RICOH UNIVERSITY
Learning ◆ Knowledge ◆ Performance



B205/B209
SERVICE MANUAL

002531MIU

Gestetner LANIER RICOH savin

RICOH
Learning ◆ Knowledge ◆ Performance
UNIVERSITY

B205/B209
SERVICE MANUAL

Gestetner®
LANIER
RICOH®
SAVIN®

RICOH UNIVERSITY
Learning ◆ Knowledge ◆ Performance

B205/B209
SERVICE MANUAL

002531MIU

Gestetner LANIER RICOH SAVIN

It is the reader's responsibility when discussing the information contained within this document to maintain a level of confidentiality that is in the best interest of Ricoh Corporation and its member companies.

NO PART OF THIS DOCUMENT MAY BE REPRODUCED IN ANY FASHION AND DISTRIBUTED WITHOUT THE PRIOR PERMISSION OF RICOH CORPORATION.

All product names, domain names or product illustrations, including desktop images, used in this document are trademarks, registered trademarks or the property of their respective companies.
They are used throughout this book in an informational or editorial fashion only and for the benefit of such companies. No such use, or the use of any trade name, or web site is intended to convey endorsement or other affiliation with Ricoh products.

© 2005 RICOH Corporation. All rights reserved.

WARNING

The Service Manual contains information regarding service techniques, procedures, processes and spare parts of office equipment distributed by Ricoh Corporation. Users of this manual should be either service trained or certified by successfully completing a Ricoh Technical Training Program.

Untrained and uncertified users utilizing information contained in this service manual to repair or modify Ricoh equipment risk personal injury, damage to property or loss of warranty protection.

Ricoh Corporation

LEGEND

PRODUCT CODE	COMPANY			
	GESTETNER	LANIER	RICOH	SAVIN
B205	DSM725	LD225	Aficio 3025	8025
B209	DSM730	LD230	Aficio 3030	8030

DOCUMENTATION HISTORY

REV. NO.	DATE	COMMENTS
*	10/2005	Original Printing

B205/B209

TABLE OF CONTENTS

INSTALLATION

1. INSTALLATION PROCEDURE 1-1

1.1 INSTALLATION REQUIREMENTS 1-1
1.1.1 ENVIRONMENT 1-1
1.1.2 MACHINE LEVEL 1-1
1.1.3 MINIMUM SPACE REQUIREMENTS 1-2
1.1.4 POWER REQUIREMENTS 1-3
1.2 COPIER INSTALLATION 1-4
1.2.1 POWER SOCKETS FOR PERIPHERALS 1-4
1.2.2 INSTALLATION FLOW CHART 1-5
1.2.3 ACCESSORY CHECK 1-6
1.2.4 INSTALLATION PROCEDURE 1-7
Tapes and Retainers 1-7
Developer 1-8
Toner Bottle 1-12
Emblem, Decals 1-13
1.3 PAPER TRAY UNIT INSTALLATION 1-15
1.3.1 ACCESSORY CHECK 1-15
1.3.2 INSTALLATION PROCEDURE 1-16
1.4 LCT INSTALLATION 1-19
1.4.1 ACCESSORY CHECK 1-19
1.4.2 INSTALLATION PROCEDURE 1-20
1.5 ARDF INSTALLATION 1-23
1.5.1 ACCESSORY CHECK 1-23
1.5.2 INSTALLATION PROCEDURE 1-24
1.6 INTERCHANGE UNIT INSTALLATION 1-28
1.6.1 COMPONENT CHECK 1-28
1.6.2 INSTALLATION PROCEDURE 1-29
1.7 1-BIN TRAY UNIT INSTALLATION 1-31
1.7.1 COMPONENT CHECK 1-31
1.7.2 INSTALLATION PROCEDURE 1-32
1.8 SHIFT TRAY 1-35
1.8.1 COMPONENT CHECK 1-35
1.8.2 INSTALLATION PROCEDURE 1-36
1.9 BY-PASS FEED UNIT INSTALLATION 1-38
1.9.1 COMPONENTS CHECK 1-38
1.9.2 INSTALLATION PROCEDURE 1-39
1.10 DUPLEX UNIT INSTALLATION 1-41
1.10.1 ACCESSORY CHECK 1-41
1.10.2 INSTALLATION PROCEDURE 1-42

1.11 BRIDGE UNIT INSTALLATION 1-44
1.11.1 ACCESSORY CHECK 1-44
1.11.2 INSTALLATION PROCEDURE 1-45
1.12 1000-SHEET FINISHER INSTALLATION 1-47
1.12.1 ACCESSORY CHECK 1-47
1.12.2 INSTALLATION PROCEDURE 1-48
1.13 500-SHEET FINISHER (B442) INSTALLATION 1-51
1.13.1 ACCESSORY CHECK 1-51
1.13.2 INSTALLATION PROCEDURE 1-52
1.14 PLATEN COVER (B406) 1-54
1.15 KEY COUNTER 1-55
1.16 OPTICS ANTI-CONDENSATION HEATER 1-57
1.17 TRAY HEATER 1-58
1.18 TRAY HEATER (OPTIONAL PAPER TRAY UNIT) 1-60
1.19 TRAY HEATER (OPTIONAL LCT) 1-63
1.20 COPY DATA SECURITY UNIT (B770) 1-66
1.21 HDD (B773) 1-68
1.22 DATA OVERWRITE SECURITY UNIT (B735) 1-70
Seal Check and Removal 1-70
Installation 1-71

PREVENTIVE MAINTENANCE

2. PREVENTIVE MAINTENANCE SCHEDULE 2-1
2.1 PM TABLE 2-1
2.2 MAIN MOTOR DRIVE GEAR 2-4

REPLACEMENT AND ADJUSTMENT

3. REPLACEMENT AND ADJUSTMENT 3-1
3.1 SPECIAL TOOLS AND LUBRICANTS 3-1
3.2 SPECIAL TOOLS 3-1
3.3 LUBRICANTS 3-1
3.4 GENERAL CAUTIONS 3-2
3.4.1 PCU (PHOTOCONDUCTOR UNIT) 3-2
3.4.2 TRANSFER ROLLER UNIT 3-2
3.4.3 SCANNER UNIT 3-2
3.4.4 LASER UNIT 3-3
3.4.5 FUSING UNIT 3-3
3.4.6 PAPER FEED 3-3
3.4.7 OTHERS 3-3
3.5 SCANNER UNIT 3-4
3.5.1 EXPOSURE GLASS 3-4
3.5.2 SCANNER EXTERIOR/OPERATION PANEL 3-5
3.5.3 LENS BLOCK ASSEMBLY 3-6
3.5.4 ORIGINAL SIZE SENSORS 3-7

3.5.5 EXPOSURE LAMP 3-8
3.5.6 SCANNER MOTOR/LAMP STABILIZER 3-9
3.5.7 SCANNER WIRES 3-10
3.6 LASER UNIT 3-13
3.6.1 CAUTION DECAL LOCATIONS 3-13
3.6.2 LASER UNIT 3-14
3.6.3 POLYGON MIRROR MOTOR 3-15
3.6.4 LD UNIT 3-16
3.6.5 LASER SYNCHRONIZATION DETECTOR 3-17
3.7 PHOTOCONDUCTOR UNIT (PCU) 3-18
3.7.1 PCU REMOVAL 3-18
3.7.2 PICK-OFF PAWLS 3-19
3.7.3 OPC DRUM 3-20
3.7.4 CHARGE ROLLER, CLEANING ROLLER 3-21
3.7.5 CLEANING BLADE 3-22
3.7.6 DEVELOPER 3-23
3.7.7 AFTER REPLACEMENT OF PCU COMPONENTS 3-27
3.8 TRANSFER UNIT 3-28
3.8.1 TRANSFER ROLLER UNIT 3-28
3.8.2 IMAGE DENSITY SENSOR 3-29
3.9 FUSING/EXIT 3-30
3.9.1 FUSING UNIT 3-30
3.9.2 THERMISTORS 3-30
3.9.3 THERMOSTATS 3-31
3.9.4 HOT ROLLER AND FUSING LAMP 3-33
3.9.5 PRESSURE ROLLER/CLEANING ROLLER 3-35
3.9.6 PAPER EXIT SENSOR/PAPER OVERFLOW SENSOR 3-36
3.10 PAPER FEED 3-37
3.10.1 FEED ROLLER: TRAY 1 3-37
3.10.2 FEED ROLLER: TRAY 2 3-38
3.10.3 PAPER END SENSOR 3-39
3.10.4 PAPER TRAY LIFT MOTORS 3-40
3.10.5 REGISTRATION CLUTCH 3-41
3.10.6 PAPER FEED CLUTCHES 3-42
Lower Paper Feed Clutch 3-42
Upper Paper Feed Clutch. 3-42
3.10.7 RELAY CLUTCHES 3-43
3.10.8 PAPER SIZE DETECTOR 3-44
3.10.9 REGISTRATION SENSOR 3-45
3.10.10 RELAY SENSORS 3-46
Upper Relay Sensor 3-46
Lower Relay Sensor 3-46
3.10.11 DUST COLLECTION BOX 3-47
3.11 PCBS AND OTHER ITEMS 3-48
3.11.1 CONTROLLER BOARD 3-48
3.11.2 NVRAM 3-49
3.11.3 SBCU BOARD 3-50
3.11.4 POWER PACK 3-51
3.11.5 MAIN MOTOR 3-52

3.11.6 PSU 3-53
3.11.7 IPU 3-54
3.11.8 HDD 3-55
Important Notes About HDD Replacement 3-56
3.12 COPY ADJUSTMENTS: PRINTING/SCANNING 3-57
3.12.1 PRINTING 3-57
Registration - Leading Edge/Side-to-Side 3-57
Blank Margin 3-58
Main Scan Magnification 3-58
Parallelogram Image Adjustment 3-59
3.12.2 SCANNING 3-60
Registration: Platen Mode 3-60
Magnification 3-60
Standard White Density Adjustment 3-61
3.12.3 ADF IMAGE ADJUSTMENT 3-62
Registration 3-62
Sub Scan Magnification 3-62
3.12.4 TOUCH SCREEN CALIBRATION 3-63

TROUBLESHOOTING

4. TROUBLESHOOTING 4-1
4.1 SERVICE CALL CONDITIONS 4-1
4.1.1 SUMMARY 4-1
4.1.2 SC CODE DESCRIPTIONS 4-2
4.2 SELF-DIAGNOSTIC MODE 4-18
4.2.1 SELF-DIAGNOSTIC MODE AT POWER ON 4-18
4.2.2 DETAILED SELF-DIAGNOSTIC MODE 4-19
Executing Detailed Self-Diagnosis 4-19
4.3 PAPER FEED TROUBLESHOOTING 4-21
4.4 SKEWED IMAGE 4-22
4.5 IMAGE PROBLEMS 4-23
4.5.1 SKEWED, TRAPEZOID AND PARALLELOGRAM IMAGES 4-23
Skewed Images 4-23
Trapezoid Images 4-23
Parallelogram Images 4-24
4.5.2 CHECKING IMAGES WITH THE TRIMMING PATTERN 4-25
4.5.3 CORRECTING THE IMAGES 4-26
Correcting Skewed Images 4-26
Correcting Trapezoid Images 4-29
Correcting Parallelogram Images 4-30
4.6 ELECTRICAL COMPONENT DEFECTS 4-31
4.6.1 SENSORS 4-31
4.6.2 SWITCHES 4-33
4.7 BLOWN FUSE CONDITIONS 4-34

SERVICE TABLES

5. SERVICE TABLES 5-1

5.1 SERVICE PROGRAM MODE 5-1
5.1.1 SERVICE MODE LOCK/UNLOCK 5-1
5.1.2 SERVICE PROGRAM MODE OPERATION 5-2
Entering and Exiting SP mode 5-2
SP Mode Button Summary 5-3
Switching Between SP Mode and Copy Mode for Test Printing 5-4
Selecting the Program Number 5-4
5.1.3 SERVICE PROGRAM MODE TABLES 5-5
SP1XXX: Feed 5-6
SP2XXX: Drum 5-15
SP4-XXX: Scanner 5-27
SP5XXX: Mode 5-38
SP6XXX: Peripherals 5-75
SP7XXX: Data Log 5-77
SP8-xxx: Data Log2 5-82
5.1.4 TEST PATTERN PRINTING (SP2902-3) 5-116
5.1.5 INPUT CHECK 5-117
Main Machine Input Check (SP5803) 5-117
ARDF Input Check (SP6007) 5-120
Finisher Input Check (SP6117) 5-121
5.1.6 OUTPUT CHECK 5-123
Main Machine Output Check (SP5804) 5-123
ARDF Output Check (SP6008) 5-125
Finisher Output Check (SP6118) 5-125
5.1.7 SMC DATA LISTS (SP5990) 5-126
5.1.8 MEMORY ALL CLEAR (SP5801) 5-127
5.1.9 APS OUTPUT DISPLAY (SP4301) 5-128
5.1.10 DF APS SENSOR OUTPUT DISPLAY (SP6901) 5-129
5.1.11 NIP BAND WIDTH MEASUREMENT (SP1109) 5-130
5.2 FIRMWARE UPDATE 5-131
5.3 SOFTWARE RESET 5-132
5.4 SYSTEM SETTINGS AND COPY SETTING RESET 5-132
5.4.1 SYSTEM SETTING RESET 5-132
5.4.2 COPIER SETTING RESET 5-133
5.5 USER TOOLS 5-134
5.5.1 HOW TO USE UP MODE 5-134
UP Mode Initial Screen: User Tools/Counter Display 5-134
System Settings 5-134
Copier/Document Server Features 5-134
Printer, Facsimile, Scanner Settings 5-135
Inquiry 5-135
Counter 5-136
5.6 LEDS 5-137
Controller 5-137
SBCU 5-137

5.7 DIP SWITCHES....5-137
Controller....5-137
SBCU....5-137
5.8 USING THE DEBUG LOG....5-138
5.8.1 SWITCHING ON AND SETTING UP SAVE DEBUG LOG....5-138
5.8.2 RETRIEVING THE DEBUG LOG FROM THE HDD....5-142
5.8.3 RECORDING ERRORS MANUALLY....5-142
5.8.4 NEW DEBUG LOG CODES....5-143
SP5857-015 Copy SD Card-to-SD Card: Any Desired Key....5-143
SP5857-016 Create a File on HDD to Store a Log....5-143
SP5857-017 Create a File on SD Card to Store a Log....5-143

DETAILED DESCRIPTIONS

6. DETAILS....6-1
6.1 OVERVIEW....6-1
6.1.1 MECHANICAL COMPONENTS....6-1
6.1.2 PAPER PATH....6-3
6.1.3 ELECTRICAL COMPONENT DESCRIPTIONS....6-4
6.1.4 DRIVE LAYOUT....6-7
6.2 BOARD STRUCTURE....6-8
6.2.1 OVERVIEW....6-8
6.2.2 CONTROLLER BOARD....6-10
6.3 COPY PROCESS....6-13
6.4 SCANNING....6-15
6.4.1 OVERVIEW....6-15
6.4.2 SCANNER DRIVE....6-16
6.4.3 ORIGINAL SIZE DETECTION: PLATEN MODE....6-17
6.5 IMAGE PROCESSING....6-19
6.5.1 OVERVIEW....6-19
6.5.2 SBU (SENSOR BOARD UNIT)....6-20
6.5.3 AUTO IMAGE DENSITY....6-21
6.5.4 ORIGINAL TYPE SETTINGS....6-22
6.5.5 IPU (IMAGE PROCESSING UNIT)....6-23
Overview....6-23
Image Processing Path....6-24
SP Modes for Each Image Processing Step....6-25
Auto Shading....6-30
Pre-Filtering....6-30
Main Scan Magnification/Reduction....6-30
Mirroring for ADF Mode....6-30
Characteristic Detection....6-31
Filtering....6-31
Background Erase....6-32
ID Gamma (g) Correction....6-32
Gradation Processing....6-32
Line width correction....6-33

6.5.6 VIDEO CONTROL UNIT (GAVD) 6-34
Fine Character and Image (FCI) 6-34
6.6 LASER EXPOSURE 6-35
6.6.1 OVERVIEW 6-35
6.6.2 AUTO POWER CONTROL (APC) 6-36
6.6.3 LD SAFETY SWITCH 6-37
6.7 PHOTOCONDUCTOR UNIT (PCU) 6-38
6.7.1 OVERVIEW 6-38
6.7.2 DRIVE 6-39
6.8 DRUM CHARGE 6-40
6.8.1 OVERVIEW 6-40
6.8.1 CHARGE ROLLER VOLTAGE CORRECTION 6-41
Correction for Environmental Conditions 6-41
6.8.2 ID SENSOR PATTERN PRODUCTION TIMING 6-42
6.8.3 DRUM CHARGE ROLLER CLEANING 6-43
6.9 DEVELOPMENT 6-44
6.9.1 OVERVIEW 6-44
6.9.2 DRIVE 6-45
6.9.3 DEVELOPER MIXING 6-46
6.9.4 DEVELOPMENT BIAS 6-47
6.9.5 TONER SUPPLY 6-48
Toner bottle replenishment mechanism 6-48
Toner supply mechanism 6-49
6.9.6 TONER DENSITY CONTROL 6-50
Overview 6-50
Toner density sensor initial setting 6-52
Toner density measurement 6-52
Vsp/Vsg detection 6-52
Toner supply reference voltage (Vref) determination 6-52
Toner supply determination 6-52
Toner Supply Motor On Time Determinations 6-53
6.9.7 TONER SUPPLY IN ABNORMAL SENSOR CONDITIONS 6-54
ID sensor 6-54
TD Sensor 6-54
6.9.8 TONER NEAR END/END DETECTION AND RECOVERY 6-54
Toner Near End Detection 6-54
Toner Near End Recovery 6-55
Toner End Detection 6-55
Toner End Recovery 6-55
6.10 DRUM CLEANING AND TONER RECYCLING 6-56
6.10.1 DRUM CLEANING 6-56
6.10.2 TONER RECYCLING 6-57
6.11 PAPER FEED 6-58
6.11.1 OVERVIEW 6-58
6.11.2 PAPER FEED DRIVE MECHANISM 6-59
6.11.3 PAPER FEED AND SEPARATION MECHANISM 6-60
6.11.4 PAPER LIFT MECHANISM 6-61
6.11.5 PAPER END DETECTION 6-63
6.11.6 PAPER HEIGHT DETECTION 6-64

6.11.7 FEED PRESSURE ADJUSTMENT FOR PAPER SIZE....6-66
Overview....6-66
Paper Size Thresholds....6-66
Feed Pressure Adjustment....6-67
Effect of the Amount of Remaining Paper....6-67
6.11.8 PAPER SIZE DETECTION....6-69
6.11.9 SPECIAL PAPER SETTING....6-70
6.11.10 SIDE AND END FENCES....6-71
Side Fences....6-71
End Fence....6-71
6.11.11 PAPER REGISTRATION....6-72
6.12 IMAGE TRANSFER AND PAPER SEPARATION....6-73
6.12.1 OVERVIEW....6-73
6.12.2 IMAGE TRANSFER CURRENT TIMING....6-74
6.12.3 TRANSFER ROLLER CLEANING....6-75
6.12.4 PAPER SEPARATION MECHANISM....6-76
6.13 IMAGE FUSING AND PAPER EXIT....6-77
6.13.1 OVERVIEW....6-77
6.13.2 FUSING DRIVE AND RELEASE MECHANISM....6-78
6.13.3 FUSING ENTRANCE GUIDE SHIFT MECHANISM....6-79
6.13.4 PRESSURE ROLLER....6-80
6.13.5 CLEANING MECHANISM....6-81
6.13.6 FUSING TEMPERATURE CONTROL....6-82
Temperature Control....6-82
Fusing Lamp Control....6-83
6.13.7 OVERHEAT PROTECTION....6-84
6.13.8 PAPER EXIT....6-85
6.14 ENERGY SAVER MODES....6-86
6.14.1 OVERVIEW....6-86
6.14.2 ENERGY SAVER MODE....6-87
Entering the energy saver mode....6-87
What happens in energy saver mode....6-87
Return to stand-by mode....6-87
6.14.3 AUTO OFF MODE....6-88
Entering off stand-by and off modes....6-88
Off Stand-by mode....6-88
Off Mode....6-88
Returning to stand-by mode....6-88

SPECIFICATIONS

7. OVERALL MACHINE INFORMATION....7-1
7.1 SPECIFICATIONS....7-1
7.2 MACHINE CONFIGURATION....7-4
7.2.1 SYSTEM COMPONENTS....7-4

7.2.2 OPTIONS TABLE 7-6
Copier options 7-6
Fax option 7-6
Printer/scanner options 7-6

PAPER BANK B390

SEE SECTION B390 FOR DETAILED TABLE OF CONTENTS

LARGE CAPACITY TRAY B391

SEE SECTION B391 FOR DETAILED TABLE OF CONTENTS

1,000-SHEET FINISHER B408

SEE SECTION B408 FOR DETAILED TABLE OF CONTENTS

1-BIN TRAY UNIT B413

SEE SECTION B413 FOR DETAILED TABLE OF CONTENTS

DUPLEX UNIT B414

SEE SECTION B414 FOR DETAILED TABLE OF CONTENTS

BY-PASS TRAY B415

SEE SECTION B415 FOR DETAILED TABLE OF CONTENTS

INTERCHANGE UNIT B416

SEE SECTION B416 FOR DETAILED TABLE OF CONTENTS

BRIDGE UNIT B417

SEE SECTION B417 FOR DETAILED TABLE OF CONTENTS

500-SHEET FINISHER B442

SEE SECTION B442 FOR DETAILED TABLE OF CONTENTS

INTERNAL SHIFT SORT TRAY B459

SEE SECTION B459 FOR DETAILED TABLE OF CONTENTS

FAX OPTION B766

SEE SECTION B766 FOR DETAILED TABLE OF CONTENTS

PRINTER/SCANNER B767/PRINTER B846

SEE SECTION B767/B846 FOR DETAILED TABLE OF CONTENTS

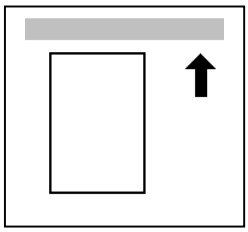
DOCUMENT FEEDER B810

SEE SECTION B810 FOR DETAILED TABLE OF CONTENTS

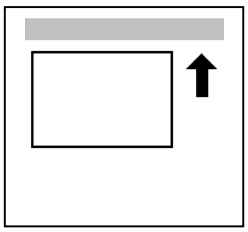
Conventions Used in this Manual

This manual uses several symbols.

Symbol	What it means
☛	Refer to section number
CT	See Core Tech Manual for details
	Screw
	Connector
	E-ring
	Clip ring
	Clamp



Lengthwise, SEF
(Short Edge Feed)



Sideways, LEF
(Long Edge Feed)

Cautions, Notes, etc.

The following headings provide special information:

⚠WARNING

FAILURE TO OBEY WARNING INFORMATION COULD RESULT IN SERIOUS INJURY OR DEATH.

⚠CAUTION

Obey these guidelines to ensure safe operation and prevent minor injuries.

Important

- Obey these guidelines to avoid problems such as misfeeds, damage to originals, loss of valuable data and to prevent damage to the machine.

IMPORTANT

- **ALWAYS OBEY THESE GUIDELINES TO AVOID SERIOUS PROBLEMS SUCH AS MISFEEDS, DAMAGE TO ORIGINALS, LOSS OF VALUABLE DATA AND TO PREVENT DAMAGE TO THE MACHINE. BOLD IS ADDED FOR EMPHASIS.**

NOTE: This information provides tips and advice about how to best service the machine.

⚠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.

OBSERVANCE OF ELECTRICAL SAFETY STANDARDS

1. The copier and its peripherals must be installed and maintained by a customer service representative who has completed the training course on those models.
2. The NVRAM on the Controller board has a lithium battery which can explode if replaced incorrectly. Replace the NVRAM only with an identical one. Do not recharge or burn this battery. Used NVRAM must be handled in accordance with local regulations.
3. The danger of explosion exists if batteries on the FCU, MBU and JBIG 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.

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:



Safety Precautions for This Machine

Before moving the mainframe:

- Disconnect all peripheral units (finisher, LCT, etc.) from the mainframe.
- Pull the slide handles out of the mainframe and use them to lift the mainframe.

INSTALLATION
DOCUMENT FEEDER B810
FAX OPTION B766

PREVENTIVE MAINTENANCE
PAPER BANK B390

REPLACEMENT AND ADJUSTMENT
LARGE CAPACITY TRAY B391

TROUBLESHOOTING
1,000-SHEET FINISHER B408
500-SHEET FINISHER B442
PRINTER/SCANNER B767/B846

SERVICE TABLES
DUPLEX UNIT B414
INTERCHANGE UNIT B416

DETAILED DESCRIPTIONS
BY-PASS TRAY B415

SPECIFICATIONS
1-BIN TRAY UNIT B413

BRIDGE UNIT B417
INTERNAL SHIFT SORT TRAY B459

TAB POSITION 1

TAB POSITION 2

TAB POSITION 3

TAB POSITION 4

TAB POSITION 5

TAB POSITION 6

TAB POSITION 7

TAB POSITION 8

INSTALLATION

1. INSTALLATION PROCEDURE

1.1 INSTALLATION REQUIREMENTS

1.1.1 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
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.

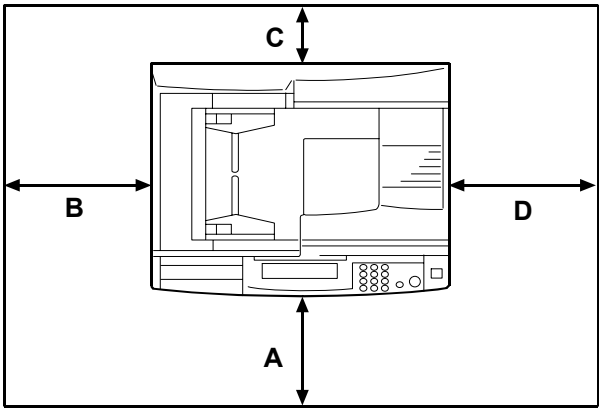
1.1.2 MACHINE LEVEL

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

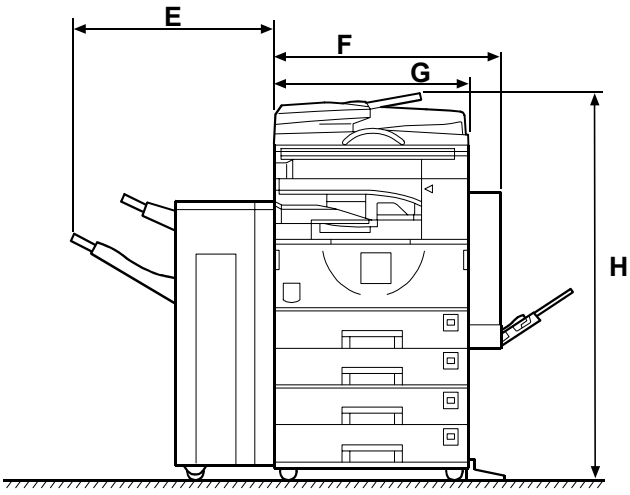
Right to left: With in 5 mm (0.2") of level

1.1.3 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 100 mm (0.4")
C: To Rear: Over 100 mm (0.4")
D: Right: Over 100 mm (0.4")



E: 620 mm (24.4")
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.

1.1.4 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 7 A
   110V, 50 Hz/60 Hz: More than 13 A
2. Permissible voltage fluctuation: ±10 %
3. Do not set anything on the power cord.

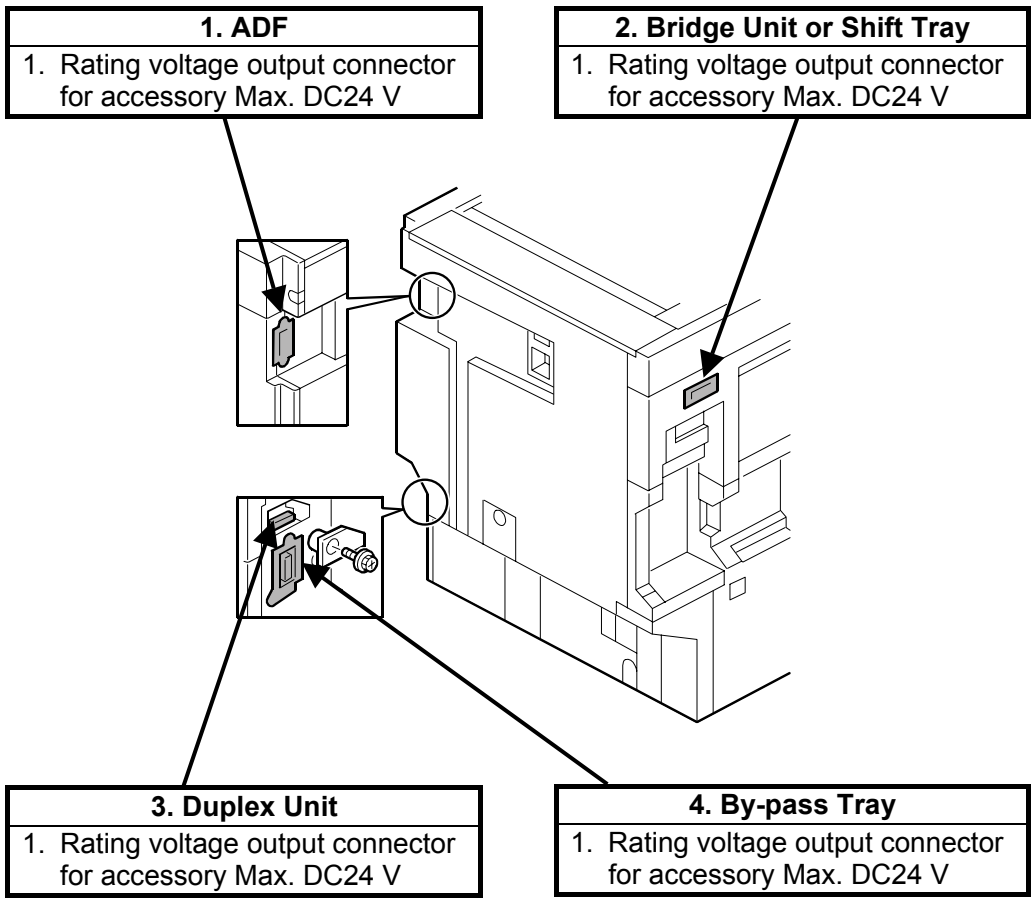
1.2 COPIER INSTALLATION

1.2.1 POWER SOCKETS FOR PERIPHERALS

⚠CAUTION

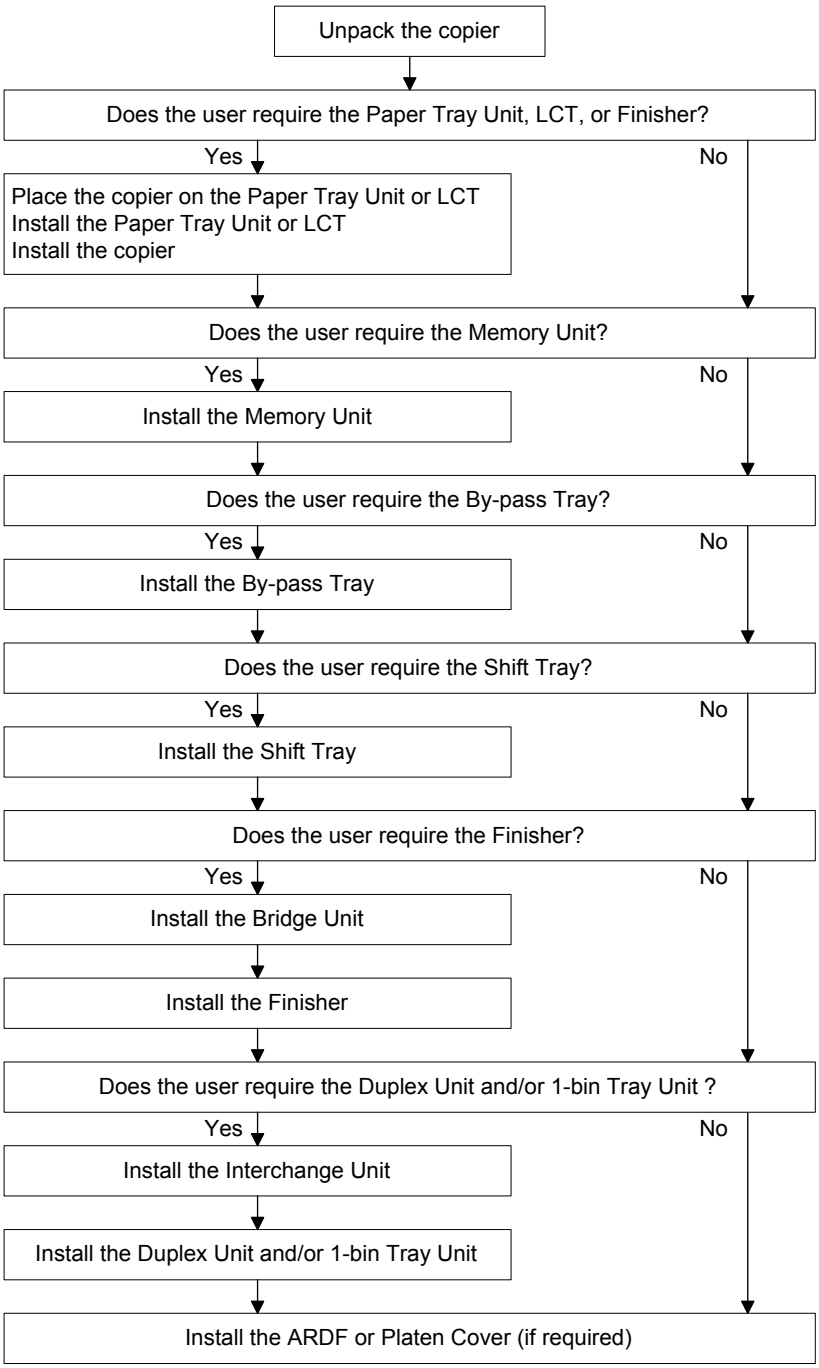
Rating voltage for peripherals.

Make sure to plug the cables into the correct sockets.



1.2.2 INSTALLATION FLOW CHART

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



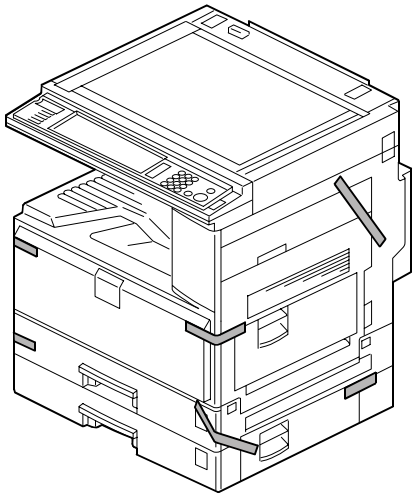
1.2.3 ACCESSORY CHECK

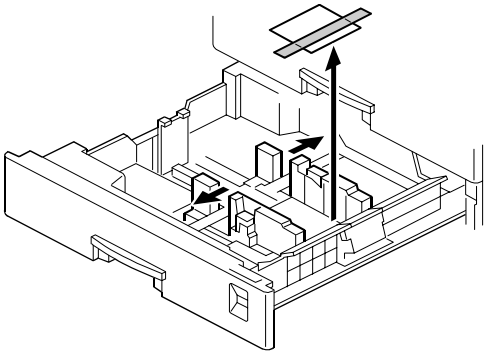
Check the quantity and condition of the accessories in the box against the following list:

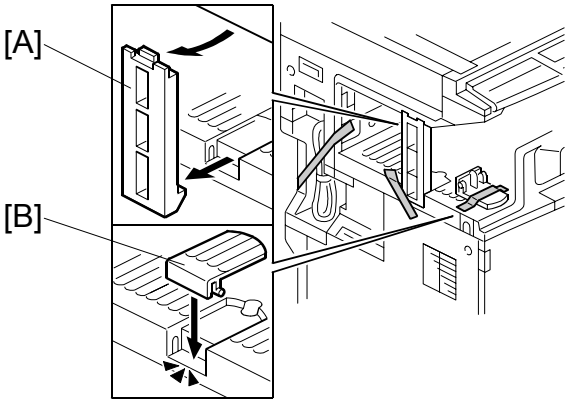
Description	Q'ty
1. Paper Tray Decal	1
2. Emblem Cover	1
3. Emblem	1
4. Model Name Decal	1
5. End Fence	1
6. HDD Caution Decal (-17, -29, -57 only)	1
7. Operating Instructions – System Setting	1
8. Operating Instructions – Copy Reference	1

1.2.4 INSTALLATION PROCEDURE

Tapes and Retainers







⚠CAUTION

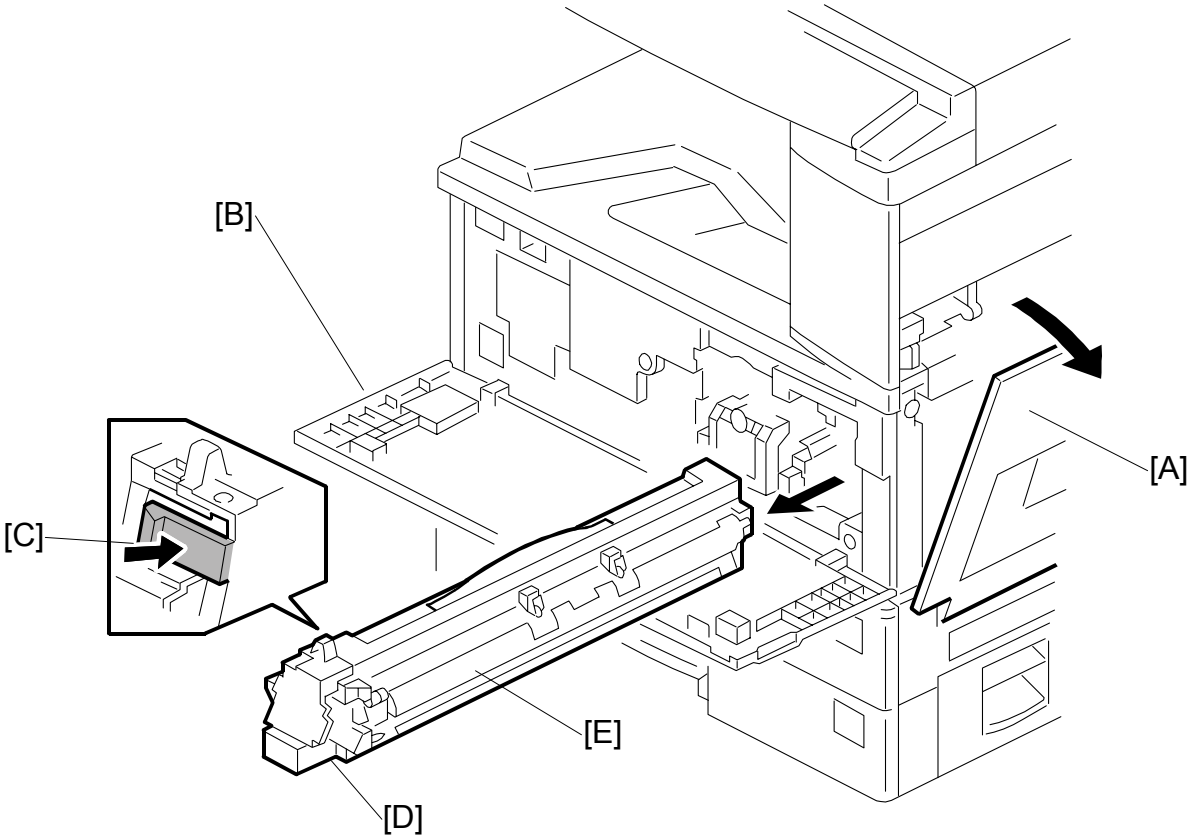
Unplug the machine power cord before starting the following procedure.

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.

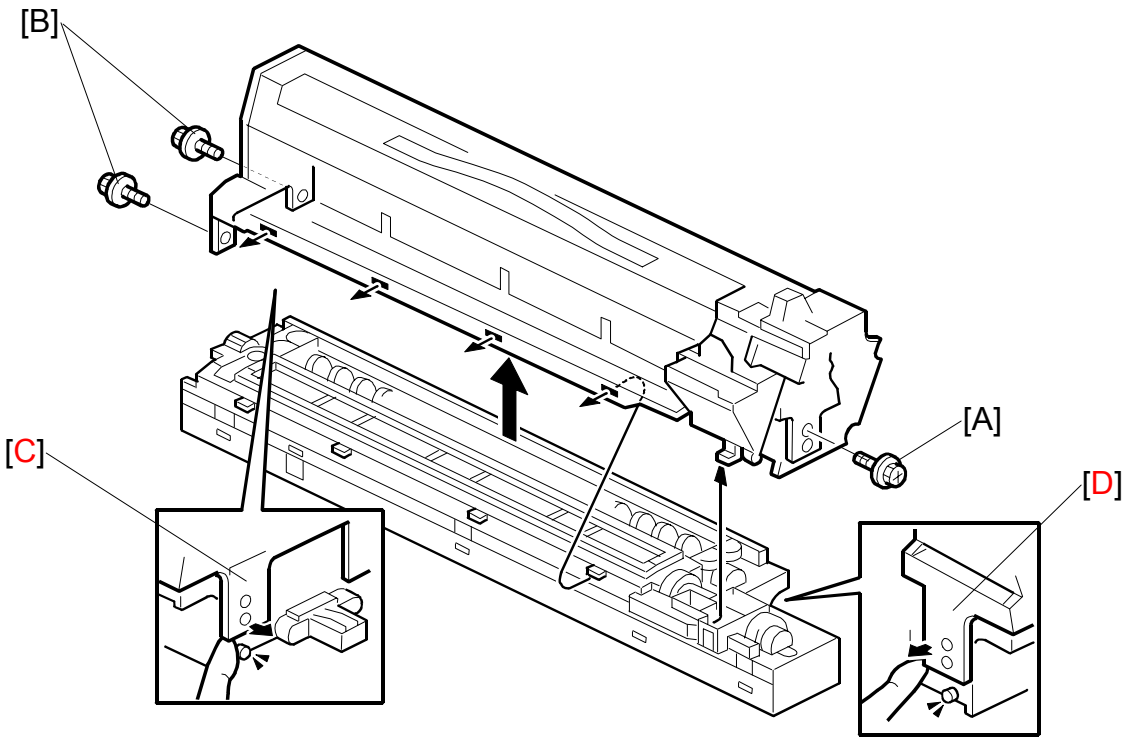
1. Remove the tapes and the shipping retainer [A] on the exterior of the copier.
2. Install the end fence [B].

Developer

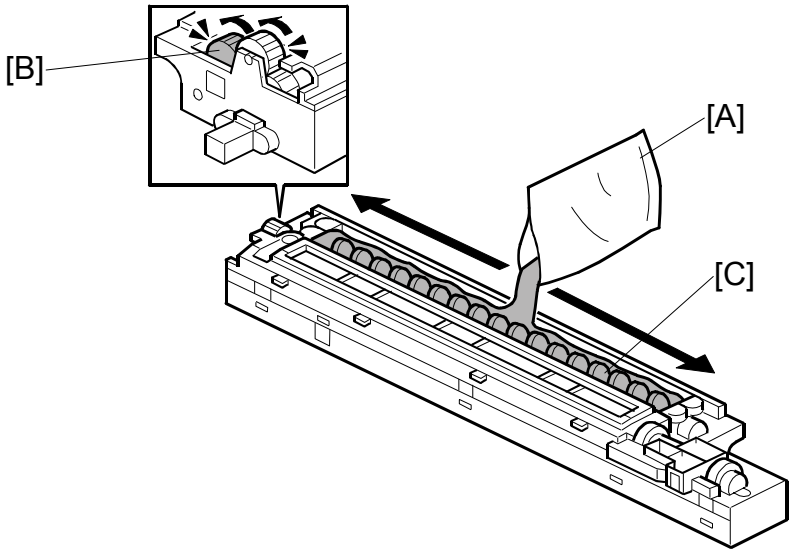


1. Spread the vinyl sheet provided with the developer kit on a flat surface.
2. Open the right door [A]
3. Open the front door [B].
4. Push the latch [C] and remove the Photo Conductor Unit (PCU) [D].

   NOTE: Do not hold PCU by OPC cover [E].



5. Remove the front screw [A] (x1)
6. Remove the rear screws [B] (x2)
7. Release the rear tab [C] then front tab [D], then separate the top and bottom.
   Important: Be sure to release the rear tab first and the front tab second.

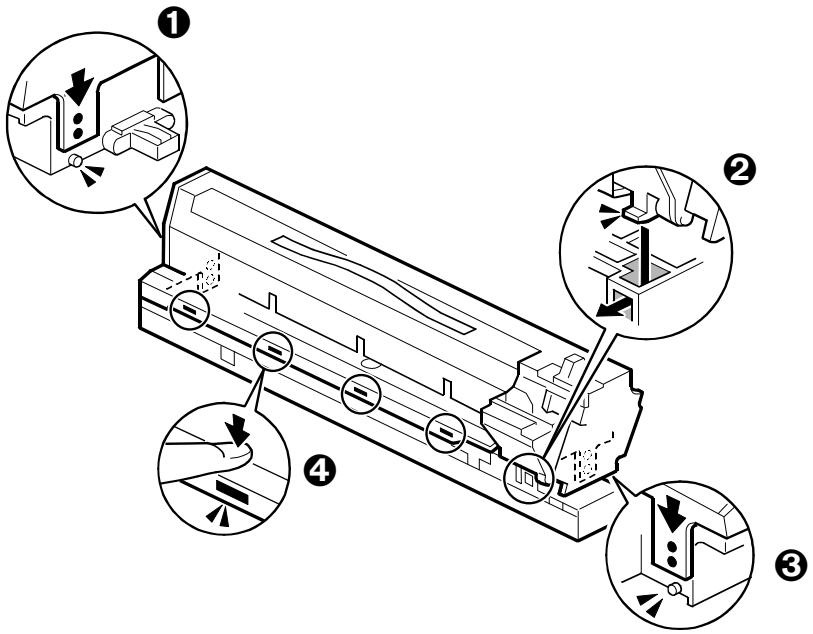


8. Open the developer pack [A].
9. While turning the black gear [B], slowly move the pack left and right and pour half of the developer over the auger [C].
10. Continue to turn the black gear until the developer is level.
11. While continuing to turn the black gear, slowly move the pack left and right and pour the remaining half of the developer over the auger until the developer is level.

Important

- Be careful. Do not spill developer on the gears and sponges.
- If you accidentally spill developer on the gears or sponges, remove it with a magnet or the tip of a magnetized screwdriver.

Re-assembly

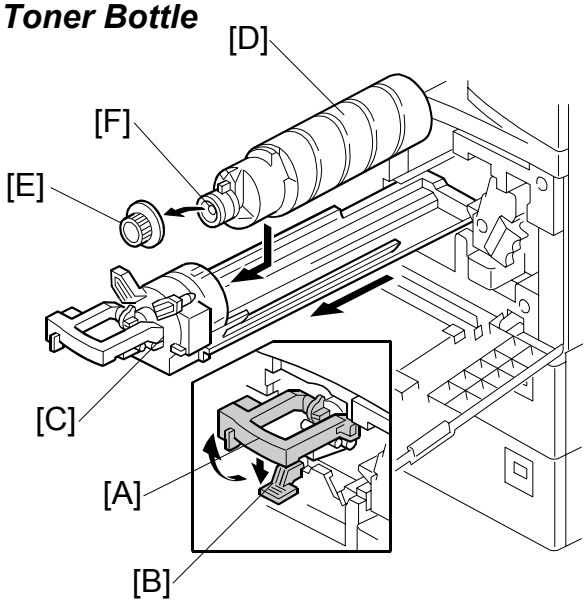


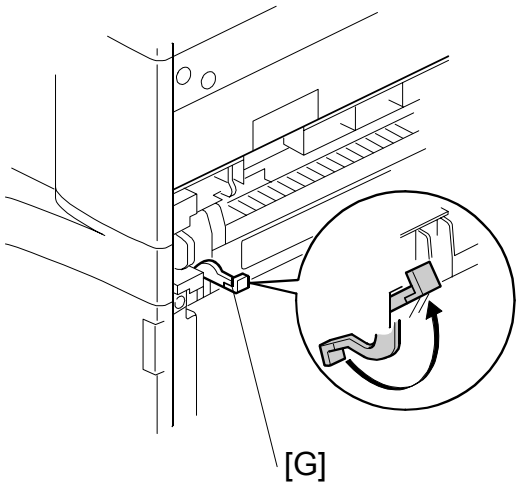
1. Make sure that all of the holes and tabs on are engaged at ❶, ❷, ❸, and ❹. Then push down to lock the tabs on the front and rear end of the PCU.
2. Make sure that the holes for the screws on the front and rear end of the PCU are aligned correctly. If the holes are not aligned correctly, make sure that the tabs at the front, rear, and left side of the PCU are engaged correctly.

Important

- Reattach the rear screws (☞ x2) first, then reattach the front screw (☞ x1).
- Do not push down on the top of the PCU when you attach the rear and front screws

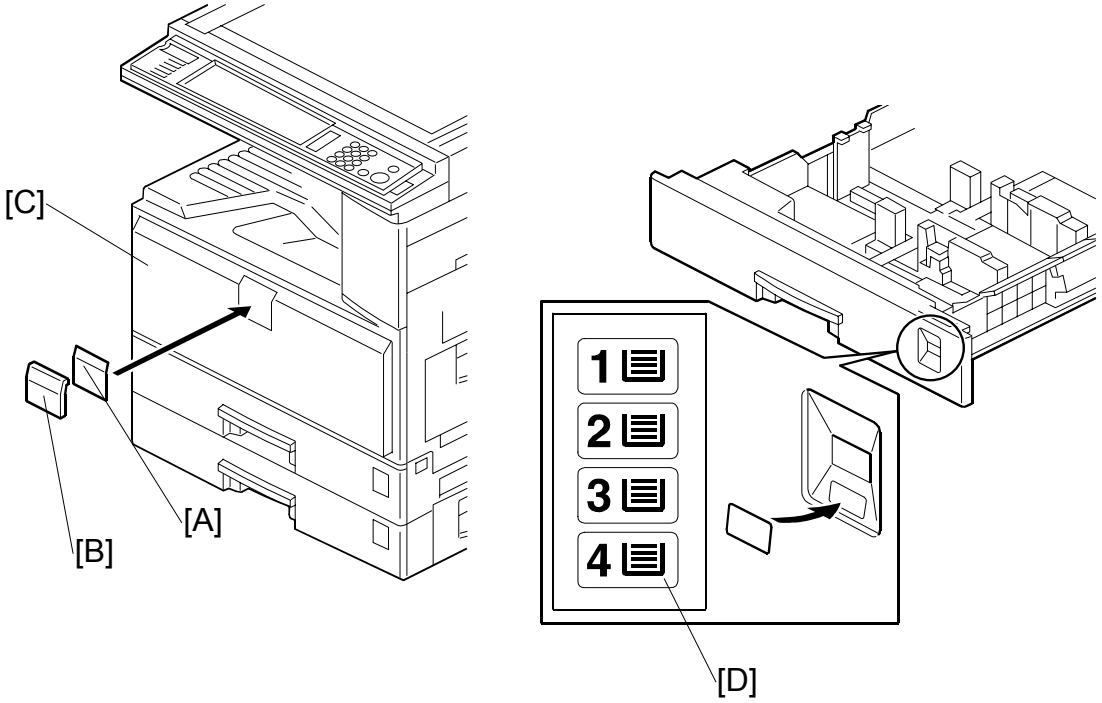
Toner Bottle



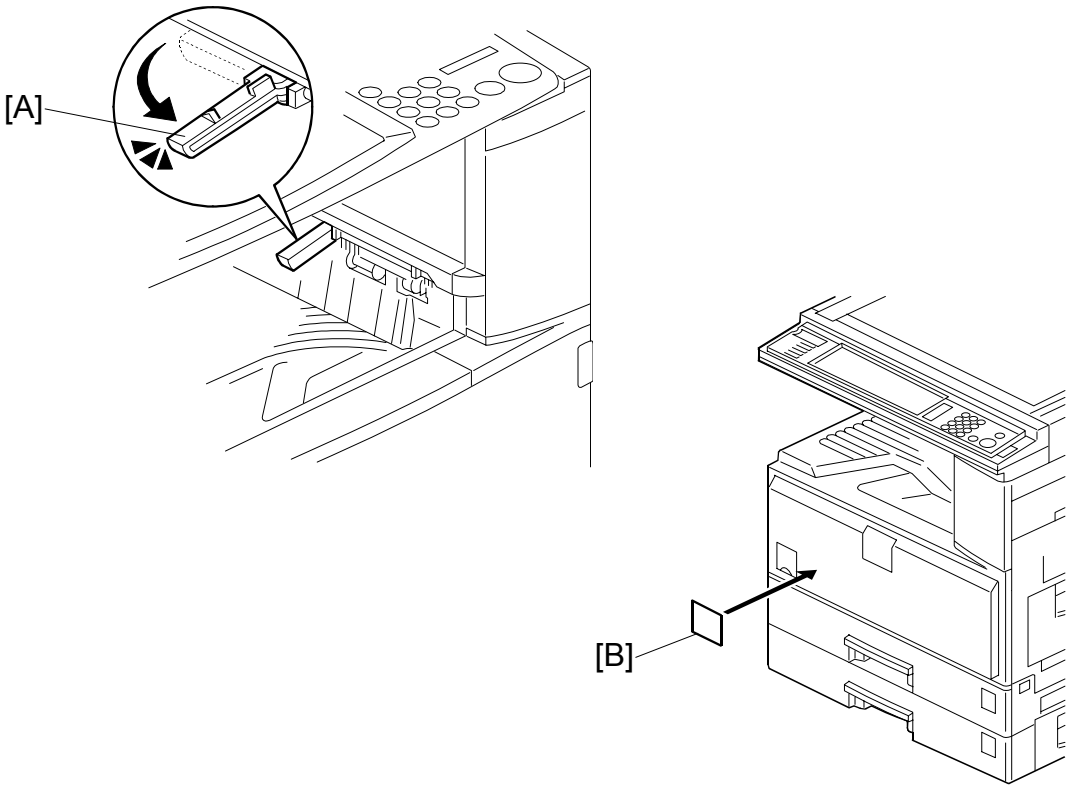


1. Raise the toner bottle holder lever [A], push lever [B] down, and pull the toner bottle holder [C] out.
2. Shake the toner bottle [D].
   NOTE: Do not remove the toner bottle cap [E] until after shaking.
3. Unscrew the bottle cap [E] and insert the bottle into the holder.
   NOTE: Do not touch the inner bottle cap [F].
4. Reposition the holder and press down the holder lever to secure the bottle.
5. Open the right cover.
6. Rotate the green fusing pressure lever [G] to the up position.

Emblem, Decals



1. Attach the emblem [A] and panel [B] to the front door [C].
   NOTE: Push the panel in until the emblem and panel move into their positions. You will hear a click.
2. 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.
3. Attach the appropriate paper tray number decal [D] to each 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.



4. If the optional bridge unit will not be installed, swing the sensor feeler [A] out.
5. Install the optional ARDF or the optional platen cover (see "ARDF Installation" (☛1.5) or "Platen Cover Installation" (☛1.14)).
6. If the HDD will be installed, attach the HDD caution decal [B] to the front cover.
7. Connect the copier and turn the machine on.
8. Go into the SP mode and do SP2801 (Developer Initialization).
9. Do some test copies to make sure that the machine operates correctly.

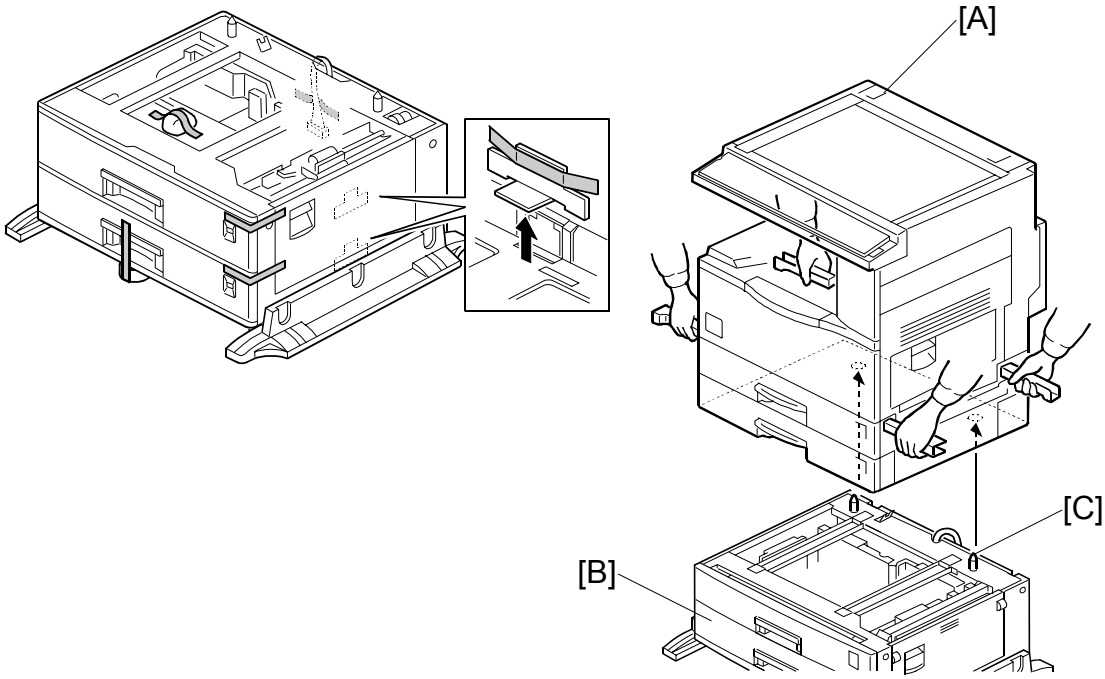
1.3 PAPER TRAY UNIT INSTALLATION

1.3.1 ACCESSORY CHECK

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

Description	Q'ty
1. Securing Bracket	2
2. Screw – M4 x 10	4

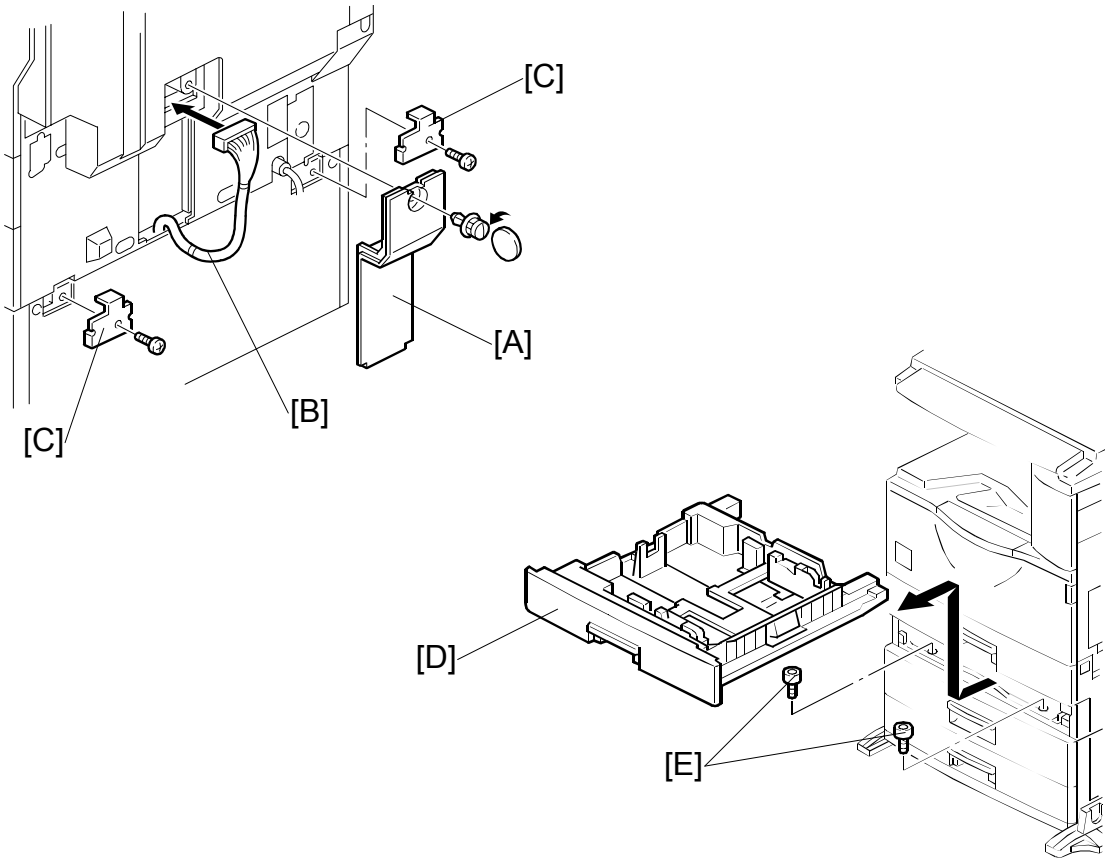
1.3.2 INSTALLATION PROCEDURE



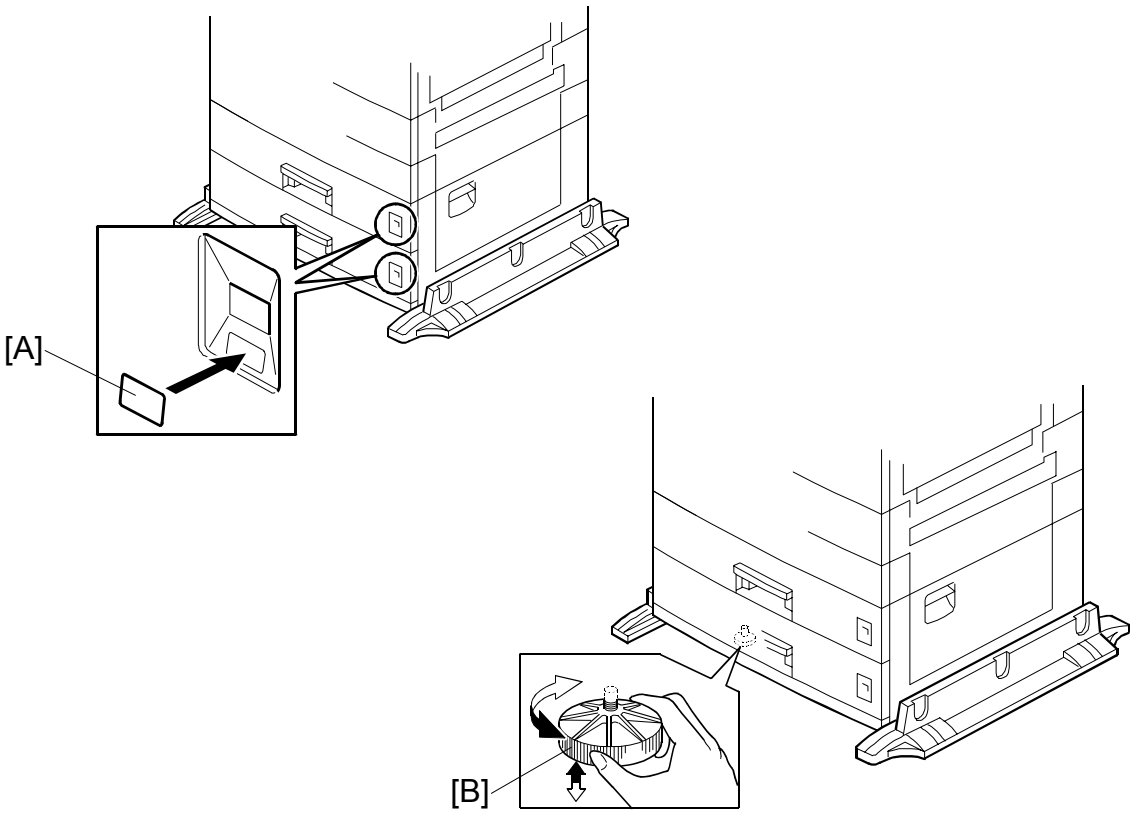
⚠CAUTION

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] (☞ x 1).
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 (☞ x 1 each).
6. Re-install the connector cover.
7. Remove the 2nd paper tray [D] and secure the paper tray unit [E] (☞ x 2).



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. Loads 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.

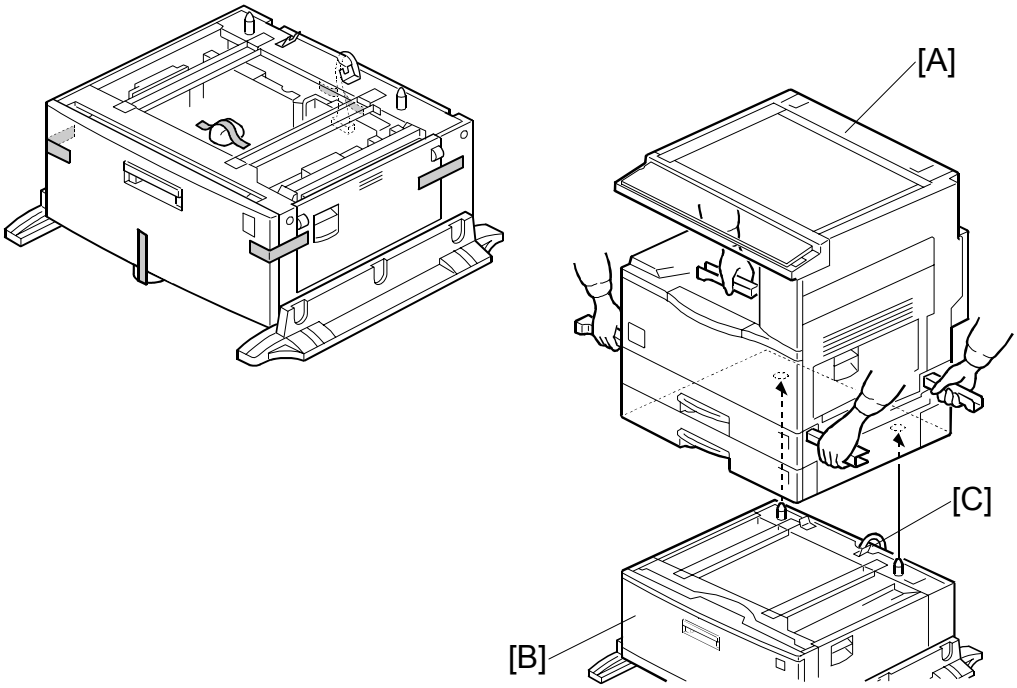
1.4 LCT INSTALLATION

1.4.1 ACCESSORY CHECK

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

Description	Q'ty
1. Securing Bracket	2
2. Screw – M4 x 10	4
3. Paper Size Decal	1

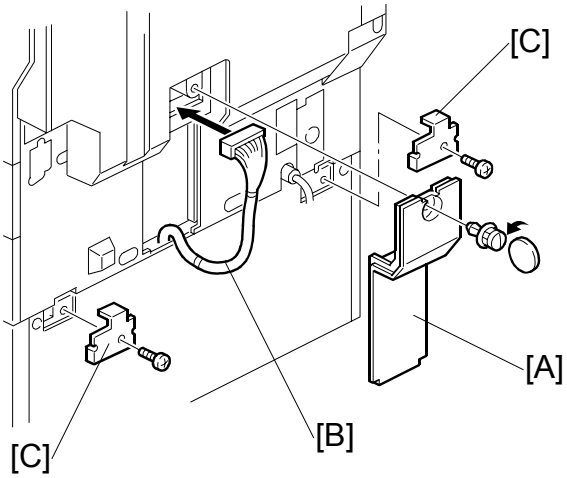
1.4.2 INSTALLATION PROCEDURE

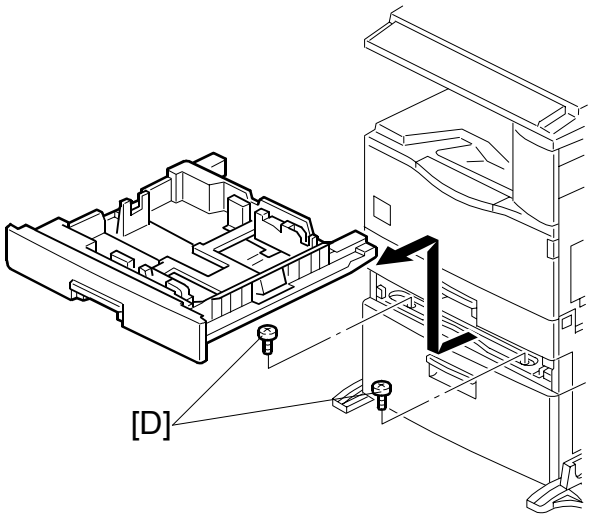


⚠CAUTION

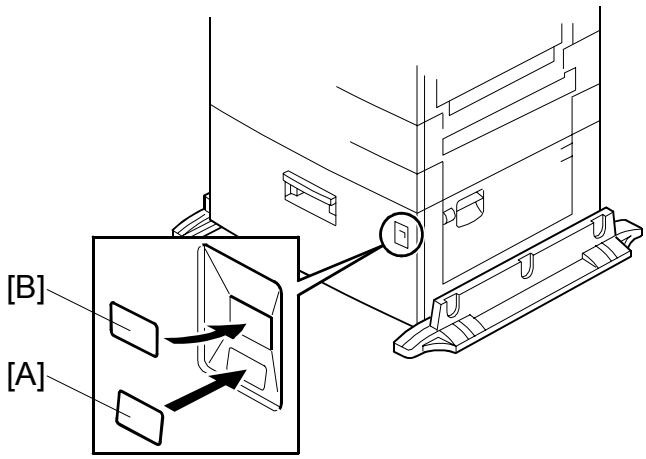
Unplug the machine power cord before starting the following procedure.

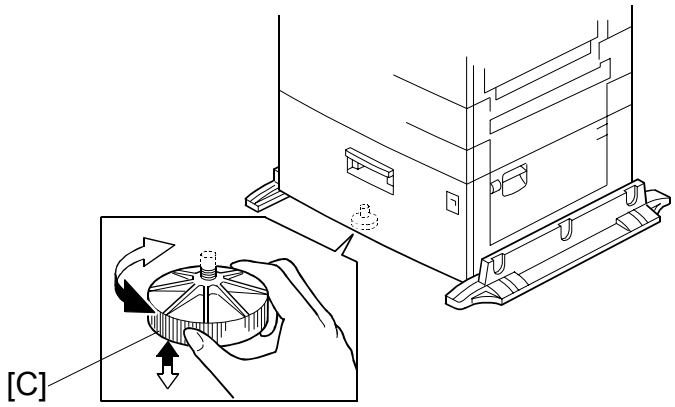
1. Remove the strips of tape.
2. Set the copier [A] on the LCT [B].
   NOTE: When installing the copier, be careful not to pinch the cable [C].





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





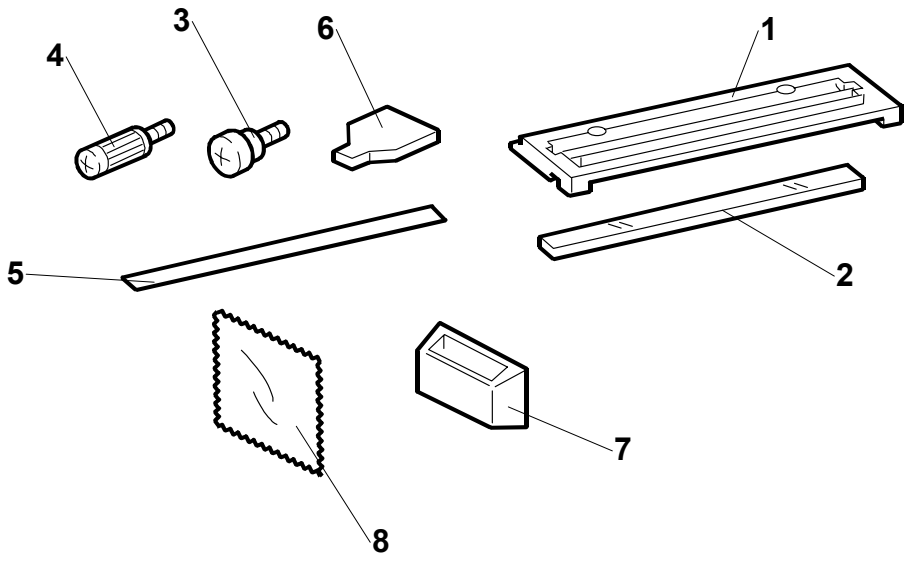
8. Load paper into the LCT.
9. Reinstall the 2nd paper tray and attach the appropriate paper tray number decal [A] and paper size decal [B] to the LCT.
   NOTE: The paper tray number decal is in the accessory box for the main copier.
10. Rotate the adjuster [C] until the machine cannot be pushed across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

1.5 ARDF INSTALLATION

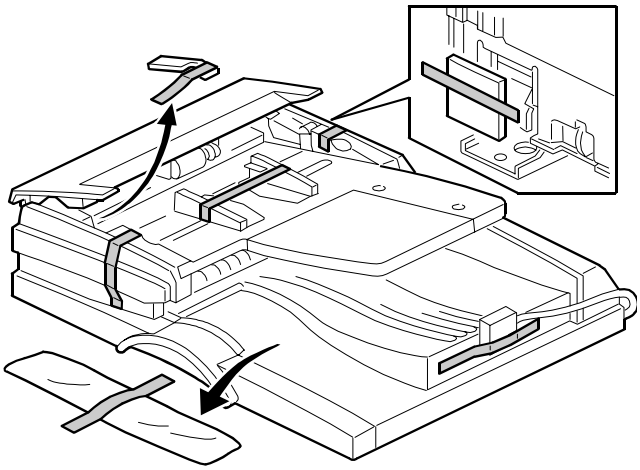
1.5.1 ACCESSORY CHECK

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

Description	Q'ty
1. Scale Guide	1
2. DF Exposure Glass	1
3. Stud Screw	2
4. Knob Screw	2
5. Original Size Decal	2
6. Screwdriver Tool	1
7. Cloth Holder	1
8. Cloth	1
9. Attention Decal – Top Cover	1
10. Attention Decal – Scanner	1



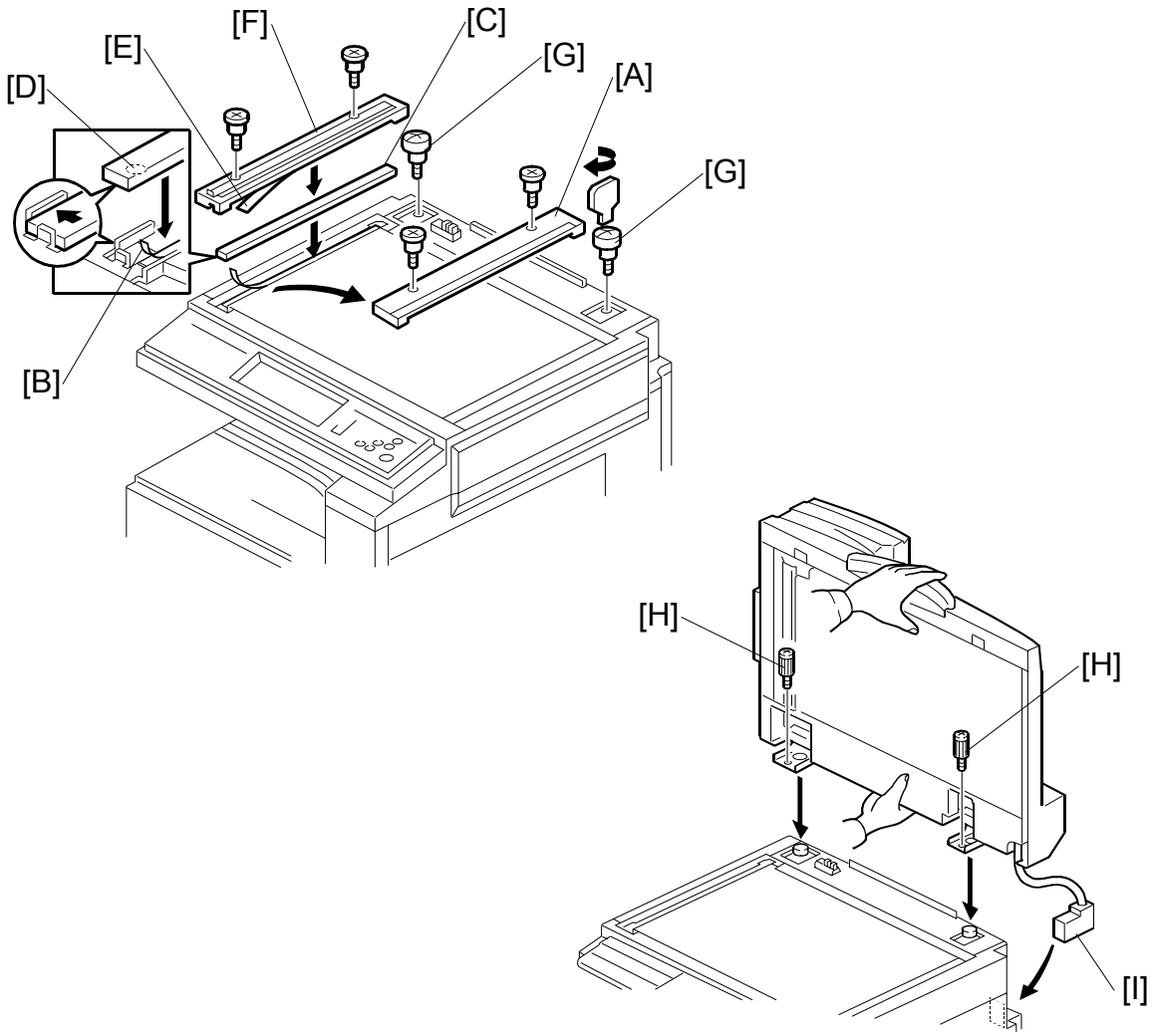
1.5.2 INSTALLATION PROCEDURE



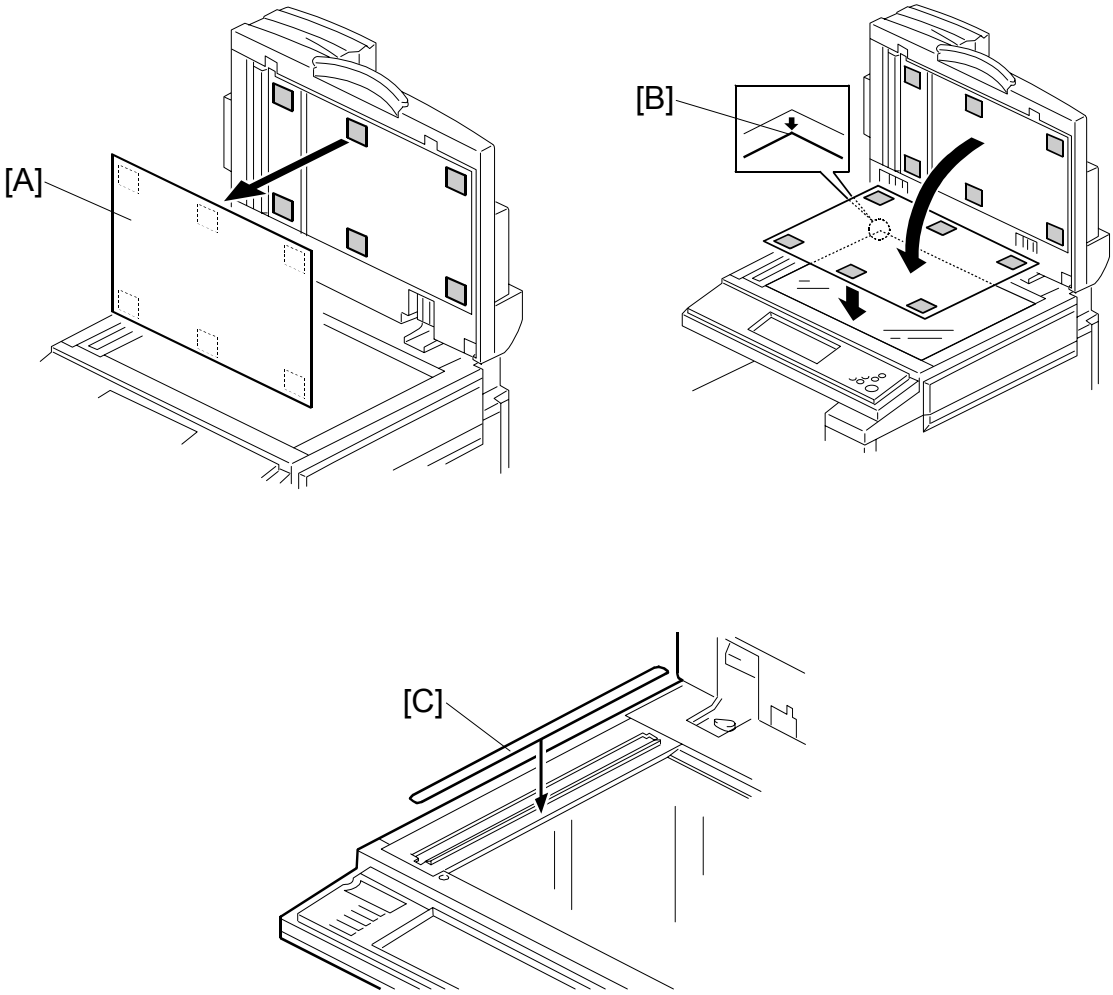
⚠CAUTION

Unplug the copier power cord before starting the following procedure.

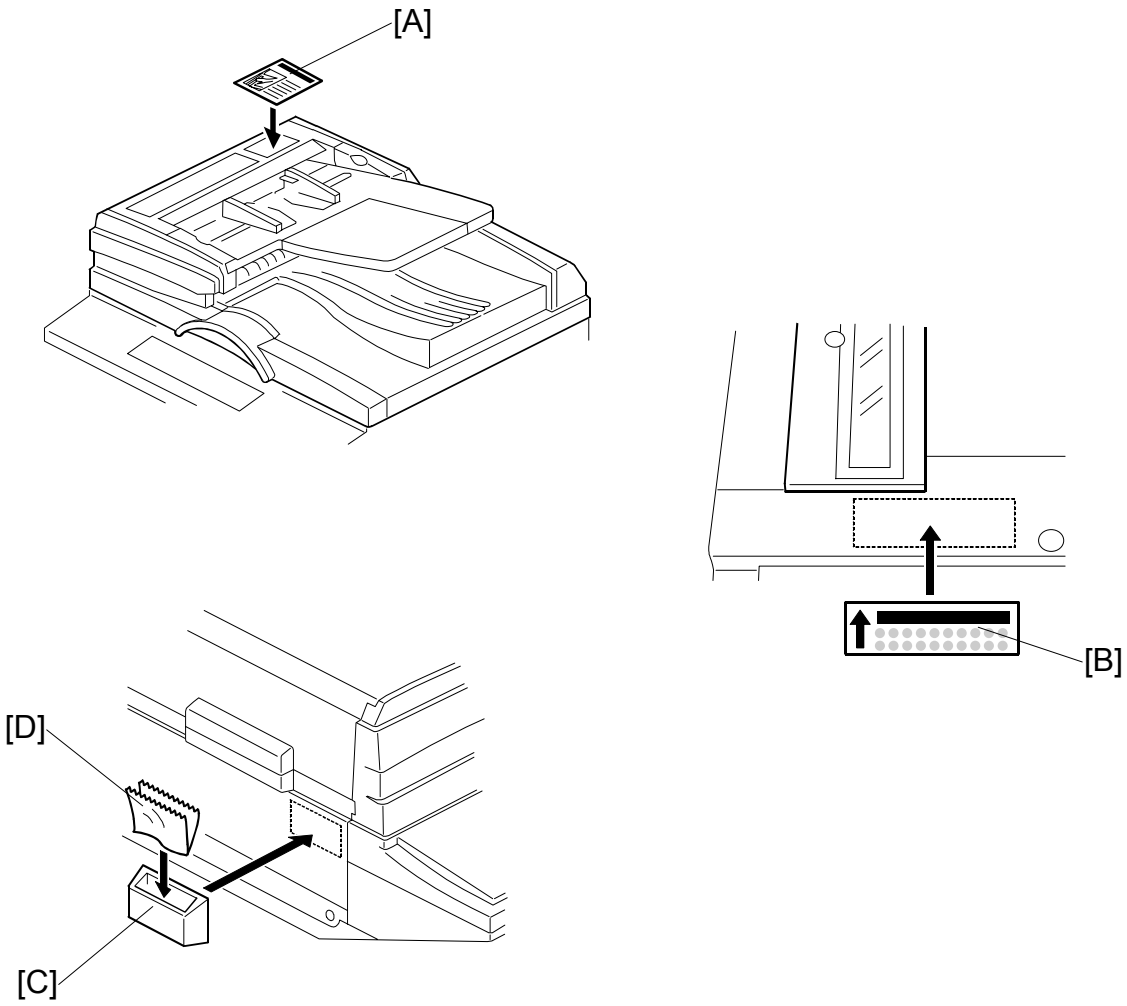
1. Remove the strips of tape.



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



10. Peel off the platen sheet [A] and place it on the exposure glass.
11. Line up the rear left corner of the platen sheet flush against corner [B] on the exposure glass.
12. Close the ARDF.
13. Attach the appropriate scale decal [C] as shown.



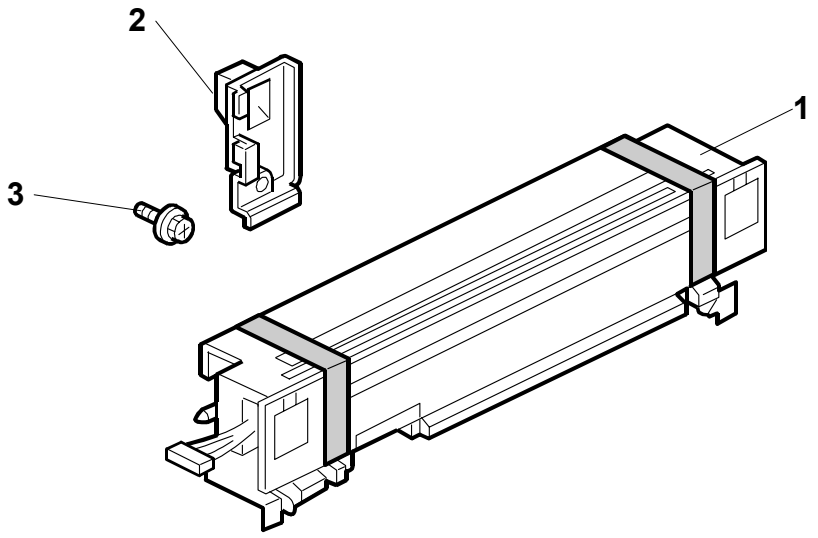
14. Attach the decal [A] to the top cover as shown, choosing the language most suitable for the machine installed.
15. Line up arrow on the decal [B] with the center of the ADF exposure glass as shown, and attach it to the cover. As with step 14, choose the language most suitable for the machine installed.
16. Attach the cloth holder [C] to the left side of the scanner as shown.
17. Insert the cloth [D] in the cloth holder.
18. Turn the main power switch on. Then check if the document feeder works properly.
19. Make a full size copy. Then check to make sure the registrations (side-to-side and leading edge) and image skew are correct. If they are not, adjust the registrations and image skew (refer to the service manual).

1.6 INTERCHANGE UNIT INSTALLATION

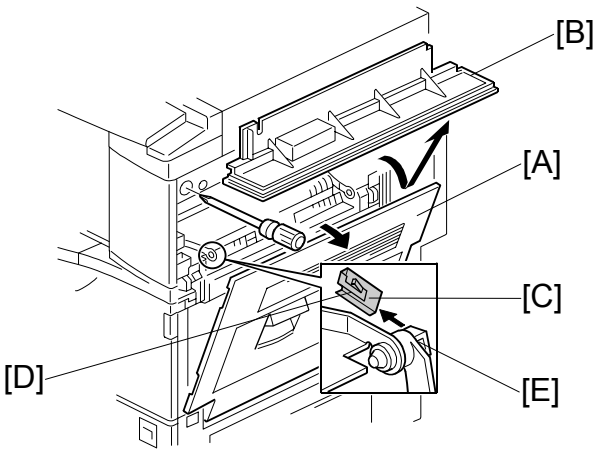
1.6.1 COMPONENT CHECK

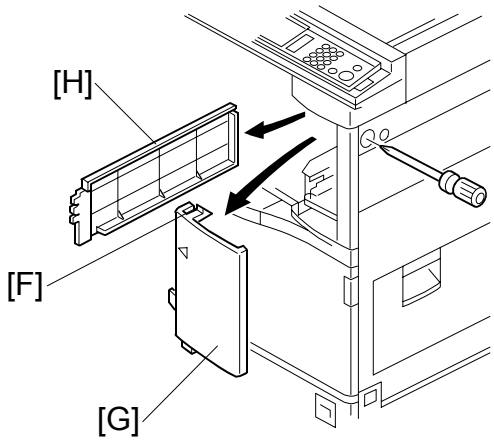
Check the quantity and condition of the components against the following list.

Description	Q'ty
1. Interchange Unit	1
2. Connector Cover	1
3. Tapping Screw M3 x 8	1



1.6.2 INSTALLATION PROCEDURE





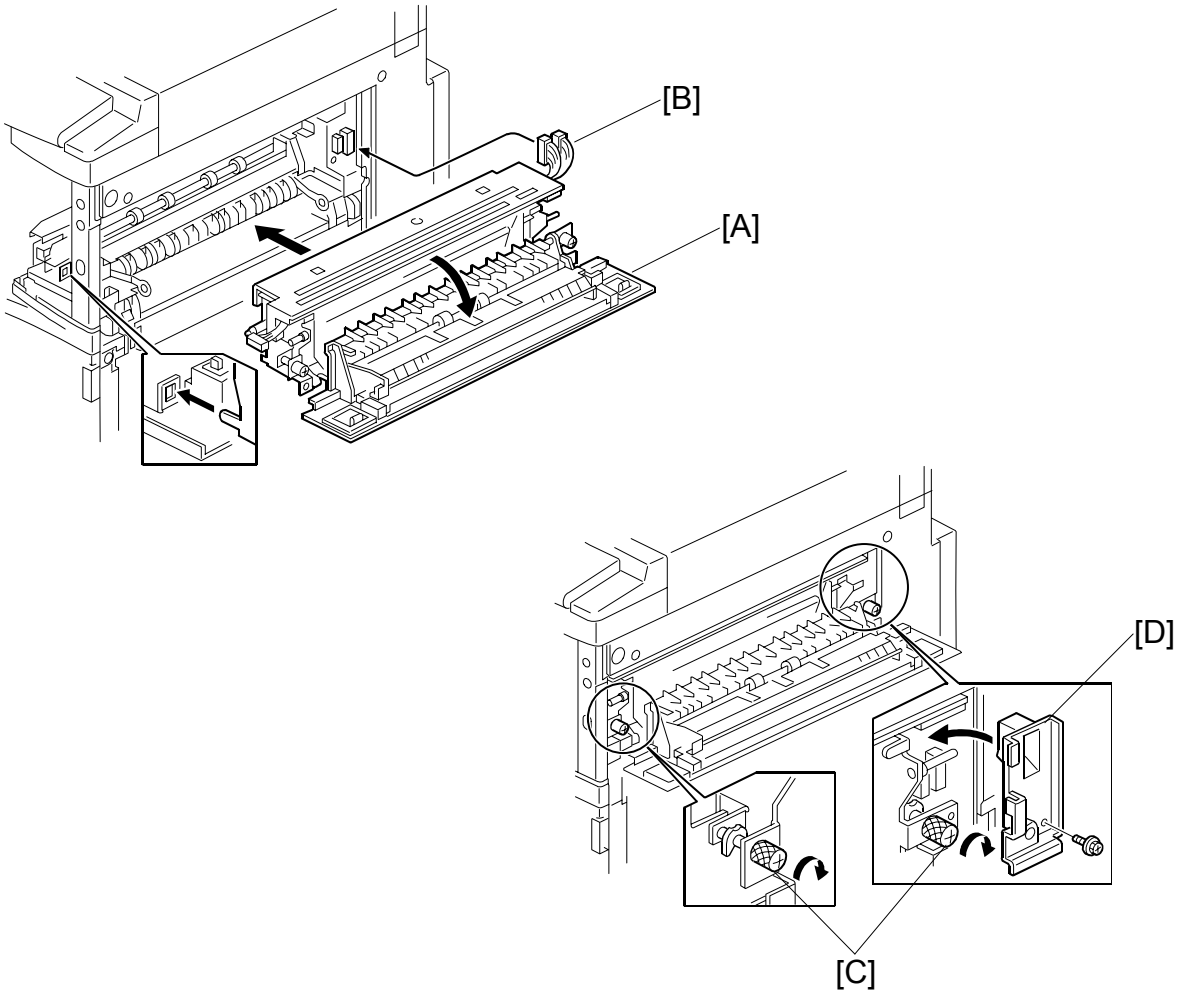
⚠CAUTION

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 (B413) 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].



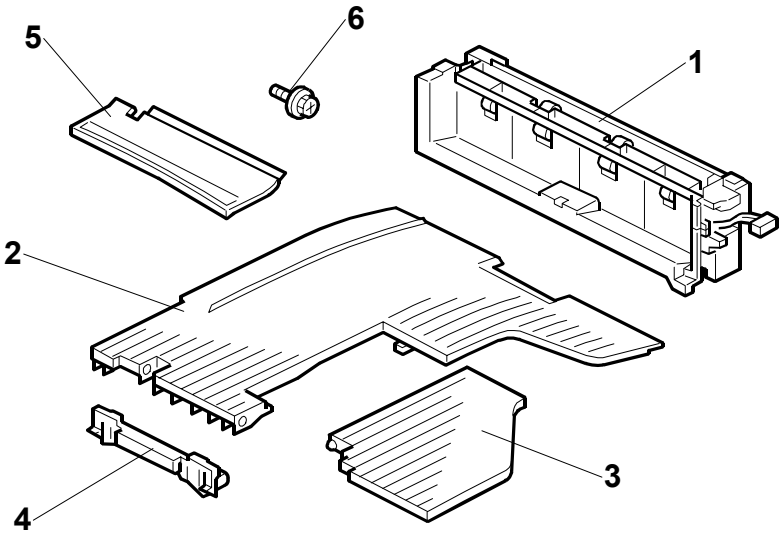
8. Open the cover [A] of the interchange unit.
9. Install the interchange unit (2 connectors) [B].
10. Secure the interchange unit with the knob screws [C].
11. Attach the connector cover [D] (🔩 x 1).

1.7 1-BIN TRAY UNIT INSTALLATION

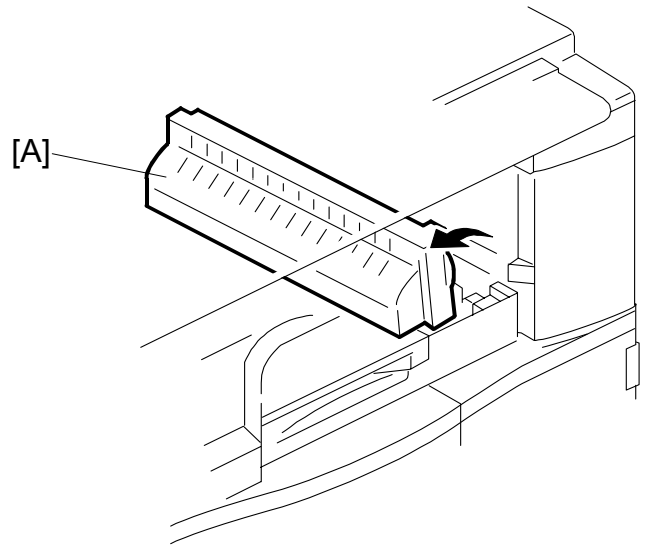
1.7.1 COMPONENT CHECK

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

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 M3 x 8	1



1.7.2 INSTALLATION PROCEDURE

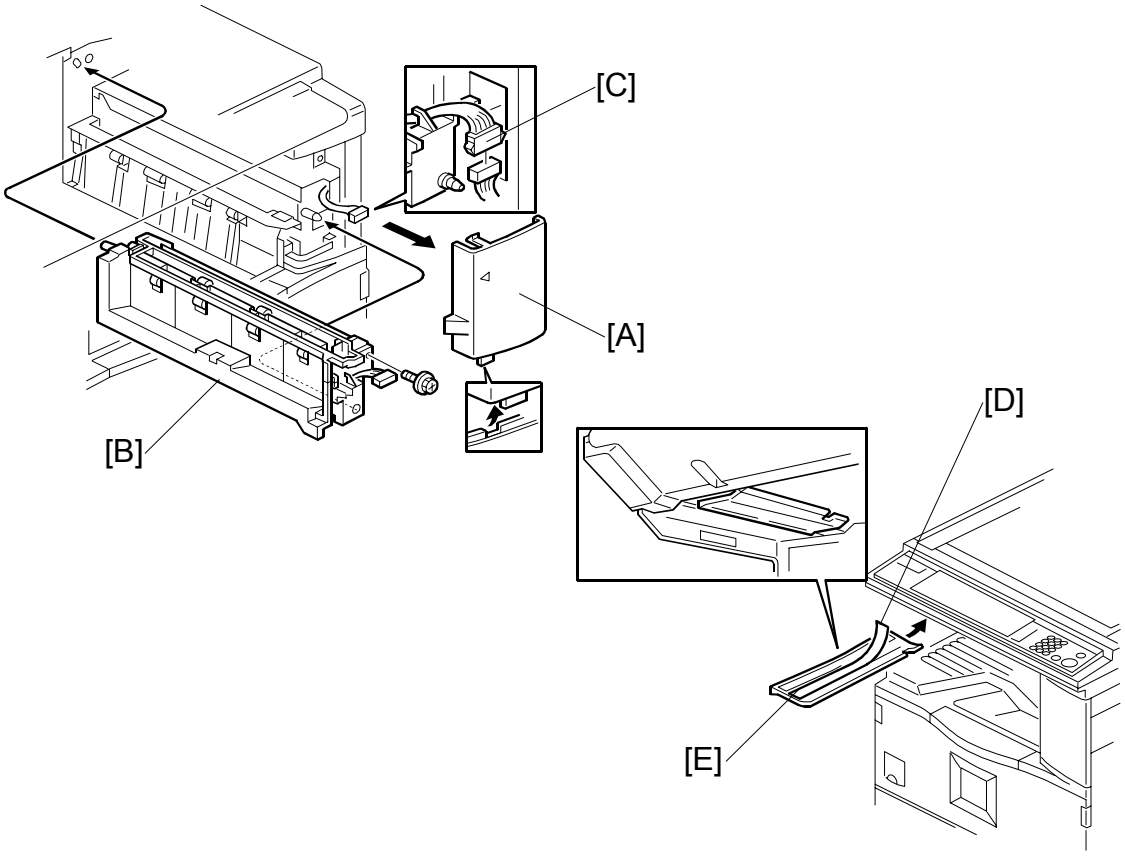


⚠CAUTION

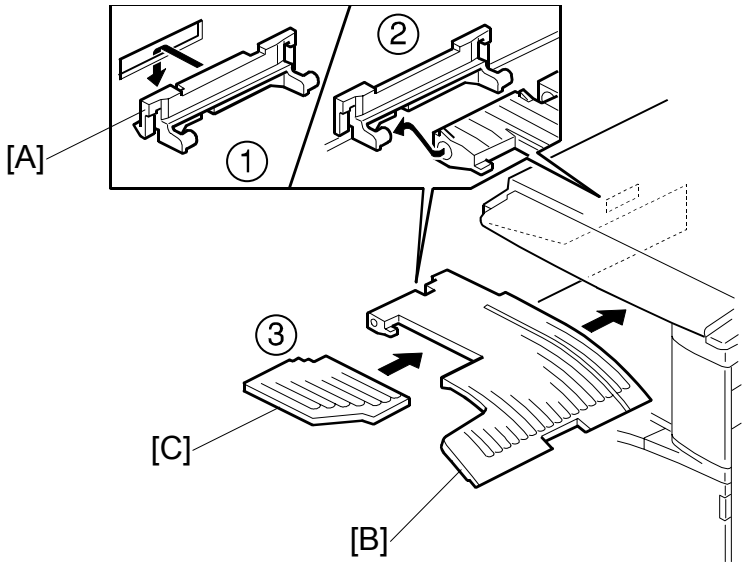
Unplug the copier power cord before starting the following procedure.

NOTE: Before installing this 1-bin tray unit, the optional interchange unit (B416) must be installed.

1. Remove all tapes.
2. If the optional bridge unit 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] (☞ x 1).
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.



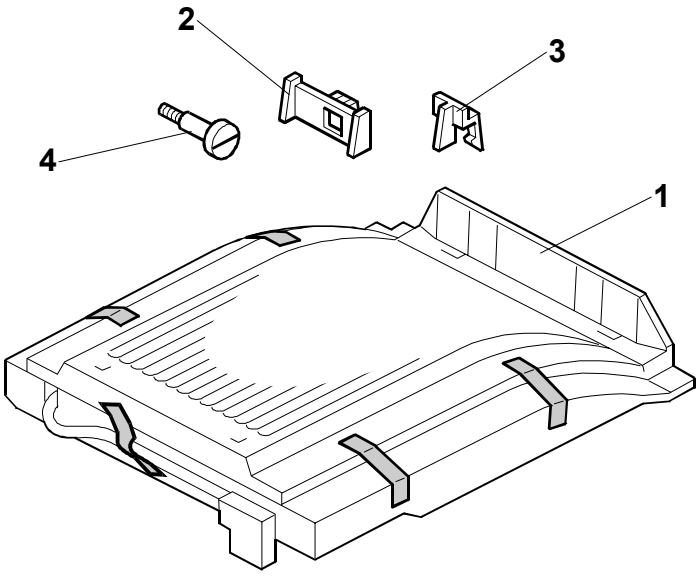
8. Install the tray guide [A].
9. Install the tray [B].
10. Install the sub-tray [C].
11. Turn on the main power switch and check the 1-bin tray unit operation.

1.8 SHIFT TRAY

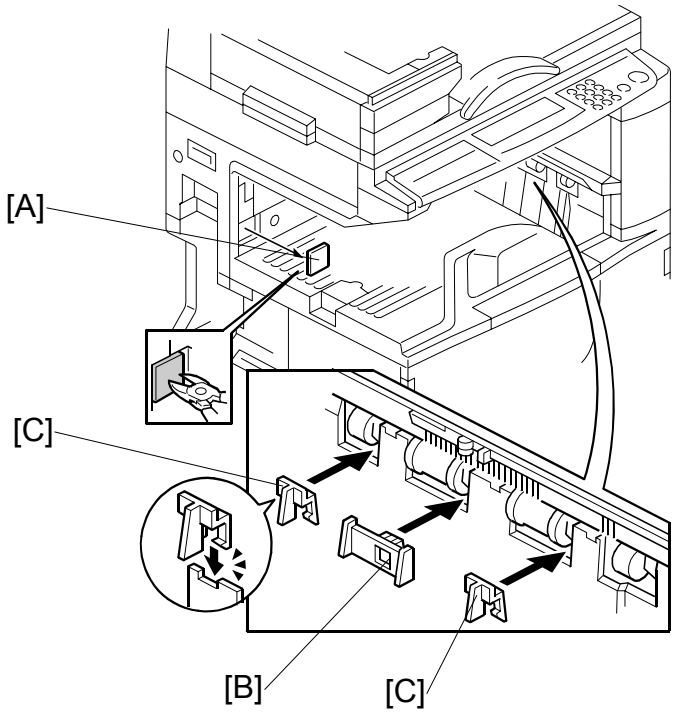
1.8.1 COMPONENT CHECK

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

Description	Q'ty
1. Shift Tray Unit	1
2. Paper Guide - Large	1
3. Paper Guide - Small	2
4. Stepped Screw	1

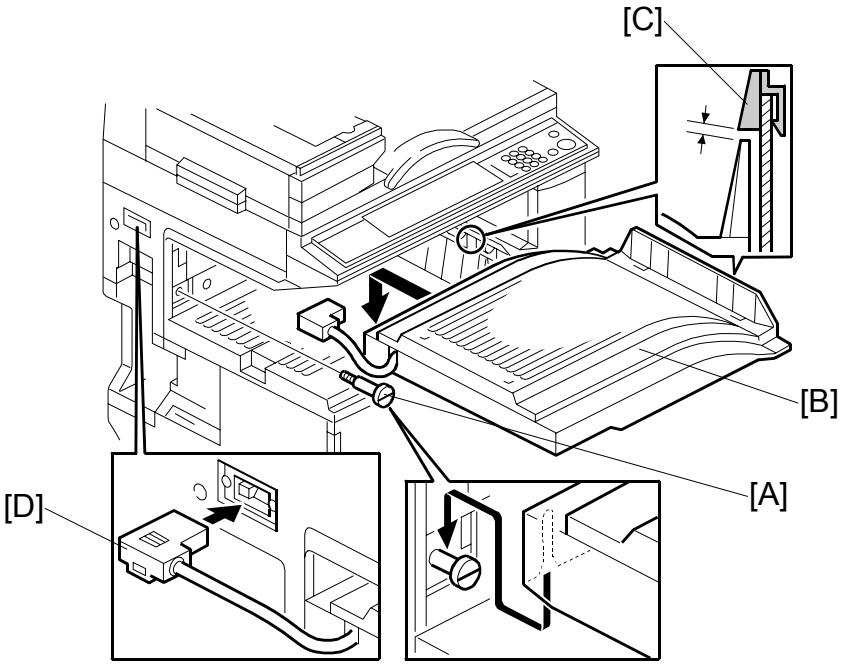


1.8.2 INSTALLATION PROCEDURE



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

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



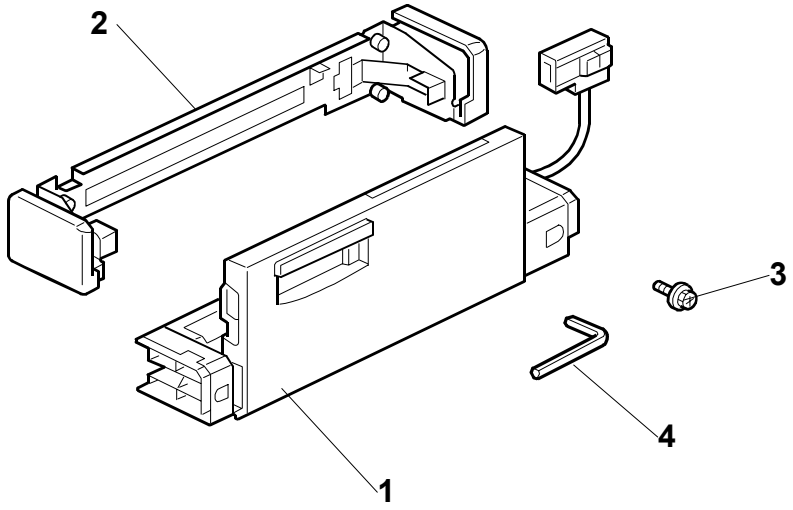
4. Install the stepped screw [A].
5. Install the shift tray unit [B], as shown.
   NOTE: 1) Set the shift tray on the stepped screw.
   2) The shift tray must be installed under the paper guide [C] installed in step 3.
6. Connect the cable [D] to the copier.
7. Turn on the main power switch.
8. Check the shift tray operation.

1.9 BY-PASS FEED UNIT INSTALLATION

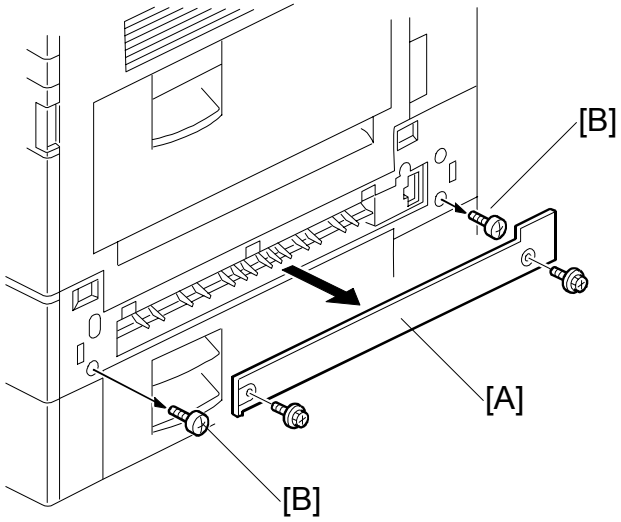
1.9.1 COMPONENTS CHECK

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

Description	Q'ty
1. By-pass Tray Unit	1
2. Unit Holder	1
3. Tapping Screw	2
4. Allen Key	1



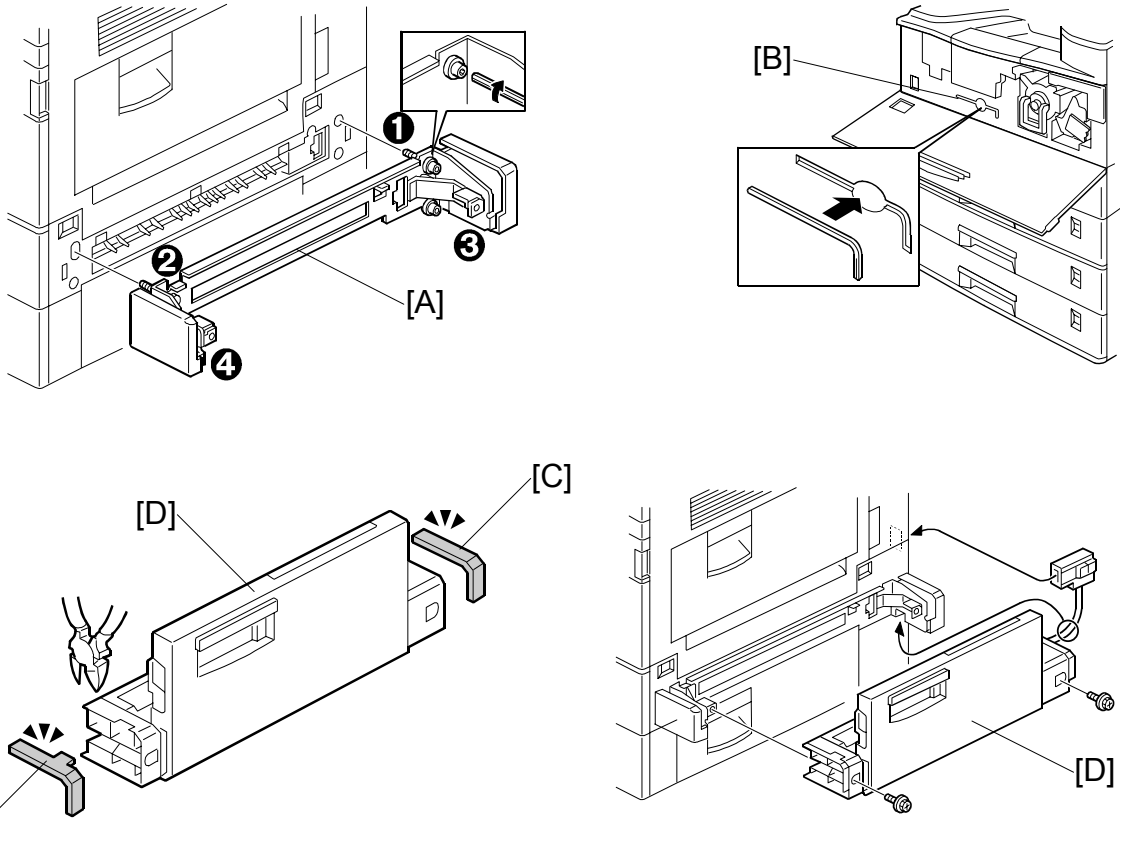
1.9.2 INSTALLATION PROCEDURE



⚠CAUTION

Unplug the copier power cord before starting the following procedure.

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



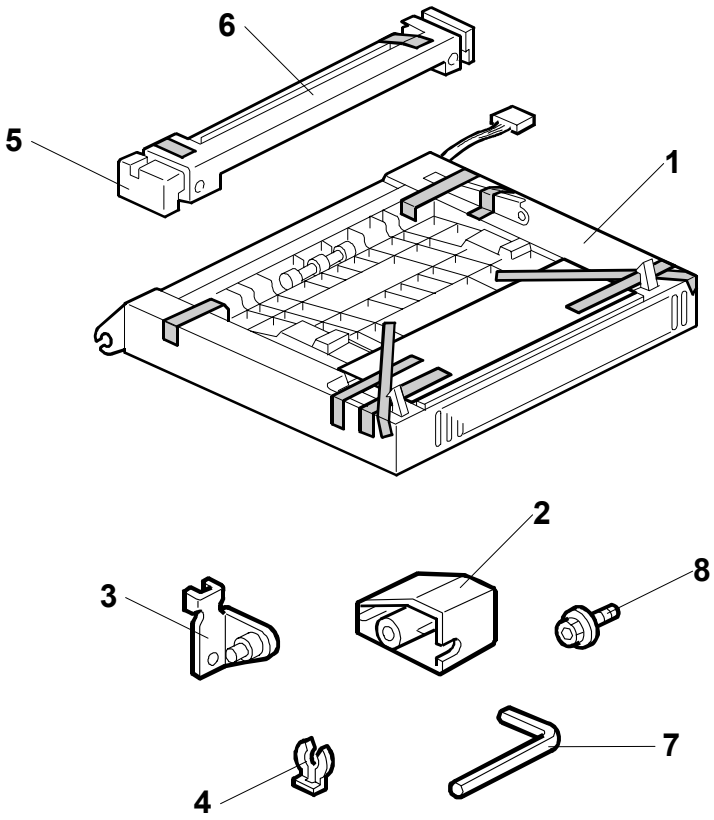
3. Install the unit holder [A] using the Allen key (x 4).
   NOTE: 1) Make sure that the four screws are tightened in the proper order, as shown above. Otherwise, when the optional duplex unit (B414) is installed, it will not properly lock in place.
   2) After securing the unit, store the Allen key in the inner cover [B] for future use.
4. **If the optional duplex unit (B414) will be installed:** Remove the indicated parts [C] of the by-pass tray unit [D].
5. Install the by-pass tray unit (x 2, x 1).
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.

1.10 DUPLEX UNIT INSTALLATION

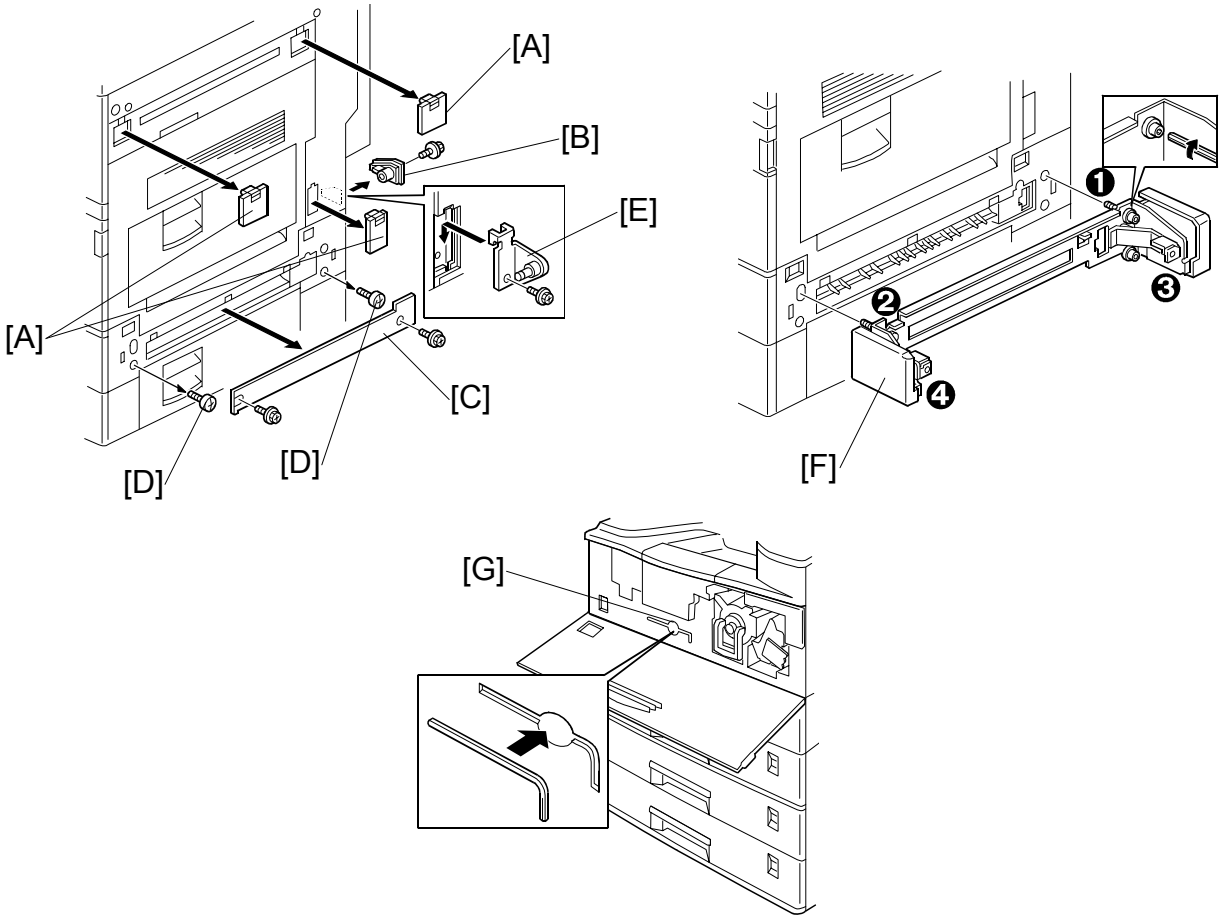
1.10.1 ACCESSORY CHECK

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

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 - M3 x 8	4



1.10.2 INSTALLATION PROCEDURE



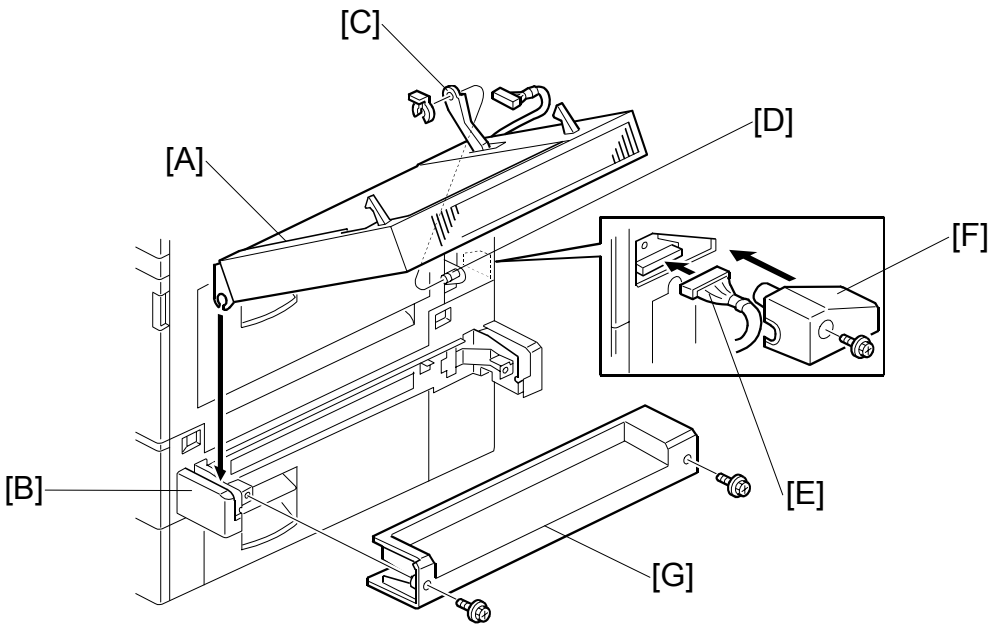
⚠CAUTION

Unplug the copier power cord before starting the following procedure.

NOTE: Before installing the duplex unit, the optional interchange unit (B416) must be installed.

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

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.



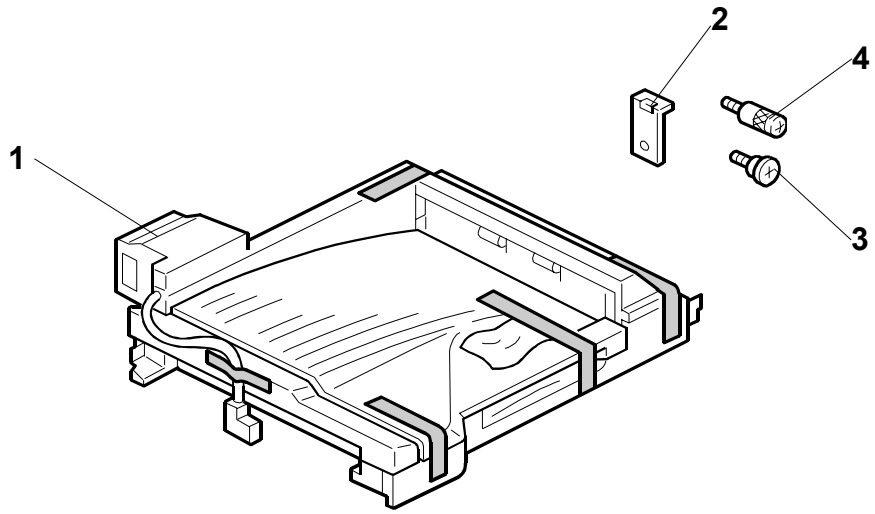
6. Set the duplex unit [A] on the unit holder [B] or on the by-pass tray unit if it has already been installed.
7. Attach the link [C] to the shaft [D] and secure it with the clip.
8. Connect the cable [E] and install the connector cover [F] (🔩 x 1).
9. **If the by-pass tray has already been installed,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

1.11 BRIDGE UNIT INSTALLATION

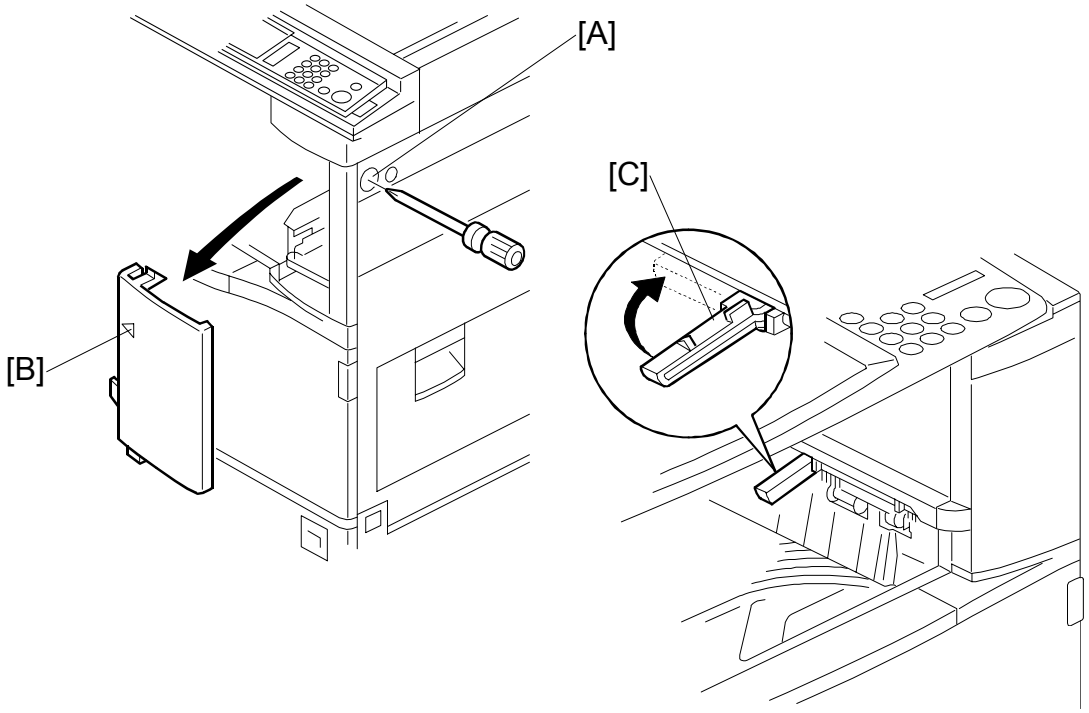
1.11.1 ACCESSORY CHECK

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

Description	Q'ty
1. Bridge Unit	1
2. Securing Plate	1
3. Shoulder Screw	1
4. Knob Screw	1



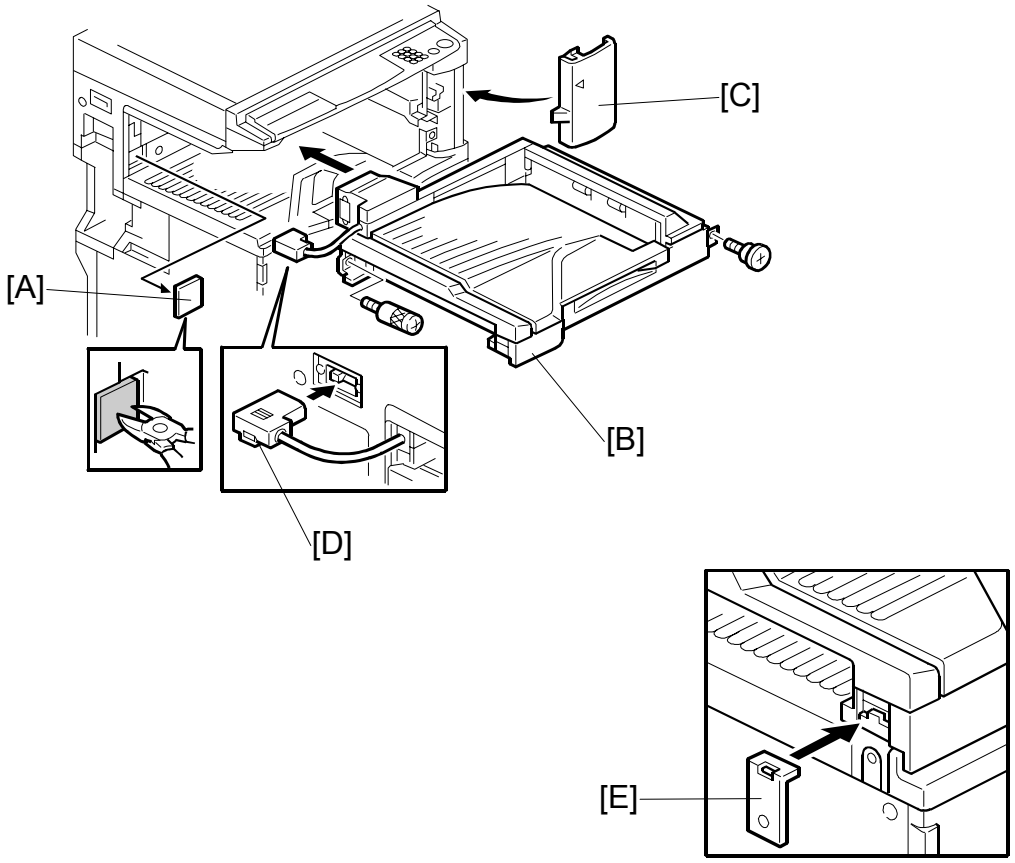
1.11.2 INSTALLATION PROCEDURE



⚠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.

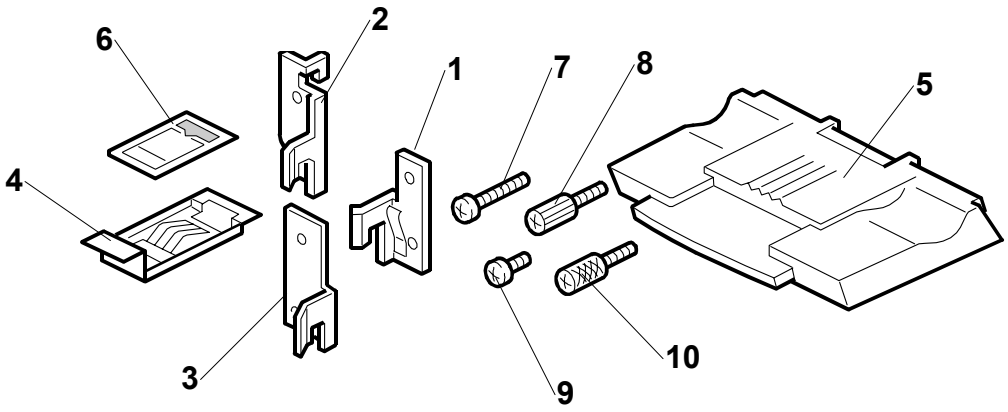


4. Remove the cover [A].
5. Install the bridge unit [B] (x 1 shoulder, x 1 knob).
6. Reinstall the front right cover [C].
7. Connect the cable [D] to the main machine.
8. Attach the securing plate [E], as shown.
   NOTE: Do not attach it with a screw; this is done when securing the front stand for the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

1.12 1000-SHEET FINISHER INSTALLATION

1.12.1 ACCESSORY CHECK

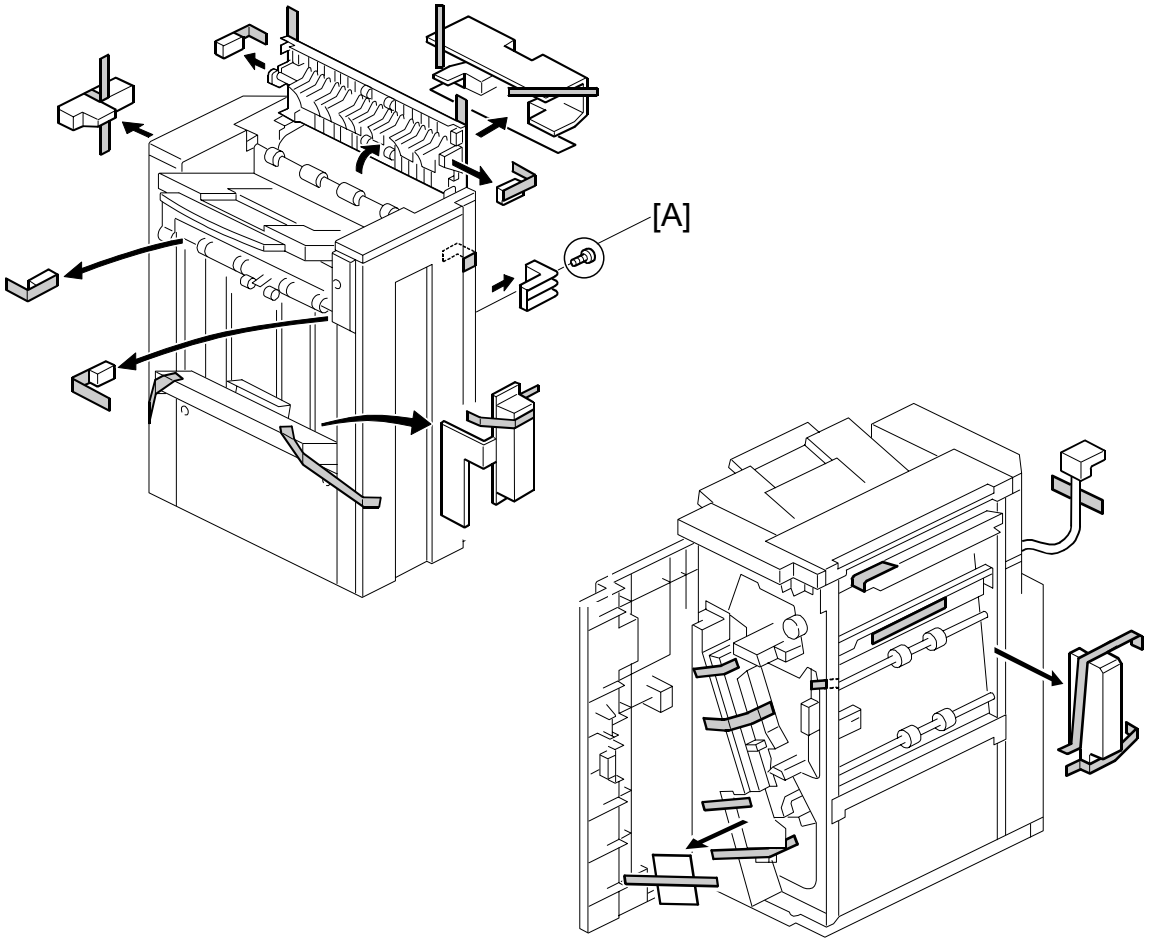
Check the quantity and condition of the accessories against the following list.



No.	Description	Q'ty	For B022/B027/B031/ B089/B093/B097/ B205/B209	For B051/B052/ B156/B220	For B079/B082/ B135/B138
1	Front Joint Bracket	1	✓	---	✓
2	Rear Joint Bracket	1	✓	---	---
3	Rear Joint Bracket	1	---	---	✓
4	Grounding Plate	1	✓	---	✓
5	Copy Tray	1	✓	✓	✓
6	Staple Position Decal	1	✓	✓	✓
7	Screw - M4 x 14	4	✓ (Use 3)	---	✓ (Use 4)
8	Knob Screw - M4 x 10	1	✓	✓	✓
9	Screw - M3 x 8	1	✓	---	✓
10	Knob Screw - M3 x 8	1	✓	✓	✓

✓ = Necessary, --- = Not necessary

1.12.2 INSTALLATION PROCEDURE



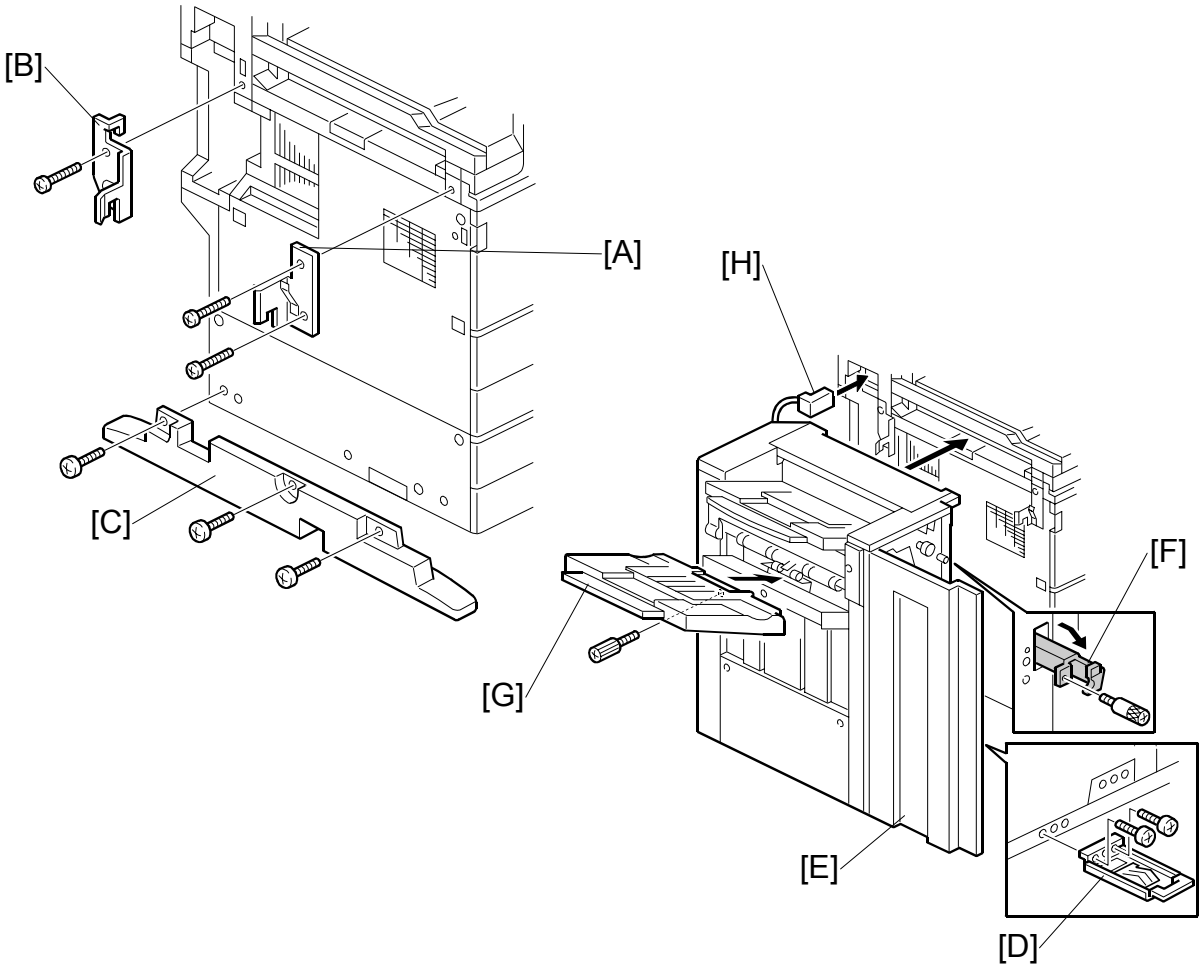
⚠CAUTION

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

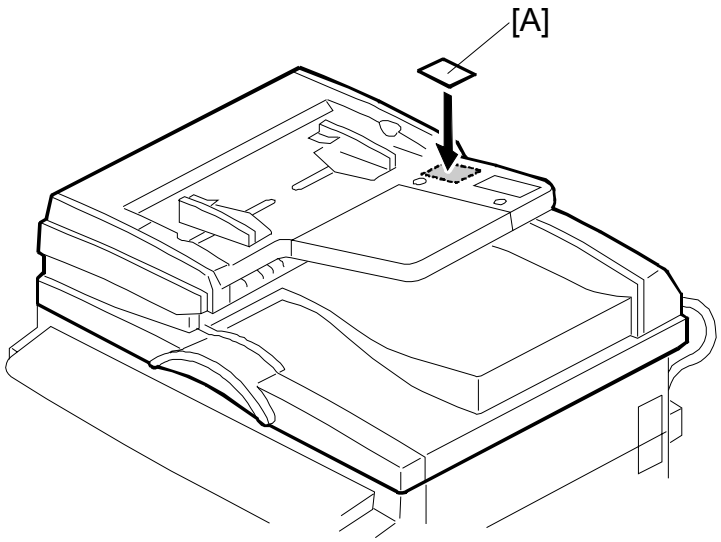
The following options must be installed before you install this finisher:

- Bridge Unit (B417)
- Paper Tray Unit (B390) or LCT (B391)

1. Unpack the finisher and remove the tapes.
   NOTE: Be sure to keep screw [A]. It will be needed to secure the grounding plate in step 4.



2. Install the front joint bracket [A] (☞ x 2 M4 x 17) and rear joint bracket [B] (☞ x 1 M4 x 17).
3. Remove the left stand [C] (☞ x 3)
4. Install the lower grounding plate [D] on the finisher (☞ x 2 M3 x 8).
   NOTE: Use the screw removed in step 1 and the screw from the accessory box.
5. Open the front door [E]. Then pull the locking lever [F].
6. Align the finisher on the joint brackets, and lock it in place by pushing the locking lever.
7. Secure the locking lever (☞ x 1 knob M3 x 8) and close the front door.
8. Install the copy tray [G] (☞ x 1 knob M4 x 10).
9. Connect the finisher cable [H] to the main machine.



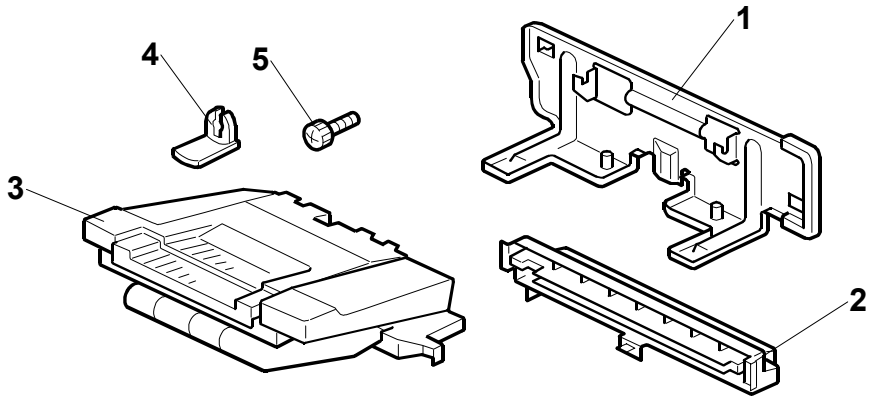
10. Attach the staple position decal [A] to the ARDF as shown.
11. Turn on the ac switch and check the finisher operation.

1.13 500-SHEET FINISHER (B442) INSTALLATION

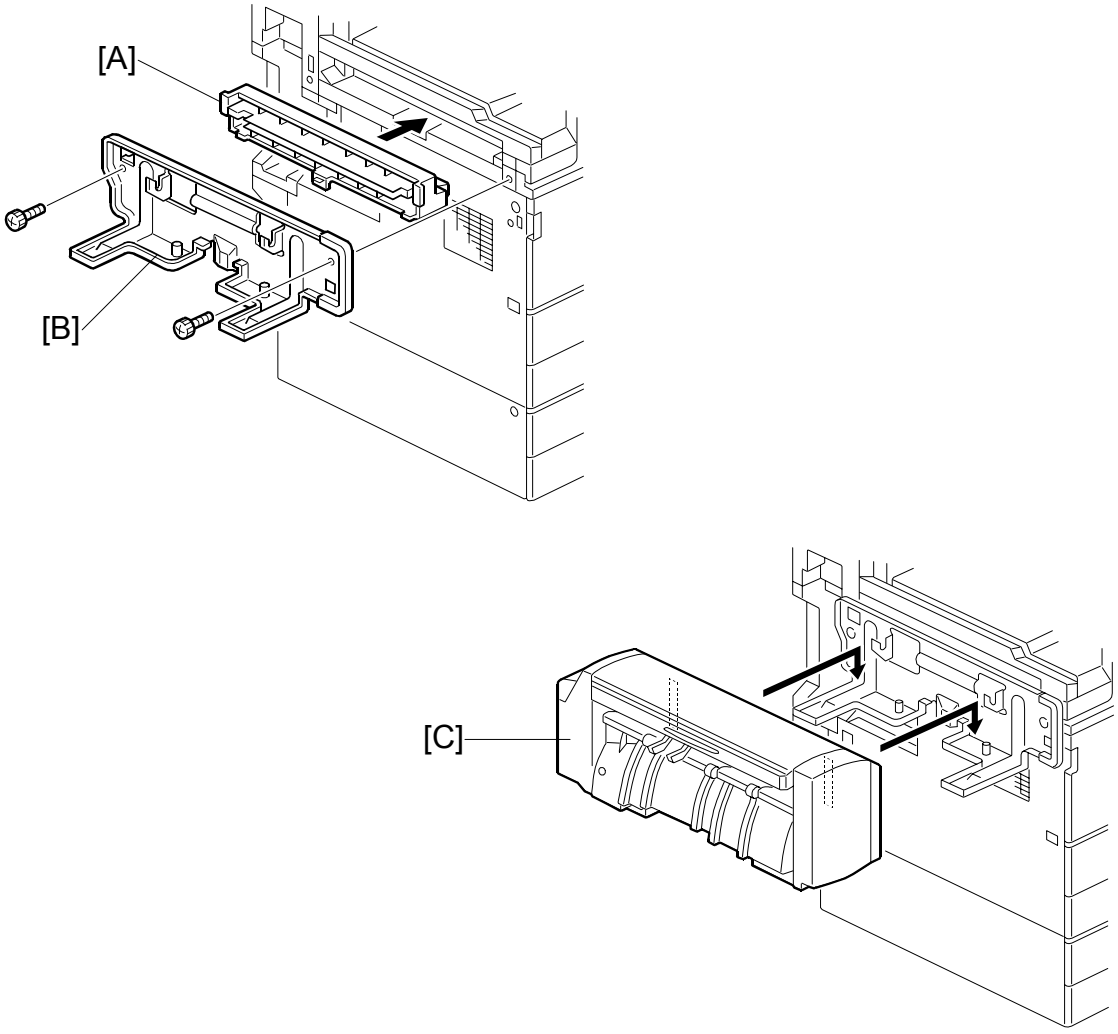
1.13.1 ACCESSORY CHECK

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

Description	Q'ty
1. Unit Holder	1
2. Entrance Guide	1
3. Output Tray	1
4. Snap Ring	2
5. Knob Screw	2



1.13.2 INSTALLATION PROCEDURE

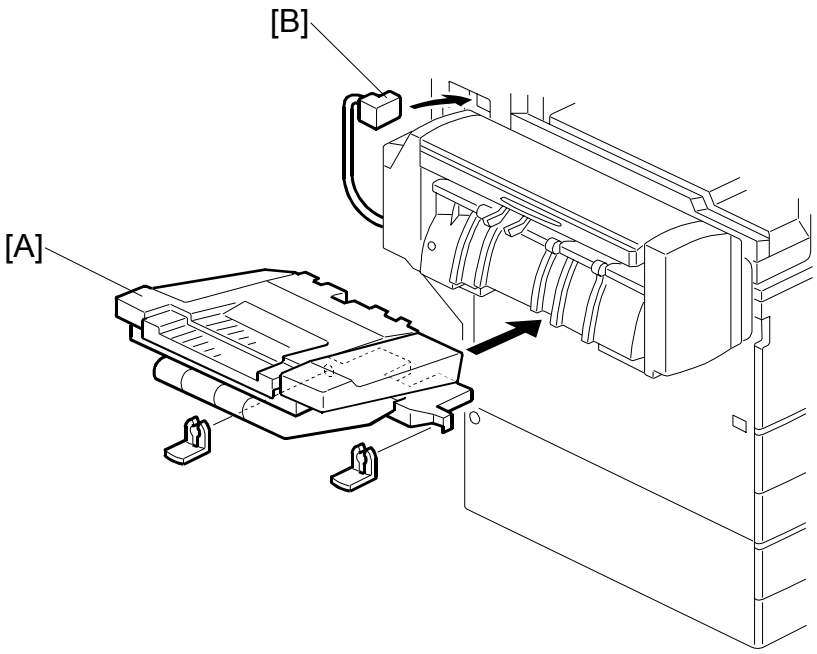


⚠CAUTION

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

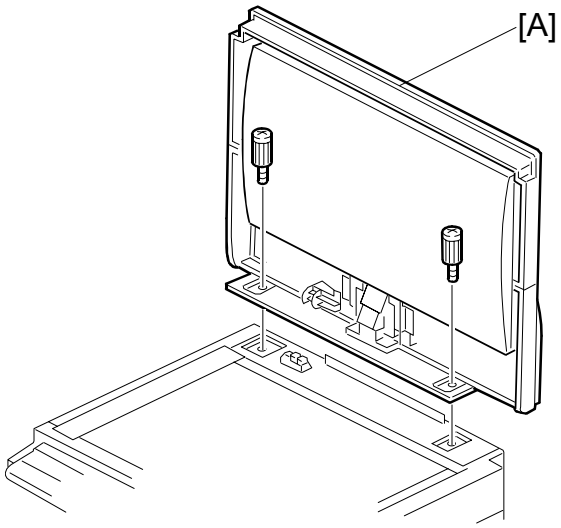
NOTE: Before installing the 500-sheet finisher, the optional bridge unit (B417) must be installed.

1. Unpack the finisher and remove the tapes.
2. Install the entrance guide [A].
3. Install the unit holder [B] (🔩 x 2).
4. Install the 500-sheet finisher [C].



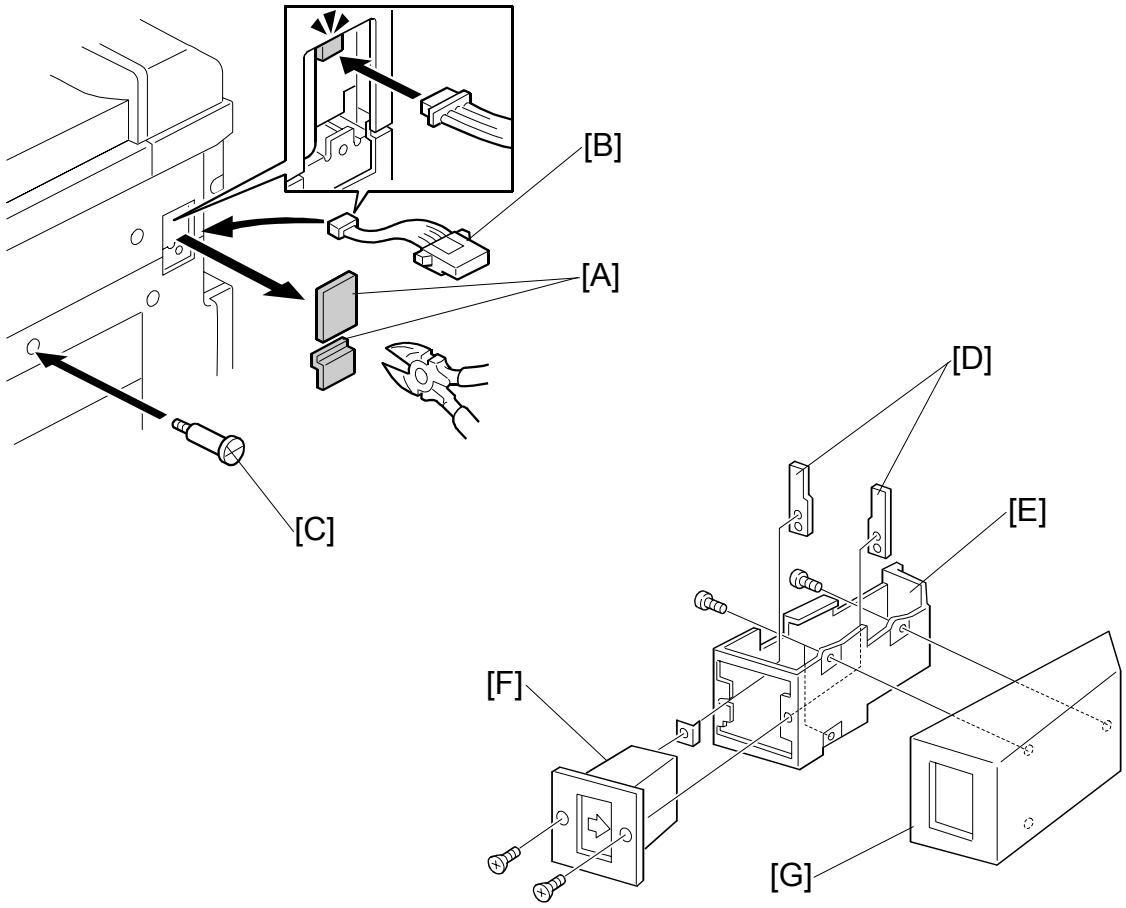
5. Install the output tray [A] as shown (2 snap rings).
6. Connect the finisher cable [B].
7. Turn on the main power switch and check the finisher operation.

1.14 PLATEN COVER (B406)



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

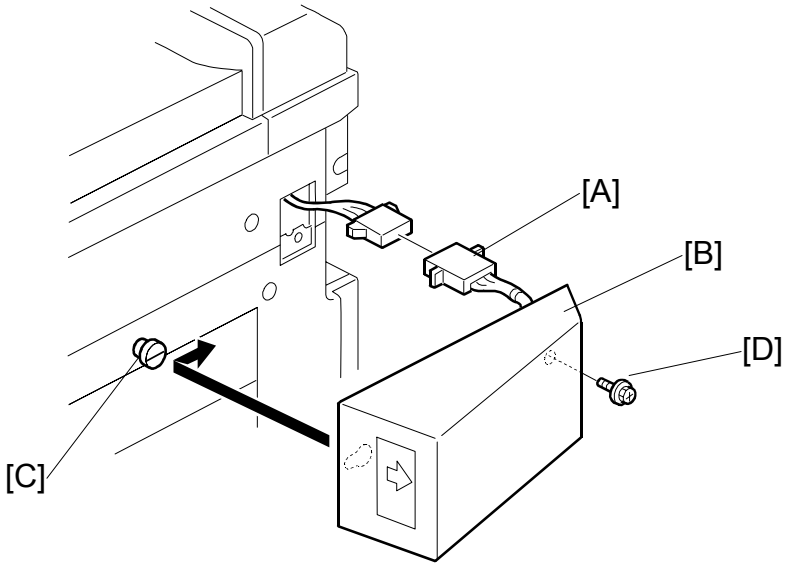
1.15 KEY COUNTER



⚠CAUTION

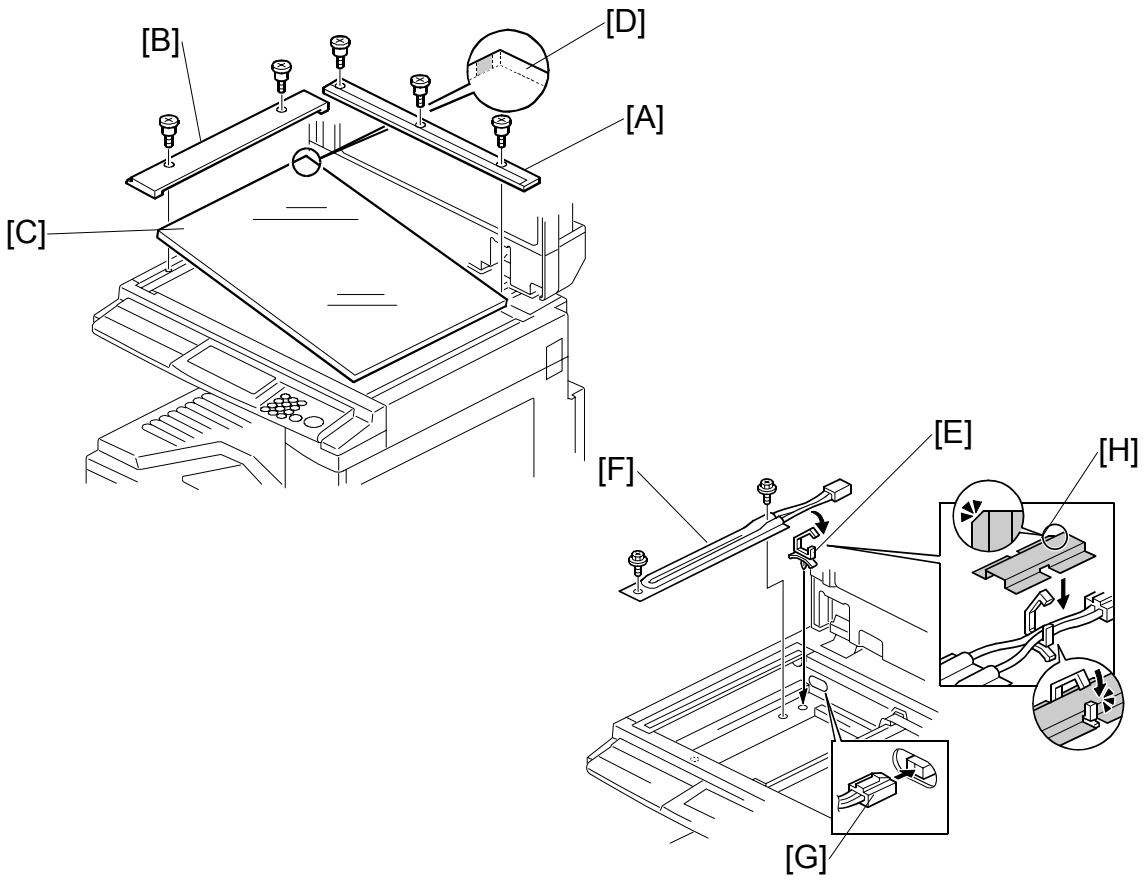
Unplug the machine power cord before starting the following procedure.

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 (🔩 x 2).
6. Install the key counter cover [G] (🔩 x 2).



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. Use the User Tools to enable the counter function for the following modes:
    - Copy mode
    - Document server mode
    - Fax mode
    - Scanner mode
    - Printer mode

1.16 OPTICS ANTI-CONDENSATION HEATER

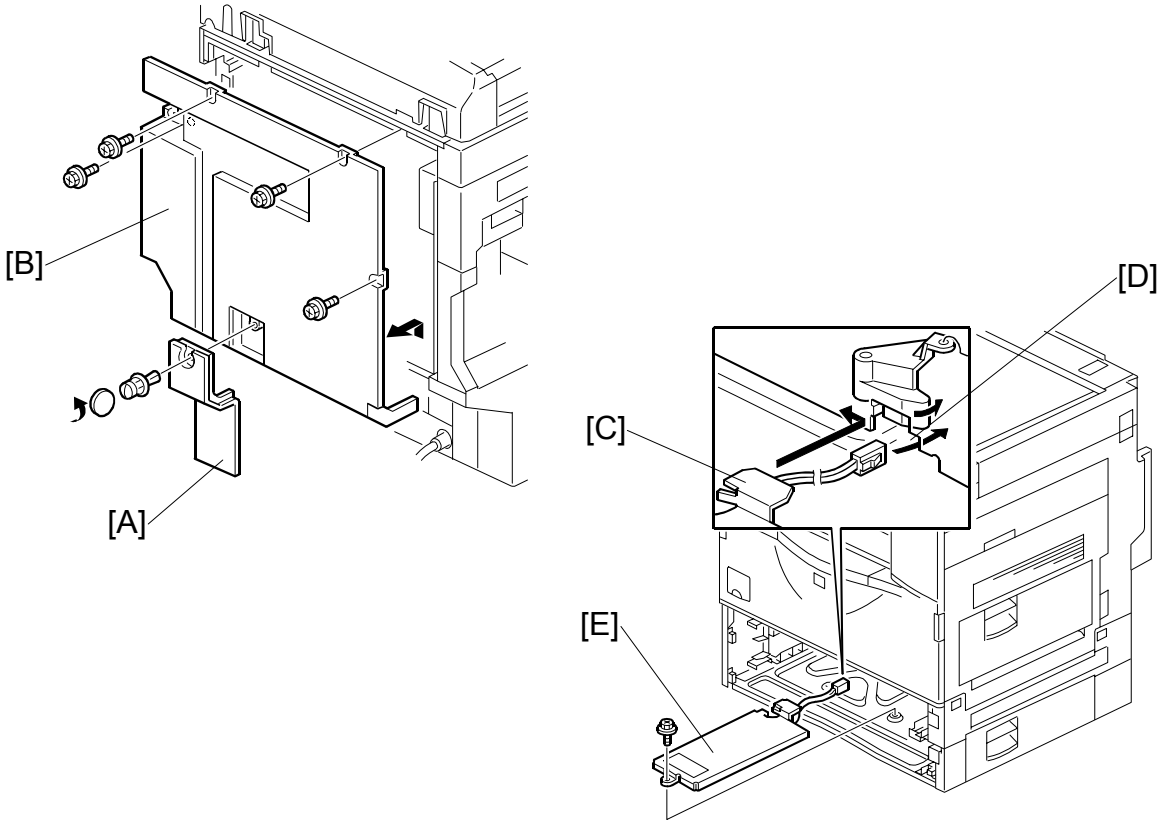


⚠CAUTION

Unplug the machine power cord before starting the following procedure.

1. Remove the rear scale [A] (🔩 x 3), left scale [B] (🔩 x 2), 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] (🔩 x 2).
5. Join the connectors [G]
6. Attach the cable cover [H], as shown.

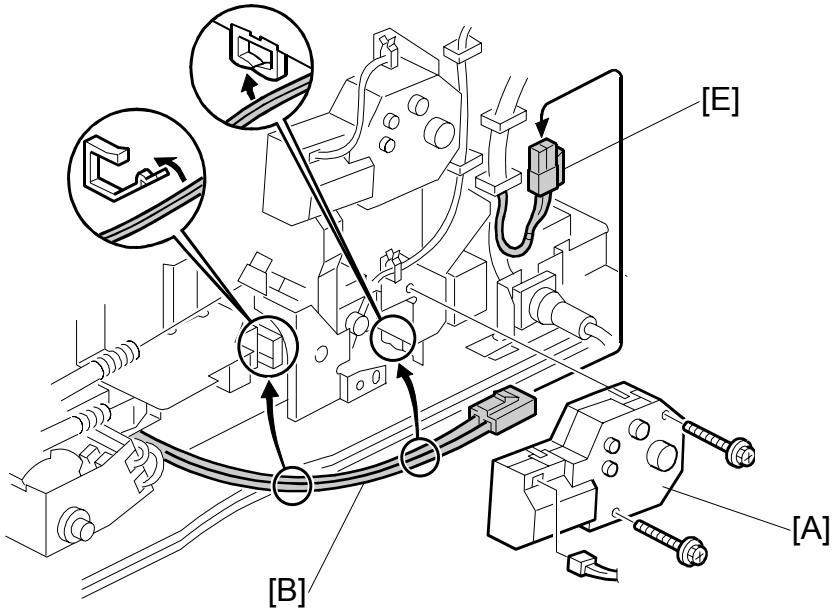
1.17 TRAY HEATER

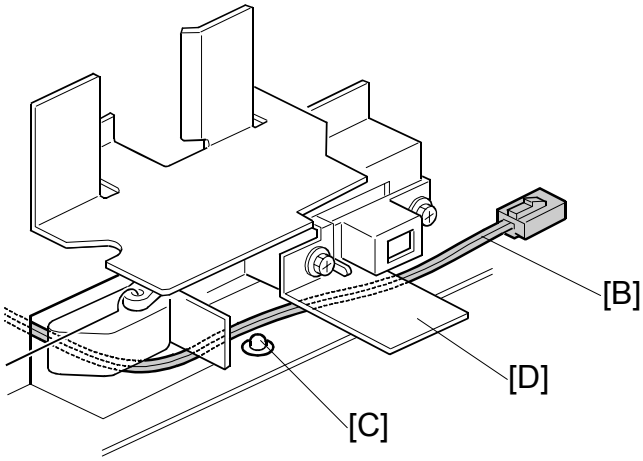


⚠CAUTION

Unplug the machine power cord before starting the following procedure.

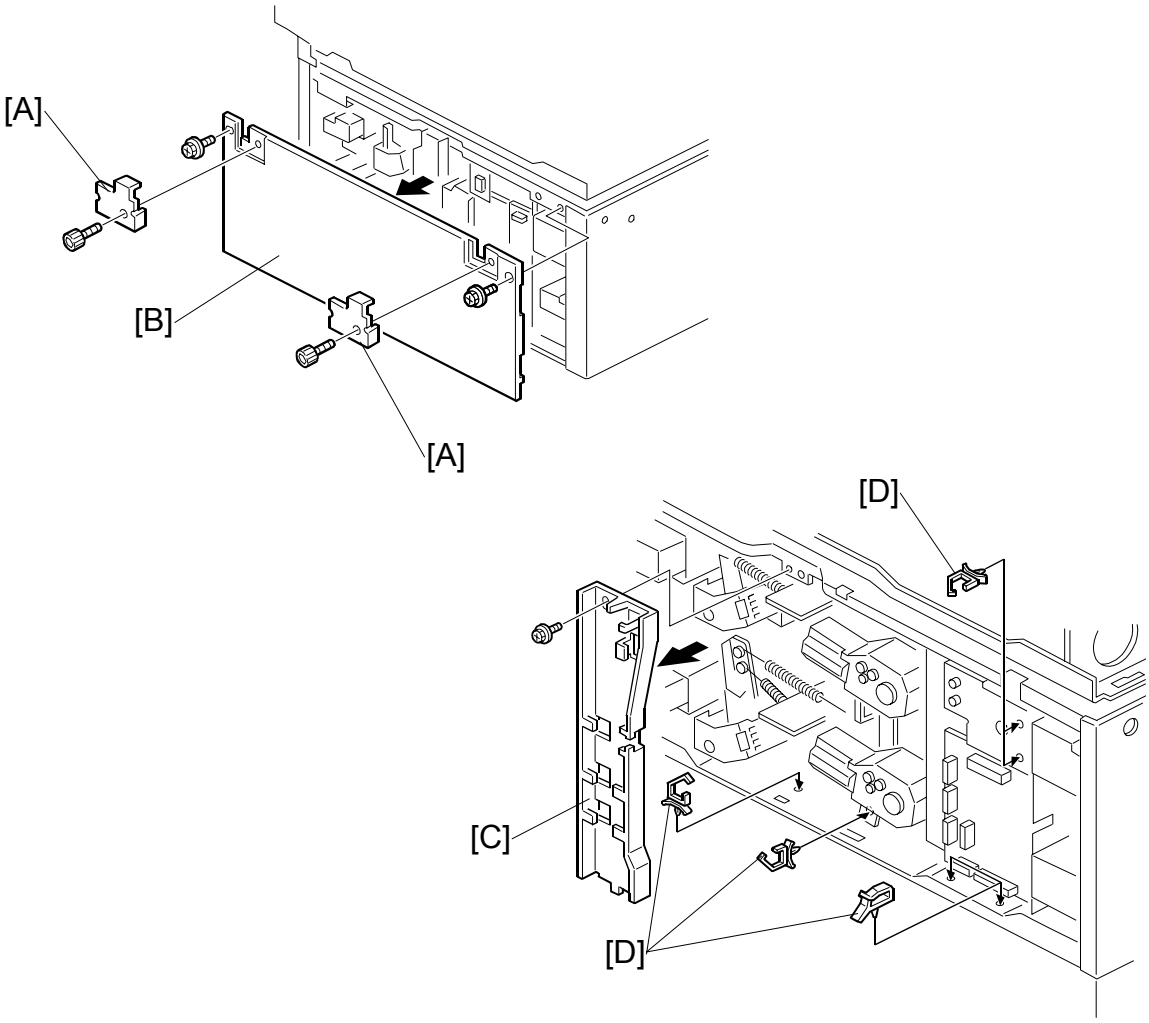
1. Remove the connector cover [A] and rear cover [B] (🔩 x 4).
2. Slide out the 1st and 2nd paper trays.
3. Pass the connector [C] through the opening [D].
4. Install the tray heater assembly [E] (🔩 x 1).





