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SERVICE MANUAL

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TABLE OF CONTENTS

OVERALL INFORMATION

1. OVERALL MACHINE INFORMATION 1-1
1.1 SPECIFICATIONS 1-1
1.2 MACHINE CONFIGURATION 1-5
1.2.1 SYSTEM COMPONENTS 1-5
1.2.2 INSTALLABLE OPTION TABLE 1-7
Copier options 1-7
Fax and printer options 1-7
Scanner option 1-7
1.3 PAPER PATH 1-8
1.4 MECHANICAL COMPONENT LAYOUT 1-9
1.5 ELECTRICAL COMPONENT DESCRIPTIONS 1-11
1.6 DRIVE LAYOUT 1-14
1.7 COPY PROCESS 1-15
1.7.1 OVERVIEW 1-15
1.8 BOARD STRUCTURE 1-17
1.8.1 OVERVIEW 1-17
1.8.2 DESCRIPTION 1-18

DETAILED DESCRIPTIONS

2. DETAILED SECTION DESCRIPTIONS 2-1
2.1 SCANNING 2-1
2.1.1 OVERVIEW 2-1
2.1.2 SCANNER DRIVE 2-2
2.1.3 ORIGINAL SIZE DETECTION IN PLATEN MODE 2-3
2.2 IMAGE PROCESSING 2-5
2.2.1 OVERVIEW 2-5
2.2.2 SBU (SENSOR BOARD UNIT) 2-6
2.2.3 AUTO IMAGE DENSITY 2-7
In the SBU 2-7
In the IPU 2-7
“Service Mode” Original Types 2-7
2.2.4 IPU (IMAGE PROCESSING UNIT) 2-8
Overview 2-8
Image Processing Modes 2-9
Image Processing Path 2-11
SP Modes for Each Image Processing Step 2-12
Auto Shading 2-18
White Line Erase Compensation 2-18
Black Line Erase Compensation 2-18
Scanner Gamma (γ Correction 2-19

Main Scan Magnification/Reduction 2-20
Mirroring for ADF Mode 2-20
Filtering 2-21
ID Gamma (γ) Correction 2-25
Gradation Processing 2-25
Line width correction 2-27
2.2.5 MEMORY CONTROLLER AND ENHANCED MEMORY BOARD (EMB) 2-28
2.2.6 VIDEO CONTROL UNIT (VCU) 2-29
Fine Character and Image (FCI) 2-29
Printer Gamma Correction 2-29
2.3 LASER EXPOSURE 2-30
2.3.1 OVERVIEW 2-30
2.3.2 AUTO POWER CONTROL (APC) 2-31
2.3.3 LD SAFETY SWITCH 2-32
2.4 PHOTOCONDUCTOR UNIT (PCU) 2-33
2.4.1 OVERVIEW 2-33
2.4.2 DRIVE 2-34
2.4.3 NEW PCU DETECTION 2-35
2.5 DRUM CHARGE 2-36
2.5.1 OVERVIEW 2-36
2.5.1 CHARGE ROLLER VOLTAGE CORRECTION 2-37
Correction for Environmental Conditions 2-37
2.5.2 ID SENSOR PATTERN PRODUCTION TIMING 2-38
2.5.3 DRUM CHARGE ROLLER CLEANING 2-39
2.6 DEVELOPMENT 2-40
2.6.1 OVERVIEW 2-40
2.6.2 DRIVE 2-41
2.6.3 DEVELOPER MIXING 2-42
2.6.4 DEVELOPMENT BIAS 2-43
2.6.5 TONER SUPPLY 2-44
Toner bottle replenishment mechanism 2-44
Toner supply mechanism 2-45
2.6.6 TONER DENSITY CONTROL 2-46
Overview 2-46
Toner density sensor initial setting 2-48
Toner density measurement 2-48
Vsp/Vsg detection 2-48
Toner supply reference voltage (Vref) determination 2-48
Toner supply determination 2-48
Toner Supply Motor On Time Determinations 2-49
2.6.7 TONER SUPPLY IN ABNORMAL SENSOR CONDITIONS 2-50
ID sensor 2-50
TD Sensor 2-50
2.6.8 TONER NEAR END/END DETECTION AND RECOVERY 2-50
Toner Near End Detection 2-50
Toner Near End Recovery 2-51
Toner End Detection 2-51
Toner End Recovery 2-51

2.7 DRUM CLEANING AND TONER RECYCLING 2-52
2.7.1 DRUM CLEANING 2-52
2.7.2 TONER RECYCLING 2-53
2.8 PAPER FEED 2-54
2.8.1 OVERVIEW 2-54
2.8.2 PAPER FEED DRIVE MECHANISM 2-55
2.8.3 PAPER FEED AND SEPARATION MECHANISM 2-56
2.8.4 PAPER LIFT MECHANISM 2-57
2.8.5 PAPER END DETECTION 2-58
2.8.6 PAPER HEIGHT DETECTION 2-59
2.8.7 FEED PRESSURE ADJUSTMENT FOR PAPER SIZE 2-60
Overview 2-60
Paper Size Thresholds 2-60
Feed Pressure Adjustment 2-61
Effect of the Amount of Remaining Paper 2-61
2.8.8 PAPER SIZE DETECTION 2-63
2.8.9 SPECIAL PAPER SETTING 2-64
2.8.10 SIDE AND END FENCES 2-65
Side Fences 2-65
End Fence 2-65
2.8.11 PAPER REGISTRATION 2-66
2.9 IMAGE TRANSFER AND PAPER SEPARATION 2-67
2.9.1 OVERVIEW 2-67
2.9.2 IMAGE TRANSFER CURRENT TIMING 2-68
2.9.3 TRANSFER ROLLER CLEANING 2-69
2.9.4 PAPER SEPARATION MECHANISM 2-69
2.10 IMAGE FUSING AND PAPER EXIT 2-70
2.10.1 OVERVIEW 2-70
2.10.2 FUSING DRIVE AND RELEASE MECHANISM 2-71
2.10.3 FUSING ENTRANCE GUIDE SHIFT MECHANISM 2-72
2.10.4 PRESSURE ROLLER 2-73
2.10.5 CLEANING MECHANISM 2-73
2.10.6 FUSING TEMPERATURE CONTROL 2-74
Temperature Control 2-74
Fusing Lamp Control 2-75
2.10.7 OVERHEAT PROTECTION 2-76
2.10.8 PAPER EXIT 2-76
2.11 ENERGY SAVER MODES 2-77
2.11.1 OVERVIEW 2-77
2.11.2 ENERGY SAVER MODE 2-78
Entering the energy saver mode 2-78
What happens in energy saver mode 2-78
Return to stand-by mode 2-78
2.11.3 LOW POWER MODE 2-79
Entering the low power mode 2-79
What happens in low power mode 2-79
Return to stand-by mode 2-79
2.11.4 AUTO OFF MODE 2-80
Entering auto off mode 2-80

What happens in auto off mode 2-80
Returning to stand-by mode 2-80
Disabling auto off mode 2-80
2.11.5 NIGHT MODE 2-81
Entering night stand-by and night modes 2-81
What happens in night stand-by and night modes 2-81
Returning to stand-by mode 2-82

INSTALLATION PROCEDURE

3. INSTALLATION PROCEDURE 3-1
3.1 INSTALLATION REQUIREMENTS 3-1
3.1.1 ENVIRONMENT 3-1
3.1.2 MACHINE LEVEL 3-1
3.1.3 MINIMUM SPACE REQUIREMENTS 3-2
3.1.4 POWER REQUIREMENTS 3-3
3.2 COPIER INSTALLATION 3-4
3.2.1 POWER SOCKETS FOR PERIPHERALS 3-4
3.2.2 INSTALLATION FLOW CHART 3-5
3.2.3 ACCESSORY CHECK 3-6
3.2.4 INSTALLATION PROCEDURE 3-7
3.3 PAPER TRAY UNIT INSTALLATION 3-11
3.3.1 ACCESSORY CHECK 3-11
3.4 LCT INSTALLATION 3-14
3.4.1 ACCESSORY CHECK 3-14
3.5 AUTO REVERSE DOCUMENT FEEDER INSTALLATION 3-17
3.5.1 ACCESSORY CHECK 3-17
3.5.2 INSTALLATION PROCEDURE 3-17
3.6 INTERCHANGE UNIT INSTALLATION 3-20
3.6.1 COMPONENT CHECK 3-20
3.6.2 INSTALLATION PROCEDURE 3-21
3.7 1-BIN TRAY UNIT INSTALLATION 3-23
3.7.1 COMPONENT CHECK 3-23
3.7.2 INSTALLATION PROCEDURE 3-23
3.8 SHIFT TRAY 3-26
3.8.1 COMPONENT CHECK 3-26
3.8.2 INSTALLATION PROCEDURE 3-26
3.9 BY-PASS FEED UNIT INSTALLATION 3-28
3.9.1 COMPONENTS CHECK 3-28
3.9.2 INSTALLATION PROCEDURE 3-28
3.10 DUPLEX UNIT INSTALLATION 3-30
3.10.1 ACCESSORY CHECK 3-30
3.10.2 INSTALLATION PROCEDURE 3-31
3.11 BRIDGE UNIT INSTALLATION 3-33
3.11.1 ACCESSORY CHECK 3-33
3.11.2 INSTALLATION PROCEDURE 3-33
3.12 1,000-SHEET FINISHER INSTALLATION 3-35
3.13 COPIER FEATURE EXPANDER INSTALLATION 3-38

3.14 PLATEN COVER INSTALLATION 3-39
3.15 KEY COUNTER INSTALLATION 3-40
3.16 ANTI-CONDENSATION HEATER 3-42
3.17 TRAY HEATER 3-43
3.18 TRAY HEATER (OPTIONAL PAPER TRAY UNIT) 3-45
3.19 TRAY HEATER (OPTIONAL LCT) 3-48

SERVICE TABLES

4. SERVICE TABLES 4-1
4.1 GENERAL CAUTION 4-1
4.1.1 PCU (PHOTOCONDUCTOR UNIT) 4-1
4.1.2 TRANSFER ROLLER UNIT 4-1
4.1.3 SCANNER UNIT 4-1
4.1.4 LASER UNIT 4-2
4.1.5 FUSING UNIT 4-2
4.1.6 PAPER FEED 4-2
4.1.7 OTHERS 4-2
4.2 SERVICE PROGRAM MODE 4-3
4.2.1 SERVICE PROGRAM MODE OPERATION 4-3
Service Program Access Procedure 4-3
Accessing Copy Mode from within an SP Mode 4-4
How to Select the Program Number 4-4
To input a value or setting for an SP mode 4-4
4.2.2 SERVICE PROGRAM MODE TABLES 4-5
4.2.3 TEST PATTERN PRINTING (SP4-417 AND SP5-902) 4-60
4.2.4 INPUT CHECK (SP5-803) 4-61
Input Check Table 4-61
4.2.5 OUTPUT CHECK (SP5-804) 4-66
Output Check Table 4-66
4.2.6 COPY JAM HISTORY DISPLAY (SP7-903) 4-68
4.2.7 SMC DATA LISTS (SP5-992) 4-69
4.2.8 ORIGINAL JAM HISTORY DISPLAY (SP7-905) 4-70
4.2.9 MEMORY ALL CLEAR (SP5-801) 4-71
Using a Flash Memory Card 4-71
Without Using a Flash Memory Card 4-71
4.2.10 PROGRAM UPLOAD/DOWNLOAD 4-72
Program Download (SP5-827) 4-72
Program Upload (SP5-826) 4-73
4.2.11 NVRAM DATA DOWNLOAD 4-74
NVRAM Data Download (SP5-825) 4-74
NVRAM Data Upload (SP5-824) 4-75
4.2.12 APS AND PLATEN/DF COVER SENSOR OUTPUT DISPLAY (SP4-301) 4-76
4.2.13 DF APS SENSOR OUTPUT DISPLAY (SP6-901) 4-77
4.2.14 NIP BAND WIDTH MEASUREMENT 4-78
4.2.15 DISPLAY LANGUAGE (SP5-808) 4-79
4.2.16 SERIAL NUMBER INPUT (SP5-811) 4-79

4.2.17 ID SENSOR ERROR ANALYSIS (SP2-221) 4-80
4.3 USER TOOLS 4-81
4.3.1 HOW TO ENTER AND EXIT USER TOOLS 4-81
4.3.2 USER TOOLS TABLE 4-81
System Setting Table 4-81
Copy Setting Table 4-82
4.4 LEDS 4-83
BICU 4-83
IOB 4-83
4.5 SPECIAL TOOLS AND LUBRICANTS 4-83
4.5.1 SPECIAL TOOLS 4-83
4.5.2 LUBRICANTS 4-83
4.6 FIRMWARE MODIFICATION HISTORY 4-84
4.6.1 BICU FIRMWARE MODIFICATION HISTORY 4-84
4.6.2 ROM HISTORY – BICU (FOR CAPTURE BOX TYPE 270) 4-87

PREVENTIVE MAINTENANCE

5. PREVENTIVE MAINTENANCE SCHEDULE 5-1
5.1 PM TABLE 5-1

REPLACEMENT AND ADJUSTMENT

6. REPLACEMENT AND ADJUSTMENT 6-1
6.1 SCANNER UNIT 6-1
6.1.1 EXPOSURE GLASS 6-1
6.1.2 SCANNER EXTERIOR/OPERATION PANEL 6-2
6.1.3 LENS BLOCK ASSEMBLY 6-3
6.1.4 ORIGINAL SIZE SENSORS/LAMP STABILIZER 6-4
6.1.5 EXPOSURE LAMP 6-5
6.1.6 SCANNER MOTOR 6-6
6.1.7 SCANNER WIRES 6-7
6.2 LASER UNIT 6-10
6.2.1 CAUTION DECAL LOCATIONS 6-10
6.2.2 LASER UNIT 6-11
6.2.3 POLYGON MIRROR MOTOR 6-12
6.2.4 LD UNIT 6-12
6.2.5 LASER SYNCHRONIZATION DETECTOR 6-13
6.3 PHOTOCONDUCTOR UNIT (PCU) 6-14
6.3.1 PCU 6-14
6.4 TRANSFER UNIT 6-15
6.4.1 TRANSFER ROLLER UNIT 6-15
6.4.2 IMAGE DENSITY SENSOR 6-16
6.5 FUSING/EXIT 6-17
6.5.1 FUSING UNIT 6-17
6.5.2 THERMISTOR 6-17
6.5.3 THERMOFUSE 6-18

6.5.4 HOT ROLLER AND FUSING LAMP 6-19
6.5.5 PRESSURE ROLLER/CLEANING ROLLER 6-20
6.5.6 PAPER EXIT SENSOR/PAPER OVERFLOW SENSOR 6-21
6.6 PAPER FEED 6-22
6.6.1 FEED ROLLERS 6-22
6.6.2 PAPER END SENSOR 6-23
6.6.3 PAPER TRAY LIFT MOTORS 6-24
6.6.4 REGISTRATION CLUTCH 6-25
6.6.5 PAPER FEED CLUTCHES 6-26
Lower Paper Feed Clutch 6-26
Upper Paper Feed Clutch. 6-26
6.6.6 RELAY CLUTCHES 6-27
6.6.7 PAPER SIZE DETECTOR/SPECIAL PAPER SENSOR 6-28
6.6.8 REGISTRATION SENSOR 6-29
6.6.9 RELAY SENSORS 6-30
Upper Relay Sensor 6-30
Lower Relay Sensor 6-30
6.7 PCBS AND OTHER ITEMS 6-31
6.7.1 BICU BOARD 6-31
6.7.2 I/O BOARD 6-32
6.7.3 POWER PACK 6-32
6.7.4 MAIN MOTOR 6-33
6.7.5 PSU 6-34
6.8 COPY ADJUSTMENTS: PRINTING/SCANNING 6-35
6.8.1 PRINTING 6-35
Registration - Leading Edge/Side-to-Side 6-35
Blank Margin 6-36
Main Scan Magnification 6-36
Parallelogram Image Adjustment 6-37
6.8.2 SCANNING 6-38
Registration: Platen Mode 6-38
Magnification 6-38
Standard White Density Adjustment 6-39
6.8.3 ADF IMAGE ADJUSTMENT 6-40
Registration 6-40

TROUBLESHOOTING

7. TROUBLESHOOTING 7-1
7.1 SERVICE CALL CONDITIONS 7-1
7.1.1 SUMMARY 7-1
7.1.2 SC CODE DESCRIPTIONS 7-2
SC194: IPU White Level Detection Error 7-4
SC546: Unstable fusing temperature 7-9
SC620: Communication error between IOB and ADF 7-10
SC760: ADF gate abnormal 7-14
SC900: Electrical total counter error 7-14
SC901: Mechanical Total Counter 7-14

SC921: EMB (Copier feature expander) hardware error 7-15
SC980: Program loading error 7-15
SC990: Communication error between BICU and IOB..... 7-15
SC999: Program version error 7-15
7.2 PAPER FEED TROUBLESHOOTING 7-16
7.3 SKEWED IMAGE..... 7-17
7.4 TONER DENSITY..... 7-18
7.4.1 ADJUST THE TONER DENSITY CONTROL 7-18
If the toner density is too low..... 7-18
If the toner density is too high 7-18
7.4.2 DIRTY BACKGROUND 7-18
7.5 ELECTRICAL COMPONENT DEFECTS..... 7-19
7.5.1 SENSORS 7-19
7.5.2 SWITCHES..... 7-21
7.6 BLOWN FUSE CONDITIONS..... 7-22

AUTO RECIRCULATING DOCUMENT FEEDER A858

1. OVERALL MACHINE INFORMATION 8-1
1.1 SPECIFICATIONS..... 8-1
1.2 MECHANICAL COMPONENT LAYOUT..... 8-2
1.3 ELECTRICAL COMPONENT LAYOUT 8-3
1.4 ELECTRICAL COMPONENT DESCRIPTION 8-4
1.5 DRIVE LAYOUT 8-5

2. DETAILED SECTION DESCRIPTIONS 8-6
2.1 ORIGINAL SIZE DETECTION 8-6
1.2 PICK-UP AND SEPARATION..... 8-9
1.3 ORIGINAL TRANSPORT AND EXIT 8-10
1.3.1 SINGLE-SIDED ORIGINALS 8-10
1.3.2 DOUBLE-SIDED ORIGINALS..... 8-11
1.3.3 ORIGINAL TRAILING EDGE SENSOR 8-12
1.4 STAMP 8-13
1.5 TIMING CHARTS..... 8-14
1.5.1 LT SIDEWAYS (SINGLE-SIDED ORIGINAL MODE) 8-14
1.5.2 LT SIDEWAYS STAMP MODE
(SINGLE-SIDED ORIGINAL MODE) 8-15
1.5.3 LT SIDEWAYS (DOUBLE-SIDED ORIGINAL MODE)..... 8-16
1.5.4 LT SIDEWAYS STAMP MODE
(DOUBLE-SIDED ORIGINAL MODE) 8-17
1.6 CONDITION OF JAM DETECTION 8-18
1.7 OVERALL ELECTRICAL CIRCUIT..... 8-19

3. REPLACEMENT AND ADJUSTMENT..... 8-20
3.1 DF EXIT TABLE AND COVER 8-20
3.2 ORIGINAL FEED UNIT..... 8-21
3.3 LEFT COVER 8-22

3.4 PICK-UP ROLLER 8-23
3.5 FEED BELT 8-24
3.6 SEPARATION ROLLER 8-25
3.7 ORIGINAL SET/ORIGINAL REVERSE SENSOR 8-26
3.8 ORIGINAL LENGTH, WIDTHSENSOR BOARD AND TRAILING EDGE SENSOR 8-27
3.9 DF FEED CLUTCH/DF PICK-UP SOLENOID/ TRANSPORT/ DF FEED MOTORS 8-28
DF Feed Clutch 8-28
Pick-up Solenoid 8-28
Transport Motor 8-28
DF Feed Motor 8-28
3.10 REGISTRATION SENSOR 8-29
3.11 STAMP SOLENOID AND ORIGINAL EXIT SENSOR 8-30

PAPER TRAY UNIT A860

1. OVERALL MACHINE INFORMATION 9-1
1.1 SPECIFICATIONS 9-1
1.2 MECHANICAL COMPONENT LAYOUT 9-2
1.3 ELECTRICAL COMPONENT LAYOUT 9-3
1.4 ELECTRICAL COMPONENT DESCRIPTION 9-4
1.5 DRIVE LAYOUT 9-5

2. DETAILED DESCRIPTIONS 9-6
2.1 PAPER FEED AND SEPARATION MECHANISM 9-6
2.2 PAPER LIFT MECHANISM 9-7
2.3 PAPER END DETECTION 9-9
2.4 PAPER HEIGHT DETECTION 9-10
1.5 PAPER SIZE DETECTION 9-12
1.6 SIDE AND END FENCES 9-13
Side Fences 9-13
End Fence 9-13

3. REPLACEMENT AND ADJUSTMENT 9-14
3.1 FEED ROLLER REPLACEMENT 9-14
3.2 TRAY MAIN BOARD REPLACEMENT 9-15
3.3 TRAY MOTOR REPLACEMENT 9-15
3.4 RELAY CLUTCH REPLACEMENT 9-16
3.5 UPPER PAPER FEED CLUTCH REPLACEMENT 9-17
3.6 LOWER PAPER FEED CLUTCH REPLACEMENT 9-18
3.7 LIFT MOTOR REPLACEMENT 9-19
3.8 PAPER END SENSOR REPLACEMENT 9-20
3.9 VERTICAL TRANSPORT SENSOR REPLACEMENT 9-20
3.10 PAPER SIZE SWITCH REPLACEMENT 9-21

LARGE CAPACITY TRAY A862

1. OVERALL MACHINE INFORMATION 10-1
1.1 SPECIFICATIONS 10-1
1.2 MECHANICAL COMPONENT LAYOUT 10-2
1.3 ELECTRICAL COMPONENT LAYOUT 10-3
1.4 ELECTRICAL COMPONENT DESCRIPTIONS 10-4

2. DETAILED SECTION DESCRIPTIONS 10-5
2.1 PAPER FEED 10-5
2.2 REVERSE ROLLER AND PICK-UP ROLLER RELEASE 10-6
2.3 TRAY LIFT 10-7
2.4 NEAR END/END DETECTION 10-8
2.5 RIGHT TRAY SIDE FENCE 10-9
2.6 LEFT TRAY REAR FENCE 10-9
2.7 RIGHT TRAY PAPER END DETECTION 10-10

3. REPLACEMENT AND ADJUSTMENT 10-11
3.1 DETACHING THE TRAY FROM THE MAINFRAME 10-11
Rear Fence HP Sensor 10-11
3.3 CHANGING THE TRAY PAPER SIZE 10-12
3.4 LEFT TRAY PAPER END SENSOR 10-12
3.5 TRAY LIFT MOTOR 10-13
3.6 TRAY MOTOR 10-14
3.7 PAPER FEED CLUTCH AND RELAY CLUTCH 10-15
3.8 PAPER FEED UNIT 10-16
3.9 UPPER LIMIT, RIGHT TRAY PAPER END, AND RELAY SENSORS 10-17
3.10 REAR FENCE MOTOR 10-18
3.11 PICK-UP/PAPER FEED/REVERSE ROLLERS 10-19

BY-PASS UNIT A899

1 OVERALL MACHINE INFORMATION 11-1
1.1 SPECIFICATIONS 11-1
1.2 MECHANICAL COMPONENT LAYOUT 11-1
1.3 ELECTRICAL COMPONENT LAYOUT 11-2
1.4 ELECTRICAL COMPONENT DESCRIPTION 11-2
2 DETAILED DESCRIPTIONs 11-3
2.1 BASIC OPERATION 11-3
2.2 PAPER SIZE DETECTION 11-4
3 REPLACEMENT AND ADJUSTMENT 11-5
3.1 PAPER FEED ROLLER/FRICTION PAD/PAPER END SENSOR 11-5
3.2 PAPER SIZE SENSOR BOARD 11-6
3.3 PAPER FEED CLUTCH 11-7

INTERCHANGE UNIT B300

1. OVERALL MACHINE INFORMATION 12-1
1.1 SPECIFICATIONS 12-1
1.2 MECHANICAL COMPONENT LAYOUT 12-2
1.3 DRIVE LAYOUT 12-3

2. DETAILED DESCRIPTION 12-4
2.1 JUNCTION GATE MECHANISM 12-4
To the Exit Tray or Bridge Unit (for the Upper Tray on top of the Bridge Unit, or the Finisher) 12-4
To the 1-bin Tray 12-4
To the Duplex Unit 12-4

3. REPLACEMENT AND ADJUSTMENT 12-5
3.1 EXIT SENSOR REPLACEMENT 12-5

DUPLEX A896

1. OVERALL MACHINE INFORMATION 13-1
1.1 SPECIFICATIONS 13-1
1.2 MECHANICAL COMPONENT LAYOUT 13-2
1.3 ELECTRICAL COMPONENT LAYOUT 13-3
1.4 ELECTRICAL COMPONENT DESCRIPTION 13-4
1.5 DRIVE LAYOUT 13-5

2. DETAILED DESCRIPTIONS 13-6
2.1 BASIC OPERATION 13-6
Larger than A4 lengthwise/LT Lengthwise 13-6
Up to A4 Lengthwise/LT lengthwise 13-7
2.2 FEED IN AND EXIT MECHANISM 13-8
When Paper is Fed Into Duplex Unit: 13-8
Inversion and Exit: 13-8

3. REPLACEMENT AND ADJUSTMENT 13-9
3.1 COVER REMOVAL 13-9
3.2 ENTRANCE SENSOR REPLACEMENT 13-10
3.3 EXIT SENSOR REPLACEMENT 13-11

1 BIN TRAY UNIT A898

1. OVERALL INFORMATION 14-1
1.1 SPECIFICATIONS 14-1
1.2 MECHANICAL COMPONENT LAYOUT 14-2
1.3 ELECTRICAL COMPONENT LAYOUT 14-3

1.4 ELECTRICAL COMPONENT DESCRIPTION 14-3

2. DETAILED SECTION DESCRIPTIONS 14-4
2.1 BASIC OPERATION 14-4

3. REPLACEMENT AND ADJUSTMENT 14-5
3.1 PAPER SENSOR REMOVAL 14-5

BRIDGE UNIT A897

1. OVERALL MACHINE INFORMATION 15-1
1.1 SPECIFICATIONS 15-1
1.2 MECHANICAL COMPONENT LAYOUT 15-2
1.3 ELECTRICAL COMPONENT LAYOUT 15-3
1.4 ELECTRICAL COMPONENT DESCRIPTION 15-4
1.5 DRIVE LAYOUT 15-5

2. DETAILED DESCRIPTION 15-6
2.1 JUNCTION GATE MECHANISM 15-6

3. REPLACEMENT AND ADJUSTMENT 15-7
3.1 BRIDGE UNIT DRIVE MOTOR REPLACEMENT 15-7
3.2 TRAY EXIT SENSOR REPLACEMENT 15-8
3.3 RELAY SENSOR REPLACEMENT 15-8

SHIFT TRAY UNIT B313

1 OVERALL MACHINE INFORMATION 16-1
1.1 SPECIFICATIONS 16-1
1.2 COMPONENT LAYOUT 16-2

2. DETAILED SECTION DESCRIPTIONS 16-3
2.1 BASIC OPERATION 16-3
2.2 PRIMARY MECHANISMS 16-4
2.2.1 TRAY SHIFT 16-4
2.2.2 HALF TURN DETECTION 16-5

3. REPLACEMENT AND ADJUSTMENT 16-6
3.1 TRAY COVER REPLACEMENT 16-6
3.1.1 TRAY COVER REMOVAL 16-6
3.1.2 TRAY COVER ATTACHMENT 16-6
3.2 TRAY MOTOR AND HALF TURN SENSOR REPLACEMENT 16-7
3.2.1 REPLACING THE TRAY MOTOR 16-7
3.2.2 REPLACING THE HALF TURN SENSOR: 16-7

FINISHER A681

1. OVERALL MACHINE INFORMATION 17-1
1.1 SPECIFICATIONS 17-1
1.2 MECHANICAL COMPONENT LAYOUT 17-2
1.3 ELECTRICAL COMPONENT LAYOUT 17-3
1.4 ELECTRICAL COMPONENT DESCRIPTIONS 17-4
1.5 DRIVE LAYOUT 17-6

2. DETAILED DESCRIPTIONS 17-7
2.1 JUNCTION GATE MECHANISM 17-7
Staple Mode 17-7
No staple Mode 17-7
2.2 JOGGER UNIT PAPER POSITIONING MECHANISM 17-8
2.3 EXIT GUIDE PLATE OPEN/CLOSE MECHANISM 17-9
2.4 STAPLER 17-10
2.5 FEED OUT MECHANISM 17-11
2.6 SHIFT TRAY UP/DOWN MECHANISM 17-12
2.7 SHIFT TRAY SIDE-TO-SIDE MECHANISM 17-13
2.8 JAM CONDITIONS 17-14
2.9 TIMING CHARTS 17-15
2.9.1 NO STAPLE MODE (A4 SIDEWAYS, 3 SHEETS/2SETS) 17-15
2.9.2 STAPLE MODE (A4 SIDEWAYS, 2 SHEETS/2 SETS) 17-16

3. SERVICE TABLE 17-17
3.1 DIP SWITCH TABLE 17-17
3.2 TEST POINTS 17-17
3.3 FUSES 17-17

4. REPLACEMENT AND ADJUSTMENT 17-18
4.1 COVER REMOVAL 17-18
Front Door 17-18
Front Cover 17-18
Rear Cover 17-18
Upper Cover 17-18
Lower Left Cover 17-19
Front Shift Tray Cover 17-19
Rear Shift Tray Cover 17-19
Shift Tray 17-19
4.2 ENTRANCE SENSOR REPLACEMENT 17-20
4.3 EXIT SENSOR REPLACEMENT 17-21
4.4 STACK HEIGHT SENSOR REPLACEMENT 17-22
4.5 POSITIONING ROLLER REPLACEMENT 17-23
4.6 STAPLER REPLACEMENT 17-24
4.7 ROM HISTORY 17-25

SCANNER KIT A844

1. OVERALL MACHINE INFORMATION 18-1
1.1 SPECIFICATIONS 18-1
1.1.1 SCANNER CONTROL BOARD 18-1
1.1.2 DRAM SIMM 18-1
1.2 SOFTWARE 18-2
1.2.1 SCANNER DRIVERS 18-2
1.2.2 SCANNER UTILITIES 18-2

2. DETAILED SECTION DESCRIPTIONS 18-3
2.1 HARDWARE OVERVIEW 18-3
2.2 SCANNER FUNCTIONS 18-5
2.2.1 SELF DIAGNOSTICS 18-5
2.2.2. IMAGE PROCESSING IN THE SCANNER CONTROLLER 18-5

3. INSTALLATION PROCEDURE 18-6

4. SERVICE TABLE 18-9
4.1 SERVICE PROGRAM MODE 18-9
4.1.1 SERVICE PROGRAM ACCESS PROCEDURE 18-9
4.1.2 SERVICE PROGRAM MODE TABLES 18-9
4.2 DOWNLOADING NEW SOFTWARE 18-11
4.2.1 SOFTWARE DOWNLOAD PROCEDURE 18-11
4.2.2 ERROR MESSAGES DURING THE SOFTWARE DOWNLOAD . 18-12

5. REPLACEMENT AND ADJUSTMENT 18-12
5.1 NOTE FOR REPLACING THE SCANNER CONTROLLER BOARD 18-13

6. TROUBLESHOOTING 18-14
6.1 SERVICE CALL CONDITION 18-14
6.1.1 SC CODE DESCRIPTIONS 18-14
6.2 LEDS 18-15
6.3 FIRMWARE HISTORY 18-16
6.3.4 A844 FIRMWARE MODIFICATION HISTORY 18-16

⚠IMPORTANT SAFETY NOTICES

PREVENTION OF PHYSICAL INJURY

1. Before disassembling or assembling parts of the copier and peripherals, make sure that the copier power cord is unplugged.
2. The wall outlet should be near the copier and easily accessible.
3. If any adjustment or operation check has to be made with exterior covers off or open while the main switch is turned on, keep hands away from electrified or mechanically driven components.
4. 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 is non-toxic, but if you get it in your eyes by accident, it may cause temporary eye discomfort. Try to remove with eye drops or flush with water as first aid. If unsuccessful, get medical attention.

SAFETY AND ECOLOGICAL NOTES FOR DISPOSAL

1. Do not incinerate the toner cassettes. Toner dust may ignite suddenly when exposed to an open flame.
2. Dispose of toner cassettes in accordance with local regulations. (This is a non-toxic unit.)
3. Dispose of replaced parts in accordance with local regulations.

LASER SAFETY

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

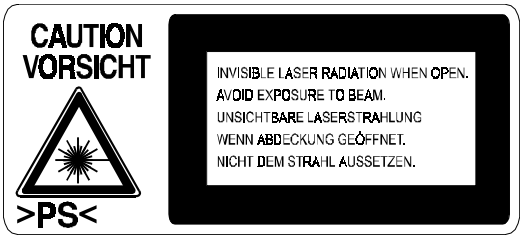
⚠WARNING

Use of controls, 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:



OVERALL INFORMATION
PAPER TRAY UNIT A860
FINISHER A681
TAB POSITION 1

DETAILED DESCRIPTIONS
LARGE CAPACITY TRAY A862
SCANNER KIT A844
TAB POSITION 2

INSTALLATION
BY-PASS UNIT A899
FAX UNIT A895
TAB POSITION 3

SERVICE TABLES
INTERCHANGE UNIT B300
ISDN UNIT A895
TAB POSITION 4

PREVENTIVE MAINTENANCE
DUPLEX A896
PRINTER CONTROLLER B306
TAB POSITION 5

REPLACEMENT AND ADJUSTMENT
1 BIN TRAY UNIT A898
NETWORK INTERFACE BOARD B307
TAB POSITION 6

TROUBLESHOOTING
BRIDGE UNIT A897
TAB POSITION 7

AUTO RECIRCULATING DOCUMENT FEEDER A858
SHIFT TRAY UNIT B313
TAB POSITION 8

OVERALL MACHINE INFORMATION

1. OVERALL MACHINE INFORMATION

1.1 SPECIFICATIONS

Configuration: Desktop

Copy Process: Dry electrostatic transfer system

Originals: Sheet/Book

Original Size: Maximum A3/11" x 17"

Copy Paper Size:
Maximum
A3/11" x 17"
Minimum
A5/8 1/2" x 5 1/2" lengthwise
Custom sizes
2nd paper tray
Width: 100 ~ 297 mm (3.9" ~ 11.5")
Length: 148 ~ 432 mm (5.8" ~ 17.0")
By-pass tray (Option):
Width: 90 ~ 305 mm (3.5" ~ 12.0")
Length: 148 ~ 1,260 mm (5.8" ~ 49.6")

Copy Paper Weight:
Paper Tray:
60 ~ 105 g/m^2, 16 ~ 28 lb (1st paper tray)
60 ~ 157 g/m^2, 16 ~ 43 lb (2nd paper tray)
By-pass (Option):
60 ~ 157 g/m^2, 16 ~ 42 lb

Reproduction Ratios: 5 Enlargement and 7 Reduction

	A4/A3 Version	LT/DLT Version
Enlargement	400% 200% 141% 122% 115%	400% 200% 155% 129% 121%
Full Size	100%	100%
Reduction	93% 87% 82% 71% 65% 50% 25%	93% 85% 78% 73% 65% 50% 25%

Zoom: 25% to 400% in 1% steps (Platen mode)
50% to 200% in 1% steps (ADF mode)

Power Source: 120 V, 60 Hz:
More than 12 A (for North America)
220 ~ 240 V, 50/60 Hz
More than 6 A (for Europe/Asia)
110 V, 50/60 Hz
More than 13 A (for Taiwan)

Power Consumption:

	Mainframe Only		Full System	
	120 V	**220 ~ 240 V**	**120 V**	**220 ~ 240 V**
Maximum	Less than 1.44 kW	Less than 1.44 kW	Less than 1.44 kW	Less than 1.44 kW
Copying	Approx. 500 Wh	Approx. 500 Wh	Approx. 500 Wh	Approx. 500 Wh
Warm-up	Approx. 1.0 kW	Approx. 1.0 kW	Approx. 1.0 kW	Approx. 1.0 kW
Stand-by	Approx. 120 Wh	Approx. 120 Wh	Approx. 130 Wh	Approx. 130 Wh
Low Power Level 1	Approx. 80 Wh	Approx. 85 Wh	Approx. 80 Wh	Approx. 85 Wh
Low Power Level 2	Approx. 50 Wh	Approx. 50 Wh	Approx. 50 Wh	Approx. 50 Wh
Auto Off	10 W	--	10 W	--

NOTE: 1) Full system: Mainframe + ADF + 1-bin Sorter + Paper Tray Unit + Duplex Unit + Bridge Unit + Finisher
2) Without the optional heaters, fax unit, and printer controller

Noise Emission (Sound Power Level):

Stand-by (Mainframe only): US/Asia Model: 40 dB(A)
Europe Model: 40 dB(A)

Operating (Mainframe only): US/Asia Model: 64 dB(A)
Europe Model: 64 dB(A)

Operating (Full System): 67.5 dB(A)

NOTE: 1) The above measurements were made in accordance with ISO 7779.
2) Full System: Mainframe + ADF + 1-bin Sorter + Paper Tray Unit + Duplex Unit + Bridge Unit + Finisher

Dimensions (W x D x H): 550 x 580 x 709 mm (21.7" x 22.8" x 28.0")

NOTE: Measurement Conditions
1) With the paper tray unit or LCT
2) Without the ADF

Weight: Less than 62 kg (136.7 lb)

Copying Speed (copies/minute):

Russian-C1A	A4 sideways/ 11" x 8 1/2"	A3/11" x 17"
Non-memory copy mode	22	12
Memory copy mode	22	13

Russian-C1B	A4 sideways/ 11" x 8 1/2"	A3/11" x 17"
Non-memory copy mode	22	12
Memory copy mode	27	15

NOTE: Measurement Conditions
1) Not APS mode
2) A4/LT copying
3) Full size

Warm-up Time: Less than 45 seconds (20°C, 68°F)

First Copy Time: Less than 4.9 s (A4), less than 5.0 s (LT)

NOTE: Measurement Conditions
1) When the polygonal mirror motor is spinning.
2) From the 1st paper tray
3) Not APS mode
4) Full size

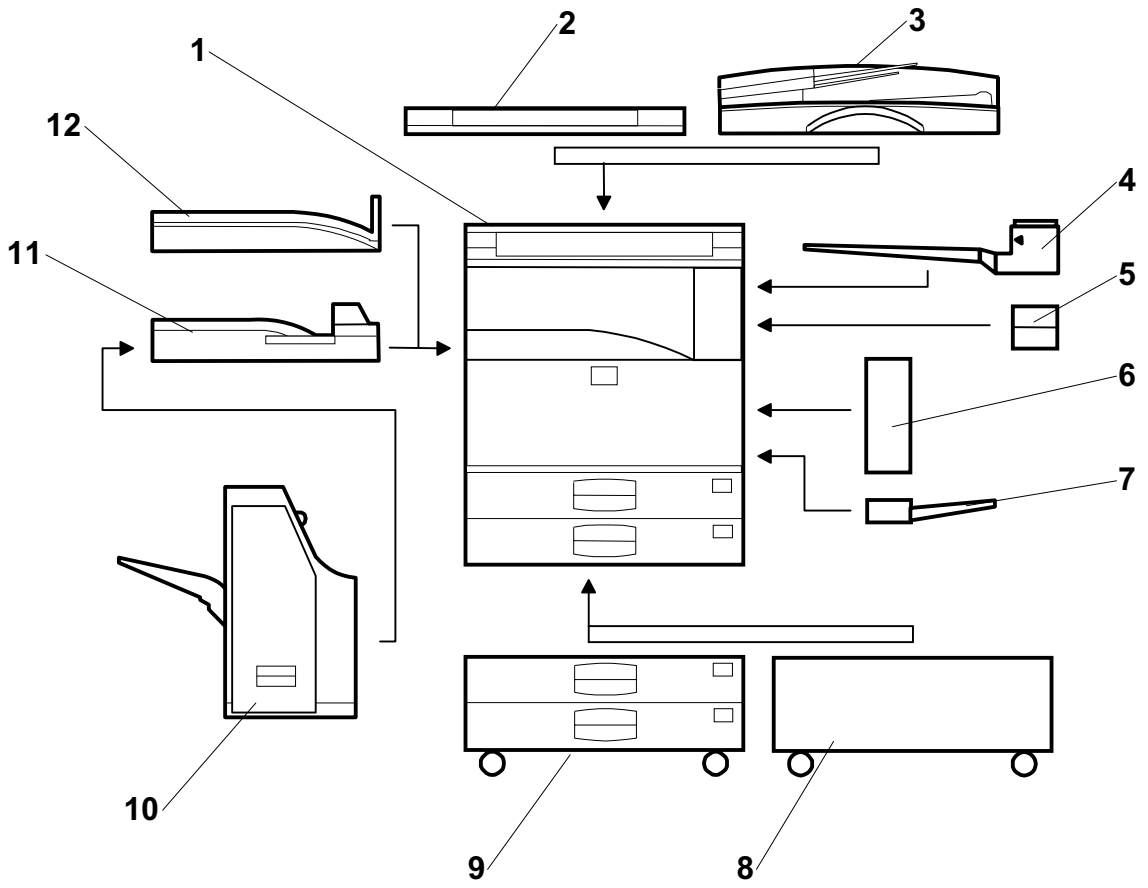
Copy Number Input: Ten-key pad, 1 to 99 (count up or count down)

Manual Image Density: 7 steps

Paper Tray Capacity:	Paper Tray: 500 sheets x 2 (Special paper in the 2nd paper tray: 50 sheets) Paper Tray Unit (Option): 500 sheets x 2 LCT (Option): 1000 sheets x 2 By-pass Tray (Option): 100 sheets (A4, B5, A5, B6, 8 1/2" x 11", 5 1/2" x 8 1/2") 10 sheets (A3, B4, 11" x 17", 8 1/2" x 13") 1 sheet (non-standard sizes) **NOTE:** Copy paper weight: 80g/m^2 (20 lb)
Toner Replenishment:	Cartridge exchange (360 g/cartridge)
Toner Yield:	10 k copies (A4 sideways, 6% full black, 1 to 1 copying, ADS mode)
Copy Tray Capacity:	Copy Tray: 500 sheets (without 1-bin tray) 250 sheets (with 1-bin tray)
Memory Capacity:	Standard 20 MB, Optional memory 48 MB

1.2 MACHINE CONFIGURATION

1.2.1 SYSTEM COMPONENTS



Version	Item	Machine Code	No.
Copier	Copier	A265	1
	Copier	A267	1
	ARDF (Optional)	A858	3
	Platen Cover (Optional)	A893	2
	Paper Tray Unit - 2 tray (Optional)	A860-11, -21, -56	9
	LCT (Optional)	A862	8
	1-bin Tray (Optional)	A898	4
	Shift Tray (Optional)	B313	12
	Duplex Unit (Optional)	A896	6
	By-pass Tray (Optional)	A899	7
	Interchange Unit (Optional)	B300	5
	Bridge Unit (Optional)	A897	11
	1000-sheet Finisher (Optional)	A681	10
	Copier Feature Expander - Memory 48 MB (Optional)	A887	
	Key Counter Bracket		
Fax	Fax Controller (Optional)	A895-01, -02, -03	
	G3 Interface Unit (Optional)	A895-11, -12	
	Handset (Optional)	H160	
	ISDN (Optional)	A895-21, -22	
	PC Fax Expander (Optional)	A894	
	Fax Function Expander (Optional)	A892	
Printer	Printer Controller (Optional)	B306	
	PostScript Kit (Optional)	B308	
	HDD (Optional)	G690	
	NIB (Optional)	B307	
	Memory 32 or 64 MB (Optional)	G688	
Scanner	Scanner Controller (Optional)	A844	

1.2.2 INSTALLABLE OPTION TABLE

Copier options

No.	Option	A265/A267	Note
1	ARDF (Optional)	❍	Install either no. 1 or 2
2	Platen Cover (Optional)	❍	Install either no. 1 or 2
3	Paper Tray Unit - 2 tray (Optional)	❍	Install either no. 3 or 4
4	LCT (Optional)	❍	Install either no. 3 or 4
5	1-bin Tray (Optional)	Δ	Requires no.9
6	Shift Tray (Optional)	❍	Install either no. 6 or 10
7	Duplex Unit (Optional)	Δ	Requires no.9
8	By-pass Tray (Optional)	❍	
9	Interchange Unit (Optional)	❍	
10	Bridge Unit (Optional)	Δ	No. 10 requires no.11 Install either no. 6 or 10
⇒ 11	1000-sheet Finisher (Optional)	Δ	Requires no.10 and either no.3 or 4
12	Memory 48 MB (Optional)	❍	
13	Key Counter Bracket	❍	

❍ = Available Δ = Requires another option

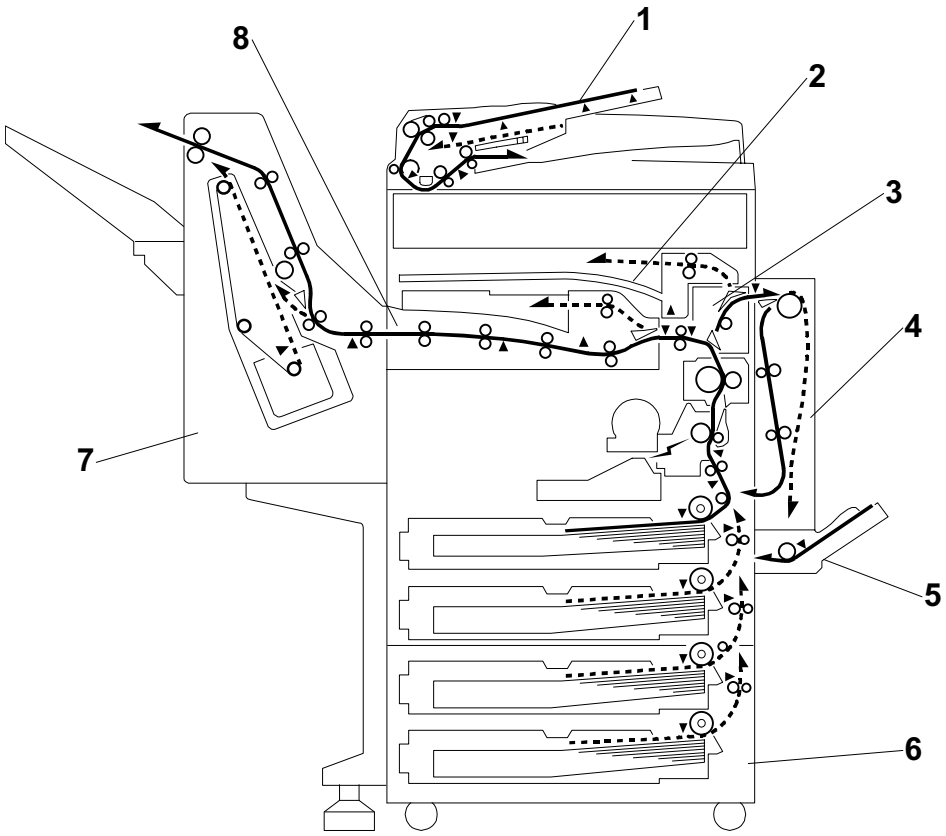
Fax and printer options

All options for the fax and printer units are available when these units have been installed.

Scanner option

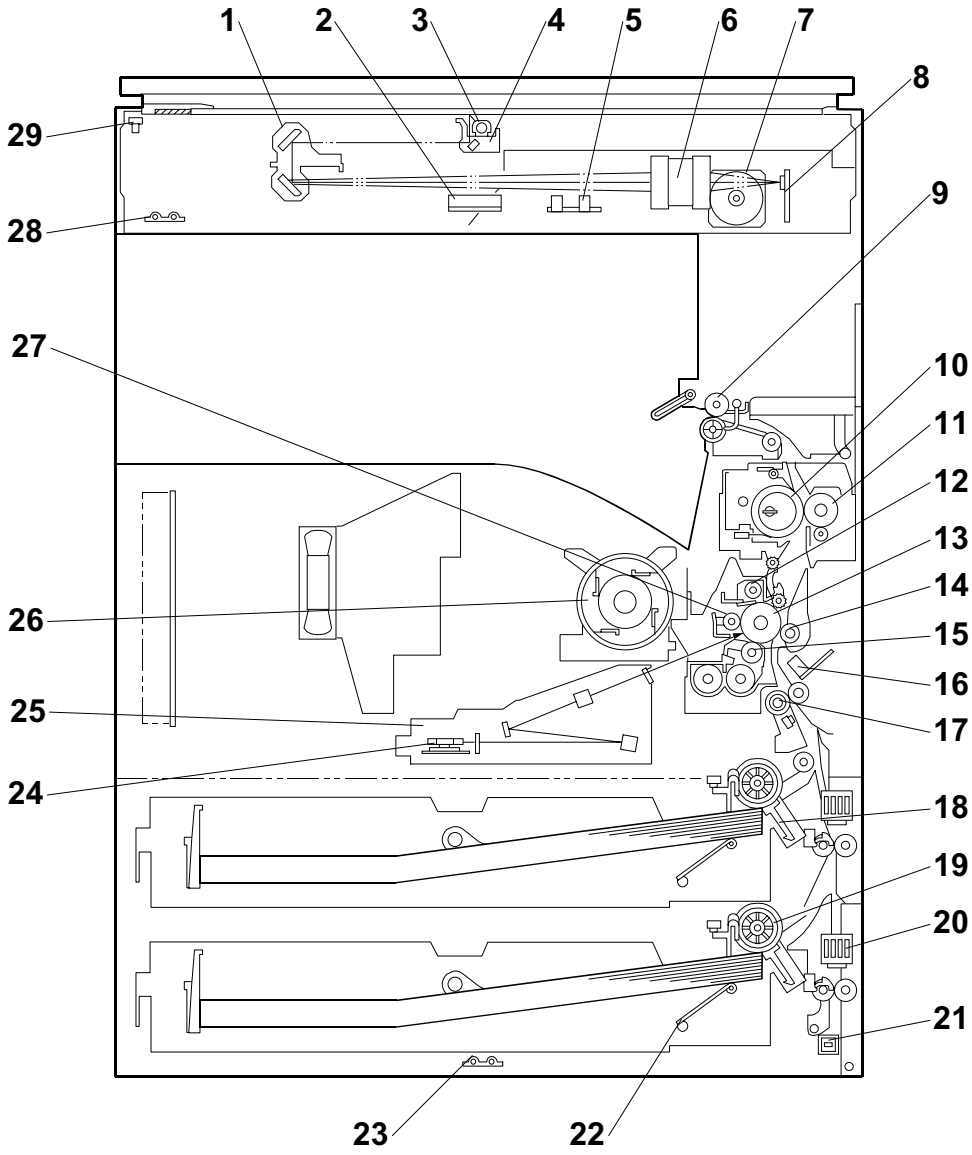
When the scanner option is installed, the printer option must be installed.

1.3 PAPER PATH



1. Optional ADF
2. Optional 1-bin Tray
3. Optional Interchange Unit
4. Optional Duplex Unit
5. Optional By-pass Feed Tray
6. Optional Paper Tray Unit
7. Optional 1000-sheet Finisher
8. Optional Bridge Unit

1.4 MECHANICAL COMPONENT LAYOUT



1. 2nd scanner
2. Original width sensor
3. Exposure lamp
4. 1st scanner
5. Original length sensor
6. Lens
7. Scanner motor
8. SBU board
9. Exit roller
10. Fusing hot roller
11. Fusing pressure roller
12. Cleaning unit
13. OPC drum
14. Transfer roller
15. Development roller
16. ID sensor
17. Registration roller
18. Friction pad
19. Paper feed roller
20. Paper size sensor
21. Special paper sensor
22. Bottom plate
23. Tray heater
24. Polygon mirror motor
25. Laser unit
26. Toner supply bottle holder
27. Drum charge roller
28. Anti-condensation heater
29. Scanner home position sensor

1.5 ELECTRICAL COMPONENT DESCRIPTIONS

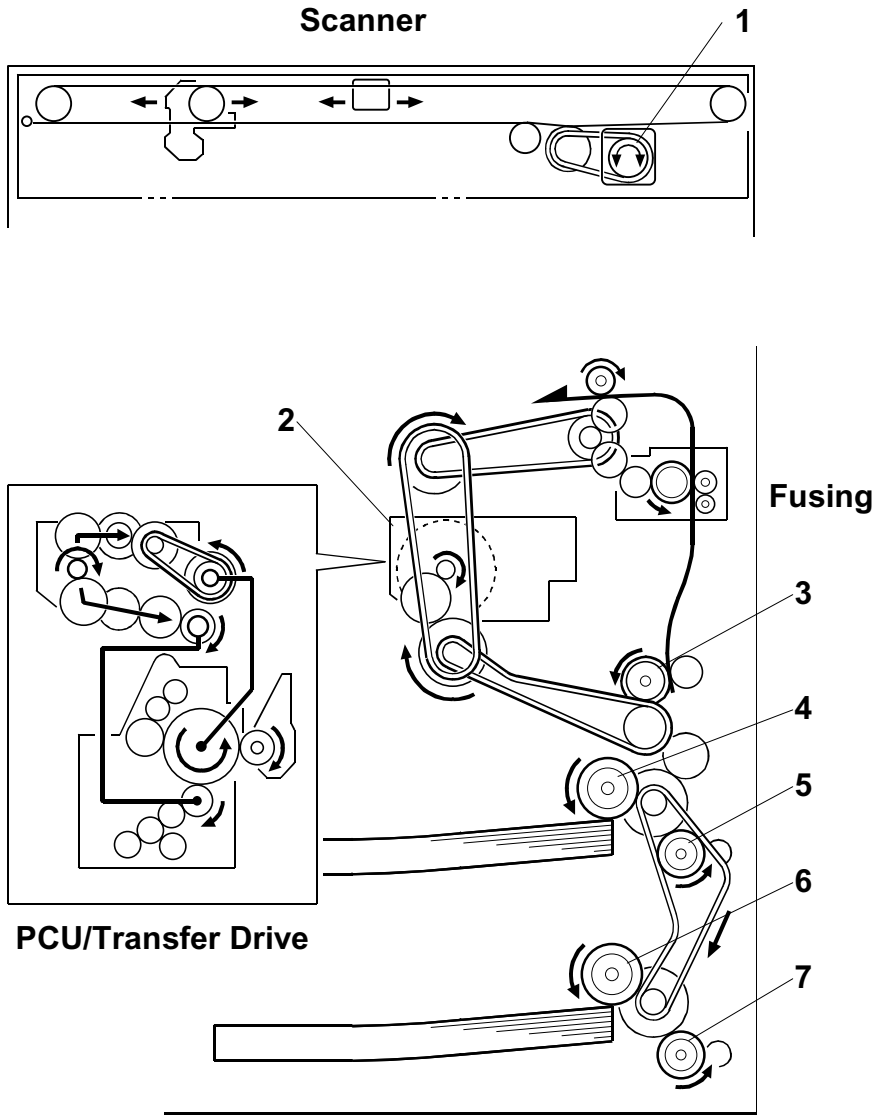
Refer to the electrical component layout on the reverse side of the point-to-point diagram for the location of the components.

Symbol	Name	Function
Motors		
M1	Scanner	Drives the 1st and 2nd scanners.
M2	Polygonal Mirror	Turns the polygonal mirror.
M3	Main	Drives the main unit components.
M4	Exhaust Fan	Removes heat from around the fusing unit.
M5	Upper Paper Lift	Raises the bottom plate in the 1st paper tray.
M6	Lower Paper Lift	Raises the bottom plate in the 2nd paper tray.
M7	Toner Supply	Rotates the toner bottle to supply toner to the development unit.
Magnetic Clutches		
MC1	Upper Paper Feed	Starts paper feed from the 1st paper tray.
MC2	Lower Paper Feed	Starts paper feed from the 2nd paper tray.
MC3	Upper Relay	Drives the upper relay rollers.
MC4	Lower Relay	Drives the lower relay rollers.
MC4	Registration	Drives the registration rollers.
Switches		
SW1	Main	Provides power to the machine. If this is off, there is no power supplied to the machine.
SW2	Right Upper Cover	Detects whether the right upper cover is open or not.
SW3	Right Cover	Cuts the +5VLD and +24V dc power line and detects whether the right cover is open or not.
SW4	Right Lower Cover	Detects whether the right lower cover is open or not.
SW5	Upper Paper Size	Determines what size of paper is in the upper paper tray.
SW6	Lower Paper Size	Determines what size of paper is in the lower paper tray.
SW7	Special Paper	Determines whether there is special paper in the lower paper tray.
SW8	New PCU Detect	Detects when a new PCU is installed.
SW9	Front Cover Safety	Cuts the +5VLD and +24V dc power line and detects whether the front cover is open or not.
SW10	Operation	Provides power for machine operation. The machine still has power if this switch is off.

Symbol	Name	Function
Sensors		
S1	Scanner HP	Informs the CPU when the 1st and 2nd scanners are at home position.
S2	Platen Cover	Informs the CPU that the platen cover is in the up or down position (related to the APS/ARE functions).
S2	Original Width	Detects original width. This is one of the APS (Auto Paper Select) sensors.
S4	Original Length 1	Detects original length. This is one of the APS (Auto Paper Select) sensors.
S5	Original Length 2	Detects original length. This is one of the APS (Auto Paper Select) sensors.
S6	Toner Density (TD)	Detects the amount of toner inside the development unit.
S7	1st Paper End	Informs the CPU when the 1st paper tray runs out of paper.
S8	2nd Paper End	Informs the CPU when the 2nd paper tray runs out of paper.
S9	Image Density (ID)	Detects the density of various patterns and the reflectivity of the drum for process control.
S10	Paper Overflow	Detects paper overflow in the built-in copy tray.
S11	Paper Exit	Detects misfeeds.
S12	Upper Relay	Detects misfeeds.
S13	Lower Relay	Detects misfeeds.
S14	Registration	Detects misfeeds and controls registration clutch off-on timing.
S15	1st Paper Lift	Detects when the paper in the 1st paper tray is at the feed height.
S16	2nd Paper Lift	Detects when the paper in the 2nd paper tray is at the feed height.
S17	1st Paper Height – 1	Detects the amount of paper in the 1st paper tray.
S18	1st Paper Height – 2	Detects the amount of paper in the 1st paper tray.
S19	2nd Paper Height – 1	Detects the amount of paper in the 2nd paper tray.
S20	2nd Paper Height – 2	Detects the amount of paper in the 2nd paper tray.
PCBs		
PCB1	BICU (Base Engine and Image Control Unit)	Controls all base engine functions both directly and through other control boards.
PCB2	PSU (Power Supply Unit)	Provides dc power to the system and ac power to the fusing lamp and heaters.
PCB3	IOB (Input/Output Board)	Controls the fusing lamp and the mechanical parts of the machine.
PCB4	SBU (Sensor Board Unit)	Contains the CCD, and outputs a video signal to the BICU board.
PCB5	Lamp Stabilizer	Stabilizes the power to the exposure lamp.
PCB6	LDD (Laser Diode Driver)	Controls the laser diode.
PCB7	Operation Panel	Controls the operation panel.

Symbol	Name	Function
PCB8	High Voltage Supply	Supplies high voltage to the drum charge roller, development roller, and transfer roller.
PCB9	Memory (Option)	Expands the memory capacity for the copier features.
Lamps		
L1	Exposure Lamp	Applies high intensity light to the original for exposure.
L2	Fusing Lamp	Heats the hot roller.
L3	Quenching Lamp	Neutralizes any charge remaining on the drum surface after cleaning.
Heaters		
H1	Anti-condensation (Option)	Turns on when the main power switch is off to prevent moisture from forming on the optics.
H2	Tray (Option)	Turns on when the main power switch is off to prevent moisture from forming around the paper trays.
Others		
TF1	Fusing Thermofuse	Opens the fusing lamp circuit if the fusing unit overheats.
TH1	Fusing Thermistor	Detects the temperature of the hot roller.
LSD 1	Laser Synchronization Detector	Detects the laser beam at the start of the main scan.
CO1	Mechanical Counter	Keeps track of the total number of prints made.
CO2	Key Counter (Option)	Used for control of authorized use. If this feature is enabled for copying, copying will be impossible until it is installed.

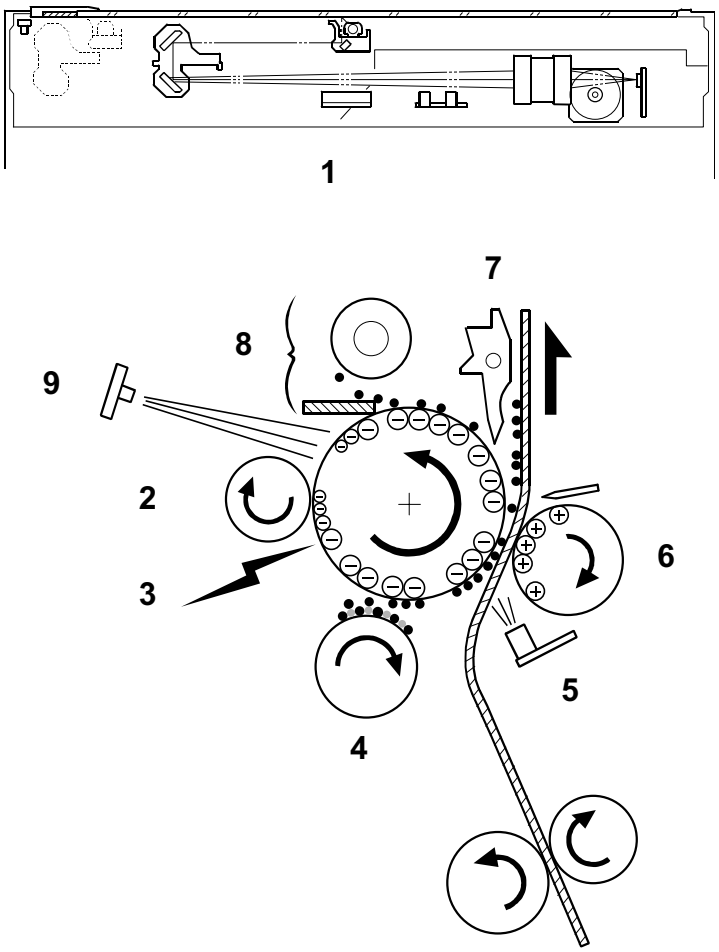
1.6 DRIVE LAYOUT



1. Scanner Drive Motor
2. Main Motor
3. Registration Clutch
4. Upper Paper Feed Clutch
5. Upper Transport Clutch
6. Lower Paper Feed Clutch
7. Lower Transport Clutch

1.7 COPY PROCESS

1.7.1 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. For multi-copy runs, the original is scanned once only and stored to the memory.

2. DRUM CHARGE

In the dark, the charge roller gives a negative charge to the organic photo-conductive (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 rollers 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 helps separate the paper from the drum.

8. CLEANING

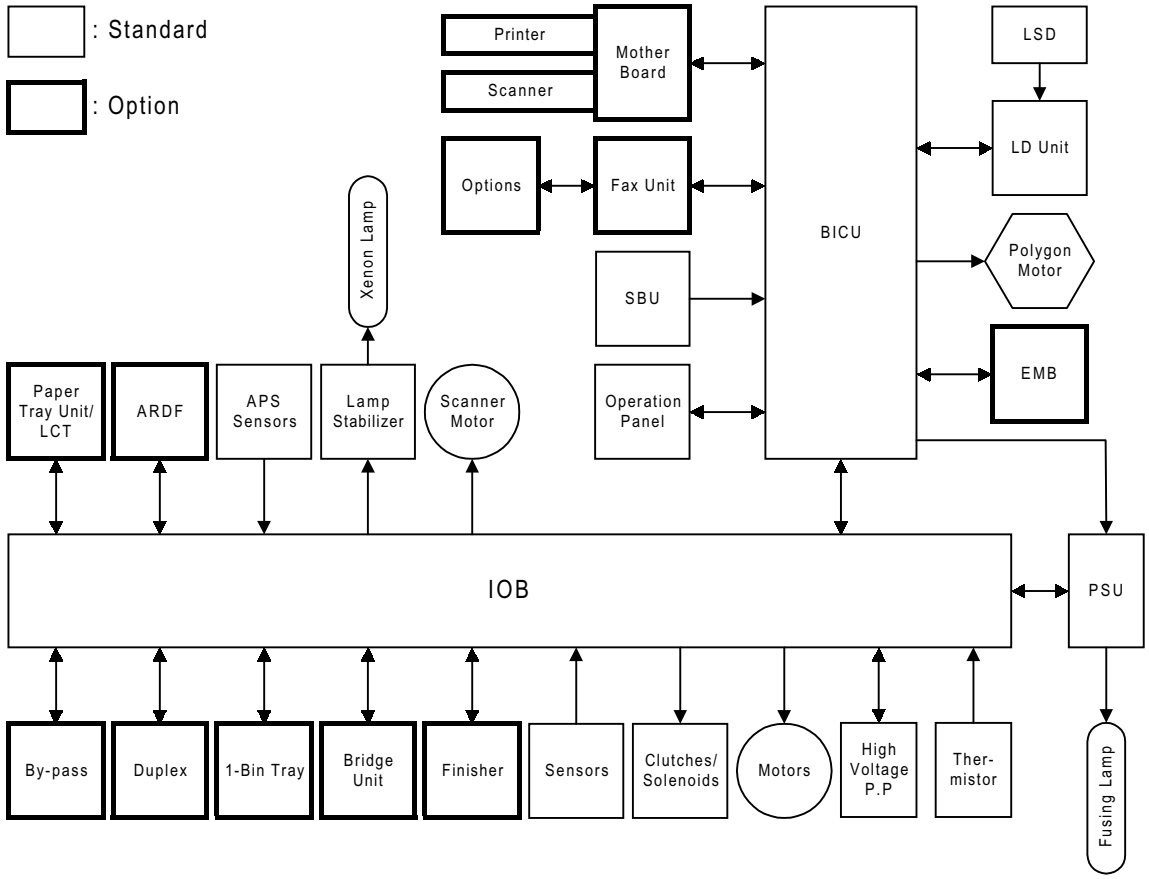
The cleaning blade removes any toner remaining on the drum surface after the image transfers to the paper.

9. QUENCHING

The light from the quenching lamp electrically neutralizes the charge on the drum surface.

1.8 BOARD STRUCTURE

1.8.1 OVERVIEW



1.8.2 DESCRIPTION

1. BICU (Base Engine and Image Control Unit)

The main board controls the following functions:

- Engine sequence
- Scanner, laser printer engine
- Timing control for peripherals
- Image processing, video control
- Operation control
- Various application boards (fax, printer, scanner)
- Machine control, system control

2. IOB (I/O Board)

The IOB handles the following functions:

- Drive control for the sensors, motors, and solenoids of the printer and scanner
- High voltage control board control
- Serial interfaces with peripherals
- Fusing control

3. SBU (Sensor Board Unit)

The SBU deals with the analog signals from the CCD and converts them into digital signals.

4. Mother Board (Option)

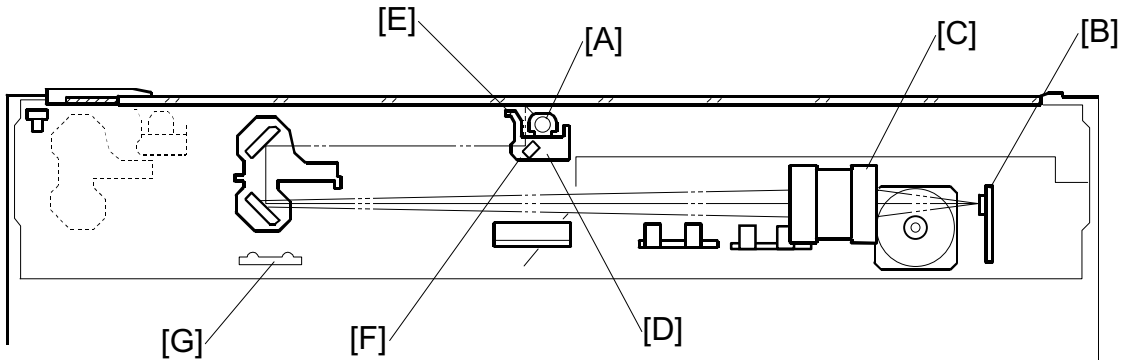
This board interfaces the BICU with the printer controller and/or the scanner controller. The mother board is part of the expansion box option.

DETAILED DESCRIPTIONS

2. DETAILED SECTION DESCRIPTIONS

2.1 SCANNING

2.1.1 OVERVIEW



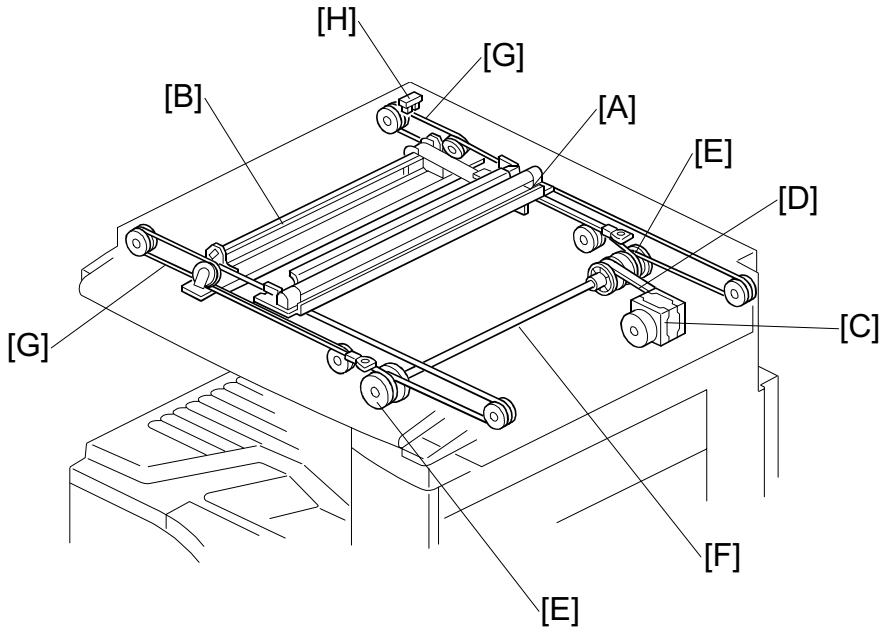
The original is illuminated by the exposure lamp (a xenon lamp in this model) [A]. The image is reflected onto a CCD (charge coupled device) [B] via the 1st, 2nd, 3rd mirrors, and lens [C].

The 1st scanner [D] consists of the exposure lamp, a reflector [E], and the 1st mirror [F].

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 [G] 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 and the main power switch is off.

2.1.2 SCANNER DRIVE



A stepper motor drives the scanner. The 1st and 2nd scanners [A,B] are driven by the scanner drive motor [C] through the timing belt [D], scanner drive pulley [E], scanner drive shaft [F], and two scanner wires [G].

- Book mode -

The scanner drive board controls and operates the scanner drive motor. In full size mode, the 1st scanner speed is 122 mm/s during scanning. The 2nd scanner speed is half that of the 1st scanner.

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

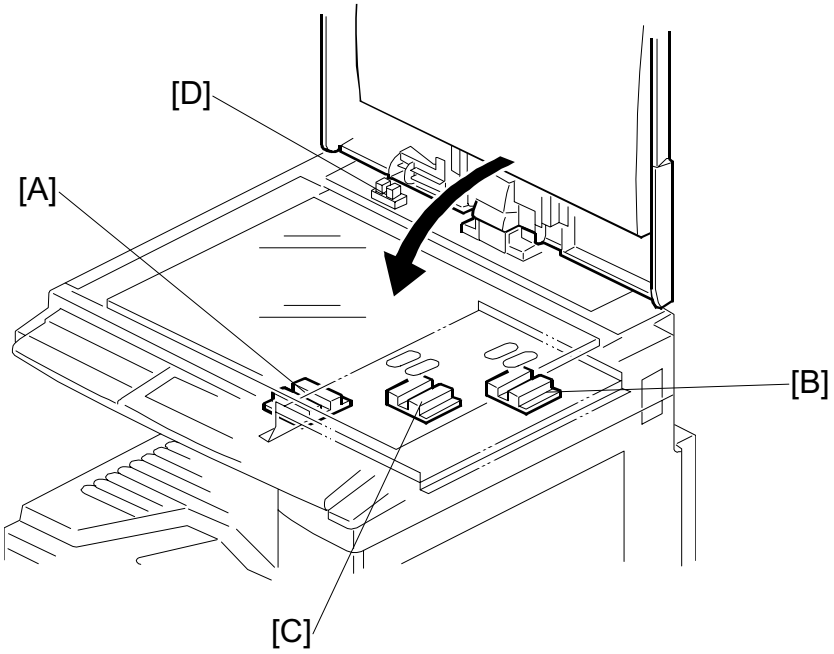
Magnification in the sub-scan direction can be adjusted by changing the scanner drive motor speed using SP4-101. Magnification in the main scan direction can be adjusted using SP4-008.

- ADF mode -

The scanners are always kept at their home position (the scanner H.P sensor [H] 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 SP6-007. In the main scan direction, it can be adjusted with SP4-008, like for book mode.

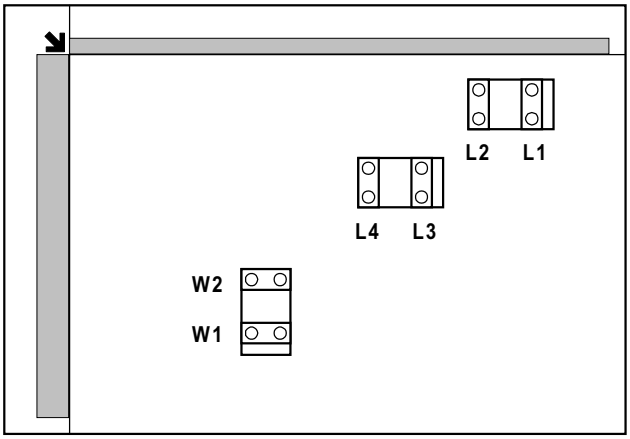
2.1.3 ORIGINAL SIZE DETECTION IN PLATEN MODE



In the optics cavity for original size detection, there are four reflective sensors in the 115V machines ([A] and [B]), and six reflective sensors in the 230V machines. The original width sensors [A] detect the original width, and the original length sensors [B] and [C] 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 [D] 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 Sensor				Width Sensor	
A4/A3 version	**LT/DLT version**	**L4**	**L3**	**L2**	**L1**	**W2**	**W1**
A3	11” x 17”	O	O	O	O	O	O
B4	10” x 14”	O	O	O	O	O	X
Foolscap	8.5” x 13”	O	O	O	X	X	X
A4-L	8.5” x 11”	O	O	X	X	X	X
B5-L		O	X	X	X	X	X
A4-S	11” x 8.5”	X	X	X	X	O	O
B5-S		X	X	X	X	O	X
A5-L, A5-S		X	X	X	X	X	X

NOTE: 1) L: Lengthwise, S: Sideways, O: High (paper present), X: Low
2) The length sensors L3 and L4 are used only for 230V machines.

For other combinations, "CANNOT DETECT ORIG. SIZE" will be indicated on the operation panel display (if SP 4-303 is kept at the default setting).

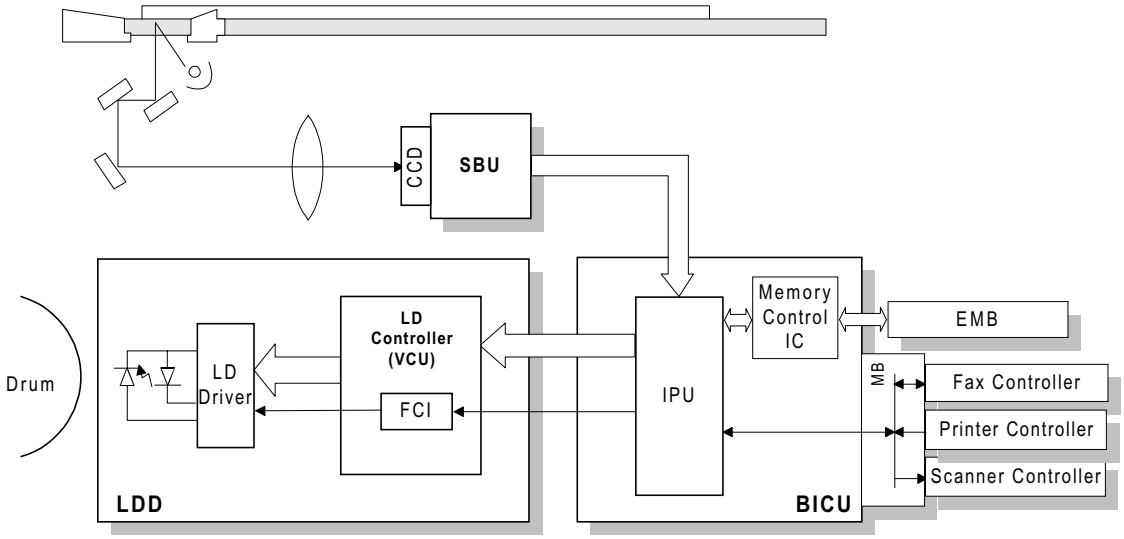
The above table shows the outputs of the sensors for each original size. This original size detection method eliminates the necessity for a pre-scan and increases the machine's productivity.

However, if the by-pass feeder is used, note that the machine assumes that the copy paper is lengthwise. For example, if A4 sideways paper is placed 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.

Original size detection using the ADF is described in the manual for the ADF.

2.2 IMAGE PROCESSING

2.2.1 OVERVIEW



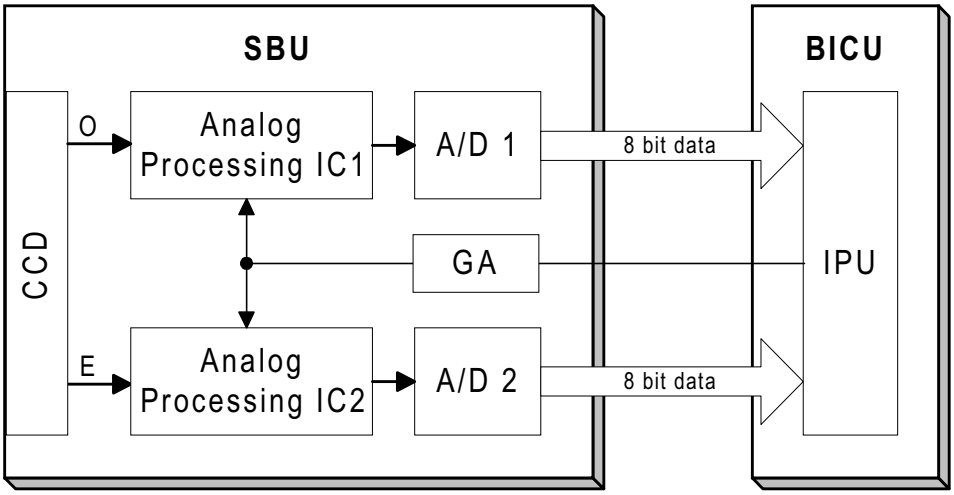
The CCD generates an analog video signal. The SBU (Sensor Board Unit) converts the analog signal to an 8-bit digital signal, then it sends the digital signal to the BICU (Base-engine and Image Control Unit) board.

The BICU board and LDD Board can be divided into three image processing blocks; the IPU (Image Processing Unit), FCI (Fine Character Image), and LD controller (VCU).

- IPU: Auto shading, filtering, magnification, γ correction, and gradation processing
- LD controller: LD print timing control and laser power PWM control
- FCI (inside the LD controller): Smoothing (binary picture processing mode only)

The EMB board is the copier feature expander option, which provides extra memory for the copier features.

2.2.2 SBU (SENSOR BOARD UNIT)



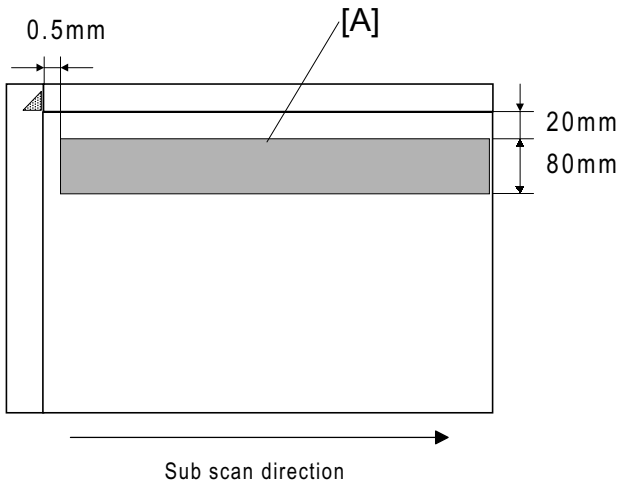
The CCD converts the light reflected from the original into an analog signal. The CCD line has 7,450 pixels and the resolution is 600 dpi (23.6 lines/mm).

The CCD has two output lines, for odd and even pixels, to the analog processing IC. The analog processing IC 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 in the AGC circuit. The maximum gains of the operational amplifiers are controlled by the CPU on the BICU board.

After the above processing, the analog signals are converted to 8-bit signals by the A/D converter. This will give a value for each pixel on a scale of 256 grades. Then, the digitized image data is sent to the BICU board.

2.2.3 AUTO IMAGE DENSITY



In the SBU

ADS prevents the background of an original from appearing on copies.

The copier scans the auto image density detection area [A] as shown in the diagram. This corresponds to a few mm at one end of the main scan line. 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 auto image density mode, and the machine will use both settings when processing the original.

In the IPU

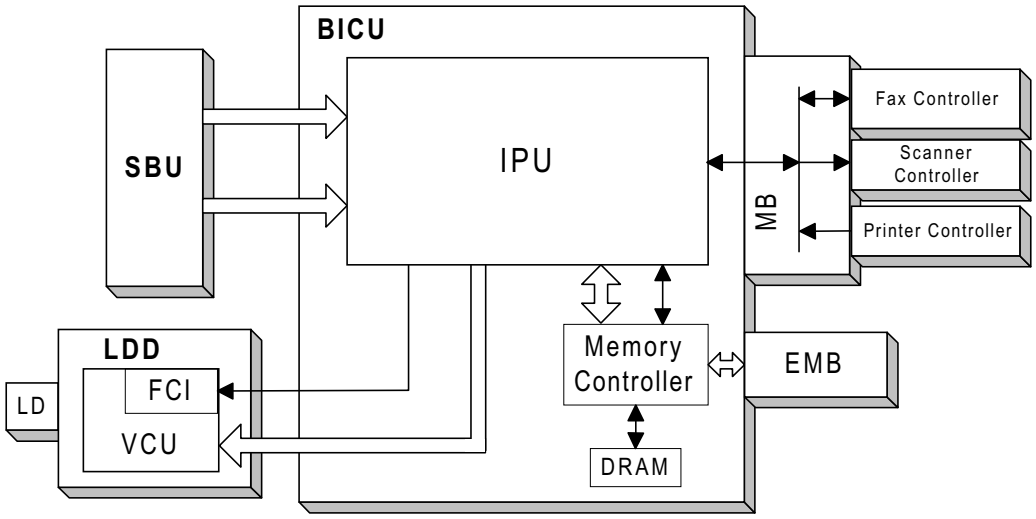
After the SBU process, the IPU board removes background noise resulting from the SBU-BICU wiring by adjusting the white level.

"Service Mode" Original Types

If the user selects a "Service Mode" original type with the user tools, these two ADS process can be either enabled or disabled (SP4-936, SP4-937), and the amount of white level change for the IPU ADS process can be adjusted (SP4-938).

2.2.4 IPU (IMAGE PROCESSING UNIT)

Overview



The image data from the SBU goes to the IPU (Image Processing Unit) IC on the BICU board, which carries out the following processes on the image data.

1. Auto shading
2. Scanner gamma correction
3. Filtering (MTF and smoothing)
4. Magnification
5. ID gamma correction
6. Grayscale processing
7. Binary picture processing
8. Error diffusion
9. Dithering
10. Video path control
11. Test pattern generation

The image data then goes to the LD driver (LDD).

Image Processing Modes

The user can select text, text/photo, and photo original types, as usual. However, each of these original types has a range of different choices (such as ”sharp text”, “glossy photo”, etc). these are listed in the table on the following page.

- Notice that there is a “Service Mode” for each of the text, text/photo, and photo original modes. This is a customizable mode, with a range of SP modes that can be adjusted to meet user requirements that are not covered by the other original modes.

In addition, there are two main image processing modes: grayscale processing mode (called “Enhanced Mode” on the display) and binary picture processing mode (called “Normal Mode” on the display). Either of these can be selected for each original type.

The user can select the modes that best suit their original with the following user tools:

- Greyscale/Binary Picture: UT mode - 2. Copier – 1. General Features – 08. Image Mode Select
- Original Type: UT mode - 2. Copier – 1. General Features – 09. Image Mode Adjustment (select text, text/photo, or photo at the operation panel, then select the sub-type with this UT mode)

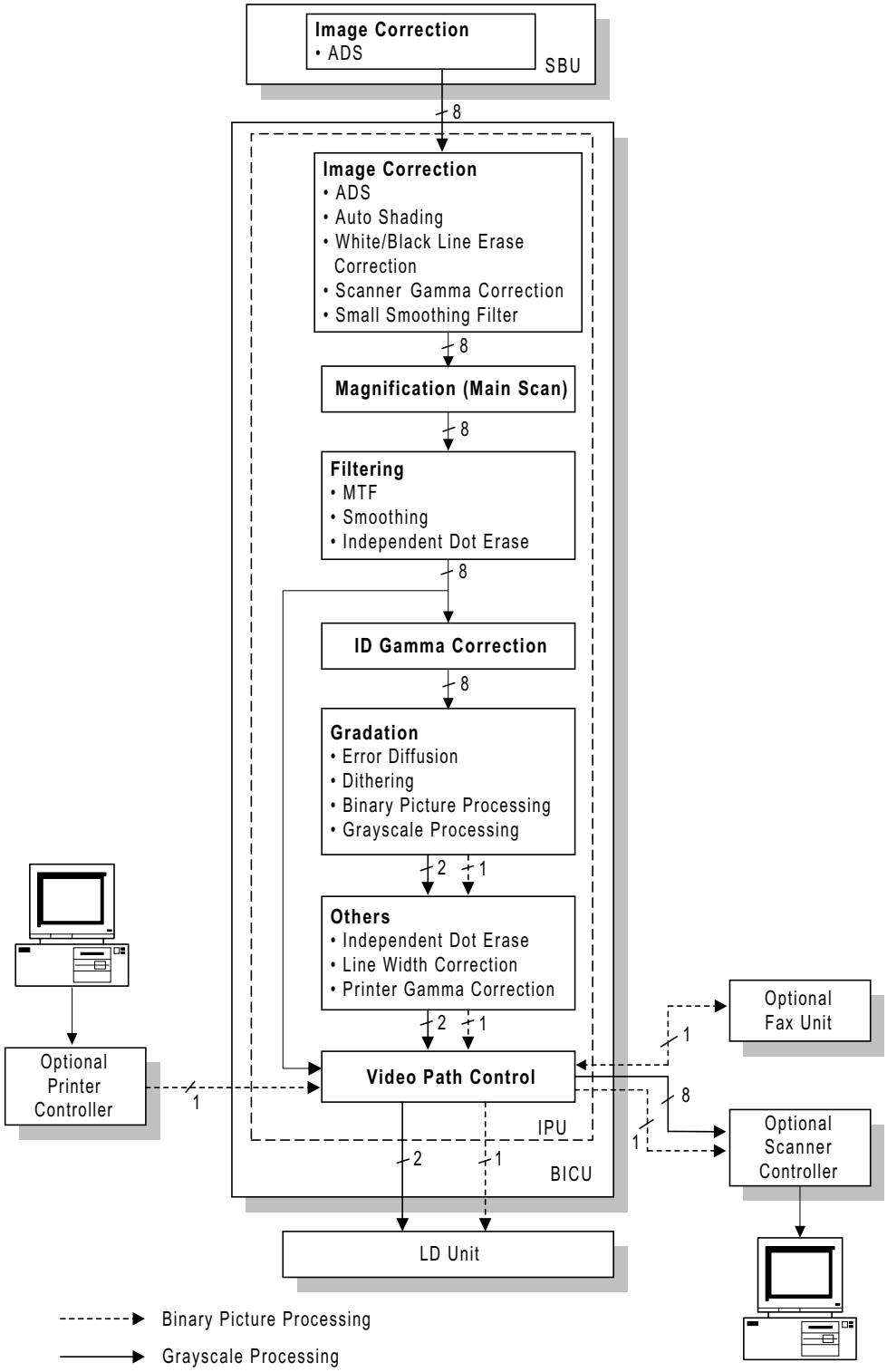
For details of the SP modes that can be used to adjust the image quality for all the original modes, see the “SP Modes for Each Image Processing Step” section.

	Original Type	Mode	Targeted Original Type
Normal Mode (Binary Picture Processing)	Text	Normal	Normal text originals
		Sharp	Newspaper, originals through which the rear side is visible
		Service mode	Default: Printouts from dot matrix printers
	Text/Photo	Photo priority	Text/photo originals which contain mainly photo areas
		Text priority	Text/photo originals which contain mainly text areas
		Service mode	Default: Colored originals (with blue or green text or background)
	Photo	Coarse print	Coarse-grained printed originals, with no text
		Press print	Fine-grained printed originals, with no text
		Glossy photo	Glossy photos
		Service mode	Default: Fine-grained printed originals, with no text.
Enhanced Mode (Grayscale Processing)	Text	Pale	Originals with low contrast text (such as written by a pencil)
		Normal	Normal text originals
		Generation	Copied originals
		Service mode	Default: Printouts from dot matrix printers
	Text/Photo	Text priority	Text/photo originals which contain mainly text areas
		Normal	Text/photo originals
		Photo priority	Text/photo originals which contain mainly photo areas
		Service mode	Default: Colored originals (with blue or green text or background)
	Photo	Press print	Fine-grained printed originals, with no text.
		Normal	Normal photos
		Glossy Photo	Glossy photos
		Service mode	Default: Normal photos

Image Processing Path

Overview

This diagram shows the various stages of the image process and where they are done.



SP Modes for Each Image Processing Step

The following tables show which SP modes are used for each step in image processing mode.

There are also some SP modes specifically for use with the positive/negative feature:

- 4-403: Can be used to disable greyscale processing for this feature
- 4-947: MTF
- 4-948: Dynamic threshold maximum and minimum limits

Text Mode, Binary Picture Processing

	Text Mode		
	Normal	**Sharp**	**Service Mode**
ADS (SBU)	As selected at the operation panel		As on the op panel 4-936-4
ADS (IPU)	As selected at the operation panel		As on the op panel 4-937-4, 4-938-4
Shading Correction	Enabled		Enabled
White Line Correction	Enabled 4-942		Enabled 4-918-4
Black Line Correction	Enabled (DF only) 4-943	Enabled (DF only) 4-943	Strong (DF only) 4-919-4
Scanner γ Correction	AE linear		Linear 4-928-4
Small Smoothing Filter	Not used	Normal	Normal 4-921-3
Main Scan Magnification	Enabled		
Mirroring	Enabled only in the ADF mode		
MTF/Smoothing Filter	MTF (Medium)	MTF (Weak)	MTF (Weak) 4-915-23~34 4-916-23~34
Independent Dot Erase	Weak 4-944 (Enable/disable)		Strong 4-917-3
ID γ Correction	Text / normal	Text / sharp	Text / sharp 4-940-4
Gradation	Error diffusion	Binary picture processing	
Threshold	Dynamic	Dynamic	Dynamic 4-922-1 4-923 ~ 4-926 4-931 ~ 4-934
Independent Dot Erase (after image process)	None		None 4-939
Line Width Correction	Disabled		Thinner Lines (medium) 4-935-4

Text Mode, Grayscale Processing

	Text Mode			
	Pale	**Normal**	**Generation**	**Service Mode**
ADS (SBU)	As selected at the operation panel			As op panel 4-936-1
ADS (IPU)	As selected at the operation panel			As op panel 4-937-1 4-938-1
Shading Correction	Enabled			Enabled
White Line Correction	Enabled 4-942			Enabled 4-918-1
Black Line Correction	Enabled (DF only) 4-943			Strong (DF only) 4-919-1
Scanner γ Correction	AE linear			Linear 4-928-1
Small Smoothing Filter	Normal			Normal 4-921-1
Main Scan Magnification	Enabled			
Mirroring	Enabled only in the ADF mode			
MTF/Smoothing Filter	MTF (Medium)			MTF (Medium) 4-915-1~10 4-916-1~10
Independent Dot Erase	Weak 4-944 (Enable/disable)			Strong 4-917-1
ID γ Correction	Text			Text 4-940-1
Gradation	Error diffusion			
Threshold	Constant			Constant 4-929-1
Independent Dot Erase (after image process)	None			None 4-939
Line Width Correction	Thick (Medium)	Disabled	Thin (Medium)	Disabled 4-935-1

Text/Photo Mode, Binary Picture Processing

	Text/Photo Mode		
	Photo Priority	**Text Priority**	**Service Mode**
ADS (SBU)	As selected at the operation panel		As on the op panel 4-936-5
ADS (IPU)	As selected at the operation panel		As on the op panel 4-937-5, 4-938-5
Shading Correction	Enabled		Enabled
White Line Correction	Enabled 4-942		Enabled 4-918-5
Black Line Correction	Enabled (DF only) 4-943	Enabled (DF only) 4-943	Strong (DF only) 4-919-5
Scanner γ Correction	AE linear		As op panel 4-928-5
Small Smoothing Filter	Not used	Normal	Normal 4-921-4
Main Scan Magnification	Enabled		
Mirroring	Enabled only in the ADF mode		
MTF/Smoothing Filter	MTF (Weak)	MTF (Weakest)	MTF (Weakest) 4-915-35~48 4-916-35~48
Independent Dot Erase	Weak 4-944 (Enable/disable)		Weak 4-917-4
ID γ Correction	Photo priority	Text Priority	Text Priority 4-940-5
Gradation	Error diffusion		
Threshold	Constant		Constant 4-922-2 4-929-4
Independent Dot Erase (after image process)	None		
Line Width Correction	Disabled		Thicker Lines (strong) 4-935-5

Text/Photo Mode, Grayscale Processing

	Text/Photo Mode			
	Text Priority	**Normal**	**Photo Priority**	**Service Mode**
ADS (SBU)	As selected at the operation panel			As op panel 4-936-2
ADS (IPU)	As selected at the operation panel			As op panel 4-937-2 4-938-2
Shading Correction	Enabled			Enabled
White Line Correction	Enabled 4-942			Enabled 4-918-2
Black Line Correction	Enabled (DF only) 4-943			Strong (DF only) 4-919-2
Scanner γ Correction	AE linear			As op panel 4-928-2
Small Smoothing Filter	Normal			Normal 4-921-2
Main Scan Magnification	Enabled			
Mirroring	Enabled only in the ADF mode			
MTF/Smoothing Filter	MTF (Weak)	MTF (Weakest)		MTF (Weak) 4-915-11~22 4-916-11~22
Independent Dot Erase	Weak 4-944 (Enable/disable)			Weak 4-917-2
ID γ Correction	Text priority		Photo priority	Text priority 4-940-2
Gradation	Error diffusion			
Threshold	Constant			Constant 4-929-2
Independent Dot Erase (after image process)	None			
Line Width Correction	Disabled			Thick (Strong) 4-935-2

Photo Mode, Binary Picture Processing

	Photo Mode			
	Coarse print	**Press print**	**Glossy photo**	**Service Mode**
ADS (SBU)	As selected at the operation panel			As op panel 4-936-6
ADS (IPU)	As selected at the operation panel			As op panel 4-937-6 4-938-6
Shading Correction	Enabled			Enabled
White Line Correction	Enabled 4-942			Enabled 4-918-6
Black Line Correction	Enabled (DF only) 4-943			Strong (DF only) 4-919-6
Scanner γ Correction	NAE linear			As op panel 4-928-6
Small Smoothing Filter	Not used			
Main Scan Magnification	Enabled			
Mirroring	Enabled only in the ADF mode			
MTF/Smoothing Filter	Smoothing (Strong)		MTF (Weak)	Smoothing (Strong) 4-927-2
Independent Dot Erase	None			
ID γ Correction	Coarse print	Press print	Glossy photo	Press print 4-940-6
Gradation	Dither (53 lines)	Dither (105 lines)	Error diffusion	Dither (105 lines) 4-929-5
Threshold	--	--	Constant	--
Independent Dot Erase (after image process)	None			
Line Width Correction	Disabled			Disabled 4-935-6

Photo Mode, Grayscale Processing

	Photo Mode			
	Coarse print	**Press print**	**Glossy photo**	**Service Mode**
ADS (SBU)	As selected at the operation panel			As op panel 4-936-3
ADS (IPU)	As selected at the operation panel			As op panel 4-937-3 4-938-3
Shading Correction	Enabled			Enabled
White Line Correction	Enabled 4-942			Enabled 4-918-3
Black Line Correction	Enabled (DF only) 4-943			Strong (DF only) 4-919-3
Scanner γ Correction	NAE linear			As op panel 4-928-3
Small Smoothing Filter	Not used			
Main Scan Magnification	Enabled			
Mirroring	Enabled only in the ADF mode			
MTF/Smoothing Filter	Smoothing (Strong)	Smoothing (Medium)	MTF (Weakest)	Smoothing (Medium) 4-927-1
Independent Dot Erase	None			
ID γ Correction	Coarse print	Press print	Glossy photo	Press print 4-940-3
Gradation	Dither (105 lines)	Dither (143 lines)	Error diffusion	Dither (143 lines) 4-929-3
Threshold	--	--	Dynamic	--
Independent Dot Erase (after image process)	None			
Line Width Correction	Disabled			Disabled 4-935-3

Auto Shading

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 Level Correction

The CPU reads 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 IPU deletes the black level value from each image pixel.

White Level Correction

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 chip.

The video signal information for each pixel obtained during image scanning is corrected by the IPU chip.

Auto shading for the first original is done before the scanning.

After scanning every page, auto shading is done to prepare for the next page.

If the copy image density or the original mode is changed during copy run, the auto shading for the next scan is done before the scanning to respond to the mode changed.

White Line Erase Compensation

During the white level correction, if extremely low CCD output is detected in some parts of the line, the machine assumes this is due to abnormal black lines on the white plate. This low output is corrected using neighboring pixels. To switch off this correction, use SP4-918 (for the original modes known as “Service Mode”) and SP4-942 (other original modes).

Black Line Erase Compensation

In ADF mode, if extremely low CCD output is detected on the scanning line before the leading edge of original arrives there, this is attributed to abnormal black dots on the exposure glass. This low output is corrected using neighboring pixels. To adjust or switch off this correction, use SP4-919 (for the original modes known as “Service Mode”) and SP4-943 (other original modes).

Scanner Gamma (γ) Correction

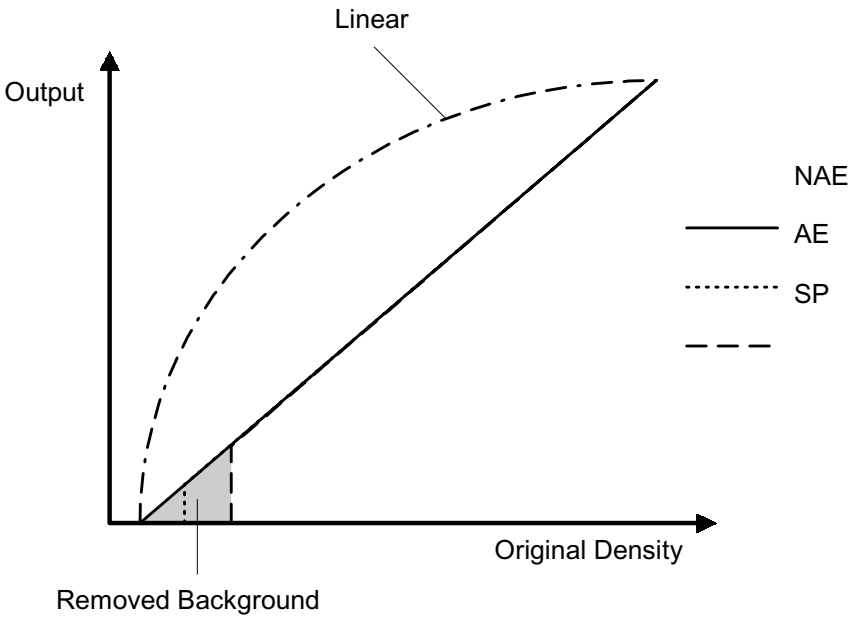
The CCD output is not proportional to the quantity of the light received. Scanner gamma (γ) correction corrects the CCD output so that grayscale data is proportion to the quantity of the light received.

The machine has four possible scanner gamma curves. The curve used by the machine depends on the original type selected by the user (at the operation panel and with the user tool 09: Image Mode Adjustment). If the user selects one of the original modes known as 'service mode', the gamma curve can be selected with SP4-928.

If "0" is selected with SP 4-928, the scanner gamma curve is either AE or NAE, depending on the selected original mode (text, photo, etc.).

The four gamma (γ) correction curves and their characteristics are as follows:

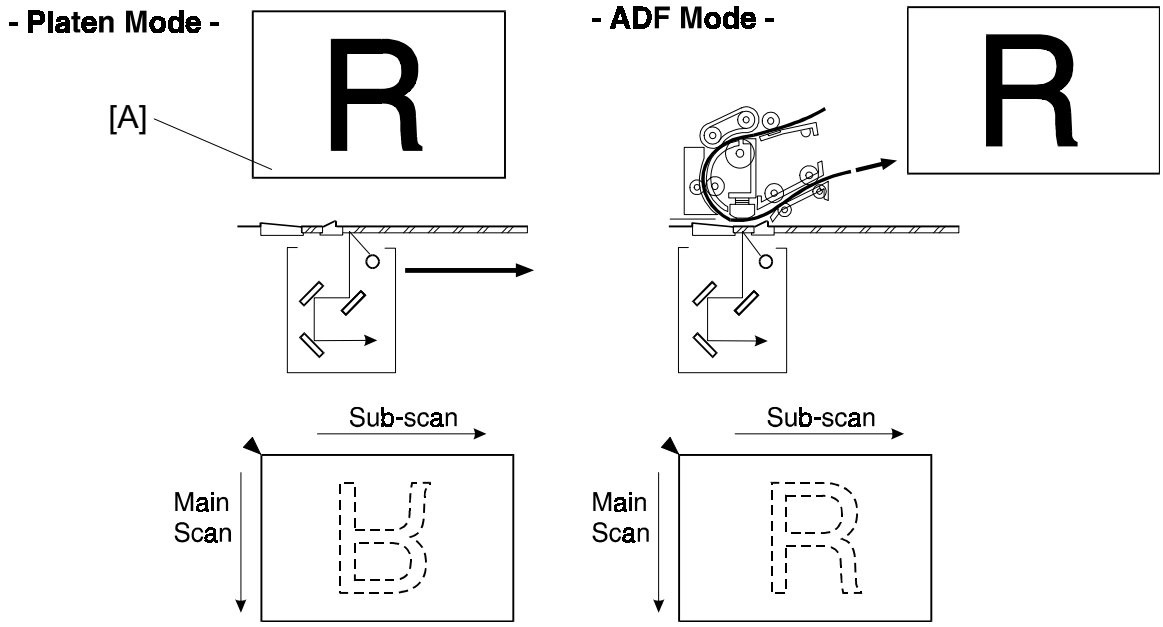
- Non Auto Exposure ID linear (NAE): Corrects the image data in proportion to the original density.
- Auto Exposure ID linear (AE): Removes the background from the image data to some extent and corrects the rest of the image data in proportion to the original density.
- Reflection Ratio ID Linear (Linear): Uses the image data without correction.
- Removed background (SP): Removes the background area completely and corrects the rest of the image data in proportion to the original density.



Main Scan Magnification/Reduction

Changing the scanner speed enables reduction and enlargement in the sub-scan direction. However, the IPU chip handles reduction and enlargement in the main scan direction. The processing for main scan magnification/reduction is the same as in the previous digital machines.

Mirroring for ADF Mode



When making a copy using the ADF, the magnification circuit creates a mirror image. This is because the scanning starting position in the main scan direction is at the other end of the scan line in ADF mode (compared with platen mode). In platen mode, the original is placed face down on the exposure glass, and the corner at [A] is at the start of the main scan. The scanner moves down the page. In ADF mode, the ADF feeds the leading edge of the original to the DF exposure glass, and the opposite top corner of the original is at the main scan start position.

To create the mirror image, the IPU stores each line in a LIFO (Last In First Out) memory.

Filtering

Overview

There are some software filters for enhancing the desired image qualities of the selected original mode. These filters are the MTF filter, the smoothing filter, and independent dot erase.

The MTF filter emphasizes sharpness and is used in Text and Text/Photo modes.

The smoothing filter is used in Photo mode, except for Glossy Photo mode. In Glossy Photo mode, the MTF filter is used.

Independent dot erase removes unwanted dots from the image.

MTF Filter Adjustment - Text and Text/Photo Modes

When the user selects “Service Mode” for either Text or Text/Photo original type, the MTF filter strength and coefficient can be adjusted with SP4-915 and 4-916.

It is difficult to simply explain the relationships between the filter coefficient and filter strengths. Refer to the following charts to determine how to make the filters weaker or stronger. A circle indicates the default setting.

When the filter is stronger in the main scan direction, lines parallel to the feed direction are emphasized. When the filter is stronger in the sub-scan direction, lines at right angles to the feed direction are emphasized. A stronger MTF filter can make a low ID image visible but moiré may become more visible. Moiré is reduced using a smoothing filter specially designed for this purpose (see “Smoothing Filter Adjustment - Text/Photo”).

Grayscale Processing

MTF Filter \ Level	Weak → Strong																												
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Main Scan: Filter Coefficient	0	1	1	3	1	1	1	3	2	3	1	3	8	1	11	3	3	4	4	5	3	3	5	4	4	15	8	7	15	15
Sub-Scan: Filter Coefficient	0	1	2	3	2	3	5	3	3	3	2	1	8	2	4	3	11	2	4	5	3	5	2	5	8	12	11	11	12	13
Main Scan: Filter Strength	0	3	3	3	4	4	4	4	4	2	5	5	3	5	2	5	5	5	5	5	0	0	0	0	0	4	0	0	5	0
Sub-Scan: Filter Strength	0	3	3	3	4	4	4	4	4	5	4	4	3	5	5	5	4	5	5	5	0	0	6	0	0	4	0	0	5	0
Original Type																														
Text (25% to 29%) SP4-915-1, 6 SP4-916-1, 6														○																
Text (30% to 76%) SP4-915-2, 7 SP4-916-2, 7														○																
Text (77% to 154%) SP4-915-3, 8 SP4-916-3, 8																○														
Text (155% to 256%) SP4-915-4, 9 SP4-916-4, 9																○														
Text (257% to 400%) SP4-915-5, 10 SP4-916-5, 10																										○				
Text/Photo (25% to 57%) SP4-915-11, 17 SP4-916-11, 17								○																						
Text/Photo (58% to 29%) SP4-915-12, 18 SP4-916-12, 18																○														
Text/Photo (30% to 76%) SP4-915-13, 19 SP4-916-13, 19								○																						
Text/Photo (77% to 154%) SP4-915-14, 20 SP4-916-14, 20								○																						
Text/Photo (155% to 256%) SP4-915-15, 21 SP4-916-15, 21								○																						
Text/Photo (257% to 400%) SP4-915-16, 22 SP4-916-16, 22								○																						

Binary Picture Processing

MTF Filter \ Level	Weak ▼																										▲ Strong				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Main Scan: Filter Coefficient	0	1	1	3	1	1	1	3	2	3	1	3	8	1	11	3	3	4	4	5	3	3	5	4	4	15	8	7	15	15
Sub-Scan: Filter Coefficient	0	1	2	3	2	3	5	3	3	3	2	1	8	2	4	3	11	2	4	5	3	5	2	5	8	12	11	11	12	13
Main Scan: Filter Strength	0	3	3	3	4	4	4	4	4	2	5	5	3	5	2	5	5	5	5	5	0	0	0	0	0	4	0	0	5	0
Sub-Scan: Filter Strength	0	3	3	3	4	4	4	4	4	5	4	4	3	5	5	5	4	5	5	5	0	0	6	0	0	4	0	0	5	0
Original Type																														
Text (25% to 49%) SP4-915-23, 29 SP4-916-23, 29					○																									
Text (50% to 95%) SP4-915-24, 30 SP4-916-24, 30					○																									
Text (96% to 125%) SP4-915-25, 31 SP4-916-25, 31														○																
Text (126% to 159%) SP4-915-26, 32 SP4-916-26, 32																○														
Text (160% to 200%) SP4-915-27, 33 SP4-916-27, 33																			○											
Text (201% to 400%) SP4-915-28, 34 SP4-916-28, 34																			○											
Text/Photo (25% to 49%) SP4-915-35, 42 SP4-916-35, 42				○																										
Text/Photo (50% to 89%) SP4-915-36, 43 SP4-916-36, 43				○																										
Text/Photo (90% to 95%) SP4-915-37, 44 SP4-916-37, 44				○																										
Text/Photo (96% to 125%) SP4-915-38, 45 SP4-916-38, 45															○															
Text/Photo (126% to 159%) SP4-915-39, 46 SP4-916-39, 46															○															
Text/Photo (160% to 200%) SP4-915-40, 47 SP4-916-40, 47															○															
Text/Photo (201% to 400%) SP4-915-41, 48 SP4-916-41, 48															○															

Smoothing Filter Adjustment - Photo Mode

When the user selects “Service Mode” for Photo original type, the smoothing filter can be changed with SP4-927. A stronger smoothing filter makes the image more blurred (1: Weak ~ 8: Strong).

Smoothing Filter Adjustment - Text and Text/Photo Modes

To reduce the possibility of moiré, a small-matrix smoothing filter is used after scanner gamma (γ) correction in the Text and Text/Photo mode.

This is only used when the user selects “Service Mode” for either Text or Text/Photo original type. The level of smoothing can be adjusted with SP4-921.

Independent Dot Erase

In Text mode and in Text/Photo mode, independent dots are detected using a 7 x 9 matrix and erased from the image.

The independent dot detection level can be adjusted with SP4-917 (for the original modes known as “Service Mode”) and SP4-944 (other original modes – on/off only; no adjustment). With a larger SP setting, more dots are detected as independent dots and erased, even if the dot's density is high. However, dots in mesh-like images may be detected as independent dots mistakenly.

Independent Dot Erase after Binary Picture Processing

Normally, independent dot erase is done in the filtering stage. However, when the user selects “Service Mode” for Text original type, independent dots may reappear in the image after the binary picture processing. These independent dots are erased after gradation processing.

SP4-939 changes the filter that is used for this process, and it can be also used to disable this feature. A smaller matrix is more likely to remove dots.

ID Gamma (γ) Correction

The machine automatically selects the most appropriate ID gamma correction based on the selected original type (and the user tool Image Adjustment setting) and ID setting made at the operation panel.

When the user selects “Service Mode” for any original type, you can use SP4-940 to change ID correction in service mode. The types that can be selected with SP4-940 are different for each original mode (Text, Text/Photo, or Photo).

Gradation Processing

Overview

There are four types of gradation processing. Refer to the “Default Image Processing Mode for Each Original Type” section for more details on which processes are used for each original mode.

- Grayscale processing: This has 4 output levels for each pixel.
- Binary picture processing: This has only two output levels (black and white).
- Error diffusion: This is used with either grayscale processing or binary picture processing mode.
- Dithering: This is used with either grayscale processing or binary picture processing mode.

Grayscale Processing

In this machine, the 8-bit image data is converted into 2-bit data. This produces up to 4 image density levels for each pixel.

To realize this, this machine uses a form of pulse width modulation. In this machine, pulse width modulation consists of the following processes:

- Laser diode pulse positioning
- Laser diode power/pulse width modulation

Laser diode power and pulse width modulation is done by the laser diode drive board (LDD). Briefly, the width of the laser pulse for a pixel depends on the output level (image density level: from 0 to 255) required for the pixel.

This machine can also change the laser pulse position (at the left side of the pixel, at the center, or at the right side) automatically, depending on the location of the image pixel so that the edges of characters and lines become clearer. There is no SP mode adjustment for this, unlike in some earlier models.

Note that although the LDD can create 256 levels per pixel, the machine only uses 16 of these, and only four are used for any one job. A gamma table determines which four output levels are used. The gamma table is different for each original type setting.

Binary Picture Processing

The 8-bit image data is converted into 1-bit data (black and white image data).

Constant and Dynamic Thresholding

There are two types of threshold:

- Constant threshold: The threshold is fixed
- Dynamic threshold: The threshold value for each pixel depends on the surrounding pixels.

The type that is used depends on the selected original type (text, text/photo, photo) and user tool Image Mode Adjustment setting.

However, if the user selects “Service Mode” for either Text or Text/Photo original type (User Tools - General Features - 09. Image Mode Adjustment), the thresholding type can be changed with SP4-922, but only for binary picture processing.

- Constant threshold value -

The threshold remains the same all the time.

The threshold can be adjusted with SP 4-923 when the user selects “Service Mode” for the Text original type, but only for binary picture processing.

Decreasing the threshold value creates a darker image.

- Dynamic threshold value -

Dynamic thresholding is designed to clearly separate text/vector graphic objects from the background. It prevents low contrast text from disappearing.

The software compares each pixel with the pixels immediately surrounding it. It is tested in four directions: horizontal, vertical, and in the two diagonal directions. If the image density difference between the object pixel and the surrounding pixels is more than a certain value in any one of these directions, the pixel is determined to be on an edge.

Pixels on the edge are treated with dynamic thresholding. The threshold is calculated by averaging the densities of pixels in the surrounding 7 x 7 area. However, the calculated threshold cannot exceed maximum and minimum limits; if it does, the upper or lower limit is used.

Pixels that are not on an edge are treated with a constant threshold value.

As a side-effect of the dynamic threshold process, copies of originals where the rear side is visible through the paper or the background is dark, may tend to have dirty background. In this case it is necessary to adjust the image density level with the image density key on the operation panel. These adjustments are only for binary picture processing mode.

- Edge detection: SP4-931 (vertical direction), 4-932 (horizontal direction), 4-933 (diagonal from top right to bottom left), 4-934 (diagonal from top left to bottom right). Decreasing the SP mode value causes a lighter line to be detected as an edge.
- Threshold limits for edges, and the threshold for non-edge pixels: SP4-924 (Max), 4-925 (Min), and 4-926 (Center, used for non-edge pixels). The closer that the upper or lower limit is adjusted to the center threshold, the fewer stains appear. However, a low ID contrast image cannot be copied.

Error Diffusion

The error diffusion process 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.

If the user selects “Service Mode” for Text (greyscale mode) or Text/Photo (greyscale or binary picture mode) and the thresholding type is changed from constant to dynamic, an error diffusion matrix can be selected with SP4-929-1 (No.1: 4 x 4 matrix and No.2: 8 x 8 matrix). The two selections are prepared for future use to match original types which are not supported currently. Therefore, at this moment SP4-929-1 should not be used.

Error diffusion cannot be selected in Photo mode.

Dithering

Each pixel is compared with the pixel in the same position in a dither matrix. Several matrixes are available, to increase or decrease the detail on the copy. If the user selects “Service Mode” for Photo original type, the dither matrix can be selected with SP4-929-3 and SP4-929-5. A larger value for this SP mode increases the number of gradations. However, the image will not have much contrast.

Line width correction

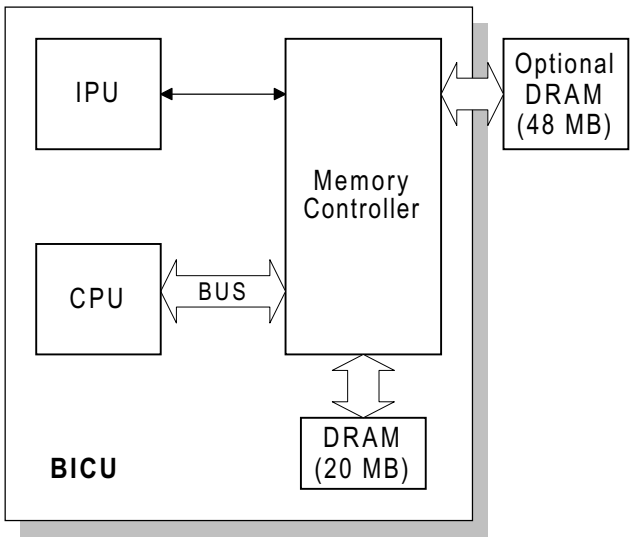
This function is effective only in pale mode and copied original mode (these are original types for Text mode with greyscale).

Usually, lines will bulge in the main scan direction as a result of the negative/positive development system that is used in this model. So, pixels on edges between black and white areas are compared with adjacent pixels, and if the pixel is on a line, the line thickness will be reduced.

The line width correction is done in the IPU chip.

The line width correction type can be selected with SP4-935.

2.2.5 MEMORY CONTROLLER AND ENHANCED MEMORY BOARD (EMB)



The BICU consists of the memory controller and the DRAM. The functions of each device are as follows.

Memory Controller:	Compressing the 1-bit image data and 2-bit image data Image rotation Image data transfer to the DRAM
DRAM (standard 20MB):	Stores the compressed data Working area

The data goes to the memory controller after binary picture processing or grayscale processing. The data is first compressed and then stored in the DRAM. For printing, the data from the DRAM goes back to the memory controller, where it is decompressed and image editing is done (e.g., image rotation, repeat image).

The memory capacity changes after installing optional memory on the BICU board, as follows.

		Standard (20 MB)	20 MB + Optional (68 MB total)
Binary picture processing	A4 6%	88	99
	ITU-T#4 (12% black)	32	99
Grayscale processing	A4 6%	Not available	99
	ITU-T#4 (12% black)	Not available	52

[A4 size, Text mode (Number of pages)]

2.2.6 VIDEO CONTROL UNIT (VCU)

Fine Character and Image (FCI)

The FCI performs image smoothing. This functions only affects binary picture processed images in sharp text mode.

Fig. A

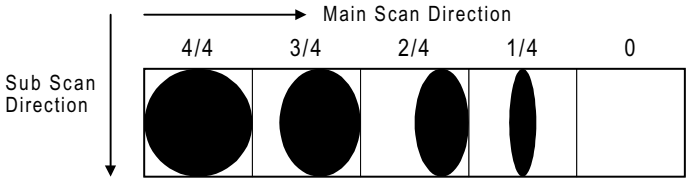


Fig. B

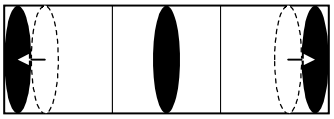
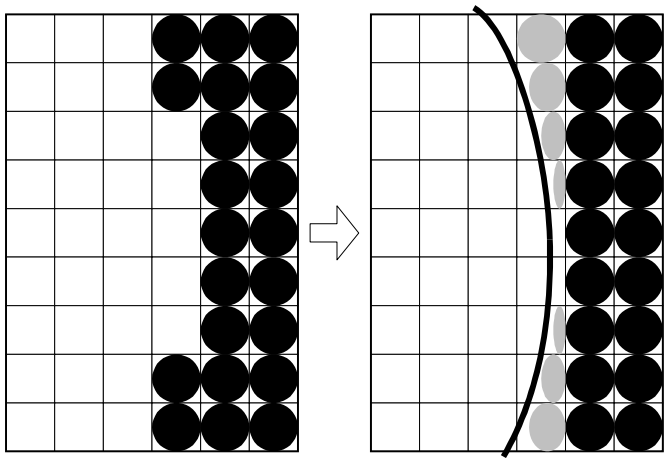


Fig. C



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.

SP2-902 switches FCI smoothing on or off, but is only valid for copy mode.

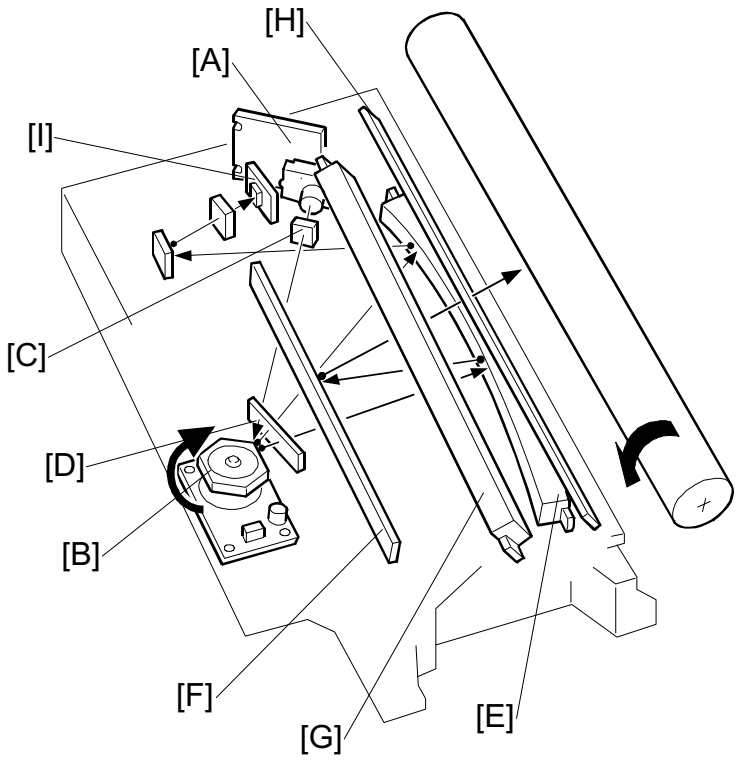
Printer Gamma Correction

Printer correction corrects the data output from the IPU to the laser diode to account for the characteristics of the printer (e.g., the characteristics of the drum, laser diode, and lenses).

The machine chooses the most suitable gamma curve for the original type selected by the user. There is no SP adjustment for this.

2.3 LASER EXPOSURE

2.3.1 OVERVIEW



The optical path from the laser diode to the drum is shown above.

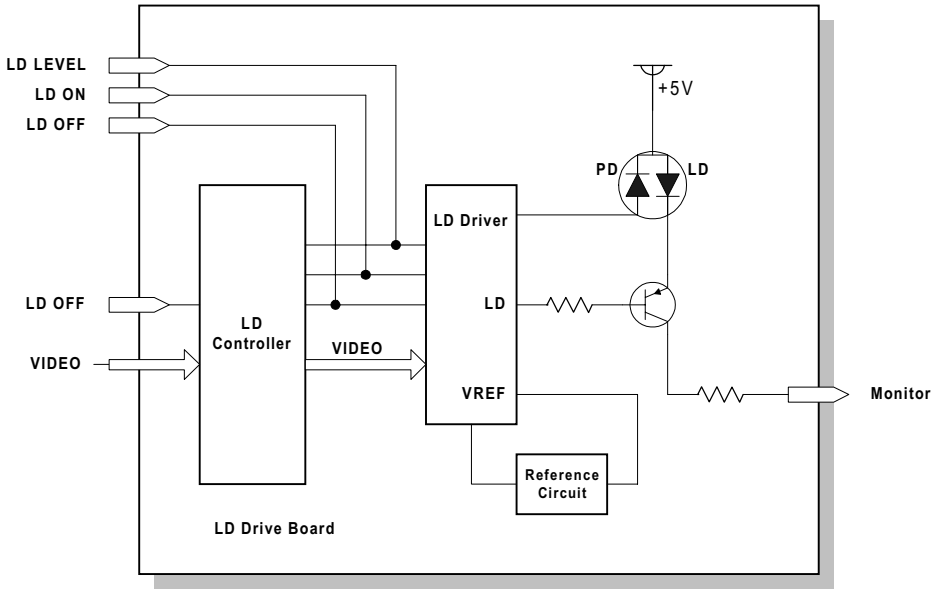
The LD unit [A] outputs a laser beam to the polygon mirror [B] through the cylindrical lens [C]. The shield glass [D] prevents dust from reaching the polygon mirror.

Each surface of the polygon mirror reflects one full main scan line. The laser beam goes to the F-theta mirror [E], mirror [F], and BTL (barrel toroidal lens) [G]. Then the laser beam goes to the drum through the toner shield glass [H].

The laser synchronizing detector [I] determines the main scan starting position.

The speed of the polygon mirror motor is 28,818.9 rpm for 600 dpi.

2.3.2 AUTO POWER CONTROL (APC)

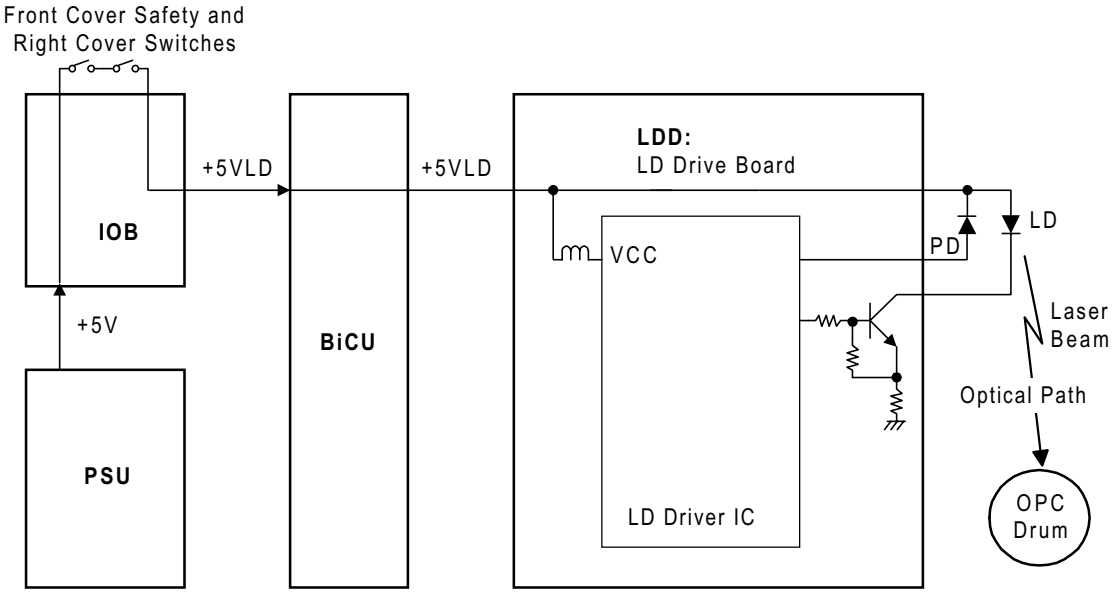


The LD driver IC drives the laser diode. To prevent the intensity of the laser beam from changing because of the temperature, the machine monitors the current passing through the laser diode (LD). The machine adjusts the current to the laser diode by comparing it with the reference level from the reference circuit.
This auto power control is done just after the machine is turned on and during printing while the laser diode is active.

The laser diode power is adjusted on the production line.

NOTE: Do not touch the variable resistors on the LD unit in the field.

2.3.3 LD SAFETY SWITCH

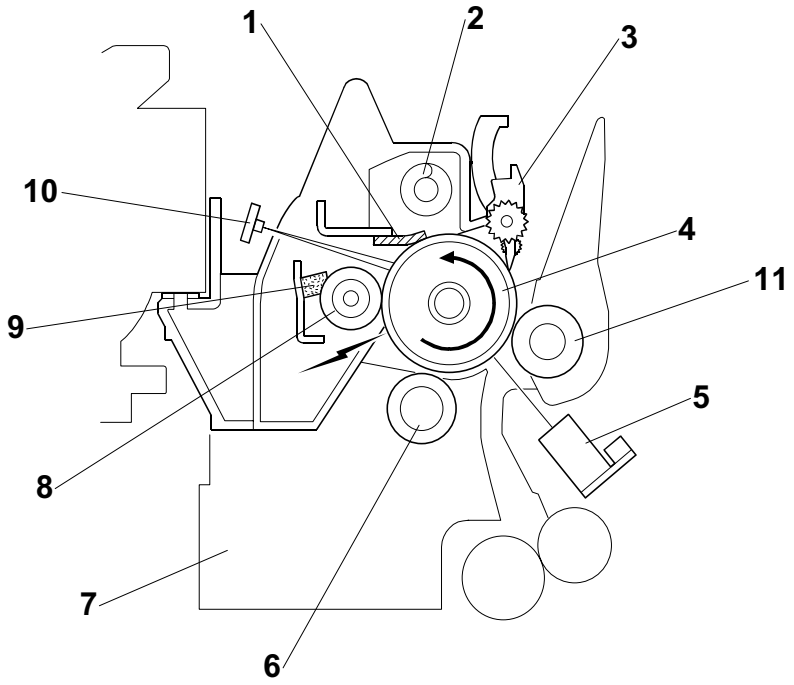


To ensure technician and user safety and to prevent the laser beam from inadvertently switching on during servicing, safety switches are located at the front and right covers. The switches are installed on the +5VLD line coming from the power supply unit through the IOB and BICU boards.

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

2.4 PHOTOCONDUCTOR UNIT (PCU)

2.4.1 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.

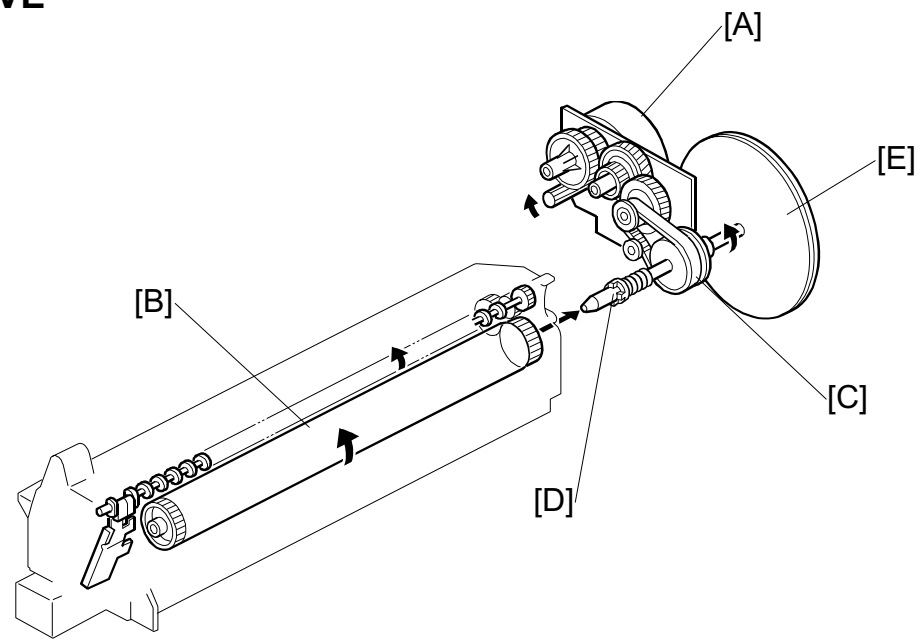
1. Cleaning Blade
2. Toner Collection Coil
3. Pick-off Pawl
4. OPC Drum
5. ID Sensor (see note)
6. Development Roller
7. Development Unit
8. Charge Roller
9. Charge Roller Cleaning Pad
10. Quenching Lamp (see note)
11. Transfer Roller (See Note)

NOTE: These parts are not included in the PCU.

The machine informs the user when the PCU life has finished. However, the user can continue to make copies.

SP5-912 can be used to enable or disable this warning message, and to change the default replacement interval (the default is 60k).

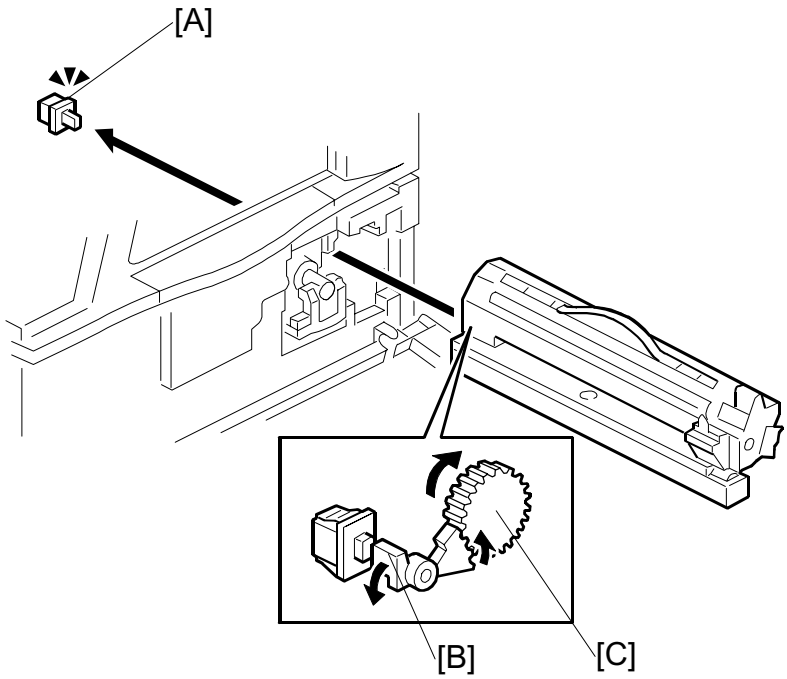
2.4.2 DRIVE



The main motor [A] drives the drum [B] through a series of gears, a timing belt [C], and the drum drive shaft [D]. The main motor assembly includes a drive controller, which outputs a motor lock signal when the rotation speed is out of the specified range.

The fly-wheel [E] on the end of the drum drive shaft stabilizes the rotation speed (this prevents banding and jitter from appearing on copies).

2.4.3 NEW PCU DETECTION



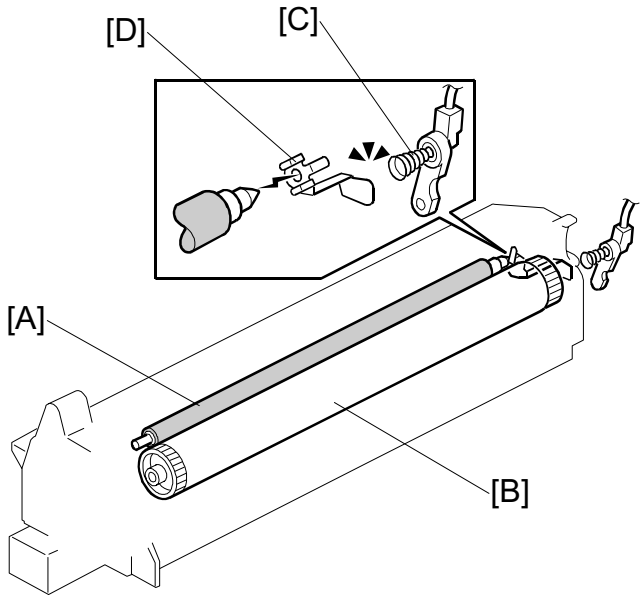
The new PCU detect switch [A] detects when a new PCU is installed. Each PCU has an actuator [B]. When a new PCU is installed in the machine, the actuator [B] pushes the new PCU detect switch. The actuator is a sector gear, and this gear engages with the drum gear [C]. When the drum rotates, the actuator is released from the drum gear. The actuator drops away from the new PCU detect switch and remains in this "down" position for the duration of the PCU's life.

The machine recognizes when a new PCU has been installed in the machine because the actuator of the new PCU contacts the new PCU detect switch. After the front cover and right cover are closed, the machine then performs the TD sensor initial setting procedure automatically (for about 45 seconds). During this time, the drum rotates and the actuator drops away from the sensor.

Also, while the machine performs the TD sensor initial setting, the machine makes a ID sensor pattern on the drum. This checks whether the developer has fallen into the development unit (in other words, it checks whether the technician remembered to remove the developer seal from the PCU at machine installation). If the machine does not detect the ID sensor pattern, SC 392 will be generated.

2.5 DRUM CHARGE

2.5.1 OVERVIEW

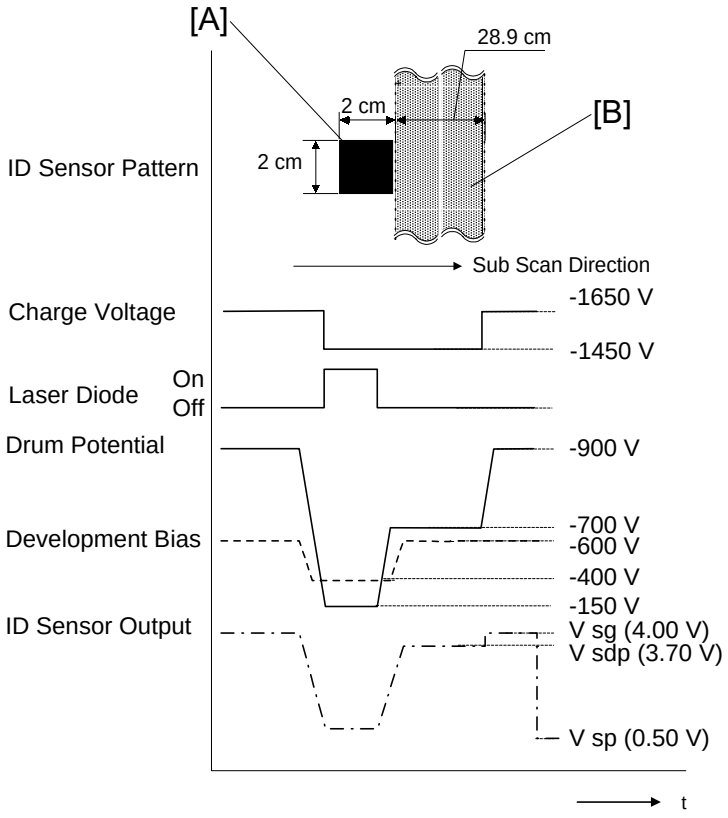


This copier uses a drum charge roller to charge the drum. The drum charge roller [A] always contacts the surface of the drum [B] to give it a negative charge of –900V.

The high voltage supply board gives a negative dc voltage to the drum charge roller through the spring [C] and terminal plate [D].

2.5.1 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 lower 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 on, but the development bias goes up to -600V; as a result the drum potential is reduced to -700V. The laser diode is not switched on, and the drum potential is now slightly higher than the development bias, so only 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.

- Vsdp / Vsg > 0.95 = Reduce the magnitude of the drum charge voltage by 50 V
- Vsdp / Vsg < 0.90 = Increase the magnitude of the drum charge voltage by 50 V

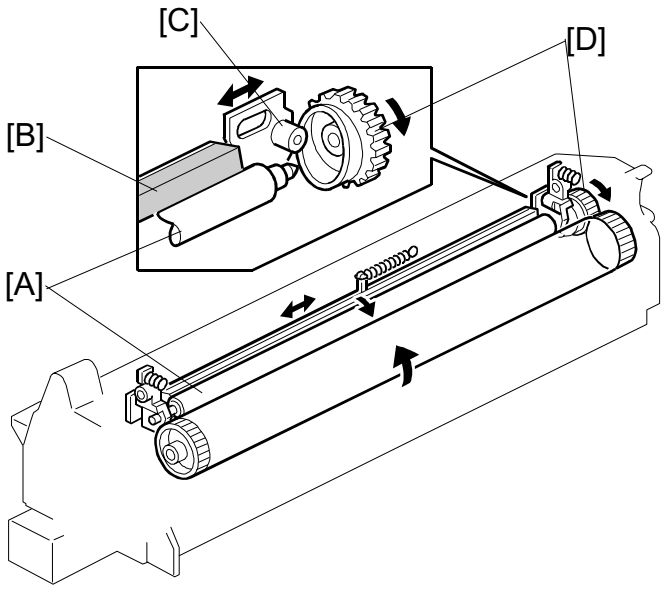
2.5.2 ID SENSOR PATTERN PRODUCTION TIMING

The ID sensor pattern is not made every page or every job. It is only made in the following conditions:

- During warming up at power on
- If the machine starts warming up after a certain time (default: 30 minutes) has passed since entering night mode or low power mode

The 30-minute interval can be changed using SP2-995.

2.5.3 DRUM CHARGE ROLLER CLEANING

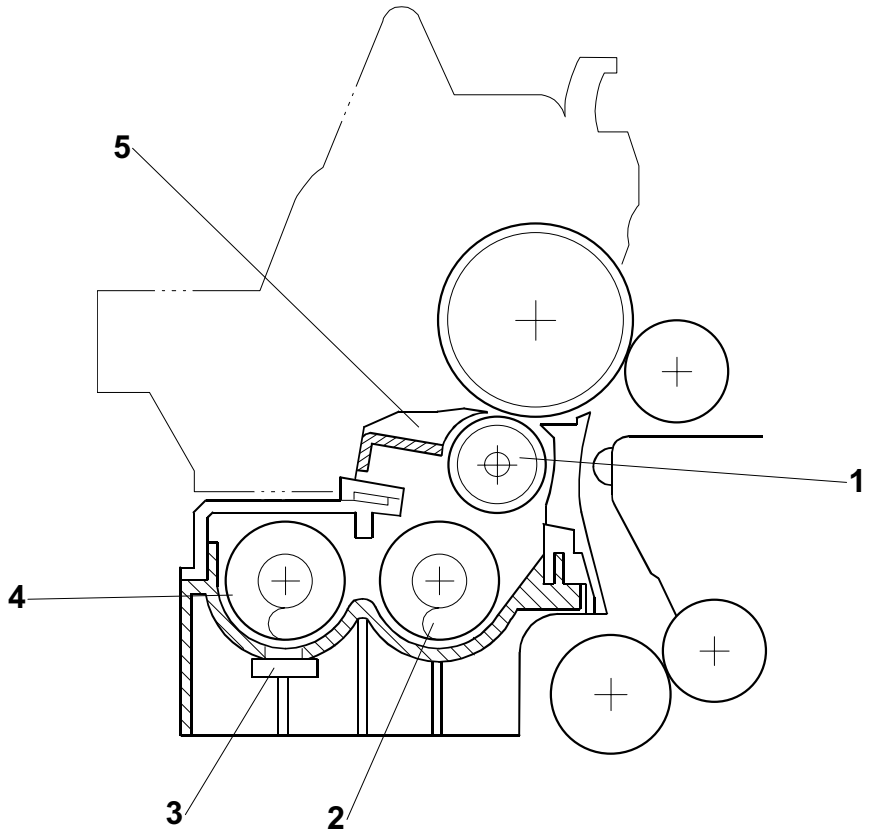


Because the drum charge roller [A] always contacts the drum, it gets dirty easily. So, the cleaning pad [B] also contacts the drum charge roller all the time to clean the surface of the drum charge roller.

The pin [C] at the rear of the cleaning pad holder touches the cam gear [D], and this gear moves the cleaning pad from side to side. This movement improves the cleaning.

2.6 DEVELOPMENT

2.6.1 OVERVIEW

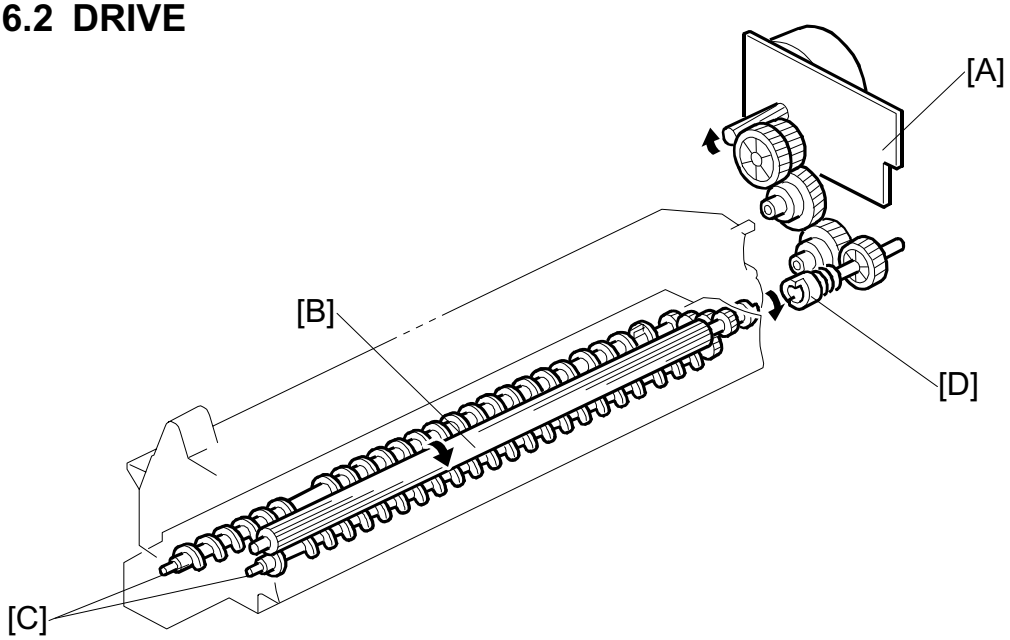


The development unit consists of the following parts.

1. Development roller
2. Mixing auger 2
3. TD sensor
4. Mixing auger 1
5. Doctor blade

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 toner density.

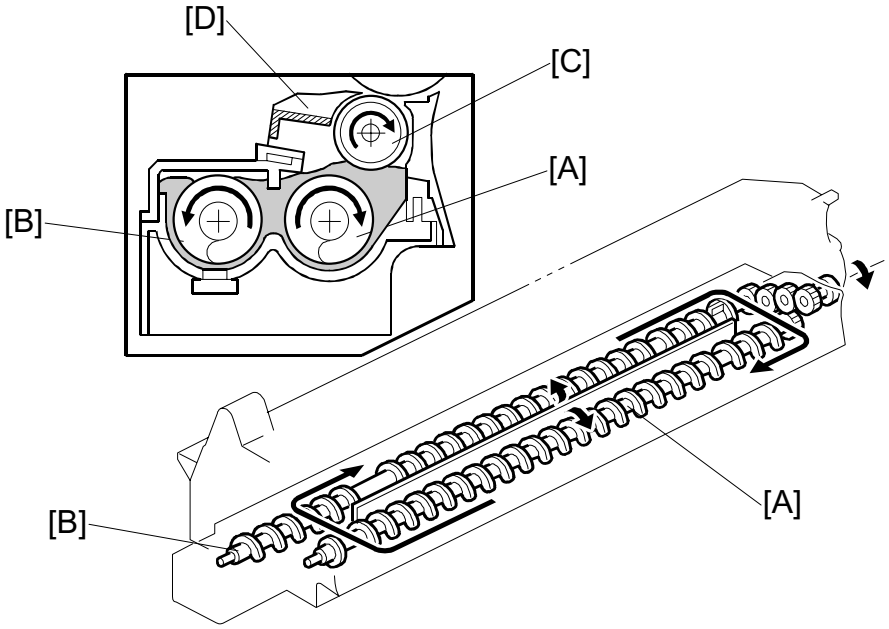
2.6.2 DRIVE



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.

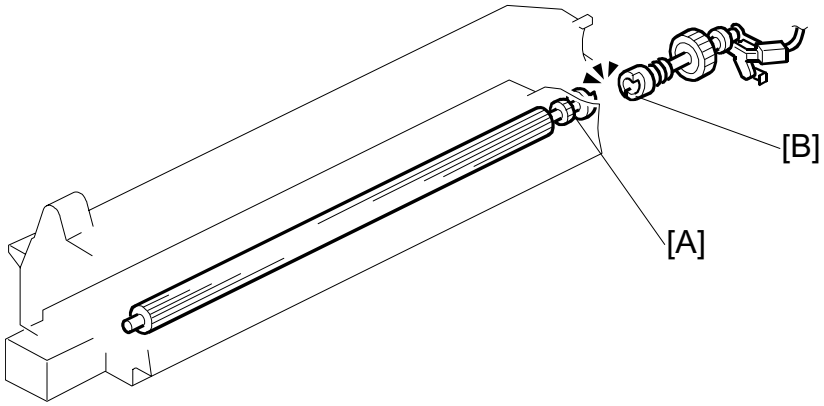
The development drive gears (except for the gears in the development unit) are helical gears. These gears are quieter than normal gears.

2.6.3 DEVELOPER MIXING



This copier uses 2 mixing augers, [A] and [B], to keep the developer evenly mixed. Mixing auger 2 [A] transports excess developer, scraped off the development roller [C] by the doctor blade [D], towards the front of the machine. Mixing auger 1 [B] returns the excess developer, along with new toner, to the rear of the mixing assembly. Here the developer is reapplied to the development roller.

2.6.4 DEVELOPMENT BIAS



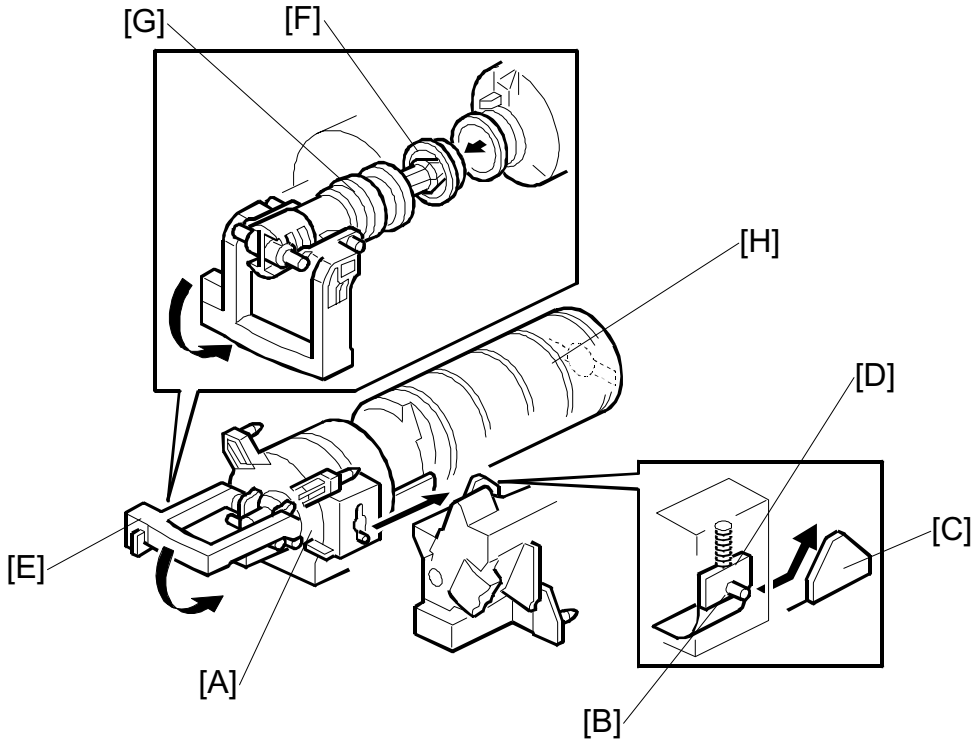
This machine uses a negative-positive development system, in which black areas of the latent image are at a low negative charge (about –150 ± 50 V) and white areas are at a high negative charge (about -900 V).

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 -600 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 (-600 V) can be adjusted with SP2-201-1.

2.6.5 TONER SUPPLY

Toner bottle replenishment mechanism



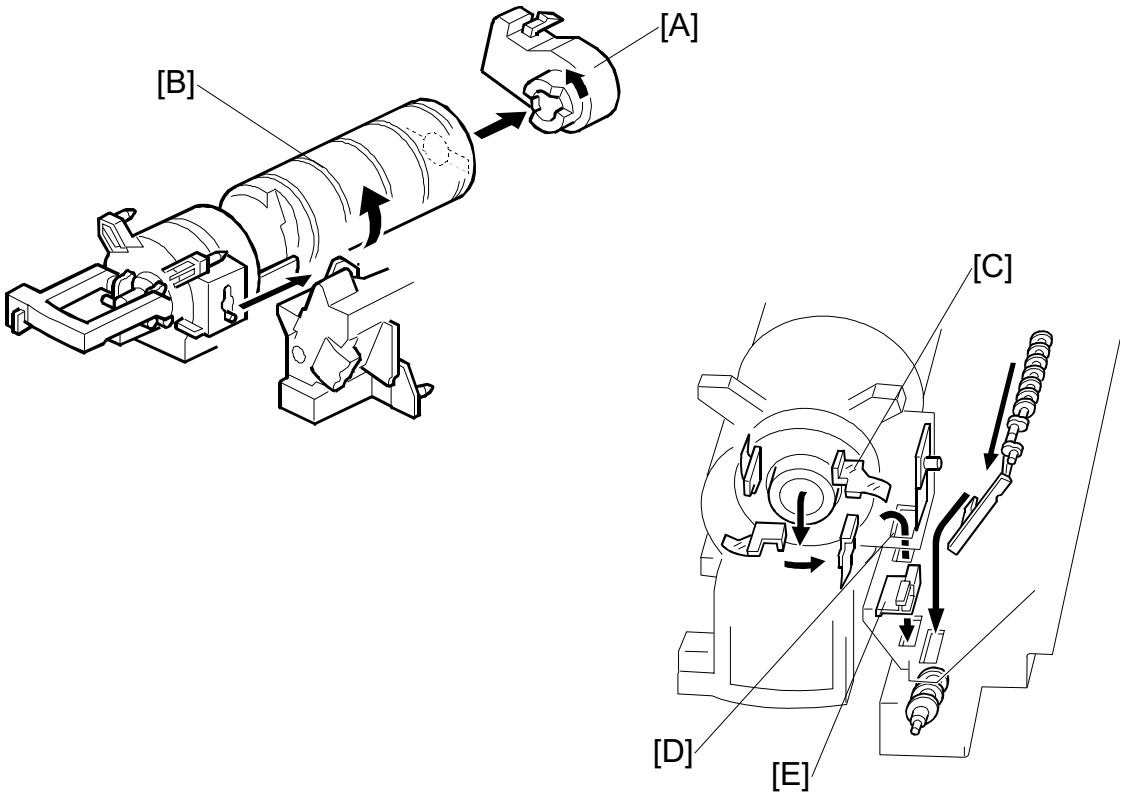
When a toner bottle is placed in the bottle holder unit [A] and the unit is pushed in completely, pin [B] moves against the side [C] of the PCU, and the toner shutter [D] is pulled out to open the bottle. When the toner bottle holder lever [E] is put back in the original position, the cap [F] on the toner bottle is pulled away and kept in place by the chuck [G].

The toner supply mechanism transports toner from the bottle to the development unit. The toner bottle has a spiral groove [H] that helps move toner to the development unit.

When the bottle holder unit is pulled out to add a new toner bottle, the following happens automatically to prevent toner from scattering.

- The chuck releases the toner bottle cap into its proper position.
- The toner shutter shuts to block the opening as a result of pressure from a spring.

Toner supply mechanism



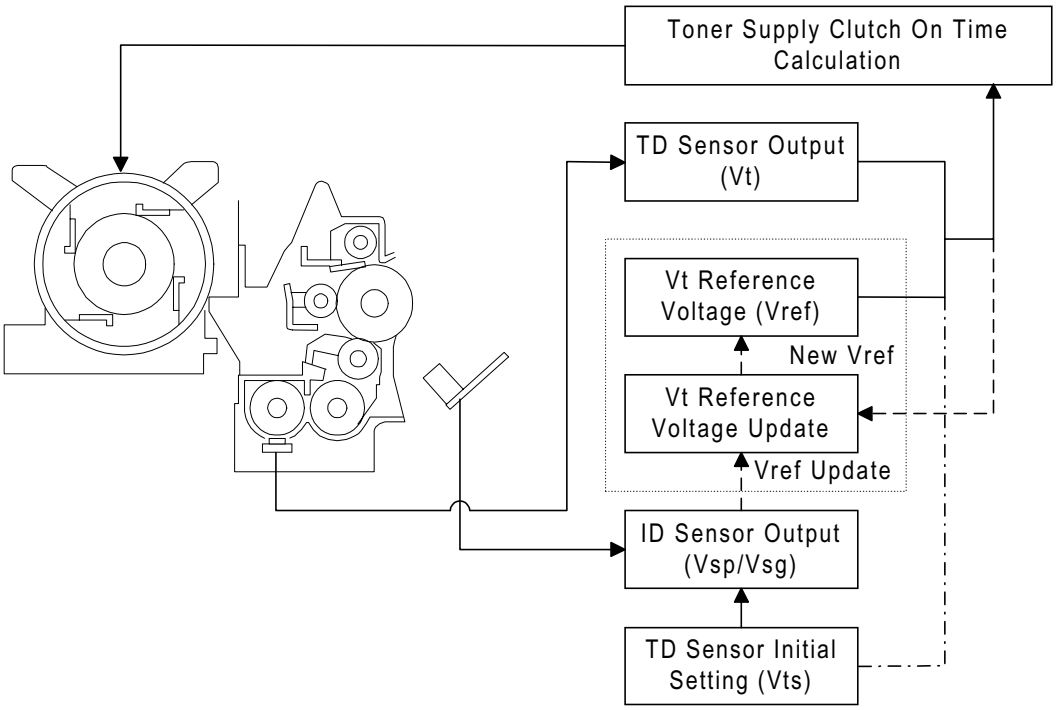
The toner supply motor [A] drives the toner bottle [B] and the mylar blades [C]. First, the toner falls down into the toner bottle holder. The toner supply mylar blades transfer the toner to the slit [D]. When the PCU is installed in the machine, the shutter [E] above the PCU is opened by the machine frame. Then the toner falls down into the development unit through the slit and the shutter.

2.6.6 TONER DENSITY CONTROL

Overview

There are four modes for controlling toner supply as shown in the following tables. The mode can be changed with by SP2-921. The factory setting is sensor control 1 mode.

Basically, toner density 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).



There are four toner density control modes 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 the reference voltage (Vts or Vref). This mode keeps the Vref value for use the next toner density control. Vts is used for the first toner density control after a new PCU has been installed, until it has been corrected with the ID sensor output. Vref is used after Vts has been corrected with the ID sensor output voltage (corrected during the first toner density control for a new PCU).
Toner supply amount	Varies
Toner end detection	Performed

Mode	Sensor control 2 (SP2-921, “1”): For designer’s use only; do not use 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. 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 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 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 procedure is performed automatically when the new PCU is installed in the machine. During TD sensor initial setting, the TD sensor is set so that the TD sensor output to the value of SP2-926 (default: 2.3V). This value will be used as the standard reference voltage (Vts) of the TD sensor.

Toner density measurement

Toner density in the developer is detected once every copy cycle. The sensor output voltage (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. This compensates 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 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 warming up at power on
- If the machine starts warming up after a certain time (default: 30 minutes) has passed since entering night mode or low power mode

The 30-minute interval can be changed using SP2-995.

Toner supply reference voltage (Vref) determination

The toner supply reference voltage (Vref) is the threshold voltage for the toner supply determination. 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.

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	2t
2	4t
3	8t
4	12t
5	16t
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 ≤ (Vts or Vref) + S/16	t (0.6)
2	(Vts or Vref) < Vt ≤ (Vts or Vref) + S/8	t x 2 (1.2)
3	(Vts or Vref) < Vt ≤ (Vts or Vref) + S/4	t x 4 (2.4)
4	(Vts or Vref) < Vt ≤ (Vts or Vref) + S/2	t x 8 (4.8)
5	(Vts or Vref) < Vt ≤ (Vts or Vref) + 4S/5	t x 16 (9.6)
6	Vt ≥ (Vts or Vref) + 4S/16 (near-end)	T (30); see note 3
7	Vt ≥ (Vts or Vref) + S (toner end)	T (30); see note 3

NOTE: 1) The value of “t” can be changed using SP2-922 (default: 0.6 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

2.6.7 TONER SUPPLY IN ABNORMAL SENSOR CONDITIONS

ID sensor

Readings are abnormal if any of the following conditions occur:

- Vsg ≤ 2.5V
- Vsg < 3.5V when maximum power (254) is applied
- Vsp ≥ 2.5V
- (Vsg – Vsp) < 1.0V
- ID sensor power required to make the standard output reaches the maximum value (254)

The above ID sensor values can be checked using SP2-221.

When this is detected, the machine changes the value of Vref to 2.5V 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 is checked every copy. If the readings from 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. Then at the end of a job (if the optional fax unit is installed), or 100 copies after the TD sensor error was detected (if no fax unit is installed), an SC code is generated (SC390) and the machine must be repaired. The 100-copy threshold can be adjusted with SP 2-992.

2.6.8 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 SP 2-923 (see the previous page).

Toner Near End Recovery

If the machine detects “Vt < (Vref or Vts) + 4S/5” twice consecutively when in one of the following situations, the machine leaves 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.

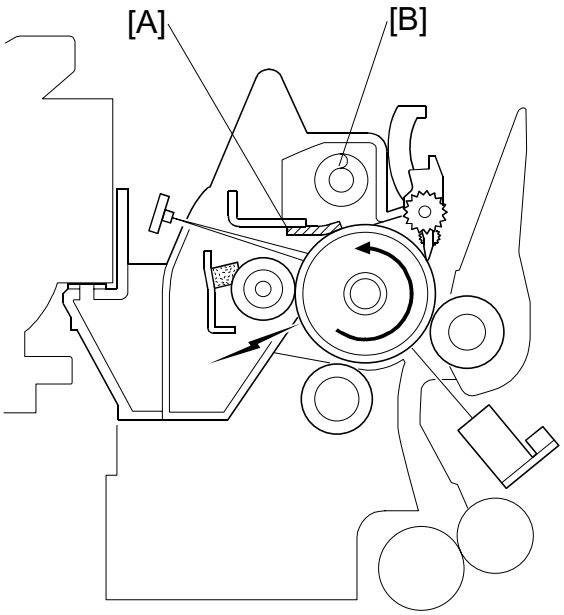
- When Vt is level 7 three times consecutively, the machine enters the toner end condition.
- When “Vt+S > Vt > (Vref or Vts) + 4S/5” is detected in the toner near end condition, then 50 copies can be made after this condition (the number of copies between this condition and toner end can be changed using SP2-213).

Toner End Recovery

If the front cover is opened and closed for 10 seconds while a toner end condition exists and the toner bottle is replaced, the machine attempts to recover using the same procedure as for toner near end/end detection.

2.7 DRUM CLEANING AND TONER RECYCLING

2.7.1 DRUM CLEANING

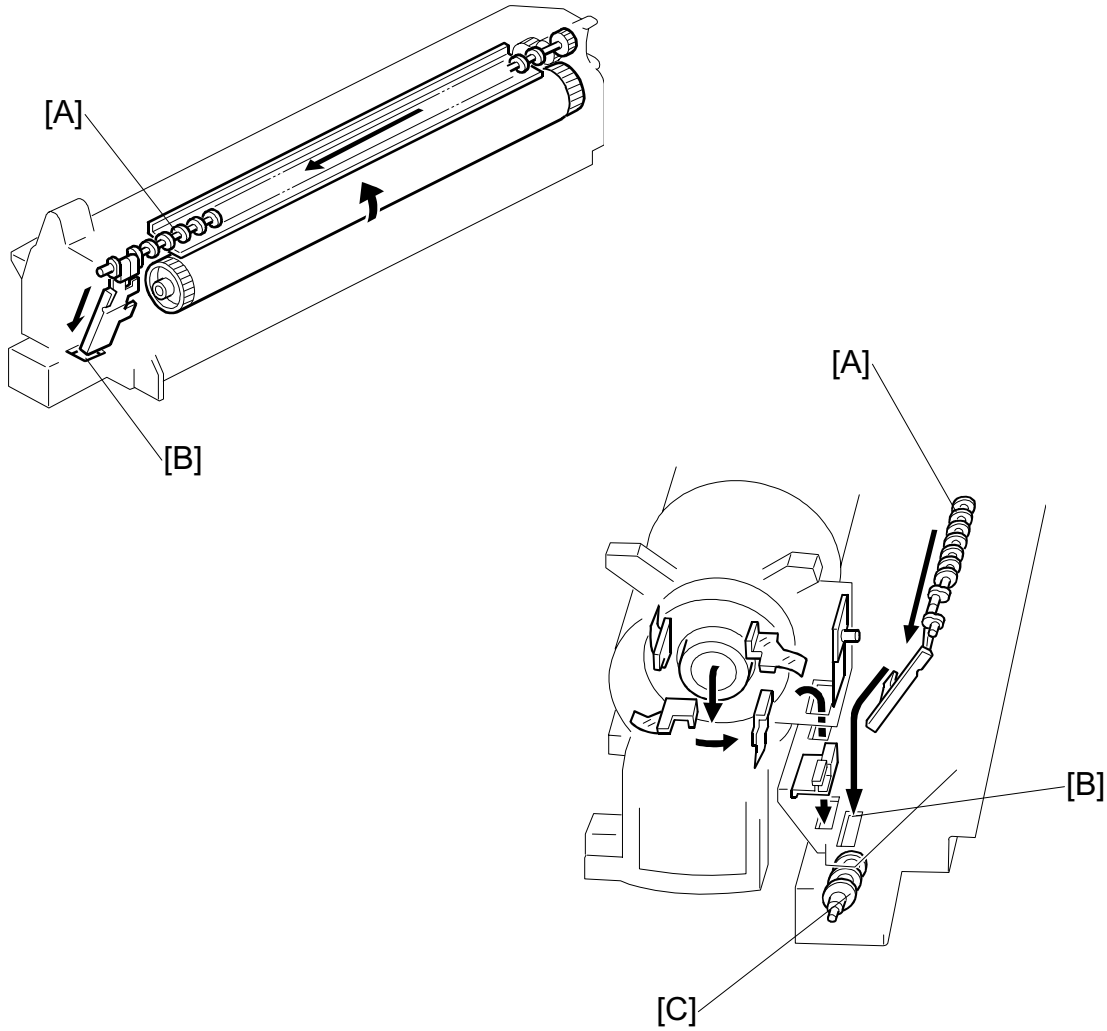


The cleaning blade [A] removes any toner remaining on the drum after the image is transferred to the paper. This model uses a counter blade system.

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.

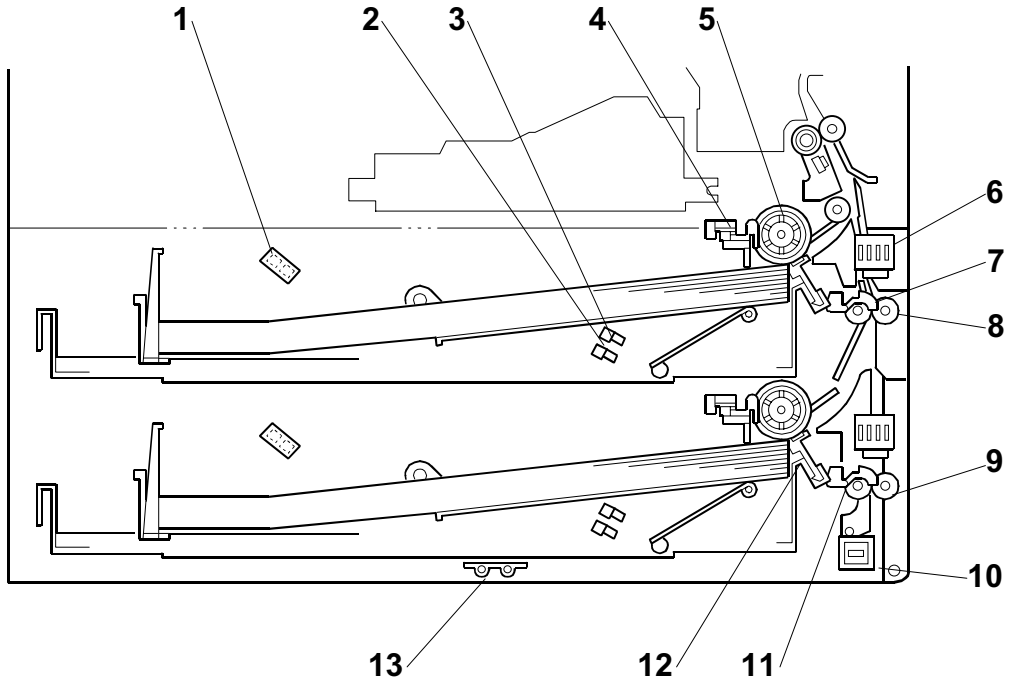
2.7.2 TONER RECYCLING



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.

2.8 PAPER FEED

2.8.1 OVERVIEW



There are two paper trays, each of which can hold 500 sheets.

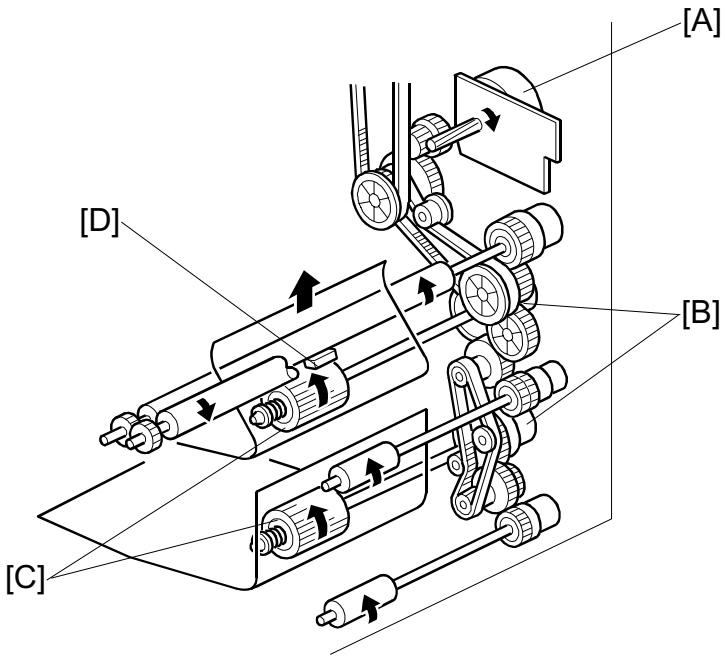
The paper tray feed stations use a friction pad system.

The two relay sensors are used for paper jam detection.

The components of the paper feed station are as follows.

1. Paper Lift Sensor
2. Paper Height –1 Sensor
3. Paper Height –2 Sensor
4. Paper End Sensor
5. Paper Feed Roller
6. Paper Size Sensor
7. Upper Relay Sensor
8. Upper Relay Roller
9. Lower Relay Roller
10. Special Paper Sensor
11. Lower Relay Sensor
12. Friction Pad
13. Tray Heater (Option)

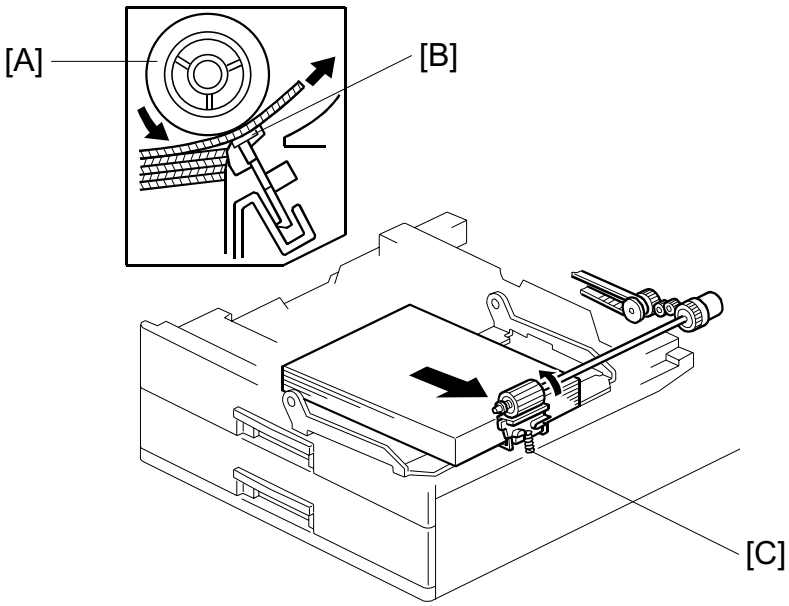
2.8.2 PAPER FEED DRIVE MECHANISM



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 rollers start to feed the paper. The paper feed clutch stays on until shortly after the registration sensor [D] has been activated.

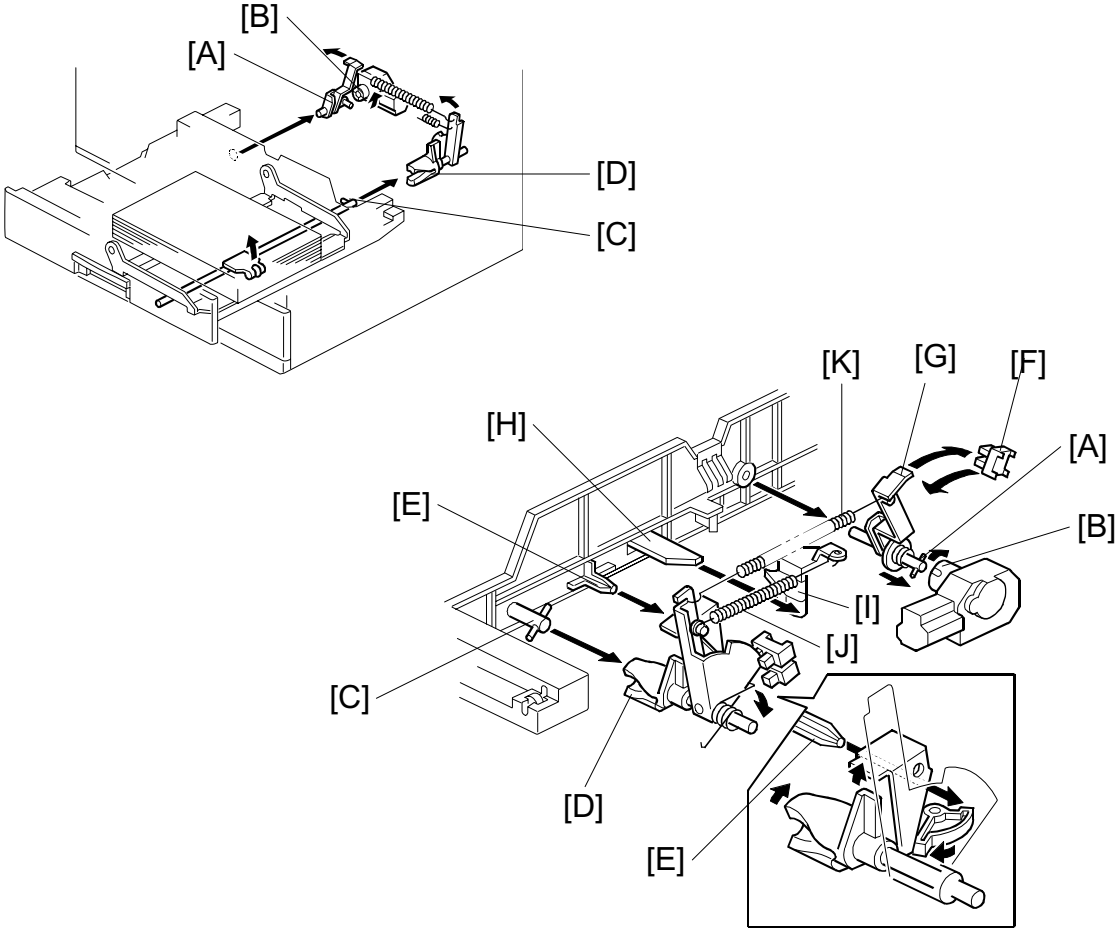
2.8.3 PAPER FEED AND SEPARATION MECHANISM



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.

2.8.4 PAPER LIFT MECHANISM



The paper size switch detects when the tray is pushed in.

When the paper tray is pushed into the machine, the pin [A] for the lift motor pressure shaft engages the lift motor coupling [B] and the pin [C] for the bottom plate lift shaft in the tray engages the bottom plate pressure lever coupling [D]. The pin [E] on the rear of the tray pushes the lock lever so that the lift motor can lift the bottom plate pressure lever.

The lift motor turns on, and turns clockwise as shown in the diagram. The main pressure spring [K] pulls the bottom plate pressure lever, and this lifts the tray bottom plate.

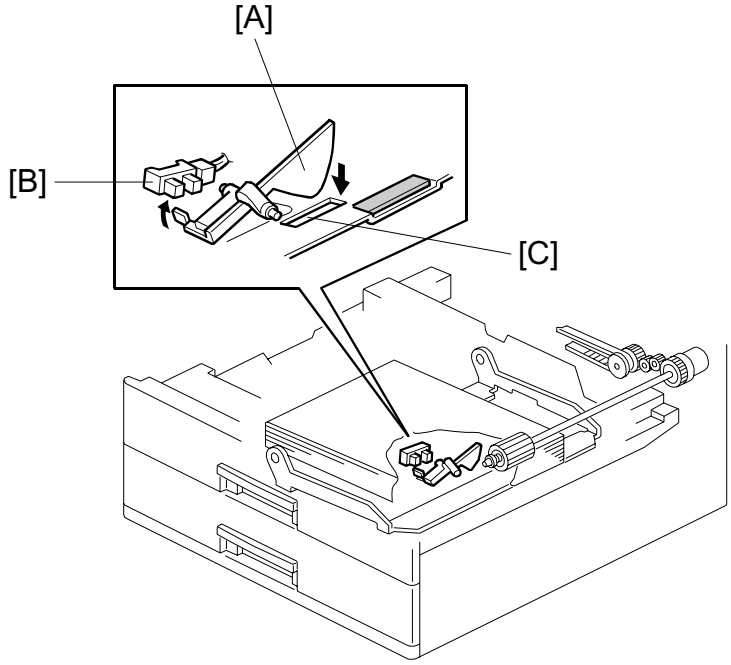
When the top of the stack touches the feed roller, the motor cannot pull up the plate any more, so it pulls the actuator [G] into the lift sensor [F]. Then the lift motor stops. The pressure of the feed roller on the paper is now too high, so the lift motor reverses a certain time (200 ms or 600 ms), depending on the paper size, to reduce this pressure. For smaller paper, it reverses the larger amount (600 ms) to reduce the pressure more.

NOTE: The relationship between the bottom plate pressure adjustment, paper size thresholds, and the related SP modes is explained in “Bottom Plate Pressure Adjustment for Paper Size”.

For A4-width paper or wider, a projection [H] on the side fence engages the secondary pressure spring [J] through a lever [I]. Then, the secondary pressure spring [J] applies paper feed pressure in addition to the main pressure spring [K], to ensure that extra pressure is applied to wider paper.

When the paper tray is pulled out, the pins [A, C] disengage from the couplings [B, D], and the bottom plate drops. To make it easier to push the tray in, the lift motor rotates backwards 1.7 seconds to return the bottom plate pressure lever coupling [D] to the original position. The amount of reverse can be adjusted with SP 1-912.

2.8.5 PAPER END DETECTION

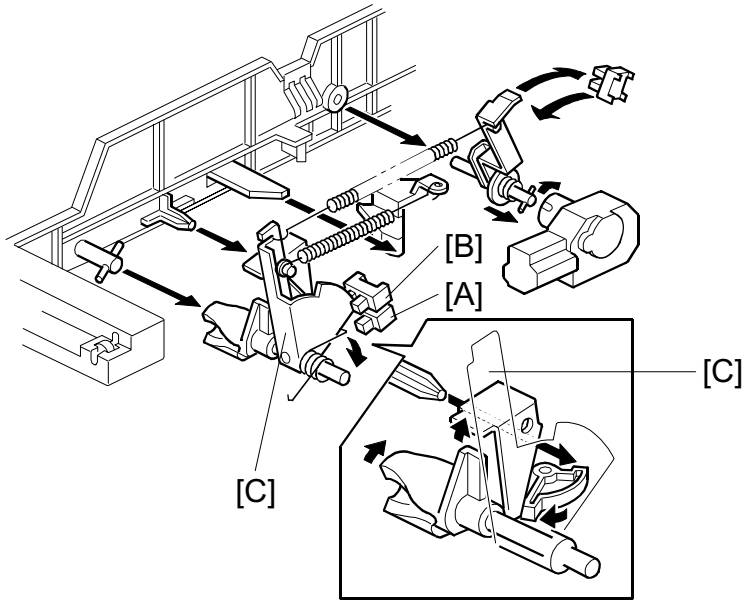


If there is some paper in the paper tray, the paper stack raises the paper end feeler [A] and the paper end sensor [B] is deactivated.

When the paper tray runs out of paper, the paper end feeler drops into the cutout [C] in the tray bottom plate and the paper end sensor is activated.

When the paper tray is drawn out with no paper in the tray, the shape of the paper end feeler causes it to lift up.

2.8.6 PAPER HEIGHT DETECTION



The amount of paper in the tray is detected by the combination of on/off signals from two paper height sensors [A] and [B]. However, these outputs are only used when the optional printer controller is installed.

When the amount of paper decreases, the bottom plate pressure lever [C] moves the actuator up.

The following combination of sensor signals is sent to the copier.

Amount of Paper	Paper Height Sensor 1	Paper Height Sensor 2
Near End	OFF	ON
30%	ON	ON
70%	ON	OFF
100%	OFF	OFF

When the tray contains paper of a small width, the paper feed pressure may become too low when the thickness of the remaining stack of paper has decreased. The lift motor rotates forward 400 ms after the sensor detects a certain amount of paper remaining in the tray to increase paper feed pressure, simulating the pressure generated by a full tray.

NOTE: The relationship between the bottom plate re-adjustment timing, paper size threshold, and the related SP modes is explained in “Bottom Plate Pressure Adjustment for Paper Size”.

2.8.7 FEED PRESSURE ADJUSTMENT FOR PAPER SIZE

Overview

For the friction pad system, the pressure from the top of the stack against the feed roller is very important for paper feed quality from the paper tray. If the pressure is high, double feed may occur. On the other hand, if the pressure is low, non-feed may occur. Because of this, the pressure must be varied depending on the paper size, paper weight, and amount of paper remaining in the tray. To achieve this, the pressure for each paper tray can be adjusted using SP mode.

Paper Size Thresholds

The upward pressure from the bottom plate spring is always the same. However, downward pressure from the stack on the bottom plate depends on the paper size. Because of this, for a smaller paper size, the pressure of the top of the stack against the feed roller is more than normal (because of the smaller downward pressure from the stack), so adjustment may be necessary.

Using the following SP modes, either two or three paper size ranges can be specified. Using other SP modes (explained later), the pressure can be adjusted separately for each of these ranges to deal with any feed problems that have been occurring.

Paper Size	Normal	Small Size	Middle Size
	Greater than HLT/A5 (default setting)	HLT/A5 or smaller (default setting)	None (default setting)
1st paper tray	---	SP1-908-8	SP1-908-9
2nd paper tray	---	SP1-909-8	SP1-909-9
3rd paper tray	---	SP1-910-8	SP1-910-9
4th paper tray	---	SP1-911-8	SP1-911-9

Paper Size Ranges

For Three Size Ranges

Small paper size range: Paper sizes equal to the ‘Small’ SP mode value, or smaller.

Middle paper size range: Paper sizes greater than the small paper size, up to and including the middle paper size specified by the ‘Middle’ SP mode.

Normal paper size range: Paper sizes greater than the ‘Middle’ SP mode.

For Two Size Ranges

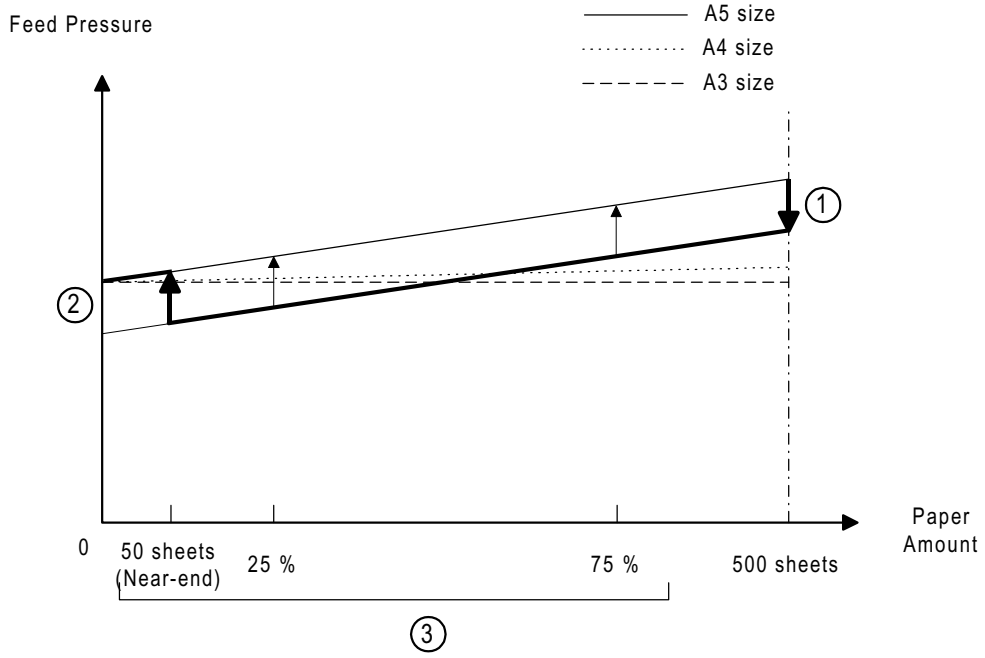
Small paper size range: Paper sizes equal to the ‘Small’ SP mode value, or smaller.

Normal paper size range: Paper sizes greater than the ‘Small’ SP mode.

Feed Pressure Adjustment

The pressure can be adjusted to solve a paper feed problem. This adjusts the amount of lift motor reverse just after the lift sensor is activated when lifting the stack to the paper feed position. To apply less pressure to the top of the stack, the amount of reverse should be increased.

Effect of the Amount of Remaining Paper



From tray full to paper near-end

The pressure between the top of the stack and the fed roller also depends on the amount of remaining paper, especially for small paper sizes, as shown in the above graph. The pressure for A5 changes significantly between stack heights of 500 sheets and 50 sheets, but not much for A4 or A3 paper.

For 500 sheets of A5, the pressure is too high. To counter this, the lift motor reverses 600 ms (in the graph), as explained in the previous section. The SP modes in the following table are for solving feed problems that occur when the tray is between full and near-end.

Paper Size	Normal	Small Size	Middle Size
	Greater than HLT/A5 (default setting)	HLT/A5 or smaller (default setting)	None (default setting)
1st paper tray	SP1-908-1	SP1-908-2	SP1-908-3
2nd paper tray	SP1-909-1	SP1-909-2	SP1-909-3
3rd paper tray	SP1-910-1	SP1-910-2	SP1-910-3
4th paper tray	SP1-911-1	SP1-911-2	SP1-911-3
Default (all trays)	200 ms	600 ms	200 ms (default: not used)

From paper near end to paper end

When paper is used up, the pressure on the bottom plate reduces, so the upward pressure increases, causing the pressure of the feed roller against the top of the stack to increase.

However, for small paper sizes, because of the previous correction (600 ms reverse rotation of the lift motor), the pressure between the feed roller and the top of the stack becomes too small at some point as paper is used up, and this could cause paper feed problems. This condition is more significant for smaller paper sizes, such as A5, as shown in the diagram.

If a paper feed problem occurs when the stack is partly used up, the pressure can be re-adjusted (in the graph) using the following SP modes. The default is set for 50 sheets (at the near-end point)

The lift motor rotates forward for the time specified by the SP mode to increase the pressure.

Paper Size	Small Size	Middle Size
	HLT/A5 or smaller (default setting)	None (default setting)
1st paper tray	SP1-908-4	SP1-908-5
2nd paper tray	SP1-909-4	SP1-909-5
3rd paper tray	SP1-910-4	SP1-910-5
4th paper tray	SP1-911-4	SP1-911-5
Default (all trays)	400 ms	300 ms (default: not used)

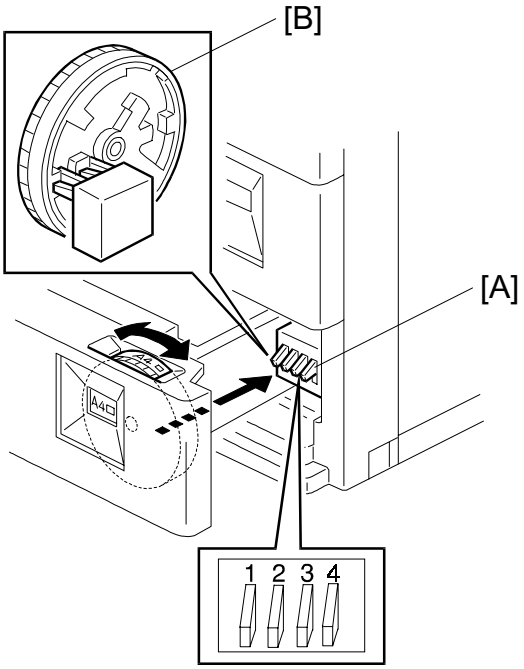
Also, the point at which this adjustment is applied (near-end [50 sheets], 25% full, 75% full) can be selected (in the graph) using the following SP modes.

Paper Size	Small Size	Middle Size
	HLT/A5 or smaller (default setting)	None (default setting)
1st paper tray	SP1-908-6	SP1-908-7
2nd paper tray	SP1-909-6	SP1-909-7
3rd paper tray	SP1-910-6	SP1-910-7
4th paper tray	SP1-911-6	SP1-911-7
Default (all trays)	Near-end	Near-end (default: not used)

2.8.8 PAPER SIZE DETECTION

SW / Size	1	2	3	4
A3	❍	❍	❍	❍
A4 Sideways	●	●	❍	●
A4 Lengthwise	●	●	❍	❍
A5 Lengthwise, 8 1/2" x 14"	❍	❍	●	●
B4, 11" x 17"	●	❍	●	❍
B5 Sideways, 11" x 8 1/2"	●	❍	❍	❍
B5 Lengthwise, 8 1/2" x 11"	❍	●	●	●
* (Asterisk)	❍	●	❍	●

●: ON (Not pushed)
❍: OFF (Pushed)



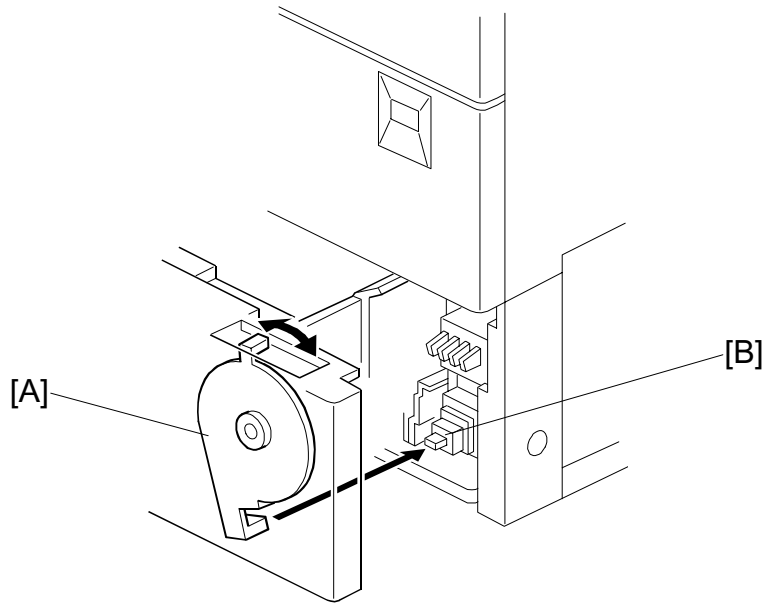
There are four paper size microswitches [A] on the front right plate of the paper tray unit. The switches are actuated by a paper size actuator [B] behind the paper size indicator plate, which is on the front right of the tray.

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.

2.8.9 SPECIAL PAPER SETTING



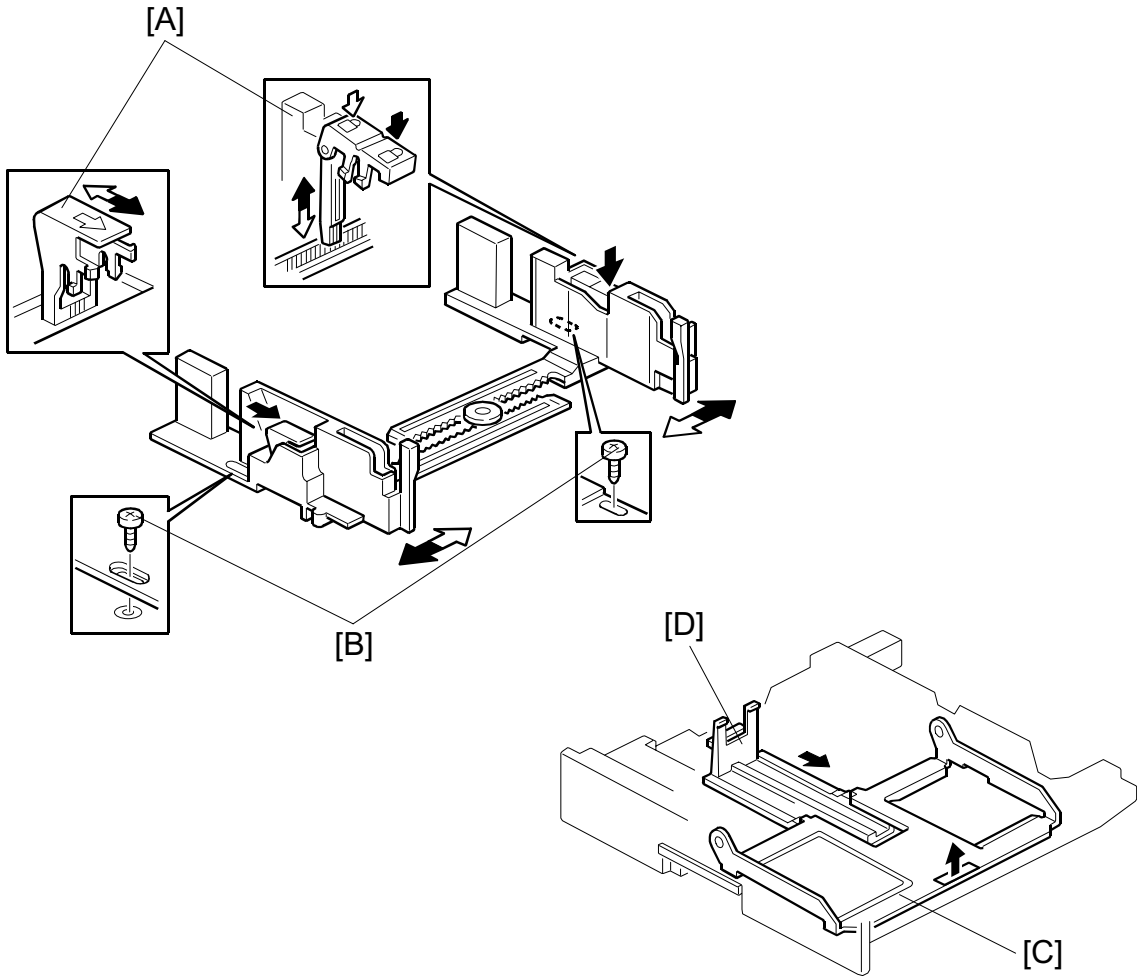
When feeding thick paper and envelopes, the user must use the 2nd paper tray (if the optional by-pass table is not installed), and turn lever [A] to the right. Then, when sliding the tray into the machine, the lever will not push the special paper switch [B] (it stays off), and the machine detects that there is special paper in the 2nd paper tray.

When the machine detects the special paper signal, the fusing temperature and the transfer roller current will be changed as follows.

1. Fusing temperature: Current operation temperature + 10 °C
2. Transfer roller current:
   A3 width (11”): 14 μA
   B4 width (10”): 15 μA
   A4 width (8.5”): 17 μA
   A5 width (5.5”): 20 μA

Note that for the by-pass tray, the fusing and transfer conditions for special paper are also applied if the user uses thick (non-standard) mode.

2.8.10 SIDE AND END FENCES



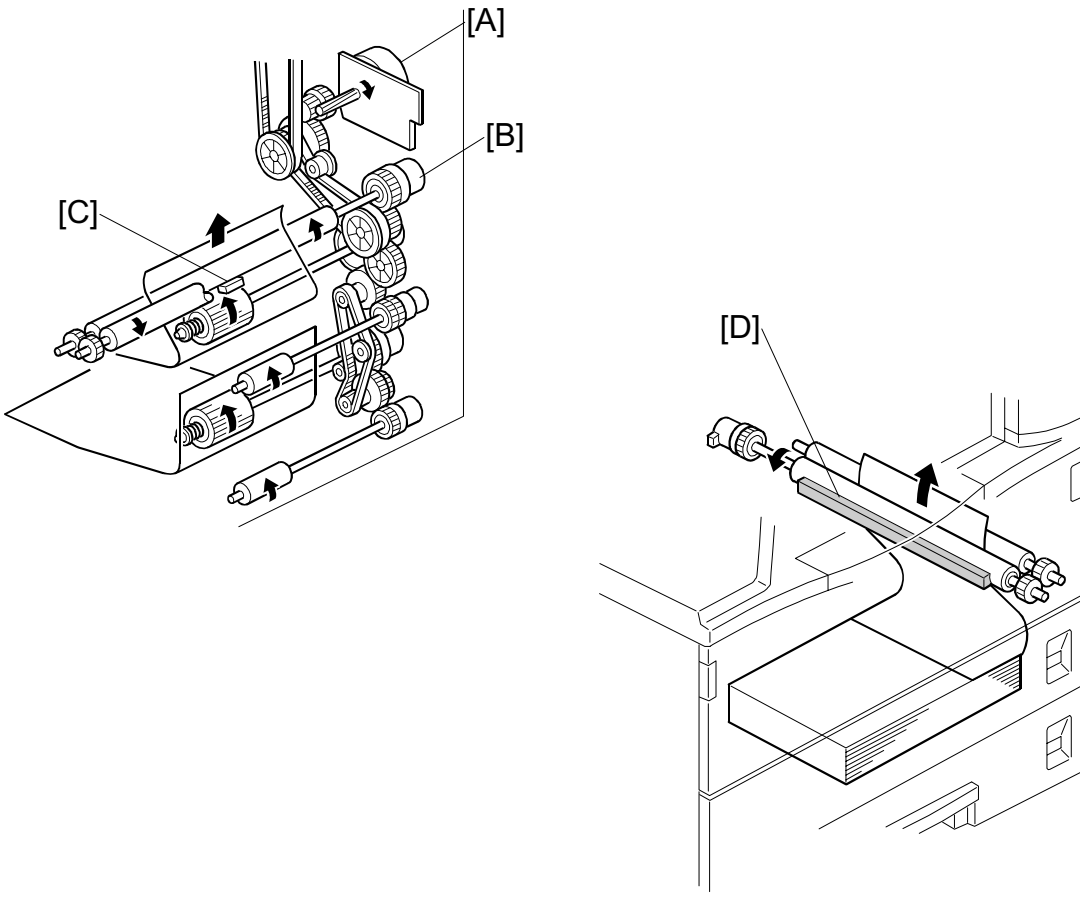
Side Fences

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 [B], for customers who do not want to change the paper size.

End Fence

As the amount of paper in the tray decreases, the bottom plate [C] lifts up gradually. The end fence [D] is connected to the bottom plate. When the tray bottom plate rises, the end fence moves forward and pushes the back of the paper stack to keep it squared up.

2.8.11 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.

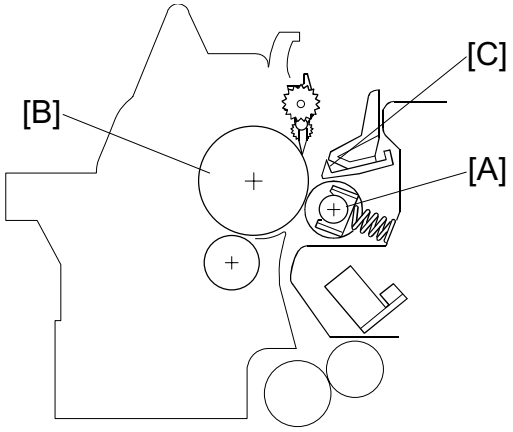
The cleaning pad [D] contacts the registration roller. It removes paper dust from the registration roller so that this dust will not transfer into the development unit through the drum cleaning unit.

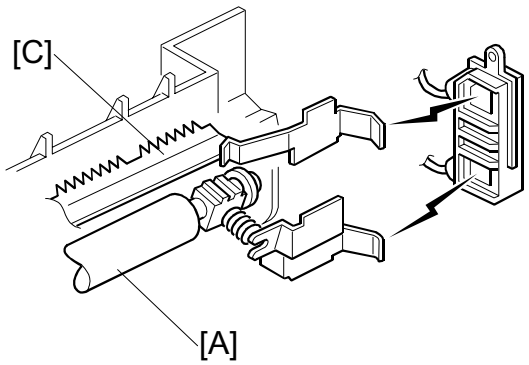
The amount of paper buckle at the registration roller to correct skew can be adjusted with SP 1-003.

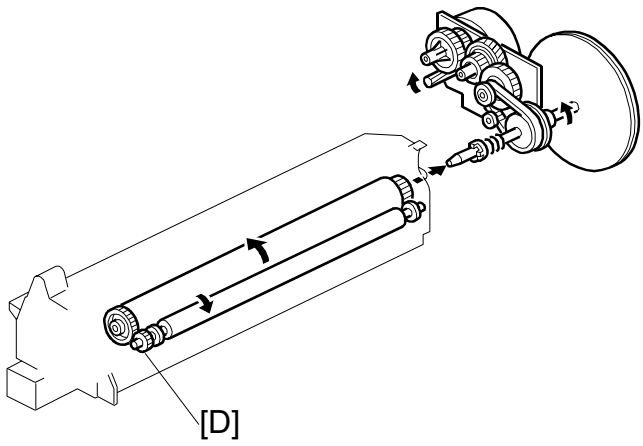
If jams frequently occur after registration, the paper feed clutch can be re-energized so that the feed roller can assist the registration roller to re-start paper feed. This may be needed when feeding thicker paper. This adjustment is made with SP 1-903; it can be adjusted separately for tray 1 and the by-pass feeder, so place the problem paper type in one of these and adjust SP 1-903 for that tray only.

2.9 IMAGE TRANSFER AND PAPER SEPARATION

2.9.1 OVERVIEW







The machine uses a transfer roller [A], which 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 high voltage supply board also supplies a negative dc voltage to the discharge plate.

Drive from the drum through a gear [D] turns the transfer roller

2.9.2 IMAGE TRANSFER CURRENT TIMING

There are two transfer current levels: low transfer current level and high transfer current level. 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 +10μA (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, +13μA (paper fed from the paper tray) is applied to the roller to transfer the toner to the paper.
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 default transfer roller current (high transfer current level) is as shown in the following table. The transfer current can be adjusted using SP2-301, except for the low transfer current.

Paper Size	Paper Tray / By-pass Tray (Normal)	Duplex (2nd Side)	By-pass Tray (Thick) / 2nd Paper Tray (Special Paper)
A3/11" x 17", A4/8 1/2 x 11"sideways	13 μA	10 μA	14 μA
B4	13 μA	12 μA	15 μA
A4/11" x 8 1/2 lengthwise, A5/5 1/2 x 8 1/2 sidewise	13 μA	16 μA	17 μA
A5/8 1/2 x 5 1/2 lengthwise	15 μA	16 μA	20 μA

Be careful when increasing the transfer current. This might 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.

2.9.3 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 current (-4 μA) 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 μA) is applied to the transfer roller to push back to the drum any positively charged toner on the transfer roller.

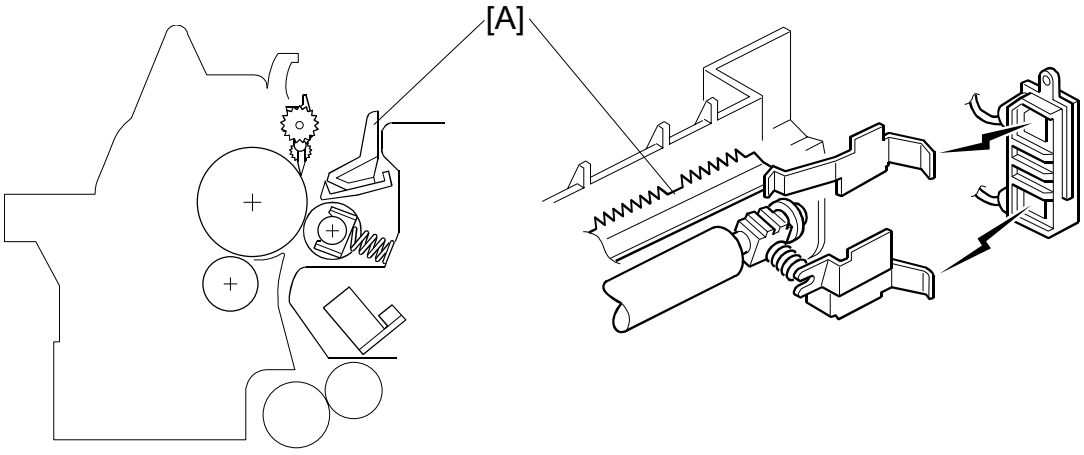
The machine goes through the cleaning mode in the following conditions:

- 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

The transfer roller cleaning function is done.

Also, the transfer roller cleaning current can be adjusted using SP2-301-4.

2.9.4 PAPER SEPARATION MECHANISM

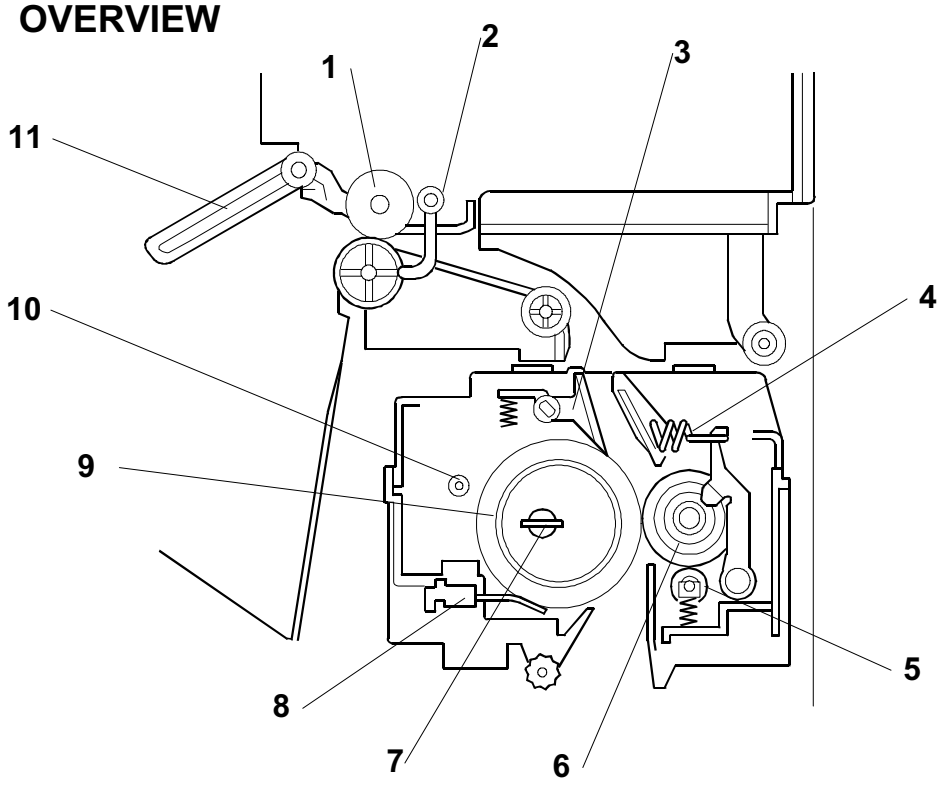


The discharge plate [A] and the drum curvature of the drum help the paper to separate away from the drum. The high voltage supply board applies a constant dc voltage, -1.8 kV (when feeding from a paper tray) or –2.1 kV (from the duplex unit) to the discharge plate.

The discharge plate voltage can be adjusted using SP2-901.

2.10 IMAGE FUSING AND PAPER EXIT

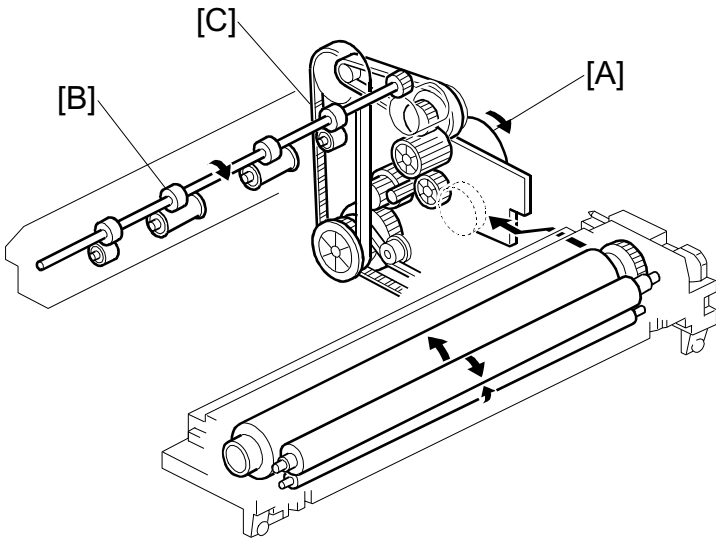
2.10.1 OVERVIEW

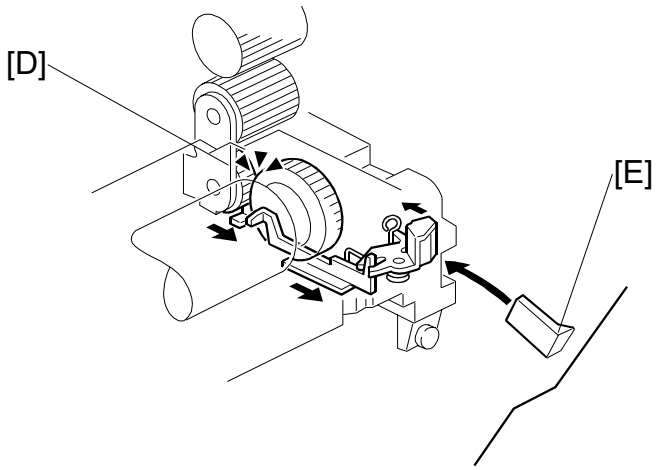


The fusing unit and paper exit area consist of the following parts.

1. Paper exit roller
2. Fusing exit sensor
3. Hot roller strippers
4. Pressure spring
5. Cleaning roller
6. Pressure roller
7. Fusing lamp
8. Thermistor
9. Hot roller
10. Thermofuse
11. Paper overflow sensor lever

2.10.2 FUSING DRIVE AND RELEASE MECHANISM

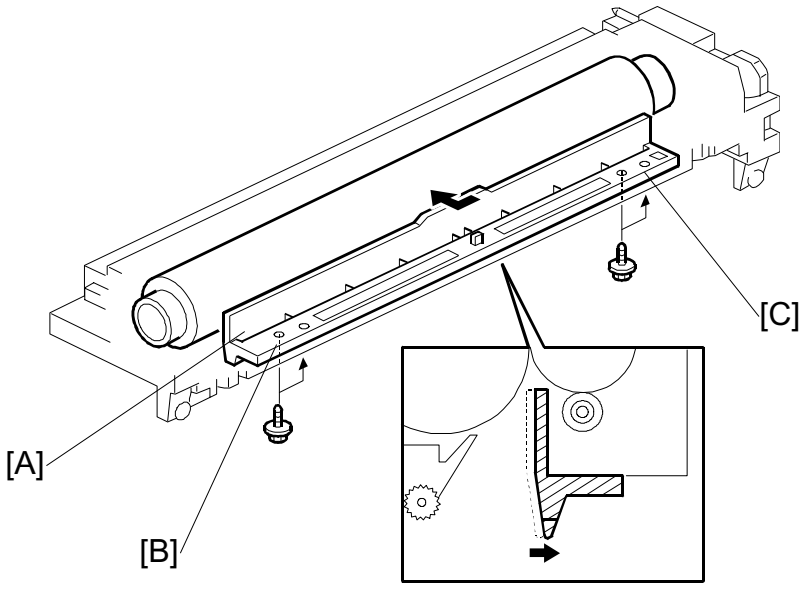




The main motor [A] drives the fusing unit through a gear train and drives the paper exit rollers [B] through a timing belt [C].

The fusing unit release mechanism automatically disengages the fusing unit drive gear [D] when the right cover [E] is opened. This allows the fusing unit drive gear to rotate freely so that misfed paper can easily be removed.

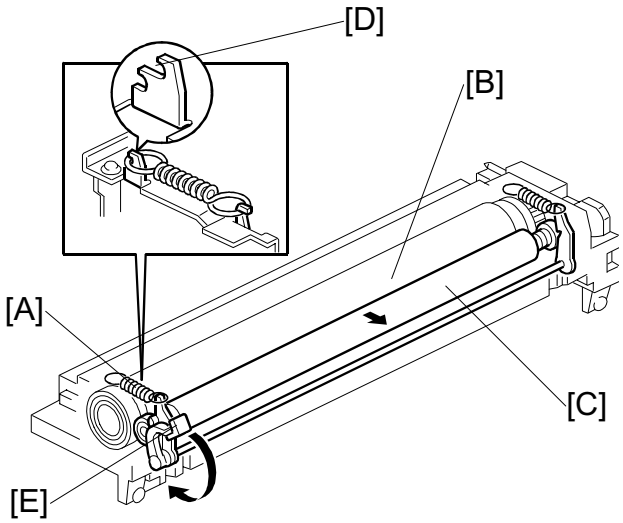
2.10.3 FUSING ENTRANCE GUIDE SHIFT MECHANISM



The entrance guide [A] is adjustable for paper thickness to prevent creasing. The left 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 other holes [C]. This allows more direct access to the gap between the hot roller and the pressure roller.

2.10.4 PRESSURE ROLLER

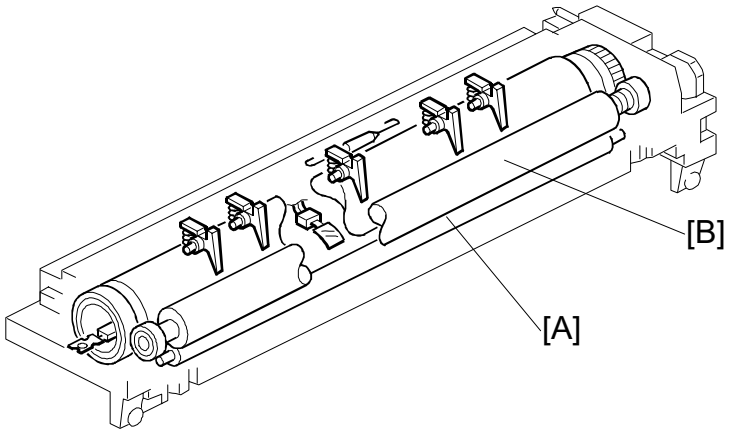


The pressure springs [A] constantly apply pressure between the hot roller [B] and the pressure roller [C].

Applied pressure can be changed by adjusting the position of the pressure springs. The spring is positioned at the top [D] as the default setting.

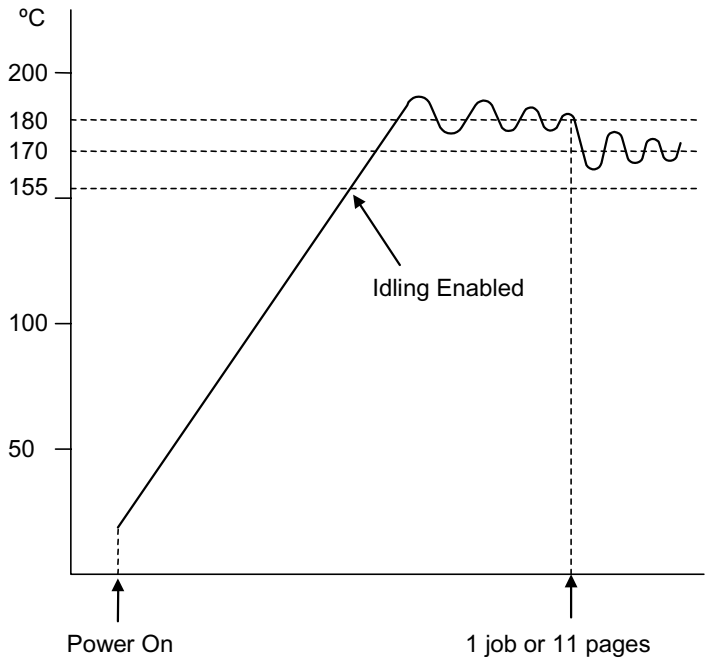
The user moves lever [E] when using thicker copy paper or envelopes, to reduce the pressure between the hot and pressure rollers.

2.10.5 CLEANING MECHANISM



The cleaning roller [A] is always in contact with the pressure roller [B]. It collects toner and paper dust adhered to the surface of the pressure roller.

2.10.6 FUSING TEMPERATURE CONTROL



Temperature Control

When the main power switch is turned on, the CPU turns on the fusing lamp to maintain the fusing temperature of 180°C for the first job, or for the first 11 consecutive pages of printing. After that, the machine maintains the fusing temperature at 170°C.

Note that the fusing temperature is higher if the user uses special paper in the 2nd tray or thick paper mode from the bypass tray (see Paper Feed – Special Paper).

To prevent each end of the hot roller temperature from becoming too high, the machine lowers the fusing temperature to 155°C when it detects that paper which is less than 216 mm width is consecutively fed.

Fusing Lamp Control

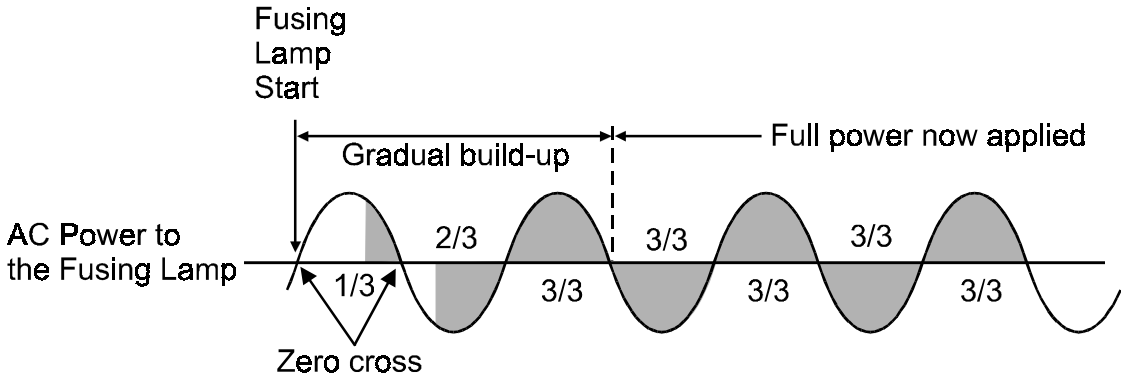
Turning on and off the fusing lamp power causes fluorescent light in the room to flicker. To reduce the flickering, use the following SP modes.

Fusing temperature detection cycle (SP mode 1-108)
The CPU checks the output from the fusing thermistor once a second (default setting). The CPU compares the current and previous temperatures. Based on the result, it then decides how long the fusing lamp power should be on during the next one-second interval (also, if the current temperature is too high, the power will not be needed).

Starting and stopping the fusing lamp power every second causes fluorescent lighting in the room to flicker. To reduce this flickering, use SP1-108 to change the cycle from 1 second to 3 seconds.

Fusing soft-start (SP mode 1-107)
In addition, whenever the fusing lamp power switches on, full power is applied to the fusing lamp gradually, not all at once. This prevents the power in the room from dropping suddenly. This feature is known as “Soft Start”. The machine does this by gradually allowing more power to the fusing lamp over a number of zero-cross cycles of the ac supply. The diagram below shows full power being applied gradually over the duration of 3 zero-cross cycles. With SP1-107, this number can be set to 3, 10, or 20 (USA version) or 5, 10, or 20 (Europe/Asia version). Soft start occurs every time the fusing lamp power switches on (i.e., at some time during every second), not just at the start of the print job.

NOTE: This SP mode is effective to counter flickering lights. However, generated noise increases if the setting is changed from the default. If a radio or a TV is close by the machine, the noise may have some effect on the image or sound.

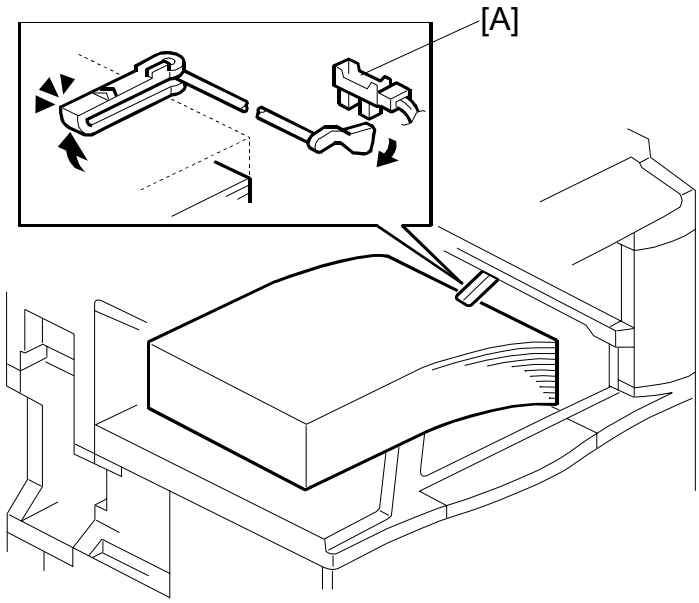


2.10.7 OVERHEAT PROTECTION

If the hot roller temperature becomes higher than 231°C, the CPU cuts off the power to the fusing lamp. At the same time, SC543 is generated.

Even if the thermistor overheat protection fails, there is a thermofuse in series with the common ground line of the fusing lamp. If the temperature of the thermofuse reaches 169°C, the thermofuse opens, removing power from the fusing lamp. At the same time, SC 542 is generated and the machine stops operating.

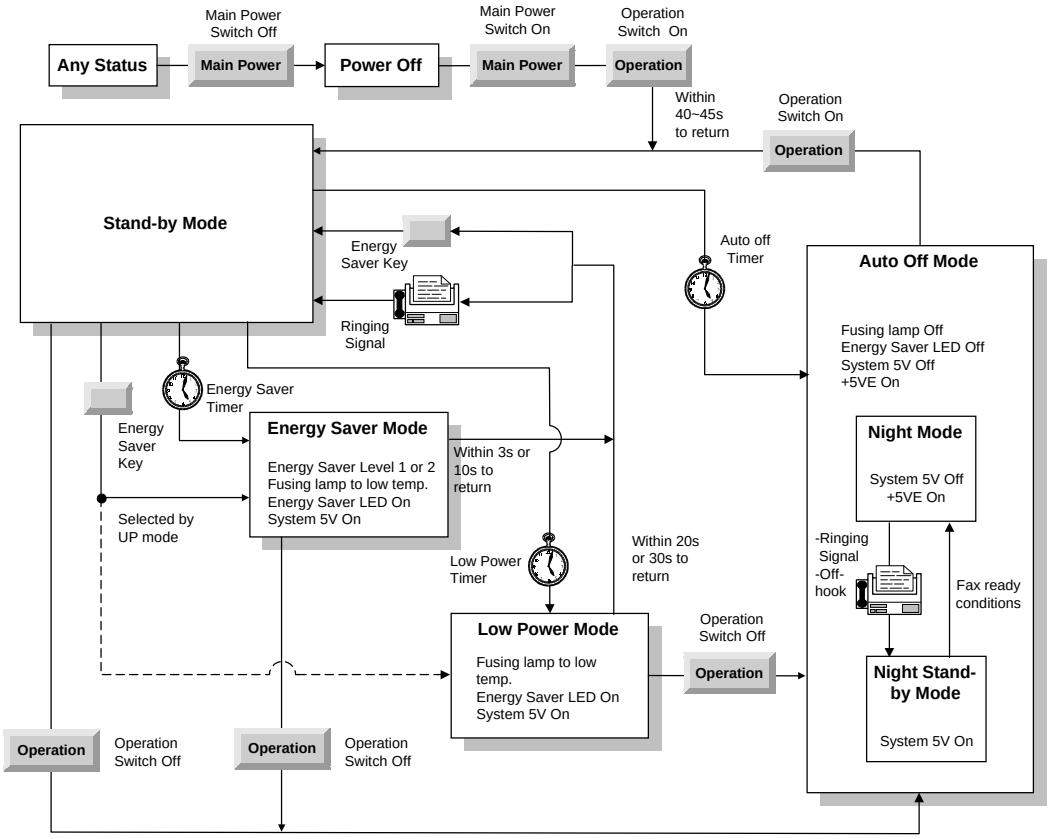
2.10.8 PAPER EXIT



The paper overflow detection sensor [A] is located at the paper exit section of the fusing unit. When this sensor is activated, the machine detects that the paper stack height exceeded a certain limit and stops printing.

2.11 ENERGY SAVER MODES

2.11.1 OVERVIEW



When the machine is not used, the energy saver function reduces power consumption by lowering the fusing temperature.

This machine has four types of energy saver mode as follows.

1) Energy saver mode (called ‘panel off mode’ in the operation manual)
2) Low power mode (called ‘energy saver mode’ in the operation manual)
3) Auto off mode (copier configuration only)
4) Night mode (copier/fax, copier/printer, copier/fax/printer configurations only)

These modes are controlled by the following UT and SP modes.

- Energy saver timer
- Low power timer
- Auto off timer
- Energy saver mode
- Auto off disabling (UT mode only)

The way that the machine operates depends on the combination of installed equipment (copier only, or whether a fax and/or printer is installed).

2.11.2 ENERGY SAVER MODE

Entering the energy saver mode

The machine enters energy saver mode when one of the following is done.

- The Energy Saver Key is held down for a second.
- The energy saver timer runs out after the last job (User Tools - System Settings - Panel Off Timer: default setting is 60 s).

What happens in energy saver mode

When the machine enters energy saver mode, the fusing lamp drops to a certain temperature and the operation panel indicators are turned off except for the Energy Saver LED and the Power LED.

If the CPU receives the image print out command from an application (e. g. to print incoming fax data or to print data from a PC), the fusing temperature rises to print the data. However, the operation indicators stay off.

Return to stand-by mode

If one of the following is done, the machine returns to stand-by mode:

- The Energy Saver Mode key is pressed
- An original is placed in the ADF
- The ADF (or platen cover) is lifted
- A sheet of paper is placed in the by-pass feed table

The recovery time from energy saver mode is about **3 s**.

Mode	Operation Switch	Energy Saver LED	Fusing Temp.	System +5V
Energy Saver Mode	On	On	160 °C	On

2.11.3 LOW POWER MODE

Entering the low power mode

The machine enters low power mode when:

- The low power shift timer runs out after the last job.
  (User Tools - System Settings - Energy Saver Timer: default setting is 15 min)

What happens in low power mode

There are two low power modes; Low Power Mode Level 1 and Low Power Mode Level 2. This can be selected by UT mode (User Tools - System Settings - Energy Saver Level).

The fusing lamp drops to a certain temperature, as shown in the table below (the temperature drops more than that in energy saver mode). The other conditions are the same as for the energy saver mode.

The fusing temperature for the level 2 low power mode can be changed by SP 1-105 (the default setting is 80 °C).

Return to stand-by mode

The machine returns to standby mode in the same way as from the energy saver mode.

Mode	Operation Switch	Energy Saver LED	Fusing Temp.	Approx. Recovery Time	System +5V
Low Power Mode Level 1	On	On	120 °C	15 s	On
Low Power Mode Level 2	On	On	80 °C	30 s	On

2.11.4 AUTO OFF MODE

Auto off mode is used only if the optional fax or printer unit is not installed.

Entering auto off mode

The machine enters auto off mode when one of the following is done.

- The auto off timer runs out after the last job (SP 5-904 or User Tools – System Settings – Auto Off Timer: default setting is 60 min)
- The operation switch is pressed to turn the power off

What happens in auto off mode

When the machine enters auto off mode, the operation switch (USA) or the main power switch (Europe/Asia) turns off automatically. The fusing lamp and all dc supplies except +5VE (+5V for energy saver mode) turn off. At this time, only the main power LED is lit.

Returning to stand-by mode

The machine returns to stand-by mode when the operation switch (USA) or the main power switch (Europe/Asia) is pressed.

Operation Switch	Energy Saver LED	Fusing Temp.	System +5V	Note
Off	Off	Room Temp. (Fusing lamp off)	Off	Only +5VE is supplied to the BICU.

Disabling auto off mode

If the user wishes to disable auto off mode, use the following user tool: User Tools – System Settings -10 – AOF (change the setting to 'OFF').

2.11.5 NIGHT MODE

This is used instead of auto off mode when an optional fax and/or printer unit is installed.

There are two types of night mode: Night Stand-by Mode and Night Mode. The difference between night stand-by mode and night mode is the machine's condition when the machine enters auto off mode.

Entering night stand-by and night modes

The machine enters the night stand-by mode and night modes when one of the following is done.

- The operation switch is pressed to turn the power off
- The auto off timer runs out (the operation switch is then turned off)

If the machine is in one or more of the following conditions, the machine enters night stand-by mode. If not, the machine enters night mode.

- Error or SC condition
- An optional G4 unit is installed
- Image data is stored in the memory
- During memory Tx or polling Rx
- The handset is off hook
- An original is in the ADF
- The ADF (or platen cover) is open
- Paper is left in the Duplex unit or staple tray

What happens in night stand-by and night modes

When the machine enters either of these modes, the fusing lamp and operation switch turn off, and only the main power LED is lit.

Night stand-by mode

The system +5V and +24 V are supplied to all components.

Note that SP5-909 allows +24V to be supplied during night mode. This allows the machine's condition to be displayed on the screen, so that any problems such as paper end can be discovered quickly, to allow normal reception and printing of fax messages.

Night mode

The system +5V supply is also turned off. However, +5VE (+5V for energy saver mode) is still activated. When the machine detects a ringing signal, or off-hook signal, the machine goes back to night stand-by mode and the system +5V and +24V supplies are activated. Then the machine receives the incoming message and prints it.

Returning to stand-by mode

The machine returns to stand-by mode when the operation switch is pressed.

The recovery time is about 45 s.

Mode	Operation Switch	Energy Saver LED	Fusing Temp.	System +5V	Note
Night stand-by mode	Off	Off	Room Temp. (Fusing lamp off)	On	
Night mode	Off	Off	Room Temp. (Fusing lamp off)	Off	Only +5VE is supplied to the fax controller.

INSTALLATION

3. INSTALLATION PROCEDURE

3.1 INSTALLATION REQUIREMENTS

3.1.1 ENVIRONMENT

1. Temperature Range: 10 °C to 32 °C (50 °F to 89.6 °F)
2. Humidity Range: 15 % to 80 % RH
3. Ambient Illumination: Less than 1,500 lux (do not expose to direct sunlight.)
4. Ventilation: Room air should turn over at least 30 m3/hr/person
5. Ambient Dust: Less than 0.10 mg/m^3 (2.7 x 10 -6 oz/yd^3)
6. Avoid an area which is exposed to sudden temperature changes. This includes:
   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 in an area where it will be exposed to corrosive gases.
8. Do not install the machine at any location over 2,000 m (6,500 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 may be subjected to strong vibrations.

