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SERVICE MANUAL

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WARNING

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Ricoh Americas Corporation

LEGEND

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TABLE OF CONTENTS

INSTALLATION

1. INSTALLATION 1-1

1.1 INSTALLATION REQUIREMENTS 1-1
1.1.1 ENVIRONMENT 1-1
1.1.2 MACHINE LEVEL 1-2
1.1.3 MINIMUM SPACE REQUIREMENTS 1-2
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 ACCESSORY CHECK 1-4
D010 1-4
D043 1-5
1.2.3 INSTALLATION PROCEDURE 1-5
1.3 PLATEN COVER INSTALLATION 1-9
1.3.1 ACCESSORY CHECK 1-9
1.3.2 INSTALLATION PROCEDURE 1-9
1.4 ARDF INSTALLATION 1-10
1.4.1 ACCESSORY CHECK 1-10
1.4.2 INSTALLATION PROCEDURE 1-11
1.5 TWO-TRAY PAPER TRAY UNIT INSTALLATION 1-14
1.5.1 ACCESSORY CHECK 1-14
1.5.2 INSTALLATION PROCEDURE 1-14
1.6 ONE-BIN TRAY INSTALLATION 1-16
1.6.1 ACCESSORY CHECK 1-16
1.6.2 INSTALLATION PROCEDURE 1-16
1.7 BRIDGE UNIT INSTALLATION 1-19
1.7.1 COMPONENT CHECK 1-19
1.7.2 INSTALLATION PROCEDURE 1-19
Installation for a machine WITHOUT the 1-bin tray unit 1-20
Installation for a machine WITH the 1-bin tray unit 1-22
1.8 500-SHEET FINISHER (B792) 1-24

1.8.1 ACCESSORY CHECK 1-24
1.8.2 INSTALLATION PROCEDURE 1-25
Installation of the 500-Sheet Finisher 1-25
1.9 ANTI-CONDENSATION HEATER INSTALLATION 1-27
1.10 TRAY HEATERS 1-28
1.10.1 TRAY HEATER 1-28
1.10.2 TRAY HEATERS FOR THE OPTIONAL PAPER FEED UNIT 1-29
1.11 KEY COUNTER INTERFACE INSTALLATION 1-33
1.12 DDST EXPANSION 1-35
1.12.1 ACCESSORY CHECK 1-35
1.12.2 INSTALLING EXPANSION COMPONENT 1-35
Installing Panels and Keys 1-36
1.13 PCL OPTION 1-38
1.13.1 ACCESSORY CHECK 1-38
1.13.2 INSTALLING PCL OPTION 1-38
1.14 MECHANICAL COUNTER 1-41
1.14.1 COMPONENT CHECK 1-41
1.14.2 INSTALLING MECHANICAL COUNTER 1-41
When removing the mechanical counter 1-43
1.15 KEY COUNTER INSTALLATION (4 PINS) 1-44

PREVENTIVE MAINTENANCE

2. PREVENTIVE MAINTENANCE 2-1
2.1 PM TABLES 2-1
2.1.1 OPTICS 2-1
2.1.2 DRUM AREA 2-1
2.1.3 PAPER FEED 2-2
2.1.4 FUSING UNIT 2-3
2.1.5 ARDF 2-3
2.1.6 PAPER TRAY UNIT 2-4
2.2 HOW TO RESET THE PM COUNTER 2-5

REPLACEMENT AND ADJUSTMENT

3. REPLACEMENT AND ADJUSTMENT 3-1
3.1 GENERAL CAUTIONS 3-1

3.1.1 PCU (PHOTOCONDUCTOR UNIT) 3-1
3.1.2 TRANSFER ROLLER 3-1
3.1.3 SCANNER UNIT 3-1
3.1.4 LASER UNIT 3-2
3.1.5 FUSING UNIT 3-2
3.1.6 PAPER FEED 3-2
3.2 SPECIAL TOOLS AND LUBRICANTS 3-3
3.3 EXTERIOR COVERS AND OPERATION PANEL 3-4
3.3.1 REAR COVER 3-4
3.3.2 TRAY HARNESS COVER 3-4
3.3.3 COPY TRAY 3-5
3.3.4 INNER COVER 3-5
3.3.5 UPPER COVERS 3-6
3.3.6 LEFT COVER 3-6
3.3.7 FRONT COVER 3-7
3.3.8 FRONT RIGHT COVER 3-7
3.3.9 RIGHT REAR COVER 3-8
3.3.10 RIGHT DOOR (DUPLEX UNIT) 3-8
3.3.11 BY-PASS TRAY 3-9
3.3.12 RIGHT LOWER COVER 3-10
3.3.13 PLATEN COVER SENSOR 3-10
3.4 SCANNER UNIT 3-11
3.4.1 EXPOSURE GLASS/DF EXPOSURE GLASS 3-11
Exposure Glass 3-11
DF Exposure Glass 3-11
3.4.2 LENS BLOCK 3-11
3.4.3 LAMP STABILIZER BOARD AND EXPOSURE LAMP 3-12
3.4.4 ORIGINAL WIDTH/LENGTH SENSOR 3-13
Sensor Positions 3-14
Rearranging Sensor Positions for China Model (8K/16K) 3-14
3.4.5 SCANNER MOTOR 3-15
3.4.6 SCANNER HOME POSITION SENSOR 3-16
3.4.7 ADJUSTING SCANNER POSITIONS 3-16
Overview 3-17
Adjusting the First Scanner Contact Points 3-18
Adjusting the Second Scanner Contact Points 3-18
3.5 LASER UNIT 3-20

3.5.1 LOCATION OF CAUTION DECAL 3-20
3.5.2 TONER SHIELD GLASS 3-20
3.5.3 LASER UNIT 3-21
3.5.4 LD UNIT 3-21
3.5.5 POLYGONAL MIRROR MOTOR....3-22
3.5.6 LASER UNIT ALIGNMENT ADJUSTMENT....3-23
3.6 PCU SECTION 3-25
3.6.1 PCU 3-25
3.6.2 PICK-OFF PAWLS AND TONER DENSITY SENSOR....3-25
3.6.3 OPC DRUM 3-27
3.6.4 CHARGE ROLLER AND CLEANING BRUSH....3-28
3.6.5 CLEANING BLADE 3-28
3.6.6 DEVELOPER....3-29
3.6.7 AFTER REPLACEMENT OR ADJUSTMENT....3-30
3.7 TONER SUPPLY MOTOR....3-31
3.8 PAPER FEED SECTION 3-32
3.8.1 PAPER FEED ROLLER: TRAY 1 3-32
3.8.2 PAPER FEED ROLLER: TRAY 2 3-32
3.8.3 FRICTION PAD 3-33
3.8.4 PAPER END SENSOR....3-33
3.8.5 UPPER/LOWER PAPER LIFT MOTORS 3-34
3.8.6 EXIT SENSOR 3-34
3.8.7 BY-PASS FEED ROLLER AND PAPER END SENSOR....3-35
3.8.8 REGISTRATION ROLLER 3-36
3.8.9 BY-PASS PAPER SIZE SWITCH....3-37
3.8.10 REGISTRATION CLUTCH....3-38
3.8.11 REGISTRATION SENSOR....3-38
3.8.12 UPPER PAPER FEED CLUTCH AND BY-PASS FEED CLUTCH3-39
3.8.13 RELAY CLUTCHES....3-39
3.8.14 UPPER RELAY SENSOR....3-40
3.8.15 LOWER RELAY SENSOR....3-40
3.8.16 LOWER PAPER FEED CLUTCH....3-41
3.8.17 UPPER/LOWER PAPER SIZE SENSORS....3-41
3.8.18 UPPER/LOWER PAPER LIFT SENSOR....3-42
3.8.19 UPPER/LOWER PAPER HEIGHT SENSORS 3-43
When reassembling the sensor bracket....3-44
3.9 IMAGE TRANSFER....3-45

3.9.1 IMAGE TRANSFER ROLLER 3-45
3.9.2 IMAGE DENSITY SENSOR 3-46
3.9.3 DISCHARGE PLATE 3-46
Reassembling the discharge plate 3-47
3.10 FUSING 3-49
3.10.1 FUSING UNIT 3-49
3.10.2 THERMISTOR 3-49
3.10.3 FUSING LAMPS 3-50
3.10.4 HOT ROLLER STRIPPER PAWLS 3-51
3.10.5 HOT ROLLER 3-51
3.10.6 THERMOSTAT 3-52
3.10.7 PRESSURE ROLLER AND BUSHINGS 3-52
3.10.8 NIP BAND WIDTH ADJUSTMENT 3-53
3.10.9 CLEANING ROLLER 3-54
3.11 DUPLEX UNIT 3-55
3.11.1 DUPLEX EXIT SENSOR 3-55
3.11.2 DUPLEX ENTRANCE SENSOR 3-55
3.11.3 DUPLEX INVERTER SENSOR 3-56
3.11.4 DUPLEX TRANSPORT MOTOR 3-56
3.11.5 DUPLEX INVERTER MOTOR 3-57
3.12 OTHER REPLACEMENTS 3-58
3.12.1 QUENCHING LAMP 3-58
3.12.2 HIGH-VOLTAGE POWER SUPPLY BOARD 3-58
3.12.3 BICU (BASE-ENGINE IMAGE CONTROL UNIT) 3-59
3.12.4 MAIN MOTOR 3-59
3.12.5 DUPLEX FAN 3-60
3.12.6 REAR EXHAUST FAN 3-60
Replacement Procedure 3-60
3.12.7 PSU (POWER SUPPLY UNIT) 3-61
3.12.8 GEARBOX 3-62
Gear Arrangement in the Gearbox 3-63
3.13 COPY ADJUSTMENTS PRINTING/SCANNING 3-64
3.13.1 PRINTING 3-64
Registration - Leading Edge/Side-to-Side 3-64
Blank Margin 3-65
Main Scan Magnification 3-66
3.13.2 SCANNING 3-66

Registration: Platen Mode....3-66
Magnification....3-67
Main Scan Magnification....3-67
Sub-Scan Magnification....3-67
Standard White Density Adjustment....3-68
3.13.3 ARDF IMAGE ADJUSTMENT....3-68
Sub-scan Magnification....3-69

TROUBLESHOOTING

4. TROUBLESHOOTING....4-1
4.1 SERVICE CALL CONDITIONS....4-1
4.1.1 SUMMARY....4-1
4.1.2 SC CODE DESCRIPTIONS....4-2
4.2 ELECTRICAL COMPONENT DEFECTS....4-19
4.2.1 SENSORS....4-19
4.2.2 SWITCHES....4-22
4.3 BLOWN FUSE CONDITIONS....4-24
4.4 LED DISPLAY....4-25
4.4.1 BICU....4-25

SERVICE TABLES

5. SERVICE TABLES....5-1
5.1 SERVICE PROGRAM MODE....5-1
5.1.1 HOW TO ENTER THE SP MODE....5-1
5.2 COPIER SP MODE TABLES....5-3
5.2.1 SP1-XXX (FEED)....5-3
5.2.2 SP2-XXX (DRUM)....5-8
5.2.3 SP3-XXX (PROCESS)....5-12
5.2.4 SP4-XXX (SCANNER)....5-18
5.2.5 SP5-XXX (MODE)....5-27
5.2.6 SP6-XXX (PERIPHERALS)....5-32
5.2.7 SP7-XXX (DATA LOG)....5-34
5.2.8 SP8-XXX (DATA LOG 2)....5-41
5.2.9 SP9-XXX (ETC.)....5-46

5.3 PRINTER/SCANNER SP MODE TABLES (DDST CONTROLLER ONLY)5-47
5.3.1 PRINTER SERVICE MODE 5-47
5.3.2 SCANNER SYSTEM AND OTHERS 5-47
5.4 USING SP MODES 5-48
5.4.1 ADJUSTING REGISTRATION AND MAGNIFICATION 5-48
5.4.2 ID SENSOR ERROR ANALYSIS (SP 3310) 5-48
5.4.3 DISPLAY APS DATA (SP 4301-1) 5-49
5.4.4 MEMORY CLEAR 5-50
With Flash Memory Card 5-51
Without Flash Memory Card 5-52
5.4.5 INPUT CHECK 5-52
Conducting an Input Check 5-52
Input Check Table for Mainframe (SP 5803) 5-52
Input Check Table for Finisher (SP 6124) 5-56
5.4.6 OUTPUT CHECK 5-58
Conducting an Output Check for Mainframe 5-58
Output Check Table for Mainframe (SP 5804) 5-58
Output Check Table for Finisher (SP 6128) 5-60
5.4.7 SERIAL NUMBER INPUT (SP 5811) 5-61
Specifying Characters 5-61
5.4.8 NVRAM DATA UPLOAD/DOWNLOAD (SP 5824/5825) 5-61
Overview 5-62
NVRAM Upload (SP 5824-1) 5-62
NVRAM Download (SP 5825-1) 5-63
5.4.9 FIRMWARE UPDATE PROCEDURE 5-63
Engine (BICU) Firmware Update Procedure 5-64
DDST (Printer Scanner) Update Procedure 5-65
5.4.10 TEST PATTERN PRINT (SP 5902-1) 5-67
Executing Test Pattern Printing 5-67
Test Patterns 5-67
5.4.11 PAPER JAM COUNTERS (SP 7504) 5-69
5.4.12 SMC PRINT (SP 5990) 5-71
5.4.13 ORIGINAL JAM HISTORY DISPLAY (SP 7508) 5-71
Viewing the Copy Jam History 5-71
Jam History Codes 5-72
5.4.14 ADF APS SENSOR OUTPUT DISPLAY (SP 6901) 5-72
Sensor Positions 5-72

Reading Data 5-73

DETAILED SECTION DESCRIPTIONS

6. DETAILED SECTION DESCRIPTIONS 6-1
6.1 OVERVIEW 6-1
6.1.1 COMPONENT LAYOUT 6-1
6.1.2 PAPER PATH 6-2
6.1.3 DRIVE LAYOUT 6-3
6.2 BOARD STRUCTURE 6-4
6.2.1 BLOCK DIAGRAM 6-4
6.2.2 BICU (BASE ENGINE AND IMAGE CONTROL UNIT) 6-4
6.2.3 SBU (SENSOR BOARD UNIT) 6-5
6.3 COPY PROCESS OVERVIEW 6-6
6.4 SCANNING 6-8
6.4.1 OVERVIEW 6-8
6.4.2 SCANNER DRIVE 6-9
6.4.3 ORIGINAL SIZE DETECTION IN PLATEN MODE 6-10
6.5 IMAGE PROCESSING 6-13
6.5.1 OVERVIEW 6-13
6.5.2 SBU (SENSOR BOARD UNIT) 6-14
6.5.3 IPU (IMAGE PROCESSING UNIT) 6-15
Overview 6-15
Image Processing Modes 6-15
Image Processing Path 6-17
Original Modes 6-18
SP Modes for Each Image Processing Step 6-18
Auto Shading 6-19
White Line Erase 6-20
Black Line Erase 6-21
Auto Image Density (ADS) 6-21
Scanner Gamma Correction 6-21
Main Scan Magnification 6-22
Mirroring for ADF Mode 6-22
Filtering 6-23
ID Gamma Correction 6-24
Gradation Processing 6-24

6.5.4 VIDEO CONTROL UNIT (VCU).....6-25
Fine Character and Image (FCI).....6-25
Printer Gamma Correction.....6-26
6.6 LASER EXPOSURE.....6-27
6.6.1 OVERVIEW.....6-27
6.6.2 AUTO POWER CONTROL (APC).....6-28
6.6.3 LD SAFETY SWITCH.....6-29
6.7 PHOTOCONDUCTOR UNIT (PCU).....6-30
6.7.1 OVERVIEW.....6-30
6.7.2 DRIVE.....6-31
6.8 DRUM CHARGE.....6-32
6.8.1 OVERVIEW.....6-32
6.8.2 CHARGE ROLLER VOLTAGE CORRECTION.....6-33
Correction for Environmental Conditions.....6-33
6.8.3 ID SENSOR PATTERN PRODUCTION TIMING.....6-34
6.8.4 DRUM CHARGE ROLLER CLEANING.....6-34
6.9 DEVELOPMENT.....6-35
6.9.1 OVERVIEW.....6-35
6.9.2 DRIVE.....6-36
6.9.3 DEVELOPER MIXING.....6-36
6.9.4 DEVELOPMENT BIAS.....6-37
6.9.5 TONER SUPPLY.....6-38
Toner Bottle Replenishment Mechanism.....6-38
6.9.6 TONER SUPPLY MECHANISM.....6-39
6.9.7 TONER DENSITY CONTROL.....6-39
Overview.....6-39
Toner Density Sensor Initial Setting.....6-42
Toner Concentration Measurement.....6-42
Vsp/Vsg Detection.....6-42
Toner Supply Reference Voltage (Vref) Determination.....6-42
Toner Supply Determination.....6-43
Toner Supply Motor On Time Determinations.....6-43
6.9.8 TONER SUPPLY IN ABNORMAL SENSOR CONDITIONS.....6-44
ID Sensor.....6-44
TD Sensor.....6-44
6.9.9 TONER NEAR END/END DETECTION AND RECOVERY.....6-45
Toner Near End Detection.....6-45

Toner Near End Recovery 6-45
Toner End Detection 6-45
Toner End Recovery 6-45
6.10 DRUM CLEANING AND TONER RECYCLING 6-46
6.10.1 DRUM CLEANING 6-46
6.10.2 TONER RECYCLING 6-47
6.11 PAPER FEED 6-48
6.11.1 OVERVIEW 6-48
6.11.2 PAPER FEED DRIVE MECHANISM 6-49
6.11.3 PAPER FEED AND SEPARATION MECHANISM 6-49
6.11.4 PAPER LIFT MECHANISM 6-50
6.11.5 PAPER END DETECTION 6-51
6.11.6 PAPER HEIGHT DETECTION 6-52
6.11.7 PAPER SIZE DETECTION 6-53
Paper Tray 6-53
By-pass Tray 6-54
6.11.8 SIDE FENCES 6-56
Side Fences 6-56
End Fence 6-56
6.11.9 PAPER REGISTRATION 6-57
6.11.10 TRAY LOCK MECHANISM 6-57
6.12 IMAGE TRANSFER AND PAPER SEPARATION 6-59
6.12.1 OVERVIEW 6-59
6.12.2 IMAGE TRANSFER CURRENT TIMING 6-60
6.12.3 TRANSFER ROLLER CLEANING 6-61
6.12.4 PAPER SEPARATION MECHANISM 6-62
6.13 IMAGE FUSING AND PAPER EXIT 6-63
6.13.1 OVERVIEW 6-63
6.13.2 FUSING UNIT DRIVE AND RELEASE MECHANISM 6-64
Fusing Unit Drive 6-64
Drive Release Mechanism 6-64
Contact/Release Control 6-64
Drive Release Solenoid 6-65
6.13.3 FUSING ENTRANCE GUIDE SHIFT 6-66
6.13.4 PRESSURE ROLLER 6-66
6.13.5 FUSING TEMPERATURE CONTROL 6-67
Overview 6-67

Temperature Control 6-67
6.13.6 OVERHEAT PROTECTION 6-69
6.14 DUPLEX UNIT 6-71
6.14.1 OVERALL 6-71
6.14.2 DRIVE MECHANISM 6-72
6.14.3 BASIC OPERATION 6-72
Larger than A4 Short-edge/LT Short-edge 6-72
Up to A4 Short-edge/LT Short-edge 6-73
6.14.4 FEED IN AND EXIT MECHANISM 6-75
6.15 ENERGY SAVER MODES OF BASIC MACHINES 6-76
6.15.1 OVERVIEW 6-76
6.15.2 AOF 6-77
6.15.3 TIMERS 6-77
6.15.4 RECOVERY 6-77
6.16 ENERGY SAVER MODES OF DDST MACHINES 6-78
6.16.1 OVERVIEW 6-78
6.16.2 AOF 6-79
6.16.3 TIMERS 6-79
6.16.4 RECOVERY 6-79

SPECIFICATIONS

7. SPECIFICATIONS 7-1
7.1 GENERAL SPECIFICATIONS 7-1
7.2 SUPPORTED PAPER SIZES 7-5
7.2.1 ORIGINAL SIZE DETECTION 7-5
North America, Europe, Asia, Taiwan 7-5
China, Korea 7-6
7.2.2 PAPER FEED AND EXIT 7-8
Main Frame, Duplex 7-8
7.3 MACHINE CONFIGURATION 7-12
7.4 OPTIONAL EQUIPMENT 7-13
7.4.1 ARDF 7-13
7.4.2 TWO-TRAY PAPER TRAY UNIT 7-13
7.4.3 ONE-BIN TRAY 7-14
7.4.4 BRIDGE UNIT 7-15
7.4.5 500-SHEET FINISHER 7-15

B792 FINISHER SR3000

SEE SECTION B792 FOR DETAILED TABLE OF CONTENTS

D330 AUTO REVERSE DOCUMENT FEEDER DF 3020

SEE SECTION D330 FOR DETAILED TABLE OF CONTENTS

D331 PAPER FEED UNIT PB 3030

SEE SECTION D331 FOR DETAILED TABLE OF CONTENTS

D339 1 BIN TRAY BN 3020

SEE SECTION D339 FOR DETAILED TABLE OF CONTENTS

D340 BRIDGE UNIT BU 3010

SEE SECTION D340 FOR DETAILED TABLE OF CONTENTS

D345 FAX OPTION TYPE 2500

SEE SECTION D345 FOR DETAILED TABLE OF CONTENTS

D359 PRINTER/SCANNER UNIT TYPE 2500

SEE SECTION D359 FOR DETAILED TABLE OF CONTENTS

Read This First

Safety Notices

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. The copier drives some of its components when it completes the warm-up period. Be careful to keep hands away from the mechanical and electrical components as the copier starts operation.
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

1. Toner and developer are non-toxic, but if you get either of them in your eyes by accident, it may cause temporary eye discomfort. Immediately wash eyes with plenty of water. If unsuccessful, get medical attention.
2. This machine, which uses a high voltage power source, can generate ozone gas. High ozone density is harmful to human health. Therefore, the machine must be installed in a well-ventilated room.

Observance of Electrical Safety Standards

This machine and its peripherals must be serviced by a customer service representative who has completed the training course on those models.

⚠WARNING

- Keep the machine away from flammable liquids, gases, and aerosols. A fire or an explosion might occur.

Safety and Ecological Notes for Disposal

1. Do not incinerate toner bottles or used toner. Toner dust may ignite suddenly when

exposed to an open flame.

2. Dispose of used toner, the maintenance unit which includes developer or the organic photoconductor in accordance with local regulations. (These are non-toxic supplies.)
3. Dispose of replaced parts in accordance with local regulations.

Laser Safety

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

⚠WARNING

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

⚠WARNING

- **WARNING**: Turn off the main switch before attempting any of the procedures in the Laser Optics Housing Unit section. Laser beams can seriously damage your eyes.
- **CAUTION MARKING:**

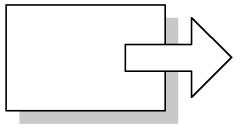


Symbols and Abbreviations

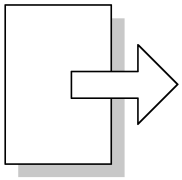
This manual uses several symbols and abbreviations. The meaning of those symbols and abbreviations are as follows:

☛	See or Refer to
⟅⟆	Clip ring

	Screw
	Connector
	Clamp
	E-ring
SEF	Short Edge Feed
LEF	Long Edge Feed



Short Edge Feed (SEF)



Long Edge Feed (LEF)

INSTALLATION
D330 AUTO REVERSE DOC FEEDER DF3020
D345 FAX OPTION TYPE 2500
TAB POSITION 1

PREVENTIVE MAINTENANCE
D331 PAPER TRAY UNIT PB3030
TAB POSITION 2

REPLACEMENT AND ADJUSTMENT
TAB POSITION 3

TROUBLESHOOTING
B792 FINISHER SR3000
D359 PRINTER/SCANNER UNIT TYPE 2500
TAB POSITION 4

SERVICE TABLES
TAB POSITION 5

DETAILED DESCRIPTIONS
TAB POSITION 6

SPECIFICATIONS
D339 1-BIN TRAY BN3020
TAB POSITION 7

D340 BRIDGE UNIT BU3010
TAB POSITION 8

INSTALLATION

REVISION HISTORY		
Page	**Date**	**Added/Updated/New**
44 ~ 46	01/08/2008	New Information – Key Counter Installation

1. INSTALLATION

1.1 INSTALLATION REQUIREMENTS

⚠CAUTION

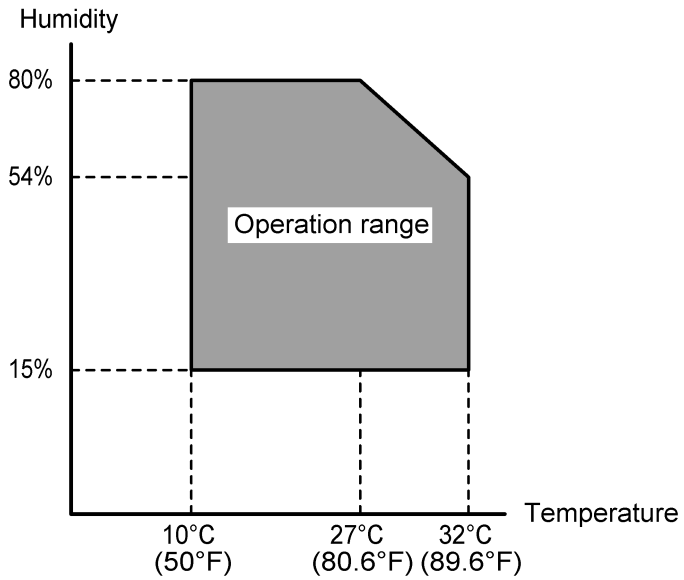
- When you install or move a main machine, first remove the optional units except for the ARDF, bridge unit, duplex unit, 1-bin tray unit and controller box from a main machine.

⚠CAUTION

- Before installing options, please do the following:
  - If there is a printer option in the machine, print out all data in the printer buffer.
  - Turn off the main switch and disconnect the power cord, the telephone line, and the network cable.

1.1.1 ENVIRONMENT

–Temperature and Humidity Chart–



▪ Temperature Range:	10°C to 32°C (50°F to 89.6°F)
▪ Humidity Range:	15% to 80% RH
▪ Ambient Illumination:	Less than 1,500 lux (do not expose to direct sunlight)
▪ Ventilation:	3 times/hr/person or more

Installation Requirements

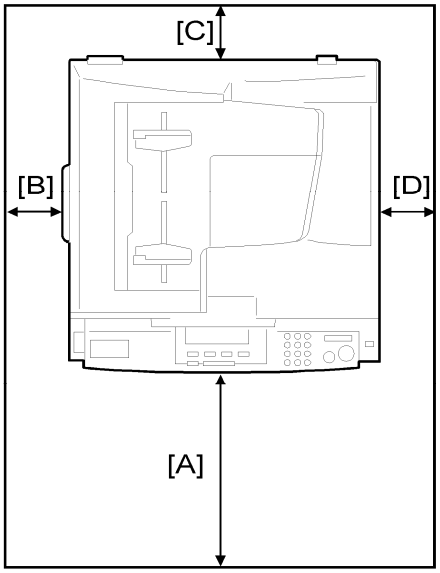
▪ Ambient Dust:	Less than 0.1 mg/m3 (2.7 x 10-6 oz/yd3)
▪ Avoid areas exposed to sudden temperature changes: 1) Areas directly exposed to cool air from an air conditioner. 2) Areas directly exposed to heat from a heater.	
▪ Do not place the machine in areas where it can be exposed to corrosive gases.	
▪ Do not install the machine at any location over 2,000 m (6,500 ft.) above sea level.	
▪ Place the machine on a strong and level base. (Inclination on any side should be no more than 5 mm.)	
▪ Do not place the machine where it is subjected to strong vibrations.	

1.1.2 MACHINE LEVEL

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

1.1.3 MINIMUM SPACE REQUIREMENTS

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



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

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

1.1.4 POWER REQUIREMENTS

⚠CAUTION

- Make sure that the wall outlet is near the machine and easily accessible. After completing installation, make sure the plug fits firmly into the outlet.
- Avoid multi-wiring.
- Make sure the wall outlet is properly grounded.

Input voltage:

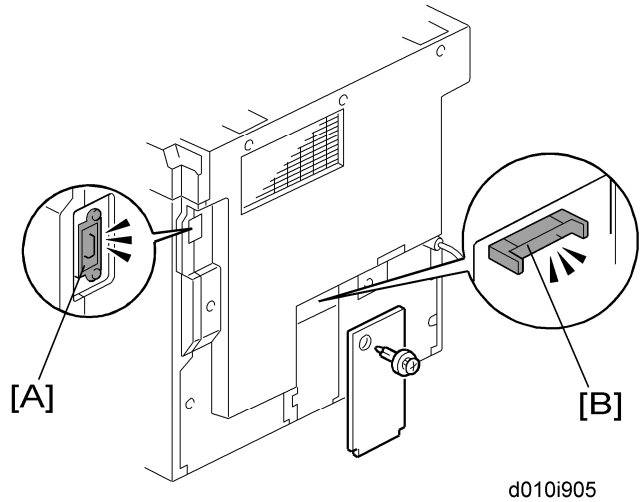
North and South America, Taiwan:	110 – 120 V, 60 Hz, 12 A
Europe, Asia:	220 – 240 V, 50/60 Hz, 7 A

1.2 COPIER INSTALLATION

1.2.1 POWER SOCKETS FOR PERIPHERALS

⚠CAUTION

- Be sure to plug the cables into the correct sockets.



[A]: Socket for ARDF (Rated voltage output max. DC24 V)

[B]: Socket for paper tray unit (Rated voltage output max. DC24 V)

1.2.2 ACCESSORY CHECK

Check that you have the accessories in this list.