5. Remove the 2nd paper lift motor [A] (x 2, x 1).
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.

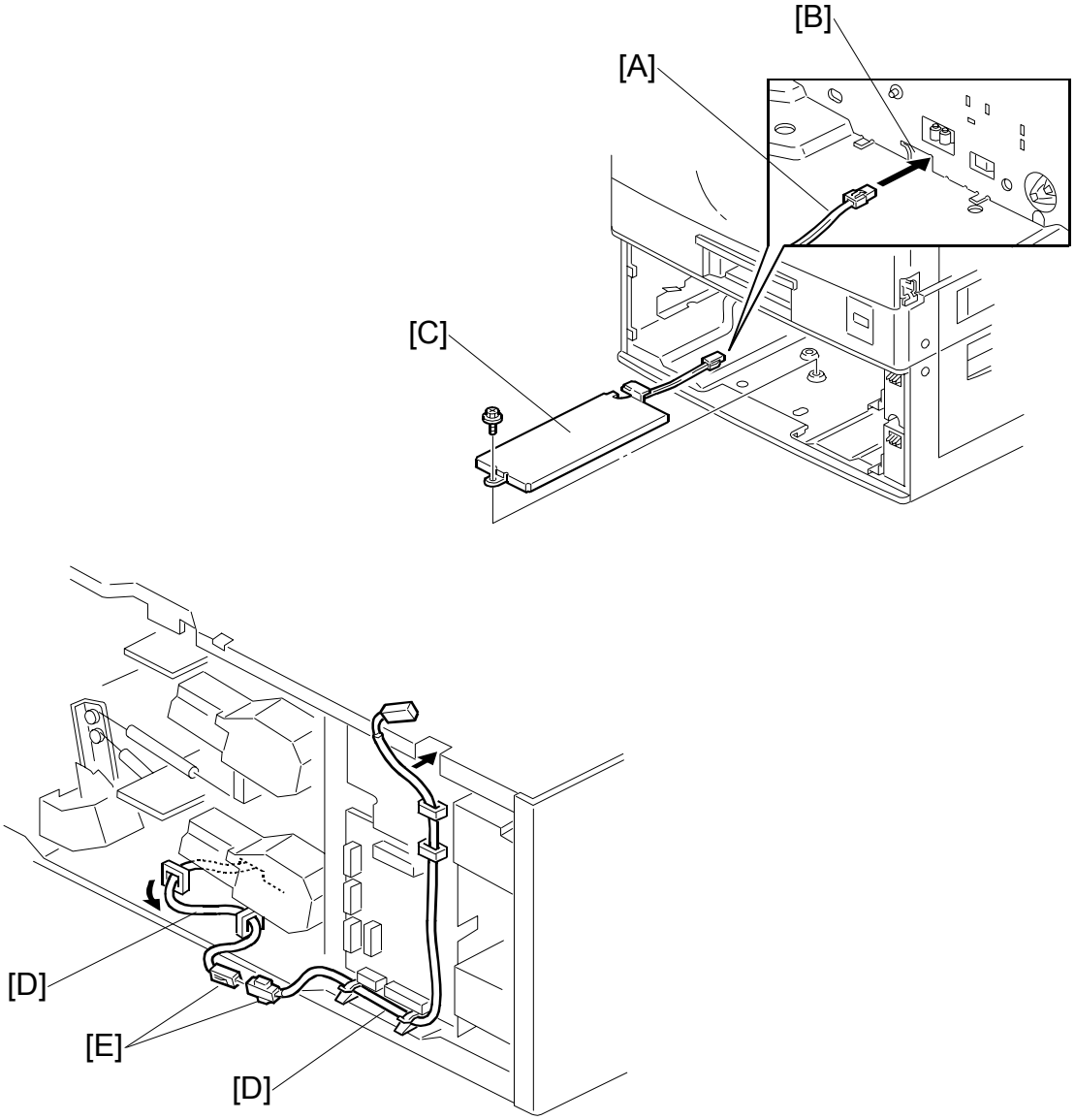
1.18 TRAY HEATER (OPTIONAL PAPER TRAY UNIT)



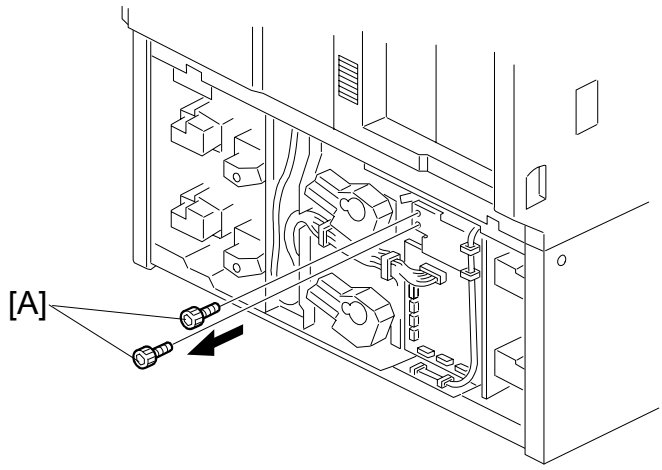
⚠CAUTION

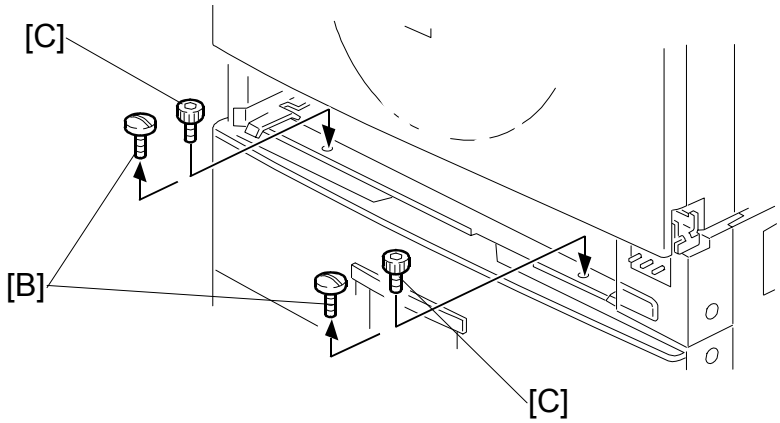
Unplug the machine power cord before starting the following procedure.

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



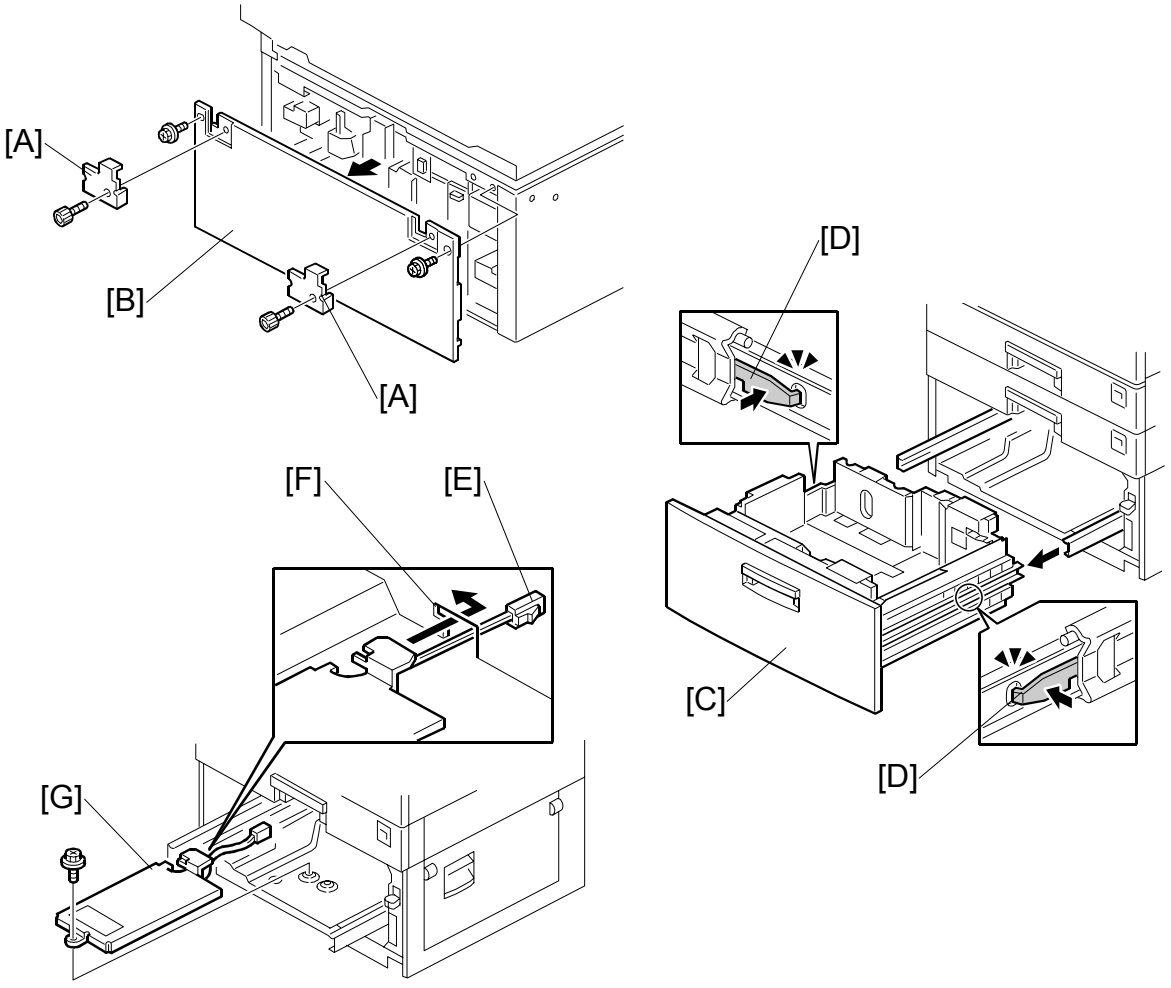
5. Slide out the two paper trays from the optional paper tray unit.
6. Pass the connector [A] through the opening [B].
7. Install the tray heater assembly [C] (🔩 x 1).
8. Clamp the cables [D], as shown.
9. Join the connectors [E].
10. Reinstall the cable guide.





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

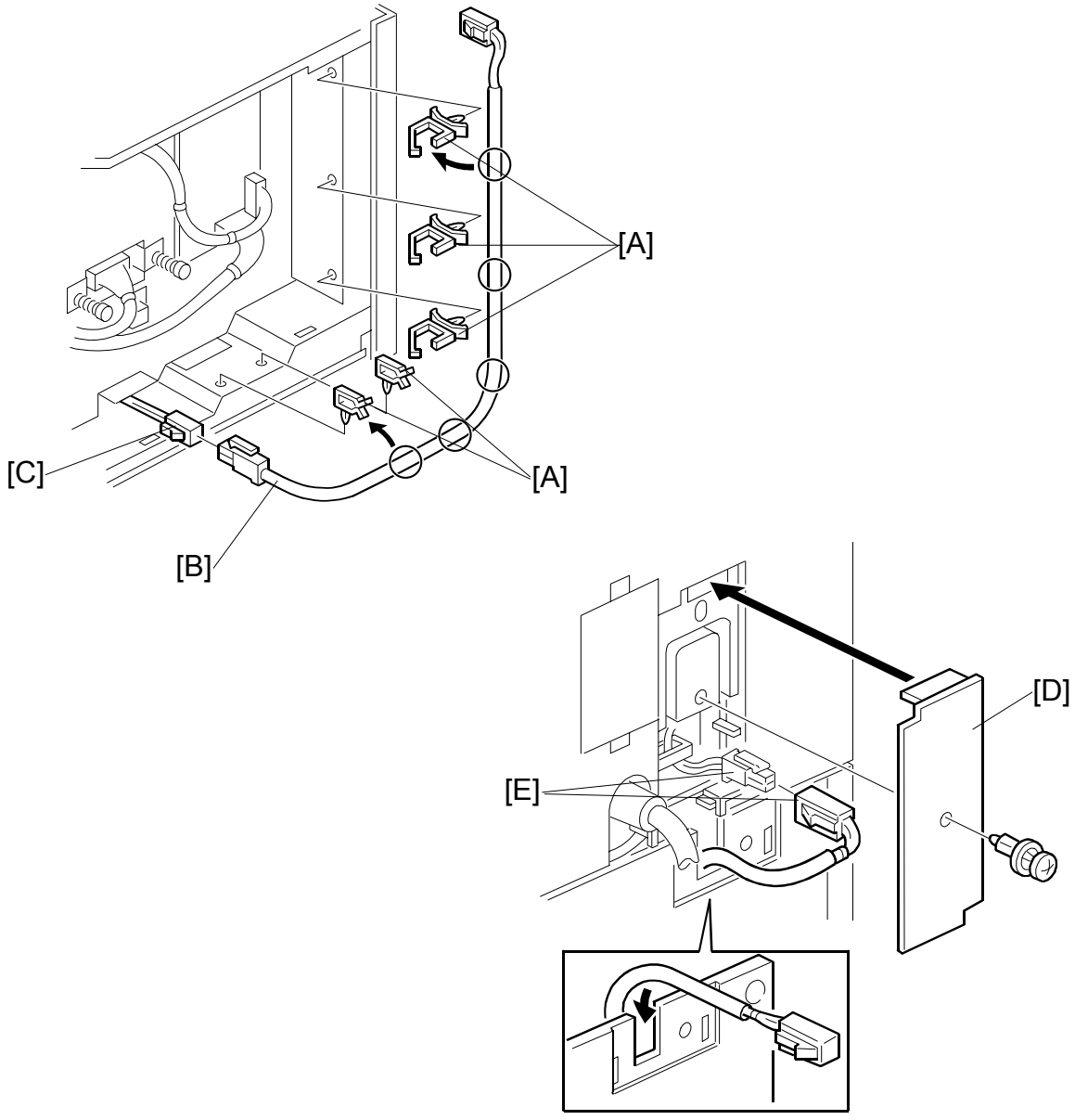
1.19 TRAY HEATER (OPTIONAL LCT)



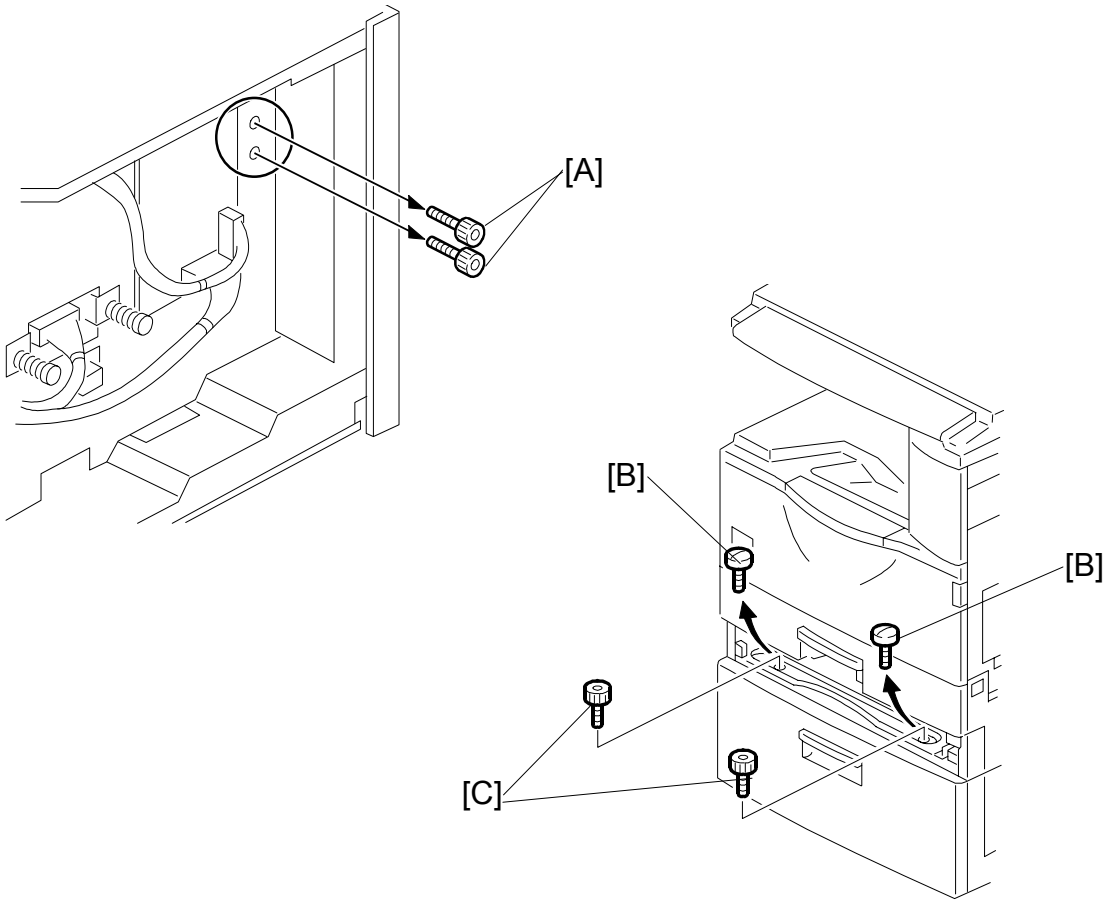
⚠CAUTION

Unplug the machine power cord before starting the following procedure.

1. Remove two joint brackets [A] (☞ x 1 each).
2. Remove the rear cover for the LCT [B] (☞ x 2).
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] (☞ x 1).



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.



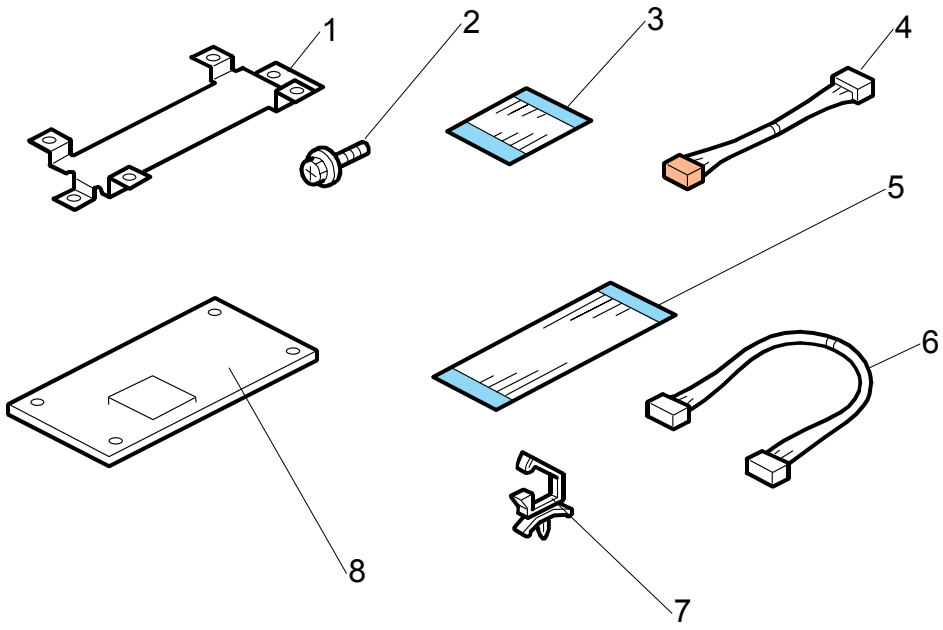
13. Remove two screws [A] from the rear side of the LCT.
14. Reinstall the rear cover of the LCT.
15. Reinstall the paper tray.
16. Remove the 2nd paper tray of the copier.
17. Remove two screws [B] and install the screws [C] which were removed in step 13.
18. Reinstall the 2nd paper tray of the copier.

1.20 COPY DATA SECURITY UNIT (B770)

Accessories

Check the accessories and their quantities against the following list:

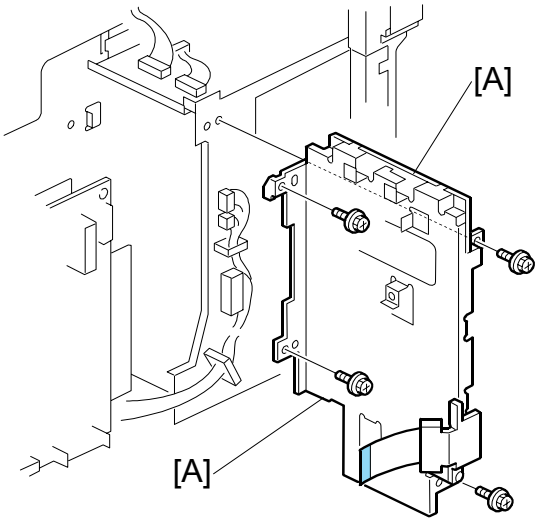
Description	Qty
1. Bracket (Not used for the B205 series copiers)	1
2. Screws	4
3. FFC (Short) (Not used)	1
4. Harness (Not used)	1
5. FFC (Long)	1
6. Connection Cable	1
7. Harness Clamp	1
8. ICIB	1



⚠CAUTION

TURN OFF THE MAIN POWER SWITCH AND DISCONNECT THE POWER SUPPLY CORD.

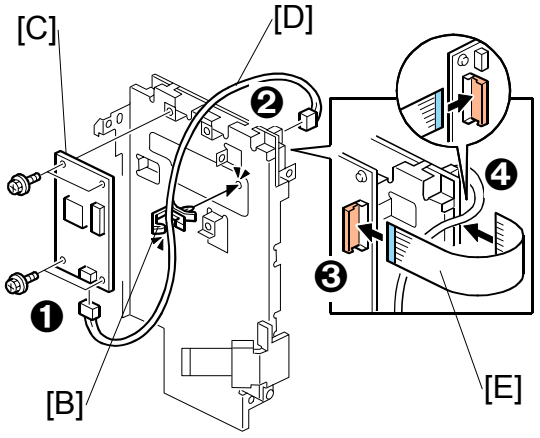
1. Remove: (☛3.11.1)
   - Controller board plastic cover (x1).
   - Controller front plate screws (x2).
2. Remove: (☛3.10.4)
   - Paper tray unit connector cover (x1)
   - Disconnect the paper tray unit (if it is installed) (x1)
   - Rear cover (x1).
3. Pull the controller board partially out of the left slot to disconnect it from the IPU.
4. Remove the IPU [A] from the main machine.



NOTE:

- The board for this option is installed on the back of the IPU board.
- For more about removal, please refer to 3.11.7.

5. Attach harness clamp [B] (x1).
6. Attach the ICIB [C] (x4)
7. Connect the cable [D] to the ICIB ❶ and the IPU Board ❷.
8. Connect the flat film connector [E] to the ICIB ❸ and IPU boards ❹.
9. Reinstall the IPU board.
10. Turn on the machine.
11. Enable the Copy Data Security function:



[User Tools]> System Settings> Administrator Tools> Copy Data Security Option

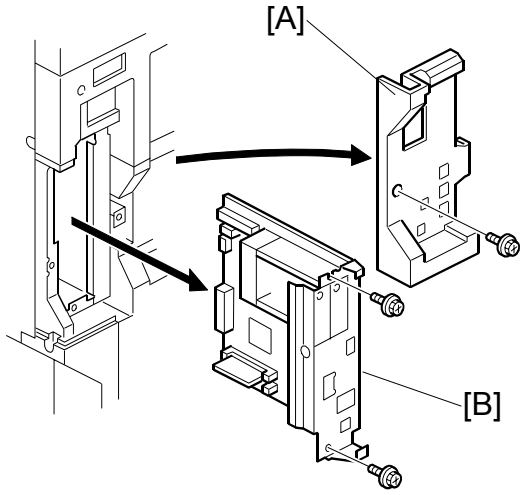
1.21 HDD (B773)

Accessories

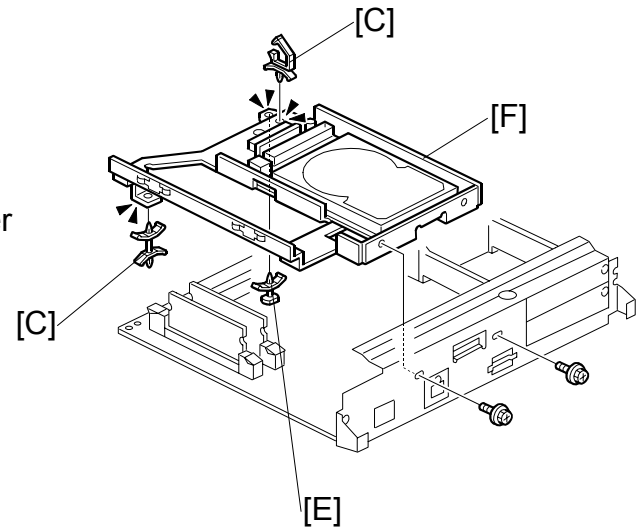
Check the accessories and their quantities against the following list:

Description	Qty
1. HDD Unit	1

1. Remove cover [A] (x1).
2. Remove controller board [B] (x1).

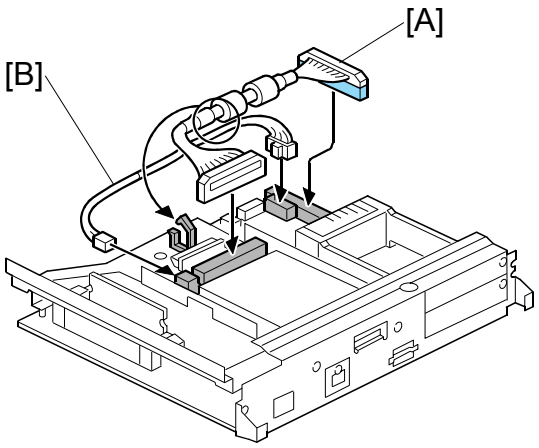


3. Attach:
   - Harness clamp [C]
   - Double standoff [D]
   - Single standoff [E]
4. Attach the HDD [F] to the controller board (x2).



5. Connect the HDD harness [A] (☞ x2).
6. Connect the AC harness [B] (☞ x2, ☞ x1)

   NOTE: Close the harness clamp around both cables.
7. Reinstall the controller board.

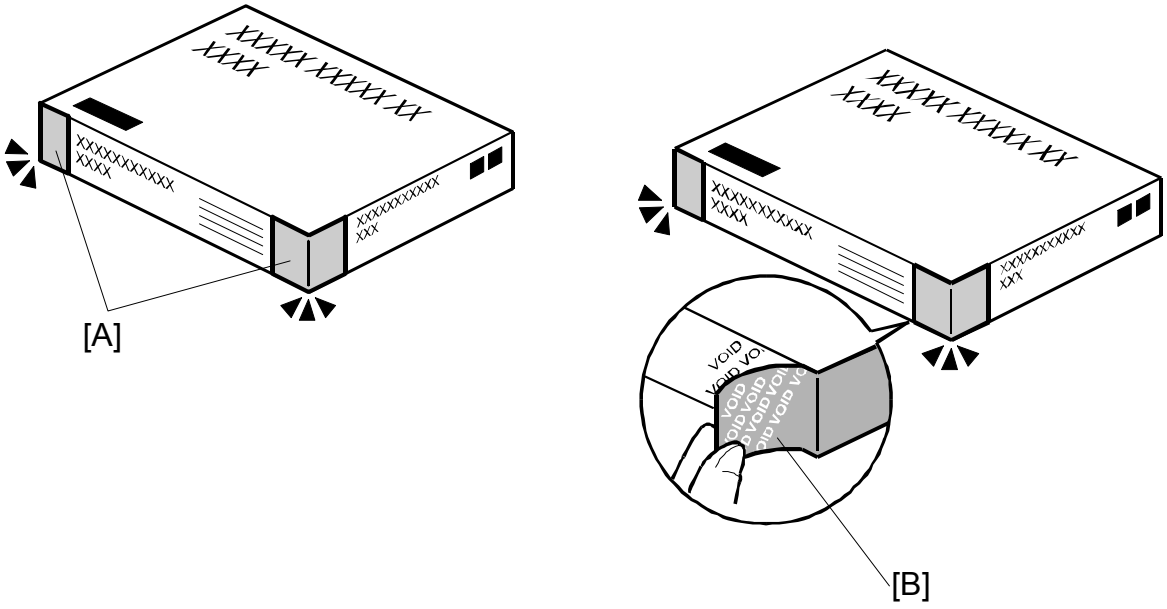


After Installing the HDD

1. Do SP5853 to copy the preset stamp data from the firmware to the hard disk. Then turn the main power switch off/on.
2. It is not necessary to format the new hard disk after installation.

1.22 DATA OVERWRITE SECURITY UNIT (B735)

Seal Check and Removal



⚠CAUTION

TURN OFF THE MAIN POWER SWITCH AND DISCONNECT THE POWER SUPPLY CORD.

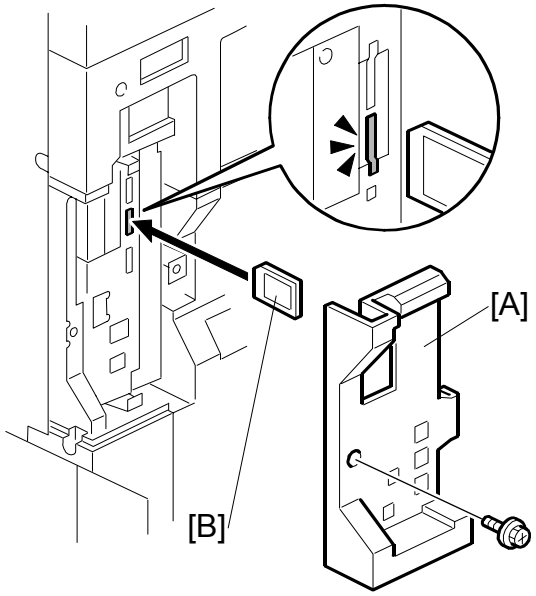
1. Check the box seals [A] on each corner of the box.
   - Make sure that a tape is attached to each corner.
   - The surfaces of the tapes must be blank. If you see “VOID” on the tapes, do not install the components in the box.
2. If the surfaces of the tapes do not show “VOID”, remove them from the corners of the box.
3. When you remove each seal, the “VOID” marks [B] can be seen. In this condition, they cannot be reattached to the box.

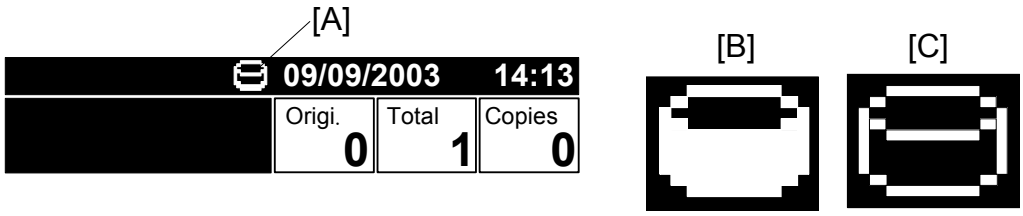
Installation

Important

- The DOS SD card must be inserted in SD card slot **C2**.
- If the PostScript3 option is also installed, you must move the DOS application to the PostScript3 SD card with SP.(☛ Printer/Scanner Manual, Sec. 1.2.2)

1. If the machine is on, turn off the main power switch.
2. Disconnect the network cable.
3. Turn the main power switch on.
4. Turn the operation switch and main power switch off.
5. Remove the application cover [A] (☞x1).
1. With the printed side of the SD card [B] facing the rear of the machine, install the SD card in SD card slot **C2**.
6. Reconnect the network cable, if the network is connected to the copier.
7. Turn the main power switch on.
8. Do SP5-878 and push [EXECUTE].
9. Go out of the SP mode, turn the operation switch off, then turn the main power switch off.
10. Turn the machine power on.
11. Push [User Tools] and select System Settings> Administrator Tools> Auto Erase Memory Setting> On.
12. Exit from User Tools mode.





13. Check the display and make sure that the overwrite erase icon [A] is displayed.
14. Make a Sample Copy.
15. Check the overwrite erase icon.
    - The icon [B] changes to [C] when job data is stored in the hard disk.
    - The icon goes back to its usual shape [B] after this function has completed a data overwrite operation to the hard disk.
16. Remove the Document Server and Scanner key-tops, and replace them with the blank key-tops that are supplied with the kit.

PREVENTIVE MAINTENANCE

2. PREVENTIVE MAINTENANCE SCHEDULE

2.1 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

	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

	EM	120K	240K	360K	NOTE
AROUND THE DRUM					
Transfer/Separation Unit		R	R	R	
ID Sensor		C	C	C	Perform the ID sensor initial setting (SP2-935) after cleaning (blower brush)

	EM	60K	120K	180K	NOTE
PCU					
Drum		R	R	R	Do SP2801. This initializes the developer and resets the TD and ID sensor outputs to their defaults. It also resets the PCU counter.
Charge Roller		R	R	R	
Cleaning Roller		R	R	R	
Cleaning Blade		R	R	R	
Pick-off Pawls		R	R	R	
Developer		R	R	R	

	EM	120K	240K	360K	NOTE
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.
Dust collection box	C	C	C	C	Remove, empty, clean

	EM	120K	240K	360K	NOTE
FUSING UNIT AND PAPER EXIT					
Fusing Entrance and Exit Guide Plates		C	C	C	Clean with water or alcohol.
Hot Roller		R	R	R	Clean with water or alcohol.
Pressure Roller		R	R	R	
Fusing Thermistors		R	R	R	
Cleaning Roller		C	C	C	
Cleaning Roller Bushings		C	C	C	
Hot Roller Strippers		R	R	R	
Hot Roller and Pressure Roller Bushings	L	L	L	L	Grease Barrierta JFE5 5/2 (A0289300)
Paper Exit Guide Ribs		C	C	C	Clean with water or alcohol.
OTHERS					
Main Motor Drive Gear	L	I	I	I	Silicone Grease G501 (☛2.2)

	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

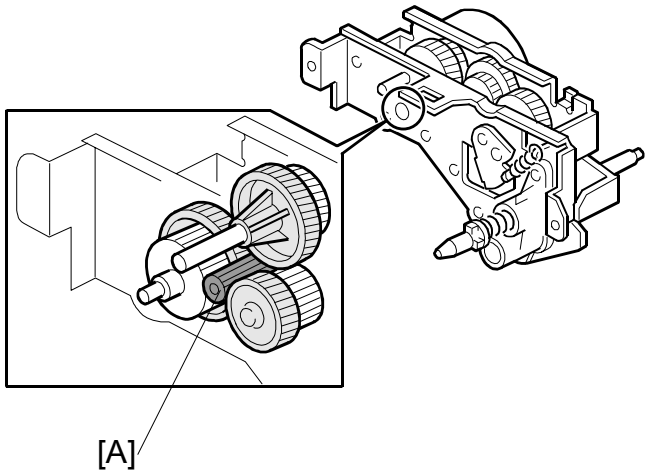
	EM	120K	240K	360K	NOTE
PAPER TRAY UNIT					
Paper Feed Roller	C	R	R	R	Clean with water
Friction Pad	C	R	R	R	Dry cloth
Paper Feed Guides	C	C	C	C	Clean with alcohol.
Relay Rollers	C	C	C	C	Clean with water.
Bottom Plate Pad	C	C	C	C	Clean with water.
Relay Clutch		I	I	I	Replace if necessary
Paper Feed Clutch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

2.2 MAIN MOTOR DRIVE GEAR



At every EM lubricate the main motor drive gear [A] with silicone grease G501.

REPLACEMENT AND ADJUSTMENT

3. REPLACEMENT AND ADJUSTMENT

⚠CAUTION

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

3.1 SPECIAL TOOLS AND LUBRICANTS

3.2 SPECIAL TOOLS

No.	Part No.	Description	Q'ty	Availability
1	A0069104	Scanner Positioning Pins (4 pins/set)	1	Common – R-C3
2	A2929500	Test Chart S5S (10 pcs/set)	1	Common - General
3	VSSM9000	Digital Multimeter FLUKE 87	1	Common - General
4	A2309003	Adjustment Cam – Laser Unit	1	Common – R-C3
5	A2309002	Positioning Pin – Laser Unit	1	Common – R-C3
6	B6455010	SD-Card	1	Common - General
7	B6456800	USB Reader/Writer	1	Common - General
8	G0219350	Loop-back Connector	1	Common - General

3.3 LUBRICANTS

No.	Part No.	Description	Q'ty	Availability
1	A2579300	Grease Barrierta S552R	1	Common - General
2	52039502	Silicone Grease G-501	1	Common - General

3.4 GENERAL CAUTIONS

3.4.1 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.

3.4.2 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.

3.4.3 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.

3.4.4 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.

3.4.5 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.

3.4.6 PAPER FEED

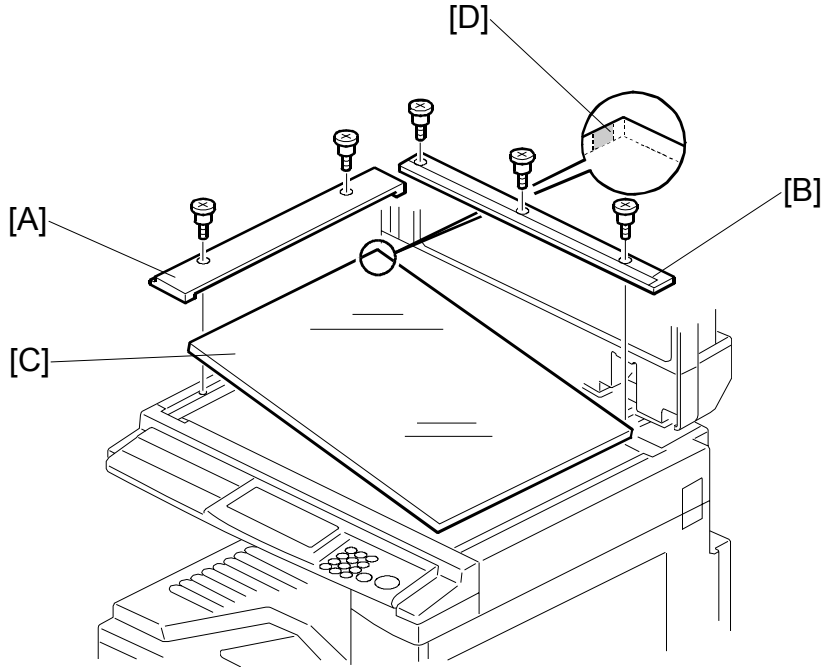
1. Do not touch the surface of the paper feed roller.
2. To avoid paper misfeeds, the side fences and end fences of the paper tray must be positioned correctly to align with the actual paper size.

3.4.7 OTHERS

1. The toner bottle should be replaced while the main switch is on.
2. 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.

3.5 SCANNER UNIT

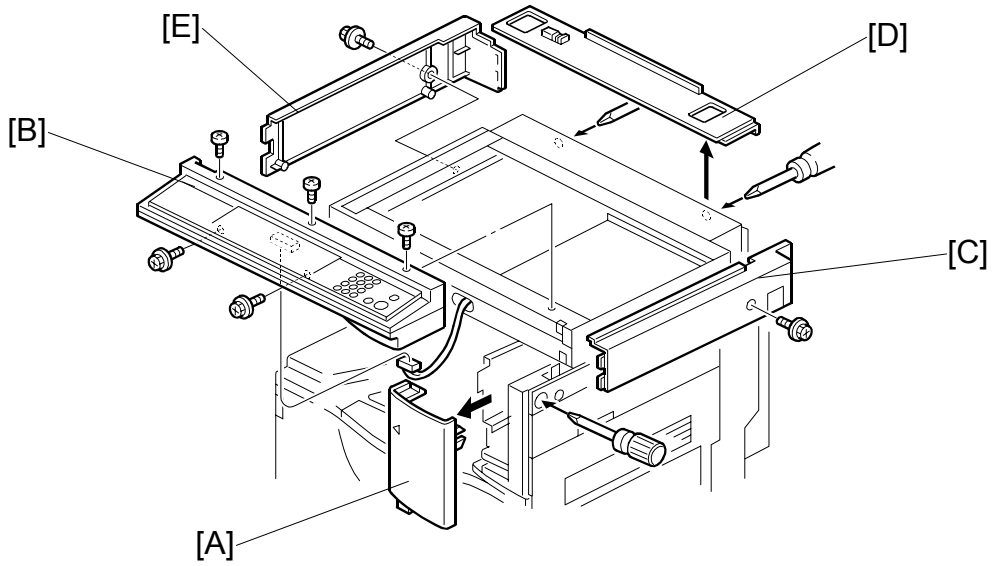
3.5.1 EXPOSURE GLASS



1. Open the ADF or platen cover.
2. Remove the left scale [A] (x2).
3. Remove the rear scale [B] (x3).
4. Remove the exposure glass [C].

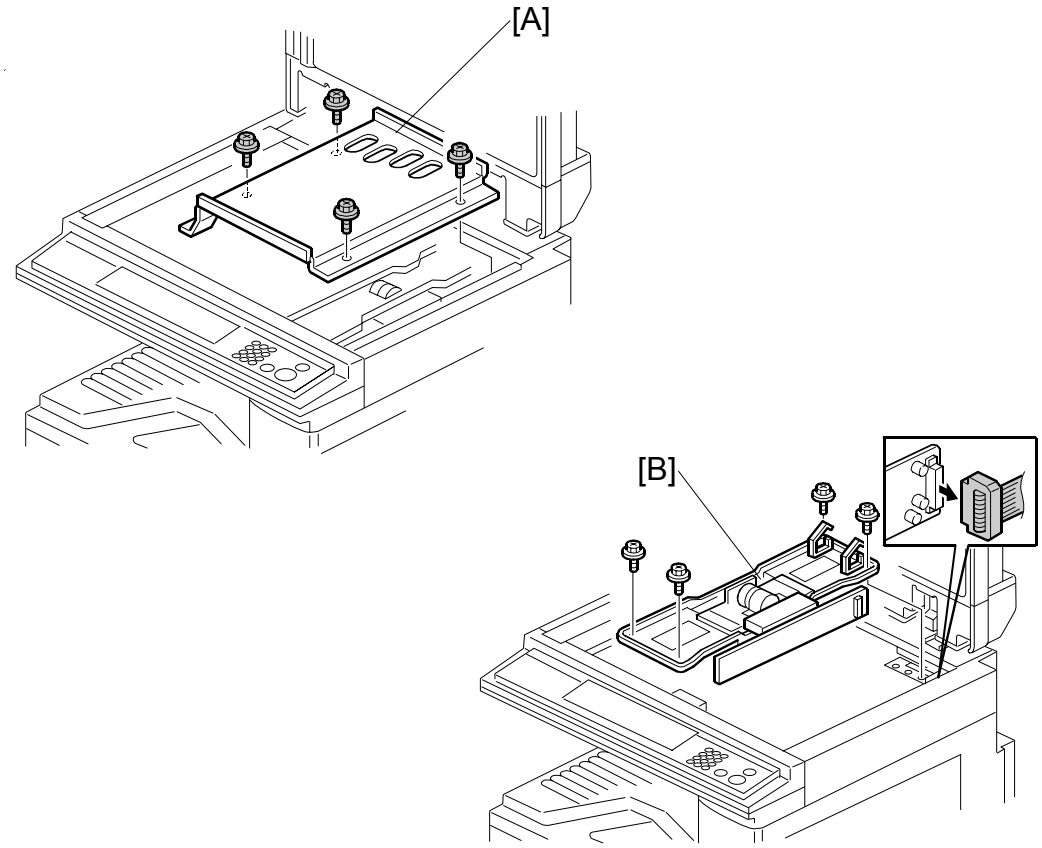
NOTE: When reinstalling the exposure glass, make sure that the mark [D] is positioned at the rear left corner, as shown.

3.5.2 SCANNER EXTERIOR/OPERATION PANEL



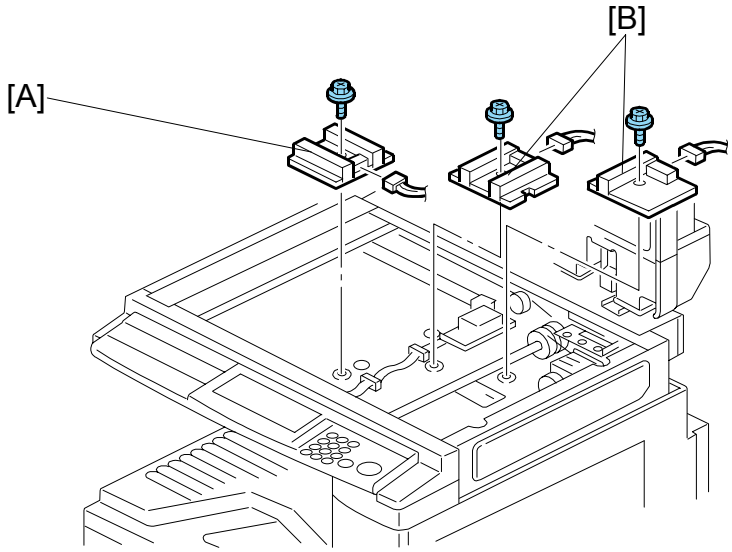
1. Remove the ADF or platen cover.
2. Remove the exposure glass. (☛ 3.5.1)
3. Remove the upper front cover [A] (x1, Hook x1).
4. Remove the operation panel [B] (x5, x1).
5. Remove the right cover [C] (x1, Hook x2).
6. Remove the rear cover [D] (x2).
7. Remove the left cover [E] (x2, Hook x2).

3.5.3 LENS BLOCK ASSEMBLY



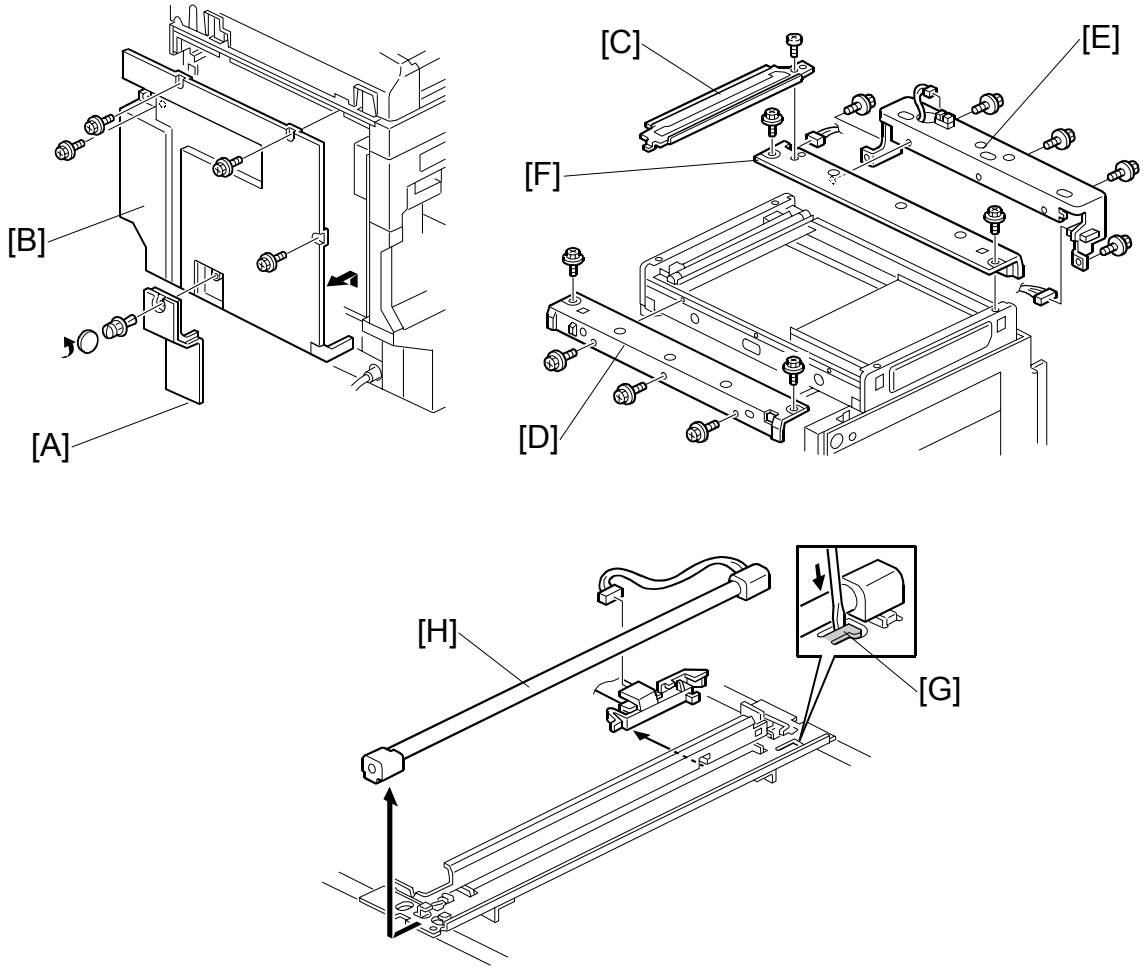
1. Remove the exposure glass. (☛3.5.1)
2. Remove the lens cover [A] (x4).
3. Replace the lens block assembly [B] (x4, x1, x 2).
   NOTE: Do not remove the screws which are locked with white paint.
4. Reassemble the machine and do the scanner and printer copy adjustments. (☛3.12)

3.5.4 ORIGINAL SIZE SENSORS



1. Remove the exposure glass. (☛ 3.5.1)
2. Remove the lens cover. (☛3.5.3)
3. Remove the original width sensor [A] (x1, x1).
4. Remove the lens block. (☛3.5.3)
5. Remove the original length sensors [B] (x1, x1 ea.).

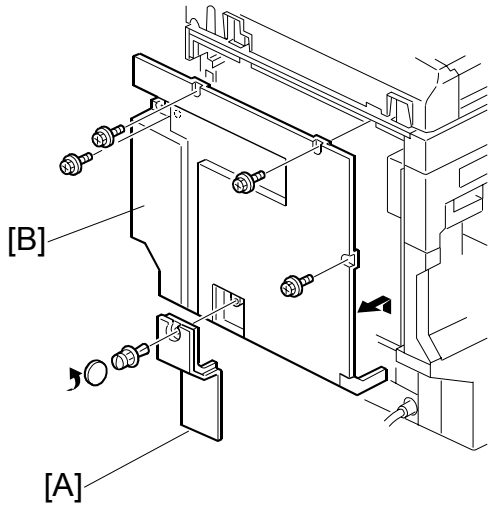
3.5.5 EXPOSURE LAMP

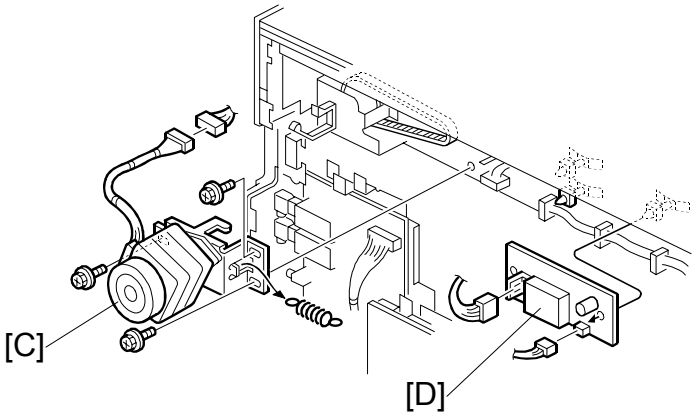


1. Remove the exposure glass. (☛ 3.5.1)
2. Remove the operation panel, rear cover, and left cover. (☛3.5.2)
3. Remove the connector cover [A], disconnect the cable, and remove the rear cover [B] (☞ x4).
4. Remove the left upper stay [C] (☞ x1).
5. Remove the front frame [D] (☞ x5).
6. Remove the rear bracket [E] (☞ x5, ☞ x2).
7. Remove the rear frame [F] (☞ x2, ☞ x1).
8. Push down the part [G] then slide out the exposure lamp [H] (☞ x1).

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.

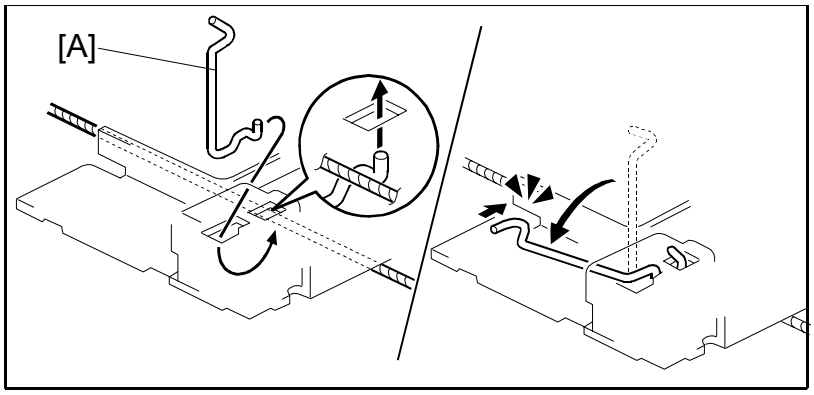
3.5.6 SCANNER MOTOR/LAMP STABILIZER



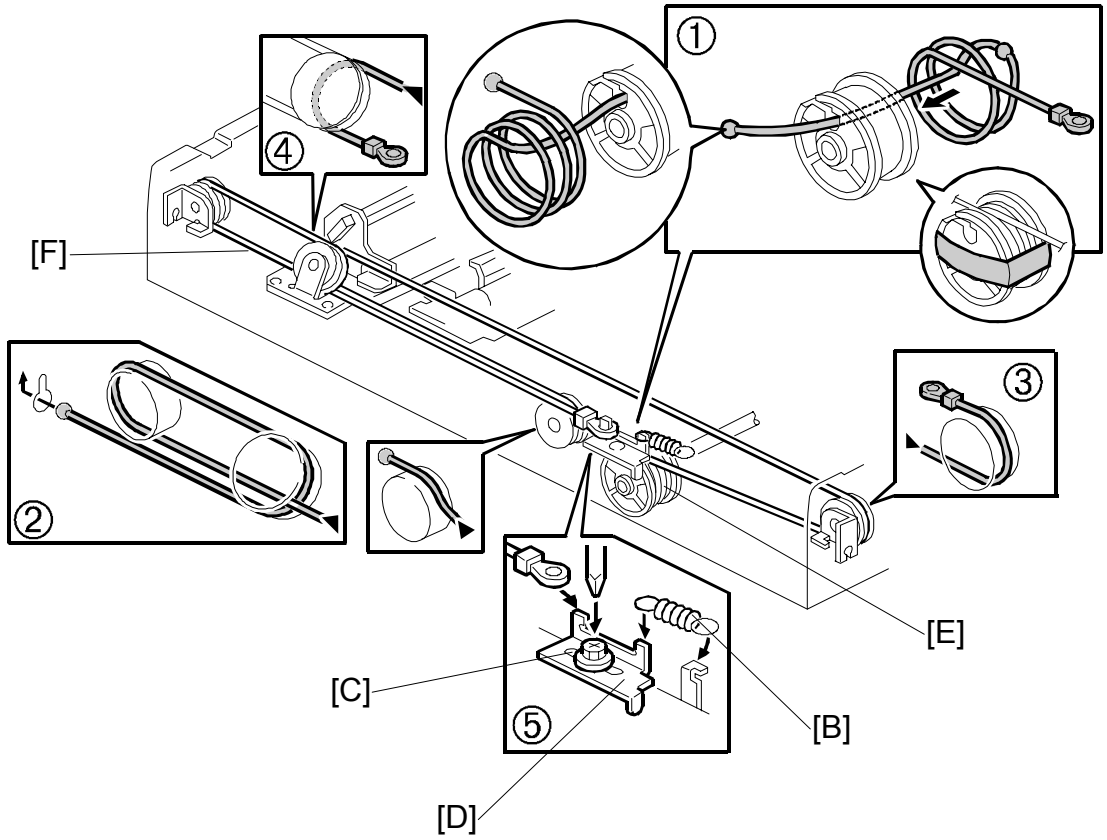


1. Remove the connector cover [A], disconnect the cable, and remove the rear cover [B].
2. Replace the scanner motor [C] (x3, 1 spring, x1).
3. Replace the lamp stabilizer [D] (x2).
4. Reassemble the machine and do the scanner and printer copy adjustments. (☛3.12)

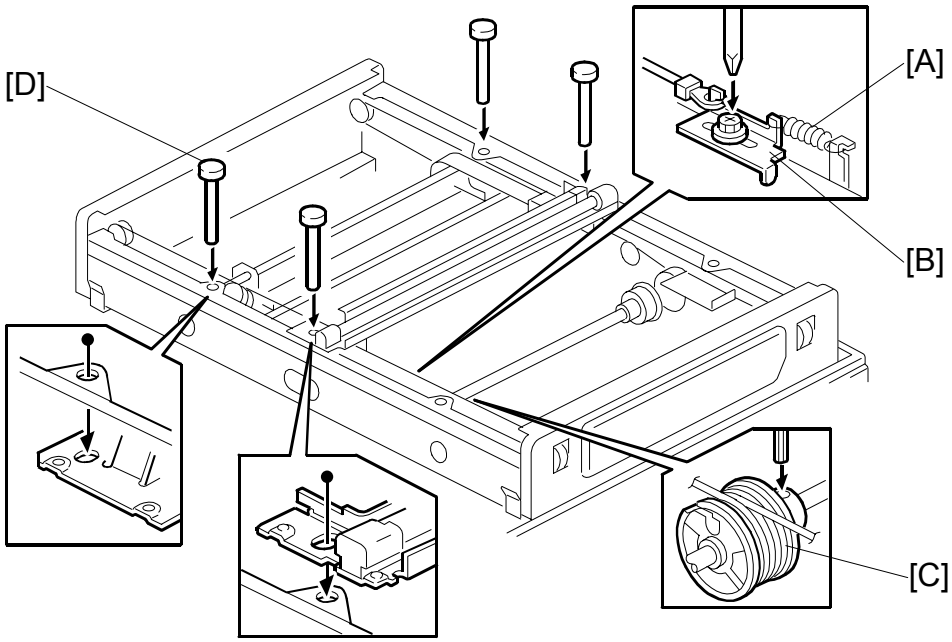
3.5.7 SCANNER WIRES



1. Remove the exposure glass, operation panel, and all scanner exterior covers. (☛ 3.5.1, 3.5.2)
2. Remove these parts: (☛3.5.5)
   - Left upper stay
   - Front frame
   - Rear bracket
   - Rear frame
3. Remove these parts: (☛3.5.3)
   - Lens cover
   - Lens block assembly
4. Remove the front and rear scanner wire pins [A]. Then, remove the 1st scanner.



5. Remove the tension spring [B].
6. Loosen the screw [C] securing the wire tension bracket [D].
7. Remove the scanner drive pulley [E] (☞ x1).
8. Remove the scanner wire [F].
9. Wrap the new scanner wire around the pulley as shown ①, then temporarily secure the pulley with tape.
10. 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.
11. Wind the new scanner wire around the scanner drive pulley in the correct way, as shown.
12. Wind the end of the new wire with the ball as shown (②).
13. Wind the end of the new wire with the ring as shown (③,④, and ⑤).
14. Install the tension spring on the wire tension bracket (⑤).
15. 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] (Allen x1).
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 (☛3.12).

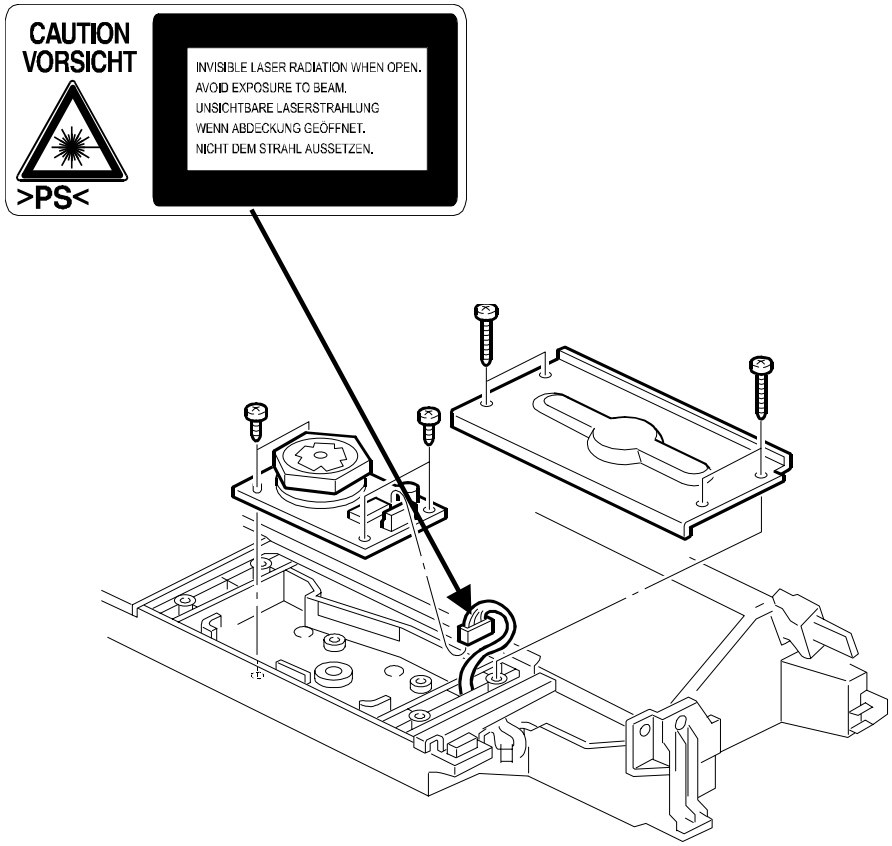
3.6 LASER UNIT

⚠WARNING

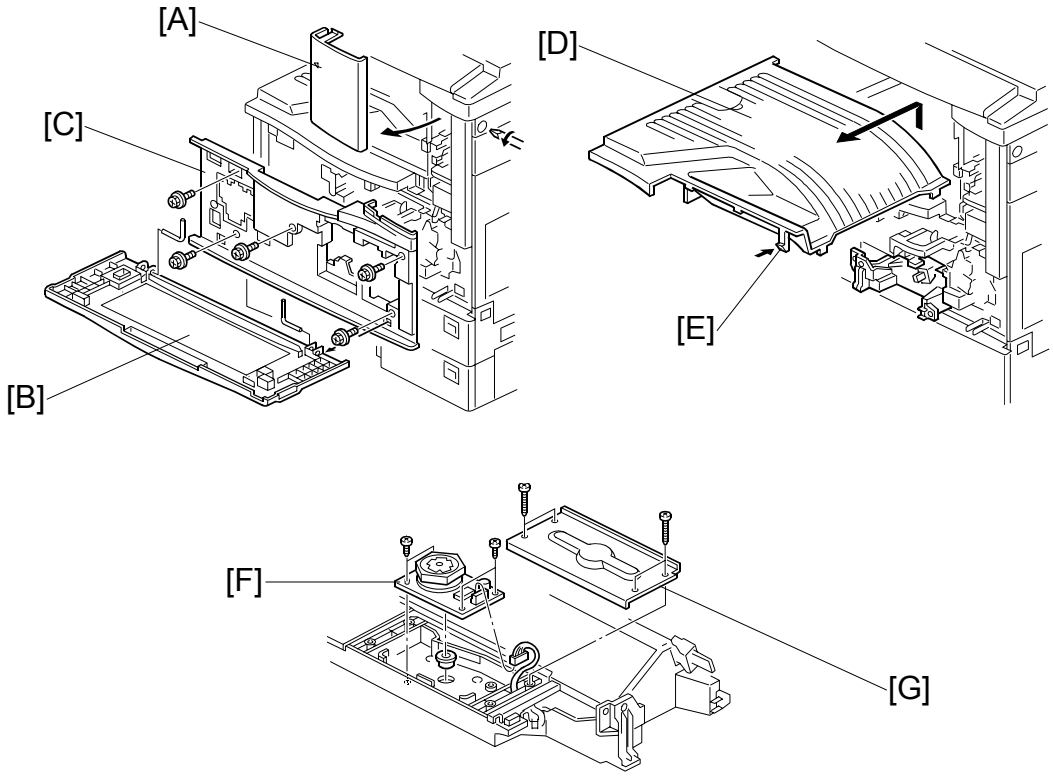
Turn off the main power switch and unplug the machine before attempting any of the procedures in this section. Laser beams can seriously damage your eyes.

3.6.1 CAUTION DECAL LOCATIONS

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



3.6.2 LASER UNIT

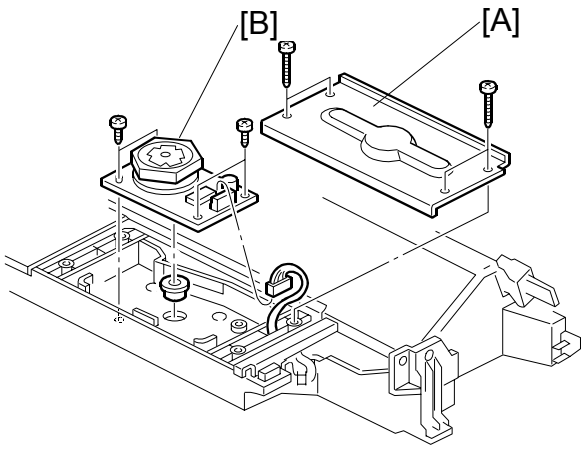


⚠WARNING

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] (x1, 1 hook).
3. Remove the front cover [B] (2 pins).
4. Remove the inner cover [C] (x5).
5. Remove the copy tray [D] (1 hook [E]).
6. Remove the toner bottle holder [F].
7. Remove the laser unit [G] (x2, x2).
8. After reassembling the machine, do the scanner and printer copy adjustments. (☛ 3.12)

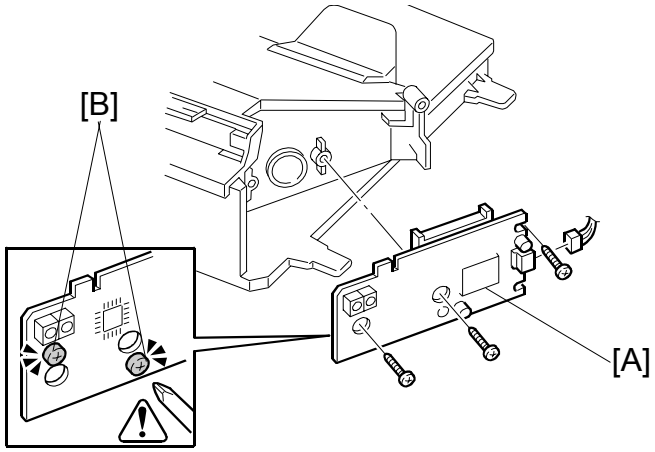
3.6.3 POLYGON MIRROR MOTOR



1. Remove the laser unit (☛3.6.2).
2. Remove the heat sink [A] (x4).
3. Replace the polygon mirror motor [B] (x4, x1).

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

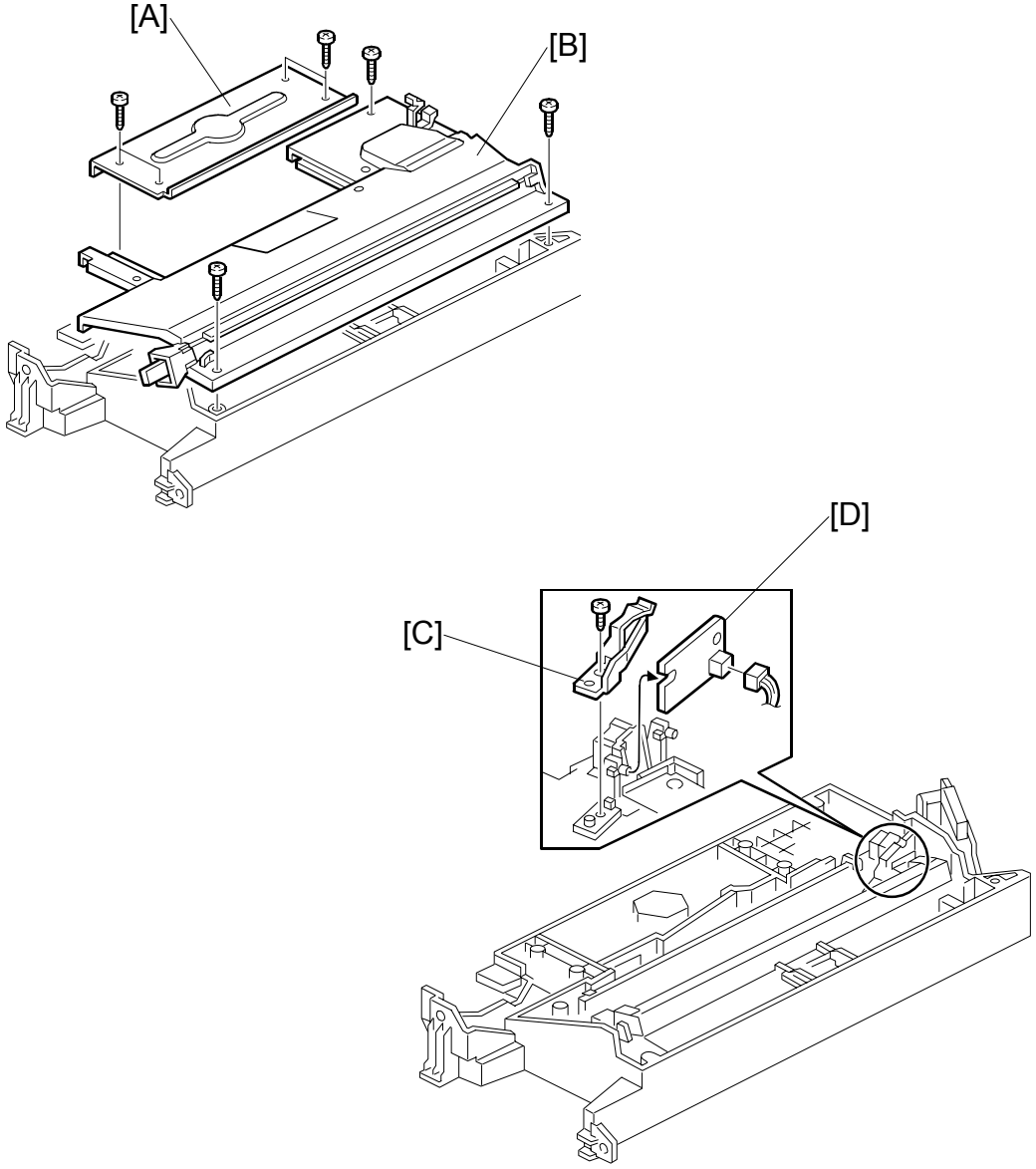
3.6.4 LD UNIT



1. Remove the laser unit (☛3.6.2).
2. Replace the LD unit [A] (x3, x1).

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

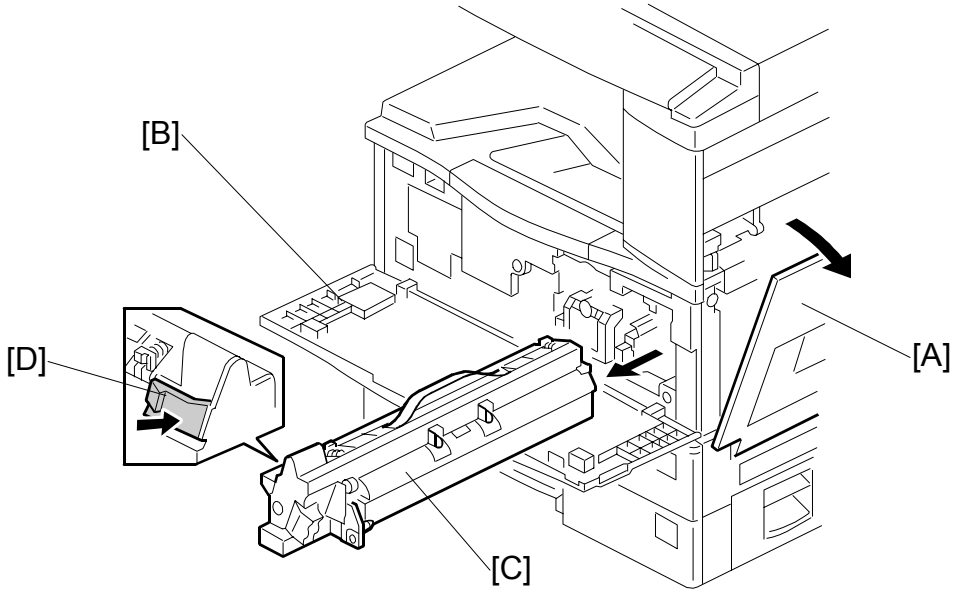
3.6.5 LASER SYNCHRONIZATION DETECTOR



1. Remove the laser unit (☛3.6.2).
2. Remove the heat sink [A] (☞ x4).
3. Remove the laser unit cover [B] (☞ x3).
4. Remove the bracket [C] (☞ x1).
5. Replace the laser synchronization detector [D] (☜ x1).

3.7 PHOTOCONDUCTOR UNIT (PCU)

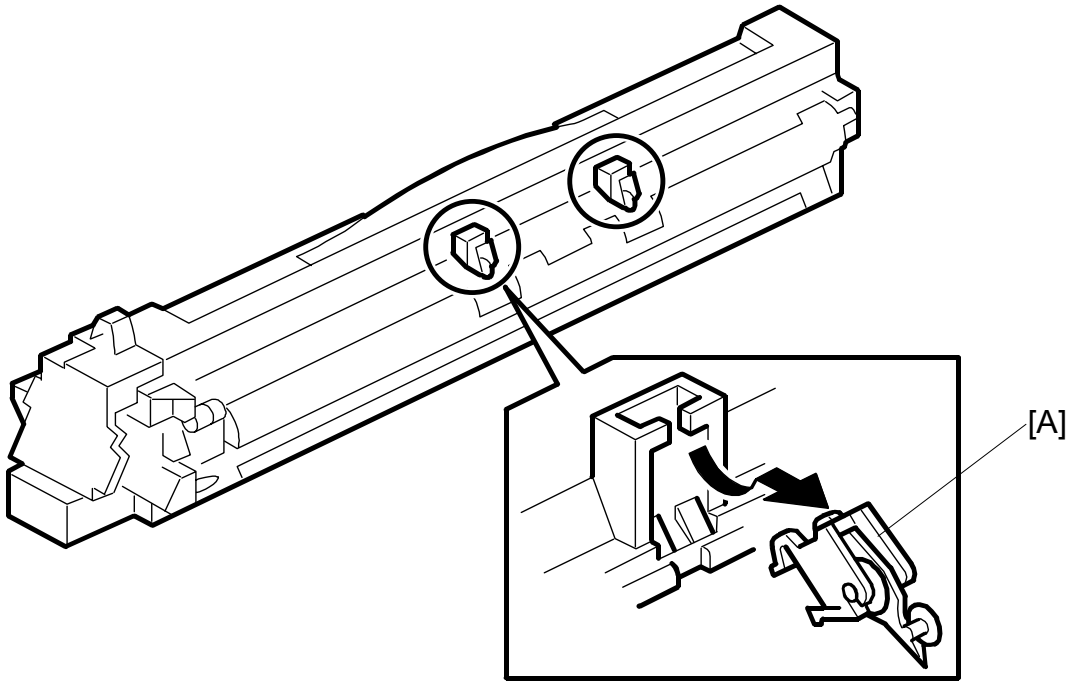
3.7.1 PCU REMOVAL



1. Open the right cover [A] and front cover [B].
2. Pull the PCU [C] out a small distance while you push the release lever [D], then remove the PCU.

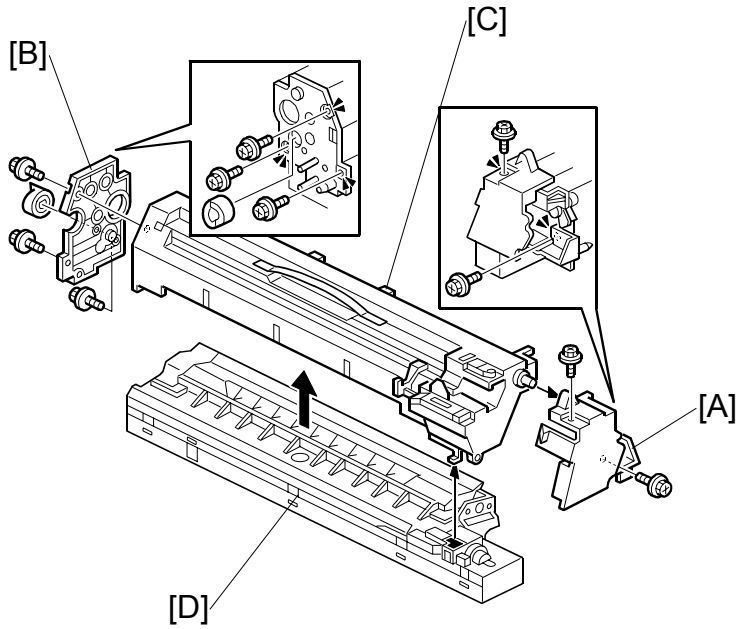
   NOTE: Do not touch the drum surface with bare hands.

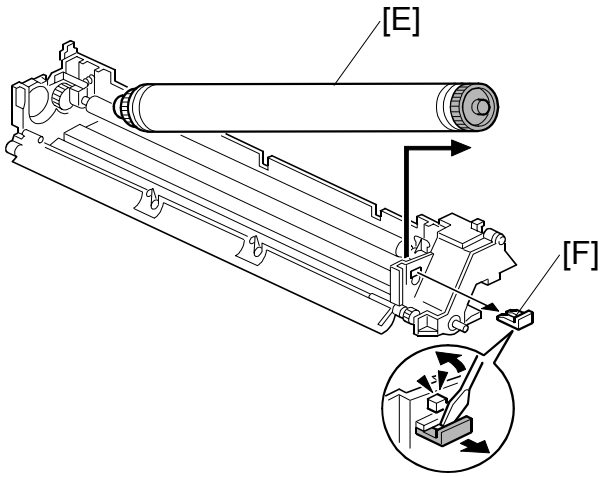
3.7.2 PICK-OFF PAWLS



1. Remove the PCU. (☛3.7.1)
2. Hold the pawl [A] by its sides, pull it down and slowly twist it away from the PCU.

3.7.3 OPC DRUM

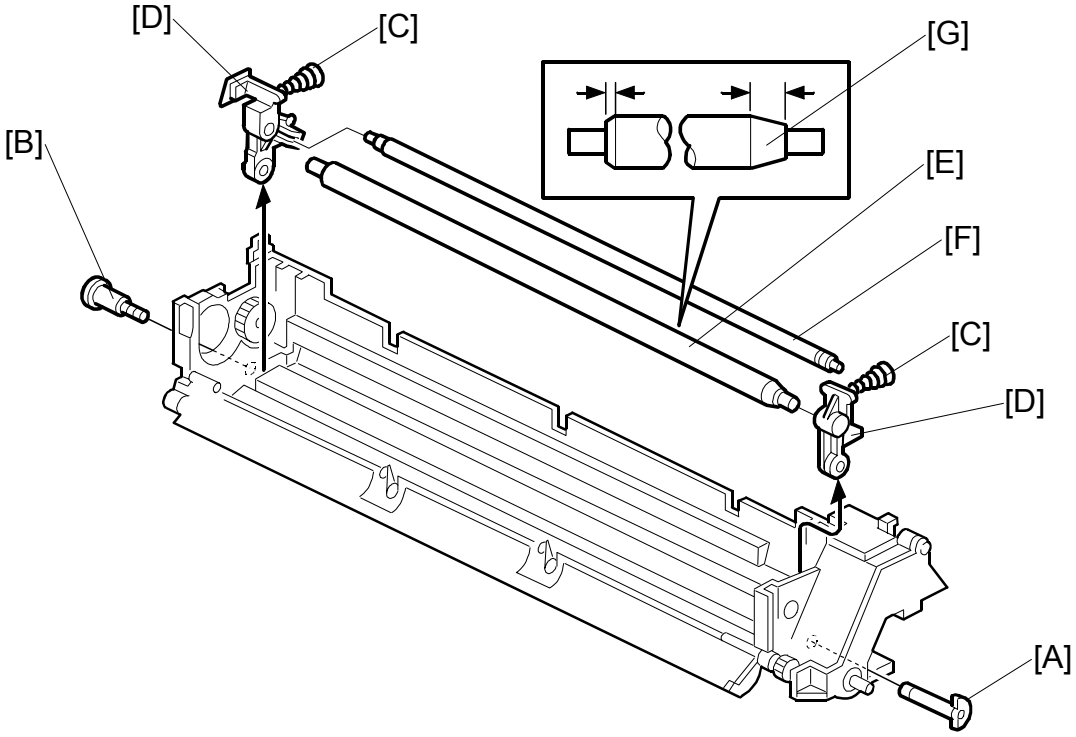




- Remove the PCU. (☛3.7.1)

[A]: Front cover (🔩 x2)
[B]: Rear cover (🔩 x3, Coupling x1)
[C]: Top part
[D]: Bottom part
[E]: Drum (White clip x1 [F])

3.7.4 CHARGE ROLLER, CLEANING ROLLER



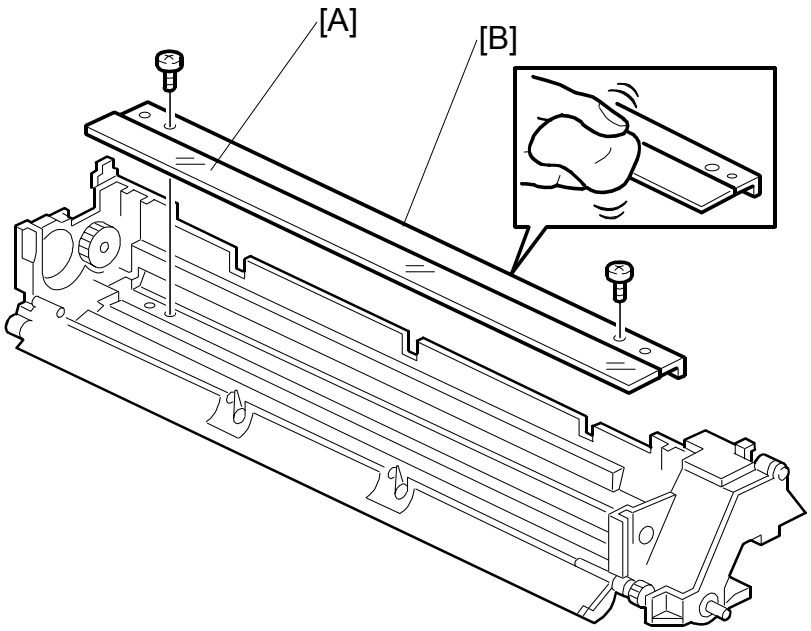
- Remove the PCU. (☛3.7.1)
- Remove the OPC drum (☛3.7.3)

[A]: Front stud (x1)
[B]: Rear shoulder screw (x1)
[C]: Release the front and rear springs.
[D]: Remove the roller assembly (Springs x2, Arms x2, Rollers x2)
[E]: Charge roller
[F]: Cleaning roller

Re-installation: Charge Roller

- Put the end of the charge roller with the wide bevel [G] at the front of the PCU.
- The ends of the cleaning roller [F] are the same (put either end at the front).
- Make sure that the front stud of the roller assembly is put in the correct position.
- Install the front stud before you tighten the rear shoulder screw. Make sure that the head of the stud is put in the correct position.

3.7.5 CLEANING BLADE



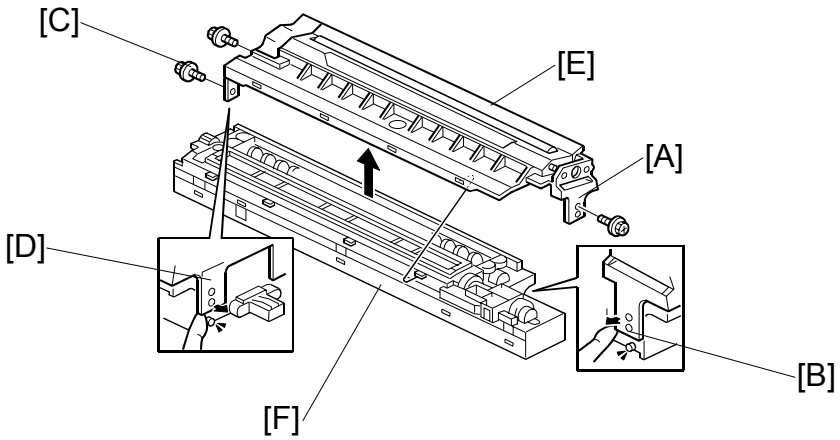
- Remove the PCU. (☛3.7.1)
- Remove the OPC drum (☛3.7.3)
- Remove the charge roller, cleaning roller (☛3.7.4)

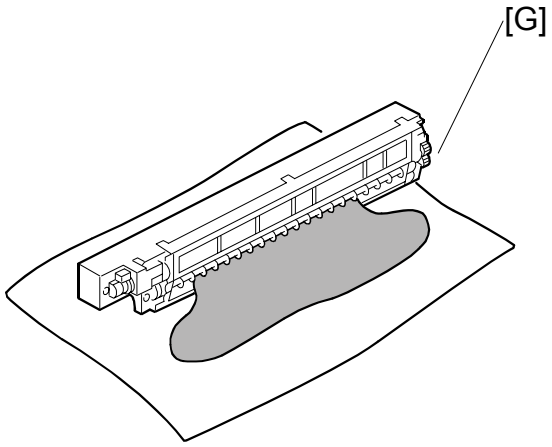
[A]: Cleaning blade (🔩 x2)

Reinstallation: Cleaning Blade

- To prevent damage to the new cleaning blade and OPC drum, apply some toner to the edge of the new blade [B].
- Install the new blade. Remove some toner from the edge of the old blade with your finger, and apply it evenly along the full length of the new blade.

3.7.6 DEVELOPER

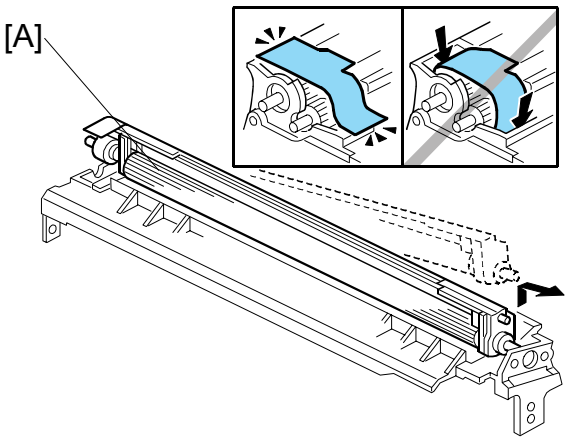




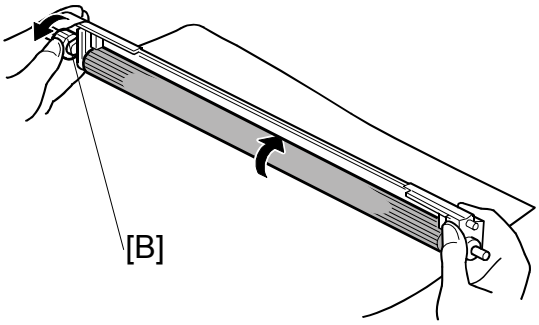
1. Spread the vinyl sheet provided with the developer kit on a flat surface.
2. Separate the top and bottom parts of the PCU. (☛3.7.4)
3. Set the bottom on the vinyl sheet.
4. Remove the front screw [A] (☞ x1)
5. Remove the rear screws [C] (☞ x2).
6. Release the front tab [B].
7. Release the rear tab [D].
8. Separate the top [E] and bottom [F] of the development unit.
9. Turn the gears [G] to remove the developer from the bottom half.

10. Remove the development roller [A] from the development unit.

    Important: At reinstallation, make sure that the mylar is positioned as shown.



11. Turn the development roller gear [B] to remove toner from around the development roller.

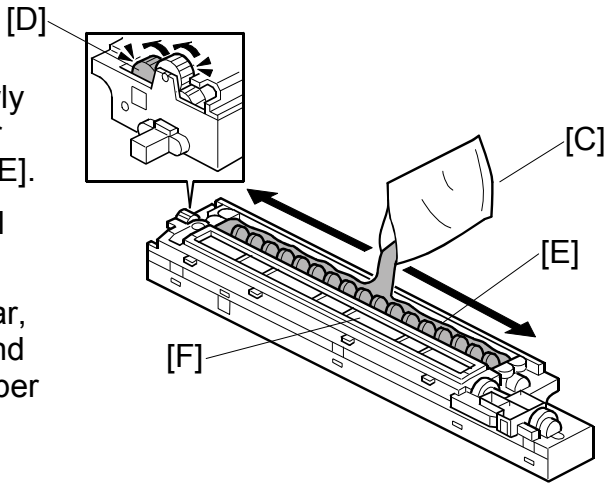


12. Assemble the development unit.

Important

- Dispose of the used developer according to the local laws and regulations regarding the disposal of such items.

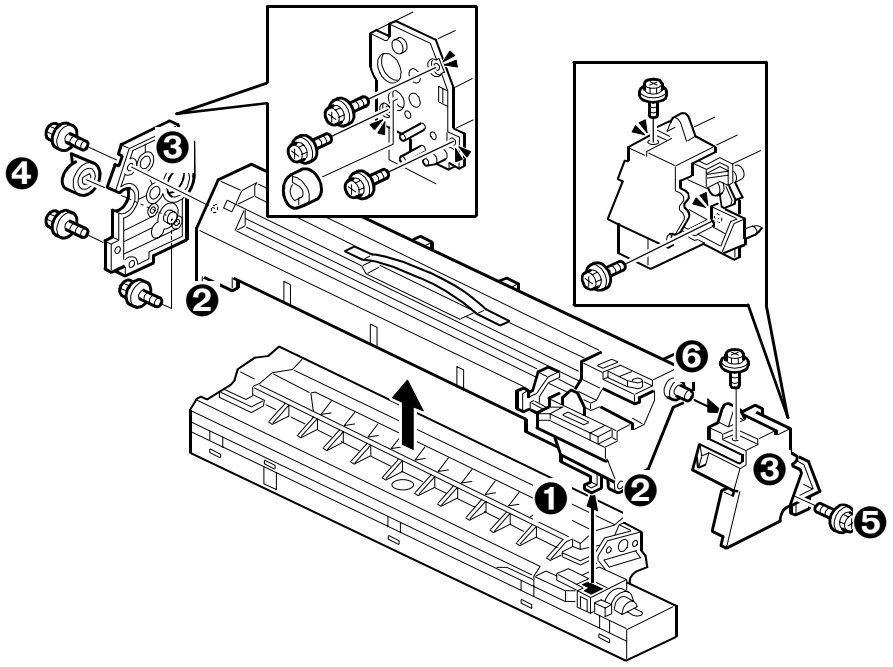
13. Open the developer pack [C]
14. While turning the black gear [D], slowly move the pack left and right and pour half of the developer over the augur [E].
15. Continue to rotate the black gear until the developer is level.
16. While continuing to turn the black gear, slowly move the pack left and right and pour the remaining half of the developer over the augur until the developer is level.



Important

- Be careful. Do not spill developer on the gears or sponges.
- If you accidentally spill developer on the gears or sponges, remove it with a magnet or the tip of a magnetized screwdriver.

PCU Reassembly



Reassemble the PCU in this order:

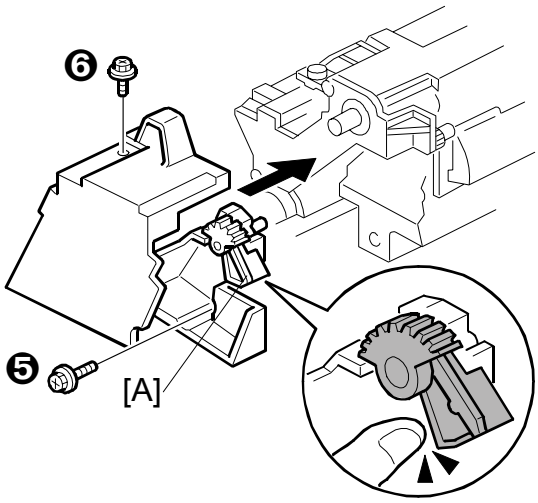
❶ Connect pawl

❷ Frame pawls, front and rear

❸ Set rear cover, front cover
- Never touch the lever [A] until after the top screw has been fastened.

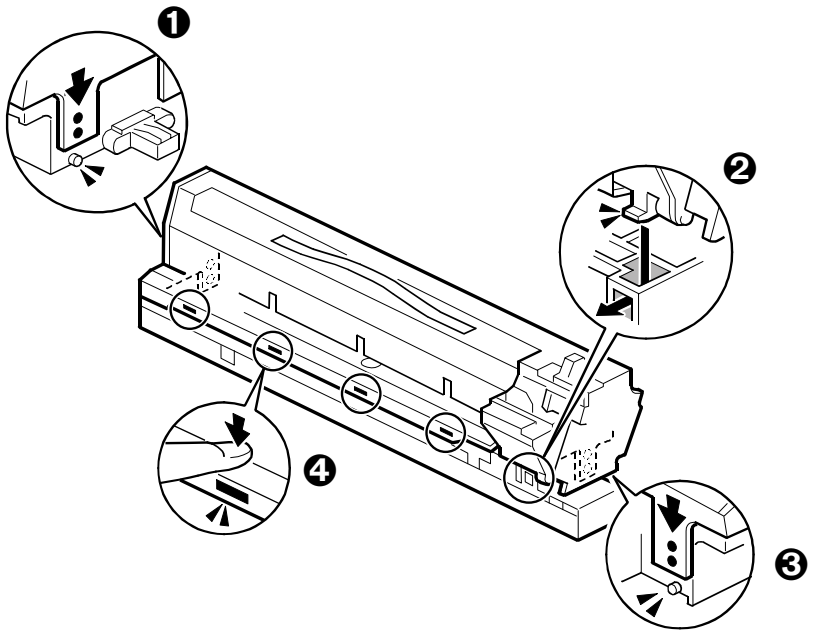
❹ Screws (🔩 x3), coupling x1
- Never press down on the top of the PCU when you reattach the rear or front cover.

❺ Lower screw (🔩 x1)
- Always install the lower screw first to maintain the correct gap between the rollers.



❻ Top screw (🔩 x1)

- Lift and lower the lever [A] to make sure that the shutter opens fully and operates smoothly.



1. Make sure that all of the holes and tabs on are engaged at ❶, ❷, ❸, and ❹. Then push down to lock the tabs on the front and rear end of the PCU.
2. Make sure that the holes for the screws on the front and rear end of the PCU are aligned correctly. If the holes are not aligned correctly, make sure that the tabs at the front, rear, and left side of the PCU are engaged correctly.

3.7.7 AFTER REPLACEMENT OF PCU COMPONENTS

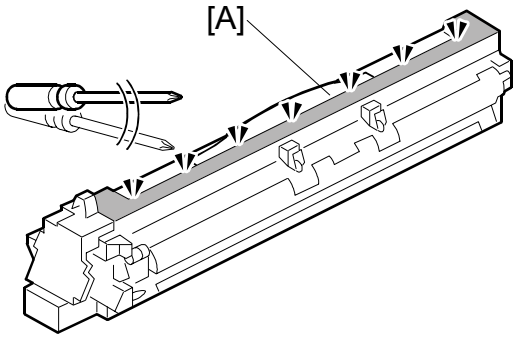
Do this procedure after replacement of the PCU components and developer.

1. Assemble the PCU and install it in the machine.
2. Turn the machine on.
3. Go into the SP mode and do SP2801 (Developer Initialization).
4. Make 5 sample copies.
5. Check the copies.

   If the copies are clean (no black dots), the replacement is completed.

   -or-

   If you see black dots of toner that fell on the copies, go to the next step.
6. Remove the PCU from the machine.
7. Lightly tap the top of the PCU [A] with a screwdriver at 8 locations. These locations must be at equal intervals. Tap 2 or 3 times at each location, to make the toner fall into the development section.

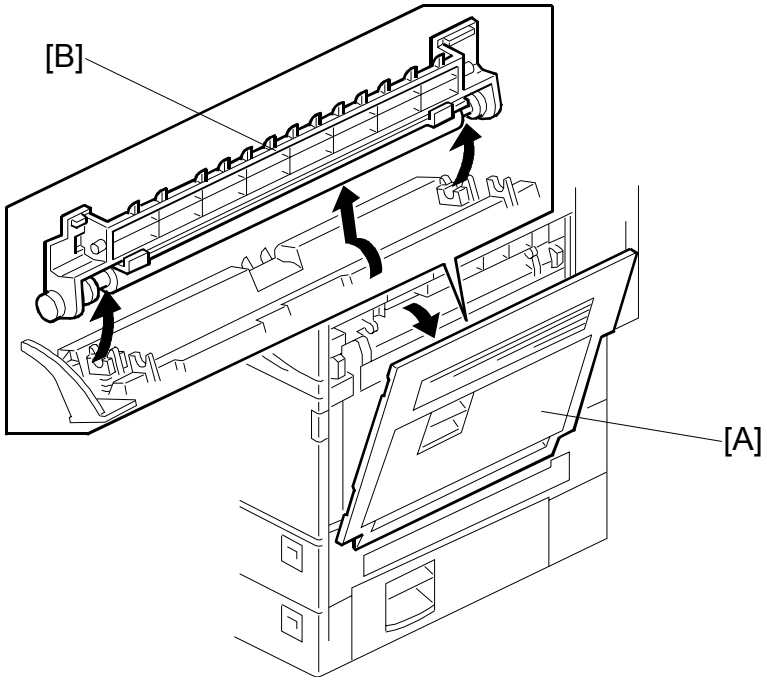


8. Install the PCU in the machine.
9. Turn the machine on, and close the front door. After the machine turns the development roller for 10 seconds, go to the next step.
10. Open and close the door two more times. The total rotation time is 30 seconds.
11. If you replaced PCU components:
    - If A4/8½" x11" paper is installed, make 4 copies/prints.
    - If A3/11" x 17" paper is installed, make 2 copies/prints.
    - To make solid black prints, use **SP2902 003** Pattern **#8**.

    NOTE: This step is not necessary if only the developer was replaced.

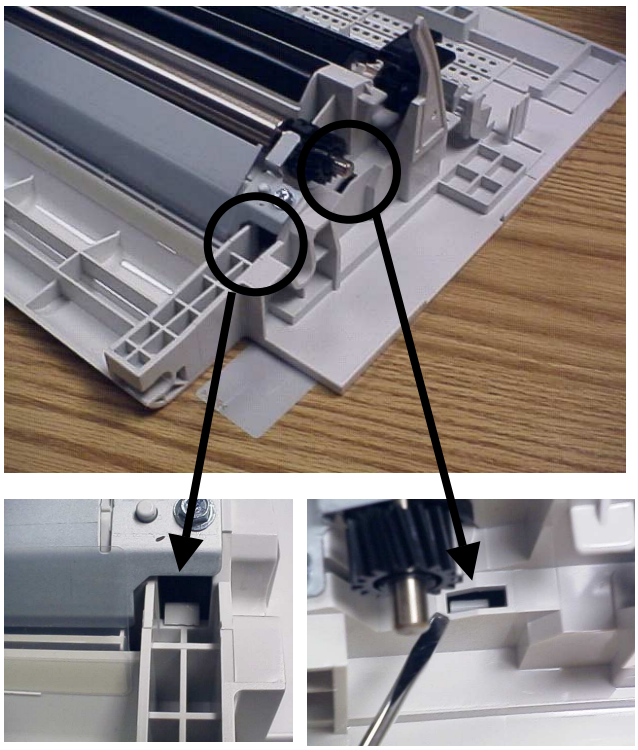
3.8 TRANSFER UNIT

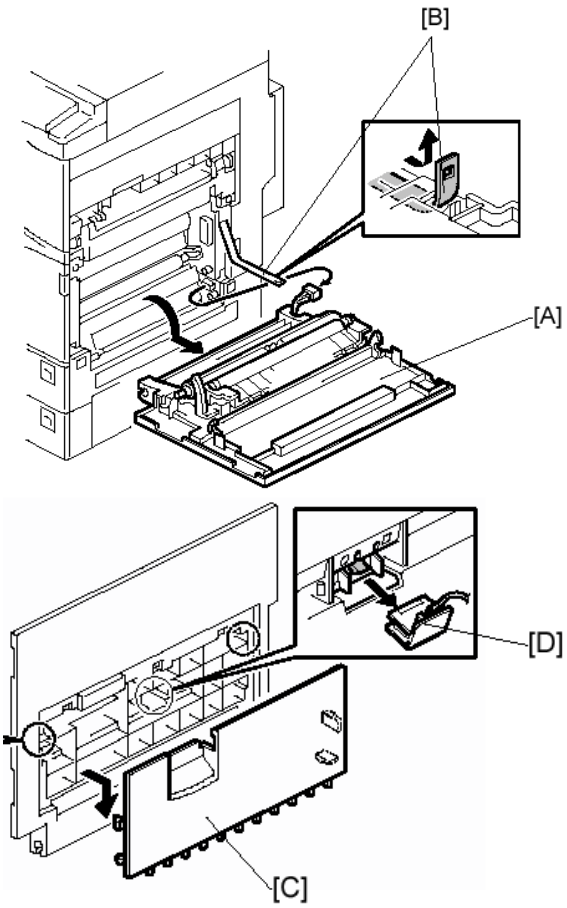
3.8.1 TRANSFER ROLLER UNIT



1. Open the right cover [A].
2. Remove the transfer roller unit [B] (Hook x1).
   NOTE: Do not touch the transfer roller surface.

3.8.2 IMAGE DENSITY SENSOR



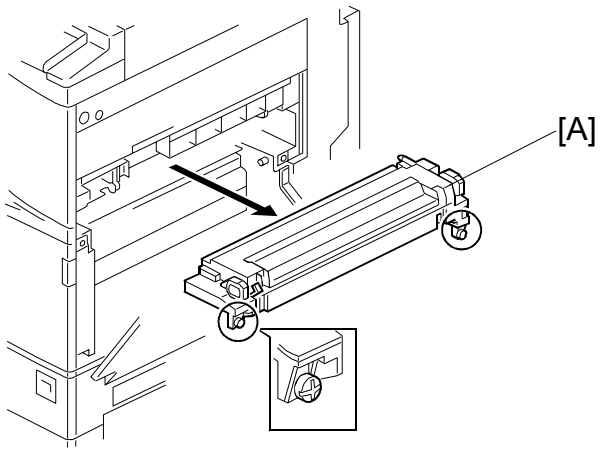


1. Open the right cover [A].
2. Remove the unit band [B].
3. Remove the right cover [A] (☞ x1),
4. Remove the sub right cover [C] (4 hooks, 2 on each side).
   NOTE: Release clips carefully to prevent breakage, see photos.
5. Replace the image density sensor [D] (☞ x1).
6. Initialize the new sensor with SP 2935.

3.9 FUSING/EXIT

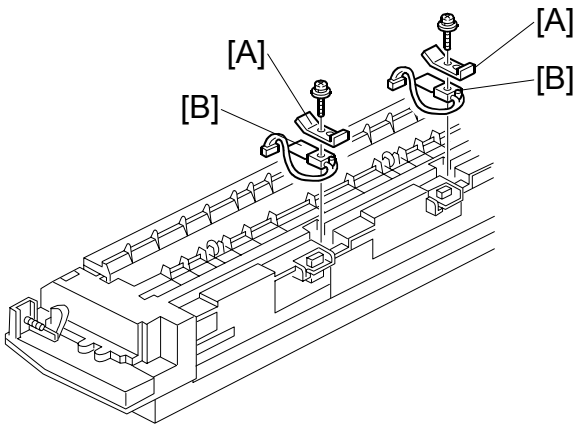
3.9.1 FUSING UNIT

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



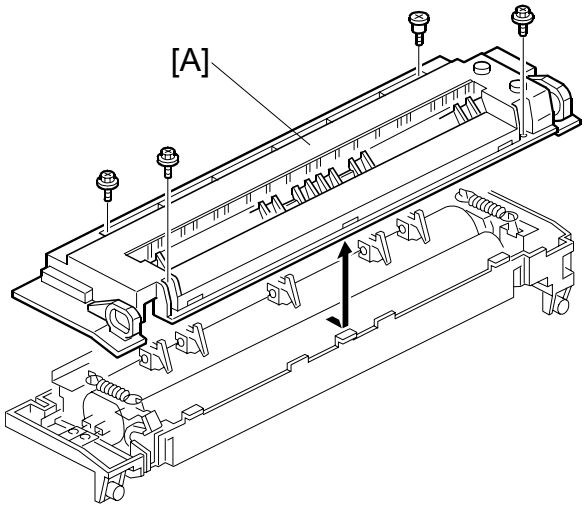
1. Release the duplex unit, if it has been installed, and open the right cover.
2. Remove the fusing unit [A] (☞ x2).

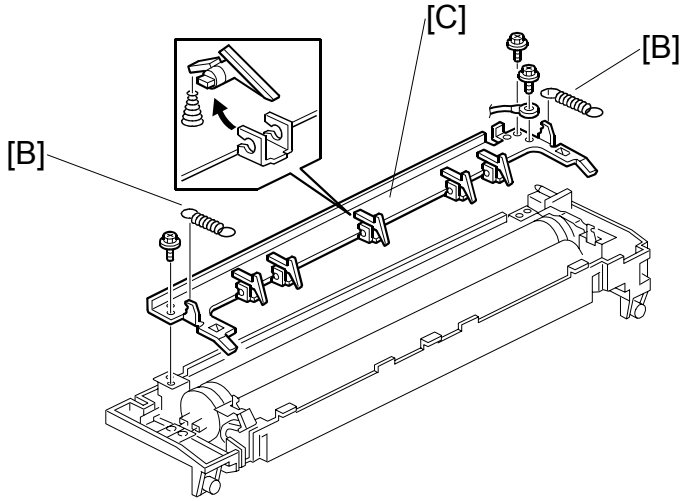
3.9.2 THERMISTORS



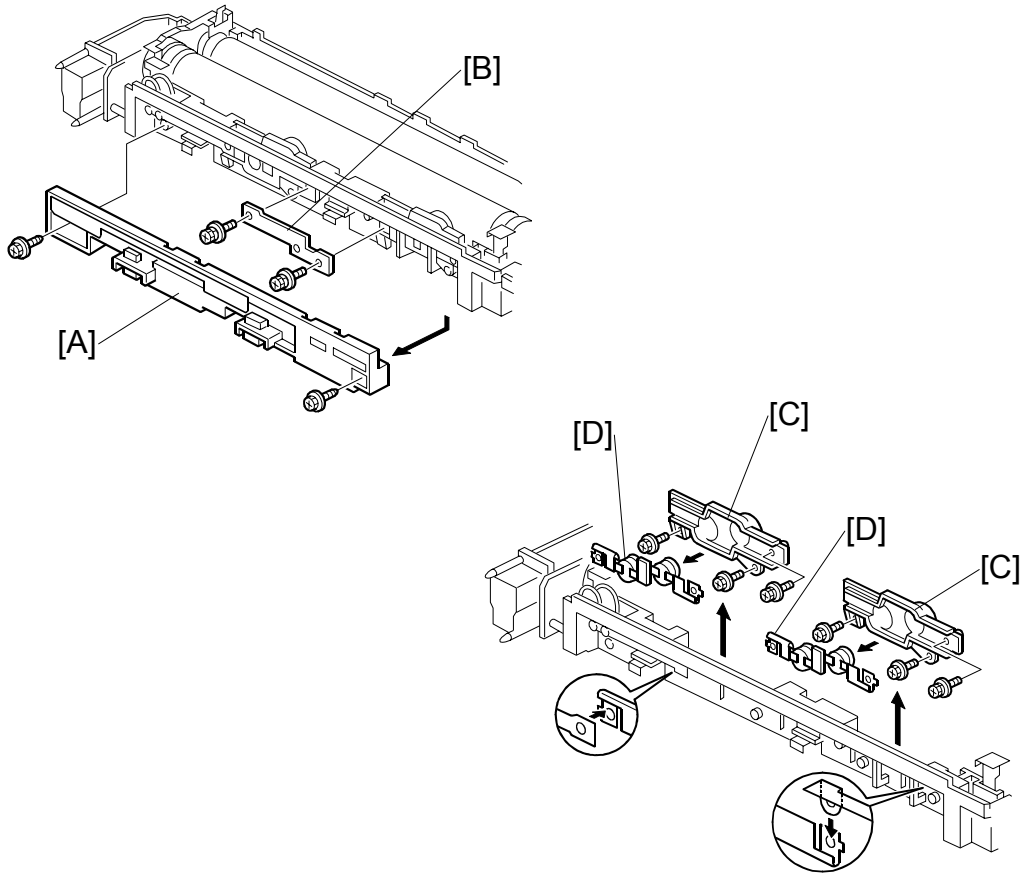
1. Remove the fusing unit. (☛ 3.9.1).
2. Remove the plates [A] (☞ x1 ea.).
3. Replace the thermistors [B] (☜ x1).

3.9.3 THERMOSTATS



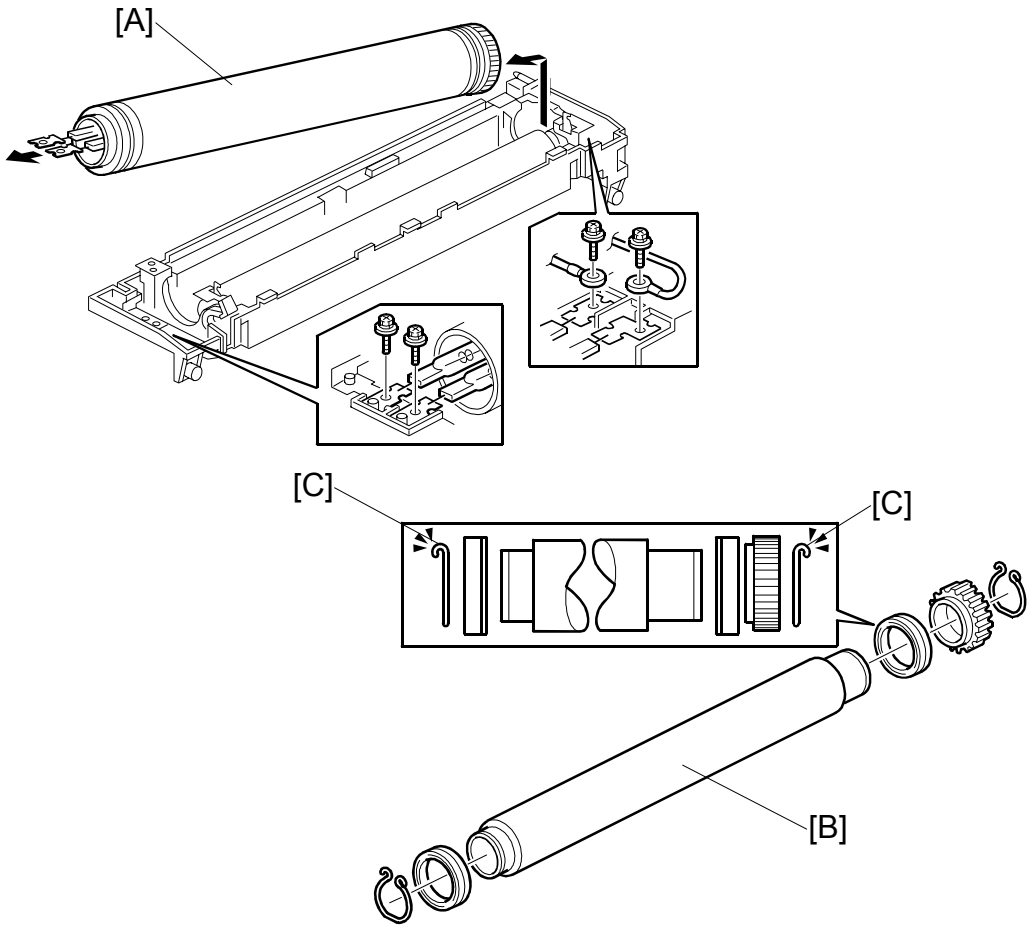


1. Remove the fusing unit. (☛ 3.9.1)
2. Remove the fusing upper cover [A] (☞ x4).
3. Remove the pressure springs [B].
4. Remove the hot roller stripper bracket [C] (☞ x3).



5. Remove the thermostat cover [A] (Tapping ☞ x2).
6. Remove the plate [B] (☞ x2, Spring washers).
7. Remove the thermostat holder [C] (☞ x3 ea.).
8. Replace the thermostats [D].

3.9.4 HOT ROLLER AND FUSING LAMP



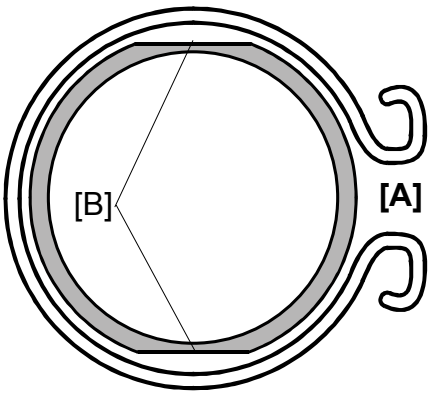
1. Remove the fusing unit. (☛ 3.9.1)
2. Remove: (☛3.9.3)
   - Fusing upper cover.
   - Pressure springs.
   - Hot roller stripper bracket.
3. Remove the fusing lamps (x4) and hot roller assembly [A].
   NOTE: Do not touch the surface of the fusing lamp with bare hands.
4. Replace the hot roller [B] (C-rings x2, Gear x1, Bushings x2).

Reinstallation

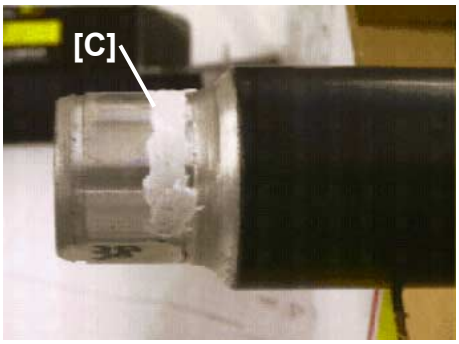
- When you reattach the C-rings, the flat sides must face the bearing/roller. (The little hooks [C] must face away from the bearing/roller).

Reinstallation

1. At the rear (gear-side) attach the C-ring so that the opening [A] is 90 degrees from the D-cut sections [B] of the fusing roller.

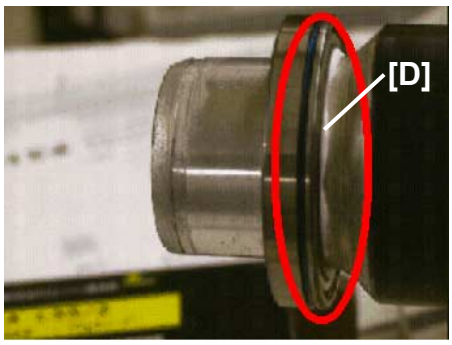


2. Apply enough grease at [C] so the metal surface is not visible.
3. The grease should be visible after reattaching the bushing [D].

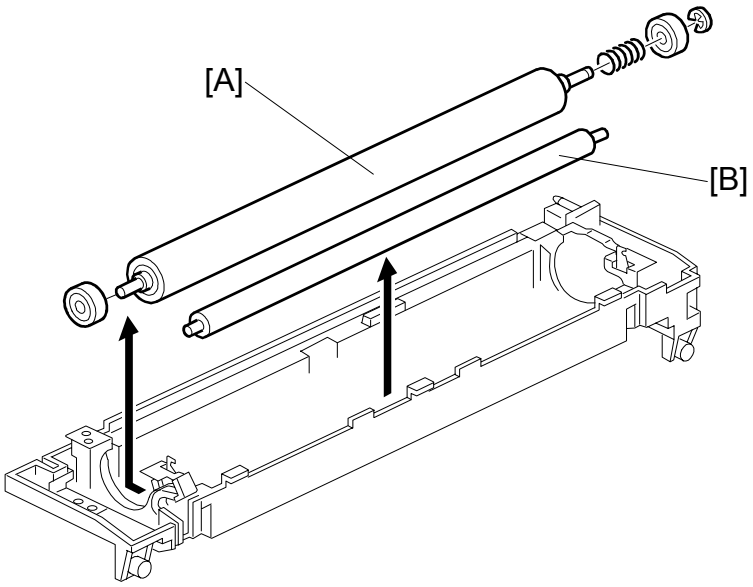


Important

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



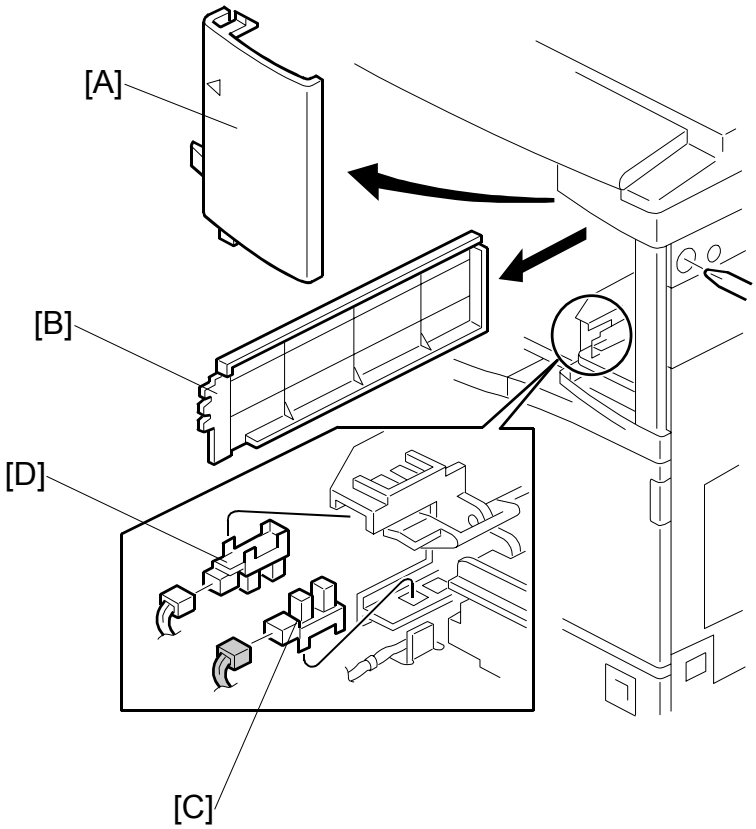
3.9.5 PRESSURE ROLLER/CLEANING ROLLER



1. Remove the fusing lamp and hot roller assembly. (☛3.9.4)
2. Replace the pressure roller [A] (℃ x1, Bushings x2, Spring x1).
3. Replace the cleaning roller [B].

NOTE: 1) Apply grease (Barrierta) to the inner surface of the bushing for the pressure roller.
2) Do not touch the surface of the rollers.

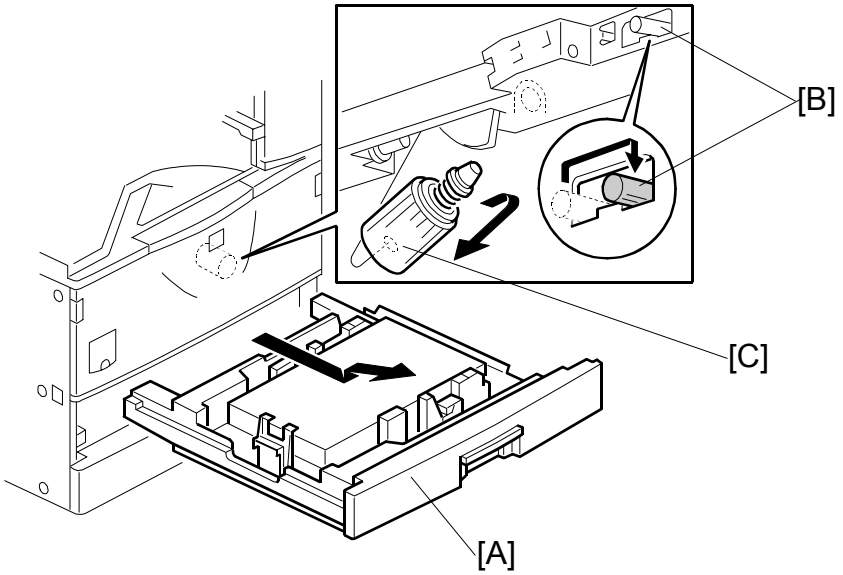
3.9.6 PAPER EXIT SENSOR/PAPER OVERFLOW SENSOR



1. Remove the front upper cover [A] (x1, Peg x1).
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] (x1).
4. Replace the overflow sensor [D] (x1).

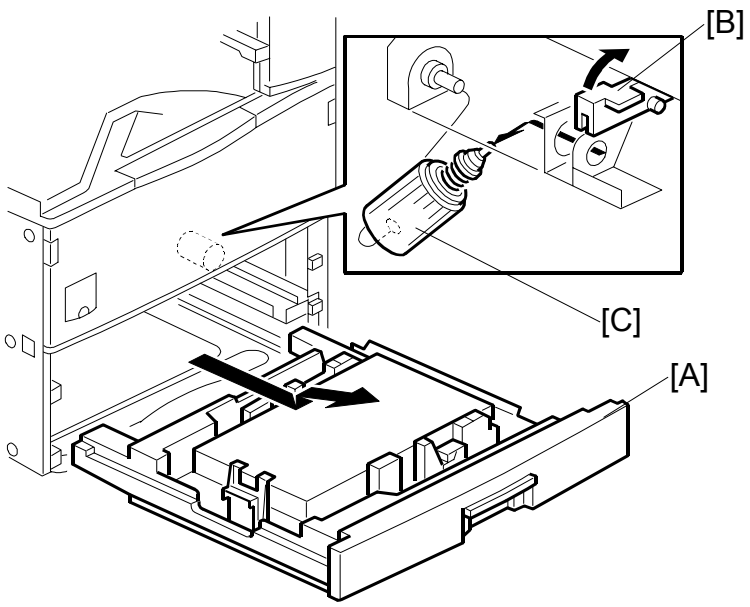
3.10 PAPER FEED

3.10.1 FEED ROLLER: TRAY 1



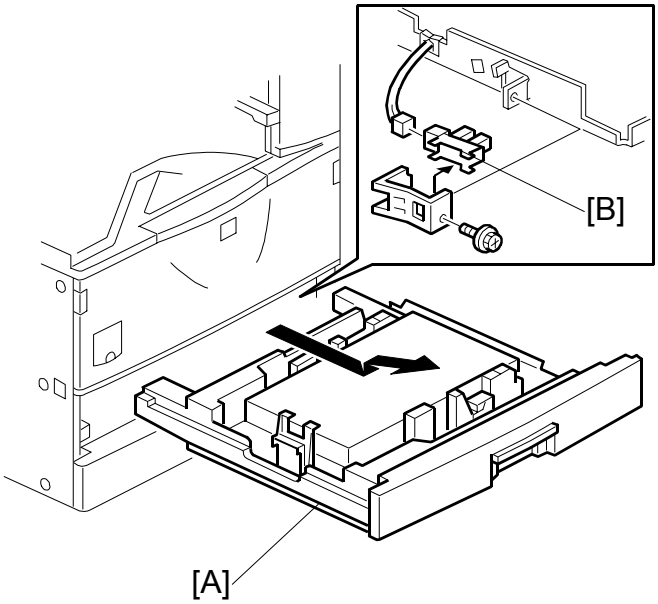
1. Remove the paper tray [A].
2. Pull the lever [B].
3. Replace the feed roller [C].
   NOTE: Do not touch the roller surface with bare hands. After reinstalling the feed roller, return the lever [B].

3.10.2 FEED ROLLER: TRAY 2



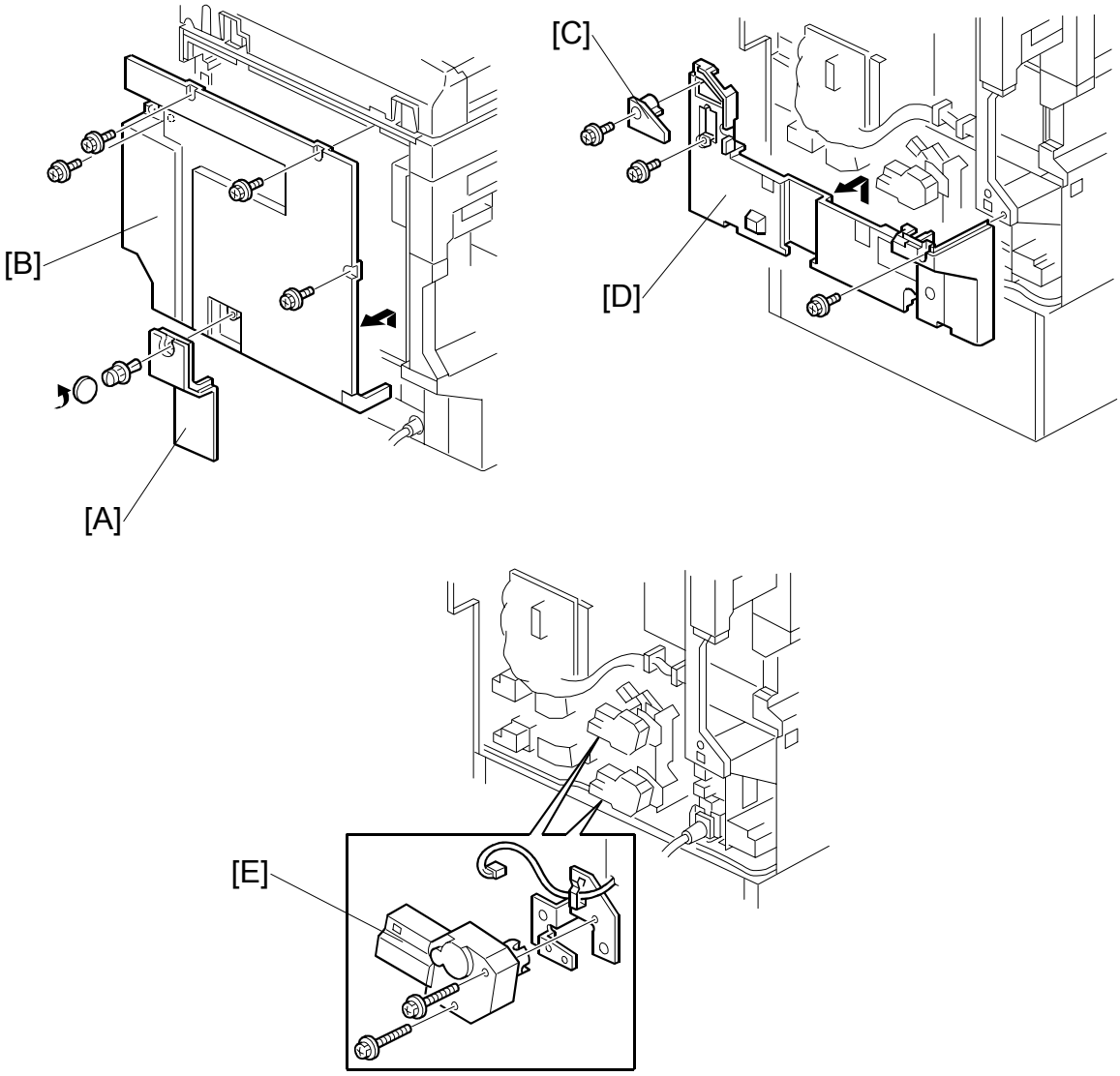
1. Remove the first paper tray.
2. Remove the second paper tray [A].
3. Raise the white Teflon lever [B] to release the roller.
4. Replace the feed roller [C].
   NOTE: Do not touch the roller surface with bare hands. After reinstalling the feed roller, reset the lever [B].

3.10.3 PAPER END SENSOR



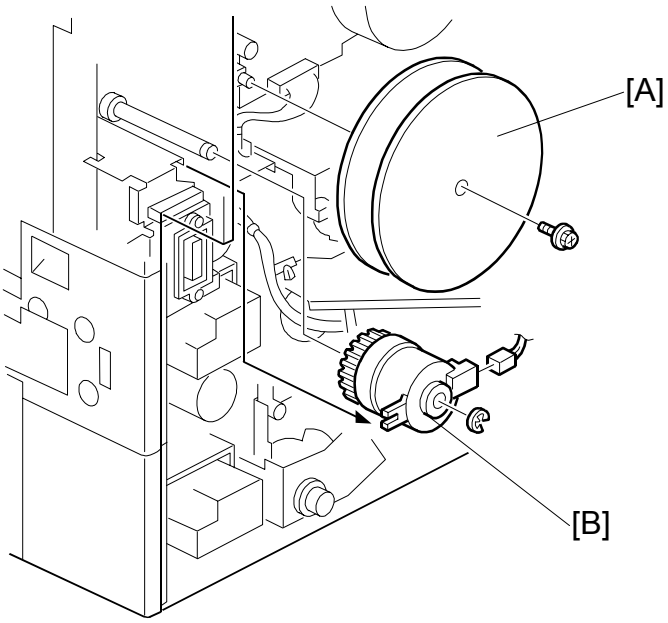
1. Remove the paper tray [A].
2. Remove the paper end sensor assembly (x1, x1).
3. Replace the paper end sensor [B].

3.10.4 PAPER TRAY LIFT MOTORS



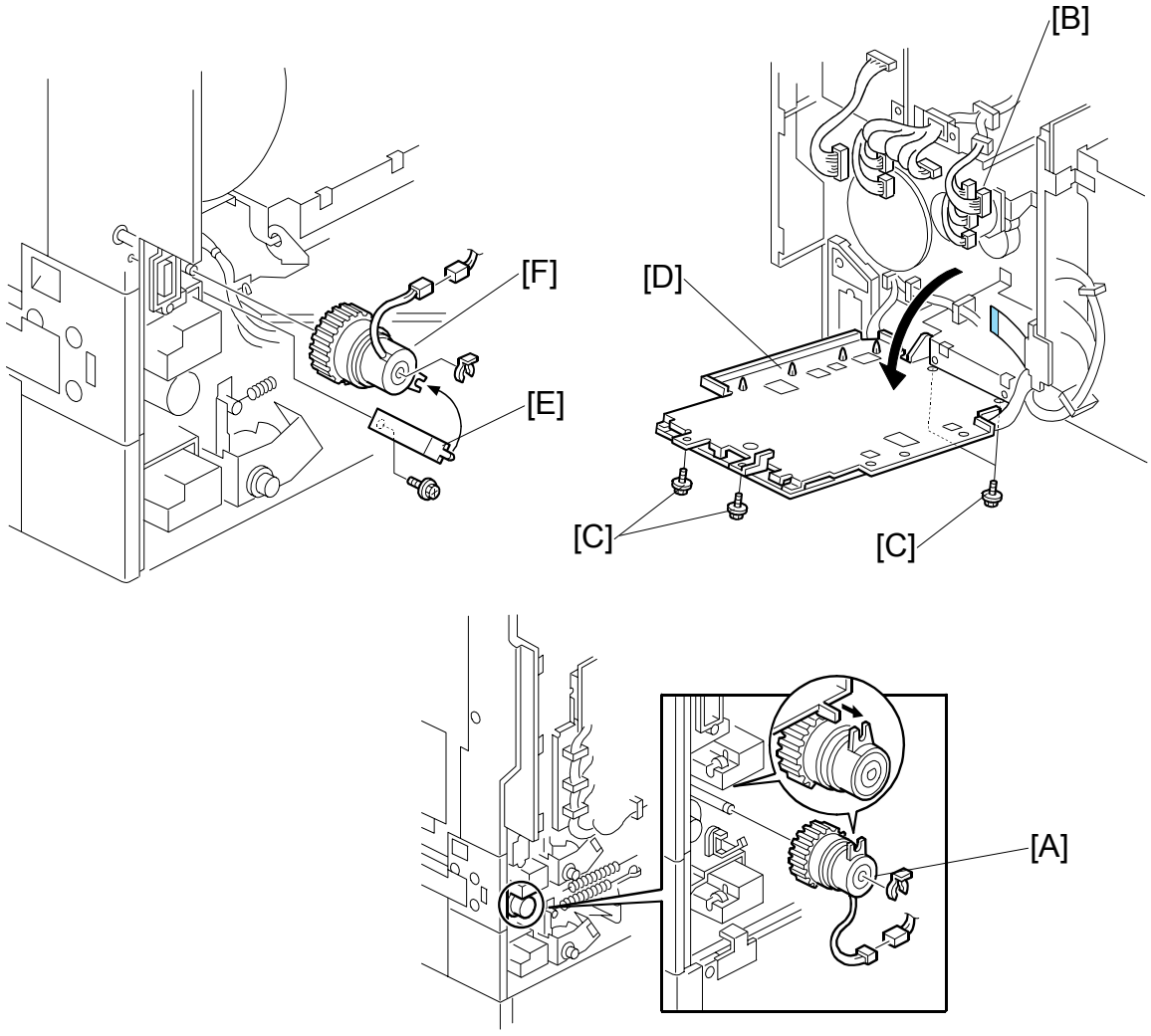
1. Remove the paper tray.
2. Remove the connector cover [A] (x1) and disconnect the cable.
3. Remove the rear cover [B] (x4).
4. Remove the duplex connector cover [C] (x1).
5. Remove the lower rear cover [D] (x2).
6. Replace the paper lift motors [E] (x2 ea., x1 ea.).

3.10.5 REGISTRATION CLUTCH



1. Remove the connector cover and the rear cover. (☛3.10.4
2. Remove the duplex connector cover and lower rear cover. (☛3.10.4)
3. Remove the fly wheels [A] (x1).
4. Remove the registration clutch [B] (x1, x1).

3.10.6 PAPER FEED CLUTCHES



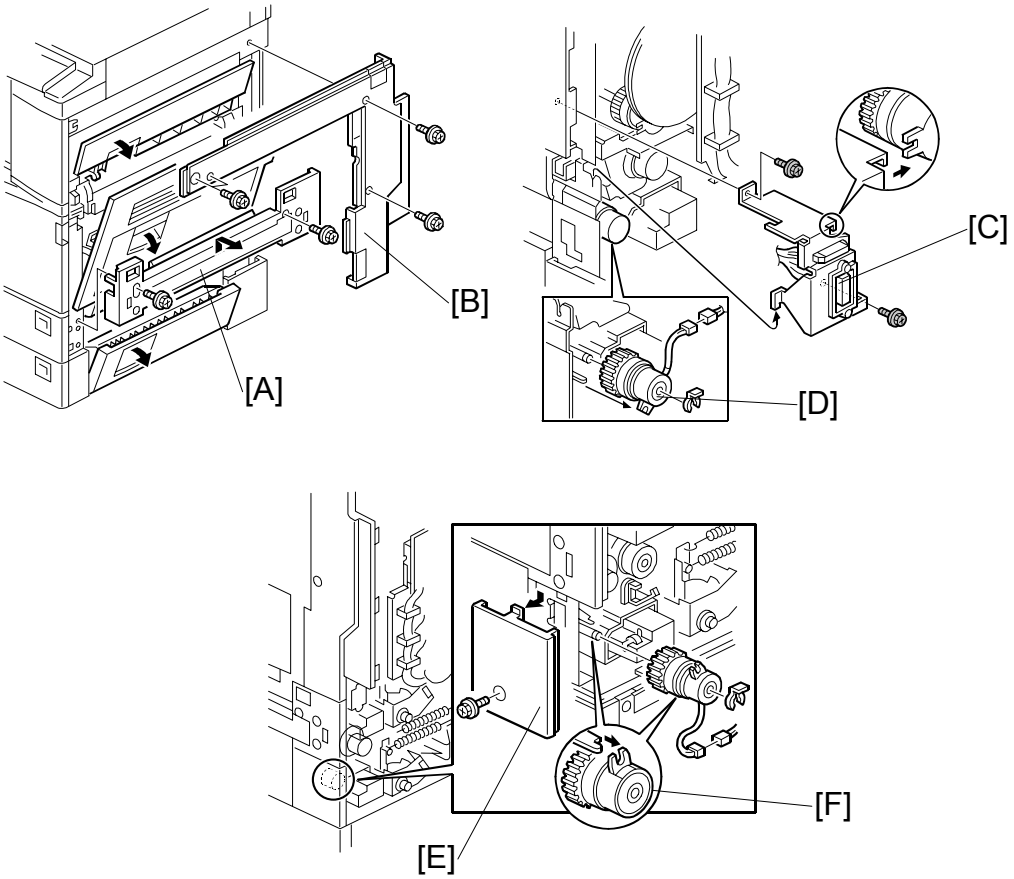
Lower Paper Feed Clutch

1. Remove the rear cover.
2. Remove the lower rear cover.
3. Replace the lower paper feed clutch [A] (x 1, x 1).

Upper Paper Feed Clutch.

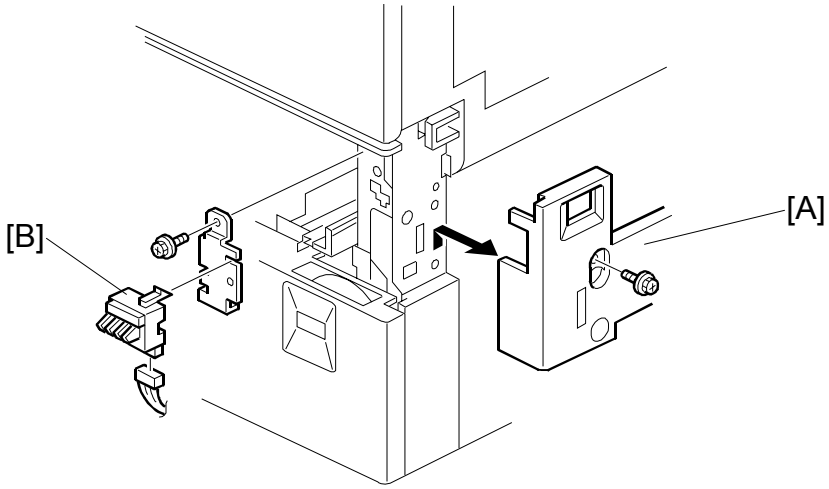
4. Disconnect the connectors [B] for the SBCU board as shown (x15).
5. Remove 4 screws [C] securing the SBCU board bracket then swing down the SBCU board bracket [D].
6. Remove the bracket [E] (x1).
7. Replace the upper paper feed clutch [F] (x 1, x 1).

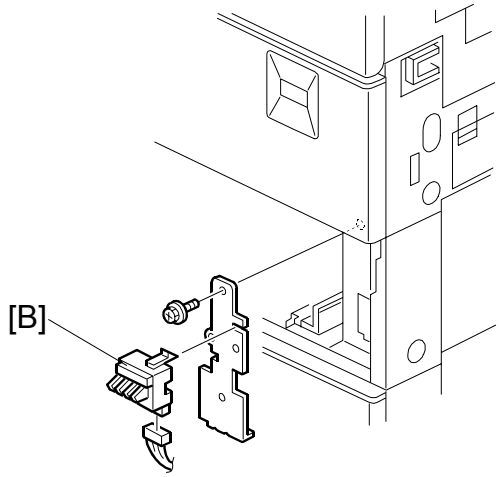
3.10.7 RELAY CLUTCHES



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.
3. Remove the lower right cover [A] (☞ x2).
4. Remove the scanner right cover.
5. Remove the right cover [B] (☞ x4).
6. Swing down the SBCU board bracket.
7. Remove the connector bracket [C] (☞ x 2).
8. Replace the upper relay clutch [D] (☞ x 1, ⌀ x 1).
9. Remove the right rear cover [E] (☞ x1).
10. Replace the lower relay clutch [F] (☞ x 1, ⌀ x 1).

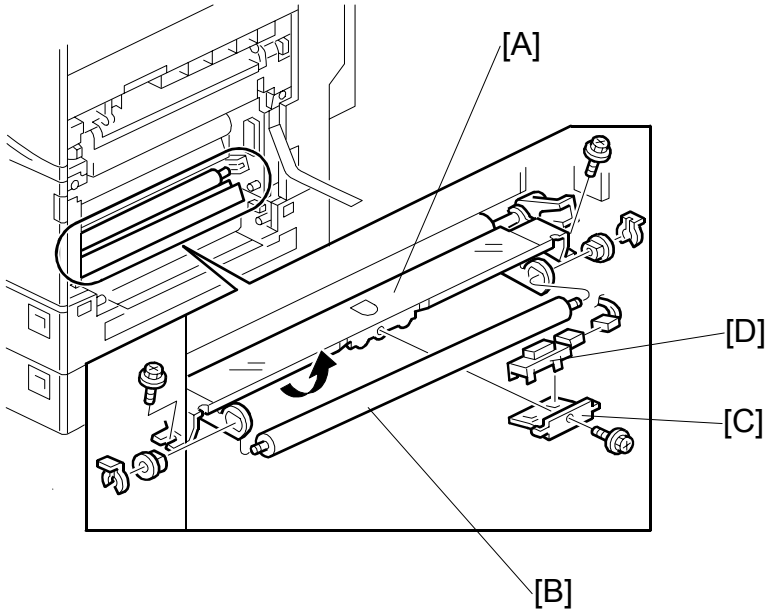
3.10.8 PAPER SIZE DETECTOR





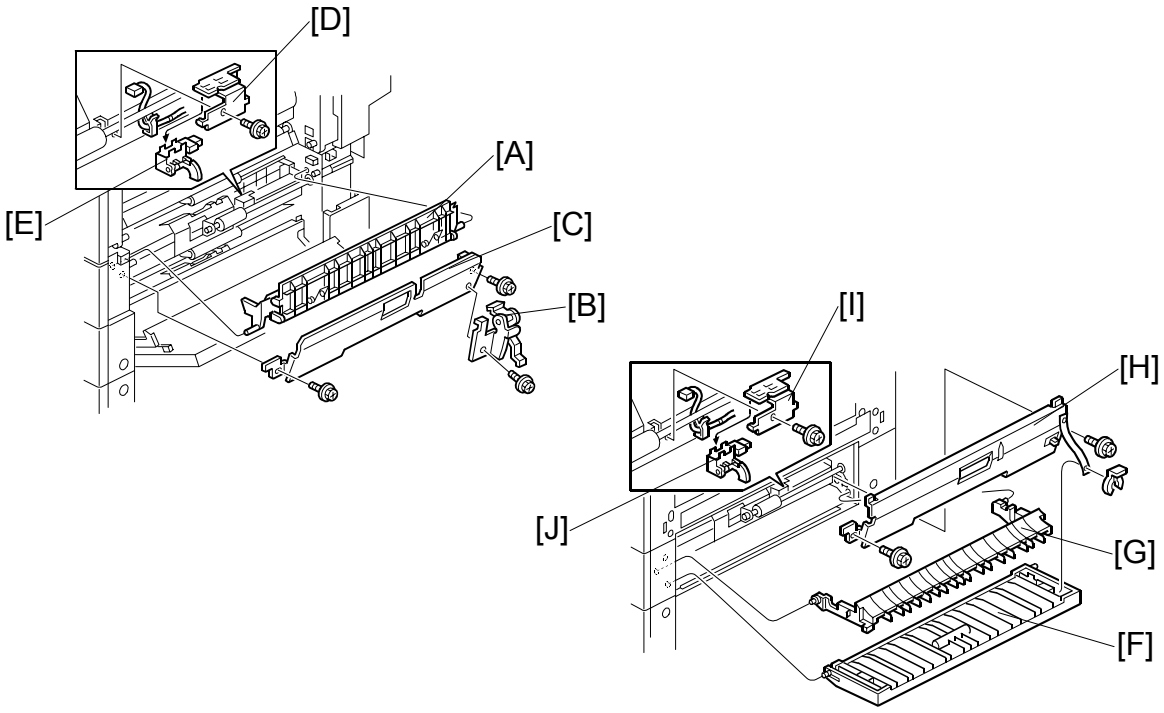
1. Remove the right lower cover [A]. (☛3.10.7)
2. Remove the paper trays.
3. Remove the paper size detector assembly (☞ x1 ea.).
4. Replace the paper size detectors [B] (☞ x1 ea.).

3.10.9 REGISTRATION SENSOR



1. Remove the right cover. (☛3.8.2)
2. Remove the registration guide plate [A] (☞ x2).
3. Remove the paper support roller [B] (2 snap rings, 2 bushings).
4. Remove the sensor bracket [C] (☞ x1).
5. Replace the registration sensor [D] (☜ x1).

3.10.10 RELAY SENSORS



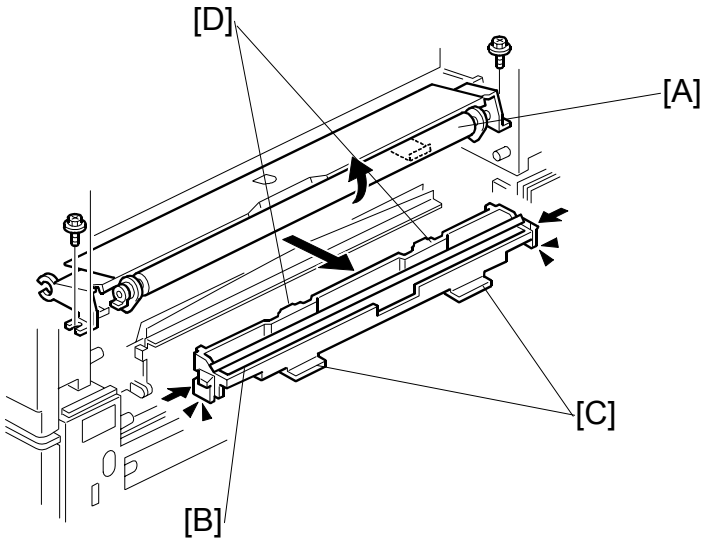
Upper Relay Sensor

1. Remove the right cover. (☛3.8.2)
2. Remove the lower right cover. (☛3.10.7)
3. Remove the guide plate [A].
4. Remove the bracket [B] (☞ x1).
5. Remove the guide plate [C] (☞ x2).
6. Remove the sensor bracket [D] (☞ x1).
7. Replace the upper relay sensor [E] (☜ x1).

Lower Relay Sensor

1. Remove the right lower door [F] (1 clip).
2. Remove the guide plate [G].
3. Remove the guide plate [H] (☞ x2).
4. Remove the sensor bracket [I] (☞ x1).
5. Replace the lower relay sensor [J] (☜ x1).

3.10.11 DUST COLLECTION BOX



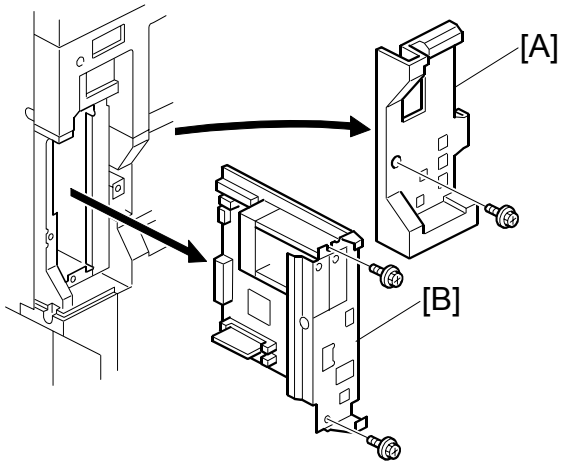
1. Remove:
   - PCU (☛3.7.1)
   - Right cover (☛3.8.2)
2. Disconnect the sponge roller assembly [A] (☞ x2) and lift it.
3. While you hold the roller assembly up, push in both ends of the dust collection bin [B] and remove the bin.
4. Tap the dust collection bin above a sheet of paper, to remove the paper dust.
5. Use a dry cloth to clean the inside of the dust collection bin.

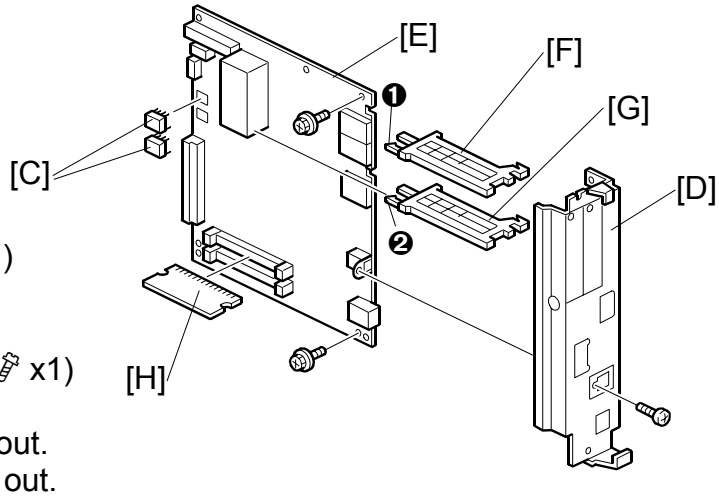
Reinstallation

- Make sure that the two tabs with ridges [C] are towards you when you install the dust collection bin.
- Insert the "A"-shaped tabs [D] on the rear of the dust collection box into the square grooves (not shown in the diagram). Turn the unit upwards to lock the unit in position. You will hear a click after the unit is installed correctly.
- If the dust collection bin is not installed correctly, the dust collection bin will not lock in its position and the sponge roller assembly will not lower fully.

3.11 PCBS AND OTHER ITEMS

3.11.1 CONTROLLER BOARD





Remove:

[A]: Controller board cover (☞ x1)
[B]: Controller board (☞ x2)
[C]: NVRAM x2
[D]: Controller board face plate (☞ x1)
[E]: Controller board (☞ x2)
[F]: Brace1. Lift hook 1 and pull out.
[G]: Brace 2. Lift hook 2 and pull out.
[H]: Standard Memory DIMM

Important:

- Take the NVRAMs from the old board and install them on the new board.
- Do not remove the NVRAM until after you upload its contents (☛3.11.2).
- Always touch a metal surface to discharge static on your hands before you touch the controller board.
- Work carefully when you remove the NVRAMs, to prevent damage to other components on the controller board. Do not short-circuit the pins of other chips.
- NVRAM chips must always be removed and replaced as a pair.
- Set the DIP switches on the new controller board to the same settings as the old board.

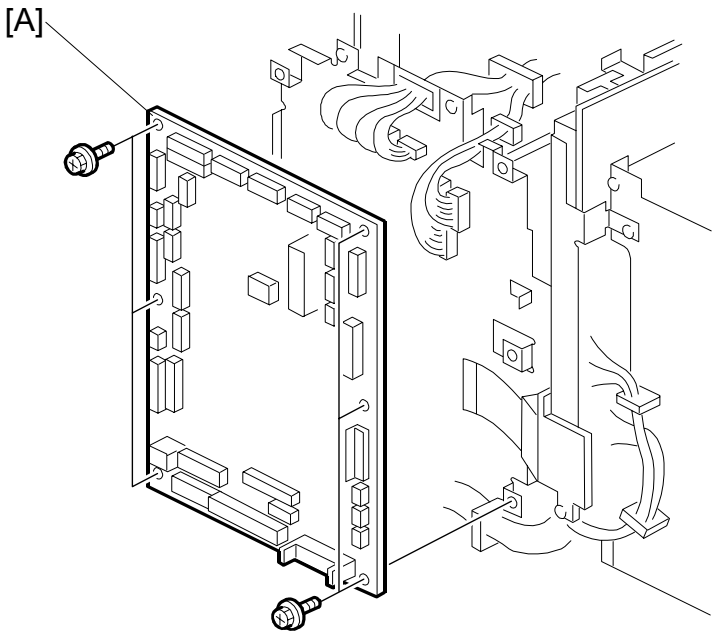
3.11.2 NVRAM

The following data cannot be downloaded from the SD card.

- Total count categories (SP7002*** Copy Counter)
- C/O, P/O Counter (SP7006*** C/O, P/O Count Display)
- Duplex, A3/DLT/Over 420 mm, Staple and Scanner application scanning counters (system settings).

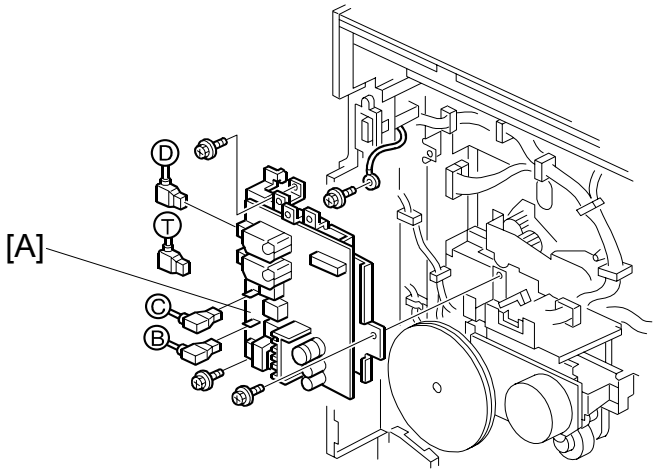
1. Do SP5990 001 to print the SMC report.
2. Turn off the main switch.
3. Remove the controller board cover (x1).
4. Put the SD card in SD card slot **C3**.
5. Turn on the main switch.
6. Do SP5824.
7. Touch “Execute” to start to upload the NVRAM data.
8. Turn off the main switch and remove the SD card.
9. Remove the controller board (x1). (☛3.11.1)
10. Remove the NVRAM (x2) and replace them with the new chips. (☛3.11.1)
    NOTE: Both NVRAM chips must be replaced.
11. Install the controller board.
12. Put the SD card with the NVRAM data in SD card slot **C3**.
13. Turn on the machine.
14. Do SP5801 to initialize the new NVRAM.
15. To download the NVRAM data from the SD card in **C3**, do SP5825.
16. Touch “Execute” to start to download the NVRAM data.
17. Turn off the main switch and remove the SD card.
18. Turn on the machine.
19. Do SP5990 001 to print another SMC report.
20. Compare this new SMC report with the report you printed in Step 1. If any of the SP settings are different, input the SP settings of the first report.
21. Do SP5907 and input the brand and model name of the machine for Windows Plug & Play capability.

3.11.3 SBCU BOARD



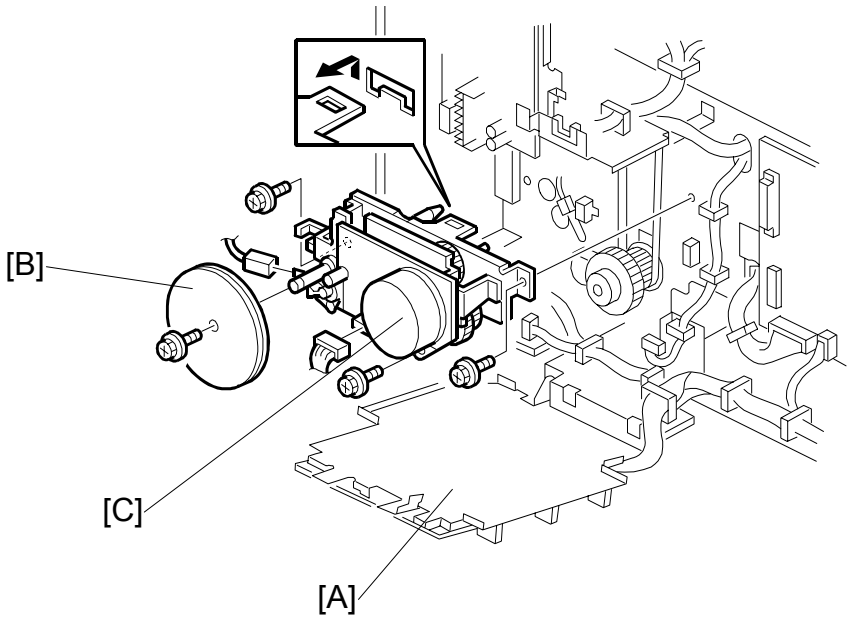
1. Remove the rear cover. (☛3.10.4)
2. Remove the SBCU board [A] (☞ x All, 🪛 x6).
3. Set the DIP switches on the new SBCU board to the same settings as the old board.

3.11.4 POWER PACK



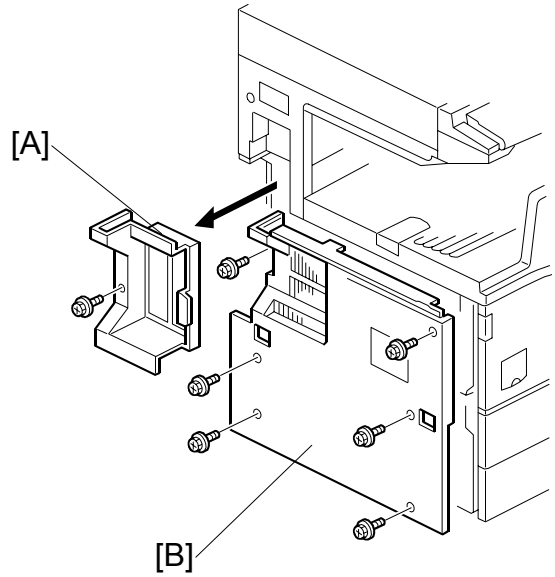
1. Remove the rear cover. (☛0)
2. Swing down the SBCU board bracket. (☛3.10.6)
3. Remove the power pack [A] (x 5, x3).

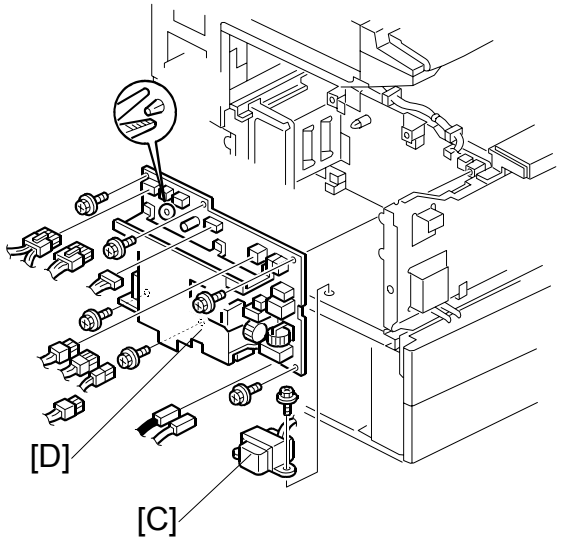
3.11.5 MAIN MOTOR



1. Remove the rear cover. (☛3.10.4)
2. Swing down the SBCU board bracket. (☛3.10.6)
3. Remove the fly wheels [B] (x1).
4. Replace the main motor [C] (x2, x3).

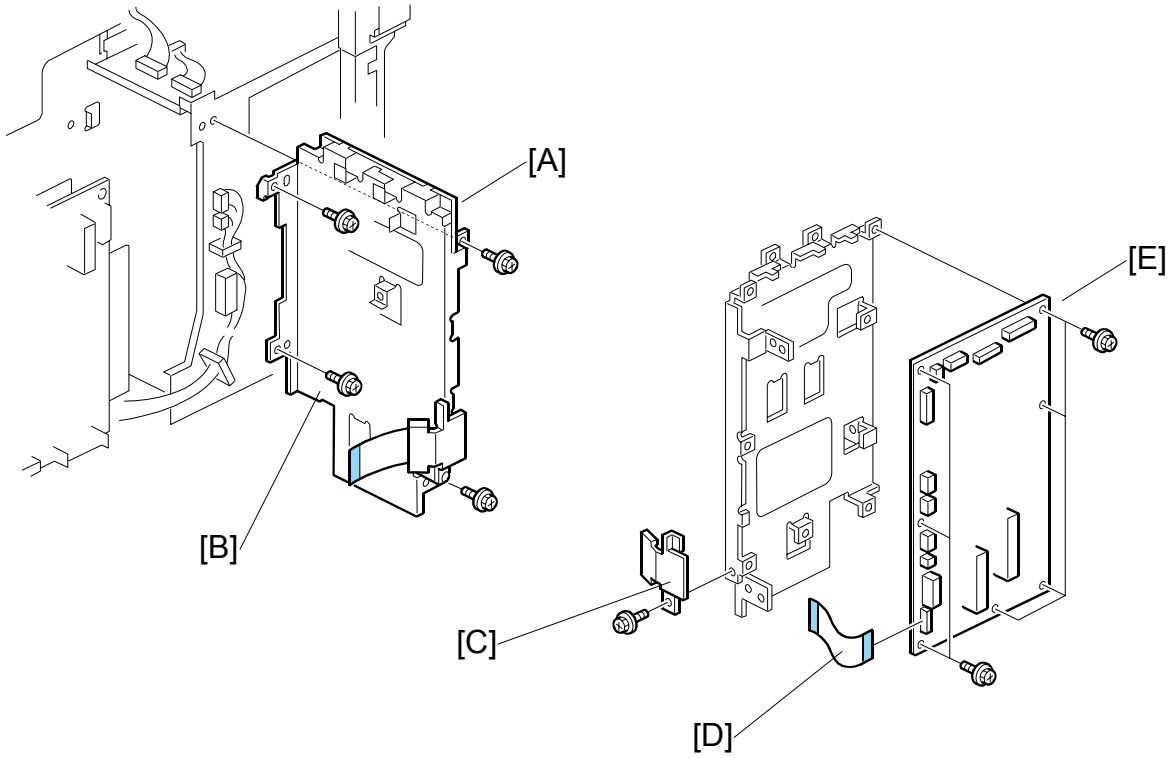
3.11.6 PSU





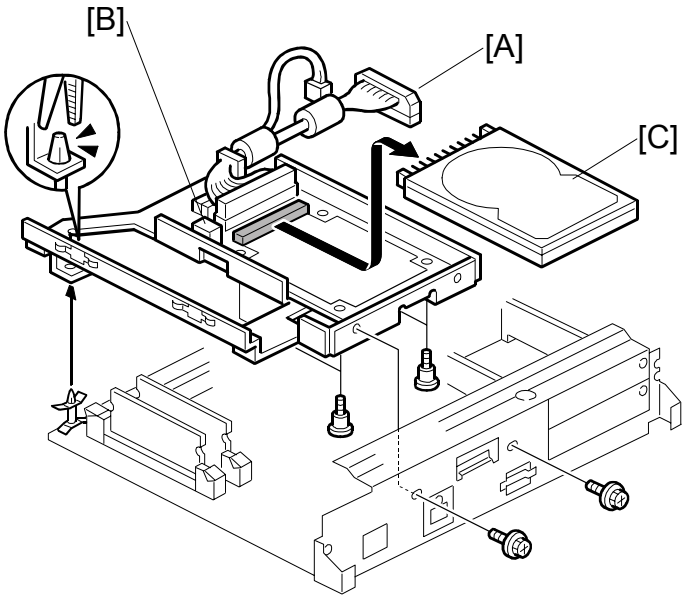
1. Remove the optional finisher if it has been installed.
2. Remove the application cover [A] (x1).
3. Remove the left cover [B] (x6).
   NOTE: For the 220 V machine only, remove the transformer [C] (x1).
4. Remove the PSU [D] (x all, x6, Clip x1).

3.11.7 IPU



1. Remove: (☛3.11.1)
   - Controller board plastic cover (☞ x1).
   - Controller front plate screws (☞ x2).
2. Remove: (☛3.10.4)
   - Paper tray unit connector cover (☞ x1)
   - Disconnect the paper tray unit (if it is installed) (✋ x1)
   - Rear cover (☞ x1).
3. Pull the controller board partially out of the left slot to disconnect it from the IPU.
4. If the FCU is installed, pull it partially out of the right slot (☞ x2).
   NOTE: Do not remove the controller or FCU fully. Only pull them out a sufficient distance to disconnect them from the IPU board.
5. Disconnect the IPU board [A] (🔌 x2, Metal clamps x2, ✋ x6)
6. Remove the IPU bracket [B] with the IPU board attached (☞ x4, FFC x1).
7. Remove the flat film connector protection plate [C] from the bracket.
8. Remove the flat film connector [D] from the IPU.
9. Remove the IPU board [E] from the bracket (☞ x7).

3.11.8 HDD



Before you replace the HDD:

- Put an SD card in SD card slot **C3**.
- Go into the SP mode.
- Do **SP5846 51** to upload the address book data to the SD card.

  Important: If the HDD is damaged, you may not be able to retrieve this data from the HDD.

1. Remove the controller board. (☛3.11.1)
2. Disconnect the HDD harness [A].
3. Disconnect the AC harness [B]
4. Remove the HDD unit (☞ x2, Standoffs x2)
   NOTE: It is not necessary to format the new hard disk after installation.
5. Remove the HDD [C] from the bracket (☞x4)
6. After you install the new HDD, do **SP5853** to copy the preset stamp data from the firmware to the hard disk. Then turn the main power switch off/on.
7. If you successfully retrieved the address book data from the HDD with **SP5846 51**, do **SP5846 52** to restore the address book data to the HDD.

Important Notes About HDD Replacement

- Never remove an HDD unit from the work site without the consent of the client.
- If the customer has concerns about the security of information on the HDD, the HDD must remain with the customer for disposal or safe keeping.
- The HDD may contain proprietary or classified (Confidential, Secret) information. Specifically, the HDD contains document server documents and data stored in temporary files created automatically during copy job sorting and jam recovery. Such data is stored on the HDD in a special format, so it cannot normally be read but can be recovered with illegal methods.
- If the customer is using the Data Overwrite Security feature, the DOS function must be set up again.

3.12 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.