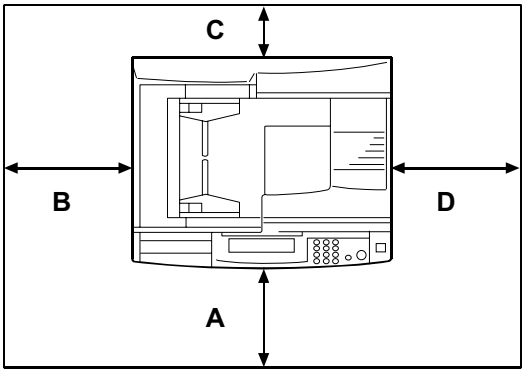
3.1.2 MACHINE LEVEL

Front to back: Within 5 mm (0.2”) of level

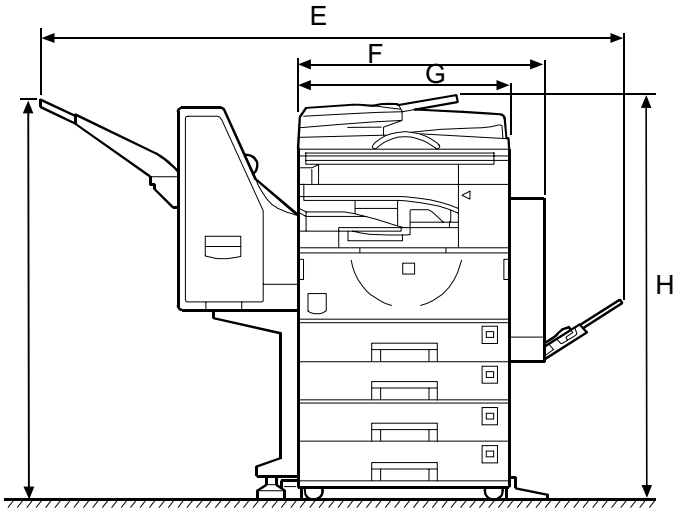
Right to left: With in 5 mm (0.2”) of level

3.1.3 MINIMUM SPACE REQUIREMENTS

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



A: In Front: Over 750 mm (29.6”)
B: Left: Over 10 mm (4”)
C: To Rear: Over 10 mm (4”)
D: Right: Over 10 mm (4”)



E: 1406 mm (55.4”)
F: 640 mm (25.2”)
G: 550 mm (21.7”)
H: 1137 mm (44.8”)

NOTE: The 750 mm recommended for the space at the front is only for pulling out the paper tray. If an operator stands at the front of the copier, more space is required.

3.1.4 POWER REQUIREMENTS

⚠CAUTION

1. **Make sure that the wall outlet is near the copier and easily accessible. Make sure the plug is firmly inserted in the outlet.**
2. **Avoid multi-wiring.**
3. **Be sure to ground the machine.**

1. Input voltage level: 120 V, 60 Hz: More than 12 A
   220 V ~ 240 V, 50 Hz/60 Hz: More than 6 A
   110V, 50 Hz/60 Hz: More than 13 A
2. Permissible voltage fluctuation: ±10 %
3. Do not set anything on the power cord.

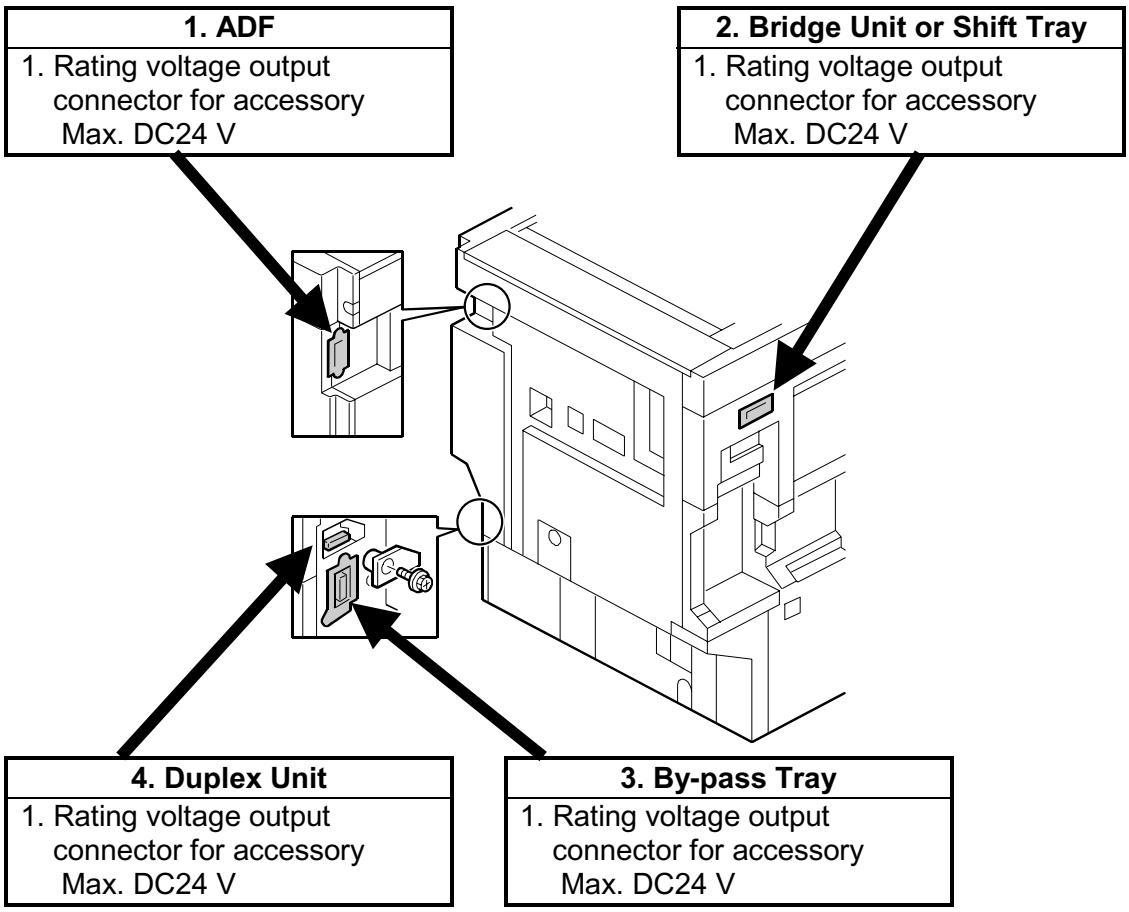
3.2 COPIER INSTALLATION

3.2.1 POWER SOCKETS FOR PERIPHERALS

⚠CAUTION

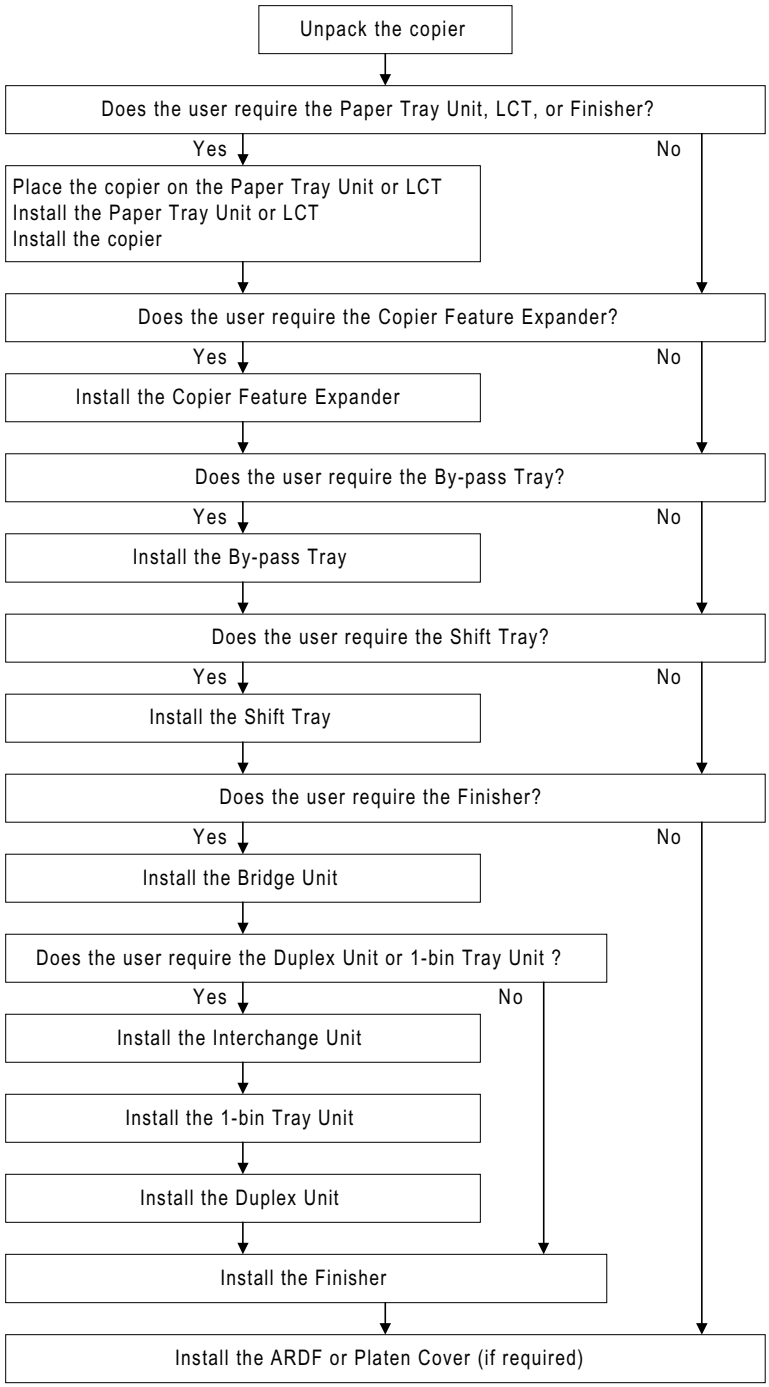
Rating voltage for peripherals.

Make sure to plug the cables into the correct sockets.



3.2.2 INSTALLATION FLOW CHART

The following flow chart shows how to install the optional units more efficiently.

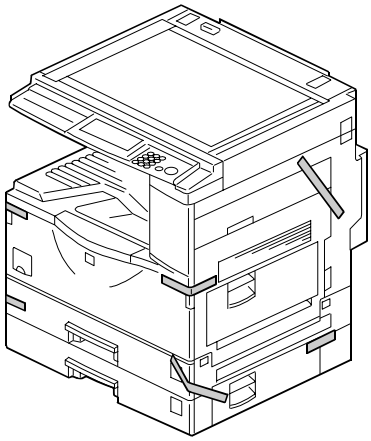


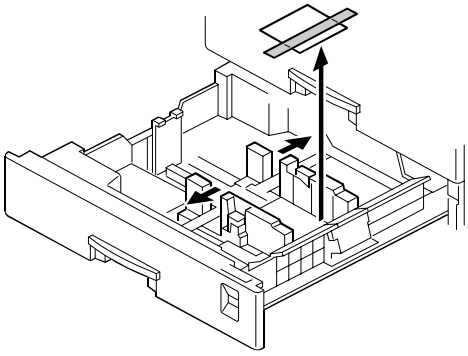
3.2.3 ACCESSORY CHECK

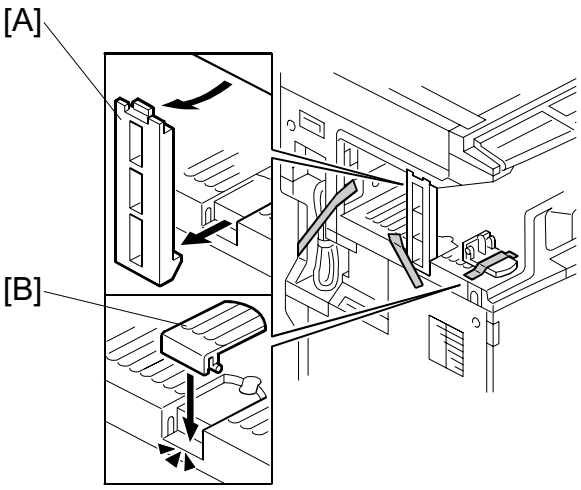
Check the quantity and condition of the accessories in the box against the following list:

No.	Description	Q'ty
1	Paper Tray Decal	1
2	Model Name Decal (-15 and -22 machine)	1
3	NECR	1
4	End Fence	1
5	Operating Instructions – System Setting	1
6	Operating Instructions – Copy Reference	1
7	Operating Instructions – Copy Quick Guide	1

3.2.4 INSTALLATION PROCEDURE







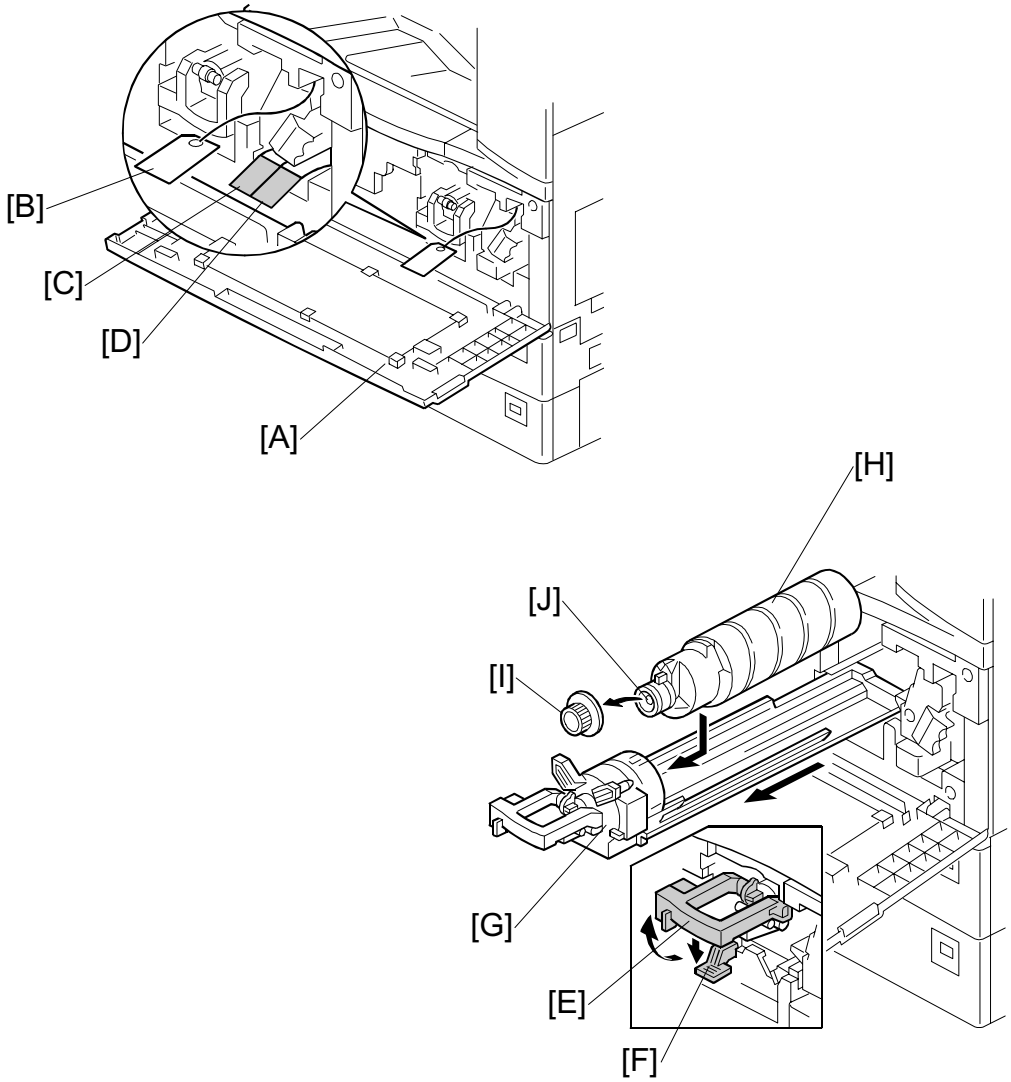
⚠CAUTION

Unplug the machine power cord before starting the following procedure.

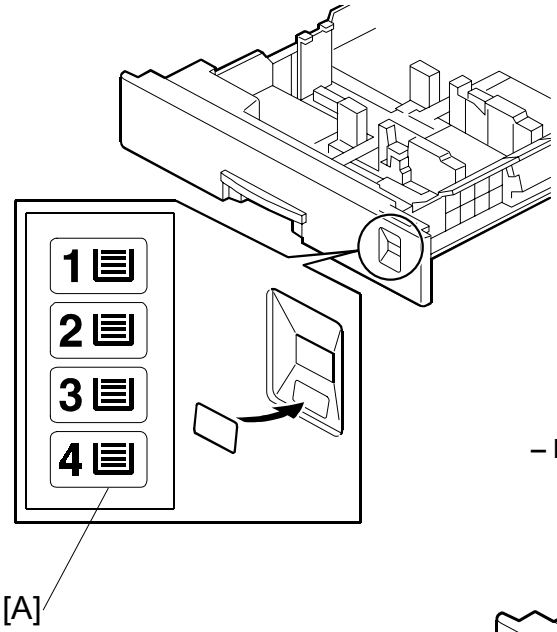
If the optional paper tray or the optional LCT is going to be installed now, put the copier on the paper tray unit or the LCT first, then install these options, then install the copier.

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

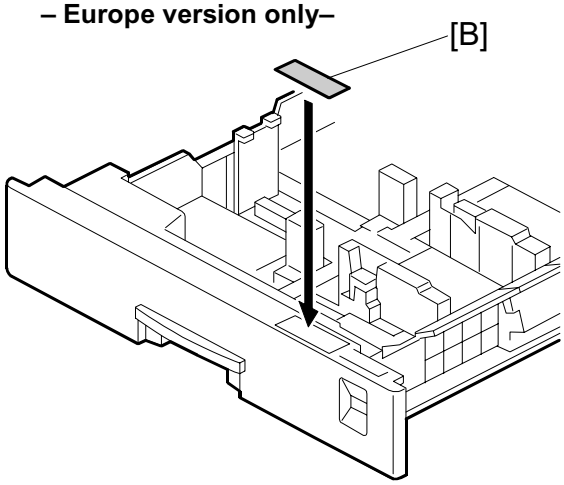
1. Remove the tapes and the shipping retainer [A] on the exterior of the copier.
2. Install the end fence [B].



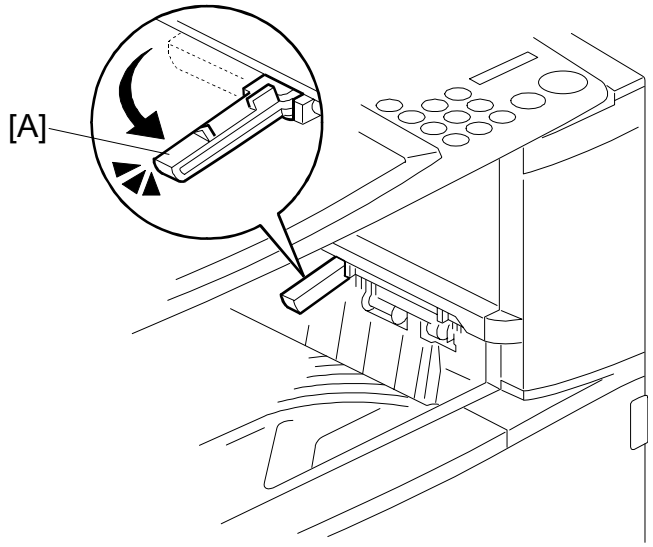
3. Open the front cover [A].
4. Remove the red tag [B] and toner seal [C], then peel the sealing tape [D] off to install the developer.
5. Raise the toner bottle holder lever [E], push lever [F] down, and pull the toner bottle holder [G] out.
6. Shake the toner bottle [H] well.
   NOTE: Do not remove the toner bottle cap [I] until after shaking.
7. Unscrew the bottle cap [I] and insert the bottle into the holder.
   NOTE: Do not touch the inner bottle cap [J].
8. Reposition the holder and press down the holder lever to secure the bottle.



– Europe version only–



9. Pull the paper tray out and turn the paper size dial to select the appropriate size. Adjust the side guides and end guide to match the paper size.
   NOTE: To move the side guides, first pull out the tray fully, then push down the green lock at the rear of the tray.
10. Attach the appropriate paper tray number decal [A] to the paper tray.
    NOTE: Paper tray number decals are also used for the optional paper tray or the optional LCT. Keep any remaining decals for use with these optional units.
11. **European version only:** Attach the special paper decal [B] to the 2nd paper tray, as shown.



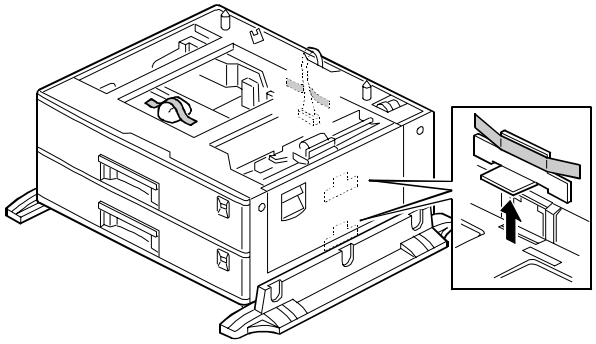
12. **If the optional bridge unit will not be installed:** Swing the sensor feeler [A] out.
13. Install the optional ARDF or the optional platen cover (see ARDF Installation or Platen Cover Installation).
14. Plug in the machine and turn the main power switch on. The machine automatically performs TD sensor initial setting (approximately 45 seconds).
15. Select the correct display language using SP 5-808 or UT mode (Language).
16. Check the copy quality and copying functions.
17. Initialize the electrical total counter using SP7-825, depending on the service contract type.
    NOTE: Select 1, then press the Original Type and OK keys at the same time. If the reset is successful, the beeper sounds 5 times.

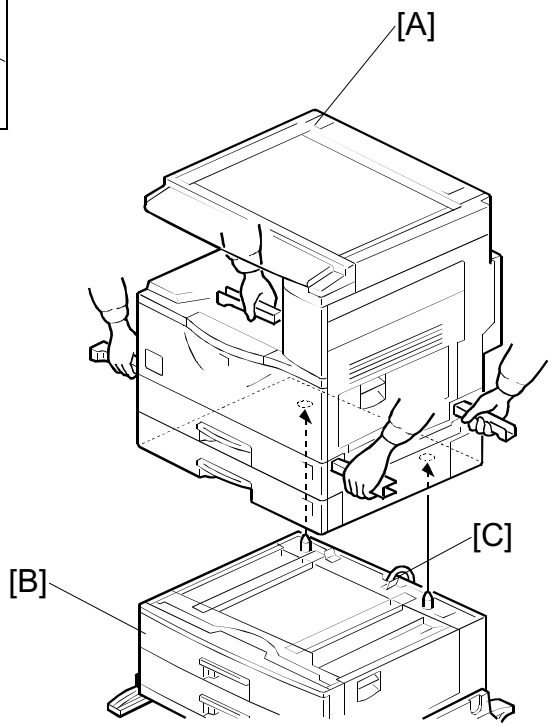
3.3 PAPER TRAY UNIT INSTALLATION

3.3.1 ACCESSORY CHECK

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

No.	Description	Q'ty
1	Securing Bracket	2
2	Screw – M4x10	4

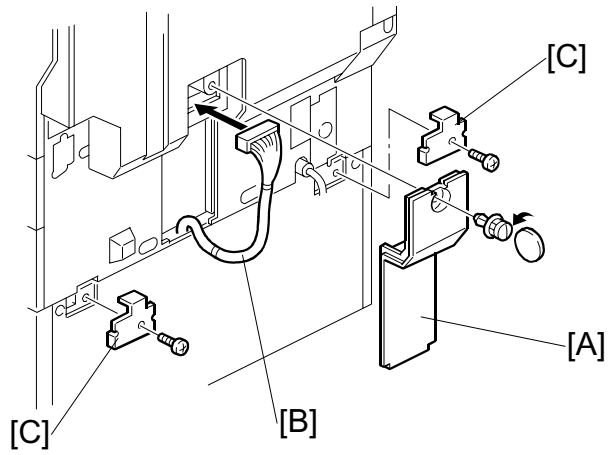


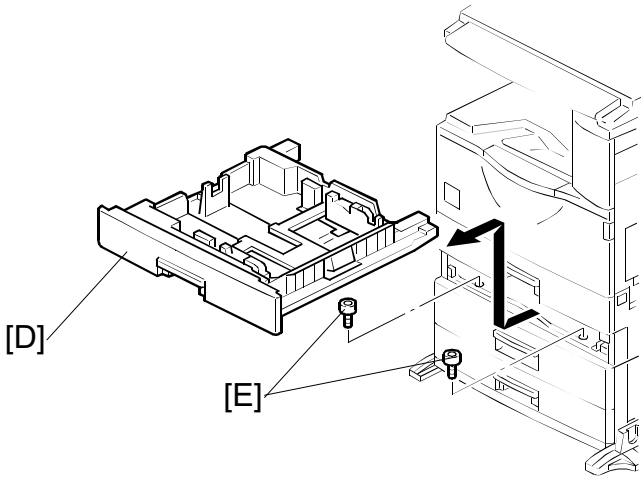


⚠CAUTION

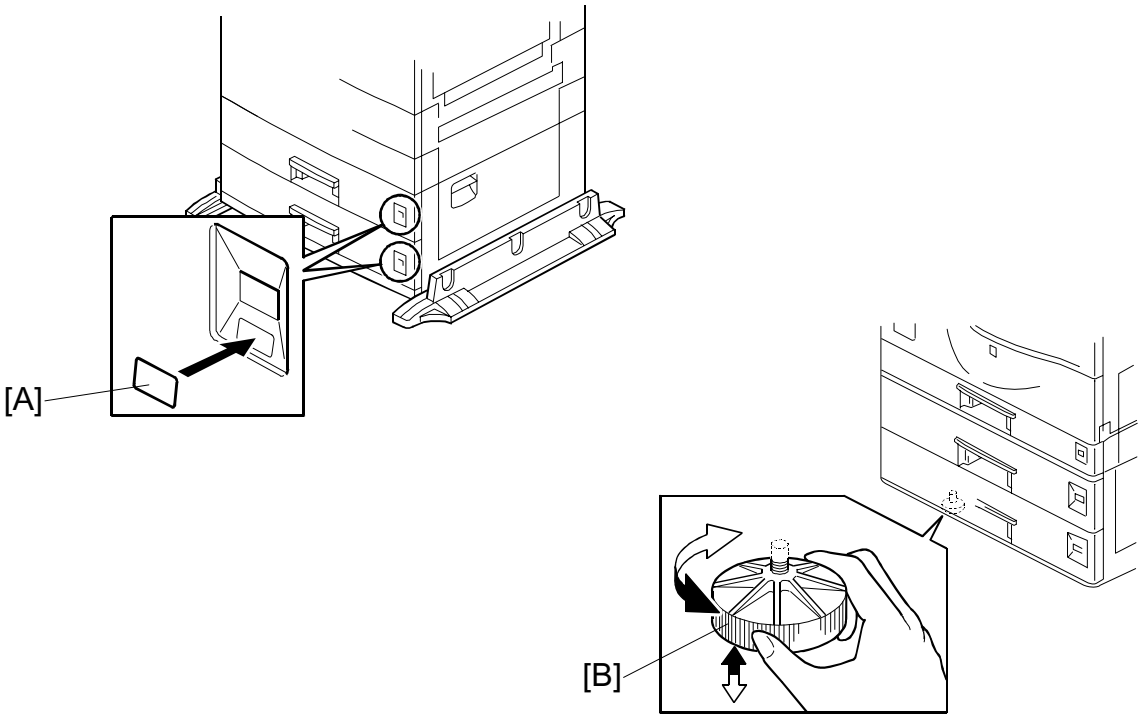
Unplug the machine power cord before starting the following procedure.

1. Remove the strips of tape.
2. Set the copier [A] on the paper tray unit [B].
   NOTE: When installing the copier, be careful not to pinch the cable [C].





3. Remove the connector cover [A] (1 screw).
4. Connect the cable [B] to the copier, as shown.
5. Attach a securing bracket [C] to each side of the paper tray unit, as shown (1 screw each).
6. Re-install the connector cover.
7. Remove the 2nd paper tray [D] and secure the paper tray unit with two screws [E].



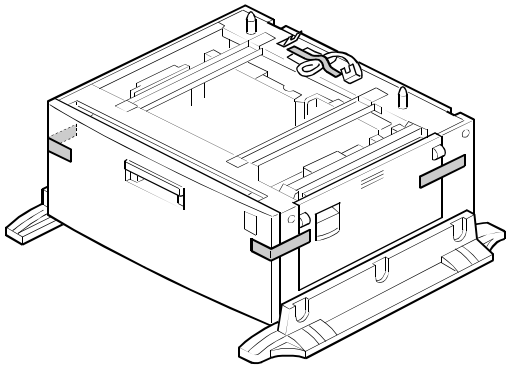
8. Reinstall the 2nd paper tray and attach the appropriate paper tray number decal [A] to the paper tray.
   NOTE: The paper tray number decal is in the accessory box for the main copier.
9. Rotate the adjuster [B] until the machine cannot be pushed across the floor.
10. Load paper into the paper trays and select the proper paper size.
11. Turn on the main switch.
12. Check the machine's operation and copy quality.

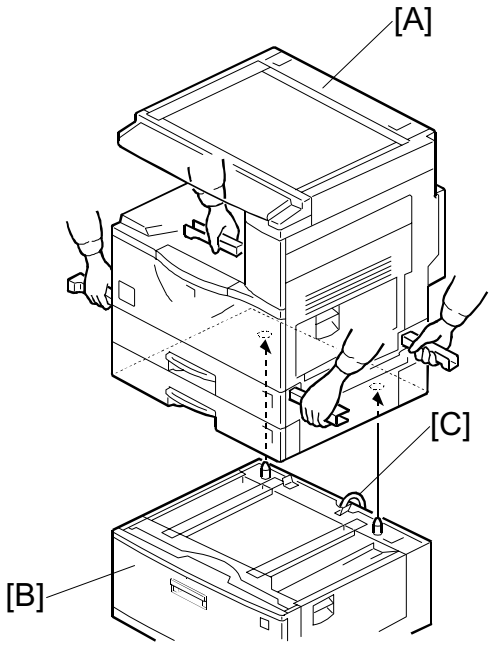
3.4 LCT INSTALLATION

3.4.1 ACCESSORY CHECK

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

No.	Description	Q'ty
1	Securing Bracket	2
2	Screw – M4x10	4
3	Paper Size Decal	1

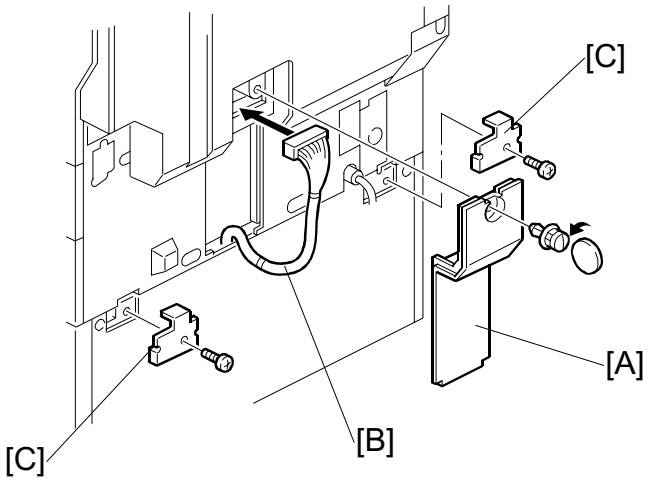


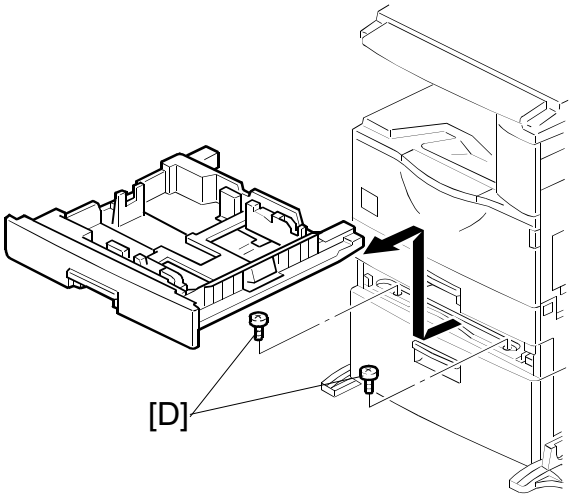


⚠CAUTION

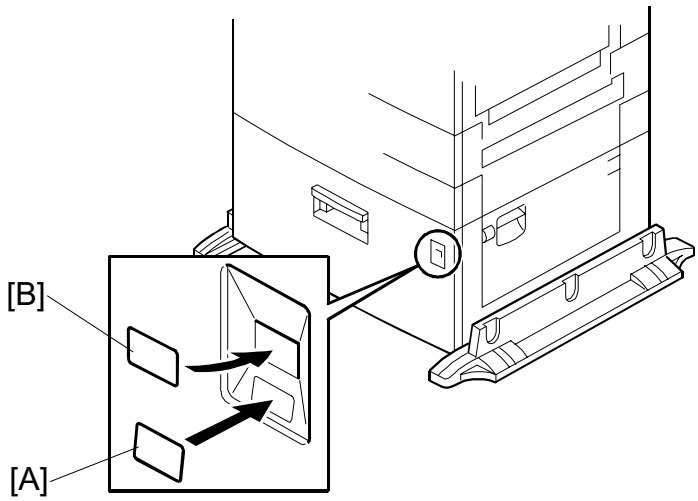
Unplug the machine power cord before starting the following procedure.

1. Remove the strips of tape.
2. Set the copier [A] on the LCT [B].
   NOTE: When installing the copier, be careful not to pinch the cable [C].





3. Remove the connector cover [A] (1 screw).
4. Connect the cable [B] to the copier, as shown.
5. Attach a securing bracket [C] to each side of the LCT, as shown (1 screw each).
6. Re-install the connector cover.
7. Remove the 2nd paper tray and secure the LCT with two screws [D].



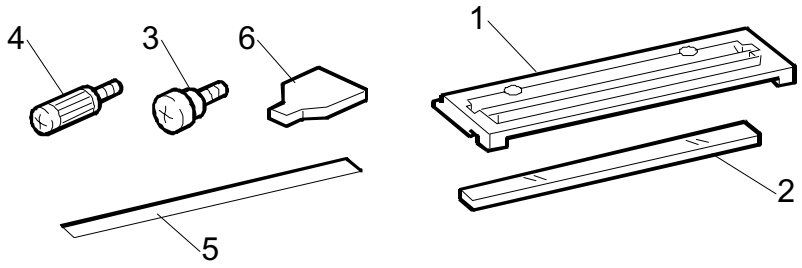
8. Load paper into the LCT.
9. Reinstall the 2nd paper tray and attach the appropriate paper tray number decal [A] and paper size decal [B] to the LCT.
   NOTE: The paper tray number decal is in the accessory box for the main copier.
10. Turn on the main switch.
11. Check the machine's operation and copy quality.

3.5 AUTO REVERSE DOCUMENT FEEDER INSTALLATION

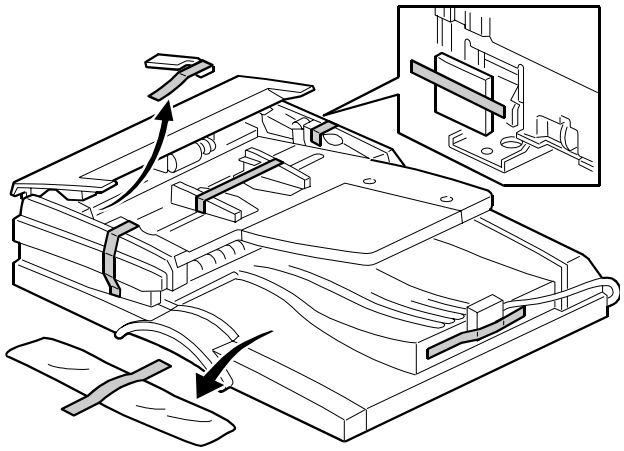
3.5.1 ACCESSORY CHECK

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	Knob Screw	2
5	Original Size Decal	2
6	Screwdriver Tool	1

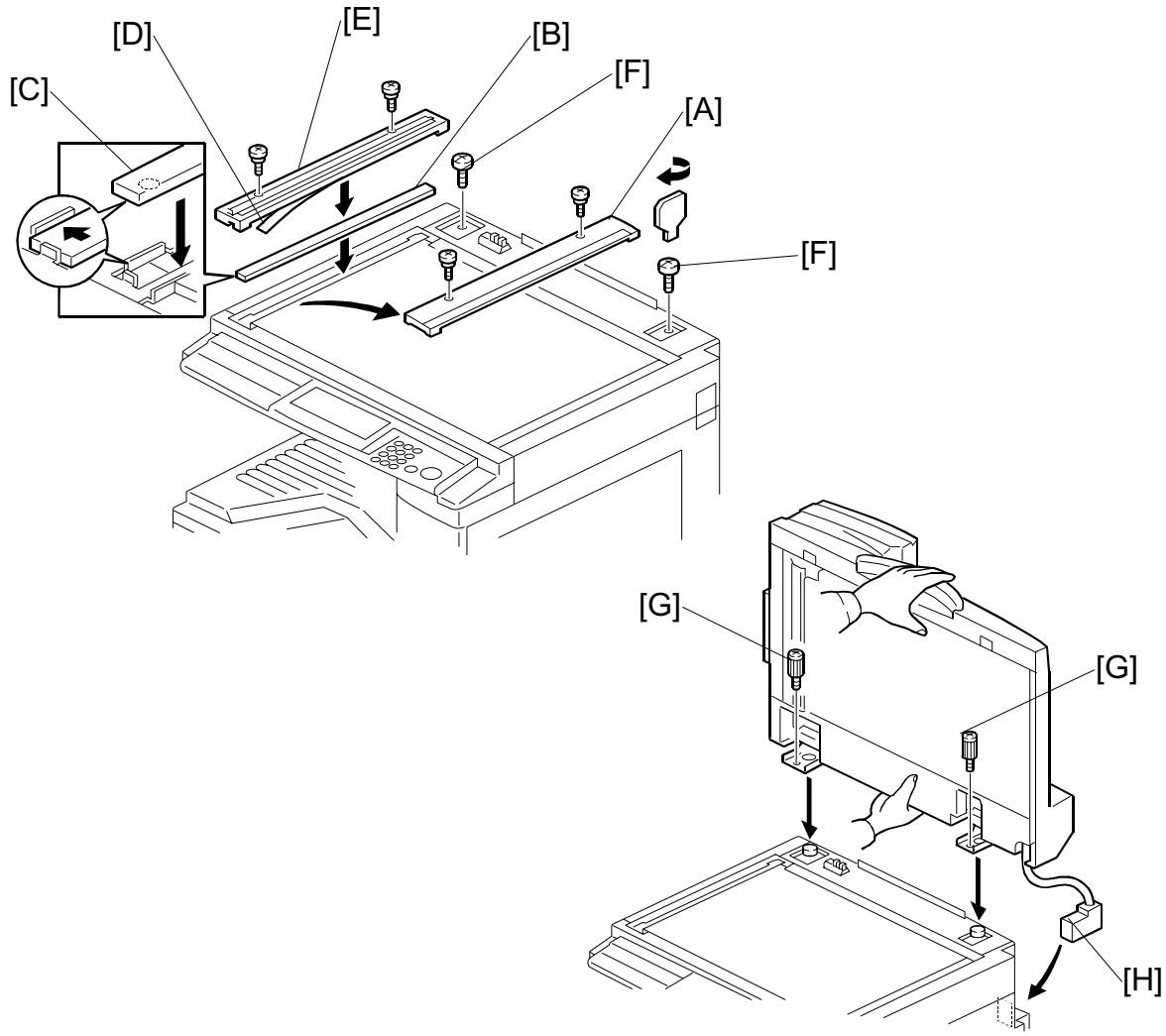


3.5.2 INSTALLATION PROCEDURE

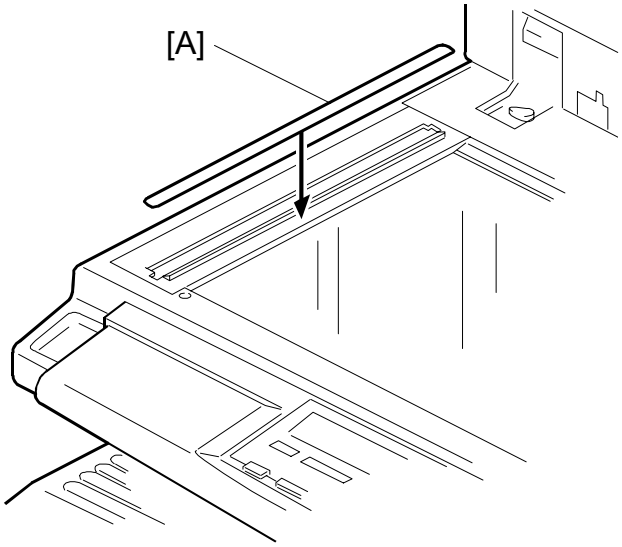


⚠CAUTION
Unplug the copier power cord before starting the following procedure.

1. Remove the strips of tape.



2. Remove the left scale [A] (2 screws).
3. Place the DF exposure glass [B] on the glass holder.
   NOTE: When installing the DF exposure glass, make sure that the white point [C] is on the lower front side of the glass, as shown.
4. Peel off the backing [D] of the double-sided tape attached to the rear side of the scale guide [E], then install it (2 screws removed in step 2).
5. Install the two stud screws [F].
6. Mount the DF on the copier, then slide the DF to the front.
7. Secure the DF unit with two screws [G].
8. Connect the cable [H] to the copier.



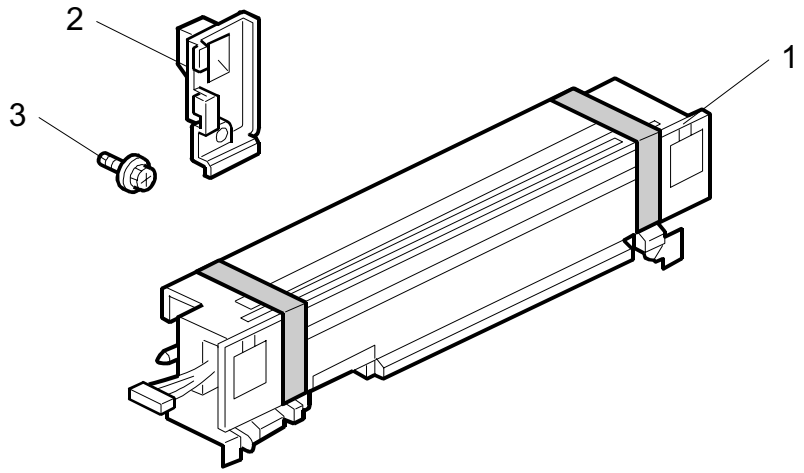
9. Attach the appropriate scale decal [A] as shown.
10. Turn the main power switch on. Then check if the document feeder works properly.
11. Make a full size copy. Then check to make sure the side-to-side and leading edge registrations are correct. If they are not, adjust the side-to-side and leading edge registrations.

3.6 INTERCHANGE UNIT INSTALLATION

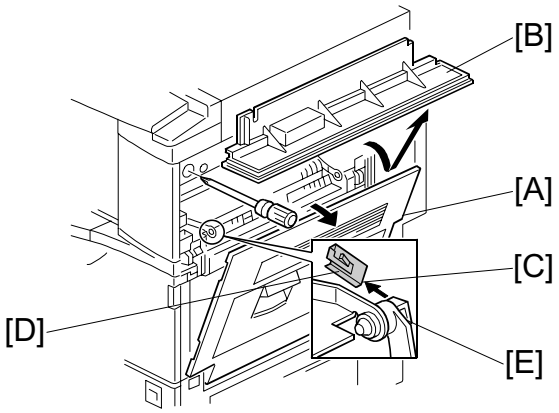
3.6.1 COMPONENT CHECK

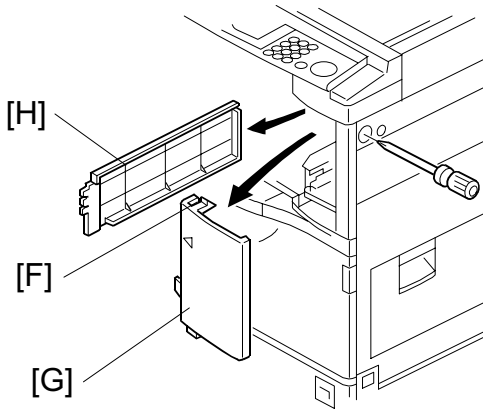
Check the quantity and condition of the components against the following list.

No.	Description	Q'ty
1	Interchange Unit	1
2	Connector Cover	1
3	Tapping Screw M3x8	1



3.6.2 INSTALLATION PROCEDURE





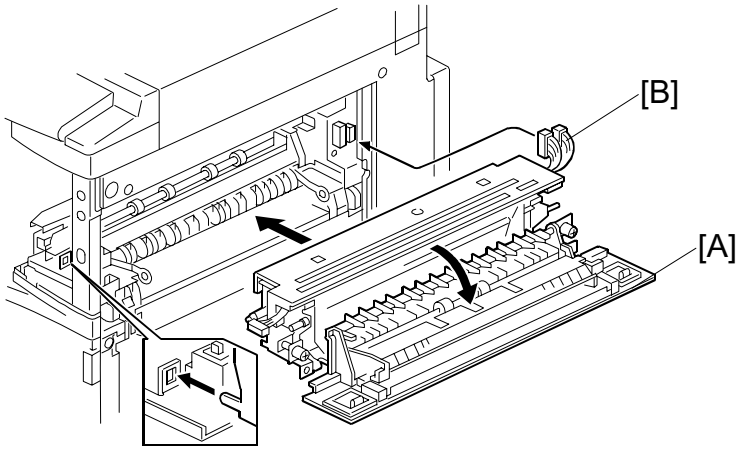
⚠CAUTION

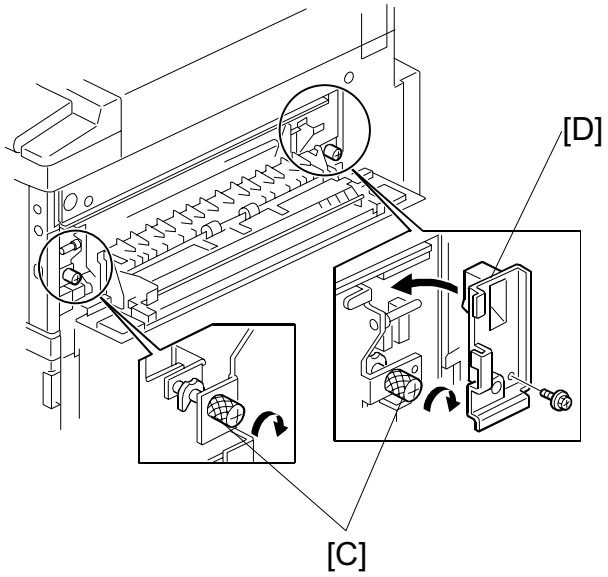
Unplug the copier power cord before starting the following procedure.

1. Remove all tapes.
2. Open the right cover [A] of the copier.
3. Open cover [B]
4. Remove the metal clip [C].
   NOTE: To remove the clip, push the small tab [D] on the clip into the slot [E], then the clip can be removed.
5. Remove the cover [B].

If the optional 1-bin tray unit will be installed, do steps 6 and 7.

6. Loosen the screw, push down tab [F] with a screwdriver, and remove the front right cover [G].
7. Slide out the exit cover [H].





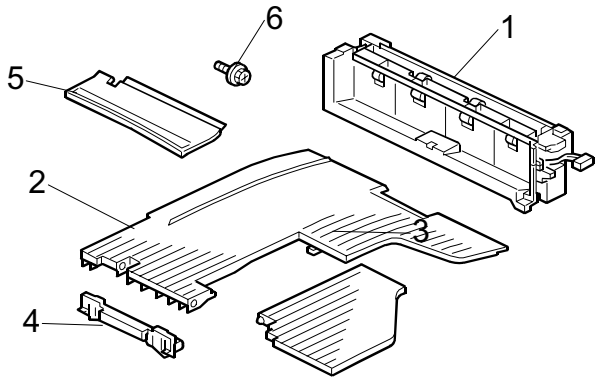
8. Open the cover [A] of the interchange unit.
9. Install the interchange unit (2 connectors [B].)
10. Secure the interchange unit with the knob screws [C].
11. Attach the connector cover [D] (1 screw).

3.7 1-BIN TRAY UNIT INSTALLATION

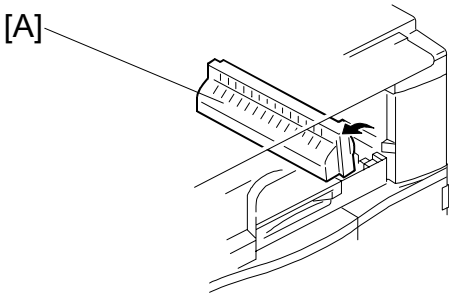
3.7.1 COMPONENT CHECK

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

No.	Description	Q'ty
1	1-Bin Tray Unit	1
2	Tray	1
3	Sub-Tray	1
4	Tray Guide	1
5	Paper Guide	1
6	Tapping Screw M3x8	1



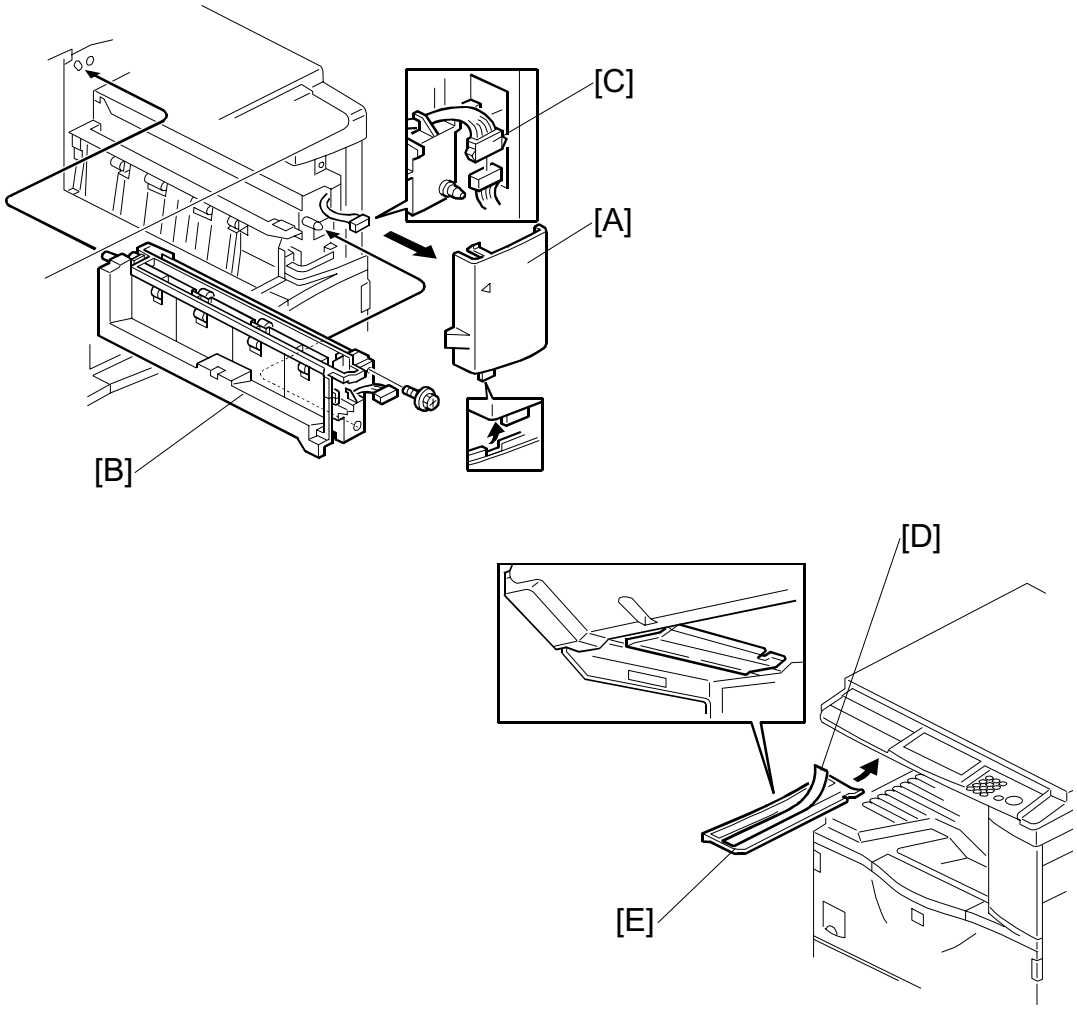
3.7.2 INSTALLATION PROCEDURE



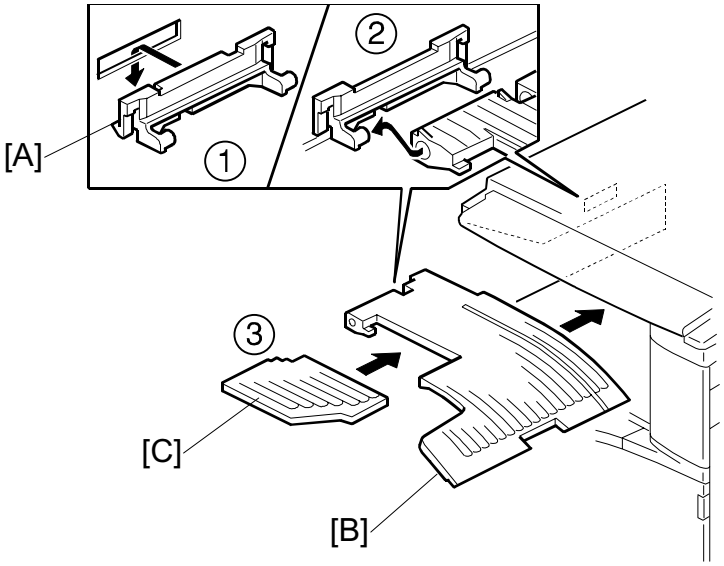
⚠CAUTION
Unplug the copier power cord before starting the following procedure.

NOTE: Before installing this 1-bin tray unit, the optional interchange unit (B300) must be installed.

1. Remove all tapes.
2. If the optional bridge unit (A897) has been installed, open the right jam removal cover [A] of the bridge unit.
   If the optional bridge unit is not installed, skip this step.



3. If the front right cover [A] is installed, remove it.
4. Install the 1-bin tray unit [B] (1 screw).
5. Connect the connector [C].
6. Reinstall the front right cover.
7. Peel off the backing [D] of the double-sided tape attached to the paper guide [E]. Then attach the paper guide to the underside of the scanner unit as shown.



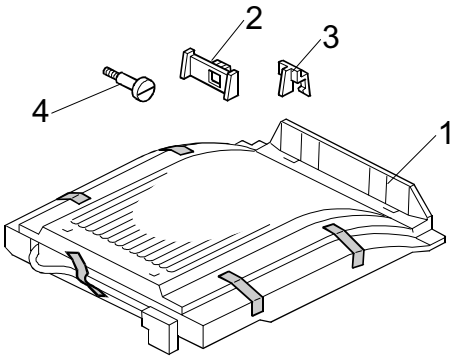
8. Install the tray guide [A].
9. Install the tray [B].
10. Install the sub-tray [C].
11. Turn on the main power switch and check the 1-bin tray unit operation.

3.8 SHIFT TRAY

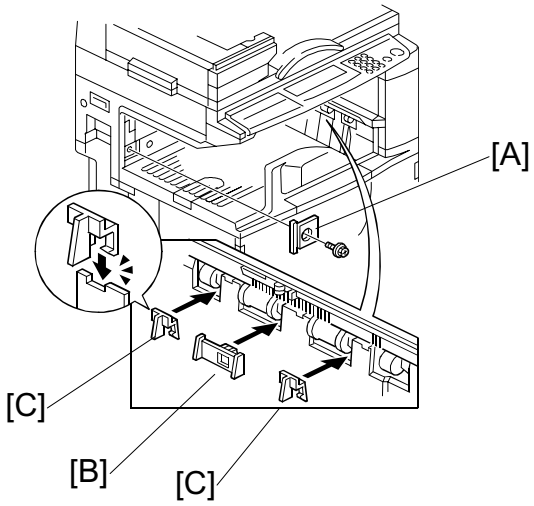
3.8.1 COMPONENT CHECK

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

No.	Description	Q'ty
1	Shift Tray Unit	1
2	Paper Guide - Large	1
3	Paper Guide - Small	2
4	Stepped Screw	1



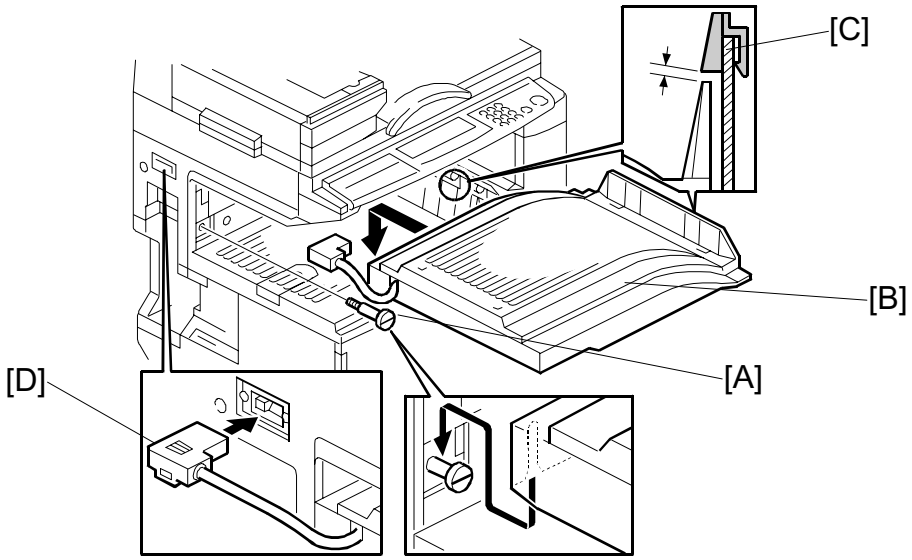
3.8.2 INSTALLATION PROCEDURE



⚠CAUTION

Unplug the copier power cord before starting the following procedure.

1. Remove all tapes.
2. Remove the plate [A] (1 screw).
3. Install the large paper guide [B] and two small paper guides [C], as shown.



4. Install the stepped screw [A].
5. Install the shift tray unit [B], as shown.

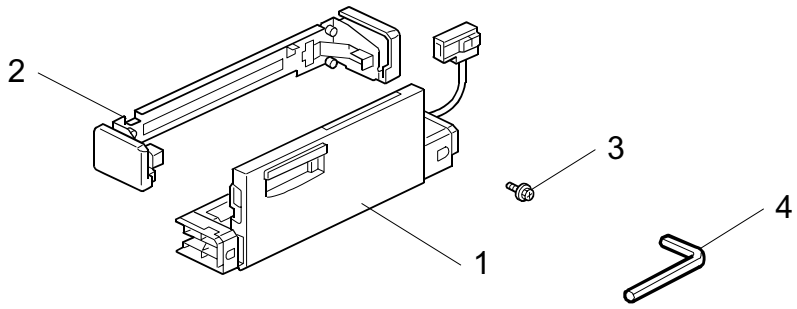
   NOTE: 1) Set the shift tray on the stepped screw.
   2) The shift tray must be installed under the paper guide [C] installed in step 3.
6. Connect the cable [D] to the copier.
7. Turn on the main power switch. Then select the shift tray using the UT mode "2. Copier – 3. Input/Output – 6. Sort – Shift Sort".
8. Check the shift tray operation.

3.9 BY-PASS FEED UNIT INSTALLATION

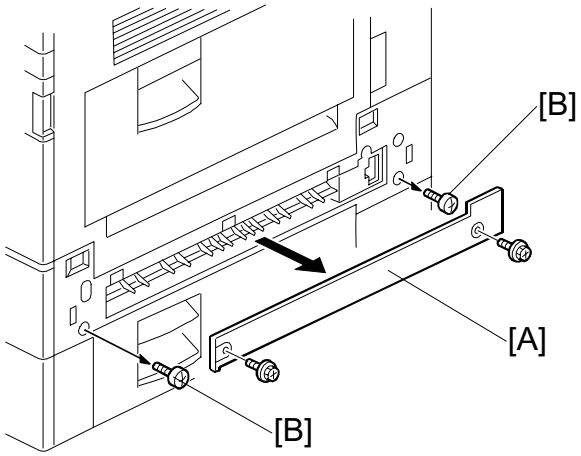
3.9.1 COMPONENTS CHECK

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

No.	Description	Q'ty
1	By-pass Tray Unit	1
2	Unit Holder	1
3	Tapping Screw	2
4	Allen Key	1



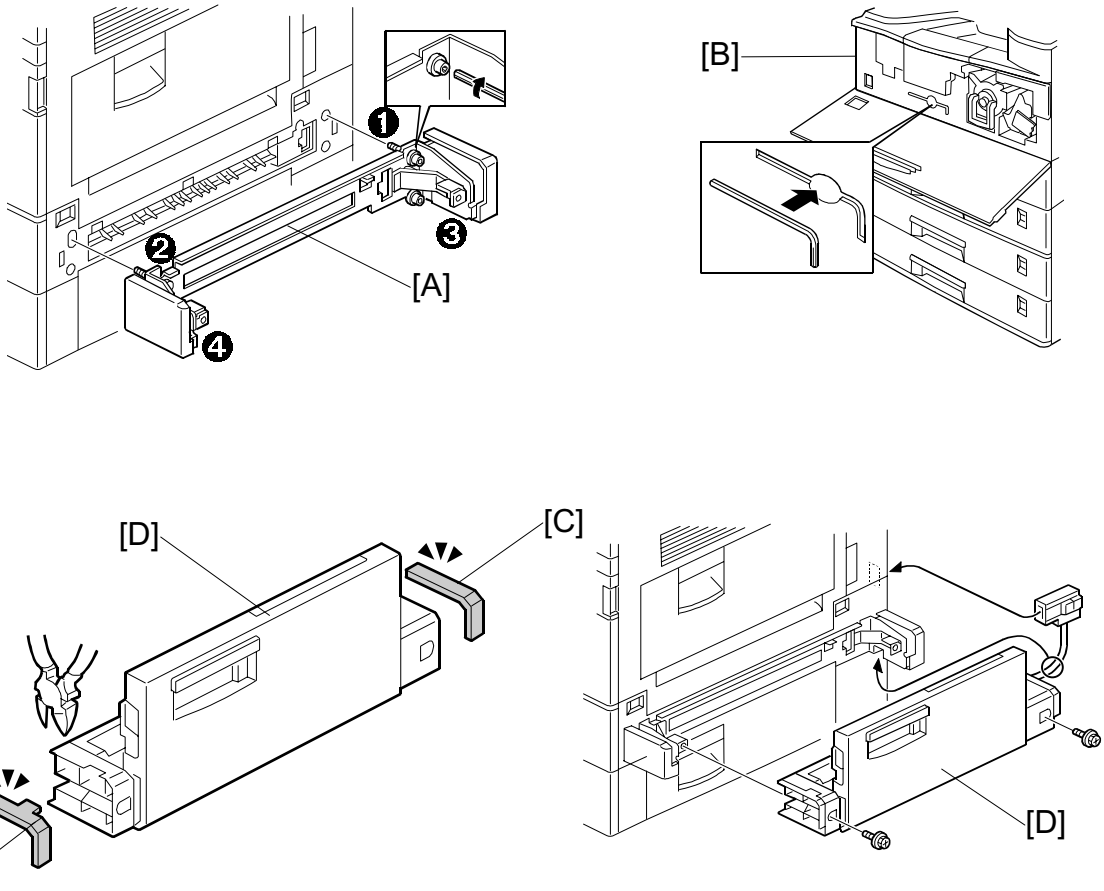
3.9.2 INSTALLATION PROCEDURE



⚠CAUTION

Unplug the copier power cord before starting the following procedure.

1. Remove all tapes.
2. Remove the entrance cover [A] (2 screws) and two screws [B].



3. Install the unit holder [A] using the Allen key (4 set screws).

NOTE: 1) Make sure that the four screws are tightened in the proper order, as shown above. Otherwise, when the optional duplex unit (A896) is installed, it will not properly lock in place.
2) After securing the unit, store the Allen key in the inner cover [B] for future use.

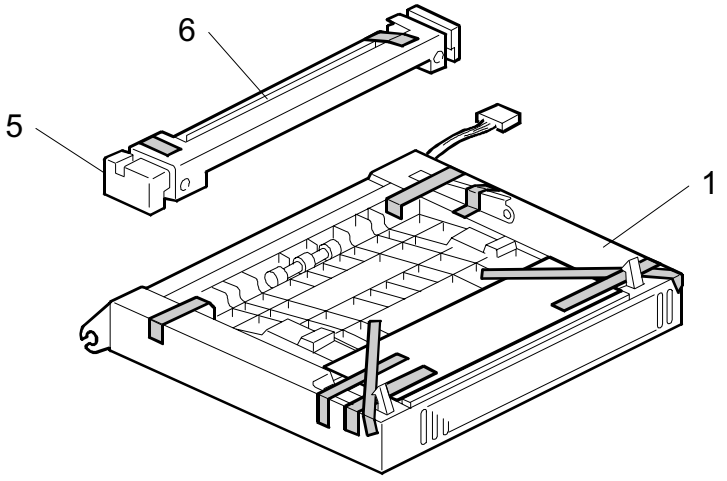
4. **If the optional duplex unit (A896) will be installed:** Remove the indicated parts [C] of the by-pass tray unit [D].
5. Install the by-pass tray unit (2 screws, 1 connector).
6. Turn the main power switch on and check the by-pass tray function.
7. Make a copy from the by-pass tray. Then check the registration.

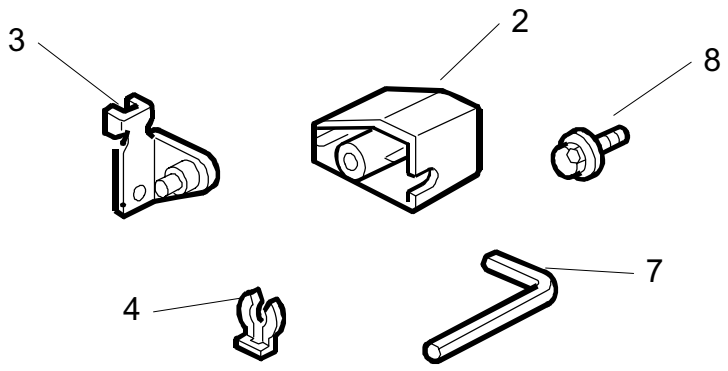
3.10 DUPLEX UNIT INSTALLATION

3.10.1 ACCESSORY CHECK

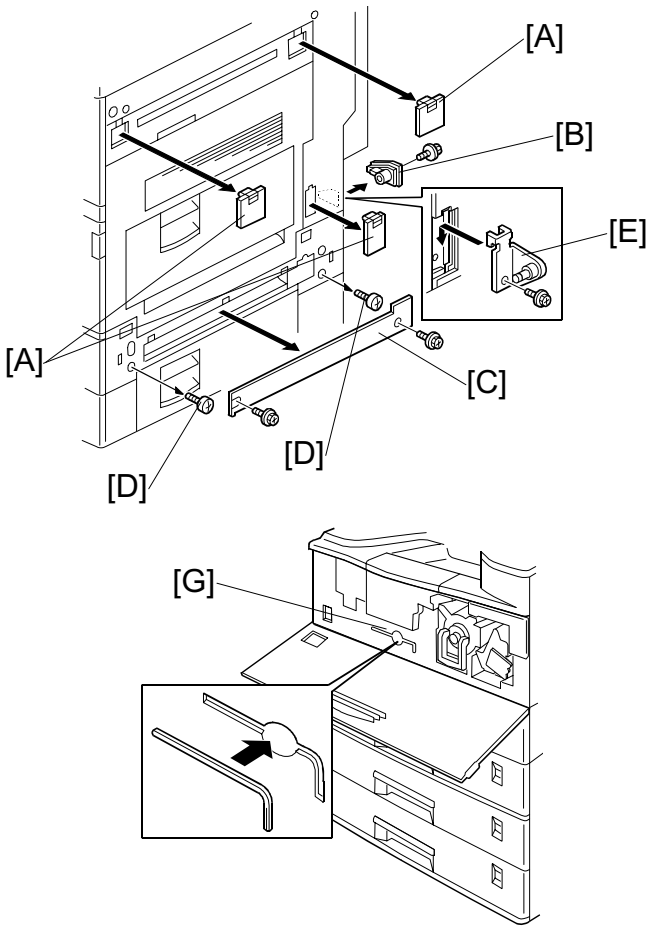
Check the quantity and condition of the accessories against the following list.

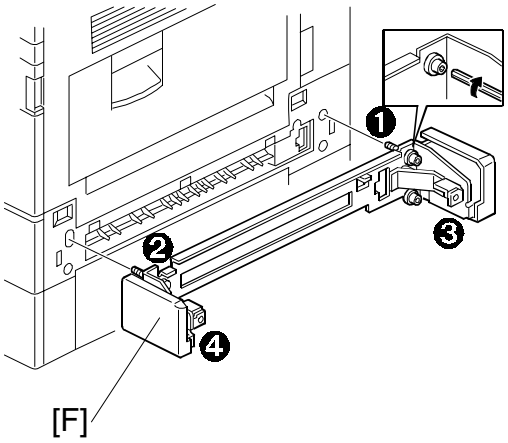
No.	Description	Q'ty
1	Duplex Unit	1
2	Connector Cover	1
3	Bracket	1
4	Clip	1
5	Unit Holder	1
6	Unit Holder Cover	1
7	Allen Key	1
8	Tapping Screw - M3x8	4





3.10.2 INSTALLATION PROCEDURE



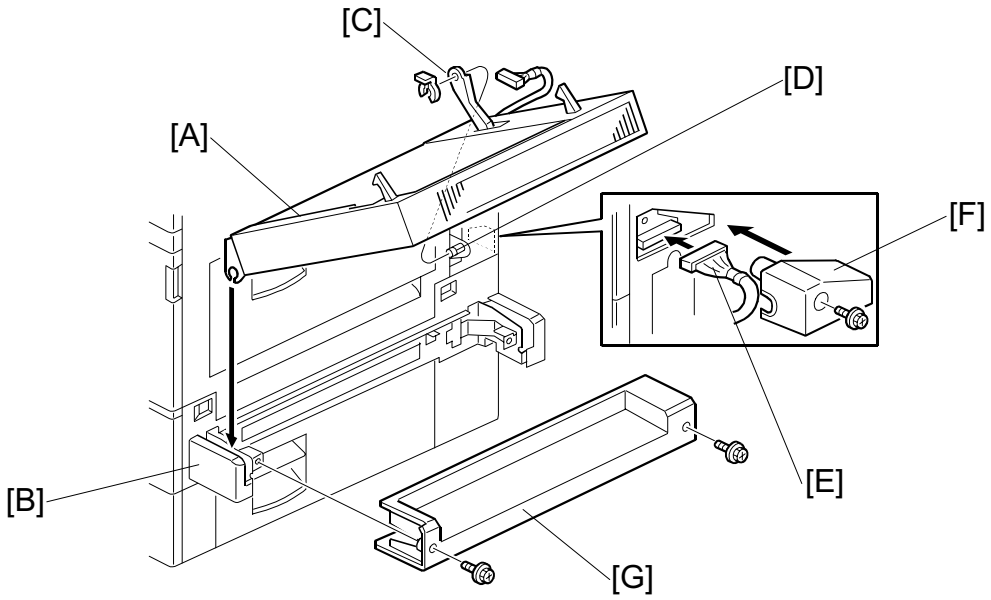


⚠CAUTION
Unplug the copier power cord before starting the following procedure.

NOTE: Before installing the duplex unit, the optional interchange unit (B300) must be installed.

1. Remove all tapes.
2. Remove three covers [A].
3. Remove the connector cover [B] (1 screw), the entrance cover [C] (2 screws; if the by-pass tray has not been installed), and two screws [D].
4. Install the bracket [E] (1 screw).
5. **If the by-pass tray has already been installed, skip this step:** Install the unit holder [F] using the Allen key (4 set screws).

NOTE: 1) Make sure that the four screws are tightened in the proper order, as shown above. Otherwise, the duplex unit will not properly lock in place.
2) After securing the unit, store the Allen key in the inner cover [G] for future use.



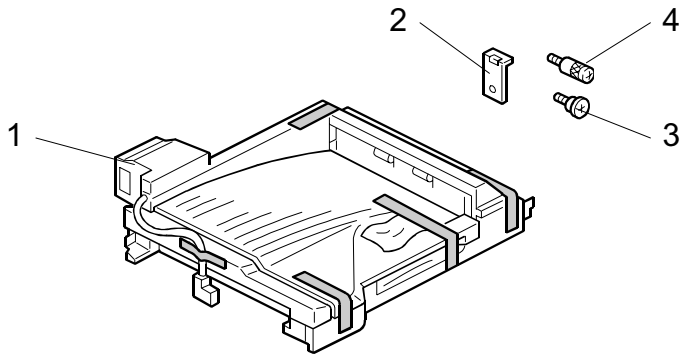
6. Set the duplex unit [A] on the unit holder [B] or on the by-pass tray unit if it has already been installed.
7. Attach the link [C] to the shaft [D] and secure it with the clip.
8. Connect the cable [E] and install the connector cover [F] (1 screw).
9. **If the by-pass tray has already been installed, skip this step:** Install the unit holder cover [G] (2 screws).
10. Turn on the main power switch and check the duplex unit function.

3.11 BRIDGE UNIT INSTALLATION

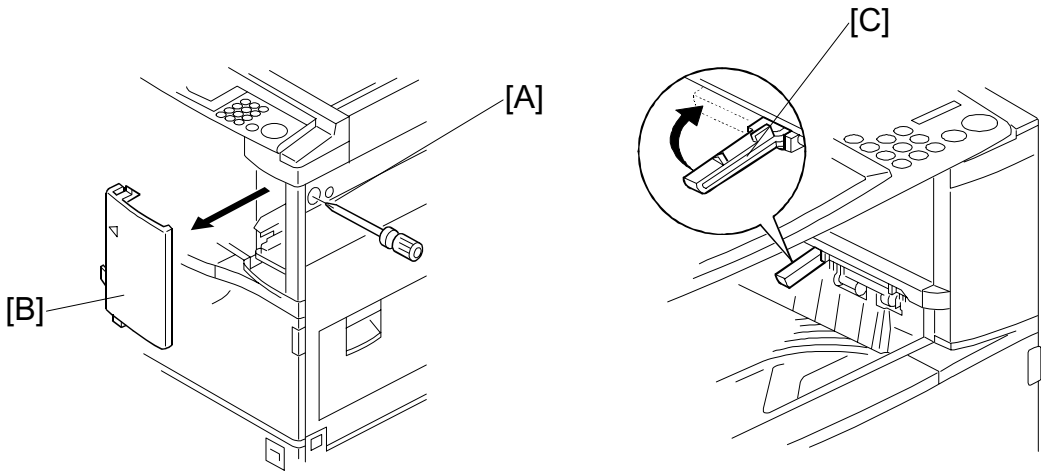
3.11.1 ACCESSORY CHECK

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

No.	Description	Q'ty
1	Bridge Unit	1
2	Securing Plate	1
3	Shoulder Screw	1
4	Knob Screw	1



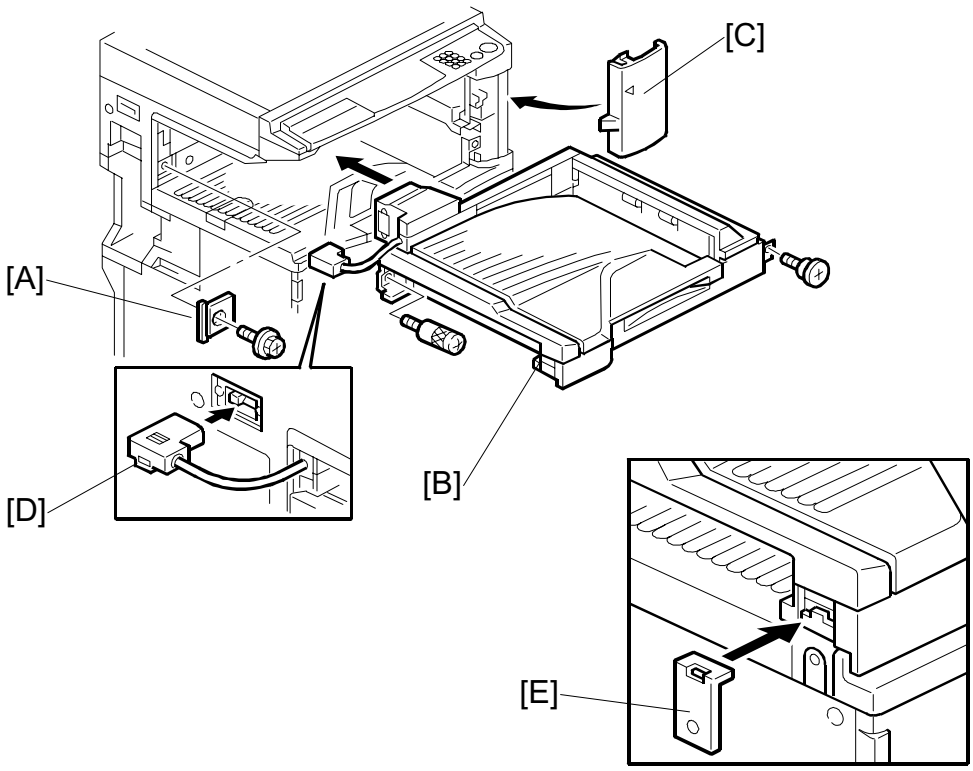
3.11.2 INSTALLATION PROCEDURE



⚠CAUTION

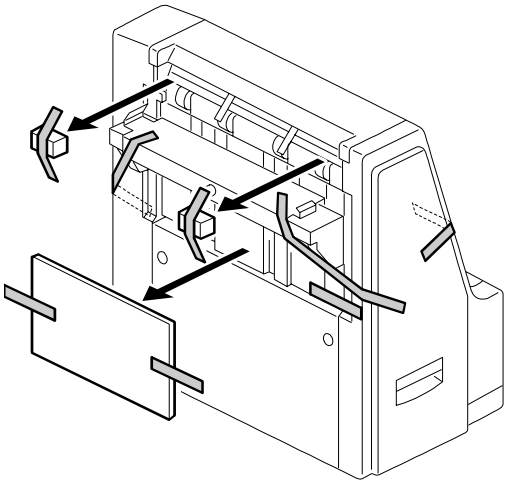
Unplug the copier power cord before starting the following procedure.

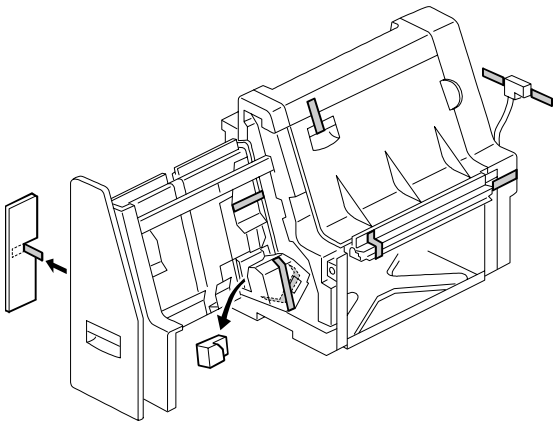
1. Remove all tapes.
2. Loosen the screw [A] and remove the front right cover [B].
3. If the sensor feeler [C] is out, fold it away into the machine.



4. Remove the cover [A] (1 screw).
5. Install the bridge unit [B] (1 shoulder screw, 1 knob screw).
6. Reinstall the front right cover [C].
7. Connect the cable [D] to the main machine.
8. Attach the securing plate [E], as shown.
   NOTE: Do not attach it with a screw; this is done when securing the front stand for the optional finisher.
9. Install the optional finisher (A681) (refer to the 1000-sheet finisher installation procedure).

3.12 1,000-SHEET FINISHER INSTALLATION



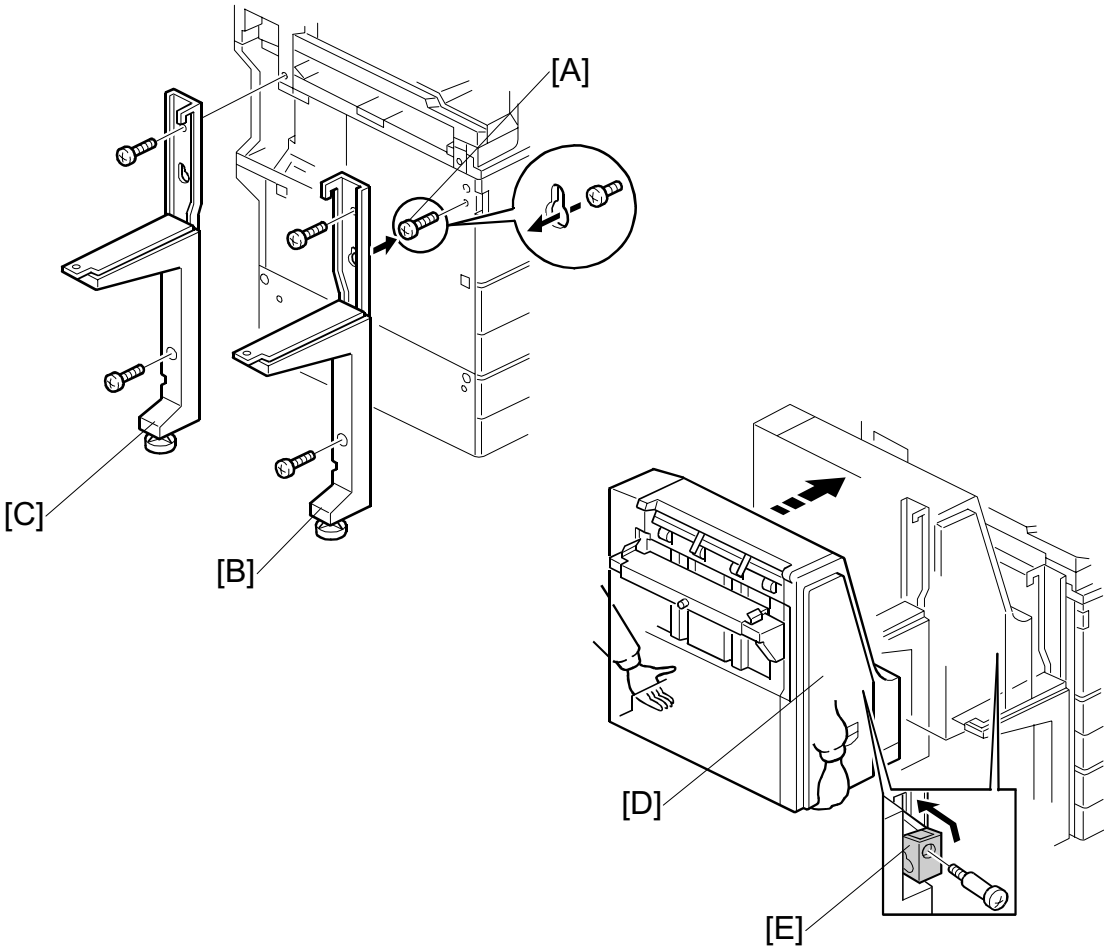


⚠CAUTION

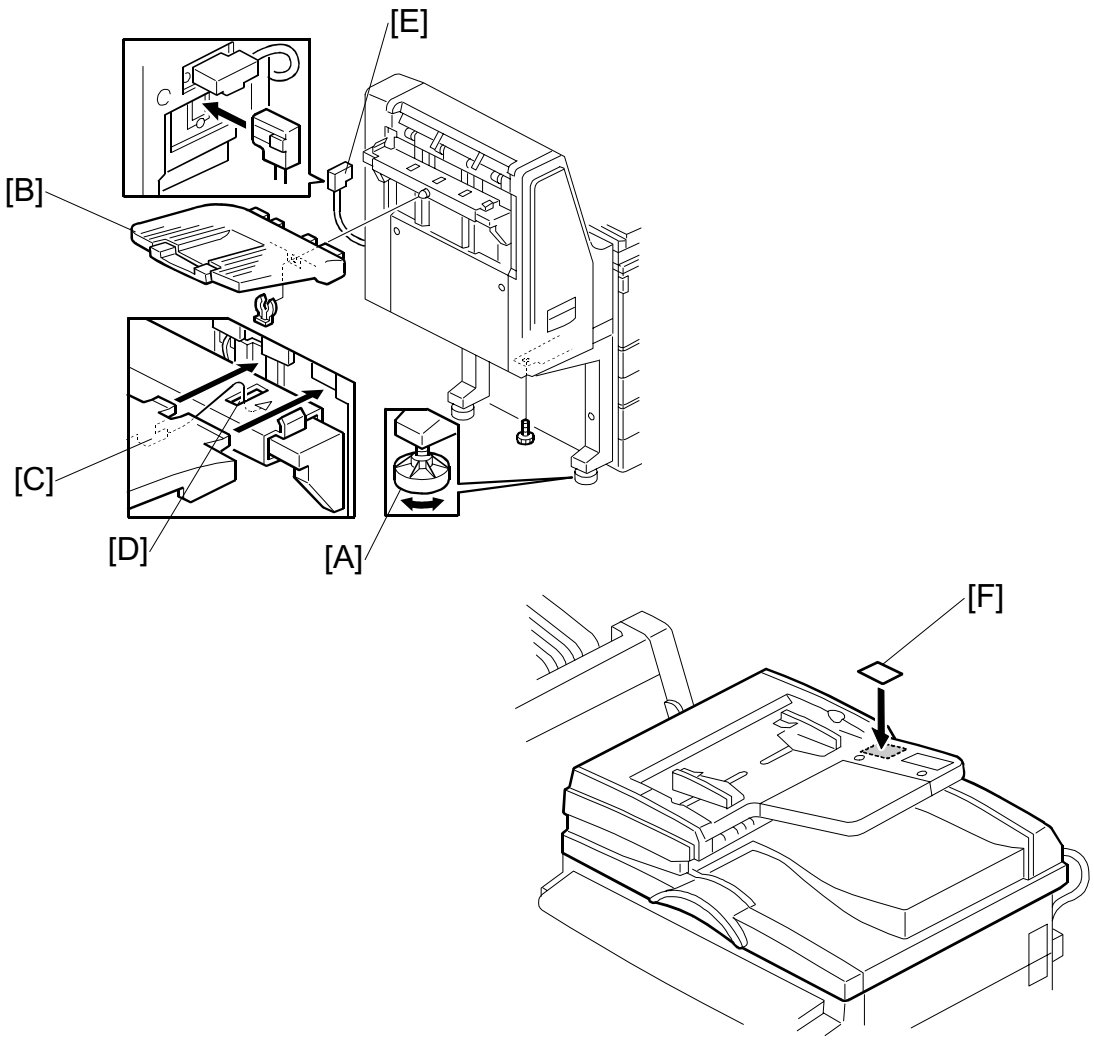
Unplug the main machine power cord before starting the following procedure.

⇒ **NOTE:** If this finisher will be installed on the A265 or A267 copier or G038 printer, the following options must be installed before installing this finisher.
Bridge Unit (A897)
Paper Tray Unit (A860) or LCT (A862)

1. Unpack the finisher and remove the tapes.

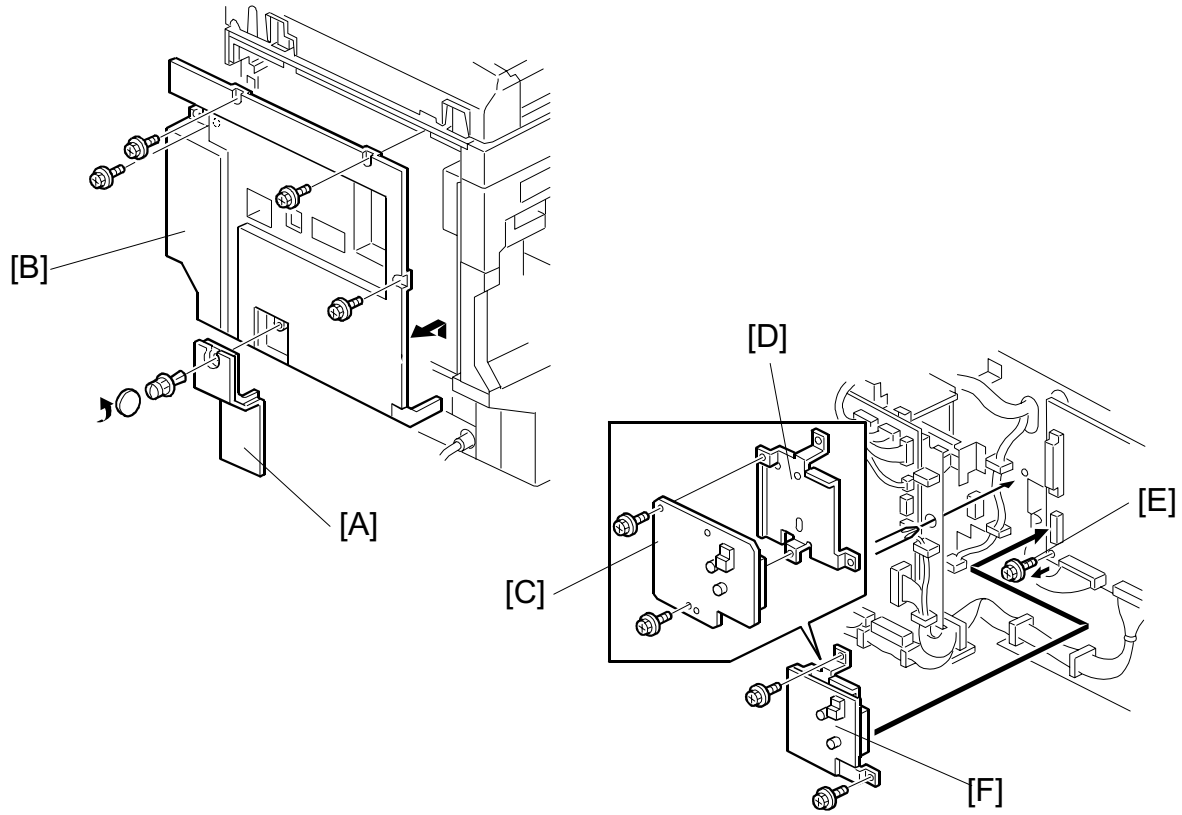


2. Install screw [A] loosely.
3. Hang the front stand [B] on the screw which was installed in step 2.
4. Secure the front stand (3 screws, including screws [A]).
5. Install the rear stand [C] (2 screws).
6. Pull out the stapler unit [D].
7. Draw out the locking lever [E] (1 screw).
8. Align the finisher on the stands, and lock it in place by pushing the locking lever.
9. Secure the locking lever (1 screw) and push the stapler unit into the finisher.



10. Secure the finisher (1 screw).
11. Adjust the securing knobs [A] under the front and rear stand until the finisher is perpendicular to the floor.
12. Install the shift tray [B] (1 snap ring).
    NOTE: Make sure that the three pegs [C] fit into the slots [D] properly.
13. Connect the finisher cable [E] to the optional bridge unit.
14. Attach the staple position decal [F] to the ARDF as shown.
15. Turn on the main power switch and check the finisher operation.

3.13 COPIER FEATURE EXPANDER INSTALLATION



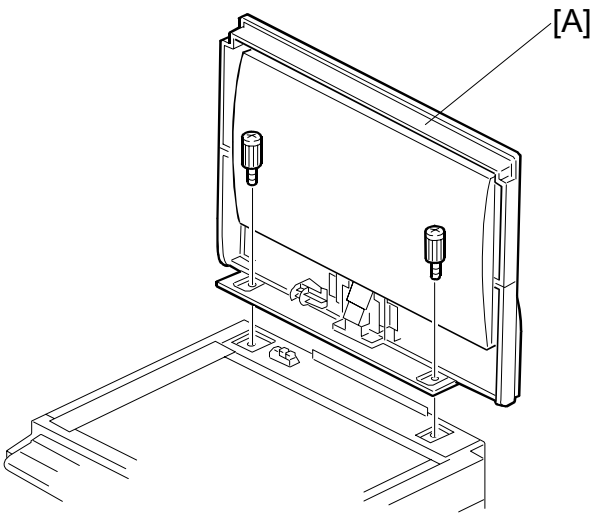
⚠CAUTION

Before installing this option, turn off the main switch and disconnect the power cord, the telephone line, and the network cable.

NOTE: If an expansion box was installed, remove it before starting the following procedure.

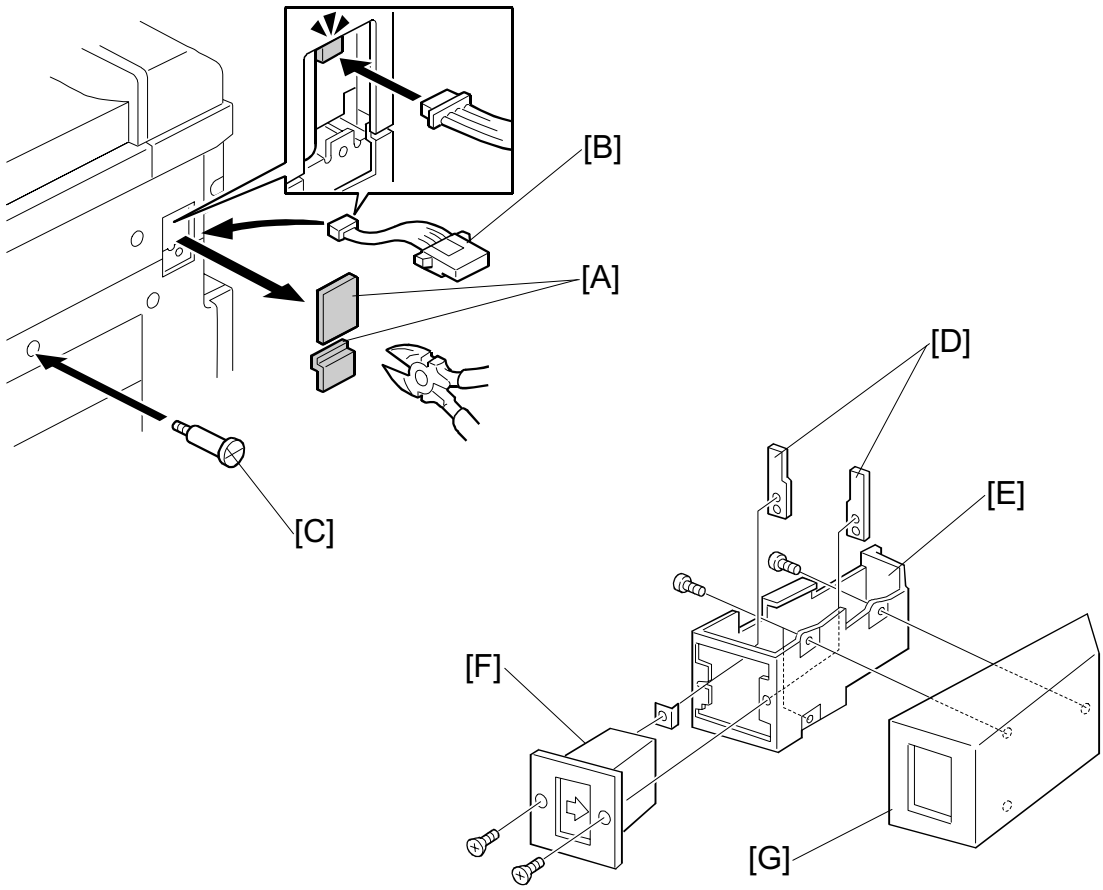
1. Remove the connector cover [A] and rear cover [B], as shown (4 screws).
2. Attach the board [C] to the bracket [D] (2 screws).
3. Remove screw [E].
4. Install the board assembly [F] (3 screws, including screw [E]).

3.14 PLATEN COVER INSTALLATION



1. Install the platen cover [A] (2 screws).

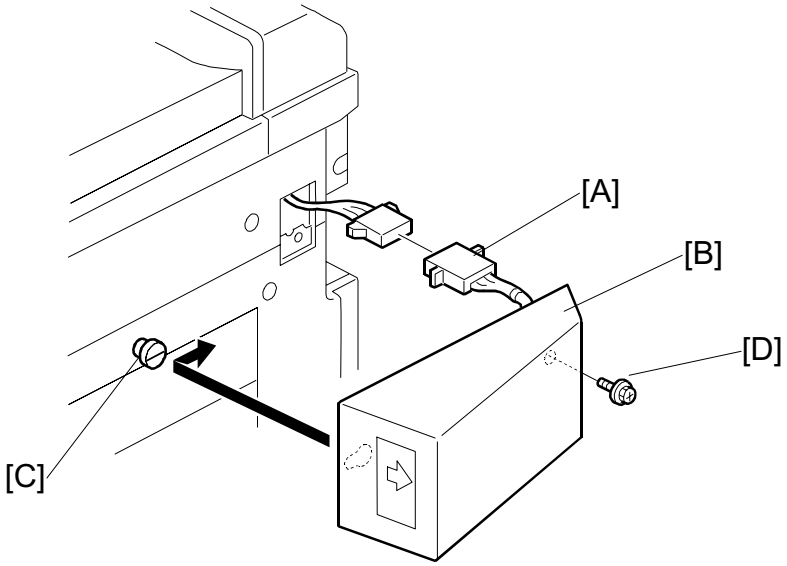
3.15 KEY COUNTER INSTALLATION



⚠CAUTION

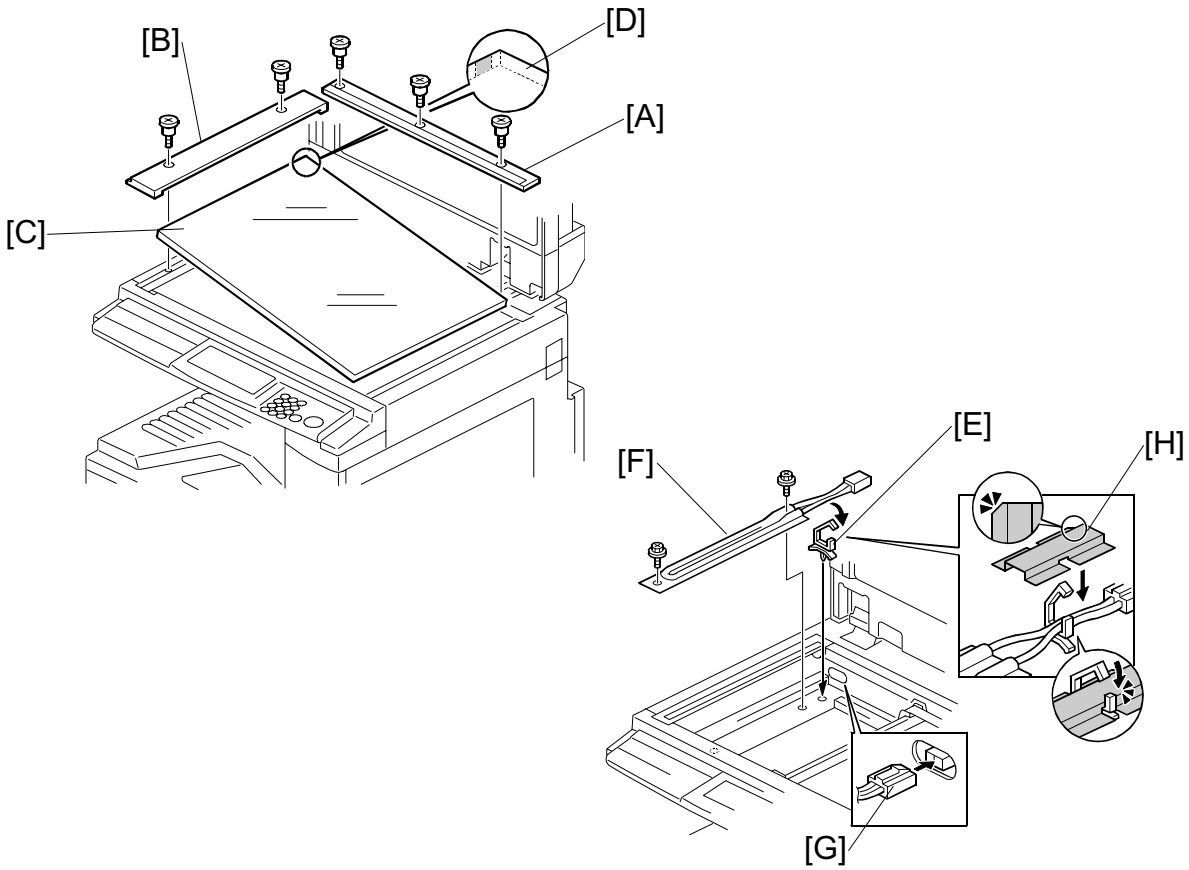
Unplug the machine power cord before starting the following procedure.

1. Remove two caps [A].
2. Connect the key counter cable [B].
3. Install the stepped screw [C].
4. Hold the key counter plate nuts [D] on the inside of the key counter bracket [E] and insert the key counter holder [F].
5. Secure the key counter holder to the bracket (2 screws).
6. Install the key counter cover [G] (2 screws).



7. Connect the cable [A].
8. Hook the key counter holder assembly [B] onto the stepped screw [C].
9. Secure the key counter holder assembly with a screw [D].
10. Change the value of SP5-113 to “1”.

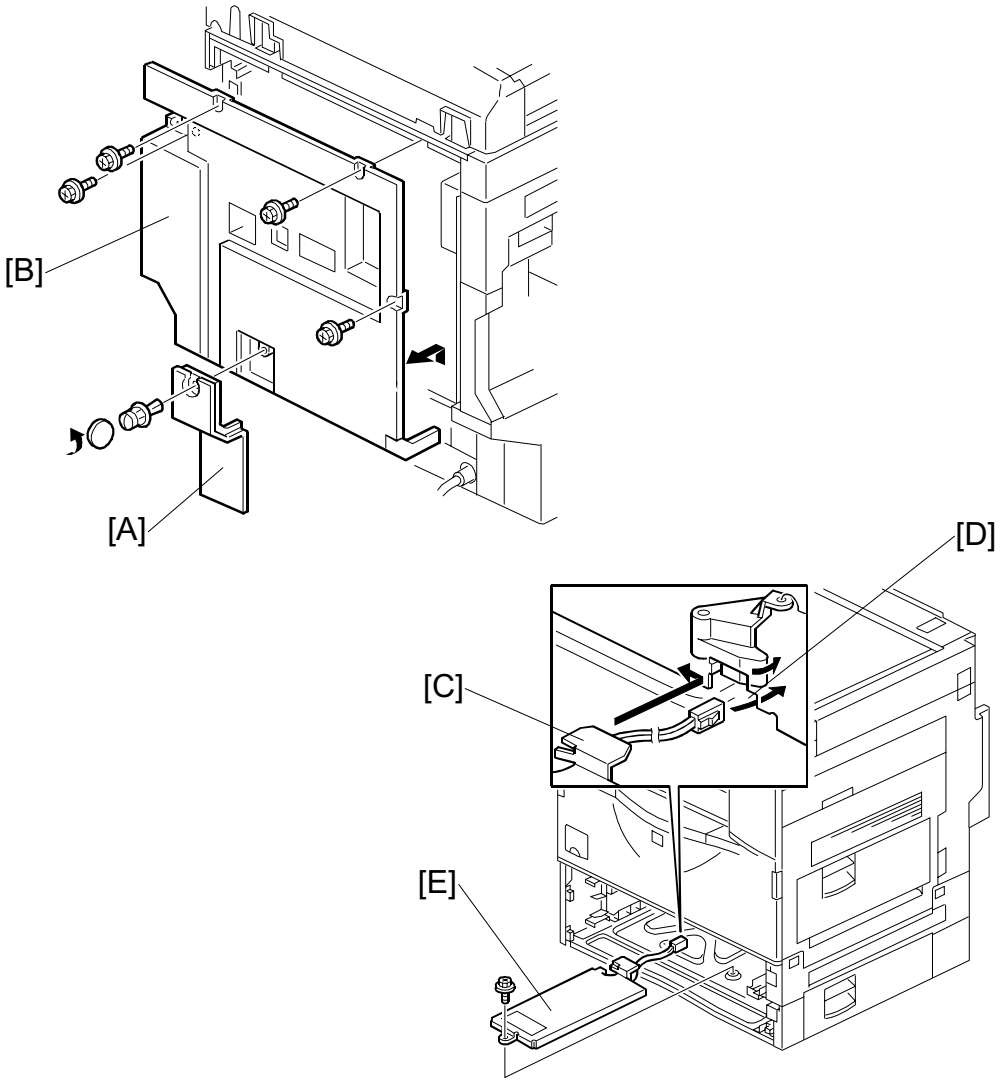
3.16 ANTI-CONDENSATION HEATER



⚠CAUTION
Unplug the machine power cord before starting the following procedure.

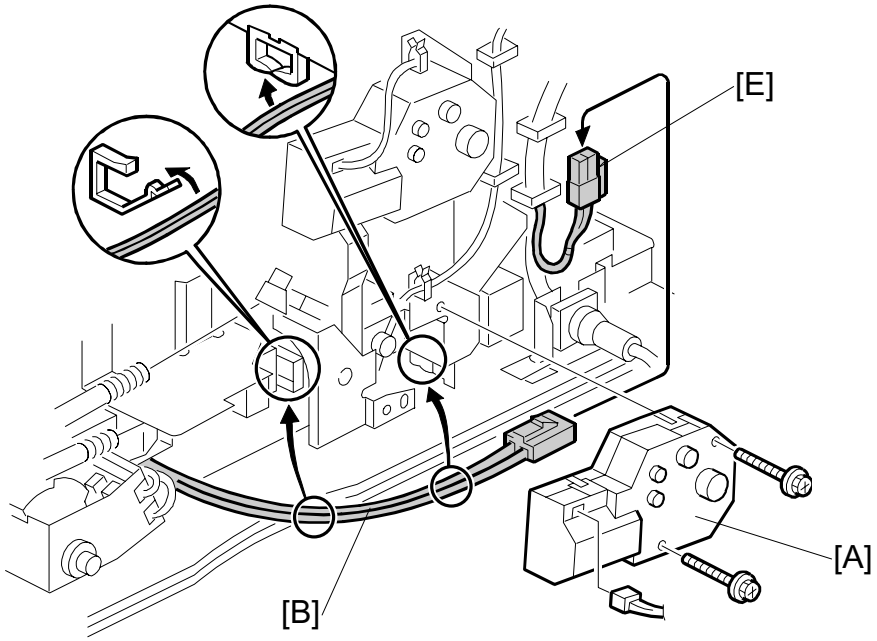
1. Remove the rear scale [A] (3 screws), left scale [B] (2 screws), and exposure glass [C].
   NOTE: When reinstalling the exposure glass, make sure that the mark [D] is positioned at the rear left corner, as shown.
2. Move the 1st and 2nd scanners to the right.
3. Install the cable clamp [E].
4. Install the anti-condensation heater [F] (2 screws).
5. Join the connectors [G]
6. Attach the cable cover [H], as shown.

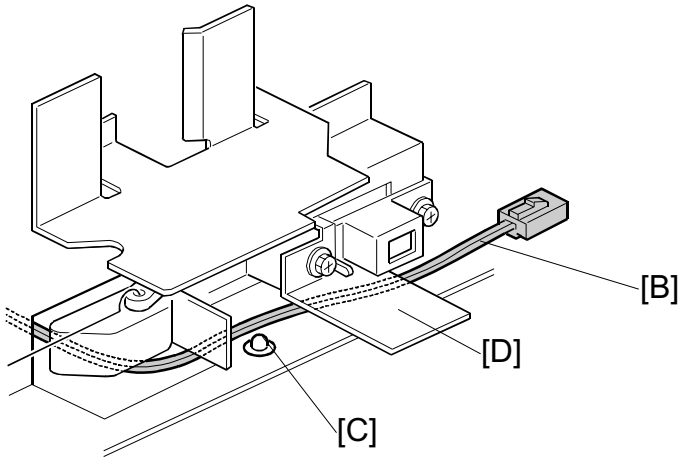
3.17 TRAY HEATER



⚠CAUTION
Unplug the machine power cord before starting the following procedure.

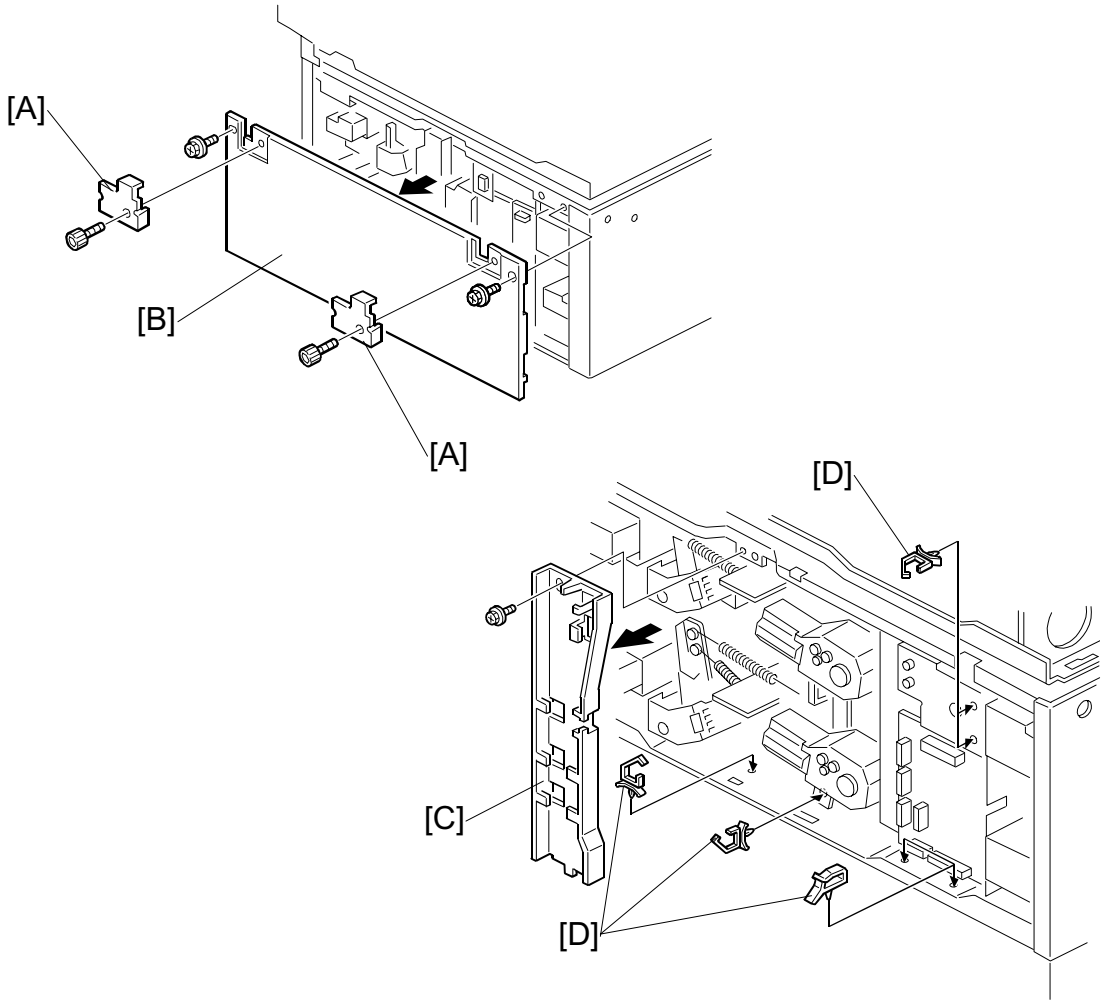
1. Remove the connector cover [A] and rear cover [B] (4 screws).
2. Slide out the 1st and 2nd paper trays.
3. Pass the connector [C] through the opening [D].
4. Install the tray heater assembly [E] (1 screw).





5. Remove the 2nd paper lift motor [A] (2 screws, 1 connector).
6. Route the heater cable [B] to the side of rivet [C] and under bracket [D].
7. Clamp the heater cable [B] as shown.
8. Joint the heater cable and the ac cable [E].
9. Reinstall the paper lift motor [A] and reassemble the machine.

3.18 TRAY HEATER (OPTIONAL PAPER TRAY UNIT)

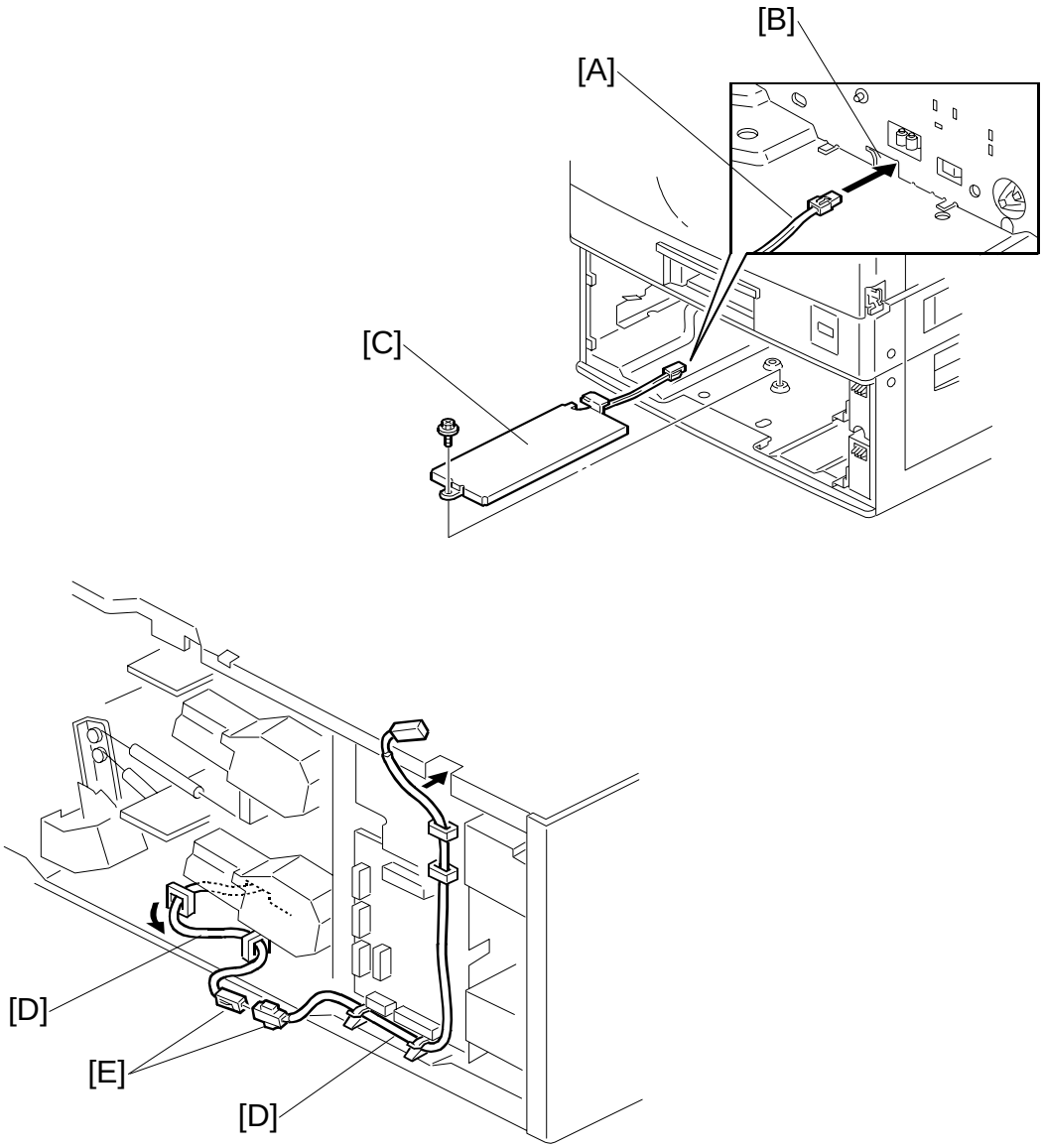


⚠CAUTION

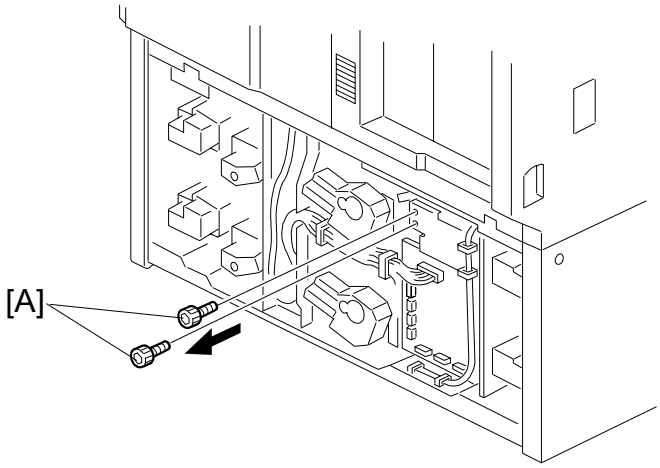
Unplug the machine power cord before starting the following procedure.

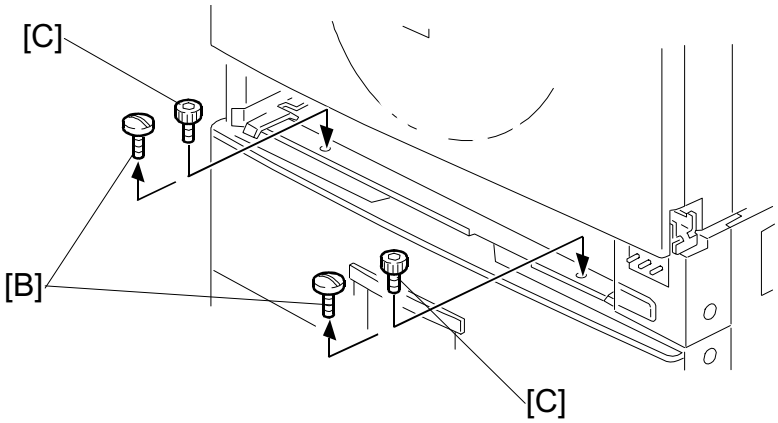
1. Remove the joint brackets [A] (1 screw each).
2. Remove the rear cover [B] for the optional paper tray unit (2 screws).
3. Remove the cable guide [C] (1 screw).
4. Install the clamps [D].

⇒



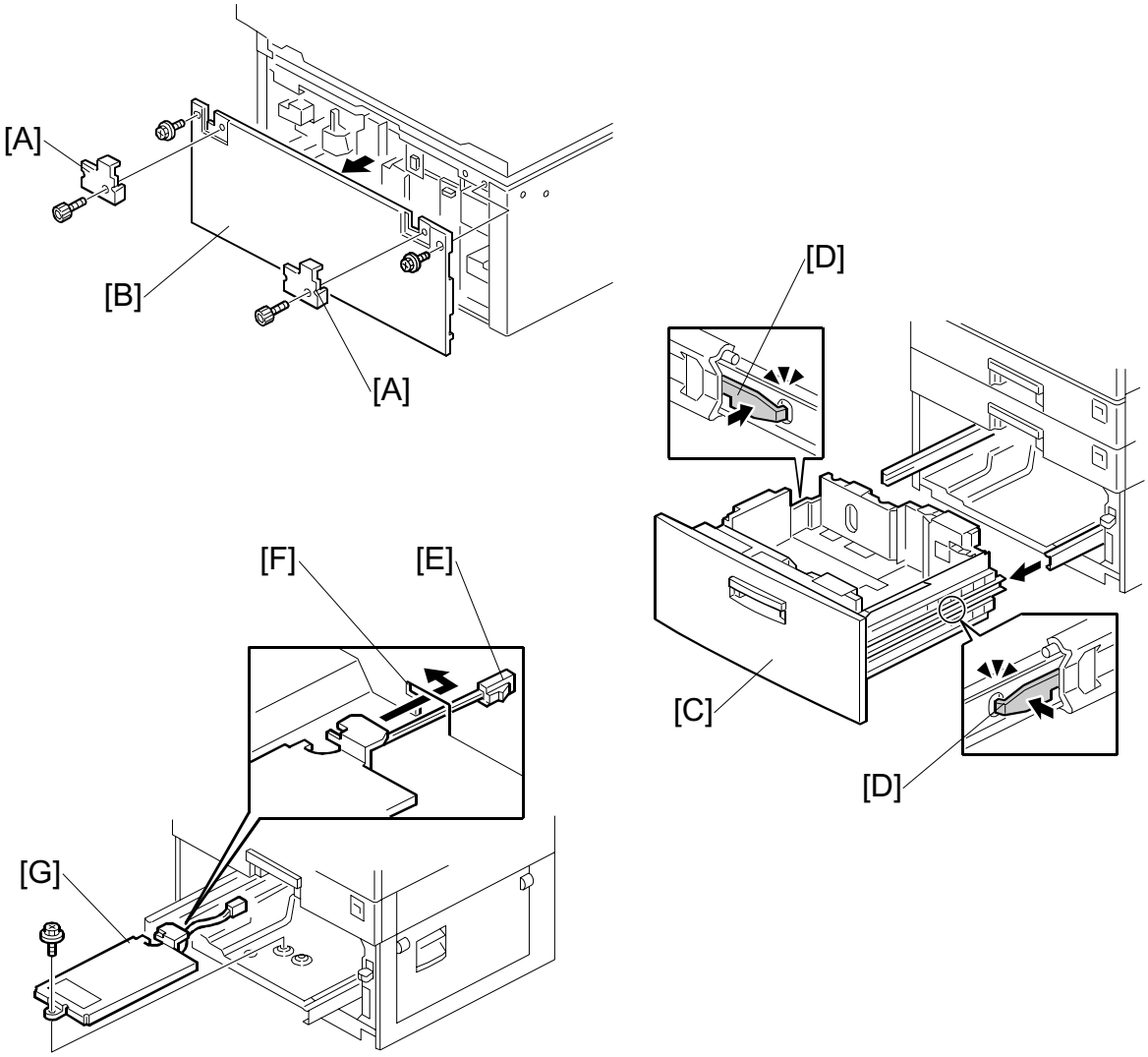
5. Slide out the two paper trays from the optional paper tray unit.
6. Pass the connector [A] through the opening [B].
7. Install the tray heater assembly [C] (1 screw).
8. Clamp the cables [D], as shown.
9. Join the connectors [E].
10. Reinstall the cable guide.





12. Remove two screws [A] from the rear side of the paper feed unit.
13. Reinstall the rear cover for the optional paper tray unit.
14. Reinstall the two paper trays into the optional paper tray unit.
15. Remove the 2nd paper tray of the copier.
16. Remove two screws [B] and install the screws [C] which were removed in step 12.
17. Reinstall the 2nd paper tray of the copier.

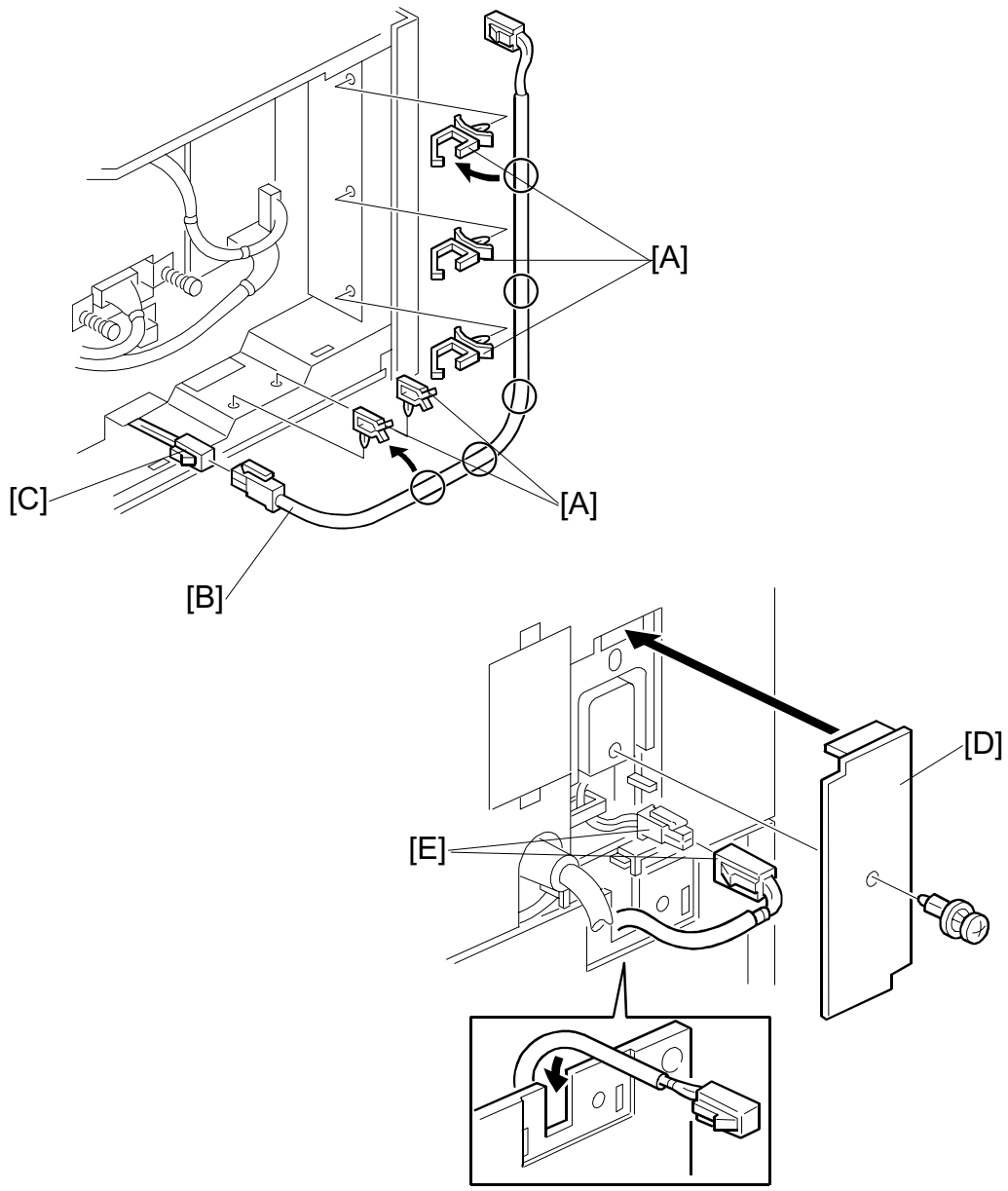
3.19 TRAY HEATER (OPTIONAL LCT)



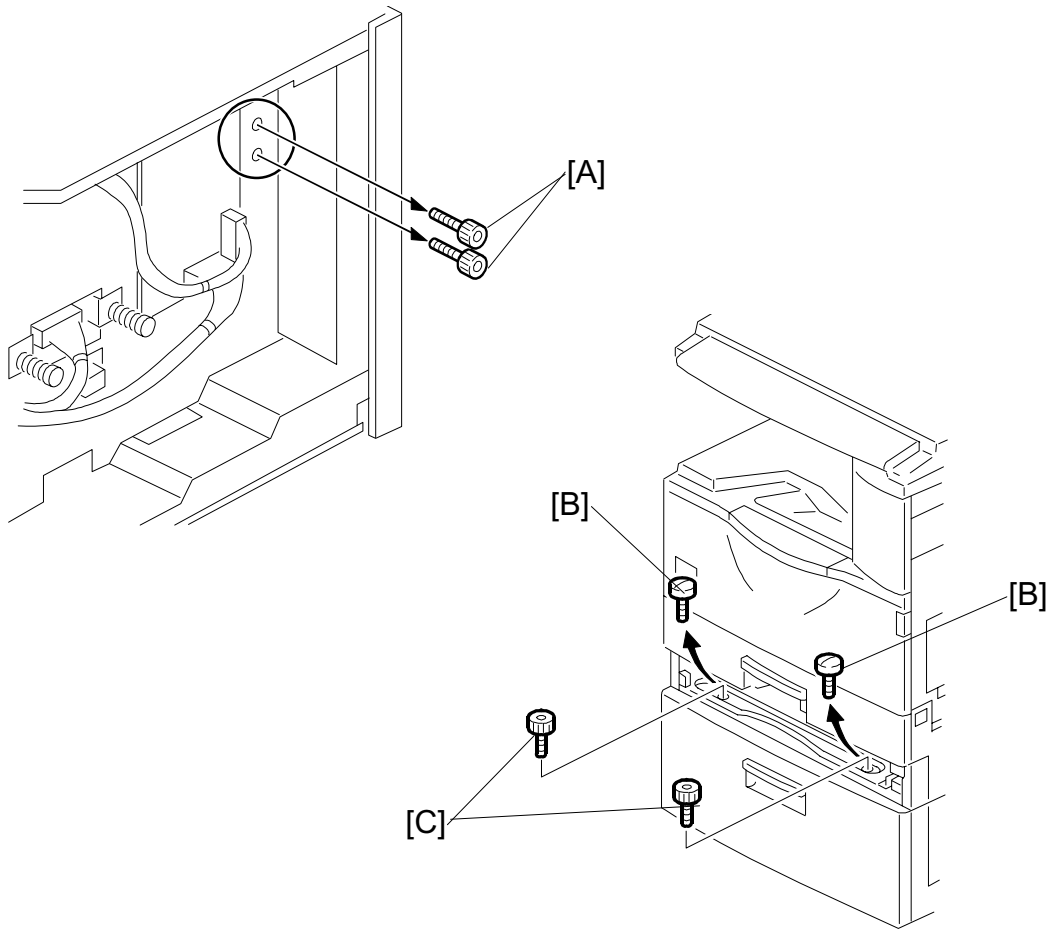
⚠CAUTION

Unplug the machine power cord before starting the following procedure.

1. Remove two joint brackets [A] (1 screw each).
2. Remove the rear cover for the LCT [B] (2 screws).
3. Slide out the paper tray [C].
4. Push the stopper [D] on both slide rails and remove the paper tray.
5. Pass the connector [E] through the opening [F].
6. Install the tray heater [G] (1 screw).



7. Install five clamps [A].
8. Connect the cable [B] to the tray heater cable [C].
9. Route the cable and clamp it.
10. Remove the connector cover of the copier [D].
11. Join the connectors [E].
12. Reinstall the connector cover of the copier.



13. Remove two screws [A] from the rear side of the LCT.
14. Reinstall the rear cover of the LCT.
15. Reinstall the paper tray.
16. Remove the 2nd paper tray of the copier.
17. Remove two screws [B] and install the screws [C] which were removed in step 13.
18. Reinstall the 2nd paper tray of the copier.

SERVICE TABLES

4. SERVICE TABLES

4.1 GENERAL CAUTION

Do not turn off the main switch while any of the electrical components are active. Doing so might cause damage to units, such as the PCU, when they are pulled out of or put back into the copier.

4.1.1 PCU (PHOTOCONDUCTOR UNIT)

The PCU consists of the OPC drum, development unit, charge roller, and cleaning unit. Follow the cautions below when handling a PCU.

1. Never touch the drum surface with bare hands. When the drum surface is touched or becomes dirty, wipe it with a dry cloth or clean it with wet cotton. Wipe with a dry cloth after cleaning with the cotton.
2. Never used alcohol to clean the drum; alcohol dissolves the drum surface.
3. Store the PCU in a cool, dry place away from heat.
4. Never expose the drum to corrosive gases such as ammonia gas.
5. Never shake the used PCU. Doing so may cause toner and/or developer to spill out.
6. Dispose of used PCUs in accordance with local regulations.

4.1.2 TRANSFER ROLLER UNIT

1. Never touch the transfer roller surface with bare hands.
2. Take care not to scratch the transfer roller as the surface is easily damaged.

4.1.3 SCANNER UNIT

1. Clean the exposure glass with alcohol or with glass cleaner to reduce the amount of static electricity on the surface of the glass.
2. Use a blower brush or a cotton pad with water to clean the mirrors and lens.
3. Do not bend or crease the exposure lamp flat cable.
4. Do not disassemble the lens unit. Doing so will throw the lens and the copy image out of focus.
5. Do not turn any of the CCD positioning screws. Doing so will throw the CCD out of position.

4.1.4 LASER UNIT

1. Do not loosen the screws that secure the LD drive board to the laser diode casing. Doing so will throw the LD unit out of adjustment.
2. Do not adjust the variable resistors on the LD unit, as they are adjusted in the factory.
3. The polygon mirror and F-theta mirror are very sensitive to dust.
4. Do not touch the glass surface of the polygon mirror motor unit with bare hands.

4.1.5 FUSING UNIT

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

4.1.6 PAPER FEED

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

4.1.7 OTHERS

1. The TD sensor initial setting is performed automatically after installing the new PCU and closing the front cover. Never open the front cover or turn off the main switch during this time. The main motor stops when the initial setting has finished.
2. The toner bottle should be replaced while the main switch is on.
3. If the optional tray, drum, and optics anti-condensation heaters have been installed, keep the copier power cord plugged in, even when the copier main switch is turned off. This keeps the heaters energized.

4.2 SERVICE PROGRAM MODE

4.2.1 SERVICE PROGRAM MODE OPERATION

The service program (SP) mode is used to check electrical data, change modes, and adjust values.

Service Program Access Procedure

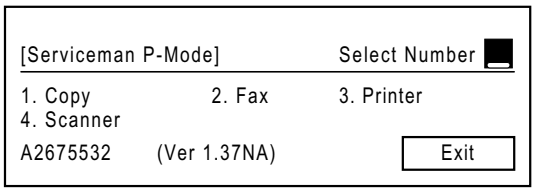
How to Enter the SP Mode

1) Press the following keys in sequence.

[ ] → (1) → (0) → (7) → (C/⊘)

- Hold the (C/⊘) (Clear/Stop) key for more than 3 seconds.

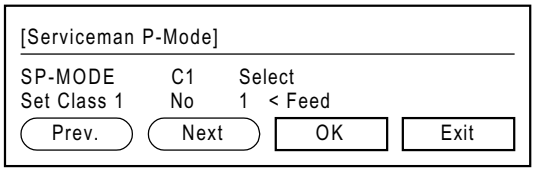
2) A menu of SP modes is displayed on the LCD.



NOTE: 1) The installed applications appear as 1. Copy, 2. Fax, 3. Printer, 4. Scanner. If an application is not installed, the application name does not appear.

2) The meaning of the bottom line is as follows.
   - "A267XXXX" is the part number of the BICU board software.
   - "(ver X. X. XX)" is the BICU board software version.

3) Press the number for the application which you need (e.g. press "1" for copier). Then, the application's SP mode display will appear, as shown.



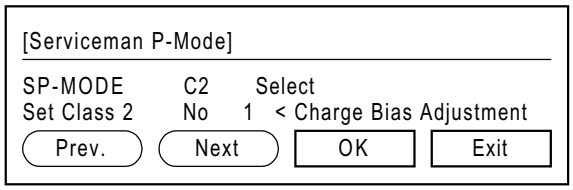
How to Exit SP Mode

Press the "Back" and "Exit" keys or [ ] (Clear Modes) key until the standby mode display appears.

Accessing Copy Mode from within an SP Mode

1. Press the ⏎ (Interrupt) key.
2. Select the appropriate copy mode and make trial copies.
3. To return to SP mode, press the ⏎ (Interrupt) key again.

How to Select the Program Number



Program numbers are composed of two or three levels.

To input the required program number, select each program level in sequence.

1. Select the 1st level program number on the numeric keypad and press the # key or “OK” key.
   NOTE: The 1st level program number can be selected by pressing the “Prev.” or “Next” bottom on the LCD.
2. Select the 2nd level program number at the numeric keypad and press the # key or “OK” key.
   NOTE: The 2nd level program number can be selected by pressing the “Prev.” or “Next” bottom on the LCD.
3. If there any are 3rd level programs in SP mode, first enter the 2nd level SP mode, then pressing the “Prev.” or “Next” bottom on the LCD.

To input a value or setting for an SP mode

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

NOTE: 1) If you forget to press the # key or “OK” key, the previous value remains.
2) Change between “+” and “–” using the */C key before entering the required value.

3. Exit SP mode.

4.2.2 SERVICE PROGRAM MODE TABLES

NOTE: 1) In the Function column, comments are in *italics*.
2) In the Setting column, the default value is in **bold** letters.
3) An asterisk "*" after the mode number means that this mode is stored in the NVRAM. If you do a RAM reset, all these SP modes will be return to their factory settings.
4) SP4-915 to 4-941: When the SP mode name has a prefix of "P-", the adjustment is only effective when the user selects an original type of "Service Mode" (User Tools - General Features - 09. Image Adjustment).

Mode No.			Function	Settings
Class 1 and 2	Class 3			
1-001*	1	Leading Edge Registration (Paper Tray Feed)	Adjusts the printing leading edge registration from each paper feed station using the Trimming Area Pattern (SP5-902, No.10). *Use the # key to toggle between + and - before entering the value. The specification is 3 ± 2 mm. See "Replacement and Adjustment - Copy Adjustment" for details, Section 6.8*	+9.0 ~ –9.0 0.1 mm/step **+0.0 mm**
	2	Leading Edge Registration (By-pass Feed)		+12.5~–12.5 0.1 mm/step **+0.0 mm**
	3	Leading Edge Registration (Duplex)		+12.5~–12.5 0.1 mm/step **+0.0 mm**
1-002*	1	Side-to-Side Registration (1st Paper Feed)	Adjusts the printing side-to-side registration from each paper feed station using the Trimming Area Pattern (SP5-902, No.10). *Use the # key to toggle between + and - before entering the value. The specification is 2 ± 1.5 mm. See "Replacement and Adjustment - Copy Adjustment" for details, Section 6.8.*	+9.0 ~ –9.0 0.1 mm/step **+0.0 mm**
	2	Side-to-Side Registration (2nd Paper Feed)		
	3	Side-to-Side Registration (3rd Paper Feed: optional PFU tray 1 or optional LCT)		
	4	Side-to-Side Registration (4th Paper Feed: optional PFU tray 2)		
	5	Side-to-Side Registration (By-pass Feed)		
	6	Side-to-Side Registration (Duplex)		
1-003*	1	Paper Feed Timing (1st Paper Feed)	Adjusts the paper feed clutch timing at registration. The paper feed clutch timing determines the amount of paper buckle at registration. (A larger setting leads to more buckling.)	0 ~ 10 1 mm/step **5 mm**

Service Tables

Mode No.			Function	Settings
Class 1 and 2	Class 3			
1-003*	2	Paper Feed Timing (2nd, 3rd, 4th Paper Feed, LCT, and By-pass Feed)	Adjusts the paper feed clutch timing at registration. The paper feed clutch timing determines the amount of paper buckle at registration. (A larger setting leads to more buckling.)	0 ~ 10 1 mm/step **5 mm**
	3	Paper Feed Timing (Duplex)		0 ~ 20 1 mm/step **6 mm**
1-007		By-pass Paper Size Display	Displays the by-pass paper width sensor output.	
1-105*	1	Fusing Temperature Adjustment (Stand-by)	Adjusts the fusing temperature for standby mode.	155 ~ 190 1°C/step **170°C**
	2	Fusing Temperature Adjustment (Low Power Level 2)	Adjusts the fusing temperature for low power level 2. *With a lower value, the machine takes more time to reach the ready condition.*	0 ~ 80 1°C/step **80°C**
	3	Fusing Temperature Adjustment (Special Paper)	Adjusts the additional fusing temperature for the special paper mode selected by the lever on the 2nd paper tray; also for the bypass tray (all paper types).	0 ~ 20 1°C/step **10°C**
1-106		Fusing Temp. Display	Displays the fusing temperature. *Press the ⌧ (Clear Modes) key to exit the display.*	
1-107*	1	Fusing Soft Start Adjustment (Stand-by, Energy saver)	Adjusts the number of zero-cross cycles of the fusing lamp ac supply needed for the fusing lamp power to reach 100%. Use a higher number if the customer complains about sudden power dropouts. **For European models, this SP mode is effective in the stand-by mode and energy saver mode only.** *See "Detailed Descriptions - Fusing Unit" for details on SP1-107, Section 2.10.6.*	N. America **0: 3 times** 1: 10 times 2: 20 times Europe/Asia 0: 5 times **1: 10 times** 2: 20 times
	2	Fusing Soft Start Adjustment (Printing)	**For European models only.** Adjusts the number of zero-cross cycles of the fusing lamp ac supply needed for the fusing lamp power to reach 100% when raising the temperature during printing. Use a higher number if the customer complains about sudden power dropouts. *See "Detailed Descriptions - Fusing Unit" for details on SP1-107, Section 2.10.6.*	0: 5 times **1: 10 times** 2: 20 times
1-108*	1	Fusing Soft Start Setting (Stand-by, Energy saver)	Selects whether the fusing temperature control cycle is 1 or 3 seconds. **For European models, this SP mode is effective in the stand-by mode and energy saver mode only.** *If this is "1", the power supply fluctuates less when the fusing lamp turns on. See "Detailed Descriptions - Fusing Unit" for details, Section 2.10.6.*	**0: 1 sec** 1: 3 sec

Mode No.			Function	Settings
Class 1 and 2	Class 3			
1-108*	2	Fusing Soft Start Setting (Printing)	**For European models only.** Selects whether the fusing temperature control cycle is 0.5 or 1 seconds during printing. If this is "1", the power supply fluctuates less when the fusing lamp turns on. See "Detailed Descriptions - Fusing Unit" for details, Section 2.10.6.	**0: 500 ms** 1: 1 sec
1-109		Fusing Nip Band Check	Checks the fusing nip band *Refer to "Nip Band Width Measurement" for more details, Section 4.2.14 .*	1: Start 0: Stop
1-901*		Auto Re-start Interval	Adjusts the auto re-start time. ***Do not change the value.***	0 ~ 9999 1 s/step **0 s**
1-902		AC Frequency Display	Displays the fusing lamp power control frequency which is detected by the zero cross signal generator. *Under "54" equals 50 Hz. Otherwise, 60 Hz.*	
1-903*	1	Feed Clutch Re-energize (By-pass Feed)	Adjusts the paper feed amount allowed by the clutch (see the table below) after correcting the skew at registration. *When paper jams occur after restarting paper feed after registration, increase the value to help the registration roller feed the paper.*	0 ~ 10 1 mm/step Defaults By-pass: 6 1st tray: 0 Other: 0
	2	Feed Clutch Re-energize (1st Paper Tray)		
	3	Feed Clutch Re-energize (Other Paper Trays)		
1-905*		Tray Paper Full Detection	Determines whether or not to detect if the built-in copy tray is full.	0: No **1: Yes**
1-906*		Tray Paper Full Timer	Adjusts the time that the paper overflow sensor must remain on before a message appears on the LCD. The sensor may be switched on and off again if the paper is curled, giving a false tray full detection. This SP prevents this problem. *This SP mode is used when SP1-905 is set to 1.*	100 ~ 5000 10 ms/step **500**

Paper Feed Station	Clutch
By-pass Feed	Upper Relay
1st Paper Tray	1st Paper Feed
Other Paper Trays	Upper Relay

Service Tables

Mode No.			Function	Settings
Class 1 and 2	Class 3			
1-908*	1	1st Bottom Plate Pressure Adjustment (Normal Size)	If a middle size threshold is not stored with SP1-908-9, this SP adjusts the upper paper lift motor reverse time for paper sizes larger than the small size threshold set with SP1-908-8. If a middle size threshold is stored with SP1-908-9, then this SP adjusts the motor reverse time for sizes larger than the middle size. **Do not input a value greater than 1200.** *Use this SP when a paper feed problem occurs from the 1st paper tray.* *See "Paper Lift Mechanism" for details on SP1-908, Section 2.8.4.*	0 ~ 2000 1 ms/step **200 ms**
	2	1st Bottom Plate Pressure Adjustment (Small Size)	Adjusts the upper paper lift motor reverse time for paper of the same size as or smaller than the small size threshold set with SP1-908-8. **Do not input a value greater than 1200.** *Use this SP when a paper feed problem occurs from the 1st paper tray.* *See "Paper Lift Mechanism" for details on SP1-908, Section 2.8.4.*	0 ~ 2000 1 ms/step **600 ms**
	3	1st Bottom Plate Pressure Adjustment (Middle Size)	Adjusts the upper paper lift motor reverse time for paper sizes larger than the small size threshold set with SP1-908-8, up to and including the middle size threshold set with SP1-908-9. If a middle size threshold is not stored with SP1-908-9, this SP is not used. **Do not input a value greater than 1200.** *Use this SP when a paper feed problem occurs from the 1st paper tray.* *See "Paper Lift Mechanism" for details on SP1-908, Section 2.8.4.*	0 ~ 2000 1 ms/step **200 ms**
	4	1st Bottom Plate Pressure Re-adjustment (Small Size)	Adjusts the upper paper lift motor forward rotation time for paper of the same size as or smaller than the small size threshold set with SP1-908-8. The motor rotates forward when the remaining paper amount is lower than the value of SP1-908-6. *Use this SP when a paper feed problem occurs when paper in the 1st paper tray is running low.* *See "Paper Lift Mechanism" for details on SP1-908, Section 2.8.4.*	0 ~ 2000 1 ms/step **400 ms**

Mode No.			Function	Settings
Class 1 and 2	Class 3			
1-908*	5	1st Bottom Plate Pressure Re-adjustment (Middle Size)	Adjusts the upper paper lift motor forward rotation time for paper sizes larger than the small size threshold set with SP1-908-8, up to and including the middle size threshold set with SP1-908-9. The motor rotates forward when the amount of remaining paper is lower than the value of SP1-908-7. If a middle size threshold is not stored with SP1-908-9, this SP is not used. *Use this SP when a paper feed problem occurs when paper in the 1st paper tray is running low.* *See "Paper Lift Mechanism" for details on SP1-908, Section 2.8.4.*	0 ~ 2000 1 ms/step **300 ms**
	6	1st Paper Amount (Small Size)	Selects the remaining paper amount limit for use with SP1-908-4. *Set this SP to 2 or 3 when a paper feed problem occurs before near-end.* *See "Paper Lift Mechanism" for details on SP1-908, Section 2.8.4.*	0: None (Empty) **1: Near End** 2: 25% 3: 75%
	7	1st Paper Amount (Middle Size)	Selects the remaining paper amount limit for use with SP1-908-5. *Set this SP to 2 or 3 when a paper feed problem occurs before near-end.* *See "Paper Lift Mechanism" for details on SP1-908, Section 2.8.4.*	0: None (Empty) **1: Near End** 2: 25% 3: 75%
⇒	8	1st Small Paper Size Setting	Selects the small size threshold for the 1st paper tray. "0" means that this setting is not used. *The size used by SP1-908 is determined by paper width. See "Paper Lift Mechanism" for details on SP1-908, Section 2.8.4.* **NOTE:** The "T" after A4 and LT refer to lengthwise feeding direction.	0: None (Not used) **1: HLT/A5** 2: A4T 3: LG, LTT 4: DLT, LT 5: A3, A4
	9	1st Middle Paper Size Setting	Selects the middle size threshold for the upper tray. "0" means that this setting is not used. *The value must be larger than the small size threshold (SP1-908-8). The size used by SP1-908 is determined by paper width. See "Paper Lift Mechanism" for details on SP1-908, Section 2.8.4.* **NOTE:** The "T" after A4 and LT refer to lengthwise feeding direction.	**0: None (Not used)** 1: HLT/A5 2: A4T 3: LG,LTT 4: DLT,LT 5: A3,A4

Mode No.			Function	Settings
Class 1 and 2	Class 3			
1-909*	1	2nd Bottom Plate Pressure Adjustment (Normal Size)	If a middle size threshold is not stored with SP1-909-9, this SP adjusts the upper paper lift motor reverse time for paper sizes larger than the small size threshold set with SP1-909-8. If a middle size threshold is stored with SP1-909-9, then this SP adjusts the motor reverse time for sizes larger than the middle size. **Do not input a value greater than 1200.** *Use this SP when a paper feed problem occurs from the 2nd paper tray.* *See "Paper Lift Mechanism" for details on SP1-909, Section 2.8.4.*	0 ~ 2000 1 ms/step **200 ms**
	2	2nd Bottom Plate Pressure Adjustment (Small Size)	Adjusts the upper paper lift motor reverse time for paper of the same size as or smaller than the small size threshold set with SP1-909-8. **Do not input a value greater than 1200.** *Use this SP when a paper feed problem occurs from the 2nd paper tray.* *See "Paper Lift Mechanism" for details on SP1-909, Section 2.8.4.*	0 ~ 2000 1 ms/step **600 ms**
	3	2nd Bottom Plate Pressure Adjustment (Middle Size)	Adjusts the upper paper lift motor reverse time for paper sizes larger than the small size threshold set with SP1-909-8, up to and including the middle size threshold set with SP1-909-9. If a middle size threshold is not stored with SP1-909-9, this SP is not used. **Do not input a value greater than 1200.** *Use this SP when a paper feed problem occurs from the 2nd paper tray.* *See "Paper Lift Mechanism" for details on SP1-909, Section 2.8.4.*	0 ~ 2000 1 ms/step **200 ms**
	4	2nd Bottom Plate Pressure Re-adjustment (Small Size)	Adjusts the upper paper lift motor forward rotation time for paper of the same size as or smaller than the small size threshold set with SP1-909-8. The motor rotates forward when the remaining paper amount is lower than the value of SP1-909-6. *Use this SP when a paper feed problem occurs when paper in the 2nd paper tray is running low.* *See "Paper Lift Mechanism" for details on SP1-909, Section 2.8.4.*	0 ~ 2000 1 ms/step **400 ms**

Mode No.			Function	Settings
Class 1 and 2	Class 3			
1-909*	5	2nd Bottom Plate Pressure Re-adjustment (Middle Size)	Adjusts the upper paper lift motor forward rotation time for paper sizes larger than the small size threshold set with SP1-909-8, up to and including the middle size threshold set with SP1-909-9. The motor rotates forward when the remaining paper amount is lower than the value of SP1-909-7. If a middle size threshold is not stored with SP1-909-9, this SP is not used. *Use this SP when a paper feed problem occurs when paper in the 2nd paper tray is running low.* *See "Paper Lift Mechanism" for details on SP1-909, Section 2.8.4.*	0 ~ 2000 1 ms/step **300 ms**
	6	2nd Paper Amount (Small Size)	Selects the remaining paper amount limit for use with SP1-909-4. *Set this SP to 2 or 3 when a paper feed problem occurs before near-end.* *See "Paper Lift Mechanism" for details on SP1-909, Section 2.8.4.*	0: None (Empty) **1: Near End** 2: 25% 3: 75%
	7	2nd Paper Amount (Middle Size)	Selects the remaining paper amount limit for use with SP1-909-5. *Set this SP to 2 or 3 when a paper feed problem occurs before near-end.* *See "Paper Lift Mechanism" for details on SP1-909, Section 2.8.4.*	0: None (Empty) **1: Near End** 2: 25% 3: 75%
	8	2nd Small Paper Size Setting	Selects the small size threshold for the 2nd paper tray. "0" means that this setting is not used. *The size used by SP1-909 is determined by paper width. See "Paper Lift Mechanism" for details on SP1-909, Section 2.8.4.*	0: None (Not used) **1:** HLT 2: A4 3: LT 4: DLT 5: A3,4
	9	2nd Middle Paper Size Setting	Selects the middle size threshold for the upper tray. "0" means that this setting is not used. *The value must be larger than the small size threshold (SP1-909-8). The size used by SP1-909 is determined by paper width. See "Paper Lift Mechanism" for details on SP1-909, Section 2.8.4.*	**0: None (Not used)** 1: HL 2: A4 3: LG, LT 4: DL, L. 5: A3, 4

Mode No.			Function	Settings
Class 1 and 2	Class 3			
1-910*	1	3rd Bottom Plate Pressure Adjustment (Normal Size) (Optional PFU)	If a middle size threshold is not stored with SP1-910-9, this SP adjusts the upper paper lift motor reverse time for paper sizes larger than the small size threshold set with SP1-910-8. If a middle size threshold is stored with SP1-910-9, then this SP adjusts the motor reverse time for sizes larger than the middle size. **Do not input a value greater than 1200.** *Use this SP when a paper feed problem occurs from the 3rd paper tray.* *See "Optional Paper Tray Unit - Paper Lift Mechanism" for details on SP1-910, Section 10.2.2.2.*	0 ~ 2000 1 ms/step **200 ms**
	2	3rd Bottom Plate Pressure Adjustment (Small Size) (Optional PFU)	Adjusts the upper paper lift motor reverse time for paper of the same size as or smaller than the small size threshold set with SP1-910-8. **Do not input a value greater than 1200.** *Use this SP when a paper feed problem occurs from the 3rd paper tray.* *See "Optional Paper Tray Unit - Paper Lift Mechanism" for details on SP1-910, Section 10.2.2.2.*	0 ~ 2000 1 ms/step **600 ms**
	3	3rd Bottom Plate Pressure Adjustment (Middle Size) (Optional PFU)	Adjusts the upper paper lift motor reverse time for paper sizes larger than the small size threshold set with SP1-910-8, up to and including the middle size threshold set with SP1-910-9. If a middle size threshold is not stored with SP1-910-9, this SP is not used. **Do not input a value greater than 1200.** *Use this SP when a paper feed problem occurs from the 3rd paper tray.* *See "Optional Paper Tray Unit - Paper Lift Mechanism" for details on SP1-910, Section 10.2.2.2.*	0 ~ 2000 1 ms/step **200 ms**
	4	3rd Bottom Plate Pressure Re-adjustment (Small Size) (Optional PFU)	Adjusts the upper paper lift motor forward rotation time for paper of the same size as or smaller than the small size threshold set with SP1-910-8. The motor rotates forward when the remaining paper amount is lower than the value of SP1-910-6. *Use this SP when a paper feed problem occurs when paper in the 3rd paper tray is running low.* *See "Optional Paper Tray Unit - Paper Lift Mechanism" for details on SP1-910, Section 10.2.2.2.*	0 ~ 2000 1 ms/step **400 ms**

Mode No.			Function	Settings
Class 1 and 2	Class 3			
1-910*	5	3rd Bottom Plate Pressure Re-adjustment (Middle Size) (Optional PFU)	Adjusts the upper paper lift motor forward rotation time for paper sizes larger than the small size threshold set with SP1-910-8, up to and including the middle size threshold set with SP1-910-9. The motor rotates forward when the remaining paper is lower than the value of SP1-910-7. If a middle size threshold is not stored with SP1-910-9, this SP is not used. *Use this SP when a paper feed problem occurs when paper in the 3rd paper tray is running low.* *See "Optional Paper Tray Unit - Paper Lift Mechanism" for details on SP1-910, Section 10.2.2.2.*	0 ~ 2000 1 ms/step **300 ms**
	6	3rd Paper Amount (Small Size) (Optional PFU)	Selects the remaining paper amount limit for use with SP1-910-4. *Set this SP to 2 or 3 when a paper feed problem occurs before near-end.* *See "Optional Paper Tray Unit - Paper Lift Mechanism" for details on SP1-910, Section 10.2.2.2.*	0: None (Empty) **1: Near End** 2: 25% 3: 75%
	7	3rd Paper Amount (Middle Size) (Optional PFU)	Selects the remaining paper amount limit for use with SP1-910-5. *Set this SP to 2 or 3 when a paper feed problem occurs before near-end.* *See "Optional Paper Tray Unit - Paper Lift Mechanism" for details on SP1-910, Section 10.2.2.2.*	0: None (Empty) **1: Near End** 2: 25% 3: 75%
	8	3rd Small Paper Size Setting (Optional PFU)	Selects the small size threshold for the 3rd paper tray. "0" means that this setting is not used. *The size used by SP1-910 is determined by paper width. See "Optional Paper Tray Unit - Paper Lift Mechanism" for details on SP1-910, Section 10.2.2.2.*	0: None (Not used) **1: HL** 2: A4 3: LG, LT 4: DL,L 5: A3,4
	9	3rd Middle Paper Size Setting (Optional PFU)	Selects the middle size threshold for the upper tray. "0" means that this setting is not used. *The value must be larger than the small size threshold (SP1-910-8). The size used by SP1-910 is determined by paper width. See "Optional Paper Tray Unit - Paper Lift Mechanism" for details on SP1-910, Section 10.2.2.2.*	**0: None (Not used)** 1: HL 2: A4 3: LG, LT 4: DL, L. 5: A3, 4

Mode No.			Function	Settings
Class 1 and 2	Class 3			
1-911*	1	4th Bottom Plate Pressure Adjustment (Normal Size) (Optional PFU)	If a middle size threshold is not stored with SP1-911-9, this SP adjusts the upper paper lift motor reverse time for paper sizes larger than the small size threshold set with SP1-911-8. If a middle size threshold is stored with SP1-911-9, then this SP adjusts the motor reverse time for sizes larger than the middle size. **Do not input a value greater than 1200.** *Use this SP when a paper feed problem occurs from the 4th paper tray.* *See "Optional Paper Tray Unit - Paper Lift Mechanism" for details on SP1-911, Section 10.2.2.2.*	0 ~ 2000 1 ms/step **200 ms**
	2	4th Bottom Plate Pressure Adjustment (Small Size) (Optional PFU)	Adjusts the upper paper lift motor reverse time for paper of the same size as or smaller than the small size threshold set with SP1-911-8. **Do not input a value greater than 1200.** *Use this SP when a paper feed problem occurs from the 4th paper tray.* *See "Optional Paper Tray Unit - Paper Lift Mechanism" for details on SP1-911, Section 10.2.2.2.*	0 ~ 2000 1 ms/step **600 ms**
	3	4th Bottom Plate Pressure Adjustment (Middle Size) (Optional PFU)	Adjusts the upper paper lift motor reverse time for paper sizes larger than the small size threshold set with SP1-911-8, up to and including the middle size threshold set with SP1-911-9. If a middle size threshold is not stored with SP1-911-9, this SP is not used. **Do not input a value greater than 1200.** *Use this SP when a paper feed problem occurs from the 4th paper tray.* *See "Optional Paper Tray Unit - Paper Lift Mechanism" for details on SP1-911, Section 10.2.2.2.*	0 ~ 2000 1 ms/step **200 ms**
	4	4th Bottom Plate Pressure Re-adjustment (Small Size) (Optional PFU)	Adjusts the upper paper lift motor forward rotation time for paper of the same size as or smaller than the small size threshold set with SP1-911-8. The motor rotates forward when the remaining paper amount is lower than the value of SP1-911-6. *Use this SP when a paper feed problem occurs when paper in the 4th paper tray is running low.* *See "Optional Paper Tray Unit - Paper Lift Mechanism" for details on SP1-911, Section 10.2.2.2.*	0 ~ 2000 1 ms/step **400 ms**

Mode No.			Function	Settings
Class 1 and 2	Class 3			
1-911*	5	4th Bottom Plate Pressure Re-adjustment (Middle Size) (Optional PFU)	Adjusts the upper paper lift motor forward rotation time for paper sizes larger than the small size threshold set with SP1-911-8, up to and including the middle size threshold set with SP1-911-9. The motor rotates forward when the remaining paper amount is lower than the value of SP1-911-7. If a middle size threshold is not stored with SP1-911-9, this SP is not used. *Use this SP when a paper feed problem occurs when paper in the 4th paper tray is running low.* *See "Optional Paper Tray Unit - Paper Lift Mechanism" for details on SP1-911, Section 10.2.2.2.*	0 ~ 2000 1 ms/step **300 ms**
	6	4th Paper Amount (Small Size) (Optional PFU)	Selects the remaining paper amount limit for use with SP1-911-4. *Set this SP to 2 or 3 when a paper feed problem occurs before near-end.* *See "Optional Paper Tray Unit - Paper Lift Mechanism" for details on SP1-911, Section 10.2.2.2.*	0: None (Empty) **1: Near End** 2: 25% 3: 75%
	7	4th Paper Amount (Middle Size) (Optional PFU)	Selects the remaining paper amount limit for use with SP1-911-5. *Set this SP to 2 or 3 when a paper feed problem occurs before near-end.* *See "Optional Paper Tray Unit - Paper Lift Mechanism" for details on SP1-911, Section 10.2.2.2.*	0: None (Empty) **1: Near End** 2: 25% 3: 75%
	8	4th Small Paper Size Setting (Optional PFU)	Selects the small size threshold for the 4th paper tray. "0" means that this setting is not used. *The size used by SP1-911 is determined by paper width. See "Optional Paper Tray Unit - Paper Lift Mechanism" for details on SP1-91, Section 10.2.2.21.*	0: None (Not used) **1: HL** 2: A4 3: LG, LT 4: DL, L. 5: A3, 4
	9	4th Middle Paper Size Setting (Optional PFU)	Selects the middle size threshold for the upper tray. "0" means that this setting is not used. *The value must be larger than the small size threshold (SP1-911-8). The size used by SP1-911 is determined by paper width. See "Optional Paper Tray Unit - Paper Lift Mechanism" for details on SP1-911, Section 10.2.2.2.*	**0: None (Not used)** **1: HL** 2: A4 3: LG, LT 4: DL,L 5: A3,4
1-912*		Tray Motor Reverse Time	Adjusts the tray motor reverse time. *The tray motor reverses when the tray is pulled out. The tray can be put back in the machine without damage while the motor reverses.*	0 ~ 9000 1 ms/step **1700 ms**
1-920*	1	Duplex Inverter Motor Speed Adjustment (Forward/Low)	Adjusts the duplex inverter motor speed during forward rotation at low speed. *Use this SP when paper often jams at the duplex entrance area. Do not use in the field unless directed by service center staff.*	-4 ~ 4 1/step **0**

Service Tables

Mode No.			Function	Settings
Class 1 and 2	Class 3			
1-920*	2	Duplex Inverter Motor Speed Adjustment (Forward/High)	Adjusts the duplex inverter motor speed during forward rotation at high speed. *Use this SP when paper often jams at the duplex entrance area. Do not use in the field unless directed by service center staff.*	-4 ~ 4 1/step **0**
	3	Duplex Inverter Motor Speed Adjustment (Reverse/Low)	Adjusts the duplex inverter motor speed during forward rotation at low speed. *Use this SP when paper often jams at the duplex inverter area. Do not use in the field unless directed by service center staff.*	-4 ~ 4 1/step **0**
	4	Duplex Inverter Motor Speed Adjustment (Reverse/High)	Adjusts the duplex inverter motor speed during forward rotation at high speed. *Use this SP when paper often jams at the duplex inverter area. Do not use in the field unless directed by service center staff.*	-4 ~ 4 1/step **0**
1-921	1	Duplex Transport Motor Speed Adjustment (Forward/Low)	Adjusts the duplex transport motor speed during forward rotation at low speed. *Use this SP when paper often jams at the duplex entrance area when feeding paper from the duplex unit to the registration area. Do not use in the field unless directed by service center staff.*	-4 ~ 4 1/step **0**
	2	Duplex Transport Motor Speed Adjustment (Forward/High)	Adjusts the duplex transport motor speed during forward rotation at high speed. *Use this SP when paper often jams at the duplex entrance area when feeding paper from the duplex unit to the registration area. Do not use in the field unless directed by service center staff.*	-4 ~ 4 1/step **0**
1-990*		Fusing Idling	Selects whether fusing idling is done or not when the machine returns to stand-by mode from low power mode level 2. *If this is at "1" and the fusing temperature in low power mode level 2 is 70°C ~ 90°C, fusing idling is done. See "Fusing Temperature Control" for more details, Section 2.10.6.*	**0: No** 1: Yes
2-001*	1*	Charge Roller Bias Adjustment (Printing)	Adjusts the voltage applied to the charge roller during printing. *This value will be changed automatically when the charge roller bias correction is performed.* *Note that if this value is changed, the charge roller voltage will be corrected based on the new voltage.*	-2100 ~ –1500 1 V/step **–1650 V**
	2*	Charge Roller Bias Adjustment (ID sensor pattern)	Adjusts the voltage applied to the charge roller when making the Vsdp ID sensor pattern (for charge roller bias correction). *The actual charge roller voltage is this value plus the value of SP2-001-1.*	0 ~ 400 1 V/step **200**

Mode No.			Function	Settings
Class 1 and 2	Class 3			
2-001*	3	Charge Roller Bias Adjustment (Temporally input)	Inputs the charge roller voltage temporarily for test purposes. ***Do not change the value.***	0 ~ -2500 1 V/step **0**
2-005*	1	Charge Roller Bias Correction (Vsdp Minimum)	Adjusts the lower threshold value for the charge roller correction. *When the value of Vsdp/Vsg is less than this value, the charge roller voltage increases by 50V (e.g. from –500 to –550). The size of the increase depends on SP 2-005-3.*	0 ~ 100 1%/step **90%**
2-005*	2	Charge Roller Bias Correction (Vsdp Maximum)	Adjusts the upper threshold value for the charge roller correction. *When the value of Vsdp/Vsg is greater than this value, the charge roller voltage decreases by 50V (e.g. from –550 to –500). The size of the decrease depends on SP 2-005-3.*	0 ~ 100 1%/step **95%**
	3	Charge Roller Bias Correction Step	Adjusts the size of the charge roller voltage correction.	0 ~ 200 1 V/step **50 V**
2-101*	1	Erase Margin Adjustment (Leading Edge)	Adjusts the leading edge erase margin. *The specification is 3 ± 2 mm. See "Replacement and Adjustment - Copy Adjustment" for details, Section 6.8.*	0.0 ~ 9.0 0.1 mm/step **3.0 mm**
	2	Erase Margin Adjustment (Trailing Edge – Small Paper Size)	Adjusts the trailing edge erase margin for paper of length 216 mm or less. *The specification is 3 ± 2 mm. See "Replacement and Adjustment - Copy Adjustment" for details, Section 6.8.*	0.0 ~ 9.0 0.1 mm/step **2.0 mm**
	3	Erase Margin Adjustment (Trailing Edge – Middle Paper Size)	Adjusts the trailing edge erase margin for paper of length 216.1 ~ 297 mm. *The specification is 3 ± 2 mm. See "Replacement and Adjustment - Copy Adjustment" for details, Section 6.8.*	0.0 ~ 9.0 0.1 mm/step **3.0 mm**
	4	Erase Margin Adjustment (Trailing Edge – Large Paper Size)	Adjusts the trailing edge erase margin for paper longer than 297 mm. *The specification is 3 ± 2 mm. See "Replacement and Adjustment - Copy Adjustment" for details, Section 6.8.*	0.0 ~ 9.0 0.1 mm/step **4.0 mm**
	5	Erase Margin Adjustment (Left Side)	Adjusts the left edge erase margin. *The specification is 2 ± 1.5 mm. See "Replacement and Adjustment - Copy Adjustment" for details, Section 6.8.*	0.0 ~ 9.0 0.1 mm/step **2.0 mm**
	6	Erase Margin Adjustment (Right Side)	Adjusts the right edge erase margin. *The specification is 2 + 2.5/-1.5 mm. See "Replacement and Adjustment - Copy Adjustment" for details , Section 6.8.*	0.0 ~ 9.0 0.1 mm/step **2.0 mm**

Mode No.			Function	Settings
Class 1 and 2	Class 3			
2-101*	7	Erase Margin Adjustment (Rear – Trailing Edge)	Adjusts the trailing edge erase margin on the reverse side of duplex copies. The actual trailing edge erase margin on the reverse side is this value plus the value of SP2-101-2 or 3 or 4. *The specification is 3 ± 2 mm. See "Replacement and Adjustment - Copy Adjustment" for details, Section 6.8*	0.0 ~ 9.0 0.1 mm/step **1.2 mm**
	8	Erase Margin Adjustment (Rear – Left Side)	Adjusts the left side erase margin on the reverse side of duplex copies. The actual left side erase margin on the reverse side is this value plus the value of SP2-101-5. *The specification is 2 ± 1.5 mm. See "Replacement and Adjustment - Copy Adjustment" for details, Section 6.8.*	0.0 ~ 9.0 0.1 mm/step **0.3 mm**
	9	Erase Margin Adjustment (Rear – Right Side)	Adjusts the right side erase margin on the reverse side of duplex copies. The actual right side erase margin on the reverse side is this value plus the value of SP2-101-6 *The specification is 2 +2.5/-1.5 mm. See "Replacement and Adjustment - Copy Adjustment" for details, Section 6.8.*	0.0 ~ 9.0 0.1 mm/step **0.3 mm**
	10	Erase Margin Adjustment (Printer, Rear Trailing Edge)	In printer mode, adjusts the trailing edge erase margin on the reverse side of duplex copies. The actual trailing edge erase margin on the reverse side is this value plus the value of SP2-101-7. *The specification is 3 ± 2 mm. See "Replacement and Adjustment - Copy Adjustment" for details, Section 6.8.*	0.0 ~ 9.0 0.1 mm/step **0.0 mm**
2-103*		LD Power Adjustment	Adjusts the LD power. ***Do not change the value.***	0 ~ 255 1 /step **129**
2-106*		ID Adjustment for Test Pattern	Adjusts the image density level for black pixels on test pattern printouts (patterns are made with SP5-902). *This SP affects all test patterns except for the grayscale test patterns.*	0 ~ 255 1 /step **255**
2-201*	1	Development Bias Adjustment (Printing)	Adjusts the development bias during printing. *This can be adjusted as a temporary measure if faint copies appear due to an aging drum.*	-1500 ~ -2000 1 V/step **–600 V**

Mode No.			Function	Settings
Class 1 and 2	Class 3			
2-201*	2	Development Bias Adjustment (ID sensor pattern)	Adjusts the development bias for making the ID sensor pattern. The actual development voltage for the ID sensor pattern is this value plus the value of SP2-201-1. *This should not be used in the field, because it affects ID sensor pattern density, which affects toner supply. However, see 'Troubleshooting – Toner Density' for one occasion when this SP mode can be used, Section 7.4.*	**0: N (200V)** 1: H (240V) 2: L (160V) 3: HH (280V) 4: LL (120V)
2-213*		Copies after Near End	Selects the number of copies that can be made after toner near-end has been detected. *If the user normally makes copies with a high proportion of black, reduce the interval.*	**0: 50 pages** 1: 20 pages
2-220*		Vt/Vsg/Vsp/Vsdp Data Display	Displays the Vt, Vsg, Vsp, and Vsdp values. *The Vt values are displayed as follows: e.g. Vt2.14/2.29 The left value is the actual TD sensor output. The right value is the target Vref value.*	**0: No** 1: Yes
2-221*		ID Sensor Error Display	Displays the Vsg, Vsp, Power, Vsg-Vsp, and Vt values for ID sensor error conditions. See "ID Sensor Error Analysis" later in this section 4.2.17 for more detail. *There is no SC code for the ID sensor error in this machine. Check the ID sensor values with this SP if abnormal copies are made (such as dirty background) to determine whether the problem is due to incorrect toner density control.*	
2-301*	1*	Transfer Current (Paper Tray Feed)	Adjusts the current applied to the transfer roller during copying from a paper tray when the user uses the "**Normal**" paper setting. *If the user normally feeds thicker paper from a paper tray, use a higher setting.*	0: –2 μA **1: 0 μA** 2: +2 μA 3: +4 μA
	2*	Transfer Current (By-pass Feed)	Adjusts the current applied to the transfer roller during copying from the by-pass tray. These settings are also used if the 2nd tray is used and special paper is selected with the switch in the tray. *If the user normally feeds thicker paper from the by-pass tray/2nd tray (special paper), use a higher setting. If waste toner is re-attracted from the drum (this can occur when using an OHP sheet), use a higher setting.*	0: –2 μA **1: 0 μA** 2: +2 μA 3: +4 μA

Service Tables

Mode No.			Function	Settings
Class 1 and 2	Class 3			
2-301*	3*	Transfer Current (Duplex)	Adjusts the current applied to the transfer roller during copying from the duplex unit when the user uses the "Normal" paper setting. *Use this SP when the image on the rear side of the paper has a problem caused by poor image transfer.*	0: –2 μA **1: 0 μA** 2: +2 μA 3: +4 μA
	4*	Transfer Current (Cleaning)	Adjusts the current applied to the transfer roller during roller cleaning. *If toner remains on the roller after cleaning (dirty background appears on the rear side of the paper), increase the current.*	0 ~ –10 1 μA/step **–4 μA**
	5	Transfer Current (Input - Front)	This is for the designer's test purposes. ***Do not change the value.***	0 ~ 30 1 μA/step **0 μA**
	6	Transfer Current (Input - Rear)	This is for the designer's test purposes. ***Do not change the value.***	0 ~ 30 1 μA/step **0 μA**
2-802		Developer Initialization	Initializes the developer and checks Vt. The machine mixes the developer for 2 minutes and while doing this, it reads and displays the TD sensor output (Vt). It does not initialize the TD sensor output. *If the machine has not been used for a long time, prints may have a dirty background. In this case, use this SP mode to mix the developer. After finishing, press the ⌧ key to remove the Vt data from the screen.*	**0: No** 1: Yes
2-901*	1	Separation Voltage Adjustment (Front – Leading Edge)	Adjusts the voltage that is applied to the separation plate during printing at the leading edge of the paper on the front side. *If the copies have pawl marks at the leading edge, increase this voltage.*	-1000 ~ -4000 1 V/step **–1800 V**
	2	Separation Voltage Adjustment (Front – others)	Adjusts the voltage that is applied to the separation plate during printing on the image area of the paper on the front side. *If the copies have pawl marks in the image area, increase this voltage.*	-1000 ~ -4000 1 V/step **–1800 V**
	3	Separation Voltage Adjustment (Rear – heading edge)	Adjusts the voltage applied to the separation plate, during printing at the leading edge of the paper on the rear side. *See SP2-901-1.*	-1000 ~ -4000 1 V/step **–2100 V**
	4	Separation Voltage Adjustment (Rear – others)	Adjusts the voltage applied to the separation plate, during printing at the image area of the paper on the rear side. *See SP2-901-2.*	-1000 ~ -4000 1 V/step **–2100 V**

Mode No.			Function	Settings
Class 1 and 2	Class 3			
2-902*		FCI Smoothing	Selects whether the FCI smoothing function to remove jagged edges is enabled or disabled. *FCI smoothing is only used with the Sharp Text setting in text mode with binary picture processing.*	0: No (Disabled) **1: Yes (Enabled)**
2-905		Gradation Type	This is for the designer's test purposes. **Do not change the value.**	**0: System** 1: 400 dpi 2: None 3: 600 dpi
2-906*	1	Tailing Correction (Shift Value)	Shifts the image across the page at the interval specified by SP 2-906-2. *When making many copies of an original that contains vertical lines (such as a table), separation may not work correctly, then a tailing image will occur (ghosts of the vertical lines will continue past the bottom of the table). This SP prevents this problem.*	0.0 ~ 1.0 0.1 mm/step **0.0 mm**
	2	Tailing Correction (Interval)	Changes the interval for the image shift specified by SP2-906-1.	1 ~ 10 1 page/step **1 page**
2-908		Forced Toner Supply	Forces the toner bottle to supply toner to the toner supply unit. Press "1" to start. *During this process, the machine supplies toner until the toner concentration in the development unit reaches a standard level. However, if the toner concentration does not reach a standard level, the machine supplies toner for 2 minutes maximum.*	**0: No** 1: Yes
2-915*		Polygon Motor Idling Time	Selects the polygon motor idling time. *If the user sets an original, touches a key, or opens the platen cover/DF, the polygon motor starts idling to make a faster first copy. However, with the default (15 s), the motor stops if the user does nothing for 15 s, and stops 15 s after the end of a job.* *If set at "0", the polygon motor never turns off during stand-by. However, when the machine goes into energy saver mode, the polygon motor turns off regardless of this timer.*	0: None **1: 15 s** 2: 25 s
2-921*		Toner Supply Mode	Selects the toner supply mode. *Normally, only use setting 0. Change to 3 temporarily if the TD sensor is defective. Do not use settings 1 and 2; these are for designer's use only.*	**0:** Normal 1 1: Normal 2 2: Fixed 1 3: Fixed 2

Mode No.			Function	Settings
Class 1 and 2	Class 3			
2-922*		Toner Supply Time	Adjusts the toner supply motor on time for sensor supply mode. This SP is effective only when SP2-921 is "0" or "1". *Increasing this value increases the toner supply motor on time. So, use a high value if the user tends to make lots of copies that have a high proportion of black.*	0.1 ~ 5.0 0.1 s/step **0.6 s**
2-923*		Toner Recovery Time	Adjusts the toner supply motor on time during recovery from toner near-end/end. This SP is effective only when SP2-921 is "0", "1", or "2". *Note that toner recovery is done in a 3-second cycle. So, the input value should be a multiple of 3 (e.g. 3, 6 ,9). See "Toner Density Control" for more details,Section 2.6.6.*	3 ~ 60 1 s/step **30 s**
2-925*		Toner Supply Rate Fixed Mode	Adjusts the toner supply rate for fixed toner supply mode. This SP is effective only when SP2-921 is "2" or "3". *Increasing this value increases the toner supply motor on time. So, use a high value if the user tends to make lots of copies that have a high proportion of black. See "Toner Density Control" for more details, Section 2.6.6.* 0: t 4: 12t 1: 2t 5: 16t 2: 4t 6: On continuously 3: 8t 7: 0 s t: 200 ms	0 ~ 7 1/step **0**
2-926*		Standard Vt	Adjusts Vts (Vt for a new PCU). The TD sensor output is adjusted to this value during the TD sensor initial setting process. This SP is effective only when SP2-921 is "0", "1", or "2". ***Do not change this value.***	0.00 ~ 5.00 0.01 V/step **2.30 V**
2-927*		ID Sensor Control	Selects whether the ID sensor is used or not for toner density control. *If this value is "0", dirty background may occur after the machine has not been used for a long time.*	0: No **1: Yes**

Mode No.			Function	Settings
Class 1 and 2	Class 3			
2-928*		Toner End Clear	Clears the toner end condition. Select "1" then press the # key to clear the toner end condition without adding new toner. *If this is "1", the following are cleared.* • *Toner end indicator (goes out)* • *Toner near-end counter* • *Toner near-end level* *When making a lot of copies after changing this setting to "1", the carrier may be attracted to the drum when the toner runs out, which may damage the drum.*	**0: No** 1: Yes
2-929*	1	Vref Upper Limit	Adjusts the upper limit for Vref. *When there is dirty background on the copy, change this value to around 3.1 V.*	0.00 ~ 5.00 0.01 V/step **2.80 V**
	2	Vref Lower Limit	Adjusts the lower limit for Vref.	0.00 ~ 5.00 0.01 V/step **1.10 V**
2-992*		Copies After TD Sensor Error	Selects the number of copies that can be made after a TD sensor error has been detected. When the machine copies this amount, an SC condition will occur. *If the optional fax unit is installed, the SC condition occurs immediately regardless of the number of prints (this is because the sender of the fax cannot check the image quality of the printout).*	**0: 100 copies** 1: 200 copies
⇒ 2-993*		Transfer Current Timing	Selects the transfer current application timing. *If "1" is selected, the machine applies the transfer current 90 ms before the Normal application time. Use this SP mode when dirty background appears on the rear side of the first page.*	**0: Normal** 1: Early
2-995*		ID Sensor Detection Interval	If the machine starts warming-up after this time has passed since entering night mode (for example, to print an incoming fax), the machine makes an ID sensor pattern. *If this value is greater, there is a greater chance that background will become dirty.*	0 ~ 999 1 minute/step **30 minutes**
2-996*		Transfer Roller Cleaning	Selects whether the transfer roller is cleaned before each copy job. Set this to '1' when dirty background appears on the reverse side of the first page of a copy job. However, the first copy time will be longer. If this SP is at 0, the transfer roller is never cleaned. See 'Detailed Section Descriptions – Transfer Roller Cleaning" for more details, Section 2.9.3.	**0: No** 1: Yes

Service Tables

Mode No.			Function	Settings
Class 1 and 2	Class 3			
2-998*	1	Main Scan Magnification (Engine)	Adjusts the magnification in the main scan direction for the engine. *Use the ⊙/* key to toggle between + and - before entering the value. The specification is ± 0.5%.* *This SP value affects all print modes (copy, printer, and image rotation). If the main scan magnification is not correct for copying, also use SP2-998-2. For image rotation, use SP2-998-3.* See "Replacement and Adjustment - Copy Adjustment" for details, Section 6.8.	-0.5 ~ +0.5 0.1 %/step **0.0 %**
	2	Main Scan Magnification (Copy)	Adjusts the magnification in the main scan direction for copying. *This SP affects only copying. It is added to the value of 2-998-1.*	-0.5 ~ +0.5 0.1 %/step **0.0 %**
	3	Main Scan Magnification (Image Rotation)	Adjusts the magnification in the main scan direction for copying with image rotation mode. *This SP affects only image rotation mode. It is added to the value of 2-998-1.*	-0.5 ~ +0.5 0.1 %/step **0.0 %**
4-008*	1	Main Scan Magnification (Scanner)	Adjusts the magnification in the main scan direction for scanning. *Use the ⊙/* key to toggle between + and - before entering the value. The specification is ± 1%. See "Replacement and Adjustment - Copy Adjustment" for details*, Section 6.8.	–1.0 ~ +1.0 0.1 %/step **0.0%**
4-010*		Leading Edge Registration (Scanner)	Adjusts the leading edge registration for scanning in platen mode. *(–): The image moves in the direction of the leading edge.* *Use the ⊙/* key to toggle between + and - before entering the value. The specification is 2 ± 1.5 mm. See "Replacement and Adjustment - Copy Adjustment" for details*, Section 6.8.	–5.0 ~ +9.0 0.1 mm/step **0.0 mm**
4-011*		Side-to-side Registration (Scanner)	Adjusts the side-to-side registration for scanning in platen mode, Section 6.8. *(–): The image disappears at the left side.* *(+): The image appears.* *Use the ⊙/* key to toggle between + and - before entering the value. The specification is 2 ± 1.5 mm. See section 6.8 "Replacement and Adjustment - Copy Adjustment" for details,*	–10.0 ~ +6.0 0.1 mm/step **0.0 mm**

Mode No.			Function	Settings
Class 1 and 2	Class 3			
4-012*	1	Erase Margin (Leading Edge)	Adjusts the erase margin at each side for scanning. *Do not adjust this unless the user wishes to have a scanner margin that is greater than the printer margin.*	0 ~ 9.0 0.1 mm/step **1.0 mm**
	2	Erase Margin (Trailing Edge)		0 ~ 9.0 0.1 mm/step **1.0 mm**
	3	Erase Margin (Left Side)		0 ~ 9.0 0.1 mm/step **1.0 mm**
	4	Erase Margin (Right Side)		0 ~ 9.0 0.1 mm/step **1.0 mm**
4-013		Scanner Free Run	Performs a scanner free run with the exposure lamp on. *After selecting "1", press "OK" or the # key twice to start this feature. Press the C/Ø (Clear/Stop) key to stop.*	**0: No** 1: Yes
4-015*	1	White Plate Scanning (Start Position)	Adjusts the scanning start position on the white plate for auto shading. *The default is 6 mm from the leading edge. The setting specifies how far scanning starts from the default position.*	– 3.0 ~ + 6.0 0.1 mm/step **0.0 mm**
	2	White Plate Scanning (Scanning Area)	Adjusts the width of the area on the white plate (in the sub scan direction) that is scanned for auto shading. *The default is 5 mm. The current setting specifies the difference from this default.*	– 3.0 ~ + 6.0 0.1 mm/step **0.0 mm**
4-101*		Sub Scan Magnification (Scanner)	Adjusts the magnification in the sub scan direction for scanning. If this value is changed, the scanner motor speed is changed. *Use the */# key to toggle between + and - before entering the value. The specification is ± 0.5%. See "Replacement and Adjustment - Copy Adjustment" for details*, Section 6.8.	– 0.9 ~ + 0.9 0.1%/step **0.0%**
4-301		APS Data Display	Displays the status of the APS sensors and platen/DF cover sensor. *See "APS and Platen/ADF Cover Sensor Output Display" after the SP mode table*, Section 4.2.12.	
4-303*		APS Small Size Original	Selects whether the copier determines that the original is A5 size when the APS sensor cannot detect the size. *If "A5 lengthwise" is selected, paper sizes that cannot be detected by the APS sensors are regarded as A5 lengthwise. If "Not detected" is selected, "Cannot detect original size" will be displayed.*	**0: No (Not detected)** 1: Yes (A5 lengthwise)

Mode No.			Function	Settings
Class 1 and 2	Class 3			
4-401*		Image Mode Selection	Selects whether the binary processing is always used in Positive/Negative mode. *0: The machine uses the process selected by the user with user tools.* *1: The machine always uses binary picture processing; greyscale processing is disabled.*	**0: System** 1: Binary
4-412*		IPU Image Data Path	Selects one of the following video data outputs, which will be used for printing. **0. N: Normal video processing** 1. S: After auto shading processing 2. M: After magnification processing 3. F: After MTF processing 4. G: After gamma correction 5. T: Data straight through (no video processing)	
			Do not change the value.	
4-417		IPU/SBU Test Pattern	Prints test patterns from the IPU or SBU video data outputs. (1 ~ 13: IPU, 14 ~ 16: SBU) **0. No Print** 1. Vertical Line - 1 dot 2. Horizontal Line - 1 dot 3. Vertical Line - 2 dot 4. Horizontal Line - 2 dot 5. Alternating Dot Pattern 6. Grid Pattern - 1 dot 7. Vertical Bands 8. Grayscale - Horizontal 9. Grayscale - Vertical 10. Patch Pattern 11. Cross Pattern 12. Slant Pattern 13. Trimming Area 14. Vertical Line - 2 dot 15. Grid Pattern - 2 dot 16. 16-grayscale	
			Change to the copy mode display by pressing the (Interrupt) key, then print the test pattern.	
4-902		Exposure Lamp ON	Turns on the exposure lamp. *To turn off the exposure lamp, select "0".*	**0: No (Off)** 1: Yes (On)
4-904	1*	SBU Gain Adjustment (EVEN)	Checks the difference value of the black level for the EVEN channel after adjusting the black level at power-up.	0 ~ 255 1/step **40**
			Do not change the value. *However, after doing a memory all clear (SP5-801), use it to re-input the previous value.*	

Mode No.			Function	Settings
Class 1 and 2	Class 3			
4-904	2*	SBU Gain Adjustment (ODD)	Checks the difference value of the black level for the ODD channel after adjusting the black level at power-up. ***Do not change the value.*** *However, after doing a memory all clear (SP5-801), use it to re-input the previous value.*	0 ~ 255 1/step **40**
	3	SBU Gain Adjustment (Adjusted EVEN)	Checks the difference value of the black level for the EVEN channel after adjusting the black level at SBU Auto Adjustment (SP4-908). ***Do not change the value.***	0 ~ 255 1/step **40**
	4	SBU Gain Adjustment (Adjusted ODD)	Checks the difference value of the black level for the ODD channel after adjusting the black level at SBU Auto Adjustment (SP4-908). ***Do not change the value.***	0 ~ 255 1/step **40**
4-905*	1	SBU DC Cont Adjustment (EVEN)	Adjusts the coefficient of the D/A converter for the AGC gain curve for DC cont for the EVEN channel. ***Do not change the value.*** *However, after doing a memory all clear (SP5-801), use it to re-input the previous value.*	0 ~ 255 1/step **25**
	2	SBU DC Cont Adjustment (ODD)	Adjusts the coefficient of the D/A converter for the AGC gain curve for DC cont for the ODD channel. ***Do not change the value.*** *However, after doing a memory all clear (SP5-801), use it to re-input the previous value.*	0 ~ 255 1/step **25**
4-906	1	SBU Ref. Value Adjustment (Current Value)	Adjusts the coefficient of the D/A converter for the AGC gain curve for scanning the white plate. ***Do not change the value.***	0 ~ 255 1/step **147**
	2	SBU Ref. Value Adjustment (Loop)	Displays the number of convergences for SBU reference control. ***Do not use in the field.***	0 ~ 255 1/step **0**
4-907*	1	SBU Offset Value Adjustment (EVEN)	Adjusts the coefficient of the D/A converter for the offset (Z/C) for the analog image data processing for EVEN. ***Do not change the value.*** *However, after performing the memory all clear (SP5-801), use it to re-input the previous value.*	0 ~ 255 1/step **180**
4-907*	2	SBU Offset Value Adjustment (ODD)	Adjusts the coefficient of the D/A converter for the offset (Z/C) for the analog image data processing for ODD. ***Do not change the value.*** *However, after performing the memory all clear (SP5-801), use it to re-input the previous value.*	0 ~ 255 1/step **180**

Mode No.			Function	Settings
Class 1 and 2	Class 3			
4-908		SBU Auto Adjustment	Performs the auto scanner adjustment. *Using this SP mode after replacing the white plate or erasing the memory on the BICU board. See "Replacement and Adjustment – Copy Image Adjustments - Standard White Density Adjustment" for details on how to do this, Section 6.8.2.*	**0: No (Normal operation)** 1: Yes (Start the adjustment)
4-909		SBU AE Cont Adjustment	Adjusts the background density when ADS mode is not being used. ***Do not change the value.***	0 ~ 255 1/step **209**
4-910*		Scanner Motor Control	Selects the scanner motor control method. *If "1" is selected, the current for the scanner motor will be reduced and jitter copy quality problems will be alleviated. However, copy speed will be reduced.* ***Normally do not change the value.***	**0: Normal** 1: Special
4-913*		DF Shading Interval Time	Adjusts the interval for shading processing in DF mode. *Light and heat may affect the scanner response. If copy quality indicates that white level is drifting during a DF copy job, reduce this setting. This setting is only effective when the setting of SP4-950 is set to 1.*	0 ~ 60 1 s/step **30 s**
4-915*	1	P - MTF Coefficient (Text /Grayscale /Main /25%~29%)	This adjustment is only effective for the "Service Mode" original type setting. Selects the MTF filter coefficient in the grayscale processing mode. See "Detailed Descriptions - Image Processing" for details. T/P: Text/Photo, Section 2.2.4.	0 ~ 15 1/step **1**
	2	P - MTF Coefficient (Text /Grayscale /Main /30%~76%)		0 ~ 15 1/step **1**
	3	P - MTF Coefficient (Text /Grayscale /Main /77%~154%)		0 ~ 15 1/step **3**
	4	P - MTF Coefficient (Text /Grayscale /Main /155%~256%)		0 ~ 15 1/step **3**
	5	P - MTF Coefficient (Text /Grayscale /Main /257%~)		0 ~ 15 1/step **15**
	6	P - MTF Coefficient (Text /Grayscale /Sub /25%~29%)		0 ~ 15 1/step **2**
	7	P - MTF Coefficient (Text /Grayscale /Sub /30%~76%)		0 ~ 15 1/step **2**

Mode No.			Function	Settings
Class 1 and 2	Class 3			
4-915*	8	P - MTF Coefficient (Text /Grayscale /Sub /77%~154%)	This adjustment is only effective for the "Service Mode" original type setting. Selects the MTF filter coefficient in the grayscale processing mode. See "Detailed Descriptions - Image Processing" for details. T/P: Text/Photo, Section 2.2.4.	0 ~ 15 1/step **3**
	9	P - MTF Coefficient (Text /Grayscale /Sub /155%~256%)		0 ~ 15 1/step **3**
	10	P - MTF Coefficient (Text /Grayscale /Main /257%~)		0 ~ 15 1/step **12**
	11	P - MTF Coefficient (T/P /Grayscale /Main /25%~57%)		0 ~ 15 1/step **3**
	12	P - MTF Coefficient (T/P /Grayscale /Main /58%~65%)		0 ~ 15 1/step **3**
	13	P - MTF Coefficient (T/P /Grayscale /Main /66%~76%)		0 ~ 15 1/step **3**
	14	P - MTF Coefficient (T/P /Grayscale /Main /77%~154%)		0 ~ 15 1/step **3**
	15	P - MTF Coefficient (T/P /Grayscale /Main /155%~256%)		0 ~ 15 1/step **3**
	16	P - MTF Coefficient (T/P /Grayscale /Main /257%~)		0 ~ 15 1/step **3**
	17	P - MTF Coefficient (T/P /Grayscale /Sub /25%~57%)		0 ~ 13 1/step **3**
	18	P - MTF Coefficient (T/P /Grayscale /Sub /58%~65%)		0 ~ 13 1/step **3**
	19	P - MTF Coefficient (T/P /Grayscale /Sub /66%~76%)		0 ~ 13 1/step **3**
	20	P - MTF Coefficient (T/P /Grayscale /Sub /77%~154%)		0 ~ 13 1/step **3**
	21	P - MTF Coefficient (T/P /Grayscale /Sub /155%~256%)		0 ~ 13 1/step **3**
	22	P - MTF Coefficient (T/P /Grayscale /Sub /257%~)		0 ~ 13 1/step **3**

Mode No.			Function	Settings
Class 1 and 2	Class 3			
4-915*	23	P - MTF Coefficient (Text /Binary /Main /25%~49%)	This adjustment is only effective for the "Service Mode" original type setting. Selects the MTF filter coefficient in the binary picture processing mode. See "Detailed Descriptions - Image Processing" for details. T/P: Text/Photo, Section 2.2.4.	0 ~ 15 1/step **1**
	24	P - MTF Coefficient (Text /Binary /Main /50%~95%)		0 ~ 15 1/step **1**
	25	P - MTF Coefficient (Text /Binary /Main /96%~125%)		0 ~ 15 1/step **1**
	26	P - MTF Coefficient (Text /Binary /Main /126%~159%)		0 ~ 15 1/step **3**
	27	P - MTF Coefficient (Text /Binary /Main /160%~200%)		0 ~ 15 1/step **4**
	28	P - MTF Coefficient (Text /Binary /Main /201%~)		0 ~ 15 1/step **4**
	29	P - MTF Coefficient (Text /Binary /Sub /25%~49%)		0 ~ 15 1/step **2**
	30	P - MTF Coefficient (Text /Binary /Sub /50%~95%)		0 ~ 15 1/step **2**
	31	P - MTF Coefficient (Text /Binary /Sub /96%~125%)		0 ~ 15 1/step **2**
	32	P - MTF Coefficient (Text /Binary /Sub /126%~159%)		0 ~ 15 1/step **3**
	33	P - MTF Coefficient (Text /Binary /Sub /160%~200%)		0 ~ 15 1/step **4**
	34	P - MTF Coefficient (Text /Binary /Sub /201%~)		0 ~ 15 1/step **4**
	35	P - MTF Coefficient (T/P /Binary /Main /25%~49%)		0 ~ 15 1/step **3**
	36	P - MTF Coefficient (T/P /Binary /Main /50%~89%)		0 ~ 15 1/step **3**
	37	P - MTF Coefficient (T/P /Binary /Main /90%~95%)		0 ~ 15 1/step **3**
	38	P - MTF Coefficient (T/P /Binary /Main /96%~125%)		0 ~ 15 1/step **1**

Mode No.			Function	Settings
Class 1 and 2	Class 3			
4-915*	39	P - MTF Coefficient (T/P /Binary /Main /126%~159%)	This adjustment is only effective for the "Service Mode" original type setting. Selects the MTF filter coefficient in the binary picture processing mode. See "Detailed Descriptions - Image Processing" for details. T/P: Text/Photo, Section 2.2.4.	0 ~ 15 1/step **1**
	40	P - MTF Coefficient (T/P /Binary /Main /160%~200%)		0 ~ 15 1/step **1**
	41	P - MTF Coefficient (T/P /Binary /Main /201%~)		0 ~ 15 1/step **1**
	42	P - MTF Coefficient (T/P /Binary /Sub /25%~49%)		0 ~ 15 1/step **3**
	43	P - MTF Coefficient (T/P /Binary /Sub /50%~89%)		0 ~ 15 1/step **3**
	44	P - MTF Coefficient (T/P /Binary /Sub /90%~95%)		0 ~ 15 1/step **3**
	45	P - MTF Coefficient (T/P /Binary /Sub /96%~125%)		0 ~ 15 1/step **2**
	46	P - MTF Coefficient (T/P /Binary /Sub /126%~159%)		0 ~ 15 1/step **2**
	47	P - MTF Coefficient (T/P /Binary /Sub /160%~200%)		0 ~ 15 1/step **2**
	48	P - MTF Coefficient (T/P /Binary /Sub /201%~)		0 ~ 15 1/step **2**
4-916*	1	P - MTF Strength (Text /Grayscale /Main /25%~29%)	This adjustment is only effective for the "Service Mode" original type setting. Selects the MTF strength using grayscale processing mode. See "Detailed Descriptions - Image Processing" for details. Weak Strong 1-2-3-4-5-0(x1)-6-7 T/P: Text/Photo, Section 2.2.4.	0 ~ 7 1/step **5**
	2	P - MTF Strength (Text /Grayscale /Main /30%~76%)		0 ~ 7 1/step **5**
	3	P - MTF Strength (Text /Grayscale /Main /77%~154%)		0 ~ 7 1/step **5**
	4	P - MTF Strength (Text /Grayscale /Main /155%~256%)		0 ~ 7 1/step **5**
	5	P - MTF Strength (Text /Grayscale /Main /257%~)		0 ~ 7 1/step **4**
	6	P - MTF Strength (Text /Grayscale /Sub /25%~29%)		0 ~ 7 1/step **5**
	7	P - MTF Strength (Text /Grayscale /Sub /30%~76%)		0 ~ 7 1/step **5**

Mode No.			Function	Settings
Class 1 and 2	Class 3			
4-916*	8	P - MTF Strength (Text /Grayscale /Sub /77%~154%)	This adjustment is only effective for the "Service Mode" original type setting. Selects the MTF strength using grayscale processing mode. See "Detailed Descriptions - Image Processing" for details. Weak Strong 1-2-3-4-5-0(x1)-6-7 T/P: Text/Photo, Section 2.2.4.	0 ~ 7 1/step **5**
	9	P - MTF Strength (Text /Grayscale /Sub /155%~256%)		0 ~ 7 1/step **5**
	10	P - MTF Strength (Text /Grayscale /Sub /257%~)		0 ~ 7 1/step **4**
	11	P - MTF Strength (T/P /Grayscale /Main /25%~57%)		0 ~ 7 1/step **4**
	12	P - MTF Strength (T/P /Grayscale /Main /58%~65%)		0 ~ 7 1/step **5**
	13	P - MTF Strength (T/P /Grayscale /Main /66%~76%)		0 ~ 7 1/step **4**
	14	P - MTF Strength (T/P /Grayscale /Main /77%~154%)		0 ~ 7 1/step **4**
	15	P - MTF Strength (T/P /Grayscale /Main /155%~256%)		0 ~ 7 1/step **4**
	16	P - MTF Strength (T/P /Grayscale /Main /157%~)		0 ~ 7 1/step **4**
	17	P - MTF Strength (T/P /Grayscale /Sub /25%~57%)		0 ~ 7 1/step **4**
	18	P - MTF Strength (T/P /Grayscale /Main /58%~65%)		0 ~ 7 1/step **5**
	19	P - MTF Strength (T/P /Grayscale /Sub /66%~76%)		0 ~ 7 1/step **4**
	20	P - MTF Strength (T/P /Grayscale /Sub /77%~154%)		0 ~ 7 1/step 4
	21	P - MTF Strength (T/P /Grayscale /Sub /155%~256%)		0 ~ 7 1/step **4**
	22	P - MTF Strength (T/P /Grayscale /Sub /157%~)		0 ~ 7 1/step **4**
	23	P - MTF Strength (Text /Binary /Main /25%~49%)		0 ~ 7 1/step **4**
	24	P - MTF Strength (Text /Binary /Main /50%~95%)		0 ~ 7 1/step **4**

Mode No.			Function	Settings
Class 1 and 2	Class 3			
4-916*	25	P - MTF Strength (Text /Binary /Main /96%~125%)	This adjustment is only effective for the "Service Mode" original type setting. Selects the MTF strength using grayscale processing mode. See "Detailed Descriptions - Image Processing" for details. Weak Strong 1-2-3-4-5-0(x1)-6-7 T/P: Text/Photo, Section 2.2.4.	0 ~ 7 1/step **5**
	26	P - MTF Strength (Text /Binary /Main /126%~159%)		0 ~ 7 1/step **5**
	27	P - MTF Strength (Text /Binary /Main /160%~200%)		0 ~ 7 1/step **5**
	28	P - MTF Strength (Text /Binary /Main /201%~)		0 ~ 7 1/step **5**
	29	P - MTF Strength (Text /Binary /Sub /25%~49%)		0 ~ 7 1/step **4**
	30	P - MTF Strength (Text /Binary /Sub /50%~95%)		0 ~ 7 1/step **4**
	31	P - MTF Strength (Text /Binary /Sub /96%~125%)		0 ~ 7 1/step **5**
	32	P - MTF Strength (Text /Binary /Sub /126%~159%)		0 ~ 7 1/step **5**
	33	P - MTF Strength (Text /Binary /Sub /160%~200%)		0 ~ 7 1/step **5**
	34	P - MTF Strength (Text /Binary /Sub /201%~)		0 ~ 7 1/step **5**
	35	P - MTF Strength (T/P /Binary /Main /25%~49%)		0 ~ 7 1/step **3**
	36	P - MTF Strength (T/P /Binary /Main /50%~89%)		0 ~ 7 1/step **3**
	37	P - MTF Strength (T/P /Binary /Main /90%~95%)		0 ~ 7 1/step **3**
	38	P - MTF Strength (T/P /Binary /Main /96%~125%)		0 ~ 7 1/step **5**
	39	P - MTF Strength (T/P /Binary /Main /126%~159%)		0 ~ 7 1/step **5**
	40	P - MTF Strength (T/P /Binary /Main /160%~200%)		0 ~ 7 1/step **5**
	41	P - MTF Strength (T/P /Binary /Main /201%~)		0 ~ 7 1/step **5**

Mode No.			Function	Settings
Class 1 and 2	Class 3			
4-916*	42	P - MTF Strength (T/P /Binary /Sub /25%~49%)	This adjustment is only effective for the "Service Mode" original type setting. Selects the MTF strength using binary picture processing mode. See "Detailed Descriptions - Image Processing" for details. Weak Strong 1-2-3-4-5-0(x1)-6-7 T/P: Text/Photo, Section 2.2.4.	0 ~ 7 1/step **3**
	43	P - MTF Strength (T/P /Binary /Sub /50%~89%)		0 ~ 7 1/step **3**
	44	P - MTF Strength (T/P /Binary /Sub /90%~95%)		0 ~ 7 1/step **3**
	45	P - MTF Strength (T/P /Binary /Sub /96%~125%)		0 ~ 7 1/step **5**
	46	P - MTF Strength (T/P /Binary /Sub /126%~159%)		0 ~ 7 1/step **5**
	47	P - MTF Strength (T/P /Binary /Sub /160%~200%)		0 ~ 7 1/step **5**
	48	P - MTF Strength (T/P /Binary /Sub /201%~)		0 ~ 7 1/step **5**
4-917*	1	P - Independent Dot Erase (Text - Grayscale)	**This adjustment is only effective for the "Service Mode" original type setting.** Selects the independent dot erase level. See "Detailed Descriptions - Image Processing" for details, Section 2.2.4. With a larger SP setting, more dots are detected as independent dots and erased. However, dots in mesh-like images may be detected as independent dots mistakenly. If "0" is selected, independent dot erase is disabled.	0 ~ 9 1/step **7**
	2	P - Independent Dot Erase (Text/Photo - Grayscale)		0 ~ 9 1/step **3**
	3	P - Independent Dot Erase (Text - Binary)		0 ~ 9 1/step **7**
	4	P - Independent Dot Erase (Text/Photo - Binary)		0 ~ 9 1/step **3**

Mode No.			Function	Settings
Class 1 and 2	Class 3			
4-918*	1	P - White Line Erase (Text - Grayscale)	**This adjustment is only effective for the "Service Mode" original type setting.** Selects whether or not white line erase is done. See "Detailed Descriptions - Image Processing" for details, Section 2.2.4.	0: No **1: Yes**
	2	P - White Line Erase (Text/Photo - Grayscale)		0: No **1: Yes**
	3	P - White Line Erase (Photo - Grayscale)		0: No **1: Yes**
	4	P - White Line Erase (Text - Binary)		0: No **1: Yes**
	5	P - White Line Erase (Text/Photo - Binary)		0: No **1: Yes**
	6	P - White Line Erase (Photo - Binary)		0: No **1: Yes**
4-919*	1	P - Black Line Erase (Text - Grayscale)	**This adjustment is only effective for the "Service Mode" original type setting.** Selects the black line erase level. This SP is effective only scanning the original using the ADF. See "Detailed Descriptions - Image Processing" for details, Section 2.2.4.	0: Disable **1: Strong** 2: Weak
	2	P - Black Line Erase (Text/Photo - Grayscale)		0: Disable **1: Strong** 2: Weak
	3	P – Black Line Erase (Photo - Grayscale)		0: Disable **1: Strong** 2: Weak
	4	P - Black Line Erase (Text - Binary)		0: Disable **1: Strong** 2: Weak
	5	P - Black Line Erase (Text/Photo - Binary)		0: Disable **1: Strong** 2: Weak
	6	P - Black Line Erase (Photo - binary)		0: Disable **1: Strong** 2: Weak
4-921*	1	P - Smoothing - Main Scan (Text - Grayscale)	**This adjustment is only effective for the "Service Mode" original type setting.** Selects the smoothing pattern for the small filter used to remove moiré. (0: Weak, 1: Normal, 2: Strong, 3: Disabled). See "Detailed Descriptions - Image Processing" for details, Section 2.2.4. **Normally do not change the value.**	0: Pat-1 **1: Pat-2** 2: Pat-3 3: Through (Disable)

Mode No.			Function	Settings
Class 1 and 2	Class 3			
4-921*	2	P - Smoothing - Main Scan (Text/Photo - Grayscale)	**This adjustment is only effective for the "Service Mode" original type setting.** Selects the smoothing pattern for the small filter used to remove moiré. (0: Weak, 1: Normal, 2: Strong, 3: Disabled). See "Detailed Descriptions - Image Processing" for details, Section 2.2.4. **Normally do not change the value.**	0: Pat-1 **1: Pat-2** 2: Pat-3 3: Through (Disable)
	3	P - Smoothing - Main Scan (Text - Binary)		0: Pat-1 **1: Pat-2** 2: Pat-3 3: Through (Disable)
	4	P - Smoothing - Main Scan (Text/Photo - Binary)		0: Pat-1 **1: Pat-2** 2: Pat-3 3: Through (Disable)
4-922*	1	P - Binary Selection (Text)	**This adjustment is only effective for the "Service Mode" original type setting.** Selects the thresholding type used during gradation processing (dynamic or constant). Only used for binary picture processing. See "Detailed Description - Image Processing" for details, Section 2.2.4. **Normally do not change the value.**	**0: Dynamic** 1: Static
	2	P - Binary Selection (Text/Photo)		0: Dynamic **1: Static**
4-923*		P - Binary Threshold	Adjusts the constant threshold used during binary picture processing. ***This adjustment is only effective for the "Text - Service Mode" original type setting.*** *If "Static" is selected with SP4-922-1, this SP is effective. See "Detailed Descriptions - Image Processing" for details, section 2.2.4.*	0 ~ 255 1/step **96**
4-924*		P – Binary Threshold - MAX	Adjusts the maximum value of the dynamic binary threshold used at the edges of text elements. Only used for binary picture processing. ***This adjustment is only effective for the "Text - Service Mode" original type setting.*** *If "Dynamic Binary" is selected with SP4-922-1, this SP is effective. See "Detailed Descriptions - Image Processing" for details, Section 2.2.4.*	0 ~ 255 1/step **160**

Mode No.			Function	Settings
Class 1 and 2	Class 3			
4-925*		P – Binary Threshold - MIN	Adjusts the minimum value of the dynamic binary threshold used at the edges of text elements. Only used for binary picture processing. ***This adjustment is only effective for the "Text - Service Mode" original type setting.*** *If "Dynamic Binary" is selected with SP4-922-1, this SP is effective. See "Detailed Descriptions - Image Processing" for details, section 2.2.4..*	0 ~ 255 1/step **96**
4-926*		P - Binary Threshold - Center	Adjusts the threshold in dynamic binary mode for pixels not on edges of text/graphic elements. Only used for binary picture processing. ***This adjustment is only effective for the "Text - Service Mode" original type setting.*** *If "Dynamic Binary" is selected with SP4-922-1, this mode is enabled. See "Detailed Descriptions - Image Processing" for details, Section 2.2.4.*	0 ~ 255 1/step **96**
4-927*	1	P - Smoothing Filter (Photo - Grayscale)	**This adjustment is only effective for the "Service Mode" original type setting for Photo mode.** Adjusts the smoothing filter level. If "0" is selected, smoothing is disabled. See "Detailed Descriptions - Image Processing" for details. Weakest Strongest 1 – 2 – 0 – 3 – 4 – 5 – 6 – 7 – 8	0 ~ 8 1/step **3**
	2	P - Smoothing Filter (Photo – Binary)		0 ~ 8 1/step **7**
4-928*	1	P - Scanner Gamma (Text - Grayscale)	**This adjustment is only effective for the "Service Mode" original type setting.** Selects the scanner gamma curve. If "0" is selected, the scanner gamma curve is either AE or NAE, depending on the setting for the other original types in the same mode (e.g., AE linear for text-greyscale, as used when pale, normal, or generation modes are selected). See "Detailed Descriptions - Image Processing" for details, Section 2.2.4. **Normally do not change the value.**	0: By key (as selected) 1: AE 2: NAE **3: Linear** 4: SP
	2	P - Scanner Gamma (Text/Photo - Grayscale)		**0: By key (as selected)** 1: AE 2: NAE 3: Linear 4: SP
	3	P - Scanner Gamma (Photo - Grayscale)		**0: By key (as selected)** 1: AE 2: NAE 3: Linear 4: SP

Mode No.			Function	Settings
Class 1 and 2	Class 3			
4-928*	4	P - Scanner Gamma (Text - Binary)	**This adjustment is only effective for the "Service Mode" original type setting.** Selects the scanner gamma curve. If "0" is selected, the scanner gamma curve is either AE or NAE, depending on the setting for the other original types in the same mode (e.g., AE linear for text-greyscale, as used when pale, normal, or generation modes are selected). See "Detailed Descriptions - Image Processing" for details, Section 2.2.4. **Normally do not change the value.**	0: By key (as selected) 1: AE 2: NAE **3: Linear** 4: SP
	5	P - Scanner Gamma (Text/Photo - Binary)		**0: By key (as selected)** 1: AE 2: NAE 3: Linear 4: SP
	6	P - Scanner Gamma (Photo - Binary)		**0: By key (as selected)** 1: AE 2: NAE 3: Linear 4: SP
4-929*	1	P - Matrix Filter (Text - Grayscale)	Selects the error diffusion matrix filter in text mode with grayscale processing. ***This adjustment is only effective for the "Service Mode" original type setting.*** *See "Detailed Descriptions - Image Processing" for details*, Section 2.2.4. ***Normally do not change the value.***	6: No.1 **7: No.2**
	2	P - Matrix Filter (Text/Photo - Grayscale)	Selects the error diffusion matrix filter in text/photo mode with grayscale processing. *See the comment for SP4-929-1.*	6: No.1 **7: No.2**
	3	P - Matrix Filter (Photo - Grayscale)	Selects the dither matrix filter in photo mode. A larger number increases the number of gradations, but may reduce the contrast. ***This adjustment is only effective for the "Service Mode" original type setting.*** *See "Detailed Descriptions - Image Processing" for details*, Section 2.2.4.	0: 105 **1: 143** 2: 210 3: 270
	4	P - Matrix Filter (Text/Photo - Binary)	Selects the error diffusion matrix filter in text/photo mode (this SP is used only with dynamic thresholding). ***This adjustment is only effective for the "Service Mode" original type setting.*** *See "Detailed Descriptions - Image Processing" for details* , Section 2.2.4. ***Normally do not change the value.***	**6: No.1** 7: No.2

Mode No.			Function	Settings
Class 1 and 2	Class 3			
4-929*	5	P - Matrix Filter (Photo - Binary)	Selects the dither matrix filter in photo mode. A larger number increases the number of gradations, but may reduce the contrast. 5: This is a special dither matrix, designed to emphasize the edges of graphic and text objects ***This adjustment is only effective for the "Service Mode" original type setting.*** *See "Detailed Descriptions - Image Processing" for details*, Section 2.2.4.	0: 53 **1: 105** 2: 143 3: 210 4: 270 5: H
4-931*		P - Edge Threshold - Vertical	Adjusts the threshold for edge detection in each direction for dynamic thresholding. Only used for binary picture processing. ***This adjustment is only effective for the "Text - Service Mode" original type setting.*** *If "Dynamic Binary" is selected with SP4-922-1, this SP mode is effective. See "Detailed Descriptions - Image Processing" for details*, Section 2.2.4. ***Normally do not change the value.*** Right: Diagonal - top right to bottom left Left: Diagonal - top left to bottom right	0 ~ 255 1/step **63**
4-932*		P - Edge Threshold - Horizontal		0 ~ 255 1/step **63**
4-933*		P - Edge Threshold - Right		0 ~ 255 1/step **63**
4-934*		P - Edge Threshold - Left		0 ~ 255 1/step **63**
4-935*	1	P - Line Width Correction (Text - Grayscale)	**This adjustment is only effective for the "Service Mode" original type setting.** Adjusts the line width. If "0" is selected, this mode is disabled. See "Detailed Descriptions - Image Processing" for details, Section 2.2.4 Settings 1 to 3 make lines thinner. 1 has the greatest effect. Settings 4 to 9 make lines thicker. 9 has the greatest effect. Thinnest Thickest 1 – 2 – 3 – 0 – 4 – 5 – 6 – 7 – 8 – 9	0 ~ 9 1/step **0**
	2	P - Line Width Correction (Text/Photo - Grayscale)		0 ~ 9 1/step **8**
	3	P - Line Width Correction (Photo - Grayscale)		0 ~ 9 1/step **0**
	4	P - Line Width Correction (Text - Binary)		0 ~ 9 1/step **2**
	5	P - Line Width Correction (Text/Photo - Binary)		0 ~ 9 1/step **8**
	6	P - Line Width Correction (Photo - Binary)		0 ~ 9 1/step **0**

Mode No.			Function	Settings
Class 1 and 2	Class 3			
4-936*	1	P - SBU ADS Setting (Text - Grayscale)	**This adjustment is only effective for the "Service Mode" original type setting.** Selects whether the SBU ADS process is done. If "0" is selected, it depends on whether the user selects ADS at the operation panel. See "Detailed Descriptions - Image Processing" for details, Section 2.2.4. **Normally do not change the value.**	**0: By key** 1: ON 2: OFF
	2	P - SBU ADS Setting (Text/Photo - Grayscale)		**0: By key** 1: ON 2: OFF
	3	P - SBU ADS Setting (Photo - Grayscale)		**0: By key** 1: ON 2: OFF
	4	P - SBU ADS Setting (Text - Binary)		**0: By key** 1: ON 2: OFF
	5	P - SBU ADS Setting (Text/Photo - Binary)		**0: By key** 1: ON 2: OFF
	6	P - SBU ADS Setting (Photo - Binary)		**0: By key** 1: ON 2: OFF
4-937*	1	P - IPU ADS Setting (Text - Grayscale)	**This adjustment is only effective for the "Service Mode" original type setting.** Selects whether the IPU ADS process is done. If "0" is selected, it depends on whether the user selects ADS at the operation panel. The value of SP4-938 is subtracted from the white video level. See "Detailed Description - Image Processing" for details, Section 2.2.4. **Normally do not change the value.**	**0: By key** 1: ON 2: OFF
	2	P - IPU ADS Setting (Text/Photo - Grayscale)		**0: By key** 1: ON 2: OFF
	3	P - IPU ADS Setting (Photo - Grayscale)		**0: By key** 1: ON 2: OFF
	4	P - IPU ADS Setting (Text – Binary)		**0: By key** 1: ON 2: OFF
	5	P - IPU ADS Setting (Text/Photo - Binary)		**0: By key** 1: ON 2: OFF
	6	P - IPU ADS Setting (Photo - Binary)		**0: By key** 1: ON 2: OFF

Mode No.			Function	Settings
Class 1 and 2	Class 3			
4-938*	1	P - IPU ADS Adjustment (Text - Grayscale)	**This adjustment is only effective for the "Service Mode" original type setting.** Decides how much is subtracted from the white video level. In SP4-937, if "By key" is selected and the user selects ADS mode, or if "ON" is selected, this value is subtracted from the white video level. See "Detailed Description - Image Processing" for details, Section 2.2.4. **Normally do not change the value.**	0 ~ 15 1/step **8**
	2	P - IPU ADS Adjustment (Text/Photo - Grayscale)		0 ~ 15 1/step **8**
	3	P - IPU ADS Adjustment (Photo - Grayscale)		0 ~ 15 1/step **8**
	4	P - IPU ADS Adjustment (Text - Binary)		0 ~ 15 1/step **8**
	5	P - IPU ADS Adjustment (Text/Photo - Binary)		0 ~ 15 1/step **8**
	6	P - IPU ADS Adjustment (Photo - Binary)		0 ~ 15 1/step **8**
4-939*		P - Binary Filter	Selects the binary filter for the independent dot erase that is done after image processing in text mode. ***This adjustment is only effective for the "Service Mode" original type setting for text mode.*** *If "0" is selected this mode is disabled. See "Detailed Descriptions - Image Processing" for details*, Section 2.2.4. ***Normally do not change the value.***	**0: Non** 1: 3 x 3 2: 4 x 4 3: 5 x 5
4-940*	1	P - ID Gamma Adjustment (Text - Grayscale)	Selects the ID gamma curve. ***This adjustment is only effective for the "Service Mode" original type setting.*** *See "Detailed Descriptions - Image Processing" for details*, Section 2.2.4. ***Normally do not change the value.***	**0: ed (Greyscale text)** 1: Linear
	2	P - ID Gamma Adjustment (Text/Photo - Grayscale)	Selects the ID gamma curve for error diffusion. ***This adjustment is only effective for the "Service Mode" original type setting.*** *See "Detailed Descriptions - Image Processing" for details*, Section 2.2.4. ***Normally do not change the value.***	0: ch (Text normal) **1: ms (Text Priority)** 2: msp (Photo Priority) 3: t3 (Glossy Photo) 4: Linear

Service Tables

Mode No.			Function	Settings
Class 1 and 2	Class 3			
4-940*	3	P - ID Gamma Adjustment (Photo - Grayscale)	Selects the ID gamma curve for dithering. ***This adjustment is only effective for the "Service Mode" original type setting.*** *See "Detailed Descriptions - Image Processing" for details*, Section 2.2.4. ***Normally do not change the value.***	5: 105 (Coarse Print) **6: 143 (Press Print)**
	4	P - ID Gamma Adjustment (Text - Binary)	Selects the ID gamma curve. ***This adjustment is only effective for the "Service Mode" original type setting.*** *See "Detailed Descriptions - Image Processing" for details*, Section 2.2.4. ***Normally do not change the value.***	**0: B&W (Sharp text)** 1: Linear (Normal text)
	5	P - ID Gamma Adjustment (Text/Photo - Binary)	Selects the ID gamma curve for error diffusion. ***This adjustment is only effective for the "Service Mode" original type setting.*** *See "Detailed Descriptions - Image Processing" for details*, Section 2.2.4. ***Normally do not change the value.***	1: Norm (Text) **2: ch (Text Priority)** 3: ph (Photo Priority) 4: ph2 (Glossy Photo)
	6	P - ID Gamma Adjustment (Photo - Binary)	Selects the ID gamma curve for dithering. **This adjustment is only effective for the "Service Mode" original type setting.** See "Detailed Descriptions - Image Processing" for details, Section 2.2.4. **Normally do not change the value.**	5: 53 (Coarse Print) **6: 105 (Press Print)**
4-942*		White Line Erase	Selects whether or not white line erase is done (for all original modes except "Service Mode"). *See "Detailed Descriptions - Image Processing" for details*, Section 2.2.4.	**0: Normal** 1: Disable
4-943*		Black Line Erase	Selects the black line erase level (for all original modes except "Service Mode"). This SP is effective only when scanning the original using the ADF *See "Detailed Descriptions - Image Processing" for details*, Section 2.2.4.	**0: Strong** 1: Disable 2: Weak
4-944*		Independent Dot Erase	Selects whether or not independent dot erase is done (for all original modes except "Service Mode"). *See "Detailed Descriptions - Image Processing" for details*, Section 2.2.4.	**0: Normal** 1: Disable
4-947*	1	Positive/Negative MTF Coefficient (Main Scan – Binary)	Selects the MTF coefficient for the positive/negative feature in the main scan direction. *This SP is effective only when the value of SP4-401 is "1".*	0 ~ 15 1 /step **1**

Mode No.			Function	Settings
Class 1 and 2	Class 3			
4-947*	2	Positive/Negative MTF Coefficient (Sub Scan – Binary)	Selects the MTF coefficient for the positive/negative feature in the sub scan direction. *This SP is effective only when the value of SP4-401 is "1".*	0 ~ 15 1 /step **2**
	3	Positive/Negative MTF Strength (Main Scan – Binary)	Selects the MTF strength for the positive/negative feature in the main scan direction. *This SP is effective only when the value of SP4-401 is "1".*	0 ~ 15 1 /step **5**
	4	Positive/Negative MTF Strength (Sub Scan – Binary)	Selects the MTF strength for the positive/negative feature in the sub scan direction. *This SP is effective only when the value of SP4-401 is "1".*	0 ~ 15 1 /step **5**
4-948*	1	Positive/Negative Binary Threshold - MAX (Upper)	Adjusts the maximum value of the dynamic binary threshold used at the edges of text elements for the positive/negative feature. *This SP is effective when the value of SP4-401 is "1".and "Dynamic Binary" is selected with SP4-922-1.* *See "Detailed Descriptions - Image Processing" for details*, Section 2.2.4.	0 ~ 255 1/step **160**
	2	Positive/Negative Binary Threshold - MIN (Lower)	Adjusts the minimum value of the dynamic binary threshold used at the edges of text elements for the positive/negative feature. *Same comments as for SP4-948-1.*	0 ~ 255 1/step **96**
	3	Positive/Negative Binary Threshold - Center	Adjusts the threshold in dynamic binary mode for pixels not on edges of text/graphic elements for the positive/negative feature. *Same comments as for SP4-948-1.*	0 ~ 255 1/step **96**
4-950*		Shading Mode Selection	Selects the scanner shading method in ADF mode. **0: A265/A267 (Do the shading every page.)** 1: A193 (Do the shading at the time specified by SP4-913.) 2: None (This is for the designer's test purposes. Do not select this value.) ***This is for the designer's test purposes. Do not change the value.***	**0**
5-001		All Indicators On	Turns on all indicators on the operation panel. *Press "OK" or the # key to check. Press the ⌧ (Clear Modes) key to exit this SP mode. The LCD blinks all on and all off every 2 seconds.*	
5-103*		Auto Paper Tray Shift	Selects whether or not auto paper tray shift is done.	0: No **1: Yes**

Mode No.			Function	Settings
Class 1 and 2	Class 3			
5-104*		A3/DLT Double Count	Specifies whether the counter is doubled for A3/11" x 17" paper.	**0: No** 1: Yes
			If "Yes" is selected, the total counter (mechanical counter) and the current user code counter counts up twice when A3/11" x 17" paper is used.	
5-106*		ADS Level Selection	Selects the image density level that is used in ADS mode.	1 ~ 7 1 notch/step **4**
5-113*		Option Counter Type	Selects the optional counter type.	**0: None** 1: Key Counter
			After installing the optional key counter, this SP must be set to "1".	
5-116*		Key Counter Up Timing	Determines whether the total counter counts up at paper feed-in or at paper exit.	**0: Feed In** 1: Exit
5-120*		Opt. Counter Reset Setting	**This SP is for Japan only. Do not change the value.**	0: Yes 1: Stand-by 2: None
5-143		DF 180° Image Rotation	Select whether the image is rotated 180° (upside down) in DF mode.	**0: No** 1: Yes
			Selects "Yes" when making a copy on a letter headed page when feeding from a paper tray.	
5-401*	1	User Code Mode (Copier)	Selects whether the user code feature is enabled in copy mode or not.	**0: No** 1: Yes
			If this value is changed, the user tool setting is also changed.	
	2	User Code Mode (Fax)	**This SP is for Japan only. Do not change the value.**	**0: No** 1: Yes
			If this value is changed, the user tool setting is also changed.	
	3	User Code Mode (Printer)	**This SP is for Japan only. Do not change the value.**	**0: No** 1: Yes
			If this value is changed, the user tool setting is also changed.	
5-501*	1	PM Alarm Interval	Sets the PM interval.	1 ~ 255 1k copies /step **120k copies**
			The value stored in this SP is used when the value of SP5-501-2 and/or -3 is "1".	
⇒	2	PM Alarm Mode (Prints)	Selects whether the PM alarm for the number of prints/copies is enabled or not	**0: No** 1: Yes
			If this is "1", the PM alarm function is enabled. ***NOTE:*** *Default changed v1.77.*	
	3	PM Alarm Mode (Original)	**This SP is for Japan only. Do not change the value.** Selects whether the PM alarm for the number of scans is enabled or not	**0: No** 1: Yes
			If this is "1", the PM alarm function is enabled.	

Mode No.			Function	Settings
Class 1 and 2	Class 3			
5-504*		Jam Alarm Setting	**This SP is for Japan only. Do not change the value.**	0 ~ 255 100 copies /step **40**
5-505*		Error Alarm Setting	**This SP is for Japan only. Do not change the value.**	0 ~ 255 100 copies /step **10**
5-507*	1	Consumable Alarm (Paper)	**This SP is for Japan only. Do not change the value.**	**0: No** 1: Yes
	2	Consumable Alarm (Staple)		**0: No** 1: Yes
	3	Consumable Alarm (Toner)		**0: No** 1: Yes
5-508*	1	CE Call (Jam Level 1)	**This SP is for Japan only. Do not change the value.**	
	2	CE Call (Jam Level 2)		
	3	CE Call (Door Open)		
5-801		Memory All Clear	Resets all software counters. Also, returns all modes and adjustments to the default settings (except for the machine serial number, SP5-811). After selecting "1", press the "Original Type" key and the # key at the same time to clear the memory. If the reset was successful, the beeper will sound 5 times. If it failed, the beeper will sound only twice. See the "Memory All Clear" section 4.2.9 for how to use this SP mode correctly.	**0: No** 1: Yes
			Normally, this SP mode should not be used. *It is used only after replacing the NVRAM or when the copier malfunctions due to a damaged NVRAM.*	
5-802		Free Run	Performs a free run for both the scanner and the printer.	**0: No** 1: Yes
			After selecting "1", press "OK" or the # key twice to start this feature. Press the C (Clear/Stop) key to stop.	
5-803		Input Check	Displays signals received from sensors and switches.	
			Press the Clear Modes key to exit the program. See the "Input Check" section 4.2.4 for details.	
5-804		Output Check	Turns on electrical components individually for test purposes.	
			See the "Output Check" section 4.2.5 for details.	