D010

No.	Description	Q'ty
1	NECR-English (-17)	1
2	EU Safety Sheet (-26, -27)	1
3	Operating Instructions - Book (-17, -19, -21, -29)	1
4	Operating Instructions - CD-ROM (-17, -19, -21, -29)	1
5	Language Kit (-26, -27)	1
6	Model Name Plate (-29)	1
7	Emblem Cover (-29)	1

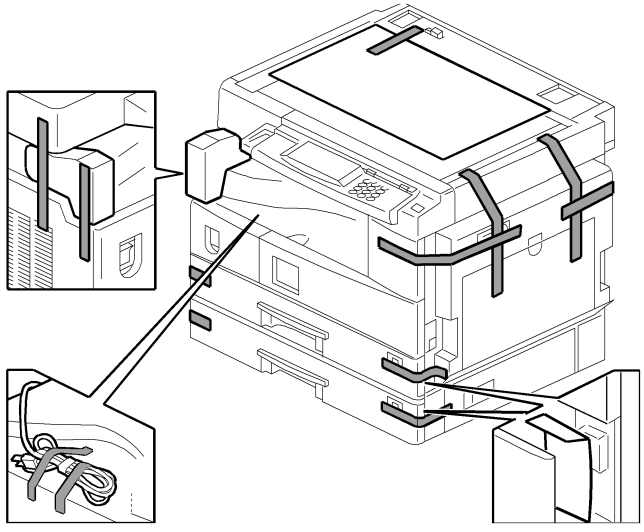
D043

No.	Description	Q'ty
1	Operating Instructions - Book	1
2	Operating Instructions - CD-ROM	1
3	Model Name Plate (-29)	1
4	Emblem Cover (-29)	1
5	Caution Sheet - CD-Driver (-29)	1
6	Sheet -EULA	1

1.2.3 INSTALLATION PROCEDURE

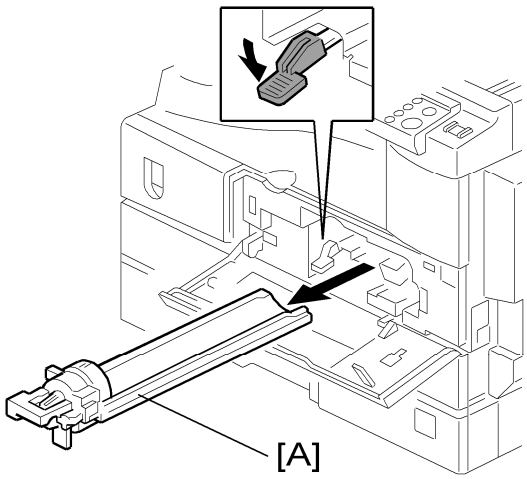
⚠CAUTION

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



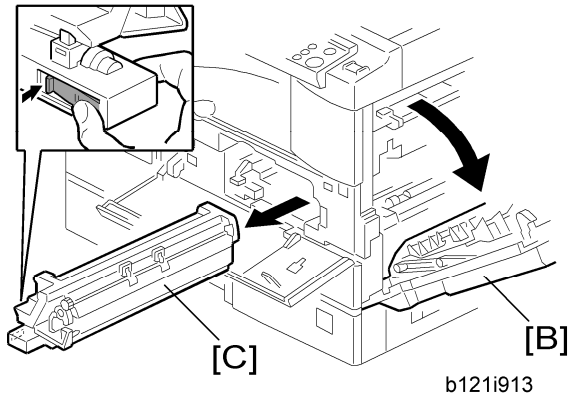
b121i904

1. Remove filament tape and other padding.



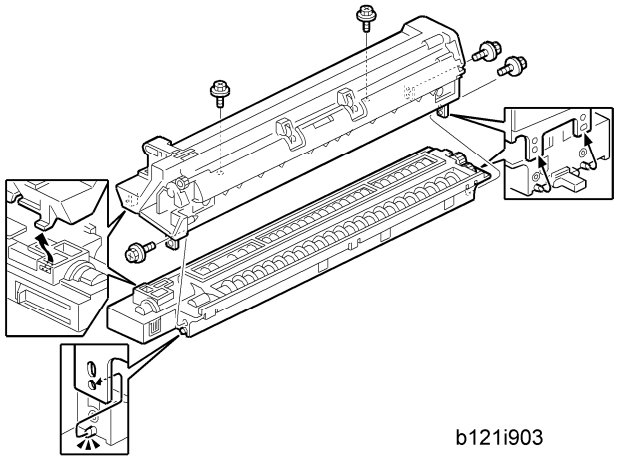
b121i912

2. Open the front door and remove the toner bottle holder [A].



b121i913

3. Open the right door [B], and remove the PCU (photo conductor unit) [C].

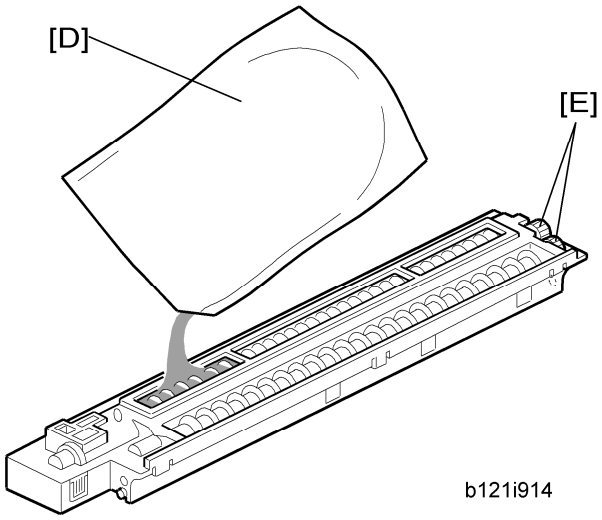


b121i903

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

Note

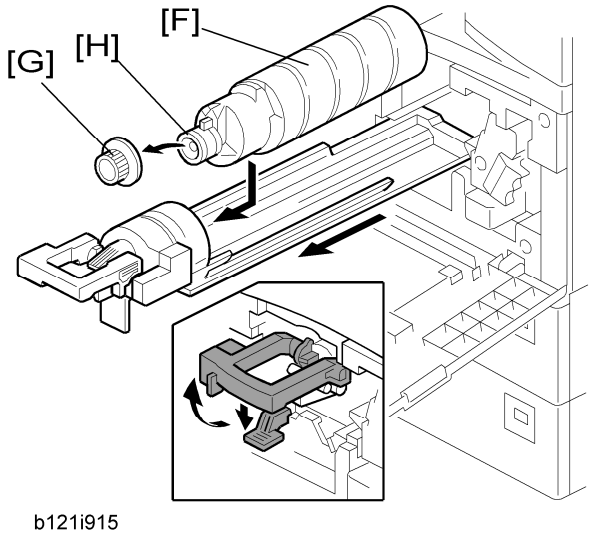
- This prevents foreign material from getting on the sleeve rollers



6. Pour a pack of developer evenly [D] into all openings of the lower part of the PCU.

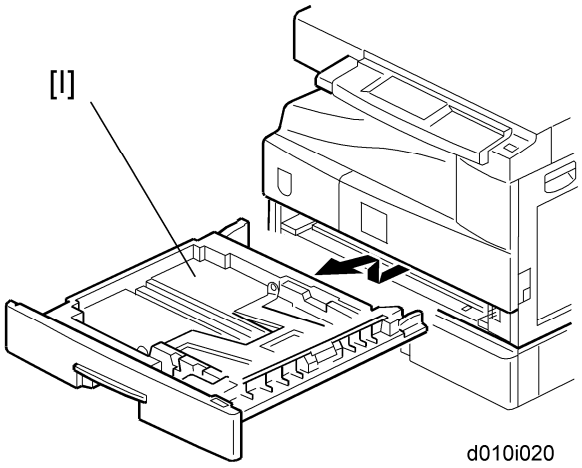
Note

- Do not spill the developer on the gears [E]. If developer has spilled on the gears, remove the developer by using a magnet or magnetized screwdriver.
- Do not turn the gear [E] excessively. The developer may spill.



7. Reassemble the PCU and reinstall it in the machine.
8. Shake a toner bottle [F] several times. (Do not remove the bottle cap [G] before you shake the bottle.)
9. Remove the bottle cap [G] and install the toner bottle on the holder. (Do not touch the inner cap [H].)

10. Push the holder (with the toner bottle) in the machine.



11. Pull out the paper tray [I] and adjust the positions of the end and side guides according to the desired paper size.

Note

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

12. Install the optional ARDF or platen cover.
13. Plug in the main power cord and turn on the main switch.
14. Activate the SP mode and execute "Devlpr Initialize" (SP 3016-1).
15. Wait until the message "Completed" shows (about 45 seconds).
16. Activate the User Tools and select the menu "Language."
17. Specify a language. This language is used for the operation panel.
18. Load paper in the paper tray and make a full size copy. Make sure the side-to-side and leading edge registrations are correct.

1.3 PLATEN COVER INSTALLATION

1.3.1 ACCESSORY CHECK

Check that you have the accessories indicated below.

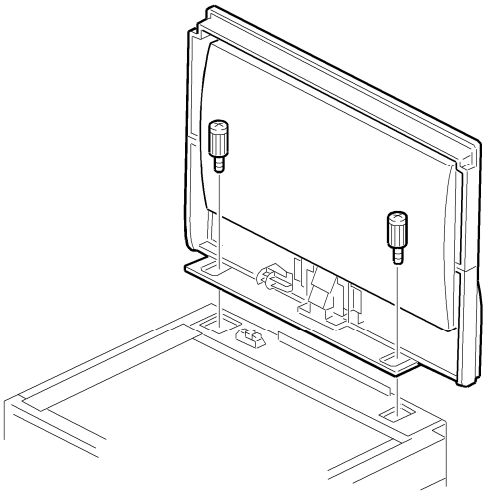
No.	Description	Q'ty
1	Stepped Screw	2

1.3.2 INSTALLATION PROCEDURE

⚠CAUTION

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

Install the platen cover (🔩 x 2) as shown.



1.4 ARDF INSTALLATION

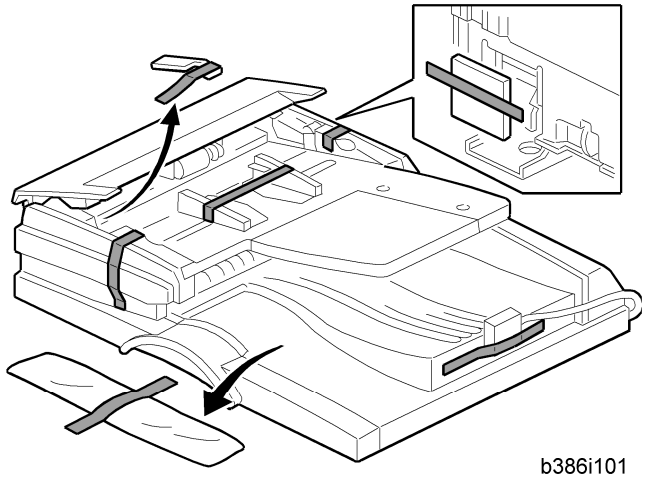
1.4.1 ACCESSORY CHECK

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

No.	Description	Q'ty
1	Scale Guide	1
2	DF Exposure Glass	1
3	Stud Screw	2
4	Knob Screw	2
5	Original Size Decal	2
6	Screwdriver Tool	1
7	Attention Decal – Top Cover	1
8	Attention Decal – Scanner	1
9	Cloth Holder	1
10	Cloth	1
11	Spacer*1	2

*1: The spacers are used for adjusting the trapezoid image.

1.4.2 INSTALLATION PROCEDURE

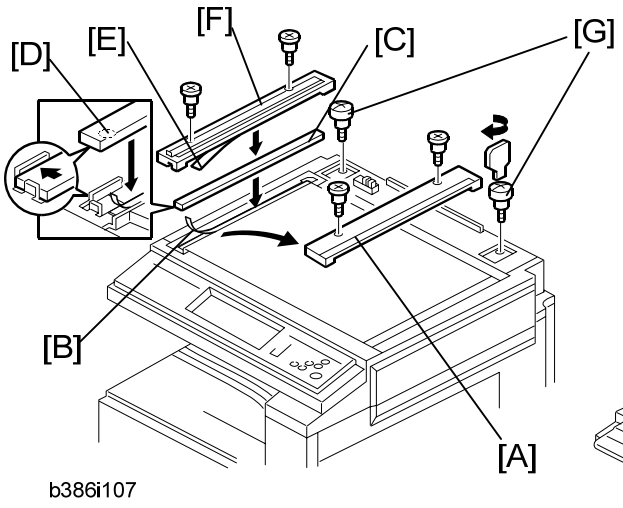


b386i101

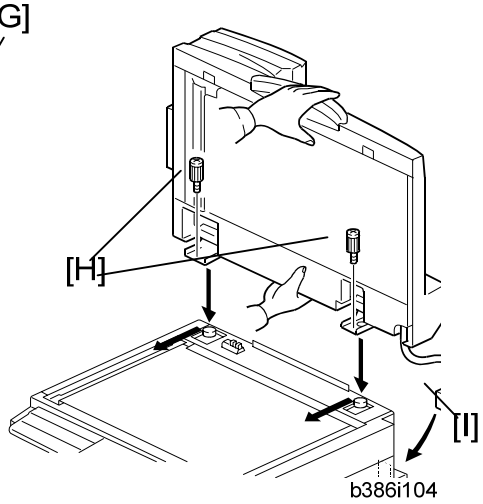
CAUTION

- Unplug the copier power cord before starting the following procedure.

1. Remove the strips of tape.



b386i107



b386i104

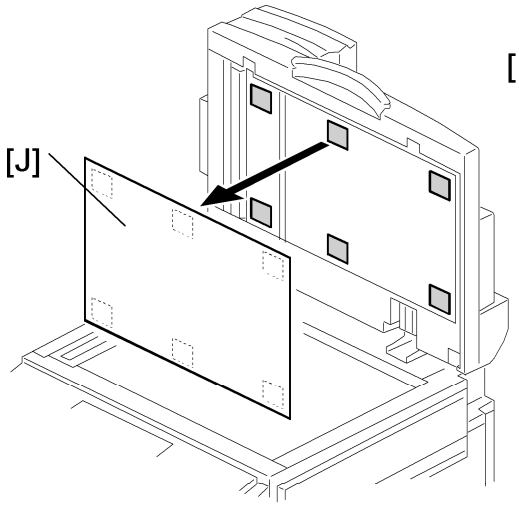
2. Remove the left scale [A] (☞ x 2).
3. Peel off the backing [B] of the double-sided tape attached to the glass holder.
4. Place the DF exposure glass [C] on the glass holder.

Note

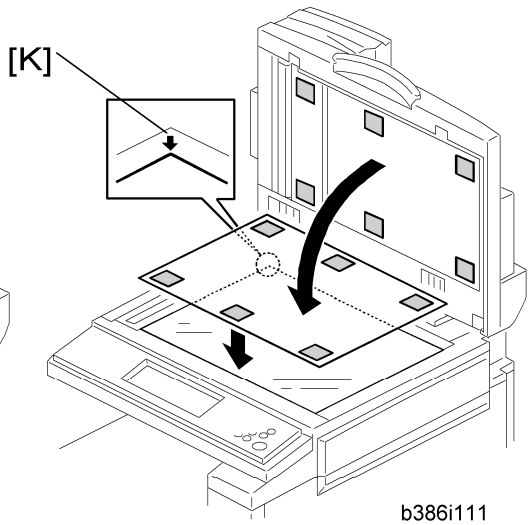
- When installing the DF exposure glass, make sure that the painted mark [D] is placed downward, as shown.

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].

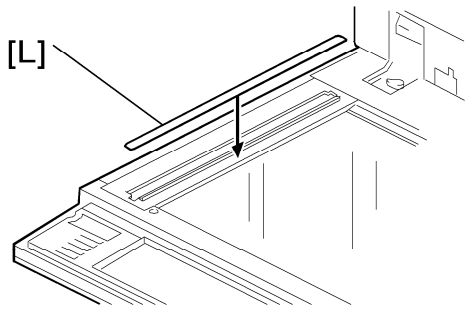
7. Mount the DF on the copier, then slide the DF to the front as shown.
8. Secure the DF unit with two screws [H].
9. Connect the cable [I] to the copier.



b386i110

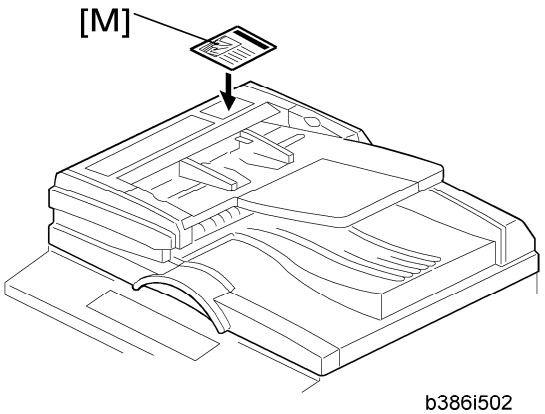


b386i111

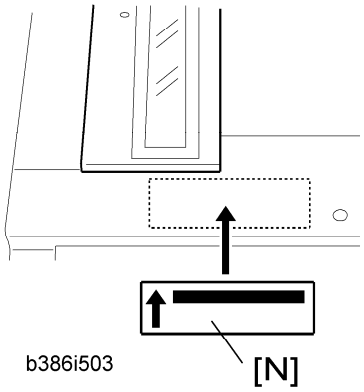


b386i501

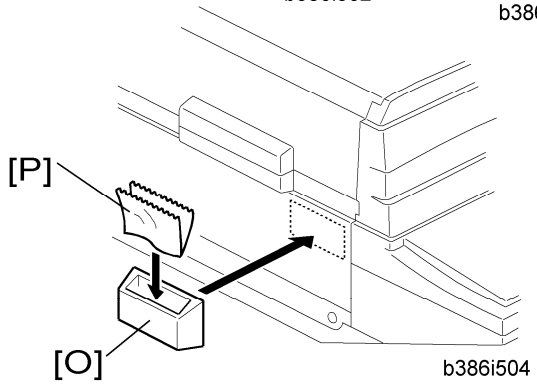
10. Peel off the platen sheet [J] and place it on the exposure glass.
11. Line up the rear left corner of the platen sheet flush against corner [K] on the exposure glass.
12. Close the ARDF.
13. Attach the appropriate scale decal [L] as shown.



b386i502



b386i503



b386i504

14. Attach the decal [M] to the top cover of the ARDF as shown, choosing the language most suitable for the machine installed.
15. Line up the arrow on the decal [N] 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 [O] to the left side of the scanner as shown.
17. Insert the cloth [P] 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 section 3.13.3 ARDF Image Adjustment).

1.5 TWO-TRAY PAPER TRAY UNIT INSTALLATION

1.5.1 ACCESSORY CHECK

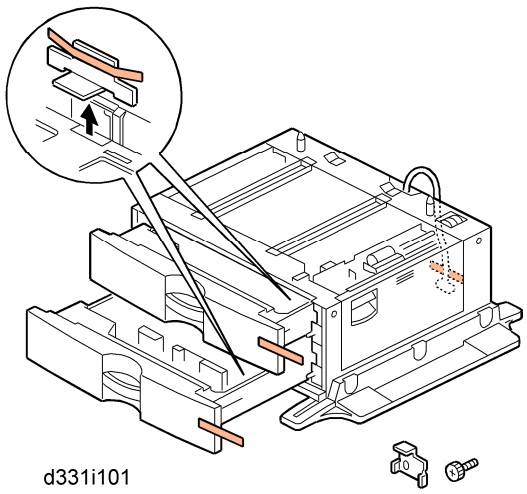
Check the quantity and condition of the accessories against the following list.

No.	Description	Q'ty
1	Securing Bracket	2
2	Screw - M4 x 8	4

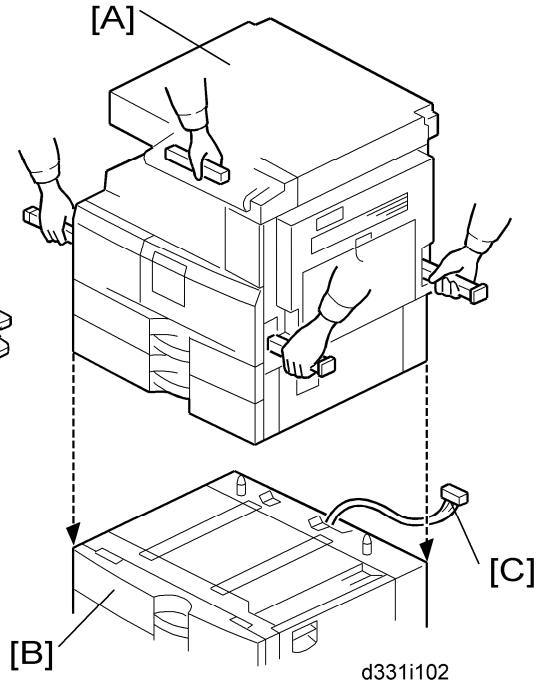
1.5.2 INSTALLATION PROCEDURE

⚠CAUTION

- **Unplug the machine power cord before starting the following procedure.**
- **The handles of the main machine for lifting must be inserted inside the machine and locked unless they are used for the installation or relocation of the main machine.**
- **When lifting the machine, be sure to have at least two people lifting.**



d331i101

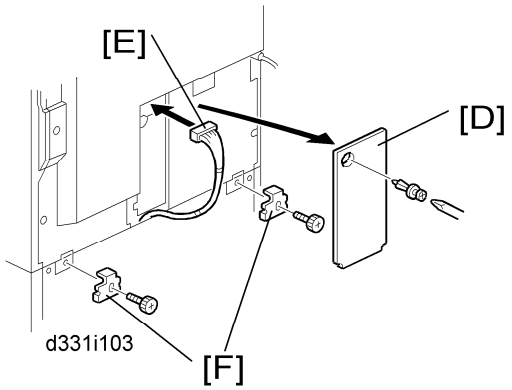


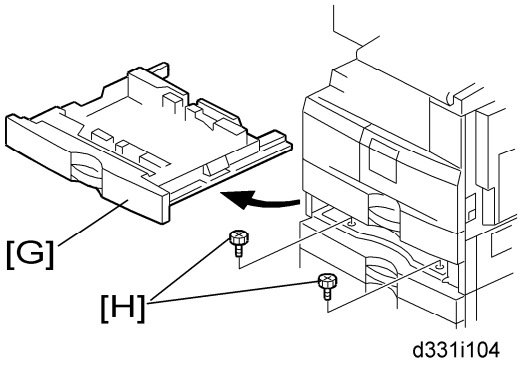
d331i102

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

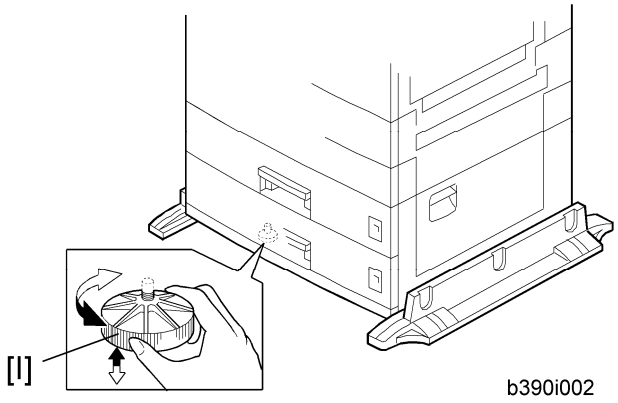
Note

- When installing the copier, be careful not to pinch the cable [C].





3. Remove the connector cover [D] (rivet screw x 1).
4. Connect the cable [E] to the copier, as shown.
5. Attach a securing bracket [F] 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 [G] and secure the paper tray unit with two screws [H].



8. Reinstall the 2nd paper tray.
9. Rotate the adjuster [I] so that the machine cannot be pushed or rolled across the floor.
10. Load paper into the paper trays and select the proper paper size.
11. Turn on the main switch.
12. Check the machine's operation and copy quality.

1.6 ONE-BIN TRAY INSTALLATION

1.6.1 ACCESSORY CHECK

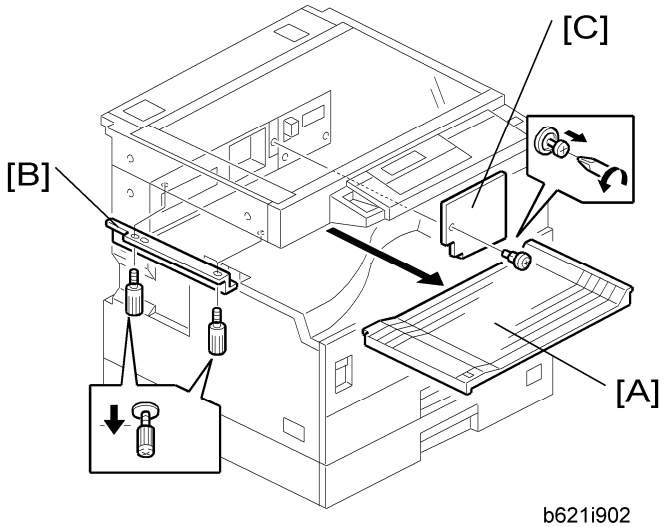
Check the quantity and condition of the accessories.

No.	Description	Q'ty
1	Installation procedure	1
2	One-bin sorter	1
3	Exit tray	1
4	Tapping screw M3 x 6	1

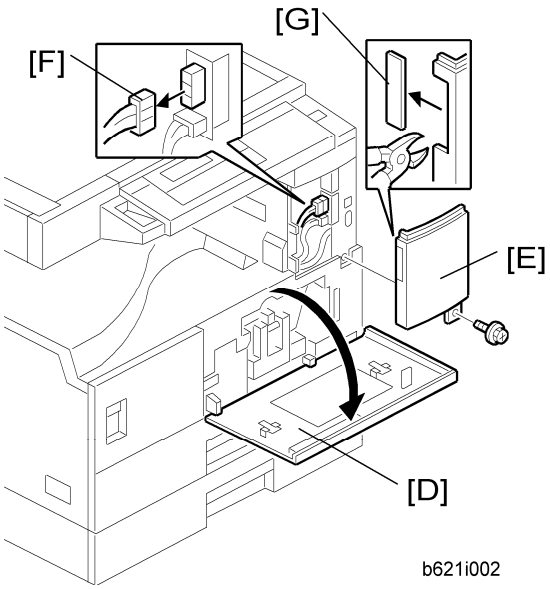
1.6.2 INSTALLATION PROCEDURE

⚠CAUTION

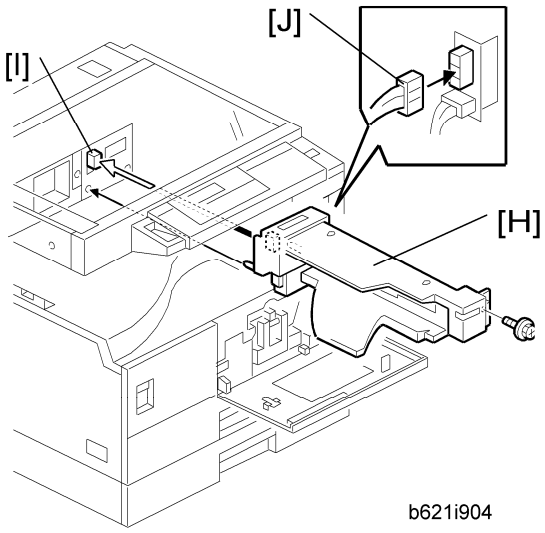
- **Unplug the machine power cord before starting the following procedure.**



1. Remove the inverter tray [A].
2. Remove the rail [B] (2 knob screws).
3. Remove the sorter cap [C] (1 rivet).



4. Open the front cover [D].
5. Remove the front right cover [E] (x 1).
6. Disconnect the connector [F].
7. Using a small cutter, cut the front cover to make an opening [G] for the 1-bin sorter.



8. Install the 1-bin sorter [H] as shown.

Note

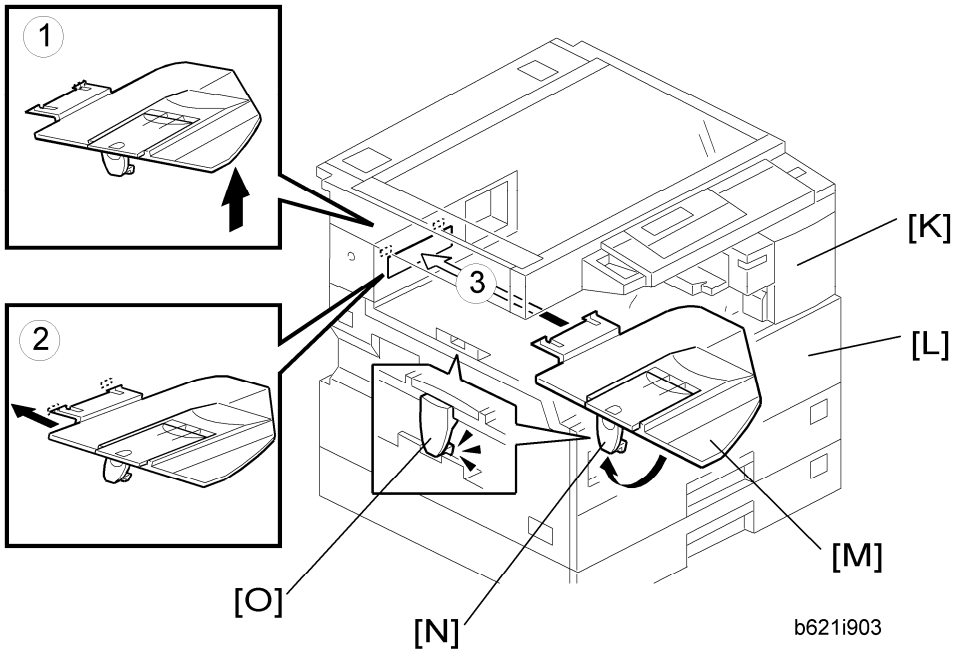
- Make sure the connector [I] is connected firmly.

9. Fasten the screw.
10. Reconnect the connector [J] you removed in step 6.

Note

- Make sure that the connector is secure.

One-Bin Tray Installation

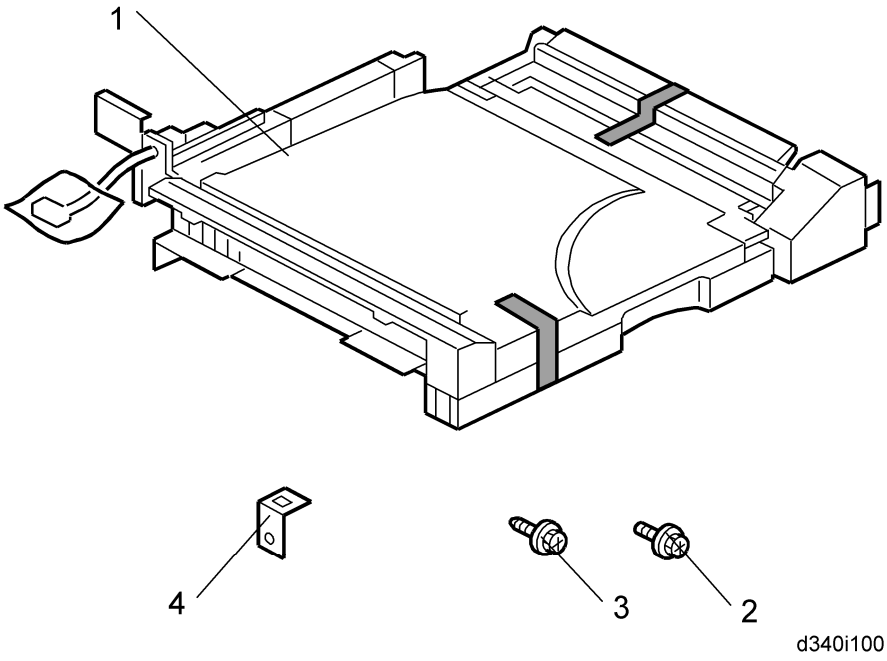


11. Reassemble the front right cover [K].
12. Close the front cover [L].
13. Install the exit tray [M] as follows:
    - Keep the front end higher than the rear end.
    - Push the left hook into the opening of the copier.
    - Push the right hook into the opening of the copier.
14. Pull the support [N] out of the left end of the exit tray.
15. Insert the support into the left end of the paper exit tray [O] (of the copier).
16. Turn the main switch on.
17. Check the operation.

1.7 BRIDGE UNIT INSTALLATION

1.7.1 COMPONENT CHECK

No.	Description	Q'ty
1	Bridge Unit	1
2	Tapping screw: M3 x 6	1
3	Tapping screw: M3 x 8	2
4	Holder bracket	1



1.7.2 INSTALLATION PROCEDURE

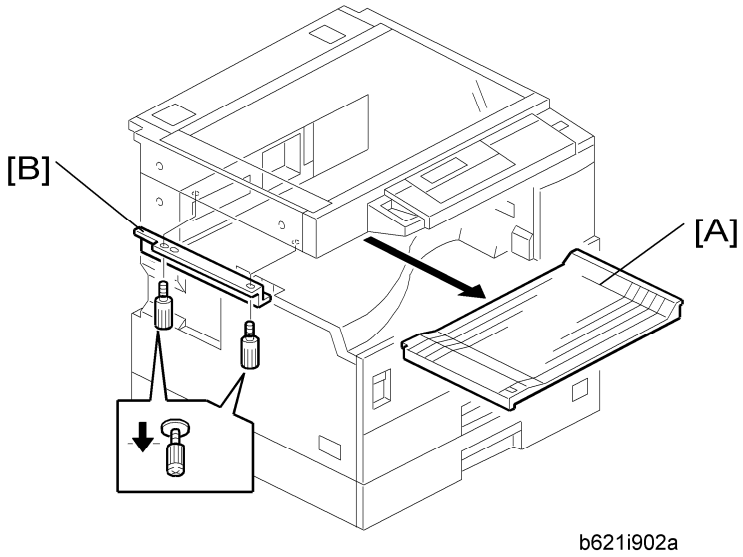
⚠CAUTION

- Unplug the copier power cord before starting the following procedure.

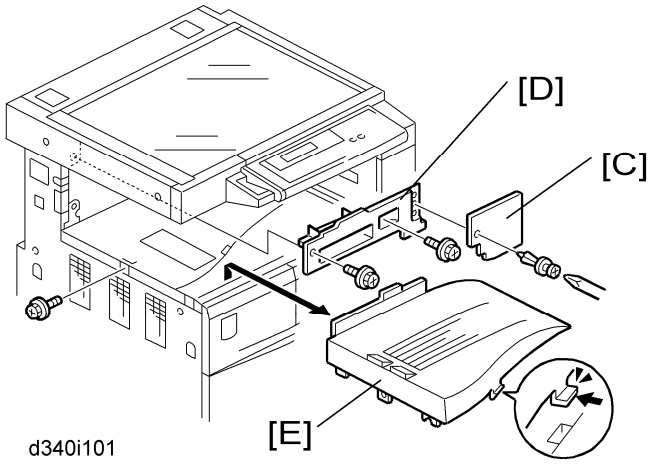
Note

- If you install the 1-bin tray (D339) to the machine, install the 1-bin tray first, before installing the bridge unit (D340).
- If you install the finisher unit (B792) to the machine, install the finisher unit after installing the bridge unit (D340).

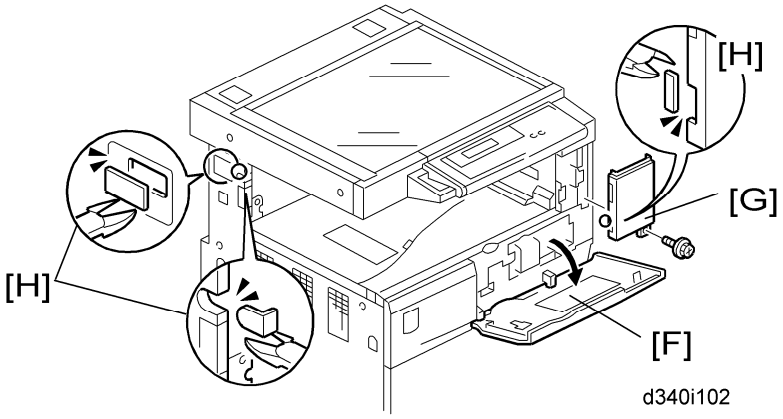
Installation for a machine WITHOUT the 1-bin tray unit



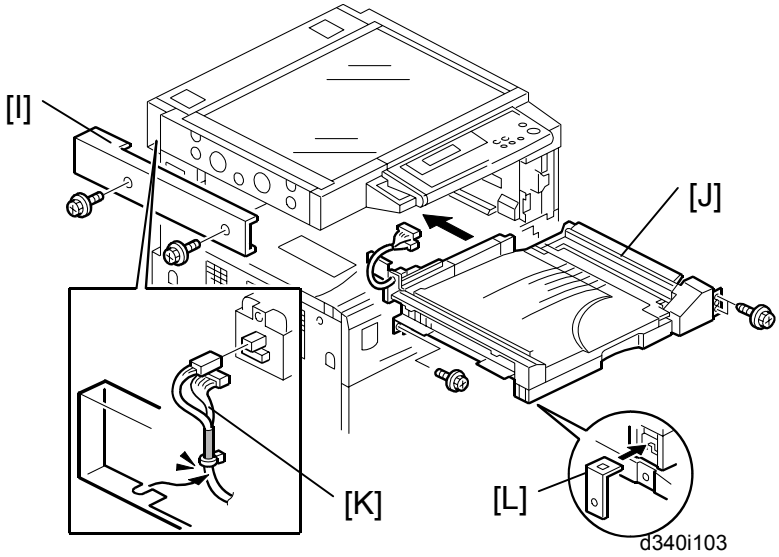
1. Remove the inverter tray [A].
2. Remove the rail [B] (knob screw x 2).