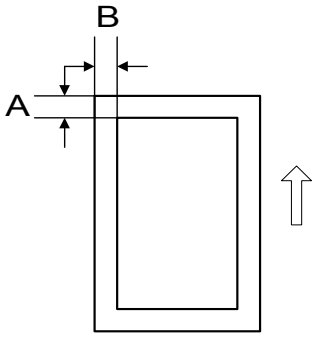
3.12.1 PRINTING

NOTE: 1) Make sure the paper is installed correctly in each paper tray before you start these adjustments.
2) Use the Trimming Area Pattern (SP2-902-3, No.10) to print the test pattern for the following procedures.
3) Set SP 2-902-3 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, side 2	SP1-002-6	



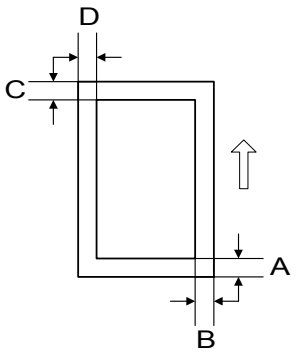
A: Leading Edge Registration
B: Side-to-side Registration

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

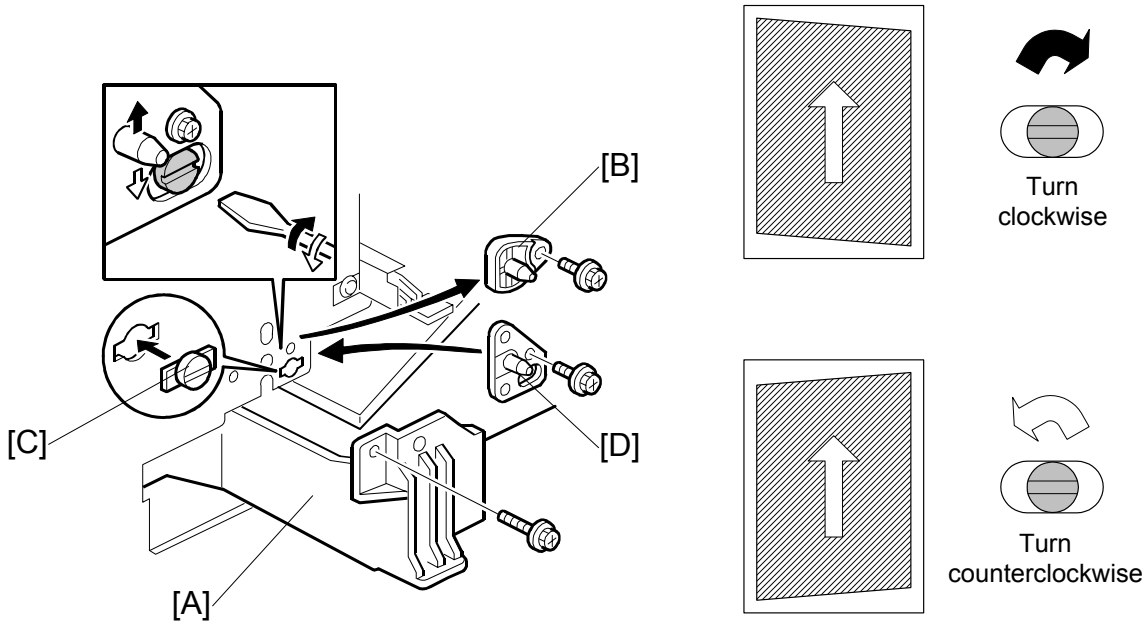
Main Scan Magnification

1. Print the single-dot grid pattern (SP2-902, no.5).
2. Check the magnification, and adjust the magnification using SP2-909 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 (SP2-902, No.10) is printed as a parallelogram, as shown. If it is, do the following.
2. Remove the laser unit [A] (☛3.6.2).
3. Remove the bracket [B] (☞ x2).
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.

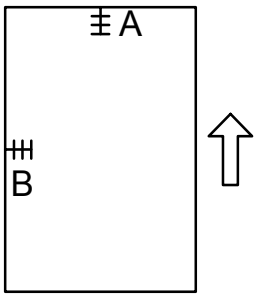
3.12.2 SCANNING

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 S5S 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

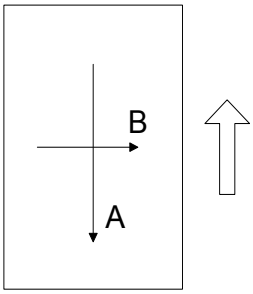


A: Leading Edge Registration
B: Side-to-side Registration

Magnification

NOTE: Use an S5S test chart to perform the following adjustment.

A: Sub scan magnification
B: Main 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
Main Scan Magnification	SP4-009

Standard White Density Adjustment

This adjusts the standard white density level.

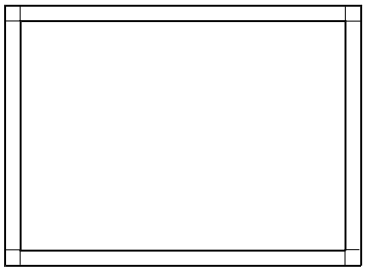
Perform this adjustment in any of the following conditions:

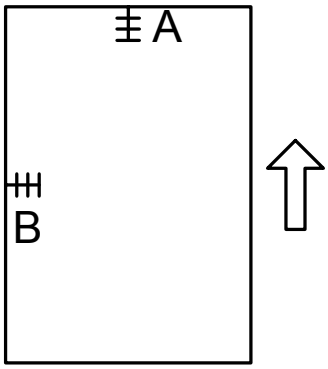
- After replacing the standard white plate.
- After replacing the NVRAM on the controller board. (If only controller board is replaced, this adjustment is not necessary, as the NVRAM from the old controller board is put on the new controller board.)
- After performing a memory all clear (SP5-801).

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 4-428 and select “1: Yes”. The standard white density is automatically adjusted.

3.12.3 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

Sub Scan Magnification

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 magnification, and adjust using the following SP modes if necessary. The specification is ±1%.

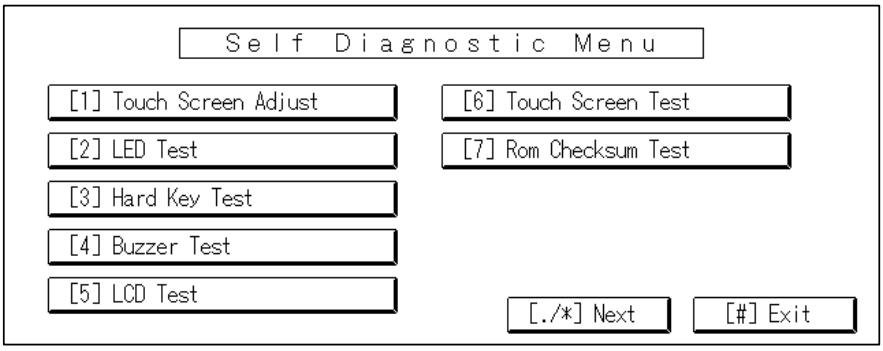
	SP mode
Sub scan magnification	SP6-006-5

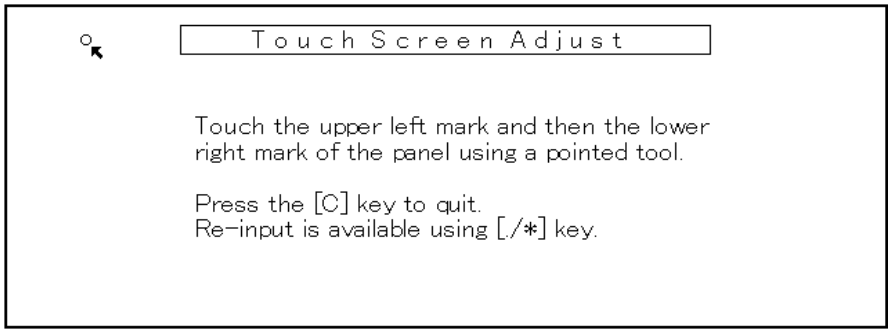
3.12.4 TOUCH SCREEN CALIBRATION

After clearing the memory, or if the touch panel detection function is not working correctly, follow this procedure to calibrate the touch screen.

NOTE: Do not attempt to use items [2] to [9] on the Self-Diagnostic Menu. These items are for design use only.

1. Press [C], press ①⑨⑨③, and then press C/© 5 times to open the Self-Diagnostics menu.





2. On the touch screen press “Touch Screen Adjust” (or press ①).
3. Use a pointed (not sharp!) tool to press the upper left mark ↖.
4. Press the lower right mark ↘ after it appears.
5. Touch a few spots on the touch panel to confirm that the marker (+) appears exactly where the screen is touched.

   If the + mark does not appear where the screen is touched, press Cancel and repeat from Step 2.
6. When you are finished, press [#] OK on the screen (or press #).
7. Touch [#] Exit on the screen to close the Self-Diagnostic menu and save the calibration settings.

TROUBLESHOOTING

4. TROUBLESHOOTING

4.1 SERVICE CALL CONDITIONS

4.1.1 SUMMARY

There are 4 levels of service call conditions.

Level	Definition	Reset Procedure
A	To prevent damage to the machine, the main machine cannot be operated until the SC has been reset by a service representative (see the note below).	Enter SP mode, and then turn the main power switch off and on.
B	SCs that disable only the features that use the defective item. Although these SCs are not shown to the user under normal conditions, they are displayed on the operation panel only when the defective feature is selected.	Turn the operation switch or main switch off and on.
C	The SC history is updated. The machine can be operated as usual.	The SC will not be displayed. Only the SC history is updated.
D	Turning the main switch off then on resets SCs displayed on the operation panel. These are re-displayed if the error occurs again.	Turn the operation switch off and on.

When a Level "D" SC code occurs

When a Level D SC occurs, a screen opens on the operation panel to tell the operator:

- An error occurred
- The job in progress will be erased
- The machine will reboot automatically after approximately 30 seconds.

The operator can wait until the machine reboots automatically or touch "Reset" on the screen to reset the machine immediately and go back to the copy screen.

If the operator does not touch "Reset"

The next message tells the operator that the machine will reset automatically and that the previous job was lost and must be started again. After reading the message, the operator touches "Confirm" on the screen. The next screen shows the number and title of the SC code, and stops until the operator turns the machine off and on.

If the operator touches "Reset"

If the operator touches "Reset" to bypass the 30-second interval for the machine to reboot, the machine reboots immediately and the operation panel displays the copy screen.

Important

- Do not try to use the operation panel during an automatic reboot.
- If the Remote Service System is in use, the SC code is sent immediately to the Service Center

4.1.2 SC CODE DESCRIPTIONS

Important

- If a problem concerns a circuit board, disconnect and reconnect the connectors and then test the machine. Often a loose or disconnected harness is the cause of the problem. Always do this before you decide to replace the PCB.
- If a motor lock error occurs, check the mechanical load before you decide to replace the motor or sensors.
- When a Level “A” or “B” SC occurs while in an SP mode, the machine cannot display the SC number. If this occurs, check the SC number after leaving the SP mode.
- The machine reboots automatically when the machine issues a Level “D” SC code. This is done for Level “D” SC codes only.

⚠CAUTION

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

NOTE: The main power LED (☀⏻) lights or flashes while the platen cover or ARDF is open, while the main machine is communicating with a facsimile or the network server, or while the machine is accessing the hard disk or memory for reading or writing data.

Code No.		Symptom	Possible Cause
101	B	Exposure lamp error 1 The standard white level was not detected properly when scanning the white plate.	• Exposure lamp defective • Lamp stabilizer defective • Exposure lamp connector defective • Standard white plate dirty • Scanner mirror or scanner lens out of position or dirty • SBU defective
102	B	Exposure lamp error 2 The exposure lamp was on longer than the allowed time (3 min.) after scanning of the originals was completed.	• SBCU defective • IPU defective • Controller board defective
120	D	Scanner home position error 1 The scanner home position sensor does not detect the on condition during initialization or copying.	• Scanner motor defective • Scanner motor drive board defective • Scanner HP sensor defective • Harness between SBCU and HP sensor loose, disconnected, damaged • Harness between SBCU and scanner motor loose, disconnected, damaged • SBCU defective • Scanner wire, timing belt, pulley, or carriage defective
121	D	Scanner home position error 2 The scanner home position sensor does not detect the off condition during initialization.	
122	B	Scanner HP Sensor – Error 1 The HP sensor remains on while the carriage is returning to the home position.	
123	B	Scanner HP sensor – Error 2 The HP sensor does not switch on after the carriage has returned to the home position.	
141	C	Black offset correction error Black offset could not be corrected after SP4800 was done.	• Lens block defective • SBCU defective
143	C	SBU auto adjust error The machine could not acquire the white or black peak level setting at power on, or after SP4428 (SBU Auto Adjust) was done.	• Exposure lamp disconnected • There is no blank sheet of A3 size paper on the platen • White plate dirty or missing
144	B	SBU connection error The IPU does not detect the SBU connection signal.	Harness between SBU and IPU board loose, disconnected, or damaged.
165	B	Copy Data Security Unit error An error occurred when the machine attempted to recognize the Copy Data Security Unit board.	• The Copy Data Security Unit board is not installed • The Copy Data Security Unit board is installed, but it is not the correct type for the machine.
193	B	Image transfer error The IPU board does not finish within 1 minute after the image data has been transferred to the controller board.	• IPU board defective • Controller board defective • Video controller defective

Code No.		Symptom	Possible Cause
195	B	DFGATE assert error The DFGATE signal does not assert within 30 seconds after the original has been scanned.	• ADF interface cable loose, disconnected, or damaged • SBCU defective • Mismatched firmware between the SBCU board and ADF
196	B	DFGATE negate error The DFGATE signal does not negate within 1 minute after the DFGATE has been asserted.	• ADF interface cable defective • SBCU defective • Mismatched firmware between the SBCU board and ADF
197	B	DFGATE error The DFGEATE signal has already been asserted at the original scan.	• ADF interface cable defective • SBCU board defective • Mismatched firmware between the SBCU board and ADF
198	B	Memory address error The IPU board does not receive the memory address from the controller board.	• Mismatched firmware between the SBCU board and controller board • Controller defective • SBCU defective • IPU board defective **Note**: Before you replace a board, update the firmware. This can repair the error.
199	B	DF scanning finish error The original does not finish scanning with in 1 minute	• ADF interface cable defective • SBCU board defective • Mismatched firmware between the SBCU board and ADF
302	B	Charge roller error A charge roller current leak signal is detected.	• Charge high voltage supply board defective • Connection at PCU loose, disconnected, or damaged
320	B	Polygon motor error • The XSCRDY signal did not activate (go LOW) within 10 sec. after the polygon motor turned on. • The XSCRDY signal did not deactivate (go HIGH) within 3 sec. after the polygon motor turned off. • The polygon motor continued to rotate for the prescribed number of rotations for 200 ms after the XSCRDY signal went HIGH (deactivated). • After the polygon motor turned on, or after the machine detected that the prescribed number of rotations had changed, the XSCRDY signal did not go LOW (active).	• Polygon motor I/F harness loose, disconnected, or defective • Polygon motor defective • Polygon motor driver defective • SBCU board defective

Code No.		Symptom	Possible Cause
322	B	Laser synchronization error The main scan synchronization detector board cannot detect the laser synchronization signal for more than 10 consecutive 50 ms intervals.	• Poor connection between the laser synchronization detector board and the SBCU board • Laser synchronization detector board out of position • Laser synchronization detector board defective • SBCU board defective • LD unit defective
323	B	LD drive current over • The LD drive current exceeded 100 mA. • The XLDERR of the LD board was detected LOW twice within 100 ms. • Initialization of the PMACA failed.	• LD unit defective (not enough power, due to aging) • Poor connection between the LD unit and the SBCU board • SBCU board defective
350	B	ID sensor calibration – Error 1 One of the following conditions occurred when the ID sensor pattern was calibrated during printing: • Vsp > 2.5V • Vsg < 2.5V • Vsp = 0V • Vsg = 0V	• ID sensor defective or dirty • ID sensor harness disconnected or connector is damaged • SBCU defective • Scanning system or image creation system malfunction • High voltage power supply board (power pack) defective
351	B	ID sensor calibration – Error 2 The following conditions occurred simultaneously when the ID sensor pattern was calibrated during printing: • Vsg = 5V • PWM = 0 (LED current drop)	• ID sensor dirty or defective • ID sensor harness disconnected, or connector damaged • SBCU board defective • High voltage power supply board (power pack) defective
352	B	ID sensor calibration – Error 3 During printing the 2.5V value for edge detection of the ID sensor pattern could not be detected after 800 ms.	• ID sensor dirty or defective • ID sensor harness disconnected, or connector damaged • SBCU defective • High voltage power supply board (power pack) defective
353	B	ID sensor adjustment Error 1 Error occurred during automatic adjustment of Vsg: • Vsg output did not attain 4V, even with PWM = 255 (maximum current for LED) • Vsg output was greater than 4V, even with PWM=0 (no current for the LED)	• ID sensor dirty or defective • ID sensor harness disconnected, or connector damaged • SBCU defective • High voltage power supply board (power pack) defective • Scanning system or image creation system malfunction
354	B	ID Sensor Adjustment Error 2 Error occurred during automatic adjustment of Vsg. Vsg could not be adjusted to 4.0V±0.2V within 50 ms even after 20 attempts.	• ID sensor dirty or defective • ID sensor harness disconnected, or connector damaged • SBCU defective • High voltage power supply board (power pack) defective • Scanning system or image creation system malfunction

Code No.		Symptom	Possible Cause
355	C	ID sensor error For details about the cause of the problem, please refer to SC350~354 above.	• ID sensor dirty or defective • ID sensor harness disconnected, or connector damaged • SBCU board defective • High voltage power supply board (power pack) defective • Scanning system or image creation system malfunction
389	B	TD sensor error TD sensor output was less than 0.5V, or more than 0.5V 10 times in succession. If the fax unit is installed, this SC is issued immediately. If the fax unit is not installed, this SC is issued after the prescribed number of copies has printed.	• TD sensor defective • TD sensor connector damaged.
390	D	TD sensor error The TD sensor outputs less than 0.5V or more than 4.0V 10 times consecutively during copying. **Note**: • If the fax option is installed, this SC is issued immediately. • If the fax option is not installed, this SC is issued after the prescribed number of pages is copied.	• TD sensor abnormal • Poor connection of the PCU
391	B	Development bias leak A development bias leak signal is detected.	• Poor connection at the PCU bias terminal • High voltage supply board defective
392	B	TD sensor initial setting error Initialization of the new PCU unit failed. TD sensor output voltage fell out of the adjustment range (2.0 ±<> 0.2 V.	• The PCU toner seal was not removed • ID sensor defective • TD sensor defective • Drum does not turn • Development roller does not turn
398	B	PCU error **South Korea only** Illegal PCU unit.	• Install the correct type of PCU.
399	B	Illegal toner bottle **South Korea only** The toner bottle installed is not intended for use with this machine.	• Install the correct type of toner bottle.

Code No.		Symptom	Possible Cause
401	B	Transfer roller leak error 1 A transfer roller current leak signal is detected. The current feedback signal for the transfer roller is not detected within the correct time.	• High voltage supply board set incorrectly or defective • Transfer roller set incorrectly or damaged • Transfer unit set incorrectly
402	B	Transfer roller leak error 2 A transfer roller current leak signal is detected. The current feedback signal for the transfer roller is not detected within the correct time.	• Transfer roller set incorrectly or damaged • High voltage supply board set incorrectly or defective
411	B	Separation bias leak error A separation bias leak signal is detected.	• High voltage supply board defective • Discharge plate defective
490	B	Toner supply motor leak error More than 1 ampere supplied to the toner supply motor for longer than 200 ms.	• Toner supply motor defective
500	B	Main motor lock 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.	• Too much load on the drive mechanism • Main motor defective
501	B	1st paper tray lift motor malfunction	• Paper lift sensor connection loose, disconnected, or damaged • Paper lift sensor defective • Tray lift motor connection loose, disconnected, or damaged • Tray lift motor defective • Obstruction that causes overload on the drive mechanism
502	B	2nd paper tray lift motor malfunction	
503	B	3rd paper tray lift motor malfunction (optional paper tray unit)	
504	B	4th paper tray lift motor malfunction (optional paper tray unit) The paper lift sensor is not activated after the tray lift motor has been on for 18 seconds.	
506	B	Paper tray motor lock (optional paper tray unit) A motor lock signal is not detected for more than 1.5 s or the lock signal is not detected for more than 1.0 s during rotation.	• Paper tray motor connection loose, disconnected, or damaged • Paper tray motor defective • Obstruction that causes overload on the drive mechanism
508	B	LCT rear fence drive error The return position sensor is not activated after the rear fence drive motor has been on to lower the tandem tray for 8 seconds.	• Rear fence motor connection loose, disconnected, or damaged • Rear fence motor defective • Return position sensor connector loose, disconnected, or damaged • Return position sensor defective • Obstruction that causes overload on the drive mechanism
509	B	LCT side fence drive error 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.	• Obstruction that causes overload on the drive mechanism • Side fence motor disconnected or defective • Side fence position sensor disconnected or defective • Side fence close sensor disconnected or defective

SERVICE CALL CONDITIONS

Code No.		Symptom	Possible Cause
510	B	LCT lower limit error The lower limit sensor does not activate within 8 seconds after the tray has been lowered.	• Tray lift motor defective • Poor connection of the tray lift motor • Lower limit sensor disconnected or defective • Obstruction that causes overload on the drive mechanism.
520	B	Paper tray error An error occurs (i.e motor error, or sensor error, etc) for any paper tray.	• A defective motor • A defective sensor • Obstruction that causes overload on the drive mechanism
541	A	Fusing thermistor open The fusing temperature did not increase 12 °C at the center or ends of the hot roller within 2 seconds after two checks from the time the fusing lamps turned on.	• Fusing thermistor out of its position because of incorrect installation • Fusing thermistor disconnected or defective • Power supply not within rated range (15% or more below rating)
542	A	Fusing temperature warm-up error The fusing temperature does not reach the standby temperature within 20 seconds after the main switch is turned on.	• Fusing thermistor defective or out of position • Fusing lamp disconnected • Fusing thermostat open
543	A	Fusing overheat error 1 A fusing temperature over 230°C is detected for 5 second by the fusing thermistor.	• TRIAC short on PSU (PSU defective) • SBCU board defective • Fusing thermistor defective
544	A	Fusing overheat error 2 • A fusing temperature over 250°C is detected by the fusing temperature monitor circuit in the SBCU board. • The power was interrupted for more than 0.3 sec.	• TRIAC short on PSU (PSU defective) • SBCU board defective • Fusing thermistor defective • Voltage of power supply unstable
545	A	Fusing overheat error 3 After warmup, the hot roller attained full operating temperature and maintained this temperature for 10 sec. without the hot roller rotating.	• Hot roller thermistor is out of its position because of incorrect installation
546	A	Unstable fusing temperature The fusing temperature varies 50°C or more twice in succession within 1 sec.	• Thermistor disconnected or defective • Fusing unit drawer installed incorrectly
547	B	Zero cross signal detection error Zero cross signals are not detected within a certain period.	• PSU defective • SBCU board defective
548	A	Fusing unit set error The machine does not detect the fusing unit.	• Poor connection of the fusing unit • The fusing unit is not installed
557	B	Zero cross waveform signal error The waveform of the zero cross signal was detected out of range.	• Electrical noise on the power supply line
590	B	Exhaust fan motor error The CPU detects an exhaust fan lock signal for more than 3.5 seconds.	• Poor connection of the exhaust fan motor • Too much load on the motor drive

Code No.		Symptom	Possible Cause
611	B	Communication break error between SBCU and ADF The SBCU received a break (LOW) signal from the ADF main board.	• Serial line connecting SBCU and ADF unstable • Connectors between SBCU and ADF loose, disconnected, or damaged
612	B	Communication command error between SBCU and ADF The SBCU sends a command to the ADF main board that it cannot execute.	• Update the firmware • SBCU board defective
620	B	Communication timeout between SBCU and finisher: Error 1 The SBCU cannot receive a response within 100 ms after 3 attempts after sending data to the finisher.	• Serial line connecting SBCU and finisher unstable • External noise
621	B	Communication timeout between SBCU and finisher: Error 2 A break (LOW) signal was received from the finisher.	• Serial line connecting SBCU and finisher unstable • External noise
650	B	Communication timeout error between SBCU and duplex unit The SBCU cannot receive a response within 1 sec. from the duplex unit.	• Serial line connecting SBCU and duplex unit unstable • External noise • SBCU board and duplex main board connection defective or loose • Duplex main board defective • SBCU board defective
669	B	EEPROM Communication Error The machine failed to detect a match between the read/write data for the EEPROM on the SBCU after 3 attempts.	• EEPROM installed incorrectly • EEPROM defective After you check the installation, turn the machine off and on. If this does not repair the problem, replace the SBCU.
670	D	Engine response error After powering on the machine, a response is not received from the engine within 30 seconds.	• SBCU installed incorrectly • SBCU defective • Controller board defective
672	D	Controller-to-operation panel communication error at startup After powering on the machine, the communication circuit between the controller and the operation panel is not opened, or communication with controller is interrupted after a normal startup.	• Controller stall • Controller board installed incorrectly • Controller board defective • Operation panel connector loose or defective
720	B	Finisher motor error The meaning of this SC error depends on which finisher is installed. **500-sheet Finisher B442** There is a problem with the upper transport motor. **1000-sheet Finisher B408** There is a problem with the registration motor.	• The motor connectors are loose, disconnected or damaged. • The motor is defective

Code No.		Symptom	Possible Cause
721	B	Lower transport motor error – 1000-sheet Finisher B408 There is a problem with the lower transport motor.	• The motor connectors are loose, disconnected or damaged. • The motor is defective
722	B	Finisher jogger motor error – 1000-sheet Finisher B408 The finisher jogger H.P sensor remains de-activated for a certain time when returning to home position. The finisher jogger H.P sensor remains activated for a certain time when moving away from home position.	• Jogger H.P sensor disconnected or defective • Jogger motor connectors loose, disconnected, or damaged • Jogger motor defective
724	B	Finisher staple hammer motor error – 1000-sheet Finisher B408 Stapling does not finish within 600 ms after the staple hammer motor turned on.	• Staple jam • Stapler overload caused by trying to staple too many sheets • Staple hammer motor defective
725	B	Finisher stack feed-out motor error – 1000-sheet Finisher B408 The stack feed-out belt H.P sensor does not activate within a certain time after the stack feed-out motor turned on.	• Stack feed-out H.P sensor defective • Stack feed-out motor defective
726	B	Finisher lift motor error The stack height sensor does not activate within a certain time after the shift tray lift motor turned on. Note: This error applies to the 500-sheet and the 1000-sheet finisher.	• Shift tray lift motor defective • Stack height sensor defective
727	B	Finisher staple hammer motor error – 500-sheet Finisher B442 Stapling does not finish within a certain time after staple hammer motor turned on.	• Staple jam • Stapler overload caused by trying to staple too many sheets • Staple hammer motor defective
728	B	Finisher exit motor/paper stack height error The meaning of this SC error depends on which finisher is installed. **1000-sheet Finisher B408** Exit motor error. **500-sheet Finisher B442** Stack height sensor error. The stack height detection lever does not return to its home position before going to detect the stack height.	**Exit motor error (B408)** • Exit motor connector loose, disconnected, or damaged • Exit motor defective **Stack height sensor error (B442)** • Stack height lever solenoid defective • Stack height sensor defective • Lever sensor defective • Main control board defective
730	B	Finisher stapler motor error –1000-sheet Finisher B408 The stapler does not return to its home position within a certain time after the stapler motor turned on. -or- The stapler H.P sensor does not activate within a certain time after the stapler motor turned on.	• Stapler motor defective • Stapler H.P sensor defective • Poor stapler motor connection

Code No.		Symptom	Possible Cause
731	B	Finisher motor error The meaning of this SC error depends on which finisher is installed. **1000-sheet Finisher B408** Exit guide plate motor error. 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. (1000-sheet finisher) **500-sheet Finisher B442** Output tray motor error. The tray upper limit sensor does not activate within a certain time after the shift motor turned on. (500-sheet finisher)	1000-sheet Finisher • Exit guide plate motor defective • Exit guide plate HP sensor defective • Exit guide plate open sensor defective 500-sheet Finisher • Output tray motor defective • Tray upper limit sensor defective
732	B	Finisher shift motor error – 1000-sheet Finisher B408 Roller shift does not finish within a certain time after the shift motor turned on.	• Shift motor defective • Shift tray HP sensor defective
770	B	Shift tray shift motor error During a shift operation the sensor state did not change (off to on, or on to off) within 2.4 sec.	• Shift sensor defective • Shift motor defective
791	B	Bridge communication error The machine cannot communicate with the finisher with the bridge unit installed.	• Poor connection between the finisher and mainframe • Harness damaged or defective
792	B	Finisher connection error The machine cannot communicate with the finisher with the bridge unit installed.	• Finisher connection defective
793	B	Interchange communication error The machine cannot communicate with the interchange unit properly when the duplex unit is installed.	• Interchange unit installed incorrectly • Interchange unit connection loose, disconnected, or damaged • Interchange unit harness damaged
800	D	Startup without video output end error (K) Video transfer to the engine is started, but the engine did not issue a video transmission end command within the specified time.	• Controller board defective
804	D	Startup without video input end (K) A video transmission was requested from the scanner, but the scanner did not issue a video transmission end command within the specified time.	• Controller board defective
818	B	Watchdog error While the system program is running, no other programs can run (due to a bus hold or endless loop).	• Defective controller board

Code No.		Symptom	Possible Cause
819	B	Kernel abnormal end error A HDD error or a software error has occurred, terminating the SCS process, gwinit process, and finally the kernel program. A system process has exhausted the RAM.	• HDD error • Software application error • RAM shortage • MBU jumper set incorrectly. For more, see "Fax Option Type B766" manual "1. Installation".
820	B	Self-Diagnostic Error: CPU An unexpected exception or interruption has occurred.	• Defective controller board • Software defective • MBUjumper set incorrectly. For more, see "Fax Option Type B766" manual "1. Installation".
821	D	Self-Diagnostic Error: ASIC The ASIC returned an error during the self-diagnostic test because the ASIC and CPU timer interrupts were compared and determined to be out of range.	• Controller board defective
822	D	Self-Diagnostic Error: HDD The hard disk drive returned an error during the self-diagnostic test.	• HDD defective • HDD connector defective • Controller board defective
823	D	Self-diagnostic Error: NIC The network interface board returned an error during the self-diagnostic test.	• Controller board defective
824	D	Self-diagnostic Error: Resident NVRAM The resident non-volatile RAM returned an error during the self-diagnostic test.	• Replace the resident NVRAM on the controller board • Replace the controller board
826	D	Self-diagnostic Error: NVRAM/Optional NVRAM The NVRAM or optional NVRAM returned an error during the self-diagnostic test.	• Replace the NVRAM on the controller board
827	D	Self-diagnostic Error: RAM The resident RAM returned a verify error during the self-diagnostic test.	• Update the controller firmware again • Replace the 256 MB memory
828	D	Self-diagnostic Error: ROM The resident read-only memory returned an error during the self-diagnostic test.	• Controller board defective • Update the controller firmware
829	D	Self-diagnostic Error: Optional RAM The optional RAM returned an error during the self-diagnostic test.	• Replace the optional memory. • Controller board defective
838	D	Self-diagnostic Error: Clock Generator A verify error occurred when setting data was read from the clock generator via the I2C bus.	• Replace the controller board

Code No.		Symptom	Possible Cause
840	D	EEPROM error 1 During input/output with the EEPROM on the controller board, one of the following errors occurred: • A read error occurred and continued after 3 retries. • A write error occurred.	• EEPROM defective; replace the controller board • EEPROM has reached the end of its service life
841	D	EEPROM error 2 The values read from the three areas during the mirroring check phase did not match. The data is being written into the three areas differently.	• EEPROM on the control board defective, or has reached the end of its service life. Replace the controller board.
850	D	Network I/F Abnormal NIB interface error.	• Controller board defective (NIB function built into the controller board. Replace the controller board.
851	D	IEEE 1394 I/F Abnormal IEEE1394 interface error.	• IEEE1384 interface board defective • Controller board defective
853	D	Wireless LAN board error 1 At startup the wireless LAN board could be accessed, but the wireless LAN board (IEEE 802.11b or Bluetooth) could not access the controller board.	• Wireless LAN board not installed when the machine was turned on
854	D	Wireless LAN board error 2 The board that holds the wireless LAN board can be accessed, but the wireless LAN board (802.11b/Bluetooth) itself cannot be accessed while the machine is operating	• Wireless LAN board has been removed during machine operation.
855	D	Wireless LAN board error 3 An error was detected for the wireless LAN board (802.11b or Bluetooth).	• Wireless LAN board defective • Wireless board connection not tight
856	D	Wireless LAN board error An error is detected for the wireless LAN board (802.11b or Bluetooth).	• Wireless LAN board defective • PCI connector loose
857	D	USB I/F Error The USB driver is unstable and generated an error. The USB I/F cannot be used. The USB driver can generate three types of errors: RX, CRC, and STALL errors. Only the STALL error can generate this SC code.	• USB 2.0 disconnected • Controller board defective
860	B	Startup without HD connection at main power on The hard disk connection is not detected.	• Cable between HDC and HDD loose or defective • HDD power connector loose or defective • HDD defective • Replace the controller board
861	B	HDD error 1 The HDD was not detected when the machine was turned on. The hard disk connection is not detected.	• Cable between HDC and HDD loose or defective • HDD power connector loose or defective • HDD defective • Replace the controller board

Code No.		Symptom	Possible Cause
862	A	HDD error 2 Maximum number of bad sectors detected on HD. Up to 101 bad sectors have appeared in the area on the hard disk where image data is archived, and the hard disk may require replacement.	• Format the HDD with SP5832. **Note**: If you continue to use an HDD with bad sectors, this can have an effect on performance. Replace the HDD as soon as possible.
863	B	HDD error 3 Startup without HD data lead. Data stored on the hard disk is not read correctly.	• A bad sector occurred during operation of the HDD
864	D	HDD error 4 HD data CRC error. During operation of the HD, the HD responded with a CRC error.	• Data transfer was abnormal in the data read from the HDD.
865	D	HDD access error HDD responded to an error during operation for a condition other than those for SC863 or 864.	• HDD defective.
866	D	SD card error 1: Recognition error The SD card in the slot contains illegal program data.	• Use only SD cards that contain the correct data.
867	D	SD card error 2: SD card removed The SD card in the boot slot when the machine was turned on was removed while the machine power was on.	• Insert the SD card, then turn the machine off and on.
868	D	SD card error 3: SD card access An error occurred while an SD card was used.	• SD card not inserted correctly • SD card defective • Controller board defective **Note**: If you want to try to reformat the SD card, use SD Formatter Ver 1.1.
870	B	Address Book Data Error Address book data stored on the hard disk was detected as abnormal when it was accessed from either the operation panel or the network.	• Software defective • HDD defective
872	B	HDD mail RX data abnormal An error was detected at power on. The data received during mail receive could be neither read nor written.	• HDD sector corrupted. Reformat with SP5832 007. • If this does not repair the problem, replace the HDD.
873	B	HDD mail TX data error An error was detected on the HDD immediately after the machine was turned on, or power was turned off while the machine used the HDD.	• Do SP5832-007 (Format HDD – Mail TX Data) to initialize the HDD. • Replace the HDD

Code No.		Symptom	Possible Cause
874	D	Delete All error 1: HDD	
		A data error was detected for the HDD/NVRAM after the Delete All option was used. **Note**: The source of this error is the Data Overwrite Security Unit B660 running from an SD card.	• Turn the main switch off/on, and try the operation again. • Install the Data Overwrite Security Unit again. For more, see section "1. Installation". • HDD defective
875	D	Delete All error 2: Data area	
		An error occurred while the machine deleted data from the HDD. **Note**: The source of this error is the Data Overwrite Security Unit B660 running from an SD card.	• Turn the main switch off/on, and try the operation again.
876	D	Log data abnormal	• Software error. Update the firmware • NVRAM defective • HDD defective
		An error was detected in the handling of the log data at power on or during machine operation. This can be caused if you turn the machine off while it is operating.	
880	D	File format converter error	• File format converter disconnected • File format converter board defective
		A request for access to the File Format Converter (MLB) was not answered within the specified time.	
901	D	Electronic total counter error	• Replace the NVRAM on the controller board
		The value of the total counter has already exceeded 9999999	
920	D	Printer Error 1	• Software defective • Insufficient memory
		An internal application error was detected and operation cannot continue.	
921	B	Printer error 2	
		When the application started, the necessary font was not on the SD card.	• Font not on the SD card
925	D	Network File Error	• Software defective • Files on the HDD corrupted
		The file that manages NetFile is corrupted and operation cannot continue.	
951	B	F-GATE error at write request	• Update the controller firmware • SBCU board defective
		After the IPU receives an F-gate signal, it receives another F-gate signal.	
953	B	Scanner setting error	• Update the controller firmware
		The IPU does not respond with the scanner setting signal required to start scanning processing.	
954	B	Printer setting error	• Replace the IPU board • Replace the controller board • Update the controller firmware
		The IPU does not respond with the settings that are required to start image processing by the printer.	

Code No.		Symptom	Possible Cause
955	B	Memory setting error The IPU does not respond with the settings that are required to start image processing using the memory.	• Replace the IPU board • Replace the controller board • Update the controller firmware
964	B	Printer ready error The printer ready signal is not generated within 17 seconds after the IPU received the print start signal.	• Replace the IPU board • Replace the controller board • Download the controller firmware
984	D	Print image data transfer error The image transfer from the controller to the engine via the PCI bus does not end within 15 s after starting.	• Controller board defective • SBCU board defective • Connectors between SBCU and controller loose or defective
986	D	Software write parameter setting error An unstable area at the storage destination in the settings table is set at NULL for the parameter received by the write module.	• Update the controller firmware
990	D	Software performance error The software attempted to perform an unexpected operation.	
		• Software defective • Internal parameter incorrect • Insufficient working memory • When this SC occurs, the file name, address, and data will be stored in NVRAM. This information can be checked by using SP7-403. Note the above data and the situation in which this SC occurs. Then report the data and conditions to your technical control center.	
991	C	Software continuity error The software attempted to perform an unexpected operation. However, unlike SC990, the object of the error is continuity of the software.	• No operation required. This SC code does not appear on the panel, and is only logged.
992	D	Unexpected Software Error Software encountered an unexpected operation not defined under any SC code.	• Software defective • An error undetectable by any other SC code occurred
995	D	Machine Type Information Error After the machine power is turned on, a mismatch is detected between the CPM information sent from the controller to the engine.	• Replace the controller board with the correct board.

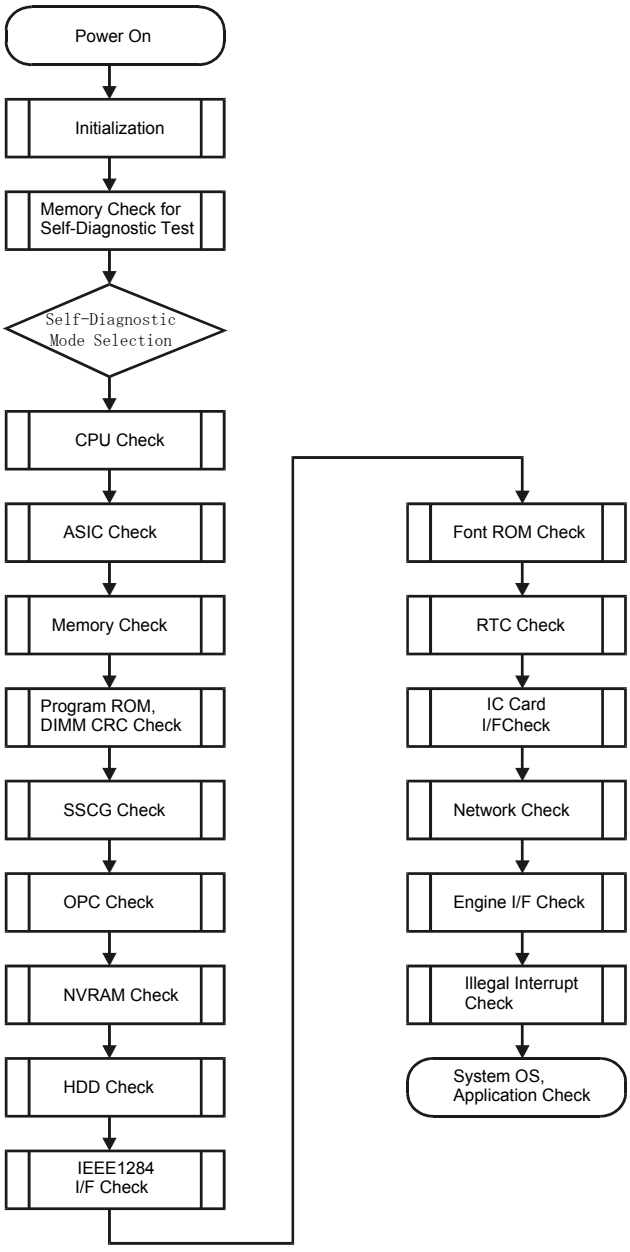
Code No.		Symptom	Possible Cause
997	B	Application function selection error The application selected by a key press on operation panel does not start or ends abnormally.	• Update the firmware for the application that failed • An option required by the application (RAM, DIMM, board) is not installed
998	D	Application start error After power on, the application does not start within 60 s. (All applications neither start nor end normally.)	• Download controller firmware • Replace the controller board • An option required by the application (RAM, DIMM, board) is not installed

4.2 SELF-DIAGNOSTIC MODE

4.2.1 SELF-DIAGNOSTIC MODE AT POWER ON

As soon as the main machine is powered on, the controller waits for the initial settings of the copy engine to take effect and then starts an independent self-diagnostic test program. The self-diagnostic test follows the path of the flow chart shown below and checks the CPU, memory, HDD, and so on. An SC code is displayed in the touch panel if the self-diagnostic program detects any malfunction or abnormal condition.

Self-Diagnostic Test Flow



4.2.2 DETAILED SELF-DIAGNOSTIC MODE

In addition to the self-diagnostic test initiated every time the main machine is powered on, you can set the machine in a more detailed diagnostic mode manually in order to test other components or conditions that are not tested during self-diagnosis after power on.

The following device is required in order to put the machine in the detailed self-diagnosis mode.

Also, the printer/scanner unit and the optional Centronics (IEEE1284) interface must be installed.

No.	Name
G0219350	Parallel Loopback Connector

Executing Detailed Self-Diagnosis

Follow this procedure to execute detailed self-diagnosis.

1. Switch off the machine, and connect the parallel loopback device to the Centronics I/F port.
2. Hold down #, press and hold down *, and then while pressing both keys at the same time, switch on the machine.
   You will see “Now Loading” on the touch-panel, and then you will see the results of the test.

A report like the one below is printed every time a detailed self-diagnostic test is executed, whether errors were detected or not.

MODEL NAME XXXX

Self-Diagnosis Report

Serial No. : ACLD000034 Firmware P/# : ACP82XXXX [1/1]

Firmware Version : 2.49.01 Wed Nov 22 13:15:30 2000

[System Construction]

Kernel Version : NetBSD 1.3.3 (SHINYOKOHAMA_ROM) #0: Sat Nov 11 16:15:35 JST 2000

CPU System Bus Clock : 100.0 MHz

CPU Pipeline Clock : 200.0 MHz

Board Type : 7

ASIC Version : 1397306160

RTC Existence : existence

RAM Capacity : 100.663296 MB

HDD Existence : existence

HDD Model :

[Total Counter]

0001000

[Program No. @]

MAIN : ACP82XXXX

ENGINE : Ver1.96

LCDC : V1.39

PI :

ADF : B3515620B

SIB : B0045383

FIN :

FIN_SDL :

BANK : A6825150

LCT :

MBX :

FCU :

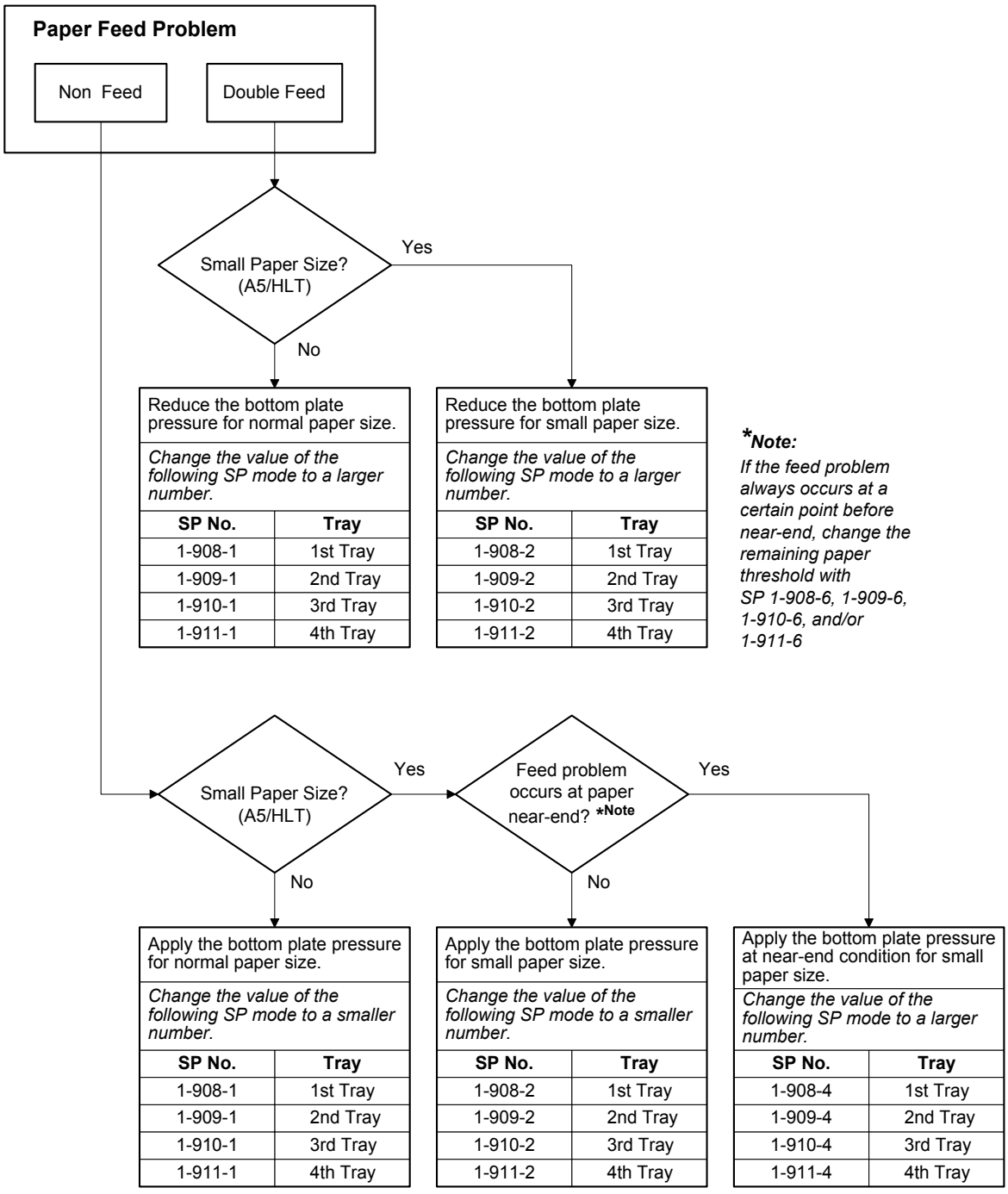
DPX :

[Error List @@@]

SCCODE (ERROR CODE)	SC CODE (ERROR CODE)	SC CODE (ERROR CODE)	SC CODE (ERROR CODE)
SC835 (110C)	SC820 (0001)	SC820 (0002)	SC820 (0003)
SC820 (0004)	SC820 (0005)		

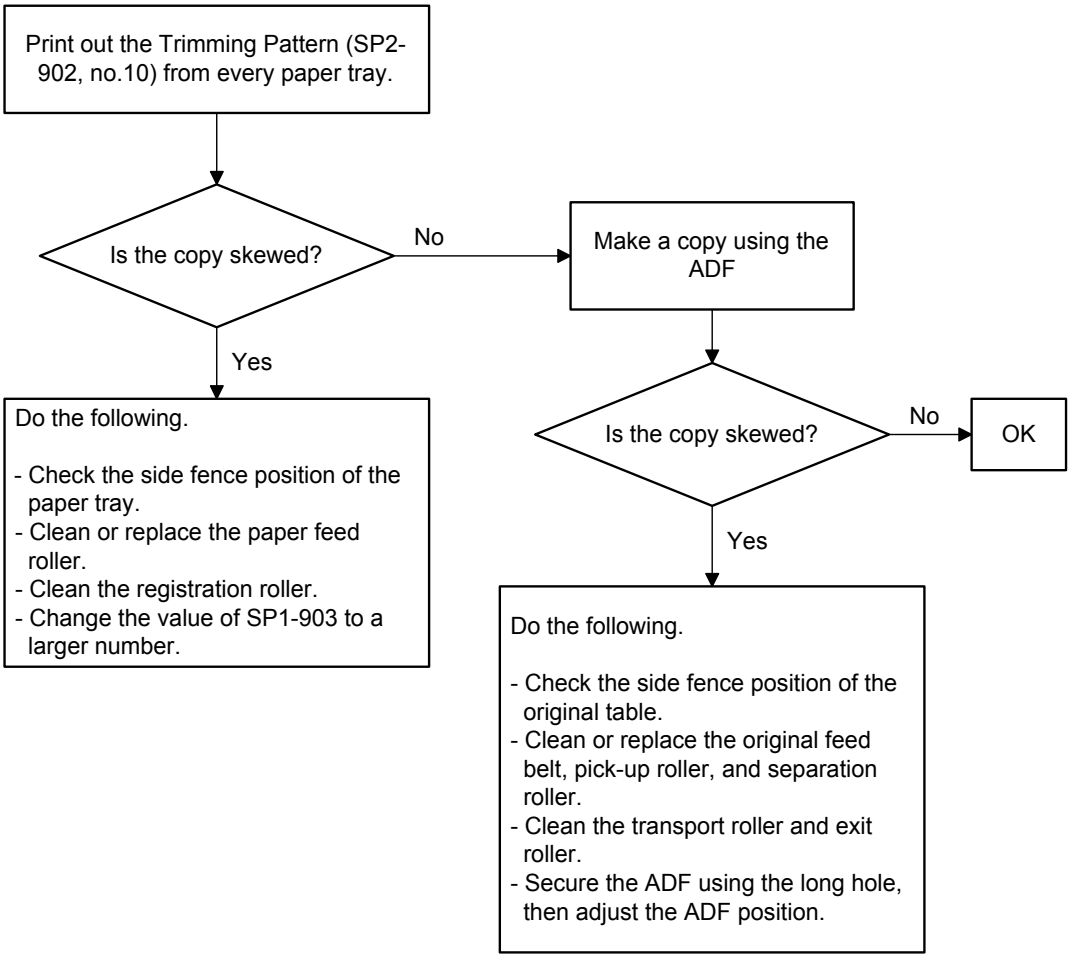
4.3 PAPER FEED TROUBLESHOOTING

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



4.4 SKEWED IMAGE

Do the following to fix a skewed image problem.

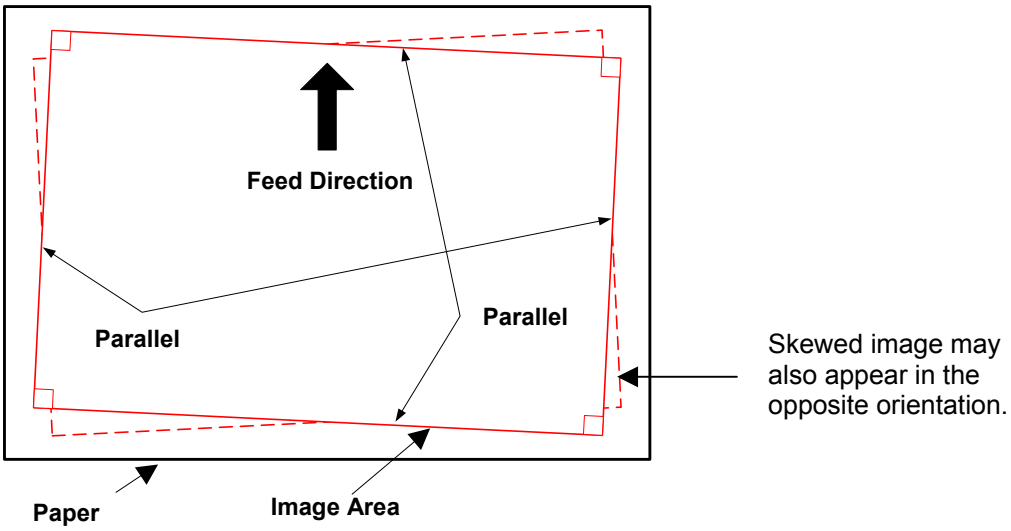


4.5 IMAGE PROBLEMS

4.5.1 SKEWED, TRAPEZOID AND PARALLELOGRAM IMAGES

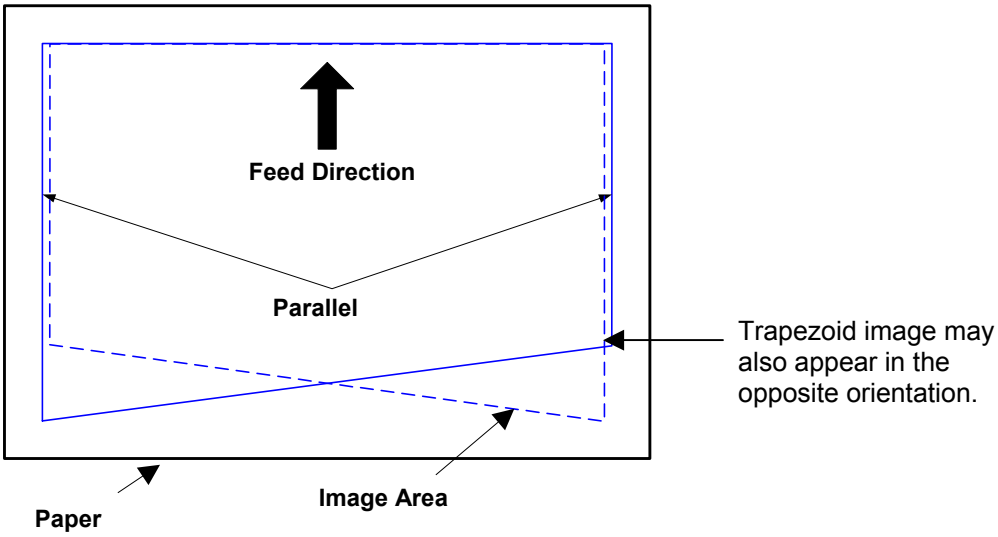
Skewed Images

- The image's leading and trailing edges are parallel.
- The image's left and right edges are also parallel.
- But, all four sides are not parallel with the paper edge.



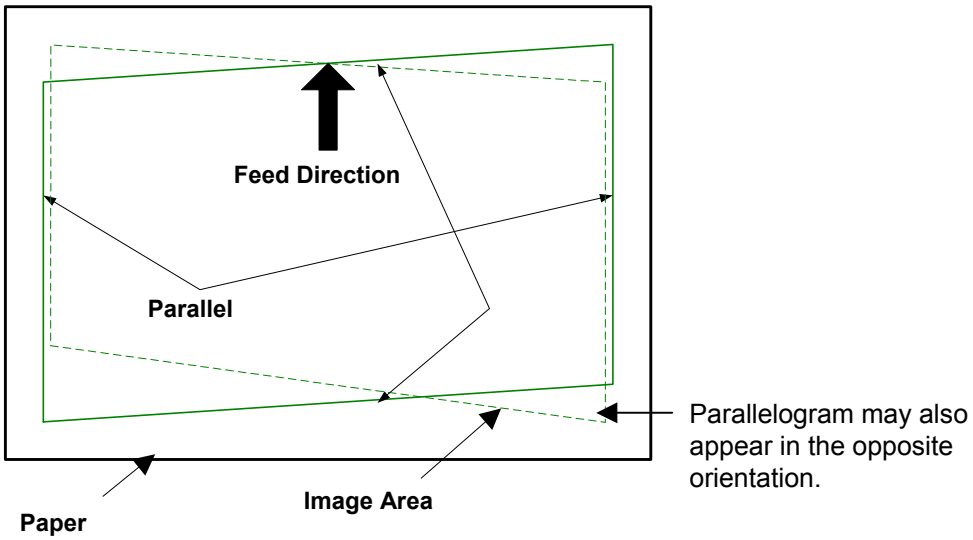
Trapezoid Images

- Only the image's trailing edge is not parallel with the paper edge. The other 3 sides are parallel to the paper's edges.



Parallelogram Images

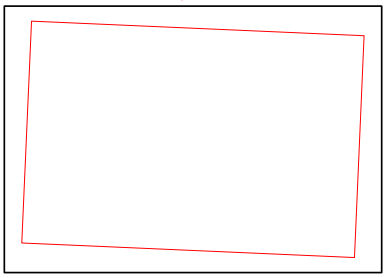
- Like skewed images, the leading/trailing edges and left/right edges are parallel to each other. But, the leading and trailing edges are not parallel to the paper's edges.



4.5.2 CHECKING IMAGES WITH THE TRIMMING PATTERN

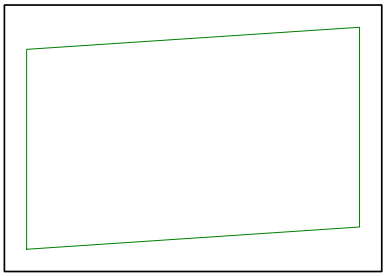
Do SP2-902-3 (Pattern 10) to print a trimming pattern.

Skewed



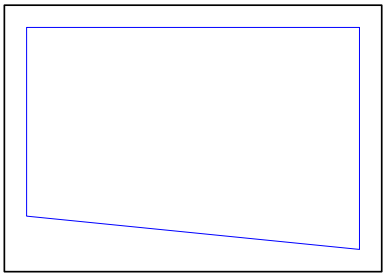
For more see "Adjusting Skewed Images" below

Parallelogram



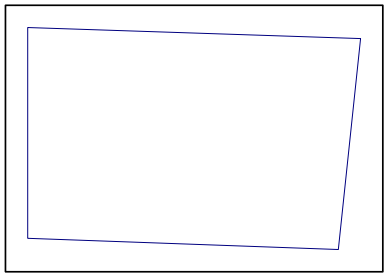
For more, see Parallelogram Image Adjustment (☛3.12.1)

Trapezoid



For more, see "Adjusting Trapezoid Images" below.

Combination skewed and trapezoid image



Perform "Adjusting Skewed Images" first, then "Adjusting Trapezoid Images".

4.5.3 CORRECTING THE IMAGES

Correcting Skewed Images

1. Test pattern (Trimming Pattern) mode check

Is the image skewed?

No **Yes**

1. Adjust the side fences. There must be no gap between the fences and the paper stack.
2. Adjust the 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 that is normally attached during shipping)

OR

Do ***Procedure A*** below.

3. ADF mode check

Feed an original through the ADF.
Is the image skewed?

No **Yes**

Do the front and rear transport rollers feed the original straight?

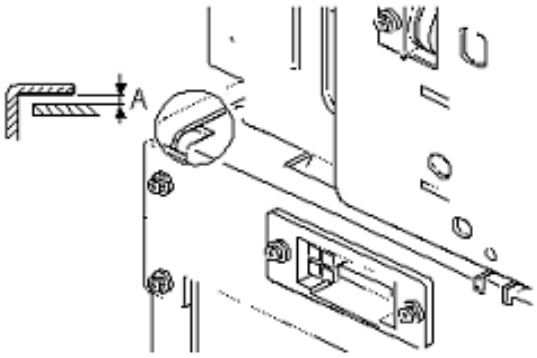
No **Yes**

Change the position of the right hinge screw to the longer hole, and make small position adjustments that are necessary.

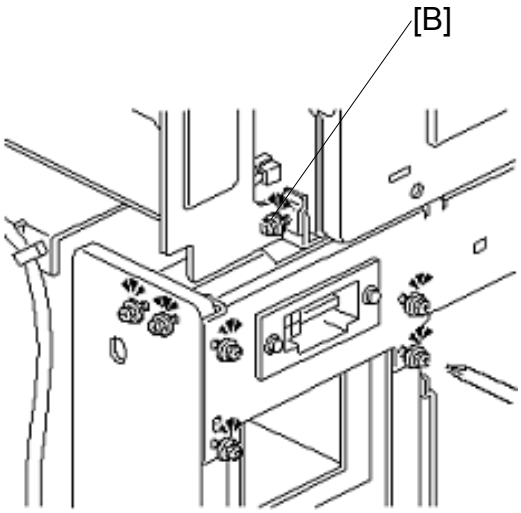
Do ***Procedure B*** below.

Procedure complete.

Procedure A (from Step 2 above):

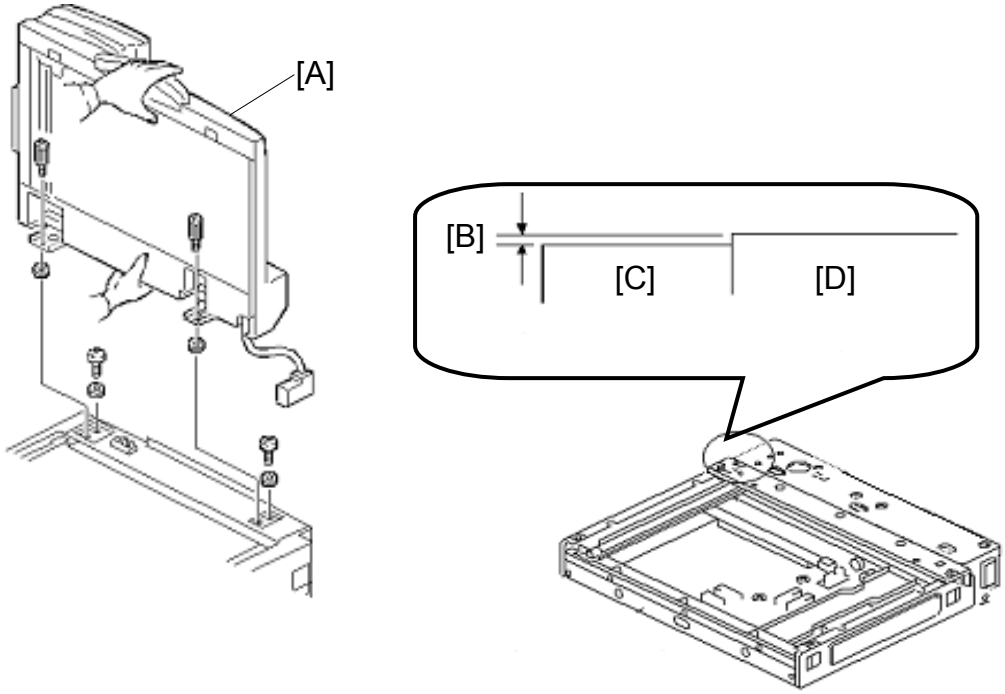


Rear, left upper side of machine



1. Remove the rear and left covers, then the left scanner cover.
2. Check to see if there is a gap between the scanner unit holder and frame at [A]
3. If there is no gap, the left front section of the scanner unit is lower than the standard position.
4. Loosen all screws (x7) [B].
5. Lift up the left front of unit until there is a 1 to 2 mm gap.
6. Tighten the 7 screws.
7. Insert a washer (#07080050, 1 mm thick) into gap [A].
8. Attach the washer in its position with an adhesive that sets quickly.
   NOTE: This washer will also absorb small amounts of shock.
9. Check if the parallelogram image still appears.

Procedure B (from Step 3 above):



1. Remove ADF [A], machine rear cover, scanner left cover, and scanner rear cover.
2. Measure the height difference [B] between the hinge bracket [C] and scanner housing [D].
3. If the difference is 0.5 mm or more:

   Add a spacer (t = 0.5 to 0.8) between the hinge bracket (mainframe) and ADF left hinge, to lift the left side of the ADF

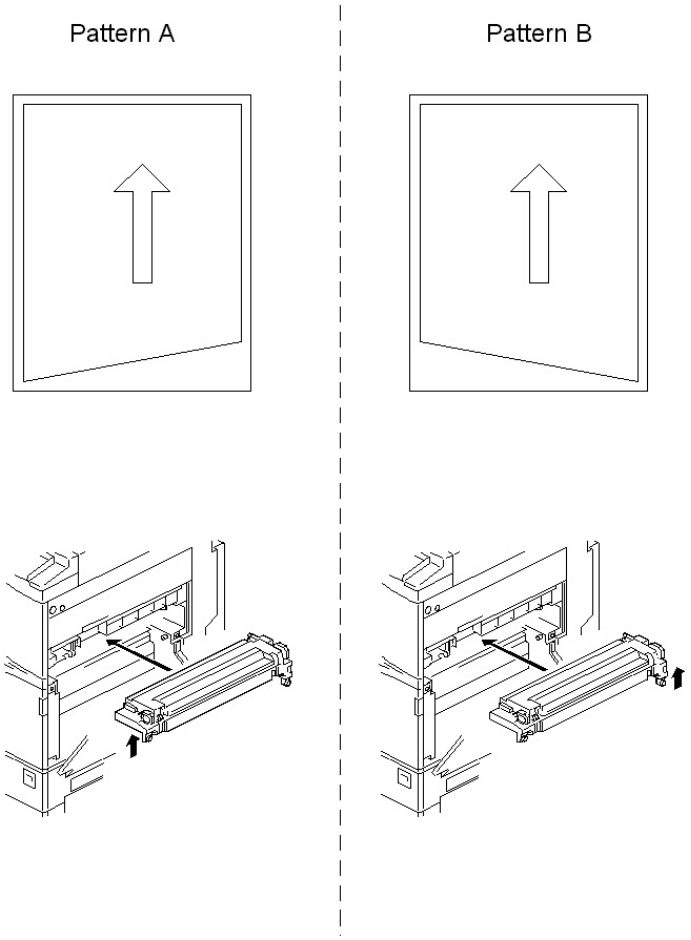
   -or-

   Adjust the stepped height difference between the hinge bracket and scanner housing until it is within 0±0.3 mm.

   NOTE: This is necessary because skew occurs when the hinge bracket more than 0.3 mm lower than the scanner housing.

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 reinstall the Fusing Unit.
   2) Tighten the left fixing screw while you push up 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, do ***Procedure 2*** below.

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 or 07080040G
t = 0.8	07080050Z or 07080050G

Correcting Parallelogram Images

Do the procedure described in Section 3.12.1 "Parallelogram Image Problems".

4.6 ELECTRICAL COMPONENT DEFECTS

4.6.1 SENSORS

Component (Symbol)	CN	Condition	Symptom
Scanner H.P	337-2 (SBCU)	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 (SBCU)	Open	APS and ARE do not function correctly.
		Shorted	No symptom
Original Width	335-3, -4 (SBCU)	Open	The CPU cannot detect the original size properly. APS and ARE do not function correctly.
		Shorted	
Original Length-1	335-8, -9 (SBCU)	Open	The CPU cannot detect the original size properly. APS and ARE do not function correctly.
		Shorted	
Original Length-2	336-3 (SBCU)	Open	The CPU cannot detect the original size properly. APS and ARE do not function correctly.
		Shorted	
Toner Density	321-3, -4 (SBCU)	Open	SC390 is displayed
		Shorted	
1st Paper End	306-2 (SBCU)	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 (SBCU)	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 (SBCU)	Open	SC392 is displayed (see note)
		Shorted	
Paper Over Flow	324-5 (SBCU)	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 (SBCU)	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 (SBCU)	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 (SBCU)	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 (SBCU)	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 (SBCU)	Open	SC501 will be displayed.
		Shorted	Paper jam will occur during copying.
2nd Paper Lift	305-10 (SBCU)	Open	SC502 will be displayed.
		Shorted	Paper jam will occur during copying.
1st Paper Height – 1	307-B2 (SBCU)	Open	The CPU cannot determine the paper near-end condition properly.
		Shorted	
1st Paper Height – 2	307-B5 (SBCU)	Open	The CPU cannot determine the paper near-end condition properly.
		Shorted	
2nd Paper Height – 1	307-B9 (SBCU)	Open	The CPU cannot determine the paper near-end condition properly.
		Shorted	
2nd Paper Height – 2	307-B12 (SBCU)	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.

4.6.2 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 (SBCU)	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	321-9 (SBCU)	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 (SBCU)	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 (SBCU)	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 (SBCU)	Open	The CPU cannot detect the proper paper size, and misfeeds may occur when a copy is made.
		Shorted	
New PCU Detect	327-7 (SBCU)	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 (SBCU)	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	110-1 (IPU	Open	The LCD does not off even if the operation switch is turned off.
		Shorted	The LCD does not on even if the operation switch is turned on.

4.7 BLOWN FUSE CONDITIONS

Fuse	Rating		Symptom when turning on the main switch
	115 V	220 ~ 240 V	
PSU			
FU1	15 A/250 V	8 A/250V	No response.
FU2	8 A/125 V	5 A/250 V	No response
FU3	2 A/125 V	1 A/250V	Anti-condensation/Tray Heater does not turn on.
FU4	6.3 A/125 V	6.3 A/250V	Optional finisher, bridge unit, and shift tray does not work then SC792 is displayed.
FU5	6.3 A/125 V	6.3 /250 V	All motors do not rotate. The "Cover Open" and SC indicators light.
FU6	6.3 A/125 V	6.3 A/250V	The touch panel does not turn on, and all motors (except scanner motor) do not rotate.
FU7	5 A/250 V	5 A/250 V	No response
FU8	5 A/250 V	5 A/250 V	No response

SERVICE TABLES

5. SERVICE TABLES

5.1 SERVICE PROGRAM MODE

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

⚠CAUTION

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

5.1.1 SERVICE MODE LOCK/UNLOCK

At locations where the machine contains sensitive data, the customer engineer cannot operate the machine until the Administrator turns the service mode lock off. This function makes sure that work on the machine is always done with the permission of the Administrator.

1. If you cannot go into the SP mode, ask the Administrator to log in with the User Tool and then set “Service Mode Lock” to OFF. After he or she logs in:
   [User Tools] > System Settings > Administrator Tools > Service Mode Lock > OFF
   - This unlocks the machine and lets you get access to all the SP codes.
   - The service technician can do servicing on the machine and turn the machine off and on. It is not necessary to ask the Administrator to log in again each time the machine is turned on.
2. If you must use the printer bit switches, go into the SP mode and set **SP5169** to “1”.
3. After machine servicing is completed:
   - Change **SP5169** from “1” to “0”.
   - Turn the machine off and on.
   - Tell the administrator that you completed servicing the machine.
   - The administrator will then set the “Service Mode Lock” to ON.

5.1.2 SERVICE PROGRAM MODE OPERATION

The service program mode is used to check electrical data, change modes, and adjust values. Two service program modes are provided:

- **SP Mode (Service)**. Includes all the options in the SP displays for normal maintenance and adjustments.
- **SSP Mode (Special Service)**. Includes the normal SP modes and *some additional options in the SP displays not required for normal settings and adjustments*. (Most are marked "DFU" in the following tables.) Do not change these important settings needlessly. For details, contact your supervisor.

Entering and Exiting SP mode

Clear Mode	Press the Clear Mode key.
1 0 7	Use the keypad to enter "107".
C/⊗	Hold down Clear/Stop for at least 3 seconds.
	Enter the Service Mode.

To enter the Normal Service Mode:

Copy SP	On the touch-panel, press Copy SP.

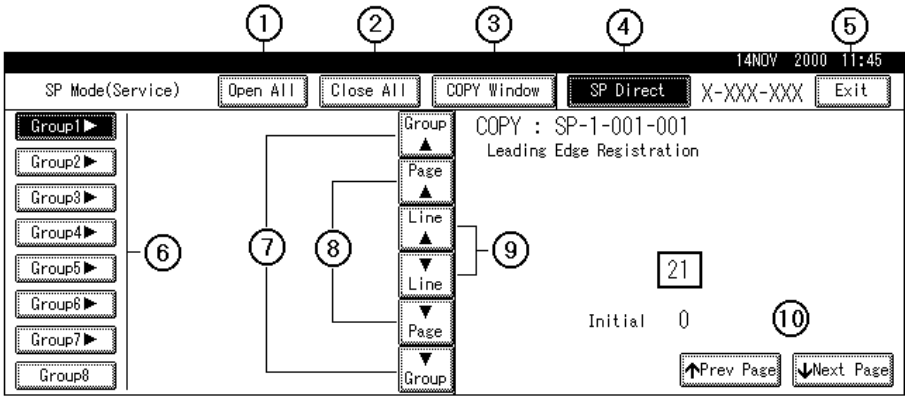
To enter the Special Service Mode:

# Copy SP	Hold down # and then press Copy SP.
Exit	Press Exit twice to return to the copy window.

NOTE: Use SP2902 to perform test pattern printing. (☛5.1.4)

SP Mode Button Summary

Here is a short summary of the touch-panel buttons.



① Opens all SP groups and sublevels.

② Closes all open groups and sublevels and restores the initial SP mode display.

③ Opens the copy window (copy mode) so you can make test copies. To return to the SP mode screen, press SP Mode (highlighted) in the copy window.

④ Enter the SP code directly with the number keys if you know the SP number and then press #. (SP Mode must be highlighted before you can enter the number. Just press SP Mode if it is not highlighted.)

⑤ Press twice to leave the SP mode and return to the copy window to resume normal operation.

⑥ Press any Group number to open a list of SP codes and titles for that group. For example, to open the SP code list for SP1nnn, press Group1. If an SP has sublevels, touch the appropriate button to expand the list.

⑦ Press to scroll the display to the previous or next group.

⑧ Press to scroll to the previous or next display in segments the size of the screen display (page).

⑨ Press to scroll the display to the previous or next line, line by line.

⑩ Press to move the highlight on the left to the previous or next selection in the list.

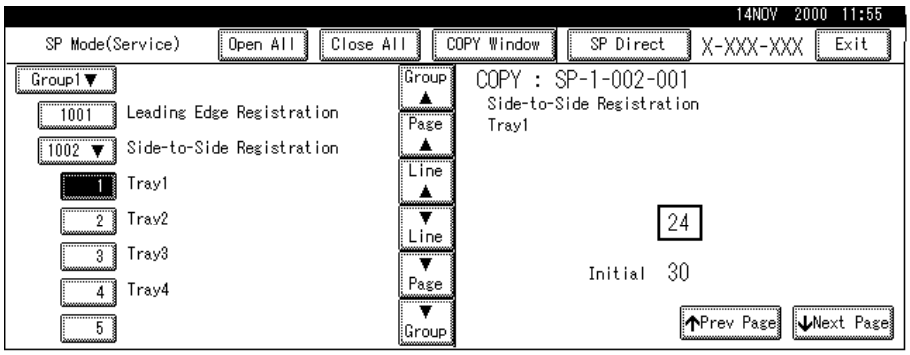
Switching Between SP Mode and Copy Mode for Test Printing

1) In the SP mode, select the test print and then press Copy Window.
2) Use the copy window (copier mode), to select the appropriate settings (paper size, etc.) for the test print.
3) Press Start Ⓢ to execute the test print.
4) Press SP Mode (highlighted) to return to the SP mode screen and repeat from step 1.

Selecting the Program Number

Program numbers have two or three levels.

1. Before you begin, refer to the Service Tables to find the SP that you want to adjust. (☛ 5.1.3)
2. Press the Group number on the left side SP Mode window that contains the SP that you want to adjust.
3. Use the scrolling buttons in the center of the SP mode window to display the SP number that you want to open, and then press that number to expand the list.
4. Use the center touch-panel buttons to scroll to the number and title of the item that you want to set and press. The small entry box on the right is activated and displays the default or the current setting below.



NOTE: Refer to the Service Tables for the range of allowed settings. (☛ 5.1.3)

1. To enter a setting
   - Press ⓒ to toggle between plus and minus and then use the keypad to enter the appropriate number. The number you enter writes over the previous setting.
   - Press ⓝ to enter the setting. (If you enter a number that is out of range, the key press is ignored.)
   - When you are prompted to complete the selection, press Yes.
2. If you need to perform a test print, press Copy Window to open the copy window and select the settings for the test print. Press Start Ⓢ twice, and then press SP Mode (highlighted) in the copy window to return to the SP mode display.
3. When you are finished, press Exit twice to return to the copy window.

5.1.3 SERVICE PROGRAM MODE TABLES

Service Table Key

Notation	What it means
[range / **default** / step]	Example: [-9 ~ +9 / **+3.0** / 0.1 mm step]. The setting can be adjusted in the range ±9, the setting is reset to +3.0 after an NVRAM reset, and the value can be changed in 0.1 mm steps with each key press.
italics	Comments added for reference.
*	Value stored in NVRAM. After a RAM reset, this default value (factory setting) is restored.
1111	An SP number set in bold-italic denotes a "Special Service Program" mode setting that appears only after entering the SP mode by pressing # and Copy SP together. (☛ 5.1.2)
DFU	Denotes "Design or Factory Use". Do not change this value.
Japan only	The feature or item is for Japan only. Do not change this value.
(S)	Sideways feed direction
(L)	Lengthwise feed direction

SP1XXX: Feed

1001*	Leading Edge Registration	
1001 1	Paper Tray Feed	Adjusts the printing leading edge registration from each paper feed station using the Trimming Area Pattern (SP4417, No.15). [+9.0 ~ –9.0 / **+0.0** / 0.1 mm/step] 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.*
1001 2	By-pass Feed	
1001 3	Duplex, Side2	

1002*	Side-to-Side Registration	
1002 1	Tray 1	Adjusts the printing side-to-side registration from each paper feed station using the Trimming Area Pattern (SP4417, No.15). [+9.0 ~ –9.0 / **+0.0** / 0.1 mm/step] *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.*
1002 2	Tray 2	
1002 3	Tray 3 (Optional PFU Tray 1, or LCT)	
1002 4	Tray 4 (Optional PFU Tray 2)	
1002 5	By-pass	
1002 6	Duplex Side 2	

1003*	Paper Feed Timing	
1003 1	Tray 1	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 / **5** / 1 mm/step]
1003 2	Tray 2/3/4 By-pass	
1003 3	Duplex Side 2	[0 ~ 20 / **6** / 1 mm/step]

1007	By-pass Paper Size Display	Displays the by-pass paper width sensor output.

1103	Fusing Idling
	Switches fusing idling on/off. [**0 = Off** / 1 = On / 2 = Off plus machine temperature check] *Switch on if fusing on the 1st and 2nd copies is incomplete (this may occur if the room is cold.)*

1105*	Fusing Temperature Adjustment	
1105 1	Roller Center	Adjusts the fusing temperature at the center and both ends of the hot roller for normal printing. [120 ~ 200 / **180** / 1°C/step]
1105 2	Roller Ends	
1105 3	Energy Saver	Adjusts the fusing temperature at the center and both ends of the hot roller for energy saver mode. [0 ~ 160 / **150** / 1°C/step]
1105 4	Thick Paper - Center	Adjusts the additional fusing temperature for thick paper for the 2nd paper tray and for the bypass tray. [0 ~ 30 / **15** / 1°C/step]
1105 5	Thick Paper - Ends	
1105 6	After Warming-up - Center	Adjusts the fusing temperature at the center of the hot roller after the machine has warmed up. [120 ~ 200 / **180** / 1°C/step]
1105 7	After Warming-up - Ends	Adjusts the fusing temperature at both ends of the hot roller after the machine has warmed up. [120 ~ 200 / **185** / 1°C/step]
1105 8	After Warming-up - No. of Pages	In this machine, fusing temperature is kept 10°C higher than the normal temperature for a number of pages after the machine has warmed up. This SP selects the number of pages made at this temperature. See Detailed Section Descriptions – Fusing for more details. [0 ~ 10 / **3** / 1 page/step]
1105 9	After Warming-up - Times	In this machine, fusing temperature is kept 10°C higher than the normal temperature for a short while after the machine been warmed up. This SP selects the length of time that this temperature is used. See Detailed Section Descriptions – Fusing for more details. [0 ~ 180 / **60** / 1s/step]

1106	Fusing Temp. Display	
1106 1	Roller Center	Displays the fusing temperature for the center or both ends of the hot roller.
1106 2	Roller Ends	
1106 3	In the Machine at Power On	Displays the temperature in the machine at power on. *This temperature is monitored by the thermistor on the SBCU board.*

1108*	Fusing Soft Start Setting
	Selects whether the fusing temperature control cycle is 1 or 3 seconds. *If this is "1 (3 s)", the power supply fluctuation caused by the fusing lamp turning on is less often.* [0 = 1 s / 1 = 2 s] Default: 0 = N. America, Taiwan, 1 = Europe/Asia

1109	Fusing Nip Band Check
	Checks the fusing nip band (☛5.1.11) [1 = Start / 0 = Stop]

1902	AC Frequency Display
	Display the AC frequency for fusing temperature control.

1903*	Feed Clutch Re-energize	
	Adjusts the paper feed amount allowed by the clutch 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.	
1903 1	By-pass Feed	[0 ~ 10 / **6** / 1 mm/step]
1903 2	Tray 1 Feed	[0 ~ 10 / **0** / 1 mm/step]
1903 3	Other Trays	

1905*	Tray Paper Full Detection
	Determines whether or not to detect if the built-in copy tray is full. [0 = No / **1 = Yes**]

1906*	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. [100 ~ 5000 / **500** / 10 ms/step] *This SP mode is used when SP1905 is set to 1.*

1908*	**1st Bottom Plate Pressure Adjustment**
1908 1	Normal Size
	If a middle size threshold is not stored with SP1908-9, this SP adjusts the upper paper lift motor reverse time for paper sizes larger than the small size threshold set with SP1908-8. If a middle size threshold is stored with SP1908-9, 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 SP1908.* [0 ~ 2000 / **200** / 1 ms/step]
1908 2	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 SP1908-8. **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 SP1908.* [0 ~ 2000 / **600** / 1 ms/step]
1908 3	Middle Size
	Adjusts the upper paper lift motor reverse time for paper sizes larger than the small size threshold set with SP1908-8, up to and including the middle size threshold set with SP1908-9. If a middle size threshold is not stored with SP1908-9, 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 SP1908.* [0 ~ 2000 / **200** / 1 ms/step]

1908	**1st Bottom Plate Pressure Re-adjustment**
1908 4	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 SP1908-8. The motor rotates forward when the remaining paper amount is lower than the value of SP1908-6. *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 SP1908.* [0 ~ 2000 / **400** / 1 ms/step]
1908 5	Middle Size
	Adjusts the upper paper lift motor forward rotation time for paper sizes larger than the small size threshold set with SP1908-8, up to and including the middle size threshold set with SP1908-9. The motor rotates forward when the amount of remaining paper is lower than the value of SP1908-7. If a middle size threshold is not stored with SP1908-9, 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 SP1908.* [0 ~ 2000 / **300** / 1 ms/step]
	1st Paper Amount
1908 6	Small Size
	Selects the remaining paper amount limit for use with SP1908-4. *Set this SP to 2 or 3 when a paper feed problem occurs before near-end.* *See "Paper Lift Mechanism" for details on SP1908.* [0 = None (Empty) / **1 = Near End** / 2 = 25% / 3 = 75%]
1908 7	Middle Size
	Selects the remaining paper amount limit for use with SP1908-5. *Set this SP to 2 or 3 when a paper feed problem occurs before near-end.* *See "Paper Lift Mechanism" for details on SP1908.* [0 = None (Empty) / **1 = Near End** / 2 = 25% / 3 = 75%]
	1st Paper Size
1908 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 SP1908 is determined by paper width. See "Paper Lift Mechanism" for details on SP1908.* [0 = None (Not used) / **1 = HLT/A5** / 2 = A4 / 3 = LT / 4 = DLT / 5 = A3]
1908 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 (SP1908-8). The size used by SP1908 is determined by paper width. See "Paper Lift Mechanism" for details on SP1908.* [**0 = None (Not used)** / 1 = HLT/A5 / 2 = A4 / 3 = LT / 4 = DLT / 5 = A3]

1909*	**2nd Bottom Plate Pressure Adjustment**
1909 1	Normal Size
	If a middle size threshold is not stored with SP1909-9, this SP adjusts the upper paper lift motor reverse time for paper sizes larger than the small size threshold set with SP1909-8. If a middle size threshold is stored with SP1909-9, then this SP adjusts the motor reverse time for sizes larger than the middle size. **Do not input a value greater than 1,200.** *Use this SP when a paper feed problem occurs from the 2nd paper tray.* *See "Paper Lift Mechanism" for details on SP1909.* [0 ~ 2000 / **200** / 1 ms/step]
1909 2	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 SP1909-8. **Do not input a value greater than 1,200.** *Use this SP when a paper feed problem occurs from the 2nd paper tray.* *See "Paper Lift Mechanism" for details on SP1909.* [0 ~ 2000 / **600** / 1 ms/step]
1909 3	Middle Size
	Adjusts the upper paper lift motor reverse time for paper sizes larger than the small size threshold set with SP1909-8, up to and including the middle size threshold set with SP1909-9. If a middle size threshold is not stored with SP1909-9, 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 SP1909.* [0 ~ 2000 / **200** / 1 ms/step]
	2nd Bottom Plate Pressure Re-adjustment
1909 4	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 SP1909-8. The motor rotates forward when the remaining paper amount is lower than the value of SP1909-6. *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 SP1909.* [0 ~ 2000 / **400** / 1 ms/step]
1909 5	Middle Size
	Adjusts the upper paper lift motor forward rotation time for paper sizes larger than the small size threshold set with SP1909-8, up to and including the middle size threshold set with SP1909-9. The motor rotates forward when the remaining paper amount is lower than the value of SP1909-7. If a middle size threshold is not stored with SP1909-9, 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 SP1909.* [0 ~ 2000 / **300** / 1 ms/step]

	2nd Paper Amount
1909 6	Small Size
	Selects the remaining paper amount limit for use with SP1909-4. *Set this SP to 2 or 3 when a paper feed problem occurs before near-end.* *See "Paper Lift Mechanism" for details on SP1909.* [0 = None (Empty) / **1 = Near End** / 2 = 25% / 3 = 75%]
1909 7	Middle Size
	Selects the remaining paper amount limit for use with SP1909-5. *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 SP1909.* [0 = None (Empty) / **1 = Near End** / 2 = 25% / 3 = 75%]
	2nd Paper Size
1909 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 SP1909 is determined by paper width. See "Paper Lift Mechanism" for details on SP1909.* [0 = None (Not used) / **1 = HLT/A5** / 2 = A4 / 3 = LT / 4 = DLT / 5 = A3]
1909 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 (SP1909-8). The size used by SP1909 is determined by paper width. See "Paper Lift Mechanism" for details on SP1909.* [**0 = None (Not used)** / 1 = HLT/A5 / 2 = A4 / 3 = LT / 4 = DLT / 5 = A3]

1910*	**3rd Bottom Plate Pressure Adjustment**
1910 1	Normal Size (Optional PFU)
	If a middle size threshold is not stored with SP1910-9, this SP adjusts the upper paper lift motor reverse time for paper sizes larger than the small size threshold set with SP1910-8. If a middle size threshold is stored with SP1910-9, 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 SP1910.* [0 ~ 2000 / **200** / 1 ms/step]
1910 2	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 SP1910-8. **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 SP1910.* [0 ~ 2000 / **600** / 1 ms/step]
1910 3	Middle Size (Optional PFU)
	Adjusts the upper paper lift motor reverse time for paper sizes larger than the small size threshold set with SP1910-8, up to and including the middle size threshold set with SP1910-9. If a middle size threshold is not stored with SP1910-9, 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 SP1910.* [0 ~ 2000 / **200** / 1 ms/step]

	3rd Bottom Plate Pressure Re-adjustment
1910 4	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 SP1910-8. The motor rotates forward when the remaining paper amount is lower than the value of SP1910-6. *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 SP1910.* [0 ~ 2000 / **400** / 1 ms/step]
1910 5	Middle Size (Optional PFU)
	Adjusts the upper paper lift motor forward rotation time for paper sizes larger than the small size threshold set with SP1910-8, up to and including the middle size threshold set with SP1910-9. The motor rotates forward when the remaining paper is lower than the value of SP1910-7. If a middle size threshold is not stored with SP1910-9, 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 SP1910.* [0 ~ 2000 / **300** / 1 ms/step]
	3rd Paper Amount
1910 6	Small Size (Optional PFU)
	Selects the remaining paper amount limit for use with SP1910-4. *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 SP1910.* [0 = None (Empty) / **1 = Near End** / 2 = 25% / 3 = 75%]
1910 7	Middle Size (Optional PFU)
	Selects the remaining paper amount limit for use with SP1910-5. *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 SP1910.* [0 = None (Empty) / **1 = Near End** / 2 = 25% / 3 = 75%]
	3rd Paper Size
1910 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 SP1910 is determined by paper width. See "Optional Paper Tray Unit - Paper Lift Mechanism" for details on SP1910.* [0 = None (Not used) / **1 = HLT/A5** / 2 = A4 / 3 = LT / 4 = DLT / 5 = A3]
1910 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 (SP1910-8). The size used by SP1910 is determined by paper width. See "Optional Paper Tray Unit - Paper Lift Mechanism" for details on SP1910.* [**0 = None (Not used)** / 1 = HLT/A5 / 2 = A4 / 3 = LT / 4 = DLT / 5 = A3]

1911*	**4th Bottom Plate Pressure Adjustment**
1911 1	Normal Size (Optional PFU)
	If a middle size threshold is not stored with SP19119, this SP adjusts the upper paper lift motor reverse time for paper sizes larger than the small size threshold set with SP19118. If a middle size threshold is stored with SP19119, 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 SP1911.* [0 ~ 2000 / **200** / 1 ms/step]
1911 2	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 SP19118. **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 SP1911.* [0 ~ 2000 / **600** / 1 ms/step]
1911 3	Middle Size (Optional PFU)
	Adjusts the upper paper lift motor reverse time for paper sizes larger than the small size threshold set with SP19118, up to and including the middle size threshold set with SP19119. If a middle size threshold is not stored with SP19119, 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 SP1911.* [0 ~ 2000 / **200** / 1 ms/step]
	4th Bottom Plate Pressure Re-adjustment
1911 4	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 SP19118. The motor rotates forward when the remaining paper amount is lower than the value of SP19116. *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 SP1911.* [0 ~ 2000 / **400** / 1 ms/step]
1911 5	Middle Size (Optional PFU)
	Adjusts the upper paper lift motor forward rotation time for paper sizes larger than the small size threshold set with SP19118, up to and including the middle size threshold set with SP19119. The motor rotates forward when the remaining paper amount is lower than the value of SP19117. If a middle size threshold is not stored with SP19119, 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 SP1911.* [0 ~ 2000 / **300** / 1 ms/step]

	4th Paper Amount
1911 6	Small Size (Optional PFU)
	Selects the remaining paper amount limit for use with SP19114. *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 SP1911.* [0 = None (Empty) / **1 = Near End** / 2 = 25% / 3 = 75%]
1911 7	Middle Size (Optional PFU)
	Selects the remaining paper amount limit for use with SP19115. *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 SP1911.* [0 = None (Empty) / **1 = Near End** / 2 = 25% / 3 = 75%]
	4th Paper Size
1911 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 SP1911 is determined by paper width. See "Optional Paper Tray Unit - Paper Lift Mechanism" for details on SP1911.* [0 = None (Not used) / **1 = HLT/A5** / 2 = A4 / 3 = LT / 4 = DLT / 5 = A3]
1911 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 (SP19118). The size used by SP1911 is determined by paper width. See "Optional Paper Tray Unit - Paper Lift Mechanism" for details on SP1911.* [**0 = None (Not used)** / 1 = HLT/A5 / 2 = A4 / 3 = LT / 4 = DLT / 5 = A3]

n

1912*	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 / **1700** / 1 ms/step]

1994	Punch Hole Detection
	When using paper that has punch holes, the registration sensor may detect the hole and a paper jam will be detected. If you select "1", the machine ignores the registration sensor off signal within 50 mm from the trailing edge of the paper. [**0 = No** 1 = Yes] **DFU**

1995	Paper Height Sensor Check **DFU**
	These sensors display the status of the paper height sensors for the 1st and 2nd Paper Trays.
1995 1	1st Paper Tray 1:OK 0:NG
1995 2	2nd Tray 1:OK 0:NG

1997	Jam Detect for Manual Tray
	Sets the jam detection method for the bypass tray. [0 ~ 1/ **0** / 1] 0:Normal Detection. Detects a jam if the size of the paper fed is shorter or longer than the size selected for the bypass tray. 1:Simple Detection. Detects a jam if the size of the paper fed is longer than the size set for the bypass tray.

SP2XXX: Drum

2001*	Charge Roller Bias Adjustment
2001 1*	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 / **–1700** / 1 V/step]
2001 2*	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 SP20011.* [0 ~ 400 / **200** / 1 V/step]
2001 3	Temporary Input
	Inputs the charge roller voltage temporarily for test purposes. ***Do not change the value.*** [0 ~ –2500 / **0** / 1 V/step]

2005*	Charge Roller Bias Correction
2005 1	Vsdp Min
	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 SP2005 3.* [0 ~ 100 / **90** / 1%/step]
2005 2	Vsdp Max
	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 SP2005 3.* [0 ~ 100 / **95** / 1 %/step]
2005 3	Charge Roller Bias Correction
	Adjusts the size of the charge roller voltage correction. [0 ~ 200 / **50** / 1 V/step]

2101*	Erase Margin Adjustment	
2101 1	Leading Edge	
		Adjusts the leading edge erase margin. *The specification is 3 ± 2 mm. See "Replacement and Adjustment - Copy Adjustment" for details.* [0.0 ~ 9.0 / **3.0** / 0.1 mm/step]
2101 2	Trailing Edge – Small Paper	
	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.* [0.0 ~ 9.0 / **2.0** / 0.1 mm/step]	
2101 3	Trailing Edge – Middle Paper	
	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.* [0.0 ~ 9.0 / **3.0** / 0.1 mm/step]	
2101 4	Trailing Edge – Large Paper	
	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.* [0.0 ~ 9.0 / **4.0** / 0.1 mm/step]	
2101 5	Left Side	
	Adjusts the left edge erase margin. *The specification is 2 ± 1.5 mm. See "Replacement and Adjustment - Copy Adjustment" for details.* [0.0 ~ 9.0 / **2.0** / 0.1 mm/step]	
2101 6	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.* [0.0 ~ 9.0 / **2.0** / 0.1 mm/step]	
2101 7	Rear – Trailing Edge (Duplex 2nd Side)	
	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 SP21012 or 3 or 4. *The specification is 3 ± 2 mm. See "Replacement and Adjustment - Copy Adjustment" for details* [0.0 ~ 9.0 / **1.2** / 0.1 mm/step]	
2101 8	Rear – Left Side (Duplex 2nd 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 SP21015. *The specification is 2 ± 1.5 mm. See "Replacement and Adjustment - Copy Adjustment" for details.* [0.0 ~ 9.0 / **0.3** / 0.1 mm/step]	
2101 9	Rear – Right Side (Duplex 2nd 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 SP21016. *The specification is 2 +2.5/–1.5 mm. See "Replacement and Adjustment - Copy Adjustment" for details.* [0.0 ~ 9.0 / **0.3** / 0.1 mm/step]	

2101 10	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 SP21017. *The specification is 3 ± 2 mm. See "Replacement and Adjustment - Copy Adjustment" for details* [0.0 ~ 9.0 / **0.0** / 0.1 mm/step]

2103*	LD Power Adjustment	[50 ~ 170 / **129** / 1/step]
	Adjusts the LD power. **DFU** ***Do not change the value.***	

2110*	Test Mode dpi
	Sets the scanning resolution (dpi). **DFU** [See below / 8 / 0~18] 0: 400x400 dpi 4: 300x300 dpi 8: 600x600 dpi

2201*	Development Bias Adjustment
2201 1	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 ~ –200 / **–650** / 1 V/step]
2201 2	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 SP22011. *This should not be used in the field, because it affects ID sensor pattern density, which affects toner supply.* [**0 = N (200V)** / 1 = H (240V) / 2 = L (160V) / 3 = HH (280V) / 4 = LL (120V)]

2210*	Bias Off Time
2210 1	Charge Bias
	Adjusts the charge voltage (-1200V) application time. **DFU** *When the charge voltage and development bias are turned off at the same time, toner or carrier will be attracted to the drum. To reduce the toner or carrier attraction, the machine applies –1200V to the charge roller before the development bias is turned off. This SP adjusts the time for applying the charge.* [0 ~ 150 / **80** / 1 ms /step]
2210 2	Development Bias
	Adjusts the development bias off time. **DFU** [-120 ~ 120 / **0** / 1ms/step]

2211*	PCU Reverse Interval
	Adjusts the PCU reverse interval for cleaning during a job. When the machine has made this number of copies in the middle of a job, the machine reverses to clean the edge of the cleaning blade. After cleaning, the machine resumes the job. Set to a shorter interval if thin white lines appear on printouts. [0 ~ 999 / **100** / 1 sheet/step] 0: Never cleans during job

2213*	Copies after Near End
	Selects the number of copies that can be made after toner near-end has been detected. [**0 = 50 pages** / 1 = 20 pages] *If the user normally makes copies with a high proportion of black, reduce the interval.*

2220*	Vt/Vsg/Vsp/Vsdp/Vts Display	
2220 1	Vsp	Displays the individual Vt, Vsg, Vsp, Vsdp, and Vts values.
2220 2	Vsg	
2220 3	Vsdp	
2220 4	Vt	
2220 5	Vts	
2220 6	Vsp/Vsg/Vsdp/Vt/Vts	Displays all the data used in process control, separated by slashes (/).

2301*	Transfer Current Adjust
2301 1*	Normal Paper
	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]
2301 2*	Thick/Thin Paper
	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. *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]
2301 3*	Duplex, Side2
	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]
2301 4*	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.* [–10 ~ 0 / **–4** / 1 μA/step]

2301 5	Input – Front **DFU**
2301 6	Input – Rear **DFU**
2301 7	Temp Inside the Machine
	Displays the temperature measured inside the machine just after power-on (by the thermistor on the SBCU board) the last time that the fusing unit was less than 40°C just after the machine was switched on. *The transfer current is corrected in accordance with this value.*

2801	Developer Initialization
	Initializes the developer and resets the TD and ID sensor outputs to their defaults. Do this SP after you fill the PCU with developer at machine installation and every time developer is replaced.

2802	Developer Mixing
	Mixes the developer and checks Vt. The machine mixes the developer for 2 minutes and while doing this, it reads 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.*

2803*	Developer Initialization Data
2803 1	Vts
	When the machine detects a new PCU (photoconductor unit) in the machine, it checks the heat seals at the creation of the first ID sensor pattern. After the agitator is rotated for 30 sec., the machine creates the second ID sensor pattern and corrects the reference value of the TD sensor. The corrected reference value for the TD sensor is recorded here.
2803 2	ID Sensor PWM Value
	Displays the PWM value of the ID sensor after performing the developer initialization. This value is added to the value of SP2934 4 (PWM Start Value for Vsg Auto Adjust).
2803 3	Flag **DFU**

2804	New PCU Check **DFU**
	This SP determines whether the machine is set to recognize a new PCU. [0~1/**0**/1] **0**: New PCU recognition on. 1: New PCU recognition off.

2901*	Separation Voltage Adj
2901 1	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.* [–4000 ~ –1000 / **–1800** / 1 V/step]
2901 2	Front – Image Area
	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.* [–4000 ~ –1000 / **–1800** / 1 V/step]
2901 3	Rear – Leading Edge
	Adjusts the voltage applied to the separation plate, during printing at the leading edge of the paper on the rear side. *See SP29011.* [–4000 ~ –1000 / **–2100** / 1 V/step]
2901 4	Rear – Image Area
	Adjusts the voltage applied to the separation plate, during printing at the image area of the paper on the rear side. *See SP29012.* [–4000 ~ –1000 / **–2100** / 1 V/step]

2902*	Test Pattern	
2902 3	Test Pattern Printing	Prints the test patterns. Select the number of the test pattern that you want to print 2902-2: Not used. To print the IPU Test Pattern – SP 4417 2902-3: *When adjusting the printing registration, select no.10 (Trimming Area Pattern).* [0 ~ 24 / **0** / 1 step]

2906*	Tailing Correction
2906 1	Shift Value
	Shifts the image across the page at the interval specified by SP2906 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 / **0.0** / 0.1 mm/step]
2906 2	Interval
	Changes the interval for the image shift specified by SP2906 1. [0 ~ 10 / **0** / 1 page/step]

2907*	Line Width Correction	
	Adjusts the line width for the copy mode. The default setting disables this function. A number smaller than the default makes lines thinner, a number larger than the default makes lines thicker.	
2907 1	Text Mode	[0 ~ 10 / **5** / 1 step]
2907 2	Photo Mode	[0 ~ 10 / **6** / 1 step]
2907 3	Text/Photo Mode	[0 ~ 10 / **5** / 1 step]
2907 4	Pale Mode	
2907 5	Generation Mode	

2908	Forced Toner Supply
	Forces the toner bottle to supply toner to the toner supply unit. Press Execute on the touch panel 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.*

2909*	Main Scan Magnification
	[-0.5 ~ 0.5 / **0.0** / 0.1%/step]
2909 1	Copy (Short Edge Feed)
	Adjusts the main scan magnification in copy mode when the machine feeds the paper in the short edge feed orientation.
2909 2	Printer (Short Edge Feed)
	Adjusts the main scan magnification in printer mode when the machine feeds the paper in the short edge feed orientation.
2909 3	Copy –(Long Edge Feed)
	Adjusts the main scan magnification in copy mode when the machine feeds the paper in the long edge feed orientation.
2909 4	Printer (Long Edge Feed)
	Adjusts the main scan magnification in printer mode when the machine feeds the paper in the long edge feed orientation.

2910*	Margin Adjustment for By-pass
	Adjusts the blank margin at the trailing edge of paper fed from the by-pass table. [-9.0 ~ +9.0 / 0 mm / 0.1 mm/step]

2913*	ID Adjustment for Test Pattern
	Adjusts the image density level for black pixels on test pattern printouts (patterns are made with SP2902) [0 ~ 15 / **15** / 1/step] *This SP affects all test patterns except for the grayscale test patterns.*

2915*	Polygon Motor Idling Time
	Selects the polygon motor idling time. [0 = None / **1 = 15 s** / 2 = 25 s] *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.*

2921*	Toner Supply Mode
	Selects the toner supply mode. [0 = Sensor 1 / 1 = Sensor 2 / 2 = Fixed 1 / 3 = Fixed 2, **4 = Sensor 3**] *Normally, only use setting 0. Change to 3 temporarily if the TD sensor is defective. Do not use settings 1, 2 and 4; these are for designer's use only.*

2922*	Toner Supply Time
	Adjusts the toner supply motor on time for sensor supply mode. This SP is effective only when SP2921 is "0" or "1". [0.1 ~ 5.0 / **0.6** / 0.1 s/step] *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.*

2923*	Toner Recovery Time
	Adjusts the toner supply motor on time during recovery from toner near-end/end. This SP is effective only when SP2921 is "0", "1", or "2". [1 ~ 60 / **30** / 1 s/step] *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.*

2925*	Toner Supply Ratio
	Adjusts the toner supply rate for fixed toner supply mode. This SP is effective only when SP2921 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.* [0 ~ 7 / **0** / 1/step] 0: t 4: 12t 1: 2t 5: 16t 2: 4t 6: On continuously 3: 8t 7: 0 s t: 200 ms

2926*	Standard Vt **DFU**
	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 SP2921 is "0", "1", or "2". [0.00 ~ 5.00 / **2.50** / 0.05 V/step]

2927*	ID Sensor Control
	Selects whether the ID sensor is used or not for toner density control. [0 = No / **1 = Yes**] *If this value is "0", dirty background may occur after the machine has not been used for a long time.*

2928*	Toner End Clear
	Clears the toner end condition. Press Execute on the touch panel to clear the toner end condition without adding new toner. When you press Execute, 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.

2929*	Vref Adjustment
2929 1	Upper Limit
	Adjusts the upper limit for Vref. [0.5 ~ 3.5 / **3.10** / 0.05 V/step]
2921 2	Lower Limit
	Adjusts the lower limit for Vref. [0.5 ~ 3.5 / **1.40** / 0.05 V/step]

2930*	TD Sensor Manual Setting
	Adjusts the TD sensor output. **DFU** [0 ~ 5 / **0.0V** / 0.05V/step]

2931*	TD (V/wt%) Setting
	Adjusts the TD sensor sensitivity (coefficient: S) for toner density control. **DFU** [0.01 ~ 1.50 / 0.4 / 0.01/step]

2932*	Toner Density Control Level
	Adjusts the toner density control threshold level. [**0 = Normal** / 1 = Dark / 2 = Light / 3 = Darker / 4 = Lighter] *Use this SP when you want to adjust the image density.*

2933*	ID Sensor Control Correction
	Adjusts the ID sensor control coefficient. **DFU** [0.5 ~ 3 / **1** / 0.1/step]

2934*	ID Sensor PWM Setting	
2934 1	Display	Displays the PWM of the ID Sensor LED.
2934 2	Upper Limit	
	Adjusts the upper limit of the PWM for the ID sensor LED. **DFU** [0 ~ 1279 / **0** / 1/step]	
2934 3	Upper Limit Correction	
	Corrects the upper limit of the PWM for the ID sensor LED. **DFU** [0 ~ 255 / **50** / 1/step]	

2935	ID Sensor Initialization
	Performs the ID sensor initial setting. *Press Execute on the touch panel to start. Perform this setting after replacing or cleaning the ID sensor.*

2936*	ID Sensor Pattern Size
	Selects the ID sensor pattern size in the main scan direction. *Set to 1 if white spots or black spots appear on prints. The ID sensor pattern is 290 mm wide, and when this is cleaned off, dirt is removed also.* [**0 = 20 mm** / 1 = 290 mm]

2989	Original PCU ID **South Korea only**	
	Displays the ISSUER CODE of the loaded PCU. The history of the PCU ID codes is stored in NVRAM for display**.**	
2989 1	Latest	Most current code (in use).
2989 2	Last 1	Up to four issuer codes of toner lots in the same series can be stored. If a PCU with a new series code is set, then the new code replaces the history of the previous PCU.
2989 3	Last 2	
2989 4	Last 3	
2989 5	Last 4	

2990	Original Toner ID **South Korea only**	
	Displays the ISSUER CODE of the loaded toner. The history of the toner ID codes are stored in NVRAM for display**.**	
2990 1	Latest	Most current code (in use).
2990 2	Last 1	Up to four issuer codes of toner lots in the same series can be stored. If toner with a new series code is set, then the new code replaces the history of the previous toner.
2990 3	Last 2	
2990 4	Last 3	
2990 5	Last 4	

2991	Original Toner Counter **South Korea only**	
	Displays the page counts for the ISSUER CODE history**.** [0~65535 / **0** / 1]	
2991 1	Latest	This SP displays the page counts for each successive issuer code. See SP2990 above.
2991 2	Last 1	
2991 3	Last 2	
2991 4	Last 3	
2991 5	Last 4	

2992*	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]

2993*	ISSUER CODE Ref
	Sets the standard issuer code, once it has been determined**. South Korea Only**. [0~9999 / 0 / 1]

2994*	Vts Limitation - Factory	
2994 1	Upper Limit - Factory Only	**DFU**
2994 2	Lower Limit - Factory Only	**DFU**

2995*	ID Sensor Detection Interval
2995 1	Warming-up
	This SP controls the temperature at which the ID sensor pattern is created after the machine is turned on, or after the machine returns to full operation from the energy saver or auto off mode. [0 ~ 255 / **30** / 1 degree]
2995 2	Number of Pages
	The machine makes an ID sensor pattern after the specified number of prints has been made. [0 ~ 999 / **300** / 1 page/step]

2996	Transfer Roller Cleaning
	These SP codes determine how the transfer roller is cleaned.
2996 1	0:OFF 1:ON
	Selects whether the transfer roller is cleaned. Transfer roller cleaning is necessary only when black spots occur in the image areas of copies. This can occur when bad environmental conditions increase the toner density. *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 regardless of the SP2996 001 setting.* [**0 = No** / 1 = Yes]
2996 2	Interval
	This SP sets the page interval for transfer roller cleaning when SP2996 001 is set to "1" (Yes). Increase this setting only when absolutely necessary. A higher setting increases wear on the PCU. [0~100/**50**/1 sheets] **Note** • This SP does not execute for the first copy after power on or when the machine returns from the energy save or auto off mode. • This SP setting does cannot correct poor copies if there is a problem with the TD sensor.

2997*	Standard Vt (Factory Only)	**DFU**

2998*	PCU Reverse Rotation Time **DFU**
2998 1	Wait Time
	Adjusts the waiting time for starting to rotate the drum in reverse after the end of each job. The wait time calculation formula is as follows. [0 ~ 999 / **600**/ 1] This SP is adjusted in units of 30 ms (1 step = 30 ms, 2 steps = 60 ms, etc.) If "0" is selected, the drum reverses immediately at the end of the job.
2998 2	Reverse Time
	Adjusts the drum reverse rotation time. [0 ~ 99 / **60**/ 1] This SP is adjusted in units of 60 ms (1 step = 6 ms, 2 steps = 12 ms, etc.) If "0" is selected, the drum does not reverse at the end of the job.
2998 3	Brake Time
	Adjusts the length of time of braking to stop reverse rotation of the drum. [0~99/**60**/1] This SP is adjusted in units of 6 ms (1 step = 6 ms, 2 steps = 12 ms, etc.) If "0" is selected, the drum stops reverse rotation immediately. **Note**: Adjust the SP only if the PCU makes noise during braking when the drum rotation slows. To reduce or eliminate the noise, select a lower setting to reduce the braking time.

2999*	Toner Control Data Display **DFU**
	Displays the toner density control data on the debug monitor. [**0 = No** / 1 = Yes]

SP4-XXX: Scanner

4008*	Scanner Sub Scan Mag
	Adjusts the magnification in the sub scan direction. [–0.9 ~ +0.9 / **0.0** / 0.1% step] *Use the # key to toggle between + and – before entering the value. The specification is ± 1%. See "Replacement and Adjustment - Copy Adjustment" for details.*

4009*	Scanner Main Scan Mag
	Adjusts the magnification in the main scan direction for scanning. [–0.9 ~ +0.9 / **0.0** / 0.1% step] *Use the # key to toggle between + and – before entering the value. The specification is ± 1%. See "Replacement and Adjustment – Copy Adjustment" for details.*

4010*	Scanner Leading Edge Registration
	Adjusts the leading edge registration for scanning in platen mode. [–0.9 ~ +0.9 / **0.0** / 0.1 mm step] *(–): 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.*

4011*	Scanner Side-to-side Registration
	Adjusts the side-to-side registration for scanning in platen mode. [–4.6 ~ +4.6 / **0.0** / 0.1 mm step] *(–): 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 "Replacement and Adjustment – Copy Adjustment" for details.*

4012*	Scanner Erase Margin	
4012 1	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 / **0.5** / 0.1 mm/step]
4012 2	Trailing Edge	
4012 3	Right Side	
4012 4	Left Side	

4013	Scanner Free Run
	Performs a scanner free run with the exposure lamp on. *Press ON on the touch panel to start this feature. Press the C (Clear/Stop) key to stop.*

4015*	White Plate Scanning
4015 1	Start Position
	Adjusts the scanning start position on the white plate for auto shading. *The default is 10.5 mm from the leading edge. The setting specifies how far scanning starts from the default position.* [–5.0 ~ +5.0 / **0.0** / 0.1 mm/step]
4015 2	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 4.76 mm. The current setting specifies the difference from this default.* [–5.0 ~ +5.0 / **0.0** / 0.1 mm/step]

4301	APS Data Display
	Displays the status of the APS sensors and platen/DF cover sensor (☛ 4.2.9).

4303*	APS Small Size Original
	Selects if the copier defaults to A5 SEF/LEF if the APS sensor cannot detect the size of a small original. [0~2/**0**/1] 0: Not detected as A5 1: Detected as A5 SEF 2: Detected as A5 LEF

4305*	Original Size Detection
	Selects whether the machine determines that the original is A4/LT, or 8K/16K. 8K/16K is not available for USA models. [**0 = Normal** (LT for USA models, A4 for Europe/Asia models) 1 = Reversed [A4 for USA models, LT for Europe/Asia models] 2 = 8K/16K]

4417	IPU Test Pattern
	Prints test patterns from the IPU video data outputs. **0.No Print** 1.Vertical Line – 1 dot 2.Vertical Line – 2 dot 3.Horizontal Line – 1 dot 4.Horizontal Line – 2 dot 5.Alternating Dot Pattern 6.Grid Pattern – 1 dot 7.Vertical Bands 8.Grayscale – Horizontal (8 level) 9. Grayscale – Vertical (8 level) 10.Grayscale – 16 level 11.Cross Pattern 12.Slant Pattern 13.Patch Pattern (256 level) 14Patch Pattern (64 level) 15.Trimming Area 16.Frequency characteristics – Vertical 15.Frequency characteristics – Horizontal *Change to the copy mode display by pressing the (Interrupt) key, then print the test pattern.*

4428	SBU Auto Adjustment
	Performs the auto scanner adjustment. *Using this SP mode after replacing the white plate or erasing the memory on the controller board. See "Replacement and Adjustment – Copy Image Adjustments - Standard White Density Adjustment" for details on how to do this.* *Press Execute on the touch panel to start.*

4550*	Scanner Appli: Text: Print	
4550 1	MTF Filter Level: Main Scan	Set the MTF coefficient for main/sub scan directions. [0~15/**8**/1] 0: Weakest ← **8: Default** → 15: Strongest
4550 2	MTF Filter Level: Sub Scan	
4550 3	MTF Filter Strength: Main Scan	Set the MTF strength for main/sub scan directions. [0~7/**4**/1] 0: Weakest ← **4: Default** → 7: Strongest
4550 4	MTF Filter Strength: Sub Scan	
4550 5	Smoothing	Selects the level of smoothing for originals that contain dithered images. [0~7/**0**/1] **0: Default (Off)** → 7: Strongest
4550 6	Brightness (Not Used)	Sets the overall brightness of the image. [1~255/**128**/1] 1: Weakest ← **128: Default** → 255: Strongest
4550 7	Contrast (Not Used)	Sets the overall contrast of the image. [1~255/**128**/1] 1: Weakest ← **128: Default** → 255: Strongest
4550 8	Independent Dot Erase	Sets the level of independent dot erasure to improve the appearance of background. [0~7/**0**/1] **0: Default (Off)** → 7: Strongest

4551*	Scanner Appli: Text: OCR	
4551 1	MTF Filter Level: Main Scan	Set the MTF coefficient for main/sub scan directions. [0~15/**8**/1] 0: Weakest ← **8: Default** → 15: Strongest
4551 2	MTF Filter Level: Sub Scan	
4551 3	MTF Filter Strength: Main Scan	Set the MTF strength for main/sub scan directions. [0~7/**4**/1] 0: Weakest ← **4: Default** → 7: Strongest
4551 4	MTF Filter Strength: Sub Scan	
4551 5	Smoothing	Selects the level of smoothing. [0~7/**0**/1] **0: Default (Off)** → 7: Strongest
4551 6	Brightness (Not Used)	Sets the overall brightness of the image. [1~255/**128**/1] 1: Weakest ← **128: Default** → 255: Strongest
4551 7	Contrast (Not Used)	Sets the overall contrast of the image. [1~255/**128**/1] 1: Weakest ← **128: Default** → 255: Strongest
4551 8	Independent Dot Erase	Sets the level of independent dot erasure to improve the appearance of background. [0~7/**0**/1] **0: Default (Off)** → 7: Strongest

4552*	Scanner Appli: Text/Photo	
4552 1	MTF Filter Level: Main Scan	Set the MTF coefficient for main/sub scan directions. [0~15/**8**/1] 0: Weakest ← **8: Default** → 15: Strongest
4552 2	MTF Filter Level: Sub Scan	
4552 3	MTF Filter Strength: Main Scan	Set the MTF strength for main/sub scan directions. [0~7/**4**/1] 0: Weakest ← **4: Default** → 7: Strongest
4552 4	MTF Filter Strength: Sub Scan	
4552 5	Smoothing	Selects the level of smoothing. [0~7/**0**/1] **0: Default (Off)** → 7: Strongest
4552 6	Brightness (Not Used)	Sets the overall brightness of the image. [1~255/**128**/1] 1: Weakest ← **128: Default** → 255: Strongest
4552 7	Contrast (Not Used)	Sets the overall contrast of the image. [1~255/**128**/1] 1: Weakest ← **128: Default** → 255: Strongest
4552 8	Independent Dot Erase	Sets the level of independent dot erasure to improve the appearance of background. [0~7/**0**/1] **0: Default (Off)** → 7: Strongest

4553*	Scanner Appli: Photo	
4553 1	MTF Filter Level: Main Scan	Set the MTF coefficient for main/sub scan directions. [0~15/**8**/1] 0: Weakest ← **8: Default** → 15: Strongest
4553 2	MTF Filter Level: Sub Scan	
4553 3	MTF Filter Strength: Main Scan	Set the MTF strength for main/sub scan directions. [0~7/**4**/1] 0: Weakest ← **4: Default** → 7: Strongest
4553 4	MTF Filter Strength: Sub Scan	
4553 5	Smoothing	Selects the level of smoothing. [0~7/**0**/1] **0: Default (Off)** → 7: Strongest
4553 6	Brightness (Not Used)	Sets the overall brightness of the image. [1~255/**128**/1] 1: Weakest ← **128: Default** → 255: Strongest
4553 7	Contrast (Not Used)	Sets the overall contrast of the image. [1~255/**128**/1] 1: Weakest ← **128: Default** → 255: Strongest
4553 8	Independent Dot Erase	Sets the level of independent dot erasure to improve the appearance of background. [0~7/**0**/1] **0: Default (Off)** → 7: Strongest

4556*	Scanner Appli Grey Scale	
4556 1	MTF Filter Level: Main Scan	Set the MTF coefficient for main/sub scan directions. [0~15/**0**/1] **0: Weakest** ← 8: Default → 15: Strongest
4556 2	MTF Filter Level: Sub Scan	
4556 3	MTF Filter Strength: Main Scan	Set the MTF strength for main/sub scan directions. [0~7/**0**/1] **0: Default (Off)** → 7: Strongest
4556 4	MTF Filter Strength: Sub Scan	
4556 5	Smoothing	Selects the level of smoothing. [0~7/**0**/1] **0: Default (Off)** → 7: Strongest
4556 6	Brightness (Not Used)	Sets the overall brightness of the image. [1~255/**128**/1] 1: Weakest ← **128: Default** → 255: Strongest
4556 7	Contrast (Not Used)	Sets the overall contrast of the image. [1~255/**128**/1] 1: Weakest ← **128: Default** → 255: Strongest
4556 8	Independent Dot Erase	Sets the level of independent dot erasure to improve the appearance of background. [0~7/**0**/1] **0: Default (Off)** → 7: Strongest

4623*	Black Level Adj. 1 **DFU**	
	Displays the DAC value of black offset correction.	
4623 1	Rough: Even	[0~255/**128**/1]
4623 2	Rough: Odd	
4623 3	Fine: Even	
4623 4	Fine: Odd	

4624*	Black Level Adj. 2 **DFU**	
	Displays the DAC value of black offset correction.	
4624 1	Rough: Even	[0~255/**128**/1]
4624 2	Rough: Odd	
4624 3	Fine: Even	
4624 4	Fine: Odd	

4646*	SBU Adjustment Error	
	Use this SP to determine whether the automatic scanner adjustment loop has exceeded the prescribed number of loops and flagged a timeout. The position of the bits that display "1" tell you where the error has occurred.	
	Bit No.	**Where the Error Occurred**
	Bit 0	White Level
	Bit 1	Black Level Adj 1
	Bit 2	Black Level Adj 2
	Bit 3	Black Level
	Bit 4	SBU
	Bit 7	Reference Adjustment

4800	Black Level Adjustment Mode **DFU**
	This SP switches the black offset compensation mode on and off. Black offset correction is done during automatic image density correction (ADS). **Note**: This SP operates only if the black offset correction circuit is built into the SBU. **0: Off** 1: On

4901	SBU Adjustment
4901 1	Gain – Even **DFU**
	Checks the difference value of the black level for the EVEN channel after adjusting the black level at power-up. However, after doing a memory all clear (SP5801), use it to re-input the previous value. [0 ~ 255 / **40** / 1/step]
4901 2	Gain – Odd **DFU**
	Checks the difference value of the black level for the ODD channel after adjusting the black level at power-up.**.** However, after doing a memory all clear (SP5801), use it to re-input the previous value. [0 ~ 255 / **40** / 1/step]
4901 3	Black Level – Even **DFU**
	Displays the coefficient of the D/A converter for the DC cont AGC gain curve for the EVEN channel.
4901 4	Black Level - Odd **DFU**
	Displays the coefficient of the D/A converter for the DC cont AGC gain curve for the ODD channel.
4901 5	White Level: EVEN **DFU**
	Displays the result of white level adjustment for the EVEN channel after automatic density level adjustment is done after the machine is switched on.
4901 6	White Level: ODD **DFU**
	Displays the result of white level adjustment for the ODD channel after automatic density level adjustment is done after the machine is switched on.
4901 7	Ref. Cont **DFU**
	Displays and allows adjustment of the coefficient of the D/A converter for the AGC gain curve for scanning the white plate. After doing a memory all clear (SP5801), use it to re-input the previous value. [0 ~255 / **147** / 1/step]

4902	Exposure Lamp ON
	Turns on the exposure lamp. *Press ON on the touch panel to turn on the lamp. Press OFF to turn off the lamp.*

4903*	Image Quality Adjustment - All	**Note**: These adjustments are effective only for the "Custom Setting" Original type.
4903 1	Text: 25% ~ 34%	Adjusts the image quality in Text mode. *A larger number increases contrast and sharpens the image but moiré may appear.* *A smaller number reduces contrast and moiré but the line may become narrower.* [0 ~ 10 / **0** / 1 step]
4903 2	Text: 35% ~ 66%	
4903 3	Text: 67% ~ 141%	
4903 4	Text: 142% ~ 400%	
4903 5	Photo: 25% ~ 34%	Adjusts the image quality in Photo mode. *0 ~ 6 are for a glossy photo image (error diffusion)* *7 ~ 20 are for a printed photo image (dithering)* *If copy quality is not satisfactory, try another setting (trial and error)* [0 ~ 20 / **12**/ 1/step]
4903 6	Photo: 35% ~ 66%	
4903 7	Photo: 67% ~ 141%	
4903 8	Photo: 142% ~ 400%	
4903 9	Text/Photo: 25% ~ 34%	Adjusts the image quality in Text/Photo mode. *A larger number increases contrast and sharpens the image but moiré may appear.* *A smaller number reduces contrast and moiré but the line may become narrower.* [0 ~ 10 / **5** / 1 step]
4903 10	Text/Photo: 35% ~ 66%	[0 ~ 10 / **5** / 1 step]
4903 11	Text/Photo: 67% ~ 141%	
4903 12	Text/Photo: 142% ~ 400%	
4903 13	Pale: 25% ~ 34%	Adjusts the image quality in Pale mode. *A larger number increase the number of gradations in low contrast areas.* [0 ~ 10 / **5** / 1 step]
4903 14	Pale: 35% ~ 66%	
4903 15	Pale: 67% ~ 141%	
4903 16	Pale: 142% ~ 400%	
4903 17	Generation: 25% ~ 34%	Adjusts the image quality in Generation mode. *A larger number increases contrast and sharpens the image but moiré may appear.* *A smaller number reduces contrast and moiré but the line may become narrower.* [0 ~ 10 / **5** / 1 step]
4903 18	Generation: 35% ~ 66%	[0 ~ 10 / **5** / 1 step]
4903 19	Generation: 67% ~ 141%	
4903 20	Generation: 142% ~ 400%	

4904*	Image Quality Adj. - Other	
	Independent Dot Erase	
4904 1	Text	This adjustment is only effective for the "Custom Setting" original type. *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 ~ 10 / **0** / 1 step]
4904 2	Photo	
4904 3	Text/Photo	
4904 4	Pale	
4904 5	Generation	[0 ~ 10 / **3** / 1 step]
	Background Erase	
4904 6	Text	This adjustment is only effective for the "Custom Setting" original type. *A larger number reduces dirty background. If "0" is selected, background erase is disabled.* [0 ~ 255 / **0** / 1 step]
4904 7	Photo	
4904 8	Text/Photo	
4904 9	Pale	
4904 10	Generation	[0 ~ 255 / **5** / 1 step]
	Gamma	
4904 11	Text	This adjustment is only effective for the "Custom Setting" original type. Selects the gamma table for each original type. [0 ~ 2 / **5** / 1/step] *0: Standard gamma table* *1: This gamma table reduces the background of the original and gives sharp characters.* *2: The gamma table increases the number of gradations in high-density areas.*
4904 12	Photo	
4904 13	Text/Photo	
4904 14	Pale	
4904 15	Generation	

4905*	Image Data Path
	Selects one of the following video data outputs which will be used for printing. **DFU** [0 ~ 3 / **0** / 1 step] 0: Normal 1: After black level correction 2: After shading correction without black level correction 3: Shading data

4907*	Gash Adj: Others
4907 1*	Fax 25%, 50% Reduction
	Determines whether 25% and 50% reduction is available in fax mode. [**0 = No**, 1 = Yes]
4907 2	Outline Level **DFU**

4909*	IPU Image Data Path
	Selects one of the following image data outputs, which will be used for printing. **DFU** [0 ~ 255 / **0** / 1 step] Bit 7: Shading Bit 6: Scanner gamma Bit 5: Pre-filtering Bit 4: Magnification Bit 3: Scanner/Printer Mask Bit 2: Gradation Bit 1: Filtering Bit 0: Printer gamma

4920	Scanning (Factory Only) **DFU**

4930*	Sensor Condition	
4930 1	Platen Cover sensor	Checks the following sensors in the scanner unit. [0 = Opened, 1 = Closed]
4930 2	Scanner HP Sensor	[0 = Opened, 1 = Closed]

4999	ADF Scan Glass Dust Check
	This function checks the narrow scanning glass of the ADF for dust that can cause black lines in copies. If dust is detected a system banner message is displayed, but processing does not stop.
4999 1	Check On/Off Change
	Issues a warning if there is dust on the narrow scanning glass of the ADF when the original size is detected before a job starts. This function can detect dust on the white plate above the scanning glass, as well as dust on the glass. Sensitivity of the level of detection is adjusted with SP4999 2. [0 ~ 1 / **0** / 1] 0:Off. No dust warning. 1:On. Dust warning. This warning does not stop the job. **Note**: Before switching this setting on, clean the ADF scanning glass and the white plate above the scanning glass.
4999 2	Detect Level
	Adjusts the sensitivity for dust detection on the ADF scanning glass. This SP is available only after SP49991 is switched on. [0~8 / **4**/ 1] If you see black streaks in copies when no warning has been issued, raise the setting to increase the level of sensitivity. If warnings are issued when you see not black streaks in copies, lower the setting. **Note**: Dust that triggers a warning could be removed from the glass by the originals in the feed path. If the dust is removed by passing originals, this is not detected and the warning remains on.

SP5XXX: Mode

5024*	mm/inch Selection
	Selects whether mm or inches are used in the display. Note: After selecting the number, you must turn the main power switch off and on. **Europe/Asia model:** [**0 = mm** / 1 = inch] **American model:** [0 = mm / **1 = inch**]

5044	Operation Panel Bit SW
5044 1	SW1 **DFU**
5044 2	SW2 **DFU**

5045	Accounting Counter
	Selects the counting method if the meter charge mode is enabled with SP5-930-001. **Note**: You can change the setting only one time. [0 to 1/ 1] 0: Development counter. Shows the total counts for color (Y,M,C) and black (K). 1: Paper counter. Shows the total page counts for: Color Total, Black Total, Color Copies, Black Copies, Color Prints, Black Prints.

5051	Toner Refill Detection Display
	Switches the toner refill prompt display off on. **Default: On**

5052	Recover Time Priority Setting
	The recovery time of the Basic model is 5 sec. so two settings provided, one for energy save priority and one for start time priority. **0**: Energy save priority 1: Start time priority

⟹

5055	[Display IP Address]	0: NO, 1: Yes
5055 1	Displays the LP's IP Address on the display panel. (Default = NO)	

5104*	A3/DLT Double Count
	Specifies whether the counter is doubled for A3/DLT. "Yes" counts except from the bypass tray. When "Yes" is selected, A3 and DLT paper are counted twice, that is A4 x2 and LT x2 respectively.

5106*	Density Level Setting
	Selects the image density level used in ADS mode. [1~7 / **4** / 1 notch per step] Example: If you set SP5106 6 to "2": Pressing the Auto Image Density key toggles the display off and manual notch 2 is selected. *Adjust this SP if the customer cannot attain clean copies after performing automatic density adjustment*

5113	Optional Counter Type
51131	Default Optional Counter Type
	Selects the type of counter: 0: None 1: Key Card (RK3, 4) **Japan only** 2: Key Card Down 3: Pre-paid Card 4: Coin Rack 5: MF Key Card 11: Exp Key Card (Add) 12: Exp Key Card (Deduct)
5113 2	External Optional Counter Type
	Enables the SDK application. This lets you select a number for the external device for user access control. **Note**: "SDK" refers to software on an SD card. [0~3/1] 0: None 1: Expansion Device 1 2: Expansion Device 2 3: Expansion Device 3

5118	Disable Copying
	Temporarily denies access to the machine. **Japan Only** [0~1/1] 0: Release for normal operation 1: Prohibit access to machine

5120	Mode Clear Opt. Counter Removal
	Do not change. **Japan Only** [0~2/1] 0: Yes. Normal reset 1: Standby. Resets before job start/after completion 2: No. Normally no reset

5121	Counter Up Timing
	Determines whether the optional key counter counts up at paper feed-in or at paper exit. **Japan Only** [0~1/1] 0: Feed count 1: No feed count

5127	APS Mode
	This SP can be used to switch APS (Auto Paper Select) off when a coin lock or pre-paid key card device is connected to the machine. [0~1/1] 0: On 1: Off

5129*	F Paper Size Selection
	Selects the “F” paper size. [0 ~ 2 / **0** / 1 step] 0: 8" x 13" 1: 8.5" x 13" 2: 8.25" x 13"

5131*	Paper Size Type Selection
	Selects the paper size (type) for both originals and copy paper. [0~2 / **DIP SW setting** / 1 step] 0:Japan 1:North America 2:Europe *After changing the setting, turn the copier off and on. If the paper size of the archive files stored on the HDD is different, abnormal copies could result. Ask the customer to restore the archive files.*

5150	Bypass Length Setting
	Sets up the by-pass tray for long paper. [0~1/1] 0: Off 1: On. Sets the tray for feeding paper up to 600 mm long. *With this SP selected on, paper jams are not detected in the paper path.*

5162	App. Switch Method
	Controls if the application screen is changed with a hardware switch or a software switch. [0~1/1] 0: Soft Key Set 1: Hard Key Set

5167	Fax Printing Mode at Optional Counter Off
	Enables or disables the automatic print out without an accounting device. This SP is used when the receiving fax is accounted for by an external accounting device. **0**: Automatic printing 1: No automatic printing

5169	CE Login
	If you will change the printer bit switches, you must 'log in' to service mode with this SP before you go into the printer SP mode. [0~1/1] 0: Off. Printer bit switches cannot be adjusted. 1: On. Printer bit switches can be adjusted.

5179*	Bypass Size Error
	This SP determines whether a paper size error prompt appears when the machine detects the wrong paper size for the job and jams during feed from the bypass tray. [0~1/**0**/1] 0: Off 1: On

5212	Page Numbering	
5212 3	Duplex Printout Left/Right Position	Horizontally positions the page numbers printed on both sides during duplexing. [–10~+10/1 mm] 0 is center, minus is left, + is right.
5212 4	Duplex Printout High/Low Position	Vertically positions the page numbers printed on both sides during duplexing. [–10~+10/1 mm] 0 is center, minus is down, + is up.

5302	Set Time **DFU**
	Sets the time clock for the local time. This setting is done at the factory before delivery. The setting is GMT expressed in minutes. [–1440~1440/1 min.] JA: +540 (Tokyo) NA: -300 (NY) EU: +6- (Paris) CH: +480 (Peking) TW: +480 (Taipei) AS: +480 (Hong Kong)

5307	Summer Time	
	Lets you set the machine to adjust its date and time automatically with the change to Daylight Savings time in the spring and back to normal time in the fall. This SP lets you set these items: • Day and time to go forward automatically in April. • Day and time to go back automatically in October. • Set the length of time to go forward and back automatically. The settings for 002 and 003 are done with 8-digit numbers:	
	Digits	**Meaning**
	1st, 2nd	Month. 4: April, 10: October (for months 1 to 9, the first digit of 0 cannot be input, so the eight-digit setting for 002 or 003 becomes a seven-digit setting)
	3rd	Day of the week. 0: Sunday, 1: Monday
	4th	The number of the week for the day selected at the 3rd digit. If “0” is selected for “Sunday”, for example, and the selected Sunday is the start of the 2nd week, then input a “2” for this digit.
	5th, 6th	The time when the change occurs (24-hour as hex code). Example: 00:00 (Midnight) = 00, 01:00 (1 a.m.) = 01, and so on.
	7th	The number of hours to change the time. 1 hour: 1
	8th	If the time change is not a whole number (1.5 hours for example), digit 8 should be 3 (30 minutes).
5307 1	Setting	Enables/disables the settings for 002 and 003. [0~1/1] 0: Disable 1: Enable
5307 2	Rule Set (Start)	The start of summer time.
5307 4	Rule Set (End)	The end of summer time.

5401	Access Control **DFU**	
	This SP stores the settings that limit uses access to SDK application data.	
5401 6	User Recognition – Copier	This SP codes are provided for future customization of the access control feature. This is to be done at the factory, not in the field. **DFU**
5401 16	Use Recognition – Document Server	
5401 26	User Recognition – Fax	
5401 36	User Recognition – Scanner	
5401 46	User Recognition – Printer	
5401 76	User Recogntion – Expanded Function 1	
5401 86	User Recogntion – Expanded Function 2	
5401 96	User Recogntion – Expanded Function 2	
5401 200	SDK1 Unique ID	"SDK" is the "Software Development Kit". This data can be converted from SAS (VAS) when installed or uninstalled. **DFU**
5401 201	SDK1 Certification Method	
5401 210	SDK2 Unique ID	
5401 211	SDK2 Certification Method	
5401 220	SDK3 Unique ID	
5401 221	SDK3 Certification Method	

5404	User Code Count Clear
	Clears the counts for the user codes assigned by the key operator to restrict the use of the machine. Press [Execute] to clear.

5501*	PM Alarm
5501 1	PM Alarm Interval
	Sets the PM interval. *The value stored in this SP is used when the value of SP55012 is "1".* [0 ~ 255 / **0** / 1 k copies/step]
5501 2	Original Count Alarm **DFU**
	Selects whether the PM alarm for the number of scans is enabled or not. *If this is "1", the PM alarm function is enabled.* [0 = **No** / 1 = Yes]

5504*	Jam Alarm **Japan Only**
	Sets the alarm to sound for the specified jam level (document misfeeds are not included). **RSS use only** [0~3 / **3** / 1 step] 0:Zero (Off) 1:Low (2.5K jams) 2:Medium (3K jams) 3:High (6K jams)

5505*	Error Alarm
	Sets the error alarm level. **Japan only DFU** [0~255 / **50** / 100 copies per step]

5507	Supply Alarm	
5507 1	Paper Supply Alarm (0:Off 1:On)	Switches the control call on/off for the paper supply. **DFU** **0: Off**, 1: On 0: No alarm. 1: Sets the alarm to sound for the specified number transfer sheets for each paper size (A3, A4, B4, B5, DLT, LG, LT, HLT)
5507 2	Staple Supply Alarm (0:Off 1:On)	Switches the control call on/off for the stapler installed in the finisher. **DFU** **0: Off**, 1: On 0: No alarm 1: Alarm goes off for every 1K of staples used.
5507 3	Toner Supply Alarm (0:Off 1:On)	Switches the control call on/off for the toner end. **DFU** **0: Off**, 1: On If you select "1" the alarm will sound when the copier detects toner end.
5507 128*	interval: Others	The "Paper Supply Call Level: nn" SPs specify the paper control call interval for the referenced paper sizes. **DFU** [00250 ~ 10000 / **1000** / 1 Step]
5507 132*	Interval: A3	
5507 133*	Interval: A4	
5507 134*	Interval: A5	
5507 141*	Interval: B4	
5507 142*	Interval: B5	
5507 160*	Interval: DLT	
5507 164*	Interval: LG	
5507 166*	Interval: LT	
5507 172*	Interval: HLT	

5508	CC Call **Japan Only**	
001	Jam Remains	Enables/disables initiating a call. [0~1/1] 0: Disable 1: Enable
002	Continuous Jams	
003	Continuous Door Open	
004	Low Call Mode	Enables/disables the new call specifications designed to reduce the number of calls. [0~1/1] 0: Normal mode 1: Reduced mode
011	Jam Detection: Time Length	Sets the length of time to determine the length of an unattended paper jam. [03~30/1] This setting is enabled only when SP5508-004 is enabled (set to 1).
012	Jam Detection Continuous Count	Sets the number of continuous paper jams required to initiate a call. [02~10/1] This setting is enabled only when SP5508-004 is enabled (set to 1).
013	Door Open: Time Length	Sets the length of time the remains opens to determine when to initiate a call. [03~30/1] This setting is enabled only when SP5508-004 is enabled (set to 1).
021	Jam Operation: Time Length	Determines what happens when a paper jam is left unattended. [0~1/1] 0: Automatic Call 1: Audible Warning at Machine
022	Jam Operation: Continuous Count	Determines what happens when continuous paper jams occur. [0~1/1] 0: Automatic Call 1: Audible Warning at Machine
023	Door Operation: Time Length	Determines what happens when the front door remains open. [0~1/1] 0: Automatic Call 1: Audible Warning at Machine

5801	Memory Clear	
	Resets NVRAM data to the default settings. Before executing any of these SP codes, print an SMC Report.	
5801 1	All Clear	Initializes items 2 ~ 15 below.
5801 2	Engine Clear	Initializes all registration settings for the engine and copy process settings.
5801 3	SCS	Initializes default system settings, SCS (System Control Service) settings, operation display coordinates, and ROM update information.
5801 4	IMH Memory Clear	Initializes the image file system. (IMH: Image Memory Handler)
5801 5	MCS	Initializes the automatic delete time setting for stored documents. (MCS: Memory Control Service)
5801 6	Copier application	Initializes all copier application settings.
5801 7	Fax application	Initializes the fax reset time, job login ID, all TX/RX settings, local storage file numbers, and off-hook timer.
5801 8	Printer application	Initializes the printer defaults, programs registered, the printer SP bit switches, and the printer CSS counter.
5801 9	Scanner application	Initializes the defaults for the scanner and all the scanner SP modes.
5801 10	Web Service/Network application	Deletes the Netfile (NFA) management files and thumbnails, and initializes the Job login ID. Netfiles: Jobs to be printed from the document server using a PC and the DeskTopBinder software
5801 11	NCS	Initializes the system defaults and interface settings (IP addresses also), the SmartNetMonitor for Admin settings, WebStatusMonitor settings, and the TELNET settings. (NCS: Network Control Service)
5801 12	R-FAX	Initializes the job login ID, SmartNetMonitor for Admin, job history, and local storage file numbers.
5801 14	Clear DCS Setting	Initializes the DCS (Delivery Control Service) settings.
5801 15	Clear UCS Setting	Initializes the UCS (User Information Control Service) settings.
5801 16	MIRS Setting	Initializes the MIRS (Machine Information Report Service) settings.
5801 17	CCS	Initializes the CCS (Certification and Charge-control Service) settings.
5801 18	SRM Clear	Initializes the SRM (System Resource Manager) settings.
5801 19	LCS Clear	Initializes the LCS (Log Count Service) settings.

5802	Printer Free Run
	Performs a free run for both the scanner and the printer. 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]

5803	Input Check
	Displays signals received from sensors and switches. Press the (Clear Modes) key to exit the program. (☛5.1.5)

5804	Output Check
	Turns on electrical components individually for test purposes. (☛5.1.6)

5807*	Option Connection Check	
5807 1	ARDF	Checks the connectors to the optional peripheral devices. Execution will return either a “1” or “0” on the display. 1:Device connected correctly. 0:Device not connected correctly.
5807 2	Paper Tray Unit	
5807 3	LCT	
5807 4	Finisher	

5810	SC Code Reset **DFU**
	Resets all level A service call conditions, such as fusing errors. To clear the service call, touch “Execute” on the LCD, then turn the main power switch off/on.

5811	Machine No. Setting
	This SP presents the screen used to enter the 11-digit number of the machine. The allowed entries are "A" to "Z" and "0" to "9". The setting is done at the factory, and should not be changed in the field. **DFU**

5812	Service Tel. No. Setting	
001	Service	Inputs the telephone number of the CE (displayed when a service call condition occurs.)
002	Facsimile	Use this to input the fax number of the CE printed on the Counter Report (UP mode). **Not Used**
003	Supply	Displayed on the initial SP screen.
004	Operation	Allows the service center contact telephone number to be displayed on the initial screen.

5816	Remote Service
5816 1	I/F Setting
	Turns the remote diagnostics off and on. [0~2/1] 0: Remote diagnostics off. 1: Serial (CSS or NRS) remote diagnostics on. 2: Network remote diagnostics.
5816 2	CE Call
	Lets the customer engineer start or end the remote machine check with CSS or NRS; to do this, push the center report key
5816 3	Function Flag
	Enables and disables remote diagnosis over the NRS network. [0~1/1] 0: Disables remote diagnosis over the network. 1: Enables remote diagnosis over the network.
5816 6	Device Information Call Display
	Controls if the item for initial setting of the screen for the NRS device-information notification-call is shown. [0~1/1] 0: Enabled. Item initial setting not shown. 1: Disable. Item for initial setting shown.
5816 7	SSL Disable
	Controls if RCG (Remote Communication Gate) confirmation is done by SSL during an RCG send for the NRS over a network interface. [0~1/1] 0: Yes. SSL not used. 1: No. SSL used.
5816 8	RCG Connect Timeout
	Sets the length of time (seconds) for the time-out when the RCG (Remote Communication Gate) connects during a call via the NRS network. [1~90/1 sec.]
5816 9	RCG Write to Timeout
	Sets the length of time (seconds) for the time-out when sent data is written to the RCG during a call over the NRS network. [0~100/1 sec.]
5816 10	RCG Read Timeout
	Sets the length of time (seconds) for the timeout when sent data is written from the RCG during a call over the NRS network. [0~100/1 sec.]
5816 11	Port 80 Enable
	Controls if permission is given to get access to the SOAP method over Port 80 on the NRS network. [0~1/1] 0: No. Access denied 1: Yes. Access granted.
5816 16	Connection Method
	Selects how the remote service is connected. **0**: Internet 1: Dial-up

5816 21	RCG – C Registered ***(RCG – C = Embedded Remote Communication Gate)***	
	This SP displays the RCG – C installation end flag. 1: Installation completed 2: Installation not completed	
5816 22	RCG – C Registered Detail	
	This SP displays the RCG – C installation status. 0: RCG – B not registered ***(RCG – B = Remote Communication Gate)*** 1: RCG – B registered 2: Device registered	
5816 23	Connect Type (N/M)	
	This SP displays and selects the RCG – C connection method. **0**: Internet connection 1: Dial-up connection	
5816 61	Cert. Expire Timing **DFU**	
	Proximity of the expiration of the certification.	
5816 62	Use Proxy	
	This SP setting determines if the proxy server is used when the machine communicates with the service center.	
5816 67	CERT: Up State	
	Displays the status of the certification update.	
	0	The certification used by RCG - C is set correctly.
	1	The certification request (setAuthKey) for update has been received from the GW URL and certification is presently being updated.
	2	The certification update is completed and the GW URL is being notified of the successful update.
	3	The certification update failed, and the GW URL is being notified of the failed update.
	4	The period of the certification has expired and new request for an update is being sent to the GW URL.
	11	A rescue update for certification has been issued and a rescue certification setting is in progress for the rescue GW connection.
	12	The rescue certification setting is completed and the GW URL is being notified of the certification update request.
	13	The notification of the request for certification update has completed successfully, and the system is waiting for the certification update request from the rescue GW URL.
	14	The notification of the certification request has been received from the rescue GW controller, and the certification is being stored.
	15	The certification has been stored, and the GW URL is being notified of the successful completion of this event.
	16	The storing of the certification has failed, and the GW URL is being notified of the failure of this event.
	17	The certification update request has been received from the GW URL, the GW URL was notified of the results of the update after it was completed, but an certification error has been received, and the rescue certification is being recorded.
	18	The rescue certification of No. 17 has been recorded, and the GW URL is being notified of the failure of the certification update.

5816 68	CERT: Error	
	Displays a number code that describes the reason for the request for update of the certification.	
	0	Normal. There is no request for certification update in progress.
	1	Request for certification update in progress. The current certification has expired.
	2	An SSL error notification has been issued. Issued after the certification has expired.
	3	Notification of shift from a common authtentication to an individual certification.
	4	Notification of a common certification without ID2.
	5	Notification that no certification was issued.
	6	Notification that GW URL does not exist.
5816 69	CERT: Up ID	
	The ID of the request for certification.	
5816 83	Firmware Up Status	
	Displays the status of the firmware update.	
5816 84	Non-HDD Firm Up	
	This setting determines if the firmware can be updated, even without the HDD installed.	
5816 85	Firm Up User Check	
	This SP setting determines if the operator can confirm the previous version of the firmware before the firmware update execution. If the option to confirm the previous version is selected, a notification is sent to the system manager and the firmware update is done with the firmware files from the URL.	
5816 86	Firmware Size	
	Allows the service technician to confirm the size of the firmware data files during the firmware update execution.	
5816 87	CERT: Macro Version	
	Displays the macro version of the NRS certification	
5816 88	CERT: PAC Version	
	Displays the PAC version of the NRS certification.	
5816 89	CERT: ID2 Code	
	Displays ID2 for the NRS certification. Spaces are displayed as underscores (_). Asteriskes (****) indicate that no NRS certification exists.	
5816 90	CERT: Subject	
	Displays the common name of the NRS certification subject. CN = the following 17 bytes. Spaces are displayed as underscores (_). Asteriskes (****) indicate that no DESS exists.	
5816 91	CERT: Serial Number	
	Displays serial number for the NRS certification. Asteriskes (****) indicate that no DESS exists.	
5816 92	CERT: Issuer	
	Displays the common name of the issuer of the NRS certification. CN = the following 30 bytes. Asteriskes (****) indicate that no DESS exists.	
5816 93	CERT: Valid Start	
	Displays the start time of the period for which the current NRS certification is enabled.	

5816 94	CERT: Valid End	
	Displays the end time of the period for which the current NRS certification is enabled.	
5816 200	Manual Polling	
	No information is available at this time.	
5816 201	Regist: Status	
	Displays a number that indicates the status of the NRS service device.	
	0	Neither the NRS device nor RCG - C device are set.
	1	The RCG - C device is being set. Only Box registration is completed. In this status the RCG - B unit cannot answer a polling request.
	2	The RCG - C device is set. In this status the RCG - B unit cannot answer a polling request.
	3	The NRS device is being set. In this status the RCG - C device cannot be set.
	4	The NRS module has not started.
5816 202	Letter Number	
	Allows entry of the number of the request needed for the RCG - C device.	
5816 203	Confirm Execute	
	Executes the inquiry request to the NRS GW URL.	
5816 204	Confirm Result	
	Displays a number that indicates the result of the inquiry executed with SP5816 203.	
	0	Succeeded
	1	Inquiry number error
	2	Registration in progress
	3	Proxy error (proxy enabled)
	4	Proxy error (proxy disabled)
	5	Proxy error (Illegal user name or password)
	6	Communication error
	7	Certification update error
	8	Other error
	9	Inquiry executing
5816 205	Confirm Place	
	Displays the result of the notification sent to the device from the GW URL in answer to the inquiry request. Displayed only when the result is registered at the GW URL.	
5816 206	Register Execute	
	Executes RCG - C Registration.	
5816 207	Register Result	
	Displays a number that indicates the registration result.	
	0	Succeeded
	2	Registration in progress
	3	Proxy error (proxy enabled)
	4	Proxy error (proxy disabled)
	5	Proxy error (Illegal user name or password)
	6	Communication error
	7	Certification update error
	8	Other error
	9	Registration executing

5816 208	Error Code		
	Displays a number that describes the error code that was issued when either SP5816 204 or SP5816 207 was executed.		
	Cause	**Code**	**Meaning**
	Illegal Modem Parameter	-11001	Chat parameter error
		-11002	Chat execution error
		-11003	Unexpected error
	Operation Error, Incorrect Setting	-12002	Inquiry, registration attempted without acquiring device status.
		-12003	Attempted registration without execution of an inquiry and no previous registration.
		-12004	Attempted setting with illegal entries for certification and ID2.
	Error Caused by Response from GW URL	-2385	Attempted dial up overseas without the correct international prefix for the telephone number.
		-2387	Not supported at the Service Center
		-2389	Database out of service
		-2390	Program out of service
		-2391	Two registrations for same device
		-2392	Parameter error
		-2393	RCG - B not managed
		-2394	Device not managed
		-2395	Box ID for RCG - B is illegal
		-2396	Device ID for RCG - B is illegal
		-2397	Incorrect ID2 format
		-2398	Incorrect request number format
5816 250	CommLog Print		
	Prints the communication log.		

5821	Remote Service Address **Japan Only**	
5821 1	CSS PI Device Code	Sets the PI device code. After you change this setting, you must turn the machine off and on.
5821 2	RCG IP Address	Sets the IP address of the RCG (Remote Communication Gate) destination for call processing at the remote service center. [00000000h~FFFFFFFFh/1]

5824	NVRAM Data Upload
	Uploads the NVRAM data to an SD card (B140). Push Execute. **Note**: When uploading in this SP mode data, the front door must be open.

5825	NVRAM Data Download
	Downloads data from an SD card to the NVRAM in the machine. After downloading is completed, remove the card and turn the machine power off and on.

5828	Network Setting				
5828 50	1284 Compatibility (Centro)	Enables and disables bi-directional communication on the parallel connection between the machine and a computer. [0~1/1] 0:Off 1: On			
5828 52	ECP (Centro)	Disables and enables the ECP feature (1284 Mode) for data transfer. [0~1/1] 0: Disabled 1: Enabled			
5828 65	Job Spooling	Switches job spooling on and off. **0**: No spooling 1: Spooling enabled			
5828 66	Job Spool Clear: Start Time	This SP determines whether the job interrupted at power off is resumed at the next power on. This SP operates only when SP5828 065 is set to 1. **1**: Resumes printing spooled jog. 0: Clears spooled job.			
5828 69	Job Spool Protocol	This SP determines whether job spooling is enabled or dispabled for each protocol. This is a 8-bit setting.			
		0	LPR	4	BMLinks (**Japan Only**)
		1	FTP (Not Used)	5	DIPRINT
		2	IPP	6	Reserved (Not Used)
		3	SMB	7	Reserved (Not Used)
5828 77	IPv4 DNS Server 2	Sets the IPv4 address for a DNS server. This address can be used among devices that have IPv4 devices (Ethernet, IPv4 Over 1394, IEEE 802.11b, etc.)			
5828 78	IPv4 DNS Server 3				
5828 79	Domain Name (Ethernet)				
5828 84	Setting List PrintPrint Settings List	Prints a list of the NCS parameter settings.			
5828 90	TELNET Operation SettingsTELNET (0:OFF 1:ON)	Disables or enables Telnet operation. If this SP is disabled, the Telnet port is closed. [0~1/1] 0: Disable 1: Enable			
5828 91	Web Operation (0:OFF 1:ON)	Disables or enables the Web operation. [0~1/1] 0: Disable 1: Enable			
5828 96	Rendezvous Operation	This SP disables/enables Rendezvous operation. This is a set of protocols that allows a device on an IP network to automatically recognize and connect with other devices (such as a printer) on a network. Once a new device is connected to the network, it can be used immediately by every computer on the network. No special setup procedures or configuration settings are required **1**: Enable 0: Disable			

5832	HDD Formatting
	Enter the SP number for the partition to initialize, then press #. When the execution ends, cycle the machine off and on.
5832 1	HDD Formatting (All)
5832 2	HDD Formatting (IMH)
5832 3	HDD Formatting (Thumbnail)
5832 4	HDD Formatting (Job Log)
5832 5	HDD Formatting (Printer Fonts)
5832 6	HDD Formatting (User Info)
5832 7	Mail RX Data
5832 8	Mail TX Data
5832 9	HDD Formatting (Data for Design)
5832 10	HDD Formatting (Log)
5832 11	HDD Formatting (Ridoc I/F) (for Ridoc Desk Top Binder)

5833	e-Cabinet Enable
	Enables the e-Cabinet function. Then, the user names in the cabinet are enabled for use with the POP server. [0~1/1] 0: Disabled 1: Enabled

5834	Operation Panel Image Exposure
	Enables and disables the operation panel read (dump) feature. After powering on the machine, set this option to 1 to enable this feature. **0**: Off (disable), 1: On (enable) **DFU** *To reset the machine to 0, the machine must be turned off and on again. Selecting 0 for this option without cycling the power off and on does not restore the default setting (0).*

5836	Capture Setting	
5836 1	Capture Function (0:Off 1:On)	
	With this function disabled, the settings related to the capture feature cannot be initialized, displayed, or selected. [0~1/1] 0: Disable 1: Enable	
5836 2	Panel Setting	
	Determines whether each capture related setting can be selected or updated from the initial system screen. [0~1/1] 0: Disable 1: Enable The setting for SP5836-001 has priority.	
5836 71	Reduction for Copy Color	[0~3/1] 0:1 1:1/2 2:1/3 3:1/4 **DFU**
5836 72	Reduction for Copy B&W Text	[0~6/1] 0:1 1:1/2 2:1/3 3:1/4 6:2/3
5836 73	Reduction for Copy B&W Other	[0~6/1] 0:1 1:1/2 2:1/3 3:1/4 6:2/3
5836 74	Reduction for Printer Color	[0~3/1] 0:1 1:1/2 2:1/3 3:1/4 **DFU**
5836 75	Reduction for Printer B&W	[0~6/1] 0 1 1:1/2 2:1/3 3:1/4 6:2/3
5836 76	Reduction for Printer B&W HQ	[1~5/1] 1:1/2 3:1/4 4:1/6 5:1/8
5836 77	Reduction for Printer Col 1200 dpi	
5836 78	Reduction for Printer B&W 1200 dpi	
5836 81	Format for Copy Color	[0~3/1] 0: JFIF/JPEG, 1: TIFF/MMR, 2: TIFF/MH, 3: TIFF/MR **DFU**
5836 82	Format for Copy B&W Text	[0~3/1] 0: JFIF/JPEG, 1: TIFF/MMR, 2: TIFF/MH, 3: TIFF/MR
5836 83	Format Copy B&W Other	[0~3/1] 0: JFIF/JPEG, 1: TIFF/MMR, 2: TIFF/MH, 3: TIFF/MR
5836 84	Format for Printer Color	[0~3/1] 0: JFIF/JPEG, 1: TIFF/MMR, 2: TIFF/MH, 3: TIFF/MR **DFU**
5836 85	Format for Printer B&W	[0~3/1] 0: JFIF/JPEG, 1: TIFF/MMR, 2: TIFF/MH, 3: TIFF/MR
5836 86	Format for Printer B&W HQ	[0~3/1] 0: JFIF/JPEG, 1: TIFF/MMR, 2: TIFF/MH, 3: TIFF/MR
5836 91	Default for JPEG	[5~95/1]
	Sets the JPEG format default for documents sent to the document management server with the MLB, with JPEG selected as the format. *Enabled only when optional File Format Converter (MLB: Media Link Board) is installed.*	

5839	IEEE 1394
	This SP is displayed only when an IEEE 1394 (firewire) card is installed.
5839 4	Host Name
	Enter the name of the device used on the network. Example: RNP0000000000
5839 7	Cycle Master
	Enables or disables the cycle master function for the 1394 bus standard. [0~1/1] 0: Disable (Off) 1: Enable (On)
5839 8	BCR Mode
	Determines how BCR (Broadcast Channel Register) operates on the 1394 standard bus when the independent node is in any mode other than IRM. (NVRAM: 2-bits) [Always Effective]
5839 9	IRM 1394a Check
	Conducts a 1394a check of IRM when the independent node is in any mode other than IRM. [0~1/1] 0: Checks whether IRM conforms to 1394a 1: After IRM is checked, if IRM does not conform then independent node switches to IRM.
5839 10	Unique ID
	Lists the ID (Node_Unique_ID) assigned to the device by the system administrator. Bit0: Off Bit1: On OFF: Does not list the Node_Unique_ID assigned by the system administrator. Instead, the Source_ID of the GASP header in the ARP is used. ON: The Node_Unique_ID assigned by the system administrator is used, and the Source_ID of the GASP header in the ARP is ignored. Also, when the serial bus is reset, extra bus transactions are opened for the enumeration.
5839 11	Logout
	Handles the login request of the login initiator for SBP-2. (1-bit) Bit0: Off Bit1: On OFF: Disable (refuse login). Initiator retry during login. Login refusal on arrival of login request (standard operation) ON: Enable (force logout). Initiator retry during login. Login refusal on arrival of login request, and the initiator forces the login.
5839 12	Login
	Enables or disables the exclusive login feature (SBP-2 related). Bit0: Off Bit1: On OFF: Disables. The exclusive login (LOGIN ORB exclusive it) is ignored. ON: Enables. Exclusive login is in effect.
5839 13	Login MAX
	Sets the maximum number of logins from the initiator (6-bits) [0~63/1] 0: Reserved 63: Reserved

5840	IEEE 802.11b
5840 6	Channel MAX
	Sets the maximum range of the bandwidth for the wireless LAN. This bandwidth setting varies for different countries. [1~14/1]
5840 7	Channel MIN
	Sets the minimum range of the bandwidth for operation of the wireless LAN. This bandwidth setting varies for different countries. [1~14/1]
5840 11	WEP Key Select
	Determines how the initiator (SBP-2) handles subsequent login requests. [0~1/1] 0: If the initiator receives another login request while logging in, the request is refused. 1: If the initiator receives another login request while logging in, the request is refused and the initiator logs out. **Note**: Displayed only when the wireless LAN card is installed.

5841	Supply Name Setting	
	Press the User Tools key. These names appear when the user presses the Inquiry button on the User Tools screen.	
5841 1	Toner Name Setting: Black	
5841 7	Org Stamp	
5841 11	StapleStd1	
5841 12	StapleStd2	Standard Staples for B698
5841 13	StapleStd3	Standard Staples for B700/B701
5841 14	Staple Std4	

5842	Net File Analysis Mode Setting **DFU**		
	This is a debugging tool. It sets the debugging output mode of each Net File process. Bit SW 0011 1111	**Bit**	**Groups**
		0	System & other groups (LSB)
		1	Capture related
		2	Certification related
		3	Address book related
		4	Machine management related
		5	Output related (printing, delivery)
		6	Repository related

5844	USB
5844 1	Transfer Rate
	Sets the speed for USB data transmission. [Full Speed] [Auto Change]
5844 2	Vendor ID
	Sets the vendor ID: Initial Setting: 0x05A Ricoh Company [0x0000~0xFFFF/1] **DFU**
5844 3	Product ID
	Sets the product ID. [0x0000~0xFFFF/1] **DFU**
5844 4	Device Release No.
	Sets the device release number of the BCD (binary coded decimal) display. [0000~9999/1] **DFU** Enter as a decimal number. NCS converts the number to hexadecimal number recognized as the BCD.

5845	Delivery Server Setting
	These are delivery server settings.
5845 1	FTP Port No.
	[0~65535/1]
5845 2	IP Address (Primary)
	Use this SP to set the Scan Router Server address. The IP address under the transfer tab can be used with the initial system setting. [0~FFFFFFFF/1]
5845 5	Capture Server IP Address
	Sets the IP address that is assigned to the PC that the capture server (eCabinet or ScanRouter) operates. This IP address is set remotely when the delivery server (Scan Router) IO device is registered. This SP only enables the IP address permit access to the DNS browser names.
5845 6	Delivery Error Display Time
	Use this setting to set the length of time that the message is shown when a test error occurs during document transfer with the NetFile application and an external device. [0~999/1]
5845 8	IP Address (Secondary)
	Sets the IP address that is given to the computer that is the secondary delivery server for Scan Router. This SP lets you set only the IP address, and does not refer to the DNS setting.

5845 9	Delivery Server Model
	Lets you change the model of the delivery server that is registered by the I/O device. [0~4/1] 0: Unknown 1: SG1 Provided 2: SG1 Package 3: SG2 Provided 4: SG2 Package
5845 10	Delivery Svr. Capability
	Changes the functions that the registered I/O device can do. [0~255/1] Bit7 = 1 Comment information exits Bit6 = 1 Direct specification of mail address possible Bit5 = 1 Mail RX confirmation setting possible Bit4 = 1 Address book automatic update function exists Bit3 = 1 Fax RX delivery function exists Bit2 = 1 Sender password function exists Bit1 = 1 Function to link MK-1 user and Sender exists Bit0 = 1 Sender specification required (if set to 1, Bit6 is set to “0”)
5845 11	Delivery Svr.Capability (Ext)
	These settings are for future use. They will let you increase the number of registered devices (in addition to those registered for SP5845 010). There are eight bits (Bit 0 to Bit 7). All are unused at this time.

5846*	UCS Setting
5846 1	Machine ID (for Delivery Server)
	Displays the unique device ID in use by the delivery server directory. The value is only displayed and cannot be changed. This ID is created from the NIC MAC or IEEE 1394 EUI. The ID is displayed as either 6-byle or 8-byte binary.
5846 2	Machine ID Clear (Delivery Server)
	Clears the unique ID of the device used as the name in the file transfer directory. Execute this SP if the connection of the device to the delivery server is unstable. After clearing the ID, the ID will be established again automatically by cycling the machine off and on.
5846 3	Maximum Entries
	Changes the maximum number of entries that UCS can handle. [2000~50000/1] If a value smaller than the present value is set, the UCS managed data is cleared, and the data (excluding user code information) is displayed.

5846 6	Delivery Server Retry Timer
	Sets the interval for retry attempts when the delivery server fails to acquire the delivery server address book. [0~255/1 s] 0: No retries
5846 7	Delivery Server Retry Times
	Sets the number of retry attempts when the delivery server fails to acquire the delivery server address book. [0~255/1]
5846 8	Delivery Server Maximum Entries
	Lets you set the maximum number of account entries and information about the users of the delivery server controlled by UCS. [20000~50000/1]
5846 10	LDAP Search Timeout
	Sets the length of the time-out for the search of the LDAP server. [1~255/1]
5846 40	Addr Book Migration (SD -> HDD)
	This SP moves the address book data from an SD card to the HDD. You must cycle the machine off and on after executing this SP. 1. Turn the machine off. 2. Install the HDD. 3. Insert the SD card with the address book data in SD card slot **C3**. 4. Turn the machine on. 5. Do SP5846 040. 6. Turn the machine off. 7. Remove the SD card from SD card slot **C3**. 8. Turn the machine on. **Notes**: • Executing this SP overwrites any address book data already on the HDD with the data from the SD card. • We recommend that you back up all directory information to an SD card with SP5846 051 before you execute this SP. • After the address book data is copied to HDD, all the address book data is deleted from the source SD card. If the operation fails, the data is not erased from the SD card.
5846 41	Fill Addr Acl Info.
	This SP must be executed immediately after installation of an HDD unit in a basic machine that previously had no HDD. The first time the machine is powered on with the new HDD installed, the system automatically takes the address book from the NVRAM and writes it onto the new HDD. However, the new address book on the HDD can be accessed only by the system administrator at this stage. Executing this SP by the service technician immediately after power on grants full address book access to all users. **Procedure** 1. Turn the machine off. 2. Install the new HDD. 3. Turn the machine on. 4. The address book and its initial data are created on the HDD automatically. However, at this point the address book can be accessed by only the system administrator or key operator. 5. Enter the SP mode and do SP5846 041. After this SP executes successfully, any user can access the address book.

5846 47	Initialize Local Address Book
	Clears all of the address information from the local address book of a machine managed with UCS.
5846 48	Initialize Delivery Addr Book
	Push [Execute] to delete all items (this does not include user codes) in the delivery address book that is controlled by UCS.
5846 49	Initialize LDAP Addr Book
	Push [Execute] to delete all items (this does not include user codes) in the LDAP address book that is controlled by UCS.
5846 50	Initialize All Addr Book
	Clears everything (including users codes) in the directory information managed by UCS. However, the accounts and passwords of the system administrators are not deleted.
5846 51	Backup All Addr Book
	Uploads all directory information to the SD card. Do this SP before replacing the HDD. The operation may not succeed if the HDD is damaged.
5846 52	Restore All Addr Book
	Downloads all directory information from the SD card. Upload the address book from the old HDD with SP5846 51 before removing it. Do SP5846 52 after installing the new HDD.
5846 53	Clear Backup Info.
	Deletes the address book uploaded from the SD card in the slot. Deletes only the files uploaded for that machine. This feature does not work if the card is write-protected. **Note**: After you do this SP, go out of the SP mode, turn the power off. Do not remove the SD card until the Power LED stops flashing.
5846 60	Search Option
	This SP uses bit switches to set up the fuzzy search options for the UCS local address book.

Bit	Meaning
0	Checks both upper/lower case characters
1	**Japan Only**
2	
3	
4	--- Not Used ---
5	--- Not Used ---
6	--- Not Used ---
7	--- Not Used ---

5846 62	Complexity Option 1
	Use this SP to set the conditions for password entry to access the local address book. Specifically, this SP limits the password entry to upper case and sets the length of the password. [0~32/1] **Note**: • This SP does not normally require adjustment. • This SP is enabled only after the system administrator has set up a group password policy to control access to the address book.