Service Tables

Mode No.			Function	Settings
Class 1 and 2	Class 3			
5-807*		Display Language Group	**This SP is effective only for the European version.** Selects the display language group. See "Display language" for details. *The actual display language can be selected using SP5-808.*	**0: Standard** 1: Option 1 2: Option 2
5-808*		Display Language	Selects the display language. See "Display language" for details, Section 4.2.15. *For the European version, the display languages are divided into the language groups of SP5-807.*	0: English 1: French 2: Spanish
5-809*		mm/inch Selection	Selects whether mm or inches are used in the display.	**Eur./Asia model** **0: mm** 1: inch **American model** **0: inch** 1: mm
5-810		SC Code Reset	Resets all level A service call conditions, such as fusing errors. After selecting "1", press the "Photo" key and the # key at the same time to reset the SC codes. If the reset was successful, the beeper will sound 5 times. If it failed, the beeper will sound only twice. After performing this SP mode, turn the machine's main switch off and on. *See "Troubleshooting - Service Call Conditions" for how to use this mode.*	**0: No** 1: Yes
5-811		Serial Number Input	Use to input the machine serial number. (This is normally done at the factory.) *This serial number will be printed on the SMC report. See the "Serial Number Input" section 4.2.16 for details.*	
5-812*	1	Service Telephone Number (Telephone)	Use this to input the telephone number of the service representative (this is displayed when a service call condition occurs). *Press the * key if you need to input a pause (–). Press the C (Clear/Stop) key to delete the telephone number.*	
	2	Service Telephone Number (Facsimile)	Use this to input the fax number which will be printed on the user counter report. *Press the * key if you need to input a pause (–). Press the C (Clear/Stop) key to delete the telephone number.*	
5-816*		CSS Function	**This SP is for Japan only. Do not change the value.**	**0: No** 1: Yes

Mode No.			Function	Settings
Class 1 and 2	Class 3			
5-817	1	CE Start/Finish Call (CE Start Call)	**This SP is for Japan only. Do not change the value.**	**0: No** 1: Yes
	2	CE Start/Finish Call (CE Finish Call)		
5-821		CSS-PI Device Code	**This SP is for Japan only. Do not change the value.**	**0: No** 1: Yes
5-824		NVRAM Data Upload	Uploads SP and UP mode data (except for counters and the serial number) from the flash memory on the BICU board to a flash memory card. *This SP can be used when a flash memory card is plugged into the machine. See the "NVRAM Data Upload" section 4.2.11 for details.*	**0: No** 1: Yes
5-825		NVRAM Data Download	Downloads SP mode data from a flash memory card to the flash memory on the BICU board. *This SP can be used when a flash memory card is plugged into the machine. See the "NVRAM Data Download" section 4.2.11 for details.*	**0: No** 1: Yes
5-826		Program Upload	Uploads the system program from the flash memory on the BICU board to a flash memory card. *This SP can be used when a flash memory card is plugged into the machine. See the "Program Upload" section 4.2.10 for details.*	**0: No** 1: Yes
5-827		Program Download	Downloads the system program from a flash memory card to the flash memory on the BICU board. *This SP can be used when a flash memory card is plugged into the machine. See the "Program Download" section 4.2.10 for details.*	**0: No** 1: Yes
5-901		Printer Free Run	Performs a printer free run. *After selecting "1", press "OK" or the # key twice to start this feature. Press the C/⊘ (Clear/Stop) key to stop.*	**0: No** 1: Yes
5-902		Test Pattern Print	Prints a test pattern. *See the "Test Pattern Printing" section for how to print a test pattern.* *Change to the copy mode display by pressing the ◁! (Interrupt) key, then print out the test pattern.*	
5-903*		LCD Contrast Adjustment	Adjusts the contrast of the LCD on the operation panel.	0 ~ 7 1 /step **3**
5-904*		Auto Off Timer Setting	Adjusts the auto off mode timer (also used for night mode if a fax or printer option is installed). *If this value is changed, the user tool setting is also changed.*	1 ~ 240 1 min/step **60 min**
5-905*		CSS 25 Hours Off Detection	**This SP is for Japan only. Do not change the value.**	

Mode No.			Function	Settings
Class 1 and 2	Class 3			
5-906*	1	Exhaust Fan Control Timer (Stand-by/Night Mode)	Inputs the fan control time for stand-by and night mode. *The fan slows down after this time has passed since the end of a job or enters energy saver mode.* *The fan stops after this time has passed since any of the following conditions occurred:* • *After entering night mode (fax/printer installed)* • *After entering an SC condition.*	30 ~ 120 1 s /step **30 s**
	2	Exhaust Fan Control Timer (Low Power Mode)	Inputs the fan control timer for low power mode. *The fan stops after this time has passed since the machine entered low power mode.*	0 ~ 180 1 s /step **180 s**
5-907		Plug & Play Setting	Selects the brand name and the production name for the Plug and Play function of Windows 95/98. These are registered in the NVRAM. If the NVRAM is defective, these names should be registered again. *Set this SP to 1. Then press down the "Photo" key and the "OK" key or # key at the same time to register the setting. If the setting was successful, the beeper will sound 5 times. If it failed, the beeper will sound only twice.* *If the setting is completed, a "∗" mark will be displayed before the selection.*	
5-908*		LCT Paper Size	Selects the paper size for the LCT. *Use this SP after changing the paper size in the optional LCT (i.e., after changing the side plate position for the LCT).*	**0: A4 (Eur./Asia model)** **1: LT (American model)**
5-909*		24V Down Setting (Night Mode)	Selects whether or not the 24V supplies are cut while night mode is active. *Set this to '1' if the customer wishes to check the machine conditions displayed on the operation panel LED (such as paper end) while night mode is active.*	**0: 24V down** 1: 24V supplied
5-911*		APS A4/LT Sideways Priority	Specifies whether the machine selects LT sideways or lengthwise paper if the original is A4. In inch models, if "Yes" is selected, LT sideways or lengthwise is selected automatically when the APS sensors detect an A4 sideways or lengthwise original. In mm models, if "Yes" is selected, A4 sideways or lengthwise is selected automatically when the APS sensors detect an LT sideways or lengthwise original.	**0: No** 1: Yes

Mode No.			Function	Settings
Class 1 and 2	Class 3			
5-912*	1	PCU Alarm Setting (Display)	Selects whether the PCU alarm message (Change Photoconductor Unit) blinks when the PCU alarm interval expires. *When installing the machine, if the customer requires that the PCU alarm message blink, select "1". If set to "0", there will be no message.*	0: No **1: Yes**
	2	PCU Alarm Setting (Interval)	Sets the PCU alarm interval. *When the machine reaches this value, the PCU alarm will be displayed on the LCD to inform the user. Only used if SP5-912-1 is at "1".*	1~ 255 1k copies/step **60k copies**
5-913		UT Mode Data Reset	Resets the user tool data. *Except for the user codes, key operator code, and key operator printer counter. Set this SP to 1. Then press down the "Original Type" key and the "OK" key or # key at the same time to reset the data. If the reset was successful, the beeper will sound 5 times. If it failed, the beeper will sound only twice.*	**0: No** 1: Yes
5-914*		Printer Counter Display	Selects whether the printer counter is displayed in the LCD or not. *If this is "0", it does not display or print out in the counter print out.*	**0: No** 1: Yes
5-916		Language UK/TW Priority	**Asia and Taiwan versions only.** Select the default language of SP5-808. *This value will not reset when Memory All Clear (SP5-801) is done.*	**0: UK (Asia version)** **1: TW (Taiwan version)**
5-925		Serial Number Display	Displays the serial number. Press Clear mode key to exit.	
5-930*		Fax Forwarding Mode	Selects whether the fax mode key is accepted when an SC has occurred. *When an SC occurs while there are received fax messages in the SAF memory, change the value to "1". Then access facsimile mode. Then forward the incoming data to another fax machine by using the fax mode bit switches.*	**0: No** 1: Yes
5-932		BICU Software Upload (for designer)	**This SP is for designers only. Do not perform this SP.**	**0: No** 1: Yes
5-933		BICU Software Download (for designer)	**This SP is for designers only. Do not perform this SP.**	**0: No** 1: Yes
5-940*		Image Rotation Mode	Selects whether the image can be rotated or not.	**0: Enabled** 1: Disabled
5-941*		Duplex Blank Page	Selects whether the blank page is made on the front side or back side when duplex copy mode is selected.	**0: Back Side** 1: Front Side

Mode No.			Function	Settings
Class 1 and 2	Class 3			
5-944*		APS Mode Setting	Selects whether APS mode is selected as the power-up default.	0: Disabled **1: Enabled**
5-946*		Auto Off Disabling	Selects whether auto off is disabled when there are sheets in the exit tray. *If the LED does not light when paper enters the tray, the user cannot easily see if paper is there or not.* *1: For machines with no fax/printer option, the machine does not do auto off (with the fax/printer option, the machine will go to night mode but the LED still works).* 0: *For machines with a fax/printer option, the machine does not light the exit tray LED even in night mode.*	**0: No** 1: Yes
5-950*		By-pass LG Size Detection	**For American models only** Selects whether the machine can detect LG paper or LT paper in the by-pass tray.	0: No **1: Yes**
5-951*		Inter Leaves Count Setting	Selects the interleave count when interleave mode is selected with User Tools (System Settings - Print Priority). In interleave mode, the machine will print 5 pages of one job, then 5 pages of the other job, and so on.	1 ~ 20 1 pages/step **5 pages**
5-952*		Paper Type Reset (By-pass Tray)	Selects the paper type for the by-pass tray at power-up or after pressing the ⎆ key. *If this is "2", the previously used paper type will be selected.*	**0: Thick** 1: Plain 2: Hold
5-991		VRAM Data Download	This is for the designer's test purposes. ***Do not change the value.***	**0: No** 1: Yes
5-992		SMC Printing	Prints the machine status history data list. See the "SMC data Lists" section 4.2.7 for how to print the lists. *"5" is for facsimile transmission.*	1: SP 2: UP 3: Log 4: All 5: Big Font
6-006*	1	ADF Registration (Side-to-Side)	Adjusts the side-to-side registration in the ADF mode. *Use the #/* key to toggle between + and - before entering the value. See "Replacement and Adjustment - Copy Adjustment" section 6.8 for details.*	–7.0 ~ +9.5 0.1 mm/step **0.0 mm**
	2	ADF Registration (Leading Edge)	Adjusts the leading edge registration in the ADF mode. *Use the #/* key to toggle between + and - before entering the value. See "Replacement and Adjustment - Copy Adjustment" section 6.8 for details.*	–5.0 ~ +5.0 0.1 mm/step **0.0 mm**

Mode No.			Function	Settings
Class 1 and 2	Class 3			
6-006*	3	ADF Registration (Trailing Edge Erase)	Adjusts the trailing edge erase margin in the ADF mode. *Use the * key to toggle between + and - before entering the value. See "Replacement and Adjustment - Copy Adjustment" section 6.8 for details.*	–3.0 ~ +3.0 0.1 mm/step **-1.0 mm**
	4	ADF Registration (Side-to-Side/Rear)	Adjusts the side-to-side registration on the rear side of the original in the ADF mode. *Use the * key to toggle between + and - before entering the value. See "Replacement and Adjustment - Copy Adjustment" section 6.8 for details.*	–7.0 ~ +9.5 0.5 mm/step **0.0 mm**
6-007*		ADF Sub-scan Magnification	Adjusts the magnification in the sub-scan direction for ADF mode. *Use the * key to toggle between + and - before entering the value. See "Replacement and Adjustment - Copy Adjustment" section 6.8 for details.*	–0.9 ~ +0.9 0.1%/step **0.0%**
6-009		ADF Free Run	Performs an ADF free run in duplex scanning mode. *After selecting "1", press "OK" or the # key twice then set the paper to start this feature. Press the C/Stop (Clear/Stop) key to stop.*	**0: No** 1: Yes
6-010*		Stamp Position Adjustment	Adjusts the stamp position in the sub-scan direction in fax mode.	–10 ~ +10 1 mm/step **0 mm**
6-901		ADF APS Data Display	Displays the status of the original size sensors in the ADF. *See the "DF APS Original Sensor Output Display" section 4.2.13.*	
6-902*		ADF Scanning Method	Selects the original scanning method in ADF mode. ***Do not change the setting.***	**0: Doc (original)** 1: Mag (copy paper size + magnification)
6-905*		ARDF Skew Correction	Selects whether the skew correction is done or not when the ARDF feeds the rear side of the original.	0: No **1: Yes**
6-906*		ARDF Original Curl Adjustment	Adjusts the amount of original buckle at the ARDF registration roller when the ARDF feeds the rear side of the original. *This SP mode is only effective when SP 6-905 is at "1".*	-20 ~ +20 1 mm/step **0 mm**
6-910		ADF/Printer Free Run	**This SP is for the designers only do not perform this SP mode.**	**0: No** 1: Yes

Mode No.			Function	Settings
Class 1 and 2	Class 3			
6-911*		Binding Hole Range	Selects the range for which binding holes in originals are ignored. If set at "0", this function is disabled. *An original jam may occur when an original with binding holes is fed, because these holes are detected by the sensors. Use this SP to avoid this problem. For example, when this value is set to "12 mm", this machine ignores binding holes within 12 mm of the trailing edge of the original.*	0 ~ 20 1 mm/step **12 mm**
7-001*		Total Operation Time	Displays the total operation time (total drum rotation time).	
7-002*	1	Total Original Counter (All Modes)	Displays the total number of scanned originals (all modes).	
	2	Total Original Counter (Copier)	Displays the total number of scanned originals (copy mode only).	
	3	Total Original Counter (Fax)	Displays the total number of scanned originals (fax mode only).	
7-003*	1	Total Print Counter (All Modes)	Displays the total number of prints (all modes).	
	2	Total Print Counter (Copier)	Displays the total number of prints (copier mode).	
	3	Total Print Counter (Fax)	Displays the total number of prints (fax mode).	
	4	Total Print Counter (Printer)	Displays the total number of prints (printer mode).	
7-004*		CE Counter Setting	**This SP mode is effective only when the CSS board is installed.** **Do not change the value.**	
7-101*	1	Copy Counter - Paper Size (A3)	Displays the total number of copies by paper size.	
	2	Copy Counter - Paper Size (B4)		
	3	Copy Counter - Paper Size (A4)		
	4	Copy Counter - Paper Size (B5)		
	5	Copy Counter - Paper Size (DLT)		
	6	Copy Counter - Paper Size (LG)		
	7	Copy Counter - Paper Size (LT)		
	8	Copy Counter - Paper Size (HLT)		
	9	Copy Counter - Paper Size (Others)		
7-201*		Total Scan Counter	Displays the total number of scanned originals.	
7-204*	1	Copy Counter - Paper Tray (1st)	Displays the total number of copies fed from each paper feed station.	

Mode No.			Function	Settings
Class 1 and 2	Class 3			
7-204*	2	Copy Counter - Paper Tray (2nd)	Displays the total number of copies fed from each paper feed station.	
	3	Copy Counter - Paper Tray (3rd)		
	4	Copy Counter - Paper Tray (4th)		
	5	Copy Counter - Paper Tray (By-pass)		
	6	Copy Counter - Paper Tray (Duplex)		
7-205*		Total ADF Counter	Displays the total number of originals fed by the ADF.	
7-301*	1	Copy Counter - Mag. (25%~49%)	Displays the total number of copies by reproduction ratio and magnification.	
	2	Copy Counter - Mag. (50%~99%)		
	3	Copy Counter - Mag. (Full Size)		
	4	Copy Counter - Mag. (101%~200%)		
	5	Copy Counter - Mag. (201%~400%)		
	6	Copy Counter - Mag. (Direct Mag.)		
	7	Copy Counter - Mag. (Direct Size Mag.)		
	8	Copy Counter - Mag. (Size Mag.)		
	9	Copy Counter - Mag. (Fix Mag.)		
7-303*	1	Copy Counter – Image Edit (All Modes)	Displays the total number of copies by image editing mode. **No.2, 4, 5, 7, and 9 are for the Japanese version only.**	
	2	Copy Counter – Image Edit (Mirror)		
	3	Copy Counter – Image Edit (Posi./Nega.)		
	4	Copy Counter – Image Edit (Sharp)		
	5	Copy Counter – Image Edit (Outline)		
	6	Copy Counter – Image Edit (Image Repeat)		
	7	Copy Counter – Image Edit (Double Copy)		

Mode No.			Function	Settings
Class 1 and 2	Class 3			
7-303*	8	Copy Counter – Image Edit (Overlay)	Displays the total number of copies by image editing mode. **No.2, 4, 5, 7, and 9 are for the Japanese version only.**	
	9	Copy Counter – Image Edit (Sharp Pattern)		
7-304*	1	Copy Counter - Copy Mode (Text)	Displays the total number of copies by copy mode.	
	2	Copy Counter - Copy Mode (Text/Photo)		
	3	Copy Counter - Copy Mode (Photo)		
	4	Copy Counter - Copy Mode (Duplex)		
	5	Copy Counter - Copy Mode (Double Sided Original)		
	6	Copy Counter - Copy Mode (Combine)		
	7	Copy Counter - Copy Mode (Series Copy)		
	8	Copy Counter - Copy Mode (Erase)		
	9	Copy Counter - Copy Mode (Preset Stamp)		
	10	Copy Counter - Copy Mode (Page Number)		
	11	Copy Counter - Copy Mode (Cover Sheet)		
	12	Copy Counter - Copy Mode (OHP Slip Sheet)		
	13	Copy Counter - Copy Mode (Sort)		
	14	Copy Counter - Copy Mode (Staple)		
	15	Copy Counter - Copy Mode (ADF)		

Mode No.			Function	Settings
Class 1 and 2	Class 3			
7-305*	1	Copy Counter - Copy Q'ty (1 to 1)	Displays the total number of series copies.	
	2	Copy Counter - Copy Q'ty (1 to 2 ~ 5)		
	3	Copy Counter - Copy Q'ty (1 to 6 ~ 10)		
	4	Copy Counter - Copy Q'ty (1 to 11 ~ 20)		
	5	Copy Counter - Copy Q'ty (1 to 21 ~ 99)		
7-401*		Total SC Counter	Displays the total number of service calls that have occurred.	
7-402*		Each SC Code Counter	Displays the total number of each service call that has occurred.	**0: No** 1: Yes
7-501*		Total Jam Counter	Displays the total number of jams.	
7-502*		Total Paper Jam Counter	Displays the total number of paper jams.	
7-503*		Total Original Jam Counter	Displays the total number of original jams.	
7-504*	1	Total Jams by Location (A Jam)	Displays the total number of paper jams by location.	
	2	Total Jams by Location (B Jam)		
	3	Total Jams by Location (C Jam)		
	4	Total Jams by Location (D Jam)		
	5	Total Jams by Location (R Jam)		
	6	Total Jams by Location (Y Jam)		
	7	Total Jams by Location (Z Jam)		
	8	Total Jams by Location (1st)		
	9	Total Jams by Location (2nd)		

Mode No.			Function	Settings
Class 1 and 2	Class 3			
7-504*	10	Total Jams by Location (3rd)	Displays the total number of paper jams by location.	
	11	Total Jams by Location (4 Th)		
	12	Total Jams by Location (By-pass)		
	13	Total Jams by Location (Duplex Unit)		
7-801	1	ROM Version/Connection (Main Control)	Displays the ROM version. **NOTE: SP7-801-5 and 14 are used only for the Japanese version.**	
	2	ROM Version/Connection (BiCU)		
	3	ROM Version/Connection (FAX Control)		
	4	ROM Version/Connection (Printer Control)		
	5	ROM Version/Connection (ANITA)		
	6	ROM Version/Connection (Scanner)		
	7	ROM Version/Connection (Duplex)		
	8	ROM Version/Connection (ADF)		
	9	ROM Version/Connection (Finisher)		
	10	ROM Version/Connection (PI)		
	11	ROM Version/Connection (Memory amount)		
	12	ROM Version/Connection (1 Bin Tray)		
	13	ROM Version/Connection (Paper Tray Unit)		

Mode No.			Function	Settings
Class 1 and 2	Class 3			
7-801	14	ROM Version/Connection (Image Edit)	Displays the ROM version. **NOTE: SP7-801-5 and 14 are used only for the Japanese version.**	
7-803*		PM Counter Display	Displays the PM counter since the last PM.	
7-804		PM Counter Resets	Resets the PM counter. *After selecting "1", press down the "Photo" key and the "OK" or # key at the same time to reset the counters. If the reset was successful, the beeper will sound 5 times. If it failed, the beeper will sound only twice.*	**0: No** 1: Yes
7-807		SC/Jam Counter Reset	Resets the SC and jam counters. *After selecting "1", press down the "Photo" key and the "OK" or # key at the same time to reset the counters. If the reset was successful, the beeper will sound 5 times. If it failed, the beeper will sound only twice.*	**0: No** 1: Yes
7-808		Resets Counters	Resets the counters except for the total counter (SP7-003) and the timer counter (SP7-991). *After selecting "1", press down the "Photo" key and the "OK" or # key at the same time to reset the counters. If the reset was successful, the beeper will sound 5 times. If it failed, the beeper will sound only twice.*	**0: No** 1: Yes
7-810		Key Operator Code Reset	Resets the key operator code. *After selecting "1", press down the "Photo" key and the "OK" or # key at the same time to reset the counters. If the reset was successful, the beeper will sound 5 times. If it failed, the beeper will sound only twice.*	**0: No** 1: Yes
7-825		Total Counter Reset	Resets the electrical total counter. *Usually, this SP mode is done at installation. This SP mode is effective only once, when the counter has a negative value.* *After selecting "1", press down the "Photo" key and the "OK" or # key at the same time to reset the counters. If the reset was successful, the beeper will sound 5 times. If it failed, the beeper will sound only twice.*	**0: No** 1: Yes
7-901*		SC History Display	Displays the last twenty SC codes that have occurred.	**0: No** 1: Yes

Mode No.			Function	Settings
Class 1 and 2	Class 3			
7-902		SC History Clear	Resets the SC history. *After selecting "1", press down the "Photo" key and the "OK" or # key at the same time to reset the counters. If the reset was successful, the beeper will sound 5 times. If it failed, the beeper will sound only twice.*	**0: No** 1: Yes
7-903*		Copy Jam History Display	Displays the copy jams that have occurred. Refer to Section 4.2.6.	**0: No** 1: Yes
7-904		Copy Jam History Clear	Resets the copy jam history. *After selecting "1", press down the "Photo" key and the "OK" or # key at the same time to reset the counters. If the reset was successful, the beeper will sound 5 times. If it failed, the beeper will sound only twice.*	**0: No** 1: Yes
7-905		Orig. Jam History Display	Displays the original jams that have occurred. Refer to section 4.2.8.	**0: No** 1: Yes
7-906		Orig. Jam History Clear	Resets the original jam history. *After selecting "1", press down the "Photo" key and the "OK" or # key at the same time to reset the counters. If the reset was successful, the beeper will sound 5 times. If it failed, the beeper will sound only twice.*	**0: No** 1: Yes
7-907		Timer Counter Reset	Resets the timer counter (SP7-991). *After selecting "1", press down the "Photo" key and the "OK" or # key at the same time to reset the counters. If the reset was successful, the beeper will sound 5 times. If it failed, the beeper will sound only twice.*	**0: No** 1: Yes
7-908*		PCU Counter Display	Displays the value of the PCU counter (number of copies since the last PCU change).	
7-909		PCU Counter Reset	Resets the PCU counter. *After selecting "1", press down the "Photo" key and the "OK" or # key at the same time to reset the counters. If the reset was successful, the beeper will sound 5 times. If it failed, the beeper will sound only twice*	**0: No** 1: Yes
7-910		Jam Code Display	Displays the jam codes. The order of the jam display is as follows. • Newest paper jam code • Newest original jam code • Paper jam codes (in numerical order) • Original jam codes (in numerical order)	

7-911		ID Sensor Error Counter Display	Displays the number of ID sensor errors that have occurred.	
7-912		ID Sensor Error Counter Reset	Resets the ID sensor error counter.	**0: No** 1: Yes
7-991*		Timer Counter Display	Displays the total time that the main switch has been turned on.	

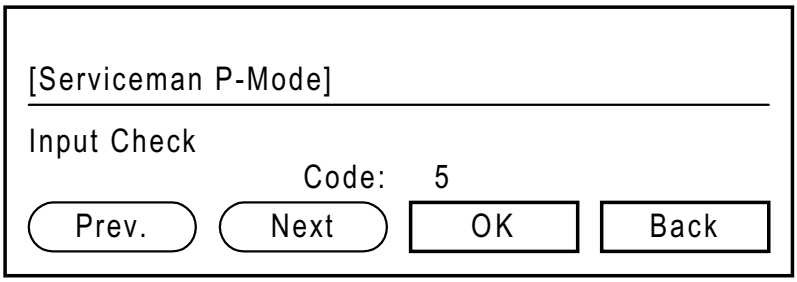
4.2.3 TEST PATTERN PRINTING (SP4-417 AND SP5-902)

1. Input the level 3 number for the test pattern you need.
2. Press the (Interrupt) key on the display to access the copy mode display.
3. Select the required copy features such as paper size, image density, and reproduction ratio.
4. Press the key to print the test pattern.
5. After checking the test pattern, exit copy mode by pressing the (Interrupt) key again.
6. Exit SP mode.

No.	Test Pattern (SP4-417)
0	No Print
1	Vertical Lines (single dot)
2	Horizontal Lines (single dot)
3	Vertical Lines (double dots)
4	Horizontal Lines (double dots)
5	Alternating Dot Pattern
6	Grid Pattern (single dot)
7	Vertical Stripes
8	Grayscales (Horizontal)
9	Grayscales (Vertical)
10	ID Patch
11	Cross Pattern
12	Argyle Pattern
13	Trimming Area
14	Vertical Lines (double dots) - SBU
15	Grid Pattern (single dot) - SBU
16	16 Grayscales - SBU

No.	Test Pattern (SP5-902)
0	No Print
1	Vertical Lines (single dot)
2	Horizontal Lines (single dot)
3	Vertical Lines (double dots)
4	Horizontal Lines (double dots)
5	Grid Pattern (single dot)
6	Grid Pattern (double dots)
7	Alternating Dot Pattern
8	Full Dot Pattern
9	Black Band
10	Trimming Area
11	Argyle Pattern
12	Grayscales (Horizontal)
13	Grayscales (Vertical)
14	Grayscales (Vert./Hor.)
15	Grayscales (Vert./Hor. Overlay)
16	Grayscales with white lines (Horizontal)
17	Grayscales with white lines (Vertical)
18	Grayscales with white lines (Vert./Hor.)

4.2.4 INPUT CHECK (SP5-803)



1. Access SP mode 5-803.
2. Select the number that will access the switch or sensor you wish to check (see the table below).
3. Check the status of the sensor or switch.
4. If you wish to check the signal during a copy cycle, select the required copy modes, then press the Start key. After that, re-enter the SP mode to monitor the signal.
5. The LCD panel will display “00H” or “01H”. The meaning of the display is as follows.

Input Check Table

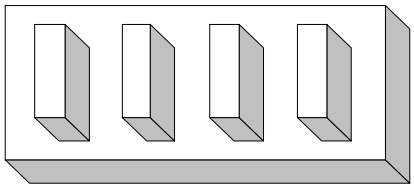
Number	Description	Reading	
		00H	01H
0	Not used		
1	Front cover safety switch	Closed	Opened
2	Front cover safety switch – LD5 V	Closed	Opened
3	Right cover switch	Closed	Opened
4	Right lower cover switch	Closed	Opened
5	Tray Cover (optional paper tray unit)	Closed	Opened
6	Duplex unit open switch (Optional duplex unit)	Closed	Opened
7	Right upper cover switch	Closed	Opened
8	Right guide switch (Optional bridge unit)	Closed	Opened
9	Left guide switch (Optional bridge unit)	Closed	Opened
10	Not used		
11	Paper overflow sensor	Paper not detected	Paper detected
12 ~ 15	Not used		
16	Upper relay sensor	Paper not detected	Paper detected
17	Lower relay sensor	Paper not detected	Paper detected
18	Vertical transport sensor (Optional paper tray unit)	Paper not detected	Paper detected

Number	Description	Reading	
		00H	01H
19	Registration sensor	Paper not detected	Paper detected
20	Paper exit sensor	Paper not detected	Paper detected
21	Exit sensor (Optional interchange unit)	Paper not detected	Paper detected
22	Duplex entrance sensor (Optional duplex unit)	Paper not detected	Paper detected
23	Duplex exit sensor (Optional Duplex unit)	Paper not detected	Paper detected
24	Relay sensor (Optional bridge unit)	Paper not detected	Paper detected
25	Tray exit sensor (Optional bridge unit)	Paper not detected	Paper detected
26	Paper end sensor (optional bypass tray)	Paper not detected	Paper detected
27	Paper size sensor sensor (optional bypass tray)	See Table 2	
28 ~ 29	Not used		
30	Special paper switch	Off	On
31	Upper paper end sensor	Paper not detected	Paper detected
32	Lower paper end sensor	Paper not detected	Paper detected
33	Upper paper size switch	See Table 1	
34	Lower paper size switch	See Table 1	
35	1st paper height sensors	See Table 3	
36	2nd paper height sensors	See Table 3	
37	Upper paper end sensor (or right tray end sensor for the LCT) (Optional paper tray unit or LCT)	Paper not detected	Paper detected
38	Lower paper end sensor (Optional paper tray unit)	Paper not detected	Paper detected
39	Upper paper size switch (Optional paper tray unit or LCT)	See Table 1 (for paper tray unit) 01: A4, 02: LT (for LCT – there is no sensor)	
40	Lower paper size switch (Optional paper tray unit)	See Table 1	
41	Upper paper height sensor (Optional paper tray unit or LCT)	See Table 3	
42	Lower paper height sensor (Optional paper tray unit)	See Table 3	
43	Upper paper lift (limit) sensor (Optional paper tray unit or LCT)	Paper not at correct height	Paper at correct height
44	Lower limit sensor (Optional LCT)	Tray is not down	Tray is down
45	Rear fence H.P sensor (Optional LCT)	Not home position	At home position
46	Rear fence return sensor (Optional LCT)	Not return position	At return position
47	Side fence closed sensor (Optional LCT)	Not detected	Detected

Number	Description	Reading	
		00H	01H
48	Side fence open sensor (Optional LCT)	Not detected	Detected
49	Left tray paper end sensor (Optional LCT)	Paper not detected	Paper detected
50	Tray set switch(Optional LCT)	Off	On
51	Paper sensor (Optional 1 Bin tray)	Paper not detected	Paper detected
52	Not used		
53	PCU set signal (a shorted connection in the ID sensor cable)	Not set	Set
54	New PCU detect switch	Used PCU	New PCU
55	Paper tray unit type (Optional paper tray unit)	See Table 4	
56	Paper tray unit installed	Not installed	Installed
57	1-bin sorter installed	Not installed	Installed
58	BICU installed	Not installed	Installed
59	Bridge unit installed	Not installed	Installed
60	Shift tray unit installed	Not installed	Installed
61	By-pass tray installed	Not installed	Installed
62	Duplex unit installed	Not installed	Installed
63	Fusing unit installed	Not installed	Installed
64	Interchange unit installed	Not installed	Installed
65	Finisher installed	Not installed	Installed
66	Not used		
67	1st paper lift sensor	Paper not at correct height	Paper at correct height
68	2nd paper lift sensor	Paper not at correct height	Paper at correct height
69	Lower paper lift sensor (Optional paper tray unit)	Paper not at correct height	Paper at correct height
70	Not used		
71	Main motor lock	Off	On
72	Polygonal mirror motor lock	Off	On
73	Tray motor lock (Optional paper tray unit)	Off	On
74	Exhaust fan motor lock	Off	On
76	Total (mechanical) counter installed	Not installed	Installed
77	Not used		
78	Key counter installed (Optional key counter)	Not installed	Installed
79 ~ 80	Not used		
81	Laser synchronization signal	Not detected	Detected
82	LD error	No error	Error
83 ~ 89	Not used		
90	DF position sensor (Optional ADF)	Closed	Opened

Number	Description	Reading	
		00H	01H
91	Feed cover open sensor (Optional ADF)	Closed	Opened
92	Original set sensor (Optional ADF)	Paper not detected	Paper detected
93	Registration sensor (Optional ADF)	Paper not detected	Paper detected
94	Original trailing edge sensor (Optional ADF)	Paper not detected	Paper detected
95	Original exit sensor (Optional ADF)	Paper not detected	Paper detected
96	Original reverse sensor (Optional ADF)	Paper not detected	Paper detected
97 ~ 98	Not used		
99	Platen cover sensor	Closed	Opened

Table 1: Paper Size Switch (Main Frame)



Number	SW 1	SW 2	SW 3	SW 4	SP Value	Paper Size
43, 34, 39, 40	0	0	0	0	00H	—
	0	0	1	0	04H	A4 Sideways
	0	0	1	1	0CH	A4 Lengthwise
	0	1	0	1	0AH	11" x 17"
	0	1	1	1	0EH	11" x 8 1/2"
	1	0	0	0	01H	8 1/2" x 11"
	1	0	1	0	05H	* (Asterisk)
	1	1	0	0	03H	8 1/2" x 14"
	1	1	1	1	0FH	A3

1: Pushed

Table 2: By-pass Paper Size Sensor

Number	SP Value	Paper Size	
		mm	inches
27	01H	A3	11" x 17"
	03H	—	11" x 17"
	02H	A4 Lengthwise	8 1/2" x 11"
	06H	8" x 13"	—
	04H	A5 Lengthwise	5 1/2" x 8 1/2"
	0CH	—	—
	08H	—	—

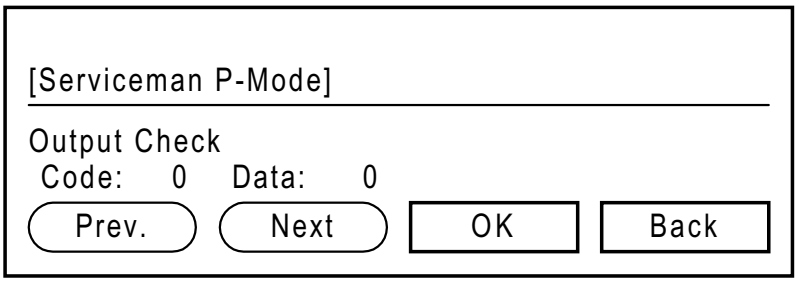
Table 3: Paper Height Sensors

Number	SP Value	Paper Amount
35, 36, 41, 42	00H	100%
	01H	70 ~ 75%
	02H	Near-end
	03H	25 ~ 30%

Table 4: Paper Tray Unit Set Sensor

Number	SP Value	Unit Installed
55	00H	None
	10H	LCT
	20H	Paper tray unit (2 trays)

4.2.5 OUTPUT CHECK (SP5-804)



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

1. Access SP mode 5-804.
2. Select the SP number that corresponds to the component you wish to check (see the table below), then press "OK" or the # key.
3. Press "1", then press "OK" or the # key to check that component.
4. To interrupt the test, exit the SP mode.
5. If you wish to check another component, re-enter the SP mode.

Output Check Table

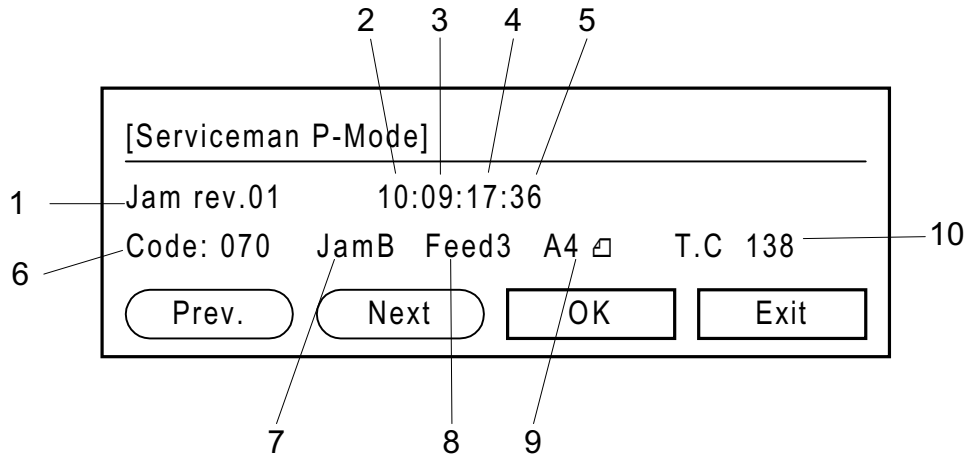
NOTE: Pull out the tray before performing the output checks from 29 to 32.

Number	Description
0	Not used
1	Main motor (forward)
2	Main motor (Reverse) **Do not use**
3	Registration clutch
4	Not used
5	Toner supply motor
6	Not used
7 ~ 8	Not used
9	Exhaust fan (High Speed)
10	Exhaust fan (Low Speed)
11	Not used
12	By-pass feed clutch
13	Upper paper feed clutch
14	Lower paper feed clutch
15	Upper paper lift motor (Up)
16	Upper paper lift motor (Down)
17	Lower paper lift motor (Up)
18	Lower paper lift motor (Down)

Number	Description
19	Lower paper lift motor (Up) (Optional paper tray unit)
20	Lower paper lift motor (Down) (Optional paper tray unit)
21	Upper relay clutch (Optional paper tray unit)
22	Lower relay clutch (Optional paper tray unit)
23	Relay clutch (Optional paper tray unit)
24 ~ 25	Not used
26	Upper paper feed clutch (Optional paper tray unit)
27	Lower paper feed clutch (Optional paper tray unit)
28	Tray motor (Optional paper tray unit)
29	Upper Paper lift motor (Up) (Optional paper tray unit or LCT) See note
30	Rear fence motor (forward) (Optional LCT) See note
31	Upper paper lift motor (Down) (Optional paper tray unit or LCT) See note
32	Rear fence motor (reverse (Optional LCT) See note
33	Side fence solenoid (Optional LCT)
34	Shift tray motor (Optional shift tray)
35	Not used
36	Exit junction gate solenoid (Optional interchange unit)
37	Duplex junction gate (Optional interchange unit)
38 ~ 39	Not used
40	Duplex inverter motor (Reverse) (Optional duplex unit)
41	Duplex inverter motor (Forward) (Optional duplex unit)
42	Duplex transport motor (Optional duplex unit)
43	Inverter gate solenoid (Optional duplex unit)
44	Not used
45	Bridge cooling fan motor (Optional bridge unit)
46	Bridge unit drive motor (Optional bridge unit)
47	Junction gate solenoid (Optional bridge unit)
48 ~ 49	Not used
50	1-bin tray LED
51	Polygonal mirror motor
52	Polygonal mirror motor and laser diode
53	Laser diode - **Do not use**
54	Junction gate solenoid (Optional 1-bin Sorter)
54 ~ 79	Not used
80	Duplex unit free run (without paper)
81	Duplex unit free run (with paper)
82 ~ 89	Not used
90	DF transport motor (Optional ADF)
91	DF feed motor (Optional ADF)
92	DF feed clutch (Optional ADF)
93	DF pick-up solenoid (Optional ADF)
94	Stamp solenoid (Optional ADF)
95	DF junction gate solenoid (Optional ADF)
96 ~ 99	Not used

4.2.6 COPY JAM HISTORY DISPLAY (SP7-903)

After entering the SP mode, select “1” and press the “OK” or ⓐ key. The LCD panel will display the following message.



1. Jam history number
2. Main motor operating time: Date
3. Hour
4. Minute
5. Second
6. Jam code (see the table below)
7. Jam location
8. Paper feed station
9. Paper size
10. Total counter value at the jam occurred.

Jam Code	Meaning
001	Jams at power on.
010	Paper does not reach the registration sensor (from paper tray unit)
011	Paper does not reach the 1st relay sensor.
030	Paper does not reach the 2nd relay sensor.
031	Paper does not reach the 3rd relay sensor.
032	Paper does not reach the LCT feed sensor.
050	Paper does not reach the registration sensor (from by-pass unit)
070	Paper caught at the registration sensor.
121	Paper does not reach the exit sensor.
122	Paper caught at the exit sensor.
123	Paper does not reach the duplex entrance sensor.
124	Paper caught at the duplex entrance sensor.
125	Paper does not reach the duplex exit sensor.
131	Paper does not reach the bridge exit sensor.
132	Paper caught at the bridge exit sensor.
133	Paper does not reach the bridge relay sensor.
134	Paper caught at the bridge relay sensor.
149	Paper does not reach the 1 bin exit sensor
150	Paper caught at the 1 bin exit sensor.

160	Paper does not reach the finisher entrance sensor.
161	Paper caught at the finisher entrance sensor.
162	Paper does not reach the finisher exit sensor.
163	Paper caught at the finisher exit sensor.
164	Paper does not reach the staple tray.
165	Paper stays in the staple tray.

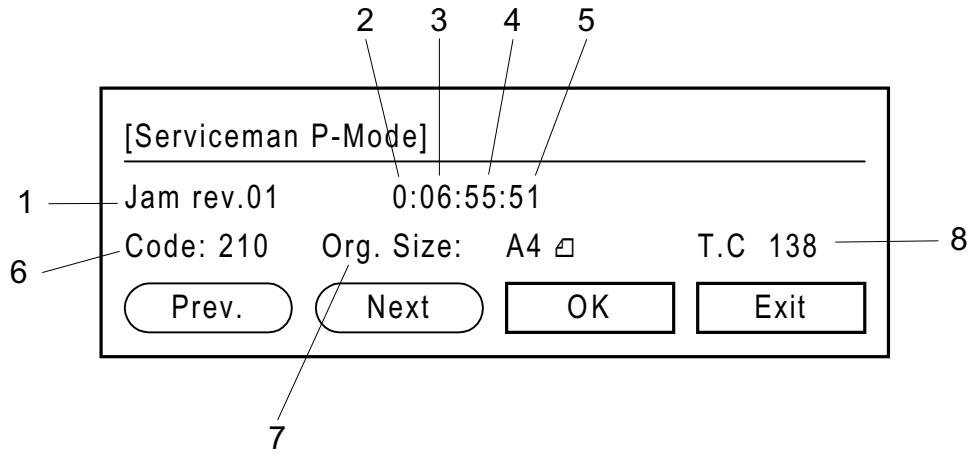
NOTE: The NVRAM can store data for up to 10 copy jams. If more than 10 copy jams occur, the oldest data is erased.

4.2.7 SMC DATA LISTS (SP5-992)

1. Access SP mode 5-992 and select the number corresponding to the list that you wish to print.
2. Press the ⇦ (Interrupt) key on the operation panel to access the copy mode display.
3. Select the paper size.
4. Press the ⓘ (Start) key on the operation panel to print the list.
5. After printing the list, exit copy mode by pressing the ⇦ (Interrupt) key on the operation panel.
6. Exit SP mode.

4.2.8 ORIGINAL JAM HISTORY DISPLAY (SP7-905)

After entering the SP mode, select “1” and press the “OK” or ⓐ key. The following message is displayed.



1. Jam history number
2. Main motor operating time: Date
3. Hour
4. Minute
5. Second
6. Jam code (see the table below)
7. Original size
8. Total counter value at the original jam occurred.

Jam Code	Meaning
210	Original does not reach the registration sensor.
211	Original caught at the registration sensor.
212	Original does not reach the feed-out sensor.
213	Original caught at the feed-out sensor.
214	Original does not reach the inverter sensor.
215	Original caught at the inverter sensor.
216	Short interval between originals.
218	No original at the stamp.

NOTE: The NVRAM can store data for up to 10 copy jams. If more than 10 copy jams occur, the oldest data will be erased.

4.2.9 MEMORY ALL CLEAR (SP5-801)

NOTE: Memory All Clear mode resets all the settings and counters stored in the NVRAM to the defaults, except for the following:

- Electrical total counter value (SP7-003)
- Machine serial number (SP5-811)
- Plug & Play brand name and production name setting (SP5-907)
- Some SBU settings (SP4-904-3, SP4-904-4, SP4-906, SP4-909)
- Language UK/TW Priority (SP5-916) – Asia and Taiwan version only

Normally, this SP mode should not be used. This procedure is necessary only after replacing the NVRAM, or when the copier malfunctions because the NVRAM is damaged.

Using a Flash Memory Card

1. Upload the NVRAM data to a flash memory card (see NVRAM Data Upload).
2. Print out all SMC data lists (SP mode 5-992).
   NOTE: Be sure to print out all the lists. If the NVRAM data upload was not completed, it is necessary to change the SP mode settings by hand.
3. Access SP mode 5-801.
4. Hold the "Original Type" key and the "OK" or # key at the same time. (If the operation was successful, the beeper will sound 5 times. If it failed, the beeper will sound only twice.)
5. Turn the main switch off and back on.
6. Download the NVRAM data from a flash memory card (see NVRAM Data Download).

Without Using a Flash Memory Card

If there is no flash memory card, follow the steps below.

1. Print out all SMC Data Lists (SP mode 5-992).
2. Access SP mode 5-801.
3. Hold the "Original Type" key and the "OK" or # key at the same time. (If the operation was successful, the beeper will sound 5 times. If it failed, the beeper will sound only twice.)
4. Turn the main switch off and back on.
5. Do the printer and scanner registration and magnification adjustments (see Replacement and Adjustment - Copy Adjustments section 6.8).
6. Referring to the SMC data lists, re-enter any values that differ from the factory settings. In particular, the values for SP4-904-1, SP4-904-2, SP4-905, and SP4-907 must be re-entered.
7. Do the standard white level adjustment (SP4-908). (See Replacement and Adjustment – Standard White Density Adjustment for details, Section 6.8).
8. Check the copy quality and the paper path, and do any necessary adjustments.

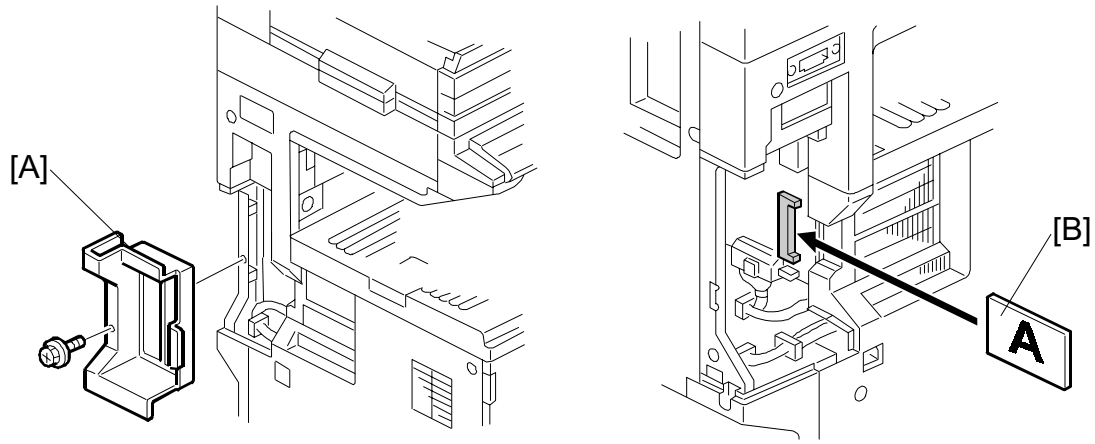
4.2.10 PROGRAM UPLOAD/DOWNLOAD

In this machine, the BICU software is upgraded using a flash memory card.

There are two program download procedures.

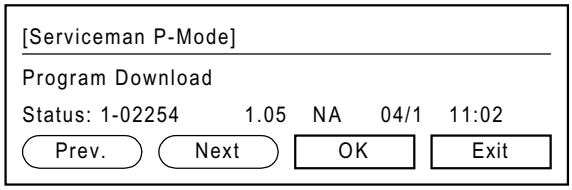
- SP5-826: Uploads from the BICU to a flash memory card.
- SP5-827: Downloads from a flash memory card to the BICU.

Program Download (SP5-827)

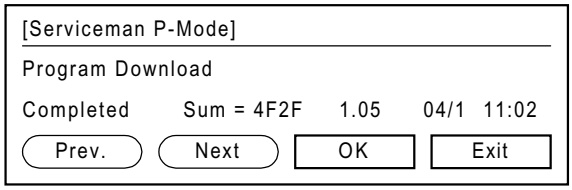


1. Turn off the main switch.
2. Remove the application cover [A] (1 screw).
3. Plug the flash memory card [B] into the card slot.
   NOTE: Make sure that the surface printed “A” faces the back side of the machine (as viewed from the front of the machine).
4. Hold the (Energy Saver) key and turn on the main switch.
   NOTE: To access SP mode 5-827 directly, hold the (Energy Saver) key and “1” key at the same time, then turn on the main switch. Go to step 6.
5. Access SP mode 5-827.
6. Press “1” key, then press the “OK” button to download the software.
7. The machine erases the current software, then writes the new software to the BICU. This takes about 60 seconds. If downloading failed, an error message appears, as follows. At this time, repeat the download procedure.
8. After finishing the software download, turn off the main switch and remove the IC card.

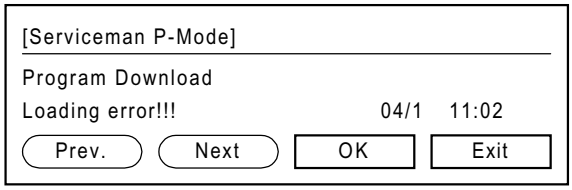
Display during writing



Display when the download is complete



Display if writing failed



NOTE: To see the current firmware version, check SP 7-801-2.

Program Upload (SP5-826)

1. Turn off the main switch.
2. Plug the flash memory card [A] into the card slot (see previous page).
   NOTE: Make sure that the surface printed “A” faces the rear side of the machine (as viewed from the front of the machine).
3. Turn on the main switch.
4. Access SP mode 5-826.
5. The machine erases the current software, then writes the new software to the flash memory card. This takes about 60 seconds. If uploading failed, an error message appears. At this time, repeat the upload procedure.
6. Turn off the main switch, then remove the IC card.

4.2.11 NVRAM DATA DOWNLOAD

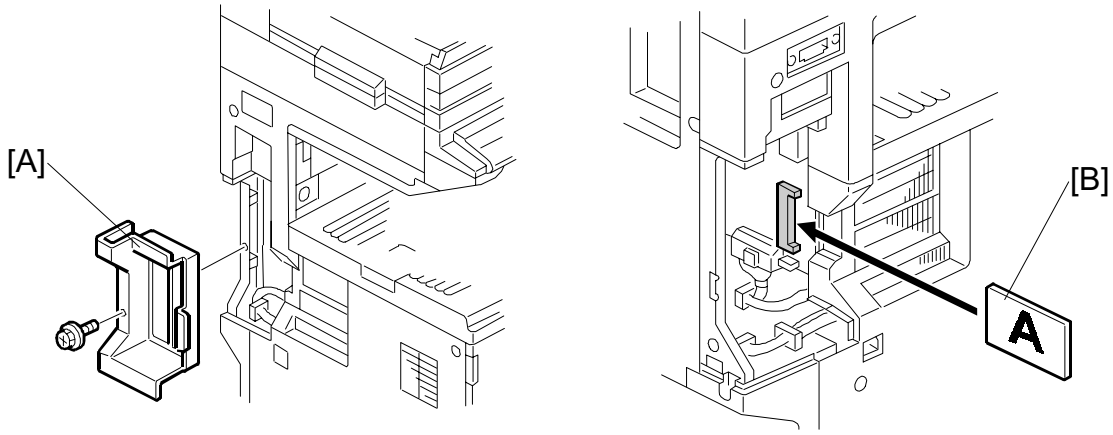
After doing the memory all clear procedure, NVRAM data will be reset to their default settings. So it is necessary to upload the NVRAM data before clearing the NVRAM, and to download the NVRAM data afterwards.

- SP5-824: Uploads from the BICU to a flash memory card.
- SP5-825: Downloads from a flash memory card to the BICU.

NVRAM Data Download (SP5-825)

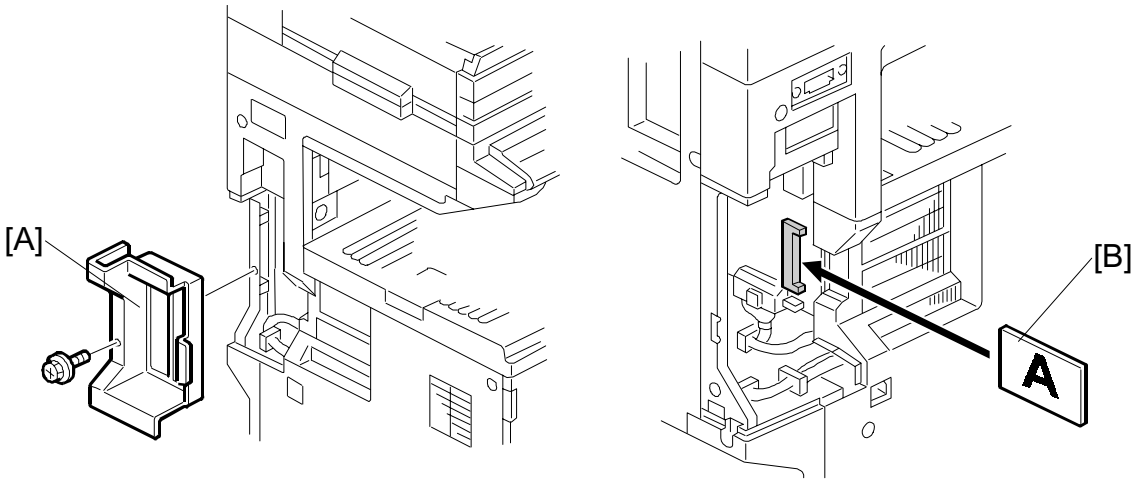
NOTE: This procedure downloads all the settings stored in the NVRAM except for the following items:

- Electrical total counter value (SP7-003)
- Machine serial number (SP5-811, SP5-920, SP5-925)
- Plug & Play brand name and production name setting (SP5-907)
- Some SBU settings (SP4-904-3, SP4-904-4, SP4-906, SP4-909)



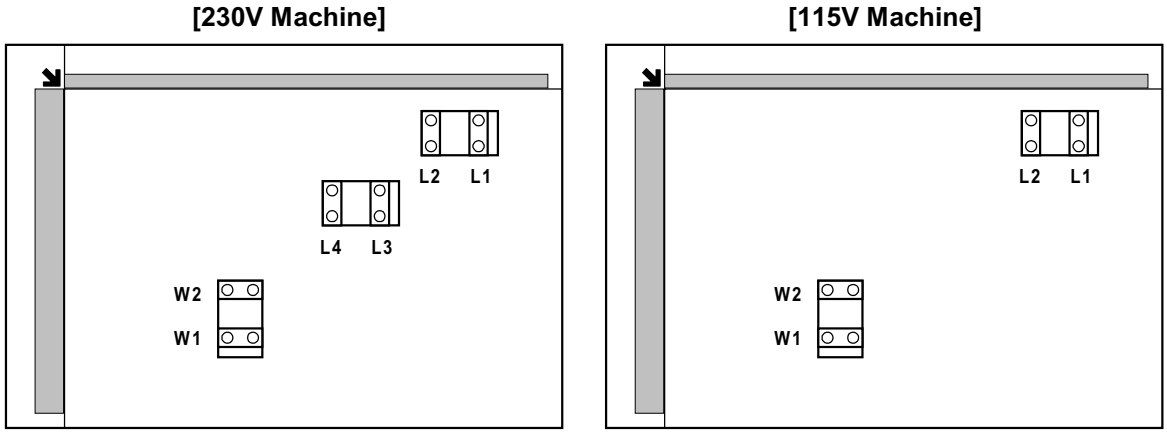
1. Turn off the main switch.
2. Remove the application cover [A] (1 screw).
3. Plug the flash memory card [B] into the card slot.
   NOTE: Make sure that the surface printed “A” faces the rear side of the machine (as viewed from the front of the machine).
4. Turn on the main switch.
5. Access the SP mode 5-825.
6. The machine erases the current settings, then writes the new settings onto the NVRAM on the BICU board. If downloading failed, an error message appears (see “Program Download”). At this time, repeat the download procedure.
7. Turn off the main switch, then remove the IC card.

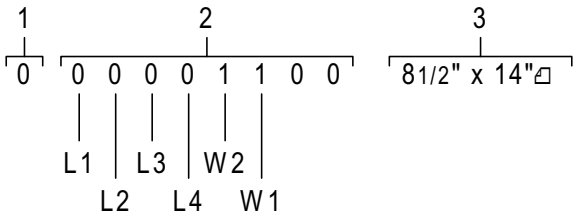
NVRAM Data Upload (SP5-824)



1. Turn off the main switch.
2. Remove the application cover [A] (1 screw).
3. Plug the flash memory card [B] into the card slot.
   NOTE: Make sure that the surface printed “A” faces the rear side of the machine (as viewed from the front of the machine).
4. Turn on the main switch.
5. Access SP mode 5-824.
6. The machine erases the current settings, then writes the machine’s settings to the flash memory card. This takes about 60 seconds. If uploading failed, an error message appears (see “Program Download”). At this time, repeat the upload procedure.
7. Turn off the main switch, then remove the IC card.

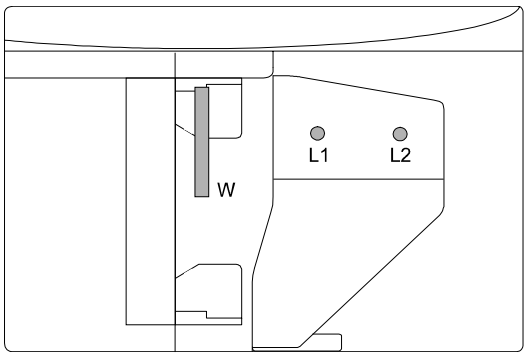
4.2.12 APS AND PLATEN/DF COVER SENSOR OUTPUT DISPLAY (SP4-301)



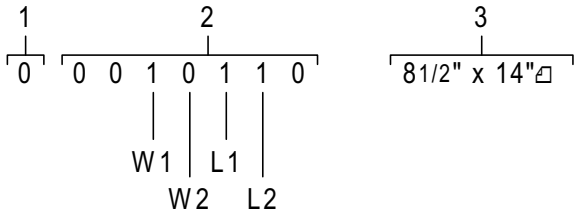


1. Platen cover sensor status 1 = Closed
2. APS sensor status 1 = Paper detected
3. Paper size display

4.2.13 DF APS SENSOR OUTPUT DISPLAY (SP6-901)



	Large ← → Small			
W1	0	0	1	1
W2	0	1	0	1

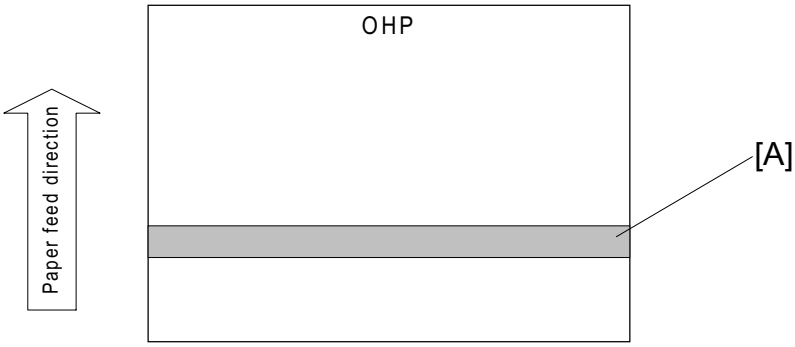


1. Original set sensor status 1 = Paper detected
2. APS sensor status 1 = Paper detected
3. Paper size display

L1	L2	W1	W2	Paper Size	
				inches	mm
0	0	0	0	8 1/2" x 11" Sideways	A4 Sideways
0	0	0	1	-	B5 Sideways
0	0	1	0	8 1/2" x 5 1/2" Sideways	A5 Sideways
0	0	1	1	5 1/2" x 8 1/2" Lengthwise	A5 Lengthwise
1	0	1	0	8 1/2" x 11" Lengthwise	A4 Lengthwise
1	0	1	1	-	B5 Lengthwise
1	1	0	0	11" x 17"	A3
1	1	0	1	10" x 14"	B4
1	1	1	0	8 1/2" x 14"	8 1/2" x 13"

1: Detected

4.2.14 NIP BAND WIDTH MEASUREMENT (SP1-109)



When paper wrinkling or image off-set occurs, the pressure from the pressure roller can be adjusted by changing the position of the pressure springs. At this time, the nip band width can also be checked with SP1-109, as follows.

1. Do a free run (SP5-802) for about 50 sheets.
2. Access SP1-109 and press the “1” key.
3. Press the ⇐ key to enter copy mode.
4. Place an OHP sheet (A4/8.5”x11” sideways) on the by-pass tray or in the 2nd paper tray.
5. Press the “Start” key.
   The OHP sheet is stopped in the fusing unit for about 20 seconds, then it will be fed automatically.
6. Check the nip band width [A]. The relationship between the position of the pressure spring and the band width is as follows.
   NOTE: Check the nip band width around the center of the OHP.

1. Pressure spring position	**Nip band width**
Upper (default position)	5.0 ± 0.5 mm
Lower	5.3 ± 0.5 mm
2. Envelope feed mode (green lever down) at the default pressure spring position	4.0 ± 0.5 mm

If the width is out of the above specification, the pressure spring should be replaced.

4.2.15 DISPLAY LANGUAGE (SP5-808)

	US	Europe (standard)	Europe (option 1)	Europe (option 2)	Asia/ Taiwan	China	Russia
0	NA	UK	UK	UK	UK	CN	RU
1	FR	DE	DE	DE	TW	UK	UK
2	ES	FR	FR	FR			
3		IT	IT	IT			
4		ES	ES	ES			
5		NL	SE	CZ			
6			NO	PL			
7			DK	PT			
8			FI	HU *			

*: In the Lanier version. this cannot be selected.

For Europe, select the group (standard, option 1, or option 2) with SP 5-807.

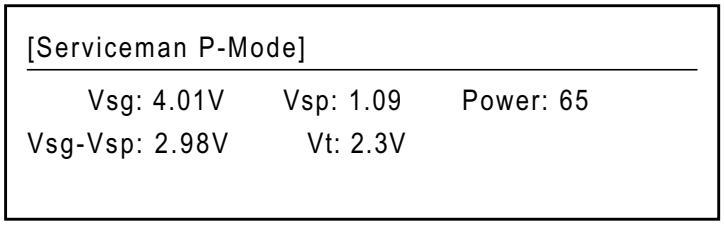
NA: English	UK: English	DE: German	TW: Taiwan
FR: French	IT: Italian	ES: Spanish	CN: Chinese
NL: Dutch	SE: Swedish	NO: Norwegian	RU: Russian
DK: Danish	FI: Finnish	CZ: Czech	
HU: Hungarian	PL: Polish	PT: Portuguese	

4.2.16 SERIAL NUMBER INPUT (SP5-811)

Used to input the machine's serial number. (This is normally done at the factory.) The numeric key pad has 12 buttons. Use the first 11 buttons ① to ⑨, ⑩ and ⓪ to input the serial number (# is not used). Each button represents one digit of the serial number. Press consecutively to get the required letter/number. The first 4 buttons allow you to scroll through number 0 to 9 and "A" to "Z". Buttons 5 to 11 only scroll through numbers 0 to 9.

①	②	③
1st digit	2nd digit	3rd digit
④	⑤	⑥
4th digit	5th digit	6th digit
⑦	⑧	⑨
7th digit	8th digit	9th digit
⑩	⓪	#
10th digit	11th digit	Not used

4.2.17 ID SENSOR ERROR ANALYSIS (SP2-221)



Even if the ID sensor is defective, the machine does not generate an SC condition. If the ID sensor is defective, the image quality becomes worse (e.g., dirty background on the copy). If these conditions occur, check the ID sensor output using this SP mode.

1. Vsg
   Error Condition: Vsg < 2.5V
   Possible causes:
   - ID sensor defective
   - ID sensor dirty
   - Drum does not get charged
2. Vsp
   Error Condition: Vsp > 2.5V
   Possible causes:
   - Toner density is very low
   - ID sensor pattern is not created
3. Power: This is the power for the light source in the ID sensor
   Error Condition: Vsg < 3.5V when maximum power (254) is applied
   Possible causes:
   - ID sensor defective
   - ID sensor dirty
   - Drum does not get charged
4. Vsg-Vsp
   Error Condition: (Vsg – Vsp) < 1.00V
   Possible causes:
   - ID sensor defective
   - Drum dirty
5. Vt
   Error Condition: Vt > 4.5V or Vt < 0.5V
   Possible causes:
   - TD sensor defective

4.3 USER TOOLS

The User Tools are accessed by users and key operators and by sales and service staff. User Tools are used to input or change the copier's default settings.

4.3.1 HOW TO ENTER AND EXIT USER TOOLS

Press the User Tools button, then select the User Tools program. After finishing the User Tools program, press the User Tools button to exit User Tools.

4.3.2 USER TOOLS TABLE

System Setting Table

1. System	1. Function Priority		
	2. Panel Tone		
	3. Copy Count Display		
	4. System Reset		
	5. Function Reset		
	6. Panel Off Timer		
	7. Energy Saver Level		
	8. Energy Saver Timer		
	9. Auto Off Timer		
	10. AOF (Keep It On.)		
	11. Special Paper Size	1. Tray 1	
		2. Tray 2	
		3. Tray 3	
		4. Tray 4	
	12. Pap. Tray Priority		
	13. Auto Tray Switch		
	14. Special Paper Indicator	1. Tray 1	
		2. Tray 2	
		3. Tray 3	
		4. Tray 4	
	15. Output Tray Priority	1. Copier	1. Paper Tray
			2. Bypass Tray
		2. FAX	1. Paper Tray
			2. Bypass Tray
		3. Printer	1. Paper Tray
			2. Bypass Tray
	16. Print Priority		
	17. Display Contrast		
	18. Key Operators Tools	1. Show/Print Counter	
		2. Print Counter List	
		3. Key Operator Access	
		4. Program Key Operator Code	
		5. Restricted Access	1. Copier
			2. Fax
			3. Printer

Copy Setting Table

2. Copier	1. General Features	1. APS Priority	
		2. ADS Priority	1. Text
			2. Text/Photo
			3. Photo
		3. Original Priority	
		4. Quick Mode Check	
		5. Max. Copy Q'ty	
		6. Original Tone	
		7. Re./En. Priority	
		8. Image Mode Select	
		9. Image Mode Adjustment	1. Normal Mode
			2. Enhanced Mode
		10. Image Density (Text)	
		11. Duplex Priority	
		12. Cover/OHP Tray	
		13. Copy Reset Timer	
		14. Initial Mode Set	
		15. Bypass Mode Clear	
		16. Key operator Tools	1. User Code Management
			2. Counter Reset
			3. Clear Code/Counter
			4. Program User Code
			5. Chg/Del User Code
			6. Counter List Print
	2. Adjust Image	1. Border Erase Width	
		2. Center Erase Width	
		3. Left Duplex Margin	
		4. Top duplex margin	
		5. Line (Combine)	
		6. Line (Repeat)	
	3. Input/Output	1. Duplex Auto Eject	
		2. Combine Auto Eject	
		3. Original Count	
		4. SADF Auto Reset	
		5. Rotate Sort Auto Paper Count	
		6. Sort	
	4. Stamp Setting	1. Page No. Priority	
		2. Page No. Size	
		3. Duplex Back Page No.	
		4. Page No. (Combine)	
		5. Page No. position	
		6. Page No. Adjustment	
		7. Stamp Priority	
		8. Stamp Size	
		9. Stamp Density	
		10. Stamp Position	
		11. Stamp Adjustment	
		12. Stamp page priority	

4.4 LEDS

BICU

Number	Function
LED 102	Monitors the +5 V line for the slave CPU. Usually, this LED is blinking.
LED 103	Monitors the +5 VE line. Usually, this LED is lit.

IOB

Number	Function
LED 100	Monitors the connection between the IOB and the BICU. Usually, this LED is blinking.

4.5 SPECIAL TOOLS AND LUBRICANTS

4.5.1 SPECIAL TOOLS

Part Number	Description	Q'ty
54209516	Test Chart - OS-A3 (10 pcs/set)	1
A0069104	Scanner Positioning Pin (4 pcs/set)	1
A0299387	Digital Multimeter - FLUKE 87	1
A2309351	Case - Flash Memory Card	1
A2309352	Flash Memory Card - 4MB	1
⇒ A2679099	NVRAM - Minus Counter	1
A2309003	Adjustment Cam – Laser Unit	1
A2679002	Positioning Pin - Laser Unit	1

4.5.2 LUBRICANTS

Part Number	Description	Q'ty
A0289300	Grease Barrierta - JFE 5 5/2	1
52039501	Silicone Grease G-501	1

⇒ 4.6 FIRMWARE MODIFICATION HISTORY

4.6.1 BICU Firmware Modification History

A265/A267 Firmware Modification History (BICU)			
Description of Modification	**Firmware Level**	**Serial Number**	**Firmware Version**
Initial Production	A2675532 **B**	From initial production.	1.57
Corrects the following: • The machine goes into Energy Saver Mode when the operator presses the Energy Saver Mode key while a print job is in progress. However, when the operator brings the machine out of the mode and returns to System Settings or Copy Features (both inside user tools), a message is displayed asking the operator to wait and the machine returns to the main copy screen. At this time, the LED for the user tools key is lit, and all indicators except the LCD report that the machine is still in User Tools. • If the operator enters System Settings or Copy Features (both inside user tools) from Fax, Printer or Scanner mode while a duplex or staple copy job is in progress, the “Copy in progress” screen is displayed. The message is still displayed even if the operator presses the User Tools Key to return to the main copy screen after the copy job finishes. • If a jam occurs while printing out a counter report, the jam indication is displayed but soon disappears. The machine then returns to the counter display screen. In addition, if the paper end condition occurs while the paper is being fed, the machine returns to the counter display screen without properly displaying “Set A4 (81/2 X 11) paper in tray”. • On machines with an optional LCT installed, SC507 can occur when the main power SW is turned on under the following conditions: 1. The LCT end fence is not in the HP *and* 2. The bottom plate for the right tray is not detected by the lower HP sensor. However, these occurrence conditions are very rare. • “1/2” appears in the Key Operator Tools display (inside user tools – system settings). • After the operator exits either of the following screens with the User Tools key and starts a copy job, the first sheet is printed out as the counter list. ➢ System Settings – Key Operator Tools – Counter List Printing ➢ Copy Features– Key Operator Tools – Counter List Printing	A2675532 **C**	October 1999 Production.	1.64

A265/A267 Firmware Modification History (BICU)			
Description of Modification	**Firmware Level**	**Serial Number**	**Firmware Version**
Corrects the following: • In printer mode, dirty back-ground may appear near the leading edge of the first page printed out following a paper jam recovery. • When exiting to the 1-bin tray, a paper jam may occur caused by the bouncing of the exit sensor actuator.	A2675532 **D**	March 2000 Production.	1.74
Corrects the following: • The default value of SP5-501-002 has been changed to "0." • Under the following conditions the staple function cannot be used after clearing a copy jam: 1. A4 sideways feed. 2. The Finisher Front Cover is opened while the last copy is being exited to the Finisher. • Under the following conditions the PM alarm does not activate when the PM counter reaches the value set in SP5-501-001 (PM Alarm Interval) 1. SP5-816 (CSS function) = 0 default setting 2. SP5-501-002 (PM alarm) =1 default setting	A2675532 **E**	April 2000 Production.	1.77
• To minimize dirty background image, TD sensor sensitivity(S): The sensitivity will change depending on the Vref value entered: See below table Vref / Sensitivity: S 1 ~ 2.7 — 0.4 2.8 ~ 3.0 — 0.2 3.1 ~ 3.2 — 0.1 • If the main scan magnification (SP2-998) is set at 0.1 when using the printer function or receiving a fax at 400dpi, the image will be stretched along the main scan direction. • One of the selections for Output Tray Priority (UP mode – System Settings) has been changed as follows: [Shift Tray] → [Finisher Tray] • Although specifications prohibit it, the machine is able to make copies under the following conditions: 1. Special size is selected for paper tray 2 2. Combine Mode is selected (several originals onto double-sided copies). • The following title descriptions for SP and Sales Modes have been changed: [Serviceman] → [Service] [Salesman] → [Sales]	A2675532 **F**	Sept. 2000 Production.	1.84

Service Tables

A265/A267 Firmware Modification History (BICU)			
Description of Modification	**Firmware Level**	**Serial Number**	**Firmware Version**
⇒ Corrects the following: Occasionally, the full page image data is reduced and printed on the left side, and the right side is printed solid black in Fax and Printer modes when the following 3 conditions exist: 1. SP2-998 (Main Scan Magnification) –1 (Engine) has a different value than –2 (Copy). 2. The interleave function is enabled between copy and printer modes (both 600 dpi). 3. Soon after the interleave job is finished, the machine prints out an image at a resolution other than 600 dpi (e.g. fax image, printer image at 300dpi). • When the main power is turned on, the machine cannot detect jammed paper remaining at the exit sensor if the interchange unit is not installed. • A new SP mode (SP2-993) has been added to prevent dirty background on the rear side of the first copy. Please refer to TB# A265/A267-020 for more details.	A2675532 **G**	Feb 2001 Production.	1.87

⟹ 4.6.2 ROM HISTORY – BICU (FOR CAPTURE BOX TYPE 270)

A265/A267 Firmware Modification History (BICU)			
Description of Modification	**Firmware Level**	**Serial Number**	**Firmware Version**
Initial Production	A2675540	First Mass production.	1.83NOA1NA
Sotware bugs: 1. Even if Printer or Fax has been set with the User Select function priority, “Copier” is displayed at power up. 2. Even if Printer has been set with the User Select function priority, the LED for the User Select key is lit. ●	A2675540 **A**	November ’00 production	1.85NOA1NA
Occasionally, the full page image data is reduced and printed on the left side, and the right side is printed solid black in Fax and Printer modes when the following 3 conditions exist: 4. SP2-998 (Main Scan Magnification) –1 (Engine) has a different value than –2 (Copy). 5. The interleave function is enabled between copy and printer modes (both 600 dpi). Soon after the interleave job is finished, the machine prints out an image at a resolution other than 600 dpi (e.g. fax image, printer image at 300dpi). A new SP mode (SP2-993) has been added to prevent dirty background on the rear side of the first copy. Please refer to RTB# RA265022 for more details. When the main power is turned on, the machine cannot detect jammed paper remaining at the exit sensor if the interchange unit is not installed.	A2675540 **B**	February ’01 Production	1.87NOA1NA

Service Tables

PREVENTIVE MAINTENANCE

5. PREVENTIVE MAINTENANCE SCHEDULE

5.1 PM TABLE

NOTE: 1) The amounts mentioned as the PM interval indicate the number of prints.
2) After carrying out PM, clear the maintenance counter (SP7-804).

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

A265/A267	EM	120K	240K	360K	NOTE
SCANNER/LASER OPTICS					
Reflector		C	C	C	Optics cloth
1st Mirror	C	C	C	C	Optics cloth
2nd Mirror	C	C	C	C	Optics cloth
3rd Mirror	C	C	C	C	Optics cloth
Scanner Guide Rails		C	C	C	Do not use alcohol.
Platen Sheet Cover	C	I	I	I	Replace the platen sheet, if necessary. Dry cloth or alcohol
Exposure Glass		C	C	C	Dry cloth or alcohol
Toner Shield Glass		C	C	C	Optics cloth
APS Sensor		C	C	C	Dry cloth or blower brush
AROUND THE DRUM					
Transfer/Separation Unit		R	R	R	
ID Sensor		C	C	C	Perform the ID sensor initial setting (SP3-927) after cleaning (blower brush)
PAPER FEED					
Registration Rollers	C	C	C	C	Clean with water
Paper Feed Roller	C	R	R	R	Clean with water
Friction Pad	C	R	R	R	Dry cloth
Paper Feed Guides	C	C	C	C	Clean with alcohol.
Relay Rollers	C	C	C	C	Clean with water.
Bottom Plate Pad	C	C	C	C	Clean with water.
Registration Roller Mylar	C	C	C	C	Clean with water.
FUSING UNIT AND PAPER EXIT					
Fusing Entrance and Exit Guide Plates		C	C	C	Clean with water or alcohol.
Hot Roller		R	R	R	
Pressure Roller		R	R	R	

PM TABLE

A265/A267	EM	120K	240K	360K	NOTE
Fusing Thermistor		C	C	C	Clean if necessary (suitable solvent)
Cleaning Roller		C	C	C	Clean with water or alcohol.
Cleaning Roller Bushings		C	C	C	Clean with water or alcohol.
Hot Roller Strippers		R	R	R	
Hot Roller Bushing		I	I	I	Clean if necessary
Paper Exit Guide Ribs		C	C	C	Clean with water or alcohol.
OTHERS					
Main Motor Drive Gear	L	I	I	I	Silicone Grease G501 (see note 1)

	EM	120K	240K	360K	NOTE
ADF (for originals)					
Pick-up Roller	C	R	R	R	Clean with water
Feed Belt	C	R	R	R	Clean with water
Separation Roller	C	R	R	R	Clean with water
Stamp		I	I	I	Replace if necessary
ADF Exposure Glass	C	C	C	C	Clean with alcohol
White Plate	C	C	C	C	Clean with alcohol
Platen Sheet	C	C	C	C	Clean with alcohol

	EM	120K	240K	360K	NOTE
PAPER TRAY UNIT					
Paper Feed Roller	C	R	R	R	Clean with water
Friction Pad	C	R	R	R	Dry cloth
Paper Feed Guides	C	C	C	C	Clean with alcohol.
Relay Rollers	C	C	C	C	Clean with water.
Bottom Plate Pad	C	C	C	C	Clean with water.
Relay Clutch		I	I	I	Replace if necessary
Paper Feed Clutch		I	I	I	Replace if necessary

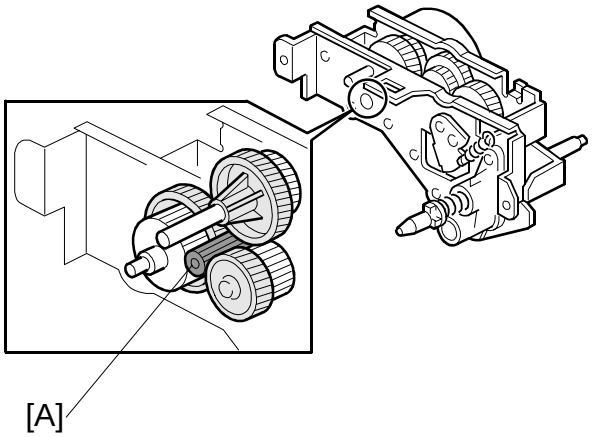
	EM	120K	240K	360K	NOTE
LCT					
Paper Feed Roller		R	R	R	
Pick-up Roller		R	R	R	
Separation Roller		R	R	R	
Transport Rollers		C	C	C	Clean with water
Bottom Plate Pad		C	C	C	Clean with water
Relay Clutch		I	I	I	Replace if necessary
Paper Feed Clutch		I	I	I	Replace if necessary

	EM	120K	240K	360K	NOTE
1,000-SHEET FINISHER					
Rollers	C				Clean with water or alcohol.
Brush Roller	I	I	I	I	Replace if necessary.
Discharge Brush	C	C	C	C	Clean with a dry cloth
Sensors	C				Blower brush
⇒ Jogger Fences	I	I	I	I	Replace if necessary.

	EM	150K	300K	450K	NOTE
1-BIN TRAY UNIT					
Rollers	C				Dry or damp cloth
Copy Tray	C				Dry or damp cloth
Sensors	C				Blower brush

NOTE 1.

Main Motor Drive Gear



Do the following every EM:

Lubricate the main motor drive gear [A] with silicone grease G501.

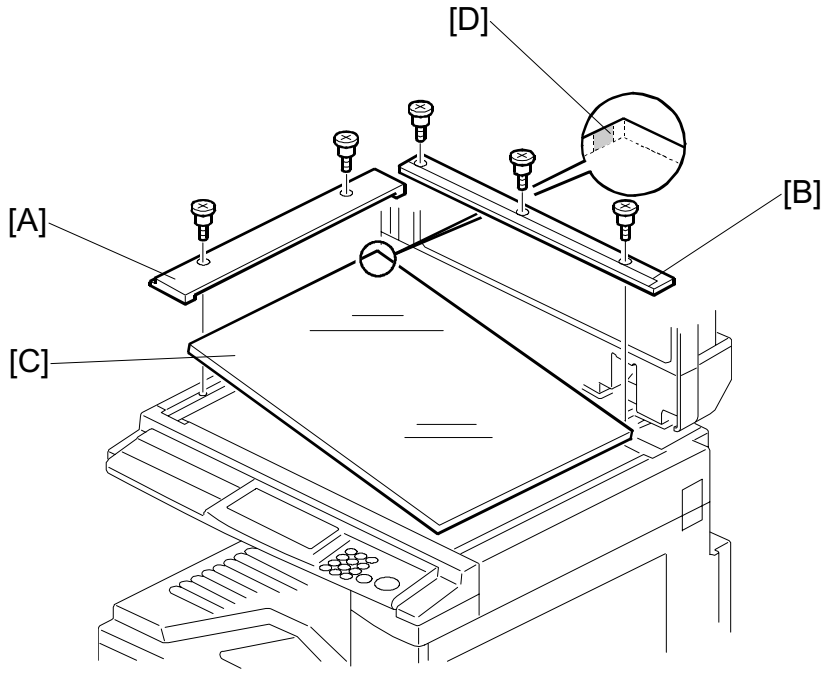
REPLACEMENT AND ADJUSTMENT

6. REPLACEMENT AND ADJUSTMENT

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

6.1 SCANNER UNIT

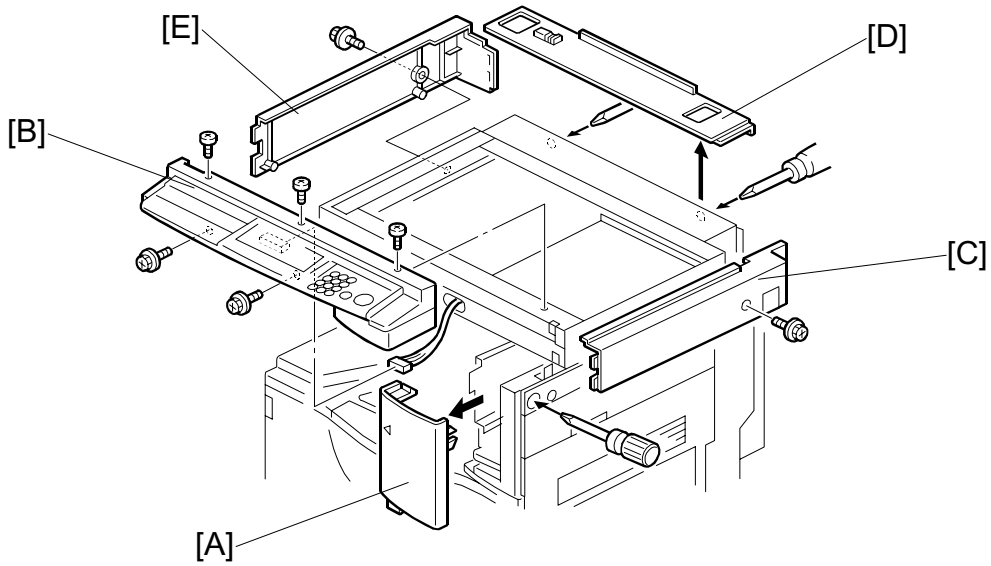
6.1.1 EXPOSURE GLASS



1. Open the ADF or platen cover.
2. Remove the left scale [A] (2 screws).
3. Remove the rear scale [B] (3 screws).
4. Remove the exposure glass [C].

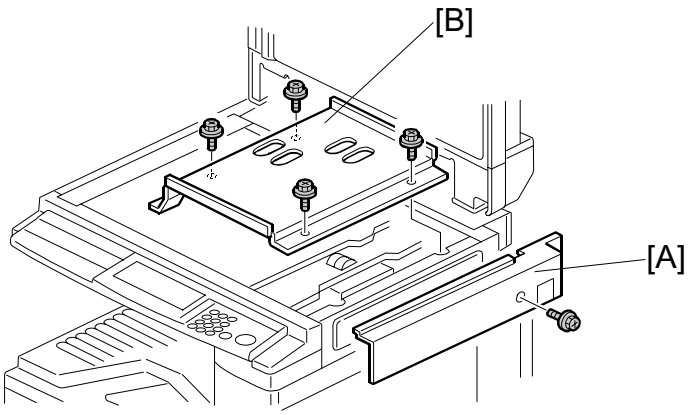
NOTE: When reinstalling the exposure glass, make sure that the mark [D] is positioned at the rear left corner, as shown.

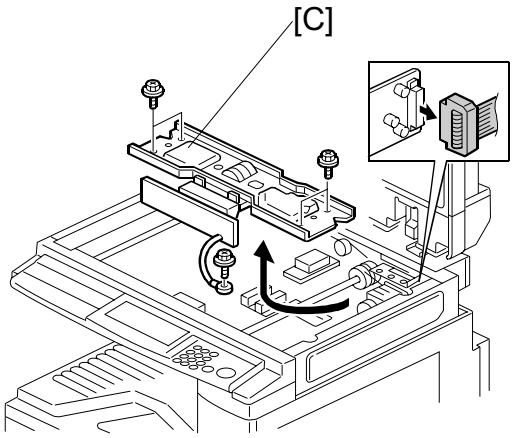
6.1.2 SCANNER EXTERIOR/OPERATION PANEL



1. Remove the ADF or platen cover.
2. Remove the exposure glass. (See Exposure Glass.)
3. Remove the upper front cover [A] (1 screw, 1 hook).
4. Remove the operation panel [B] (5 screws, 1 connector).
5. Remove the right cover [C] (1 screw, 2 hooks).
6. Remove the rear cover [D] (2 screws).
7. Remove the left cover [E] (2 screws, 2 hooks).

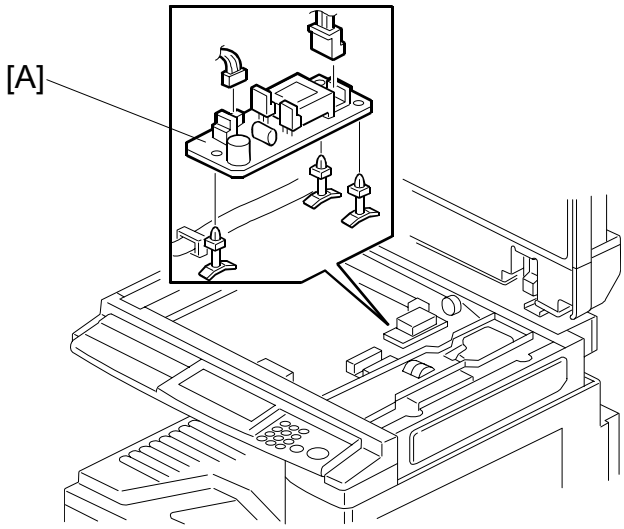
6.1.3 LENS BLOCK ASSEMBLY

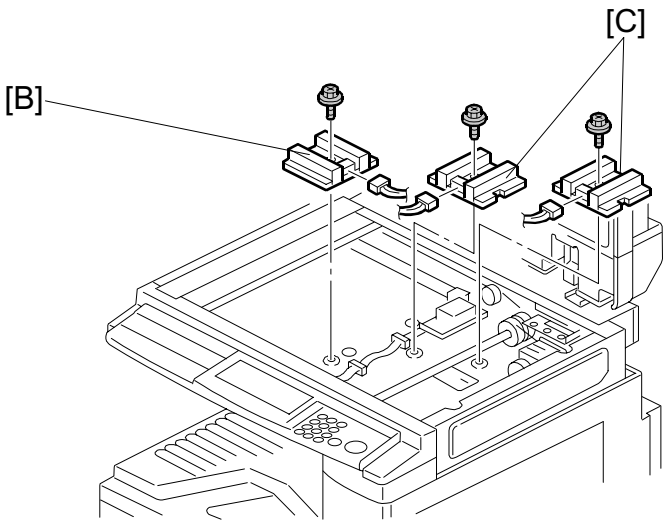




1. Remove the exposure glass. (See Scanner Exterior/Exposure Glass.)
2. Remove the right cover [A]. (See Scanner Exterior/Exposure Glass.)
3. Remove the lens cover [B] (4 screws).
4. Replace the lens block assembly [C] (5 screws, 1 connector).
   NOTE: Do not remove the screws which are locked with white paint.
5. Reassemble the machine and do the scanner and printer copy adjustments. (See Copy Adjustments, section 6.8.)

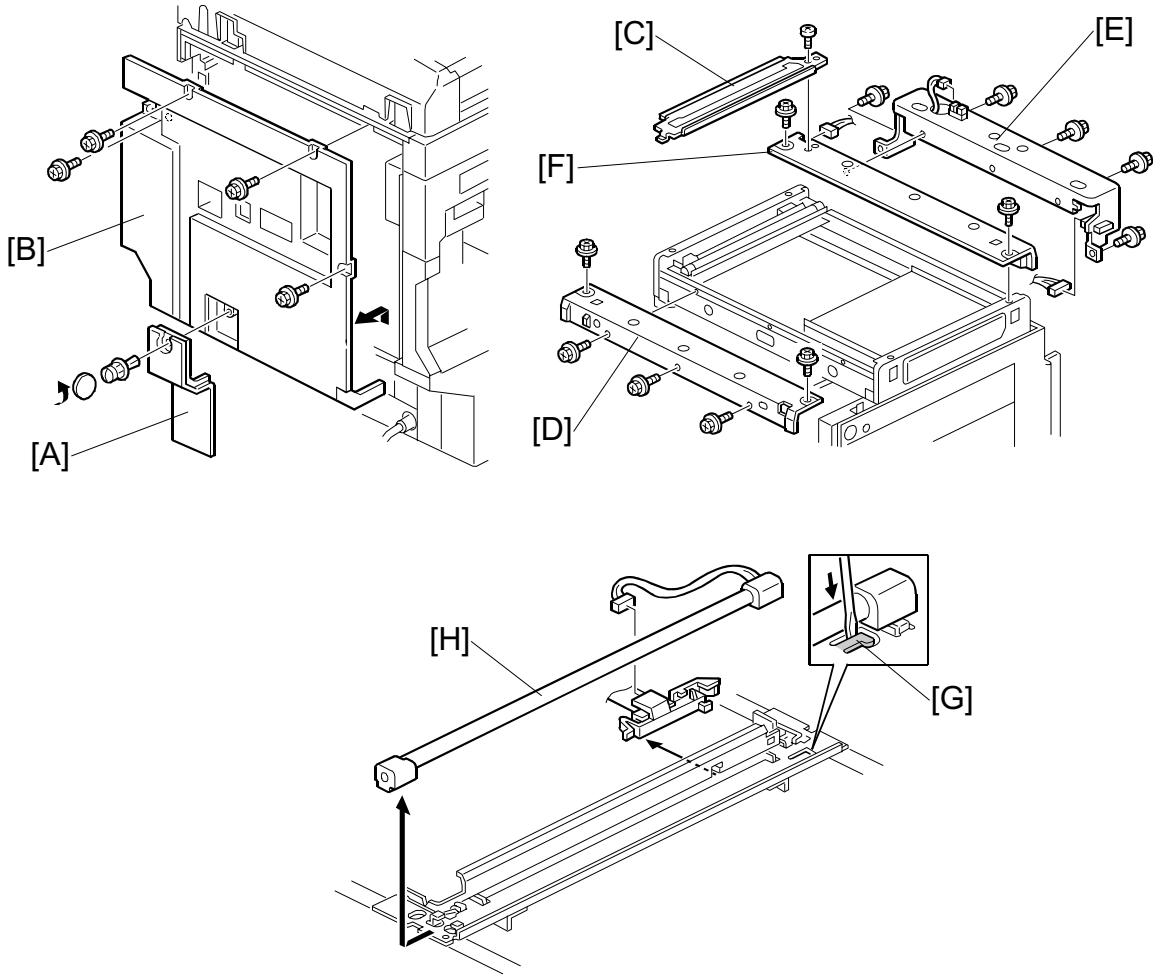
6.1.4 ORIGINAL SIZE SENSORS/LAMP STABILIZER





1. Remove the exposure glass. (See Exposure Glass.)
2. Remove the lens cover. (See Lens Block.)
3. Remove the lamp stabilizer [A] (2 connectors).
4. Remove the original width sensor [B] (1 screw, 1 connector).
5. Remove the lens block. (See Lens Block Assembly.)
6. Remove the original length sensors [C] (1 screw, 1 connector each).

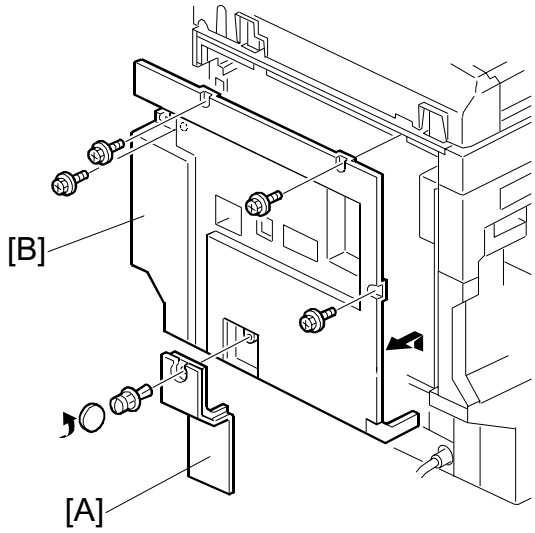
6.1.5 EXPOSURE LAMP

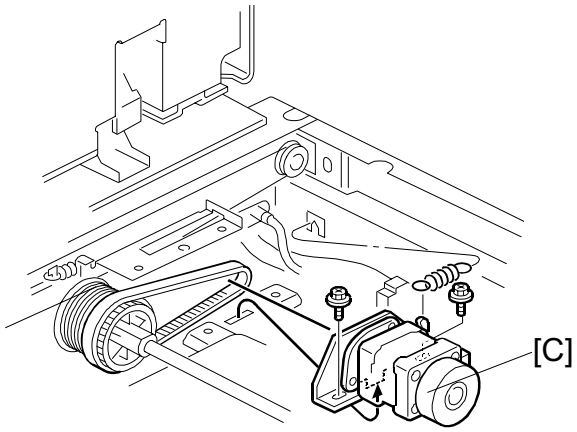


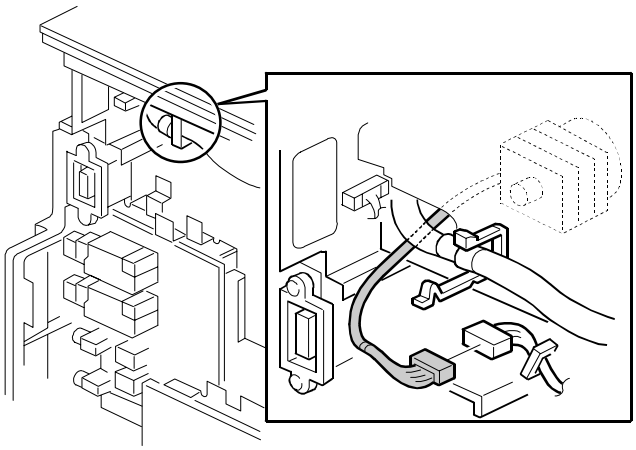
1. Remove the exposure glass. (See Exposure Glass.)
2. Remove the operation panel, rear cover, and left cover. (See Scanner Exterior/Operation Panel.)
3. Remove the connector cover [A], disconnect the cable, and remove the rear cover [B] (4 screws).
4. Remove the left upper stay [C] (1 screw).
5. Remove the front frame [D] (5 screws).
6. Remove the rear bracket [E] (5 screws, 2 connectors).
7. Remove the rear frame [F] (2 screws, 1 connector).
8. Push down the part [G] then slide out the exposure lamp [H] (1 connector).

NOTE: 1) Do not touch the glass surface of the exposure lamp with bare hands.
2) After installing the lamp, the part [G] must be returned to the original position.

6.1.6 SCANNER MOTOR

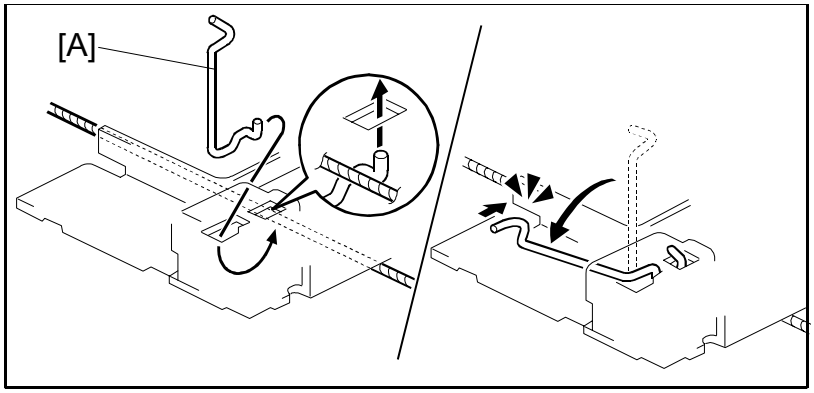




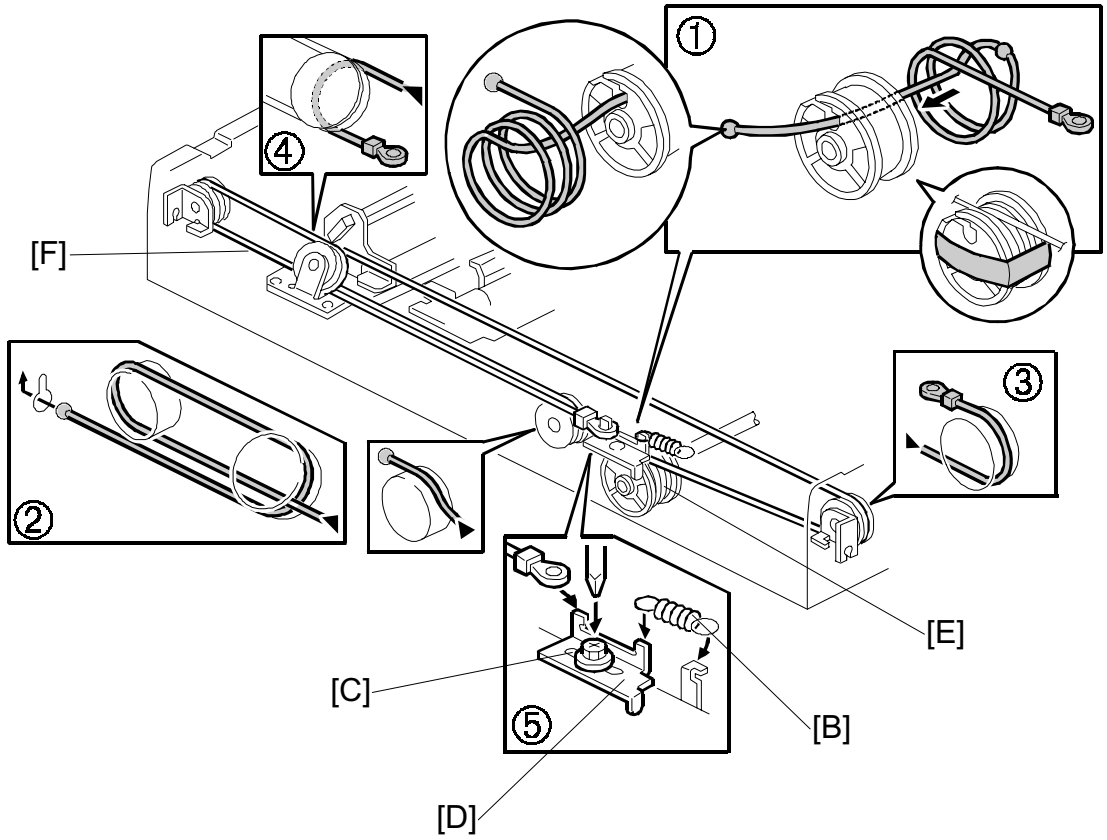


1. Remove the connector cover [A], disconnect the cable, and remove the rear cover [B].
2. Remove the exposure glass. (See Exposure Glass.)
3. Remove the lens block. (See Lens Block Assembly.)
4. Replace the scanner motor [C] (2 screws, 1 spring, 1 connector).
5. Reassemble the machine and do the scanner and printer copy adjustments. (See Copy Adjustments, section 6.8).

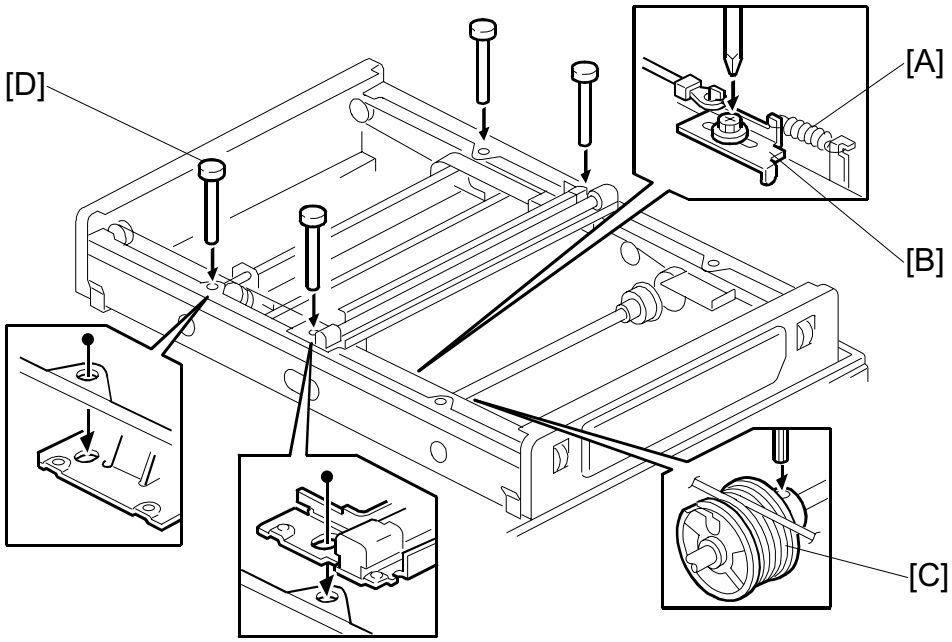
6.1.7 SCANNER WIRES



1. Remove the exposure glass, operation panel, and all scanner exterior covers. (See Exposure Glass and Scanner Exterior/Operation Panel.)
2. Remove the left upper stay. (See Exposure Lamp.)
3. Remove the front frame. (See Exposure Lamp.)
4. Remove the rear bracket. (See Exposure Lamp.)
5. Remove the rear frame. (See Exposure Lamp.)
6. Remove the lens cover. (See Lens Block Assembly.)
7. Remove the lens block assembly. (See Lens Block Assembly.)
8. Remove the front and rear scanner wire pins [A]. Then, remove the 1st scanner.



9. Remove the tension spring [B].
10. Loosen the screw [C] securing the wire tension bracket [D].
11. Remove the scanner drive pulley [E] (1 set screw).
12. Remove the scanner wire [F].
13. Wrap the new scanner wire around the pulley as shown ①, then temporarily secure the pulley with tape.
14. Re-install the 1st scanner. Then secure the 1st and 2nd scanner with the scanner positioning tools (P/N A0069104), as shown in the illustration on the next page.
15. Wind the new scanner wire around the scanner drive pulley in the correct way, as shown.
16. Wind the end of the new wire with the ball as shown (②).
17. Wind the end of the new wire with the ring as shown (③,④, and ⑤).
18. Install the tension spring on the wire tension bracket (⑤).
19. Wind the new scanner wire for the other side as well.



20. Secure the 1st scanner with the scanner wire pins.
21. Install the tension spring [A] to the tension bracket.
22. Tighten the tension bracket [B].
23. Secure the scanner wire pulley [C] (1 Allen screw).
24. Remove the positioning tools [D]. After sliding the scanner to the right and left several times, re-install the positioning tools to check the scanner wire bracket and tension bracket again.
25. Reassemble the scanner and do the scanner and printer copy adjustments (see Copy Adjustments, section 6.8).

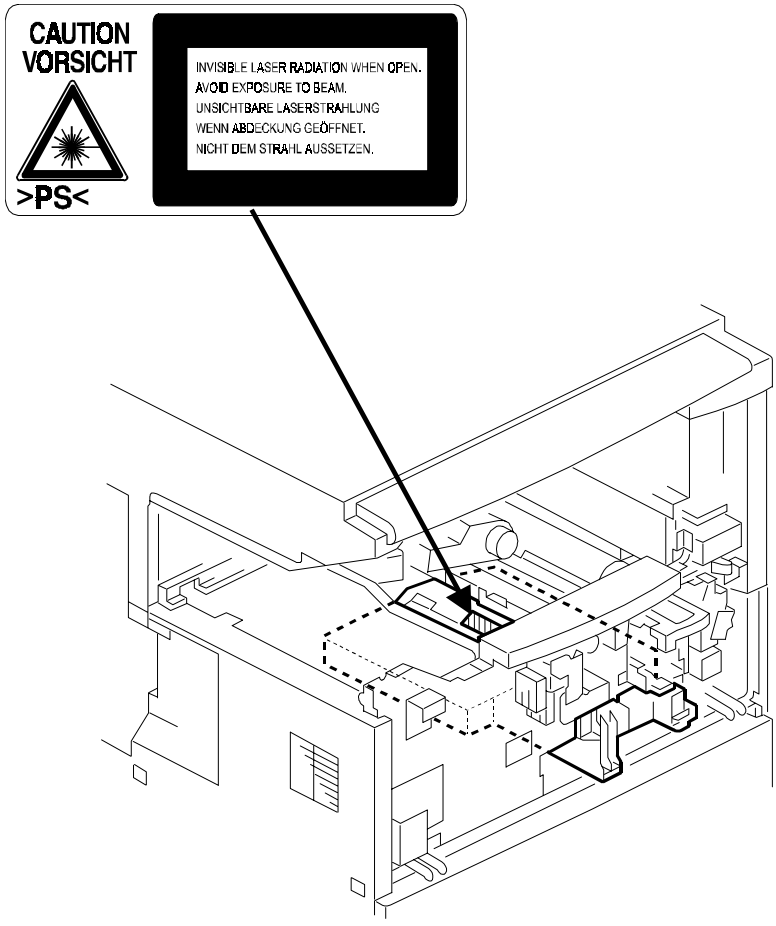
6.2 LASER UNIT

⚠WARNING

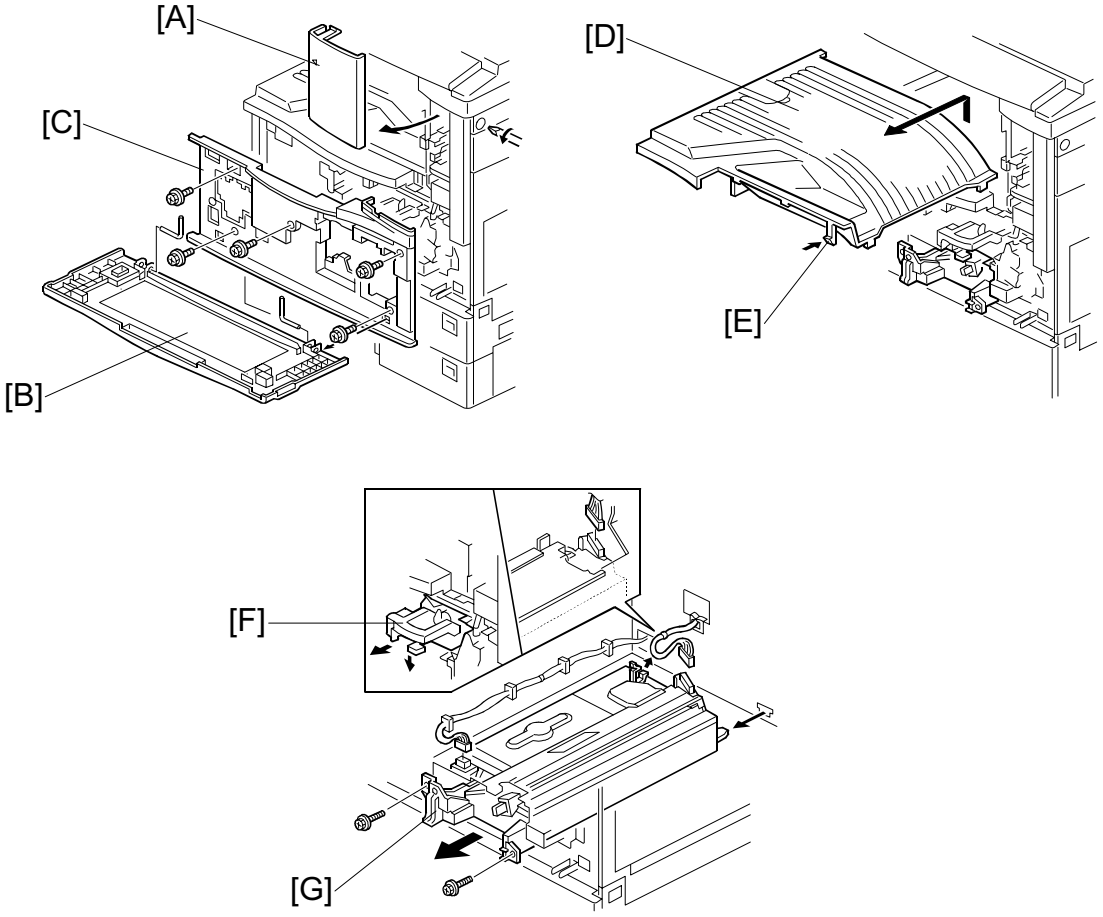
Turn off the main power switch and unplug the machine before attempting any of the procedures in this section. Laser beams can seriously damage your eyes.

6.2.1 CAUTION DECAL LOCATIONS

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



6.2.2 LASER UNIT

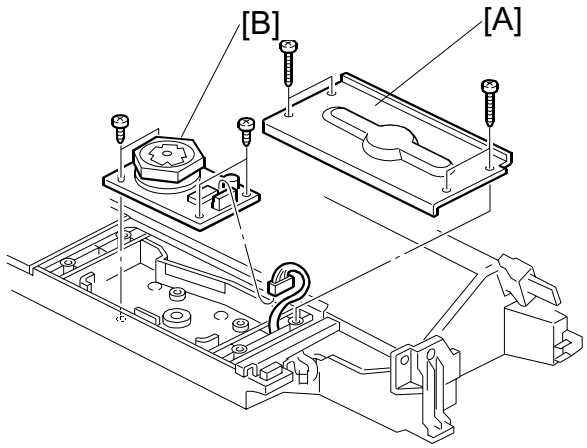


⚠WARNING

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

1. Remove the optional finisher/bridge unit, and either the tray for the optional 1-bin tray unit or optional shift tray, if these units have been installed.
2. Remove the upper front cover [A] (1 screw, 1 hook).
3. Remove the front cover [B] (2 pins).
4. Remove the inner cover [C] (5 screws).
5. Remove the copy tray [D] (1 hook [E]).
6. Remove the toner bottle holder [F].
7. Remove the laser unit [G] (2 screws, 2 connectors).
8. After reassembling the machine, do the scanner and printer copy adjustments. (See Copy Adjustments, section 6.8).

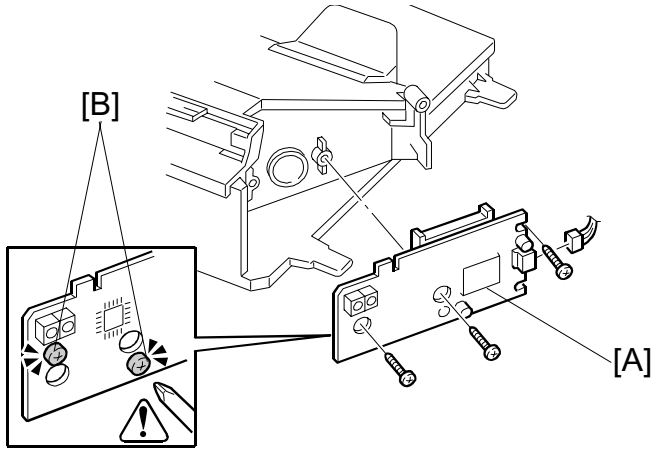
6.2.3 POLYGON MIRROR MOTOR



1. Remove the laser unit (see Laser Unit).
2. Remove the heat sink [A] (4 screws).
3. Replace the polygon mirror motor [B] (4 screws, 1 connector).

NOTE: When installing the new polygon mirror motor, do not touch the surface of the mirror with bare hands.

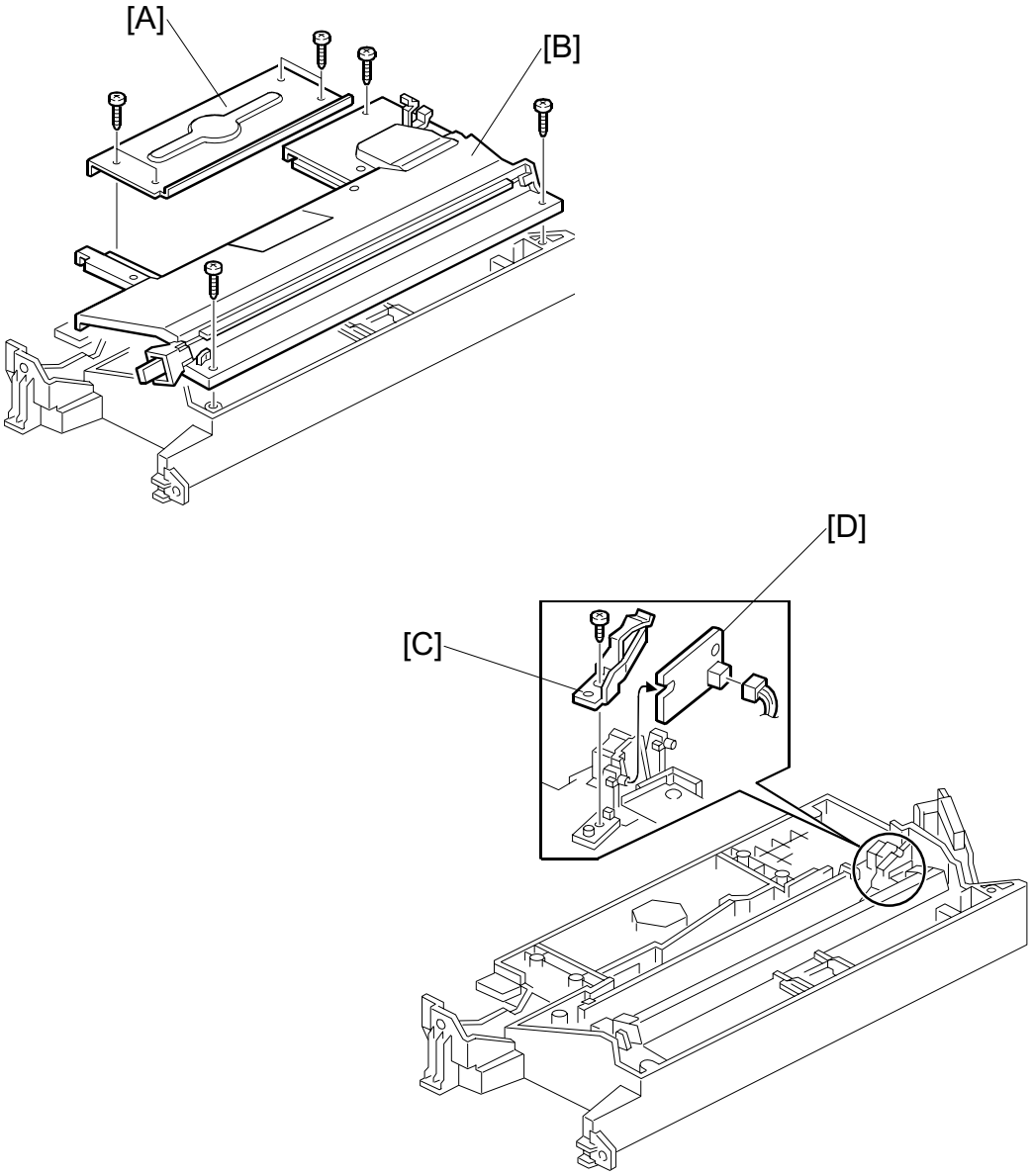
6.2.4 LD UNIT



1. Remove the laser unit (see Laser Unit).
2. Replace the LD unit [A] (3 screws, 1 connector).

NOTE: 1) Do not remove the screws [B].
2) Do not touch any variable resistors on the LD unit.

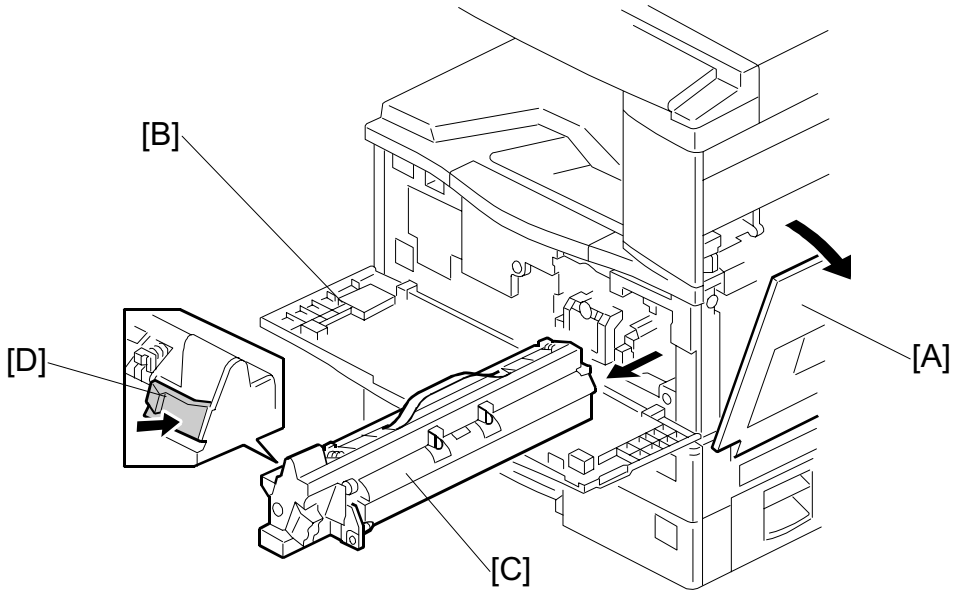
6.2.5 LASER SYNCHRONIZATION DETECTOR



1. Remove the laser unit (See Laser Unit).
2. Remove the heat sink [A] (4 screws).
3. Remove the laser unit cover [B] (3 screws).
4. Remove the bracket [C] (1 screw).
5. Replace the laser synchronization detector [D] (1 connector).

6.3 PHOTOCONDUCTOR UNIT (PCU)

6.3.1 PCU

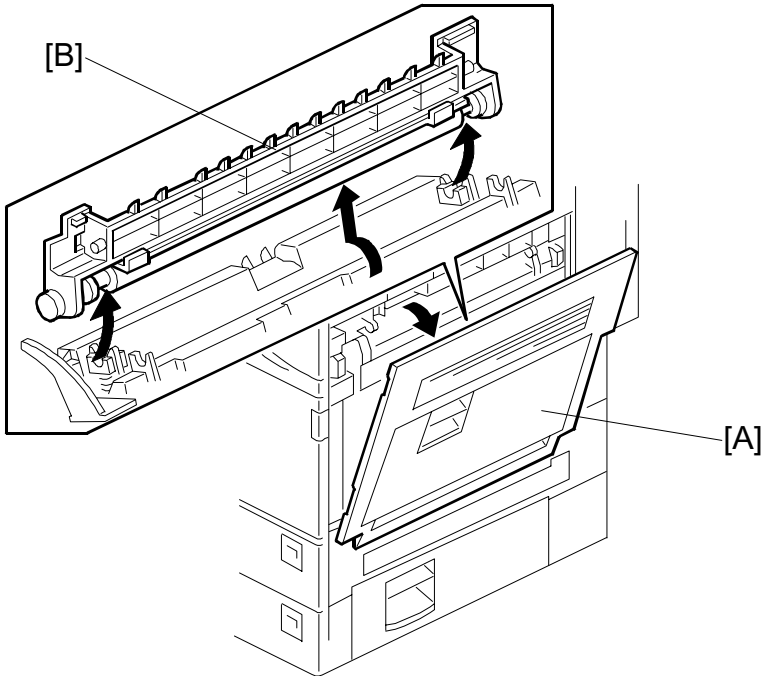


1. Open the right cover [A] and front cover [B].
2. Pull the PCU [C] out slightly while pushing the release lever [D].

NOTE: Do not touch the drum surface with bare hands.

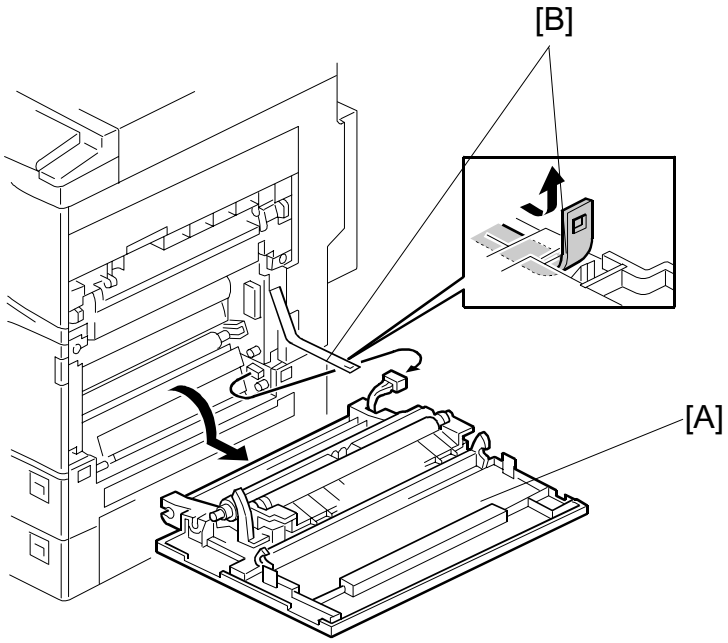
6.4 TRANSFER UNIT

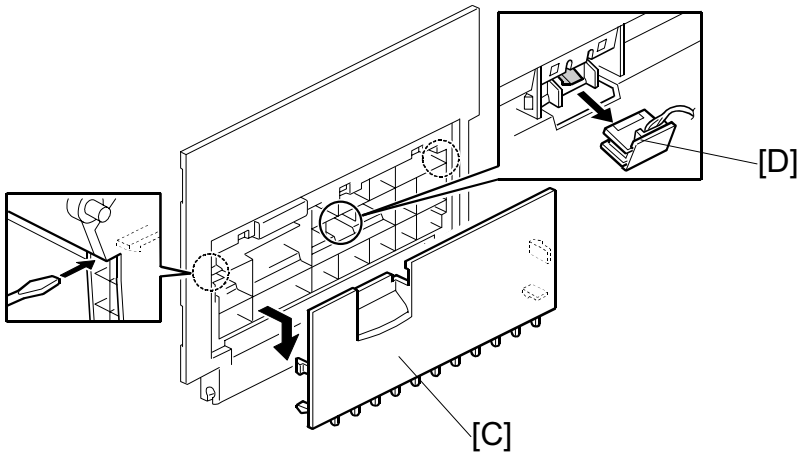
6.4.1 TRANSFER ROLLER UNIT



1. Open the right cover [A].
2. Remove the transfer roller unit [B] (1 hook).
   NOTE: Do not touch the transfer roller surface.

6.4.2 IMAGE DENSITY SENSOR



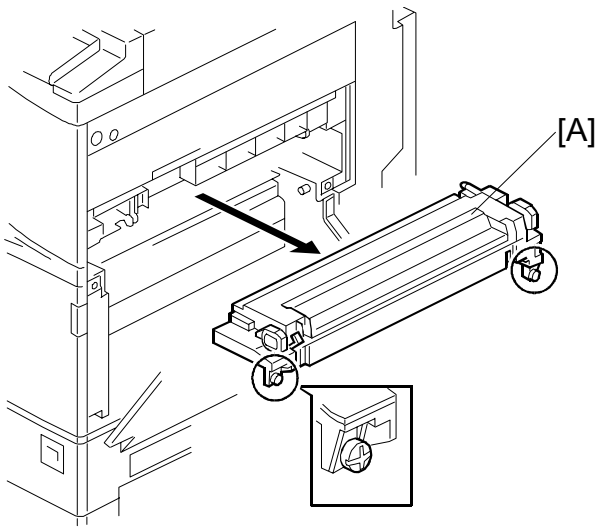


1. Open the right cover [A].
2. Remove the unit band [B].
3. Remove the right cover [A] (1 connector),
4. Remove the sub right cover [C] (2 hooks).
5. Replace the image density sensor [D] (1 connector).
6. Reset the ID sensor error counter (SP 7-912).

6.5 FUSING/EXIT

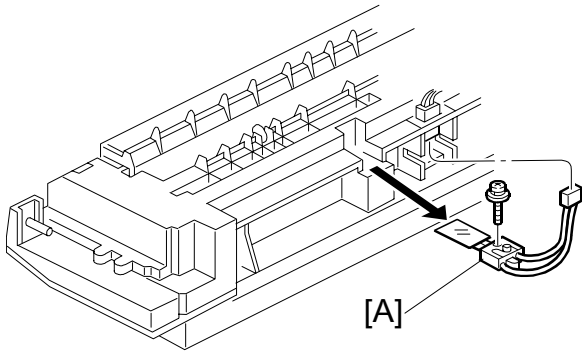
6.5.1 FUSING UNIT

⚠CAUTION
Allow time for the unit to cool before doing the following procedure.



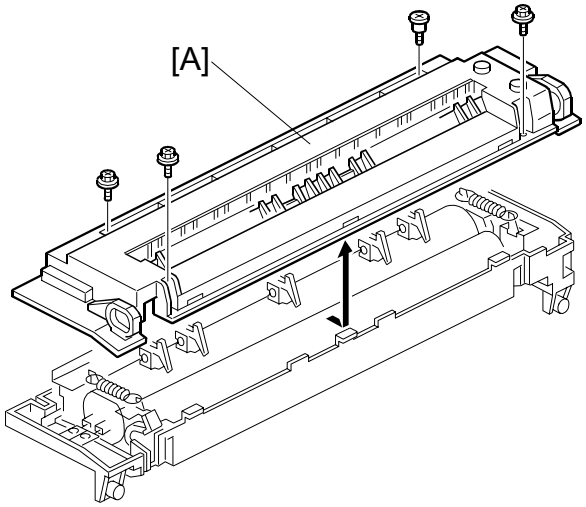
1. Release the duplex unit, if it has been installed, and open the right cover.
2. Remove the fusing unit [A] (2 screws).

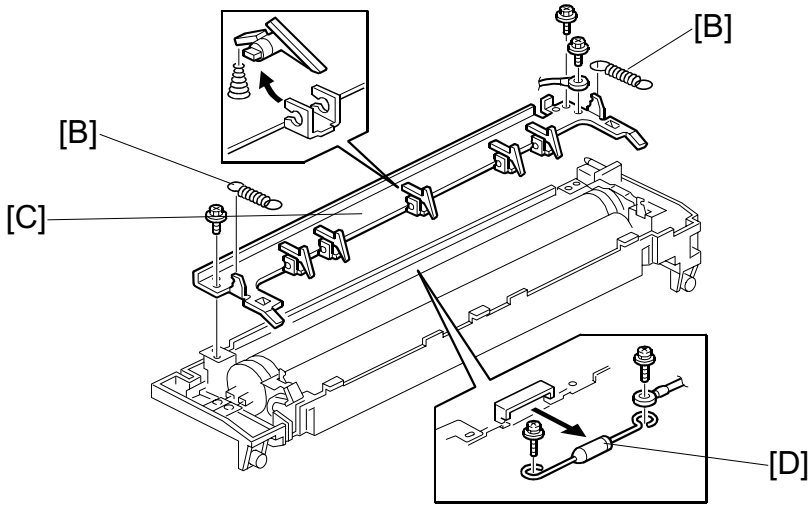
6.5.2 THERMISTOR



1. Remove the fusing unit. (See Fusing Unit).
2. Replace the thermistor [A] (1 screw, 1 connector).

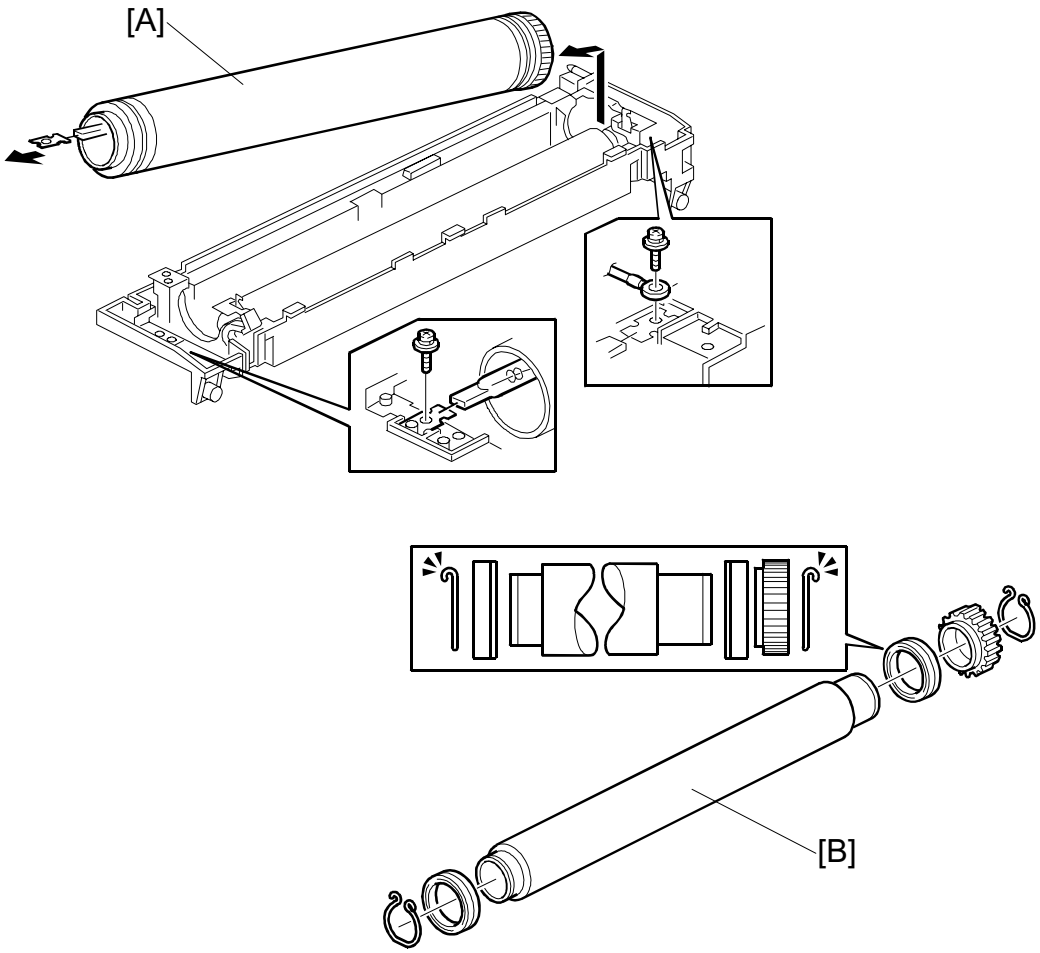
6.5.3 THERMOFUSE





1. Remove the fusing unit. (See Fusing Unit.)
2. Remove the fusing upper cover [A] (4 screws).
3. Remove the pressure springs [B].
4. Remove the hot roller stripper bracket [C] (3 screws).
5. Replace the thermofuse [D] (2 screws).

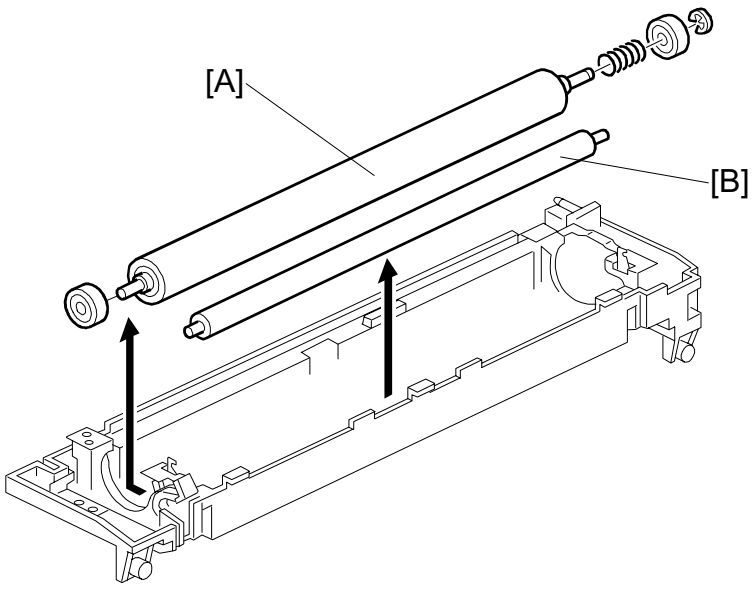
6.5.4 HOT ROLLER AND FUSING LAMP



1. Remove the fusing unit. (See Fusing Unit.)
2. Remove the fusing upper cover. (See Thermofuse.)
3. Remove the pressure springs. (See Thermofuse.)
4. Remove the hot roller stripper bracket. (See Thermofuse.)
5. Remove the fusing lamp (2 screws) and hot roller assembly [A].
   NOTE: Do not touch the surface of the fusing lamp with bare hands.
6. Replace the hot roller [B] (2 C-rings, 1 gear, 2 bushings).

   NOTE: 1) Before installing the new hot roller, peel off 3 cm (1 inch) from both ends of the protective sheet on the new roller.
   2) Do not touch the surface of the rollers.
   3) When reinstalling the fusing lamp, secure the front screws first.
   4) Be careful not to damage the surface of the hot roller.

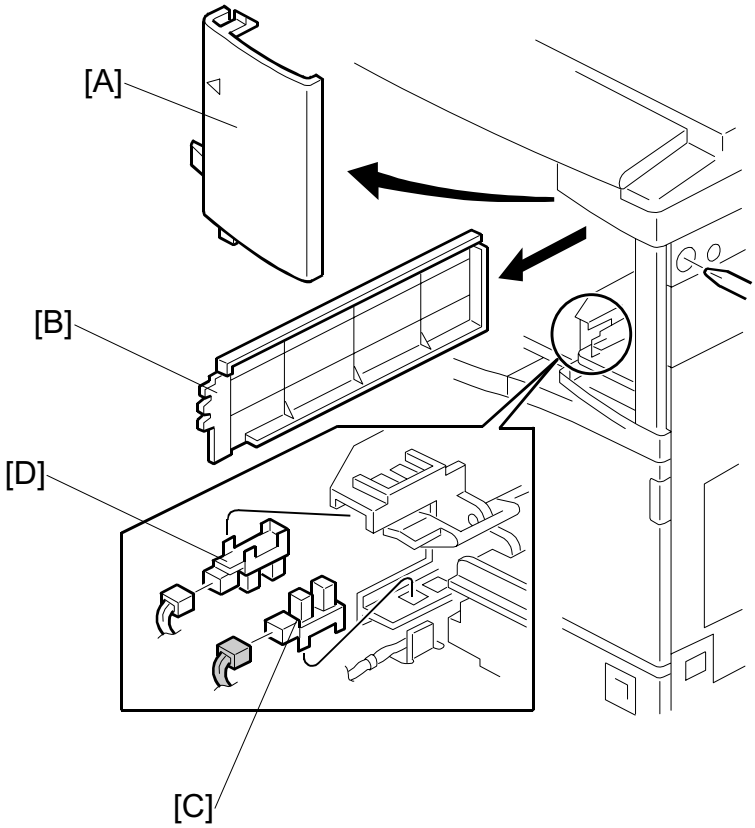
6.5.5 PRESSURE ROLLER/CLEANING ROLLER



1. Remove the fusing lamp and hot roller assembly. (See Hot Roller and Fusing Lamp.)
2. Replace the pressure roller [A] (1 E-ring, 2 bushings, 1 spring).
3. Replace the cleaning roller [B].

NOTE: Do not touch the surface of the rollers.

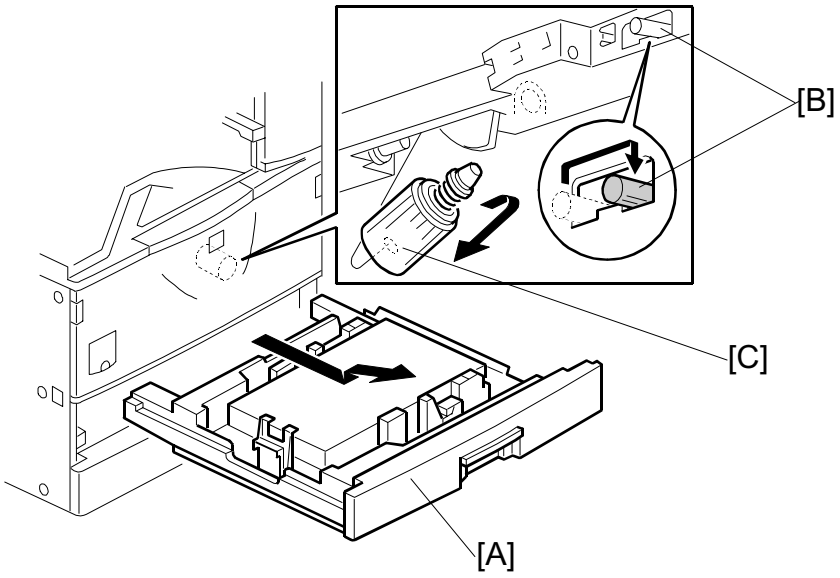
6.5.6 PAPER EXIT SENSOR/PAPER OVERFLOW SENSOR



1. Remove the front upper cover [A] (1 screw, 1 hook).
2. Remove the exit cover [B].
   NOTE: If the optional 1 bin tray unit and/or interchange unit have been installed, remove them.
3. Replace the exit sensor [C] (1 connector).
4. Replace the overflow sensor [D] (1 connector).

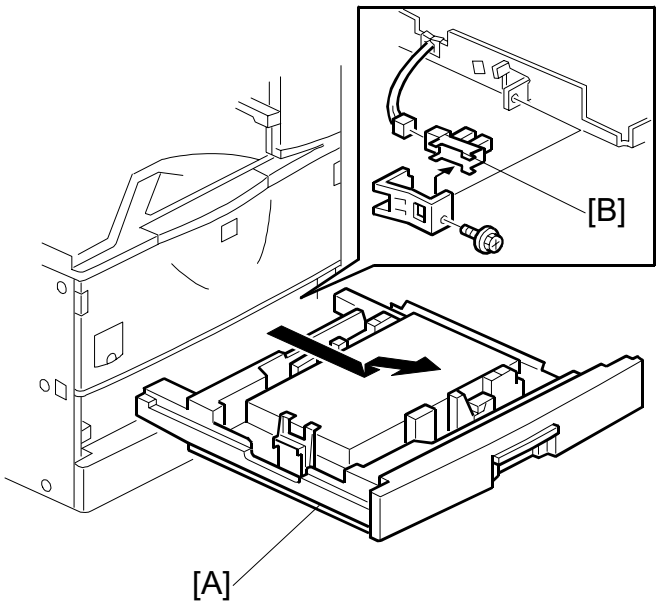
6.6 PAPER FEED

6.6.1 FEED ROLLERS



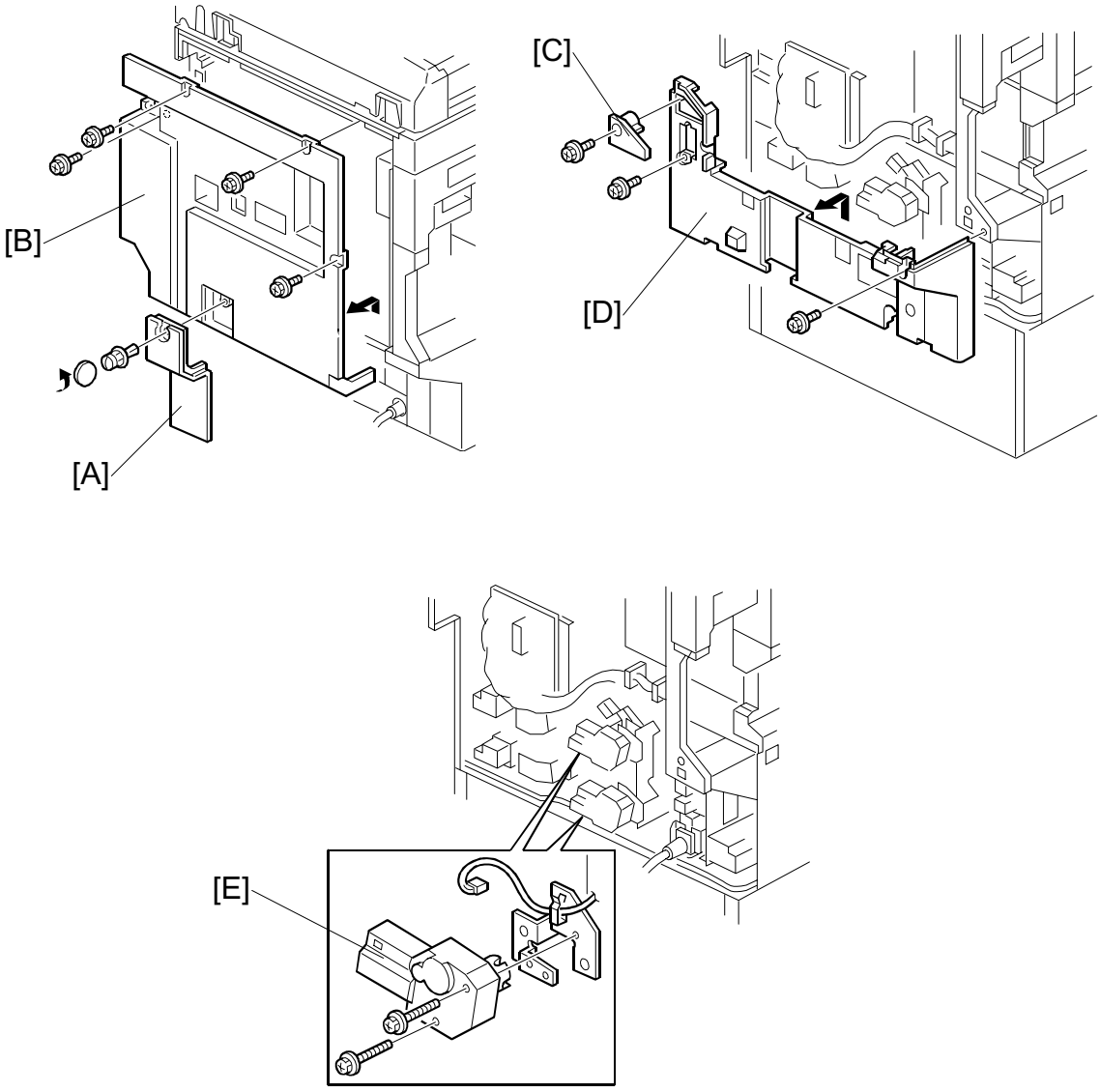
1. Remove the paper tray [A].
2. Pull the lever [B].
3. Replace the feed roller [C].
   NOTE: Do not touch the roller surface with bare hands.
   After reinstalling the feed roller, return the lever [A].

6.6.2 PAPER END SENSOR



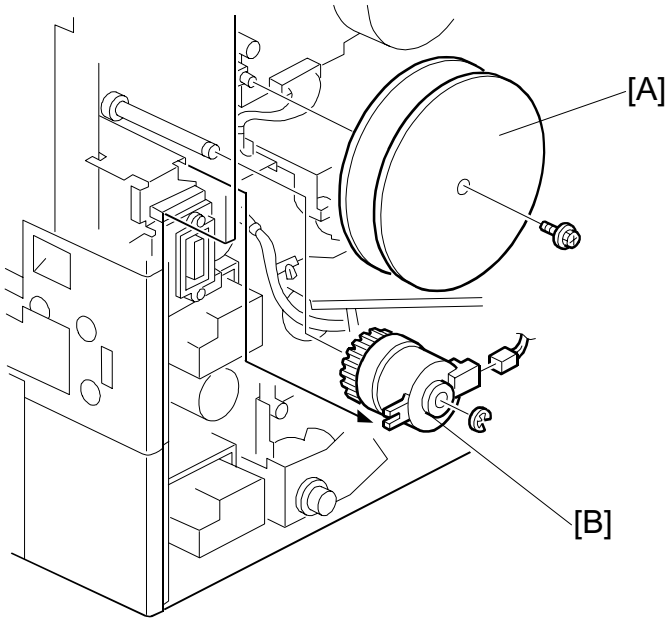
1. Remove the paper tray [A].
2. Remove the paper end sensor assembly (1 screw, 1 connector).
3. Replace the paper end sensor [B].

6.6.3 PAPER TRAY LIFT MOTORS



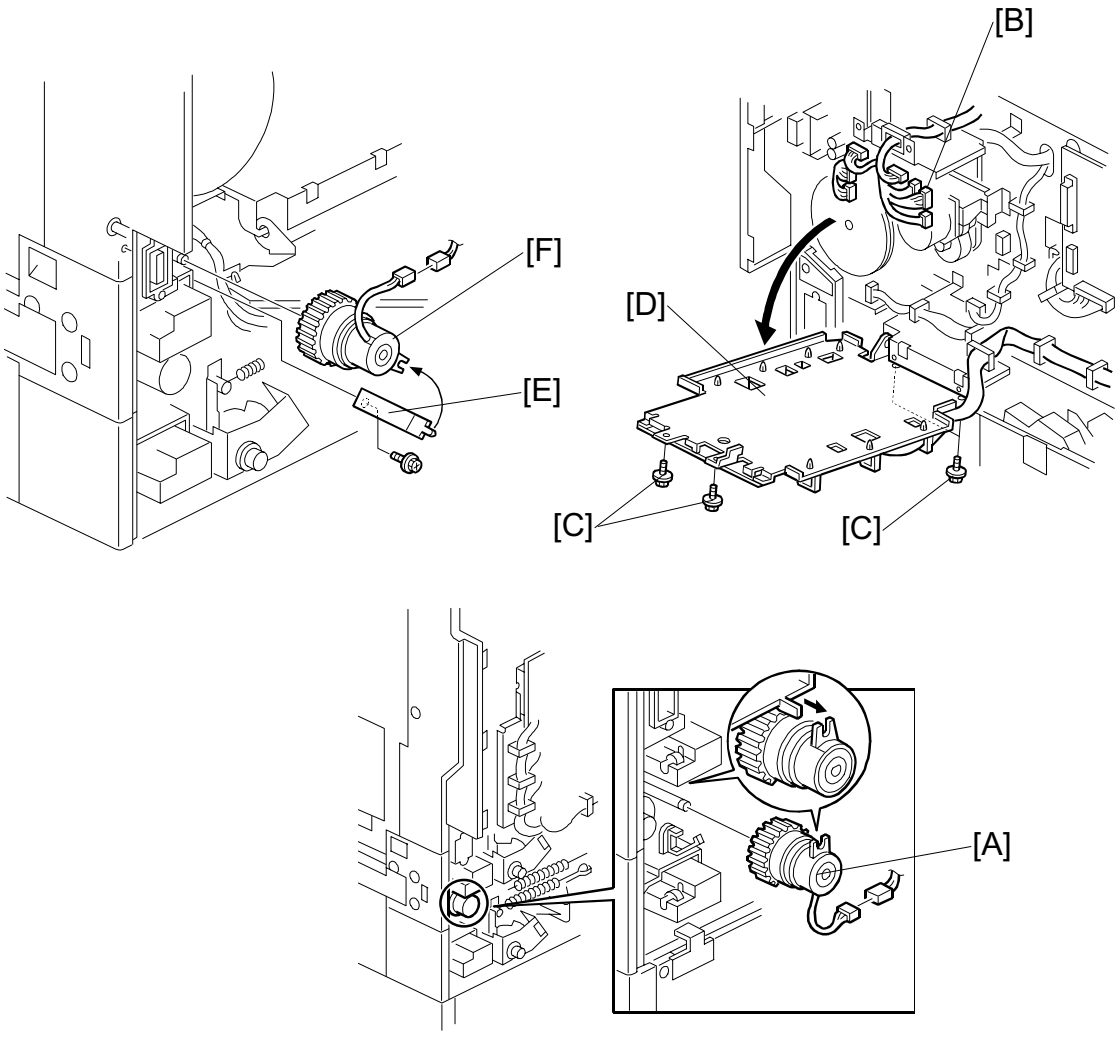
1. Remove the paper tray.
2. Remove the connector cover [A] (1 screw) and disconnect the cable.
3. Remove the rear cover [B] (4 screws).
4. Remove the duplex connector cover [C] (1 screw).
5. Remove the lower rear cover [D] (2 screws).
6. Replace the paper lift motors [E] (2 screws each, 1 connector each).

6.6.4 REGISTRATION CLUTCH



1. Remove the connector cover and the rear cover. (See Paper Tray Lift Motors.)
2. Remove the duplex connector cover and lower rear cover. (See Paper Tray Lift Motors.)
3. Remove the fly wheels [A] (1 screw).
4. Remove the registration clutch [B] (1 E-ring, 1 connector).

6.6.5 PAPER FEED CLUTCHES



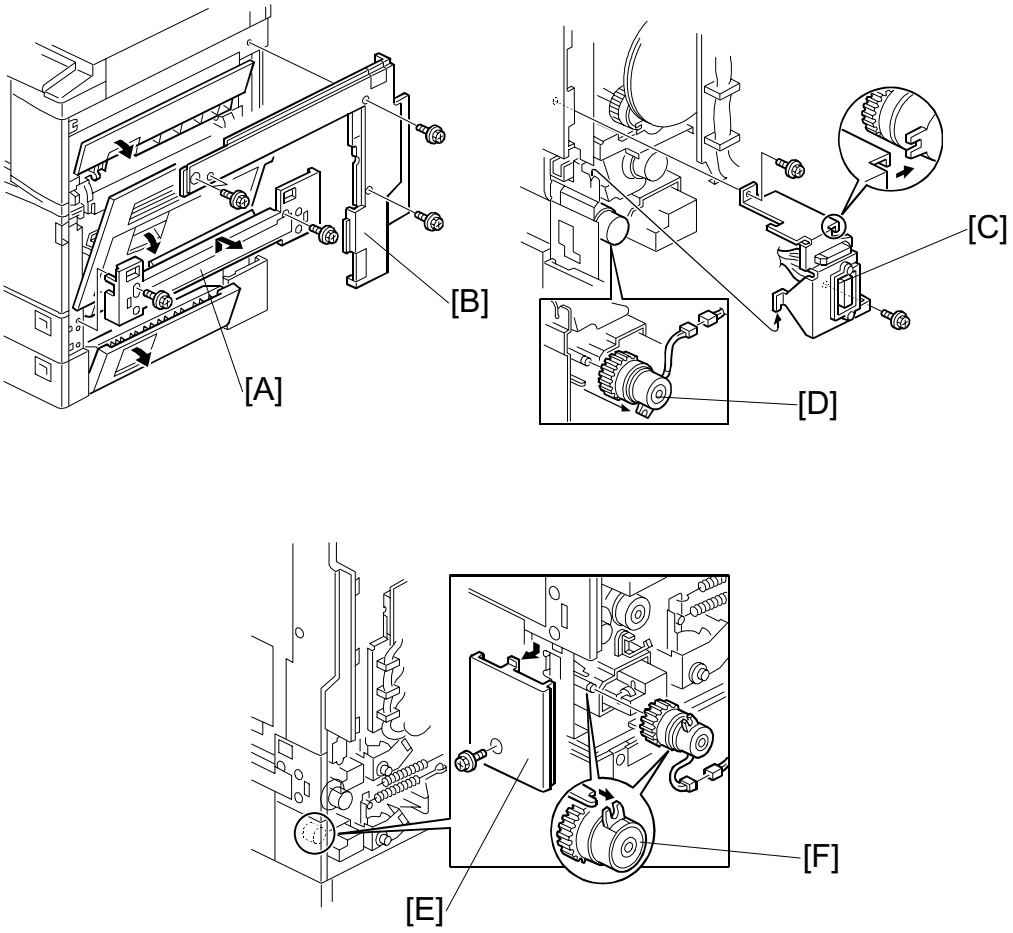
Lower Paper Feed Clutch

1. Remove the rear cover. (See Paper Tray Lift Motors.)
2. Remove the lower rear cover. (See Paper Tray Lift Motors.)
3. Replace the lower paper feed clutch [A] (1 connector).

Upper Paper Feed Clutch.

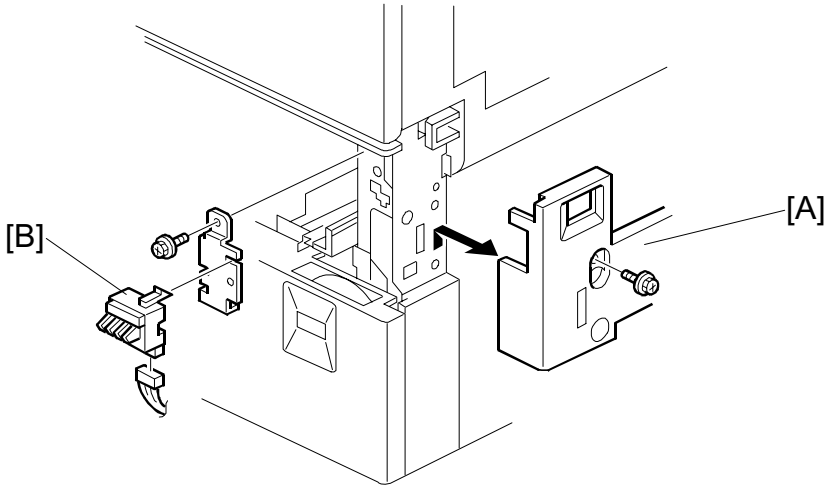
4. Disconnect the connectors [B] for the I/O board as shown (11 connectors).
5. Remove 4 screws [C] securing the I/O board bracket then swing down the I/O board bracket [D].
6. Remove the bracket [E] (1 screw).
7. Replace the upper paper feed clutch [F] (1 connector).

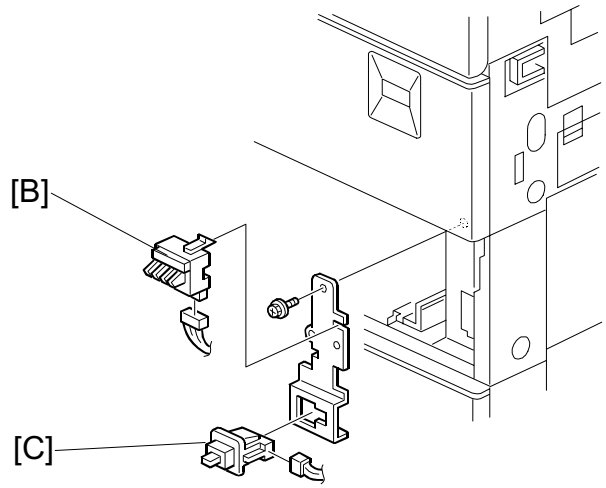
6.6.6 RELAY CLUTCHES



1. Remove the optional duplex unit and/or by-pass tray unit if they have been installed.
2. Remove the rear cover and lower rear cover. (See Paper Tray Lift Motors.)
3. Remove the lower right cover [A] (2 screws).
4. Remove the scanner right cover. (See Scanner Exterior.)
5. Remove the right cover [B] (4 screws).
6. Swing down the I/O board bracket. (See Paper Feed Clutches.)
7. Remove the connector bracket [C] (2 screws).
8. Replace the upper relay clutch [D] (1 connector).
9. Remove the right back cover [E] (1 screw).
10. Replace the lower relay clutch [F] (1 connector).

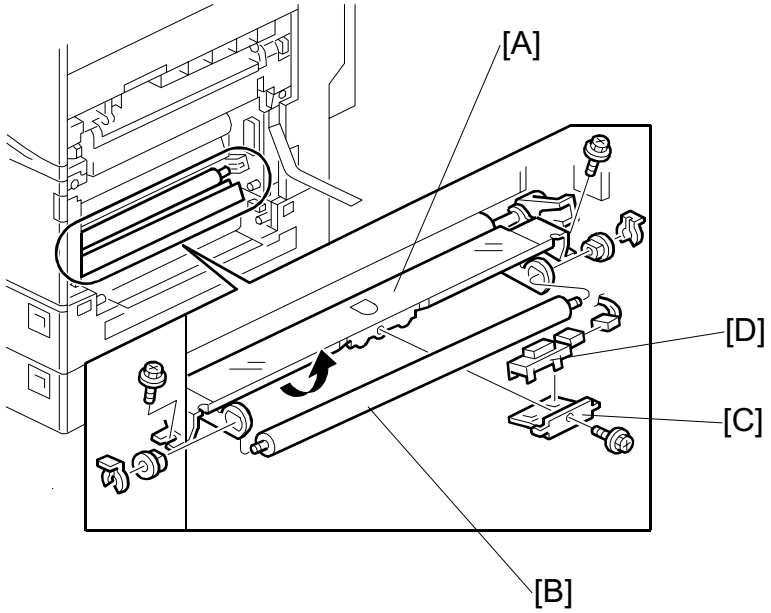
6.6.7 PAPER SIZE DETECTOR/SPECIAL PAPER SENSOR





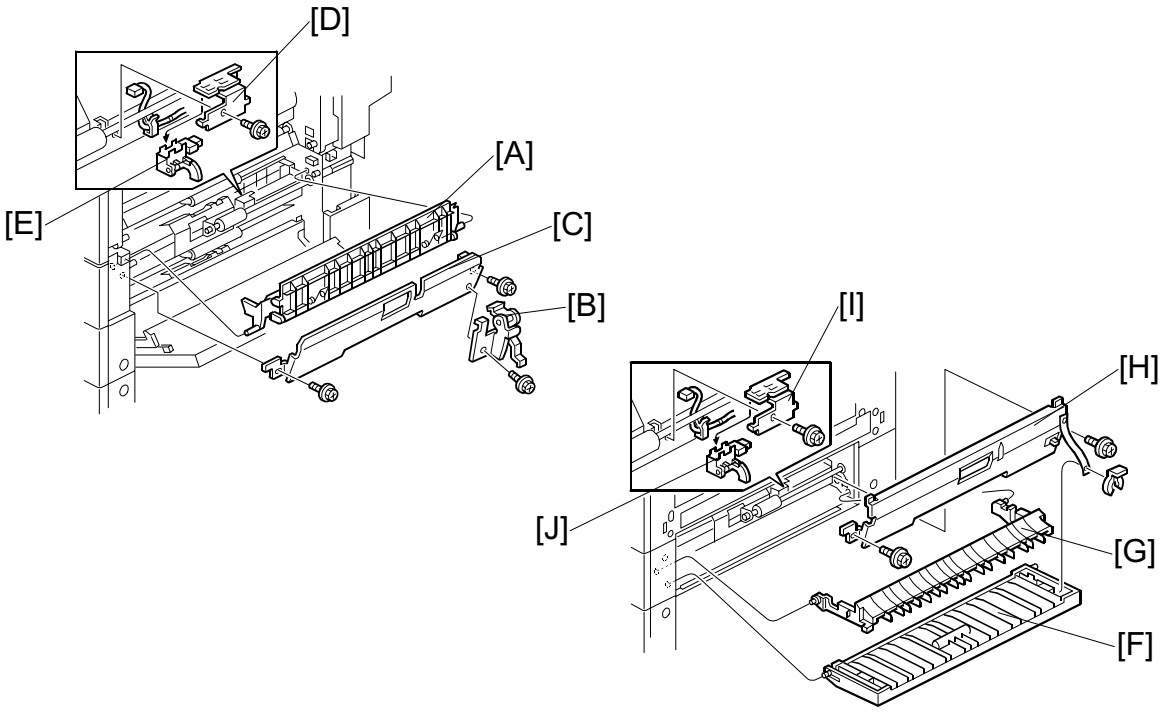
1. Remove the right lower cover [A]. (See Relay Clutches.)
2. Remove the paper trays.
3. Remove the paper size detector assembly (1 screw each).
4. Replace the paper size detectors [B] (1 connector each) and the special paper sensor [C] (1 connector).

6.6.8 REGISTRATION SENSOR



1. Remove the right cover. (See Image Density Sensor.)
2. Remove the registration guide plate [A] (2 screws).
3. Remove the paper support roller [B] (2 snap rings, 2 bushings).
4. Remove the sensor bracket [C] (1 screw).
5. Replace the registration sensor [D] (1 connector).

6.6.9 RELAY SENSORS



Upper Relay Sensor

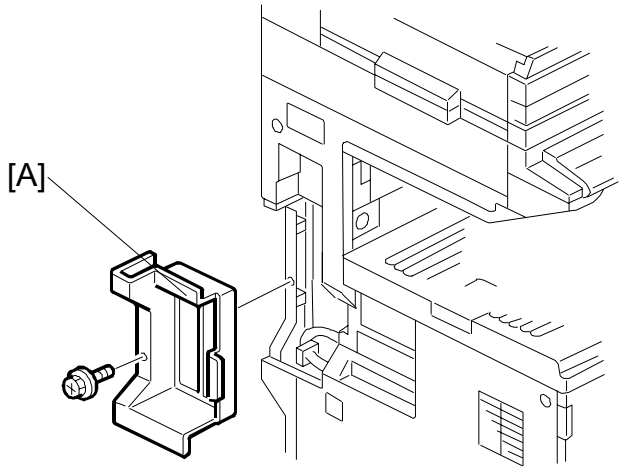
1. Remove the right cover. (See Image Density Sensor.)
2. Remove the lower right cover. (See Relay Clutches.)
3. Remove the guide plate [A].
4. Remove the bracket [B] (1 screw).
5. Remove the guide plate [C] (2 screws).
6. Remove the sensor bracket [D] (1 screw).
7. Replace the upper relay sensor [E] (1 connector).

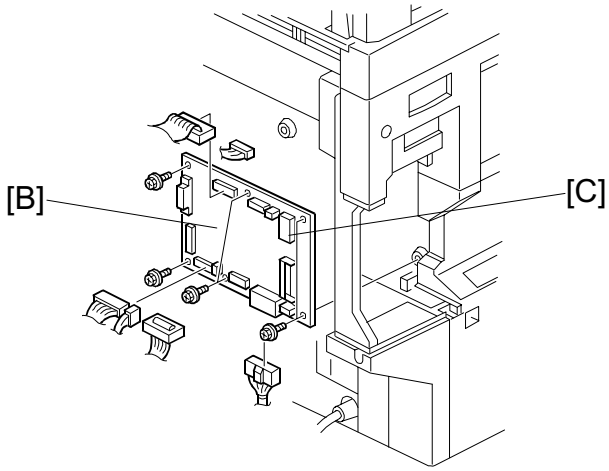
Lower Relay Sensor

1. Remove the right lower door [F] (1 clip).
2. Remove the guide plate [G].
3. Remove the guide plate [H] (2 screws).
4. Remove the sensor bracket [I] (1 screw).
5. Replace the lower relay sensor [J] (1 connector).

6.7 PCBS AND OTHER ITEMS

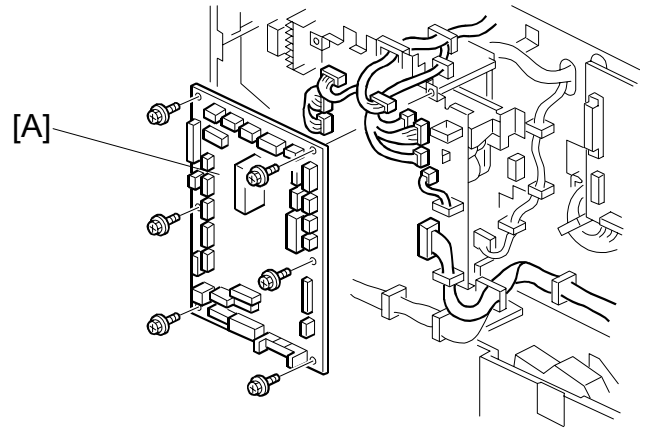
6.7.1 BICU BOARD





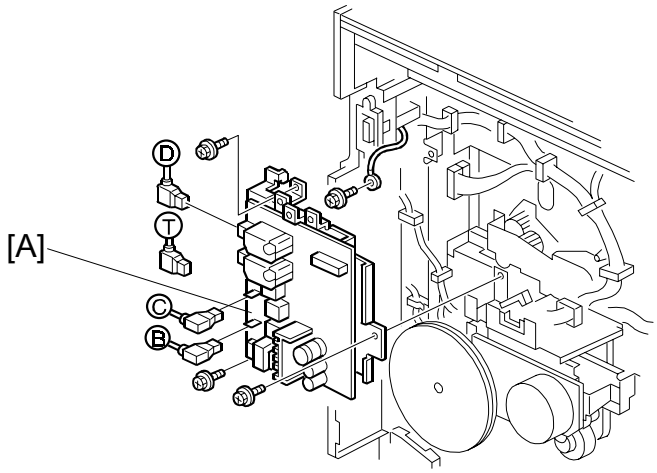
1. Remove the rear cover. (See Paper Tray Lift Motors.)
2. Remove the optional finisher if it has been installed.
3. Remove the application cover [A] (1 screw).
4. Remove the expansion box if the fax, printer, or scanner option units have been installed.
5. Remove the optional copier memory if it has been installed.
6. Remove the BICU board [B] (6 connectors, 6 screws or 5 screws if the optional copier memory has been installed).
7. Remove the NVRAM [C] from the old BICU board and put it on the new BICU board.

6.7.2 I/O BOARD



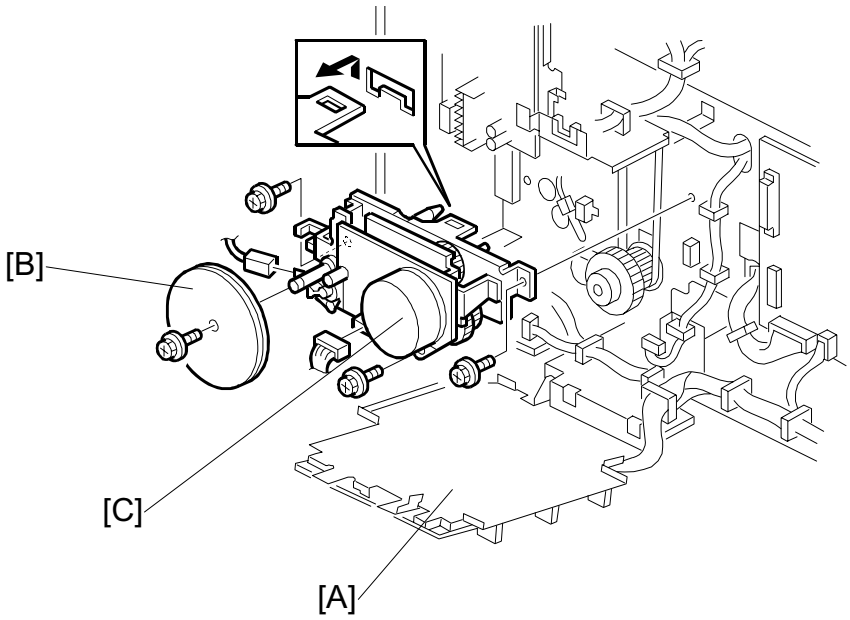
1. Remove the rear cover. (See Paper Tray Lift Motors.)
2. Remove the I/O board [A] (All connectors, 6 screws).

6.7.3 POWER PACK



1. Remove the rear cover. (See Paper Tray Lift Motors.)
2. Swing down the I/O board bracket. (See Paper Feed Clutches.)
3. Remove the power pack [A] (5 connectors, 4 screws).

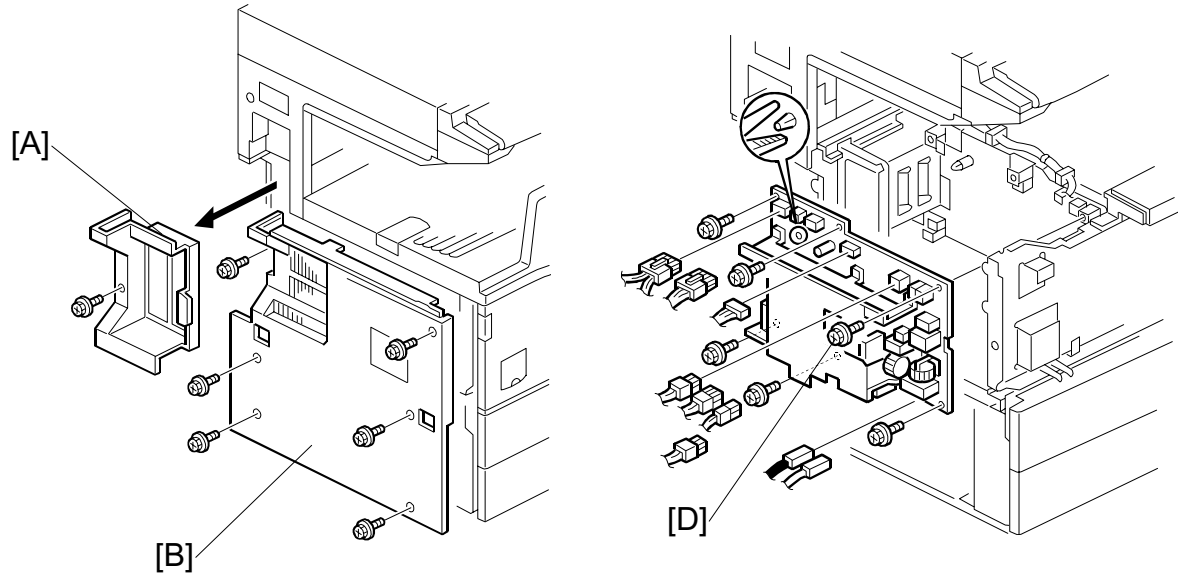
6.7.4 MAIN MOTOR



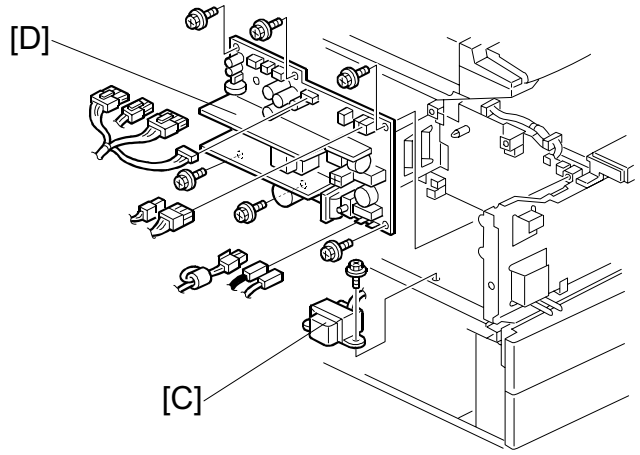
1. Remove the rear cover. (See Paper Tray Lift Motors.)
2. Swing down the I/O board bracket [A]. (See Paper Feed Clutches.)
3. Remove the fly wheels [B] (1 screw).
4. Replace the main motor [C] (2 connectors, 3 screws).

6.7.5 PSU

– 115 V Machine –



– 220 V machine –



1. Remove the optional finisher if it has been installed.
2. Remove the application cover [A] (1 screw).
3. Remove the left cover [B] (6 screws).
4. **220 V machine only:** Remove the transformer [C] (1 screw).
5. Remove the PSU [D] (all connectors, 6 screws, 1 clip).

6.8 COPY ADJUSTMENTS: PRINTING/SCANNING

NOTE: 1) You need to perform these adjustment(s) after replacing any of the following parts:
- Scanner Wire
- Lens Block/SBU Assembly
- Scanner Drive Motor
- Polygon Mirror Motor
- Paper Side Fence
- Memory All Clear

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

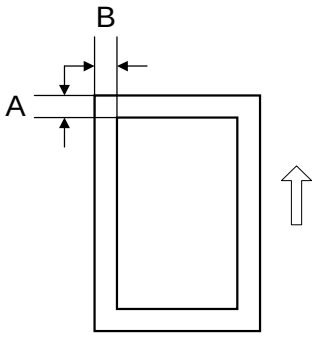
6.8.1 PRINTING

NOTE: 1) Make sure the paper is installed correctly in each paper tray before you start these adjustments.
2) Use the Trimming Area Pattern (SP5-902-3, No.10) to print the test pattern for the following procedures.
3) Set SP 5-902-3 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 them using SP1-001.
2. Check the side-to-side registration for each paper feed station, and adjust them using SP1-002.

Tray	SP mode	Specification
Any paper tray	SP1-001-1	3 ± 2 mm
By-pass feed	SP1-001-2	
Duplex	SP1-001-3	
1st paper feed	SP1-002-1	2 ± 1.5 mm
2nd paper feed	SP1-002-2	
3rd paper feed (Optional PFU tray 1), or LCT	SP1-002-3	
4th paper feed (Optional PFU tray 2)	SP1-002-4	
By-pass feed	SP1-002-5	
Duplex	SP1-002-6	



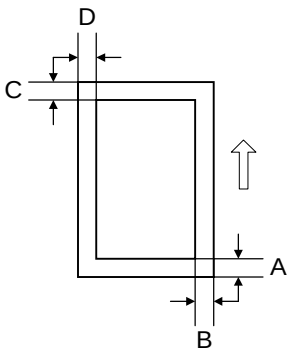
A: Leading Edge Registration
B: Side-to-side Registration

Blank Margin

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

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

	SP mode	Specification
Trailing edge	SP2-101-2/3/4	3 ± 2 mm
Right edge	SP2-101-6	2 +2.5/-1.5 mm
Leading edge	SP2-101-1	3 ± 2 mm
Left edge	SP2-101-5	2 ± 1.5 mm
Trailing edge (duplex copy, 2nd side)	SP2-101-7	2 ± 2 mm
Left edge (duplex copy, 2nd side)	SP2-101-8	2 ± 1.5 mm
Right edge (duplex copy, 2nd side)	SP2-101-9	2 +2.5/-1.5 mm



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

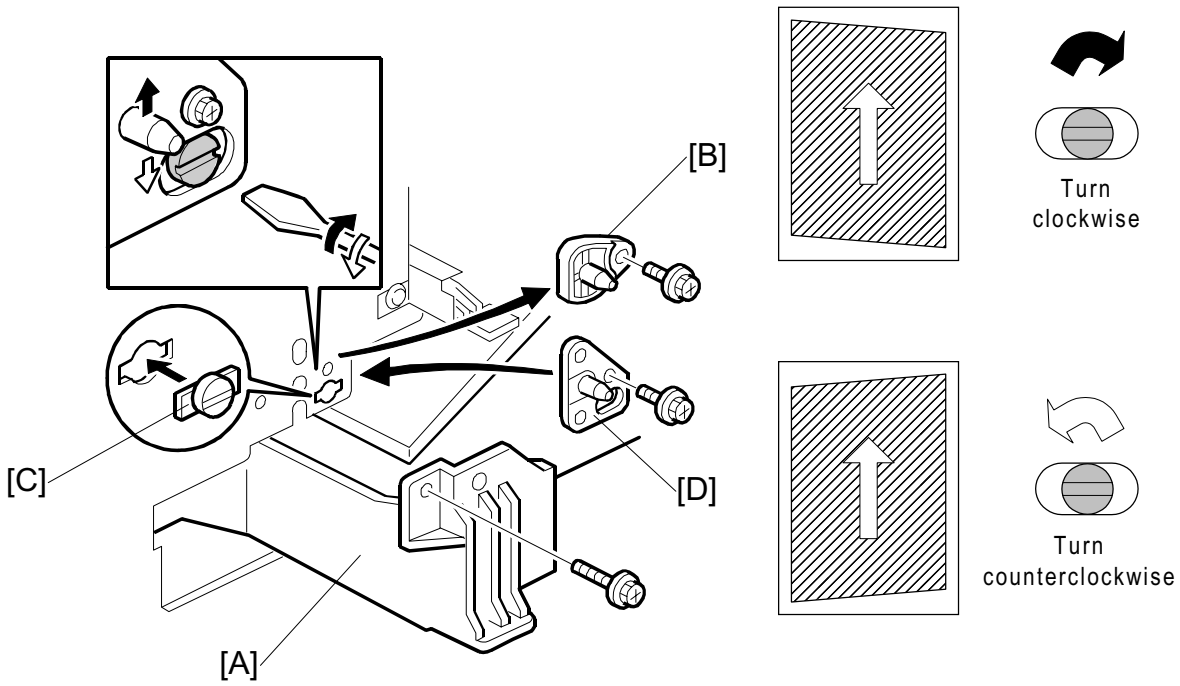
Main Scan Magnification

1. Print the single-dot grid pattern (SP5-902, no.5).
2. Check the magnification, and adjust the magnification using SP2-998-1 if necessary. The specification is ± 1%.

Parallelogram Image Adjustment

Do the following procedure if a parallelogram is printed while adjusting the printing registration or the printing margin using a trimming area pattern.

NOTE: The following procedure should be done after adjusting the side-to-side registration for each paper tray station.



1. Check whether the trimming area pattern (SP5-902, No.10) is printed as a parallelogram, as shown. If it is, do the following.
2. Remove the laser unit [A] (see Laser Unit).
3. Remove the bracket [B] (2 screws).
4. Install the adjusting cam [C] (P/N: A2309003).
5. Secure the adjustment bracket [D] (P/N A2679002) using the screw which was used for bracket [B]. However, do not tighten the screws at this time.
6. Adjusts the laser unit position by turning the adjusting cam. (Refer to the above illustration for the relationship between the image and the cam rotation direction).
7. Tighten the adjustment bracket.
8. Print the trimming area pattern to check the image. If it is still unsatisfactory, repeat steps 4 to 8.

6.8.2 SCANNING

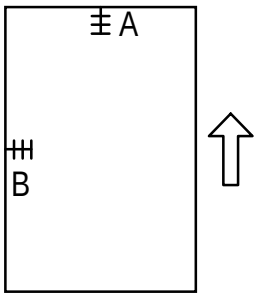
NOTE: 1) Before doing the following scanner adjustments, perform or check the printing registration/side-to-side adjustment and the blank margin adjustment.
2) Use an OS-A3 test chart to perform the following adjustments.

Registration: Platen Mode

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

	SP mode
Leading Edge	SP4-010
Side-to-side	SP4-011

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

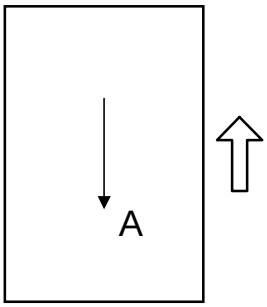


Magnification

NOTE: Use an OS-A3 test chart to perform the following adjustment.

Sub Scan Magnification

A: Sub Scan Magnification



1. Place the test chart on the exposure glass and make a copy from one of the feed stations.
2. Check the magnification ratio, and adjust it using the following SP mode if necessary. The specification is ±1%.

	SP mode
Sub Scan Magnification	SP4-008

Standard White Density Adjustment

This adjusts the standard white density level.

Perform this adjustment in any of the following conditions:

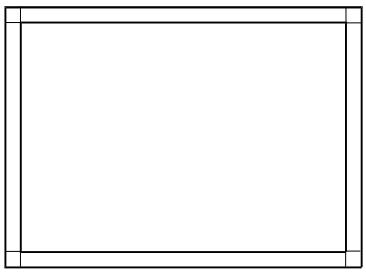
- After replacing the standard white plate.
- After replacing the NVRAM on the BICU board. (If only BICU board is replaced, this adjustment is not necessary, as the NVRAM from the old BICU is put on the new BICU.)
- After performing a memory all clear (SP5-801).

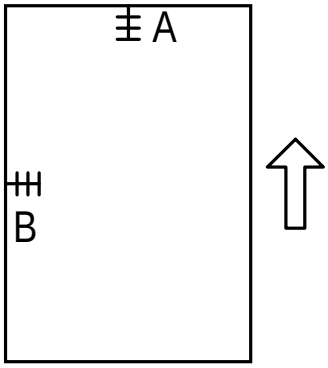
Procedure:

1. Place 10 sheets of new A4 sideways (do not use any recycled paper) or A3 paper on the exposure glass and close the platen cover or the ADF.
2. Enter SP 4-908 and select “1: Yes”. The standard white density is automatically adjusted.

6.8.3 ADF IMAGE ADJUSTMENT

Registration





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

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

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

	SP mode
Side-to-side Registration	SP6-006-1
Leading Edge Registration (Simplex)	SP6-006-2
Trailing Edge Blank Margin	SP6-006-3
Side-to-side Registration (Duplex: rear)	SP6-006-4

TROUBLESHOOTING

7. TROUBLESHOOTING

7.1 SERVICE CALL CONDITIONS

7.1.1 SUMMARY

There are 4 levels of service call conditions.

Level	Definition	Reset Procedure
A	To prevent the machine from being damaged, the SC can only be reset by a service representative. The copier cannot be operated at all.	Enter SP 5-810 (SC code reset) and select “1”. Then hold down the Photo mode key and the # key at the same time for at least 3 seconds (this does not require the main switch to be turned off and on).
B	The SC can be reset by turning the operation switch off and on if the SC was caused by a sensor error.	Turn the operation switch or main power switch off and on.
B’	The SC can be reset by turning the main power switch off and on if the SC was caused by a communication error.	Turn the main power switch off and on.
C	The copier can be operated as usual except for the unit related to the service call.	Turn the operation switch off and on.

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

7.1.2 SC CODE DESCRIPTIONS

SC101: Exposure lamp error

-Definition- [B]

The standard while level was not detected properly when scanning the white plate.

- Possible causes -

- Exposure lamp defective
- Exposure lamp stabilizer defective
- Exposure lamp connector defective
- Dirty scanner mirror or scanner mirror out of position
- SBU board defective
- SBU connector defective
- Lens block out of position

SC120: Scanner home position error 1

-Definition- [B]

The scanner home position sensor does not detect the off condition during initialization or copying.

- Possible causes -

- Scanner home position sensor defective
- Scanner drive motor defective
- Scanner home position sensor connector defective
- Scanner drive motor connector defective
- IOB board defective

SC121: Scanner home position error 2

-Definition- [B]

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

- Possible causes -

- Scanner home position sensor defective
- Scanner drive motor defective
- Scanner home position sensor connector defective
- Scanner drive motor connector defective
- IOB board defective

SC122: Scanner home position error 3

-Definition- [B]

The scanner home position sensor detects the on condition while the scanner is returning to the home position.

- Possible causes -

- Scanner home position sensor defective
- Scanner drive motor defective
- Scanner home position sensor connector defective
- Scanner drive motor connector defective
- IOB board defective

SC123: Scanner home position error 4

-Definition- [B]

The scanner home position sensor does not detect the on condition after the scanner returns to the home position.

- Possible causes -

- Scanner home position sensor defective
- Scanner drive motor defective
- Scanner home position sensor connector defective
- Scanner drive motor connector defective
- IOB board defective

SC192: Automatic SBU adjustment error

-Definition- [B]

An error is detected during automatic SBU adjustment (SP4-903)

- Possible causes -

- SBU defective
- BICU board defective
- Exposure lamp stabilizer defective
- Exposure lamp defective
- Dirty white plate

SC194: IPU White Level Detection Error

Definition: [B]

The level of the white standard pattern detected by the IPU chip (on the BICU board) is too low.

Possible Causes:

- Exposure lamp defective
- BICU board defective
- Incorrect position of the white standard pattern
- Dirty white plate
- SBU board defective
- Fuse FU4 Defective (PSU)

SC302: Charge roller current leak

-Definition- [B]

A charge roller current leak signal is detected.

- Possible causes -

- Charge roller damaged
- Charge high voltage supply board defective
- Poor connection of the PCU

SC320: Polygon motor error

-Definition- [B]

The polygon motor does not reach its operating speed within 10 seconds after the polygon motor on signal, or the lock signal is not detected for more than 200 ms continuously during operation.

- Possible causes -

- Polygon mirror motor defective
- Poor connection between the polygon mirror motor driver and the BICU board
- BICU board defective

SC321: No laser writing signal (F-GATE) error

Definition: [B]

The laser writing signal (F-GATE) is still not LOW when the laser writing area +5 mm has passed since the laser writing start position on the drum.

Possible Causes:

- BICU board defective
- EMB (Copier feature expander) board defective
- The fax controller or printer controller has a poor connection.
- Fax controller or printer controller defective

SC322: Laser synchronization error

-Definition- [B]

The main scan synchronization detector board cannot detect the laser synchronization signal for more than 5 consecutive 100 ms intervals.

- Possible causes -

- Poor connection between the laser synchronization detector board and the BICU board
- Laser synchronization detector board out of position
- Laser synchronization detector board defective
- BICU board defective
- LD unit defective

SC324: LD drive current over

-Definition- [B]

The LD drive board applies more than 100 mA to the LD.

- Possible causes -

- LD unit defective (not enough power, due to aging)
- Poor connection between the LD unit and the BICU board
- BICU board defective

SC390: TD sensor error

-Definition- [B]

The TD sensor outputs less than 0.5V or more than 4.0V 10 times consecutively during copying.

- Possible causes -

- TD sensor abnormal
- Poor connection of the PCU

SC391: Development bias leak

-Definition- [B]

A development bias leak signal is detected.

- Possible causes -

- Poor connection of the PCU
- High voltage supply board defective

SC392: TD sensor initial setting error

-Definition- [B]

TD sensor output voltage falls out of the adjustment range (2.0 ± 0.2 V) after the TD sensor initial setting has been finished.

- Possible causes -

- Someone forgot to remove the toner seal of the PCU
- ID sensor defective
- TD sensor abnormal
- Drum does not turn
- Development roller does not turn
- Poor connection of the PCU

SC401: Transfer roller leak error 1
SC402: Transfer roller leak error 2

-Definition- [B]

A transfer roller current leak signal is detected.
The current feedback signal for the transfer roller is not detected.

- Possible causes -

- High voltage supply board defective
- Poor connection of the PCU
- Transfer/separation unit set incorrectly
- Transfer roller damaged

SC411: Separation bias leak error

-Definition- [B]

A separation bias leak signal is detected.

- Possible causes -

- High voltage supply board defective
- Poor connection of the PCU
- Discharge plate defective

SC500: Main motor lock

-Definition- [B]

A main motor lock signal is not detected for more than 500 ms after the main motor starts to rotate, or the lock signal is not detected for more than 500 ms during rotation after the last signal.

- Possible causes -

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

SC501: 1st paper tray lift motor malfunction
SC502: 2nd paper tray lift motor malfunction
SC503: 3rd paper tray lift motor malfunction (optional paper tray unit)
SC504: 4th paper tray lift motor malfunction (optional paper tray unit)

-Definition- [C]

The paper lift sensor is not activated after the tray lift motor has been on for 18 seconds.

- Possible causes -

- Paper lift sensor defective
- Tray lift motor defective
- Too much load on the drive mechanism
- Poor tray lift motor connection

SC506: Paper tray motor lock (optional paper tray unit)

-Definition- [C]

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.

- Possible causes -

- Paper tray unit motor defective
- Too much load on the drive mechanism

SC507: Tandem tray lift error (optional LCT)

-Definition- [C]

The lower limit sensor is not activated after the paper tray lift motor has been on to lower the tandem tray for 8 seconds.

- Possible causes -

- Paper tray lift motor defective
- Lower limit sensor defective
- Too much load on the drive mechanism

SC508: Rear fence drive error (optional LCT)

-Definition- [C]

The return position sensor is not activated after the rear fence drive motor has been on to lower the tandem tray for 8 seconds.

- Possible causes -

- Rear fence motor defective
- Return position sensor defective
- Too much load on the drive mechanism

SC509: Side fence drive error (optional LCT)

-Definition- [C]

The side fence positioning sensor is not activated for more 3 seconds when the paper stack in the left tray is moved to the right tray.

The side fence close sensor is not activated for more 3 seconds after moving the paper stack to the right tray.

- Possible causes -

- Side fence motor defective
- Side fence position sensor defective
- Side fence close sensor defective
- Too much load on the drive mechanism

SC541: Fusing thermistor open

-Definition- [A]

The fusing temperature detected by the thermistor was below 55 °C for 15 seconds or below 75 °C for 20 seconds.

- Possible causes -

- Fusing thermistor defective or out of position
- Fusing lamp open
- Fusing thermofuse open
- Power supply board defective
- Poor connection of the fusing unit

SC542: Fusing temperature warm-up error

-Definition- [A]

The fusing temperature does not reach 155 °C within 60 seconds after the main switch is turned on.

- Possible causes -

- Fusing thermistor defective or out of position
- Fusing lamp open
- Fusing thermofuse open
- Power supply board defective
- Poor connection of the fusing unit

SC543: Fusing overheat error

-Definition- [A]

A fusing temperature of over 231°C is detected for 1 second by the fusing thermistor.

- Possible causes -

- Fusing thermistor defective
- Power supply board defective

SC544: Fusing low temperature error

-Definition- [A]

A fusing temperature of lower than 100°C is detected for 1 second by the fusing thermistor.

- Possible causes -

- Fusing thermistor defective
- Power supply board defective
- Poor connection of the fusing unit

SC546: Unstable fusing temperature

Definition: [A]

Fusing temperature more than 60 °C: The fusing temperature does not rise 2°C or more within 6 seconds after the fusing lamp has been on.

Fusing temperature 60 °C or less: The fusing temperature does not rise 2°C or more during a 6 second interval (the 6 s timer starts 14 s after the fusing lamp turned on).

Possible Causes:

- Thermistor defective
- Poor connection of the fusing unit
- Power supply unit defective

SC547: Zero cross signal malfunction

-Definition- [A]

Zero cross signals are not detected within a certain period.

- Possible causes -

- Power supply board defective
- IOB defective
- BICU defective

SC590: Exhaust fan motor error

-Definition- [B]

The CPU detects an exhaust fan lock signal for more than 3.5 seconds.

- Possible causes -

- Poor connection of the exhaust fan motor
- Too much load on the motor drive

SC610: Communication error between IOB and duplex unit

-Definition- [B']

The IOB cannot communicate with the duplex unit properly.

- Possible causes -

- Poor connection between the IOB and duplex unit
- IOB defective
- Duplex control board defective

SC620: Communication error between IOB and ADF

Definition: [B]

The IOB cannot receive a response from the ADF main board for 4 seconds or more.

Possible Causes:

- Poor connection between the IOB and ADF main board (DF connector)
- ADF main board defective
- IOB defective

SC691: Communication error between BICU and fax controller

-Definition- [B]

The BICU board cannot communicate with the fax controller properly.

- Possible causes -

- Poor connection between the BICU board and the fax controller
- BICU board defective
- Fax controller defective

SC692: Communication error between BICU and printer controller

-Definition- [B]

The BICU board cannot communicate with the printer controller properly.

- Possible causes -

- Poor connection between the BICU board and the mother board.
- Poor connection between the mother board and the printer controller
- BICU board defective
- Printer controller defective
- Mother board defective

SC694: Communication error between BICU and scanner controller

-Definition- [B]

The BICU board cannot communicate with the scanner controller properly.

- Possible causes -

- Poor connection between the BICU board and the mother board.
- Poor connection between the mother board and the scanner controller
- BICU board defective
- Scanner controller defective
- Mother board defective

SC 696: Communication error between IOB and finisher

-Definition- [B']

The IOB cannot communicate with the finisher properly.

- Possible causes -

- Poor connection between the IOB and finisher
- IOB defective
- Finisher main board defective

SC722: Finisher jogger motor error

-Definition- [B']

1) The finisher jogger H.P sensor remains de-activated for a certain time when returning to home position.
2) The finisher jogger H.P sensor remains activated for a certain time when moving away from home position.

- Possible causes -

- Jogger H.P sensor defective
- Jogger motor defective

SC725: Finisher stack feed-out motor error

- Definition - [B']

The stack feed-out belt H.P sensor does not activate within a certain time after the stack feed-out motor turned on.

- Possible causes -

- Stack feed-out H.P sensor defective
- Stack feed-out motor defective

SC726: Finisher shift motor error

- Definition - [B']

Tray shift does not finish within a certain time after the shift motor turned on.

- Possible causes -

- Shift motor defective
- Shift tray half-turn sensor defective

SC730: Finisher stapler position motor error

- Definition - [B']

1) The stapler does not return to its home position within a certain time after the stapler motor turned on.
2) The stapler H.P sensor does not activate within a certain time after the stapler motor turned on.

- Possible causes -

- Stapler motor defective
- Stapler H.P sensor defective
- Poor stapler motor connection

SC733: Finisher stack feed-out motor error

- Definition - [B']

The stack feed-out belt H.P sensor does not activate within a certain time after the stack feed-out motor turned on.

- Possible causes -

- Stack feed-out H.P sensor defective
- Stack feed-out motor defective

SC734: Finisher lift motor error

- Definition - [B']

The stack height sensor does not activate within a certain time after the shift tray lift motor turned on.

- Possible causes -

- Shift tray lift motor defective
- Stack height sensor defective

SC735: Finisher exit guide plate motor error

- Definition - [B']

The exit guide plate open sensor or exit guide plate HP sensor does not activate within a certain time after the exit guide plate motor turned on.

- Possible causes -

- Exit guide plate motor defective
- Exit guide plate HP sensor defective
- Exit guide plate open sensor defective

SC 750: Interchange unit connection error

-Definition- [B']

The IOB cannot communicate with the interchange unit properly when the duplex unit is installed.

- Possible causes -

- Poor connection between the IOB and interchange unit
- IOB defective

SC 751: Bridge unit connection error

-Definition- [B']

The IOB cannot communicate with the bridge unit properly when the finisher is installed.

- Possible causes -

- Poor connection between the IOB and bridge unit
- IOB defective

SC752: Finisher connection error

-Definition- [B]

The IOB cannot communicate with the finisher properly when the bridge unit is installed.

- Possible causes -

- Poor connection between the finisher and bridge unit
- IOB defective
- Fuse FU6 Defective (PSU)

SC760: ADF gate abnormal

Definition: [B]

The ADF Gate signal line between the ADF main board and the IOB is disconnected.

Possible Causes:

- ADF main board defective
- Input/output board defective
- Poor connection (ADF Gate line) between the ADF main board and the IOB.

SC770: Shift tray motor error (optional shift tray unit)

-Definition- [B]

The shift tray half-turn sensor is not activated within a certain time after the shift tray motor turned on.

- Possible causes -

- Shift tray motor defective
- Shift tray half-turn sensor defective

SC900: Electrical total counter error

Definition: [B]

The electrical total counter is not working properly.

Possible Causes:

- NVRAM defective
- Fuse FU7 Defective (PSU)

⟹ SC901: Mechanical Total Counter

Definition: [B]

The mechanical total counter is not working properly.

Possible Causes:

- Mechanical total counter defective
- IOB defective
- Disconnected mechanical total counter

SC921: EMB (Copier feature expander) hardware error

Definition: [B]

The hardware of the MSU is defective.

Possible Causes:

- EMB (Copier feature expander) defective
- BICU defective

SC980: Program loading error

Definition: [A]

The program cannot load properly.

Possible Causes:

- The connection between the BICU and the Memory Card is poor.
- BICU board defective
- Memory Card or the program defective

NOTE: This SC should be cleared by trying to download again from a memory card.

⟹ SC981: NVRAM error

Definition: [B]

The NVRAM is defective.

Possible Causes:

- NVRAM is defective.
- BICU is defective.

SC990: Communication error between BICU and IOB

Definition: [B]

The BICU board cannot communicate with the IOB.

Possible Causes:

- The connection between the BICU board and the IOB is poor.
- BICU board defective
- IOB defective

SC999: Program version error

Definition: [B]

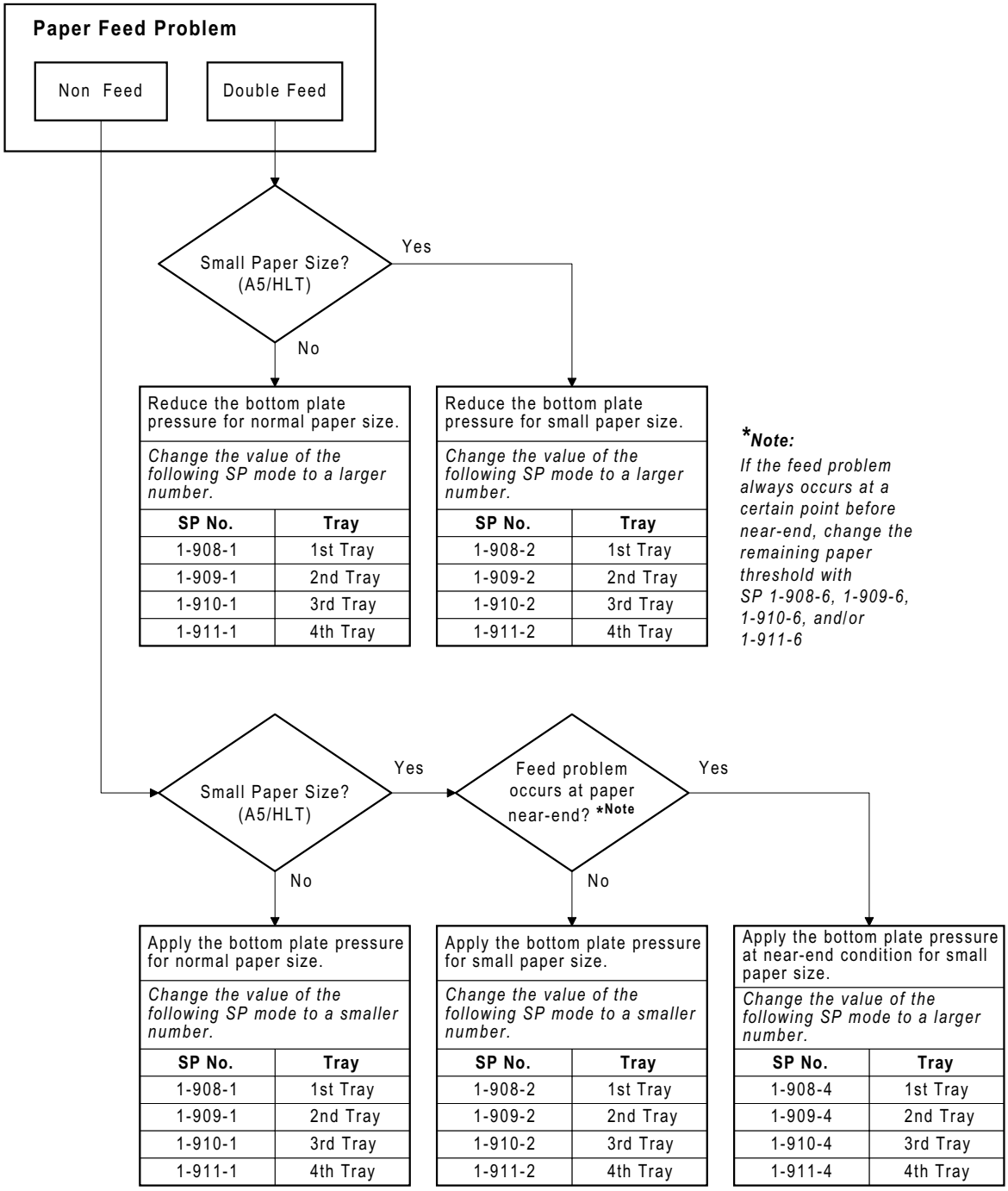
An incorrect type of main software was downloaded.

Possible Causes:

- The main software for another machine was downloaded to this machine.

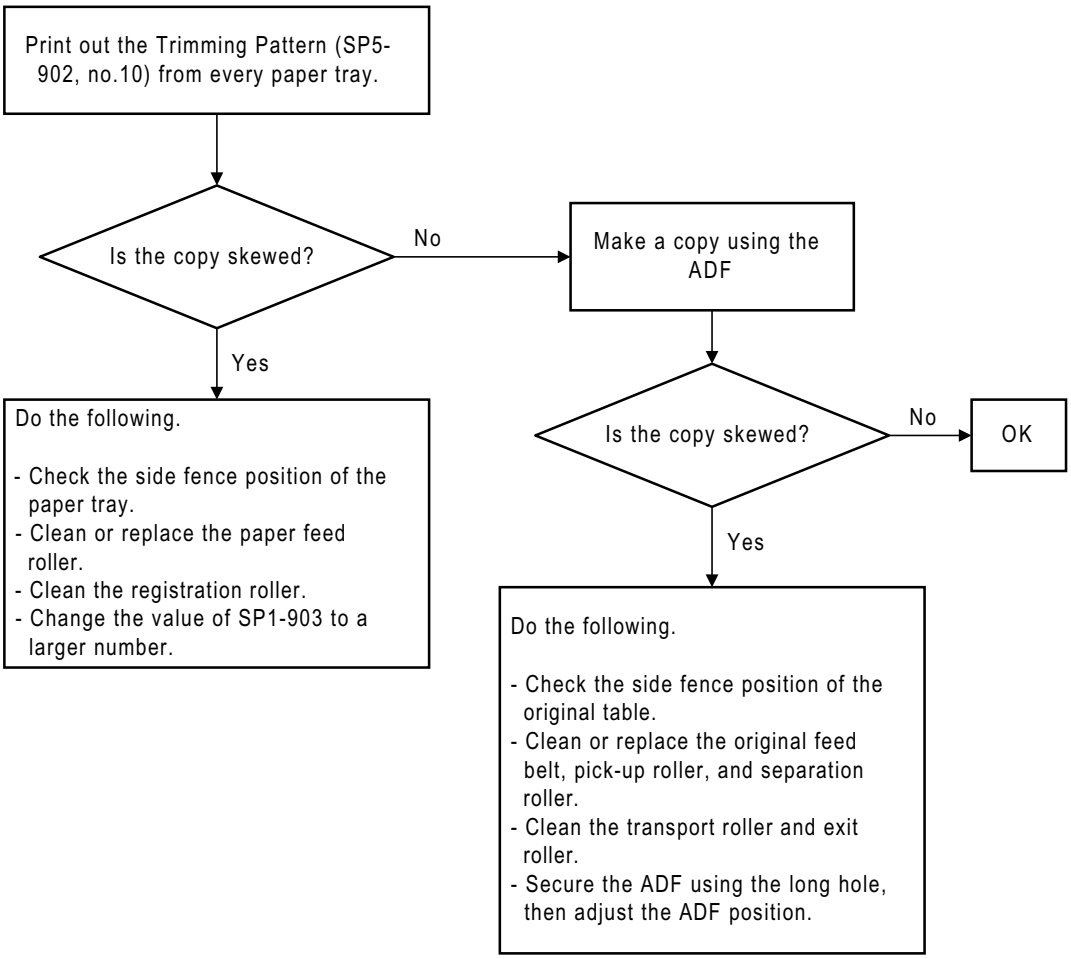
7.2 PAPER FEED TROUBLESHOOTING

When a paper double feed or paper non feed problem occurs, fix the problem in accordance with the following flow chart.



7.3 SKEWED IMAGE

Do the following to fix a skewed image problem.



7.4 TONER DENSITY

7.4.1 ADJUST THE TONER DENSITY CONTROL

If the toner density is too low

Change the value of SP 2-201-2 to “1” or “3”.

If the toner density is too high

Change the value of SP2-201-2 to “2” or “4”.

7.4.2 DIRTY BACKGROUND

Do either of the following.

- Change the value of SP2-929-1 from 2.80 V to 3.10 V.
- Change the value of SP2-201-1 to a value between – 550V and -500V

7.5 ELECTRICAL COMPONENT DEFECTS

7.5.1 SENSORS

Component (Symbol)	CN	Condition	Symptom
Scanner H.P	337-2 (IOB)	Open	SC120 is displayed.
		Shorted	The CPU does not detect the scanner home position and the scanner motor does not stop.
Platen Cover	337-5 (IOB)	Open	APS and ARE do not function correctly.
		Shorted	No symptom
Original Width	(IOB)	Open	The CPU cannot detect the original size properly. APS and ARE do not function correctly.
		Shorted	
Original Length-1	(IOB)	Open	The CPU cannot detect the original size properly. APS and ARE do not function correctly.
		Shorted	
Original Length-2	(IOB)	Open	The CPU cannot detect the original size properly. APS and ARE do not function correctly.
		Shorted	
Toner Density	302-3 (IOB)	Open	SC390 is displayed
		Shorted	
1st Paper End	306-2 (IOB)	Open	The Paper End indicator lights even if paper is placed in the 1st paper tray.
		Shorted	The Paper End indicator does not light even if there is no paper in the 1st paper tray.
2nd Paper End	307-A2 (IOB)	Open	The Paper End indicator lights even if paper is placed in the 2nd paper tray.
		Shorted	The Paper End indicator does not light even if there is no paper in the 2nd paper tray.
Image Density	321-3 (IOB)	Open	SC392 is displayed (see note)
		Shorted	
Paper Over Flow	324-5 (IOB)	Open	The paper overflow message is not displayed when the paper overfull condition exist.
		Shorted	The paper overflow message is displayed.
Paper Exit	324-2 (IOB)	Open	The Paper Jam indicator will light whenever a copy is made.
		Shorted	The Paper Jam indicator lights even if there is no paper.
Upper Relay	306-5 (IOB)	Open	The Paper Jam indicator will light whenever a copy is made.
		Shorted	The Paper Jam indicator lights even if there is no paper.

Component (Symbol)	CN	Condition	Symptom
Lower Relay	307-A5 (IOB)	Open	The Paper Jam indicator will light whenever a copy is made.
		Shorted	The Paper Jam indicator lights even if there is no paper.
Registration	321-6 (IOB)	Open	The Paper Jam indicator will light whenever a copy is made.
		Shorted	The Paper Jam indicator lights even if there is no paper.
1st Paper Lift	305-7 (IOB)	Open	SC501 will be displayed.
		Shorted	Paper jam will occur during copying.
2nd Paper Lift	305-10 (IOB)	Open	SC502 will be displayed.
		Shorted	Paper jam will occur during copying.
1st Paper Height – 1	307-B2 (IOB)	Open	The CPU cannot determine the paper near-end condition properly.
		Shorted	
1st Paper Height – 2	307-B5 (IOB)	Open	The CPU cannot determine the paper near-end condition properly.
		Shorted	
2nd Paper Height – 1	307-B9 (IOB)	Open	The CPU cannot determine the paper near-end condition properly.
		Shorted	
2nd Paper Height – 2	307-B12 (IOB)	Open	The CPU cannot determine the paper near-end condition properly.
		Shorted	

NOTE: An SC condition occurs only when a new PCU is being installed in the machine. During copying, if the ID sensor fails, the image density will be changed.

7.5.2 SWITCHES

Component (Symbol)	CN	Condition	Symptom
Main	281-1,2 (PSU)	Open	The machine does not turn on.
		Shorted	The machine does not turn off.
Right Upper Cover	324-8 (IOB)	Open	The Cover Open indicator is not lit even if the right upper cover is opened.
		Shorted	The Cover Open indicator is lit even if the right upper cover is closed.
Right Cover	308-9 (IOB)	Open	The Cover Open indicator is not lit even if the right cover is opened.
		Shorted	The Cover Open indicator is lit even if the right cover is closed.
Right Lower Cover	307-A8 (IOB)	Open	The Cover Open indicator is not lit even if the right lower cover is opened.
		Shorted	The Cover Open indicator is lit even if the right lower cover is closed.
Upper Paper Size	308-1,2,4,5 (IOB)	Open	The CPU cannot detect the proper paper size, and misfeeds may occur when a copy is made.
		Shorted	
Lower Paper Size	308-6,7,9,10 (IOB)	Open	The CPU cannot detect the proper paper size, and misfeeds may occur when a copy is made.
		Shorted	
Special Paper	308-12 (IOB)	Open	No symptom. However, the image density problem will occur when using a thick paper.
		Shorted	
New PCU Detect	302-6 (IOB)	Open	The TD sensor initial setting procedure is not performed when a new PCU is installed.
		Shorted	The TD sensor initial setting procedure is performed whenever the front cover is closed.
Front Cover Safety	311-2, 4 (IOB)	Open	The Cover Open indicator is not lit even if the front cover is opened.
		Shorted	The Cover Open indicator is lit even if the front cover is closed.
Operation	103-5 (BICU)	Open	The LCD does not turn off even if the operation switch is turned off.
		Shorted	The LCD does not turn on even if the operation switch is turned on.

7.6 BLOWN FUSE CONDITIONS

Fuse	Rating		Symptom when turning on the main switch
	115 V	220 ~ 240 V	
Power Supply Board			
FU1	15 A/250 V	----	No response.
FU2	8 A/125 V	3.15 A/250 V	No response
FU3	2 A/125 V	2 A/250V	Anti-condensation/Tray Heater does not turn on.
FU4	4 A/125 V	4 A/250V	“Doors/Covers Open” is displayed then SC194 is displayed
FU5	4 A/125 V	4 /250 V	Optional peripherals does not work
FU6	4 A/125 V	4 A/250V	SC752 is displayed
FU7	2 A/125 V	2 A/250 V	SC990 is displayed

AUTO RECIRCULATING DOCUMENT FEEDER

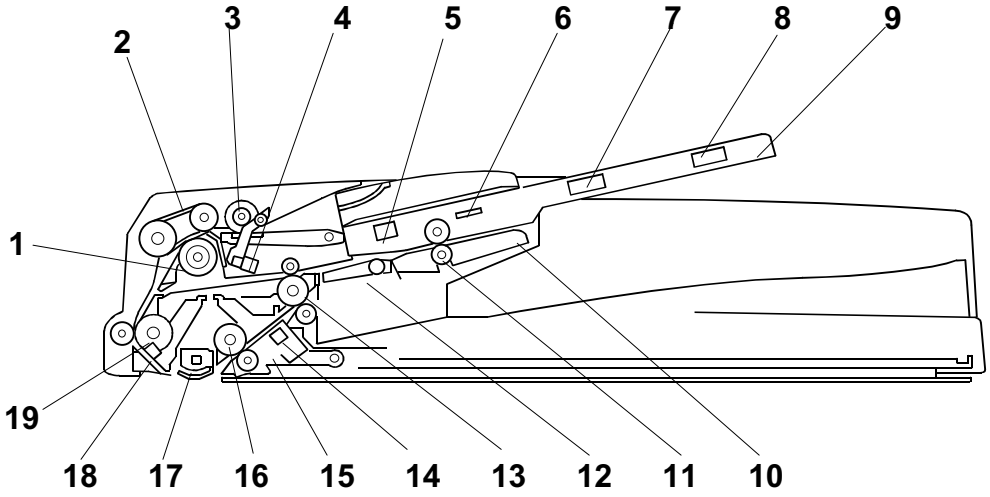
A858

1. OVERALL MACHINE INFORMATION

1.1 SPECIFICATIONS

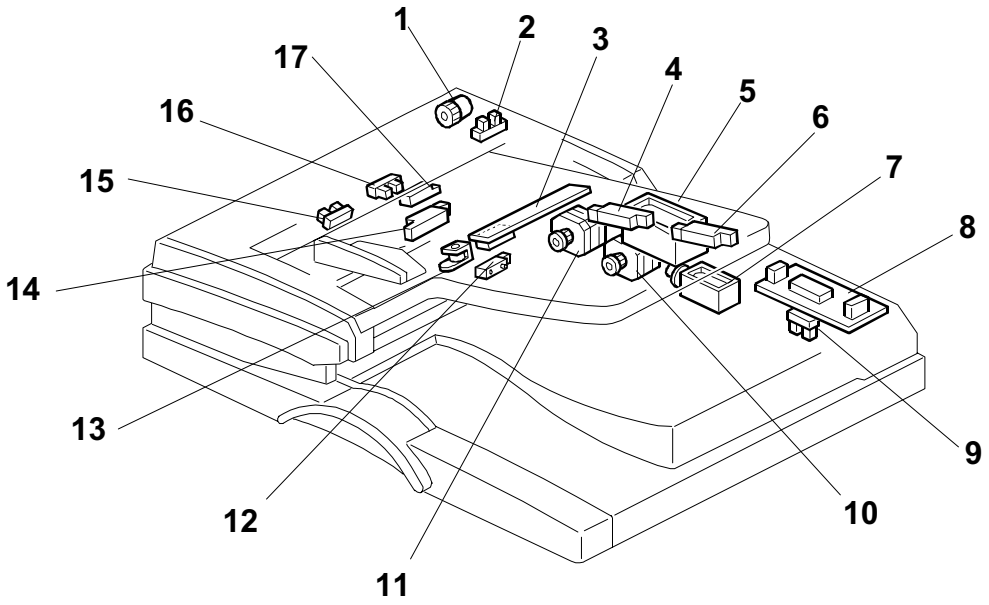
Original Size:	Standard sizes Single-sided mode: A3 to A5, DLT to HLT Double-sided mode: A3 to A4, DLT to LT Non-standard sizes (Single-sided mode only) Max. width 297 mm Min. width 105 mm Max. length 1260 mm Min. length 128 mm
Original Weight:	Single-sided mode: 52~128 g/m^2,14~34 lb Double-sided mode: 52~105 g/m^2,14~28 lb
Table Capacity:	30 sheets (70 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 & 5 Vdc from the copier
Power Consumption:	50 W
Dimensions (W x D x H):	550 x 470 x 110 mm
Weight:	10 kg

1.2 MECHANICAL COMPONENT LAYOUT



1. Separation Roller
2. Paper Feed Belt
3. Pick-up Roller
4. Original Set Sensor
5. Original Trailing Edge Sensor
6. Original Width Sensor Board
7. Original Length Sensor 1
8. Original Length Sensor 2
9. Original Table
10. Reverse Table
11. Reverse Roller
12. Junction Gate
13. Exit Roller
14. Original Exit Sensor
15. Stamp
16. 2nd Transport Roller
17. Original Exposure Guide
18. Registration Sensor
19. 1st Transport Roller

1.3 ELECTRICAL COMPONENT LAYOUT

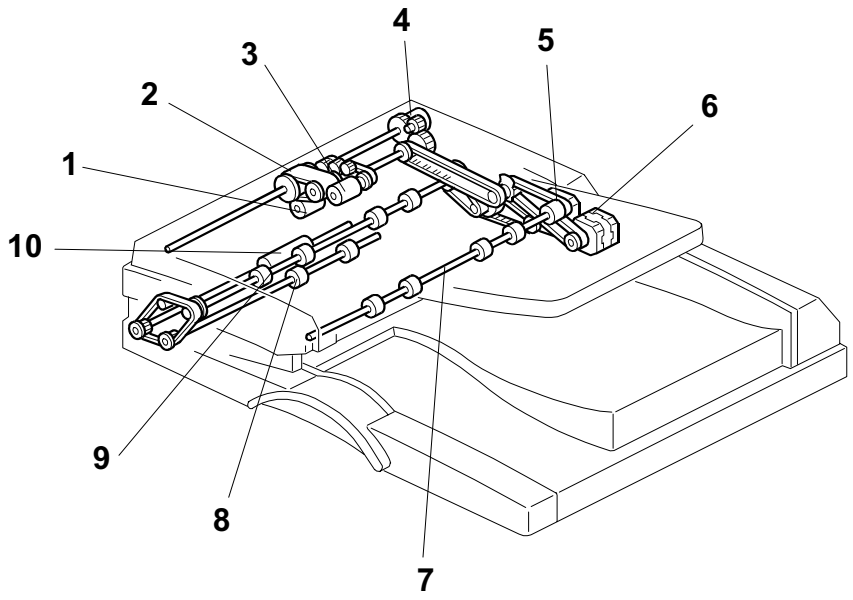


1. DF Feed Clutch
2. Feed Cover Open Sensor
3. Original Width Sensor Board
4. Original Length Sensor 1
5. DF Pick-up Solenoid
6. Original Length Sensor 2
7. Junction Gate Solenoid
8. DF Drive PCB
9. DF Position Sensor
10. DF Feed Motor
11. DF Transport Motor
12. Original Exit Sensor
13. Stamp Solenoid
14. Original Trailing Edge Sensor
15. Original Set Sensor
16. Original Reverse Sensor
17. Registration Sensor

1.4 ELECTRICAL COMPONENT DESCRIPTION

Symbol	Name	Function	Index No.
Motors			
M1	DF Feed	Drives the feed belt, separation, pick-up, and reverse table rollers.	10
M2	DF Transport	Drives the transport and exit rollers	11
Sensors			
S1	DF Position	Detects whether the DF is lifted or not.	9
S2	Registration	Detects the leading edge of the original to turn off the DF feed and transport motors, detects the original exposure timing, and checks for original misfeeds.	17
S3	Feed Cover Open Sensor	Detects whether the feed-in cover is opened or not.	2
S4	Original Width Sensor Board	Detects the original width.	3
S5	Original Length - 1	Detects the original length.	4
S6	Original Length - 2	Detects the original length.	6
S7	Original Set	Detects if an original is on the feed table.	15
S8	Original Exit	Detects the leading edge of the original to turn on the junction gate solenoid and checks for original misfeeds. Detects the trailing edge of the original to turn off the transport and feed motor and junction gate solenoid. In single-sided mode, used to detect original misfeeds.	12
S9	Original Trailing Edge	Detects the trailing edge of the last original to stop copy paper feed and to turn off the transport motor, and checks for original misfeeds.	14
S10	Original Reverse Sensor	Detects when the original is fed from the reverse area during duplex scanning.	16
Solenoids			
SOL1	DF Pick-up	Controls the up-down movement of the original table.	5
SOL2	Stamp	Energizes the stamper to mark the original.	13
SOL3	Junction Gate	Opens and closes the junction gate.	7
Clutches			
MC1	DF Feed	Transfers transport motor drive to the pick-up roller and feed belt.	1
PCBs			
PCB1	DF Drive	Interfaces the sensor signals with the copier, and transfers the magnetic clutch, solenoid and motor drive signals from the copier.	8

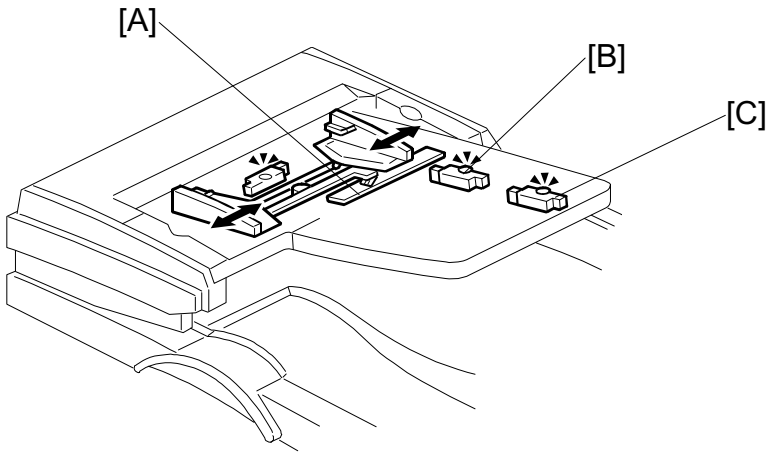
1.5 DRIVE LAYOUT



1. Separation Roller
2. Original Feed Belt
3. Pick-up Roller
4. DF Feed Clutch
5. DF Transport Motor
6. DF Feed Motor
7. Reverse Table Roller
8. 2nd Transport Roller
9. Exit Roller
10. 1st Transport Roller

2. DETAILED SECTION DESCRIPTIONS

2.1 ORIGINAL SIZE DETECTION



The original size detection mechanism consists of the original width sensor board [A] and two original length sensors-1 [B] and -2 [C]. Based on the combined output of the length sensors and the width sensor board, the machine can detect the size of the original. This integrated detection mechanism is detailed in the table on the next page.

Note that the width sensor's terminal plate is attached to the original guide, so the widths of the originals must all be the same.

	NA	EU	Original Width-1	Original Width-2	Original Width-3				Original Length-1	Original Length-2
					P4	P3	P2	P1		
A3 (297 x 420)	✗	❍	L	L	ON	—	—	—	ON	ON
B4 (257 x 364)	✗	❍	L	H	—	ON	—	—	ON	ON
A4 (Lengthwise) (210 x 297)	✗	❍	H	L	—	—	ON	—	ON	—
A4 (297 x 210) (Sideways)	✗	❍	L	L	ON	—	—	—	—	—
B5 (182 x 257) (Lengthwise)	✗	❍	H	H	—	—	—	ON	ON	—
B5 (257 x 182) (Sideways)	✗	❍	L	H	—	ON	—	—	—	—
A5 (148 x 210) (Lengthwise)	✗	✗	H	H	—	—	—	ON	—	—
A5 (210 x 148) (Sideways)	✗	❍	H	L	—	—	ON	—	—	—
11" x 17" (DLT)	❍	✗	L	L	ON	—	—	—	ON	ON
11" x 15"	❍	✗	L	L	ON	—	—	—	ON	ON
10" x 14"	❍	✗	L	H	—	ON	—	—	ON	—
8.5" x 14" (LG)	❍	✗	H	L	—	—	ON	—	ON	—
8.5" x 13" (F4)	✗	❍	H	L	—	—	ON	—	ON	—
8" x 13" (F)	❍	❍	H	L	—	—	ON	—	ON	—
8.5" x 11" (Lengthwise)	❍	✗	H	L	—	—	ON	—	ON	—
8.5" x 11" (Sideways)	❍	✗	L	L	ON	—	—	—	—	—
10" x 8" (Lengthwise)	❍	✗	L	H	—	ON	—	—	ON	—
5.5" x 8.5" (Lengthwise) (HLT)	❍	✗	H	H	—	—	—	ON	—	—
5.5" x 8.5" (Sideways) (HLT)	❍	✗	H	L	—	—	ON	—	—	—

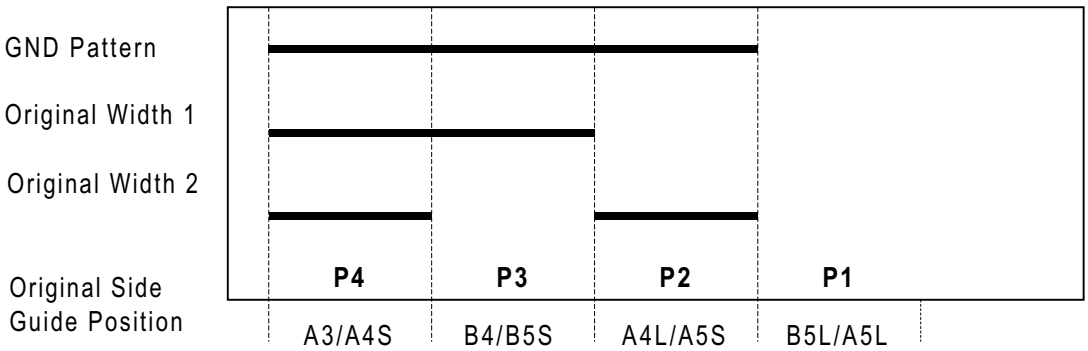
Key
✗: No, ❍: Yes
ON: Paper present
NA: North America, EU: Europe

NOTE: 1) P1-P4 represent the four positions on the width sensor board. ON indicates the presence of the terminal plate in a given position. “Original Width-1” and “Original Width-2” are the outputs from the sensor board to the DF main board. The state of these outputs (L or H) depends on the position of the terminal plate on the sensor board (P1, P2, P3, or P4). For example, if the terminal plate is at P4, both outputs are L.

2) A reading of “L” on either of the width sensor outputs indicates that the terminal plate is connecting the GND pattern with the width sensor output signal line.

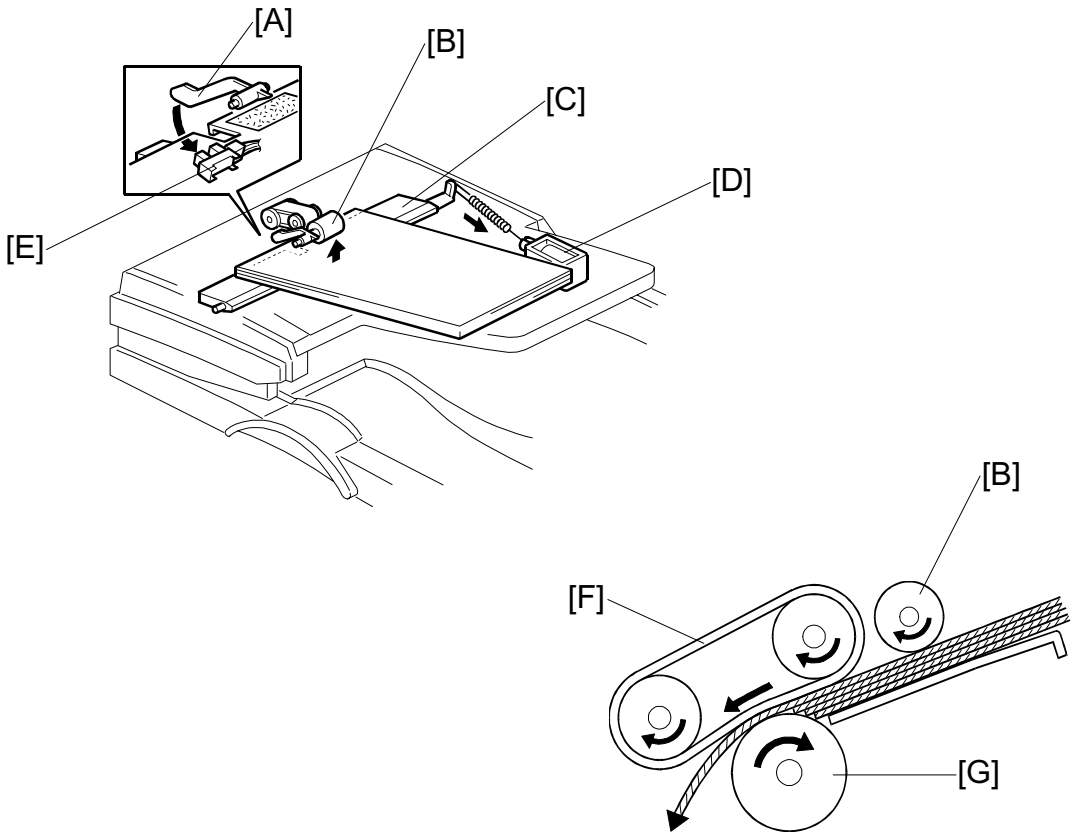
3) The machine cannot detect more than one size of originals in the same job.

Original Width Sensor Board



The signal is "L" when the terminal plate is connected to the GND pattern.

2.2 PICK-UP AND SEPARATION



The original is set with the image facing up. The original pushes actuator [A] and the original set sensor [E] is activated.

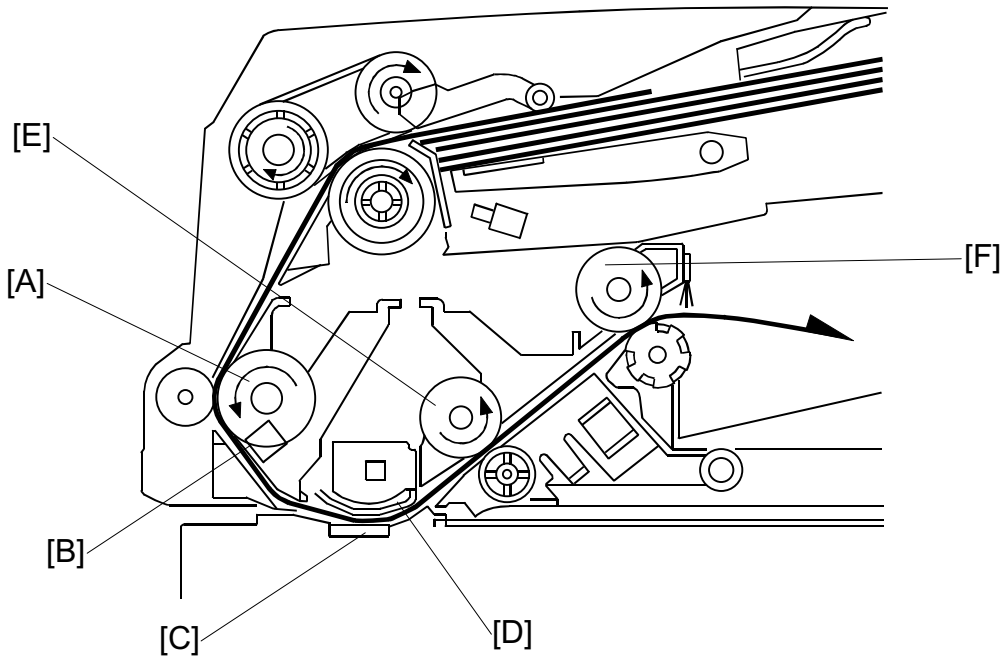
After pressing the start button, the pick-up solenoid [D] is activated and the lift plate [C] lifts the original up until it comes in contact with the pick-up roller [B]. The pick-up roller then feeds the top sheet of paper.

After being fed from the pick-up roller, the topmost sheet is separated from the stack by the separation roller and sent to the first transport roller.

The mechanism is an FRR system (feed and reverse roller), consisting of the original feed belt [F] and separation roller [G].

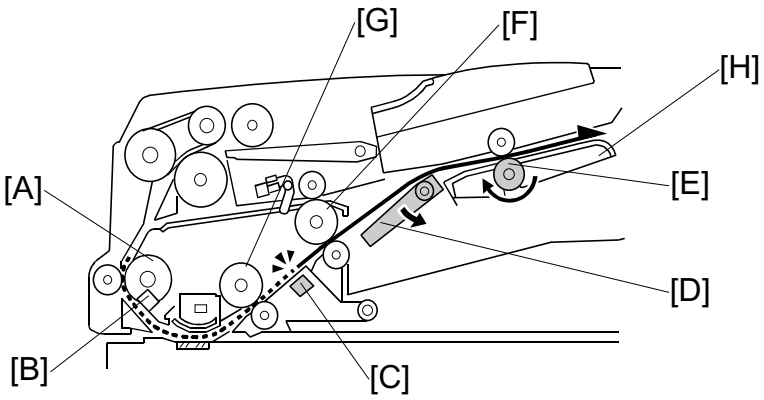
2.3 ORIGINAL TRANSPORT AND EXIT

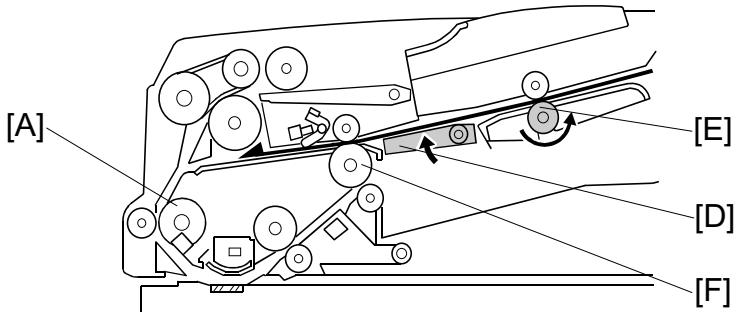
2.3.1 SINGLE-SIDED ORIGINALS



The DF feed motor feeds the separated original to the first transport roller [A] at maximum speed. When the registration sensor [B] detects the leading edge, the motor stops for a short while. Then the feed and transport motors turn on again, and feed the original through scanning area at a lower speed (the scanning area contains the original exposure guide [D] and DF exposure glass [C]). After scanning, the original is fed out by the second transport roller [E] and exit roller [F].

2.3.2 DOUBLE-SIDED ORIGINALS

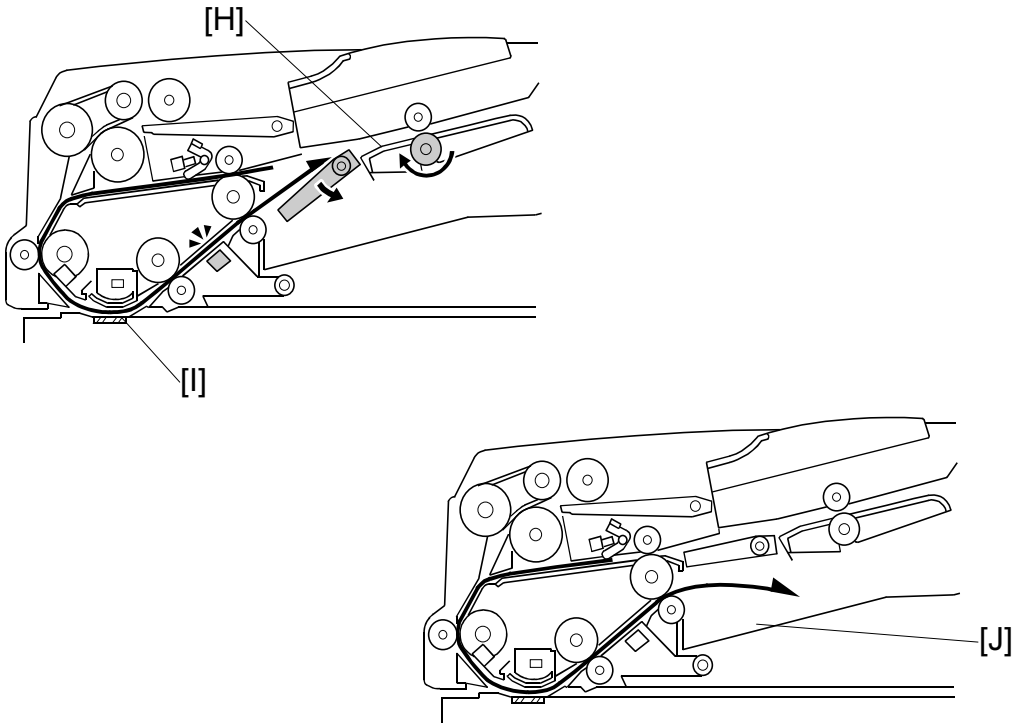




When the registration sensor [B] detects the leading edge of the original, the DF feed motor (which drives the feed roller) and transport motor (which drives the transport roller) both switch off. After a brief interval, the transport motor alone reactivates to drive the first [A] and second transport roller [G] and the exit roller [F]. The front side of the original is then scanned.

When the original exit sensor [C] detects the leading edge of the original, the junction gate solenoid is activated and the junction gate [D] opens. The original is then transported towards the reverse table [H].

Soon after the trailing edge of the original passes the exit sensor [C], the junction gate solenoid switches off and the junction gate [D] is closed. When the original has been fed onto the reverse table, the DF feed motor switches on in reverse. The original is then fed by the reverse roller [E] and then by the exit roller [F] and first transport roller [A] to the scanning area (where the reverse side will be scanned).