3. Remove the inner cover right [C] (rivet screw x 1).
4. Remove the inner cover left [D] (🔩 x 2).
5. Remove the inner tray [E] (🔩 x 1). Middle screw.



6. Open the front door [F].
7. Remove the front right cover [G] (x 1).
8. Cut off the cutouts (3 pieces) [H] with small cutters.



9. Remove the left upper cover [I] (x 2).
10. Install the bridge unit [J] to the machine (Front side: (M3x8) x 2, Rear side: (M3x6) x 1).
11. Connect the cables [K] to the machine (x 2).
12. Reinstall the left upper cover (x 2).
13. Reinstall the inner cover right if 1-bin tray unit is not installed (rivet screw x 1).
14. Reinstall the inner cover left (x 2).
15. Install the holder bracket [L]

Note

- The holder bracket [L] is necessary when the finisher is installed. Do not tighten it with a screw at this time.

16. Reinstall the rail (knob screw x 2) and inverter tray.

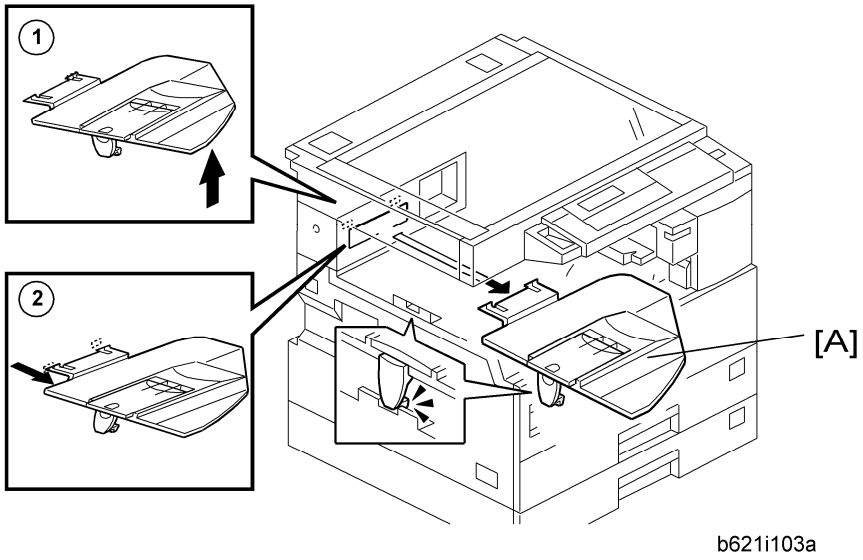
Note

- Skip step 16 if installing the 1-bin tray.

17. Reinstall the front right cover in the machine (☞ x 1), and then close the front door of the machine.
18. Install the optional finisher (refer to the finisher installation procedure).
19. Turn on the main power switch of the machine.
20. Check the bridge unit operation.

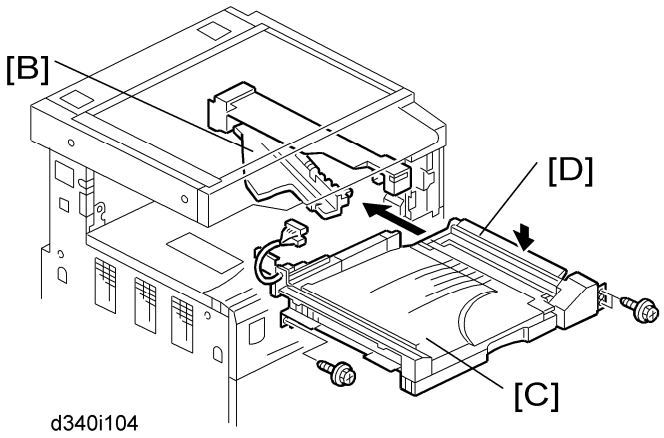
Installation for a machine WITH the 1-bin tray unit

1. Remove the inverter tray and rail (see the steps 1 and 2 in "Installation for a machine WITHOUT the 1-bin tray unit").



b621i103a

2. Remove the exit tray [A].
3. Remove the inner cover left (☞ step 4 in "Installation for a machine WITHOUT the 1-bin tray unit").
4. Open the front door (☞ step 6 in "Installation for a machine WITHOUT the 1-bin tray unit").
5. Remove the front right cover (☞ step 7 in "Installation for a machine WITHOUT the 1-bin tray unit").
6. Cut off the cutouts (4 pieces) with small cutters (☞ step 8 in "Installation for a machine WITHOUT the 1-bin tray unit").



7. Open the 1-bin tray [B] as shown.
8. Install the bridge unit [C] holding down the guide plate [D] (Front side: (M3x8) x 2, Rear side: (M3x6) x 1).
9. Close the 1-bin tray.
10. Reinstall the exit tray to the machine.
11. To complete the installation, follow steps 9 to 20 in "Installation for a machine WITHOUT the 1-bin tray unit".

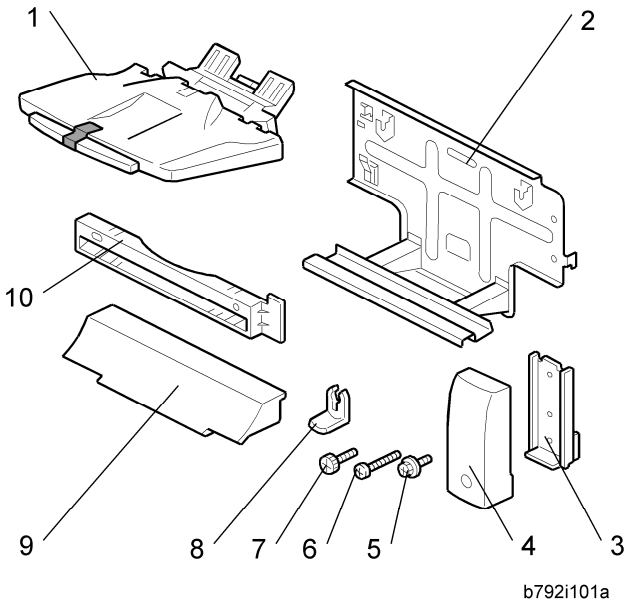
1.8 500-SHEET FINISHER (B792)

1.8.1 ACCESSORY CHECK

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

No.	Description	Q'ty
1	Output Tray	1
2	Unit Holder	1
3	Support Bracket*	2
4	Support Bracket Cover*	2
5	Screws: M3 x 8*	2
6	Screws: M4 x 16*	4
7	Knob screws	4
8	Snap Rings	2
9	Bracket Cover	1
10	Paper Guide	1

*: Four of the items below (No. 3 to 6) are not used for these models (D010/D043).



b792i101a

1.8.2 INSTALLATION PROCEDURE

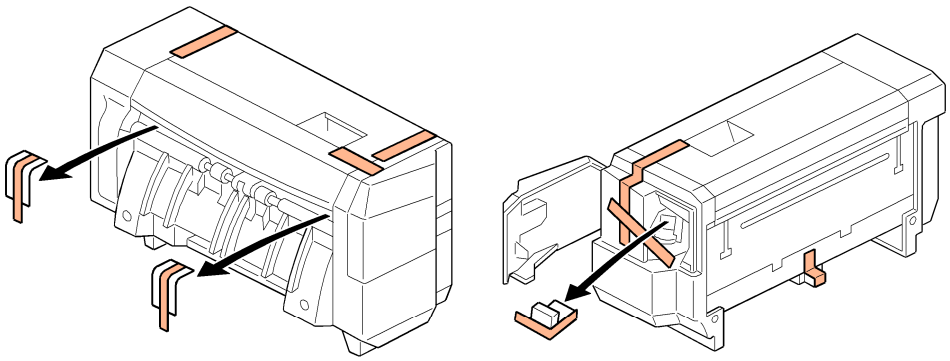
⚠CAUTION

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

Note

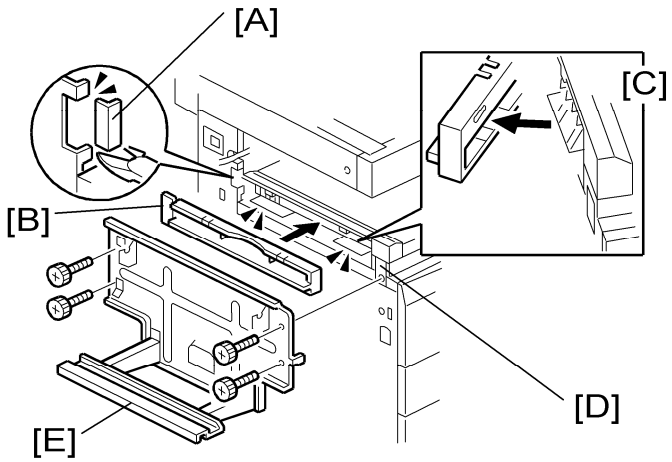
- Before you install the 500-sheet finisher, the optional bridge unit (D340) must be installed.

Installation of the 500-Sheet Finisher



b792i102_103

1. Unpack the finisher and remove all tapes and retainers.



b792i204

2. Cut off the cutout [A] with small cutters.
3. Attach the paper guide [B] to the bridge unit.

Note

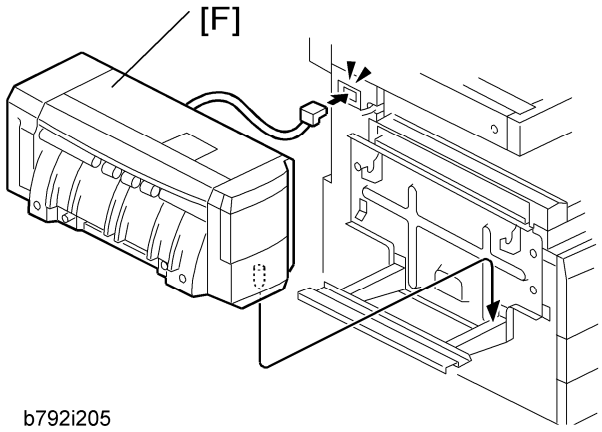
- Make sure to pass the mylar through the opening in the paper guide [C].

4. Attach the holder bracket [D] and the unit holder [E] (knob screw x 4).

500-Sheet Finisher (B792)

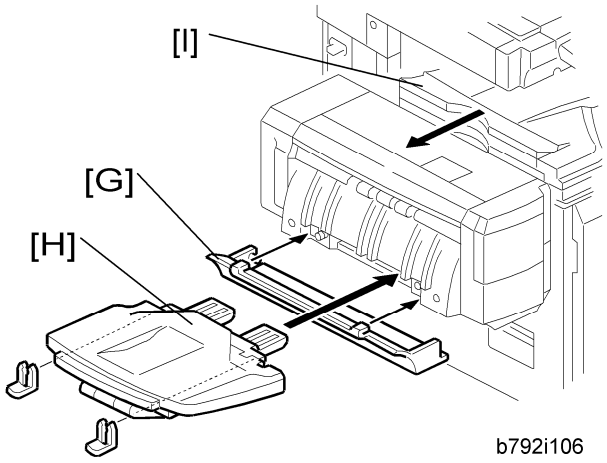
Note

- The holder bracket [D] must be placed inside the unit holder [E]. The holder bracket is provided with the bridge unit (D340).



b792i205

5. Install the 500-sheet finisher [F] on the machine (☞ x 1) as shown.



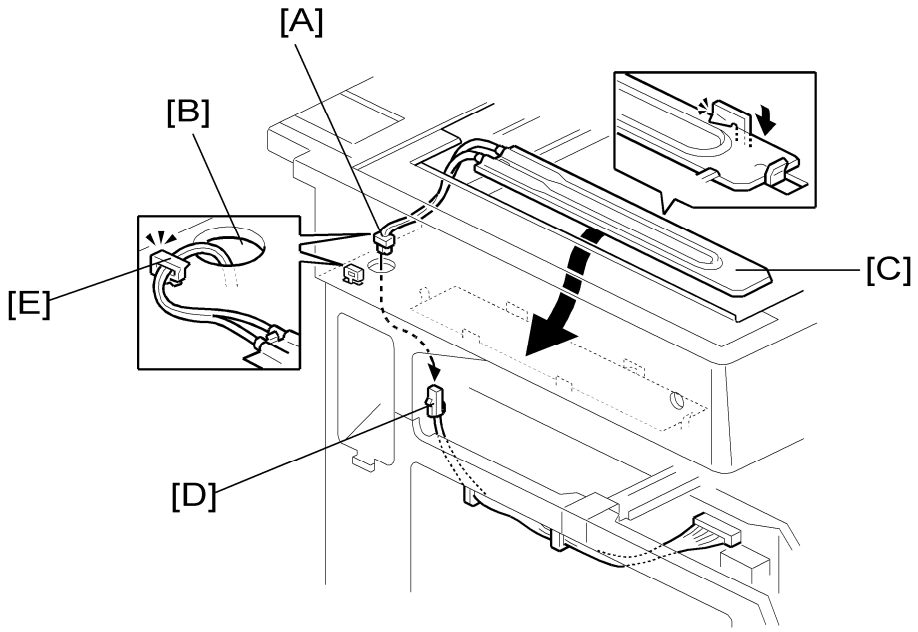
b792i106

6. Attach the bracket cover [G].
7. Install the output tray [H] on the 500-sheet finisher (2 snap rings).
8. Pull out the tray extension [I] of the bridge unit.
9. Turn on the main power switch, and then check the finisher operation.

1.9 ANTI-CONDENSATION HEATER INSTALLATION

⚠CAUTION

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



b121i127

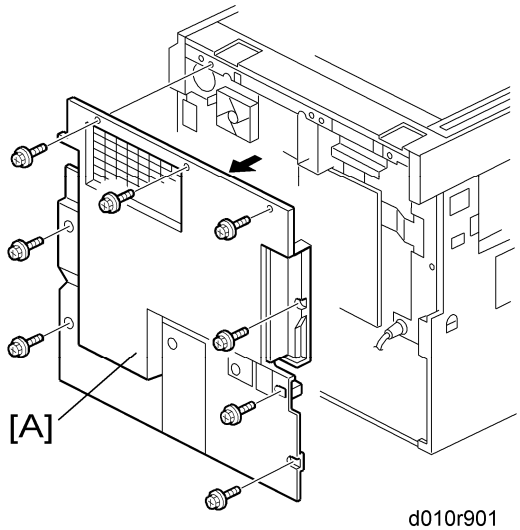
1. Remove the exposure glass.
2. Remove the left cover.
3. Pass the heater connector [A] through the opening [B].
4. Install the anti-condensation heater [C], as shown.
5. Join the connectors [A, D].
6. Clamp the harness with the clamp [E].
7. Reinstall the left cover and exposure glass.
8. Attach the decal to the left side of the machine's main switch.

1.10 TRAY HEATERS

⚠CAUTION

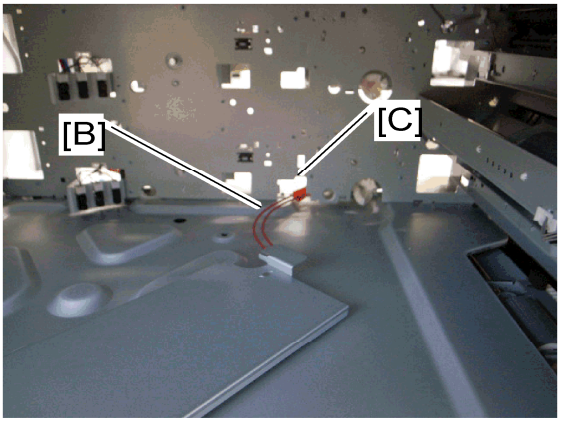
- Unplug the machine power cord before starting the following procedure.

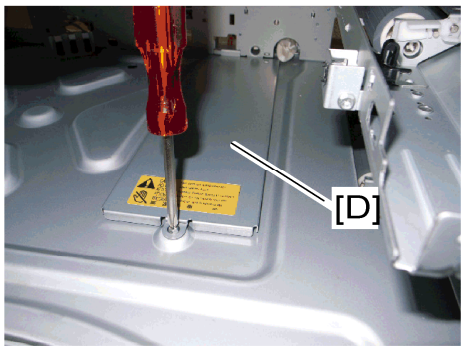
1.10.1 TRAY HEATER



d010r901

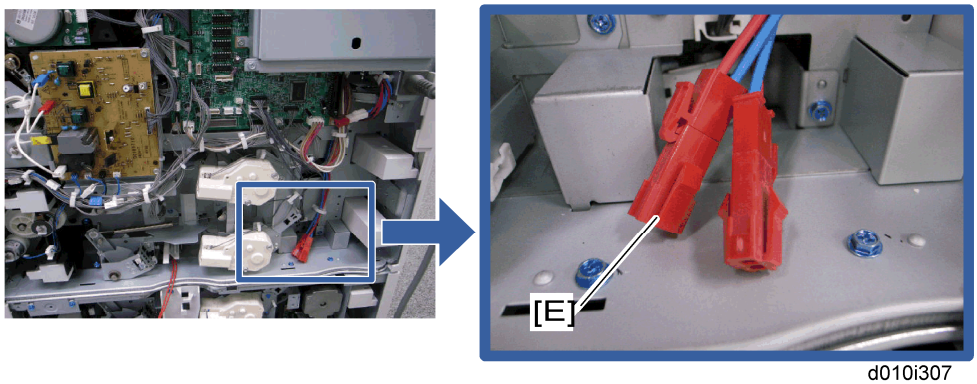
1. Remove the 1st and 2nd tray cassettes.
2. Remove the rear cover [A] (🔩 x 8).





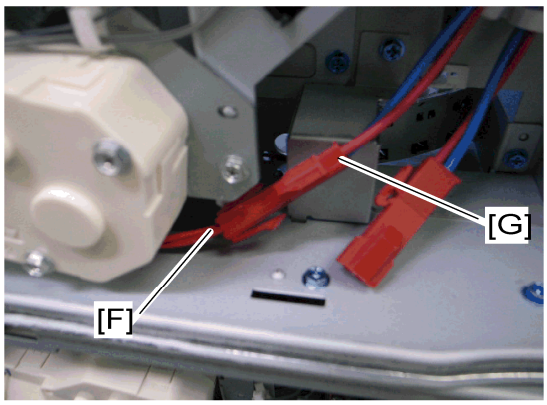
d010i306

3. Place the tray heater on the bottom frame inside the machine and pass the heater harness [B] through the opening [C] of the rear frame.
4. Attach the tray heater [D] to the bottom frame (🔩 x 1) as shown.



d010i307

5. Remove the harness cap [E] of the machine.

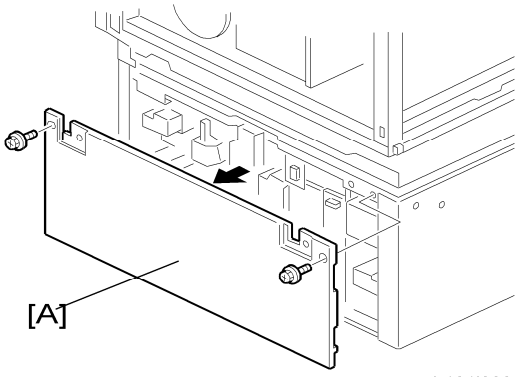


d010i308

6. Connect the harness [F] that was run through the opening in step 3 of the heater to the harness [G] of the machine.
7. Reinstall the rear cover and all tray cassettes/
8. Attach the power decal to the left side of the machine's main switch.

1.10.2 TRAY HEATERS FOR THE OPTIONAL PAPER FEED UNIT

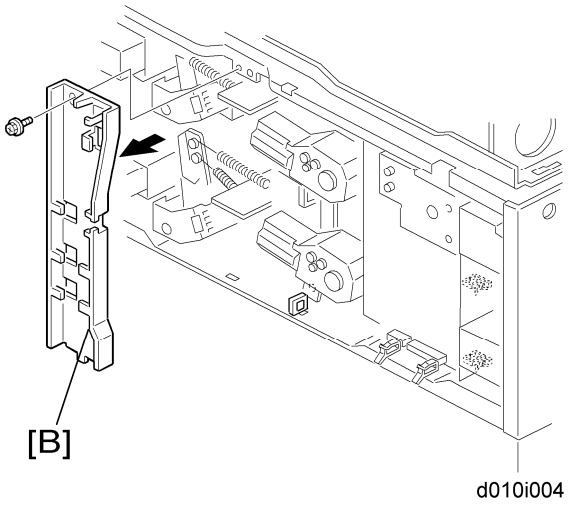
1. Remove the rear cover of the main machine.
2. Pull out all the tray cassettes from the paper tray unit.



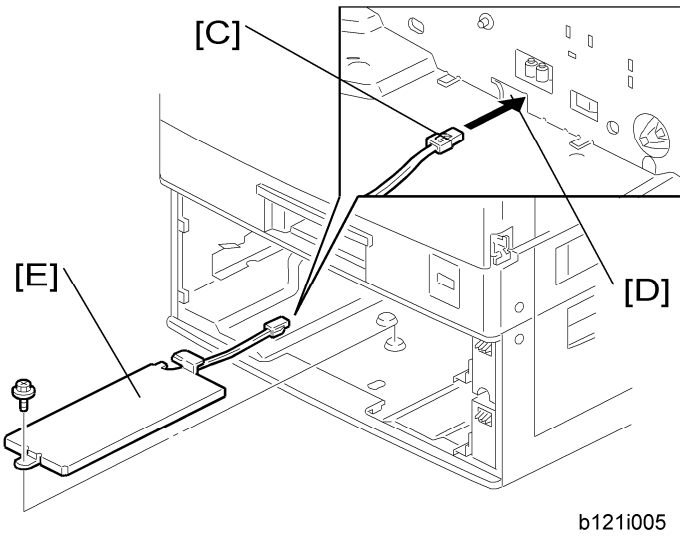
b121i202

Tray Heaters

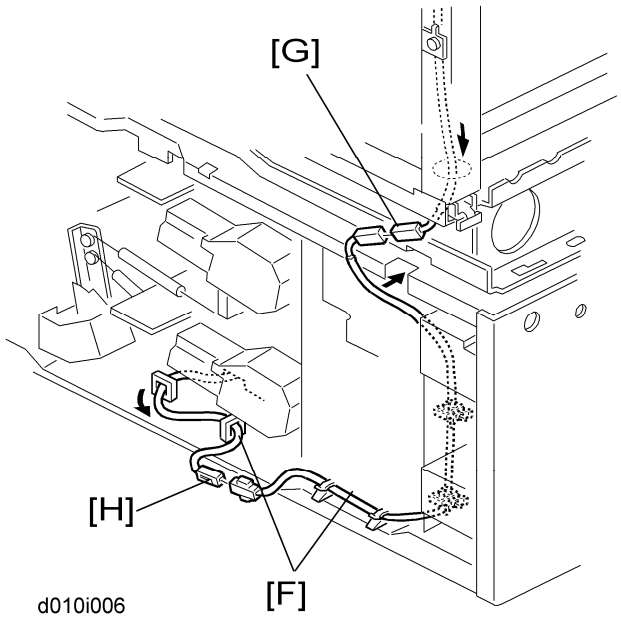
3. Remove the rear cover [A].for the paper tray unit



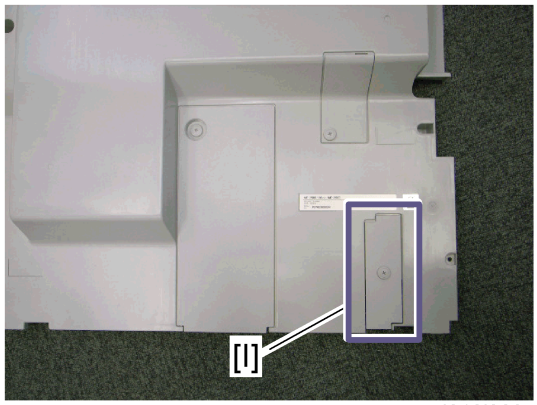
4. Remove the cable guide [B].



5. Pass the connector [C] through the opening [D].
6. Install the tray heater [E] (🔩 x 1)

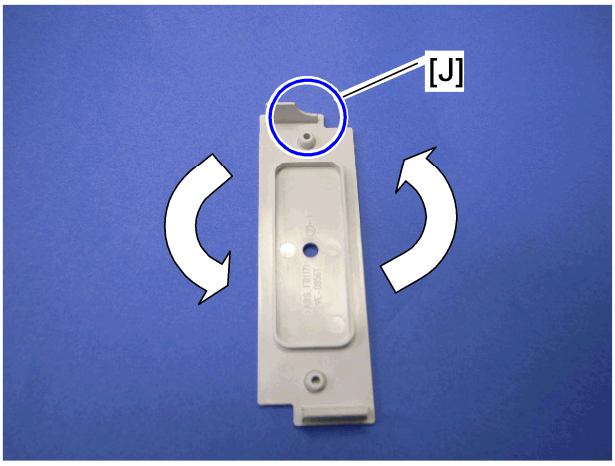


7. Clamp the cables [F], as shown.
8. Remove the harness cap [G] of the machine.
9. Join the connectors [G] [H].
10. Reinstall the cable guide and rear cover of the paper tray unit.
11. Reinstall the all tray cassettes.



12. Remove the heater harness cover [I] (rivet screw x 1).

Tray Heaters



d010i310

13. Turn the heater harness cover upside down and reinstall it in the rear cover of the main machine.

Important

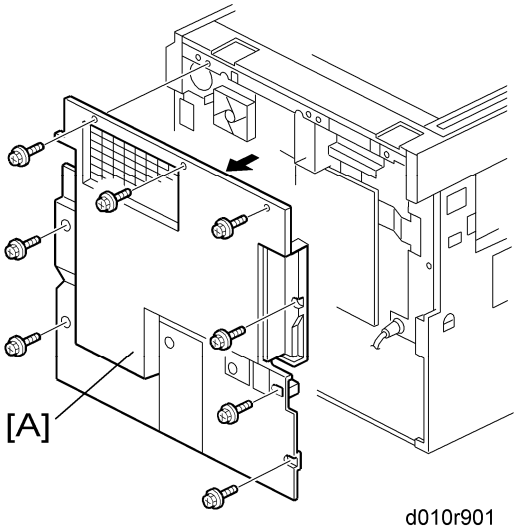
- Make sure that cutout [J] is facing downward. Otherwise, the rear cover of the main machine pinches the heater harness and breaks it.

14. Reinstall the rear cover of the main machine.
15. Attach the power decal to the left side of the machine's main switch if it has not already been attached.

1.11 KEY COUNTER INTERFACE INSTALLATION

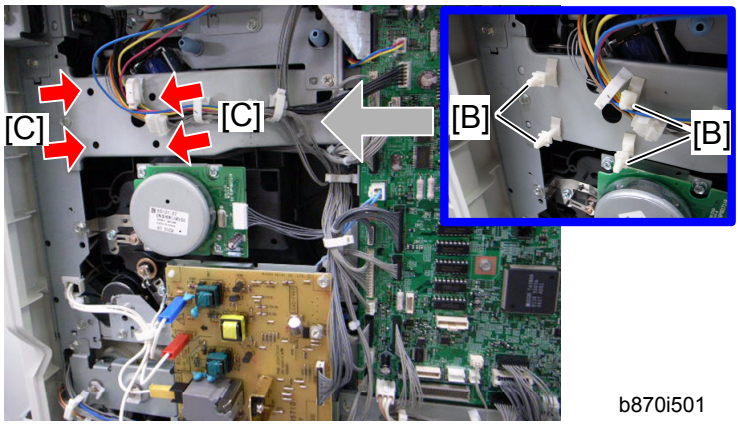
⚠CAUTION

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



d010r901

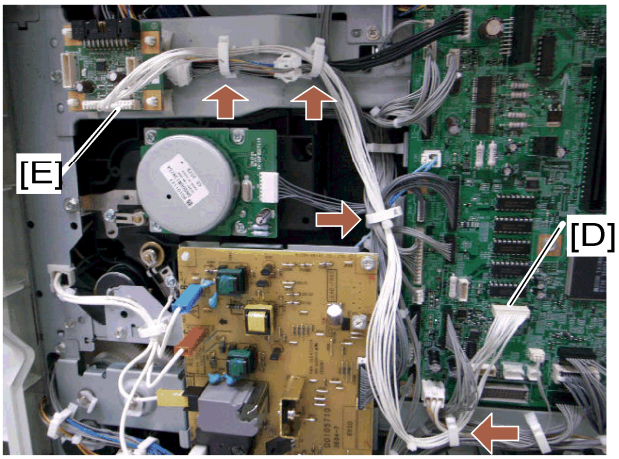
1. Remove the rear cover [A] (🔩 x 8).



b870i501

2. Install the four standoffs [B] in the four holes [C] on the crosspiece.
3. Attach the bridge board.

Key Counter Interface Installation



b870i502

4. Connect one side [D] of the harness to CN140 (13 pins) on the BICU and the other side [E] of the harness to CN3 on the bridge board.
5. Clamp the harness (x 4).
6. Reassemble the rear cover.

1.12 DDST EXPANSION

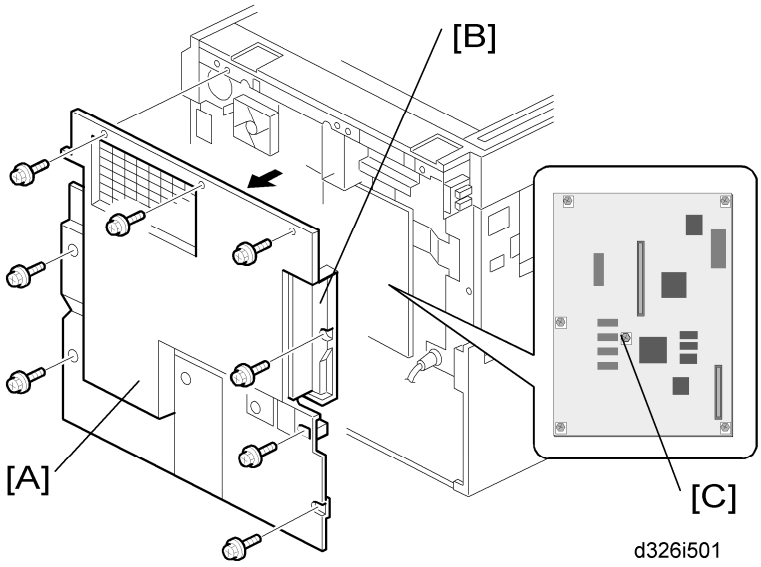
1.12.1 ACCESSORY CHECK

No.	Description	Q'ty
1	Cover-CPS NA	1
2	Cover-CPS EU	1
3	Tapping Screw-M3X6	6
4	Sheet-EULA	1
5	Seal-Caution	1
6	Installation Procedure	1
7	PCL Dongle (-57)	1

1.12.2 INSTALLING EXPANSION COMPONENT

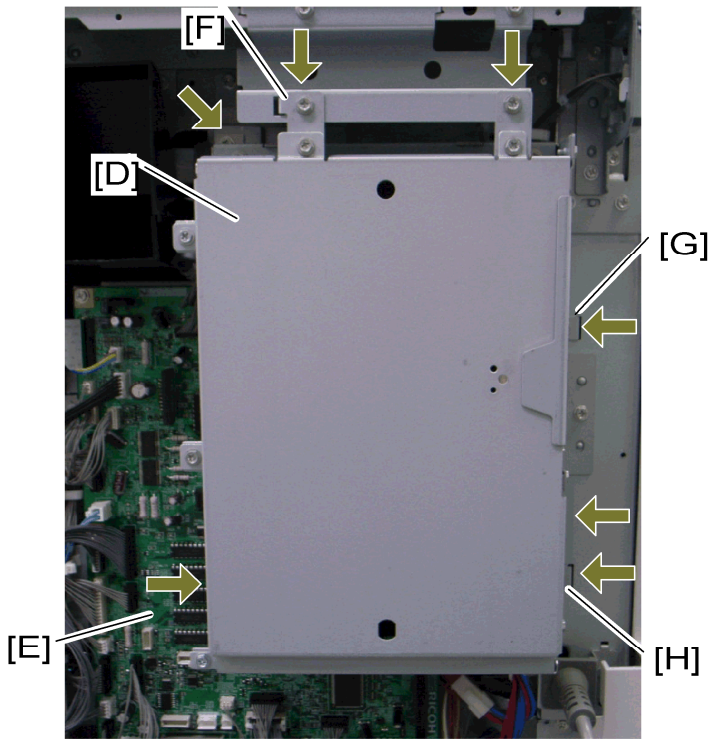
⚠CAUTION

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



1. Remove the rear cover [A] (🔩 x 8).
2. Remove the interface cover [B].

3. Remove one screw [C] from the BICU.



d326i506

4. Connect the controller box [D] to the BICU (x 7).
   Make sure that the BICU [E] is not damaged and that the three openings [F][G][H] hold the controller box.
5. Re-attach the rear cover (x 8).