5846 63	Complexity Option 2
	Use this SP to set the conditions for password entry to access the local address book. Specifically, this SP limits the password entry to lower case and defines the length of the password. [0~32/1] **Note**: • This SP does not normally require adjustment. • This SP is enabled only after the system administrator has set up a group password policy to control access to the address book.
5846 64	Complexity Option 3
	Use this SP to set the conditions for password entry to access the local address book. Specifically, this SP limits the password entry to numbers and defines the length of the password. [0~32/1] **Note**: • This SP does not normally require adjustment. • This SP is enabled only after the system administrator has set up a group password policy to control access to the address book.
5846 65	Complexity Option 4
	Use this SP to set the conditions for password entry to access the local address book. Specifically, this SP limits the password entry to symbols and defines the length of the password. [0~32/1] **Note**: • This SP does not normally require adjustment. • This SP is enabled only after the system administrator has set up a group password policy to control access to the address book.
5846 90	Plain Data Forbidden
	Lets you to prevent the address from transmission as plain data. This is a security function that prevents unauthorized access to address book data. [0~1/1] 0: No check. Address book data not protected. 1: Check. Enables operation of UCS without data from HDD or SC card and without creating address book information with plain data.
5846 91	FTP Auth. Port Settings
	Sets the FTP port to get the delivery server address book that is used in the individual authorization mode. [0~65535/1]
5846 94	Encryption Start
	Shows the status of the encryption function of the address book on the LDAP server. [0~255/1] No default

5847	Net File Resolution Reduction		
	5847 1 through 5847 6 changes the default settings of image data sent externally by the Net File page reference function. [0~2/1] 5847 21 sets the default for JPEG image quality of image files controlled by NetFile. "NetFile" refers to jobs to be printed from the document server with a PC and the DeskTopBinder software.		
5847 1	Rate After Copy Col	[0~5/1]	0: 1x 1: 1/2x 2: 1/3x 3: 1/4x 4: 1/6x 5: 1/8x 6: 2/3x[1] [1]: "6: 2/3x" applies to 003, 005, 006 only.
5847 2	Rate for Copy B&W Text	[0~6/1]	
5847 3	Rate for Copy B&W Other	[0~6/1]	
5847 4	Rate for Printer Color	[0~5/1]	
5847 5	Rate for Printer B&W	[0~6/1]	
5847 6	Rate for Printer B&W HQ	[0~6/1]	
5847 21	Network Quality Default for JPEG		
	Sets the default value for the quality of JPEG images sent as NetFile pages. This function is available only with the MLB (Media Link Board) option installed. [5~95/1]		

5848	Web Service	
	5847 2 sets the 4-bit switch assignment for the access control setting. Setting of 0001 has no effect on access and delivery from Scan Router. 5847 100 sets the maximum size of images that can be downloaded. The default is equal to 1 gigabyte.	
5848 1	Access Control. : NetFile (Lower 4 Bits Only)	
	Bit switch settings. 0000: No access control 0001: Denies access to Desk Top Binder. Access and deliveries from Scan Router have no effect on capture.	
5848 2	Acc. Ctrl.: Repository (only Lower 4 Bits)	0000: No access control 0001: Denies access to DeskTop Binder.
5848 3	Acc. Ctrl.: Doc. Svr. Print (Lower 4 Bits)	Switches access control on and off. 0000: OFF, 0001: ON
5848 4	Acc. Ctrl.: User Directory (Lower 4 Bits)	
5848 5	Acc. Ctrl.: Delivery Input (Lower 4 Bits)	
5848 7	Acc. Ctrl Comm. Log Fax (Lower 4 Bits)	
5848 9	Acc. Ctrl.: Job Control (Lower 4 Bits)	
5848 11	Acc. Ctrl: Device Management (Lower 4 Bits)	
5848 13	Acc. Ctrl: Fax (Lower 4 Bits)	
5848 21	Acc. Ctrl: Delivery (Lower 4 Bits)	
5848 22	Acc. Ctrl: User Administration (Lower 4 Bits)	
5848 41	Acc. Ctrl: Security Setting (Lower 4 Bits only)	
5848 100	Repository: Download Image Max. Size	[1~1024/1 K]
5848 201	Access Ctrl: Regular Trans	
	No information is available at this time. **0**: Not allowed 1: Allowed	
5848 210	Setting: Log Type: Job 1	
	No information is available at this time.	
5848 211	Setting: Log Type: Job 2	
	No information is available at this time.	
5848 212	Setting: Log Type: Access	
	No information is available at this time.	
5848 213	Setting: Primary Srv	
	No information is available at this time.	
5848 214	Setting: Secondary Srv	
	No information is available at this time.	
5848 215	Setting: Start Time	
	No information is available at this time.	
5848 216	Setting: Interval Time	
	No information is available at this time.	
5848 217	Setting: Timing	
	No information is available at this time.	

5850*	Address Book Function	
5850 1	Switch Module	Selects the module for managing user information. [0~1/1] 0: SCS 1: UCS
5850 2	Select Title	Selects the default heading of the address book. [2~4/1] 2: Heading 1 3: Heading 2 4: Heading 3

5849	Installation Date	
	Displays or prints the installation date of the machine.	
5849 1	Display	The “Counter Clear Day” has been changed to “Installation Date” or “Inst. Date”.
5849 2	Switch to Print	Determines whether the installation date is printed on the printout for the total counter. [0~1/1] 0: No Print 1: Print

5851	Bluetooth Mode
	Sets the operation mode for the Bluetooth Unit. Press either key. [0:Public] [1: Private]

5853	Stamp Data Download
	Push [Execute] to download the fixed stamp data from the machine ROM onto the hard disk. Then these stamps can be used by the system. If this is not done, the user will not have access to the fixed stamps (“Confidential”, “Secret”, etc.). You must always execute this SP after replacing the HDD or after formatting the HDD. Always switch the machine off and on after executing this SP.

5856	Remote ROM Update
	When set to “1” allows reception of firmware data via the local port (IEEE 1284) during a remote ROM update. This setting is reset to zero after the machine is cycled off and on. Allows the technician to upgrade the firmware using a parallel cable [0~1/1] 0: Not allowed 1: Allowed

5857	Save Debug Log
5857 1	On/Off (1:ON 0:OFF)
	Switches on the debug log feature. The debug log cannot be captured until this feature is switched on. [0~1/1] 0: OFF 1: ON
5857 2	Target (2: HDD 3: SD)
	Selects the destination where the debugging information generated by the event selected by SP5858 will be stored if an error is generated [2~3 /1] 2: HDD 3: SD Card
5857 5	Save to HDD
	Specifies the decimal key number of the log to be written to the hard disk.
5857 6	Save to SD Card
	Specifies the decimal key number of the log to be written to the SD Card.
5857 9	Copy HDD to SD Card (Latest 4 MB)
	Takes the most recent 4 MB of the log written to the hard disk and copies them to the SD Card. A unique file name is generated to avoid overwriting existing file names on the SD Card. Up to 4MB can be copied to an SD Card. 4 MB segments can be copied one by one to each SD Card.
5857 10	Copy HDD to SD Card Latest 4 MB Any Key)
	Takes the log of the specified key from the log on the hard disk and copies it to the SD Card. A unique file name is generated to avoid overwriting existing file names on the SD Card. Up to 4 MB can be copied to an SD Card. 4 MB segments can be copied one by one to each SD Card. This SP does not execute if there is no log on the HDD with no key specified.
5857 11	Erase HDD Debug Data
	Erases all debug logs on the HDD
5857 12	Erase SD Card Debug Data
	Erases all debug logs on the SD Card. If the card contains only debugging files generated by an event specified by SP5858, the files are erased when SP5857 010 or 011 is executed. To enable this SP, the machine must be cycled off and on.
5857 13	Free Space on SD Card
	Displays the amount of space available on the SD card.
5857 14	Copy SD to SD (Latest 4MB)
	Copies the last 4MB of the log (written directly to the card from shared memory) onto an SD card.
5857 15	Copy SD to SD (Latest 4MB Any Key)
	This SP copies the log on an SD card (the file that contains the information written directly from shared memory) to a log specified by key number.
5857 16	Make HDD Debug
	This SP creates a 32 MB file to store a log on the HDD.
5857 17	Make SD Debug
	This SP creates a 4 MB file to store a log on an SD card.

5858*	Debug Save When	
	These SPs select the content of the debugging information to be saved to the destination selected by SP5857 002. SP58583 stores one SC specified by number. *Refer to Section 4 for a list of SC error codes.*	
58581*	Engine SC Error (0:OFF 1:ON)	Stores SC codes generated by copier engine errors.
58582*	Controller SC Error (0:OFF 1:ON)	Stores SC codes generated by GW controller errors.
58583*	Any SC Error (0:OFF 1:ON)	[0~65535 / **0** / 1]
58584*	Jam (0:OFF 1:ON)	Stores jam errors.

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

5860	SMTP/POP3/IMAP4
5860 1	SMTP Server Name
	Allows you to specify the name of the SMTP server. Enter either the host name or the IP address. If you enter the host name, you must also specify the name of the DNS server.
5860 2	SMTP Server Port Number
	This SP sets the number of the SMTP server port. [1~65535/1]
5860 3	SMTP Certification
	This setting switches SMTP certification on and off for mail sending. **0**: Off 1: On
5860 4	SMTP Certification User Name
	Allows you to set the user name to be used for SMTP certification. This user name is used only when the user name for SMTP certification has not been selected with the software application. The user name includes the "realmID" string.
5860 5	SMTP Certification Password
	Allows you to set the password to be used for SMTP certification. The length of the password is limited to 128 alphanumeric characters.
5860 6	SMTP Certification Encryption
	This setting determines whether the password for SMTP certification is encrypted. **0:** Automatic 1: No encryption done 2: Encryption done

5860 7	POP Before SMTP
	This setting determines whether the transmission connects with the POP server first for certification before it connects to the SMTP server for sending. **0**: No connection to POP server 1: Connection to POP server
5860 8	Standby Wait Time After POP3 Certification
	This SP sets the amount of time to allow for the connection to the SMTP server after the transmission has connected to the POP server and been certified during the execution of POP Before SMTP. [0~10000/**300**/1]
5860 9	RX Protocol
	This SP specifies POP3 protocol or switches off receiving. 0: No receiving **1**: POP3 protocol
5860 10	POP3/IMAP4 Server Name
	This SP specifies the POP3/IMAP4 server that uses POP Before SMTP during mail receiving. The server can be specified either by IP address or host name. If you use the host name, you also need the name of the DNS server.
5860 11	POP3/IMAP4 User Name
	This SP sets the user name used during POP3/IMAP4 certification.
5860 12	POP3/IMAP4 Password
	This SP sets the password used during POP3/IMAP4 certification.
5860 13	POP3/IMAP4 Certification Encryption
	This SP specifies whether password encryption is done for POP3/IMAP4 certification. **0**: Automatic 1: No encryption done 2: Encryption done
5860 14	POP3 Server Port Number
	This SP sets the number of the POP3 server port. [1~65535/**110**/1]
5860 15	IMAP4 Server Port Number
	This SP sets the number of the IMAP4 server port. [1~65535/**143**/1]
5860 16	SMTP RX Port Number
	This SP sets the number of the port that receives SMTP mail. [1~65535/**25**/1]
5860 17	Mail RX Interval
	This SP sets the timing for mail received at regular intervals. [2~1440/15/1 min.] **Note**: Setting this SP to "0" switches off receiving mail at timed intervals.
5860 18	Limit Size of RX Mail
	This SP specifies the maximum size of mail that can be received. [1~50/**2**/1 MB]
5860 19	Server Mail Store
	This SP setting determines whether received mail is stored on the server. **0**: Received mail not stored 1: All received mail stored 2: Stores only mail that generated errors during receiving

5860 20	Partial Mail Receive Timeout
	[1~168/**72**/1] Sets the amount of time to wait before saving a mail that breaks up during reception. The received mail is discarded if the remaining portion of the mail is not received during this prescribed time.
5860 21	MDN Response RFC2298 Compliance
	Determines whether RFC2298 compliance is switched on for MDN reply mail. [0~1/1] 0: No **1**: Yes
5860 22	SMTP Auth. From Field Replacement
	Determines whether the FROM item of the mail header is switched to the validated account after the SMTP server is validated. [0~1/1] 0: No. “From” item not switched. 1: Yes. “From” item switched.
5860 23	SMTP Certification Account Mail
	This is the mail address for SMTP certification. When SMTP certification is done in response to a send request for a document or text mail, this SP sets the mail address for the SMTP protocol MAIL FROM command in the following cases: • When the SMTP certification information has not been set from the software application. • When the SMTP certification information for UCS has been set or not set on the mainframe with the User Tools.
5860 24	POP3/IMAP4 Account Mail Address
	This is the mail address for POP Before SMTP mail address. When POP Before SMTP certification is done in response to a send request for a document or text mail, this SP sets the mail address for the SMTP protocol MAIL FROM command in the following cases: • When the POP Before SMTP certification information has not been set from the software application. • When the SMTP certification information for UCS has been set or SMTP certification information has not set on the mainframe with the User Tools. • Also, when SP5960 022 is set to "1" (Yes – "From" item switched), this mail address is inserted into the header for the "From" item.
5860 25	SMTP Auth Direct Sending
	Occasionally, all SMTP certifications may fail with SP5860 006 set to "2" to enable encryption during SMTP certification for the SMTP server. This can occur if the SMTP server does not meet RFC standards. In such cases you can use this SP to set the SMTP certification method directly. However, this SP can be used only after SP5860 003 has been set to "1" (On). Bit0: LOGIN Bit1: PLAIN Bit2: CRAM_MD5 Bit3: DIGEST_MD5 Bit4 to Bit 7: Not Used

5866	E-Mail (Date Field)
	Not used.

5870	Common Key Info Writing	
	Writes to flash ROM the common proof for validating the device for NRS specifications.	
5870 1	Writing	**Note**: These SPs are for future use and currently are not used.
5870 3	Initialize	

5873	SD Card Apli.	
	Allows you to move applications from one SD card another. For more, see "1.16.5 Mergining Applications on One SD Card".	
5873 1	Move Exec	Executes the move from one SD card to another.
5873 2	Undo Exec	This is an undo function. It cancels the previous execution.

5875	SC Auto Reboot	
	This SP determines whether the machine reboots automatically when an SC error occurs. **Note**: The reboot does not occur for Type A SC codes.	
5875 1	Reboot Setting	The machine reboots automatically when the machine issues an SC error and logs the SC error code. If the same SC occurs again, the machine does not reboot.
5875 2	Reboot Type	The machine does not reboot when an SC error occurs.

5878	Option Setup	Data Overwrite Security (DOS) Setup
	Press [Execute] to initialize the Data Overwrite Security option for the copier. For more, see "1.16 MFP Controller Options" in Section "1. Installation".	

5879	Editing Option Setup **DFU**
	This SP is used to install the edit option card.

⇒

5886	[ROM Update]	0: YES, 1: No
5886 1	Enables/Disables firmware to allow access to the ROM by the Remote Firmware Update function. (Default = Yes)	

5907	Plug & Play Maker/Model Name
	Selects the brand name and the production name for Windows Plug & Play. This information is stored in the NVRAM. If the NVRAM is defective, these names should be registered again. After selecting, press the “Original Type” key and “#” key at the same time. When the setting is completed, the beeper sounds five times.

5908*	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). [0~1 / **1** / 1] North America 0: A4 **1**: LT [0~1 / **0** / 1] Other Areas (Europe/Asia) **0**: A4 1: LT

5912*	PCU Alarm Setting	
5912 2	Interval Display	Sets the PCU alarm interval. When the machine reaches this value, the PCU alarm will be displayed on the LCD to inform the user. [0 ~ 255 / **60** / 1 k copies/step] **Note**: The zero setting switches the alarm off.

5913	Switchover Permission Time
5913 2	Print Application Timer
	Sets the length of time to elapse before allowing another application to take control of the display when the application currently controlling the display is not operating because a key has not been pressed. [3~30/1 s]
5913 102	Print Application Set This SP prescribes the time interval to expire before the machine shifts to another application when another application currently holds access control for the standby mode while there is no key input. [0~1/**1**/1]

5915*	Mechanical Counter Detection
	Checks whether the mechanical counter inside the inner cover is connected or not. Display: 0:Not detected 1:Detected 2:Unknown

5921*	Exhaust Fan Control
	Sets the timing for slowing the exhaust fan motor speed or shutting the motor off for normal operation, depending on the following conditions: 1. After the machine has entered energy saver mode or stand-by mode, the machine slows the fan speed after this time runs out. 2. After the machine has entered the auto off mode or an error occurs, the machine stops the fan after this time runs out. [30 ~ 120 / **30 s** / 1 s]

5923*	Border Remove Area Switching
	Toggles between two settings that affect the appearance of the pages for border removal and printed facing pages: (1) Using the original area as the allotted area, or (2) Using only the copy paper as the allotted area. [**0 = Original base**, 1 = Copy base] 0: Original area used as base 1: Copy used as the base

5967	Copy Server: Set Function
	Enables and disables the document server. This is a security measure that prevents image data from being left in the temporary area of the HDD. After changing this setting, you must switch the main switch off and on to enable the new setting.[0~1/1] 0: ON 1: OFF

5974	Scan Router
	Selects which version of the Scan Router application program, “Light” or “Full (Professional)”, is installed. [0 ~ 1 / **0** / 1 /step] *0: Light version (supplied with this machine)* *1: Full version (optional)*

5985	Device Setting	
	The NIC and USB support features are built into the GW controller. Use this SP to enable and disable these features. In order to use the NIC and USB functions built into the controller board, these SP codes must be set to "1".	
5985 1	On Board NIC	**0: Disable** 1: Enable
5985 2	On Board USB	

5990	SP Print Mode	SMC Print
	In the SP mode, press Copy Window to move to the copy screen, select the paper size, then press Start. Select A4/LT (Sideways) or larger to ensure that all the information prints. Press SP Window to return to the SP mode, select the desired print, and press Execute.	
5990 1	All (Data List)	
5990 2	SP (Mode Data List)	
5990 3	User Program	
5990 4	Logging Data	
5990 5	Diagnostic Report	
5990 6	Non-Default (Prints only SPs set to values other than defaults.)	
5990 7	NIB Summary	
5990 8	Capture Log	
5990 21	Copier User Program	
5990 22	Scanner SP	
5990 23	Scanner User Program	

5995	Factory Mode	**DFU**

5996	Machine State **DFU**	
5996 1	Destination	Shows intended destination of the engine board. 0: Japan 1: North America 2: Europe 3: Mainland China 4: Taiwan
5996 2	SBCU ID	Displays the CPM information for the engine board. For example, 25 (25 cpm), 30 (30 cpm), and so on.
5996 3	IPU ID	Displays the IPU ID (presently fixed at “30”).

SP6XXX: Peripherals

6006*	DF Adjustment	
	These settings adjust the registration and other settings for the ADF mode. Use the ⊛ key to toggle between + and - before entering a value. For more details, see "Replacement and Adjustment - Copy Adjustment" for details.	
6006 1	Side-to-Side (For Simplex)	[–5.0 ~ +5.0 / **0.0** / 0.1 mm/step]
6006 2	Leading Edge	
6006 3	Trailing Edge Erase	Adjusts the trailing edge erase margin. [–5.0 ~ +5.0 / **1.0** / 0.1 mm/step]
6006 4	Side-to-Side/Rear (For Duplex)	Adjusts the side-to-side registration on the rear side of the original. [–5.0 ~ +5.0 / **0.0** / 0.1 mm/step]
6006 5	Sub Scan Magnification	Adjusts the sub scan magnification. [–5.0 ~ +5.0 / **0.0** / 0.1 % step]
6006 6	Skew Correction	Selects whether skew correction is done. 0 = Off, **1 = On**
6006 7	Original Buckle Adj	Adjusts the amount of original buckle at the ARDF registration roller when the ARDF feeds the back side of the original. [–5.0 ~ +5.0 / **0.0** / 0.1 mm/step]

6007	ADF Input Check
	Displays the signals received from sensors and switches of the ARDF.(☛5.1.5)

6008	ADF Output Check
	Switches on each electrical component (ARDF motor, solenoid, etc.) of the ARDF for testing. (☛5.1.6) Press ① to switch on or ⓪ to switch off.

6009	ADF Free Run
	Performs an ARDF free run in duplex mode. Press ① to start. 1: To Start, 0: To cancel This is a general free run controlled from the copier. For more detailed free run modes, see the ARDF manual.

6010*	Stamp Position Adjustment
	Adjusts the stamp position in the sub-scan direction in fax mode. [–5.0 ~ +5.0 / **0** / 1 mm/step]

6016*	ADF Original Size Detection
	Selects whether the machine determines that the original is A4/LT, or 8K/16K when the APS sensor in the ADF does not detect the original size. 8K/16K is not available for 115V machines. [**0 = Normal** (LT for USA models, A4 for Europe/Asia models) 1 = Reversed [A4 for USA models, LT for Europe/Asia models] 2 = 8K/16K]

6105*	Staple Position Adjustment
	Adjusts the staple position in the main scan direction when using the two-tray finisher. [–3.5~+3.5 / **0.0** / 0.5 mm step] *Press # to toggle ±. A larger value shifts the staple toward the edge of the paper.*

6117	Finisher Input Check
	Displays the signals received from finisher sensors and switches. (☛5.1.5)

6118	Finisher Output Check
	Switches on each electrical component of the finisher for testing. (☛ 5.1.6) Press 1 to switch on or 0 to switch off.

6802	ADF Mounted
	Displays the model number of the ADF (ALPS-C-0x03) installed on the machine.

6901	ADF APS Data Display	
	Displays the status of the original size sensors in the ADF. (☛5.1.9)	

6910*	ADF 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.* [0 ~ 120 / **20s** / 1s/step]

6920	DF Check	
6920 1	DF GATE IN	**DFU** 0 = Gate, 1 = Asart
6920 2	DF TXD Break	**DFU** 0 = Off, 1 = On
6920 3	Serial Communication	**DFU** 0 = NG, 1 = OK
6920 4	Original Set	**DFU** 0 = Off, 1 = On
6920 5	Serial Check	**DFU**

6925	Bridge/Duplex/By-Pass/Loop Back **DFU**	
6925 1	Practice	**DFU**
6925 2	Result	**DFU**

SP7XXX: Data Log

7001*	Main Motor Operation Time
	The number of prints and drive time for drum revolutions can be obtained by counting the main motor revolution time. If the amount of the time required for the drum to revolve to print 1 copy increases, this data combined with the number of copies can be used to analyze problems and could be useful for future product development. Display: 0000000~9999999 min.

7401*	Total SC Counter
	Displays the total number of service calls that have occurred.

7403*	SC History	
7403 1	Latest	Displays the most recent 10 service calls.
7403 2	Latest 1	
7403 3	Latest 2	
7403 4	Latest 3	
7403 5	Latest 4	
7403 6	Latest 5	
7403 7	Latest 6	
7403 8	Latest 7	
7403 9	Latest 8	
7403 10	Latest 9	

7502*	Total Paper Jam Counter
	Displays the total number of paper jams.

7503*	Total Original Jam Counter
	Displays the total number of original jams.

7504*	Total Jams by Location
	These SPs display the total number of paper jams by location. A “Check-in” (paper late) error occurs when the paper fails to activate the sensor at the precise time. A “Check-out” (“paper lag”) paper jam occurs when the paper remains at the sensor for longer than the prescribed time.
7504 1	At power on
7504 3	Upper relay sensor (Lag)
7504 4	Lower relay sensor (Lag)
7504 5	Vertical transport sensor (Late) (optional bank)
7504 6	Relay sensor (Late) (optional LCT)
7504 7	By-pass Non-Feed
7504 10	Duplex Non-Feed
7504 11	Registration sensor (Late)
7504 12	Paper exit sensor (Late)
7504 13	Bridge relay sensor (Late)
7504 14	Bridge exit sensor (Late)
7504 15	Duplex entrance sensor (Late)
7504 16	Duplex exit sensor (Late)
7504 17	1 bin tray exit sensor (Late)
7504 20	Finisher entrance sensor
7504 21	Finisher shift tray exit sensor
7504 23	Finisher staple tray paper sensor
7504 24	Finisher stack feed-out belt HP sensor
7504 26	Finisher paper taking out
7504 27	Finisher drive error
7504 28	Finisher tray lift error
7504 29	Finisher jogger drive error
7504 30	Finisher tray shift drive error
7504 31	Finisher stapler error
7504 32	Finisher stack-feed out error
7504 33	Finisher feed out error
7504 34	Finisher no response
7504 53	Transport Sensor 1 (Off Check)
7504 54	Transport Sensor 2 (Off Check)
7504 55	Transport Sensor 3 (Off Check)
7504 56	LCT Relay Sensor (Off Check)
7504 57	U Relay Sn (Lag) from Bypass
7504 61	Registration sensor (Lag)
7504 62	Paper exit sensor (Lag)
7504 63	Bridge relay sensor (Lag)
7504 64	Bridge exit sensor (Lag)
7504 65	Duplex entrance sensor (Lag)
7504 66	Duplex exit sensor (Lag)
7504 67	1 bin tray exit sensor (Lag)

7505	Total Original Jam by Location
	Displays the total number of original jams by location. These jams occur when the original does not activate the sensors. A Check-in (“paper late”) error occurs when the paper fails to activate the sensor at the precise time. a Check-out (“paper lag”) paper jam occurs when the paper remains at the sensor for longer than the prescribed time.
7505 1	At Power On
7505 5	Registration Sensor (On Check)
7505 6	Exit Sensor (On Check)
7505 7	Inverter Sensor (On Check)
7505 55	Registration Sensor (Off Check)
7505 56	Exit Sensor (Off Check)
7505 57	Inverter Sensor (Off Check)

7506*	Jam Count by Copy Size	
7506 5	A4 LEF	Displays the total number of copy jams by paper size.
7506 6	A5 LEF	
7506 14	B5 LEF	
7506 038	LT LEF	
7506 044	HLT LEF	
7506 132	A3 SEF	
7506 133	A4 SEF	
7506 134	A5 SEF	
7506 141	B4 SEF	
7506 142	B5 SEF	
7506 160	DLT SEF	
7506 164	LG SEF	
7506 166	LT SEF	
7506 172	HLT SEF	
7506 255	Others	

7507*	Plotter (Copy) Jam History				
7507 1	Last	Displays the copy jam history (the most recent 10 jams) Sample Display: CODE:007 SIZE:05h TOTAL:0000334 DATE:Mon Mar 15 11:44:50 2000 where: **CODE** is the SP7504-*** number (see above. **SIZE** is the ASAP paper size code in hex. **TOTAL** is the total jam error count (SP7003) **DATE** is the date the jams occurred.			
7507 2	Latest 1				
7507 3	Latest 2				
7507 4	Latest 3				
7507 5	Latest 4				
7507 6	Latest 5				
7507 7	Latest 6				
7507 8	Latest 7				
7507 9	Latest 8				
7507 10	Latest 9				
Size	**Code**	**Size**	**Code**	**Size**	**Code**
A4 (S)	05	A3 (L)	84	DLT (L)	A0
A5 (S)	06	A4 (L)	85	LG (L)	A4
B5 (S)	0E	A5 (L)	86	LT (L)	A6
LT (S)	26	B4 (L)	8D	HLT (L)	AC
HLT (S)	2C	B5 (L)	8E	Others	FF

7508*	Original Jam History	
7508 1	Last	Displays the original jam history (the most recent 10 jams. Sample Display: CODE:007 SIZE:05h TOTAL:0000334 DATE:Mon Mar 15 11:44:50 2000 where: **CODE** is the SP7505*** number (see above. **SIZE** is the ASAP paper size code in hex. **TOTAL** is the total error count (SP7002001) **DATE** is the date the jams occurred.
7508 2	Last 1	
7508 3	Last 2	
7508 4	Last 3	
7508 5	Last 4	
7508 6	Last 5	
7508 7	Last 6	
7508 8	Last 7	
7508 9	Last 8	
7508 10	Last 9	

7801	ROM Version/Firmware Version
	This SP codes display the firmware versions of all ROMs in the system, including the mainframe, the ARDF, and peripheral devices.

7803*	PM Counter Display
	Displays the PM counter since the last PM.

7804	PM Counter Resets
	Resets the PM counter. To reset, press Execute on the touch panel.

7807	SC/Jam Counter Reset
	Resets the SC and jam counters. To reset, press Execute on the touch panel. This SP does not reset the jam history counters: SP7507, SP7508.

7826	MF Error Counter Japan Only	
	Displays the number of counts requested of the card/key counter**.**	
7826 1	Error Total	A request for the count total failed at power on. This error will occur if the device is installed but disconnected.
7826 2	Error Staple	The request for a staple count failed at power on. This error will occur if the device is installed but disconnected.

7827	MF Error Counter Clear
	Press Execute to reset to 0 the values of SP7826. **Japan Only**

7832	Self-Diagnosis Result Display
	Execute to open the “Self-Diagnostics Result Display” to view details about errors. Use the keys in the display on the touch-panel to scroll through all the information. If no errors have occurred, you will see the “No Error” message on the screen.

7834	Clear Pixel Coverage Data
	These SPs clear the counters for the following items.
7834 1	Last & Average
7834 2	Toner Bottles
7834 3	Page Count: Bottle
7834 4	Dot Coverage Clear
7834 255	All Coverage Counts

7836	Total Memory Size
	Displays the memory capacity of the controller system.

7852*	ADF Exposure Glass	
	Counts the number of occurrences (0 ~ 65,535) when dust was detected on the scanning glass of the ADF.	
7852 1*	Detect Count	Counts the occurrences. Counting is done only if SP4999 1 (ADF Scan Glass Dust Check) is switched on.
7852 2*	Counter Clear	Clears the count. Memory All Clear (SP5801) resets this counter to zero.

7901*	Assert Info. **DFU**	
	These SP numbers display the results of the occurrence of the most recent SC code generated by the machine.	
7991 1*	File Name	Module name
7991 2*	Line Number	Number of lines
7991 3*	Location	Value

7909	PCU Counter Display
	Displays the value of the PCU counter (number of copies since the last PCU change).

7999	Engine Debug Log Switch			
	This SP switches the contents of the debug log.			
	0	RHM log (all)	4	Scanner log 2
	1	Plotter log	5	Scanner log 3
	2	Print log	6	Scanner log 4
	3	Scanner log 1	7-255	RHM log (all)

SP8-xxx: Data Log2

Many of these counters are provided for features that are currently not available, such as sending color faxes, and so on. However, here are some Group 8 codes that when used in combination with others, can provide useful information.

SP Numbers	What They Do
SP8211~SP8216	The number of pages scanned to the document server.
SP8401~SP8406	The number of pages printed from the document server
SP8691~SP8696	The number of pages sent from the document server

Specifically, the following questions can be answered:

- How is the document server actually being used?
- What application is using the document server most frequently?
- What data in the document server is being reused?

Most of the SPs in this group are prefixed with a letter that indicates the mode of operation (the mode of operation is referred to as an 'application'). Before reading the Group 8 Service Table, make sure that you understand what these prefixes mean.

PREFIXES	WHAT IT MEANS	
T:	Total: (Grand Total).	Grand total of the items counted for all applications (C, F, P, etc.)..
C:	Copy application.	Totals (pages, jobs, etc.) executed for each application when the job was *not* stored on the document server.
F:	Fax application.	
P:	Print application.	
S:	Scan application.	
L:	Local storage (document server)	Totals (jobs, pages, etc.) for the document server. The L: counters work differently case by case. Sometimes, they count jobs/pages stored on the document server; this can be in document server mode (from the document server window), or from another mode, such as from a printer driver or by pressing the Store File button in the Copy mode window. Sometimes, they include occasions when the user uses a file that is already on the document server. Each counter will be discussed case by case.
O:	Other applications (external network applications, for example)	Refers to network applications such as Web Image Monitor. Utilities developed with the SDK (Software Development Kit) will also be counted with this group in the future.

The Group 8 SP codes are limited to 17 characters, forced by the necessity of displaying them on the small LCDs of printers and faxes that also use these SPs. Read over the list of abbreviations below and refer to it again if you see the name of an SP that you do not understand.

Key for Abbreviations

ABBREVIATION	WHAT IT MEANS
/	"By", e.g. "T:Jobs/Apl" = Total Jobs "by" Application
>	More (2> "2 or more", 4> "4 or more"
AddBook	Address Book
Apl	Application
B/W	Black & White
Bk	Black
C	Cyan
ColCr	Color Create
ColMode	Color Mode
Comb	Combine
Comp	Compression
Deliv	Delivery
DesApl	Designated Application. The application (Copy, Fax, Scan, Print) used to store the job on the document server, for example.
Dev Counter	Development Count, no. of pages developed.
Dup, Duplex	Duplex, printing on both sides
Emul	Emulation
FC	Full Color
FIN	Post-print processing, i.e. finishing (punching, stapling, etc.)
Full Bleed	No Margins
GenCopy	Generation Copy Mode
GPC	Get Print Counter. For jobs 10 pages or less, this counter does not count up. For jobs larger than 10 pages, this counter counts up by the number that is in excess of 10 (e.g., for an 11-page job, the counter counts up 11-10 =1)
IFax	Internet Fax
ImgEdt	Image Edit performed on the original with the copier GUI, e.g. border removal, adding stamps, page numbers, etc.
K	Black (YMCK)
LS	Local Storage. Refers to the document server.
LSize	Large (paper) Size
Mag	Magnification
MC	One color (monochrome)
NRS	New Remote Service, which allows a service center to monitor machines remotely. "NRS" is used overseas, "CSS" is used in Japan.
Org	Original for scanning
OrgJam	Original Jam
Palm 2	Print Job Manager/Desk Top Editor: A pair of utilities that allows print jobs to be distributed evenly among the printers on the network, and allows files to moved around, combined, and converted to different formats. ~~Currently not available~~.
PC	Personal Computer
PGS	Pages. A page is the total scanned surface of the original. Duplex pages count as two pages, and A3 simplex count as two pages if the A3/DLT counter SP is switched ON.
PJob	Print Jobs

ABBREVIATION	WHAT IT MEANS
Ppr	Paper
PrtJam	Printer (plotter) Jam
PrtPGS	Print Pages
R	Red (Toner Remaining). Applies to the wide format model A2 only. This machine is under development and currently not available.
Rez	Resolution
SC	Service Code (Error SC code displayed)
Scn	Scan
Sim, Simplex	Simplex, printing on 1 side.
S-to-Email	Scan-to-E-mail
SMC	SMC report printed with SP5990. All of the Group 8 counters are recorded in the SMC report.
Svr	Server
TonEnd	Toner End
TonSave	Toner Save
TXJob	Send, Transmission
YMC	Yellow, Magenta, Cyan
YMCK	Yellow, Magenta, Cyan, BlacK

NOTE: All of the Group 8 SPs are reset with SP5 801 1 Memory All Clear, or the Counter Reset SP7 808.

8001	T:Total Jobs	These SPs count the number of times each application is used to do a job. [0~9999999/ **0** / 1] **Note**: The L: counter is the total number of times the other applications are used to send a job to the document server, plus the number of times a file already on the document server is used.
8002	C:Total Jobs	
8003	F:Total Jobs	
8004	P:Total Jobs	
8005	S:Total Jobs	
8006	L:Total Jobs	

- These SPs reveal the number of times an application is used, not the number of pages processed.
- When an application is opened for image input or output, this counts as one job.
- Interrupted jobs (paper jams, etc.) are counted, even though they do not finish.
- Only jobs executed by the customer are counted. Jobs executed by the customer engineer using the SP modes are not counted.
- When using secure printing (when a password is required to start the print job), the job is counted at the time when either “Delete Data” or “Specify Output” is specified.
- A job is counted as a fax job when the job is stored for sending.
- When a fax is received to fax memory, the F: counter increments but the L: counter does not (the document server is not used).
- A fax broadcast counts as one job for the F: counter (the fax destinations in the broadcast are not counted separately).
- A fax broadcast is counted only after all the faxes have been sent to their destinations. If one transmission generates an error, then the broadcast will not be counted until the transmission has been completed.
- A printed fax report counts as one job for the F: counter.
- The F: counter does not distinguish between fax sending or receiving.
- When a copy job on the document server is printed, SP8022 also increments, and when a print job stored on the document server is printed, SP8024 also increments.
- When an original is both copied and stored on the document server, the C: and L: counters both increment.
- When a print job is stored on the document server, only the L: counter increments.
- When the user presses the Document Server button to store the job on the document server, only the L: counter increments.
- When the user enters document server mode and prints data stored on the document server, only the L: counter increments.
- When an image received from Palm 2 is received and stored, the L: counter increments.
- When the customer prints a report (user code list, for example), the O: counter increments. However, for fax reports and reports executed from the fax application, the F: counter increments.

8011	T:Jobs/LS	These SPs count the number of jobs stored to the document server by each application, to reveal how local storage is being used for input. [0~9999999/ **0** / 1] The L: counter counts the number of jobs stored from within the document server mode screen at the operation panel.
8012	C:Jobs/LS	
8013	F:Jobs/LS	
8014	P:Jobs/LS	
8015	S:Jobs/LS	
8016	L:Jobs/LS	
8017	O:Jobs/LS	

- When a scan job is sent to the document server, the S: counter increments. When you enter document server mode and then scan an original, the L: counter increments.
- When a print job is sent to the document server, the P: counter increments.
- When a network application sends data to the document server, the O: counter increments.
- When an image from Palm 2 is stored on the document server, the O: counter increments.
- When a fax is sent to the document server, the F: counter increments.

8021	T:Pjob/LS	These SPs reveal how files printed from the document server were stored on the document server originally. [0~9999999/ **0** / 1] The L: counter counts the number of jobs stored from within the document server mode screen at the operation panel.
8022	C:Pjob/LS	
8023	F:Pjob/LS	
8024	P:Pjob/LS	
8025	S:Pjob/LS	
8026	L:Pjob/LS	
8027	O:Pjob/LS	

- When a copy job stored on the document server is printed with another application, the C: counter increments.
- When an application like DeskTopBinder merges a copy job that was stored on the document server with a print job that was stored on the document server, the C: and P: counters both increment.
- When a job already on the document server is printed with another application, the L: counter increments.
- When a scanner job stored on the document server is printed with another application, the S: counter increments. If the original was scanned from within document server mode, then the L: counter increments.
- When images stored on the document server by a network application (including Palm 2), are printed with another application, the O: counter increments.
- When a copy job stored on the document server is printed with a network application (Web Image Monitor, for example), the C: counter increments.
- When a fax on the document server is printed, the F: counter increments.

8031	T:Pjob/DesApl	These SPs reveal what applications were used to output documents from the document server. [0~9999999/ **0** / 1] The L: counter counts the number of jobs printed from within the document server mode screen at the operation panel.
8032	C:Pjob/DesApl	
8033	F:Pjob/DesApl	
8034	P:Pjob/DesApl	
8035	S:Pjob/DesApl	
8036	L:Pjob/DesApl	
8037	O:Pjob/DesApl	

- When documents already stored on the document server are printed, the count for the application that started the print job is incremented.
- When the print job is started from a network application (Desk Top Binder, Web Image Monitor, etc.) the L: counter increments.

8041	T:TX Jobs/LS	These SPs count the applications that stored files on the document server that were later accessed for transmission over the telephone line or over a network (attached to an e-mail, or as a fax image by I-Fax). [0~9999999/ **0** / 1] **Note**: Jobs merged for sending are counted separately. The L: counter counts the number of jobs scanned from within the document server mode screen at the operation panel.
8042	C:TX Jobs/LS	
8043	F:TX Jobs/LS	
8044	P:TX Jobs/LS	
8045	S:TX Jobs/LS	
8046	L:TX Jobs/LS	
8047	O:TX Jobs/LS	

- When a stored copy job is sent from the document server, the C: counter increments.
- When images stored on the document server by a network application or Palm2 are sent as an e-mail, the O: counter increments.

8051	T:TX Jobs/DesApl	These SPs count the applications used to send files from the document server over the telephone line or over a network (attached to an e-mail, or as a fax image by I-Fax). Jobs merged for sending are counted separately. [0~9999999/ **0** / 1] The L: counter counts the number of jobs sent from within the document server mode screen at the operation panel.
8052	C:TX Jobs/DesApl	
8053	F:TX Jobs/DesApl	
8054	P:TX Jobs/DesApl	
8055	S:TX Jobs/DesApl	
8056	L:TX Jobs/DesApl	
8057	O:TX Jobs/DesApl	

- If the send is started from Desk Top Binder or Web Image Monitor, for example, then the O: counter increments.

8061	T:FIN Jobs	[0~9999999/ **0** / 1]
	These SPs total the finishing methods. The finishing method is specified by the application.	
8062	C:FIN Jobs	[0~9999999/ **0** / 1]
	These SPs total finishing methods for copy jobs only. The finishing method is specified by the application.	
8063	F:FIN Jobs	[0~9999999/ **0** / 1]
	These SPs total finishing methods for fax jobs only. The finishing method is specified by the application. Note: Finishing features for fax jobs are not available at this time.	
8064	P:FIN Jobs	[0~9999999/ **0** / 1]
	These SPs total finishing methods for print jobs only. The finishing method is specified by the application.	
8065	S:FIN Jobs	[0~9999999/ **0** / 1]
	These SPs total finishing methods for scan jobs only. The finishing method is specified by the application. Note: Finishing features for scan jobs are not available at this time.	
8066	L:FIN Jobs	[0~9999999/ **0** / 1]
	These SPs total finishing methods for jobs output from within the document server mode screen at the operation panel. The finishing method is specified from the print window within document server mode.	
8067	O:FIN Jobs	[0~9999999/ **0** / 1]
	These SPs total finishing methods for jobs executed by an external application, over the network. The finishing method is specified by the application.	
806x 1	Sort	Number of jobs started in Sort mode. When a stored copy job is set for Sort and then stored on the document server, the L: counter increments. (See SP8066 1)
806x 2	Stack	Number of jobs started out of Sort mode.
806x 3	Staple	Number of jobs started in Staple mode.
806x 4	Booklet	Number of jobs started in Booklet mode. If the machine is in staple mode, the Staple counter also increments.
806x 5	Z-Fold	Number of jobs started In any mode other than the Booklet mode and set for folding (Z-fold).
806x 6	Punch	Number of jobs started in Punch mode. When Punch is set for a print job, the P: counter increments. (See SP8064 6.)
806x 7	Other	Reserved. Not used.

8071	T:Jobs/PGS	[0~9999999/ **0** / 1]	
	These SPs count the number of jobs broken down by the number of pages in the job, regardless of which application was used.		
8072	C:Jobs/PGS	[0~9999999/ **0** / 1]	
	These SPs count and calculate the number of copy jobs by size based on the number of pages in the job.		
8073	F:Jobs/PGS	[0~9999999/ **0** / 1]	
	These SPs count and calculate the number of fax jobs by size based on the number of pages in the job.		
8074	P:Jobs/PGS	[0~9999999/ **0** / 1]	
	These SPs count and calculate the number of print jobs by size based on the number of pages in the job.		
8075	S:Jobs/PGS	[0~9999999/ **0** / 1]	
	These SPs count and calculate the number of scan jobs by size based on the number of pages in the job.		
8076	L:Jobs/PGS	[0~9999999/ **0** / 1]	
	These SPs count and calculate the number of jobs printed from within the document server mode window at the operation panel, by the number of pages in the job.		
8077	O:Jobs/PGS	[0~9999999/ **0** / 1]	
	These SPs count and calculate the number of “Other” application jobs (Web Image Monitor, Palm 2, etc.) by size based on the number of pages in the job.		
807x 1	1 Page	807x 8	21~50 Pages
807x 2	2 Pages	807x 9	51~100 Pages
807x 3	3 Pages	807x 10	101~300 Pages
807x 4	4 Pages	807x 11	301~500 Pages
807x 5	5 Pages	807x 12	501~700 Pages
807x 6	6~10 Pages	807x 13	701~1000 Pages
807x 7	11~20 Pages	807x 14	1001~ Pages

- For example: When a copy job stored on the document server is printed in document server mode, the appropriate L: counter (SP8076 0xx) increments.
- Printing a fax report counts as a job and increments the F: counter (SP 8073).
- Interrupted jobs (paper jam, etc.) are counted, even though they do not finish.
- If a job is paused and re-started, it counts as one job.
- If the finisher runs out of staples during a print and staple job, then the job is counted at the time the error occurs.
- For copy jobs (SP 8072) and scan jobs (SP 8075), the total is calculated by multiplying the number of sets of copies by the number of pages scanned. (One duplex page counts as 2.)
- The first test print and subsequent test prints to adjust settings are added to the number of pages of the copy job (SP 8072).
- When printing the first page of a job from within the document server screen, the page is counted.

8111	T:FAX TX Jobs	[0~9999999/ **0** / 1]
	These SPs count the total number of jobs (color or black-and-white) sent by fax, either directly or using a file stored on the document server, on a telephone line. **Note**: Color fax sending is not available at this time.	
8113	F:FAX TX Jobs	[0~9999999/ **0** / 1]
	These SPs count the total number of jobs (color or black-and-white) sent by fax directly on a telephone line. **Note**: Color fax sending is not available at this time.	

- These counters count jobs, not pages.
- This SP counts fax jobs sent over a telephone line with a fax application, including documents stored on the document server.
- If the mode is changed during the job, the job will count with the mode set when the job started.
- If the same document is faxed to both a public fax line and an I-Fax at a destination where both are available, then this counter increments, and the I-Fax counter (812x) also increments.
- The fax job is counted when the job is scanned for sending, not when the job is sent.

8121	T:IFAX TX Jobs	[0~9999999/ **0** / 1]
	These SPs count the total number of jobs (color or black-and-white) sent, either directly or using a file stored on the document server, as fax images using I-Fax. **Note**: Color fax sending is not available at this time.	
8123	F:IFAX TX Jobs	[0~9999999/ **0** / 1]
	These SPs count the number of jobs (color or black-and-white) sent (not stored on the document server), as fax images using I-Fax. **Note**: Color fax sending is not available at this time.	

- These counters count jobs, not pages.
- The counters for color are provided for future use; the color fax feature is not available at this time.
- The fax job is counted when the job is scanned for sending, not when the job is sent.

8131	T:S-to-Email Jobs	[0~9999999/ **0** / 1]
	These SPs count the total number of jobs scanned and attached to an e-mail, regardless of whether the document server was used or not.	
8135	S:S-to-Email Jobs	
	These SPs count the number of jobs scanned and attached to an e-mail, without storing the original on the document server.	
8136	L:S-to-Email Jobs	
	These SPs count the number of jobs using a file stored on stored on the document server, and attaching it to an e-mail.	

- These counters count jobs, not pages.
- If the job is stored on the document server, after the job is stored it is determined to be color or black-and-white then counted.
- If the job is cancelled during scanning, or if the job is cancelled while the document is waiting to be sent, the job is not counted.
- If the job is cancelled during sending, it may or may not be counted, depending on what stage of the process had been reached when the job was cancelled.
- If several jobs are combined for sending to the Scan Router, Scan-to-Email, or Scan-to-PC, or if one job is sent to more than one destination. each send is counted separately. For example, if the same document is sent by Scan-to-Email as well as Scan-to-PC, then it is counted twice (once for Scan-to-Email and once for Scan-to-PC).

8141	T:Deliv Jobs/Svr	[0~9999999/ **0** / 1]
	These SPs count the total number of jobs scanned and sent to a Scan Router server.	
8143	F:Deliv Jobs/Svr	
	These SPs count the number of jobs scanned in fax mode and sent to a Scan Router server.	
8145	S:Deliv Jobs/Svr	
	These SPs count the number of jobs scanned in scanner mode and sent to a Scan Router server.	

- These counters count jobs, not pages.
- The jobs are counted even though the arrival and reception of the jobs at the Scan Router server cannot be confirmed.
- If even one color image is mixed with black-and-white images, then the job is counted as a “Color” job.
- If the job is cancelled during scanning, or if the job is cancelled while the document is waiting to be delivered, the job is not counted.
- If the job is cancelled during sending, it may or may not be counted, depending on what stage of the process had been reached when the job was cancelled.
- Even if several files are combined for sending, the transmission counts as one job.

8151	T:Deliv Jobs/PC	[0~9999999/ **0** / 1]
	These SPs count the total number of jobs scanned and sent to a folder on a PC (Scan-to-PC). **Note**: At the present time, 8151 and 8155 perform identical counts.	
8155	S:Deliv Jobs/PC	
	These SPs count the total number of jobs scanned and sent with Scan-to-PC.	

- These counters count jobs, not pages.
- If the job is cancelled during scanning, it is not counted.
- If the job is cancelled while it is waiting to be sent, the job is not counted.
- If the job is cancelled during sending, it may or may not be counted, depending on what stage of the process had been reached when the job was cancelled.
- Even if several files are combined for sending, the transmission counts as one job.

8161	T:PCFAX TX Jobs	These SPs count the number of PC Fax transmission jobs. A job is counted from when it is registered for sending, not when it is sent. [0~9999999/ **0** / 1] **Note**: At the present time, these counters perform identical counts.
8163	F:PCFAX TX Jobs	

- This counts fax jobs started from a PC using a PC fax application, and sending the data out to the destination from the PC through the copier.

8191	T:Total Scan PGS	These SPs count the pages scanned by each application that uses the scanner to scan images. [0~9999999/ **0** / 1]
8192	C:Total Scan PGS	
8193	F:Total Scan PGS	
8195	S:Total Scan PGS	
8196	L:Total Scan PGS	

- SP 8191 to 8196 count the number of scanned sides of pages, not the number of physical pages.
- These counters do not count reading user stamp data, or reading color charts to adjust color.
- Previews done with a scanner driver are not counted.
- A count is done only after all images of a job have been scanned.
- Scans made in SP mode are not counted.

Examples:

- If 3 B5 pages and 1 A3 page are scanned with the scanner application but not stored, the S: count is 4.
- If both sides of 3 A4 sheets are copied and stored to the document server using the Store File button in the Copy mode window, the C: count is 6 and the L: count is 6.
- If both sides of 3 A4 sheets are copied but not stored, the C: count is 6.
- If you enter document server mode then scan 6 pages, the L: count is 6.

8201	T:LSize Scan PGS	[0~9999999/ **0** / 1]
	These SPs count the total number of large pages input with the scanner for scan and copy jobs. Large size paper (A3/DLT) scanned for fax transmission are not counted. **Note**: These counters are displayed in the SMC Report, and in the User Tools display.	
8205	S:LSize Scan PGS	[0~9999999/ **0** / 1]
	These SPs count the total number of large pages input with the scanner for scan jobs only. Large size paper (A3/DLT) scanned for fax transmission are not counted. **Note**: These counters are displayed in the SMC Report, and in the User Tools display..	

8211	T:Scan PGS/LS	These SPs count the number of pages scanned into the document server . [0~9999999/ **0** / 1] The L: counter counts the number of pages stored from within the document server mode screen at the operation panel, and with the Store File button from within the Copy mode screen
8212	C:Scan PGS/LS	
8213	F:Scan PGS/LS	
8215	S:Scan PGS/LS	
8216	L:Scan PGS/LS	

- Reading user stamp data is not counted.
- If a job is cancelled, the pages output as far as the cancellation are counted.
- If the scanner application scans and stores 3 B5 sheets and 1 A4 sheet, the S: count is 4.
- If pages are copied but not stored on the document server, these counters do not change.
- If both sides of 3 A4 sheets are copied and stored to the document server, the C: count is 6 and the L: count is 6.
- If you enter document server mode then scan 6 pages, the L: count is 6.

8221	ADF Org Feeds	[0~9999999/ **0** / 1]
	These SPs count the number of pages fed through the ADF for front and back side scanning.	
8221 1	Front	Number of front sides fed for scanning: With an ADF that can scan both sides simultaneously, the Front side count is the same as the number of pages fed for either simplex or duplex scanning. With an ADF that cannot scan both sides simultaneously, the Front side count is the same as the number of pages fed for duplex front side scanning. (The front side is determined by which side the user loads face up.)
8221 2	Back	Number of rear sides fed for scanning: With an ADF that can scan both sides simultaneously, the Back count is the same as the number of pages fed for duplex scanning. With an ADF that cannot scan both sides simultaneously, the Back count is the same as the number of pages fed for duplex rear-side scanning.

- When 1 sheet is fed for duplex scanning the Front count is 1 and the Back count is 1.
- If a jam occurs during the job, recovery processing is not counted to avoid double counting. Also, the pages are not counted if the jam occurs before the first sheet is output.

8231	Scan PGS/Mode	[0~9999999/ **0** / 1]
	These SPs count the number of pages scanned by each ADF mode to determine the work load on the ADF.	
8231 1	Large Volume	Selectable. Large copy jobs that cannot be loaded in the ADF at one time.
8231 2	SADF	Selectable. Feeding pages one by one through the ADF.
8231 3	Mixed Size	Selectable. Select “Mixed Sizes” on the operation panel.
8231 4	Custom Size	Selectable. Originals of non-standard size.
8231 5	Platen	Book mode. Raising the ADF and placing the original directly on the platen.

- If the scan mode is changed during the job, for example, if the user switches from ADF to Platen mode, the count is done for the last selected mode.
- The user cannot select mixed sizes or non-standard sizes with the fax application so if the original’s page sizes are mixed or non-standard, these are not counted.
- If the user selects “Mixed Sizes” for copying in the platen mode, the Mixed Size count is enabled.
- In the SADF mode if the user copies 1 page in platen mode and then copies 2 pages with SADF, the Platen count is 1 and the SADF count is 3.

8241	T:Scan PGS/Org	[0~9999999/ **0** / 1]
	These SPs count the total number of scanned pages by original type for all jobs, regardless of which application was used.	
8242	C:Scan PGS/Org	[0~9999999/ **0** / 1]
	These SPs count the number of pages scanned by original type for Copy jobs.	
8243	F:Scan PGS/Org	[0~9999999/ **0** / 1]
	These SPs count the number of pages scanned by original type for Fax jobs.	
8245	S:Scan PGS/Org	[0~9999999/ **0** / 1]
	These SPs count the number of pages scanned by original type for Scan jobs.	
8246	L:Scan PGS/Org	[0~9999999/ **0** / 1]
	These SPs count the number of pages scanned and stored from within the document server mode screen at the operation panel, and with the Store File button from within the Copy mode screen	

	8241	**8242**	**8243**	**8245**	**8246**
824x 1: Text	Yes	Yes	Yes	Yes	Yes
824x 2: Text/Photo	Yes	Yes	Yes	Yes	Yes
824x 3: Photo	Yes	Yes	Yes	Yes	Yes
824x 4: GenCopy, Pale	Yes	Yes	No	Yes	Yes
824x 5: Map	Yes	Yes	No	Yes	Yes
824x 6: Normal/Detail	Yes	No	Yes	No	No
824x 7: Fine/Super Fine	Yes	No	Yes	No	No
824x 8: Binary	Yes	No	No	Yes	No
824x 9: Grayscale	Yes	No	No	Yes	No

- If the scan mode is changed during the job, for example, if the user switches from ADF to Platen mode, the count is done for the last selected mode.

8251	T:Scan PGS/ImgEdt	These SPs show how many times Image Edit features have been selected at the operation panel for each application. Some examples of these editing features are: • Erase> Border • Erase> Center • Image Repeat • Centering • Positive/Negative [0~9999999/ **0** / 1] Note: The count totals the number of times the edit features have been used. A detailed breakdown of exactly which features have been used is not given.
8252	C:Scan PGS/ImgEdt	
8254	P:Scan PGS/ImgEdt	
8256	L:Scan PGS/ImgEdt	
8257	O:Scan PGS/ImgEdt	

The L: counter counts the number of pages stored from within the document server mode screen at the operation panel, and with the Store File button from within the Copy mode screen.

8281	T:Scan PGS/TWAIN	These SPs count the number of pages scanned using a TWAIN driver. These counters reveal how the TWAIN driver is used for delivery functions. [0~9999999/ **0** / 1] **Note**: At the present time, these counters perform identical counts.
8285	S:Scan PGS/TWAIN	

8291	T:Scan PGS/Stamp	These SPs count the number of pages stamped with the stamp in the ADF unit. [0~9999999/ **0** / 1] The L: counter counts the number of pages stored from within the document server mode screen at the operation panel, and with the Store File button from within the Copy mode screen
8293	F:Scan PGS/Stamp	
8295	S:Scan PGS/Stamp	
8296	L:Scan PGS/Stamp	

8301	T:Scan PGS/Size	[0~9999999/ **0** / 1]
	These SPs count by size the total number of pages scanned by all applications. Use these totals to compare original page size (scanning) and output (printing) page size [SP 8-441].	
8302	C:Scan PGS/Size	[0~9999999/ **0** / 1]
	These SPs count by size the total number of pages scanned by the Copy application. Use these totals to compare original page size (scanning) and output (printing) page size [SP 8-442].	
8303	F:Scan PGS/Size	[0~9999999/ **0** / 1]
	These SPs count by size the total number of pages scanned by the Fax application. Use these totals to compare original page size (scanning) and output page size [SP 8-443].	
8305	S:Scan PGS/Size	[0~9999999/ **0** / 1]
	These SPs count by size the total number of pages scanned by the Scan application. Use these totals to compare original page size (scanning) and output page size [SP 8-445].	
8306	L:Scan PGS/Size	[0~9999999/ **0** / 1]
	These SPs count by size the total number of pages scanned and stored from within the document server mode screen at the operation panel, and with the Store File button from within the Copy mode screen. Use these totals to compare original page size (scanning) and output page size [SP 8-446].	
830x 1	A3	
830x 2	A4	
830x 3	A5	
830x 4	B4	
830x 5	B5	
830x 6	DLT	
830x 7	LG	
830x 8	LT	
830x 9	HLT	
830x 10	Full Bleed	
830x 254	Other (Standard)	
830x 255	Other (Custom)	

8311	T:Scan PGS/Rez	[0~9999999/ **0** / 1]
	These SPs count by resolution setting the total number of pages scanned by applications that can specify resolution settings.	
8315	S:Scan PGS/Rez	[0~9999999/ **0** / 1]
	These SPs count by resolution setting the total number of pages scanned by applications that can specify resolution settings. **Note**: At the present time, 8311 and 8315 perform identical counts.	
831x 1	1200dpi ~	
831x 2	600dpi~1199dpi	
831x 3	400dpi~599dpi	
831x 4	200dpi~399dpi	
831x 5	~199dpi	

- Copy resolution settings are fixed so they are not counted.
- The Fax application does not allow finely-adjusted resolution settings so no count is done for the Fax application.

8381	T:Total PrtPGS	These SPs count the number of pages printed by the customer. The counter for the application used for storing the pages increments. [0~9999999/ **0** / 1] The L: counter counts the number of pages stored from within the document server mode screen at the operation panel. Pages stored with the Store File button from within the Copy mode screen go to the C: counter.
8382	C:Total PrtPGS	
8383	F:Total PrtPGS	
8384	P:Total PrtPGS	
8385	S:Total PrtPGS	
8386	L:Total PrtPGS	
8387	O:Total PrtPGS	

- When the A3/DLT double count function is switched on with SP5104, 1 A3/DLT page is counted as 2.
- When several documents are merged for a print job, the number of pages stored are counted for the application that stored them.
- These counters are used primarily to calculate charges on use of the machine, so the following pages are not counted as printed pages:
    - Blank pages in a duplex printing job.
    - Blank pages inserted as document covers, chapter title sheets, and slip sheets.
    - Reports printed to confirm counts.
    - All reports done in the service mode (service summaries, engine maintenance reports, etc.)
    - Test prints for machine image adjustment.
    - Error notification reports.
    - Partially printed pages as the result of a copier jam.

8391	LSize PrtPGS	[0~9999999/ **0** / 1]
	These SPs count pages printed on paper sizes A3/DLT and larger. **Note**: In addition to being displayed in the SMC Report, these counters are also displayed in the User Tools display on the copy machine.	

8401	T:PrtPGS/LS	These SPs count the number of pages printed from the document server. The counter for the application used to print the pages is incremented. The L: counter counts the number of jobs stored from within the document server mode screen at the operation panel. [0~9999999/ **0** / 1]
8402	C:PrtPGS/LS	
8403	F:PrtPGS/LS	
8404	P:PrtPGS/LS	
8405	S:PrtPGS/LS	
8406	L:PrtPGS/LS	

- Print jobs done with Web Image Monitor and Desk Top Binder are added to the L: count.
- Fax jobs done with Web Image Monitor and Desk Top Binder are added to the F: count.

8411	Prints/Duplex	This SP counts the amount of paper (front/back counted as 1 page) used for duplex printing. Last pages printed only on one side are not counted. [0~9999999/ **0** / 1]

8421	T:PrtPGS/Dup Comb	[0~9999999/ **0** / 1]
	These SPs count by binding and combine, and n-Up settings the number of pages processed for printing. This is the total for all applications.	
8422	C:PrtPGS/Dup Comb	[0~9999999/ **0** / 1]
	These SPs count by binding and combine, and n-Up settings the number of pages processed for printing by the copier application.	
8423	F:PrtPGS/Dup Comb	[0~9999999/ **0** / 1]
	These SPs count by binding and combine, and n-Up settings the number of pages processed for printing by the fax application.	
8424	P:PrtPGS/Dup Comb	[0~9999999/ **0** / 1]
	These SPs count by binding and combine, and n-Up settings the number of pages processed for printing by the printer application.	
8425	S:PrtPGS/Dup Comb	[0~9999999/ **0** / 1]
	These SPs count by binding and combine, and n-Up settings the number of pages processed for printing by the scanner application.	
8426	L:PrtPGS/Dup Comb	[0~9999999/ **0** / 1]
	These SPs count by binding and combine, and n-Up settings the number of pages processed for printing from within the document server mode window at the operation panel.	
8427	O:PrtPGS/Dup Comb	[0~9999999/ **0** / 1]
	These SPs count by binding and combine, and n-Up settings the number of pages processed for printing by Other applications	
842x 1	Simplex> Duplex	
842x 2	Duplex> Duplex	
842x 3	Book> Duplex	
842x 4	Simplex Combine	
842x 5	Duplex Combine	
842x 6	2>	2 pages on 1 side (2-Up)
842x 7	4>	4 pages on 1 side (4-Up)
842x 8	6>	6 pages on 1 side (6-Up)
842x 9	8>	8 pages on 1 side (8-Up)
842x 10	9>	9 pages on 1 side (9-Up)
842x 11	16>	16 pages on 1 side (16-Up)
842x 12	Booklet	
842x 13	Magazine	

- These counts (SP8421 to SP8427) are especially useful for customers who need to improve their compliance with ISO standards for the reduction of paper consumption.
- Pages that are only partially printed with the n-Up functions are counted as 1 page.

- Here is a summary of how the counters work for Booklet and Magazine modes:

Booklet	
Original Pages	**Count**
1	1
2	2
3	2
4	2
5	3
6	4
7	4
8	4

Magazine	
Original Pages	**Count**
1	1
2	2
3	2
4	2
5	4
6	4
7	4
8	4

8431	T:PrtPGS/ImgEdt	[0~9999999/ **0** / 1]
	These SPs count the total number of pages output with the three features below, regardless of which application was used.	
8432	C:PrtPGS/ImgEdt	[0~9999999/ **0** / 1]
	These SPs count the total number of pages output with the three features below with the copy application.	
8434	P:PrtPGS/ImgEdt	[0~9999999/ **0** / 1]
	These SPs count the total number of pages output with the three features below with the print application.	
8436	L:PrtPGS/ImgEdt	[0~9999999/ **0** / 1]
	These SPs count the total number of pages output from within the document server mode window at the operation panel with the three features below.	
8437	O:PrtPGS/ImgEdt	[0~9999999/ **0** / 1]
	These SPs count the total number of pages output with the three features below with Other applications.	
843x 1	Cover/Slip Sheet	Total number of covers or slip sheets inserted. The count for a cover printed on both sides counts 2.
843x 2	Series/Book	The number of pages printed in series (one side) or printed as a book with booklet right/left pagination.
843x 3	User Stamp	The number of pages printed where stamps were applied, including page numbering and date stamping.

8441	T:PrtPGS/Ppr Size	[0~9999999/ **0** / 1]
	These SPs count by print paper size the number of pages printed by all applications.	
8442	C:PrtPGS/Ppr Size	[0~9999999/ **0** / 1]
	These SPs count by print paper size the number of pages printed by the copy application.	
8443	F:PrtPGS/Ppr Size	[0~9999999/ **0** / 1]
	These SPs count by print paper size the number of pages printed by the fax application.	
8444	P:PrtPGS/Ppr Size	[0~9999999/ **0** / 1]
	These SPs count by print paper size the number of pages printed by the printer application.	
8445	S:PrtPGS/Ppr Size	[0~9999999/ **0** / 1]
	These SPs count by print paper size the number of pages printed by the scanner application.	
8446	L:PrtPGS/Ppr Size	[0~9999999/ **0** / 1]
	These SPs count by print paper size the number of pages printed from within the document server mode window at the operation panel.	
8447	O:PrtPGS/Ppr Size	[0~9999999/ **0** / 1]
	These SPs count by print paper size the number of pages printed by Other applications.	
844x 1	A3	
844x 2	A4	
844x 3	A5	
844x 4	B4	
844x 5	B5	
844x 6	DLT	
844x 7	LG	
844x 8	LT	
844x 9	HLT	
844x 10	Full Bleed	
844x 254	Other (Standard)	
844x 255	Other (Custom)	

- These counters do not distinguish between LEF and SEF.

8451	PrtPGS/Ppr Tray	[0~9999999/ **0** / 1]
	These SPs count the number of sheets fed from each paper feed station.	
8451 1	Bypass	Bypass Tray
8451 2	Tray 1	Copier
8451 3	Tray 2	Copier
8451 4	Tray 3	Paper Tray Unit (Option)
8451 5	Tray 4	Paper Tray Unit (Option)
8451 6	Tray 5	LCT (Option)
8451 7	Tray 6	Currently not used.
8451 8	Tray 7	Currently not used.
8451 9	Tray 8	Currently not used.
8451 10	Tray 9	Currently not used.

8461	T:PrtPGS/Ppr Type	[0~9999999/ **0** / 1]
	These SPs count by paper type the number pages printed by all applications. • These counters are not the same as the PM counter. The PM counter is based on feed timing to accurately measure the service life of the feed rollers. However, these counts are based on output timing. • Blank sheets (covers, chapter covers, slip sheets) are also counted. • During duplex printing, pages printed on both sides count as 1, and a page printed on one side counts as 1.	
8462	C:PrtPGS/Ppr Type	[0~9999999/ **0** / 1]
	These SPs count by paper type the number pages printed by the copy application.	
8463	F:PrtPGS/Ppr Type	[0~9999999/ **0** / 1]
	These SPs count by paper type the number pages printed by the fax application.	
8464	P:PrtPGS/Ppr Type	[0~9999999/ **0** / 1]
	These SPs count by paper type the number pages printed by the printer application.	
8466	L:PrtPGS/Ppr Type	[0~9999999/ **0** / 1]
	These SPs count by paper type the number pages printed from within the document server mode window at the operation panel.	
846x 1	Normal	
846x 2	Recycled	
846x 3	Special	
846x 4	Thick	
846x 5	Normal (Back)	
846x 6	Thick (Back)	
846x 7	OHP	
846x 8	Other	

8471	PrtPGS/Mag	[0~9999999/ **0** / 1]
	These SPs count by magnification rate the number of pages printed.	
8471 1	~49%	
8471 2	50%~99%	
8471 3	100%	
8471 4	101%~200%	
8471 5	201% ~	

- Counts are done for magnification adjusted for pages, not only on the operation panel but performed remotely with an external network application capable of performing magnification adjustment as well.
- Magnification adjustments done with printer drivers with PC applications such as Excel are also counted.
- Magnification adjustments done for adjustments after they have been stored on the document server are not counted.
- Magnification adjustments performed automatically during Auto Reduce/Enlarge copying are counted.
- The magnification rates of blank cover sheets, slip sheets, etc. are automatically assigned a rate of 100%.

8481	T:PrtPGS/TonSave
8484	P:PrtPGS/TonSave
	These SPs count the number of pages printed with the Toner Save feature switched on. **Note**: These SPs return the same results as this SP is limited to the Print application. [0~9999999/ **0** / 1]

8511	T:PrtPGS/Emul	[0~9999999/ **0** / 1]
	These SPs count by printer emulation mode the total number of pages printed.	
8514	P:PrtPGS/Emul	[0~9999999/ **0** / 1]
	These SPs count by printer emulation mode the total number of pages printed.	
8514 1	RPCS	
8514 2	RPDL	
8514 3	PS3	
8514 4	R98	
8514 5	R16	
8514 6	GL/GL2	
8514 7	R55	
8514 8	RTIFF	
8514 9	PDF	
8514 10	PCL5e/5c	
8514 11	PCL XL	
8514 12	IPDL-C	
8514 13	BM-Links	Japan Only
8514 14	Other	

- SP8511 and SP8514 return the same results as they are both limited to the Print application.
- Print jobs output to the document server are not counted.

8521	T:PrtPGS/FIN	[0~9999999/ **0** / 1]
	These SPs count by finishing mode the total number of pages printed by all applications.	
8522	C:PrtPGS/FIN	[0~9999999/ **0** / 1]
	These SPs count by finishing mode the total number of pages printed by the Copy application.	
8523	F:PrtPGS/FIN	[0~9999999/ **0** / 1]
	These SPs count by finishing mode the total number of pages printed by the Fax application. **Note**: • Print finishing options for received faxes are currently not available.	
8524	P:PrtPGS/FIN	[0~9999999/ **0** / 1]
	These SPs count by finishing mode the total number of pages printed by the Print application.	
8525	S:PrtPGS/FIN	[0~9999999/ **0** / 1]
	These SPs count by finishing mode the total number of pages printed by the Scanner application.	
8526	L:PrtPGS/FIN	[0~9999999/ **0** / 1]
	These SPs count by finishing mode the total number of pages printed from within the document server mode window at the operation panel.	
852x 1	Sort	
852x 2	Stack	
852x 3	Staple	
852x 4	Booklet	
852x 5	Z-Fold	
852x 6	Punch	
852x 7	Other	

NOTE: 1) If stapling is selected for finishing and the stack is too large for stapling, the unstapled pages are still counted.
2) The counts for staple finishing are based on output to the staple tray, so jam recoveries are counted.

8531	Staples	This SP counts the amount of staples used by the machine. [0~9999999/ **0** / 1]

8581	T:Counter	[0~9999999/ **0** / 1]
	These SPs count the total output broken down by color output, regardless of the application used. In addition to being displayed in the SMC Report, these counters are also displayed in the User Tools display on the copy machine. **Note:** This SP is expanded for color MFP and color LP machines. For this machine, the count is done for black only.	

8591	O:Counter	[0~9999999/ **0** / 1]
	These SPs count the totals for A3/DLT paper use, number of duplex pages printed, and the number of staples used. These totals are for Other (O:) applications only.	
8591 1	A3/DLT	
8591 2	Duplex	
8591 3	Staple	

8631	T:FAX TX PGS	[0~9999999/ **0** / 1]
	These SPs count by color mode the number of pages sent by fax to a telephone number. **Note:** This SP is expanded for color MFP and color LP machines. For this machine, the count is done for black only.	
8633	F:FAX TX PGS	[0~9999999/ **0** / 1]
	These SPs count by color mode the number of pages sent by fax to a telephone number. **Note:** This SP is expanded for color MFP and color LP machines. For this machine, the count is done for black only.	

- If a document has color and black-and-white pages mixed, the pages are counted separately as B/W or Color.
- At the present time, this feature is provided for the Fax application only so SP8631 and SP8633 are the same.
- The counts include error pages.
- If a document is sent to more than one destination with a Group transmission, the count is done for each destination.
- Polling transmissions are counted but polling RX are not.
- Relay, memory, and confidential mailbox transmissions and are counted for each destination.

8641	T:FAX TX PGS	[0~9999999/ **0** / 1]
	These SPs count by color mode the number of pages sent by fax to as fax images using I-Fax. **Note:** This SP is expanded for color MFP and color LP machines. For this machine, the count is done for black only.	
8643	F:FAX TX PGS	[0~9999999/ **0** / 1]
	These SPs count by color mode the number of pages sent by Fax as fax images using I-Fax. **Note:** This SP is expanded for color MFP and color LP machines. For this machine, the count is done for black only.	

- If a document has color and black-and-white pages mixed, the pages are counted separately as B/W or Color.
- At the present time, this feature is provided for the Fax application only so SP8641 and SP8643 are the same.
- The counts include error pages.
- If a document is sent to more than one destination with a Group transmission, the count is done for each destination.
- Polling transmissions are counted but polling RX are not.
- Relay, memory, and confidential mailbox transmissions and are counted for each destination.

8651	T:S-to-Email PGS	[0~9999999/ **0** / 1]
	These SPs count by color mode the total number of pages attached to an e-mail for both the Scan and document server applications. **Note:** This SP is expanded for color MFP and color LP machines. For this machine, the count is done for black only.	
8655	S:S-to-Email PGS	[0~9999999/ **0** / 1]
	These SPs count by color mode the total number of pages attached to an e-mail for the Scan application only. **Note:** This SP is expanded for color MFP and color LP machines. For this machine, the count is done for black only.	

NOTE: 1) The count for B/W and Color pages is done after the document is stored on the HDD. If the job is cancelled before it is stored, the pages are not counted.
2) If Scan-to-Email is used to send a 10-page document to 5 addresses, the count is 10 (the pages are sent to the same SMTP server together).
3) If Scan-to-PC is used to send a 10-page document to 5 folders, the count is 50 (the document is sent to each destination of the SMB/FTP server).
4) Due to restrictions on some devices, if Scan-to-Email is used to send a 10-page document to a large number of destinations, the count may be divided and counted separately. For example, if a 10-page document is sent to 200 addresses, the count is 10 for the first 100 destinations and the count is also 10 for the second 100 destinations, for a total of 20.).

8661	T:Deliv PGS/Svr	[0~9999999/ **0** / 1]
	These SPs count by color mode the total number of pages sent to a Scan Router server by both Scan and LS applications. **Note:** This SP is expanded for color MFP and color LP machines. For this machine, the count is done for black only.	
8665	S:Deliv PGS/Svr	[0~9999999/ **0** / 1]
	These SPs count by color mode the total number of pages sent to a Scan Router server by the Scan application. **Note:** This SP is expanded for color MFP and color LP machines. For this machine, the count is done for black only.	

NOTE: 1) The B/W and Color counts are done after the document is stored on the HDD of the Scan Router server.
2) If the job is canceled before storage on the Scan Router server finishes, the counts are not done.
3) The count is executed even if regardless of confirmation of the arrival at the Scan Router server.

8671	T:Deliv PGS/PC	[0~9999999/ **0** / 1]
	These SPs count by color mode the total number of pages sent to a folder on a PC (Scan-to-PC) with the Scan and LS applications. **Note:** This SP is expanded for color MFP and color LP machines. For this machine, the count is done for black only.	
8675	S:Deliv PGS/PC	[0~9999999/ **0** / 1]
	These SPs count by color mode the total number of pages sent with Scan-to-PC with the Scan application. **Note:** This SP is expanded for color MFP and color LP machines. For this machine, the count is done for black only.	

8681	T:PCFAX TXPGS	These SPs count the number of pages sent by PC Fax. These SPs are provided for the Fax application only, so the counts for SP8681 and SP8683 are the same. [0~9999999/ **0** / 1]
8683	F:PCFAX TXPGS	

- This counts pages sent from a PC using a PC fax application, from the PC through the copier to the destination.
- When sending the same message to more than one place using broadcasting, the pages are only counted once. (For example, a 10-page fax is sent to location A and location B. The counter goes up by 10, not 20.)

8691	T:TX PGS/LS	These SPs count the number of pages sent from the document server. The counter for the application that was used to store the pages is incremented. [0~9999999/ **0** / 1] The L: counter counts the number of pages stored from within the document server mode screen at the operation panel. Pages stored with the Store File button from within the Copy mode screen go to the C: counter.
8692	C:TX PGS/LS	
8693	F:TX PGS/LS	
8694	P:TX PGS/LS	
8695	S:TX PGS/LS	
8696	L:TX PGS/LS	

NOTE: 1) Print jobs done with Web Image Monitor and Desk Top Binder are added to the count.
2) If several documents are merged for sending, the number of pages stored are counted for the application that stored them.
3) When several documents are sent by a Fax broadcast, the F: count is done for the number of pages sent to each destination.

8701	TX PGS/Port	[0~9999999/ **0** / 1]
	These SPs count the number of pages sent by the physical port used to send them. For example, if a 3-page original is sent to 4 destinations via ISDN G4, the count for ISDN (G3, G4) is 12.	
8701 1	PSTN-1	
8701 2	PSTN-2	
8701 3	PSTN-3	
8701 4	ISDN (G3,G4)	
8701 5	Network	

8711	T:Scan PGS/Comp	[0~9999999/ 1]
	These SPs count the number of compressed pages scanned into the document server, counted by the formats listed below.	
8711 1	JPEG/JPEG2000	
8711 2	TIFF (Multi/Single)	
8711 3	PDF	
8711 4	Other	

8 715	S:Scan PGS/Comp	[0~9999999/ 1]
	These SPs count the number of compressed pages scanned by the scan application, counted by the formats listed below.	
8715 1	JPEG/JPEG2000	
8715 2	TIFF (Multi/Single)	
8715 3	PDF	
8715 4	Other	

8741	RX PGS/Port	[0~9999999/ **0** / 1]
	These SPs count the number of pages received by the physical port used to receive them.	
8741 1	PSTN-1	
8741 2	PSTN-2	
8741 3	PSTN-3	
8741 4	ISDN (G3,G4)	
8741 5	Network	

8771	Dev Counter	[0~9999999/ **0** / 1]
	These SPs count the frequency of use (number of rotations of the development rollers) for black and other color toners. **Note:** For machines that do not support color, the Black toner count is the same as the Total count.	

8781	Pixel Coverage Ratio
	This SP displays the number of toner bottles used. The count is done based on the equivalent of 1,000 pages per bottle.

8791	LS Memory Remain	This SP displays the percent of space available on the document server for storing documents. [0~100/ **0** / 1]

8801	Toner Remain	[0~100/ **0** / 1]
	This SP displays the percent of toner remaining for each color. This SP allows the user to check the toner supply at any time. **Note:** • This precise method of measuring remaining toner supply (1% steps) is better than other machines in the market that can only measure in increments of 10 (10% steps). • This SP is expanded for color MFP and color LP machines. For this machine, the count is done for black only.	

8831	Pixel Cover Ave.	Average Pixel Coverage
8831 1	Accum. Ave. K	
8831 2	Accum. Ave. M	Do not display for this machine.
8831 3	Accum. Ave. C	
8831 4	Accum. Ave. Y	

8841	Pixel Cover Last	Average Pixel Coverage
001	Last Page K	
002	Last Page M	Do not display for this machine.
003	Last Page C	
004	Last Page Y	

8851	Toner Coverage 0-10%		[0~9999999]
	These SPs count the percentage of dot coverage for black other color toners.		
8851 1	K	Black toner	
8851 2	M	Magenta toner	Do not display for this machine.
8851 3	C	Cyan toner	
8851 4	Y	Yellow toner	

8861	Toner Coverage 11-20%		[0~9999999]
	These SPs count the percentage of dot coverage for black other color toners.		
8861 1	K	Black toner	
8861 2	M	Magenta toner	Do not display for this machine.
8861 3	C	Cyan toner	
8861 4	Y	Yellow toner	

8871	Toner Coverage 21-30%		[0~9999999]
	These SPs count the percentage of dot coverage for black other color toners.		
8871 1	K	Black toner	
8871 2	M	Magenta toner	Do not display for this machine.
8871 3	C	Cyan toner	
8871 4	Y	Yellow toner	

8881	Toner Coverage 31 -%		[0~9999999]
	These SPs count the percentage of dot coverage for black other color toners.		
8881 1	K	Black toner	
8881 2	M	Magenta toner	Do not display for this machine.
8881 3	C	Cyan toner	
8881 4	Y	Yellow toner	

8901	Coverage Display (Toner Bottle: Previous) **DFU**
8911	Coverage Display (Toner Bottle: Before Previous) **DFU**

8941	Machine Status	[0~9999999/ **0** / 1]
	These SPs count the amount of time the machine spends in each operation mode. These SPs are useful for customers who need to investigate machine operation for improvement in their compliance with ISO Standards.	
8941 1	Operation Time	Engine operation time. Does not include time while controller is saving data to HDD (while engine is not operating).
8941 2	Standby Time	Engine not operating. Includes time while controller saves data to HDD. Does not include time spent in Energy Save, Low Power, or Off modes.
8941 3	Energy Save Time	Includes time while the machine is performing background printing.
8941 4	Low Power Time	Includes time in Energy Save mode with Engine on. Includes time while machine is performing background printing.
8941 5	Off Mode Time	Includes time while machine is performing background printing. Does not include time machine remains powered off with the power switches.
8941 6	SC	Total down time due to SC errors.
8941 7	PrtJam	Total down time due to paper jams during printing.
8941 8	OrgJam	Total down time due to original jams during scanning.
8941 9	Supply PM Wait End	Total down time due to toner end.

8951	AddBook Register		
	These SPs count the number of events when the machine manages data registration.		
8951 1	User Code	User code registrations.	[0~9999999/ **0** / 1]
8951 2	Mail Address	Mail address registrations.	
8951 3	Fax Destination	Fax destination registrations.	
8951 4	Group	Group destination registrations.	
8951 5	Transfer Request	Fax relay destination registrations for relay TX.	
8951 6	F-Code	F-Code box registrations.	
8951 7	Copy Program	Copy application registrations with the Program (job settings) feature.	[0~255 / **0** / 255]
8951 8	Fax Program	Fax application registrations with the Program (job settings) feature.	
8951 9	Printer Program	Printer application registrations with the Program (job settings) feature.	
8951 10	Scanner Program	Scanner application registrations with the Program (job settings) feature.	

5.1.4 TEST PATTERN PRINTING (SP2902-3)

NOTE: Always print a test pattern to confirm correct operation of the machine.

1. Enter the SP mode and select SP2902 003.
2. Enter the number for the test pattern that you want to print and press #. (See the tables below.)
3. Press Copy Window to open the copy window and then select the settings for the test print (paper size, etc.)
4. Press Start ◇ twice. (Ignore the “Place Original” messages) to start the test print.
5. Press SP Mode (highlighted) to return to the SP mode display.

No.	Test Pattern
0	None
1	Vertical Line (1dot)
2	Horizontal Line (1dot)
3	Vertical Line (2-dot)
4	Horizontal Line (2-dot)
5	Grid Pattern (1dot)
6	Independent (1-dot)
7	Independent (2-dot)
8	100% Black Coverage
9	Belt Pattern
10	Trimming Area
11	Argyle
12	Argyle (2-dot)
13	Checkered Flag
14	Horizontal Belt
15	Independent (4-dot)
16	Grayscale Horizontal
17	Grayscale Vertical
18	Grayscale Horizontal/Vertical
19	Grayscale Grid
20	Grayscale Horizontal White Stripe
21	Grayscale Vertical White Stripe
22	Grayscale Horizontal/Vertical White Stripe
23	100% White Coverage
24	Trimming Area (OR Outside Data)

NOTE: See SP 4417 in the SP table for a different set of test patterns.

5.1.5 INPUT CHECK

Main Machine Input Check (SP5803)

1. Enter the SP mode and select SP5803.
2. Enter the number (1 – 11) for the item that you want to check. A small box will be displayed on the SP mode screen with a series of 0's and 1's.
   The meaning of the display is as follows.

   0 0 0 0 0 0 0 0

   Bit 7 6 5 4 3 2 1 0
3. Check the status of each item against the corresponding bit numbers listed in the table below.

Number	Bit	Description	Reading	
			0	1
Group 1	7	Paper Height Sensor 2 (2nd Tray)	Activated	Deactivated
	6	Paper Height Sensor 1 (2nd Tray)	Activated	Deactivated
	5	Paper Height Sensor 2 (1st Tray)	Activated	Deactivated
	4	Paper Height Sensor 1 (1st Tray)	Activated	Deactivated
	3	Paper End Sensor (2nd Tray)	Paper End	Paper is present
	2	Upper Relay Sensor	Activated	Deactivated
	1	Lower Right Cover Open	Closed	Open
	0	Not used		
Group 2	7	Paper Exit Sensor	Activated	Deactivated
	6	Fusing Unit	Unit Set	Unit not set
	5	PCU Set	Activated	Deactivated
	4	New PCU Sensor	Activated	Deactivated
	3	Interchange Exit Sensor	Activated	Deactivated
	2	1 bin Tray Unit Set	Unit Set	Unit not set
	1	1 bin Tray Paper Sensor	Activated	Deactivated
	0	Interchange Unit Set	Unit Set	Unit not set
Group 3	7	Bridge Exit Sensor	Activated	Deactivated
	6	Bridge Relay Sensor	Activated	Deactivated
	5	Bridge Paper Sensor	Activated	Deactivated
	4	Bridge Right Guide Switch	Activated	Deactivated
	3	Bridge Left Guide Switch	Activated	Deactivated
	2	Bridge Unit Set	Unit Set	Unit not set
	1	Bridge Fan Motor Lock	Locked	Unlocked
	0	Shift Tray Unit Set	Unit Set	Unit not set

Number	Bit	Description	Reading	
			0	1
Group 4	7	Wake up Signal	Not detected	Detected
	6	Lower Relay Sensor	Activated	Deactivated
	5	Vertical Transport Sensor (Optional paper tray unit)	Activated	Deactivated
	4	3rd Tray Paper Size	Activated	Deactivated
	3	4th Tray Paper Size	Activated	Deactivated
	2	Motor Lock (Optional paper tray unit)	Not locked	Locked
	1	Height Sensor (Optional paper tray unit)	Activated	Deactivated
	0	Unit Set (Optional paper tray unit)	Unit set	Unit not set
Group 5	7	Fusing Drive Release Solenoid	Activated	Deactivated
	6	Main Motor Brake Signal	Not active	Active
	5	Main Motor On Signal	Activated	Deactivated
	4	Main Motor Rotation Direction Signal	Not active	Active
	3	3rd Paper End Sensor	Paper End	Paper is present
	2	4th Paper End Sensor	Paper End	Paper is present
	1	3rd Paper Height Sensor	Deactivated	Activated
	0	4th Paper Height Sensor	Deactivated	Activated
Group 6	7	Duplex Unit Set	Unit set	Unit not set
	6	Total Counter	Not detected	Detected
	5	By-pass Tray Unit Set	Detected	Not detected
	4	By-pass Paper End Sensor	Paper End	Paper is present
	3	By-pass Paper Size 2	Activated	Deactivated
	2	By-pass Paper Size 1	Activated	Deactivated
	1	By-pass Paper Size 4	Activated	Deactivated
	0	By-pass Paper Size 3	Activated	Deactivated
Group 7	7	Not Used		
	6	Not Used		
	5	Not Used		
	4	Not Used		
	3	Key Counter Set	Detected	Not detected
	2	Key Card Set	Detected	Not detected
	1	Polygon Motor Ready Signal	Ready	Not ready
	0	Not Used		

Number	Bit	Description	Reading	
			0	1
8	7	Dip Switch - 4	On	Off
	6	Dip Switch - 3	Off	On
	5	Dip Switch - 2	Off	On
	4	Dip Switch - 1	Off	On
	3	Not Used		
	2	Front Safety Sw – 5V	On	Off
	1	Front Safety Sw – 24V	Off	On
	0	Main Motor Ready Signal	Ready	Not ready
9	7	Not used		
	6	Relay Off Signal	Not detected	Detected
	5	Toner Bottle Motor Lock	Locked	Not locked
	4	Right Cover Open	Closed	Open
	3	Registration Sensor	Activated	Deactivated
	2	Exhaust Fan Lock	Not locked	Locked
	1	Interchange Cover Open	Closed	Open
	0	Paper Overflow Sensor	Activated	Deactivated
10	7	Not Used		
	8	Not Used		
	5	Not Used		
	4	Upper Relay Sensor	Activated	Deactivated
	3	1st Paper End	Paper End	Paper is present
	2	2nd Paper Lift Sensor	Activated	Deactivated
	1	1st Paper Lift Sensor	Activated	Deactivated
	0	Not Used		
11	7	2nd Paper Size 1	Activated	Deactivated
	6	2nd Paper Size 2	Activated	Deactivated
	5	2nd Paper Size 3	Activated	Deactivated
	4	2nd Paper Size 4	Activated	Deactivated
	3	1st Paper Size 1	Activated	Deactivated
	2	1st Paper Size 2	Activated	Deactivated
	1	1st Paper Size 3	Activated	Deactivated
	0	1st Paper Size 4	Activated	Deactivated

NOTE: Numbers 12 to 14 are not used for this machine.

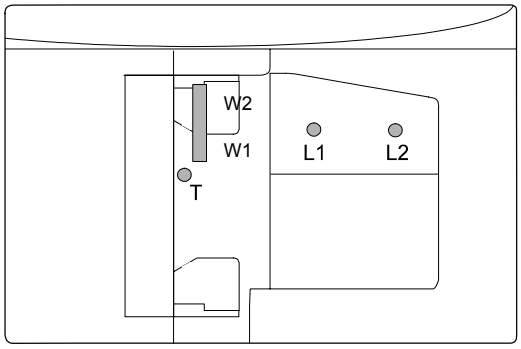
ARDF Input Check (SP6007)

1. Enter the SP mode and select SP6007.
2. Enter the number (1 – 11) for the item that you want to check. A small box will be displayed on the SP mode screen with a series of 0's and 1's, as shown below. However, only bit 0 at the right side of the screen is valid.

0 0 0 0 0 0 0 0

Bit 7 6 5 4 3 2 1 0

3. Check the status of bit 0 for the required item listed in the table below.



B205S903.WMFF

No..	Description	Reading	
		0	1
1	Original set sensor	Paper not detected	Paper detected
2	Original width sensor 1 (W1)	Paper not detected	Paper detected
3	Original width sensor 2 (W2)	Paper not detected	Paper detected
4	Original length sensor 1 (L1)	Paper not detected	Paper detected
5	Original length sensor 2 (L2)	Paper not detected	Paper detected
6	Original trailing edge sensor	Paper not detected	Paper detected
7	ADF cover sensor	Cover closed	Cover opened
8	DF position sensor (Lift up)	ADF closed	ADF opened
9	Registration sensor	Paper not detected	Paper detected
10	Exit sensor	Paper not detected	Paper detected
11	Inverter sensor	Paper not detected	Paper detected

Finisher Input Check (SP6117)

1. Enter the SP mode and select SP6117.
2. Enter the number (1 – 4) for the item that you want to check. A small box will be displayed on the SP mode screen with a series of 0's and 1's.
   The meaning of the display is as follows.

   0 0 0 0 0 0 0 0

   Bit 7 6 5 4 3 2 1 0
3. Check the status of each item against the corresponding bit numbers listed in the table below.

For 1000-sheet Finisher

Number	Bit	Description	Reading	
			0	1
Group 1	7	Stack Feed-out Belt HP Sensor	Activated	Deactivated
	6	Not Used		
	5	Jogger Fence HP Sensor	Activated	Deactivated
	4	Stapler HP Sensor	Activated	Deactivated
	3	Stapler Tray Entrance Sensor	Activated	Deactivated
	2	Not Used		
	1	Lower Tray Exit Sensor	Activated	Deactivated
	0	Entrance Sensor	Activated	Deactivated
Group 2	7	Not Used		
	6	Not Used		
	5	Stapler Ready Signal	Activated	Deactivated
	4	Not Used		
	3	Not Used		
	2	Staple Sensor	Activated	Deactivated
	1	Staple Hammer HP Sensor	Activated	Deactivated
	0	Stapler Tray Paper Sensor	Activated	Deactivated
Group 3 (Only 1000 Fin.)	7	Not Used		
	6	Lower Tray Lower Limit Sensor	Activated	Deactivated
	5	Not used		
	4	Stack Height Sensor	Activated	Deactivated
	3	Not Used		
	2	Not Used		
	1	Shift HP Sensor	Activated	Deactivated
	0	Exit Guide HP Sensor	Activated	Deactivated

Number	Bit	Description	Reading	
			0	1
Group 4 (Only 1000 Fin.)	7	Not Used		
	6	Not Used		
	5	Not Used		
	4	Not Used		
	3	Upper Tray Paper Limit Sensor	Activated	Deactivated
	2	Not Used		
	1	Not Used		
	0	Not Used		

For 500-sheet Finisher

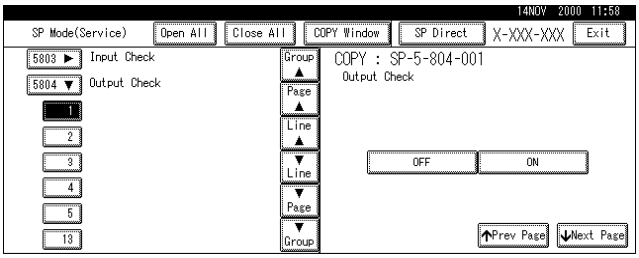
Number	Bit	Description	Reading	
			0	1
Group 1	7	Stack Near-limit Sensor	Activated	Deactivated
	6	Tray Upper Limit Sensor	Activated	Deactivated
	5	Lever Sensor	Activated	Deactivated
	4	Stack Height Sensor	Activated	Deactivated
	3	Top Cover Sensor	Closed	Opened
	2	Jogger HP Sensor	Activated	Deactivated
	1	Exit Sensor	Activated	Deactivated
	0	Entrance Sensor	Activated	Deactivated
Group 2	7	Not Used		
	6	Not Used		
	5	Not Used		
	4	Staple Unit Lock	Locked	Not Locked
	3	Staple Cartridge Sensor	Activated	Deactivated
	2	Staple End Sensor	Activated	Deactivated
	1	Staple Hammer HP Sensor	Activated	Deactivated
	0	Staple Unit Cover Switch	Closed	Opened

5.1.6 OUTPUT CHECK

NOTE: Motors keep turning in this mode regardless of upper or lower limit sensor signals. To prevent mechanical or electrical damage, do not keep an electrical component on for a long time.

Main Machine Output Check (SP5804)

1. Open SP mode 5804.
2. Select the SP number that corresponds to the component you wish to check. (Refer to the table on the next page.)
3. Press On then press Off to test the selected item.
   NOTE: You cannot exit and close this display until you press off to switch off the output check currently executing. Do not keep an electrical component switched on for a long time.



B205S904.WMFF

Output Check Table

NOTE: Pull out the tray before performing the output checks 25, 26, 29, and 30.

Number	On Screen	Service Manual Part Name
1	Main Motor (Fwd)	Main motor (forward)
2	Main Motor (Rev)	Main motor (Reverse) **Do not use**
3	Registration CL	Registration clutch
4	Development CL	Not used
5	Toner Bottle Motor	Toner supply motor
6	Exhaust Fan Motor (High Speed)	Exhaust fan (High Speed)
7	Exhaust Fan Motor (Low Speed)	Exhaust fan (Low Speed)
8	By-pass Feed CL	By-pass feed clutch
9	1st Paper Feed CL	Upper paper feed clutch
10	2nd Paper Feed CL	Lower paper feed clutch
11	1st Paper Tray Up	Upper paper lift motor (Up)
12	1st Paper Tray Down	Upper paper lift motor (Down)
13	2nd Paper Tray Up	Lower paper lift motor (Up)
14	2nd Paper Tray Down	Lower paper lift motor (Down)
15	Paper Transport CL	Upper relay clutch
16	Paper Transport CL2	Lower relay clutch
17	Fuser Drive Cancel SOL	Fusing drive release solenoid

Number	On Screen	Service Manual Part Name
21	Paper Transport CL3	Relay clutch (Optional paper tray unit)
22	3rd Paper Feed CL	Upper paper feed clutch (Optional paper tray unit)
23	4th Paper Feed CL	Lower paper feed clutch (Optional paper tray unit)
24	Paper Bank Motor	Tray motor (Optional paper tray unit)
25	3rd/LCT Tray Up	Upper Paper lift motor (Up) (Optional paper tray unit or LCT)
26	3rd/LCT Tray Down	Upper paper lift motor (Down) (Optional paper tray unit or LCT)
27	4th Tray Up	Lower paper lift motor (Up) (Optional paper tray unit)
28	4th Tray Down	Lower paper lift motor (Down) (Optional paper tray unit)
29	Tandem Rear Fence Drive Motor – Fwd	Rear fence motor (forward) (Optional LCT)
30	Tandem Rear Fence Drive Motor – Rev	Rear fence motor (reverse (Optional LCT)
31	Tandem Fence SOL	Side fence solenoid (Optional LCT)
32	Exit Tray Shift Motor	Shift tray motor (Optional shift tray)
33	Exit Junction Gate SOL (Upper Unit)	Exit junction gate (Optional interchange unit)
34	Exit Junction Gate SOL (Lower Unit)	Duplex junction gate (Optional interchange unit)
41	Duplex Inverter Motor (Rev)	Duplex inverter motor (Reverse) (Optional duplex unit)
42	Duplex Inverter Motor (Fwd)	Duplex inverter motor (Forward) (Optional duplex unit)
43	Duplex Transport Motor	Duplex transport motor (Optional duplex unit)
44	Duplex SOL	Inverter gate solenoid (Optional duplex unit)
51	Relay Fan Motor	Bridge cooling fan motor (Optional bridge unit)
52	Relay Transport Motor	Bridge unit drive motor (Optional bridge unit)
53	Relay SOL	Junction gate solenoid (Optional bridge unit)
54	Total Counter	Total counter
60	Polygon Motor	Polygonal mirror motor
61	Polygon Motor/LD	Polygonal mirror motor and laser diode
62	LD ON	Laser diode - **Do not use**
81	Duplex Unit Free Run 1	Duplex unit free run (without paper)
82	Duplex Unit Free Run 2	Duplex unit free run (with paper)

ARDF Output Check (SP6008)

1. Open SP mode SP6008.
2. Select the SP number that corresponds to the component you wish to check. (Refer to the table below.)
3. Press On then press Off to test the selected item. You cannot exit and close this display until you click Off to switch off the output check currently executing.

No.	Description
1	Feed Motor (Fwd)
2	Feed-in Motor (Rev)
3	Transport Motor (Fwd)
4	Feed Clutch
5	Pick-up Solenoid
6	Junction Gate Solenoid
7	Stamp Solenoid

Finisher Output Check (SP6118)

1. Open SP mode SP6118.
2. Select the SP number that corresponds to the component you wish to check. (Refer to the table below.)
3. Press On then press Off to test the selected item. You cannot exit and close this display until you click Off to switch off the output check currently executing.

No.	Description	
	1000-sheet finisher	500-sheet finisher
1	Upper Transport Motor	Main Motor
2	Shift Tray Lift Motor	Output Tray Motor
3	Staple Hammer Motor	Stapler Motor
4	Shift Motor	Jogger Motor
5	Lower Transport Motor	Not Used
6	Shift Tray Exit Motor	Not Used
7	Tray Junction Gate Solenoid	Not Used
8	Jogger Motor	Not Used
9	Stapler Motor	Not Used
10	Stapler Junction Gate Solenoid	Not Used
11	Positioning Roller Solenoid	Not Used
12	Stack Feed-out Motor	Not Used
13	Exit Guide Plate Motor	Not Used
14	Not Used	Paddle Roller Solenoid
15	Not Used	Exit Unit Gear Solenoid
16	Not Used	Stack Height Lever Solenoid
17		Transport Motor

5.1.7 SMC DATA LISTS (SP5990)

1. Open SP mode 5990 and select the number corresponding to the list that you wish to print.

SMC (System Parameter and Data Lists)	
1	All Data List
2	SP Mode Data List
3	UP Mode Data List
4	Logging Data List
5	Self-Diagnostics Results List
7	NIB Summary
8	Capture Log
21	Copy UP Mode List
22	Scanner SP Mode List
23	Scanner UP Mode List

2. Touch “Execute” on the touch panel
3. Select. “Single Face” or “Both Face” then touch “Execute” to start printing.
4. After printing the list, press Exit twice to close the SP Mode screen and return to copy mode.

5.1.8 MEMORY ALL CLEAR (SP5801)

Executing Memory All Clear resets all the settings stored in the NVRAM to their default settings except the following:

SP2989 1-5	PCU ID (South Korea Only)
SP2990 1-5	Original Toner ID (South Korea Only)
SP2991 1-5	Original Toner Counter (South Korea Only)
SP5811 1:	Machine serial number
SP590 7:	Plug & Play Brand Name and Production Name Setting
SP7002 1:	Electrical total counter value

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.

1. Enter the SP mode, do SP5801, and press the number for the item that you want to initialize.

No.	What It Initializes	Comments
1	All Clear	Initializes items 2 ~ 12 below.
2	Engine Clear	Initializes all registration settings for the engine and process settings.
3	SCS	(System Control Service)/SRAM. Initializes default system settings, CSS settings, operation display coordinates, and ROM update information.
4	IMH Memory Clear	Initializes the image file system. (IMH: Image Memory Handler)
5	MCS	(Memory Control Service). Initializes the automatic delete time setting for stored documents.
6	Copier application	Initializes all copier application settings.
7	Fax application	Initializes the fax reset time, job login ID, all TX/RX settings, local storage file numbers, and off-hook timer.
8	Printer application	Initializes the printer defaults, programs registered, the printer SP bit switches, and the printer CSS counter.
9	Scanner application	Initializes the scanner defaults for the scanner and all the scanner SP modes.
10	Network application	Deletes the network file application management files and thumbnails, and initializes the job login ID.
11	NCS	(Network Control Service) Initializes the system defaults and interface settings (IP addresses also), SmartNetMonitor for Admin, WebStatusMonitor settings, and the TELNET settings.
12	R-FAX	Initializes the job login ID, SmartNetMonitor for Admin, job history, and local storage file numbers.
14	Clear DCS Settings	Initializes: SP5845 (All), SP5860 (All), SP5861 (All), SP5863, registered scanner documents and subjects.
15	Clear UCS Settings	Initializes: SP5846 (All), SP5801 15
18	SRM Memory Clear	Initializes information in non-volatile RAM.
19	LCS Memory Clear	Initializes information in non-volatile RAM.

2. Press Execute and turn the main switch off and back on.

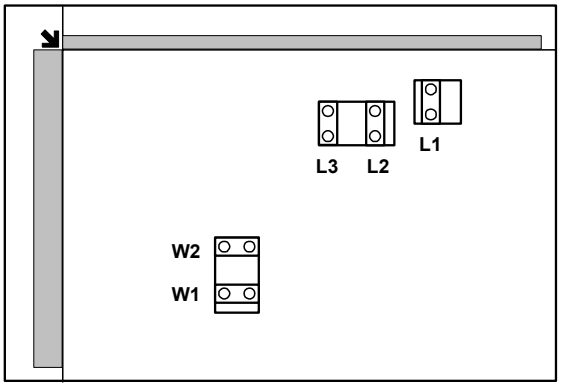
5.1.9 APS OUTPUT DISPLAY (SP4301)

When open this SP, a small box will be displayed on the SP mode screen with a series of 0's and 1's. The meaning of the display is as follows.

0 0 0 0 0 0 0 0

Bit 7 6 5 4 3 2 1 0

1 = Paper detected



B205S905.WMFF

Bit	Description
7	L2
6	L3
5	W1
4	W2
3	Not Used
2	L1
1	Not Used
0	Not Used

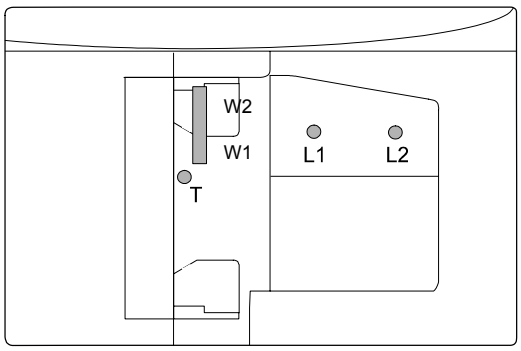
5.1.10 DF APS SENSOR OUTPUT DISPLAY (SP6901)

When open this SP, a small box will be displayed on the SP mode screen with a series of 0's and 1's. The meaning of the display is as follows.

0 0 0 0 0 0 0 0

Bit 7 6 5 4 3 2 1 0

1 = Paper detected

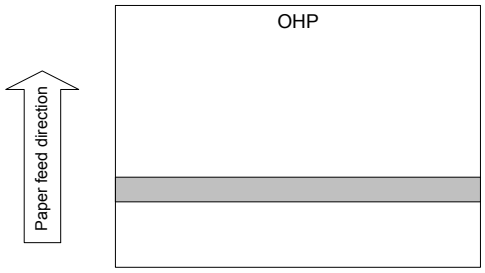


B205S906.WMFF

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

Bit	Description
7	Not Used
6	Not Used
5	W1
4	W2
3	L1
2	L2
1	L3
0	Not Used

5.1.11 NIP BAND WIDTH MEASUREMENT (SP1109)



B205S907.WMFF

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 SP1109, as follows.

1. Do a free run (SP5802) for about 50 sheets.
2. Access SP1109 and press the “1” key.
3. Press Copy Window to return to the copy window.
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)	5.2 ± 0.5 mm
Lower	5.3 ± 0.5 mm
2. Envelope feed mode (green lever down) at the default pressure spring position	4.7 ± 0.5 mm

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

5.2 FIRMWARE UPDATE

The procedure is the same for all firmware modules.

NOTE: If you will change scanner firmware, print 5-990-22 and -23 (SMC reports for scanner settings) before you start this procedure.

1. Turn off the main power switch.
2. Remove the SD card slot cover (x 2).
3. Insert the SD card [B] containing the software you wish to download into SD card slot C3.
4. Open the front cover.
5. Turn on the main power.
6. Follow the instructions on the operation panel
7. Monitor the downloading status on the operation panel.
   - While downloading is in progress, the panel displays “Writing”. When downloading has been completed, the panel displays “Completed”.
   - The Start key lights red during downloading, then lights green after downloading is completed. (only for "Operation Panel" downloading)

⚠CAUTION

Never switch off the power while downloading. Switching off the power while the new software is being downloading will damage the boot files in the controller.

8. After confirming that downloading is completed, turn off the main power and remove the SD card.
9. If more software needs to be downloaded, repeat steps 1 to 7.
10. Turn the main power on and confirm that the new software loads and that the machine starts normally.
11. After installing new scanner firmware, do SP5-801-9 (Memory All Clear – Scanner Application). Then input scanner settings that are different from the defaults (see the SMC prints of 5-990-22 and -23 that you made earlier).

Important

If the download failed, an error message appears on the panel. Do the download procedure again. If the second download fails:

- For the controller module, set bit 1 of DIP switch 1 on the controller board to OFF, then switch on the machine. The machine boots from the SD card.
- Other modules. Replace the appropriate PCB.

5.3 SOFTWARE RESET

The software can be rebooted when the machine hangs up. Use the following procedure.

Turn the main power switch off and on.

-or-

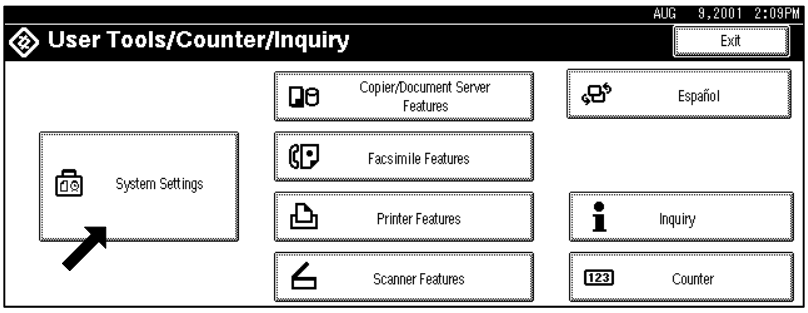
Press and hold down * # together for over 10 seconds. When the machine beeps once release both buttons. After “Now loading. Please wait” is displayed for a few seconds the copy window will open. The machine is ready for normal operation.

5.4 SYSTEM SETTINGS AND COPY SETTING RESET

5.4.1 SYSTEM SETTING RESET

The system settings in the UP mode can be reset to their defaults. Use the following procedure.

1. Press User Tools/Counter.
2. Hold down # and then press System Settings.
   NOTE: You must press # first.



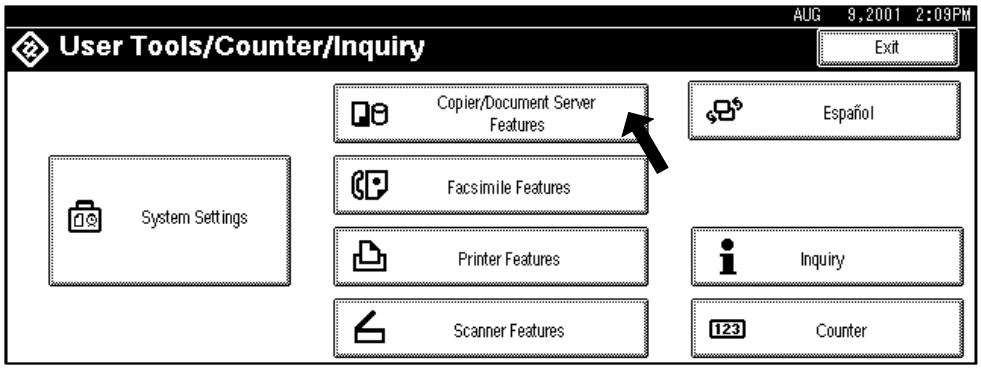
B205S908.WMFF

3. When the message prompts you to confirm that you want to reset the system settings, press Yes.
4. When the message tells you that the settings have been reset, press Exit.

5.4.2 COPIER SETTING RESET

The copy settings in the UP mode can be reset to their defaults. Use the following procedure.

1. Press User Tools/Counter.
2. Hold down (#) and then press Copier/Document Server Settings.
   NOTE: You must press (#) first.



B205S909.WMFF

3. When the message prompts you to confirm that you want to reset the Copier Document Server settings, press Yes.
4. When the message tells you that the settings have been reset, press Exit.

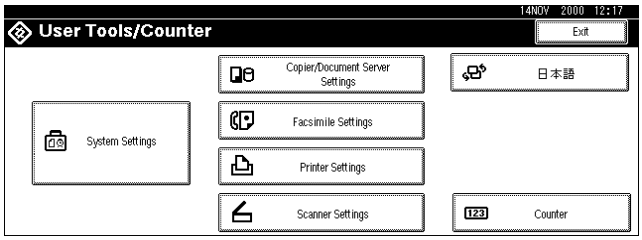
5.5 USER TOOLS

The user program (UP) mode can be accessed by users and operators, and by sales and service staff. UP mode is used to input the copier's default settings. The user can reset the default settings at any time. (☛ 5.4)

5.5.1 HOW TO USE UP MODE

UP Mode Initial Screen: User Tools/Counter Display

To enter the UP mode, press User Tools/Counter.

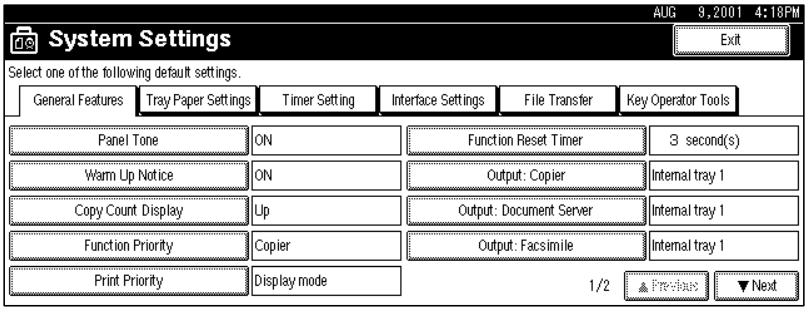


B205S910.WMFF

System Settings

In the User Tools/Counter display, press System Settings.

Click a tab to display the settings. If the Next button is lit in the lower right corner, press it to display more options. Perform the settings, press Exit to return to the User Tools/Counter display, and then press Exit to return to the copy window.



B205S911.WMFF

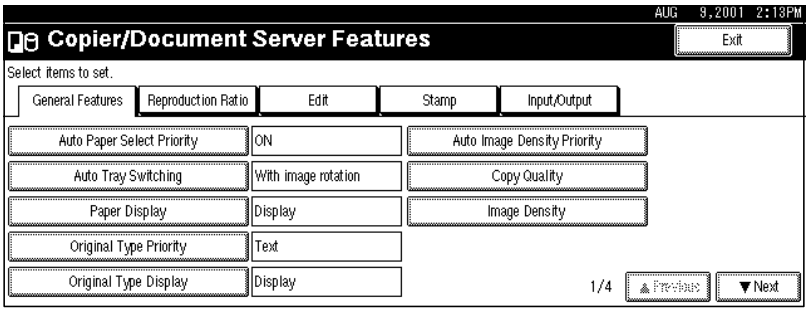
Copier/Document Server Features

In the User/Tools Counter display, press Copy/Document Server Settings.

Click a tab to display the settings. If the Next button is lit in the lower right corner, press it to display more options. Perform the settings, press Exit to return to the User Tools/Counter display, and then press Exit to return to the copy window.

Printer, Facsimile, Scanner Settings

In the User/Tools Counter display, press Printer Settings, Facsimile, or Scanner Settings to open the appropriate screen and then click the tab to display more settings. The screen below shows the Printer Features screen.



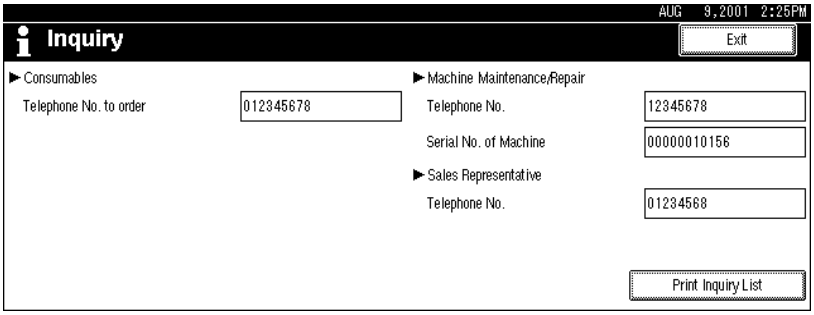
B205S912.WMFF

Inquiry

In the User/Tools Counter display, press Inquiry.

The following SP mode settings will be displayed.

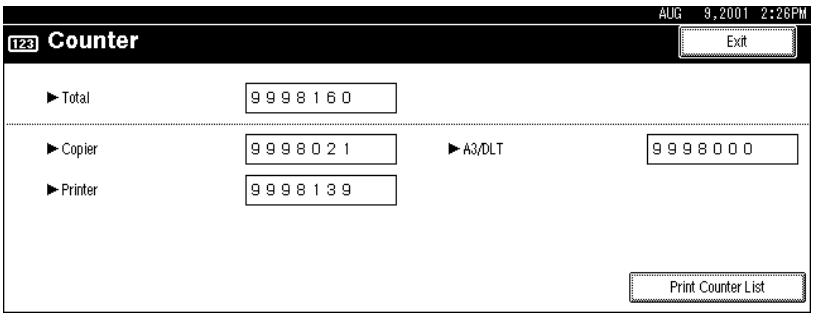
- Service Telephone Number (SP58121)
- Sales Telephone Number (SP8124)
- Consumable Telephone Number (SP8123)
- Toner Name (SP-841)



B205S913.WMFF

Counter

In the User/Tools Counter display, press Counter.



B205S914.WMFF

The following SP mode counters will be displayed.

- Copy Counter (SP59142)
- A3/DLT Counter (SP5918)
- Printer Counter (SP59141)

View the settings, press Print Counter Exit to return to the User Tools/Counter display, and then press Exit to return to the copy window.

5.6 LEDS

Controller

Number	Normal	Controller Software Download	Error
LED 1	Off	Blinking	Off
LED 2	Blinking	Blinking	Lit or Off

SBCU

Number	Normal	SBCU Software Download	Error
LED 1	Lit	Lit	Off or Blinking
LED 2	Blinking	Lit	Lit (except downloading) or Off

5.7 DIP SWITCHES

Controller

SW1

Number	OFF	ON
1	Boot from SD card	Default: Boot from Flash ROM
2 to 7	Default: OFF **DFU**	---
8	---	Default **DFU**

SBCU

SW102

Destination	Bit			
	1	2	3	4
Japan	OFF	OFF	OFF	OFF
NA	ON	OFF	OFF	OFF
EU/ASIA	OFF	ON	OFF	OFF

SW103

DFU. Do not change these settings.

5.8 USING THE DEBUG LOG

This machine provides a Save Debug Log feature that allows the Customer Engineer to save and retrieve error information for analysis.

Every time an error occurs, debug information is recorded in volatile memory but this information is lost when the machine is switched off and on.

To capture this debug information, the Save Debug Log feature provides two main features:

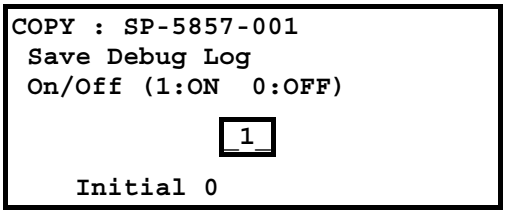
- Switching on the debug feature so error information is saved directly to the HDD for later retrieval.
- Copying the error information from the HDD to an SD card.

When a user is experiencing problems with the machine, follow the procedure below to set up the machine so the error information is saved automatically to the HDD. Then ask the user to reproduce the problem.

5.8.1 SWITCHING ON AND SETTING UP SAVE DEBUG LOG

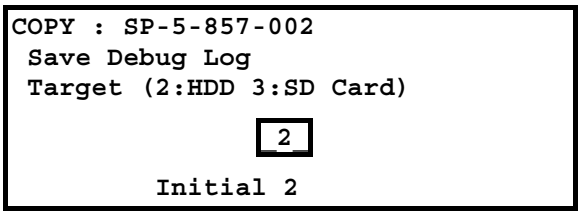
The debug information cannot be saved the until the “Save Debug Log” function has been switched on and a target has been selected.

1. Enter the SP mode.
   - Press [◇] (Clear Modes) then use the 10-key pad to enter ①⓪⑦.
   - Press and hold down [C/◎] (Clear/Stop) for more than 3 seconds.
   - Press “Copy SP” on the touch-panel.
   - Enter ⑤⑧⑤⑦ then press ⓗ.
2. Under “5857 Save Debug Log”, press ①.



3. On the control panel keypad, press “1” then press ⓗ. This switches the Save Debug Log feature on.
   NOTE: The default setting is “0” (OFF). This feature must be switched on in order for the debug information to be saved.

4. Next, select the target destination where the debug information will be saved. Under “5857 Save Debug Log”, touch “2 Target”, enter “2” with the operation panel key to select the hard disk as the target destination, then press #.



NOTE: Select “3 SD Card” to save the debug information directly to the SD card if it is inserted in the service slot.

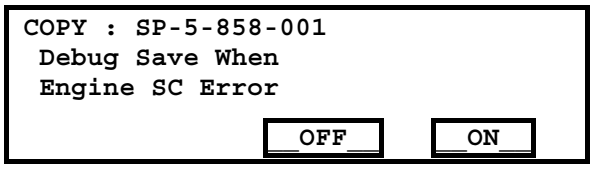
5. Now touch “5858” and specify the events that you want to record in the debug log. SP5858(Debug Save When) provides the following items for selection.

1	Engine SC Error	Saves data when an engine-related SC code is generated.
2	Controller SC Error	Saves debug data when a controller-related SC Code is generated.
3	Any SC Error	Saves data only for the SC code that you specify by entering code number.
4	Jam	Saves data for jams.

NOTE: More than one event can be selected.

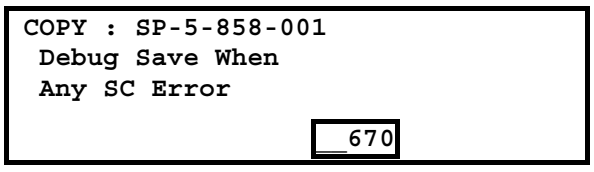
Example 1: To Select Items 1, 2, 4

Touch the appropriate items(s). Press “ON” for each selection. This example shows “Engine SC Error” selected.



Example 2: To Specify an SC Code

Touch “3 Any SC Error”, enter the 3-digit SC code number with the control panel number keys, then press #. This example shows an entry for SC670.



NOTE: For details about SC code numbers, please refer to the SC tables in Section “4. Troubleshooting”.

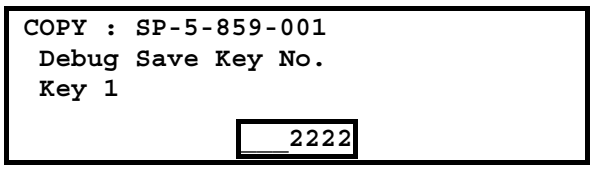
6. Next, select the one or more memory modules for reading and recording debug information. Touch “5859”.

   Under “5859” press the appropriate key item for the module that you want to record.

   Enter the appropriate 4-digit number, then press #.

   NOTE: Refer to the two tables below for the 4-digit numbers to enter for each key.

   The example below shows “Key 1” with “2222” entered.



   The following keys can be set with the corresponding numbers. (The initials in parentheses indicate the names of the modules.)

4-Digit Entries for Keys 1 to 10

KEY NO.	COPY	PRINTER	SCANNER	WEB
1	2222 (SCS)			
2	2223 (SRM)			
3	256 (IMH)			
4	1000 (ECS)			
5	1025 (MCS)			
6	4848(COPY)	4400 (GPS)	5375 (Scan)	5682 (NFA)
7	2224 (BCU)	4500 (PDL)	5682 (NFA)	6600 (WebDB)
8		4600 (GPS-PM)	3000 (NCS)	3300 (PTS)
9		2000 (NCS)	2000 (NCS)	6666 (WebSys)
10		2224 (BCU)		2000 (NCS)

NOTE: The default settings for Keys 1 to 10 are all zero (“0”).

Key to Acronyms

Acronym	Meaning	Acronym	Meaning
ECS	Engine Control Service	NFA	Net File Application
GPS	GW Print Service	PDL	Printer Design Language
GSP-PM	GW Print Service – Print Module	PTS	Print Server
IMH	Image Memory Handler	SCS	System Control Service
MCS	Memory Control Service	SRM	System Resource Management
NCS	Network Control Service	WebDB	Web Document Box (Document Server)

   The machine is now set to record the debugging information automatically on the HDD (the target selected with SP5-857-002) for the events that you selected SP5-858and the memory modules selected with SP5-859.

Please keep the following important points in mind when you are doing this setting:

- Note that the number entries for Keys 1 to 5 are the same for the Copy, Printer, Scanner, and Web memory modules.
- The initial settings are all zero.
- These settings remain in effect until you change them. Be sure to check all the settings, especially the settings for Keys 6 to 10. To switch off a key setting, enter a zero for that key.
- You can select any number of keys from 1 to 10 (or all) by entering the corresponding 4-digit numbers from the table.
- You cannot mix settings for the groups (COPY, PRINTER, etc.) for 006~010. For example, if you want to create a PRINTER debug log you must select the settings from the 9 available selections for the “PRINTER” column only.
- One area of the disk is reserved to store the debug log. The size of this area is limited to 4 MB.

5.8.2 RETRIEVING THE DEBUG LOG FROM THE HDD

1. Insert the SD card into service slot C3 of the copier.
2. Enter the SP mode and execute SP5857 009 (Copy HDD to SD Card (Latest 4 MB) to write the debugging data to the SD card.
3. Use a card reader to copy the file and send it for analysis to your local Ricoh representative by email, or just send the SD card by mail.

5.8.3 RECORDING ERRORS MANUALLY

Since only SC errors and jams are recorded to the debug log automatically, for any other errors that occur while the customer engineer is not on site, please instruct customers to perform the following immediately after occurrence to save the debug data. Such problems would include a controller or panel freeze.

NOTE: In order to use this feature, the customer engineer must have previously switched on the Save Debug Feature (SP5857-001) and selected the hard disk as the save destination (SP5857-002).

1. When the error occurs, on the operation panel, press (Clear Modes).
2. On the control panel, enter “01” then hold down C/ for at least 3 sec. until the machine beeps then release. This saves the debug log to the hard disk for later retrieval with an SD card by the service representatives.
3. Switch the machine off and on to resume operation.

   The debug information for the error is saved on the hard disk so the service representatives can retrieve it on their next visit by copying it from the HDD to an SD card.

5.8.4 NEW DEBUG LOG CODES

SP5857-015 Copy SD Card-to-SD Card: Any Desired Key

This SP copies the log on an SD card (the file that contains the information written directly from shared memory) to a log specified by key number. The copy operation is executed in the log directory of the SD card inserted in the same slot. (This function does not copy from one slot to another.) Each SD card can hold up to 4 MB of file data. Unique file names are created for the data during the copy operation to prevent overwriting files of the same name. This means that log data from more than one machine can be copied onto the same SC card. This command does not execute if there is no log on the HDD for the name of the specified key.

SP5857-016 Create a File on HDD to Store a Log

This SP creates a 32 MB file to store a log on the HDD. However, this is not a completely empty file. The created file will hold the number “2225” as the SCS key number and other non-volatile information. Even if this SP is not executed, a file is created on the HDD when the first log is stored on the HDD, but this operation takes time. This creates the possibility that the machine may be switched off and on before the log can be created completely. If you execute this SP to create the log file beforehand, this will greatly reduce the amount of time required to acquire the log information and save onto the HDD. With the file already created on the HDD for the log file, the data only needs to be recorded; a new log file does not require creation. To create a new log file, execute SP5857-011 to delete the debug log data from the HDD and then execute this SP (SP5857-016).

SP5857-017 Create a File on SD Card to Store a Log

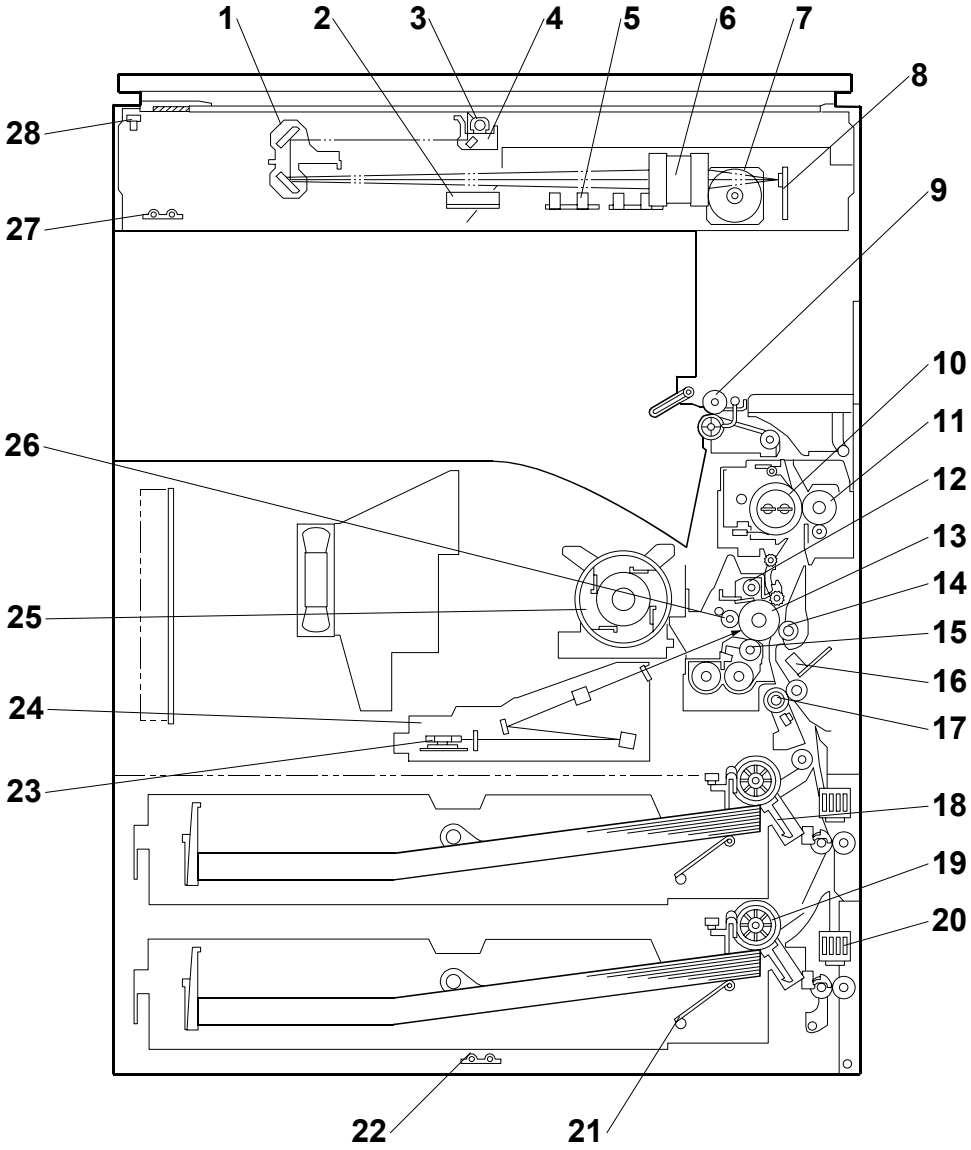
This SP creates a 4 MB file to store a log on an SD card. However, this is not a completely empty file. The created file will hold the number “2225” as the SCS key number and other non-volatile information. Even if this SP is not executed, a file is created on the SD card when the first log is stored on the SD card, but this operation takes time. This creates the possibility that the machine may be switched off and on before the log can be created completely. If you execute this SP to create the log file beforehand, this will greatly reduce the amount of time required to acquire the log information and save onto the SD card. With the file already created on the SD card for the log file, the data only needs to be recorded; a new log file does not require creation. To create a new log file, execute SP5857-012 to delete the debug log data from the SD card and then execute this SP (SP5857-017).

DETAILED DESCRIPTIONS

6. DETAILS

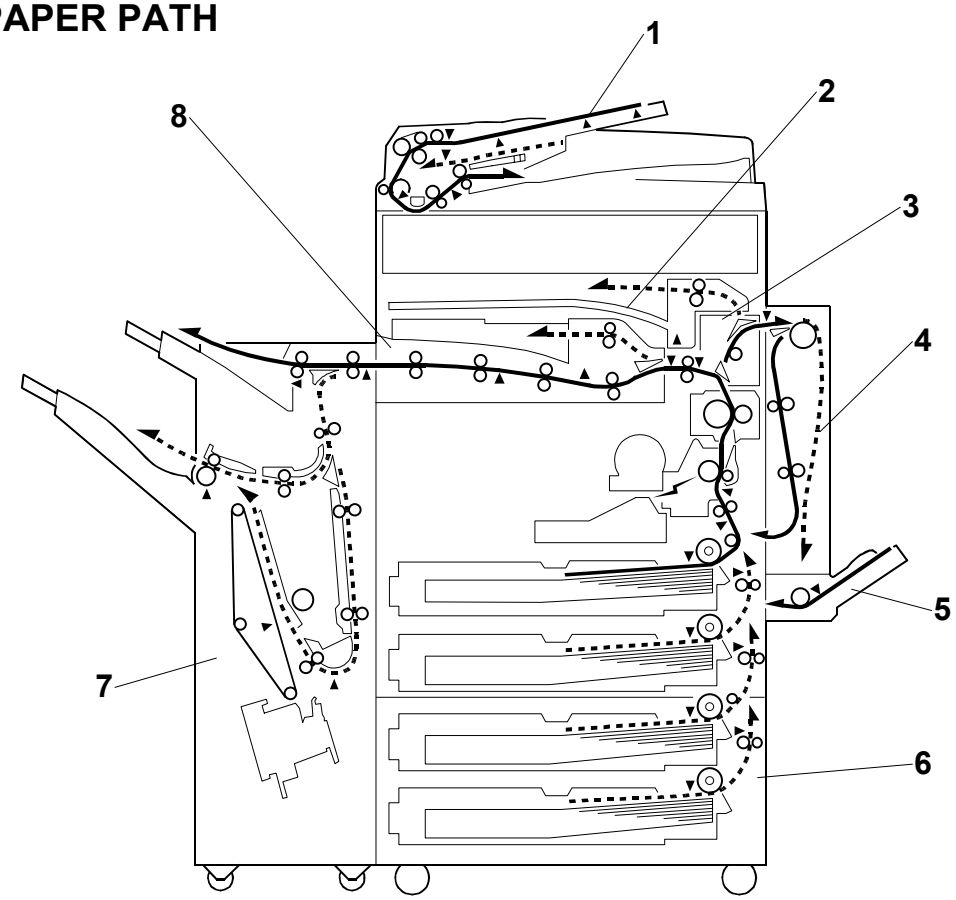
6.1 OVERVIEW

6.1.1 MECHANICAL COMPONENTS



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. Bottom plate
22. Tray heater
23. Polygon mirror motor
24. Laser unit
25. Toner supply bottle holder
26. Drum charge roller
27. Anti-condensation heater
28. Scanner home position sensor

6.1.2 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

6.1.3 ELECTRICAL COMPONENT DESCRIPTIONS

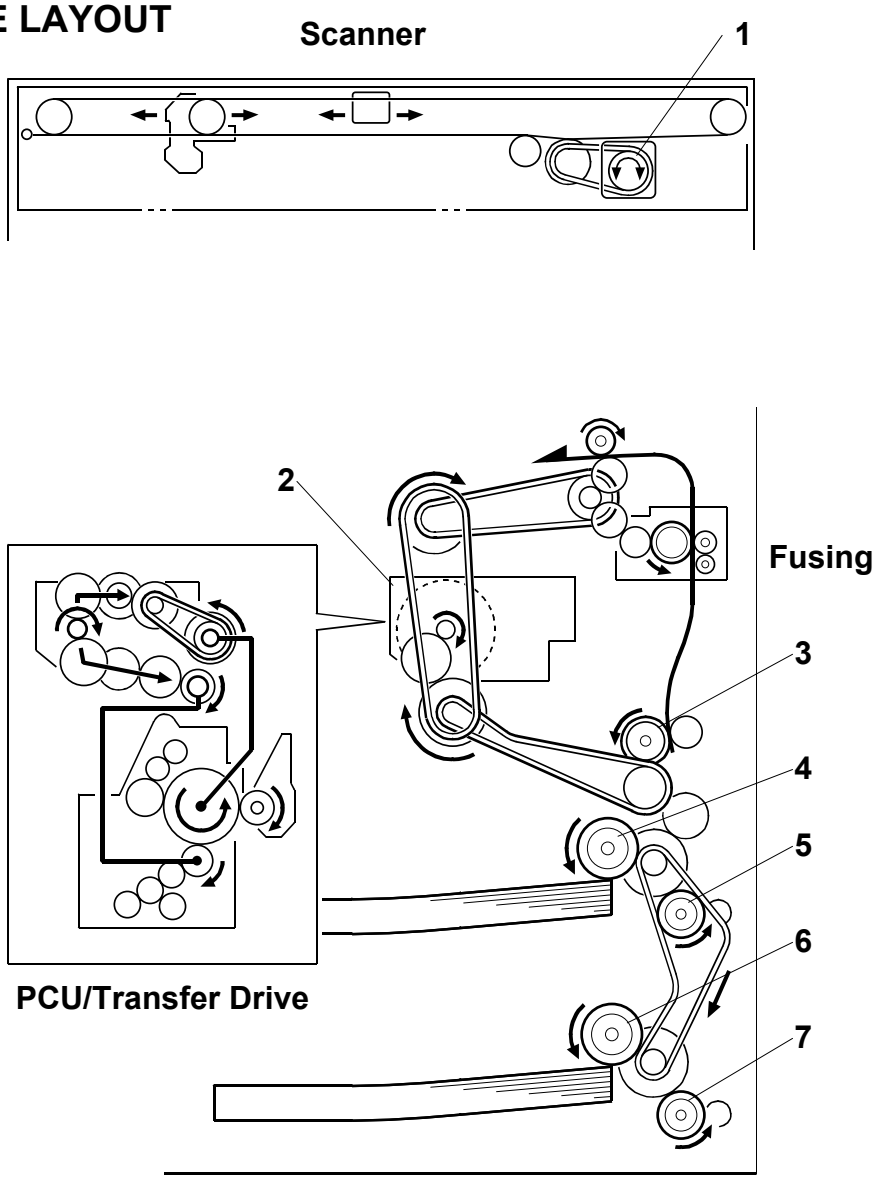
Refer to the electrical component layout on the reverse side of the point-to-point diagram for the location of the components.

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	New PCU Detect	Detects when a new PCU is installed. **Japan Only**
SW8	Front Cover Safety	Cuts the +5VLD and +24V dc power line and detects whether the front cover is open or not.
SW9	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).
S3	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.

Symbol	Name	Function
PCBs		
PCB1	Controller	Controls all applications 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	SBCU (Scanner & Base Engine Control Unit)	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 IPU 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.
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, printer, and scanner features.
PCB10	IPU (Image Processing Unit)	Performs the image processing functions.
Solenoids		
SOL1	Fusing Drive Release	Releases the drive for the fusing unit.
Lamps		
L1	Exposure Lamp	Applies high intensity light to the original for exposure.
L2	Main Fusing Lamp	Heats the center of the hot roller.
L3	Secondary Fusing Lamp	Heats both ends of the hot roller.
L4	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		
TS1	Fusing Thermostats	Opens the fusing lamp circuit if the fusing unit overheats.
TH1	Fusing Thermistors	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.

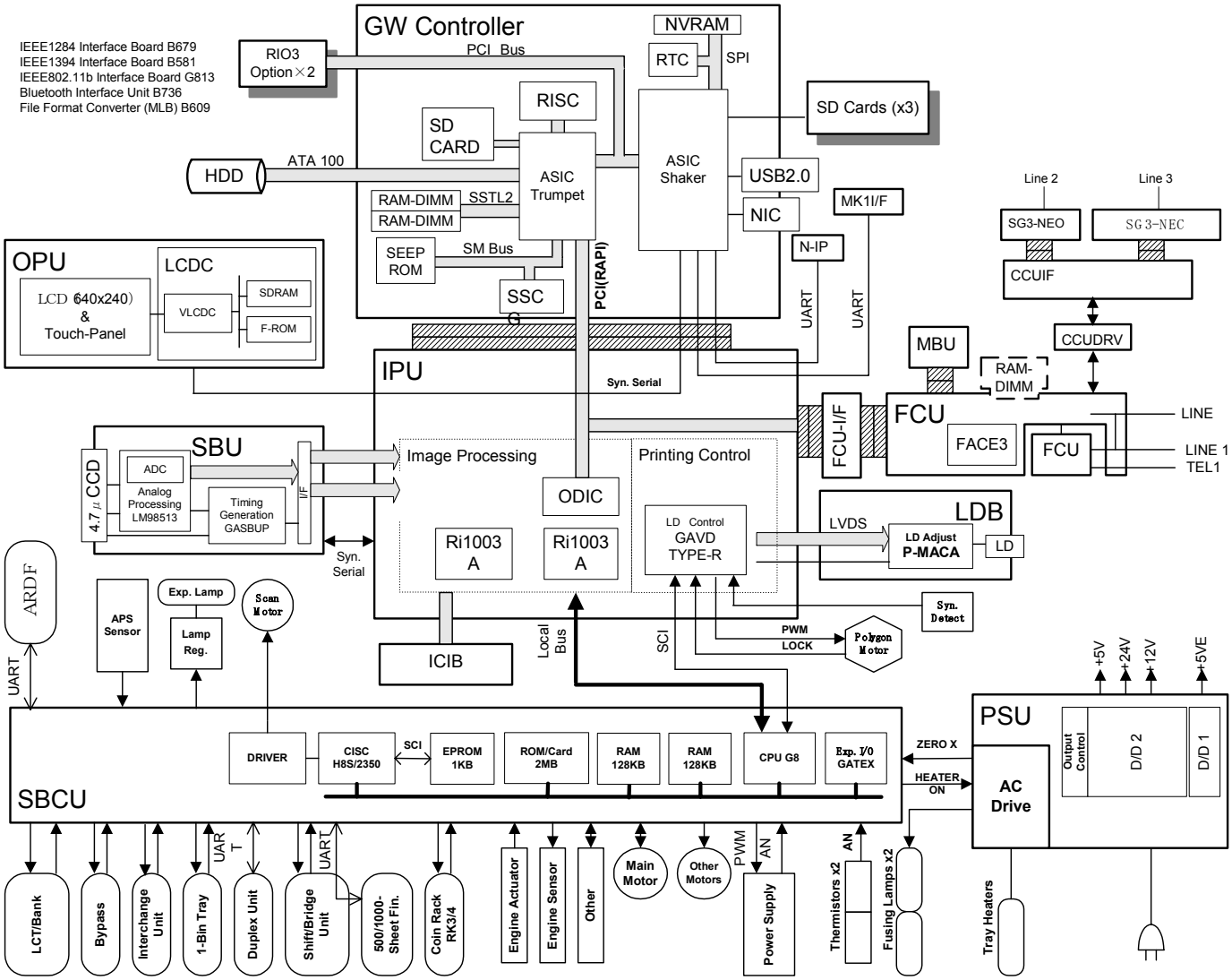
6.1.4 DRIVE LAYOUT



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

6.2 BOARD STRUCTURE

6.2.1 OVERVIEW



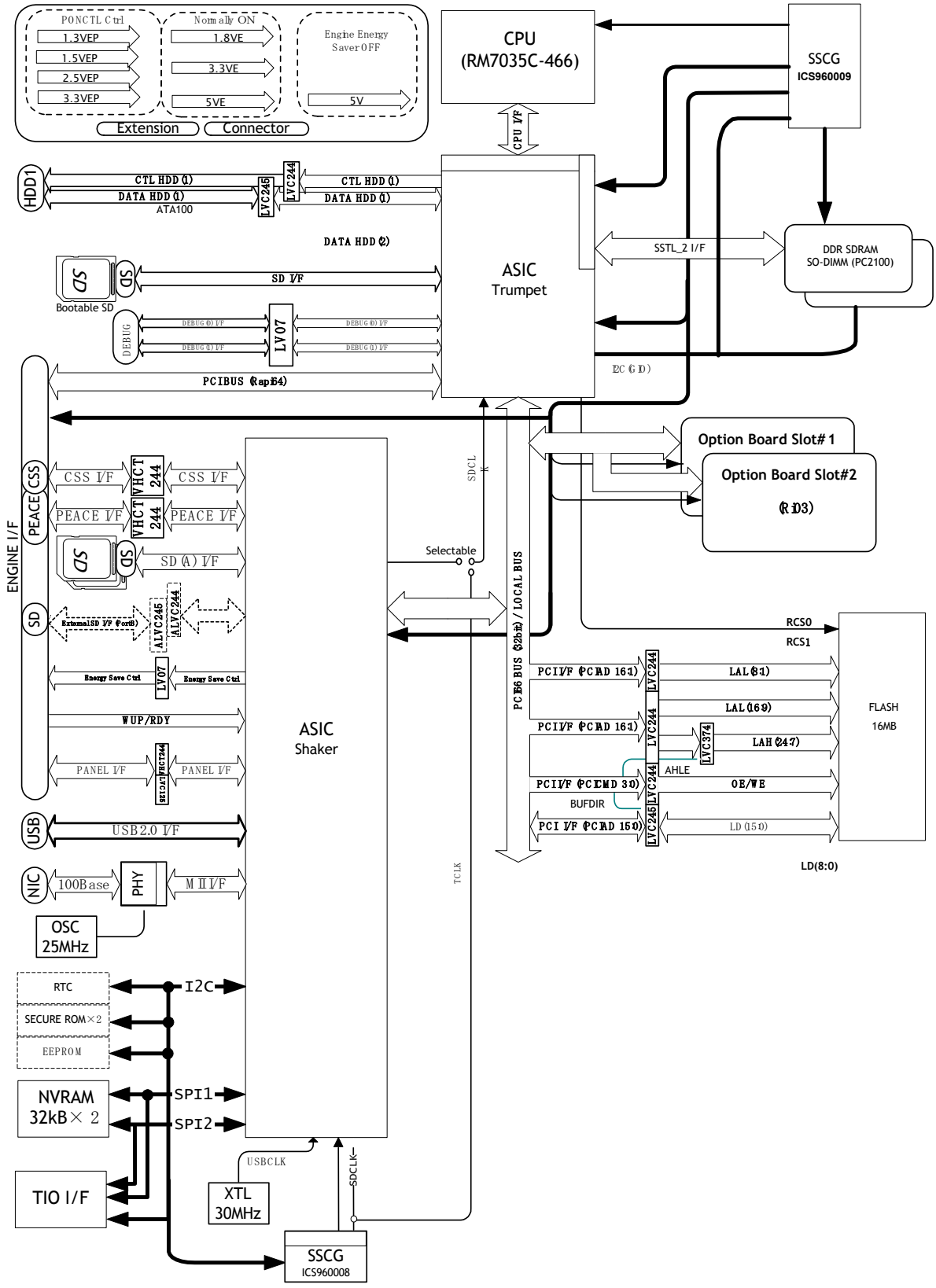
NOTE: Larger image available in pocket at rear of manual.

Here is a summary of the new features of the boards in this machine:

- **GW Controller**. Controls the memory and the fax/scanner/printer options

  Important: The NIB (Network Interface Board) and USB 2.0 interfaces are built into the controller board and do not require installation.
- **SBCU (Scanner Base engine Control Unit)**. This is the scanner and engine control board. It controls the following functions:
  - Engine sequence
  - Timing control for peripherals
  - Image processing control and video control
  - Operation control
  - Drive control for the sensors, motors, and solenoids of the printer and scanner
  - High voltage supply board control
  - Fusing control
- **SBU (Sensor Board Unit)**. Converts the analog signals to 8-bit digital signals, and then sends them to the IPU for processing.
- **IPU (Image Processing Unit)**. The IPU board does the image processing (for example, auto shading, filtering, magnification, gradation processing), and finally sends the data to the LD drive board. The IPU also functions as a motherboard because it has connection points for the GW controller and FCU. The ICIB (Illegal Copy Interface Board) also connects directly to the IPU
- **LDB (Laser Diode Board)**. The laser diode board is controlled directly by the GAVD mounted on the IPU.
- **Operation Panel**. The operation panel LCD is controlled by the VLCDC mounted on the LCDC (LCD Controller).
- **PSU (Power Supply Unit)**. The ac drive circuit is the same as the previous model. The newly-designed PSU consumes only 1W when the machine is not operating, a decrease of 12W.
- **Fax Unit B766**. The FCU (Facsimile Control Unit) is new (it is also used on other new models). The fax unit is an option for this machine. The NCU (Network Control Circuit) that interfaces the fax unit and telephone network is built into the FCU.

6.2.2 CONTROLLER BOARD



NOTE: Larger image available in pocket at rear of manual.

The controller controls all applications, including copier, printer, scanner, and fax applications. To add the optional printer, or scanner function, an SD card must be inserted in an SD card slot of the controller. The fax option, however, requires installation of an FCU.

ASCI Trumpet. Contains the dedicated GW controller chips of the shared resources (the CPU, memory, and HDD hardware) for the copying and printing functions.

- **CPU (RM7035C-466)** The central processing unit that controls the operation of the controller board.
- **HDD**. A 2.5-in HDD unit (capacity more than 20 GB) can be connected using the IDE I/F. The disks are portioned as shown in the table below.
- **SD (Bootable C3).** Service slot for firmware version updates, moving applications to other SD cards, and downloading/uploading NVRAM contents.
- **DDR SDRAM**. The image memory for the printer function where image compression, image rotation and other operations are done. (Standard: 128 MB, Option: 256 MB)

ASIC Shaker. Controls the following functions: USB, Ethernet, PCI (optional boards for Bluetooth, FireWire, Wireless LAN, and Centronics), debug serial, I2C, applications on SD cards mounted in SD card slots C1 and C2, and the energy save features.

- **SD**. This is the interface for SD card slots C1, and C2. C1 is for the Printer/Scanner B767. C2 is for PostScript3 B757 or Data Overwrite Security B735.
- **Board Option Slots 1, 2**. Only one of the following options can be installed in either Slot 1 or Slot 2: IEEE1284 Interface Board B679 (Centronics), IEEE802.11b G813 (Wireless LAN), IEEE1394 Interface Board B581 (FireWire), Bluetooth Interface Unit B736. The File Format Converter B609 (MLB) can be installed in either slot:
- **Flash ROM**. Stores the program. Maximum capacity: 16 MB.
- **USB**. The interface for USB 2.0 devices. Supports both low-speed and high-speed modes. USB support is built-into the controller. No installation is required for the USB function. But, SP5895 001 must be set to "**1**" to enable the network functions.
- **NIB**. The Ethernet interface connection. Network support is built-into the controller. No installation is required for the network function. But, SP5895 002 must be set to "**1**" to enable the network functions.
- **NVRAM**. The 64 MB memory (32 MBx2) that stores many settings: SP mode settings, UP mode settings, system log information, user accounts, etc. Also, the number of user accounts can be increases by installing an optional NVRAM (EEPROM).

The hard disk is partitioned as shown below.

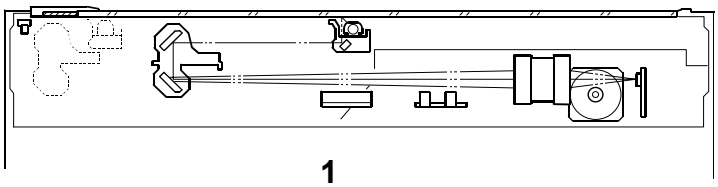
Partition	Size (MB)	Function	Power Off
File System 1	500	Downloaded fonts, forms	Remains
File System 2	500	Job spooling area	Remains
File System 3	2,000	Work data area	Remains*1
Image LS*2	3,955	Document server, local storage archive	Remains*3
Image Temp	3,870	Collation, sample prints, locked prints	Erased*3
SAF Thumbnails	300	Stores SAF thumbnails	Remains
Job Log	200	Job log	Remains
Address Book	300	Stores address book data	Remains
Image Transfer	1,002	Stores images for transfer	Remains
Capture	500	Stores captured images	Remains
Debug	500	Object and swap area for debugging	Remains
SDK	1,200	Used for SDK application	Remains
Debug Log	150	Debug log	Remains
Mail Box	200	Stores images for mail box	Remains
Others	542	Miscellaneous	Remains
Total	**15,629**	---	---

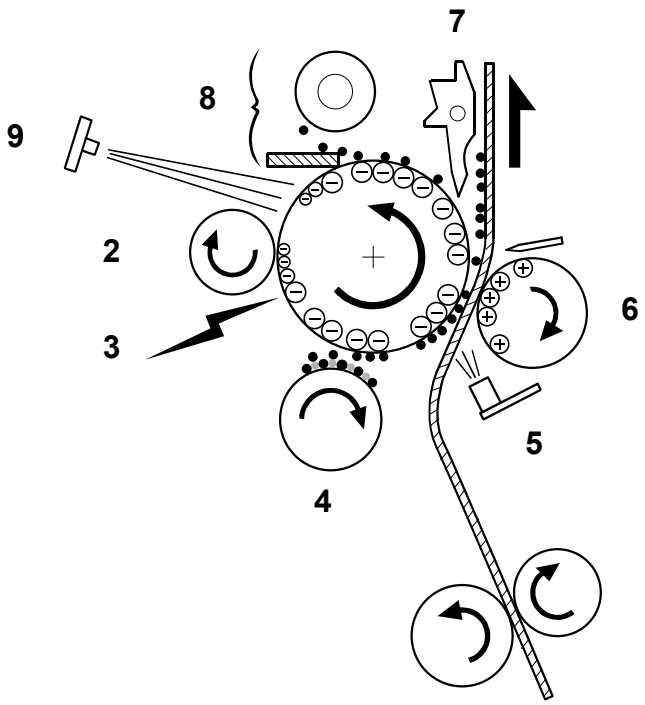
*1 Used for document server.

*2 When an application uses an image page, it uses the Image LS area first. If this area is not available, it uses the Image TMP area.

*3 Commonly used for applications to store copy, printer, fax, and scanner data. Storage capacity: About 9,000 pages (3,000 files).

6.3 COPY PROCESS





1. EXPOSURE

A xenon lamp exposes the original. Light reflected from the original passes to the CCD, Were 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 IPU 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 Were 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

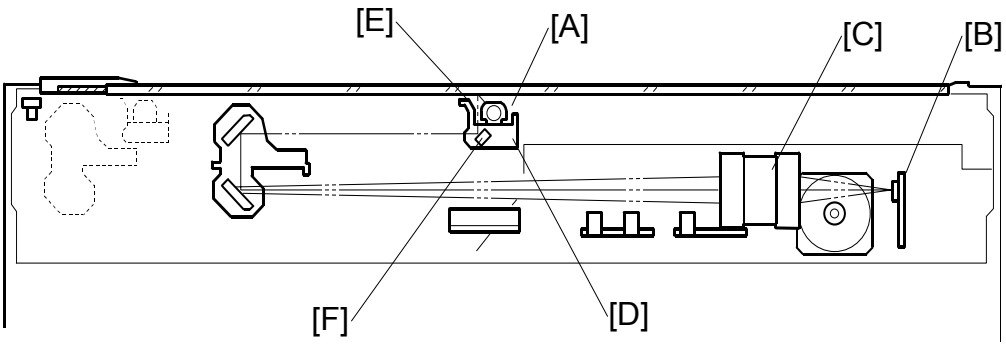
The cleaning blade removes any toner remaining on the drum surface after the image transfers to the paper.

9. QUENCHING

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

6.4 SCANNING

6.4.1 OVERVIEW

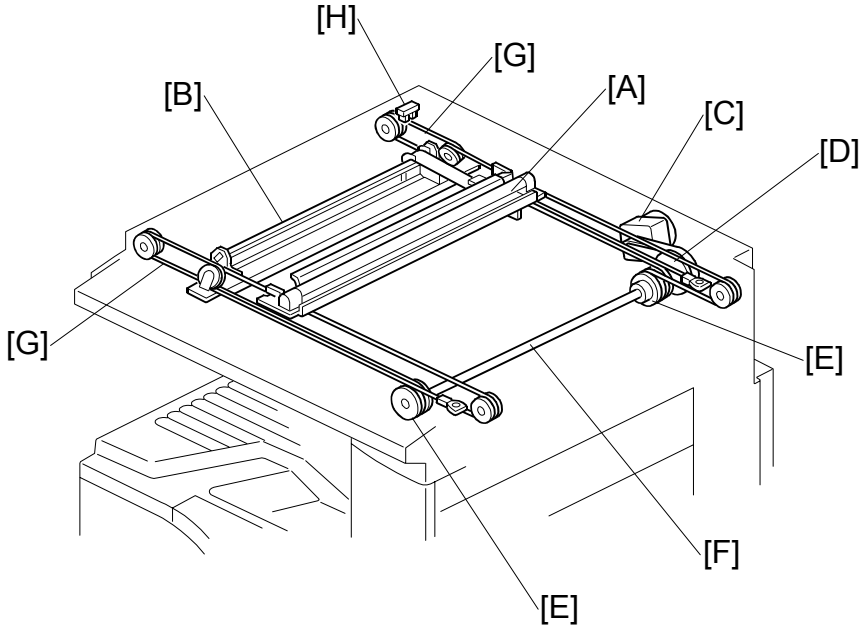


The original is illuminated by the exposure lamp (a xenon lamp in this model) [A]. The image is reflected onto a CCD (charge coupled device) [B] via the 1st, 2nd, 3rd mirrors, and lens [C].

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.

6.4.2 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 150 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 IPU board.

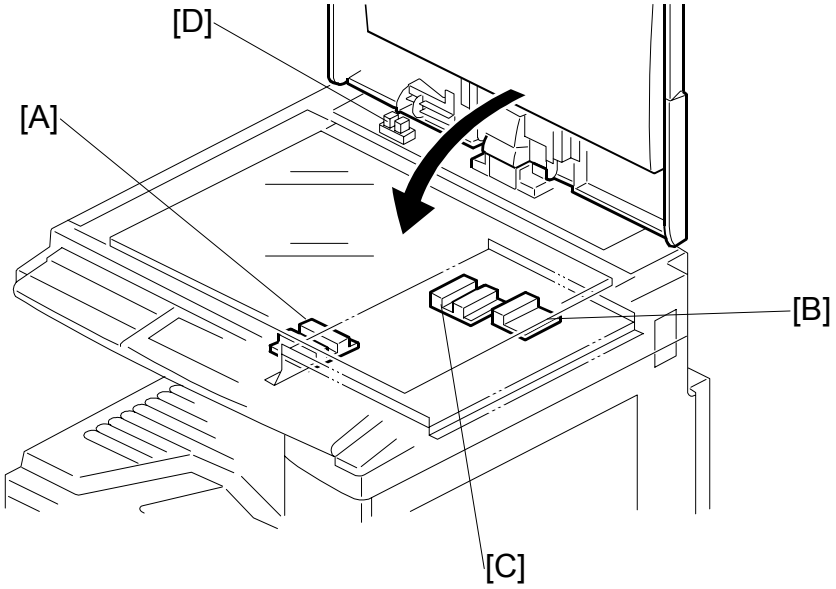
Magnification in the sub-scan direction can be adjusted by changing the scanner drive motor speed using SP4008. Magnification in the main scan direction can be adjusted using SP4009.

- 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 IPU board, like for book mode.

Magnification in the sub-scan direction can be adjusted by changing the ADF motor speed using SP6006. In the main scan direction, it can be adjusted with SP4009, like for book mode.

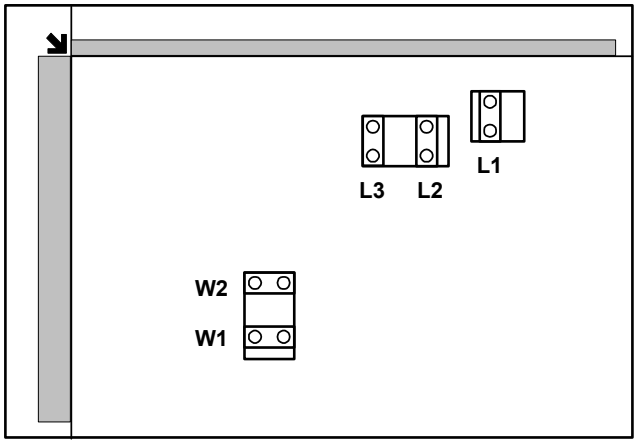
6.4.3 ORIGINAL SIZE DETECTION: PLATEN MODE



In the optics cavity for original size detection, there are five reflective sensors in three APS units [A], [B], and [C]. 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**	**L3**	**L2**	**L1**	**W2**	**W1**
A3	11" x 17"	O	O	O	O	O
B4	10" x 14"	O	O	O	O	X
Foolscap	8.5" x 13"	O	O	X	X	X
A4-L	8.5" x 11"	O	O	X	X	X
B5-L		O	X	X	X	X
A4-S	11" x 8.5"	X	X	X	O	O
B5-S		X	X	X	O	X
A5-L, A5-S		X	X	X	X	X

NOTE: **L**: Lengthwise, **S**: Sideways, **O**: High (paper present), **X**: Low

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).

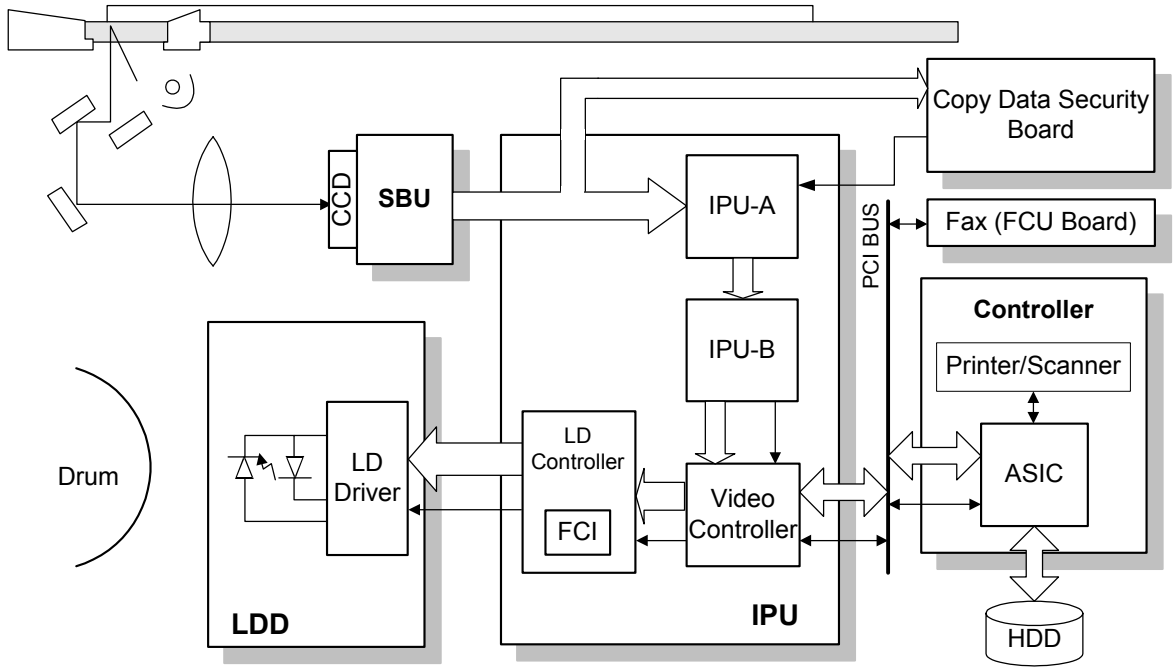
The above table shows the outputs of the sensors for each original size. This original size detection method eliminates the necessity for a pre-scan and increases the machine productivity.

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.

6.5 IMAGE PROCESSING

6.5.1 OVERVIEW



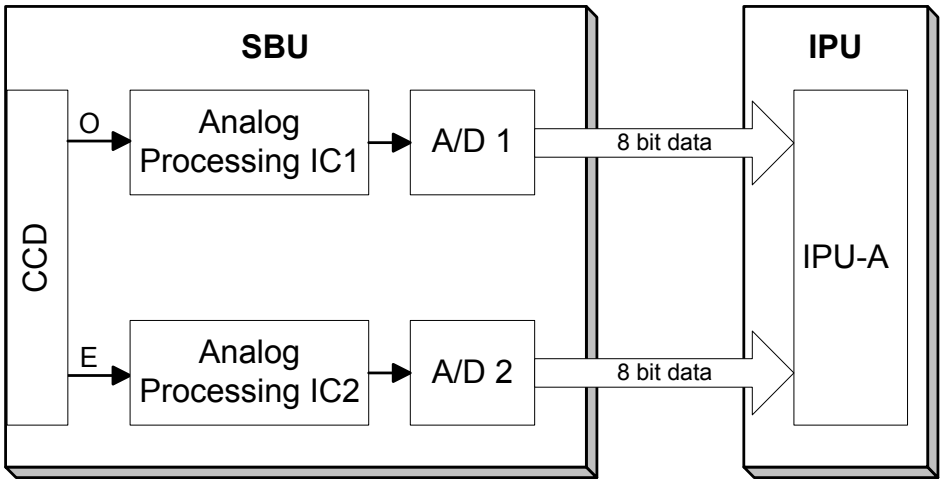
The CCD generates an analog video signal. The SBU (Sensor Board Unit) converts the analog signal to an 8-bit digital signal, then it sends the digital signal to the IPU (Image Processing Unit) board.

The IPU board performs the image processing, such as auto shading, filtering, magnification, gradation processing.

The ASIC on the controller board performs the image editing, such as image repeat, double copy.

Finally, the IPU board sends the video data to the LD drive board.

6.5.2 SBU (SENSOR BOARD UNIT)



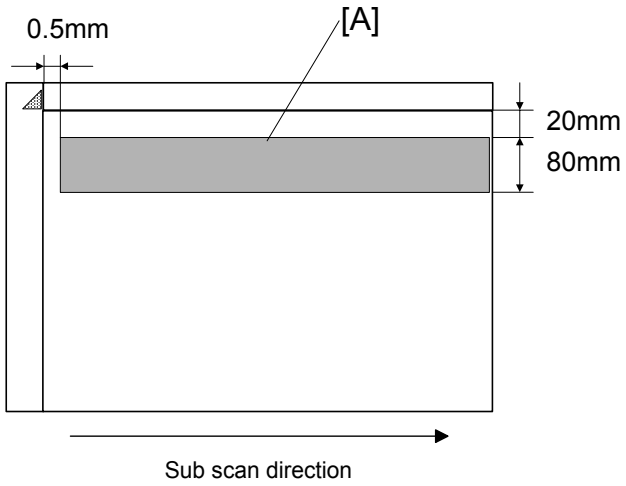
The CCD converts the light reflected from the original into an analog signal. The CCD line has 7,400 pixels and the resolution is 600 dpi (23.6 lines/mm).

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.
3. Auto Gain Control
   Adjusts the gain curve for the scanned image density.

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 goes to the IPU board.

6.5.3 AUTO IMAGE DENSITY



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 SBU detects the peak white level for each scan line. The IPU performs the ADS function in accordance with the peak white level.

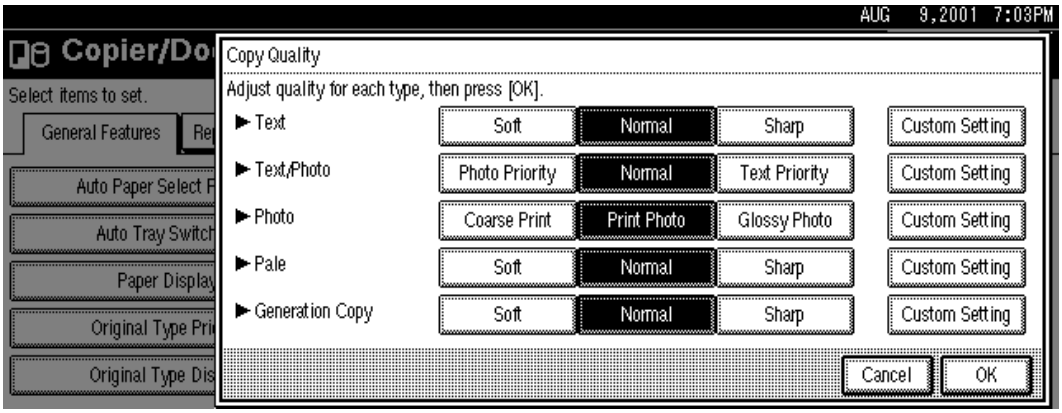
When an original with a gray background is scanned, the density of the gray area is the peak white level density. Therefore, the original background will not appear on copies. Because peak level data is taken for each scan line, ADS corrects for any changes in background density down the page.

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.

6.5.4 ORIGINAL TYPE SETTINGS

The user can select one of the following modes with the User Tools screen: Text, Text/Photo, Photo, Pale, Generation. Each of these modes has a range of different settings (e.g. Soft, Normal, Sharp, etc). For each mode, a Custom Setting option is also available. This Custom Setting holds the values selected with the SP modes, which can be adjusted to meet special requirements that cannot be covered by the standard settings.

To display this screen, press User Tools/Counter, press Copier/Document Server Settings, press the General Features tab, and then press Copy Quality.