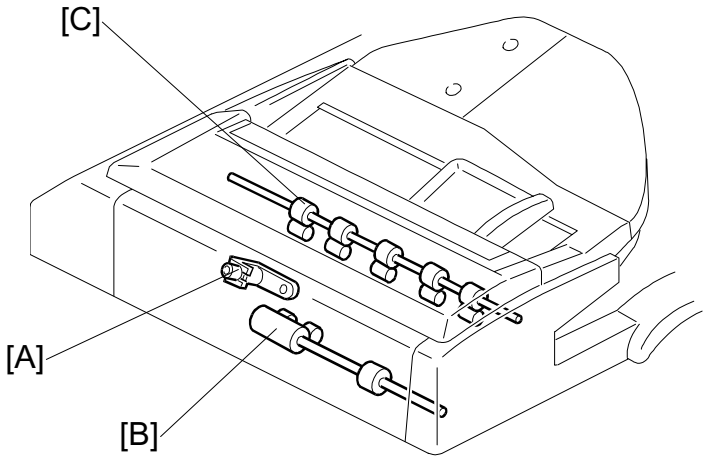


The original is then sent to the reverse table [H] a second time to be turned over. This is done so that the duplex copies will be properly stacked (front side down) in the exit tray [J] in the correct order.

2.3.3 ORIGINAL TRAILING EDGE SENSOR

During one-to-one copying, copy paper is fed to the registration roller in advance (while the original is still being scanned), to increase the copy speed. The trailing edge sensor monitors the stack of originals in the feeder, and detects when the trailing edge of the last page has been fed in. The main CPU then stops the copier from feeding an unwanted extra sheet of copy paper.

2.4 STAMP



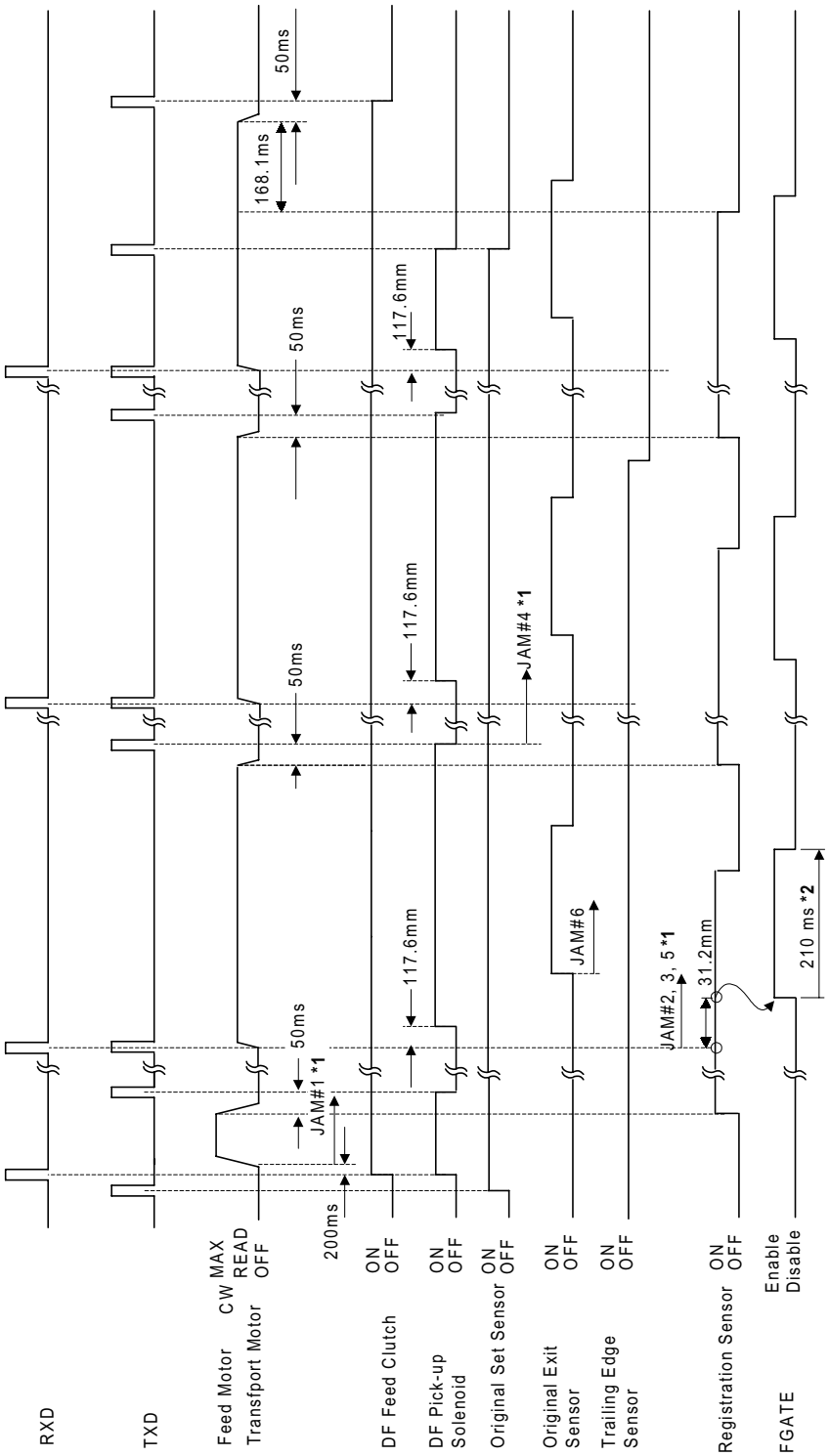
This function is only for fax mode.

There is a stamp [A] between the 2nd transport roller [B] and the exit roller [C], and its solenoid is controlled by the copier directly.

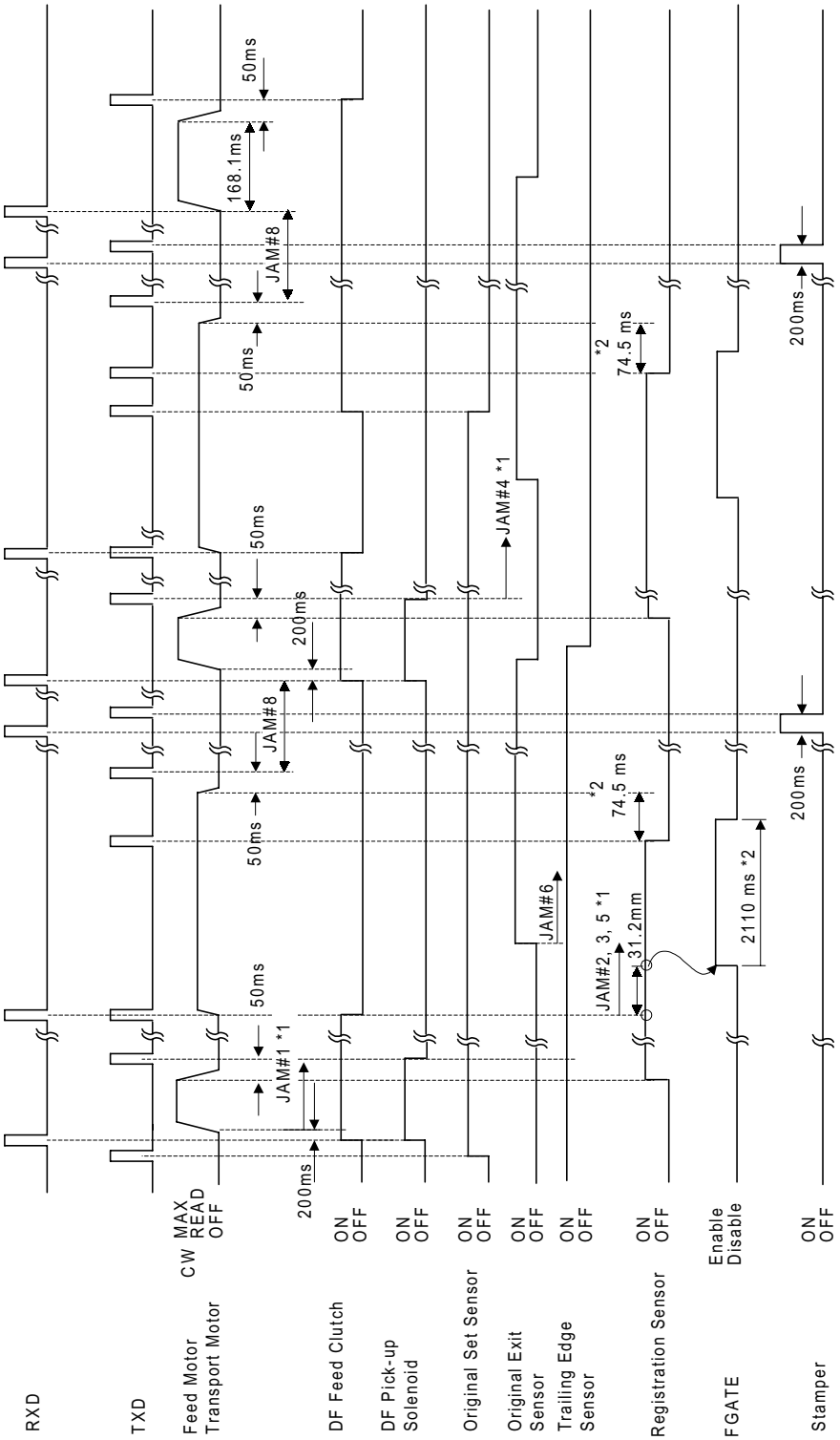
When the original reaches the stamp position, the DF feed motor stops. At 300 milliseconds after stopping the DF feed motor, the stamp solenoid turns on if the page was sent successfully (immediate transmission) or stored successfully (memory transmission). After stamping, the DF feed motor starts again to feed out the document, and its speed is about 1.3 times the normal speed.

The stamping position on the original can be changed by adjusting SP6-010.

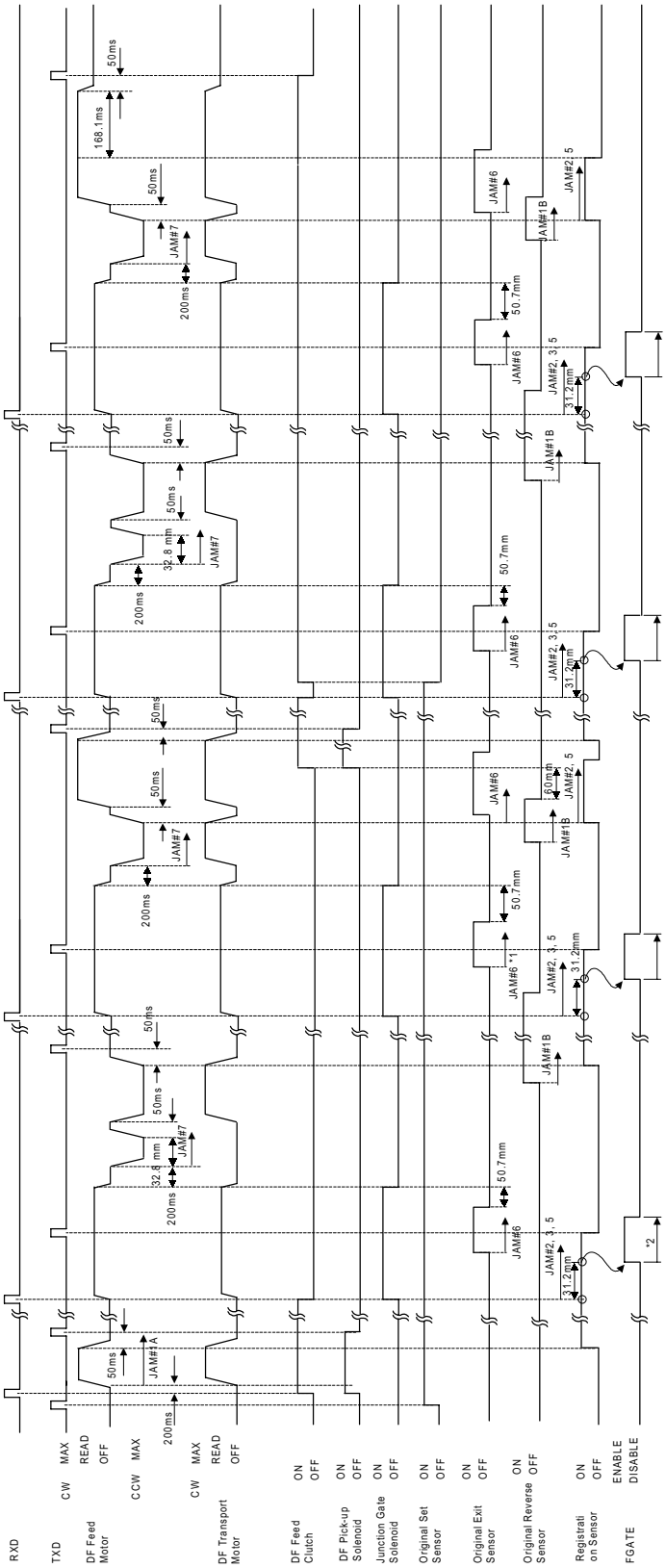
2.5 TIMING CHARTS



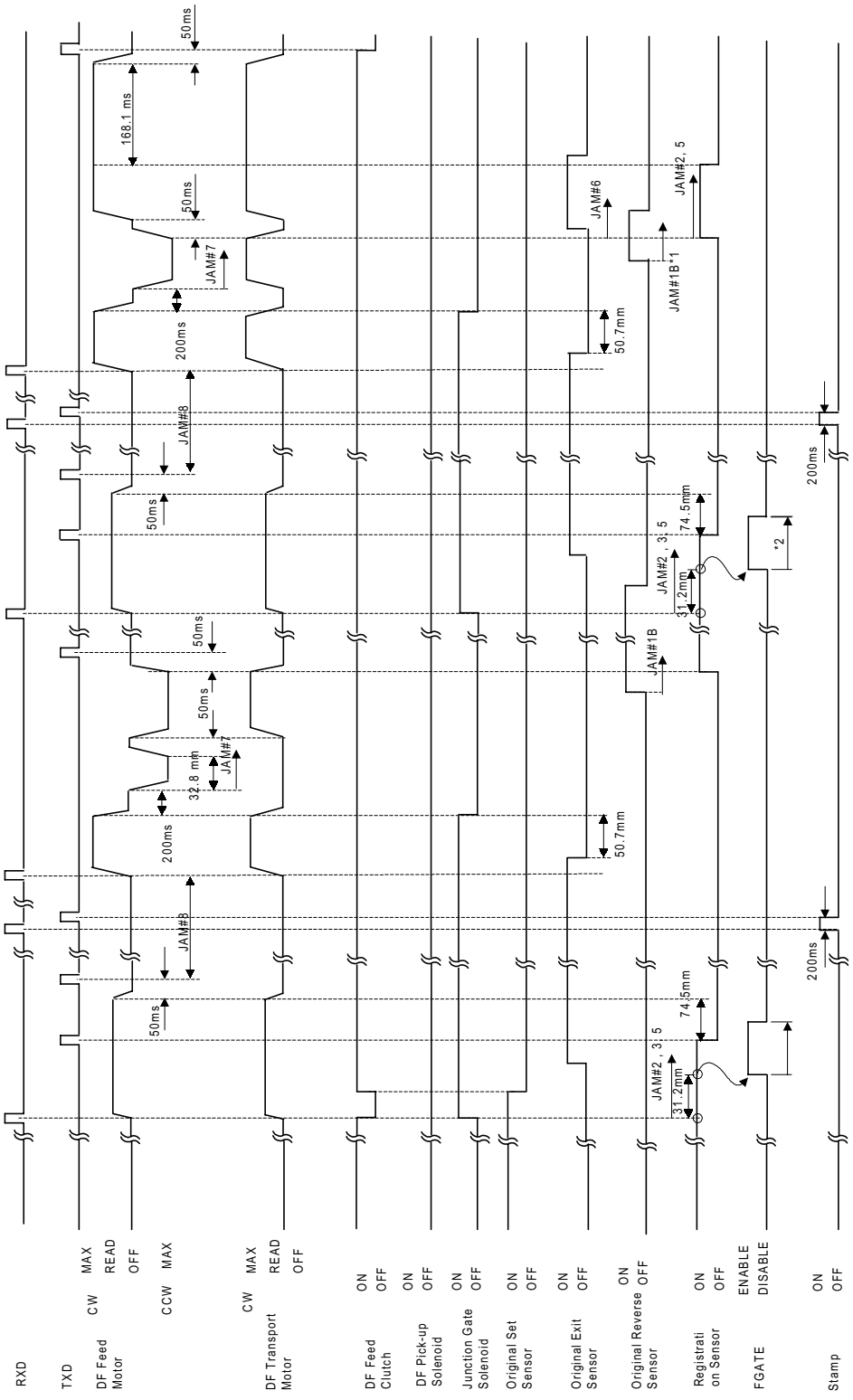
2.5.2 LT SIDEWAYS STAMP MODE (SINGLE-SIDED ORIGINAL MODE)



2.5.3 LT SIDEWAYS (DOUBLE-SIDED ORIGINAL MODE)



2.5.4 LT SIDEWAYS STAMP MODE (DOUBLE-SIDED ORIGINAL MODE)



ARDF A858

2.6 CONDITION OF JAM DETECTION

JAM 1A: If the registration sensor does not turn on within X1 ms after original feed starts.

X1=(114x1.1)/line speed + 2000 ms

JAM 1B: If the registration sensor does not turn on within 500 ms after the leading edge of the original reaches the original reverse sensor (duplex mode only)

JAM 2: If the registration sensor does not turn off within X2 mm after turning on.

X2 = (Original length/line speed) +2000 ms

JAM 3: If there is no original at the registration sensor when scanning is started, even though the sensor had already turned on.
The operator may have removed the original from the ADF.

JAM 4: The current original is stopped after the registration sensor detects its leading edge, but the previous original is still at the scanning position.

JAM 5: If the original exit sensor does not turn on within X3 ms after the registration sensor turns on.

X3=140 mm/line speed

JAM 6: If the original exit sensor does not turn off within X4 ms after the original exit sensor turns on.

X4 =(Original length/line speed) +2000 ms

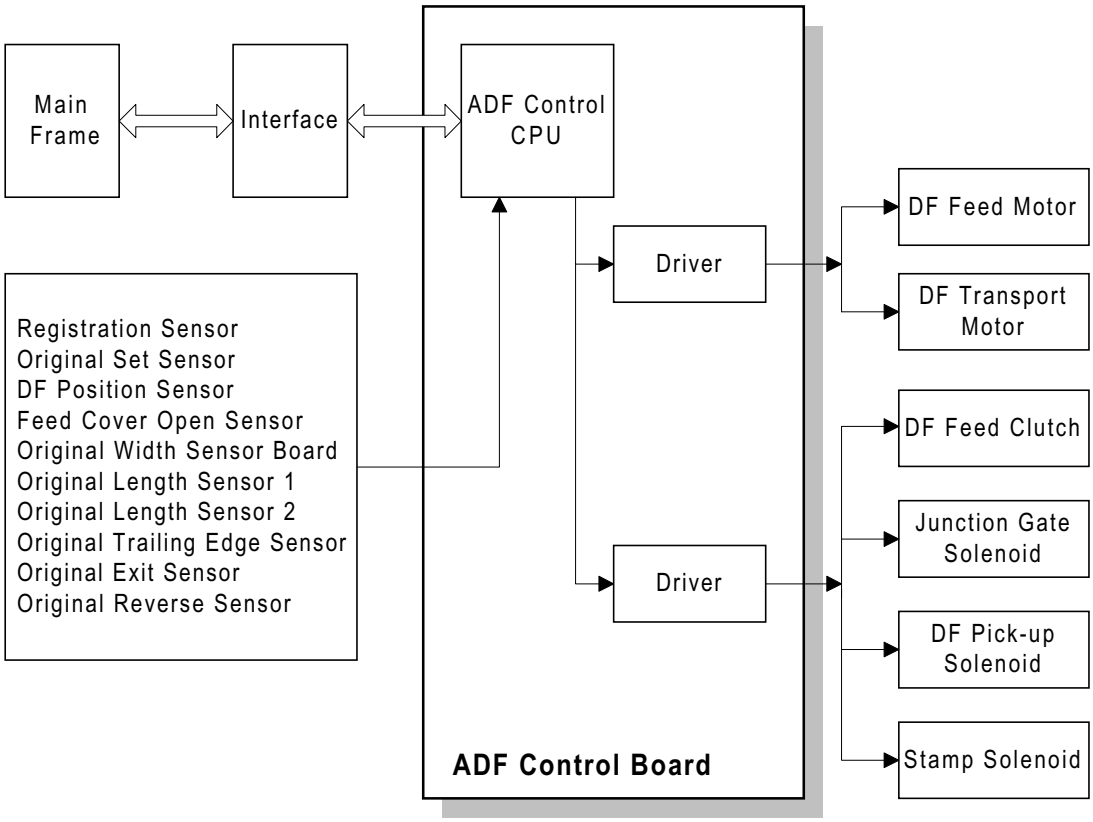
JAM 7: If the original reverse sensor does not turn on within 1700 ms after the reversing process begins (duplex mode only).

JAM 8: If the original stopped at the stamp position is removed.

JAM 9: If the cover is opened or the ADF is lifted up while the ADF is in operation.

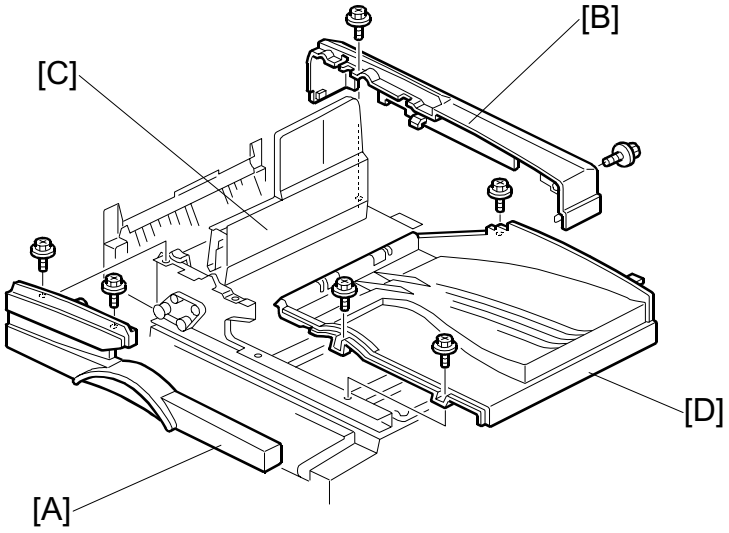
2.7 OVERALL ELECTRICAL CIRCUIT

The DF CPU controls the transport motor, DF feed motor, DF feed clutch, junction Gate solenoid, stamp solenoid, and pick-up solenoid. The DF CPU also monitors all DF sensors and provides updated status information when prompted at regular intervals by the mainframe, which may then take action based on this information. The DF–mainframe connection is checked automatically just after power is supplied to the mainframe.



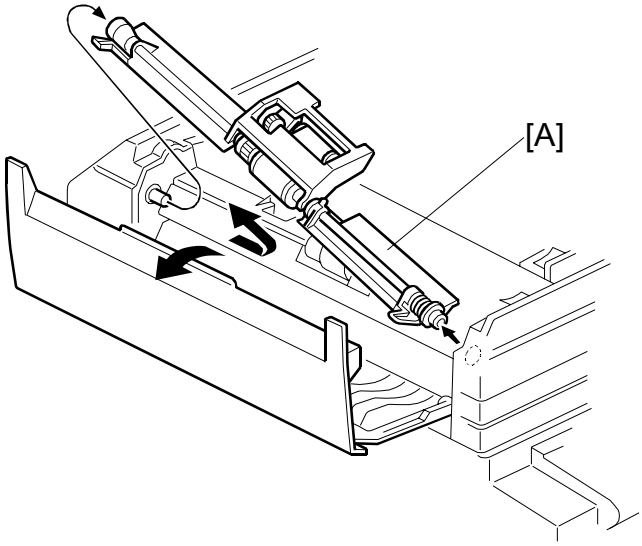
3. REPLACEMENT AND ADJUSTMENT

3.1 DF EXIT TABLE AND COVER



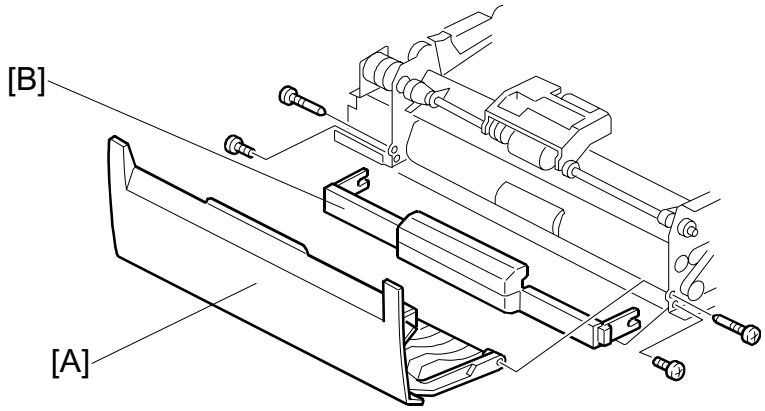
1. Open the DF feed cover.
2. Remove the front cover [A] (2 screws).
   Remove the rear cover [B] (2 screws).
3. Open the reverse table [C].
   Remove the original exit table [D] (3 screws).

3.2 ORIGINAL FEED UNIT



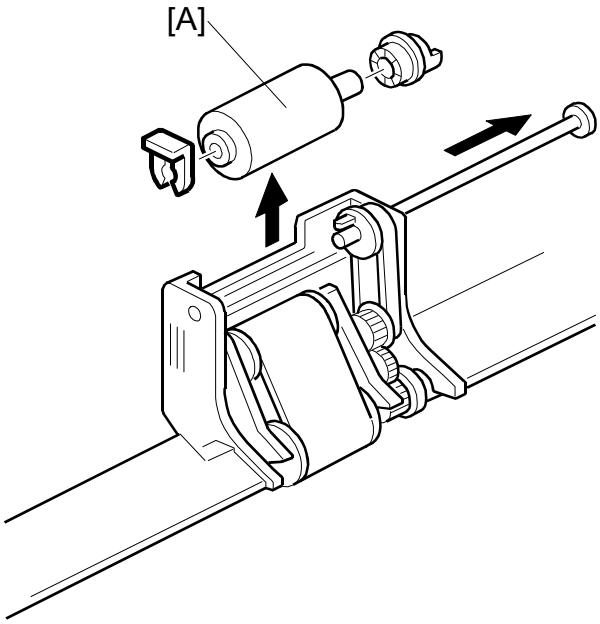
1. Open the left cover.
2. Detach the paper feed unit by sliding it toward the front of the machine (spring-loaded side) and then lifting the far side.

3.3 LEFT COVER



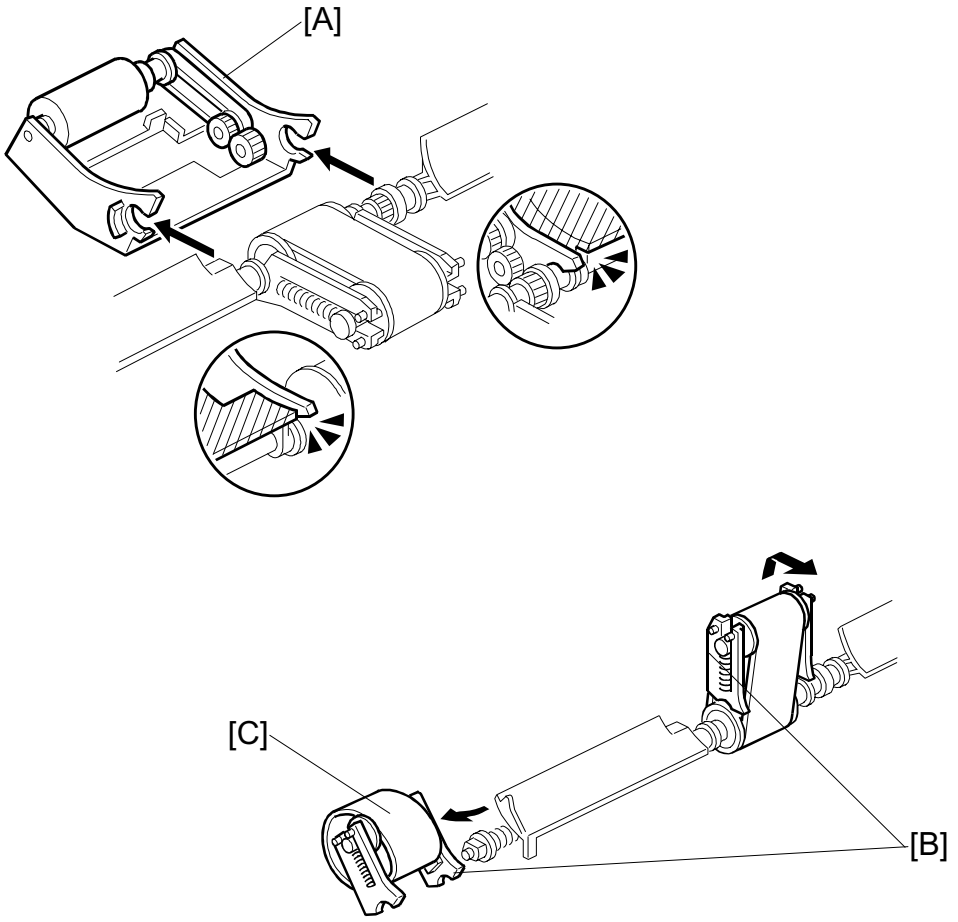
1. Remove the front and rear covers.
2. Remove the left cover [A].
3. Remove the lower left stay unit [B] (2 screws).

3.4 PICK-UP ROLLER



1. Remove the original feed unit.
2. Replace the pick-up roller [A] (1 snap ring).

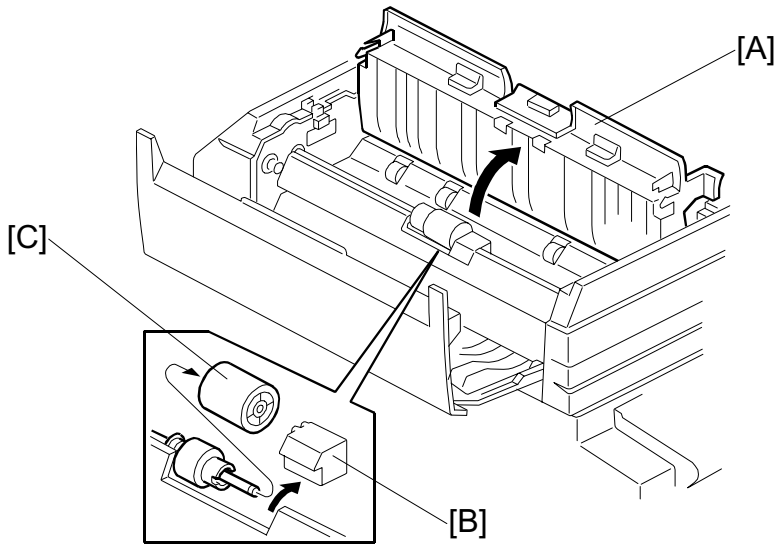
3.5 FEED BELT



1. Remove the original feed unit.
2. Open the paper feed guide [A].
3. Remove the belt holders [B].
4. Replace the feed belt [C].

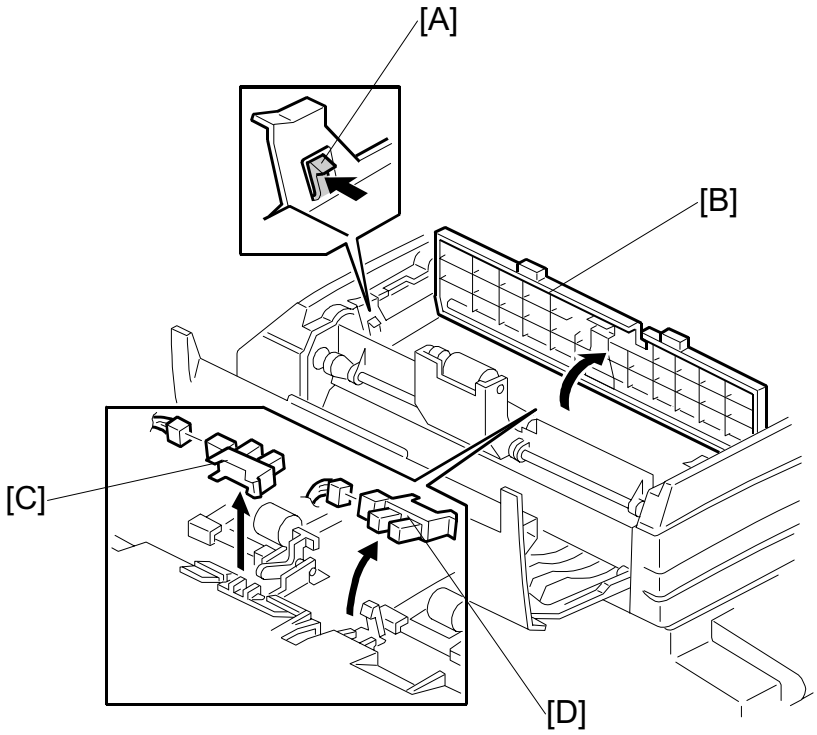
3.6 SEPARATION ROLLER

4



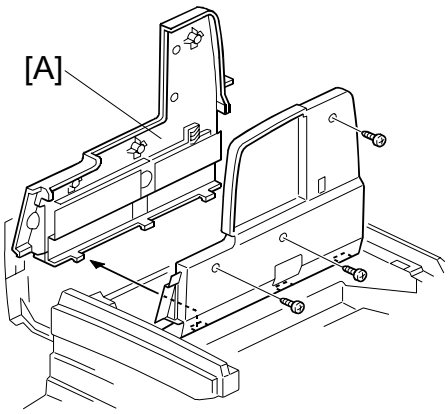
1. Lift the original feed guide [A].
2. Remove the separation roller cover [B].
3. Replace the separation roller [C].

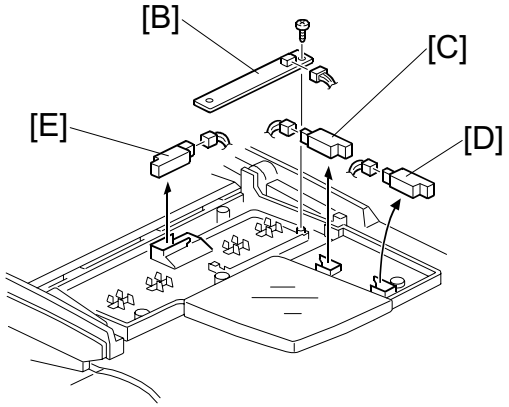
3.7 ORIGINAL SET/ORIGINAL REVERSE SENSOR



1. Open the left cover.
2. While pushing the left and right pawls [A], open the original feed guide plate [B].
3. Remove the original set sensor [C]
4. Remove the original reverse sensor [D].

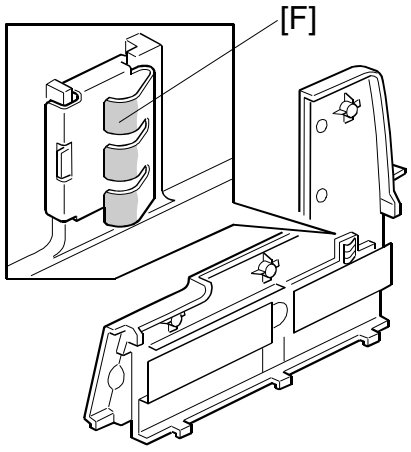
3.8 ORIGINAL LENGTH, WIDTHSENSOR BOARD AND TRAILING EDGE SENSOR



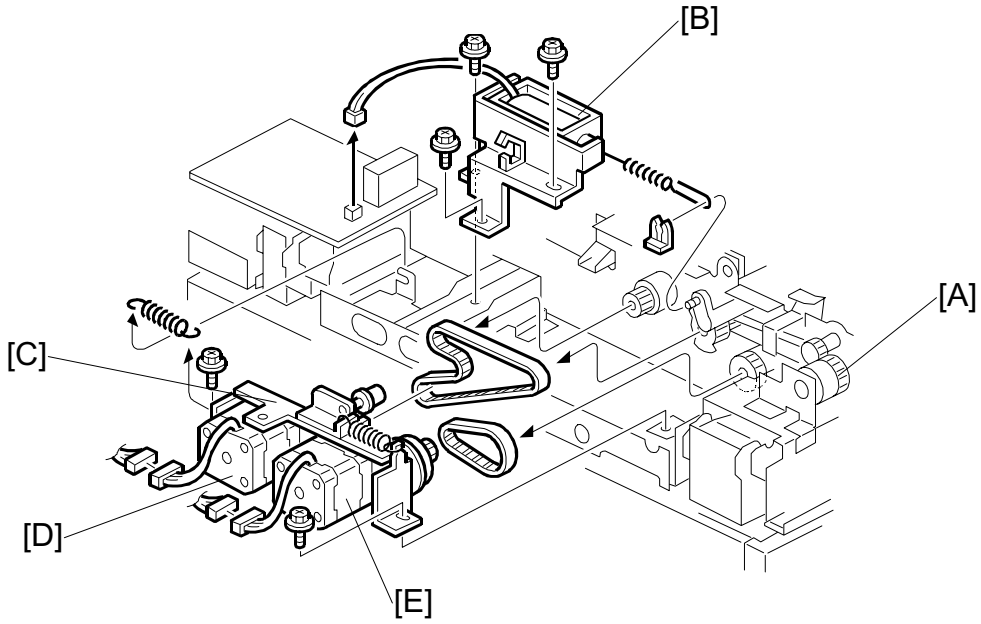


1. Open the original table [A].
2. Remove the upper part of the table (3 screws).
3. Replace the width sensor board [B], length sensor (–1 [C] and –2 [D]) and trailing edge sensor [E].

NOTE: To ensure proper detection of paper size, after wiping off the sensor board and terminal plate with a dry cloth (or cloth with alcohol), apply silicone grease (KS-660) to the terminal plate [F].



3.9 DF FEED CLUTCH/DF PICK-UP SOLENOID/ TRANSPORT/DF FEED MOTORS



First remove the rear cover. Then follow the instructions below for each part replacement:

DF Feed Clutch

1. Replace the DF feed clutch [A] (1 E-ring, 1 connector).

Pick-up Solenoid

1. Replace the pick-up solenoid [B] (3 screws, 1 snap ring, 1 connector).

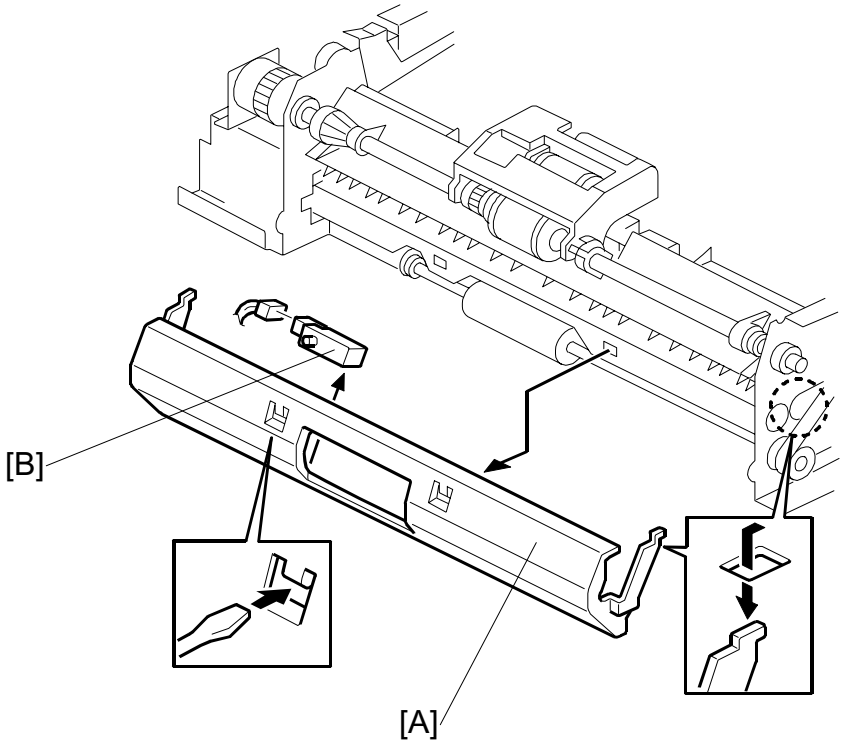
Transport Motor

1. Remove the bracket [C] (2 screws).
2. Replace the transport motor [E] (2 screws, 1 connector).

DF Feed Motor

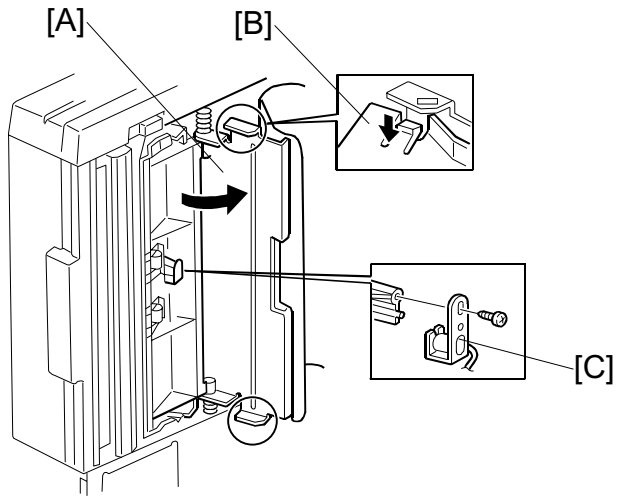
1. Remove the bracket [C] (2 screws).
2. Replace the DF feed motor [D] (2 screws, 1 connector).

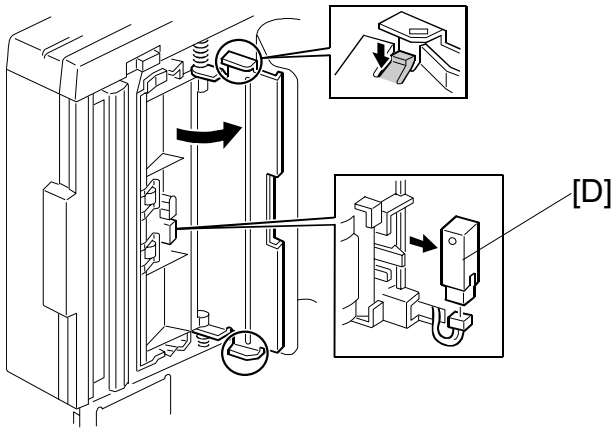
3.10 REGISTRATION SENSOR



1. Remove the front and rear covers.
2. Remove the transport guide plate [A].
3. Replace the registration sensor [B].

3.11 STAMP SOLENOID AND ORIGINAL EXIT SENSOR





1. Remove the rear cover (1 connector). Also remove the upper cover (the exit tray).
2. Open the exit guide plate [A]. Next, detach the unit by inserting a screwdriver or other tool into one of the small openings [B] on either side of the guide plate holder and pushing firmly.
3. Remove the stamp solenoid [C] (1 screw).
4. Remove the original exit sensor [D] (1 connector).

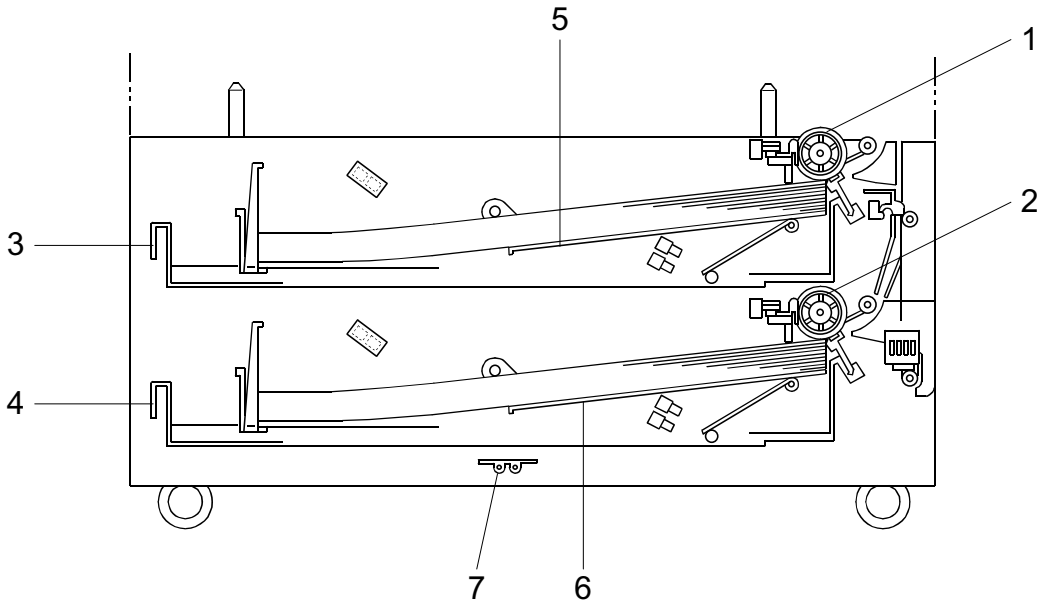
PAPER TRAY UNIT
A860

1. OVERALL MACHINE INFORMATION

1.1 SPECIFICATIONS

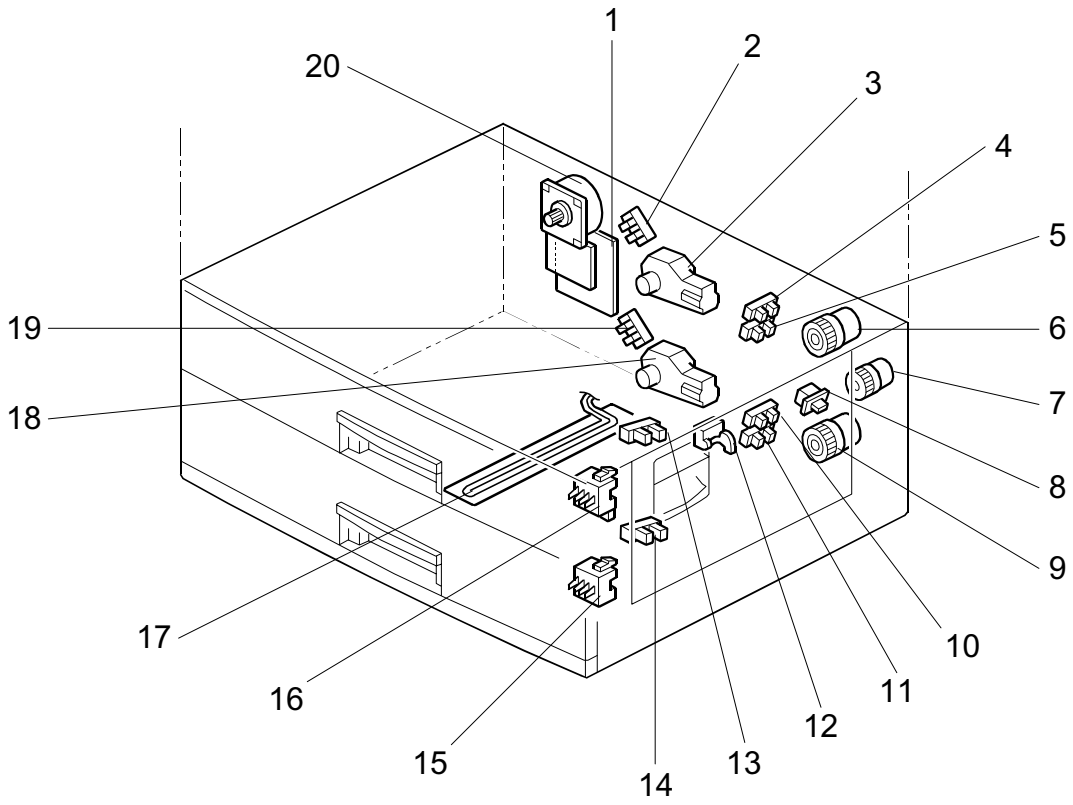
Paper Size:	A5 to A3 HLT lengthwise to DLT
Paper Weight:	60 ~ 105 g/m^2, 16 ~ 28 lbs.
Tray Capacity:	500 sheets (80 g/m^2, 20 lbs.) x 2 trays
Paper Feed System:	Feed roller and friction pad
Paper Height Detection:	4 steps (100%, 70%, 30%, Near end)
Power Source:	24 VDC, 5 VDC (from the copier) 120 Vac: 120 V version, from the copier when the optional tray heater is installed 220 ~ 240 Vac: 230 V version, from the copier when the optional tray heater is installed
Power Consumption:	Max: 30 W (Copying) 23 W (Optional Tray Heater On) Average: 17 W (Copying) 15 W (Optional Tray Heater On)
Weight:	25 kg (55 lbs.)
Size (W x D x H):	550 mm x 520 mm x 271 mm

1.2 MECHANICAL COMPONENT LAYOUT



1. Upper paper feed roller
2. Lower paper feed roller
3. Upper tray
4. Lower tray
5. Upper bottom plate
6. Lower bottom plate
7. Optional tray heater

1.3 ELECTRICAL COMPONENT LAYOUT

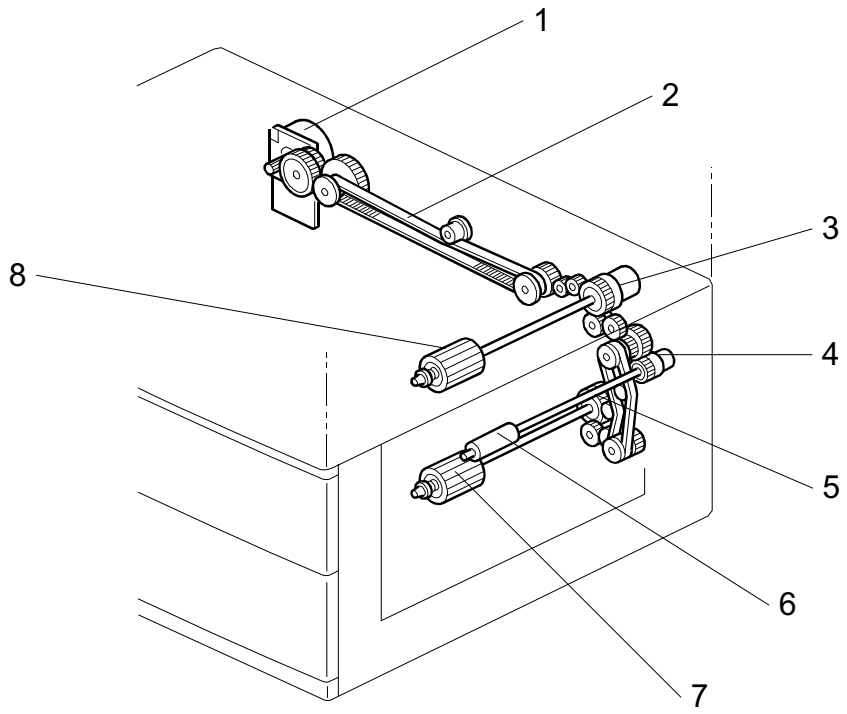


1. Tray main board
2. Upper lift sensor
3. Upper lift motor
4. Upper paper height 2 sensor
5. Upper paper height 1 sensor
6. Upper paper feed clutch
7. Relay clutch
8. Tray cover switch
9. Lower paper feed clutch
10. Lower paper height 2 sensor
11. Lower paper height 1 sensor
12. Vertical transport sensor
13. Upper paper end sensor
14. Lower paper end sensor
15. Lower paper size switch
16. Upper paper size switch
17. Optional tray heater
18. Lower lift motor
19. Lower lift sensor
20. Tray motor

1.4 ELECTRICAL COMPONENT DESCRIPTION

Symbol	Name	Function	Index No.
Motors			
M1	Tray	Drives all rollers.	20
M2	Upper Lift	Lifts the upper tray bottom plate.	3
M3	Lower Lift	Lifts the lower tray bottom plate.	18
Sensors			
S1	Upper Lift	Detects when the paper in the upper tray is at the correct feed height.	2
S2	Lower Lift	Detects when the paper in the lower tray is at the correct feed height.	19
S3	Upper Paper End	Informs the copier when the upper tray runs out of paper.	13
S4	Lower Paper End	Informs the copier when the lower tray runs out of paper.	14
S5	Vertical Transport	Detects misfeeds.	12
S6	Upper Paper Height 1	Detects the amount of paper in the upper tray.	5
S7	Upper Paper Height 2	Detects the amount of paper in the upper tray.	4
S8	Lower Paper Height 1	Detects the amount of paper in the lower tray.	11
S9	Lower Paper Height 2	Detects the amount of paper in the lower tray.	10
Switches			
SW1	Tray Cover	Detects whether the tray cover is opened or not.	8
SW2	Upper Paper Size	Determines what paper size is in the upper tray.	15
SW3	Lower Paper Size	Determines what paper size is in the lower tray.	16
Magnetic Clutches			
MC1	Upper Paper Feed	Starts paper feed from the upper tray.	6
MC2	Lower Paper Feed	Starts paper feed from the lower tray.	9
MC3	Relay	Drives the relay rollers.	7
PCBs			
PCB1	Tray Main	Controls the paper tray unit and communicates with the copier.	1
Others			
H1	Optional Tray Heater	Removes humidity from the paper in the trays.	17

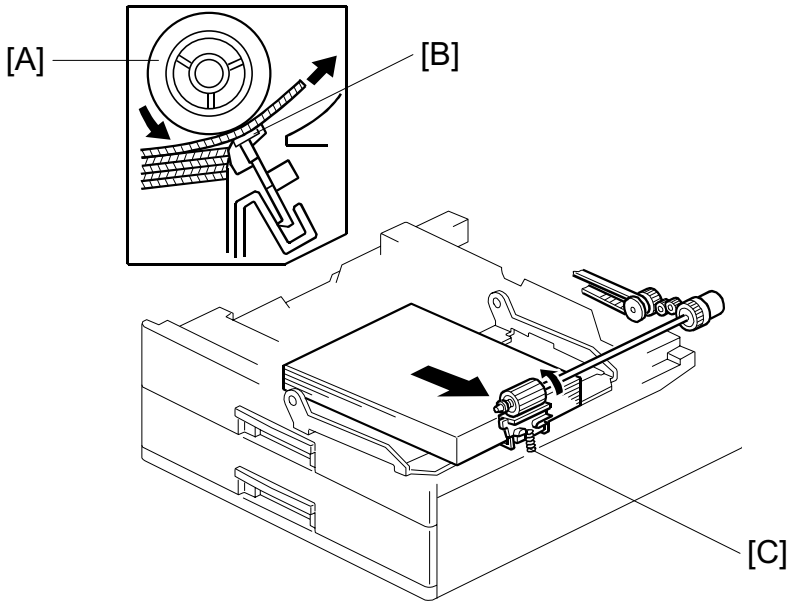
1.5 DRIVE LAYOUT



1. Tray motor
2. Drive belt
3. Upper paper feed clutch
4. Relay clutch
5. Lower paper feed clutch
6. Relay roller
7. Lower paper feed roller
8. Upper paper feed roller

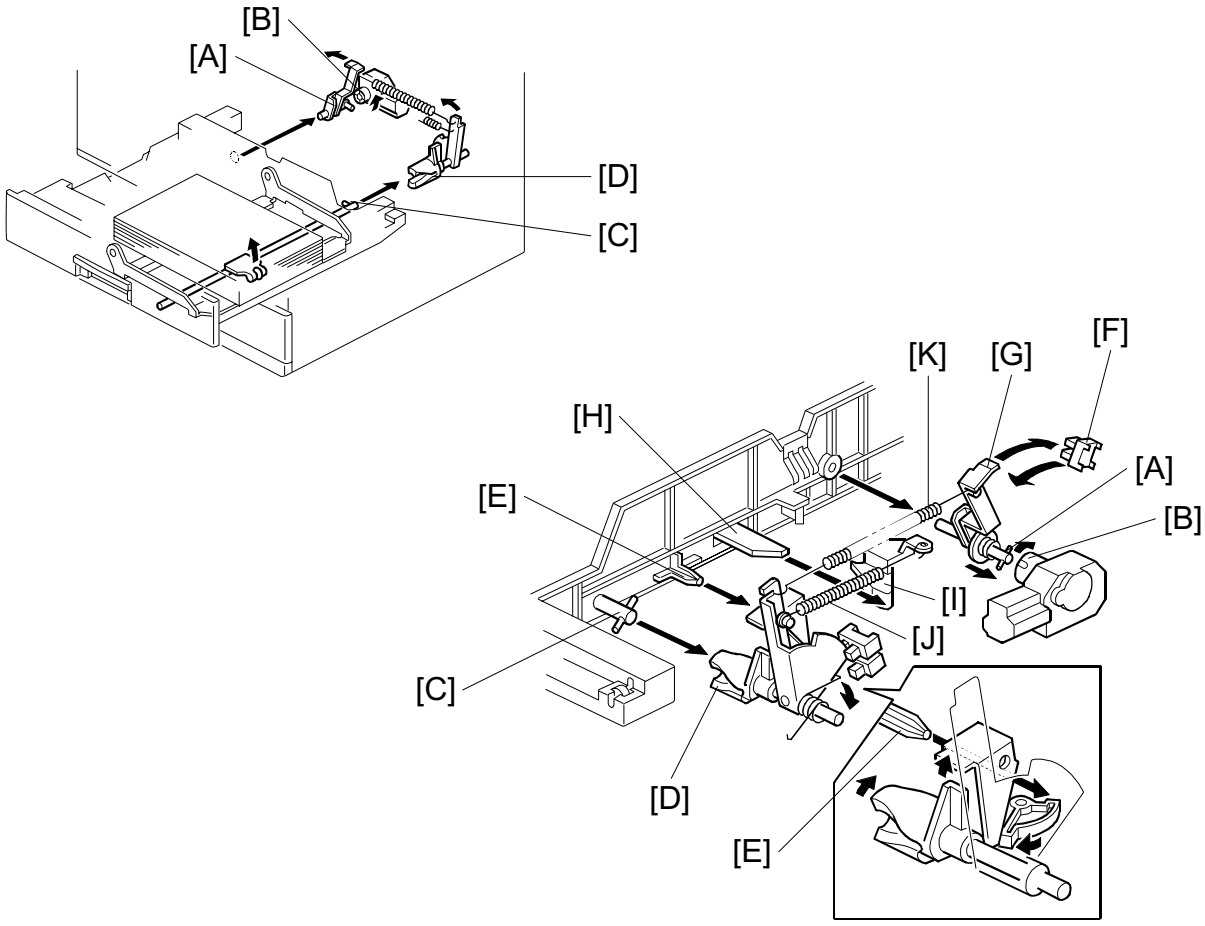
2. DETAILED DESCRIPTIONS

2.1 PAPER FEED AND SEPARATION MECHANISM



The paper tray holds 500 sheets. 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].

2.2 PAPER LIFT MECHANISM



The paper size switch detects when the tray is pushed in.

When the paper tray is pushed into the machine, the pin [A] for the lift motor pressure shaft engages the lift motor coupling [B] and the pin [C] for the bottom plate lift shaft in the tray engages the bottom plate pressure lever coupling [D]. The pin [E] on the rear of the tray pushes the lock lever so that the lift motor can lift the bottom plate pressure lever.

The lift motor turns on, and turns clockwise as viewed on the diagram. The main pressure spring [K] pulls the bottom plate pressure lever, and this lifts the tray bottom plate.

When the top of the stack touches the feed roller, the motor cannot pull up the plate any more, so it pulls the actuator [G] into the lift sensor [F].

The pressure of the feed roller on the paper is now too high, so the lift motor reverses to reduce this pressure. It reverses for 300 ms or 600 ms, depending on the paper size. For smaller paper, it reverses the larger amount (600 ms) to reduce the pressure more.

The paper size thresholds for this feature depend on SP1-908-8, 9, 17, and 18. (Note that there are two paper size thresholds for each tray: small and middle. Some models only use the small threshold.) The amount of reverse depends on SP 1-908-1, 2, 3, 10, 11, and 12. (See the table later in this section for details of how these SP modes work.)

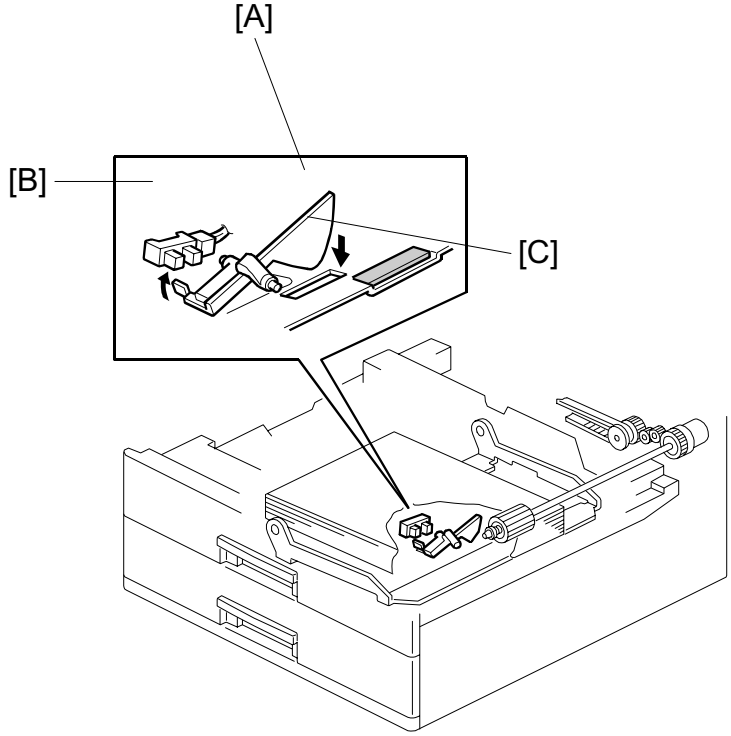
For A4-width paper or wider, a projection [H] on the side fence engages the secondary pressure spring [J] through a lever [I] . Then, the secondary pressure spring [J] applies paper feed pressure in addition to the main pressure spring [K], to ensure that extra pressure is applied to wider paper.

As stated earlier, various SP modes control this mechanism. The following table summarizes them.

No Middle Size Programmed (Default)	**With Middle Size Programmed**
Paper width: Tray 1: More than 1-908-8 Tray 2: More than 1-908-17 (Default: Wider than HLT) Amount of reverse: Tray 1: 1-908-1 Tray 2: 1-908-10 (Default 300 ms)	Paper width: Tray 1: More than 1-908-9 Tray 2: More than 1-908-18 Amount of reverse: Tray 1: 1-908-1 Tray 2: 1-908-10
Paper width: Tray 1: 1-908-8 or less Tray 2: 1-908-17 or less (Default: HLT or narrower) Amount of reverse: Tray 1: 1-908-2 Tray 2: 1-908-11 (Default: 600 ms)	Paper width: Tray 1: More than 1-908-8, up to and including 1-908-9 Tray 2: More than 1-908-17, up to and including 1-908-18 Amount of reverse: Tray 1: 1-908-3 Tray 2: 1-908-12
	Paper width: Tray 1: 1-908-8 or less Tray 2: 1-908-17 or less Amount of reverse: Tray 1: 1-908-2 Tray 2: 1-908-11

When the paper tray is pulled out, the pins [A, C] disengage from the couplings [B, D], and the bottom plate drops. To make it easier to push the tray in, the lift motor rotates backwards 1.7 seconds to return the bottom plate pressure lever coupling [D] to the original position.

2.3 PAPER END DETECTION

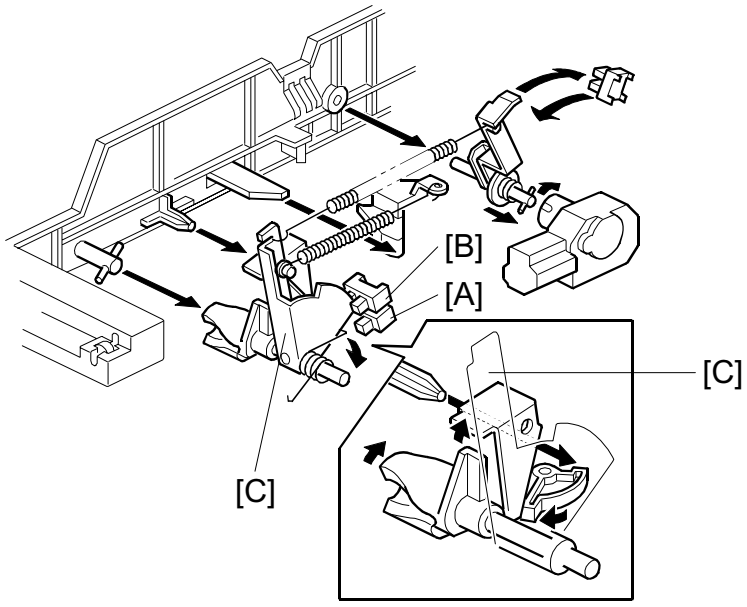


If there is some paper in the paper tray, the paper stack raises the paper end feeler [A] and the paper end sensor [B] is deactivated.

When the paper tray runs out of paper, the paper end feeler drops into the cutout [C] in the tray bottom plate and the paper end sensor is activated.

When the paper tray is drawn out with no paper in the tray, the shape of the paper end feeler causes it to lift up.

2.4 PAPER HEIGHT DETECTION



The amount of paper in the tray is detected by the combination of on/off signals from two paper height sensors [A] and [B].

When the amount of paper decreases, the bottom plate pressure lever [C] moves the actuator up.

The following combination of sensor signals is sent to the copier.

Amount of Paper	Paper Height Sensor 1	Paper Height Sensor 2
Near End	OFF	ON
30%	ON	ON
70%	ON	OFF
100%	OFF	OFF

When the tray contains paper of a small width, the paper feed pressure may become too low when the thickness of the remaining stack of paper has decreased. The lift motor rotates forward 300 ms after the sensor detects a certain amount of paper remaining in the tray to increase paper feed pressure, simulating the pressure generated by a full tray.

The amount of remaining paper depends on SP modes 1-908-6, 7, 15, and 16. The amount of forward rotation depends on SP1-908-4, 5, 13, and 14. Note that there are two paper size thresholds for each tray: small and middle (this is the same as for the paper lift mechanism described earlier). Some models only use the small threshold. The paper size thresholds depend on SP1-908-8, 9, 17, and 18.

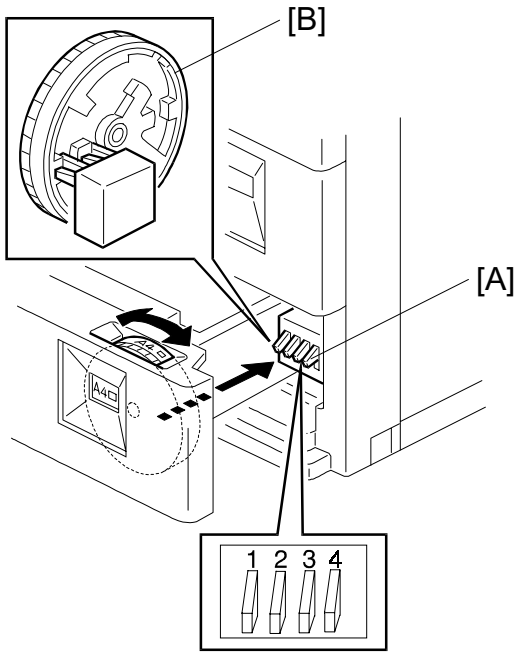
The following table summarizes how these SP modes work.

No Middle Size Programmed (Default)	With Middle Size Programmed
Paper width: Tray 1: More than 1-908-8 Tray 2: More than 1-908-17 (Default: Wider than HLT) Amount of forward rotation: None	Paper width: Tray 1: More than 1-908-9 Tray 2: More than 1-908-18 Amount of forward rotation: None
Paper width: Tray 1: 1-908-8 or less Tray 2: 1-908-17 or less (Default: HLT or narrower) Amount of remaining paper: Tray 1: 1-908-6 Tray 2: 1-908-15 (Default: When near-end is detected) Amount of forward rotation: Tray 1: 1-908-4 Tray 2: 1-908-13 (Default: 300 ms)	Paper width: Tray 1: More than 1-908-8, up to and including 1-908-9 Tray 2: More than 1-908-17, up to and including 1-908-18 Amount of remaining paper: Tray 1: 1-908-7 Tray 2: 1-908-16 Amount of forward rotation: Tray 1: 1-908-5 Tray 2: 1-908-14
	Paper width: Tray 1: 1-908-8 or less Tray 2: 1-908-17 or less Amount of remaining paper: Tray 1: 1-908-6 Tray 2: 1-908-15 Amount of forward rotation: Tray 1: 1-908-4 Tray 2: 1-908-13

2.5 PAPER SIZE DETECTION

SW / Size	1	2	3	4
A3, F (8 1/2" x 13")	●	●	●	❍
A4 Lengthwise	●	❍	●	❍
A4 Sideways	●	❍	❍	❍
A5 Sideways, 11" x 17"	●	●	❍	❍
B4, 8 1/2" x 14"	❍	●	❍	❍
B5 Sideways, 8 1/2" x 11"	❍	❍	❍	❍
B5 Lengthwise, 11" x 8 1/2"	❍	❍	●	❍
* (Asterisk)	❍	❍	●	●

●: ON (Not pushed)
❍: OFF (Pushed)



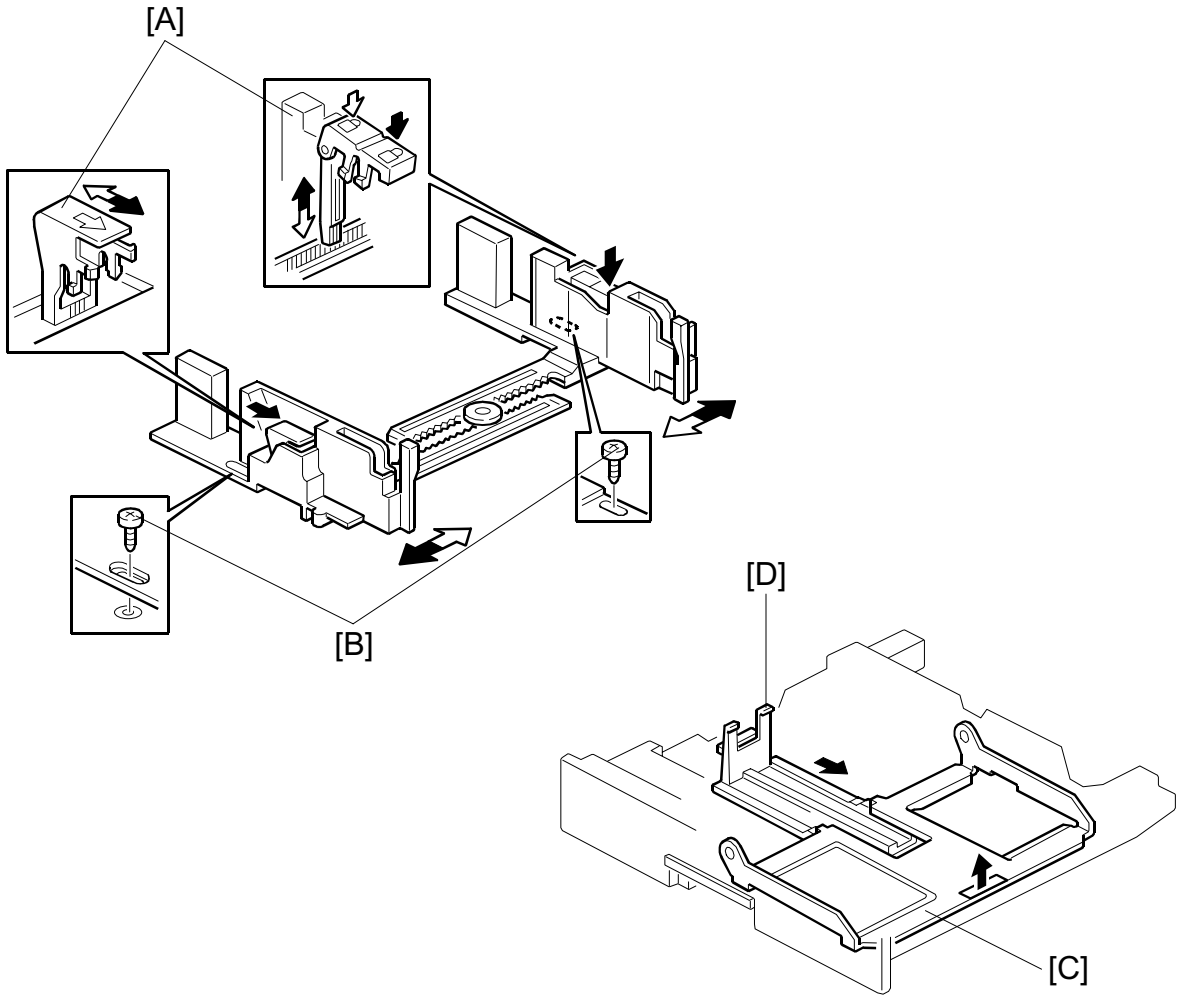
There are four paper size microswitches [A] on the front right plate of the paper tray unit. The switches are actuated by a paper size actuator [B] behind the paper size indicator plate, which is on the front right of the tray.

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.

2.6 SIDE AND END FENCES



Side Fences

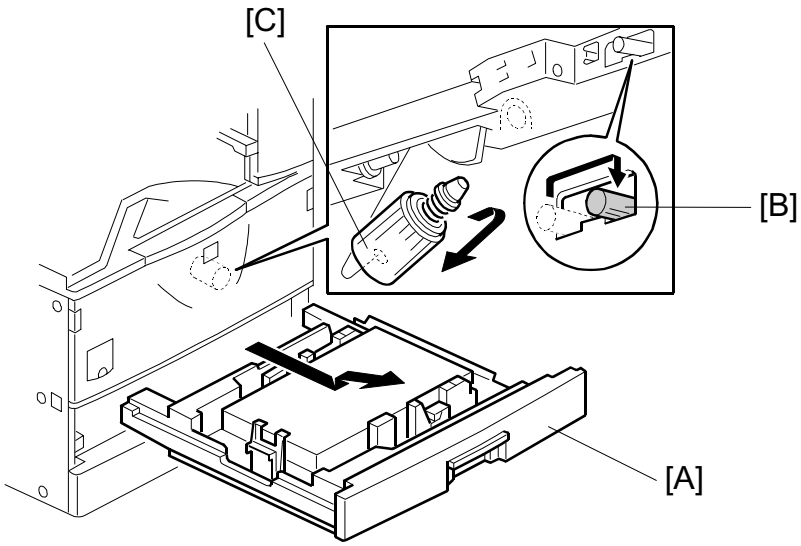
If the tray is full of paper and it is pushed in strongly, the fences may deform or bend. This may cause the paper to skew or the side-to-side registration to be incorrect. To correct this, each side fence has a stopper [A] attached to it. Each side fence can be secured with a screw [B], for customers who do not want to change the paper size.

End Fence

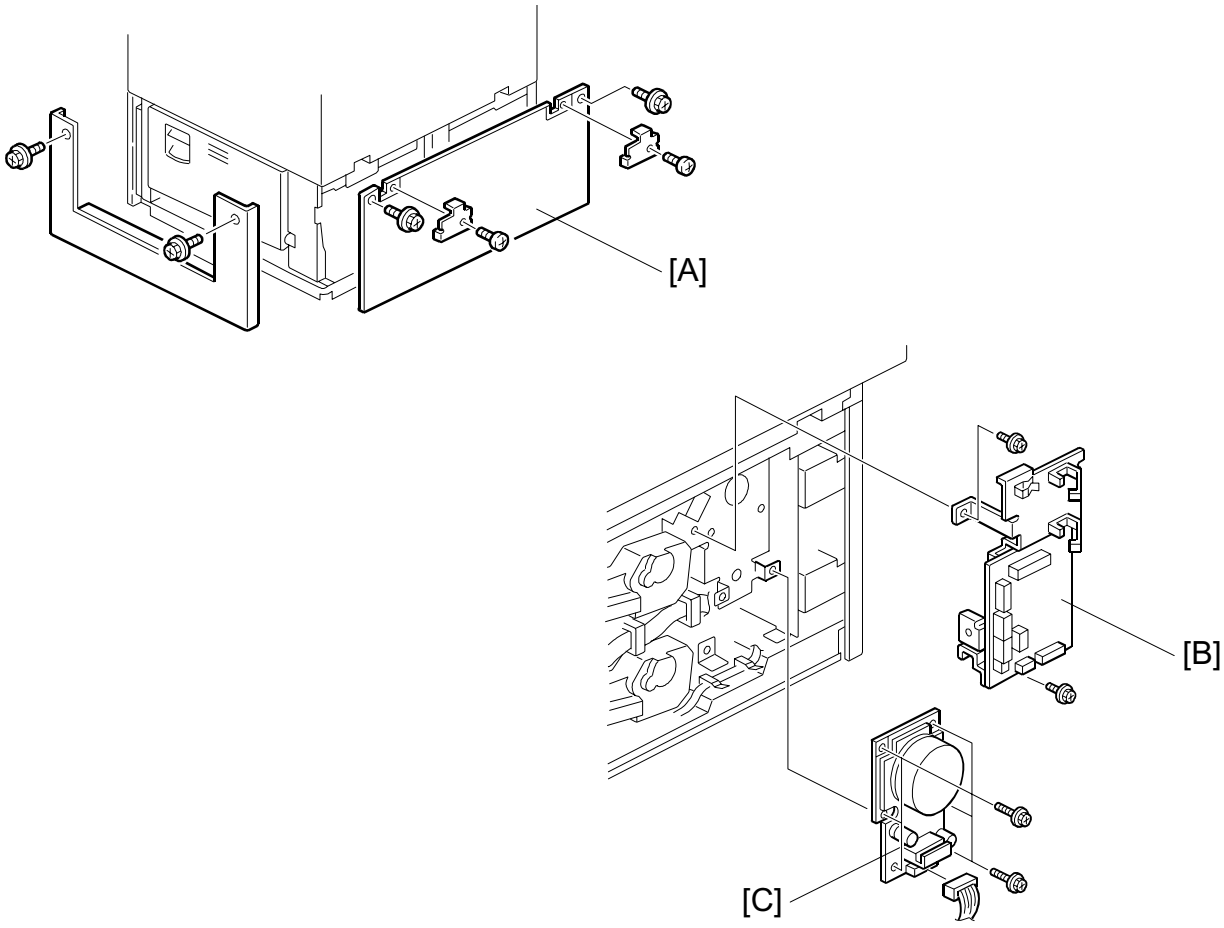
As the amount of paper in the tray decreases, the bottom plate [C] lifts up gradually. The end fence [D] is connected to the bottom plate. When the tray bottom plate rises, the end fence moves forward and pushes the back of the paper stack to keep it squared up.

3. REPLACEMENT AND ADJUSTMENT

3.1 FEED ROLLER REPLACEMENT



1. Remove the paper tray [A].
2. Move the release lever [B] to the front.
3. Pull the feed roller [C] to the operation side and remove it.
4. Replace the feed roller.



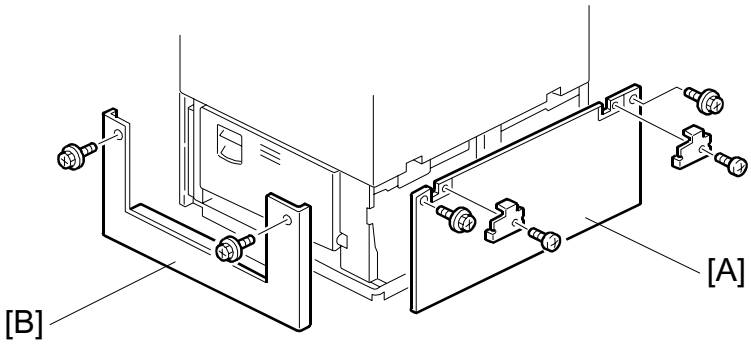
3.2 TRAY MAIN BOARD REPLACEMENT

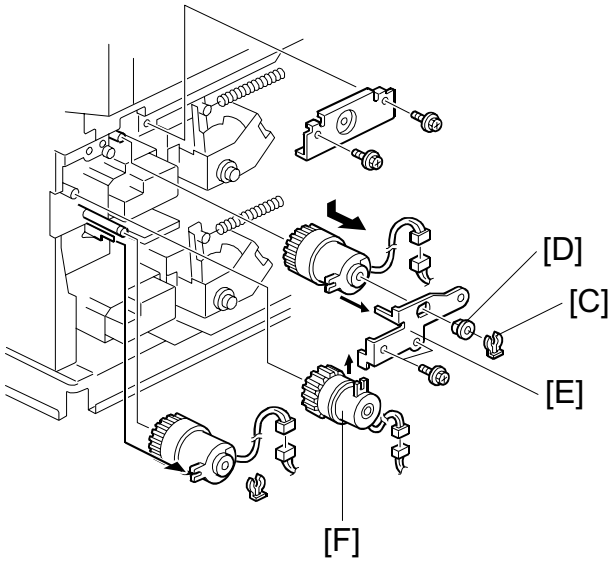
1. Remove the rear cover [A] (4 screws).
2. Replace the tray main board [B] (4 screws and 8 connectors).

3.3 TRAY MOTOR REPLACEMENT

1. Remove the rear cover (4 screws).
2. Disconnect 8 connectors from the tray main board [B].
3. Remove the tray main board with the bracket (2 screws).
4. Remove the tray motor [C] (6 screws and 1 connector).

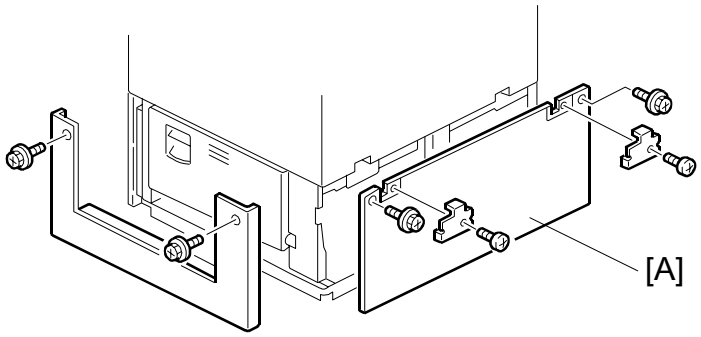
3.4 RELAY CLUTCH REPLACEMENT

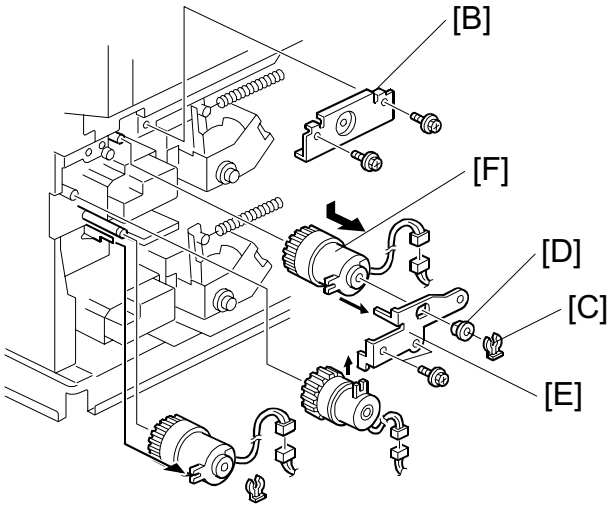




1. Remove the rear cover [A] (4 screws).
2. Remove the right cover [B] (2 screws).
3. Remove the snap ring [C].
4. Remove the bushing [D].
5. Remove the stopper bracket [E] (2 screws).
6. Replace the relay clutch [F] (1 connector).

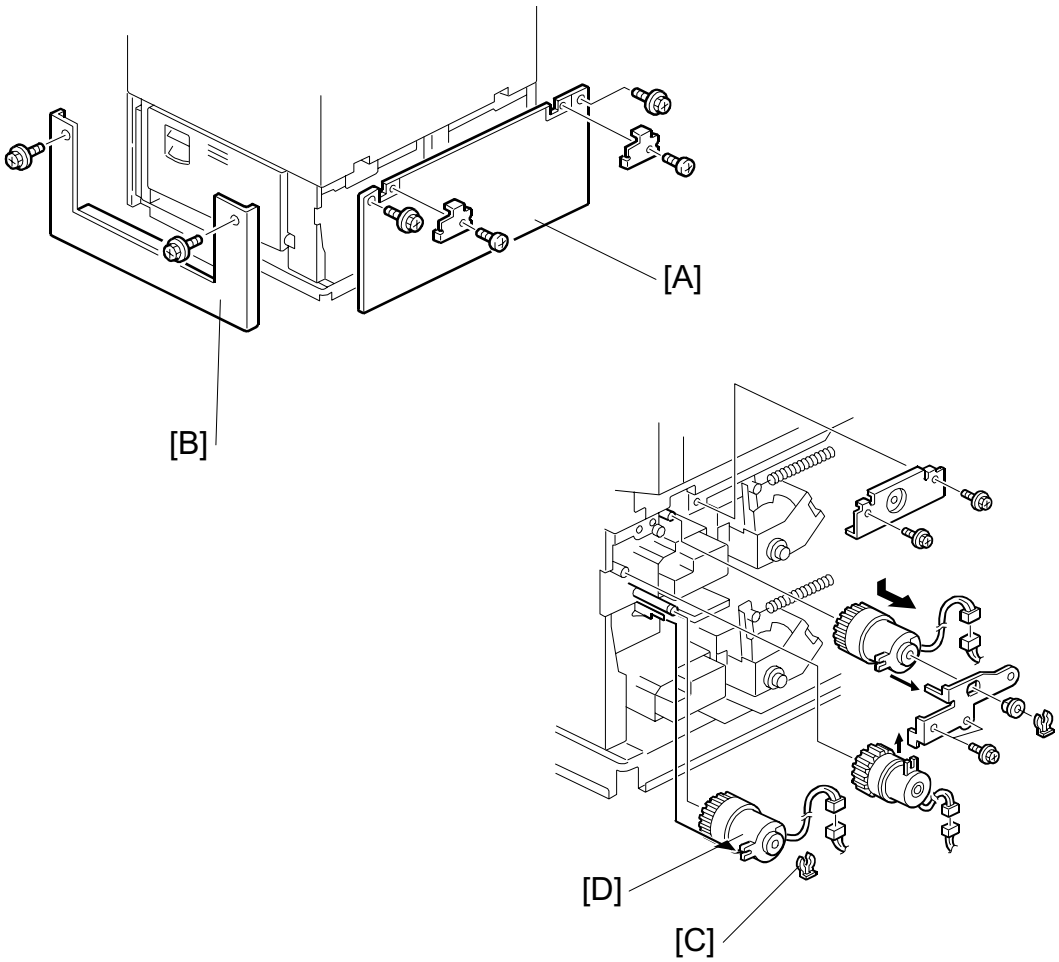
3.5 UPPER PAPER FEED CLUTCH REPLACEMENT





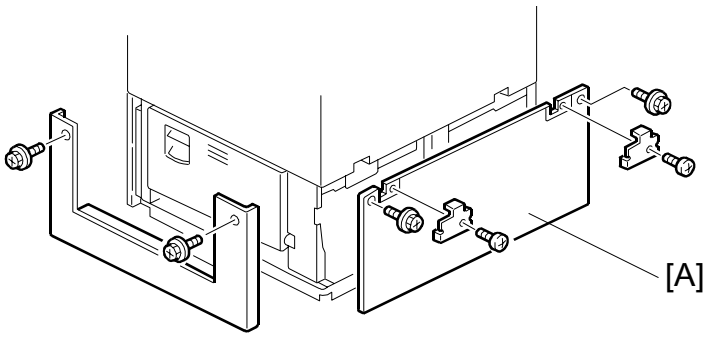
1. Remove the rear cover [A] (4 screws).
2. Remove the bracket [B] (2 screws).
3. Remove the snap ring [C].
4. Remove the bushing [D].
5. Remove the stopper bracket [E] (2 screws).
6. Replace the upper paper feed clutch [F] (1 connector).

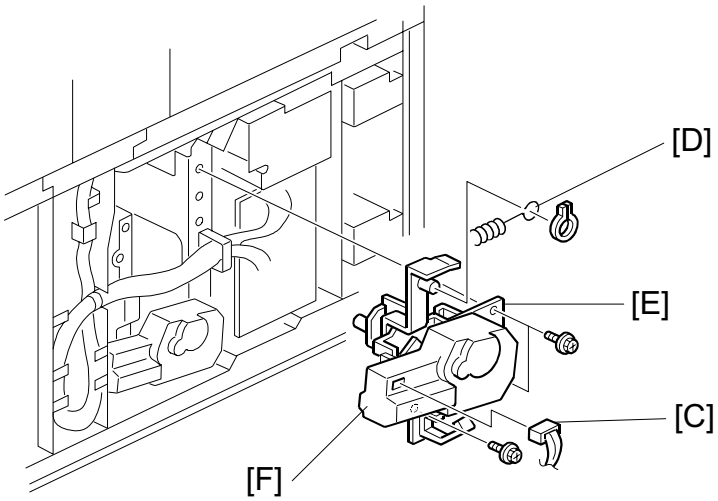
3.6 LOWER PAPER FEED CLUTCH REPLACEMENT



1. Remove the rear cover [A] (4 screws).
2. Remove the bracket [B] (2 screws)
3. Remove the snap ring [C].
4. Replace the lower paper feed clutch [D].

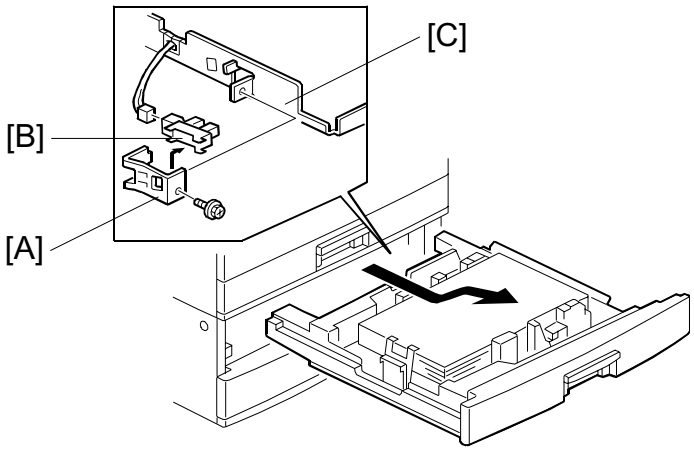
3.7 LIFT MOTOR REPLACEMENT





1. Pull out the paper tray.
2. Remove the rear cover [A] (4 screws).
3. Remove the bracket [B] (2 screws)
4. Disconnect the 2P connector [C].
5. Remove the spring [D].
6. Remove the lift motor unit [E] (3 screws).
7. Remove the lift motor [F] (2 screws).

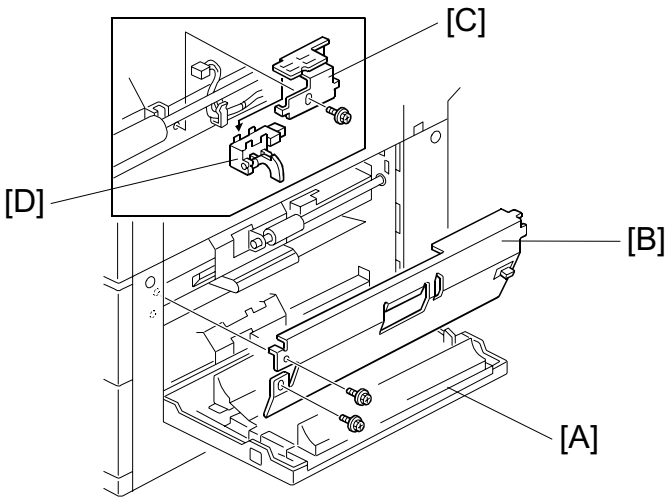
3.8 PAPER END SENSOR REPLACEMENT



1. Remove the paper tray.
2. Remove the paper end sensor bracket [A] (1 screw and 1 connector).
3. Replace the paper end sensor [B].

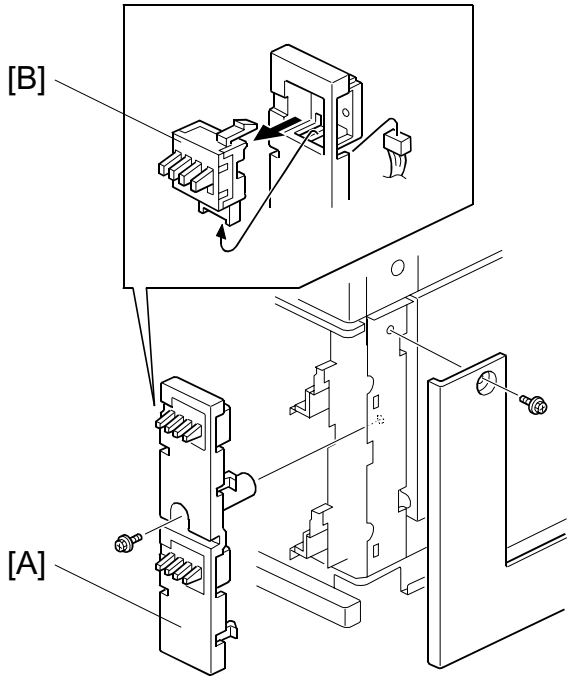
NOTE: After replacing the sensor, pull the sensor cable towards the right side of the frame [C] so that it does not touch the paper in the tray.

3.9 VERTICAL TRANSPORT SENSOR REPLACEMENT



1. Open the right door [A].
2. Remove the right guide plate [B] (2 screws).
3. Remove the vertical transport sensor bracket [C] (1 screw and 1 connector).
4. Replace the vertical transport sensor [D].

3.10 PAPER SIZE SWITCH REPLACEMENT



1. Remove the upper and lower paper trays.
2. Remove the inner cover [A] (2 screws).
3. Replace the paper size switch [B] (1 connector).

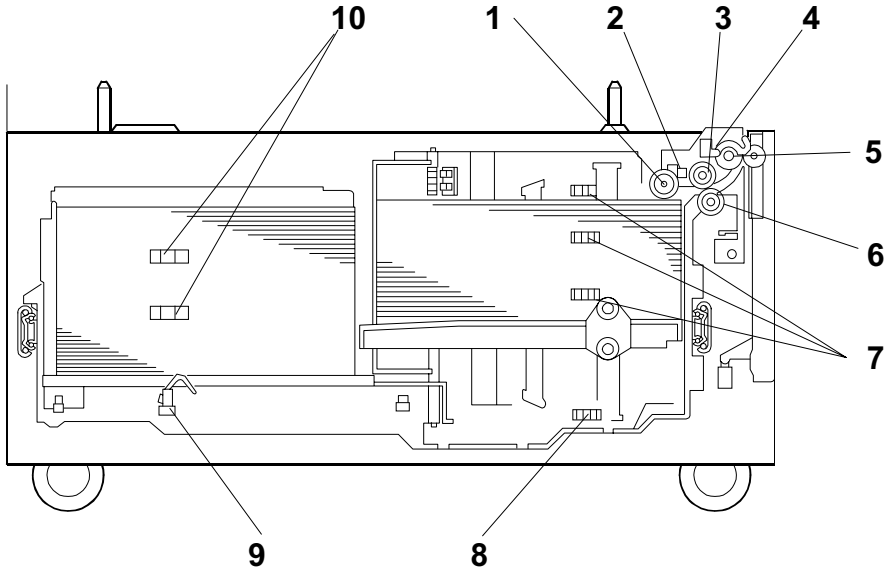
LARGE CAPACITY TRAY
A862

1. OVERALL MACHINE INFORMATION

1.1 SPECIFICATIONS

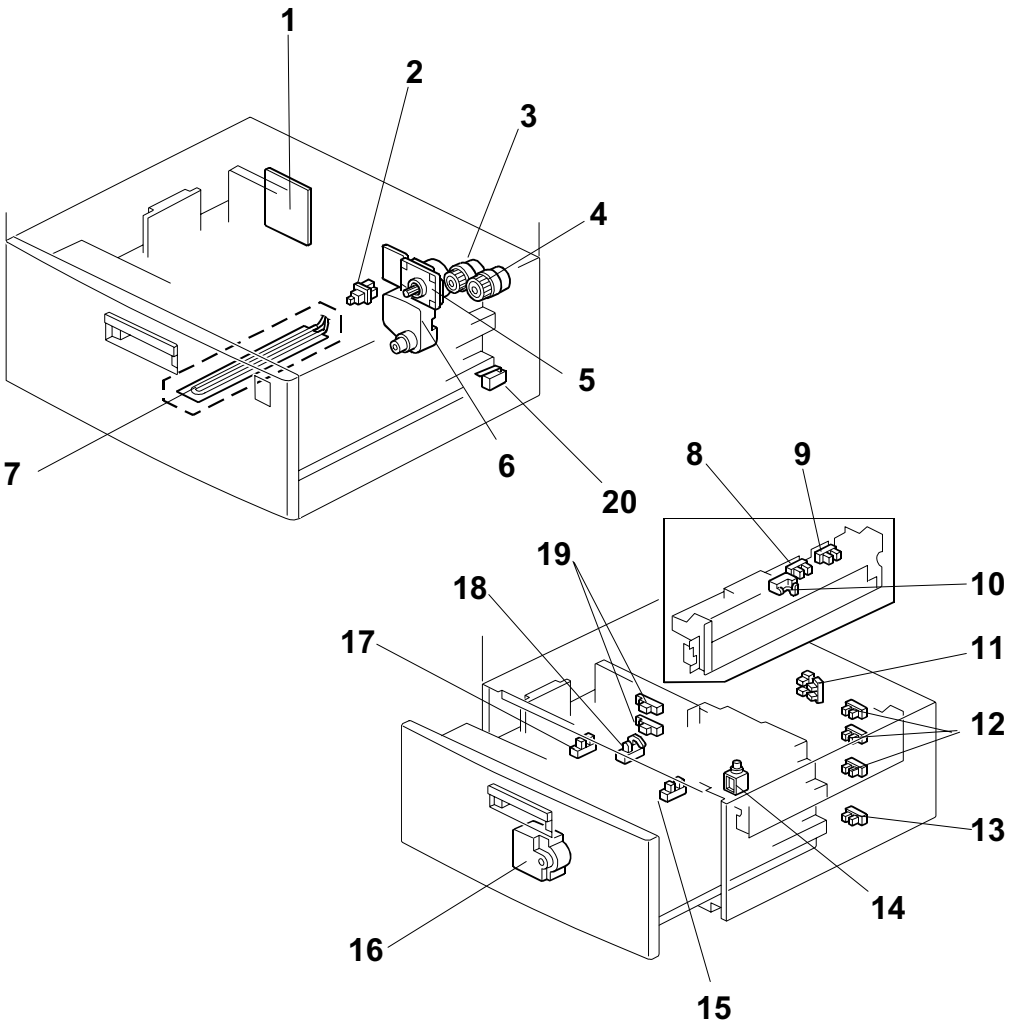
Paper Size:	A4 sideways/LT sideways
Paper Weight:	60 g/m^2 ~ 105 g/m^2, 16 lb ~ 28 lb
Tray Capacity:	2,000 sheets (80 g/m^2, 20lb)
Remaining Paper Detection:	5 steps (100%, 75%, 50%, 25%, Near end)
Power Source:	24 Vdc, 5 Vdc (from copier)
Power Consumption:	26 W (Max.)/14 W (Ave.)
Weight:	25 kg (55 lbs.)
Size (W x D x H):	550 mm x 520 mm x 271 mm

1.2 MECHANICAL COMPONENT LAYOUT



1. Pick-up Roller
2. Upper Limit Sensor
3. Paper Feed Roller
4. Relay Sensor
5. Relay Roller
6. Reverse Roller
7. Paper Height Sensors 1, 2, 3
8. Lower Limit Sensor
9. Left Paper End Sensor
10. Paper Height Sensors 4,5

1.3 ELECTRICAL COMPONENT LAYOUT



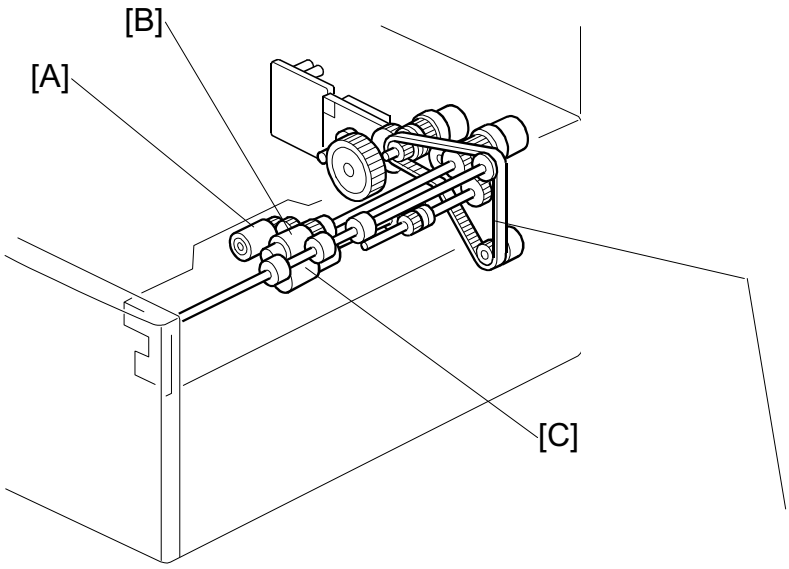
1. Main Board
2. Tray Sensor
3. Relay Clutch
4. Paper Feed Clutch
5. Tray Motor
6. Tray Lift Motor
7. Tray Heater (option)
8. Right Tray Paper End Sensor
9. Upper Limit Sensor
10. Relay Sensor
11. Side Fence Open/Closed Sensors
12. Paper Height Sensors 1, 2, 3
13. Lower Limit Sensor
14. Side Fence Solenoid
15. Rear Fence Return Sensor
16. Rear Fence Motor
17. Rear Fence Home Position Sensor
18. Left Tray Paper End Sensor
19. Paper Height Sensors 4, 5
20. Right Cover Switch

1.4 ELECTRICAL COMPONENT DESCRIPTIONS

Symbol	Name	Function	Index No.
Motors			
M1	Tray Motor	Drives all rollers.	5
M2	Tray Lift Motor	Drives the paper tray up or down.	6
M3	Rear Fence Motor	Moves the rear fence to transfer the paper stack from the paper storage (left) side of the tray to the paper feed (right) side.	16
Sensors			
S1	Right Tray Paper End	Informs the copier when the paper in the right side (paper feed side) of the tray has been used up. If there is a paper stack in the left side (paper storage side), this is moved into the right tray. If there is no paper stack in the left side, paper end is indicated.	8
S2	Relay	Detects the copy paper coming to the relay roller and checks for misfeeds.	10
S3	Upper Limit	Detects when the paper is at the correct paper feed height.	9
S4	Lower Limit	Detects when the tray is completely lowered, to stop the LCT motor.	13
S5	Paper Height 1, 2, 3	Detects the amount of paper remaining in the right side of the tray.	12
S6	Paper Height 4, 5	Detects the amount of paper remaining in the left side of the tray.	19
S7	Rear Fence Home Position	Detects when the rear fence is at H.P.	17
S8	Tray	Detects whether the tray is correctly set.	2
S9	Side Fence Open/Closed	Detects whether the side fence is opened on closed.	11
S10	Rear Fence Return	Detects when the rear fence has moved the paper stack from the left side to the right side.	15
S11	Left Tray Paper End	Informs the copier when there is no paper in the left side (paper storage side) of the tray.	18
Solenoids			
SOL1	Side Fence	Controls open-close movement of the side fence.	14
Magnetic Clutches			
MC1	Paper Feed	Drives the paper feed roller.	4
MC2	Relay	Drives the relay roller.	3
PCBs			
PCB1	Main	Controls the LCT and communicates with the copier.	1
Switches			
SW1	Right Cover	Detects whether the right cover is open.	20

2. DETAILED SECTION DESCRIPTIONS

2.1 PAPER FEED

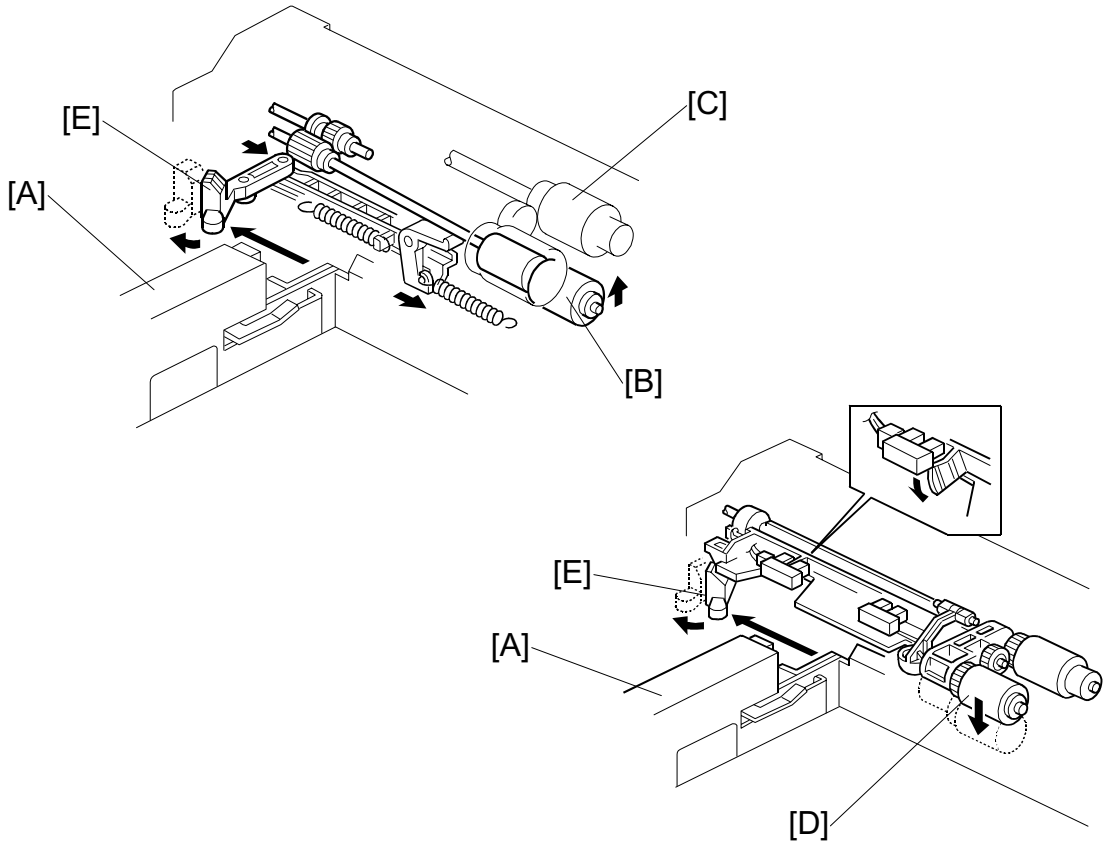


This products uses an FRR (Feed and Reverse Roller) type paper feed mechanism.

The paper feed unit consists of the pickup roller [A], paper feed roller [B], reverse roller [C], and grip and transport rollers.

There is a torque limiter in the back of the reverse roller (ferrite powder type).

2.2 REVERSE ROLLER AND PICK-UP ROLLER RELEASE

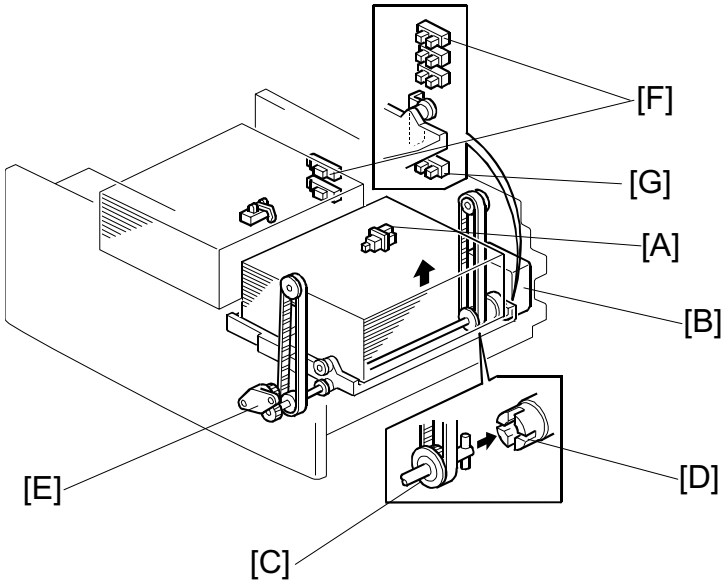


To prevent the paper from being torn when pulling out the paper feed tray, the reverse and pickup rollers are set so that they release automatically.

When the paper tray [A] is not inside the machine, the reverse roller [B] is away from the paper feed roller [C] and the pick-up roller [D] stays in the upper position.

When the paper tray is set into the machine, it pushes the release lever [E]. This causes the pick-up roller [D] to go down into contact with the top sheet of paper and the reverse roller [B] to move up and contact the paper feed roller.

2.3 TRAY LIFT



When the paper feed tray is put in the machine, the tray switch [A] on the back face turns on and the tray lift motor [B] starts up. The base plate lift shaft [C] is coupled to the lift motor at shaft [D], so the base plate of the tray is lifted. After a short while, the top of the paper stack contacts the pick-up roller and lifts it up.

When this occurs, the actuator enters the upper limit sensor, the sensor turns off and the lift motor stops. When paper in the tray is used up, the pick-up roller is gradually lowered, and the actuator leaves the upper limit sensor (turning the sensor on). When this happens, the lift motor begins turning again. The tray will then be lifted until the actuator enters the upper limit sensor (turning the sensor off again).

When the tray is removed from the copier, the coupling between the lift motor [B] and base plate lift shaft [C] is broken and the base plate goes into a controlled free fall (using a damper [E] to slow the fall and prevent damage).

2.4 NEAR END/END DETECTION

This tray can hold two stacks of paper, so the machine needs to monitor the status of both these stacks. There are seven sensors to do this.

In the right tray (paper feed side), three height sensors measure the height of the stack, and an end sensor detects when all the paper is used up. As the amount of paper remaining in the tray decreases, the base plate rises and the actuator activates the paper height sensors. When paper runs out in the right tray, the stack in the left tray is moved across to the right tray.

There are also two height sensors ([F] in the diagram on the previous page) and an end sensor in the left tray (paper storage side) ([G] in the diagram on the previous page). When there is no paper in both trays, paper end is detected.

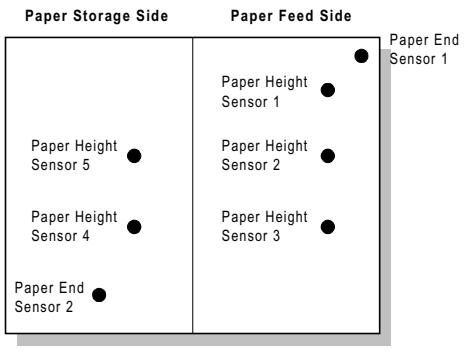
The machine determines the amount of remaining paper based on the sensor outputs, as shown in the following table.

Paper end sensor 1: ❍ = Low (no paper), ● = High (paper present)
Other sensors: ❍ = Low (paper present), ● = High (no paper)

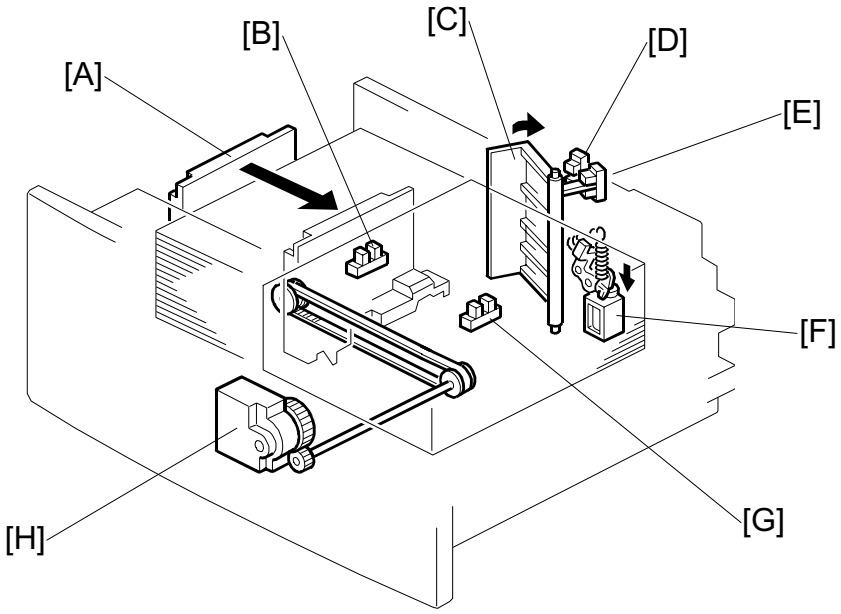
	Amount of paper								
	100%	75%		50%					
Paper Height Sensor 1	❍	❍	❍	❍	❍	❍	●	❍	❍
Paper Height Sensor 2	❍	❍	❍	❍	❍	●	–	❍	●
Paper Height Sensor 3	❍	❍	●	❍	❍	–	–	●	–
Paper End Sensor 1	●	●	●	●	●	●	●	●	●
Paper Height Sensor 4	❍	●	❍	●	●	❍	❍	●	●
Paper Height Sensor 5	❍	❍	❍	●	●	❍	❍	❍	❍
Paper End Sensor 2	❍	❍	❍	❍	●	❍	❍	❍	❍

	Amount of paper							
	25%					Near-end		End
Paper Height Sensor 1	●	❍	❍	❍	❍	●	●	–
Paper Height Sensor 2	–	–	●	❍	●	–	–	–
Paper Height Sensor 3	–	–	–	●	–	–	–	–
Paper End Sensor 1	●	●	●	●	●	●	●	❍
Paper Height Sensor 4	❍	●	●	●	●	●	●	●
Paper Height Sensor 5	●	❍	●	●	●	●	●	●
Paper End Sensor 2	❍	❍	❍	●	●	❍	●	●

The following diagram is the sensor layout, as viewed from the front.



2.5 RIGHT TRAY SIDE FENCE



When the paper in the right tray is used up, the side fence solenoid [F] activates and stays on until the side fence open/closed sensor [E] detects that the fence is open. The rear fence [A] then moves the stack of paper from the left tray into the right tray, as described in the following section. When the stack has been transferred to the right tray, the rear fence return sensor [G] detects the rear fence and then the cpu turns off the side fence open solenoid (closing the side fence).

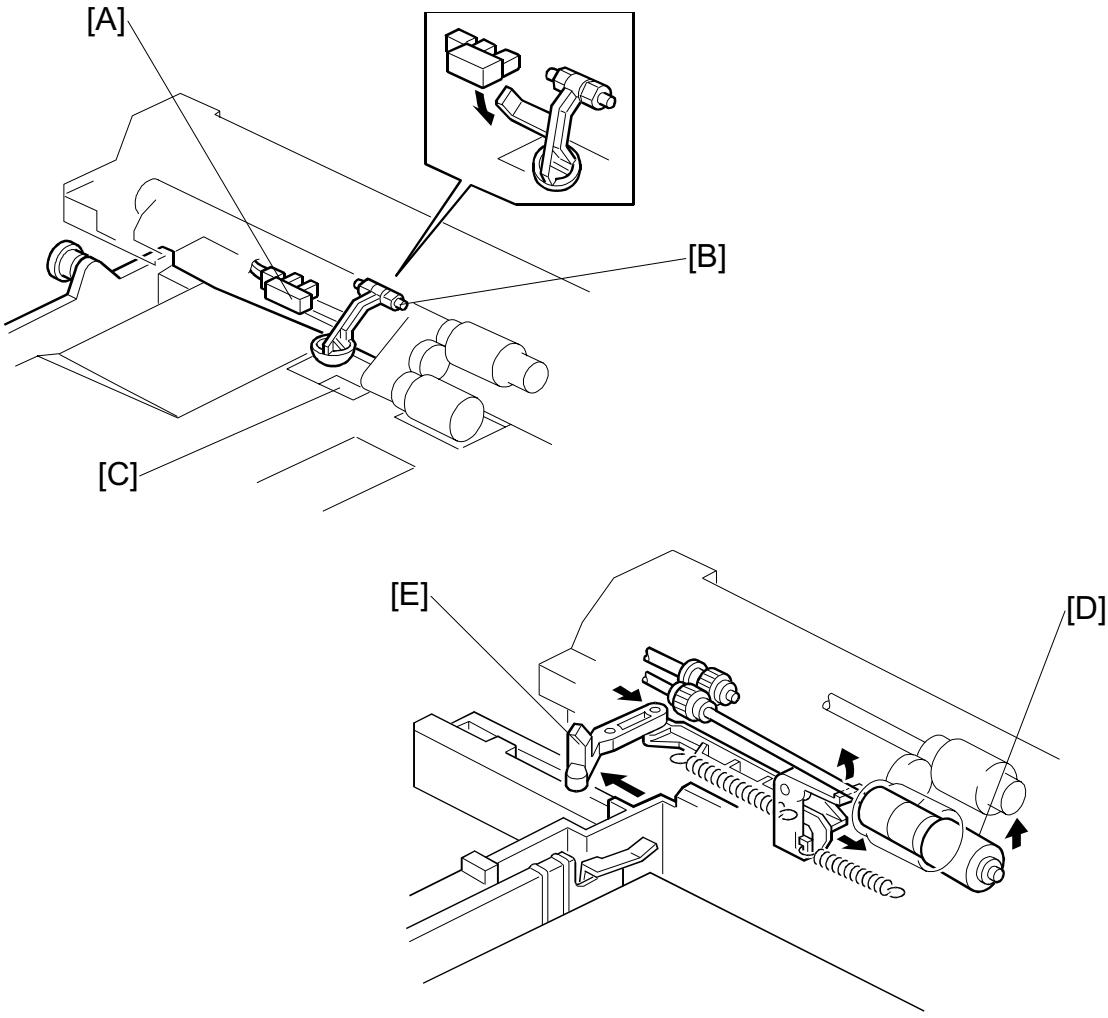
The side fence open/closed sensor [D] detects when the side fence is closed. When it is not closed, the user is prompted at the operation panel to free the mechanism.

2.6 LEFT TRAY REAR FENCE

If the right tray paper end sensor detects that there is no paper in the tray (while the left tray sensor detects that there is still paper in the left tray), the right side fence [C] opens and the rear fence motor [H] turns on. The rear fence of the left tray moves and the paper stack is then transferred from the left tray to the right tray.

When the left tray rear fence activates the rear fence return sensor, the machine detects that the paper stack has been transferred to the right tray and the rear fence motor rotates in the opposite direction. When the rear fence HP sensor [B] comes on, the motor stops.

2.7 RIGHT TRAY PAPER END DETECTION



The paper end sensor [A] detects when copy paper in the right tray runs out.

When there is paper in the tray, the paper pushes up the paper end feeler [B] and causes the actuator to come between the LED and photo diode of the sensor. When paper runs out, the feeler drops and the actuator leaves the photointerruptor, and the machine detects that there is no paper in the tray.

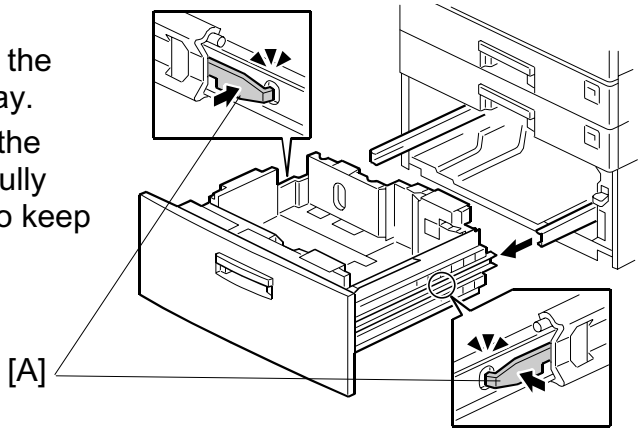
When the tray is being pulled out, the lever [E] lifts the pick-up roller and this also lifts up the feeler.

3. REPLACEMENT AND ADJUSTMENT

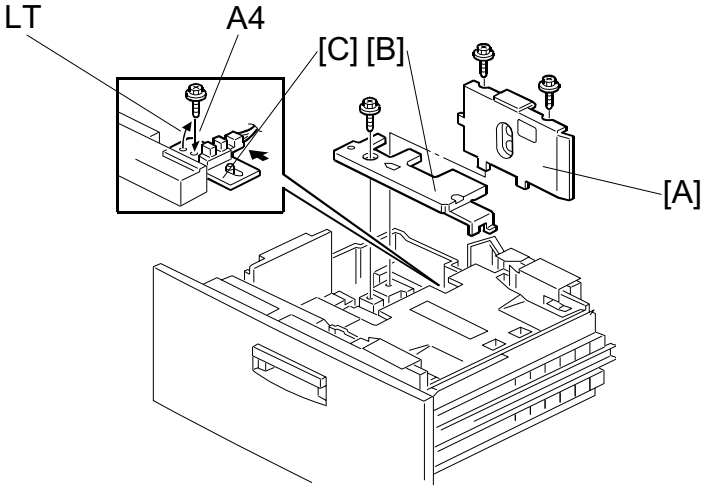
3.1 DETACHING THE TRAY FROM THE MAINFRAME

While pressing the stopper attached to the guide rail, pull out the large capacity tray.

NOTE: When reinstalling the tray, set the tray on the guide rail and carefully push the tray in, making sure to keep the tray level.



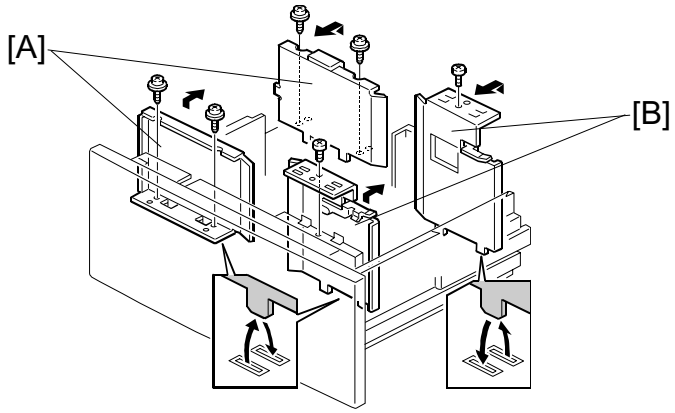
3.2 REAR FENCE HP SENSOR



1. Pull out the large capacity tray.
2. Remove the left tray rear side fence [A] (2 screws).
3. Remove the rear fence bracket [B] (1 screw).
4. Remove the connector of the rear fence HP sensor.
5. Replace the rear fence HP sensor [C] (1 screw).

NOTE: When securing the sensor in place, be sure to fasten the screw in the proper position.

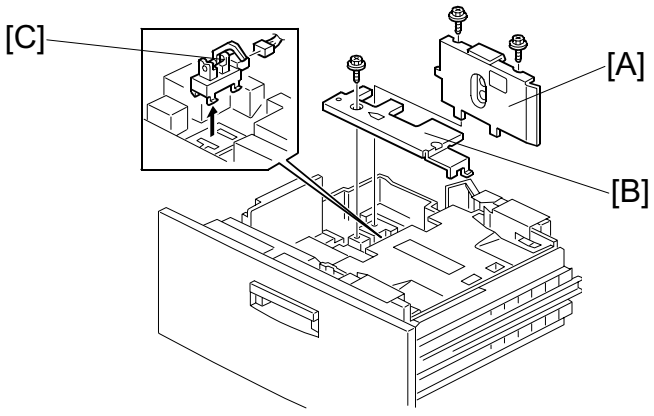
3.3 CHANGING THE TRAY PAPER SIZE



1. Remove the screws of all side fences [A], [B].
2. The position of the rear fence HP sensor can then be changed (see Rear Fence HP Sensor Removal).
3. The paper size display can then be changed with an SP mode.

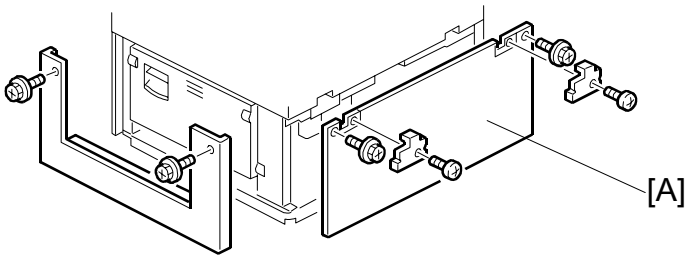
NOTE: When securing the right tray side fence, fasten the screw after setting the paper in the right tray and adjusting the fence to the width of the paper.

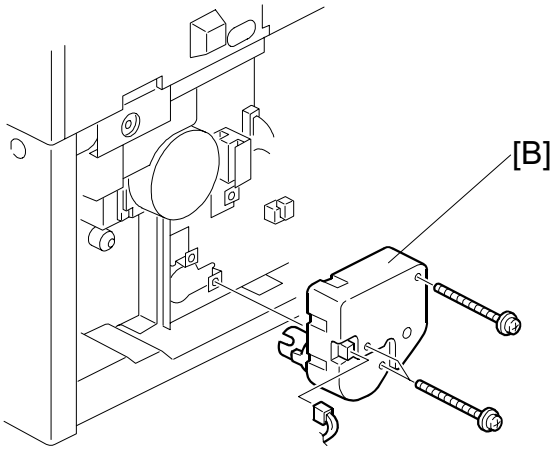
3.4 LEFT TRAY PAPER END SENSOR



1. Pull out the large capacity tray.
2. Remove the left tray side fence [A] (2 screws).
3. Remove the rear fence bracket [B] (1 screws).
4. Replace the left tray paper end sensor [C] (1 connector).

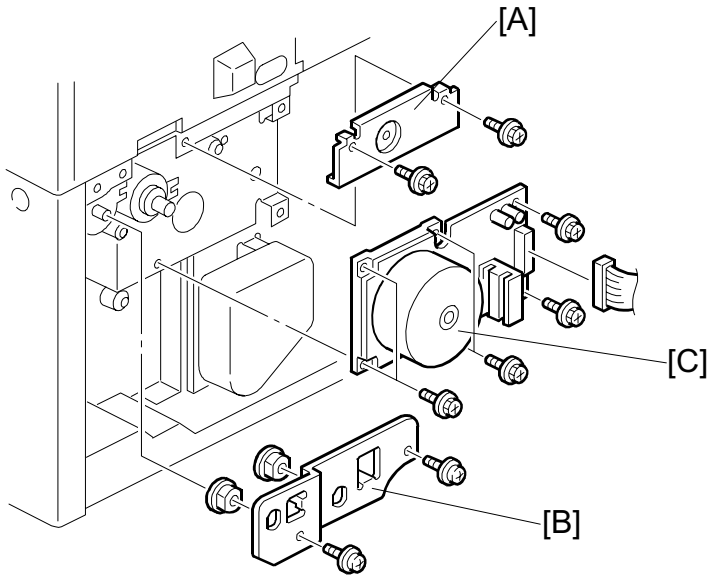
3.5 TRAY LIFT MOTOR





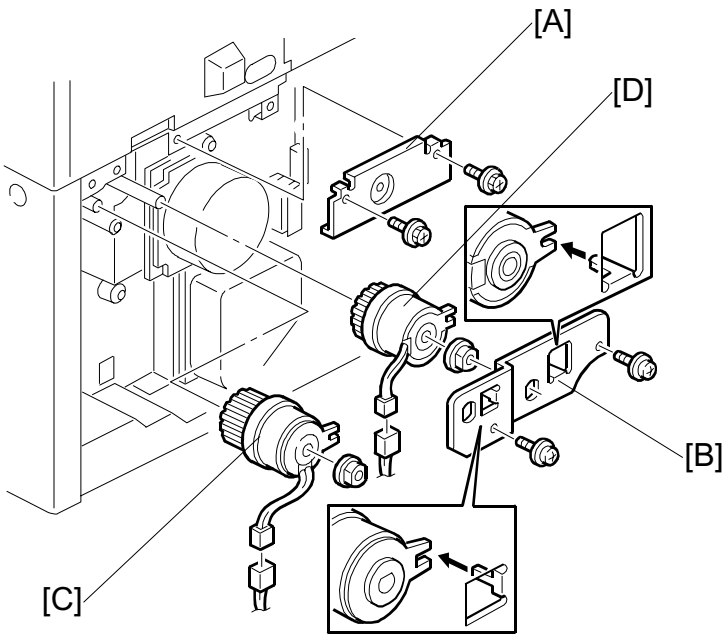
1. Remove the brackets (1 screw for each).
2. Remove the rear cover [A] (2 screws).
3. Remove the tray lift motor [B] (3 screws, 1 connector).

3.6 TRAY MOTOR



1. Remove the rear cover.
2. Remove bracket #1 [A] (2 screws).
3. Remove bracket #2 [B] (2 screws).
4. Remove the tray motor [C] (6 screws, 1 connector).

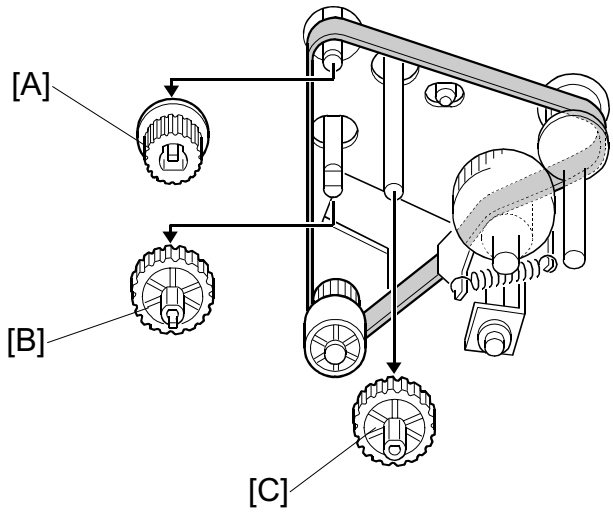
3.7 PAPER FEED CLUTCH AND RELAY CLUTCH

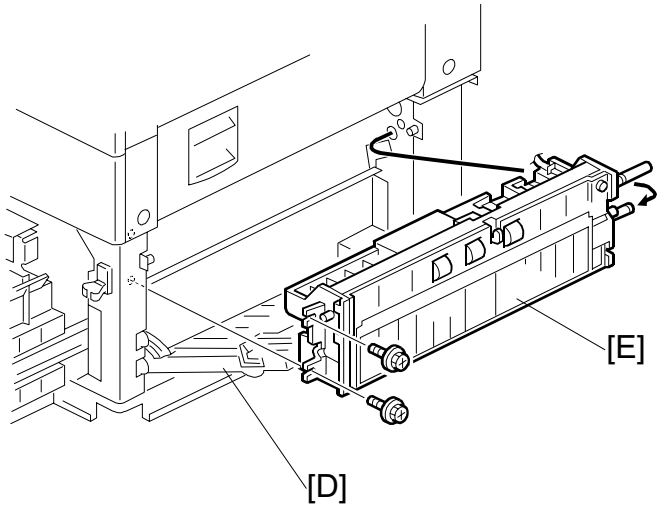


1. Remove the rear cover.
2. Remove bracket #1 [A] (2 screws).
3. Remove bracket #2 [B] (2 screws).
4. Remove all bushings.
5. Remove the paper feed clutch [C] and relay clutch [D].
6. Replace the required clutch.

NOTE: Make sure to properly secure both clutches before completing installation.

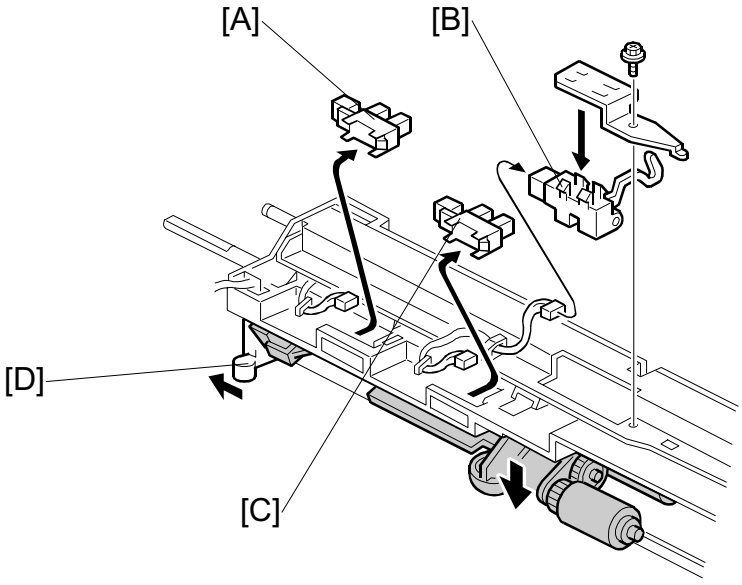
3.8 PAPER FEED UNIT





1. Remove the paper feed clutch and relay clutch (see Paper Feed Clutch and Relay Clutch Replacement).
2. Remove pulleys A [A], B [B], and C [C].
3. Remove the paper feed harness from the main board.
4. Open the vertical transport guide plate [D].
5. Remove the paper feed unit [E] (2 screws).

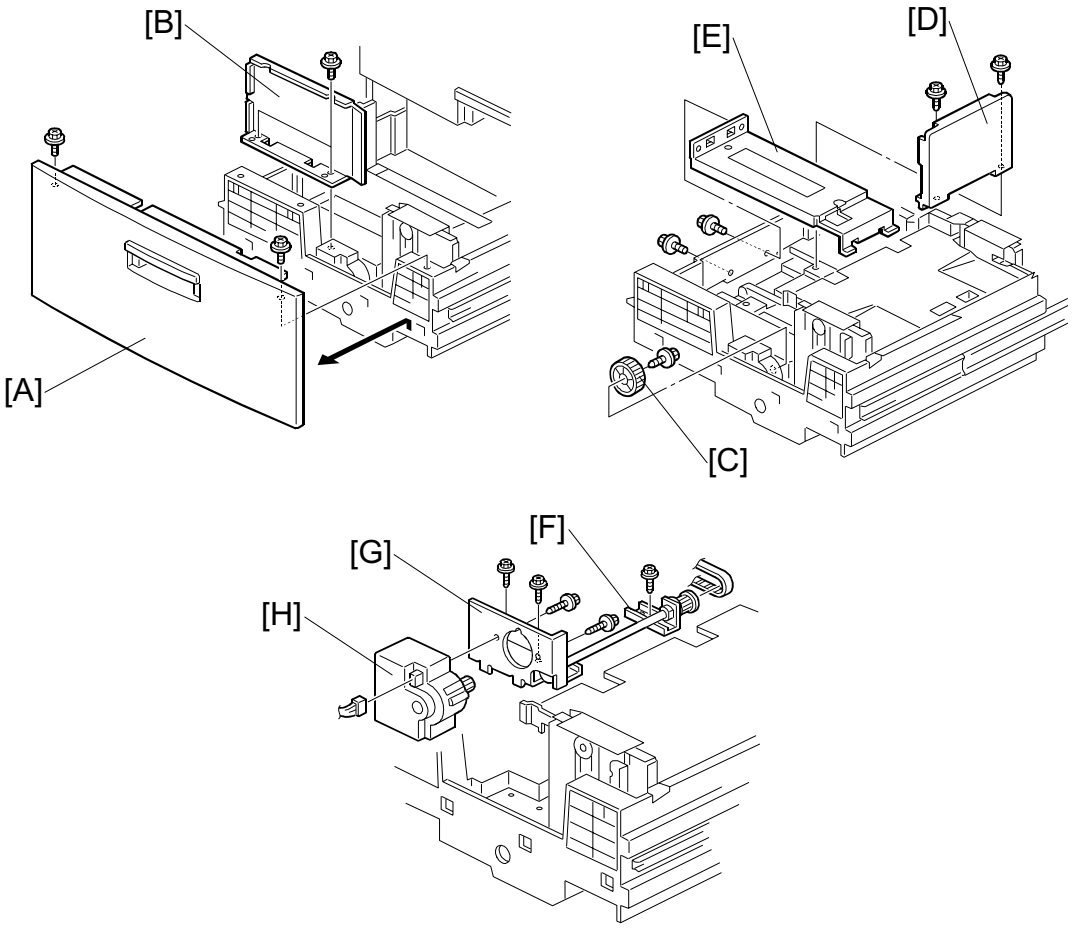
3.9 UPPER LIMIT, RIGHT TRAY PAPER END, AND RELAY SENSORS



1. Remove the paper feed unit (see Paper Feed Unit Replacement).
2. Replace the required sensor.
   - Upper limit [A]
   - Relay [B]
   - Right tray paper end [C]

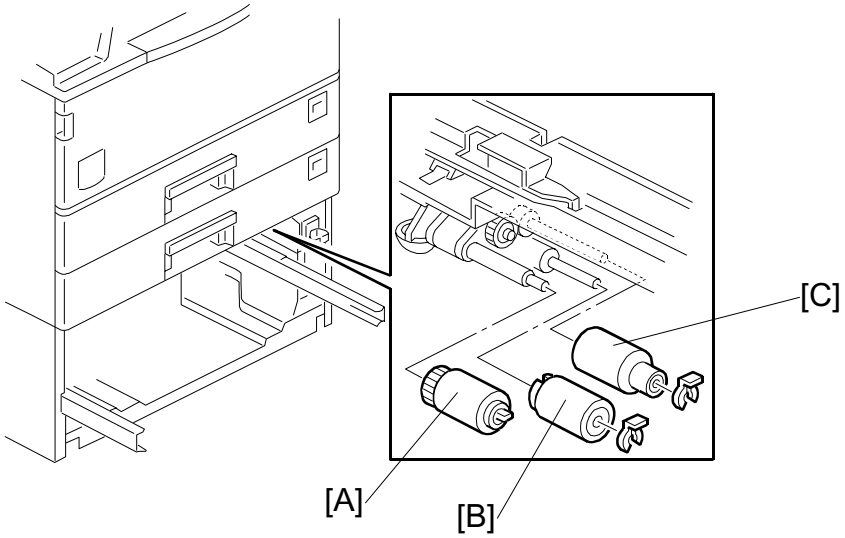
NOTE: When replacing the upper limit [A] and paper end sensor [C], please be sure to do so while pushing the release lever [D].

3.10 REAR FENCE MOTOR



1. Pull out the paper feed tray unit.
2. Remove the paper feed tray front cover [A] (2 screws).
3. Remove the left side fence [B].
4. Remove the rear fence drive gear [C] (1 screw). This is in order to free the end fence [D].
5. Move the end fence to the right (toward the center).
6. Remove the end fence (1 screw).
7. Remove the end fence bracket [E] (2 screws).
8. Remove the bracket [F] (1 screw).
9. Remove the bracket [G] of the rear fence motor assembly (2 screws).
10. Remove the rear fence motor assembly (2 screws).
11. Replace the motor [H] (1 connector).

3.11 PICK-UP/PAPER FEED/REVERSE ROLLERS



1. Remove the paper tray unit (see Paper Tray Unit Replacement).
2. Remove the snap ring (1 each for the paper feed and reverse rollers).
3. Remove the pick up roller [A].
4. Replace each roller [B], [C].

NOTE: Install the paper feed rollers the correct way round, as shown in the illustration. If the rollers are installed incorrectly, this will cause the one-way clutch to lock.

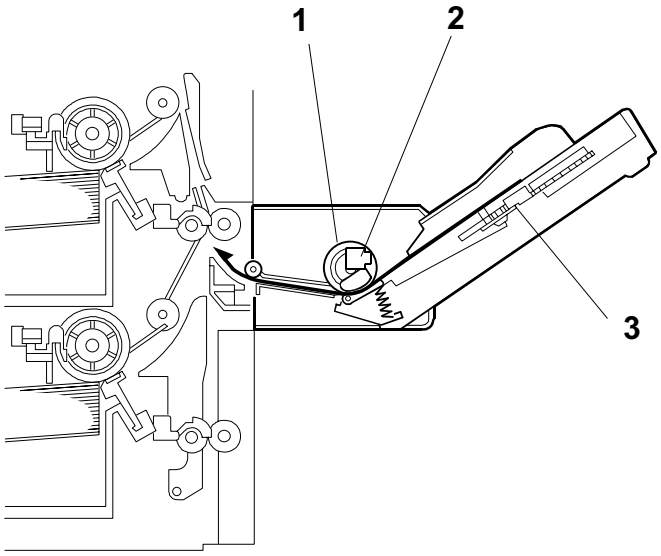
BY-PASS A899

1 OVERALL MACHINE INFORMATION

1.1 SPECIFICATIONS

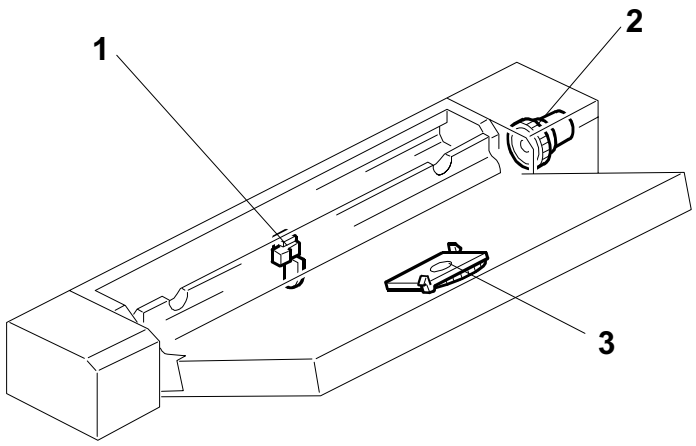
Paper Size:	Standard sizes A6 lengthwise to A3 HLT lengthwise to DLT Non-standard sizes Width: 90 to 305 mm Length: 148 to 432 mm
Paper Weight:	52 g/m^2 ~ 157 g/m^2, 16 lb ~ 42 lb
Tray Capacity:	50 sheets (80 g/m^2, 20 lb)
Paper Feed System:	Friction Pad Paper Feed

1.2 MECHANICAL COMPONENT LAYOUT



1. Paper Feed Roller
2. Paper End Sensor
3. Paper Size Sensor Board

1.3 ELECTRICAL COMPONENT LAYOUT



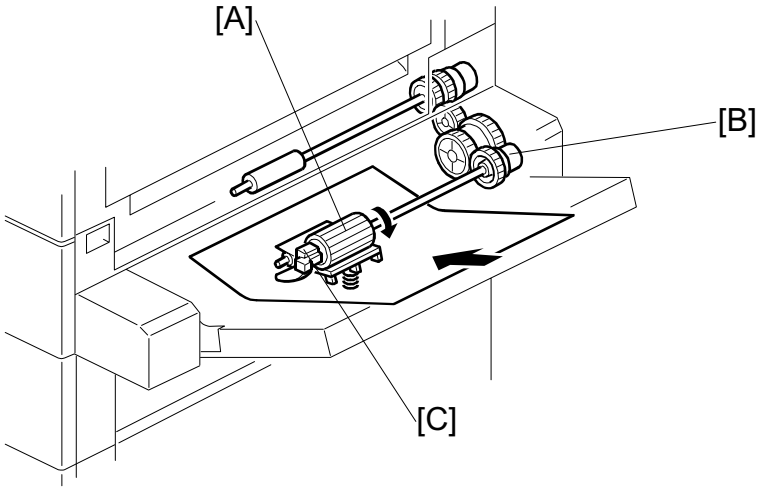
1. Paper End Sensor
2. Paper Feed Clutch
3. Paper Size Sensor Board

1.4 ELECTRICAL COMPONENT DESCRIPTION

Symbol	Name	Function	Index No.
Sensors			
S1	Paper End	Informs the copier when the by-pass tray runs out of paper.	1
S2	Paper Size Sensor Board	Detects the paper width.	3
Magnetic Clutches			
MC1	Paper Feed	Starts paper feed from the by-pass tray.	2

2 DETAILED DESCRIPTIONS

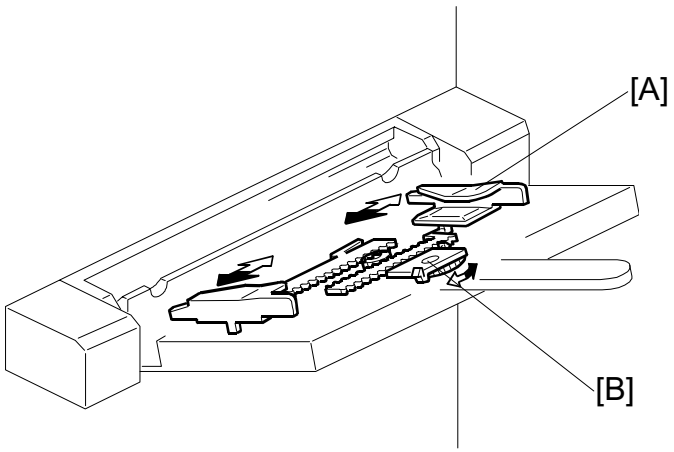
2.1 BASIC OPERATION



The by-pass unit uses a friction pad paper feed mechanism. The transport roller gear in the main copier drives the gear on the paper feed clutch [B] through a series of gears.

When paper is placed in the tray, the paper end sensor [C] switches off. When the Start button is pressed, the paper feed clutch [B] is activated and the paper feed roller [A] feeds the paper one sheet at a time.

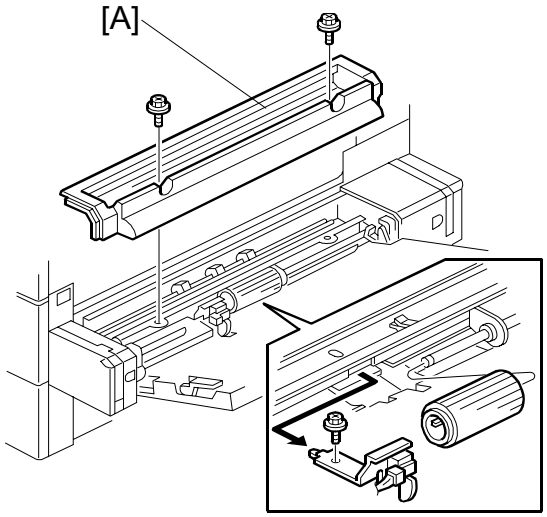
2.2 PAPER SIZE DETECTION

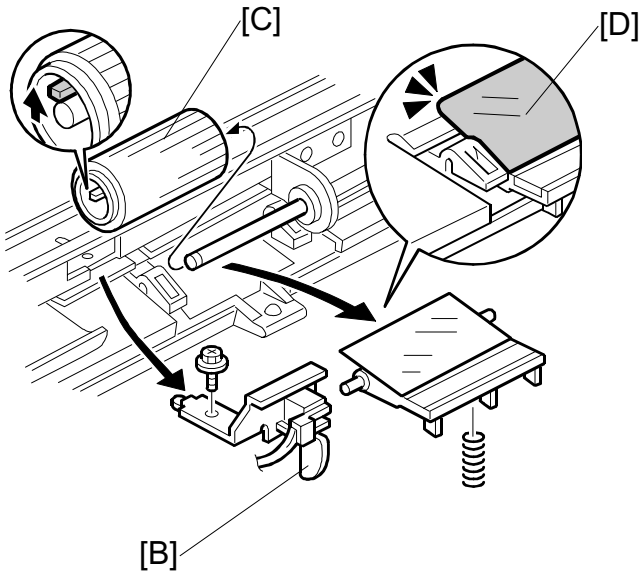


The paper size sensor board [B] monitors the paper width. The rear side fence [A] is connected to the terminal plate. The pattern for each paper width is unique. Therefore, the copier determines which paper has been placed in the by-pass tray by the signal output from the board. However, the copier will not determine the paper length from the by-pass tray hardware (refer to Original Size Detection in the manual for the base copier for details on how paper length is determined).

3 REPLACEMENT AND ADJUSTMENT

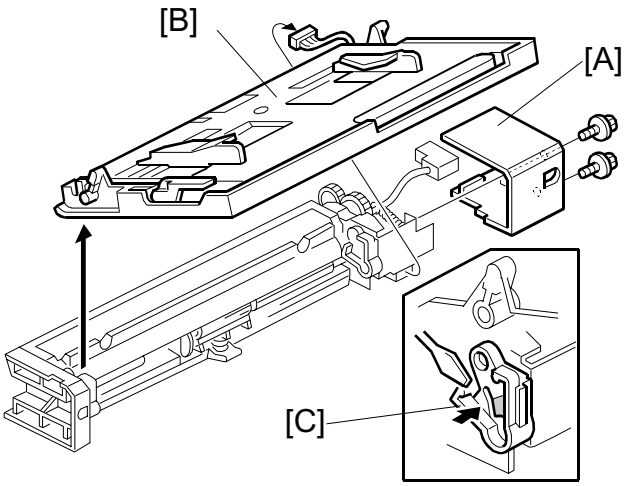
3.1 PAPER FEED ROLLER/FRICTION PAD/PAPER END SENSOR

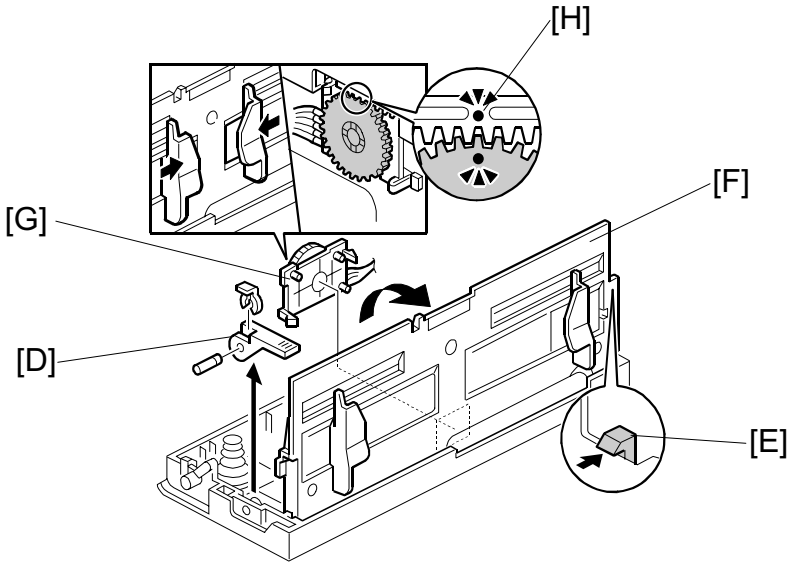




1. Remove the upper cover [A] (2 screws).
2. Remove the paper end sensor bracket [B] (1 screw).
3. Remove the paper feed roller [C] (snap-fit).
4. If removing the friction pad [D], do so at this time.

3.2 PAPER SIZE SENSOR BOARD

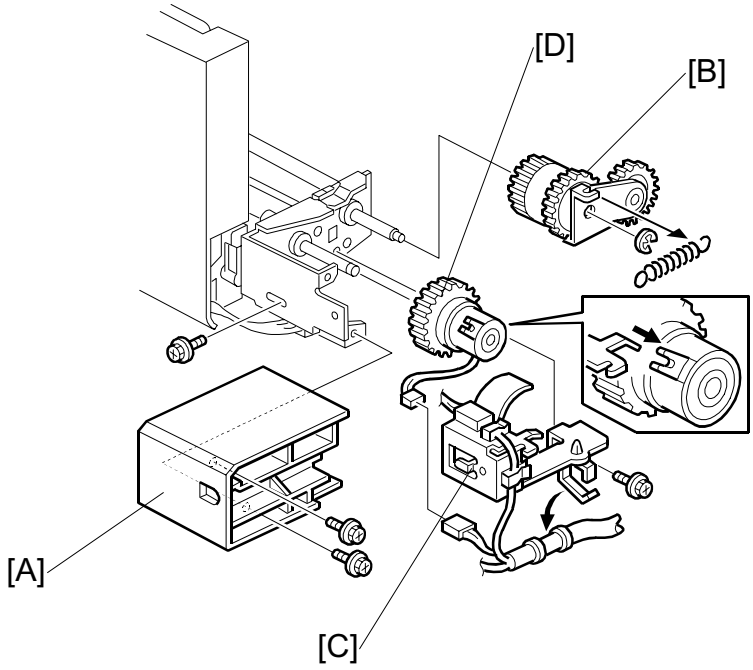




1. Remove the rear cover [A] (2 screws).
2. Remove the by-pass tray [B] (1 connector, 2 release levers [C]).
3. Remove the lever [D] (1 snap ring, 1 pin).
4. While pushing the release lever [E], remove the paper tray [F].
5. Remove the by-pass width sensor [G].

NOTE: When installing the by-pass width sensor [G], move the side fence inward all the way so that the seal on the side face gear faces the surface with the seal [H] on the by-pass width sensor.

3.3 PAPER FEED CLUTCH



1. Remove the rear cover [A] (2 screws).
2. Remove the spring.
3. Remove the drive gear and drive gear bracket [B] (1 E-ring, 1 spring).
4. Remove the paper feed clutch bracket [C] (2 screws).
5. Remove the paper feed clutch [D] (1 connector).

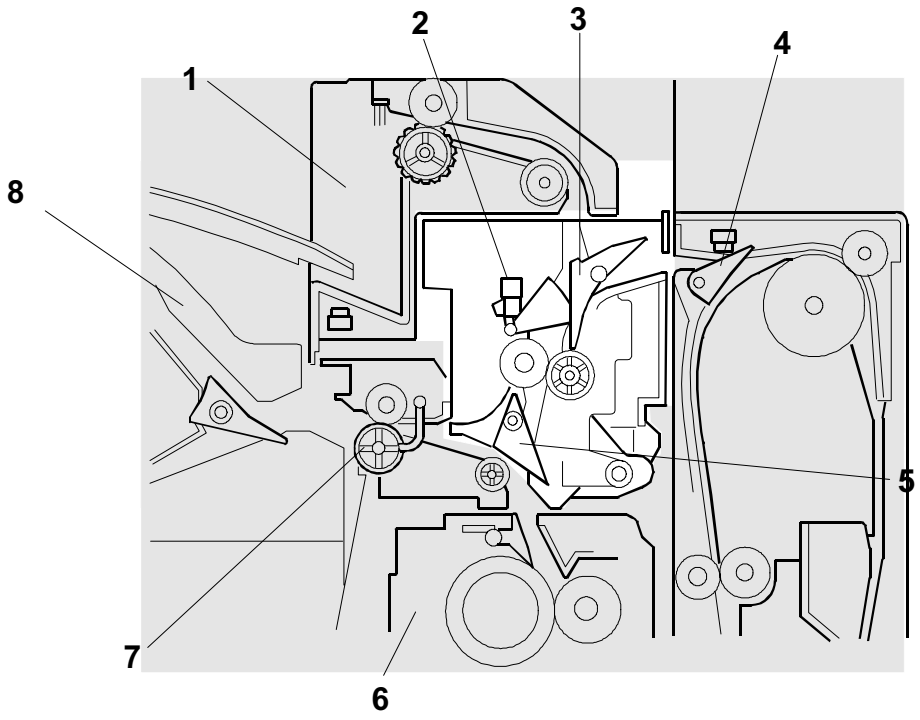
INTERCHANGE UNIT
B300

1. OVERALL MACHINE INFORMATION

1.1 SPECIFICATIONS

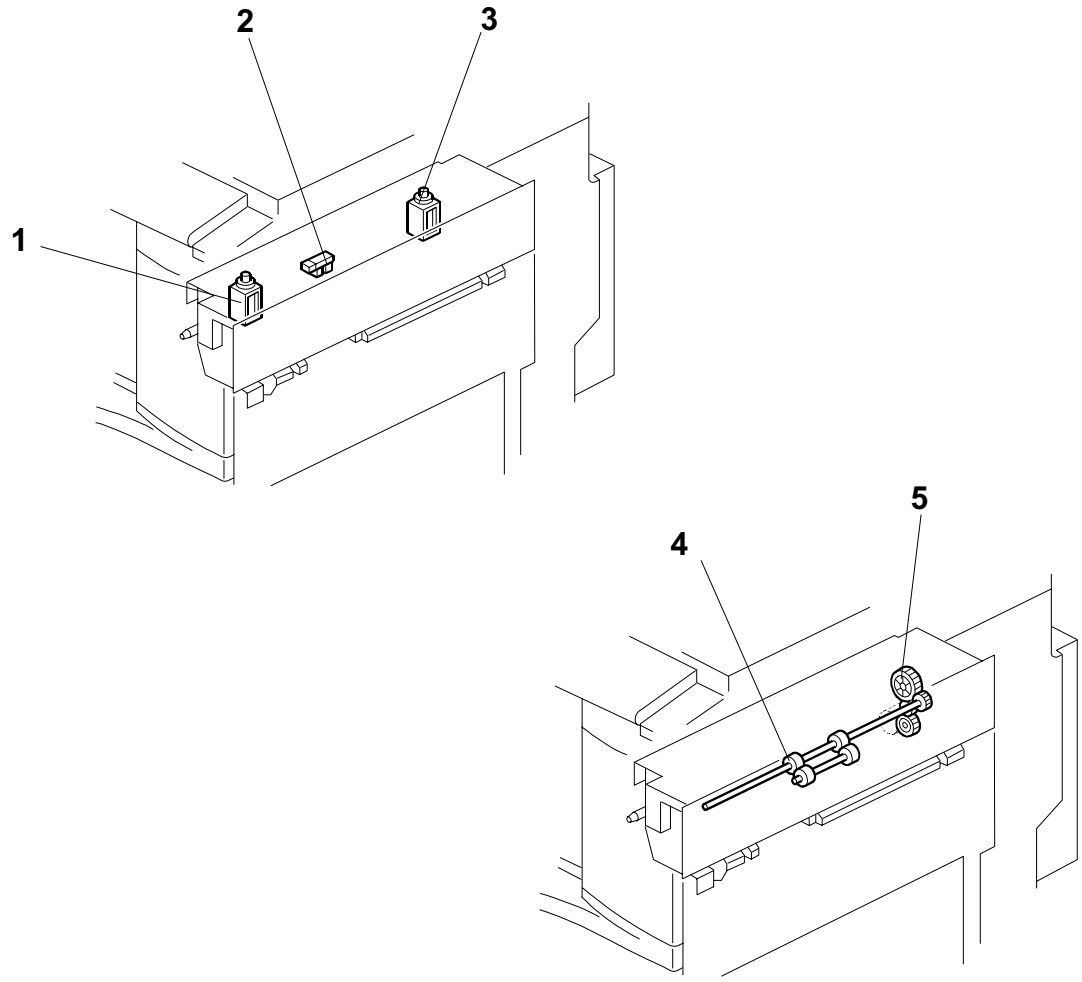
Paper Size:	Standard sizes A6 lengthwise to A3 HLT to DLT Non-standard sizes Width: 100 to 305 mm Length: 148 to 432 mm
Paper Weight:	52 g/m^2 ~ 135 g/m^2, 16 lb ~ 36 lb
Power Consumption:	15 W
Dimensions (W x D x H):	117 x 447 x 92 mm
Weight:	1.6 kg (4.5 lbs.)

1.2 MECHANICAL COMPONENT LAYOUT



1. 1-bin Tray (Option)
2. Exit Sensor
3. Duplex Junction Gate
4. Duplex Unit (Option)
5. Exit Junction Gate
6. Fusing Unit (Inside the Copier)
7. Exit Roller
8. Bridge Unit

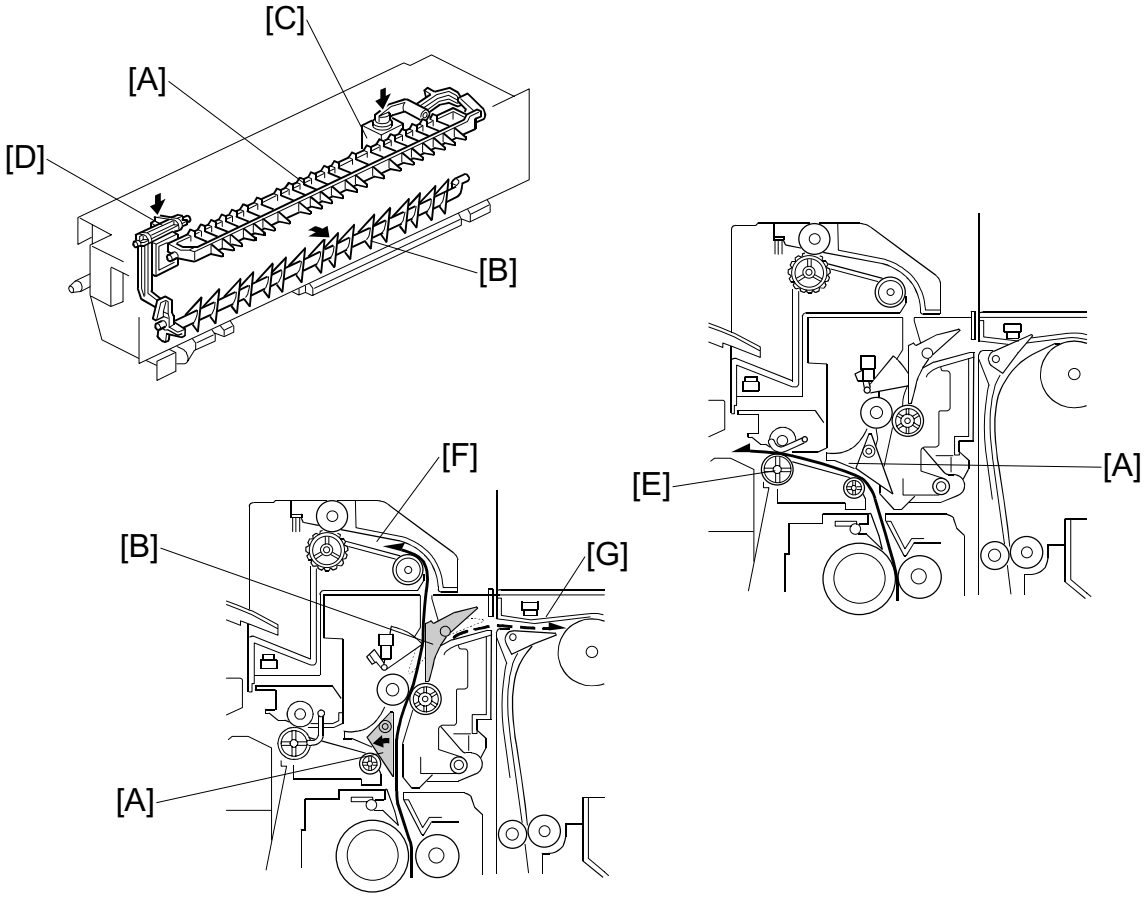
1.3 DRIVE LAYOUT



1. Exit Junction Gate Solenoid
2. Exit Sensor
3. Duplex Junction Gate Solenoid
4. Exit Roller
5. Drive Gear

2. DETAILED DESCRIPTION

2.1 JUNCTION GATE MECHANISM



Depending on the selected mode, the copies are directed up, left, or right by the exit junction gate [A] and the duplex junction gate [B]. These are controlled by the exit junction gate solenoid [C] and the duplex junction gate solenoid [D].

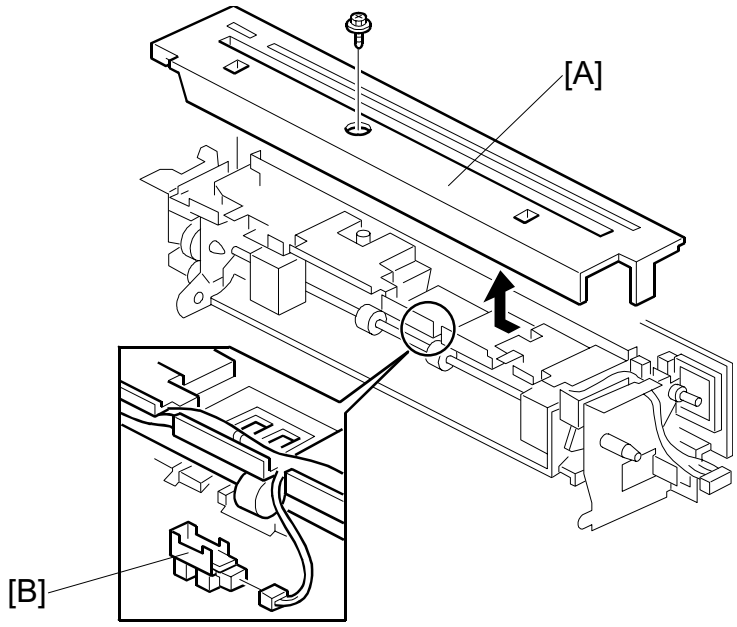
To the Exit Tray or Bridge Unit (for the Upper Tray on top of the Bridge Unit, or the Finisher)
The exit junction gate solenoid stays off and the paper is directed to the copier exit unit [E].

To the 1-bin Tray
The exit junction gate solenoid turns on and the duplex junction gate solenoid stays off. The paper is directed to the 1-bin tray [F].

To the Duplex Unit
The exit junction gate solenoid and the duplex junction gate solenoid both turn on and the paper is directed to the duplex unit [G].

3. REPLACEMENT AND ADJUSTMENT

3.1 EXIT SENSOR REPLACEMENT



1. Remove the interchange unit.
2. Remove the upper cover [A] of the interchange unit.
3. Remove the exit sensor [B] (1 connector).

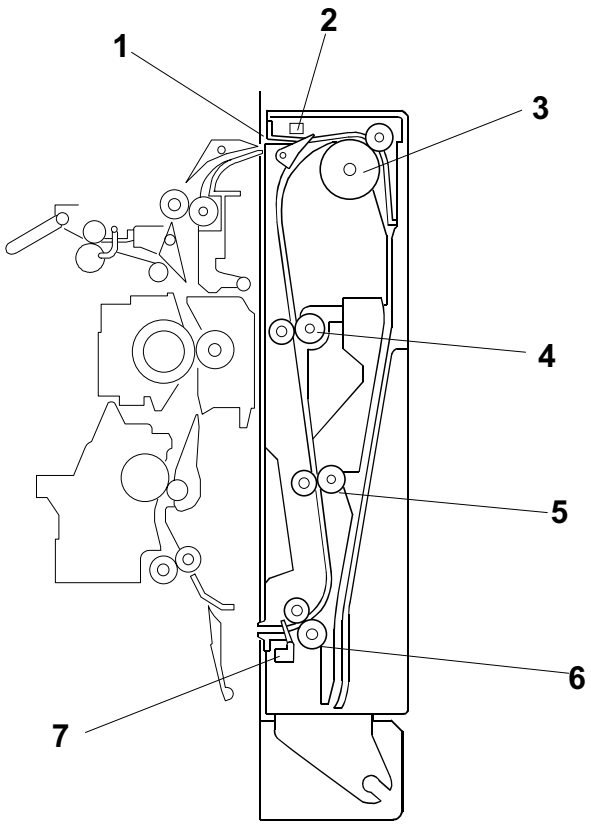
DUPLEX UNIT
A896

1. OVERALL MACHINE INFORMATION

1.1 SPECIFICATIONS

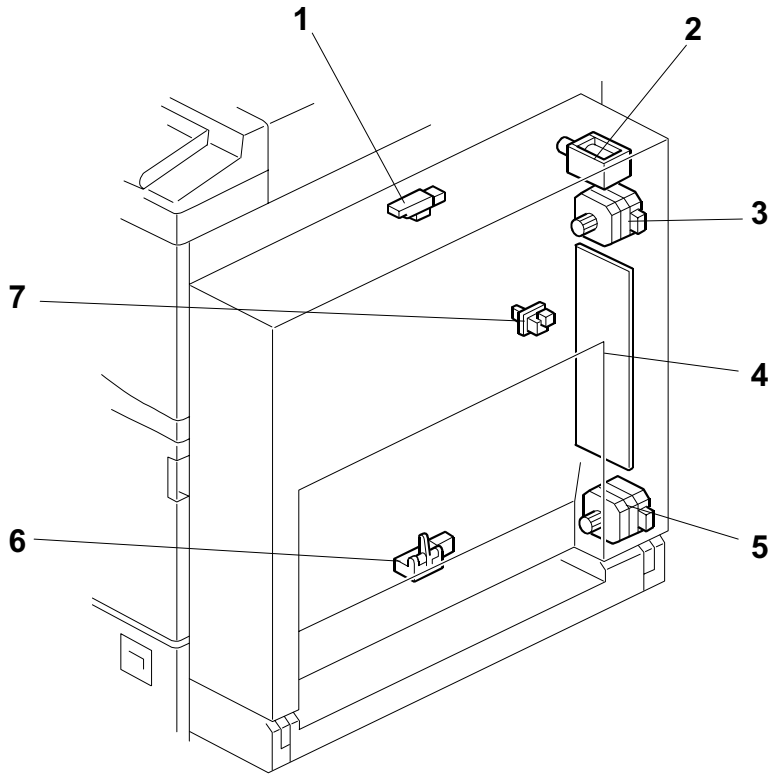
Paper Size:	Standard sizes A5 lengthwise to A3 HLT to DLT Non-standard sizes Width: 140 to 297 mm Length: 182 to 432 mm
Paper Weight:	64 g/m^2 ~ 105 g/m^2, 20 lb ~ 28 lb
Tray Capacity:	1 sheet
Power Consumption:	40 W
Power Source:	DC 24 V, 5 V
Dimensions (W x D x H):	90 x 495 x 452 mm
Weight:	6 kg (13.2 lbs.)

1.2 MECHANICAL COMPONENT LAYOUT



1. Inverter Gate
2. Entrance Sensor
3. Inverter Roller
4. Upper Transport Roller
5. Middle Transport Roller
6. Lower Transport Roller
7. Exit Sensor

1.3 ELECTRICAL COMPONENT LAYOUT

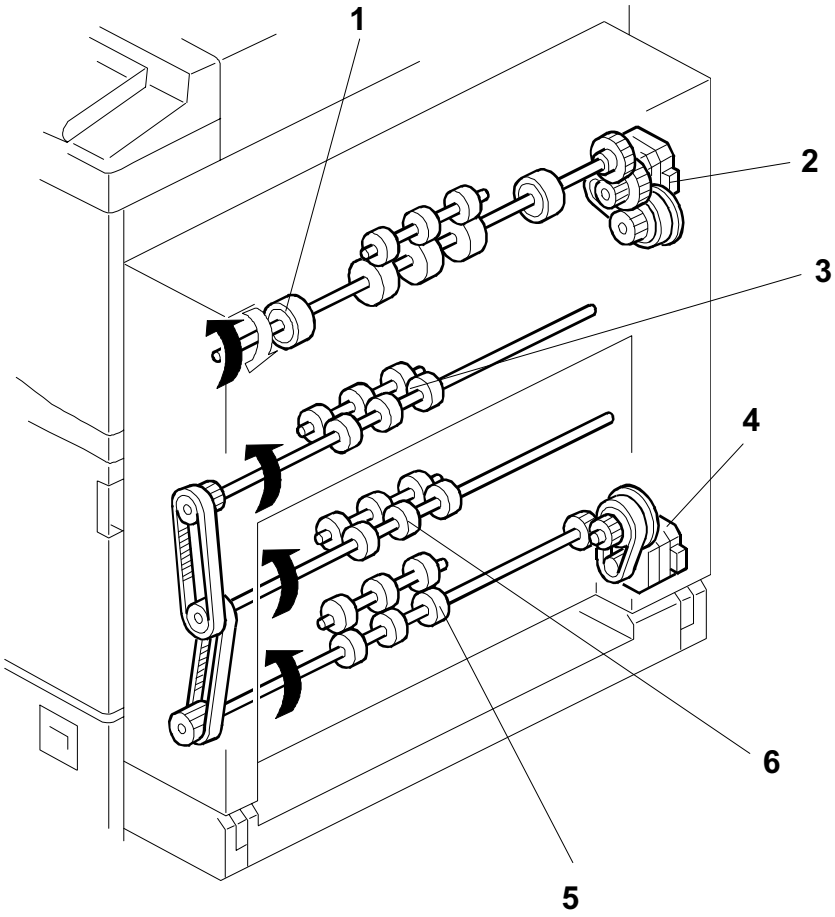


1. Entrance Sensor
2. Inverter Gate Solenoid
3. Inverter Motor
4. Main Board
5. Transport Motor
6. Exit Sensor
7. Duplex Unit Open Switch

1.4 ELECTRICAL COMPONENT DESCRIPTION

Symbol	Name	Function	Index No.
Motors			
M1	Inverter	Drives the inverter roller.	3
M2	Transport	Drives the upper and lower transport rollers.	5
Sensors			
S1	Entrance	Detects the trailing edge of the copy paper to turn on the inverter gate solenoid and turn on the inverter motor in reverse. Checks for misfeeds.	1
S2	Exit	Checks for misfeeds.	6
Switches			
SW1	Duplex Unit Open	Detects whether the duplex unit is opened or not.	7
Solenoids			
SOL1	Inverter Gate	Controls the inverter gate.	2
PCBs			
PCB1	Main	Controls the duplex unit and communicates with the copier.	4

1.5 DRIVE LAYOUT



1. Inverter Roller
2. Inverter Motor
3. Upper Transport Roller
4. Transport Motor
5. Lower Transport Roller
6. Middle Transport Roller

2. DETAILED DESCRIPTIONS

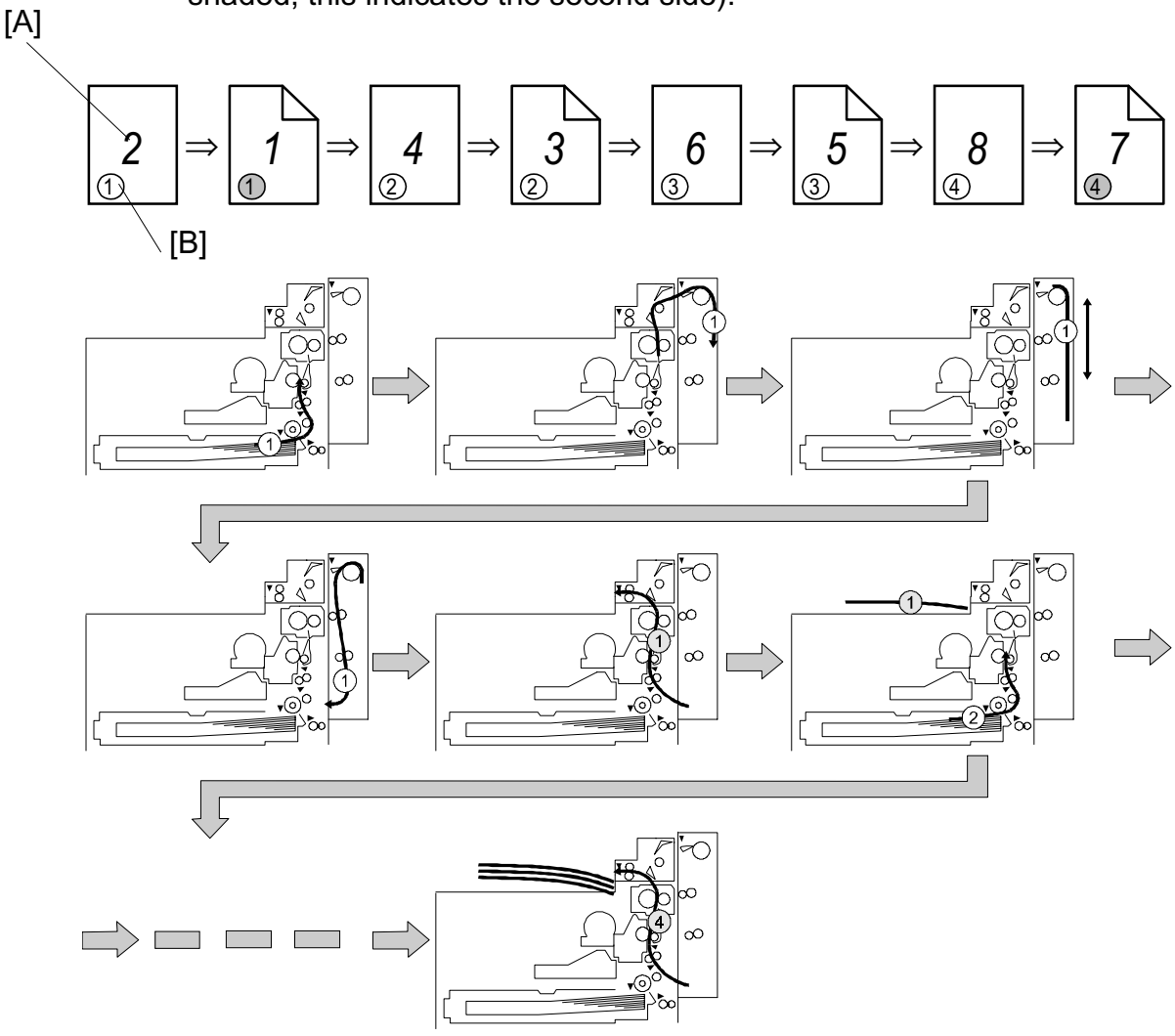
2.1 BASIC OPERATION

To increase the productivity of the duplex unit, copies are printed as follows.

Larger than A4 lengthwise/LT lengthwise

The duplex unit can store only one sheet of copy paper.

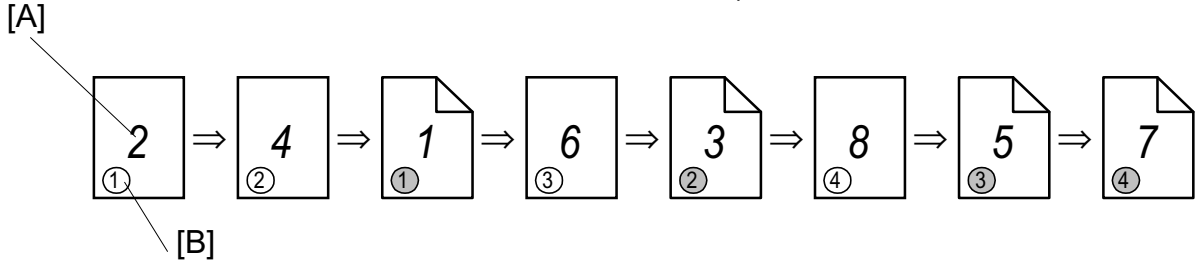
Example: 8 pages. The number [A] in the illustration shows the order of pages. The number [B] in the illustration shows the order of sheets of copy paper (if shaded, this indicates the second side).

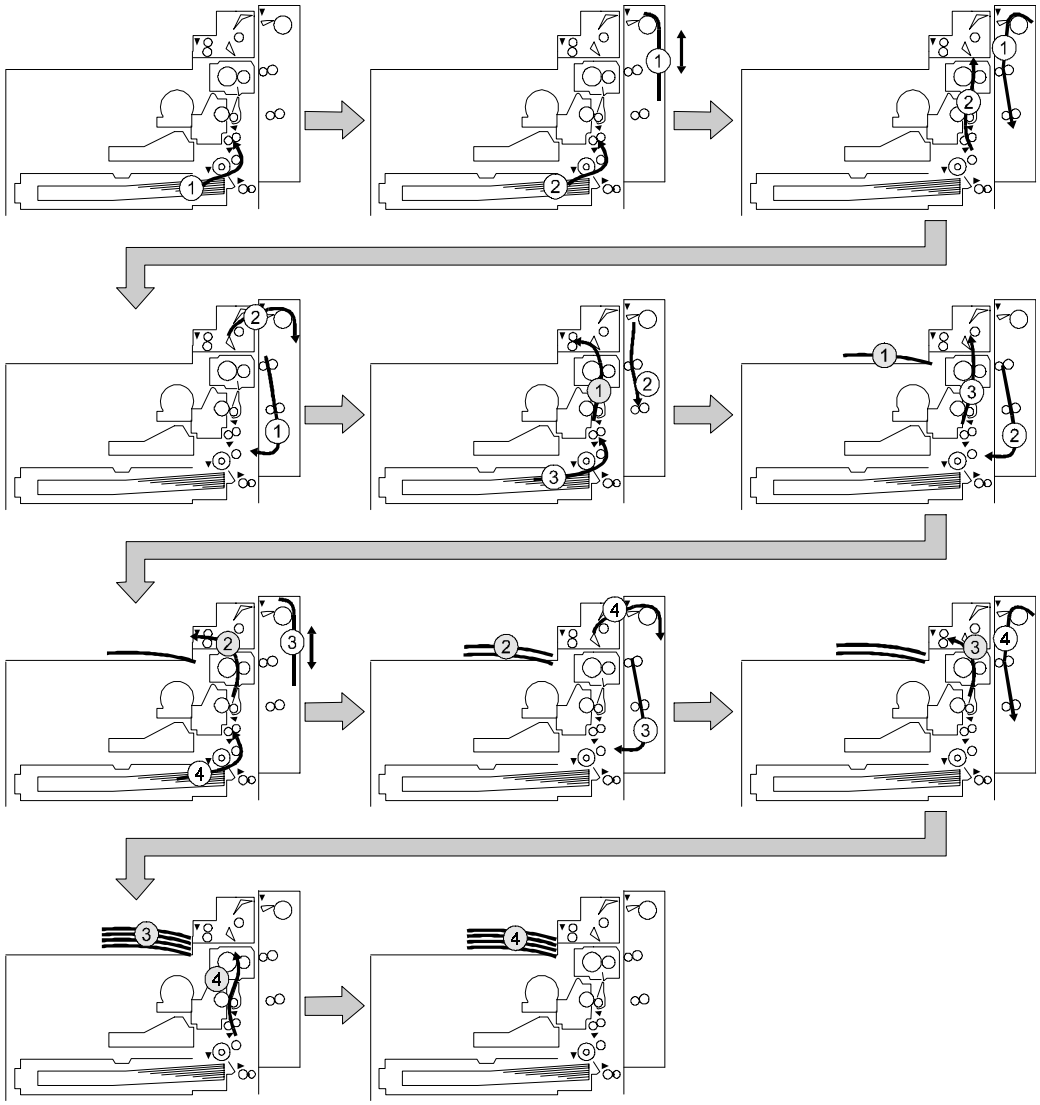


Up to A4 lengthwise/LT lengthwise

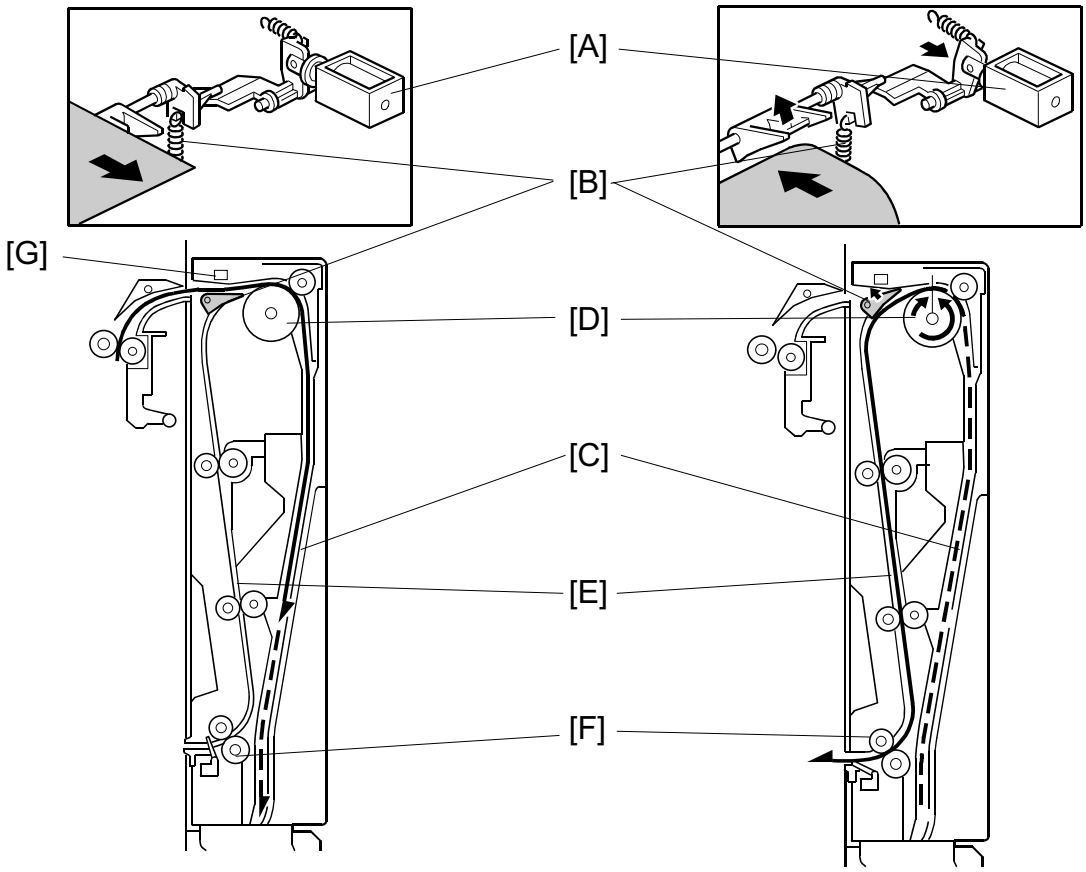
The duplex unit can store two sheets of copy paper

Example: 8 pages. The number [A] in the illustration shows the order of pages. The number [B] in the illustration shows the order of sheets of copy paper (if shaded, this indicates the second side).





2.2 FEED IN AND EXIT MECHANISM



When paper is fed into duplex unit:

As soon as the paper arrives from the interchange unit, it is sent to the inverter section [C] (the inverter gate solenoid [A] remains off during this process).

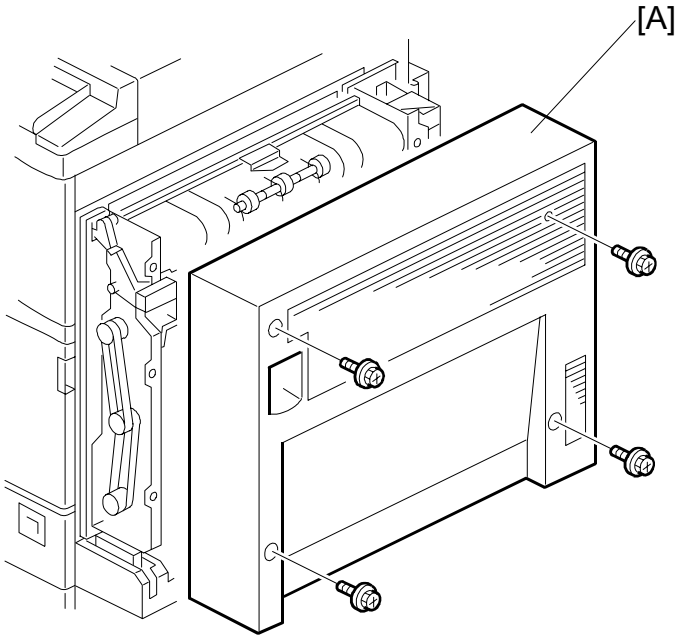
The inverter section can hold a sheet of paper up to A3 size. Because of this, the cover guide used in the previous model has become obsolete and has been eliminated from the design.

Inversion and Exit:

Shortly after the trailing edge of the paper passes the entrance sensor [G], the inverter gate solenoid [A] switches on and the inverter gate [B] switches over to direct the paper to the exit path [E]. The inverter roller [D] then changes its rotation direction and the paper goes to the exit transport area [F]. The paper is then sent to the registration rollers in the main copier via the transport rollers.

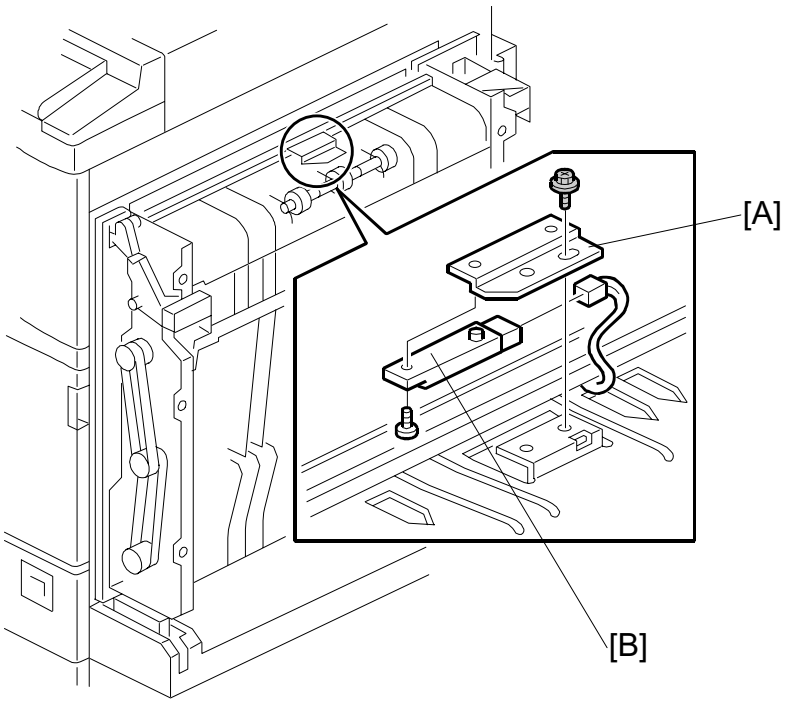
3. REPLACEMENT AND ADJUSTMENT

3.1 COVER REMOVAL



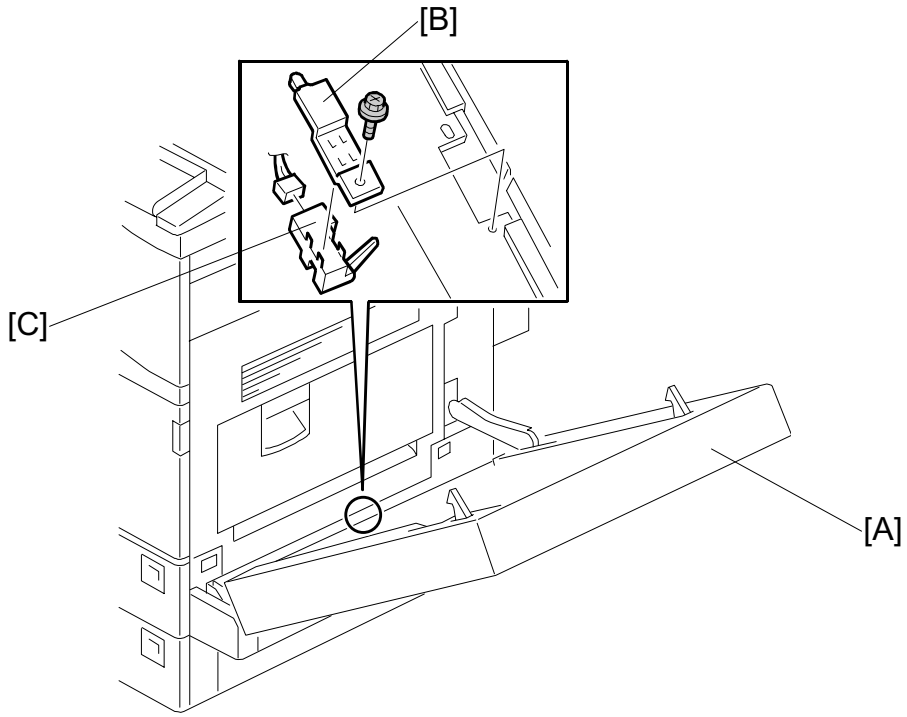
1. Remove the duplex unit cover [A] (4 screws).

3.2 ENTRANCE SENSOR REPLACEMENT



1. Remove the duplex unit cover. (Refer to section 3.1.)
2. Remove the sensor holder [A] (1 screw).
3. Replace the entrance sensor [B] (1 connector, 1 screw).

3.3 EXIT SENSOR REPLACEMENT



1. Open the duplex unit [A].
2. Remove the sensor bracket [B] (1 screw).
3. Replace the exit sensor [C] (1 connector).

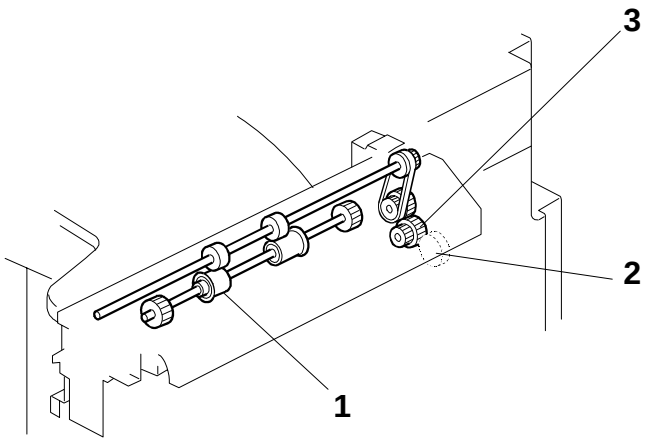
1-BIN TRAY UNIT
A898

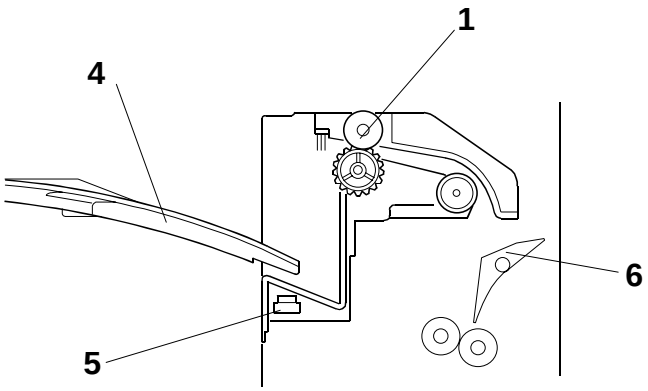
1. OVERALL INFORMATION

1.1 SPECIFICATIONS

Paper Size:	Standard Size: A5 Lengthwise to A3 HLT Lengthwise to DLT Non-standard Size: Paper Width: 90 ~ 297 mm Paper Length: 148 ~ 432 mm
Paper Weight:	60 ~ 105 g/m², 16 ~ 28 lbs.
Tray Capacity:	125 sheets (80 g/m², 20 lbs.)
Power Source:	5 VDC, 24 VDC (from the copier)
Power Consumption:	17 W
Weight:	1.1 kg
Size (W x D x H):	530 mm x 410 mm x 120 mm

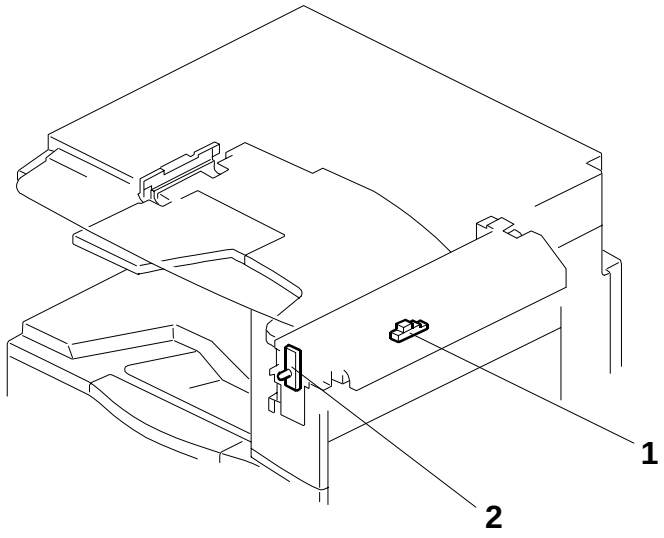
1.2 MECHANICAL COMPONENT LAYOUT





1. Exit Rollers
2. Junction Gate Gear
3. Drive Gear
4. Paper Tray
5. Paper Sensor
6. Junction Gate (Interchange Unit)

1.3 ELECTRICAL COMPONENT LAYOUT



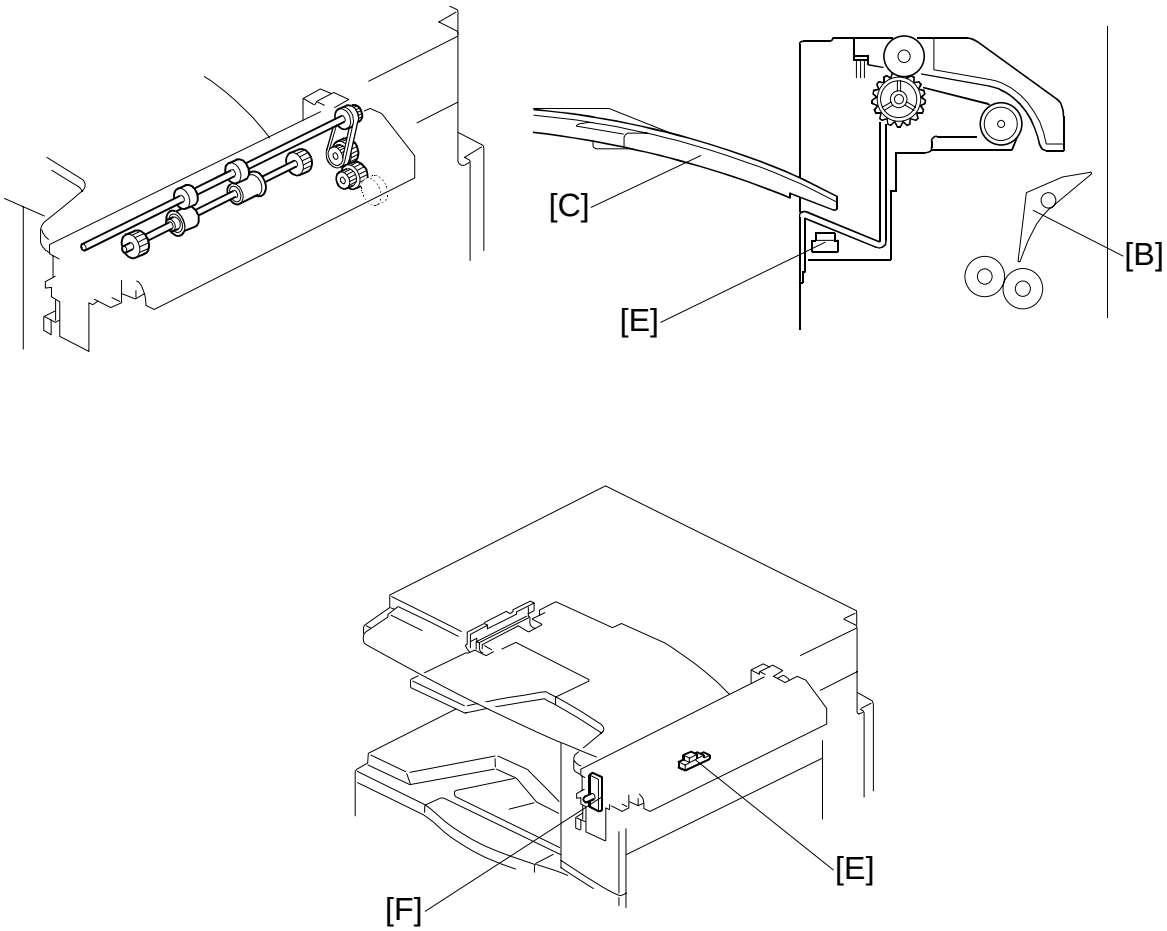
1. Paper Sensor
2. 1-bin Sorter Exit Tray LED
   (located in the copier)

1.4 ELECTRICAL COMPONENT DESCRIPTION

Symbol	Name	Function	Index No.
Sensors			
S1	Paper	Detects whether there is paper on the tray.	1
LEDs			
LED1	1 Bin Exit Tray	Indicates when there is paper in the tray. This sensor is located in the copier.	2

2. DETAILED SECTION DESCRIPTIONS

2.1 BASIC OPERATION



At the appropriate time after the leading edge of the first sheet of copy paper reaches the copier's registration roller, the junction gate solenoid in the interchange unit turns on to switch the junction gate [B] to direct the paper to the tray [C].

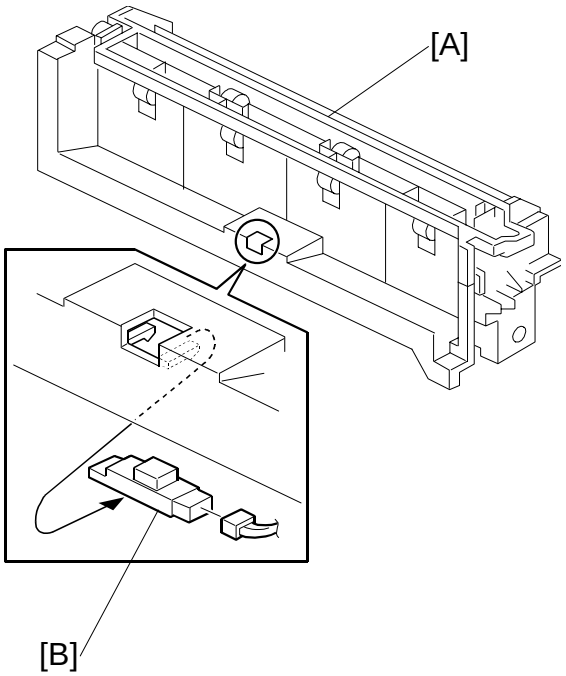
The junction gate solenoid turns off at the appropriate time after the paper is directed to the tray. The main motor in the copier stops after the final sheet passes through the paper sensor [E].

The paper sensor [E] turns on when there is paper in the tray, and the paper indicator [F] turns on.

The tray can be opened for easier jam removal by swinging the tray to the left.

3. REPLACEMENT AND ADJUSTMENT

3.1 PAPER SENSOR REMOVAL



1. Remove the 1-bin tray.
2. Remove the 1-bin sorter unit [A].
3. Remove the paper sensor [B] (1 connector).

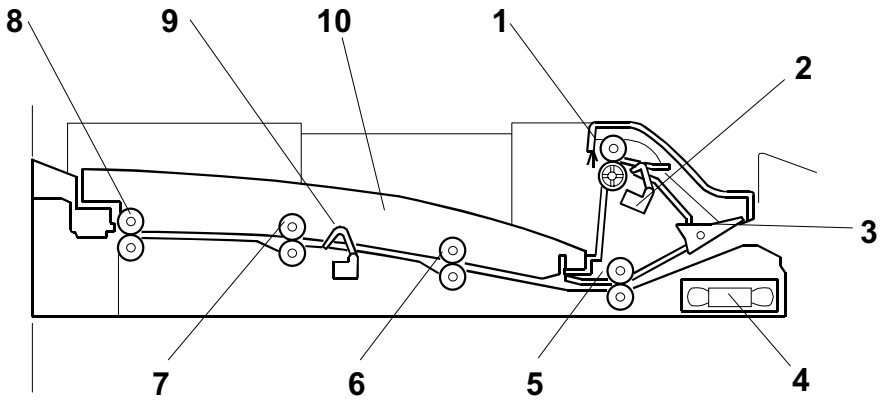
BRIDGE UNIT
A897

1. OVERALL MACHINE INFORMATION

1.1 SPECIFICATIONS

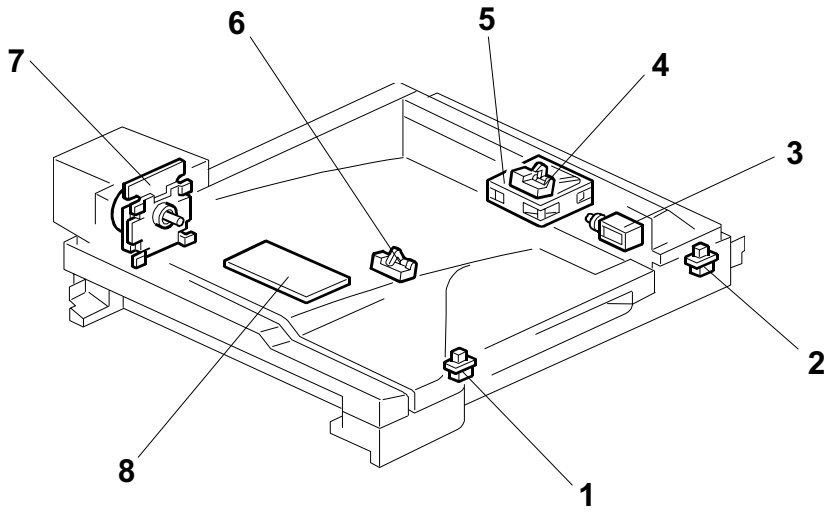
Paper Size:	Standard sizes A6 lengthwise to A3 HLT to DLT Non-standard sizes Width: 100 to 305 mm Length: 148 to 432 mm
Paper Weight:	52 g/m^2 ~ 135 g/m^2, 16 lb ~ 42 lb
Power Source:	DC24 V, 5 V (from the copier)
Dimensions (W x D x H):	413 x 435 x 126 mm
Weight	3.0 kg (6.6lbs.)

1.2 MECHANICAL COMPONENT LAYOUT



1. Upper Exit Roller
2. Tray Exit Sensor
3. Junction Gate
4. Cooling Fan
5. 1st Transport Roller
6. 2nd Transport Roller
7. 3rd Transport Roller
8. Left Exit Roller
9. Relay Sensor
10. Paper Tray

1.3 ELECTRICAL COMPONENT LAYOUT

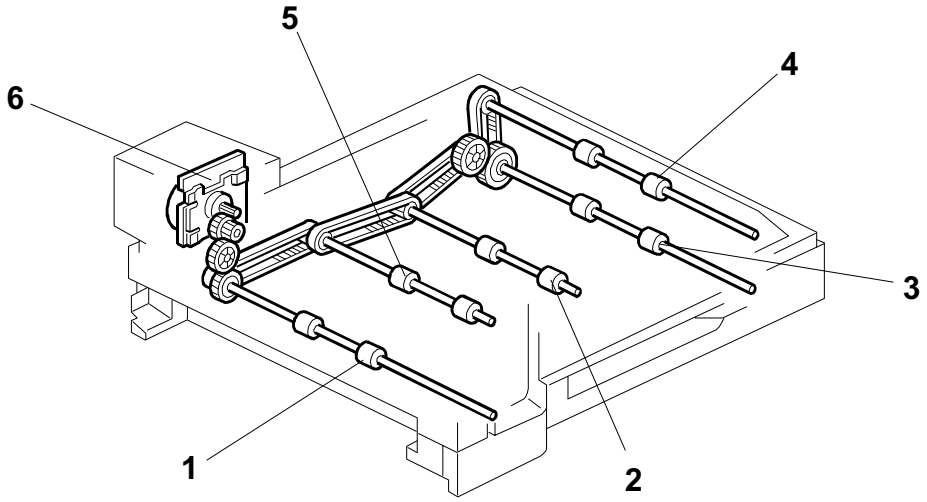


1. Left Guide Switch
2. Right Guide Switch
3. Junction Gate Solenoid
4. Tray Exit Sensor
5. Cooling Fan Motor
6. Relay Sensor
7. Bridge Unit Drive Motor
8. Bridge Unit Control Board

1.4 ELECTRICAL COMPONENT DESCRIPTION

Symbol	Name	Function	Index No.
Motors			
M1	Cooling Fan	Cools the transport unit.	5
M2	Drive Motor	Drives the bridge unit.	7
Sensors			
S1	Tray Exit	Checks for misfeeds.	4
S2	Relay	Checks for misfeeds.	6
Switches			
SW2	Right Guide	Detects when the right guide is opened.	2
SW3	Left Guide	Detects when the left guide is opened.	1
Solenoids			
SOL1	Junction Gate	Moves the junction gate to direct the paper to the upper tray (on top of the bridge unit) or to the finisher.	3
PCBs			
PCB1	Bridge Unit Control Board	Controls the bridge unit.	8

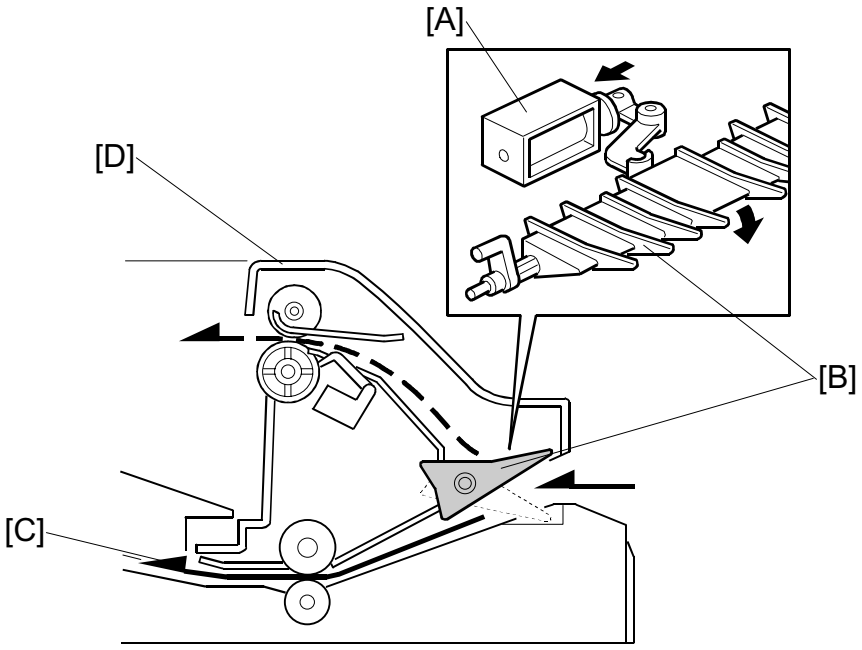
1.5 DRIVE LAYOUT



1. Left Exit Roller
2. 2nd Transport Roller
3. 1st Transport Roller
4. Upper Exit Roller
5. 3rd Transport Roller
6. Bridge Unit Drive Motor

2. DETAILED DESCRIPTION

2.1 JUNCTION GATE MECHANISM



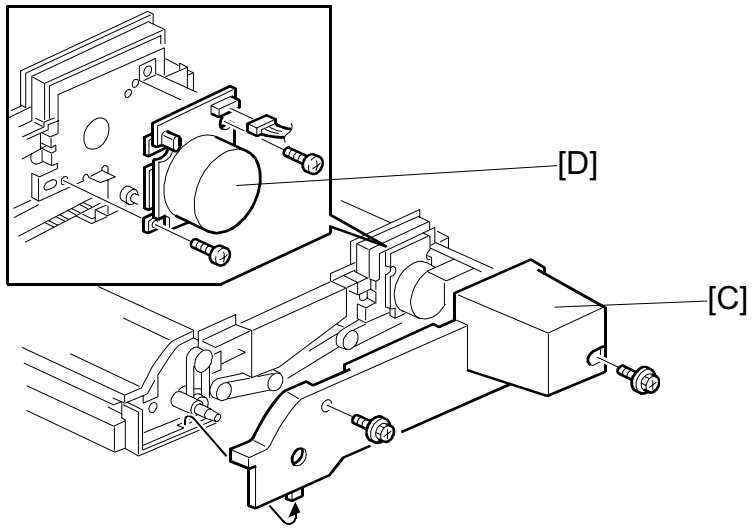
The junction gate [B] directs any paper reaching the bridge unit to either the upper tray (on top of the bridge unit) or to the finisher, depending on which has been selected.

If the junction gate solenoid [A] has been activated, the junction gate [B] points downward and directs the paper to the upper tray [D] (dotted line path in illustration). When the solenoid is off, the junction gate points upward and the paper is fed out to the finisher [C] by the transport and exit rollers (solid line).

3. REPLACEMENT AND ADJUSTMENT

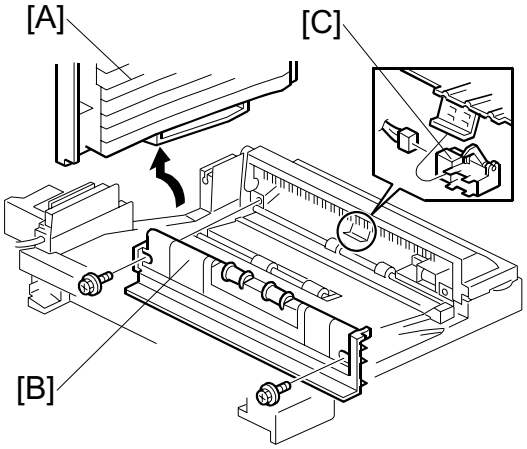
NOTE: When taking apart the bridge unit, first take the unit out of the copier.

3.1 BRIDGE UNIT DRIVE MOTOR REPLACEMENT



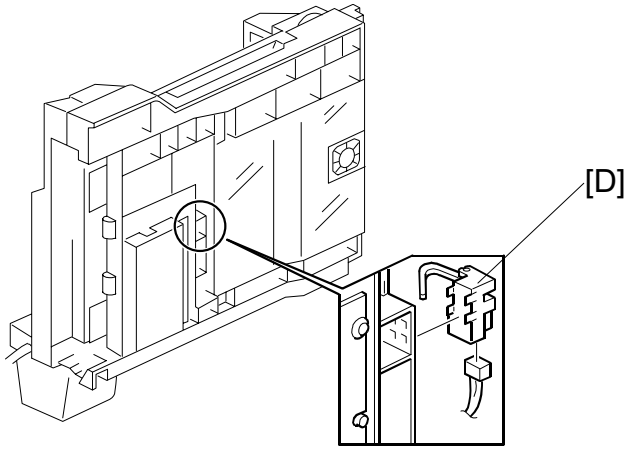
1. Remove the bridge unit from the copier. (See the Installation Procedure in the base copier manual.)
2. Remove the rear cover [C] (2 screws).
3. Remove the bridge unit drive motor [D] (2 screws, 1 connector).

3.2 TRAY EXIT SENSOR REPLACEMENT



1. Remove the bridge unit from the copier. (See the Installation Procedure in the base copier manual.)
2. Remove the rear cover (2 screws). See Bridge Unit Drive Motor Replacement.
3. Remove the paper tray [A].
4. Remove the exit guide [B] (2 screws).
5. Remove the tray exit sensor [C] (1 connector).

3.3 RELAY SENSOR REPLACEMENT



1. Remove the bridge unit from the copier. (See the Installation Procedure in the base copier manual.)
2. Stand the bridge unit up as shown in the illustration and remove the sensor [D].

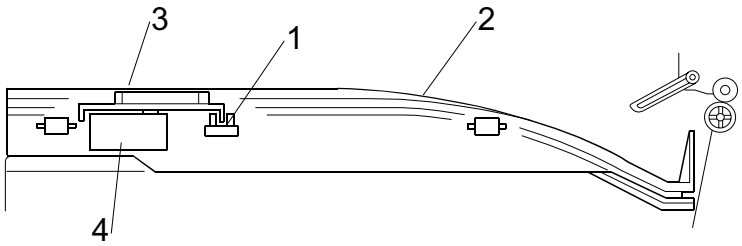
SHIFT TRAY UNIT
B313

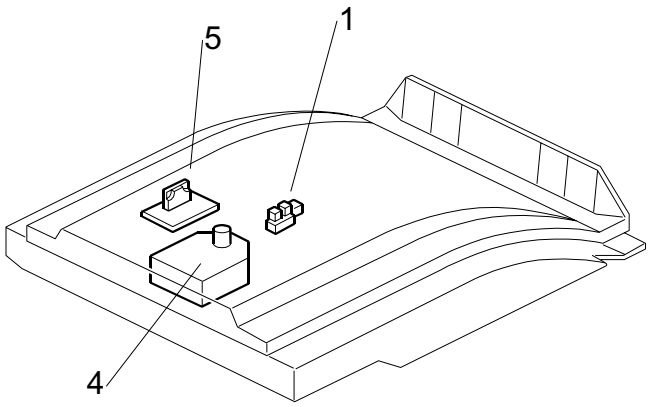
1 OVERALL MACHINE INFORMATION

1.1 SPECIFICATIONS

Paper Size:	Standard Size: A5 lengthwise to A3 HLT lengthwise to DLT Non-standard Size: Paper Width: 90 ~ 297 mm Paper Length: 148 ~ 432 mm
Paper Weight:	60 ~ 105 g/m², 16 ~ 28 lbs.
Tray Capacity:	125 sheets (80 g/m², 20 lbs.)
Power Source:	5 VDC, 24 VDC (from the copier)
Power Consumption:	17 W
Weight:	1.1 kg
Size (W x D x H):	530 mm x 410 mm x 120 mm

1.2 COMPONENT LAYOUT

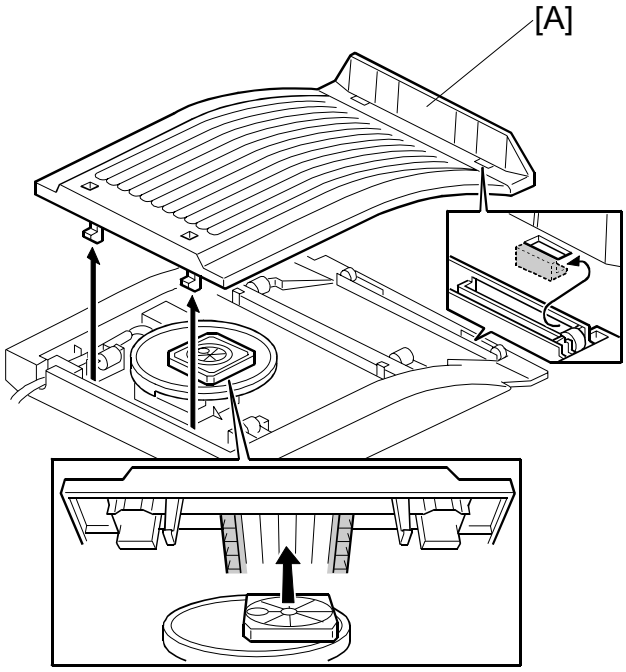




1. Half Turn Sensor
2. Tray Cover
3. Slip Disc
4. Tray Motor
5. Driver PCB

2. DETAILED SECTION DESCRIPTIONS

2.1 BASIC OPERATION

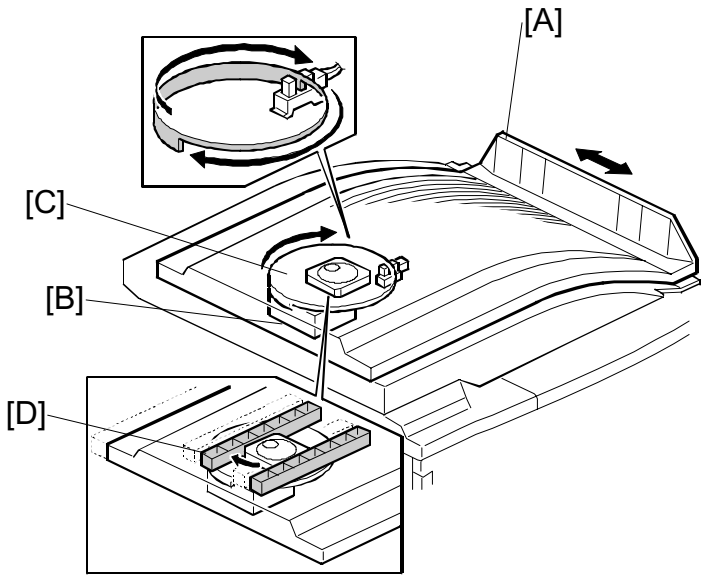


The shift tray allows copies to be sorted into separate piles on one tray.

From the left-right movement of the tray cover [A], the piles of copies are offset into two positions, slightly overlapping one another.

2.2 PRIMARY MECHANISMS

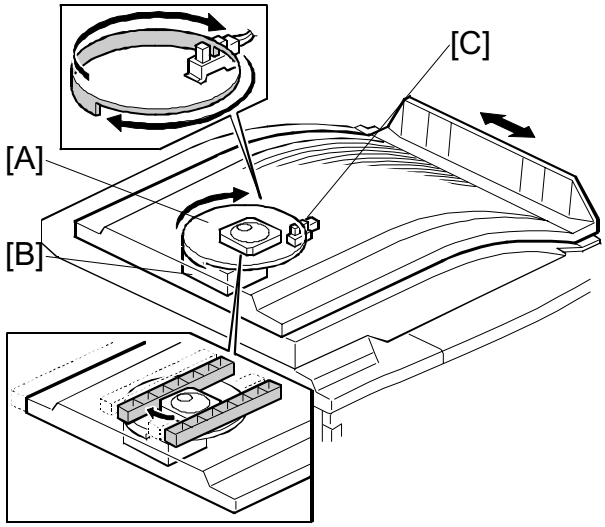
2.2.1 TRAY SHIFT



As stated above, the shift tray cover [A] moves from left to right to create two possible positions for the copies to stack up. This motion is driven by the tray motor [B], which connects to the slip disc [C] via a small shaft. The shaft is connected at the rotational center of the disc. However, there is an off-centered white square attached to the top surface of the disc. When the tray cover is attached to the unit, this square fits into a groove [D] (approximately equal to its width) that runs lengthwise along the underside of the tray

When the motor is running, the disc rotation causes the off-centered white square to change position. Since the square only has freedom of movement along the groove [D], the only net motion of the tray is from left to right.

2.2.2 HALF TURN DETECTION



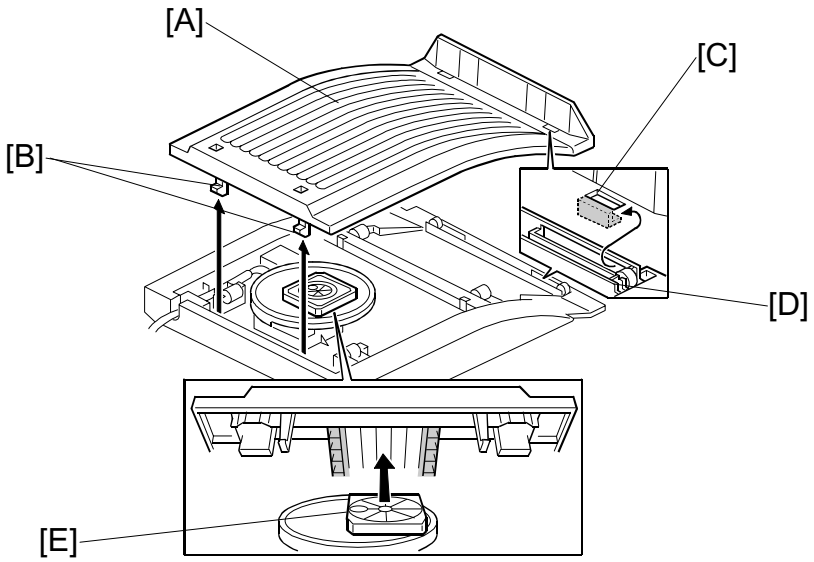
Half turn detection is performed through a combination of two components: the slip disc [A] and half turn sensor [C].

The slip disc has a rim extending below the top surface. However, the rim only extends 180° around the disc. The half turn sensor is below the edge of the disc, opposite the tray motor. The sensor is positioned so that the rim of the disc passes between the LED and photo diode when the disc turns.

While the motor [B] is rotating the disc and moving the tray cover, the disc rim is not between the diode and LED. After the disc has turned its maximum 180°, the rim passes between these two parts and blocks the signal to the LED, stopping the motor. The tray stays in place until the motor is activated again to move the tray across to receive another copy of the original.

3. REPLACEMENT AND ADJUSTMENT

3.1 TRAY COVER REPLACEMENT



3.1.1 TRAY COVER REMOVAL

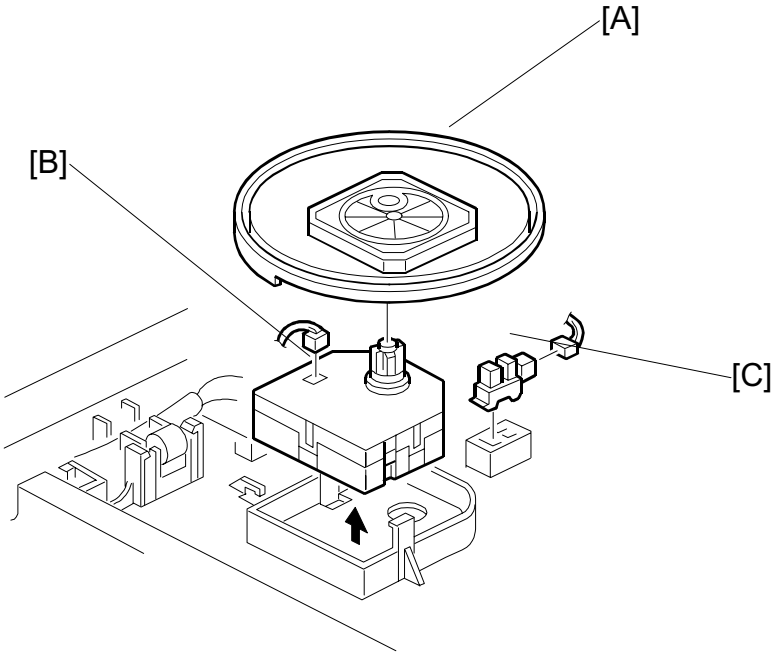
1. Remove the tray cover [A] by pressing on the two pawls [B] on the left side of the cover.

3.1.2 TRAY COVER ATTACHMENT

NOTE: The right side of the tray cover should be attached first.

1. Fit the pawls [C] (just below the cover fin) around the thin bar [D] on the shift tray.
2. Align the square [E] so that it fits into the groove in the underside of the tray cover and does not interfere with the attachment of the cover.
3. Complete the attachment by inserting the left side pawls [B] into place.

3.2 TRAY MOTOR AND HALF TURN SENSOR REPLACEMENT



3.2.1 REPLACING THE TRAY MOTOR

1. Remove the slip disc [A].
2. Remove the tray motor [B] from the motor holder (1 connector).

3.2.2 REPLACING THE HALF TURN SENSOR:

1. Remove the half turn sensor [C] (1 connector).

1,000-SHEET FINISHER
A681

1. OVERALL MACHINE INFORMATION

1.1 SPECIFICATIONS

Paper Size:
No staple mode:
A3 to A6 lengthwise
DLT to HLT lengthwise
Staple mode:
A3, B4, A4, B5 sideways
DLT to LT

Paper Weight:
No staple mode: 52 ~ 157 g/m^2, 16 ~ 42 lb
Staple mode: 64 ~ 80 g/m^2, 17 ~ 21 lb

Stapler Capacity:
20 sheets (A3, B4, DLT, LG)
30 sheets (A4, B5 sideways, LT)

Paper Capacity:
No staple mode:
1,000 sheets (A4/LT or smaller: 80 g/m^2, 21 lb)
500 sheets (A3, B4, DLT, LG: 80 g/m^2, 21 lb)
Staple mode: (80 g/m^2, 21 lb, number of sets)

Size of each set / Size	2 to 10		11 to 20	21 to 30
	2 to 5	6 to 10		
A4/LT sideways B5 sideways	100	85	40	25
A4/LT lengthwise	50		25	15
A3, B4, DLT, LG	50		25	—

Staple Positions: 1

Staple Replenishment: Cartridge (3,000 staples/cartridge)

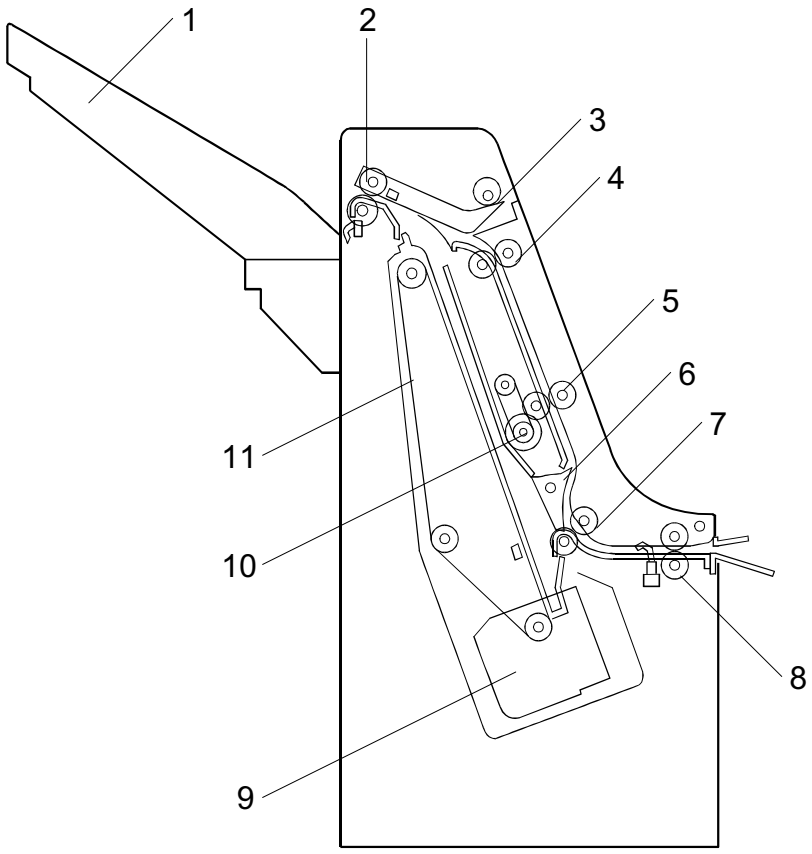
Power Source: 24 Vdc, 5 Vdc (from the copier)

Power Consumption: 48 W

Weight: 21 kg (46.2 lbs.)