Installing Panels and Keys



1. Remove the dummy cover [A] from the operation panel.



2. Install the printer/scanner panel [B] on the operation panel.

1.13 PCL OPTION

1.13.1 ACCESSORY CHECK

No.	Description	Q'ty
1	PCL Dongle	1

1.13.2 INSTALLING PCL OPTION

Important

- Before installing the PCL option, download the latest firmware from the firmware download site into an IC card.

CAUTION

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

Note

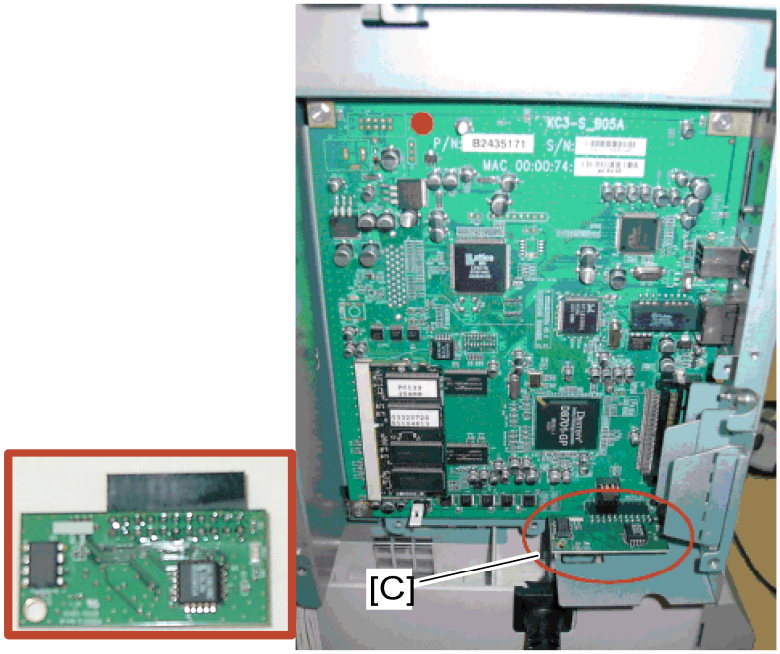
- Before you install the PCL, the DDST expansion (D326-17) must be installed.

1. Remove the rear cover (☛ "Rear Cover" in the section "Replacement and Adjustment").



d326i502

2. Remove the DDST box left cover [A] (x 7).
3. Remove the DDST box cover [B] (x 7).



d326i503

4. Install the PCL dongle [C] in the DDST board socket as shown above.

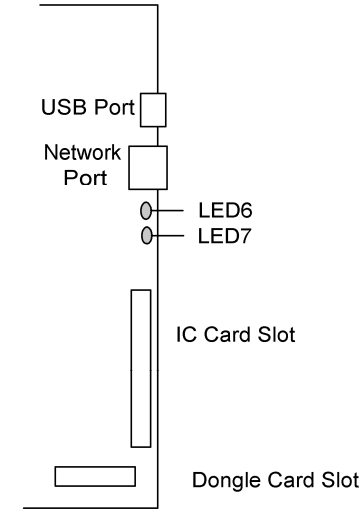


d326i504

5. Turn on the DipSW2 [D] switch (upper position).
6. Remove the cover of the IC card slot on the DDST controller board.
7. Install the PCL IC card in the IC card slot.

PCL Option

8. Turn on the main power switch.



Note

- LED7 (orange) blinks during this installation.
- LED6 (red) lights after completion of this installation.

9. Turn off the main power switch after completing the installation.
10. Turn off the Dip SW2 (lower position).
11. Reassemble the machine.
12. Turn on the main power switch.
13. Output the "Config. Page" (UserTool > Printer Features > List/Test Print > Config. Page) and confirm if PCL option is correctly installed.

Note

- This installation procedure is not necessary for PCL updating once the PCL option has been installed in the DDST controller. In PCL updating, you can see the installation procedure on the LCD after installing the PCL option IC card in the IC card slot.

1.14 MECHANICAL COUNTER

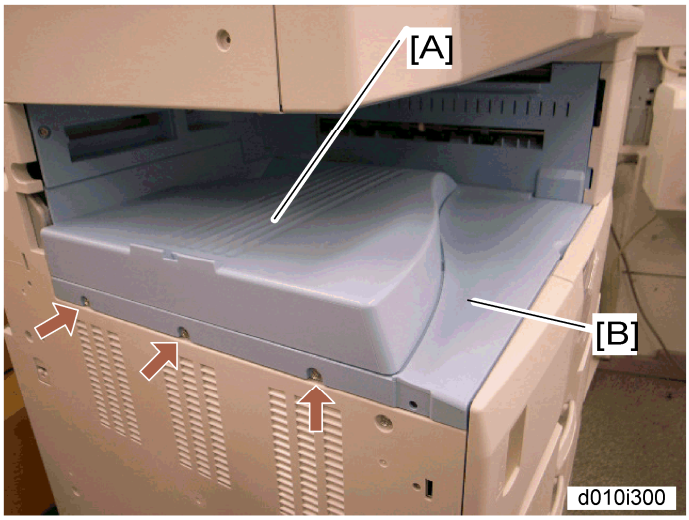
1.14.1 COMPONENT CHECK

No.	Description	Q'ty
1	Mechanical counter	1

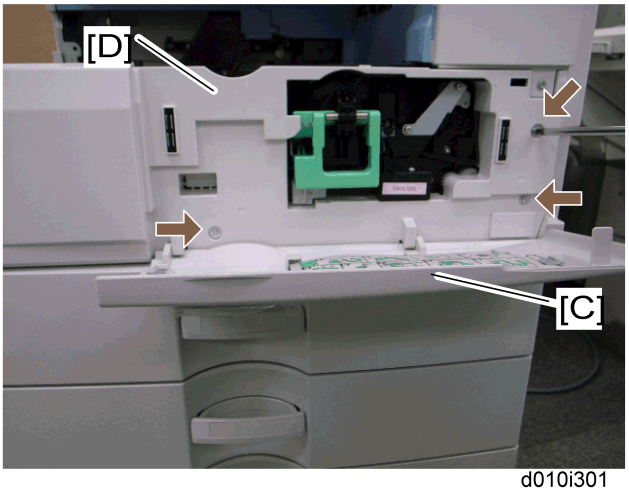
1.14.2 INSTALLING MECHANICAL COUNTER

⚠CAUTION

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

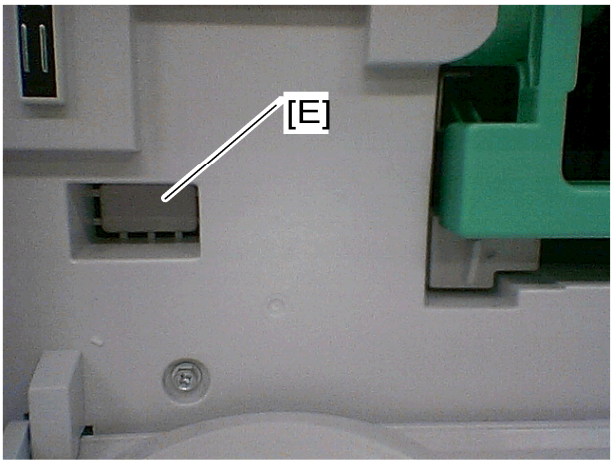


1. Remove the copy tray [A] (☞ x 1, hooks).
2. Remove the inner cover [B] (☞ x 2, hooks).



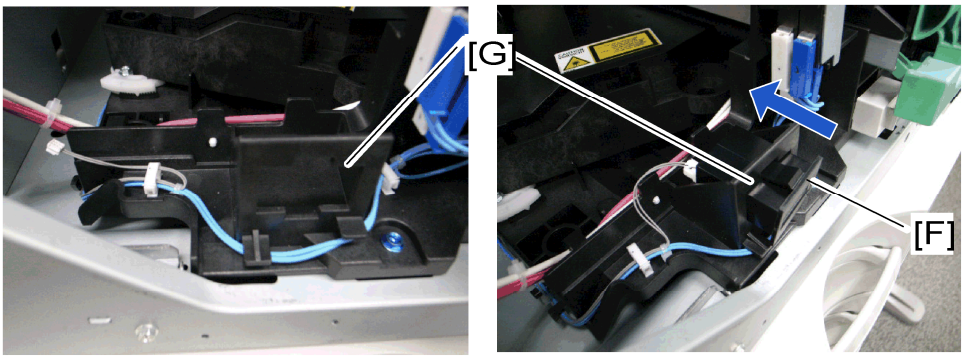
Mechanical Counter

3. Open the front door [C].
4. Remove the front cover [D] (x 3).



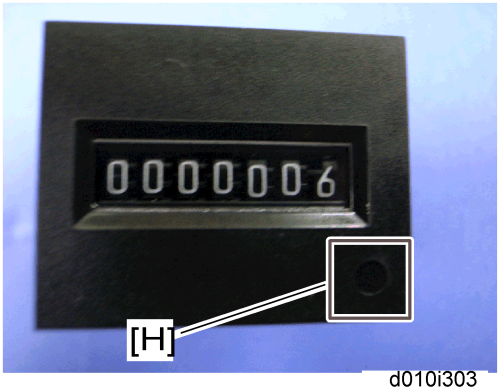
d010i305

5. Cut off the cutout [E] of the front cover with small cutters.



d010i302

6. Install the mechanical counter [F] into the counter slot [G] (x 1).



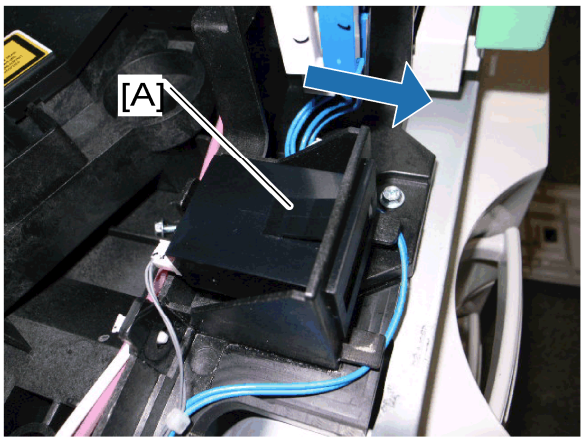
d010i303

Important

- When you install the mechanical counter, make sure that the circle mark [H] is facing downward.

7. Reassemble the machine.

When removing the mechanical counter



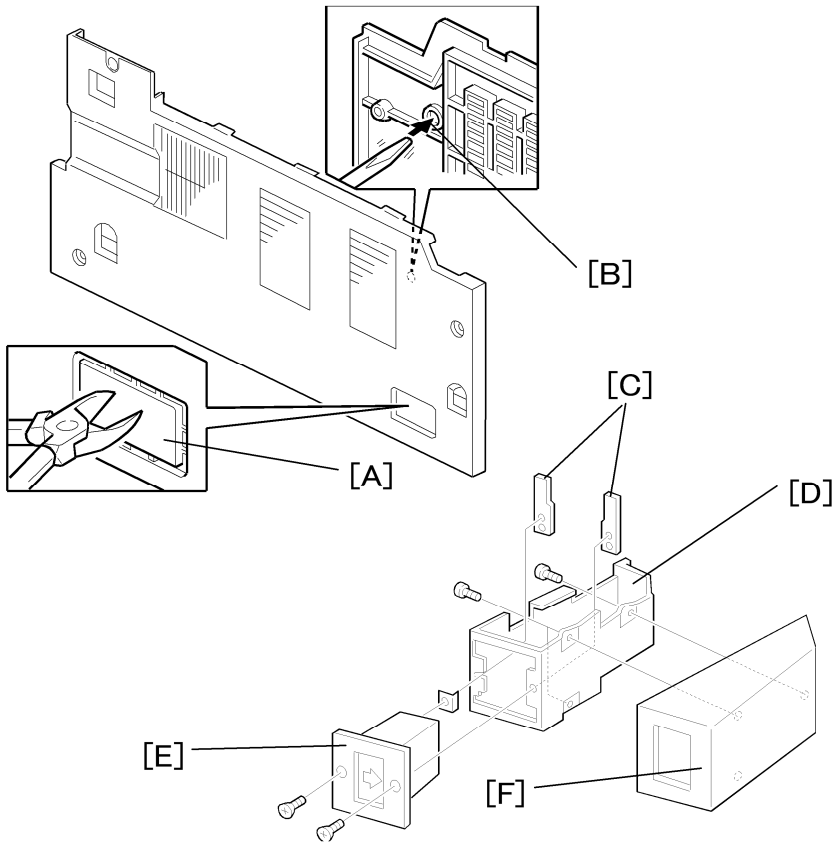
d010i304

When removing the mechanical counter, first release the hook [A], and then pull it out.

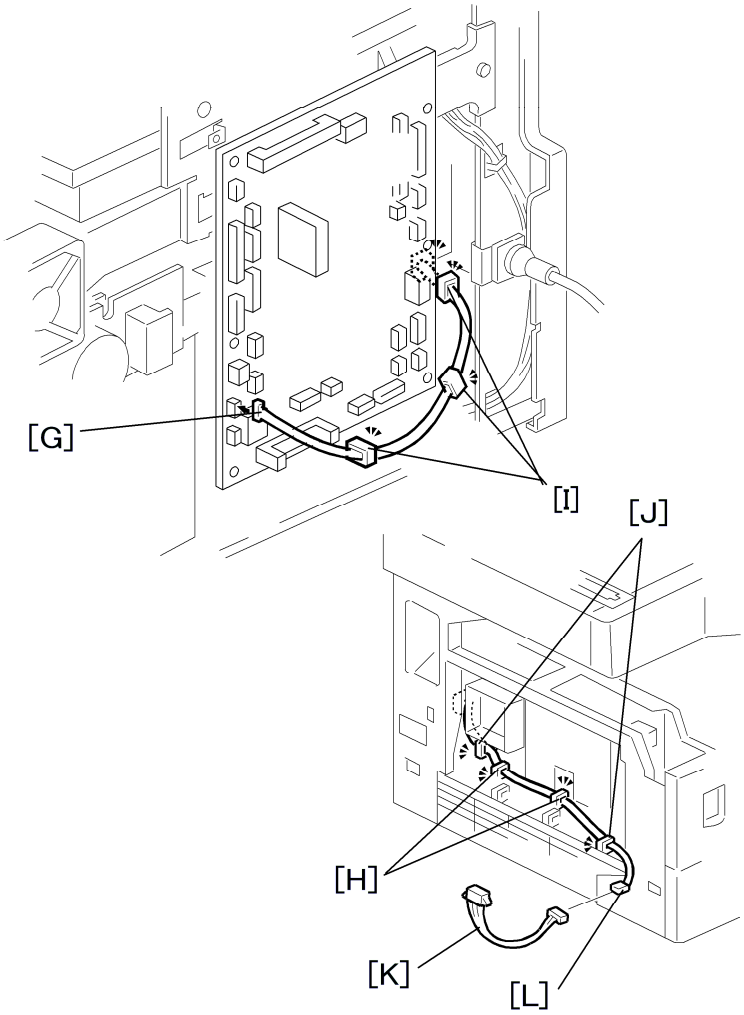
⇒1.15 KEY COUNTER INSTALLATION (4 PINS)

⚠CAUTION

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



1. Remove the left cover.
2. Remove the rear cover.
3. Cut the cap [A] with nippers.
4. Punch out the small hole [B] using a screwdriver.
5. Hold the key counter plate nuts [C] on the inside of the key counter bracket [D] and insert the key counter holder [E].
6. Secure the key counter holder to the bracket (x 2).
7. Install the key counter cover [F] (x 2).



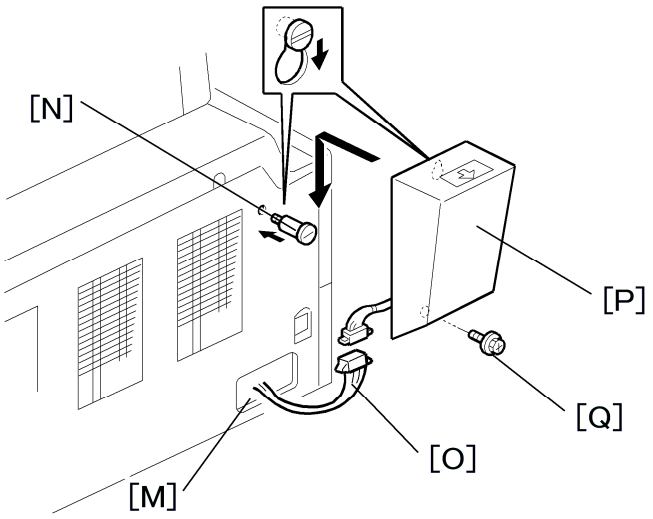
8. Connect the connector [G] (p/n B1215261) to CN126 on the BICU.
9. Hold the harness with the clamps [H][I][J].

Note

The relay harness is not included in the key counter bracket accessories.

10. Join the relay harness [K] with the connector [L].
11. Reinstall the rear cover.

⇒



12. Pass the relay harness through the opening [M] and reinstall the left cover.
13. Install the stepped screw [N].
14. Join the connectors [O].
15. Pass the joined connectors through the opening of the key counter holder assembly [P], and put the connectors inside the assembly.
16. Hook the key counter holder assembly onto the stepped screw [N]. Check that the harness is not caught between the left cover and the key counter holder assembly.
17. Secure the key counter holder assembly with the screw [Q].

PREVENTIVE MAINTENANCE

REVISION HISTORY		
Page	**Date**	**Added/Updated/New**
		None

2. PREVENTIVE MAINTENANCE

2.1 PM TABLES

Note

- After preventive maintenance work, reset the PM counter (SP 7804-1).
- PM intervals (60k, 120K and 600K) indicate the number of prints.

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

2.1.1 OPTICS

	EM	60k	120k	AN	NOTE
Reflector	C				Optics cloth
1st mirror	C			C	Optics cloth
2nd mirror	C			C	Optics cloth
3rd mirror	C			C	Optics cloth
Scanner guide rails	C				Do not use alcohol.
Platen cover	I			C	Replace the platen sheet if necessary. Blower brush or alcohol
Exposure glass	C			C	Blower brush or alcohol
Toner shield glass	C				Blower brush
APS sensors	C				Blower brush

2.1.2 DRUM AREA

	EM	60k	120k	600k	AN	NOTE
PCU		I		R		

PM Tables

	EM	60k	120k	600k	AN	NOTE
Drum		R				
Developer		R				
Charge roller		R				
Cleaning brush (charge roller)		R				
Cleaning blade (OPC drum)		R				
Pick-off pawls (OPC drum)		R				
Transfer roller			R			
Discharge Plate			R			
ID sensor	C				C	Blower brush

2.1.3 PAPER FEED

	EM	60k	120k	AN	NOTE
Paper feed roller (each tray)		C	R	C	Clean with water or alcohol.
Friction pad (each tray)		C	R	C	Clean with water or alcohol.
Bottom-plate pad (each tray)		C		C	Clean with water or alcohol.
Paper feed roller (bypass tray)		C		C	Clean with water or alcohol.
Friction pad (bypass tray)		C		C	Clean with water or alcohol.
Bottom-plate pad (by-pass tray)		C		C	Clean with water or alcohol.
Registration rollers		C		C	Clean with water or

	EM	60k	120k	AN	NOTE
					alcohol.
Relay rollers		C		C	Clean with water or alcohol.
Paper feed guides		C		C	Clean with water or alcohol.
Paper-dust Mylar		C		C	Clean with water or alcohol.

2.1.4 FUSING UNIT

	EM	60k	120k	AN	NOTE
Hot roller			R/L		S552R
Pressure roller			R		
Pressure roller cleaning roller			R		A cleaner and alcohol
Hot roller bushings			I/L	C	S552R
Pressure roller bushing			R	C	
Hot roller stripper pawls			R	C	Dry cloth
Thermistor			R	C	Dry cloth
Fusing guide plate		C			A cleaner and alcohol
Cleaning roller bushing			C	C	Dry cloth

2.1.5 ARDF

	EM	80k	AN	NOTE
Feed belt		R	C	Clean with water or alcohol.

PM Tables

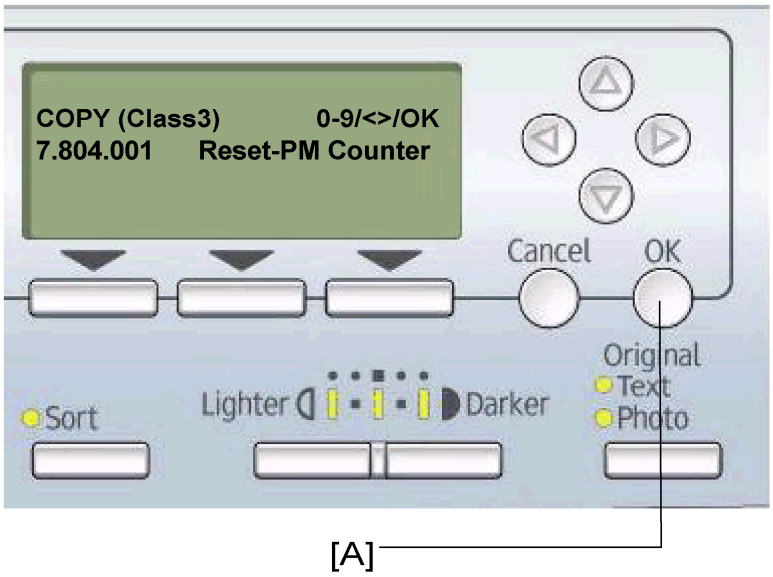
	EM	80k	AN	NOTE
Separation roller		R	C	Clean with water or alcohol.
Pick-up roller		R	C	Clean with water or alcohol.
Stamp			R	Replace when necessary.
White plate	C		C	Clean with water or alcohol.
DF exposure glass	C		C	Clean with water or alcohol.
Platen cover	I		C	Clean with water or alcohol.

2.1.6 PAPER TRAY UNIT

	60k	120k	AN	NOTE
Paper feed rollers		R	C	Dry or damp cloth
Bottom-plate pads	C		C	Dry cloth
Paper-feed guides	C		C	Clean with water or alcohol.
Friction pads		R	C	Dry or damp cloth
Relay clutch		I		
Feed clutches		I		
Relay roller		C	C	Dry cloth

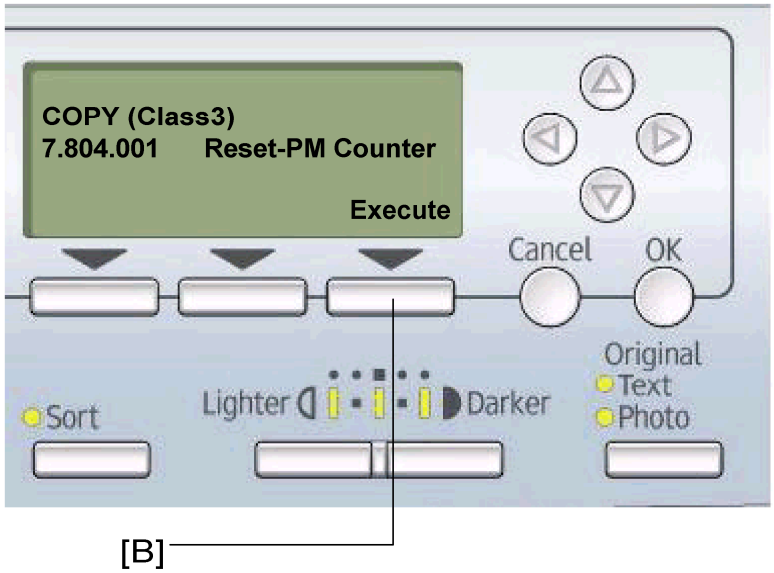
2.2 HOW TO RESET THE PM COUNTER

After preventive maintenance work, reset the PM counter (SP 7804-1) as follows.



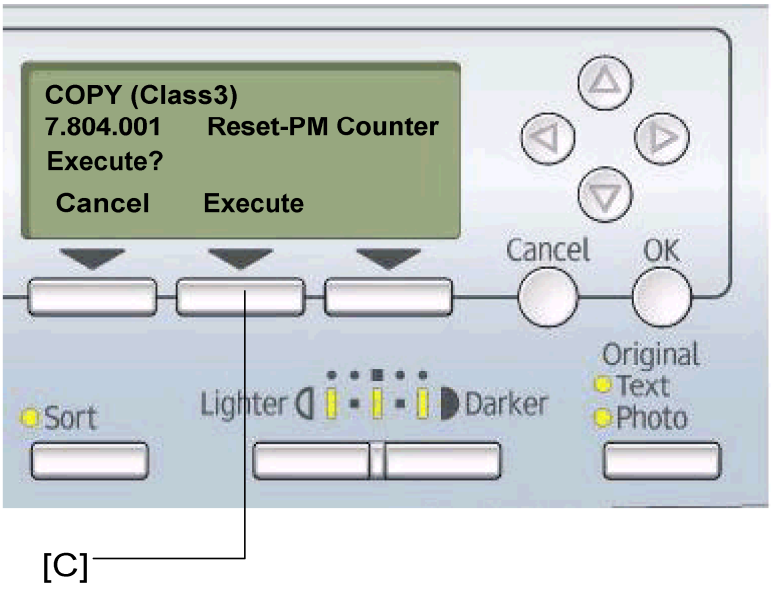
Activate the SP mode (☛ "Service Program Mode").

1. Select SP 7804-1 (Reset–PM Counter).
2. Press the OK key [A]. The message "Execute" shows.

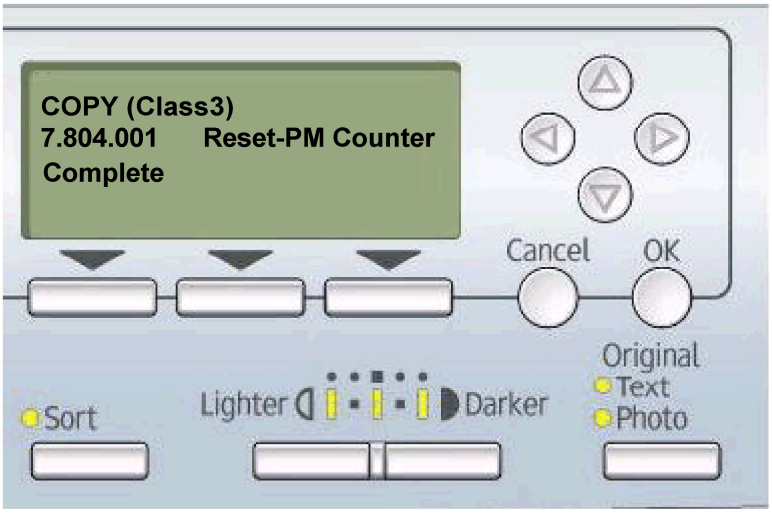


3. Press the button [B] below the message "Execute."
4. The messages "Execute?" followed by "Cancel" and "Execute" show.

How to Reset the PM Counter



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



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

REPLACEMENT AND ADJUSTMENT

REVISION HISTORY		
Page	**Date**	**Added/Updated/New**
		None

3. REPLACEMENT AND ADJUSTMENT

3.1 GENERAL CAUTIONS

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

3.1.1 PCU (PHOTOCONDUCTOR UNIT)

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

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

Important

- You must run SP 3016-1 to initialize the TD sensor after you install a new PCU. After starting initialization, be sure to wait for it to reach completion (wait for the motor to stop) before you re-open the front cover or turn off the main switch.

3.1.2 TRANSFER ROLLER

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

3.1.3 SCANNER UNIT

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

3.1.4 LASER UNIT

1. Do not loosen or adjust the screws securing the LD drive board on the LD unit. This will knock the LD unit out of adjustment.
2. Do not adjust the variable resistors on the LD unit. These are adjusted at the factory.
3. The polygonal mirror and F-theta lens are very sensitive to dust.
4. Do not touch the toner shield glass or the surface of the polygonal mirror with bare hands.

3.1.5 FUSING UNIT

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

3.1.6 PAPER FEED

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

		Standard		Option	
1st tray	2nd tray	3rd tray	4th tray		
Standard	1st tray	Yes	No	No	No
	2nd tray	No	Yes	No	No
Option	3rd tray	No	No	Yes	Yes
	4th tray	No	No	Yes	Yes

Important

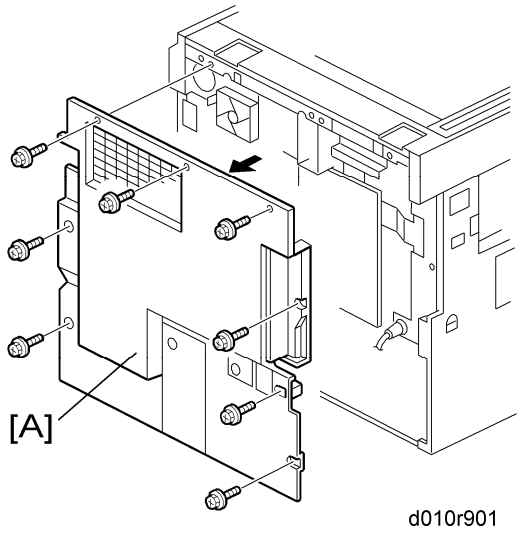
- If the optional tray heater or optics anti-condensation heater is installed, keep the machine's power cord plugged in while the main switch is off, to keep the heater(s) energized.

3.2 SPECIAL TOOLS AND LUBRICANTS

Part Number	Description	Q'ty
A0069104	Scanner Positioning Pins (4 pins/set)	1 set
A2929500	Test Chart S5S (10 pcs/set)	1 set
VSSM9000	FLUKE 87 Digital Multimeter	1
N8036701	4MB Flash Memory Card	1
A2579300	Grease Barrierta S552R	1
52039502	Grease G-501	1

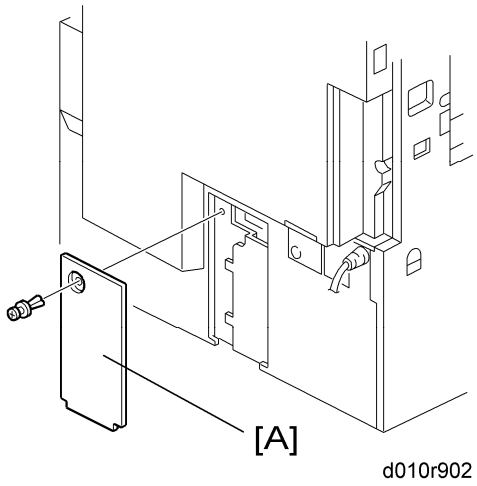
3.3 EXTERIOR COVERS AND OPERATION PANEL

3.3.1 REAR COVER



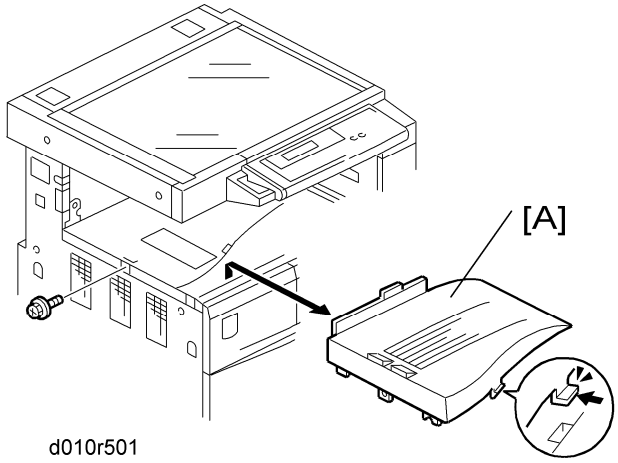
1. Unplug the DF cable (if installed).
2. Rear cover [A] (x 8)

3.3.2 TRAY HARNESS COVER



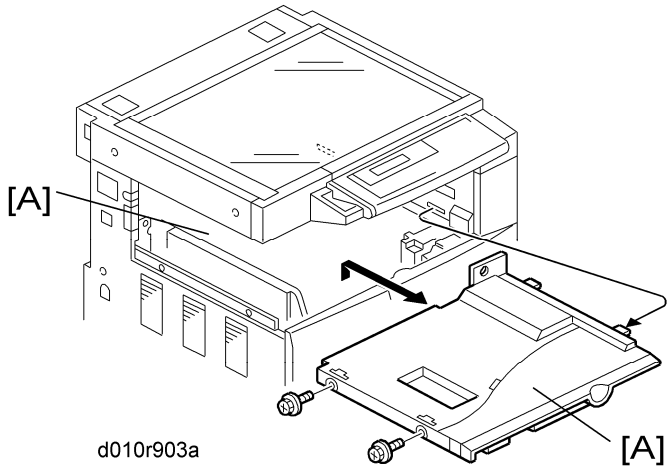
1. Tray harness cover [A] (1 rivet)

3.3.3 COPY TRAY



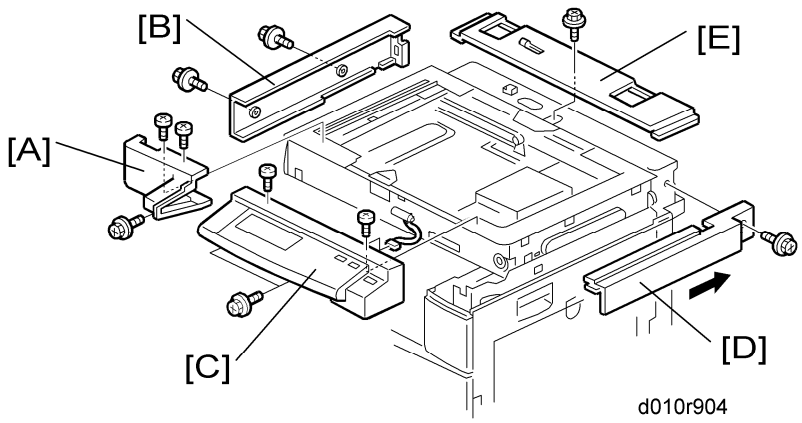
1. Copy tray [A] (☞ x 1、hook x 1)

3.3.4 INNER COVER



1. Copy tray (☛ "Copy Tray")
2. Inner cover [A] (☞ x 2)

3.3.5 UPPER COVERS



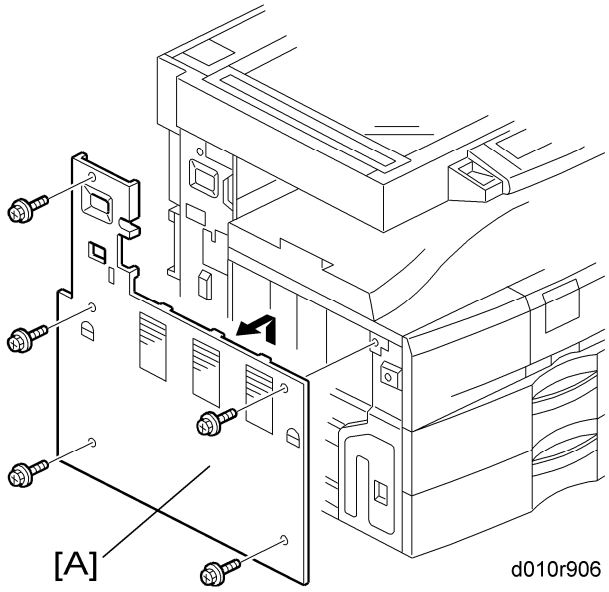
1. Platen Cover, ARDF, or ADF (if installed)
2. Rear cover (☛ "Rear Cover")
3. Front upper left cover [A] (x 3)
4. Left upper cover [B] (x 2)
5. Operation panel [C] (x 4, x 1)
6. Right upper cover [D] (x 1, 3 hooks)

Note

- Push the cover to the rear to release the hooks.