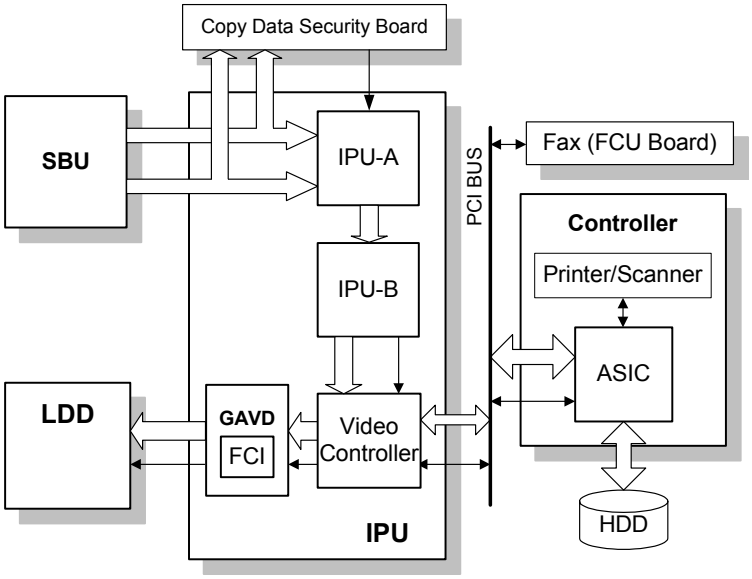


Mode	Function
Text	Best reproduction of text and sharp lines. Ignores background texture. (☛ p.6-25 Text Mode)
Text/Photo	Good reproduction of mixed text and photographs with accurate grayscaling, better than that achieved in the Text mode. (☛ p.6-27 Text/Photo Mode)
Photo	Best possible reproduction of photographs. (☛ p.6-26 Photo Mode)
Pale	Reproduction similar to text mode, but of lower contrast. Ideal for copying thin originals. (☛ p.6-28 Pale Mode)
Generation Copy	Attempts to achieve the best reproduction of copied originals that are faded because they are copies of copies. (☛ p.6-29 Generation Copy)

In addition, there are two main image processing modes: grayscale processing and binary picture processing. When no optional hard disk has been installed, the machine uses binary picture processing. However, when the optional hard disk has been installed, the machine uses grayscale processing. The user or technician cannot select the mode.

6.5.5 IPU (IMAGE PROCESSING UNIT)

Overview



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

IPU-A

- Auto shading
- Pre-filtering
- Magnification
- Test pattern generation

IPU-B

- Filtering (MTF and smoothing)
- ID gamma correction
- Grayscale processing
- Binary picture processing
- Error diffusion
- Dithering

Video Controller

- Video path control

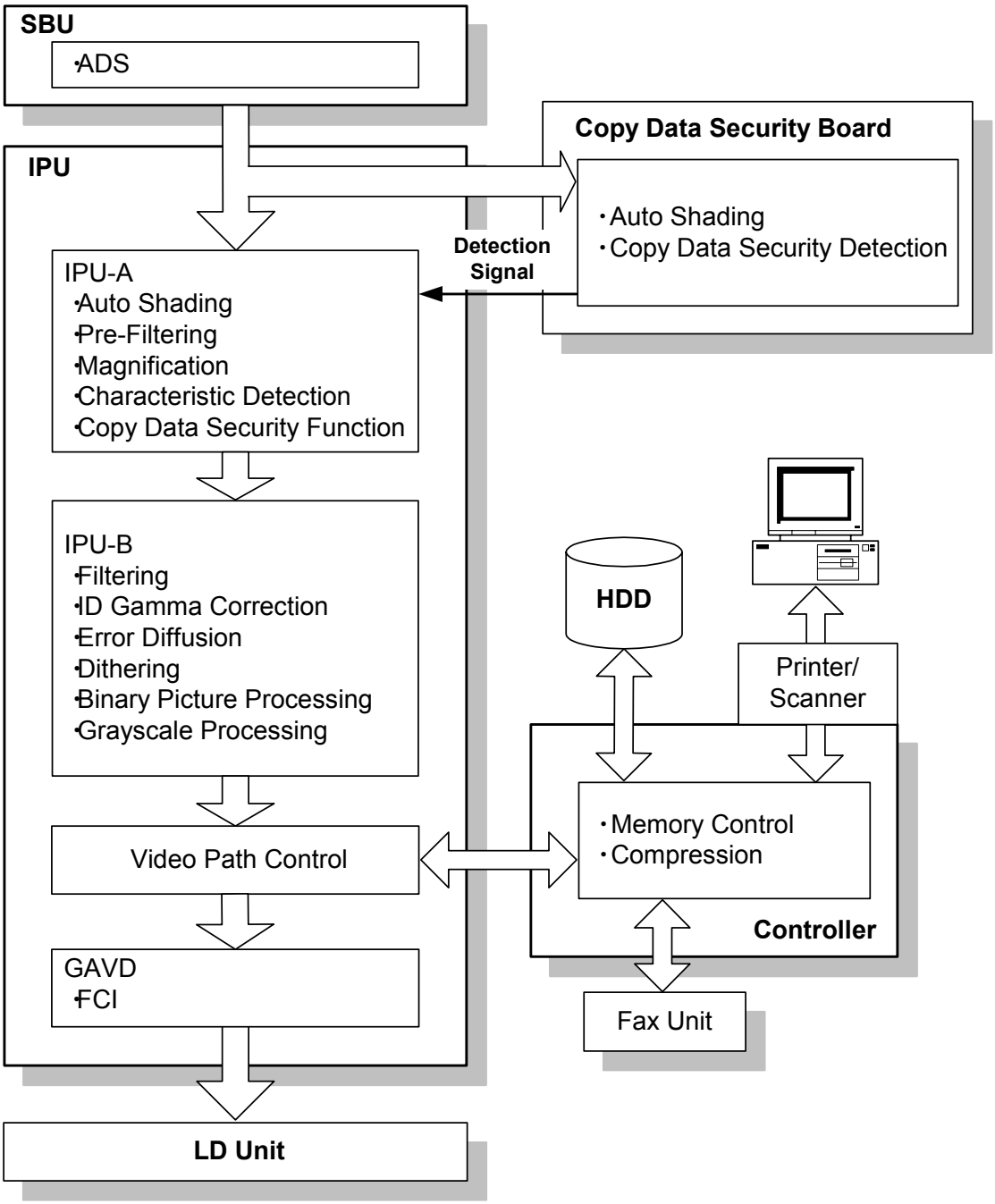
GAVD

- FCI (Fine Character and Image)

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

Image Processing Path

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 settings and SP modes are used for each image processing step.

Text Mode

		Text Mode			
		Soft	**Normal**	**Sharp**	**Custom Setting**
ADS (SBU)		As selected at the operation panel			
Shading Correction	~34%	Enabled			
	35%~				
Small Smoothing Filter	~34%	Three-line filter			
	35%~	One-line filter			
Main Scan Magnification	~34%	Enabled			
	35%~				
Mirroring	~34%	Enabled only in the ADF mode			
	35%~				
Characteristic Detection	~34%	None			
	35%~	Weak	Middle	Strong	4-903-2 ~ 4
MTF/Smoothing Filter	~34%	MTF (Weak)	MTF (Medium)	MTF (Strong)	4-903-1
	35%~	Character (Weak)	Character (Medium)	Character (Strong)	4-903-2 ~ 4
Independent Dot Erase	~34%	None			4-904-1
	35%~	None			
Background Erase	~34%	None			4-904-6
	35%~	None			
γ Correction	~34%	Text			4-904-11
	35%~	Character (Text)			
Gradation	~34%	Normal error diffusion		Binary picture processing	4-903-1
	35%~	Character error diffusion		Binary picture processing	4-903-2 ~ 4
Line Width Correction	~34%	2-907-1			
	35%~				

Photo Mode

		Photo Mode			
		Coarse Print	**Print Photo**	**Glossy Photo**	**Custom Setting**
ADS (SBU)		As selected at the operation panel			
Shading Correction	~34%	Enabled			
	35%~				
Small Smoothing Filter	~34%	Three-line filter			
	35%~	One-line filter			
Main Scan Magnification	~34%	Enabled			
	35%~				
Mirroring	~34%	Enabled only in the ADF mode			
	35%~				
Characteristic Detection	~34%	None			
	35%~	None			4-903-6 ~ 8
MTF/Smoothing Filter	~34%	Character	Smoothing		4-903-5
	35%~	Smoothing		Character	4-903-6 ~ 8
Independent Dot Erase	~34%	None			4-904-2
	35%~	None			
Background Erase	~34%	None			4-904-7
	35%~	None			
γ Correction	~34%	Dither (16x16)	Dither (8x8)	Dither (Character)	4-904-12
	35%~				
Gradation	~34%	Dither (16x16)	Dither (8x8)	Normal error diffusion	4-903-5
	35%~			Character error diffusion	4-903-6 ~ 8
Line Width Correction	~34%	2-907-2			
	35%~				

Text/Photo Mode

		Text/Photo Mode			
		Photo priority	**Normal**	**Text Priority**	**Custom Setting**
ADS (SBU)		As selected at the operation panel			
Shading Correction	~34%	Enabled			
	35%~				
Small Smoothing Filter	~34%	Three-line filter			
	35%~	One-line filter			
Main Scan Magnification	~34%	Enabled			
	35%~				
Mirroring	~34%	Enabled only in the ADF mode			
	35%~				
Characteristic Detection	~34%	None			
	35%~	Strong	Middle	Weak	4-903-10 ~ 12
MTF/Smoothing Filter	~34%	MTF (Weak)	MTF (Medium)	MTF (Strong)	4-903-9
	35%~	Character (Weak)	Character (Medium)	Character (Strong)	4-903-10 ~ 12
Independent Dot Erase	~34%	None			4-904-3
	35%~	None			
Background Erase	~34%	None			4-904-8
	35%~	None			
γ Correction	~34%	Text/Photo			4-904-13
	35%~	Character (Text/Photo)			
Gradation	~34%	Normal error diffusion			
	35%~	Character error diffusion			
Line Width Correction	~34%	2-907-3			
	35%~				

Pale Mode

		Pale Mode			
		Photo priority	**Normal**	**Text Priority**	**Custom Setting**
ADS (SBU)		As selected at the operation panel			
Shading Correction	~34%	Enabled			
	35%~				
Small Smoothing Filter	~34%	Three-line filter			
	35%~	One-line filter			
Main Scan Magnification	~34%	Enabled			
	35%~				
Mirroring	~34%	Enabled only in the ADF mode			
	35%~				
Characteristic Detection	~34%	None			
	35%~	Weak	Middle	Strong	4-903-14 ~ 16
MTF/Smoothing Filter	~34%	MTF (Weak)	MTF (Medium)	MTF (Strong)	4-903-13
	35%~	Character (Weak)	Character (Medium)	Character (Strong)	4-903-14 ~ 16
Independent Dot Erase	~34%	None			4-904-4
	35%~	None			
Background Erase	~34%	None			4-904-9
	35%~	None			
γ Correction	~34%	Pale			4-904-14
	35%~	Character (Pale)			
Gradation	~34%	Normal error diffusion			
	35%~	Character error diffusion			
Line Width Correction	~34%	2-907-4			
	35%~				

Generation Copy

		Generation Copy Mode			
		Photo priority	**Normal**	**Text Priority**	**Custom Setting**
ADS (SBU)		As selected at the operation panel			
Shading Correction	~34%	Enabled			
	35%~				
Small Smoothing Filter	~34%	Three-line filter			
	35%~	One-line filter			
Main Scan Magnification	~34%	Enabled			
	35%~				
Mirroring	~34%	Enabled only in the ADF mode			
	35%~				
Characteristic Detection	~34%	None			
	35%~	Weak	Middle	Strong	4-903-18 ~ 20
MTF/Smoothing Filter	~34%	MTF (Weak)	MTF (Medium)	MTF (Strong)	4-903-17
	35%~	Character (Weak)	Character (Medium)	Character (Strong)	4-903-18 ~ 20
Independent Dot Erase	~34%	Weak			4-904-5
	35%~	Weak			
Background Erase	~34%	Weak			4-904-10
	35%~	Weak			
γ Correction	~34%	Generation copy			4-904-15
	35%~	Character (Generation copy)			
Gradation	~34%	Normal error diffusion			
	35%~	Character error diffusion			
Line Width Correction	~34%	2-907-5			
	35%~				

Auto Shading

Auto shading does two things.

- Zeroes the black level for each scan line of data.
- Corrects for variations in white level across the main scan.

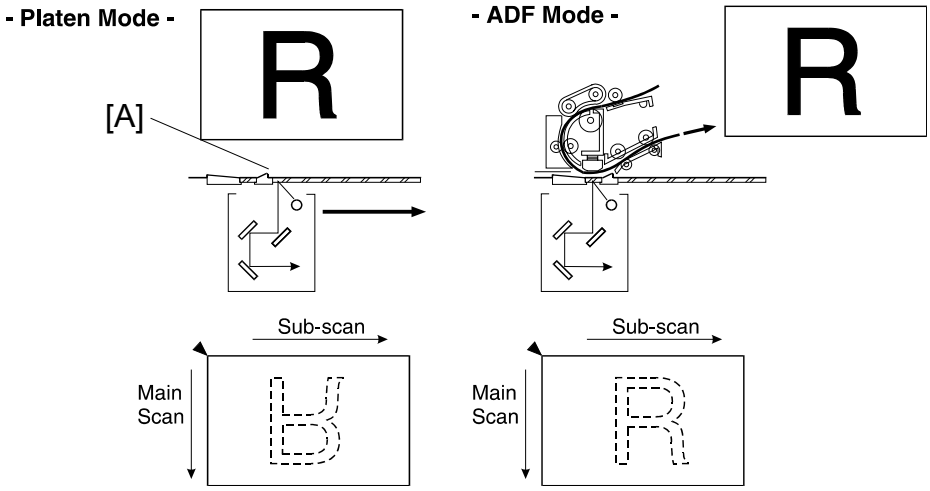
Pre-Filtering

Pre-filter smoothes mainly parallel lines in the main scan direction and extended lines in the sub-scan direction. This reduces moiré and spurious noise in images.

Main Scan Magnification/Reduction

Changing the scanner speed enables reduction and enlargement in the sub-scan direction. However, the IPU-A 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-A stores each line in a LIFO (Last In First Out) memory.

Characteristic Detection

This function uses software filters to detect edge areas, non-edge areas, and areas of shaded dot patterns.

The result determines the image processing that will be applied to each pixel.

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, characteristic filter, and independent dot erase.

Depending on the original mode and the reproduction ratio, the machine will use either MTF/smoothing, or the filter determined by characteristic detection.

If MTF/smoothing is used, it is applied to all areas of the original, regardless of whether they are edge areas, non-edge areas, or independent dots.

- The MTF filter emphasizes sharpness and is used in all original types except Photo mode.
- The smoothing filter is used in Photo mode.

If the characteristic filter is used, the filter for each pixel depends on the image data type that was detected by characteristic detection.

MTF Filter

An MTF filter is used for all original types except Photo mode.

When the reproduction ratio is less than 35%, this filter is applied to all image data pixels, regardless of whether they are in an edge area or non-edge area.

When the reproduction ratio is 35% or more, the type of MTF filter used for each pixel depends on the results of characteristic detection.

Smoothing Filter

A smoothing filter is used in Photo mode instead of MTF. It is applied to all image data pixels, regardless of whether they are in an edge area or non-edge area.

With some combinations of reproduction ratio and image mode, the type of smoothing used for each pixel depends on the results of characteristic detection (see the Photo mode table in SP Modes for Each Processing Step).

Characteristic Filter

A characteristic filter is applied instead of MTF, smoothing, and ID gamma correction with some combinations of original type and reproduction ratio. See the ‘SP Modes for Each Processing Step’ section.

For example, In text mode, for the ‘Normal’ original type, if the reproduction ratio is less than 35%, MTF (medium) is used for all pixels in the image. However, if the reproduction ratio is 35% or more, the ‘medium’ characteristic filter is used, and the processing depends on whether the pixel was in an edge area, a non-edge area, or in an area shaded using a dot pattern.

Each characteristic filter consists of a combination of the following features: MTF, smoothing, error diffusion, dithering, ID gamma correction. For each of these features, the machine chooses from two types when making up a characteristic filter.

Independent Dot Erase

Independent dot erase removes unwanted dots from the image.

Independent dot erase is enabled only for Generation Copy mode (according to the default settings). However, for the "Custom Setting" original modes, independent dot detection can be enabled and adjusted with SP4-904-2~4. With a larger SP setting, more dots are detected as independent dots and erased, even if the dot density is high. However, dots in mesh-like images may be mistakenly detected as independent dots.

Background Erase

By default, this process is disabled in all original modes. However, it can be enabled with SP mode.

Usually, dirty background is erased using the Auto Image Density (ADS) function. However, sometimes, dirty background areas will still appear. These can be erased with this function.

The threshold level for erasing can be changed with SP4-904-6~10.

ID Gamma (γ) Correction

The machine automatically selects the most appropriate ID gamma correction based on the selected original type.

Also, for certain combinations of reproduction ratio and original type, characteristic detection is used. In this case, the machine can use one of two gamma correction tables. The one that is used is decided separately for each pixel, and depends on the results of characteristic detection.

Gradation Processing

Overview

There are four types of gradation processing:

- Grayscale processing: This has 4 output levels for each pixel.
- Binary picture processing: This has only two output levels (black and white).
- Error diffusion: There are two error diffusion processing types (normal and characteristic detection)
- Dithering: There are two dithering processing types (normal and characteristic detection).

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.

Note that although the LDD can create 256 levels per pixel, the machine only uses 8 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).

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.

There are two types of error diffusion processing: One is ‘normal’. The other is part of the characteristic detection process, in which the error diffusion method is determined separately for each pixel. The error diffusion type (normal or characteristic) depends on the reproduction ratio and the original type (refer to the SP Modes for Each Image Processing Step tables).

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.

Line width correction

This function is effective in all original modes.

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.

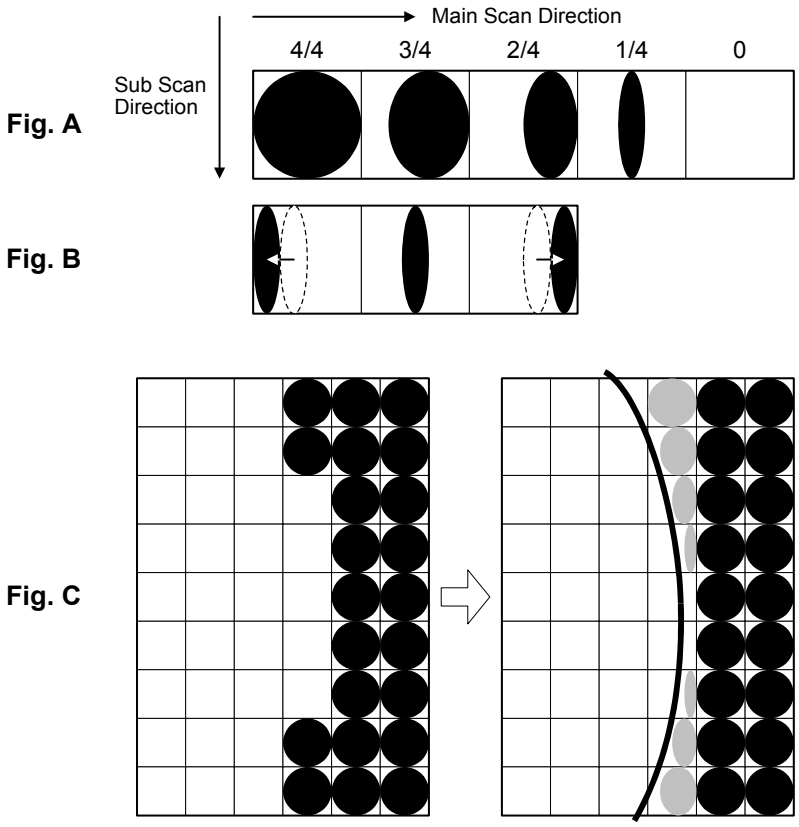
Line width correction is done in the GAVD chip on the LDD board.

The line width correction type can be selected with SP2-907.

6.5.6 VIDEO CONTROL UNIT (GAVD)

Fine Character and Image (FCI)

The FCI circuit performs image smoothing.



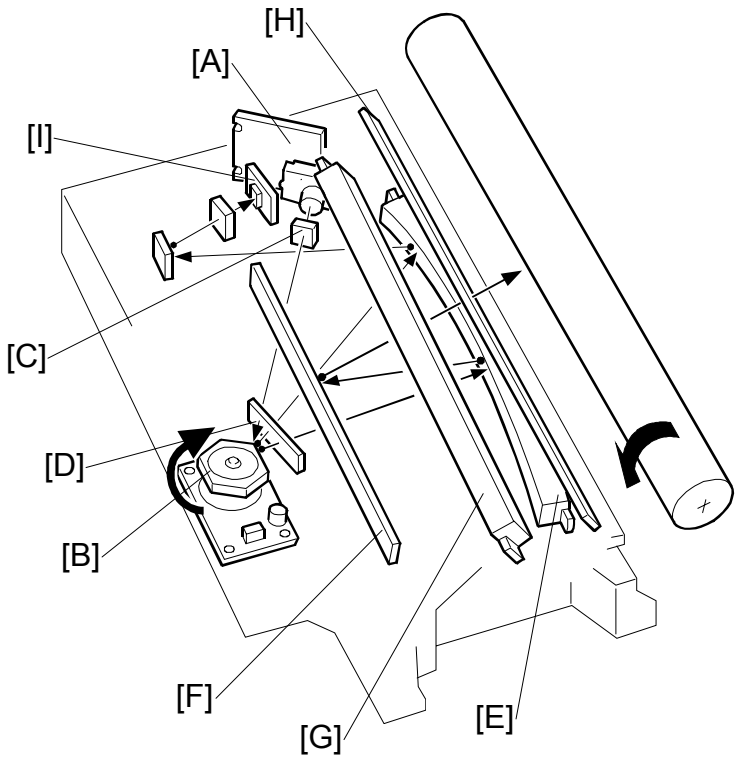
Usually, binary picture processing generates jagged edges on characters, as shown in the above illustration. These are reduced using edge smoothing. The FCI changes the laser pulse duration and position for certain pixels.

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.

This function only affects the received image for fax mode and for printer mode, even if copy mode is also using binary picture processing.

6.6 LASER EXPOSURE

6.6.1 OVERVIEW



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

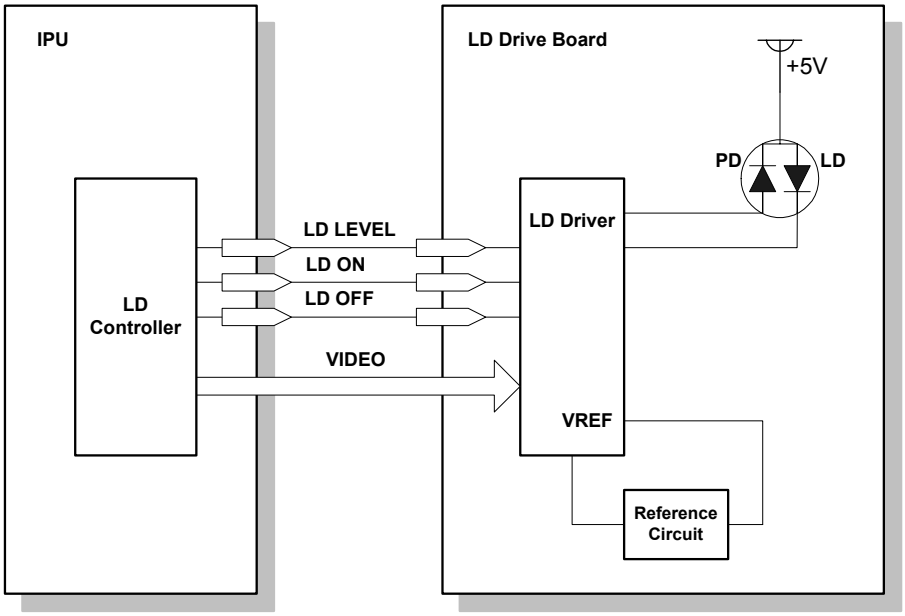
The LD unit [A] outputs a laser beam to the polygon mirror [B] through the cylindrical lens [C]. The shield glass [D] prevents dust from reaching the polygon mirror.

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 35,433 rpm for 600 dpi.

6.6.2 AUTO POWER CONTROL (APC)

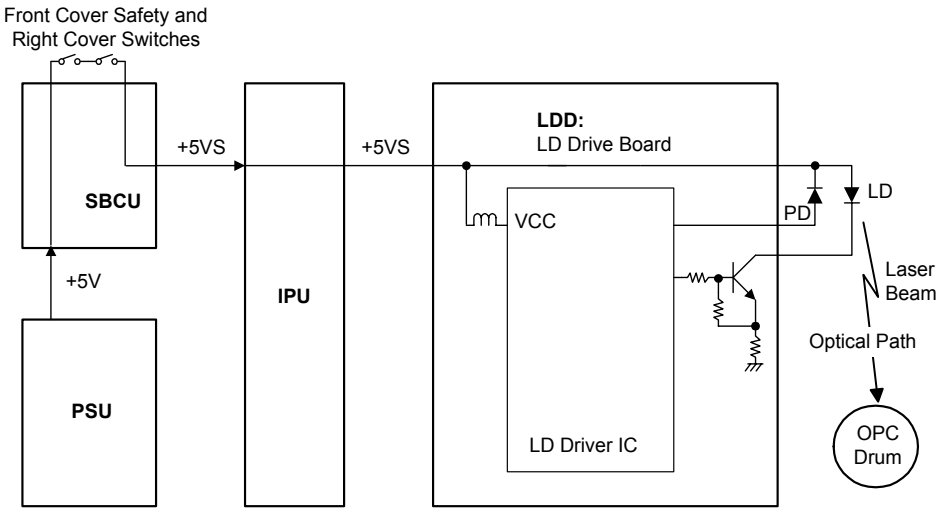


The LD driver IC drives the laser diode. To prevent the intensity of the laser beam from changing because of the temperature, the machine monitors the current passing through the laser diode (LD). The machine adjusts the current to the laser diode by comparing it with the reference level from the reference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

6.6.3 LD SAFETY SWITCH

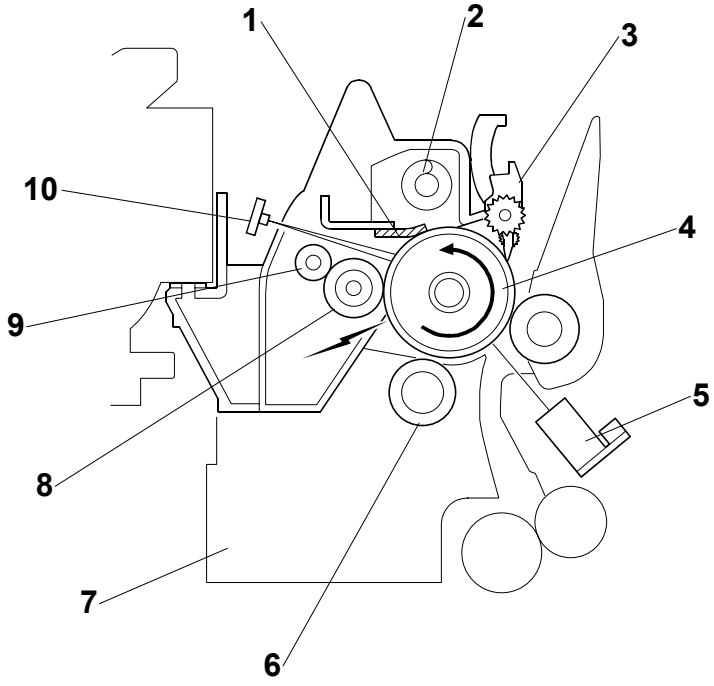


To ensure technician and user safety and to prevent the laser beam from inadvertently switching on during servicing, safety switches are located at the front and right covers. The switches are installed on the +5VLD line coming from the power supply unit through the SBCU and IPU boards.

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

6.7 PHOTOCONDUCTOR UNIT (PCU)

6.7.1 OVERVIEW



The PCU consists of the components shown in the above illustration. An organic photoconductor (OPC) drum (diameter: 30 mm) is used in this machine.

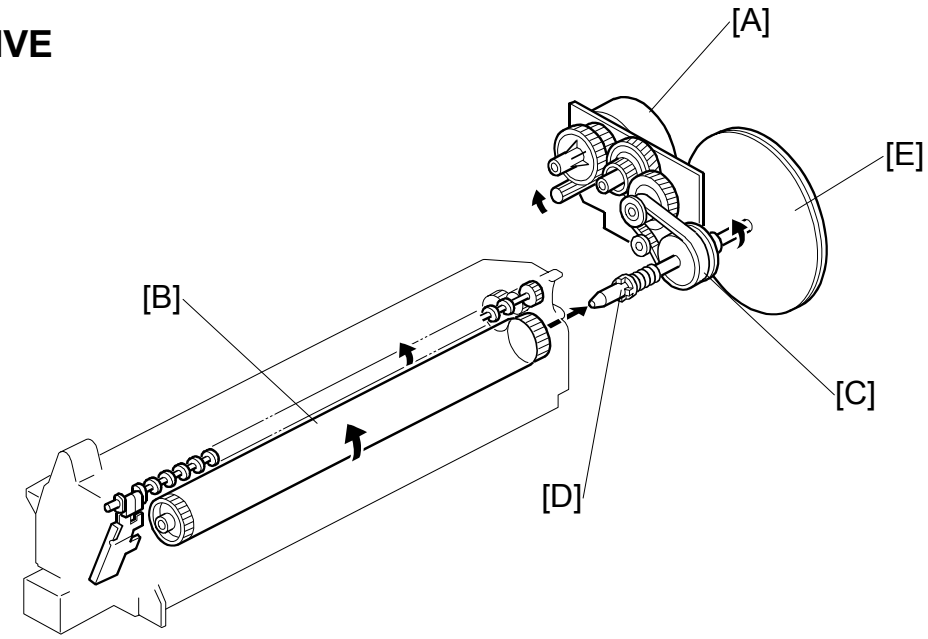
1. Cleaning Blade
2. Toner Collection Coil
3. Pick-off Pawl
4. OPC Drum
5. ID Sensor (see note)
6. Development Roller
7. Development Unit
8. Charge Roller
9. Charge Roller Cleaning Roller
10. Quenching Lamp (see note)

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).

6.7.2 DRIVE

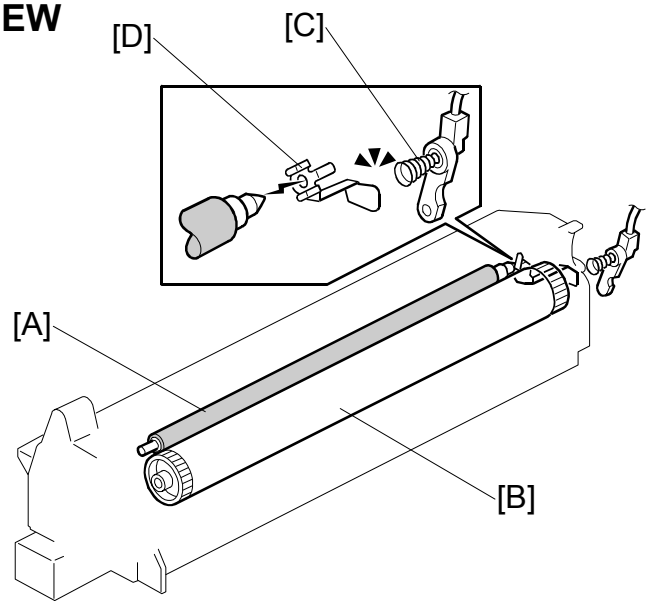


The main motor [A] drives the drum [B] through a series of gears, a timing belt [C], and the drum drive shaft [D]. The main motor assembly includes a drive controller, which outputs a motor lock signal when the rotation speed is out of the specified range.

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).

6.8 DRUM CHARGE

6.8.1 OVERVIEW

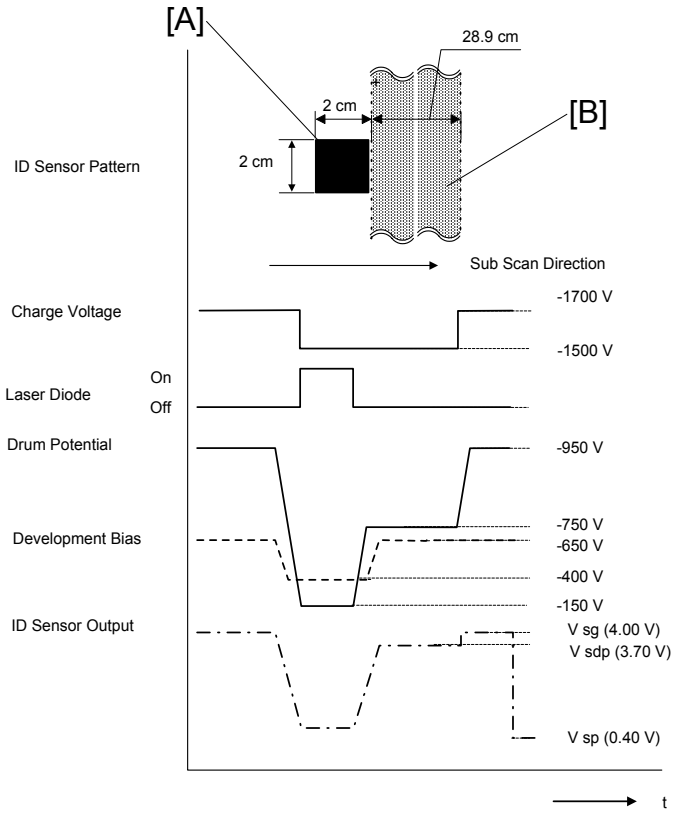


This copier uses a drum charge roller to charge the drum. The drum charge roller [A] always contacts the surface of the drum [B] to give it a negative charge of -950V.

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

6.8.1 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 -650V; as a result the drum potential is reduced to -750V. 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.

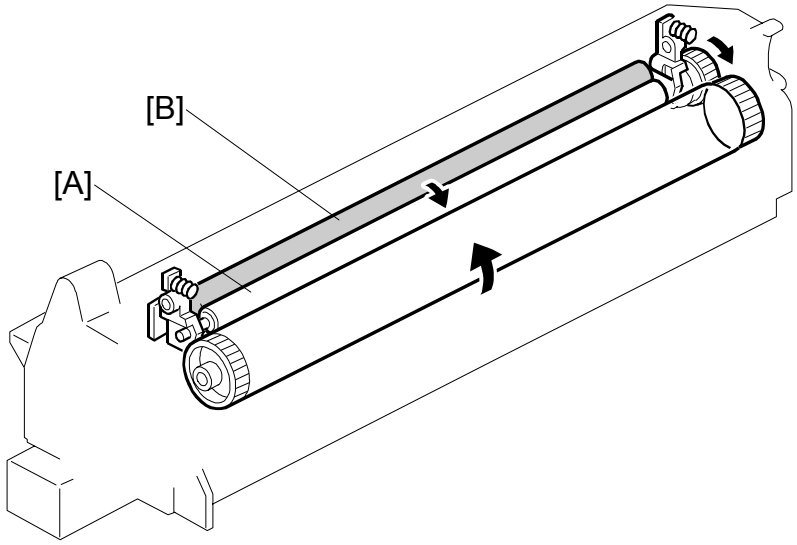
- Vsdp / Vsg > 0.95 = Reduce the magnitude of the drum charge voltage by 50 V
- Vsdp / Vsg < 0.90 = Increase the magnitude of the drum charge voltage by 50 V

6.8.2 ID SENSOR PATTERN PRODUCTION TIMING

The ID sensor pattern is made in the following conditions:

- When the machine is turned on or returns from the energy save mode and the hot roller temperature is less than 30°C. The temperature threshold can be adjusted with SP2995 001
- After the total number of prints exceeds 300 pages. If this total is exceeded during a job, the pattern is created at the completion of the job. This total can be changed with SP2995 002.

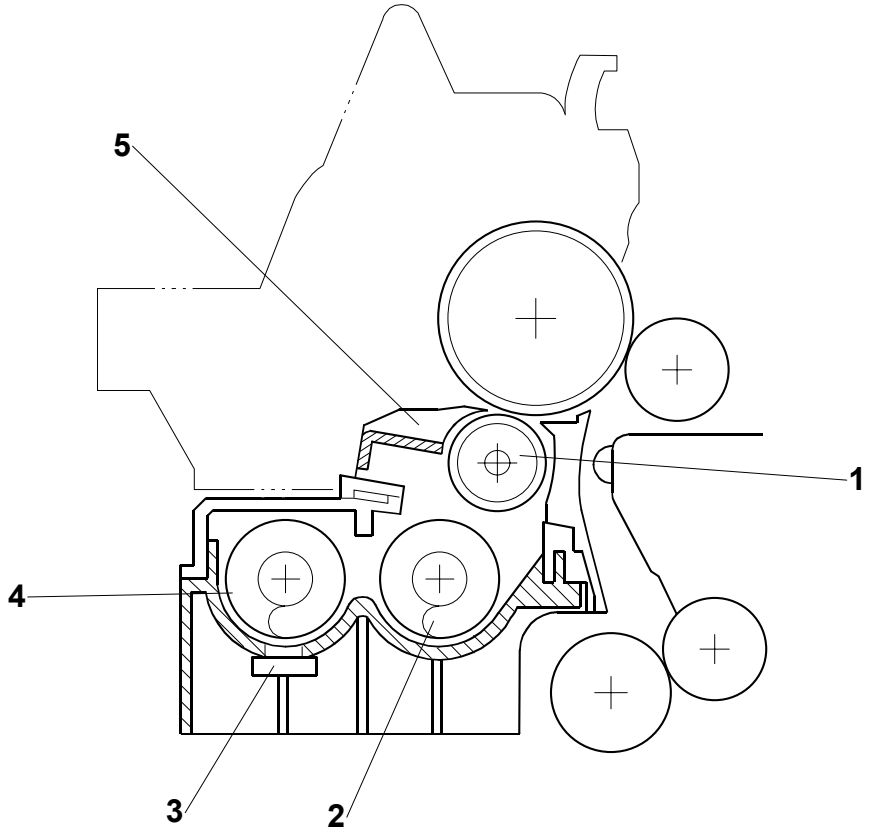
6.8.3 DRUM CHARGE ROLLER CLEANING



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

6.9 DEVELOPMENT

6.9.1 OVERVIEW

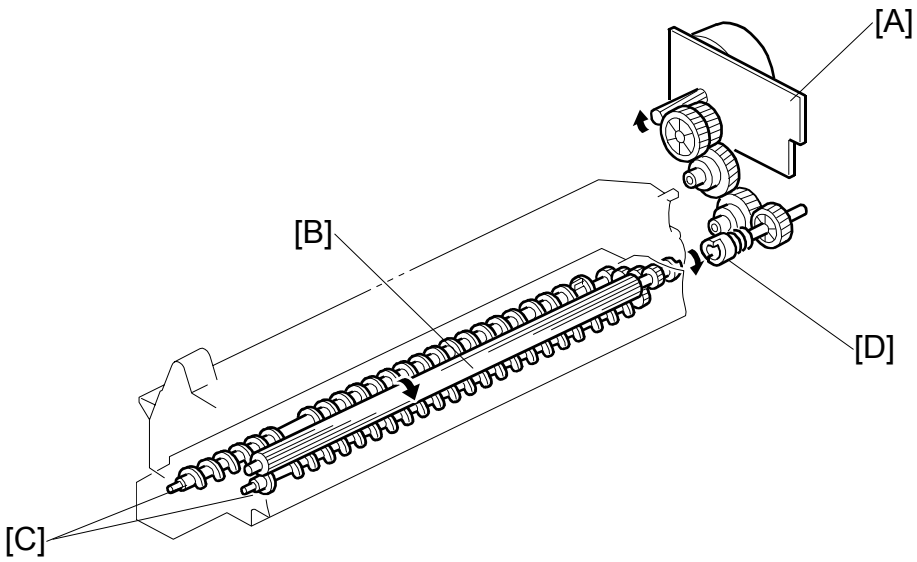


The development unit consists of the following parts.

1. Development roller
2. Mixing auger 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.

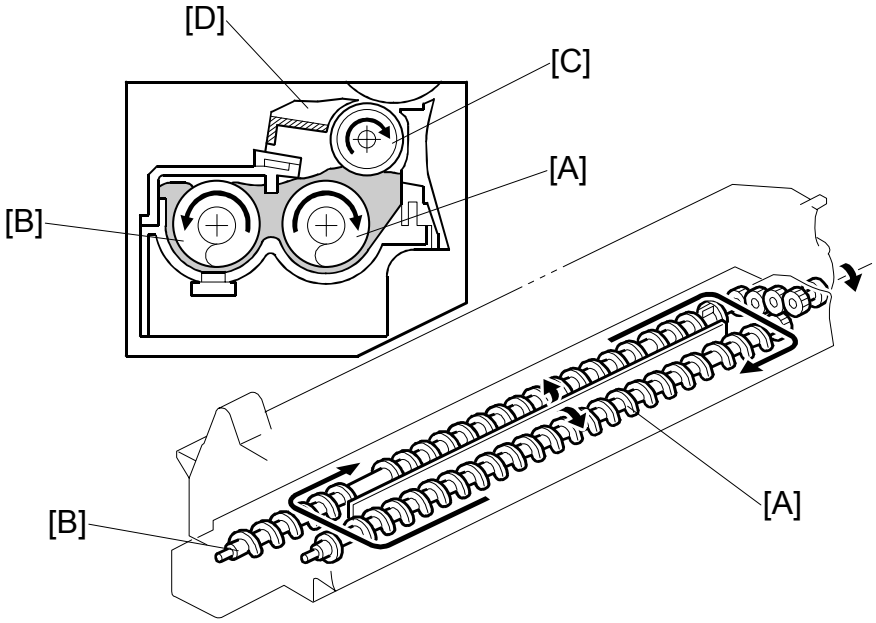
6.9.2 DRIVE



The main motor [A] drives the development roller [B] and mixing augers [C] through a train of gears and the development drive shaft [D]. When the PCU is pushed in, the development drive shaft engages the development roller gear.

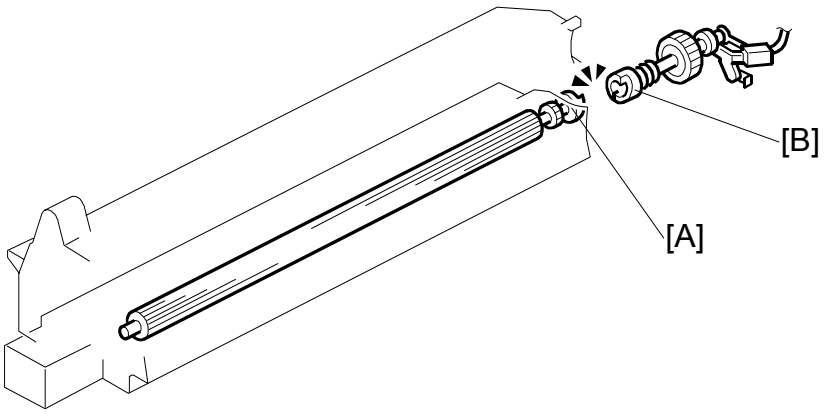
The development drive gears (except for the gears in the development unit) are helical gears. These gears are quieter than normal gears.

6.9.3 DEVELOPER MIXING



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.

6.9.4 DEVELOPMENT BIAS



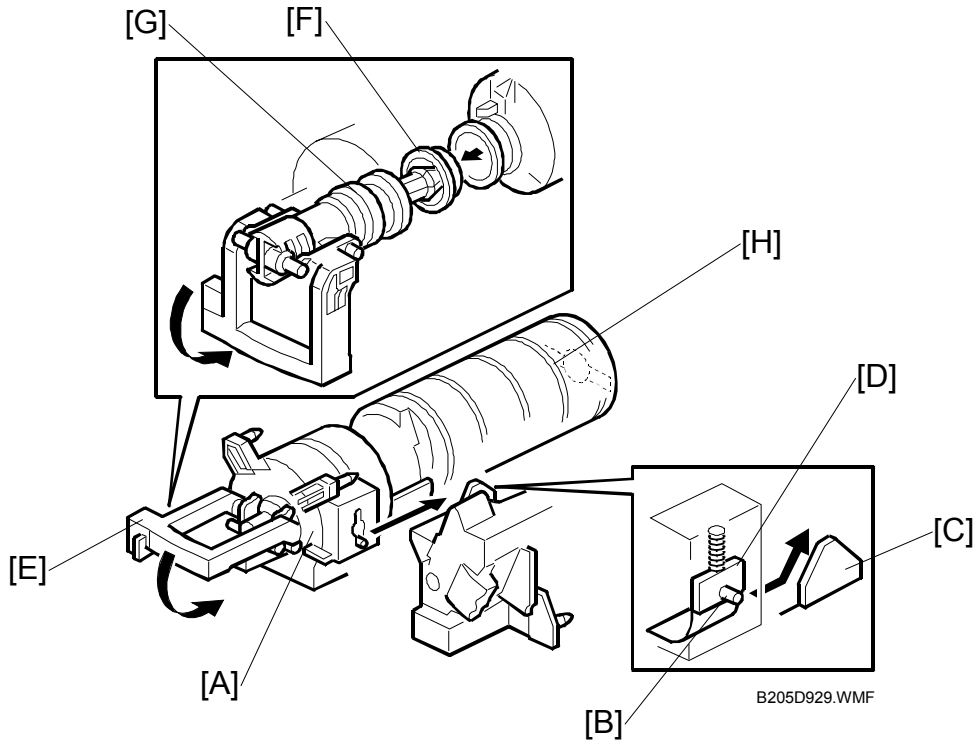
This machine uses a negative-positive development system, in which black areas of the latent image are at a low negative charge (about –150 ± 50 V) and white areas are at a high negative charge (about -950 V).

To attract negatively charged toner to the black areas of the latent image on the drum, the high voltage supply board applies a bias of -650 volts to the development rollers throughout the image development process. The bias is applied to the development roller shaft [A] through the drive shaft [B].

The development bias voltage (-650 V) can be adjusted with SP2-201-1.

6.9.5 TONER SUPPLY

Toner bottle replenishment mechanism



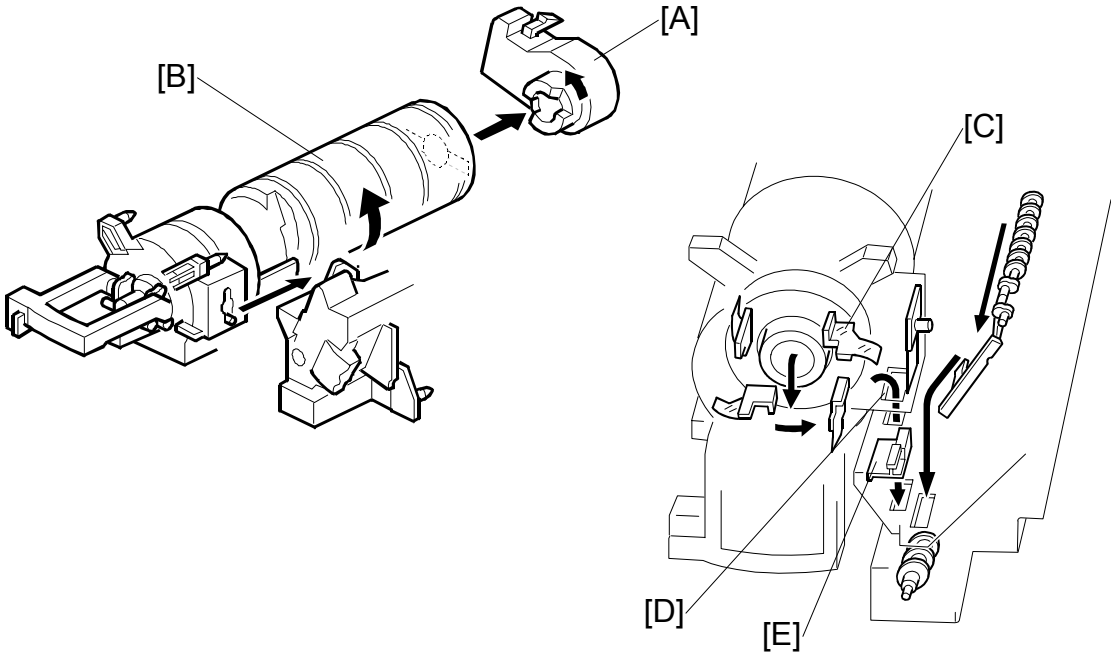
When a toner bottle is placed in the bottle holder unit [A] and the unit is pushed in completely, pin [B] moves against the side [C] of the PCU, and the toner shutter [D] is pulled out to open the bottle. When the toner bottle holder lever [E] is put back in the original position, the cap [F] on the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



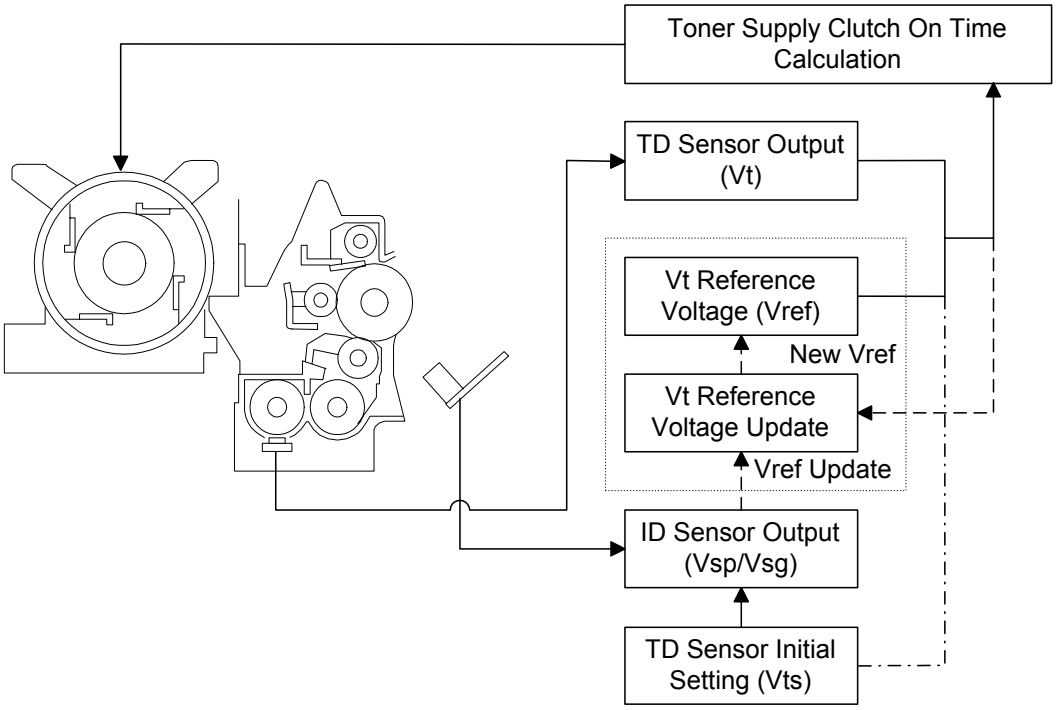
The toner supply motor [A] drives the toner bottle [B] and the mylar blades [C]. First, the toner falls down into the toner bottle holder. The toner supply mylar blades transfer the toner to the slit [D]. When the PCU is installed in the machine, the shutter [E] above the PCU is opened by the machine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

6.9.6 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 five 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 or Vref)
Toner control process	This toner control process is the same as sensor control 1 mode. However, the reference voltage is always the same as Vref.
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

Mode	Sensor control 3 (SP921, "4". **DFU**
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.

Toner density sensor initial setting

The TD sensor initial setting procedure is done by SP2801. During TD sensor initial setting, the TD sensor is set so that the TD sensor output to the value of SP2-926 (default: 2.5V). 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
- At the end of a job, if an ID sensor pattern has not been made for a certain number of sheets (default: 0 sheets = disabled)
  The number of sheets can be changed using SP2-995-2.

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:

- When the machine is turned on or returns from the energy save mode and the hot roller temperature is less than 30°C. The temperature threshold can be adjusted with SP2995 001
- After the total number of prints exceeds 300 pages. If this total is exceeded during a job, the pattern is created at the completion of the job. This total can be changed with SP2995 002.

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.

- ΔVt (= Vt – (Vref or Vts))
- TD sensor sensitivity (coefficient: S, value is 0.3)

There are seven levels for toner supply motor on time as shown below.

Level	Decision	Motor On Time (seconds)
1	$0 < \Delta Vt \leq S/16$	t (0.6)
2	$S/16 < \Delta Vt \leq S/8$	t x 2 (1.2)
3	$S/8 < \Delta Vt \leq S/4$	t x 4 (2.4)
4	$S/4 < \Delta Vt \leq S/2$	t x 8 (4.8)
5	$S/2 < \Delta Vt \leq 4S/5$	t x 16 (9.6)
6	$4S/5 < \Delta Vt \leq S$ (near-end)	T (30); see note 3
7	$S < \Delta Vt$ (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 half duty cycle (1.5 s on, 1.5 s off) for 30 seconds

6.9.7 TONER SUPPLY IN ABNORMAL SENSOR CONDITIONS

ID sensor

Readings are abnormal if any of the following conditions occur:

- 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 SP2-220.

When this is detected, the machine changes the value of Vref to the previous value 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.

6.9.8 TONER NEAR END/END DETECTION AND RECOVERY

The toner near end and end conditions are detected using the Vt and Vref values, in a similar way to toner density control.

This is done in all toner supply modes except for fixed mode 2, when toner end is not detected.

Toner Near End Detection

If Vt is at level 6 (see the table on the previous page) five times consecutively, the machine enters the toner near end condition and the toner end indicator starts blinking. Then the machine supplies toner for a certain time, which depends on the setting of SP 2-923 (see the previous page).

Toner Near End Recovery

If the machine detects "S/2 < ΔVt ≤ 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.

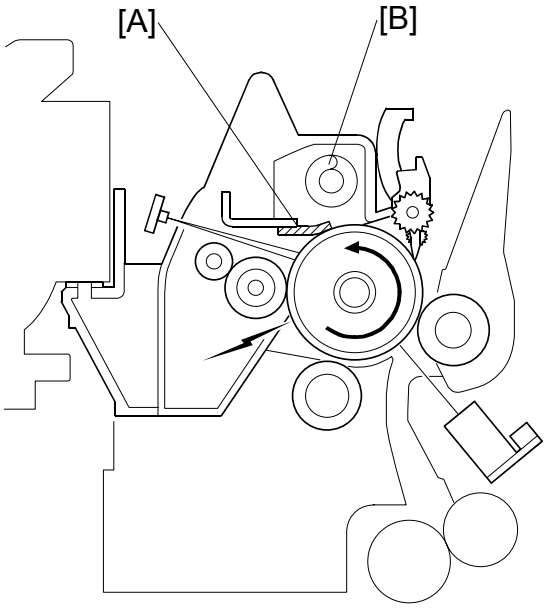
- When Vt is level 7 three times consecutively, the machine enters the toner end condition.
- When "4S/5 < ΔVt ≤ S" is detected in the toner near end condition, then 50 copies can be made after this condition (the number of copies between this condition and toner end can be changed using SP2-213).

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.

6.10 DRUM CLEANING AND TONER RECYCLING

6.10.1 DRUM CLEANING



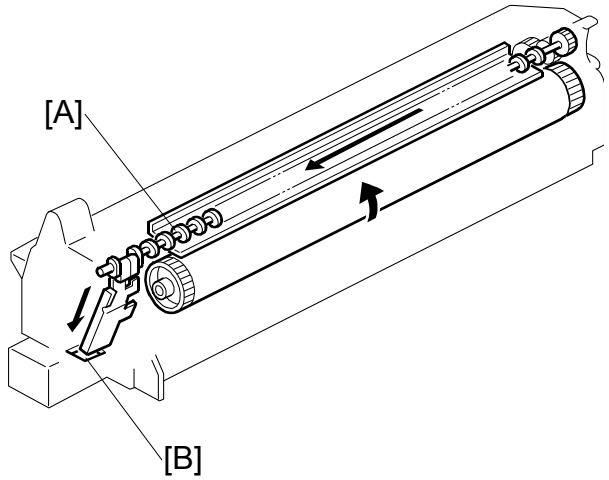
The cleaning blade [A] removes any toner remaining on the drum after the image is transferred to the paper. This model uses a counter blade system.

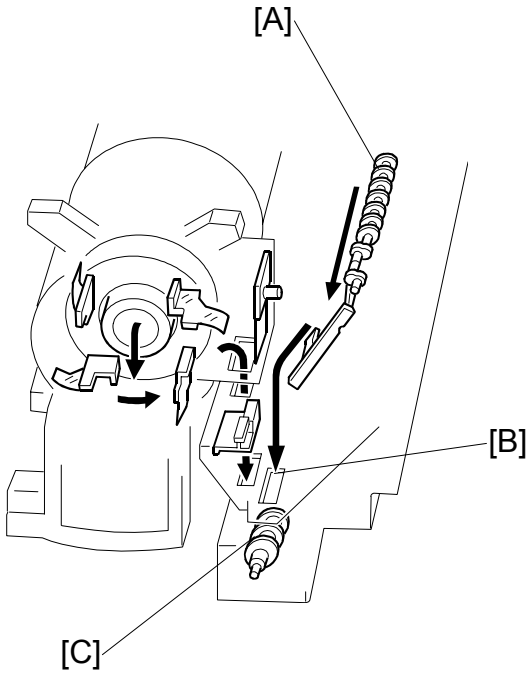
The cleaning blade scrapes off toner remaining on the drum. When toner builds up in the cleaning unit, toner at the top of the pile is removed by the toner collection coil [B].

To remove the toner and other particles that are accumulated at the edge of the cleaning blade, the drum turns in reverse for about 5 mm at the end of every copy job. This feature is controlled with SP 2-998.

In addition, cleaning is done in the middle of a job if 100 sheets have been made since the previous cleaning. This feature is controlled with SP 2-211.

6.10.2 TONER RECYCLING

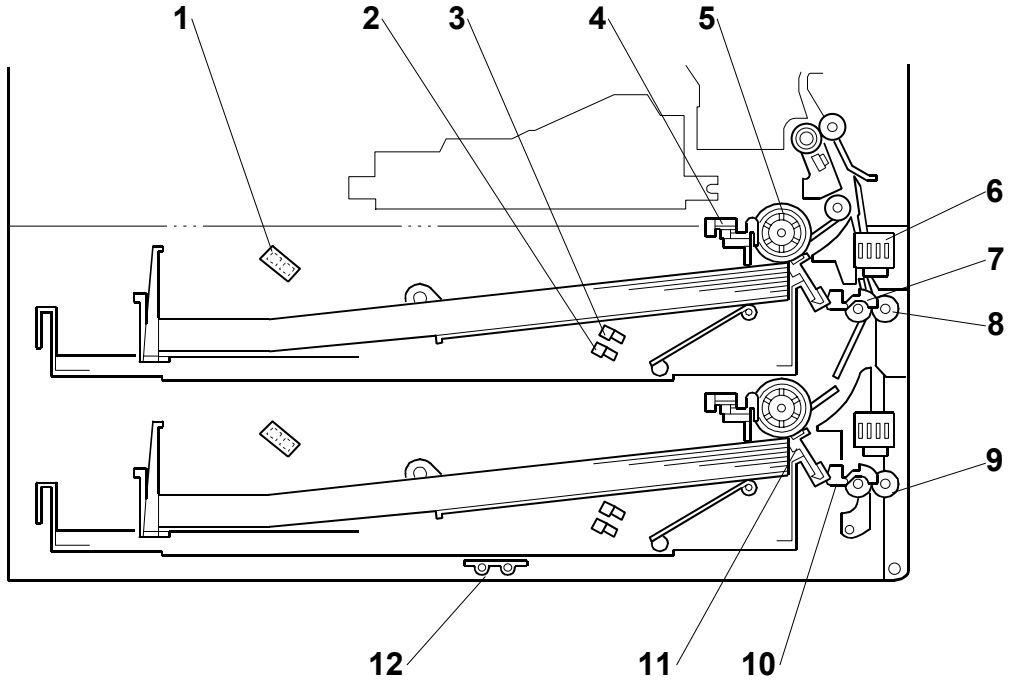




Toner picked up by the toner collection coil [A], is transported to the opening [B] in the side of the PCU. Then, this toner falls into the development unit with new toner coming from the toner bottle and it is all mixed together by mixing auger 1 [C] and used again.

6.11 PAPER FEED

6.11.1 OVERVIEW



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

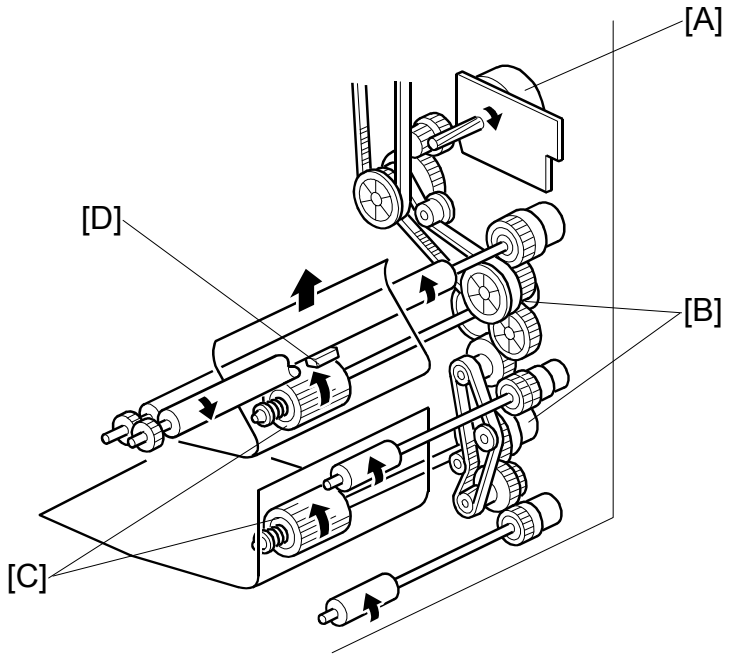
The paper tray feed stations use a friction pad system.

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. Lower Relay Sensor
11. Friction Pad
12. Tray Heater (Option)

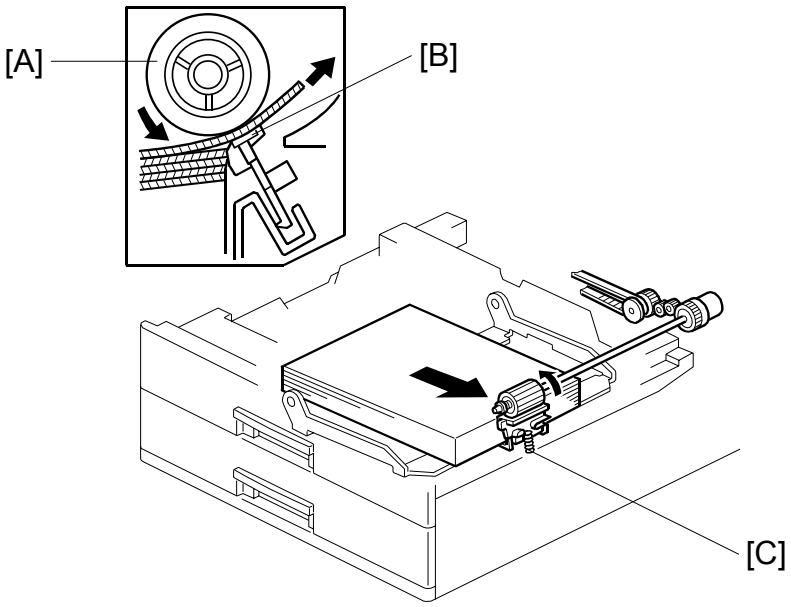
6.11.2 PAPER FEED DRIVE MECHANISM



The main motor [A] drives the pick-up and feed mechanism of both the first and second paper trays. The paper feed clutches [B] transfer drive from this motor to the paper feed rollers [C].

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

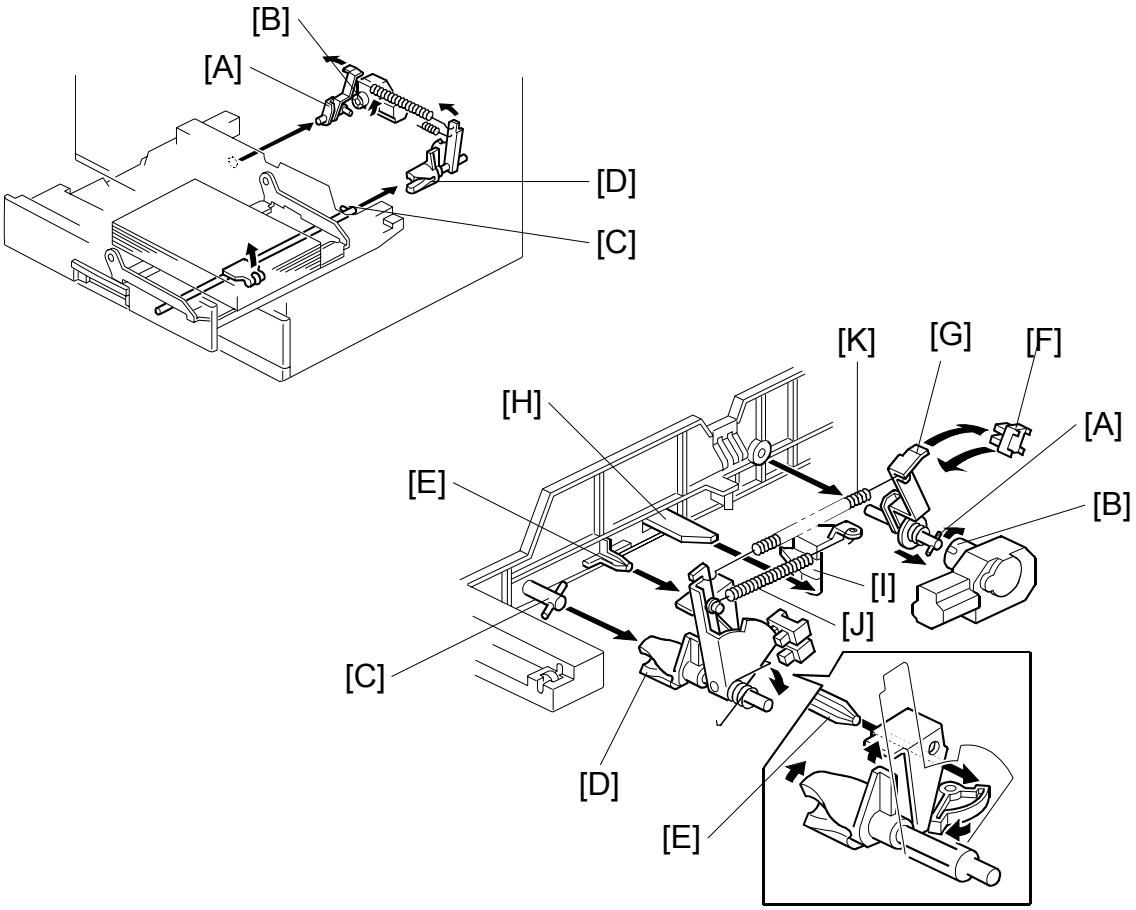
6.11.3 PAPER FEED AND SEPARATION MECHANISM



The paper feed roller [A] drives the top sheet of paper from the paper tray to the copier. The friction pad [B] allows only one sheet to feed at a time. The friction pad applies pressure to the feed roller with a spring [C].

The friction pad pressure cannot be adjusted.

6.11.4 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.

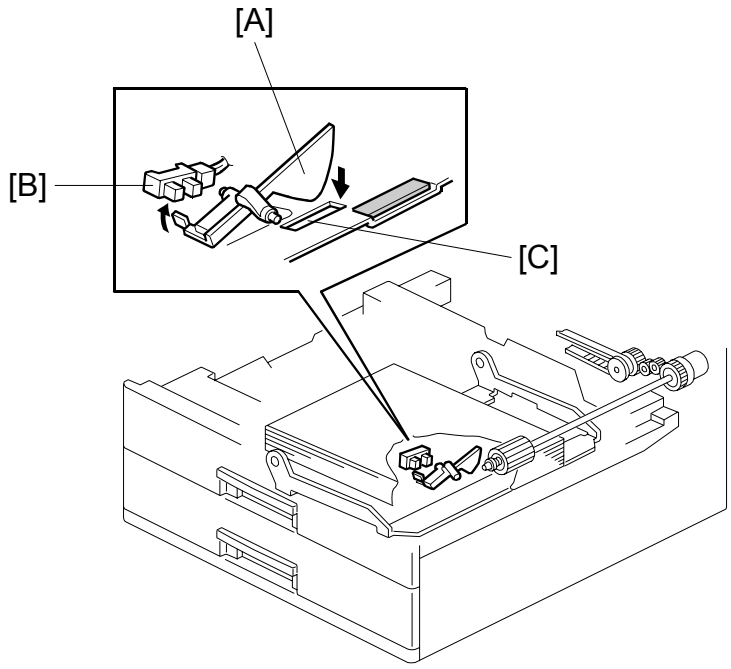
The pressure of the feed roller on the paper is now too high, so the lift motor reverses a certain time (200 ms or 600 ms), depending on the paper size, to reduce this pressure. For smaller paper, it reverses the larger amount (600 ms) to reduce the pressure more.

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.

6.11.5 PAPER END DETECTION

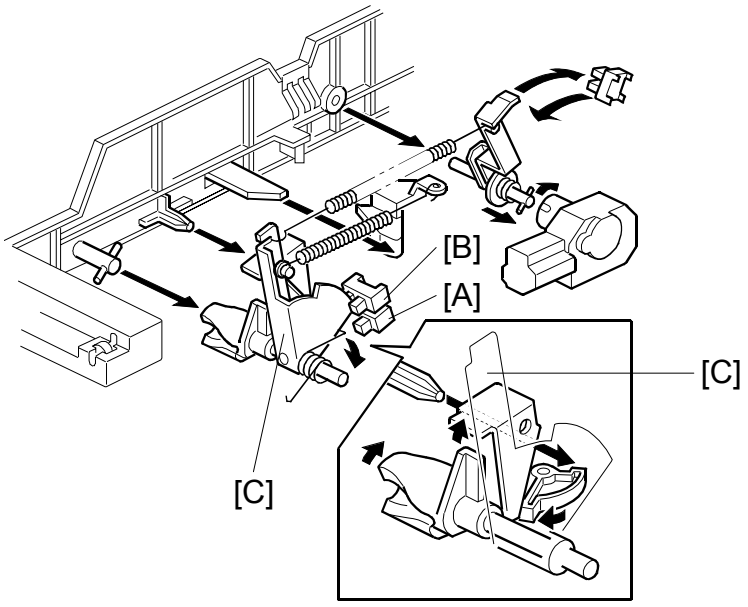


If there is some paper in the paper tray, the paper stack raises the paper end feeler [A] and the paper end sensor [B] is deactivated.

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.

6.11.6 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]. The paper amount is displayed on the LCD.

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”.

6.11.7 FEED PRESSURE ADJUSTMENT FOR PAPER SIZE

Overview

For the friction pad system, the pressure from the top of the stack against the feed rolleris 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	---	SP1908-8	SP1908-9
2nd paper tray	---	SP1909-8	SP1909-9
3rd paper tray	---	SP1910-8	SP1910-9
4th paper tray	---	SP1911-8	SP1911-9

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.

Paper Size Ranges: For Two Size Ranges

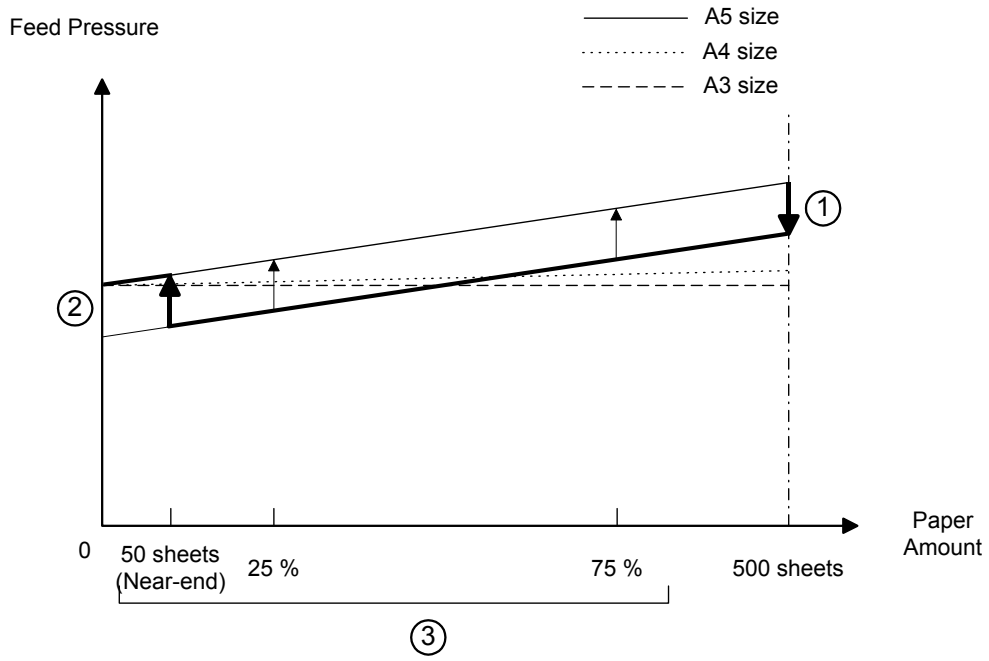
Small paper size range: Paper sizes equal to the ‘Small’ SP mode value, or smaller.

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 (① 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	SP1908-1	SP1908-2	SP1908-3
2nd paper tray	SP1909-1	SP1909-2	SP1909-3
3rd paper tray	SP1910-1	SP1910-2	SP1910-3
4th paper tray	SP1911-1	SP1911-2	SP1911-3
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 (② 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	SP1908-4	SP1908-5
2nd paper tray	SP1909-4	SP1909-5
3rd paper tray	SP1910-4	SP1910-5
4th paper tray	SP1911-4	SP1911-5
Default (all trays)	400 ms	300 ms (default: not used)

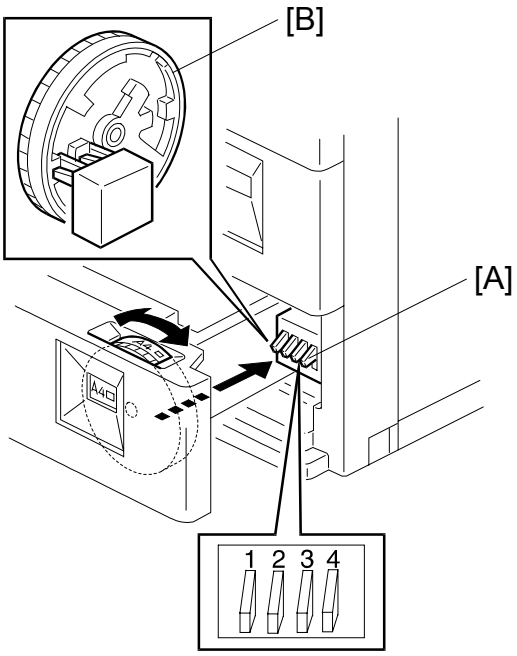
Also, the point at which this adjustment is applied (near-end [50 sheets], 25% full, 75% full) can be selected (③ in the graph) using the following SP modes.

Paper Size	Small Size	Middle Size
	HLT/A5 or smaller (default setting)	None (default setting)
1st paper tray	SP1908-6	SP1908-7
2nd paper tray	SP1909-6	SP1909-7
3rd paper tray	SP1910-6	SP1910-7
4th paper tray	SP1911-6	SP1911-7
Default (all trays)	Near-end	Near-end (default: not used)

6.11.8 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.

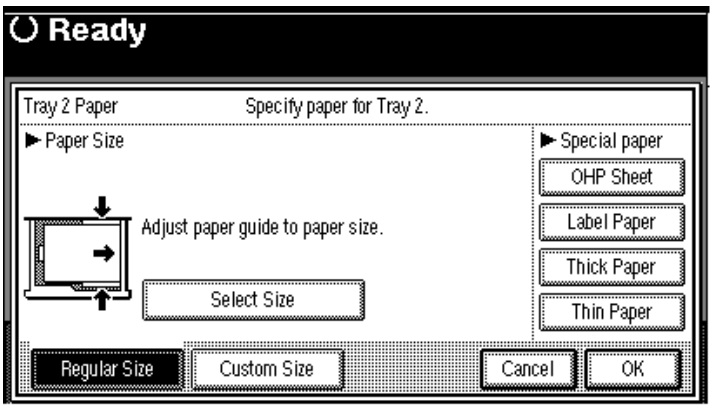
The CPU disables paper feed from a tray if the paper size cannot be detected. If the paper size actuator is broken, or if there is no tray installed, the Add Paper indicator will light.

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.

6.11.9 SPECIAL PAPER SETTING

Only the 2nd tray can feed special paper such as thick paper or envelopes. The special paper type can be selected either by using the UP mode or with the following operation.

- Select the 2nd tray then press the # key.

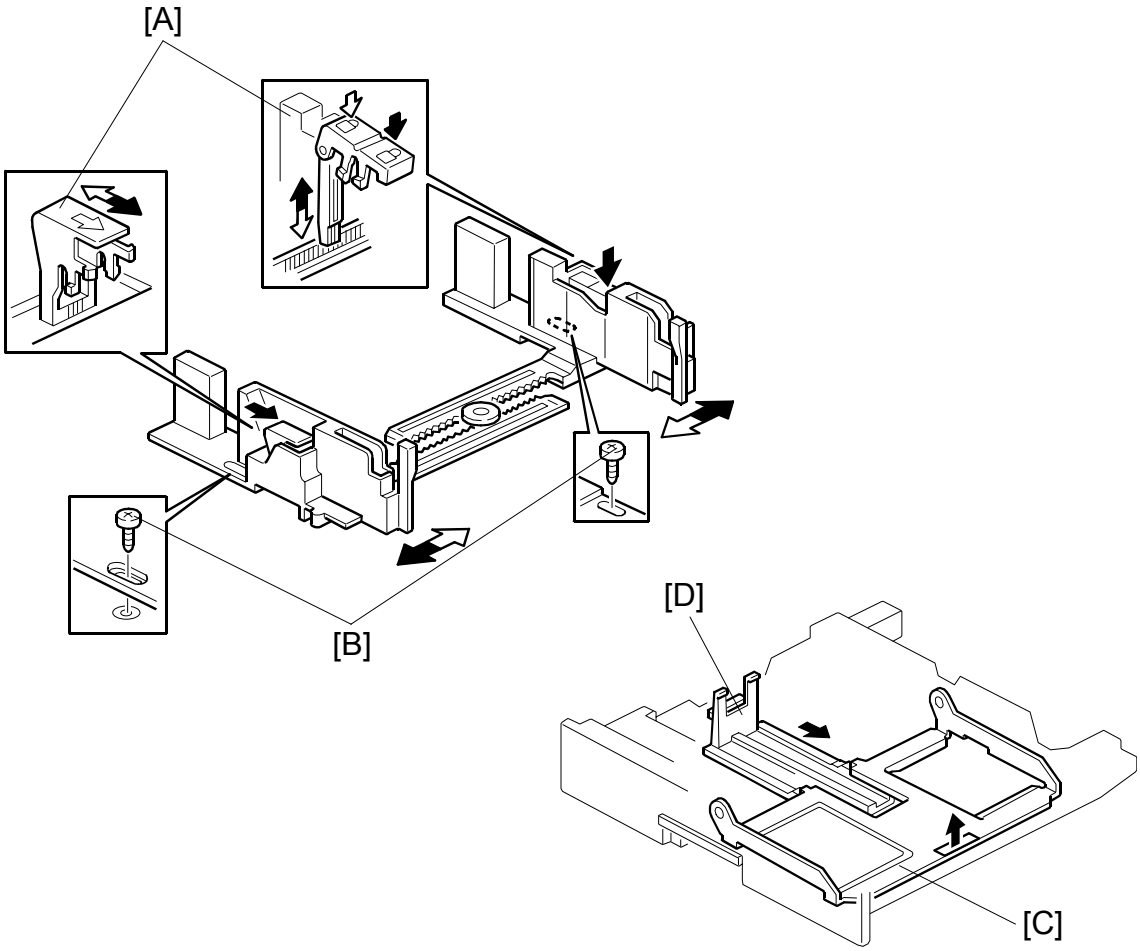


After selecting the special paper type, the fusing temperature and transfer roller current will be changed as follows.

1. Fusing temperature (when thick paper is selected):
   Current operation temperature + 15 °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.

6.11.10 SIDE AND END FENCES



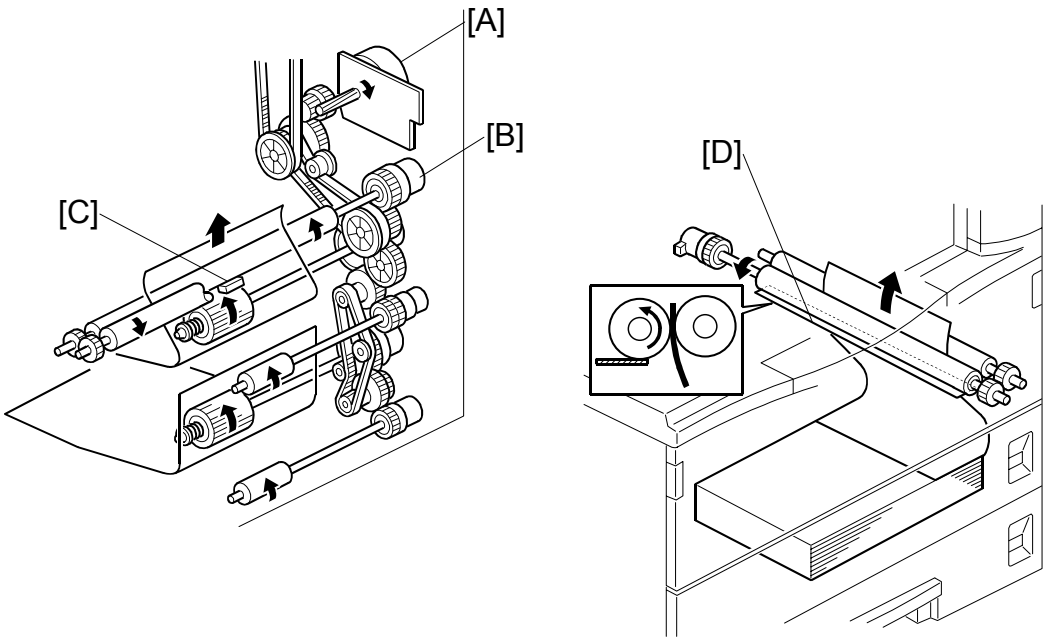
Side Fences

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.

6.11.11 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.

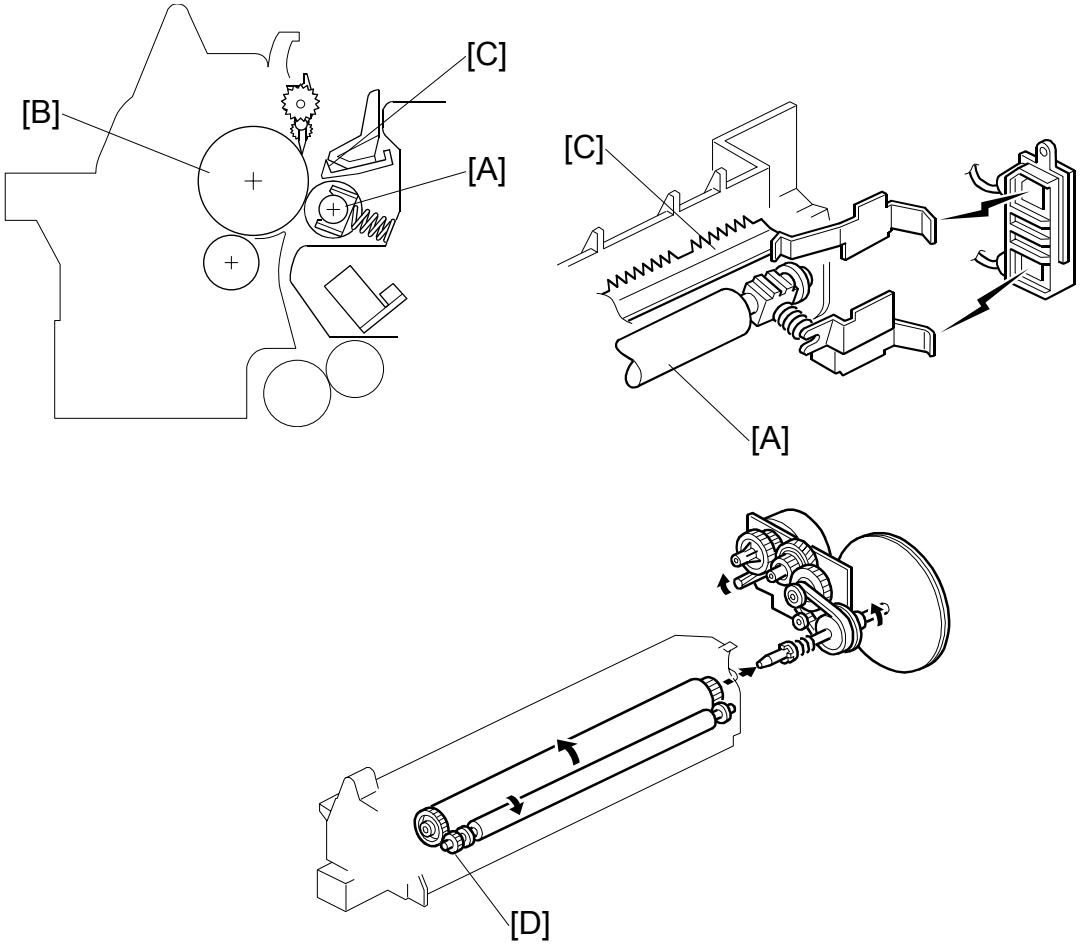
The cleaning mylar [D] contacts the registration roller. It removes paper dust from the registration roller so that this dust will not transfer into the development unit through the drum cleaning unit.

The amount of paper buckle at the registration roller to correct skew can be adjusted with SP 1003.

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 1903; 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.

6.12 IMAGE TRANSFER AND PAPER SEPARATION

6.12.1 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

6.12.2 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, an appropriate current 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 transfer current (high transfer current level) depends on the paper feed station, paper width, and the temperature in the machine.

Example: Temperature = 15°C ~ 24°C

Paper Width	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	14 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 and less	16 μA	16 μA	20 μA

The transfer current can be adjusted using SP2301, except for the low transfer current.

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. It may also damage the OPC drum in the worst case.

6.12.3 TRANSFER ROLLER CLEANING

If the paper size is smaller than the image, or if a paper jam occurs during printing, toner may be transferred to the roller surface. To prevent the toner from transferring to the back side of the printouts, the transfer roller requires cleaning before the next printing run.

During transfer roller cleaning, the high voltage supply unit supplies a negative cleaning 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.

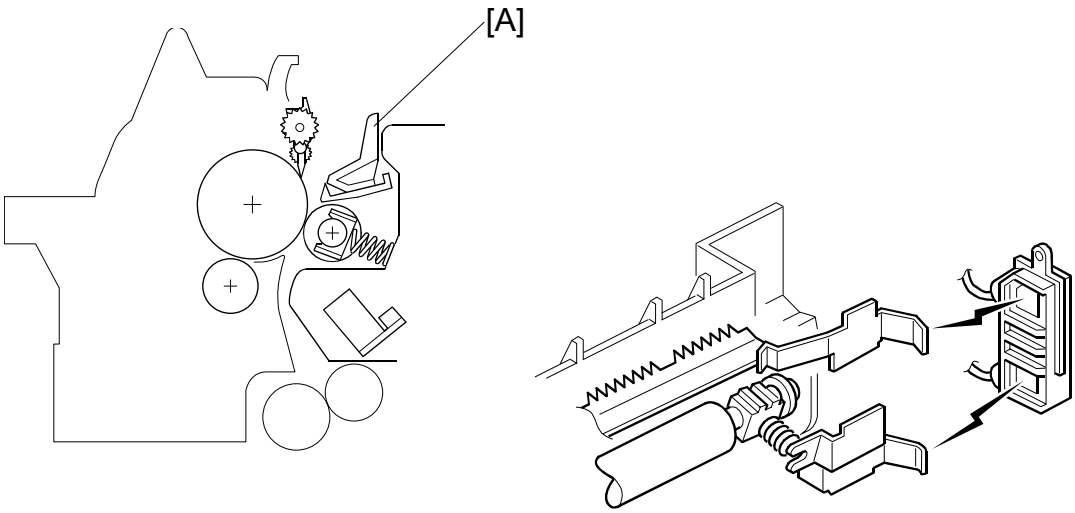
The machine goes through the cleaning mode in the following conditions:

- 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
- After 50 sheets have printed. If a job is in progress when the number of prints exceeds 50, the machine enters cleaning mode at the completion of the current job (the print job is not interrupted for cleaning).

The transfer roller cleaning function is done.

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

6.12.4 PAPER SEPARATION MECHANISM

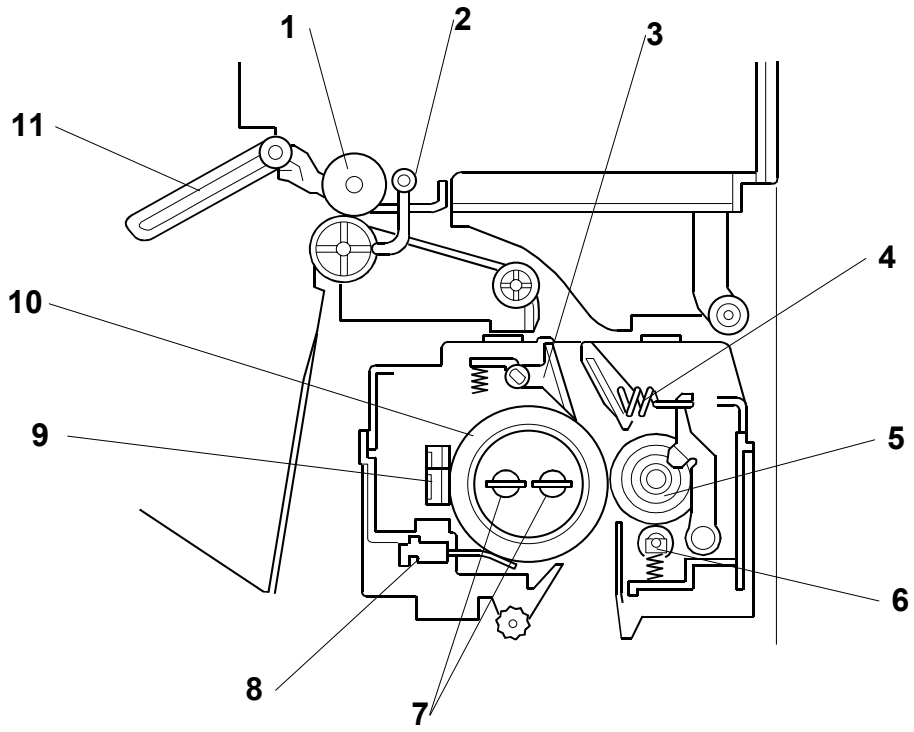


The discharge plate [A] and the drum curvature of the drum help the paper to separate away from the drum. The high voltage supply board applies a constant dc voltage, -1.8 kV (when feeding from a paper tray) or –2.1 kV (from the duplex unit) to the discharge plate.

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

6.13 IMAGE FUSING AND PAPER EXIT

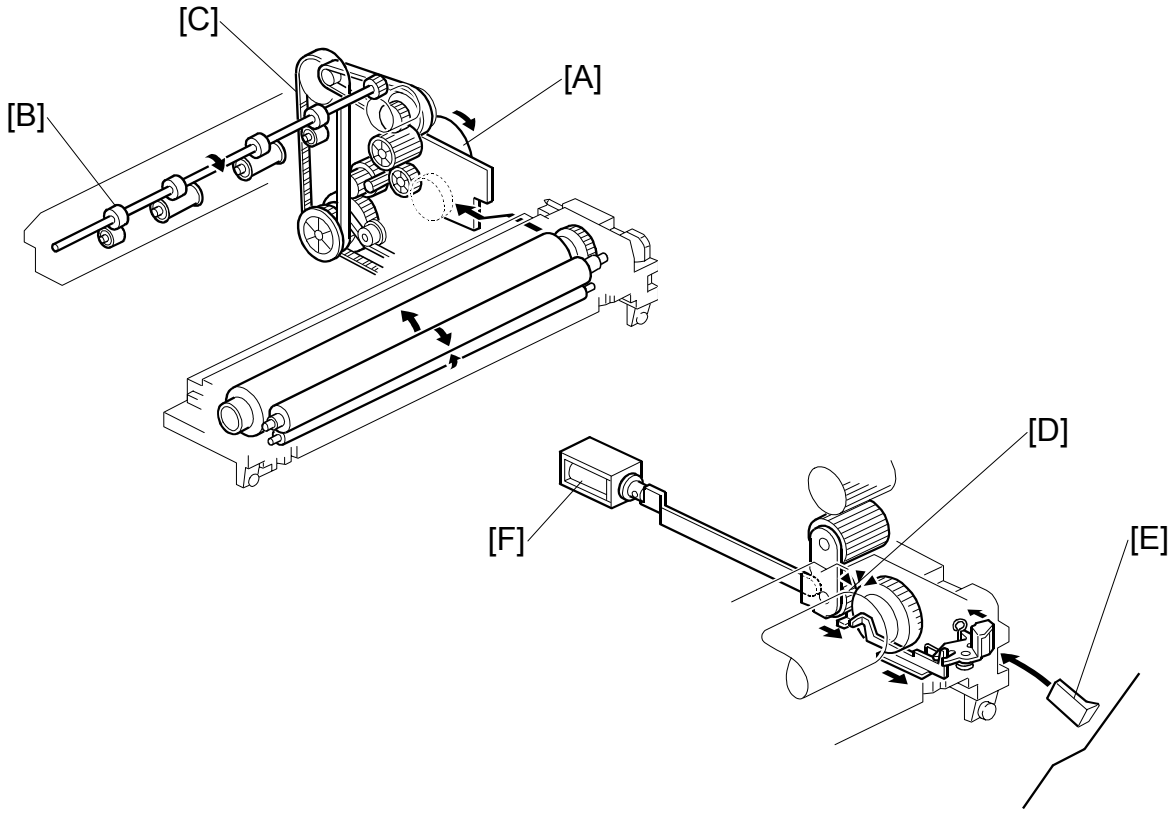
6.13.1 OVERVIEW



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. Pressure roller
6. Cleaning roller
7. Two fusing lamps
8. Two thermistors
9. Four thermostats
10. Hot roller
11. Paper overflow sensor

6.13.2 FUSING DRIVE AND RELEASE MECHANISM



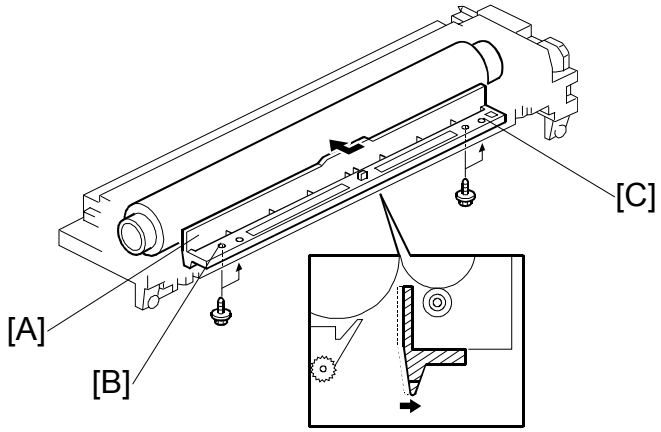
The main motor [A] drives the fusing unit through a gear train and drives the paper exit rollers [B] through a timing belt [C].

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.

Also, the fusing drive is released by the fusing drive release solenoid [F]. To reduce the warming up time, the machine cuts the drive to the fusing unit during warming up. Just after the main switch is turned on, this solenoid is energized and the fusing unit drive gear [D] is disengaged.

However, the fusing unit drive is not released when the temperature is lower than 15°C.

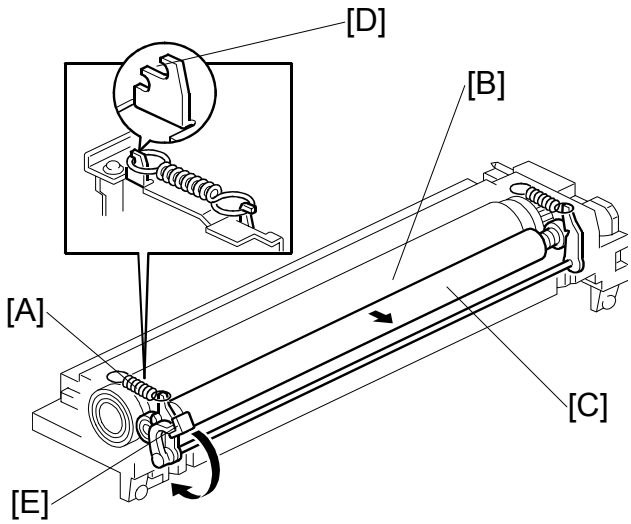
6.13.3 FUSING ENTRANCE GUIDE SHIFT MECHANISM



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.

6.13.4 PRESSURE ROLLER

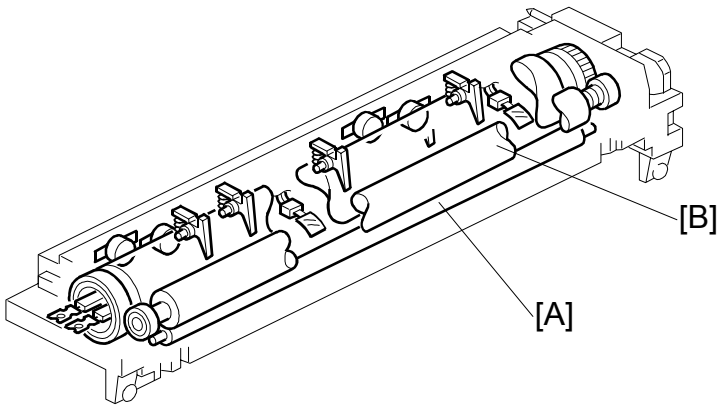


The pressure springs [A] constantly apply pressure between the hot roller [B] and the pressure roller [C].

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.

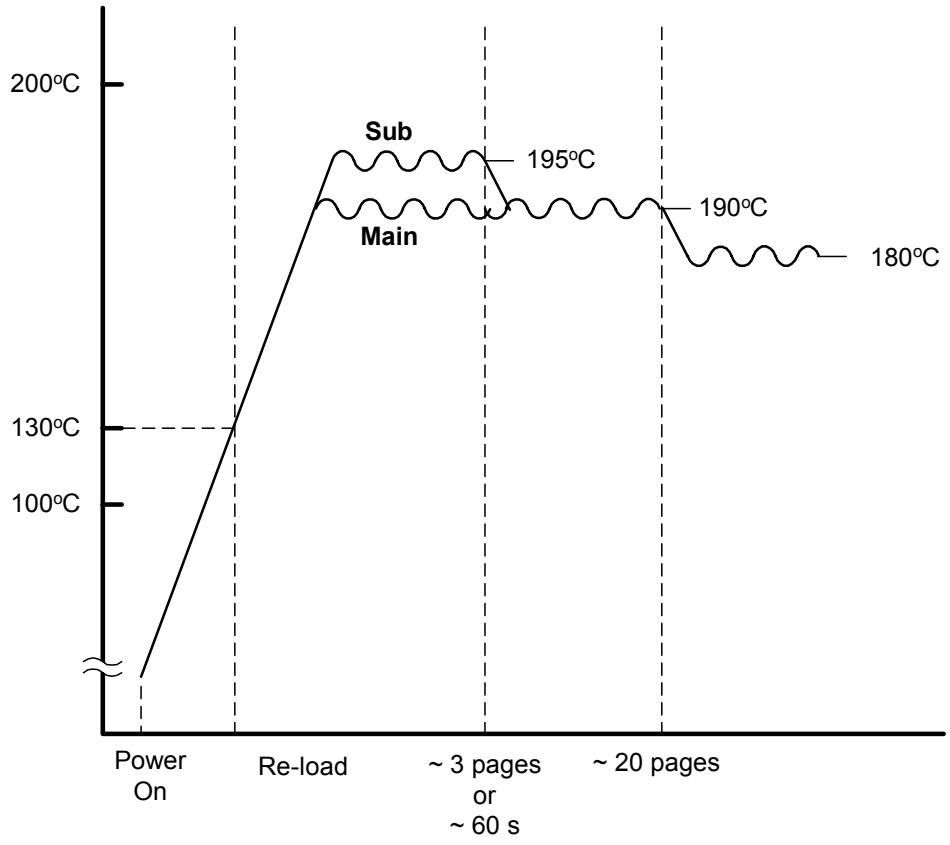
The user moves lever [E] when using thicker copy paper or envelopes, to reduce the pressure between the hot and pressure rollers.

6.13.5 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.

6.13.6 FUSING TEMPERATURE CONTROL



Temperature Control

Just after the main power switch is turned on, the CPU turns on the fusing lamp to obtain a fusing temperature of 190°C (Main fusing lamp), 195°C (Sub fusing lamp) for the first 60s, or for the first three consecutive pages of printing, whichever comes first. After that, the machine keeps the fusing temperature at 190°C for the first 20 consecutive pages of printing. Then the fusing temperature is kept at 180°C.

The three-page and 60-second limits can be adjusted with SP1-105-8 and -9.

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.

Fusing Lamp Control

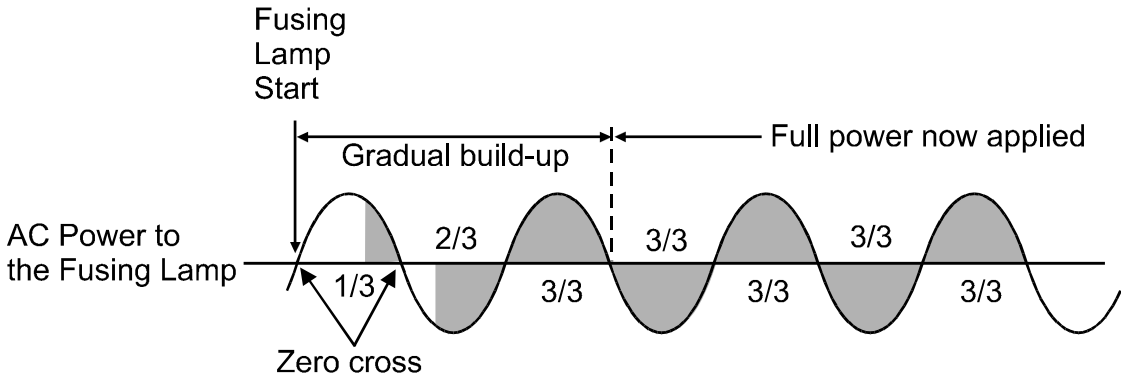
Turning on and off the fusing lamp power causes fluorescent light in the room to flicker. To reduce the flickering, use the following SP modes.

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 2 seconds.

Fusing soft-start
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. 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 feature 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.



6.13.7 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.

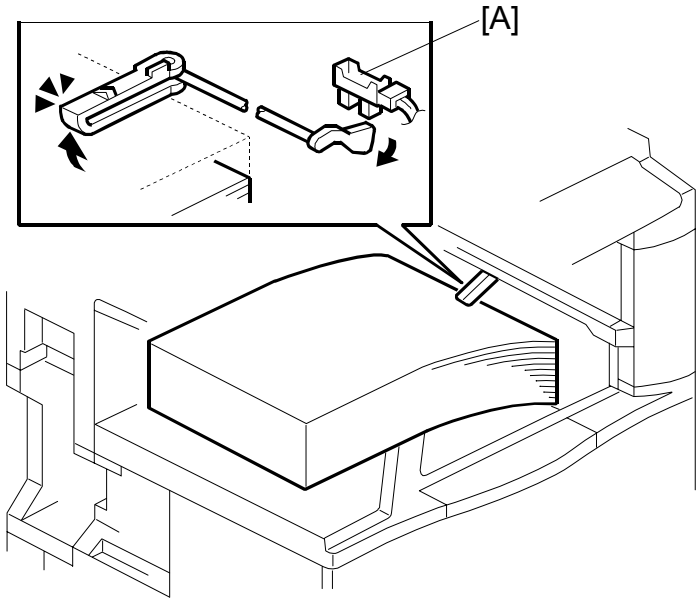
Even if the thermistor overheat protection fails, there are four thermostats in series with the common ground line of the fusing lamp. If the temperature of the thermostat reaches 210°C, one of the thermostats opens, removing power from the fusing lamp. At the same time, SC542 is generated and the machine stops operating.

In addition to these protection devices, there is a backup temperature control circuit on the SBCU. If the thermistor protection fails, or if a short circuit occurs on the PSU board.

If the temperature exceeds 250 °C:

- This backup temperature control circuit switches off the fusing lamps
- The machine issues SC544.

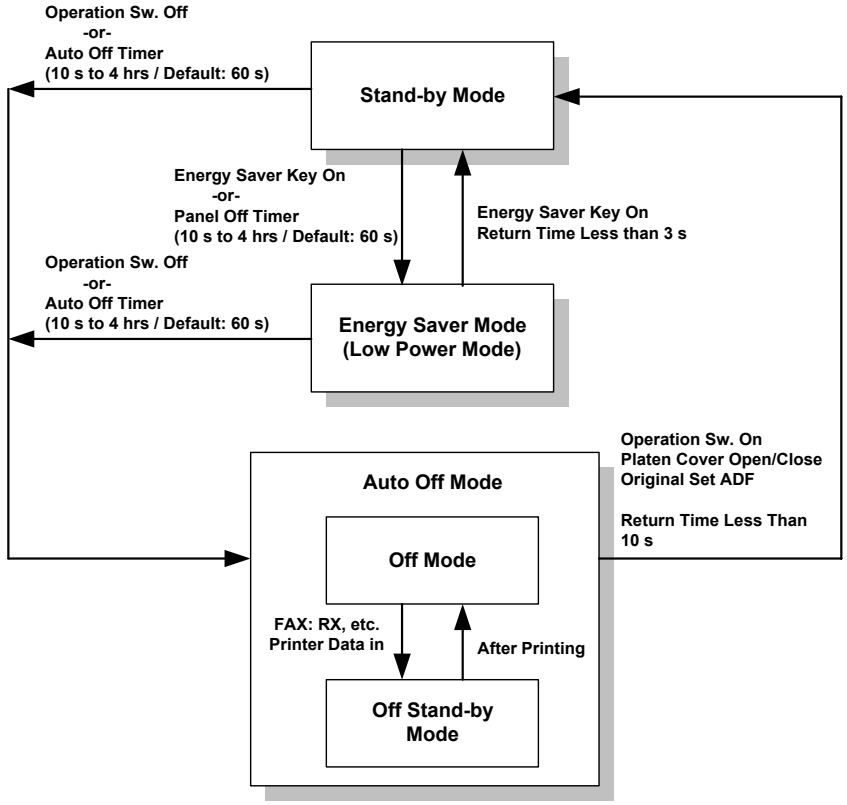
6.13.8 PAPER EXIT



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.

6.14 ENERGY SAVER MODES

6.14.1 OVERVIEW



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

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

1) Energy saver mode
2) Auto Off mode

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

- Panel off timer (energy saver mode timer) :
  User Tools> System Settings> Timer Setting> Panel Off Timer
- Auto off timer:
  User Tools> System Settings> Timer Setting> Auto Off Timer
- Auto off disabling (SP mode): Set SP 5-305 to 1. This allows the user to disable auto off mode by setting the auto off timer to 0.

6.14.2 ENERGY SAVER MODE

Entering the energy saver mode

The operation manual uses the term 'panel off mode' for the timer.

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

- The panel off timer runs out
- The Clear Mode/Energy Saver Key is held down for one second

Note that the default setting of the panel off timer is 60 s, which is the same as the auto off timer. In this condition, if the machine is not touched for 60 s, it will go straight to auto off mode. If the user wants an energy saver mode and an auto off mode, the panel off timer must be set to a shorter value than the auto off timer,

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 an 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.

Return to stand-by mode

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

- The Clear Mode/Energy Saver Mode key is pressed
- Any key on the operation panel or touch panel screen is pressed
- An original is placed in the ADF
- The ADF is lifted
- A sheet of paper is placed in the by-pass feed table

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

Mode	Operation Switch	Energy Saver LED	Fusing Temp.	+24V	System +5V
Energy Saver	On	On	150°C	On	On

6.14.3 AUTO OFF MODE

There are two Auto Off modes: Off Stand-by mode and Off mode. The difference between Off Stand-by mode and Off mode is the machine's condition when it enters Auto Off mode.

NOTE: The machine will not enter the Auto Off mode for at least 90 sec. after the machine is turned on when applications other than Copy (printer/scanner, printer, etc.) are installed.

Entering off stand-by and off modes

The machine enters the Off Stand-by mode or Off mode when:

- The auto off timer runs out
- The operation switch is pressed to turn the power off

If one or more of the following conditions exists, the machine enters Off Stand-by mode. If none of these conditions exist, the machine enters Off 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 is open

Off Stand-by mode

The system +5V is still supplied to all components. When the machine detects a ringing signal or receives a stream of data for a print job, the +24V supply is activated and the machine automatically prints the incoming message or executes the print job.

Off Mode

The system +5V supply also turns off. However, +5VE (+5V for energy saver mode) is still activated. When the machine detects a ringing signal, off-hook signal, or receives a print job, the machine returns to the Off Stand-by mode and the system +5V and +24V supplies are activated.

Returning to stand-by mode

The machine returns to stand-by mode when the operation switch is pressed. The recovery time is about 10 s.

Mode	Operation Switch	Energy Saver Mode	Fusing Lamp	+24V	System +5V	Note
Off Stand-by	Off	Off	Off (On when printing)	On	On	
Off	Off	Off	Off	Off	Off	+5VE is supplied

SPECIFICATIONS

7. OVERALL MACHINE INFORMATION

7.1 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: A5/81/2" x 51/2" 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)
52 ~ 157 g/m^2, 16 ~ 43 lb (2nd paper tray)
By-pass (Option):
52 ~ 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)
25% 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 7 A (for Europe/Asia)
110 V, 50/60 Hz: More than 13 A (for Taiwan)

Power Consumption: 115V Model

Mainframe Only		
	B205	**B209**
Warm-up	1.27 kW	1.27 kW
Standby	about 150 W	about 160 W
During Printing	about 690 W	about 790 W
Maximum	1.17 kW	1.17 kW
Complete System		
Warm-up	1.34 kW	1.34 kW
Standby	about 160 W	about 170 W
During Printing	about 750 W	about 840 W
Maximum	1.28 kW	1.28 kW

Power Consumption: 220V Model

Mainframe Only		
	B205	**B209**
Warm-up	1.27 kW	1.27 kW
Standby	about 150 W	about 150 W
During Printing	about 700 W	about 800 W
Maximum	1.05 kW	1.05 kW
Complete System		
Warm-up	1.32 kW	1.32 kW
Standby	about 150 W	about 160 W
During Printing	about 720 W	about 820 W
Maximum	1.15 kW	1.15 kW

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

Noise Emission (Sound Power Level):

Stand-by (Mainframe only):	40 dB(A)	
Stand-by (Full System)	44 dB(A)	
Operating (Mainframe only):	63 dB(A)	
Operating (Full System):	B205	68.5 dB(A)
	B209	69 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 604 x 709 mm (21.7" x 23.8" x 28.0")

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

Weight: Less than 55 kg (121.3lb)

Copying Speed (copies/minute):

B205	**A4, 11" x 8 1/2" LEF**	**A3/11" x 17"**
Non-memory copy mode	25	16
Memory copy mode	25	16
B209	**A4, 11" x 8 1/2" LEF**	**A3/11" x 17"**
Non-memory copy mode	30	17
Memory copy mode	30	17

NOTE: Measurement Conditions
1) Not APS mode
2) A4/LT and A3/DLT copying
3) Full size

Warm-up Time: Less than 10 seconds (20°C, 68°F) from power on with the operation switch.

Less than 12 seconds (20°C, 68°F) from power on with the main power switch.

First Copy Time: Less than 4.4 sec. (A4), less than 5.0 sec. (LT)

Measured under the following conditions:

- When the polygonal mirror motor is rotating.
- From the 1st paper tray
- Not APS mode
- Full size

Copy Number Input: Ten-key pad, 1 to 999 (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, 81/2" x 11", 51/2" x 81/2")
10 sheets (A3, B4, 11" x 17", 81/2" x 13")
1 sheets (non-standard sizes)

NOTE: Copy paper weight: 80g/m^2 (20 lb)

Toner Replenishment: Cartridge exchange (360 g/cartridge)

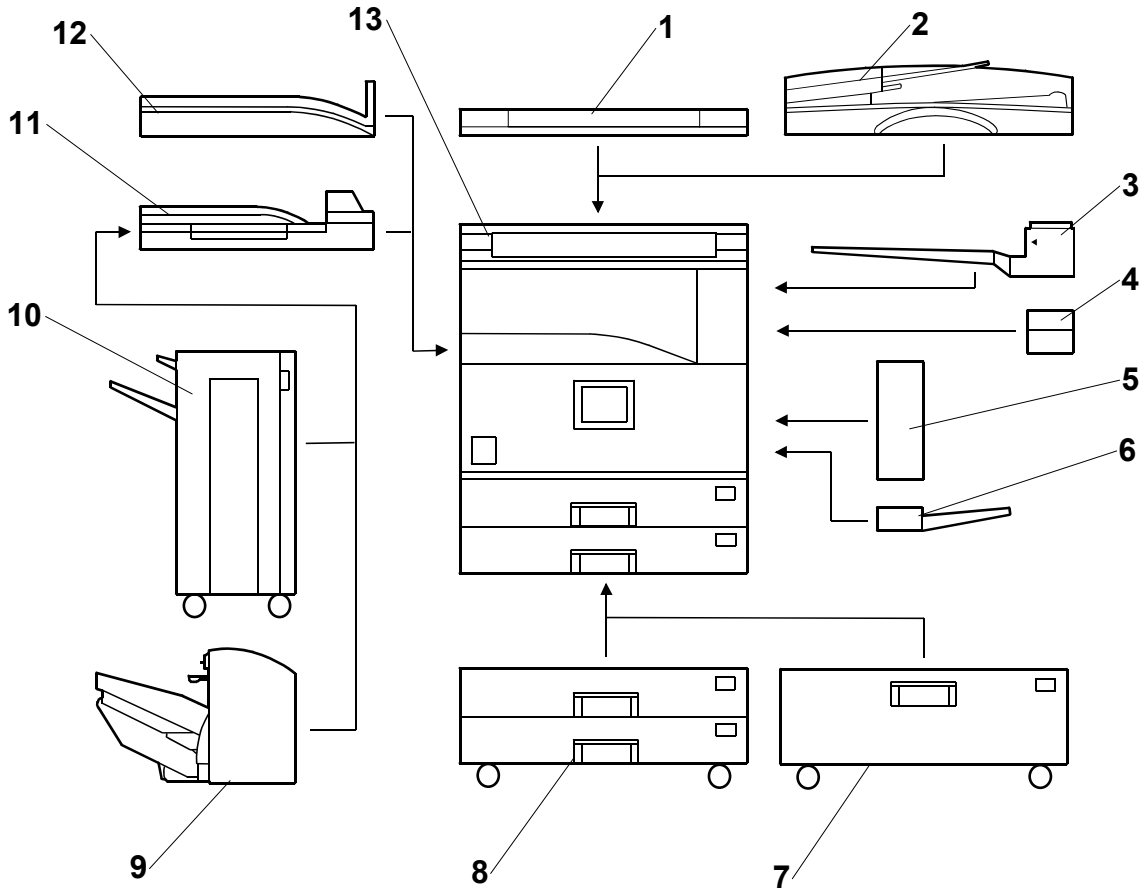
Toner Yield: 11 k copies (A4 sideways, 6% full black, 1 to 1 copying, ADS mode)

Copy Tray Capacity: Copy Tray: 500 sheets (without 1-bin tray)
250 sheets (with 1-bin tray)

Memory Capacity: Standard 128 MB, Optional memory 256 MB

7.2 MACHINE CONFIGURATION

7.2.1 SYSTEM COMPONENTS



	Item	Code	No.	Common With:
Mainframe	Copier	B205	13	
		B209	13	
Options	Paper Tray Unit-2 tray (Option)	B390	8	B022, B089
	LCT (Option)	B391	7	B022, B089
	Platen Cover (Option)	B406	1	B022, B089
	1000-sheet finisher (Option)	B408	10	B022, B089
	1-bin Tray (Option)	B413	3	B022, B089
	Duplex Unit (Option)	B414	5	B022, B089
	By-pass Tray (Option)	B415	6	B022, B089
	Interchange Unit (Option)	B416	4	B022, B089
	Bridge Unit (Option)	B417	11	B022, B089
	500-sheet finisher (Option)	B442	9	B022, B089
	Key Counter Bracket (Option)	B452		B022, B089
	Shift Tray (Option)	B459	12	B022, B089
	Data Overwrite Security Unit	B735		B180
	Copy Data Security Unit	B770		B264
	HDD (Option)	B773		New
	ARDF (Option)	B810	2	B156
	256 MB Memory DIMM (Option)	G818		New
	FAX			
	Handset (Option)	B433		B089
	Fax Unit (Option)	B766		New
	G3 Interface Unit (Option)	B768		New
	Memory – 32 MB (Option)	G578		B089
	PRINTER, PRINTER/SCANNER			
	Printer Unit (Option)	B846		New
	Printer/Scanner Unit (Option)	B767		New
	IEEE1394 Interface Board (FireWire - Option)	B581		B180
	File Format Converter (Option)	B609		B180
	Bluetooth Interface Unit	B736		B180
	PostScript 3 (Option)	B757		New
	IEEE1284 Interface Board (Centronics)	B679		B180
	IEEE 802.11b Wireless – LAN (Option)	G813		B180

Note: USB 2.0 and the NIB are built into the controller board. These items are not options (installation is not necessary). However, to use these functions they must be enabled with SP5985. Also, the printer/scanner kit must be installed.

7.2.2 OPTIONS TABLE

Copier options

No.	Option	B205/B209	Note
1	ARDF (Option)	❍	Install either no. 1 or 2.
2	Platen Cover (Option)	❍	Install either no. 1 or 2.
3	Paper Tray Unit – two-tray (Option)	❍	Install either no. 3 or 4.
4	LCT (Option)	❍	Install either no. 3 or 4.
5	1-bin Tray (Option)	Δ	Requires no.9.
6	Shift Tray (Option)	❍	Install either no. 6 or 10.
7	Duplex Unit (Option)	Δ	Requires no.9.
8	By-pass Tray (Option)	❍	
9	Interchange Unit (Option)	❍	
10	Bridge Unit (Option)	Δ	No. 10 requires no.11 or 12. Install either no. 6 or 10.
11	1000-sheet Finisher (Option)	Δ	Install either no. 11 or 12 Requires no.10, and either no.3 or 4
12	500-sheet Finisher (Option)	Δ	Install either no. 11 or 12 Requires no.10, and either no.3 or 4
13	Memory 256 MB (Option)	❍	
14	Key Counter Bracket	❍	

❍ = Available Δ = Requires another option

Fax option

All options for the fax unit are available when the fax unit has been installed.

Printer/scanner options

1. Two board slots are available, but only one of the following boards can be installed:
   - IEEE1284 Interface Board B679 (Centronics
   - IEEE 802.11b Wireless LAN G813
   - IEEE1394 Interface Board B581 (FireWire)
   - Bluetooth Interface Unit B736
2. The printer/scanner option requires:
   - 256 MB Memory Unit G818 (DIMM)

PAPER TRAY UNIT

B390

PAPER TRAY UNIT B390

TABLE OF CONTENTS

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

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

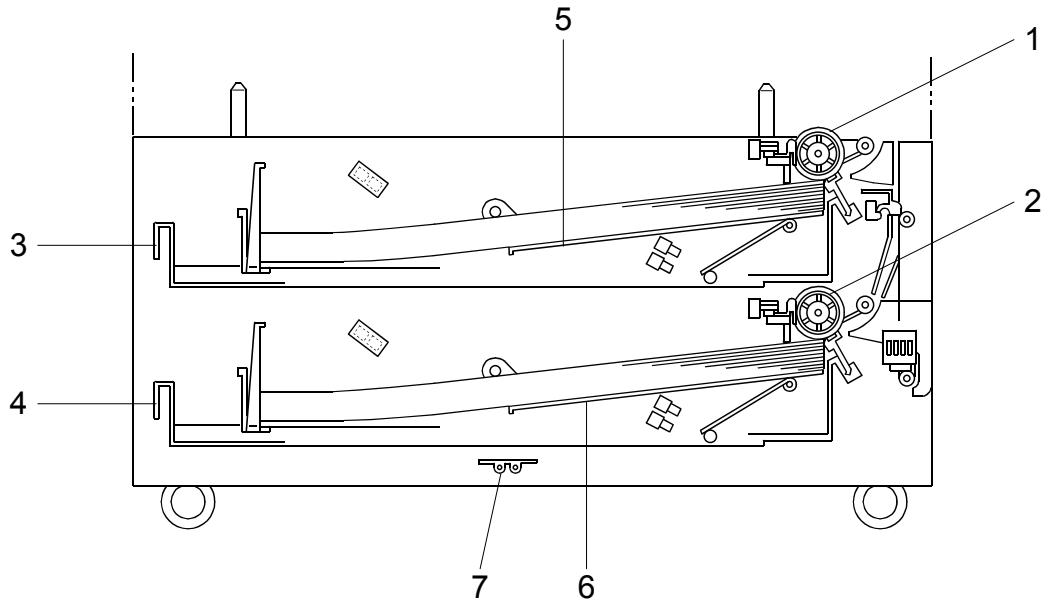
3 REPLACEMENT AND ADJUSTMENT.....14
3.1 FEED ROLLER REPLACEMENT.....14
3.2 TRAY MAIN BOARD REPLACEMENT.....15
3.3 TRAY MOTOR REPLACEMENT.....15
3.4 RELAY CLUTCH REPLACEMENT.....16
3.5 UPPER PAPER FEED CLUTCH REPLACEMENT.....17
3.6 LOWER PAPER FEED CLUTCH REPLACEMENT.....18
3.7 LIFT MOTOR REPLACEMENT.....19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

1. OVERALL MACHINE INFORMATION

1.1 SPECIFICATIONS

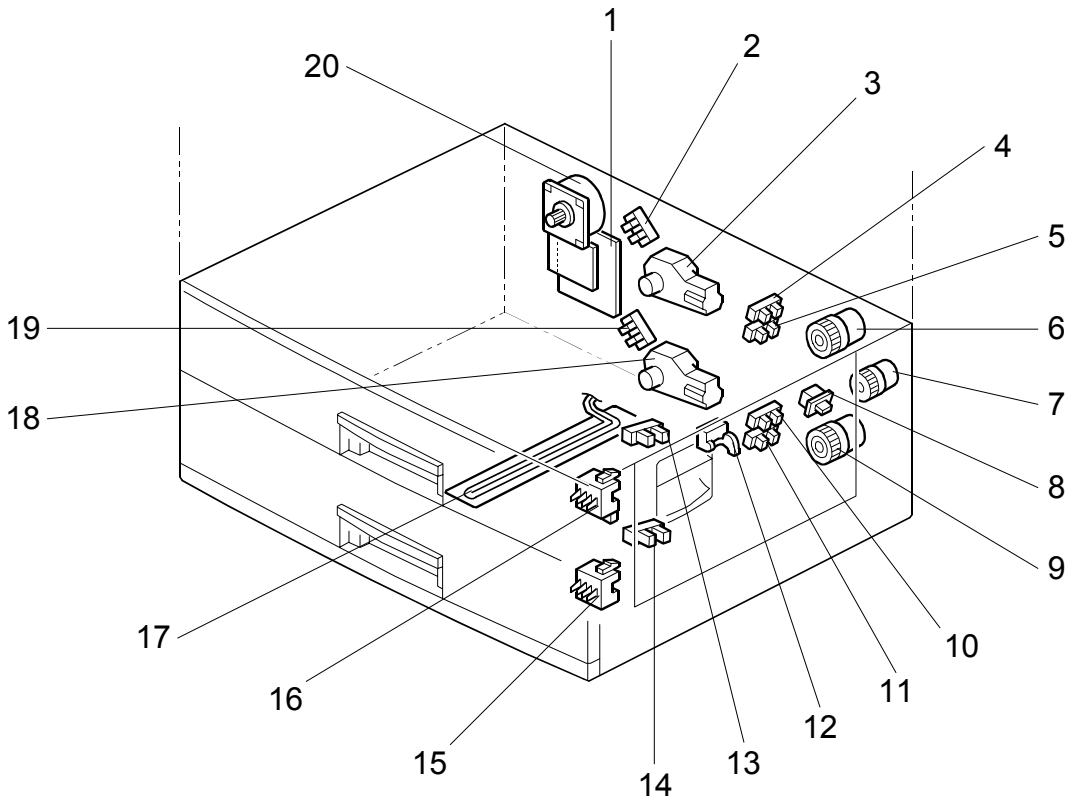
Paper Size:	A5 to A3 HLT lengthwise to DLT
Paper Weight:	60 ~ 105 g/m^2, 16 ~ 28 lbs.
Tray Capacity:	500 sheets (80 g/m^2, 20 lbs.) x 2 trays
Paper Feed System:	Feed roller and friction pad
Paper Height Detection:	4 steps (100%, 70%, 30%, Near end)
Power Source:	24 VDC, 5 VDC (from the copier/printer) 120 Vac: 120 V version, from the copier/printer when the optional tray heater is installed 220 ~ 240 Vac: 230 V version, from the copier/printer when the optional tray heater is installed
Power Consumption:	Max: 30 W (Copying/printing) 23 W (Optional Tray Heater On) Average: 17 W (Copying/printing) 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

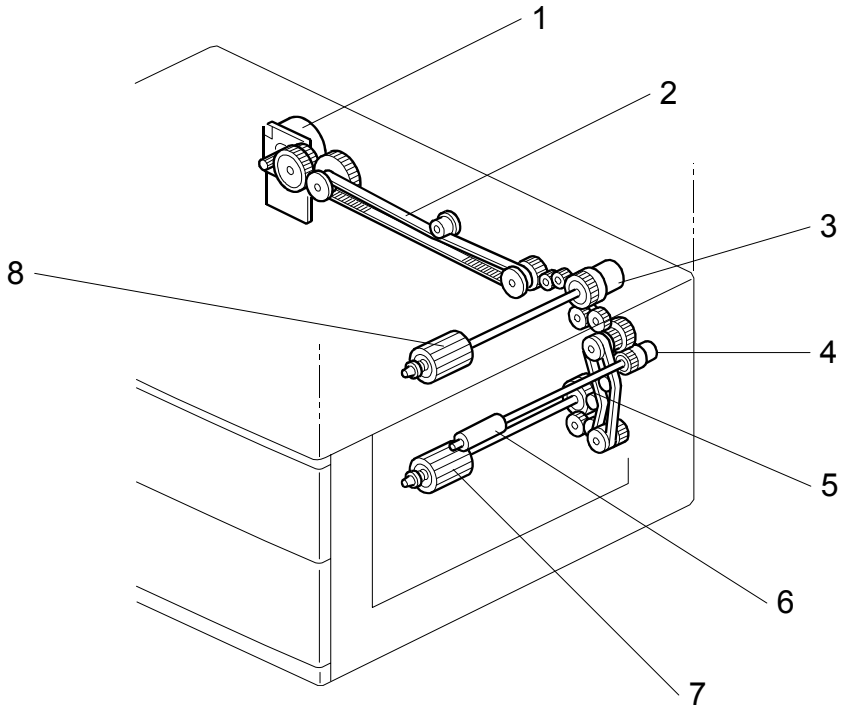


1. Tray main board
2. Upper lift sensor
3. Upper lift motor
4. Upper paper height 2 sensor
5. Upper paper height 1 sensor
6. Upper paper feed clutch
7. Relay clutch
8. Tray cover switch
9. Lower paper feed clutch
10. Lower paper height 2 sensor
11. Lower paper height 1 sensor
12. Vertical transport sensor
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/printer when the upper tray runs out of paper.	13
S4	Lower Paper End	Informs the copier/printer 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 when the tray cover is opened.	8
SW2	Upper Paper Size	Determines what paper size is in the upper tray.	16
SW3	Lower Paper Size	Determines what paper size is in the lower tray.	15
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/printer.	1
Others			
H1	Optional Tray Heater	Removes humidity from the paper in the trays.	17

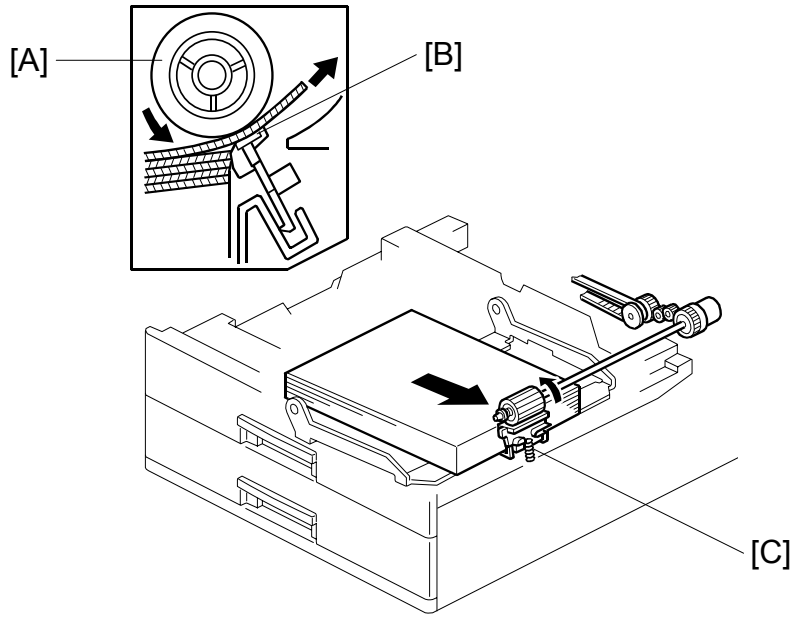
1.5 DRIVE LAYOUT



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

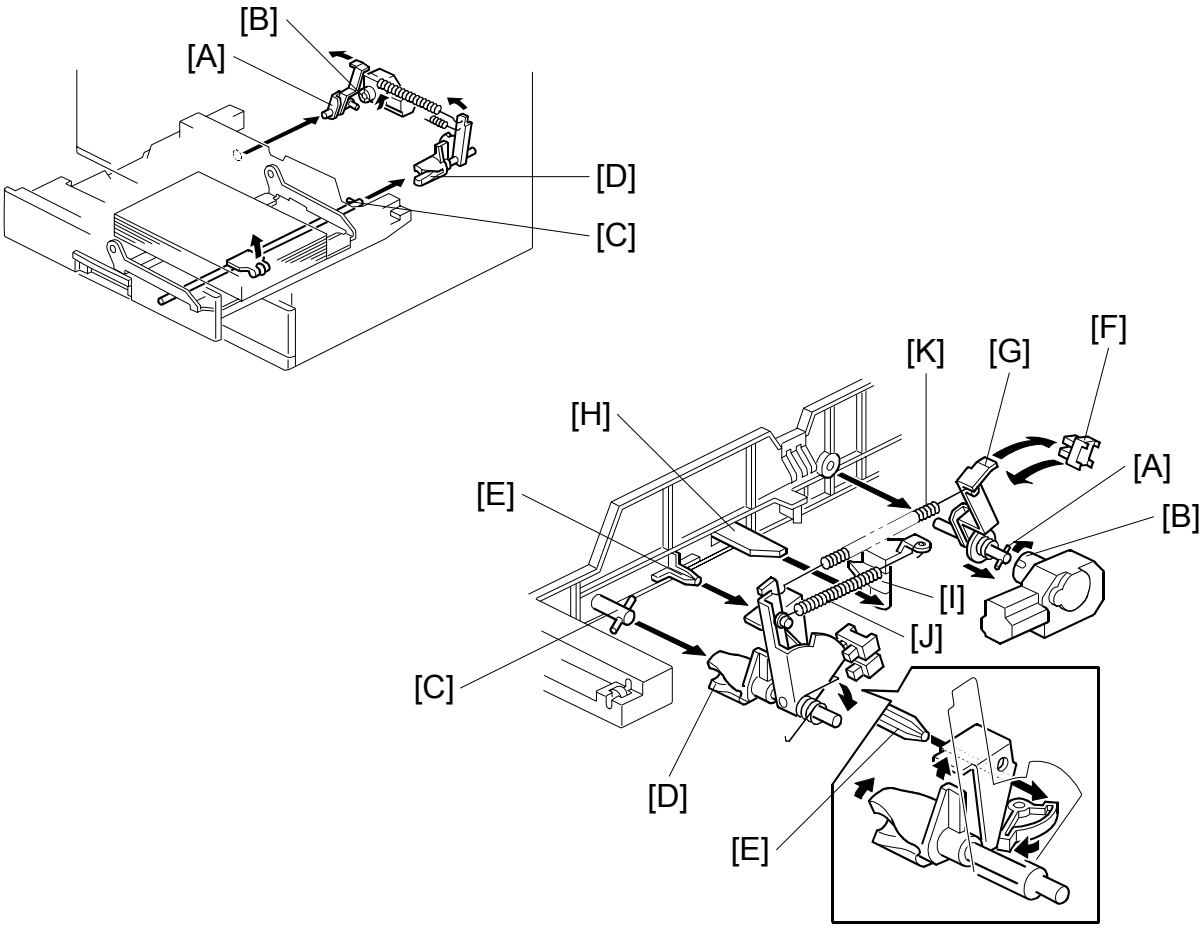
2. DETAILED DESCRIPTIONS

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/printer. 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.)

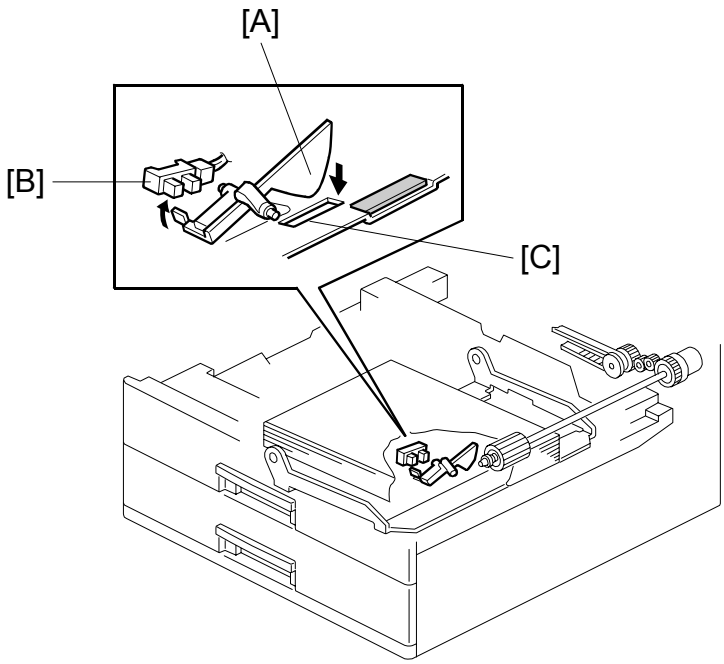
For A4-width paper or wider, a projection [H] on the side fence engages the secondary pressure spring [J] through a lever [I] . Then, the secondary pressure spring [J] applies paper feed pressure in addition to the main pressure spring [K], to ensure that extra pressure is applied to wider paper.

As stated earlier, various SP modes control this mechanism. The following table summarizes them.

No Middle Size Programmed	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

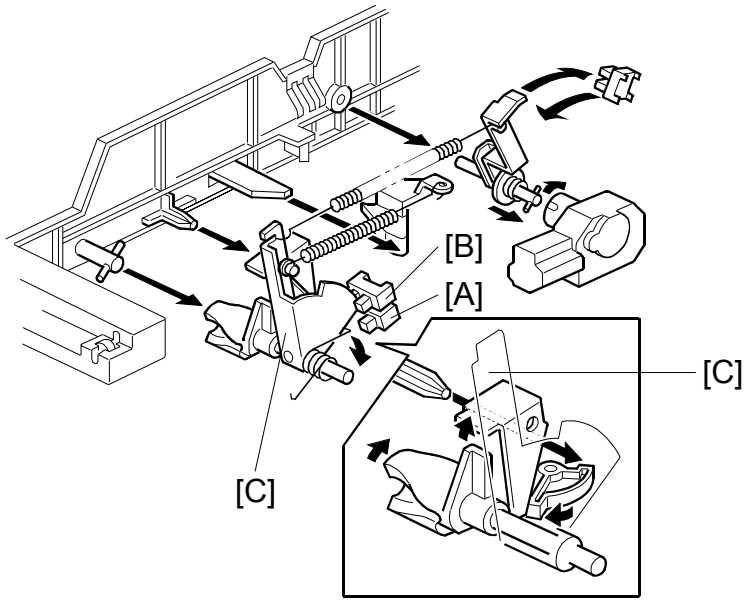


If there is some paper in the paper tray, the paper stack raises the paper end feeler [A] and the paper end sensor [B] is deactivated.

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/printer.

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.

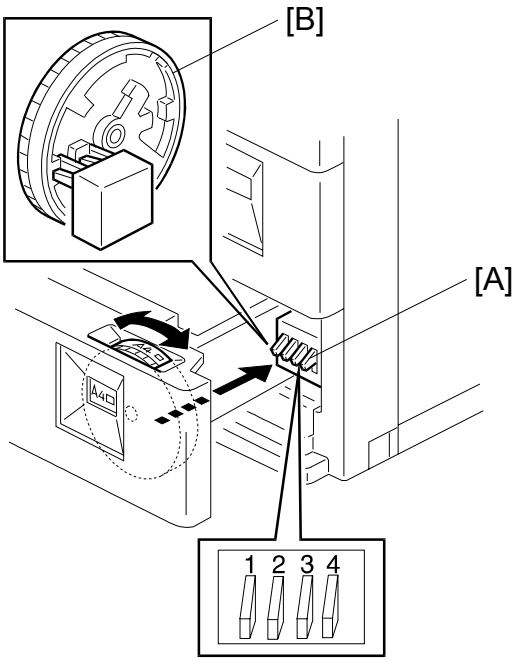
The following table summarizes how these SP modes work.

No Middle Size Programmed	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)



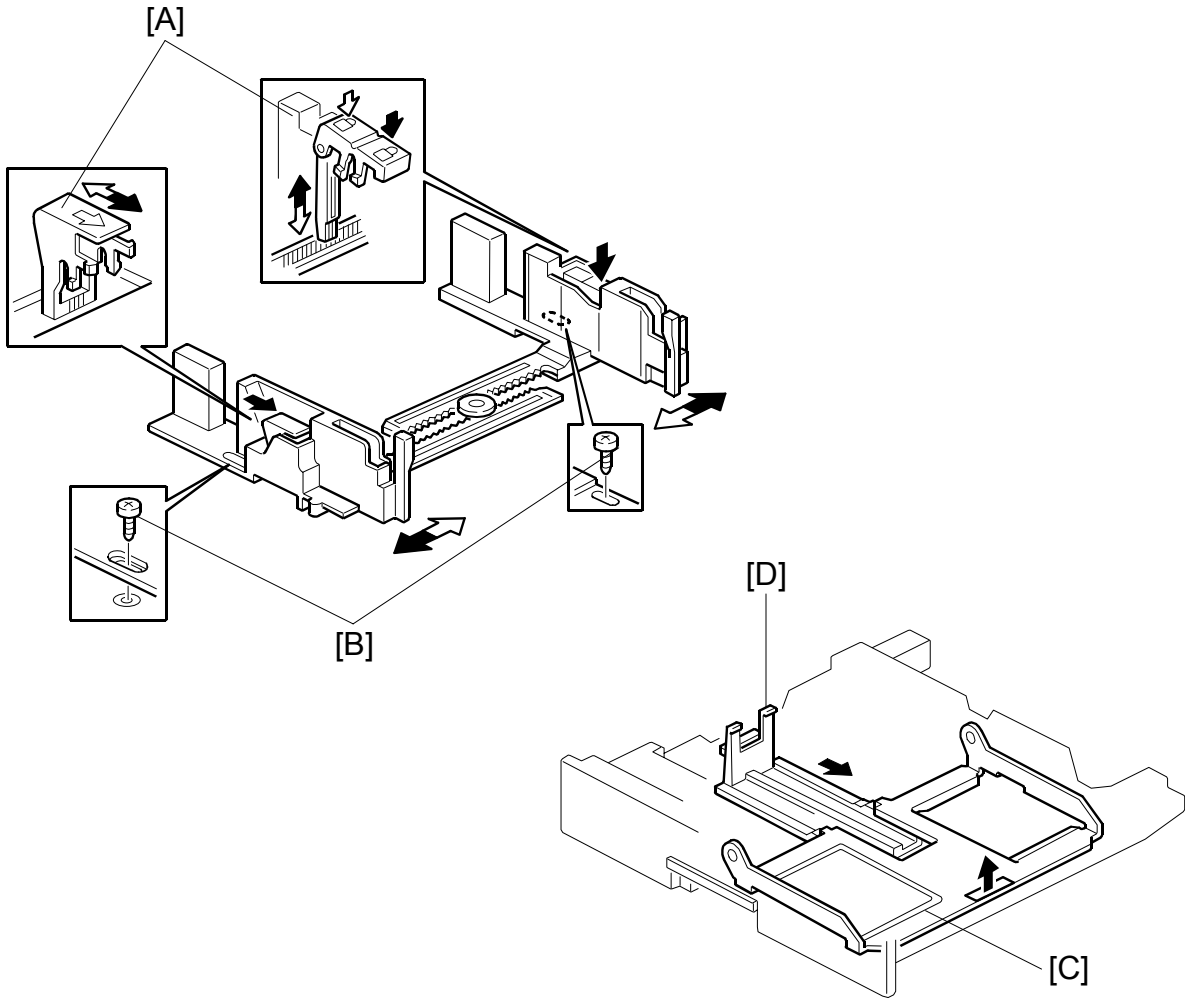
There are four paper size microswitches [A] on the front right plate of the paper tray unit. The switches are actuated by a paper size actuator [B] behind the paper size indicator plate, which is on the front right of the tray.

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

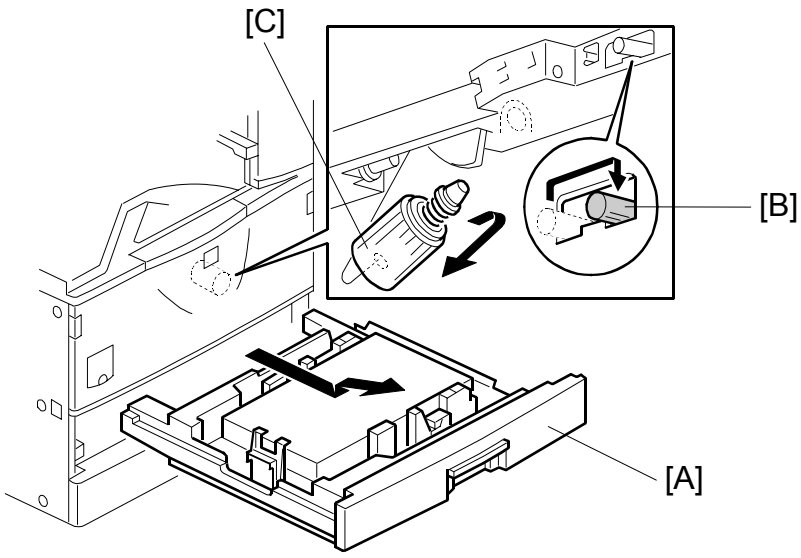
If the tray is full of paper and it is pushed in strongly, the fences may deform or bend. This may cause the paper to skew or the side-to-side registration to be incorrect. To correct this, each side fence has a stopper [A] attached to it. Each side fence can be secured with a screw [B], for customers who do not want to change the paper size.

End Fence

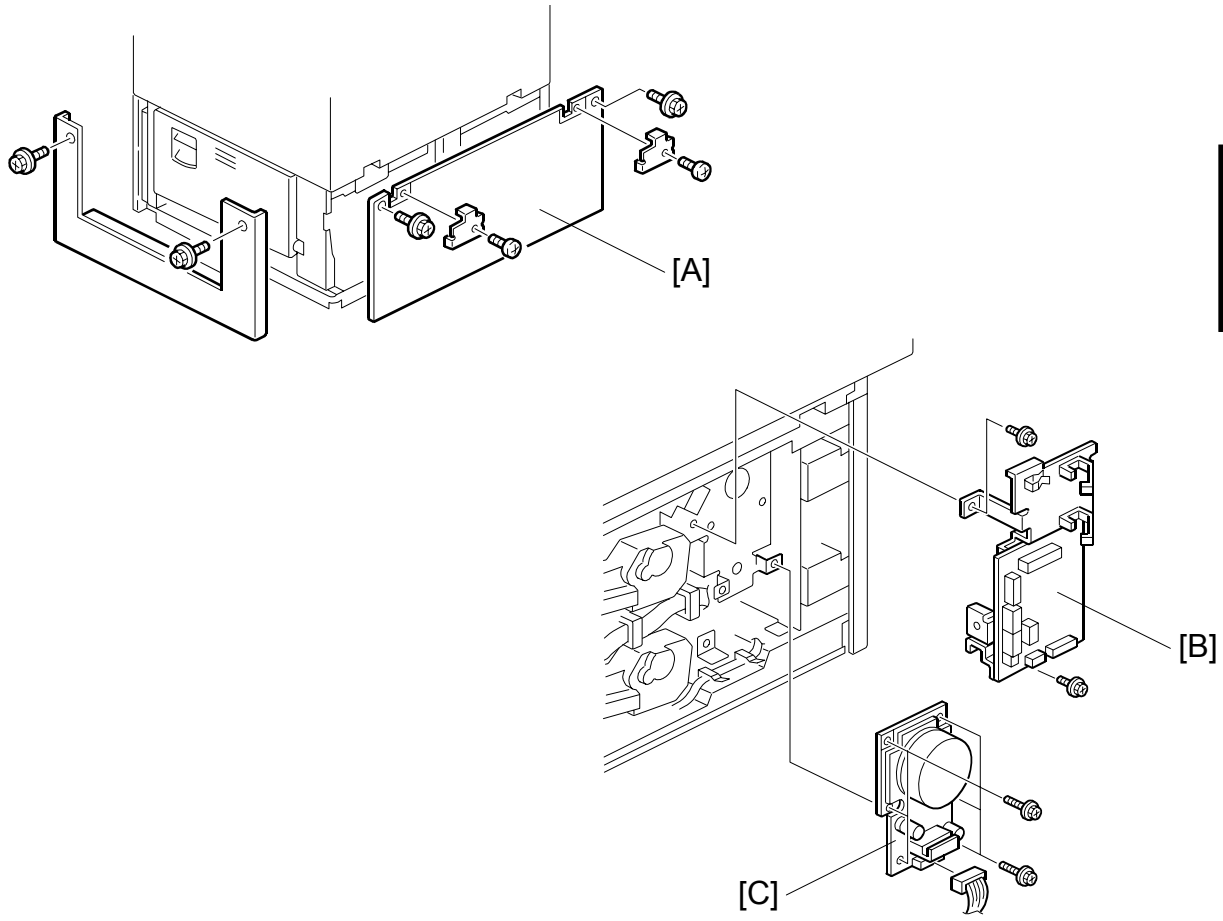
As the amount of paper in the tray decreases, the bottom plate [C] lifts up gradually. The end fence [D] is connected to the bottom plate. When the tray bottom plate rises, the end fence moves forward and pushes the back of the paper stack to keep it squared up.

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.



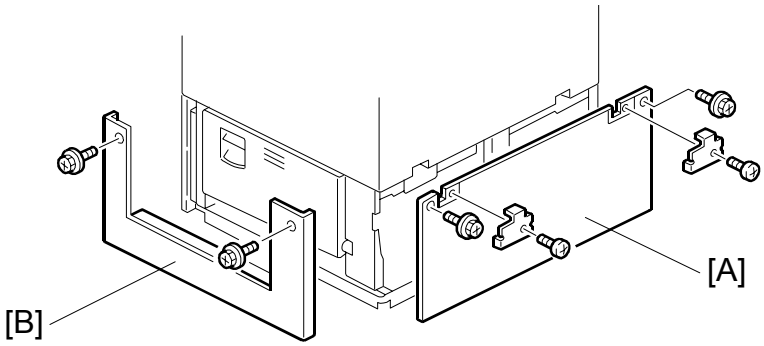
3.2 TRAY MAIN BOARD REPLACEMENT

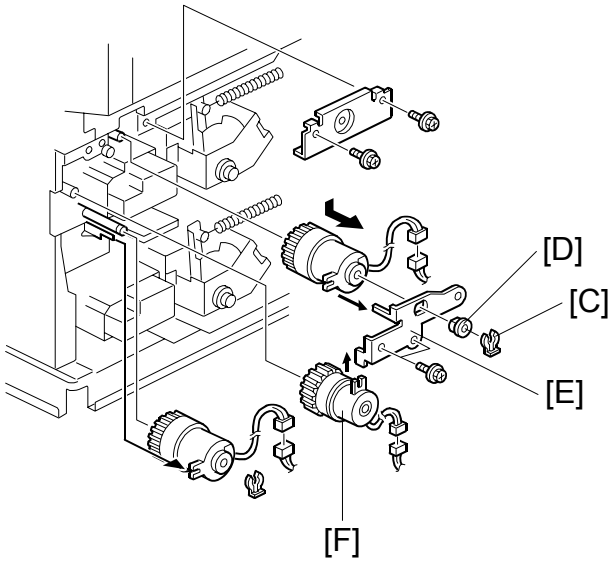
1. Remove the rear cover [A] (4 screws).
2. Replace the tray main board [B] (4 screws and 8 connectors).

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).

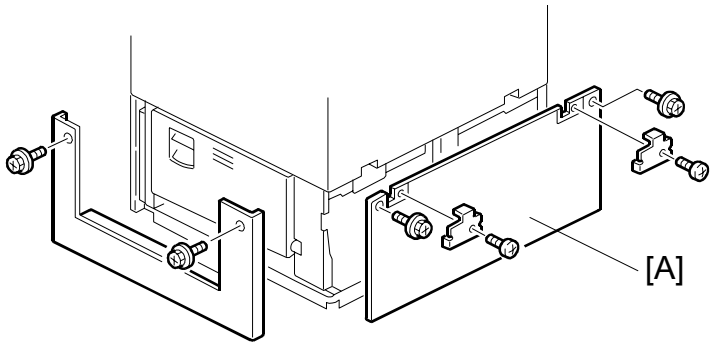
3.4 RELAY CLUTCH REPLACEMENT

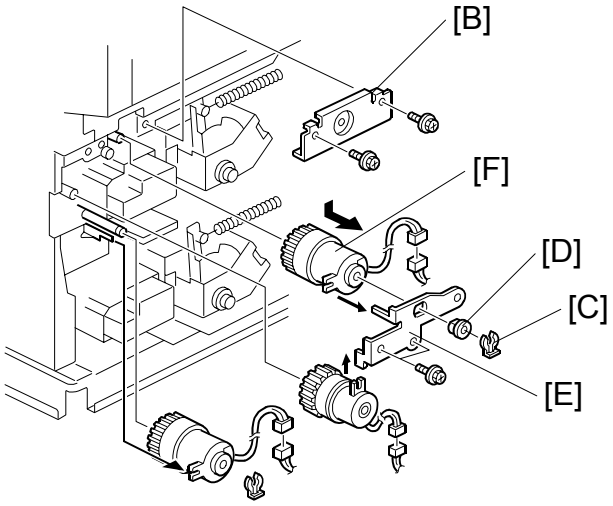




1. Remove the rear cover [A] (4 screws).
2. Remove the right cover [B] (2 screws).
3. Remove the snap ring [C].
4. Remove the bushing [D].
5. Remove the stopper bracket [E] (2 screws).
6. Replace the relay clutch [F] (1 connector).

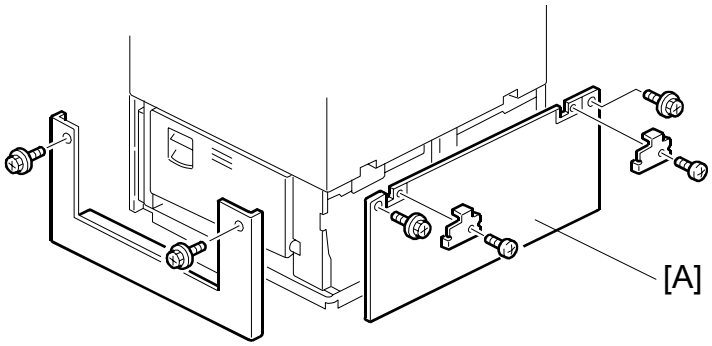
3.5 UPPER PAPER FEED CLUTCH REPLACEMENT

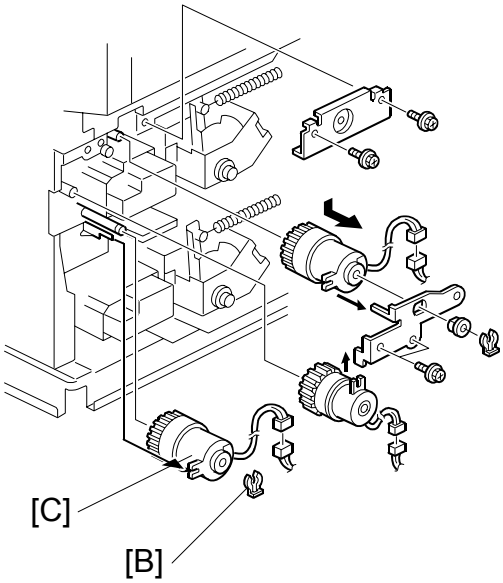




1. Remove the rear cover [A] (4 screws).
2. Remove the bracket [B] (2 screws).
3. Remove the snap ring [C].
4. Remove the bushing [D].
5. Remove the stopper bracket [E] (2 screws).
6. Replace the upper paper feed clutch [F] (1 connector).

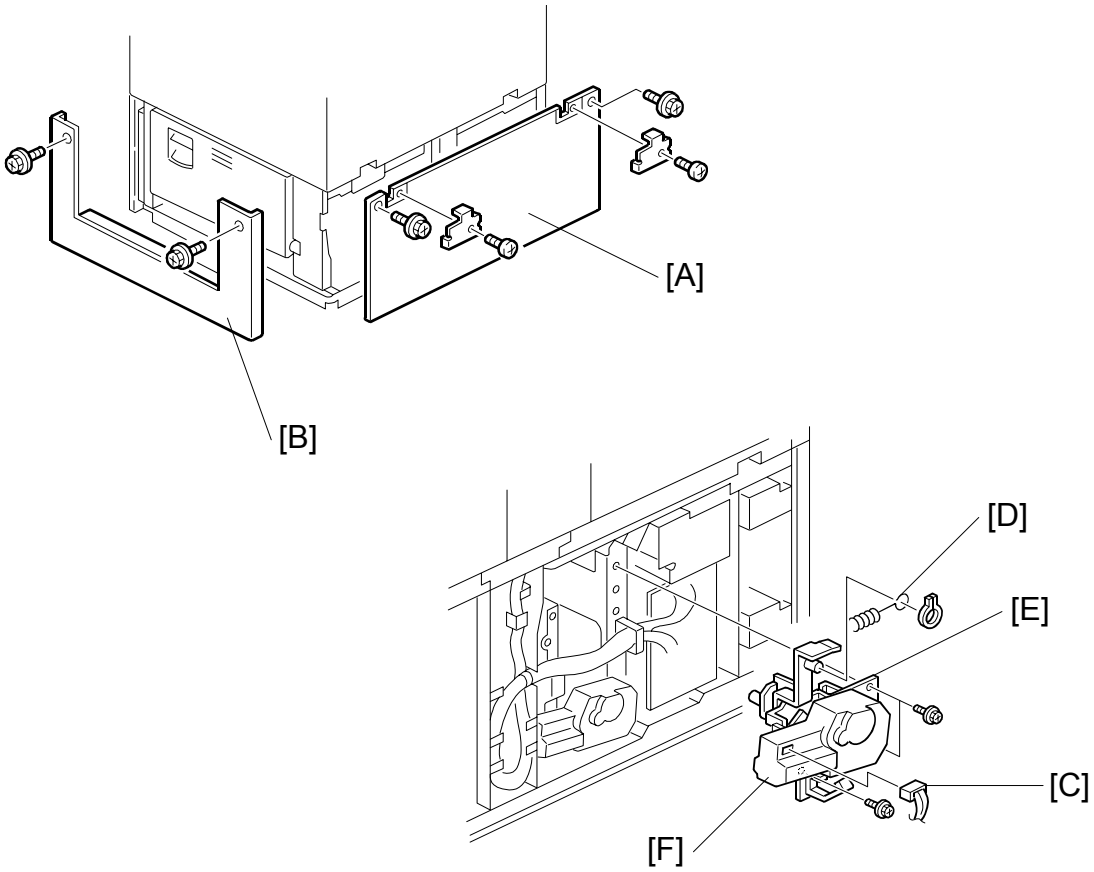
3.6 LOWER PAPER FEED CLUTCH REPLACEMENT





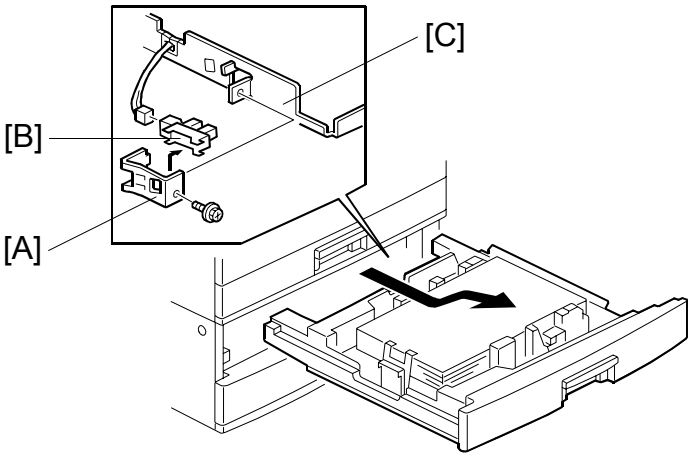
1. Remove the rear cover [A] (4 screws).
2. Remove the snap ring [B].
3. Replace the lower paper feed clutch [C].

3.7 LIFT MOTOR REPLACEMENT



1. Pull out the paper tray.
2. Remove the rear cover [A] (4 screws) and the bracket [B] (2 screws).
3. Disconnect the 2P connector [C].
4. Remove the spring [D].
5. Remove the lift motor unit [E] (3 screws).
6. Remove the lift motor [F] (2 screws).

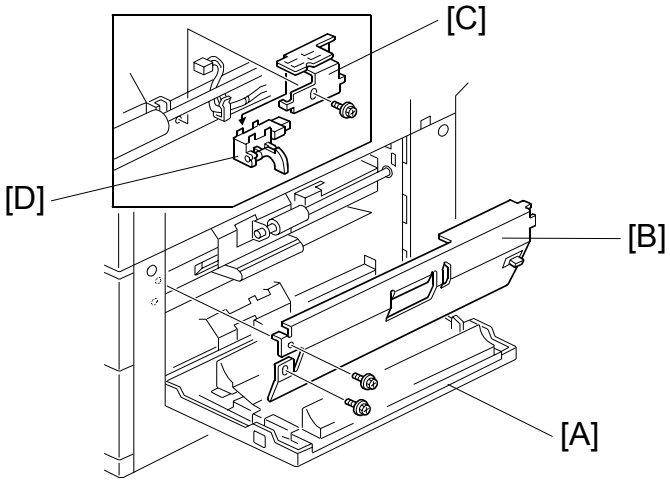
3.8 PAPER END SENSOR REPLACEMENT



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].

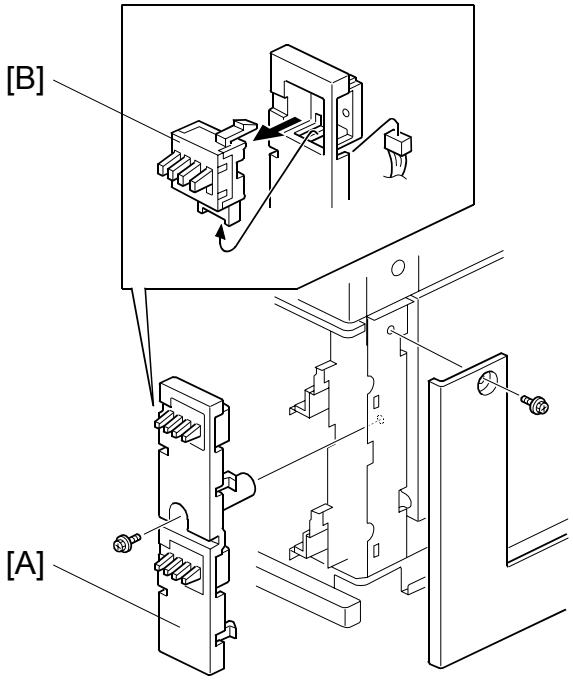
NOTE: After replacing the sensor, pull the sensor cable towards the right side of the frame [C] so that it does not touch the paper in the tray.

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
B391

LARGE CAPACITY TRAY B391
TABLE OF CONTENTS

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

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

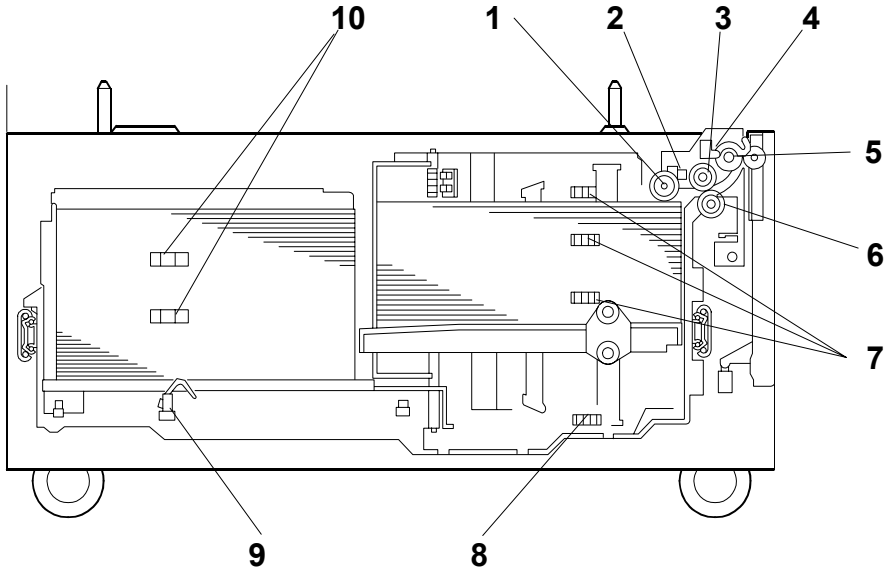
3 REPLACEMENT AND ADJUSTMENT.....11
3.1 DETACHING THE TRAY FROM THE MAINFRAME.....11
3.2 REAR FENCE HP SENSOR.....11
3.3 CHANGING THE TRAY PAPER SIZE.....12
3.4 LEFT TRAY PAPER END SENSOR.....12
3.5 TRAY LIFT MOTOR.....13
3.6 TRAY MOTOR.....14
3.7 PAPER FEED CLUTCH AND RELAY CLUTCH.....15
3.8 PAPER FEED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

1. OVERALL MACHINE INFORMATION

1.1 SPECIFICATIONS

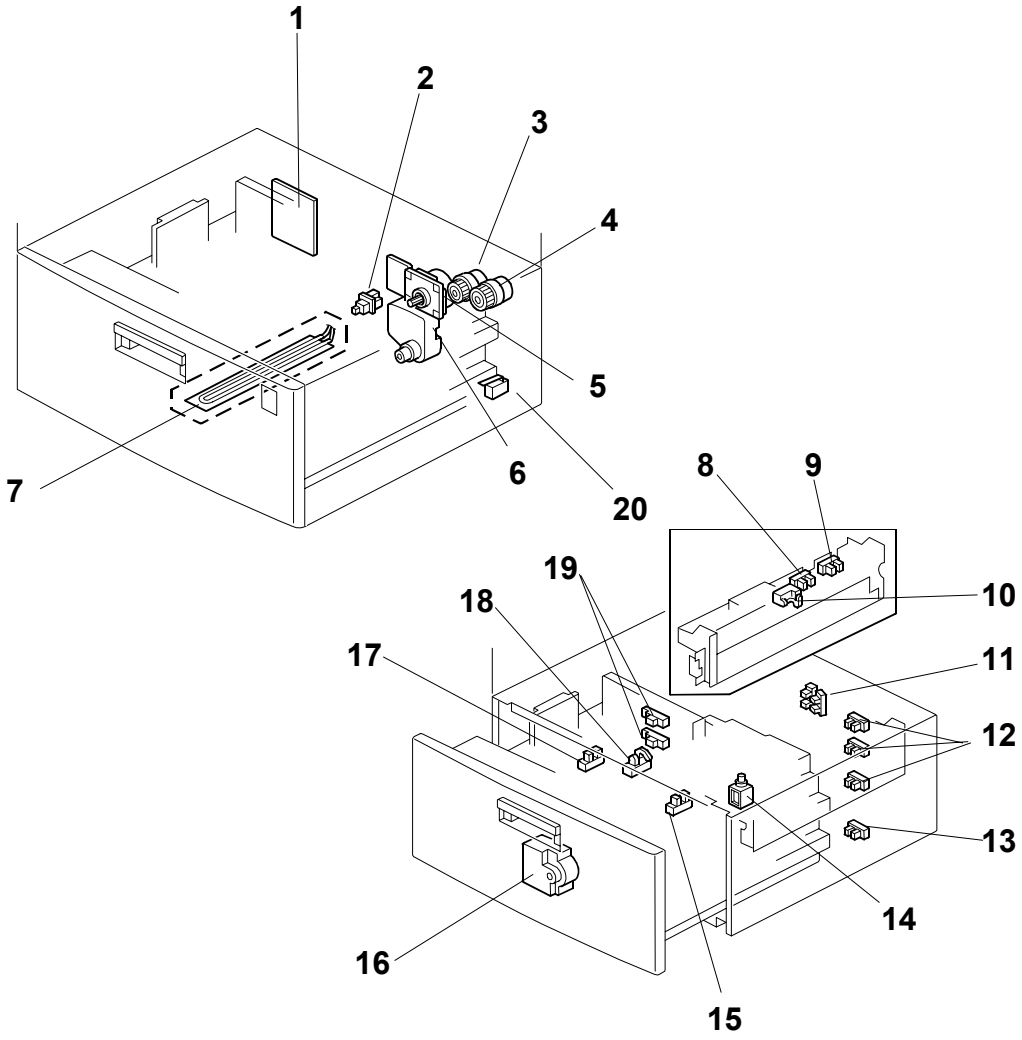
Paper Size:	A4 sideways/LT sideways
Paper Weight:	60 g/m^2 ~ 105 g/m^2, 16 lb ~ 28 lb
Tray Capacity:	2,000 sheets (80 g/m^2, 20lb)
Remaining Paper Detection:	5 steps (100%, 75%, 50%, 25%, Near end)
Power Source:	24 Vdc, 5 Vdc (from copier/printer)
Power Consumption:	26 W (Max.)/14 W (Ave.)
Weight:	25 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



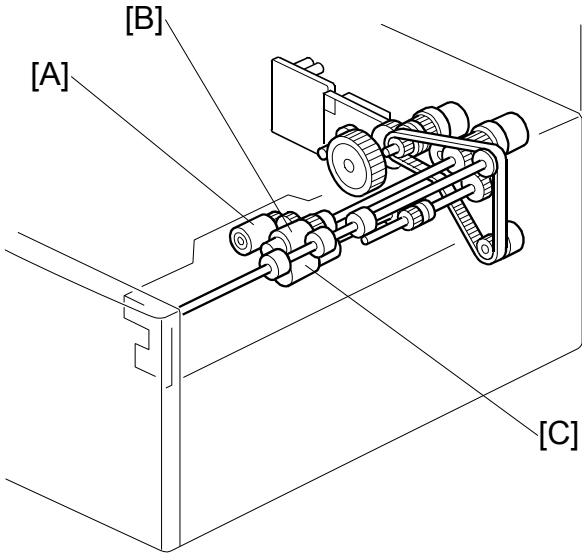
1. Main Board
2. Tray Sensor (Switch)
3. Relay Clutch
4. Paper Feed Clutch
5. Tray Motor
6. Tray Lift Motor
7. Tray Heater (option)
8. Right Tray Paper End Sensor
9. Upper Limit Sensor
10. Relay Sensor
11. Side Fence Open/Closed Sensors
12. Paper Height Sensors 1, 2, 3
13. Lower Limit Sensor
14. Side 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/printer 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 (Switch)	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/printer 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/printer.	1
Switches			
SW1	Right Cover	Detects whether the right cover is open.	20

2. DETAILED SECTION DESCRIPTIONS

2.1 PAPER FEED

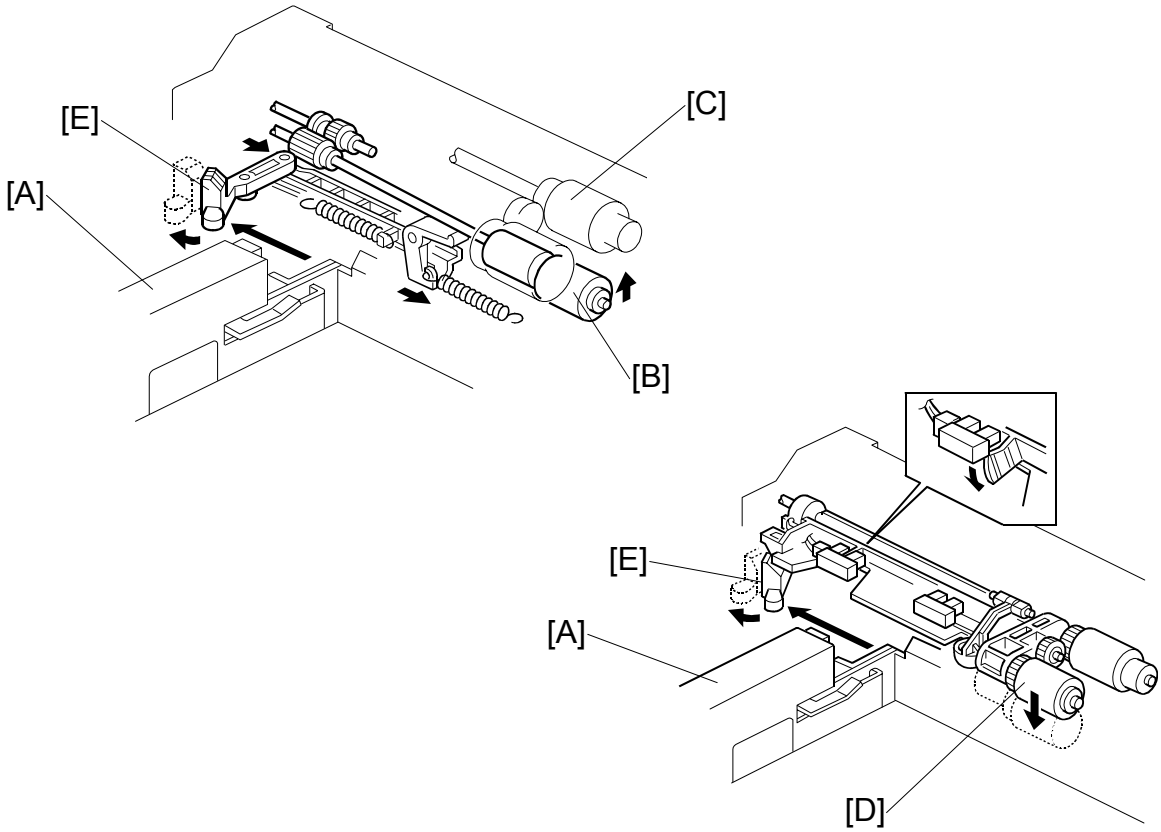


This products uses an FRR type paper feed mechanism.