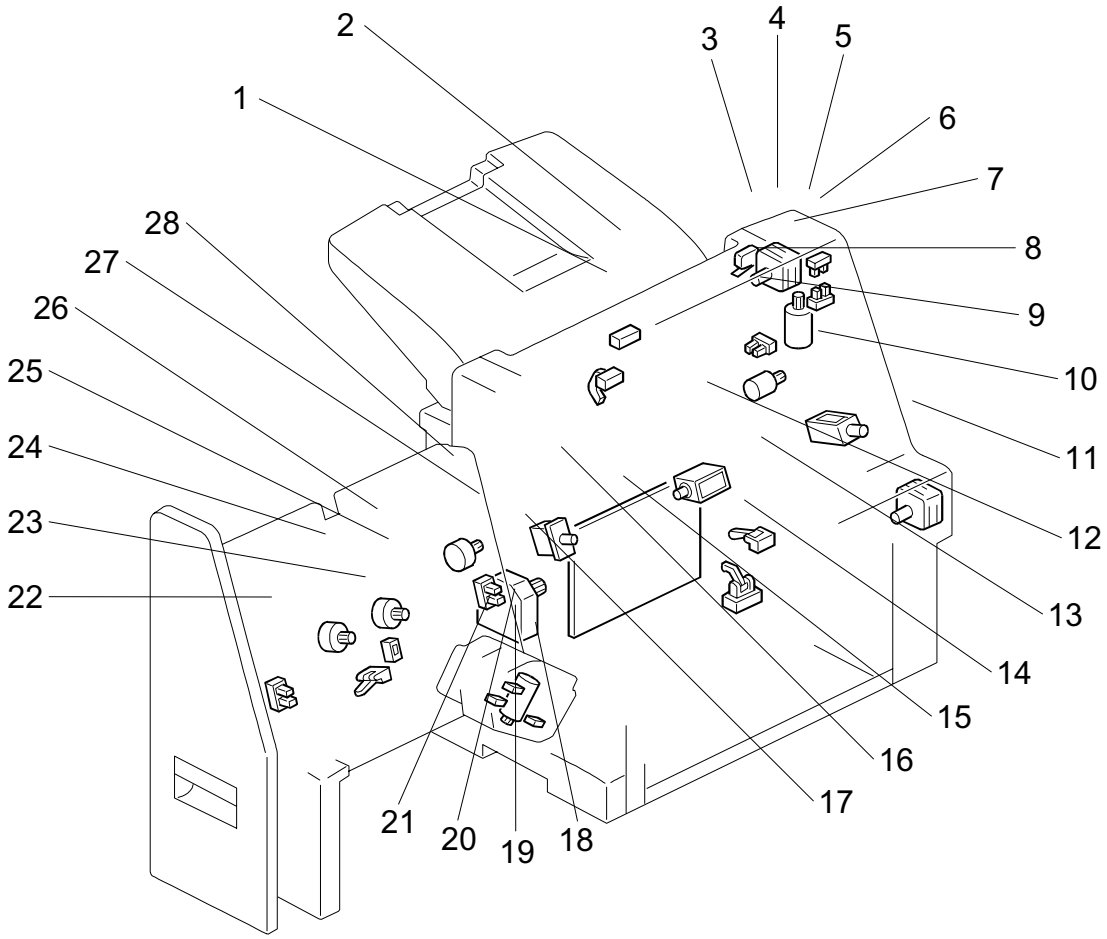
Dimensions (W x D x H): 568 x 520 x 625 mm

1.2 MECHANICAL COMPONENT LAYOUT



1. Shift Tray
2. Exit Roller
3. Exit Roller Release Cam
4. Upper Transport Roller
5. Middle Transport Roller
6. Junction Gate
7. Lower Transport Roller
8. Entrance Roller
9. Stapler Unit
10. Positioning Roller
11. Stack Feed-out Belt

1.3 ELECTRICAL COMPONENT LAYOUT



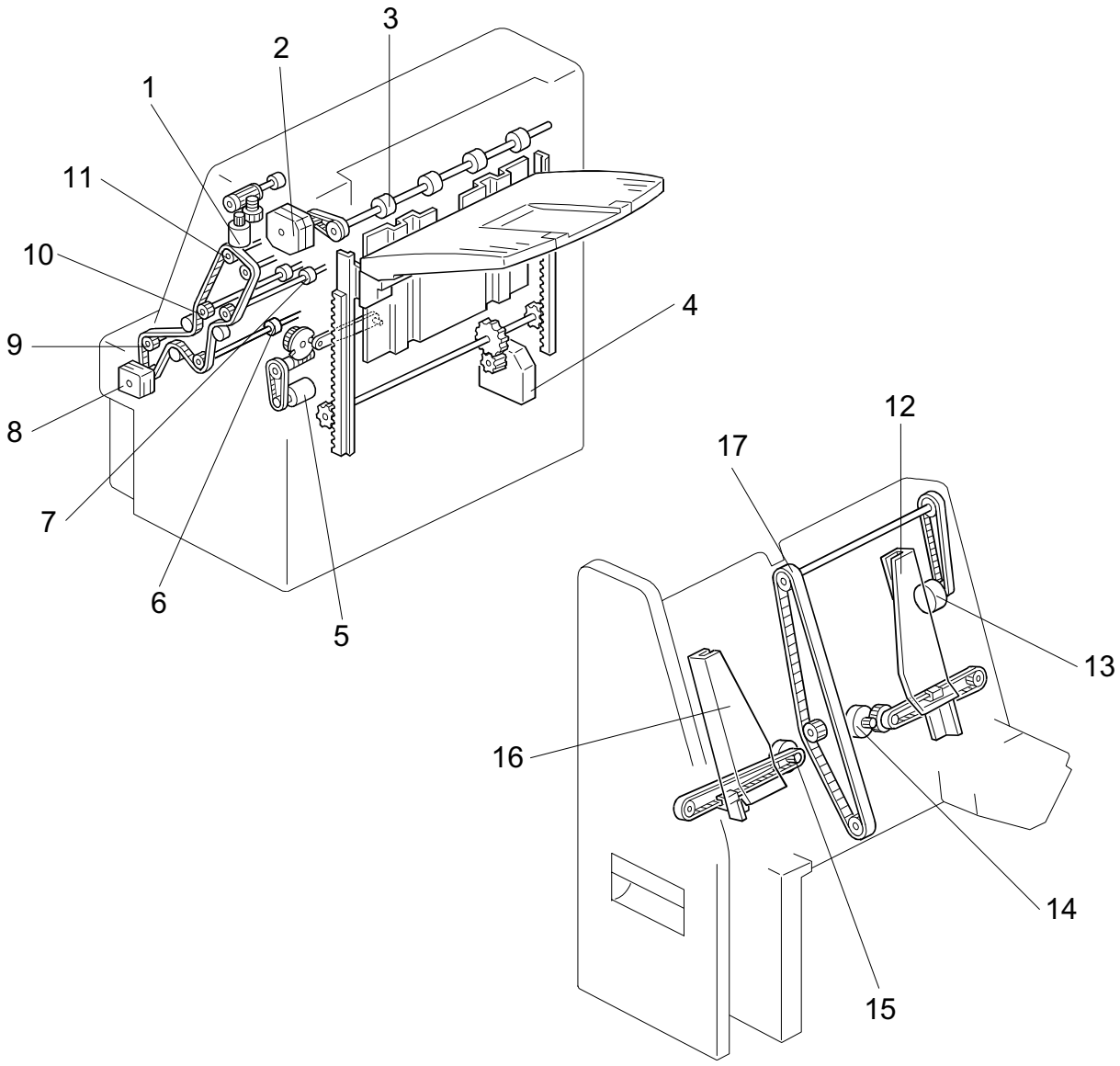
1. Stack Height Sensor
2. Exit Sensor
3. Shift Tray Upper Limit Switch
4. Exit Motor
5. Exit Guide Plate Open Sensor
6. Exit Guide Plate HP Sensor
7. Exit Guide Plate Motor
8. Shift Tray Half-turn Sensor
9. Shift Motor
10. Junction Gate Solenoid
11. Transport Motor
12. Positioning Roller Solenoid
13. Shift Tray Lower Limit Sensor
14. Entrance Sensor
15. Main Board
16. Right Cover Safety Switch
17. Shift Tray Lift Motor
18. Staple Hammer HP Sensor
19. Staple Hammer Motor
20. Cartridge Set Switch
21. Staple End Switch
22. Jogger Fence HP Sensor
23. Stack Feed-out Belt HP Sensor
24. Jogger Fence Motor
25. Jogger Unit Paper Sensor
26. Rear Fence Motor
27. Rear Fence HP Sensor
28. Stack Feed-out Motor

1.4 ELECTRICAL COMPONENT DESCRIPTIONS

Symbol	Name	Function	Index No.
Motors			
M1	Transport	Drives the entrance roller, transport rollers, and positioning roller.	11
M2	Jogger Fence	Drives the jogger fence.	24
M3	Rear Fence	Drives the rear fence.	26
M4	Staple Hammer	Drives the staple hammer.	19
M5	Stack Feed-out	Drives the stack feed-out belt.	28
M6	Exit Guide Plate	Opens and closes the exit guide plate.	7
M7	Exit	Drives the exit roller.	4
M8	Shift Tray Lift	Moves the shift tray up or down.	17
M9	Shift	Moves the shift tray from side to side.	9
Sensors			
S1	Entrance	Detects copy paper entering the finisher and checks for misfeeds.	14
S2	Jogger Unit Paper	Detects copy paper in the jogger unit.	25
S3	Jogger Fence HP	Detects the home position of the jogger fence.	22
S4	Rear Fence HP	Detects the home position of the rear fence.	27
S5	Stack Feed-out Belt HP	Detects the home position of the stack feed-out belt.	23
S6	Staple Hammer HP	Detects the staple hammer home position.	18
S7	Exit Guide Plate HP	Detects the home position of the exit guide plate.	6
S8	Exit Guide Plate Open	Detects whether the exit guide plate is opened or not.	5
S9	Exit	Checks for misfeeds.	2
S10	Stack Height	Detects the top of the copy paper stack.	1
S11	Shift Tray Lower Limit	Detects the lower limit position of the shift tray.	13
S12	Shift Tray Half-turn	Detects the stop position of the shift tray during the side-to-side movement.	8
Solenoids			
SOL1	Junction Gate	Drives the junction gate.	10
SOL2	Positioning Roller	Moves the positioning roller.	12

Symbol	Name	Function	Index No.
Switches			
SW1	Shift Tray Upper Limit	Detects the upper limit position of the shift tray.	3
SW2	Right Cover Safety	Cuts the dc power when the right cover is opened.	16
SW3	Cartridge Set	Detects whether a staple cartridge is installed.	20
SW4	Staple End	Detects staples in the cartridge.	21
PCBs			
PCB1	Main	Controls the finisher and communicates with the copier.	15

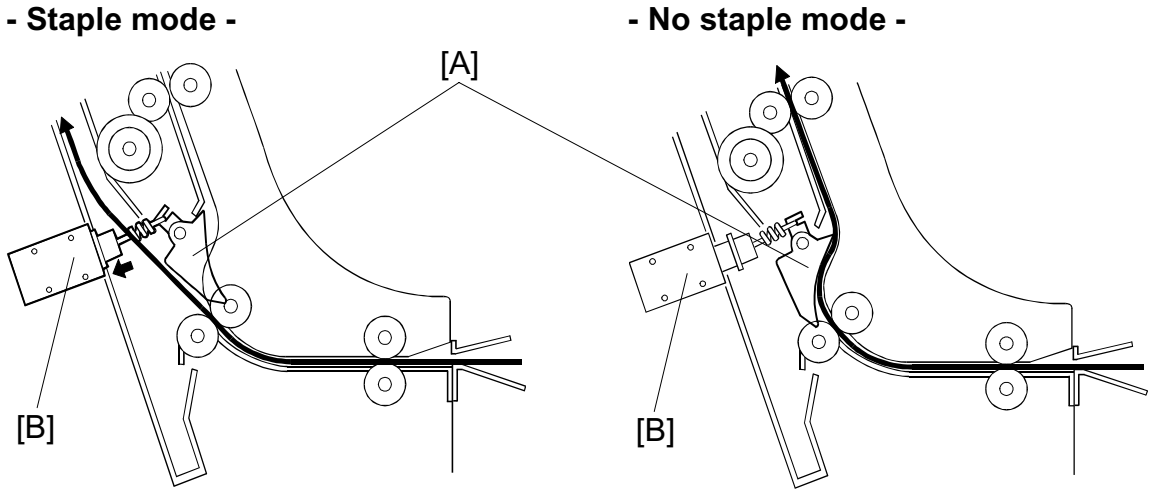
1.5 DRIVE LAYOUT



1. Exit Guide Plate Motor
2. Exit Motor
3. Exit Roller
4. Shift Tray Lift Motor
5. Shift Motor
6. Lower Transport Roller
7. Positioning Roller Drive Roller
8. Transport Motor
9. Entrance Roller
10. Middle Transport Roller
11. Upper Transport Roller
12. Rear Fence
13. Stack Feed-out Motor
14. Rear Fence Motor
15. Jogger Fence Motor
16. Jogger Fence
17. Stack Feed-out Belt

2. DETAILED DESCRIPTIONS

2.1 JUNCTION GATE MECHANISM



Depending on the selected finishing mode, the copies are directed to the left or right by the junction gate [A], which is controlled by the junction gate solenoid [B]. This happens when the exit sensor of the copier turns on.

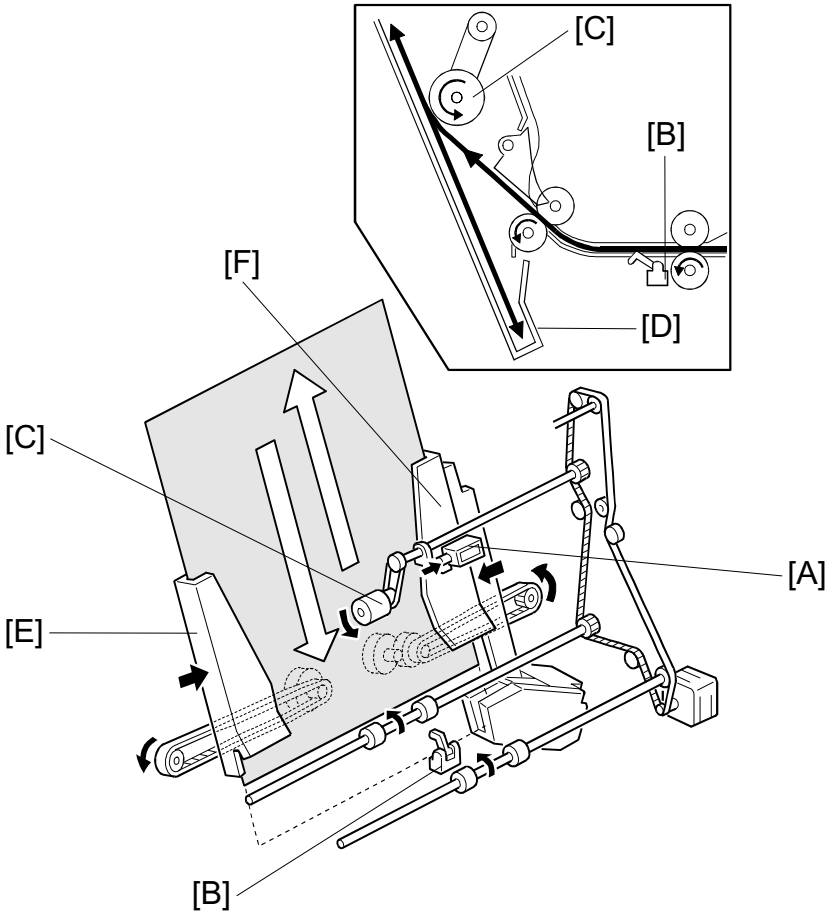
Staple mode

When the exit sensor of the copier turns on, the junction gate solenoid is energized. The paper is sent to the jogger unit.

No staple mode

The junction gate solenoid stays off and the paper is sent to the shift tray directly.

2.2 JOGGER UNIT PAPER POSITIONING MECHANISM



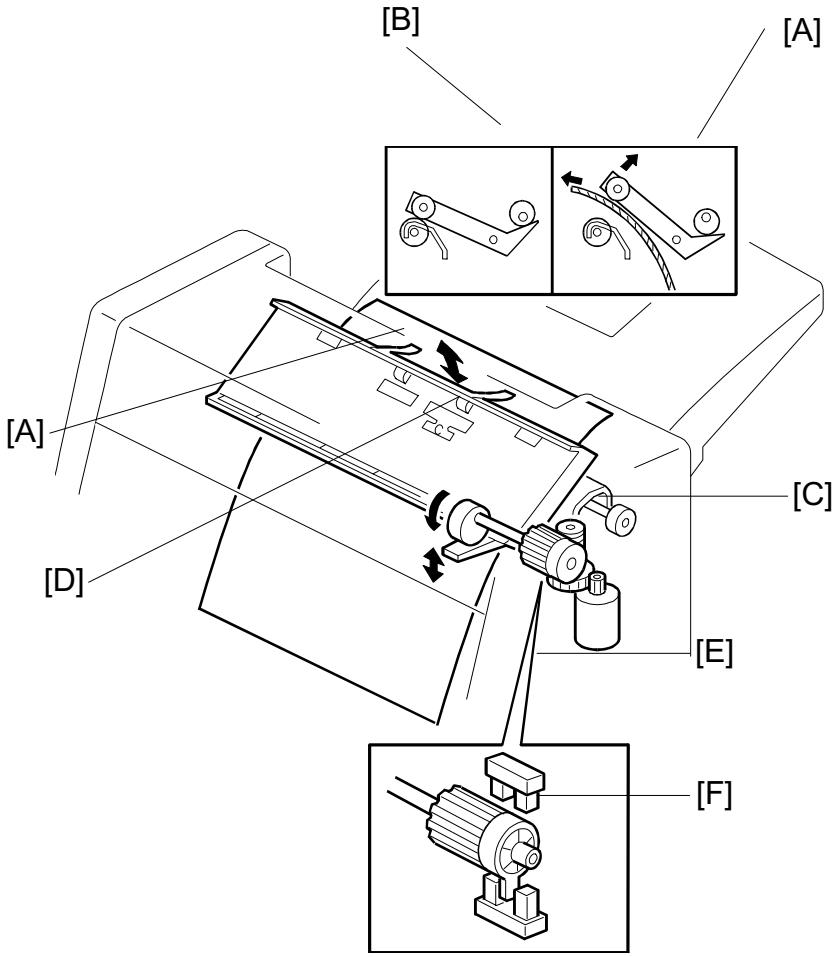
In staple mode, each sheet of copy paper is vertically and horizontally aligned when it arrives in the jogger unit.

For the vertical paper alignment, the positioning roller solenoid [A] turns on shortly after the entrance sensor [B] turns off and the positioning roller [C] pushes the copy against the bottom of stack stopper [D].

For the horizontal paper alignment, the jogger fence [E] and the rear fence [F] move to the waiting position, which is 10 mm away from the side of the paper. After the vertical position is aligned, the jogger fence pushes the paper 20 mm against the rear fence to align the paper horizontally. Then the jogger fence moves back to the previous position.

The stapler is mounted on the rear fence.

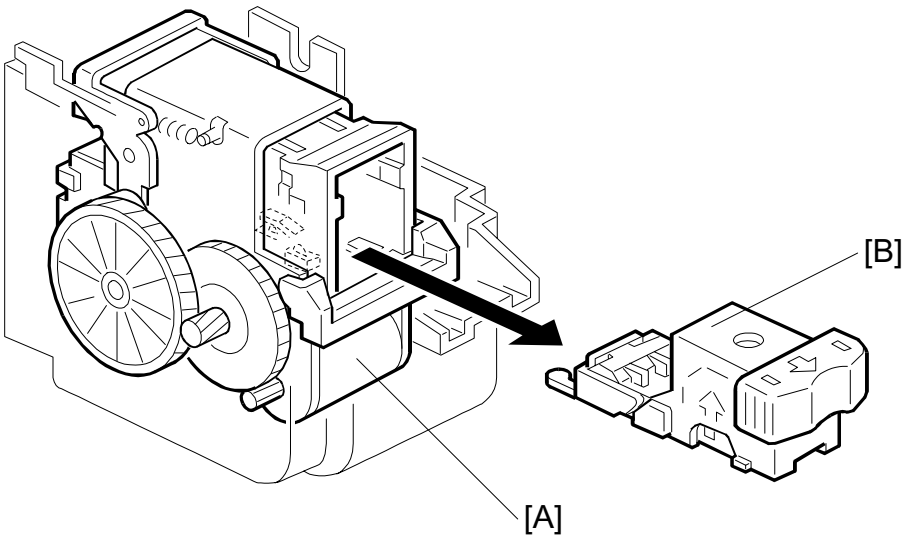
2.3 EXIT GUIDE PLATE OPEN/CLOSE MECHANISM



When stacking a large size of paper (such as A3, DLT) in the jogger unit, the leading edge of the paper reaches the exit rollers. To prevent the paper from running into the exit rollers and not being aligned correctly, the exit guide plate [A] is moved up and this makes a gap between the exit rollers [B]. This operation is done at all paper sizes, but is only needed for the larger sizes.

The exit guide plate motor [C] and exit roller release cam [D] control the exit guide plate movement. When the exit guide plate motor starts, the cam turns and the exit guide plate is moved up. When the exit guide plate open sensor [E] turns on, the motor stops. When stapling is finished, the exit guide plate motor turns on again to close the exit guide plate. When the exit guide plate HP sensor [F] turns on, the motor stops.

2.4 STAPLER



The stapler is mounted on the rear fence. When the rear fence moves, the stapler moves.

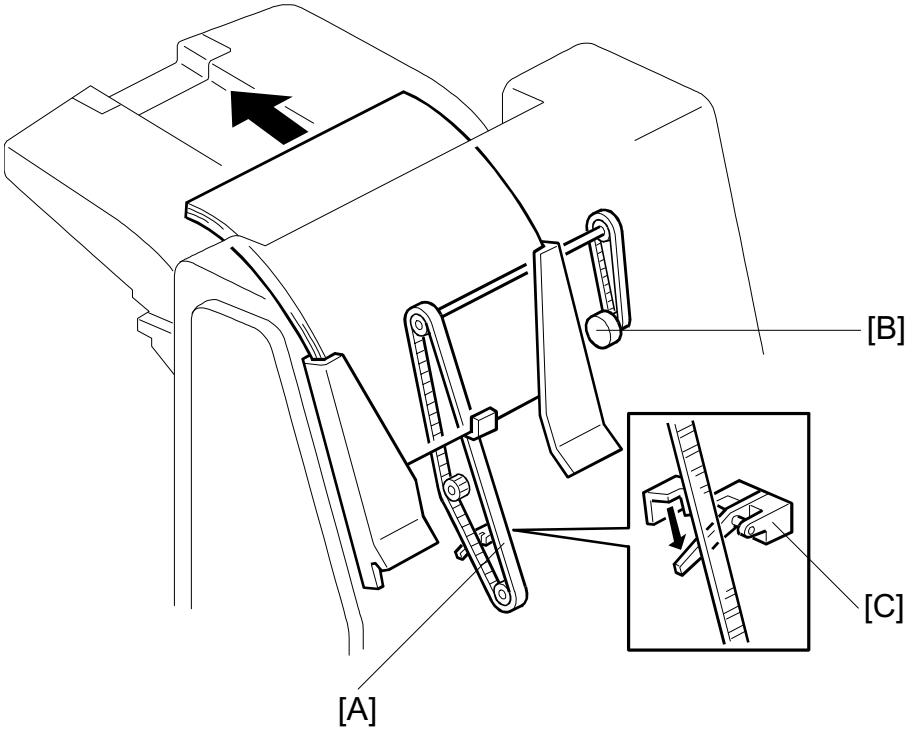
The staple hammer is driven by the stapler hammer motor [A].

When excessive load is applied to the staple hammer motor, the copier detects a staple jam. When a staple jam has occurred, the jammed staple is inside the staple cartridge [B]. Therefore, the jammed staple can be removed easily after pulling out the staple cartridge.

If there is no staple cartridge in the stapler unit or no staples in the staple cartridge, staple end is indicated on the operation panel.

This machine has only one stapling position.

2.5 FEED OUT MECHANISM



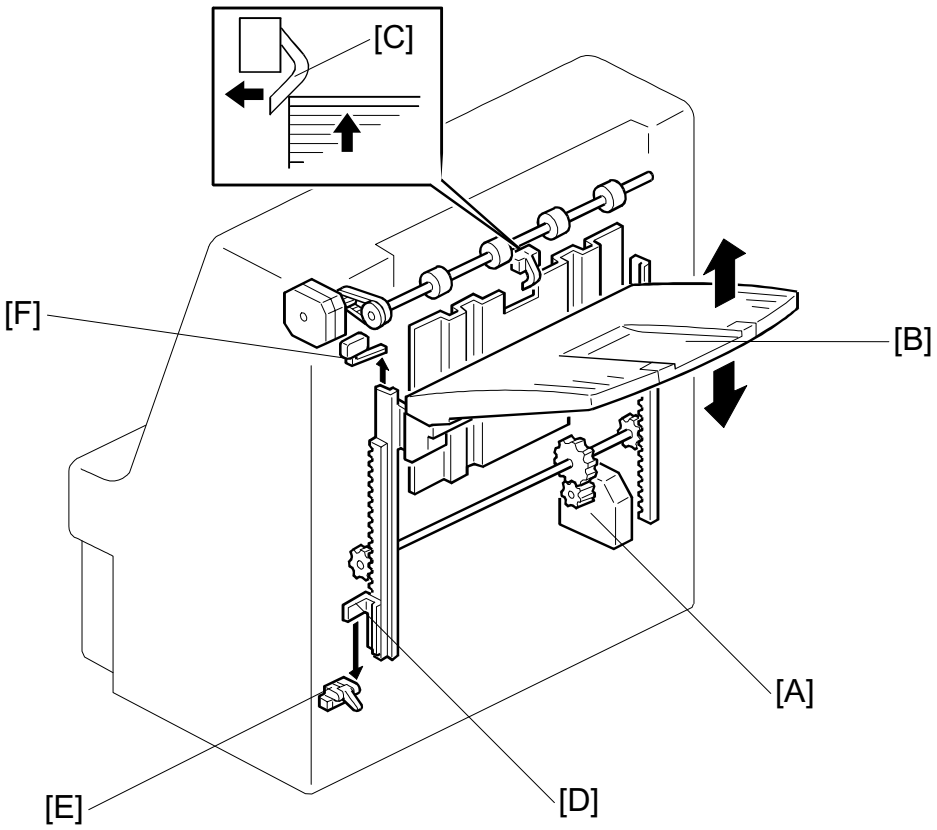
The stack feed-out belt [A] and the exit roller feed out the set of stapled copies.

After the copies have been stapled, the stack feed-out motor [B] turns on to drive the stack feed-out belt.

When the leading edge of the copies reaches the exit rollers, the exit guide plate motor turns on and the exit roller comes down to transport the set of stapled copies. Shortly afterwards, the stack feed-out motor stops, and the exit motor feeds out the stack.

When the stack has been fed out to the shift tray, the stack feed-out motor turns on again. When the stack feed-out belt HP sensor [C] turns on, the stack feed-out motor turns off.

2.6 SHIFT TRAY UP/DOWN MECHANISM



The shift tray lift motor [A] controls the vertical position of the shift tray [B] through some gears. Just after the main switch is turned on, the tray is initialized at the upper position. The tray upper position is detected when the stack height sensor [C] is activated by the shift tray.

During copying, every ten copies in no staple mode or for each set of copies in staple mode, the shift tray is lowered until the stack height sensor turns off then raised until the stack height sensor turns on, and lowered again until the stack height sensor turns off.

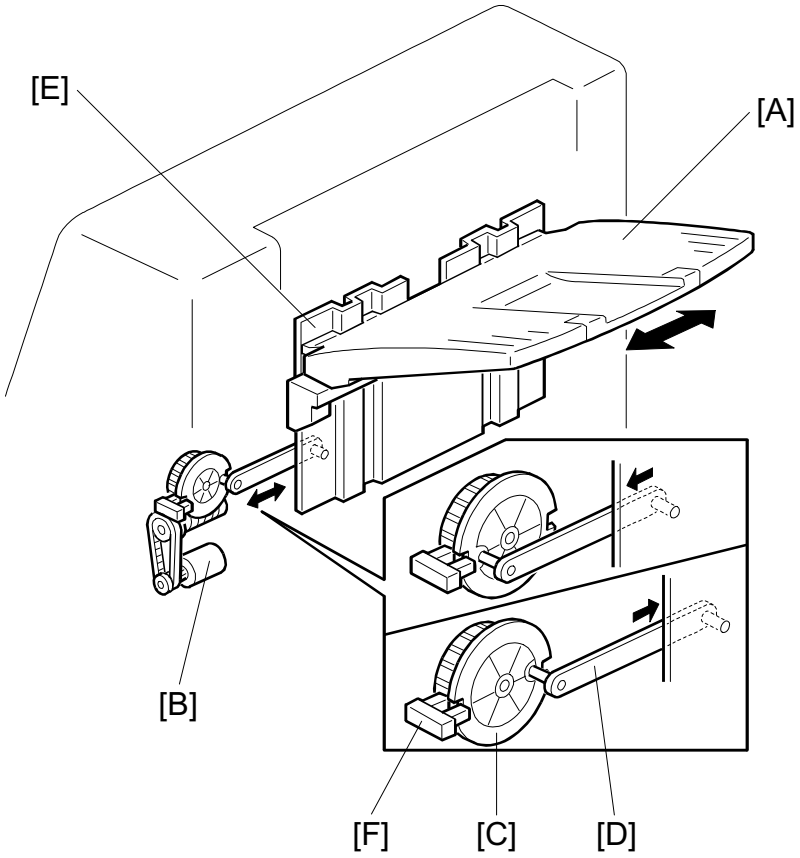
In either mode, the shift tray will rise when the user takes the stack of paper from the tray during copying.

When the shift tray reaches its lower limit, the actuator [D] turns on the shift tray lower limit sensor [E], and copying stops.

When the stack height sensor stays off for 2 seconds in standby mode, the shift tray is raised till the stack height sensor turns on.

The shift tray upper limit switch [F] prevents the drive gears from being damaged if the stack height sensor fails. When the shift tray turns on the shift tray upper limit switch, the switch cuts the power to the shift tray lift motor.

2.7 SHIFT TRAY SIDE-TO-SIDE MECHANISM



In the sort/stack mode, the shift tray [A] moves from side to side to separate the sets of copies.

The horizontal position of the shift tray is controlled by the shift motor [B] and the shift gear disk [C]. After one set of copies is made and delivered to the shift tray, the shift motor turns on, driving the shift gear disk and the link [D]. The end fence [E] is positioned by the link, creating the side-to-side movement.

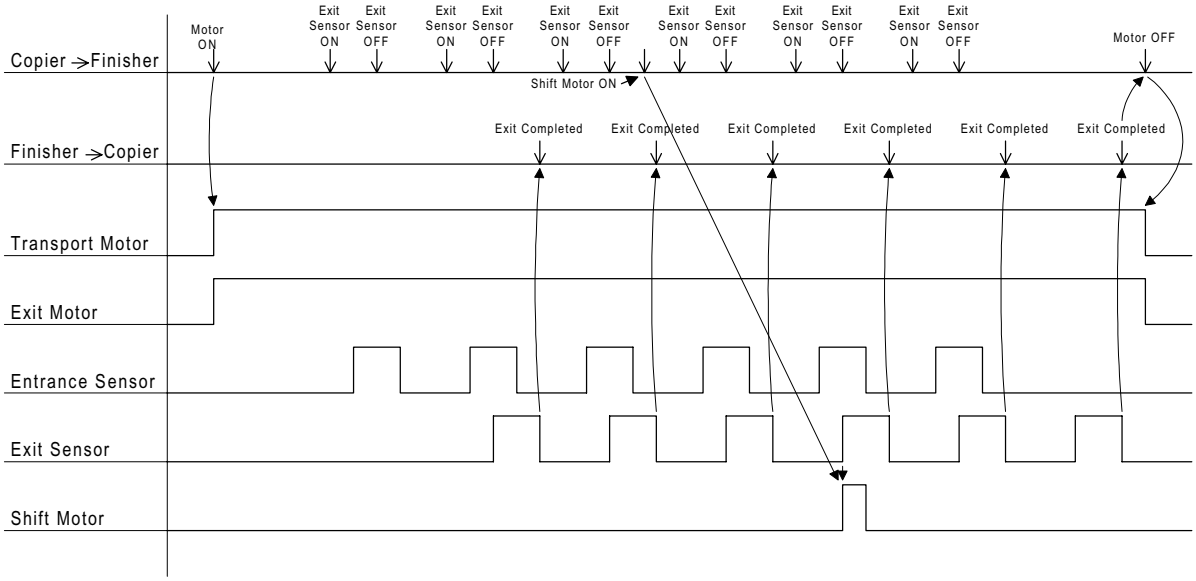
When the shift gear disk has rotated 180 degrees (when the shift tray is fully shifted across), the cut-out in the shift gear disk turns on the shift tray half-turn sensor [F] and the shift motor stops. The next set of copies is then delivered. The motor turns on, repeating the same process and moving the tray back to the previous position.

2.8 JAM CONDITIONS

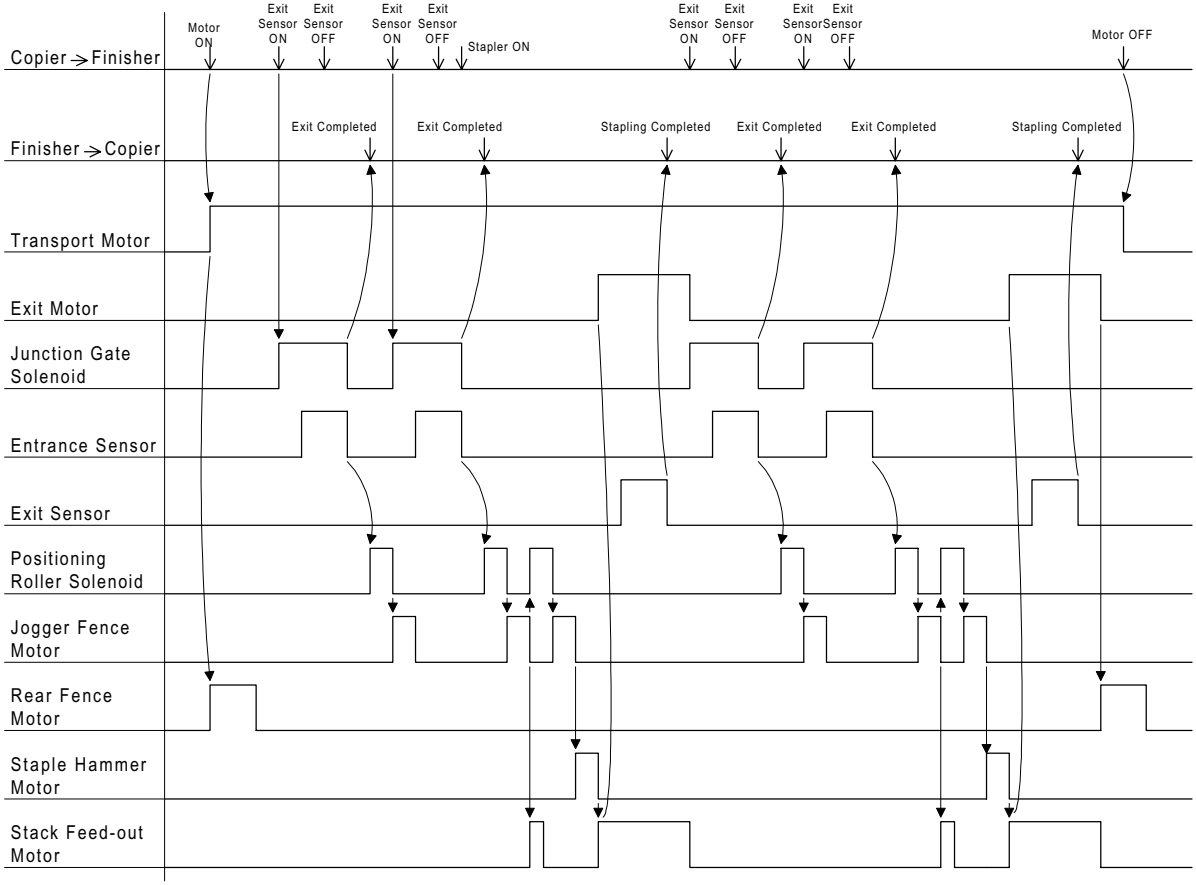
1. When the entrance sensor does not turn off within 1,000 ms after it turns on.
2. When the exit sensor does not turn off within 1,000 ms after it turns on.
3. When the exit sensor does not turn on in no staple mode within 1,250 ms after the entrance sensor turns on.

2.9 TIMING CHARTS

2.9.1 NO STAPLE MODE (A4 SIDEWAYS, 3 SHEETS/2SETS)



2.9.2 STAPLE MODE (A4 SIDEWAYS, 2 SHEETS/2 SETS)



3. SERVICE TABLE

3.1 DIP SWITCH TABLE

DPS101				Description
1	2	3	4	
0	0	0	0	Default
1	1	1	0	Free run: staple mode
1	1	0	1	Free run: no-staple mode

3.2 TEST POINTS

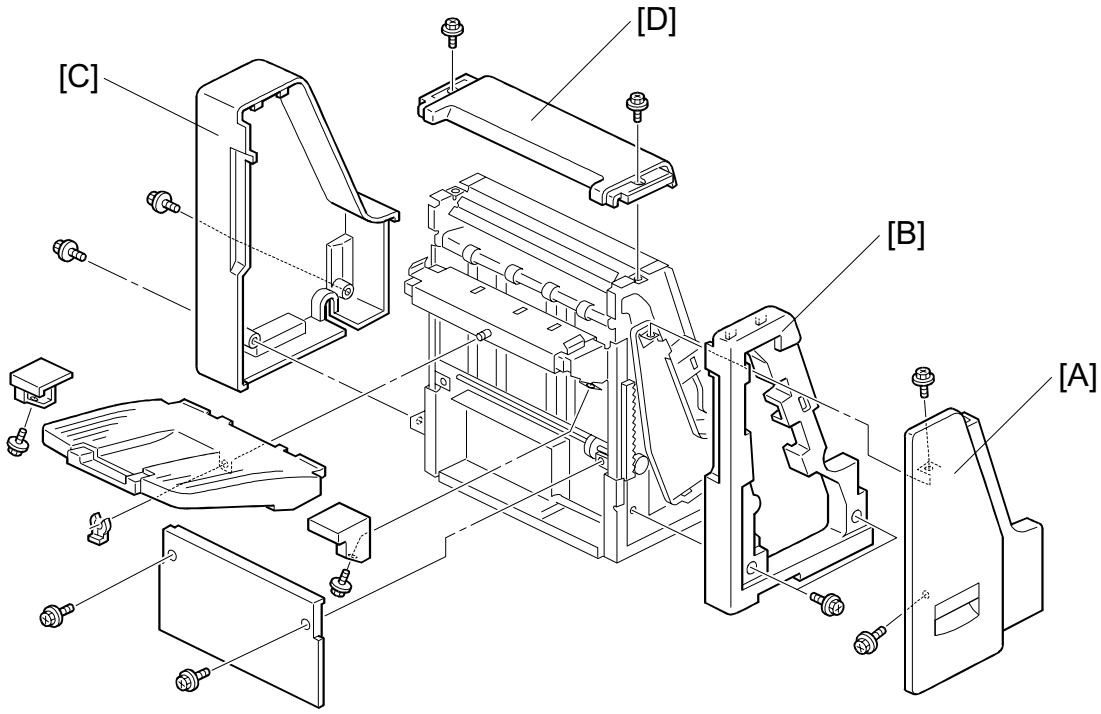
No.	Label	Monitored Signal
TP100	(5 V)	+5 V
TP101	(GND)	Ground

3.3 FUSES

No.	Function
FU100	Protects the 24 V line.

4. REPLACEMENT AND ADJUSTMENT

4.1 COVER REMOVAL



Front Door

1. Remove the front door [A] (2 screws).

Front Cover

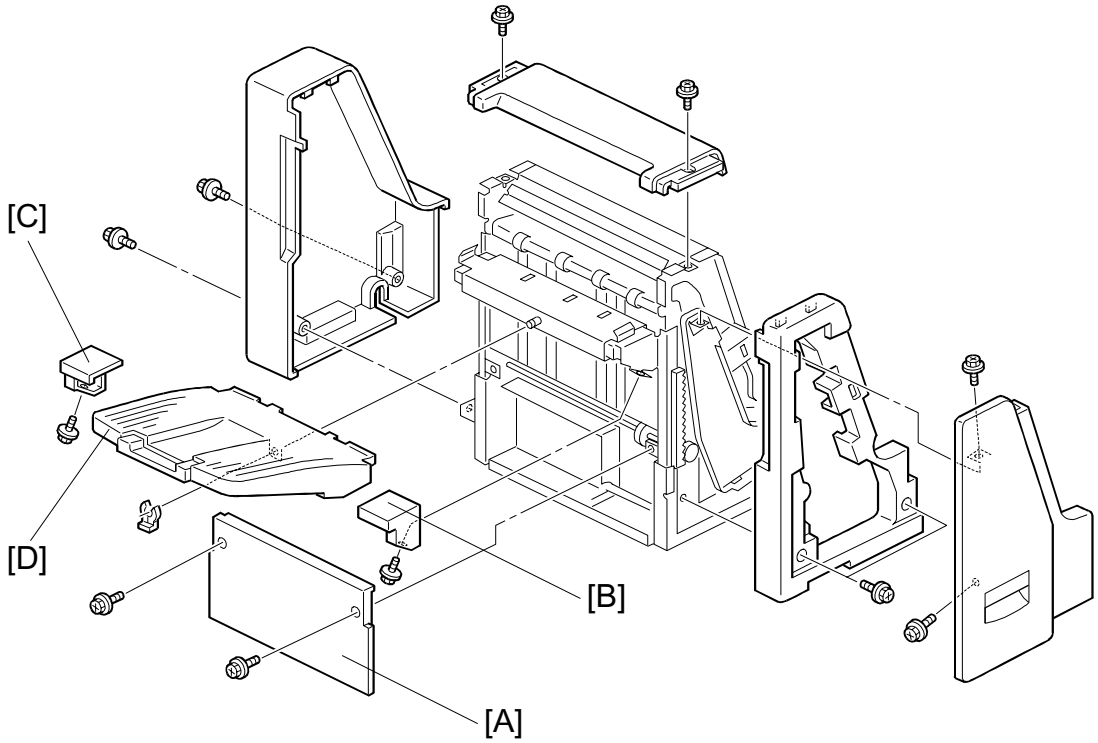
1. Remove the front door.
2. Remove the front cover [B] (2 screws).

Rear Cover

1. Remove the rear cover [C] (2 screws).

Upper Cover

1. Remove the front door.
2. Remove the front cover.
3. Remove the rear cover.
4. Remove the upper cover [D] (2 screws).



Lower Left Cover

1. Remove the lower left cover [A] (2 screws).

Front Shift Tray Cover

1. Remove the front shift tray cover [B] (1 screw).

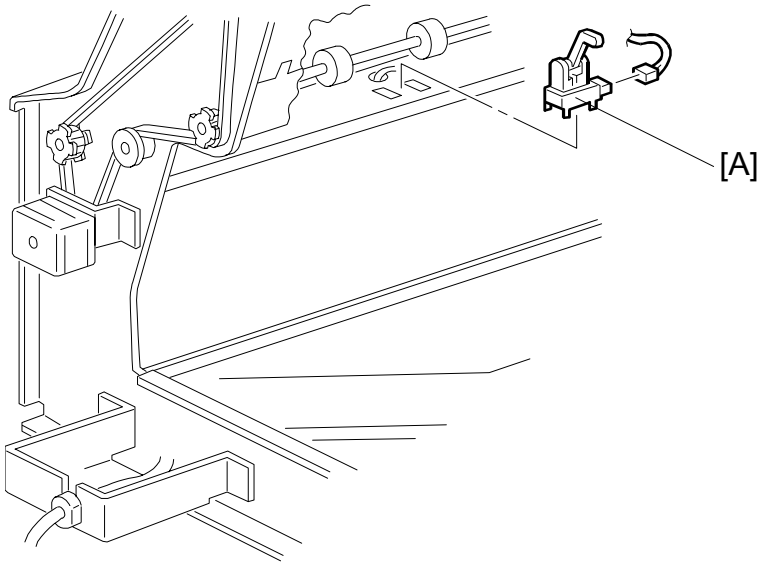
Rear Shift Tray Cover

1. Remove the rear shift tray cover [C] (1 screw).

Shift Tray

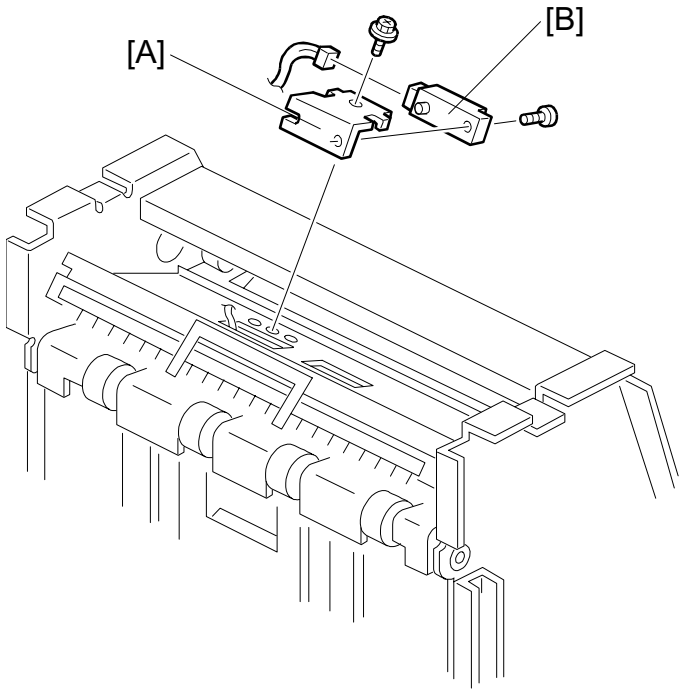
1. Remove the shift tray [D] (1 snap ring).

4.2 ENTRANCE SENSOR REPLACEMENT



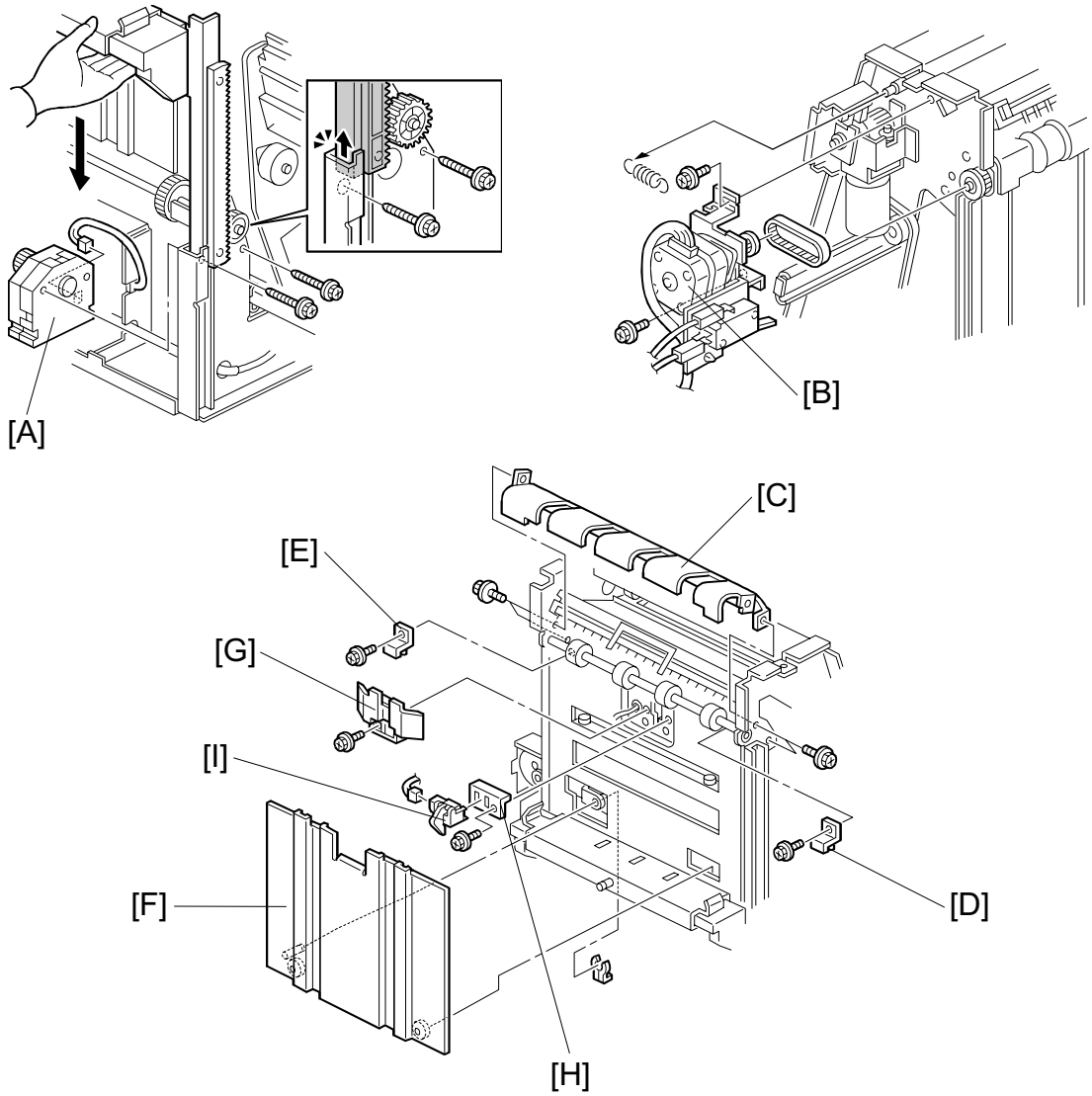
1. Remove the finisher from the copier.
2. Replace the entrance sensor [A] (1 connector).

4.3 EXIT SENSOR REPLACEMENT



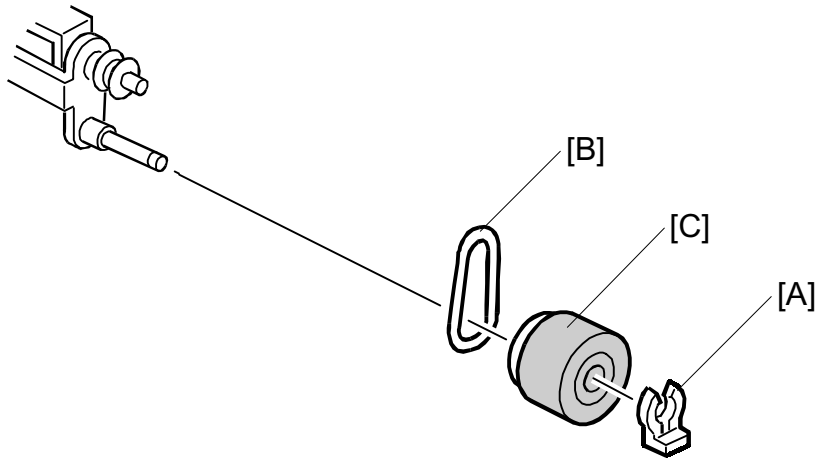
1. Remove the upper cover.
2. Remove the exit sensor bracket [A] (1 screw).
3. Replace the exit sensor [B] (1 screw, 1 connector).

4.4 STACK HEIGHT SENSOR REPLACEMENT



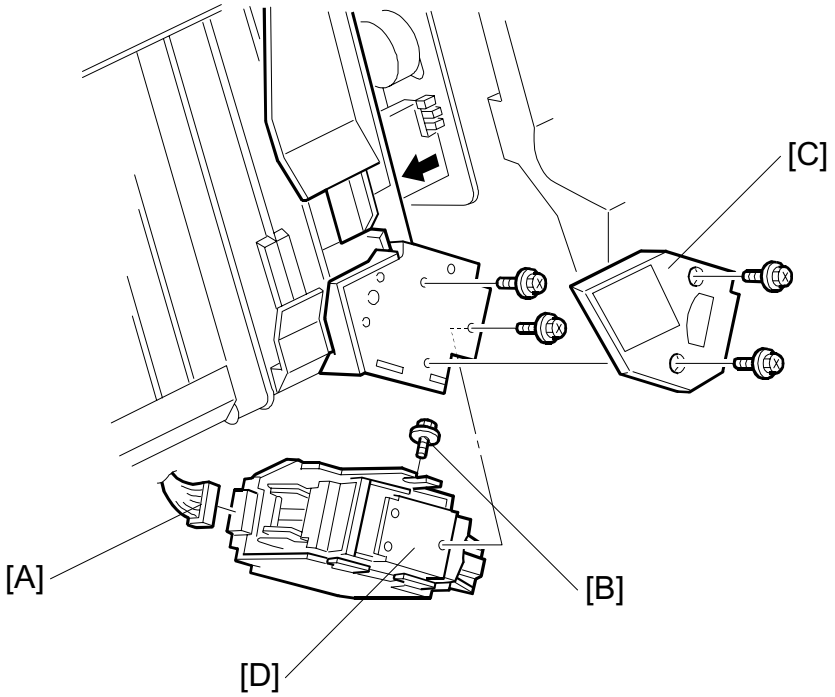
1. Remove the front cover.
2. Remove the shift tray lift motor [A] (2 screws).
   NOTE: The shift tray must be pulled up to remove the two screws.
3. Remove the rear cover.
4. Remove the exit motor unit [B] (2 screws, 1 spring, 1 timing belt).
5. Remove the lower exit guide [C] (4 screws).
6. Remove the front and rear end fence holders [D,E] (1 screw each).
7. Remove the end fence [F] (1 snap ring).
8. Remove the stack height sensor cover [G] (1 screw).
9. Remove the stack height sensor bracket [H] (1 screw).
10. Replace the stack height sensor [I] (1 connector).

4.5 POSITIONING ROLLER REPLACEMENT



1. Pull out the jogger unit.
2. Remove the snap ring [A].
3. Release the rubber belt [B].
4. Remove the positioning roller [C].

4.6 STAPLER REPLACEMENT



1. Pull out the jogger unit.
2. Disconnect the stapler connector [A].
3. Remove the lower cover screw [B].
4. Remove the upper cover [C] (2 screws).
5. Remove the stapler with the lower cover [D] (2 screws).
6. Release the harness from the lower cover.
7. Replace the stapler.

⇒4.7 ROM HISTORY

A681 Firmware Modification History (1000 Sheet Finisher)			
Description of Modification	**Level**	**Prod. Date**	**Ver.**
Corrects the following: • Paper jams due to an error in the vertical movement of the tray.	A6815103K	NA	K
Corrects the following: • Jams that occur when the door is opened during a staple job. • After the power is turned on, the copier reaches ready status even though the shift tray lower limit sensor is on (and the stack is full). A jam occurs if a copy job is started.	A6815103J	NA	J
Corrects the following: • The mainframe locks up during jam recovery. The frequency of occurrence is extremely low. • The user cancels the staple job when there is only one sheet in the staple tray and the sheet is automatically removed from the tray. A paper jam occurs when the next sheet is fed for stapling.	A6815103H	NA	H
Corrects the following: • The jam detection timing has been changed so the A681 can also be used with the A265, A267 or G038. This change has no effect on the A232 series.	A6815103G	NA	G
Corrects the following: • Stapled paper did not stack straight.	A6815103F	NA	F
Corrects the following: • Paper rolling on the shift tray.	A6815103E	NA	E

SCANNER KIT

A844

1. OVERALL MACHINE INFORMATION

1.1 SPECIFICATIONS

1.1.1 SCANNER CONTROL BOARD

Standard Scanner Resolution:	Main scan/Sub scan 600 dpi
Available Scanning Resolution Range:	Main scan/Sub scan Book Mode Binary processing: 100 ~ 2400 dpi Grayscale Processing: 100 ~ 600 dpi ADF Mode Binary processing: 100 ~ 1200 dpi Grayscale Processing: 100 ~ 300 dpi
Grayscales:	8 bits/pixel
Scanning Speed:	0.8 s/200 dpi (A4 lengthwise, Binary, Book mode, MMR Compression)
Scanning Throughput:	22.8 spm for TWAIN (local peer-to-peer scanning) 35.1 spm for Delivery mode (network scanning to a server) (A4 lengthwise, Binary, ADF mode, MMR Compression)
Interface:	Network interface x 1 Ethernet (100 base-TX/10 base-T for TCP/IP)
Compression Method:	MH, MR, MMR (Binary Picture Processing) JPEG (Grayscale Processing)
Video Memory Capacity:	9 MB (Standard – 4 MB for image storage, 5MB for a work area) 1 DRAM SIMM slot (16 MB or 32 MB) Up to 36 MB (4MB + 32 MB)
Power:	DC 5V, 3A (from the main machine)

1.1.2 DRAM SIMM

Number of Pins	72 pins
Access Speed	60 ns or faster
Capacity	16 or 32 MB
Parity	Any setting is OK
Type	EDO required

1.2 SOFTWARE

1.2.1 SCANNER DRIVERS

The following scanner drivers are included on the CD-ROM.

- Network TWAIN Driver for Windows 95/98/NT4.0/NT3.51

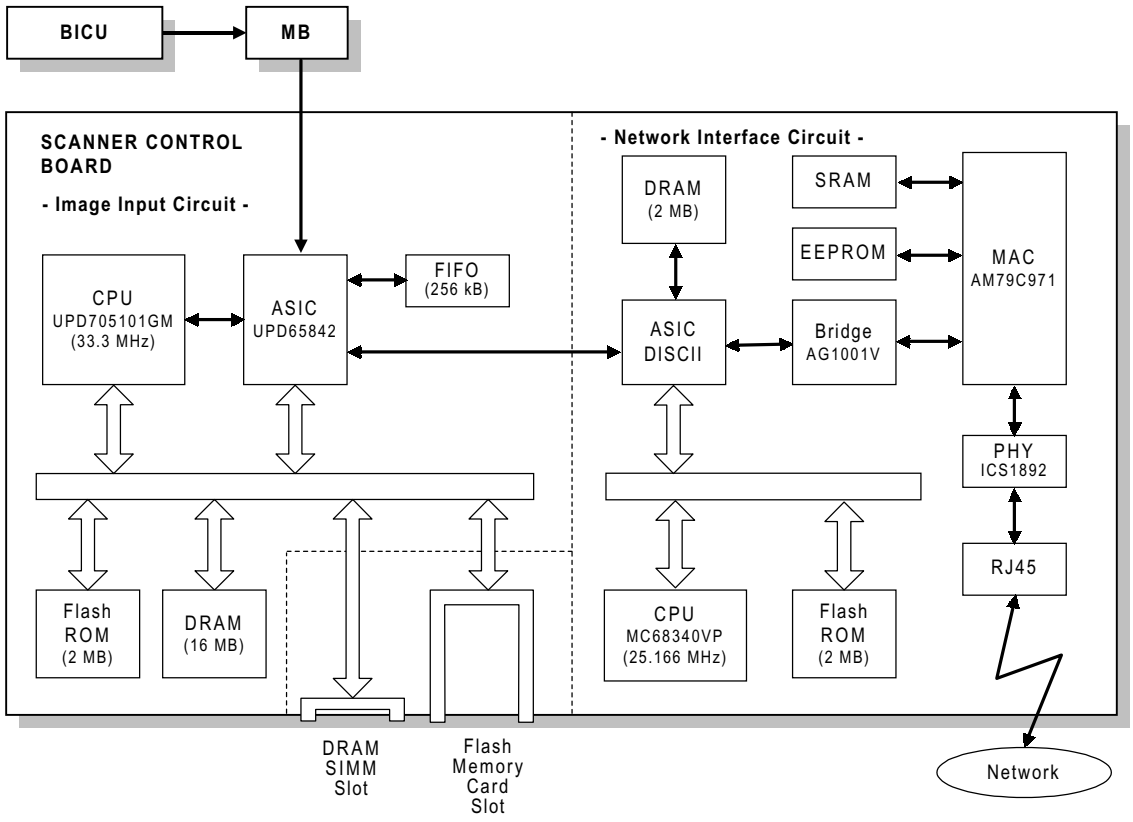
1.2.2 SCANNER UTILITIES

- Scan Router for Windows 95/98/NT4.0
- Aficio Manager for Admin/Client (Windows 95/98/NT4.0)

  NOTE: The Aficio Manager utilities are included on the CD-ROM for the optional printer controller.

2. DETAILED SECTION DESCRIPTIONS

2.1 HARDWARE OVERVIEW



The scanner controller contains image input and network interface circuits. The image data from the BICU is compressed in the image input circuit, then the data goes to the network through the network interface circuit.

Each circuit has a CPU and flash memory IC. The functions of each major component are as follows.

1. Image input circuit

CPU: UPD705101GM

- Sequence control for the image input circuit
- Clock/time control
- DMA control

ASIC: UPD65842

- Stores the image data from the BICU board in the main machine into the buffer memory (DRAM)
- Address control when recalling the data from the memory
- DMA control for the network interface circuit

DRAM:

Compresses and stores the image data from the main machine (Total 16 MB. 9MB for work area, 4MB for buffer area, 3 MB for the working program)

Flash ROM:

Contains the scanner controller program and stores the UP/SP settings for the scanner (2 MB)

2. Network interface circuit

CPU: MC58340VP

- Sequence control for the network interface circuit
- Clock/time control
- DMA control

ASIC (DISCII):

- Bus interface between the image input circuit and network interface circuit

Bridge: AG1001V

This is an ISA-PCI bridge; it corrects the timing and decodes the commands between the ISA bus and the PCI bus.

MAC: AM79C971

This is a LAN controller; it covers the same functions as the Data Link Layer of the OSI model.

PHY: This device covers the same functions as the Physical Layer of the OSI model.

Flash ROM: Contains the program for the network interface (2 MB)

EEPROM: Contains UP/SP settings for the network interface

2.2 SCANNER FUNCTIONS

2.2.1 SELF DIAGNOSTICS

Every time the main power switch has just been turned on, the scanner board performs the self diagnostics and the following items will be done automatically.

- SRAM read/write test
- Flash ROM read test
- Battery test
- Initializes the network interface circuit
- Application software for scanner controller test
- Connection test between the scanner board and the main body

If an error is detected, an appropriate error message or condition will be generated (refer to the Troubleshooting section).

2.2.2 IMAGE PROCESSING IN THE SCANNER CONTROLLER

The image processing for scanner mode is done in the IPU chip on the BICU board. However, the following processes are done in the scanner controller.

- Image compression
- Sub-scan magnification

Also, the scanner controller has a gamma table and dither matrix for scanner mode. When the user selects the image mode using the scanner driver, the appropriate gamma table and dither matrix are downloaded to the BICU board. Then the IPU chip does the image processing using these tables or matrixes.

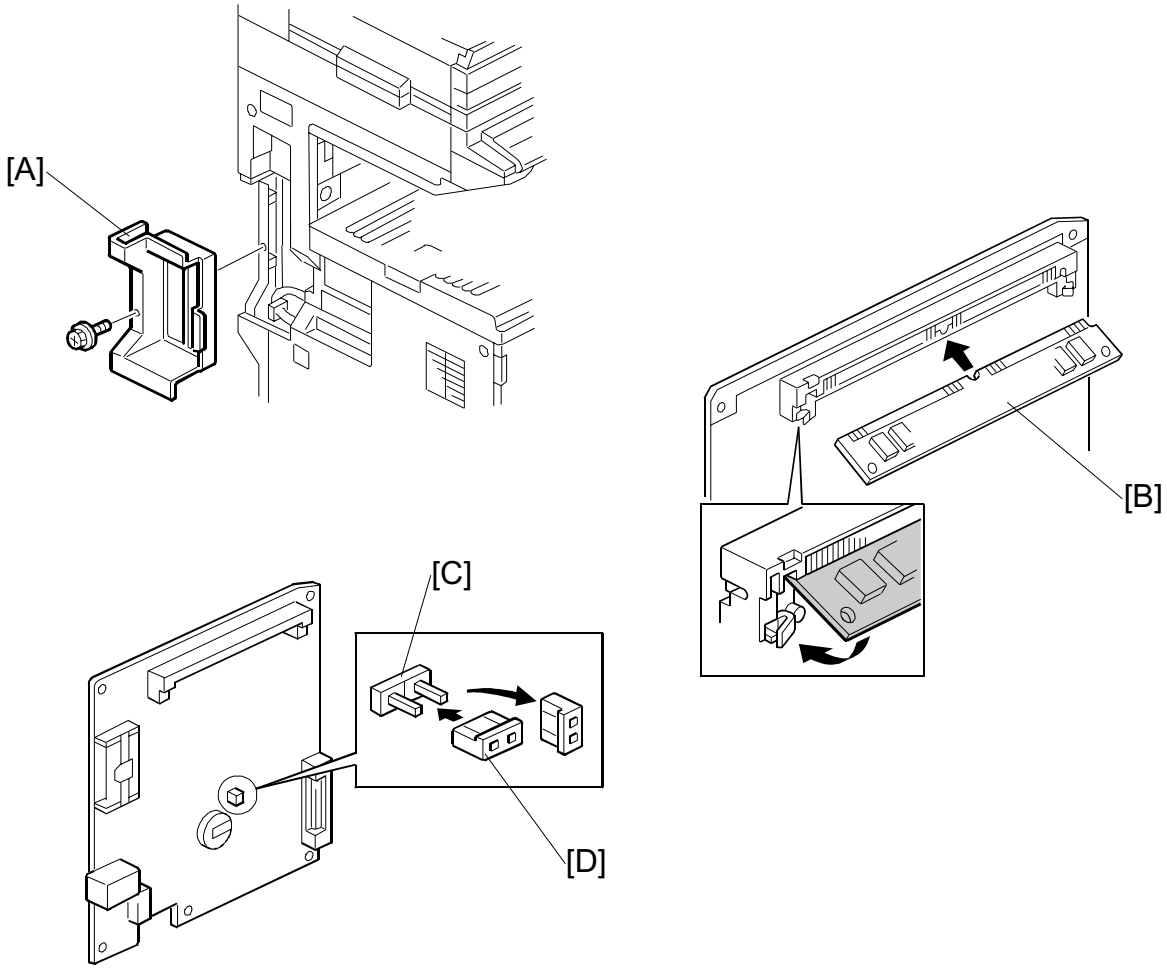
Image compression

The image compression method for binary picture processing uses MH, MR, or MMR, depending on scanner SP mode 002. Grayscale processing uses JPEG. This is done by the software.

Sub-scan magnification

Usually, the sub-scan magnification is done by changing the scanner motor speed. However, when the amount of data being transferred is high (e.g, low resolution in grayscale processing mode), the scanner controller deletes every other line.

3. INSTALLATION PROCEDURE



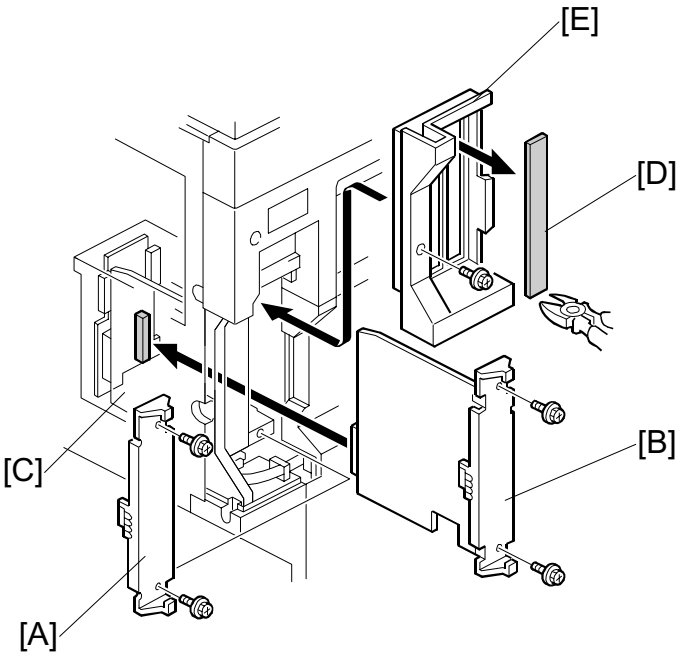
⚠CAUTION

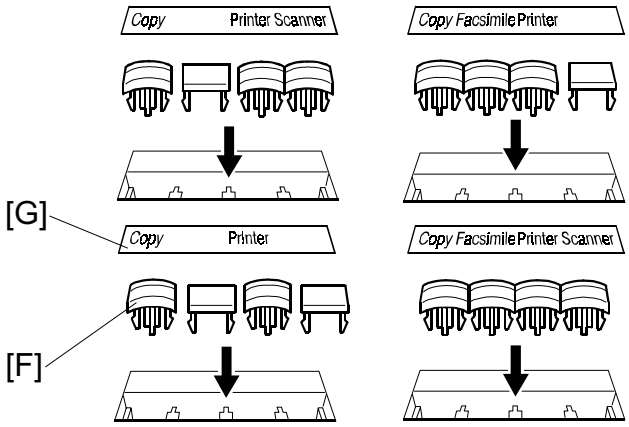
Unplug the main machine's power cord before starting the following procedure.

NOTE: Before doing the following steps, the printer controller (B306) must be installed.

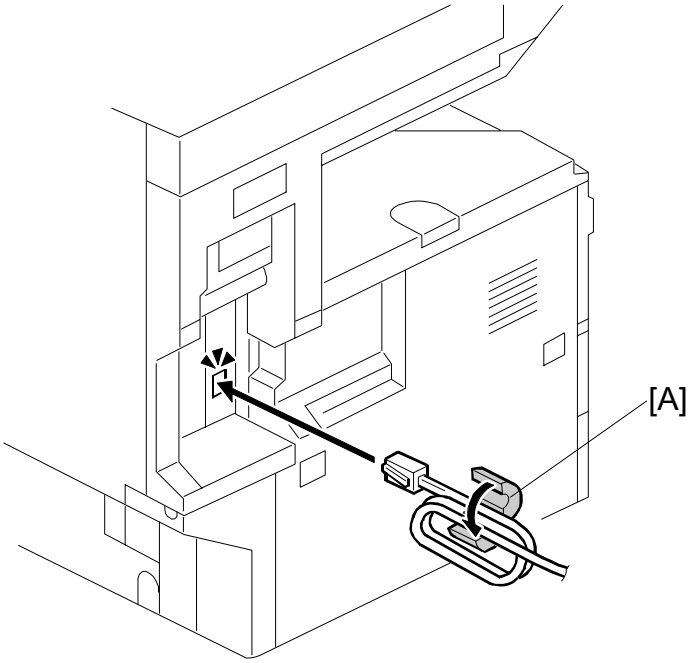
When installing the scanner controller and the printer controller (B306) at the same time, skip step 1.

1. Remove the application cover [A] (1 screw)
2. Install the optional SIMM memory [B] on the scanner board if it is required.
3. Short TB4 [C] on the scanner board with jumper [D].





4. Remove the plate [A] from the expansion box (2 screws).
5. Install the scanner controller board [B] in the right-most slot of the expansion box [C] (2 screws).
6. Cut away the cover [D] from the application cover [E].
7. Reinstall the application cover (1 screw).
8. Remove the mode key cap. Then install the key tops [F] and decal [G] depending on the machine configuration, as shown.



9. Turn the machine on, SC4003 may occur. Do the following procedure to clear the SC condition.
   NOTE: The meaning of SC4003 is that the battery worn out. Even if the TB4 is shorted by the jumper chip, the battery level is low at the time of installation of the scanner controller board. This SC condition will not occur for about 30 minutes after the TB4 has been shorted.
   1) Enter SP mode (→ 1 → 0 → 7 → C/© press C/© for more than 3 seconds).
   2) Select 4 (Scanner SP mode).
   3) Press the Next bottom 4 times to access SP005 (Error Log Indication).
   4) Leave the SP mode.
   5) Turn the machine off and on. If SC4003 still occur, check the jumper position.
10. Make sure that the parallel cable is not connected to the printer controller and check the setting of the following copier SP mode (enter the SP mode and select 1):

    - SP5-907: Plug & Play Brand Name and Production Name Setting – select the correct one.

11. Attach the core [A] to the STP (Shielded Twist Pair) cable, then connect the cable to the scanner controller.

4. SERVICE TABLE

4.1 SERVICE PROGRAM MODE

4.1.1 SERVICE PROGRAM ACCESS PROCEDURE

The service program access procedure, such as “Entering Service Program (SP) Mode” and “Exiting SP Mode” is the same as for copier and fax, as follows.

Entering SP mode

[#/⏻] → [1] → [0] → [7] → [C/⏻] (hold it for more than 3 seconds.)

Exiting SP mode

Press the “Back” and “Exit” keys until the standby mode display appears.

4.1.2 SERVICE PROGRAM MODE TABLES

NOTE: 1) In the Function column, comments are in italics.
2) In the Settings column, the default value is in bold letters.

No.		Function	Setting
001	FTP Port Number	Changes the FTP port number. *After changing this value, do the following:* *1. Run the Registry Editor.* *2. Access /HKEY_LOCAL_MACHINE/SOFTWARE/Ricoh/NetworkScanner* *3. Change the value of PortNo to this SP mode’s value.*	0000 ~ 9999 1 / step **3670**
002	Compression Type	Selects the compression type for binary picture processing.	0: MH 1: MR **2: MMR**
003	Software Version	Displays the software version.	
004	Program Number	Displays the program’s part number.	
005	Error Log Display	Displays the error logging data *Check this data when SC4005 occurs. Then inform it to the service center.*	
006	Scan Data Reset	Resets all scanner data (UP and SP modes) except for the network interface data (UP-Network-1 ~ 8) *Press “1” three times to reset.*	
007	All Data Reset	Resets all UP and SP settings *Press “1” three times to reset.*	

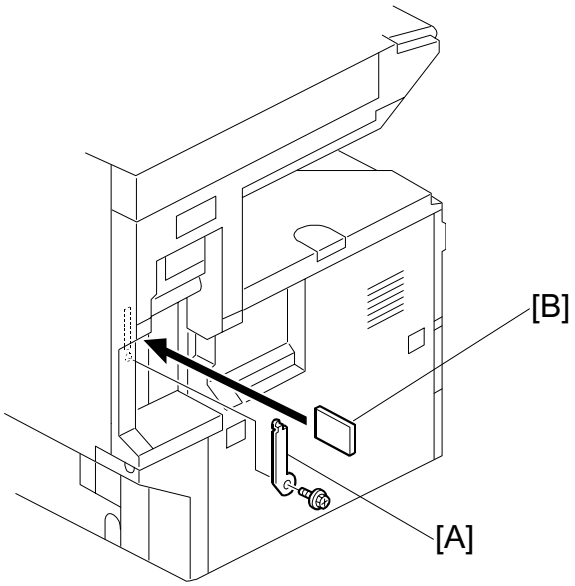
No.		Function	Setting
008	NIC Data Reset	Resets all network interface data (UP-Network-1 ~ 8) *Press "1" three times to reset.*	
009	Density Adjustment 1	Adjusts the image density for each image density level which can be selected with UT mode (UT-Scan-Density)	0 ~ 255 1 / step **40**
010	Density Adjustment 2		0 ~ 255 1 / step **70**
011	Density Adjustment 3		0 ~ 255 1 / step **100**
012	Density Adjustment 4		0 ~ 255 1 / step **130**
013	Density Adjustment 5		0 ~ 255 1 / step **170**
014	Density Adjustment 6		0 ~ 255 1 / step **200**
015	Density Adjustment 7		0 ~ 255 1 / step **230**
016	ROM Disk Format	Initializes the flash ROM. Press "1" three times to initialize.	

4.2 DOWNLOADING NEW SOFTWARE

4.2.1 SOFTWARE DOWNLOAD PROCEDURE

The software for the scanner controller contains the system software, application software, and network interface software. The new software can be downloaded from a flash memory card.

1. Prepare a flash memory card that has been programmed with the latest software.



2. Turn off the machine and disconnect the Ethernet (STP) cable from the scanner controller.
3. Remove the cover [A], and insert the flash memory card [B] into the slot so that the “A” side of the card faces the front of the machine.
4. Turn the machine on and press the Scanner Mode key.
5. Press the INSTALL key in reply to the message. Software download will take several minutes.
6. Make sure that the machine displays the scanner SP mode, then after new software has been downloaded successfully, turn off the machine, remove the card, connect the Ethernet cable, and turn the machine back on.

4.2.2 ERROR MESSAGES DURING THE SOFTWARE DOWNLOAD

If downloading failed, one of the following error messages appears. At this time, press the “CONFIRM” bottom in the display to re-try the download.

Message	Action
SYS Erasing Failed ADDR:XXXXXXXX	Re-try the download. If the download fails again, replace the scanner controller.
SYS Writing Failed ADDR:XXXXXXXX	
SYS Verify Failed ADDR:XXXXXXXX	
APL Erasing Failed ADDR:XXXXXXXX	
APL Writing Failed ADDR:XXXXXXXX	
APL Verify Failed ADDR:XXXXXXXX	
NIC board is not equipped	
NIC Initialization failed. CODE:XXXX	
NIC Download mode is disable	
NIC Writing Failed ADDR:XXXXXXXX	
NIC Host Service Error CODE:XXXX	Re-try the download. If the download fails again, replace the scanner controller. Check whether the STP cable is disconnected. If it is connected, disconnect the cable and re-try the downloading.

5. REPLACEMENT AND ADJUSTMENT

5.1 NOTE FOR REPLACING THE SCANNER CONTROLLER BOARD

The scanner controller does not have a configuration report and cannot upload/download settings to an IC card. So, before replacing the scanner controller board, check all UT mode and SP mode settings. After replacing the board, re-input these settings.

6. TROUBLESHOOTING

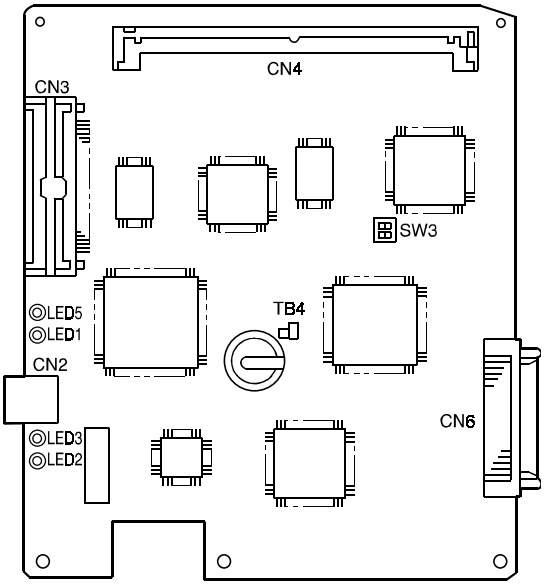
6.1 SERVICE CALL CONDITION

The scanner controller board automatically performs the self diagnostics whenever the main power switch is turned on. If an error is detected, it displays an error message on the LCD. Turn the main switch off and on to reset the SC condition.

6.1.1 SC CODE DESCRIPTIONS

SC code	Error Items	Conditions	Action
SC4001	DRAM Error	• SIMM defective • A SIMM type other than 16MB or 32MB SIMM is installed	Replace or re-install the SIMM
		• Standard SRAM defective	Replace the scanner controller board
SC4002	Flash ROM Error	The machine cannot scan	Defective firmware; try to download the software. If the download fails, replace the scanner controller.
SC4003	Battery Error	• The battery has run out	Replace the scanner controller board
		• The jumper TB4 is at the off position	Change the jumper position
SC4004	NIC Error	NIC circuit defective	Replace the scanner controller board
SC4005	Application Error	Logical error	Turn the main switch off and on, check the error log data (SP005), then inform it to the service center.

6.2 LEDS



LED No.	Color	Status	Condition
LED1	Yellow	Lit	The network interface circuit is working properly.
		Off	The network interface circuit does not work.
LED2	Green	Lit	The scanner controller board is connected to the network properly.
		Off	The scanner controller board is not connected to the network.
LED3	Green	Lit	100 Base-TX
		Off	10 Base-T
LED5	Red	Lit	+ 5V is supplied
		Off	+ 5V is not supplied
		Blinking	Communication error between the scanner controller board and BICU.

6.3 FIRMWARE HISTORY

6.3.4 A844 FIRMWARE MODIFICATION HISTORY

A844 SCANNER OPTION FIRMWARE MODIFICATION HISTORY			
DESCRIPTION OF MODIFICATION	**FIRMWARE LEVEL**	**SERIAL NUMBER**	**FIRMWARE VERSION**
• 1st Mass Production	A8775810**E**	1st Mass Production	3.0.1
• The firmware was modified so that it can be used with the scanner controller for A283/A284 • The machine sometimes scans part of the exposure glass scale and edge of the original. To prevent this, a new scanner SP mode has been added (SP017, Trimming Margin Adjustment). • Note: After installing the firmware, Scanner SP006 (Scan Data Reset) must be performed. • The machine stalls when the memory full condition is reached.	A8775810 **F**	February Production 2000	4.0.0
• When Scanner Auto Clear is enabled: If an ADF jam occurs during a scanning job initiated before the Scanner Auto Clear timer expires, the scanner settings are reset to default.	A8775810**G**	March Production 2000	4.0.3

FAX UNIT
A895

This manual explains the fax unit, as well as the following.

- EXFUNC board - Fax Function Expander (Machine Code: A892)
- Handset (Machine Code: H160)
- PCFE board - PC Fax Expander (Machine Code: A894)
- ISDN kit (Machine Code: A895)
- G3 unit (Machine Code: A895)
- (EXMEM board – Expansion Memory)

TABLE OF CONTENTS

FAX UNIT

OVERALL INFORMATION

1. OVERALL MACHINE INFORMATION 1-1
1.1 SPECIFICATIONS 1-1
1.2 FEATURES 1-2
1.2.1 FEATURES LIST 1-2
1.2.2 CAPABILITIES OF PROGRAMMABLE ITEMS 1-5
1.3 OVERALL MACHINE CONTROL 1-6
1.3.1 SYSTEM CONTROL 1-6
1.3.2 POWER DISTRIBUTION AND CONTROL 1-7
1.3.3 MEMORY BACK-UP 1-7
1.4 VIDEO DATA PATH 1-8
1.4.1 TRANSMISSION 1-8
1.4.2 RECEPTION 1-10
1.4.3 PC FAX COMMUNICATION 1-11
1.4.4 SCANNING AND PRINTING 1-13

DETAILED DESCRIPTIONS

2. DETAILED SECTION DESCRIPTIONS 2-1
2.1 AUTOMATIC SERVICE CALLS 2-1
2.1.1 SERVICE CALL CONDITIONS 2-1
2.1.2 PERIODIC SERVICE CALL 2-3
2.1.3 PM CALL 2-3
2.1.4 EFFECTIVE TERM OF SERVICE CALLS 2-3
2.2 SCANNING FEATURES 2-4
2.2.1 PAGE SPLIT TRANSMISSION (BOOK TRANSMISSION) 2-4
2.2.2 IMAGE ROTATION BEFORE TRANSMISSION 2-5
2.2.3 CREATE MARGIN TRANSMISSION 2-7
2.3 PRINTING FEATURES 2-8
2.3.1 PAPER SIZE SELECTION 2-8
2.3.2 JUST SIZE PRINTING 2-14
2.3.3 REDUCTION FOR JOURNAL PRINTING 2-14
2.3.4 JOURNAL LINE TYPE SORT PRINTING 2-15
2.3.5 PRINTING LISTS & REPORTS ON A5/HLT SIZE PAPER 2-15
2.3.6 REDUCTION OF THE SAMPLE IMAGE ON REPORTS 2-16
2.4 FAX COMMUNICATION FEATURES 2-17
2.4.1 SEP/SUB/PWD/SID 2-17
2.4.2 JBIG COMPRESSION 2-19
2.4.3 V.8/V.34 PROTOCOL 2-20
2.5 LINE TYPE CHANGE 2-24

2.6 PCBS 2-25
2.6.1 FCU 2-25
2.6.2 NCU (US) 2-27
2.6.3 NCU (EUROPE/ASIA) 2-28
2.6.4 SG3 BOARD 2-29
2.6.5 EXFUNC BOARD 2-30

INSTALLATION

3. INSTALLATION 3-1
3.1 FAX UNIT 3-1
3.1.1 CAUTIONS 3-1
3.1.2 FLOW CHART 3-2
3.1.3 FAX OPTION TYPE 270 INSTALLATION 3-3
3.2 OPTIONAL UNITS 3-7
3.2.1 G3 INTERFACE UNIT TYPE 270 3-7
3.2.2 ISDN OPTION TYPE 270 3-11
3.2.3 PC FAX EXPANDER (PCFE) 3-14
3.2.4 FAX FUNCTION EXPANDER (EXFUNC) 3-16
3.2.5 EXPANSION MEMORY (EXMEM) BOARD 3-18
3.2.6 HANDSET 3-19

SERVICE TABLES

4. SERVICE TABLES 4-1
4.1 SERVICE LEVEL FUNCTIONS 4-1
4.1.1 HOW TO ENTER AND EXIT THE FAX SERVICE MODE 4-1
4.1.2 BIT SWITCH PROGRAMMING (FUNCTION 01) 4-1
4.1.3 SYSTEM PARAMETER LISTS (FUNCTION 02) 4-2
4.1.4 FCU ROM VERSION DISPLAY (FUNCTION 02) 4-4
4.1.5 MODEM PROGRAM VERSION DISPLAY (FUNCTION 02) 4-4
4.1.6 ERROR CODE DISPLAY (FUNCTION 03) 4-4
4.1.7 SERVICE MONITOR REPORT (FUNCTION 04) 4-4
4.1.8 G3 PROTOCOL DUMP LIST (FUNCTION 05) 4-5
4.1.9 G4 PROTOCOL DUMP LIST (FUNCTION 05) 4-5
4.1.10 PC PROTOCOL DUMPLIST (FUNCTION 05) 4-6
4.1.11 RAM DISPLAY AND REWRITE (FUNCTION 06) 4-6
4.1.12 NCU PARAMETERS (FUNCTION 06) 4-7
4.1.13 RAM DUMP (FUNCTION 06) 4-7
4.1.14 RAM CLEAR (FUNCTION 07) 4-8
4.1.15 FCU REBOOT 4-8
4.1.16 SERVICE STATION FAX NUMBER (FUNCTION 09) 4-8
4.1.17 SERIAL NUMBER (FUNCTION 10) 4-9
4.1.18 MODEM TEST (FUNCTION 11) 4-9
4.1.19 V.34 MODEM TEST (FUNCTION 11) 4-10
4.1.20 DTMF TEST (FUNCTION 11) 4-10

4.1.21 RINGER TEST (FUNCTION 11) 4-11
4.1.22 MEMORY TEST (FUNCTION 11) 4-11
4.1.23 DIU TEST (FUNCTION 11) 4-12
4.1.24 FILE PRINTOUT (FUNCTION 13) 4-12
4.1.25 JOURNAL PRINTOUT (FUNCTION 14) 4-13
4.1.26 USAGE LOG PRINTOUT (FUNCTION 15) 4-13
4.1.27 DATA TRANSFER (FUNCTION 16) 4-13
4.1.28 SG3-V34 (FUNCTION 17) 4-14
4.2 BIT SWITCHES 4-17
4.2.1 SYSTEM SWITCHES 4-17
4.2.2 SCANNER SWITCHES 4-31
4.2.3 PRINTER SWITCHES 4-36
4.2.4 COMMUNICATION SWITCHES 4-41
4.2.5 G3 SWITCHES 4-52
4.2.6 SG3 SWITCHES 4-60
4.3 NCU PARAMETERS 4-67
4.4 DEDICATED TRANSMISSION PARAMETERS 4-78
4.1.1 PROGRAMMING PROCEDURE 4-78
4.1.2 PARAMETERS 4-79
4.5 SERVICE RAM ADDRESSES 4-83

PREVENTIVE MAINTENANCE

5. PREVENTIVE MAINTENANCE 5-1
5.1 SPECIAL TOOLS AND LUBRICANTS 5-1
5.2 PM TABLE 5-1

REMOVAL AND REPLACEMENT

6. REMOVAL AND REPLACEMENT 6-1
6.1 PRECAUTION 6-1
6.2 FCU 6-1
6.2.1 REMOVAL 6-1
6.2.2 SRAM DATA RESTORE FROM FCU 6-3
6.2.3 SRAM DATA RESTORE FROM FLASH CARD BACKUP 6-4
6.3 NCU 6-7
6.4 ROM UPDATE 6-8
6.4.1 FCU ROM DOWNLOAD 6-8
6.4.2 FCU ROM UPLOAD 6-10
6.4.3 SG3 BOARD ROM DOWNLOAD 6-12
6.4.4 SG3 BOARD MODEM ROM DOWNLOAD 6-13
6.5 SRAM DATA BACKUP AND RESTORE 6-14
6.5.1 SRAM BACKUP TO A FLASH MEMORY CARD 6-14
6.5.2 SRAM RESTORE FROM A FLASH MEMORY CARD 6-15

TROUBLESHOOTING

7. TROUBLESHOOTING 7-1
7.1 ERROR CODES 7-1
7.2 FAX SC CODES 7-10
7.2.1 OVERVIEW 7-10
7.2.2 SC1201 7-10
7.2.3 SC1207 7-10
7.2.4 FAX SC CODE TABLE 7-11
7.3 ROM HISTORY 7-12
7.3.1 FAX CONTROLLER FIRMWARE HISTORY 7-12
7.3.2 G3 INTERFACE UNIT FIRMWARE HISTORY 7-14
7.3.3 SG3 INTERFACE UNIT FIRMWARE HISTORY 7-15

Lithium Batteries

⚠CAUTION
The danger of explosion exists if batteries on the FCU and EXMEM boards are incorrectly replaced. **Replace only with the same or an equivalent type recommended by the manufacturer. Discard used batteries in accordance with the manufacturer's instructions.**

CE 0682 X

The interface complies with the requirements for Council Decision 98/482/EC.

98/482/EC:
Council Decision of 20 July 1998 on a common technical Regulation for the requirements for connection to the analogue public switched telephone networks (PSTNs) of terminal equipment (excluding terminal equipment supporting the voice telephony justified case service) in which network addressing, if provided, is by means of dual tone multi-frequency (DTMF) signaling.

Network compatibility declaration for the EU.
Fax Option Type 270 designed to work on all EU networks.

1. OVERALL MACHINE INFORMATION

1.1 SPECIFICATIONS

Type
Desktop type transceiver

Circuit
PSTN, PABX, ISDN

Connection
Direct couple

Original Size (Book)
Maximum Length: 432 mm [17 ins]
Maximum Width: 297 mm [11.7 ins]

Original Size (ADF)
Length: 128 - 1200 mm [5.0 – 47.2 ins]
Width: 105 - 297 mm [4.1 - 11.7 ins]
Thickness: 40 - 128 g/m^2 [10 - 34 lbs]

Scanning Method
Flat bed, with CCD

Scan Width
210 mm [8.3 ins] ± 1% (A4)
216 mm [8.5 ins] ± 1% (8.5" x 11")
256 mm [10.1 ins] ± 1% (B4)
279 mm [11.0 ins] ± 1% (11" x 17")
297 mm [11.7 ins] ± 1% (A3)

Resolutions
8 x 3.85 lines/mm (G3 only)
8 x 7.7 lines/mm (G3 only)
8 x 15.4 lines/mm (G3 only)
16 x 15.4 lines/mm (G3 only)
200 x 100 dpi
200 x 200 dpi
400 x 400 dpi

Note:
To use the 8 x 15.4 lines/mm, 16 x 15.4 lines/mm and 400 x 400 dpi resolutions, an optional EXMEM board is required.

Memory Capacity

ECM: 128 Kbytes

SAF:
Standard: 2 Mbytes (160 pages)

With optional memory board (EXFUNC + EXMEM) :
30 Mbytes (3000 pages)

Measured using an ITU-T #1 test document (Slerexe letter)

Compression
MH, MR, MMR
JBIG (EXFUNC and/or SG3 board required, G3/ISDN G3 only)
(MMR only with ECM and G4)
SAF storage for memory tx: MMR and/or raw data

Protocol
Group 3 with ECM
Group 4 (ISDN unit required)

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

Data Rate (bps)
G3:
33600/31200/28800/26400/24000/21600/19200/16800/14400/12000/9600/7200/4800/2400, Automatic fallback
G4 (option): 64 kbps/56 kbps

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

Transmission Time
G3: 3 s at 28800 bps; Measured with G3 ECM using memory for an ITU-T #1 test document (Slerexe letter) at 8 x 3.85 l/mm resolution
G4 (option): 3 s at 64 kbps; Measured with an ITU-T #1 test document (Slerexe letter) at 200 x 200 dpi resolution

1.2 FEATURES

1.2.1 FEATURES LIST

KEY:
O = Used, X = Not Used,
(A = Optional EXMEM board required)
B = Optional EXFUNC board required
C = Optional PCFE board required
D = Optional ISDN unit required
E = Optional G3 unit required

Video Processing Features	
Automatic image density selection	O
Contrast	O
Halftone (Basic & Error Diffusion)	O
JBIG compression	B or E
MTF	O
Reduction before tx	O
Scanning Resolution – Standard	O
Scanning Resolution – Detail	O
Scanning Resolution – Fine	A
Scanning Resolution – Superfine	A
Smoothing to 400 x 400 dpi when printing	O

Communication Features – Automatic	
Automatic fallback	O
Automatic redialing (Memory tx only)	O
Dual Access	O
Length Reduction	O
Resolutions available for reception Detail Fine Superfine	 O A A
Substitute reception	O
V34 communication	O

Communication Features - User Selectable	
90° Image Rotation before tx	O
Action as a transfer broadcaster	X
AI Redial (last ten numbers)	O
Answering machine interface	X
Authorized Reception	O
Auto Document	O
Automatic dialing (pulse or DTMF)	O
Automatic Voice Message	X
Batch Transmission	O
Book Original tx	O
Broadcasting	O
Chain Dialing	O
Communication Record Display	O
Confidential ID Override	O
Confidential Reception	O
Confidential Transmission	O
Direct Fax Number Entry	O
Economy Transmission	O
Fax on demand	X
Forwarding	O
Free Polling	O
Groups (Standard: 9 groups)	O
Hold	X
ID Transmission	O
Immediate Redialing	O
Immediate Transmission	O
ISDN	D
Keystroke Programs	O
Memory transmission	O
Multi-step Transfer	O
Non-standard original size transmission	O
OMR	X
On Hook Dial	O
Ordering Toner	X
Page Count	O
Page separation mark	O
Parallel memory transmission	O
Partial Image Area Scanning	X

Communication Features - User Selectable	
Personal Codes	O
Polling Reception	O
Polling Transmission	O
Polling tx file lifetime in the SAF	O
Quick Dial (Standard: 56 stations)	O
Reception modes (Fax, Tel)	O
Remote control features	X
Remote Transfer	X
Restricted Access	O
Secured Polling	O
Secured Polling with Stored ID Override	O
Send Later	O
SEP/SUB/PWD/SID	O
Silent ringing detection	X
Specified Image area	X
Speed Dial (Standard: 100 stations)	O
Stamp	O
Telephone Directory	O
Tonal Signal Transmission	O
Transfer Request	O
Transmission Deadline (TRD)	O
Turnaround Polling	X
Two in one	O
Voice Request (immed. tx only)	X

Communication Features - Service Selectable	
AI Short Protocol	O
Auto-reduction override option	O
Busy tone detection	O
Cable Equalizer	O
Closed Network	O
Continuous Polling Reception	O
Dedicated tx parameters	O
ECM	O
EFC	X
Inch-mm conversion before tx	O
Length Reduction	O
Page retransmission times	O
Protection against wrong connection	O

Communication Features - Service Selectable	
Short Preamble	X

Other User Features	
Area code prefix	X
Center mark	O
Checkered mark	O
Clearing a memory file	O
Clearing a polling file	O
Clock	O
Confidential ID	O
Counters	O
Daylight Saving Time	O
Destination Check	X
Direct entry of names	O
Energy Saver	O
File Retention Time	O
File Retransmission	O
Function Programs (F1 – F4)	O
Hard Disk Filing System	X
ID Code	O
Label Insertion ("To xxx")	O
Language Selection	SP mode
Memory Lock	O
Modifying a memory file (tx)	O
Multi Sort Document Reception	X
Own telephone number	O
Print density control	X
RDS on/off	O
Reception Mode Switching Timer	X
Reception time printing	O
Remaining memory indicator	O
Reverse Order Printing	O
RTI, TTI, CSI	O
Service Report Transmission	O
Speaker volume control	O
Specified Cassette Selection	O
Substitute reception on/off	O
Telephone line type	O
Toner Saving Mode	X
TTI/CIL on/off	O
User Function Keys (4 keys)	O
User Parameters	O

Other User Features	
Wild Cards	O

Reports - Automatic	
Charge Control Report	X
Communication Failure Report	O
Confidential File Report	O
Error Report	O
Fax On Demand Report	X
File Clear Report	O
File Reserve Report	O
Journal	O
Polling Result Report	O
Power Failure Report	O
Transfer Result Report	O
Transmission Result Report	O

Reports - User-initiated	
Authorized Reception List	O
Charge Control Report	X
File List	O
Forwarding List	O
Group List	O
Hard Disk File List	X
Journal	O
Personal Code List	O
Program List	O
Quick Dial Label	O
Quick Dial List	O
Specified Cassette Selection List	X
Speed Dial List	O
Transmission Status Report	X
User Function List	X
User Parameter List	O

Service Mode Features	
Back-to-back test	O
Bit switch programming	O
Cable equalizer	O
Comm. parameter display	O
Counter check	SP mode
Country code	O
DTMF tone test	O

Service Mode Features	
Echo countermeasure	O
Effective term of service calls	O
Error code display	O
Excessive jam alarm	O
File Transfer (all files)	O
LCD contrast adjustment	SP mode
Line error mark	X
Memory file printout (all files)	O
Modem Software Download	***1**
Modem test (includeV.34 / V.8)	O
NCU parameters	O
Periodic service call	O
PM Call	O
Printing all communication records kept in memory	O
Protocol dump list	O
RAM display/rewrite	O
RAM dump	O
RAM test	O
RDS - RAM read/write - Dial data transfer (Quick/Speed) - Software transfer	 O O O
Ringer test	O
ROM version display (FCU)	SP mode
Serial number	O
Service monitor report	O
Service station number	O
Software Upload/Download	O
SRAM data backup/restore	O
System parameter list	O
Technical data on the Journal	O

***1**: Modem Software Download is available only for the optional G3 interface unit.

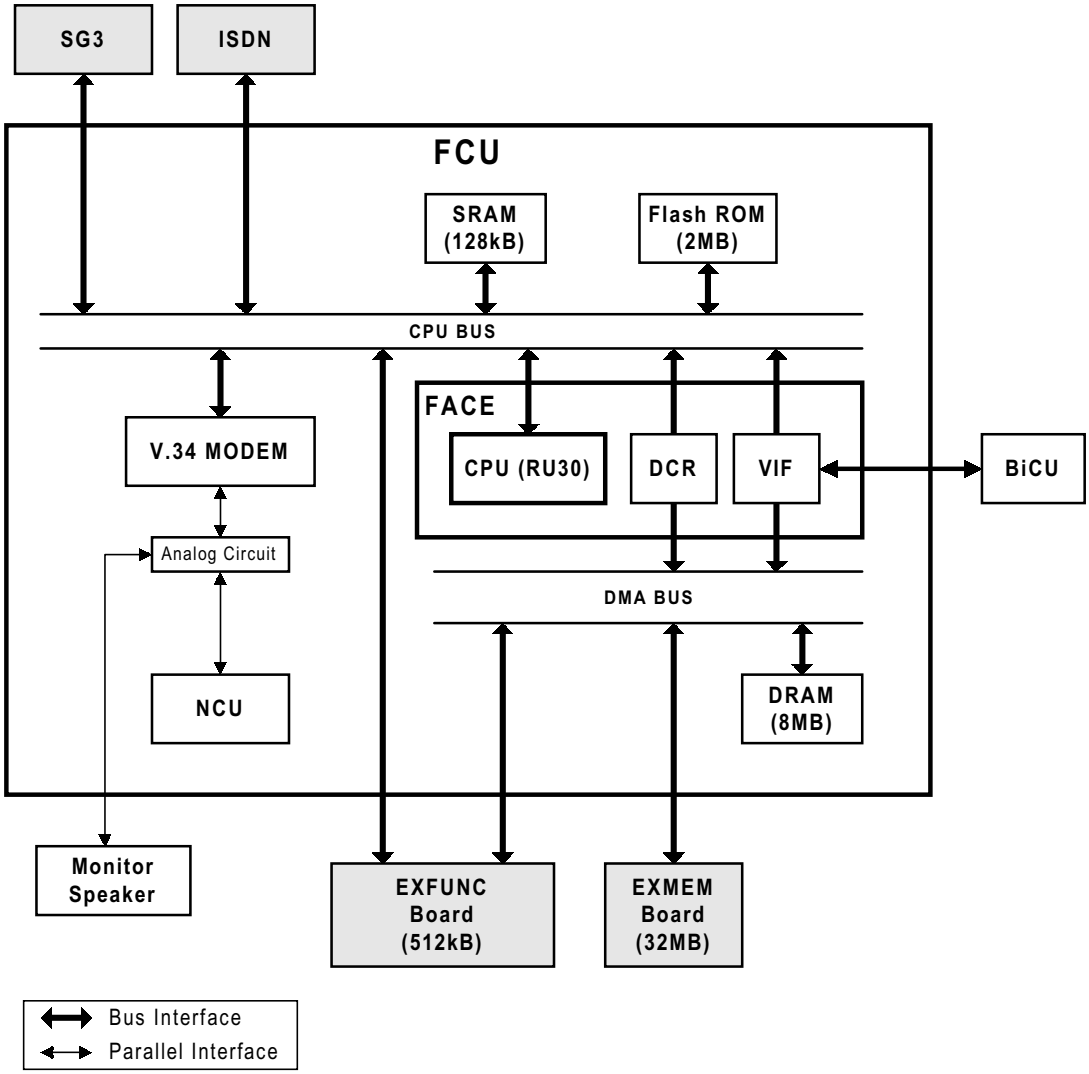
1.2.2 CAPABILITIES OF PROGRAMMABLE ITEMS

The following table shows how the capabilities of each programmable item will change after the optional function upgrade card is installed.

Item	Standard	With optional boards (EXFUNC + EXMEM)
Maximum number of memory files	200	1000
Maximum number of destinations per file	256	500
Maximum number of destinations overall	300	2000
Maximum number of pages overall	400	3000
Number of Quick Dials	56	56
Number of Speed Dials	100	1000
Number of Groups	9	30
Maximum number of destinations per Group	256	500
Maximum number of destinations dialed from the ten-key pad overall	100	1000
Maximum number of programs	56 (programmed in 56 Quick Dial keys)	56 (programmed in 56 Quick Dial keys)
Maximum number of Auto Documents	6 (programmed in 6 Quick Dial keys)	18 (programmed in 18 Quick Dial keys)
Maximum number of communication records for the TCR (Journal) stored in the memory	100	900
Maximum number of addresses specified for features such as Authorized Reception and Specified Cassette Selection	30	50
Maximum number of user function keys	4	4
Maximum number of personal codes	20	50

1.3 OVERALL MACHINE CONTROL

1.3.1 SYSTEM CONTROL



The basic fax unit consists of two PCBs: an FCU and an NCU.
The FCU controls all the fax communications and fax features, in cooperation with the base copier's main board, the BiCU. The NCU switches the analog line between the fax unit and the external telephone.

Fax Options

1. EXFUNC board: JBIG compression becomes available. In addition, this expands the system's SRAM capacity to hold programmed telephone numbers, communication records, etc.
2. PC fax expander: Class 2 fax communication from a PC and local printing from a PC fax application become available (PC fax application required). Also, local scanning from the machine's scanner using TWAIN API becomes available (CFM Twain driver required).
3. ISDN unit: This allows the fax unit to communicate over an ISDN (Integrated Services Digital Network) line.
4. EXMEM board: This expands the SAF memory capacity. Also, this expands the page memory capacity to enable 400 dpi communications.)
5. SG3 unit: This provides one more analog line (PSTN) interface. This allows full dual access (two communications can be made at the same time).

1.3.2 POWER DISTRIBUTION AND CONTROL

The FCU power is supplied from the base copier's BiCU (+24V, +12V, -12V, and +5V). Refer to the base copier's service manual for details.

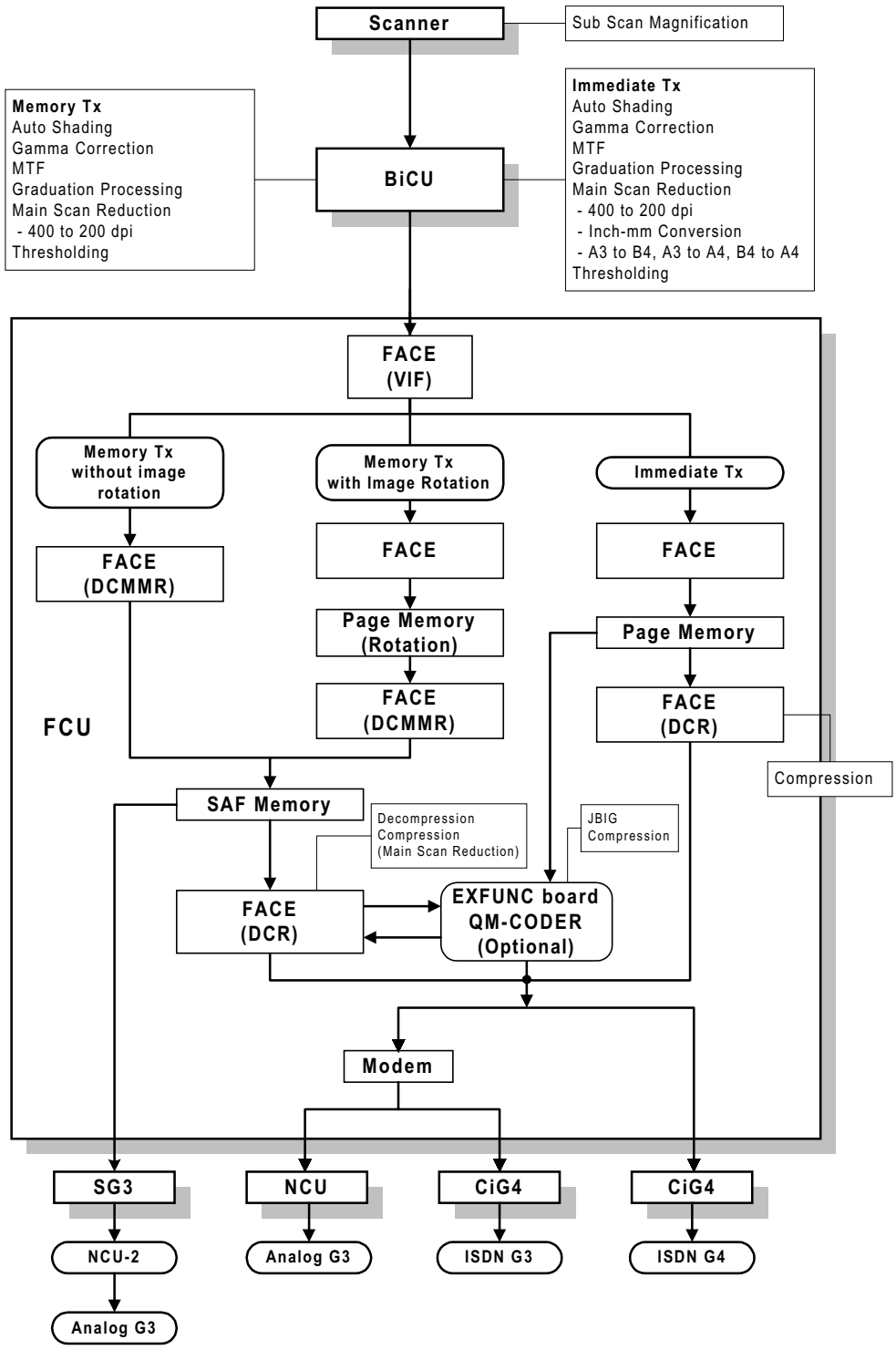
1.3.3 MEMORY BACK-UP

The system parameters and programmed items in the SRAM on the FCU and the EXFUNC board are backed up by batteries (long-term backup), in case the base copier's main switch is turned off.

The SAF memory (DRAM) on the FCU and the EXMEM board are backed up by rechargeable batteries for 1 hour.

1.4 VIDEO DATA PATH

1.4.1 TRANSMISSION



Memory Transmission and Parallel Memory Transmission

The base copier's scanner scans the original at the selected resolution in inch format. The BiCU processes the data and transfers it to the FCU.

NOTE: When scanning a fax original, the BiCU uses the MTF and thresholding parameter settings programmed in the fax unit's scanner bit switches, not the copier's SP modes.

Then, the FCU converts the data to mm format, and compresses the data in MMR or raw format to store it in the SAF memory. If image rotation will be done (see section 2-2-2), the image is rotated in page memory before compression.

At the time of transmission, the FCU decompresses the stored data, then re-compresses and/or reduces the data if necessary for transmission. Either the NCU or CiG4 (optional) transmits the data to the line.

Immediate Transmission

The base copier's scanner scans the original at the resolution agreed with the receiving terminal. The BiCU video processes the data and transfers it to the FCU.

NOTE: When scanning a fax original, the BiCU uses the MTF and thresholding parameter settings programmed in the fax unit's scanner bit switches, not the copier's SP modes.

Then the FCU stores the data in page memory, and compresses the data for transmission. Either the NCU or CiG4 (optional) transmits the data to the line.

Note that ISDN G3 tx is not possible on the PSTN-2 line.

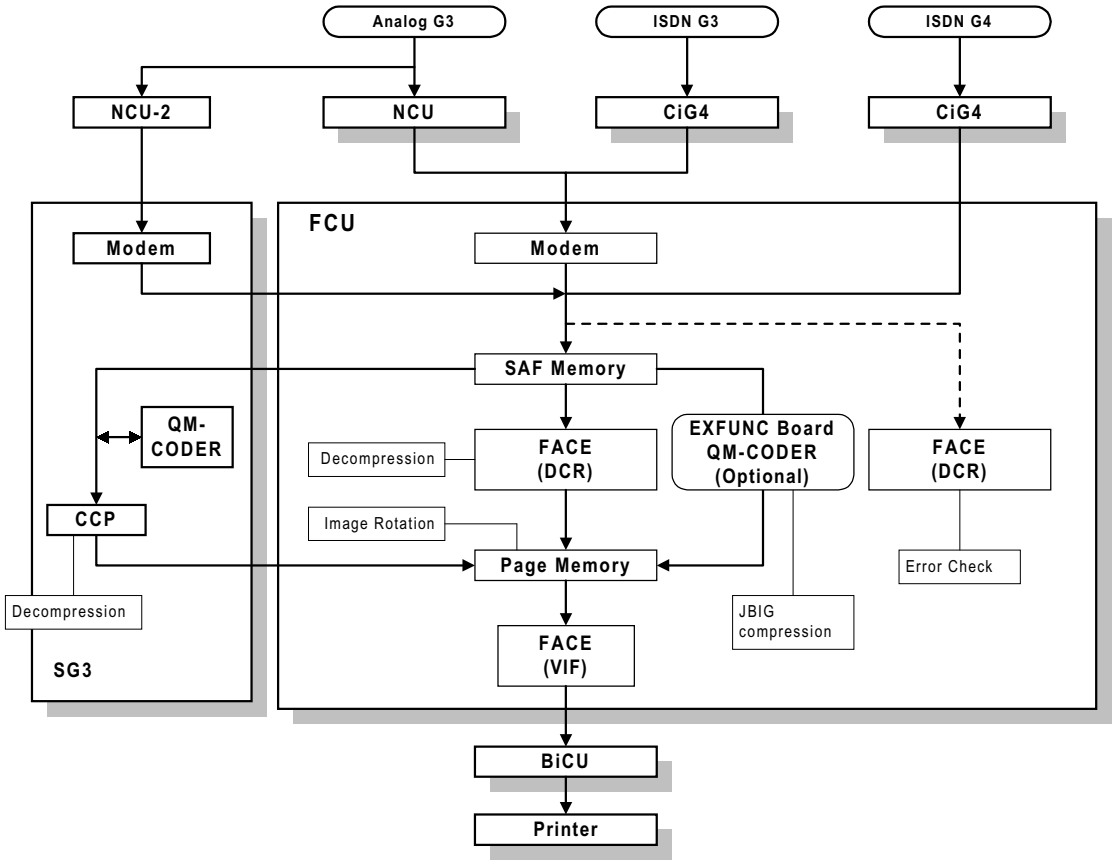
JBIG Transmission

- **Memory transmission:** If the receiver has JBIG compression, the data goes from the FACE (DCR) to the EXFUNC board for JBIG compression. Then either the NCU or CiG4 (ISDN G3) transmits the data to the line. When an optional G3 unit (SG3) is installed and PSTN2 is selected as the line type, JBIG compression is available, but only for the PSTN-2 line.
- **Immediate transmission:** If the receiver has JBIG compression, the data goes from the page memory to the EXFUNC board for JBIG compression. Then either the NCU or CiG4 (ISDN G3) transmits the data to the line. When an optional G3 unit (SG3) is installed and PSTN2 is selected as the line type, JBIG compression is available, but only for the PSTN-2 line.

Adjustments

- Line used for G3 transmissions (PSTN or ISDN): System switch 0A bit 6
- Line used for G3 transmissions (PSTN 1/PSTN 2): System switch 16 bit 1
- Use of the PSTN-2 line (rx only, or both tx and rx): Communication switch 16 bit 5
- G3 line type: User parameter switch 6, bits 2 and 3
  If this is at G3 auto selection, the machine can use either PSTN-1 or PSTN-2
  If this is at PSTN-1, the machine will only use the PSTN-1 line.

1.4.2 RECEPTION



First, the FCU stores the incoming data from either an analog line or an ISDN line to the SAF memory. (The data goes to the FACE at the same time, and is checked for error lines/frames.)

The FCU then decompresses the data and transfers it to page memory. If image rotation will be done (see section 2-2-2), the image is rotated in the page memory. The data is transferred to the BiCU.

If the optional G3 unit is installed, the line that the message comes in on depends on the telephone number dialed by the other party (the optional G3 unit has a different telephone number from the main fax board).

Note that ISDN G3 rx is not possible on the PSTN-2 line.

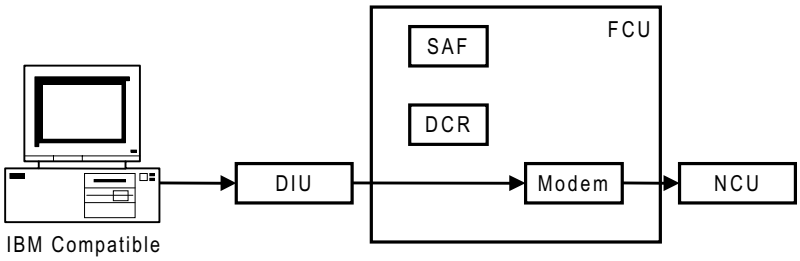
JBIG Reception

When data compressed with JBIG comes in on PSTN-1 (the standard analog line), the data is sent to the EXFUNC board for decompression. Then the data is stored in the page memory, and transferred to the BiCU.

When data compressed with JBIG comes in on PSTN-2 (optional extra analog line), the data is sent to the QM-CODER on the SG3 board for decompression.

1.4.3 PC FAX COMMUNICATION

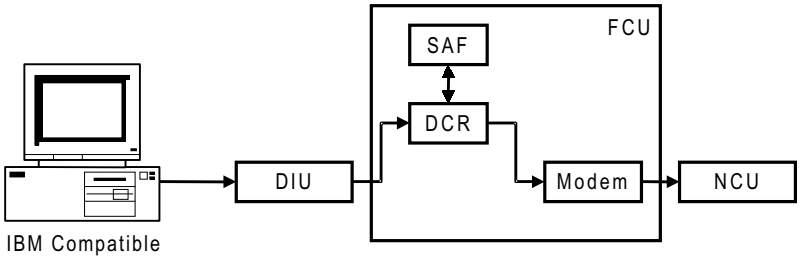
Direct transmission



The host computer sends commands and image data to the machine through the DIU during transmission.

NOTE: 1) Group dials programmed in the machine cannot be used.
2) T.30 optional protocols (e.g., BFT) are not supported by class 2 fax communication.
3) ISDN G4 numbers programmed in quick or speed dials cannot be used.
4) If ISDN is selected for G3 communication (system switch 0A, bit 6), the G3 numbers must have been programmed in quick or speed dials.

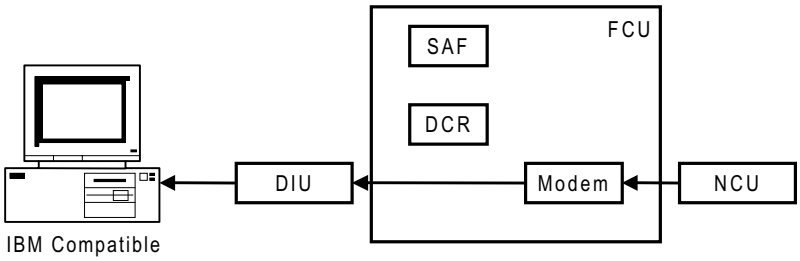
Memory transmission



The host computer sends destination number(s) and image data to the machine through the DIU during transmission. The machine stores the image in the SAF memory, then makes a fax transmission.

NOTE: 1) If the memory overflows while storing the first page into SAF memory, the machine does not start the transmission.
2) If the memory overflows while storing the second or subsequent page into SAF memory, the machine transmits all the successfully stored pages.
3) When fax numbers programmed in the machine's quick or speed dials are specified using the PC fax application, all the specified numbers must have been programmed in the fax machine.
4) T.30 optional protocols (e.g., BFT) are not supported by class 2 fax communication.

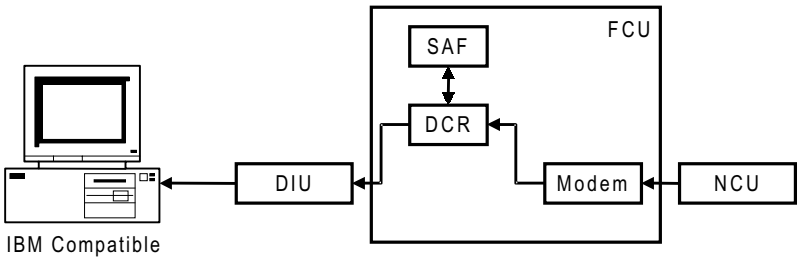
Direct reception



The machine transfers received image data directly to the host PC without storing it into SAF memory.

NOTE: 1) If the host PC is not ready to receive a fax message, the machine receives the message into SAF memory.
2) Even if the SAF memory is full, the machine starts fax reception. However, the machine will not continue reception if the host computer is not ready to receive a message.
3) The “Number of rings to answer” parameter in the PC fax application must not exceed 4.

Memory reception



The machine receives a fax message in the SAF memory, then transfers data to the host computer after the reception has finished. The machine prints the received message after transferring data to the host if user parameter 21 – bits 1 and 2 are set to “1: Print”.

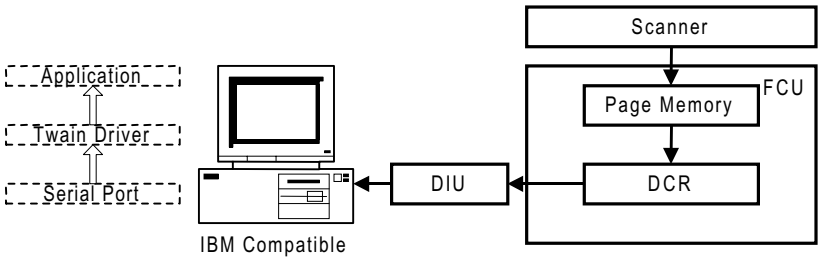
NOTE: 1) If an error occurs due to cable disconnection, the PC fax application must be restarted to receive the message.
2) Memory reception is not possible when forwarding is enabled.
3) Manual reception from the PC fax application is not supported.
4) The “Number of rings to answer” parameter in the PC fax application must not exceed 4.

Adjustments

- PC transmission mode (direct or memory): User parameter 20 (14H), bit 0
- Line for PC transmission (PSTN 1/PSTN 2): User parameter 20 (14H), bit 4
- Line for PC memory transmission (PSTN/ISDN G4): User parameter 20 (14H), bit 5
- PC fax reception mode (direct/memory): User parameter 21 (15H), bits 1 and 2

1.4.4 SCANNING AND PRINTING

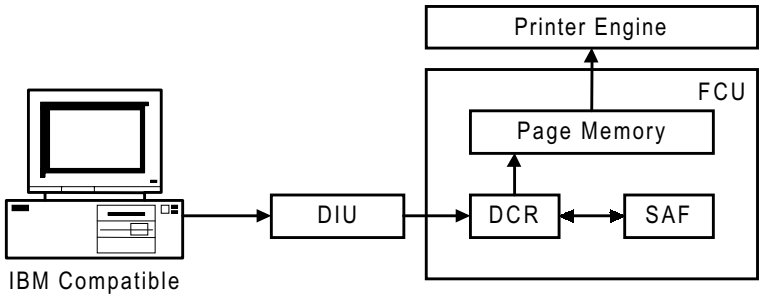
SCANNING



The machine scans an original into page memory, then transfers the data to the host PC. The data is sent to the application through the CFM Twain driver.

NOTE: The maximum resolution is 200 x 200 dpi.

PRINTING



The machine receives print data into SAF memory as fax image data, then prints it after all the data has been transferred from the host PC.
The destination number “0000” informed from the host PC identifies a print job.

NOTE: 1) If SAF memory runs out while receiving print data, the machine prints up to the successfully received data.
2) The machine cannot receive print data while printing a message from the SAF memory. The data will be received after printing.
3) If a fax destination is specified together with the print destination “0000”, the destinations specified after “0000” will be delayed until the machine prints all pages in the message.

2. DETAILED SECTION DESCRIPTIONS

2.1 AUTOMATIC SERVICE CALLS

2.1.1 SERVICE CALL CONDITIONS

The fax unit makes an automatic service call when the base copier's BiCU generates any SC code except for those stored in the following RAM.

NOTE: The service station's fax number has to be programmed in advance, or the machine cannot make a service call.

Exceptions

Address (H)	Definition	Default	SC code
680DC8	1st SC code - High byte (BCD)	01	192 Automatic SBU adjustment error
680DC9	1st SC code - Low byte (BCD)	92	
680DCA	2nd SC code - High byte (BCD)	09	980 Program loading error
680DCB	2nd SC code - Low byte (BCD)	80	
680DCC	3rd SC code - High byte (BCD)	09	999 Program version error
680DCD	3rd SC code - Low byte (BCD)	99	
680DCE to 680DEF	4th SC code - High byte (BCD) to 20th SC code - Low byte (BCD)	FF(H)	Not Programmed

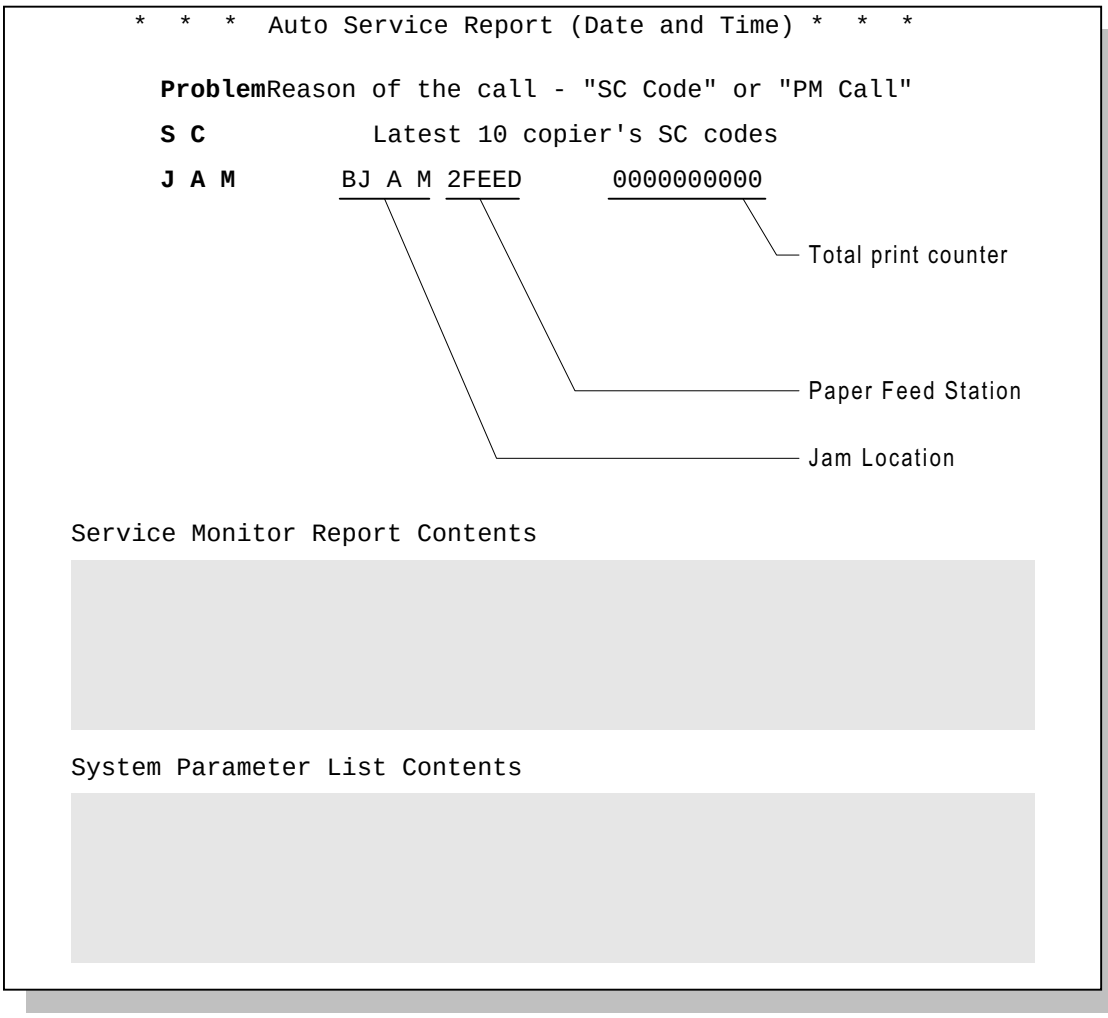
To add additional SC codes, program them in the blank addresses.

Wild Cards
This function allows "A" or "a", to be used as a wild card instead of numbers from 0 to 9. For example, "1AA" or "1aa" means all the SC codes from 100 to 199, and "39A" or "39a" means all the SC codes from 390 to 399.

The fax unit cannot make an automatic service call when a Fax SC code condition has occurred. Refer to the Troubleshooting section for Fax SC code details.

Manual Service Call
If the service station needs a report, the user can make a service call manually, by changing bit 7 of User Parameter 14 (0E) to "1".

A sample auto service report



2.1.2 PERIODIC SERVICE CALL

The periodic service call notifies the service station of the machine's condition. The call is made at a time interval programmed in the following RAM addresses:

Parameters		Address (H)
Call interval: 01 through 15 months (BCD) 00: Periodic service call disabled		**6803A1**
Date and time of the next call	Day: 01 through 31 (BCD)	**6803A4**
	Hour: 01 through 24 (BCD)	**6803A5**

To change these settings after programming, change the call interval. The machine then automatically changes the remaining parameters by referring to the interval and the current date and time.

2.1.3 PM CALL

If PM alarm is enabled with the base copier's SP mode and PM call is enabled with system switch 01, the machine will make an automatic service call when the base copier's PM counter reaches the PM interval.

Cross reference

- PM service call on/off: System switch 01, bit 0
- PM alarm setting: SP mode 5-501 (default: 120K)

2.1.4 EFFECTIVE TERM OF SERVICE CALLS

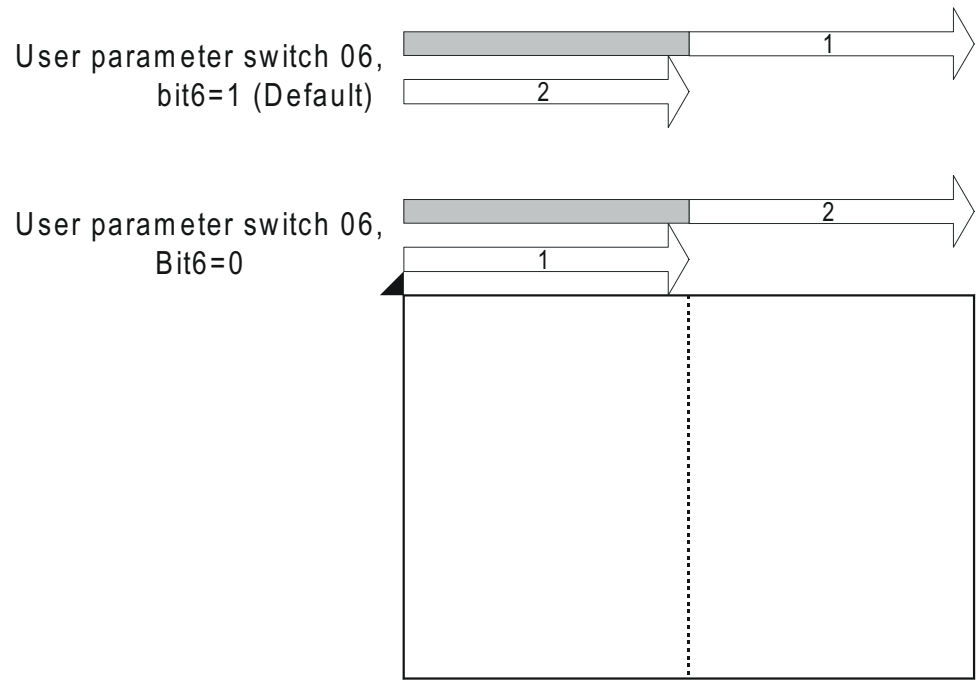
If a time limit for the effectiveness of service calls is programmed, the machine stops making automatic service calls after the time limit.

Program the time limit at the following addresses. This function is disabled when all of these addresses are 00(H).

Parameters	Address (H)
Year: last two digits of the year (BCD)	**6803AB**
Month: 01 through 12 (BCD)	**6803AC**
Day: 01 through 31 (BCD)	**6803AD**

2.2 SCANNING FEATURES

2.2.1 PAGE SPLIT TRANSMISSION (BOOK TRANSMISSION)



This function allows a B4, A4/8.5 x 11", or A3/11 x 17" size book original to be sent as two separate pages.

When this function is selected, the machine scans the original twice and transmits the pages in the same sequence as they were scanned.

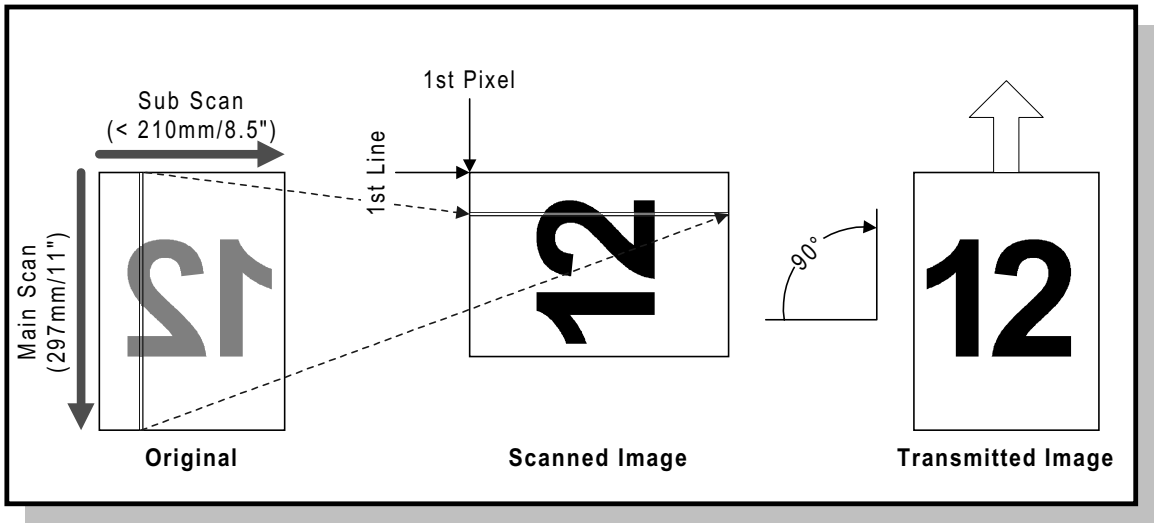
With the default setting, the right page is sent first, then the left page is sent. If the setting is changed, the order is reversed.

Cross Reference

- Scanning start page – User parameter switch 06, bit 6
  The default setting is 1 (start scanning from the right).

NOTE: 1) This function is only possible when sending a book original from the exposure glass.
2) If this function is used for an A3 or 11 x 17" original, the pages may be transmitted in a lengthwise direction, depending on the setting of "Image Rotation before Transmission" (see the next page).

2.2.2 IMAGE ROTATION BEFORE TRANSMISSION



A4 or 8.5 x 11" sideways

This function avoids the unintentional reduction of an A4 or 8.5 x 11” sideways original. When the machine detects a sideways A4 or 8.5 x 11" original in the ADF or on the exposure glass, the fax unit rotates the scanned image clockwise by 90 degrees before transmission, as shown above.

A5 or HLT lengthwise/B5 lengthwise

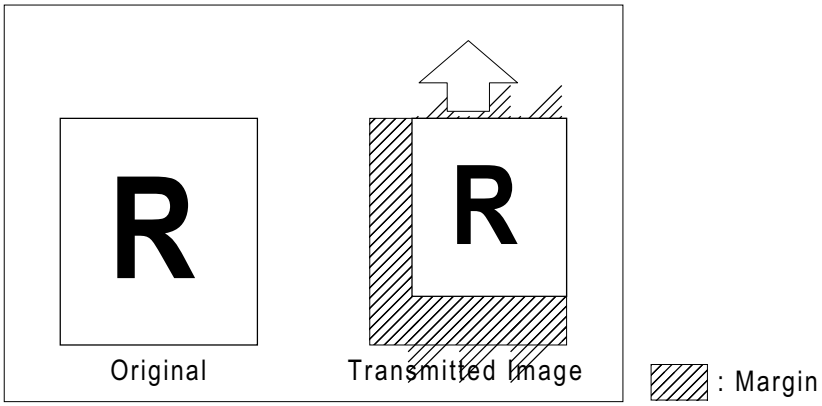
This function prevents blank spaces at the sides of the received image. When the machine detects an A5 or HLT original placed lengthwise in the ADF or on the exposure glass, the fax unit rotates the scanned image clockwise by 90 degrees before transmission, as shown above.

NOTE: 1) Even if Parallel Memory Transmission is enabled, the machine uses normal memory transmission to send an A4 or 8.5 x 11" sideways original.
2) If the machine carries out this function while printing, the machine stops printing until scanning is completed.
3) The machine determines if it will rotate the image after the paper size is determined.
4) This feature is not performed during parallel memory transmission.
5) In Book mode, the machine determines image rotation for each page scanned.
In ADF mode, the machine determines image rotation for the first page. If it is rotated, all pages will be rotated. If the first page need not to be rotated, all pages will not be rotated.
6) When this feature is enabled for A5 or HLT lengthwise, “APS small original detection” must be changed. This allows the machine to detect an A5/HLT size original. With the default setting, the machine does not detect A5 or HLT lengthwise in book mode.

Cross Reference

- Image rotation before Tx A3 or 11” width original on/off
  - Scanner switch 0F, bit 0 (Default setting is enabled)
- Image rotation before Tx A5 or HLT width original on/off
  - Scanner switch 0F, bit 2 (Default setting is disabled)
- Image rotation before Tx B5 width original on/off
  - User Parameter switch 19 (13H), bit 3 (Default setting is disabled)
- APS small size original detection
  - Base copier’s SP 4-303 (Default setting is “Not detected”)
  - Scanner switch 0C, bits 1 and 2
    (Default setting is “Depends on the setting of the base copier”)

2.2.3 CREATE MARGIN TRANSMISSION



When this function is enabled, the scanner is able to reduce the image of the original. This allows the person at the other end to file the printout without losing any of the data to punch holes.

The machine adds a margin to the bottom and left borders of the image so that the transmitted page is the same size as the original.

Cross reference

- Reduction ratio - System switch 06 bit 0 to 7
  Default setting is 93% (71 to 99%)

NOTE: 1) This function is only possible during memory transmission.
2) “Create margin transmission” and “Image rotation before transmission” are not compatible. (Create margin transmission is given priority)
3) The sample image on reports is also reduced and contains the margin.
4) Both the main and sub scan directions use the same magnification ratio.

2.3 PRINTING FEATURES

2.3.1 PAPER SIZE SELECTION

This section explains how the FCU selects the appropriate paper size for printing a received fax image.

Width Priority and Length Priority

When “Width Priority” is selected, a paper size of the same width as the received fax image has a higher priority. The fax image may be printed on several pages.

When “Length Priority” is selected, a paper size that has enough length to print the received fax image has higher priority. The fax image is printed on one sheet of paper, but the printed fax may have wide margins on the left and right.

Cross Reference

- Paper selection priority - Printer switch 0E, bit 0 (Default: Width)
- Paper size selection priority for an A4 size fax message when A4/LT size paper is not available. - User Parameter switch 16 (10H), bit 2
  0: A3 has priority (Default setting), 1: B4 has priority

Image Rotation Before Printing

If the machine has the same size paper as the received fax image size, but in sideways orientation, the fax unit rotates the image by 90 degrees clockwise, and prints it sideways.

This feature is only possible when the received fax image is one of the following sizes: A4 lengthwise, 8.5 x 11" lengthwise, B5 lengthwise

NOTE: This function can not be disabled.

Sub-Scan Reduction and Page Separation

Sub-scan Reduction Disabled

When Sub-scan Reduction is disabled, the received fax image is printed unreduced.

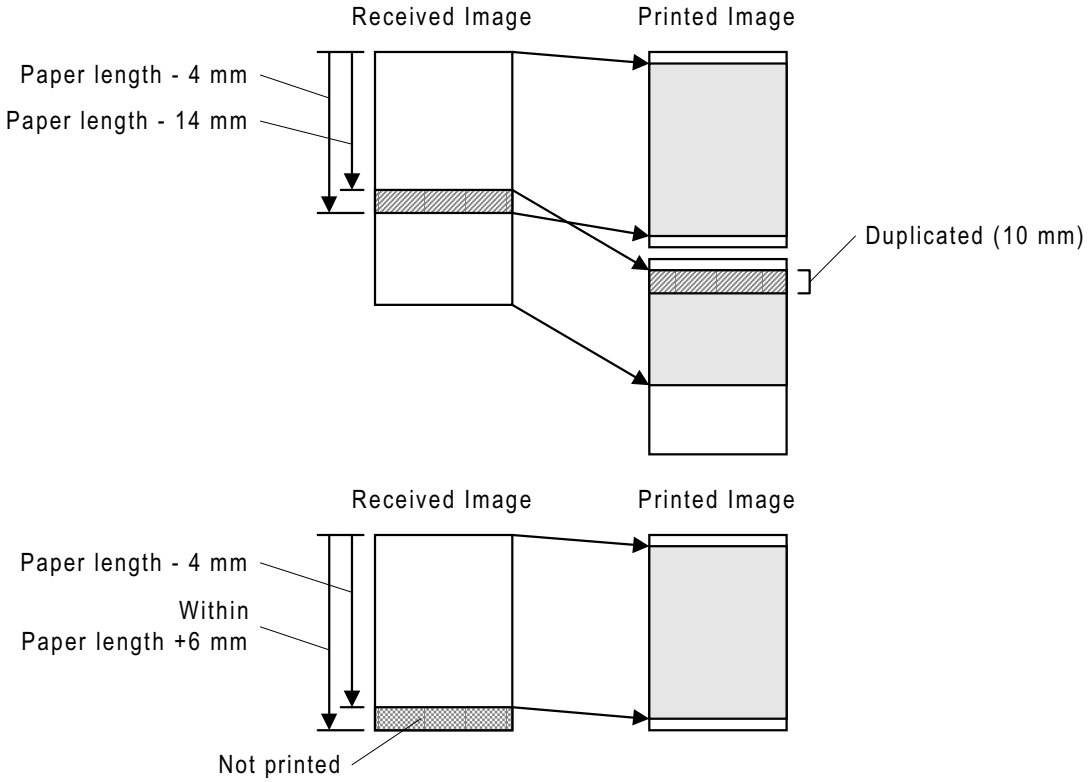
If the image is longer than the paper length + 6 mm, the image is separated onto two pages (see the top drawing below).

If the image is shorter than the paper length + 6 mm but longer than the paper length - 4 mm, the part of the image after paper length - 4 mm will be lost (see the bottom drawing below).

NOTE: The page separation threshold is adjustable between 0 and 15 mm (the default is paper length + 6 mm). Refer to Printer Switch 03, bits 4 to 7 for more details.

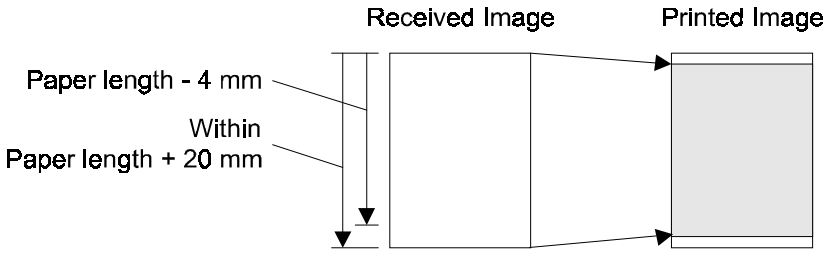
The 2 mm gaps at the leading and trailing edges depend on the leading and trailing edge margin settings.

The 10 mm image duplication can be adjusted or disabled.



Sub-scan Reduction Enabled

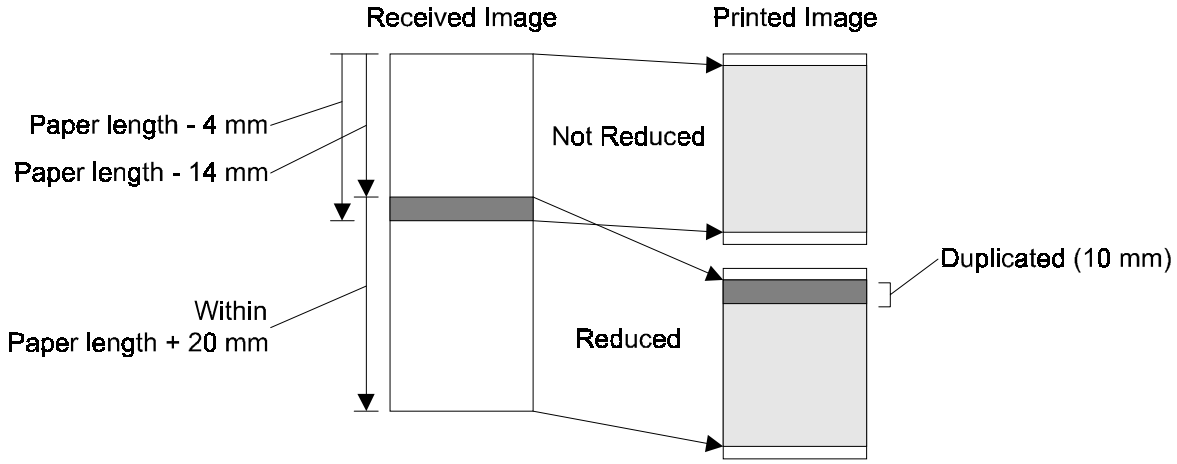
When Sub-scan Reduction is enabled, the received fax image is reduced in the page memory to fit on the selected paper, if the received image length is between [paper length - 4 mm] and [paper length + 20 mm]. See the drawing below.



NOTE: The upper limit (page length +20 mm) is adjustable between 0 and 155 mm. Refer to Printer Switch 04, bits 0 to 4 for more details.

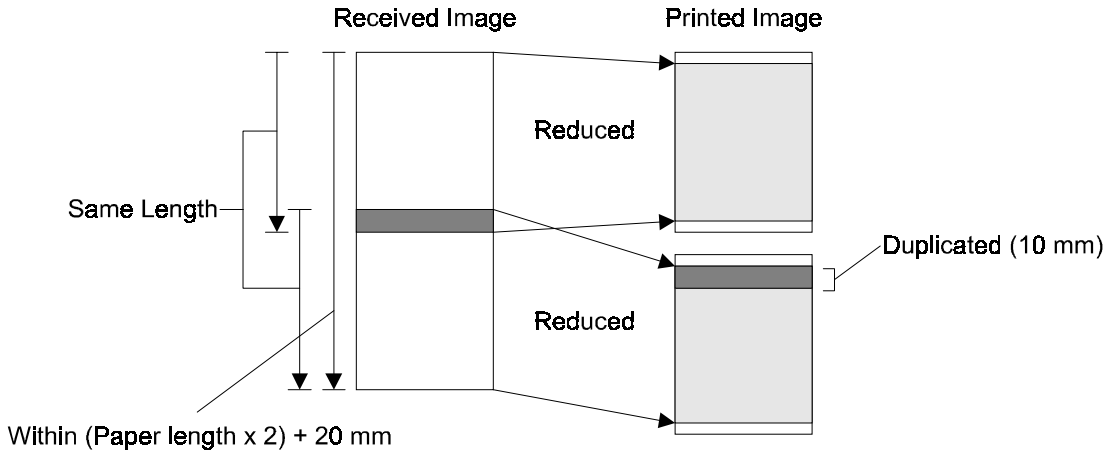
If the FCU detects that the image must be separated into more than one page after reduction, what happens to the data depends on the Reduction Rate Equalization setting (Printer Switch 0E, bit 7).

- Reduction Rate Equalization Off (Example Diagram: Two-page Printout) -



1. The data up to [page length –4 mm] will be printed on page 1, without reduction.
2. The last 10 mm of this data will be repeated at the top of the next page (this length can be can be adjusted or repetition can be switched off).
3. The remaining data will be printed on page 2, with reduction, if it is within [paper length + 20 mm].
4. If it is longer than this, page separation is done again. Data up to [page length - 4 mm] will be printed on page 2, without reduction.
5. The process for page 3 and subsequent pages will repeat from step 2.

- Reduction Rate Equalization On (Example Diagram: Two-page Printout) -



1. The machine determines how many pages will be needed to print the message, taking the following into account:

The final page (n) is such that the received image length is within (paper length x n) + 20 mm
The data must be reduced to fit on pages of length (paper length - 4 mm), with an equal reduction rate for each page.
The last 10 mm of the previous page will be repeated at the top of the next page (this length can be adjusted or repetition can be disabled).

2. The machine prints all the pages, at the same reduction rate.

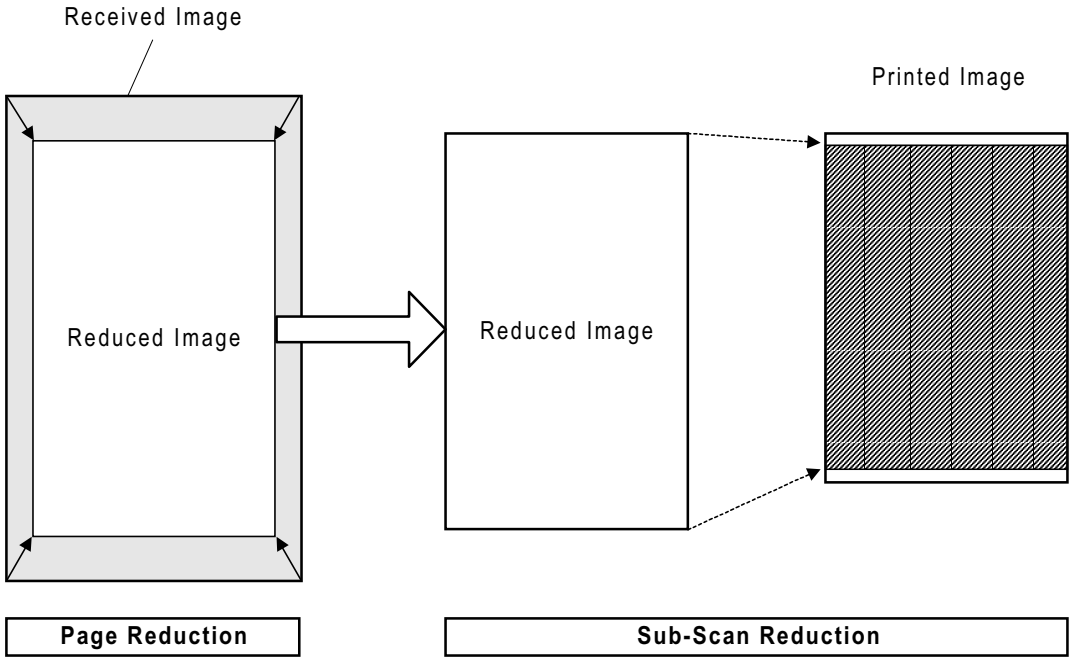
If the customer does not want to receive a fax message on separate pages, page separation can be disabled. However, once it has been disabled, the machine does not print the received fax message until a paper size which can hold the received fax image on one page is set in a cassette. Keep page separation enabled if the customer expects to receive fax messages longer than the installed paper.

Cross Reference

Parameter	Switch	Default Setting
Reduction in sub-scan direction on/off	Printer Switch 03, bit 0	Enabled (except Germany)
Equalizing reduction rate among separated pages	Printer Switch 0E, bit 7	Enabled
Page separation threshold when reduction is disabled	Printer Switch 03, bits 4-7	6 mm
Page separation threshold when reduction is enabled	Printer Switch 04, bits 0-4	20 mm
Page separation on/off	Printer Switch 0E, bit 2	Enabled
Page separation mark on/off	Printer Switch 00, bit 0	Enabled
Image duplication with page separation, on/off	Printer Switch 00, bit 1	Enabled
Length of the repeated image on the next page	Printer Switch 04, bits 5-6	10 mm

Page Reduction

This function allows a received fax image to be printed on paper with less width than the fax image.



First, the received image is reduced by a fixed reduction rate in the main and sub-scan directions. The available reduction rates are as follows:

- 84% - A3 to B4 reduction
- 82% - B4 to A4 lengthwise reduction

Then, the reduced image is further reduced (if necessary) in the sub-scan direction so that it can be printed on one page. However, if the FCU detects that the image does not fit on one page after sub-scan reduction, the FCU cancels the page reduction, but uses normal sub-scan reduction on the received fax image.

NOTE: 1) Sub-scan reduction is automatically enabled when Page Reduction is enabled.
2) A3 to A4 reduction is not available.

Cross Reference

- Page reduction on/off - User parameter 10 (0A), bit 3 (Default: Disabled)

Examples

1. When printing a B4 size fax image on 8.5" x 11" lengthwise paper
   - Fax image size: 256 x 364 mm (10.7 x 14.3")
   - Paper size: 216 x 279 mm (8.5 x 11")
   - Reduction rate used: 82%
   - Page separation threshold: 20 mm

The received image is printed on one 8.5 x 11" sheet, because the image length after page reduction (364 mm x 82% = 298.5 mm) is shorter than the paper length (279 mm) plus 20 mm.

2. When printing a non-standard size (256 x 400 mm) fax image on 8.5 x 11" lengthwise paper
   - Fax image size: 256 x 400 mm (10.7 x 15.7")
   - Paper size: 216 x 279 mm (8.5 x 11")
   - Reduction rate used: 82%
   - Page separation threshold: 20 mm

The received fax image is printed on two 8.5 x 11" sheets after page separation and image rotation, because the image length after page reduction (400 mm x 82% = 328 mm) is longer than the paper length (279 mm) plus 20 mm.

Two In One

This function allows two small pages to be printed on one sheet of paper. However, this function only works when the machine does not have the following size of paper in the cassette.

- The same size of paper as the received image
- Paper which has the same width and sufficient length

Cross Reference

- Two in one on/off - User parameter 10 (0A), bit 1 (Default: Disabled)

2.3.2 JUST SIZE PRINTING

This function restricts the machine so that it can only print a received message on paper with the highest priority paper size.

NOTE: 1) Example:
A: The machine has A4 (lengthwise) and B4.
B: The A4 paper tray is empty
C: The machine receives an A4 (lengthwise) size message.
When just size printing is disabled, the machine prints the received image on B4 paper. When just size printing is enabled, the machine will not print on B4 paper. If the machine has A4 (sideways), the machine prints using image rotation.
2) When the paper tray with the highest priority paper size is empty, the machine displays “Paper designated to print Fax/lists are empty. Refill -- size”.
3) When both page reduction and just size printing are enabled, page reduction is given priority.

Cross Reference
- Just size printing on/off – User parameter switch 05, bit 5
  Default setting is 0: Just size printing is disabled
- Just size printing while a paper cassette is pulled out – Printer switch 06, bit 0
  Default setting is 0: Printing will not start

2.3.3 REDUCTION FOR JOURNAL PRINTING

The machine reduces the size of the journal and adds a margin to the bottom and left edges of the journal.
This function allows the customer to add punch holes without losing any part of the image.

Cross Reference
- Reduction for journal printing on/off - Printer switch 07 bit 0
  Default setting is 0 (Disabled)

2.3.4 JOURNAL LINE TYPE SORT PRINTING

When an optional G4 or (and) G3 interface is installed, the machine can print the journal arranged by type of fax line.

Cross Reference

- Journal arrangement by fax line on/off - User parameter switch 19 (13H) bit 1 Default setting is 0 (Disabled)

2.3.5 PRINTING LISTS & REPORTS ON A5/HLT SIZE PAPER

This function allows the customer to print lists & reports on A5/HLT size paper under the following conditions.

Conditions:

- User parameter switch 19 (13H) bit 5 = 1 (enables the function)
- There is A5/HLT size paper in the machine
- No more than 58 lines on the list/report
- The report/list is only one page (not multi-page)

NOTE: Under these conditions, the following lists/reports will be printed out on A5/HLT size paper.

- Auto Document List
- ✻ Communication Failure Report
- Confidential file Report
- Error Report
- Group Dial List
- Immediate TX Result Report
- Keystroke Program List
- ✻ Memory Storage Report
- ✻ Memory TX Result Report
- Personal Code List
- Poling RX Reserve Report
- Polling RX Result Report
- ✻ Polling Transmission Clear Report
- Power Failure Report
- Quick Dial List
- Sender/Authorized Reception List
- Sender/Forwarding List
- Specified Sender List
- Speed Dial List
- ✻ Transfer Result Report
- TX File List

✻ : When printing these 5 reports, A5/HLT cannot be used if a sample of the image is included in the report (user parameter switch 04 bit 7).

2.3.6 REDUCTION OF THE SAMPLE IMAGE ON REPORTS

This function reduces the sample image on reports to 50%.

Cross Reference

- Reduction of sample image on reports on/off - User parameter switch 19 (13H) bit 4
  The default setting is 1 (Enabled)

NOTE: When the value of user parameter switch 19 (13H) bit 4 is 0, the machine uses the setting of printer switch 0E bits 3 and 4

Printer switch 0E bits 3 and 4

Bit 4	Bit 3	Settings
0	0	The upper half only, no reduction
0	1	50% reduction in sub scan only
1	0	Same size (no reduction, output separated in to two pages)
1	1	Not used

2.4 FAX COMMUNICATION FEATURES

2.4.1 SEP/SUB/PWD/SID

In 1996, ITU-T introduced the following protocol signals into the T.30 recommendations. These signals enable confidential transmission and secured polling between machines produced by different manufacturers.

SEP (Selective Polling): This signal informs the other terminal of a polling ID to enable secured (ID) polling or to select a document to poll.
Up to 20 digits or characters can be sent in a SEP frame.

PWD (Password): This signal informs the other terminal of a password to enable extra security.
Up to 20 digits or characters can be sent in a PWD frame.

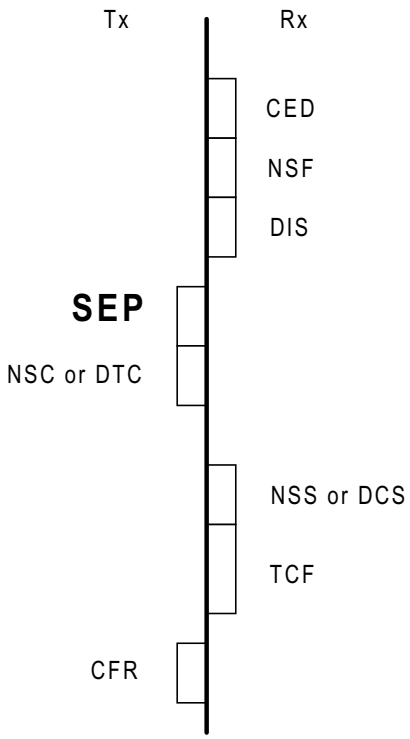
SUB (Sub-address): This signal informs a sub-address of a destination. Some fax servers use this information to route a received fax message to a specific address in the local network.
Up to 20 digits or characters can be sent in a SUB frame.

SID (Sender ID): This signal informs the other terminal of the sender ID to identify the transmitter.
Up to 20 digits or characters can be sent in a SID frame.

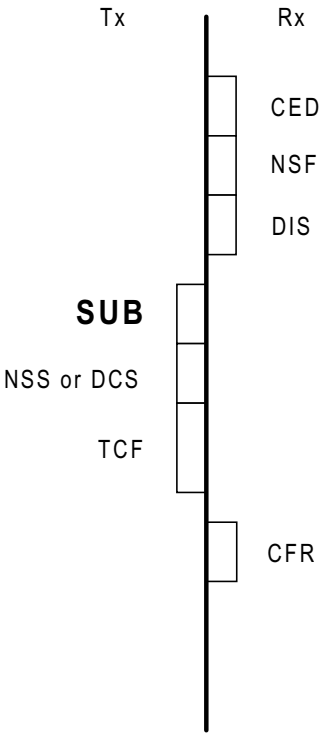
The ITU-T recommendation only clarifies transmission requirements, and does not specify reception requirements. How the receiving terminal treats these signals varies with receiver terminal and manufacturer.

This machine is capable of sending SEP, SUB, PWD and SID codes in transmission or for polling reception, but it is not capable of receiving PWD and SID codes. If the machine receives one of these frames, the machine disconnects.

Selective Polling (SEP/PWD)



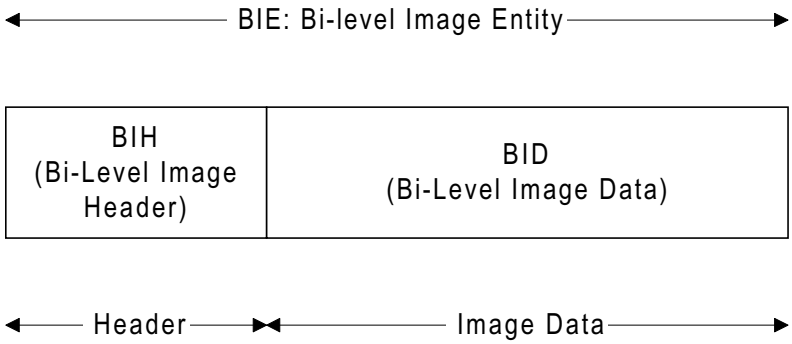
Sub-address (SUB)



2.4.2 JBIG COMPRESSION

JBIG (Joint Bi-Level Image Coding Expert Group) is a working group which consists of members of ITU-T T.82 and ISO11544. The JBIG compression method allows data compression of approximately 1.2 to 1.3 times the MMR method in text mode, and 2 to 10 times in halftone mode.

JBIG compressed data is referred to as a Bi-level Image Entity (BIE).
The BIE consists of a header frame (BIH: Bi-level Image Header) and a compressed data frame (BID: Bi-level Image Data).
The BIH frame contains information such as main scan width (pixels), sub-scan length, and compression mode (standard/optional).
The BID frame contains the actual data.



The optional EXFUNC board is required for JBIG compression.

JBIG compression is disabled when any of the following conditions occur.

- When JBIG compression is turned off with communication switch 00.
- When ECM is turned off with communication switch 01.
- When the receiving terminal does not have the JBIG feature.
- When the receiving terminal does not have the ECM feature.

There are two modes for JBIG compression.

- Standard mode: one stripe (data block) consists of 128 lines.
- Optional mode: one stripe of one page (transmission speed with this mode is faster).

This machine supports both modes for transmission and reception. The mode used is determined during handshaking.

Cross reference: Section 4.2 Bit switches

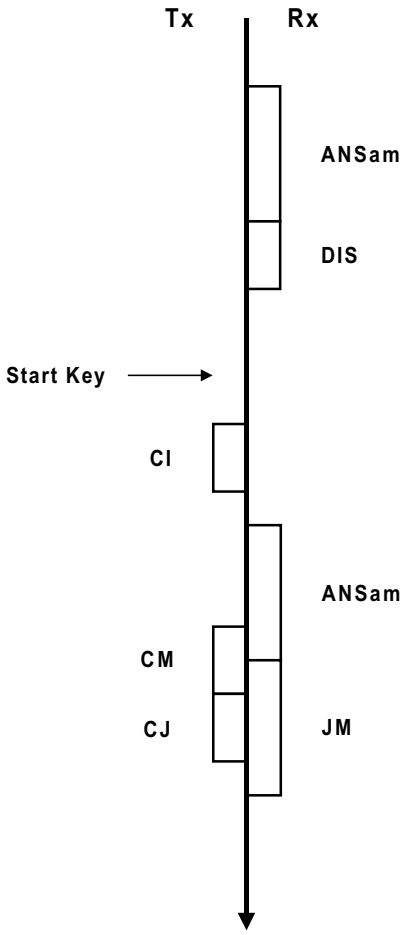
- JBIG reception mode : Communication bit switch 00 bit 5
  0: Standard mode only 1: Standard mode and optional mode (default)
- Priority of JBIG mode used for transmission: Communication bit switch 00 bit 6
  0: Standard mode 1: Optional mode (default)

2.4.3 V.8/V.34 PROTOCOL

NOTE: 4) Refer to "V.8/V.34 Training Manual" for overall information about V.8/V.34 protocol.
5) This section explains machine specific functions only.

V.8 in Manual Transmission

This machine starts the V.8 procedure in order to allow V.34 communication in manual transmission, though some other fax machines do not.



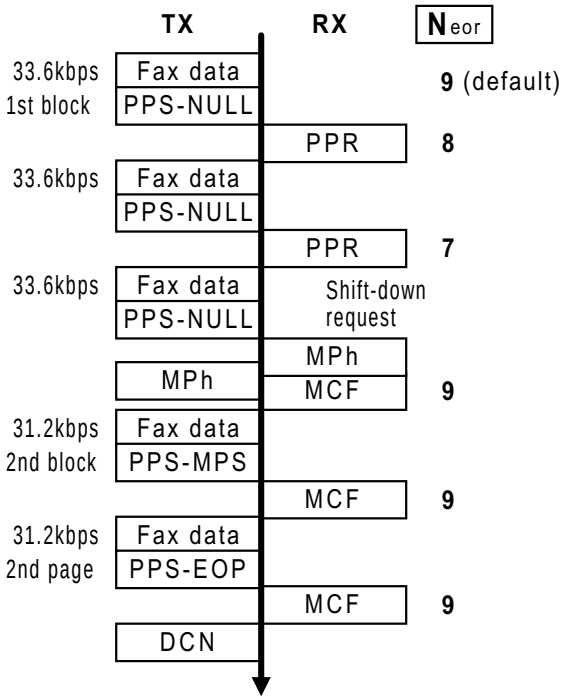
The diagram shows the protocol used by this model acting as the transmitting terminal.

V.8 in Manual Reception

This machine starts the V.8 procedure in order to allow V.34 communication in manual reception, though some other fax machines do not.
Refer to “V.8/V.34 Training Manual – section 3.1” for detailed procedures.

Shift-down Conditions

One-step Shift-Down from the Receiving Terminal

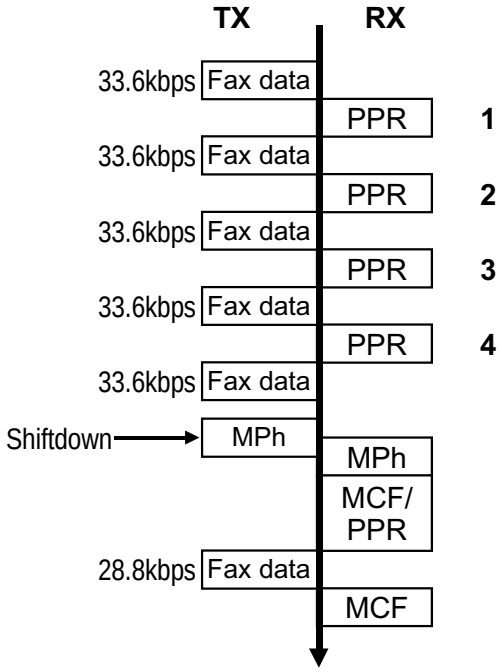


The diagram shows the protocol used by this model acting as the receiving terminal.

If the machine has sent two PPRs for one ECM block, it will request the sending terminal to make a one-step shift-down in the next control channel.

N eor: Number of frame re-transmissions remaining until the Tx terminal sends DCN to terminate the communication. This is fixed at “9”, and is not adjustable.

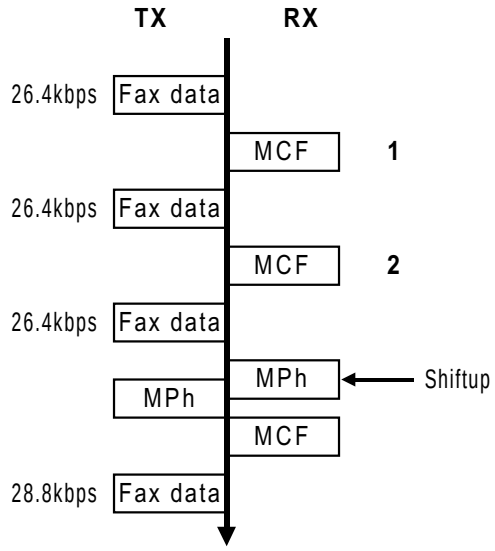
Two-step Shift-down from the Sending Terminal



The diagram shows the protocol used by this model acting as the sending terminal.

If this machine has received four PPRs for one ECM block, it will request the receiving terminal to accept a two-step shift-down in the next control channel.

One-step Shift-up from the Receiving Terminal



The diagram shows the protocol used by this model acting as the receiving terminal.

If this machine has sent two consecutive MCFs and it could detect good line condition, it will request the sending terminal to make a one-step shift-up in the next control channel.

2.5 LINE TYPE CHANGE

When the machine is initially used only with the PSTN, the line type programmed with phone numbers in Quick Dials and Speed Dials is stored as PSTN G3.
Later, if the line connection is changed so that G3 is to be used only with the ISDN, the communication port for all stored Quick and Speed Dials must be changed to ISDN G3.
This feature allows the communication mode and port to be changed for all stored numbers at once.

Procedure:

1) Change the data in the following RAM addresses.
   68E8E4 (H) - Current line type setting.
   68E8E5(H) – New line type setting.

NOTE: The default setting for the above addresses are FF(H).

2) Turn the main switch off and on.
   Then, the machine checks all phone numbers stored in Quick Dials, Speed Dials, AI Redial, and Forwarding Stations. If the communication mode and the port setting for a number is the same as specified for the “current setting” in the above address, the machine changes these to the “new setting”.
3) After this procedure, the data programmed automatically returns to FF(H).

Setting:

These settings can be used only when an optional G3 and/or G4 unit is installed in the machine.

Bit 0 and 1: Communication mode

Bit	1	0	Setting
	0	0	G3
	0	1	G4
	Other settings - Not used		

Bit 2 to 4: Communication port

Bit	4	3	2	Setting
	0	0	0	PSTN-1
	0	0	1	PSTN-2
	0	1	1	ISDN
	1	0	0	G3 auto selection (PSTN-1 OR PSTN-2)
	Other settings - Not used			

Bit 5 to 7: Not used

Allowable settings are as follows:

	7	6	5	4	3	2	1	0	Setting
00H	0	0	0	0	0	0	0	0	G3-1 (PSTN-1)
04H	0	0	0	0	0	1	0	0	G3-2 (PSTN-2)
0DH	0	0	0	0	1	1	0	1	G4 (ISDN)
10H	0	0	0	1	0	0	0	0	G3 (auto selection)

Example:

If you wish to change the port setting from PSTN-1 G3 to ISDN G4,

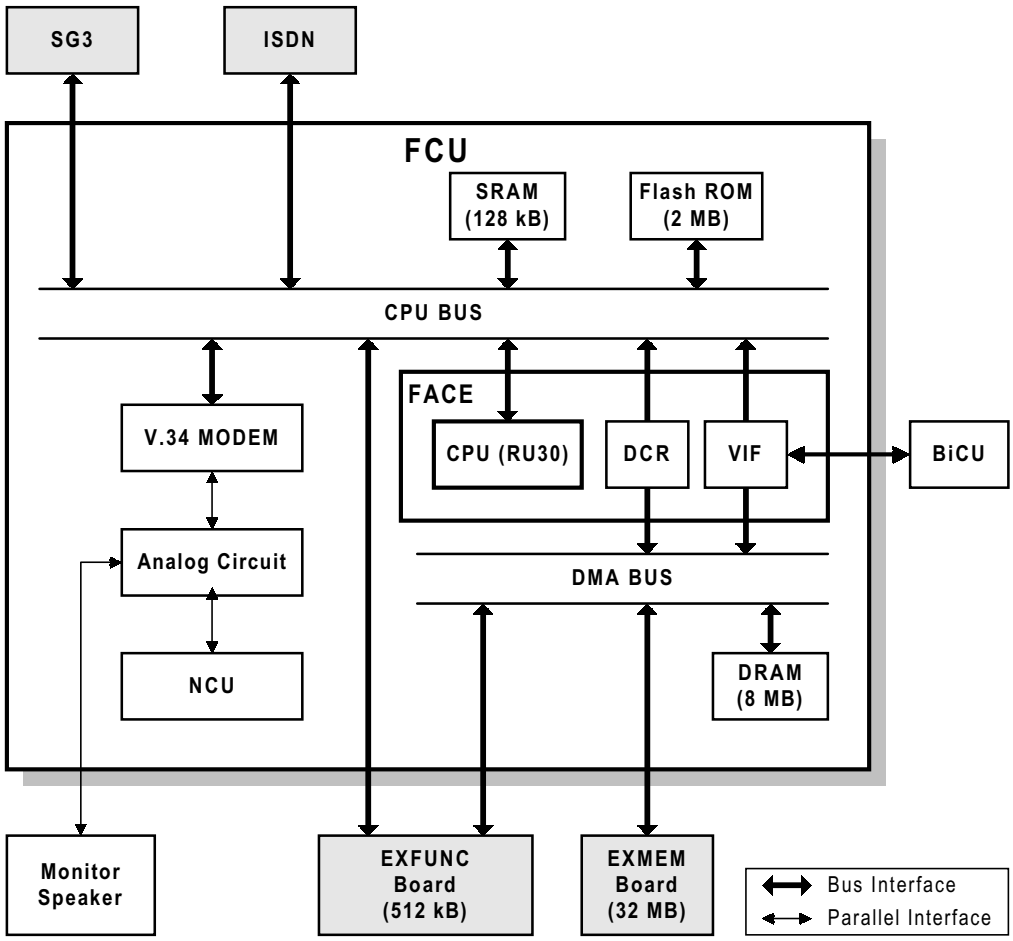
1. Change the data in address 68E8E4(H) to 00(H) (0000 0000)
2. Change the data in address 68E8E5(H) to 0D(H) (00001101)

NOTE: 1) Do not use this procedure if there are any files stored in the memory awaiting transmission.

2) Quick/Speed Dial addresses containing an F-code (i.e., for communications that will use SEP/SUB/PWD/SID) cannot be converted to ISDN G4.

2.6 PCBS

2.6.1 FCU



The FCU (Facsimile Control Unit) controls fax communications, the video interface to the base copier's engine, and all the fax options.

FACE (Fax Application Control Engine)

- CPU
- Data compression and reconstruction (DCR)
- DMA control
- Clock generation
- DRAM backup control
- Ringing signal/tone detection
- Video and command interface to the BiCU (VIF)

Modem (Rockwell R288F)

- V.34, V33, V17, V.29, V.27ter, V.21, and V.8

ROM

- 2MB (16 Mbit) flash ROM for system software storage

DRAM

- The 8 MB of DRAM is shared between SAF memory, ECM buffer, page memory, working memory, line buffer, and so on.
- The SAF memory (2MB) is backed up by a rechargeable battery.

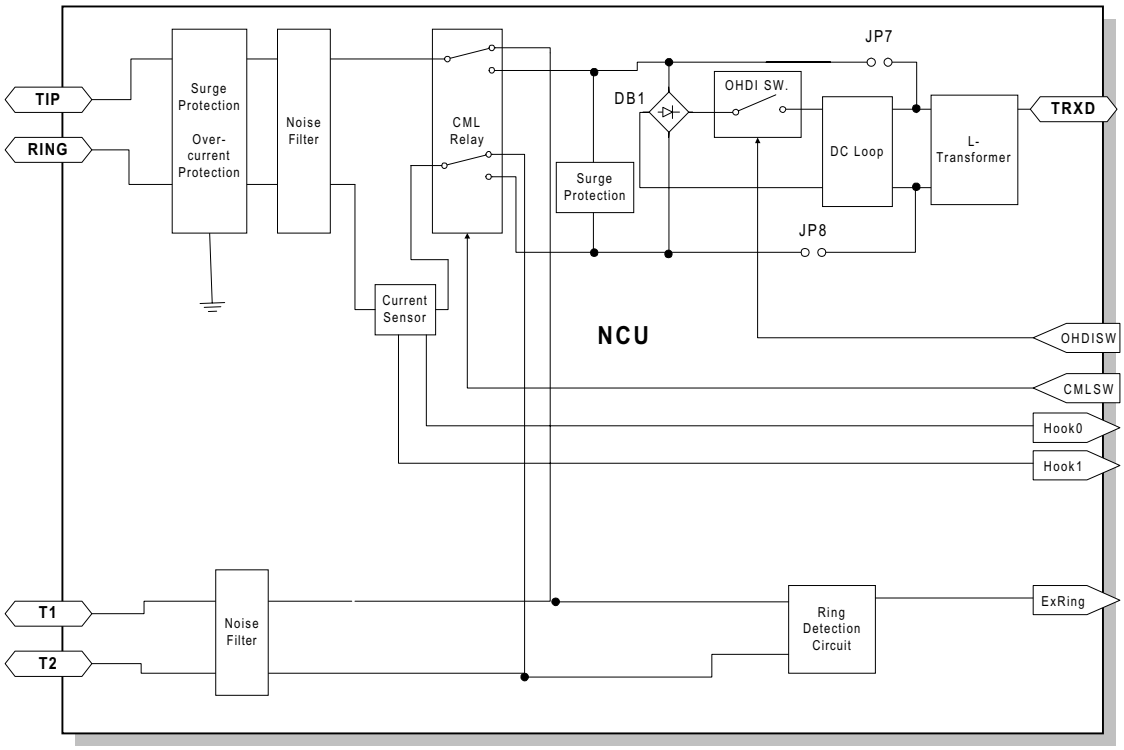
SRAM

- The 128 KB SRAM for system and user parameter storage is backed up by a lithium battery.

Switches

Item	Description
SW1	Determines which firmware the machine boots from. If the switch is OFF, the firmware on the FCU inside the machine is used. If the switch is ON, the firmware on the flash memory card or external FCU is used.
SW2	Reset switch, to reboot the FCU board
SW3	Switches the SRAM backup battery on/off

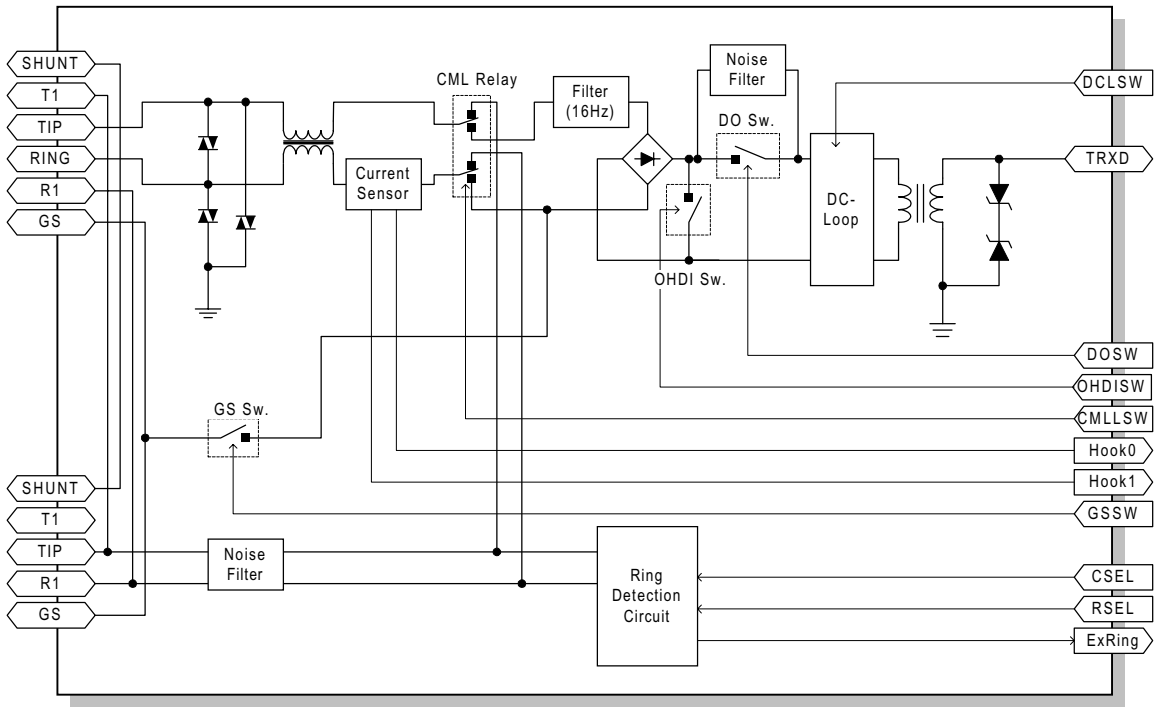
2.6.2 NCU (US)



Jumpers

Item	Description
JP7	These jumpers should be shorted when the machine is connected to a dry line.
JP8	
DB1	Also remove DB1 when the machine is connected to a dry line.

2.6.3 NCU (EUROPE/ASIA)

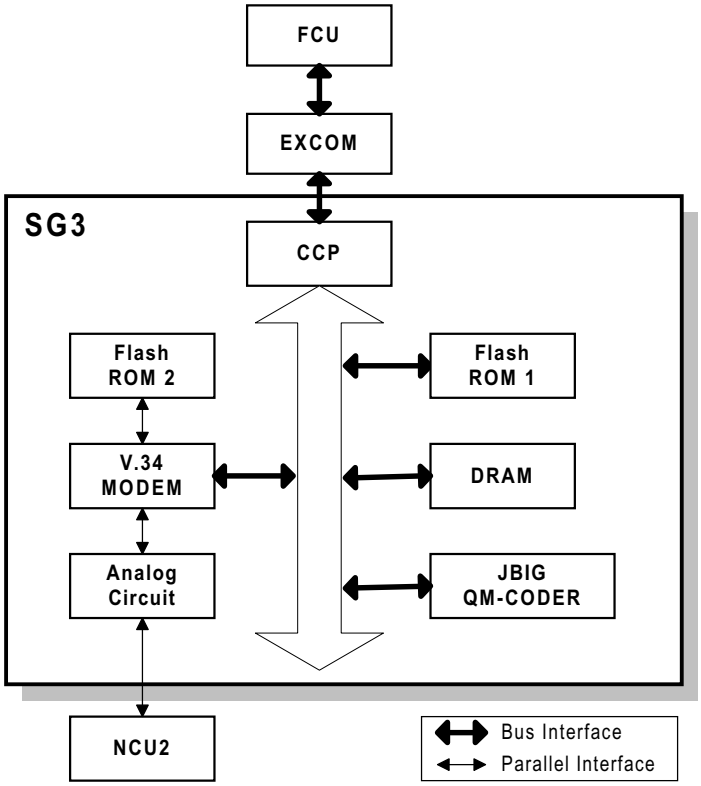


Control Signals and Jumpers

	CSEL1	RSEL
Country	**CN2-5**	**CN1-13**
CTR21	H	H
Australia	H	H
South Africa	H	H
Malaysia	H	H
Hong Kong	L	L
New Zealand	L	L
Singapore	L	L
Asia	L	L
	L: Low, H: High	

CTR21 (Common Technical Regulation 21):
France, Germany, UK, Italy, Austria, Belgium, Denmark, Finland, Ireland, Norway, Sweden, Switzerland, Portugal, Holland, Spain, Israel, Greece

2.6.4 SG3 BOARD



The SG3 board allows up to two simultaneous communications when used in combination with the FCU.

CCP

- Controls the SG3 board.

Flash ROM 1

- Flash ROM for SG3 software storage.

Flash ROM 2

- Flash ROM for Panasonic modem software storage.

DRAM

- Shared between ECM buffer, line buffer, working memory, and so on.

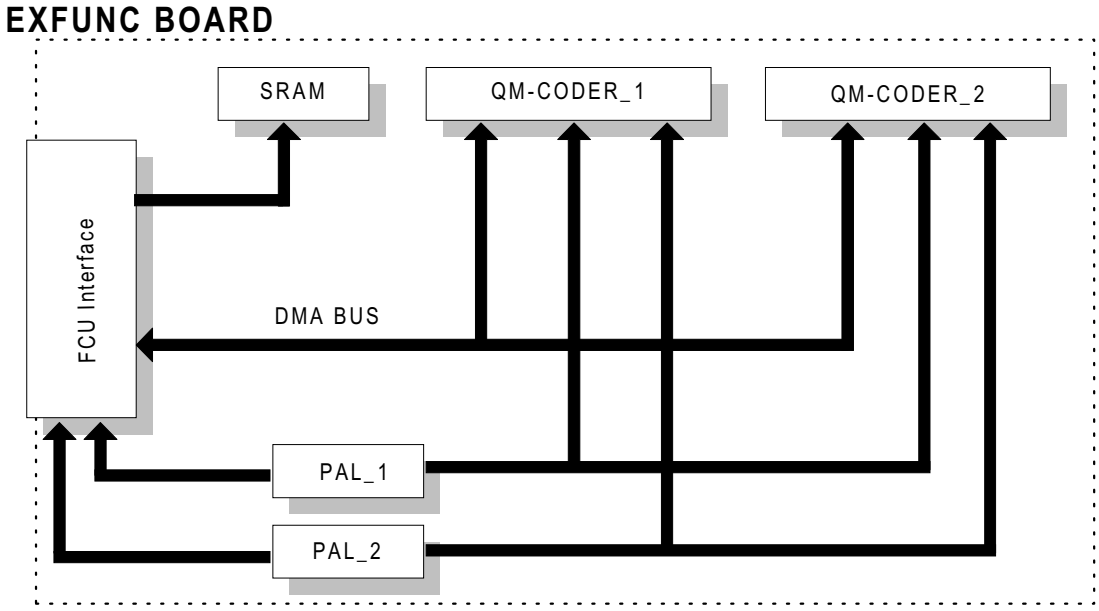
QM coder

- QM coder for JBIG compression and decompression.

V.34 Modem

- Panasonic V.34 modem (MN195003MFL)

2.6.5 EXFUNC BOARD



The EXFUNC board allows JBIG compression and some additional features become available. In addition, this board expands the SRAM capacity.

QM Coder

- 2 QM coders for JBIG compression and decompression.

PAL (PALCE16V8H-15PC)

- 2 PALs make a strobe control signal. This is used for DMA selection.

SRAM

- 512KB SRAM for telephone numbers and other user parameters.

Lithium battery

- Backs up the SRAM.

Switches

Item	Description
SW1	Switches the backup battery on/off

3. INSTALLATION

3.1 FAX UNIT

3.1.1 CAUTIONS

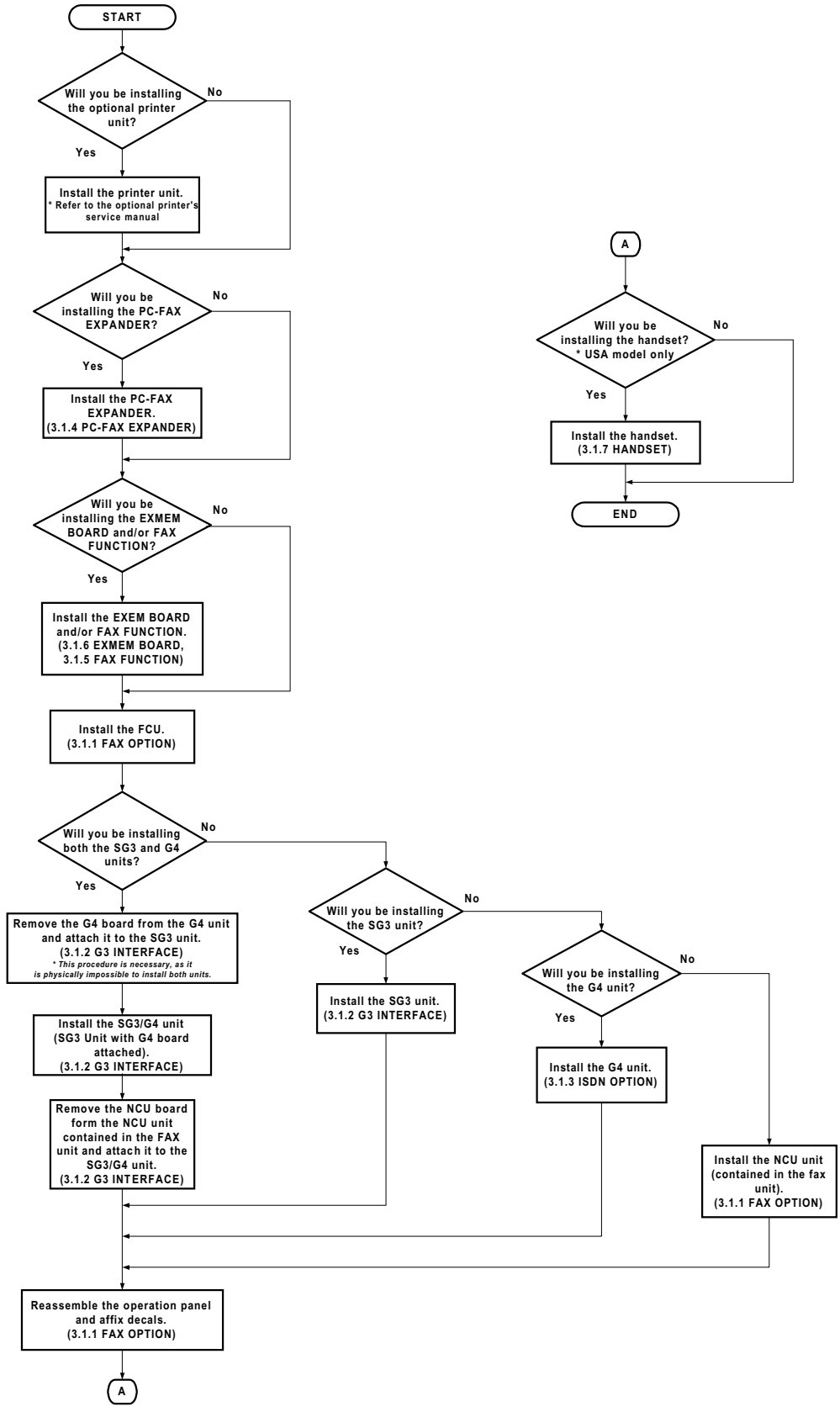
NOTE: 1) Never install telephone wiring during a lightning storm.
2) Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.
3) Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
4) Use caution when installing or modifying telephone lines.
5) Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning.
6) If there is a gas leak, do not use the telephone in the vicinity of the leak to report it.

⚠CAUTION

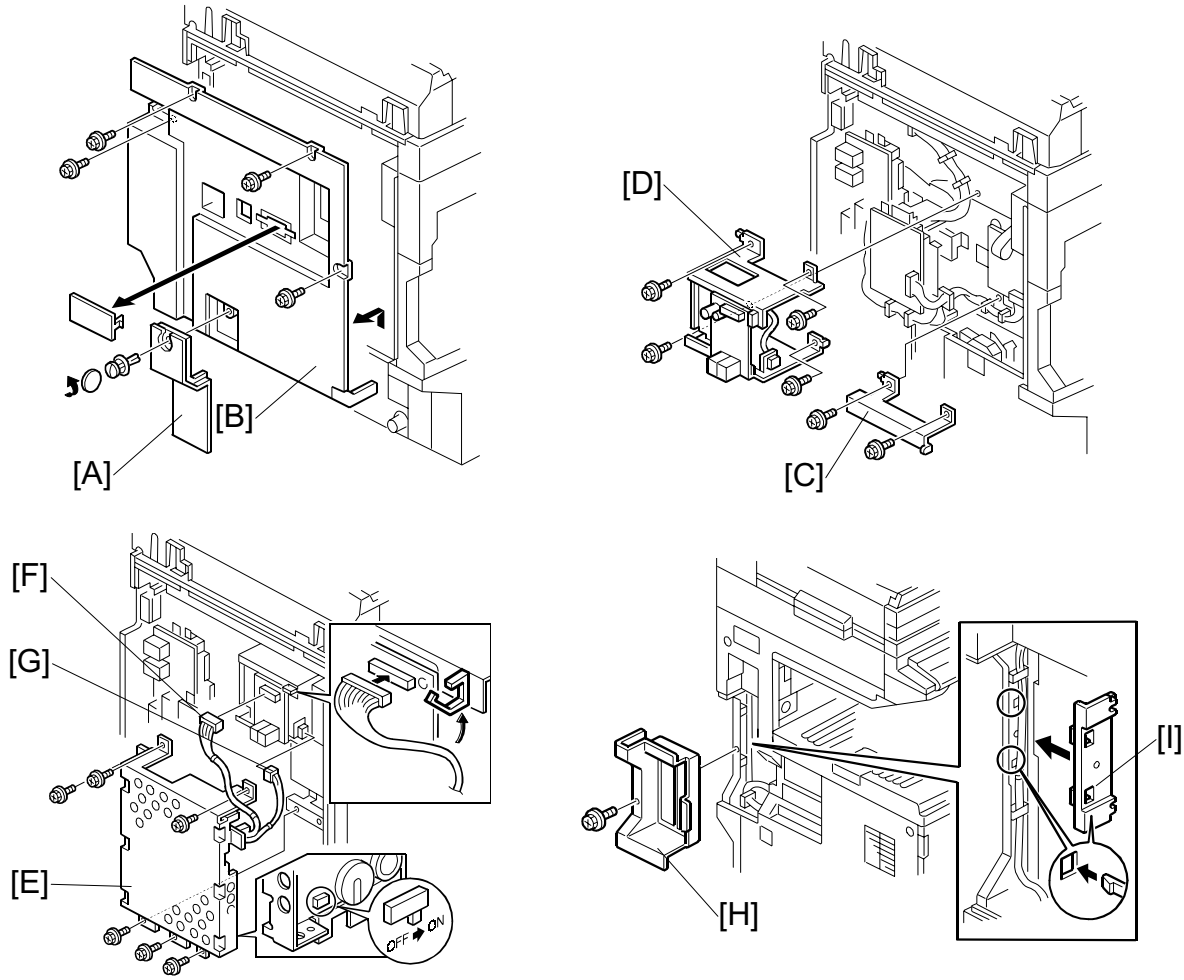
1. **Before installing the fax unit, switch off the main power and operation switches, and disconnect the power cord.**
2. **The fax unit contains a lithium battery. The danger of explosion exists if a battery of this type is incorrectly replaced. Replace only with the same or an equivalent type recommended by the manufacturer. Discard used batteries in accordance with the manufacturer's instructions.**

3.1.2 FLOW CHART

Before installing the fax unit and/or fax options, refer to the following flow chart.



3.1.1 FAX OPTION TYPE 270 INSTALLATION

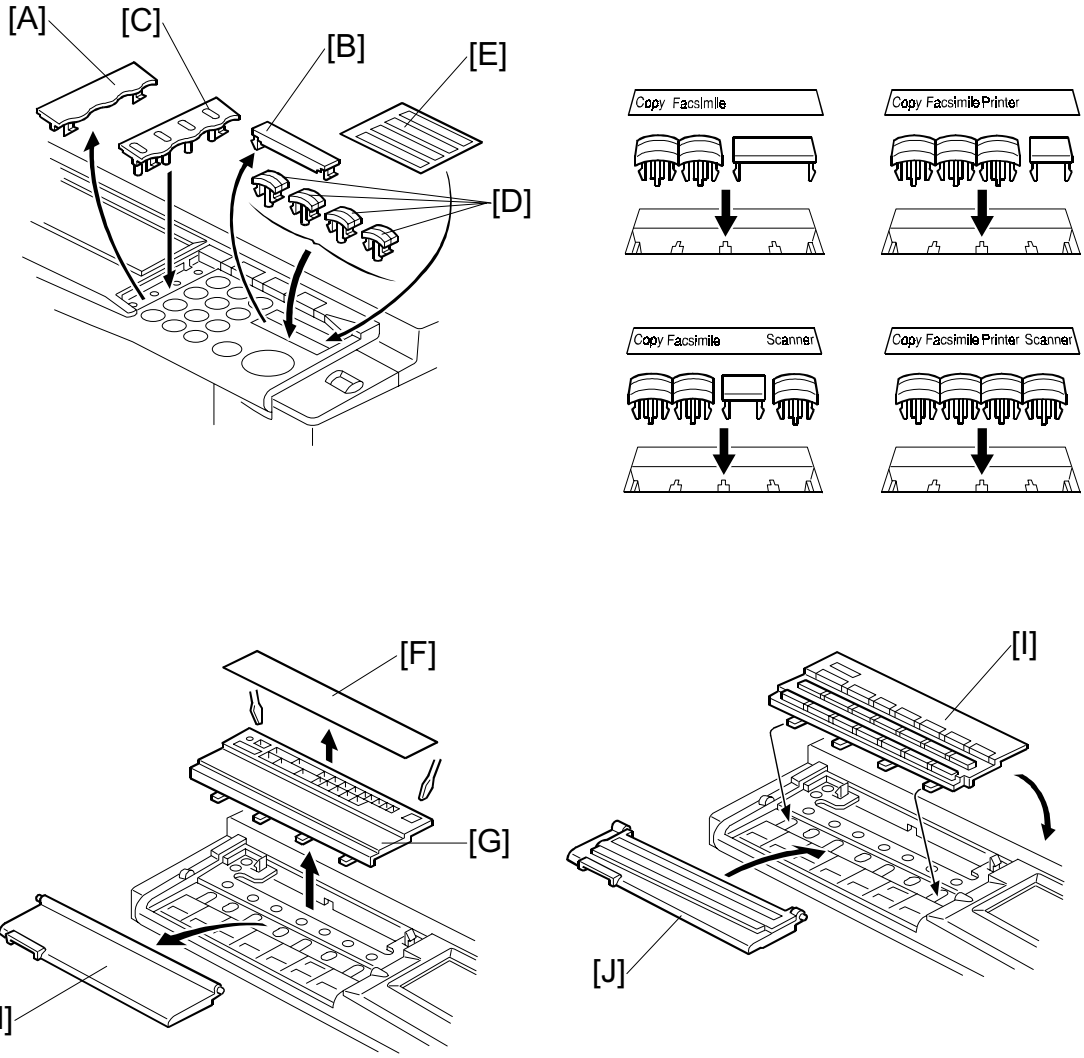


⚠CAUTION

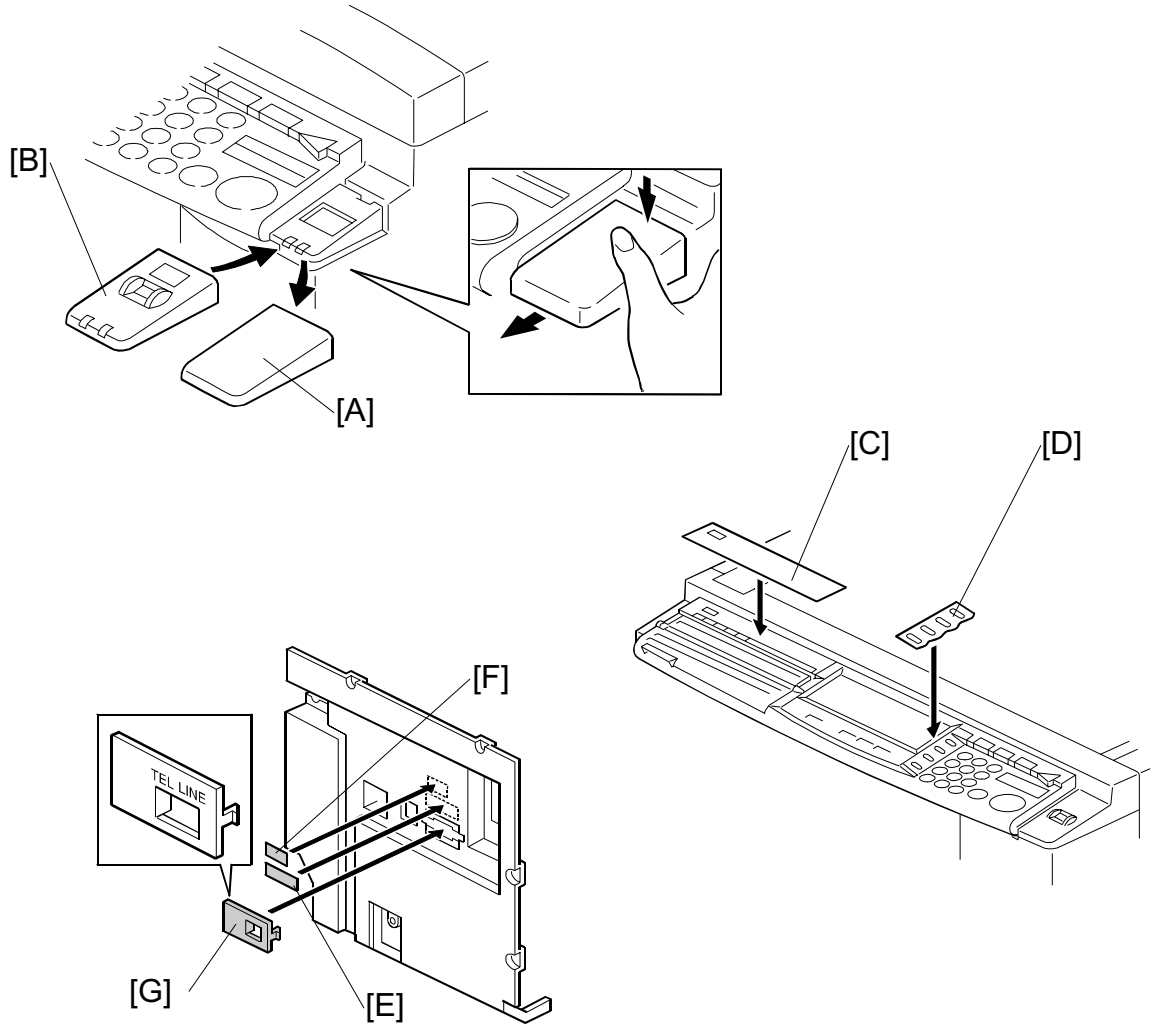
Before installing this option, do the following:

1. **If there is a printer option in the machine, print out all data in the printer buffer.**
2. **Turn off the main switch and disconnect the power cord and the LAN cable.**

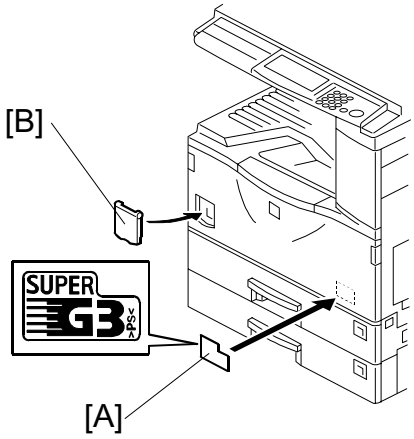
1. Remove the small cover [A] (1 rivet) and the rear cover [B] (4 screws).
2. Attach the bracket [C] (2 screws) and NCU unit [D] (4 screws) into the machine.
3. Turn on the battery switch (SW3) on the FCU board, then attach the FCU unit [E] (6 screws). Connect harnesses [F] and [G], then clamp harness [F] as shown. Replace the rear cover and the small cover.
4. Remove cover [H] (1 screw) and attach cover [I], then replace cover [H].

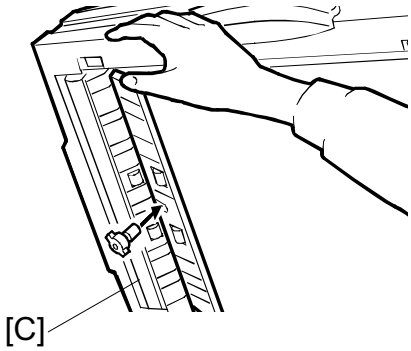


5. Remove parts [A] and [B], then install parts [C] and [D]. After that, affix on the decal [E].
   NOTE: The decal affixed on the operation panel changes depending on the options installed at the same time. Therefore refer to the illustration above. The decal [E] for European, Chinese and Taiwanese models is written in each languages and it includes two extra decals (mentioned in step 9).
6. At first, peel off the decal [F], then remove parts [G] and [H].
7. Install parts [I] and [J] as shown.



8. Remove part [A], then attach part [B] as shown.
   NOTE: This procedure is for European, Asian, Chinese and Taiwanese models only.
9. Affix two extra decals [C] and [D] on the operation panel as shown.
   NOTE: This procedure is for European, Chinese and Taiwanese models only.
10. Affix the FCC decal [E] and the serial number decal [F] on the rear cover as shown. Then install the small cover [G] on the rear cover.

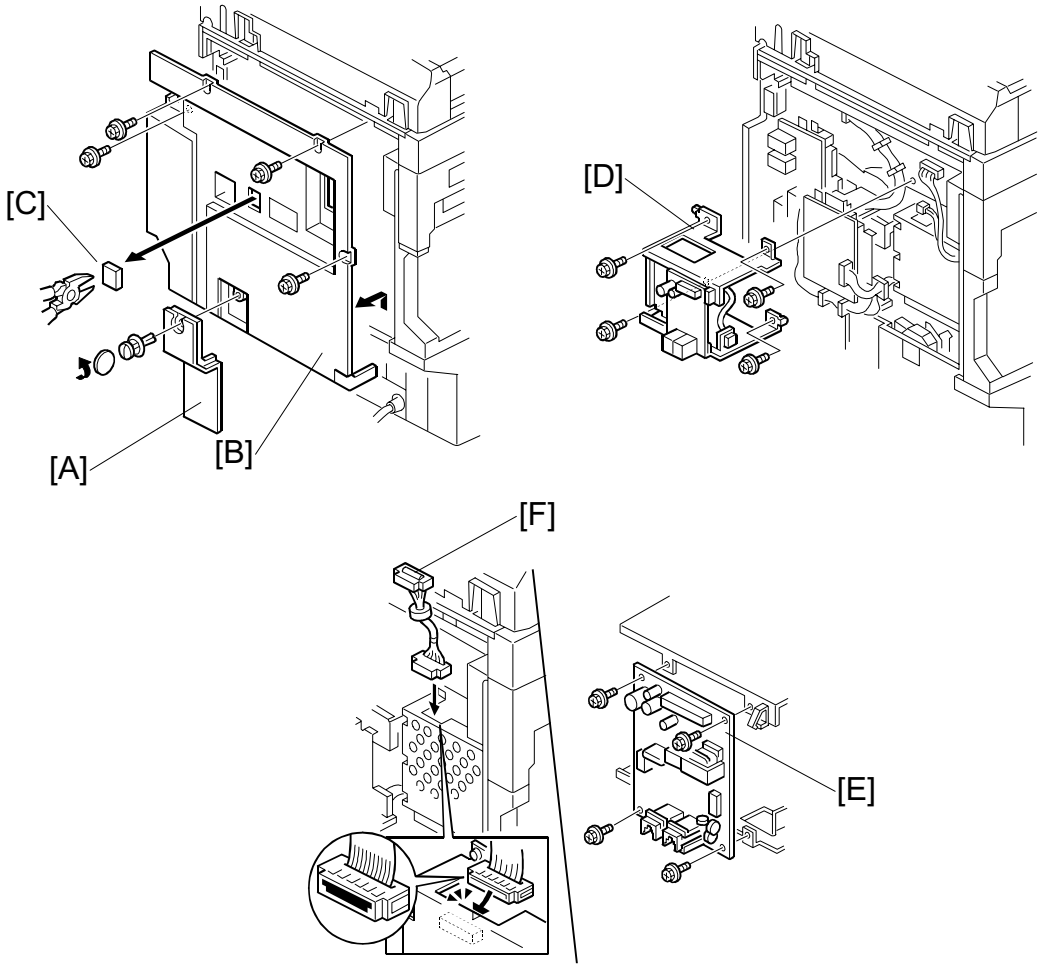




11. Affix the super G3 decal [A] and attach the cover [B] on the front cover as shown.
    NOTE: The cover [B] is for European, Asian, Chinese and Taiwanese models only.
12. If the ADF has been installed, insert the stamp cartridge [C] into the ADF as shown.
13. Connect the telephone line to the “LINE” jack at the rear of the machine.
14. Plug in the machine and turn on the main power switch.
15. Press the “Facsimile” key. At this time, the display shows: SC1201 - Functional problem with the fax. Data should be initialized.
    NOTE: This is not a functional problem. The machine shows this message only when the fax unit is first installed. If the same message appears at the next power on, check whether the battery switch (SW3) on the FCU has been turned on.
16. Press “Yes” to initialize the fax unit.
17. Remind the user to program the items required for fax communications.
    - RTI for PSTN-1
    - TTI-1, TTI-2
    - Own telephone number (for transfer result reports)
    - Telephone line type
18. If the user function keys (F1, F2, F3, F4) need to be programmed, attach a label.
    The default settings for the user function keys are as follows:
    *F1: Start Manual Rx
    *F2: TEL Mode
    *F3: Tx Result Display
    *F4: Not programmed
19. Be sure to set the clock. (Date and time)
20. Program the serial number into the fax unit (service function 10). The serial number can be found on the serial number label (attached to the machine in step 10).

3.2 OPTIONAL UNITS

3.2.1 G3 INTERFACE UNIT TYPE 270



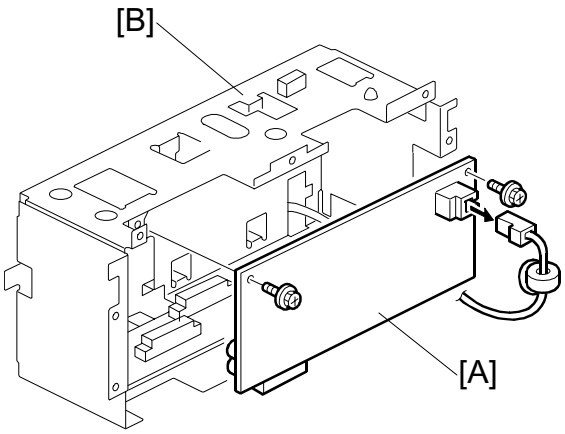
⚠CAUTION

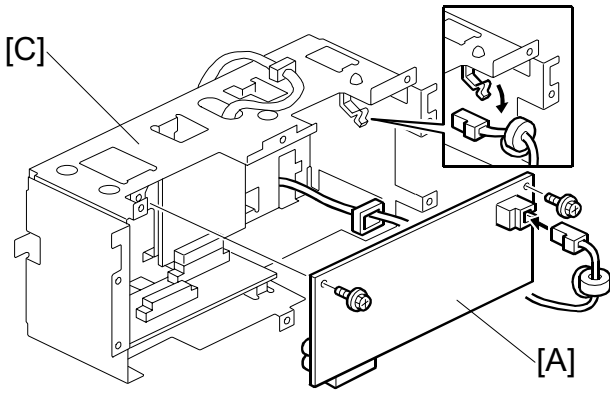
Before installing this option, do the following:

1. **If there is a printer option in the machine, print out all data in the printer buffer.**
2. **Turn off the main switch and disconnect the power cord and the LAN cable.**

1. Remove the small cover [A] (1 rivet) and the rear cover [B] (4 screws). Then cut away the jack window [C].
2. Remove the NCU unit [D] (4 screws, 2 connectors)
3. Remove the NCU [E] from the NCU unit (4 screws). Connect cable [F] to the FCU (CN604).

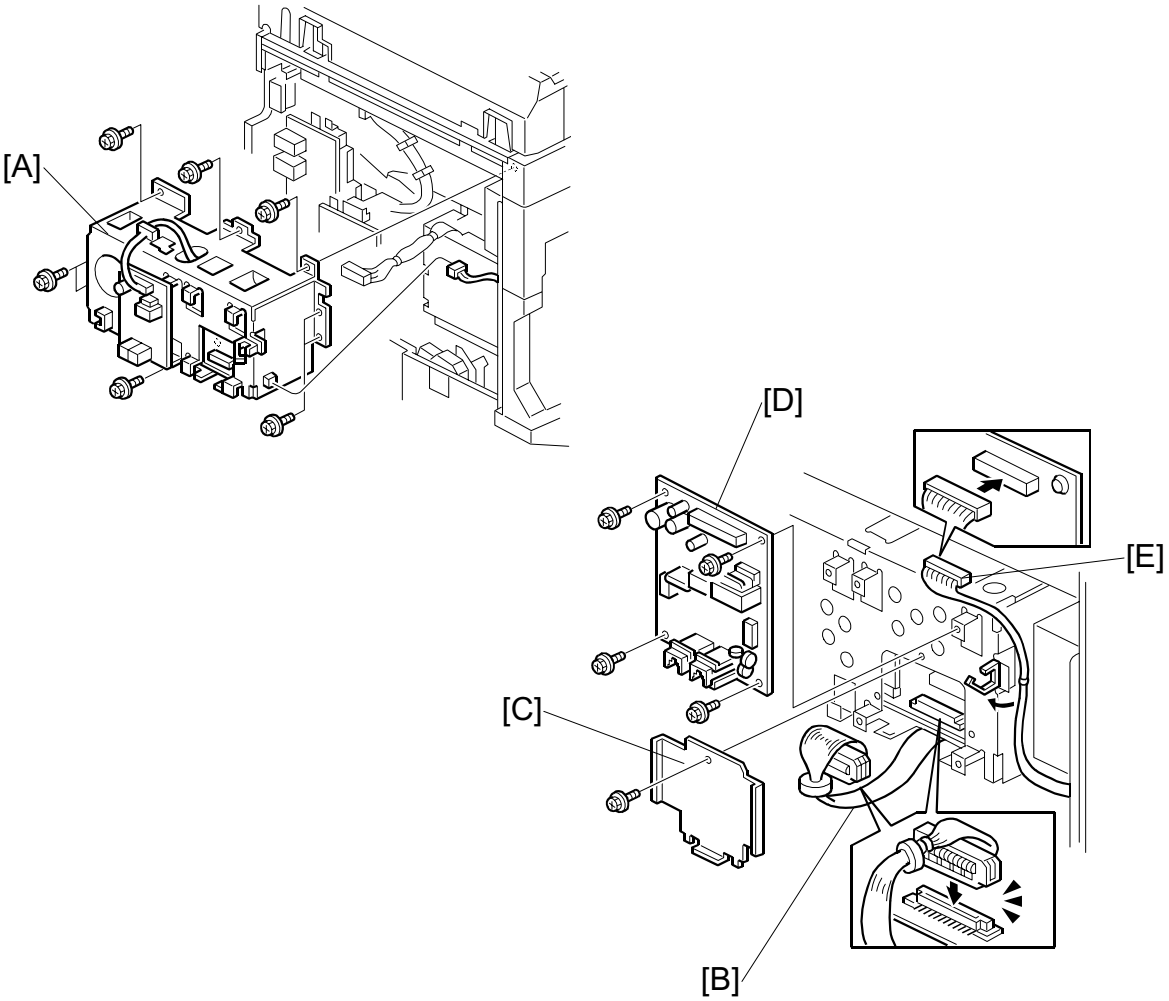
If the G4 unit is not installed at the same time, go to step 6.





If installing the G4 unit at the same time, do steps 4 and 5.

4. After unpacking the G4 unit, remove the G4 board [A] from the G4 unit [B].
5. Attach the G4 board [A] to the G3 unit [C].



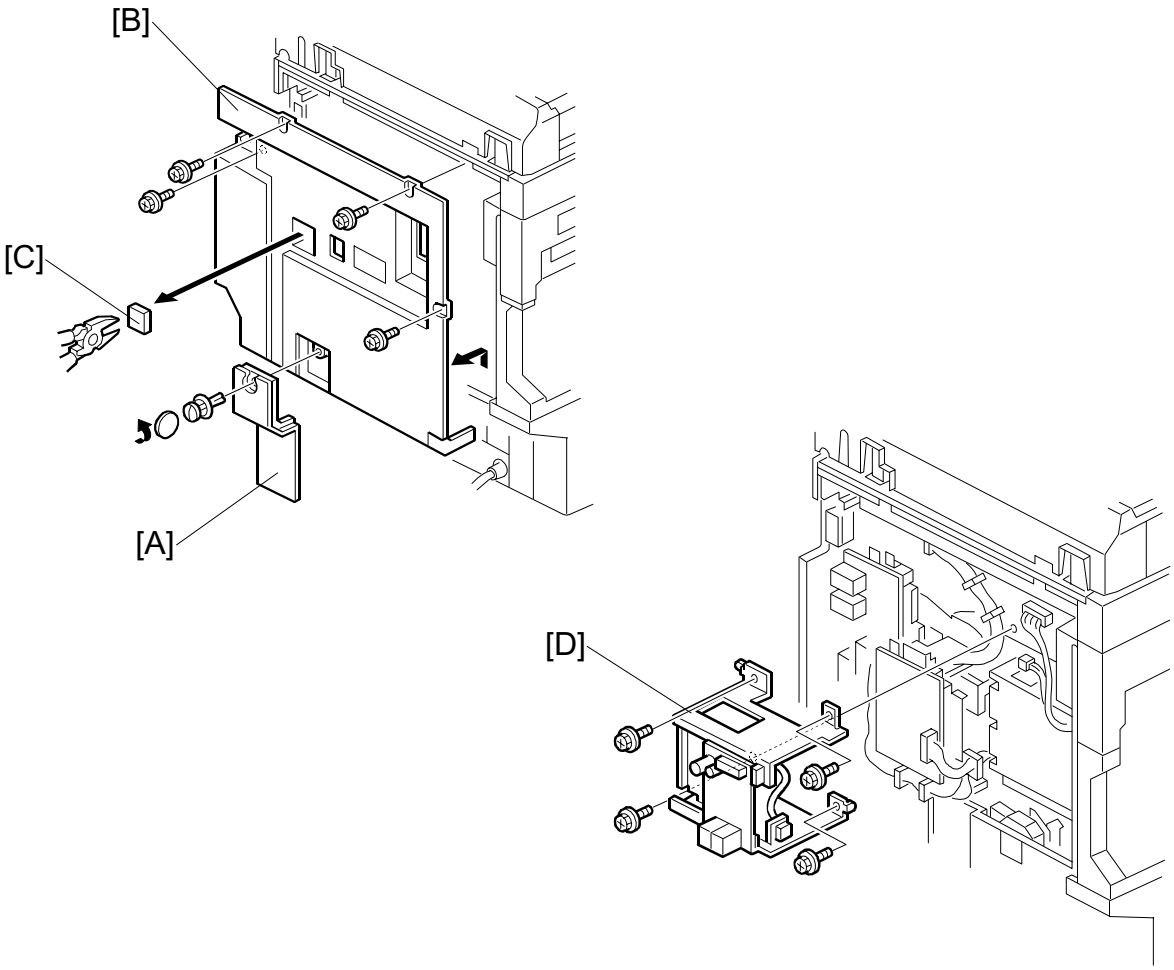
6. Attach the G3 unit [A] to the machine (6 screws, 1 connector).
7. Connect cable [B] to the interface board and attach bracket [C] (1 screw). Then attach the NCU [D] (removed from the NCU unit in step 3) to the G3 unit (4 screws).
8. Connect cable [E] to the NCU [D], then clamp cable [E] as shown.

9. Replace the rear cover and the small cover.
10. Connect the cable to the LINE2 jack, then plug in the machine and turn the main switch on.
11. Enter service mode and set bit 1 of communication switch 16 to “1”. After that turn the main switch off and on.
12. Print the system parameter list and ensure that “SG3-V34” is listed as an option.
13. Remind the user to program the items required for PSTN-2 communications.
    - RTI for PSTN-2
    - CSI for PSTN-2
    - Telephone line type

NOTE: The default settings for the user function keys with a G3 unit are as follows.
F1: Start Manual Rx
F2: TEL Mode
F3: Tx Result Display
F4: G3 Line Type Selection

The default settings for the user function keys with G3 and G4 units are as follows.
F1: Start Manual Rx
F2: TEL Mode
F3: Tx Result Display
F4: Line Type (G3 auto sel./G3-1 dir./G3-2 dir./G4) Selection

3.2.2 ISDN OPTION TYPE 270

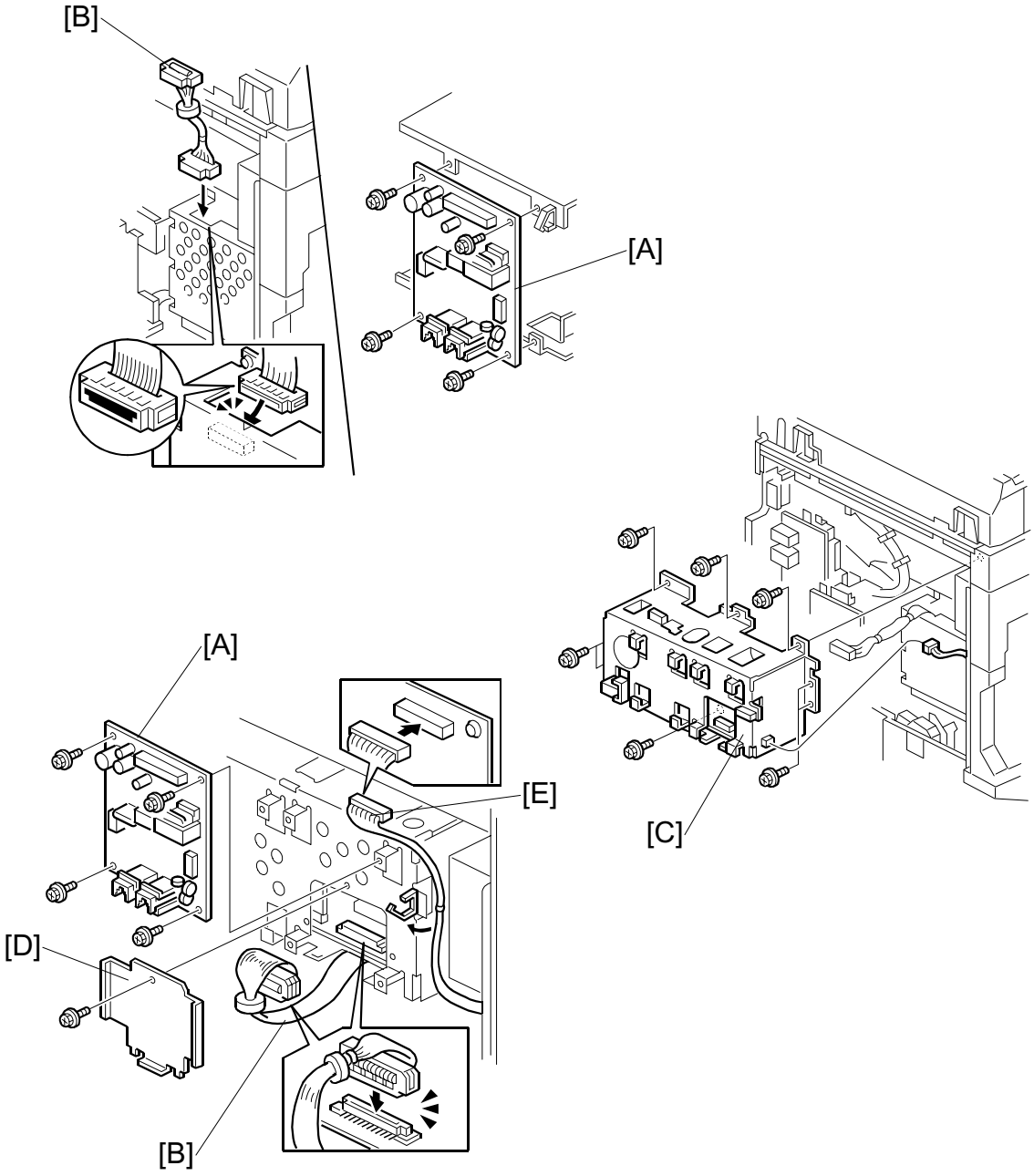


⚠CAUTION

Before installing this option, do the following:

1. **If there is a printer option in the machine, print out all data in the printer buffer.**
2. **Turn off the main switch and disconnect the power cord and the LAN cable.**

1. Remove the small cover [A] (1 rivet) and the rear cover [B] (4 screws). Then cut away the jack window [C].
2. Remove the NCU unit [D] (4 screws, 2 connectors)

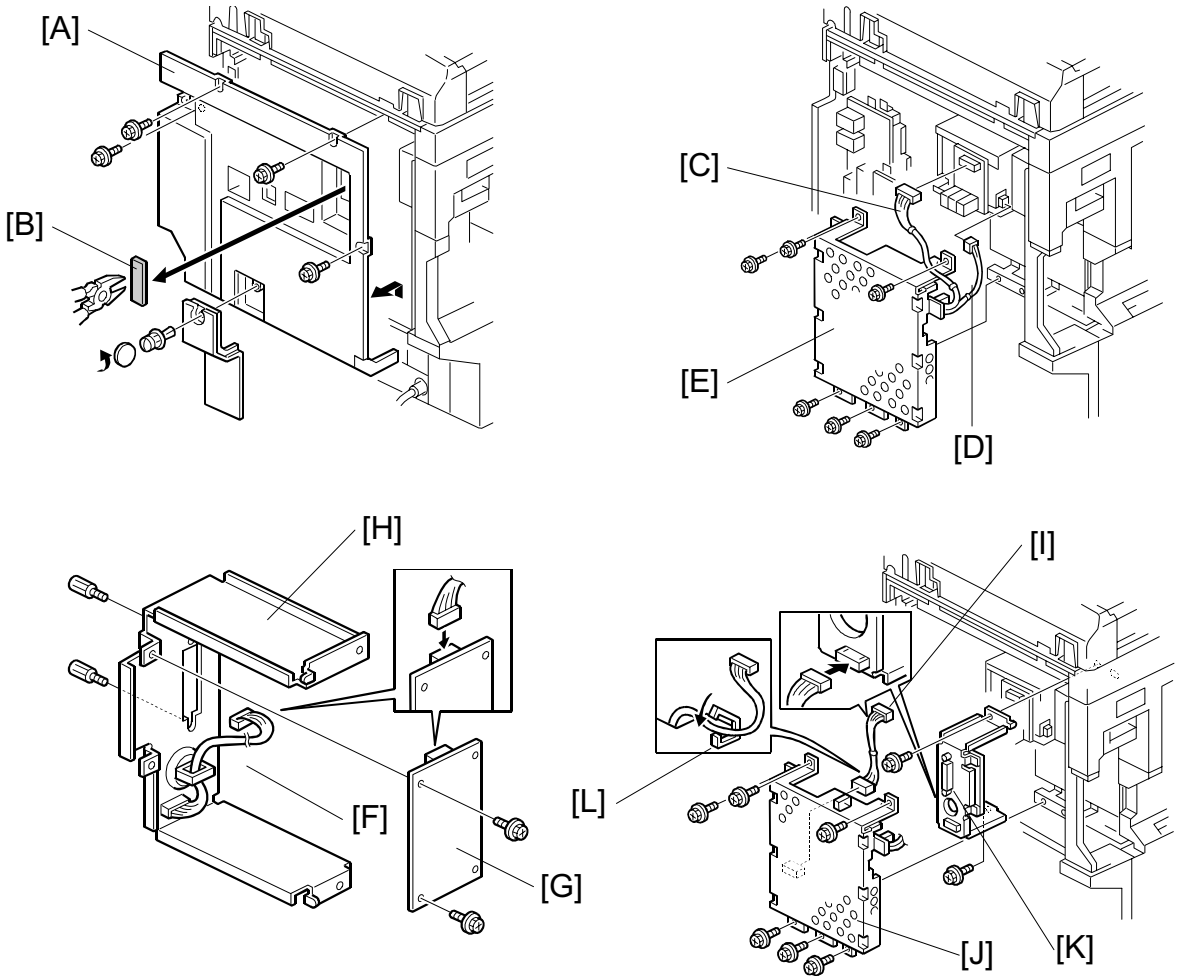


3. Remove the NCU [A] from the NCU unit (4 screws). Connect the cable [B] to the FCU (CN604).
4. Attach the G4 unit [C] to the machine (6 screws, 1 connector).
5. Connect the cable [B] to the interface board and attach bracket [D] (1 screw). Then attach the NCU [A] (removed from the NCU unit in step 3) to the G4 unit (4 screws).
6. Connect the cable [E] to the NCU [A], then clamp cable [E] as shown.

7. Replace the rear cover and the small cover.
8. Connect the cable to the ISDN jack, then plug in the machine and turn the main switch on.
9. Enter service mode and set bit 2 of communication switch 16 to "1". After that turn the main switch off and on.
10. Print the system parameter list and ensure that "G4" is listed as an option.
11. Program the items required for ISDN communications (refer to the ISDN kit service manual). After setting up the ISDN parameters, be sure to turn the main switch off and on.

NOTE: The default settings for the user function keys with a G4 unit are as follows.
F1: Start Manual Rx
F2: TEL Mode
F3: Tx Result Display
F4: G3/G4 communication Mode Selection

3.2.3 PC FAX EXPANDER (PCFE)



⚠CAUTION

Before installing this option, do the following:

1. **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 LAN cable.**

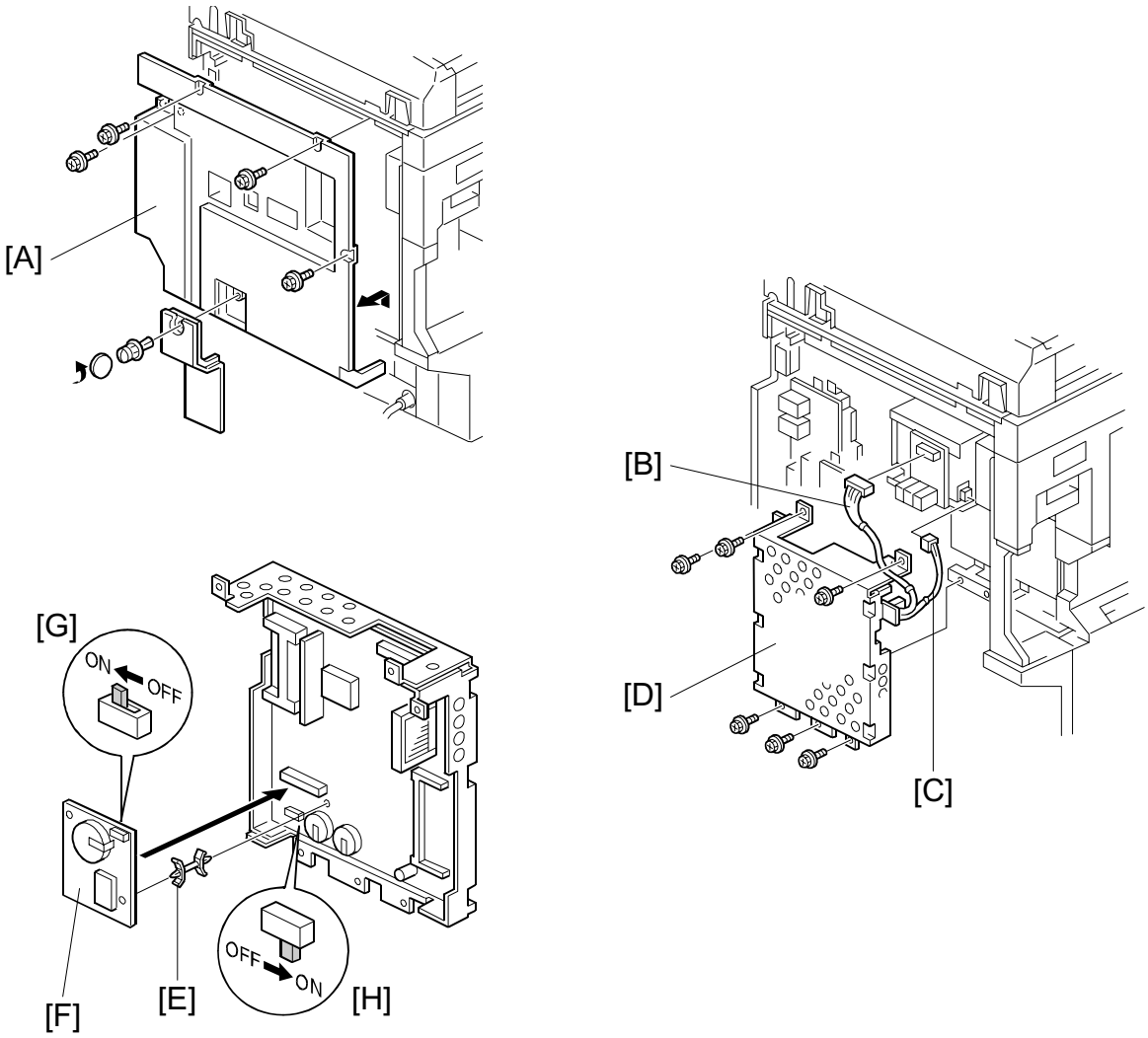
1. Remove the rear cover [A] (4 screws), and cut away the small cover [B].
2. Disconnect the cables [C] and [D], then remove the fax unit [E] (6 screws).
3. Connect the cable [F] to the DIU board [G].
4. Attach the DIU board [G] to the bracket [H] (2 screws/2 hexagonal screws).
5. Connect the cable [I] to CN609 on the FCU board, then re-install the fax unit [J] in the machine.
6. Attach the DIU assembly [K] to the machine (2 screws), then connect the cable [I] to the DIU assembly [K] and run the cable [I] through the clamp [L].
7. Re-install the rear cover (4 screws).
8. Plug in the machine and turn on the main power and operation switches.
9. Enter SP mode as follows:
   1) Press the “Clear Modes” key.
   2) Enter “107”
   3) Press the “Clear/Stop” key for more than 3 seconds.



10. Enter “2” (select “Fax”).
11. Enter “01” (select “Bit Switches”).
12. Enter “1” (select “System Switch”).
13. Press the “↑ Switch” key several times and select “Switch 1C”.
14. Enter “0” and change bit 0 from 0 to 1.
15. Exit SP mode and turn the main switch off/on.
16. Print the system parameter list. If “TR29” appears in the “option” section of the system parameter list, go ahead. Otherwise, check the cable connection.
17. Follow the instructions in the operator’s manual for how to connect the machine to a host computer and how to set up the machine and computer, if required.

    NOTE: 1) A “straight-through” shielded serial cable is required, but it is not enclosed.
    2) One end of the serial cable must have a DB25 male connection to connect to the DIU.