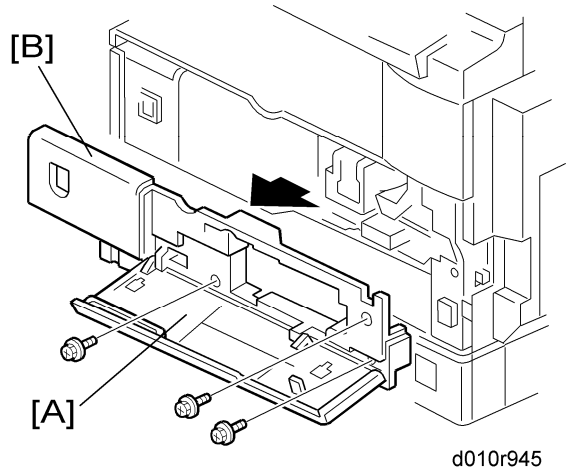
7. Top rear cover [E] (x 1)

3.3.6 LEFT COVER



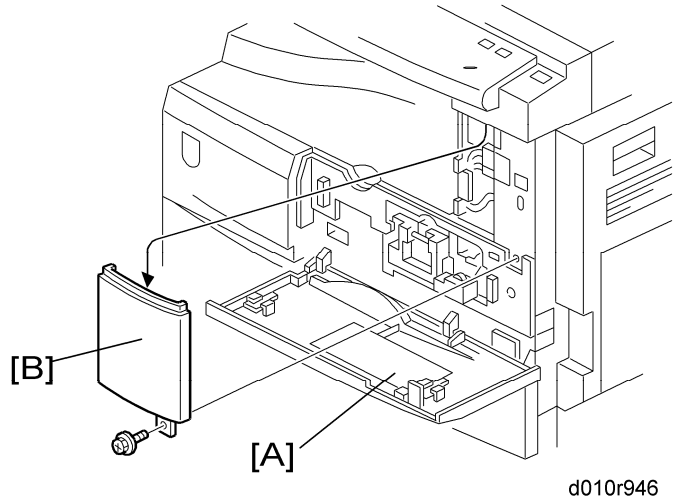
1. Left cover [A] (x 5)

3.3.7 FRONT COVER



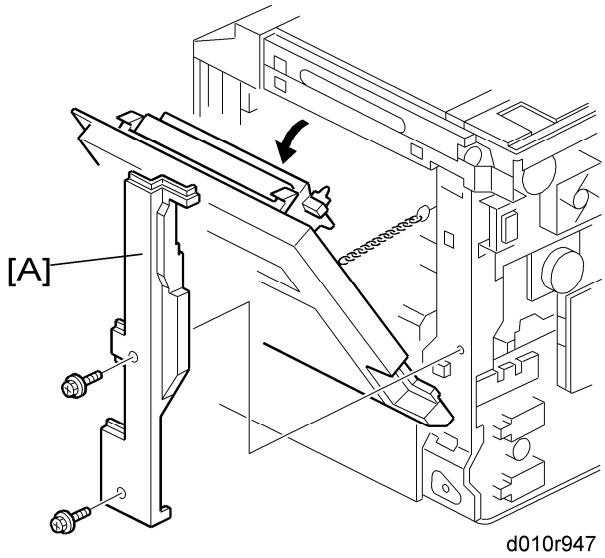
1. Pull out the (top) paper tray.
2. Open the front door [A].
3. Front cover [B] (x 3)

3.3.8 FRONT RIGHT COVER



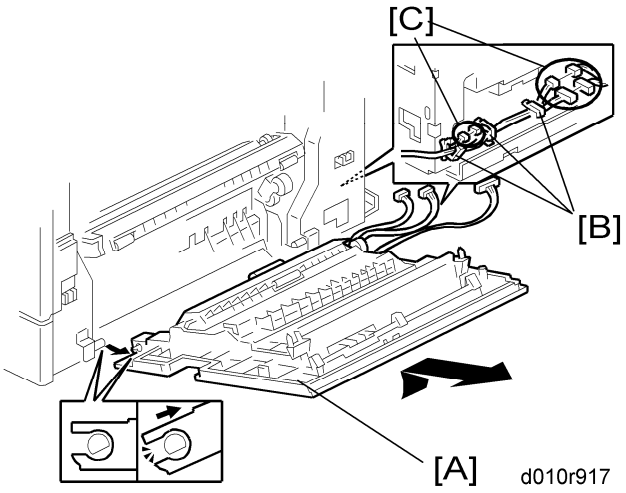
1. Open the front door [A].
2. Front right cover [B] (x 1)

3.3.9 RIGHT REAR COVER



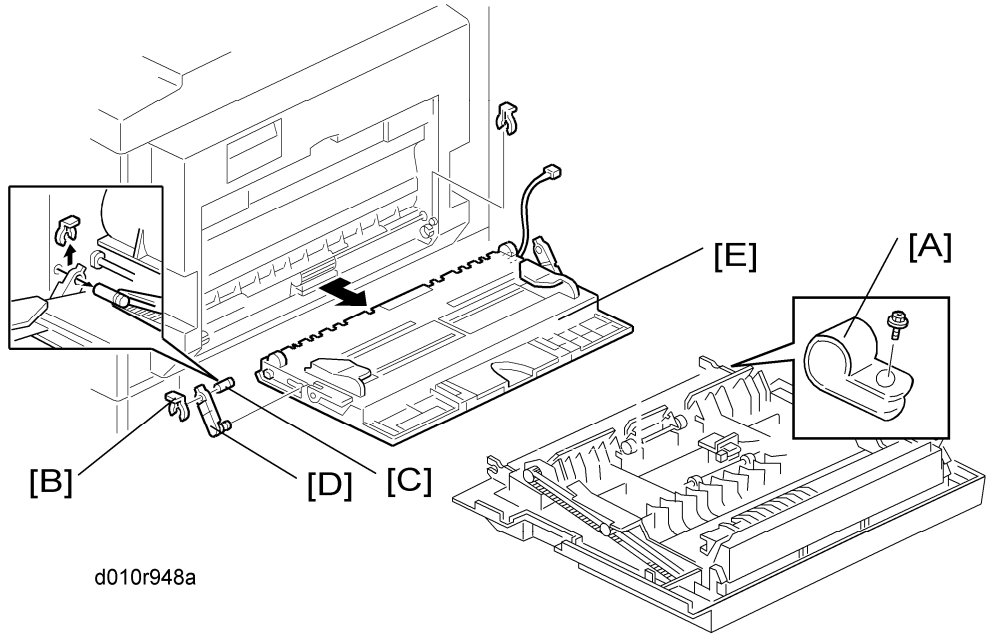
1. Right upper cover (☛ "Upper Covers")
2. Open the duplex unit.
3. Right rear cover [A] (☞ x 2)

3.3.10 RIGHT DOOR (DUPLEX UNIT)



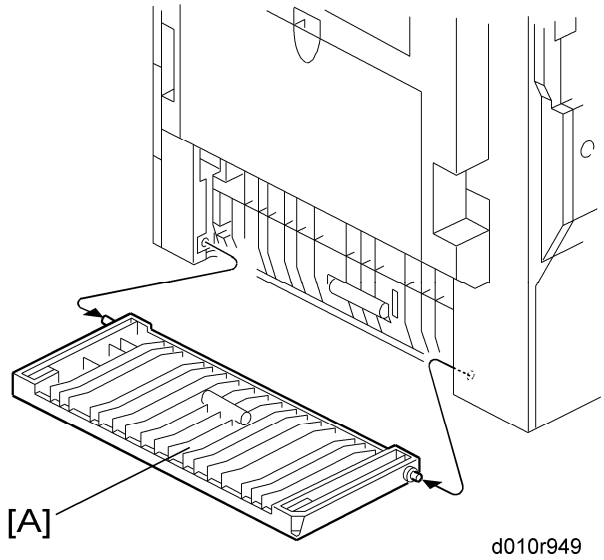
1. Rear cover (☛ "Rear Cover")
2. Open the right door [A].
3. Release the spring and chain.
4. Open the clamps [B] and disconnect the three connectors [C].
5. Right door [A]

3.3.11 BY-PASS TRAY



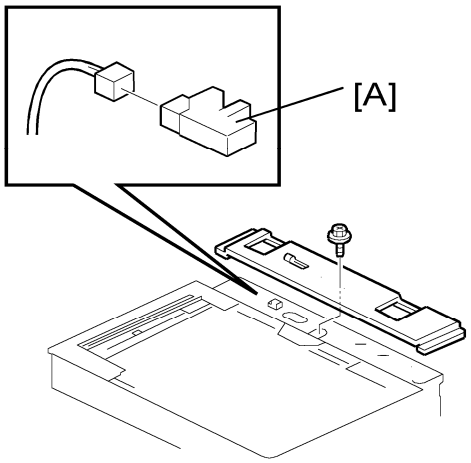
1. Right rear cover (☛ "Right Rear Cover")
2. Open the right door.
3. Release the by-pass tray cable from the clamps (see [B] in the preceding procedure "Right Door") and disconnect the connector (5-pin connector with colored wires).
4. Cable holder [A]
5. Front-side clip ring [B]
6. Front-side pin [C] (You can push the pin from behind the right door.)
7. Front-side tray holder arm [D]
8. Remove the rear-side clip ring, pin, and tray holder arm in the same manner.
9. By-pass tray [E]

3.3.12 RIGHT LOWER COVER



1. Right lower cover [A] (2 pin)

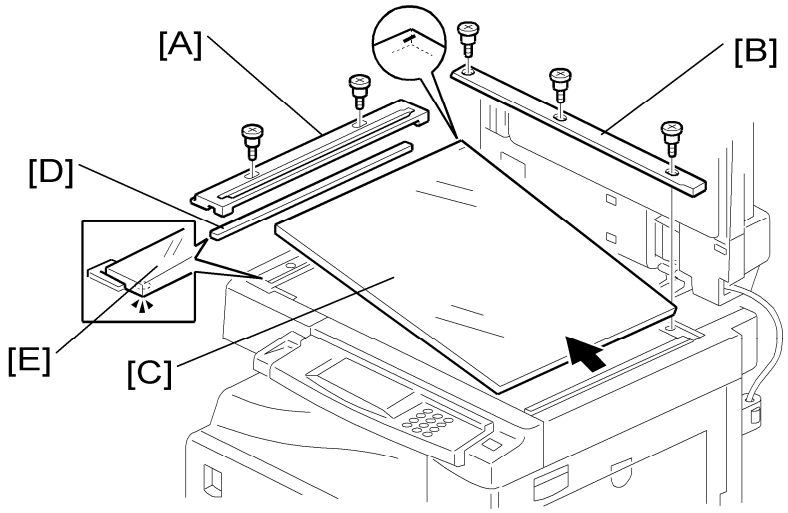
3.3.13 PLATEN COVER SENSOR



1. Top rear cover (☛ "Upper Covers")
2. Platen cover sensor [A] (☞ x 1)

3.4 SCANNER UNIT

3.4.1 EXPOSURE GLASS/DF EXPOSURE GLASS



b121r950

Exposure Glass

1. Front upper left cover (☛ "Upper Covers")
2. Left scale [A] (☞ x 2)
3. Rear scale [B] (☞ x 3)
4. Exposure glass [C]

Note

- Make sure that the mark on the exposure glass is at the rear left corner, and that the left edge is aligned to the support on the frame when you reinstall the exposure glass.

DF Exposure Glass

1. Front upper left cover (☛ "Upper Covers")
2. Left scale [A]
3. DF exposure glass [D]

Note

- Make sure that the yellow mark [E] is on the bottom at the front end when you reinstall the DF exposure glass.

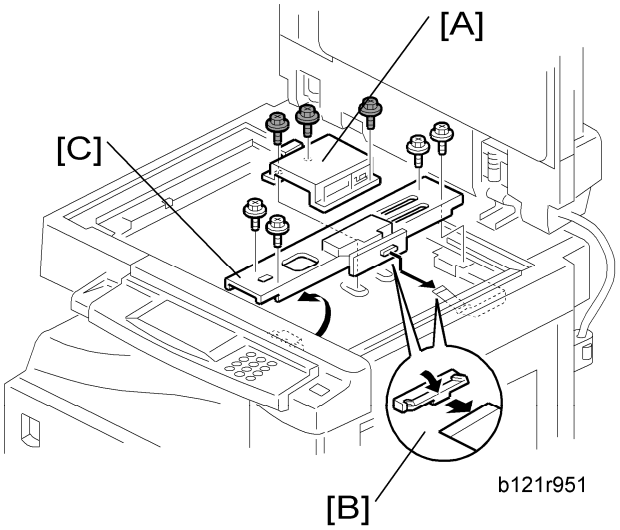
3.4.2 LENS BLOCK

⚠CAUTION

- Do not touch the paint-locked screws on the lens block. The position of the lens

assembly (black part) is adjusted before shipment.

- Do not grasp the PCB or the lens assembly when you handle the lens block. The lens assembly may slide out of position.

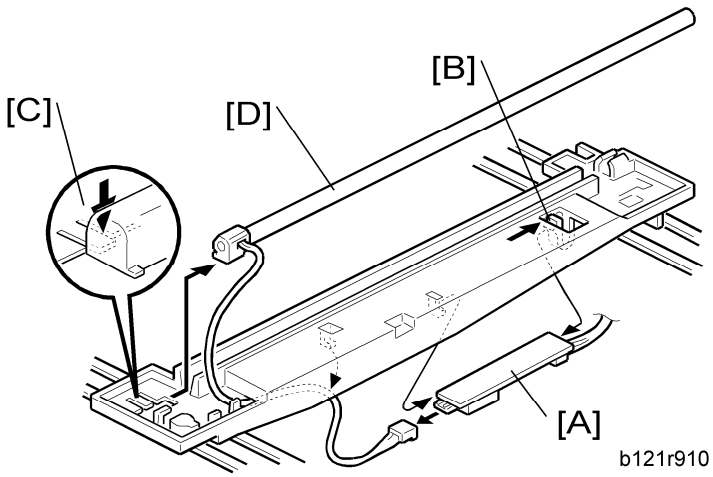


1. Exposure glass (☛ "Scanner Unit")
2. Lens cover [A] (☞ x 5)
3. Disconnect the flat cable [B].
4. Lens block [C] (☞ x 4)

Note

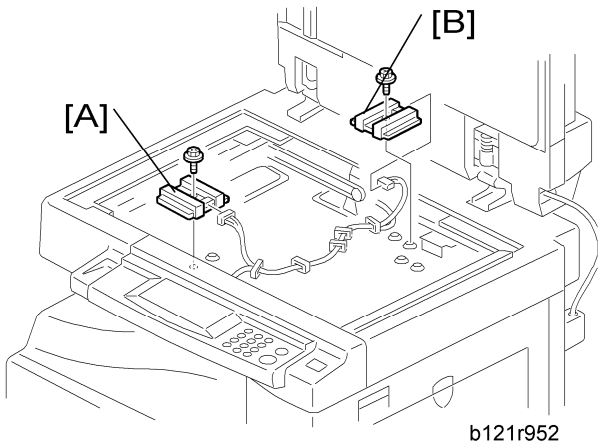
- Adjust the image quality (☛ "Copy Adjustments Printing/Scanning") after you install a new lens block.

3.4.3 LAMP STABILIZER BOARD AND EXPOSURE LAMP



1. Operation panel (☛ "Upper Covers")
2. Exposure glass (☛ "Exposure Glass/DF Exposure Glass")
3. Slide the first scanner to a position where the front end of the lamp is visible.
4. Place one hand under the lamp stabilizer board [A] and release the hook [B].
5. Lamp stabilizer board (x 1, flat cable x 1)
6. Press the plastic latch [C] and push the front end of the lamp toward the rear.
7. Lamp [D] (with the cable)

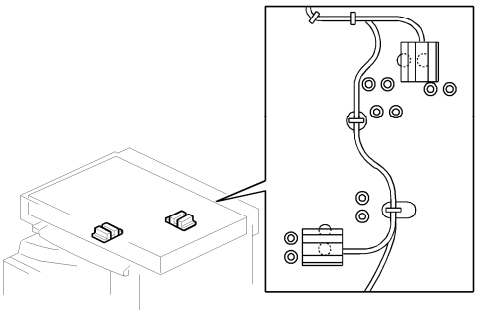
3.4.4 ORIGINAL WIDTH/LENGTH SENSOR



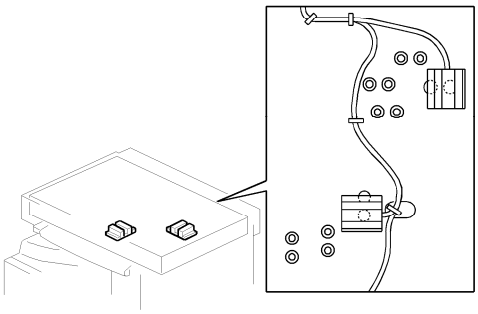
1. Exposure glass (☛ "Scanner Unit")
2. Original width sensor [A] (x 1, x 1)
3. Lens block (☛ "Scanner Unit")
4. Original length sensor [B] (x 1, x 1)

Sensor Positions

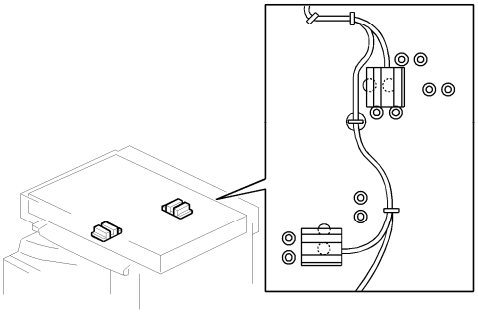
Asia (including Taiwan; excluding China), Europe



America



China (Sensor positions for China model (8K/16K))



b121r954

Sensor positions vary according to regions as shown above.

Rearranging Sensor Positions for China Model (8K/16K)

This procedure is for China models only. You must rearrange the positions of the original width and length sensors for the copier to detect the following original sizes:

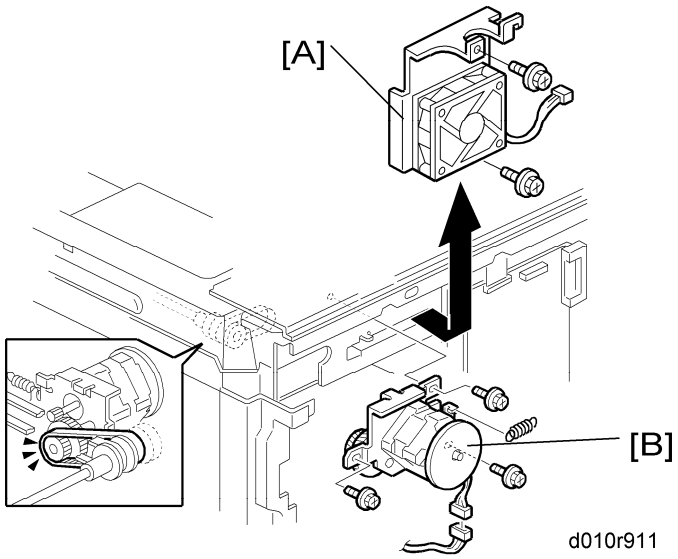
- 8K SEF (270 x 390 mm)
- 16K SEF (195 x 270 mm)
- 16K LEF (270 x 195 mm)

After you have rearranged the positions, the sensors work as listed in the table. Rearrange the sensor positions as follows:

Original Size	Length Sensors		Width Sensors	
8K-SEF	L1	L2	W1	W2
16K-SEF	X	X	X	O
16K-LEF	X	O	O	O
16K-SEF	O	O	X	O

1. Specify SP mode settings:
2. Select SP 4305 1, and specify 2 (=Yes).
   The machine will detect 8K/16K rather than A3/A4/B4/B5 (A3-SEF/B4-SEF ⇒ 8K-SEF; B5-SEF/A4-SEF ⇒ 16K-SEF; B5-LEF/A4-LEF ⇒ 16K-LEF).
3. Turn off the main switch.
4. Exposure glass (☛ "Scanner Unit").
5. Original width/length sensors [A] [B]
6. Rearrange the sensor positions [C] [D].
7. Turn on the main switch and check the operations.

3.4.5 SCANNER MOTOR

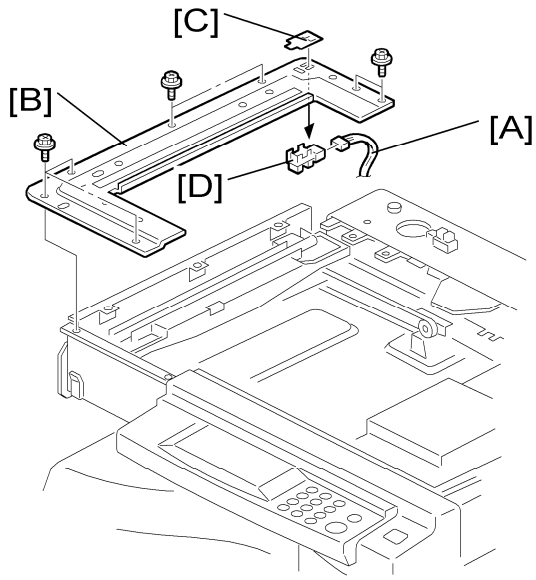


1. Rear cover (☛ "Rear Cover")
2. Right upper cover (☛ "Right Upper Cover")
3. Exposure glass (☛ "Exposure Glass/DF Exposure Glass")
4. Duplex fan [A] (x 2, x 1)
5. Scanner motor [B] (x 3, x 1, spring x 1, belt x 1)

Note

- Install the belt first, then set the spring when you reassemble. Fasten the left-most screw (viewed from the rear), and fasten the other two screws.
- Adjust the image quality after you install the motor.

3.4.6 SCANNER HOME POSITION SENSOR



b121r958

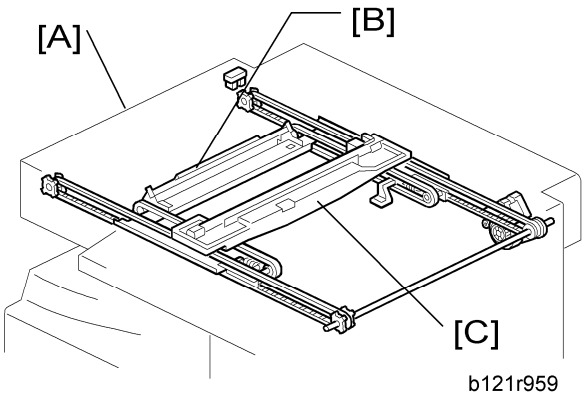
1. Left upper cover, front upper cover, top rear cover (☛ "Upper Covers")
2. Exposure glass, DF exposure glass (if installed) (☛ "Exposure Glass/DF Exposure Glass")
3. Disconnect the connector [A].
4. Scanner left lid [B] (🔩 x 7)
5. Sensor tape [C].
6. Scanner home position sensor [D]

3.4.7 ADJUSTING SCANNER POSITIONS

⚠CAUTION

- **Grasp the front and rear ends (not the middle) of the first scanner when you manually move it. The first scanner may be damaged if you press, push, or pull it from the middle part.**

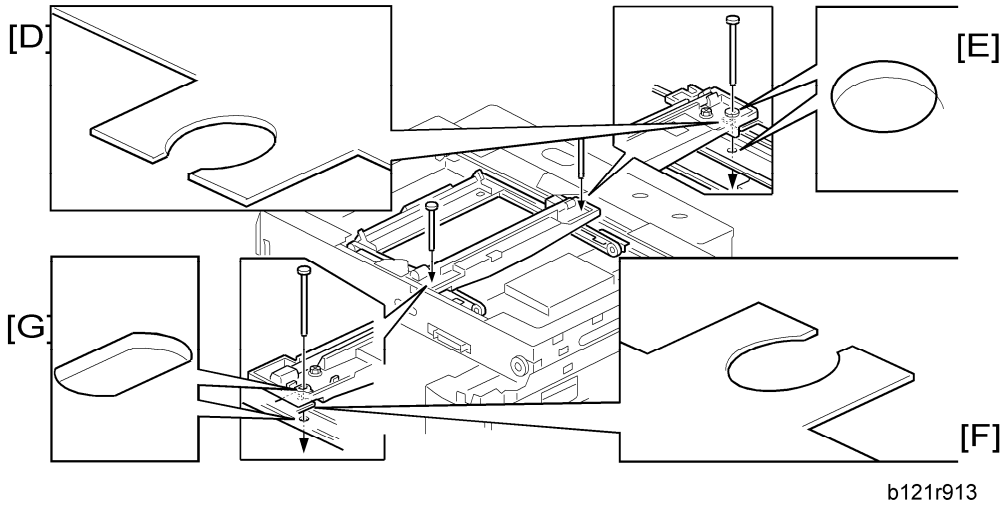
Overview



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

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

- To adjust the belt contact points on the first scanner (☛ "Adjusting the First Scanner Contact Points" below.**)**
- To adjust the belt contact points on the scanner bracket (☛ "Adjusting the Second Scanner Contact Points" below.)

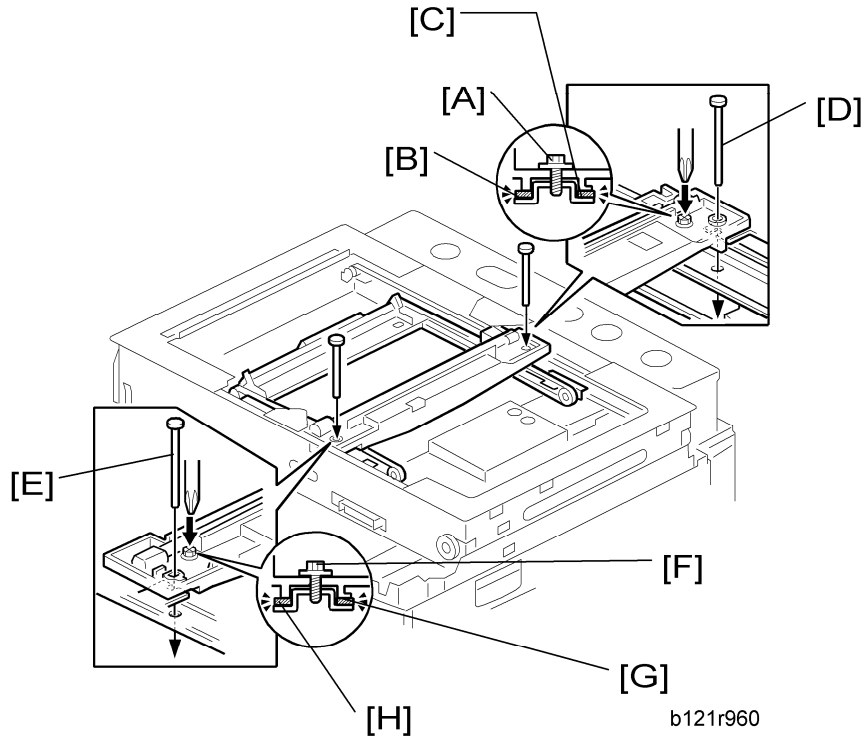


The two procedures above have the same objectives--to align the following holes and marks:

- The adjustment holes [E] [G] in the first scanner
- The adjustment holes [E] [G] in the second scanner
- The alignment marks [D] [F] on the frames

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

Adjusting the First Scanner Contact Points

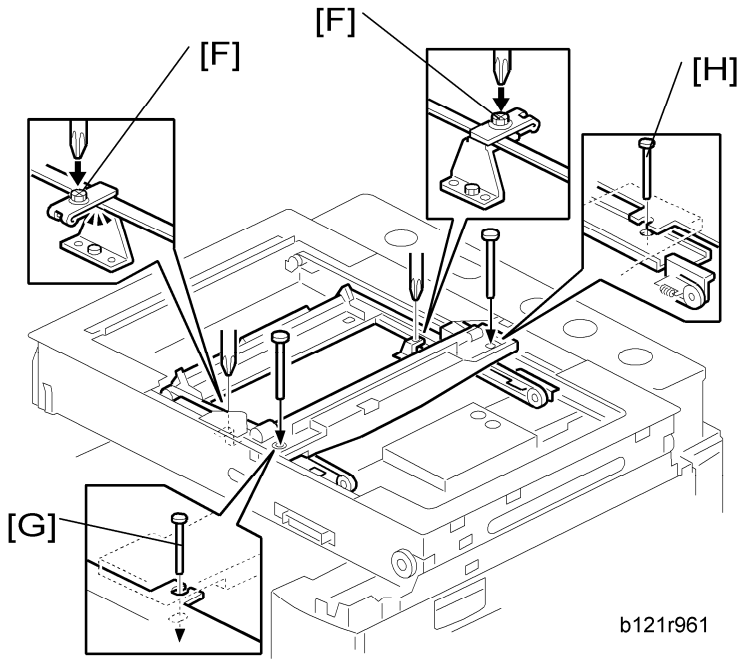


1. A(R)DF or platen cover
2. Operation panel, top rear cover (☛ "Upper Covers").
3. Exposure glass (☛ "Exposure Glass/DF Exposure Glass")
4. Loosen the 2 screws [A] [F].
5. Slide the 1st and/or 2nd scanners to align the following holes and marks:
   - The adjustment holes in the first scanner
   - The adjustment holes in the second scanner
   - The alignment marks on the frames
6. Insert the positioning tools [D] [E] through the holes and marks.
7. Check that the scanner belts [B] [C] [G] [H] are properly set between the bracket and the 1st scanner.
8. Tighten the screws [A] [F].
9. Remove the positioning tools.
10. Reassemble the machine and check the operation.