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

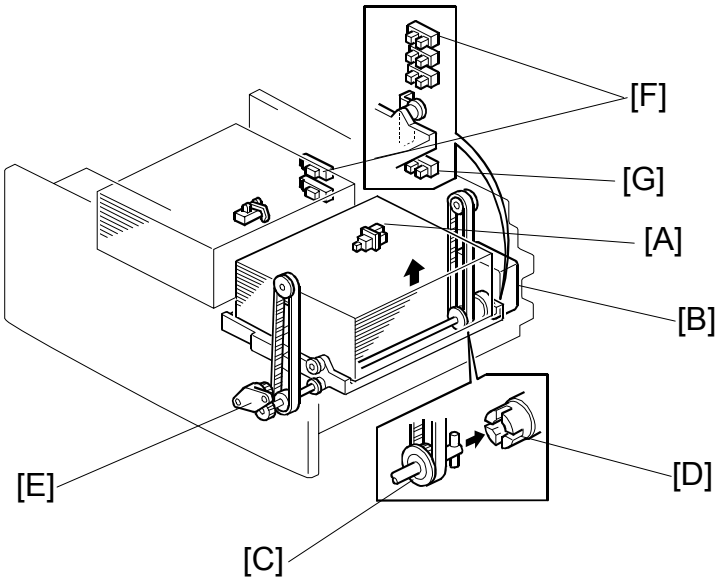


To prevent the paper from being torn when pulling out the paper feed tray, the reverse and pickup rollers are set so that they release automatically.

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.

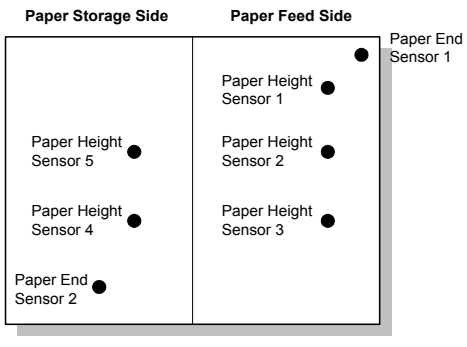
The machine determines the amount of remaining paper based on the sensor outputs, as shown in the following table.

Paper end sensor 1: ❍ = Low (no paper), ● = High (paper present)
Other sensors: ❍ = Low (paper present), ● = High (no paper)

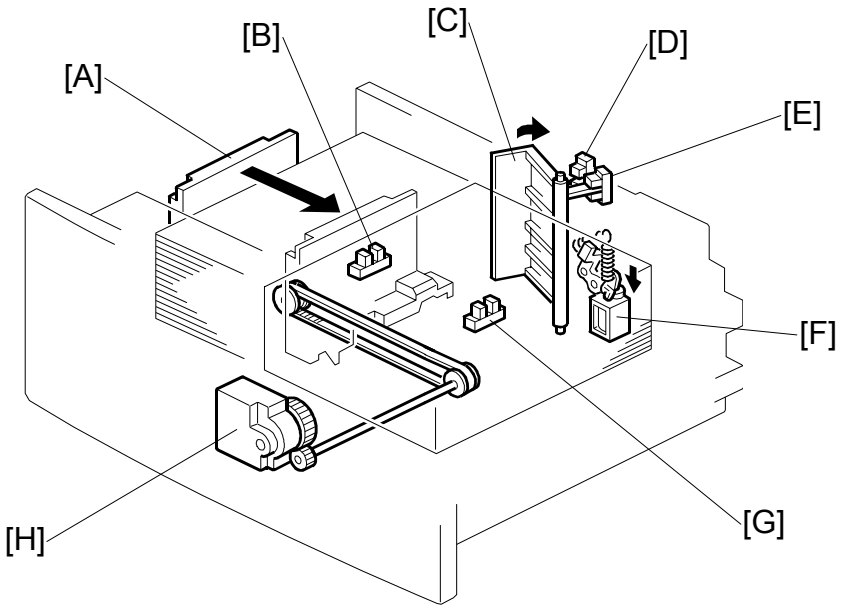
	Amount of paper								
	100%	75%		50%					
Paper Height Sensor 1	❍	❍	❍	❍	❍	❍	●	❍	❍
Paper Height Sensor 2	❍	❍	❍	❍	❍	●	–	❍	●
Paper Height Sensor 3	❍	❍	●	❍	❍	–	–	●	–
Paper End Sensor 1	●	●	●	●	●	●	●	●	●
Paper Height Sensor 4	❍	●	❍	●	●	❍	❍	●	●
Paper Height Sensor 5	❍	❍	❍	●	●	❍	❍	❍	❍
Paper End Sensor 2	❍	❍	❍	❍	●	❍	❍	❍	❍

	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).

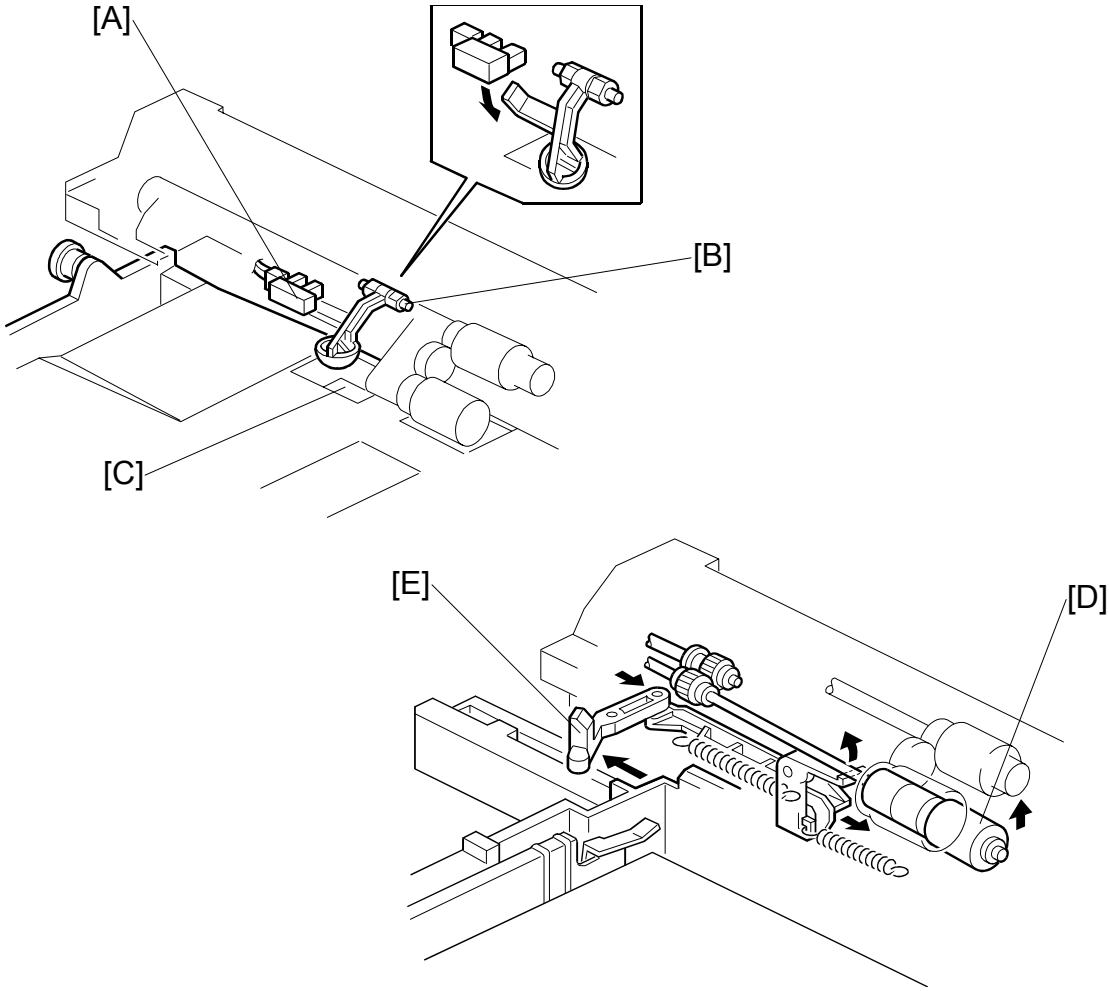
The side fence open/closed sensor [D] detects when the side fence is closed. When it is not closed, the user is prompted at the operation panel to free the mechanism.

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.

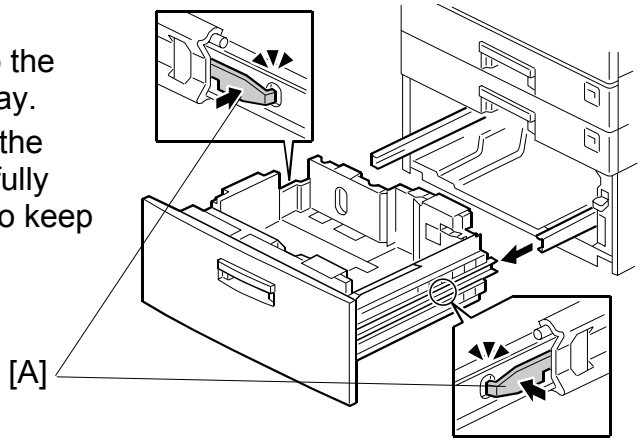
When the tray is being pulled out, the lever [E] lifts the pick-up roller and this also lifts up the feeler.

3. REPLACEMENT AND ADJUSTMENT

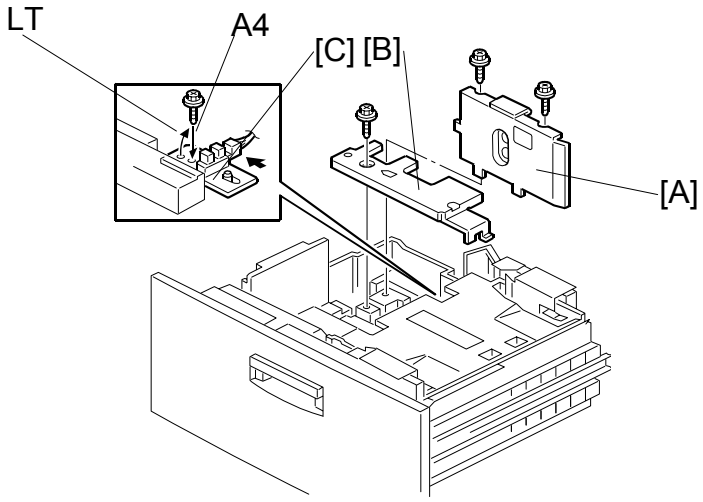
3.1 DETACHING THE TRAY FROM THE MAINFRAME

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.



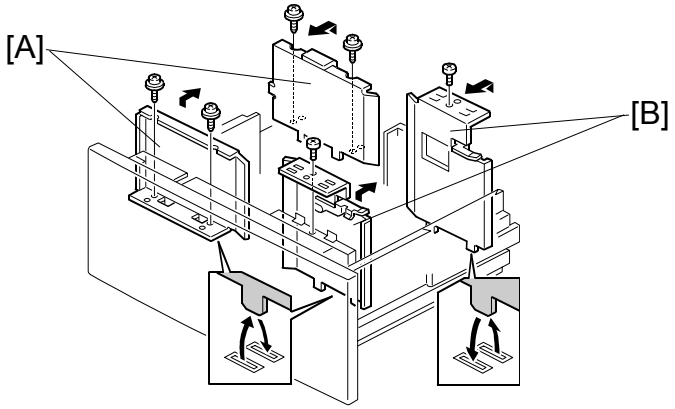
3.2 REAR FENCE HP SENSOR



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.

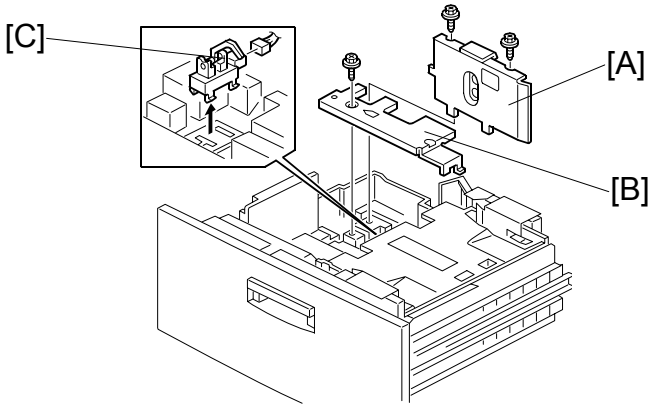
3.3 CHANGING THE TRAY PAPER SIZE



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.

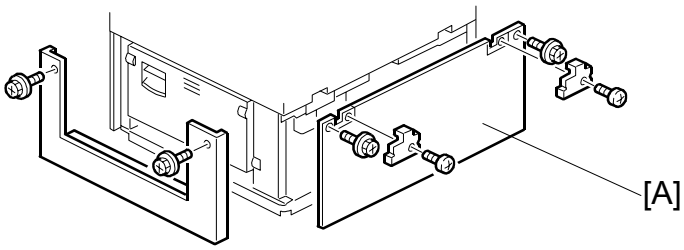
NOTE: When securing the right tray side fence, fasten the screw after setting the paper in the right tray and adjusting the fence to the width of the paper.

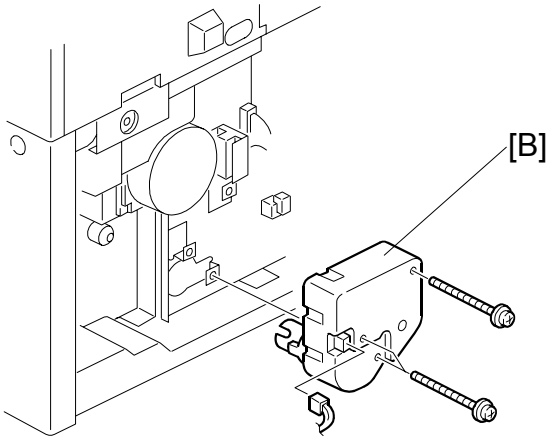
3.4 LEFT TRAY PAPER END SENSOR



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).

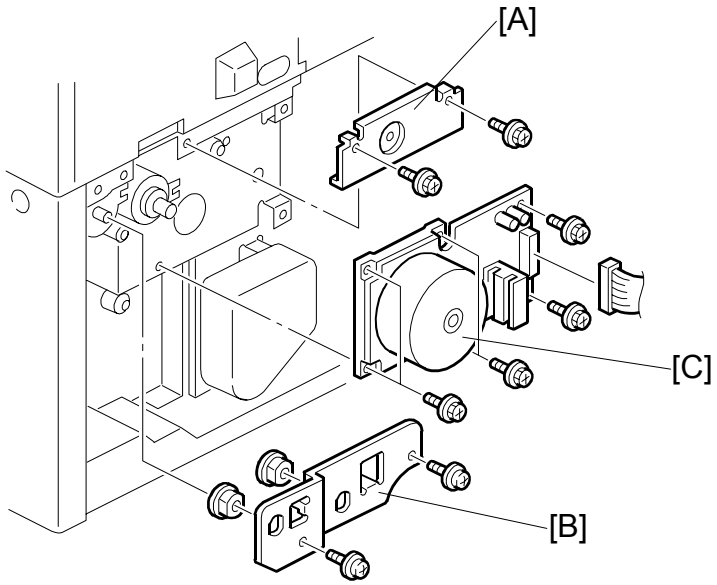
3.5 TRAY LIFT MOTOR





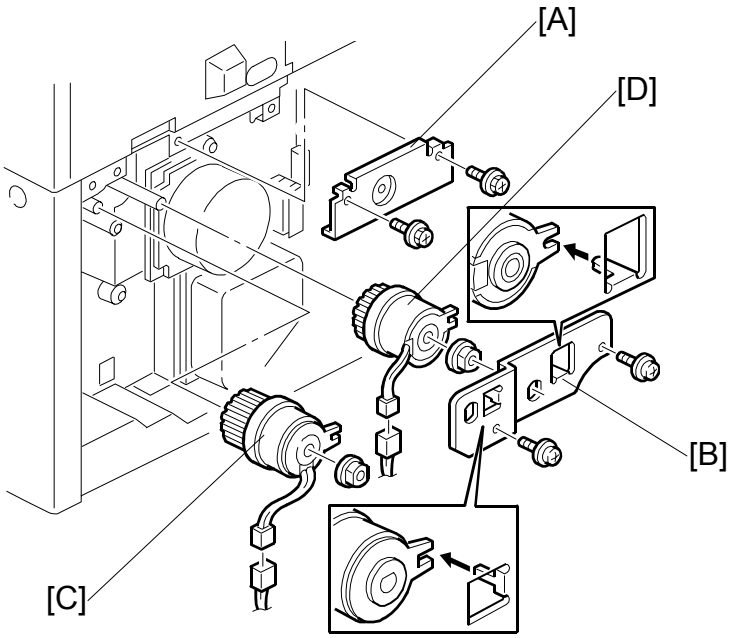
1. Remove the brackets (1 screw for each).
2. Remove the rear cover [A] (2 screws).
3. Remove the tray lift motor [B] (3 screws, 1 connector).

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).

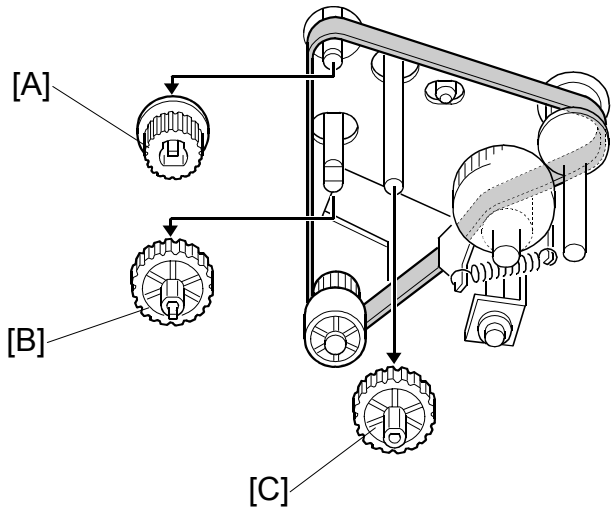
3.7 PAPER FEED CLUTCH AND RELAY CLUTCH

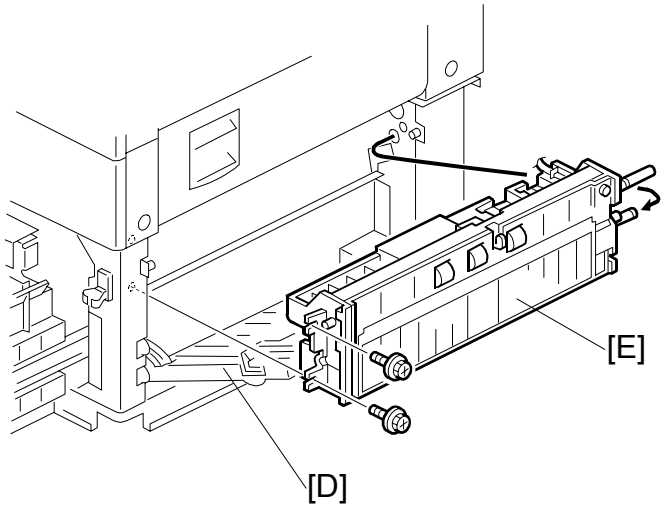


1. Remove the rear cover.
2. Remove bracket #1 [A] (2 screws).
3. Remove bracket #2 [B] (2 screws).
4. Remove all bushings.
5. Remove the paper feed clutch [C] and relay clutch [D].
6. Replace the required clutch.

NOTE: Make sure to properly secure both clutches before completing installation.

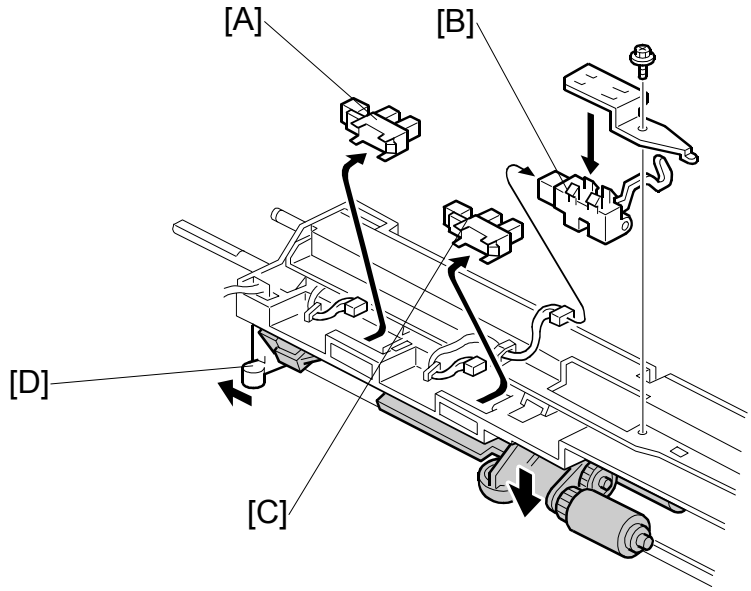
3.8 PAPER FEED UNIT





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).

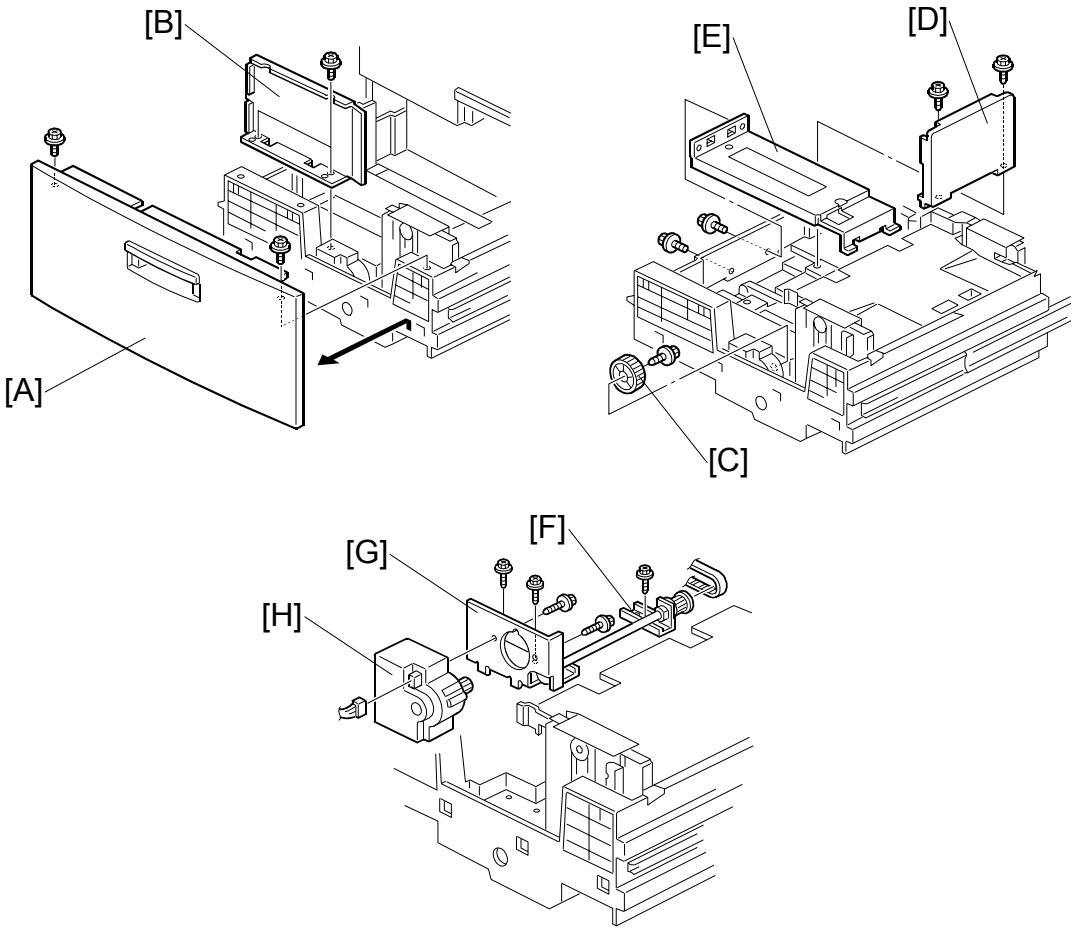
3.9 UPPER LIMIT, RIGHT TRAY PAPER END, AND RELAY SENSORS



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]

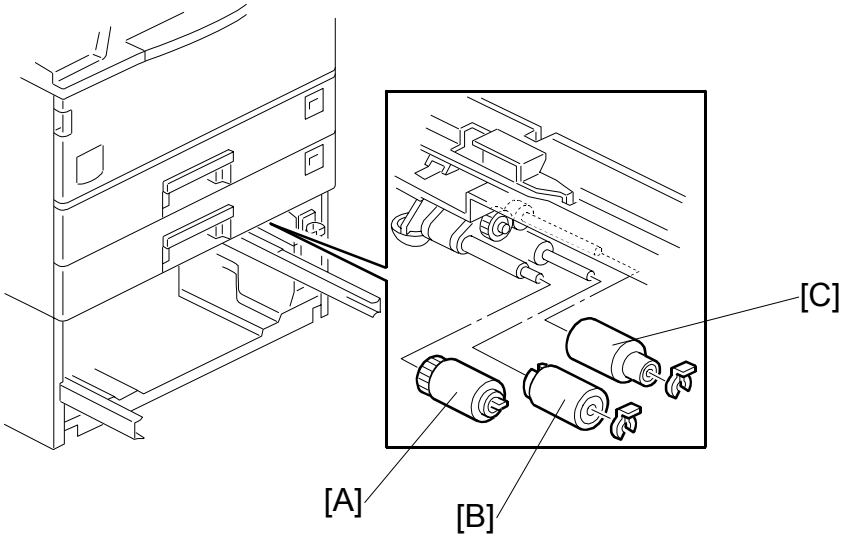
NOTE: When replacing the upper limit [A] and paper end sensor [C], please be sure to do so while pushing the release lever [D].

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.

1,000-SHEET FINISHER

B408

1,000-SHEET FINISHER B408

TABLE OF CONTENTS

1. REPLACEMENT AND ADJUSTMENT 1
- 1.1 MAIN PCB 1
- 1.2 STAPLER UNIT 2
- 1.3 MOTORS 3
  - 1.3.1 SHIFT MOTOR 3
  - 1.3.2 STAPLER MOTOR 3
  - 1.3.3 UPPER TRANSPORT MOTOR AND EXIT MOTOR 4
  - 1.3.4 LOWER TRANSPORT MOTOR 4
- 1.4 MOTORS AND SENSORS 5
  - 1.4.1 PREPARATION 5
  - 1.4.2 STACK HEIGHT SENSOR 6
  - 1.4.3 STAPLER TRAY PAPER SENSOR 6
  - 1.4.4 LOWER TRAY LIFT MOTOR 7
  - 1.4.5 STACK FEED-OUT MOTOR 7

2. TROUBLESHOOTING 8
- 2.1 JAM DETECTION 8

3. SERVICE TABLES 9
- 3.1 DIP SWITCH SETTINGS 9

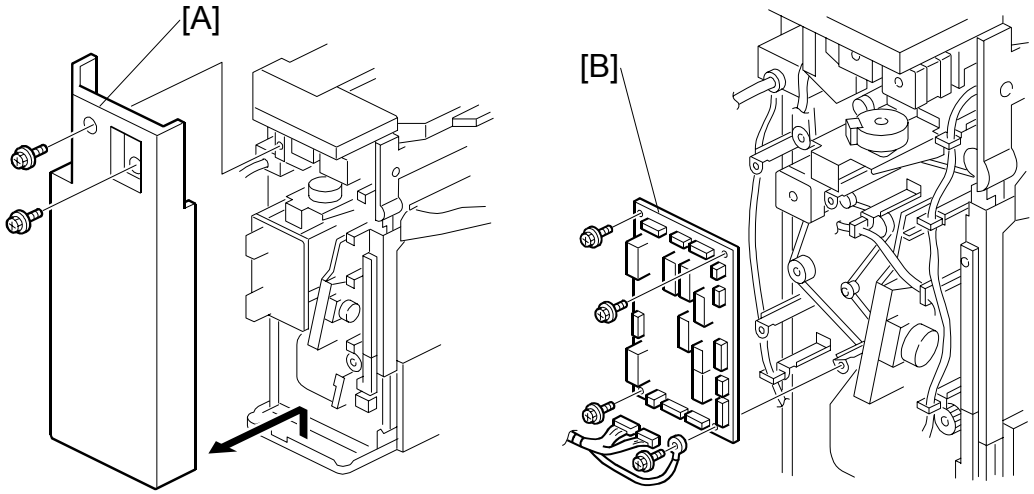
4. DETAILED DESCRIPTIONS 10
- 4.1 GENERAL LAYOUT 10
- 4.2 ELECTRICAL COMPONENT LAYOUT 11
- 4.3 ELECTRICAL COMPONENT DESCRIPTION 13
- 4.4 DRIVE LAYOUT 15
- 4.5 JUNCTION GATES 16
  - Upper Tray Mode 16
  - Sort/Stack Mode 16
  - Staple Mode 16
- 4.6 UPPER TRAY 17
- 4.7 LOWER TRAY UP/DOWN MECHANISMS 18
- 4.8 PAPER SHIFT MECHANISM 19
- 4.9 JOGGER UNIT PAPER POSITIONING MECHANISM 20
- 4.10 EXIT GUIDE PLATE 21
- 4.11 STAPLER MECHANISM 22
- 4.12 STAPLER UNIT MOVEMENT MECHANISM 23
- 4.13 PAPER FEED-OUT MECHANISM 24

1. REPLACEMENT AND ADJUSTMENT

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

NOTE: This manual uses the following symbols.
☛ : See or Refer to : Screws : Connector : Clip ring
 : E-ring

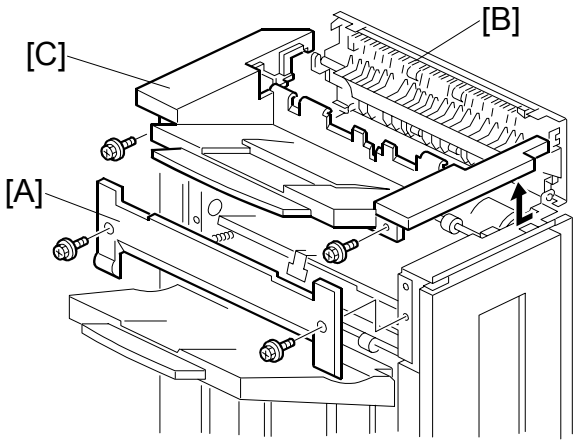
1.1 MAIN PCB



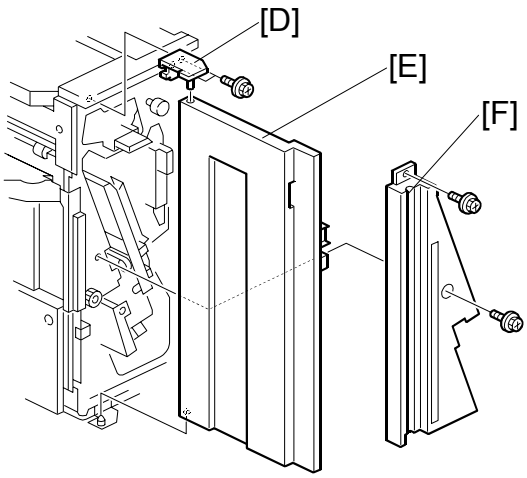
1. Rear cover [A] (x 2)
2. Main PCB [B] (x 4, All)

1.2 STAPLER UNIT

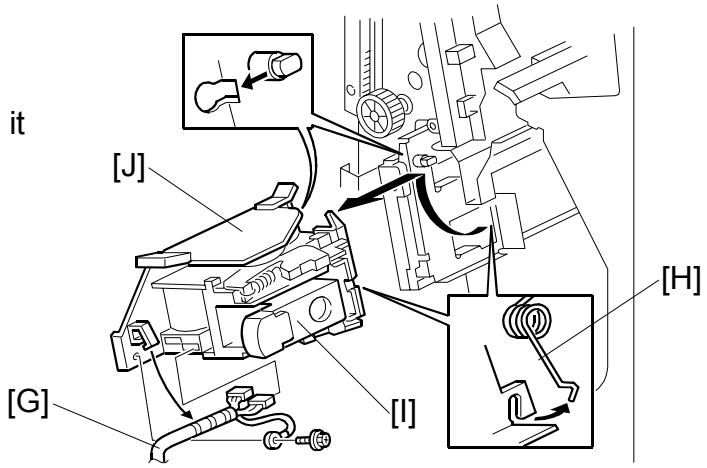
1. Side cover [A] (x 2)
2. Open exit guide plate [B]
3. Upper side cover [C] (x 2)



4. Front cover support plate [D] (x 1)
5. Front cover [E]
6. Front inner cover [F] (x 2)



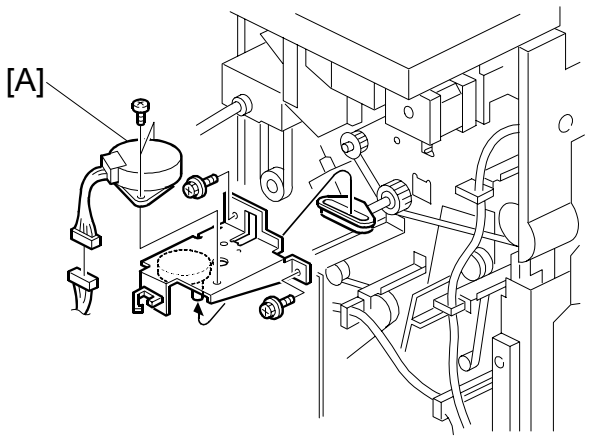
7. Harness [G]
8. Unhook the spring [H]
9. Turn the stapler unit [I] and take it out.
10. Bracket [J] (x 2)



1.3 MOTORS

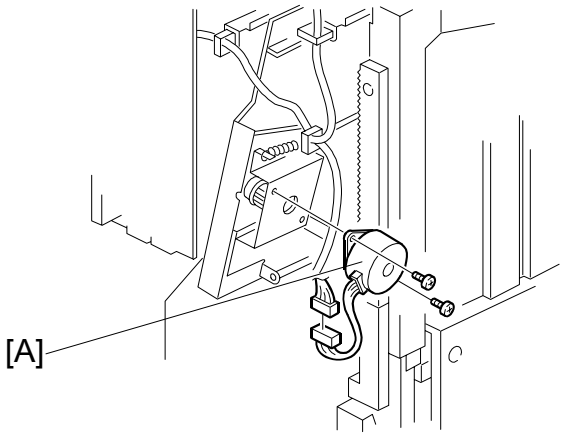
1.3.1 SHIFT MOTOR

1. Rear cover (☛1.1)
2. Shift motor [A] (🔩 x 2, 🖐 x 1)



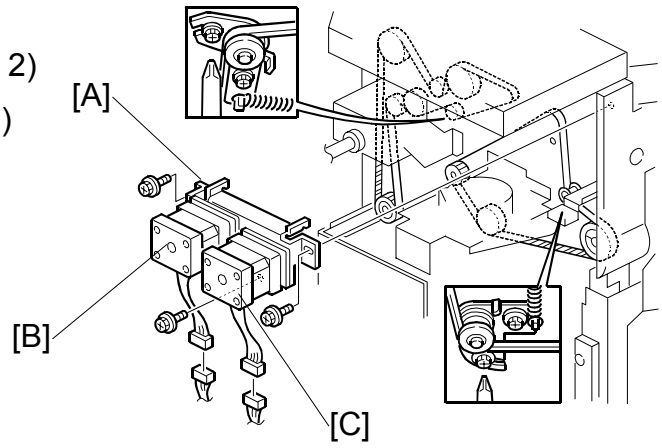
1.3.2 STAPLER MOTOR

1. Rear cover (☛1.1)
2. Stapler motor [A] (🔩 x 2, 🖐 x 1)



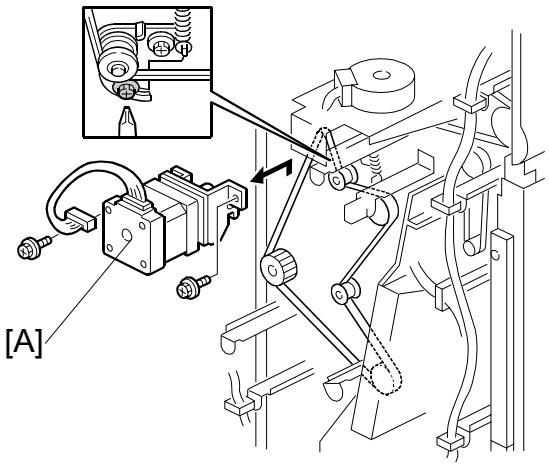
1.3.3 UPPER TRANSPORT MOTOR AND EXIT MOTOR

1. Rear cover (☛1.1)
2. Motor assembly [A] (🔩 x 4, 🖐 x 2)
3. Upper transport motor [B] (🔩 x 4)
4. Exit motor [C] (🔩 x 4)



1.3.4 LOWER TRANSPORT MOTOR

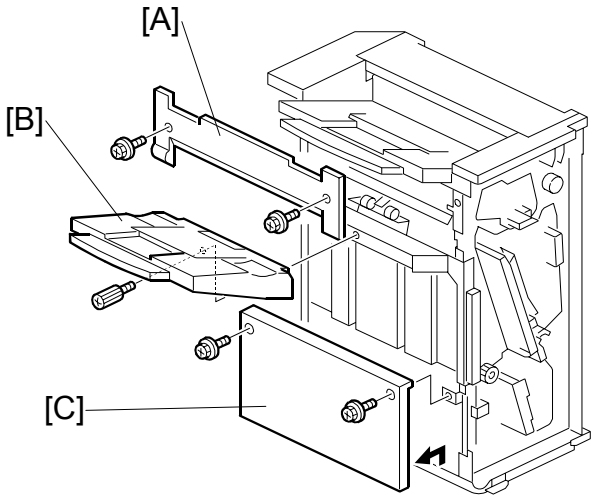
1. Main PCB (☛1.1)
2. Lower transport motor [A] (🔩 x 2, 🖐 x 1)



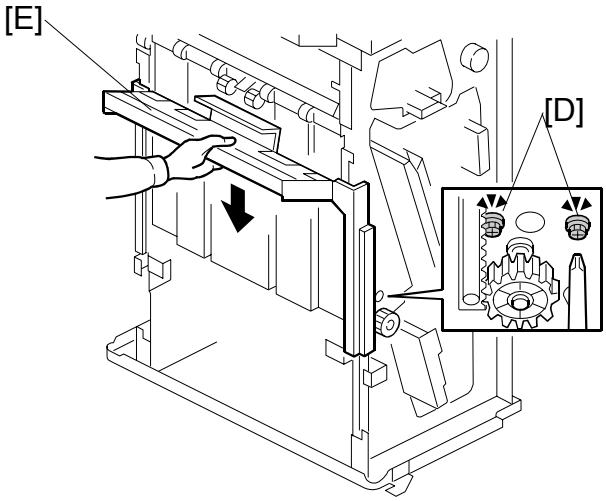
1.4 MOTORS AND SENSORS

1.4.1 PREPARATION

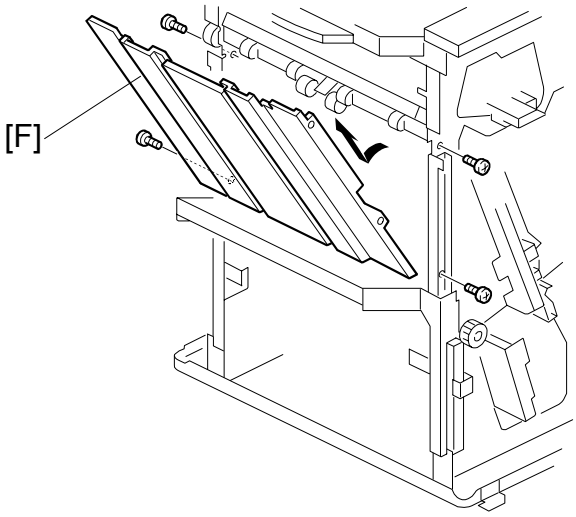
1. Front cover and inner cover (☛1.2)
2. Upper side cover [A] (☞ x 2)
3. Upper tray [B] (☞ x 1)



4. Lower side cover [C] (☞ x 2)
5. Loosen the 2 screws [D].
6. Lower the lower tray guide plate [E].

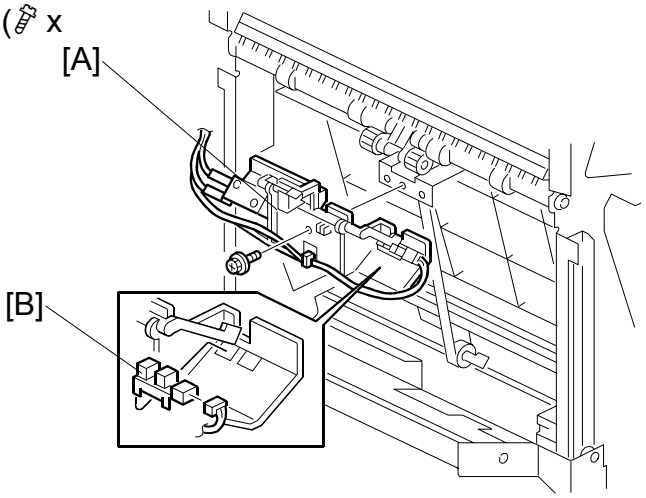


7. Guide plate [F] (☞ x 4)



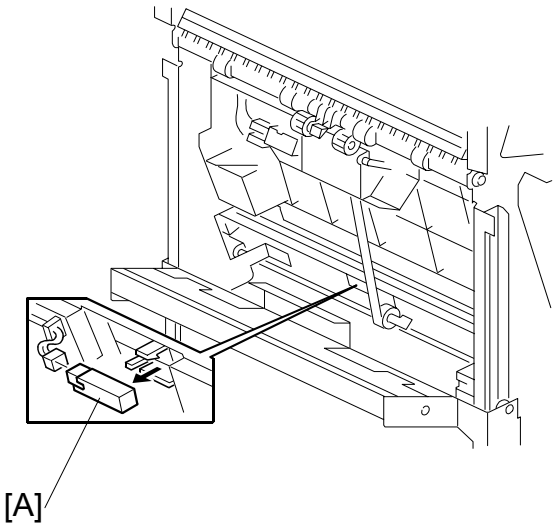
1.4.2 STACK HEIGHT SENSOR

1. Stack height sensor assembly [A] (☞ x 1)
2. Stack height sensor [B] (☞ x 1)



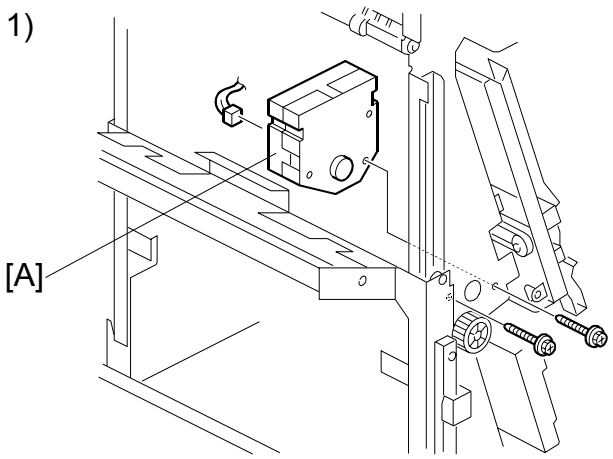
1.4.3 STAPLER TRAY PAPER SENSOR

1. Stapler tray paper sensor [A] (☞ x 1)



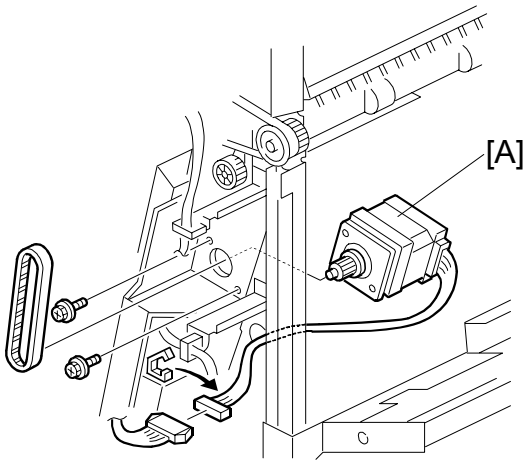
1.4.4 LOWER TRAY LIFT MOTOR

1. Lower tray lift motor [A] (x 2, x 1)



1.4.5 STACK FEED-OUT MOTOR

1. Stack feed-out motor [A] (x 2, x 1)



2. TROUBLESHOOTING

2.1 JAM DETECTION

Mode		Jam	Content
Shift	Staple		
✔	✔	Entrance sensor: On check	The entrance sensor does not turn on within the normal time after the main machine exit sensor turns on
✔	✔	Entrance sensor: Off check	The entrance sensor does not turn off within the normal time after it turns on.
✔		Lower tray exit sensor: On check	The lower tray exit sensor does not turn on within the normal time after the entrance sensor turns off.
✔		Tray exit sensor: Off check	The tray exit sensor does not turn off within the normal time after it turns on.
	✔	Stapler tray entrance sensor: On check	The stapler tray entrance sensor does not switch on within the normal time after the entrance sensor switched on.
	✔	Stapler tray entrance sensor: Off check	The staple tray entrance sensor does not turn off within the normal time after it turns on.
	✔	Lower tray exit sensor: On check	The lower exit sensor does not turn on after the feed-out pawl feeds out the outputs.
	✔	Lower tray exit sensor: Off check	The lower exit sensor turns on when the feed-out pawl returns to its home position after feeding out the outputs.

3. SERVICE TABLES

3.1 DIP SWITCH SETTINGS

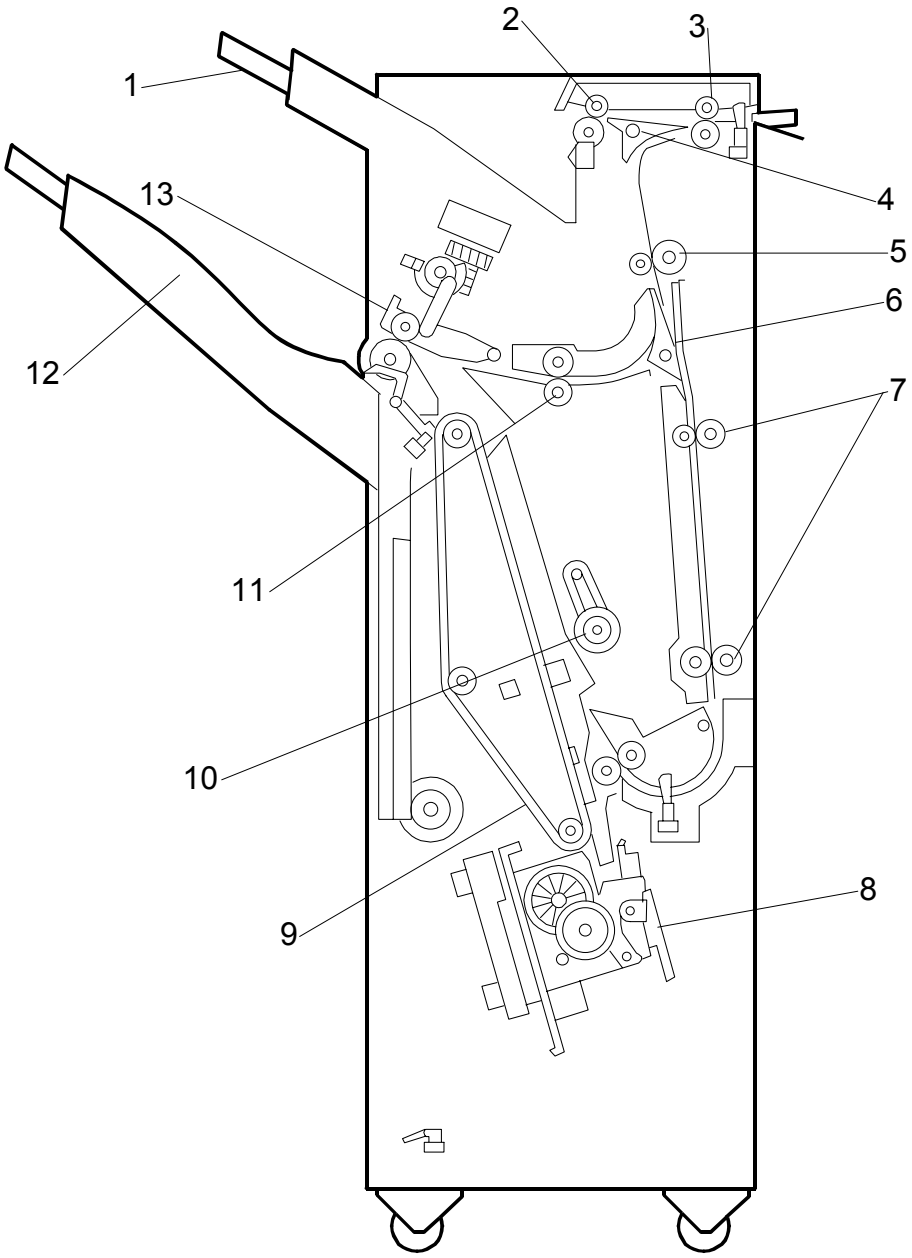
The DIP switches should not be set to any combination other than those listed in the table below.

SW100		Description
1	2	
0	0	Normal operation mode (Default)
1	0	Packing mode.

- Before packing the machine, do the following: Set switch 1 to 1 then back to zero. The lower tray moves to the lowest position. Then turn off the main switch.
- After unpacking the machine, do the following: After turning the main switch back on, the lower tray returns to home position automatically.

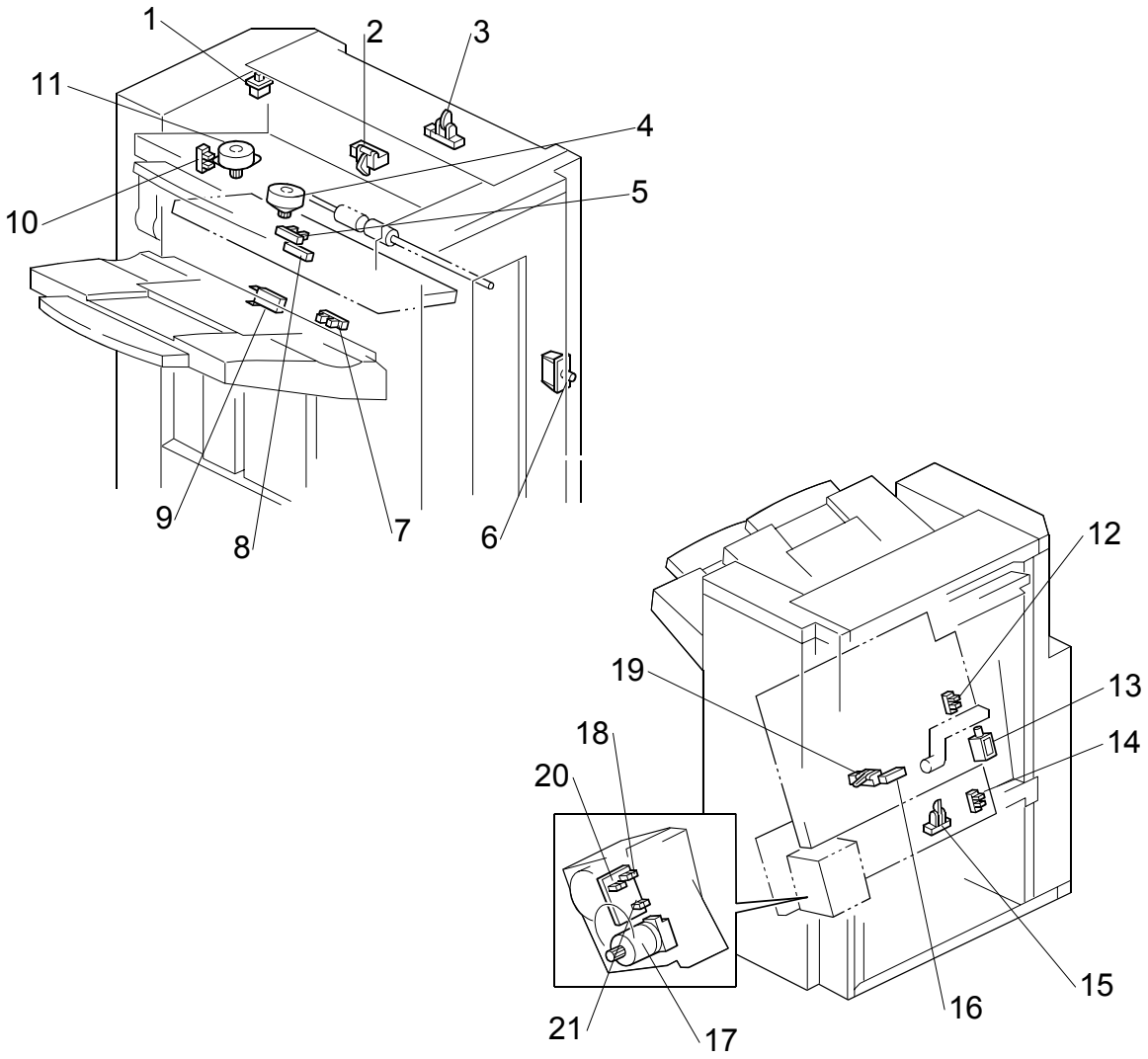
4. DETAILED DESCRIPTIONS

4.1 GENERAL LAYOUT

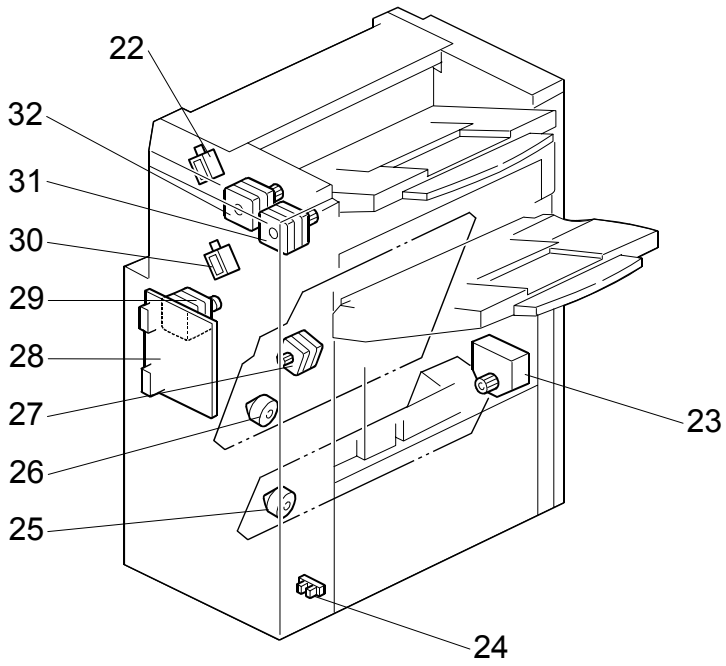


1. Upper Tray
2. Upper Tray Exit Roller
3. Entrance Roller
4. Tray Junction Gate
5. Upper Transport Roller
6. Stapler Junction Gate
7. Lower Transport Rollers
8. Stapler
9. Stack Feed-out Belt
10. Positioning Roller
11. Shift Roller
12. Lower Tray
13. Lower Tray Exit Roller

4.2 ELECTRICAL COMPONENT LAYOUT



1. Upper Cover Switch
2. Paper Limit Sensor
3. Entrance Sensor
4. Exit Guide Plate Motor
5. Exit Guide Plate HP Sensor
6. Front Door Safety Switch
7. Stack Height Sensor
8. Lower Tray Exit Sensor
9. Lower Tray Upper Limit Switch
10. Shift HP Sensor
11. Shift Motor
12. Jogger Fence HP Sensor
13. Positioning Roller Solenoid
14. Stapler HP Sensor
15. Stapler Tray Entrance Sensor
16. Stapler Tray Paper Sensor
17. Stapler Hammer Motor
18. Staple Sheet Sensor
19. Stack Feed-out Belt HP Sensor
20. Stapler Rotation HP Sensor
21. Staple Sensor



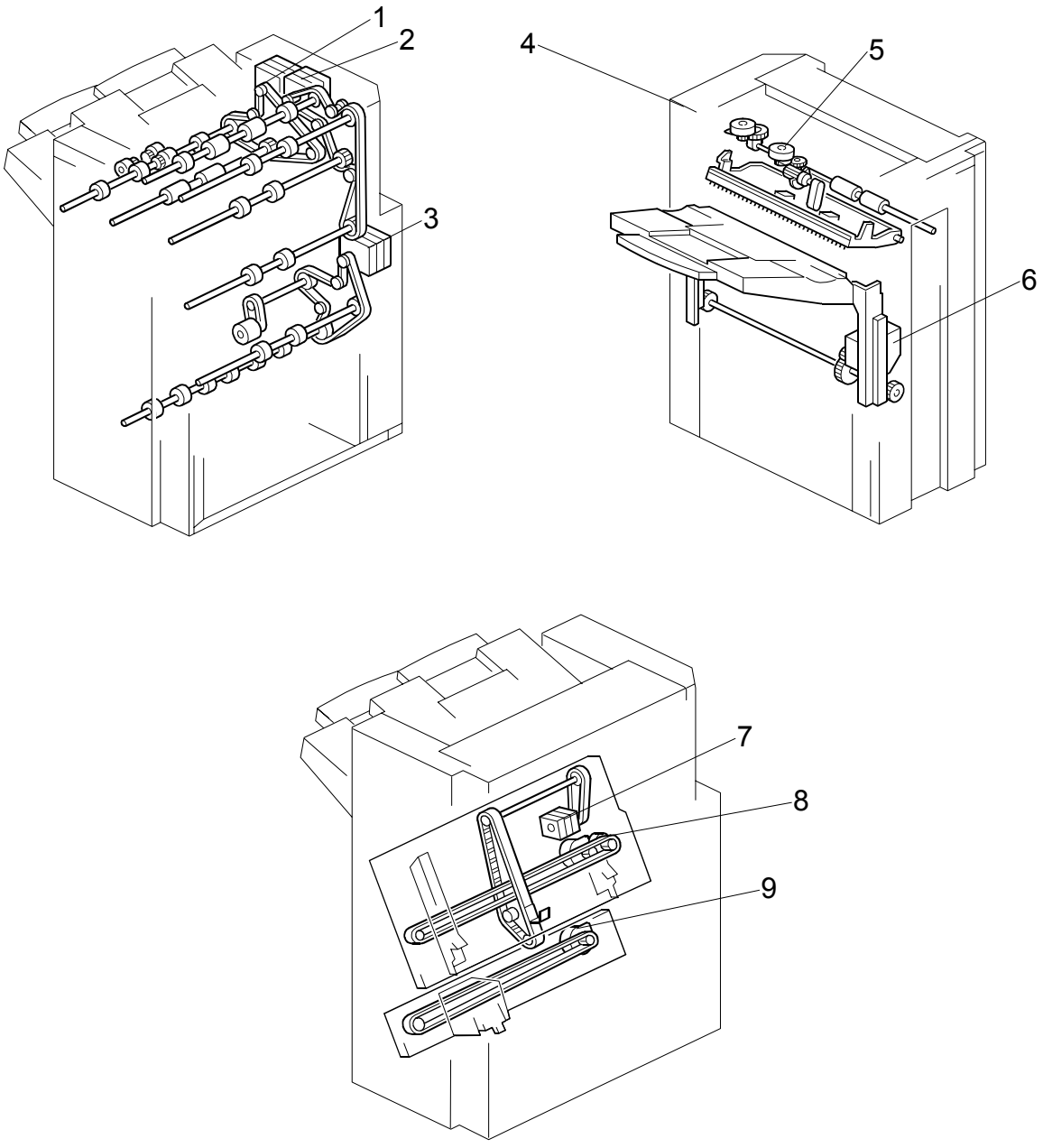
22. Tray Junction Gate Solenoid
23. Lower Tray Lift Motor
24. Lower Tray Lower Limit Sensor
25. Stapler Motor
26. Jogger Fence Motor
27. Stack Feed-out Motor
28. Main Board
29. Lower Transport Motor
30. Stapler Junction Gate Solenoid
31. Exit Motor
32. Upper Transport Motor

4.3 ELECTRICAL COMPONENT DESCRIPTION

Symbol	Name	Function	Index No.
Motors			
M1	Upper Transport	Drives the entrance roller and upper transport rollers.	32
M2	Lower Transport	Drives the lower transport rollers and the positioning roller.	29
M3	Jogger Fence	Drives the jogger fences.	26
M4	Staple Hammer	Drives the staple hammer.	17
M5	Stack Feed-out	Drives the stack feed-out belt.	27
M6	Exit Guide Plate	Opens and closes the exit guide plate.	4
M7	Exit	Drives the exit roller.	31
M8	Lower Tray Lift	Moves the lower tray up or down.	23
M9	Shift	Moves the shift roller from side to side.	11
M10	Stapler	Moves the stapler unit from side to side.	25
Sensors			
S1	Entrance	Detects copy paper entering the finisher and checks for misfeeds.	3
S2	Paper Limit	Detects when the paper stack height in the upper tray is at its limit.	2
S3	Jogger Fence HP	Detects when the jogger fence is at home position.	12
S4	Shift HP	Detects when the shift roller is at home position.	10
S5	Stack Feed-out Belt HP	Detects when the stack feed-out belt is at home position.	19
S6	Stapler HP	Detects when the stapler is at home position.	14
S7	Exit Guide Plate HP	Detects when the exit guide plate is at home position.	5
S8	Stapler Tray Entrance	Detects copy paper entering the stapler tray and checks for misfeeds.	15
S9	Lower Tray Exit	Checks for misfeeds.	8
S10	Stack Height	Detects the top of the copy paper stack.	7
S11	Lower Tray Lower Limit	Detects when the lower tray is at its lower limit position.	24
S12	Stapler Tray Paper	Detects when there is copy paper in the stapler tray.	16
S13	Staple Sheet	Detects the leading edge of the staple sheet.	18
S14	Stapler Rotation HP	Detects when the staple hammer is at home position.	20
S15	Staple	Detects whether there are staples in the staple cartridge.	21
Solenoids			
SOL1	Tray Junction Gate	Drives the tray junction gate.	22
SOL2	Stapler Junction Gate	Drives the stapler junction gate.	30

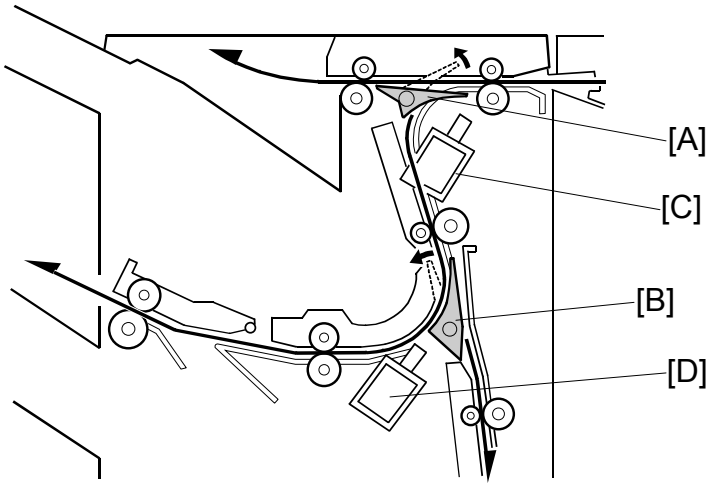
Symbol	Name	Function	Index No.
SOL3	Positioning Roller	Moves the positioning roller.	13
Switches			
SW1	Lower Tray Upper Limit	Detects when the lower tray is at its upper limit position.	9
SW2	Front Door Safety	Cuts the dc power when the front door is opened.	6
SW3	Upper Cover	Cuts the dc power when the upper cover is opened.	1
PCBs			
PCB1	Main	Controls the finisher and communicates with the copier/printer.	28

4.4 DRIVE LAYOUT



1. Exit Motor
2. Upper Transport Motor
3. Lower Transport Motor
4. Shift Motor
5. Exit Guide Plate Motor
6. Lower Tray Lift Motor
7. Stack Feed-out Motor
8. Jogger Motor
9. Stapler Motor

4.5 JUNCTION GATES



Depending on the finishing mode, the copies are directed up, straight through, or down by the combination of the tray junction gate [A] and stapler junction gate [B]. These gates are controlled by the tray junction gate solenoid [C] and stapler junction gate solenoid [D].

Upper Tray Mode

The tray junction gate solenoid remains off. The copies go up to the upper tray.

Sort/Stack Mode

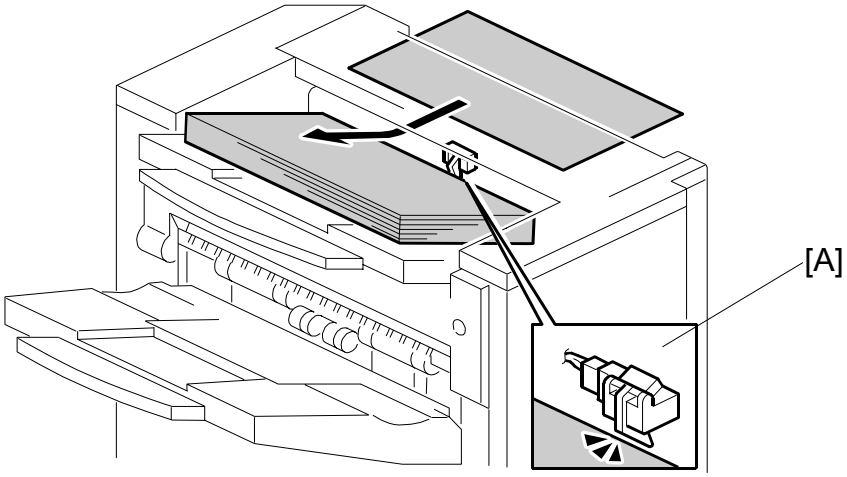
The tray junction gate solenoid turns on and the stapler junction gate solenoid remains off. The copies are sent to the lower tray directly.

Staple Mode

The tray junction gate solenoid and the stapler junction gate solenoid both turn on.

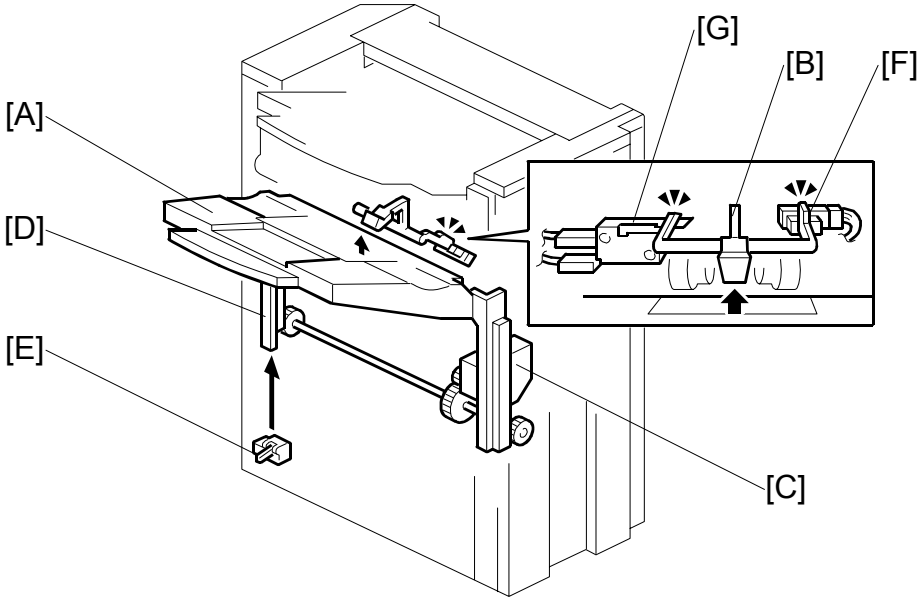
The copies go down to the jogger unit.

4.6 UPPER TRAY



When the paper limit sensor [A] switches on during feed-out for each of three consecutive sheets of paper, paper overflow is detected.

4.7 LOWER TRAY UP/DOWN MECHANISMS



The vertical position of the lower tray [A] depends on the height of the copied paper stack on the lower tray. The stack height sensor feeler [B] contacts the top of the stack, and the lower tray lift motor [C] controls the tray height.

When the lower tray reaches its lowest possible position, the actuator [D] turns on the lower tray lower limit sensor [E], and copying stops.

Tray Up

When the copy paper on the tray is removed, the stack height sensor [F] turns off and the tray lifts up. Then, the tray stops when the sensor turns on again (the tray pushes up the feeler).

If the stack height sensor fails, the lower tray upper limit switch [G] detects the tray and stops the motor. This is a safety measure against stack height sensor failure.

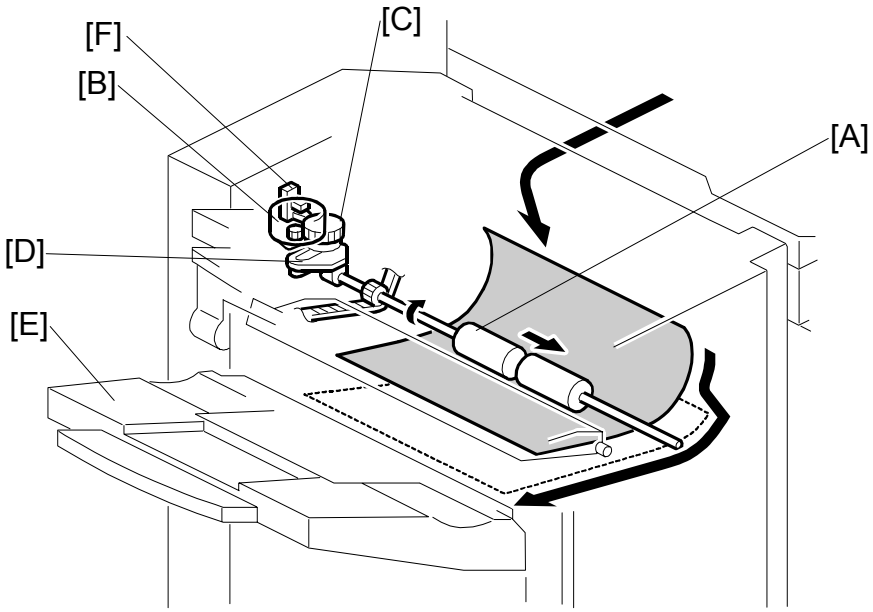
Sort/Stack Mode (Tray Down)

Every five sheets of paper, the tray goes down until the sensor turns off again. Then, it goes up until the sensor is on again.

Staple Mode (Tray Down)

After a stapled copy is fed out, the tray goes up for 220 ms and stops for 300 ms. Then, it goes down for 1 second, waits for 500 ms, then goes up until the sensor turns on.

4.8 PAPER SHIFT MECHANISM



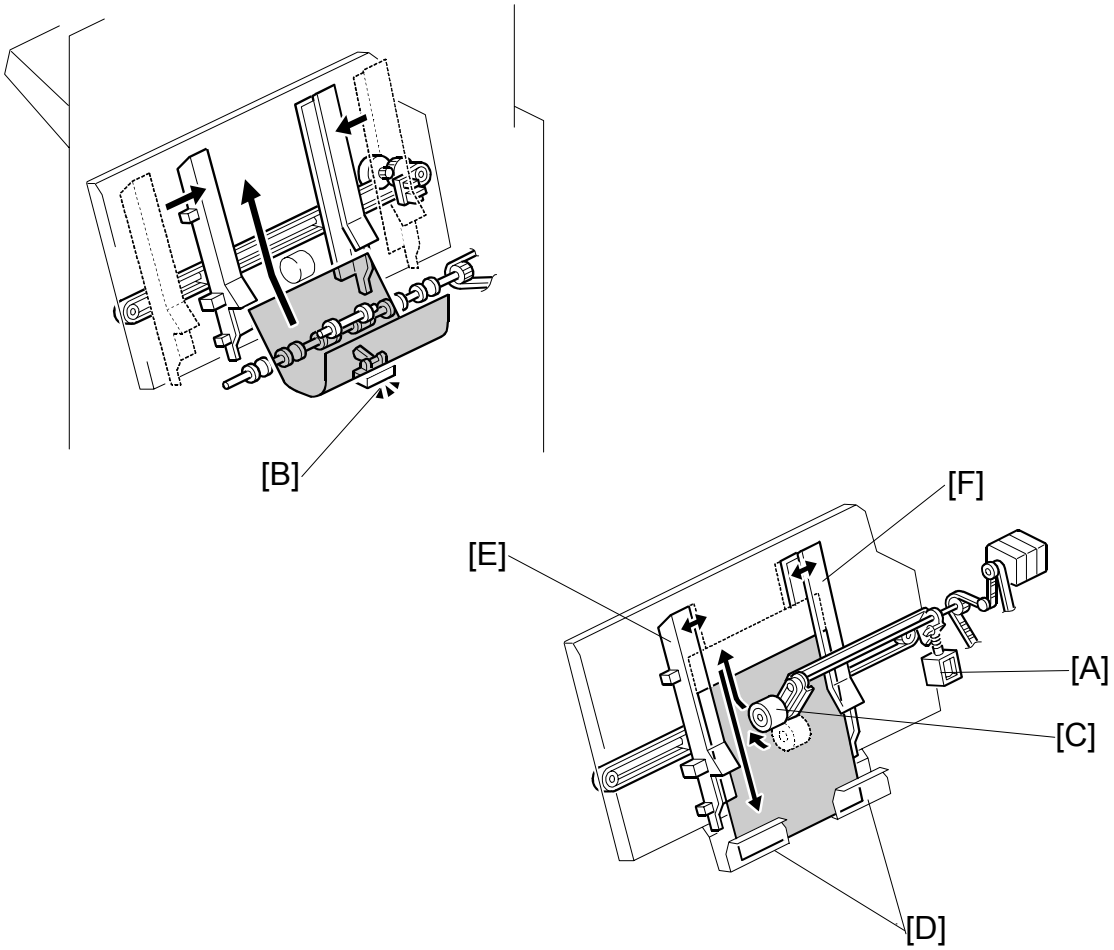
In the sort/stack mode, the shift roller [A] moves from side to side to separate the sets of copies.

The horizontal position of the shift roller is controlled by the shift motor [B] and the shift gear disk [C]. After the trailing edge of the copy passes the upper transport roller, the shift motor turns on, driving the shift gear disk and the link [D].

After the paper is delivered to the lower tray [E], the shift roller moves to its home position, which is detected by the shift HP sensor [F]. Then, when the trailing edge of the next copy passes the upper transport roller, the shift roller shifts again. This operation is done every sheet.

When the trailing edge of each page in the next set of copies passes the upper transport roller, the shift roller shifts in the opposite direction.

4.9 JOGGER UNIT PAPER POSITIONING MECHANISM

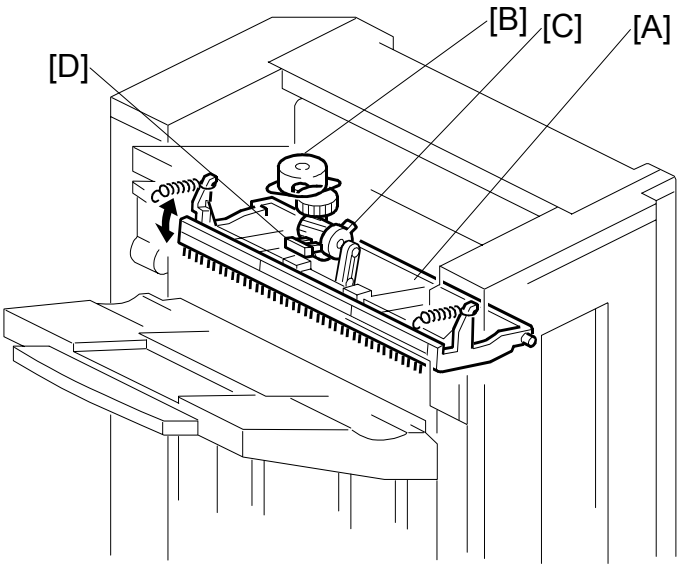


In staple mode, each sheet of copy paper is vertically and horizontally aligned when it arrives in the jogger unit.

For the vertical paper alignment, the positioning roller solenoid [A] turns on shortly after the stapler tray entrance sensor [B] turns off, and the positioning roller [C] pushes the copy against the bottom of the stack stopper [D].

For the horizontal paper alignment, the jogger front fence [E] and the rear fence [F] move to the waiting position, which is 18 mm away from the side of the paper. When aligning the paper vertically, the jogger fence moves in 14 mm from the waiting position. After the vertical position has been aligned, the jogger fence pushes the paper 4 mm against the rear fence to align the paper horizontally. Then the jogger fence moves back to the previous position.

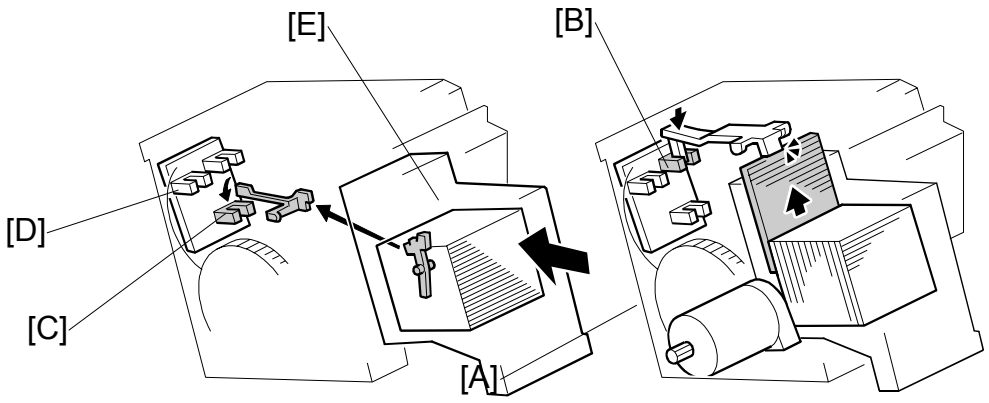
4.10 EXIT GUIDE PLATE



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 to make a gap between the exit rollers. This operation is done for all paper sizes, but is only needed for the larger sizes.

The exit guide plate motor [B] and exit roller release cam [C] control the exit guide plate movement. When the exit guide plate motor starts, the cam turns and the exit guide plate moves up. 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 [D] turns on, the motor stops.

4.11 STAPLER MECHANISM



The staple hammer motor [A] drives the staple hammer.

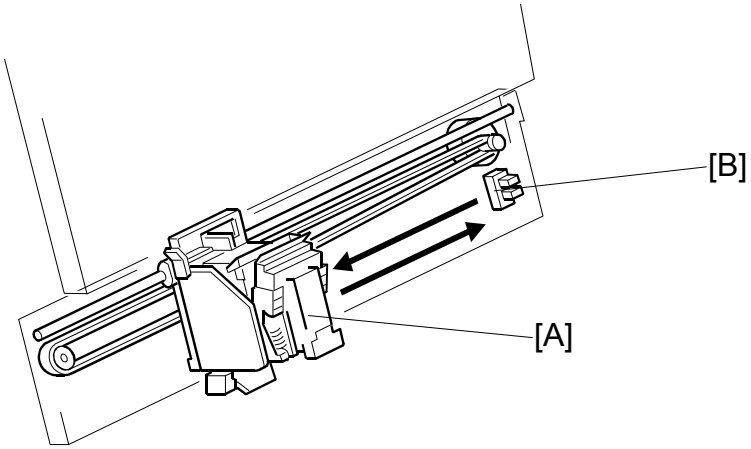
The staple sheet sensor [B] detects the leading edge of the staple sheet at the stapling position to prevent the hammer from operating if there are no staples at the stapling position.

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. The stapler sensor [C] detects this.

The stapler rotation HP sensor [D] checks whether the staple hammer mechanism returns to home position after each stack has been stapled.

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 [E]. Therefore, the jammed staple can be removed easily after pulling out the staple cartridge.

4.12 STAPLER UNIT MOVEMENT MECHANISM

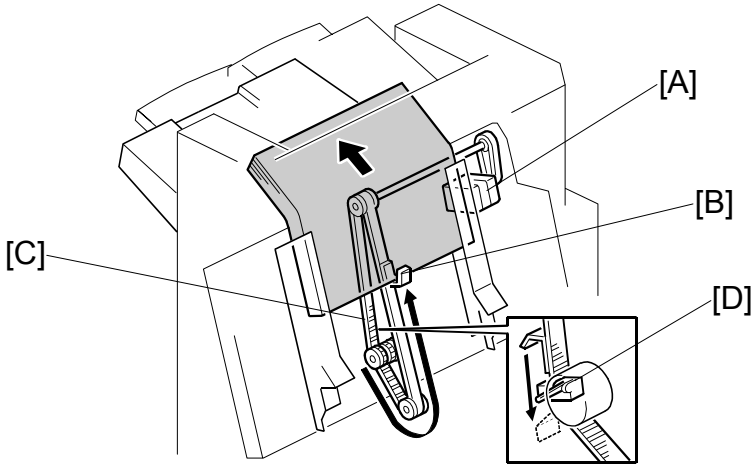


The stapler motor moves the stapler [A] from side to side. After the start key is pressed, the stapler moves from its home position to the stapling position.

If two-staple-position mode is selected, the stapler moves to the front stapling position first, then moves to the rear stapling position. However, for the next copy set, it staples in the reverse order (at the rear side first, then at the front side).

After the job is completed, the stapler moves back to its home position. The stapler HP sensor [B] detects this.

4.13 PAPER FEED-OUT MECHANISM



After the copies have been stapled, the stack feed-out motor [A] starts. The pawl [B] on the stack feed-out belt [C] transports the set of stapled copies up and feeds it to the shift roller. The shift roller takes over stack feed-out after the leading edge reaches this roller.

Just before the stapled stack passes through the lower tray exit sensor, the stack-feed-out motor turns off until the shift rollers have completely fed the stack out to the lower tray. Then, the stack-feed-out motor turns on again until the pawl [B] actuates the stack feed-out belt home position sensor [D].

1-BIN TRAY UNIT
B413

1-BIN TRAY UNIT B413

TABLE OF CONTENTS

1 OVERALL INFORMATION 1
1.1 SPECIFICATIONS 1
1.2 MECHANICAL COMPONENT LAYOUT 2
1.3 ELECTRICAL COMPONENT LAYOUT 3
1.4 ELECTRICAL COMPONENT DESCRIPTION 3

2 DETAILED SECTION DESCRIPTIONS 4
2.1 BASIC OPERATION 4

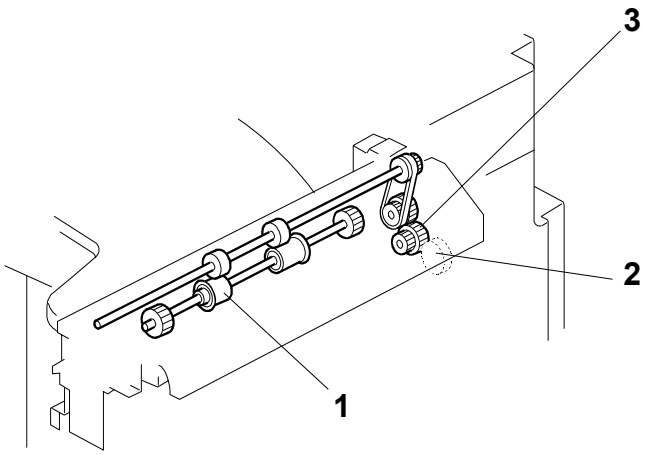
3 REPLACEMENT AND ADJUSTMENT 5
3.1 PAPER SENSOR REMOVAL 5

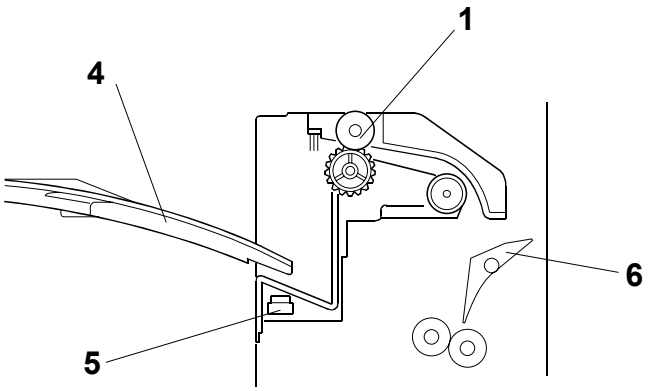
1. OVERALL INFORMATION

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

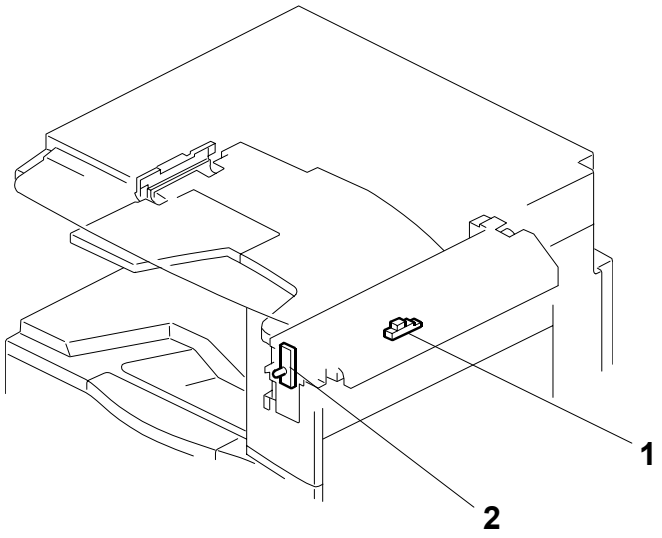
1.2 MECHANICAL COMPONENT LAYOUT





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



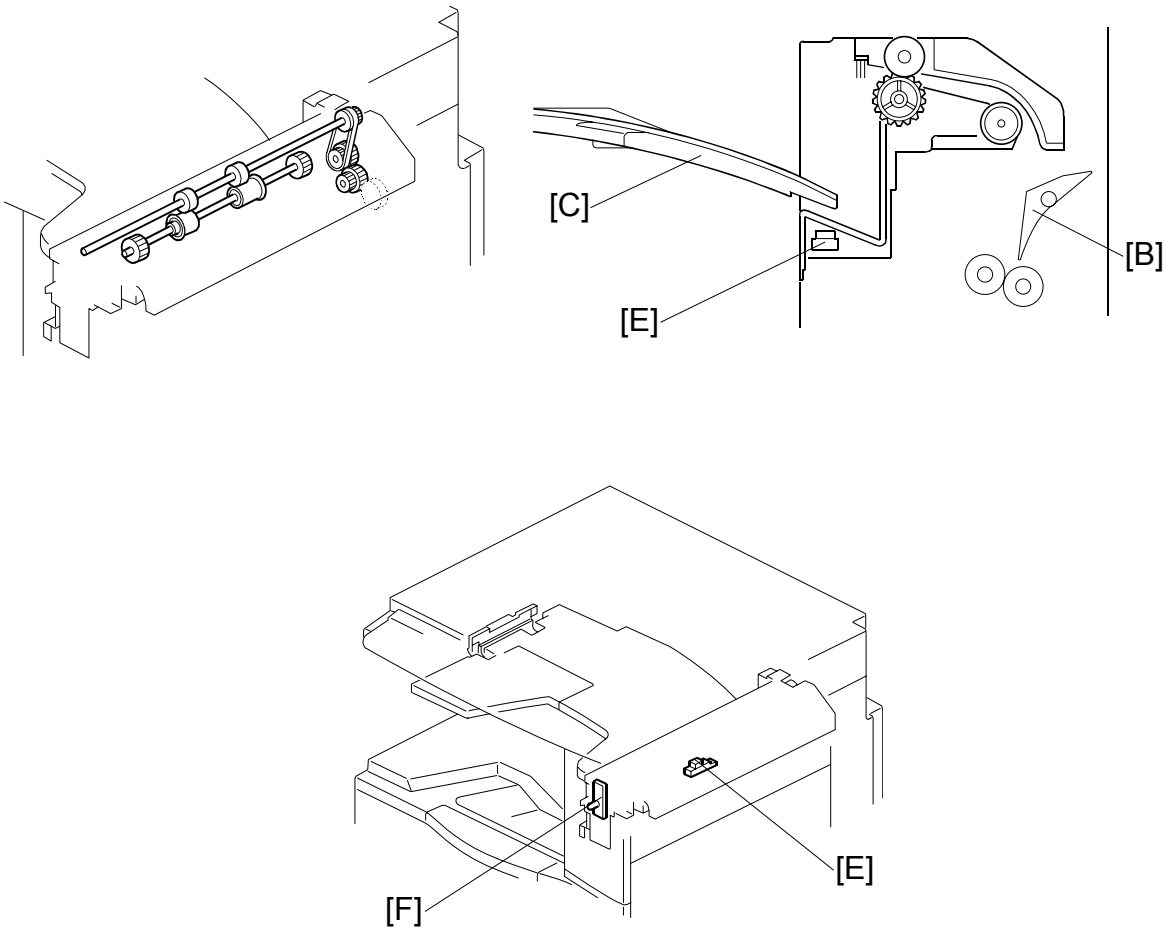
1. Paper Sensor
2. 1-bin Sorter Exit Tray LED
   (located in the copier)

1.4 ELECTRICAL COMPONENT DESCRIPTION

Symbol	Name	Function	Index No.
Sensors			
S1	Paper	Detects when 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 [B] in the interchange unit turns on to switch the junction gate to direct the paper to the tray [C].

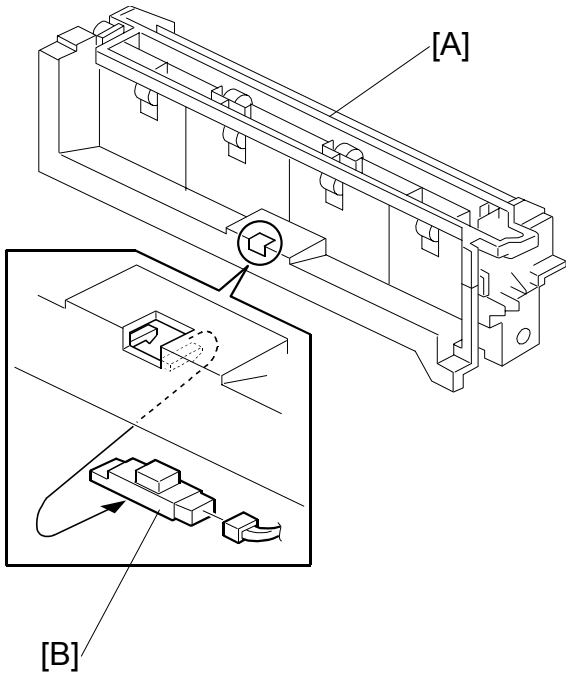
The junction gate solenoid turns off at the appropriate time after the paper is directed to the tray. The main motor in the copier stops after the final sheet passes through the paper sensor [E].

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).

DUPLEX UNIT
B414

DUPLEX UNIT B414

TABLE OF CONTENTS

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

2 DETAILED DESCRIPTIONS 6
2.1 BASIC OPERATION 6
LONGER THAN A4 SIDEWAYS/LT SIDEWAYS 6
UP TO A4 SIDEWAYS/LT SIDEWAYS 7
2.2 FEED IN AND EXIT MECHANISM 8
WHEN PAPER IS FED INTO DUPLEX UNIT: 8
INVERSION AND EXIT: 8

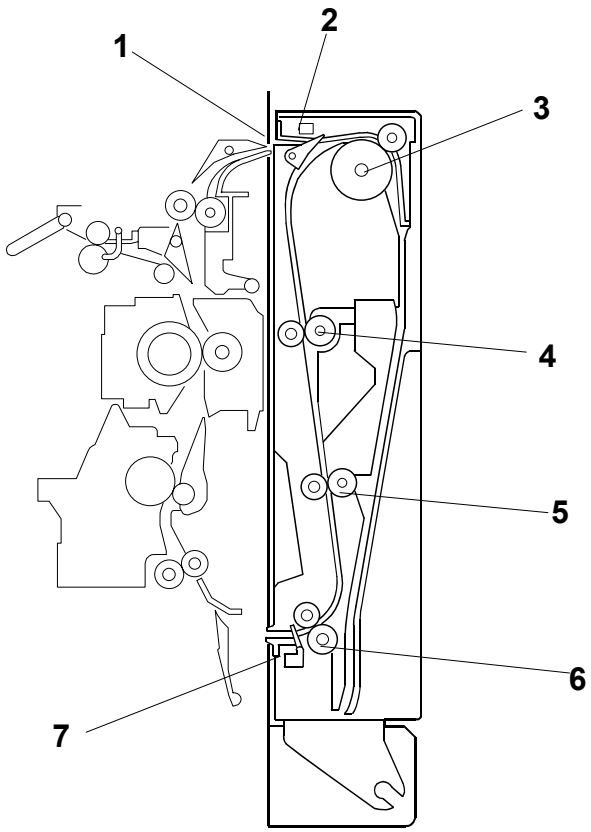
3 REPLACEMENT AND ADJUSTMENT 9
3.1 COVER REMOVAL 9
3.2 ENTRANCE SENSOR REPLACEMENT 10
3.3 EXIT SENSOR REPLACEMENT 11

1. OVERALL MACHINE INFORMATION

1.1 SPECIFICATIONS

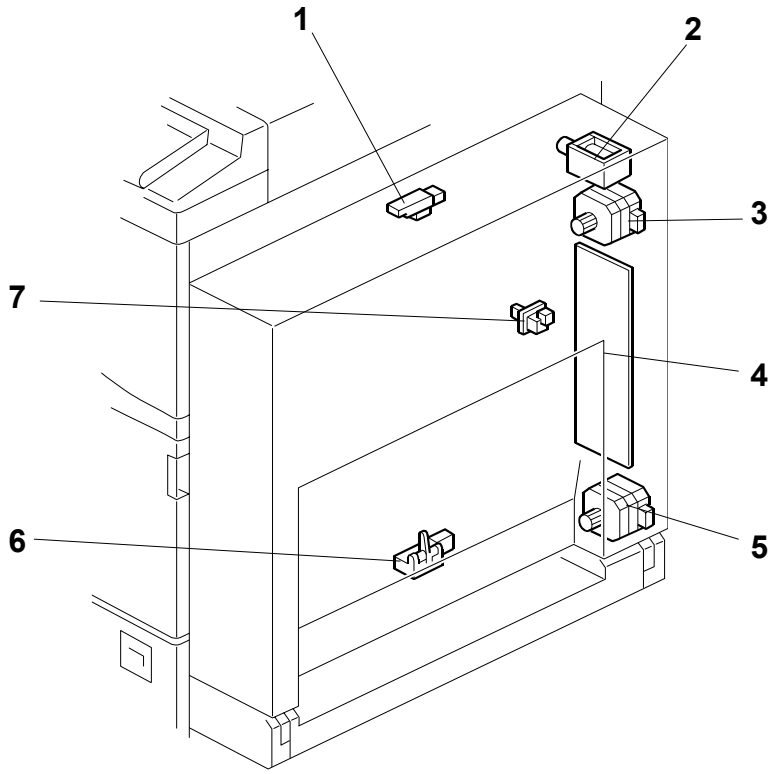
Paper Size:	Standard sizes A5 lengthwise to A3 HLT to DLT Non-standard sizes Width: 140 to 297 mm Length: 182 to 432 mm
Paper Weight:	64 g/m^2 ~ 105 g/m^2, 20 lb ~ 28 lb
Tray Capacity:	1 sheet
Power Consumption:	40 W
Power Source:	DC 24 V, 5 V
Dimensions (W x D x H):	90 x 495 x 452 mm
Weight:	6 kg

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

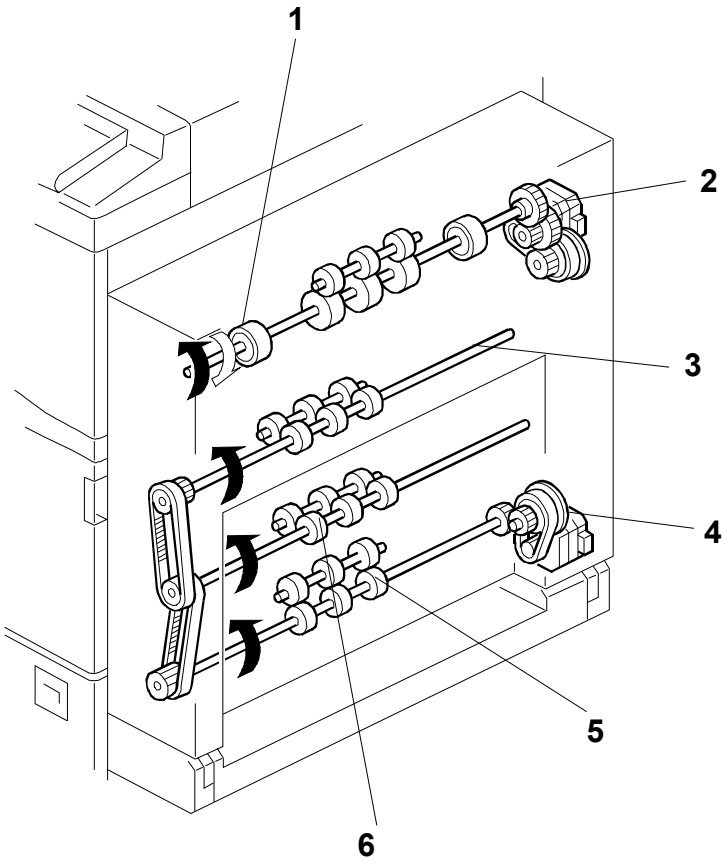


1. Entrance Sensor
2. Inverter Gate Solenoid
3. Inverter Motor
4. Main Board
5. Transport Motor
6. Exit Sensor
7. Duplex Unit Open Switch

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

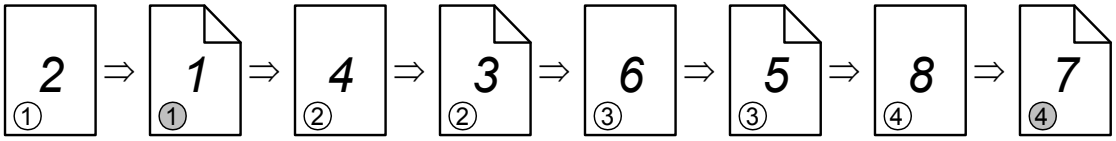
2.1 BASIC OPERATION

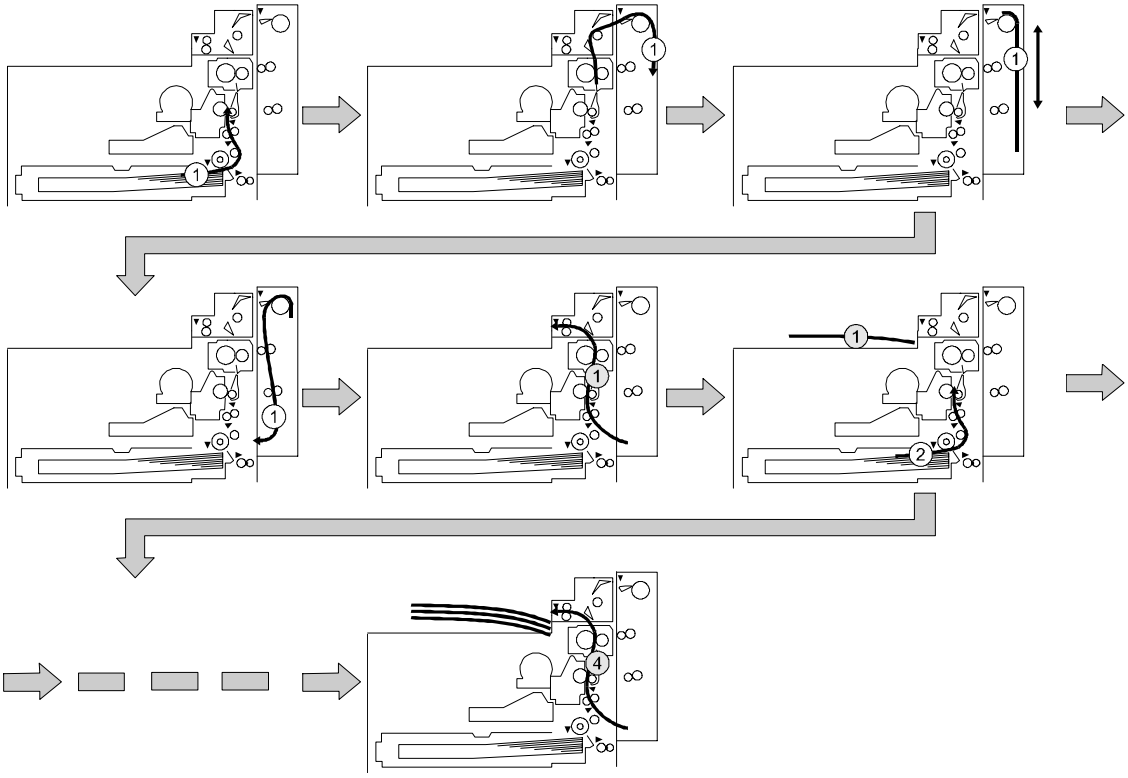
To increase the productivity of the duplex unit, copies are printed as follows.

Longer than A4 sideways/LT sideways

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).

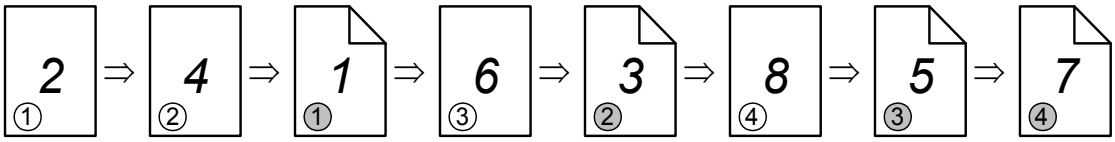


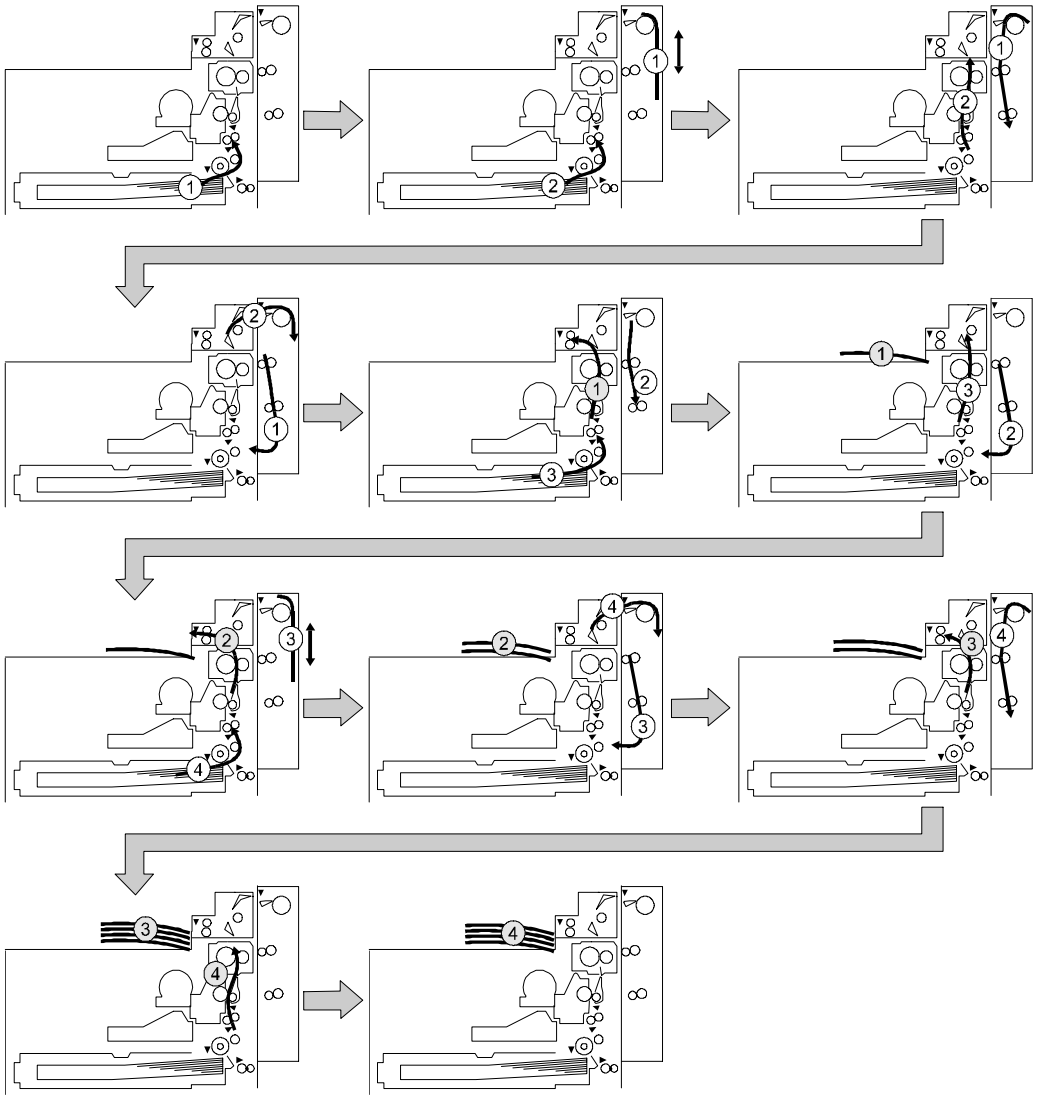


Up to A4 sideways/LT sideways

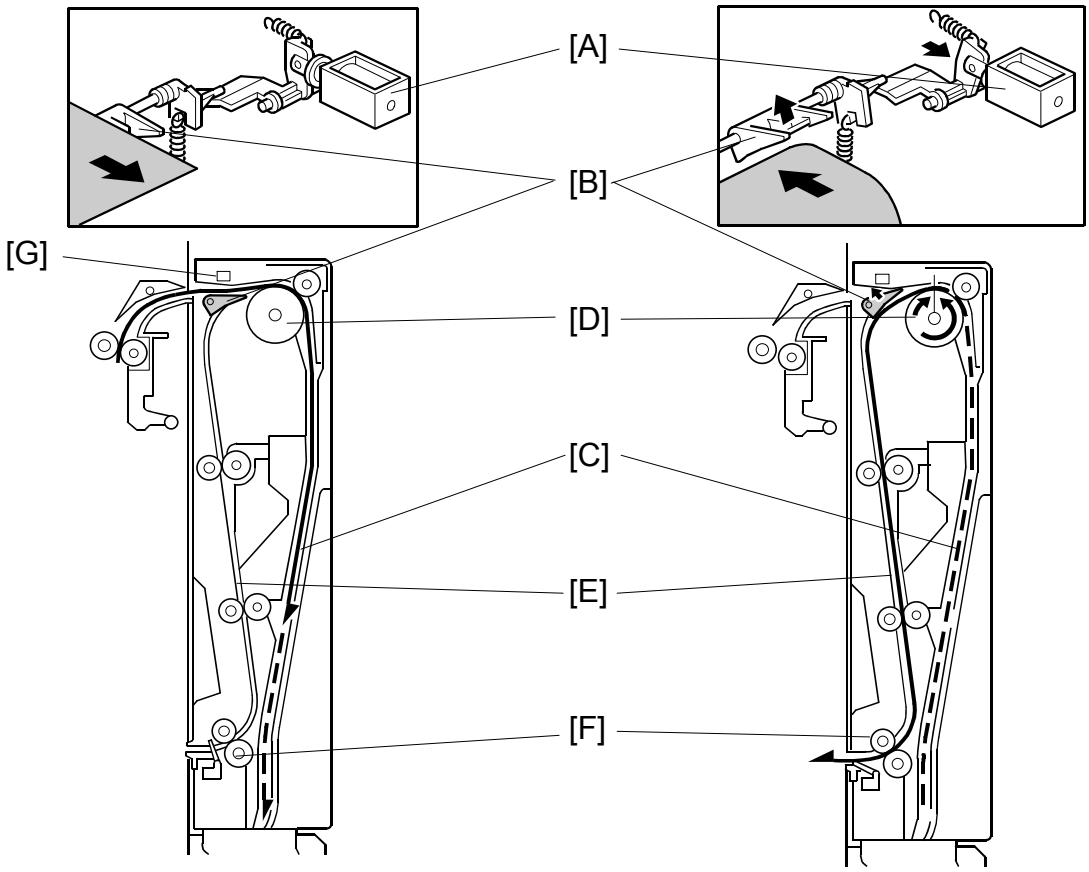
The duplex unit can store two sheets of copy paper

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).

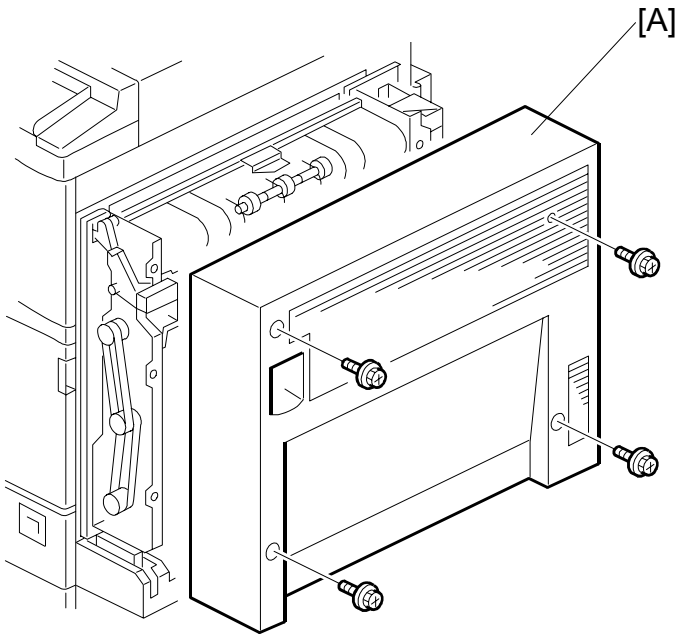
The inverter section can hold a sheet of paper up to A3 size. Because of this, the cover guide used in the previous model has become obsolete and has been eliminated from the design.

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.

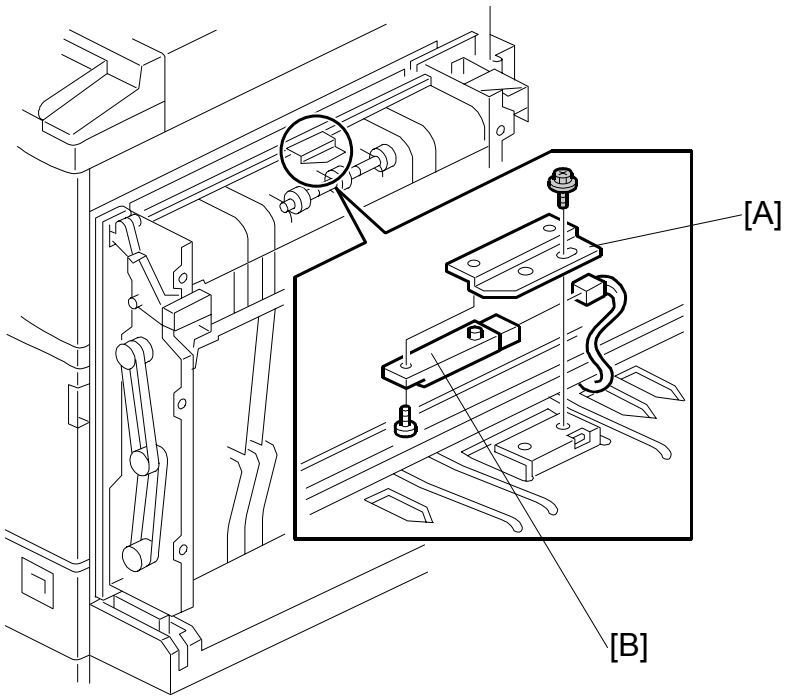
3. REPLACEMENT AND ADJUSTMENT

3.1 COVER REMOVAL



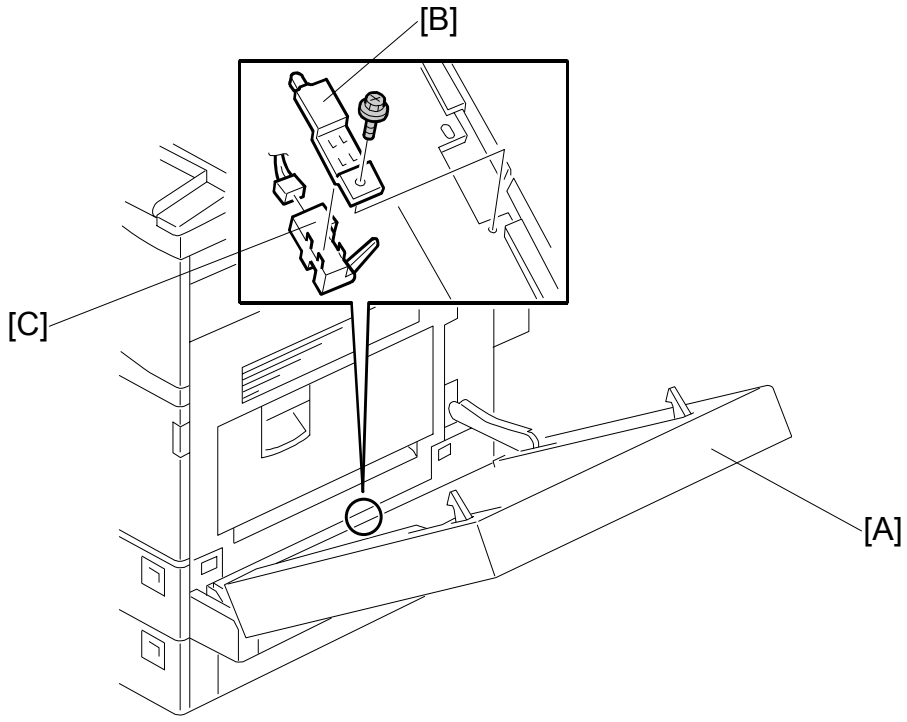
1. Remove the duplex unit cover [A] (4 screws).

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).

BY-PASS TRAY
B415

BY-PASS TRAY B415

TABLE OF CONTENTS

1 OVERALL MACHINE INFORMATION.....1
1.1 SPECIFICATIONS.....1
1.2 MECHANICAL COMPONENT LAYOUT.....1
1.3 ELECTRICAL COMPONENT LAYOUT.....2
1.4 ELECTRICAL COMPONENT DESCRIPTION.....2

2 DETAILED DESCRIPTIONS.....3
2.1 BASIC OPERATION.....3
2.2 PAPER SIZE DETECTION.....4

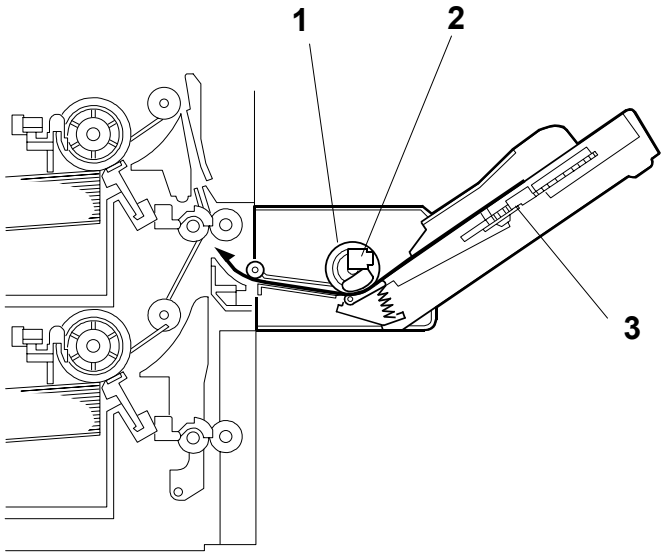
3 REPLACEMENT AND ADJUSTMENT.....5
3.1 PAPER FEED ROLLER/FRICTION PAD/PAPER END SENSOR.....5
3.2 PAPER SIZE SENSOR BOARD.....6
3.3 PAPER FEED CLUTCH.....7

1 OVERALL MACHINE INFORMATION

1.1 SPECIFICATIONS

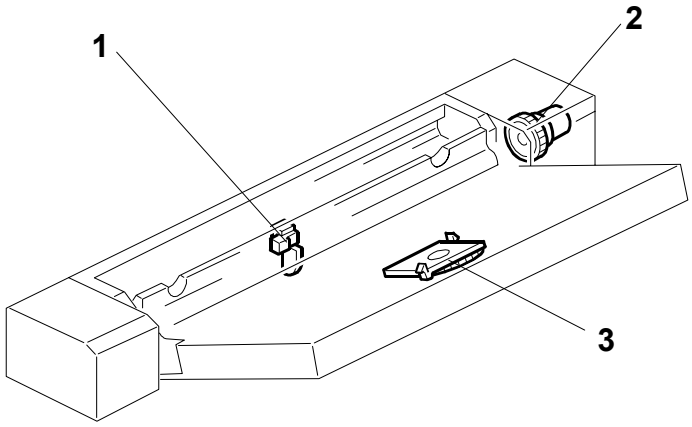
Paper Size:	Standard sizes A6 lengthwise to A3 HLT lengthwise to DLT Non-standard sizes Width: 90 to 305 mm Length: 148 to 432 mm
Paper Weight:	52 g/m^2 ~ 157 g/m^2, 16 lb ~ 42 lb
Tray Capacity:	50 sheets (80 g/m^2, 20 lb)
Paper Feed System:	Friction Pad Paper Feed

1.2 MECHANICAL COMPONENT LAYOUT



1. Paper Feed Roller
2. Paper End Sensor
3. Paper Size Sensor Board

1.3 ELECTRICAL COMPONENT LAYOUT



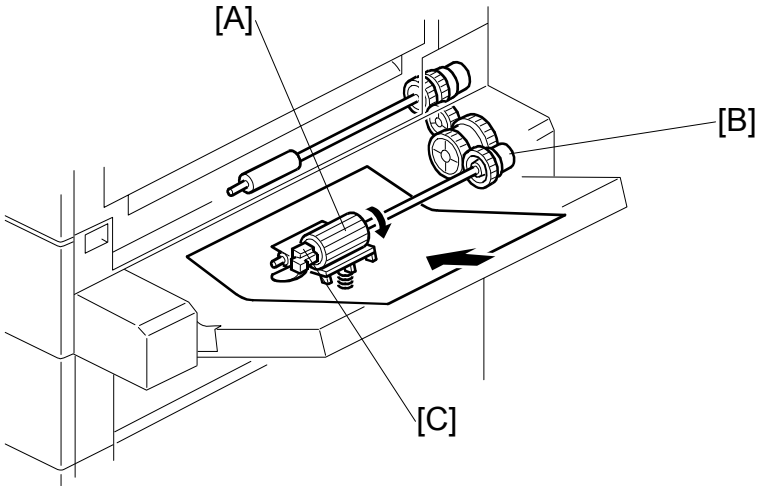
1. Paper End Sensor
2. Paper Feed Clutch
3. Paper Size Sensor Board

1.4 ELECTRICAL COMPONENT DESCRIPTION

Symbol	Name	Function	Index No.
Sensors			
S1	Paper End	Informs the copier/printer 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

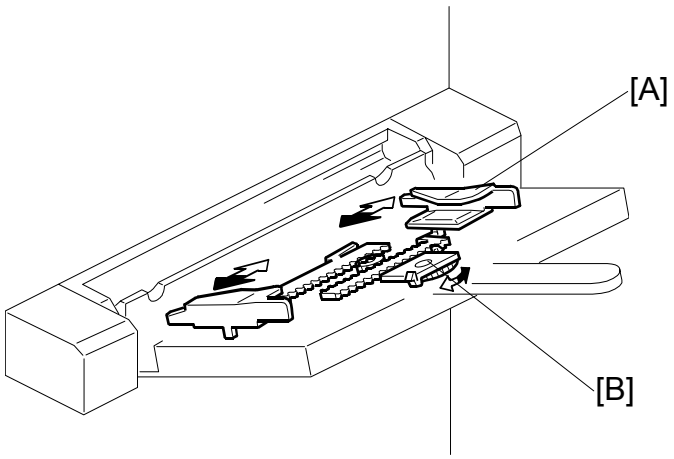
2.1 BASIC OPERATION



The by-pass unit uses a friction pad paper feed mechanism. The transport roller gear in the main copier/printer 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.

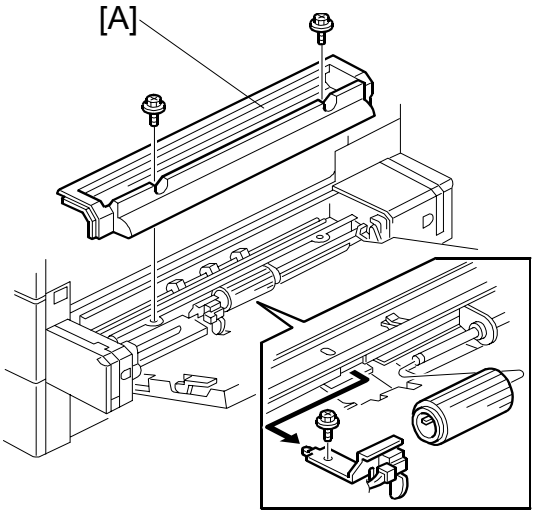
2.2 PAPER SIZE DETECTION

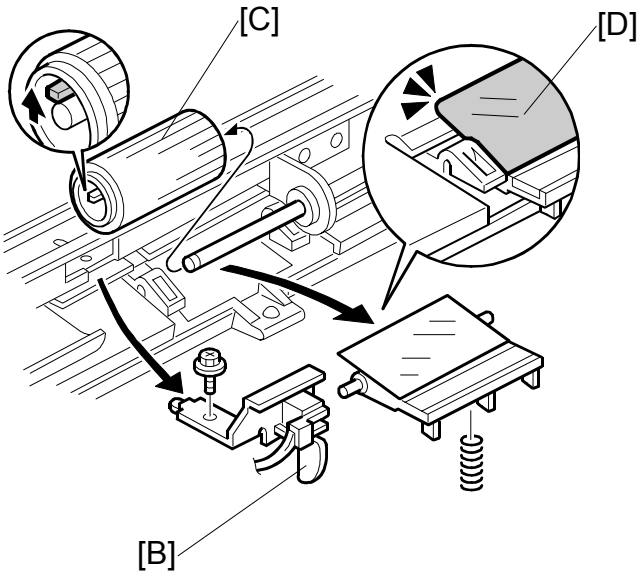


The paper size sensor board [B] monitors the paper width. The rear side fence [A] is connected to the terminal plate. The pattern for each paper width is unique. Therefore, the copier/printer determines which paper has been placed in the by-pass tray by the signal output from the board. However, the 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

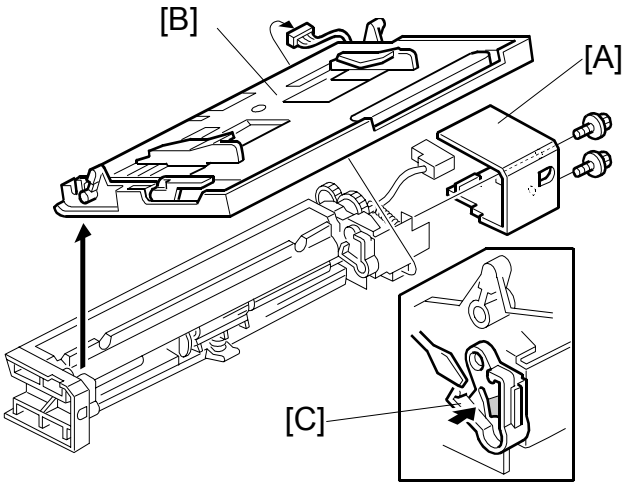
3.1 PAPER FEED ROLLER/FRICTION PAD/PAPER END SENSOR

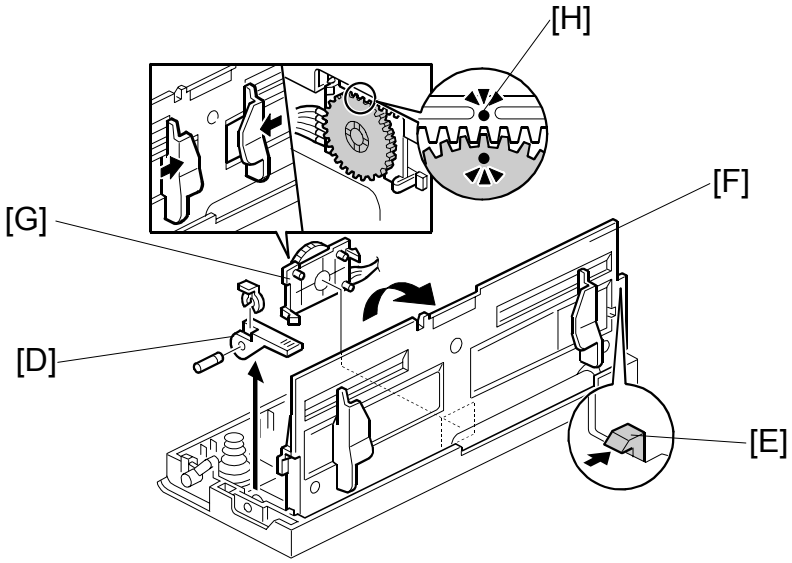




1. Remove the upper cover [A] (2 screws).
2. Remove the paper end sensor bracket [B] (1 screw).
3. Remove the paper feed roller [C] (snap-fit).
4. If removing the friction pad [D], do so at this time.

3.2 PAPER SIZE SENSOR BOARD

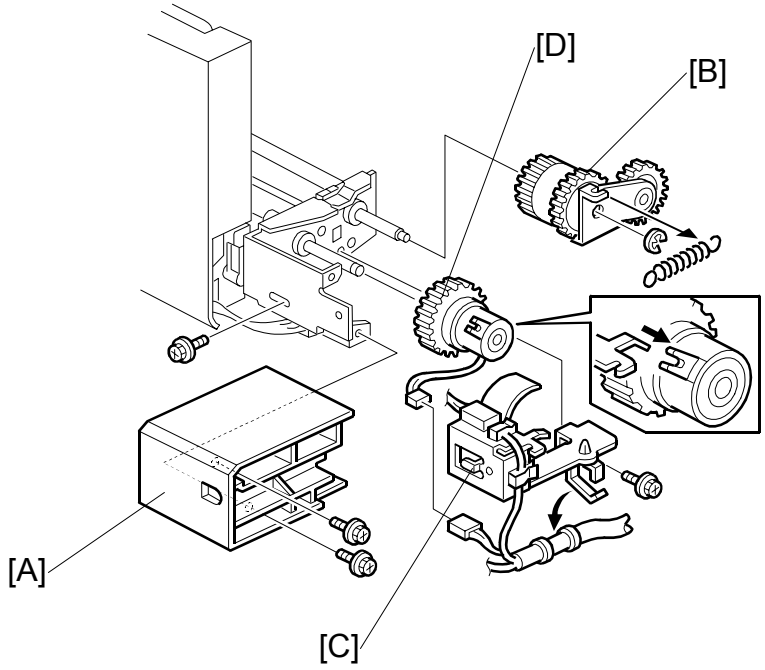




1. Remove the rear cover [A] (2 screws).
2. Remove the by-pass tray [B] (1 connector, 2 release levers [C]).
3. Remove the lever [D] (1 snap ring, 1 pin).
4. While pushing the release lever [E], remove the paper tray [F].
5. Remove the by-pass width sensor [G].

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
B416

INTERCHANGE UNIT B416

TABLE OF CONTENTS

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

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

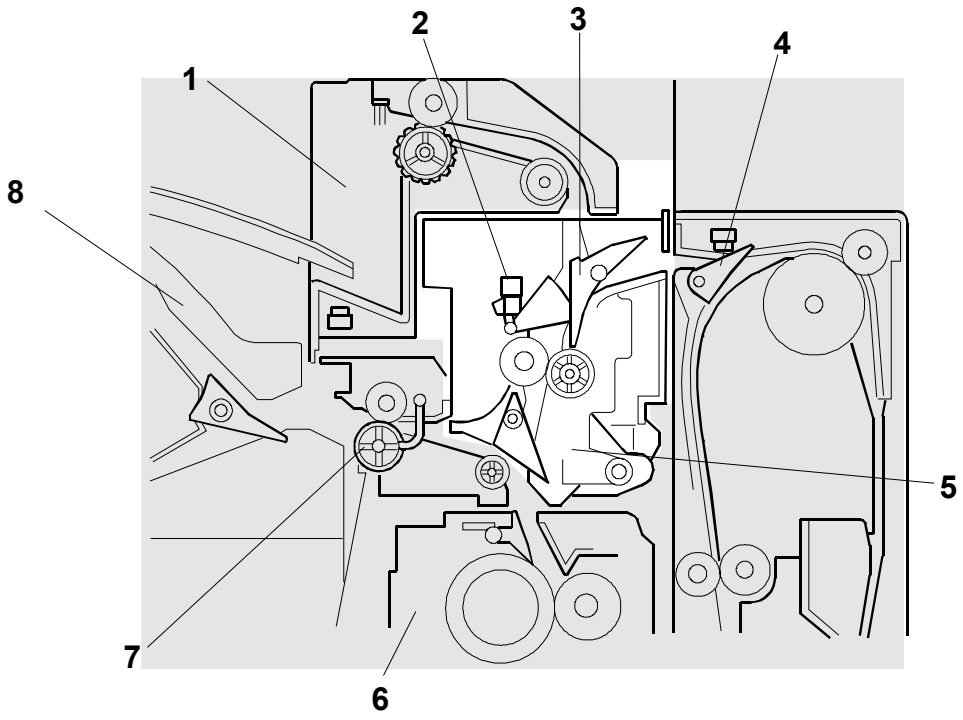
3 REPLACEMENT AND ADJUSTMENT.....5
3.1 EXIT SENSOR REPLACEMENT.....5

1. OVERALL MACHINE INFORMATION

1.1 SPECIFICATIONS

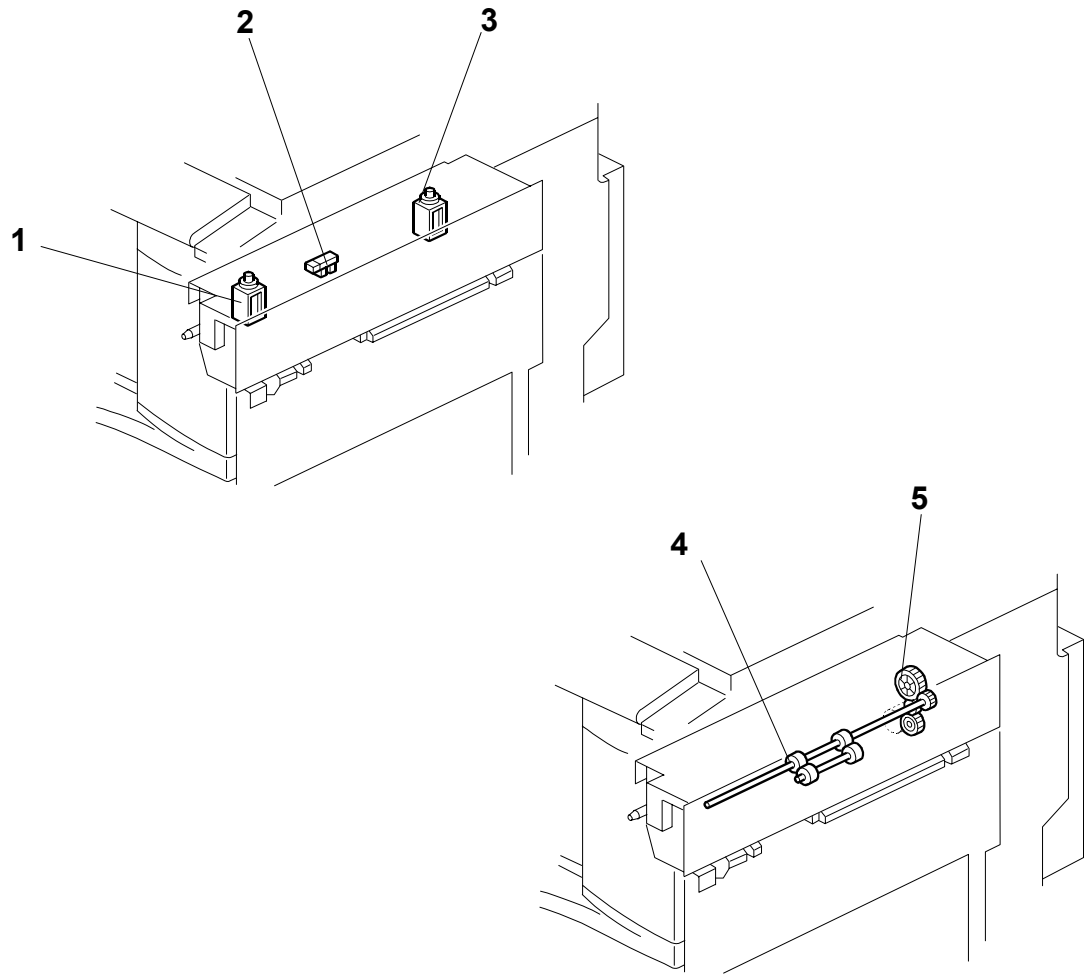
Paper Size:	Standard sizes A6 lengthwise to A3 HLT to DLT Non-standard sizes Width: 100 to 305 mm Length: 148 to 432 mm
Paper Weight:	52 g/m^2 ~ 135 g/m^2, 16 lb ~ 36 lb
Power Consumption:	15 W
Dimensions (W x D x H):	117 x 447 x 92 mm
Weight:	1.6 kg

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

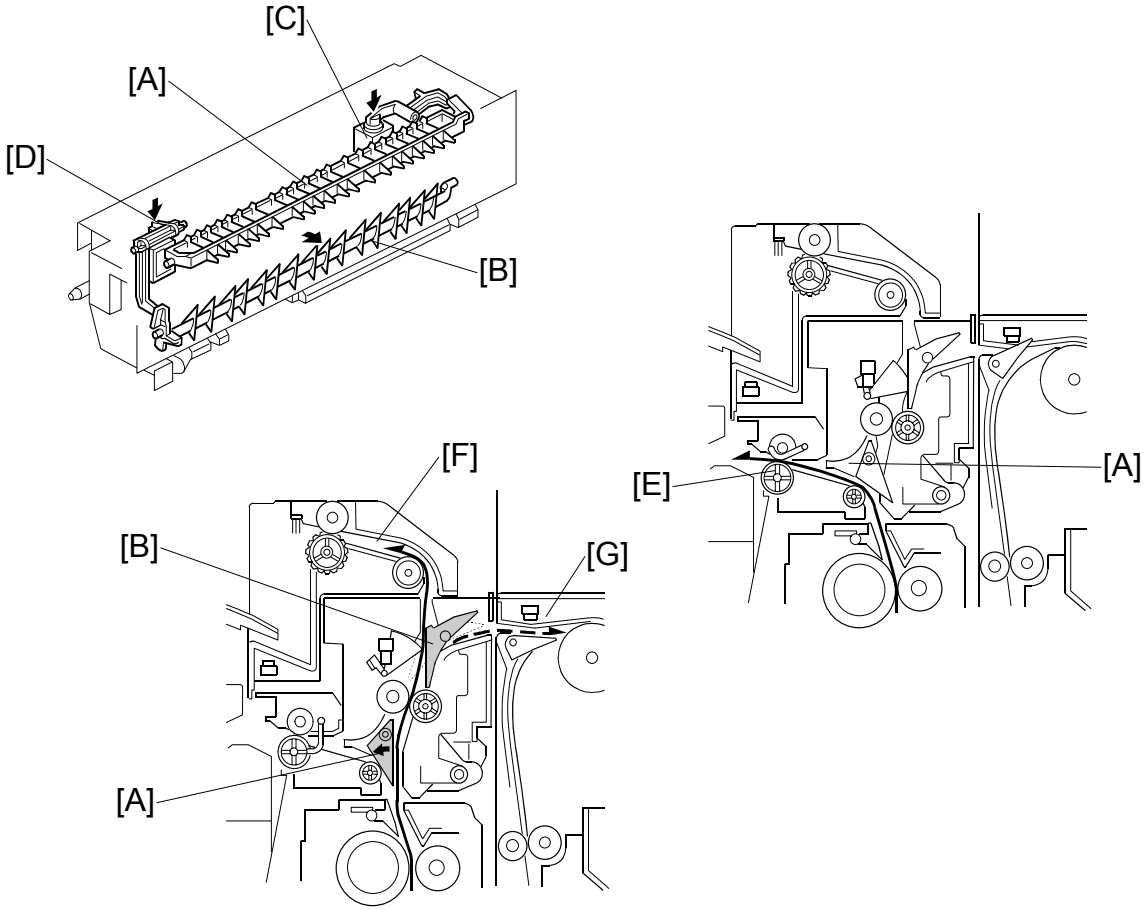
1.3 DRIVE LAYOUT



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

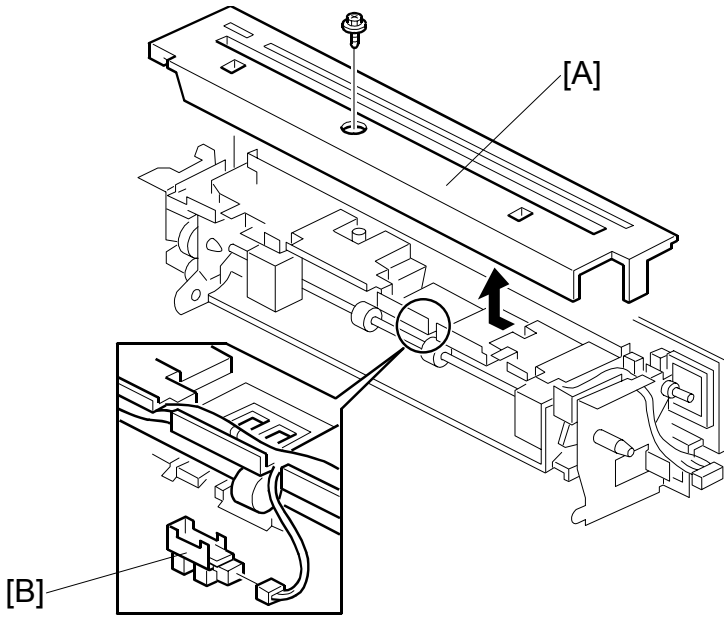
The exit junction gate solenoid turns on and the duplex junction gate solenoid stays off. The paper is directed to the 1-bin tray [F].

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).

BRIDGE UNIT
B417

BRIDGE UNIT B417

TABLE OF CONTENTS

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

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

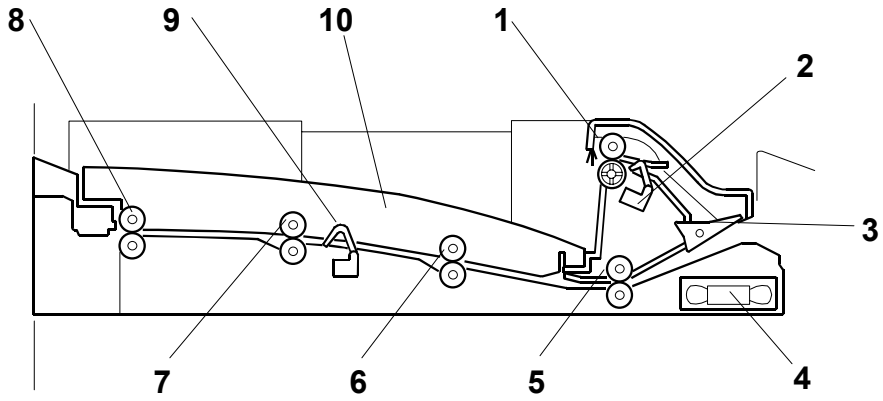
3 REPLACEMENT AND ADJUSTMENT....7
3.1 BRIDGE UNIT DRIVE MOTOR REPLACEMENT....7
3.2 TRAY EXIT SENSOR REPLACEMENT....8
3.3 RELAY SENSOR REPLACEMENT....8

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/printer)
Dimensions (W x D x H):	413 x 435 x 126 mm
Weight	3.0 kg (6.6 lbs)

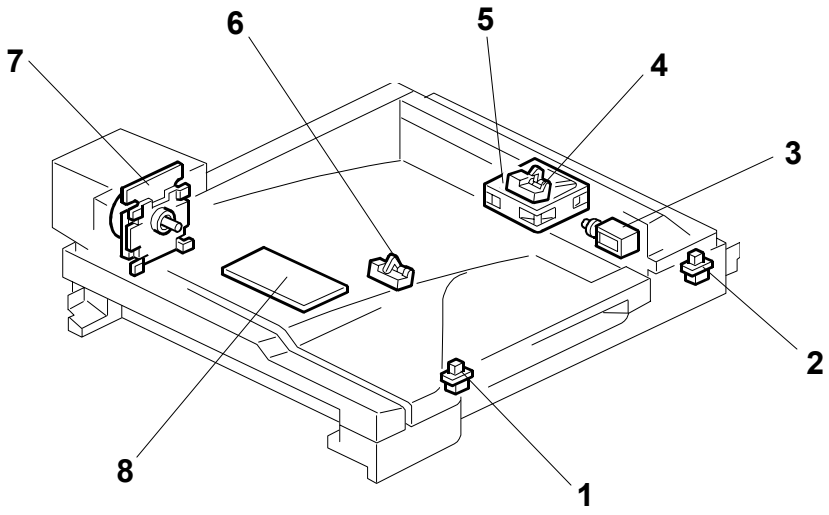
1.2 MECHANICAL COMPONENT LAYOUT



B417V500.WMF

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

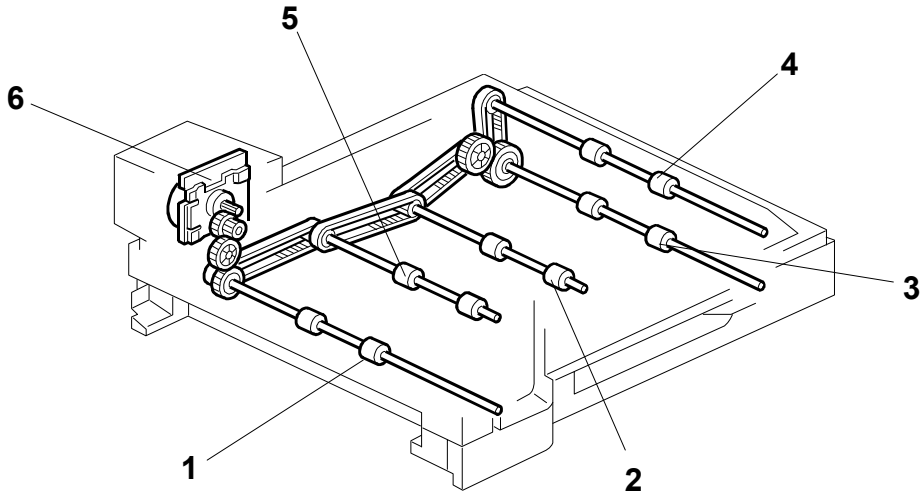


1. Left Guide Switch
2. Right Guide Switch
3. Junction Gate Solenoid
4. Tray Exit Sensor
5. Cooling Fan Motor
6. Relay Sensor
7. Bridge Unit Drive Motor
8. Bridge Unit Control Board

1.4 ELECTRICAL COMPONENT DESCRIPTION

Symbol	Name	Function	Index No.
Motors			
M1	Cooling Fan	Cools the transport unit.	5
M2	Bridge Unit Drive	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

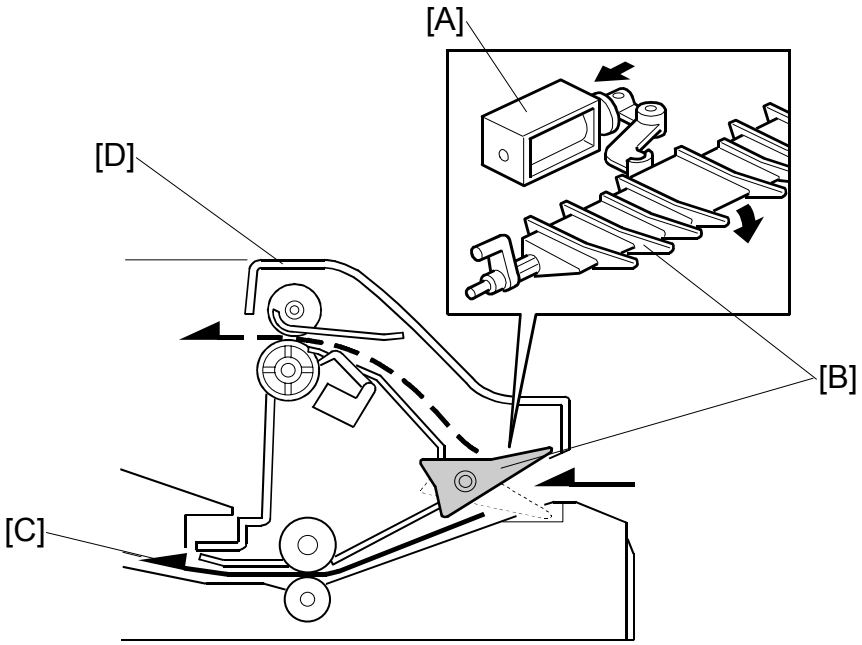
1.5 DRIVE LAYOUT



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



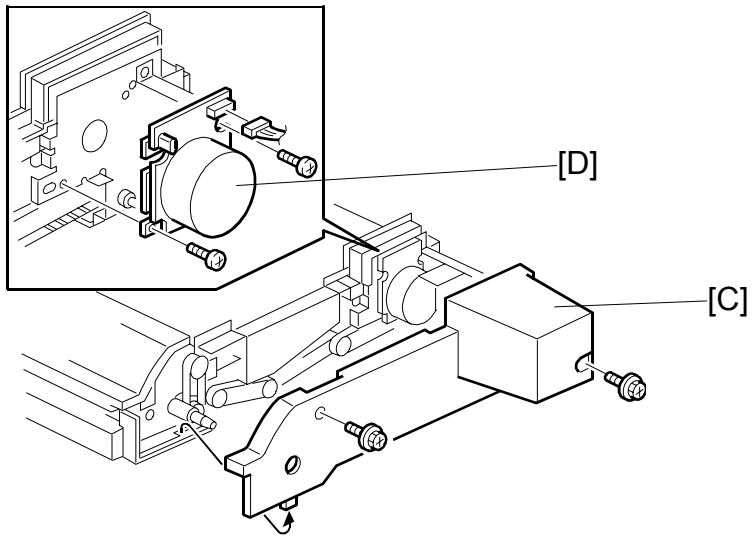
The junction gate [B] directs any paper reaching the bridge unit to either the upper tray (on top of the bridge unit) or to the finisher, depending on which has been selected.

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

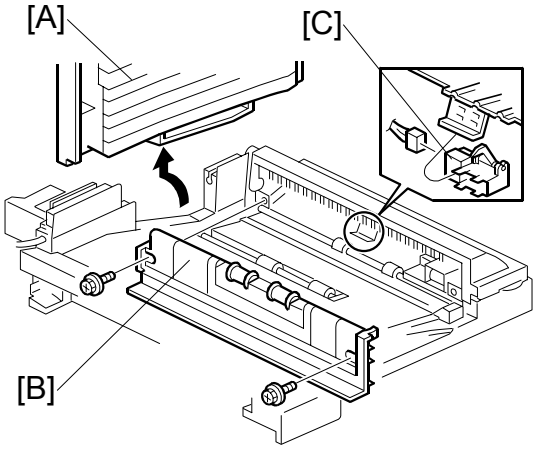
NOTE: When taking apart the bridge unit, first take the unit out of the copier.

3.1 BRIDGE UNIT DRIVE MOTOR REPLACEMENT



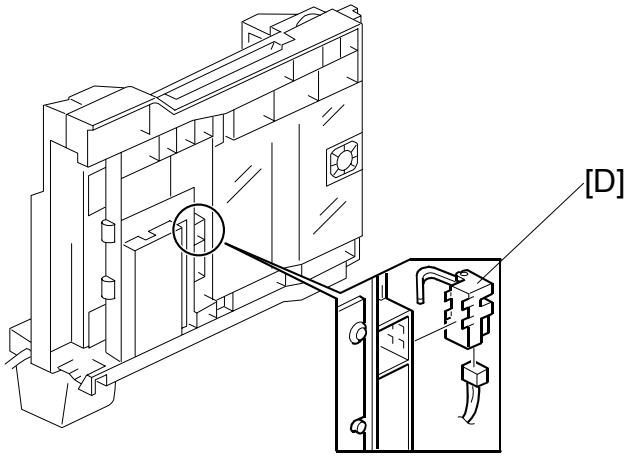
1. Remove the bridge unit from the copier. (See the Installation Procedure in the base copier manual.)
2. Remove the rear cover [C] (2 screws).
3. Remove the bridge unit drive motor [D] (2 screws, 1 connector).

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].

500-SHEET FINISHER

B442

500-SHEET FINISHER B442

TABLE OF CONTENTS

1 REPLACEMENT AND ADJUSTMENT 1
1.1 EXTERIOR 1
1.2 ENTRANCE UPPER GUIDE / PAPER EXIT UNIT 4
1.3 ENTRANCE LOWER GUIDE 5
1.4 PAPER EXIT UNIT GEAR / PADDLE ROLLER SOLENOID 5
1.5 STAPLER UNIT 6
1.6 JOGGER TRAY UNIT 6
1.7 PAPER EXIT SENSOR FEELER 7
1.8 MAIN MOTOR 7
1.9 JOGGER MOTOR 8
1.10 CONTROL BOARD 8
1.11 OUTPUT TRAY UNIT 9

2 DETAILED DESCRIPTIONS 10
2.1 OVERALL MACHINE INFORMATION 10
2.1.1 COMPONENT LAYOUT 10
Mechanical component layout 10
Drive layout 11
2.1.2 ELECTRICAL COMPONENT DESCRIPTIONS 12
2.2 DETAILED SECTION DESCRIPTIONS 14
2.2.1 OUTPUT TRAY MECHANISM 14
Stack height detection 14
Output tray up/down mechanism 15
2.2.2 PAPER FEED 16
Overview 16
Straight feed out mode 16
Shift sorting mode 17
Stapling mode 19
2.2.3 JAM CONDITIONS 20
2.2.4 ERROR DETECTION 20

3 OVERALL MACHINE INFORMATION 21
3.1 SPECIFICATIONS 21

1. REPLACEMENT AND ADJUSTMENT

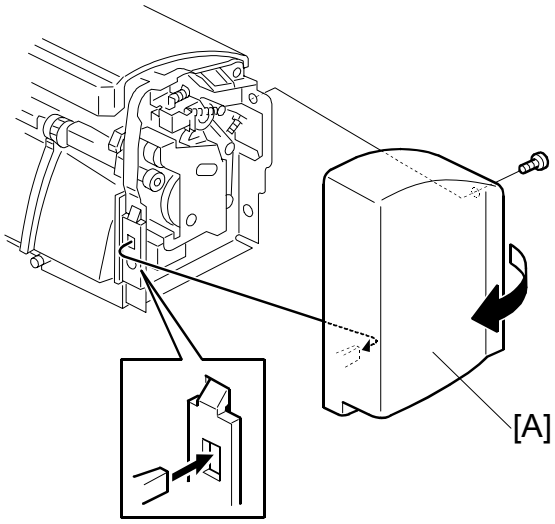
1.1 EXTERIOR

NOTE: This manual uses several symbols. The meanings for these symbols are as follows:

☛: See or refer to : screw : connector : clip

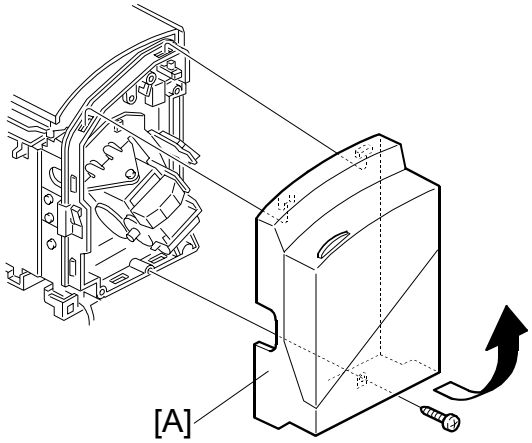
Front cover

[A]: : Front cover (1)



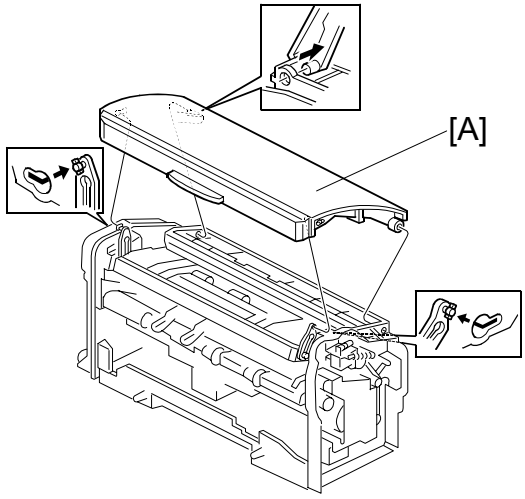
Rear cover

[A]: Rear cover (1)

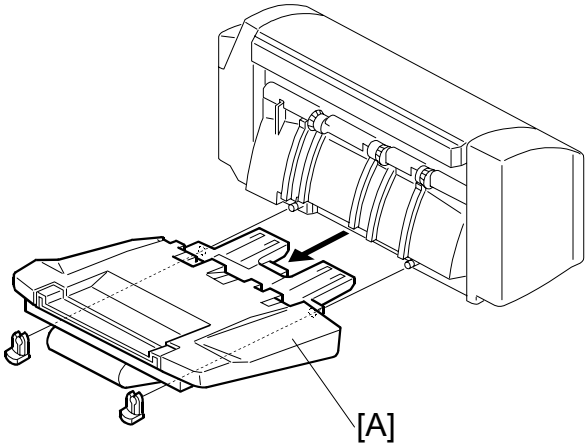


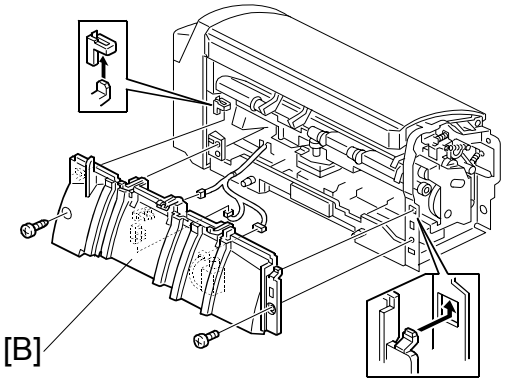
Top cover

[A]: Top cover (2 links)



Front lower guide





[A]: Output tray (2)

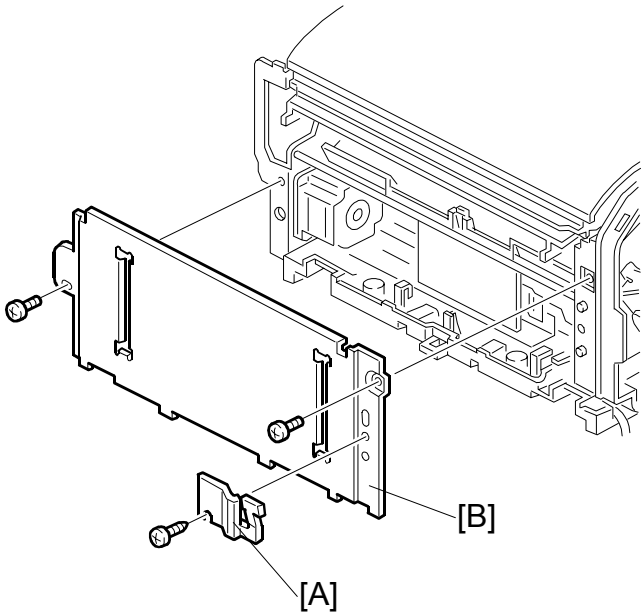
[B]: Front lower guide (2)

NOTE: 1) When re-attaching the lower guide, be sure that it is not in contact with the exit lower guide and that the exit lower guide moves smoothly.
2) Make sure that the blue and black cables are in the correct position, as engraved on the inside of the front lower guide.

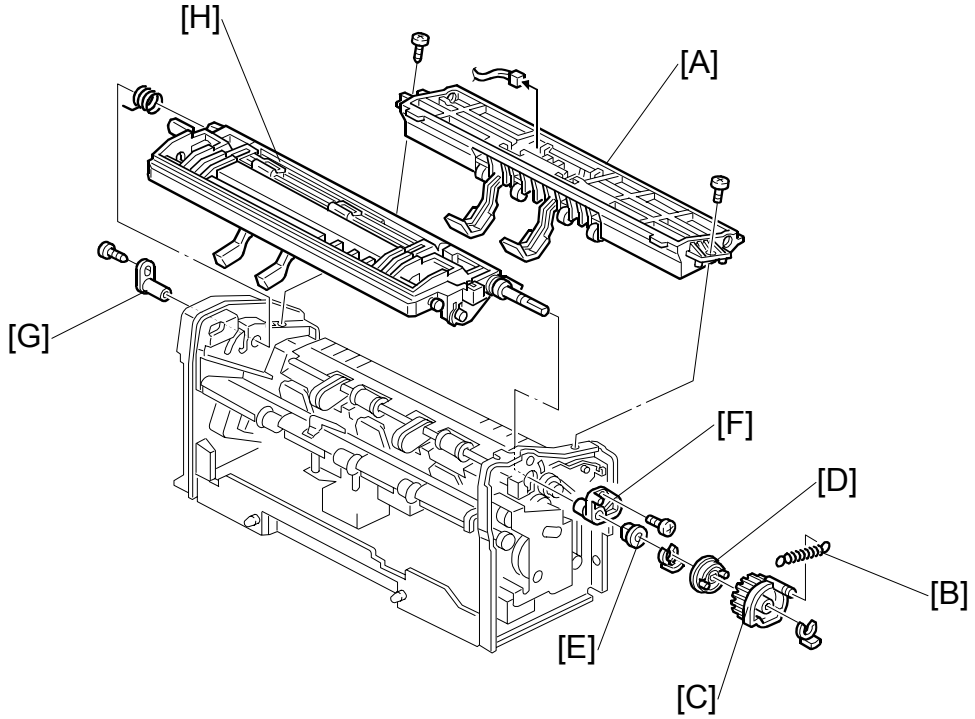
Right cover

[A]: Grounding plate (1)

[B]: Right cover (2)



1.2 ENTRANCE UPPER GUIDE / PAPER EXIT UNIT



- Front, rear, and top covers and front lower guide (☛ 1.1 Exterior)

[A]: Entrance upper guide (2, 1)

[B]: Paddle gear spring

[C]: Paddle gear (1)

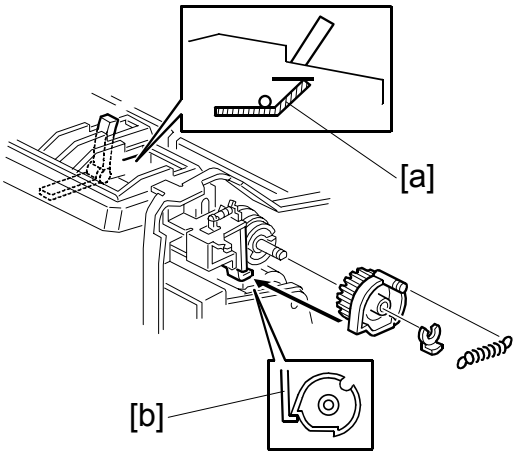
[D]: Paddle gear holder

[E]: Bushing (1)

[F]: Paper exit unit holder (1)

[G]: Rear paper exit unit holder (1)

[H]: Exit unit



NOTE: Keep the paper exit unit stays in the upper position. Rotate the paddle roller into the position shown in the illustration [a]. Then, insert the paddle gear, making sure that the pawl on the gear's outer frame is resting on the clutch link [b].

1.3 ENTRANCE LOWER GUIDE

- Entrance upper guide (☛ 1.2 Entrance upper guide / Exit unit)
- Exit unit (☛1.2 Entrance upper guide / Exit unit)

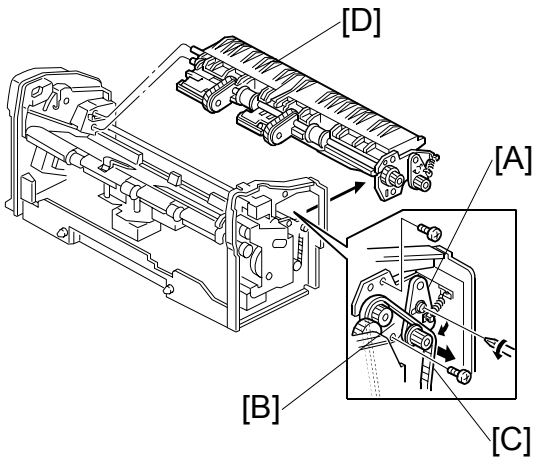
[A]: Release tension bracket (1)

[B]: Reverse roller gear bracket (2)

[C]: Timing belt

[D]: Entrance lower guide

NOTE: When re-assembling the tension bracket, rotate the main motor counter clockwise to tighten the timing belt.