3.2.4 FAX FUNCTION EXPANDER (EXFUNC)



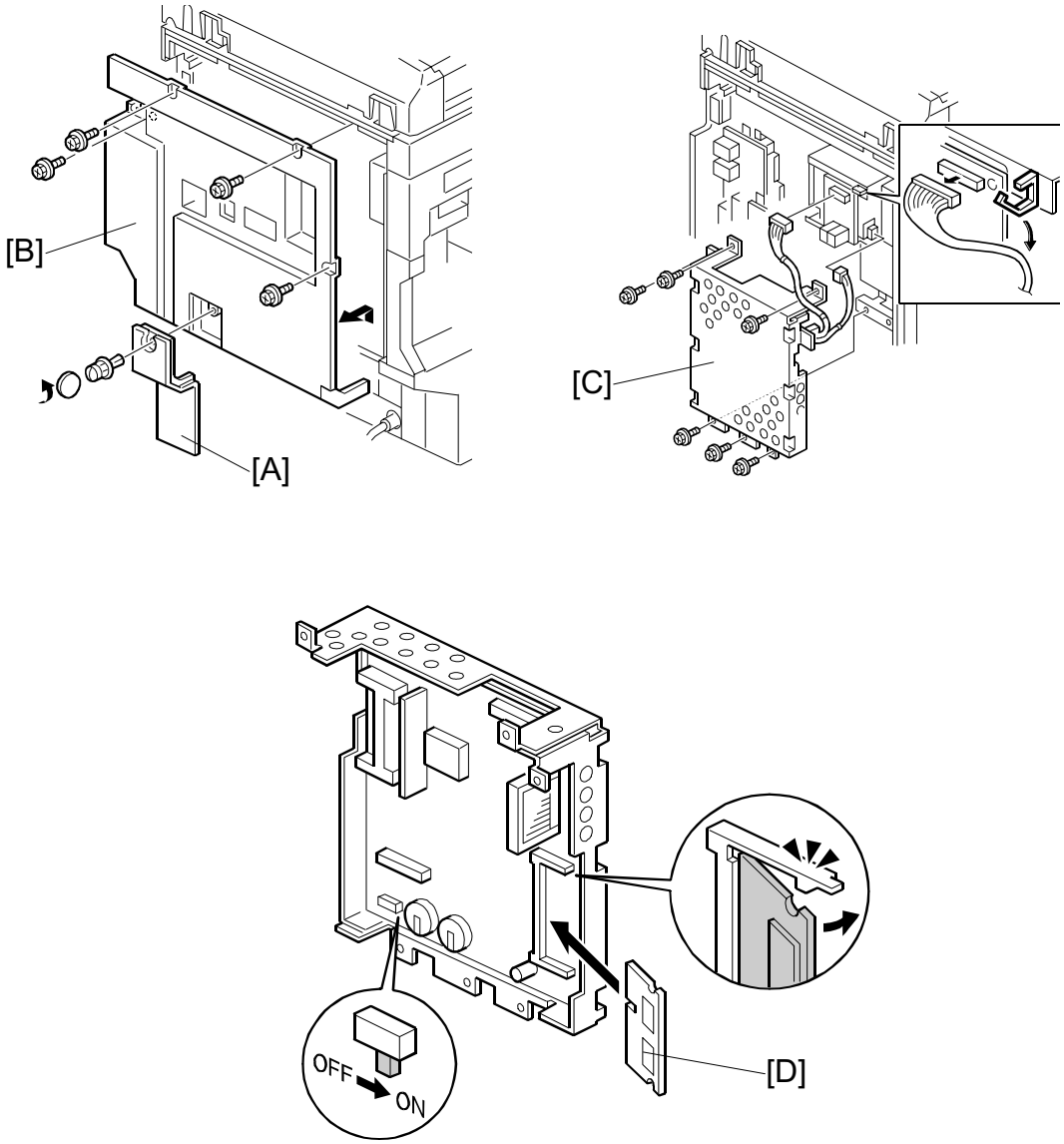
⚠CAUTION

Before installing this option, do the following:

1. **Print out all messages stored in the memory, the lists of user-programmed items, and the system parameter list.**
2. **Back up the fax unit's SRAM data (refer to Removal and Replacement – SRAM Data Backup and Restore).**
3. **If there is a printer option in the machine, print out all data in the printer buffer.**
4. **Turn off the main switch and disconnect the power cord, the telephone line, and the LAN cable.**

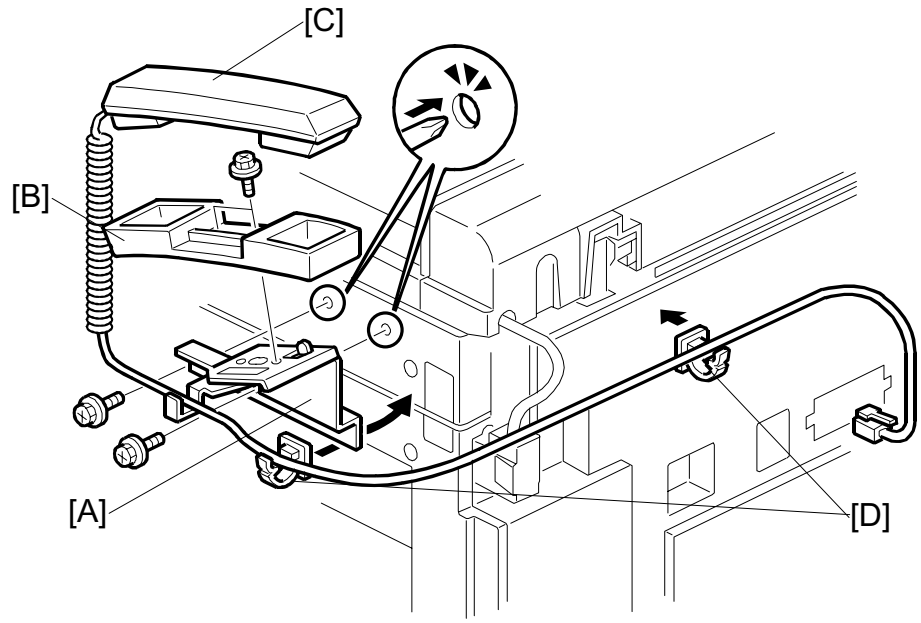
1. Remove the rear cover [A] (4 screws).
2. Disconnect the cables [B] and [C], then remove the fax unit [D] (6 screws).
3. Install the locking support [E].
4. Install the fax function upgrade board [F].
5. Turn on the battery switch [G].
   NOTE: If installing the fax unit at the same time, be sure to turn on the FCU board battery switch (SW3) [H].
6. Re-install the fax unit into the machine.
7. Re-install the rear cover (4 screws).
8. Plug in the machine and turn on the main switch.
9. Press the “Fax” key and ensure that the Fax LED lights.
   At this time, the following message appears;
   “SC1207 - Adding FAX Feature Expander causes data loss. Turn main power switch off remove it to avoid loss. To continue press “Yes”.
10. Press “Yes” to initialize the SRAM.
    NOTE: Whenever installing the Fax Feature Expander board for the first time, the machine displays SC1207, but this is not a problem.
11. Enter the service mode, and set bit 7 of system switch 1E to “1”.
12. Print the system parameter list and make sure that “EXFUNC” is listed as an option. Also check that the memory indicator shows “100%” in standby mode.
13. Connect the telephone cable to the NCU.

3.2.5 EXPANSION MEMORY (EXMEM) BOARD



1. Remove the small cover [A] (1 rivet) and the rear cover [B] (4 screws).
2. Remove the FCU unit [C].
3. Install the EXMEM board [D] as shown. Tilt the EXMEM board so that it is at an angle to the FCU, and slide it into the slot as shown. If the fax unit is being installed at the same time, turn SW3 on the FCU board on.
4. Replace the FCU unit.
5. Replace the rear cover and the small cover.

3.2.6 HANDSET



1. At first, make 2 holes in the right side cover at the places marked with dimples as shown.
2. Attach the bracket [A] enclosed with the fax unit (2 screws).
   NOTE: The bracket and the cable clamp enclosed with the handset are not used for this machine.
3. Remove the label from the handset cradle [B]. Attach the cradle [B] to the bracket [A] (2 screws) then replace the label.
4. Install the handset [C] on the cradle [B], then connect the cable to the "TEL1" or "TEL2" jack at the rear of the machine.
5. Attach the clamps [D] to the cover as shown, then run the cable though the clamps.
6. Select the dialing method.

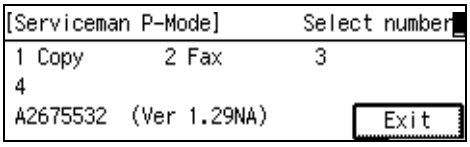
4. SERVICE TABLES

4.1 SERVICE LEVEL FUNCTIONS

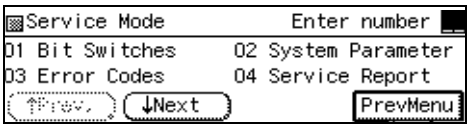
4.1.1 HOW TO ENTER AND EXIT THE FAX SERVICE MODE

To Enter Fax Service Mode:

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



3. Press 2 to enter the fax service mode.

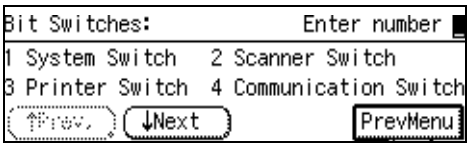


To Exit Fax Service Mode:

1. Press ⊡ or "PrevMenu" until the SP mode main menu appears.
2. Press the ⊡ key.

4.1.2 BIT SWITCH PROGRAMMING (FUNCTION 01)

1. Enter the fax service mode.
2. Press 0 1.
3. Press one of the following numbers, as required:
   - 1 – System bit switches
   - 2 – Scanner bit switches
   - 3 – Printer bit switches
   - 4 – Communication bit switches
   - 5 – G3 bit switches
   - 6 – G4 internal switches
   - 7 – G4 parameter switches



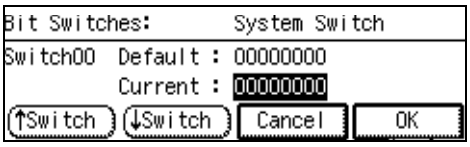
NOTE: 1. SG3 bit switches are located under function 17.

2. An optional G4 interface is required to access the G4 internal and G4 parameter bit switches.

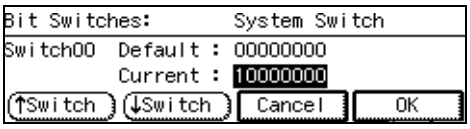
Service Tables A895

Example:

1. Press [1].
2. Scroll through the bit switches.
   To increment the bit switch number:
   press "↓ Switch".
   To decrement the bit switch number:
   press "↑ Switch".
   Example:
   To display bit switch 03:
   Press "↓ Switch" 3 times.



3. Adjust the bit switch.
   Example:
   To change the value of bit 7, press 7.
4. To adjust more bit switches, go to step 2.
   To finish, press "OK" then "PrevMenu".

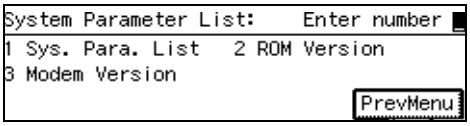


5. Exit the service mode.

NOTE: After changing any of the G4 bit switches, be sure to turn the main power switch off and back on to activate the new settings.

4.1.3 SYSTEM PARAMETER LISTS (FUNCTION 02)

1. Enter the fax service mode.
2. Press [0] [2].
3. Press [1].
4. Press ⓐ.
5. Exit the service mode.



NOTE: Pages 5 and 6 of the system parameter list are for designer use only. However some information may be useful for service technicians. See the next page.

- An example of the system parameter list (pages 5 and 6) -

```
       *  *  *  SYSTEM PARAMETER LIST (Date and Time) *  *  *
                                                              1)TTI 1
                                                              2)TTI 2

                  And later is information for a design.

REST ENTRY DATA
    TMP DIAL:1005  One key:30  Speed key:1000  PRG JOB:32  PRG DIAL:2000
    Rest Job file:1003(max:1004)  Rest Dial file:2002(max:2002)
Resouece
    Free:0x0FFEFDFF  Bad:0x0000001D  CCU:0x00   [P1|XX|XX|XX|S|p|H]
SAF CAPACITY
    100%(Rest block:0x1E00)
Receive
    Now status          0x00 OK



CCU TX ERROR
```

```
       *  *  *  SYSTEM PARAMETER LIST (Date and Time) *  *  *
                                                            1)TTI 1
                                                            2)TTI 2

Task Status
    ID  TASK   PRI STS       ISP         START       SP          PC
    00  idle   20  RDY       0x00800A5E  0x00004530  0x00800A5E  0x00004530
    01   :      :   :             :           :           :           :
```

REST ENTRY DATA

TEMP DIAL: Remaining number of destinations that can be programmed at the ten-key pad.

One key: Remaining number of destinations that can be programmed as Quick Dials

Speed key: Remaining number of destinations that can be programmed as Speed Dials

PRG JOB: Remaining number of keystroke programs that can be programmed

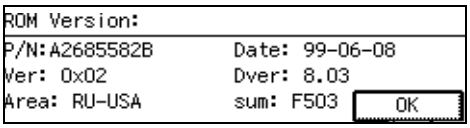
PRG DIAL: Remaining number of destinations that can be used in keystroke programs.

Rest Job file: Number of remaining job files that can be used.

Rest Dial file: Number of remaining destinations that can be used.

4.1.4 FCU ROM VERSION DISPLAY (FUNCTION 02)

1. Enter the fax service mode.
2. Press [0] [2] then [2].

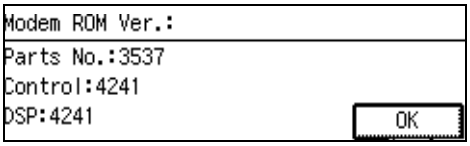


3. Exit the service mode.

NOTE: The check-sum value displayed is calculated in 16-bit little endian format.

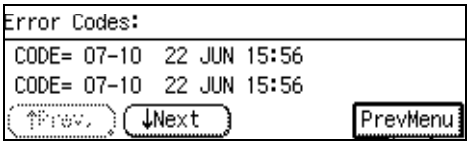
4.1.5 MODEM PROGRAM VERSION DISPLAY (FUNCTION 02)

1. Enter the fax service mode.
2. Press [0] [2] then [3].
3. Exit the service mode.



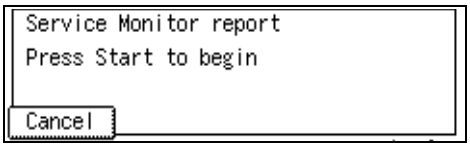
4.1.6 ERROR CODE DISPLAY (FUNCTION 03)

1. Enter the fax service mode.
2. Press [0] [3].
3. Press either Prev. or Next to scroll through the error codes.
4. Exit the service mode.



4.1.7 SERVICE MONITOR REPORT (FUNCTION 04)

1. Enter the fax service mode.
2. Press [0] [4] then ⓐ.
3. Exit the service mode.



4.1.8 G3 PROTOCOL DUMP LIST (FUNCTION 05)

1. Enter the fax service mode.
2. Press [0] [5].

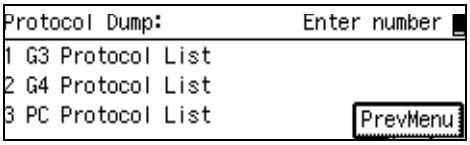


3. Press [1] then (◈).
4. Exit the service mode.

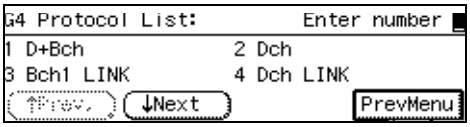
4.1.9 G4 PROTOCOL DUMP LIST (FUNCTION 05)

NOTE: An optional G4 interface is required to print the G4 protocol dump list.

1. Enter the fax service mode.
2. Press [0] [5].



3. Press [2].
4. Press one of the following numbers as required:
   - [1] – D + Bch
   - [2] – Dch
   - [3] – Bch1 Link
   - [4] – Dch Link
   - [5] – D + Bch2
   - [6] – Bch1 Link





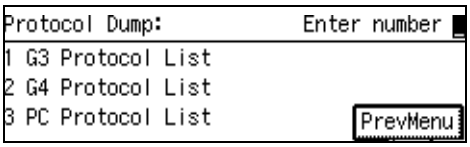
5. Exit the service mode.

Service Tables A895

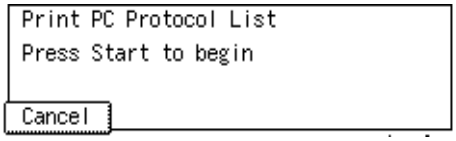
4.1.10 PC PROTOCOL DUMPLIST (FUNCTION 05)

NOTE: An optional PC fax expander board (PCFE) is required to print the PC protocol dump list.

1. Enter the fax service mode.
2. Press ⓐ 5.



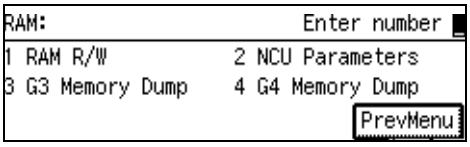
3. Press 3 then ⓐ.



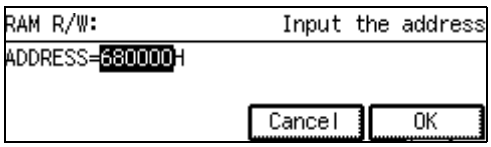
4. Exit the service mode.

4.1.11 RAM DISPLAY AND REWRITE (FUNCTION 06)

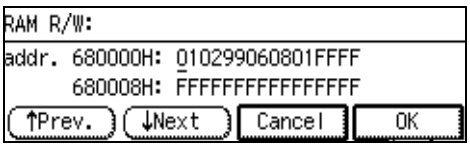
1. Enter the fax service mode.
2. Press 0 6.
3. Press 1.



4. Enter the start address of the RAM area to be displayed, then press “OK”.



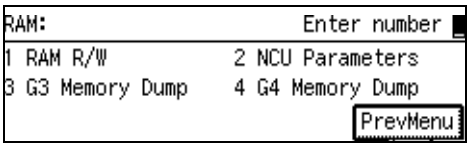
5. Move the cursor to the target address using the arrow keys, then enter a new value (0-9: Ten-key pad, A-F: Quick Dial keys).



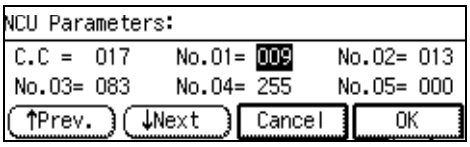
6. To scroll through the RAM addresses:
   Press “Prev”. or “Next”.
   To jump to another address: Press “OK”, and go back to step 3.
7. Exit the service mode.

4.1.12 NCU PARAMETERS (FUNCTION 06)

1. Enter the fax service mode.
2. Press [0] [6].
3. Press [2].

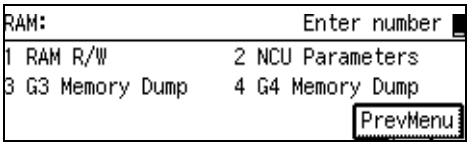


4. Move the cursor to the target parameter using the arrow keys, then enter a new value at the ten-key pad.
5. Exit the service mode.

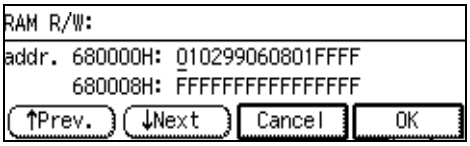


4.1.13 RAM DUMP (FUNCTION 06)

1. Enter the fax service mode.
2. Press [0] [6].
3. Press one of the following numbers as required:
   [3] – G3 memory dump list
   [4] – G4 memory dump list
   NOTE: An optional G4 interface is required to print the G4 memory dump list.



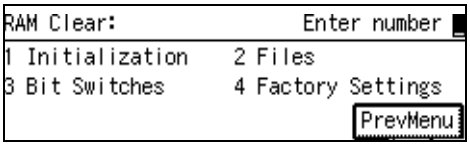
4. Enter the first four digits of the start and end addresses, then press “OK”
   Example: Start at 680000, end at 6801FF
   [6] [8] [0] [0] [6] [8] [0] [1] “OK”



5. Press ⓐ.
6. Exit the service mode.

4.1.14 RAM CLEAR (FUNCTION 07)

1. Enter the fax service mode.
2. Press [0] [7].



3. Press one of the following numbers, as required:
   [1] Initializes the bit switches and user parameters, user data in the SRAM, files in the SAF memory, and the clock.
   [2] Erases all the files stored in the SAF memory.
   [3] Resets the bit switches and user parameters.
   [4] Initializes the bit switches and user parameters, user data in the SRAM, and files in the SAF memory.
4. The machine automatically returns to standby mode after self-initialization.

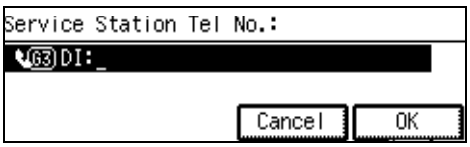
4.1.15 FCU REBOOT

To initialize the fax unit without erasing files or resetting the bit switches, do one of the following:

- Hold down the “Speed Dial” key for more than 10 s, while the machine is in facsimile mode. This initializes the fax unit only.
- Remove the rear cover and press SW2 on the FCU. This initializes the fax unit only.
- Turn off the main power and operation switches and turn them back on. This initializes the whole machine.
- Hold down the # and * keys for more than 10 s. This initializes the whole machine.

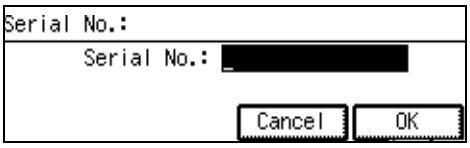
4.1.16 SERVICE STATION FAX NUMBER (FUNCTION 09)

1. Enter the fax service mode.
2. Press [0] [9].
3. Enter the fax number of the service station that will receive Automatic Service Calls from this machine. To use a G4 number, press the “F4” key.
4. Press “OK”.
5. Exit the service mode.



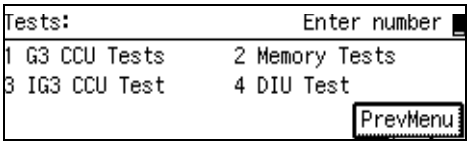
4.1.17 SERIAL NUMBER (FUNCTION 10)

1. Enter the fax service mode.
2. Press [1] [0].
3. Enter the fax unit's serial number at the keypad, then press "OK".
4. Exit the service mode.

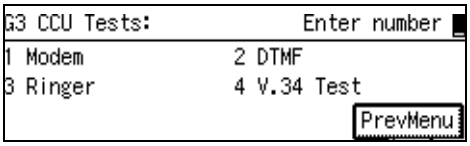


4.1.18 MODEM TEST (FUNCTION 11)

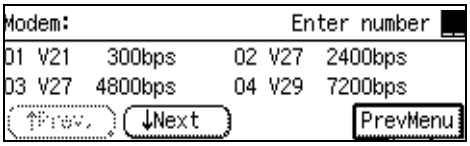
1. Enter the fax service mode.
2. Press [1] [1].



3. Press one of the following numbers:
   [1] – Modem test (analog line)
   [3] – Modem test (ISDN line [IG3 CCU])
   NOTE: An optional ISDN interface is required to test a modem on an ISDN line.

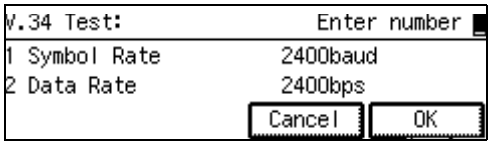


4. Press [1] (Modem).
5. Choose a modem signal type at the keypad, then press ⓐ.
   To stop, press ⓒ.
6. Exit the service mode.

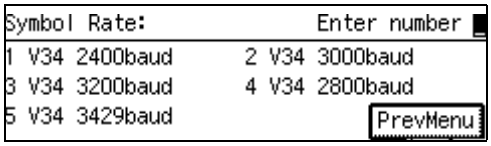


4.1.19 V.34 MODEM TEST (FUNCTION 11)

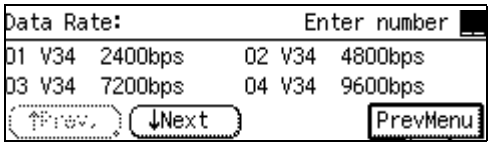
1. Enter the service mode.
2. Press [1] [1] then [1].
3. Press [4].



4. Select a symbol rate and a data rate, then press OK.
   [1] – Select a symbol rate



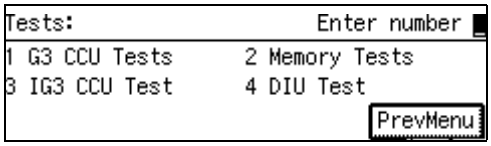
   [2] – Select a data rate



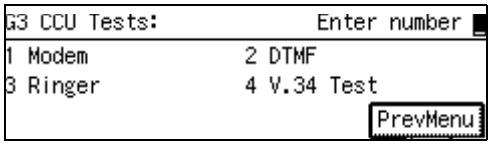
5. Press ⓪ to start the test.
   To stop the test, press C/©.
6. Exit the service mode.

4.1.20 DTMF TEST (FUNCTION 11)

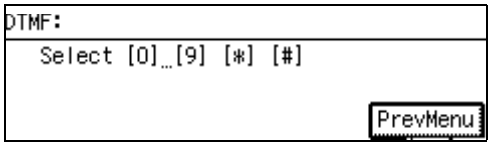
1. Enter the fax service mode.
2. Press [1] [1].



3. Press one of the following numbers:
   [1] – DTMF test (analog line)
   [3] – DTMF test (ISDN line)
   NOTE: A G4 interface is required to test DTMF tones on an ISDN line.



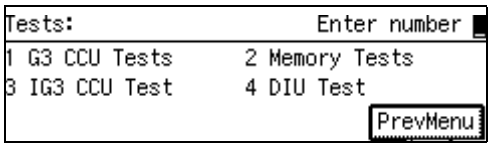
4. Press [2].



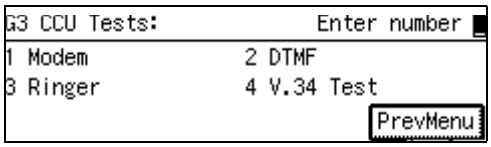
5. Choose a DTMF signal type at the keypad, then press ⓪.
   To stop the test, press C/©.

4.1.21 RINGER TEST (FUNCTION 11)

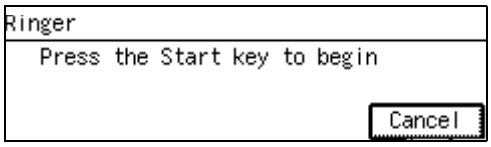
1. Enter the fax service mode.
2. Press [1] [1].



3. Press [1].

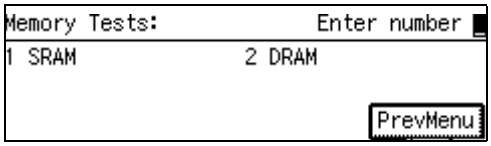


4. Press [3] then (Start). To stop the test, press (C).
5. Exit the service mode.

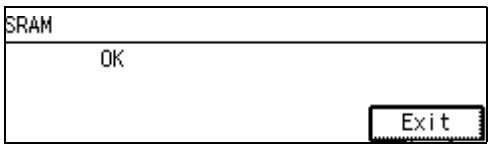


4.1.22 MEMORY TEST (FUNCTION 11)

1. Enter the fax service mode.
2. Press [1] [1].
3. Press [2].



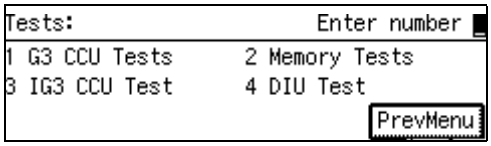
4. Press one of the following numbers:
   [1] – SRAM test
   [2] – DRAM test
5. Press (Start) to start the test.
   To stop the test, press (C).
   If the test is successful, the display shows "OK".
   If the test is unsuccessful, the display shows "NG".



6. Exit the service mode.

4.1.23 DIU TEST (FUNCTION 11)

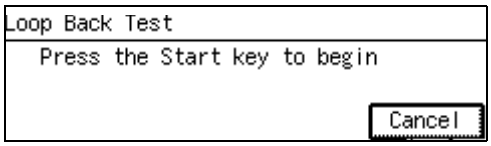
1. Enter the fax service mode.
2. Press [1] [1].



3. Press [4].

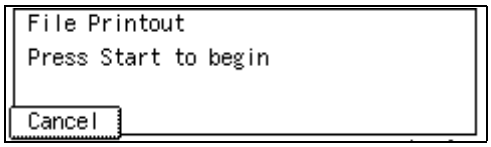


4. Press [2] then ◇.
   To stop the test, press C/⊘.
5. Exit the service mode.



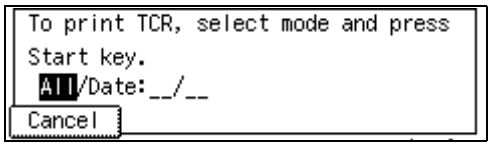
4.1.24 FILE PRINTOUT (FUNCTION 13)

1. Enter the fax service mode.
2. Press [1] [3] then ◇.
   The machine prints all the files stored 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.



4.1.25 JOURNAL PRINTOUT (FUNCTION 14)

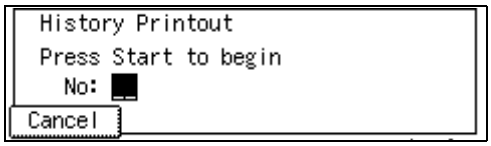
1. Enter the fax service mode.
2. Press [1] [4].
3. Either:
   Choose All - The machine prints all the communication records on the report. The maximum is 100 records, or 900 records if the optional EXFUNC board is installed.
   Specify a date - The machine prints all communication records after the specified date.
4. Press ⓘ.
5. Exit the service mode.



4.1.26 USAGE LOG PRINTOUT (FUNCTION 15)

The following functions are for designer use only. However, list 5 (SC history) may be useful.

1. Enter the fax service mode.
2. Press [1] [5].
3. Press the number, then press ⓘ.
   [5] – SC history
4. Exit the service mode.



4.1.27 DATA TRANSFER (FUNCTION 16)

This function allows ROM and SRAM data transfer between the FCU inside the machine and an external flash memory card or FCU. Refer to the following sections for details.

- Section 6.4.1 - FCU ROM download from a flash memory card
- Section 6.4.2 - FCU ROM upload to a flash memory card
- Section 6.5.1 - SRAM backup to a flash memory card
- Section 6.2.3 - SRAM restore from a flash memory card
- Section 6.2.2 – SRAM restore from FCU

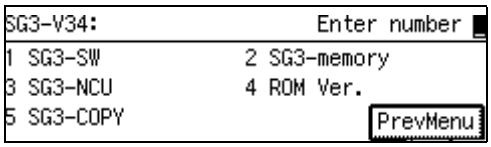
4.1.28 SG3-V34 (FUNCTION 17)

NOTE: An optional G3 interface is required to access function 17.

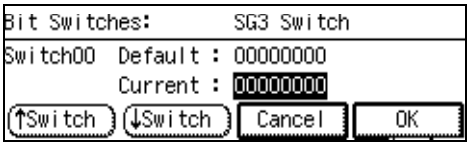
1. SG3 Bit Switches

Please refer to section 4.1.2 for how to adjust bit switch settings.

1. Enter the fax service mode.
2. Press [1] [7].

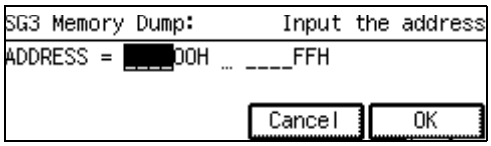


3. Press [1].
4. Adjust the required bit switches.
5. Exit the service mode.



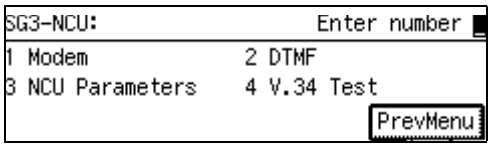
2. SG3 Memory Dump

1. Enter the fax service mode.
2. Press [1] [7] then [2].
3. Enter the first fax digits of the start and end addresses, then press “OK”.
4. Press ⓕ.
5. Exit the service mode.

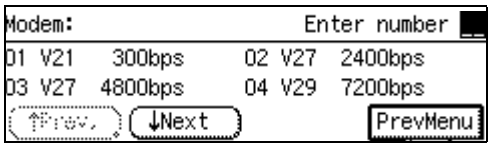


3. SG3 NCU Parameters and Tests

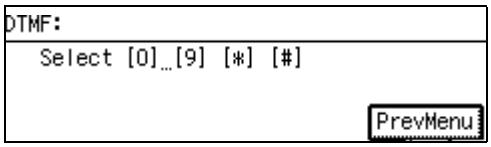
1. Enter the fax service mode.
2. Press [1] [7] then [3].



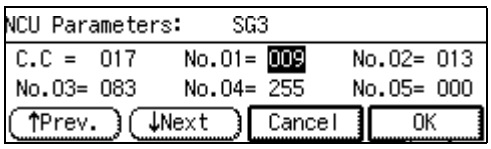
3. Press one of the following numbers
   [1] – Modem test



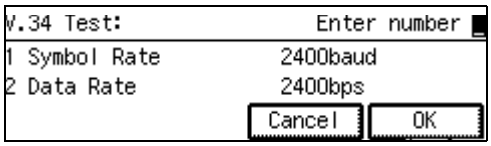
   [2] – DTMF test



   [3] – NCU parameters



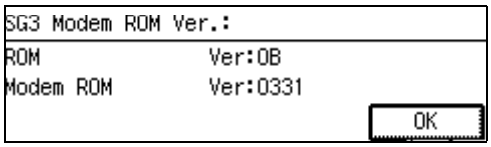
   [4] – V-34 test



Then start the test or program the items. The procedures are the same as for the base fax board's NCU parameters and tests.

4. SG3 ROM Version Display

1. Enter the fax service mode.
2. Press [1] [7] then [4].



3. Exit the service mode.

5. SG3 Data Transfer

This function allows SG3 ROM and SG3 modem ROM data transfer between the SG3 board inside the machine and an external flash memory card. Refer to the following sections for details.

- Section 6.4.3 - SG3 ROM download from a flash memory card.
- Section 6.4.4 - SG3 modem ROM download from a flash memory card.

4.2 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.

4.2.1 SYSTEM SWITCHES

System Switch 00

No	FUNCTION	COMMENTS
0-1	Not used	Do not change the settings.
2	Technical data printout on the Journal **0:** Disabled **1:** Enabled	**1**: Instead of the personal name, the following data are listed on the Journal for each G3 communication.
	e.g. **0000 32V34 288/264 L0100 03 04** (1) (2)(3) (4) (5) (6) (7) (8) **(1):** EQM value (Line quality data). A larger number means more errors. **(2):** Symbol rate (V.34 only) **(3):** Final modem type used **(4):** Starting data rate (for example, 288 means 28.8 kbps) **(5):** Final data rate **(6):** Rx revel (refer to the note after this table for how to read the rx level) **(7):** Total number of error lines that occurred during non-ECM reception. **(8):** Total number of burst error lines that occurred during non-ECM reception. **Note:** EQM and rx level are fixed at "FFFF" in tx mode. The seventh and eighth numbers are fixed at "00" for transmission records and ECM reception records.	
	Rx level calculation **Example:** 0000 32 V34 288/264 **L <u>01</u> <u>00</u>** 03 04 The four-digit hexadecimal value (N) after "L" indicates the rx level. The <u>high</u> byte is given first, followed by the <u>low</u> byte. Divide the decimal value of N by -16 to get the rx level. In the above example, the decimal value of N (= 0100 [H]) is 256. So, the actual rx level is 256/-16 = -16 dB	
3	Not used	Do not change the settings.
⇒ **4**	Line error marks on received pages **0**: Disabled **1**: Enabled	If this bit is 1, a mark will be printed on the left edge of the page at any place where a line error occurred in the data. A noisy line can cause such errors.

System Switch 00		
No	**FUNCTION**	**COMMENTS**
5	G3/G4 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 **0:** Off **1:** On	This is only used for communication troubleshooting. It shows the content of the transmitted facsimile protocol signals. Always reset this bit to 0 after finishing testing. If system switch 09 bit 6 is at "1", the list is only printed if there was an error during the communication.
7	Amount of protocol dump data in one protocol dump list printout operation **0:** Up to the limit of the memory area for protocol dumping **1:** Last communication only	Change this bit to 1 if you want to have a protocol dump list of the last communication only. If bit 6 is turned on, the machine prints a protocol dump list for the last communication only, regardless of this bit setting. If system switch 09 bit 6 is at "1", the list is only printed if there was an error during the communication.

G3 Communication Parameters

Modem rate	336: 33600 bps 168: 16800 bps 312: 31200 bps 144: 14400 bps 288: 28800 bps 120: 12000 bps 264: 26400 bps 96: 9600 bps 240: 24000 bps 72: 7200 bps 216: 21600 bps 48: 4800 bps 192: 19200 bps 24: 2400 bps
Resolution	S: Standard (8 x 3.85 dots/mm) D: Detail (8 x 7.7 dots/mm) F: Fine (8 x 15.4 dots/mm) SF: Superfine (16 x 15.4 dots/mm) 21: Standard (200 x 100 dpi) 22: Detail (200 x 200 dpi) 44: Superfine (400 x 400 dpi)
Compression mode	MMR: MMR compression MR: MR compression MH: MH compression JBO: JBIG compression (Optional mode) 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

I/O rate	0: 0 ms/line 10: 10 ms/line 25: 2.5 ms/line 20: 20 ms/line 5: 5 ms/line 40: 40 ms/line **Note:** "40" is displayed while receiving a fax message using AI short protocol.

G4 Communication Parameters

Compression mode	MMR: MMR compression MR: MR compression MH: MH compression
Resolution	21: Standard (200 x 100 dpi) 22: Detail (200 x 200 dpi) 44: Superfine (400 x 400 dpi)
Width and reduction	A4: A4 (8.3"), no reduction B4: B4 (10.1"), no reduction A3: A3 (11.7"), no reduction
Transfer	T: Transfer - : Other
Confidential	C: Confidential - : Other
Other parameters	The following information is shown in 6-bit format. Bit 1 is the first bit from the left, and bit 6 is at the right end. Bit 1 - Smoothing 0: Off, 1: On (Smoothing is disabled in halftone mode.) Bit 2 - CIL printing 0: On, 1: Off Bit 3 - Not used Bit 4 - mm/inch conversion 0: Off, 1: On Bit 5 - Engine type 0: mm, 1: inches Bit 6 - Document resolution unit 0: mm, 1: inches

System Switch 01		
No	**FUNCTION**	**COMMENTS**
0	Automatic Service Call at PM **0:** Disabled **1:** Enabled	This bit switch determines whether the machine will send an Auto Service Call to the service station when it is time for PM. **Cross reference** Auto service calls: Section 2.1
1-7	Not used	Do not change the settings.

System Switch 02		
No	**FUNCTION**	**COMMENTS**
0-3	Not used	Do not change the settings.
4	File retention time **0:** Depends on User Parameter 24 [18(H)] **1:** No limit	**1:** A file that had a communication error will not be erased unless the communication is successful.
5	Not used	Do not change the settings.
6 **7**	Memory read/write by RDS **Bit 7 6 Setting** 0 0 Always disabled 0 1 User selectable 1 0 User selectable 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. **(1,1):** At any time, an RDS system can access the machine.

System Switch 03		
No	**FUNCTION**	**COMMENTS**
0 **to** **7**	Length of time that RDS is temporarily switched on when bits 6 and 7 of System Switch 02 are set to “User selectable”	00 - 99 hours (BCD). This setting is only valid if bits 6 and 7 of System Switch 02 are set to “User selectable”. The default setting is 24 hours.

System Switch 04		
No	**FUNCTION**	**COMMENTS**
0-2	Not used	Do not change the settings.
3	Printing dedicated tx parameters on Quick/Speed Dial Lists **0:** Disabled **1:** Enabled	**1:** Each Quick/Speed dial number on the list is printed with the dedicated tx parameters (8 bytes each). The last 10 bytes of data are the programmed dedicated tx parameters; 32 bytes of data are printed (the other 22 bytes have no use for service technicians).
4	Not used	Do not change the settings.

System Switch 04		
No	**FUNCTION**	**COMMENTS**
5	Memory file transfer operation **0:** User level **1:** Service level	If the machine is unable to print fax messages due to a mechanical problem, change this bit to 0 to transfer all messages in the memory (including confidential rx messages) to an another terminal. Always reset this bit to 1 after transfer. However, this bit can be left at 0, if the customer's key-operators want to transfer the files themselves. **Procedure** 1. Enter service mode and change this bit to 0. 2. Exit the service mode. 3. Enter the user tools, and select "Key-operator settings". 4. Choose "03" and specify a destination for the machine to transfer all the files to. 5. Press "Start". 6. After the machine transfers the memory files, enter the service mode and reset this bit to 1. Otherwise, anybody who knows how to enter the key-operator mode can transfer confidential messages.
6	G3 CSI/G4 Terminal ID programming level **0:** User level **1:** Service level	**1:** The CSI and Terminal ID can only be programmed by a technician (in the user tools). The Terminal ID can only be programmed if a Group 4 option is installed.
7	Telephone line type programming mode **0:** User level **1:** Service level	**1:** Telephone line type selection (choosing tone dial or pulse dial) can only be programmed by a technician (in the user tools).

System Switch 05		
No	**FUNCTION**	**COMMENTS**
0-1	Not used	Do not change the settings.
2	Display of both RTI and CSI on the LCD **0:** Disabled **1:** Enabled	**1:** An RTI will be displayed until phase B of the protocol sequence, and a CSI will be displayed after phase C.
3-7	Not used	Do not change the settings.

System Switch 06		
No	**FUNCTION**	**COMMENTS**
0 to 7	Margin setting for Create Margin Transmission	71 to 99 (BCD) %. This setting determines the reduction ratio when the user uses the Create Margin Transmission feature. Default setting:1001 0011 (93%)

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		
No	**FUNCTION**	**COMMENTS**
0	Addition of image data from confidential transmissions on the transmission result report **0:** Disabled **1:** Enabled	If this feature is enabled, the top half of the first page of confidential messages will be printed on transmission result reports.
1	Inclusion of communications on the Journal when no image data was exchanged. **0:** Disabled **1:** Enabled	**0:** Communications that reached phase C (message tx/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. **1:** Error reports will be printed automatically after failed communications.
3	Printing of the error code on the error report **0:** No **1:** Yes	**1:** Error codes are printed on the error reports.
4	Not used	Do not change the settings.
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 **0:** Print for all communications **1:** Print only when there is a communication error	This switch becomes effective only when system switch 00 bit 6 is set to 1. **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 **0:** RTI > CSI > Dial label > Tel. number **1:** Dial label > Tel. number > RTI > CSI	This bit determines which set of priorities the machine uses when listing remote terminal names on reports. In G4 communication, G4_TID (Terminal ID) is used instead of RTI or CSI. **Dial Label:** The name stored, by the user, for the Quick/Speed Dial number.

System Switch 0A		
No	**FUNCTION**	**COMMENTS**
0-2	Not used	Do not change the settings.
3	Continuous polling reception **0:** Disabled **1:** Enabled	This feature allows a series of stations to be polled in a continuous cycle. This will continue until the polling reception file is erased. The dialing interval is the same as memory transmission.
4	Dialing on the ten-key pad when the external telephone is off-hook **0:** Disabled **1:** Enabled	**0:** Prevents dialing from the ten-key pad while the external telephone is off-hook. Use this setting when the external telephone is not by the machine, or if a wireless telephone is connected as an external telephone. **1:** The user can dial on the machine's ten-key pad when the handset is off-hook.
5	On hook dial **0:** Disabled **1:** Enabled	**0:** On hook dial is disabled.
6	Line used for G3 transmission **0:** PSTN **1:** ISDN	If an ISDN unit has been installed, this bit determines whether G3 transmissions go out over the PSTN or the ISDN.
7	Line used when the machine falls back to G3 from G4 if the other end is not a G4 machine **0:** PSTN **1:** ISDN	This bit switch has no effect if Communication Switch 07 bit 0 is set to 0.

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**
0-2	Not used	Do not change the settings.
3	Action when the external handset goes off-hook **0:** Manual tx and rx operation **1:** Memory tx and rx operation (the display remains the same)	**0:** Manual tx and rx are possible while the external handset is off-hook. However, memory tx is not possible. **1:** The display stays in standby mode even when the external handset is used, so that other people can use the machine for memory tx operation. Note that manual tx and rx are not possible with this setting.
4-7	Not used	Do not change the settings.

System Switch 0F		
No	**FUNCTION**	**COMMENTS**
0 to 7	Country code for functional settings (Hex) 00: France 11: USA 01: Germany 12: Asia 02: UK 13: Japan 03: Italy 14: Hong Kong 04: Austria 15: South Africa 05: Belgium 16: Australia 06: Denmark 17: NewZealand 07: Finland 18: Singapore 08: Ireland 19: Malaysia 09: Norway 1A: China 0A: Sweden 1B: Taiwan 0B: Switz. 20: Turkey 0C: Portugal 21: Greece 0D: Holland 0E: Spain 0F: Israel	This country code determines the factory settings of bit switches and RAM addresses. However, it has no effect on the NCU parameter settings and communication parameter RAM addresses. **Cross reference** NCU country code: Function 06, parameter C.C.

System Switch 10		
No	**FUNCTION**	**COMMENTS**
0 to 7	Threshold memory level for parallel memory transmission	Threshold = N x 128 kbytes + 256 kbytes N can be between 00 - FF(H) Default setting: 02(H) = 512 kbytes

System Switch 11		
No	**FUNCTION**	**COMMENTS**
0	TTI printing position **0:** Superimposed on the page data **1:** Printed before the data leading edge	Change this bit to 1 if the TTI overprints information that the customer considers to be important (G3 transmissions).
1	TSI (G3) or CIL/TID (G4) printing position **0:** Superimposed on the page data **1:** Printed before the data leading edge	Change this bit to 1 if the TSI (G3) or CIL/TID (G4) overprints information that the customer considers to be important. G4: Europe model only
2	Not used	Do not change the factory settings.
3	TTI used for broadcasting **0:** The TTIs selected for each Quick/Speed dial are used **1:** The same TTI is used for all destinations	**1:** The TTI (TTI_1 or TTI_2) which is selected with user switch 01 bit 6 is used for all destinations during broadcasting.

System Switch 11		
No	**FUNCTION**	**COMMENTS**
4	Type of TTI used for transmission using the ten-key pad **0:** TTI_1 **1:** TTI_2	**1:** The machine uses TTI_2 when the user dials the destination using the ten-key pad. It is also used for polling transmission and manual transmission using the handset.
5-6	Not used	Do not change the factory settings.
7	Use of parallel memory transmission with G4 transmission **0:** Disabled **1:** Enabled	This determines whether parallel transmission can be used with a G4 transmission or not. Note that this bit is only effective if Parallel Memory transmission is enabled (User Parameter 07 - bit 2).

System Switch 12		
No	**FUNCTION**	**COMMENTS**
0 to 7	TTI/CIL printing position in the main scan direction CIL: Command Information Line (Group 4)	TTI/CIL: 08 to 64 (BCD) mm Input even numbers only. This setting determines the print start position for the TTI and CIL from the left edge of the paper. If the TTI is moved too far to the right, it may overwrite the file number which is on the top right of the page. On an A4 page, if the CIL is moved over by more than 60 mm, it may overwrite the page number.

System Switch 13 - Not used (do not change the settings)
System Switch 14 - Not used (do not change the settings)

System Switch 15		
No	**FUNCTION**	**COMMENTS**
0	Not used	Do not change the settings.
1	Going into the Night mode automatically **0**: Enabled **1**: Disabled	**1:** The machine will restart from the Energy Saver mode quickly, because the +5V power supply is active even in the Energy Saver mode.
2	Protocol dump data backup **0**: Disabled **1**: Enabled	**1:** The machine backs up the protocol dump data for approximately one hour when the main switch is turned off, in the same way as image data.
3-7	Not used	Do not change the settings.

System Switch 16		
No	**FUNCTION**	**COMMENTS**
0	Parallel Broadcasting **0**: Disabled **1**: Enabled	**1:** When the G4 or/and G3 unit is installed, the machine sends messages simultaneously using both available ports (PSTN/ISDN) during broadcasting.
1	Changing the G3 line default. **0**: PSTN-1 **1**: PSTN-2	This function allows the user to select the default G3 line type. An optional SG3 unit is required to use the PSTN-2 setting.
1-7	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**
0 to 2	Key acknowledgement tone volume adjustment **000** (Min.: OFF)-**111** (Max.) Default setting – 011	This controls the volume of this tone when the machine is in fax mode (it has no effect on the tone when the machine is in copier or printer mode).
3-6	Not used	Do not change the settings.
7	Special Original mode **0:** Disabled **1:** Enabled	**1:** If the customer frequently wishes to transmit a form or letterhead which has a colored or printed background, change this bit to “1”. “Special Original” can be selected in addition to the “Text”, “Text/Photo” and “Photo” modes. When this mode is selected, the “Text/Photo” and “Photo” LEDs are both lit. **Cross reference** q Type of special original mode – Scanner switch 00 bit 0.

System Switch 1A - Not used (do not change the settings)
System Switch 1B - Not used (do not change the settings)

System Switch 1C		
No	**FUNCTION**	**COMMENTS**
0	PC-Fax Expander option **0:** Not installed **1:** Installed	Change this bit to 1 when installing the PC-Fax Expander.
1	To omit the PSTN access code during a PC-Fax transmission **0:** Disabled **1:** Enabled	**1:** The machine does not dial the PSTN access code programmed in the PC-Fax application during PC-Fax memory transmission. This function becomes effective only when the PC fax application dials using a Quick/Speed/Group Dial stored in the fax machine. The machine will not omit dialing the PSTN access code when a destination number is programmed manually.
2	Not used	Do not change the setting.
3	Deleting the file when an error occurs during PC data storage to the SAF **0:** Not cleared **1:** Cleared	This function is effective for PC memory transmission. **0:** The pages stored in the SAF will be transmitted from the machine. **1:** All data is cleared when an error occurs. However, if the SAF memory becomes full during data storage, the setting of system bit switch 1E bit 1 determines how data is treated. This function is also effective for PC printing using the PCFE option for the fax board.
4	Resolution unit used for PC-Fax communication **0:** mm **1:** inches	This bit determines the resolution unit used for PC fax communication. This is because the PC fax application cannot automatically adjust the resolution unit. This setting is also effective for PC scanning using the PCFE option for the fax board.
5-6	Not used	Do not change the settings.
7	PC protocol dump list output after each PC communication **0:** Off **1:** On	**1:** This is only used for PC communication troubleshooting. q Communications between the DIU (PCFE board) and a host PC are logged on the PC dump list. If system switch 09 bit 6 is at “1”, the list is only printed if there was an error during the communication. q PC scan and PC print jobs using the PCFE option for the fax board are printed on the Journal. q The Data-in LED turns on while data is coming in and going out to the PC. Be sure to reset this bit to “0” after a test.

System Switch 1D - Not used (do not change the settings)

System Switch 1E		
No	**FUNCTION**	**COMMENTS**
0	Communication after the Journal data storage area has become full **0:** Impossible **1:** Possible	This setting is effective only when Automatic Journal printout is enabled but the machine cannot print the report (e.g., no paper). **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. **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. **Cross Reference** q Automatic Journal output - User switch 03 bit 7 q Number of communication records for the Journal: 100 records (standard) 900 records (with the EXFUNC board installed)
1	Action when the SAF memory has become full during scanning **0:** The current page is erased. **1:** The entire file is erased.	**0:** If the SAF memory becomes full during scanning, the successfully scanned pages are transmitted. **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 **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 **0**: All fax reception is disabled **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. 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	Address display priority in the AI redial mode **0:** RTI/CSI **1:** Telephone number	**0:** When the machine has both RTI/CSI and the telephone number information, the machine displays RTI/CSI. **1:** The machine always displays the telephone number.

System Switch 1E		
No	**FUNCTION**	**COMMENTS**
6	Not used	Do not change the settings
7	RAM initialization after the optional EXFUNC board is installed or removed **0:** Enabled **1:** Disabled	When the machine detects that an EXFUNC board has been installed or removed, the machine shows the following message on the display for the customer. *"Adding/Removing FAX Feature Expander causes data loss. Turn Main Power Switch off and remove/replace it to avoid loss. To continue, press Yes."* If Yes is pressed, the machine initializes the RAM to the "with" or "without card" configuration. However, changing this bit to "1" disables this initialization, even if Yes is pressed. Change this bit to 1 after installing the EXFUNC board. **0:** When the above message is displayed, the machine initializes the RAM if Yes is pressed. The amount of data lost depends on whether the board is in or out. To avoid losing data, the user must switch off immediately and put the EXFUNC board back in. **1:** When the above message is displayed, the machine does not initialize the RAM even if Yes is pressed. However, the fax unit cannot be used until the user switches off, puts the EXFUNC board back in, then switches back on. No data is lost.

System Switch 1F		
No	**FUNCTION**	**COMMENTS**
0	Not used	Do not change the setting.
1	Report printout after an original jam during SAF storage or if the SAF memory fills up **0:** Enabled **1:** Disabled	**0:** When an original jams, or the SAF memory overflows during scanning, a report will be printed. Change this bit to "1" if the customer does not want to have a report in these cases. Memory tx – Memory storage report Parallel memory tx – Transmission result report
2	Not used	Do not change the setting.
3	Received fax print start timing (G3 reception) **0:** After receiving each page **1:** After receiving all pages	**0:** The machine prints each page immediately after the machine receives it. **1:** The machine prints the complete message after the machine receives all the pages in the memory.
4	Received fax print start timing (G4 reception) **0:** After receiving each page **1:** After receiving all pages	
5-6	Not used	Do not change the factory setting.
7	Action when a fax SC has occurred **0:** Automatic reset **1:** SC code display	**0:** When the fax unit detects a fax SC code other than SC1201 and SC1207, the fax unit automatically resets itself. **1:** When the fax unit detects any fax SC code, the fax unit displays the SC code and stops. **Cross Reference** Fax SC codes - See "Troubleshooting", section 7.1.

4.2.2 SCANNER SWITCHES

Scanner Switch 00		
No	**FUNCTION**	**COMMENTS**
0	Type of special original mode **0:** Monotone background **1:** Colored background	This setting determines the scanner parameters used for special original mode. **0:** This setting is for originals with random background of constant density, such as seen on banknotes (faxing banknotes is not recommended!). **1:** This setting is for originals with background of constant density, such as those made on colored paper. This switch becomes effective only when system switch 19 bit 7 is set to 1.
1-3	Not used	Do not change the settings.
4	OR processing (Text mode) **0:** Disabled **1:** Enabled	**1:** Each pair of scan lines goes through OR processing before transmission.
5-7	Not used	Do not change the settings.

Scanner Switch 01		
No	**FUNCTION**	**COMMENTS**
0 to 4	Scan density step value (Text mode)	When scan density is adjusted manually away from the Normal setting, the threshold value for binary picture processing changes for each step from the value specified by Scanner Switch 02, by the amount programmed here. For example, with the default setting (14), the threshold value changes as follows. +3 (Darkest) : 77 (= 91 – 14) +2 : 91 (= 105 – 14) +1 : 105 (= 119 – 14) 0 (Normal) : 119 (Scanner Switch 02 setting) -1 : 133 (= 119 + 14) -2 : 147 (= 133 + 14) -3 (Lightest) : 161 (= 147 + 14) The value can be between 00 and 1F(H) [= 31(D)]. For smaller steps, input a lower value.
5-7	Not used	Do not change the settings.

Scanner Switch 02		
No	**FUNCTION**	**COMMENTS**
0 to 7	Binary picture processing: Threshold for Text mode - Normal setting (center position)	This setting determines the threshold value for binary picture processing in Text mode (when the scan density setting is at the center). The value can be between 01 and FF. For a darker threshold, input a lower value. Default setting: 77(H) = 119(D)

Scanner Switch 03		
No	**FUNCTION**	**COMMENTS**
0 to 7	Binary picture processing: Threshold for Photo and Text/Photo mode - Normal setting (center position)	This setting determines the threshold value for binary picture processing in Text/Photo mode (when the scan density setting is at the center). The value can be between 01 and FF. For a darker threshold, input a lower value. Default setting: 23(H) = 35(D)

Scanner Switch 04 - Not used (do not change the settings)
Scanner Switch 05 - Not used (do not change the settings)

Scanner Switch 06		
No	**FUNCTION**	**COMMENTS**
0 to 3	MTF filter level (Text mode)	The value can be between 0(Off) and F. For a weaker threshold, input a lower value. Default setting: 6 This setting is independent from the threshold specified by the copier SP modes.
4 to 7	MTF filter level (Text/Photo mode)	The value can be between 0(Off) and F. For a weaker threshold, input a lower value. Default setting: 6 This setting is independent from the threshold specified by the copier SP modes.

Scanner Switch 07		
No	**FUNCTION**	**COMMENTS**
0 to 2	Smoothing filter level (Photo mode)	The value can be between 0(Off) and 7. For a weaker threshold, input a lower value. Default setting: 2 This setting is independent from the threshold setting specified by the copier SP modes.
3-7	Not used	Do not change the settings.

Scanner Switch 08 - Not used (do not change the settings)
Scanner Switch 09 - Not used (do not change the settings)

Scanner Switch 0A		
No	**FUNCTION**	**COMMENTS**
0 to 2	Independent dot erase level (Text modes)	The value can be between 0 (Off) and 4. For a higher threshold, input a higher value (larger dots are erased). Default setting: 2 This setting is independent from the threshold setting specified by the copier SP modes.
3-7	Not used	Do not change the settings.

Scanner Switch 0B		
No	**FUNCTION**	**COMMENTS**
0 to 3	Scan margin setting (top and bottom margin in book scan mode, and top margin in ADF mode) The setting can be between 0 and F (H) (in mm). Default setting: 3 mm	
4 to 6	Scan margin setting (bottom margin in ADF mode) The setting can be between 0 and 7 (H) (in mm). Default setting: 2 mm If the scanned image margin is still incorrect after adjustment, the base copier's SP mode settings may be wrong. Check and adjust SP mode 6-006-3.	
7	Not used	Do not change the setting.

Scanner Switch 0C		
No	**FUNCTION**	**COMMENTS**
0	Action when an original jam has occurred while scanning the original into memory for memory tx **0:** Continues scanning after recovery **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). If parallel memory tx 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. **0:** The machine displays a message asking the user to put the jammed page back into the original stack, and continues scanning. The message is displayed for the time period specified by scanner switch 0E, bit 2. **1:** The machine erases all the scanned pages and asks the user to retry from the first page.
1 to 2	Setting when an original size cannot be recognized **Bit 2 1 Setting** 0 0 Depending on the copier's setting 0 1 A5 ▯ 1 0 A5 ▭ 1 1 No original	When both bits are set to "0", the machine recognizes an original size depending on SP4-303 in copier service mode.
3-5	Not used	Do not change the settings.
6	Scan width used for a document set in the ADF when the width is less than 230 mm. **0**: A4 (210 mm) **1**: LT (216 mm)	This bit is set at "1" when the country code is set to the US.
7	Not used	Do not change the setting.

Scanner Switch 0D

BIT SWITCHES

No	FUNCTION	COMMENTS
0 1	Scan magnification ratio fine tuning (main scan direction) $\begin{pmatrix}0\\0\end{pmatrix}$= 0%, $\begin{pmatrix}1\\0\end{pmatrix}$=−1.5%, $\begin{pmatrix}0\\1\end{pmatrix}$=+1.5%, $\begin{pmatrix}1\\1\end{pmatrix}$=Do not use this setting The actual magnification ratio is the sum of the SP mode 4-008 setting and this setting.	
2 3	Scan magnification ratio fine tuning (sub scan direction) $\begin{pmatrix}0\\0\end{pmatrix}$=0%, $\begin{pmatrix}1\\0\end{pmatrix}$=−1.5%, $\begin{pmatrix}0\\1\end{pmatrix}$=+1.5%, $\begin{pmatrix}1\\1\end{pmatrix}$=Do not use this setting The actual magnification ratio is the sum of the SP mode 4-101 setting and this setting.	
4-6	Not used	Do not change the settings.
7	Scan width for A5 lengthwise or B5 lengthwise originals **0:** 210 mm (8.5”) **1:** Original width	**0:** The machine scans the original as 210 mm (8.5") width. The transmitted image has a blank area on the right. **1:** The machine scans 148 mm (A5) or 182 mm (B5) and centers the scanned data on a 216 mm width transmitted image.

Scanner Switch 0E		
No	**FUNCTION**	**COMMENTS**
0	Wait time for the next page when scanning a book original into memory **0:** 60 s **1:** 30 s	This bit determines how long the machine waits for the next page when scanning a book original for memory transmission. If this timer expires, the machine transmits all the pages scanned so far as one document. **Note:** In immediate tx or parallel memory tx, the wait time for the next page is 10 s.
1	Scan resolution unit (except standard resolution in book scan mode) **0:** mm **1:** inches	This bit determines which resolution unit will be used for scanning a fax message. Default setting: mm
2	ADF jam alarm display time **0:** 60 s **1:** 30 s	The bit is only effective when bit 0 of scanner bit switch 0C is “0”. This bit determines how long the machine displays the ADF jam alarm after a jam occurred.
3-7	Not used	Do not change the settings.

Scanner Switch 0F		
No	**FUNCTION**	**COMMENTS**
0	Image rotation before transmission (A4/LT sideways) **0:** Disabled **1:** Enabled	This bit determines whether the machine rotates the scanned image by 90 degrees before transmission. If this bit is set at 1, A4 (LT) sideways images (297 mm width in the protocol) will be transmitted as A4 (LT) lengthwise images (216 mm width in the protocol). Refer to Image Rotation Before Transmission in section 2 for more details.
1	Not used	Do not change the setting.
2	Image rotation before transmission (A5/HLT lengthwise) **0:** Disabled **1:** Enabled	This bit determines whether the machine rotates the scanned image by 90 degrees before transmission. If this bit is set at "1", A5 (HLT) lengthwise images will be transmitted as A4 (LT) width images (216 mm width in the protocol). Refer to Image Rotation Before Transmission in section 2 for more details.
3-7	Not used	Do not change the setting.

4.2.3 PRINTER SWITCHES

Printer Switch 00		
No	**FUNCTION**	**COMMENTS**
0	Page separation mark **0:** Disabled **1:** Enabled	**0:** No marks are printed. **1**: If a received page has to be printed out on two sheets, an asterisk inside square brackets is printed at the bottom right hand corner of the first sheet, and a “2” inside a small box is printed at the top right hand corner of the second sheet. This helps the user to identify pages that have been split.
1	Repetition of data when the received page is longer than the printer paper **0:** Disabled **1:** Enabled	**0:** The next page continues from where the previous page left off. **1:** The final few mm of the previous page are repeated at the top of the next page. The amount of repeated data depends on printer switch 04, bits 5 and 6. See Sub Scan Reduction and Page Separation in section 2 for details.
2	Prints the date and time on received fax messages **0:** Disabled **1:** Enabled	This switch is only effective when user parameter 02 - bit 2 (printing the received date and time on received fax messages) is enabled. **1:** The machine prints the received and printed date and time at the bottom of each received page.
3-7	Not used	Do not change the settings.

Printer Switch 01		
No	**FUNCTION**	**COMMENTS**
0-2	Not used	Do not change the settings.
3 **4**	Maximum print width used in the setup protocol $\binom{0}{0}$=Do not use this setting $\binom{1}{0}$=A3 $\binom{0}{1}$=B4 $\binom{1}{1}$=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 **0:** Disabled **1:** Enabled	**0:** The machine informs the transmitting machine of the print width depending on the paper size available from the paper feed stations. Refer to the table on the next page for how the machine chooses the paper width used in the setup protocol (NSF/DIS). **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" x 11"	297 mm width
B5	256 mm width
A5 or 8.5" x 5.5"	216 mm width
No paper available (Paper end)	216 mm width

Printer Switch 02		
No	**FUNCTION**	**COMMENTS**
0	1st paper feed station usage for fax printing **0:** Enabled **1:** Disabled	**0:** The paper feed station can be used to print fax messages and reports. **1**: The specified paper feed station will not be used for printing fax messages and reports. **Note:** Do not disable usage for a paper feed station which has been specified by User Parameter Switch 0F (15), or which is used for the Specified Cassette Selection feature.
1	2nd paper feed station usage for fax printing **0:** Enabled **1:** Disabled	
⟹ **2**	3rd paper feed station usage for fax printing **(Including LCT)** **0:** Enabled **1:** Disabled	
3	4th paper feed station usage for fax printing **0:** Enabled **1:** Disabled	
4	LCT usage for fax printing **0:** Enabled **1:** Disabled	
5-7	Not used	Do not change the settings.

Printer Switch 03		
No	**FUNCTION**	**COMMENTS**
0	Length reduction of received data **0:** Disabled **1:** Enabled	**0:** Incoming pages are printed without length reduction. (Page separation threshold: Printer Switch 03, bits 4 to 7) **1:** Incoming page length is reduced when printing. (Maximum reducible length: Printer Switches 04, bits 0 to 4) Page separation and data reduction: Section 2
1-3	Not used	Do not change the settings

Printer Switch 03		
No	**FUNCTION**	**COMMENTS**
4 to 7	Page separation threshold (with reduction disabled with switch 03-0 above) If the incoming page is up to x mm longer than the length of copy paper, the excess portion will not be printed. If the incoming page is more than x mm longer than the length of copy paper, the excess portion will be printed on the next page. The value of x is determined by these four bits. Hex value of bits 4 to 7 x (mm) 0 0 1 1 and so on until F 15 Default setting: 6 mm **Cross reference** Page separation and data reduction: section 2 Length reduction On/Off: Printer Switch 03, Bit 0	

Printer Switch 04		
No	**FUNCTION**	**COMMENTS**
0 to 4	Maximum reducible length when length reduction is enabled with switch 03-0 above. <Maximum reducible length> = <Paper length> + (N x 5mm) “N” is the decimal value of the binary setting of bits 0 to 4. Bit 4 3 2 1 0 Setting 0 0 0 0 0 0 mm 0 0 0 0 1 5 mm 0 0 1 0 0 20 mm (default setting) 1 1 1 1 1 155 mm For A5 sideways and B5 sideways paper <Maximum reducible length> = <Paper length> + 0.75 x (N x 5mm)	
5 6	Length of the duplicated image on the next page, when page separation has taken place. $\binom{0}{0}$=4 mm $\binom{1}{0}$=10 mm $\binom{0}{1}$=15 mm $\binom{1}{1}$=Not used	
7	Not used.	Do not change the setting.

Printer Switch 05 - Not used (do not change the settings)

Printer Switch 06		
No	**FUNCTION**	**COMMENTS**
0	Printing while a paper cassette is pulled out, when the Just Size Printing feature is enabled. **0**: Printing will not start **1**: Printing will start if another cassette has a suitable size of paper, based on the paper size selection priority tables.	Refer to Just Size Printing in section 2 for details. **Cross reference** 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**
0	Reduction for Journal printing **0:** Off **1:** On	**1:** The Journal is reduced to 91% to ensure that there is enough space in the left margin for punch holes or staples.
2-3	Not used.	Do not change the settings.
4	List of destinations in the Communication Failure Report for broadcasting **0**: All destinations **1**: Only destinations where communication failure occurred	**1:** Only destinations where communication failure occurred are printed on the Communication Failure Report.
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		
No	**FUNCTION**	**COMMENTS**
0	Paper size selection priority **0:** Width **1:** Length	**0:** A paper size that has the same width as the received data is selected first. **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" size **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" x 11" size paper.

Printer Switch 0E		
No	**FUNCTION**	**COMMENTS**
2	Page separation **0:** Enabled **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). After a larger size of paper is set in a cassette, the machine automatically prints the fax message.
3 to 4	Printing the sample image on reports **Bit 4 Bit 3 Setting** 0 0 The upper half only 0 1 50% reduction in sub-scan only 1 0 Same size 1 1 Not used	"Same size" means the sample image is printed at 100%, even if page separation occurs. User Parameter Switch 19 (13H) bit 4 must be set to "0" to enable this switch. 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 (Page Separation) **0:** Enabled **1:** Disabled	**0:** When page separation has taken place, all the pages are reduced with the same reduction ratio. **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		
No	**FUNCTION**	**COMMENTS**
0 to 1	Smoothing feature **Bit 1 Bit 0 Setting** 0 0 Disabled 0 1 Disabled 1 0 Enabled 1 1 Not used	**(0, 0) (0, 1):** Disable smoothing if the machine receives halftone images from other manufacturers fax machines frequently.
2	Duplex printing **0:** Disabled **1:** Enabled	**1:** The machine always prints received fax messages in duplex printing mode:
3	Binding direction for Duplex printing **0:** Left binding **1:** Top binding	
4	Printing fax messages in user code mode **0:** Enabled **1:** Disabled	**1:** The machine holds the received fax messages until the machine exits the restricted access mode (user code or key counter). If the machine enters the restricted access mode again while printing fax messages, the machine stops printing the machine exits the mode again.
5	Not used	Do not change the setting.

Printer Switch 0F		
No	**FUNCTION**	**COMMENTS**
6 to 7	Wait timer for duplex printing $\binom{0}{0}$=No Limit, $\binom{1}{0}$ =1 min., $\binom{0}{1}$ =3 min., $\binom{1}{1}$ =10 min. If the duplex unit is already being used for a copy or print job when the fax unit is going to print a fax message in duplex mode, the fax unit waits until the duplex unit becomes available. The time that the fax unit will wait can be specified, as shown above. It the timer expires, the message is printed on single sides.	

4.2.4 COMMUNICATION SWITCHES

Communication Switch 00		
No	**FUNCTION**	**COMMENTS**
0 to 1	Compression modes available in receive mode **Bit 1 0 Modes** 0 0 MH only 0 1 MH/MR 1 0 MH/MR/MMR 1 1 MH/MR/MMR/ JBIG	These bits determine the compression capabilities to be declared in phase B (handshaking) of the T.30 protocol.
2 to 3	Compression modes available in transmit mode **Bit 3 2 Modes** 0 0 MH only 0 1 MH/MR 1 0 MH/MR/MMR 1 1 MH/MR/MMR/ JBIG	These bits determine the compression capabilities to be used in the transmission and to be declared in phase B (handshaking) of the T.30 protocol.
4	Not used	Do not change the settings.
5	JBIG compression method: Reception **0**: Only basic supported **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 **1**: Optional mode priority	Change the setting when communication problems occur using JBIG compression.
7	Closed network (reception) **0:** Disabled **1:** Enabled	**1:** Reception will not go ahead if the ID code of the other terminal does not match the ID code of this terminal. This function is only available in NSF/NSS mode.

Communication Switch 01		
No	**FUNCTION**	**COMMENTS**
0	ECM **0:** Off **1:** On	If this bit is set to 0, ECM is switched off for all communications. In addition, V.8 protocol and JBIG compression are switched off automatically.
1	Not used	Do not change the setting.
2 to 3	Wrong connection prevention method **Bit 3 Bit 2 Setting** 0 0 None 0 1 8 digit CSI 1 0 4 digit CSI 1 1 CSI/RTI	**(0,1) -** The machine will disconnect the line without sending a fax message, if the last 8 digits of the received CSI do not match the last 8 digits of the dialed telephone number. This does not work when manually dialed. **(1,0) -** The same as above, except that only the last 4 digits are compared. **(1,1) -** The machine will disconnect the line without sending a fax message, if the other end does not identify itself with an RTI or CSI. **(0,0) -** Nothing is checked; transmission will always go ahead. **Note:** This function does not work when dialing is done from the external telephone.
4-5	Not used	Do not change the setting.
6 to 7	Maximum printable page length available **Bit 7 6 Setting** 0 0 No limit 0 1 B4 (364 mm) 1 0 A4 (297 mm) 1 1 A3 (432 mm)	The setting determined by these bits is informed to the transmitting terminal in the pre-message protocol exchange (in the DIS/NSF frames).

Communication Switch 02		
No	**FUNCTION**	**COMMENTS**
0	Burst error threshold **0:** Low **1:** High	If there are more consecutive error lines in the received page than the threshold, the machine will send a negative response. The Low and High threshold values depend on the sub-scan resolution, and are as follows. **Resolution 100 dpi 200 dpi 400 dpi** **3.85 l/mm 7.7 l/mm 15.4 l/mm** Low settings 6 12 24 High settings 12 24 48
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.

Communication Switch 02		
No	**FUNCTION**	**COMMENTS**
2	Treatment of pages received with errors during G3 reception **0:** Deleted from memory without printing **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 **0:** No hang-up, **1:** Hang-up	**0:** The next page will be sent even if RTN or PIN is received. **1:** The machine will send DCN and hang up if it receives RTN or PIN. This bit is ignored for memory transmissions or if ECM is being used.
4-6	Not used	Do not change the settings.
7	Method of total error rate calculation **0:** Normal method **1:** French PTT requirement	**0:** Error rate is calculated by dividing the number of total lines by the number of error lines. **1:** Error rate is calculated by dividing the number of total plus error lines by the number of error lines.

Communication Switch 03		
No	**FUNCTION**	**COMMENTS**
0 to 7	Maximum number of page retransmissions in a G3 memory transmission	00 - FF (Hex) times. This setting is not used if ECM is switched on. Default setting - 03(H)

Communication Switch 04 - Not used (do not change the settings)
Communication Switch 05 - Not used (do not change the settings)

Communication Switch 06		
No	**FUNCTION**	**COMMENTS**
0	Dialing requirements: Germany **0:** Disabled **1:** Enabled	These switches are automatically set to the settings required by each country after the country code (System Switch 0F) is programmed.
1	Dialing requirements: Austria **0:** Disabled **1:** Enabled	
2	Dialing requirements: Norway **0:** Disabled **1:** Enabled	
3	Dialing requirements: Denmark **0:** Disabled **1:** Enabled	
4	Dialing requirements: France **0:** Disabled **1:** Enabled	
5	Dialing requirements: Switzerland **0:** Disabled **1:** Enabled	
6	Not used	Do not change the setting.
7	Carrier drop display **0:** Disabled **1:** Enabled	This is an European PTT requirement. This bit is available only for the European models.

Communication Switch 07		
No	**FUNCTION**	**COMMENTS**
0	Fallback from G4 to G3 if the other terminal is not a G4 terminal **0:** Disabled **1:** Enabled	Also see system switch 0A bit 7. Refer to the ISDN G4 option service manual (G4 Internal Switches 17, 18, 1A, 1B, and 1C) for the CPS code set (Cause Value set) that determines G4 to G3 fallback.
1	Not used	Do not change the setting.
2	Not used	Do not change the setting.
3	Fallback from G4 to G3 reflected in programmed Quick/Speed dials **0:** Fallback enabled **1:** Always start with G4	**0:** If a communication falls back from G4 to G3, the machine will always start transmission with G3 from the next communication. **1:** The machine will always start to transmit with G4.
4	Fallback from G4 to G3 when G4 communication fails on the ISDN B-channel **0:** Fallback disabled **1:** Fallback enabled	**1:** Enable this switch only when G4 communication errors occur because the exchanger connects G4 calls to the PSTN. This problem occurs with some types of exchanger.
5	Not used	Do not change the setting.
6	Not used	Do not change the setting.
7	Not used	Do not change the setting.

Communication Switch 08		
No	**FUNCTION**	**COMMENTS**
0 to 7	Not used	Do not change the settings.

Communication Switch 09 - Not used (do not change the settings)

Communication Switch 0A		
No	**FUNCTION**	**COMMENTS**
0	Point of resumption of memory transmission upon redialing **0:** From the error page **1:** From page 1	**0:** The transmission begins from the page where transmission failed the previous time. **1:** Transmission begins from the first page, using normal memory transmission.
1-6	Not used	Do not change the settings.
7	Emergency calls using 999 **0:** Enabled **1:** Disabled	If this bit is at 1, the machine will not allow you to dial 999 at the auto-dialer. This is a PTT requirement in the UK and some other countries.

Communication Switch 0B		
No	**FUNCTION**	**COMMENTS**
0	Use of Economy Transmission during a Transfer operation to end receivers **0:** Disabled **1:** Enabled	These bits determine whether the machine uses the Economy Transmission feature when it is carrying out a Transfer operation as a Transfer Station.
1	Use of Economy Transmission during a Transfer operation to the Next Transfer Stations **0:** Disabled **1:** Enabled	
2	Use of Label Insertion for the End Receivers in a Transfer operation **0:** Disabled **1:** Enabled	This bit determines whether the machine uses the Label Insertion feature when it is carrying out a Transfer operation as a Transfer Station.
3	Conditions required for Transfer Result Report transmission **0:** Always transmitted **1:** Only transmitted if there was an error	**0:** When acting as a Transfer Station, the machine will always send a Transfer Result Report back to the Requesting Station after completing the Transfer Request, even if there were no problems. **1:** The machine will only send back a Transfer Result Report if there were errors during communication, meaning one or more of the End Receivers could not be contacted.

Communication Switch 0B		
No	**FUNCTION**	**COMMENTS**
4	Printout of the message when acting as a Transfer Station **0:** Disabled **1:** Enabled	When the machine is acting as a Transfer Station, this bit determines whether the machine prints the fax message coming in from the Requesting Terminal.
5	Action when there is no fax number in the programmed Quick/Speed dials which meets the requesting terminal's own fax number **0:** Transfer is disabled **1:** Transfer is enabled	After the machine receives a transfer request, the machine compares the last N digits of the requesting terminal's own fax number with all the Quick/Speed dials programmed in the machine. (N is the number programmed in communication switch 0C.) **0:** If there is no matching number programmed in the machine, the machine rejects the transfer request. **1:** Even if there is no matching number programmed in the machine, the machine accepts the transfer request. The result report will be printed at the transfer terminal, but will not be sent back to the requesting terminal.
6-7	Not used	Do not change the settings.

Communication Switch 0C		
No	**FUNCTION**	**COMMENTS**
0 to 4	Number of digits compared to find the requester's fax number from the programmed Quick/Speed Dials when acting as a Transfer Station	00 - 1F (0 to 31 digits) After the machine receives a transfer request, the machine compares the own telephone number sent from the Requesting Terminal with all Quick/Speed Dials programmed in the machine, starting from Quick Dial 01 to the end of the Speed Dials. This number determines how many digits from the end of the telephone numbers the machine compares. If it is set to 00, the machine will send the report to the first Quick/Speed Dial that the machine compared. If Quick Dial 01 is programmed, the machine will send the report to Quick 01. If Quick Dial 01 through 04 are not programmed and Quick Dial 05 is programmed, the machine will send the report to Quick 05. Default setting - 05(H) = 5 digits
5-7	Not used	Do not change the settings.

Communication Switch 0D		
No	**FUNCTION**	**COMMENTS**
0 to 7	The available memory threshold, below which ringing detection (and therefore reception into memory) is disabled	00 to FF (Hex), unit = 4 kbytes (e.g., 06(H) = 24 kbytes) One page is about 24 kbytes. 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. 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**
0 to 7	Minimum interval between automatic dialing attempts	06 to FF (Hex), unit = 2 s (e.g., 06(H) = 12 s) This value is the minimum time that the machine waits before it dials the next destination.

Communication Switch 0F		
No	**FUNCTION**	**COMMENTS**
0 to 7	Not used	Do not change the settings.

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

Communication Switch 11 - Not used (do not change the settings.)

Communication Switch 12		
No	**FUNCTION**	**COMMENTS**
0 to 7	Memory transmission: Interval between dialing attempts to the same destination	01 - FF (Hex) minutes

Communication Switch 13 - Not used (do not change the settings.)

Communication Switch 14		
No	**FUNCTION**	**COMMENTS**
0	Inch-to-mm conversion during transmission **0:** Disabled **1:** Enabled	**0:** In immediate transmission, data scanned in inch format are transmitted without conversion. In memory transmission, data stored in the SAF memory in mm format are transmitted without conversion. **Note:** When storing the scanned data into SAF memory, the fax unit always converts the data into mm format. **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.

Communication Switch 14		
No	**FUNCTION**	**COMMENTS**
6 to 7	Available unit of resolution in which fax messages are received **Bit 7** **Bit 6** **Unit** 0 0 mm 0 1 inch 1 0 mm and inch (default) 1 1 Not used	For the best performance, do not change the factory settings. 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		
No	**FUNCTION**	**COMMENTS**
0	Not used	Do not change the settings.
1	Optional G3 unit **0:** Not installed **1:** Installed	Change this bit to 1 when installing the optional G3 unit.
2	Optional ISDN unit **0:** Not installed **1:** Installed	Change this bit to 1 when installing the optional ISDN unit.
3-4	Not used	Do not change the settings.
5	Use of the PSTN-2 line **0:** Tx or rx **1:** Rx only	Change this bit to 1 when the customer requires.
6	G4 Dual communication **0:** Enabled **1:** Disabled	**1:** The machine uses only one B channel for communication. This enables a customer to occupy another B channel for other purposes such as internet communication.
7	Not used	Do not change the setting.

Communication Switch 17		
No	**FUNCTION**	**COMMENTS**
0	SEP reception **0:** Disabled **1:** Enabled	**0:** Polling transmission to another maker's machine using the SEP (Selective Polling) signal is disabled.
1	SUB reception **0:** Disabled **1:** Enabled	**0:** Confidential reception to another maker's machine using the SUB (Sub-address) signal is disabled.
2-7	Not used	Do not change the settings.

Communication Switch 18		
No	**FUNCTION**	**COMMENTS**
0	Memory Lock for PSTN-1 **0:** Disabled **1:** Enabled	Change this bit to 1 when the customer requires.
1	Memory Lock for PSTN-2 **0:** Disabled **1:** Enabled	Change this bit to 1 when the customer requires. This function requires an optional G3 unit.
2	Memory Lock for ISDN **0:** Disabled **1:** Enabled	Change this bit to 1 when the customer requires. This function requires an optional G4 unit.
3-7	Not used	Do not change the settings.

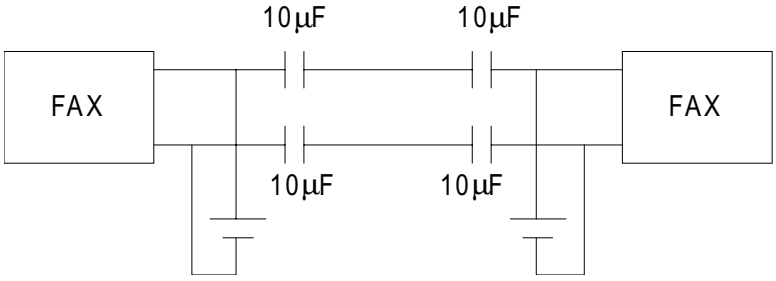
Communication Switch 19 - Not used (do not change the settings)
Communication Switch 1A - Not used (do not change the settings)
Communication Switch 1B - Not used (do not change the settings)
Communication Switch 1C - Not used (do not change the settings)
Communication Switch 1D - Not used (do not change the settings)

Communication Switch 1E		
No	**FUNCTION**	**COMMENTS**
0 to 7	Extension access code (0 to 7) to turn V.8 protocol On/Off **0:** On **1:** Off	If the PABX does not support V.8/V.34 protocol procedure, set this bit to "1" to disable V.8. **Example:** If "0" is the PSTN access code, set bit 0 to 1. When the machine detects "0" as the first dialed number, it automatically disables V.8 protocol. (Alternatively, if "3" is the PSTN access code, set bit 3 to 1.)

Communication Switch 1F		
No	**FUNCTION**	**COMMENTS**
0 to 1	Extension access code (8 and 9) to turn V.8 protocol On/Off **0:** On **1:** Off	Refer to communication switch 1E. **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.

4.2.5 G3 SWITCHES

G3 Switch 00		
No	**FUNCTION**	**COMMENTS**
0 **1**	Monitor speaker during communication (tx and rx) **Bit 1 Bit 0 Setting** 0 0 Disabled 0 1 Up to Phase B 1 0 All the time 1 1 Not used	**(0, 0):** The monitor speaker is disabled all through the communication. **(0, 1):** The monitor speaker is on up to phase B in the T.30 protocol. **(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.
3-6	Not used	Do not change the settings.
7	Back to back test 0: Disabled 1: Enabled	Set this bit to 1 when you wish to do a back to back test. **115 V model:** Be sure to connect jumpers JP5 and JP6 on the NCU before doing the test. **220 V model:** Be sure to apply dc voltage between wires L1 and L2 on the NCU.



Back-to-Back Connection:
The dc power supplies should be adjusted so that the line current to the NCU is about 30mA.

G3 Switch 01		
No	**FUNCTION**	**COMMENTS**
0-3	Not used	Do not change the settings.
4	DIS frame length **0:** 10 bytes **1:** 4 bytes	**1:** The bytes in the DIS frame after the 4th byte will not be transmitted (set to 1 if there are communication problems with PC-based faxes which cannot receive the extended DIS frames).
5	Not used	Do not change the setting.
6	CED/ANSam transmission **0:** Disabled **1:** Enabled	Do not change this setting, unless the communication problem is caused by the CED/ANSam transmission.
7	Not used	Do not change the setting.

G3 Switch 02		
No	**FUNCTION**	**COMMENTS**
0	G3 protocol mode used **0:** Standard and non-standard **1:** Standard only	Change this bit to 1 only when the other end can only communicate with machines that send T.30-standard frames only. **1:** Disables NSF/NSS signals (these are used in non-standard mode communication)
1-4	Not used	Do not change the settings.
5	Use of modem rate history for transmission using Quick/Speed Dials **0:** Disabled **1:** Enabled	**0:** Communications using Quick/Speed Dials always start from the highest modem rate. **1:** The machine refers to the modem rate history for communications with the same machine when determining the most suitable rate for the current communication.
6	AI short protocol (transmission and reception) **0:** Disabled **1:** Enabled	Refer to Appendix B in the Group 3 Facsimile Manual for details about AI Short Protocol.
7	Short preamble **0:** Disabled **1:** Enabled	Refer to Appendix B in the Group 3 Facsimile Manual for details about Short Preamble.

G3 Switch 03		
No	**FUNCTION**	**COMMENTS**
0	DIS detection number (Echo countermeasure) **0:** 1 **1:** 2	**0:** The machine will hang up if it receives the same DIS frame twice. **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 **0:** Disabled **1:** Enabled	**0:** The machine sends CED instead of ANSam when starting a manual reception. **1:** The machine sends ANSam during manual reception.
2	V.8 protocol **0:** Disabled **1:** Enabled	**0:** V.8/V.34 communications will not be possible. **Note:** Do not set to 0 unless the line condition is always bad enough to slow down the data rate to 14.4 kbps or lower.
3	ECM frame size **0:** 256 bytes **1:** 64 bytes	Keep this bit at “0” in most cases.

G3 Switch 03		
No	**FUNCTION**	**COMMENTS**
4	CTC transmission conditions **0:** After one PPR signal received **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. $\sqrt{N\,Transmit \leq NRe\,send}$ $N_{Transmit}$- Number of transmitted frames N_{Resend}- Number of frames to be retransmitted **1:** When using ECM, the machine sends a CTC to drop back the modem rate after receiving four PPRs. PPR, CTC: These are ECM protocol signals. This bit is not effective in V.34 communications.
5	Modem rate used for the next page after receiving a negative code (RTN or PIN) **0:** No change **1:** Fallback	**1:** The machine's tx modem rate will fall back before sending the next page if a negative code is received. This bit is ignored if ECM is being used.
6	V.8 protocol in manual transmission **0:** Disabled **1:** Enabled	**1:** The machine detects either ANSam or CED during manual transmission.
7	Not used	Do not change the setting.

G3 Switch 04		
No	**FUNCTION**	**COMMENTS**
0 to 3	Training error detection threshold	0 - F (Hex); 0 - 15 bits If the number of error bits in the received TCF is below this threshold, the machine informs the sender that training has succeeded.
4-7	Not used	Do not change the settings.

G3 Switch 05		
No	**FUNCTION**	**COMMENTS**
0 to 3	Initial Tx modem rate **Bit 3 2 1 0 Setting (bps)** 0 0 0 1 2.4 k 0 0 1 0 4.8 k 0 0 1 1 7.2 k 0 1 0 0 9.6 k 0 1 0 1 12.0 k 0 1 1 0 14.4 k 0 1 1 1 16.8 k 1 0 0 0 19.2 k 1 0 0 1 21.6 k 1 0 1 0 24.0 k 1 0 1 1 26.4 k 1 1 0 0 28.8 k 1 1 0 1 31.2 k 1 1 1 0 33.6 k Other settings - Not used	These bits set the initial starting modem rate for transmission. Use the dedicated transmission parameters if you need to change this for specific receivers. If a modem rate 14.4 kbps or slower is selected, V.8 protocol should be disabled manually. **Cross reference** V.8 protocol on/off - G3 switch 03, bit2
4 to 5	Initial modem type for 9.6 k or 7.2 kbps. **Bit 5 Bit 4 Setting** 0 0 V.29 0 1 V.17 1 0 Not used 1 1 Not used	These bits set the initial modem type for 9.6 and 7.2 kbps, if the initial modem rate is set at these speeds.
6-7	Not used	Do not change the settings.

G3 Switch 06		
No	**FUNCTION**	**COMMENTS**
0 to 3	Initial Rx modem rate **Bit 3 2 1 0 Setting (bps)** 0 0 0 1 2.4 k 0 0 1 0 4.8 k 0 0 1 1 7.2 k 0 1 0 0 9.6 k 0 1 0 1 12.0 k 0 1 1 0 14.4 k 0 1 1 1 16.8 k 1 0 0 0 19.2 k 1 0 0 1 21.6 k 1 0 1 0 24.0 k 1 0 1 1 26.4 k 1 1 0 0 28.8 k 1 1 0 1 31.2 k 1 1 1 0 33.6 k Other settings - Not used	These bits set the initial starting modem rate for reception. Use a lower setting if high speeds pose problems during reception. If a modem rate 14.4 kbps or slower is selected, V.8 protocol should be disabled manually. **Cross reference** V.8 protocol on/off - G3 switch 03, bit2

G3 Switch 06		
No	**FUNCTION**	**COMMENTS**
4 to 7	Modem types available for reception **Bit 7 6 5 4 Setting** 0 0 0 1 V.27ter 0 0 1 0 V.27ter, V.29 0 0 1 1 V.27ter, V.29 V.33 0 1 0 0 V.27ter, V.29, V.17/V.33 0 1 0 1 V.27ter, V.29, V.17/V33, V.34 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. If V.34 is not selected, V.8 protocol must be disabled manually. **Cross reference** V.8 protocol on/off - G3 switch 03, bit2

G3 Switch 07		
No	**FUNCTION**	**COMMENTS**
0 to 1	PSTN cable equalizer (tx mode: Internal) **Bit 1 Bit 0 Setting** 0 0 None 0 1 Low 1 0 Medium 1 1 High	Use a higher setting if there is signal loss at higher frequencies because of the length of wire between the modem and the telephone exchange. Use the dedicated transmission parameters for specific receivers. Also, try using the cable equalizer if one or more of the following symptoms occurs. • Communication error • Modem rate fallback occurs frequently. **Note:** This setting is not effective in V.34 communications.
2 to 3	PSTN cable equalizer (rx mode: Internal) **Bit 3 Bit 2 Setting** 0 0 None 0 1 Low 1 0 Medium 1 1 High	Use a higher setting if there is signal loss at higher frequencies because of the length of wire between the modem and the telephone exchange. Also, try using the cable equalizer if one or more of the following symptoms occurs. • Communication error with error codes such as 0-20, 0-23, etc. • Modem rate fallback occurs frequently. **Note:** This setting is not effective in V.34 communications.
4	PSTN cable equalizer (V.8/V.17 rx mode: External) **0**: Disabled **1**: Enabled	Keep this bit at “1”.

G3 Switch 07		
No	**FUNCTION**	**COMMENTS**
5	PSTN cable equalizer (V.34 rx mode; External)	Keep this bit at “1”.
6-7	Not used	Do not change the settings.

G3 Switch 08 - Not used (do not change the settings)

G3 Switch 09		
No	**FUNCTION**	**COMMENTS**
0 to 1	ISDN cable equalizer (tx mode: Internal) **Bit 1 Bit 0 Setting** 0 0 None 0 1 Low 1 0 Medium 1 1 High	Use a higher setting if there is signal loss at higher frequencies because of the length of wire between the modem and the telephone exchange. Use the dedicated transmission parameters for specific receivers. Also, try using the cable equalizer if one or more of the following symptoms occurs. • Communication error • Modem rate fallback occurs frequently. **Note:** This setting is not effective in V.34 communications.
2 to 3	ISDN cable equalizer (rx mode: Internal) **Bit 3 Bit 2 Setting** 0 0 None 0 1 Low 1 0 Medium 1 1 High	Use a higher setting if there is signal loss at higher frequencies because of the length of wire between the modem and the telephone exchange. Also, try using the cable equalizer if one or more of the following symptoms occurs. • Communication error with error codes such as 0-20, 0-23, etc. • Modem rate fallback occurs frequently. **Note:** This setting is not effective in V.34 communications.
4	ISDN cable equalizer (V.8/V.17 rx mode: External) **0**: Disabled **1**: Enabled	Keep this bit at “0” in most cases.
5	ISDN cable equalizer (V.34 rx mode: External) **0**: Disabled **1**: Enabled	Keep this bit at “0” in most cases.
6-7	Not used	Do not change the settings.

G3 Switch 0A		
No	**FUNCTION**	**COMMENTS**
0 **1**	Maximum allowable carrier drop during image data reception **Bit 1 Bit 0 Value (ms)** 0 0 200 0 1 400 1 0 800 1 1 Not used	These bits set the acceptable modem carrier drop time. Try using a longer setting if error code 0-22 is frequent.
2-3	Not used	Do not change the settings.
4	Maximum allowable frame interval during image data reception. **0:** 5 s **1:** 13 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 s **1:** 12 s	When the sending terminal is controlled by a computer, there may be a delay in receiving page data after the local machine accepts set-up data and sends CFR. This is outside the T.30 recommendation. But, if this delay occurs, set this bit to 1 to give the sending machine more time to send data. Refer to error code 0-20. ITU-T T.30 recommendation: The first line should come within 5 s of CFR.
7	Not used	Do not change the setting.

G3 Switch 0B		
No	**FUNCTION**	**COMMENTS**
0	Protocol requirements: Europe **0:** Disabled **1:** Enabled	The machine does not automatically reset these bits for each country after a country code (System Switch 0F) is programmed. Change the required bits manually at installation.
1	Protocol requirements: Spain **0:** Disabled **1:** Enabled	
2	Protocol requirements: Germany **0:** Disabled **1:** Enabled	
3	Protocol requirements: France **0:** Disabled **1:** Enabled	
4	PTT requirements: Germany **0:** Disabled **1:** Enabled	
5	PTT requirements: France **0:** Disabled **1:** Enabled	
6	Not used	Do not change the setting.
7	DTS requirements : Germany **0:** Disabled **1:** Enabled	Change this bit manually if required.

G3 Switch 0C		
No	**FUNCTION**	**COMMENTS**
0 **1**	Pulse dialing method **Bit 1 Bit 0 Setting** 0 0 Normal(P=N) 0 1 Oslo (P=10 - N) 1 0 Sweden (N+1) 1 1 Not used	P = Number of pulses sent out, N = Number dialed.
2-7	Not used	Do not change the settings.

G3 Switch 0D		
No	**FUNCTION**	**COMMENTS**
0-1	Not used	Do not change the settings.
2 **to** **5**	Data rate threshold during V.34 reception **Bit 5 4 3 2 Setting** 0 0 0 0 Normal 0 1 1 1 Lower by one step 1 1 1 1 Lower by two steps	The machine changes the modulation parameters in the MPh signal to lower the initial modem rate during V.34 reception. If this switch is set to "0111", the machine lowers the initial speed one step, for example, from 28,800 to 26,400 bps. This switch reduces transmission time if the machine frequently sends PPR signals during V.34 reception.
6	Not used	Do not change the setting.
7	B signal detection time for V.34 polling transmission **0:** 75 ms (default setting) **1:** 65 ms	Change this switch only when there are communication errors during V.34 polling transmission to a machine with a Panasonic modem.

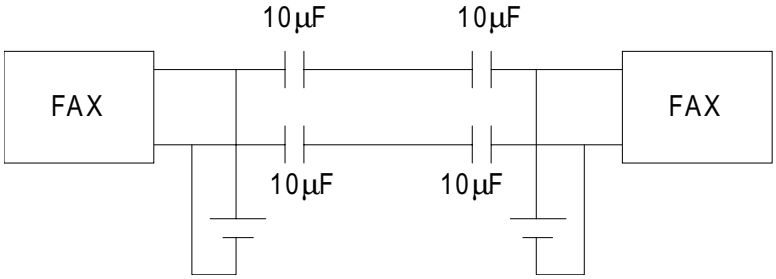
G3 Switch 0E - Not used (do not change the settings)

G3 Switch 0F		
No	**FUNCTION**	**COMMENTS**
0	Alarm when an error occurred in Phase C or later **0**: Disabled **1**: Enabled	If the customer wants to hear an alarm after each error communication, change this bit to "1".
1	Alarm when the handset is off-hook at the end of communication **0**: Disabled **1**: Enabled	If the customer wants to hear an alarm if the handset is off-hook at the end of fax communication, change this bit to "1".
⇒ **2** **to** **3**	**G3 switch 0F** **Bit 3 Bit 2 Settings** 0 0 32 sec 0 1 40 sec 1 0 50 sec 1 1 60 sec	In order to ensure that the NSF/DIS signals (from the machine tat is to receive the facsimile) will successfully be received by the sender, the transmission duration of these signals can now be extended.
4-7	Not used	Do not change the settings.

4.2.6 SG3 SWITCHES

This switches require an optional G3 interface unit.

SG3 Switch 00		
No	**FUNCTION**	**COMMENTS**
0-6	Not used	Do not change the settings.
7	Back to back test **0:** Disabled **1:** Enabled	Set this bit to 1 when you wish to do a back to back test. **115 V model:** Be sure to connect jumpers JP5 and JP6 on the NCU before doing the test. **220 V model:** Be sure to apply dc voltage between wires L1 and L2 on the NCU.



Back-to-Back Connection:
The dc power supplies should be adjusted so that the line current to the NCU is about 30mA.

SG3 Switch 01		
No	**FUNCTION**	**COMMENTS**
0-3	Not used	Do not change the settings.
4	DIS frame length **0:** 10 bytes **1:** 4 bytes	**1:** The bytes in the DIS frame after the 4th byte will not be transmitted (set to 1 if there are communication problems with PC-based faxes which cannot receive the extended DIS frames).
5	Not used	Do not change the setting.
6	CED/ANSam transmission **0:** Disabled **1:** Enabled	Do not change this setting, unless the communication problem is caused by the CED/ANSam transmission.
7	Not used	Do not change the setting.

SG3 Switch 02		
No	**FUNCTION**	**COMMENTS**
0	G3 protocol mode used **0:** Standard and non-standard **1:** Standard only	Change this bit to 1 only when the other end can only communicate with machines that send T.30-standard frames only. **1:** Disables NSF/NSS signals (these are used in non-standard mode communication)
1-4	Not used	Do not change the settings.
5	Use of modem rate history for transmission using Quick/Speed Dials **0:** Disabled **1:** Enabled	**0:** Communications using Quick/Speed Dials always start from the highest modem rate. **1:** The machine refers to the modem rate history for communications with the same machine when determining the most suitable rate for the current communication.
6	AI short protocol (transmission and reception) **0:** Disabled **1:** Enabled	Refer to Appendix B in the Group 3 Facsimile Manual for details about AI Short Protocol.
7	Short preamble **0:** Disabled **1:** Enabled	Refer to Appendix B in the Group 3 Facsimile Manual for details about Short Preamble.

SG3 Switch 03		
No	**FUNCTION**	**COMMENTS**
0	DIS detection number (Echo countermeasure) **0:** 1 **1:** 2	**0:** The machine will hang up if it receives the same DIS frame twice. **1:** Before sending DCS, the machine will wait for the second DIS which is caused by echo on the line.
1	Not used	Do not change the settings.
2	V.8 protocol **0:** Disabled **1:** Enabled	**0:** V.8/V.34 communications will not be possible. **Note:** Do not set to 0 unless the line condition is always bad enough to slow down the data rate to 14.4 kbps or lower.
3	ECM frame size **0:** 256 bytes **1:** 64 bytes	Keep this bit at “0” in most cases.

SG3 Switch 03		
No	**FUNCTION**	**COMMENTS**
4	CTC transmission conditions **0:** After one PPR signal received **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. $\sqrt{N\,Transmit \leq NRe\,send}$ $N_{Transmit}$- Number of transmitted frames N_{Resend}- Number of frames to be retransmitted **1:** When using ECM, the machine sends a CTC to drop back the modem rate after receiving four PPRs. PPR, CTC: These are ECM protocol signals. This bit is not effective in V.34 communications.
5	Modem rate used for the next page after receiving a negative code (RTN or PIN) **0:** No change **1:** Fallback	**1:** The machine's tx modem rate will fall back before sending the next page if a negative code is received. This bit is ignored if ECM is being used.
6	Not used	Do not change the setting.
7	Not used	Do not change the setting.

SG3 Switch 04		
No	**FUNCTION**	**COMMENTS**
0 to 3	Training error detection threshold	0 - F (Hex); 0 - 15 bits If the number of error bits in the received TCF is below this threshold, the machine informs the sender that training has succeeded.
4-7	Not used	Do not change the settings.

SG3 Switch 05		
No	**FUNCTION**	**COMMENTS**
0 to 3	Initial Tx modem rate **Bit 3 2 1 0 Setting (bps)** 0 0 0 1 2.4 k 0 0 1 0 4.8 k 0 0 1 1 7.2 k 0 1 0 0 9.6 k 0 1 0 1 12.0 k 0 1 1 0 14.4 k 0 1 1 1 16.8 k 1 0 0 0 19.2 k 1 0 0 1 21.6 k 1 0 1 0 24.0 k 1 0 1 1 26.4 k 1 1 0 0 28.8 k 1 1 0 1 31.2 k 1 1 1 0 33.6 k Other settings - Not used	These bits set the initial starting modem rate for transmission. Use the dedicated transmission parameters if you need to change this for specific receivers. If a modem rate 14.4 kbps or slower is selected, V.8 protocol should be disabled manually. **Cross reference** V.8 protocol on/off - SG3 switch 03, bit2
4 to 5	Initial modem type for 9.6 k or 7.2 kbps. **Bit 5 Bit 4 Setting** 0 0 V.29 0 1 V.17 1 0 Not used 1 1 Not used	These bits set the initial modem type for 9.6 and 7.2 kbps, if the initial modem rate is set at these speeds.
6-7	Not used	Do not change the settings.

SG3 Switch 06		
No	**FUNCTION**	**COMMENTS**
0 to 3	Initial Rx modem rate **Bit 3 2 1 0 Setting (bps)** 0 0 0 1 2.4 k 0 0 1 0 4.8 k 0 0 1 1 7.2 k 0 1 0 0 9.6 k 0 1 0 1 12.0 k 0 1 1 0 14.4 k 0 1 1 1 16.8 k 1 0 0 0 19.2 k 1 0 0 1 21.6 k 1 0 1 0 24.0 k 1 0 1 1 26.4 k 1 1 0 0 28.8 k 1 1 0 1 31.2 k 1 1 1 0 33.6 k Other settings - Not used	These bits set the initial starting modem rate for reception. Use a lower setting if high speeds pose problems during reception. If a modem rate 14.4 kbps or slower is selected, V.8 protocol should be disabled manually. **Cross reference** V.8 protocol on/off - SG3 switch 03, bit2

SG3 Switch 06		
No	**FUNCTION**	**COMMENTS**
4 to 7	Modem types available for reception **Bit 7 6 5 4 Setting** 0 0 0 1 V.27ter 0 0 1 0 V.27ter, V.29 0 0 1 1 V.27ter, V.29 V.33 0 1 0 0 V.27ter, V.29, V.17/V.33 0 1 0 1 V.27ter, V.29, V.17/V33, V.34 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. If V.34 is not selected, V.8 protocol must be disabled manually. **Cross reference** V.8 protocol on/off - SG3 switch 03, bit2

SG3 Switch 07		
No	**FUNCTION**	**COMMENTS**
0 to 1	PSTN cable equalizer (tx mode: Internal) **Bit 1 Bit 0 Setting** 0 0 None 0 1 Low 1 0 Medium 1 1 High	Use a higher setting if there is signal loss at higher frequencies because of the length of wire between the modem and the telephone exchange. Use the dedicated transmission parameters for specific receivers. Also, try using the cable equalizer if one or more of the following symptoms occurs. • Communication error • Modem rate fallback occurs frequently. Note: This setting is not effective in V.34 communications.
2 to 3	PSTN cable equalizer (rx mode: Internal) **Bit 3 Bit 2 Setting** 0 0 None 0 1 Low 1 0 Medium 1 1 High	Use a higher setting if there is signal loss at higher frequencies because of the length of wire between the modem and the telephone exchange. Also, try using the cable equalizer if one or more of the following symptoms occurs. • Communication error with error codes such as 0-20, 0-23, etc. • Modem rate fallback occurs frequently. Note: This setting is not effective in V.34 communications.
4	PSTN cable equalizer (V.8/V.17 rx mode: External) **0**: Disabled **1**: Enabled	Keep this bit at “1”.

SG3 Switch 07		
No	**FUNCTION**	**COMMENTS**
5	PSTN cable equalizer (V.34 rx mode; External)	Keep this bit at “1”.
6-7	Not used	Do not change the settings.

SG3 Switch 08 - Not used (do not change the settings)
SG3 Switch 09 - Not used (do not change the settings)

SG3 Switch 0A		
No	**FUNCTION**	**COMMENTS**
0 **1**	Maximum allowable carrier drop during image data reception **Bit 1** **Bit 0** **Value (ms)** 0 0 200 0 1 400 1 0 800 1 1 Not used	These bits set the acceptable modem carrier drop time. Try using a longer setting if error code 0-22 is frequent.
2-3	Not used	Do not change the settings.
4	Maximum allowable frame interval during image data reception. **0:** 5 s **1:** 13 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 s **1:** 12 s	When the sending terminal is controlled by a computer, there may be a delay in receiving page data after the local machine accepts set-up data and sends CFR. This is outside the T.30 recommendation. But, if this delay occurs, set this bit to 1 to give the sending machine more time to send data. Refer to error code 0-20. ITU-T T.30 recommendation: The first line should come within 5 s of CFR.
7	Not used	Do not change the setting.

SG3 Switch 0B		
No	**FUNCTION**	**COMMENTS**
0	Protocol requirements: Europe **0:** Disabled **1:** Enabled	The machine does not automatically reset these bits for each country after a country code (System Switch 0F) is programmed. Change the required bits manually at installation.
1	Protocol requirements: Spain **0:** Disabled **1:** Enabled	
2	Protocol requirements: Germany **0:** Disabled **1:** Enabled	
3	Protocol requirements: France **0:** Disabled **1:** Enabled	
4	PTT requirements: Germany **0:** Disabled **1:** Enabled	
5	PTT requirements: France **0:** Disabled **1:** Enabled	
6	Not used	Do not change the setting.
7	Not used	Do not change the setting.

SG3 Switch 0C		
No	**FUNCTION**	**COMMENTS**
0 **1**	Pulse dialing method **Bit 1 Bit 0 Setting** 0 0 Normal(P=N) 0 1 Oslo (P=10 - N) 1 0 Sweden (N+1) 1 1 Not used	P = Number of pulses sent out, N = Number dialed.
2-7	Not used	Do not change the settings.

SG3 Switch 0D - Not used (do not change the settings)
SG3 Switch 0E - Not used (do not change the settings)
SG3 Switch 0F - Not used (do not change the settings)

4.3 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 (Function 06-1), but some can be changed using NCU Parameter programming (Function 06-2); if Function 06-2 can be used, this will be indicated in the Remarks column. The RAM is programmed in hex code unless (BCD) is included in the Unit column.

NOTE: The following addresses describe settings for the standard NCU. Change the fourth digit from “4” to “5” (e.g. 680400 to 680500) for the settings for the optional G3 interface unit.

<table>
<tr><th>Address</th><th>Function</th><th>Unit</th><th>Remarks</th></tr>
<tr><td>680400</td><td>Country code for NCU parameters</td><td colspan="2">Use the Hex value to program the country code directly into this address, or use the decimal value to program it using Function 06-2 (parameter 00).

Country Decimal Hex
France 00 00
Germany 01 01
UK 02 02
Italy 03 03
Austria 04 04
Belgium 05 05
Denmark 06 06
Finland 07 07
Ireland 08 08
Norway 09 09
Sweden 10 0A
Switzerland 11 0B
Portugal 12 0C
Holland 13 0D
Spain 14 0E
Israel 15 0F
USA 17 11
Asia 18 12
Hong Kong 20 14
South Africa 21 15
Australia 22 16
New Zealand 23 17
Singapore 24 18
Malaysia 25 19
China 26 1A
Taiwan 27 1B
Greece 33 21</td></tr>
<tr><td>680401</td><td>Line current detection time</td><td rowspan="3">20 ms</td><td rowspan="3">Line current detection is disabled.
Line current is not detected if 680401 contains FF.</td></tr>
<tr><td>680402</td><td>Line current wait time</td></tr>
<tr><td>680403</td><td>Line current drop detect time</td></tr>
</table>

Address	Function	Unit	Remarks
680404	PSTN dial tone frequency upper limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
680405	PSTN dial tone frequency upper limit (low byte)		
680406	PSTN dial tone frequency lower limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
680407	PSTN dial tone frequency lower limit (low byte)		
680408	PSTN dial tone detection time	20 ms	If 680408 contains FF(H), the machine pauses for the pause time (address 68040D / 68040E). Italy: See Note 2.
680409	PSTN dial tone reset time (LOW)		
68040A	PSTN dial tone reset time (HIGH)		
68040B	PSTN dial tone continuous tone time		
68040C	PSTN dial tone permissible drop time		
68040D	PSTN wait interval (LOW)		
68040E	PSTN wait interval (HIGH)		
68040F	PSTN ring-back tone detection time	20 ms	Detection is disabled if this contains FF.
680410	PSTN ring-back tone off detection time	20 ms	
680411	PSTN detection time for silent period after ring-back tone detected (LOW)	20 ms	
680412	PSTN detection time for silent period after ring-back tone detected (HIGH)	20 ms	
680413	PSTN busy tone frequency upper limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
680414	PSTN busy tone frequency upper limit (low byte)		
680415	PSTN busy tone frequency lower limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
680416	PSTN busy tone frequency lower limit (low byte)		
680417	PABX dial tone frequency upper limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
680418	PABX dial tone frequency upper limit (low byte)		
680419	PABX dial tone frequency lower limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
68041A	PABX dial tone frequency lower limit (low byte)		

Address	Function	Unit	Remarks
68041B	PABX dial tone detection time	20 ms	If 68041B contains FF, the machine pauses for the pause time (680420 / 680421).
68041C	PABX dial tone reset time (LOW)		
68041D	PABX dial tone reset time (HIGH)		
68041E	PABX dial tone continuous tone time		
68041F	PABX dial tone permissible drop time		
680420	PABX wait interval (HIGH)		
680421	PABX wait interval (LOW)		
680422	PABX ringback tone detection time	20 ms	If both addresses contain FF(H), tone detection is disabled.
680423	PABX ringback tone off detection time	20 ms	
680424	PABX detection time for silent period after ringback tone detected (LOW)	20 ms	If both addresses contain FF(H), tone detection is disabled.
680425	PABX detection time for silent period after ringback tone detected (HIGH)	20 ms	
680426	PABX busy tone frequency upper limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
680427	PABX busy tone frequency upper limit (low byte)		
680428	PABX busy tone frequency lower limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
680429	PABX busy tone frequency lower limit (low byte)		
68042A	Busy tone ON time: range 1	20 ms	
68042B	Busy tone OFF time: range 1		
68042C	Busy tone ON time: range 2		
68042D	Busy tone OFF time: range 2		
68042E	Busy tone ON time: range 3		
68042F	Busy tone OFF time: range 3		
680430	Busy tone ON time: range 4		
680431	Busy tone OFF time: range 4		
680432	Busy tone continuous tone detection time		

Address	Function	Unit	Remarks
680433	Busy tone signal state time tolerance for all ranges, and number of cycles required for detection (a setting of 4 cycles means that ON-OFF-ON or OFF-ON-OFF must be detected twice). Tolerance (±) **Bit 1 0** 0 0 75% Bits 2 and 3 must always 0 1 50% be kept at 0. 1 0 25% 1 1 12.5% Bits 7, 6, 5, 4 - number of cycles required for cadence detection		
680434	International dial tone frequency upper limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
680435	International dial tone frequency upper limit (low byte)		
680436	International dial tone frequency lower limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
680437	International dial tone frequency lower limit (low byte)		
680438	International dial tone detection time	20 ms	If 680438 contains FF, the machine pauses for the pause time (68043D / 68043E). Belgium: See Note 2.
680439	International dial tone reset time (LOW)		
68043A	International dial tone reset time (HIGH)		
68043B	International dial tone continuous tone time		
68043C	International dial tone permissible drop time		
68043D	International dial wait interval (HIGH)		
68043E	International dial wait interval (LOW)		
68043F	Country dial tone upper frequency limit (HIGH)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
680440	Country dial tone upper frequency limit (LOW)		
680441	Country dial tone lower frequency limit (HIGH)		If both addresses contain FF(H), tone detection is disabled.
680442	Country dial tone lower frequency limit (LOW)		

Address	Function	Unit	Remarks
680443	Country dial tone detection time	20 ms	If 680443 contains FF, the machine pauses for the pause time (680448 / 680449).
680444	Country dial tone reset time (LOW)		
680445	Country dial tone reset time (HIGH)		
680446	Country dial tone continuous tone time		
680447	Country dial tone permissible drop time		
680448	Country dial wait interval (LOW)		
680449	Country dial wait interval (HIGH)		
68044A	Time between opening or closing the DO relay and opening the OHDI relay	1 ms	See Notes 3, 6 and 8.* Function 06-2 (parameter 11).
68044B	Break time for pulse dialing	1 ms	See Note 3. * Function 06-2 (parameter 12).
68044C	Make time for pulse dialing	1 ms	See Note 3. * Function 06-2 (parameter 13).
68044D	Time between final OHDI relay closure and DO relay opening or closing	1 ms	See Notes 3, 6 and 8. * Function 06-2 (parameter 14). This parameter is only valid in Europe.
68044E	Minimum pause between dialed digits (pulse dial mode)	20 ms	See Note 3 and 8. * Function 06-2 (parameter 15).
68044F	Time waited when a pause is entered at the operation panel		Function 06-2 (parameter 16). See Note 3.*
680450	DTMF tone on time	1 ms	Function 06-2 (parameter 17).
680451	DTMF tone off time		Function 06-2 (parameter 18).
680452	Tone attenuation level of DTMF signals while dialing	-N x 0.5 –3.5 dBm	Function 06-2 (parameter 19). See Note 5. *
680453	Tone attenuation value difference between high frequency tone and low frequency tone in DTMF signals	-dBm x 0.5	Function 06-2 (parameter 20). The setting must be less than –5dBm, and should not exceed the setting at 680452h above. See Note 5. *
680454	PSTN: DTMF tone attenuation level after dialing	-N x 0.5 –3.5 dBm	Function 06-2 (parameter 21). See Note 5. *

*: Notes are located on page 4-77

Address	Function	Unit	Remarks
680455	ISDN: DTMF tone attenuation level after dialing	-dBm x 0.5	See Note 5 *
680456	Not used		Do not change the settings.
680457	Time between 68044Dh (NCU parameter 14) and 68044Eh (NCU parameter 15)	1 ms	This parameter takes effect when the country code is set to France.
680458	Not used		Do not change the setting.
680459	Grounding time (ground start mode)	20 ms	The Gs relay is closed for this interval.
68045A	Break time (flash start mode)	1 ms	The OHDI relay is open for this interval.
68045B	International dial access code (High)	BCD	For a code of 100: 68045B - F1 68045C - 00
68045C	International dial access code (Low)		
68045D	PSTN access pause time	20 ms	This time is waited for each pause input after the PSTN access code. If this address contains FF[H], the pause time stored in address 68044F is used. Do not set a number more than 7 in the UK.
68045E	Progress tone detection level, and cadence detection enable flags	Bit 7 Bit 6 Bit 5 dBm 0 0 0 -25.0 0 0 1 -35.0 0 1 0 -30.0 1 0 0 -40.0 1 1 0 -49.0 Bits 2, 0 - See Note 2.*	
68045F to 680464	Not used		Do not change the settings.
680465	Long distance call prefix (HIGH)	BCD	For a code of 0: 680465 - FF 680466 - F0
680466	Long distance call prefix (LOW)	BCD	
680467 to 680471	Not used		Do not change the settings.

*: notes are located on page 4-77

Address	Function	Unit	Remarks
680472	Acceptable ringing signal frequency: range 1, upper limit	1000/ N (Hz).	Function 06-2 (parameter 02).
680473	Acceptable ringing signal frequency: range 1, lower limit		Function 06-2 (parameter 03).
680474	Acceptable ringing signal frequency: range 2, upper limit		Function 06-2 (parameter 04).
680475	Acceptable ringing signal frequency: range 2, lower limit		Function 06-2 (parameter 05).
680476	Number or rings until a call is detected	1	Function 06-2 (parameter 06). The setting must not be zero.
680477	Minimum required length of the first ring	20 ms	See Note 4.* Function 06-2 (parameter 07).
680478	Minimum required length of the second and subsequent rings	20 ms	Function 06-2 (parameter 06-2).
680479	Ringing signal detection reset time (LOW)	20 ms	Function 06-2 (parameter 09).
68047A	Ringing signal detection reset time (HIGH)		Function 06-2 (parameter 10).
68047B to 680480	Not used		Do not change the settings.
680481	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
680482	Bits 0 and 1 - Handset off-hook detection time **Bit 1 0 Setting** 0 0 200 ms 0 1 800 ms Other Not used Bits 2 and 3 - Handset on-hook detection time **Bit 3 2 Setting** 0 0 200 ms 0 1 800 ms Other Not used Bits 4 to 7 - Not used		
680483 to 6804A0	Not used		Do not change the settings.

*: notes are located on page 4-77

*: notes are located on page 4-77

Address	Function	Unit	Remarks
6804A1	Acceptable CED detection frequency upper limit (high byte)	BCD (Hz)	If both addresses contain FF(H), tone detection is disabled.
6804A2	Acceptable CED detection frequency upper limit (low byte)		
6804A3	Acceptable CED detection frequency lower limit (high byte)	BCD (Hz)	If both addresses contain FF(H), tone detection is disabled.
6804A4	Acceptable CED detection frequency lower limit (low byte)		
6804A5	CED detection time	20 ms ± 20 ms	Factory setting: 200 ms
6804A6	Acceptable CNG detection frequency upper limit (high byte)	BCD (Hz)	If both addresses contain FF(H), tone detection is disabled.
6804A7	Acceptable CNG detection frequency upper limit (low byte)		
6804A8	Acceptable CNG detection frequency lower limit (high byte)	BCD (Hz)	If both addresses contain FF(H), tone detection is disabled.
6804A9	Acceptable CNG detection frequency lower limit (low byte)		
6804AA	Not used		Do not change the setting.
6804AB	CNG on time	20 ms	Factory setting: 500 ms
6804AC	CNG off time	20 ms	Factory setting: 200 ms
6804AD	Number of CNG cycles required for detection		The data is coded in the same way as address 680433.
6804AE	Not used		Do not change the settings.
6804AF	Acceptable AI short protocol tone (800Hz) detection frequency upper limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
6804B0	Acceptable AI short protocol tone (800Hz) detection frequency upper limit (low byte)		
6804B1	Acceptable AI short protocol tone (800Hz) detection frequency lower limit (high byte)	Hz(BCD)	If both addresses contain FF(H), tone detection is disabled.
6804B2	Acceptable AI short protocol tone (800Hz) detection frequency lower limit (low byte)		
6804B3	Detection time for 800 Hz AI short protocol tone	20 ms	Factory setting: 360 ms
6804B4	PSTN: Tx level from the modem	-N – 3 dBm	Function 06-2 (parameter 01).
6804B5	PSTN: 1100 Hz tone transmission level	- N 6804B4 - 0.5N 6804B5 –3.5 (dB) See Note 7.*	
6804B6	PSTN: 2100 Hz tone transmission level	- N6804B4 - 0.5N 6804B6 –3 (dB) See Note 7.*	
6804B7	PABX: Tx level from the modem	- dBm	

Address	Function	Unit	Remarks
6804B8	PABX: 1100 Hz tone transmission level	- N 6804B7 - 0.5N 6804B8 (dB)	
6804B9	PABX: 2100 Hz tone transmission level	- N 6804B7 - 0.5N 6804B9 (dB)	
6804BA	ISDN: Tx level from the modem	- dBm	The setting must be between -12dBm and -15dBm.
6804BB	ISDN: 1100 Hz tone transmission level	- N 6804BA - 0.5N 6804BB (dB)	
6804BC	ISDN: 2100 Hz tone transmission level	- N 6804BA - 0.5N 6804BC (dB)	
6804BD	Modem turn-on level (incoming signal detection level)	-37-0.5N (dBm)	
6804BE to 6804C6	Not used		Do not change the settings.
6804C7	Bits 0 to 3 – Not used. Bit 4 – V.34 protocol dump **0:** Simple, **1:** Detailed (default) Bits 5 to 7 – Not used.		
6804C8 to 6804D9	Not used		Do not change the settings.
6804DA	T.30 T1 timer	1 s	
6804E0 bit 3	Maximum wait time for post message	**0:** 12 s **1:** 30 s	**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 68045E: 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.
   680408 (if bit 0 = 1) or 680438 (if bit 2 = 1): tolerance for on or off state duration (%), and number of cycles required for detection, coded as in address 680433.
   68040B (if bit 0 = 1) or 68043B (if bit 2 = 1): on time, hex code (unit = 20 ms)
   68040C (if bit 0 = 1) or 68043C (if bit 2 = 1): off time, hex code (unit = 20 ms)
3. Pulse dial parameters (addresses 68044A to 68044F) 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 x $N_{680452/680454}$–3.5 dBm
   – 0.5 x N_{680455} dBm
   Low frequency tone: – 0.5 x ($N_{680452/680454}$ + N_{680453}) –3.5 dBm
   – 0.5 x (N_{680455} + N_{680453}) dBm
   NOTE: N_{680452}, for example, means the value stored in address 680452(H)
6. 68044A: Europe - Between Ds opening and Di opening, France - Between Ds closing and Di opening
   68044D: Europe - Between Ds closing and Di closing, France - Between Ds opening and Di closing
7. Tone signals which frequency is lower than 1500Hz (e.g., 800Hz tone for AI short protocol) refer to the setting at 6804B5h. Tones which frequency is higher than 1500Hz refer to the setting at 6804B6h.
8. 68044A, 68044D, 68044E: The actual inter-digit pause (pulse dial mode) is the sum of the period specified by the RAM addresses 68044A, 68044D, and 68044E.

4.4 DEDICATED TRANSMISSION PARAMETERS

Each Quick Dial Key and Speed Dial Code has eight bytes of programmable parameters allocated to it. If transmissions to a particular machine often experience problems, store that terminal's fax number as a Quick Dial or Speed Dial, and adjust the parameters allocated to that number.

The programming procedure will be explained first. Then, the eight bytes will be described.

4.4.1 PROGRAMMING PROCEDURE

1. Make sure the machine is in "Facsimile" mode. Press "User Tools" key then choose "Fax".
2. Press [1], then either choose "Registering Quick Dial" or "Registering Speed Dial".
   Example: Change the Parameters in Quick Dial 10.
3. Press Quick Dial key 10.
   NOTE: The selected Quick or Speed Dial must be programmed beforehand.
4. When the programmed dial number is displayed, press S - V - C using Quick Dial keys, then press "Start".
5. The settings for byte 0 are now displayed. Press a number from 0 to 7 corresponding to the bit that you wish to change.
   Example: Change bit 7 to 1: Press 7
6. To scroll through the parameter bytes, either:
   Select the next byte: press "↓ Switch"
   or
   Select the previous byte: press "↑ Switch" until the correct byte is displayed.
   Then go back to step 5.
7. After the setting is changed, press OK.
8. To finish, press "User Tools".

4.4.2 PARAMETERS

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

Switch 01
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 (00h to 78h) FFh - The local NCU parameter factory setting is used. Do not program a value between 79h and FEh.

Switch 02		
No	**FUNCTION**	**COMMENTS**
0 to 4	Tx level **Bit 4 3 2 1 0 Setting** 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 : : 0 1 1 1 1 -15 1 1 1 1 1 Disabled	If communication with a particular remote terminal often contains errors, the signal level may be inappropriate. Adjust the Tx level for communications with that terminal until the results are better. If the setting is “Disabled”, the NCU parameter 01 setting is used. **Note:** Do not use settings other than listed on the left.
5 to 7	Cable equalizer **Bit 7 6 5 Setting** 0 0 0 None 0 0 1 Low 0 1 0 Medium 0 1 1 High 1 1 1 Disabled	Use a higher setting if there is signal loss at higher frequencies because of the length of wire between the modem and the telephone exchange when calling the number stored in this Quick/Speed Dial. Also, try using the cable equalizer if one or more of the following symptoms occurs. • Communication error with error codes such as 0-20, 0-23, etc. • Modem rate fallback occurs frequently. **Note:** Do not use settings other than listed on the left. If the setting is “Disabled”, the bit switch setting is used.

Switch 03		
No	**FUNCTION**	**COMMENTS**
0 to 3	Initial Tx modem rate **Bit 3 2 1 0 Setting (bps)** 0 0 0 0 Not used 0 0 0 1 2,400 0 0 1 0 4,800 0 0 1 1 7,200 0 1 0 0 9,600 0 1 0 1 12,000 0 1 1 0 14,400 0 1 1 1 16,800 1 0 0 0 19,200 1 0 0 1 21,600 1 0 1 0 24,000 1 0 1 1 26,400 1 1 0 0 28,800 1 1 0 1 31,200 1 1 1 0 33,600 1 1 1 1 Disabled 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. For the settings 14.4 or kbps slower, Switch 04 bit 4 must be changed to 0. **Note:** Do not use settings other than listed on the left. If the setting is “Disabled”, the bit switch setting is used.
4-5	Not used	Do not change the settings.
6	AI short protocol **0:** Off **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 setting.

Switch 04		
No	**FUNCTION**	**COMMENTS**
0 1	Inch-mm conversion before tx **Bit 1 Bit 0 Setting** 0 0 Inch-mm conversion available 0 1 Inch only 1 0 Not used 1 1 Disabled	The machine uses inch-based resolutions for scanning. If “inch only” is selected, the printed copy may be slightly distorted at the other end if that machine uses mm-based resolutions. If the setting is “Disabled”, the bit switch setting is used.
2 to 3	DIS/NSF detection method **Bit 3 Bit 2 Setting** 0 0 First DIS or NSF 0 1 Second DIS or NSF 1 0 Not used 1 1 Disabled	**(0, 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. If the setting is “Disabled”, the bit switch setting is used.

Switch 04		
No	**FUNCTION**	**COMMENTS**
4	V.8 protocol **0**: Off **1**: Disabled	If transmissions to a specific destination always end at a lower modem rate (14,400 bps or lower), disable V.8 protocol so as not to use V.34 protocol. **0:** 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 **0:** MH only **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.
6 **7**	ECM during transmission **Bit 7 Bit 6 Setting** 0 0 Off 0 1 On 1 0 Not used 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. 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 05 - Not used (do not change the settings)
Switch 06 - Not used (do not change the settings)

Switch 07 - Optional ISDN G4 kit required		
No	**FUNCTION**	**COMMENTS**
0 **to** **3**	Data rate **Bits 3 2 1 0 Setting** 0 0 0 0 64 kbps 0 0 0 1 56 kbps 1 1 1 1 Disabled	If the setting is “Disabled”, the current setting of G4 parameter switch 2 (bits 0 and 1) is used.
4-7	Not used	Do not change the settings.

Switch 08 - Optional ISDN G4 kit required		
No	**FUNCTION**	**COMMENTS**
0 **to** **3**	Link modulus **Bits 3 2 1 0 Setting** 0 0 0 0 Modulo 8 0 0 0 1 Modulo 128 1 1 1 1 Disabled	If the setting is “Disabled”, the current setting of G4 parameter switch 3 (bit 0) is used.
4-7	Not used	Do not change the settings.

Switch 09 - Optional ISDN G4 kit required		
No	**FUNCTION**	**COMMENTS**
0 to 3	Layer 3 protocol **Bits 3 2 1 0 Setting** 0 0 0 0 ISO 8208 0 0 0 1 T.70 NULL 1 1 1 1 Disabled	If the setting is “Disabled”, the current setting of G4 parameter switch 6 (bit 0) is used.
4 to 7	Packet modulus **Bits 3 2 1 0 Setting** 0 0 0 0 Modulo 8 0 0 0 1 Modulo 128 1 1 1 1 Disabled	If the setting is “Disabled”, the current setting of G4 parameter switch 6 (bit 4) is used.

Switch 0A - Not used

4.5 SERVICE RAM ADDRESSES

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

680001 to 680004(H) - ROM version (Read only)
680001(H) - Revision number (BCD)
680002(H) - Year (BCD)
680003(H) - Month (BCD)
680004(H) - Day (BCD)

680006 to 680015(H) - Machine's serial number (16 digits - ASCII)

680018(H) - Total program checksum (low)
680019(H) - Total program checksum (high)

680020 to 68003F(H) - System bit switches
680040 to 68004F(H) - Scanner bit switches
680050 to 68005F(H) - Printer bit switches
680060 to 68007F(H) - Communication bit switches
680080 to 68008F(H) - G3 bit switches
680090 to 68009F(H) - SG3 bit switches

6800C0(H) - User parameter switch 00 (SWUER_00)
Bit 0: Stamp home position 0: Disabled, 1: Enabled
Bits 1 to 3: Scanning contrast home position

Bit 3	2	1	Setting
0	0	0	Automatic
0	0	1	Position 1 (Lightest)
0	1	0	Position 2
0	1	1	Position 3
1	0	0	Position 4 (Medium)
1	0	1	Position 5
1	1	0	Position 6
1	1	1	Position 7 (Darkest)

Bits 4 and 5: Scanning resolution home position
(This switch is not printed on the user parameter list.)

Bit 5	4	Setting
0	0	Standard
0	1	Detail
1	0	Superfine
1	1	Superfine

Bit 6: Transmission mode home position
(This switch is not printed on the user parameter list.)
0: Memory tx, 1: Immediate tx
Bit 7: Not used

6800C1(H) - User parameter switch 01 (SWUSR_01)
Bit 0: Label insertion home position 0: Disabled, 1: Enabled
Bit 1: ID transmission home position 0: Disabled, 1: Enabled
Bit 2: Automatic reduction (tx) home position 0: Disabled, 1: Enabled
Bits 3 and 4: Scanning mode LED home position
(This switch is not printed on the user parameter list.)

Bit 4	3	Setting
0	0	Text
0	1	Text/ Photo
1	0	Photo
1	1	Special Original (See the note below)

Note: The "Special Original" setting is not explained in the Operator's Manual, because it can be selected only if System Switch 19 – bit 7 is set to "1".

Bit 5: TTI print home position 0: Disabled, 1: Enabled
Bit 6: TTI used for broadcasting; the TTI selected with this switch is used for all destinations during broadcasting.
0: TTI_1, **1:** TTI_2
(This switch is not printed on the user parameter list.)

Note: System Switch 11 bit 3 must be set to "1" to enable this switch.

Bit 7: Settings return to home position after scanning 0: Disabled, 1: Enabled

6800C2(H) - User parameter switch 02 (SWUSR_02)
Bit 0: Forwarding mark printing on forwarded messages 0: Disabled, 1: Enabled
Bit 1: Center mark printing on received copies
(This switch is not printed on the user parameter list.)
0: Disabled, 1: Enabled
Bit 2: Reception time printing
(This switch is not printed on the user parameter list.)
0: Disabled, 1: Enabled
Bit 3: TSI print on received messages 0: Disabled, 1: Enabled
Bit 4: Checkered mark printing
(This switch is not printed on the user parameter list.)
0: Disabled, 1: Enabled
Bit 5: CIL printing (G4) 0: Disabled, 1: Enabled
Bit 6: TID printing (G4) 0: Disabled, 1: Enabled
Bit 7: Not used

6800C3(H) - User parameter switch 03 (SWUSR_03: Automatic report printout)
Bit 0: Transmission result report (memory transmissions) 0: Off, 1: On
Bit 1: Not used
Bit 2: Memory storage report 0: Off, 1: On
Bit 3: Polling reserve report (polling reception) 0: Off, 1: On
Bit 4: Polling result report (polling reception) 0: Off, 1: On
Bit 5: Transmission result report (immediate transmissions) 0: Off, 1: On
Bit 6: Polling clear report 0: Off, 1: On
Bit 7: Journal 0: Off, 1: On

6800C4(H) - User parameter switch 04 (SWUSR_04: Automatic report printout)

Bit 0: Automatic confidential reception report output 0: Off, 1: On
Bits 1 to 6: Not used
Bit 7: Inclusion of a sample image on reports 0: Off, 1: On

6800C5(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 rx when the machine cannot print messages (Paper end, toner end, jam, and during night mode)

Bit 2	1	Setting
0	0	The machine receives all the fax messages.
0	1	The machine receives the fax messages with RTI or CSI.
1	0	The machine receives the fax messages with the same ID code.
1	1	The machine does not receive anything.

Bit 3: Not used
Bit 4: Restricted Access using personal codes 0: Off, 1: On
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

6800C6(H) - User parameter switch 06 (SWUSR_06)

Bit 0: Not used
Bit 1: G3/G4 LED home position 0: G3, 1: G4
Bits 2 and 3: G3 line type home position

Bit 3	2	Setting
0	0	G3 auto selection
0	1	PSTN-1
1	0	PSTN-2 (only available if the optional SG3 board is installed)
1	1	Not used

Bit 4: Quick dial label print format
0: Suitable for white paper, 1: Suitable for transparent paper
Bit 5: Not used
Bit 6: Scan sequence in Book transmission
0: Left page then right page, 1: Right page then left page
Bit 7: Not used

6800C7(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

6800C8(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.

6800C9(H) - User parameter switch 09 (SWUSR_09)
Bits 0 to 7: Not used

6800CA(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

6800CB(H) - User parameter switch 11 (SWUSR_0B)
Bit 0: Not used
Bit 1: Method of transmitting numbers after the “Tone” mark over an ISDN line
0: UUI, 1: Tone
Bits 2 to 5: Not used
Bit 6: Printout of messages received while acting as a forwarding station
0: Off, 1: On
Bit 7: Polling Standby duration 0: Once, 1: No limit

6800CC(H) - User parameter switch 12 (SWUSR_0C)
Bits 0 to 7: Not used

6800CD(H) - User parameter switch 13 (SWUSR_0D)
(This switch is not printed on the user parameter list.)
Bits 0 and 1: PSTN-1 access method from behind a PABX

Bit 1	0	Setting
0	0	PSTN
0	1	Loop start
1	0	Ground start
1	1	Flash start

Bits 2 to 3: PSTN-2 access method from behind a PABX (only if an optional SG3 board is installed)

Bit 1	0	Setting
0	0	PSTN
0	1	Loop start
1	0	Ground start
1	1	Flash start

Bit 5: Action when receiving a SETUP signal containing no called number and the G4 subscriber number was programmed in this machine.
0: Respond to the call, 1: Do not respond to the call
Bit 6: Action when the received HLC (Higher Level Capabilities) is Tel or BC (Bearer Capabilities) is Speech.
0: Do not respond to the call, 1: Respond to the call
This switch determines which information transfer capabilities the machine can accept when receiving a call.
1: When the received HLC is Tel (digital telephone) or BC is Speech (voice), the machine responds to the call. In short, the machine receives every call.
This switch is useful for communication problems when the other terminal informs the above transfer capabilities although it is a fax machine.
Bit 7: Not used

6800CE(H) - User parameter switch 14 (SWUSR_0E)

Bit 0: Message printout while the machine is in Night Timer mode 0: On, 1: Off
Bit 1: Maximum document length detection
0: Double letter, 1: Longer than double-letter (well log) – up to 1,200 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

⟹**6800CF(H) - User parameter switch 15 (SWUSR_0F)**

Bits 0, 1 and 2: Cassette for fax printout

Bit 2	1	0	Setting
0	0	1	1st paper feed station
0	1	0	2nd paper feed station
0	1	1	3rd paper feed station
1	0	0	4th paper feed station

Other settings Not used
Bits 3 and 4: Not used
Bit 5: Using the cassette specified by bits 0, 1 and 2 above only 0: On, 1: Off
Bits 6 and 7: Not used

6800D0(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

6800D1(H) – User parameter switch 17 (SWUSR_11)

Bits 0 and 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 7: Not used

6800D2(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
Bit 4 to 7: Not used

6800D3(H) - User parameter switch 19 (SWUSR_13)

Bit 0: Offset sort function for the fax (only using the shift tray on the 1,000 sheet finisher)
0: Disabled, 1: Enabled

Bit 1: Journal format
0: The Journal is separated into transmissions and receptions
1: The Journal is separated into PSTN-1, PSTN-2, and G4 communications

Bit 2: Action when the paper cassette that was selected by the specified cassette selection feature becomes empty.
(This switch is not printed on the user parameter list.)
0: The machine will not print any received files until paper is added.
1: The machine will use other cassettes to print received files that are not specified by this feature.

Bit 3: 90° 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 sub-scan 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: Line type selection for printing out to the one-bin tray (messages coming in on other lines do not go to the one-bin tray)

Bit 7	Bit 6	Setting
0	0	Disabled
0	1	PSTN-1
1	0	PSTN-2
1	1	ISDN

6800D4(H) - User parameter switch 20 (SWUSR_14)

Bit 0: PC transmission mode
0: Direct Tx, 1: Memory Tx

Bit 1: Addition of fax TTI during PC memory transmission
0: Disabled, 1: Enabled

Bit 2: Checkered mark on printouts during PC printing
0: Disabled, 1: Enabled

Bit 3: Not used

Bit 4: Line type selection for PC transmission (memory or direct)
0: PSTN-1, PSTN-2

Bit 5: Communication port for PC memory transmission
(This switch is not printed on the user parameter list.)
0: PSTN (the line used depends on bit 4), 1: ISDN G4

Bits 6 and 7: Buffer threshold for PC direct transmission
Keep this bit at “0,0” in most cases.
(This switch is not printed on the user parameter list.)

Bit 7	Bit 6	setting
0	0	Minimum (default)
0	1	:
1	0	:
1	1	Maximum

6800D5(H) - User parameter switch 21 (SWUSR_15)
Bit 0: PC fax reception 0: Disabled, 1: Enabled
Bits 1 and 2: PC fax reception mode

Bit 2	Bit 1	Setting
0	0	Direct rx
0	1	Memory rx
1	0	Not used
1	1	Memory rx and print on the fax machine

Bit 3: Automatic reduction when the machine transfers data to the PC from the machine. This switch is effective only for PC memory rx.
(This switch is not printed on the user parameter list.)
0: Enabled, 1: Disabled
Bits 4 and 5: Scan density for the “Light” setting.
(This switch is effective only when a PC scanner application with the CMF-TWAIN driver is used.)

Bit 5	Bit 4	Setting
0	0	Level 1 (default)
0	1	Level 1
1	0	Level 2
1	1	Level 3

Bits 6 and 7: Scan density for the “Dark” setting.
(This switch is effective only when a PC scanner application with the CMF-TWAIN driver is used.)

Bit 7	Bit 6	Setting
0	0	Level 7 (default)
0	1	Level 5
1	0	Level 6
1	1	Level 7

6800D6(H) - User parameter switch 22 (SWUSR_16)
Bits 0 to 7: Not used

6800D7 – User Parameter switch 23 (SWUSR_17)
PSTN-2 access code from behind a PABX (only used if an optional SG3 board is installed).
(This switch is not printed on the user parameter list.)

Access number	Hex value to program (BCD)
0	F0
0	F0
00	00
99	99

6800D8(H) - User parameter switch 24 (SWUSR_18)
Bits 0 and 1: File retention time (Cross reference: System switch 02 bit 4)

Bit 1	0	Setting
0	0	File retention impossible
0	1	24 hours
1	0	File retention impossible
1	1	72 hours

Bits 2 to 7: Not used

6800D9(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 and 6: Not used
Bit 7: Daylight saving time 0: Disabled, 1: Enabled

6800DA(H) - User parameter switch 26 (SWUSR_1A)
(This switch is not printed on the user parameter list.)
Bit 0: Not used
Bit 1: PSTN-1 Dialing type 0: Pulse dialing (10 pps), 1: Tone (DTMF) dialing
Bits 2 to 4: Not used
Bits 5: PSTN-2 Dialing type 0: Pulse dialing (10 pps), 1: Tone (DTMF) dialing

6800DB(H) - User parameter switch 27 (SWUSR_1B)
PSTN-1 access code from behind a PABX
(This switch is not printed on the user parameter list.)

Access number	Hex value to program (BCD)
0	F0
0	F0
00	00
99	99

6800DC(H) to 6800DF - User parameter switch 28 to 31 (SWUSR_1C to 1F)
Bits 0 to 7: Not used

6800E0 to 6800EF(H) - G4 Parameter Switches
(Refer to the ISDN G4 option service manual for details.)

6800F0 to 68010F(H) - G4 Internal Switches
(Refer to the ISDN G4 option service manual for details.)

680110 to 68011E(H) - Service station's fax number (Service mode 09)
See 68027C(H) for the type of network used for this number.

68011F to 68012D(H) - Own fax PABX extension number
68012E to 68013C(H) - Own fax number (PSTN)
68013D to 68014B(H) - Own fax number (ISDN G4)
68014C to 68015A(H) - The first subscriber number (ISDN G3)
68015B to 680169(H) - The second subscriber number (ISDN G3)
68016A to 680178(H) - The first subscriber number (ISDN G4)
680179 to 680187(H) - The second subscriber number (ISDN G4)

680188 to 68019B(H) - PSTN-1 RTI (Max. 20 characters - ASCII) - See the following note.
68019C to 6801AF(H) - PSTN-2 RTI (Max. 20 characters - ASCII) - See the following note.
6801B0 to 6801EF(H) - TTI 1 (Max. 64 characters - ASCII) - See the following note.
6801F0 to 680229(H) - TTI 2 (Max. 64 characters - ASCII) - See the following note.
680230 to 680243(H) - PSTN-1 CSI (Max. 20 characters - ASCII)
680244 to 680257 - PSTN-2 CSI (Max.20 characters - ASCII)
680258 to 68026B(H) - ISDN G3 CSI (Max. 20 characters - ASCII)
68026C(H) - Number of PSTN-1 CSI characters (Hex)
68026D - Number of PSTN-2 CSI characters (Hex)
68026E(H) - Number of ISDN G3 CSI characters (Hex)

NOTE: If the number of characters is less than the maximum (20 for RTI, 64 for TTI), add a stop code (FF[H]) after the last character.

680270(H) - ID code (low - Hex)
680271(H) - ID code (high - Hex)

680272(H) - Confidential ID (low - BCD)
680273(H) - Confidential ID (high - BCD)

68027C(H) - Network type used for the service station number
0 0 (H) - PSTN-1
0 4 (H) - PSTN-2
0 D (H) - G4
1 0 (H) - G3 auto selection

680280 to 680287(H) - Last power off time (Read only)
680280(H) - 01(H) - 24-hour clock, 00(H) - 12-hour clock (AM), 02(H) - 12-hour clock (PM)
680281(H) - Year (BCD)
680282(H) - Month (BCD)
680283(H) - Day (BCD)
680284(H) - Hour
680285(H) - Minute
680286(H) - Second
680287(H) - 00: Monday, 01: Tuesday, 02: Wednesday, ... , 06: Sunday

680294(H) - Optional equipment (Read only – Do not change the settings)
Bits 0 to 2: EXMEM board 0: Not installed, 1: Installed
Bit 3: Not used
Bit 4: EXFUNC board 0: Not installed, 1: Installed
Bit 5 to 7: Not used

680295(H) - Optional equipment (Read only – Do not change the settings)
Bit 0: EXFUNC board 0: Not installed, 1: Installed
Bit 1 to 3: Not used 0: Not installed, 1: Installed
Bit 4: SG3-V34 0: Not installed, 1: Installed
Bit 5: Not used 0: Not installed, 1: Installed
Bit 6: ISDN unit 0: Not installed, 1: Installed
Bit 7: PC Fax Expander unit 0: Not installed, 1: Installed

680296(H) - Optional equipment (Read only – Do not change the settings)
Bit 0: Paper tray unit 0: Not installed, 1: Installed
Bit 1: Bypass Tray 0: Not installed, 1: Installed
Bit 2: LCT 0: Not installed, 1: Installed
Bit 3: Duplex unit 0: Not installed, 1: Installed
Bit 4: 1-bin sorter 0: Not installed, 1: Installed
Bit 5: Finisher 0: Not installed, 1: Installed
Bit 6: Bridge unit 0: Not installed, 1: Installed
Bit 7: Not used

680297(H) - Optional equipment (Read only – Do not change the settings)
Bit 0: Not used
Bit 1: Document feeder 0: Not installed, 1: Installed
Bit 2: Not used
Bit 3: Not used
Bit 4: Copier Feature Expander
Bits 5 to 7: Not used

6802CC to 6802E3(H) - G4 terminal ID (ASCII - Max. 24 characters)
6802FD to 680300(H) - ISDN G3 sub-address
680301 to 680304(H) - ISDN G4 sub-address
680305 to 680309(H) - CiG4 board ROM information (Read only)
680305(H) - Suffix
680306(H) - Version (BCD)
680307(H) - Year (BCD)
680308(H) - Month (BCD)
680309(H) - Day (BCD)

68030A to 68030E – SG3 board ROM information (Read only)
68030A(H) - Suffix (BCD)
68030B(H) - Version (BCD)
68030C(H) - Year (BCD)
68030D(H) - Month (BCD)
68030E(H) - Day (BCD)

680312(H) - SG3 board modem ROM version (Read only)

680314 to 680319(H) - Modem ROM version (Read only)
680314(H) - Part number (low)
680315(H) - Part number (high)
680316(H) - Control (low)
680317(H) - Control (high)
680318(H) - DSP (low)
680319(H) - DSP (high)

68037E(H) - Time for economy transmission (hour in 24h clock format - BCD)
68037F(H) - Time for economy transmission (minute - BCD)

68039A(H) - Transmission monitor volume 00 - 07(H)
68039B(H) - Reception monitor volume 00 - 07(H)
68039C(H) - On-hook monitor volume 00 - 07(H)
68039D(H) - Dialing monitor volume 00 - 07(H)
68039E(H) - Buzzer volume 00 - 07(H)

6803A1 to 6803A5(H) - Periodic service call parameters

Parameters		Address (H)
Call interval: 01 through 15 month(s) (BCD) 00: Periodic service call disabled		**6803A1**
Date and time of the next call	Day: 01 through 31 (BCD)	**6803A4**
	Hour: 01 through 24 (BCD)	**6803A5**

6803AB to 6803AD(H) - Effective term of automatic service calls

Parameters	Address (H)
Year: last two digits of the year (BCD)	**6803AB**
Month: 01 through 12 (BCD)	**6803AC**
Day: 01 through 31 (BCD)	**6803AD**

680400 to 6804E0(H) - NCU parameters (Refer to section 4.3 for details)

680DC8 to 680DEF(H) - SC codes NOT for automatic service call

If the fax unit receives a copier engine SC code other than those programmed in these addresses, the fax unit sends an automatic service call report to the programmed service station.
Six SC codes have already been programmed at default, as shown in the table below. Fourteen more SC codes can be programmed, if required (if an address contains FF(H), a code is not programmed in it).
Program a SC code in four-digit BCD format as shown in the example below.
Example 1: SC code “192”
Address (High) - 01 (BCD)
Address (Low) - 92 (BCD)

Wildcard characters “a” or “A” can be used to specify a series of SC codes.
Example 2: SC code “900 to 999”
Address (High) – 09 (BCD)
Address (Low) – aa or AA (Hex)

Example 3: SC code “330 to 339”
Address (High) – 03 (BCD)
Address (Low) – 3a or 3A (Hex)

- Default settings -

High Address (H)	Data (BCD)	Low Address (L)	Data (BCD)	SC code
680DC8	01	680DC9	92	192
680DCA	09	680DCB	80	980
680DCC	09	680DCD	99	999
680DCE to 680DEE	FF(H)	680DCF to 680DEF	FF(H)	Not Programmed

68849C to 688B9B(H) - Dedicated tx parameters for Quick Dial 01 - 56.
There are 32 bytes for each Quick Dial. Only the 23rd to 32nd bytes are used.
6884B2 to 6884BB(H) - Dedicated tx parameters for Quick 01
6884D2 to 6884DB(H) - Dedicated tx parameters for Quick 02
6884F2 to 6884FB(H) - Dedicated tx parameters for Quick 03

688B92 to 688B9B(H) - Dedicated tx parameters for Quick 56

688B9C to 68981B(H) - Dedicated tx parameters for Speed Dial #00 - #99.
There are 32 bytes for each Speed Dial. Only the 23rd to 32nd bytes are used.
688BB2 to 688BBB(H) - Dedicated tx parameters for Speed #00
688BD2 to 688BDB(H) - Dedicated tx parameters for Speed #01
688BF2 to 688BFB(H) - Dedicated tx parameters for Speed #02

689812 to 68981B(H) - Dedicated tx parameters for Speed #99

68E8E4 to 68E8E5(H) - Line type change (refer to section 2 for more details)
68E8E4(H) - Current line type setting
68E8E5(H) - New line type settings

69CA00 to 69CBFF(H) - Latest 64 error codes (Read only)

One error record consists of 8 bytes of data.

First error record start address – 69CA00(H)
Second error record start address – 69CA08(H)
Third error record start address – 69CA10(H)
:
64th error record start address – 69CBF8(H)

The format is as follows:
1st byte - Minute (BCD)
2nd byte - Hour (BCD)
3rd byte - Day (BCD)
4th byte - Month (BCD)
5th byte - Error code – low (BCD) [If the error code is 1-23, 23 is stored here.]
6th byte - Error code – high (BCD) [If the error code is 1-23, 01 is stored here.]
7th byte - Communication line (Hex)
PSTN-1: 00(H), PSTN-2: 04 (H), PABX: 02(H), ISDN G3: 0C(H), ISDN G4: 0D(H)
8th byte - Not used

69E134 to 69E813(H) - Latest 20 error communication records (Read only)

One error communication record consists of 88 bytes. The format is as follows:

1st byte - Header
Bit 0: Communication result 0: OK, 1: NG
Bit 1: Document jam 1: Occurred
Bit 2: Power down 1: Occurred
Bit 3: Not used
Bit 4: Technical data printout instead of personal codes 0: No, 1: Yes
Bit 5: Type of technical data 0: Rx level, 1: Measure of error rate
Bit 6: Error report 0: Not printed, 1: Printed
Bit 7: Data validity 0: Not valid, 1: Valid

2nd byte - Not used

3rd to 6th bytes - Date and time when the communication started
3rd byte - Month (BCD)
4th byte - Day (BCD)
5th byte - Hour (BCD)
6th byte - Minute (BCD)

7th and 8th bytes - Communication time
7th byte - Minutes (BCD)
8th byte - Seconds (BCD)

9th and 10th bytes - Number of pages transmitted or received
9th byte - Low byte (Hex)
10th byte - High byte (Hex)

11th and 12th bytes - Personal code or number of total/burst error lines

If bit 4 of the 1st byte is 0:
11th byte - Personal code (low - BCD)
12th byte - Personal code (high - BCD)
If bit 4 of the 1st byte is 1:
11th byte - Number of total error lines (Hex)
12th byte - Number of burst error lines (Hex)

13th byte - File number (low - Hex)
14th byte - File number (high - Hex)

15th and 16th bytes - Rx level or a measure of the error rate
If bit 5 of the 1st byte is 0:
15th byte - Rx level (low - Hex)
16th byte - Rx level (high - Hex)
If bit 4 of the 1st byte is 1:
15th byte - Measure of error rate (low - Hex)
16th byte - Measure of error rate (high - Hex)

17th byte - Final modem rate
Bits 0 to 3: Final modem speed

$$\begin{pmatrix} Bit0 \\ Bit1 \\ Bit2 \\ Bit3 \end{pmatrix} = \begin{pmatrix} 1 \\ 0 \\ 0 \\ 0 \end{pmatrix} : 2.4\,\text{k} \begin{pmatrix} 0 \\ 1 \\ 0 \\ 0 \end{pmatrix} : 4.8\,\text{k} \begin{pmatrix} 1 \\ 1 \\ 0 \\ 0 \end{pmatrix} : 7.2\,\text{k} \begin{pmatrix} 0 \\ 0 \\ 1 \\ 0 \end{pmatrix} : 9.6\,\text{k} \begin{pmatrix} 1 \\ 0 \\ 1 \\ 0 \end{pmatrix} : 12.0\,\text{k} \begin{pmatrix} 0 \\ 1 \\ 1 \\ 0 \end{pmatrix} : 14.4\,\text{k} \begin{pmatrix} 1 \\ 1 \\ 1 \\ 0 \end{pmatrix} : 16.8\,\text{k}$$

$$\begin{pmatrix} Bit0 \\ Bit1 \\ Bit2 \\ Bit3 \end{pmatrix} = \begin{pmatrix} 0 \\ 0 \\ 0 \\ 1 \end{pmatrix} : 19.2\,\text{k} \begin{pmatrix} 1 \\ 0 \\ 0 \\ 1 \end{pmatrix} : 21.6\,\text{k} \begin{pmatrix} 0 \\ 1 \\ 0 \\ 1 \end{pmatrix} : 24.0\,\text{k} \begin{pmatrix} 1 \\ 1 \\ 0 \\ 1 \end{pmatrix} : 26.4\,\text{k} \begin{pmatrix} 0 \\ 0 \\ 1 \\ 1 \end{pmatrix} : 28.8\,\text{k} \begin{pmatrix} 1 \\ 0 \\ 1 \\ 1 \end{pmatrix} : 31.2\,\text{k} \begin{pmatrix} 0 \\ 1 \\ 1 \\ 1 \end{pmatrix} : 33.6\,\text{k}$$

Bits 4 to 6: Final modem type

$$\begin{pmatrix} Bit4 \\ Bit5 \\ Bit6 \\ Bit7 \end{pmatrix} = \begin{pmatrix} 1 \\ 0 \\ 0 \\ 0 \end{pmatrix} : \text{V.27ter} \begin{pmatrix} 0 \\ 1 \\ 0 \\ 0 \end{pmatrix} : \text{V.29} \begin{pmatrix} 1 \\ 1 \\ 0 \\ 0 \end{pmatrix} : \text{V.33} \begin{pmatrix} 0 \\ 0 \\ 1 \\ 0 \end{pmatrix} : \text{V.17 (Long)} \begin{pmatrix} 1 \\ 0 \\ 1 \\ 0 \end{pmatrix} : \text{V.17 (Short)}$$

$$\begin{pmatrix} Bit4 \\ Bit5 \\ Bit6 \\ Bit7 \end{pmatrix} = \begin{pmatrix} 1 \\ 0 \\ 0 \\ 1 \end{pmatrix} : V.34\ 2400\,baud \begin{pmatrix} 0 \\ 1 \\ 0 \\ 1 \end{pmatrix} : V.34\ 3000\,baud \begin{pmatrix} 1 \\ 1 \\ 0 \\ 1 \end{pmatrix} : V.34\ 3200\,baud \begin{pmatrix} 0 \\ 0 \\ 1 \\ 1 \end{pmatrix} : V.34\ 2800\,baud \begin{pmatrix} 1 \\ 0 \\ 1 \\ 1 \end{pmatrix} : V.34\ 3429\,baud$$

18th to 20th byte - Not used

21st to 44th byte - Remote terminal's ID (RTI, TSI or CSI) (ASCII)

45th byte - Communication mode #1
Bits 0 - 1: Network

$$\begin{pmatrix} Bit0 \\ Bit1 \end{pmatrix} = \begin{pmatrix} 1 \\ 0 \end{pmatrix} : \text{P}STN \begin{pmatrix} 0 \\ 1 \end{pmatrix} : \text{I}SDN$$

45th byte - Communication mode #1
Bits 0 - 1: Network

$$\begin{pmatrix} Bit0 \\ Bit1 \end{pmatrix} = \begin{pmatrix} 1 \\ 0 \end{pmatrix} : PSTN \quad \begin{pmatrix} 0 \\ 1 \end{pmatrix} : ISDN$$

Bit 2: Communication protocol 0: G3, 1: G4
Bit 3: ECM 0: Off, 1: On
Bits 4 to 7: Communication mode used

$$\begin{pmatrix} Bit4 \\ Bit5 \\ Bit6 \\ Bit7 \end{pmatrix} = \begin{pmatrix} 0 \\ 0 \\ 0 \\ 0 \end{pmatrix} : Normal \quad \begin{pmatrix} 1 \\ 0 \\ 0 \\ 0 \end{pmatrix} : \begin{pmatrix} 1 \\ 1 \\ 0 \\ 0 \end{pmatrix} : Transfer$$

$$\begin{pmatrix} Bit4 \\ Bit5 \\ Bit6 \\ Bit7 \end{pmatrix} = \begin{pmatrix} 0 \\ 0 \\ 0 \\ 0 \end{pmatrix} : Forwarding \quad \begin{pmatrix} 1 \\ 0 \\ 0 \\ 0 \end{pmatrix} : Automatic\ service\ call$$

46th byte - Communication mode #2

Bit 0: Tx or Rx 0: Tx, 1: Rx
Bit 1: Reduction during Tx 0: Not reduced, 1: Reduced
Bit 2: Batch transmission 0: Not used, 1: Used
Bit 3: Send later transmission 0: Not used, 1: Used
Bit 4: Transmission from 0: ADF, 1: Memory
Bits 5 to 7: Not used

47th byte - Not used

48th byte - Number of errors during communication (Hex)

49th to 52nd byte - 1st error code and page number where the error occurred
- 49th byte - Page number where the error occurred (low - Hex)
- 50th byte - Page number where the error occurred (high - Hex)
- 51st byte - Error code (low - BCD)
- 52nd byte - Error code (high - BCD)

53rd to 56th byte - 2nd error code and page number where the error occurred
57th to 60th byte - 3rd error code and page number where the error occurred
61st to 64th byte - 4th error code and page number where the error occurred
65th to 68th byte - 5th error code and page number where the error occurred
69th to 72nd byte - 6th error code and page number where the error occurred
73rd to 76th byte - 7th error code and page number where the error occurred
77th to 80th byte - 8th error code and page number where the error occurred
81st to 84th byte - 9th error code and page number where the error occurred
85th to 88th byte - 10th error code and page number where the error occurred

7644F0 to 76B56F(H) - Dedicated tx parameters for Speed Dial #100 - #999, when the optional EXFUNC board is installed.
There are 32 bytes for each Speed Dial. Only the 23rd to 32nd bytes are used.

764506 to 76450F(H) - Dedicated tx parameters for Speed #100
764526 to 76452F(H) - Dedicated tx parameters for Speed #101
764546 to 76454F(H) - Dedicated tx parameters for Speed #102

76B566 to 76B56F(H) - Dedicated tx parameters for Speed #999

5. PREVENTIVE MAINTENANCE

5.1 SPECIAL TOOLS AND LUBRICANTS

- Flash/SRAM data copy tool (P/N: A1939353)
- Flash Memory Card – 4MB (P/N: A2309352)
- Card Case (P/N: A2309351)

5.2 PM TABLE

No PM necessary for the fax option.

6. REMOVAL AND REPLACEMENT

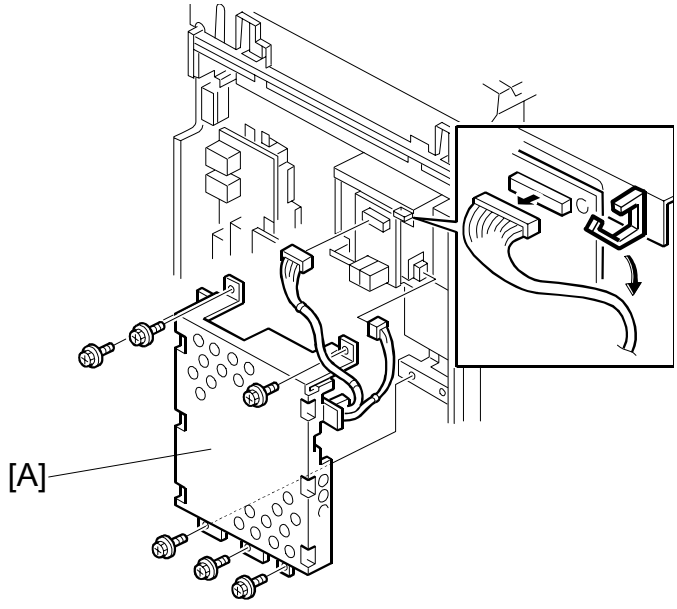
6.1 PRECAUTION

⚠CAUTION
Before starting disassembly, be sure to print all message files in the SAF memory. Then, turn off the main power switch and disconnect the power cord and telephone cable for safety.
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 manufacturer. Discard used batteries in accordance with the manufacturer's instructions.**

6.2 FCU

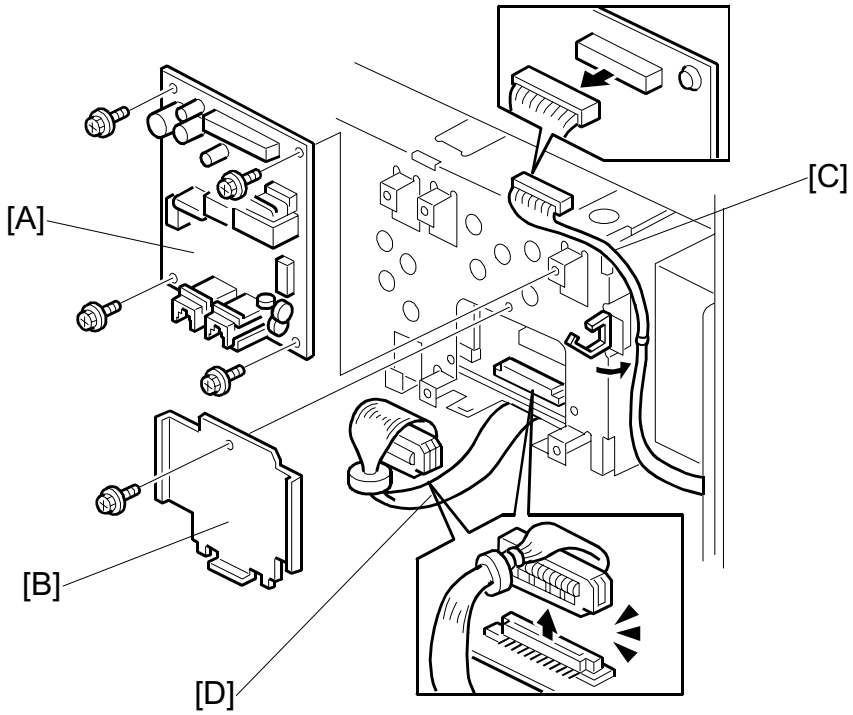
6.2.1 REMOVAL

- If optional G4 or G3 interface kits are not installed -



1. Remove the rear cover.
2. Disconnect the cables.
3. Remove the FCU unit [A] (6 screws) from the machine.

- When the optional G4 or G3 interface unit is also installed -



1. Remove the rear cover.
2. Remove the NCU [A] (4 screws) and the small bracket [B] (1 screw).
3. Disconnect cables [C] and [D].
4. Remove the FCU unit from the machine (see the previous page).

6.2.2 SRAM DATA RESTORE FROM FCU

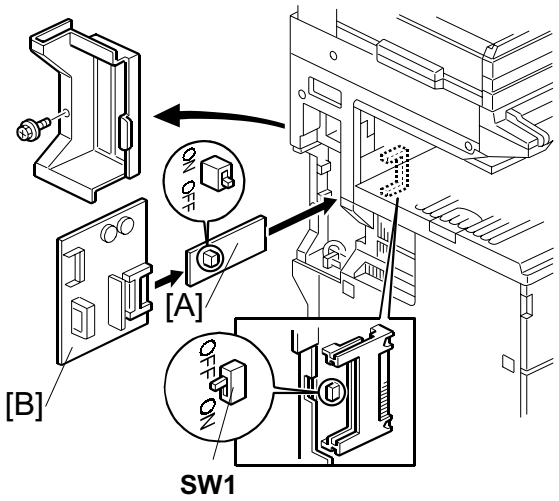
Before restoring the SRAM data, install a new FCU and initialize the SRAM on the new FCU using the following procedure.

1. Install a new FCU in the machine (see section 6.2.1)
   Do not put back the EXFUNC and EXMEM boards yet, if they were present.
2. Turn on the machine. The machine displays “SC1201”.
   NOTE: The machine always displays “SC1201” the first time a new FCU with no RAM data is installed. Please ignore it.
3. Press YES to initialize the SRAM.

Then, restore the SRAM using the following procedure.

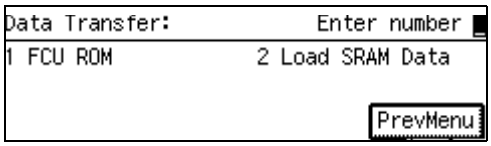
4. Turn off the machine.
5. Connect the data copy tool [A] with the old FCU [B] to the card slot as shown. See the note below for the switch settings.

   IMPORTANT: Support the old FCU by hand from now until the end of the download procedure

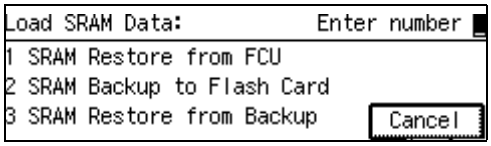


NOTE: 1) The switch on the data copy tool must be OFF.
2) SW1 below the card slot must be OFF.
3) Do not turn off the battery switch on the old FCU.

6. Turn on the machine, and enter the fax service mode.
7. Press [1] [6].

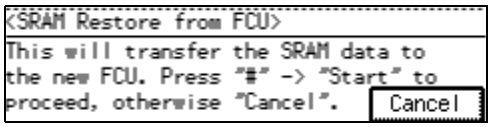


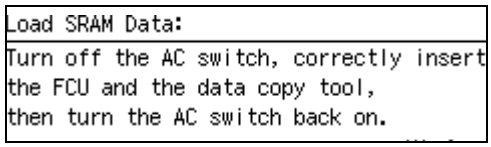
8. Press [2].



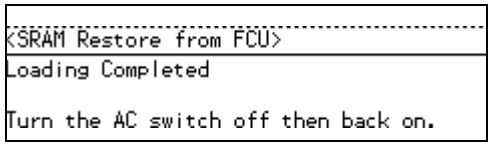
9. Press 1.
   If the switch settings are correct, the message on the right appears.
   Then go to the next step.

   If the switch setting is wrong, or if the tool is not connected correctly, the message on the right appears. Then turn off the machine and retry the procedure.





10. Press "#" then ⓐ.
    If data has been restored successfully, the message on the right appears.
11. Turn off the main power switch then disconnect the tools.



12. Install the EXFUNC and EXMEM boards if they were present.
13. Turn the machine back on.
14. Print the system parameter list to check if the previous settings have been successfully recovered.

6.2.3 SRAM DATA RESTORE FROM FLASH CARD BACKUP

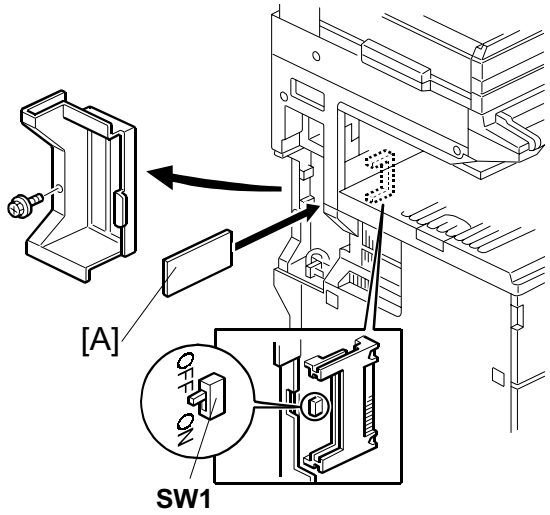
SRAM data can be copied to a flash memory card. For how to do this, refer to section 6.5.

Before restoring the SRAM data, install a new FCU and initialize the SRAM on the new FCU using the following procedure.

1. Install a new FCU in the machine (see section 6.2.1).
2. Turn on the machine. The machine displays "SC1201".
   NOTE: The machine always displays "SC1201" the first time the FCU is installed. Please ignore it.
3. Press YES to initialize the SRAM.

Then, restore the SRAM using the following procedure.

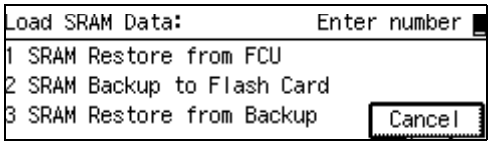
4. Turn off the machine.
   NOTE: If the EXFUNC board was present; make sure that a backup of both the EXFUNC and FCU SRAM data is available, then install the EXFUNC board.
   If the EXFUNC backup is not available, restore the data from the old FCU before installing the EXFUNC board on the new FCU.



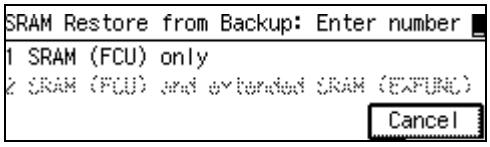
5. Connect the flash memory card [A] to the card slot as shown.
   See the note below for the switch settings.

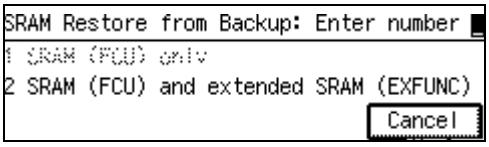
   NOTE: 1) SW1 below the card slot must be OFF.
   2) If the switch setting is wrong, the fax function will not start up.

6. Turn on the machine, and enter the fax service mode.
7. Press [1] [6] then [2].



8. Press [3].
   If the switch settings are correct, either of the messages below appears.

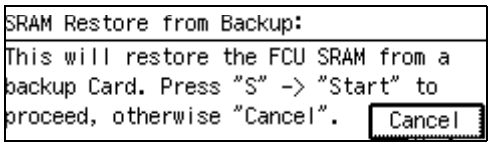




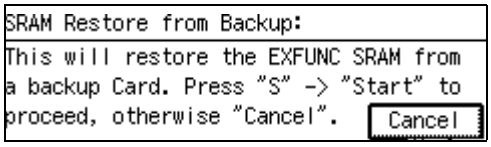
Refer to the table below for which type of backup must be used, depending on the presence of an EXFUNC board.

EXFUNC board	Type of backup	
	FCU SRAM	FCU and EXFUNC SRAM
Not present	OK	Do not use.
Present	Do not use.	OK

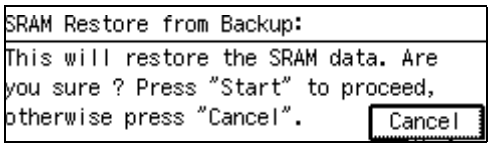
9. Press either of the following:
   1 – Standard SRAM only



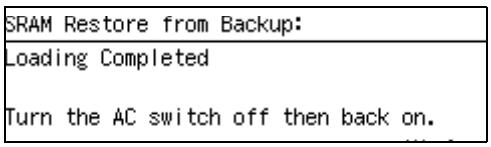
   2 – Standard SRAM and SRAM on the EXFUNC.



10. Press "S" then C; a confirmation message appears.



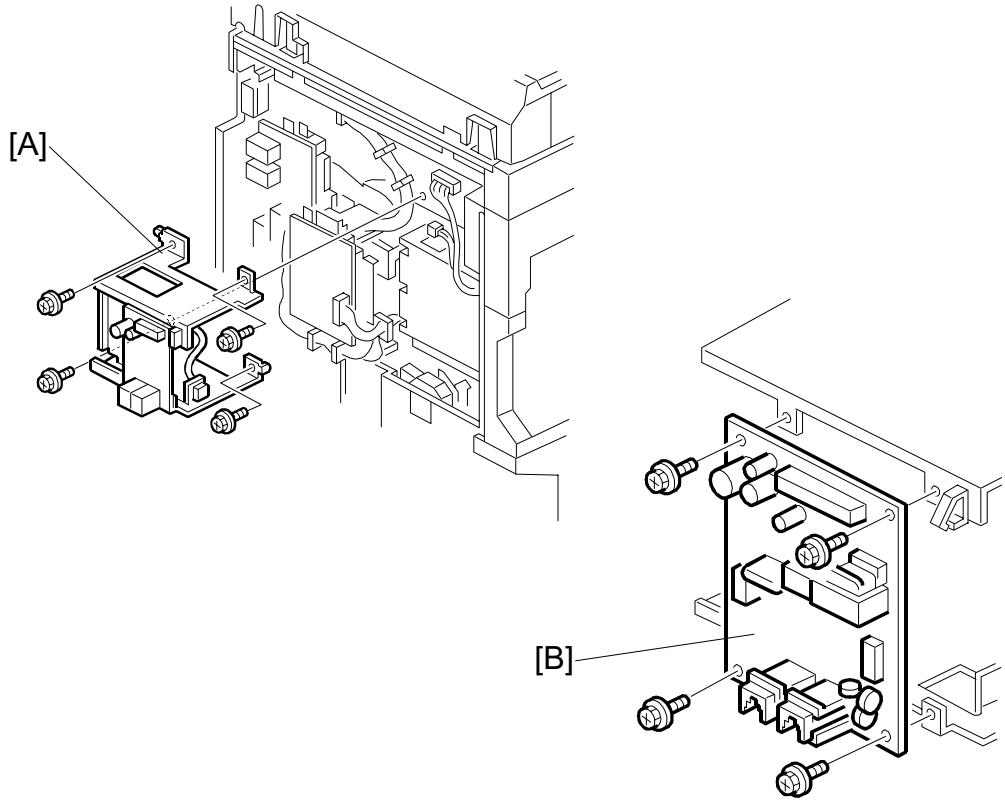
11. Press ◇ to restore the SRAM.
    If data has been restored successfully, the message on the right appears.



12. Turn off the main power switch then disconnect the card.
13. Turn the machine back on.
14. Print the system parameter list to check if the previous settings have been successfully recovered.

6.3 NCU

- If optional G4 or G3 interface kits are not installed -



1. Remove the rear cover.
2. Remove the FCU unit.
3. Remove the NCU assembly [A] (4 screws).
4. Remove the NCU [B] (4 screws) from the NCU assembly [A].

- When the optional G4 or G3 interface unit is also installed -

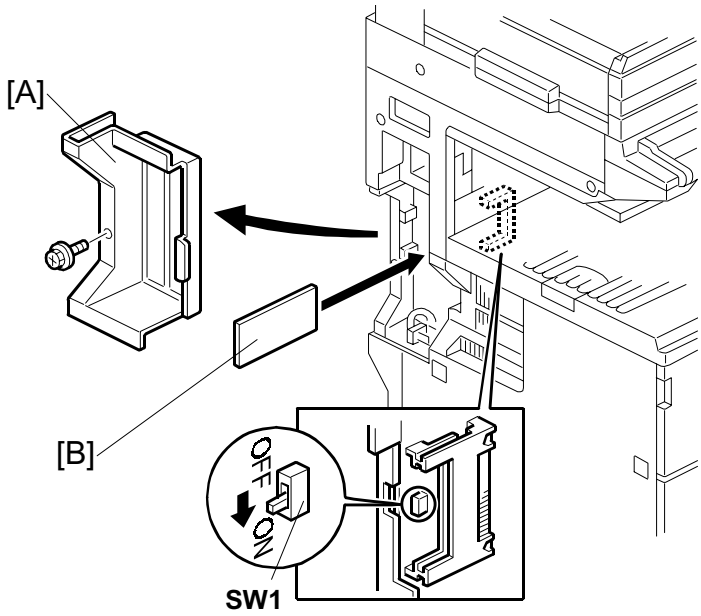
Refer to the FCU removal section.

6.4 ROM UPDATE

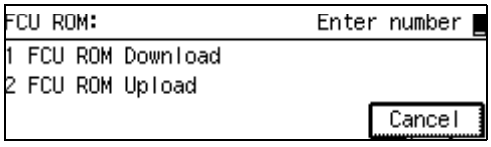
6.4.1 FCU ROM DOWNLOAD

This function updates the FCU firmware using a flash memory card.

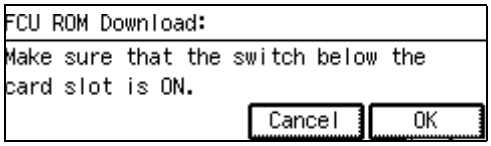
1. Turn off the machine and remove the cover [A].



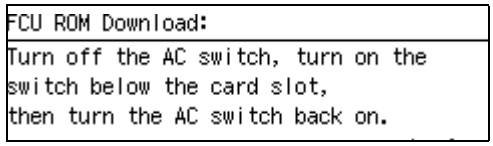
2. Connect the flash memory card [B] to the card slot as shown.
   NOTE: SW1 below the card slot must be **ON**.
3. Turn on the machine and enter the fax service mode.
4. Press 1 6 then 1.



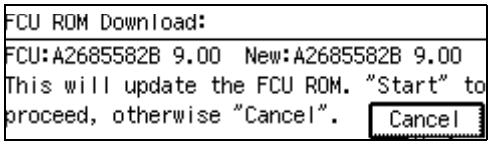
5. Press 1.
   If the switch setting is correct, the message on the right appears.
   Then press OK and go to the next step.



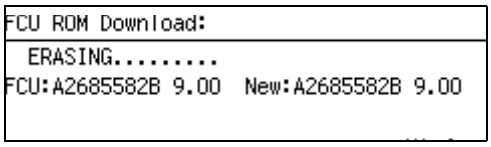
   If the switch setting is wrong, or if the tool is not connected correctly, the message on the right appears. Then turn off the machine and retry the procedure again.



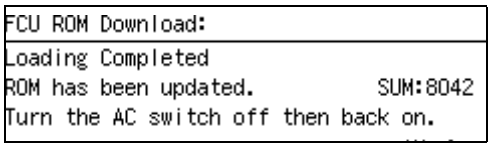
6. Press OK, then check the ROM version. If the card does not contain FCU ROM data, “Please check flash card” appears. Turn off the machine and retry the procedure with the correct card.



7. Press ⓞ.



After the machine updates the ROM data, the message on the right appears.



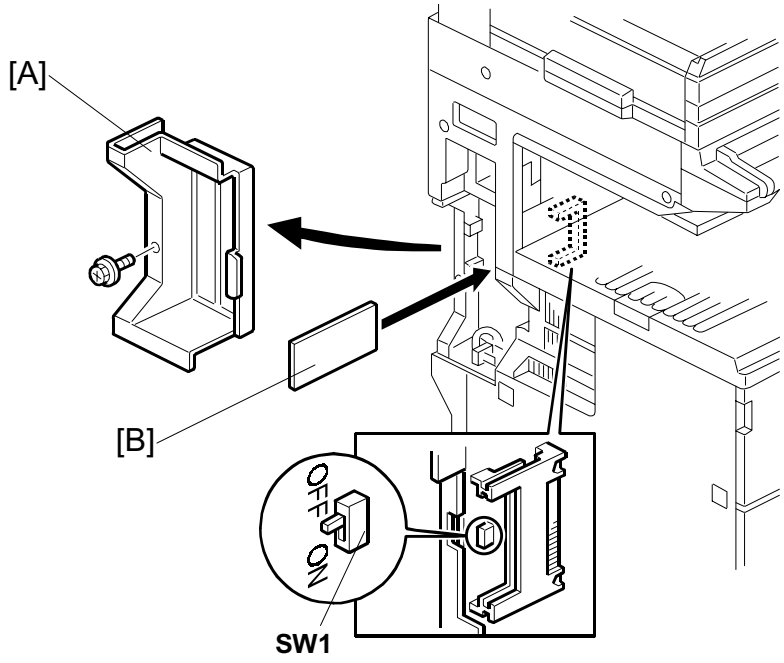
8. Turn off the main power switch then disconnect the flash memory card.
9. Turn SW1 off then turn the machine back on.
   NOTE: If SW1 is not turned off at this time, the machine cannot recognize the fax option.
10. Print the system parameter list to check if the new ROM version is printed.

6.4.2 FCU ROM UPLOAD

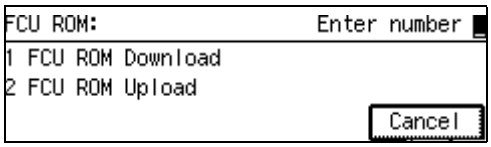
This function makes a copy of the FCU ROM inside the machine onto a flash memory card.

NOTE: This procedure erases the flash memory card completely before uploading ROM data.

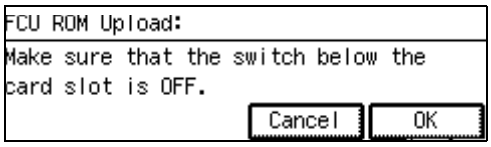
1. Turn off the machine and remove the cover [A].



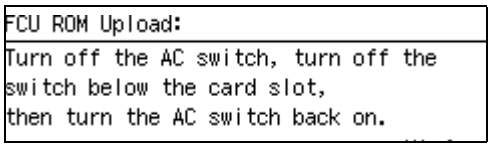
2. Connect the flash memory card [B] to the card slot as shown.
   NOTE: SW1 below the card slot must be **OFF**.
3. Turn on the machine and enter the fax service mode.
4. Press [1] [6] then [1].



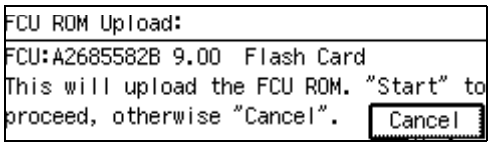
5. Press [2].
   If the switch setting is correct, the message on the right appears.
   Then press OK and go to the next step.



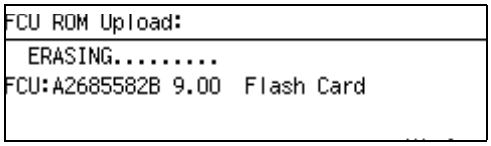
   If the switch setting is wrong, or if the tool is not connected correctly, the message on the right appears. Then turn off the machine and retry the procedure.



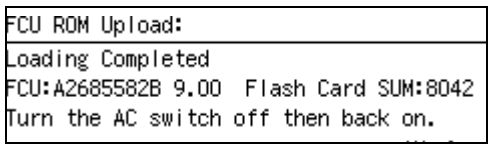
6. Press OK, then check the ROM version.



7. Press ⓐ.



   After the machine updates the ROM data, the message on the right appears.

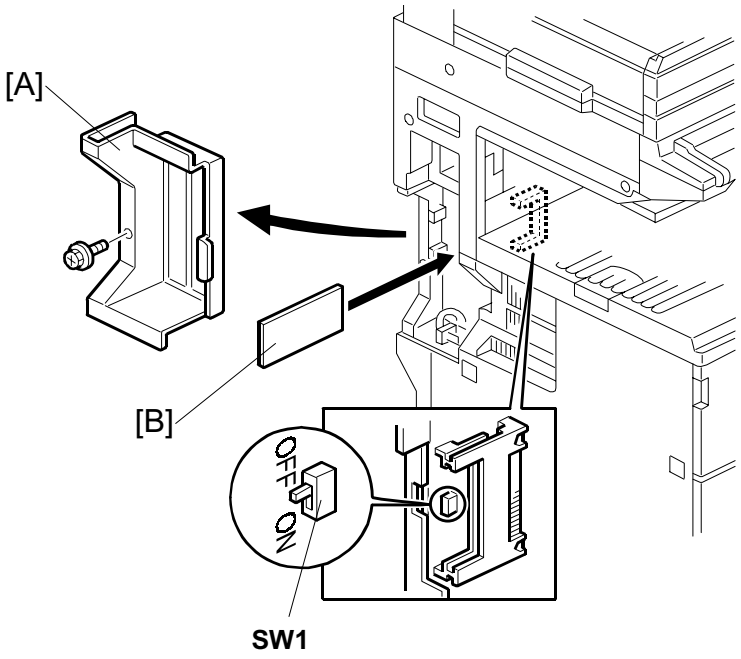


8. Turn off the main power switch then disconnect the flash memory card.
9. Turn the machine back on.

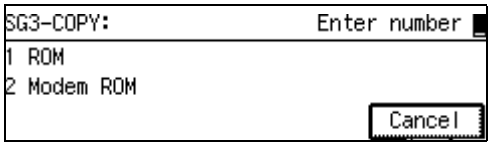
6.4.3 SG3 BOARD ROM DOWNLOAD

This function updates the SG3 board ROM using a flash memory card.

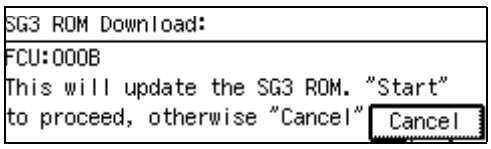
1. Turn off the machine and remove the cover [A] (1 screw).



2. Connect the flash memory card [B] to the card slot as shown.
   NOTE: SW1 below the card slot must be OFF.
3. Turn on the machine and enter the fax service mode.
4. Press 1 7 then 5.



5. Press 1. If the switch setting is correct, the message on the right appears. Then go to the next step.
6. Press ⓞ.

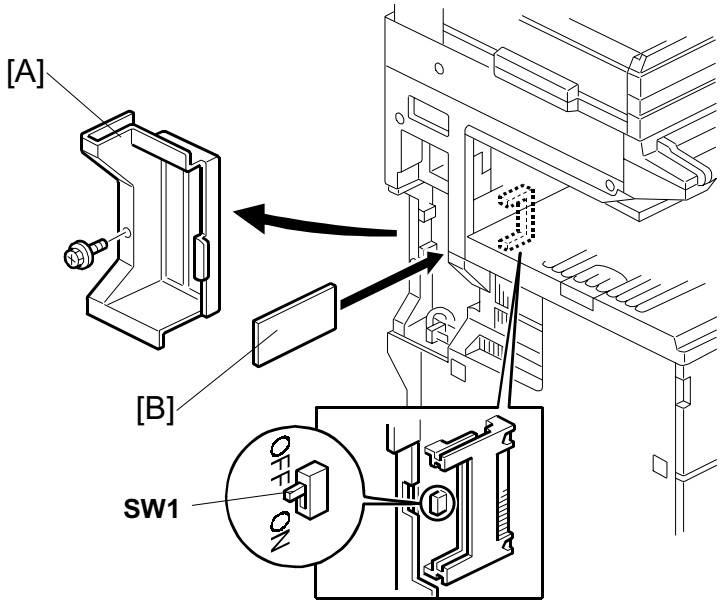


7. After the machine updates the ROM data, turn off the machine then disconnect the flash card.
8. Turn the machine back on.
9. Print the system parameter list to check if the new ROM version is printed.

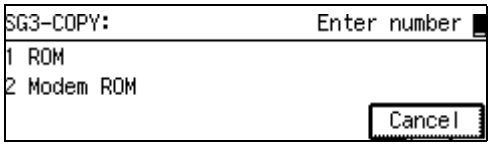
6.4.4 SG3 BOARD MODEM ROM DOWNLOAD

This function updates the SG3 board modem ROM using a flash memory card.

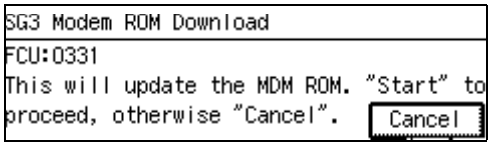
1. Turn off the machine and remove the cover [A] (1 screw).



2. Connect the flash memory card [B] to the card slot as shown.
   NOTE: SW1 below the card slot must be OFF.
3. Turn on the machine and enter the fax service mode.
4. Press [1] [7] then [5].



5. Press [2]. If the switch setting is correct, the message on the right appears. Then go to the next step.
6. Press ⓢ.



7. After the machine updates the SG3 modem ROM data, turn off the machine then disconnect the flash card.
8. Turn the machine back on.
9. Print the system parameter list to check if the new ROM version is printed.

6.5 SRAM DATA BACKUP AND RESTORE

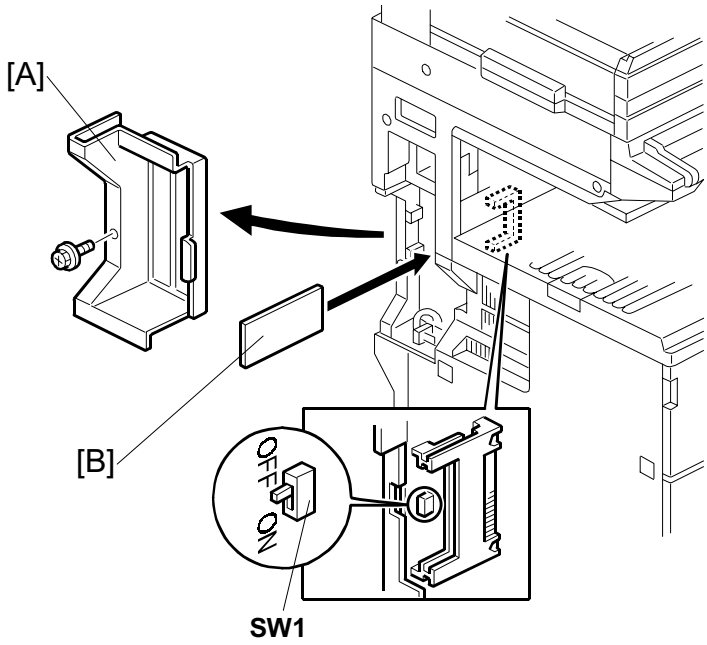
6.5.1 SRAM BACKUP TO A FLASH MEMORY CARD

This function makes a backup copy of all the fax SRAM data onto a flash memory card. If a computer-based PC card writer system is available, the backup can be saved as a computer file from the flash memory card.

If the EXFUNC board is not installed, this function makes a backup copy of the standard SRAM on the FCU.
If the EXFUNC board is installed, this function makes a backup copy of the standard SRAM and the SRAM on the optional EXFUNC board.

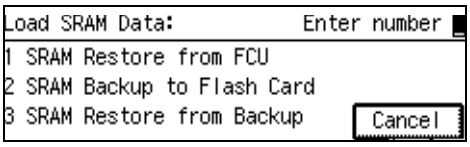
NOTE: This procedure erases the flash memory card completely before uploading SRAM data.

1. Turn off the machine and remove the cover [A].

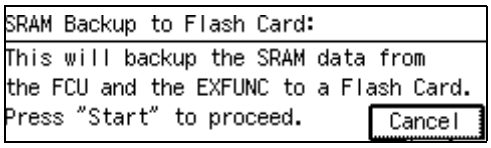


2. Connect the flash memory card [B] to the card slot as shown.
   NOTE: SW1 below the card slot must be **OFF**.
3. Turn on the machine and enter the fax service mode.

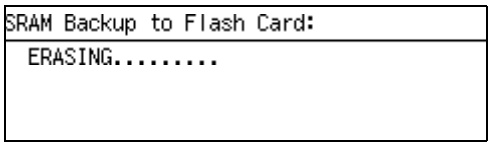
4. Press [1] [6] then [2].



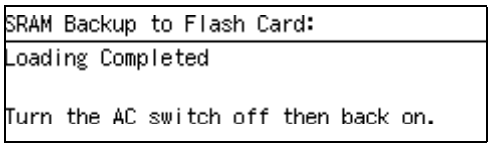
5. Press [2].



6. Press ⓐ.



After the machine backs up the data to the flash card, the message on the right appears.



7. Turn off the main power switch then disconnect the flash memory card.
8. Turn the machine back on

The data in the flash card can be copied to a PC for safe keeping. This data can then be uploaded from the PC to a flash memory card if the SRAM data has to be restored later.

Refer to the SwapFTL manual for details about how to copy files from flash card to PC and vice versa.

6.5.2 SRAM RESTORE FROM A FLASH MEMORY CARD

This function recovers SRAM data if the FCU is replaced or SRAM data was lost accidentally.

For how to restore the SRAM data from the backup on a flash memory card, refer to section 6.2.3.

7. TROUBLESHOOTING

7.1 ERROR CODES

If an error code occurs, retry the communication. If the same problem occurs, try to fix the problem as suggested below. Note that some error codes appear only in the error code display and on the service report.

Code	Meaning	Suggested Cause/Action
0-00	DIS/NSF not detected within 40 s of Start being pressed	• Check the line connection. • Check the NCU - FCU connectors. • The machine at the other end may be incompatible. • Replace the NCU or FCU. • Check for DIS/NSF with an oscilloscope. • 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. • 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. • Check the NCU - FCU connectors. • Try changing the tx level and/or cable equalizer settings. • Replace the FCU or NCU. • The other terminal may be faulty; try sending to another machine. • If the rx signal is weak or defective, there may be a bad line. **Cross reference** • Tx level - NCU Parameter 01 (PSTN) • Cable equalizer - G3 Switch 07 (PSTN) • Dedicated Tx parameters - Section 4
0-05	Unsuccessful after modem training at 2400 bps	• Check the line connection. • Check the NCU - FCU connectors. • Try adjusting the tx level and/or cable equalizer. • Replace the FCU or NCU. • Check for line problems. **Cross reference** • See error code 0-04.

Code	Meaning	Suggested Cause/Action
0-06	The other terminal did not reply to DCS	• Check the line connection. • Check the FCU - NCU connectors. • Try adjusting the tx level and/or cable equalizer settings. • Replace the NCU or FCU. • The other end may be defective or incompatible; try sending to another machine. • Check for line problems. **Cross reference** • See error code 0-04.
0-07	No post-message response from the other end after a page was sent	• Check the line connection. • Check the FCU - NCU connectors. • Replace the NCU or FCU. • The other end may have jammed or run out of paper. • The other end user may have disconnected the call. • Check for a bad line. • 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. • Check the FCU - NCU connectors. • Replace the NCU or FCU. • The other end may have jammed, or run out of paper or memory space. • Try adjusting the tx level and/or cable equalizer settings. • The other end may have a defective modem/NCU/FCU; try sending to another machine. • Check for line problems and noise. **Cross reference** • Tx level - NCU Parameter 01 (PSTN) • Cable equalizer - G3 Switch 07 (PSTN) • Dedicated Tx parameters - Section 4
0-14	Non-standard post message response code received	• Check the FCU - NCU connectors. • Incompatible or defective remote terminal; try sending to another machine. • Noisy line: resend. • Try adjusting the tx level and/or cable equalizer settings. • Replace the NCU or FCU. **Cross reference** • See error code 0-08.

Code	Meaning	Suggested Cause/Action
0-15	The other terminal is not capable of specific functions.	The other terminal is not capable of accepting the following functions, or the other terminal's memory is full. • Confidential rx • Transfer function • SEP/SUB/PWD/SID
0-16	CFR or FTT not detected after modem training in confidential or transfer mode	• Check the line connection. • Check the FCU - NCU connectors. • Replace the NCU or FCU. • Try adjusting the tx level and/or cable equalizer settings. • The other end may have disconnected, or it may be defective; try calling another machine. • If the rx signal level is too low, there may be a line problem. **Cross reference** • See error code 0-08.
0-17	Communication was interrupted by pressing the Stop key.	If the Stop key was not pressed and this error keeps occurring, replace the operation panel.
0-20	Facsimile data not received within 6 s of retraining	• Check the line connection. • Check the FCU - NCU connectors. • Replace the NCU or FCU. • Check for line problems. • Try calling another fax machine. • Try adjusting the reconstruction time for the first line and/or rx cable equalizer setting. **Cross reference** • Reconstruction time - G3 Switch 0A, bit 6 • Rx cable equalizer - G3 Switch 07 (PSTN)
0-21	EOL signal (end-of-line) from the other end not received within 5 s of the previous EOL signal	• Check the connections between the FCU, NCU, & line. • Check for line noise or other line problems. • Replace the NCU or FCU. • The remote machine may be defective or may have disconnected. **Cross reference** • Maximum interval between EOLs and between ECM frames - G3 Bit Switch 0A, bit 4

Code	Meaning	Suggested Cause/Action
0-22	The signal from the other end was interrupted for more than the acceptable modem carrier drop time (default: 200 ms)	• Check the line connection. • Check the FCU - NCU connectors. • Replace the NCU or FCU. • Defective remote terminal. • Check for line noise or other line problems. • Try adjusting the acceptable modem carrier drop time. **Cross reference** • Acceptable modem carrier drop time - G3 Switch 0A, bits 0 and 1
0-23	Too many errors during reception	• Check the line connection. • Check the FCU - NCU connectors. • Replace the NCU or FCU. • Defective remote terminal. • Check for line noise or other line problems. • Try asking the other end to adjust their tx level. • Try adjusting the rx cable equalizer setting and/or rx error criteria. **Cross reference** • Rx cable equalizer - G3 Switch 07 (PSTN) • Rx error criteria - Communication Switch 02, bits 0 and 1
0-30	The other terminal did not reply to NSS(A) in AI short protocol mode	• Check the line connection. • Check the FCU - NCU connectors. • Try adjusting the tx level and/or cable equalizer settings. • The other terminal may not be compatible. **Cross reference** • Dedicated tx parameters - Section 4
0-32	The other terminal sent a DCS, which contained functions that the receiving machine cannot handle.	• Check the protocol dump list. • 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.) • A polling tx file was not ready at the other terminal when polling rx was initiated from the calling terminal.
0-74	The calling terminal fell back to T.30 mode, because it could not detect ANSam after sending CI.	• The calling terminal could not detect ANSam due to noise, etc. • ANSam was too short to detect. • Check the line connection and condition. • Try making a call to another V.8/V.34 fax.

Code	Meaning	Suggested Cause/Action
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. • Check the line connection and condition. • 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. • Check the line connection and condition. • 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. • A network that has narrow bandwidth cannot pass JM to the other end. • Check the line connection and condition. • Try receiving a call from another V.8/V.34 fax.
0-79	The called terminal detected CI 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. If these errors happen at the transmitting terminal: • Try making a call at a later time. • Try using V.17 or a slower modem using dedicated tx parameters. • Try increasing the tx level. • Try adjusting the tx cable equalizer setting. If these errors happen at the receiving terminal: • Try adjusting the rx cable equalizer setting. • Try increasing the tx level. • Try using V.17 or a slower modem if the same error is frequent when receiving from multiple senders.
0-81	The line was disconnected due to a timeout in V.34 phase 3 – equalizer training.	
0-82	The line was disconnected due to a timeout in the V.34 phase 4 – control channel start-up.	
0-83	The line was disconnected due to a timeout in the V.34 control channel restart sequence.	
0-84	The line was disconnected due to abnormal signaling in V.34 phase 4 – control channel start-up.	• The signal did not stop within 10 s. • Turn off the machine, then turn it back on. • 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. • Turn off the machine, then turn it back on. • 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. • Ask the other party to contact the manufacturer.

Code	Meaning	Suggested Cause/Action
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. • 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. • 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. • Update the modem ROM. • Replace the FCU.
2-20	Abnormal coding/decoding (cpu not ready)	• Replace the FCU.
2-23	JBIG compression or reconstruction error	• Turn off the machine, then turn it back on. • Replace the EXFUNC board if the error is frequent.
2-24	JBIG ASIC error	• Turn off the machine, then turn it back on. • Replace the EXFUNC board if the error is frequent.
2-25	JBIG data reconstruction error (BIH error)	• JBIG data error • Check the sender's JBIG function. • Update the FCU ROM.
2-26	JBIG data reconstruction error (Float marker error)	
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.
2-51	The machine resets itself because of a fatal communication error	• If this is frequent, update the ROM, or replace the FCU.
3-00	G4 interface board reset	• Replace the G4 interface board or FCU.
3-10	Disconnection during ISDN G3 communication	• Check the other terminal and the ISDN line. • The other terminal may have dialed a wrong number.
3-11	Disconnection during ISDN G4 communication	• Check the other terminal and the ISDN line.
3-20	A CSA signal was received during ISDN G4 communication	• The operator at the other terminal may have interrupted the communication.

Code	Meaning	Suggested Cause/Action
3-21	A CSA signal was sent during ISDN G4 communication, because the Stop key was pressed	• The local operator has interrupted the communication.
3-30	Mismatched specifications (rx capability)	• Check the receive capabilities requested from the other terminal.
4-01	Line current was cut	• Check the line connector. • Check the connection between FCU and NCU. • Check for line problems. • Replace the FCU or the NCU.
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. • The machine at the other end may be defective.
5-00	Data construction not possible	• Replace the FCU.
5-01	Data reconstruction not possible	
5-10	DCR timer expired	
5-20	Storage impossible because of a lack of memory	• Temporary memory shortage. • Test the SAF memory. • Replace the FCU or optional EXMEM board
5-21	Memory overflow	
5-22	Mode table overflow after the second page of a scanned document	• Wait for the messages which are currently in the memory to be sent or delete some files from memory.
5-23	Print data error when printing a substitute rx or confidential rx message	• Test the SAF memory. • Ask the other end to resend the message. • Replace the FCU or optional EXMEM board.
5-24	Memory overflow after the second page of a scanned document	• Try using a lower resolution setting. • Wait for the messages which are currently in the memory to be sent or delete some files from memory.
5-25	SAF file access error	• Replace the FCU or EXMEM board.
6-00	G3 ECM - T1 time out during reception of facsimile data	• Try adjusting the rx cable equalizer. • Replace the FCU or NCU.
6-01	G3 ECM - no V.21 signal was received	
6-02	G3 ECM - EOR was received	

Code	Meaning	Suggested Cause/Action
6-04	G3 ECM - RTC not detected	• Check the line connection. • Check connections from the NCU to the FCU. • Check for a bad line or defective remote terminal. • Replace the FCU or NCU.
6-05	G3 ECM - facsimile data frame not received within 18 s of CFR, but there was no line fail	• Check the line connection. • Check connections from the NCU to the FCU. • Check for a bad line or defective remote terminal. • Replace the FCU or NCU. • Try adjusting the rx cable equalizer **Cross reference** • Rx cable equalizer - G3 Switch 07 (PSTN)
6-06	G3 ECM - coding/decoding error	• Defective FCU. • 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. • The other terminal may be defective.
6-09	G3 ECM - ERR received	• Check for a noisy line. • Adjust the tx levels of the communicating machines. • See code 6-05.
6-10	G3 ECM - error frames still received at the other end after all communication attempts at 2400 bps	• Check for line noise. • Adjust the tx level (use NCU parameter 01 or the dedicated tx parameter for that address). • Check the line connection. • 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. • If the same error occurs frequently, replace the FCU. • Defective remote terminal.
6-99	V.21 signal not stopped within 6 s	• Replace the FCU.

Code	Meaning	Suggested Cause/Action
9-40	CRC error during PC fax communication	• Check the serial interface and cable connection between the PC. • Replace the DIU (PCFE board) or FCU.
9-41	Third failure during PC fax communication	
9-42	DCN received unexpectedly during PC fax communication	
9-43	Frame received unexpectedly during PC fax communication	
9-44	Response time over during PC fax communication	
9-45	Frame transmission error during PC fax communication	
9-61	Memory overflow occurs during reception	Check the SAF.
22-00	Original length exceeded the maximum scan length	• Divide the original into more than one page. • Check the resolution used for scanning. Lower the scan resolution if possible. • Add optional page memory.
22-01	Memory overflow while receiving	• Wait for the files in the queue to be sent. • Delete unnecessary files from memory. • Transfer the substitute reception files to an another fax machine, if the machine's printer is busy or out of order. • 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. • Restart the machine.
22-04	The machine cannot store received data in the SAF	• Update the ROM • Replace the FCU.
23-00	Data read timeout during construction	• Restart the machine. • Replace the FCU
25-00	The machine software resets itself after a fatal transmission error occurred	• Update the ROM • Replace the FCU.
F0-xx	V.34 modem error	• Replace the FCU.
F6-8x	SG3-V34 modem error	• Update the SG3-V34 modem ROM. • Replace the SG3-V34 board. • Check for line noise or other line problems. • Try communicating another V.8/V.34 fax.

7.2 FAX SC CODES

7.2.1 OVERVIEW

When the FCU detects a Fax SC Code condition other than SC1201 and SC1207, it resets itself automatically (default setting). This initializes the FCU without erasing files in the SAF memory or resetting the switches.

NOTE: For details on Fax SC Codes 1201 and 1207, refer to the following sections.

If bit 7 of System Switch 1F is changed to “1”, when the FCU detects a Fax SC Code condition, it displays the code on the display and stops working until the fax unit is initialized using one of the following methods:

- Hold down the “#” and “*” keys for more than 10 s.
- Turn off the main power switch and turn it back on.
- Remove the rear cover, and press SW2 on the FCU.

The fax unit cannot make automatic service calls in reaction to a Fax SC Code, because the fax unit cannot make fax communications in fax SC code conditions.

7.2.2 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 SW1 on the FCU is at the “OFF” position
- SRAM on the FCU has a physical defect
- Flash memory card or data copy tool connection was loose

7.2.3 SC1207

This is the same as SC1201 except the error location is the SRAM on the EXFUNC board.

The possible causes are:

- SRAM backup battery defect, or SW1 on the EXFUNC board is at the “OFF” position.
- SRAM on the EXFUNC has a physical defect.
- The EXFUNC connection was loose.

7.2.4 FAX SC CODE TABLE

SC Code	Description	Suggested Action	Sys Switch 1F bit 7 = 0	Sys Switch 1F bit 7 = 1
1102	Handshake error with BiCU at start-up	Initialize the fax unit. (See section 7.2.1.for the initialization procedure)	Automatic reset	SC Code display
1111	Command TX/RX error to/from the BiCU			
1112	Base copier's engine was reset			
1120	Interface module error			
1201	Unrecoverable FCU - SRAM error	Refer to section 7.2.2.	SC Code display	
1207	Unrecoverable EXFUNC - SRAM error	Refer to section 7.2.3.	SC Code display	
1299	Software error	Turn off and on the main switch.	Automatic reset	
1301	Original size error	Check the scanner mechanism.		
1302	Scanner parameter error	Initialize the fax unit.		
1303	Software error	Initialize the fax unit.		
1304				
1305				
1306				
1308				
1313				
1314				
1316				
1318				
1323				
1324				
1326				
1328				
1334				
1338				
1401	Command timeout error - after scanning	Initialize the fax unit.		
1402	Software error	Initialize the fax unit.		
1403				
1404				
1405	Command timeout error - during storage	Check the connection for the FCU.		
1406	Command timeout error - original feed out	Initialize the fax unit.		
1410	Software error	Initialize the fax unit.		
1601				

7.3 ROM HISTORY

7.3.1 FAX CONTROLLER FIRMWARE HISTORY

A895 Fax Unit Firmware Modification History

Description Of Modification	Firmware Level	Serial Number	Software Version
This is first production version. When the received CSI have only space data, it is ignored by this version firmware. Line Error Marks on received page: A mark will be printed on the left edge of the page anywhere a line error has occurred in the data if the following bit is enabled. **System switch00 bit4** **0:** Disabled **1:** Enabled In order to ensure that the NSF/DIS signals (from the machine that is to receive the facsimile) will successfully be received by the sender, the transmission duration of these signals can now be extended as follows: **G3 switch0F** **Bit 3 Bit 2 Settings** 0 0 32 sec 0 1 40 sec 1 0 50 sec 1 1 60 sec	A2685582 **B**	1st Mass Production	10.03
Conditions for printing (Scan Router): It determines whether or not the machine will print out the incoming fax when a transmission is made to the Scan Router Professional Station. **User Parameter switch 31 bit2** **0:** Document not printed **1:** Document will be printed	A2685582 **C**	December 1999 Production	13.03
⇒ ICB-1 function is available. When the use of the PSTN-2 line is changed to Rx only, the setting of PSTN-2 cannot be changed. The machine displays the clock for 12:xx as 0:xx When over 20H is input for the Incoming signal detection level (RAM address 6804BD), the minimum signal strength decreases. * Maximum value for this address is 1FH.	A2685582 **D**	August 2000 Production	21.00

.. Continued

A895 Fax Unit Firmware Modification History			
Description Of Modification	**Firmware Level**	**Serial Number**	**Software Version**
⇒ Even though the following bit switch settings should disable the File Retention function, the machine retains files for 24 hours: User Parameter switch 24 (swusr_18): (bit1, bit0) = (1, 0) When using the Create Margin Transmission function and the rear side image needs to be rotated 180 degrees, the margin for the rear side is placed on the right (instead of the left). The ghost image may appear on the left of the page in JBIG direct transmission mode during the dual operation. (The page width data is rarely not received before making the page.)			

⇒ 7.3.2 G3 INTERFACE UNIT FIRMWARE HISTORY

G3 Interface Unit Firmware Modification History			
Description Of Modification	**Firmware Level**	**Serial Number**	**Software Version**
First production version.	A8955590 **-**	1ST Mass Production	0331
A communications error occurs when the modem data is erased by a Loader malfunction. The malfunction is caused by a buildup of static electricity. Note: Panasonic modem only. The Loader is a function normally contained in the modem software that allows it to be overwritten to a newer version. To prevent this error, the manufacturer has removed the Loader function from ROM version 0334. This function was removed also because the manufacturer does not intend to release any versions after 0334, as it has judged that the need will not arise in the field. As a result, customers who use an SG3 option with ver.0334 will need to replace the SG3 board by the service technician to update to the next version (if released).	A8955590 **A**	February 2000 Production	0334

⟹ 7.3.3 SG3 INTERFACE UNIT FIRMWARE HISTORY

SG3 Interface Unit Firmware Modification History			
Description Of Modification	**Firmware Level**	**Serial Number**	**Software Version**
First production version.	A8955580 **A**	1st Mass Production	16
When over 20H is input for the incoming signal detection level (RAM address 6805BD), the minimum signal strength decreases. The maximum value for this address is 1FH.	A8955580 **B**	April 2000 Production	18

ISDN UNIT

A895

TABLE OF CONTENTS

1. INSTALLATION 1-1
1.1 INSTALLATION PROCEDURE 1-1
1.2 USER LEVEL PROGRAMMING 1-4
1.3 SERVICE LEVEL PROGRAMMING 1-5

2. SERVICE TABLES AND PROCEDURES 2-1
2.1 SERVICE LEVEL FUNCTIONS 2-1
2.2 BIT SWITCHES 2-2
2.2.1 G4 INTERNAL SWITCHES 2-2
2.2.2 G4 PARAMETER SWITCHES 2-10
2.3 DEDICATED TRANSMISSION PARAMETERS 2-15

3. TROUBLESHOOTING 3-1
3.1 ERROR CODES 3-1
3.1.1 D-CHANNEL LAYER MANAGEMENT 3-2
3.1.2 D-CHANNEL, LAYER 1 3-2
3.1.3 D-CHANNEL LINK LAYER 3-2
3.1.4 D-CHANNEL NETWORK LAYER 3-3
3.1.5 B-CHANNEL LINK LAYER 3-3
3.1.6 B-CHANNEL NETWORK LAYER 3-4
3.1.7 TRANSPORT LAYER 3-4
3.1.8 SESSION LAYER 3-5
3.1.9 DOCUMENT LAYER 3-6
3.1.10 PRESENTATION LAYER 3-6
3.2 G4CCU STATUS CODES 3-7
3.2.1 LAYER 1 (PHYSICAL LAYER) 3-7
3.2.2 LAYER 2 (LINK LAYER) 3-7
3.2.3 NETWORK LAYER (LAYER 3) 3-8
3.2.4 TRANSPORT LAYER (LAYER 4) 3-8
3.2.5 SESSION LAYER, SESSION CONTROL LAYER (LAYER 5) 3-8
3.2.6 SESSION LAYER, DOCUMENT CONTROL LAYER (LAYER 5) 3-8
3.3 LEDS 3-9
3.4 BACK-TO-BACK TEST 3-10

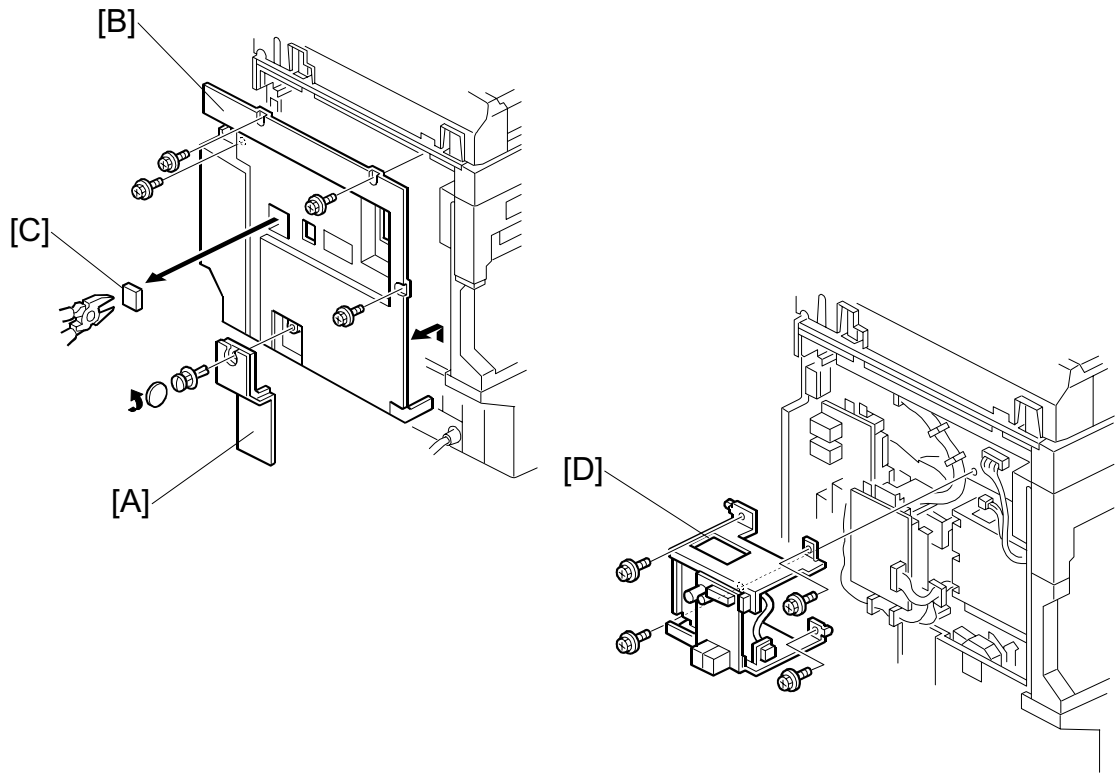
1. INSTALLATION

1.1 INSTALLATION PROCEDURE

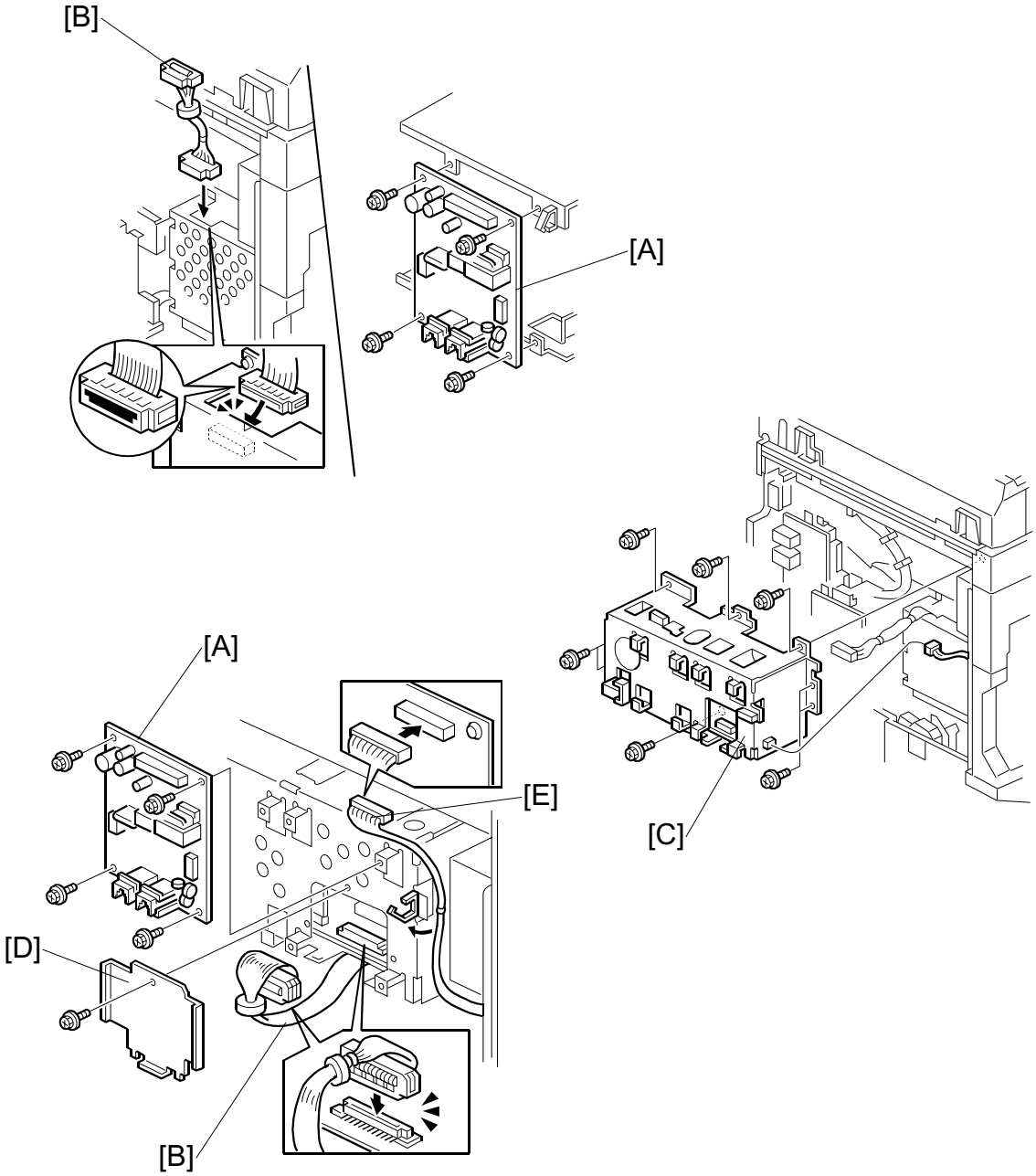
⚠CAUTION

Before installing this option, do the following:

1. **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 LAN cable.**



1. Remove the small cover [A] (1 rivet) and the rear cover [B] (4 screws). Then cut away the jack window [C].
2. Remove the NCU unit [D] (4 screws, 2 connectors)



3. Remove the NCU [A] from the NCU unit (4 screws). Connect the harness [B] to the FCU (CN604).
4. Attach the G4 unit [C] to the machine (6 screws, 1 connector).
5. Connect the harness [B] to the interface board and attach bracket [D] (1 screw). Then attach the NCU [A] (removed from the NCU unit in step 3) to the G4 unit (4 screws). After that, connect the harness [E] to the NCU [A], then clamp harness [E] as shown.

6. Replace the rear cover and the small cover.
7. Connect the cable to the ISDN jack, then plug in the machine and turn the main switch on.
8. Enter SP mode as follows:
   1) Press the “Clear Modes” key.
   2) Enter “107”
   3) Press the “Clear/Stop” key more than 3 seconds.



9. Enter “2” (select “Fax”).
10. Enter “01” (select “Bit Switches”).
11. Enter “4” (select “Communication Switch”).
12. Press the “↑ Switch” key several time and select “Switch 16”.
13. Press “2” to change bit 2 from 0 to 1.
14. Exit SP mode and turn the main switch off/on.

1.2 USER LEVEL PROGRAMMING

The following items can be programmed by the key operator. Make sure that the items are programmed correctly.

Item	ISDN		PSTN	Remarks
	G4	G3	G3	
Transfer report: G3 direct number			✔	Used for transfer request operations in G3 PSTN communications
Transfer report: G4 fax number	✔	✔		Used for transfer request operations in ISDN communications
G3-1 analog line: CSI			✔	Used to identify the terminal in G3 DIS/DCS communications over the PSTN1.
G3-2 analog line: CSI			✔	Used to identify the terminal in G3 DIS/DCS communications over the PSTN2.
G3 digital line: Own fax number1		✔		**When not using MSN* service:** Program the ISDN subscriber number here. If an another terminal is on the same bus from the DSU, identify the terminals using a sub-address. **When using MSN* service:** Program the dedicated ISDN number for the terminal as the 1st ISDN subscriber number. If the customer wishes the machine to answer calls to two different numbers, program the second number as the 2nd subscriber no.
G3 digital line: Own fax number2		✔		
G3 digital line: Sub-address		✔		Program a sub-address to identify the terminal, if two or more terminals answer the call to the same subscriber number for G3 fax.
G3 digital line: CSI		✔		Used to identify the terminal in G3 communications over an ISDN.
G4 digital line: Own fax number1	✔			**When not using MSN* service:** Program the ISDN subscriber number here. If an another terminal is on the same bus from the DSU, identify the terminals using a sub-address. **When using MSN* service:** Program the dedicated ISDN number for the terminal as the 1st ISDN subscriber number. If the customer wishes the machine to answer the calls to two different numbers, program the second number as the 2nd subscriber no.
G4 digital line: Own fax number2	✔			
G4 digital line: Sub-address	✔			Program a sub-address to identify the terminal, if two or more terminals answer the call to the same subscriber number for G4 fax.
G4 digital line: TID (Terminal ID)	✔			Used to identify the terminal in G4 communications.

Item	ISDN		PSTN	Remarks
	G4	G3	G3	
Polling ID	✔	✔	✔	Used for secured polling, transfer request operations, and closed network.
Confidential ID	✔	✔	✔	Used for confidential reception. Optional SAF memory required.
Memory Lock ID	✔	✔	✔	
RTI (PSTN1/PSTN2)		✔	✔	Used to identify the terminal in G3 NSF/NSS communications.
TTI (PSTN1/PSTN2)		✔	✔	Printed on each transmitted page in G3 communications.

* MSN = Multiple Subscriber Number; this is also referred to as “Direct Dialing In” in some countries. In this service, more than one number is allocated to one line (one line can have up to 8 units connected to it).

1.3 SERVICE LEVEL PROGRAMMING

Item	Function No.	Remarks
System switches	01 - 1	**System Switch 0A** - Network used for G3 transmission - Network used for G4-to-G3 fallback
Communication switches	01 - 4	**Communication Switch 07** - G4-to-G3 fallback On/Off - Reflect line type for G4-to-G3 fallback
G4 internal switches	01 - 6	Change the country code, and reset the machine first. Then change any of the locally required settings and/or the following. **Internal Switches 17, 18, 1A, 1B and 1C** - G4 to G3 automatic fallback parameters **Parameter Switch 01, bits 4 to 6** - Codec attenuation level
G4 parameter switches	01 - 7	

After changing any setting, make sure to turn off the machine, wait for 5 or more seconds, then turn it back on, so that the new settings take effect.

2. SERVICE TABLES AND PROCEDURES

2.1 SERVICE LEVEL FUNCTIONS

Refer to the Fax Unit service manual for how to operate the functions.
Enter SP mode as follows:

1) Press the “Clear Modes” key.
2) Enter “107”
3) Press the “Clear/Stop” key more than 3 seconds.

   ⊡ → ① → ⓪ → ⑦ → C/⊘

4) Enter “2” (select “Fax”).

Function Number	Description
01	Programming G4 Internal and Parameter Switches
02	Printing System Parameter List
05	G4 Protocol Dump Lists
06	G4 RAM read/write and printing G4 Memory Dump List
11	ISDN G3 CCU tests

2.2 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: After changing any of the switches below, turn off the machine, wait for 5 seconds or more, and turn it back on, so that the new settings take effect.

2.2.1 G4 INTERNAL SWITCHES

Bit Switch 00		
No.	**FUNCTION**	**COMMENTS**
0 to 7	Country code Bit 4 3 2 1 0 Country 0 0 0 0 0 France 0 0 0 0 1 Germany (1TR6 mode) 0 0 0 1 0 Universal (Europe Euro ISDN) 1 0 0 0 1 USA **Note:** In Germany, use the UK setting for the Euro ISDN lines.	

Bit switches 01 and 02 are not used.

Bit Switch 03		
No.	**FUNCTION**	**COMMENTS**
0	Amount of protocol dump data in one protocol dump list **0:** Last communication only **1:** Up to the limit of the memory area for protocol dumping	Change this bit to 0 if you want to have a protocol dump list of the last communication only. This bit is only effective for the dump list #2 (D + Bch1).
1-7	Not used	Do not change the factory settings.

Bit Switch 04		
No.	**FUNCTION**	**COMMENTS**
0-4	Not used	Do not change the factory settings.
5	RCBCTR **0:** Not valid **1:** Valid	This bit is used in Germany; set it to 1 for German PTT approval tests. **1:** RCBCTR counts consecutive R:RNR signals. If the counter reaches the value of N2, the link is disconnected.
6-7	Not used	Do not change the factory settings.

Bit Switch 05		
No.	**FUNCTION**	**COMMENTS**
0	Not used	Do not change the factory setting.
1	Logical channel number (LCN) **0:** Not controlled **1:** Fixed at 01	This bit is normally 0. However, some networks may require a fixed LCN. In such cases, this bit should be 1, and you may have to set a different value for the LCN using G4 Parameter Switch 0A.
2	Protocol ID check **0:** Yes **1:** No	The Protocol ID is in the CR packet.
3-7	Not used	Do not change the factory settings.

Bit Switch 06		
No.	**FUNCTION**	**COMMENTS**
0	Inclusion of the DTE address in the S:CR packet **0:** No **1:** Yes	When the CR packet format matches ISO8208 protocol, some networks may require this bit to be set at 1. This bit is only effective if bit 0 of G4 Parameter switch 06 is at 0.
1	Calling and called DTE addresses **0:** Not used **1:** Used	This is only for packet networks. The CR packet should contain the rx side's DTE address, but does not have to include the tx side's; it can include it as an option.
2-7	Not used	Do not change the factory settings.

Bit switches 07 and 08 are not used.

Bit Switch 09		
No.	**FUNCTION**	**COMMENTS**
0	Not used	Do not change the factory setting.
1	New session within the same call **0:** Not accepted **1:** Accepted	**0:** If a new R:CSS is received, the machine sends back S:RSSN. **1:** If a new R:CSS is received, the machine sends back S:RSSP. Set this bit to 1 for German PTT approval tests.
2-7	Not used	Do not change the factory settings.

Bit switches 0A to 0F are not used.

Bit Switch 10 (Dch. Layer 1)		
No.	**FUNCTION**	**COMMENTS**
0	Connection detector **0:** Disabled **1:** Enabled	In most countries (including Europe), this should be disabled.
1 **2**	Layer 1 T3 timer **Bit 2 1 Time** 0 0 5 s 0 1 29 s 1 0 10 s 1 1 Not used	This should be kept at 5 s (both bits at 0) for normal operation. However, you may have to change this during PTT approval tests.
3	Layer 1 T4 timer **0:** Not used **1:** Used	Set this bit to 1 for French PTT approval tests.
4-5	Not used	Do not change the factory settings.
6	INFO1 signal resend **0:** Resend **1:** No resend	**0:** If there is accidental noise in the INFO1 signal, some DSUs may not reply to the INFO1 signal with INFO2. Try changing this bit to 0, to resend INFO1 before the machine displays “CHECK INTERFACE”.
7	Loop back 4 mode **0:** Disabled **1:** Enabled	This is normally kept at 0. However, set it to 1 for British PTT approval tests.

Bit Switch 11 (Dch. Layer 2)		
No.	**FUNCTION**	**COMMENTS**
0	Not used	Do not change the factory setting.
1	Type of TEI used **0:** Dynamic TEI **1:** Static TEI	This is normally fixed at 0. However, some networks may require this bit to be set at 1 (see below). In this case, you may have to change the values of bits 2 to 7.
2 to 7	Static TEI value	Store the lowest bit of the TEI at bit 7 and the highest bit of the TEI at bit 2. **Example:** If the static TEI is 011000, set bits 3 and 4 to 1 and bits 2, 5, 6, and 7 to 0.

Bit Switch 12 (Dch. Layer 3)		
No.	**FUNCTION**	**COMMENTS**
0-7	Not used	Do not change the factory settings.

Bit Switch 13: D channel layer 3 (Attachment IE in S: SETUP)		
No.	**FUNCTION**	**COMMENTS**
0-1	Not used	Do not change the factory settings.
2	Attachment of calling ID **0:** No **1:** Yes	Normally, this bit should be at 0, because most networks add the calling ID to the SETUP signal to the receiver. However, some networks may require the machine to add this ID. Only in this case should this bit be at 1.
3	Attachment of the Lower Layer Capabilities **0:** No **1:** Yes	This bit determines whether Lower Layer Capabilities are informed in the [SETUP] signal. Keep this bit at 0 in most cases.
4	Attachment of the Higher Layer Capabilities **0:** Yes **1:** No	This bit determines whether Higher Layer Capabilities are informed in the [SETUP] signal. Keep this bit at 0 in most cases.
5	Attachment of channel information element (L3 CONN) **0:** No **1:** Yes	This is normally fixed at 0.
6	Attachment of the Higher Layer Capabilities for ISDN G3 **0:** Refer to bit 4 **1:** Not attached	This bit determines whether Higher Layer Capabilities are informed in the [SETUP] signal for ISDN G3 transmission. This switch is effective in coping with communication problems with some types of T/A and PBX which do not respond to Higher Layer Capability “G3.” When this bit is set to 0, the setting depends on the setting of bit 4.
7	Not used	Do not change the factory setting.

Bit Switch 14: D channel layer 3 (Selection IE in S: SETUP)		
No.	**FUNCTION**	**COMMENTS**
0	ISDN G3 information transfer capability **0:** 3.1 kHz audio **1:** Speech	In tx mode, this determines the information transfer capability informed in the [SETUP] message. In rx mode, this determines the information transfer capability that the machine can use to receive a call. Set this bit to 1 if the ISDN does not support 3.1 kHz audio. This bit is only used in the USA and the UK.
1-2	Not used	Do not change the factory settings.
3 **4**	Channel selection in [SETUP] in tx mode Bit 4 3 Setting 0 0 Any channel 0 1 B1 channel 1 0 B2 channel 1 1 Not used	**Any channel:** When this is informed to the exchanger, the exchanger will select either B1 or B2.
5	Called ID mapping **0:** Called party number **1:** Keypad facility	**0:** Called ID is mapped to the called party number. **1:** Called ID is mapped to the keypad facility.
6	Numbering plan for the called party number **0:** Unknown **1:** E.164	**E.164:** This may be used in Sweden if an AXE10 exchanger is fitted with old software, and in Australia. **Unknown:** This is the normal setting.
7	Subaddress coding type **0:** IA5 (NSAP) **1:** BCD (ISO8348)	This is normally kept at 0. However, some networks require this bit to be at 1.

Bit Switch 15: D channel layer 3 (Judgement R: MSG)		
No.	**FUNCTION**	**COMMENTS**
0	Action when receiving a [SETUP] signal containing no called subaddress, if the subaddress was included in the dialed number **0:** A reply is sent **1:** No reply is sent	This bit depends on user requirements. If it is at 1, communication will be halted if the other terminal has not input the subaddress.
1-4	Not used	Do not change the factory settings
5	Global call reference **0:** Ignored **1:** Global call number is used	Global call reference means 'call reference value = 0'. This bit determines how to deal with such an incoming call if received from the network. Keep this bit at 1 in Germany (1TR6), also in countries where the global call reference is used.
6-7	Not used	Do not change the factory settings.

Bit Switch 16: D channel layer 3 (Approval)		
No.	**FUNCTION**	**COMMENTS**
0 **1**	Answer delay time Bit 1 0 Setting 0 0 No delay 0 1 1.0 s delayed (1TR6) 1 0 0.5 s delayed 1 1 Not used	In Germany (1TR6), a time delay to answer a call is required. In other countries, use this switch as follows: If the machine is connected to the same bus from the DSU as a model K200, the machine receives most of the calls because the response time to a call is faster than the K200. If the customer wants the K200 to receive most of the calls, adjust the response time using these bits. If the customer does not want one machine to receive most of the calls, use subaddresses to identify each terminal.
2	Action when receiving [SETUP] signal containing user-specific called party subaddress **0:** Ignores the call **1:** Receives the call	Normally, the 3rd octet of called party subaddress information in the [SETUP] signal is set to NSAP. However, some networks may add “user-specific” subaddress to the [SETUP] signal (UK), and the result of this is that the machine won't answer the call if a subaddress is specified. So, change this bit to 1 to let the machine receive the call if the machine is connected to such a network.
3-4	Not used	Do not change the factory settings.
5	Indicated bearer capabilities **0:** 56 kbps **1:** 64 kbps	**1:** 64 kbps calling is indicated in the Bearer Capabilities, but communication is at 56 k. Use this bit if the machine is connected to a network which does not accept a 56 kbps data transfer rate as a bearer capability.
6	Not used	Do not change the factory setting.
7	Transfer capabilities (SI) informed in 1TR6 ISDN G3 transmission **0:** G3 Fax **1:** Analog	This bit determines whether transfer capabilities are informed in the Service Indicator for 1TR6 ISDN G3 transmission. This switch is effective in coping with communication problems with some types of T/A and PBXs.