Adjusting the Second Scanner Contact Points

1. A(R)DF or platen cover
2. Operation panel, top rear cover (☛ "Upper Covers").

3. Exposure glass (☛ "Exposure Glass/DF Exposure Glass")



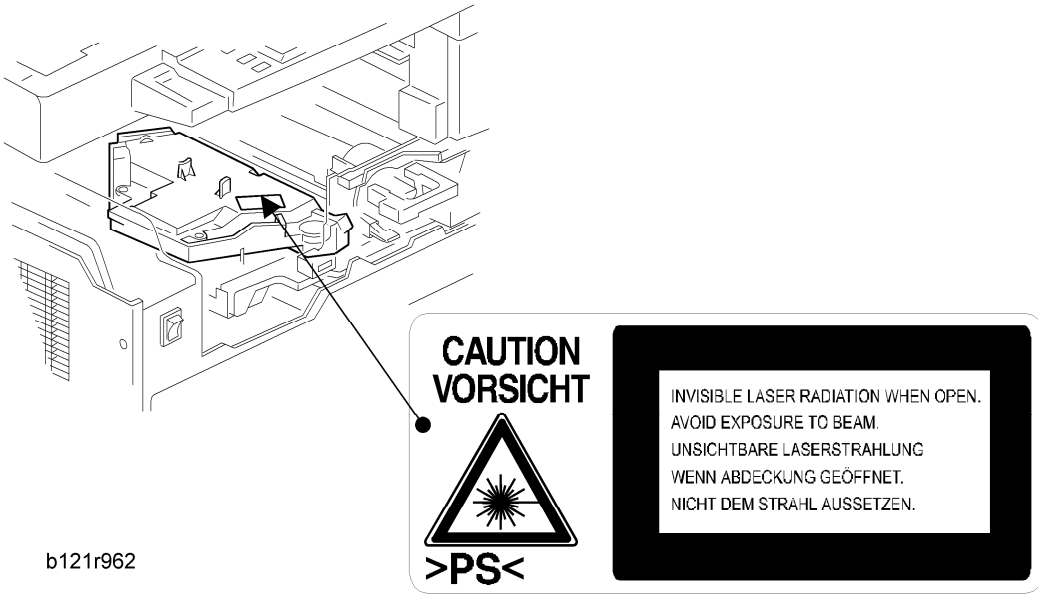
4. Loosen the 2 screws [F].
5. Slide the 2nd scanner to align the following holes and marks
6. The adjustment holes in the first scanner
7. The adjustment holes in the second scanner
8. The alignment marks on the frames
9. Insert the positioning tools [G] [H] through the holes and marks.
10. Check that the scanner belts are properly set in the brackets.
11. Remove the positioning tools.
12. Reassemble the machine and check the operation.

3.5 LASER UNIT

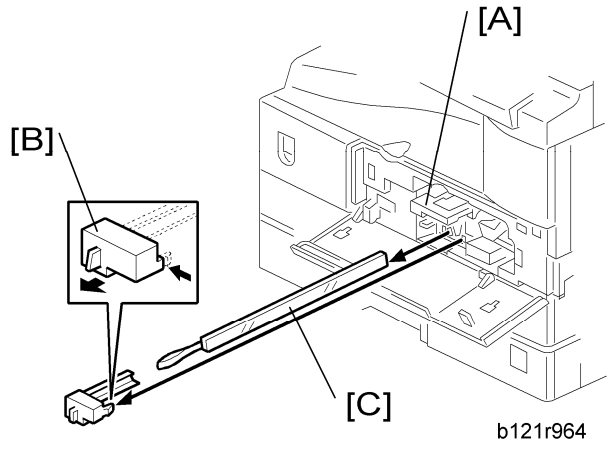
⚠WARNING

- **The laser beam can cause serious damage to your eyes. Be absolutely sure that the main power switch is off and that the machine is unplugged before you access the laser unit.**

3.5.1 LOCATION OF CAUTION DECAL



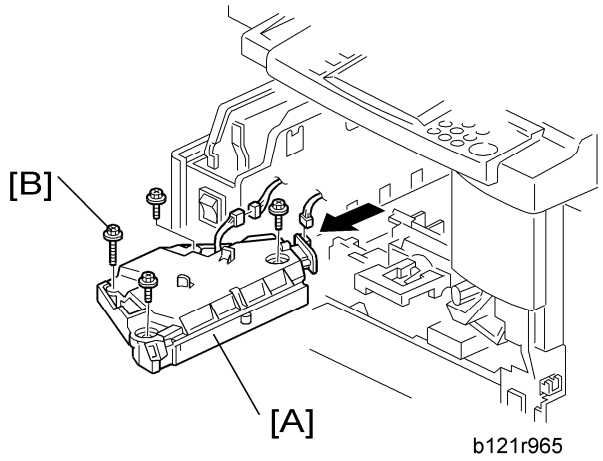
3.5.2 TONER SHIELD GLASS



1. Open the front door.

2. Lift the toner cartridge latch [A].
3. Push the toner shield glass cover [B] to the left and pull it out.
4. Pull out the toner shield glass [C].

3.5.3 LASER UNIT



1. Toner shield glass (☛ "Toner Shield Glass")
2. Inner cover (☛ "Inner Cover")
3. Pull out the (upper) paper tray.
4. Front cover
5. Laser unit [A] (x 2, x 4)

Note

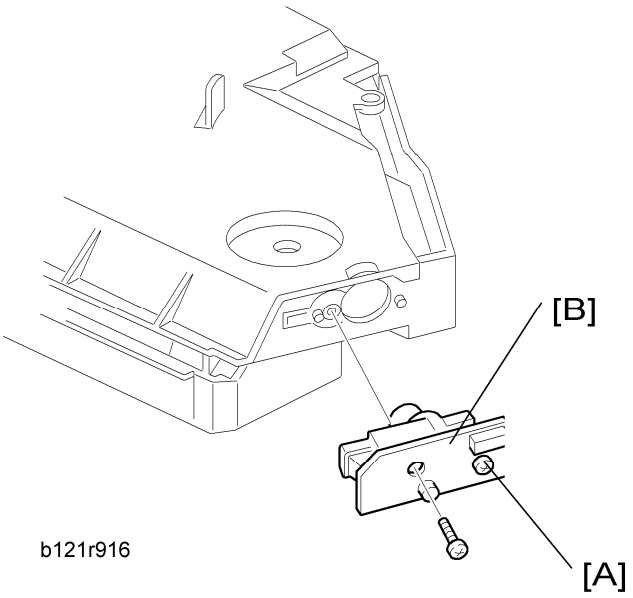
- The screw at the left front position [B] is longer than the other three.

3.5.4 LD UNIT

CAUTION

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

Laser Unit

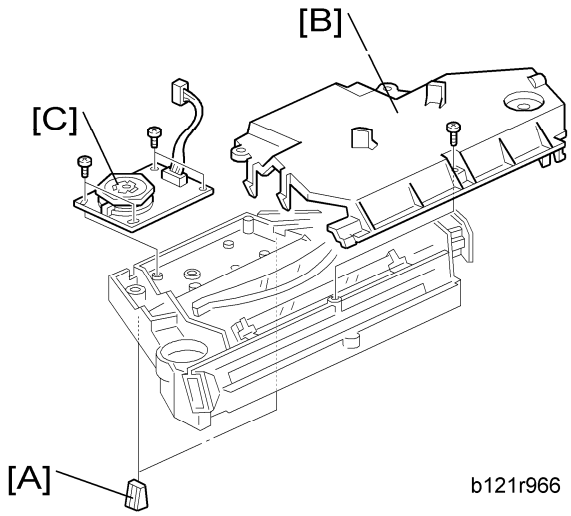


1. Laser unit [A]
2. LD unit [B] (x 1)

Note

- Do not screw the LD unit in too tightly when you install it.

3.5.5 POLYGONAL MIRROR MOTOR



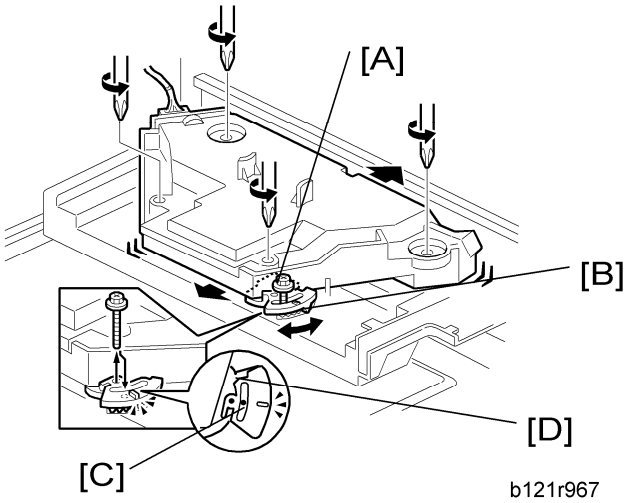
1. Laser unit
2. Two rubber bushings [A]
3. Laser unit cover [B] (x 1)
4. Polygonal mirror motor [C] (x 4)

5. After reassembling, adjust the image quality (☛ "Copy Adjustments Printing/Scanning").

3.5.6 LASER UNIT ALIGNMENT ADJUSTMENT

⚠WARNING

- **Reinstall the copy exit tray before you turn the main switch on. The laser beam may escape the copier when the copy exit tray is not installed. The laser beam can seriously damage your eyes.**

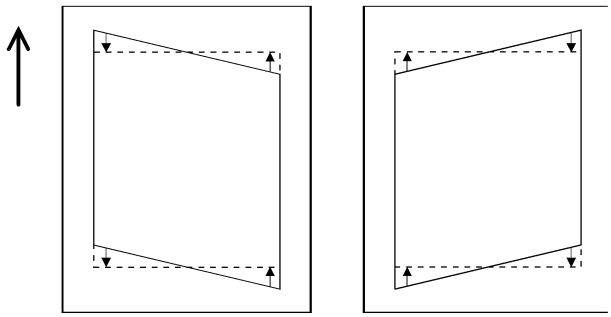


1. Enter the SP mode.
2. Select SP 5902 1 and print out the "Trimming Area"pattern (pattern 10).
3. Make sure that the four corners of the pattern are at right angles:
   - If they are at right angles, you do not need to adjust the laser unit alignment.
   - If they do not make right angles, go on to the next step.
4. Check the screw position on the lever [B].
   - If the screw is in the hole [C], go on to the next step.
   - If the screw is in the slot [D], loosen the screw on the lever, loosen the four screws on the laser unit, and go on to step 9.

   Note
   - The initial position of the screw is in hole [C].
5. Four screws in the laser unit (☛ "Laser Unit")
6. Remove the lever (☞ x 1), confirm the position of the hole beneath the slot [D], and reinstall the lever.
7. Install the screw (through the slot [D]) loosely into the hole beneath the slot (do not tighten the screw).
8. Install the four screws for the laser unit loosely (do not tighten the screws).

Laser Unit

9. When you rotate the lever clockwise or counterclockwise by one notch of the lever, the corners of the pattern shift by ±0.4 mm (from the leading and trailing edges). See the trim pattern made in step 2, and find how much the corners should be shifted.

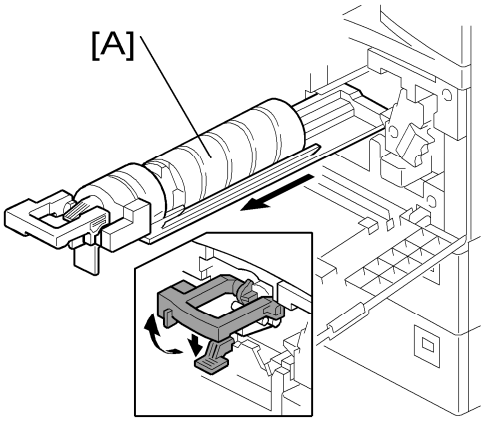


b121r968

10. Tighten the screw [A].
11. Tighten the screws on the laser unit.
12. Reinstall the inner cover and copy tray.
13. Print the trim pattern and check the result. Do the procedure again if further adjustment is required.

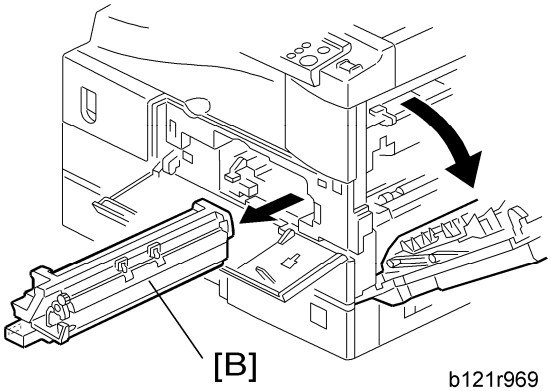
3.6 PCU SECTION

3.6.1 PCU



b121r918

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



b121r969

3. Pull out the PCU [B].

Note

- Do not touch the OPC drum surface with bare hands.

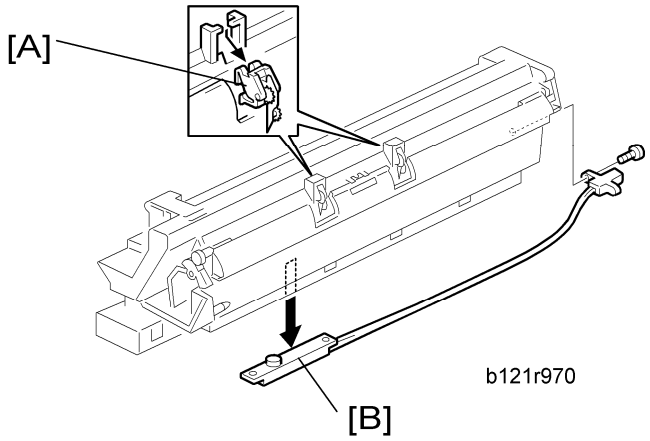
4. Load new developer (☛ "Developer").
5. Do SP 3016-1 to reinitialize the TD sensor when you reassemble.

3.6.2 PICK-OFF PAWLS AND TONER DENSITY SENSOR

⚠CAUTION

- Do not turn the PCU upside down. This causes toner and developer to spill out.

PCU Section



1. PCU (☛ "PCU")
2. Pawl [A]

Note

- Pull down the pawl and release the bottom end.

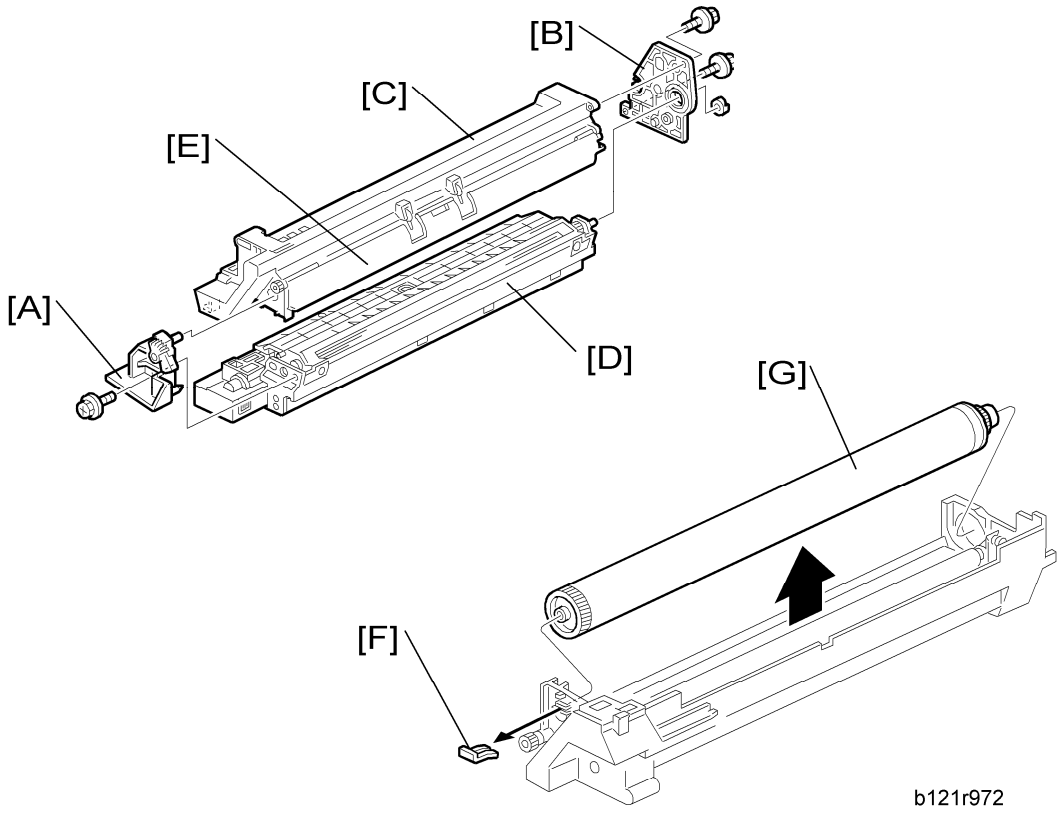
3. Toner density sensor [B] (🖉 x 1)

Note

- The toner density sensor is taped to the bottom of the PCU. Pry it off with a flathead screwdriver

4. After reinstalling the pick-off pawls or toner density sensor, adjust the image quality (☛ "After Replacement or Adjustment").

3.6.3 OPC DRUM



1. PCU (☛ "PCU")
2. Front side piece [A] (☞ x 1)
3. Rear side piece [B] (☞ x 2, 1 coupling)
4. Separate the drum section [C] from the developer section [D].

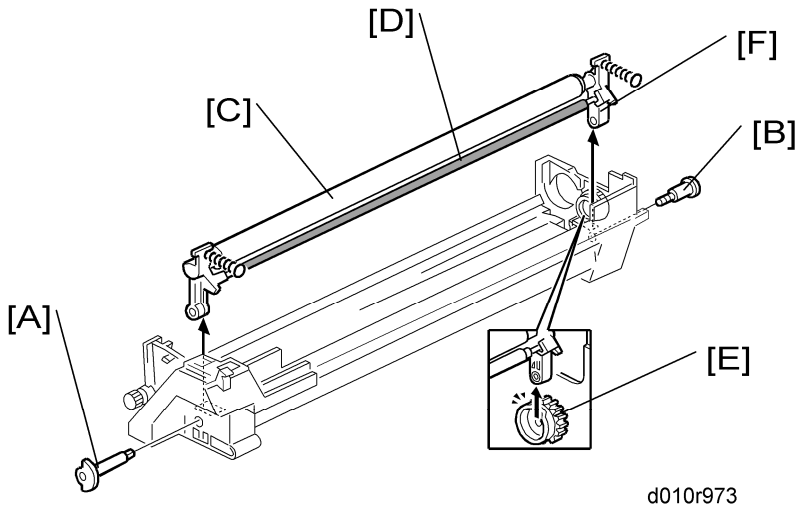
   Note

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

   Note

   - Install the clip in the same orientation (with the lip facing away from the drum shaft) when you reassemble.
6. OPC drum [G]
7. When reassembling, adjust the image quality (☛ "After Replacement or Adjustment").

3.6.4 CHARGE ROLLER AND CLEANING BRUSH



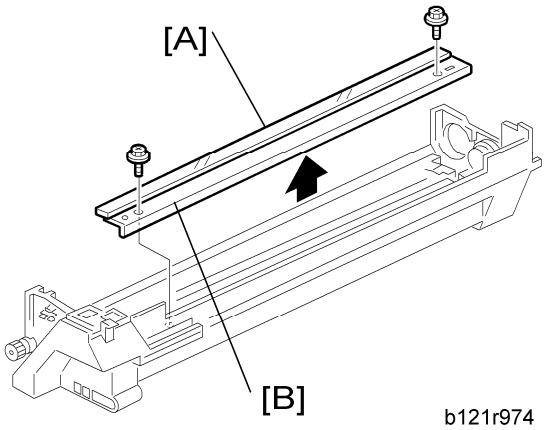
1. OPC Drum (☛ "OPC Drum"))
2. Holding pin [A]
3. Stepped screw [B]
4. Charge roller [C] and cleaning brush [D] (with the holders and springs)

Note

- Turn the gear [E] (as necessary) so that the rear holder [F] comes out.

5. When reassembling, adjust the image quality (☛ "After "Replacement or Adjustment").

3.6.5 CLEANING BLADE

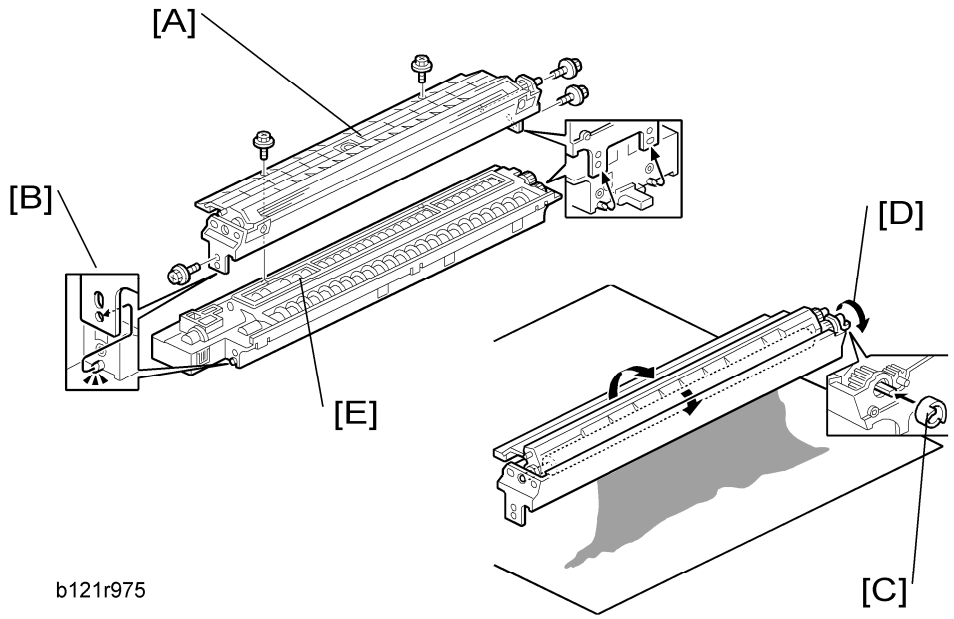


1. Drum charge roller (☛ "Charge Roller and Cleaning Brush")
2. Cleaning blade [B] (🔩 x 2)
3. When reassembling, adjust the image quality (☛ "After Replacement or Adjustment").

Important

- Reassembling
- Apply toner to the edge of the new cleaning blade when you replace the cleaning blade. This prevents possible damage to the OPC drum and blade.
  1. After installing the cleaning blade, remove some of the toner from the old blade with your finger.
  2. Apply the toner to the edge [A] of the new cleaning blade. Make sure to apply the toner evenly along full length of the new cleaning blade.

3.6.6 DEVELOPER



1. PCU (☛ "PCU")
2. To allow the toner to fall to the development section, gently tap about eight different spots on the top of the PCU with a screwdriver. Each spot must be approximately at an equal distance from the next spot.
3. Reinstall the PCU in the copier.
4. Turn the main switch on.
5. Open and close the front door and wait for the machine to rotate the development roller for about 10 seconds.
6. Repeat the previous step two more times.
7. PCU (☛ PCU)
8. Separate the developer section from the OPC drum section (☛ "OPC Drum").

PCU Section

9. Top part [A] of the development unit (🔩 x 5)

Note

- Release the hook [B].

10. Set the coupling [C] back on the shaft.
11. Turn the coupling in the direction of the arrow [D] to remove developer from the roller.
12. Turn the bottom part [E] over and rotate the gears to remove the developer.
13. Load new developer.
14. When reassembling, execute SP 3016-1 to reinitialize the TD sensor.

Note

- Make sure no toner or developer stays on the gear. Clean the gears as necessary with a blower brush, etc.
- Be sure to replace the Mylar at the rear side in the correct position. (The Mylar protects the gears at the rear side from toner).

3.6.7 AFTER REPLACEMENT OR ADJUSTMENT

Important

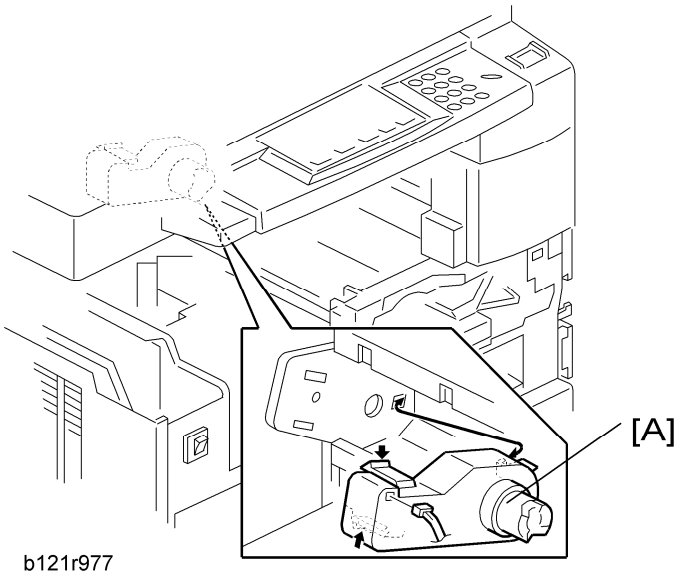
- Do the following procedure after you replace or adjust any of the PCU components. This procedure is not necessary when you replaced the whole PCU with a new one.

1. Take 5 sample copies.
2. If black dots (dropped toner) show on any of the copies, continue as follows. (If all copies are clean, you don't need to do the following steps.)
3. Remove the PCU from the mainframe.
4. Tap the top of the PCU with a screwdriver at eight evenly spaced locations (two or three taps at each spot), to knock the recycled toner down into the development section.
5. Put the PCU back into the mainframe.
6. Turn the main power on. Then open and close the door and wait for the machine to rotate the development roller for 10 seconds. Then open and close the door two more times, so that total rotation time is 30 seconds.
7. Make several sky-shot copies (or solid black prints).
   - If using A4 or $8^1/_2$" x 11" paper, make 4 copies/prints.
   - If using A3 or 11" x 17" paper, make 2 copies/prints.
   - To make solid black prints, use SP 5902 pattern 8.

Note

- Step 7 is required only after parts replacement or adjustment. You do not need to make sky-shot (or solid black) copies after you replace the developer.

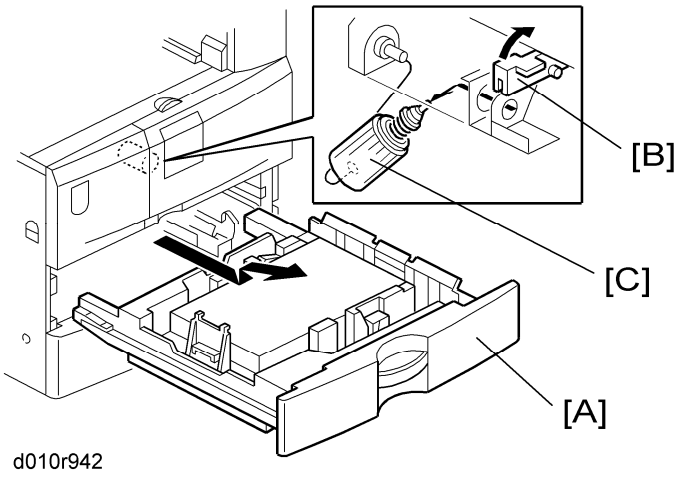
3.7 TONER SUPPLY MOTOR



1. Inner cover (☛ "Inner Cover")
2. Open the front door.
3. Toner bottle holder (☛ "PCU")
4. Toner supply motor [A] (✋ x 1)

3.8 PAPER FEED SECTION

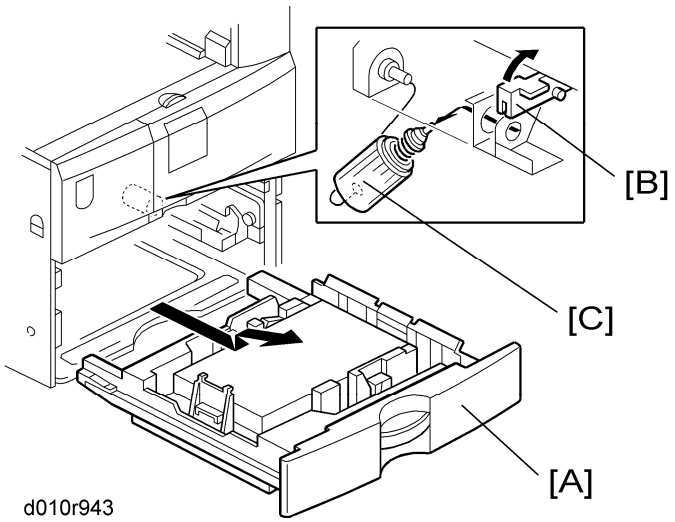
3.8.1 PAPER FEED ROLLER: TRAY 1



d010r942

1. Pull out the paper tray 1 [A].
2. Pull up the stopper [B].
3. Paper feed roller [C]

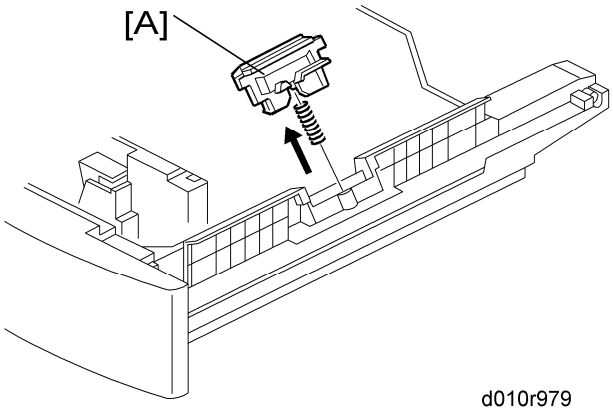
3.8.2 PAPER FEED ROLLER: TRAY 2



d010r943

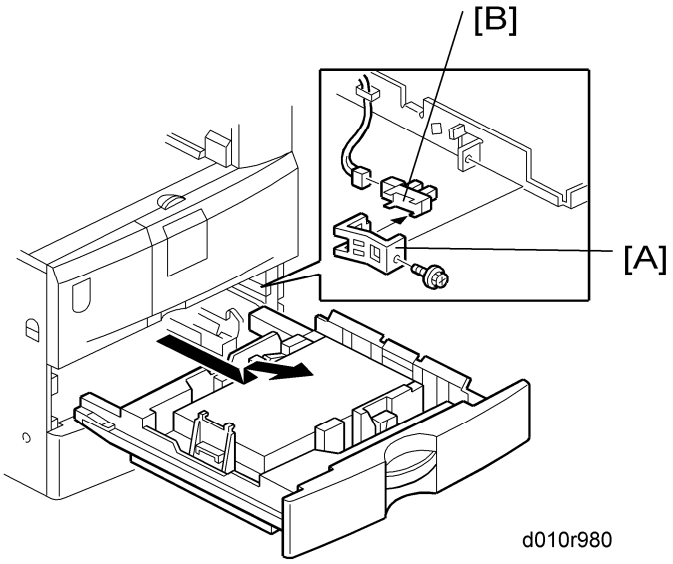
1. Pull out the paper tray 1 and 2 [A].
2. Pull up the stopper [B].
3. Paper feed roller [C]

3.8.3 FRICTION PAD



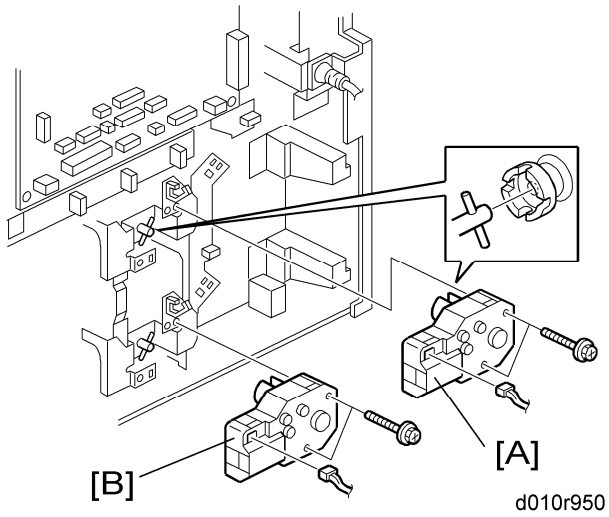
1. Pull out the paper tray.
2. Friction pad [A] (spring x 1)

3.8.4 PAPER END SENSOR



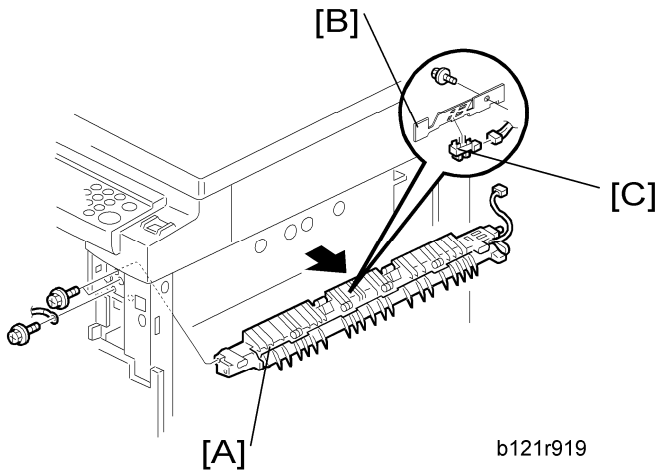
1. Paper cassette
2. Bracket [A] (x 1, x 1)
3. Paper end sensor [B] (hook)

3.8.5 UPPER/LOWER PAPER LIFT MOTORS



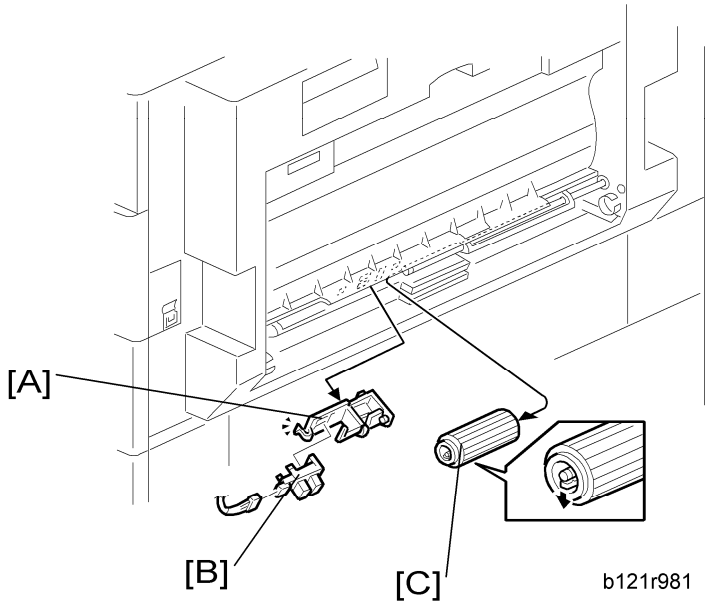
1. Rear cover (☛ "Rear Cover")
2. Upper or lower paper lift motors [A] [B] (x 2, x 1 each)

3.8.6 EXIT SENSOR



1. Open the right door.
2. Front right cover (☛ "Front Right Cover")
3. Disconnect the fusing lamp connector at the front right frame.
4. Upper guide [A] (x 3, x 1, ground cable x 1)
5. Exit sensor bracket [B] (x 1)
6. Exit sensor [C] (x 1)

3.8.7 BY-PASS FEED ROLLER AND PAPER END SENSOR



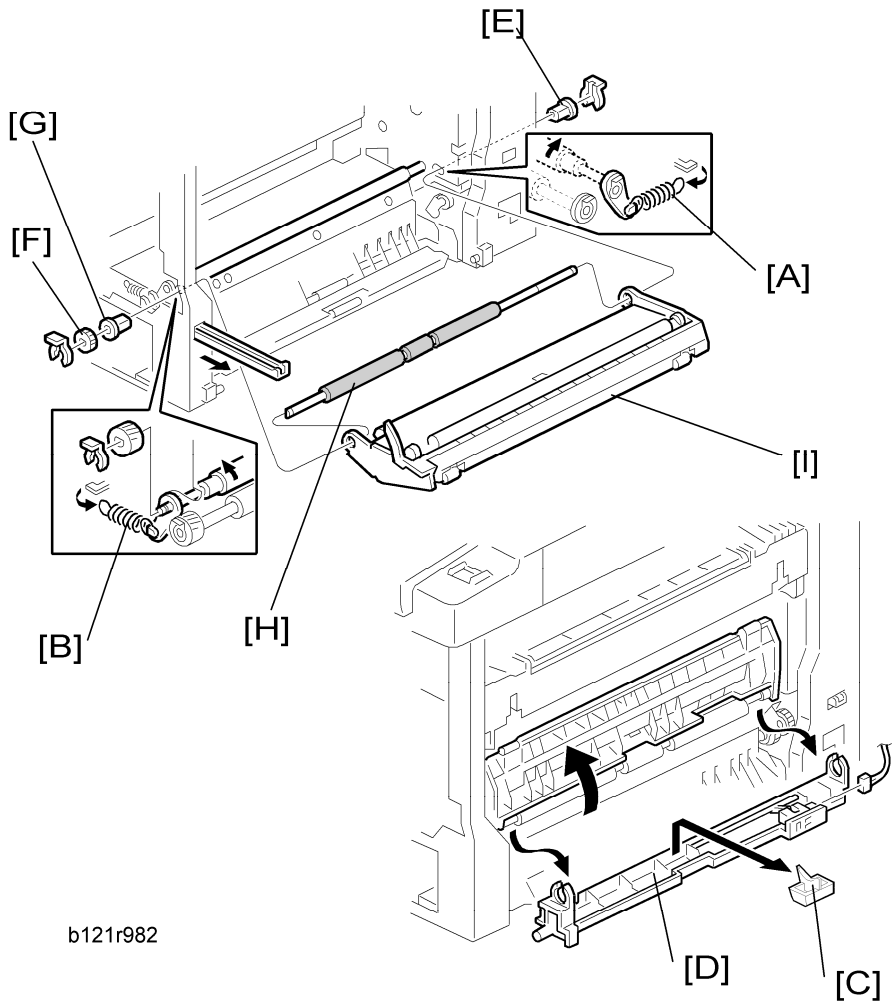
1. By-pass tray

Note

- If you have a support to keep the by-pass tray within the reach of the connector cable, you do not need to disconnect the connector. When you do so, use caution not to place too much load on the cable.