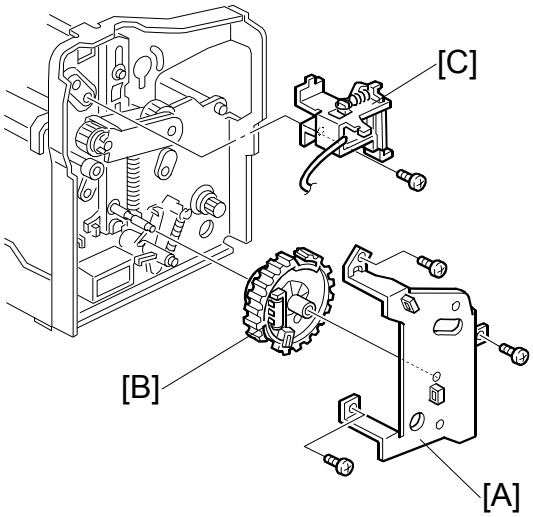
1.4 PAPER EXIT UNIT GEAR / PADDLE ROLLER SOLENOID

- Front cover (☛ 1.1 Exterior)

[A]: Gear bracket (3)

[B]: Paper exit unit gear

[C]: Paddle roller solenoid (1)

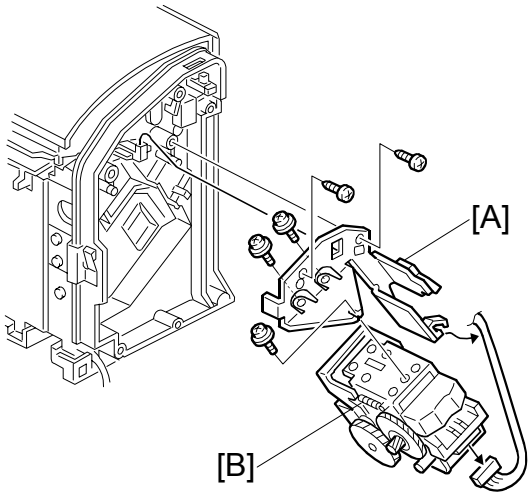


1.5 STAPLER UNIT

- Rear cover (☛1.1 Exterior)

[A]: Stapler unit bracket (2, 1)

[B]: Stapler unit (3)



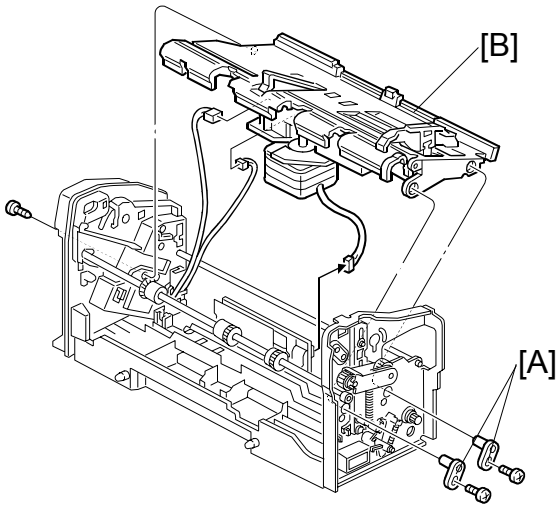
1.6 JOGGER TRAY UNIT

- Entrance upper guide and paper exit unit (☛1.2 Entrance upper guide / paper exit unit)
- Entrance lower guide (☛1.2 Entrance lower guide)
- Paper exit unit gear and Paddle roller solenoid (☛1.4 Paper exit unit gear / Paddle roller solenoid)
- Stapler unit (☛ 1.5 Stapler unit)

[A]: Jogger tray unit holders (2)

[B]: Jogger tray unit (1, 3)

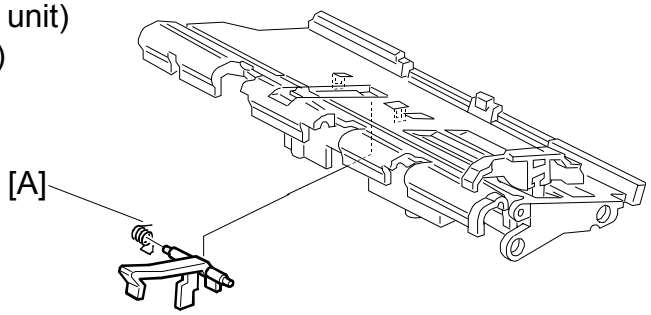
NOTE: Be sure to connect the black cable to the paper exit sensor and the blue one to the jogger home position sensor.



1.7 PAPER EXIT SENSOR FEELER

- Jogger tray unit (☛1.6 Jogger tray unit)
- Jogger motor (☛1.9 Jogger motor)

[A]: Paper exit sensor feeler

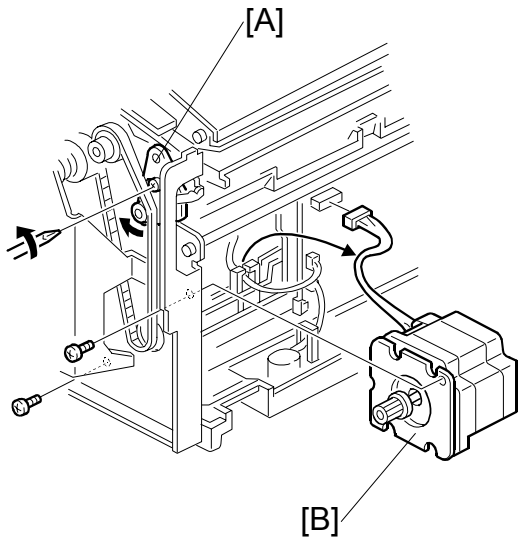


1.8 MAIN MOTOR

- Right cover (☛1.1 Exterior)

[A]: Release tension bracket (1)

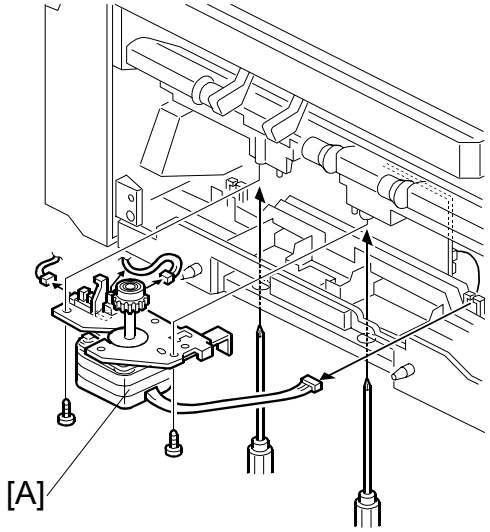
[B]: Main motor (2, 1)



1.9 JOGGER MOTOR

- Front lower guide (☛1.1 Exterior)

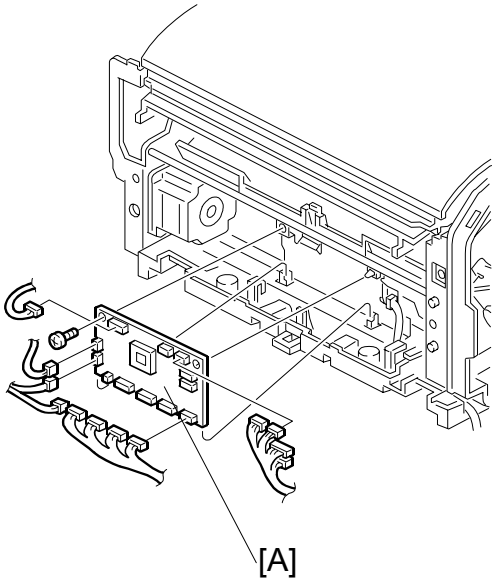
[A]: Jogger motor (2, 3)



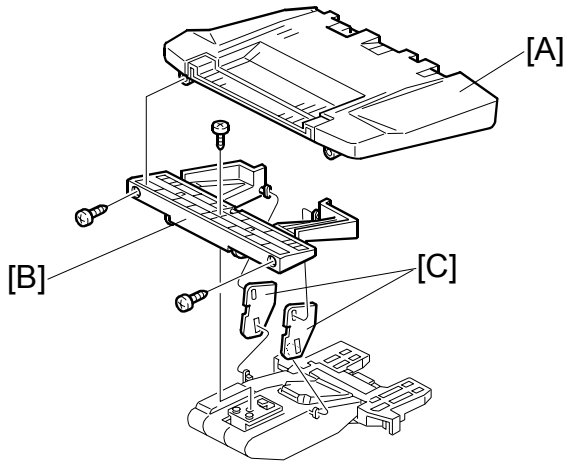
1.10 CONTROL BOARD

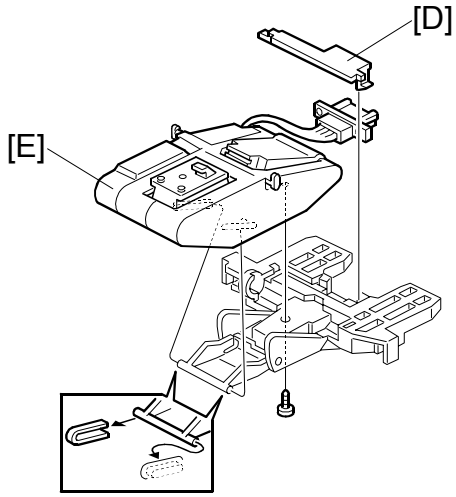
- Front lower guide (☛1.1 Exterior)

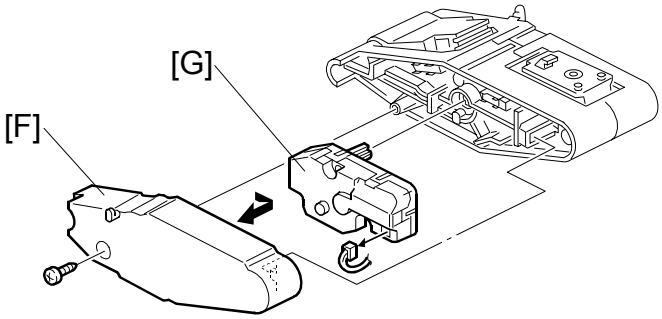
[A]: Control board (1, 12)



1.11 OUTPUT TRAY UNIT







[A]: Output tray cover (2)

[B]: Tray holder (1)

[C]: Links

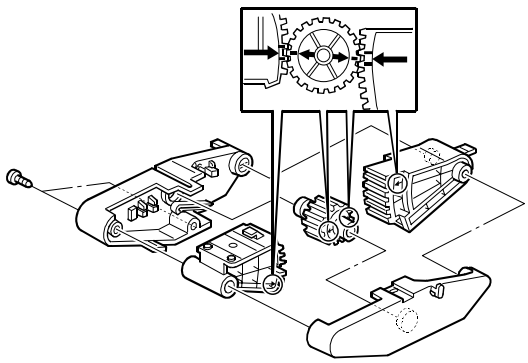
[D]: Connector cover

[E]: Output tray motor link unit (1)

[F]: Rear cover (1)

[G]: Output tray motor (1)

NOTE: When re-attaching the motor link unit, the arrows on each of the gears need to face each other as shown in the illustration.

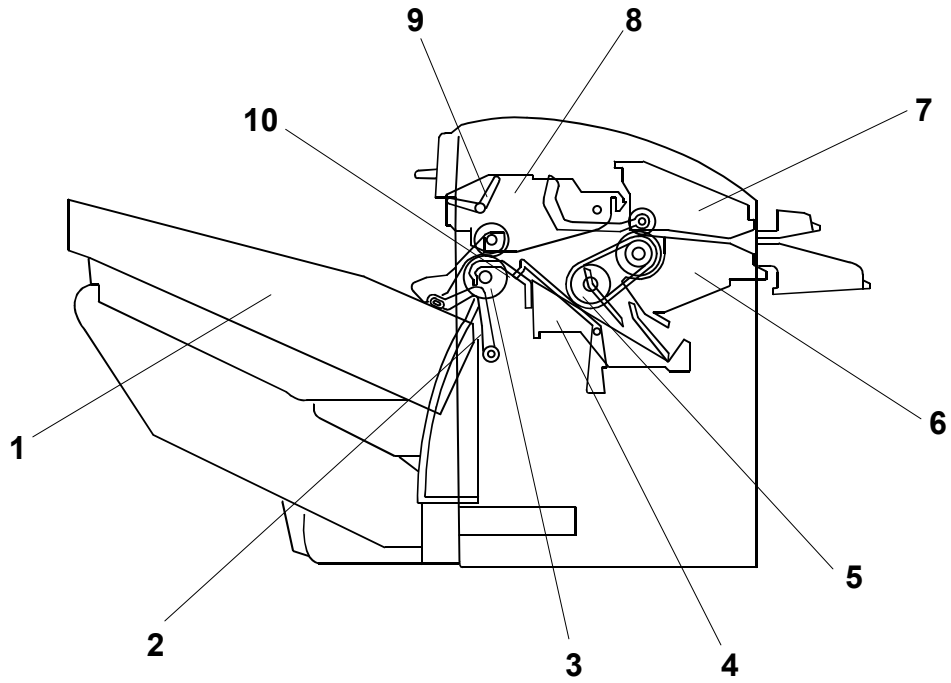


2. DETAILED DESCRIPTIONS

2.1 OVERALL MACHINE INFORMATION

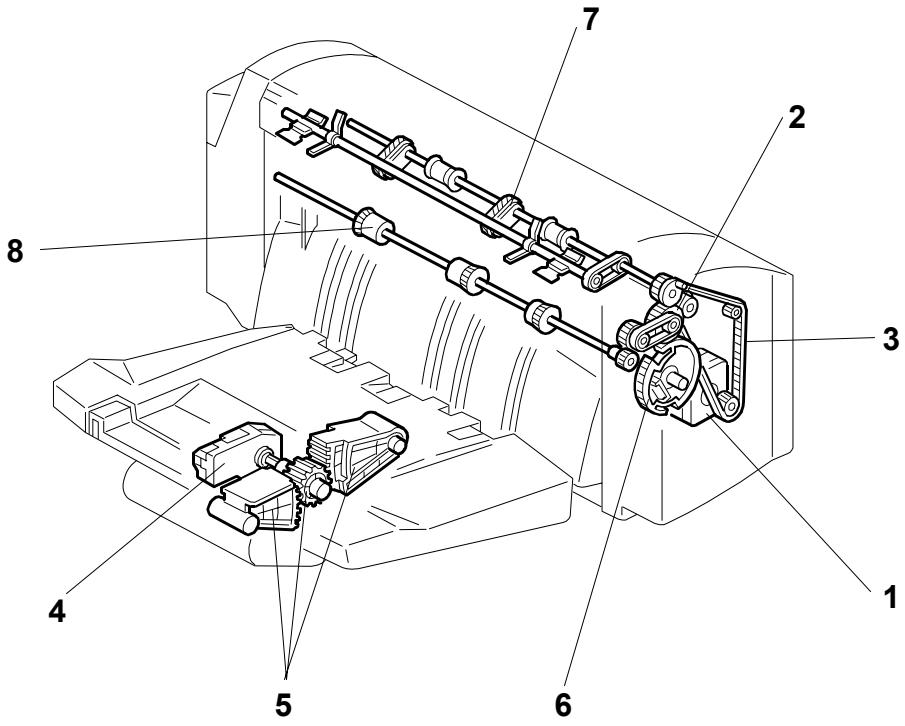
2.1.1 COMPONENT LAYOUT

Mechanical component layout



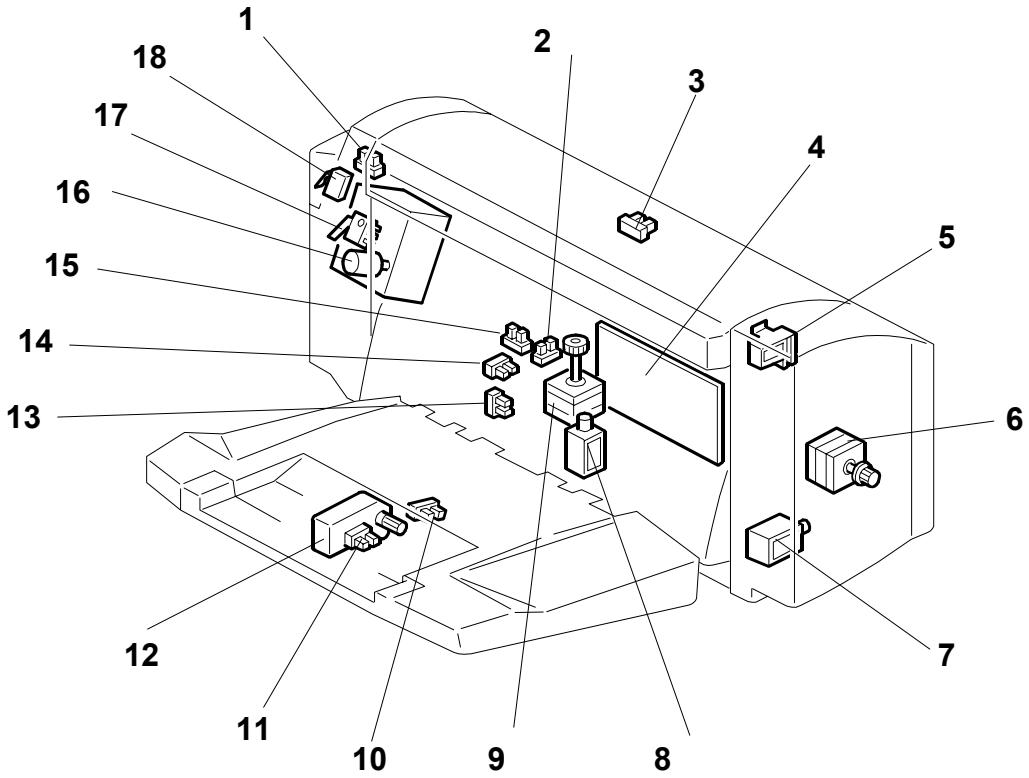
1. Output tray
2. Stack height detection lever
3. Paper exit roller
4. Jogger tray
5. Reverse roller
6. Lower entrance guide
7. Upper entrance guide
8. Paper exit unit
9. Paddle roller
10. Lower exit guide

Drive layout



1. Main motor
2. Exit roller timing belt
3. Main motor timing belt
4. Output tray motor
5. Output tray link gears
6. Paper exit unit drive gear
7. Reverse roller
8. Paper exit roller

2.1.2 ELECTRICAL COMPONENT DESCRIPTIONS



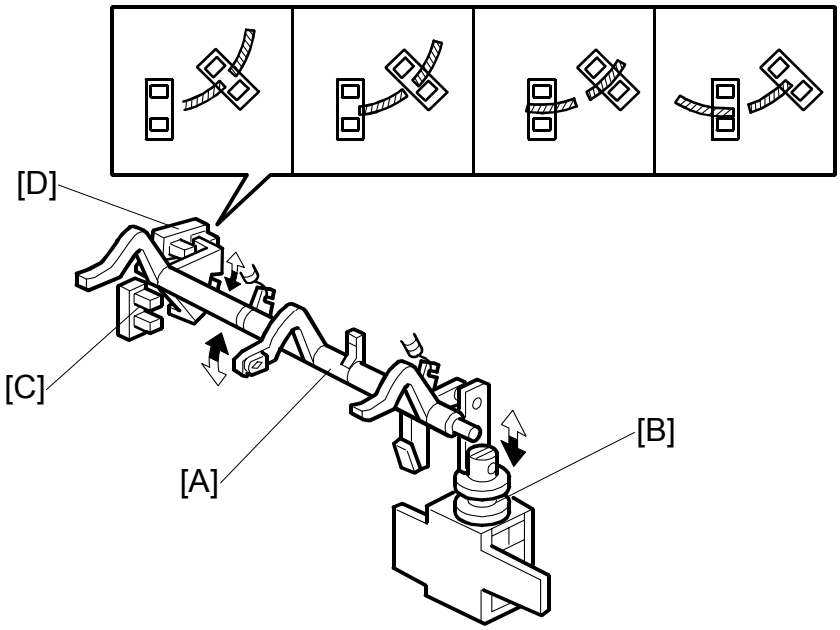
See the next page for the component description table.

Symbols	Name	Function	Index No.
Motors			
M1	Main	Drives all the rollers	6
M2	Jogger	Drives the jogger fence	9
M3	Output Tray	Drives the tray up and down	12
M4	Stapler	Drives the stapler	16
Sensors			
S1	Entrance	Detects paper at the entrance	3
S2	Exit	Detects paper at the exit	15
S3	Stack height	Detects the top of the paper stack	13
S4	Lever	Detects the position of stack height lever	14
S5	Jogger home position	Detects the position of the jogger fence	2
S6	Top cover	Detects if the top cover is open	1
S7	Tray upper limit	Detects when the tray is lifted to the upper limit	11
S8	Stack near-limit	Detects when the tray is at its lowest limit (almost full)	10
Solenoids			
SOL1	Exit unit gear	Moves the paper exit unit up and down	7
SOL2	Paddle roller	Switches paddle roller rotation on and off.	5
SOL3	Stack height lever	Moves the stack height lever into contact with the top of the stack.	8
PCBs			
PCB1	Main control	Controls all finisher functions	4
Switches			
SW1	Paper exit unit	Switches DC for the stapler unit on and off.	18
SW2	Staple unit cover	Cuts DC when staple unit cover is open.	17

2.2 DETAILED SECTION DESCRIPTIONS

2.2.1 OUTPUT TRAY MECHANISM

Stack height detection



Stack height detection lever [A]: Driven by stack height lever solenoid [B].

Two sensors detect the height of the stack in the output tray: the stack height [C] and lever [D] sensors.

Stack height sensor	Lever sensor	Status
Off	Off	The stack height is below the target. The output tray is lifted to the target position.
Off	On	Target position
On	On	The stack height is more the target. The output tray is lowered to the target position.
On	Off	The stack height detection lever is at home position.

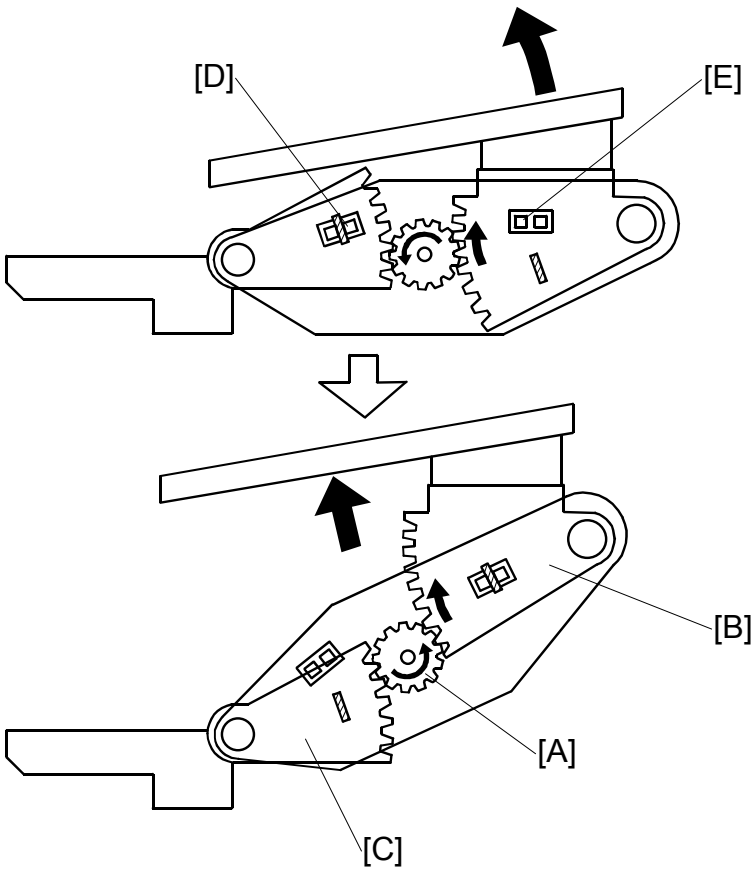
Off: Actuator not in sensor

At the start of a print job, the solenoid turns off. The stack height detection lever comes down, to detect the current stack level.

When a sheet of paper is being fed out, the solenoid turns on and the lever goes back up to home position (inside the unit).

After paper has been fed out, the solenoid turns on again, and the lever detects the level of the stack.

Output tray up/down mechanism



Overview

The output tray motor [A] lifts/lowers the tray if the stack height is not at the target position.

Gears [B] and [C] keep the angle of the tray constant at any tray position.

Output Tray Downward Movement

The top of the paper stack is checked after every page (or set of pages) has been fed out. If the top of the stack is higher than the target level, the output tray motor moves the tray down.

When the stack near-limit sensor [D] detects the actuator on gear [C], a stack near-limit signal is transferred to the main frame. The tray cannot move any lower. The next time the top of the stack height is above the target level, printing stops.

Output Tray Upward Movement

If paper is removed from the stack, the top of the stack will be lower than the target level, and the output tray motor moves the tray up.

When the tray upper limit sensor [E] detects the actuator on gear [B], the tray cannot be moved up any more, so the motor stops.

2.2.2 PAPER FEED

Overview

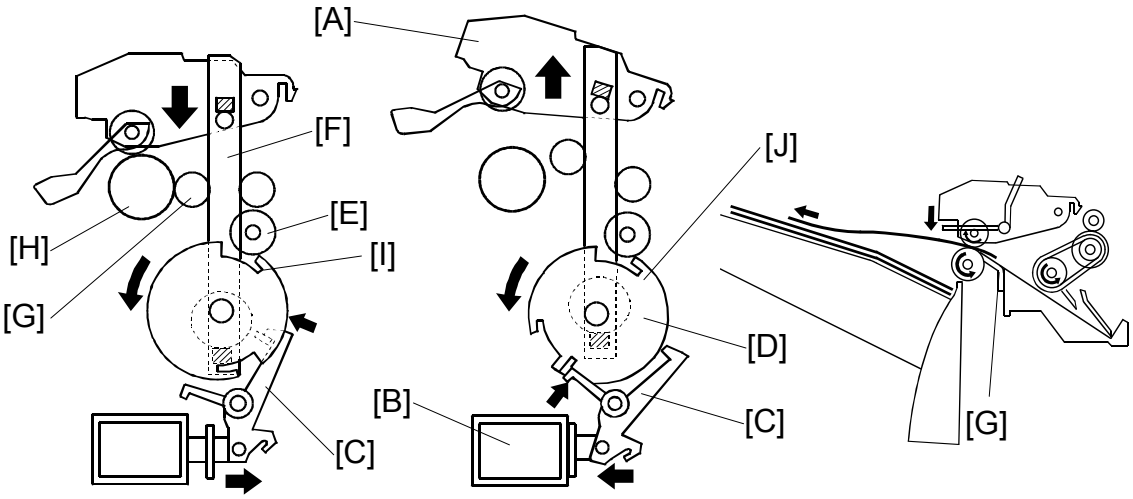
The following paper feed out modes can be selected at the printer driver.

Mode	Description
Straight feed out mode	Paper is fed directly to the output tray without shifting or stapling.
Shift sorting mode	Alternate sets are shifted before being fed to the output tray.
Stapling mode	All sets are shifted and stapled, then fed to the output tray.

Straight feed out mode

Before the job, the exit unit [A] is up, and the exit unit gear solenoid [B] is on, pulling lever [C] away from the exit unit gear [D].

At the start of the job, the stack height detection lever detects the top of the stack.



The tray moves up or down if the top of the stack is not at the correct level.

When the paper exit sensor in the main frame turns on, the finisher main motor starts. It drives the exit unit gear [D] through idle gear [E]. The gear pulls paper exit unit [A] down, using the paper exit link [F]. The link also moves the paper exit roller [H] up through the exit roller drive gear [G].

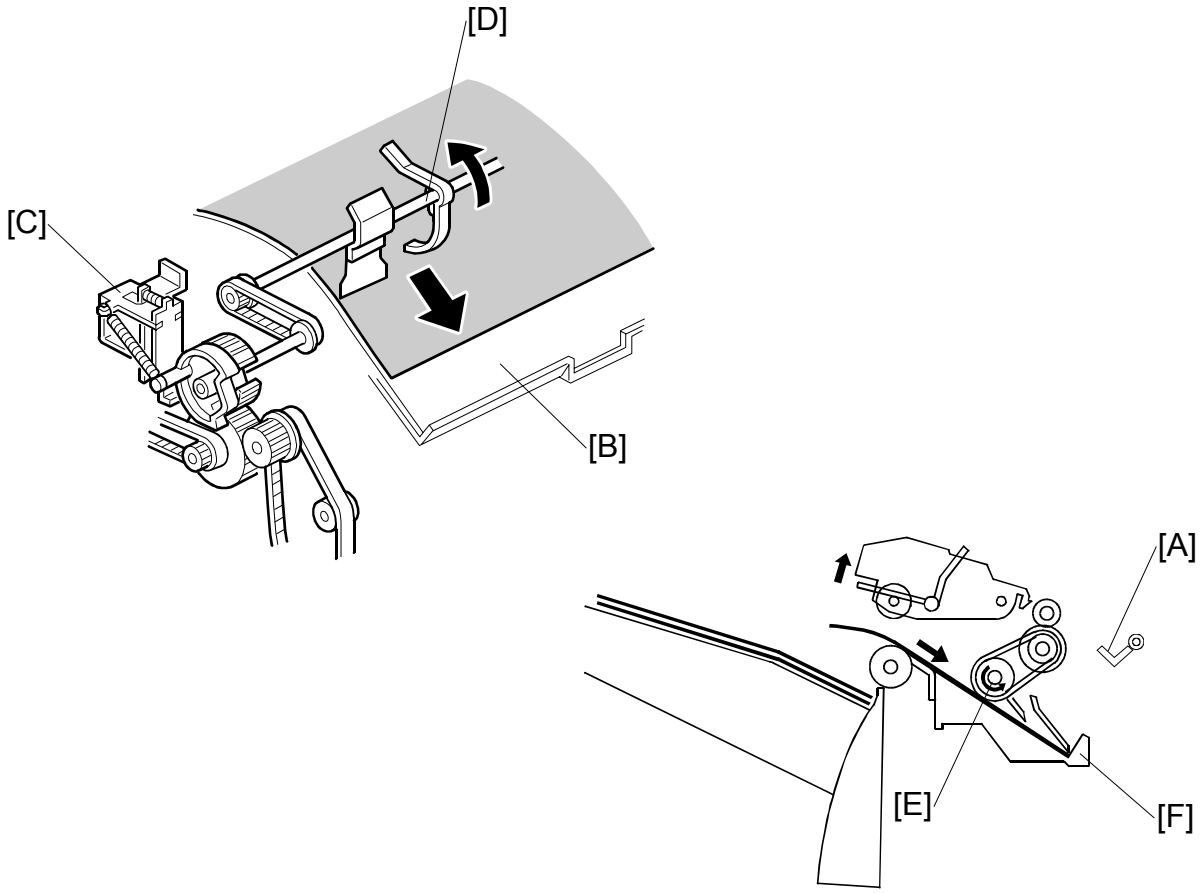
When the motor starts, the solenoid switches off and a spring pushes lever [C] into contact with the exit unit gear [D].

When a part of the exit unit gear without threads [I] faces the idle gear, the gear stops turning (see the left-hand diagram). The lever [C] catches a peg on the exit unit gear, to make sure that it stops at the correct position. The paper exit rollers [H] now contact each other and the main motor feeds out the paper.

When the last page has been fed out, the solenoid turns on to pull the lever away from the gear. The gear starts turning, to lift the exit unit to the standby position.

When the other part of the exit unit gear without threads [J] faces the idle gear, the exit unit gear stops. Then, the main motor stops and the solenoid turns off.

Shift sorting mode

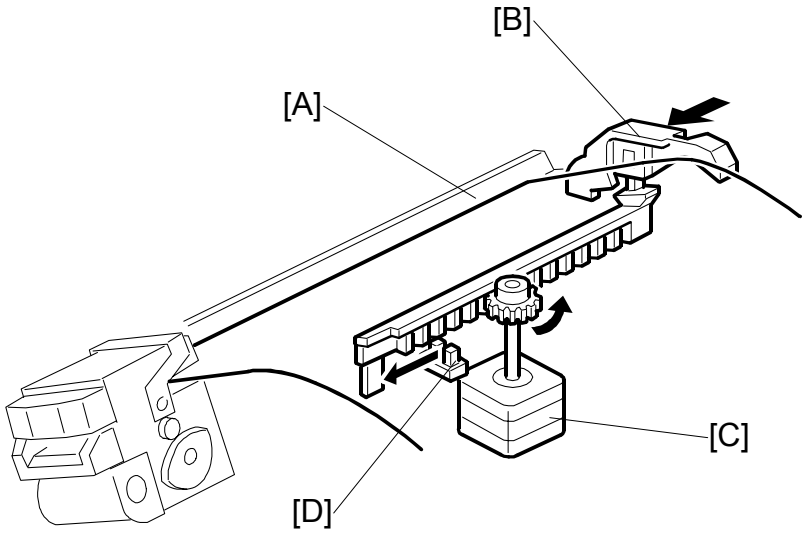


At the start of the job, and for odd numbered sets of copies, the mechanism is the same as the straight feed out mode. However, even numbered sets are fed back to the jogger tray, which shifts the sets to one side before feeding them out.

This section describes what happens for even-numbered sets (sets 2, 4, 6 etc) of the job.

A short time after the entrance sensor [A] detects the first page of the set, the paper exit unit solenoid turns on to restart the rotation of the paper exit unit gear, raising the paper exit unit to the standby position. It stays there until after the last page of the set.

The paper cannot feed out, so it drops into the jogger tray [B]. The paddle roller solenoid [C] turns on and the paddle roller [D] feeds the paper to the reverse roller [E]. The reverse roller feeds the paper to the end fence [F] of the jogger tray.



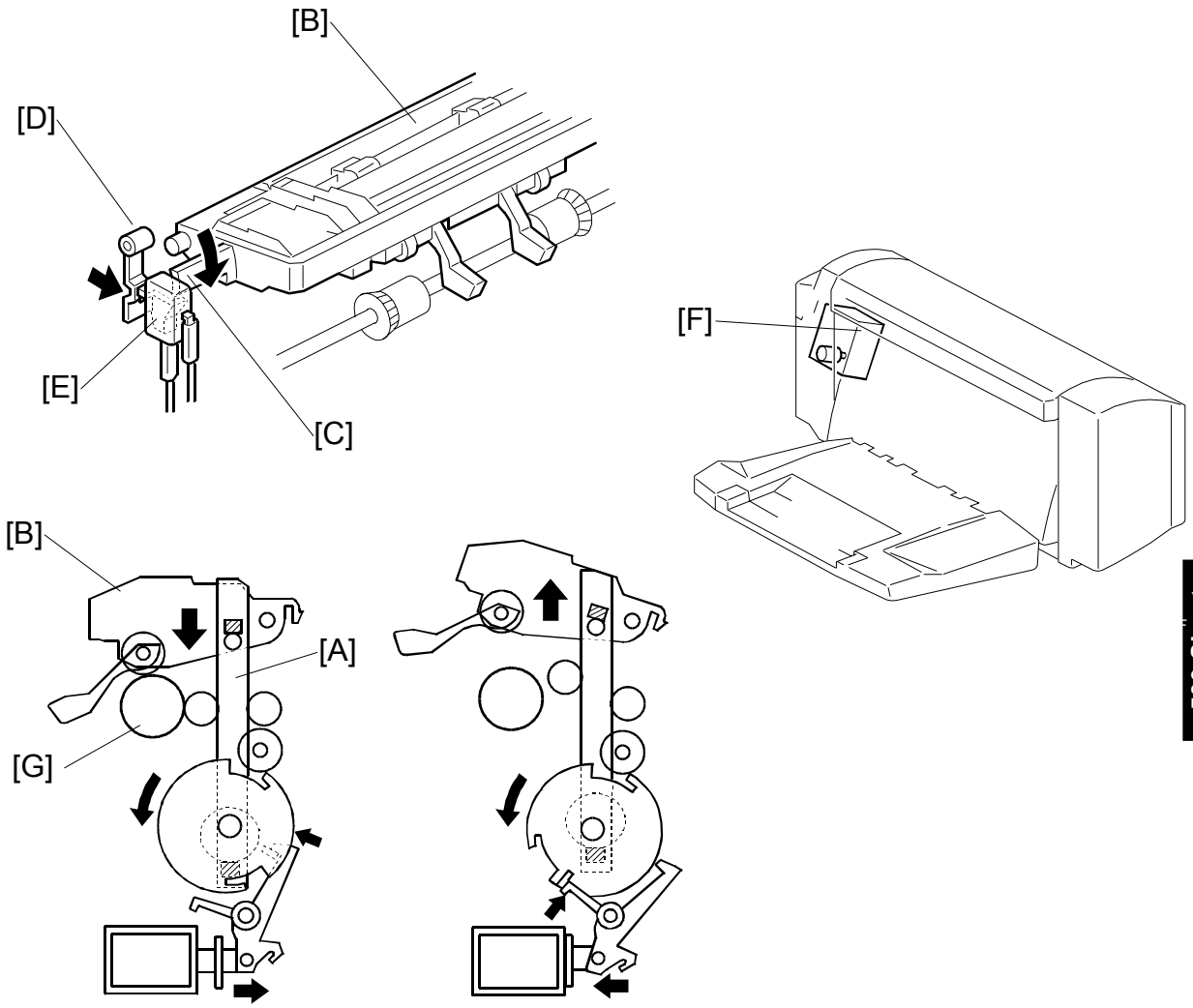
After the paper reaches the end fence [A], the jogger fence [B] shifts the paper across. The jogger motor [C] drives the jogger fence. The home position sensor [D] detects when the jogger fence has returned to home position.

When the next set begins, the paper exit unit moves down, and the machine operates the same way as straight feed out mode. At this time, the entire set in the jogger tray is fed out at the same time as the first page of the next set. However, the set coming from the jogger tray has been shifted to one side.

If the last set is an even-numbered set, the paper exit unit must be pulled down to feed the final set out of the jogger tray. Then the exit unit moves back up to the standby position.

The capacity of the jogger tray is 30 sheets. If the set contains more than 30 sheets, the machine feeds out the first 30 from the jogger tray, then continues with the rest of the set, using the jogger tray.

Stapling mode



The stapler is attached to the jogger tray, so all sets go to the jogger tray.

After all pages of a set have entered the jogger tray and been shifted across, the paper exit link [A] pulls the paper exit unit [B] down until knob [C] on the exit unit pushes the link lever [D] for the exit unit switch [E]. This turns on the exit unit switch. When this switch is on, dc is supplied to the stapler unit [F] and the main motor is turned off.

The exit unit switch is activated when the exit unit is pulled part-way down. After stapling the set of prints, the paper exit unit is pulled down again until the unit comes in contact with the paper exit roller [G], and the stapled set is fed out.

2.2.3 JAM CONDITIONS

	Sensors	Conditions
Remaining paper detection	Entrance Exit	Either the entrance or exit sensor detects paper just after the unit is initialized.
Non-feed at the entrance	Entrance	The entrance sensor is not activated within a certain period after the paper exit sensor detects paper.
Jamming at the entrance	Entrance	The entrance sensor is not de-activated after paper is fed 1.3 times the length of the paper.
Non-feed inside the unit (Straight feed out mode only)	Exit	The exit sensor is not activated within a certain period after the entrance sensor detects paper.
Jamming at the exit	Exit	The exit sensor is not de-activated after paper is fed for a certain period.
Jogger tray	Exit	The exit sensor is de-activated during paper shifting or stapling.

2.2.4 ERROR DETECTION

	Conditions
Jogger motor error	Jogger home position sensor does not shut off after jogger motor starts.
Jogger motor home position detection error	Jogger home position sensor does not turn on after paper shifting.
Stapler error	Stapler home position sensor (inside stapler unit) does not turn on after stapling.
Output tray upper limit error	Tray upper limit sensor is activated.
Output tray motor error	The output tray is away from the target position for more than 10 seconds.
Stack height detection error	The stack height detection lever does not return to its home position before going to detect the stack height.

NOTE: The above errors are indicated as “Finisher jam” at the first occurrence. If the same error happens again in the next job, “finisher error” is indicated.

3. OVERALL MACHINE INFORMATION

3.1 SPECIFICATIONS

Paper Size:	A3, B4, A4, B5 sideways (Metric) DLT, LG, LT (Inch)
Paper Weight	52 ~ 128 g/m^2, 14 ~ 34 lb.
Staple Capacity:	20 sheets (A3, B4, DLT, LG : 80 g/m^2, 20 lb) 30 sheets (A4, B5 sideways, LT : 80 g/m^2, 20 lb)
Stack Capacity (Maximum):	500 sheets (A4/LT or smaller: 80 g/m^2, 20 lb.) 250 sheets (A3, B4, DLT and LG: 80 g/m^2, 20 lb.)
Stapling Positions:	1
Staple Replenishment:	Cartridge (3,000 staples/cartridge)
Power Source:	24 V DC, 5 V DC (from the copier/printer)
Power Consumption:	48 W
Weight:	8.3 kg (18.4 lbs.)
Dimensions (W x D x H):	350 x 490 x 230 mm

INTERNAL SHIFT SORT TRAY
B459

INTERNAL SHIFT SORT TRAY B459

TABLE OF CONTENTS

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

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

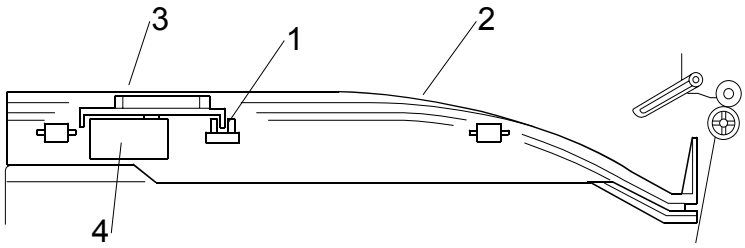
3 REPLACEMENT AND ADJUSTMENT 6
3.1 TRAY COVER REPLACEMENT 6
3.1.1 TRAY COVER REMOVAL 6
3.1.2 TRAY COVER ATTACHMENT 6
3.2 TRAY MOTOR AND HALF TURN SENSOR REPLACEMENT 7
3.2.1 REPLACING THE TRAY MOTOR 7
3.2.2 REPLACING THE HALF TURN SENSOR: 7

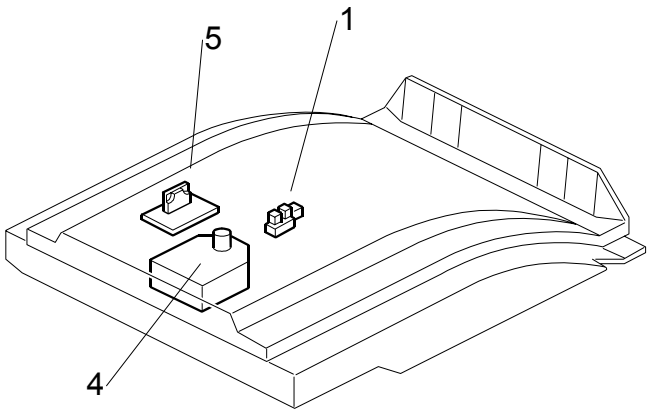
1 OVERALL MACHINE INFORMATION

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.): B4 or larger
	250 sheets (80 g/m², 20 lbs.): A4 or smaller
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

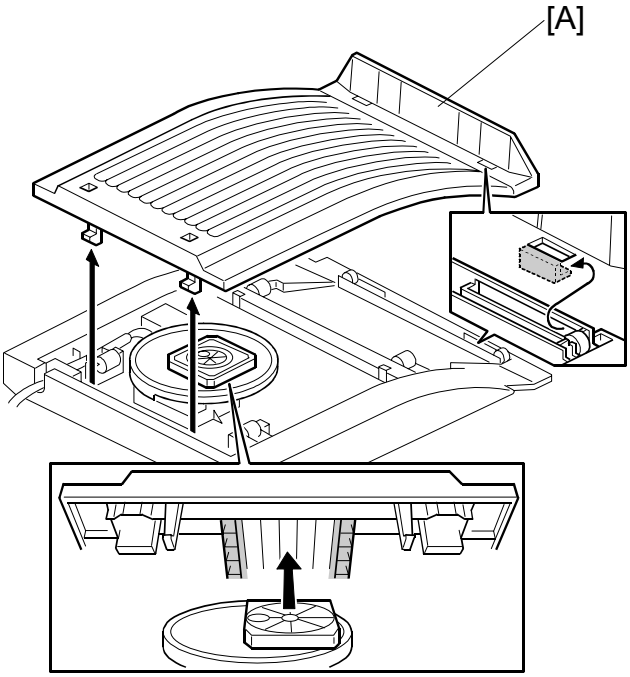




1. Half Turn Sensor
2. Tray Cover
3. Slip Disc
4. Tray Motor
5. Driver PCB

2. DETAILED SECTION DESCRIPTIONS

2.1 BASIC OPERATION

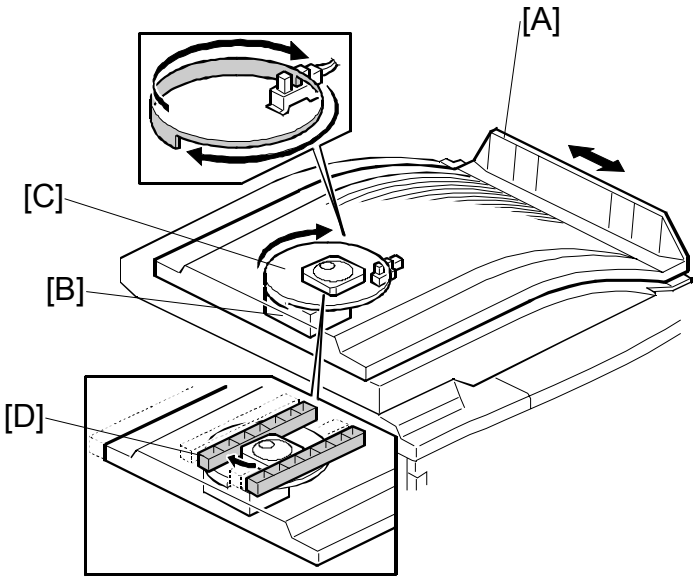


The shift tray allows copies to be sorted into separate piles on one tray.

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

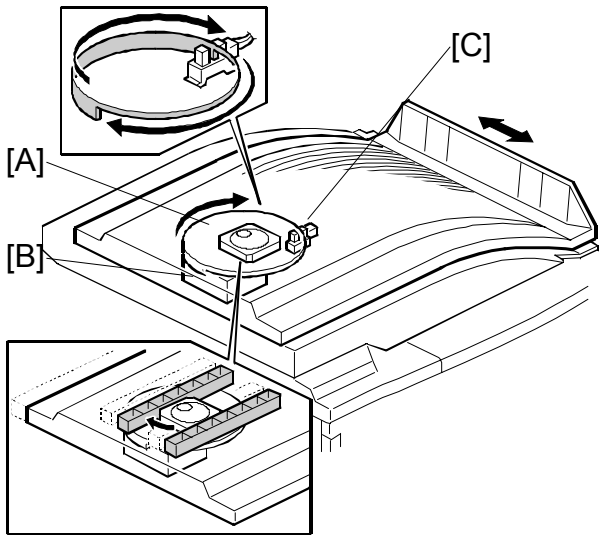
2.2.1 TRAY SHIFT



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



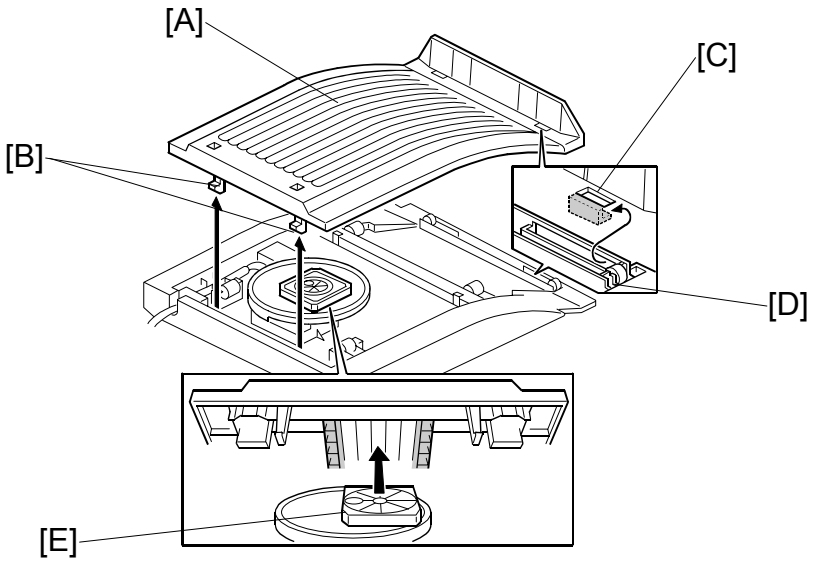
Half turn detection is performed through a combination of two components: the slip disc [A] and half turn sensor [C].

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

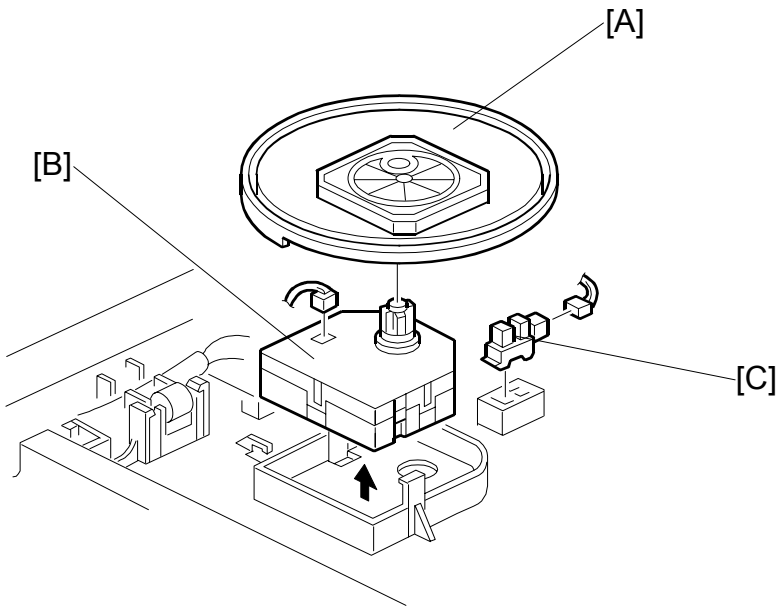
1. Remove the tray cover [A] by pressing on the two pawls [B] on the left side of the cover.

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).

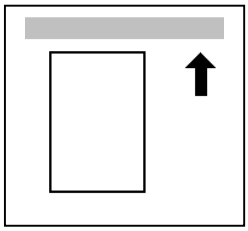
FAX OPTION TYPE 3030

B766

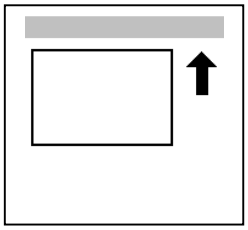
Conventions Used in this Manual

This manual uses several symbols.

Symbol	What it means
☛	Refer to section number
CT	See Core Tech Manual for details
	Screw
	Connector
	E-ring
	Clip ring
	Clamp



Lengthwise, SEF
(Short Edge Feed)



Sideways, LEF
(Long Edge Feed)

Cautions, Notes, etc.

The following headings provide special information:

⚠WARNING

FAILURE TO OBEY WARNING INFORMATION COULD RESULT IN SERIOUS INJURY OR DEATH.

⚠CAUTION

Obey these guidelines to ensure safe operation and prevent minor injuries.

Important

- Obey these guidelines to avoid problems such as misfeeds, damage to originals, loss of valuable data and to prevent damage to the machine.

IMPORTANT

- **ALWAYS OBEY THESE GUIDELINES TO AVOID SERIOUS PROBLEMS SUCH AS MISFEEDS, DAMAGE TO ORIGINALS, LOSS OF VALUABLE DATA AND TO PREVENT DAMAGE TO THE MACHINE. BOLD IS ADDED FOR EMPHASIS.**

NOTE: This information provides tips and advice about how to best service the machine.

⚠WARNING

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 telephone wires that are not insulated or terminals unless the telephone line has been disconnected at the network interface.**
4. **Use caution when you install or modify telephone lines.**
5. **Do not use a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning.**
6. **Do not use a telephone to report a gas leak in the vicinity of the leak.**

⚠CAUTION

1. **Switch off the main switch and disconnect the power cord before you install the fax unit.**
2. **The fax unit has a lithium battery. An explosion can occur if a battery of this type is incorrectly replaced. Replace only with the same or an equivalent type recommended by the manufacturer. Discard batteries in accordance with the manufacturer's instructions.**

Note to users in Australia: Unit shall be connected to Telecommunication Network through a line cord which meets the requirements of ACA Technical Standard TS008.

B766

TABLE OF CONTENTS

1. INSTALLATION 1
1.1 FAX UNIT B766 1
1.2 OPTIONAL 32 MB MEMORY 4
1.3 G3 INTERFACE UNIT B768 5

2. REPLACEMENT AND ADJUSTMENT 9
2.1 FCU 9

3. TROUBLESHOOTING 10
3.1 ERROR CODES 10
3.2 IFAX TROUBLESHOOTING 22
3.3 IP-FAX TROUBLESHOOTING 25
IP-Fax Transmission 25
IP-Fax Reception 28

4. SERVICE TABLES 30
4.1 SERVICE TABLES 30
4.2 BIT SWITCHES 38
4.2.1 SYSTEM SWITCHES 38
4.2.2 I-FAX SWITCHES 48
4.2.3 PRINTER SWITCHES 54
4.2.4 COMMUNICATION SWITCHES 59
4.2.5 G3 SWITCHES 67
4.2.6 G3-2/3 SWITCHES 73
4.2.7 G4 INTERNAL SWITCHES 79
4.2.8 G4 PARAMETER SWITCHES 79
4.2.9 IP FAX SWITCHES 79
4.3 NCU PARAMETERS 85
4.4 DEDICATED TRANSMISSION PARAMETERS 94
4.4.1 PROGRAMMING PROCEDURE 94
4.4.2 PARAMETERS 95
Fax Parameters 95
E-mail Parameters 98
4.5 SERVICE RAM ADDRESSES 100

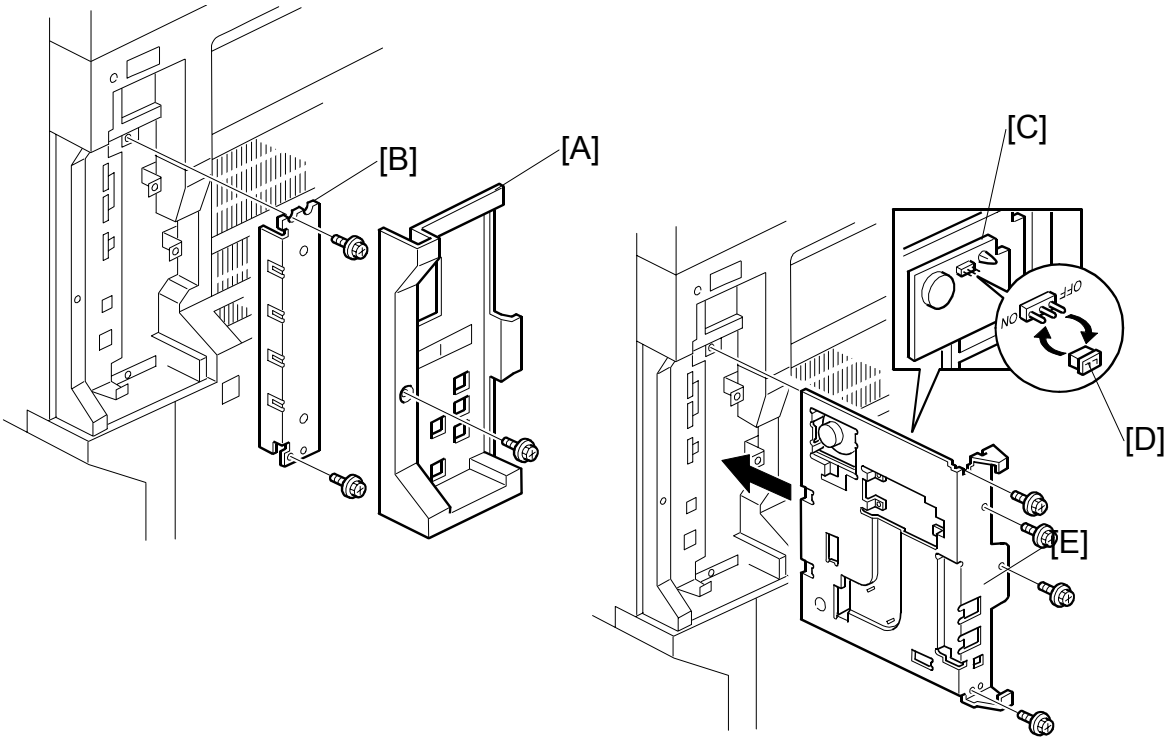
5. DETAILS 109
5.1 OVERVIEW 109
5.2 BOARDS 110
5.2.1 FCU 110
FACE3 (Fax Application Control Engine) 110
Modem (FAME) 110
DRAM 110

Memory Back-up 110
5.2.2 MBU 111
ROM 111
SRAM 111
Memory Back-up 111
Switches 111
5.2.3 SG3 BOARD 112
NCCP (New Communication Control Processor) 112
FROM 112
SDRAM 112
AFE (Analog Front End) 112
CODEC (COder-DECoder) 112
REG 112
5.3 VIDEO DATA PATH 113
5.3.1 TRANSMISSION 113
Memory Transmission and Parallel Memory Transmission 114
Immediate Transmission 114
JBIG Transmission 114
Adjustments 114
5.3.2 RECEPTION 115
5.4 FAX COMMUNICATION FEATURES 116
5.4.1 MULTI-PORT 116
5.4.2 DOCUMENT SERVER 117
5.4.3 INTERNET MAIL COMMUNICATION 118
Mail Transmission 118
Mail Reception 120
Handling Mail Reception Errors 122
Secure Internet Reception 122
Transfer Request: Request By Mail 123
E-Mail Options (Sub TX Mode) 124
Subject and Level of Importance 124
How the Subject Differs According to Mail Type 124
Subjects Displayed on the PC 124
E-mail Messages 125
Message Disposition Notification (MDN) 125
Handling Reports 126
5.5 IP-FAX 127

6. SPECIFICATIONS 128
6.1 GENERAL SPECIFICATIONS 128
6.2 CAPABILITIES OF PROGRAMMABLE ITEMS 129
6.3 IFAX SPECIFICATIONS 130
6.4 IP-FAX SPECIFICATIONS 131
6.5 FAX UNIT CONFIGURATION 132

1. INSTALLATION

1.1 FAX UNIT B766



⚠CAUTION

Do the following before you install this option:

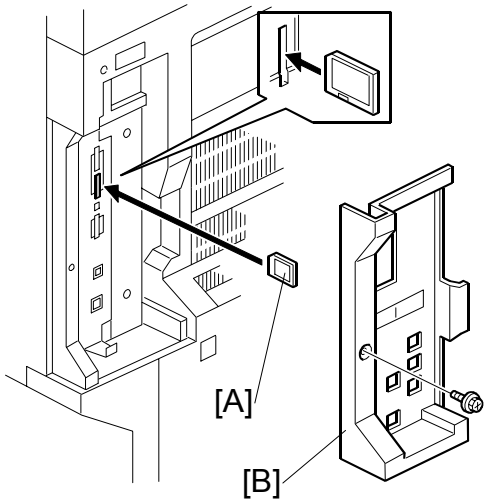
1. **Print out all data in the printer buffer if there is a printer option in the machine.**
2. **Turn off the main switch and disconnect the power cord and the network cable.**

1. Remove the application cover [A] of the controller (🔩 x 1)
2. Remove the cover plate [B] (🔩 x 2).
3. On the MBU [C], set the jumper [D] from OFF to ON.
4. Push down the MBU. Make sure that it is installed correctly

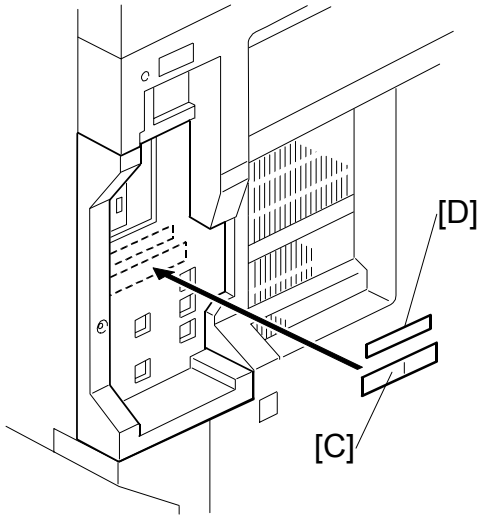
   Important: **SC819** occurs if the MBU is loose.

   NOTE: If installing the optional G3 Interface Unit (B768), it should be installed at this point. See 1.3 G3 Interface Unit B768.
5. Insert the fax unit [E] into the slot and attach it (🔩 x 3).

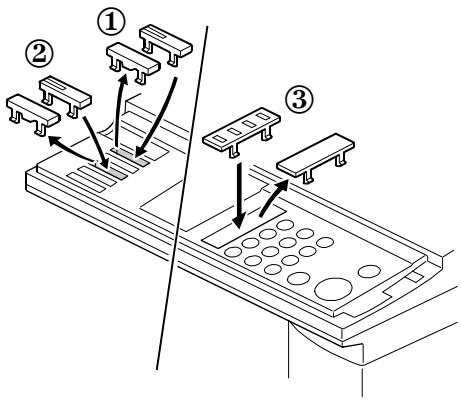
6. If there is no HDD installed in the mainframe, insert the SD [A] that has the address book into **Slot 2** of the controller board.
7. Attach the application cover [B] (☞ x 1).



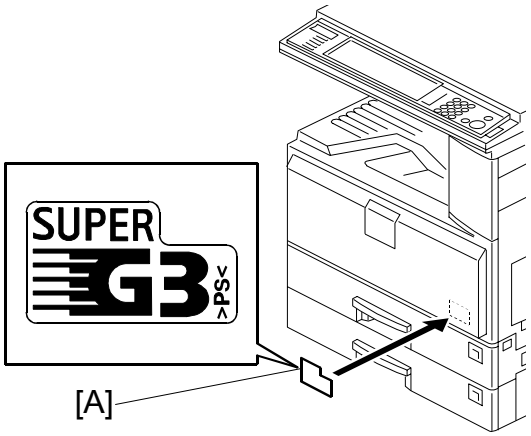
8. Attach the FCC decal [C] to the application cover as shown, if you do this procedure on the NA model. Go to the next step if you do not have the NA model.
9. Attach the serial number label [D] to the application cover as shown.



10. Replace the blank keytops with the new keytops ① **Copy SW**, ② **Facsimile SW**, ③ **On Hook Dial** on the operation panel.

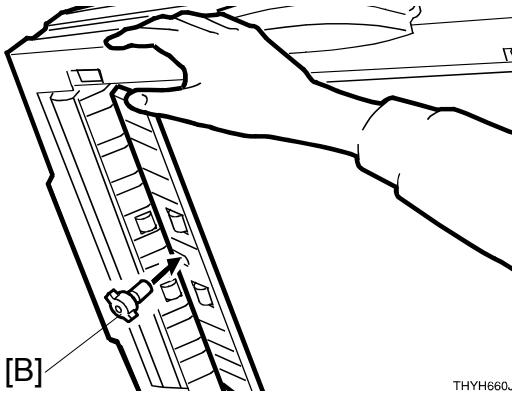


11. Attach the G3 decal [A] as shown.



12. If the ADF has been installed, install the stamp cartridge [B] in the ADF as shown.
13. Connect the telephone line to the "LINE" jack at the left of the machine.
14. Connect the machine's power cord. Then turn on the main power switch.

    NOTE: The machine must be connected to a correctly grounded socket outlet.

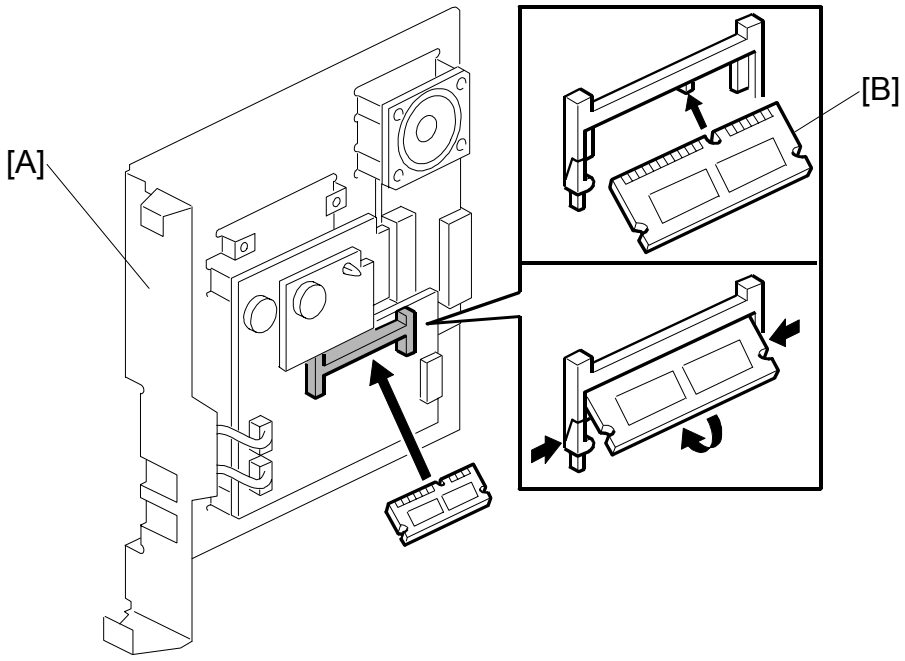


Important

- After you turn the machine on, if you see a message that tells you the SRAM has been formatted due to a problem with SRAM, turn the machine off and on again to clear the message.

15. Be sure to set the clock (date and time) with the User Tools.
16. Go into service mode and program the serial number into the fax unit with **SP3102**. You can find the serial number on the serial number label (attached to the machine in Step 9).

1.2 OPTIONAL 32 MB MEMORY



1. Remove the FCU [A] from the machine. (☛1.1)
2. Attach the DIMM [B] to the FCU board as shown.

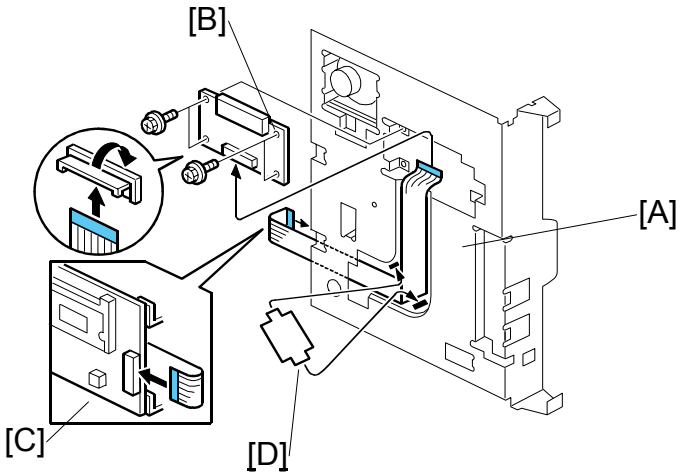
1.3 G3 INTERFACE UNIT B768

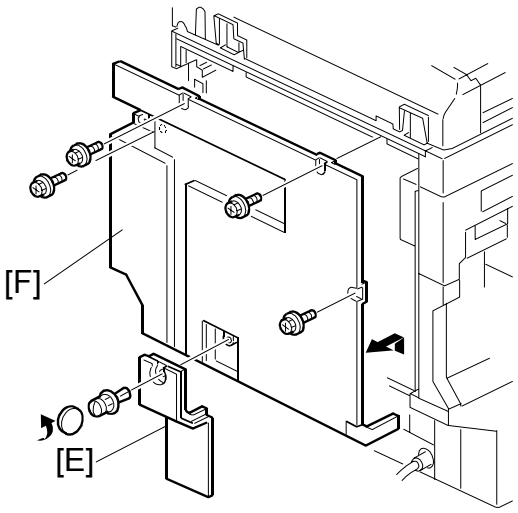
You can install one of these units (single-port option) or two of them (dual-port option).

⚠CAUTION

Do the following before you install this option:

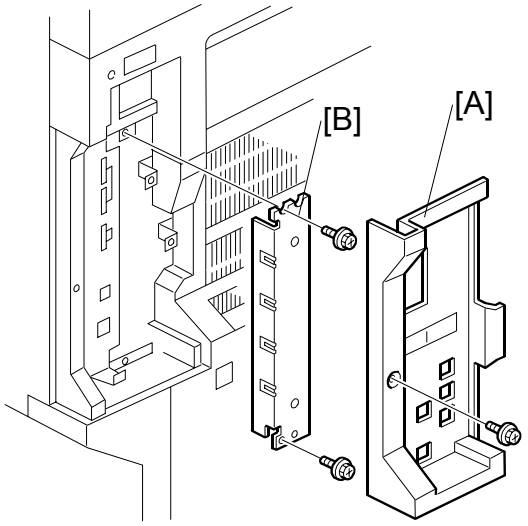
1. **Print out all data in the printer buffer if there is a printer option in the machine.**
2. **Turn off the main switch and disconnect the power cord and the network.**



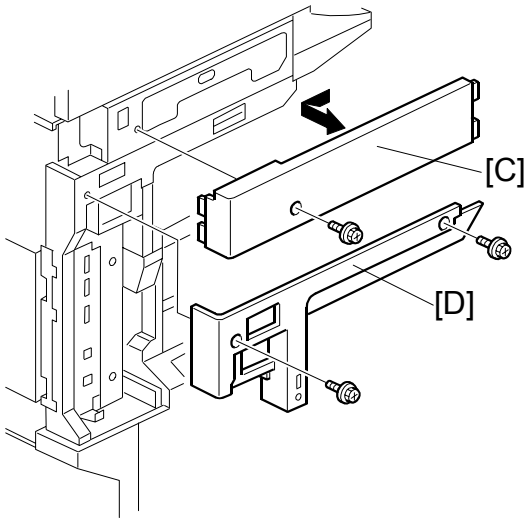


1. Connect the ribbon cable [A], blue side up, to the CCU DRV board [B].
2. Attach the CCU DRV board to the back of the G3 unit (🖉 x 4).
3. Connect the ribbon cable to the FCU [C], blue side up.
4. Attach the film plate [D] to keep the ribbon cable in the correct position.
5. Remove the connector cover [E] and disconnect the cable. Then remove the rear cover [F] of the copier (🖉 x 4)

6. Remove the application cover [A] of the controller (🔩 x 1)
7. Remove the cover plate [B] (🔩 x 2).



8. Remove the left scanner cover [C] (🔩 x 1) and the cover below the scanner [D] (🔩 x 2).

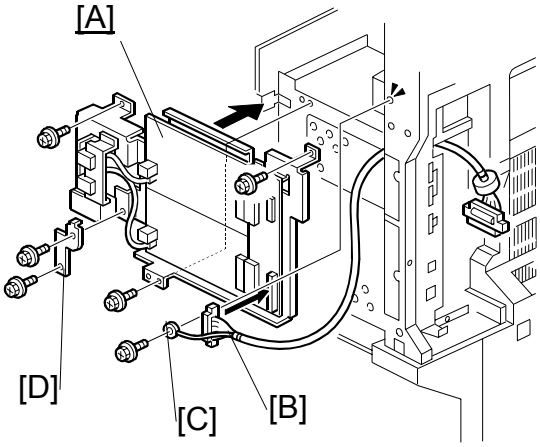


Do the procedures below for either the single-port or dual-port unit.

Single Port

1. Attach the G3 Unit [A] to the back of the mainframe (🔩 x 3).
2. Connect the harness [B], red stripe up, to the CCU I/F board (🤚 x 1)

   NOTE: Attach the end of the harnesses without the clamp to the CCU I/F, red stripe to left.
3. Fasten the ground wire [C] (🔩 x 2).
4. Attach the plate [D] (🔩 x 2).



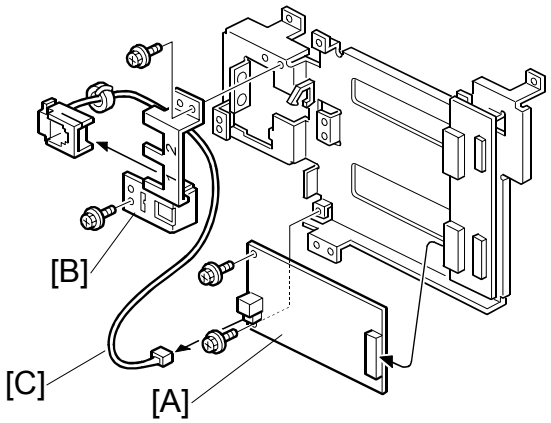
Single Port

Dual Port

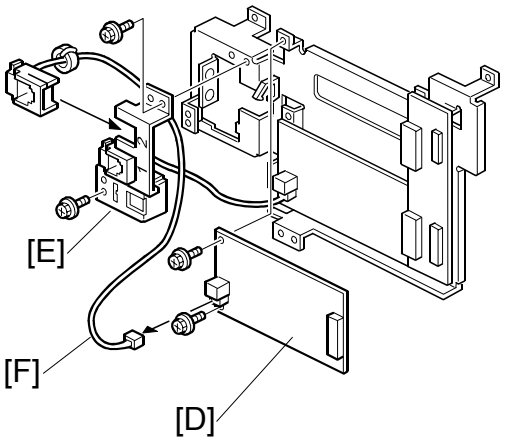
You need two G3 Interface Units to create the Dual G3 port.

Do the following if you install the second port for an installation where the single port is already installed:

1. Remove the G3 board [A] (☞ x 2, ☞ x 1) from a G3 interface unit.
2. Remove the bracket [B] (☞ x 2) and the harness [C].

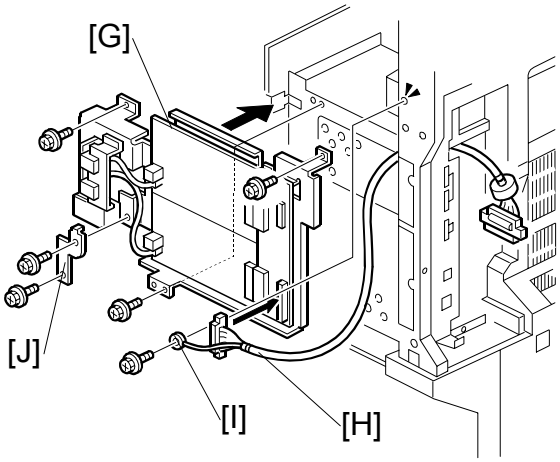


3. Install the G3 board [D] (removed in step 1) in the upper slot of the other G3 interface unit. You will install this unit in the machine.
4. Remove the bracket [E] (☞ x 2). Then install the harness [F] (removed in step 2).
5. Install the bracket [E] (☞ x 2).



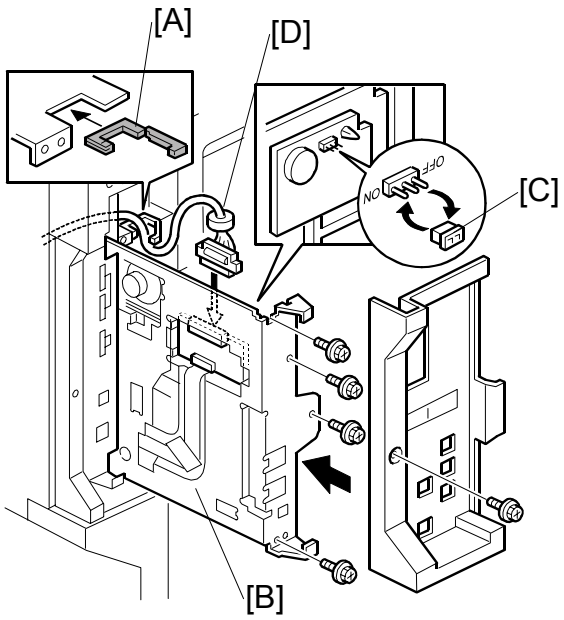
6. Attach the G3 Unit [G] to the back of the mainframe (☞ x 3).
5. Connect the harness [H] to the CCU I/F board (☞ x 1)

   NOTE: Attach the end of the harnesses without the clamp to the CCU I/F.
6. Fasten the ground wire [I] (☞ x 2).
7. Attach the plate [J] (☞ x 2).



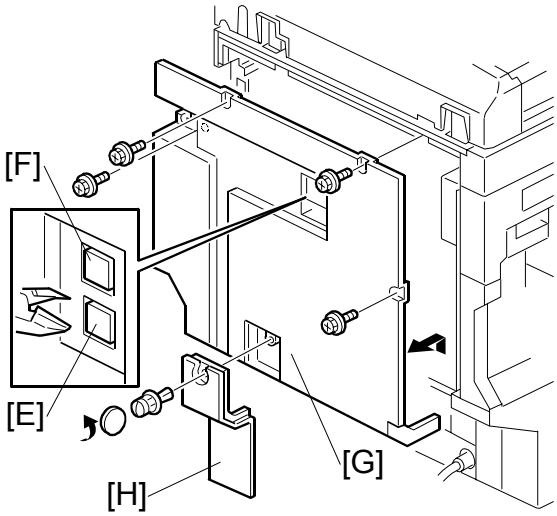
Dual Port

FCU Unit (Single or Dual Port)



1. Attach the harness clamp [A] to the notch.
2. Remove the FCU unit [B] (☞ x 2) if it has been installed.
3. Check the jumper [C]. Make sure that it is set to ON.
4. Insert the FCU Unit [B] about half way into the slot.

   NOTE: Slide the ferrite core up slightly at [D] to allow insertion of the FCU unit.
5. Connect the FCU harness [D] to the CCU DRV board.
6. Run the harness through the clamp. Then clamp the harness (☞ x 1).
7. Insert the FCU unit fully into the controller slot. Then attach it (☞ x 2).
8. On the rear cover, use a cutter or pair of wire cutters to remove the knockout for Line 2 [E].
   -or-
   Remove the knockout for Line 2 and Line 3 [F] if you install the dual ports.
9. Reattach the rear cover [G] (☞ x 4) and connector cover [H].
10. Reassemble the machine.
11. Connect the telephone lines to the back of the machine at LINE 2 (single port) or LINE 2 and LINE 3 (dual port).



12. Connect the machine's power cord. Then turn the main switch on.
13. Go into the Fax SP mode and set **Bit 1** of Communication Switch **16** to "**1**" if you install the single port.
    -or-
    Go into the Fax SP mode and set **Bit 3** of Communication Switch **16** to "**1**" if you install the dual ports.
14. Print the system parameter list. Make sure that "G3-2" (single port) or "G3-3" (dual port) is listed as an option.
15. Set up the items required for PSTN-2 communication.

2. REPLACEMENT AND ADJUSTMENT

2.1 FCU

1. When you replace the FCU board, remove the MBU board from the old FCU board and install it on the new FCU board.
2. Set the correct date and time with the User Tools:
   User Tools> System Settings> Timer Setting> Set Date/Time

NOTE:

- Do not turn off the battery switch (SW1).
- Do SP6101 to print the system parameters, and check the settings.

3. TROUBLESHOOTING

3.1 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.
0-20	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
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

Code	Meaning	Suggested Cause/Action
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.
0-55	FCE does not detect the SG3-V34.	• FCU firmware or board defective. • SG3-V34 firmware or board defective.
0-56	The stored message data exceeds the capacity of the mailbox in the SG3-V34.	• SG3-V34 firmware or board defective.
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.
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.

Code	Meaning	Suggested Cause/Action
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.
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.

Code	Meaning	Suggested Cause/Action
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.
2-23	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 MBU 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)	
2-29	JBIG trailing edge maker error	• FCU defective • Check the destination device.
2-50	The machine resets itself for a fatal FCU system error	• If this is frequent, update the ROM, or replace the FCU.
2-51	The machine resets itself because of a fatal communication error	• If this is frequent, update the ROM, or replace the FCU.
2-53	Snd msg() in the manual task is an error because the mailbox for the operation task is full.	• The user did the same operation many times, and this gave too much load to the machine.
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.
5-10	DCR timer expired	• Replace the FCU.
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	
5-23	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.
5-25	SAF file access error	• Replace the FCU or EXMEM board.

Code	Meaning	Suggested Cause/Action
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	
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.
13-17	SIP user name registration error	• Double registration of the SIP user name. • Capacity for user-name registration in the SIP server is not sufficient.
13-18	SIP server access error	• Incorrect initial setting for the SIP server. • Defective SIP server.

Code	Meaning	Suggested Cause/Action
14-00	SMTP Send Error	Error occurred during sending to the SMTP server. Occurs for any error other than 14-01 to 16. For example, the mail address of the system administrator is not registered.
14-01	SMTP Connection Failed	Failed to connect to the SMTP server (timeout) because the server could not be found. • The PC is not ready to transfer files. • SMTP server not functioning correctly. • The DNS IP address is not registered. • Network not operating correctly. • Destination folder selection not correct.
14-02	No Service by SMTP Service (421)	SMTP server operating incorrectly, or the destination for direct SMTP sending is not correct. • Contact the system administrator and check that the SMTP server has the correct settings and operates correctly. • Contact the system administrator for direct SMTP sending and check the sending destination.
14-03	Access to SMTP Server Denied (450)	Failed to access the SMTP server because the access is denied. • SMTP server operating incorrectly. Contact the system administrator to determine if there is a problem with the SMTP server and to check that the SMTP server settings are correct. • Folder send destination is incorrect. Contact the system administrator to determine that the SMTP server settings and path to the server are correct. • Device settings incorrect. Confirm that the user name and password settings are correct. • Direct SMTP destination incorrect. Contact the system administrator to determine if there is a problem at the destination at that the settings at the destination are correct.
14-04	Access to SMTP Server Denied (550)	• SMTP server operating incorrectly • Direct SMTP sending not operating correctly
14-05	SMTP Server HDD Full (452)	Failed to access the SMTP server because the HDD on the server is full. • Insufficient free space on the HDD of the SMTP server. Contact the system administrator and check the amount of space remaining on the SMTP server HDD. • Insufficient free space on the HDD where the destination folder is located. Contact the system administrator and check the amount of space remaining on the HDD where the target folder is located. • Insufficient free space on the HDD at the target destination for SMTP direct sending. Contact the system administrator and check the amount of space remaining on the target HDD.

Code	Meaning	Suggested Cause/Action
14-06	User Not Found on SMTP Server (551)	The designated user does not exist. • The designated user does not exist on the SMTP server. • The designated address is not for use with direct SMTP sending.
14-07	Data Send to SMTP Server Failed (4XX)	Failed to access the SMTP server because the transmission failed. • PC not operating correctly. • SMTP server operating incorrectly • Network not operating correctly. • Destination folder setting incorrect. • Direct SMTP sending not operating correctly.
14-08	Data Send to SMTP Server Failed (5XX)	Failed to access the SMTP server because the transmission failed. • SMTP server operating incorrectly • Destination folder setting incorrect. • Direct SMTP sending not operating correctly. • Software application error.
14-09	Authorization Failed for Sending to SMTP Server	• POP-Before-SMTP or SMTP authorization failed. • Incorrect setting for file transfer
14-10	Addresses Exceeded	Number of broadcast addresses exceeded the limit for the SMTP server.
14-11	Buffer Full	The send buffer is full so the transmission could not be completed. Buffer is full due to using Scan-to-Email while the buffer is being used send mail at the same time.
14-12	Data Size Too Large	Transmission was cancelled because the detected size of the file was too large.
14-13	Send Cancelled	Processing is interrupted because the user pressed Stop.
14-30	MCS File Creation Failed	Failed to create the MCS file because: • The number of files created with other applications on the Document Server has exceeded the limit. • HDD is full or not operating correctly. • Software error.
14-31	UFS File Creation Failed	UFS file could not be created: • Not enough space in UFS area to handle both Scan-to-Email and IFAX transmission. • HDD full or not operating correctly. • Software error.
14-32	Cancelled the Mail Due to Error Detected by NFAX	Error detected with NFAX and send was cancelled due to a software error.
14-33	No Mail Address For the Machine	Neither the mail address of the machine nor the mail address of the network administrator is registered.
14-34	Address designated in the domain for SMTP sending does not exist	Operational error in normal mail sending or direct SMTP sending. • Check the address selected in the address book for SMTP sending. • Check the domain selection.

ERROR CODES

Code	Meaning	Suggested Cause/Action
14-50	Mail Job Task Error	Due to an FCU mail job task error, the send was cancelled: • Address book was being edited during creation of the notification mail. • Software error.
14-51	UCS Destination Download Error	Not even one return notification can be downloaded: • The address book was being edited. • The number for the specified destination does not exist (it was deleted or edited after the job was created).
14-60	Send Cancel Failed	The cancel operation by the user failed to cancel the send operation.
14-61	Notification Mail Send Failed for All Destinations	All addresses for return notification mail failed.
15-01	POP3/IMAP4 Server Not Registered	At startup, the system detected that the IP address of the POP3/IMAP4 server has not been registered in the machine.
15-02	POP3/IMAP4 Mail Account Information Not Registered	The POP3/IMAP4 mail account has not been registered.
15-03	Mail Address Not Registered	The mail address has not been registered.
15-10	DCS Mail Receive Error	Error other than 15-11 to 15-18.
15-11	Connection Error	The DNS or POP3/IMAP4 server could not be found: • The IP address for DNS or POP3/IMAP4 server is not stored in the machine. • The DNS IP address is not registered. • Network not operating correctly.
15-12	Authorization Error	POP3/IMAP4 send authorization failed: • Incorrect IFAX user name or password. • Access was attempted by another device, such as the PC. • POP3/IMAP4 settings incorrect.
15-13	Receive Buffer Full	Occurs only during manual reception. Transmission cannot be received due to insufficient buffer space. The buffer is being used for mail send or Scan-to-Email.
15-14	Mail Header Format Error	The mail header is not standard format. For example, the Date line description is incorrect.
15-15	Mail Divide Error	The e-mail is not in standard format. There is no boundary between parts of the e-mail, including the header.
15-16	Mail Size Receive Error	The mail cannot be received because it is too large.
15-17	Receive Timeout	May occur during manual receiving only because the network is not operating correctly.
15-18	Incomplete Mail Received	Only one portion of the mail was received.
15-31	Final Destination for Transfer Request Reception Format Error	The format of the final destination for the transfer request was incorrect.

Code	Meaning	Suggested Cause/Action
15-39	Send/Delivery Destination Error	The transmission cannot be delivered to the final destination: • Destination file format is incorrect. • Could not create the destination for the file transmission.
15-41	SMTP Receive Error	Reception rejected because the transaction exceeded the limit for the “Auth. E-mail RX” setting.
15-42	Off Ramp Gateway Error	The delivery destination address was specified with Off Ramp Gateway OFF.
15-43	Address Format Error	Format error in the address of the Off Ramp Gateway.
15-44	Addresses Over	The number of addresses for the Off Ramp Gateway exceeded the limit of 30.
15-61	Attachment File Format Error	The attached file is not TIFF format.
15-62	TIFF File Compatibility Error	Could not receive transmission due to: Resolution error • Image of resolution greater than 200 dpi without extended memory. • Resolution is not supported. • Page size error • The page size was larger than A3. • Compression error • File was compressed with other than MH, MR, or MMR.
15-63	TIFF Parameter Error	The TIFF file sent as the attachment could not be received because the TIFF header is incorrect: • The TIFF file attachment is a type not supported. • The TIFF file attachment is corrupted. • Software error.
15-64	TIFF Decompression Error	The file received as an attachment caused the TIFF decompression error: • The TIFF format of the attachment is corrupted. • Software error.
15-71	Not Binary Image Data	The file could not be received because the attachment was not binary image data.
15-73	MDN Status Error	Could not find the Disposition line in the header of the Return Receipt, or there is a problem with the firmware.
15-74	MSDN Message ID Error	Could not find the Original Message ID line in the header of the Return Receipt, or there is a problem with the firmware.
15-80	Mail Job Task Read Error	Could not receive the transmission because the destination buffer is full and the destination could not be created (this error may occur when receiving a transfer request or a request for notification of reception).

Code	Meaning	Suggested Cause/Action
15-81	Repeated Destination Registration Error	Could not repeat receive the transmission because the destination buffer is full and the destination could not be created (this error may occur when receiving a transfer request or a request for notification of reception).
15-91	Send Registration Error	Could not receive the file for transfer to the final destination: • The format of the final destination or the transfer destination is incorrect. • Destinations are full so the final and transfer destinations could not be created.
15-92	Memory Overflow	Transmission could not be received because memory overflowed during the transaction.
15-93	Memory Access Error	Transaction could not complete due to a malfunction of SAF memory.
15-94	Incorrect ID Code	The machine rejected an incoming e-mail for transfer request, because the ID code in the incoming e-mail did not match the ID code registered in the machine.
15-95	Transfer Station Function	The machine rejected an incoming e-mail for transfer because the transfer function was unavailable.
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.
22-05	No G3 parameter confirmation answer	• Defective FCU board or firmware.
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-xx	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.

3.2 IFAX TROUBLESHOOTING

Use the following procedures to determine whether the machine or another part of the network is causing the problem.

Communication Route	Item	Action	Remarks
General LAN	1. Connection with the LAN	• Check that the LAN cable is connected to the machine. • Check that the LEDs on the hub are lit.	
	2. LAN activity	• Check that other devices connected to the LAN can communicate through the LAN.	
Between IFAX and PC	1. Network settings on the PC	• Check the network settings on the PC.	• Is the IP address registered in the TCP/IP properties in the network setup correct? Check the IP address with the administrator of the network.
	2. Check that PC can connect with the machine	• Use the “ping” command on the PC to contact the machine.	• At the MS-DOS prompt, type ping then the IP address of the machine, then press Enter.
	3. LAN settings in the machine	• Check the LAN parameters • Check if there is an IP address conflict with other PCs.	• Use the “Network” function in the User Tools. • If there is an IP address conflict, inform the administrator.
Between machine and e-mail server	1. LAN settings in the machine	• Check the LAN parameters • Check if there is an IP address conflict with other PCs.	• Use the “Network” function in the User Tools. • If there is an IP address conflict, inform the administrator.

Communication Route	Item	Action	Remarks
Between machine and e-mail server	2. E-mail account on the server	• Make sure that the machine can log into the e-mail server. • Check that the account and password stored in the server are the same as in the machine.	• Ask the administrator to check.
	3. E-mail server	• Make sure that the client devices which have an account in the server can send/receive e-mail.	• Ask the administrator to check. • Send a test e-mail with the machine's own number as the destination. The machine receives the returned e-mail if the communication is performed successfully.
Between e-mail server and internet	1. E-mail account on the Server	• Make sure that the PC can log into the e-mail server. • Check that the account and password stored in the server are the same as in the machine.	• Ask the administrator to check.
	2. E-mail server	• Make sure that the client devices which have an account in the server can send/receive e-mail.	• Ask the administrator to check. • Send a test e-mail with the machine's own number as the destination. The machine receives the returned e-mail if the communication is performed successfully.
	3. Destination e-mail address	Make sure that the e-mail address is actually used. Check that the e-mail address contains no incorrect characters such as spaces.	

Communication Route	Item	Action	Remarks
Between e-mail server and internet	4. Router settings	Use the “ping” command to contact the router. Check that other devices connected to the router can sent data over the router.	• Ask the administrator of the server to check.
Between e-mail server and internet	1. Error message by e-mail from the network of the destination.	• Check whether e-mail can be sent to another address on the same network, using the application e-mail software. • Check the error e-mail message.	• Inform the administrator of the LAN.

3.3 IP-FAX TROUBLESHOOTING

IP-Fax Transmission

Cannot send by IP Address/Host Name

Check Point		Action
1	LAN cable connected?	Check the LAN cable connection.
2	Specified IP address/host name correct?	Check the IP address/host name.
3	Firewall/NAT is installed?	Cannot breach the firewall. Send by using another method (Fax, Internet Fax)
4	Transmission sent manually?	Manual sending not supported.
5	IP address of local machine registered?	Register the IP address.
6	Remote terminal port number setting other than 1720?	Send by specifying the port number.
7	Specified port number correct?	Confirm the port number of the remote fax.
8	DNS server registered when host name specified?	Contact the network administrator.
9	Remote fax a T.38 terminal?	Check whether the remote fax is a T38 terminal.
10	Remote fax switched off or busy?	Check that the remote fax is switched on.
11	Network bandwidth too narrow?	Request the network administrator to increase the bandwidth.
		Raise the delay level. IPFAX SW 01 Bit 0 to 3
		IP-Fax bandwidth is the same as the DCS speed. Set IP-Fax SW00 Bit 6 to 1.
12	Remote fax cancelled transmission?	Check whether the remote fax cancelled the transmission.

Cannot send via VoIP Gateway

Check Point		Action
1	LAN cable connected?	Check the LAN cable connection.
2	VoIP Gateway T.38 standard?	Contact the network administrator.
3	VoIP Gateway installed correctly?	Contact the network administrator.
4	VoIP Gateway power switched on?	Contact the network administrator.
5	Is the IP address/host name of the specified Gateway correct?	Check the IP address/host name.
6	Number of the specified fax correct?	Check the remote fax number.
7	Firewall/NAT is installed?	Cannot breach the firewall. Send by using another method (Fax, Internet Fax)
8	Transmission sent manually?	Manual sending not supported.
9	IP address of local fax registered?	Register the IP address.
10	DNS registered when host name specified?	Contact the network administrator.
11	Remote fax a G3 fax?	Check that the remote fax is a G3 fax.
12	G3 fax is connected to VoIP gateway?	Check that G3 fax is connected.
13	Remote G3 fax turned on?	Check that G3 fax is switched on.
14	Network bandwidth too narrow?	Request the network administrator to increase the bandwidth.
		Raise the network delay level. IPFAX SW 01 Bit 0 to 3
		IP-Fax bandwidth is the same as the DCS speed. Set IP-Fax SW00 Bit 6 to 1.

Cannot send by Alias Fax number.

Check Point		Action
1	LAN cable connected?	Check the LAN cable connection.
2	Number of specified Alias fax correct?	Confirm the Alias of the remote fax. Error Code: 13-14
3	Firewall/NAT installed?	Cannot breach the firewall. Send by using another method (Fax, Internet Fax)
4	Transmission sent manually?	Manual sending not supported.
5	Gatekeeper installed correctly?	Contact the network administrator.
6	Gatekeeper power switched on?	Contact the network administrator.
7	IP address/host name of Gatekeeper correct?	Check the IP address/host name.
8	DNS server registered when Gatekeeper host name specified?	Contact the network administrator.
9	Enable H.323 SW is set to on?	Check the settings. See User Parameter SW 34 Bit 0
10	IP address of local fax registered?	Register the IP address of the local fax.
11	Alias number of local fax registered?	Register the Alias number of the local fax.
12	Remote fax registered in Gatekeeper?	Contact the network administrator.
13	Remote fax a T.38 terminal?	Check whether the remote fax is a T38 terminal.
14	Remote fax switched off or busy?	Contact the network administrator.
15	Network bandwidth too narrow?	Request the system administrator to increase the bandwidth.
		Raise the delay level. IPFAX SW 01 Bit 0 to 3
		Lower the modem transmission baud rate. IPFAX SW 05
16	Remote fax cancelled transmission?	Check whether the remote fax cancelled the transmission.

IP-Fax Reception

Cannot receive by IP Address/Host name.

Check Point		Action
1	LAN cable connected?	Check the LAN cable connection.
2	Firewall/NAT is installed?	Cannot breach the firewall. Send by using another method (Fax, Internet Fax)
3	IP address of local fax registered?	Register the IP address.
4	Port number specified at remote sender fax (if required)?	Request the sender to specify the port number.
5	Specified port number correct (if required)?	Request the sender to check the port number.
6	DNS server registered when host name specified on sender side?	Contact the network administrator. **Note**: The sender machine displays this error code if the sender fax is a Ricoh model.
7	Network bandwidth too narrow?	Request the system administrator to increase the bandwidth.
		Lower the start modem reception baud rate on the receiving side. IPFAX SW06
8	Remote fax cancelled transmission?	Check whether the remote fax cancelled the transmission.

Cannot receive by VoIP Gateway.

Check Point		Action
1	LAN cable connected?	Check the LAN cable connection.
2	Firewall/NAT is installed?	Cannot breach the firewall. Request the remote fax to send by using another method (Fax, Internet Fax)
3	VoIP Gateway installed correctly?	Contact the network administrator.
4	VoIP Gateway power switched on?	Contact the network administrator.
5	IP address/host name of specified VoIP Gateway correct on sender's side?	Request the remote fax to check the IP address/host name.
6	DNS server registered when host name specified on sender side?	Contact the network administrator.
7	Network bandwidth too narrow?	Request the network administrator to increase the bandwidth.
8	G3 fax connected?	Check that G3 fax is connected.
9	G3 fax power switched on?	Check that G3 fax is switched on.

Cannot receive by Alias Fax number.

Check Point		Action
1	LAN cable connected?	Check the LAN cable connection.
2	Firewall/NAT is installed?	Cannot the breach firewall. Request the remote fax to send by using another method (Fax, Internet Fax)
3	Gatekeeper installed correctly?	Contact the network administrator. **Note**: The sender machine displays this error code when the sender fax is a Ricoh model.
4	Power to Gatekeeper switched on?	Contact the network administrator. **Note**: The sender machine displays this error code when the sender fax is a Ricoh model.
5	IP address/host name of Gatekeeper correct on the sender's side?	Request the sender to check the IP address/host name. **Note**: The sender machine displays this error code when the sender fax is a Ricoh model.
6	DNS server registered when Gatekeeper host name specified on sender's side?	Contact the network administrator. **Note**: The sender machine displays this error code when the sender fax is a Ricoh model.
7	Enable H.323 SW is set to on?	Request the sender to check the settings. User Parameter SW 34 Bit 0 **Note**: Only if the remote sender fax is a Ricoh fax.
8	Local fax IP address registered?	Register the IP address.
9	Local fax Alias number registered?	Register the Alias number.
10	Network bandwidth too narrow?	Request the system administrator to increase the bandwidth.
		Lower the start modem reception baud rate on the receiving side. IPFAX SW06
11	Remote fax cancelled transmission?	Check whether the remote fax cancelled the transmission.
12	Local fax registered in Gatekeeper?	Contact the network administrator. **Note**: The sender machine displays this error code when the sender fax is a Ricoh model.

4. SERVICE TABLES

⚠CAUTION

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

NOTE: The main power LED (☀⏻) lights or flashes while the platen cover or ARDF is open, while the main machine is communicating with a facsimile or the network server, or while the machine is accessing the hard disk or memory for reading or writing data.

4.1 SERVICE TABLES

SP1-XXX (Bit Switches) ☛ Section 4.2 Bit Switches

1	Mode No.		Function
101	System Switch		
	001 – 032	00 – 1F	Change the bit switches for system settings for the fax option ☛ Section 4.2 Bit Switches
102	Ifax Switch		
	001 – 016	00 – 0F	Change the bit switches for internet fax settings for the fax option ☛ Section 4.2 Bit Switches
103	Printer Switch		
	001 – 016	00 – 0F	Change the bit switches for printer settings for the fax option ☛ Section 4.2 Bit Switches
104	Communication Switch		
	001 – 032	00 – 1F	Change the bit switches for communication settings for the fax option ☛ Section 4.2 Bit Switches
105	G3-1 Switch		
	001 – 016	00 – 0F	Change the bit switches for the protocol settings of the standard G3 board ☛ Section 4.2 Bit Switches
106	G3-2 Switch		
	001 – 016	00 – 0F	Change the bit switches for the protocol settings of the optional G3 board ☛ Section 4.2 Bit Switches
107	G3-3 Switch		
	001 – 016	00 – 0F	Change the bit switches for the protocol settings of the optional G3 board ☛ Section 4.2 Bit Switches
108	G4 Internal Switch		
	001 – 032	00 – 1F	**Not used (**Do not change the bit switches**)**
109	G4 Parameter Switch		
	001 – 016	00 – 0F	**Not used (**Do not change the bit switches**)**

111	IP fax Switch		
	001 – 016	00 – 0F	Change the bit switches for optional IP fax parameters ☛ Section 4.2 Bit Switches

SP2-XXX (RAM Data)

2	Mode No.		Function
101	RAM Read/Write		
	001		Change RAM data for the fax board directly. ☛ Section 4.5 Service RAM Addresses
102	Memory Dump		
	001	G3-1 Memory Dump	Print out RAM data for the fax board. ☛ Section 4.5 Service RAM Addresses
	002	G3-2 Memory Dump	Print out RAM data for the optional SG3 board.
	003	G3-3 Memory Dump	Print out RAM data for the optional SG3 board.
	004	G4 Memory Dump	Print out RAM data for the SiG4 board.
103	G3-1 NCU Parameters		
	001 – 023	CC, 01 – 22	NCU parameter settings for the standard G3 board. ☛ Section 4.3 NCU Parameters
104	G3-2 NCU Parameters		
	001 – 023	CC, 01 – 22	NCU parameter settings for the optional G3 board. ☛ Section 4.3 NCU Parameters
105	G3-3 NCU Parameters		
	001 – 023	CC, 01 – 22	NCU parameter settings for the optional G3 board. ☛ Section 4.3 NCU Parameters

SP3-XXX (Tel Line Settings)

3	Mode No.		Function
101	Service Station		
	001	Fax Number	Enter the fax number of the service station.
	002	Select Line	Select the line type.
102	Serial Number		
	000		Enter the fax unit's serial number.
103	PSTN-1 Port Settings		
	001	Select Line	Select the line type setting for the G3-1 line. If the machine is installed on a PABX line, select "PABX", "PABX(GND)" or "PABX(FLASH)".
	002	PSTN Access Number	Enter the PSTN access number for the G3-1 line.
	003	Memory Lock Disabled	If the customer does not want to receive transmissions using Memory Lock on this line, turn this SP on.
104	PSTN-2 Port Settings		
	001	Select Line	Select the line setting for the G3-2 line. If the machine is installed on a PABX line, select "PABX", "PABX(GND)" or "PABX(FLASH)".
	002	PSTN Access Number	Enter the PSTN access number for the G3-2 line.
	003	Memory Lock Disabled	If the customer does not want to receive transmissions using Memory Lock on this line, change this SP to on.
	004	Transmission Disabled	If you turn this SP on, the machine does not send any fax messages on the G3-2 line.
105	PSTN-3 Port Settings		
	001	Select Line	Select the line setting for the G3-3 line. If the machine is installed on a PABX line, select "PABX", "PABX(GND)" or "PABX(FLASH)".
	002	PSTN Access Number	Enter the PSTN access number for the G3-3 line.
	003	Memory Lock Disabled	If the customer does not want to receive transmissions using Memory Lock on this line, change this SP to on.
	004	Transmission Disabled	If you turn this SP on, the machine does not send any fax messages on the G3-3 line.
106	ISDN Port Settings		
	001	Select Line	**Not used (**Do not change the bit switches**)**
	002	PSTN Access Number	
	003	Memory Lock Disabled	

3	Mode No.		Function
106	004	Transmission Disabled	
107	IPFAX Port Settings		
	001	H323 Port	
	002	SIP Port	
	003	RAS Port	
	004	Gatekeeper port	
	005	T.38 Port	
	006	SIP Server Port	
	007	IPFAX Protocol Priority	Select "H323" or "SIP".
201	FAX SW		
	001 – 032	00 – 1F	

SP4-XXX (ROM Versions)

4	Mode No.		Function
101	001	FCU ROM Version	Displays the FCU ROM version.
102	001	Error Codes	Displays the latest 64 fax error codes.
103	001	G3-1 ROM Version	Displays the G3-1 modem version.
104	001	G3-2 ROM Version	Displays the G3-2 modem version.
105	001	G3-3 ROM Version	Displays the G3-3 modem version.
106	001	G4 ROM Version	**Not used (**Do not change the bit switches**)**
107	001	Charge ROM Version	**Not used (**Do not change the bit switches**)**

SP5-XXX (Initializing)

5	Mode No.		Function
101	Initialize SRAM		
	000		Initializes the bit switches and user parameters, user data in the SRAM, files in the SAF memory, and clock.
102	Erase All Files		
	000		Erases all files stored in the SAF memory.
103	Reset Bit Switches		
	000		Resets the bit switches and user parameters.
104	Factory setting		
	000		Resets the bit switches and user parameters, user data in the SRAM and files in the SAF memory.
105	Initialize All Bit Switches		
	000		Initializes all the current bit switch settings.
106	Initialize Security Bit Switches		
	000		Initializes only the security bit switches. If you select automatic output/display for the user parameter switches, the security settings are initialized.

SP6-XXX (Reports)

6	Mode No.		Function
101	System Parameter List		
	000		Touch the “ON” button to print the system parameter list.
102	Service Monitor Report		
	000		Touch the “ON” button to print the service monitor report.
103	G3 Protocol Dump List		
	001	G3 All Communications	Prints the protocol dump list of all communications for all G3 lines.
	002	G3-1 (All Communications)	Prints the protocol dump list of all communications for the G3-1 line.
103	003	G3-1 (1 Communication)	Prints the protocol dump list of the last communication for the G3-1 line.
	004	G3-2 (All Communications)	Prints the protocol dump list of all communications for the G3-2 line.
	005	G3-2 (1 Communication)	Prints the protocol dump list of the last communication for the G3-2 line.
	006	G3-3 (All Communications)	Prints the protocol dump list of all communications for the G3-3 line.
	007	G3-3 (1 Communication)	Prints the protocol dump list of the last communication for the G3-3 line.
104	G4 Protocol Dump List		
	001	Dch + Bch 1	**Not used (**Do not change the bit switches**)**
	002	Dch	
	003	Bch 1 Link Layer	
	004	Dch Link Layer	
	005	Dch +Bch 2	
	006	Bch 2 Link Layer	
105	All Files print out		
	000		Prints out all the user files in the SAF memory, including confidential messages. **NOTE:** Do not use this function, unless the customer is having trouble printing confidential messages or recovering files stored using the memory lock feature.
106	Journal Print out		
	001	All Journals	The machine prints all the communication records on the report.
	002	Specified Date	The machine prints all communication records after the specified date.

107	Log List Print out		
	001	All log files	These log print out functions are for designer use only.
	002	Printer	
	003	SC/TRAP Stored	
	004	Decompression	
	005	Scanner	
	006	JOB/SAF	
	007	Reconstruction	
	008	JBIG	
	009	Fax Driver	
	010	G3CCU	
	011	Fax Job	
	012	CCU	
	013	Scanner Condition	
108	IP Protocol Dump List		
	001	All Communications	Prints the protocol dump list of all communications for the IP fax line.
	002	1 Communication	Prints the protocol dump list of the last communication for the IP fax line.

SP7-XXX (Test Modes)

These are the test modes for PTT approval.

7	Function
101	G3-1 Modem Tests
102	G3-1 DTMF Tests
103	Ringer Test
104	G3-1 V34 (S2400baud)
105	G3-1 V34 (S2800baud)
106	G3-1 V34 (S3000baud)
107	G3-1 V34 (S3200baud)
108	G3-1 V34 (S3429baud)
109	Recorded Message Test
110	G3-2 Modem Tests
111	G3-2 DTMF Tests
112	G3-2 V34 (S2400baud)
113	G3-2 V34 (S2800baud)
114	G3-2 V34 (S3000baud)
115	G3-2 V34 (S3200baud)
116	G3-2 V34 (S3429baud)
117	G3-3 Modem Tests
118	G3-3 DTMF Tests
119	G3-3 V34 (S2400baud)
120	G3-3 V34 (S2800baud)
121	G3-3 V34 (S3000baud)
122	G3-3 V34 (S3200baud)
123	G3-3 V34 (S3429baud)
124	IG3-1 Modem Tests **- Not used**
125	IG3-1 DTMF Tests **- Not used**
126	IG3-1 V34 (S2400baud) **- Not used**
127	IG3-1 V34 (S2800baud) **- Not used**
128	IG3-1 V34 (S3000baud) **- Not used**
129	IG3-1 V34 (S3200baud) **- Not used**
130	IG3-1 V34 (S3429baud) **- Not used**
131	IG3-2 Modem Tests **- Not used**
132	IG3-2 DTMF Tests **- Not used**
133	IG3-2 V34 (S2400baud) **- Not used**
134	IG3-2 V34 (S2800baud) **- Not used**
135	IG3-2 V34 (S3000baud) **- Not used**
136	IG3-2 V34 (S3200baud) **- Not used**
137	IG3-2 V34 (S3429baud) **- Not used**

SP9-XXX (Design Switch Mode)

9	Mode No.	Function
702	Design Switch **DFU**	

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		**SP No. 1-101-001**
No	**FUNCTION**	**COMMENTS**
0	Dedicated transmission parameter programming **0:** Disabled **1:** Enabled	Set this bit to 1 before changing any dedicated transmission parameters. Reset this bit to 0 after programming dedicated transmission parameters.
1	Not used	Do not change
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.	
2	**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	

System Switch 00		SP No. 1-101-001
No	**FUNCTION**	**COMMENTS**
3	Not used	Do not change this setting.
4	Line error mark print 0: OFF, 1: ON (print)	When "1" is selected, a line error mark is printed on the printout if a line error occurs during reception.
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	Not used	Do not change the setting.

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.

System Switch 01 - Not used (Do not change the factory settings.)

System Switch 02		SP No. 1-101-003
No	**FUNCTION**	**COMMENTS**
0	Not used	Do not change these settings.
2	Force after transmission stall 0: Off 1: On	With this setting on, the machine resets itself automatically if a transmission stalls and fails to complete the job.
3	Not used	Do not change these 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 this setting.
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		SP No. 1-101-004
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		SP No. 1-101-005
No	**FUNCTION**	**COMMENTS**
0-2	Not used	Do not change these 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 (10 bytes each). The first 10 bytes of data are the programmed dedicated tx parameters; 34 bytes of data are printed (the other 24 bytes have no use for service technicians).
4-7	Not used	Do not change these settings.

System Switch 05 - Not used (Do not change the factory settings.)

System Switch 06		SP No. 1-101-007
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		SP No. 1-101-010
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 this setting.
5	Power failure report **0:** Disabled **1:** Enabled	**1:** A power failure report will be automatically printed after the power is switched on if a fax message disappeared from the memory when the power was turned off last.
6	Conditions for printing the protocol dump list **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. **Dial Label:** The name stored, by the user, for the Quick/Speed Dial number.

System Switch 0A		SP No. 1-101-011
No	**FUNCTION**	**COMMENTS**
0	Automatic port selection **0**: Disabled, **1**: Enabled	When "1" is selected, a suitable port is automatically selected if the selected port is not used.
1-2	Not used	Do not change these 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.
6-7	Not used	Do not change the factory settings

System Switch 0B - Not used (Do not change the factory settings.)
System Switch 0C - Not used (Do not change the factory settings.)
System Switch 0D - Not used (Do not change the factory settings.)

System Switch 0E		SP No. 1-101-015
No	**FUNCTION**	**COMMENTS**
0-1	Not used	Do not change the settings.
2	Enable/disable for direct sending selection 0: Direct sending off 1: Direct sending on	Direct sending cannot operate when the capture function is on during sending. Setting this switch to "1" enables direct sending without capture. Setting this switch to "0" masks the direct sending function on the operation panel so it cannot be selected.
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 these settings.

System Switch 0F			SP No. 1-101-016
No	**FUNCTION**		**COMMENTS**
0 to 7	Country/area code for functional settings (Hex)		This country/area 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: SP No. 2-103-001 for G3-1 SP No. 2-104-001 for G3-2 SP No. 2-105-001 for G3-3
	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: New Zealand	
	07: Finland	18: Singapore	
	08: Ireland	19: Malaysia	
	09: Norway	1A: China	
	0A: Sweden	1B: Taiwan	
	0B: Switz.	1C: Korea	
	0C: Portugal	20: Turkey	
	0D: Holland	21: Greece	
	0E: Spain	22: Hungary	
	0F: Israel	23: Czech	
	10: ---	24: Poland	

System Switch 10		SP No. 1-101-017
No	**FUNCTION**	**COMMENTS**
0 to 7	Threshold memory level for parallel memory transmission	Threshold = N x 128 KB + 256 KB N can be between 00 - FF(H) Default setting: 02(H) = 512 KB

System Switch 11		SP No. 1-101-018
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) printing position **0:** Superimposed on the page data **1:** Printed before the data leading edge	Change this bit to 1 if the TSI (G3) overprints information that the customer considers to be important.
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 for all destinations during broadcasting.
4-7	Not used	Do not change the factory settings.

System Switch 12		SP No. 1-101-019
No	**FUNCTION**	**COMMENTS**
0 to 7	TTI printing position in the main scan direction	TTI: 08 to 92 (BCD) mm Input even numbers only. This setting determines the print start position for the TTI 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 TTI is moved over by more than 50 mm, it may overwrite the page number.

System Switch 13 - Not used (do not change these settings)
System Switch 14 - Not used (do not change these settings)

System Switch 15		SP No. 1-101-022
No	**FUNCTION**	**COMMENTS**
0	Not used	Do not change the settings.
1	Going into the Energy Saver 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.
2-3	Not used	Do not change these settings.
4-5	Interval for preventing the machine from entering Energy Saver mode if there is a pending transmission file. **Bit 5 4 Setting** 0 0 1 min 0 1 30 min 1 0 1 hour 1 1 24 hours	If there is a file waiting for transmission, the machine does not go to Energy Saver mode during the selected period. After transmitting the file, if there is no file waiting for transmission, the machine goes to the Energy Saver mode.
6-7	Not used	Do not change

System Switch 16		SP No. 1-101-023
No	**FUNCTION**	**COMMENTS**
0	Parallel Broadcasting **0**: Disabled **1**: Enabled	**1:** The machine sends messages simultaneously using all available ports during broadcasting.
1	Priority setting for the G3 line. **0**: PSTN-1 > PSTN-2 or 3 **1**: PSTN-2 or 3 > PSTN-1	This function allows the user to select the default G3 line type. The optional SG3 unit(s) are required to use the PSTN-2 or 3 setting.
2-7	Not used	Do not change these settings.

System Switch 17 - Not used (do not change these settings)
System Switch 18 - Not used (do not change these settings)

System Switch 19		SP No. 1-101-026
No	**FUNCTION**	**COMMENTS**
0-5	Not used	Do not change the settings.
6	Extended scanner page memory after memory option is installed **0:** Disabled **1:** Enabled	0: After installing the memory expansion option, the scanner page memory is extended to 4 MB from 2 MB. 1: If this bit is set to 1 after installing the memory expansion option, the scanner page memory is extended to 12 MB. But the SAF memory decreases to 18 MB.
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”. “Original 1” and “Original 2” can be selected in addition to the “Text”, “Text/Photo” and “Photo” modes.

System Switch 1A		
No.	**FUNCTION**	**COMMENTS**
0-7	LS RX memory capacity threshold setting 00-FF (0-1020 Kbyte: Hex)	Sets the value to x4KB. When the amount of available memory drops below this setting, RX documents are printed to conserve memory. Initial setting 0x80 (512 KB)

System Switch 1B - Not used (do not change these settings)
System Switch 1C - Not used (do not change these settings)

System Switch 1D		SP No. 1-101-030
No	**FUNCTION**	**COMMENTS**
0	RTI/CSI/CPS code display **0:** Enable **1:** Disable	0: RTI, CSI, CPS codes are displayed on the top line of the LCD panel during communication. 1: Codes are switched off (no display)
1	Not used	Do not change this setting.
2	Destination telephone number display limitation 0: OFF, 1: ON	When "1" is selected, the destination telephone number display is limited and redial is disabled.
3-7	Not used	Do not change these settings.

System Switch 1E		SP No. 1-101-031
No	**FUNCTION**	**COMMENTS**
0	Communication after the Journal data storage area has become full **0:** Impossible **1:** Possible	**0**: When this switch is on and the journal history becomes full, the next report prints. If the journal history is not deleted, the next transmission cannot be received. This prevents overwriting communication records before the machine can print them. **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. **Note**: This setting is effective only when Automatic Journal printout is enabled but the machine cannot print the report (e.g., no paper).
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)”.
5-7	Not used	Do not change the settings

System Switch 1F		SP No. 1-101-032
No	**FUNCTION**	**COMMENTS**
0	Not used	Do not change the settings.
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 settings.
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.
4-6	Not used	Do not change the factory settings.
7	Action when a fax SC has occurred **0:** Automatic reset **1:** Fax unit stops	**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 stops. **Cross Reference** Fax SC codes - See "Troubleshooting"

4.2.2 I-Fax Switches

I-fax Switch 00		SP No. 1-102-001
No	**FUNCTION**	**COMMENTS**
	Original Width of TX Attachment File	This setting sets the maximum size of the original that the destination can receive. (Bits 3~7 are reserved for future use or not used.)
0	A4	0: Off (not selected), 1: On (selected) If more than one of these three bits is set to "1", the larger size has priority. For example, if both Bit 2 and Bit 1 are set to "1" then the maximum size is "A3" (Bit 2). When mail is sent, there is no negotiation with the receiving machine at the destination, so the sending machine cannot make a selection for the receiving capabilities (original width setting) of the receiving machine. The original width selected with this switch is used as the RX machine's original width setting, and the original is reduced to this size before sending. The default is A4. *If the width selected with this switch is higher than the receiving machine can accept, the machine detects this and this causes an error.*
1	B4	
2	A3	
3-6	Reserved	
7	Not used	

I-fax Switch 01		SP No. 1-102-002
No	**FUNCTION**	**COMMENTS**
	Original Line Resolution of TX Attachment File	These settings set the maximum resolution of the original that the destination can receive.
0	200x100 Standard	0: Not selected 1: Selected If more than one of these three bits is set to “1”, the higher resolution has priority. For example, if both Bit 0 and Bit 2 are set to “1” then the resolution is set for "Bit 2 200 x 400.
1	200x200 Detail	
2	200x400 Fine	
3	300 x 300 Reserve	
4	400 x 400 Super Fine	
5	600 x 600 Reserve	
6	Reserve	
7	mm/inch	
	This setting selects mm/inch conversion for mail transmission. 0: Off (No conversion), 1: On (Conversion) When on (set to “1”), the machine converts millimeters to inches for sending mail. There is no switch for converting inches to millimeters. **NOTE:** Unlike G3 fax transmissions which can negotiate between sender and receiver to determine the setting, mail cannot negotiate between terminals; the mm/inch selection is determined by the sender fax. When this switch is Off (0): • Images scanned in inches are sent in inches. • Images scanned in mm are sent in mm. • Images received in inches are transmitted in inches. • Images received in mm are transmitted in mm. When this switch is On (1): • Images scanned in inches are sent in inches. • Images scanned in mm are converted to inches. • Images received in inches are transmitted in inches. • Images received in mm are converted to inches.	

I-fax Switch 02		SP No. 1-102-003
No	**FUNCTION**	**COMMENTS**
0	RX Text Mail Header Processing	
	This setting determines whether the header information is printed with text e-mails when they are received. 0: Prints only text mail. 1: Prints mail header information attached to text mail. • When a text mail is received with this switch On (1), the "From" address and "Subject" address are printed as header information. • When a mail with only binary data is received (a TIFF-F file, for example), this setting is ignored and no header is printed.	
1	Output from Attached Document at E-mail TX Error	
	This setting determines whether only the first page or all pages of an e-mail attachment are printed at the sending station when a transmission error occurs. This allows the customer to see which documents have not reached their intended destinations if sent to the wrong e-mail addresses, for example. 0: Prints 1st page only. 1: Prints all pages.	
2-3	Text String for Return Receipt	
	This setting determines the text string output for the Return Receipt that confirms the transmission was received normally at the destination.	
	00: "Dispatched" Sends from PC mail a request for a Return Receipt. Receives the Return Receipt with "dispatched" in the 2nd part: **Disposition: Automatic-action/MDN-send automatically; dispatched** The "dispatched" string is included in the Subject string. 01: "Displayed" Sends from PC mail a request for a Return Receipt. Receives the Return Receipt with "displayed" in the 2nd part: **Disposition: Automatic-action/MDN-send automatically; displayed** The "displayed" string is included in the Subject string. 10: Reserved 11: Reserved **NOTE:** A mail requesting a Return Receipt sent from an IFAX with this switch set to "00" (for "dispatched") received by Microsoft Outlook 2000 may cause an error. If any setting other than "displayed" (01) causes a problem, change the setting to "01" to enable normal sending of the Return Receipt.	
4	Media accept feature	
	This setting adds or does not add the media accept feature to the answer mail to confirm a reception. 0: Does not add the media accept feature to the answer mail 1: Adds the media accept feature to the answer mail. **NOTE:** Use this bit switch if a problem occurs when the machine receives an answer mail, which contains the media accept feature field.	
5-6	Not Used	

I-fax Switch 02		SP No. 1-102-003
No	**FUNCTION**	**COMMENTS**
7	Image Resolution of RX Text Mail	
	This setting determines the image resolution of the received mail. 0: 200 x 200 1: 400 x 400 **NOTE:** The "1" setting requires installation of the Function Upgrade Card in order to have enough SAF (Store and Forward) memory to receive images at 400 x 400 resolution.	

I-fax Switch 03		SP No. 1-102-004
No	**FUNCTION**	**COMMENTS**
0	Original Output at Transfer Station	
	This setting determines whether the original is output at the transfer station when it is received from the sender that initiated the transfer transmission. This feature is the same as for G3 transfer transmissions. 0: Received original not output at the transfer station. 1: Received original output. The original is printed after the transfer station has transferred it to the destinations, so its output confirms that the original has been transferred.	
1	Transfer Result Report	
	This setting determines when a Transfer Result Report is generated and returned to the transfer requestor. 0: Returns the report after each transfer. 1: Returns the report only if an error occurred during transfer.	
2	Destination Error Handling for Reception Transfer Request	
	This setting restricts transfer transmission based on whether the final destinations are correct or not. 0: The transfer station transmits to correct destinations only (addresses with no errors in them). 1: If any address has an error in it, the transfer station transfers no transmissions and returns a transfer transmission failure report to the requestor that initiated the transfer. There is no negotiation between the transfer initiator and the transfer station to determine whether the final destination addresses are correct or not. This setting determines whether or not the transfer station transfers the transmissions if there is a mistake in even one of the final destination addresses.	
3	Polling ID Check for Reception of Transfer Request	
	This setting determines whether the polling IDs of incoming transmissions are checked to ensure that the polling IDs match. 0: Receives and transfers only messages that have matching polling IDs. 1: Receives and transfers all messages, even if the polling IDs do not match.	
4-7	Not Used	

I-fax Switch 04		SP No. 1-102-005
No	**FUNCTION**	**COMMENTS**
0	Subject for Delivery TX/Memory Transfer	
	This setting determines whether the RTI/CSI registered on this machine or the RTI/CSI of the originator is used in the subject lines of transferred documents. 0: Puts the RTI/CSI of the originator in the Subject line. If this is used, either the RTI or CSI is used. Only one of these can be received for use in the subject line. 1: Puts the RTI/CSI registered on this machine in the Subject line. When this switch is used to transfer and deliver mail to a PC, the information in the Subject line that indicates where the transmission originated can be used to determine automatically the destination folder for each e-mail.	
1	Subject corresponding to mail post database 0: Standard subject 1: Mail post database subject The standard subject is replaced by the mail post database subject in the following three cases: 1) When the service technician sets the service (software) switch. 2) When memory sending or delivery specified by F code is applied by the SMTP server 3) With relay broadcasting (1st stage without the Schmidt 4 function). **Note**: This switch does not apply for condition 3) when the RX system is set up for memory sending, delivery by F-code, sending with SMTP RX and when operators are using FOL (to prevent problems when receiving transmissions).	
2-7	Not Used	

I-fax Switch 05		SP No. 1-102-006
No	**FUNCTION**	**COMMENTS**
0	Mail Addresses of SMTP Broadcast Recipients	
	Determines whether the e-mail addresses of the destinations that receive transmissions broadcasted using SMTP protocol are recorded in the Journal. For example: "1st destination + Total number of destinations: 9" in the Journal indicates a broadcast to 9 destinations. 0: Not recorded 1: Recorded	
1-7	Not Used	

I-fax Switch 06 - Not used (do not change the settings)	**SP No. 1-102-007**
I-fax Switch 07 - Not used (do not change the settings)	**SP No. 1-102-008**

I-fax Switch 08		SP No. 1-102-009
No	**FUNCTION**	**COMMENTS**
0-7	Memory Threshold for POP Mail Reception	
	This setting determines the amount of SAF (Store and Forward) memory. (SAF stores fax messages to send later for transmission to more than one location, and also holds incoming messages if they cannot be printed.) When the amount of SAF memory available falls below this setting, mail can no longer be received; received mail is then stored on the mail server. 00-FF (0 to 1024 KB: HEX) **NOTE:** The hexadecimal number you enter is multiplied by 4 KB to determine the amount of memory.	

I-fax Switch 09		SP No. 1-102-010
No	**FUNCTION**	**COMMENTS**
0-3	Not used	Do not change the settings
4-7	Restrict TX Retries	This setting determines the number of retries when connection and transmission fails due to errors. 01-F (1-15 Hex)

I-fax Switch 0A - Not used (do not change the settings)	**SP No. 1-102-011**
I-fax Switch 0B - Not used (do not change the settings)	**SP No. 1-102-012**
I-fax Switch 0C - Not used (do not change the settings)	**SP No. 1-102-013**
I-fax Switch 0D - Not used (do not change the settings)	**SP No. 1-102-014**
I-fax Switch 0E - Not used (do not change the settings)	**SP No. 1-102-015**

I-fax Switch 0F		SP No. 1-102-016
No	**FUNCTION**	**COMMENTS**
0	Delivery Method for SMTP RX Files	
	This setting determines whether files received with SMTP protocol are delivered or output immediately. 0: Off. Files received via SMTP are output immediately without delivery. 1: On. Files received via SMTP are delivered immediately to their destinations.	
1-7	Not used	

4.2.3 Printer Switches

Printer Switch 00		SP No. 1-103-001
No	**FUNCTION**	**COMMENTS**
0	Select page separation marks **0:** Off **1:** On	**0:** If a 2 page RX transmission is split, [*] is printed in the bottom right corner of the 1st page and only a [2] is printed in the upper right corner of the 2nd page. **1**: If a 2 page RX transmission is split into two pages, for example, [*] [2] is printed in the bottom right corner of the 1st page and only a [2] is printed in the upper right corner of the 2nd page. **Note**: This helps the user to identify pages that have been split because the size of the paper is smaller than the size of the document received. (When A5 is used to print an A4 size document, for example.)
1	Repetition of data when the received page is longer than the printer paper **0:** Off **1:** On	**1:** Default. 10 mm of the trailing edge of the previous page are repeated at the top of the next page. **0:** The next page continues from where the previous page stopped without any repeated text.
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		SP No. 1-103-002
No	**FUNCTION**	**COMMENTS**
0-2	Not used	Do not change the settings.
3-4	Maximum print width used in the setup protocol **Bit 4 3 Setting** 0 0 Not used 0 1 A3 1 0 B4 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		**SP No. 1-103-003**
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 **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		SP No. 1-103-004
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)
1-3	Not used	Do not change the settings
4 to 7	Page separation setting when sub scan compression is forbidden 00-0F (0-15 mm: Hex) Default: 6 mm	Page separation threshold (with reduction disabled with switch 03-0 above). For example, if this setting is set to "10", and A4 is the selected paper size: • If the received document is 10 mm or less longer than A4, then the 10 mm are cut and only 1 page prints. • If the received document is 10 mm longer than A4, then the document is split into 2 pages.

Printer Switch 04		SP No. 1-103-005
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		SP No. 1-103-007
No	**FUNCTION**	**COMMENTS**
0	Printing while a paper cassette is pulled out, when the Just Size Printing feature is enabled. **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.	**Cross reference** Just size printing on/off – User switch 05, bit 5
1-7	Not used.	Do not change the settings.

Printer Switch 07		SP No. 1-103-008
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		SP No. 1-103-015
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.
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		SP No. 1-103-016
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	0: Sets the binding for the left edge of the stack. 1: Sets the binding for the top of the stack.
4-7	Not used	Do not change the settings.

4.2.4 COMMUNICATION SWITCHES

Communication Switch 00		SP No. 1-104-001
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 polling ID code of the remote terminal does not match the polling ID code of the local terminal. This function is only available in NSF/NSS mode.

Communication Switch 01		SP No. 1-104-002
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 Not used	The setting determined by these bits is informed to the transmitting terminal in the pre-message protocol exchange (in the DIS/NSF frames).

Communication Switch 02		SP No. 1-104-003
No	**FUNCTION**	**COMMENTS**
0	G3 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.
		100 dpi: 6(L) → 12(H)
		200 dpi: 12(L) → 24(H)
		300 dpi: 18(L) → 36(H)
		400 dpi: 24(L) → 48(H)
1	Acceptable total error line ratio **0:** 5% **1:** 10%	If the error line ratio for a page exceeds the acceptable ratio, RTN will be sent to the other end.
2	Treatment of pages received with errors during G3 reception **0:** Deleted from memory without printing **1:** Printed	**0:** Pages received with errors are not printed.

Communication Switch 02		SP No. 1-104-003
No	**FUNCTION**	**COMMENTS**
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.
4-7	Not used	Do not change the settings.

Communication Switch 03		SP No. 1-104-004
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 - Not used (do not change the settings)
Communication Switch 07 - Not used (do not change the settings)
Communication Switch 08 - Not used (do not change the settings)
Communication Switch 09 - Not used (do not change the settings)

Communication Switch 0A		SP No. 1-104-011
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.
1-7	Not used	Do not change the settings.

Communication Switch 0B		SP No. 1-104-012
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.
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		SP No. 1-104-013
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		SP No. 1-104-014
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		SP No. 1-104-015
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 – Not used (do not change the settings.)

Communication Switch 10		SP No. 1-104-017
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		SP No. 1-104-019
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		SP No. 1-104-021
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.
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		SP No. 1-104-023
No	**FUNCTION**	**COMMENTS**
0	Not used	Do not change the settings.
1	Optional G3 unit (G3-2) **0:** Not installed **1:** Installed	Change this bit to 1 when installing the first optional G3 unit.
2	Not used	
3	Select PSTN connection 0: Off 1: On	This switch enables the G3-2. 0: Off, no connection 1: Recognizes and enables G3-2. This switch can be used only after G3-2 has been installed.
4-7	Not used	Do not change the settings.

Communication Switch 17		SP No. 1-104-024
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	PWD reception **0:** Disabled **1:** Enabled	**0:** Disables features that require PWD (Password) signal reception.
3-6	Not used	Do not change the settings.
7	Action when there is no box with an F-code that matches the received SUB code **0:** Disconnect the line **1:** Receive the message (using normal reception mode)	Change this setting when the customer requires.

Communication Switch 18 - Not used (do not change the settings)
Communication Switch 19 - Not used (do not change the settings)
Communication Switch 1A - Not used (do not change the settings)

Communication Switch 1B		SP No. 1-104-028
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 1C		SP No. 1-104-029
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 1B. **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.

Communication Switch 1D - Not used (do not change the settings)
Communication Switch 1E - Not used (do not change the settings)
Communication Switch 1F - Not used (do not change the settings)

4.2.5 G3 SWITCHES

G3 Switch 00		SP No. 1-105-001
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.
3-7	Not used	Do not change the settings.

G3 Switch 01		SP No. 1-105-002
No	**FUNCTION**	**COMMENTS**
0	Not used	Do not change the settings.
1	Select V.8 protocol for manual RX function 0: No 1: Yes	This switch switches the V.8 protocol for manual receiving off and on.
2-3	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	Forbid CED/AMsam output **0:** Off **1:** On (Forbid output)	Do not change this setting (Default: 0: Off), unless communication problem is caused by a CED or ANSam transmission.
7	Not used	Do not change the setting.

G3 Switch 02		SP No. 1-105-003
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	Not Used	Do not change the settings.
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		SP No. 1-105-004
No	**FUNCTION**	**COMMENTS**
0	DIS detection number (Echo countermeasure) **0:** 1 **1:** 2	**0:** The machine will hang up if it receives the same DIS frame twice. **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.
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 settings
7	Select detection of reverse polarity in ringing 0: Off 1: On	This switch is used to prevent reverse polarity in ringing on the phone line (applied to PSTN-G3 ringing). Do not change this setting 0: No detection → Outside Japan 1: Detection → **Inside Japan only**

G3 Switch 04		SP No. 1-105-005
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		SP No. 1-105-006
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 V.34 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		SP No. 1-105-007
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
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		SP No. 1-105-008
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.

G3 Switch 07		SP No. 1-105-008
No	**FUNCTION**	**COMMENTS**
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".
5-7	Not used	Do not change the settings.

G3 Switch 08 - Not used (do not change the settings)
G3 Switch 09 - Not used (do not change the settings)

G3 Switch 0A		SP No. 1-105-011
No	**FUNCTION**	**COMMENTS**
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	Select cancellation of high-speed RX if carrier signal lost while receiving 0: Off 1: On	This switch setting determines if high-speed receiving ends if the carrier signal is lost when receiving during non-ECM mode
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 settings.

G3 Switch 0A		SP No. 1-105-011
No	**FUNCTION**	**COMMENTS**
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 settings.

G3 Switch 0B Not used (do not change the settings).
G3 Switch 0C Not used (do not change the settings).
G3 Switch 0D Not used (do not change the settings).

G3 Switch 0E		SP No 1-105-015
0-7	Set CNG send time interval Some machines on the receiving side may not be able to automatically switch the 3-second CNG interval.	
	High order bit	3000-2250ms: 3000-50xNms 3000 – 50 x Nms 0F (3000 ms) ≤ N ≤ FF (2250 ms)
	Low order bit	00-0E(3000-3700ms: 3000+50xNms 3000 – 50 x Nms 0F (3000 ms) ≤ N ≤ 0F (3700 ms)

G3 Switch 0F		**SP No. 1-105-016**
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”.
2-7	Not used	Do not change the settings.

4.2.6 G3-2/3 SWITCHES

These switches require an optional G3 interface unit.

G3-3 switches are the same as for G3-2 switches.

G3-2 Switch 00		SP No. 1-106-001
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.
3-7	Not used	Do not change the settings.

G3-2 Switch 01		SP No. 1-106-002
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	Forbid CED/AMsam output **0:** Off **1:** On (Forbid output)	Do not change this setting, unless the communication problem is caused by a CED or ANSam transmission.
7	Not used	Do not change the setting.

G3-2 Switch 02		SP No. 1-106-003
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	Not used	Do not change the settings.
7	Short preamble **0:** Disabled **1:** Enabled	Refer to Appendix B in the Group 3 Facsimile Manual for details about Short Preamble.

G3-2 Switch 03		SP No. 1-106-004
No	**FUNCTION**	**COMMENTS**
0	DIS detection number (Echo countermeasure) **0:** 1 **1:** 2	**0:** The machine will hang up if it receives the same DIS frame twice. **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.

G3-2 Switch 03		SP No. 1-106-004
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 settings.
7	Select detection of reverse polarity in ringing 0: Off 1: On	This switch is used to prevent reverse polarity in ringing on the phone line (applied to PSTN-G3 ringing). Do not change this setting 0: No detection → Outside Japan 1: Detection → **Inside Japan only**

G3-2 Switch 04		SP No. 1-106-005
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.

G3-2 Switch 05		SP No. 1-106-006
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 V.34 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.

G3-2 Switch 06		SP No. 1-106-007
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

G3-2 Switch 06		SP No. 1-106-007
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

G3-2 Switch 07		SP No. 1-106-008
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”.
5-7	Not used	Do not change the settings.

G3-2 Switch 08 - Not used (do not change the settings)
G3-2 Switch 09 - Not used (do not change the settings)

G3-2 Switch 0A		**SP No. 1-106-011**
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	Select cancellation of high-speed RX if carrier signal lost while receiving 0: Off 1: On	This switch setting determines if high-speed receiving ends if the carrier signal is lost when receiving during non-ECM mode
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 settings.
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 settings.

G3-2 Switch 0B- Not used (do not change the settings)
G3-2 Switch 0C- Not used (do not change the settings)
G3-2 Switch 0D - Not used (do not change the settings)
G3-2 Switch 0E - Not used (do not change the settings)
G3-2 Switch 0F - Not used (do not change the settings)

4.2.7 G4 INTERNAL SWITCHES

The G4 internal switches (SW00 to 1F) are displayed but do not change these settings.

4.2.8 G4 PARAMETER SWITCHES

The G4 parameter switches (SW00 to 0F) are displayed but do not change these settings.

4.2.9 IP FAX SWITCHES

IP Fax Switch 00		**SP No. 1-111-001**
No.	**FUNCTION**	**COMMENTS**
0	Not used	Do not change this setting.
1	IP Fax Transport **0**: TCP, 1: UDP	Selects TCP or UDP protocol for IP-Fax
2	IP Fax single port selection **0**: OFF, 1: ON (enable)	Selects single data port.
3	IP Fax double ports (single data port) selection **0**: OFF, 1: ON (enable)	Selects whether IP-Fax uses a double port.
4	IP Fax Gatekeeper **0**: OFF, 1: ON (enable)	Enables/disables the gatekeeper for IP-Fax.
5	IP Fax T30 bit signal reverse **0**: LSB first, 1: MSB first	Reverses the T30 bit signal.
6	IP Fax max bit rate setting **0**: Not affected, 1: Affected	When "0" is selected, the max bit rate does not affect the value of the DIS/DCS. When "1" is selected, the max bit rate affects the value of the DIS/DCS.
7	IP Fax received telephone number confirmation **0**: No confirmation, 1: Confirmation	When "0" is selected, fax data is received without checking the telephone number. When "1" is selected, fax data is received only when confirming that the telephone number from the sender matches the registered telephone number in this machine. If this confirmation fails, the line is disconnected.

<table>
<tr><th colspan="3">IP Fax Switch 01 SP No. 1-111-002</th></tr>
<tr><th>No.</th><th>FUNCTION</th><th>COMMENTS</th></tr>
<tr><td>0-3</td><td>IP Fax delay level setting
Selects the acceptable delay level.
Level 0 is the highest quality
Default is "0000" (level 0).</td><td><table><tr><th>Bit 3</th><th>Bit 2</th><th>Bit 1</th><th>Bit 0</th><th></th></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>Level 0</td></tr><tr><td>0</td><td>0</td><td>0</td><td>1</td><td>Level 1</td></tr><tr><td>0</td><td>0</td><td>1</td><td>0</td><td>Level 2</td></tr><tr><td>0</td><td>0</td><td>1</td><td>1</td><td>Level 3</td></tr></table></td></tr>
<tr><td>4-7</td><td>IP Fax preamble wait time setting</td><td>Selects the preamble wait time.
[00 to 0f]
There are 16 values in this 4-bit binary switch combination.
Waiting time: set value level x 100 ms
Max: 0f (1500 ms) Min: 00 (No wait time)
The default is "0000" (00H).</td></tr>
</table>

<table>
<tr><th colspan="3">IP Fax Switch 02 SP No. 1-111-003</th></tr>
<tr><th>No.</th><th>FUNCTION</th><th>COMMENTS</th></tr>
<tr><td>0</td><td>IP Fax bit signal reverse setting
0: Maker code setting
1: Internal bit switch setting</td><td>When "0" is selected, the bit signal reverse method is decided by the maker code.
When "1" is selected, the bit signal reverse method is decided by the internal bit switch.
NOTE: When communicating between IP Fax devices, LSB first is selected.)</td></tr>
<tr><td>1</td><td>IP Fax transmission speed setting
0: Modem speed
1: No limitation</td><td>Selects the transmit speed for IP Fax communication.</td></tr>
<tr><td>2</td><td>SIP transport setting
0: TCP
1: UDP</td><td>This bit switch sets the transport that has priority for receiving IP Fax data.
This function is activated only when the sender has both TCP and UDP.</td></tr>
<tr><td>3-7</td><td>Not used</td><td>Do not change these settings.</td></tr>
</table>

IP Fax Switch 03		SP No. 1-111-004
No.	**FUNCTION**	**COMMENTS**
0	Effective field limitation for G3 standard function information **0**: OFF, 1: 4byte (DIS)	Limits the effective field for standard G3 function information.
1	Switching between G3 standard and G3 non standard **0**: Enable switching 1: G3 standard only	Enables/disables switching between G3 standard and G3 non-standard.
2	AI modem rate function 0: OFF, **1**: ON (enable)	Enables/disables the AI modem rate.
3	ECM frame size selection at transmitting **0**: 256byte, 1: 64byte	Selects the ECM frame size for sending.
4	DIS detection times for echo prevention **0**: 1 time, 1: 2 times	Sets the number of times for DIS to detect echoes.
5	CTC transmission selection **0**: PPRx1 1: PPRx4	When "0" is selected, the transmission condition is decided by error frame numbers. When "1" is selected, the transmission condition is based on the ITU-T method.
6	Shift down setting at receiving negative code **0**: OFF, 1: ON	Selects whether to shift down when negative codes are received.
7	Not used	Do not change this setting.

IP Fax Switch 04		SP No. 1-111-005
No.	**FUNCTION**	**COMMENTS**
0	TCF error threshold	Sets the TCF error threshold level. [00 to 0f] The default is "1111" (0fH).
1		
2		
3		
4-7	Not used	Do not change these settings.

IP Fax Switch 05 — **SP No. 1-111-006**

No.	FUNCTION	COMMENTS
0-3	Modem bit rate setting for transmission Sets the modem bit rate for transmission. The default is "0110" (14.4K bps).	

Bit 4	Bit 3	Bit 2	Bit 1	
0	0	0	1	2400 bps
0	0	1	1	4800 bps
0	0	1	1	7200 bps
0	1	0	0	9600 bps
0	1	0	1	12.0 Kbps
0	1	1	0	14.4 Kbps
0	1	1	1	16.8 Kbps
1	0	0	0	19.2 Kbps
1	0	0	1	21.6 Kbps
1	0	1	0	24.0 Kbps
1	0	1	1	26.4 Kbps
1	1	0	0	28.8 Kbps
1	1	0	1	31.2 Kbps
1	1	1	0	33.6 Kbps

No.	FUNCTION	COMMENTS
4-5	Modem setting for transmission Sets the modem for transmission. The default is "00" (V29).	

Bit 5	Bit 4	
0	0	**V29**
0	1	V17
1	0	V34
1	1	Not used

6-7	Not used	Do not change these settings.

IP Fax Switch 06 — **SP No. 1-111-007**

No.	FUNCTION	COMMENTS
0-3	Modem bit rate setting for reception Sets the modem bit rate for reception. The default is "0110" (14.4K bps).	
4-7	Modem setting for reception Sets the modem type for reception. The default is "0100" (V27ter, V29, V17).	

0-3

Bit 7	Bit 6	Bit 5	Bit 4	
0	0	0	1	V27ter
0	0	1	0	**V27ter, V29**
0	0	1	1	V27ter, V29, V33 (invalid)
0	1	0	0	V27ter, V29, V17
0	1	0	1	V27ter, V29, V17, V34

4-7

Bit 3	Bit 1	Bit 1	
0	0	1	V27ter
0	1	0	V27ter, V29
0	1	1	Not used
1	0	0	V27ter, V29, V17
1	0	1	V27ter, V29, V17, V34

IP Fax Switch 07 — **SP No. 1-111-008**

No.	FUNCTION	COMMENTS
0	TSI information **0**: Not added, 1: Added	Adds or does not add TSI information to NSS(S).
1	DCN transmission setting at T1 timeout **0**: Not transmitted, 1: Transmitted	Transmits or does not transmit DCN at T1 timeout.
2	Not used	Do not change this setting.
3	Hang up setting at DIS reception disabled **0**: No hang up 1: Hang up after transmitting DCN	Sets whether the machine disconnects after DIS reception.
4	Number of times for training **0**: 1 time, 1: 2 times	Selects the number of times training is done at the same bit rate.
5	Space CSI transmission setting at no CSI registration **0**: Not transmitted, 1: Transmitted	When "0" is selected, frame data is enabled. When "1" is selected, the transmitted data is all spaces.
6-7	Not used	Do not change these settings.

<table>
<tr><th colspan="2">IP Fax Switch 08</th><th>SP No. 1-111-009</th></tr>
<tr><th>No.</th><th>FUNCTION</th><th>COMMENTS</th></tr>
<tr><td>0-1</td><td>T1 timer adjustment
Adjusts the T1 timer.
The default is "00" (35 seconds).</td><td><table><tr><th>Bit 1</th><th>Bit 0</th><th></th></tr><tr><td>0</td><td>0</td><td>35 sec</td></tr><tr><td>0</td><td>1</td><td>40 sec</td></tr><tr><td>1</td><td>0</td><td>50 sec</td></tr><tr><td>1</td><td>1</td><td>60 sec</td></tr></table></td></tr>
<tr><td>2-3</td><td>T4 timer adjustment
Adjust the T4 timer.
The default is "00" (3 seconds).</td><td><table><tr><th>Bit 3</th><th>Bit 2</th><th></th></tr><tr><td>0</td><td>0</td><td>3 sec</td></tr><tr><td>0</td><td>1</td><td>3.5 sec</td></tr><tr><td>1</td><td>0</td><td>4 sec</td></tr><tr><td>1</td><td>1</td><td>5 sec</td></tr></table></td></tr>
<tr><td>4-5</td><td colspan="2">T0 timer adjustment
Bit 5 Bit 4
0 0 75 sec
0 1 120 sec
1 0 180 sec
1 1 240 sec
Adjusts the fail safe timer. This timer sets the interval between "setup" data transmission and T.38 phase decision. If your destination return is late on the network or G3 fax return is late, adjust the longer interval timer.
The default is "00" (75 seconds).</td></tr>
<tr><td>6-7</td><td>Not used</td><td>Do not change these settings.</td></tr>
</table>

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 (SP2-102), but some can be changed using NCU Parameter programming (SP2-103, 104 and 105); if SP2-103, 104 and 105 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 "5" to "6" (e.g. 680500 to 680600) for the settings for the first optional G3 interface unit and from "5" to "7" (e.g. 680700) for the settings for the second optional G3 interface unit.

Address	Function	Unit	Remarks
680500	Country/Area code for NCU parameters		
	Use the Hex value to program the country/area code directly into this address, or use the decimal value to program it using SP2-103-001		
680501	Line current detection time	20 ms	Line current detection is disabled. Line current is not detected if 680501 contains FF.
680502	Line current wait time		
680503	Line current drop detect time		
680504	PSTN dial tone frequency upper limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
680505	PSTN dial tone frequency upper limit (low byte)		

Country/Area	Decimal	Hex	Country/Area	Decimal	Hex
France	00	00	Hong Kong	20	14
Germany	01	01	South Africa	21	15
UK	02	02	Australia	22	16
Italy	03	03	New Zealand	23	17
Austria	04	04	Singapore	24	18
Belgium	05	05	Malaysia	25	19
Denmark	06	06	China	26	1A
Finland	07	07	Taiwan	27	1B
Ireland	08	08	Korea	28	1C
Norway	09	09	Greece	33	21
Sweden	10	0A	Turkey	32	20
Switzerland	11	0B	Greece	33	21
Portugal	12	0C	Hungary	34	22
Holland	13	0D	Czech	35	23
Spain	14	0E	Poland	36	24
Israel	15	0F			
USA	17	11			
Asia	18	12			

Address	Function	Unit	Remarks
680506	PSTN dial tone frequency lower limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
680507	PSTN dial tone frequency lower limit (low byte)		
680508	PSTN dial tone detection time	20 ms	If 680508 contains FF(H), the machine pauses for the pause time (address 68050D / 68050E). Italy: See Note 2.
680509	PSTN dial tone reset time (LOW)		
68050A	PSTN dial tone reset time (HIGH)		
68050B	PSTN dial tone continuous tone time		
68050C	PSTN dial tone permissible drop time		
68050D	PSTN wait interval (LOW)		
68050E	PSTN wait interval (HIGH)		
68050F	PSTN ring-back tone detection time	20 ms	Detection is disabled if this contains FF.
680510	PSTN ring-back tone off detection time	20 ms	
680511	PSTN detection time for silent period after ring-back tone detected (LOW)	20 ms	
680512	PSTN detection time for silent period after ring-back tone detected (HIGH)	20 ms	
680513	PSTN busy tone frequency upper limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
680514	PSTN busy tone frequency upper limit (low byte)		
680515	PSTN busy tone frequency lower limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
680516	PSTN busy tone frequency lower limit (low byte)		
680517	PABX dial tone frequency upper limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
680518	PABX dial tone frequency upper limit (low byte)		
680519	PABX dial tone frequency lower limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
68051A	PABX dial tone frequency lower limit (low byte)		
68051B	PABX dial tone detection time	20 ms	If 68051B contains FF, the machine pauses for the pause time (680520 / 680521).
68051C	PABX dial tone reset time (LOW)		
68051D	PABX dial tone reset time (HIGH)		
68051E	PABX dial tone continuous tone time		
68051F	PABX dial tone permissible drop time		
680520	PABX wait interval (LOW)		
680521	PABX wait interval (HIGH)		
680522	PABX ringback tone detection time	20 ms	If both addresses contain FF(H), tone detection is disabled.
680523	PABX ringback tone off detection time	20 ms	
680524	PABX detection time for silent period after ringback tone detected (LOW)	20 ms	If both addresses contain FF(H), tone detection is disabled.

Address	Function	Unit	Remarks
680525	PABX detection time for silent period after ringback tone detected (HIGH)	20 ms	
680526	PABX busy tone frequency upper limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
680527	PABX busy tone frequency upper limit (low byte)		
680528	PABX busy tone frequency lower limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
680529	PABX busy tone frequency lower limit (low byte)		
68052A	Busy tone ON time: range 1	20 ms	
68052B	Busy tone OFF time: range 1		
68052C	Busy tone ON time: range 2		
68052D	Busy tone OFF time: range 2		
68052E	Busy tone ON time: range 3		
68052F	Busy tone OFF time: range 3	20 ms	
680530	Busy tone ON time: range 4		
680531	Busy tone OFF time: range 4		
680532	Busy tone continuous tone detection time		
680533	Busy tone signal state time tolerance for all ranges, and number of cycles required for detection (a setting of 4 cycles means that ON-OFF-ON or OFF-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		
680534	International dial tone frequency upper limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
680535	International dial tone frequency upper limit (low byte)		
680536	International dial tone frequency lower limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
680537	International dial tone frequency lower limit (low byte)		
680538	International dial tone detection time	20 ms	If 680538 contains FF, the machine pauses for the pause time (68053D / 68053E). Belgium: See Note 2.
680539	International dial tone reset time (LOW)		
68053A	International dial tone reset time (HIGH)		
68053B	International dial tone continuous tone time		
68053C	International dial tone permissible drop time		
68053D	International dial wait interval (LOW)		

Address	Function	Unit	Remarks
68053E	International dial wait interval (HIGH)		
68053F	Country dial tone upper frequency limit (HIGH)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
680540	Country dial tone upper frequency limit (LOW)		
680541	Country dial tone lower frequency limit (HIGH)		If both addresses contain FF(H), tone detection is disabled.
680542	Country dial tone lower frequency limit (LOW)		
680543	Country dial tone detection time	20 ms	If 680543 contains FF, the machine pauses for the pause time (680548 / 680549).
680544	Country dial tone reset time (LOW)		
680545	Country dial tone reset time (HIGH)		
680546	Country dial tone continuous tone time		
680547	Country dial tone permissible drop time	20 ms	
680548	Country dial wait interval (LOW)		
680549	Country dial wait interval (HIGH)		
68054A	Time between opening or closing the DO relay and opening the OHDI relay	1 ms	See Notes 3, 6 and 8. SP2-103-012 (parameter 11).
68054B	Break time for pulse dialing	1 ms	See Note 3. SP2-103-013 (parameter 12).
68054C	Make time for pulse dialing	1 ms	See Note 3. SP2-103-014 (parameter 13).
68054D	Time between final OHDI relay closure and DO relay opening or closing	1 ms	See Notes 3, 6 and 8. SP2-103-015 (parameter 14). This parameter is only valid in Europe.
68054E	Minimum pause between dialed digits (pulse dial mode)	20 ms	See Note 3 and 8. SP2-103-016 (parameter 15).
68054F	Time waited when a pause is entered at the operation panel		SP2-103-017 (parameter 16). See Note 3.
680550	DTMF tone on time	1 ms	SP2-103-018 (parameter 17).
680551	DTMF tone off time		SP2-103-019 (parameter 18).
680552	Tone attenuation level of DTMF signals while dialing	-N x 0.5 –3.5 dBm	SP2-103-020 (parameter 19). See Note 5.
680553	Tone attenuation value difference between high frequency tone and low frequency tone in DTMF signals	-dBm x 0.5	SP2-103-021 (parameter 20). The setting must be less than –5dBm, and should not exceed the setting at 680552h above. See Note 5.

Address	Function	Unit	Remarks
680554	PSTN: DTMF tone attenuation level after dialling	-N x 0.5 –3.5 dBm	SP2-103-022 (parameter 21). See Note 5.
680555	ISDN: DTMF tone attenuation level after dialling	-dBm x 0.5	See Note 5
680556	Not used		Do not change the settings.
680557	Time between 68054Dh (NCU parameter 14) and 68054Eh (NCU parameter 15)	1 ms	This parameter takes effect when the country code is set to France.
680558	Not used		Do not change the setting.
680559	Grounding time (ground start mode)	20 ms	The Gs relay is closed for this interval.
68055A	Break time (flash start mode)	1 ms	The OHDI relay is open for this interval.
68055B	International dial access code (High)	BCD	For a code of 100: 68055B - F1 68055C - 00
68055C	International dial access code (Low)		
68055D	PSTN access pause time	20 ms	This time is waited for each pause input after the PSTN access code. If this address contains FF[H], the pause time stored in address 68054F is used. Do not set a number more than 7 in the UK.
68055E	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.	
68055F to 680564	Not used		Do not change the settings.
680565	Long distance call prefix (HIGH)	BCD	For a code of 0: 680565 - FF 680566 - FF
680566	Long distance call prefix (LOW)	BCD	
680567 to 680571	Not used		Do not change the settings.
680572	Acceptable ringing signal frequency: range 1, upper limit	1000/ N (Hz).	SP2-103-003 (parameter 02).
680573	Acceptable ringing signal frequency: range 1, lower limit		SP2-103-004 (parameter 03).
680574	Acceptable ringing signal frequency: range 2, upper limit		SP2-103-005 (parameter 04).
680575	Acceptable ringing signal frequency: range 2, lower limit		SP2-103-006 (parameter 05).

Address	Function	Unit	Remarks
680576	Number of rings until a call is detected	1	SP2-103-007 (parameter 06). The setting must not be zero.
680577	Minimum required length of the first ring	20 ms	See Note 4. SP2-103-008 (parameter 07).
680578	Minimum required length of the second and subsequent rings	20 ms	SP2-103-009 (parameter 08).
680579	Ringing signal detection reset time (LOW)	20 ms	SP2-103-010 (parameter 09).
68057A	Ringing signal detection reset time (HIGH)		SP2-103-011 (parameter 10).
68057B to 680580	Not used		Do not change the settings.
680581	Interval between dialing the last digit and switching the Oh relay over to the external telephone when dialing from the operation panel in handset mode.	20 ms	Factory setting: 500 ms
680582	Bits 0 and 1 - Handset off-hook detection time **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		
680583 to 6805A0	Not used		Do not change the settings.
6805A1	Acceptable CED detection frequency upper limit (high byte)	BCD (Hz)	If both addresses contain FF(H), tone detection is disabled.
6805A2	Acceptable CED detection frequency upper limit (low byte)		
6805A3	Acceptable CED detection frequency lower limit (high byte)	BCD (Hz)	If both addresses contain FF(H), tone detection is disabled.
6805A4	Acceptable CED detection frequency lower limit (low byte)		
6805A5	CED detection time	20 ms ± 20 ms	Factory setting: 200 ms
6805A6	Acceptable CNG detection frequency upper limit (high byte)	BCD (Hz)	If both addresses contain FF(H), tone detection is disabled.
6805A7	Acceptable CNG detection frequency upper limit (low byte)		

Address	Function	Unit	Remarks
6805A8	Acceptable CNG detection frequency lower limit (high byte)	BCD (Hz)	If both addresses contain FF(H), tone detection is disabled.
6805A9	Acceptable CNG detection frequency lower limit (low byte)		
6805AA	Not used		Do not change the setting.
6805AB	CNG on time	20 ms	Factory setting: 500 ms
6805AC	CNG off time	20 ms	Factory setting: 3000 ms
6805AD	Number of CNG cycles required for detection		The data is coded in the same way as address 680533.
6805AE	Not used		Do not change the settings.
6805AF	Acceptable AI short protocol tone (800Hz) detection frequency upper limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
6805B0	Acceptable AI short protocol tone (800Hz) detection frequency upper limit (low byte)		
6805B1	Acceptable AI short protocol tone (800Hz) detection frequency lower limit (high byte)	Hz(BCD)	If both addresses contain FF(H), tone detection is disabled.
6805B2	Acceptable AI short protocol tone (800Hz) detection frequency lower limit (low byte)		
6805B3	Detection time for 800 Hz AI short protocol tone	20 ms	Factory setting: 360 ms
6805B4	PSTN: Tx level from the modem	-N – 3 dBm	SP2-103-002 (parameter 01).
6805B5	PSTN: 1100 Hz tone transmission level	- N 6805B4 - 0.5N 6805B5 –3.5 (dB) See Note 7.	
6805B6	PSTN: 2100 Hz tone transmission level	- N6805B4 - 0.5N 6805B6 –3 (dB) See Note 7.	
6805B7	PABX: Tx level from the modem	- dBm	
6805B8	PABX: 1100 Hz tone transmission level	- N 6805B7 - 0.5N 6805B8 (dB)	
6805B9	PABX: 2100 Hz tone transmission level	- N 6805B7 - 0.5N 6805B9 (dB)	
6805BD	Modem turn-on level (incoming signal detection level)	-37-0.5N (dBm)	
6805BE to 6805C6	Not used		Do not change the settings.
6805C7	Bits 0 to 3 – Not used. Bit 4 – V.34 protocol dump **0:** Simple, **1:** Detailed (default) Bits 5 to 7 – Not used.		
6805C8 to 6805D9	Not used		Do not change the settings.
6805DA	T.30 T1 timer	1 s	

<table>
<tr><th>Address</th><th colspan="7">Function</th><th>Unit</th><th>Remarks</th></tr>
<tr><td>6805E0
bit 3</td><td colspan="7">Maximum wait time for post message</td><td>0: 12 s
1: 30 s</td><td>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.</td></tr>
<tr><td rowspan="8">6805E3</td><td colspan="7">Voltage setting to detect off-hook for voltage/DP detection for an externally connected line.</td><td>0: Auto
1: Fixed V</td><td rowspan="8">Do not change these settings</td></tr>
<tr><td colspan="7">Here is a summary of the fixed voltage settings (1: Fixed) for an externally connected line.</td></tr>
<tr><td>Bit 7</td><td>Bit 6</td><td>Bit 5</td><td>Bit 4</td><td colspan="3"></td></tr>
<tr><td>0</td><td>0</td><td>0</td><td>0</td><td colspan="3">Not used</td></tr>
<tr><td>0</td><td>0</td><td>0</td><td>1</td><td colspan="3">2.75 V</td></tr>
<tr><td>0</td><td>0</td><td>1</td><td>0</td><td colspan="3">5.5 V</td></tr>
<tr><td>1</td><td>0</td><td>0</td><td>0</td><td colspan="3">22 V</td></tr>
<tr><td>1</td><td>1</td><td>1</td><td>1</td><td colspan="3">41.25 V</td></tr>
<tr><td rowspan="4">6805E4</td><td colspan="3" rowspan="4">Bit 1 sets the level of the call signal, Bit 3 sets the call signal impedance</td><td rowspan="2">Bit 1</td><td>0</td><td>RT=0 (Low)</td><td rowspan="4"></td></tr>
<tr><td>1</td><td>RT=1 (High</td></tr>
<tr><td rowspan="2">Bit 3</td><td>0</td><td>RZ=0 (High)</td></tr>
<tr><td>1</td><td>RZ=1 (Composite)</td></tr>
<tr><td rowspan="11">6805E5</td><td colspan="3" rowspan="3">Bit 0 sets the ring detection method, Bit 1 sets the ring detection method when fixed.</td><td>Bit 0</td><td>0</td><td>RT=0 (Low)</td><td rowspan="11">If any setting is changed, select a setting that is higher than the default setting.</td></tr>
<tr><td></td><td>1</td><td>RT=1 (High</td></tr>
<tr><td rowspan="2">Bit 1</td><td>0</td><td>Use RDTP</td></tr>
<tr><td colspan="3"></td><td>1</td><td>Use RDTN</td></tr>
<tr><td colspan="7">Here is a summary of the voltages for the detection of off-hook for DP detection.</td></tr>
<tr><td>Bit 7</td><td>Bit 6</td><td>Bit 5</td><td>Bit 4</td><td colspan="3"></td></tr>
<tr><td>0</td><td>0</td><td>0</td><td>0</td><td colspan="3">Not used</td></tr>
<tr><td>0</td><td>0</td><td>0</td><td>1</td><td colspan="3">2.75 V</td></tr>
<tr><td>0</td><td>0</td><td>1</td><td>0</td><td colspan="3">5.5 V</td></tr>
<tr><td>1</td><td>0</td><td>0</td><td>0</td><td colspan="3">22 V</td></tr>
<tr><td>1</td><td>1</td><td>1</td><td>1</td><td colspan="3">41.25 V</td></tr>
</table>

NOTES

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

   RAM address 68055E: the lower four bits have the following meaning.
   Bit 2 - 1: International dial tone cadence detection enabled (Belgium)
   Bit 1 - Not used
   Bit 0 - 1: PSTN dial tone cadence detection enabled (Italy)

   If bit 0 or bit 2 is set to 1, the functions of the following RAM addresses are changed.
   680508 (if bit 0 = 1) or 680538 (if bit 2 = 1): tolerance for on or off state duration (%), and number of cycles required for detection, coded as in address 680533.
   68050B (if bit 0 = 1) or 68053B (if bit 2 = 1): on time, hex code (unit = 20 ms)
   68050C (if bit 0 = 1) or 68053C (if bit 2 = 1): off time, hex code (unit = 20 ms)
3. Pulse dial parameters (addresses 68054A to 68054F) are the values for 10 pps. If 20 pps is used, the machine automatically compensates.
4. The first ring may not be detected until 1 to 2.5 wavelengths after the time specified by this parameter.
5. The calculated level must be between 0 and 10.
   The attenuation levels calculated from RAM data are:
   High frequency tone: – 0.5 x $N_{680552/680554}$–3.5 dBm
   – 0.5 x N_{680555} dBm
   Low frequency tone: – 0.5 x ($N_{680552/680554}$ + N_{680553}) –3.5 dBm
   – 0.5 x (N_{680555} + N_{680553}) dBm
   NOTE: N_{680552}, for example, means the value stored in address 680552(H)
6. 68054A: Europe - Between Ds opening and Di opening, France - Between Ds closing and Di opening
   68054D: Europe - Between Ds closing and Di closing, France - Between Ds opening and Di closing
7. Tone signals which frequency is lower than 1500Hz (e.g., 800Hz tone for AI short protocol) refer to the setting at 6805B5h. Tones which frequency is higher than 1500Hz refer to the setting at 6805B6h.
8. 68054A, 68054D, 68054E: The actual inter-digit pause (pulse dial mode) is the sum of the period specified by the RAM addresses 68054A, 68054D, and 68054E.

4.4 DEDICATED TRANSMISSION PARAMETERS

There are two sets of transmission parameters: Fax and E-mail

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. Set the bit 0 of System Bit Switch 00 to 1.
2. Enter Address Book Management mode ([User Tools]> System Settings> Key Operator> Address Book Management).
3. Select the address book that you want to program.
4. For the fax parameter, select "Fax Dest.", for the E-mail parameter, select "E-mail", then press "Start". Make sure that the LED of the Start button lights green.
5. The settings for the switch 00 are now displayed. Press the bit number that you wish to change.
6. To scroll through the parameter switches, either:
7. Select the next switch: press "Next"
   or
   Select the previous switch: "Prev." until the correct switch is displayed.
   Then go back to step 6.
8. After the setting is changed, press "OK".
9. After finishing, reset bit 0 of System Bit Switch 00 to 0.

4.4.2 PARAMETERS

Fax Parameters

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

Switch 00
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 01		
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 02		
No	**FUNCTION**	**COMMENTS**
0 to 3	Initial Tx modem rate **Bit3 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.
4-7	Not used	Do not change the settings.

Switch 03		
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.
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.

Switch 03		
No	**FUNCTION**	**COMMENTS**
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 04 - Not used (do not change the settings)
Switch 05 - Not used (do not change the settings)
Switch 06 - Not used (do not change the settings)
Switch 07 - Not used (do not change the settings)
Switch 08 - Not used (do not change the settings)
Switch 09 - Not used (do not change the settings)

E-mail Parameters

The initial settings of the following e-mail parameters are all "0" (all parameters disabled).

Switch 00		
No	**FUNCTION**	**COMMENTS**
0	HM Compression mode for e-mail attachments **0**: Off 1: On	Switches HM compression on and off for files attached to e-mails for sending.
1	HR Compression mode for e-mail attachments **0**: Off 1: On	Switches HR compression on and off for files attached to e-mails for sending.
2	MMR Compression mode for e-mail attachments **0**: Off 1: On	Switches MMR compression on and off for files attached to e-mails for sending.
3-6	Not used	Do not change these settings.
7	Designates the bits to reference for compression method of e-mail attachments **0**: Registered (Bit 0 to 6) 1: No registration.	The "0" selection (default) references the settings for Bits 00, 01, 02 above. The "1" selection ignores the selections of Bits 00, 01, 02.