Bit Switch 17: CPS Code Used for G4 to G3 Fallback - 1		
No.	**FUNCTION**	**COMMENTS**
0 to 6	Condition for fallback from G4 to G3 Bits 0 to 6 of bit switch 17 contain a CPS code, and bits 0 to 6 of bit switch 18 contain another CPS code. If a CPS code is received which is the same as either of these, communication will fall back from ISDN G4 mode to ISDN G3. The CPS codes must be the same as those specified in table 4-13 of ITU-T recommendation Q.931. Examples: Bit 6 5 4 3 2 1 0 1 0 0 0 0 0 1 CPS code 65 1 0 1 1 0 0 0 CPS code 88 For the codes in bits 0 to 6 to be recognized, bit 7 of bit switch 17 must be 1. Also, bit 0 of Communication Switch 07 must be at 0, or fallback from G4 to G3 will be disabled.
7	This bit determines whether fallback from G4 to G3 occurs on receipt of one of the CPS codes programmed in bit switches 17 or 18, or on receipt of a certain standard code. **0:** Fallback occurs on receipt of any of the following CPS codes: UK (EuroISDN mode) - #3, #18, #57, #58, # 63, # 65, #79, #88, and #127 Germany (1TR6 mode) - #3, #31, #53, #58, and #90 Others - #3, #65, and #88 **1:** Fallback from G4 to G3 occurs on receipt any of above CPS codes or one of the CPS codes programmed in bit switches 17, 18, 1A, 1B, or 1C.

Bit Switch 18: CPS Code Used for G4 to G3 Fallback - 2		
	FUNCTION	**COMMENTS**
0 to 6	Condition for fallback from G4 to G3 See the explanation for bits 0 to 6 of bit switch 17	
7	This bit determines the CPS code set for G4 to G3 fallback. **0:** Fallback occurs on receipt of the CPS codes specified by bit switch 17 bit 7. **1:** The CPS code set depends on bit switch 17, bit 7: If bit switch 17 bit 7 is 0, fallback occurs on receipt of the UK CPS code set (#3, #18, #57, #58, # 63, # 65, #79, #88, and #127) even if another country code is programmed. If bit switch 17 bit 7 is 1, fallback occurs on receipt of the UK CPS code set or one of the CPS codes programmed in bit switches 17, 18, 1A, 1B, or 1C.	

G4 to G3 fallback

Bit 0 of Communication Switch 07 must be at 0, or fallback from G4 to G3 will be disabled.

The CPS codes for which fallback occurs are decided as follows.

- G4 bit switch 17, bit 7 – If set to ‘0’, fallback occurs on receipt of a code from a set that depends on the country code (UK, Germany, or Others). If set to ‘1’, fallback occurs for the 5 CPS codes programmed in bits 0 to 6 of G4 bit switches 17, 18, 1A, 1B, and 1C, in addition to the country code set.
  Note that if G4 bit switch 18, bit 7 is set to ‘1’, the country code CPS code set that is used is always the UK set, regardless of the country code setting.

Bit Switch 19		
No.	**FUNCTION**	**COMMENTS**
0	Permanence of the link **0:** Set/released each LAPD call **1:** Permanent	This bit is normally 0, depending on network requirements.
1	Channel used in ISDN L2 (64k) mode **0:** B1 **1:** B2	When making an IDSN L2 back-to-back test, you can select either the B1 or B2 channel with this bit switch.
2	SPID procedure (L2) **0:** Disabled **1:** Enabled	This is normally fixed at 0.
3	G4 SPID procedure (L2) **0:** Disabled **1:** Enabled	This is normally fixed at 0.
4-7	Not used	Do not change the factory settings.

Bit Switch 1A: CPS Code Used for G4 to G3 Fallback - 3		
No.	**FUNCTION**	**COMMENTS**
0 to 6	Condition for fallback from G4 to G3 See the explanation for bits 0 to 6 of bit switch 17	
7	Not used.	Do not change the setting.

Bit Switch 1B: CPS Code Used for G4 to G3 Fallback - 4		
No.	**FUNCTION**	**COMMENTS**
0 to 6	Condition for fallback from G4 to G3 See the explanation for bits 0 to 6 of bit switch 17	
7	Not used.	Do not change the setting.

Bit Switch 1C: CPS Code Used for G4 to G3 Fallback - 5		
No.	**FUNCTION**	**COMMENTS**
0 to 6	Condition for fallback from G4 to G3 See the explanation for bits 0 to 6 of bit switch 17	
7	Not used.	Do not change the setting.

Bit switches 1D to 1F are not used. Do not change any of the factory settings.

2.2.2 G4 PARAMETER SWITCHES

Parameter Switch 00		
No.	**FUNCTION**	**COMMENTS**
0 **1** **2**	Network type Bit 2 1 0 Type x 0 0 Circuit switched ISDN Other settings: Not used	Do not change the default setting.
3-7	Not used	Do not change the default settings.

Parameter Switch 01		
No.	**FUNCTION**	**COMMENTS**
0	Voice coding **0:** μ law **1:** A law	**0:** This setting is used in Japan, Taiwan, and the USA. **1:** This setting is used in Europe and Asia.
1	Action when a [SETUP] signal without HLC is received **0:** Respond to the call **1:** Do not respond to the call	If there are several TEs on the same bus and the machine responds to calls for another TE, the call may be without HLC information. Identify the type of calling terminal and change this bit to 1 if the caller is not a fax machine.
2-3	Not used	Do not change the default settings.
4 **5** **6**	Signal attenuation level for G3 fax signals received from the ISDN line. If an analog signal comes over an digital line, the signal level after decoding by the TE is theorically the same as the level at the entrance to the digital line. However, this sometimes causes the received signal level to be too high at the received end. In this case, adjust the decoded signal's attenuation level using these switches. The values in the “Codec” column below show the attenuation level at the G4 interface board. The values in the “Modem” column show the actual attenuation level at the modem, because the signal is attenuated again on the FCU by -6dB. Bit 6 5 4 Codec Modem (Actual attenuation level) 0 0 0 -4.5dB -10.5dB 0 0 1 -2.5dB -8.5dB 0 1 0 -0.5dB -6.5dB 0 1 1 +1.5dB -4.5dB (default setting) 1 0 0 +3.5dB -2.5dB 1 0 1 +5.5dB -0.5dB 1 1 0 +7.5dB +1.5dB 1 1 1 +9.5dB +3.5dB	
7	Not used	Do not change the default setting.

Parameter Switch 02		
No.	**FUNCTION**	**COMMENTS**
0 **1**	Data rate (kbps) Bit 1 0 Setting 0 0 64 kbps 0 1 56 kbps	Other settings: Not used
2-3	Not used	Do not change the default settings.
4 **5**	Transmission mode Bit 5 4 Mode 0 0 CS	Other settings: Not used
6-7	Not used	Do not change the default settings.

Parameter Switch 03		
No.	**FUNCTION**	**COMMENTS**
0	Link modulus **0:** 8 **1:** 128	This setting determines whether protocol frame numbering is done using 3 bits (0 to 7 then start again at 0) or 7 bits (0 to 127 then start again at 0). Set this bit switch to match the network's specifications.
1-7	Not used	Do not change the default settings.

Parameter Switch 04 is not used. Do not change any of the default settings.

Parameter Switch 05		
No.	**FUNCTION**	**COMMENTS**
0 **1** **2** **3**	Link timer (D-channel layer 2 T1 timer) Bit 3 2 1 0 Value 0 0 0 0 0 s 0 0 0 1 1 s 0 0 1 0 2 s and so on until 0 0 1 0 10 s	The link timer is the maximum allowable time between sending a protocol frame and receiving a response frame from the remote terminal.
4-7	Not used	Do not change the default settings.

Parameter Switch 06		
No.	**FUNCTION**	**COMMENTS**
0	Layer 3 protocol **0:** ISO8208 **1:** T.70NULL	Set this bit to match the type of layer 3 signalling used by the ISDN. The dedicated parameters have the same setting for specific destinations.
1-3	Not used	Do not change the default settings.
4	Packet modulus **0:** 8 **1:** 128	Do not change the default setting, unless the machine is experiencing compatibility problems.
5-7	Not used	Do not change the default settings.

Parameter Switch 07		
No.	**FUNCTION**	**COMMENTS**
0 **1** **2** **3**	Packet size Bit 3 2 1 0 Value 0 1 1 1 128 1 0 0 0 256 1 0 0 1 512 1 0 1 0 1024 1 0 1 1 2048	This value is sent in the CR packet. This value must match the value stored in the other terminal, or communication will stop (CI will be returned). If the other end returns CI, check the value of the packet window size with the other party. Note that this value must be the same as the value programmed for the transport block size (G4 Parameter Switch B, bits 0 to 3). Normally, do not change the default setting.
4-7	Not used	Do not change the default settings.

Parameter Switch 08		
No.	**FUNCTION**	**COMMENTS**
0 **1** **2** **3**	Packet window size Bit 3 2 1 0 Value 0 0 0 1 1 0 0 1 0 2 and so on until 1 1 1 1 15	This is the maximum number of unacknowledged packets that the machine can send out before having to pause and wait for an acknowledgement from the other end. This should be kept at 7 normally. If the packet modulus (G4 Parameter Switch 6, bit 4) is 8, the packet window size cannot be more than 7. However, if the packet modulus is 128, the window size can be up to 15. Also, if the layer 3 protocol setting (G4 Parameter Switch 6, bit 0) is at IS8208, the packet window size cannot be more than 7.
4-7	Not used	Do not change the default settings.

Parameter Switch 09		
No.	**FUNCTION**	**COMMENTS**
0 **1** **2** **3**	LCGN Bit 3 2 1 0 Value 0 0 0 0 0 0 0 0 1 1 0 0 1 0 2 and so on until 1 1 1 1 15	Keep the value of the LCGN at 0.
4-7	Not used	Do not change the default settings.

Parameter Switch 0A		
No.	**FUNCTION**	**COMMENTS**
0 **1** **2** **3** **4** **5** **6** **7**	LCN Bit 7 6 5 4 3 2 1 0 Value 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 0 2 0 0 0 0 0 0 1 1 3 and so on until 1 1 1 1 1 1 1 1 255	Normally, keep at the value of the LCN at 1.

Parameter Switch 0B		
No.	**FUNCTION**	**COMMENTS**
0 **1** **2** **3**	Transport block size Bit 3 2 1 0 Value 0 1 1 1 128 1 0 0 0 256 1 0 0 1 512 1 0 1 0 1024 1 0 1 1 2048	This value must match the value set in the other terminal. Note that this value must be the same as the value programmed for the packet size (G4 Parameter Switch 7, bits 0 to 3). Also, the transport block size is limited by the amount of memory in the remote terminal.
4-7	Not used	Do not change the default settings.

Parameter Switch 0C is not used. Do not change any of the default settings.

Parameter Switch 0D		
No.	**FUNCTION**	**COMMENTS**
0 **1**	Back-to-back test mode Bit 1 0 Setting 0 0 Off 0 1 Not used 1 0 ISDN L2 test mode (TE mode) 1 1 ISDN L2 test mode (NT mode)	When doing a back-to-back test or doing a demonstration without a line simulator, use these bits to set up one of the machines in TE mode, and the other in NT mode. After the test, return both bits to 0. See "Back-to-back Testing" in the Troubleshooting section for full details.
2-7	Not used	Do not change the default settings.

Parameter Switch 0E		
No.	**FUNCTION**	**COMMENTS**
0	Troubleshooting mode - real time status codes display **0:** Off **1:** On	If this is switched on, the status codes will be displayed in the lower two lines of the LCD. Change this bit back to 0 after testing.
1	Saving frames to the protocol dump list **0:** Off **1:** On	Keep this bit at 1 normally.
2-7	Not used	Do not change the default settings.

2.3 DEDICATED TRANSMISSION PARAMETERS

The following G4 communication parameter bytes have been added for each Quick Dial and Speed Dial. For how to program Dedicated Transmission Parameters, refer to the Service Manual for the base fax unit.

Switches 01 to 04 are for use with Group 3 communication and are explained in the Service Manual for the base fax unit. Switches 5, 6, and 10 are not used.

Switch 07	
No.	**FUNCTION**
0	Data rate Bit 3 2 1 0 Setting
1	0 0 0 0 64 kbps
2	0 0 0 1 56 kbps
3	1 1 1 1 As in Parameter Switch 2, bits 0 and 1
	Other settings: Not used
4-7	Not used

Switch 08	
No.	**FUNCTION**
0	Link modulus Bit 3 2 1 0 Setting
1	0 0 0 0 Modulo 8
2	0 0 0 1 Modulo 128
3	1 1 1 1 As in Parameter Switch 3, bit 0
	Other settings: Not used
4-7	Not used

Switch 09	
No.	**FUNCTION**
0	Layer 3 protocol Bit 3 2 1 0 Setting
1	0 0 0 0 IS8208
2	0 0 0 1 T.70 NULL
3	1 1 1 1 As in Parameter Switch 6, bit 0
	Other settings: Not used
4	Packet modulus Bit 7 6 5 4 Setting
5	0 0 0 0 Modulo 8
6	0 0 0 1 Modulo 128
7	1 1 1 1 As in Parameter Switch 6, bit 4
	Other settings: Not used

3. TROUBLESHOOTING

3.1 ERROR CODES

The tables on the following pages show the error codes that will be printed on the Service Monitor Report. See the service manual for the base fax unit for instructions on how to print this report.

The meaning of the numbers in the Action column is as follows.

1. Check Layer 1 signaling with a protocol analyzer to determine the cause of the problem. This may require assistance from a G4 specialist.
2. Repeat the communication. If the problem does not repeat itself, the problem was a temporary one caused by the user connecting the machine to another interface. However, if the problem remains, there is a network problem.
3. There is a network problem.
4. There is a network problem. Do the following:
   - Check the error bit rate of the network. If it is high, contact the network and ask them to improve the line.
   - Check the network speed (is it 56 or 64 kbps), and make sure that the bit switch setting is correct. You may also use the dedicated transmission parameters if this problem only occurs when dialing certain numbers.
   - Check that the user dialed the correct number.
5. There is a network problem, or a problem in the machine at the other end.
6. There is a problem in the machine at the other end; ask a technician to check it.
7. The machine at the other end is not a Group 4 fax terminal.
8. The machine is not compatible with the machine at the other end. A compatibility test is needed.

Error codes related to the errors detected by the FCU are listed in the service manual for the main fax unit.

3.1.1 D-CHANNEL LAYER MANAGEMENT

Code	Probable Cause	Action
7-00	Link reset	2
7-01	Link set-up failed because of a time-out	2
7-02	Link release failed because of a time-out	2
7-03	Link set-up parameter error	2

3.1.2 D-CHANNEL, LAYER 1

Code	Probable Cause	Action
7-10	T3 timeout (layer 1 activation error)	1
7-11	No connection on the S0 interface	1
7-12	Deactivated	1

3.1.3 D-CHANNEL LINK LAYER

Code	Probable Cause	Action
7-20	At the start of link set-up, the machine received an unsolicited S (F=1)	2
7-21	At the start of link set-up, the machine received an unsolicited DM (F=1)	2
7-22	At TEI release, the machine received an unsolicited UA (F=1)	2
7-23	At the start of link set-up, the machine received an unsolicited DM (F=0)	2
7-24	At TEI release, the machine received an unsolicited UA (F=0)	2
7-25	SABME received at the start of network link set-up	No error
7-26	N200 retransmission error for SABME	2
7-27	N200 retransmission error for DISC	2
7-28	N200 retransmission error for situation enquiry (RR)	2
7-29	N(R) sequence number error	3
7-30	N(S) sequence number error	3
7-31	FRMR received	3
7-32	Non-standard frame received	3
7-33	Abnormal frame length	3
7-34	N201 error; information field N in the I frame exceeded N201	3
7-35	T201 timeout; timeout while waiting for checking	3
7-36	T202 timeout; timeout while waiting for ID assignment	3

3.1.4 D-CHANNEL NETWORK LAYER

Code	Probable Cause	Action
7-40	Insufficient mandatory information elements	3
7-41	Abnormal LI for a mandatory information element	3
7-42	T301 timeout; timeout while waiting for R:CONN	3
7-43	T303 timeout; timeout while waiting for R:CALL-PROC etc.	3
7-44	T304 timeout; timeout while waiting for R:CALL-PROC etc.	3
7-45	T305 timeout; timeout while waiting for R:REL	3
7-46	T308 timeout; timeout while waiting for R:REL-COMP	3
7-47	T310 timeout; timeout while waiting for R:ALERT etc.	3
7-48	T313 timeout; timeout while waiting for R:CONN-ACK	3
7-49	Internal error	3
7-51	Release call reference during communication	3

3.1.5 B-CHANNEL LINK LAYER

Code	Probable Cause	Action
7-60	T3 timeout; timeout while waiting for flag	4
7-61	T3 timeout; timeout while waiting for SABM during an incoming call	4
7-62	T1 timeout x N2; timeout while waiting for UA after sending SABM	5
7-63	T1 timeout x N2; timeout while waiting for a response to a transmitted S frame (P=1)	5
7-64	T1 timeout x N2; timeout while waiting for SABM or DISC after sending FRMR	5
7-65	T1 timeout x N2; timeout while waiting for a response to DISC	5
7-66	RNR x N2 (other end busy, RCB counter error)	5
7-67	Invalid (Ad) frame received	5
7-68	Invalid short frame received	5
7-69	Link reset error	5
7-70	FRMR received	5
7-71	Non-standard (Cn) frame received	5
7-72	An S or U frame having an information field was received	5
7-73	A frame longer than the maximum N1 length was received	5
7-74	An S or I frame having an N(R) error was received	5
7-75	CRC error	3

3.1.6 B-CHANNEL NETWORK LAYER

Code	Probable Cause	Action
7-80	A packet having an abnormal GFI was received	6
7-81	A packet was received that had a logical channel number different from the logical channel being used for the communication	6
7-82	A packet containing a format error was received	6
7-83	A packet containing an LI error was received	7
7-84	A CN packet was received that had a PID different from 02	7
7-85	Unsupported packet type received	7
7-86	Abnormal or unsupported facility received	7
7-87	P(s) sequence number error	6
7-88	P(r) sequence number error	6
7-89	A reset using S:RQ or R:RI occurred	6
7-90	A restart using S:RQ or R:SI occurred	6
7-91	Call set-up error; in reply to S:CR, R:CI was received to indicate rejection of the call	7
7-92	T20 timeout; timeout while waiting for an SF packet	6
7-93	T21 timeout; timeout while waiting for a CC packet	6
7-94	T22 timeout; timeout while waiting for an RF packet	6
7-95	T23 timeout; timeout while waiting for a CF packet	6
7-96	T10 timeout; timeout while waiting for the first frame	6

3.1.7 TRANSPORT LAYER

Code	Probable Cause	Action
8-00	Invalid block received	8
8-01	TCC block received	8
8-02	TBR block received	8
8-05	TCR block; block format error	8
8-06	TCR block; block size parameter LI error	8
8-07	TCR block; extended addressing LI error	8
8-08	TCR block; block size length error	8
8-10	TCA block; block format error	8
8-11	TCA block; Tx origin reference data in TCR disagreed with the address reference data in TCA	8
8-12	TCA block; octet 7 did not equal 0	8
8-13	TCA block; extended addressing LI error	8
8-14	TCA block; block size exceeded that set by TCR	8
8-15	TCA block; block size parameter LI error	8
8-20	TDT block; block format error	8
8-21	TDT block; octet 3 did not equal either 00 or 80(H)	8
8-22	TDT block; the end indicator was “Continue” even though there was no field data	8

Code	Probable Cause	Action
8-23	TDT block; an end block with no field data was received after an end indicator of “End”	8
8-26	Timeout during state 0.2	8
8-27	Timeout during state 1.1	8
8-28	Timeout during state 0.3	8

3.1.8 SESSION LAYER

Code	Probable Cause	Action
8-30	Invalid frame received	8
8-31	RSSN received	8
8-32	CSA received	8
8-34	Calling terminal identification error in CSS	8
8-35	Date and time error in CSS	8
8-36	Window size error in CSS	8
8-37	Service identification error in CSS	8
8-38	Session user data error in CSS	8
8-39	CSS rejected (new session rejected)	8
8-40	Called terminal identification error in RSSP	8
8-41	Date and time error in RSSP	8
8-42	Date and time in RSSP was not the same as that in CSS	8
8-43	Window size error in RSSP	8
8-44	Service identification error in RSSP	8
8-45	<%2>Session user data error in <%0>RSSP	8
8-47	Message synchronization error inside the CCU	8
8-48	Document task busy	8
8-50	Ti timeout; non-communication surveillance timer (T.62)	8
8-51	T2 timeout; timeout while waiting for a response (T.62)	8
8-52	T3 timeout; CSA timer timeout (T.62)	8
8-53	G4 board load timer timeout; calling side waited too long for a new session	8
8-54	G4 board load timer timeout; calling side waited too long for transport probability	8
8-55	G4 board load timer timeout; called side waited too long for S:RSSP	8
8-56	G4 board load timer timeout; document transmission surveillance timer timeout	8
8-57	G4 board load timer timeout; timeout while waiting for a user abort request after a provider fail	8

3.1.9 DOCUMENT LAYER

Code	Probable Cause	Action
8-60	T.62 coding format error (LI error)	8
8-61	A mandatory PI was absent, or the LI for a mandatory PI was 0	8
8-62	Calling/called terminal identification LI was different from that specified by F.184 (LI = 24)	8
8-63	The LI for session user data exceeded the maximum value (512)	8
8-64	The LI for CDUI was not 0	8
8-65	Checkpoint and document reference numbers LI error, or they were not in T.61 (ASCII) coding	8
8-66	The checkpoint reference number differed from the expected value	8
8-70	RDGR received	8
8-71	A non-standard PDU was received while in calling mode	8
8-72	A non-standard PDU was received while in called mode	8
8-73	Abnormal PDU received while in calling state ds1	8
8-74	15 consecutive CDCL signals received	8
8-75	Session window size control error (size not equal to 0)	8
8-76	Internal error	8

3.1.10 PRESENTATION LAYER

Code	Probable Cause	Action
8-80	X.209 coding error in session user data (LI error)	8
8-81	PV error in session user data	8
8-82	PI error in session user data	8
8-83	The capabilities in the session user data of CDS/CDC were not the same as those in RDCLP	8
8-84	X.209 coding error in the DP (LI error)	8
8-85	X.209 coding error in the SLD (document descriptor/page descriptor) (LI error)	8
8-86	SLD object type absent	8
8-87	PI error in the SLD (document descriptor/page descriptor)	8
8-88	The capabilities in the SLD (document descriptor/page descriptor) are duplicated or are not the same as those in RDCLP	8
8-89	No document descriptor at the start of the document	8
8-90	No page descriptor at the start of the page	8
8-91	Page descriptor PV error	8
8-92	X.209 coding error in the TU (LI error)	8
8-93	The TU was absent	8
8-94	PV error in the TU	8
8-95	TI error	8
8-96	X.209 coding nest level >> 8, or an LI form error	8
8-97	CDPB/CDE received while TU/TI not yet completed, or an unexpected PDU was received while analyzing an SLD	8

3.2 G4CCU STATUS CODES

The display of G4CCU status codes is affected by the Real Time Display On/off setting (G4 Parameter Switch E, bit 0).

- If Real Time Display is off (the bit is 0; this is the default setting), there is no indication on the operation panel.
- If Real Time Display is on (the bit is 1), the codes are fully displayed on the operation panel.

The codes are defined in the following pages.

3.2.1 LAYER 1 (PHYSICAL LAYER)

Code (H)	Status	Code (H)	Status
10	Ready	E0	R: [DISC]
01	S: [SETUP]	E1	S: [REL]
02	R: [CALL_PROC]	E3	R: [REL_COMP]
03	R: [CONN]	E4	R: [STAT]
04	S: [CONN_ACK]	E5	R: [STAT_ENQ]
05	R: [SETUP ACK]	F0	S: [DISC]
06	R: [ALERT]	F1	R: [REL]
11	R: [SETUP]	F2	S: [REL_COMP]
12	S: [CALL_PROC]	F3	S: [STAT]
13	S: [CONN]		
14	R: [CONN_ACK]		

3.2.2 LAYER 2 (LINK LAYER)

Code (H)	Status	Code (H)	Status
20	S: SABM, or R: SABM	D0	S: DISC, or R: DISC
21	S: UA, or R: UA	D1	S: DM, or R: DM
22	S: FRMR, or R: FRMR		
28	S: SABME, or R: SABME		

3.2.3 NETWORK LAYER (LAYER 3)

Code (H)	Status	Code (H)	Status
30	S: CR	C2	S: SQ
31	R: CC	C3	R: SF
38	R: CN	CA	R: SI
39	S: CA	CB	S: SF
32	S: GF	C4	S: RQ
3A	R: GQ	C5	R: RF
3B	R: GF	CC	R: RI
C0	S: CQ	CD	S: RF
C1	R: CF	C6	R: IT
C8	R: CI	C7	R: IF
C9	S: CF	CE	R: DIAG

3.2.4 TRANSPORT LAYER (LAYER 4)

Code (H)	Status	Code (H)	Status
40	S: TCR, or R: TCR	42	S: TBR, or R: TBR
41	S: TCA, or R: TCA	43	S: TCC or R: TCC

3.2.5 SESSION LAYER, SESSION CONTROL LAYER (LAYER 5)

Code (H)	Status	Code (H)	Status
50	S: CSS, or R: CSS	56	S: RSUI, or R: RSUI
51	S: RSSP, or R: RSSP	A0	S: CSA, or R: CSA
52	S: RSSN, or R: RSSN	A1	S: RSAP, or R: RSAP
53	S: CSCC, or R: CSCC	A2	S: CSE, or R: CSE
54	S: RSCCP, or R: RSCCP	A3	S: RSEP, or R: RSEP

3.2.6 SESSION LAYER, DOCUMENT CONTROL LAYER (LAYER 5)

Code (H)	Status	Code (H)	Status
60	S: CDCL, or R: CDCL	90	S: CDE, or R: CDE
61	S: RDCLP, or R: RDCLP	91	S: RDEP, or R: RDEP
62	S: CDS, or R: CDS	92	S: CDD, or R: CDD
63	S: CDC, or R: CDC	93	S: RDDP, or R: RDDP
64	S: CDPB, or R: CDPB	94	S: CDR, or R: CDR
65	S: RDPBP, or R: RDPBP	95	S: RDRP, or R: RDRP
70	S: CDUI, or R: CDUI (Data phase - layer 6 and facsimile data)	96	S: RDGR, or R: RDGR
		97	S: RDPBN, or R: RDPBN

3.3 LEDS

There are six LEDs on the G4 Interface board, as shown below.

		LED 5	LED 6
LED 1	LED 2	LED 3	LED 4

These LEDs give the following information about the status of the machine.

Initial Settings O=ON, --=OFF

Power-up/Reset			O	O
	--	--	--	--
Initial setting request from FCU			--	O
	--	--	--	--
Initial setting confirmation to FCU			--	--
	--	--	--	--

Communication

Layer 1 activated			--	--
	O	--	--	--
Layer 2 set			--	--
	O	O	--	--
B channel connected (ISDN G4)			--	--
	O	O	O	--
B channel connected (ISDN G3)			--	--
	O	O	--	O
B channel released			--	--
	O	O	--	--
Layer 2 released			--	--
	O	--	--	--
Layer 1 deactivated			--	--
	--	--	--	--

The following will be displayed if bit 1 of G4 parameter switch E is at 1.

B channel: send I frame (A blinks at this time if bit 1 of G4 parameter switch E is at 1)			--	A
	O	O	O	--
B channel: receive I frame (B blinks at this time if bit 1 of G4 parameter switch E is at 1)			B	--
	O	O	O	--

Note: At the start and end of communication, both A and B will blink.

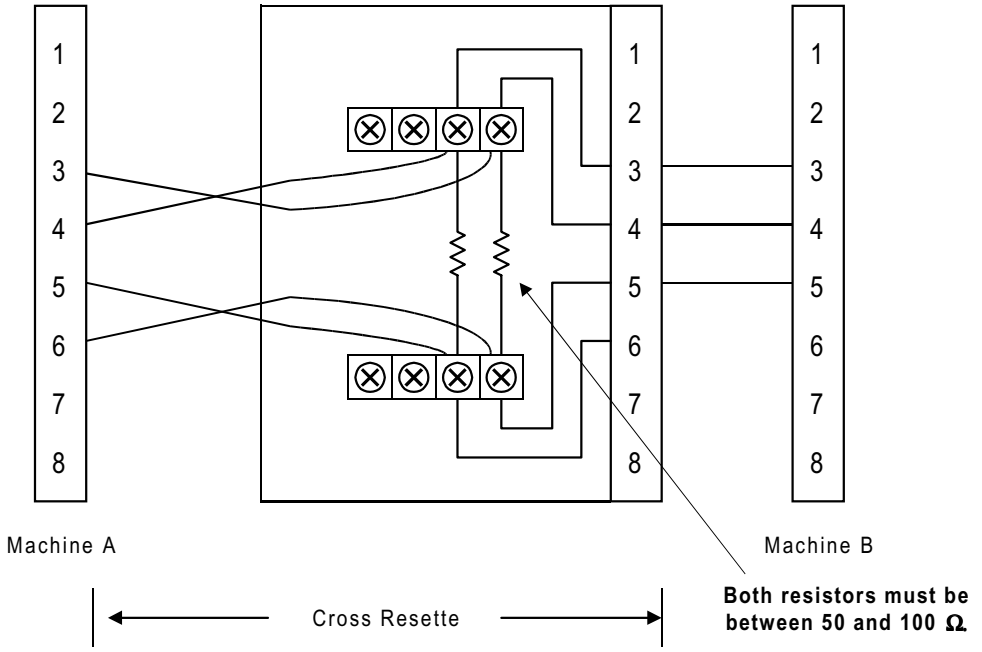
3.4 BACK-TO-BACK TEST

To make a back-to-back test, you need:

- Two machines (both of them must have a CiG4 board)
- Cross rosette

The procedure is as follows.

1. Switch off the machines
2. Connect two machines back-to-back using the cross rosette as follows.



3. Make the following bit switch adjustments:
   - In the machine acting in NT mode, set bits 0 and 1 of G4 parameter switch 0D to 1.
   - In the machine acting in TE mode, set bit 0 of G4 parameter switch 0D to 0 and bit 1 to 1.
4. Reset the machines by switching them off, waiting a few seconds, then switching back on.
5. Place a document in one of the machines, dial a number, then press Start.
6. After you have finished the test, set bits 0 and 1 of G4 parameter switch 0D back to 0, then reset the machine.

NOTE: The following cannot be tested using this procedure:

- ISDN G3 communication
- P to M

PRINTER CONTROLLER

B306

TABLE OF CONTENTS

1. OVERALL MACHINE INFORMATION 1-1
1.1 SPECIFICATIONS 1-1
1.1.1 GENERAL SPECIFICATIONS 1-1
1.1.2 SUPPORTED PAPER SIZES 1-2
1.2 SOFTWARE ACCESSORIES 1-3
1.2.1 PRINTER DRIVERS 1-3
1.2.2 UTILITY SOFTWARE 1-3
1.2.3 SERVICE TOOLS 1-3
1.3 MACHINE LAYOUT 1-4
1.4 BLOCK DIAGRAM 1-5

2. DETAILED SECTION DESCRIPTIONS 2-1
2.1 IMAGE DATA PROCESSING 2-1
2.2 ENGINE FUNCTIONS 2-1
2.2.1 PRINT PRIORITY AND INTERLEAVING 2-1
Display Priority 2-1
Copier, Fax or Printer 2-1
Interleave 2-2
2.3 CONTROLLER FUNCTIONS 2-3
2.3.1 PAPER SIZE/TYPE DETECTION AND SELECTION 2-3
2.3.2 PAPER SOURCE SELECTION 2-3
Auto Tray Select 2-3
Manual Tray Select 2-4
Tray Lock 2-4
By-pass Tray 2-4
Paper Size Mismatch 2-5
2.3.3 OUTPUT TRAY SELECTION 2-5
2.3.4 COLLATION (SORT) 2-6
2.3.5 DUPLEX PRINTING 2-7
2.3.6 STAPLING 2-7
2.3.7 PROOF PRINT 2-8
2.3.8 RESET OPERATIONS 2-9
Job Reset 2-9
System Reset 2-9
Menu Reset 2-9
2.3.9 HDD (OPTIONAL) 2-9

3. INSTALLATION PROCEDURES 3-1
3.1 PRINTER CONTROLLER 3-1
3.2 HARD DISK (HDD) 3-5
3.3 NETWORK INTERFACE BOARD (NIB) 3-7
3.4 POSTSCRIPT DIMM 3-9
3.5 MEMORY (SDRAM DIMM) 3-11

4. SERVICE TABLES 4-1
4.1 PRECAUTION 4-1
4.2 SERVICE PROGRAM MODE OVERVIEW 4-1
4.2.1 HOW TO ENTER THE SP MODE 4-1
Entering Printer SP mode 4-1
Exiting SP mode 4-1
4.1.2 SP MODE TABLE 4-1
SERVICE MENU 4-1
SERVICE TOOLS 4-2
4.3 SERVICE MENU 4-2
4.3.1 BIT SWITCH PROGRAMMING 4-2
BIT SWITCHES 4-2
4.3.2 NVRAM RESET 4-3
DIAG. ERROR LOG AND PAPER TRAY SETTINGS RESET 4-3
CONTROLLER NVRAM RESET 4-3
NIB NVRAM RESET 4-3
COUNTER RESET 4-4
4.1.3 POWER-ON DIAGNOSTICS ERROR DISPLAY 4-4
4.1.4 SERVICE SUMMARY 4-4
4.4 SERVICE TOOLS 4-6
4.4.1 HDD TEST 4-6
4.4.2 HDD FORMAT 4-7
4.5 FIRMWARE UPDATE 4-9
4.5.1 FIRMWARE DOWNLOAD (CONTROLLER, NIB AND PS3) 4-9
4.1.2 ERROR RECOVERY 4-11
CONTROLLER 4-11
PS3 DIMM / NIB 4-11
4.6 POWER-ON SELF TEST 4-12
4.6.1 PARALLEL LOOP-BACK TEST 4-12
4.6.2 OTHER TESTS 4-12

5. REMOVAL AND REPLACEMENT 5-1
5.1 PRECAUTIONS 5-1
5.2 CONTROLLER 5-1
5.3 NIB 5-2

6. TROUBLESHOOTING 6-1
6.1 SC CODES 6-1
6.2 ERROR CODES 6-1
6.3 LED DISPLAY 6-2
6.3.1 LOCATION 6-2
6.3.2 FATAL ERRORS 6-3
6.4 FIRMWARE HISTORY 6-5
6.4.1 B306 FIRMWARE MODIFICATION HISTORY 6-5

1. OVERALL MACHINE INFORMATION

1.1 SPECIFICATIONS

1.1.1 GENERAL SPECIFICATIONS

Print Speed (Max.)	A265: 22 ppm, / A267: 27 ppm (600 dpi, A4 sideways)
Printer Languages	PCL 6 and PCL 5e PostScript Level 3 (optional) Note: PostScript Level 3 is referred to as “PS3” in this manual.
Print Resolution	PCL 6 – 600 dpi PCL 5e – 300/600 dpi PS3 (optional) – 300/600 dpi
Memory (SDRAM)	16 MB (standard) 80 MB (maximum) Note: There is 1 slot for a 32 or 64 MB SDRAM DIMM.
Memory (Hard Disk)	1.6 GB (optional) Note: The HDD is used for print data spooling, proof print, font storage, and macro (form) storage.
Resident Fonts	PCL: 45 outline fonts and 1 bitmap font PS3 (optional): 136 fonts (24 Type 2 fonts and 112 Type 14 fonts)
Host Interfaces	IEEE1284/ECP parallel interface x 1 (standard) Ethernet 10BaseT/100BaseTX network interface x 1 (optional) Note: Refer to the NIB service manual for details.
Other Interfaces	ROM DIMM interface x 1 (for optional PS3) SDRAM DIMM interface x 1 (for optional memory) PC Card interface x 1 (for upgrading firmware)

1.1.2 SUPPORTED PAPER SIZES

Paper	Size (W x L)	Trays			LCT	Duplex	By-pass/ Tray 2
		NA	EU	Asia			
Ledger	11 x 17"	Y	Y#	Y#	N	Y	Y#
Legal	8.5 x 14"	Y	Y#	Y#	N	Y	Y#
Letter SEF	8.5 x 11"	Y	Y	Y	N	Y	Y#
Letter LEF	11 x 8.5"	Y	Y	Y	Y	Y	Y#
Half Letter SEF	5.5 x 8.5"	Y#	Y#	Y#	N	N	Y#
Half Letter LEF	8.5 x 5.5”	N	N	N	N	N	N
Executive SEF	7.25 x 10.5"	Y#	Y#	Y#	N	Y#	Y#
Executive LEF	10.5 x 7.25"	Y#	Y#	Y#	N	Y#	Y#
A3	297 x 420 mm	Y#	Y	Y	N	Y	Y#
B4	257 x 364 mm	Y#	Y#	Y#	N	Y#	Y#
A4 SEF	210 x 297 mm	Y#	Y	Y	N	Y	Y#
A4 LEF	297 x 210 mm	Y	Y	Y	Y	Y	Y#
B5 SEF	182 x 257 mm	Y#	Y#	Y#	N	Y#	Y#
B5 LEF	257 x 182 mm	Y#	Y#	Y#	N	Y#	Y#
A5 SEF	148 x 210 mm	Y#	Y	Y	N	Y#	Y#
A5 LEF	210 x 148 mm	N	N	N	N	N	Y#
A6 SEF	105 x 148 mm	N	N	N	N	N	Y#
Folio	8.25 x 13"	Y#	Y#	Y#	N	Y#	Y#
Foolscap	8.5 x 13"	Y	Y	Y	N	Y#	Y#
F	8 x 13"	Y#	Y#	Y#	N	Y#	Y#
Com10 Env	4.125 x 9.5"	N	N	N	N	N	Y#
Monarch Env	3.875 x 7.5"	N	N	N	N	N	Y#
C6 Env	114 x 162 mm	N	N	N	N	N	Y#
C5 Env	162 x 229 mm	N	N	N	N	N	Y#
DL Env	110 x 220 mm	N	N	N	N	N	Y#
8K	267 x 390 mm	Y#	Y#	Y#	N	N	Y#
16K SEF	195 x 267 mm	Y#	Y#	Y#	N	N	Y#
16K LEF	267 x 195 mm	Y#	Y#	Y#	N	N	Y#
Custom	Minimum 90 x 148 mm Maximum 297 x 432 mm	N	N	N	N	N	YC

Keys:

Y	Supported. The paper size sensor detects this paper size.
Y#	Supported. The user has to select the correct paper size for the tray.
YC	Supported. The user has to enter the width and length of the paper.
N	Not supported.

NA: North America version, EU: Europe version

1.2 SOFTWARE ACCESSORIES

The printer drivers and utility software are provided on one CD-ROM. An auto-run installer allows you to select which components to install. The service tools are not provided on the CD-ROM.

1.2.1 PRINTER DRIVERS

Printer Language	Windows 3.1x	Windows 95/98	Windows NT4.0	Macintosh
PCL 6	Yes	Yes	Yes	No
PCL 5e	Yes	Yes	Yes	No
PS3	Yes	Yes	Yes	Yes

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 Adobe PS drivers. A PPD file for each operating system is provided with the driver.
3) The PS3 drivers for Macintosh support Mac OS 7.1 or later versions.
4) The PS3 drivers for Windows 3.1x and Windows NT4.0 do not support the “Proof Print” function.

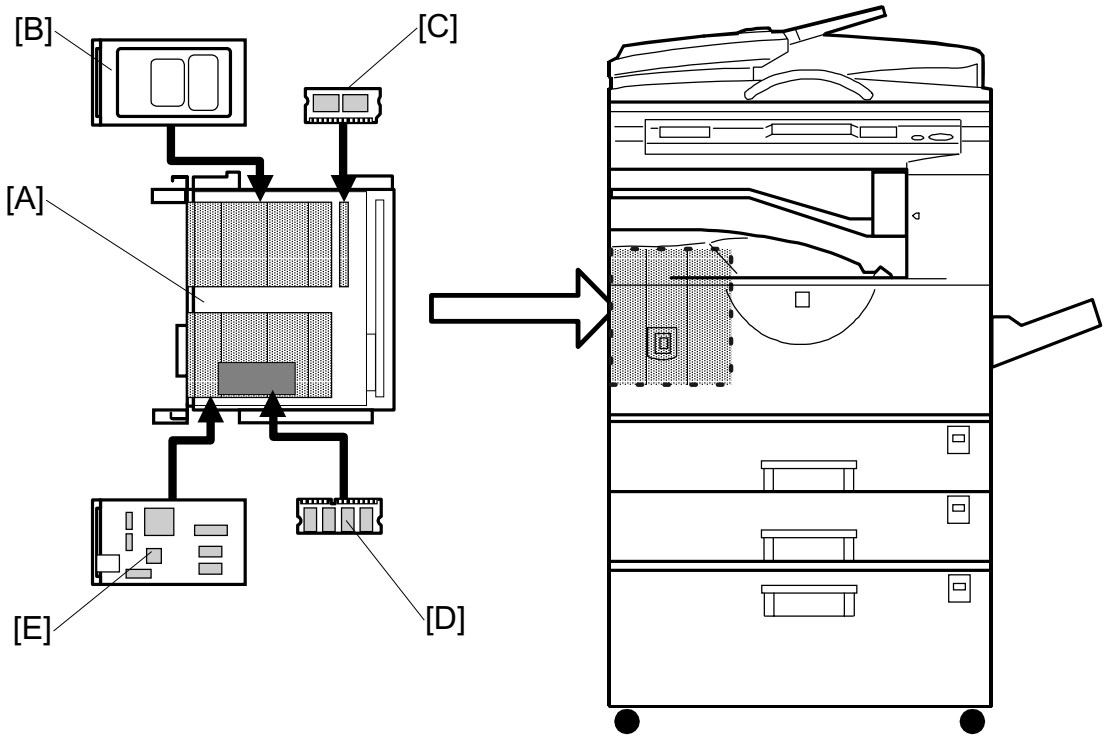
1.2.2 UTILITY SOFTWARE

Software	Description
Afga Font Manager (Win3.1x, 95/98, NT4)	A font management utility with screen fonts for the printer.
Aficio Manager for Admin (Win 95/98, NT4)	A printer management utility for network administrators. NIB setup utilities are also available.
Aficio Manager for Client (Win95/98, NT4)	A printer management utility for client users.
Multi-Direct Print (Win95/98, NT4)	A utility for peer-to-peer printing over a NetBEUI or TCP/IP network.
Port Navi (Win95/98, NT4)	A peer-to-peer print utility over a TCP/IP network. This provides parallel printing and recovery printing functions. Parallel printing: Divides a print job over more than one printer Recovery printing: Allows another printer to print the job when the selected printer is not available

1.2.3 SERVICE TOOLS

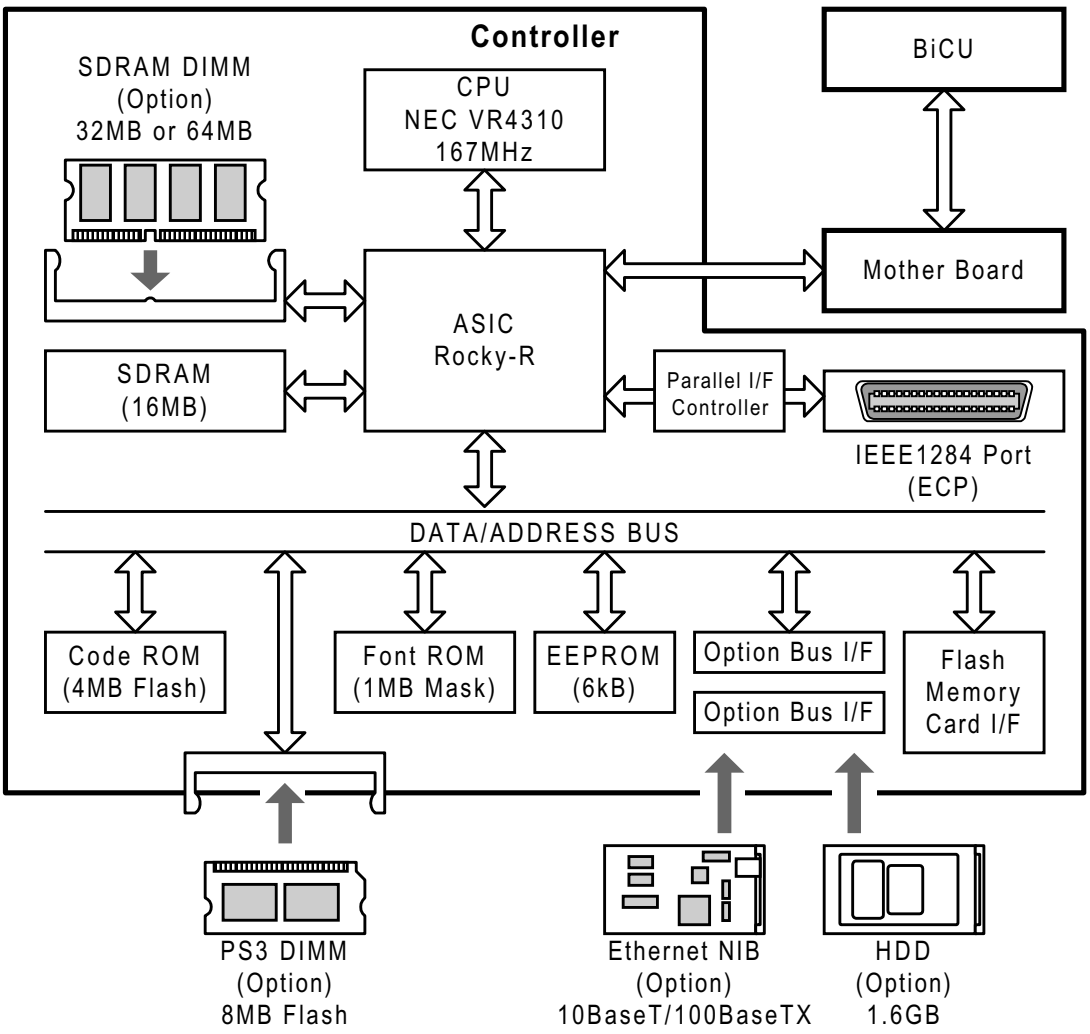
Software	Description
NBTFTP	NIB firmware update utility for use on a NetBEUI network. This utility is not on the Driver and Utilities CD-ROM; it is issued separately as a service tool.

1.3 MACHINE LAYOUT



Ref.	Component	Machine Code
A	Printer Controller	B306
B	Hard Disk (option)	G690
C	PS3 Module (option)	B308
D	SDRAM Module (option)	G688
E	Network Interface Board (option)	B307

1.4 BLOCK DIAGRAM



The controller board contains a CPU (NEC VR4310) and an ASIC (Rocky-R). The ASIC controls the main memory (SDRAM), engine interface, ROM interface, IEEE1284 parallel interface, two option bus interfaces for the NIB and HDD, and an IC card interface for upgrading firmware.

There is one optional memory socket that can have either a 32MB or a 64MB SDRAM DIMM module to increase RAM capacity and enable RAM collation. With the 64MB SDRAM module, the RAM capacity is increased to 80MB. There is another memory socket for the optional PS3 DIMM.

The two option bus interfaces allow the user to install an Ethernet NIB and a hard disk drive (the hard disk allows the Proof Print, Disk Collation, and font and form download features).

The flash memory card interface allows the firmware for the controller, PostScript, and NIB to be updated.

2. DETAILED SECTION DESCRIPTIONS

2.1 IMAGE DATA PROCESSING

There are two image-processing modes for printer edge smoothing and toner saving mode. The controller uses the engine's FCI (Fine Character Image) function for smoothing. The controller performs the toner saving function using ASIC (Ricky-R). These two functions do not work at the same time. When toner saving mode is enabled, edge smoothing is automatically disabled.

The memory circuit in the engine (EMB) is not used for printing from the controller.

2.2 ENGINE FUNCTIONS

2.2.1 PRINT PRIORITY AND INTERLEAVING

[User Tools] – [System Settings] – [Print Priority] defines how the copy, fax and printer applications share a single print engine.

NOTE: "[User Tools] – [System Settings] – [Print Priority]" indicates that you press the System Tools key, select System from the menu, then select "Print Priority" from the next menu.

Display Priority

A print request from the application (copy, fax, or printer) now displayed on the LCD has the highest priority. For example, the machine is in the middle of a large copy run, and a user wants to print a document from a computer immediately. In this case, pressing the Printer key to switch the LCD display to Printer mode will interrupt the copy run and print the document from the computer, and the copy run will resume after the document has been printed. If the LCD display stays in Copy mode, the user will have to wait until the copy run finishes.

Note that the Interrupt key on the operation panel does not work like the Printer key in the above example. The Interrupt key is for interrupting a copy run to do another copy operation.

Copier, Fax or Printer

The selected application has the highest priority, regardless of which mode the LCD is in. If there are multiple print requests to the print engine, the selected application will print first. Other applications have to wait until the selected application finishes printing.

Interleave

All the applications have the same priority. An application can print even while another application is using the printer engine. If there are multiple print requests to the print engine, the engine will adjust its print priorities and the sequence of printed pages.

For example, if a received fax message and a copy job are waiting for printing, the machine prints 5 pages of the fax, then 5 pages of the copy job, then the next 5 pages of the fax, and so on.

Copier SP mode 5-951 determines the number of pages that are printed from one job before switching over to the next. The default is 5 pages.

NOTE: Using the Interleave function is not recommended if the machine does not have multiple output trays. This is because the printouts from copy, fax, and printer applications may be mixed up in a single output tray if the Interleave function is enabled.

2.3 CONTROLLER FUNCTIONS

2.3.1 PAPER SIZE/TYPE DETECTION AND SELECTION

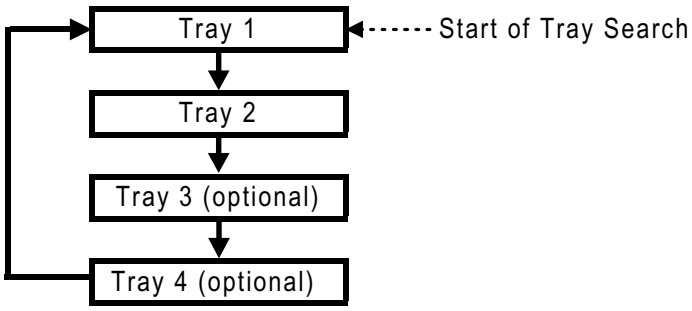
The controller uses the paper sizes detected by the print engine for trays 1, 2, 3 and 4. For the by-pass tray, the user has to specify a paper size using the Job Control menu in the Printer User Tools. Refer to section 1.1.2 for details on supported paper sizes.

The paper type selection is available using User Tools (User Tools – 1. System – 14. Special Paper Indicator) for each paper tray.

When the printer controller receives a print job, the controller uses the paper size specified in the PJL, PCL, or PS commands and the paper type specified in the PCL or PS commands for printing.

2.3.2 PAPER SOURCE SELECTION

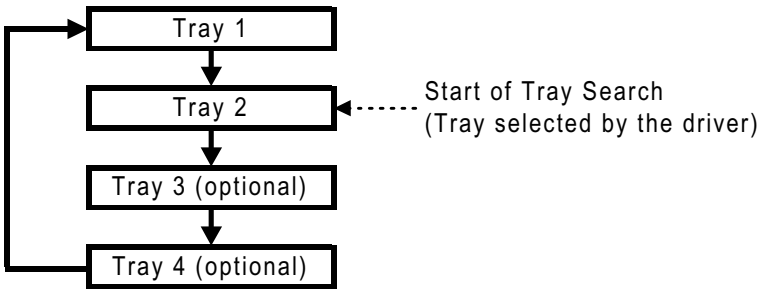
Auto Tray Select



The controller searches for the specified paper size and paper type, starting from Tray 1, and uses the first tray that has the specified paper size and paper type. If the selected tray is pulled out or paper runs out during printing, the controller searches for another tray with the specific paper size and paper type then if found, automatically switches to it. If the controller cannot find another paper tray with the specified paper size and paper type, printing stops and the LCD displays the message “Add Paper to Tray 1”.

When special paper has been selected for the 2nd paper tray, the 2nd paper tray is not included in the auto tray search cycle.

Manual Tray Select



When the printer driver specifies a tray, the selected tray becomes the first tray checked at the start of the tray search. If the selected tray does not have the size and type of paper specified by the driver, the controller searches the other trays for the same paper size and paper type.

NOTE: Tray Priority in the Job Control menu does not specify the start of the tray search, but specifies the paper size in the selected tray as the default paper size.

Tray Lock

If Tray Lock is enabled for a tray, the controller does not use the “locked” tray in the tray search process. If a tray has, for example, colored A4 size paper for fax prints, enable tray lock for that tray so that the controller does not select the tray for printing.

If the printer driver selects a “locked” tray, the controller uses the tray for printing only when the specified paper size matches the actual paper size in the tray.

By-pass Tray

The by-pass tray is not part of the automatic tray search. To print from the by-pass tray, the user has to select the by-pass tray (using either the driver or operation panel). Even if the by-pass tray is empty, the controller will not switch to another tray; the message on the LCD asks the user to add paper to the by-pass tray.

NOTE: Collation and duplex are disabled when the by-pass tray is selected.

Paper Size Mismatch

When the controller could not find the specified paper size and paper type in any of the trays, the machine displays an error message.

Then the user can either load the requested paper size and paper type in a tray or select another tray, e.g., a tray that contains A4 size paper, by pressing the “Form Feed” key.

The controller will print the job if the specified paper size and paper type are detected in a tray, or if the user presses the Enter key after selecting a tray.

2.3.3 OUTPUT TRAY SELECTION

Output Tray Priority in the System User Tools specifies the default paper output tray for each application.

If a print job does not specify an output tray or if the driver specifies the default tray, the default tray is used.

If the driver specifies an output tray, this overrides the default tray setting in the user tools.

If the option one-bin tray is selected but it is not working, the standard output tray is used.

2.3.4 COLLATION (SORT)

When the controller has either an optional SDRAM DIMM or an optional HDD installed, collation is enabled.

If the memory or HDD becomes full while storing a job that uses collation, the controller prints the pages that have been stored for collation, empties the memory or HDD, then continues printing the rest of the pages with collation.

Memory Capacity	Collation	Maximum Pages	Note
16MB (standard)	Not possible		
48MB (with 32MB)	Possible	30 pages	Note 1)
80MB (with 64MB)	Possible	50 pages	Note 1)
With HDD	Possible	1500 pages	Note 2)

NOTE: 1) The number of pages is calculated using a sample MS-Word document that contains 5,000 characters of plain text. The sample document takes 409.6kB of memory space per page.
If the document is more complex, the memory can hold fewer pages. If the document is simpler, e.g., 1,000 characters per page, the memory can hold more pages.
2) This is the maximum number of pages that the controller can handle.
If the document is more complex, the HDD can hold fewer pages. Even if the document is simpler, e.g., 1,000 characters per page, the HDD cannot hold more than 1,500 pages.
To calculate the pages using the same document as specified in Note 1, the HDD can hold about 1,250 pages.
About 500 MB of disk space is used for collation.

⟹

Function	Optional Memory	Optional HDD
Sort / Sort with Stapling	Required	-
Rotate Sort	-	Required

NOTE: If the Finisher or the Shift Tray is installed, Rotate Sort is disabled in print mode.

2.3.5 DUPLEX PRINTING

Duplex printing is available with all output bin options but not all paper sizes (refer to the specifications section of the copier manual). If a job specifies duplex but the paper size to be used is not usable in the duplex unit, the job will be printed single-sided.

Duplex printing is available in two binding methods: short-edge binding and long-edge binding.

In short-edge binding, when printing the second side of a page, the image may require rotation. The image is rotated by the ASIC (Rocky-R) in the printer controller.

The ASIC (Rocky-R) corrects the image printing order for duplexing as follows.

- Larger than A4 lengthwise/LT lengthwise (example 8 pages)
  2nd page – 1st page – 4th page – 3rd page – 6th page – 5th page – 8th page – 7th page
- Up to A4 lengthwise/LT lengthwise (example 8 pages)
  2nd page – 4th page – 1st page – 6th page – 3rd page – 8th page – 5th page – 7th page

⟹

Function	Optional Memory	Optional HDD
Duplex	Required	-

2.3.6 STAPLING

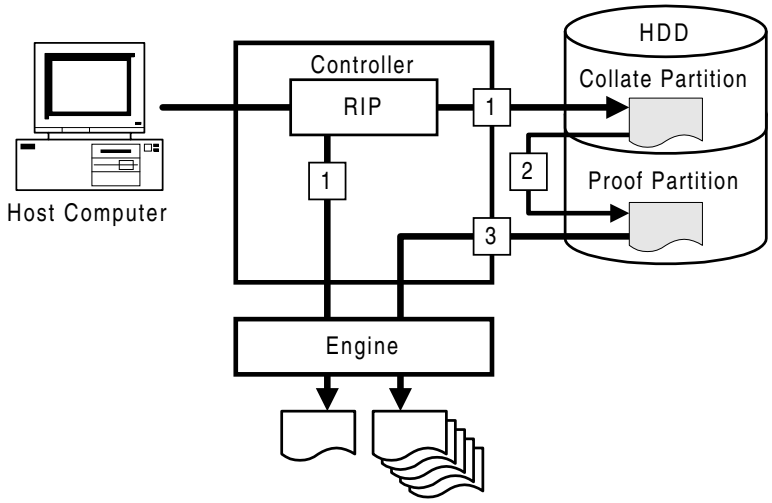
Stapling is only available when the 1000-sheet finisher is installed.

The finisher has only one stapling position, upper left corner.

Depending on the paper orientation, the image may have to be rotated. This image rotation is done by the ASIC (Rocky-R) in the printer controller.

There is a limit for the number of sheets that can be stapled. If a job that specifies stapling has more than this number of sheets, it will not be stapled.

2.3.7 PROOF PRINT



The Proof Print function gives users a chance to check the print results before starting a multiple-set print run.

When printing from a host computer, a print job is sent to the controller with a user ID and the current time. Then the controller executes raster image processing (RIP), stores the image data onto the collation partition of the hard disk, and prints one set of the document (step [1] in the above diagram). Then the controller moves the raster image file to the proof print partition of the hard disk (step [2] in the above diagram).

After the user checks that the print result is OK, the user selects the file using the machine's operation panel, and prints the rest of the sets (step [3] in the above diagram). After all sets have been printed, the controller deletes the file automatically.

If the proof print result is not OK, the user must delete the file manually.

If there is no available space for a new file in the proof print partition, the controller deletes the file from the collation partition after printing the first set, even though it cannot copy the file to the proof print partition.

NOTE: 1) Proof print requires the installation of an optional hard disk.
2) The proof print partition size is about 600 MB. It can hold up to 30 files or 2,000 pages. The maximum number of pages depends on how complex the pages are.
3) Proof print is available with the PCL drivers, the Windows 95/98 PostScript driver, and the Macintosh PostScript driver (with the Proof Print plug-in). The PostScript drivers for Windows 3.x and Windows NT4.0 do not support the proof print function.

Function	Optional Memory	Optional HDD
Proof Print	-	Required

2.3.8 RESET OPERATIONS

Job Reset

This resets the job being processed and ignores all incoming data until a data end is received.

If a collate job or a proof print job is being printed, the controller stops printing and deletes the file from the RAM or HDD.

System Reset

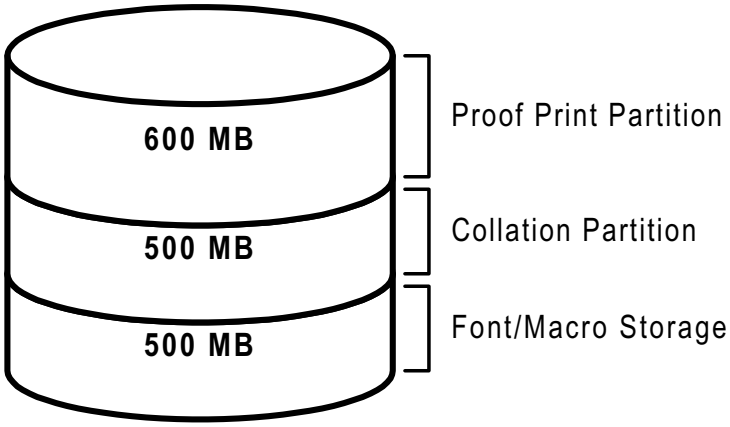
This initializes the collation data, proof print data, fonts and macros downloaded to the RAM. The menu settings, NIB settings, system log data, and error codes remain unchanged.

NOTE: Do not use this when the controller is receiving a print job.

Menu Reset

This resets all the menu settings to their default values, including the NIB settings.

2.3.9 HDD (OPTIONAL)

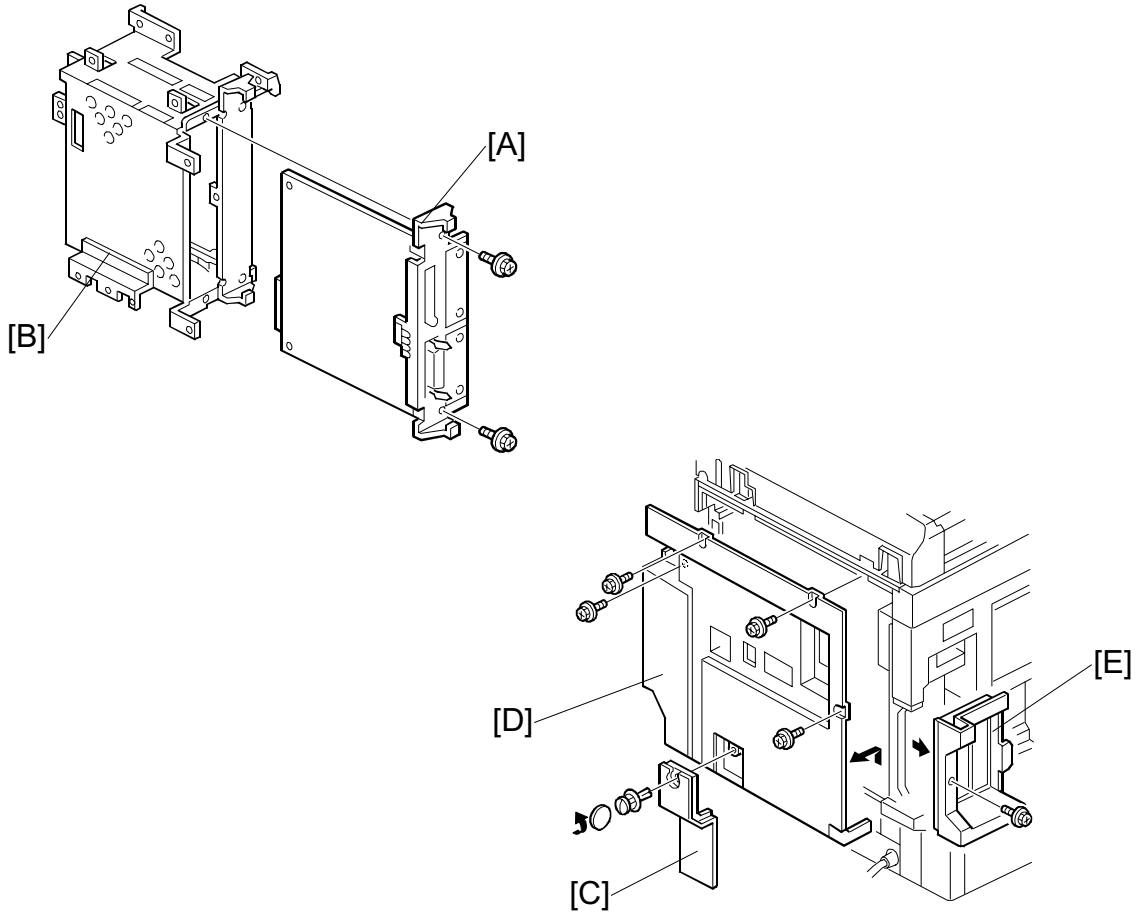


The optional 1.6 GB HDD has three partitions.

- The Proof Print partition uses 600 MB for proof print file storage.
- The Collation partition uses 500 MB for collation data storage.
- The last partition uses 500 MB for font and macro storage.

3. INSTALLATION PROCEDURES

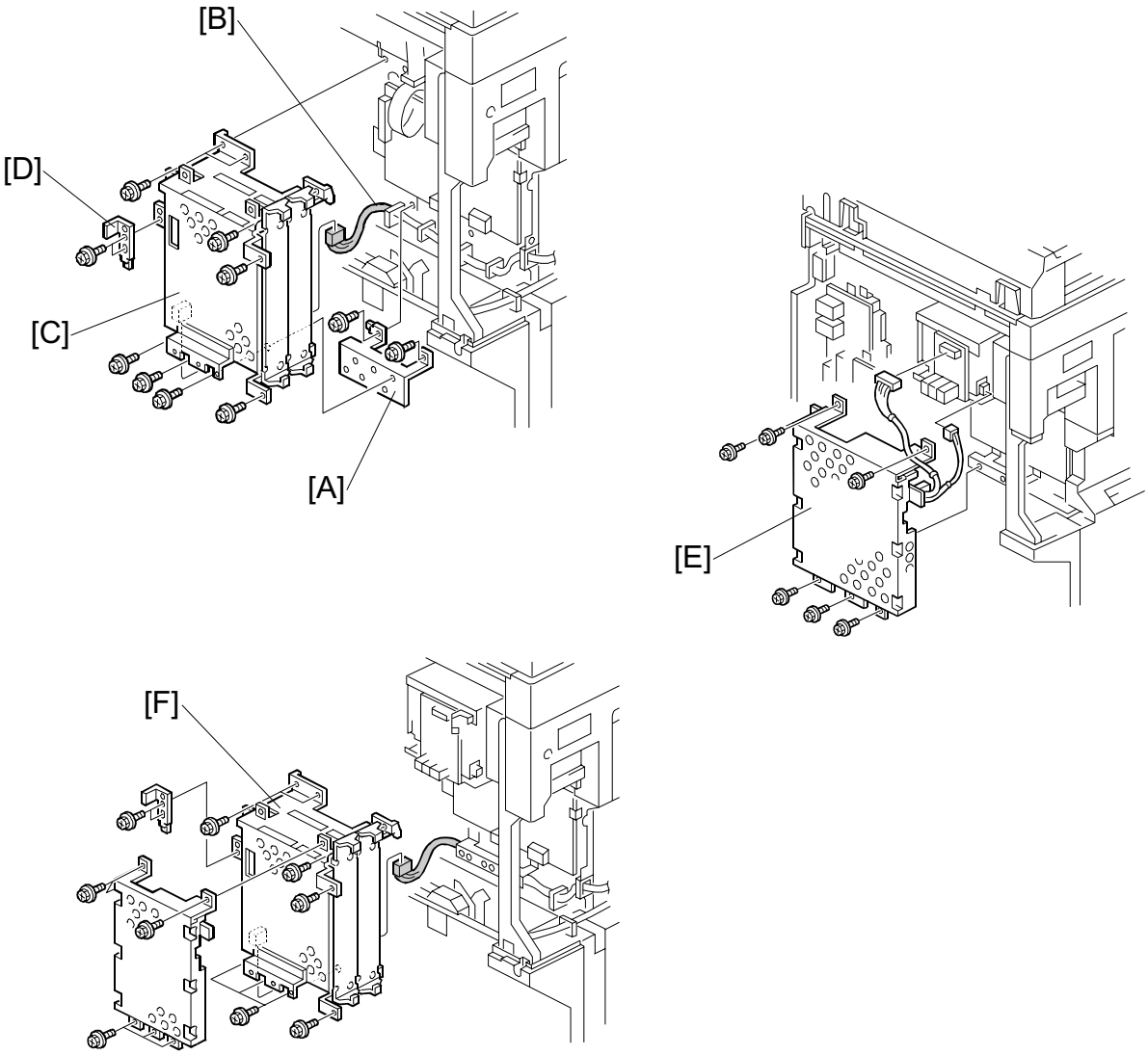
3.1 PRINTER CONTROLLER



⚠CAUTION

Unplug the main machine power cord before starting the following procedure.

1. When installing the optional HDD (G690), or PS Kit (B308), or Network Interface Board (B307), first remove the printer controller [A] from the expansion box [B] (2 screws). Refer to their respective installation manuals for more details.
2. After installing the options reinstall the printer controller.
   NOTE: When the optional scanner kit (A844) is installed, Install it to the expansion box at this time (see the scanner kit installation manual).
3. Remove the connector cover [C], rear cover [D] (4 screws), and application cover [E] (1 screw).

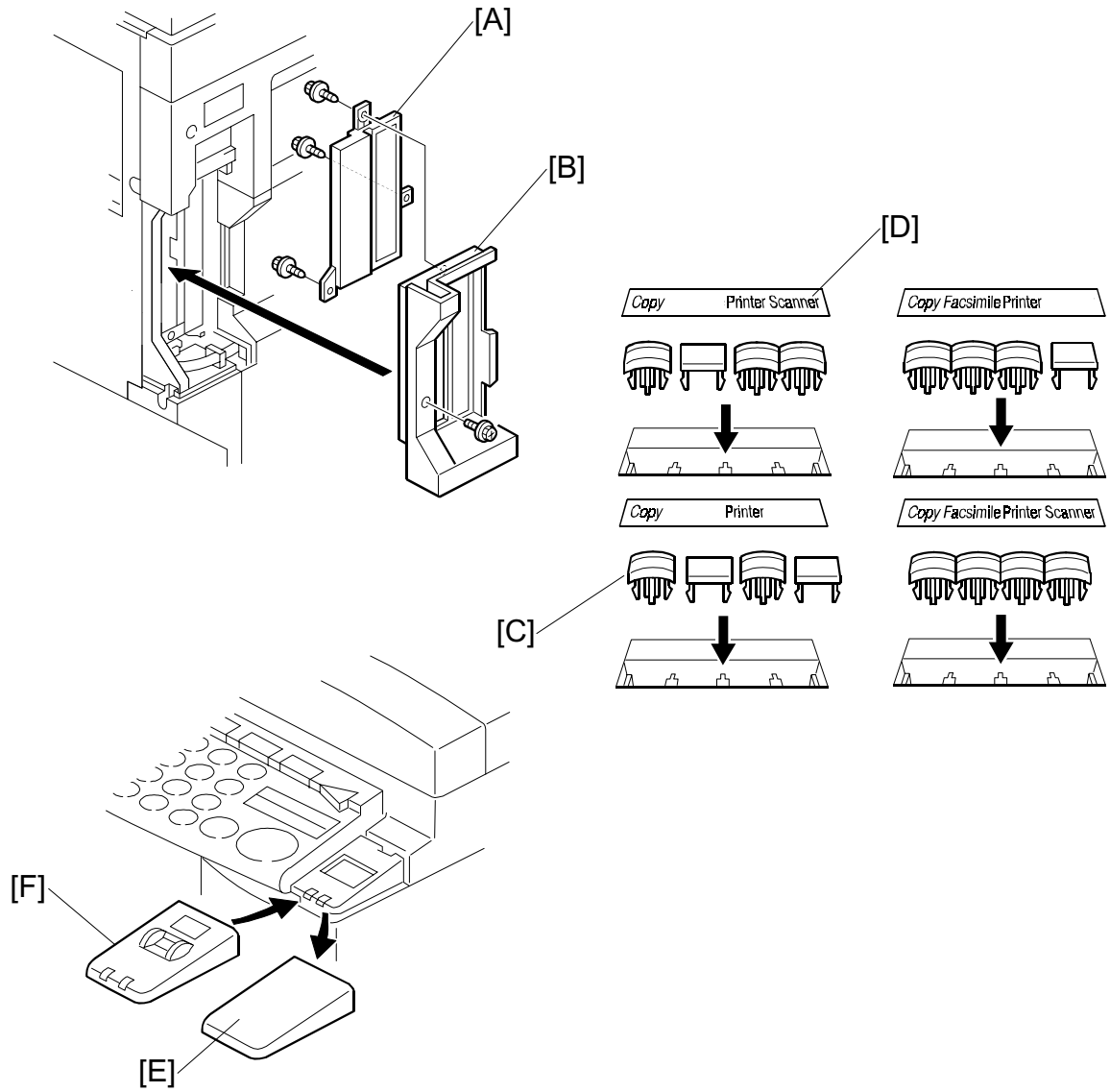


If the optional fax unit has not been installed, do steps 4 to 6.

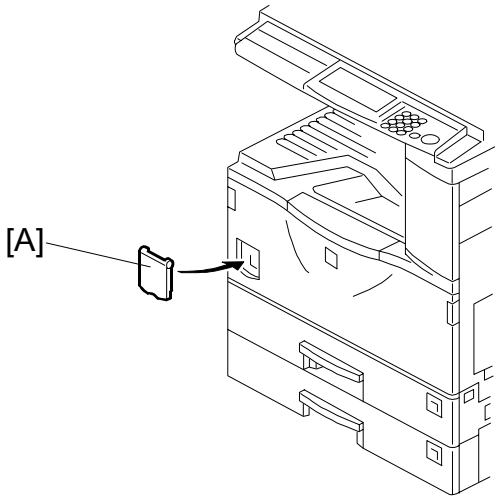
4. Install the stand [A] (2 screws).
5. Connect the cable [B] to the expansion box [C] and install the box (7 screws).
6. Install the grounding bracket [D] (1 screw). Go to step 8.

If the optional fax has been installed, do steps 7 to 9.

7. Remove the optional fax unit [E] (6 screws and 2 connectors).
8. Install the expansion box [F] (refer to steps 5 and 6).
9. Re-install the optional fax unit on the expansion box (6 screws, 2 connectors).



10. Remove the cover [A] (3 screws) from the application cover [B].
11. Reinstall the removed covers (rear cover and application cover).
12. Remove the mode key cap. Then install the key tops [C] and decal [D] depending on the machine configuration, as shown.
13. **European and Asian models only:** Remove the cover [E], then install the operation switch cover [F].



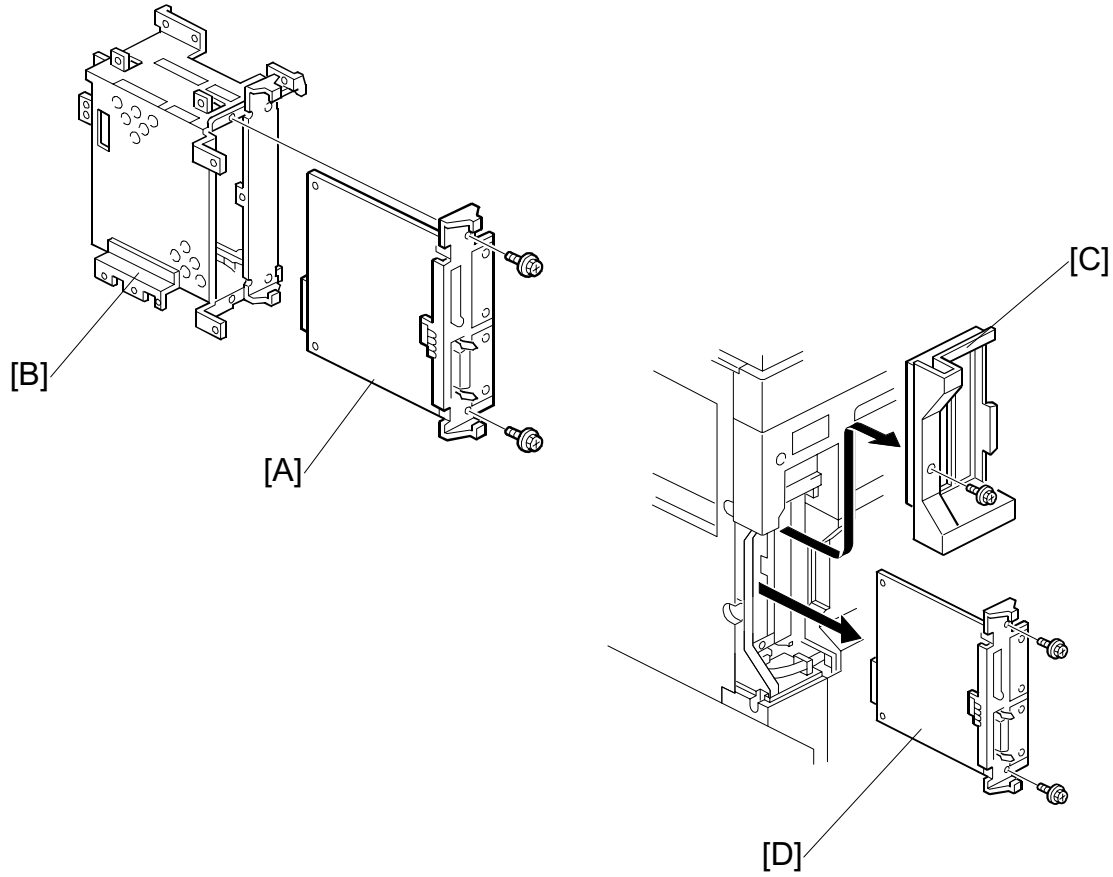
If the optional fax has been installed to European or Asian model, skips step 14.

14. **European and Asian models only:** Attach the switch cover [A] on the front cover.
15. Make sure that the parallel cable is not connected to the controller and turn the machine on. Then check the setting of the following copier SP mode:

    - SP5-907: Plug & Play Brand Name and Production Name Setting – select the correct one.

16. Print the Printer Configuration Page (User Tool – 4. Printer – 7. List Print – 5. Configuration Page) to check the printer controller connection.
17. If the parallel cable is going to be connected, turn off the machine first, connect the parallel cable, and then turn the machine back on again.

3.2 HARD DISK (HDD)

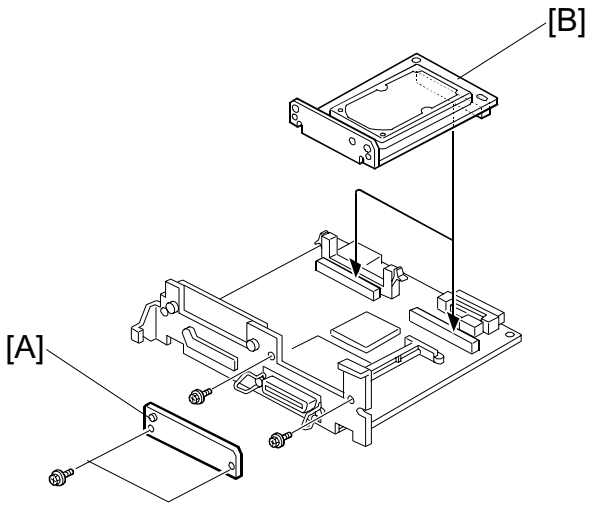


⚠CAUTION

Before installing this option, do the following:

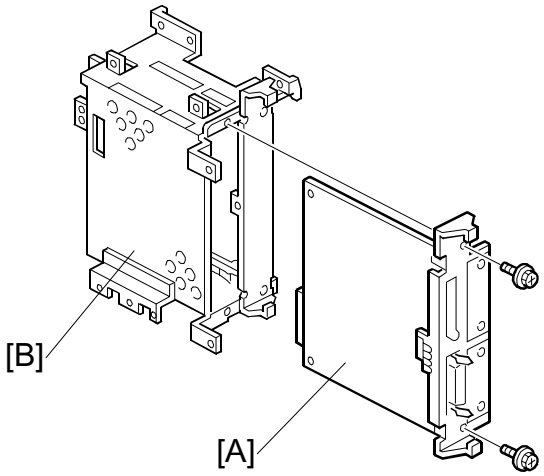
1. **Print out all data in the printer buffer.**
2. **Turn off the main switch and disconnect the power cord, the telephone line, and the network cable.**

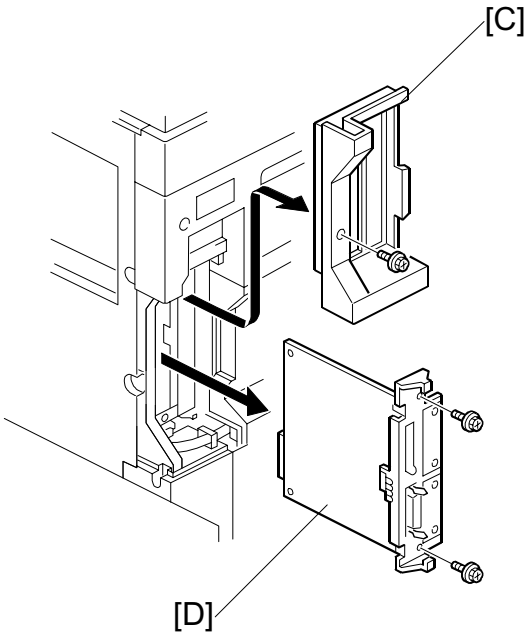
1. When installing this option and the printer controller (G306) at the same time, first remove the printer controller [A] from the expansion box [B]. Then go to step 4.
2. Remove the cover [C] (1 screw).
3. Remove the printer controller [D] (2 screws).



4. Remove the cover bracket [A] (2 screws).
5. Attach the hard disk drive [B] to the printer controller (2 screws removed in step 4). The drive can be connected to either socket.
6. Reassemble the machine.

3.3 NETWORK INTERFACE BOARD (NIB)



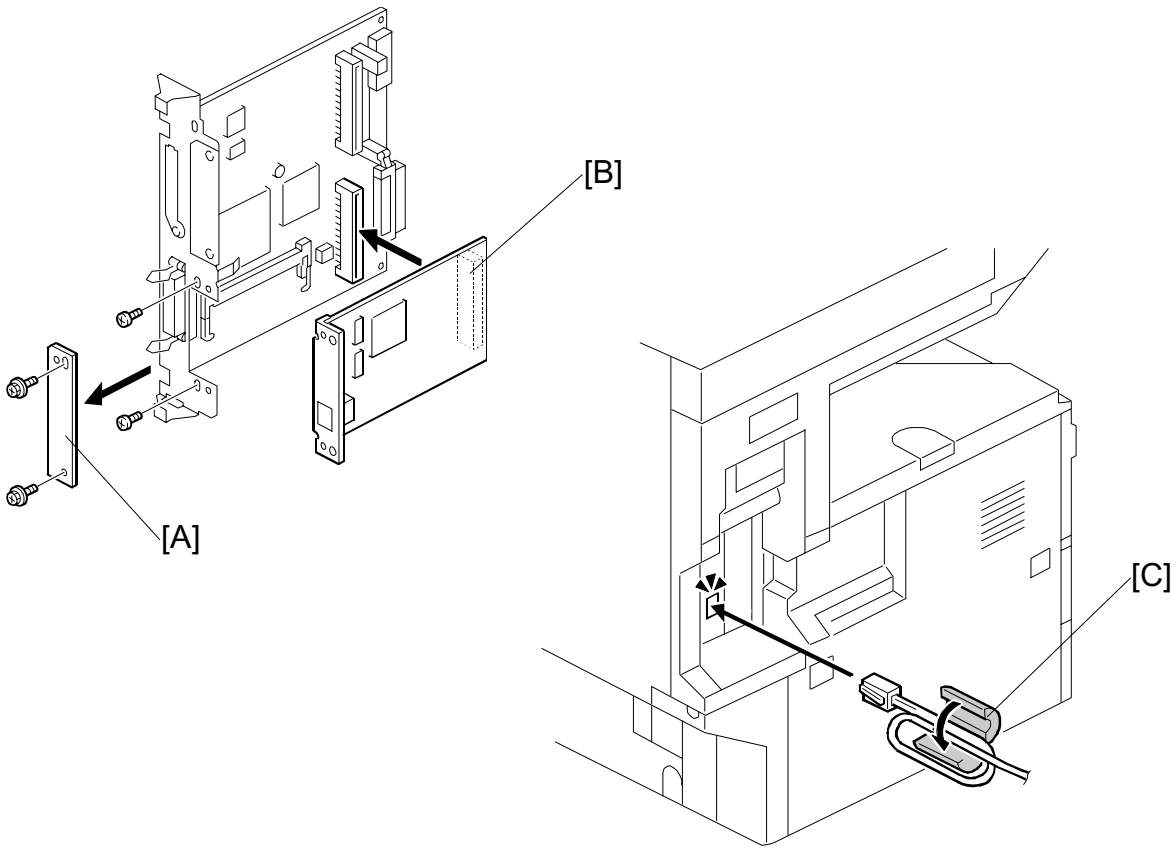


⚠CAUTION

Before installing this option, do the following:

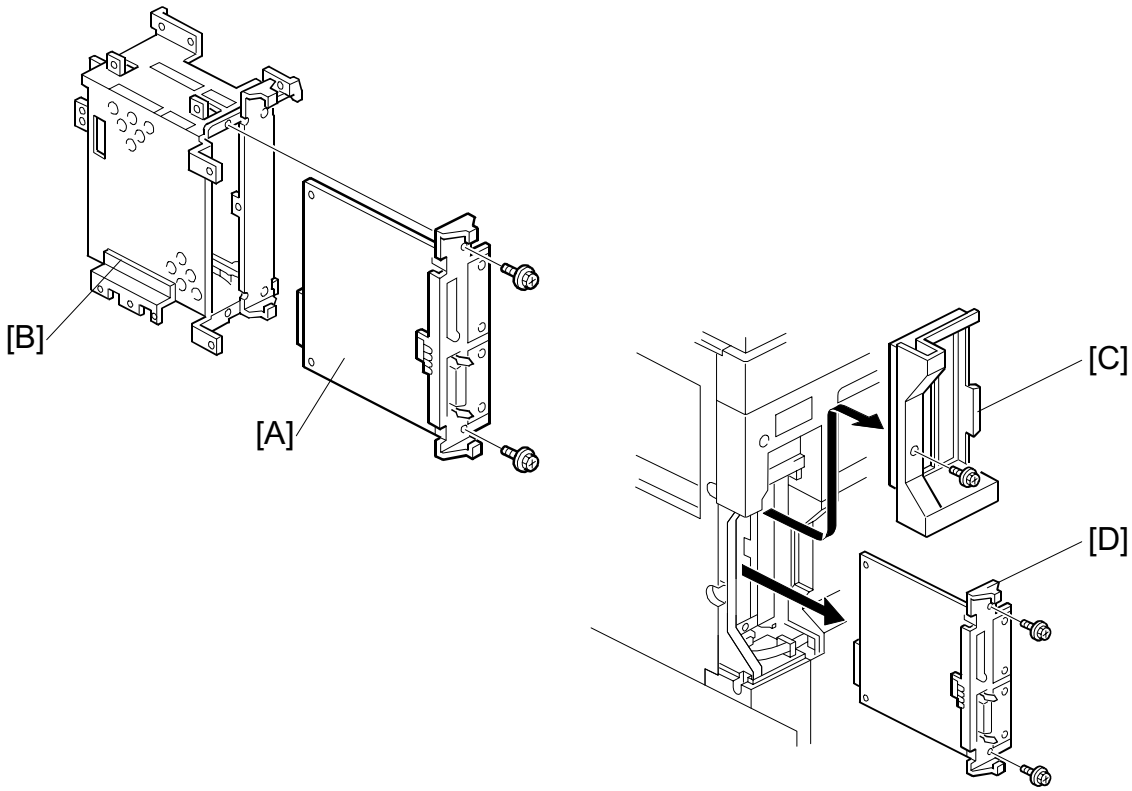
1. **Print out all data in the printer buffer.**
2. **Turn off the main switch and disconnect the power cord, the telephone line, and the network cable.**

1. When installing this option and the printer controller (G306) at the same time, first remove the printer controller [A] from the expansion box [B]. Then go to step 4.
2. Remove the cover [C] (1 screw).
3. Remove the printer controller [D] (2 screws).



4. Remove the cover plate [A] (2 screws).
5. Attach the network interface board [B] (2 screws removed in step 4). The NIB can be connected to either socket.
6. Reassemble the machine.
7. Attach the core [C] to the network cable, as shown.

3.4 POSTSCRIPT DIMM

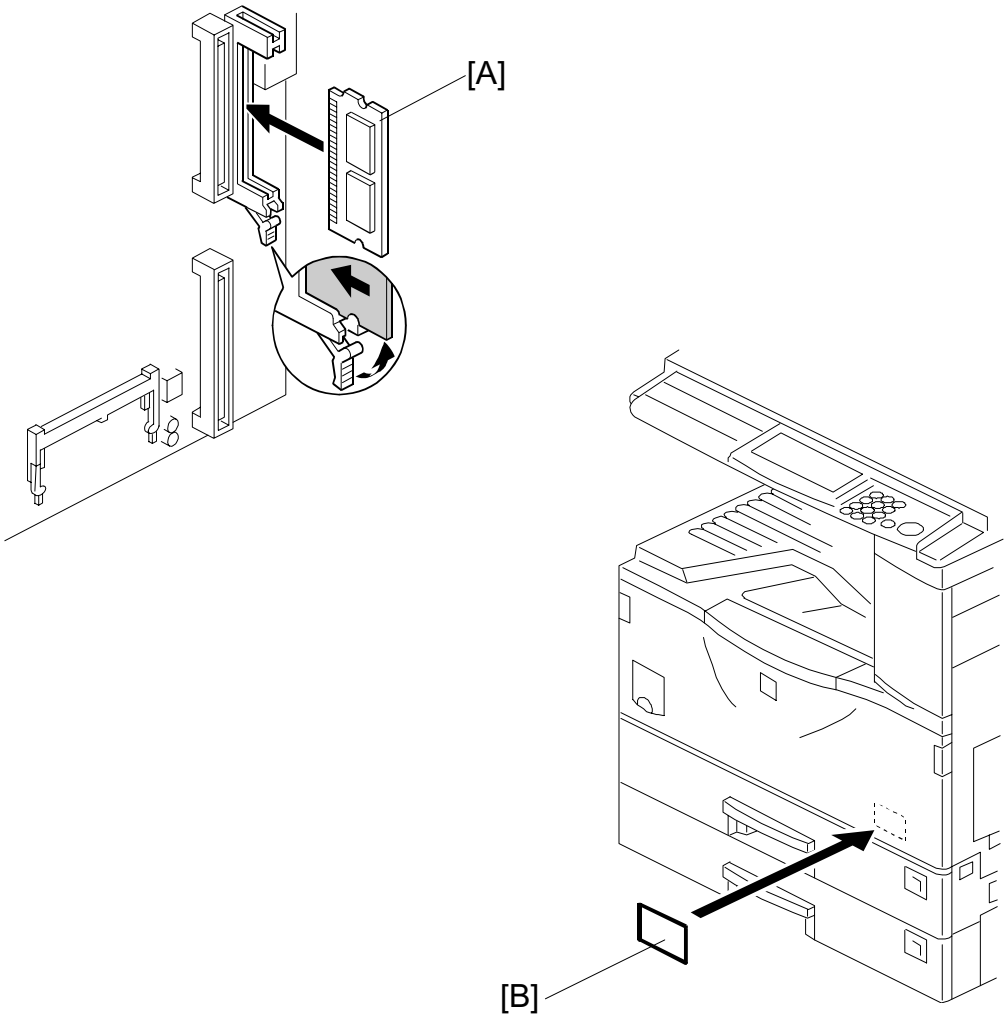


⚠CAUTION

Before installing this option, do the following:

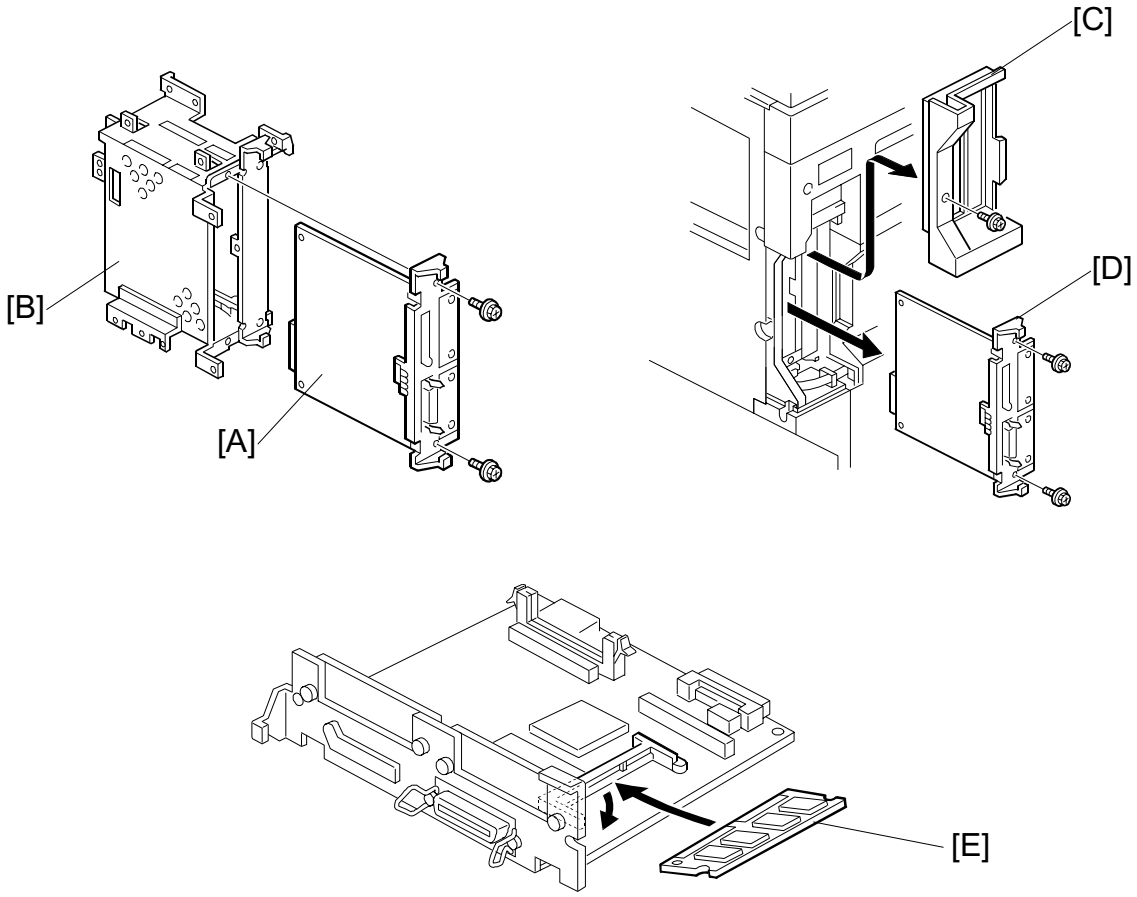
1. **Print out all data in the printer buffer.**
2. **Turn off the main switch and disconnect the power cord, the telephone line, and the network cable.**

1. When installing this option and the printer controller (G306) at the same time, first remove the printer controller [A] from the expansion box [B]. Then go to step 4.
2. Remove the cover [C] (1 screw).
3. Remove the printer controller [D] (2 screws).



4. Attach the PostScript kit [A] to the printer controller.
5. Reassemble the machine.
6. Attach the PostScript decal [B] to the front cover, as shown.

3.5 MEMORY (SDRAM DIMM)



⚠CAUTION

Before installing this option, do the following:

1. **Print out all data in the printer buffer.**
2. **Turn off the main switch and disconnect the power cord, the telephone line, and the network cable.**

1. When installing this option and the printer controller (G306) at the same time, first remove the printer controller [A] from the expansion box [B]. Then go to step 4.
2. Remove the cover [C] (1 screw).
3. Remove the printer controller [D] (2 screws).
4. Attach the printer memory [E] to the printer controller, as shown.
5. Re-install the printer controller.
6. Turn on the machine and print the Printer Configuration Page ([User Tools] – [Printer] – [List Print]). Verify that the total memory has increased.

4. SERVICE TABLES

4.1 PRECAUTION

Do not turn off the machine, or switch the controller off-line, while the data-in LED is blinking or lit. Some data that the controller has received for raster image processing may be lost.

Check with the customer before maintenance to avoid such data loss.

4.2 SERVICE PROGRAM MODE OVERVIEW

4.2.1 HOW TO ENTER THE SP MODE

Entering and exiting SP mode is the same as for copier and fax, as follows.

NOTE: Before using any of the SP modes, disconnect the parallel and Ethernet cables.

Entering Printer SP mode

[#/⏎] → [1] → [0] → [7] → [C/⏎] (Hold for more than 3 seconds.)

Select “4. Printer”. The Printer SP mode main menu appears.

Exiting SP mode

Select “3. End” from the Printer SP mode main menu, then exit the SP mode main menu.

4.2.2 SP MODE TABLE

SERVICE MENU

	Title	Description
A	BitSw#1 Set	Adjusts bit switch settings. Refer to section 4.3.1 for details. **NOTE:** The bit switches are not used at the moment.
B	BitSw#2 Set	
C	BitSw#3 Set	
D	BitSw#4 Set	
E	NVRAM Clear 1	Initializes the controller NVRAM except bit switches and log data. The NIB settings on the NIB NVRAM are not reset.
F	NVRAM Clear 2	Initializes the NVRAM on the controller. The NIB settings on the NIB NVRAM are not reset.
G	NVRAM Clear 3	Initializes the NVRAM on the NIB.
H	Counter Clear	Initializes all counters to zero.
I	Diag. Error	Displays diagnostics error codes on the LCD.
J	Service Print	Prints the service summary sheet.

SERVICE TOOLS

	Title	Description
H	HDD Test	Verifies the FAT and directory entries on the HDD.
I	HDD Format	Partitions and formats the HDD.

4.3 SERVICE MENU

4.3.1 BIT SWITCH PROGRAMMING

1. Enter the Printer SP mode, and select “1. Service Menu”.
2. Select A, B, C, or D for the desired bit switch, then press [Enter].
3. Press [Enter] in the “Bit Switch Set” menu.
4. Adjust the bit switch using the following keys.
   - [UP] [DOWN]: Change the switch setting and moves to the next bit.
   - [CANCEL]: Exit without saving changes.
   - [ENTER]: Exit and save changes.
5. Press [Enter] to save changes and exit.

BIT SWITCHES

NOTE: The bit switches are not used at the moment.

4.3.2 NVRAM RESET

⚠CAUTION

Print the service summary report, controller configuration page, and NIB configuration page before resetting the NVRAM(s).

DIAG. ERROR LOG AND PAPER TRAY SETTINGS RESET

This initializes the following settings in the controller NVRAM.

- Controller diagnostics error log
- Paper type settings for trays
- Paper size setting for the by-pass tray

1. Enter the Printer SP mode, and select “1. Service Menu”.
2. Select “E. NVRAM Clear 1”, then press [Enter].
3. Ensure that you have printed the service summary report, then press [Enter].
4. Press [Enter] to execute. Or press [Cancel] to exit.

CONTROLLER NVRAM RESET

This initializes all the data in the controller NVRAM, but does not initialize the NIB settings.

1. Enter the Printer SP mode, and select “1. Service Menu”.
2. Select “F. NVRAM Clear 2”, then press [Enter].
3. Ensure that you have printed the service summary report and controller configuration page, then press [Enter].
4. Press [Enter] to execute. Or press [Cancel] to exit.

NIB NVRAM RESET

This initializes all the data in the NIB NVRAM.

1. Enter the Printer SP mode, and select “1. Service Menu”.
2. Select “G. NVRAM Clear 3”, then press [Enter].
3. Ensure that you have printed the NIB configuration page, then press [Enter].
4. Press [Enter] to execute. Or press [Cancel] to exit.

COUNTER RESET

This initializes all the print counters in the controller NVRAM. Refer to the service summary report for the counters in the controller NVRAM.

1. Enter the Printer SP mode, and select “1. Service Menu”.
2. Select “H. Counter Clear”, then press [Enter].
3. Press [Enter] to reset all the print counters.
4. Press [Enter] to execute. Or press [Cancel] to exit.

4.3.3 POWER-ON DIAGNOSTICS ERROR DISPLAY

This displays the latest 8 error codes that were found during the power-on self-test. Refer to chapter 6 (Troubleshooting) for details of the error codes.

1. Enter the Printer SP mode, and select “1. Service Menu”.
2. Select “I. Diag. Error”, then press [Enter].
3. Check the error codes on the LCD.
   - [UP] [DOWN]: Move to the previous/next page.
4. Press [Cancel] to exit.

4.3.4 SERVICE SUMMARY

This prints a summary of all the controller settings.

1. Enter the Printer SP mode, and select “1. Service Menu”.
2. Select “J. Service Print”, then press [Enter].
3. Press [Enter] again to print the report.

Model Number / System Version / Unit Number

Lists the machine’s Plug&Play name, controller firmware version, and the controller part number.

Program List

Lists the firmware module version.

Bit Switch

List the current bit switch settings.

NOTE: The bit switches are not actually used at the moment.

Counter

List all the counters in the controller.

NOTE: Some counters listed in the report are not actually used.
For example, “Punch Printed Page Count” is listed, but not available.

Exception Information

Lists CPU exception error information. Designer use only.

System Logging / System Logging 2

Lists internal log data. Designer use only.

Option

Lists all the installed optional components.

4.4 SERVICE TOOLS

4.4.1 HDD TEST

This verifies the file and directory entries on the hard disk drive.

1. Enter the Printer SP mode, and select “2. Service Tool”.
2. Select “HDD Test”, then press [Enter].
3. Specify the number of tests, then press [Enter].
   - If “000” is specified, the test will continue until it is manually cancelled.
   - [UP] [DOWN]: Increment/decrement the digit at the cursor.
   - [Cancel]: Exit without executing the test. Cancels the test even while it is being executed.
   - [Enter]: Execute the test.
4. Check the result of the test, then do the following:
   - If the result is OK, press [Enter] to display the available free space on the HDD. Then press [Enter] again to exit.
   - If the result is NG, press [Enter] to do the test again. Or, press [Cancel] to exit.

Error Display Details	
Number at the top right corner	Indicates that the error was found in the n’th test.
Error Message	“NG clstr error” A damaged cluster was found. The damaged cluster was marked as “bad” to avoid future use.

4.4.2 HDD FORMAT

This creates partitions on the HDD and formats them.

1. Enter the Printer SP mode, and select “2. Service Tool”.
2. Select “HDD Format”, then press [Enter].
3. Check the HDD capacity, then press [Enter].
4. Press [Enter] again to start formatting. Or, press [Cancel] to exit.
   NOTE: Once the format has started, it cannot be cancelled.
5. Check the result of the test, then do the following:
   - If the result is OK, press [Enter] to exit.
   - If the result is NG, check the error message, then press [Enter] to exit.

Error Display Details	
Error Messages	“HDD Ident Fail” The controller could not retrieve information from the HDD. “NG Logic Format” Logical format failed. “No Support HDD” Unsupported HDD is detected.



⇒

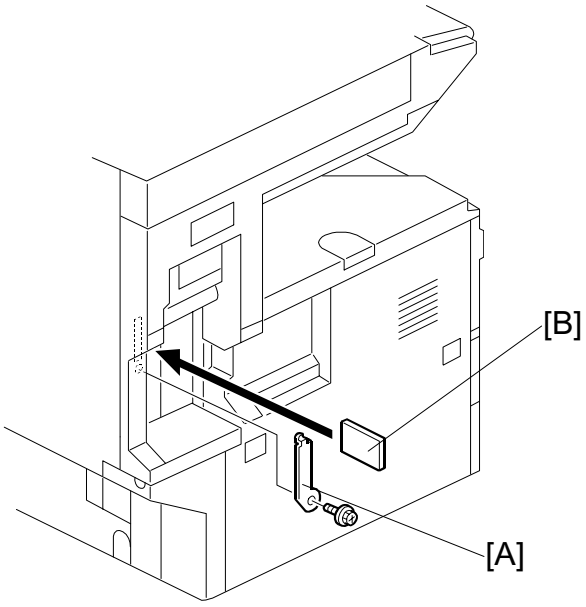
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4.5 FIRMWARE UPDATE

4.5.1 FIRMWARE DOWNLOAD (CONTROLLER, NIB AND PS3)

This procedure is for upgrading the firmware for the controller, the network interface board, and the PS3 DIMM module.

To update the PS3 firmware, the target DIMM module must already contain a version of the PS3 firmware.



⚠CAUTION

Do not turn off the machine while downloading the firmware.

1. Prepare an IC card that contains the required firmware.
2. Turn off the machine and remove the cover [A] (1 screw).
3. Install the card [B] in the IC card slot on the controller.
   NOTE: When you see the machine from the front, the “A” side of the card must face the front side.
4. Turn on the machine and switch the display to “Printer” (use the “Printer” key on the operation panel).

5. Check the firmware version as follows:
   1) Controller and NIB Firmware
      - CARD: Firmware version on the card
      - ROM: Current controller or NIB firmware version
   2) PS3 DIMM
      - DIMM: Current PS3 firmware version
      - CARD: Firmware version on the card
6. Start downloading the new firmware.
   1) Controller and NIB Firmware
      - Press [Execute] to download the new firmware.
      - Press [Cancel] to exit.
   2) PS3 DIMM
      - Press [Execute] to download.
      - Turn off the machine to cancel.
7. After the firmware download has finished, turn off the machine, and remove the card. Then, re-install the cover [A].
8. Turn on the machine, and print the service summary report to confirm that the new firmware version has been installed.

Error Messages

Message	Description	Controller	NIB	PS3
Erasing Failed ADRS: xxxxxx	Test the on-board flash ROM and retry the download.	Yes	Yes	Yes
Writing Failed ADRS: xxxxxx		Yes	Yes	Yes
Memory Insufficient	Reset the controller and try again.	Yes	Yes	Yes
Melting Failed	The firmware file used to program the card may be damaged. Get a new firmware file and store it on the card.	Yes	Yes	No
DIMM – installable program cannot find	Wrong type of firmware on the card.	No	No	Yes
CRC error: Please retry install	The firmware file used to program the card may be damaged. Get a new firmware file and store it on the card.	No	No	Yes
NIB board is not equipped	Install a NIB on the controller, then try again.	No	Yes	No
Initialization failed	Retry the download.	No	Yes	No
Download mode is disabled	Retry the download.	No	Yes	No

4.5.2 ERROR RECOVERY

CONTROLLER

If the controller does not start up after a failed firmware download, use the following procedure. This procedure will force the controller to boot from the IC card.

1. Prepare an IC card with the required controller firmware version on it.
2. Turn off the machine and remove the controller.
3. Change the DIP switch 1 – No. 1 setting to “ON”.
4. Put back the controller and install the card in the IC card slot on the controller.
   NOTE: When you see the machine from the back, the “A” side of the card must face the right side.
5. Turn on the machine.
6. Wait until the LEDs between the IC card slot and the parallel interface are both lit (this may take 1 to 2 minutes.).
7. Turn off the machine, remove the card, and reset the DIP switch 1 – No.1 setting to “OFF”. Then, put back the controller.
   NOTE: The default settings of the DIP switches are all “OFF”.
8. Turn on the machine, and print the service summary report.

PS3 DIMM / NIB

If a download attempt failed, try downloading the new firmware again.

4.6 POWER-ON SELF TEST

4.6.1 PARALLEL LOOP-BACK TEST

This tests the standard IEEE1284 parallel interface using a loop-back connector. The loop-back connector (P/#: G0219350) is required for this test.

NOTE: Do not use the loop-back connector (P/#: G0109350). This loop-back connector causes a timeout error.

1. Turn off the machine and attach the loop-back connector to the Centronics parallel interface.
2. Turn on the machine.
   - Regardless of the test result, the controller starts up as normal.
3. Enter the SP mode and check the “Diag. Error” function for the error codes 1101 or 1102.
   - Refer to section 4.3.3 for how to check the error codes.
   - Refer to section 6.2 for details of the error codes.

4.6.2 OTHER TESTS

The controller tests the following devices at power-on. If an error is detected, an error code is stored in the NVRAM. Refer to section 4.3.3 for how to check the error codes, and section 6.2 for details of the error codes.

- Flash ROM (firmware)
- CPU, clock and ASIC
- Resident and optional SDRAM
- Centronics interface (if a loop-back connector is present)
- NVRAM
- Font ROM
- Optional HDD

5. REMOVAL AND REPLACEMENT

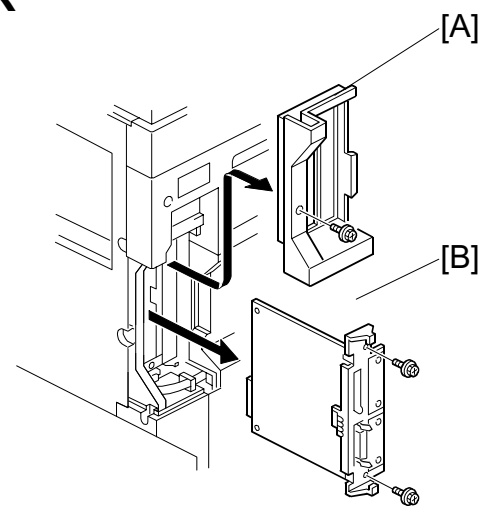
5.1 PRECAUTIONS

⚠CAUTION

Before removing any of the printer components, do the following:

1. **If the data-in lamp on the operation panel is blinking or lit, wait until a document or report is printed, then turn off the machine.**
2. **Turn off the main switch and disconnect the power cord, the telephone cable(s), and the Ethernet cable.**

5.2 CONTROLLER



NOTE: 1) When replacing the controller board, remove the NVRAM (IC26) from the defective board, then install the NVRAM on the new board.
2) If the controller does not start up after a firmware update, try to boot from the IC card and download the firmware. Refer to section 4.5.3 (Error Recovery) for details. If that does not work, you may need to replace the controller board.

1. Remove the cover [A] (1 screw).
2. Remove the controller [B] (2 screws).
3. Remove the optional component(s) and the NVRAM from the controller, then install them on the new controller.
4. Install the new controller.
5. Turn on the machine and print the Printer Configuration Page ([User Tools] – [Printer] – [List Print]).
   Ensure that all the controller settings are restored.

5.3 NIB

NOTE: 1) Before replacing the NIB, back up the NIB NVRAM to the controller using the “NIB read/write” service tool. Then, replace the NIB. Then restore the NIB NVRAM using the “NIB read/write” service tool. Refer to section 4.4.3 for details.
2) If the NIB does not start up after a firmware update using the NBTFTP utility, try downloading the firmware from an IC card.

1. Back up the NIB NVRAM to the controller using [Service Tool] – [NIB read/write].
2. Remove the printer controller (See Controller Removal).
3. Replace the NIB (2 screws).
4. Put back the controller.
5. Turn on the machine and restore the NIB NVRAM using the [Service Tool] – [NIB read/write].
6. Turn off the machine and turn it back on. Then, print the Printer Configuration Page ([User Tools] – [Printer] – [List Print]).
   Ensure that all the controller settings are restored.

6. TROUBLESHOOTING

6.1 SC CODES

SC No.	Description	Required Action
2001	Power-on Self-Diagnostics Error	Check the error code using [Service Menu] – [Diag. Error].
2002	FGATE error	Check any SC errors for the engine.

6.2 ERROR CODES

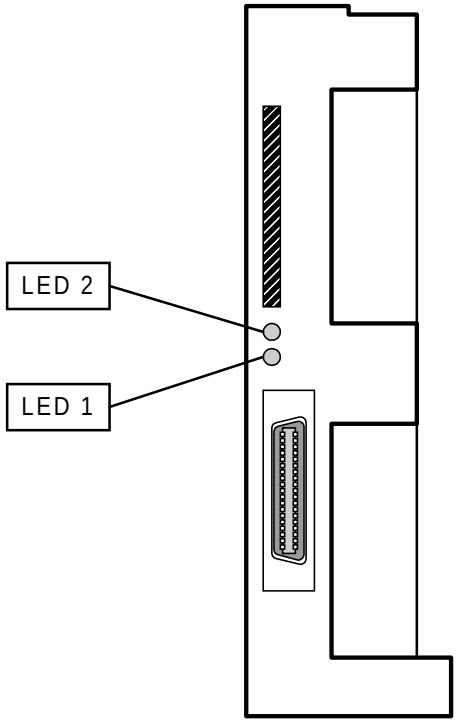
Code	Description	Required Action
0201	On-board SDRAM read/verify failed.	Replace the controller if this error is frequent.
0301	SDRAM DIMM (option) read/verify failed.	Replace the SDRAM DIMM if this error is frequent.
0Fxx	Controller – BiCU interface error.	Check the connectors and cable connections. Replace the motherboard, cable, and/or BiCU.
1101	Data transmission did not finish within the specified time.	An incompatible loop-back connector is connected to the parallel port, or the loop-back connector is not connected. Use the correct loop-back connector (P/#: G0219350) before the test.
1102	Data looped back to the controller is not the same as the data transmitted.	The loop-back connector may be defective. Try using another one.
11xx	Centronics parallel interface error.	Replace the controller if this error is frequent.
1401	The controller NVRAM has a problem.	Replace the NVRAM if this error is frequent.
1402	NVRAM checksum error or the battery has run out.	
1403	NVRAM write error	
1404	NVRAM read error	
1501	RTC error	Replace the controller if this error is frequent.
1601	Font ROM error	Replace the controller if this error is frequent.
1602	The data in the Font ROM is damaged.	Replace the controller if this error is frequent.
1Bxx	Option bus A (CN506) error	Check the connection to the optional component at CN506. Try replacing the optional NIB or HDD.

Code	Description	Required Action
1Cxx	Option bus B (CN507) error	Check the connection to the optional component at CN507. Try replacing the optional NIB or HDD.
2100	NIB self test failed.	Turn off the machine and turn it back on. Replace the NIB if this error is frequent.
21xx	NIB error	
2501	The data in the PS DIMM is damaged.	Replace the PS DIMM if this error is frequent.
2508	The data in the IC card is damaged.	Reprogram the IC card and try again.
⇒ 3003 or 3004	A damaged cluster was found on the HDD.	The damaged cluster is automatically marked as “bad”. If this error is frequent, format the HDD.
47xx	Controller ASIC error.	Replace the controller.

6.3 LED DISPLAY

6.3.1 LOCATION

The controller uses two LEDs to display error status even while the LCD message is not active.



6.3.2 FATAL ERRORS

If the controller detected a fatal error during the power-on self-test, it uses two LEDs to notify the cause of the error.

If one of the following fatal errors happens, the LED status changes as shown (read from the left of the diagram to the right).

Flash ROM Error



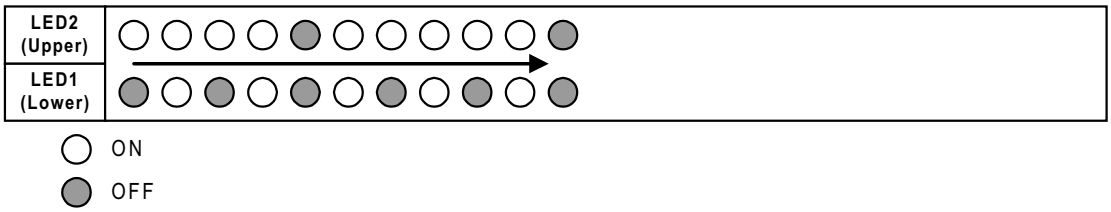
Turn off the machine and turn it back on. If the controller detects the same error, download new firmware from a IC card (refer to section 4.5.3). If the problem still remains, replace the controller.

SDRAM Error



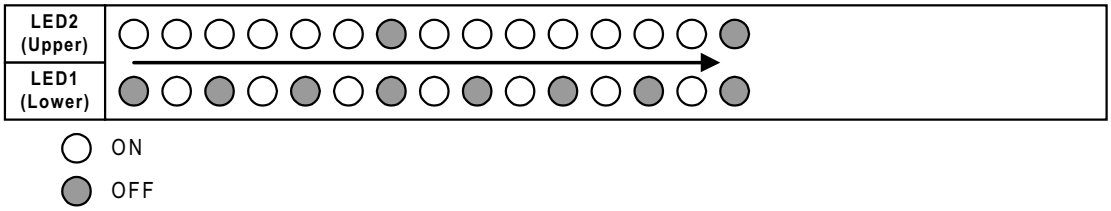
Turn off the machine and turn it back on. If the controller detects the same error, replace the controller.

CPU Error



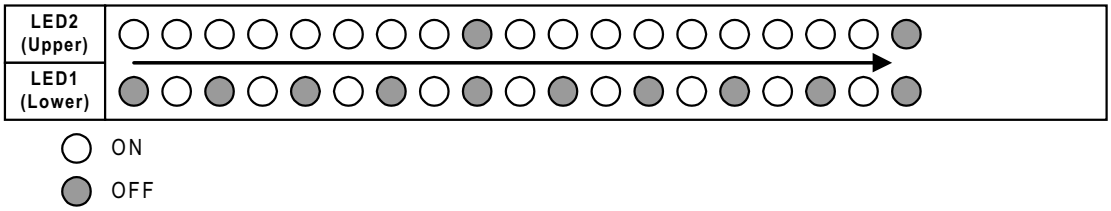
Turn off the machine and turn it back on. If the controller detects the same error, replace the controller.

ASIC Error



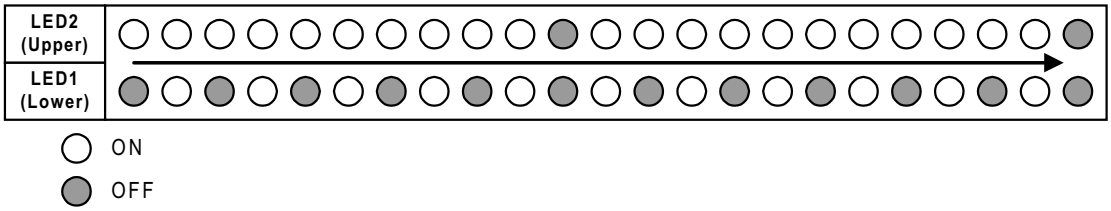
Turn off the machine and turn it back on. If the controller detects the same error, replace the controller.

Other Diagnostic Error



Turn off the machine, check the connection to the optional components, and turn on the machine. If the controller detects the same error, replace the controller or optional HDD/NIB.

APIP Error (Communication error between printer controller and BICU board)



Turn off the machine, check the connection to the BiCU, then turn on the machine. If the controller detects the same error, replace the motherboard, controller, or BiCU.

6.4 FIRMWARE HISTORY

6.4.1 B306 FIRMWARE MODIFICATION HISTORY

B306 PRINTER OPTION FIRMWARE MODIFICATION HISTORY			
DESCRIPTION OF MODIFICATION	**FIRMWARE LEVEL**	**SERIAL NUMBER**	**FIRMWARE VERSION**
• **First Mass Production**	B3065280 **A**	1st Mass Production	1.2.0
• Firmware modified so that it can be used with printer controllers for China and Taiwan. • Firmware modified so that it will be compatible with new HDD to be used in the printer controller. • **NOTE:** new HDD is identical in function to previous one. • If a Postscript Driver job is canceled midway through, the image data for the next job is not printed out correctly. • "Waiting..." is displayed when an error occurs, but the machine does not return to normal operating mode (ready status). The next job is not printed out. • When two separate jobs of text data less than 256 bytes is sent from the network, the two jobs are printed out simultaneously on the same page. • It is possible to print out the HDD Directory List when there is no HDD or PS option installed. • Corrects Taiwanese translation error. • If data recovery (Raster image production) takes longer than usual when using Formfeed, the Alarm LED remains lit until printing begins. To correct this, the LED can now be turned off by pressing the ENTER key.	B3065280 **B**	January Production 2000	1.2.9

B306 PRINTER OPTION FIRMWARE MODIFICATION HISTORY			
DESCRIPTION OF MODIFICATION	**FIRMWARE LEVEL**	**SERIAL NUMBER**	**FIRMWARE VERSION**
• Electrical sort mode (collation) will be disabled when special paper mode is selected for tray 2. • If the bridge unit cover is opened during printing in electrical sort mode (second set onward), the machine cannot recover from the resulting jam condition. • Even when the PJLK command "<Esc>&11H" is released instructing the machine to feed the paper from tray 2, the paper is not fed from the tray. • In addition to the cumulative total counter value (copier/fax/printer), the total counter values for each function can be sent to PCs connected to the PAS Server. • With Overlay printing, the text outside the fixed overlay pattern is printed out as PCL commands (specifically, the ESC sequence).	B3065280 **C**	March 2000 Production	1.3.4
⇒ • If a tray SC occurs during an electrical sort (collation) printing, the error message does not display on LCD. • NIB NVRAM back and restore function (SP mode: Service Tools "L: NIB read/write") is no longer valid. **NOTE**: Please refer to TSB B306 - 006 for details.	B3065280 **D**	April 2000 Production	1.3.6
⇒ • The printed area is shifted slightly when "Unit of Measure" is defined using the macro command. • With Raster images, sometimes part of the right edge of the printable area comes out blank. • Italian and Spanish text characters overlap each other on the configuration page error log. • The following title on the configuration page has been changed: "Printer Name (NetWare)" □ "Printer Name". • If the optional memory and PS option are not installed, A3-size images read by a scanner cannot be printed out.	B3065280 **E**	Sept. 2000 Production	1.4.0

B306 PRINTER OPTION FIRMWARE MODIFICATION HISTORY			
DESCRIPTION OF MODIFICATION	**FIRMWARE LEVEL**	**SERIAL NUMBER**	**FIRMWARE VERSION**
⇒ • Part of the image is missing for the first two pages when printing out with the Unico2000 CAD application. • When printing out with the Microsoft Mini Driver for Windows NT Terminal Server, the image created is sometimes out of specification. • When printing out a file made with certain CAD applications for DOS without using a printer driver, thick lines on the original image appear thin on the output. ** To activate this correction, it is necessary to set Bit SW3, bit 3 to 1 (0=disabled, 1=Enabled). • Firmware modified to meet the functional specifications of the Tray Priority function. • Some stapling modes, the printing image direction is not same as copier's. ** To activate this correction, it is necessary to set Bit SW3, bit 7 to 1 (0=disabled, 1=Enabled). • The print speed slows down during continuos printing of a 1-page job. ** To activate this correction, it is necessary to set Bit SW3, bit 2 to 1 (0=Disabled, 1=Enabled) and set Bit SW3, bit 4 to 1 (DAZEL* support function disabled). The correction will not be effective if both of these switches are enabled. • Firmware modified so that the controller can connect to and be used with the DAZEL System. However, the A265/A267 is not yet officially certified by DAZEL Corp. When you enable this function, it is necessary to do the following: -Upgrade the NIB firmware to version 4.0.6 or later and the PS3 firmware to version 1.2.4 or later. -Set NIC to bi-directional-mode (refer to NIC manual). -Do not set Bit SW3, bit 2 to 1 (as explained above, these two SW should not be simultaneously enabled). * To deactivate the DAZEL support function, set Bit SW3, bit 4 to 1 (0=Enabled, 1=Disabled).	B3065280 **F**	Nov. 2000 Production	1.4.4

Printer Controller B306

B306 PRINTER OPTION FIRMWARE MODIFICATION HISTORY			
DESCRIPTION OF MODIFICATION	**FIRMWARE LEVEL**	**SERIAL NUMBER**	**FIRMWARE VERSION**
⇒ • When using the Dazel system, the job cannot be reset after the paper feed tray reaches paper end • When printing out with a certain macro, the frame and lower area of the image are missing • When using a certain DOS (CAD) application, the paper size and/or paper feed direction are not sent to the controller, and the machine uses the defaults. • When printing out from a certain DOS application, the right part of the internal print pattern is missing.	B3065280 **G**	Dec.2000 Production	1.4.8
• The “Paper Type” information does not listed in the configuration sheet when the by-pass feed unit is installed • The controller stalls when the test document (A4 LEF) for Corel Draw 9 is printed. • . Using the PCL 6 driver when printing an MS Word 97 or Word Pad document. If the following functions are enabled, the front side only is printed out in Top Binding. The rear side only is printed out in Side Binding: Duplex-SIDE BINDING and in Paper mode Different Paper for First Page (First Page from 1 or 2 Tray and Other Pages from Tray 3 or 4; Destination – Printer Default). This problem doesn’t occur with PCL5e driver. • After an A4 LEF print job is completed and the ON Line key is pressed, it takes a relatively long time to enter OFF Line mode. • Add Toner condition occurs during printing with staple mode. The machine does not print out the remaining page even if the toner bottle is replaced	B3065280 **H**	Jan.2001 Production	1.4.9

B306 PRINTER OPTION FIRMWARE MODIFICATION HISTORY			
DESCRIPTION OF MODIFICATION	**FIRMWARE LEVEL**	**SERIAL NUMBER**	**FIRMWARE VERSION**
⇒ • Buffer size error occurs during data communication over IEEE1284 ECP. • When using the PS driver for a collate print job (bypass feed), only the 1st set is printed out. • When a job has been sent with the PS driver but the tray has not been specified (w/manual selection), the machine does not inform the Aficio Manager of this error. • Configuration Sheet does not print out. • With the PS driver, the printer does not print out jobs when the Separator function has been selected • OCR font does not download into the HDD.	B3065280 **J**	Sep.2001 Production	1.5.4

NETWORK INTERFACE BOARD

B307

TABLE OF CONTENTS

1. OVERALL MACHINE INFORMATION 1-1
1.1 SPECIFICATIONS 1-1
1.2 SOFTWARE ACCESSORIES 1-1
1.2.1 UTILITY SOFTWARE 1-1
1.2.2 SERVICE TOOLS 1-1
1.3 BLOCK DIAGRAM 1-2
1.4 COMPONENT LAYOUT 1-3

2. INSTALLATION 2-1
2.1 HARDWARE INSTALLATION 2-1
2.2 UTILITY SOFTWARE SETUP 2-1
2.2.1 PRINTER MANAGER FOR ADMIN 2-1
2.2.2 WEB STATUS MONITOR 2-1
2.3 SETTING UP THE NIB FOR VARIOUS NETWORKS 2-2
2.3.1 NETWARE NETWORKS 2-2
2.3.2 TCP/IP NETWORKS 2-3
Possible Problems with DHCP Parameter Settings 2-4
2.3.3 NETBEUI NETWORKS 2-4
2.3.4 APPLETALK (ETHERTALK) NETWORKS 2-5

3. SERVICE TABLES AND PROCEDURES 3-1
3.1 PRINTING REPORTS 3-1
3.1.1 NIB STATUS SHEET 3-1
3.1.2 NIB LOG LIST 3-1
3.2 NVRAM RESET 3-1

4. TROUBLESHOOTING 4-1
4.1 LED INDICATIONS 4-1
4.2 FIRMWARE HISTORY 4-2

1. OVERALL MACHINE INFORMATION

1.1 SPECIFICATIONS

Type	Internal network interface board
Network Topology	Ethernet 100BaseTX/10BaseT
Network Interface	RJ45 x 1
Cable	STP (Shielded Twisted-Pair) cable, category/type 5 or better **Note:** A cable is not enclosed with this option.
Protocol	TCP/IP, IPX/SPX, NetBEUI, AppleTalk
Ethernet Frame Types	Ethernet II, IEEE802.3, IEEE802.2, Ethernet_SNAP
SNMP support	IP and IPX SNMP support of MIB-II
Supported NOS	§ NetWare 3.x, 4.x, (5.0), Intranetware § Windows NT4.0 § Windows 95/98 § Mac OS 7.1 or later
Other	§ Built-in web server § Built-in Telnet server § Built-in LPD daemon § Firmware update over IP network

1.2 SOFTWARE ACCESSORIES

Utility software is provided in the Drivers and Utilities CD-ROM that comes with the base printer.

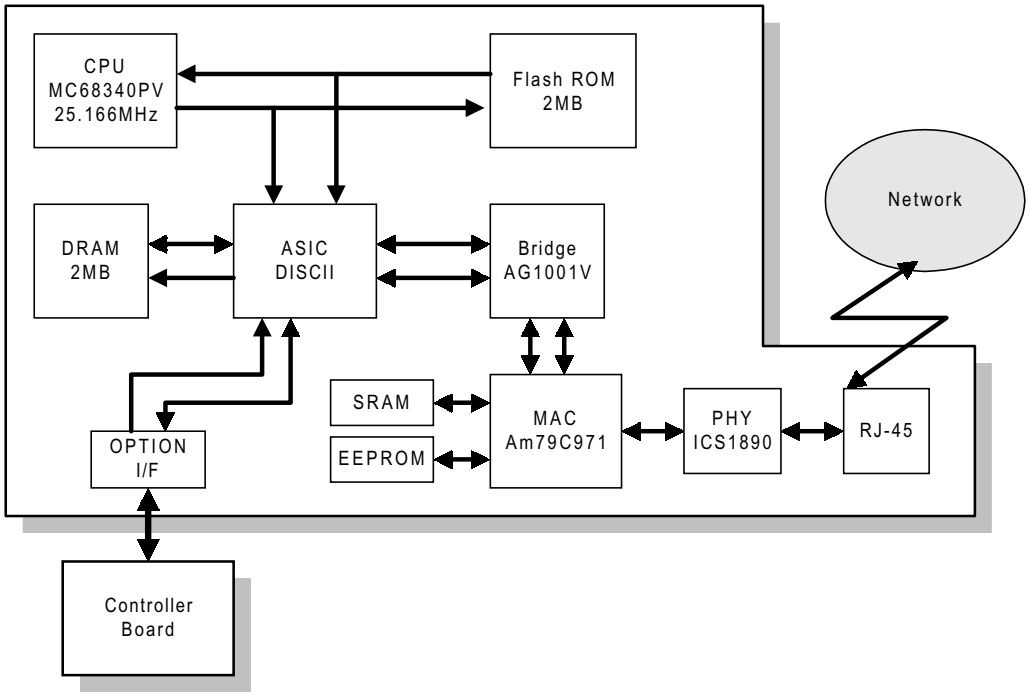
1.2.1 UTILITY SOFTWARE

Software	Description
Aficio Manager for Admin (Win 95/98, NT4)	Printer management software for network administrators. NIB setup utilities are also available.
Aficio Manager for Client (Win95/98, NT4)	Printer management software for client users.
Multi-Direct Print (Win95/98, NT4)	A peer-to-peer print utility for NetBEUI or TCP/IP.

1.2.2 SERVICE TOOLS

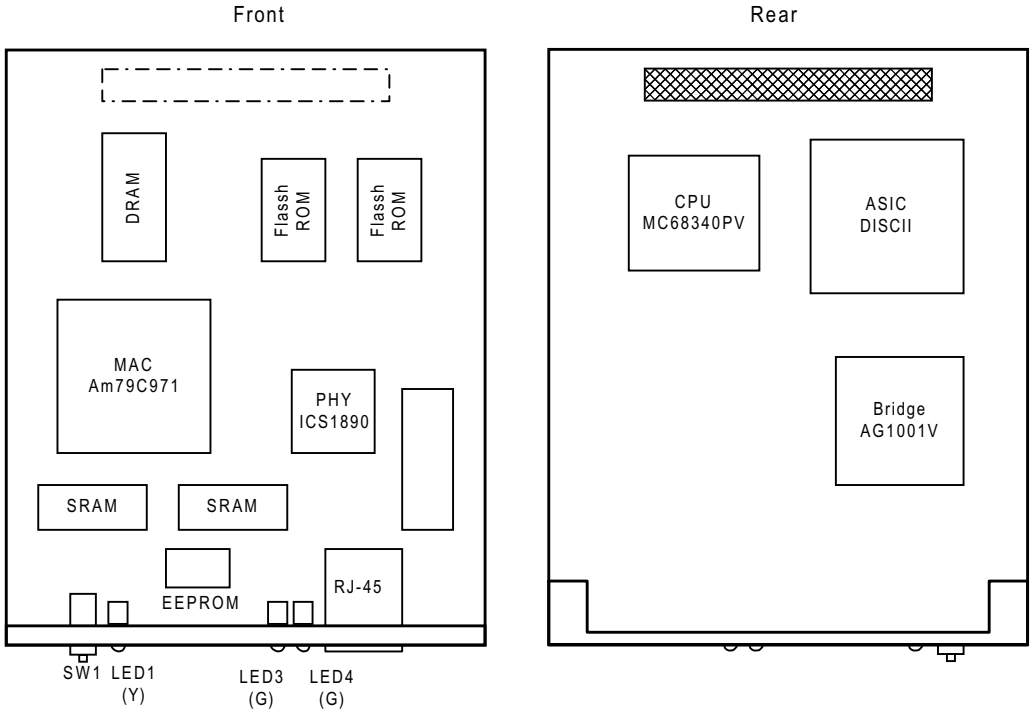
Software	Description
NBTFTP	An NIB firmware update utility for use on a NetBEUI network. This utility is not on the Driver and Utilities CD-ROM; it is issued separately as a service tool.

1.3 BLOCK DIAGRAM



- The Flash ROM contains NIB firmware. The firmware can be upgraded over the network or from an IC card connected to the controller.
- The EEPROM holds all the NIB settings. Before replacing the NIB, the EEPROM data can be backed up in the controller memory, and restored to the new NIB after replacement.

1.4 COMPONENT LAYOUT



- Three LEDs show the status information.
- The push switch (SW1) is used to print reports.

2. INSTALLATION

2.1 HARDWARE INSTALLATION

Refer to the base engine or printer controller installation instructions for how to install the network interface board.

The machine does not print a NIB status sheet automatically. Print the NIB status sheet by pressing the push switch (SW1) on the NIB after installation.

2.2 UTILITY SOFTWARE SETUP

One of the following utilities is required to monitor and set up the NIB. The utilities are on the Drivers and Utilities CD-ROM that comes with the base machine or controller.

2.2.1 PRINTER MANAGER FOR ADMIN

Printer Manager for Admin comes with NIB Setup Tool.

1. Install Printer Manager for Admin from the CD-ROM. (Use Custom Setup when installing the software from the Autorun installation program.)
2. Start the NIB Setup Tool from the menu.

NOTE: Do not use the MAP utility for this type of NIB.

2.2.2 WEB STATUS MONITOR

The built-in web server provides an interface to monitor and manage the NIB from a remote host.

1. Assign an IP address to the NIB.
2. Access “http:// <IP address of the NIB> / from a web browser.

NOTE: 1) Use Printer User Tools at the machine’s operation panel to assign an IP address.
2) Help for the Web Status Monitor is on the Drivers and Utilities CD-ROM. After you can access the NIB web server, set up the “Help URL” parameter in the [Network Config.] – [General] page as follows:

<CD-ROM drive letter>:\HELP\WSHELP\EN\index.htm

2.3 SETTING UP THE NIB FOR VARIOUS NETWORKS

This section gives a summary of how to set up the NIB in various network environments.

NOTE: It is not recommended for service technicians to program network and protocol parameters. Ask the customer's network administrator to program and manage these parameters.

2.3.1 NETWARE NETWORKS

The following parameters are required for NetWare networks.

Parameter	Novell 2.x/3.x/4.x/ (5.0) Bindery Network	Novell 4.x / (5.0) NDS Network
Protocol (Default = Enabled)	Yes	Yes
Operation Mode (Default = Print Server)	Yes (Print Server or Remote Printer)	Yes (Print Server or Remote Printer)
Remote Printer No. (Default = 0)	Yes (Note 1)	Yes (Note 1)
Print Server Name	Yes (Note 2)	Yes (Note 2)
Print Server Password	Cannot be programmed	Cannot be programmed
File Server Name	Yes	No
NDS Context Name	No	Yes
Preferred NDS Tree	No	Yes (Note 3)
Print Queue Scan Rate	Cannot be programmed	Cannot be programmed
Frame Type (Default = Auto-Select)	Yes	Yes
Job Timeout (Default = 15 s)	Yes	Yes
Disable Bindery	Cannot be programmed	Cannot be programmed

NOTE: 1) 'Remote printer number' is necessary only when the "Operation Mode" is "Remote Printer".
2) 'Print server name' is necessary only when the "Operation Mode" is "Print Server". The default name is "RNPxxxxxx" (xxxxxx is the lower 6 digits of the MAC address).
3) The preferred NDS context must be typed in without a starting dot (.).
– OU=Development.O=Corp [OK]
– .OU=Development.O=Corp [NG]
– Development.Corp [OK]
– .Development.Corp [NG]
4) The following utilities can be used to change the settings.
– Printer Manager for Admin
– Web Status Monitor
– (Telnet)

2.3.2 TCP/IP NETWORKS

The following parameters are available for TCP/IP network printing.

Parameter	Description
Protocol (Default = Enabled)	Disable this if TCP/IP is not used.
IP Address (Default = 11.22.33.44)	IP address of the NIB (required)
Subnet Mask (Default = 0.0.0.0)	Subnet mask for the subnet (required)
Default Gateway (Default = 0.0.0.0)	Default gateway of the subnet. This is required when the NIB is accessed from a host in a different subnet.
Access Control Address Access Control Mask	These two parameters are used to allow access to the NIB only to the hosts in the specified subnet. For example, if the Access Control Address is set to "128.1.2.3", access to the NIB is restricted as follows: • When Access Control Mask is "255.0.0.0", hosts in the 128.0.0.0 subnet can access the NIB. • When Access Control Mask is "255.255.0.0", hosts in the 128.1.0.0 subnet can access the NIB. • When Access Control Mask is "255.255.255.0", hosts in the 128.1.2.0 subnet can access the NIB. • When Access Control Mask is "255.255.255.255", only the host that has the IP address 128.1.2.3 can access the NIB.
Network Boot	Use "NONE" when an IP address is specified manually (default), or use "DHCP" if the NIB receives an IP address from a DHCP server. All the other settings may not be used, unless the NIB is installed in, for example, a UNIX network. • RARP + TFTP • BOOTP • RARP + BOOTP • ARP + PING • ARP & RARP • ARP & BOOTP • ARP & RARP & BOOTP
Frame Type	Ethernet II is always used.

Possible Problems with DHCP Parameter Settings

1. IP address conflicts with another host
   If the IP address conflicts with another host, the NIB does not show any errors. However, the NIB cannot receive any print jobs, because the IP protocol is disabled automatically at startup.
   In this case, the other host in conflict with the NIB must have a manually assigned IP address. Find the host using the **PING** and **ARP** commands for example, and assign a suitable address.

2. IP address changes after restarting the machine
   The DHCP server may lease a different IP address to the NIB if available IP addresses become in short supply. As a result, the NIB cannot receive any print jobs, because the jobs are sent to the previously assigned IP address.

   To solve this problem, reserve an IP address at the DHCP server by allocating an address to the NIB's Ethernet (MAC) Address.

2.3.3 NETBEUI NETWORKS

The following parameters are available for NetBEUI network printing.

In a Microsoft Windows network, the NIB appears like a computer host with a printer connected.

Parameter	Description
Protocol (Default = Enabled)	Disable this if NetBEUI is not used.
Workgroup Name (Default = WORKGROUP)	The name of the workgroup to which the NIB belongs in the Microsoft Windows network.
Computer Name	This appears in, for example, the Network Neighborhood" window to which the printer is connected.
Comment	Comment for the host.
Share Name	The Plug&Play name specified with SP5-907 appears here. This cannot be changed with the utility software.
Notify Print Completion (Default = Disabled)	Enable this if notification is needed after printing (the controller notifies the NIB, then the NIB notifies the client PC).

2.3.4 APPLETALK (ETHERTALK) NETWORKS

The following parameters are available for AppleTalk network printing.

Parameter	Description
Protocol (Default = Enabled)	Disable this if AppleTalk is not used.
Network No.	The network number of the AppleTalk network to which the NIB is connected is displayed.
Printer Name	The Plug&Play name specified with SP5-907 appears here. This can be changed using the Apple Printer Utility.
Printer Type	“LaserWriter” is always displayed.
AppleTalk Zone	The default AppleTalk zone name of the network is displayed. This can be changed by sending the ZoneName PS file to the NIB.

3. SERVICE TABLES AND PROCEDURES

3.1 PRINTING REPORTS

3.1.1 NIB STATUS SHEET

The NIB status sheet has all the current settings for the NIB parameters, as well as the firmware version information.

1. Turn on the machine.
2. Hold down the push switch (SW1) on the NIB for 2 seconds. The NIB status sheet is printed.

3.1.2 NIB LOG LIST

The NIB log list has all the system log information.

1. Turn on the machine.
2. Hold down the push switch (SW1) on the NIB for 5 seconds. The NIB log sheet is printed.

3.2 NVRAM RESET

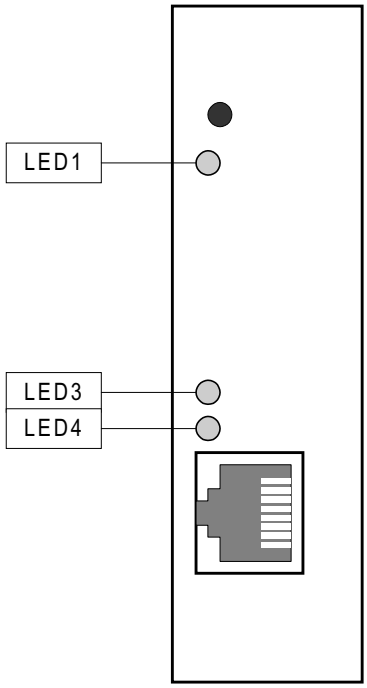
The NIB NVRAM can be reset to the factory defaults using the printer controller's SP modes, or using the following procedure. Refer to the controller service manual for how to use the printer SP mode.

This resets NVRAM (EEPROM) to the factory defaults. All the NIB parameters are initialized to the default settings.

1. Hold down the push switch (SW1) on the NIB while turning on the machine, and keep holding down the switch for 15 seconds.
2. Release the switch for 3 seconds, press it for 3 seconds, and then release it.
3. Turn the main switch off/on to reset the NVRAM.
   NOTE: There is a margin of less than 1 second for error. Use a watch to measure the time periods as accurately as possible.
4. Print out the configuration page, and then check the settings. If the procedure failed, the previous settings remain. Repeat the above procedure until the old settings have been cleared.

4. TROUBLESHOOTING

4.1 LED INDICATIONS



LED	Description	On	Off
LED1	Operating status	Ready	Not ready
LED2	Not used		
LED3	Topology	100BaseTX	10BaseT
LED4	Link status	Link success	Link failure

4.2 FIRMWARE HISTORY

B307 NIB OPTION FIRMWARE MODIFICATION HISTORY			
DESCRIPTION OF MODIFICATION	**FIRMWARE LEVEL**	**SERIAL NUMBER**	**FIRMWARE VERSION**
Initial Production Release	G6785839B	Initial Production	3.7.5
Corrects the following: • On the web status monitor, the improper icon was used for “Paper Empty”. • If the NIB received 5 simultaneous print jobs, additional print jobs would be lost.	G6785839C	February ’99 Production	3.7.7
Corrects the following: • The firmware was modified to support A250/B001.	G6785839D	March ’99 Production	3.8.6
Corrects the following: • One banner data page of NetWare was split into two pages when using NetWare 3.12 pserver mode. • In NetWare remote printer mode, the NIB consumed a server connection license. To avoid this, the firmware has been modified to disconnect the NCP connection immediately after the remote printer has connected to the server.	G6785839E	April ’99 Production	3.8.7
Corrects the following: • On the web status monitor, the wording in German was incorrect. “FreierSpeicher” corrected to “Freier Speicher”. • The Web status monitor displays “No Tray/No Paper” error when a tray is not closed completely. The message has been changed to “Other Error”. • Disabling (Down) or enabling (Up) AppleTalk protocol from the operation panel sometimes did not take effect after the change. To avoid this, the firmware has been changed to save a new setting to the NVRAM immediately after a change.	G6785839F	June ’99 Production	3.8.8
Corrects the following: • When a printer error occurs, the printer information cannot be accessed using Macintosh printer utilities such as Apple Printer Utility. • IPP (Internet Print Protocol) function has been added.	G6785839G	July ’99 Production	3.9.2

B307 NIB OPTION FIRMWARE MODIFICATION HISTORY			
DESCRIPTION OF MODIFICATION	**FIRMWARE LEVEL**	**SERIAL NUMBER**	**FIRMWARE VERSION**
Corrects the following: • The wording “Config Reference” has been changed to “Riferim. Config” for the Italian version of Web status. • The wording “Default Gateway Address” has been changed to “Direcci. Gateway” for the Spanish version of Web status. • A type of Cisco router caused a problem in browsing the NIB in an AppleTalk network. The cause of this was in the Cisco router but the NIB firmware has been modified to correct this.	G6785839H	October ’99 Production	3.9.8
Corrects the following: • PCL text filter support has been added. • “RICOH” brand name has been deleted from several functions and reports.	G6785839J	November ’99 Production	4.0.0
Corrects the following: • HTTP access has been improved when multiple protocols are used at the same time (e.g. telnet, IPP and HTTP).	G6785839K	April ’00 Production	4.0.2
Corrects the following: • Bi-directional communication of "diprint" (using 9100 port of TCP/IP printing) is supported (required for DAZEL system). • The "diprint direct [On/Off]" command using telnet has been implemented for supporting bi-directional communication of diprint (required for DAZEL system). PortNavi and Multidirect Print are not supported if bi-directional communication has been selected. • The spelling of the command "retern" in the UNIX install shell has been corrected to "return". • The DHCP of NetWare5 is supported. • The DHCP relay agent is supported. (This has been confirmed only with Windows NT 4.0 relay agent at this time.) • There may be some minor (character) display errors on the LCD while the NIB firmware is being upgraded. The firmware has been modified to prevent this.	G6785839L	October ’00 Production	4.0.6
⇒ Corrects the following: • Classless InterDomain Routing (CIDR) is supported. • DHCP of Solaris 2.6 is supported.	G6785839M	February ’01 Production	4.0.7

B307 NIB OPTION FIRMWARE MODIFICATION HISTORY			
DESCRIPTION OF MODIFICATION	**FIRMWARE LEVEL**	**SERIAL NUMBER**	**FIRMWARE VERSION**
⇒ Corrects the following: • Can not connect to NetWare Servers when the servers use NCP Packet Signature Level 2.	G6785839N	August ’01 Production	4.0.8
Corrects the following: • SNMP security vulnerabilities reported by CERT on Feb.12, 2002 has been tested using the PROTOS c06-snmpv1 test suite and we have verified the fixes. -CERT :http://www.cert.org/advisories/CA-2002-03.html -PROTOS c06-snmpv1 test Suite :http://www.ee.oulu.fi/research/ouspg/protos/testing/c06/snmpv1/	G6785839P	July ’02 Production	4.1.0

ROM HISTORY

TABLE OF CONTENTS

ROM HISTORY..... 1-1
1.1 FIRMWARE MODIFICATION HISTORY..... 1-1

1. ROM HISTORY

1.1 FIRMWARE MODIFICATION HISTORY

B308 POSTSCRIPT OPTION FIRMWARE MODIFICATION HISTORY			
DESCRIPTION OF MODIFICATION	**FIRMWARE LEVEL**	**SERIAL NUMBER**	**FIRMWARE VERSION**
Corrects the following: • The printer controller can now detect whether it is installed in a A250 or B001	B3085280 **A**	Initial Production	1.0.0
Corrects the following: • The PostScript Option firmware has been modified so that it can also be used with the A265/A267.	B3085280 **B**	October '99 Production	1.2.0
Corrects the following: • The PostScript Option firmware was modified so that it can also be used with the B001.	B3085280 **C**	October '99 Production	1.2.1
Corrects the following: • The product names of the B001 PostScript drivers for NRG, Savin and Infotec should be corrected as follows: Incorrect / Correct NRG D415s/2815s /3215s PS3 → NRG D415s/2815S /3215 PS3 SAVIN 9915DP PS3 → SAVIN 2015DP PS3 Infotec PS3 → Infotec 4150 MF PS3	B3085280 **D**	January '00 Production	1.2.2
⇒ Corrects the following: • Firmware modified so that the controller can connect to and be used with the DAZEL System. However, the A265/A267 is not yet officially certified by DAZEL Corp. When you enable this function, it is necessary to do the following: -Upgrade the NIB firmware to version 4.0.6 or later and the PS3 firmware to version 1.2.4 or later. -Set NIC to bi-directional-mode (refer to NIC manual). -Do not set Bit SW3, bit 2 to 1 (as explained above, these two SW should not be simultaneously enabled). * To deactivate the DAZEL support function, set Bit SW3, bit 4 to <u>1</u> (0=Enabled, 1=Disabled).	B3085280 **E**	November '00 Production	1.2.4

…Continued

B308 POSTSCRIPT OPTION FIRMWARE MODIFICATION HISTORY			
DESCRIPTION OF MODIFICATION	**FIRMWARE LEVEL**	**SERIAL NUMBER**	**FIRMWARE VERSION**
⇒ Continued… • The print speed slows down during continuos printing of a 1-page job. ** To activate this correction, it is necessary to set Bit SW3, bit 2 to 1 (0=Disabled, 1=Enabled) and set Bit SW3, bit 4 to 1 (DAZEL* support function disabled). The correction will not be effective if both of these switches are enabled.			
Corrects the following: • During RAM collate printing, the job cannot be cancelled. • When the job is cancelled, the output paper count is sent to the printer controller (a side-effect of the previous modification made for DAZEL connection).	B3085280 **F**	January '01 Production	1.2.6

TECHNICAL SERVICE BULLETINS

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A265/A267 - 001 **03/28/2000**

APPLICABLE MODEL:

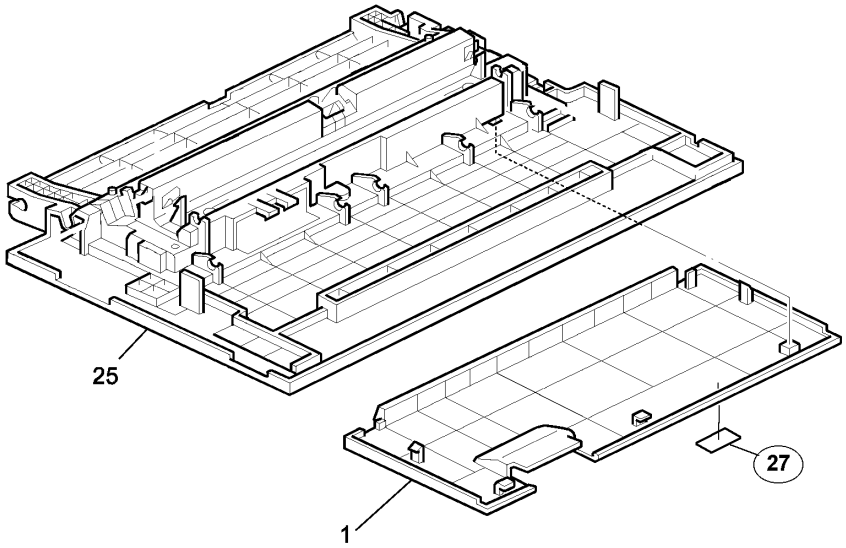
GESTETNER – 3222/3227
RICOH – AFICIO 220/270
SAVIN – 9922DP/9927DP

Note: This copy is intended as a master original for reproduction of additional bulletins.

SUBJECT: TRANSFER UNIT

GENERAL:

A Decal has been added to the location where the user should push the Right Cover to completely close it. The following part update is being issued for all A265/A267 Parts Catalogs. Please update your Parts Catalogs with the following information.



			REFERENCE	
PART NUMBER	**DESCRIPTION**	**QTY**	**PAGE**	**ITEM**
A2673858	Decal – Right Cover	1	25	27*

***** Denotes new item number.

UNITS AFFECTED:

All A265/A267 copiers manufactured after the Serial Numbers listed below will have the Decal – Right Cover installed during production.

MODEL NAME	SERIAL NUMBER
Gestetner 3222	H2491100001
Gestetner 3227	H2591100001
Ricoh AFICIO 220	H2491100536
Ricoh AFICIO 270	H2591100401
Savin 9922DP	H2491100001
Savin 9927DP	H2591100001

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A265/A267 – 002 **03/28/2000**

APPLICABLE MODEL:

GESTETNER – 3222/3227
RICOH – AFICIO 220/270
SAVIN – 9922DP/9927DP

Note: This copy is intended as a master original for reproduction of additional bulletins.



SERVICE MANUAL

SUBJECT: SERVICE MANUAL - INSERT

GENERAL:

The Service Manual pages listed below must be replaced with the pages supplied. Each bulletin package contains 1 set of replacement pages.

PAGES:

The revised areas have been highlighted by an arrow ⇒.

- 1-7 Updated Information (Installable Option Table)
- 3-35 Updated Information (1,000 Sheet Finisher Installation)
- 3-46 Updated Information (Tray Heater)
- 4-9 Updated Information (SP1-908)
- 4-44 Updated Information (SP5-401)
- 4-83 Updated Information (Special Tools)
- 5-3 Updated Information (PM Table)
- 7-14 & 7-15 Updated Information (Service Call Conditions)

1.2.2 INSTALLABLE OPTION TABLE

Copier options

No.	Option	A265/A267	Note
1	ARDF (Optional)	❍	Install either no. 1 or 2
2	Platen Cover (Optional)	❍	Install either no. 1 or 2
3	Paper Tray Unit - 2 tray (Optional)	❍	Install either no. 3 or 4
4	LCT (Optional)	❍	Install either no. 3 or 4
5	1-bin Tray (Optional)	Δ	Requires no.9
6	Shift Tray (Optional)	❍	Install either no. 6 or 10
7	Duplex Unit (Optional)	Δ	Requires no.9
8	By-pass Tray (Optional)	❍	
9	Interchange Unit (Optional)	❍	
10	Bridge Unit (Optional)	Δ	No. 10 requires no.11 Install either no. 6 or 10
⇒ 11	1000-sheet Finisher (Optional)	Δ	Requires no.10 and either no.3 or 4
12	Memory 48 MB (Optional)	❍	
13	Key Counter Bracket	❍	

❍ = Available Δ = Requires another option

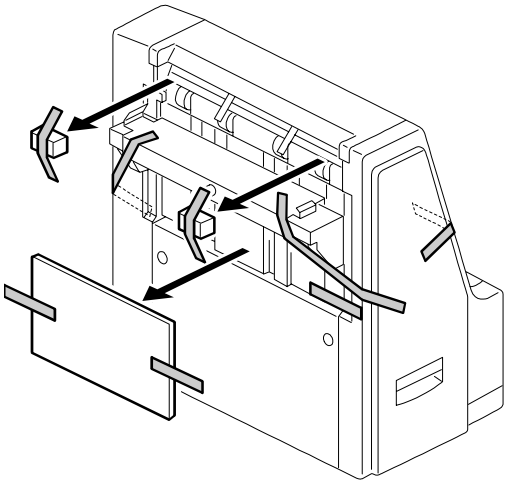
Fax and printer options

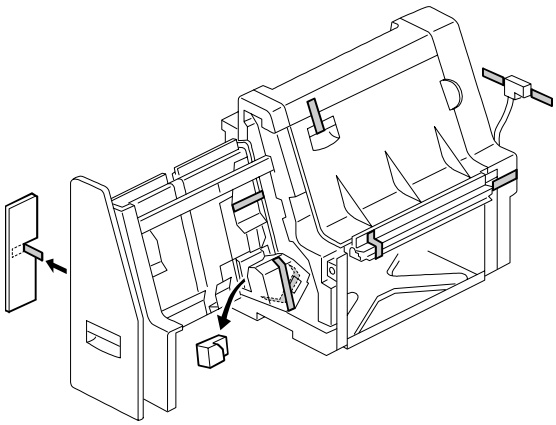
All options for the fax and printer units are available when these units have been installed.

Scanner option

When the scanner option is installed, the printer option must be installed.

3.12 1,000-SHEET FINISHER INSTALLATION





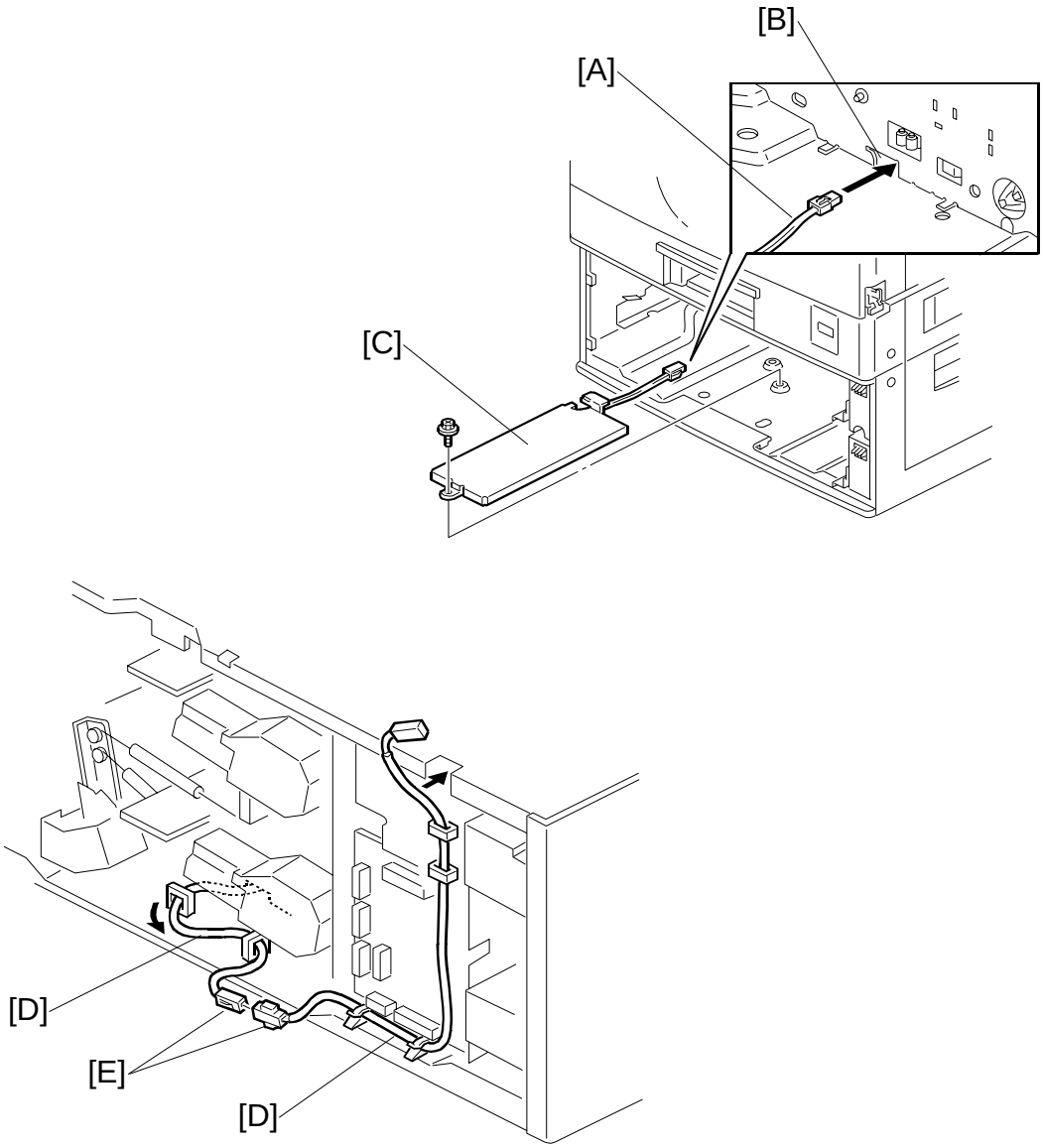
⚠CAUTION

Unplug the main machine power cord before starting the following procedure.

⇒ **NOTE:** If this finisher will be installed on the A265 or A267 copier or G038 printer, the following options must be installed before installing this finisher.
Bridge Unit (A897)
Paper Tray Unit (A860) or LCT (A862)

1. Unpack the finisher and remove the tapes.

⇒



5. Slide out the two paper trays from the optional paper tray unit.
6. Pass the connector [A] through the opening [B].
7. Install the tray heater assembly [C] (1 screw).
8. Clamp the cables [D], as shown.
9. Join the connectors [E].
10. Reinstall the cable guide.

Mode No.			Function	Settings
Class 1 and 2	Class 3			
1-908*	5	1st Bottom Plate Pressure Re-adjustment (Middle Size)	Adjusts the upper paper lift motor forward rotation time for paper sizes larger than the small size threshold set with SP1-908-8, up to and including the middle size threshold set with SP1-908-9. The motor rotates forward when the amount of remaining paper is lower than the value of SP1-908-7. If a middle size threshold is not stored with SP1-908-9, this SP is not used. *Use this SP when a paper feed problem occurs when paper in the 1st paper tray is running low.* *See "Paper Lift Mechanism" for details on SP1-908, Section 2.8.4.*	0 ~ 2000 1 ms/step **300 ms**
	6	1st Paper Amount (Small Size)	Selects the remaining paper amount limit for use with SP1-908-4. *Set this SP to 2 or 3 when a paper feed problem occurs before near-end.* *See "Paper Lift Mechanism" for details on SP1-908, Section 2.8.4.*	0: None (Empty) **1: Near End** 2: 25% 3: 75%
	7	1st Paper Amount (Middle Size)	Selects the remaining paper amount limit for use with SP1-908-5. *Set this SP to 2 or 3 when a paper feed problem occurs before near-end.* *See "Paper Lift Mechanism" for details on SP1-908, Section 2.8.4.*	0: None (Empty) **1: Near End** 2: 25% 3: 75%
⇒	8	1st Small Paper Size Setting	Selects the small size threshold for the 1st paper tray. "0" means that this setting is not used. *The size used by SP1-908 is determined by paper width. See "Paper Lift Mechanism" for details on SP1-908, Section 2.8.4.* **NOTE:** The "T" after A4 and LT refer to lengthwise feeding direction.	0: None (Not used) **1: HLT/A5** 2: A4T 3: LG, LTT 4: DLT, LT 5: A3, A4
	9	1st Middle Paper Size Setting	Selects the middle size threshold for the upper tray. "0" means that this setting is not used. *The value must be larger than the small size threshold (SP1-908-8). The size used by SP1-908 is determined by paper width. See "Paper Lift Mechanism" for details on SP1-908, Section 2.8.4.* **NOTE:** The "T" after A4 and LT refer to lengthwise feeding direction.	**0: None (Not used)** 1: HLT/A5 2: A4T 3: LG,LTT 4: DLT,LT 5: A3,A4

Mode No.			Function	Settings
Class 1 and 2	Class 3			
5-104*		A3/DLT Double Count	Specifies whether the counter is doubled for A3/11" x 17" paper.	**0: No** 1: Yes
			If "Yes" is selected, the total counter (mechanical counter) and the current user code counter counts up twice when A3/11" x 17" paper is used.	
5-106*		ADS Level Selection	Selects the image density level that is used in ADS mode.	1 ~ 7 1 notch/step **4**
5-113*		Option Counter Type	Selects the optional counter type.	**0: None** 1: Key Counter
			After installing the optional key counter, this SP must be set to "1".	
5-116*		Key Counter Up Timing	Determines whether the total counter counts up at paper feed-in or at paper exit.	**0: Feed In** 1: Exit
5-120*		Opt. Counter Reset Setting	**This SP is for Japan only. Do not change the value.**	0: Yes 1: Stand-by 2: None
5-143		DF 180° Image Rotation	Select whether the image is rotated 180° (upside down) in DF mode.	**0: No** 1: Yes
			Selects "Yes" when making a copy on a letter headed page when feeding from a paper tray.	
⇒ 5-401*	1	User Code Mode (Copier)	Selects whether the user code feature is enabled in copy mode or not.	**0: No** 1: Yes
			If this value is changed, the user tool setting is also changed.	
	2	User Code Mode (Fax)	**This SP is for Japan only. Do not change the value.**	**0: No** 1: Yes
			If this value is changed, the user tool setting is also changed.	
	3	User Code Mode (Printer)	**This SP is for Japan only. Do not change the value.**	**0: No** 1: Yes
			If this value is changed, the user tool setting is also changed.	
5-501*	1	PM Alarm Interval	Sets the PM interval.	1 ~ 255 1k copies /step **120k copies**
			The value stored in this SP is used when the value of SP5-501-2 and/or -3 is "1".	
	2	PM Alarm Mode (Prints)	Selects whether the PM alarm for the number of prints/copies is enabled or not	0: No **1: Yes**
			If this is "1", the PM alarm function is enabled.	
	3	PM Alarm Mode (Original)	**This SP is for Japan only. Do not change the value.** Selects whether the PM alarm for the number of scans is enabled or not	**0: No** 1: Yes
			If this is "1", the PM alarm function is enabled.	

4.4 LEDS

BICU

Number	Function
LED 102	Monitors the +5 V line for the slave CPU. Usually, this LED is blinking.
LED 103	Monitors the +5 VE line. Usually, this LED is lit.

IOB

Number	Function
LED 100	Monitors the connection between the IOB and the BICU. Usually, this LED is blinking.

4.5 SPECIAL TOOLS AND LUBRICANTS

4.5.1 SPECIAL TOOLS

Part Number	Description	Q'ty
54209516	Test Chart - OS-A3 (10 pcs/set)	1
A0069104	Scanner Positioning Pin (4 pcs/set)	1
A0299387	Digital Multimeter - FLUKE 87	1
A2309351	Case - Flash Memory Card	1
A2309352	Flash Memory Card - 4MB	1
⇒ A2679099	NVRAM - Minus Counter	1
A2309003	Adjustment Cam – Laser Unit	1
A2679002	Positioning Pin - Laser Unit	1

4.5.2 LUBRICANTS

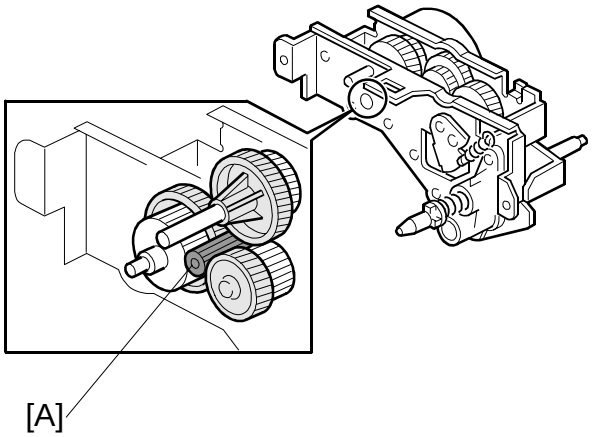
Part Number	Description	Q'ty
A0289300	Grease Barrierta - JFE 5 5/2	1
52039501	Silicone Grease G-501	1

	EM	120K	240K	360K	NOTE
1,000-SHEET FINISHER					
Rollers	C				Clean with water or alcohol.
Brush Roller	I	I	I	I	Replace if necessary.
Discharge Brush	C	C	C	C	Clean with a dry cloth
Sensors	C				Blower brush
⇒ Jogger Fences	I	I	I	I	Replace if necessary.

	EM	150K	300K	450K	NOTE
1-BIN TRAY UNIT					
Rollers	C				Dry or damp cloth
Copy Tray	C				Dry or damp cloth
Sensors	C				Blower brush

NOTE 1.

Main Motor Drive Gear



Do the following every EM:

Lubricate the main motor drive gear [A] with silicone grease G501.

SC752: Finisher connection error

-Definition- [B]

The IOB cannot communicate with the finisher properly when the bridge unit is installed.

- Possible causes -

- Poor connection between the finisher and bridge unit
- IOB defective
- Fuse FU6 Defective (PSU)

SC760: ADF gate abnormal

Definition: [B]

The ADF Gate signal line between the ADF main board and the IOB is disconnected.

Possible Causes:

- ADF main board defective
- Input/output board defective
- Poor connection (ADF Gate line) between the ADF main board and the IOB.

SC770: Shift tray motor error (optional shift tray unit)

-Definition- [B]

The shift tray half-turn sensor is not activated within a certain time after the shift tray motor turned on.

- Possible causes -

- Shift tray motor defective
- Shift tray half-turn sensor defective

SC900: Electrical total counter error

Definition: [B]

The electrical total counter is not working properly.

Possible Causes:

- NVRAM defective
- Fuse FU7 Defective (PSU)

⟹ SC901: Mechanical Total Counter

Definition: [B]

The mechanical total counter is not working properly.

Possible Causes:

- Mechanical total counter defective
- IOB defective
- Disconnected mechanical total counter

SC921: EMB (Copier feature expander) hardware error

Definition: [B]

The hardware of the MSU is defective.

Possible Causes:

- EMB (Copier feature expander) defective
- BICU defective

SC980: Program loading error

Definition: [A]

The program cannot load properly.

Possible Causes:

- The connection between the BICU and the Memory Card is poor.
- BICU board defective
- Memory Card or the program defective

NOTE: This SC should be cleared by trying to download again from a memory card.

⟹ SC981: NVRAM error

Definition: [B]

The NVRAM is defective.

Possible Causes:

- NVRAM is defective.
- BICU is defective.

SC990: Communication error between BICU and IOB

Definition: [B]

The BICU board cannot communicate with the IOB.

Possible Causes:

- The connection between the BICU board and the IOB is poor.
- BICU board defective
- IOB defective

SC999: Program version error

Definition: [B]

An incorrect type of main software was downloaded.

Possible Causes:

- The main software for another machine was downloaded to this machine.

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A265/A267 - 003 **04/17/2000**

APPLICABLE MODEL:

GESTETNER – 3222/3227
RICOH – AFICIO 220/270
SAVIN – 9922DP/9927DP

Note: This copy is intended as a master original for reproduction of additional bulletins.

SUBJECT: SERVICE MANUAL - INSERT



■ SERVICE MANUAL

GENERAL:

The Service Manual pages listed below must be replaced with the pages supplied. Each bulletin package contains 1 set of replacement pages.

PAGES:

The revised areas have been highlighted by an arrow ⇒.

- TOC vi through ix — Updated Information (Table of Contents)
- 4-84 & 85 — Updated Information (ROM History)

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4.2.17 ID SENSOR ERROR ANALYSIS (SP2-221) 4-80
4.3 USER TOOLS 4-81
4.3.1 HOW TO ENTER AND EXIT USER TOOLS 4-81
4.3.2 USER TOOLS TABLE 4-81
System Setting Table 4-81
Copy Setting Table 4-82
4.4 LEDS 4-83
BICU 4-83
IOB 4-83
4.5 SPECIAL TOOLS AND LUBRICANTS 4-83
4.5.1 SPECIAL TOOLS 4-83
4.5.2 LUBRICANTS 4-83
4.6 ROM HISTORY 4-84
4.6.1 ROM HISTORY - BICU 4-84

PREVENTIVE MAINTENANCE

5. PREVENTIVE MAINTENANCE SCHEDULE 5-1
5.1 PM TABLE 5-1

REPLACEMENT AND ADJUSTMENT

6. REPLACEMENT AND ADJUSTMENT 6-1
6.1 SCANNER UNIT 6-1
6.1.1 EXPOSURE GLASS 6-1
6.1.2 SCANNER EXTERIOR/OPERATION PANEL 6-2
6.1.3 LENS BLOCK ASSEMBLY 6-3
6.1.4 ORIGINAL SIZE SENSORS/LAMP STABILIZER 6-4
6.1.5 EXPOSURE LAMP 6-5
6.1.6 SCANNER MOTOR 6-6
6.1.7 SCANNER WIRES 6-7
6.2 LASER UNIT 6-10
6.2.1 CAUTION DECAL LOCATIONS 6-10
6.2.2 LASER UNIT 6-11
6.2.3 POLYGON MIRROR MOTOR 6-12
6.2.4 LD UNIT 6-12
6.2.5 LASER SYNCHRONIZATION DETECTOR 6-13
6.3 PHOTOCONDUCTOR UNIT (PCU) 6-14
6.3.1 PCU 6-14
6.4 TRANSFER UNIT 6-15
6.4.1 TRANSFER ROLLER UNIT 6-15
6.4.2 IMAGE DENSITY SENSOR 6-16
6.5 FUSING/EXIT 6-17
6.5.1 FUSING UNIT 6-17
6.5.2 THERMISTOR 6-17
6.5.3 THERMOFUSE 6-18

6.5.4 HOT ROLLER AND FUSING LAMP 6-19
6.5.5 PRESSURE ROLLER/CLEANING ROLLER 6-20
6.5.6 PAPER EXIT SENSOR/PAPER OVERFLOW SENSOR 6-21
6.6 PAPER FEED 6-22
6.6.1 FEED ROLLERS 6-22
6.6.2 PAPER END SENSOR 6-23
6.6.3 PAPER TRAY LIFT MOTORS 6-24
6.6.4 REGISTRATION CLUTCH 6-25
6.6.5 PAPER FEED CLUTCHES 6-26
Lower Paper Feed Clutch 6-26
Upper Paper Feed Clutch. 6-26
6.6.6 RELAY CLUTCHES 6-27
6.6.7 PAPER SIZE DETECTOR/SPECIAL PAPER SENSOR 6-28
6.6.8 REGISTRATION SENSOR 6-29
6.6.9 RELAY SENSORS 6-30
Upper Relay Sensor 6-30
Lower Relay Sensor 6-30
6.7 PCBS AND OTHER ITEMS 6-31
6.7.1 BICU BOARD 6-31
6.7.2 I/O BOARD 6-32
6.7.3 POWER PACK 6-32
6.7.4 MAIN MOTOR 6-33
6.7.5 PSU 6-34
6.8 COPY ADJUSTMENTS: PRINTING/SCANNING 6-35
6.8.1 PRINTING 6-35
Registration - Leading Edge/Side-to-Side 6-35
Blank Margin 6-36
Main Scan Magnification 6-36
Parallelogram Image Adjustment 6-37
6.8.2 SCANNING 6-38
Registration: Platen Mode 6-38
Magnification 6-38
Standard White Density Adjustment 6-39
6.8.3 ADF IMAGE ADJUSTMENT 6-40
Registration 6-40

TROUBLESHOOTING

7. TROUBLESHOOTING 7-1
7.1 SERVICE CALL CONDITIONS 7-1
7.1.1 SUMMARY 7-1
7.1.2 SC CODE DESCRIPTIONS 7-2
SC194: IPU White Level Detection Error 7-4
SC546: Unstable fusing temperature 7-9
SC620: Communication error between IOB and ADF 7-10
SC760: ADF gate abnormal 7-14
SC900: Electrical total counter error 7-14
SC901: Mechanical Total Counter 7-14

SC921: EMB (Copier feature expander) hardware error 7-15
SC980: Program loading error 7-15
SC990: Communication error between BICU and IOB..... 7-15
SC999: Program version error 7-15
7.2 PAPER FEED TROUBLESHOOTING 7-16
7.3 SKEWED IMAGE..... 7-17
7.4 TONER DENSITY..... 7-18
7.4.1 ADJUST THE TONER DENSITY CONTROL 7-18
If the toner density is too low..... 7-18
If the toner density is too high 7-18
7.4.2 DIRTY BACKGROUND 7-18
7.5 ELECTRICAL COMPONENT DEFECTS..... 7-19
7.5.1 SENSORS 7-19
7.5.2 SWITCHES..... 7-21
7.6 BLOWN FUSE CONDITIONS..... 7-22

AUTO RECIRCULATING DOCUMENT FEEDER A858

1. OVERALL MACHINE INFORMATION 8-1
1.1 SPECIFICATIONS..... 8-1
1.2 MECHANICAL COMPONENT LAYOUT..... 8-2
1.3 ELECTRICAL COMPONENT LAYOUT 8-3
1.4 ELECTRICAL COMPONENT DESCRIPTION 8-4
1.5 DRIVE LAYOUT 8-5

2. DETAILED SECTION DESCRIPTIONS 8-6
2.1 ORIGINAL SIZE DETECTION 8-6
1.2 PICK-UP AND SEPARATION..... 8-9
1.3 ORIGINAL TRANSPORT AND EXIT 8-10
1.3.1 SINGLE-SIDED ORIGINALS 8-10
1.3.2 DOUBLE-SIDED ORIGINALS..... 8-11
1.3.3 ORIGINAL TRAILING EDGE SENSOR 8-12
1.4 STAMP 8-13
1.5 TIMING CHARTS..... 8-14
1.5.1 LT SIDEWAYS (SINGLE-SIDED ORIGINAL MODE) 8-14
1.5.2 LT SIDEWAYS STAMP MODE
(SINGLE-SIDED ORIGINAL MODE) 8-15
1.5.3 LT SIDEWAYS (DOUBLE-SIDED ORIGINAL MODE)..... 8-16
1.5.4 LT SIDEWAYS STAMP MODE
(DOUBLE-SIDED ORIGINAL MODE) 8-17
1.6 CONDITION OF JAM DETECTION 8-18
1.7 OVERALL ELECTRICAL CIRCUIT..... 8-19

3. REPLACEMENT AND ADJUSTMENT..... 8-20
3.1 DF EXIT TABLE AND COVER 8-20
3.2 ORIGINAL FEED UNIT..... 8-21
3.3 LEFT COVER 8-22

3.4 PICK-UP ROLLER 8-23
3.5 FEED BELT 8-24
3.6 SEPARATION ROLLER 8-25
3.7 ORIGINAL SET/ORIGINAL REVERSE SENSOR 8-26
3.8 ORIGINAL LENGTH, WIDTHSENSOR BOARD AND TRAILING EDGE SENSOR 8-27
3.9 DF FEED CLUTCH/DF PICK-UP SOLENOID/ TRANSPORT/ DF FEED MOTORS 8-28
DF Feed Clutch 8-28
Pick-up Solenoid 8-28
Transport Motor 8-28
DF Feed Motor 8-28
3.10 REGISTRATION SENSOR 8-29
3.11 STAMP SOLENOID AND ORIGINAL EXIT SENSOR 8-30

PAPER TRAY UNIT A860

1. OVERALL MACHINE INFORMATION 9-1
1.1 SPECIFICATIONS 9-1
1.2 MECHANICAL COMPONENT LAYOUT 9-2
1.3 ELECTRICAL COMPONENT LAYOUT 9-3
1.4 ELECTRICAL COMPONENT DESCRIPTION 9-4
1.5 DRIVE LAYOUT 9-5

2. DETAILED DESCRIPTIONS 9-6
2.1 PAPER FEED AND SEPARATION MECHANISM 9-6
2.2 PAPER LIFT MECHANISM 9-7
2.3 PAPER END DETECTION 9-9
2.4 PAPER HEIGHT DETECTION 9-10
1.5 PAPER SIZE DETECTION 9-12
1.6 SIDE AND END FENCES 9-13
Side Fences 9-13
End Fence 9-13

3. REPLACEMENT AND ADJUSTMENT 9-14
3.1 FEED ROLLER REPLACEMENT 9-14
3.2 TRAY MAIN BOARD REPLACEMENT 9-15
3.3 TRAY MOTOR REPLACEMENT 9-15
3.4 RELAY CLUTCH REPLACEMENT 9-16
3.5 UPPER PAPER FEED CLUTCH REPLACEMENT 9-17
3.6 LOWER PAPER FEED CLUTCH REPLACEMENT 9-18
3.7 LIFT MOTOR REPLACEMENT 9-19
3.8 PAPER END SENSOR REPLACEMENT 9-20
3.9 VERTICAL TRANSPORT SENSOR REPLACEMENT 9-20
3.10 PAPER SIZE SWITCH REPLACEMENT 9-21

4.6 ROM HISTORY

4.6.1 ROM HISTORY - BICU

A265/A267 Firmware Modification History (BICU)			
Description of Modification	**Firmware Level**	**Serial Number**	**Firmware Version**
Initial Production	A2675532 B	From initial production.	1.57
Corrects the following: • The machine goes into Energy Saver Mode when the operator presses the Energy Saver Mode key while a print job is in progress. However, when the operator brings the machine out of the mode and returns to System Settings or Copy Features (both inside user tools), a message is displayed asking the operator to wait and the machine returns to the main copy screen. At this time, the LED for the user tools key is lit, and all indicators except the LCD report that the machine is still in User Tools. • If the operator enters System Settings or Copy Features (both inside user tools) from Fax, Printer or Scanner mode while a duplex or staple copy job is in progress, the “Copy in progress” screen is displayed. The message is still displayed even if the operator presses the User Tools Key to return to the main copy screen after the copy job finishes. • If a jam occurs while printing out a counter report, the jam indication is displayed but soon disappears. The machine then returns to the counter display screen. In addition, if the paper end condition occurs while the paper is being fed, the machine returns to the counter display screen without properly displaying “Set A4 (81/2 X 11) paper in tray”.	A2675532 C	October 1999 production.	1.64 Continued…

A265/A267 Firmware Modification History (BICU)			
Description of Modification	**Firmware Level**	**Serial Number**	**Firmware Version**
• On machines with an optional LCT installed, SC507 can occur when the main power SW is turned on under the following conditions: 1. The LCT end fence is not in the HP *and* 2. The bottom plate for the right tray is not detected by the lower HP sensor. However, these occurrence conditions are very rare. • "1/2" appears in the Key Operator Tools display (inside user tools – system settings). • After the operator exits either of the following screens with the User Tools key and starts a copy job, the first sheet is printed out as the counter list. ➢ System Settings – Key Operator Tools – Counter List Printing ➢ Copy Features– Key Operator Tools – Counter List Printing			
Corrects the following: • In printer mode, dirty background may appear near the leading edge of the first page printed out following a paper jam recovery. • When exiting to the 1-bin tray, a paper jam may occur caused by the bouncing of the exit sensor actuator.	A2675532 D	March 2000 production.	1.74

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A265/A267 - 004 **05/18/2000**

APPLICABLE MODEL:

GESTETNER – 3222/3227
RICOH – AFICIO 220/270
SAVIN – 9922DP/9927DP

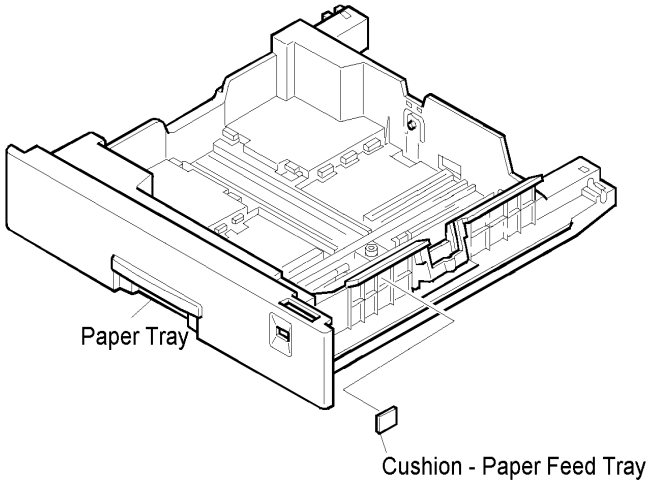
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SUBJECT: PARTS CATALOG UPDATES

GENERAL:

The following parts updates are being issued for all A265/A267 Parts Catalogs (Sections).

- **UPDATE 1:** **Cushion – Paper Feed Tray –** To prevent Paper Tray 1 and 2 from generating noise during paper feed, a Cushion has been added. The following part update is being issued for all A265/A267 Parts Catalogs. Please update your Part Catalog with the following information.



			REFERENCE	
PART NUMBER	**DESCRIPTION**	**QTY**	**PAGE**	**ITEM**
A2672913	Cushion – Paper Feed Tray	1	37	33 *
A2672913	Cushion – Paper Feed Tray	1	39	36 *

* Denotes new item number.

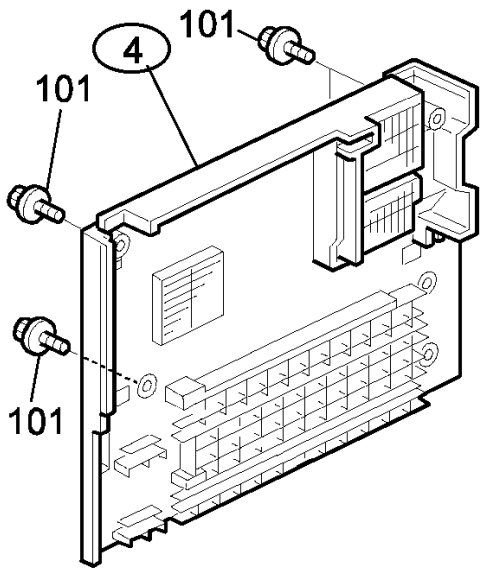
UNITS AFFECTED:

A265/A267 Serial Number cut-in not available at time of publication.

Continued…

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- **UPDATE 2:** **Left Cover –** To standardize with other models the Left Cover has been changed. The following part update is being issued for all A265/A267 Parts Catalogs. Please update your Part Catalog with the following information.



					REFERENCE	
OLD PART NO.	**NEW PART NO.**	**DESCRIPTION**	**QTY**	**INT**	**PAGE**	**ITEM**
A2671281	G0621281	Left Cover	1	0	11	4

INTERCHANGEABILITY CHART:

0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines.
3/S	Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or previously modified, use the new part numbers individually.		

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A265/A267 - 005 **05/15/2000**

APPLICABLE MODEL:
GESTETNER – 3222/3227
RICOH – AFICIO 220/270
SAVIN – 9922DP/9927DP

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SUBJECT: BLACK LINE ON EDGE OF SCANNED IMAGE

SYMPTOM:

When using the scanner function, a black line appears on the scanned image.

CAUSE:

Scanning starts from the upper-left hand corner of the Exposure Glass. Therefore, when the original is curled or not lined up flush against the corner in "Platen Mode" or when DF feed is late in the "ADF Mode". The machine scans part of the Exposure Glass Scale first and then edge of the original.

SOLUTION:

A new scanner SP mode has been added **(SP017, "Trimming")** so that the scanning margin can be adjusted. This SP Mode was made available with the release of scanner controller firmware version 4.0.3. Please make sure to perform SP6-006 after installing the new firmware.

The scanner controller firmware version 4.0.3 **(File name A844_403.exe)** can be downloaded through the Ricoh Technical Services FTP Site http://tsc.ricohcorp.com.

NOTE: *Refer to Facts Line Bulletin # FL002 for more information about the FTP Internet Web Site.*

The Details Of This SP Mode Are As Follows:

Scanner SP017:

No		Function	Settings
017	Trimming	Adjusts the scanning margins for both the main and sub scan directions.	0 ~ 5 1 mm / step
		The larger the value, the wider the margin.	**0**

NOTE: *This problem occurs only when the machine is set to scan the entire original, not when scanning a selected area within the original. Therefore, this SP mode does not apply to cases where the Preview function is used.*

Continued…

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EXAMPLES:

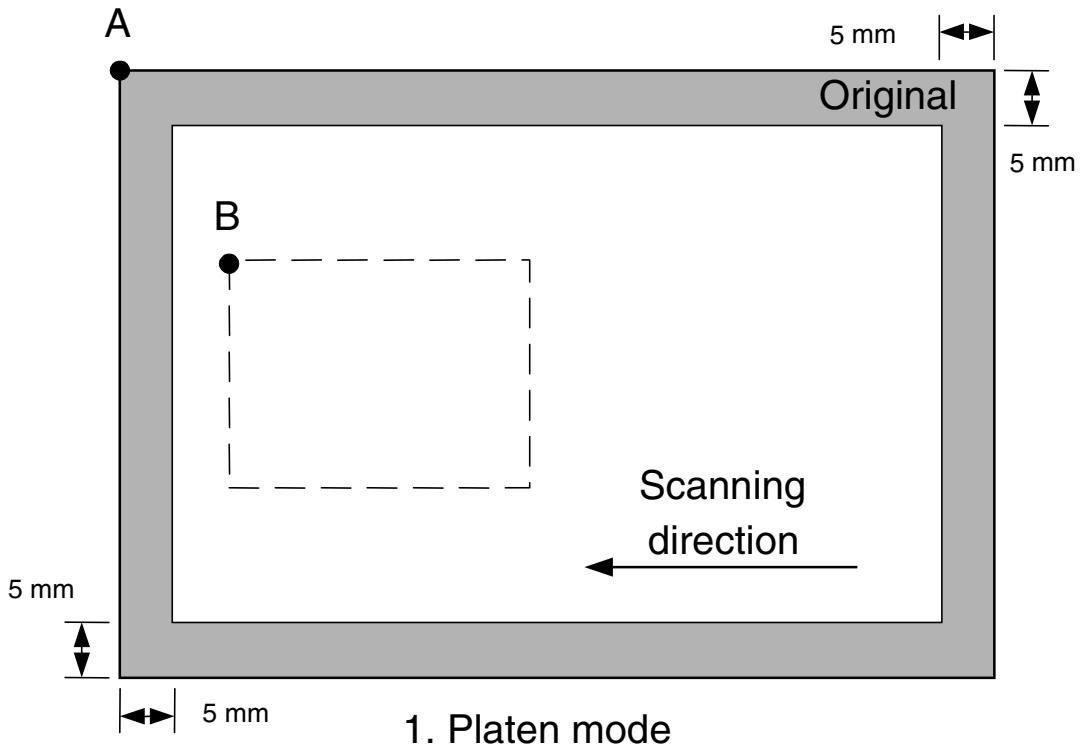
1. When the machine scans an 8.5x11 sized original in Platen Mode and the value of SP017 is **'5'** (illustration 1 below):

NOTE: *Since the scanning start position is at "A", the margins will placed at 5mm from the left and right edges (main scan) as well as from the leading and trailing edges (sub-scan). Any image within 5mm of the four edges will be erased.*

2. When scanning a selected area with the Preview function in Platen Mode and the value of SP017 is **'5'** (illustration 1 below):

NOTE: *Since scanning starts from point "B", the 5mm margin is not applied to the selected area, and nothing in this area is erased along either scan direction.*

ILLUSTRATION 1



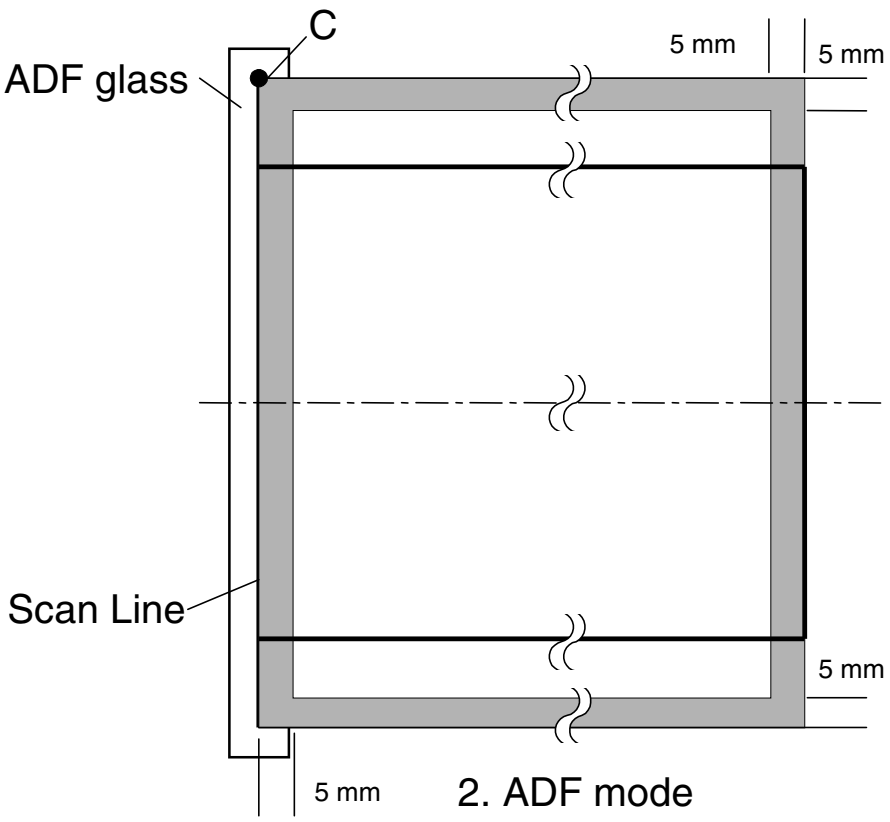
1. Platen mode

Continued…

3. When the machine scans an 8.5x11 sized original in ADF mode and the value of SP017 is **'5'** (illustration 2):

In ADF mode, the original is centered along the main scan direction. Although the sub-scan direction margins are applied to the original (as in example 1), the main scan margins will not appear (left/right edges). This is because the machine applies the 5mm main scan margin using reference point "C" (where scanning begins), and so the centered 8.5x11 original is too narrow for the main scan margin to appear.

ILLUSTRATION 2



UNITS AFFECTED:

Serial Number cut-in not available at time of publication.

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A265/A267 - 006 **05/15/2000**

APPLICABLE MODEL:

GESTETNER – 3222/3227
RICOH – AFICIO 220/270
SAVIN – 9922DP/9927DP

Note: This copy is intended as a master original for reproduction of additional bulletins.



SERVICE MANUAL

SUBJECT: SERVICE MANUAL - INSERT

GENERAL:

The Service Manual page listed below must be replaced with the page supplied. Each bulletin package contains 1 set of replacement pages.

PAGES:

The revised areas have been highlighted by an arrow ⇒.

- 18-10 Updated Information

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No.		Function	Setting
008	NIC Data Reset	Resets all network interface data (UP-Network-1 ~ 8) *Press "1" three times to reset.*	
009	Density Adjustment 1	Adjusts the image density for each image density level which can be selected with UT mode (UT-Scan-Density)	0 ~ 255 1 / step **40**
010	Density Adjustment 2		0 ~ 255 1 / step **70**
011	Density Adjustment 3		0 ~ 255 1 / step **100**
012	Density Adjustment 4		0 ~ 255 1 / step **130**
013	Density Adjustment 5		0 ~ 255 1 / step **170**
014	Density Adjustment 6		0 ~ 255 1 / step **200**
015	Density Adjustment 7		0 ~ 255 1 / step **230**
016	ROM Disk Format	Initializes the flash ROM. Press "1" three times to initialize.	
⇒ 017	Trimming	Adjusts the scanning margins for both the main and sub scan directions The larger the value, the wider the margin	0 ~ 5 1mm / step **0**

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A256/A267 - 007 **05/30/2000**

APPLICABLE MODEL:

GESTETNER – 3222/3227
RICOH – AFICIO 220/270
SAVIN – 9922DP/9927DP

Note: This copy is intended as a master original for reproduction of additional bulletins.

SUBJECT: SERVICE MANUAL - INSERT



SERVICE MANUAL

GENERAL:

The Service Manual pages listed below must be replaced with the pages supplied. Each bulletin package contains 1 set of replacement pages.

PAGES:

- xiv Updated Information (Table of Contents Page)
- 18-16 A844 Scanner Option Firmware Modification History

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SCANNER KIT A844

1. OVERALL MACHINE INFORMATION 18-1
1.1 SPECIFICATIONS 18-1
1.1.1 SCANNER CONTROL BOARD 18-1
1.1.2 DRAM SIMM 18-1
1.2 SOFTWARE 18-2
1.2.1 SCANNER DRIVERS 18-2
1.2.2 SCANNER UTILITIES 18-2

2. DETAILED SECTION DESCRIPTIONS 18-3
2.1 HARDWARE OVERVIEW 18-3
2.2 SCANNER FUNCTIONS 18-5
2.2.1 SELF DIAGNOSTICS 18-5
2.2.2. IMAGE PROCESSING IN THE SCANNER CONTROLLER 18-5

3. INSTALLATION PROCEDURE 18-6

4. SERVICE TABLE 18-9
4.1 SERVICE PROGRAM MODE 18-9
4.1.1 SERVICE PROGRAM ACCESS PROCEDURE 18-9
4.1.2 SERVICE PROGRAM MODE TABLES 18-9
4.2 DOWNLOADING NEW SOFTWARE 18-11
4.2.1 SOFTWARE DOWNLOAD PROCEDURE 18-11
4.2.2 ERROR MESSAGES DURING THE SOFTWARE DOWNLOAD . 18-12

5. REPLACEMENT AND ADJUSTMENT 18-12
5.1 NOTE FOR REPLACING THE SCANNER CONTROLLER BOARD 18-13

6. TROUBLESHOOTING 18-14
6.1 SERVICE CALL CONDITION 18-14
6.1.1 SC CODE DESCRIPTIONS 18-14
6.2 LEDS 18-15
6.3 FIRMWARE HISTORY 18-16
6.3.4 A844 FIRMWARE MODIFICATION HISTORY 18-16

6.3 FIRMWARE HISTORY

6.3.4 A844 FIRMWARE MODIFICATION HISTORY

A844 SCANNER OPTION FIRMWARE MODIFICATION HISTORY			
DESCRIPTION OF MODIFICATION	**FIRMWARE LEVEL**	**SERIAL NUMBER**	**FIRMWARE VERSION**
• 1st Mass Production	A8775810**E**	1st Mass Production	3.0.1
• The firmware was modified so that it can be used with the scanner controller for A283/A284 • The machine sometimes scans part of the exposure glass scale and edge of the original. To prevent this, a new scanner SP mode has been added (SP017, Trimming Margin Adjustment). • Note: After installing the firmware, Scanner SP006 (Scan Data Reset) must be performed. • The machine stalls when the memory full condition is reached.	A8775810 **F**	February Production 2000	4.0.0
• When Scanner Auto Clear is enabled: If an ADF jam occurs during a scanning job initiated before the Scanner Auto Clear timer expires, the scanner settings are reset to default.	A8775810**G**	March Production 2000	4.0.3

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A265/A267 - 008 **05/30/2000**

APPLICABLE MODEL:
GESTETNER – 3222/3227
RICOH – AFICIO 220/270
SAVIN – 9922DP/9927DP

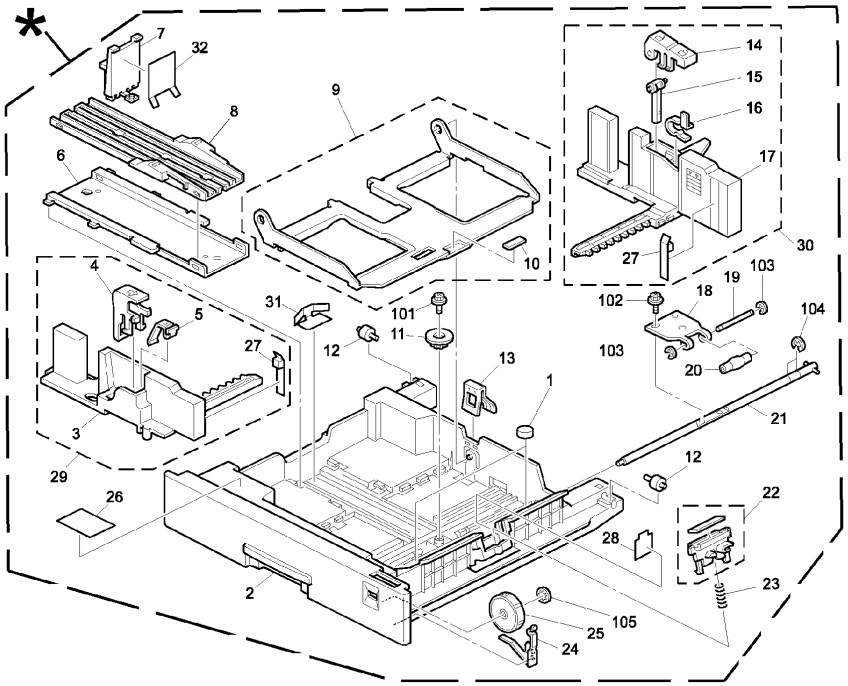
Note: This copy is intended as a master original for reproduction of additional bulletins.

SUBJECT: PARTS CATALOG UPDATES

GENERAL:

The following parts updates are being issued for all A265 and A267 Parts Catalogs.

- **UPDATE 1:** **1st Paper Tray Assembly –** As per a field request the 1st Paper Tray Assembly has been registered as a service part.

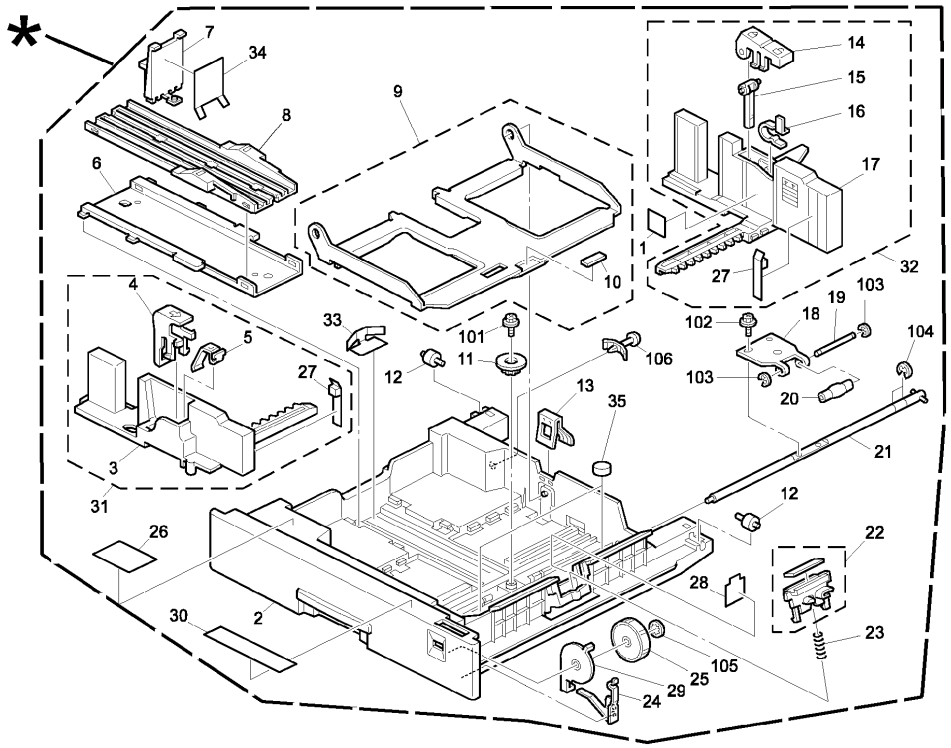


			REFERENCE	
NEW PART NUMBER	**DESCRIPTION**	**QTY**	**PAGE**	**ITEM**
A2677353	1st Paper Tray Assembly	1	37	*

Continued…

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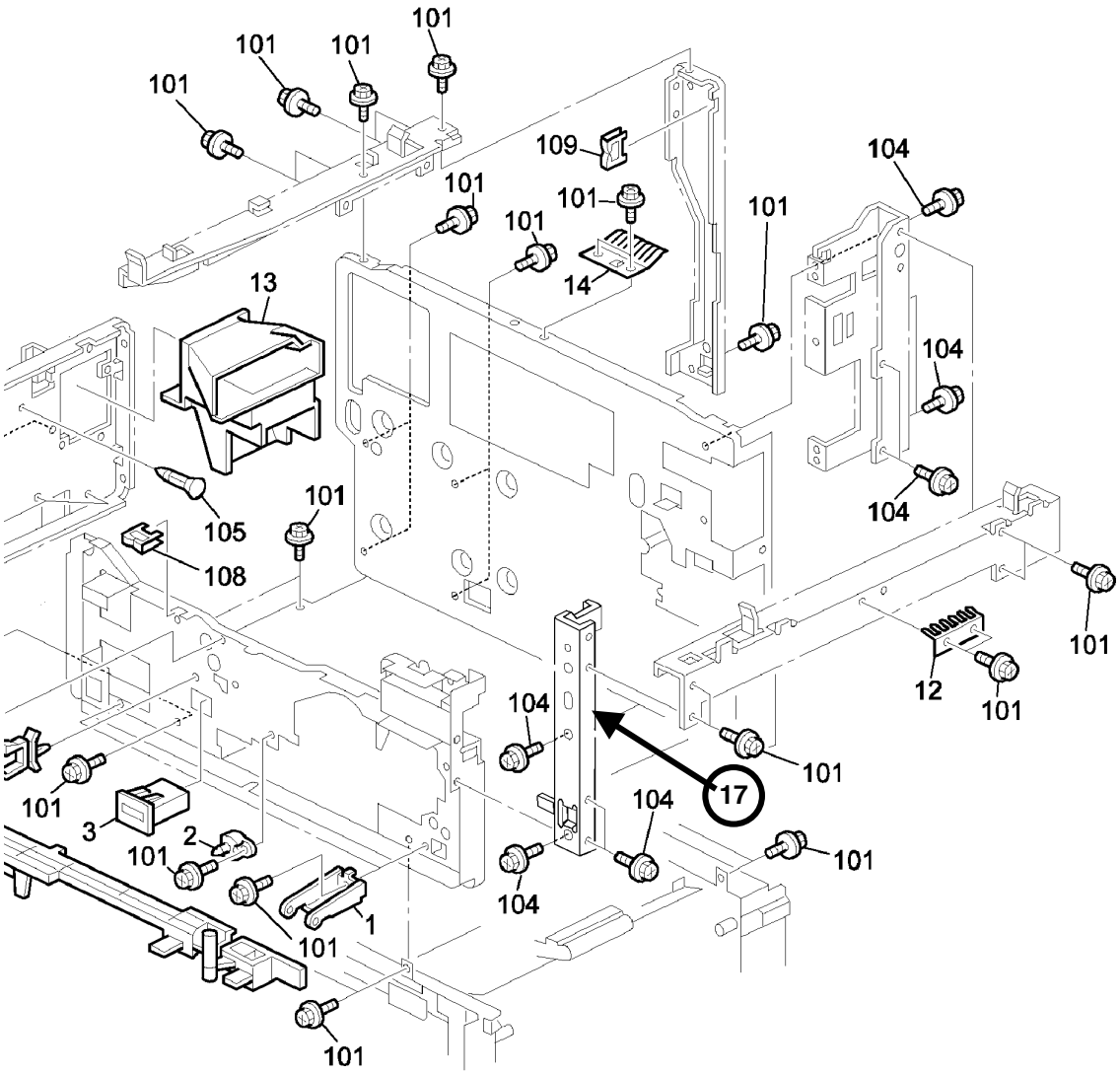
- **UPDATE 2:** **2nd Paper Tray Assembly –** As per a field request the 2nd Paper Tray Assembly has been registered as a service part.



			REFERENCE	
NEW PART NUMBER	**DESCRIPTION**	**QTY**	**PAGE**	**ITEM**
A2677354	2nd Paper Tray Assembly	1	39	*

Continued…

- **UPDATE 1:** **Front Right Frame –** As per a field request the Front Right Frame has been registered as a service part.



			REFERENCE	
NEW PART NUMBER	**DESCRIPTION**	**QTY**	**PAGE**	**ITEM**
A2671078	Front Right Frame	1	57	17 *

*** DENOTES NEW ITEM NUMBER**

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A265/A267 – 009 **07/13/2000**

APPLICABLE MODEL:
GESTETNER – 3222/3227
RICOH – AFICIO 220/270
SAVIN – 9922DP/9927DP

Note: This copy is intended as a master original for reproduction of additional bulletins.

■ COPY QUALITY ■ PARTS

SUBJECT: ADF ORIGINAL SKEW CORRECTION

SYMPTOM:

Skewed image on copy.

CAUSE:

The present adjustment range for the ADF Right Hinge is not wide enough to completely correct skew in some cases. The adjustment range is limited to 0.5 mm because the ADF Right Hinge is stopped by the Scanner Rear Upper Cover.

PRODUCTION COUNTERMEASURE:

To expand the adjustment range for the ADF Right Hinge, the bottom of the ADF Right Hinge has been shortened by 1 mm and the opening of the Scanner Rear Upper Cover has been expanded by 1.5 mm. See Figures 1 and 2 below.

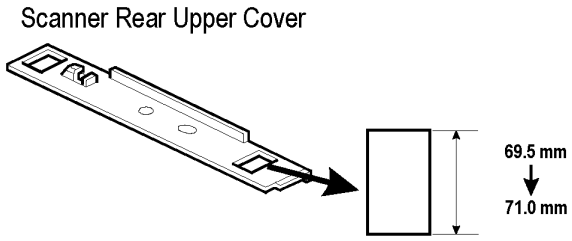


Figure 1

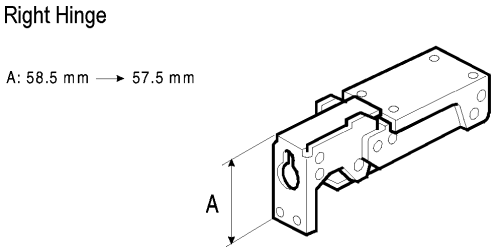


Figure 2

FIELD COUNTERMEASURE:

If skewed copies cannot be corrected by adjusting the ADF position, replace the Scanner Rear Upper Cover (P/N A2671251 suffix G) and the ADF Right Hinge (P/N A8581831 suffix C) of the ADF as a set. Perform the ADF Skew Adjustment procedure on page 2 of 2.

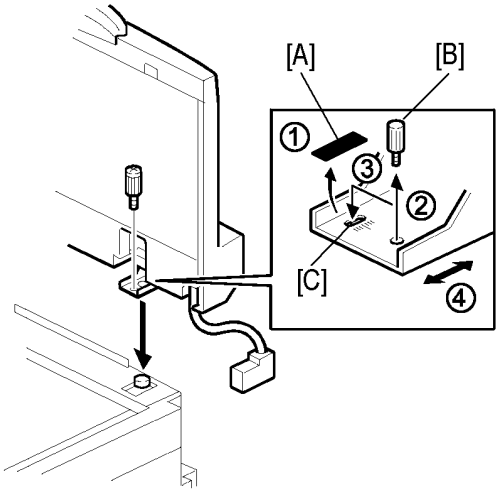
Continued…

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ADF SKEW ADJUSTMENT:

1. Remove Black Mylar [A].
2. Remove Screw [B].
3. Install Screw [B] in the oblong screw hole [C].
4. Adjust the position of the ADF Right Hinge from front (operator side) to back (non-operator side) to correct for original skew.

See illustration to the right for adjustment procedure.



GENERAL:

A265/A267					REFERENCE	
PART NUMBER	**OLD SUFFIX**	**NEW SUFFIX**	**DESCRIPTION**	**QTY**	**PAGE**	**ITEM**
A2671251	F	G	Rear Upper Cover – Scanner	1	11	8

A858					REFERENCE	
PART NUMBER	**OLD SUFFIX**	**NEW SUFFIX**	**DESCRIPTION**	**QTY**	**PAGE**	**ITEM**
A8581831	B	C	Right Hinge	1	13	3

UNITS AFFECTED:

A265/A267 Serial Number cut-in for the Rear Upper Cover Scanner was not available at time of publication.

All A858 ADFs manufactured after the Serial Number listed below will have the new style Right Hinge installed during production.

MODEL NAME	SERIAL NUMBER
A858 ADF	2607301842

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A265/A267 - 010 **07/13/2000**

APPLICABLE MODEL:

GESTETNER – 3222/3227
RICOH – AFICIO 220/270
SAVIN – 9922DP/9927DP

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■ SERVICE MANUAL

SUBJECT: SERVICE MANUAL - INSERT

GENERAL:

The Service Manual pages listed below must be replaced with the pages supplied. Each bulletin package contains 1 set of replacement pages.

PAGES:

The revised areas have been highlighted by an arrow ⇒.

- 4-44 Updated Information (SP5-501)
- 4-85 Updated Information (ROM HISTORY)

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Mode No.			Function	Settings
Class 1 and 2	Class 3			
5-104*		A3/DLT Double Count	Specifies whether the counter is doubled for A3/11" x 17" paper.	**0: No** 1: Yes
			If "Yes" is selected, the total counter (mechanical counter) and the current user code counter counts up twice when A3/11" x 17" paper is used.	
5-106*		ADS Level Selection	Selects the image density level that is used in ADS mode.	1 ~ 7 1 notch/step **4**
5-113*		Option Counter Type	Selects the optional counter type.	**0: None** 1: Key Counter
			After installing the optional key counter, this SP must be set to "1".	
5-116*		Key Counter Up Timing	Determines whether the total counter counts up at paper feed-in or at paper exit.	**0: Feed In** 1: Exit
5-120*		Opt. Counter Reset Setting	**This SP is for Japan only. Do not change the value.**	0: Yes 1: Stand-by 2: None
5-143		DF 180° Image Rotation	Select whether the image is rotated 180° (upside down) in DF mode.	**0: No** 1: Yes
			Selects "Yes" when making a copy on a letter headed page when feeding from a paper tray.	
5-401*	1	User Code Mode (Copier)	Selects whether the user code feature is enabled in copy mode or not.	**0: No** 1: Yes
			If this value is changed, the user tool setting is also changed.	
	2	User Code Mode (Fax)	**This SP is for Japan only. Do not change the value.**	**0: No** 1: Yes
			If this value is changed, the user tool setting is also changed.	
	3	User Code Mode (Printer)	**This SP is for Japan only. Do not change the value.**	**0: No** 1: Yes
			If this value is changed, the user tool setting is also changed.	
5-501*	1	PM Alarm Interval	Sets the PM interval.	1 ~ 255 1k copies /step **120k copies**
			The value stored in this SP is used when the value of SP5-501-2 and/or -3 is "1".	
⇒	2	PM Alarm Mode (Prints)	Selects whether the PM alarm for the number of prints/copies is enabled or not	**0: No** 1: Yes
			If this is "1", the PM alarm function is enabled. ***NOTE:*** *Default changed v1.77.*	
	3	PM Alarm Mode (Original)	**This SP is for Japan only. Do not change the value.** Selects whether the PM alarm for the number of scans is enabled or not	**0: No** 1: Yes
			If this is "1", the PM alarm function is enabled.	

A265/A267 Firmware Modification History (BICU)			
Description of Modification	**Firmware Level**	**Serial Number**	**Firmware Version**
• On machines with an optional LCT installed, SC507 can occur when the main power SW is turned on under the following conditions: 1. The LCT end fence is not in the HP *and* 2. The bottom plate for the right tray is not detected by the lower HP sensor. However, these occurrence conditions are very rare. • "1/2" appears in the Key Operator Tools display (inside user tools – system settings). • After the operator exits either of the following screens with the User Tools key and starts a copy job, the first sheet is printed out as the counter list. ➢ System Settings – Key Operator Tools – Counter List Printing ➢ Copy Features– Key Operator Tools – Counter List Printing			
Corrects the following: • In printer mode, dirty back-ground may appear near the leading edge of the first page printed out following a paper jam recovery. • When exiting to the 1-bin tray, a paper jam may occur caused by the bouncing of the exit sensor actuator.	A2675532 D	March 2000 Production.	1.74
⇒ Corrects the following: • The default value of SP5-501-002 has been changed to "0." • Under the following conditions the staple function cannot be used after clearing a copy jam: 1. A4 sideways feed. 2. The Finisher Front Cover is opened while the last copy is being exited to the Finisher. • Under the following conditions the PM alarm does not activate when the PM counter reaches the value set in SP5-501-001 (PM Alarm Interval) 1. SP5-816 (CSS function) = 0 default setting 2. SP5-501-002 (PM alarm) =1 default setting	A2675532 E	April 2000 Production.	1.77

Service Tables

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TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A265/A267 – 011 **07/13/2000**

APPLICABLE MODEL:
GESTETNER – 3222/3227
RICOH – AFICIO 220/270
SAVIN – 9922DP/9927DP

Note: This copy is intended as a master original for reproduction of additional bulletins.



SUBJECT: PAPER JAM AT THE OPC DRUM

SYMPTOM:

The OPC Drum does not turn causing a paper jam at the OPC Drum.

CAUSE:

The pin on the Drum Drive Shaft is being pushed all the way into the Shaft. As a result, the Drum Drive Coupler cannot rotate. It was discovered that a tool used in motor production caused the pin to be pushed into the Drum Drive Shaft.

PRODUCTION COUNTERMEASURE:

A new tool was created and has been used in motor production since December 1999.

FIELD COUNTERMEASURE:

Replace the Drive Shaft (P/N A2672840).

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TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A265/A267 – 011 REISSUE ★ **11/17/2000**

APPLICABLE MODEL:
GESTETNER – 3222/3227
RICOH – AFICIO 220/270
SAVIN – 9922DP/9927DP

Note: This copy is intended as a master original for reproduction of additional bulletins.



SUBJECT: PAPER JAM AT THE OPC DRUM

SYMPTOM:

The OPC Drum does not turn causing a paper jam at the OPC Drum.

CAUSE:

The pin on the Drum Drive Shaft is being pushed all the way into the Shaft. As a result, the Drum Drive Coupler cannot rotate. It was discovered that a tool used in Motor production caused the pin to be pushed into the Drum Drive Shaft.

PRODUCTION COUNTERMEASURE:

A new tool was created and has been used in Motor production since December 1999.

FIELD COUNTERMEASURE:

★ Replace the Main Motor Ass'y (P/N AX060199).

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TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A265/A267 - 012 **10/11/2000**

APPLICABLE MODEL:

GESTETNER – 3222/3227
RICOH – AFICIO 220/270
SAVIN – 9922DP/9927DP

Note: This copy is intended as a master original for reproduction of additional bulletins.

SUBJECT: ADD TONER INDICATION / LIGHT COPY QUALITY

SYMPTOM:

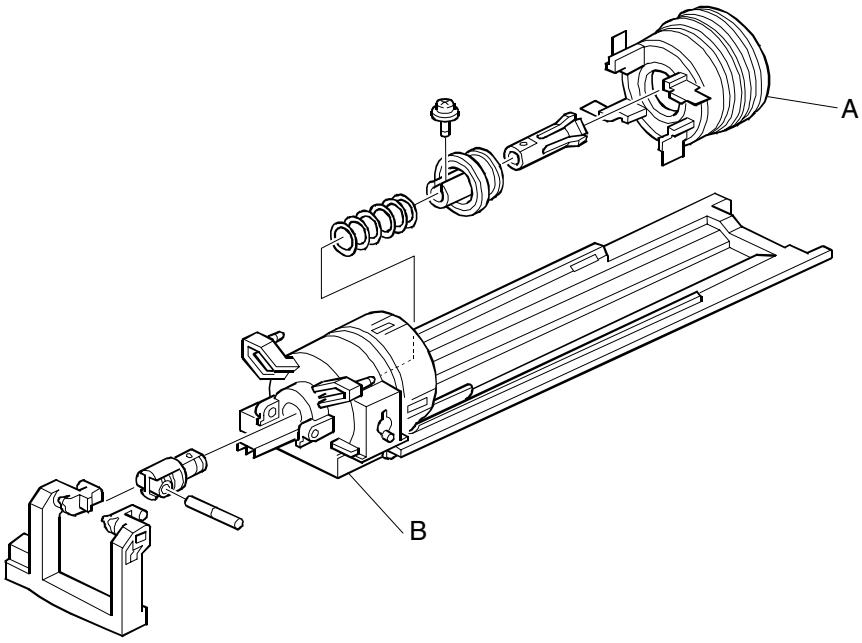
Add toner indication and / or light copy quality.

CAUSE 1:

In high volume machines, (greater than 5K per day) or long copy runs (2,000 pages) the Toner Auger Gear Bushing may become deformed due to friction between the shaft and bushing. This may cause the Auger Shaft to lock and the Idle Drive Gear to break, preventing the Toner Mixing Auger from turning.

CAUSE 2:

The Toner Hopper Unit is not delivering a sufficient amount of toner to the Development Unit of the PCU. There is minimal clearance between the Toner Supply Cover [A] (see illustration below) and case [B]. The resulting friction caused the unit torque to increase, causing a malfunction with the Toner Bottle rotation. Therefore, an insufficient amount of toner is supplied to the Development Unit, resulting in the Toner End condition.



Continued…

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SOLUTIONS:

Examine the Toner Port on the PCU:

If the Toner Port of the PCU is full of Toner, see Test Procedure for Cause 1.
If the Toner Port of the PCU is empty of Toner, see Test Procedure for Cause 2.

Test Procedure for Cause 1:

1. Make copy samples using the OS-A3 Test Chart and print the SMC Data Sheets using SP5-992. SP2-928 will clear the Toner End condition to allow printing.

2. Remove the PCU.

3. Remove the translucent cap on the center of the PCU to visually inspect the Toner Auger.

4. Turn the Development Roller using the Coupler Gear on the rear of the PCU while examining the Toner Auger.

5. Is the Toner Auger turning?
   Yes- Troubleshoot the TD Sensor circuit using the Service Manual and the Point to Point.
   No- Replace the PCU.

NOTE: *1. If your PCU is outside of the serial number range (listed below), and the Toner Auger does not turn, please forward the following information to the Technology Solution Center. Send the PCU, copy samples and SMC Data sheets along with A Dealer Technical Alert Form.*

2. The copy samples and SMC Data Sheets from SP5-992 ***must be printed using the defective PCU****. SP2-928 will clear the Toner End condition to allow printing.*

Countermeasure for Toner Auger Gear Bushing:

The factory has changed the material of the Bushing. See the Affected Units table below for the PCU Countermeasure Serial Numbers.

Affected Units for Add Toner Indicator / Light Copies

Distribution	PCU Serial Number	Production Month
PCU factory installed in machine	OE091004486	October 1999
Gestetner	GE091000001	October 1999
Ricoh	1E091000001	October 1999
Savin	SE091000001	October 1999

Test Procedure for Cause 2:

1. Make copy samples using OS-A3 Test Chart and print the SMC Data Sheets using SP5-992. SP2-928 will clear the Toner End condition to allow printing.

2. Remove the Toner Hopper Assembly. Actuate the front door interlock and turn on the Main Switch. Observe the Toner Motor Operation. Does the Toner Bottle Drive Motor turn?
   Yes- The Toner Bottle turns. See Step 3.
   No- Troubleshoot the Toner Motor Drive Circuit using the Service Manual and the Point to Point.

3. Re-insert the Toner Hopper Assembly with a new Toner Bottle. Does the Add Toner Indicator turn off?
   Yes- Run 50 copies of OS-A3 test Chart.
   No- The Add Toner Indicator does not turn off. See Step 4.

Continued…

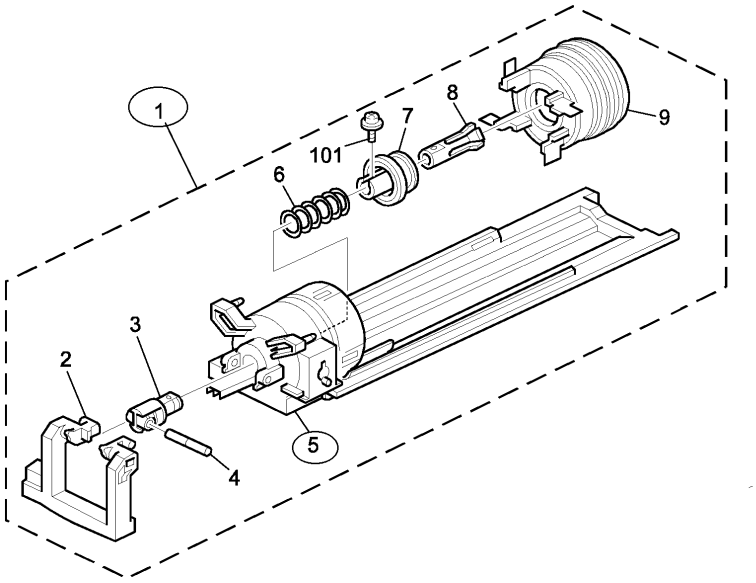
Continued from step 3 on page 2:

Does the Add Toner Indicator remain off?
Yes- Forward the following information to the Technology Solution Center: Please send the Toner Bottle with the unused toner, before and after Copy Samples, the SMC Data Sheets from SP5-992 along with a completed Dealer Technical Alert Form.
No- The Add Toner Indicator does not turn off or remain off. See Step 4

4. Disassemble the Toner Hopper Assembly. Clean and vacuum the Toner Hopper completely. Reassemble and reinstall the Toner Hopper into the machine. Turn on the Main Switch and check if the Add Toner Indicator turns off by the end of the drive cycle.
Yes- The Add Toner Indicator turned off. Run 50 copies of the OS-A3 Test Chart.
No- The Add Toner Indicator did not turn off. See the instructions for "No" below.

Does Add Toner Indicator remain off?
Yes- The problem is resolved.
No- The Add Toner Indicator does not turn off or remain off. Replace the Toner Hopper Assembly with the modified one below:

Countermeasure for Toner Supply Unit:



OLD PART NUMBER	NEW PART NUMBER	DESCRIPTION	Q'TY	INT	PAGE	ITEM
A2673500	A2673501	Toner Supply Unit (RIC 120V)	1	1	33	1
A2677470	A2677471	Toner Supply Unit (Gest/Sav)	1	1	33	1
A2673550	A2673549	Case – Toner Supply Assembly	1	1	33	5

NOTE: *A265/A267 Serial Number cut-ins were not available at time of publication.*

INTERCHANGEABILITY CHART:

0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines.
3/S	Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or previously modified, use the new part numbers individually.		

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A265/A267 – 012 REISSUE ★ **11/17/2000**

APPLICABLE MODEL:

GESTETNER – 3222/3227
RICOH – AFICIO 220/270
SAVIN – 9922DP/9927DP

Note: This copy is intended as a master original for reproduction of additional bulletins.

SUBJECT: ADD TONER INDICATION / LIGHT COPY QUALITY

SYMPTOM:

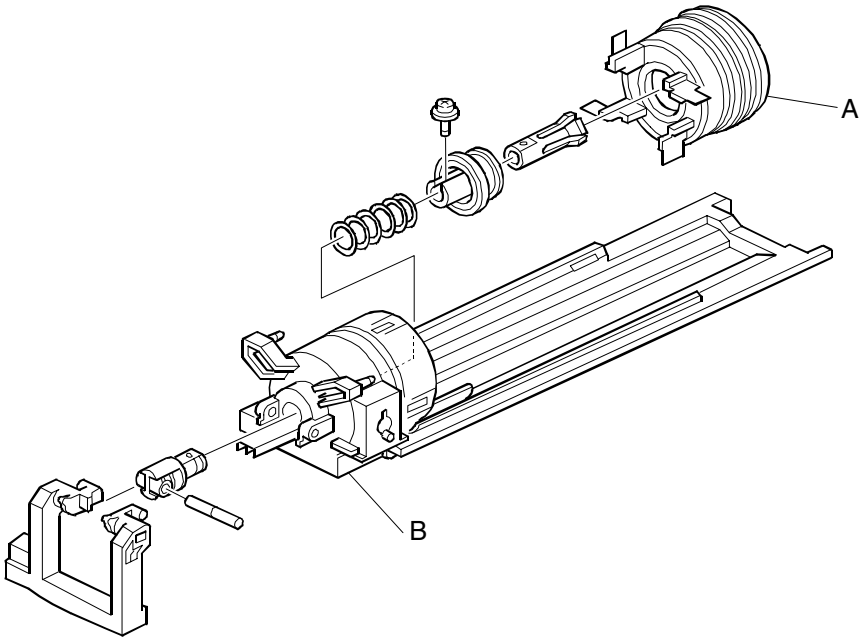
Add toner indication and / or light copy quality.

CAUSE 1:

In high volume machines, (greater than 5K per day) or long copy runs (2,000 pages) the Toner Auger Gear Bushing may become deformed due to friction between the shaft and bushing. This may cause the Auger Shaft to lock and the Idle Drive Gear to break, preventing the Toner Mixing Auger from turning.

CAUSE 2:

The Toner Hopper Unit is not delivering a sufficient amount of toner to the Development Unit of the PCU. There is minimal clearance between the Toner Supply Cover [A] (see illustration below) and case [B]. The resulting friction caused the unit torque to increase, causing a malfunction with the Toner Bottle rotation. Therefore, an insufficient amount of toner is supplied to the Development Unit, resulting in the Toner End condition.



Continued…

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SOLUTIONS:

Examine the Toner Port on the PCU:

If the Toner Port of the PCU is full of Toner, see Test Procedure for Cause 1.
If the Toner Port of the PCU is empty of Toner, see Test Procedure for Cause 2.

Test Procedure for Cause 1:

1. Make copy samples using the OS-A3 Test Chart and print the SMC Data Sheets using SP5-992. SP2-928 will clear the Toner End condition to allow printing.

2. Remove the PCU.

3. Remove the translucent cap on the center of the PCU to visually inspect the Toner Auger.

4. Turn the Development Roller using the Coupler Gear on the rear of the PCU while examining the Toner Auger.

5. Is the Toner Auger turning?
   Yes- Troubleshoot the TD Sensor circuit using the Service Manual and the Point to Point.
   No- Replace the PCU.

NOTE: *1. If your PCU is outside of the serial number range (listed below), and the Toner Auger does not turn, please forward the following information to the Technology Solution Center. Send the PCU, copy samples and SMC Data sheets along with A Dealer Technical Alert Form.*

2. The copy samples and SMC Data Sheets from SP5-992 ***must be printed using the defective PCU****. SP2-928 will clear the Toner End condition to allow printing.*

Countermeasures for Toner Auger Gear Bushing:

1. The factory has changed the material of the Bushing. See the Affected Units table below for the PCU Countermeasure Serial Numbers.

Affected Units for Add Toner Indicator / Light Copies

Distribution	PCU Serial Number	Production Month
PCU factory installed in machine	OE091004486	October 1999
Gestetner	GE091000001	October 1999
Ricoh	1E091000001	October 1999
Savin	SE091000001	October 1999

★ 2. Developer leaks out from the developer Tank and Cleaning Tank and gets stuck on the Gear. The following additional modifications to the PCU have been made:
   - A Sponge has been attached so that Developer from below the Roller will not get stuck on the Gear. See Figure 1 on page 3.
   - A strip of Mylar has been attached so that developer will not fall on the Gear and stick to it. See Figure 2 on page 3.

Continued…

★

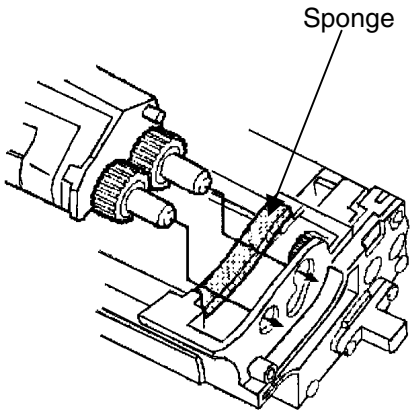


Figure 1

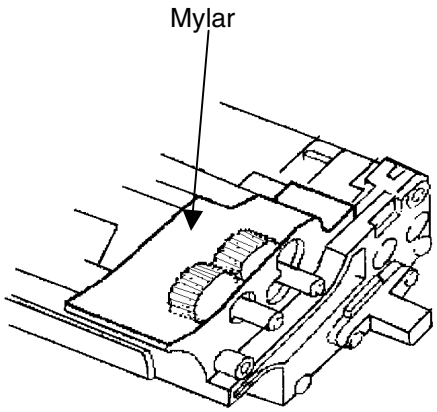


Figure 2

Distribution	PCU Serial Number	Production Month
PCU factory installed in machine	OE000700001	July 2000
Gestetner	GE000700001	July 2000
Ricoh	1E000604156	June 2000
Savin	SE000700001	July 2000

Test Procedure for Cause 2:

1. Make copy samples using OS-A3 Test Chart and print the SMC Data Sheets using SP5-992. SP2-928 will clear the Toner End condition to allow printing.