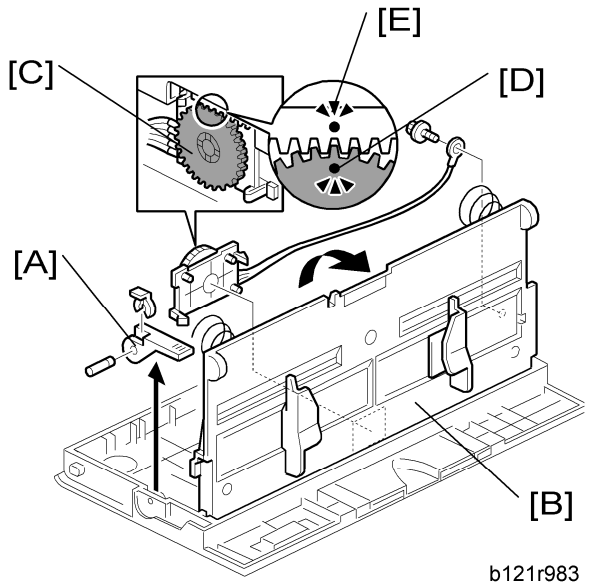
2. Sensor holder [A]
3. By-pass paper end sensor [B] (x 1)
4. By-pass feed roller [C]

3.8.8 REGISTRATION ROLLER



1. PCU (☛ "PCU")
2. Front cover (☛ "Front Cover")
3. Right door (☛ "Right Door")
4. Rear cover (☛ "Rear Cover")
5. High-voltage power supply board bracket (☛ "Registration Clutch")
6. Registration clutch (☛ "Registration Clutch")
7. Unhook the springs [A] and [B] at the rear and front sides.
8. Guide support [C] and guide [D] (x 1, x 1)
9. Bushing [E] (x 1)
10. Gear [F] and bushing [G] (x 1)
11. Registration roller [H] with the image transfer unit [I] (x 1)

3.8.9 BY-PASS PAPER SIZE SWITCH

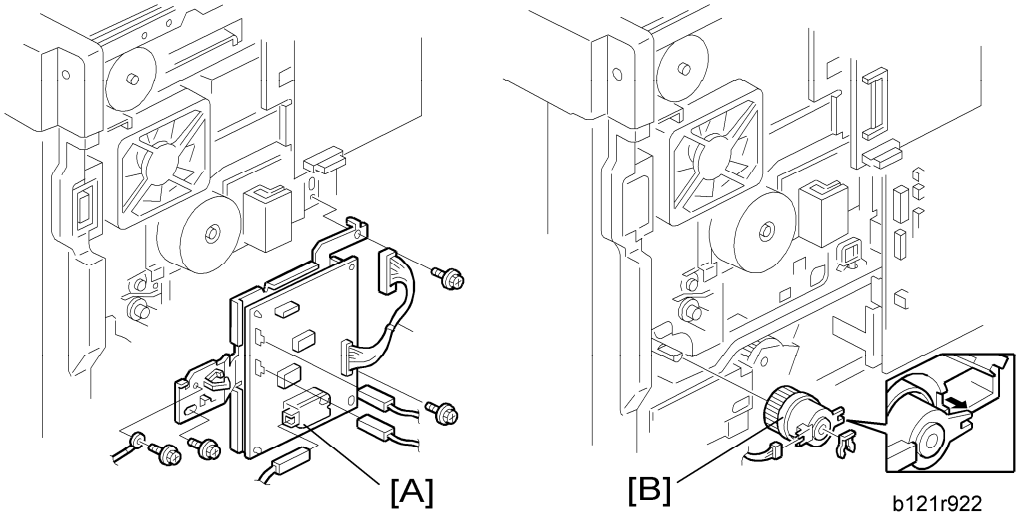


1. By-pass tray
2. Tray lever [A] (x 1, 1 pin)
3. Lift the upper tray [B]
4. By-pass paper size switch [C] (x 1)

Note

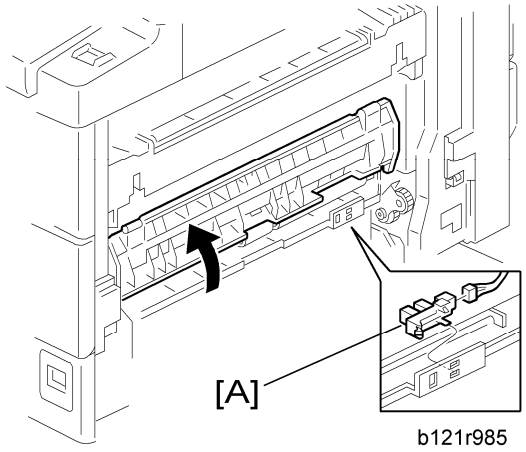
- When reinstalling the switch: Move the paper guides to their middle position (about halfway between fully open and fully closed), and install the round gear so that the hole in the gear [D] aligns with the peg [E] on the sliding gear.

3.8.10 REGISTRATION CLUTCH



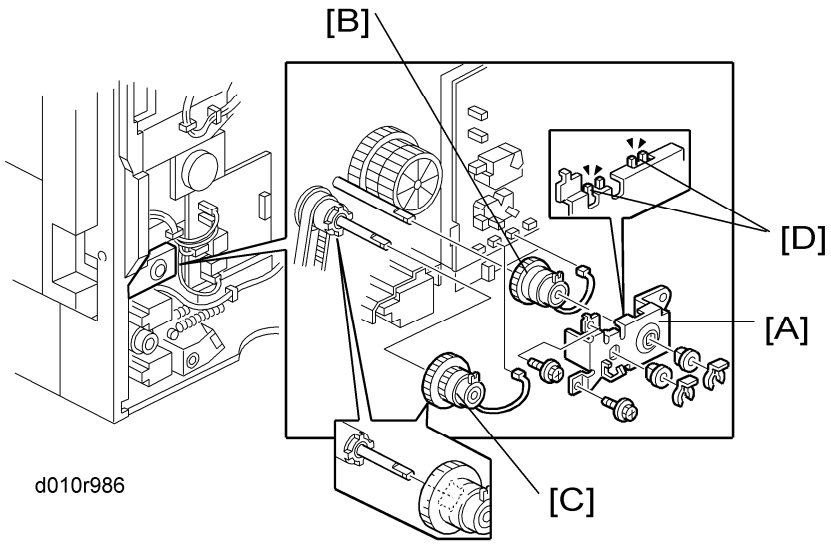
1. Rear cover
2. High-voltage power supply board bracket [A] (x 4, x 3, all connectors)
3. Registration clutch [B] (x 1, x 1)

3.8.11 REGISTRATION SENSOR



1. Open the right door.
2. Registration sensor [A] (x 1)

3.8.12 UPPER PAPER FEED CLUTCH AND BY-PASS FEED CLUTCH

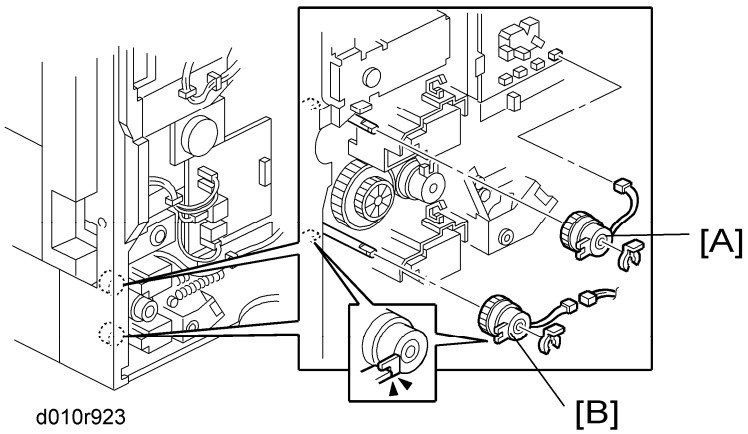


1. Rear cover (☛ "Rear Cover")
2. Right rear cover (☛ "Right Rear Cover")
3. High-voltage power supply board bracket (☛ "Registration Clutch")
4. Clutch cover [A] (x 2, 2 bushings, x 2)
5. Paper feed clutch [B] (x 1)
6. Upper relay clutch (☛ "Upper and Lower Relay Clutches")
7. By-pass feed clutch [C] (x 1)

Note

- Make sure that the rotation-prevention tabs [D] on the clutches fit correctly into the corresponding openings on the clutch cover when you reinstall.

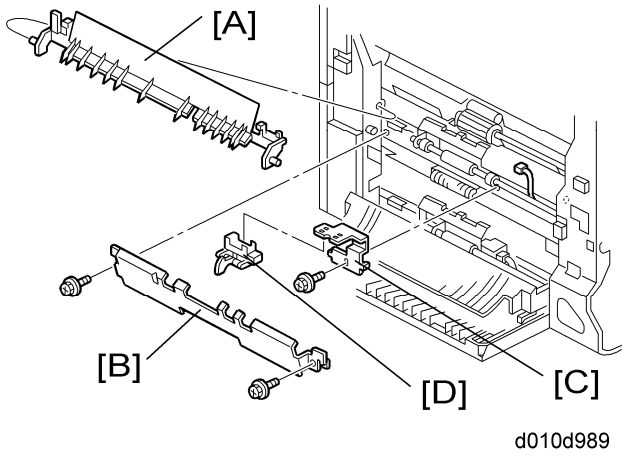
3.8.13 RELAY CLUTCHES



Paper Feed Section

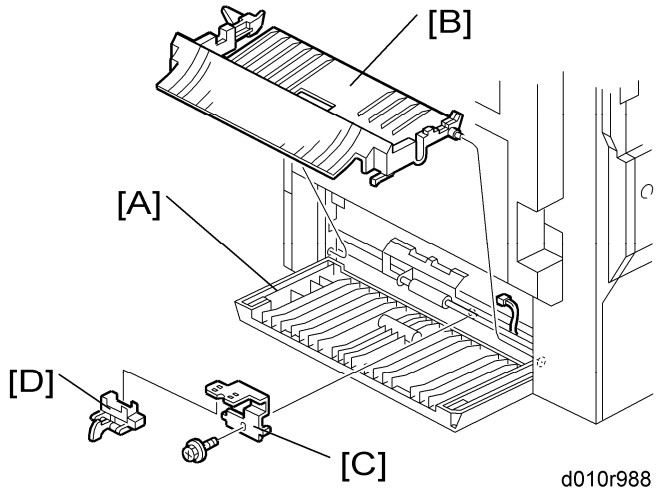
1. Rear cover (☛ "Rear Cover")
2. Upper relay clutch [A] (x 1, x 1)
3. Lower relay clutch [B] (x 1, x 1)

3.8.14 UPPER RELAY SENSOR



1. Right door (☛ "Right Door")
2. Paper guide plate [A]
3. Paper guide frame [B] (x 2)
4. Upper relay sensor bracket [C] (x 1, x 1)
5. Upper relay sensor [D] (hooks)

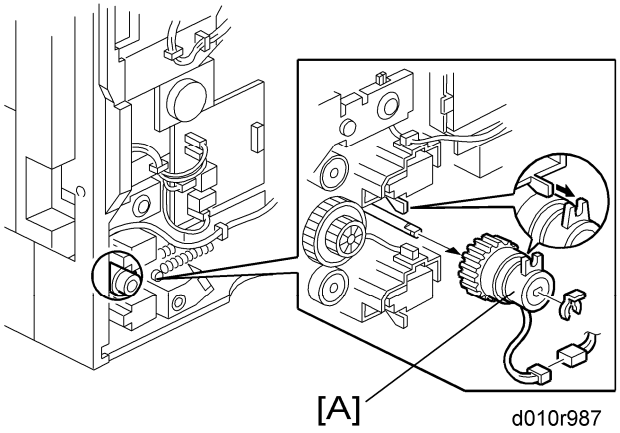
3.8.15 LOWER RELAY SENSOR



1. Open the right lower cover [A].
2. Paper guide plate [B]
3. Lower relay sensor bracket [C] (x 1, x 1)

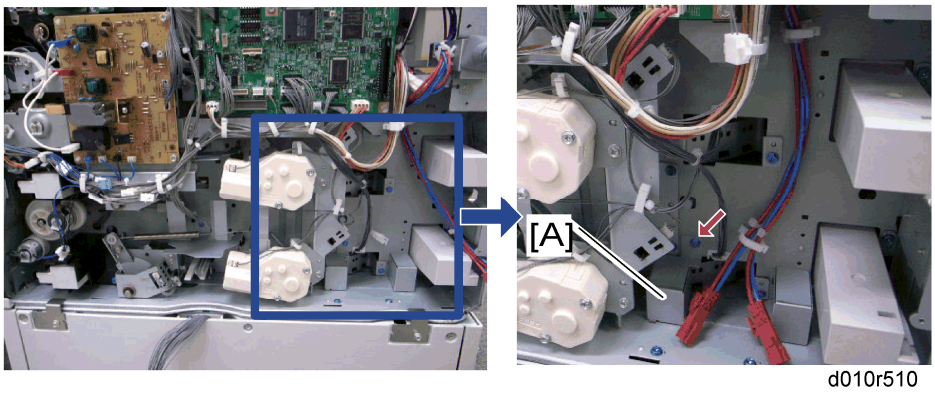
4. Lower relay sensor [D] (hooks)

3.8.16 LOWER PAPER FEED CLUTCH



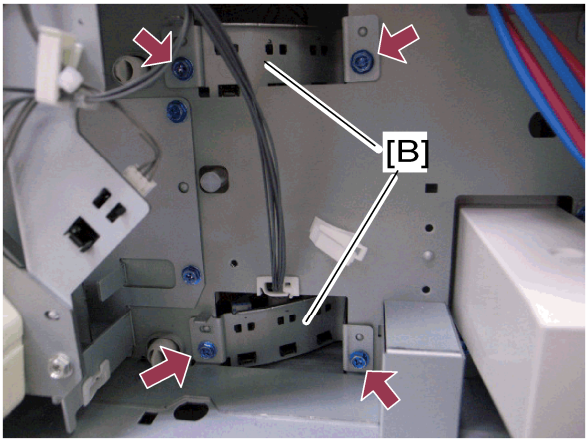
1. Rear cover (☛ "Rear Cover")
2. Lower paper feed clutch [B] (x 1, x 1)

3.8.17 UPPER/LOWER PAPER SIZE SENSORS



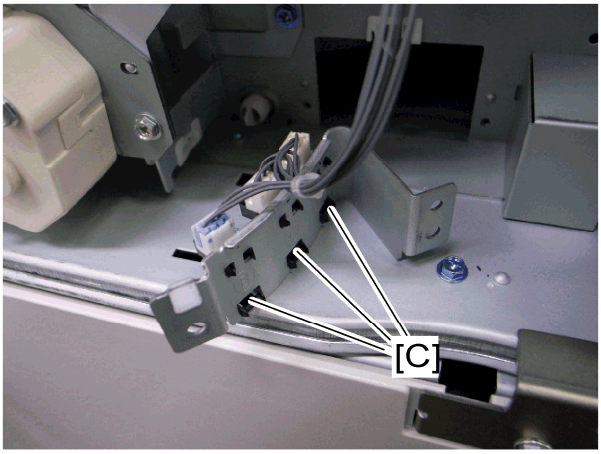
1. Pull out the paper tray 1 and/or 2.
2. Rear cover (☛ "Rear Cover")
3. Cover bracket [A] (x 1)

Paper Feed Section



d010r511

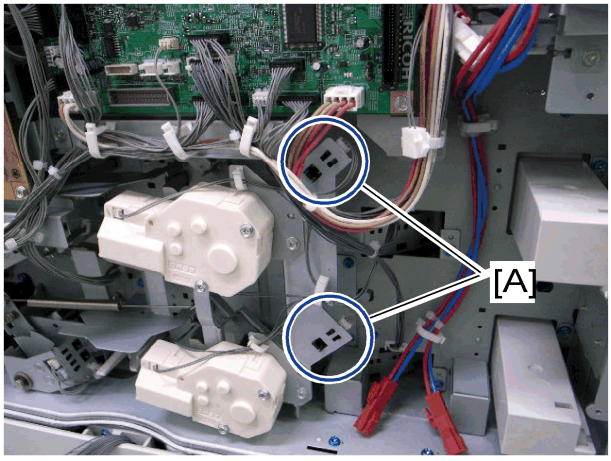
4. Size sensor brackets [B] (x 2 each)



d010r512

5. Upper or lower paper size sensors [C] (x 1, hook x 2 each)

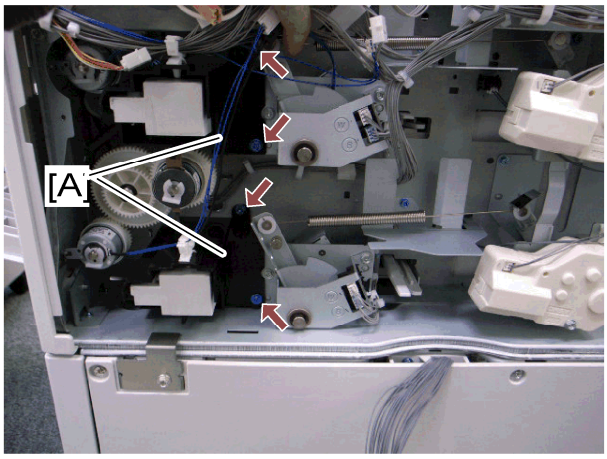
3.8.18 UPPER/LOWER PAPER LIFT SENSOR



d010r513

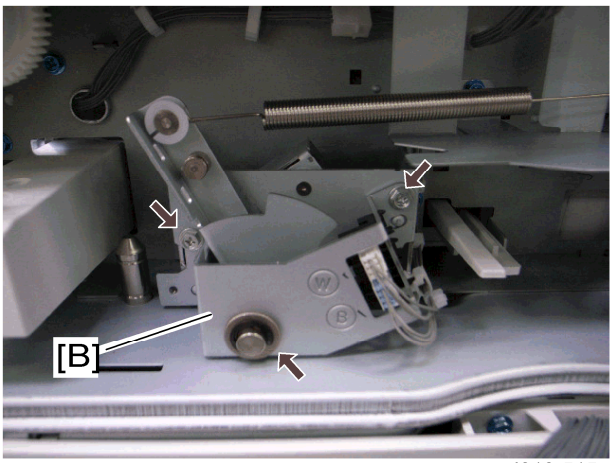
1. Rear cover (☛ "Rear Cover")
2. Upper or lower paper lift sensor [A] (x 1, hook x 2 each)

3.8.19 UPPER/LOWER PAPER HEIGHT SENSORS



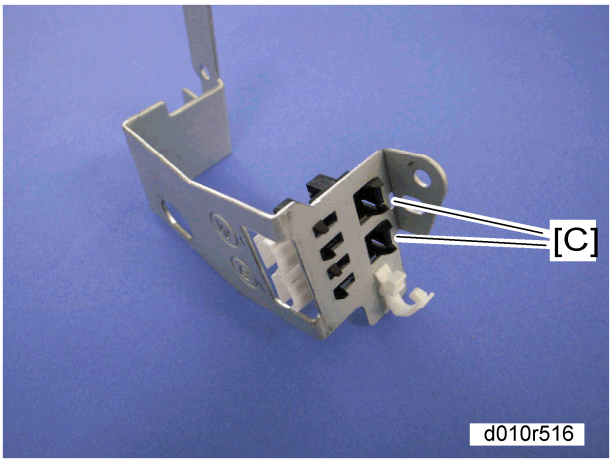
d010r514

1. Rear cover (☛ "Rear Cover")
2. High-voltage power supply board bracket (☛ "Registration Clutch")
3. Tray bar covers [A] (x 2 each)



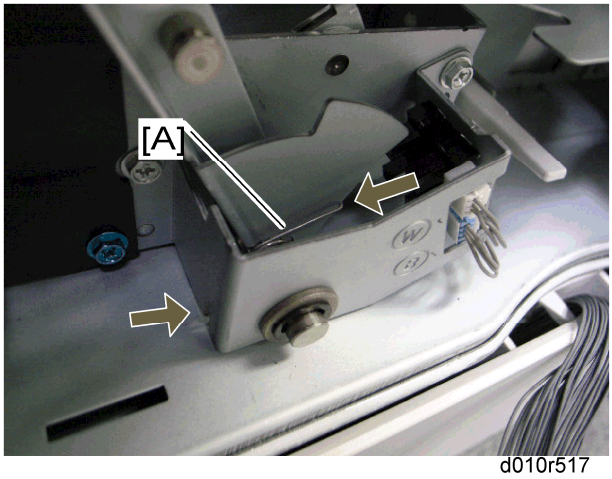
d010r515

4. Sensor bracket [B] (x 1, bushing x 1, x 1, x 2, x 2, spring x 1)



5. Upper or lower paper height sensors [C] (hook x 2)

When reassembling the sensor bracket



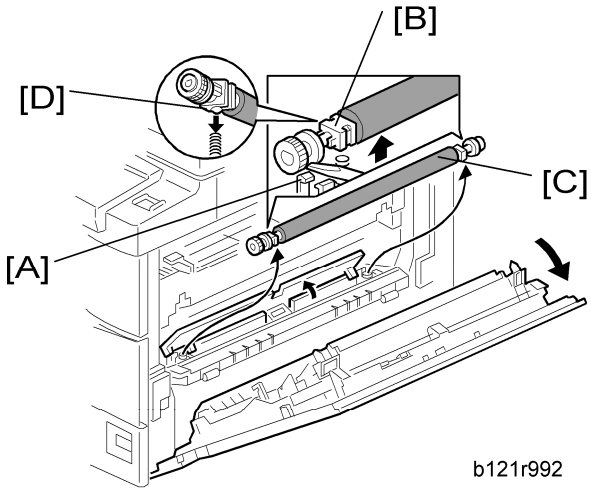
Maker sure that the spring [A] hooks two notches of the brackets when you reassembles the sensor bracket to the machine.

3.9 IMAGE TRANSFER

3.9.1 IMAGE TRANSFER ROLLER

CAUTION

- Do not touch the transfer roller surface with bare hands

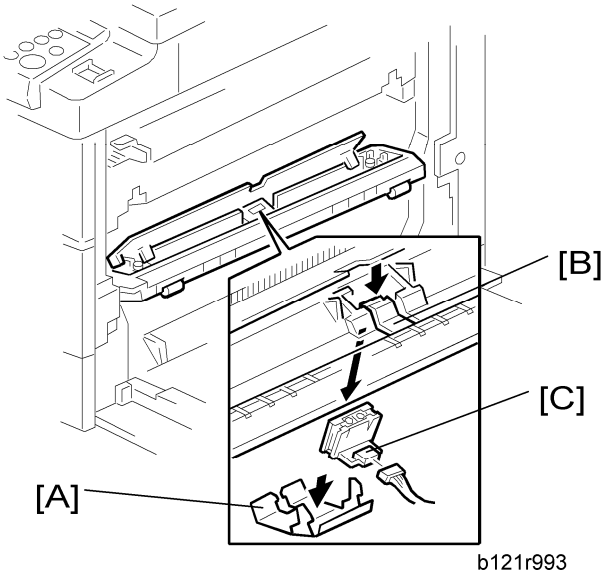


1. Open the right door.
2. Release the hooks [A] at the both sides of the image transfer roller.
3. Lift the plastic holders [B] with the image transfer roller [C].

Note

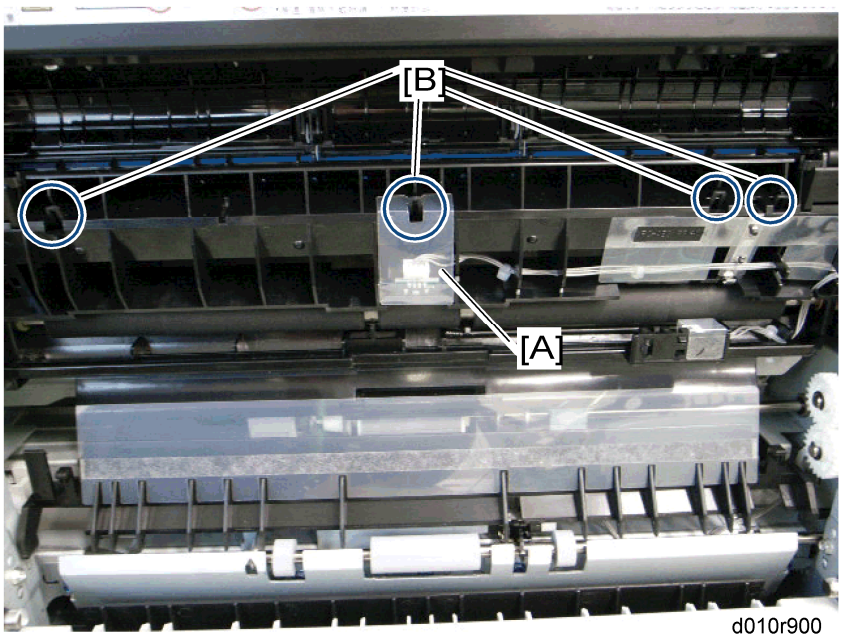
- Leave the springs under the holders. Make sure that the pegs [D] on the holders engage with the springs when you reassemble.

3.9.2 IMAGE DENSITY SENSOR

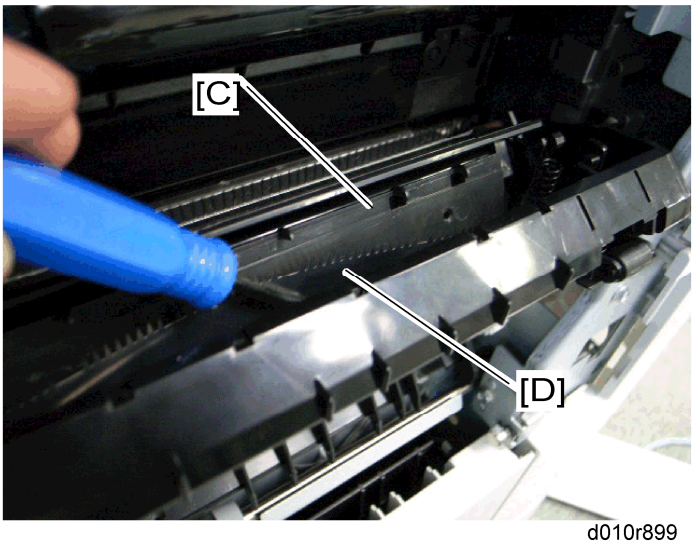


1. Open the right door.
2. Plastic cover [A]
3. Image transfer roller (☛ "Image Transfer Roller")
4. Push down on the notch [B] to free the sensor.
5. Image density sensor [C] (☞ x 1)

3.9.3 DISCHARGE PLATE



1. Right door (☛ Right Door)
2. Image transfer roller (☛ "Image Transfer Roller")
3. Mylar [A]
4. Release the four hooks [B].



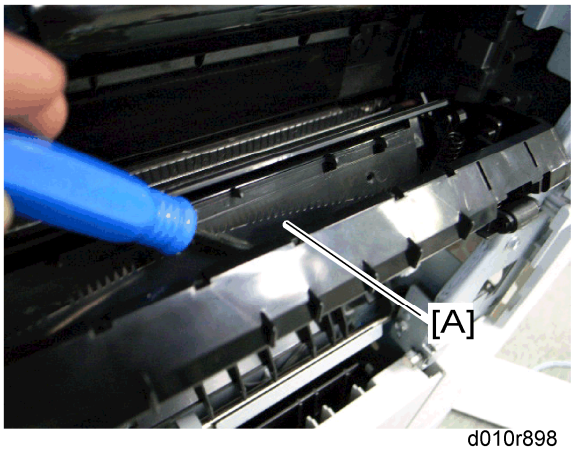
d010r899

5. Remove the discharge plate cover [C].
6. Discharge plate [D]

⚠CAUTION

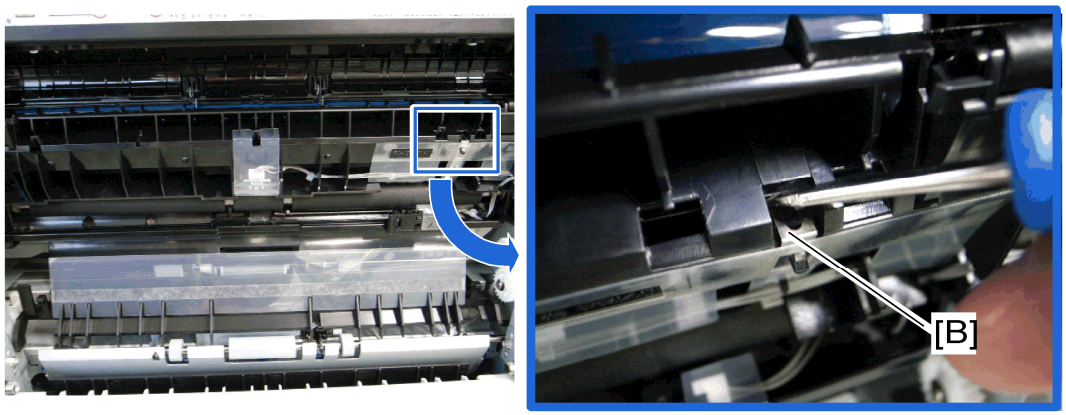
- Be careful when handling the discharge plate, as it may cause injury due to the saw-like teeth of the discharge plate being very sharp.