Switch 01		
No	**FUNCTION**	**COMMENTS**
0	Original width of e-mail attachment: A4 **0**: Off 1: On	Sets the original width of the e-mail attachment as A4.
1	Original width of e-mail attachment: B4 **0**: Off 1: On	Sets the original width of the e-mail attachment as B4.
2	Original width of e-mail attachment: A3 **0**: Off 1: On	Sets the original width of the e-mail attachment as A3.
3-6	Not used	Do not change these settings.
7	Designates the bits to reference for original size of e-mail attachments **0**: Registered (Bit 0 to 6) 1: No registration.	The "0" selection (default) references the settings for Bits 00, 01, 02 above. The "1" selection ignores the selections of Bits 00, 01, 02.

Switch 02		
No	**FUNCTION**	**COMMENTS**
0	Line resolution of e-mail attachment: 200 x 100 **0**: Off 1: On	Sets the line resolution of the e-mail attachment as 200 x100.
1	Line resolution of e-mail attachment: 200 x 200 **0**: Off 1: On	Sets the line resolution of the e-mail attachment as 200 x 200.
2	Line resolution of e-mail attachment: 200 x 400 **0**: Off 1: On	Sets the line resolution of the e-mail attachment as 200 x 400.
3	Not used	Do not change these settings.
4	Line resolution of e-mail attachment: 400 x 400 **0**: Off 1: On	Sets the line resolution of the e-mail attachment as 400 x 400.
5-6	Not used	Do not change these settings.
7	Designates the bits to reference for original size of e-mail attachments **0**: Registered (Bit 0 to 6) 1: No registration.	The "0" selection (default) references the settings for Bits 00, 01, 02, 04 above. The "1" selection ignores the selections of Bits 00, 01, 02, 04.

Switch 03 - Not used (do not change the settings)
Switch 04 - Not used (do not change the settings)
Switch 05 - Not used (do not change the settings)
Switch 06 - Not used (do not change the settings)
Switch 07 - Not used (do not change the settings)
Switch 08 - Not used (do not change the settings)
Switch 09 - Not used (do not change the settings)

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
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) - G3-2 bit switches
6800A0 to 6800AF(H) - G3-3 bit switches
6800D0(H) - User parameter switch 00 (SWUER_00) : Not used
6800D1(H) - User parameter switch 01 (SWUSR_01) : Not used

6800D2(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: Not used
Bit 6: Not used
Bit 7: Not used

6800D3(H) - User parameter switch 03 (SWUSR_03: Automatic report printout)

Bit 0: Transmission result report (memory transmissions) 0: Off, 1: On
Bit 1: Not used
Bit 2: Memory storage report 0: Off, 1: On
Bit 3: 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

6800D4(H) - User parameter switch 04 (SWUSR_04: Automatic report printout)

Bit 0: Automatic confidential reception report output 0: Off, 1: On
Bit 1: Automatic communication failure report and transfer result report output
0: Off, 1: On
Bits 2 to 3: Not used
Bit 4: Indicates the parties 0: Not indicated, 1: Indicated
Bit 5: Include sender's name on reports 0: Off, 1: On
Bit 6: Not used
Bit 7: Inclusion of a sample image on reports 0: Off, 1: On

6800D5(H) - User parameter switch 05 (SWUSR_05)

Bit 0: Substitute reception when the base copier is in an SC condition
0: Enabled, 1: Disabled
Bits 1 and 2: Condition for substitute 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: Not used
Bit 5: Just size printing 0: Off, 1: On
Bit 6: Not used
Bit 7: Add paper display when a cassette is empty 0: Off, 1: On

6800D6(H) - User parameter switch 06 (SWUSR_06)

Bits 0 to 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

6800D7(H) - User parameter switch 07 (SWUSR_07)

Bits 0 and 1: Not used
Bit 2: Parallel memory transmission 0: Off, 1: On
Bits 3 to 7: Not used

6800D8(H) - User parameter switch 08 (SWUSR_08)
Bits 0 and 1: Not used.
Bit 2: Authorized reception
0: Only faxes from senders whose RTIs/CSIs are specified for this feature are accepted.
1: Only faxes from senders whose RTIs/CSIs are not specified for this feature are accepted.
Bits 3 to 7: Not used.

6800D9(H) - User parameter switch 09 (SWUSR_09) : Not used

6800DA(H) - User parameter switch 10 (SWUSR_0A)
Bit 0: Not used
Bit 1: 2 into 1 0: Off, 1: On
Bit 2: Not used
Bit 3: Page reduction 0: Off, 1: On
Bit 4: Not used
Bit 5: Reception file printout 0: Disabled, 1: Enabled
Bit 6: Use both e-mail notification and printed reports to confirm the transmission results 0: Off, 1: On
Bit 7: Not used

6800DB(H) - User parameter switch 11 (SWUSR_0B)
Bit 0: Not used
Bit 1: Not used
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

6800DC(H) - User parameter switch 12 (SWUSR_0C): Not used

6800DD(H) - **User parameter switch 13 (SWUSR_0D)**: Not used

6800DE(H) - User parameter switch 14 (SWUSR_0E)
Bit 0: Message printout while the machine is in Night Printing mode 0: On, 1: Off
Bit 1: Maximum document length detection
0: Double letter, 1: Longer than double-letter (well log) – up to 1,200 mm
Bit 2: Batch transmission 0: Off, 1: On
Bit 3: Fax mode settings, such as resolution, before a mode key (Copy/Fax/Printer /Scanner) is pressed
0: Not cleared, 1: Cleared
Bits 4 to 6: Not used
Bit 7: Manual service call (sends the system parameter list to the service station)
0: Off, 1: On

6800DF(H) - User parameter switch 15 (SWUSR_0F)
(This switch is not printed on the user parameter list.)
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
1	0	1	LCT

Other settings Not used
Bits 3 and 4: Not used
Bit 5: Using the cassette specified by bits 0, 1 and 2 above only 0: On, 1: Off
Bits 6 and 7: Not used

6800E0(H) – User parameter switch 16 (SWUSR_10)
(This switch is not printed on the user parameter list.)
Bits 0 and 1: Not used
Bit 2: Paper size selection priority for an A4 size fax message when A4/LT size paper is not available.
0: A3 has priority, 1: B4 has priority
Bits 3 to 7: Not used

6800E1(H) – User parameter switch 17 (SWUSR_11)
Bit 0: IFAX Group Destination Selection/Release Method

0 Priority Select Mode
Select the priority destination according to input mode. The Group button reflects either email or fax input mode. Released as soon as the entry mode is selected, regardless of the current entry mode.

1 All Select Mode
Acquires all registered members regardless of entry mode. If both email and fax are registered, both are selected. The Group button reflects either email or fax input mode. All registered members are released, regardless of the entry mode. If both email/fax are registered, both are released.

Bit 1: Not used
Bit 2: Inclusion of the “Add” button when a sequence of Quick/Speed dials is selected for broadcasting
0:Not needed, 1: Needed
Bits 3 to 6: Not used
Bit 7: Press “Start” key without an original when using the on hook dial or the external telephone,
0: displays “Cannot detect original size”.
1: Receives fax messages.

6800E2(H) - User parameter switch 18 (SWUSR_12)
Bit 0: TTI date 0: Off, 1: On
Bit 1: TTI sender 0: Off, 1: On
Bit 2: TTI file number 0: Off, 1: On
Bit 3: TTI page number 0: Off, 1: On
Bit 4 to 7: Not used

6800E3(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 G3-1, G3-2, and G3-3 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: Not used

6800E4(H) - User parameter switch 20 (SWUSR_14)

Bit 0: Automatic printing of the LAN fax result report
0: Off, 1: On

Bit 1: Not used.

Bits 2 to 5: Store documents in memory which could not be printed from PC fax (LAN fax) driver

Bit 5	4	3	2	Setting
0	0	0	0	0 min.
0	0	0	1	1 min.
		⇩		⇩
1	1	1	0	14 min.
1	1	1	1	15 min.

Bits 6 and 7: Not used.

6800E5(H) - User parameter switch 21 (SWUSR_15)

Bit 0: Print results of sending reception notice request message
0: Disabled (print only when error occurs), 1: Enabled

Bit 1: Respond to e-mail reception acknowledgment request
0: Disabled, 1: Enabled

Bit 2: Not used

Bit 3: File format for forwarded folders 0: TIFF, 1:PDF

Bit 4: Transmit Journal by E-mail 0: Disabled, 1: Enabled

Bit 5: Not used

Bit 6: Network error display 0: Displayed, 1: Not displayed

Bit 7: Transmit error mail notification 0: Enabled, 1: Disabled

6800E6(H) - User parameter switch 22 (SWUSR_16)
(This switch is not printed on the user parameter list.)
Bit 0: Dial tone detection (PSTN 1) 0: Disabled, 1: Enabled
Bit 1: Dial tone detection (PSTN 2) 0: Disabled, 1: Enabled
Bit 2: Dial tone detection (PSTN 3) 0: Disabled, 1: Enabled
Bits 3 to 7: Not used

6800E7(H) – User parameter switch 23 (SWUSR_17) : Not used

6800E8(H) - User parameter switch 24 (SWUSR_18)
Bits 0 and 1: File retention time (Cross reference: System switch 02 bit 4)

Bit 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

6800E9(H) - User parameter switch 25 (SWUSR_19)
Bit 0 and 1: Not used
Bit 2: Not used
Bit 3: Not used
Bit 4: RDS operation
0: Not acceptable
1: Acceptable for the limit specified by system switch 03

NOTE: This bit is only effective when RDS operation can be selected by the user (see system switch 02).

Bits 5 to 7: Not used

6800EA(H) to 6800EF(H) - User parameter switch 26 to 31 (SWUSR_1A to 1F)
: Not used

6800F0(H) - User parameter switch 32 (SWUSR_20)
Bit 0: Quotation priority for a destination when there is no destination of the specified type
0: Paper output priority
Priority order
1. IP-fax destination, 2. Fax Number, 3. E-mail address, 4. Folder
1: Electric putout order
Priority order
1. E-mail address, 2. Folder, 3. IP-fax destination, 4. Fax number
Bits 1 to 7: Not used

6800F1(H) - User parameter switch 33 (SWUSR_21): Not used

6800F2(H) - User parameter switch 34 (SWUSR_22)
Bit 0: Gatekeeper server used with IP-Fax 0: Disabled, 1: Enabled
Bit 1: SIP server used with IP-Fax 0: Disabled, 1: Enabled

680100 to 68010F(H) - G4 Parameter Switches – Not used
680110 to 68012F(H) - G4 Internal Switches – Not used
680170 to 68017F(H) - IFAX Switches
680180 to 68018F(H) - IP-FAX Switches

680190 to 6801AF(H) - Service station's fax number (SP3-101)

6801B0 to 6801B9(H) - Own fax PABX extension number
6801BA to 6801C3(H) - Own fax number (PSTN)
6801C4 to 6801D7(H) - Own fax number (ISDN G4) – Not used
6801D8 to 6801E3(H) - The first subscriber number (ISDN G3) – Not used
6801E4 to 6801EF(H) - The second subscriber number (ISDN G3) – Not used
6801F0 to 6801FB(H) - The first subscriber number (ISDN G4) – Not used
6801FC to 680207(H) - The second subscriber number (ISDN G4) – Not used

680208 to 68021B(H) - PSTN-1 RTI (Max. 20 characters - ASCII) - See the following note.
68021C to 68022F(H) - PSTN-2 RTI (Max. 20 characters - ASCII) - See the following note.
680230 to 680246(H) - PSTN-3 RTI (Max. 20 characters - ASCII) - See the following note.
680247 to 680286(H) - TTI 1 (Max. 64 characters - ASCII) - See the following note.
680287 to 6802C6(H) - TTI 2 (Max. 64 characters - ASCII) - See following note.
6802C7 to 680306(H) - TTI 3 (Max. 64 characters - ASCII) - See following note.
680307 to 68031A(H) - PSTN-1 CSI (Max. 20 characters - ASCII)
68031B to 68032E(H) - PSTN-2 CSI (Max.20 characters - ASCII)
68032F to 680342(H) - PSTN-3 CSI (Max.20 characters - ASCII)

680343(H) - Number of PSTN-1 CSI characters (Hex)
680344(H) - Number of PSTN-2 CSI characters (Hex)
680345(H) Number of PSTN-3 CSI characters (Hex)-

NOTE: If the number of characters is less than the maximum (20 for RTI, 64 for TTI), add a stop code (00[H]) after the last character.

680380 to 680387(H) - Last power off time (Read only)
680380(H) - 01(H) - 24-hour clock, 00(H) - 12-hour clock (AM),
02(H) - 12-hour clock (PM)
680381(H) - Year (BCD)
680382(H) - Month (BCD)
680383(H) - Day (BCD)
680384(H) - Hour
680385(H) - Minute
680386(H) - Second
680387(H) - 00: Monday, 01: Tuesday, 02: Wednesday, ... , 06: Sunday

680394(H) - Optional equipment (Read only – Do not change the settings)
Bit 0: Page Memory 0: Not installed, 1: Installed
Bit 1: SAF Memory 0: Not installed, 1: Installed
Bits 2 to 7; Not used

680395(H) - Optional equipment (Read only – Do not change the settings)
Bits 0 to 3: Not used
Bit 4: G3-2 0: Not installed, 1: Installed
Bit 5: G3-3 0: Not installed, 1: Installed
Bit 6 and 7: Not used

680406 to 68040A – Option G3 board (G3-2) ROM information (Read only)
680406(H) - Suffix (BCD)
680407(H) - Version (BCD)
680408(H) - Year (BCD)
680409(H) - Month (BCD)
68040A(H) - Day (BCD)

68040B to 68040F – Option G3 board (G3-3) ROM information (Read only)
68040B(H) - Suffix (BCD)
68040C(H) - Version (BCD)
68040D(H) - Year (BCD)
68040E(H) - Month (BCD)
68040F(H) - Day (BCD)

680410(H) - G3-1 Modem ROM version (Read only)
680412(H) - G3-2 Modem ROM version (Read only)
680414(H) - G3-3 Modem ROM version (Read only)

680420(H) - Number of multiple sets print (Read only)

680476(H) - Time for economy transmission (hour in 24h clock format - BCD)
680477(H) - Time for economy transmission (minute - BCD)

680492(H) - Transmission monitor volume 00 - 07(H)
680493(H) - Reception monitor volume 00 - 07(H)
680494(H) - On-hook monitor volume 00 - 07(H)
680495(H) - Dialing monitor volume 00 - 07(H)
680496(H) - Buzzer volume 00 - 07(H)
680497(H) - Beeper volume 00 - 07(H)

69ED04 to 69F003(H) - SIP server address (Read only)
69ED04(H) - Proxy server - Main (Max. 128 characters - ASCII)
69ED84(H) - Proxy server - Sub (Max. 128 characters - ASCII)
69EE04(H) - Redirect server - Main (Max. 128 characters - ASCII)
69EE04(H) - Redirect server - Sub (Max. 128 characters - ASCII)
69EF04(H) - Registrar server - Main (Max. 128 characters - ASCII)
69EF04(H) - Registrar server - Sub (Max. 128 characters - ASCII)

69F004(H) - Gatekeeper server address - Main (Max. 128 characters - ASCII)
69F084(H) - Gatekeeper server address - Sub (Max. 128 characters - ASCII)
69F104(H) - Arias Number (Max. 128 characters - ASCII)
69F184(H) - SIP user name (Max. 128 characters - ASCII)
69F204(H) - Gateway address information (Max. 128 characters - ASCII)

6A0DC0(H) - Stand-by port number for H.232 connection
6A0DC2(H) - Stand-by port number for SIP connection
6A0DC4(H) - RAS port number

6A0DC6(H) - Gatekeeper port number
6A0DC8(H) - Port number of data waiting for T.38
6A0DCA(H) - Port number of SIP server

6A0DCC(H) - Priority for SIP and H.323 0: H.323, 1: SIP
6A0DCD(H) - SIP function 0: Disabled, 1: Enabled
6A0DCE(H) - H.323 function 0: Disabled, 1: Enabled

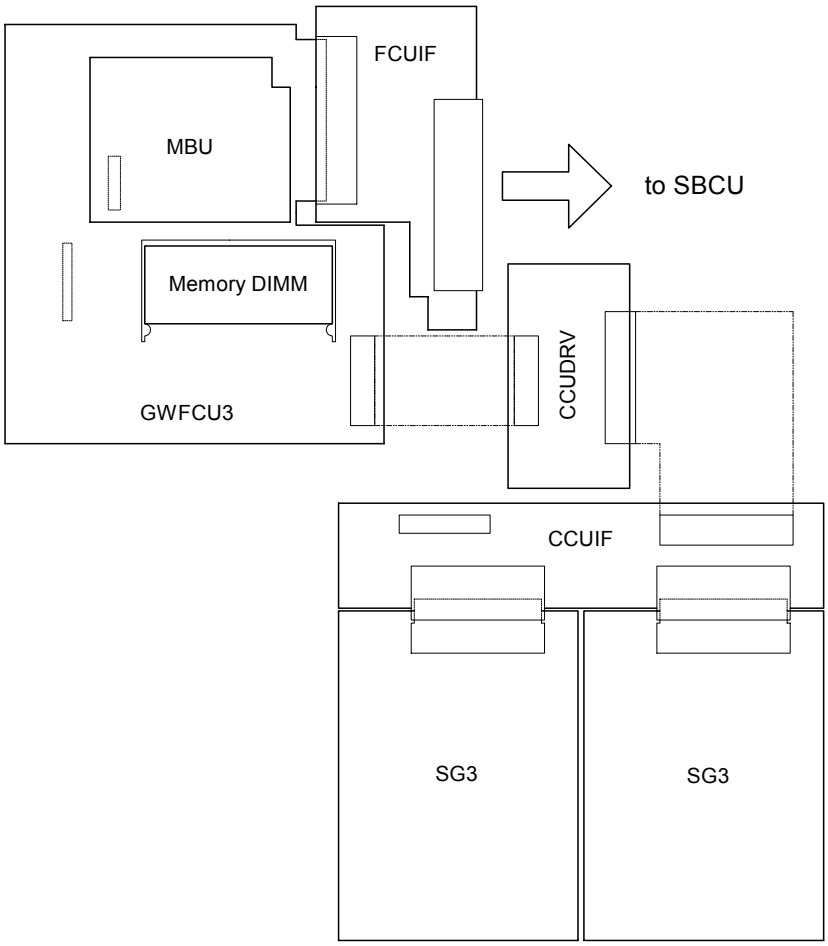
6BEBFE(H) – Dial tone detection frequency – Upper limit (High)
Defaults: NA: 06, EU: 06, ASIA: 06
6BEBFF(H) – Dial tone detection frequency – Upper Limit (Low)
Defaults: NA: 50, EU: 50, ASIA: 50
6BEC00(H) – Dial tone detection frequency – Lower Limit (High)
Defaults: NA: 03, EU: 02, ASIA: 02
6BEC01(H) – Dial tone detection frequency – Lower Limit (Low)
Defaults: NA: 60, EU: 90, ASIA: 90
6BEC02(H) –Dial tone detection waiting time (20 ms)
Defaults: NA: 64, EU 64, ASIA: 64
6BEC03 to 6BEC04 – Dial tone detection monitoring time (20 ms)
Defaults

Area	6BEC03	6BEC04
NA	F4	01
EU	F4	01
ASIA	F4	01

6BEC05(H) – Dial tone detect judge time (20 ms)
Defaults: NA: 64, EU: 1B, ASIA: 32
6BEC06(H) – Dial tone disconnect permission time (20 ms)
Defaults: NA: 11, EU: 0F, ASIA: 11

5. DETAILS

5.1 OVERVIEW



The basic fax unit consists of two PCBs: an FCU and an MBU.

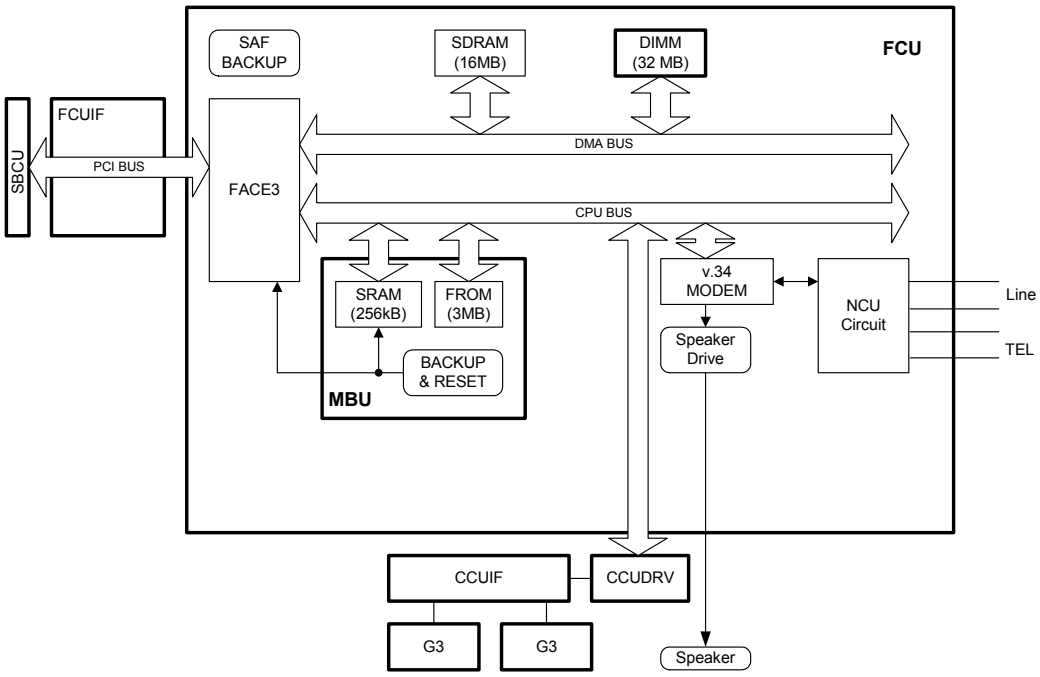
The FCU controls all the fax communications and fax features, in cooperation with the controller board. The MBU contains the ROM and SRAM. Also, the FCU has an NCU circuit.

Fax Options:

1. Extra G3 Interface option: This provides one more analog line interface. This allows full dual access. Two extra G3 interface options can be installed.
2. Memory Expansion: This expands the SAF memory and the page memory (used for image rotation); without this expansion, the page memory is not big enough for image rotation at 400 dpi, so transmission at 400 dpi is not possible.

5.2 BOARDS

5.2.1 FCU



The FCU (Facsimile Control Unit) controls fax communications, the video interface to the base copier's engine, and all the fax options.

FACE3 (Fax Application Control Engine)

- CPU
- Data compression and reconstruction (DCR)
- DMA control
- Clock generation
- DRAM backup control

Modem (FAME)

- V.34, V33, V17, V.29, V.27ter, V.21, and V.8

DRAM

- The 16 MB of DRAM is shared as follows.
  SAF memory : 4MB
  Working memory : 4MB
  Page memory : 8MB
- The SAF memory is backed up by a rechargeable battery.

Memory Back-up

- A Rechargeable battery backs up the SAF memory (DRAM) for 1 hour.

5.2.2 MBU

On this board, the flash ROM contains the FCU firmware, and the SRAM contains the system data and user parameters. Even if the FCU is changed, the system data and user parameters are kept on the MBU board.

ROM

- 3MB flash ROMs for system software storage
  2MB (16bit x 1MB) + 1MB (16bit x 512K)

SRAM

- The 256 KB SRAM for system and user parameter storage is backed up by a lithium battery.

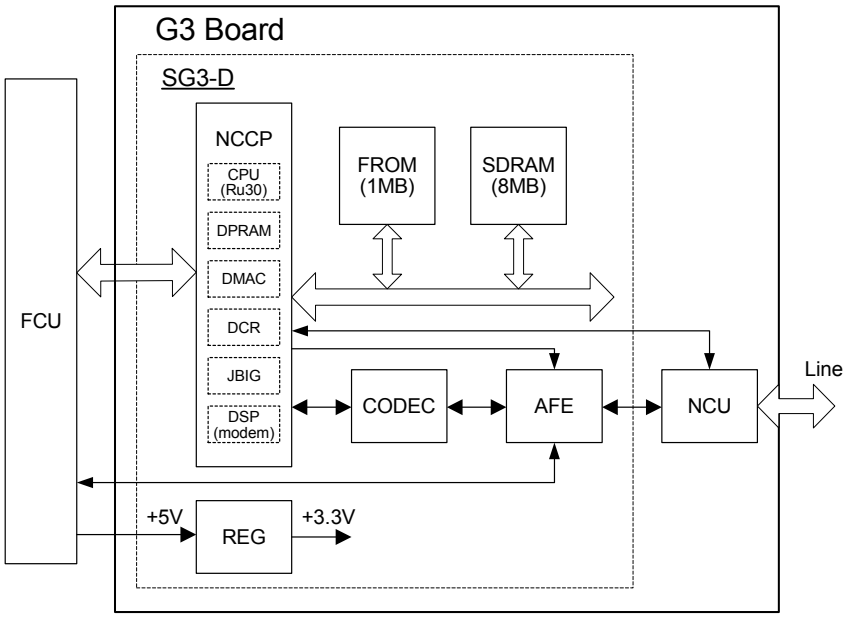
Memory Back-up

- A lithium battery backs up the system parameters and programmed items in the SRAM, in case the base copier's main switch is turned off.

Switches

Item	Description
SW1	Switches the SRAM backup battery on/off.

5.2.3 SG3 BOARD



The SG3 board allows up to three simultaneous communications when used in combination with the FCU and optional G3 boards. The NCU is on the same board as the common SG-3 board. This makes the total board structure smaller. But, the specifications of the SG3 board do not change.

NCCP (New Communication Control Processor)

- Controls the SG3 board.
- CPU (RU30)
- DPRAM (Dual Port RAM): Handshaking with the FCU is done through this block.
- DMA controller
- JBIG
- DSP V34 modem (RL5T892): Includes the DTMF Receiver function
- DCR for MH, MR, MMR, and JBIG compression and decompression

FROM

- 1Mbyte flash ROM for SG3 software storage and modem software storage

SDRAM

- 4Mbyte DRAM shared between ECM buffer, line buffer, and working memory

AFE (Analog Front End)

- Analog processing

CODEC (COder-DECoder)

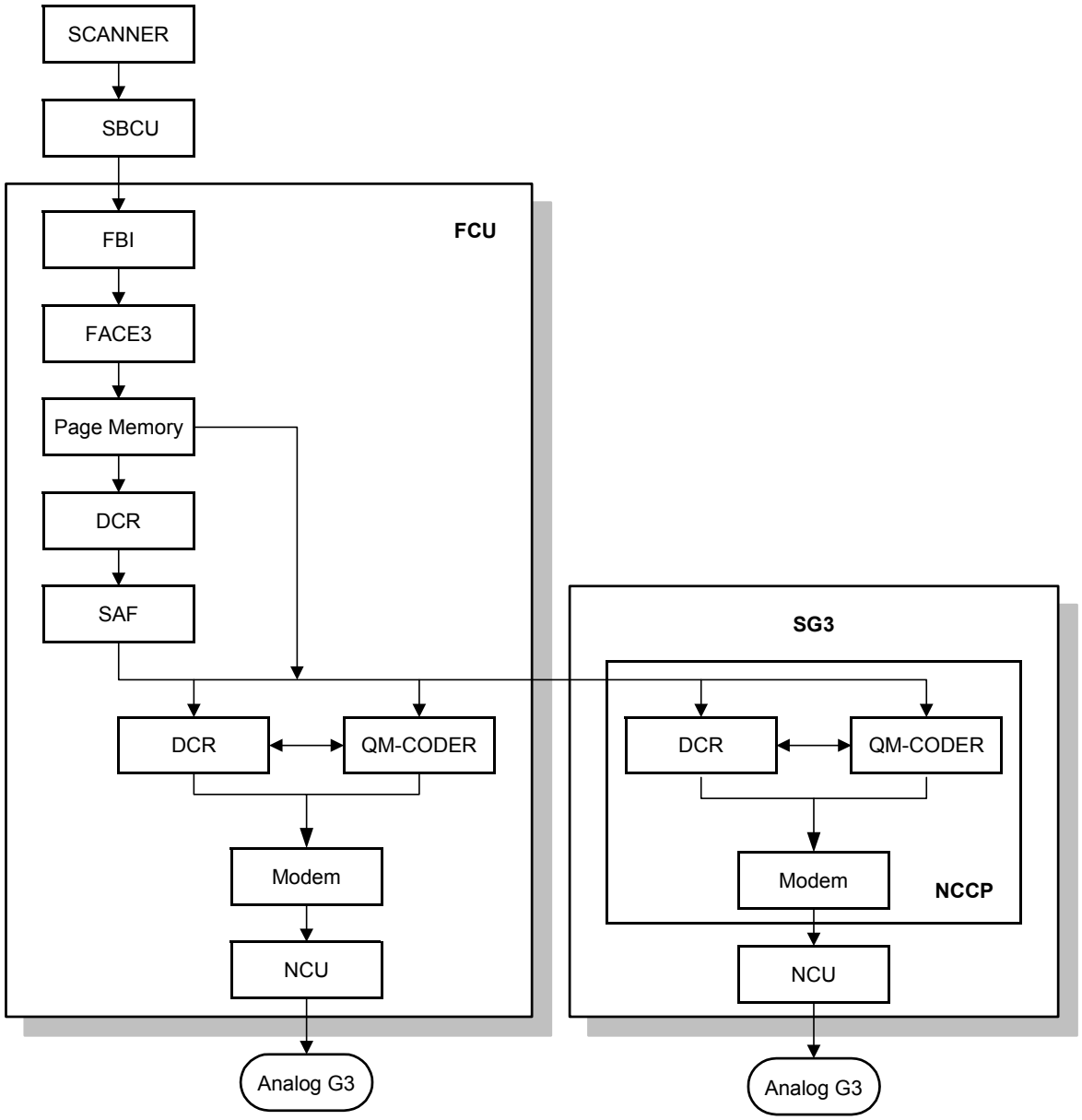
- A/D & D/A conversions for modem

REG

- Generates +3.3 V from the +5V from the FCU

5.3 VIDEO DATA PATH

5.3.1 TRANSMISSION



Memory Transmission and Parallel Memory Transmission

The base copier's scanner scans the original at the selected resolution in inch format. The SBCU processes the data and transfers it to the FCU.

NOTE: When scanning a fax original, the SBCU uses the MTF, independent dot erase 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, 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. The NCU 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 SBCU video processes the data and transfers it to the FCU.

NOTE: When scanning a fax original, the SBCU uses the MTF, independent dot erase 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. The NCU transmits the data to the line.

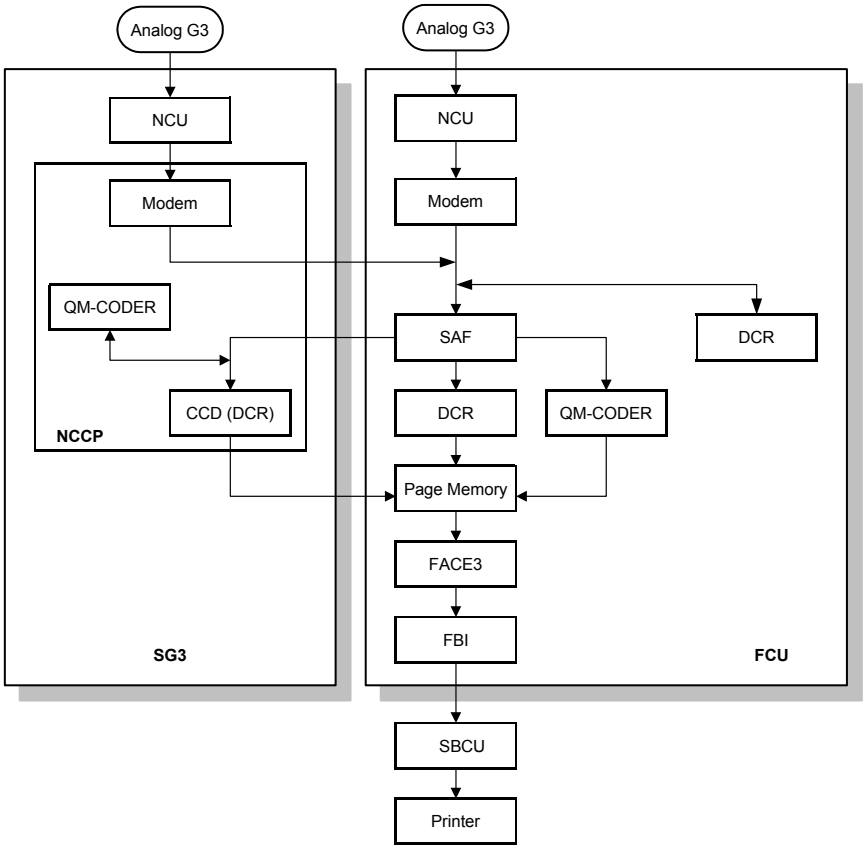
JBIG Transmission

- **Memory transmission:** If the receiver has JBIG compression, the data goes from the DCR to the QM-Coder. Then the NCU 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 QM-Coder. Then the NCU 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

- Priority for the line used for G3 transmissions (PSTN 1/PSTN 2 or 3): System switch 16 bit 1

5.3.2 RECEPTION



First, the FCU stores the incoming data from either an analog line to the SAF memory. (The data goes to the FACE3 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, the image is rotated in the page memory. The data is transferred to the SBCU.

If the optional G3 unit is installed, the line that the message comes in on depends on the telephone number dialled by the other party (the optional G3 unit has a different telephone number from the main fax board).

JBIG Reception

When data compressed with JBIG comes in on PSTN-1 (the standard analog line), the data is sent to the QM-CODER for decompression. Then the data is stored in the page memory, and transferred to the SBCU.

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.

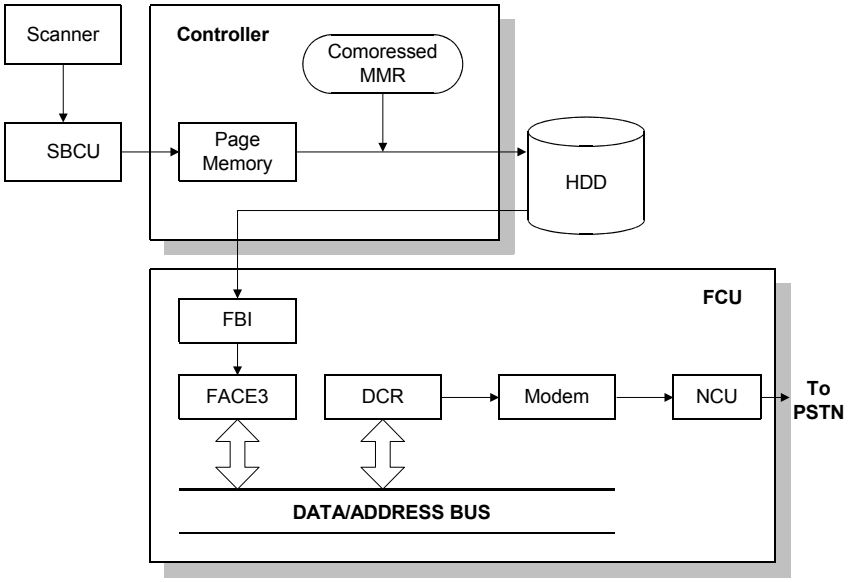
5.4 FAX COMMUNICATION FEATURES

5.4.1 MULTI-PORT

When the optional extra G3 Interface Unit is installed, communication can take place at the same time through the two or three lines at once.

Option	Available Line Type	Available protocol Combinations
Standard only	PSTN	G3
Extra G3 Interface Unit (single)	PSTN + PSTN	G3 + G3
Extra G3 Interface Unit (double)	PSTN + PSTN +PSTN	G3 + G3 +G3

5.4.2 DOCUMENT SERVER



The base copier's scanner scans the original at the selected resolution. The IPU video processes the data and transfers it to the controller board.

Then the controller stores the data in the page memory for the copier function, and compresses the data in MMR (by software) to store it in the HDD. If image rotation will be done, the image is rotated in the page memory before compression.

For transmission, the stored image data is transferred to the FCU. The FCU decompresses the image data, then recompresses and/or reduces the data if necessary for transmission. the NCU transmits the data to the line.

The documents can be stored in the HDD (Document Server) from the fax application. The stored documents in the document sever can be used for the fax transmission in many times. More than one document and the scanned document can be combined into one file and then the file can be transmitted.

- When using the document server, the SAF memory is not used.
- The document is compressed with MMR and stored.
- Up to 9,000 pages can be stored. (1 file: Up to 1,000 pages) from the fax application.
- Only stored documents from the fax application can be transmitted.
- Scanned documents are given a name automatically, such as “FAX001”. But it is possible to change the file name, user name and password.
- Up to 30 files can be selected at once.

NOTE: 1) The compression method of the fax application is different from the copy application. The storing time is longer than the copier storing.
2) When selecting “Print 1st page”, the stored document will be reduced to A4 size.

5.4.3 INTERNET MAIL COMMUNICATION

Mail Transmission

This machine supports T.37 full mode. (ITU-, RFC232). The difference between T.37 simple mode and full mode is as follows.

Function	T.37 Simple Mode	T.37 Full Mode
Resolution	200 x 100 200 x 200	200 x100 200 x 200 200 x 400 400 x 400 (if available)
RX Paper Width	A4	A4, B4, A3
RX Data Compression Method	MH	MH (default), MR, MMR,
Signals	Image data transmission only	Image data transmission, exchange of capability information between the two terminals, and acknowledgement of receipt of fax messages

Data Formats

The scanned data is converted into a TIFF-F formatted file.

The fields of the e-mail and their contents are as follows:

Field	Content
From	Mail address of the sender
Reply To	Destination requested for reply
To	Mail address of the destination
Bcc	Backup mail address
Subject	From CSI or RTI (Fax Message No. xxxx)
Content Type	Multipart/mixed Attached files: image/tiff
Content Transfer Encoding	Base 64, 7-bit, 8-bit, Quoted Printable
Message Body	MIME-converted TIFF-F (MIME standards specify how files are attached to e-mail messages)

Direct SMTP Transmission

Internet Fax documents can be sent directly to their destinations without going through the SMTP server. (Internet Faxes normally transmit via the SMTP server.)

For example:

e-mail address: gts@ricoh.co.jp

SMTP server address: gts.abcd.com

In this case this feature destination e-mail address (gts@ricoh.co.jp) is read as the SMTP server address "gts.abcd.com" and the transmissions bypass the SMTP server.

Selectable Options

These options are available for selection:

- With the default settings, the scan resolution can be either standard or detail. Inch-mm conversion before TX depends on IFAX SW01 Bit 7. Detail resolution will be used if Super Fine resolution is selected, unless Fine resolution is enabled with IFAX SW01.
- The requirements for originals (document size, scan width, and memory capacity) are the same as for G3 fax memory TX.
- The default compression is TIFF-F format.
- IFAX SW00: Acceptable paper widths for sending
- IFAX SW09: Maximum number of attempts to the same destination

Secure Internet Transmission

- **SMTP Authentication**:
  User Tools> System Settings> File Transfer> SMTP Authentication
- **POP Before SMTP**:
  User Tools> System Settings> File Transfer> POP Before SMTP

Mail Reception

This machine supports three types of e-mail reception:

- POP3 (Post Office Protocol Ver. 3.)
- IMAP4 (Internet Messaging Access Protocol)
- SMTP (Simple Mail Transfer Protocol)

For details: Core Technology Manual – Facsimile Processes – Faxing from a PC – Internet/LAN Fax Boards – Mail Reception

POP3/IMAP4 Mail Reception Procedure

The machine automatically picks up e-mail from the server at an interval which is adjustable in the range 2 to 1440 min. in 1-minute steps:
User Tools> System Settings> File Transfer> E-mail Reception Interval

SMTP Reception

- The IFAX must be registered as an SMTP server in the MX record of the DNS server, and the address of the received mail must specify the IFAX.
- Enable SMTP reception:

  User Tools> System Settings> File Transfer> Reception Protocol

  Even if the MX record on the DNS server includes the IFAX, mail cannot be received with SMTP until SMTP reception is enabled:

  However, if SMTP reception is selected and the machine is not registered in the MX record of the DNS server, then either IMAP4 or POP3 is used, depending on the setting:

  User Tools> System Settings> File Transfer> Reception Protocol

Mail Delivery Conditions: Transferring Mail Received With SMTP

1) The machine must be set up for SMTP mail delivery:

   User Tools> Facsimile Features> E-mail Settings> SMTP RX File Delivery Settings
2) If the user wishes to limit this feature so that the machine will only deliver mail from designated senders, the machine's "Auth. E-mail RX" feature must be set (User Tools> Facsimile Features> E-mail Settings> SMTP RX File Delivery Settings).
3) If the "SMTP RX File Delivery Setting" is set to 0 to prohibit SMTP receiving, and if there is mail designated for delivery, then the machine responds with an error. (User Tools> Facsimile Features> E-mail Settings> SMTP RX File Delivery Settings)
4) If the quick dial, speed dial, or group dial entry is incorrect, the mail transmission is lost, and the IFAX issues an error to the SMTP server and outputs an error report.

Auth. E-mail RX

In order to limit access to mail delivery with IFAX, the addresses of senders must be limited using the Access Limit Entry. Only one entry can be registered.

1) Access Limit Entry
   For example, to limit access to @IFAX.ricoh.co.jp:

gts@IFAX.ricoh.co.jp	Matches and is delivered.
gts@IFAX.abcde.co.jp	Does not match and is not delivered.
IFAX@ricoh.co.jp	Does not match and is not delivered.

2) Conditions
   - The length of the Access Limit Entry is limited to 127 characters.
   - If the Access Limit Entry address and the mail address of the incoming mail do not match, the incoming mail is discarded and not delivered, and the SMTP server responds with an error. However, in this case an error report is not output.
   - If the Access Limit Entry address is not registered, and if the incoming mail specifies a delivery destination, then the mail is delivered unconditionally.

Handling Mail Reception Errors

Abnormal files

When an error of this type occurs, the machine stops receiving and commands the server to erase the message. Then the machine prints an error report and sends information about the error by e-mail to the sender address (specified in the “From” or “Reply-to” field of the message). If there is an incomplete received message in the machine memory, it will be erased.

The machine prints an error message when it fails to send the receive error notification after a certain number of attempts.

The following types of files are judged to be abnormal if one or more of the following are detected:

1. Unsupported MIME headers.

   Supported types of MIME header

Header	Supported Types
Content-Type	Multipart/mixed, text/plain, message/rfc822 Image/tiff
Charset	US-ASCII, ISO 8859 X. Other types cannot be handled, and some garbage may appear in the data.
Content-Transfer-Encoding	Base 64, 7-bit, 8-bit, Quoted Printable

2. MIME decoding errors
3. File format not recognized as TIFF-F format
4. Resolution, document size, or compression type cannot be accepted

Remaining SAF capacity error

The machine calls the server but does not receive e-mail if the remaining SAF capacity is less than a certain value (the value depends on IFAX Switch 08. The e-mail will be received when the SAF capacity increases (for example, after substitute reception files have been printed). The error handling method for this type of error is the same as for “Abnormal files”.

If the capacity of the SAF memory drops to zero during reception, the machine operates in the same way as when receiving an abnormal file (refer to “Abnormal files” above).

Secure Internet Reception

To enable password encryption and higher level security:

User Tools> System Settings> File Transfer> POP3/IMAP4 Settings> Encryption (set to “On”)

Transfer Request: Request By Mail

For details: Core Technology Manual – Facsimile Processes – Faxing from a PC – Internet/LAN Fax Boards – Transfer Request

The fields of the e-mail and their contents are as follows:

Field	Content
From	E-mail address of the requesting terminal
To	Destination address (Transfer Station address)
Bcc	Backup mail address
Subject	From TSI (Fax Message No. xxxx)
Content-Type	Multipart/mixed Text/Plain (for a text part), image/tiff (for attached files)
Content-Transfer-Encoding	Base 64, 7-Bit, 8-bit, Quoted Printable
Mail body (text part)	RELAY-ID-: xxxx (xxxx: 4 digits for an ID code) RELAY: #01#*X#**01….
Message body	MIME-converted TIFF-F.

E-Mail Options (Sub TX Mode)

The following features are available as options for mail sending: entering a subject, designating the level of importance, confirming reception of the mail.

Subject and Level of Importance

You can enter a subject message with: Sub TX Mode> E-mail Options

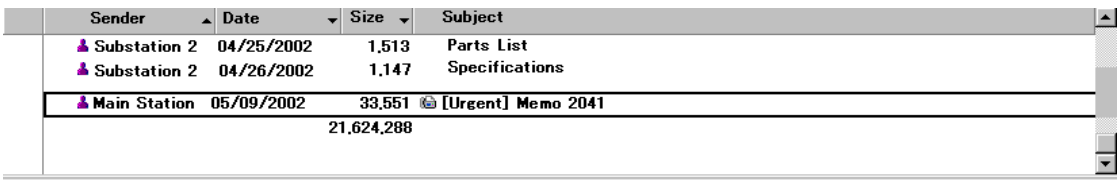
The Subject entry for the mail being sent is limited to 64 characters. The subject can also be prefixed with an “Urgent” or “High” notation.

How the Subject Differs According to Mail Type

<table>
<tr><th>Mail Type</th><th>①</th><th colspan="2">②</th><th>③</th></tr>
<tr><td>Subject Entry</td><td>---</td><td colspan="2">Entry Condition</td><td rowspan="5">Fax Message No.
+
File No.</td></tr>
<tr><td rowspan="4">No Subject Entry</td><td rowspan="4"></td><td colspan="2">1. “CSI” (“RTI”)</td></tr>
<tr><td>2. “RTI”</td><td>CSI not registered</td></tr>
<tr><td>3. “CSI”</td><td>RTI not registered</td></tr>
<tr><td>4. None</td><td>CSI, RTI not registered</td></tr>
<tr><td rowspan="4">Confirmation of Reception</td><td rowspan="4">From</td><td colspan="2">1. “CSI” (“RTI”)</td><td rowspan="2">Normal:
Return Receipt (dispatched).
You can select “displayed” with IFAX SW02 Bits 2 and 3.</td></tr>
<tr><td>2. “RTI”</td><td>CSI not registered</td></tr>
<tr><td>3. “CSI”</td><td>RTI not registered</td><td rowspan="2">Error:
Return Receipt (processed/error)</td></tr>
<tr><td>4. None</td><td>CSI, RTI not registered</td></tr>
<tr><td rowspan="4">Mail delivery, memory transfer, SMTP receiving and delivery</td><td rowspan="4">From</td><td>RTI or CSI of the station designated for delivery</td><td>Mail delivery</td><td rowspan="4">Fax Message No. + File Number</td></tr>
<tr><td>RTI or CSI of sender</td><td>Mail sending from G3 memory</td></tr>
<tr><td>Mail address of sender</td><td>Memory sending</td></tr>
<tr><td>Mail address of sender</td><td>SMTP receiving and delivery (Off Ramp Gateway)</td></tr>
<tr><td>Mail error notification</td><td>---</td><td colspan="3">Error Message No. xxxx From CSI (RTI)</td></tr>
</table>

Items ① ② ③ of the table above are in the Subject.

Subjects Displayed on the PC



E-mail Messages

After entering the subject, you can enter a message with:

Sub TX Mode> E-mail Options

An e-mail message (up to 5 lines) can be pre-registered with:

User Tools> System Settings> File Transfer> Program/Change/Delete E-mail Message

Limitations on Entries

Item	Maximum
Number of Lines	5 lines
Line Length	80 characters
Name Length	20 characters

Message Disposition Notification (MDN)

For details: Core Technology Manual – Facsimile Processes – Faxing from a PC – Internet/LAN Fax Boards – E-mail Options

The network system administrator can confirm whether a sent mail has been received correctly or not. This confirmation is done in four steps.

1. Send request for confirmation of mail reception. To enable or disable this request (known as MDN):
   Sub TX Mode> E-mail Options
2. Mail reception (receive confirmation request)
3. Send confirmation of mail reception
4. Receive confirmation of mail reception

The other party's machine will not respond to the request unless the two conditions below are met:

- The other party's machine must be set up to respond to the confirmation request.
- The other party's machine must support MDN (Message Disposition Notification).

- Setting up the Receiving Party -

The receiving party will respond to the confirmation request if:

1) The "Disposition Notification To" field is in the received mail header (automatically inserted in the 4th line in the upper table on the previous page, if MDN is enabled), and
2) Sending the disposition notification must be enabled (User Parameter Setting SW21 (15 [H]) Bit 1 for this model). The content of the response is as follows:

Normal reception:	"Return Receipt (dispatched)" in the Subject line
IFAX SW02 (Bit 2, 3)	"Return Receipt (displayed)" in the Subject line
Error:	"Return Receipt (processed/error)" in the Subject line

Handling Reports

1. Sending a Request for a Return Receipt by Mail

   After the mail sender transmits a request for a return receipt, the mail sender's journal is annotated with two hyphens (--) in the Result column and a "Q" in the Mode column.

2. Mail Receipt (Request for Receipt Confirmation) and Sending Mail Receipt Response

   After the mail receiver sends a response to the request for a return receipt, the mail receiver's journal is annotated with two hyphens (--) in the Result column and an "A" in the Mode column.

3. Receiving the Return Receipt Mail
   - After the mail sender receives a return receipt, the information in the mail sender's journal about the receipt request is replaced, i.e. the journal is annotated with "OK" in the Result column.
   - When the return receipt reports an error, the journal is annotated with an "E" in the Result column.
   - The arrival of the return receipt is not recorded in the journal as a separate communication. Its arrival is only reported by the presence of "OK" or "E" in the Result column.
   - If the mail address used by the sender specifies a mailing list (i.e., a Group destination; the machine sends the mail to more than one location. See "How to set up Mail Delivery"), the Result column of the Journal is updated every time a return receipt is received. For example, if the mailing list was to 5 destinations, the Result column indicates the result of the communication with the 5th destination only. The results of the communications to the first 4 destinations are not shown.
     Exceptions:
     If one of the communications had an error, the Result column will indicate E, even if subsequent communications were OK.
     If two of the communications had an error, the Journal will indicate the destination for the first error only.

Report Sample

DATE	TIME	ADDRESS	MODE	TIME	PAGE	RESULT
MAY. 5	10:15	fuser_01@dom1g. ricoh. co.	Mail SM	0'09"	2	--
	10:16	fuser_01@dom1g. ricoh. co.	Mail SMQ	0'05"	1	--
	10:17	s_tadashi@dom1g. ricoh. co.	Mail SMQ	0'09"	2	OK
	10:19	m_masataka@dom1g. ricoh. co.	Mail SMA	0'05"	1	--

5.5 IP-FAX

What is IP-FAX?

For details: Core Technology Manual – Facsimile Processes – Faxing from a PC – Internet/LAN Fax Boards – IP-FAX

T.38 Packet Format

TCP is selected by default for this machine, but you can change this to UDP with IPFAX SW 00 Bit 1.

UDP Related Switches

IP-Fax Switch 01		
No.	**FUNCTION**	**COMMENTS**
0-3	Select IP FAX Delay Level Bit 3 2 1 0 Setting 0 0 0 0 Level 0 0 0 0 1 Level 1 0 0 1 0 Level 2 0 0 1 1 Level 3	Raise the level by selecting a higher setting if too many transmission errors are occurring on the network. If TCP/UDP is enabled on the network, raise this setting on the T.30 machine. Increasing the delay time allows the recovery of more lost packets. If only UDP is enabled, increase the number of redundant packets. Level 1~2: 3 Redundant packets Level 3: 4 Redundant packets

Settings

User parameter switch 34 (22[H]), bit 0
IP-Fax Gate Keeper usage 0: No, 1: Yes

IP Fax Switches: Various IP-FAX settings (see the bit switch table)

6. SPECIFICATIONS

6.1 GENERAL SPECIFICATIONS

Type:	Desktop type transceiver
Circuit:	PSTN (max. 3ch.) PABX
Connection:	Direct couple
Original Size:	Book (Face down) Maximum Length: 432 mm [17 ins] Maximum Width: 297 mm [11.7 ins] ARDF (Face up) (Single-sided document) Length: 128 - 1200 mm [5.0 - 47.2 ins] Width: 105 - 297 mm [4.1 - 11.7 inch] (Double-sided document) Length: 128 - 432 mm [5.0 - 17 inch] Width: 105 - 297 mm [4.1 - 11.7 inch]
Scanning Method:	Flat bed, with CCD
Resolution:	G3 8 x 3.85 lines/mm (Standard) 8 x 7.7 lines/mm (Detail) 8 x 15.4 line/mm (Fine) Note1 16 x15.4 line/mm (Super Fine) See Note 1 200 x 100 dpi (Standard) 200 x 200 dpi (Detail) 400 x 400 dpi (Super Fine) See Note 1 **NOTE:** 1. Optional Expansion Memory required
Transmission Time:	G3: 3 s at 28800 bps; Measured with G3 ECM using memory for an ITU-T #1 test document (Slerexe letter) at standard resolution
Data Compression:	MH, MR, MMR JBIG
Protocol:	Group 3 with ECM
Modulation:	V.34, V.33, V.17 (TCM), V.29 (QAM), V.27ter (PHM), V.8, V.21 (FM)
Data Rate:	G3: 33600/31200/28800/26400/24000/21600/ 19200/16800/14400/12000/9600/7200/4800/2400 bps Automatic fallback
I/O Rate:	With ECM: 0 ms/line Without ECM: 2.5, 5, 10, 20, or 40 ms/line

Memory Capacity: ECM: 128 KB

SAF
Standard: 4 MB
With optional Expansion Memory: 28 MB (4 MB+ 24 MB)

Page Memory
Standard: 4 MB (Print: 2 MB + Scanner: 2 MB)
With optional Expansion Memory: 12 MB (4 MB + 8 MB)
(Print 8 MB + Scanner: 4 MB)

6.2 CAPABILITIES OF PROGRAMMABLE ITEMS

The following table shows how the capabilities of each programmable item will change after the optional Fax Function Upgrade Unit is installed.

Item	Standard
Quick Dial	2000
Groups	100
Destination per Group	500
Destinations dialed from the ten-key pad overall	500
Programs	100
Auto Document	6
Communication records for Journal stored in the memory	200
Specific Senders	30

The following table shows how the capabilities of the document memory will change after the optional Fax Function Upgrade Unit and the Expansion Memory are installed.

	Without the Expansion Memory	With the Expansion Memory
Memory Transmission file	400	400
Maximum number of page for memory transmission	1000	1000
Memory capacity for memory transmission (☛ Note1)	320	2240

NOTE: Measured using an ITU-T #1 test document (Slerexe letter) at the standard resolution, the auto image density mode and the Text mode.

6.3 IFAX SPECIFICATIONS

Connectivity

Local area network
Ethernet 100base-Tx/10base-T
IEEE1394 (IP over 1394)
IEEE802.11b (wireless LAN)

Resolution

Main scan: 400 dpi, 200 dpi
Sub scan: 400 dpi, 200 dpi, 100 dpi

NOTE: To use 400 dpi, IFAX SW01 Bit 4 must be set to “1”.

Transmission Time

1 s (through a LAN to the server)
Condition: ITU-T #1 test document (Selerexe Letter)
MTF correction: OFF
TTI: None
Resolution: 200 x 100 dpi
Communication speed: 10 Mbps
Correspondent device: E-mail server
Line conditions: No terminal access

Document Size

Maximum message width is A4/LT.
Note: To use B4 and A3 width, IFAX SW00 Bit 1 (B4) and/or Bit 2 (A3) must be set to “1”.

E-mail File Format

Single/multi-part
MIME conversion
Image: TIFF-F (MH, MR, MMR)

Protocol

Transmission:
SMTP, TCP/IP
Reception:
POP3, SMTP, IMAP4, TCP/IP

Data rate

100 Mbps(100base-Tx)
10 Mbps (10base-T)

Authentication method

SMTP-AUTH
POP before SMTP
A-POP

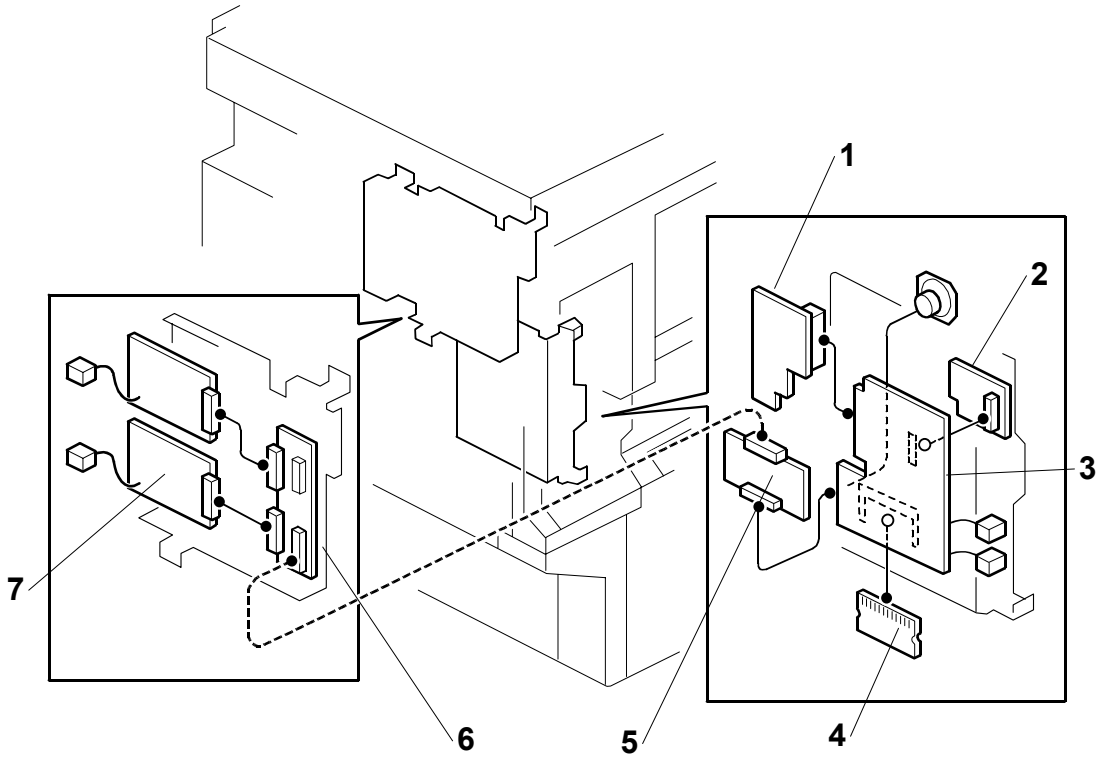
Remark

The machine must be set up as an e-mail client before installation. Any client PCs connected to the machine through a LAN must also be e-mail clients, or some features will not work (e.g. Autorouting).

6.4 IP-FAX SPECIFICATIONS

Network:	LAN: Local Area Network Ethernet/10base-T, 100base-TX, IEEE1394 (IP over 1394), IEEE802.11b (wireless LAN)
Scan line density:	8 x 3.85 lines/mm, 200x100dpi (standard character), 8 x 7.7lines/mm, 200x200dpi (detail character), 8 x 15.4lines/mm (fine character: optional expansion memory required), 16 x 15.4lines/mm, 400x400dpi (super fine character: optional expansion memory required)
Original size:	Maximum A3 or 11"x 17" (DLT)
Maximum scanning size:	Standard: A3, 297mm x 432mm Irregular: 297mm x 1200mm
Transmission protocol:	Recommended: T.38 Annex protocol, TCP, UDP/IP communication
Compatible machines:	IP-Fax compatible machines
IP-Fax transmission function:	Specify IP address and send fax to an IP-Fax compatible fax through a network. Also capable of sending fax from a G3 fax connected to the public telephone lines via a VoIP gateway.
IP-Fax reception function:	Receive a fax sent from an IP-Fax compatible fax through a network. Also capable of receiving fax from a G3 fax connected the public telephone lines via a VoIP gateway.

6.5 FAX UNIT CONFIGURATION



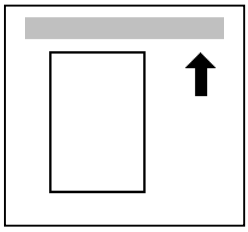
Component	Code	No.	Remarks
FCU	B766	3	Included with fax unit
MBU		2	
FCU Interface		1	
CCU Drive Board	B768	5	Included with optional G3 unit.
Interface Board		6	
G3 Board		7	
Expansion Memory	G578	4	Common with B180.
Handset Type 1018	B433		USA only. Common with B180
Marker Type 30	H903		Refill for stamp ink.

PRINTER/SCANNER OPTION
B767
PRINTER OPTION
B846

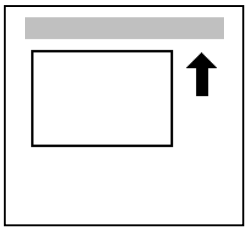
Conventions Used in this Manual

This manual uses several symbols.

Symbol	What it means
☛	Refer to section number
CT	See Core Tech Manual for details
	Screw
	Connector
	E-ring
	Clip ring
	Clamp



Lengthwise, SEF
(Short Edge Feed)



Sideways, LEF
(Long Edge Feed)

Cautions, Notes, etc.

The following headings provide special information:

⚠WARNING

FAILURE TO OBEY WARNING INFORMATION COULD RESULT IN SERIOUS INJURY OR DEATH.

⚠CAUTION

Obey these guidelines to ensure safe operation and prevent minor injuries.

Important

- Obey these guidelines to avoid problems such as misfeeds, damage to originals, loss of valuable data and to prevent damage to the machine.

IMPORTANT

- **ALWAYS OBEY THESE GUIDELINES TO AVOID SERIOUS PROBLEMS SUCH AS MISFEEDS, DAMAGE TO ORIGINALS, LOSS OF VALUABLE DATA AND TO PREVENT DAMAGE TO THE MACHINE. BOLD IS ADDED FOR EMPHASIS.**

NOTE: This information provides tips and advice about how to best service the machine.

B767/B846

TABLE OF CONTENTS

1. INSTALLATION 1
1.1 OVERVIEW 1
Board, SD Card Slots 1
Board Slots 2
1.2 MERGING APPLICATIONS ON ONE SD CARD 3
1.2.1 OVERVIEW 3
1.2.2 MERGING APPLICATIONS 4
1.2.3 UNDO EXEC 5
1.3 INSTALLING CONTROLLER OPTIONS 6
1.3.1 P/S UNIT (B767), P UNIT (B846), 256 MB MEMORY (G818) 6
Accessories 6
Printer/Scanner Installation 7
1.3.2 IEEE 1284 INTERFACE BOARD (B679) 11
1.3.3 IEEE 1394 INTERFACE BOARD (B581) 12
1.3.4 IEEE 802.11B INTERFACE KIT (G813) 14
1.3.5 BLUETOOTH UNIT (B736) 17
1.3.6 POSTSCRIPT 3 UNIT (B757) 18
1.3.7 FILE FORMAT CONVERTER (B609) 19
1.4 CHECK ALL CONNECTIONS 20

2. DETAILS 21
2.1 OVERVIEW 21

3. SERVICE TABLES 22
3.1 PRINTER SERVICE TABLE 22
3.2 SCANNER SERVICE TABLE 23

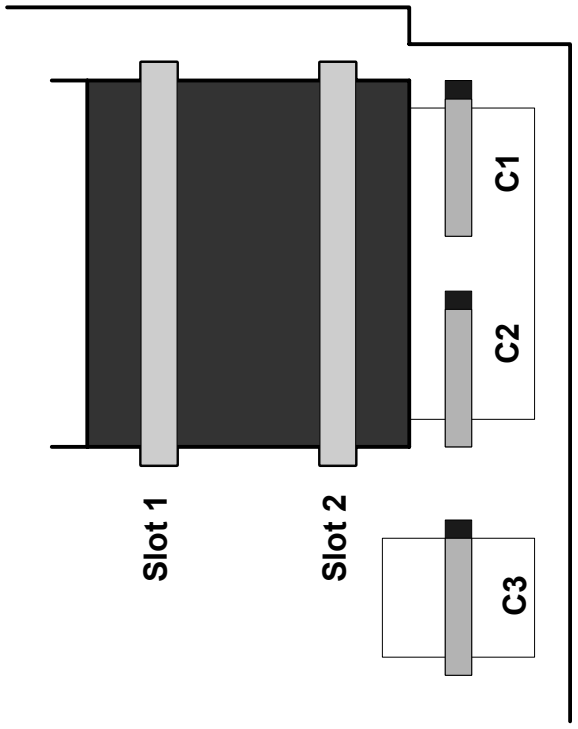
4. SPECIFICATIONS 24
4.1 SYSTEM COMPONENTS 24
4.2 SPECIFICATIONS 25
4.2.1 PRINTER CONTROLLER (GENERAL) 25
4.2.2 USB SPECIFICATIONS 26
4.2.3 IEEE 802.11B SPECIFICATIONS 26
4.2.4 IEEE 1394 SPECIFICATIONS 26
4.2.5 BLUETOOTH SPECIFICATIONS 26
4.2.6 SCANNER SPECIFICATIONS 27
4.2.7 SOFTWARE ACCESSORIES 27
PRINTER 24
PRINTER DRIVERS 27
SCANNER 28

1. INSTALLATION

1.1 OVERVIEW

Board, SD Card Slots

The machine controller box has two board slots and three SD card slots. Make sure that each board and SD card is put in the correct slot.



The names of the slots for the boards and SD cards are embossed on the face of the controller plate.

Slot 1, Slot 2

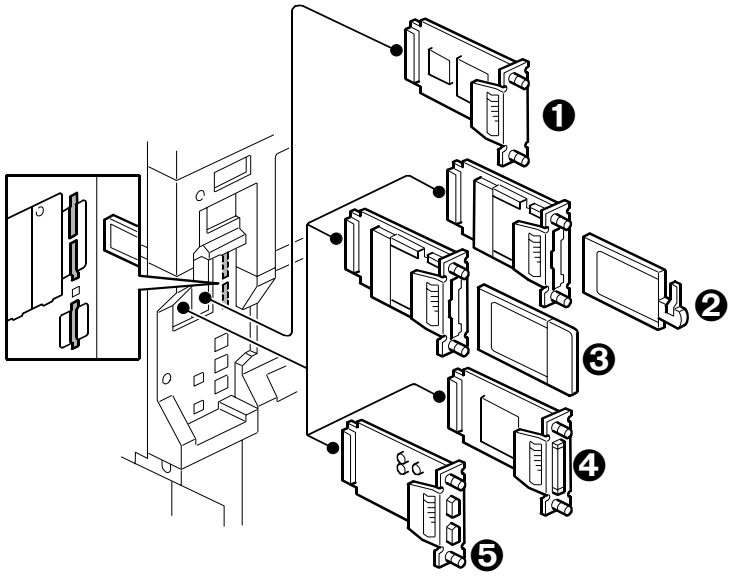
The optional boards are inserted here (see the next page).

SD Card Slots

C1	Printer/Scanner B767, or Printer Option B846. The printer/scanner option or printer option also requires installation of the 256 MB memory.
C2	PostScript3 B757 or Data Overwrite Security B770. The DOS option can be moved to the PostScript SD card if both options will be used.
C3	Service slot for firmware version updates, moving applications to other SD cards, and downloading/uploading NVRAM contents.

Board Slots

Two slots are available for the following boards:



Slot	Board
1 or 2	❶ File Format Converter B609 (MLB)
1 or 2	❷ Bluetooth Interface Unit B736*[1]
1 or 2	❸ IEEE802.11b G813 – Wireless LAN*[1]
1 or 2	❹ IEEE1284 Interface Board B679 – Centronics*[1]
1 or 2	❺ IEEE1394 Interface Board B581 – FireWire*[1]

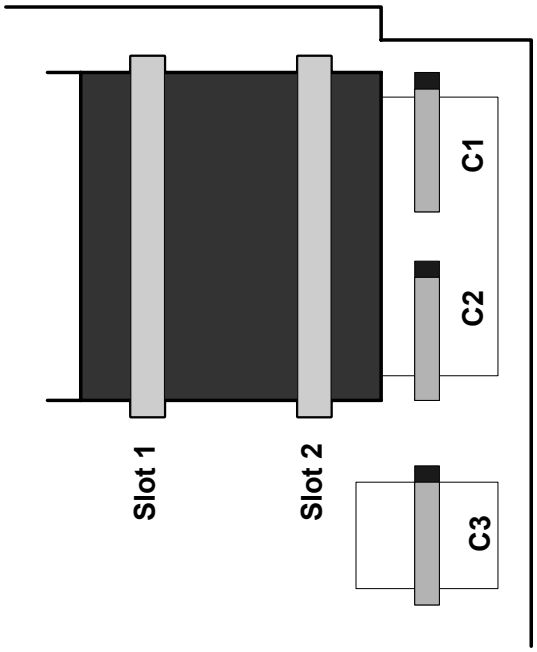
*[1] Only one of these boards can be installed at one time.

1.2 MERGING APPLICATIONS ON ONE SD CARD

1.2.1 OVERVIEW

The machine has three SD card slots:

- **C1** is for the printer/scanner option only.
- **C2** is for the PostScript3 or the Data Overwrite Security SD card. If both options must be installed, the DOS application must be moved to the PS3 SD card.
- **C3** is used for servicing only. Otherwise, this slot should always be empty.



Important

- The data necessary for authentication is transferred with the application program to the target SD card.
- Do not use an SD card if it was used with a computer before this time. Correct operation is not guaranteed if this type of SD card is used.
- The SD card is the only evidence that the customer is licensed to use the application program. The service technician may occasionally need to check the SD card and its data to solve problems. SD cards must be stored in a safe location at the work site.
- A licensing agreement prohibits copying of the PostScript SD card. However, you can copy an application from another SD card to the PS SD card.
- If an SD card was used to combine applications on that card, that SD card cannot be used for a different function.

1.2.2 MERGING APPLICATIONS

Do this procedure to put more than one application on one SD card.

This procedure shows you how to move the DOS application to the PS3 SD card.

1. Turn off the copier.
2. Remove the SD card slot cover (☞ x2).
3. Put the Source (DOS) SD card in **C3**. This card contains the application that you want to copy.
   NOTE: The PS SD card cannot be the source card because it cannot be copied.
4. Put the Target (PS3) SD card in **C2**. The application on the card in **C3** will be copied to this card.
5. Open the front door.
6. Turn the copier on.
7. Go into the SP mode and select **SP5873 001**.
8. Touch "Execute".
9. Read the instructions on the display and touch "Execute" to start copying.
10. When the display tells you copying is completed, touch "Exit".
11. Turn the copier off.
12. Remove the Source SD card from **C3**. Keep the target SD card in **C2**.
13. Turn the copier on.
14. Go into the User Tools mode and check that all the applications on the SD card in **C2** are enabled:
    User Tools> System Settings> Administrator Tools> Firmware Version> Next
15. Turn the copier off again, then:
    - Attach the SD card slot cover.
    - Attach the rear cover of the machine.

Important!

- After an SD card is copied, it cannot be used. But it must be kept by the customer, to serve as proof of purchase by the customer.
- The original card can also be used to perform an undo procedure (SP 5873 002). Before you store the card in a safe place, label it carefully so that you can identify it easily if you need to do the undo procedure (see the next page).

1.2.3 UNDO EXEC

1. Turn the main switch off.
2. Put the SD card with the merged applications in **C2**.
3. Put the original destination SD card (the one that is kept by the customer) into **C3**.
   NOTE: The SD card in **C3** must be the original SD card for the application you want to move from **C2** to **C3**. You cannot use a different blank SD card in **C3**.
4. Turn the main switch on.
5. Go into the SP mode and do **SP5873-002** (Undo Exec).
6. Follow the messages on the operation panel to complete the procedure.
7. Turn the main switch off.
8. Remove the SD cards from the slots.
9. Turn the main switch on.

1.3 INSTALLING CONTROLLER OPTIONS

1.3.1 P/S UNIT (B767), P UNIT (B846), 256 MB MEMORY (G818)

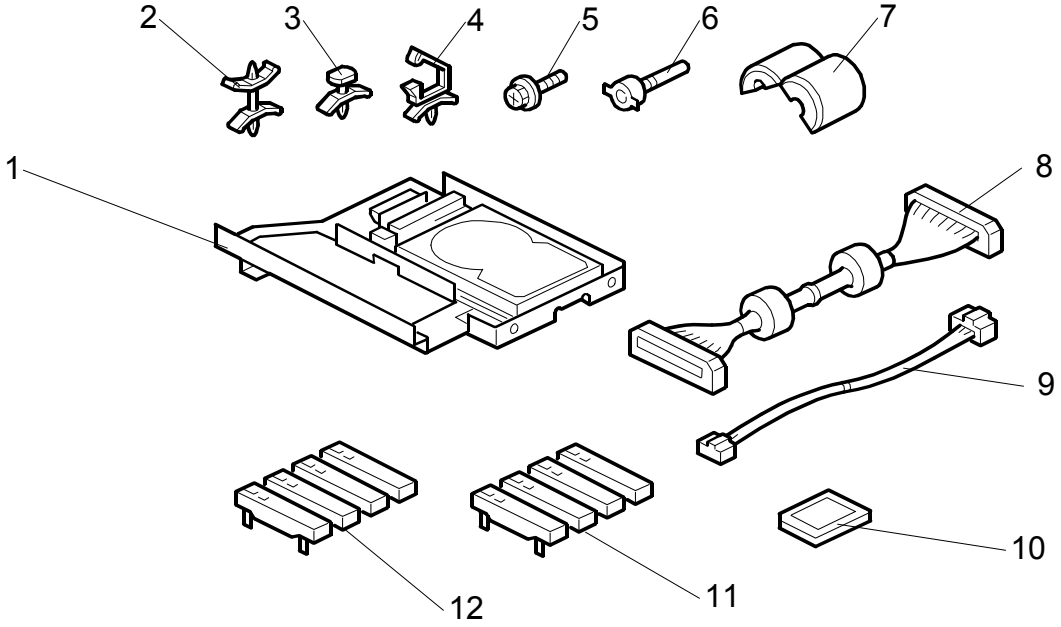
Accessories

Check the accessories and their quantities against the following list:

Description	Q'ty
1. HDD	1
2. Standoff (double)	1
3. Standoff (single)	1
4. Harness Clamps	1
5. Screws	2
6. Stamp Cartridge*1	1
7. Ferrite Core	1
8. HDD Harness	1
9. AC Harness	1
10. Printer/scanner SD card, or P SD Card	1
11. NA Keytop Set*2	1
12. EU Keytop Set*2	1

*1 Not provided with the Printer Unit (B846).
*2 Only scanner keytop set is not used for the Printer Unit (B846)

NOTE: The Optional Memory (G818) is required for both Printer/Scanner Unit (B767) and the Printer Unit (B846)

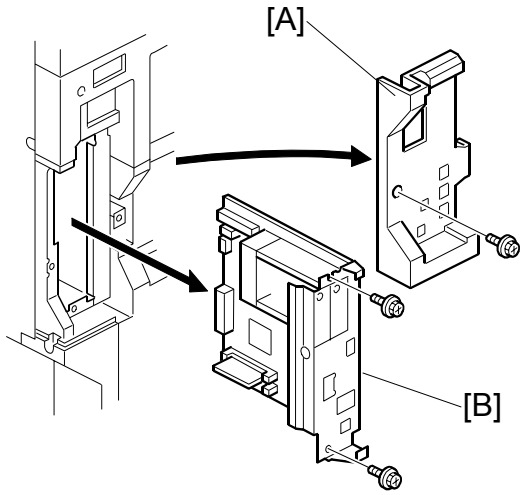


Printer/Scanner Installation

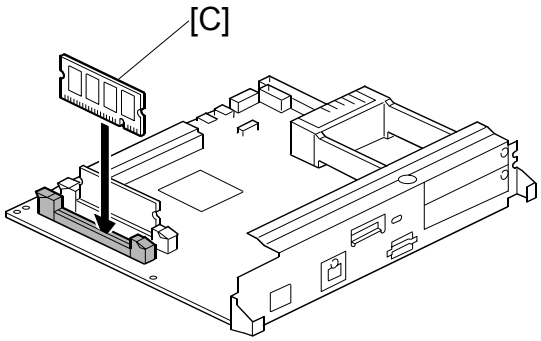
⚠CAUTION

TURN OFF THE MAIN POWER SWITCH AND DISCONNECT THE POWER SUPPLY CORD.

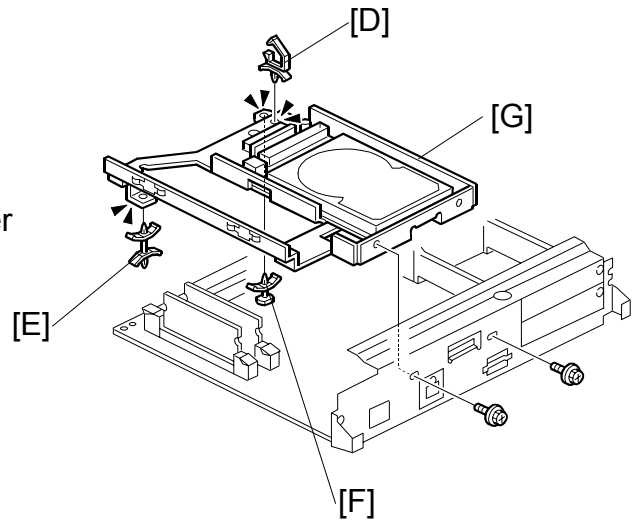
1. Remove cover [A] (🔩 x1).
2. Remove controller board [B] (🔩 x1).



3. Install the 256 MB memory DIMM [C].

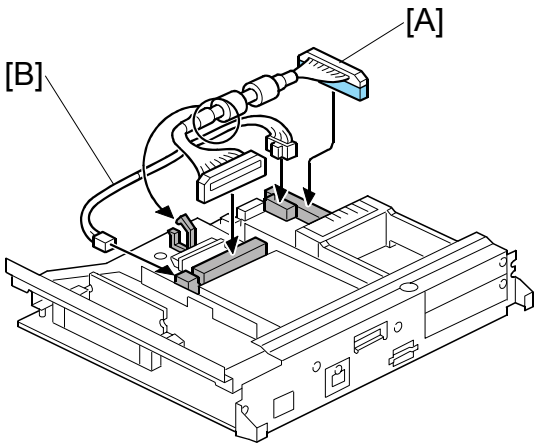


4. Attach:
   - Harness clamp [D]
   - Double standoff [E]
   - Single standoff [F]
5. Attach the HDD [G] to the controller board (🔩 x2).

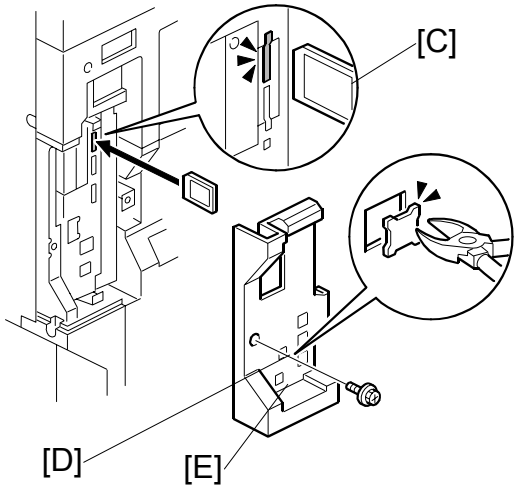


6. Connect the HDD harness [A] (x2).
7. Connect the AC harness [B] (x2, x1)

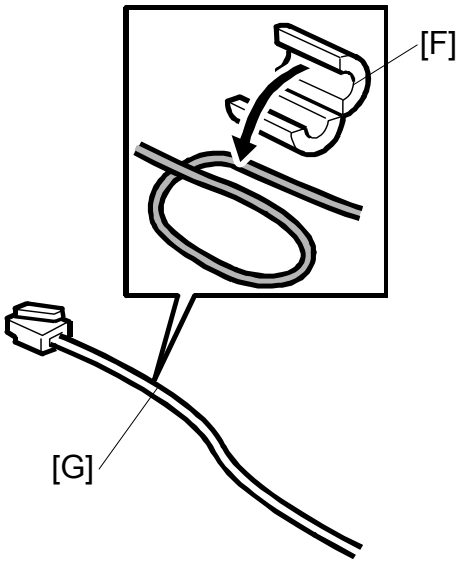
   NOTE: Close the harness clamp around both cables.
8. Reinstall the controller board.



9. Insert the Printer/Scanner SD card [C] in SD card slot **C1.**
10. Remove the "USB" knockout [D] and "NIC" knockout [E].
11. Reattach the application cover.



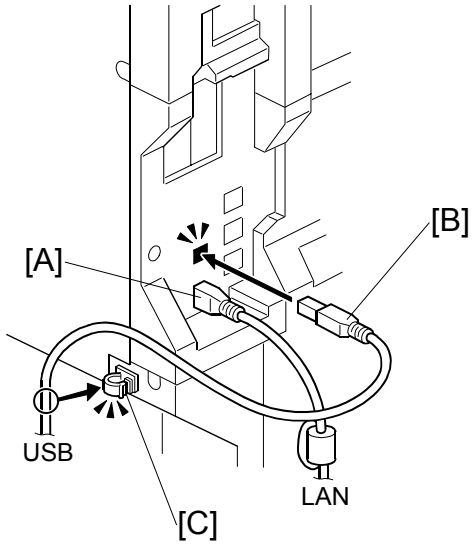
12. Attach the ferrite core [F] to the LAN cable [G].



13. Connect the LAN cable [A] to the "NIC" connection.
14. Connect the USB cable [B] to the "USB" connection.

North America Only

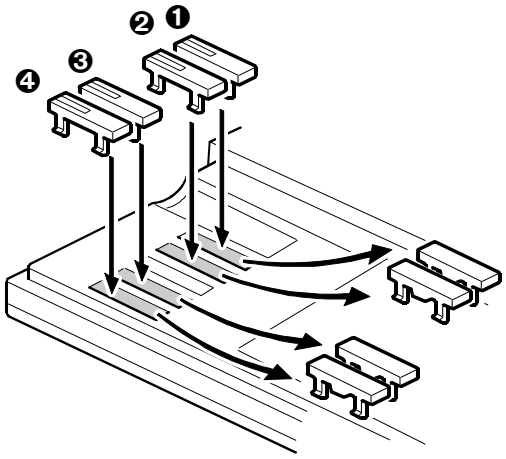
15. Open the clamp [C] and close it around the USB cable.



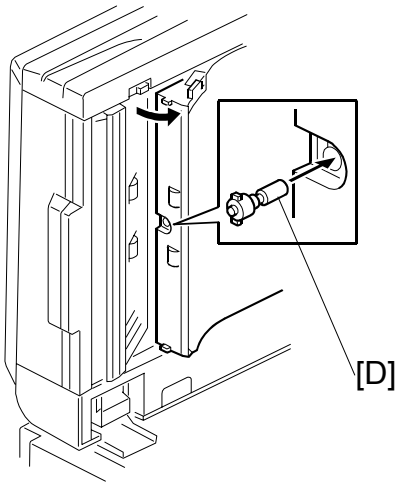
16. Remove the 1st, 2nd, 4th, and 5th blank key tops.

    NOTE: The 3rd blank keytop from the top is reserved for the "Fax" keytop. Do not remove it at this time.

17. Replace the blank keytops:
    ❶ Copy
    ❷ Document Server
    ❸ Printer
    ❹ Scanner (P/S Unit only)



18. Attach the stamp cartridge [D] if the ARDF is installed. (P/S Unit only)



19. Connect the machine's power cord and turn the main power switch on.
20. Enable the network and USB functions.

    Important: The NIB and USB functions must be enabled with SP5985. These functions are built into the controller.

    - To enable the Ethernet function, enter the SP mode and set SP5985-001 (On Board NIC) to "1" (Enable).
    - To enable the USB function, enter the SP mode and set SP5985-002 (On Board USB) to "1" (Enable).
21. If there was no HDD in the machine before you installed the printer/scanner unit or printer unit, do **SP5846 41** to let the user get access to the address book.

    Important
    - This SP must be done immediately after installation of an HDD unit in a machine that previously had no HDD.
    - The first time the machine power is turned on with the new HDD installed, the system automatically takes the address book from the NVRAM and writes it on the new HDD. But, only the system administrator can get access to the new address book on the HDD at this time.
    - If you do **SP5846 41** immediately after power on, then all users can use the address book.

    NOTE: It is not necessary to format the new hard disk after installation.
22. If there was no HDD in the machine before you installed the printer/scanner unit or printer unit, do **SP5853** to copy the preset stamp data to the hard disk. Then turn the main power switch off/on.

1.3.2 IEEE 1284 INTERFACE BOARD (B679)

Accessories

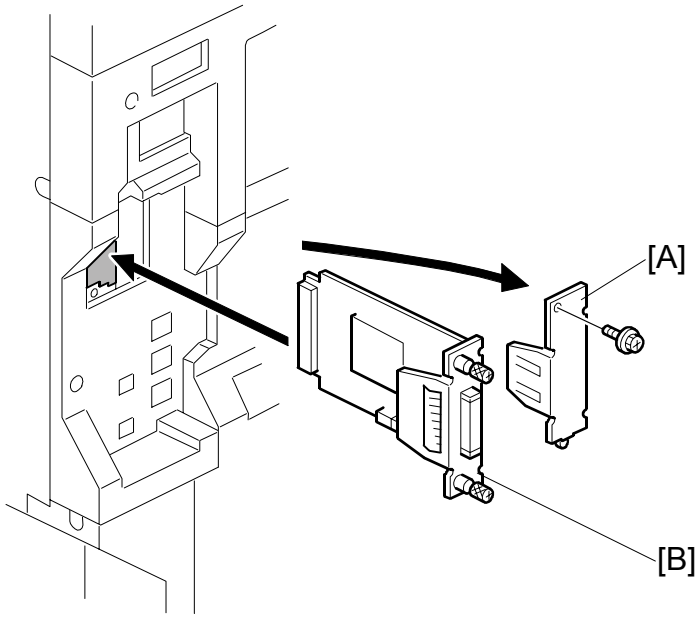
Check the accessories and their quantities against the following list:

Description	Q'ty
1. IEEE 1284 Interface Board B679	1

⚠CAUTION

TURN OFF THE MAIN POWER SWITCH AND DISCONNECT THE POWER SUPPLY CORD.

NOTE: You can only install one of these network interfaces: IEEE 802.11b (Wireless LAN), IEEE1284 (Parallel/Centronics), IEEE1394 (FireWire), Bluetooth.



1. Remove the cover [A] of board **Slot 1 or 2** (🔩 x1)
2. Install the interface board [B] (🔩 x2 knob screws)
   NOTE: Use a screwdriver to tighten the knob-screws. Do not tighten manually, because this can disconnect the board.
3. Reattach the application cover (🔩 x1)

1.3.3 IEEE 1394 INTERFACE BOARD (B581)

Accessories

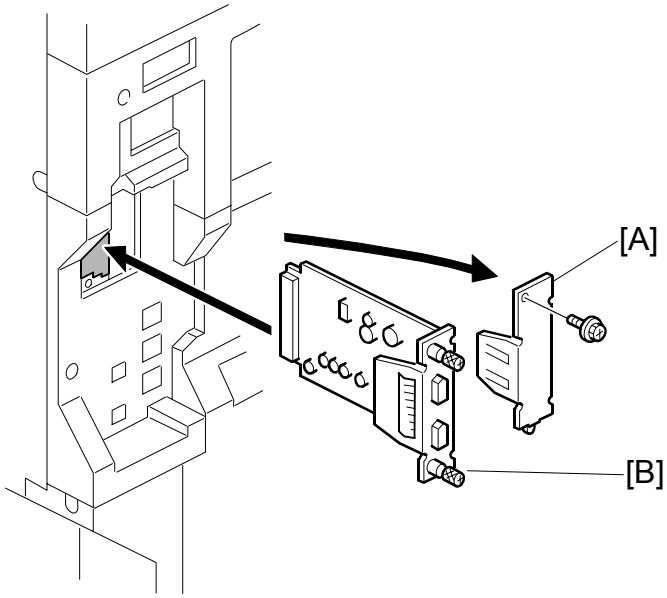
Check the accessories and their quantities against the following list:

Description	Q'ty
1. IEEE 1394 Interface Board B581	1

⚠CAUTION

TURN OFF THE MAIN POWER SWITCH AND DISCONNECT THE POWER SUPPLY CORD.

NOTE: You can only install one of these network interface boards: IEEE 802.11b (Wireless LAN), IEEE1284 (Parallel/Centronics), IEEE1394 (FireWire), or Bluetooth.



1. Remove the cover [A] of board **Slot 1 or 2** (☞ x1).
2. Install the interface board [B] (☞ x1 knob screw).
   NOTE: Use a screwdriver to tighten the knob-screw. Do not tighten manually, because this can disconnect the board.
3. Reattach the application cover (☞ x1).

UP Mode Settings for IEEE 1394

Enter the UP mode. Then do the procedure below to perform the initial interface settings for IEEE 1394. These settings take effect every time the machine is powered on.

1. Press the “User Tools/Counter”key.
2. On the touch panel, press “System Settings”.
3. Press “Interface Settings”.
4. Press “IEEE1394”.
5. Press the following soft keys on the touch panel. Then select the following settings:
   - “IP Address”. Select the “AUTO-Obtain (DHCP) ” or “Specify”. When you select “Specify”, you can set the IP Address and Subnet Mask manually.
   - “IP over 1394”.
   - Enable or disable this setting as required. This setting enables IP over 1394 as the default setting for the printing method.
   - “SCSI Print”. Enable or disable this setting as required. This setting enables SCSI Print as the default setting for the printing method.
   - “Bi-directional SCSI Print”. Switch bi-directional printing on or off for SCSI print.

SP Mode Settings for IEEE 1394

The following SP commands can be set for IEEE 1394.

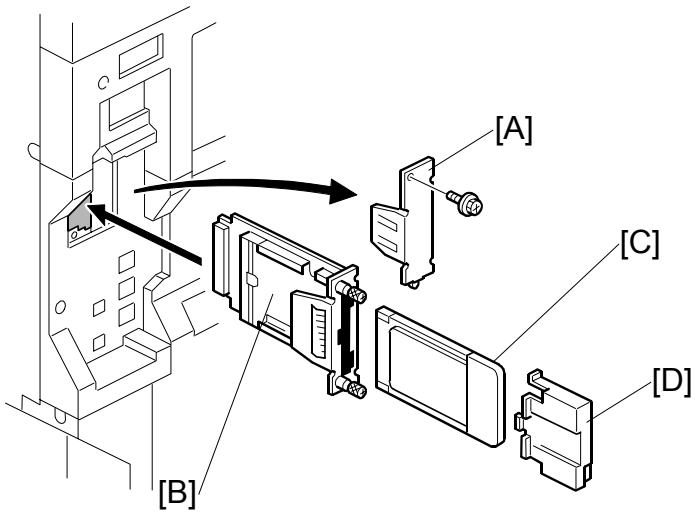
SP No.	Name	Function
5839 004	Device Name	Sets the name of the device used on the network. Example: RNPXXXXXXXXXX
5839 007	Cycle Master	Enables or disables cycle master function of the IEEE 1394 standard bus.
5839 008	BCR Mode	Sets the BCR (Broadcast Channel Register) setting for the Auto Node operation for the standard IEEE1394 bus for when IRM is not in use. The following three settings are available: “Standard,” “IRM Color Copy,” and “Always Effective.”
5839 009	IRM 1394a Check	Determines whether an IRM check for IEEE 1394a is conducted for the Auto Node when IRM is not used.
5839 010	Unique ID	Enables the “Node_Unique_Id” setting for enumeration on the standard IEEE 1394 bus.
5839 011	Logout	Determines how successive initiator login requests are handled during login in for SBP-2.
5839 012	Login	Enables or disables exclusive login for SBP-2.
5839 013	Login MAX	Sets the limit for the number of logins for SBP-2. Range: 1 ~ 62.

1.3.4 IEEE 802.11B INTERFACE KIT (G813)

Accessories

Check the accessories and their quantities against the following list:

Description	Q'ty
1. IEEE 802.11b Board	1
2. PCI Card	1
3. Antenna cap	1



⚠CAUTION

TURN OFF THE MAIN POWER SWITCH AND DISCONNECT THE POWER SUPPLY CORD.

NOTE: You can only install one of the following network interfaces at the same time: IEEE 802.11b (Wireless LAN), IEEE1284 (Parallel/Centronics), IEEE1394 (FireWire), Bluetooth.

1. Remove the cover [A] of board **Slot 1 or 2** (🔩 x1)
2. Attach the interface board [B] to the controller board (🔩 x1 knob screw).
   NOTE: Use a screwdriver to tighten the knob-screws. Do not tighten manually, because this can disconnect the board.
3. With the printed side facing the front of the machine, insert the interface card [C] board.
4. Attach the antenna cap [D].

UP Mode Settings for Wireless LAN

Enter the UP mode. Then do the procedure below to perform the initial interface settings for IEEE 802.11b. These settings take effect every time the machine is powered on.

NOTE: You cannot use the wireless LAN if you use Ethernet.

1. Press the “User Tools/Counter” key.
2. On the touch panel, press “System Settings”.
   NOTE: The Network I/F (default: Ethernet) must be set for either Ethernet or wireless LAN.
3. Select “Interface Settings”> “Network”> “Network I/F Setting”
4. Press “IEEE 802.11b”. Only the wireless LAN options show.
5. **Communication Mode**. Select either “802.11 Ad hoc”, “Ad hoc” or “Infrastructure”.
6. **SSID Setting**. Enter the SSID setting. (The setting is case sensitive.)
7. **Channel**. You need this setting when Ad Hoc Mode is selected.
   Range: 1 ~ 14 (default: 11)
   NOTE: The allowed range for the channel settings may vary for different countries.
8. **WEP (Encryption) Setting**. The WEP (Wired Equivalent Privacy) setting is designed to protect wireless data transmission. The same WEP key is required on the receiving side in order to unlock encoded data. There are 64 bit and 128 bit WEP keys.

   WEP:

   Selects “Active” or “Inactive”. (“Inactive” is default.)

   Range of Allowed Settings:

   64 bit 10 characters
   128 bit 26 characters

9. **Transmission Speed**. Press the Next button to show more settings. Then select the transmission speed for the mode: Auto, 11 Mbps, 5.5 Mbps, 2 Mbps, 1 Mbps (default: Auto). This setting should match the distance between the closest machine or access point. This depends on which mode is selected.
   NOTE: For the Ad Hoc Mode, this is the distance between the machine and the closest PC in the network. For the Infrastructure Mode, this is the distance between the machine and the closest access point.

11 Mbps	140 m (153 yd.)
5.5 Mbps	200 m (219 yd.)
2 Mbps	270 m (295 yd.)
1 Mbps	400 m (437 yd.)

10. Press “Return to Default” to initialize the wireless LAN settings.
    Press “Yes” to initialize the following settings:
    - Transmission mode
    - Channel
    - Transmission Speed
    - WEP
    - SSID
    - WEP Key

SP Mode Settings for IEEE 802.11b Wireless LAN

The following SP commands and UP modes can be set for IEEE 802.11b

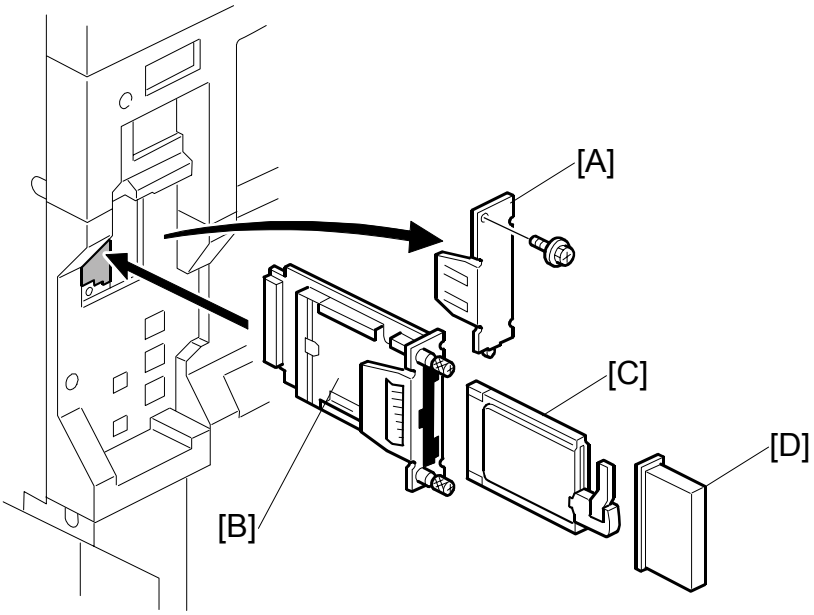
SP No.	Name	Function
5840 006	Channel MAX	Sets the maximum range of the channel settings for the country.
5840 007	Channel MIN	Sets the minimum range of the channels settings allowed for your country.
5840 011	WEP Key Select	Used to select the WEP key (Default: 00).
UP mode	**Name**	**Function**
	SSID	Used to confirm the current SSID setting.
	WEP Key	Used to confirm the current WEP key setting.
	WEP Mode	Used to show the maximum length of the string that can be used for the WEP Key entry.

1.3.5 BLUETOOTH UNIT (B736)

Accessories

Check the accessories and their quantities against the following list:

Description	Q'ty
1. Bluetooth Unit B736	1
2. PCI Card	1
3. Cap	1



⚠CAUTION

TURN OFF THE MAIN POWER SWITCH AND DISCONNECT THE POWER SUPPLY CORD.

NOTE: You can only install one of these network interfaces at the same time: IEEE 802.11b (Wireless LAN), IEEE1284 (Parallel/Centronics), IEEE1394 (FireWire), Bluetooth.

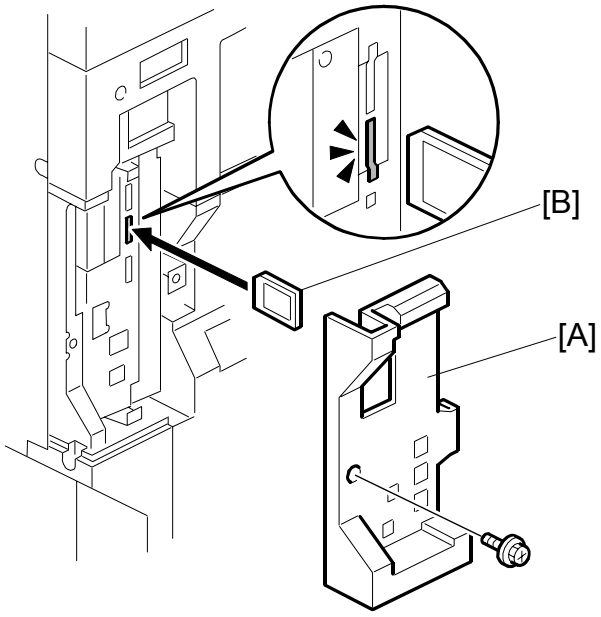
1. Remove the cover [A] of board **Slot 1 or 2** (🖉 x1).
2. Attach the interface board [B] to the controller board (🖉 x2 knob screws).
   NOTE: Use a screwdriver to tighten the knob-screws. Do not tighten manually, because this can disconnect the board.
3. Install the Bluetooth card [C] in the slot in the Bluetooth unit.
4. Attach the antenna cap [D].

1.3.6 POSTSCRIPT 3 UNIT (B757)

Accessories

Check the accessories and their quantities against the following list:

Description	Q'ty
1. PostScript 3 Emulation SD Card	1
2. Decal	1



⚠CAUTION

TURN OFF THE MAIN POWER SWITCH AND DISCONNECT THE POWER SUPPLY CORD.

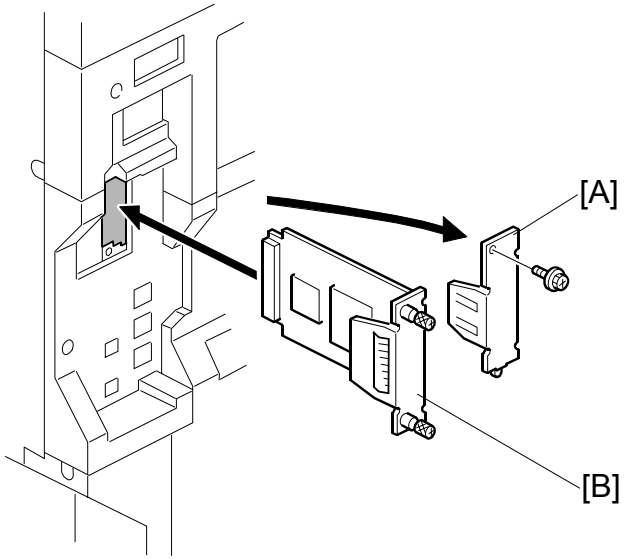
1. Remove the application cover [A] (☞ x1).
2. With the printed side of the SD card [B] facing the rear of the machine, install the SD card in SD card slot **C2**.
3. Reattach the application cover (☞ x1).
4. Attach the “Adobe PostScript 3” decal to the front cover.

1.3.7 FILE FORMAT CONVERTER (B609)

Accessories

Check the accessories and their quantities against the following list:

Description	Q'ty
1. File Format Converter Board B609	1



⚠CAUTION

TURN OFF THE MAIN POWER SWITCH AND DISCONNECT THE POWER SUPPLY CORD.

Important: This option also requires installation of the Printer/Scanner Unit B767 or the Printer Unit B846.

1. Remove the cover [A] of Board **Slot 1 or 2** (🖉 x1).
2. Install the board [B] (🖉 x2 knob screws).
   NOTE: Use a screwdriver to tighten the knob-screw. Do not tighten manually, because this can disconnect the board.
3. Reattach the application cover (🖉 x1).

1.4 CHECK ALL CONNECTIONS

1. Connect the machine's power cord and turn on the main switch.
2. Go into the printer user mode and print the configuration page.
   User Tools> Printer Settings> List Test Print> Config. Page

   NOTE: The same data can also be printed with printer SP1-004 – Print Summary. All installed options are listed in the "System Reference" column.

2. DETAILS

2.1 OVERVIEW

Enhanced and New Printer Features Table for R-C4

Feature	R-C3/R-C4 Compared	Description
Sample Print	Enhanced	Outputs a single hard copy of the document so it can be checked for errors or irregularities. If the sample copy looks acceptable, the user can enter a number to print additional copies. This feature can be used before setting up large copy jobs.
Locked Print	Enhanced	Printing a document requires a password entry. This feature is useful for protecting sensitive information.
Hold Print	New	Documents are stored on the printer HDD (similar to a locked print) but printing does not require a password entry.
Stored Print	New	Documents are stored on the printer HDD and printed as needed. This is useful for documents that are printed frequently (applications, catalogs, etc.)

R-C4 Printer Features Comparison Table

Model	Feature	Storage Capacity	Sort by User ID	Multiple File Print/Delete	Save at Power Off	File Password	Save After Printing
R-C3	Sample Print	30*1	No	No	No	Yes (4-digit)	No
	Locked Print		No	No	No	NO	No
R-C4	Sample Print	100*1	Yes	Yes	Yes	Yes (4-8 digits)	No
	Locked Print		Yes	Yes	Yes	No	No
	Hold Print		Yes	Yes	Yes	No	No
	Stored Print		Yes	Yes	Yes	Optional (4-8 digits)	Yes

*1 Total number of files (includes all job types).

3. SERVICE TABLES

3.1 PRINTER SERVICE TABLE

SP	Number/Bit SW		Initial	
1001	Bit Switch			
	001	Bit SW 1	00H	Adjusts the bit switch settings. **Note: These bit switches are currently not being used**
	002	Bit SW 2	00H	
	003	Bit SW 3	00H	
	004	Bit SW 4	00H	
	005	Bit SW 5	00H	
	006	Bit SW 6	00H	
	007	Bit SW 7	00H	
	008	Bit SW 8	00H	

SP	Number/Name		Function/[Setting]
1003	Clear setting		
	001	Initialize Printer System	Initializes the settings in the printer feature settings of UP mode.
	002	Clear CSS Counter	**DFU**
	003	Delete Program	**DFU**
1004	Print Summary		Prints the printer summary sheet.
1005	Display Version.		Displays the version of the controller firmware.
1006	Sample/Proof Print		[0~1/**0**/1] 0: Link with Doc. Server 1: Enable

SP	Function/[Setting]					
7910	PDL Part No. Information					
	Returns a text string for the version.					
	RPCS	150	**R55**	156	**PDF**	162
	PS	151	**RTIFF**	157	**BMLinks**	163
	RPDL	152	**PCL**	156	**PICTBRIDGE**	164
	R98	153	**PCLXL**	159	**FONT**	180
	R16	154	**MSIS**	160	**FONT1**	181
	RPGL	155	**MSIS (OPT)**	161	**FONT2**	182
					FONT3	183

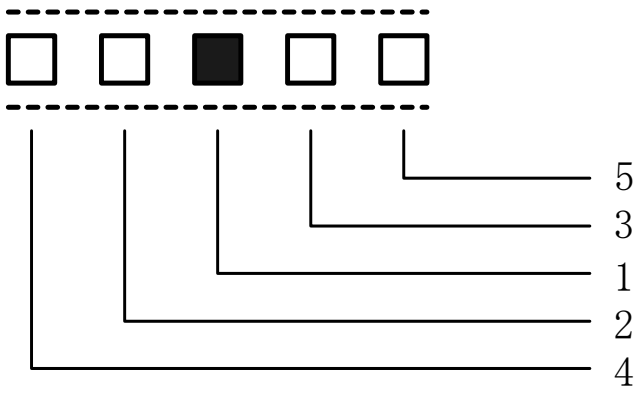
7911	PDL Version Information			Returns a text string for the version.		
	RPCS	150	**R55**	156	**PDF**	162
	PS	151	**RTIFF**	157	**BMLinks**	163
	RPDL	152	**PCL**	156	**PICTBRIDGE**	164
	R98	153	**PCLXL**	159	**FONT**	180
	R16	154	**MSIS**	160	**FONT1**	181
	RPGL	155	**MSIS (OPT)**	161	**FONT2**	182
					FONT3	183

3.2 SCANNER SERVICE TABLE

SP	Number/Name	Function/[Setting]
1004	Compression Type	Selects the compression type for binary picture processing. [1-3/**1**/1] 1: MH, 2: MR, 3: MMR
1005	Erase Margin	Creates an erase margin for all edges of the scanned image. *If the machine has scanned the edge of the original, create a margin.* [0 – 5/**0**/1mm]
1009	Forbid Using TWAIN	Sets the system not to use the network TWAIN scanner driver. **0**: Not forbidden (can use TWAIN) 1: Forbid using TWAIN driver.

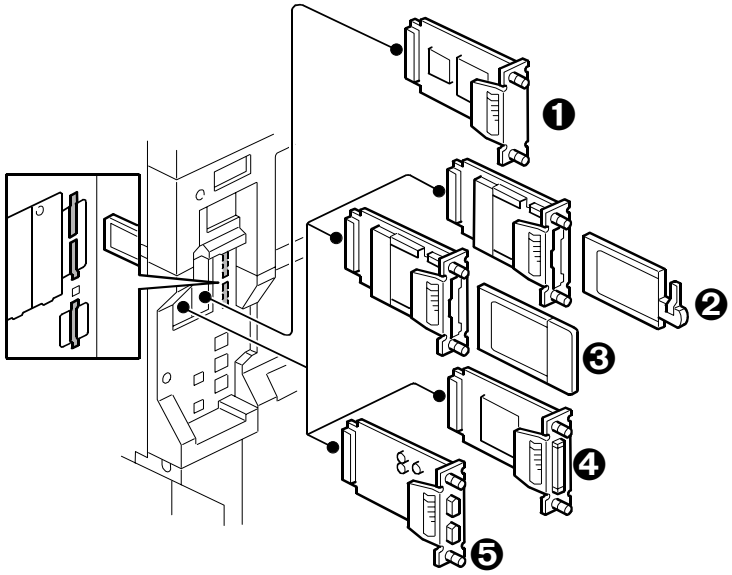
SP	Number/Name	Function/[Setting]
2021	Compression level (grayscale)	
	These SP codes set the compression ratio for the grayscale processing mode that can be selected with the notch settings on the operation panel. Range: 5 (lowest ratio) ←→ 95 (highest ratio)	
2021 1	Level 3 (Middle I-Qual)	[5~95/**40**/1/step]
2021 2	Level 2 (High I-Qual)	[5~95/**50**/1/step]
2021 3	Level 4 (Low I-Qual)	[5~95/**30**/1/step]
2021 4	Level 1 (Highest I-Qual)	[5~95/**60**/1/step]
2021 5	Level 5 (Lowest I-Qual)	[5~95/**20**/1/step]

Compression Notch Assignment



4. SPECIFICATIONS

4.1 SYSTEM COMPONENTS



No.	Item	Code	Remarks
❶	File Format Converter (MLB)	B609	Slot 1 or 2
❷	Bluetooth Interface Unit*[1]	B736	
❸	IEEE802.11b – Wireless LAN*[1]	G813	
❹	IEEE1284 Interface Board – Centronics*[1]	B679	
❺	IEEE1394 Interface Board – FireWire*[1]	B581	
6	Memory 256 MB	G818	Not shown
7	USB 2.0	---	Built into controller board
8	NIB Network Interface	---	
9	PostScript 3*[2]	B757	SD Card (C2)
10	Printer Scanner Unit	B767	SD Card (C1)
11	Printer Unit	B846	SD Card (C1)

*[1] Only one of these boards can be installed at one time.
*[2] If both PS3 and DOS (Data Overwrite Security B735) are required, DOS must be moved to the PS3 SD card with SP5878 1. (☛**Error! Reference source not found.**)

4.2 SPECIFICATIONS

4.2.1 PRINTER CONTROLLER (GENERAL)

Printing Speed:	Maximum 25 ppm (A4/LT LEF): B205 Maximum 30 ppm (A4/LT LEF): B209	
Printer Languages:	PCLXL/PCL5e PostScript 3 (option) RPCS (Refined Printing Command Stream) - an original Ricoh PDL)	
Resolution (Driver):	RPCS	200/600 dpi
	PS3	600 dpi
	PCL5e	300/600 dpi
	PCLXL	600 dpi
Resident Fonts:	PCL	TrueType: 10, Intellifont: 35, International: 13, Bitmap: 1
	PS3	Option fonts PS3
Connectivity	Std.	RJ-45 network port (100BASE-TX, 10BASE-T, USB 2.0)
	Option	IEEE1394 (FireWire), IEEE802.11b (Wireless LAN), Bluetooth, IEEE1284 (Centronics Parallel)
Network Protocols	TCP/IP, IPX/SPX, SMB (NetBIOS over TCP/IP), AppleTalk (Auto Switching)	
RAM:	Maximum 384 MB (Resident 128 MB + Additional 256 MB) **Note**: Additional 256 MB is required for the printer/scanner unit and printer unit.	

4.2.2 USB SPECIFICATIONS

USB connectivity is built into the controller.

Interface	USB 1.1, USB 2.0
Data rates	480 Mbps (high speed), 12 Mbps (full speed), 1.5 Mbps (low speed)
	High speed mode is only supported by USB 2.0.

4.2.3 IEEE 802.11B SPECIFICATIONS

Standard applied	IEEE802.11b	
Data transmission rates	Speed	Distance
	11 Mbps	140 m (153 yd.)
	5.5 Mbps	200 m (219 yd.)
	2 Mbps	270 m (295 yd.)
	1 Mbps	400 m (437 yd.)
Network protocols	TCP/IP, Apple Talk, NetBEUI, IPX/SPX, SMB	
Bandwidth	2.4GHz (divided over 14 channels, 2400 to 2497 MHz for each channel)	

4.2.4 IEEE 1394 SPECIFICATIONS

Interface	IEEE 1394 (firewire)	
Number of Ports	2 ports	
Data Transmission Speed	400 Mbps, 200 Mbps, 100 Mbps	
Available Features, Functions, Protocols	SCSI print	IP over 1384
	Print	Print, Scan
	SBP-2	TCP/IP

4.2.5 BLUETOOTH SPECIFICATIONS

Transmission Specifications	Based on Bluetooth V1.1
Data Transfer Speed	1 Mbps
Profile	Hard Copy Cable Replacement Profile (HCRP), Serial Port Profile (SPP), BIP
Distance Between Devices	10 m (The maximum distance when using outdoors, otherwise depends on the office environment.)

4.2.6 SCANNER SPECIFICATIONS

Standard Scanner Resolution:	Main scan/Sub scan 600 dpi	
Scanning Speed	52 ipm, E-mail/Scan-to-Folder/Network Delivery Scanner (A4 LEF, Text 200 dpi, MH Compression)	
Available scanning Resolution Range:	100 ~ 1200 dpi;	When used as a Network TWAIN scanner.
	100, 200, 300, 400, 600 dpi;	When used as a network delivery scanner or for sending e-mail
Grayscales:	8 bits/pixel	
Interface:	Ethernet 10/100BASE TX, IP over IEEE1394, Wireless LAN 802.11b	
Compression Method:	MH, MR, MMR (Binary Picture Processing) JPEG (Grayscale Processing)	
Video Memory Capacity:	384 MB	
Image Storage Capacity:	Number of originals per file: Maximum 1,000 pages	
	Maximum of files: 3000 files	
Max. Storage on Doc. Svr.	9,000 pages (B&W (ITUT No. 1/200 dpi MMR)	

4.2.7 SOFTWARE ACCESSORIES

PRINTER

The printer drivers and utility software are provided on one CD-ROM. An auto-run installer allows you to select which components to install.

PRINTER DRIVERS

Printer Language	Windows 95/98/Me	Windows NT4.0	Windows 2000, XP, Server 2003	Macintosh
PCL 6	Yes	Yes	Yes	No
PCL 5e	Yes	Yes	Yes	No
PS3	Yes	Yes	Yes	Yes
RPCS	Yes	Yes	Yes	No

NOTE: 1) The printer drivers for Windows NT 4.0 are only for the Intel x86 platform. There is no Windows NT 4.0 printer driver for the PowerPC, Alpha, or MIPS platforms.
2) The PS3 drivers are all genuine AdobePS drivers, except for Windows 2000/XP/Server 2003, which uses Microsoft PS. A PPD file for each operating system is provided with the driver.

Utility Software

Software	Description
Agfa Monotype Font Manager 2000 (Win 95/98/Me, NT4, 2000)	A font management utility with screen fonts for the printer.
SmartNetMonitor for Admin (Win 95/98/Me, NT4, 2000/XP/Server 2003)	A printer management utility for network administrators. NIB setup utilities are also available.
SmartNetMonitor for Client (Win 95/98/Me, NT4, 2000/XP/Server 2003)	A printer management utility for client users. Peer-to-peer printing utility and parallel/recovery printing functions are included.
1394 Utility (Win 2000/XP)	A utility for removal IEEE 1394 printers.
LAN-Fax M3 Driver (Win 95/98/Me, NT4, 2000/XP)	This driver allows use of the LAN-Fax functions by installing the LAN-Fax driver, Address Book, and LAN-Fax Cover Sheet Editor.
Printer Utility for Mac	This software provides several convenient functions for printing from Macintosh clients.
USB Printing Support	A utility for the USB 2.0 board. A computer running Windows 98 SE or Windows ME requires installation of this utility.
Acrobat Reader	A utility that allows reading PDF files.

SCANNER

The scanner driver and utility software are provided on one CD-ROM.

Scanner Driver

- Network Twain Driver for Win95/98/Me/NT4/2000/XP/Server 2003

Scanner Utilities

- Scan Router V2 Lite for Win95/98/Me/NT4.0/2000/XP
- Desk Top Binder V2 Lite for Win95/98/Me/NT4.0/2000/XP/Server 2003

AUTO REVERSE DOCUMENT FEEDER

B810

AUTO REVERSE DOCUMENT FEEDER B810

TABLE OF CONTENTS

1. REPLACEMENT AND ADJUSTMENT 1
1.1 DF EXIT TABLE AND COVERS.....1
1.2 ORIGINAL FEED UNIT 2
1.3 LEFT COVER.....2
1.4 PICK-UP ROLLER.....3
1.5 FEED BELT.....3
1.6 SEPARATION ROLLER.....4
1.7 ORIGINAL SET/ORIGINAL REVERSE SENSORS.....4
1.8 ORIGINAL SIZE SENSORS, TRAILING EDGE SENSOR 5
1.9 ORIGINAL FEED DRIVE.....6
DF Feed Clutch.....6
Pick-up Solenoid.....6
Transport Motor 6
DF Feed Motor.....6
1.10 REGISTRATION SENSOR.....7
1.11 STAMP SOLENOID AND ORIGINAL EXIT SENSOR 8

2. DETAILED DESCRIPTIONS 9
2.1 MECHANICAL COMPONENT LAYOUT 9
2.2 ELECTRICAL COMPONENT LAYOUT.....10
2.3 ELECTRICAL COMPONENT DESCRIPTION.....11
2.4 DRIVE LAYOUT 12
2.5 ORIGINAL SIZE DETECTION.....13
2.6 MIXED ORIGINAL SIZE MODE 16
2.7 PICK-UP AND SEPARATION 17
2.8 ORIGINAL TRANSPORT AND EXIT.....18
2.8.1 SINGLE-SIDED ORIGINALS.....18
2.8.2 DOUBLE-SIDED ORIGINALS 19
2.8.3 ORIGINAL TRAILING EDGE SENSOR.....20
2.9 STAMP 21
2.10 TIMING CHART.....22
2.11 CONDITION OF JAM DETECTION.....23
2.12 OVERALL ELECTRICAL CIRCUIT 24

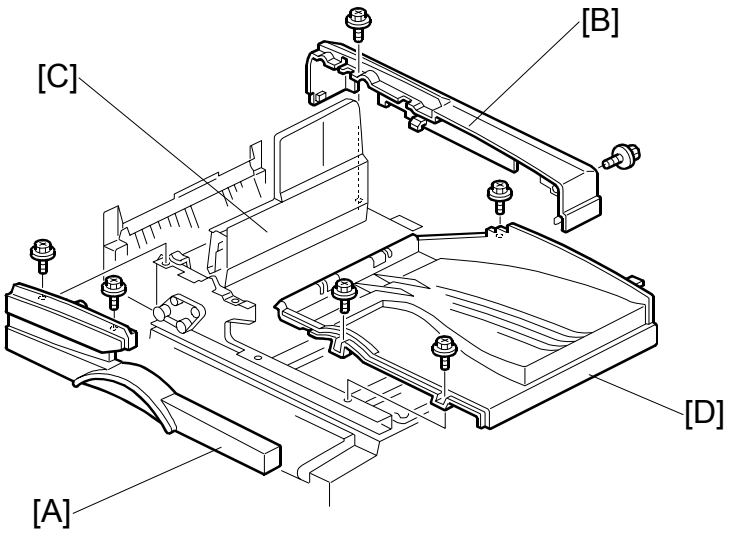
3. SERVICE TABLES.....25
3.1 DIP SWITCHES.....25

1. REPLACEMENT AND ADJUSTMENT

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

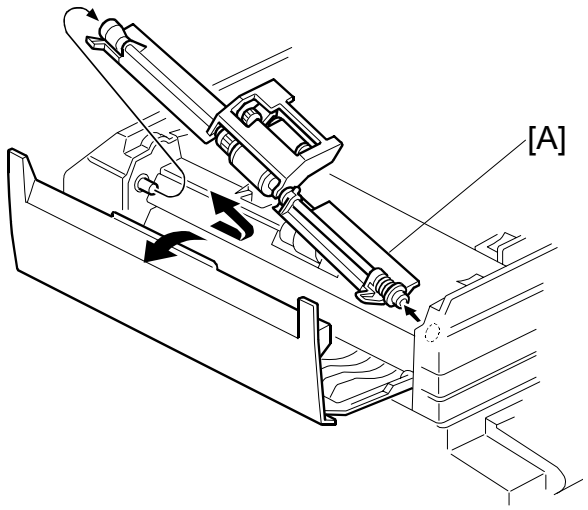
NOTE: This manual uses the following symbols.
☛ : See or Refer to : Screws : Connector : Clip ring
 : E-ring

1.1 DF EXIT TABLE AND COVERS



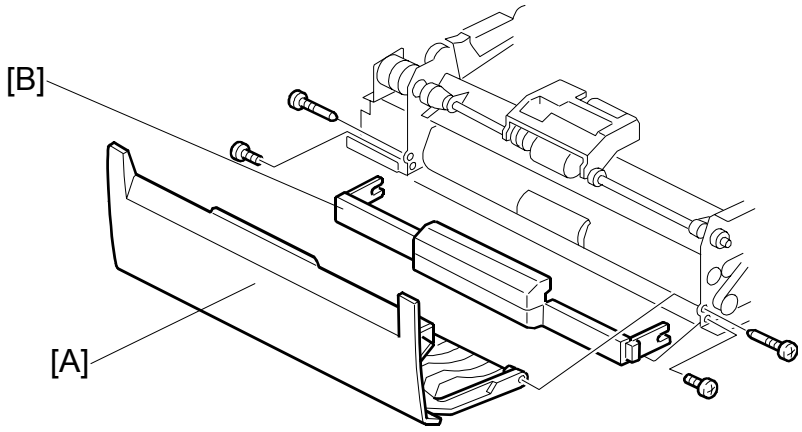
1. Open the DF feed cover.
2. Front cover [A] (x 3)
3. Rear cover [B] (x 3)
4. Open the reverse table [C].
5. Original exit table [D] (x 3)

1.2 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.

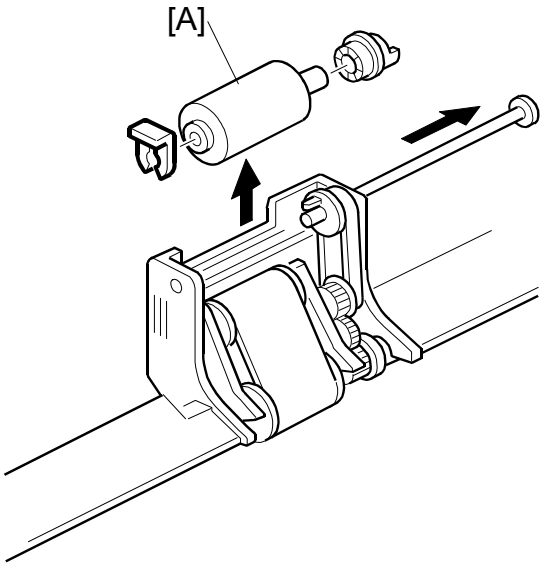
1.3 LEFT COVER



1. Front and rear covers
2. Left cover [A] (x 2)
3. Lower left stay unit [B] (x 2)

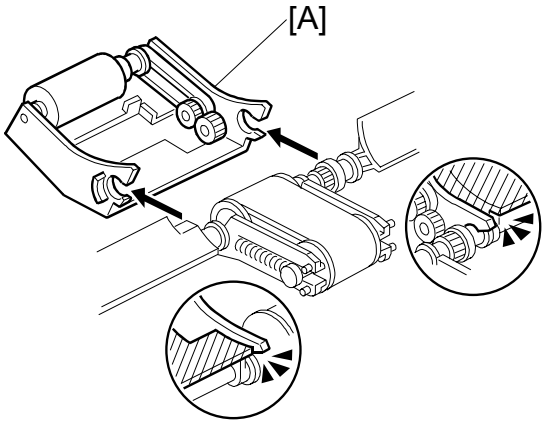
1.4 PICK-UP ROLLER

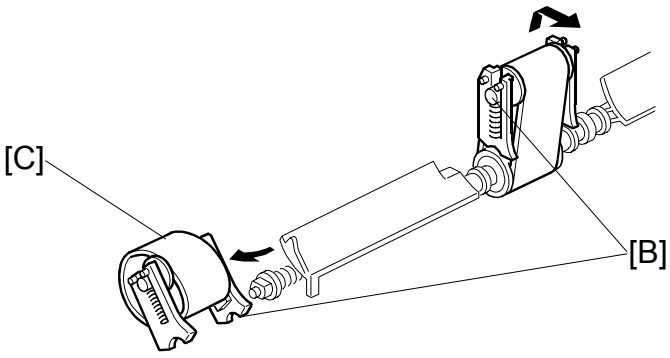
1. Original feed unit.
2. Pick-up roller [A] (x 1)



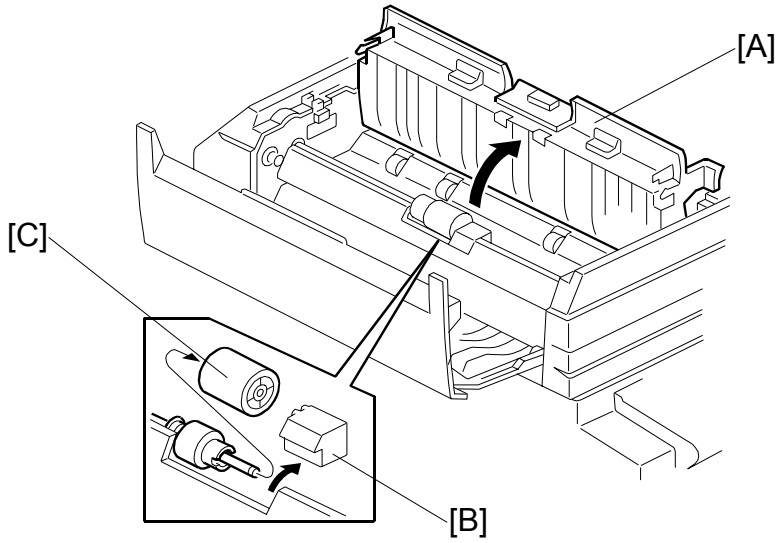
1.5 FEED BELT

1. Original feed unit
2. Open the paper feed guide [A].
3. Belt holders [B]
4. Feed belt [C]
   - Push in on the bottom of the roller and lift slightly to remove the belt.



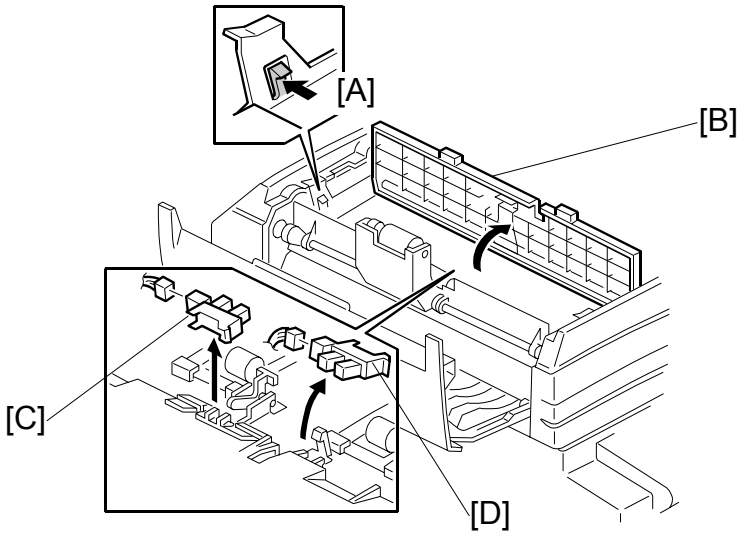


1.6 SEPARATION ROLLER



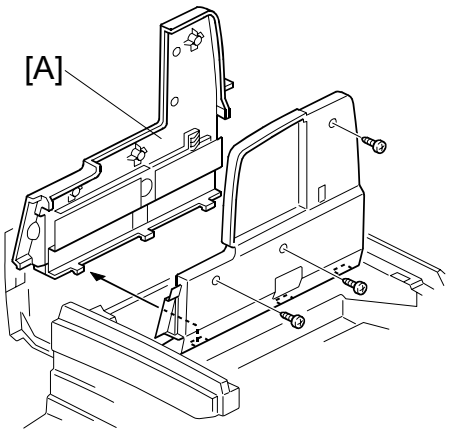
1. Lift the original feed guide [A].
2. Separation roller cover [B]
3. Separation roller [C]

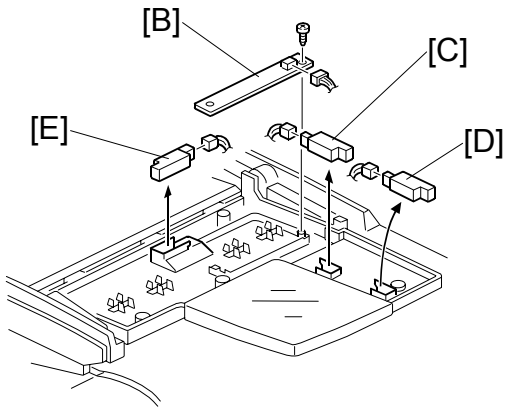
1.7 ORIGINAL SET/ORIGINAL REVERSE SENSORS



1. Open the left cover.
2. While pushing the left and right pawls [A], open the original feed guide plate [B].
3. Original set sensor [C]
4. Original reverse sensor [D]

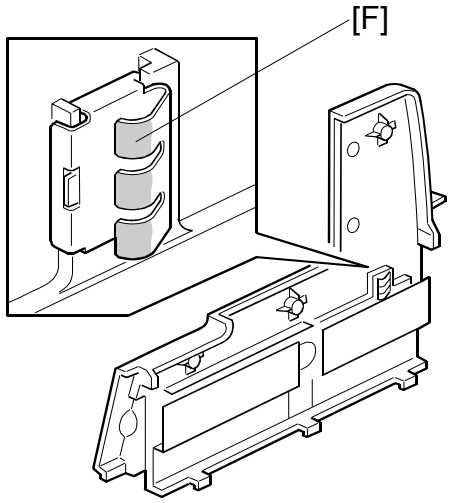
1.8 ORIGINAL SIZE SENSORS, TRAILING EDGE SENSOR



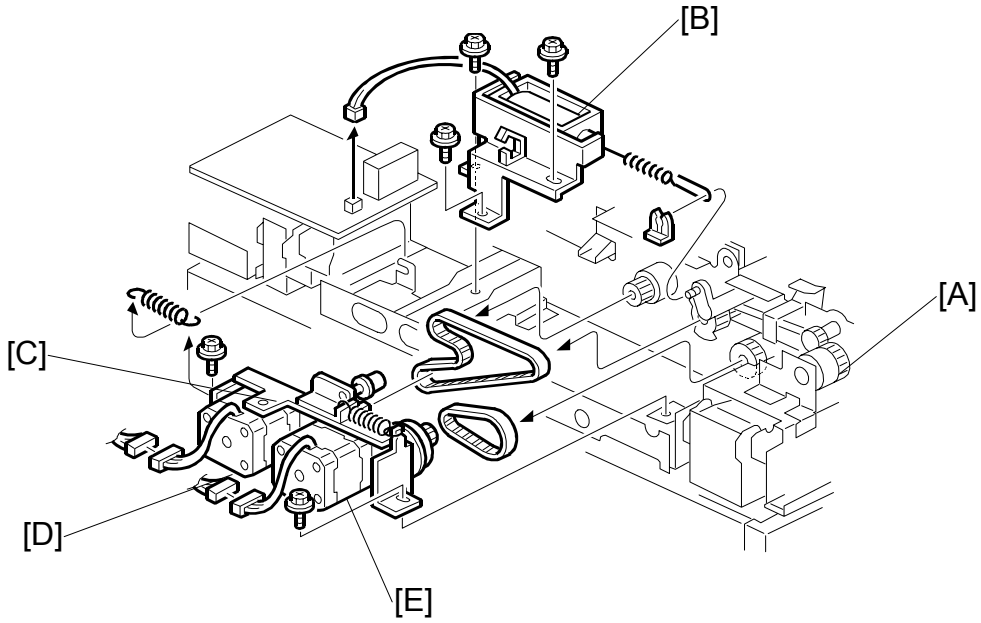


1. Open the original table [A].
2. Upper part of the table (🔩 x 3)
3. Replace the width sensor board [B], length sensor (-1 [C] and -2 [D]) and trailing edge sensor [E].

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].



1.9 ORIGINAL FEED DRIVE



First remove the rear cover. Then follow the instructions below for each part replacement:

DF Feed Clutch

1. DF feed clutch [A] (C x 1, x 1)

Pick-up Solenoid

1. Pick-up solenoid [B] (x 3, x 1, x 1)

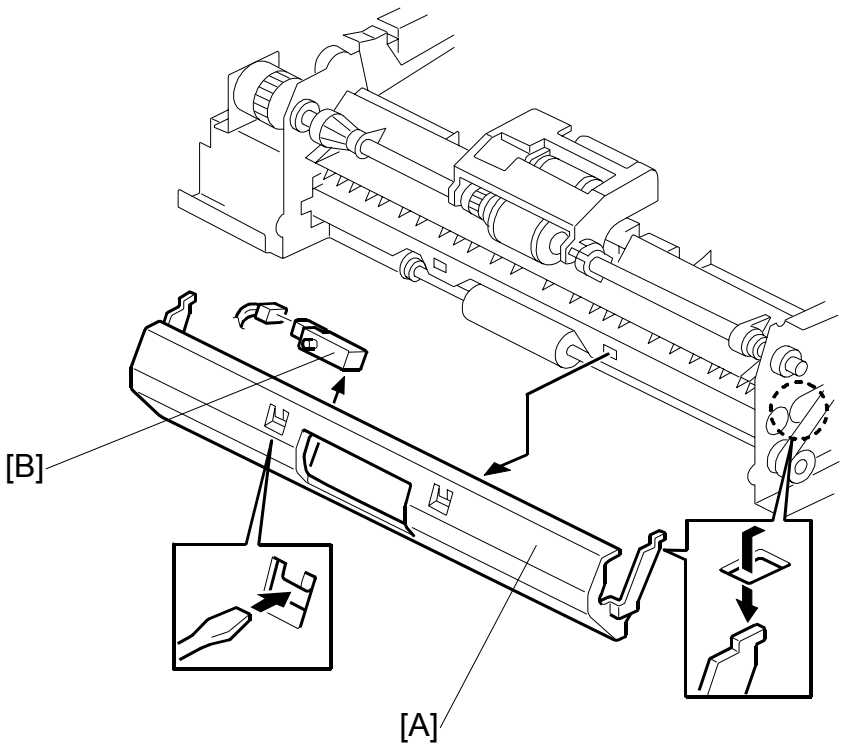
Transport Motor

1. Bracket [C] (x 2)
2. Transport motor [E] (x 2, x 1)

DF Feed Motor

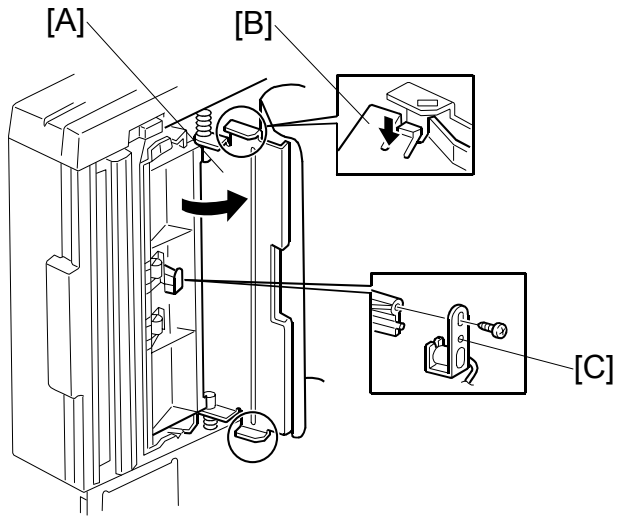
1. Bracket [C] (x 2)
2. DF feed motor [D] (x 2, x 1)

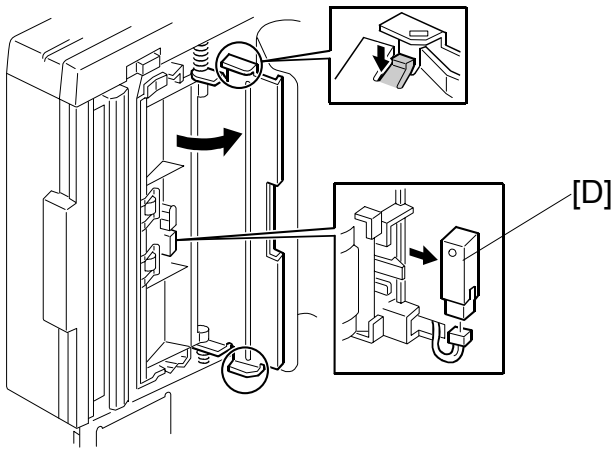
1.10 REGISTRATION SENSOR



1. Front and rear covers
2. Transport guide plate [A]
3. Registration sensor [B]

1.11 STAMP SOLENOID AND ORIGINAL EXIT SENSOR

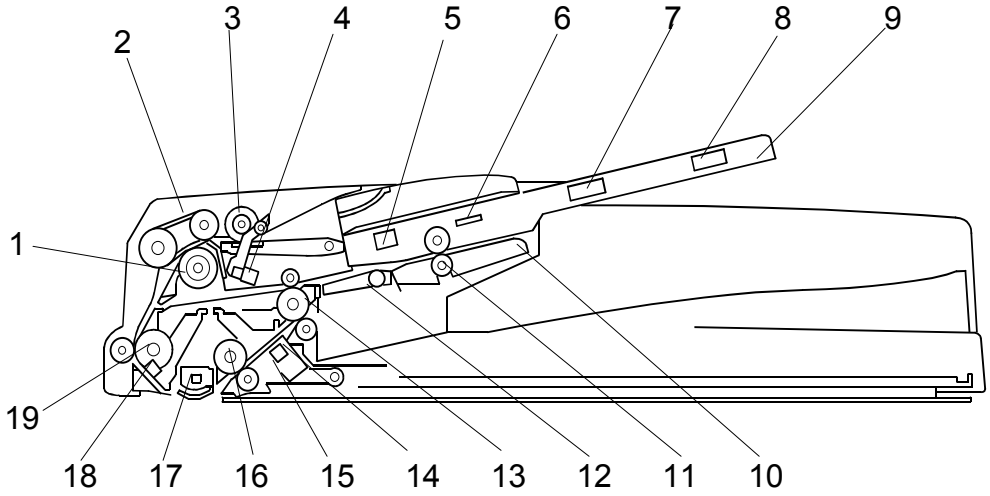




1. Rear cover (☞ x 1)
2. Upper cover and the exit tray
3. Open the exit guide plate [A]. Detach the unit by inserting a screwdriver into one of the small openings [B] on either side of the guide plate holder and pushing firmly.
4. Stamp solenoid [C] (☞ x 1)
5. Original exit sensor [D] (☞ x 1)

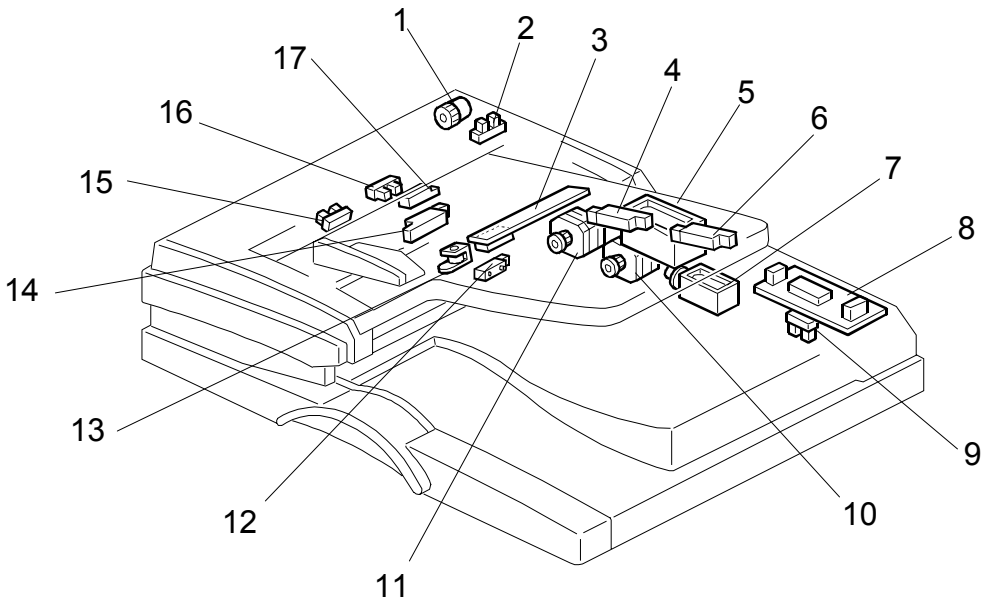
2. DETAILED DESCRIPTIONS

2.1 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

2.2 ELECTRICAL COMPONENT LAYOUT

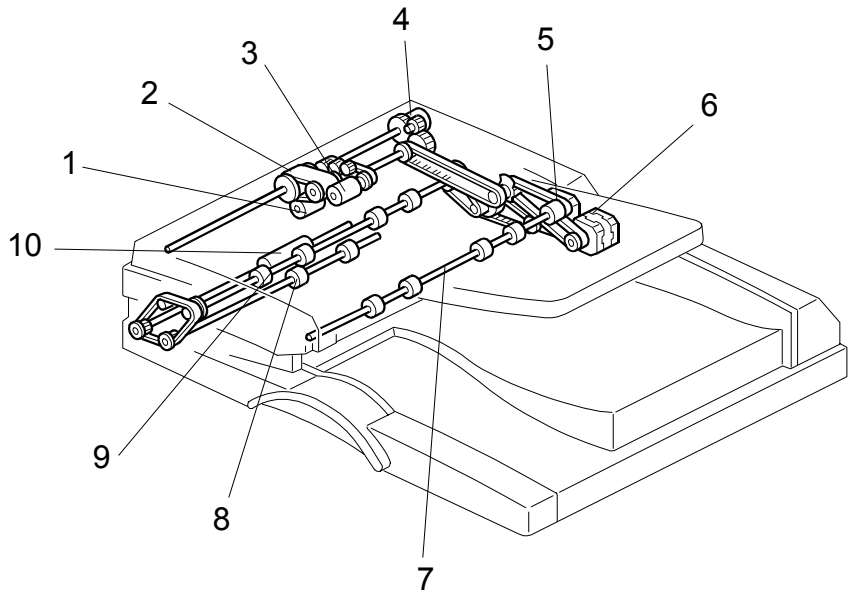


1. DF Feed Clutch
2. Feed Cover Sensor
3. Original Width Sensor Board
4. Original Length Sensor 1
5. DF Pick-up Solenoid
6. Original Length Sensor 2
7. Junction Gate Solenoid
8. DF Drive PCB
9. DF Position Sensor
10. DF Feed Motor
11. DF Transport Motor
12. Original Exit Sensor
13. Stamp Solenoid
14. Original Trailing Edge Sensor
15. Original Set Sensor
16. Original Reverse Sensor
17. Registration Sensor

2.3 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
Magnetic 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

2.4 DRIVE LAYOUT

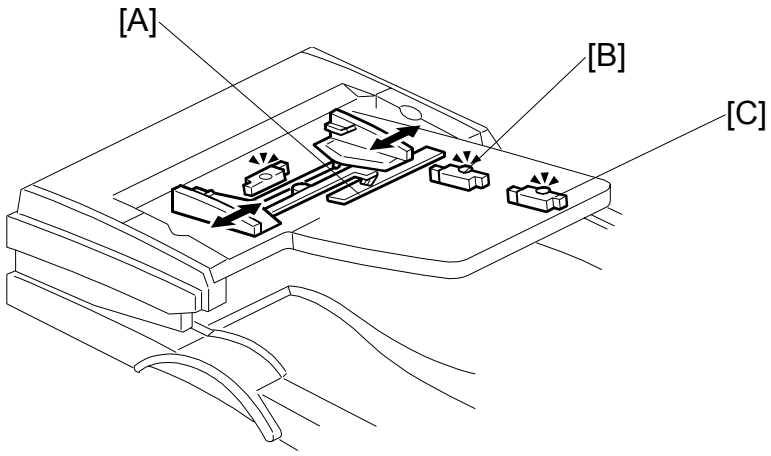


1. Separation Roller
2. Original Feed Belt
3. Pick-up Roller
4. DF Feed Clutch
5. DF Transport Motor
6. DF Feed Motor
7. Reverse Table Roller
8. 2nd Transport Roller
9. Exit Roller
10. 1st Transport Roller

DF Feed Motor: Drives the feed belt, separation, pick-up, and reverse table rollers

DF Transport Motor: Drives the transport and exit rollers

2.5 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.

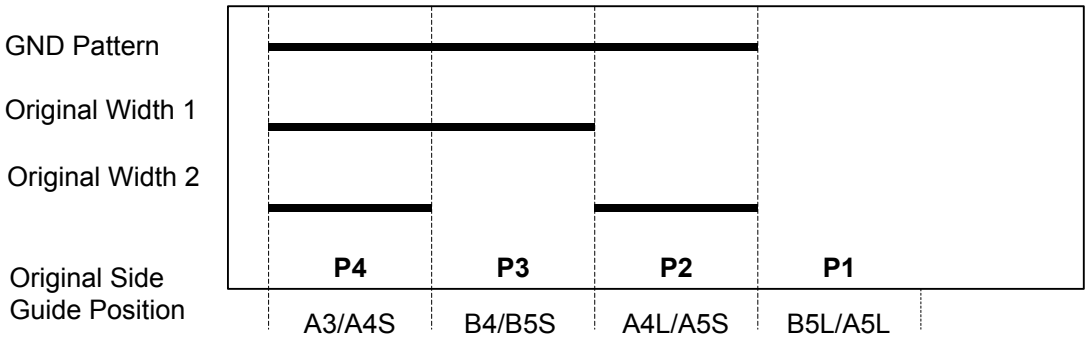
Note that the width sensor's terminal plate is attached to the original guide, so the widths of the originals must all be the same.

	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.

2.6 MIXED ORIGINAL SIZE MODE

This section explains what happens when the user selects mixed original size mode.

Because this ADF is a sheet-through document feeder, the method for original document width detection is the same as when the originals are the same size, but the document length detection method is different. Therefore, the scanning speed is slightly slower.

Document length detection

From when the registration sensor switches on until it switches off, the CPU counts the transport motor pulses. The number of pulses determines the length of the original.

Feed-in cycle

When the original size for the copy modes listed below cannot be determined, the image cannot be correctly scaled (reduced or enlarged) or processed until the original's length has been accurately detected. The length must be determined before the image is scanned.

Auto Reduce/Enlarge
Centering
Erase Center/Border
Booklet
Image Repeat

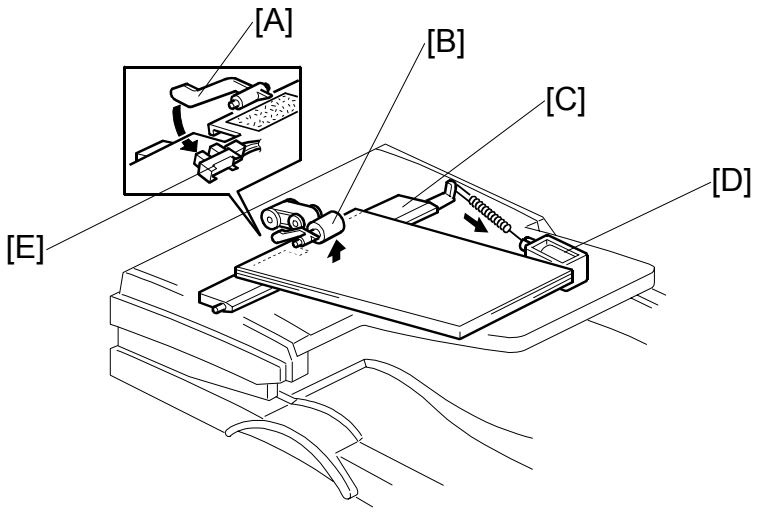
The originals follow this path:

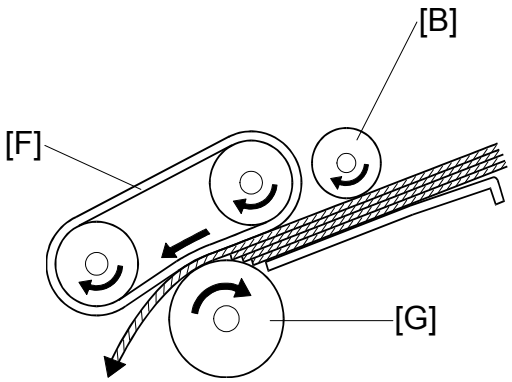
1. Length detection ➔ Scanning glass ➔ Inverter table
2. Inverter table ➔ Scanning glass ➔ Inverter table (restores the original order)
3. Inverter table ➔ Scanning glass (image scanned) ➔ Exit tray

Normal feed-in

In a copy mode other than those listed above, when the reduction/enlargement ratio has been determined, the originals are scanned normally. In order to store the scanned images, a large area of memory (the detected original width x 432 mm length) is prepared. Next, only the portion of the image up to the detected original length is read from memory and printed.

2.7 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.

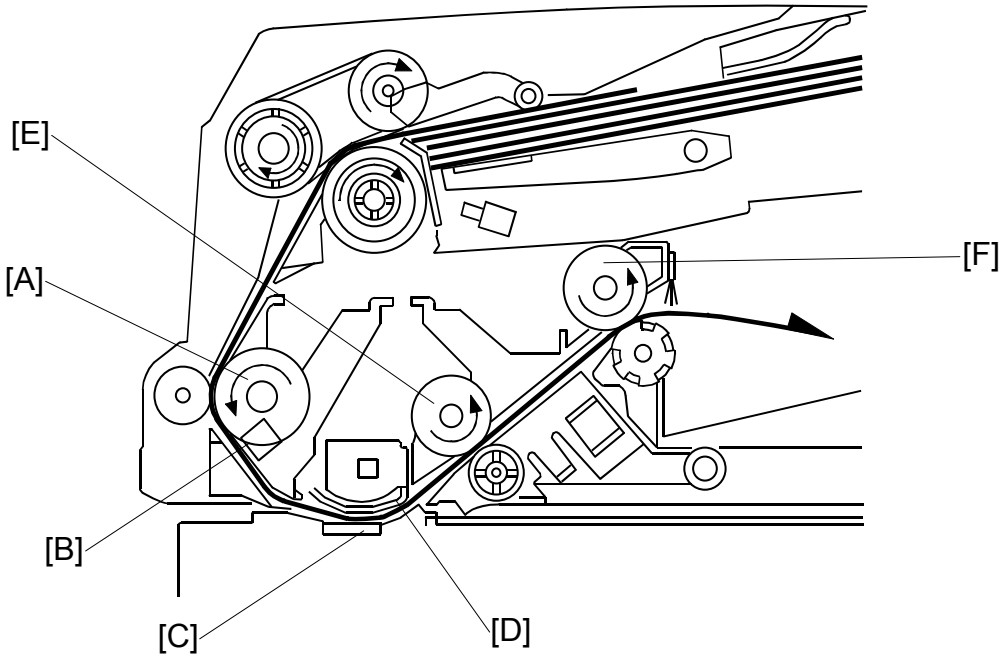
After pressing the start button, the pick-up solenoid [D] is activated and the lift plate [C] lifts the original up until it comes in contact with the pick-up roller [B]. The pick-up roller then feeds the top sheet of paper.

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, consisting of the original feed belt [F] and separation roller [G].

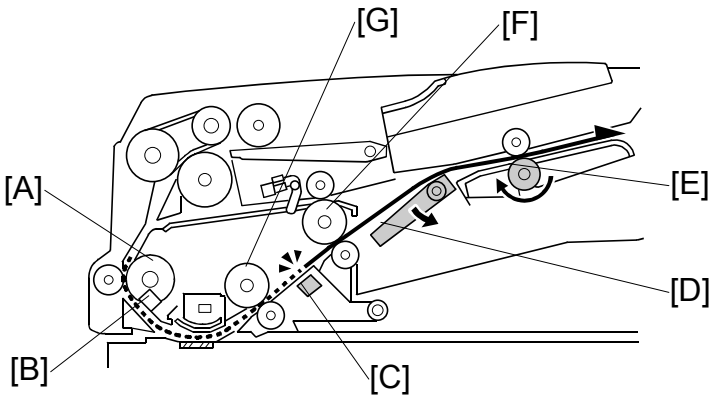
2.8 ORIGINAL TRANSPORT AND EXIT

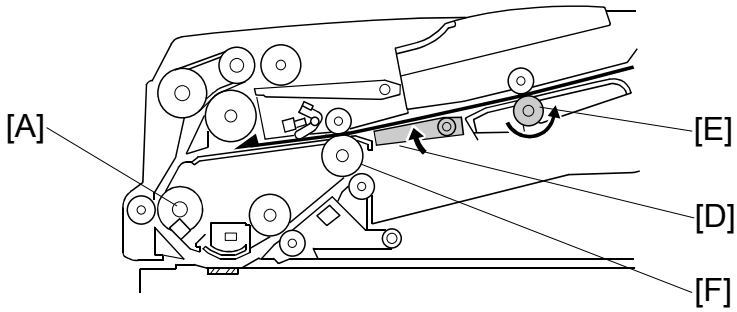
2.8.1 SINGLE-SIDED ORIGINALS



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].

2.8.2 DOUBLE-SIDED ORIGINALS

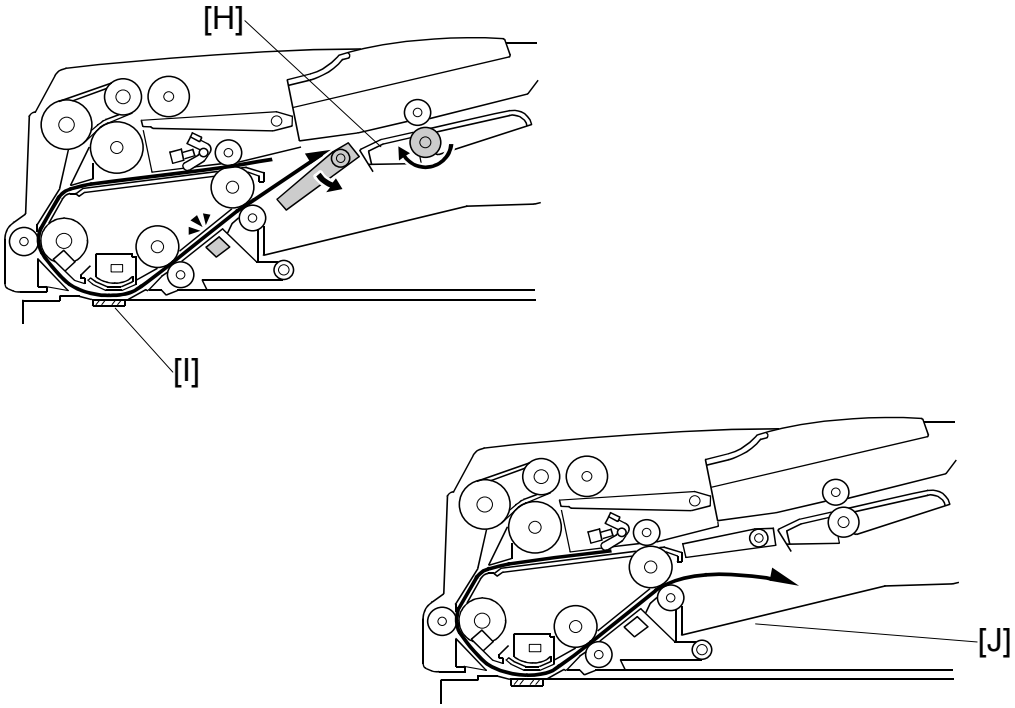




When the registration sensor [B] detects the leading edge of the original, the DF feed motor (which drives the feed roller) and transport motor (which drives the transport roller) both switch off. After a brief interval, the transport motor alone reactivates to drive the first [A] and second transport 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).

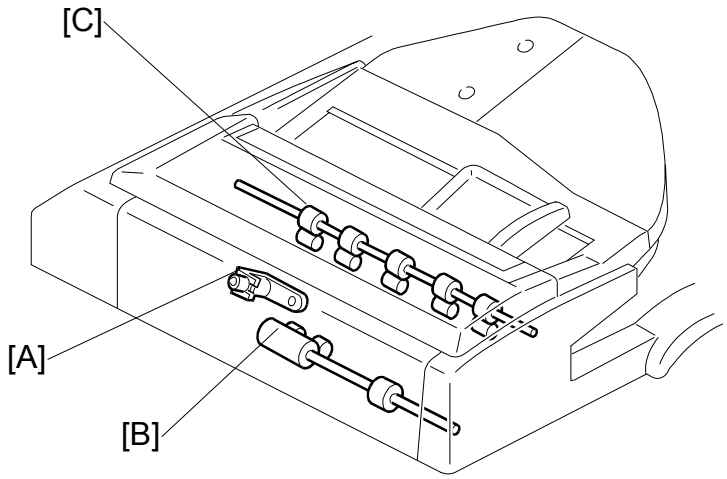


The original is then sent to the reverse table [H] a second time to be turned over. This is done so that the duplex copies will be properly stacked front side down in the exit tray [J] in the correct order.

2.8.3 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.

2.9 STAMP



This function is only for fax mode.

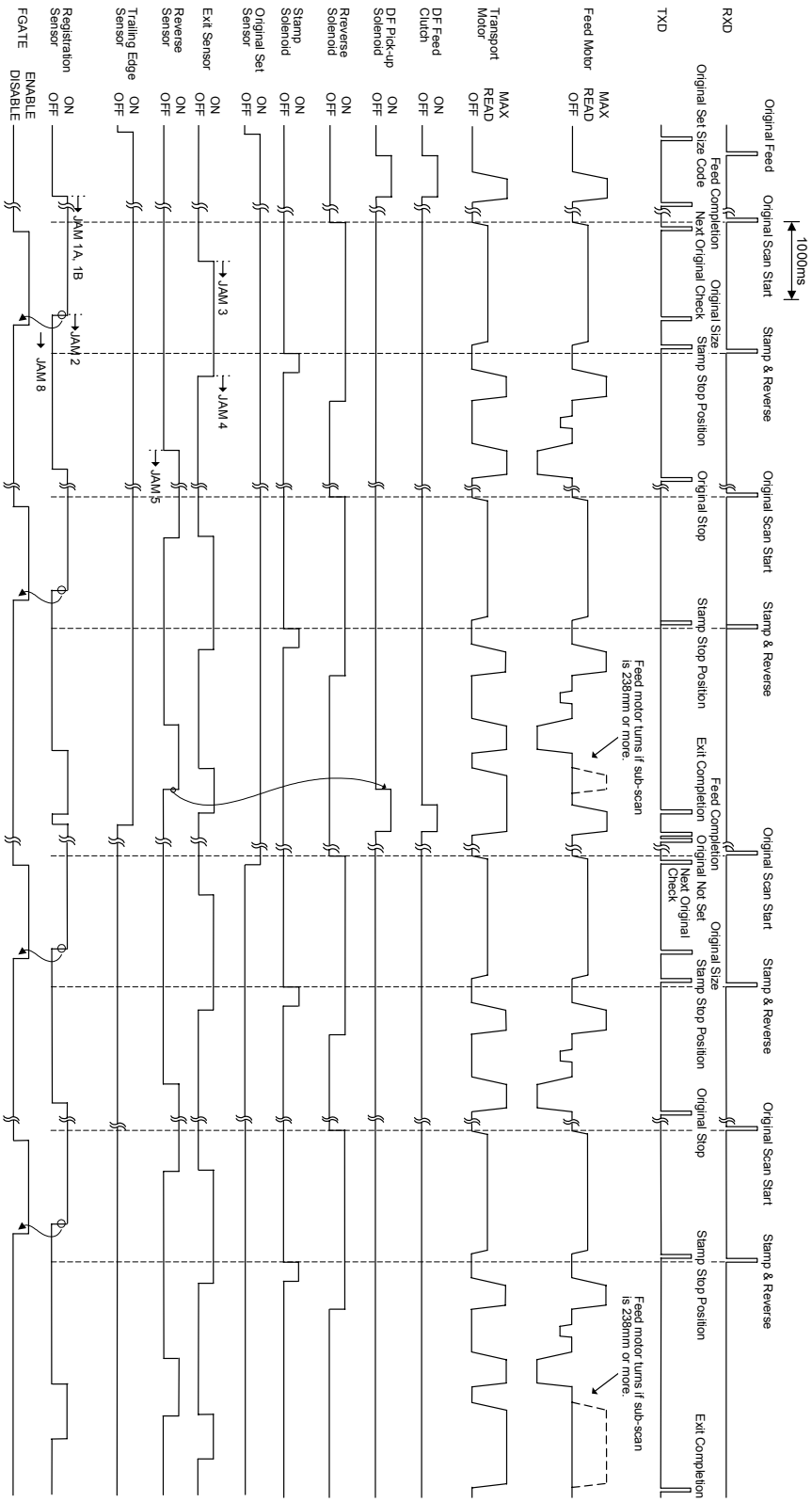
There is a stamp [A] between the 2nd transport roller [B] and the exit roller [C], and its solenoid is controlled by the copier directly.

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.

2.10 TIMING CHART

LT SIDEWAYS STAMP MODE (DOUBLE-SIDED ORIGINAL MODE)



2.11 CONDITION OF JAM DETECTION

JAM 1A: If the registration sensor does not turn on within 114 mm x 2 since the feed motor started (twice the distance between the original set position and the (registration sensor).

JAM 1B: Duplex mode only: If the registration sensor does not turn on within 161 mm x 1.5 since the feed motor started (1.5 times the distance between the original reverse position and the registration sensor).

JAM 2: If the registration sensor does not turn off within 1260 mm x 1.1 since the feed motor started (1.1 times the distance between the paper stop position at registration and the maximum original length).

JAM 3: If the original exit sensor does not turn on within 92 mm x 1.5 since the feed motor started (1.5 times the distance between registration sensor and exit sensor)

JAM 4: If the original exit sensor does not turn off within original length + 120 mm since the transport motor started after the exit sensor turns on

JAM 5: Duplex mode only: If the original reverse sensor does not turn on within 161 mm x 1.4 since the feed motor started (1.4 times the distance between the original reverse position and the registration sensor).

JAM 6: If the feeding original is removed.

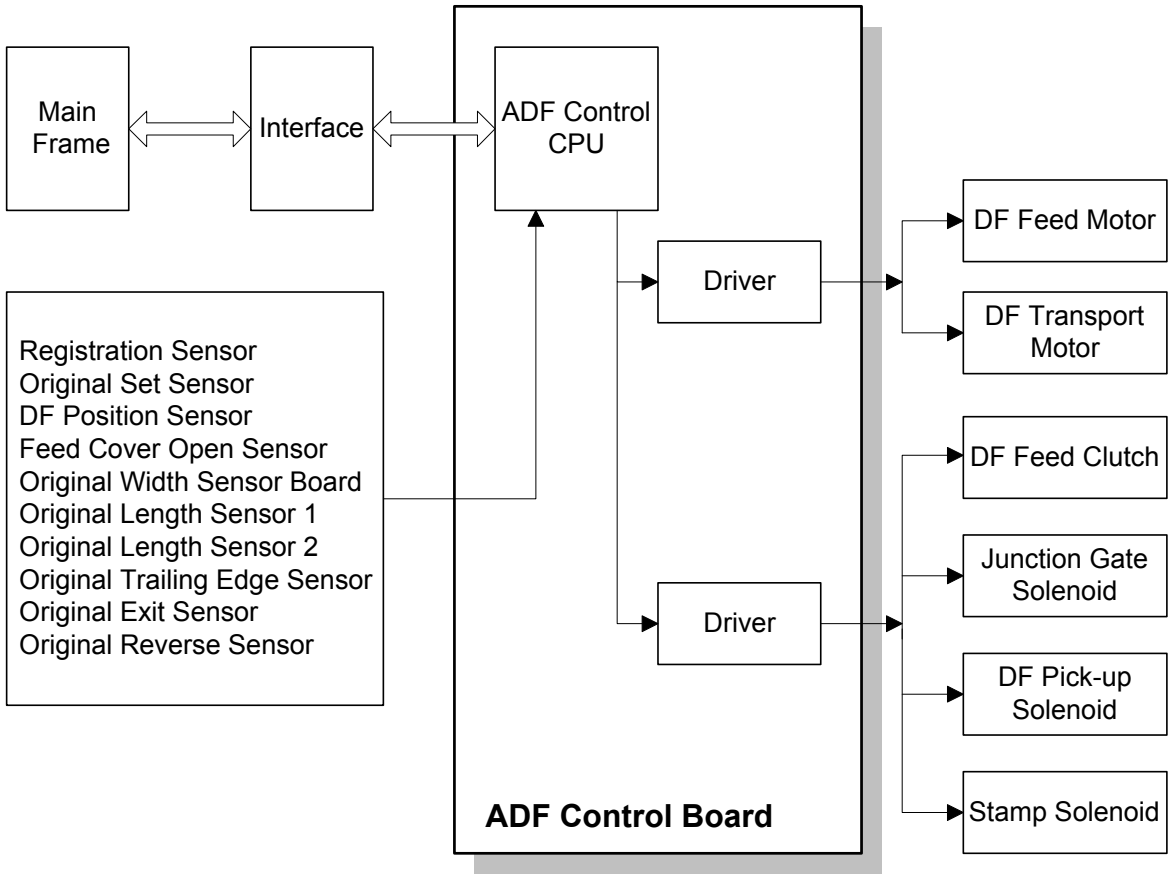
JAM 7: If the cover is opened or the ADF is lifted while the ADF is in operation.

JAM 8: If an area outside the maximum scannable area is selected.

JAM 9: If scanning of the previous original is not completed when the registration sensor detects the leading edge of the current original.

2.12 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. SERVICE TABLES

3.1 DIP SWITCHES

SW100				Description
1	2	3	4	
0	0	0	0	Normal operating mode (Default)
0	0	0	1	No function
0	0	1	0	Free run with two-sided original 100%
0	0	1	1	DF feed clutch operates
0	1	0	0	Free run with one-sided original 32.6%
0	1	0	1	DF pick-up solenoid operates
0	1	1	0	Motors rotate
0	1	1	1	No function
1	0	0	0	Free run with one-sided original 100%
1	0	0	1	Junction gate solenoid operates
1	0	1	0	Free run without two-sided original 100%
1	0	1	1	No function
1	1	0	0	Free run without one-sided original 100%
1	1	0	1	Stamp solenoid operates
1	1	1	0	Free run with two-sided original 32.6%
1	1	1	1	Free run without two-sided original 100%