2. Remove the Toner Hopper Assembly. Actuate the front door interlock and turn on the Main Switch.
★ Observe the Toner Motor Operation. Does the Toner Bottle Drive Motor turn?
Yes- The Toner Motor turns. See Step 3.
No- Troubleshoot the Toner Motor Drive Circuit using the Service Manual and the Point to Point.

★ 3. Re-insert the Toner Hopper Assembly with a new **Toner Bottle**. Does the Add Toner Indicator turn off?
Yes- Run 50 copies of OS-A3 test Chart.

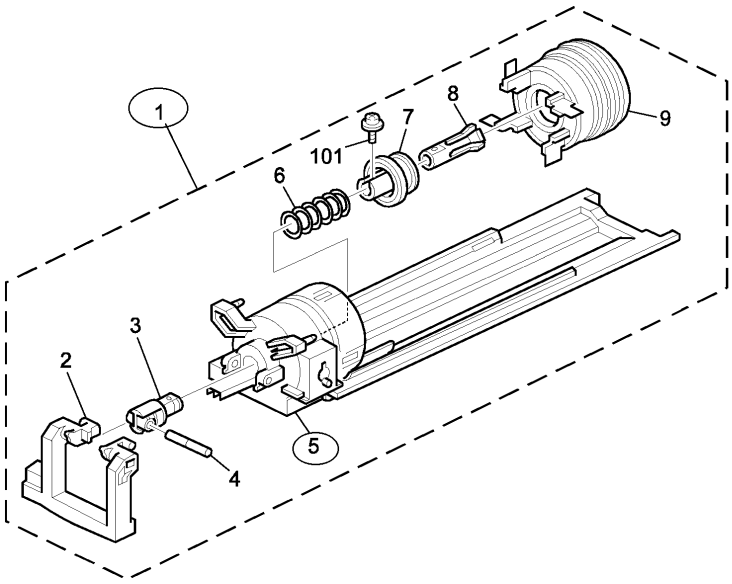
Does the Add Toner Indicator remain off?
Yes- Forward the following information to the Technology Solution Center: Please send the **Toner Bottle** with the unused toner, before and after Copy Samples, the SMC Data Sheets from SP5-992 along with a completed Dealer Technical Alert Form.
No- The Add Toner Indicator does not turn off or remain off. See Step 4.

★ 4. Disassemble the Toner Hopper Assembly. Clean and vacuum the Toner Hopper completely. Reassemble and reinstall the Toner Hopper into the machine. Turn on the Main Switch and check if the Add Toner Indicator turns off by the end of the drive cycle.
Yes- The Add Toner Indicator turned off. Run 50 copies of the OS-A3 Test Chart.

Does Add Toner Indicator remain off?
Yes- The problem is resolved.
No- The Add Toner Indicator does not turn off or remain off. Replace the Toner Hopper Assembly with the modified one on page 4:

Continued…

Countermeasure for Toner Supply Unit:



OLD PART NUMBER	NEW PART NUMBER	DESCRIPTION	Q'TY	INT	PAGE	ITEM
A2673500	A2673501	Toner Supply Unit (RIC 120V)	1	1	33	1
A2677470	A2677471	Toner Supply Unit (Gest/Sav)	1	1	33	1
A2673550	A2673549	Case – Toner Supply Assembly	1	1	33	5

NOTE: *A265/A267 Serial Number cut-ins were not available at time of publication.*

INTERCHANGEABILITY CHART:

0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines.
3/S	Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or previously modified, use the new part numbers individually.		

Gestetner RICOH SAVIN

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A265/A267 - 013 **10/12/2000**

APPLICABLE MODEL:

GESTETNER – 3222/3227
RICOH – AFICIO 220/270
SAVIN – 9922DP/9927DP

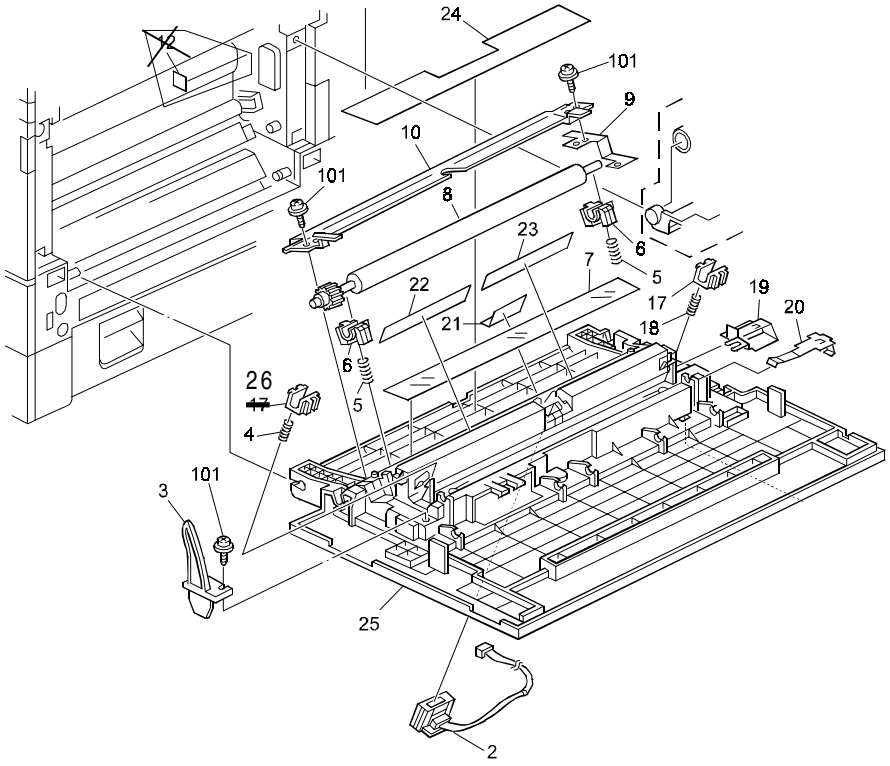
Note: This copy is intended as a master original for reproduction of additional bulletins.

SUBJECT: PARTS CATALOG UPDATES

GENERAL:

The following parts updates are being issued for all A265/A267 Parts Catalogs.

- **UPDATE 1:** **Transfer Roller Bushings & High Voltage Decal –** The Transfer Roller Bushing part number has been changed to indicate Front and Rear Bushings. The High Voltage Decal is no longer available. Please update your Parts Catalog with the following information.



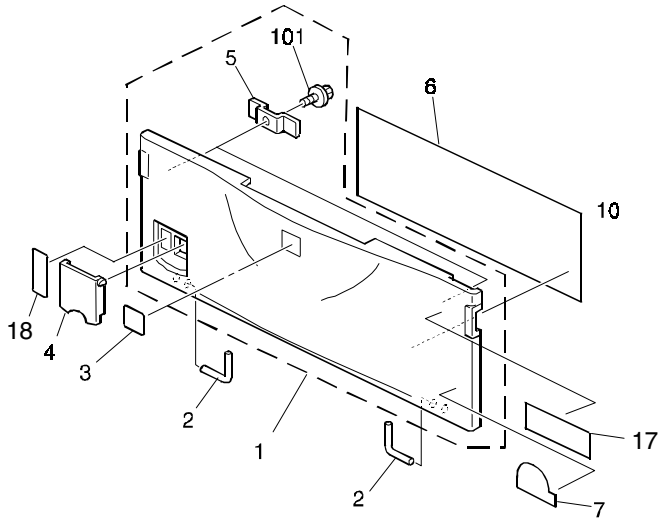
					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
52144975		Decal High Voltage	1→0	-	25	12
AA080255		Bushing - Transfer Roller	2→0	-	25	17
	▶ AA080250	Rear Bushing – Transfer Roller	1	-	25	17
	▶ AA080256	Front Bushing – Transfer Roller	1	-	25	26 *

* Denotes new item number.

Continued…

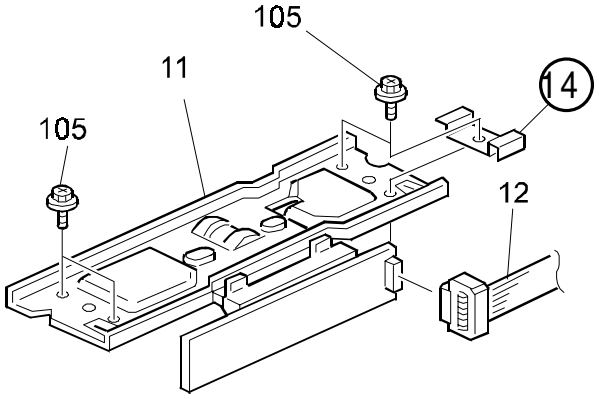
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- **UPDATE 2:** **Model Name Plates –** The Model Name Plate (GES) part numbers were omitted from the Parts Catalog. Please update your Parts Catalog with the following information.



				REFERENCE	
PART NUMBER	**DESCRIPTION**	**QTY**	**INT**	**PAGE**	**ITEM**
A2657108	Model Name Plate (GES)	1	-	9	17
A2677108	Model Name Plate (GES)	1	-	9	17

- **UPDATE 3:** **Grounding Plate – Lens Block –** The Grounding Plate – Lens Block part number was omitted from the Parts Catalog. Please update your Parts Catalog with the following information.

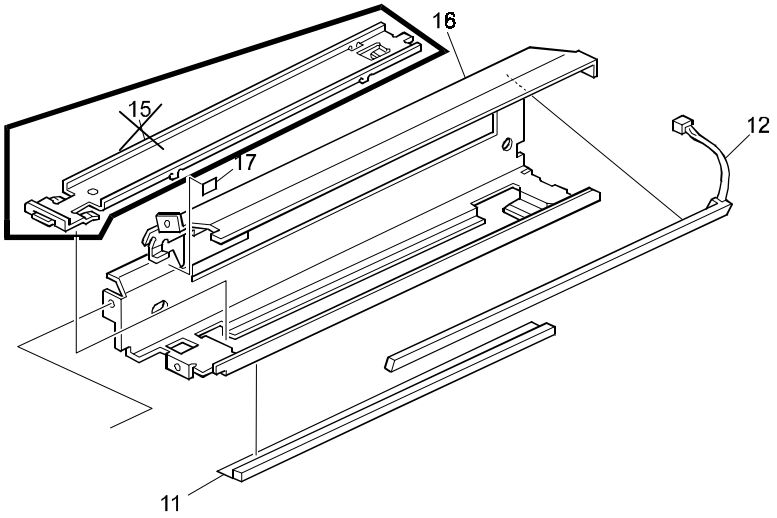


				REFERENCE	
PART NUMBER	**DESCRIPTION**	**QTY**	**INT**	**PAGE**	**ITEM**
A2671788	Grounding Plate – Lens Block	1	-	19	14 *

* Denotes new item number.

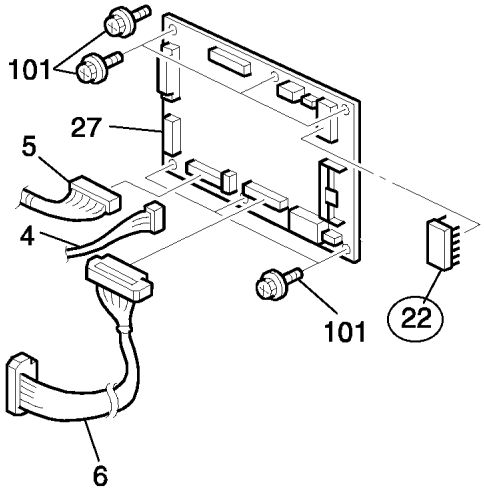
Continued…

- **UPDATE 4:** **Heater Bracket –** The Heater Bracket is being removed from the Parts Catalog. Please update your Parts Catalog with the following information.



					REFERENCE	
OLD PART NO.	**NEW PART NO.**	**DESCRIPTION**	**QTY**	**INT**	**PAGE**	**ITEM**
A2671098	-	Heater Bracket	1→0	-	35	15

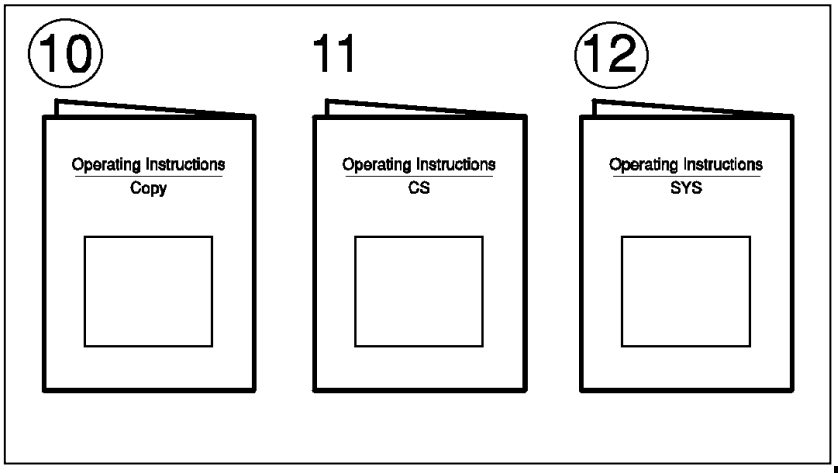
- **UPDATE 5:** **NV-RAM Minus Counter –** The part number for the NV-RAM Minus Counter has been changed. Please update your Parts Catalog with the following information.



					REFERENCE	
OLD PART NO.	**NEW PART NO.**	**DESCRIPTION**	**QTY**	**INT**	**PAGE**	**ITEM**
A2679001	A2679099	NVRAM – Minus Counter	1	-	53	22

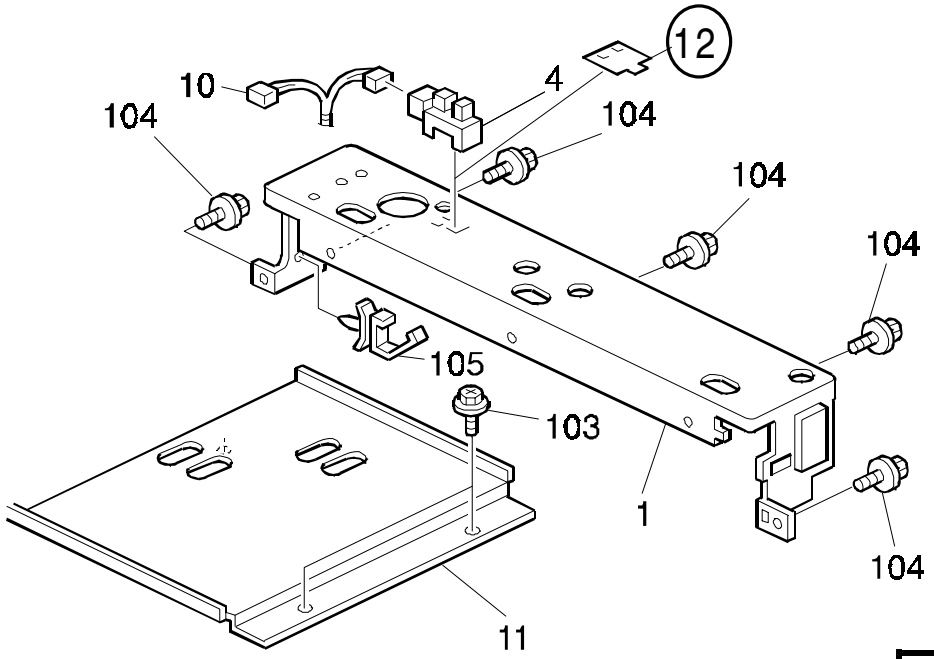
Continued…

- **UPDATE 6:** **Operating Instructions –** The Operating Instructions – Copy and System (SVN/GES) have been added to the Parts Catalog. Please update your Parts Catalog with the following information.



				REFERENCE	
PART NUMBER	**DESCRIPTION**	**QTY**	**INT**	**PAGE**	**ITEM**
A2676697	Operating Instructions – Copy (SVN/GES)	1	-	69	10
A2678697	Operating Instructions – System (SVN/GES)	1	-	69	12

- **UPDATE 7:** **Sheet – Photo Sensor –** The Sheet – Photo Sensor has been added to the Parts Catalog. Please update your Parts Catalog with the following information.



				REFERENCE	
PART NUMBER	**DESCRIPTION**	**QTY**	**INT**	**PAGE**	**ITEM**
A2671820	Sheet – Photo Sensor	1	-	17	12 *

* Denotes new item number.

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A265/A267 – 014 **10/30/2000**

APPLICABLE MODEL:

GESTETNER – 3222/3227
RICOH – AFICIO 220/270
SAVIN – 9922DP/9927DP

Note: This copy is intended as a master original for reproduction of additional bulletins.



SERVICE MANUAL

SUBJECT: SERVICE MANUAL - INSERT

GENERAL:

The Service Manual pages listed below must be replaced with the pages supplied. Each bulletin package contains 1 set of replacement pages.

PAGES:

The revised areas have been highlighted by an arrow ⇒.

- 6-6 Updated Information (B306 Firmware History)

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B306 PRINTER OPTION FIRMWARE MODIFICATION HISTORY			
DESCRIPTION OF MODIFICATION	**FIRMWARE LEVEL**	**SERIAL NUMBER**	**FIRMWARE VERSION**
• Electrical sort mode (collation) will be disabled when special paper mode is selected for tray 2. • If the bridge unit cover is opened during printing in electrical sort mode (second set onward), the machine cannot recover from the resulting jam condition. • Even when the PJLK command "<Esc>&11H" is released instructing the machine to feed the paper from tray 2, the paper is not fed from the tray. • In addition to the cumulative total counter value (copier/fax/printer), the total counter values for each function can be sent to PCs connected to the PAS Server. • With Overlay printing, the text outside the fixed overlay pattern is printed out as PCL commands (specifically, the ESC sequence).	B3065280 **C**	March 2000 Production	1.3.4
⇒ • If a tray SC occurs during an electrical sort (collation) printing, the error message does not display on LCD. • NIB NVRAM back and restore function (SP mode: Service Tools "L: NIB read/write") is no longer valid. **NOTE**: Please refer to TSB B306 - 006 for details.	B3065280 **D**	April 2000 Production	1.3.6
⇒ • The printed area is shifted slightly when "Unit of Measure" is defined using the macro command. • With Raster images, sometimes part of the right edge of the printable area comes out blank. • Italian and Spanish text characters overlap each other on the configuration page error log. • The following title on the configuration page has been changed: "Printer Name (NetWare)" □ "Printer Name". • If the optional memory and PS option are not installed, A3-size images read by a scanner cannot be printed out.	B3065280 **E**	Sept. 2000 Production	1.4.0

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A265/A267 – 015 **11/06/2000**

APPLICABLE MODEL:

GESTETNER – 3222/3227
RICOH – AFICIO 220/270
SAVIN – 9922DP/9927DP

SUBJECT: SERVICE MANUAL - INSERT

GENERAL:

The Service Manual pages listed below must be replaced with the pages supplied. Each bulletin package contains 1 set of replacement pages.

PAGES:

The revised areas have been highlighted by an arrow ⇒.

- iv — Updated Information (Table of Contents - A895)
- 7-12 through 14 — Updated Information (ROM History)

Note: This copy is intended as a master original for reproduction of additional bulletins.

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TROUBLESHOOTING

7. TROUBLESHOOTING 7-1
7.1 ERROR CODES 7-1
7.2 FAX SC CODES 7-10
7.2.1 OVERVIEW 7-10
7.2.2 SC1201 7-10
7.2.3 SC1207 7-10
7.2.4 FAX SC CODE TABLE 7-11
7.3 ROM HISTORY 7-12
7.3.1 FAX CONTROLLER FIRMWARE HISTORY 7-12
7.3.2 G3 INTERFACE UNIT FIRMWARE HISTORY 7-14

7.3 ROM HISTORY

7.3.1 FAX CONTROLLER FIRMWARE HISTORY

A895 Fax Unit Firmware Modification History

Description Of Modification	Firmware Level	Serial Number	Software Version
This is first production version. When the received CSI have only space data, it is ignored by this version firmware. Line Error Marks on received page: A mark will be printed on the left edge of the page anywhere a line error has occurred in the data if the following bit is enabled. **System switch00 bit4** **0:** Disabled **1:** Enabled In order to ensure that the NSF/DIS signals (from the machine that is to receive the facsimile) will successfully be received by the sender, the transmission duration of these signals can now be extended as follows: **G3 switch0F** **Bit 3 Bit 2 Settings** 0 0 32 sec 0 1 40 sec 1 0 50 sec 1 1 60 sec	A2685582 **B**	1st Mass Production	10.03
Conditions for printing (Scan Router): It determines whether or not the machine will print out the incoming fax when a transmission is made to the Scan Router Professional Station. **User Parameter switch 31 bit2** **0:** Document not printed **1:** Document will be printed	A2685582 **C**	December 1999 Production	13.03
⇒ ICB-1 function is available. When the use of the PSTN-2 line is changed to Rx only, the setting of PSTN-2 cannot be changed. The machine displays the clock for 12:xx as 0:xx When over 20H is input for the Incoming signal detection level (RAM address 6804BD), the minimum signal strength decreases. * Maximum value for this address is 1FH.	A2685582 **D**	August 2000 Production	21.00

.. Continued

A895 Fax Unit Firmware Modification History			
Description Of Modification	**Firmware Level**	**Serial Number**	**Software Version**
⇒ Even though the following bit switch settings should disable the File Retention function, the machine retains files for 24 hours: User Parameter switch 24 (swusr_18): (bit1, bit0) = (1, 0) When using the Create Margin Transmission function and the rear side image needs to be rotated 180 degrees, the margin for the rear side is placed on the right (instead of the left). The ghost image may appear on the left of the page in JBIG direct transmission mode during the dual operation. (The page width data is rarely not received before making the page.)			

⇒ 7.3.2 G3 INTERFACE UNIT FIRMWARE HISTORY

G3 Interface Unit Firmware Modification History			
Description Of Modification	**Firmware Level**	**Serial Number**	**Software Version**
First production version.	A8955590 **-**	1ST Mass Production	0331
A communications error occurs when the modem data is erased by a Loader malfunction. The malfunction is caused by a buildup of static electricity. Note: Panasonic modem only. The Loader is a function normally contained in the modem software that allows it to be overwritten to a newer version. To prevent this error, the manufacturer has removed the Loader function from ROM version 0334. This function was removed also because the manufacturer does not intend to release any versions after 0334, as it has judged that the need will not arise in the field. As a result, customers who use an SG3 option with ver.0334 will need to replace the SG3 board by the service technician to update to the next version (if released).	A8955590 **A**	February 2000 Production	0334

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A265/A267 – 016 **11/28/2000**

APPLICABLE MODEL:

GESTETNER – 3222/3227
RICOH – AFICIO 220/270
SAVIN – 9922DP/9927DP

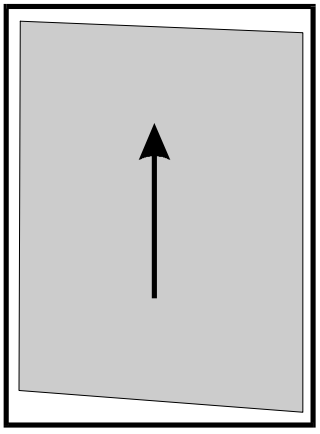
SUBJECT: SCANNER HOLDER

Note: This copy is intended as a master original for reproduction of additional bulletins.

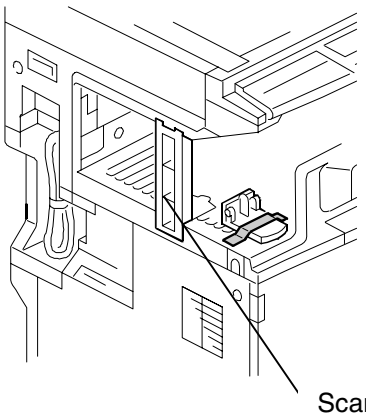
GENERAL:

If a heavy weight is placed on the Exposure Glass (approx. 50 kg / 110 lbs.), it puts pressure on the left front corner of the Scanner Unit. As a result of this pressure, the leading and trailing edges of the scanned image may not be parallel to the paper edges (see Drawing 1). If this occurs install the Scanner Holder (See Drawing 2). The color of the Holder has been changed from red to gray. The part has also been registered as a Service Part. The following part update is being issued for all A265/A267 Parts Catalogs.

NOTE: *The installation of the Scanner Holder cannot be performed if either the Bridge Unit or Finisher is installed.*



Drawing 1



Drawing 2

					REFERENCE	
OLD PART NO.	**NEW PART NO.**	**DESCRIPTION**	**QTY**	**INT**	**PAGE**	**ITEM**
-	A2671099	Scanner Holder	1	-	9	19 *

* Denotes new item number.

UNITS AFFECTED:

All A265/A267 copiers manufactured after the Serial Numbers listed below will have the new style Scanner Holder (gray) installed during production.

MODEL NAME	SERIAL NUMBER
Gestetner 3222	H2400700001
Gestetner 3227	H2500700001
Ricoh AFICIO 220	H2400701576
Ricoh AFICIO 270	H2500700501
Savin 9922DP	H2400700001
Savin 9927DP	H2500700001

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TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A265/A267 – 017 **12/12/2000**

APPLICABLE MODEL:

GESTETNER – 3222/3227
RICOH – AFICIO 220/270
SAVIN – 9922DP/9927DP

Note: This copy is intended as a master original for reproduction of additional bulletins.

SUBJECT: SERVICE MANUAL – INSERT/CAPTURE BOX OPTION TYPE 270

GENERAL:

The Capture Box Option Type 270 requires the installation of the BICU firmware (Ver. 1.83NOA1NA) in the A265/A267 mainframe. If the message "User Select" is displayed among the application keys on the A265/A267 operation panel, the Capture Box Option Type 270 has been installed.

Install the standard BICU firmware (A2675532) in standard A265/A267 mainframes that **do not** contain the Capture Box Option Type 270.

If the wrong BICU firmware is installed, the Capture Box Option (User Select Mode) will not be accessible from User Tools or Service Mode.

NOTE: *Install the following firmware or later version in A265/A267 mainframes that contain the Capture Box Option Type270.*

BICU

FIRMWARE TYPE	VERSION	PRODUCTION
A2675540	1.83NOA1NA	1st Mass Prod.

FCU

FIRMWARE TYPE	VERSION	PRODUCTION
A2685582 D	21.00	August 2000 prod.

The Service Manual pages listed below must be replaced with the pages supplied. Each bulletin package contains 1 set of replacement pages.

PAGES:

The revised areas have been highlighted by an arrow ⇒.

- vi Updated Information (Table of Contents)
- 4-86 Updated Information (ROM History)

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4.2.17 ID SENSOR ERROR ANALYSIS (SP2-221) 4-80
4.3 USER TOOLS 4-81
4.3.1 HOW TO ENTER AND EXIT USER TOOLS 4-81
4.3.2 USER TOOLS TABLE 4-81
System Setting Table 4-81
Copy Setting Table 4-82
4.4 LEDS 4-83
BICU 4-83
IOB 4-83
4.5 SPECIAL TOOLS AND LUBRICANTS 4-83
4.5.1 SPECIAL TOOLS 4-83
4.5.2 LUBRICANTS 4-83
4.6 ROM HISTORY 4-84
4.6.1 ROM HISTORY - BICU 4-84
4.6.2 ROM HISTORY – BICU (FOR CAPTURE BOX TYPE 270) 4-86

PREVENTIVE MAINTENANCE

5. PREVENTIVE MAINTENANCE SCHEDULE 5-1
5.1 PM TABLE 5-1

REPLACEMENT AND ADJUSTMENT

6. REPLACEMENT AND ADJUSTMENT 6-1
6.1 SCANNER UNIT 6-1
6.1.1 EXPOSURE GLASS 6-1
6.1.2 SCANNER EXTERIOR/OPERATION PANEL 6-2
6.1.3 LENS BLOCK ASSEMBLY 6-3
6.1.4 ORIGINAL SIZE SENSORS/LAMP STABILIZER 6-4
6.1.5 EXPOSURE LAMP 6-5
6.1.6 SCANNER MOTOR 6-6
6.1.7 SCANNER WIRES 6-7
6.2 LASER UNIT 6-10
6.2.1 CAUTION DECAL LOCATIONS 6-10
6.2.2 LASER UNIT 6-11
6.2.3 POLYGON MIRROR MOTOR 6-12
6.2.4 LD UNIT 6-12
6.2.5 LASER SYNCHRONIZATION DETECTOR 6-13
6.3 PHOTOCONDUCTOR UNIT (PCU) 6-14
6.3.1 PCU 6-14
6.4 TRANSFER UNIT 6-15
6.4.1 TRANSFER ROLLER UNIT 6-15
6.4.2 IMAGE DENSITY SENSOR 6-16
6.5 FUSING/EXIT 6-17
6.5.1 FUSING UNIT 6-17
6.5.2 THERMISTOR 6-17
6.5.3 THERMOFUSE 6-18

⇒ 4.6.2 ROM HISTORY – BICU (FOR CAPTURE BOX TYPE 270)

A265/A267 Firmware Modification History (BICU)			
Description of Modification	**Firmware Level**	**Serial Number**	**Firmware Version**
Initial Production	A2675540	First Mass production.	1.83NOA1NA
• Wording changes only.	A2675540 **A**	October '00 production	1.85NOA1NA

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A265/A267 - 017 **02/06/2001**

APPLICABLE MODEL:

GESTETNER – 3222/3227
RICOH – AFICIO 220/270
SAVIN – 9922DP/9927DP

Note: This copy is intended as a master original for reproduction of additional bulletins.

SUBJECT: SERVICE MANUAL - INSERT



■ SERVICE MANUAL

GENERAL:

The Service Manual pages listed below must be replaced with the pages supplied.
Each bulletin package contains 1 set of replacement pages.

The revised areas have been highlighted by an arrow ⇒.

PAGES:

• iv	Updated Information (Table of Contents Page)
• 4-84 & 4-85	BICU Firmware Modification History

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4.2.17 ID SENSOR ERROR ANALYSIS (SP2-221) 4-80
4.3 USER TOOLS 4-81
4.3.1 HOW TO ENTER AND EXIT USER TOOLS 4-81
4.3.2 USER TOOLS TABLE 4-81
System Setting Table 4-81
Copy Setting Table 4-82
4.4 LEDS 4-83
BICU 4-83
IOB 4-83
4.5 SPECIAL TOOLS AND LUBRICANTS 4-83
4.5.1 SPECIAL TOOLS 4-83
4.5.2 LUBRICANTS 4-83
4.6 FIRMWARE MODIFICATION HISTORY 4-84
4.6.1 BICU FIRMWARE MODIFICATION HISTORY 4-84
4.6.2 ROM HISTORY – BICU (FOR CAPTURE BOX TYPE 270) 4-86

PREVENTIVE MAINTENANCE

5. PREVENTIVE MAINTENANCE SCHEDULE 5-1
5.1 PM TABLE 5-1

REPLACEMENT AND ADJUSTMENT

6. REPLACEMENT AND ADJUSTMENT 6-1
6.1 SCANNER UNIT 6-1
6.1.1 EXPOSURE GLASS 6-1
6.1.2 SCANNER EXTERIOR/OPERATION PANEL 6-2
6.1.3 LENS BLOCK ASSEMBLY 6-3
6.1.4 ORIGINAL SIZE SENSORS/LAMP STABILIZER 6-4
6.1.5 EXPOSURE LAMP 6-5
6.1.6 SCANNER MOTOR 6-6
6.1.7 SCANNER WIRES 6-7
6.2 LASER UNIT 6-10
6.2.1 CAUTION DECAL LOCATIONS 6-10
6.2.2 LASER UNIT 6-11
6.2.3 POLYGON MIRROR MOTOR 6-12
6.2.4 LD UNIT 6-12
6.2.5 LASER SYNCHRONIZATION DETECTOR 6-13
6.3 PHOTOCONDUCTOR UNIT (PCU) 6-14
6.3.1 PCU 6-14
6.4 TRANSFER UNIT 6-15
6.4.1 TRANSFER ROLLER UNIT 6-15
6.4.2 IMAGE DENSITY SENSOR 6-16
6.5 FUSING/EXIT 6-17
6.5.1 FUSING UNIT 6-17
6.5.2 THERMISTOR 6-17
6.5.3 THERMOFUSE 6-18

⇒ 4.6 FIRMWARE MODIFICATION HISTORY

4.6.1 BICU Firmware Modification History

A265/A267 Firmware Modification History (BICU)			
Description of Modification	**Firmware Level**	**Serial Number**	**Firmware Version**
Initial Production	A2675532 **B**	From initial production.	1.57
Corrects the following: • The machine goes into Energy Saver Mode when the operator presses the Energy Saver Mode key while a print job is in progress. However, when the operator brings the machine out of the mode and returns to System Settings or Copy Features (both inside user tools), a message is displayed asking the operator to wait and the machine returns to the main copy screen. At this time, the LED for the user tools key is lit, and all indicators except the LCD report that the machine is still in User Tools. • If the operator enters System Settings or Copy Features (both inside user tools) from Fax, Printer or Scanner mode while a duplex or staple copy job is in progress, the “Copy in progress” screen is displayed. The message is still displayed even if the operator presses the User Tools Key to return to the main copy screen after the copy job finishes. • If a jam occurs while printing out a counter report, the jam indication is displayed but soon disappears. The machine then returns to the counter display screen. In addition, if the paper end condition occurs while the paper is being fed, the machine returns to the counter display screen without properly displaying “Set A4 (81/2 X 11) paper in tray”. • On machines with an optional LCT installed, SC507 can occur when the main power SW is turned on under the following conditions: 1. The LCT end fence is not in the HP *and* 2. The bottom plate for the right tray is not detected by the lower HP sensor. However, these occurrence conditions are very rare. • “1/2” appears in the Key Operator Tools display (inside user tools – system settings). • After the operator exits either of the following screens with the User Tools key and starts a copy job, the first sheet is printed out as the counter list. ➢ System Settings – Key Operator Tools – Counter List Printing ➢ Copy Features– Key Operator Tools – Counter List Printing	A2675532 **C**	October 1999 Production.	1.64

A265/A267 Firmware Modification History (BICU)			
Description of Modification	**Firmware Level**	**Serial Number**	**Firmware Version**
Corrects the following: • In printer mode, dirty back-ground may appear near the leading edge of the first page printed out following a paper jam recovery. • When exiting to the 1-bin tray, a paper jam may occur caused by the bouncing of the exit sensor actuator.	A2675532 **D**	March 2000 Production.	1.74
Corrects the following: • The default value of SP5-501-002 has been changed to "0." • Under the following conditions the staple function cannot be used after clearing a copy jam: 1. A4 sideways feed. 2. The Finisher Front Cover is opened while the last copy is being exited to the Finisher. • Under the following conditions the PM alarm does not activate when the PM counter reaches the value set in SP5-501-001 (PM Alarm Interval) 1. SP5-816 (CSS function) = 0 default setting 2. SP5-501-002 (PM alarm) =1 default setting	A2675532 **E**	April 2000 Production.	1.77
• To minimize dirty background image, TD sensor sensitivity(S): The sensitivity will change depending on the Vref value entered: See below table Vref / Sensitivity: S 1 ~ 2.7 — 0.4 2.8 ~ 3.0 — 0.2 3.1 ~ 3.2 — 0.1 • If the main scan magnification (SP2-998) is set at 0.1 when using the printer function or receiving a fax at 400dpi, the image will be stretched along the main scan direction. • One of the selections for Output Tray Priority (UP mode – System Settings) has been changed as follows: [Shift Tray] → [Finisher Tray] • Although specifications prohibit it, the machine is able to make copies under the following conditions: 1. Special size is selected for paper tray 2 2. Combine Mode is selected (several originals onto double-sided copies). • The following title descriptions for SP and Sales Modes have been changed: [Serviceman] → [Service] [Salesman] → [Sales]	A2675532 **F**	Sept. 2000 Production.	1.84

Service Tables

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A265/A267 – 017 REISSUE ★ **10/16/2001**

APPLICABLE MODEL:

GESTETNER – 3222/3227
RICOH – AFICIO 220/270
SAVIN – 9922DP/9927DP

Note: This copy is intended as a master original for reproduction of additional bulletins.

SUBJECT: FIRMWARE HISTORY CAPTURE BOX TYPE 270

GENERAL:

The following is a firmware history for the A265/267 Capture Box Option Type 270.

Note: Install the following firmware (*1.87NOA1NA*) or later version in A265/267 mainframes that contain the Capture Box Option Type 270.

BICU

(For USA Model)

A2675540	Version	Production
" "	1.84NOA1NA	1st Mass Prod.
A	1.85NOA1NA	November 2000 Prod.
B	*1.87NOA1NA*	*February Prod. '01*

The Service Manual pages listed below must be replaced with the pages supplied. Each bulletin package contains 1 set of replacement pages.

An arrow has highlighted the revised areas ⇒.

PAGES:

- vi Updated Information (Table of Contents)
- 4-87 Updated Information (ROM History)

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4.2.17 ID SENSOR ERROR ANALYSIS (SP2-221) 4-80
4.3 USER TOOLS 4-81
4.3.1 HOW TO ENTER AND EXIT USER TOOLS 4-81
4.3.2 USER TOOLS TABLE 4-81
System Setting Table 4-81
Copy Setting Table 4-82
4.4 LEDS 4-83
BICU 4-83
IOB 4-83
4.5 SPECIAL TOOLS AND LUBRICANTS 4-83
4.5.1 SPECIAL TOOLS 4-83
4.5.2 LUBRICANTS 4-83
4.6 FIRMWARE MODIFICATION HISTORY 4-84
4.6.1 BICU FIRMWARE MODIFICATION HISTORY 4-84
4.6.2 ROM HISTORY – BICU (FOR CAPTURE BOX TYPE 270) 4-87

PREVENTIVE MAINTENANCE

5. PREVENTIVE MAINTENANCE SCHEDULE 5-1
5.1 PM TABLE 5-1

REPLACEMENT AND ADJUSTMENT

6. REPLACEMENT AND ADJUSTMENT 6-1
6.1 SCANNER UNIT 6-1
6.1.1 EXPOSURE GLASS 6-1
6.1.2 SCANNER EXTERIOR/OPERATION PANEL 6-2
6.1.3 LENS BLOCK ASSEMBLY 6-3
6.1.4 ORIGINAL SIZE SENSORS/LAMP STABILIZER 6-4
6.1.5 EXPOSURE LAMP 6-5
6.1.6 SCANNER MOTOR 6-6
6.1.7 SCANNER WIRES 6-7
6.2 LASER UNIT 6-10
6.2.1 CAUTION DECAL LOCATIONS 6-10
6.2.2 LASER UNIT 6-11
6.2.3 POLYGON MIRROR MOTOR 6-12
6.2.4 LD UNIT 6-12
6.2.5 LASER SYNCHRONIZATION DETECTOR 6-13
6.3 PHOTOCONDUCTOR UNIT (PCU) 6-14
6.3.1 PCU 6-14
6.4 TRANSFER UNIT 6-15
6.4.1 TRANSFER ROLLER UNIT 6-15
6.4.2 IMAGE DENSITY SENSOR 6-16
6.5 FUSING/EXIT 6-17
6.5.1 FUSING UNIT 6-17
6.5.2 THERMISTOR 6-17
6.5.3 THERMOFUSE 6-18

⟹ 4.6.2 ROM HISTORY – BICU (FOR CAPTURE BOX TYPE 270)

A265/A267 Firmware Modification History (BICU)			
Description of Modification	**Firmware Level**	**Serial Number**	**Firmware Version**
Initial Production	A2675540	First Mass production.	1.83NOA1NA
Sotware bugs: 1. Even if Printer or Fax has been set with the User Select function priority, “Copier” is displayed at power up. 2. Even if Printer has been set with the User Select function priority, the LED for the User Select key is lit. ●	A2675540 **A**	November ’00 production	1.85NOA1NA
Occasionally, the full page image data is reduced and printed on the left side, and the right side is printed solid black in Fax and Printer modes when the following 3 conditions exist: 4. SP2-998 (Main Scan Magnification) –1 (Engine) has a different value than –2 (Copy). 5. The interleave function is enabled between copy and printer modes (both 600 dpi). Soon after the interleave job is finished, the machine prints out an image at a resolution other than 600 dpi (e.g. fax image, printer image at 300dpi). A new SP mode (SP2-993) has been added to prevent dirty background on the rear side of the first copy. Please refer to RTB# RA265022 for more details. When the main power is turned on, the machine cannot detect jammed paper remaining at the exit sensor if the interchange unit is not installed.	A2675540 **B**	February ’01 Production	1.87NOA1NA

Service Tables

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A265/A267 – 018 **01/30/2001**

APPLICABLE MODEL:

GESTETNER – NETWORK INTERFACE BOARD FOR 3222/3227
RICOH - NETWORK INTERFACE BOARD FOR AFICIO 220/270
SAVIN - NETWORK INTERFACE BOARD FOR /9922DP/9927DP

Note: This copy is intended as a master original for reproduction of additional bulletins.

SUBJECT: SERVICE MANUAL - INSERT



SERVICE MANUAL

GENERAL:

The Service Manual pages listed below must be replaced with the pages supplied. Each bulletin package contains 1 set of replacement pages.

PAGES:

- 4- 3 Updated Information (A265/A267 NIB OPTION FIRMWARE HISTORY)

An arrow has highlighted the revised areas ⇒.

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CONTROL NO. 077ABW

B307 NIB OPTION FIRMWARE MODIFICATION HISTORY			
DESCRIPTION OF MODIFICATION	**FIRMWARE LEVEL**	**SERIAL NUMBER**	**FIRMWARE VERSION**
Corrects the following: • The wording “Config Reference” has been changed to “Riferim. Config” for the Italian version of Web status. • The wording “Default Gateway Address” has been changed to “Direcci. Gateway” for the Spanish version of Web status. • A type of Cisco router caused a problem in browsing the NIB in an AppleTalk network. The cause of this was in the Cisco router but the NIB firmware has been modified to correct this.	G6785839H	October ’99 Production	3.9.8
Corrects the following: • PCL text filter support has been added. • “RICOH” brand name has been deleted from several functions and reports.	G6785839J	November ’99 Production	4.0.0
Corrects the following: • HTTP access has been improved when multiple protocols are used at the same time (e.g. telnet, IPP and HTTP).	G6785839K	April ’00 Production	4.0.2
⇒ Corrects the following: • Bi-directional communication of "diprint" (using 9100 port of TCP/IP printing) is supported (required for DAZEL system). • The "diprint direct [On/Off]" command using telnet has been implemented for supporting bi-directional communication of diprint (required for DAZEL system). PortNavi and Multidirect Print are not supported if bi-directional communication has been selected. • The spelling of the command "retern" in the UNIX install shell has been corrected to "return". • The DHCP of NetWare5 is supported. • The DHCP relay agent is supported. (This has been confirmed only with Windows NT 4.0 relay agent at this time.) • There may be some minor (character) display errors on the LCD while the NIB firmware is being upgraded. The firmware has been modified to prevent this.	G6785839L	October ’00 Production	4.06

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A265/A267 - 019 **06/27/2001**

APPLICABLE MODEL:

GESTETNER – Model 3222/3227
RICOH – Model AFICIO220/270
SAVIN – Model 9922DP/9927DP

Note: This copy is intended as a master original for reproduction of additional bulletins.

SUBJECT: SERVICE MANUAL - INSERT



SERVICE MANUAL

GENERAL:

The Service Manual pages listed below must be replaced with the pages supplied. Each bulletin package contains 1 set of replacement pages.

An arrow has highlighted the revised areas ⇒.

PAGES:

• vi	T.O.C
• 4-86	Firmware Modification History

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4.2.17 ID SENSOR ERROR ANALYSIS (SP2-221) 4-80
4.3 USER TOOLS 4-81
4.3.1 HOW TO ENTER AND EXIT USER TOOLS 4-81
4.3.2 USER TOOLS TABLE 4-81
System Setting Table 4-81
Copy Setting Table 4-82
4.4 LEDS 4-83
BICU 4-83
IOB 4-83
4.5 SPECIAL TOOLS AND LUBRICANTS 4-83
4.5.1 SPECIAL TOOLS 4-83
4.5.2 LUBRICANTS 4-83
4.6 FIRMWARE MODIFICATION HISTORY 4-84
4.6.1 BICU FIRMWARE MODIFICATION HISTORY 4-84
⟹ 4.6.2 ROM HISTORY – BICU (FOR CAPTURE BOX TYPE 270) 4-87

PREVENTIVE MAINTENANCE

5. PREVENTIVE MAINTENANCE SCHEDULE 5-1
5.1 PM TABLE 5-1

REPLACEMENT AND ADJUSTMENT

6. REPLACEMENT AND ADJUSTMENT 6-1
6.1 SCANNER UNIT 6-1
6.1.1 EXPOSURE GLASS 6-1
6.1.2 SCANNER EXTERIOR/OPERATION PANEL 6-2
6.1.3 LENS BLOCK ASSEMBLY 6-3
6.1.4 ORIGINAL SIZE SENSORS/LAMP STABILIZER 6-4
6.1.5 EXPOSURE LAMP 6-5
6.1.6 SCANNER MOTOR 6-6
6.1.7 SCANNER WIRES 6-7
6.2 LASER UNIT 6-10
6.2.1 CAUTION DECAL LOCATIONS 6-10
6.2.2 LASER UNIT 6-11
6.2.3 POLYGON MIRROR MOTOR 6-12
6.2.4 LD UNIT 6-12
6.2.5 LASER SYNCHRONIZATION DETECTOR 6-13
6.3 PHOTOCONDUCTOR UNIT (PCU) 6-14
6.3.1 PCU 6-14
6.4 TRANSFER UNIT 6-15
6.4.1 TRANSFER ROLLER UNIT 6-15
6.4.2 IMAGE DENSITY SENSOR 6-16
6.5 FUSING/EXIT 6-17
6.5.1 FUSING UNIT 6-17
6.5.2 THERMISTOR 6-17
6.5.3 THERMOFUSE 6-18

A265/A267 Firmware Modification History (BICU)			
Description of Modification	**Firmware Level**	**Serial Number**	**Firmware Version**
⇒ Corrects the following: Occasionally, the full page image data is reduced and printed on the left side, and the right side is printed solid black in Fax and Printer modes when the following 3 conditions exist: 1. SP2-998 (Main Scan Magnification) –1 (Engine) has a different value than –2 (Copy). 2. The interleave function is enabled between copy and printer modes (both 600 dpi). 3. Soon after the interleave job is finished, the machine prints out an image at a resolution other than 600 dpi (e.g. fax image, printer image at 300dpi). • When the main power is turned on, the machine cannot detect jammed paper remaining at the exit sensor if the interchange unit is not installed. • A new SP mode (SP2-993) has been added to prevent dirty background on the rear side of the first copy. Please refer to TB# A265/A267-020 for more details.	A2675532 **G**	Feb 2001 Production.	1.87

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A265/A267 - 020 **06/25/2001**

APPLICABLE MODEL:

GESTETNER – Model 3222/3227
RICOH – Model AFICIO220/270
SAVIN – Model 9922DP/9927DP

Note: This copy is intended as a master original for reproduction of additional bulletins.

SUBJECT: SERVICE MANUAL - INSERT



SERVICE MANUAL

GENERAL:

The Service Manual pages listed below must be replaced with the pages supplied. Each bulletin package contains 1 set of replacement pages.

An arrow has highlighted the revised areas ⇒.

PAGES:

- 4-23 Service Program Mode

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Mode No.			Function	Settings
Class 1 and 2	Class 3			
2-928*		Toner End Clear	Clears the toner end condition. Select "1" then press the # key to clear the toner end condition without adding new toner. *If this is "1", the following are cleared.* • *Toner end indicator (goes out)* • *Toner near-end counter* • *Toner near-end level* *When making a lot of copies after changing this setting to "1", the carrier may be attracted to the drum when the toner runs out, which may damage the drum.*	**0: No** 1: Yes
2-929*	1	Vref Upper Limit	Adjusts the upper limit for Vref. *When there is dirty background on the copy, change this value to around 3.1 V.*	0.00 ~ 5.00 0.01 V/step **2.80 V**
	2	Vref Lower Limit	Adjusts the lower limit for Vref.	0.00 ~ 5.00 0.01 V/step **1.10 V**
2-992*		Copies After TD Sensor Error	Selects the number of copies that can be made after a TD sensor error has been detected. When the machine copies this amount, an SC condition will occur. *If the optional fax unit is installed, the SC condition occurs immediately regardless of the number of prints (this is because the sender of the fax cannot check the image quality of the printout).*	**0: 100 copies** 1: 200 copies
⇒ 2-993*		Transfer Current Timing	Selects the transfer current application timing. *If "1" is selected, the machine applies the transfer current 90 ms before the Normal application time. Use this SP mode when dirty background appears on the rear side of the first page.*	**0: Normal** 1: Early
2-995*		ID Sensor Detection Interval	If the machine starts warming-up after this time has passed since entering night mode (for example, to print an incoming fax), the machine makes an ID sensor pattern. *If this value is greater, there is a greater chance that background will become dirty.*	0 ~ 999 1 minute/step **30 minutes**
2-996*		Transfer Roller Cleaning	Selects whether the transfer roller is cleaned before each copy job. Set this to '1' when dirty background appears on the reverse side of the first page of a copy job. However, the first copy time will be longer. If this SP is at 0, the transfer roller is never cleaned. See 'Detailed Section Descriptions – Transfer Roller Cleaning" for more details, Section 2.9.3.	**0: No** 1: Yes

Service Tables

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A265/A267 – 021 **06/26/2001**

APPLICABLE MODEL:

GESTETNER – Scanner Option 220 for 3222/3227
RICOH – Scanner Option 220 for AFICIO 220/270
SAVIN – Scanner Option 220 for 9922DP/9927DP

Note: This copy is intended as a master original for reproduction of additional bulletins.

SUBJECT: SCANNER CONTROLLER CONNECTION TO HUBS

SYMPTOM

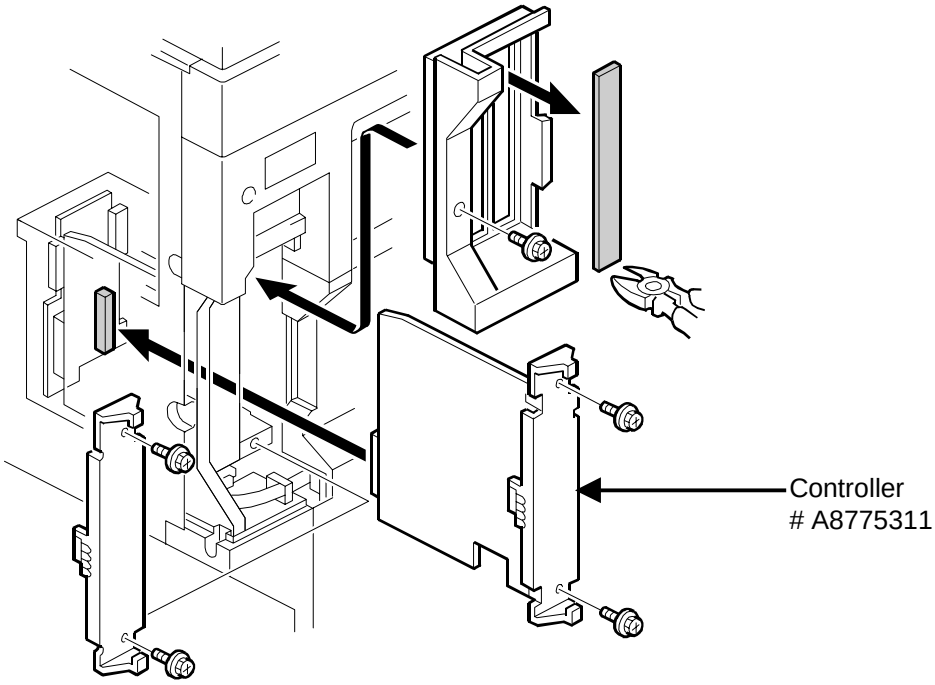
The scanner controller may not connect with some types of HUBs at 10 Mbps, depending on the particular HUB and scanner NIB combination.

CAUSE

The OSC5 oscillator on the scanner controller does not match the particular HUB.

SOLUTION

The OSC5 oscillator has been changed. The **new** controller is A8775311 (A8775310N).



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TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A265/A267 – 022 **07/13/2001**

APPLICABLE MODEL:

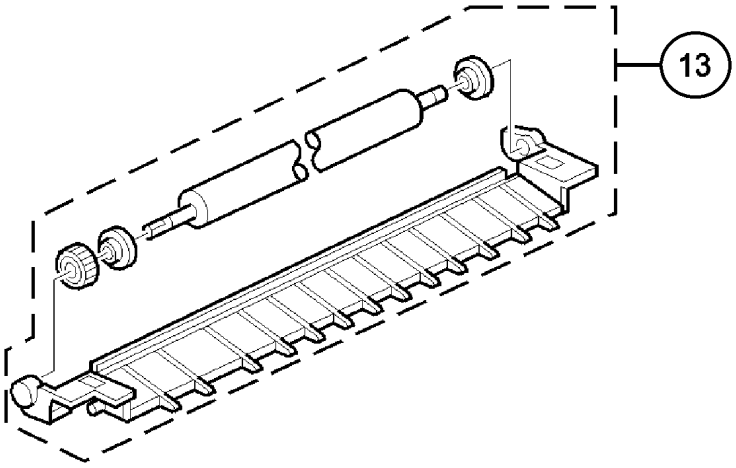
GESTETNER – 3222/3227
RICOH – AFICIO 220/270
SAVIN – 9922DP/9927DP

SUBJECT: TRANSFER / SEPARATION UNIT

Note: This copy is intended as a master original for reproduction of additional bulletins.

GENERAL:

Noise may be generated if toner gets between the transfer roller shaft and bushing. To prevent toner from entering this area, collars have been added to the shaft. The following part update is being issued for all A265/A267 Parts Catalogs.



					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
A2673830	A2673831	Transfer/Separation Unit	1	1	25	13

UNITS AFFECTED:

All A265/A267 copiers manufactured after the Serial Numbers listed below will have the new style Transfer/Separation Unit installed during production.

MODEL NAME	SERIAL NUMBER
Gestetner 3222	H2400500001
Gestetner 3227	H2500500001
Ricoh AFICIO 220	H2400500701
Ricoh AFICIO 270	H2500500231
Savin 9922DP	H2400500001
Savin 9927DP	H2500500001

INTERCHANGEABILITY CHART:

0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines.
3/S	Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or previously modified, use the new part numbers individually.		

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TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A265/A267 – 023 **07/26/2001**

APPLICABLE MODEL:

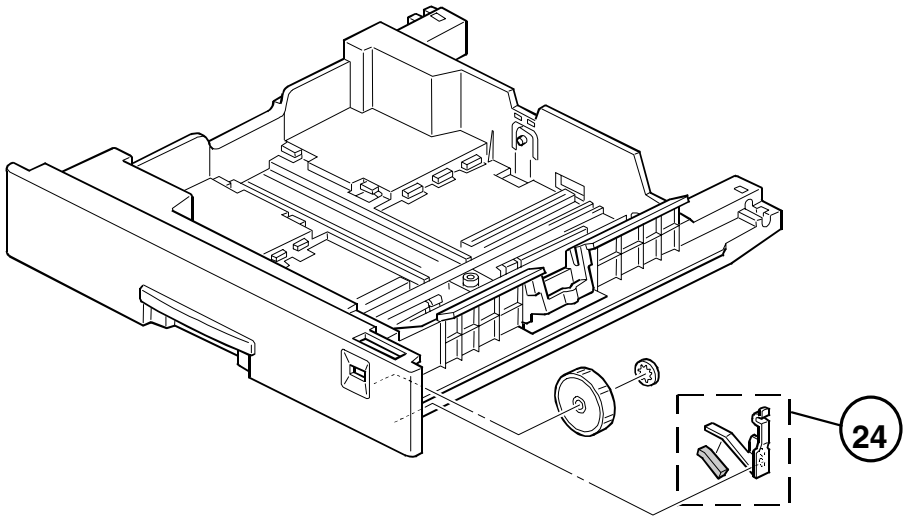
GESTETNER – 3222/3227
RICOH – AFICIO 220/270
SAVIN – 9922DP/9927DP

Note: This copy is intended as a master original for reproduction of additional bulletins.

SUBJECT: SPRING PLATE SPONGE

GENERAL:

The edge of the spring plate for the paper size dial was relatively sharp. To ensure proper safety, a sponge has been added to the spring plate. The following part update is being issued for all A265/A267 Parts Catalogs.



					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
A2672868	A2672870	Sponge – Spring Plate	1	-	37	24
A2672868	A2672870	Sponge – Spring Plate	1	-	39	24

UNITS AFFECTED:

All A265/A267 copiers manufactured after the Serial Numbers listed below will have the new style Sponge-Spring Plate installed during production.

MODEL NAME	SERIAL NUMBER
Gestetner 3222	H24101xxxxx
Gestetner 3227	H2501200001
Ricoh AFICIO 220	H24101xxxxx
Ricoh AFICIO 270	H2501201051
Savin 9922DP	H24101xxxxx
Savin 9927DP	H2501200001

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TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A265/A267 – 024 **08/06/2001**

APPLICABLE MODEL:

GESTETNER – 3222/3227
RICOH – AFICIO 220/270
SAVIN – 9922DP/9927DP

Note: This copy is intended as a master original for reproduction of additional bulletins.

SUBJECT: STAY BRACKET

GENERAL:

To standardize the following parts with other models, the front and rear stay brackets have been changed**.** The following parts corrections are being issued for all A265/A267 Parts Catalogs.

					REFERENCE	
OLD PART NO.	**NEW PART NO.**	**DESCRIPTION**	**QTY**	**INT**	**PAGE**	**ITEM**
A2671809	A2671811	Front Stay Bracket	1-1	1	21	1
A2671810	A2671812	Rear Stay Bracket	1-1	1	21	11

UNITS AFFECTED:

All A265/A267 copiers manufactured after the Serial Numbers listed below will have the new style front and rear stay brackets installed during production

MODEL NAME	SERIAL NUMBER
Ricoh AFICIO 220	H2401000980
Ricoh AFICIO 270	H2501000746
Savin 9922DP	H2401000001
Savin 9927DP	H2501000001

INTERCHANGEABILITY CHART:

0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines.
3/S	Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or previously modified, use the new part numbers individually.		

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TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A265/267 – 025 **08/06/2001**

APPLICABLE MODEL:

GESTETNER – 3222/3227
RICOH – AFICIO 220/270
SAVIN – 9922DP/9927DP

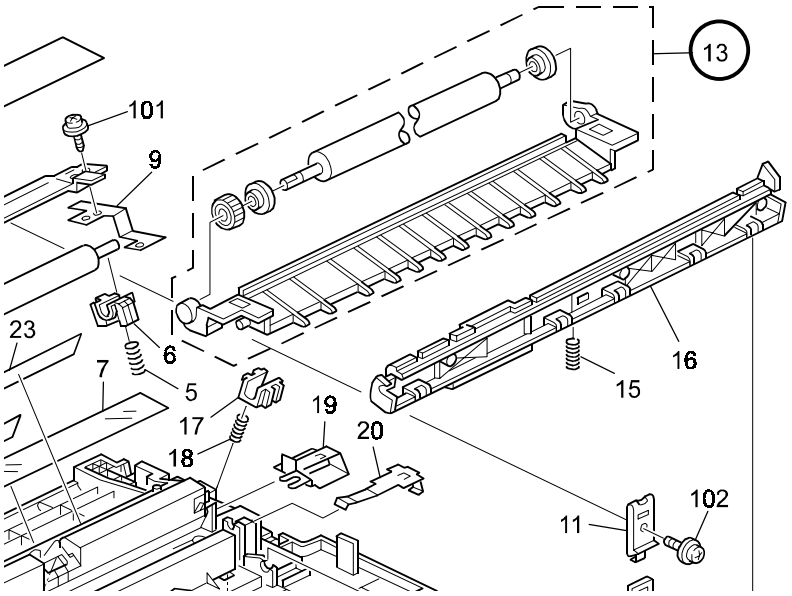
Note: This copy is intended as a master original for reproduction of additional bulletins.

SUBJECT: TRANSFER SEPARATION UNIT

GENERAL:

Noise can be generated if toner gets stuck in between the transfer roller shaft and bushing. To ensure that toner does not enter this area, collars have been added to the shaft.

The following part correction is being issued for all A265/267 Parts Catalogs.



					REFERENCE	
OLD PART NO.	**NEW PART NO.**	**DESCRIPTION**	**QTY**	**INT**	**PAGE**	**ITEM**
A2673830	A2673831	Transfer/Separation Unit	1-1	1	25	13

Continued…

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UNITS AFFECTED:

All A265/A267 copiers manufactured after the Serial Numbers listed below will have the new style transfer separation unit installed during production.

MODEL NAME	SERIAL NUMBER
Ricoh AFICIO 220	H2400500701
Ricoh AFICIO 270	H2500500231
Savin 9922DP	H2400500001
Savin 9927DP	H2500500001

INTERCHANGEABILITY CHART:

0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines.
3/S	Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or previously modified, use the new part numbers individually.		

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A265/267 – 026 **08/06/2001**

APPLICABLE MODEL:

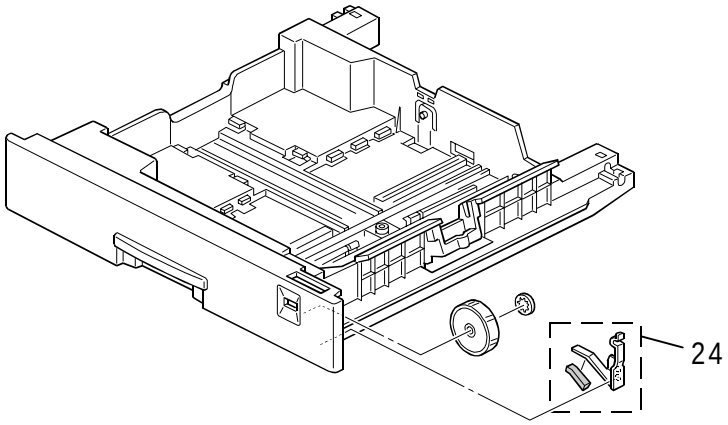
GESTETNER – 3222/3227
RICOH – AFICIO 220/270
SAVIN – 9922DP/9927DP

Note: This copy is intended as a master original for reproduction of additional bulletins.

SUBJECT: SPONGE - SPRING PLATE

GENERAL:

The edge of the spring pate for the paper size dial may be sharp. A sponge has been added to the plate for protection.The following parts corrections are being issued for all A265/A267 Parts Catalogs.



				REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	PAGE	ITEM
A2672868	A2672870	Sponge – Spring Plate	1-1	37	24
A2672868	A2672870	Sponge – Spring Plate	1-1	39	24

Continued…

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UNITS AFFECTED:

All A265/A267 copiers manufactured after the Serial Numbers listed below will have the new style sponge – spring plate installed during production.

MODEL NAME	SERIAL NUMBER
Ricoh Aficio 220	H24101XXXX
Ricoh Aficio 270	H2501201051
Savin 9922DP	H24101XXXX
Savin 9927DP	H2501200001

NOTE: *Refer to Facts Line Bulletin # FL002 and Publication Bulletin #023 for more information about the FTP Internet Web Site and EPROM / Flash Card Exchange program.*

INTERCHANGEABILITY CHART:

0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines.
3/S	Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or previously modified, use the new part numbers individually.		

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A265/267 – 027 **08/06/2001**

APPLICABLE MODEL:

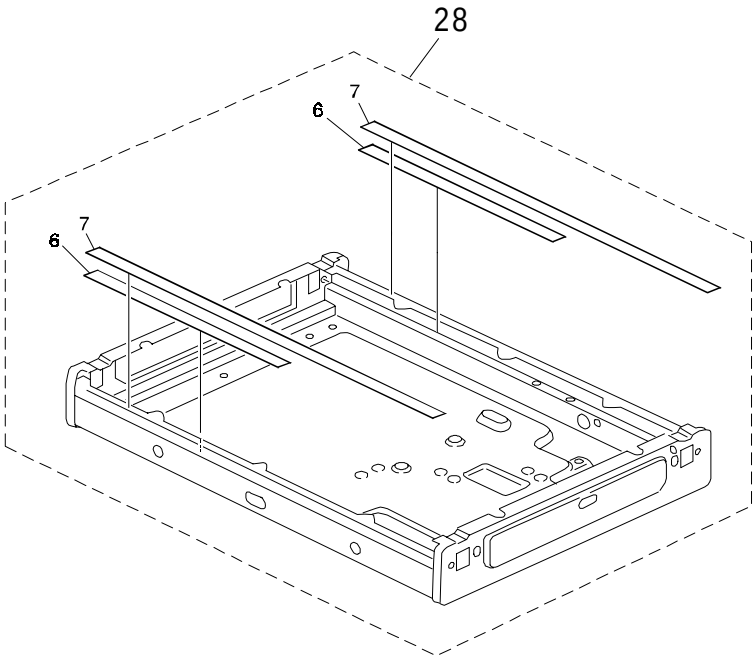
GESTETNER – 3222/3227
RICOH – AFICIO 220/270
SAVIN – 9922DP/9927DP

Note: This copy is intended as a master original for reproduction of additional bulletins.

SUBJECT: SCANNER BASE

GENERAL:

The scanner base has been registered as a service part, per a request from the field. The following part addition is being issued for all A265/A267 Parts Catalogs.



NEW PART NO.	DESCRIPTION	QTY	REFERENCE PAGE	REFERENCE ITEM
A2671801	Base – Scanner Assembly	1	21	28*

***DENOTES NEW ITEM NUMBER**

INTERCHANGEABILITY CHART:

0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines.
3/S	Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or previously modified, use the new part numbers individually.		

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TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A265/267 – 028 **08/06/2001**

APPLICABLE MODEL:

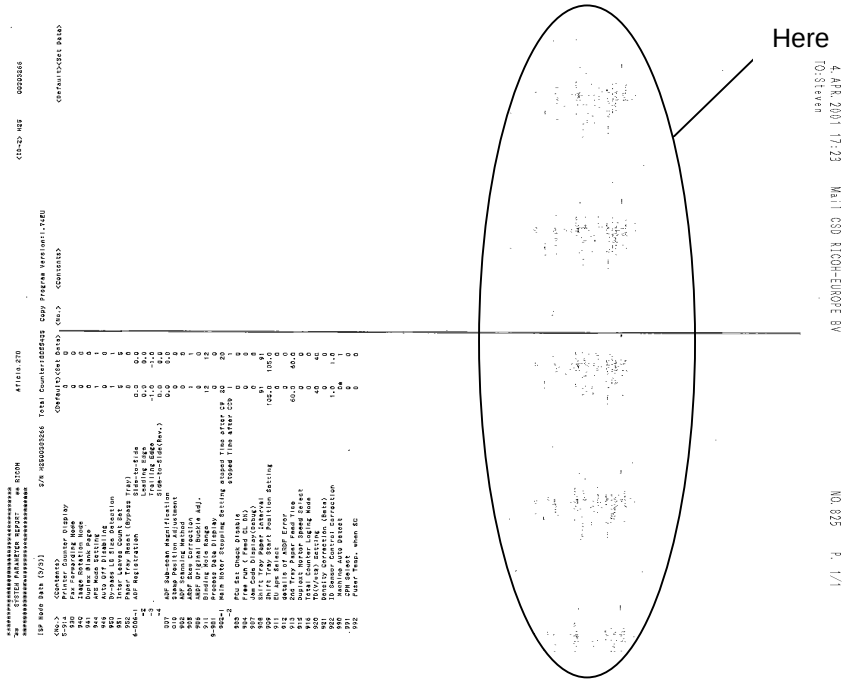
GESTETNER – 3222/3227
RICOH – AFICIO 220/270
SAVIN – 9922DP/9927DP

Note: This copy is intended as a master original for reproduction of additional bulletins.

SUBJECT: BLACK STRIPES ON COPIES

SYMPTOM:

Broken black stripes appear on copies (see below).



CAUSE:

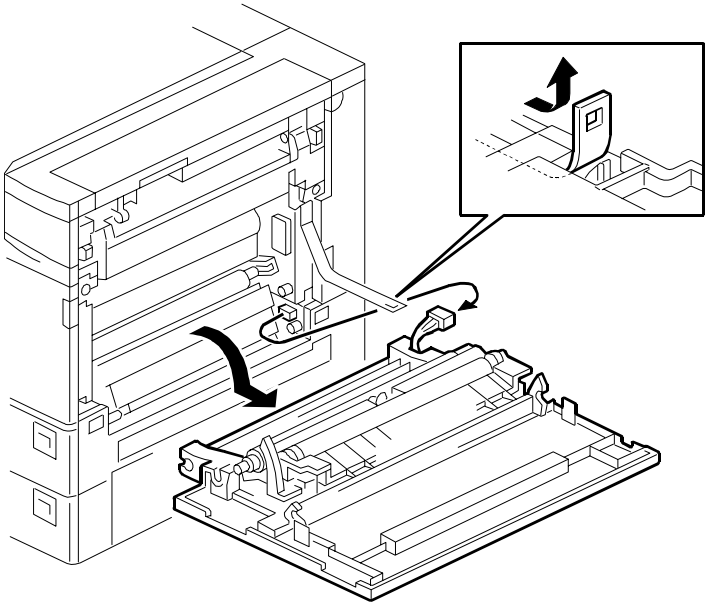
The Aficio A265/A267 has toner recycling mechanisms. Broken black stripes can appear on copies when paper dust in the recycled toner, builds up on the drum or charge roller surfaces. If the paper dust is on the charge roller surface, the stripe intervals will match the pitch of the roller. The cleaning mylar, which contacts the registration roller, normally collects paper dust and prevents these copy quality problems. However, when there is an abnormally large amount of paper dust present, the mylar is not able to collect all of it, which can cause some dust to get into the pcu.

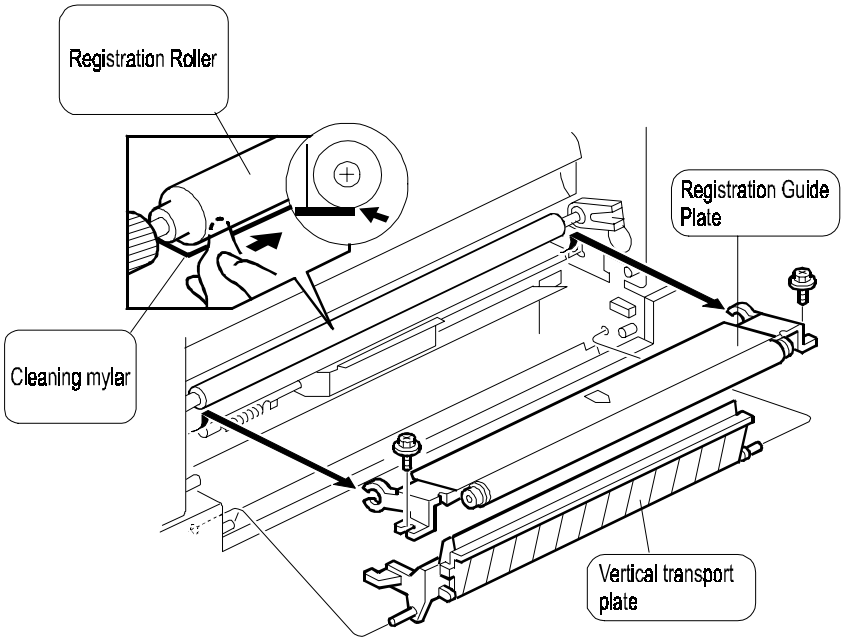
Continued…

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SOLUTION:

Clean out the paper dust that has accumulated between the dust cleaning mylar and registration roller:

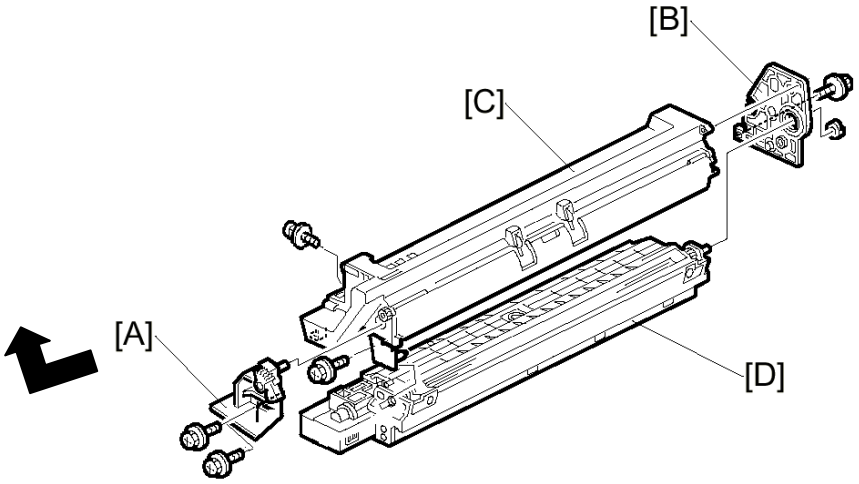




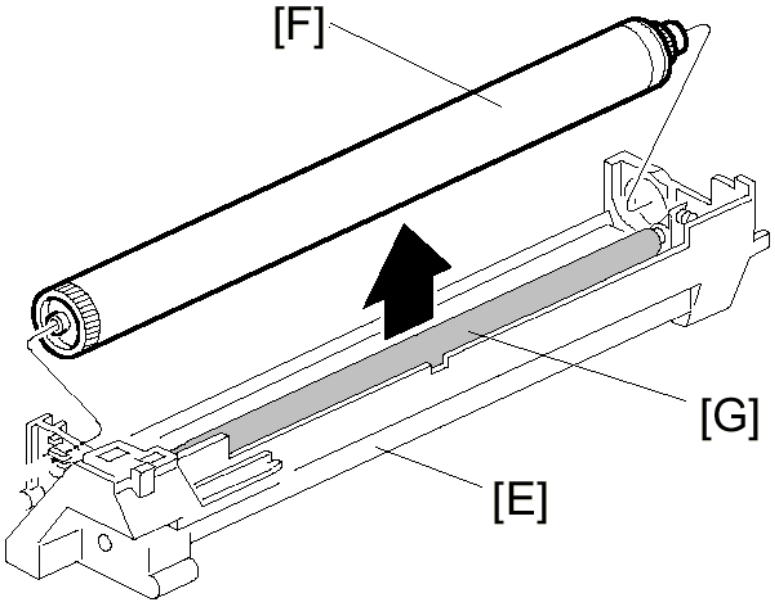
1. Detach the support arm from the right cover, then remove the ID sensor connector and right cover.
2. Being careful not to scratch the mylar, slide the vertical transport guide plate to one side and remove it.
3. Remove the registration guide plate (2 screws).
   Note: Before doing the following step, be sure and place a piece of paper underneath the registration roller to prevent paper dust from getting on the paper feed rollers.
4 Slide a piece of thick paper, or other material that will not scratch the roller, in between the registration roller and mylar. Then, while sliding the paper back and forth, remove the accumulated paper dust. In addition, cleaning the charge roller is also recommend.

Continued…

PCU Charge Roller Cleaning Procedure



1. Remove the front side piece [A] (2 screws) and rear piece [B] (1 screw, 1 coupling).
2. Remove remaining screws (1 screw front frame, 1 screw side frame).
3. Separate the drum section [C] from the developer section [D] by sliding the drum section forward and up.



1. Invert the drum section [E].
2. Carefully remove the drum [F].
3. Clean the charge roller [G] with a dry cloth.
4. Re-assemble the pcu unit.

Gestetner RICOH SAVIN

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A265/A267 - 029 **09/19/2001**

APPLICABLE MODEL:

GESTETNER – 3222/3227
RICOH – AFICIO 220/270
SAVIN – 9922DP/9927DP

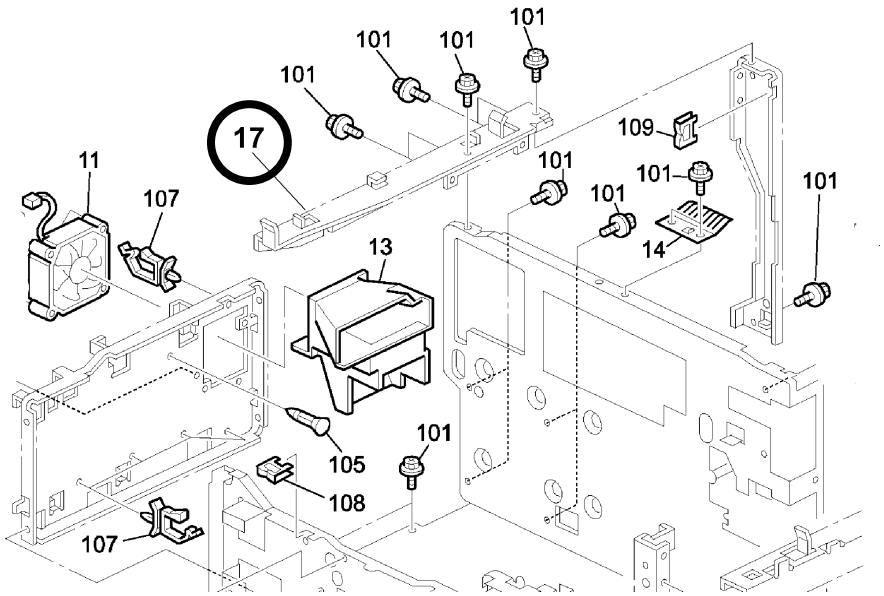
Note: This copy is intended as a master original for reproduction of additional bulletins.

SUBJECT: PARTS CATALOG UPDATES

GENERAL:

The following part catalog updates are being issued for all A265/A267 Parts Catalogs.

- **UPDATE 1:** **Scanner Unit - Left Arm –** The left arm of the scanner unit has been registered as a service part.

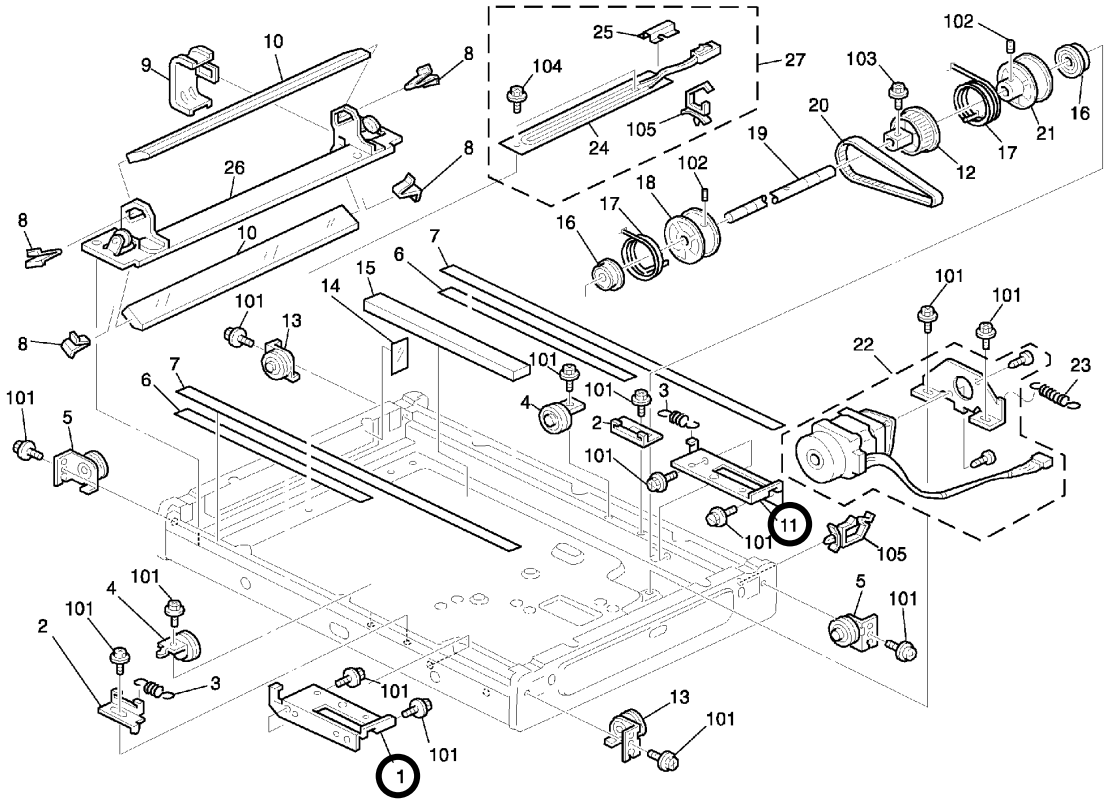


			REFERENCE	
NEW PART NUMBER	**DESCRIPTION**	**QTY**	**PAGE**	**ITEM**
B0241084	Left Arm - Scanner Unit	1	57	17

Continued…

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- **UPDATE 2:** **Front & Rear Stay Bracket –** To standardize the front and rear stay brackets with other models, the brackets have been changed.



					REFERENCE	
OLD PART NO.	**NEW PART NO.**	**DESCRIPTION**	**QTY**	**INT**	**PAGE**	**ITEM**
A2671809	A2671811	Front Stay Bracket	1-1	1	21	1
A2671810	A2671812	Rear Stay Bracket	1-1	1	21	11

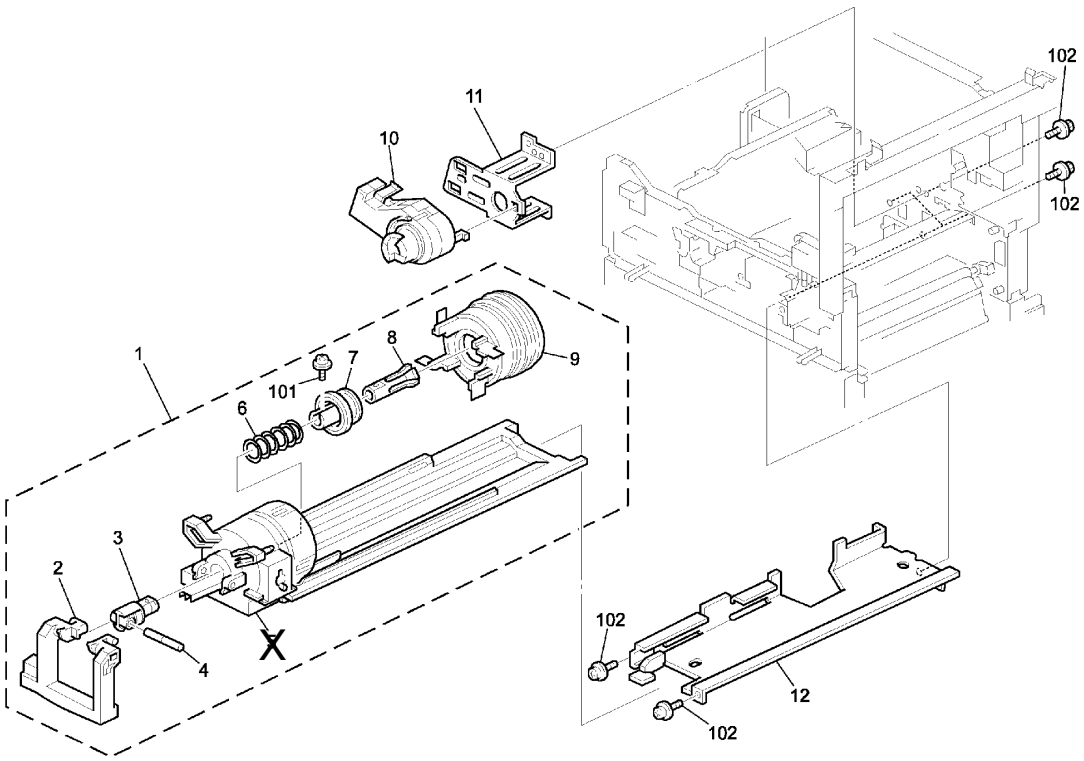
UNITS AFFECTED:

All A265/A267 copiers manufactured after the Serial Numbers listed below will have the new front and rear stay brackets installed during production.

MODEL NAME	SERIAL NUMBER
Gestetner 3222	H2401000001
Gestetner 3227	H2501000001
Ricoh Aficio 220	H2401000980
Ricoh Aficio 270	H2501000746
Savin 9922DP	H2401000001
Savin 9927DP	H2501000001

Continued…

- **UPDATE 3:** **Toner Supply Case Assembly –** To maintain the reliability of the toner supply unit, the toner supply case assembly is no longer supplied as a service part. Please delete the part from your listings.



			REFERENCE	
DELETED PART NUMBER	**DESCRIPTION**	**QTY**	**PAGE**	**ITEM**
A2673549	Case - Toner Supply Assembly	1-0	33	5

INTERCHANGEABILITY CHART:

0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines.
3/S	Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or previously modified, use the new part numbers individually.		

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A265/A267 – 030 **11/16/2001**

APPLICABLE MODEL:

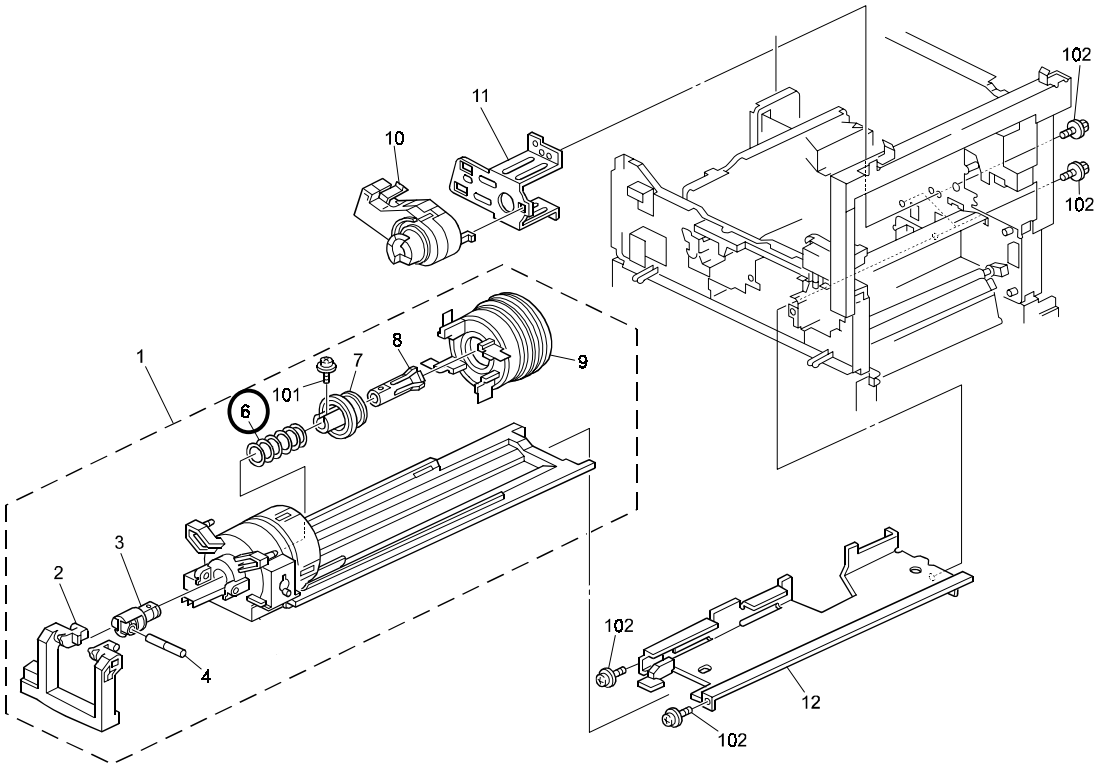
GESTETNER – 3222/3227
RICOH – AFICIO 220/270
SAVIN – 9922DP/9927DP

Note: This copy is intended as a master original for reproduction of additional bulletins.

SUBJECT: CHUCK SPRING

GENERAL:

The chuck spring tension has been increased to ensure proper closing of the toner inner cap when removing the bottle. The cap will not shut properly on occasion due to variations in bottle dimensions, toner bottle lever operation and environmental conditions (esp. low humidity). The following part correction is being issued for all A265/A267 Parts Catalogs.



					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
A1843411	A2673556	Chuck Spring	1-1	0	33	6

Continued…

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UNITS AFFECTED:

All A265/267 copiers manufactured after the Serial Numbers listed below will have the new style Chuck Spring installed during production.

MODEL NAME	SERIAL NUMBER
Ricoh AFICIO 220	H24104XXXX
Ricoh AFICIO 270	H2510300501
Savin 9927DP	H2510400001
Savin 9922DP	H24104XXXX

INTERCHANGEABILITY CHART:

0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines.
3/S	Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or previously modified, use the new part numbers individually.		

Gestetner RICOH SAVIN

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A265/A267 - 031 **12/20/2001**

APPLICABLE MODEL:
GESTETNER – 3222/3227
RICOH – AFICIO 220/270
SAVIN – 9922DP/9927DP

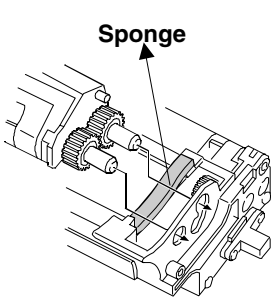
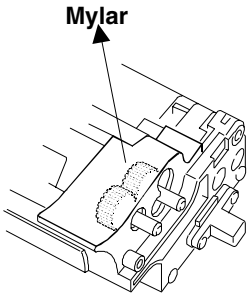
Note: This copy is intended as a master original for reproduction of additional bulletins.

SUBJECT: IMAGE PROBLEM HISTORY CAUSED BY PCU

GENERAL:

This bulletin summarizes the history of modifications made to the PCU for various image quality symptoms.

1. Light Copy / Toner End / Gear Broken

Cause	Countermeasure	Affected Part
The bushing for the toner supply coil shaft partially melts.	Material of the bushing changed.	PCU *See table 1.*
Developer leaks out from the cleaning and developer tanks and gets stuck on the gear.	1. Sponge attached so that developer from below the roller will not get stuck on the gear. See fig 1. 2. Strip of Mylar attached so that the developer will not fall onto the gear and stick to it. See fig 2.  Fig.1  Fig. 2	PCU *See table 2.*
	To improve upon the previous countermeasure, the material of the idle gear has been changed to metal.	PCU *See table 4.*

Continued…

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2. Full-page Dirty Background

Cause	Countermeasure	Effected Part
Toner concentration (in the development unit) too high.	Factory procedures for regulating developer properties changed.	PCU *See table 1.*
	BICU firmware changed to enhance the rage of TD sensor sensitivity ("S"). **Firmware Corrected -** To minimize dirty background image, TD sensor sensitivity: S will change as follows, depending on the Vref value entered: **Vref** **Sensitivity: S** 1 ~ 2.7 0.4 2.8 ~ 3 0.2 3.1 ~ 3.2 0.1	BICU firmware ver. 1.8.4 or higher.
	Amount of developer inserted in PCU at the factory changed from 365g to 345g, in order to reduce developer mixing torque.	PCU *See table 3.*

NOTE: *The firmware can be downloaded through the Technology Solution Center FTP Site http://tsc.ricohcorp.com. Refer to Facts Line Bulletin # FL002 and Publication Bulletin #023 for more information about the FTP Internet Web Site and EPROM / Flash Card Exchange program.*

UNITS AFFECTED:

All A265/A267 copiers manufactured after the serial numbers listed below will have the new parts installed during production.

Table 1

	Distributions	Serial Number	Note
For Consumables	Ricoh	1E091000001~	October '99 production
	Gestetner	GE091000001~	October '99 production
	Savin	SE091000001~	October '99 production
For Machine		OE091004486~	October '99 production

Table 2

	Distributions	Serial Number	Note
For Consumables	Ricoh	1E000604156~	'99 June 30 ~
	Gestetner	GE000700001~	July '00 production
	Savin	SE000700001~	July '00 production
For Machine		OE000700001~	July '00 production

Continued…

Table 3

	Distributions	**Serial Number**	**Note**
For Consumables	Ricoh	1E000900001~	September ’00 production
	Gestetner	GE000900001~	September ’00 production
	Savin	SE000900001~	September ’00 production
For Machine		OE000802601~	’00 Aug. 22~

Table 4

	Distributions	**Serial Number**	**Note**
For Consumables	Ricoh	5E110500423~	May ’01 production
	Gestetner	GE110500642~	May ’01 production
	Savin	SE110500001~	May ’01 production
For Machine		2E110501210~	May ’01 production

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A265/A267 - 032 **01/22/2002**

APPLICABLE MODEL:

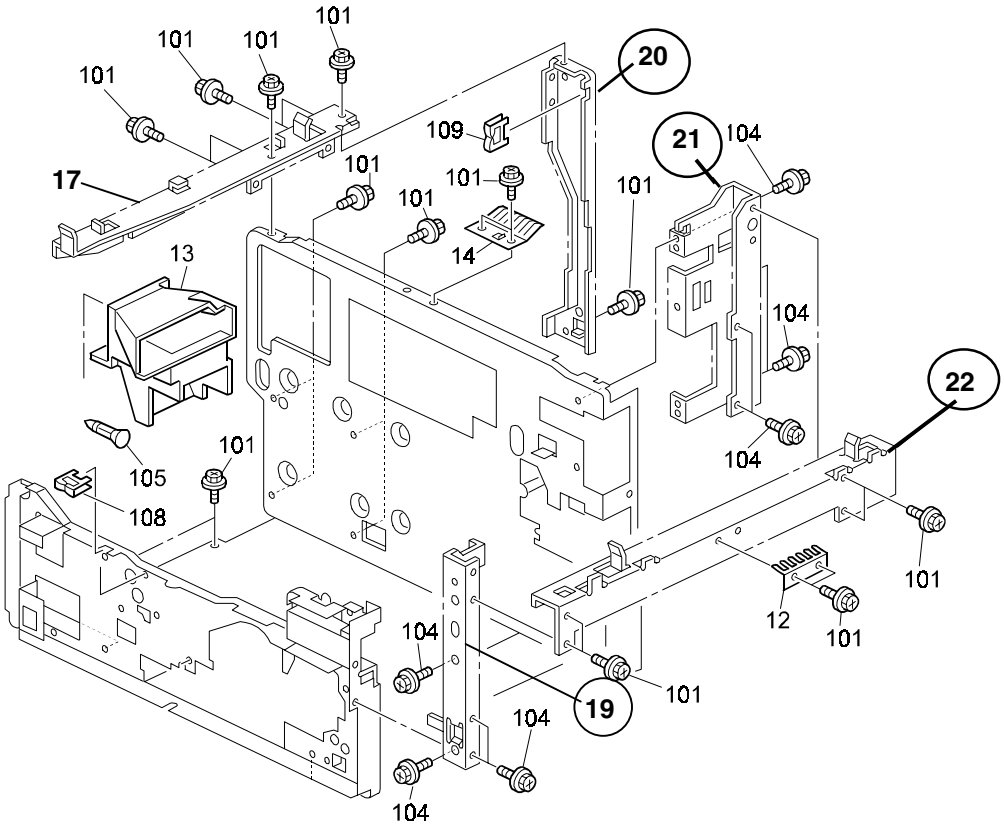
GESTETNER – 3222/3227
RICOH – AFICIO 220/270
SAVIN – 9922DP/9927DP

Note: This copy is intended as a master original for reproduction of additional bulletins.

SUBJECT: FRAMES

GENERAL:

The parts indicated have been registered as service parts. The following parts corrections are being issued for all A265/A267 Parts Catalogs.



			REFERENCE	
NEW PART NO.	**DESCRIPTION**	**QTY**	**PAGE**	**ITEM**
A2671078	Frame – Right Front		57	19*
B0241083	Support Bracket – Left Rear	1	57	20*
B0241079	Frame – Right Rear	1	57	21*
A2671080	Scanner Stay – Lower Right	1	57	22*

***DENOTES NEW ITEM NUMBER**

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Gestetner RICOH savin

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A265/A267 – 033 **05/23/2002**

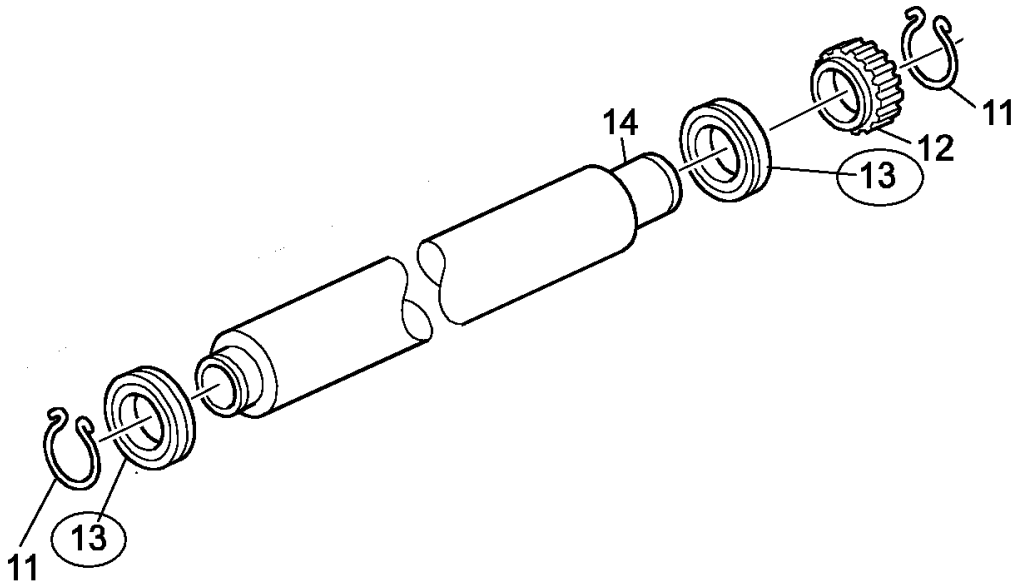
APPLICABLE MODEL:
GESTETNER – 3222/3227
RICOH – AFICIO 220/270
SAVIN – 9922DP/9927DP

Note: This copy is intended as a master original for reproduction of additional bulletins.

SUBJECT: BALL BEARINGS (FUSING UNIT)

GENERAL:

The ball bearings in the Fusing Unit have been changed for parts standardization with the B022. The following part update is being issued for all A265/A267 Parts Catalogs.



					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
AE030026	G0524618	Ball Bearing – 30x42x7	2	0	41	13

UNITS AFFECTED:

All A265/A267 copiers manufactured after the Serial Numbers listed below will have the new style Ball Bearing installed during production.

MODEL NAME	SERIAL NUMBER
Gestetner 3222	H24104xxxx
Gestetner 3227	H2510300042
Ricoh Aficio 220	H24104xxxx
Ricoh Aficio 270	H25104xxxx
Savin 9922DP	H24104xxxx
Savin 9927DP	H2510300042

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TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A265/A267 – 034 **05/31/2002**

APPLICABLE MODEL:
GESTETNER – 3222/3227
RICOH – AFICIO 220/270
SAVIN – 9922DP/9927DP

Note: This copy is intended as a master original for reproduction of additional bulletins.

SUBJECT: DF JAM

SYMPTOM:

An original jam occurs if the leading edge contacts the pullout roller guide while the second side is being scanned**.**



CAUSE

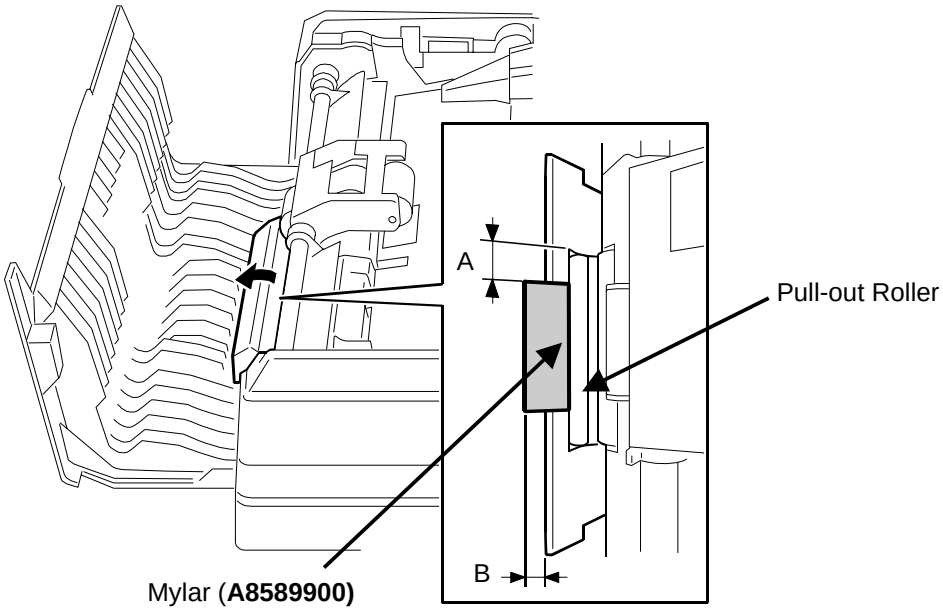
Some Left Covers were produced with a slight bulge in the pullout roller guide (0.1 – 0.5mm). The jam does not always occur, but has a greater tendency to occur if the original leading edge is already curled.

Continued…

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SOLUTION:

If this original jam occurs in the field, attach Mylar A8589900 as shown below, effectively extending the roller guide. (Please be sure to observe dimensions A and B).



A: 14 +/- 5 mm
B: 1.5 – 3.0 mm

UNITS AFFECTED:

All A265/A267 copiers manufactured after the Serial Numbers listed below will have the new style Mylar installed during production.

MODEL NAME	SERIAL NUMBER
Gestetner 3222	H2617700001
Gestetner 3227	H2617708471
Ricoh Aficio 220	H2617700001
Ricoh Aficio 270	H2617708471
Savin 9922DP	H2617700001
Savin 9927DP	H2617708471

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A265/A267 – 035 **07/24/2002**

APPLICABLE MODEL:

GESTETNER – 3222/3227
RICOH – AFICIO 220/270
SAVIN – 9922DP/9927DP

SUBJECT: POINT TO POINT CORRECTIONS

Note: This copy is intended as a master original for reproduction of additional bulletins.

GENERAL:

Please make the following corrections to your A265/A267 Point to Point Diagram.

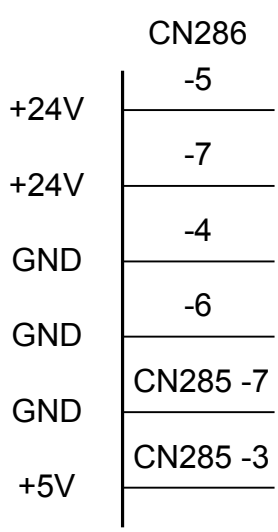
PSU – CN286

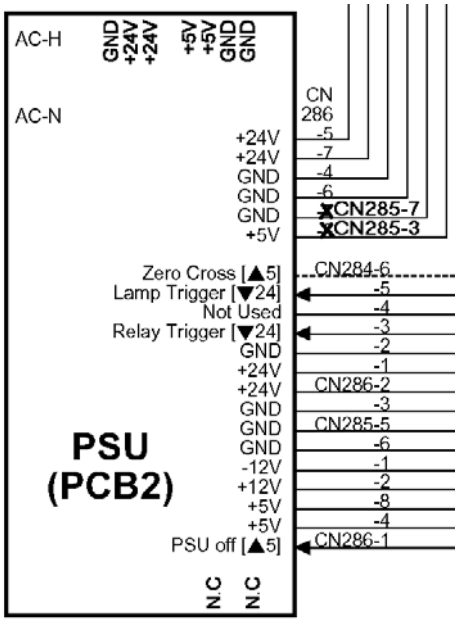
Location: B5

Incorrect:



Correct:





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TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A265/A267 – 036 **11/06/2002**

APPLICABLE MODEL:

GESTETNER – 3222/3227
RICOH – AFICIO 220/270
SAVIN – 9922DP/9927DP

SUBJECT: SERVICE MANUAL – INSERT

GENERAL:

The Service Manual pages listed below must be replaced with the pages supplied. Each bulletin package contains 1 set of replacement pages.

PAGES:

The revised areas have been highlighted by an arrow ⇒.

- vii through xiv — Updated Information (Table of Contents)
- 6-41 through 6-48 — New Information (Identifying Skewed, Trapezoid & Parallelogram Images)

Note: This copy is intended as a master original for reproduction of additional bulletins.



■ SERVICE MANUAL

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6.5.4 HOT ROLLER AND FUSING LAMP 6-19
6.5.5 PRESSURE ROLLER/CLEANING ROLLER 6-20
6.5.6 PAPER EXIT SENSOR/PAPER OVERFLOW SENSOR 6-21
6.6 PAPER FEED 6-22
6.6.1 FEED ROLLERS 6-22
6.6.2 PAPER END SENSOR 6-23
6.6.3 PAPER TRAY LIFT MOTORS 6-24
6.6.4 REGISTRATION CLUTCH 6-25
6.6.5 PAPER FEED CLUTCHES 6-26
Lower Paper Feed Clutch 6-26
Upper Paper Feed Clutch. 6-26
6.6.6 RELAY CLUTCHES 6-27
6.6.7 PAPER SIZE DETECTOR/SPECIAL PAPER SENSOR 6-28
6.6.8 REGISTRATION SENSOR 6-29
6.6.9 RELAY SENSORS 6-30
Upper Relay Sensor 6-30
Lower Relay Sensor 6-30
6.7 PCBS AND OTHER ITEMS 6-31
6.7.1 BICU BOARD 6-31
6.7.2 I/O BOARD 6-32
6.7.3 POWER PACK 6-32
6.7.4 MAIN MOTOR 6-33
6.7.5 PSU 6-34
6.8 COPY ADJUSTMENTS: PRINTING/SCANNING 6-35
6.8.1 PRINTING 6-35
Registration - Leading Edge/Side-to-Side 6-35
Blank Margin 6-36
Main Scan Magnification 6-36
Parallelogram Image Adjustment 6-37
6.8.2 SCANNING 6-38
Registration: Platen Mode 6-38
Magnification 6-38
Standard White Density Adjustment 6-39
6.8.3 ADF IMAGE ADJUSTMENT 6-40
Registration 6-40
6.9 IDENTIFYING SKEWED, TRAPEZOID & PARALLELOGRAM IMAGES 6-41
6.9.1 SKEWED IMAGES 6-41
6.9.2 TRAPEZOID IMAGES 6-41
6.9.3 PARALLELOGRAM IMAGES 6-42
6.10 CHECKING THE IMAGE WITH THE TRIMMING PATTERN 6-43
6.11 CORRECTING THE IMAGES 6-44
6.11.1 CORRECTING SKEWED IMAGES 6-44
6.11.2 CORRECTING TRAPEZOID IMAGES 6-47

TROUBLESHOOTING

7. TROUBLESHOOTING 7-1
7.1 SERVICE CALL CONDITIONS 7-1

7.1.1 SUMMARY 7-1
7.1.2 SC CODE DESCRIPTIONS 7-2
SC194: IPU White Level Detection Error 7-4
SC546: Unstable fusing temperature 7-9
SC620: Communication error between IOB and ADF 7-10
SC760: ADF gate abnormal 7-14
SC900: Electrical total counter error 7-14
SC901: Mechanical Total Counter 7-14
SC921: EMB (Copier feature expander) hardware error 7-15
SC980: Program loading error 7-15
SC990: Communication error between BICU and IOB 7-15
SC999: Program version error 7-15
7.2 PAPER FEED TROUBLESHOOTING 7-16
7.3 SKEWED IMAGE 7-17
7.4 TONER DENSITY 7-18
7.4.1 ADJUST THE TONER DENSITY CONTROL 7-18
If the toner density is too low 7-18
If the toner density is too high 7-18
7.4.2 DIRTY BACKGROUND 7-18
7.5 ELECTRICAL COMPONENT DEFECTS 7-19
7.5.1 SENSORS 7-19
7.5.2 SWITCHES 7-21
7.6 BLOWN FUSE CONDITIONS 7-22

AUTO RECIRCULATING DOCUMENT FEEDER A858

1. OVERALL MACHINE INFORMATION 8-1
1.1 SPECIFICATIONS 8-1
1.2 MECHANICAL COMPONENT LAYOUT 8-2
1.3 ELECTRICAL COMPONENT LAYOUT 8-3
1.4 ELECTRICAL COMPONENT DESCRIPTION 8-4
1.5 DRIVE LAYOUT 8-5

2. DETAILED SECTION DESCRIPTIONS 8-6
2.1 ORIGINAL SIZE DETECTION 8-6
1.2 PICK-UP AND SEPARATION 8-9
1.3 ORIGINAL TRANSPORT AND EXIT 8-10
1.3.1 SINGLE-SIDED ORIGINALS 8-10
1.3.2 DOUBLE-SIDED ORIGINALS 8-11
1.3.3 ORIGINAL TRAILING EDGE SENSOR 8-12
1.4 STAMP 8-13
1.5 TIMING CHARTS 8-14
1.5.1 LT SIDEWAYS (SINGLE-SIDED ORIGINAL MODE) 8-14
1.5.2 LT SIDEWAYS STAMP MODE (SINGLE-SIDED ORIGINAL MODE) 8-15
1.5.3 LT SIDEWAYS (DOUBLE-SIDED ORIGINAL MODE) 8-16
1.5.4 LT SIDEWAYS STAMP MODE (DOUBLE-SIDED ORIGINAL MODE) 8-17

1.6 CONDITION OF JAM DETECTION....8-18
1.7 OVERALL ELECTRICAL CIRCUIT....8-19

3. REPLACEMENT AND ADJUSTMENT....8-20
3.1 DF EXIT TABLE AND COVER....8-20
3.2 ORIGINAL FEED UNIT....8-21
3.3 LEFT COVER....8-22
3.4 PICK-UP ROLLER....8-23
3.5 FEED BELT....8-24
3.6 SEPARATION ROLLER....8-25
3.7 ORIGINAL SET/ORIGINAL REVERSE SENSOR....8-26
3.8 ORIGINAL LENGTH, WIDTHSENSOR BOARD AND TRAILING EDGE SENSOR....8-27
3.9 DF FEED CLUTCH/DF PICK-UP SOLENOID/ TRANSPORT/ DF FEED MOTORS....8-28
DF Feed Clutch....8-28
Pick-up Solenoid....8-28
Transport Motor....8-28
DF Feed Motor....8-28
3.10 REGISTRATION SENSOR....8-29
3.11 STAMP SOLENOID AND ORIGINAL EXIT SENSOR....8-30

PAPER TRAY UNIT A860

1. OVERALL MACHINE INFORMATION....9-1
1.1 SPECIFICATIONS....9-1
1.2 MECHANICAL COMPONENT LAYOUT....9-2
1.3 ELECTRICAL COMPONENT LAYOUT....9-3
1.4 ELECTRICAL COMPONENT DESCRIPTION....9-4
1.5 DRIVE LAYOUT....9-5

2. DETAILED DESCRIPTIONS....9-6
2.1 PAPER FEED AND SEPARATION MECHANISM....9-6
2.2 PAPER LIFT MECHANISM....9-7
2.3 PAPER END DETECTION....9-9
2.4 PAPER HEIGHT DETECTION....9-10
1.5 PAPER SIZE DETECTION....9-12
1.6 SIDE AND END FENCES....9-13
Side Fences....9-13
End Fence....9-13

3. REPLACEMENT AND ADJUSTMENT....9-14
3.1 FEED ROLLER REPLACEMENT....9-14
3.2 TRAY MAIN BOARD REPLACEMENT....9-15
3.3 TRAY MOTOR REPLACEMENT....9-15
3.4 RELAY CLUTCH REPLACEMENT....9-16
3.5 UPPER PAPER FEED CLUTCH REPLACEMENT....9-17

3.6 LOWER PAPER FEED CLUTCH REPLACEMENT 9-18
3.7 LIFT MOTOR REPLACEMENT 9-19
3.8 PAPER END SENSOR REPLACEMENT 9-20
3.9 VERTICAL TRANSPORT SENSOR REPLACEMENT 9-20
3.10 PAPER SIZE SWITCH REPLACEMENT 9-21

LARGE CAPACITY TRAY A862

1. OVERALL MACHINE INFORMATION 10-1
1.1 SPECIFICATIONS 10-1
1.2 MECHANICAL COMPONENT LAYOUT 10-2
1.3 ELECTRICAL COMPONENT LAYOUT 10-3
1.4 ELECTRICAL COMPONENT DESCRIPTIONS 10-4

2. DETAILED SECTION DESCRIPTIONS 10-5
2.1 PAPER FEED 10-5
2.2 REVERSE ROLLER AND PICK-UP ROLLER RELEASE 10-6
2.3 TRAY LIFT 10-7
2.4 NEAR END/END DETECTION 10-8
2.5 RIGHT TRAY SIDE FENCE 10-9
2.6 LEFT TRAY REAR FENCE 10-9
2.7 RIGHT TRAY PAPER END DETECTION 10-10

3. REPLACEMENT AND ADJUSTMENT 10-11
3.1 DETACHING THE TRAY FROM THE MAINFRAME 10-11
Rear Fence HP Sensor 10-11
3.3 CHANGING THE TRAY PAPER SIZE 10-12
3.4 LEFT TRAY PAPER END SENSOR 10-12
3.5 TRAY LIFT MOTOR 10-13
3.6 TRAY MOTOR 10-14
3.7 PAPER FEED CLUTCH AND RELAY CLUTCH 10-15
3.8 PAPER FEED UNIT 10-16
3.9 UPPER LIMIT, RIGHT TRAY PAPER END, AND RELAY SENSORS 10-17
3.10 REAR FENCE MOTOR 10-18
3.11 PICK-UP/PAPER FEED/REVERSE ROLLERS 10-19

BY-PASS UNIT A899

1 OVERALL MACHINE INFORMATION 11-1
1.1 SPECIFICATIONS 11-1
1.2 MECHANICAL COMPONENT LAYOUT 11-1
1.3 ELECTRICAL COMPONENT LAYOUT 11-2
1.4 ELECTRICAL COMPONENT DESCRIPTION 11-2
2 DETAILED DESCRIPTIONS 11-3

2.1 BASIC OPERATION....11-3
2.2 PAPER SIZE DETECTION....11-4
3 REPLACEMENT AND ADJUSTMENT....11-5
3.1 PAPER FEED ROLLER/FRICTION PAD/PAPER END SENSOR....11-5
3.2 PAPER SIZE SENSOR BOARD....11-6
3.3 PAPER FEED CLUTCH....11-7

INTERCHANGE UNIT B300

1. OVERALL MACHINE INFORMATION....12-1
1.1 SPECIFICATIONS....12-1
1.2 MECHANICAL COMPONENT LAYOUT....12-2
1.3 DRIVE LAYOUT....12-3

2. DETAILED DESCRIPTION....12-4
2.1 JUNCTION GATE MECHANISM....12-4
To the Exit Tray or Bridge Unit (for the Upper Tray on top of the Bridge Unit, or the Finisher)....12-4
To the 1-bin Tray....12-4
To the Duplex Unit....12-4

3. REPLACEMENT AND ADJUSTMENT....12-5
3.1 EXIT SENSOR REPLACEMENT....12-5

DUPLEX A896

1. OVERALL MACHINE INFORMATION....13-1
1.1 SPECIFICATIONS....13-1
1.2 MECHANICAL COMPONENT LAYOUT....13-2
1.3 ELECTRICAL COMPONENT LAYOUT....13-3
1.4 ELECTRICAL COMPONENT DESCRIPTION....13-4
1.5 DRIVE LAYOUT....13-5

2. DETAILED DESCRIPTIONS....13-6
2.1 BASIC OPERATION....13-6
Larger than A4 lengthwise/LT Lengthwise....13-6
Up to A4 Lengthwise/LT lengthwise....13-7
2.2 FEED IN AND EXIT MECHANISM....13-8
When Paper is Fed Into Duplex Unit:....13-8
Inversion and Exit:....13-8

3. REPLACEMENT AND ADJUSTMENT....13-9
3.1 COVER REMOVAL....13-9
3.2 ENTRANCE SENSOR REPLACEMENT....13-10
3.3 EXIT SENSOR REPLACEMENT....13-11

1 BIN TRAY UNIT A898

1. OVERALL INFORMATION 14-1
1.1 SPECIFICATIONS 14-1
1.2 MECHANICAL COMPONENT LAYOUT 14-2
1.3 ELECTRICAL COMPONENT LAYOUT 14-3
1.4 ELECTRICAL COMPONENT DESCRIPTION 14-3

2. DETAILED SECTION DESCRIPTIONS 14-4
2.1 BASIC OPERATION 14-4

3. REPLACEMENT AND ADJUSTMENT 14-5
3.1 PAPER SENSOR REMOVAL 14-5

BRIDGE UNIT A897

1. OVERALL MACHINE INFORMATION 15-1
1.1 SPECIFICATIONS 15-1
1.2 MECHANICAL COMPONENT LAYOUT 15-2
1.3 ELECTRICAL COMPONENT LAYOUT 15-3
1.4 ELECTRICAL COMPONENT DESCRIPTION 15-4
1.5 DRIVE LAYOUT 15-5

2. DETAILED DESCRIPTION 15-6
2.1 JUNCTION GATE MECHANISM 15-6

3. REPLACEMENT AND ADJUSTMENT 15-7
3.1 BRIDGE UNIT DRIVE MOTOR REPLACEMENT 15-7
3.2 TRAY EXIT SENSOR REPLACEMENT 15-8
3.3 RELAY SENSOR REPLACEMENT 15-8

SHIFT TRAY UNIT B313

1 OVERALL MACHINE INFORMATION 16-1
1.1 SPECIFICATIONS 16-1
1.2 COMPONENT LAYOUT 16-2

2. DETAILED SECTION DESCRIPTIONS 16-3
2.1 BASIC OPERATION 16-3
2.2 PRIMARY MECHANISMS 16-4
2.2.1 TRAY SHIFT 16-4
2.2.2 HALF TURN DETECTION 16-5

3. REPLACEMENT AND ADJUSTMENT 16-6
3.1 TRAY COVER REPLACEMENT 16-6
3.1.1 TRAY COVER REMOVAL 16-6
3.1.2 TRAY COVER ATTACHMENT 16-6
3.2 TRAY MOTOR AND HALF TURN SENSOR REPLACEMENT 16-7
3.2.1 REPLACING THE TRAY MOTOR 16-7
3.2.2 REPLACING THE HALF TURN SENSOR: 16-7

FINISHER A681

1. OVERALL MACHINE INFORMATION 17-1
1.1 SPECIFICATIONS 17-1
1.2 MECHANICAL COMPONENT LAYOUT 17-2
1.3 ELECTRICAL COMPONENT LAYOUT 17-3
1.4 ELECTRICAL COMPONENT DESCRIPTIONS 17-4
1.5 DRIVE LAYOUT 17-6

2. DETAILED DESCRIPTIONS 17-7
2.1 JUNCTION GATE MECHANISM 17-7
Staple Mode 17-7
No staple Mode 17-7
2.2 JOGGER UNIT PAPER POSITIONING MECHANISM 17-8
2.3 EXIT GUIDE PLATE OPEN/CLOSE MECHANISM 17-9
2.4 STAPLER 17-10
2.5 FEED OUT MECHANISM 17-11
2.6 SHIFT TRAY UP/DOWN MECHANISM 17-12
2.7 SHIFT TRAY SIDE-TO-SIDE MECHANISM 17-13
2.8 JAM CONDITIONS 17-14
2.9 TIMING CHARTS 17-15
2.9.1 NO STAPLE MODE (A4 SIDEWAYS, 3 SHEETS/2SETS) 17-15
2.9.2 STAPLE MODE (A4 SIDEWAYS, 2 SHEETS/2 SETS) 17-16

3. SERVICE TABLE 17-17
3.1 DIP SWITCH TABLE 17-17
3.2 TEST POINTS 17-17
3.3 FUSES 17-17

4. REPLACEMENT AND ADJUSTMENT 17-18
4.1 COVER REMOVAL 17-18
Front Door 17-18
Front Cover 17-18
Rear Cover 17-18
Upper Cover 17-18
Lower Left Cover 17-19
Front Shift Tray Cover 17-19
Rear Shift Tray Cover 17-19
Shift Tray 17-19

4.2 ENTRANCE SENSOR REPLACEMENT 17-20
4.3 EXIT SENSOR REPLACEMENT 17-21
4.4 STACK HEIGHT SENSOR REPLACEMENT 17-22
4.5 POSITIONING ROLLER REPLACEMENT 17-23
4.6 STAPLER REPLACEMENT 17-24
4.7 ROM HISTORY 17-25

SCANNER KIT A844

1. OVERALL MACHINE INFORMATION 18-1
1.1 SPECIFICATIONS 18-1
1.1.1 SCANNER CONTROL BOARD 18-1
1.1.2 DRAM SIMM 18-1
1.2 SOFTWARE 18-2
1.2.1 SCANNER DRIVERS 18-2
1.2.2 SCANNER UTILITIES 18-2

2. DETAILED SECTION DESCRIPTIONS 18-3
2.1 HARDWARE OVERVIEW 18-3
2.2 SCANNER FUNCTIONS 18-5
2.2.1 SELF DIAGNOSTICS 18-5
2.2.2. IMAGE PROCESSING IN THE SCANNER CONTROLLER 18-5

3. INSTALLATION PROCEDURE 18-6

4. SERVICE TABLE 18-9
4.1 SERVICE PROGRAM MODE 18-9
4.1.1 SERVICE PROGRAM ACCESS PROCEDURE 18-9
4.1.2 SERVICE PROGRAM MODE TABLES 18-9
4.2 DOWNLOADING NEW SOFTWARE 18-11
4.2.1 SOFTWARE DOWNLOAD PROCEDURE 18-11
4.2.2 ERROR MESSAGES DURING THE SOFTWARE DOWNLOAD 18-12

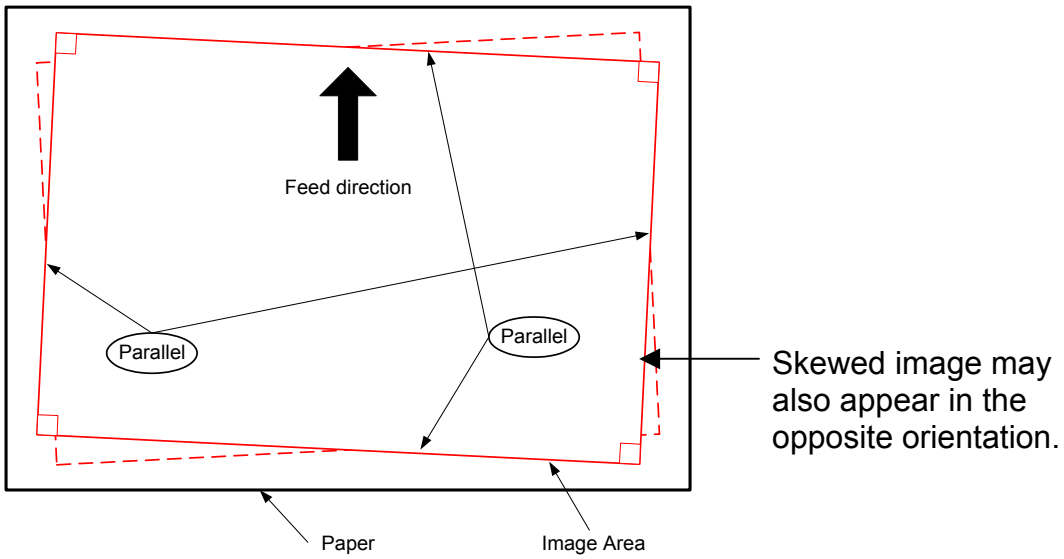
5. REPLACEMENT AND ADJUSTMENT 18-12
5.1 NOTE FOR REPLACING THE SCANNER CONTROLLER BOARD 18-13

6. TROUBLESHOOTING 18-14
6.1 SERVICE CALL CONDITION 18-14
6.1.1 SC CODE DESCRIPTIONS 18-14
6.2 LEDS 18-15
6.3 FIRMWARE HISTORY 18-16
6.3.1 A844 FIRMWARE MODIFICATION HISTORY 18-16

⇒6.9 IDENTIFYING SKEWED, TRAPEZOID AND PARALLELOGRAM IMAGES

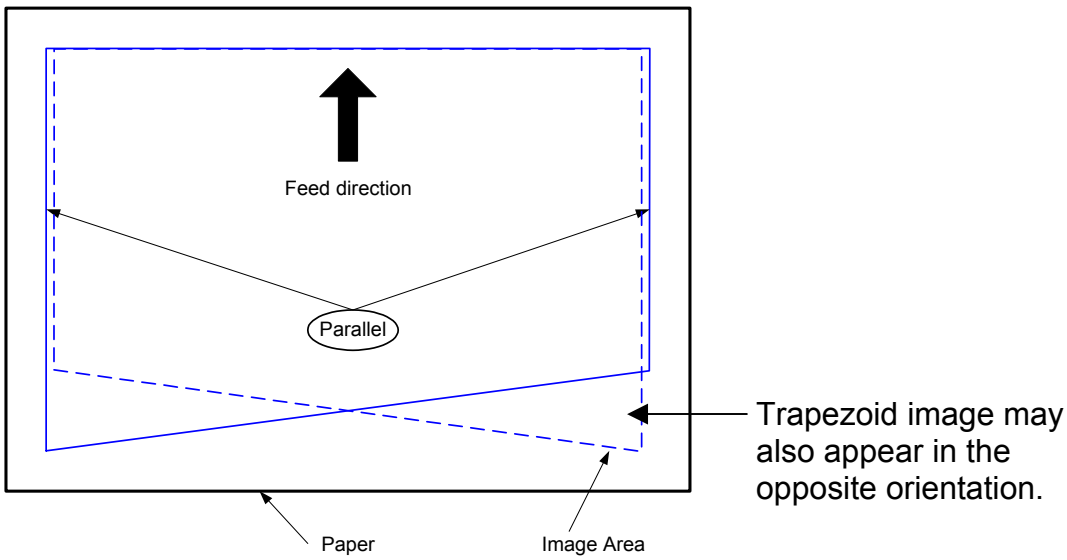
6.9.1 SKEWED IMAGES

- The image's leading and trailing edges are parallel to one another.
- The image's left and right edges are also parallel.
- However, **all four sides** are slanted with respect to the paper's edge.



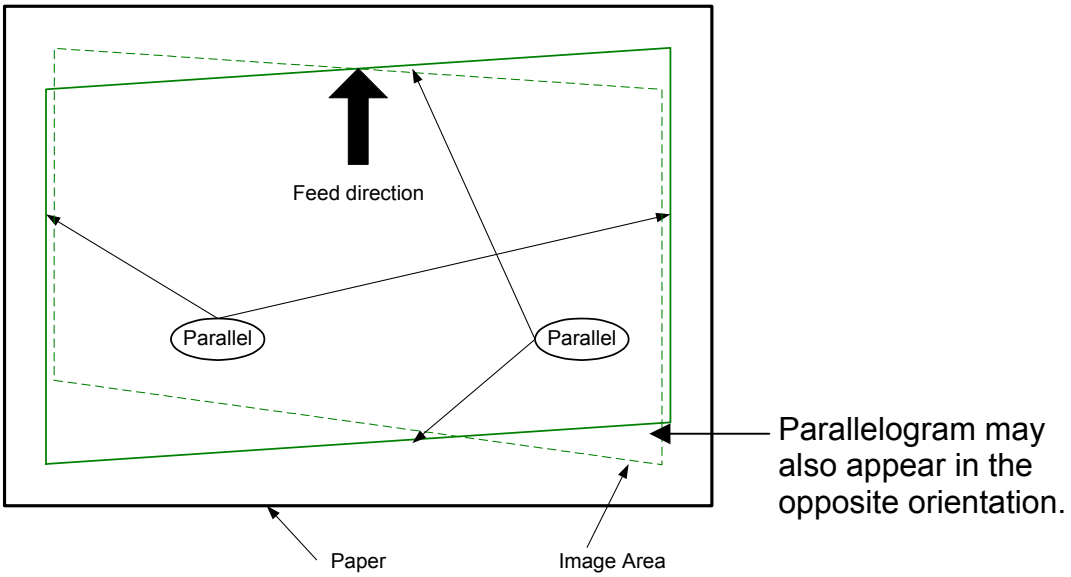
6.9.2 TRAPEZOID IMAGES

- Only the image's **trailing edge** is slanted with respect to the paper. The remaining 3 sides are parallel to the paper's edges.



6.9.3 PARALLELOGRAM IMAGES

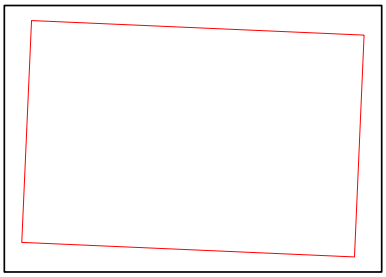
- Like skewed images, the leading/trailing edges and left/right edges are parallel to each other, however here, the **leading and trailing edges** are both slanted with respect to the paper's edge.



6.10 CHECKING THE IMAGE WITH THE TRIMMING PATTERN

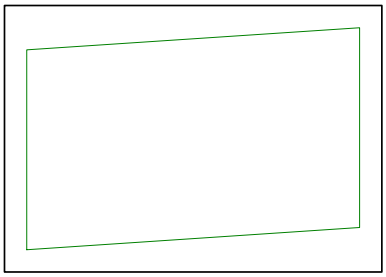
Print out 5, DLT (11 x 17) Trimming Patterns from SP5-902 (value: 10).

Skewed



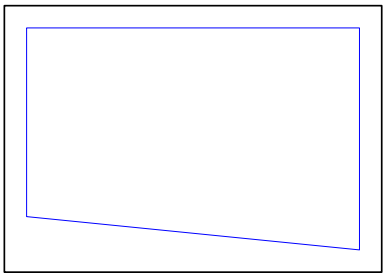
See *Adjusting Skewed Images*, pg. 6-44

Parallelogram



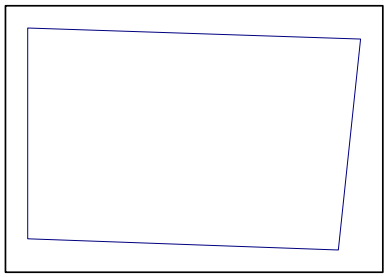
See *Parallelogram Image Adjustment,* Service Manual pg. 6-37

Trapezoid



See *Adjusting Trapezoid Images*, pg. 6-47

Combination skewed and trapezoid image



Perform *Adjusting Skewed Images* first, then *Adjusting Trapezoid Images.*

6.11 CORRECTING THE IMAGES

6.11.1 CORRECTING SKEWED IMAGES

1. Test pattern (Trimming Pattern) mode check

Is the image skewed?

No **Yes**

1. Adjust the side fences so that there is no gap between the fences and paper stack.
2. Adjust the amount of paper buckle: SP1-003-1 and 2.

2. Platen mode check

Set an original flush against the left and rear scales and make a copy.
Does the image come out as a parallelogram?

No **Yes**

Attach the Scanner Holder (a supporter normally attached during shipping)

OR

Perform ***Procedure A***.

3. ADF mode check

Feed an original through the ADF.
Is the image skewed?

No **Yes**

Are the front and rear transport rollers feeding the original straight?

No **Yes**

Change the position of the right hinge screw to the longer hole, and make any minor positional adjustments necessary.

Perform ***Procedure B***.

Procedure complete.

Procedure A :

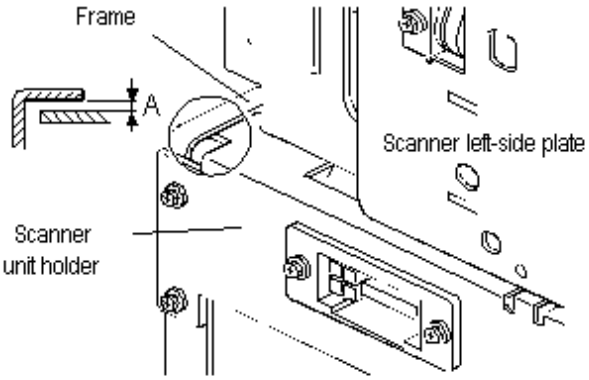


Fig. 1: Rear, left upper side of machine

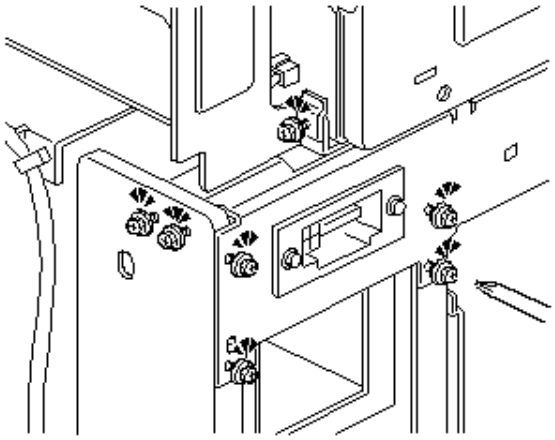


Fig. 2: (similar view)

1. Remove the rear and left covers, then the left scanner cover.
2. Check to see if there is a gap ([A]) between the scanner unit holder and frame.
3. If there is no gap, this means that the left front section of the scanner unit is positioned lower than the standard.
4. Loosen all 7 screws (Fig. 2) and lift up the left front portion of unit until there is a 1 to
   2 mm gap between the two.
5. Tighten the screws.
6. Place a washer (P/N 07080050, 1mm thick) in between the two to occupy the gap [A].
   Fix the washer in place using an instant-acting adhesive.
   Note: This washer will also act to absorb minor amounts of shock.
7. Check whether the parallelogram image still appears.

Procedure B:

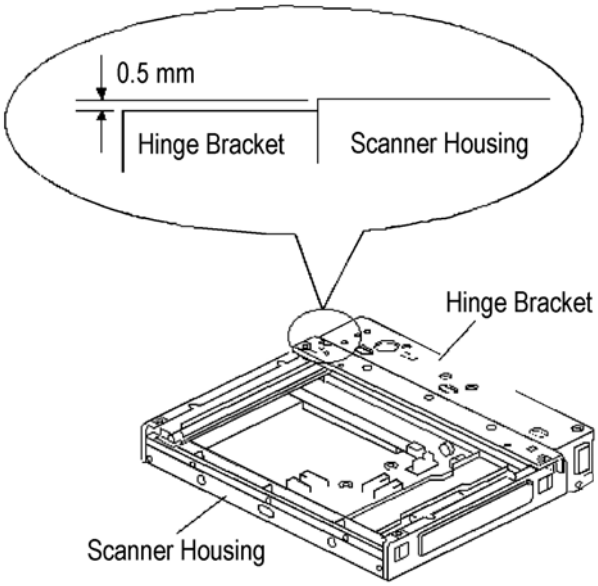


Fig. 3

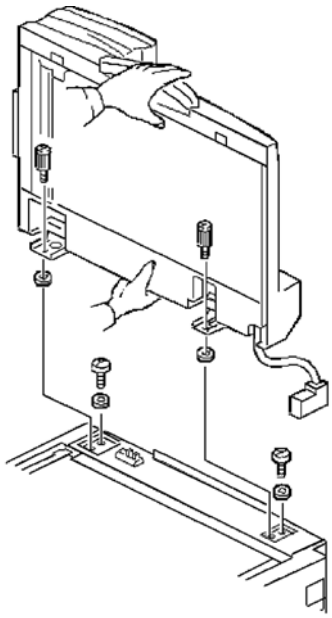


Fig. 4

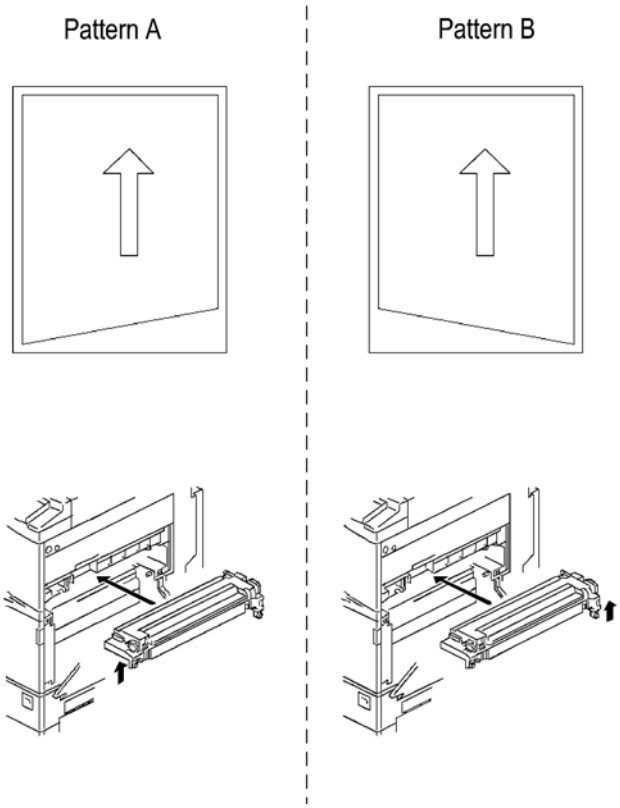
1. Remove the ADF, rear cover, scanner left cover, and scanner rear cover.
2. Check the height difference between the hinge bracket and scanner housing.
3. If this difference is 0.5mm or more, please do one of the following. This is necessary since it has been confirmed that skewing occurs when the hinge bracket is this much lower than the scanner housing:

   1) Add a spacer (t = 0.5 to 0.8) between the hinge bracket (mainframe) and ADF left hinge, in order to raise the height of the left side of the ADF, **OR:**

   2) Adjust the stepped height difference between the hinge bracket and scanner housing until it is within 0±0.3mm.

6.11.2 CORRECTING TRAPEZOID IMAGES

Procedure 1: Minor Adjustment of the Fusing Unit Height (front-to-rear)



1. Print out the SP2-902-003 Trimming Pattern (value: 10).
2. If the image is a Pattern A trapezoid:
   1) Remove and reinsert the Fusing Unit.
   2) Tighten the left fixing screw while pushing up on the unit's left side (until it stops).
3. If the image is a Pattern B trapezoid, do the same for the unit's right side.
4. If the image is still printed out as a trapezoid, perform ***Procedure 2***.

Procedure 2: Minor Adjustment of the Fusing Unit Position (front-to-rear)

1. Remove the Fusing Unit, then add a washer (t = 0.5 to 1.6) to the front fixing screw. **Note:** This will increase the distance from the mainframe stay.
2. Check the image.
   Still NG **OK**

   Adjustment Complete.
3. Add more washers (t = 0.5 to 1.6, as above).
   Note: Too many washers can cause wrinkling in the paper.
   Still NG **OK**

   Adjustment Complete.
4. Remove the Fusing Unit and all the washers added in Steps 1 and 2 above. Then, add washer(s) **in the same way for the rear side**.

Recommended Washers:

t = 0.5	07080040Z
t = 0.8	07080050Z

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A265/A267 – 037 **11/06/2002**

APPLICABLE MODEL:

GESTETNER – 3222/3227
RICOH – AFICIO 220/270
SAVIN – 9922DP/9927DP

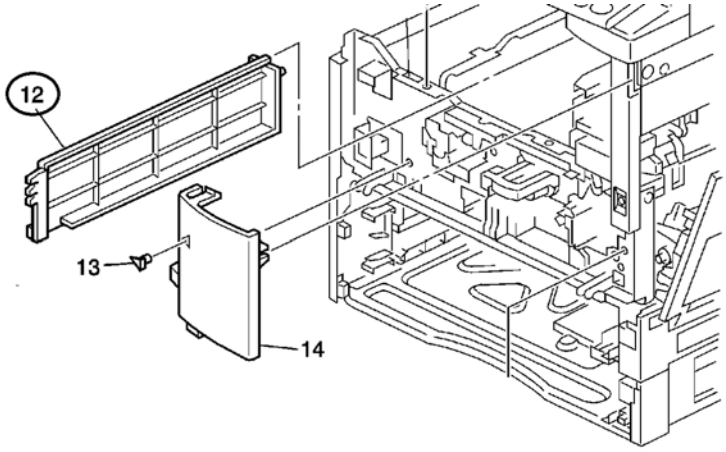
Note: This copy is intended as a master original for reproduction of additional bulletins.

SUBJECT: PARTS CATALOG UPDATES

GENERAL:

The following parts updates are being issued for all A265/A267 Parts Catalogs.

- **UPDATE 1:** **Upper Paper Exit Cover –** To ensure that steam generated by the Fusing Unit does not condense on the Exposure Glass, a small opening has been added to the Left Scanner Cover to ventilate the steam. Please update your A265/A267 Parts Catalog with the following information.



					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
A2671305	A2671306	Upper Paper Exit Cover	1	1	9	12

UNITS AFFECTED:

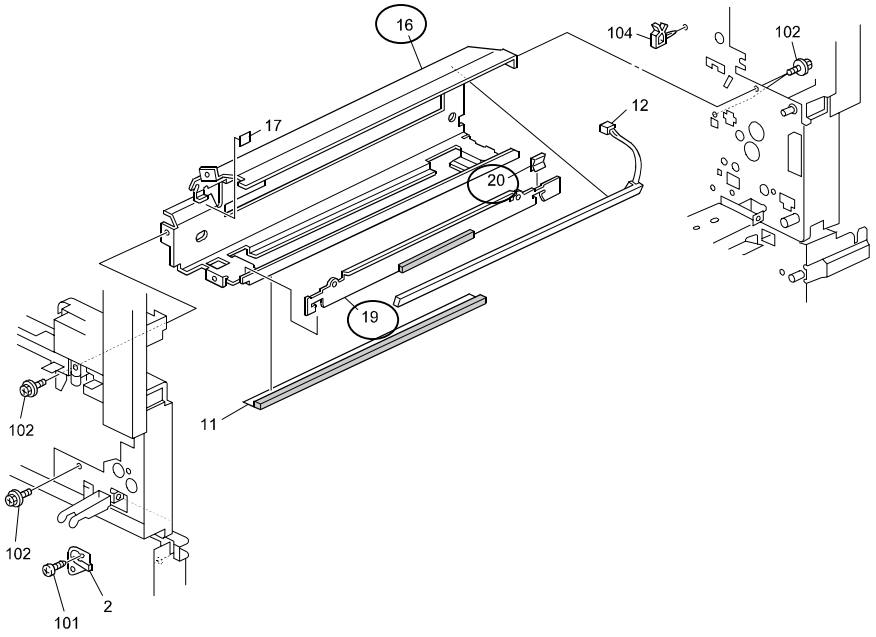
All A265/A267 copiers manufactured after the Serial Numbers listed below will have the new style Upper Paper Exit Cover installed during production.

MODEL NAME	SERIAL NUMBER
Gestetner 3222	H24109XXXX
Gestetner 3227	H2510800001
Ricoh Aficio 220	H24109XXXX
Ricoh Aficio 270	H2510800057
Savin 9922DP	H24109XXXX
Savin 9927DP	H2510800001

Continued…

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- **UPDATE 2:** **Registration Roller Cleaning Pad –** To increase Registration Roller cleaning efficiency and provide greater accessibility, the Mylar type Registration Roller Cleaner has been changed to a removable Cleaning Pad type. With respect to this change, the shape of the PCU Guide Plate has also been changed. Please update your A265/A267 Parts Catalog with the following information.



					REFERENCE	
OLD PART NO.	**NEW PART NO.**	**DESCRIPTION**	**QTY**	**INT**	**PAGE**	**ITEM**
B0241051	B0271051	PCU Guide Plate	1	1	35	16
	B0272711	Cleaning Pad – Regist Roller	1	1	35	19 *
	B0272714	Clip	1	1	35	20 *

*** DENOTES NEW ITEM NUMBER.**

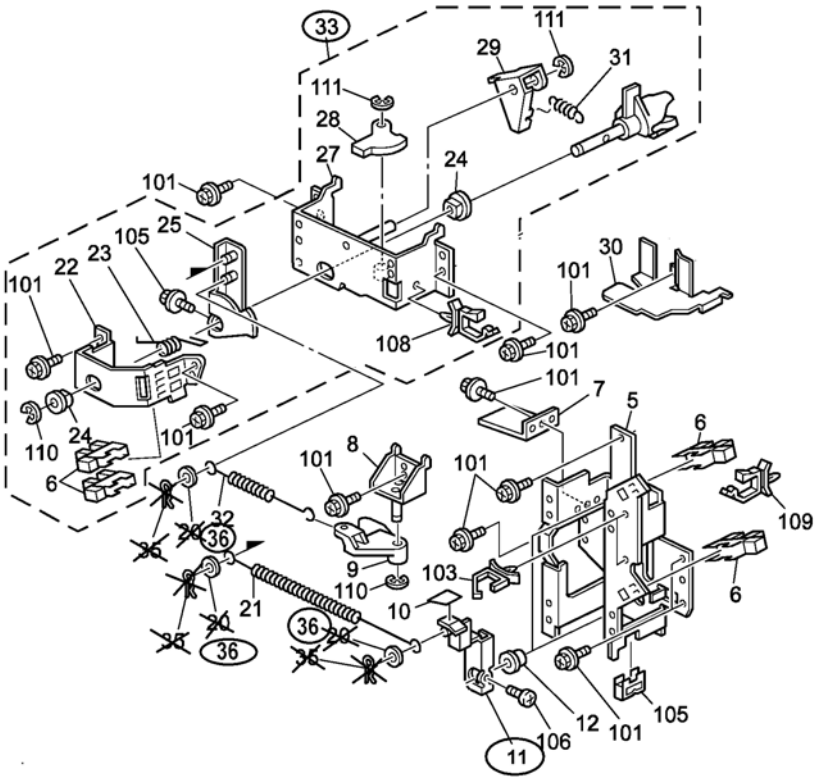
UNITS AFFECTED:

All A265/A267 copiers manufactured after the Serial Numbers listed below will have the new style Registration Roller Cleaning Pad installed during production.

MODEL NAME	SERIAL NUMBER
Gestetner 3222	H24109XXXX
Gestetner 3227	H25111XXXX
Ricoh Aficio 220	H24109XXXX
Ricoh Aficio 270	H25111XXXX
Savin 9922DP	H24109XXXX
Savin 9927DP	H25111XXXX

Continued…

- **UPDATE 3:** **Tray Lift Assembly –** To assist with the proper operation of the Tray Lift Unit and DC Motor Lever, the following changes have been made. Please update your A265/A267 Parts Catalog with the following information.



					REFERENCE	
OLD PART NO.	**NEW PART NO.**	**DESCRIPTION**	**QTY**	**INT**	**PAGE**	**ITEM**
AA132208	-	Spacer – M6	6→0		47	20
A2672836	-	Pin – M6	6→0		47	35
B0242780	B0312780	Tray Lift Assembly	2	1	47	33
-	B0312836	Clip - Shaft	6	1	47	36 *
B0242776	B0312776	Lever – DC Motor	2	1	47	11

*** DENOTES NEW ITEM NUMBER.**

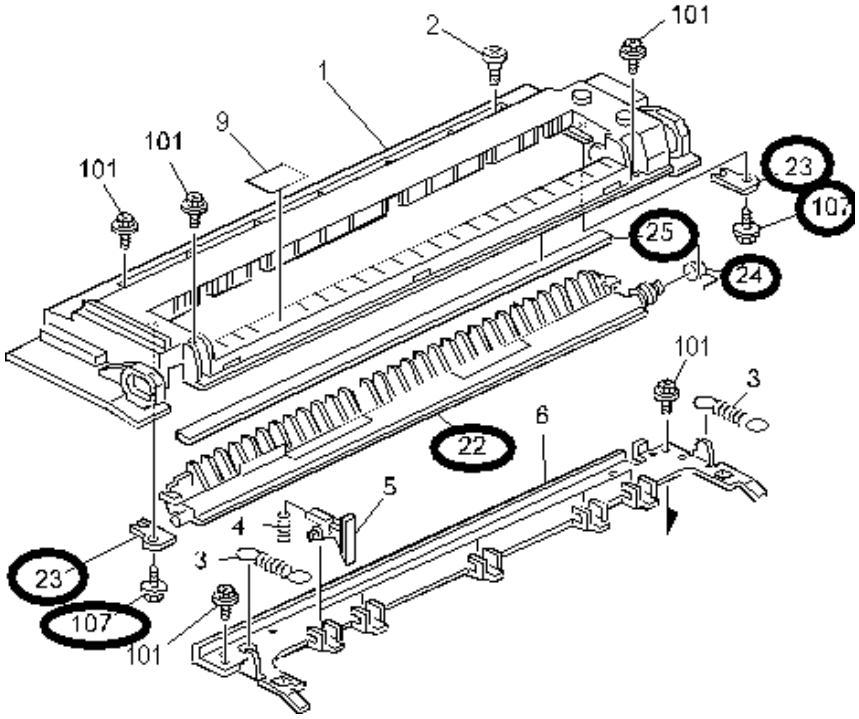
UNITS AFFECTED:

All A265/A267 copiers manufactured after the Serial Numbers listed below will have the new style Tray Lift Assembly installed during production.

MODEL NAME	SERIAL NUMBER
Gestetner 3222	H24202xxxxx
Gestetner 3227	H25201xxxxx
Ricoh Aficio 220	H24202xxxxx
Ricoh Aficio 270	H25201xxxxx
Savin 9922DP	H24202xxxxx
Savin 9927DP	H25201xxxxx

Continued…

- **UPDATE 4:** **Upper Fusing Cover –** To assist with the removal of jammed paper, the following changes have been made to the Fusing Unit Upper Frame. Please update your A265/A267 Parts Catalog with the following information.



					REFERENCE	
OLD PART NO.	**NEW PART NO.**	**DESCRIPTION**	**QTY**	**INT**	**PAGE**	**ITEM**
	A2674155	Upper Guide Plate	1	-	41	22 *
	A2674157	Fusing Upper Stopper	2	-	41	23 *
	A2674158	Open/Close Spring	1	-	41	24 *
	A2674159	Open/Close Shield	1	-	41	25 *
	04503008B	Tapping Screw – M3X8		-	41	107 *

*** DENOTES NEW ITEM NUMBER.**

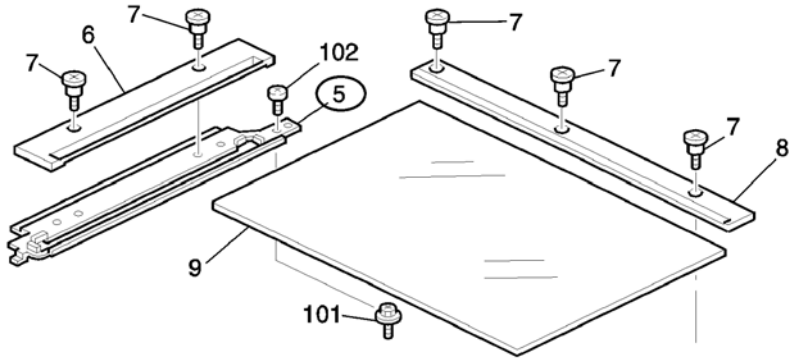
UNITS AFFECTED:

All A265/A267 copiers manufactured after the Serial Numbers listed below will have the new style Upper Fusing Cover installed during production.

MODEL NAME	SERIAL NUMBER
Gestetner 3222	H2400400001
Gestetner 3227	H2500400001
Ricoh Aficio 220	H2400400431
Ricoh Aficio 270	H2500400306
Savin 9922DP	H2400400001
Savin 9927DP	H2500400001

Continued…

- **UPDATE 5:** **Scale Bracket –** To ensure that dust does not get inside the ADF exposure glass through the gap between the glass and the left scale, which can cause white lines on copies, a Mylar has been added to the Scale Bracket. Please update your A265/A267 Parts Catalog with the following information.



					REFERENCE	
OLD PART NO.	**NEW PART NO.**	**DESCRIPTION**	**QTY**	**INT**	**PAGE**	**ITEM**
A2671743	B0271742	Bracket - Scale	1-1	1	17	5

UNITS AFFECTED:

All A265/A267 copiers manufactured after the Serial Numbers listed below will have the new style Bracket - Scale installed during production.

MODEL NAME	SERIAL NUMBER
Gestetner 3222	H24208xxxxx
Gestetner 3227	H25208xxxxx
Ricoh Aficio 220	H24208xxxxx
Ricoh Aficio 270	H25207xxxxx
Savin 9922DP	H24208xxxxx
Savin 9927DP	H25208xxxxx

INTERCHANGEABILITY CHART:

0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines.
3/S	Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or previously modified, use the new part numbers individually.		

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A265/A267 – 038 11- 07 - 2002

APPLICABLE MODEL:
GESTETNER – 3222/3227
RICOH – AFICIO 220/270
SAVIN – 9922DP/9927DP

SUBJECT: SERVICE MANUAL - INSERT

GENERAL:

The Service Manual pages listed below must be replaced with the pages supplied. Each bulletin package contains 1 set of replacement pages.

An arrow has highlighted the revised areas ⇒.

PAGES:

- 6 -9 Updated Information (B306 printer option firmware history).

Note: This copy is intended as a master original for reproduction of additional bulletins.

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B306 PRINTER OPTION FIRMWARE MODIFICATION HISTORY			
DESCRIPTION OF MODIFICATION	**FIRMWARE LEVEL**	**SERIAL NUMBER**	**FIRMWARE VERSION**
• Buffer size error occurs during data communication over IEEE1284 ECP**.** • When using the PS driver for a collate print job (bypass feed), only the 1st set is printed out. • When a job has been sent with the PS driver but the tray has not been specified (w/manual selection), the machine does not inform the Aficio Manager of this error. • Configuration Sheet does not print out. • With the PS driver, the printer does not print out jobs when the Separator function has been selected • OCR font does not download into the HDD.	B3065280 **J**	Sep.2001 Production	1.5.4
⇒ • Corrects the following: • *When adding macro commands to a multiple-page duplex print job, such as when directly printing out from DOS, the first sheet comes out one-sided.* • *The printer freezes up when the priority paper tray is pulled out after the PS driver is unable to locate the paper size specified in the driver.*	B3065280 **K**	Dec.2001 Production	1.5.6
• *Software modified so that it is possible to perform jobs containing a mixture of PCL and PS commands when printing directly from a host application.* • When printing the PCL file, the certain characters do not print. • When the paper runs out while the sort print is performing and perform the forced print, the printer prints a multiple set of job. The Engine Maintenance message “Service man call” has been changed to “Service call” • Add some Euro Symbol Sets and Euro Currency Codes for compatibility with HP printers. (PCL5e, PCLXL) • Using the specific DOS application (UNICO2001): When the data includes the following printing order, the printer will hang up. • Duplex printing from odd page and single page printing	B3065280 **L**	May.2002 Production	1.5.7

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A265/A267 – 039 **11/11/2002**

APPLICABLE MODEL:

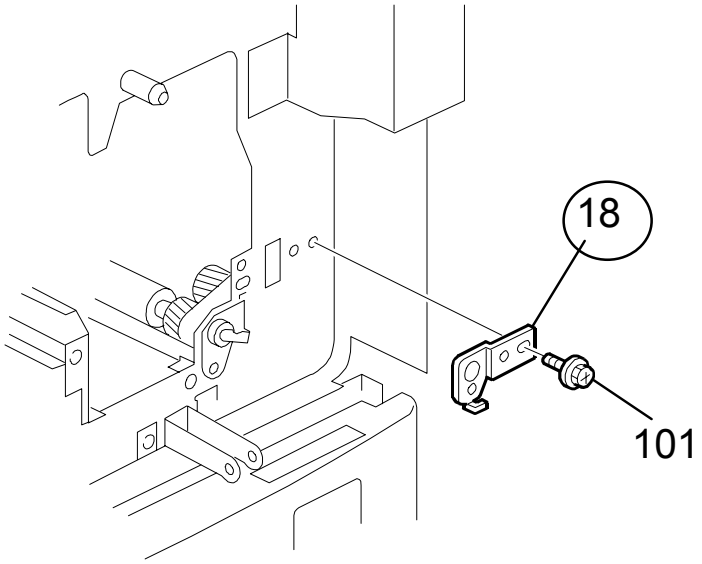
GESTETNER – 3222/3227
RICOH – AFICIO 220/270
SAVIN – 9922DP/9927DP

Note: This copy is intended as a master original for reproduction of additional bulletins.

SUBJECT: PCU BRACKET

GENERAL:

The following parts corrections are being issued for all A265/A267 Parts Catalogs.
The PCU bracket has been added to the front plate so the PCU for the B022/B027 cannot be installed in the A265/A267.



			REFERENCE	
NEW PART NO.	DESCRIPTION	QTY	PAGE	ITEM
A2671092	PCU Bracket	1	57	18*

***DENOTES NEW ITEM NUMBER**

UNITS AFFECTED:

All A265/A267 copiers manufactured after the Serial Numbers listed below will have the new style PCU Bracket installed during production.

MODEL NAME	SERIAL NUMBER
Gestetner 3222	H2401000946
Gestetner 3227	H2501000746
Ricoh Aficio 220	H2401000946
Ricoh Aficio 270	H2501000746
Savin 9922DP	H2401000001
Savin 9927DP	H2501000001

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TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A265/A267 - 040 **02/11/2003**

APPLICABLE MODEL:

GESTETNER – 3222/3227
RICOH – AFICIO 220/270
SAVIN – 9922DP/9927DP

Note: This copy is intended as a master original for reproduction of additional bulletins.

SUBJECT: TROUBLESHOOTING GUIDE DIRTY BACKGROUND & SC390

GENERAL:

Please utilize this Technical Service Bulletin as a troubleshooting guide for dirty background and SC390.

BASIC CHECK PROCEDURE FOR DIRTY BACKGROUND:

NO.	ITEM	CHECK POINTS	NOTE
1	Copy image check.	Use the guide on the following pages to determine what type of back grounding is being reported.	
2	Process data check.	Vtref value mentioned on the SMC list.	A lower value indicates a high toner concentration. **High** copy volume machines give lower values (1.2 – 1.4). **Target** copy volume machines give values between 1.8 – 2.4. **Low** copy volume machines give values between 2.7 – 3.1.
		Vsp value mentioned on the SMC list.	High copy volume machines give values of approximately 0.7.
		Compare the PCU counter with the 1-to-1 copy counter.	A high 1-to-1-copy ratio reduces the PCU lifetime. (PCU lifetime is calculated assuming A4, 5% charts fed LEF, 1-to-2 copying).
3	Make test copies.	Check to see if the back grounding is duplicated as reported.	Use an original with a low image coverage ratio, such as a trimming image or 'blank' image.
4	External PCU check.	The level of toner scattering (cleaning the PCU housing).	When removing the PCU, make sure to keep it level (horizontal). This is to ensure that a large amount of recycled toner does not fall into the development unit and increase the toner concentration.
5	Use the guide on the following pages to take the appropriate action.		

Continued…

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TROUBLESHOOTING – DIRTY BACKGROUND:

Symptom		Possible Cause	Possible Factors	Action
Entire surface	Also appears on the rear side	Toner concentration too high	• The electrostatic properties of the developer and toner deteriorate, lowering chargeability. • Non-Ricoh toner is being used	• When the value of Vtref is 2.8 – 3.1, change the value of SP2-929-1 (Vtref Upper Limit) to 3.2 or 3.3 • Make 20 sky shot copies or 20 copies of an all-black test patterns. If the value of Vsp is less than 0.4, replace the PCU • Replace the PCU, Toner Supply Unit and Toner Bottle
	Visible paper dust and/or paper fiber	Too much paper dust in the development unit.	• Too much paper dust inhibits the function of the paper dust removal seal in the registration area.	• To remove the paper dust in the unit, make 20 sky shot copies or 20 copies of an all-black test pattern • Clean the dust cleaning Mylar refer to TSB A265/A267-028 or install the registration cleaning pad refer to TSB A265/A267-037 update #2.
	Light gray	Toner concentration too high	• The electrostatic properties of the developer and toner deteriorate, lowering chargeability. • Non-Ricoh toner is being used	• When the value of Vtref is 2.8 – 3.1, change the value of SP2-929-1 (Vtref Upper Limit) to 3.2 or 3.3 • Make 20 sky shot copies or 20 copies of an all-black test patterns. If the value of Vsp is less than 0.4, replace the PCU • Replace the PCU, Toner Supply Unit and Toner Bottle
		Drum potential too low	• Drum surface filming • Drum has reached its lifetime (OPC layer has thinned out)	• Clean drum surface with a dry cloth • If this does not correct the filming, replace the PCU
	Dark gray	Insufficient charge roller bias	• The bias terminal is dirty • Poor bias terminal connection	• Clean the bias terminal • Check the bias spring in the machine and bias plate in the PCU for any deformation, poor connection, etc.
Partially (includes black spots)	Leading edge area	Toner concentration is too high, and the area around the development unit is dirty (due to scattering)	• The electrostatic properties of the developer and toner deteriorate, lowering chargeability. • Non-Ricoh toner is being used	• When the value of Vtref is 2.8 – 3.1, change the value of SP2-929-1 (Vtref Upper Limit) to 3.2 or 3.3 • Make 20 sky shot copies or 20 copies of an all-black test patterns. If the value of Vsp is less than 0.4, replace the PCU • Replace the PCU, Toner Supply Unit and Toner Bottle
		Upper paper guide of the fusing unit is dirty	• Toner concentration too high • Paper feeding not stabilized (vibration).	• When the value of Vtref is 2.8 – 3.1, change the value of SP2-929-1 (Vtref Upper Limit) to 3.2 or 3.3 • Make 20 sky shot copies or 20 copies of an all-black test patterns. If the value of Vsp is less than 0.4, replace the PCU • Clean or replace the upper guide of the fusing unit

Continued…

Symptom		Possible Cause	Possible Factors	Action
Partially (includes black spots)	30 – 40 mm area from the trailing edge	Area around the development roller is dirty. The trailing edge hits the housing after passing the registration roller, and the vibration causes poor toner transfer from the drum. This occurs more easily with LT SEF.	Toner concentration is too high	• When the value of Vtref is 2.8 – 3.1, change the value of SP2-929-1 (Vtref Upper Limit) to 3.2 or 3.3 • Make 20 sky shot copies or 20 copies of an all-black test patterns. If the value of Vsp is less than 0.4, replace the PCU • To remove the paper dust in the unit, make 20 sky shot copies or 20 copies of an all-black test pattern • Clean the dust cleaning Mylar refer to TSB A265/A267-028or install the registration cleaning pad refer to TSB A265/A267-037 update #2.
	Random	The toner in the development entrance seal falls onto the paper.	• The electrostatic properties of the developer and toner deteriorate, lowering chargeability. • Non-Ricoh toner is being used • Too much paper dust inhibits the function of the paper dust removal seal in the registration area.	• When the value of Vtref is 2.8 – 3.1, change the value of SP2-929-1 (Vtref Upper Limit) to 3.2 or 3.3 • Make 20 sky shot copies or 20 copies of an all-black test patterns. If the value of Vsp is less than 0.4, replace the PCU • Replace the PCU, Toner Supply Unit and Toner Bottle • To remove the paper dust in the unit, make 20 sky shot copies or 20 copies of an all-black test pattern • Clean the dust cleaning Mylar refer to TSB A265/A267-028 or install the registration cleaning pad refer to TSB A265/A267-037 update #2.
Vertical band (sub scan direction)	Occurs in the same area on paper, regardless of the magnification ratio	Charge roller is dirty	• Cleaning blade has reached its lifetime, causing cleaning efficiency to drop. • Paper dust or other foreign particles stick to the blade surface, decreasing cleaning efficiency.	• To remove the paper dust in the unit, make 20 sky shot copies or 20 copies of an all-black test pattern • Clean the dust cleaning Mylar refer to TSB A265/A267-028 or install the registration cleaning pad refer to TSB A265/A267-037 update #2. • Clean the charge roller • Replace the PCU • Clean the ribs
		Ribs on the paper guides in the paper transport path are dirty	Toner scattering	
	Occurs in different areas on the paper when the magnification ratio is changed	Laser Diode Unit shield glass is dirty	Toner scattering or dust in the machine.	Clean the shield glass
		Scanning section is dirty	Dust in the scanner unit	Clean the scanner unit

Continued…

Symptom		Possible Cause	Possible Factors	Action
Horizontal line and band (includes black spots)	44 mm pitch (charge roller pitch)	Insufficient drum cleaning	• Cleaning blade has reached its lifetime, causing cleaning efficiency to drop. • Paper dust or other foreign particles stick to the blade surface, decreasing cleaning efficiency.	• To remove the paper dust in the unit, make 20 sky shot copies or 20 copies of an all-black test pattern • Clean the dust cleaning Mylar refer to TSB A265/A267-028 or install the registration cleaning pad refer to TSB A265/A267-037 update #2. • Clean the charge roller • Replace the PCU
	50 mm pitch, rear side (transfer roller pitch)	Transfer roller is dirty	• The electrostatic properties of the developer and toner deteriorate, lowering chargeability.	• When the value of Vtref is 2.8 – 3.1, change the value of SP2-929-1 (Vtref Upper Limit) to 3.2 or 3.3 Make 20 sky shot copies or 20 copies of an all-black test patterns. If the value of Vsp is less than 0.4, replace the PCU • Replace transfer roller
Horizontal line and band (includes black spots)	94 mm pitch (drum pitch)	The drum surface gets damaged or attracts particles/foreign materials.	• Toner or the adhesive from label paper sticks to the surface of the drum. • Jammed paper is removed too forcefully or incorrectly, or foreign particles are introduced into the machine.	Clean the drum surface with a dry cloth
	125 mm pitch (fusing roller pitch)	Drum potential is low only in certain areas (not uniformly across the surface).	• Drum surface filming • Drum has reached its lifetime (OPC layer has thinned out)	• Clean drum surface with a dry cloth • If this does not correct the filming, replace the PCU.
		Fusing offset	• Toner density is too high	• When the value of Vtref is 2.8 – 3.1, change the value of SP2-929-1 (Vtref Upper Limit) to 3.2 or 3.3 • Make 20 sky shot copies or 20 copies of an all-black test patterns. If the value of Vsp is less than 0.4, replace the PCU
			• Insufficient fusing when using thick paper	• Adjust the position of the fusing pressure lever
			• Dirty fusing roller	• Clean or replace the fusing roller

Continued…

TROUBLESHOOTING – SC390:

SC390	Poor connection at the development bias terminal	• Bias terminal is dirty • Bias terminal connection is broken.	• Clean the bias terminal (modular jack type connector in the PCU) • If broken, replace the necessary component(s).
	Toner concentration too high	Too much recycled toner drops into the development unit (especially with high copy volume machines)	If the value of Vt is less than 0.5V: • To remove the paper dust in the unit, make 20 sky shot copies or 20 copies of an all-black test pattern • Clean the dust cleaning Mylar refer to TSB A265/A267-028 or install the registration cleaning pad refer to TSB A265/A267-037 update #2.
	TD sensor defective	Electrostatic buildup on the board.	Replace the PCU

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A265/A267 - 041 **03/10/2003**

APPLICABLE MODEL:

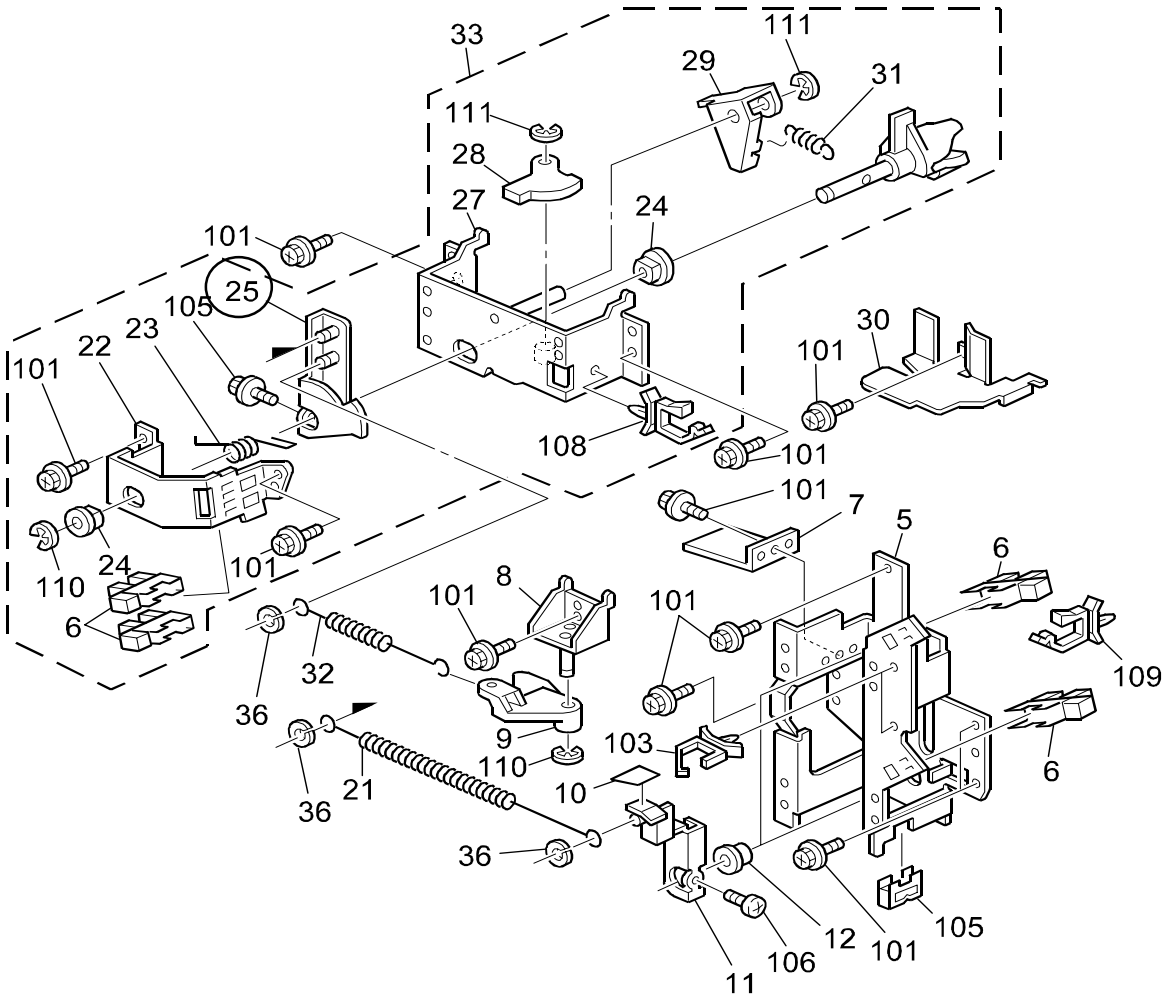
GESTETNER – 3222/3227
RICOH – AFICIO 220/270
SAVIN – 9922DP/9927DP

Note: This copy is intended as a master original for reproduction of additional bulletins.

SUBJECT: ACTUATOR – PAPER HEIGHT SENSOR

GENERAL:

To facilitate assembly of the Tray Lift Unit and DC Motor Lever, the Actuator – Paper Height Sensor has been changed. Refer to TSB A265/A267- 037 Update #3 for more details concerning this change.
The following parts correction is being issued for all A265/A267 Parts Catalogs.



Continued…

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					REFERENCE	
OLD PART NO.	**NEW PART NO.**	**DESCRIPTION**	**QTY**	**INT**	**PAGE**	**ITEM**
B0242777	B0312777	Actuator – Paper Height Sensor	2	-	47	25

UNITS AFFECTED:

All A265/A267 copiers manufactured after the Serial Numbers listed below will have the new style Actuator – Paper Height Sensor installed during production.

MODEL NAME	SERIAL NUMBER
Gestetner 3222	H24202XXXXX
Gestetner 3227	H25201XXXXX
Ricoh AFICIO 270	H25201XXXXX
Ricoh AFICIO 220	H24202XXXXX
Savin 9922DP	H24202XXXXX
Savin 9927DP	H25201XXXXX

INTERCHANGEABILITY CHART:

0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines.
3/S	Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or previously modified, use the new part numbers individually.		

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A265/A267 – 042 **07/17/2003**

APPLICABLE MODEL:

GESTETNER – 3222/3227
LANIER – 5222/5227
RICOH – AFICIO 220/270
SAVIN – 9922DP/9927DP

SUBJECT: NOISE GENERATED FROM FUSING UNIT

SYMPTOM:

Noise is generated from the hot roller while the machine is operating.

CAUSE:

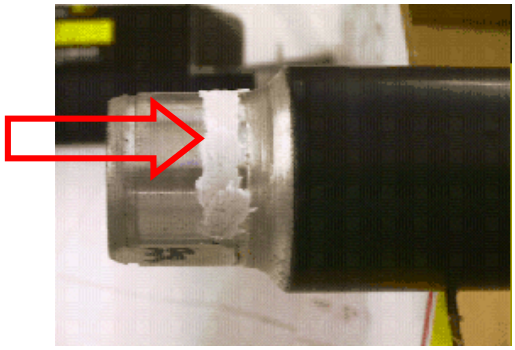
An insufficient amount of grease (P/N A2579300) has been applied to the bearings.

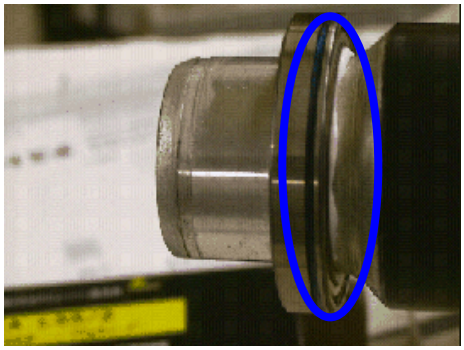
PRODUCTION COUNTERMEASURE:

A new production tool is being used to ensure that a sufficient amount of grease is being applied to this area (from April '03 production).

FIELD COUNTERMEASURE:

Apply a sufficient amount of grease (P/N A2579300) to the area shown below (white area, covered with grease) when noise is reported and whenever you replace the hot roller or bearing.





NOTE: *Make sure to apply enough grease so the metal surface below the area is not visible (left photo), and the grease is still visible after attaching the bushing (right photo).*

GENERAL:

PART NUMBER	DESCRIPTION
A2579300	GREASE - BARRIERTA S552R

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TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B306 – 001 **03/27/2000**

APPLICABLE MODEL:

GESTETNER – PRINTER CONTROLLER for 3222/3227
RICOH – PRINTER CONTROLLER for AFICIO 220/270
SAVIN – PRINTER CONTROLLER for 9922DP/9927DP

Note: This copy is intended as a master original for reproduction of additional bulletins.



SERVICE MANUAL

SUBJECT: SERVICE MANUAL - INSERT

GENERAL:

The Service Manual pages listed below must be replaced with the pages supplied. Each bulletin package contains 1 set of replacement pages.

PAGES:

The revised areas have been highlighted by an arrow ⇒.

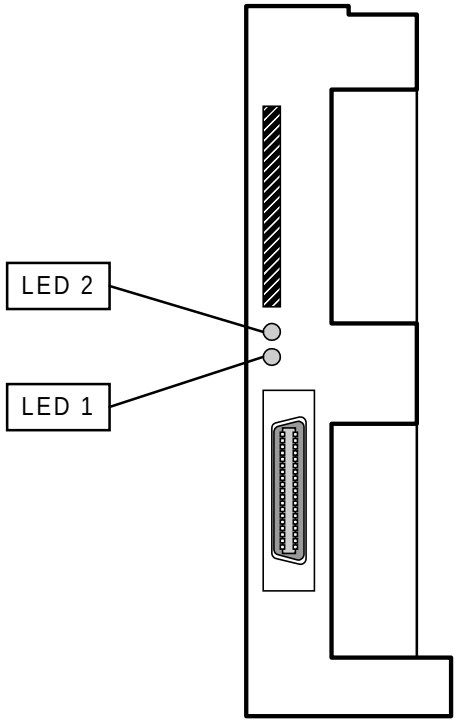
- B306 6-2 Updated Information (Printer Controller Error Conditions)

Code	Description	Required Action
1Cxx	Option bus B (CN507) error	Check the connection to the optional component at CN507. Try replacing the optional NIB or HDD.
2100	NIB self test failed.	Turn off the machine and turn it back on. Replace the NIB if this error is frequent.
21xx	NIB error	
2501	The data in the PS DIMM is damaged.	Replace the PS DIMM if this error is frequent.
2508	The data in the IC card is damaged.	Reprogram the IC card and try again.
⇒ 3003 or 3004	A damaged cluster was found on the HDD.	The damaged cluster is automatically marked as “bad”. If this error is frequent, format the HDD.
47xx	Controller ASIC error.	Replace the controller.

6.3 LED DISPLAY

6.3.1 LOCATION

The controller uses two LEDs to display error status even while the LCD message is not active.



TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B306 - 002 **05/17/2000**

APPLICABLE MODEL:

GESTETNER – PRINTER CONTROLLER for 3222/3227
RICOH – PRINTER CONTROLLER for AFICIO 220/270
SAVIN – PRINTER CONTROLLER for 9922DP/9927DP

Note: This copy is intended as a master original for reproduction of additional bulletins.

SUBJECT: HDD ERROR

BACKGROUND:

This bulletin is to inform you of the possibility of compatibility issues with the Printer Hard Disk Type 185 (G690). The production of 1.6 GB Hard Disk Drives (HDD) will be discontinued in March 2000 and a new 6.0 GB HDD will be used in production starting in April 2000. When the new style 6.0 GB HDD is installed in the machine using Controller Firmware prior to version 1.2.9, an error may occur.

NOTE: *Controller Firmware has been modified from January 2000 production, therefore these B306's are compatible with both the old style 1.6 GB and the new style 6.0 GB Hard Disk Drives.*

SYMPTOM:

The B306 may not be able to detect the HDD during the power on Self-Diagnostic Test. A SC2001 3003 (HDD Error) will be displayed.

TEMPORARY SOLUTION:

Turn the Main Switch off and then on. If the problem persists, try turning off and on again. Once the machine detects the HDD properly (No error message is displayed), there are no problems related to the HDD of the B306.

PERMANENT SOLUTION:

Upgrade the controller firmware with version 1.2.9 or later.

The Controller Firmware revision C (file name B306_134.EXE) can be downloaded through the Ricoh Technical Services FTP Site http://tsc.ricohcorp.com.

NOTE: *Refer to Facts Line Bulletin # FL002 for more information about the FTP Internet Web Site.*

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TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B306 - 003 **05/17/2000**

APPLICABLE MODEL:

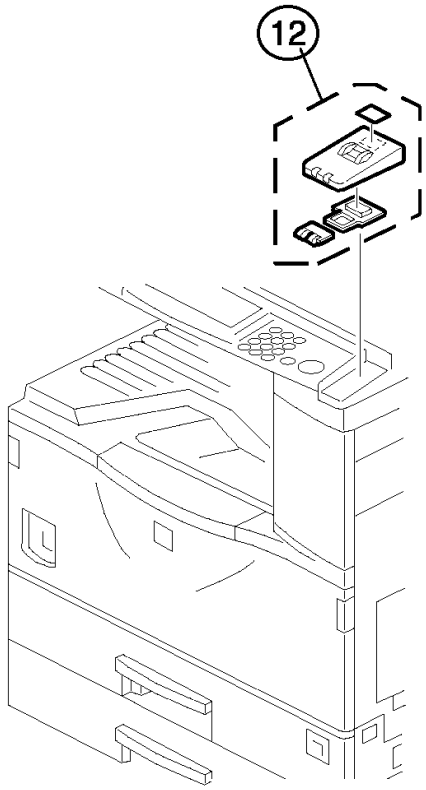
GESTETNER – PRINTER OPTION for 3222/3227
RICOH – PRINTER OPTION for AFICIO 220/270
SAVIN – PRINTER OPTION for 9922DP/9927DP

SUBJECT: OPERATION SWITCH

Note: This copy is intended as a master original for reproduction of additional bulletins.

GENERAL:

The part number and description for the Operation Switch were incorrect in the Parts Catalog. The following part correction is being issued for all B306 Parts Catalogs.



				REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	PAGE	ITEM
A9851480		Operation Switch Cover	1→0	5	12
	▶ A8951480	Operation Switch	0→1	5	12

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TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B306 - 004 **05/30/2000**

APPLICABLE MODEL:

GESTETNER – PRINTER OPTION for 3222/3227
RICOH - PRINTER OPTION for AFICIO 220/270
SAVIN - PRINTER OPTION for 9922DP/9927DP

SUBJECT: SERVICE MANUAL - INSERT

GENERAL:

The Service Manual pages listed below must be replaced with the pages supplied. Each bulletin package contains 1 set of replacement pages.

PAGES:

- ii — Updated Information (TOC Page)
- 6-5, 6-6 — B306 Firmware Modification History



SERVICE MANUAL

Note: This copy is intended as a master original for reproduction of additional bulletins.

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4. SERVICE TABLES 4-1
4.1 PRECAUTION 4-1
4.2 SERVICE PROGRAM MODE OVERVIEW 4-1
4.2.1 HOW TO ENTER THE SP MODE 4-1
Entering Printer SP mode 4-1
Exiting SP mode 4-1
1.1.2 SP MODE TABLE 4-1
SERVICE MENU 4-1
SERVICE TOOLS 4-2
1.3 SERVICE MENU 4-2
1.3.1 BIT SWITCH PROGRAMMING 4-2
BIT SWITCHES 4-2
1.3.2 NVRAM RESET 4-3
DIAG. ERROR LOG AND PAPER TRAY SETTINGS RESET 4-3
CONTROLLER NVRAM RESET 4-3
NIB NVRAM RESET 4-3
COUNTER RESET 4-4
1.1.3 POWER-ON DIAGNOSTICS ERROR DISPLAY 4-4
1.1.4 SERVICE SUMMARY 4-4
1.4 SERVICE TOOLS 4-6
1.4.1 HDD TEST 4-6
1.4.2 HDD FORMAT 4-7
1.4.3 NIB NVRAM BACKUP AND RESTORE 4-7
1.5 FIRMWARE UPDATE 4-9
1.5.1 FIRMWARE DOWNLOAD (CONTROLLER, NIB AND PS3) 4-9
1.1.2 ERROR RECOVERY 4-11
CONTROLLER 4-11
PS3 DIMM / NIB 4-11
1.6 POWER-ON SELF TEST 4-12
1.6.1 PARALLEL LOOP-BACK TEST 4-12
1.6.2 OTHER TESTS 4-12

5. REMOVAL AND REPLACEMENT 5-1
5.1 PRECAUTIONS 5-1
1.2 CONTROLLER 5-1
1.3 NIB 5-2

6. TROUBLESHOOTING 6-1
6.1 SC CODES 6-1
6.2 ERROR CODES 6-1
6.3 LED DISPLAY 6-2
6.3.1 LOCATION 6-2
6.3.2 FATAL ERRORS 6-3
6.4 FIRMWARE HISTORY 6-5
B306 FIRMWARE MODIFICATION HISTORY 6-5

6.4 FIRMWARE HISTORY

6.4.1 B306 FIRMWARE MODIFICATION HISTORY

B306 PRINTER OPTION FIRMWARE MODIFICATION HISTORY			
DESCRIPTION OF MODIFICATION	**FIRMWARE LEVEL**	**SERIAL NUMBER**	**FIRMWARE VERSION**
• **First Mass Production**	B3065280 **A**	1st Mass Production	1.2.0
• Firmware modified so that it can be used with printer controllers for China and Taiwan. • Firmware modified so that it will be compatible with new HDD to be used in the printer controller. • **NOTE:** new HDD is identical in function to previous one. • If a Postscript Driver job is canceled midway through, the image data for the next job is not printed out correctly. • "Waiting..." is displayed when an error occurs, but the machine does not return to normal operating mode (ready status). The next job is not printed out. • When two separate jobs of text data less than 256 bytes is sent from the network, the two jobs are printed out simultaneously on the same page. • It is possible to print out the HDD Directory List when there is no HDD or PS option installed. • Corrects Taiwanese translation error. • If data recovery (Raster image production) takes longer than usual when using Formfeed, the Alarm LED remains lit until printing begins. To correct this, the LED can now be turned off by pressing the ENTER key.	B3065280 **B**	January Production 2000	1.2.9

B306 PRINTER OPTION FIRMWARE MODIFICATION HISTORY			
DESCRIPTION OF MODIFICATION	**FIRMWARE LEVEL**	**SERIAL NUMBER**	**FIRMWARE VERSION**
• Electrical sort mode (collation) will be disabled when special paper mode is selected for tray 2. • If the bridge unit cover is opened during printing in electrical sort mode (second set onward), the machine cannot recover from the resulting jam condition. • Even when the PJLK command "<Esc>&11H" is released instructing the machine to feed the paper from tray 2, the paper is not fed from the tray. • In addition to the cumulative total counter value (copier/fax/printer), the total counter values for each function can be sent to PCs connected to the PAS Server. • With Overlay printing, the text outside the fixed overlay pattern is printed out as PCL commands (specifically, the ESC sequence).	B3065280 **C**	March Production 2000	1.3.4

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B306 - 005 **08/02/2000**

APPLICABLE MODEL:

GESTETNER - PRINT CONTROLLER for 3222/3227
RICOH - PRINT CONTROLLER for AFICIO 220/270
SAVIN - PRINT CONTROLLER for 9922DP/9927DP

SUBJECT: SERVICE MANUAL - INSERT

GENERAL:

The Service Manual pages listed below must be replaced with the pages supplied. Each bulletin package contains 1 set of replacement pages.

PAGES:

The revised areas have been highlighted by an arrow ⇒.

- 2-6 through 8 Updated Information (Print Controller)

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2.3.4 COLLATION (SORT)

When the controller has either an optional SDRAM DIMM or an optional HDD installed, collation is enabled.

If the memory or HDD becomes full while storing a job that uses collation, the controller prints the pages that have been stored for collation, empties the memory or HDD, then continues printing the rest of the pages with collation.

Memory Capacity	Collation	Maximum Pages	Note
16MB (standard)	Not possible		
48MB (with 32MB)	Possible	30 pages	Note 1)
80MB (with 64MB)	Possible	50 pages	Note 1)
With HDD	Possible	1500 pages	Note 2)

NOTE: 1) The number of pages is calculated using a sample MS-Word document that contains 5,000 characters of plain text. The sample document takes 409.6kB of memory space per page.
If the document is more complex, the memory can hold fewer pages. If the document is simpler, e.g., 1,000 characters per page, the memory can hold more pages.
2) This is the maximum number of pages that the controller can handle.
If the document is more complex, the HDD can hold fewer pages. Even if the document is simpler, e.g., 1,000 characters per page, the HDD cannot hold more than 1,500 pages.
To calculate the pages using the same document as specified in Note 1, the HDD can hold about 1,250 pages.
About 500 MB of disk space is used for collation.

⟹

Function	Optional Memory	Optional HDD
Sort / Sort with Stapling	Required	-
Rotate Sort	-	Required

NOTE: If the Finisher or the Shift Tray is installed, Rotate Sort is disabled in print mode.

2.3.5 DUPLEX PRINTING

Duplex printing is available with all output bin options but not all paper sizes (refer to the specifications section of the copier manual). If a job specifies duplex but the paper size to be used is not usable in the duplex unit, the job will be printed single-sided.

Duplex printing is available in two binding methods: short-edge binding and long-edge binding.

In short-edge binding, when printing the second side of a page, the image may require rotation. The image is rotated by the ASIC (Rocky-R) in the printer controller.

The ASIC (Rocky-R) corrects the image printing order for duplexing as follows.

- Larger than A4 lengthwise/LT lengthwise (example 8 pages)
  2nd page – 1st page – 4th page – 3rd page – 6th page – 5th page – 8th page – 7th page
- Up to A4 lengthwise/LT lengthwise (example 8 pages)
  2nd page – 4th page – 1st page – 6th page – 3rd page – 8th page – 5th page – 7th page

⟹

Function	Optional Memory	Optional HDD
Duplex	Required	-

2.3.6 STAPLING

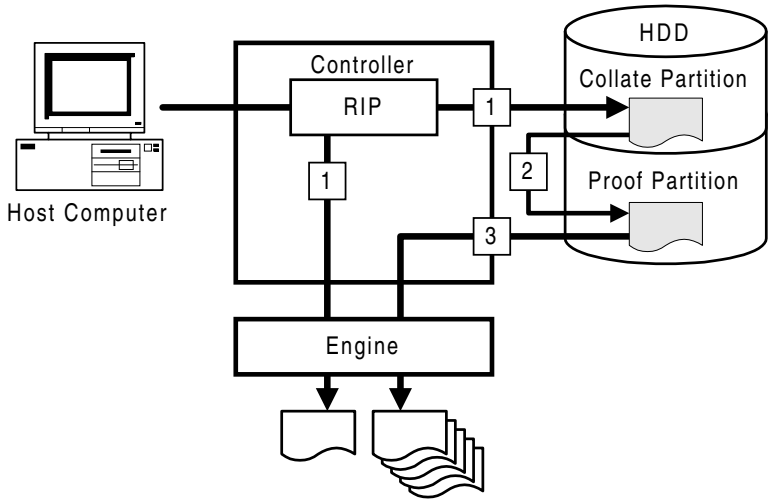
Stapling is only available when the 1000-sheet finisher is installed.

The finisher has only one stapling position, upper left corner.

Depending on the paper orientation, the image may have to be rotated. This image rotation is done by the ASIC (Rocky-R) in the printer controller.

There is a limit for the number of sheets that can be stapled. If a job that specifies stapling has more than this number of sheets, it will not be stapled.

2.3.7 PROOF PRINT



The Proof Print function gives users a chance to check the print results before starting a multiple-set print run.

When printing from a host computer, a print job is sent to the controller with a user ID and the current time. Then the controller executes raster image processing (RIP), stores the image data onto the collation partition of the hard disk, and prints one set of the document (step [1] in the above diagram). Then the controller moves the raster image file to the proof print partition of the hard disk (step [2] in the above diagram).

After the user checks that the print result is OK, the user selects the file using the machine's operation panel, and prints the rest of the sets (step [3] in the above diagram). After all sets have been printed, the controller deletes the file automatically.

If the proof print result is not OK, the user must delete the file manually.

If there is no available space for a new file in the proof print partition, the controller deletes the file from the collation partition after printing the first set, even though it cannot copy the file to the proof print partition.

NOTE: 1) Proof print requires the installation of an optional hard disk.
2) The proof print partition size is about 600 MB. It can hold up to 30 files or 2,000 pages. The maximum number of pages depends on how complex the pages are.
3) Proof print is available with the PCL drivers, the Windows 95/98 PostScript driver, and the Macintosh PostScript driver (with the Proof Print plug-in). The PostScript drivers for Windows 3.x and Windows NT4.0 do not support the proof print function.

Function	Optional Memory	Optional HDD
Proof Print	-	Required

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B306 - 006 **09/11/2000**

APPLICABLE MODEL:

GESTETNER – PRINTER CONTROLLER for 3222/3227
RICOH – PRINTER CONTROLLER for AFICIO 220/270
SAVIN – PRINTER CONTROLLER for 9922DP/9927DP

Note: This copy is intended as a master original for reproduction of additional bulletins.

SUBJECT: NIB NVRAM BACKUP and RESTORE

SYMPTOM:

The machine may not start up after the NIB NVRAM Backup and Restore Procedure (Service Tool: NIB read/write). This problem may occur after the NIB NVRAM data is backed up to the Controller (Data Copy Direction: "NIB ⇒ CTL").
This is because the NVRAM volume is not large enough to store all the NIB data.
NOTE: *The NIB NVRAM Backup And Restore Procedure is required only when replacing the NIB.*

SOLUTION:

Do not use the NIB NVRAM Backup and Restore Procedure.
If the machine does not start up after performing this function, you must download the Controller Firmware using the Error Recovery Firmware Update Procedure.
(This procedure will force the Controller to boot from the IC card. Please refer to section 4.5.2 of the Service Manual for the detailed procedures.)
The Controller Firmware will be modified so this function will no longer be valid. It will not be shown on the Service Tool.
The firmware is modified from the April '00 production (version 1.3.6).
Currently there is no way to enable this function because the current NVRAM volume on the Controller Board is not big enough to store all the NIB NVRAM data.
After replacing a NIB, input the data manually.

GENERAL:

The Service Manual pages listed below must be replaced with the pages supplied. Each bulletin package contains 1 set of replacement pages.

PAGES:

The revised areas have been highlighted by an arrow ⇒.

- i and ii — Updated Information (B306 Table of Contents)
- 4-2 — Updated Information (Service Menu)
- 4-7 and 8 — Updated Information (Removal of NIB NVRAM Backup and Restore)

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TABLE OF CONTENTS

1. OVERALL MACHINE INFORMATION 1-1
1.1 SPECIFICATIONS 1-1
1.1.1 GENERAL SPECIFICATIONS 1-1
1.1.2 SUPPORTED PAPER SIZES 1-2
1.2 SOFTWARE ACCESSORIES 1-3
1.2.1 PRINTER DRIVERS 1-3
1.2.2 UTILITY SOFTWARE 1-3
1.2.3 SERVICE TOOLS 1-3
1.3 MACHINE LAYOUT 1-4
1.4 BLOCK DIAGRAM 1-5

2. DETAILED SECTION DESCRIPTIONS 2-1
2.1 IMAGE DATA PROCESSING 2-1
2.2 ENGINE FUNCTIONS 2-1
2.2.1 PRINT PRIORITY AND INTERLEAVING 2-1
Display Priority 2-1
Copier, Fax or Printer 2-1
Interleave 2-2
2.3 CONTROLLER FUNCTIONS 2-3
2.3.1 PAPER SIZE/TYPE DETECTION AND SELECTION 2-3
2.3.2 PAPER SOURCE SELECTION 2-3
Auto Tray Select 2-3
Manual Tray Select 2-4
Tray Lock 2-4
By-pass Tray 2-4
Paper Size Mismatch 2-5
2.3.3 OUTPUT TRAY SELECTION 2-5
2.3.4 COLLATION (SORT) 2-6
2.3.5 DUPLEX PRINTING 2-7
2.3.6 STAPLING 2-7
2.3.7 PROOF PRINT 2-8
2.3.8 RESET OPERATIONS 2-9
Job Reset 2-9
System Reset 2-9
Menu Reset 2-9
2.3.9 HDD (OPTIONAL) 2-9

3. INSTALLATION PROCEDURES 3-1
3.1 PRINTER CONTROLLER 3-1
3.2 HARD DISK (HDD) 3-5
3.3 NETWORK INTERFACE BOARD (NIB) 3-7
3.4 POSTSCRIPT DIMM 3-9
3.5 MEMORY (SDRAM DIMM) 3-11

4. SERVICE TABLES 4-1
4.1 PRECAUTION 4-1
4.2 SERVICE PROGRAM MODE OVERVIEW 4-1
4.2.1 HOW TO ENTER THE SP MODE 4-1
Entering Printer SP mode 4-1
Exiting SP mode 4-1
4.1.2 SP MODE TABLE 4-1
SERVICE MENU 4-1
SERVICE TOOLS 4-2
4.3 SERVICE MENU 4-2
4.3.1 BIT SWITCH PROGRAMMING 4-2
BIT SWITCHES 4-2
4.3.2 NVRAM RESET 4-3
DIAG. ERROR LOG AND PAPER TRAY SETTINGS RESET 4-3
CONTROLLER NVRAM RESET 4-3
NIB NVRAM RESET 4-3
COUNTER RESET 4-4
4.1.3 POWER-ON DIAGNOSTICS ERROR DISPLAY 4-4
4.1.4 SERVICE SUMMARY 4-4
4.4 SERVICE TOOLS 4-6
4.4.1 HDD TEST 4-6
4.4.2 HDD FORMAT 4-7
4.5 FIRMWARE UPDATE 4-9
4.5.1 FIRMWARE DOWNLOAD (CONTROLLER, NIB AND PS3) 4-9
4.1.2 ERROR RECOVERY 4-11
CONTROLLER 4-11
PS3 DIMM / NIB 4-11
4.6 POWER-ON SELF TEST 4-12
4.6.1 PARALLEL LOOP-BACK TEST 4-12
4.6.2 OTHER TESTS 4-12

5. REMOVAL AND REPLACEMENT 5-1
5.1 PRECAUTIONS 5-1
5.2 CONTROLLER 5-1
5.3 NIB 5-2

6. TROUBLESHOOTING 6-1
6.1 SC CODES 6-1
6.2 ERROR CODES 6-1
6.3 LED DISPLAY 6-2
6.3.1 LOCATION 6-2
6.3.2 FATAL ERRORS 6-3
6.4 FIRMWARE HISTORY 6-5
6.4.1 B306 FIRMWARE MODIFICATION HISTORY 6-5

SERVICE TOOLS

	Title	Description
H	HDD Test	Verifies the FAT and directory entries on the HDD.
I	HDD Format	Partitions and formats the HDD.

4.3 SERVICE MENU

4.3.1 BIT SWITCH PROGRAMMING

1. Enter the Printer SP mode, and select “1. Service Menu”.
2. Select A, B, C, or D for the desired bit switch, then press [Enter].
3. Press [Enter] in the “Bit Switch Set” menu.
4. Adjust the bit switch using the following keys.
   - [UP] [DOWN]: Change the switch setting and moves to the next bit.
   - [CANCEL]: Exit without saving changes.
   - [ENTER]: Exit and save changes.
5. Press [Enter] to save changes and exit.

BIT SWITCHES

NOTE: The bit switches are not used at the moment.

4.4.2 HDD FORMAT

This creates partitions on the HDD and formats them.

1. Enter the Printer SP mode, and select “2. Service Tool”.
2. Select “HDD Format”, then press [Enter].
3. Check the HDD capacity, then press [Enter].
4. Press [Enter] again to start formatting. Or, press [Cancel] to exit.
   NOTE: Once the format has started, it cannot be cancelled.
5. Check the result of the test, then do the following:
   - If the result is OK, press [Enter] to exit.
   - If the result is NG, check the error message, then press [Enter] to exit.

Error Display Details	
Error Messages	“HDD Ident Fail” The controller could not retrieve information from the HDD. “NG Logic Format” Logical format failed. “No Support HDD” Unsupported HDD is detected.



⇒

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TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B306 - 007 **12/11/2000**

APPLICABLE MODEL:

GESTETNER – PRINTER CONTROLLER for 3222/3227
RICOH - PRINTER CONTROLLER for AFICIO 220/270
SAVIN - PRINTER CONTROLLER for 9922DP/9927DP

SUBJECT: SERVICE MANUAL - INSERT

GENERAL:

The Service Manual pages listed below must be replaced with the pages supplied. Each bulletin package contains 1 set of replacement pages.

PAGES:

The revised areas have been highlighted by an arrow ⇒.

- 6-7 Updated Information (Firmware History)

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B306 PRINTER OPTION FIRMWARE MODIFICATION HISTORY			
DESCRIPTION OF MODIFICATION	**FIRMWARE LEVEL**	**SERIAL NUMBER**	**FIRMWARE VERSION**
⇒ • Part of the image is missing for the first two pages when printing out with the Unico2000 CAD application. • When printing out with the Microsoft Mini Driver for Windows NT Terminal Server, the image created is sometimes out of specification. • When printing out a file made with certain CAD applications for DOS without using a printer driver, thick lines on the original image appear thin on the output. ** To activate this correction, it is necessary to set Bit SW3, bit 3 to 1 (0=disabled, 1=Enabled). • Firmware modified to meet the functional specifications of the Tray Priority function. • Some stapling modes, the printing image direction is not same as copier's. ** To activate this correction, it is necessary to set Bit SW3, bit 7 to 1 (0=disabled, 1=Enabled). • The print speed slows down during continuos printing of a 1-page job. ** To activate this correction, it is necessary to set Bit SW3, bit 2 to 1 (0=Disabled, 1=Enabled) and set Bit SW3, bit 4 to 1 (DAZEL* support function disabled). The correction will not be effective if both of these switches are enabled. • Firmware modified so that the controller can connect to and be used with the DAZEL System. However, the A265/A267 is not yet officially certified by DAZEL Corp. When you enable this function, it is necessary to do the following: -Upgrade the NIB firmware to version 4.0.6 or later and the PS3 firmware to version 1.2.4 or later. -Set NIC to bi-directional-mode (refer to NIC manual). -Do not set Bit SW3, bit 2 to 1 (as explained above, these two SW should not be simultaneously enabled). * To deactivate the DAZEL support function, set Bit SW3, bit 4 to 1 (0=Enabled, 1=Disabled).	B3065280 **F**	Nov. 2000 Production	1.4.4

Printer Controller B306

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B306 – 008 **12/03/2002**

APPLICABLE MODEL:

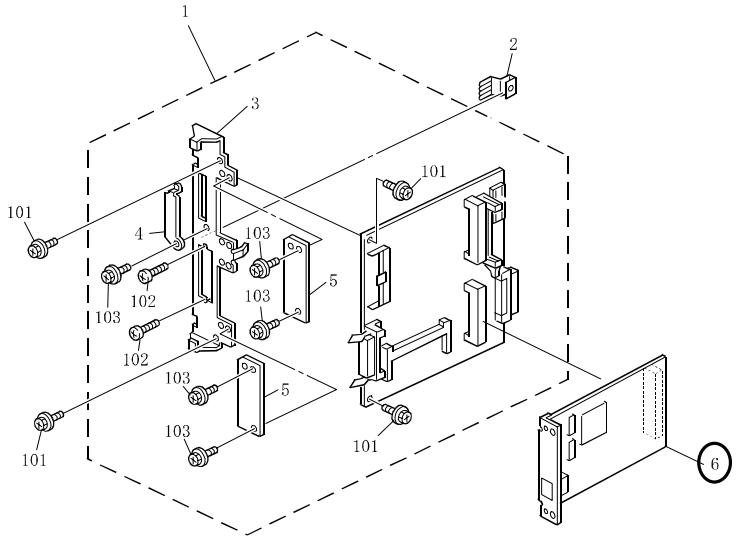
GESTETNER – PRINTER OPTION for 3222/3227
RICOH – PRINTER OPTION for AFICIO 220/270
SAVIN – PRINTER OPTION for 9922DP/9927DP

Note: This copy is intended as a master original for reproduction of additional bulletins.

SUBJECT: NETWORK INTERFACE BOARD

GENERAL:

The Network Interface Board has been registered as a service part for the B306 Parts Catalog. The following part update is being issued for all B306 Parts Catalogs.



			REFERENCE	
PART NUMBER	**DESCRIPTION**	**QTY**	**PAGE**	**ITEM**
G6785714	Network Interface Board	1	3	6 *

*** DENOTES NEW ITEM NUMBER**

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TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B306 – 009 **05/09/2003**

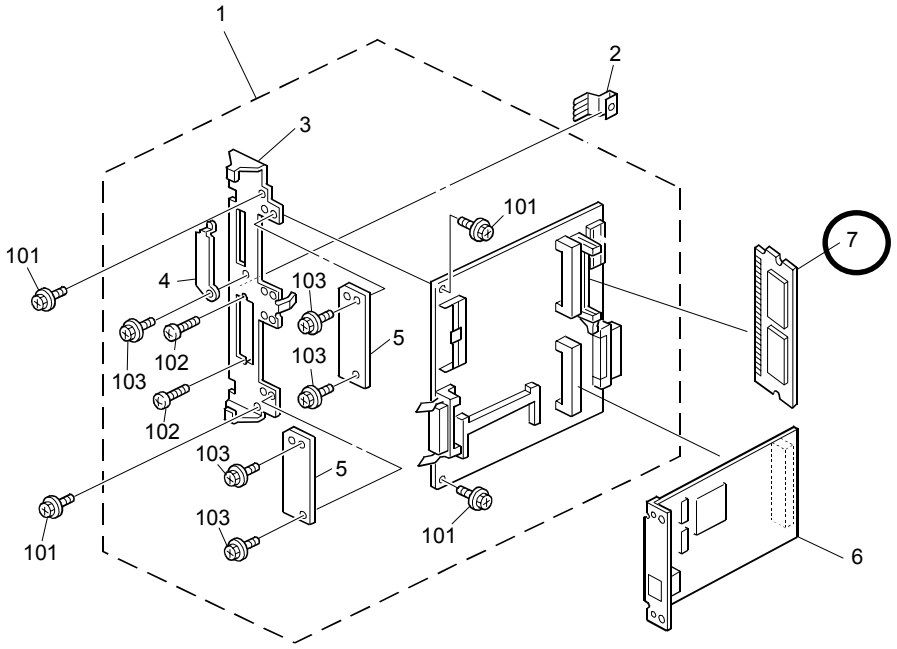
APPLICABLE MODEL:

GESTETNER – PRINTER CONTROLLER TYPE 270 for 3222/3227
LANIER – PRINTER CONTROLLER TYPE 270 for 5222/5227
RICOH – PRINTER CONTROLLER TYPE 270 for AFICIO 220/270
SAVIN – PRINTER CONTROLLER TYPE 270 for 9922DP/9927DP

SUBJECT: PS3 BOARD

GENERAL:

As per a field request, the PS3 Board has been registered as a service part. Please update your B306 Parts Catalog as shown in the illustration below. The following part update is being issued for all B306 Parts Catalogs.



			REFERENCE	
NEW PART NUMBER	DESCRIPTION	QTY	PAGE	ITEM
B3085181	PS3 Board	1	3	7 *

*** DENOTES NEW ITEM NUMBER**

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TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B308 - 001 **08/02/2000**

APPLICABLE MODEL:

GESTETNER - POSTSCRIPT OPTION TYPE 185 for 3218/3215S/3222/3227
RICOH - POSTSCRIPT OPTION TYPE 185 for AFICIO 180/150/220/270
SAVIN - POSTSCRIPT OPTION TYPE 185 for 9918DP/2015DP/9922DP/9927DP

Note: This copy is intended as a master original for reproduction of additional bulletins.

SUBJECT: SERVICE MANUAL - INSERT



SERVICE MANUAL

GENERAL:

The Service Manual pages listed below must be added to the appropriate service manuals with the pages supplied. Each bulletin package contains 1 set of new pages.

PAGES:

The revised areas have been highlighted by an arrow ⇒.

• Title Page	New Information (PostScript Kit Type 185)
• TOC	New Information (Table of Contents for B308)
• 1-1	New Information (ROM History)

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POSTSCRIPT KIT TYPE 185

B308

TABLE OF CONTENTS

ROM HISTORY..... 1-1
1.1 FIRMWARE MODIFICATION HISTORY 1-1

1. ROM HISTORY

1.1 FIRMWARE MODIFICATION HISTORY

B308 POSTSCRIPT OPTION FIRMWARE MODIFICATION HISTORY			
DESCRIPTION OF MODIFICATION	**FIRMWARE LEVEL**	**SERIAL NUMBER**	**FIRMWARE VERSION**
Corrects the following: • The printer controller can now detect whether it is installed in a A250 or B001	B3085280 **A**	Initial Production	1.0.0
Corrects the following: • The PostScript Option firmware has been modified so that it can also be used with the A265/A267.	B3085280 **B**	October '99 Production	1.2.0
Corrects the following: • The PostScript Option firmware was modified so that it can also be used with the B001.	B3085280 **C**	October '99 Production	1.2.1
Corrects the following: • The product names of the B001 PostScript drivers for NRG, Savin and Infotec should be corrected as follows: Incorrect / Correct NRG D415s/2815s /3215s PS3 / NRG D415s/2815S /3215 PS3 SAVIN 9915DP PS3 / SAVIN 2015DP PS3 Infotec PS3 / Infotec 4150 MF PS3	B3085280 **D**	January '00 Production	1.2.2

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B308 – 002 **12/11/2000**

APPLICABLE MODEL:

GESTETNER – POSTSCRIPT OPTION TYPE 185 for 3218/3215S/3222/3227
RICOH - POSTSCRIPT OPTION TYPE 185 for AFICIO 180/150/220/270
SAVIN - POSTSCRIPT OPTION TYPE 185 for 9918DP/2015DP/9922DP/9927DP

Note: This copy is intended as a master original for reproduction of additional bulletins.

SUBJECT: SERVICE MANUAL - INSERT



SERVICE MANUAL

GENERAL:

The Service Manual pages listed below must be replaced with the pages supplied. Each bulletin package contains 1 set of replacement pages.

PAGES:

The revised areas have been highlighted by an arrow ⇒.

- 1-1 & 1-2 Updated Information (B308 ROM History)

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1. ROM HISTORY

1.1 FIRMWARE MODIFICATION HISTORY

B308 POSTSCRIPT OPTION FIRMWARE MODIFICATION HISTORY			
DESCRIPTION OF MODIFICATION	**FIRMWARE LEVEL**	**SERIAL NUMBER**	**FIRMWARE VERSION**
Corrects the following: • The printer controller can now detect whether it is installed in a A250 or B001	B3085280 **A**	Initial Production	1.0.0
Corrects the following: • The PostScript Option firmware has been modified so that it can also be used with the A265/A267.	B3085280 **B**	October '99 Production	1.2.0
Corrects the following: • The PostScript Option firmware was modified so that it can also be used with the B001.	B3085280 **C**	October '99 Production	1.2.1
Corrects the following: • The product names of the B001 PostScript drivers for NRG, Savin and Infotec should be corrected as follows: Incorrect / Correct NRG D415s/2815s /3215s PS3 / NRG D415s/2815S /3215 PS3 SAVIN 9915DP PS3 / SAVIN 2015DP PS3 Infotec PS3 / Infotec 4150 MF PS3	B3085280 **D**	January '00 Production	1.2.2 …Continued

B308 POSTSCRIPT OPTION FIRMWARE MODIFICATION HISTORY			
DESCRIPTION OF MODIFICATION	**FIRMWARE LEVEL**	**SERIAL NUMBER**	**FIRMWARE VERSION**
⇒ Corrects the following: • The print speed slows down during continuos printing of a 1-page job. ** To activate this correction, it is necessary to set Bit SW3, bit 2 to 1 (0=Disabled, 1=Enabled) and set Bit SW3, bit 4 to 1 (DAZEL* support function disabled). The correction will not be effective if both of these switches are enabled. • Firmware modified so that the controller can connect to and be used with the DAZEL System. However, the A265/A267 is not yet officially certified by DAZEL Corp. When you enable this function, it is necessary to do the following: -Upgrade the NIB firmware to version 4.0.6 or later and the PS3 firmware to version 1.2.4 or later. -Set NIC to bi-directional-mode (refer to NIC manual). -Do not set Bit SW3, bit 2 to 1 (as explained above, these two SW should not be simultaneously enabled). * To deactivate the DAZEL support function, set Bit SW3, bit 4 to 1 (0=Enabled, 1=Disabled).	B3085280 **E**	November '00 Production	1.2.4

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B308 – 003 **07/16/2001**

APPLICABLE MODEL:

GESTETNER – POSTSCRIPT OPTION TYPE 185 for 3218/3215S/3222/3227
RICOH - POSTSCRIPT OPTION TYPE 185 for AFICIO 180/150/220/270
SAVIN - POSTSCRIPT OPTION TYPE 185 for 9918DP/2015dp/9922DP/9927DP

Note: This copy is intended as a master original for reproduction of additional bulletins.

SUBJECT: SERVICE MANUAL - INSERT

GENERAL:

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PAGES:

The revised areas have been highlighted by an arrow ⇒.

- 1-1 & 2 Updated Information (ROM History B308)

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1. ROM HISTORY

1.1 FIRMWARE MODIFICATION HISTORY

B308 POSTSCRIPT OPTION FIRMWARE MODIFICATION HISTORY			
DESCRIPTION OF MODIFICATION	**FIRMWARE LEVEL**	**SERIAL NUMBER**	**FIRMWARE VERSION**
Corrects the following: • The printer controller can now detect whether it is installed in a A250 or B001	B3085280 **A**	Initial Production	1.0.0
Corrects the following: • The PostScript Option firmware has been modified so that it can also be used with the A265/A267.	B3085280 **B**	October '99 Production	1.2.0
Corrects the following: • The PostScript Option firmware was modified so that it can also be used with the B001.	B3085280 **C**	October '99 Production	1.2.1
Corrects the following: • The product names of the B001 PostScript drivers for NRG, Savin and Infotec should be corrected as follows: Incorrect / Correct NRG D415s/2815s /3215s PS3 / NRG D415s/2815S /3215 PS3 SAVIN 9915DP PS3 / SAVIN 2015DP PS3 Infotec PS3 / Infotec 4150 MF PS3	B3085280 **D**	January '00 Production	1.2.2
⇒ Corrects the following: • Firmware modified so that the controller can connect to and be used with the DAZEL System. However, the A265/A267 is not yet officially certified by DAZEL Corp. When you enable this function, it is necessary to do the following: -Upgrade the NIB firmware to version 4.0.6 or later and the PS3 firmware to version 1.2.4 or later. -Set NIC to bi-directional-mode (refer to NIC manual). -Do not set Bit SW3, bit 2 to 1 (as explained above, these two SW should not be simultaneously enabled). * To deactivate the DAZEL support function, set Bit SW3, bit 4 to 1 (0=Enabled, 1=Disabled).	B3085280 **E**	November '00 Production	1.2.4 …Continued

B308 POSTSCRIPT OPTION FIRMWARE MODIFICATION HISTORY			
DESCRIPTION OF MODIFICATION	**FIRMWARE LEVEL**	**SERIAL NUMBER**	**FIRMWARE VERSION**
⇒ Continued… • The print speed slows down during continuos printing of a 1-page job. ** To activate this correction, it is necessary to set Bit SW3, bit 2 to 1 (0=Disabled, 1=Enabled) and set Bit SW3, bit 4 to 1 (DAZEL* support function disabled). The correction will not be effective if both of these switches are enabled.			
Corrects the following: • During RAM collate printing, the job cannot be cancelled. • When the job is cancelled, the output paper count is sent to the printer controller (a side-effect of the previous modification made for DAZEL connection).	B3085280 **F**	January '01 Production	1.2.6

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B307 – 001 **05/19/2000**

APPLICABLE MODEL:

GESTETNER – NETWORK INTERFACE BOARD for 3218/3215S
RICOH - NETWORK INTERFACE BOARD for AFICIO 180/150
SAVIN - NETWORK INTERFACE BOARD for 9918DP/2015DP

Note: This copy is intended as a master original for reproduction of additional bulletins.

SUBJECT: SERVICE MANUAL - INSERT



SERVICE MANUAL

GENERAL:

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- B307 TOC i — Updated Information (B307 Table of Contents)
- 4-2,3 — Updated Information (NIB Firmware History)

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NETWORK INTERFACE BOARD B307

TABLE OF CONTENTS

1. OVERALL INFORMATION 1-1
1.1 SPECIFICATIONS 1-1
1.2 SOFTWARE ACCESSORIES 1-1
1.2.1 UTILITY SOFTWARE 1-1
1.2.2 SERVICE TOOLS 1-1
1.3 BLOCK DIAGRAM 1-2
1.4 COMPONENT LAYOUT 1-3

2. INSTALLATION 2-1
2.1 HARDWARE INSTALLATION 2-1
2.2 UTILITY SOFTWARE SETUP 2-1
2.2.1 PRINTER MANAGER FOR ADMIN 2-1
2.2.2 WEB STATUS MONITOR 2-2
2.3 SETTING UP THE NIB FOR VARIOUS NETWORKS 2-2
2.3.1 NETWARE NETWORKS 2-3
2.3.2 TCP/IP NETWORKS 2-3
Possible Problems with DHCP Parameter Settings 2-4
2.3.3 NETBEUI NETWORKS 2-4
2.3.4 APPLETALK (ETHERTALK) NETWORKS 2-5

3. SERVICE TABLES AND PROCEDURES 3-1
3.1 PRINTING REPORTS 3-1
3.1.1 NIB STATUS SHEET 3-1
3.1.2 NIB LOG LIST 3-1
3.2 NVRAM RESET 3-1

4. TROUBLESHOOTING 4-1
4.1 LED INDICATIONS 4-1
4.2 FIRMWARE HISTORY 4-2

4.2 FIRMWARE HISTORY

B307 NIB OPTION FIRMWARE MODIFICATION HISTORY			
DESCRIPTION OF MODIFICATION	**FIRMWARE LEVEL**	**SERIAL NUMBER**	**FIRMWARE VERSION**
Initial Production Release	G6785839B	Initial Production	3.7.5
Corrects the following: • On the web status monitor, the improper icon was used for “Paper Empty”. • If the NIB received 5 simultaneous print jobs, additional print jobs would be lost.	G6785839C	February ’99 Production	3.7.7
Corrects the following: • The firmware was modified to support A250/B001.	G6785839D	March ’99 Production	3.8.6
Corrects the following: • One banner data page of NetWare was split into two pages when using NetWare 3.12 pserver mode. • In NetWare remote printer mode, the NIB consumed a server connection license. To avoid this, the firmware has been modified to disconnect the NCP connection immediately after the remote printer has connected to the server.	G6785839E	April ’99 Production	3.8.7
Corrects the following: • On the web status monitor, the wording in German was incorrect. “FreierSpeicher” corrected to “Freier Speicher”. • The Web status monitor displays “No Tray/No Paper” error when a tray is not closed completely. The message has been changed to “Other Error”. • Disabling (Down) or enabling (Up) AppleTalk protocol from the operation panel sometimes did not take effect after the change. To avoid this, the firmware has been changed to save a new setting to the NVRAM immediately after a change.	G6785839F	June ’99 Production	3.8.8
Corrects the following: • When a printer error occurs, the printer information cannot be accessed using Macintosh printer utilities such as Apple Printer Utility. • IPP (Internet Print Protocol) function has been added.	G6785839G	July ’99 Production	3.9.2

B307 NIB OPTION FIRMWARE MODIFICATION HISTORY			
DESCRIPTION OF MODIFICATION	**FIRMWARE LEVEL**	**SERIAL NUMBER**	**FIRMWARE VERSION**
Corrects the following: • The wording “Config Reference” has been changed to “Riferim. Config” for the Italian version of Web status. • The wording “Default Gateway Address” has been changed to “Direcci. Gateway” for the Spanish version of Web status. • A type of Cisco router caused a problem in browsing the NIB in an AppleTalk network. The cause of this was in the Cisco router but the NIB firmware has been modified to correct this.	G6785839H	October ’99 Production	3.9.8
Corrects the following: • PCL text filter support has been added. • “RICOH” brand name has been deleted from several functions and reports.	G6785839J	November ’99 Production	4.0.0
Corrects the following: • HTTP access has been improved when multiple protocols are used at the same time (e.g. telnet, IPP and HTTP).	G6785839K	April ’00 Production	4.0.2

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B307 – 002 **05/19/2000**

APPLICABLE MODEL:

GESTETNER – NETWORK INTERFACE BOARD for 3222/3227
RICOH - NETWORK INTERFACE BOARD for AFICIO 220/270
SAVIN - NETWORK INTERFACE BOARD for 9922DP/9927DP

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SERVICE MANUAL

SUBJECT: SERVICE MANUAL - INSERT

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• B307 TOC i	Updated Information (B307 Table of Contents)
• 4-2,3	Updated Information (NIB Firmware History)

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TABLE OF CONTENTS

1. OVERALL MACHINE INFORMATION 1-1
1.1 SPECIFICATIONS 1-1
1.2 SOFTWARE ACCESSORIES 1-1
1.2.1 UTILITY SOFTWARE 1-1
1.2.2 SERVICE TOOLS 1-1
1.3 BLOCK DIAGRAM 1-2
1.4 COMPONENT LAYOUT 1-3

2. INSTALLATION 2-1
2.1 HARDWARE INSTALLATION 2-1
2.2 UTILITY SOFTWARE SETUP 2-1
2.2.1 PRINTER MANAGER FOR ADMIN 2-1
2.2.2 WEB STATUS MONITOR 2-1
2.3 SETTING UP THE NIB FOR VARIOUS NETWORKS 2-2
2.3.1 NETWARE NETWORKS 2-2
2.3.2 TCP/IP NETWORKS 2-3
Possible Problems with DHCP Parameter Settings 2-4
2.3.3 NETBEUI NETWORKS 2-4
2.3.4 APPLETALK (ETHERTALK) NETWORKS 2-5

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3.1.1 NIB STATUS SHEET 3-1
3.1.2 NIB LOG LIST 3-1
3.2 NVRAM RESET 3-1

4. TROUBLESHOOTING 4-1
4.1 LED INDICATIONS 4-1
4.2 FIRMWARE HISTORY 4-2

4.2 FIRMWARE HISTORY

B307 NIB OPTION FIRMWARE MODIFICATION HISTORY			
DESCRIPTION OF MODIFICATION	**FIRMWARE LEVEL**	**SERIAL NUMBER**	**FIRMWARE VERSION**
Initial Production Release	G6785839B	Initial Production	3.7.5
Corrects the following: • On the web status monitor, the improper icon was used for “Paper Empty”. • If the NIB received 5 simultaneous print jobs, additional print jobs would be lost.	G6785839C	February ’99 Production	3.7.7
Corrects the following: • The firmware was modified to support A250/B001.	G6785839D	March ’99 Production	3.8.6
Corrects the following: • One banner data page of NetWare was split into two pages when using NetWare 3.12 pserver mode. • In NetWare remote printer mode, the NIB consumed a server connection license. To avoid this, the firmware has been modified to disconnect the NCP connection immediately after the remote printer has connected to the server.	G6785839E	April ’99 Production	3.8.7
Corrects the following: • On the web status monitor, the wording in German was incorrect. “FreierSpeicher” corrected to “Freier Speicher”. • The Web status monitor displays “No Tray/No Paper” error when a tray is not closed completely. The message has been changed to “Other Error”. • Disabling (Down) or enabling (Up) AppleTalk protocol from the operation panel sometimes did not take effect after the change. To avoid this, the firmware has been changed to save a new setting to the NVRAM immediately after a change.	G6785839F	June ’99 Production	3.8.8
Corrects the following: • When a printer error occurs, the printer information cannot be accessed using Macintosh printer utilities such as Apple Printer Utility. • IPP (Internet Print Protocol) function has been added.	G6785839G	July ’99 Production	3.9.2

B307 NIB OPTION FIRMWARE MODIFICATION HISTORY			
DESCRIPTION OF MODIFICATION	**FIRMWARE LEVEL**	**SERIAL NUMBER**	**FIRMWARE VERSION**
Corrects the following: • The wording “Config Reference” has been changed to “Riferim. Config” for the Italian version of Web status. • The wording “Default Gateway Address” has been changed to “Direcci. Gateway” for the Spanish version of Web status. • A type of Cisco router caused a problem in browsing the NIB in an AppleTalk network. The cause of this was in the Cisco router but the NIB firmware has been modified to correct this.	G6785839H	October ’99 Production	3.9.8
Corrects the following: • PCL text filter support has been added. • “RICOH” brand name has been deleted from several functions and reports.	G6785839J	November ’99 Production	4.0.0
Corrects the following: • HTTP access has been improved when multiple protocols are used at the same time (e.g. telnet, IPP and HTTP).	G6785839K	April ’00 Production	4.0.2

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B307 - 003 **06/23/2000**

APPLICABLE MODEL:

GESTETNER – NETWORK INTERFACE BOARD for 3218/3215S
RICOH – NETWORK INTERFACE BOARD for AFICIO 180/150
SAVIN – NETWORK INTERFACE BOARD for 9918DP/2015DP

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SUBJECT: NIB NVRAM BACKUP AND RESTORE

SYMPTOM:

The copier may not start after performing the NIB NVRAM Backup Procedure. (Service Tool: NIB Read/Write). This symptom may occur after the NIB NVRAM data is backed up to the Controller. (Data Copy direction: NIB ⇒ Controller).

CAUSE:

The symptom occurs because the NVRAM volume is not large enough to store all the NIB data.

NOTE: *The NIB NVRAM backup and restore procedure is only required when replacing a NIB.*

TEMPORARY SOLUTION:

Do not use the NIB NVRAM backup and restore procedure(Section 4.4.3 of the Printer Option Service Manual). If the copier does not start after performing this function, you must download the Controller Firmware using the error recovery update procedure. This procedure will force the Controller to boot from the IC Card. Please refer to section 4.5.3 of the Printer Option Service Manual for a detailed description.

PERMANENT SOLUTION:

The Controller Firmware will be modified so this function will no longer be valid. It will not be shown as a Service Tool. The Firmware was modified starting with the April 2000 production (version 1.3.6 or higher). Currently there is no way to enable this function because the current NVRAM volume on the Controller Board is not large enough to store all the NIB NVRAM data. After replacing the NIB, you must input the data manually.

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TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B307 – 004 **08/03/2001**

APPLICABLE MODEL:

GESTETNER – NETWORK INTERFACE BOARD for 3218/3215S
RICOH - NETWORK INTERFACE BOARD for AFICIO 180/150
SAVIN - NETWORK INTERFACE BOARD for 9918DP/2015DP

Note: This copy is intended as a master original for reproduction of additional bulletins.



SERVICE MANUAL

SUBJECT: SERVICE MANUAL - INSERT

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- 4-3 Updated Information (B307 Firmware Modification History)

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B307 NIB OPTION FIRMWARE MODIFICATION HISTORY			
DESCRIPTION OF MODIFICATION	**FIRMWARE LEVEL**	**SERIAL NUMBER**	**FIRMWARE VERSION**
Corrects the following: • The wording “Config Reference” has been changed to “Riferim. Config” for the Italian version of Web status. • The wording “Default Gateway Address” has been changed to “Direcci. Gateway” for the Spanish version of Web status. • A type of Cisco router caused a problem in browsing the NIB in an AppleTalk network. The cause of this was in the Cisco router but the NIB firmware has been modified to correct this.	G6785839H	October ’99 Production	3.9.8
Corrects the following: • PCL text filter support has been added. • “RICOH” brand name has been deleted from several functions and reports.	G6785839J	November ’99 Production	4.0.0
Corrects the following: • HTTP access has been improved when multiple protocols are used at the same time (e.g. telnet, IPP and HTTP).	G6785839K	April ’00 Production	4.0.2
Corrects the following: • Bi-directional communication of "diprint" (using 9100 port of TCP/IP printing) is supported (required for DAZEL system). • The "diprint direct [On/Off]" command using telnet has been implemented for supporting bi-directional communication of diprint (required for DAZEL system). PortNavi and Multidirect Print are not supported if bi-directional communication has been selected. • The spelling of the command "retern" in the UNIX install shell has been corrected to "return". • The DHCP of NetWare5 is supported. • The DHCP relay agent is supported. (This has been confirmed only with Windows NT 4.0 relay agent at this time.) • There may be some minor (character) display errors on the LCD while the NIB firmware is being upgraded. The firmware has been modified to prevent this.	G6785839L	October ‘00	4.0.6
⇒ Corrects the following: • Classless InterDomain Routing (CIDR) is supported. • DHCP of Solaris 2.6 is supported.	G6785839**M**	February ‘01	4.0.7

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B307 – 005 **08/03/2001**

APPLICABLE MODEL:

GESTETNER – NETWORK INTERFACE BOARD for 3222/3227
RICOH - NETWORK INTERFACE BOARD for AFICIO 220/270
SAVIN - NETWORK INTERFACE BOARD for 9922DP/9927DP

Note: This copy is intended as a master original for reproduction of additional bulletins.



SERVICE MANUAL

SUBJECT: SERVICE MANUAL - INSERT

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- 4-3 Updated Information (B307 Firmware Modification History)

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B307 NIB OPTION FIRMWARE MODIFICATION HISTORY			
DESCRIPTION OF MODIFICATION	**FIRMWARE LEVEL**	**SERIAL NUMBER**	**FIRMWARE VERSION**
Corrects the following: • The wording “Config Reference” has been changed to “Riferim. Config” for the Italian version of Web status. • The wording “Default Gateway Address” has been changed to “Direcci. Gateway” for the Spanish version of Web status. • A type of Cisco router caused a problem in browsing the NIB in an AppleTalk network. The cause of this was in the Cisco router but the NIB firmware has been modified to correct this.	G6785839H	October ’99 Production	3.9.8
Corrects the following: • PCL text filter support has been added. • “RICOH” brand name has been deleted from several functions and reports.	G6785839J	November ’99 Production	4.0.0
Corrects the following: • HTTP access has been improved when multiple protocols are used at the same time (e.g. telnet, IPP and HTTP).	G6785839K	April ’00 Production	4.0.2
Corrects the following: • Bi-directional communication of "diprint" (using 9100 port of TCP/IP printing) is supported (required for DAZEL system). • The "diprint direct [On/Off]" command using telnet has been implemented for supporting bi-directional communication of diprint (required for DAZEL system). PortNavi and Multidirect Print are not supported if bi-directional communication has been selected. • The spelling of the command "retern" in the UNIX install shell has been corrected to "return". • The DHCP of NetWare5 is supported. • The DHCP relay agent is supported. (This has been confirmed only with Windows NT 4.0 relay agent at this time.) • There may be some minor (character) display errors on the LCD while the NIB firmware is being upgraded. The firmware has been modified to prevent this.	G6785839L	October ’00 Production	4.0.6
⇒ Corrects the following: • Classless InterDomain Routing (CIDR) is supported. • DHCP of Solaris 2.6 is supported.	G6785839M	February ’01 Production	4.0.7

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B307 – 006 **12/04/2002**

APPLICABLE MODEL:

GESTETNER – NETWORK INTERFACE BOARD for 3222/3227
RICOH – NETWORK INTERFACE BOARD for AFICIO 220/270
SAVIN – NETWORK INTERFACE BOARD for 9922DP/9927DP

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■ SERVICE MANUAL

GENERAL:

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- 4-4 Updated Information (B307 Firmware Modification History)

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B307 NIB OPTION FIRMWARE MODIFICATION HISTORY			
DESCRIPTION OF MODIFICATION	**FIRMWARE LEVEL**	**SERIAL NUMBER**	**FIRMWARE VERSION**
⇒ Corrects the following: • Can not connect to NetWare Servers when the servers use NCP Packet Signature Level 2.	G6785839N	August ’01 Production	4.0.8
Corrects the following: • SNMP security vulnerabilities reported by CERT on Feb.12, 2002 has been tested using the PROTOS c06-snmpv1 test suite and we have verified the fixes. -CERT :http://www.cert.org/advisories/CA-2002-03.html -PROTOS c06-snmpv1 test Suite :http://www.ee.oulu.fi/research/ouspg/protos/testing/c06/snmpv1/	G6785839P	July ’02 Production	4.1.0

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B307 – 007 **12/04/2002**

APPLICABLE MODEL:

GESTETNER – NETWORK INTERFACE BOARD for 3218/3215S
RICOH – NETWORK INTERFACE BOARD for AFICIO 180/150
SAVIN – NETWORK INTERFACE BOARD for 9918DP/2015DP

SUBJECT: SERVICE MANUAL – INSERT

GENERAL:



■ SERVICE MANUAL

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PAGES:

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- 4-4 Updated Information (B307 Firmware Modification History)

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B307 NIB OPTION FIRMWARE MODIFICATION HISTORY			
DESCRIPTION OF MODIFICATION	**FIRMWARE LEVEL**	**SERIAL NUMBER**	**FIRMWARE VERSION**
⇒ Corrects the following: • Can not connect to NetWare Servers when the servers use NCP Packet Signature Level 2.	G6785839N	August ’01 Production	4.0.8
Corrects the following: • SNMP security vulnerabilities reported by CERT on Feb.12, 2002 has been tested using the PROTOS c06-snmpv1 test suite and we have verified the fixes. -CERT :http://www.cert.org/advisories/CA-2002-03.html -PROTOS c06-snmpv1 test Suite :http://www.ee.oulu.fi/research/ouspg/protos/testing/c06/snmpv1/	G6785839P	July ’02 Production	4.1.0