Reassembling the discharge plate



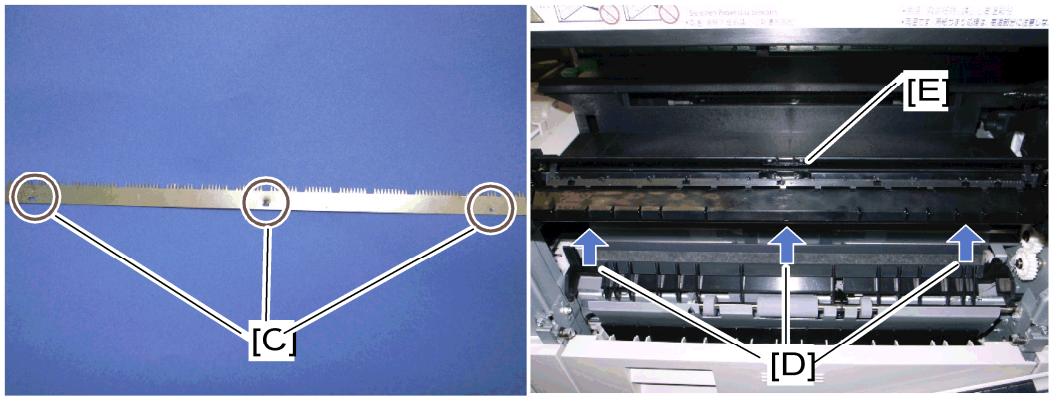
d010r898

1. Insert the new discharge plate [A] into the image transfer unit as shown.



d010r897

2. Push the spring plate [B] with a screwdriver and clip the right side of the discharge plate inside the image transfer unit.



d010r896

3. Align the three holes [C] on the discharge plate with the three bosses [D] inside the image transfer unit and insert (note that the right-side hole must be precisely aligned, while the left and center holes have some leeway.

Note

- It is difficult to see the three bosses because they are inside the unit. Use extra caution when aligning the discharge plate, as it's very easy to prick a finger with one of the saw-like teeth.

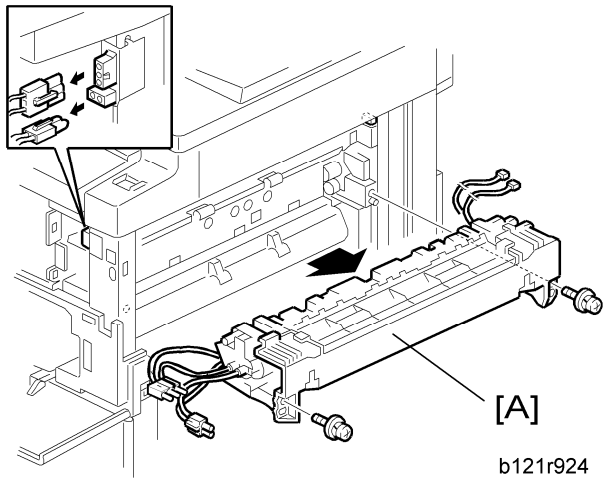
4. Close the discharge plate cover [E], snapping the four previously mentioned clips into place. (The plate cover can be removed at the time the discharge place is removed, but it's better to leave it in the machine).
5. Reinstall the mylar outside the image transfer unit.
6. Reinstall the image transfer roller and right door.

3.10 FUSING

3.10.1 FUSING UNIT

⚠CAUTION

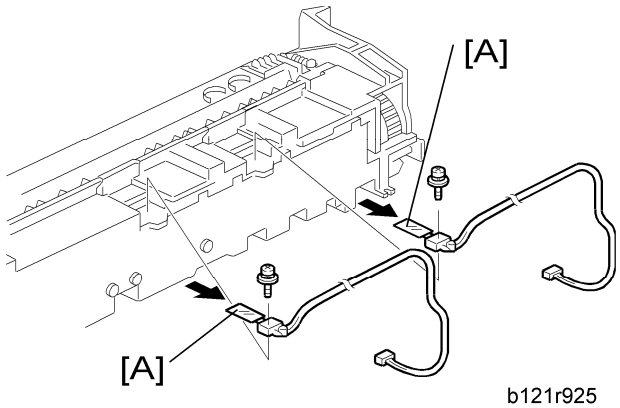
- **The fusing unit can be very hot. Make sure that it has cooled down sufficiently before you handle it.**



b121r924

1. Turn off the main switch, and unplug the machine.
2. Front right cover
3. Open the right door.
4. Fusing unit [A] (☞ x 2, ☞ x 4)

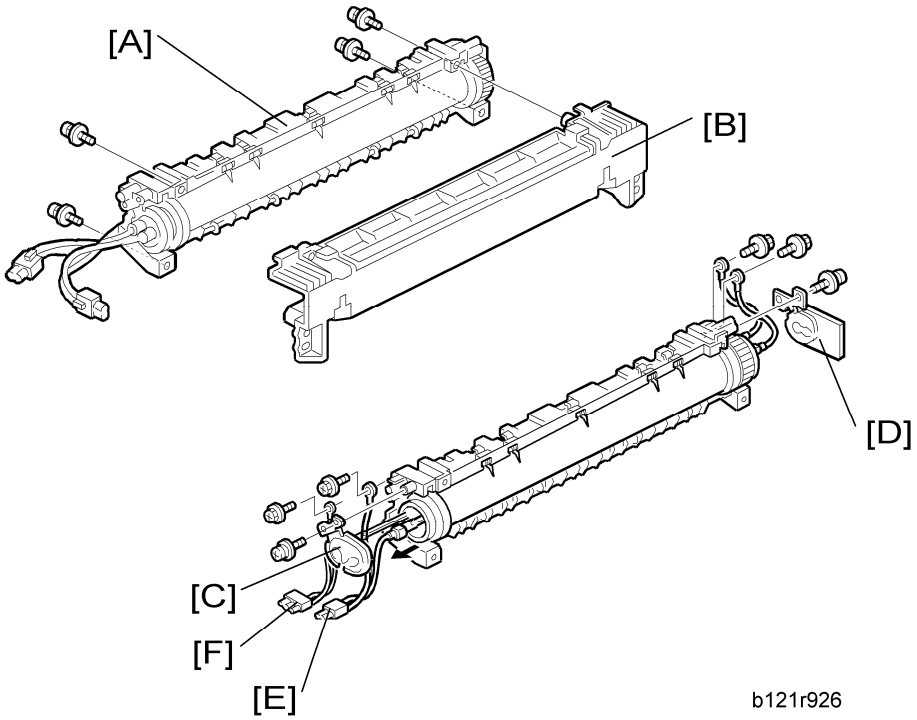
3.10.2 THERMISTOR



b121r925

1. Fusing unit (☛ "Fusing Unit")
2. Thermistors [A] (☞ x 1, ☞ x 1 each)

3.10.3 FUSING LAMPS

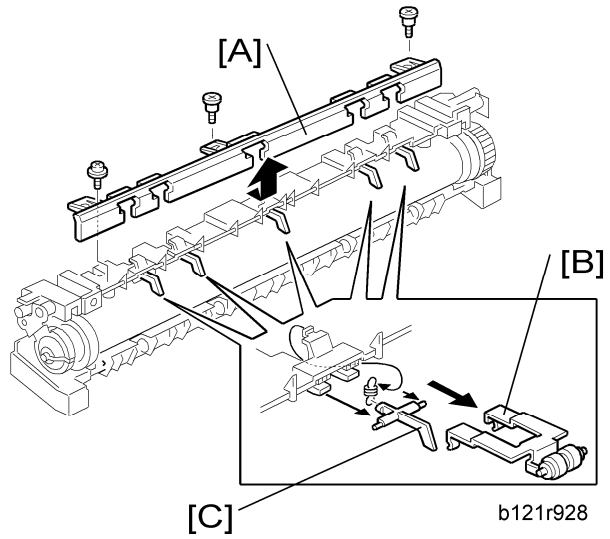


1. Fusing unit
2. Separate the hot roller section [A] from the pressure roller section [B] (☞ x 4).
3. Front holding plate [C] (☞ x 1)
4. Rear holding plate [D] (☞ x 1)
5. Fusing lamp with the connector (600W) [E] (☞ x 2)
6. Fusing lamp with the connector (550W) [F] (☞ x 2)

Note

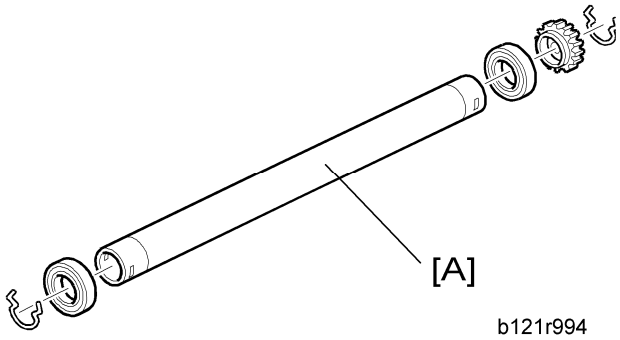
- Check that the front ends of both lamps fit in the front holding plate when you reassemble. They will not fit if you arrange the two lamps incorrectly.

3.10.4 HOT ROLLER STRIPPER PAWLS



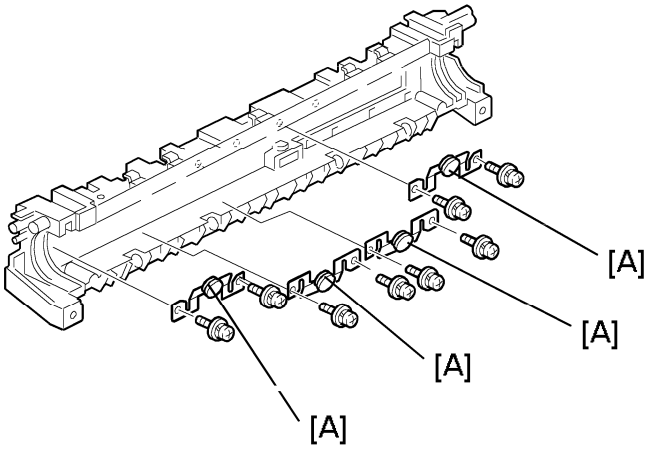
1. Hot roller section (☛ "Fusing Lamps")
2. Roller guard [A] (☞ x 3)
3. Metal holders [B] (1 holder for each)
4. Hot roller stripper pawls [C] (1 spring for each)

3.10.5 HOT ROLLER



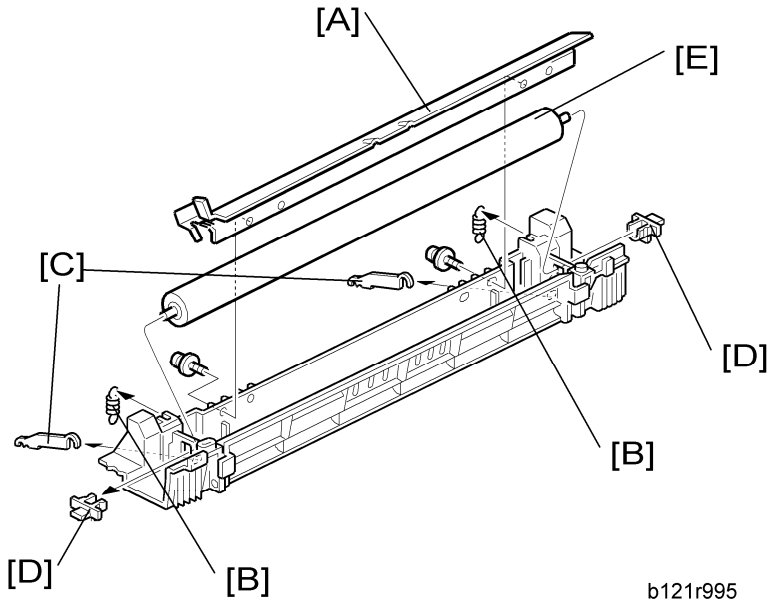
1. Hot roller stripper pawls (☛ "Hot Roller Stripper Pawls")
2. Hot roller [A] (2 C-rings, 1 gear, 2 bearings)

3.10.6 THERMOSTAT



1. Hot roller (☛ "Hot Roller")
2. Thermostat [A] (🔩 x 2 for each)

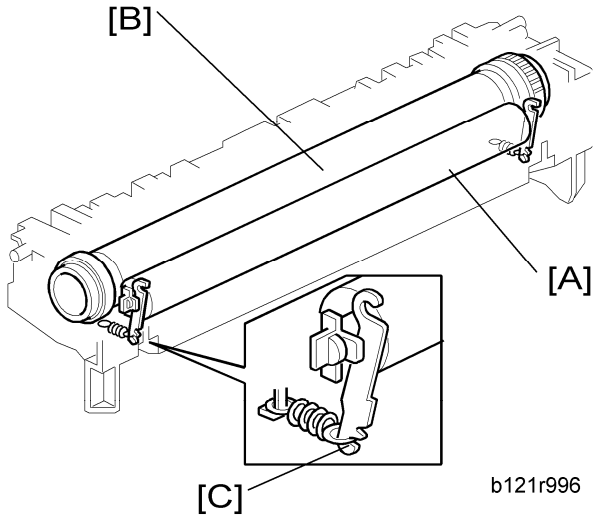
3.10.7 PRESSURE ROLLER AND BUSHINGS



1. Separate the hot roller section from the pressure roller section (☛ "Fusing Lamps").
2. Fusing entrance guide [A] (🔩 x 2)
3. 2 springs [B]
4. 2 pressure arms [C]
5. 2 Bushings [D]
6. Pressure roller [E]

3.10.8 NIP BAND WIDTH ADJUSTMENT

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



[A]: Pressure roller

[B]: Hot roller

1. Place an OHP sheet on the by-pass feed table.
2. Enter SP mode, and run SP 1109.
3. Press '1' (Yes)
4. Press ⓞ twice. The machine feeds the OHP sheet into the fusing section, stops it there for 20 seconds, then ejects it to the copy tray.
5. Press the ⓒ key.
6. Quit the SP mode.
7. Check that the nip band (the opaque stripe) across the ejected OHP sheet is symmetrical, with both ends slightly thicker than the center.

Note

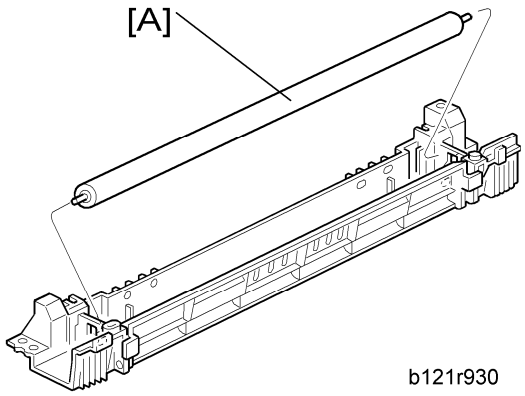
- There is no standard value for the nip band on this machine. Make the adjustment based on the band's appearance.

8. If the band is not as described above, change the position of the spring hooks [C] (one on each side), and then check the band again.

Note

- The higher hook position produces greater tension.

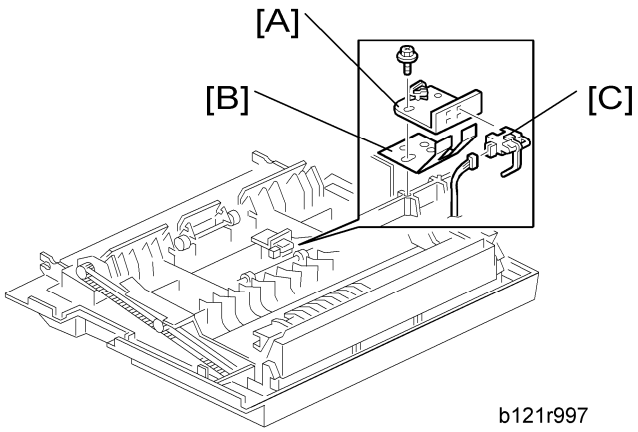
3.10.9 CLEANING ROLLER



1. Pressure roller and bushings (☛ "Pressure Roller and Bushings")
2. Cleaning roller [A]

3.11 DUPLEX UNIT

3.11.1 DUPLEX EXIT SENSOR



b121r997

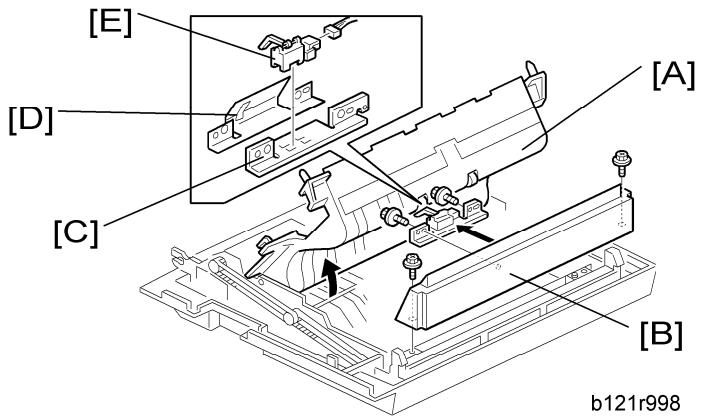
1. Open the right door.
2. Sensor bracket [A] (x 2, ground cable x 1)

Note

- A second bracket [B] comes off with the sensor bracket.

3. Duplex exit sensor [C] (x 1)

3.11.2 DUPLEX ENTRANCE SENSOR



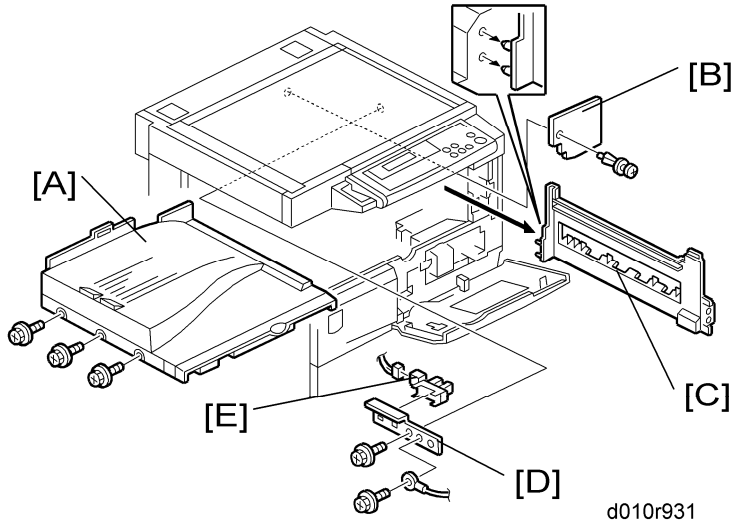
b121r998

1. Open the right door.
2. Lift the duplex guide [A].
3. Duplex guide [B] (x 2)
4. Entrance sensor bracket [C] and bracket cover [D] (x 3, ground cable x 1)

Duplex Unit

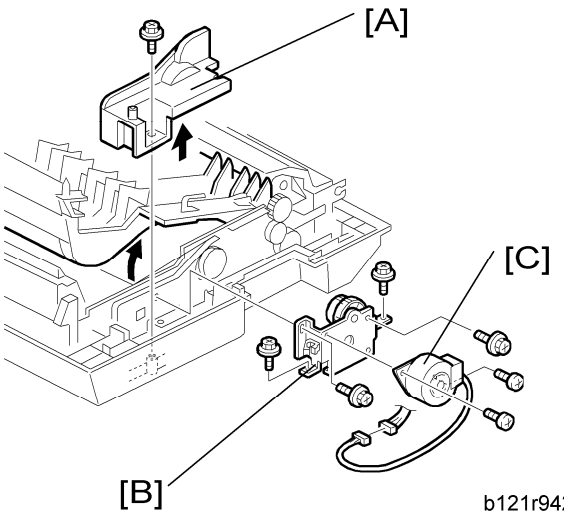
5. Duplex entrance sensor [E] (☞ x 1)

3.11.3 DUPLEX INVERTER SENSOR



1. Open the front door.
2. Front right cover (☛ "Front Right Cover")
3. Inner cover [A] (☞ x 3)
4. Inner cover right [B] (Rivet x 1)
5. Exit cover [C] (☞ x 1)
6. Sensor bracket [D] (☞ x 2, ☞ x 1, ground cable x 1)
7. Duplex inverter sensor [E] (hooks)

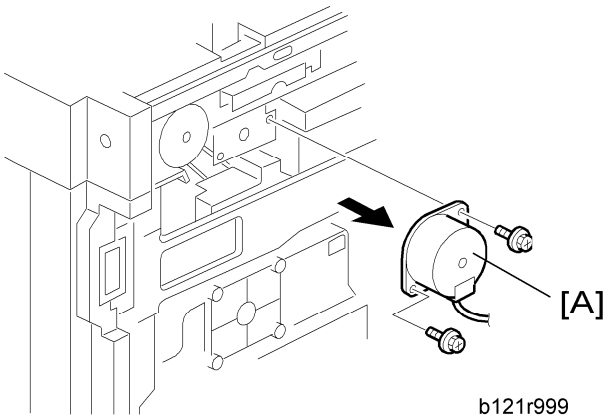
3.11.4 DUPLEX TRANSPORT MOTOR



1. Open the right door.

2. Detach the chain and spring from the frame, and lower the right door.
3. Cover [A] (x 1)
4. Motor bracket [B] (x 4, x 1).
5. Duplex transport motor [C] (x 2)

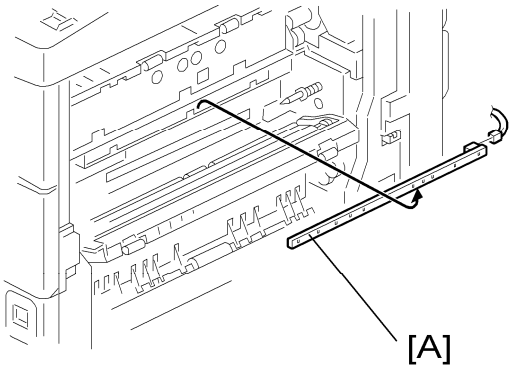
3.11.5 DUPLEX INVERTER MOTOR



1. Rear cover ("Rear Cover")
2. Duplex fan ("Duplex Fan")
3. Duplex inverter motor [A] (x 2, x 1, x 2)

3.12 OTHER REPLACEMENTS

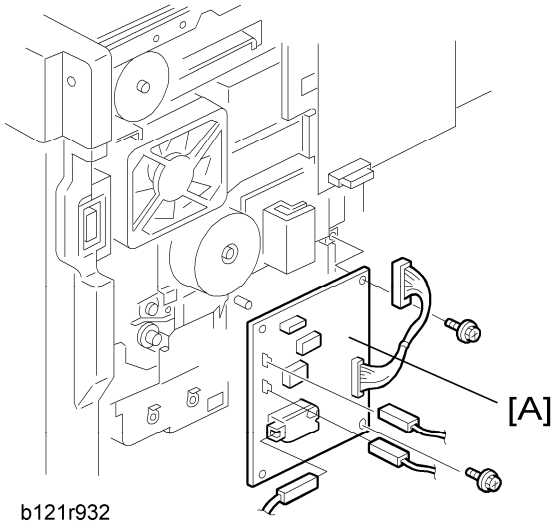
3.12.1 QUENCHING LAMP



b121r502

1. PCU (☛ "PCU")
2. Quenching lamp [A] (☞ x 1)

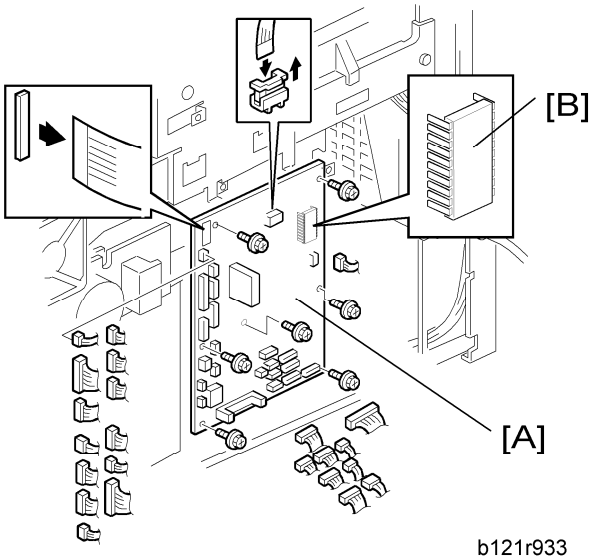
3.12.2 HIGH-VOLTAGE POWER SUPPLY BOARD



b121r932

1. Rear cover (☛ "Rear Cover")
2. High-voltage power supply board [A] (☞ x 2, 3 standoffs, all connectors)

3.12.3 BICU (BASE-ENGINE IMAGE CONTROL UNIT)



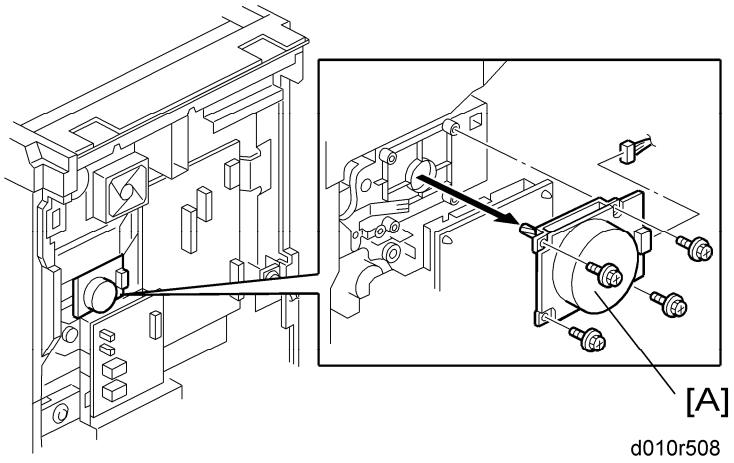
b121r933

1. Rear cover (☛ "Rear Cover")
2. BICU [A] (x 7, all connectors, 2 flat cables)

Note

- Remove the NVRAM [B] from the old BICU and install it on the new BICU when you replace the BICU. The NVRAM holds machine-specific data.

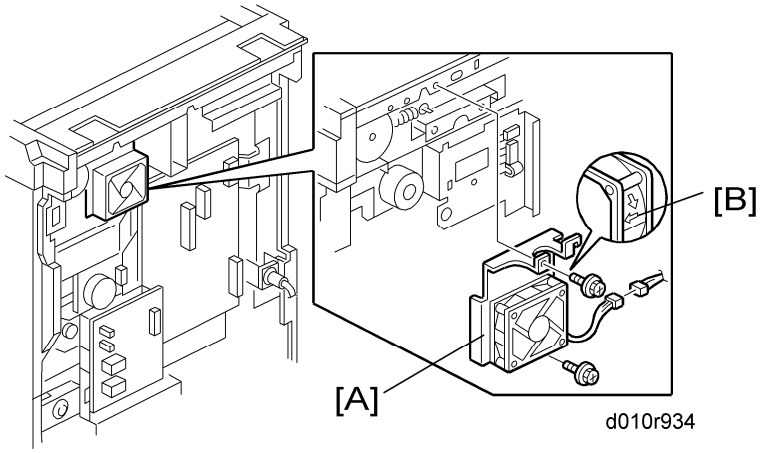
3.12.4 MAIN MOTOR



d010r508

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

3.12.5 DUPLEX FAN



1. Rear cover (☛ "Rear Cover")
2. Duplex fan [A] (x 2, x 1)

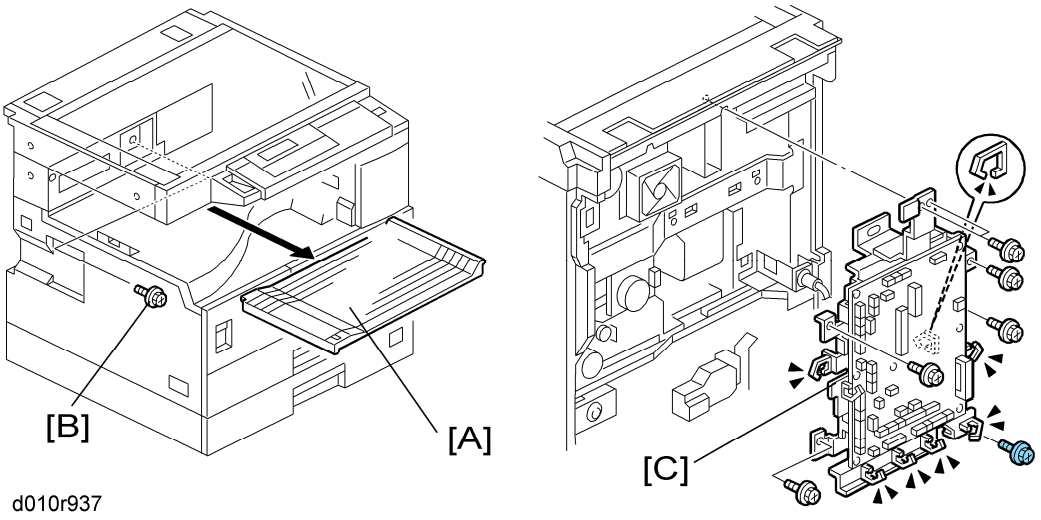
Important

- Reassembling: Make sure that the arrow on the fan [B] points to the outside of the copier when you reassemble The arrow indicates the direction of the air current.

3.12.6 REAR EXHAUST FAN

Replacement Procedure

1. Rear cover (☛ "Rear Cover")

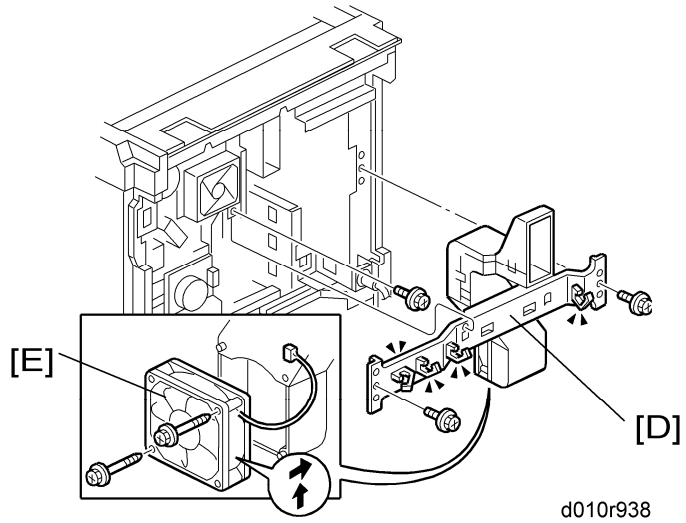


2. Inverter tray [A]
3. Screw [B] from the inner left cover

Note

- This step releases the topmost part of the BICU bracket.

4. High-voltage power supply board (with the bracket) (☛ "Registration Clutch")
5. BICU (with the bracket) [C] (🔩 x 7, all connectors)

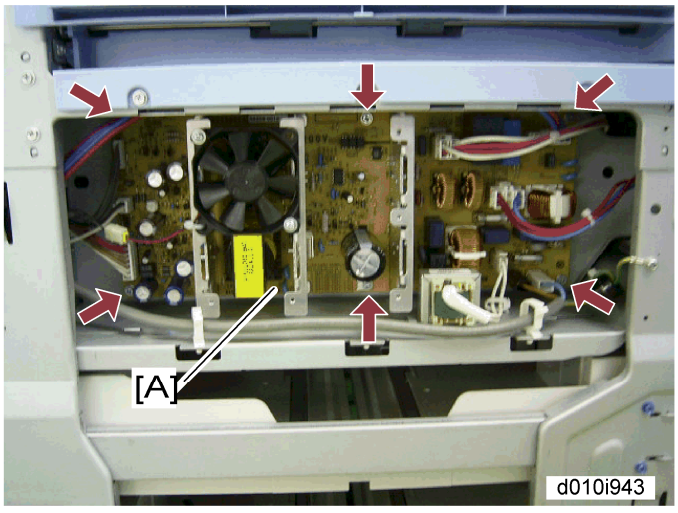


6. Main motor (☛ "Main Motor")
7. Crosspiece [D] (🔩 x 3)
8. Rear exhaust fan (🔩 x 2)

Important

- Reassembling: Make sure that the arrow on the fan [E] points to the outside of the copier when you reassemble. The arrow indicates the direction of the air current.

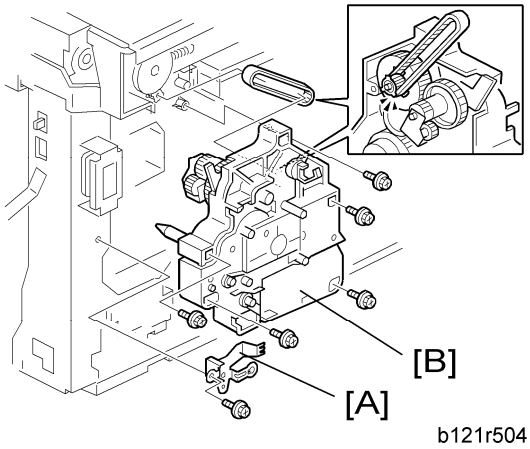
3.12.7 PSU (POWER SUPPLY UNIT)



1. Left cover (☛ "Left Cover")
2. PSU [A] (All connectors, 🔩 x 6)

3.12.8 GEARBOX

1. Crosspiece (☛ "Rear Exhaust Fan")
2. Registration clutch (☛ "Registration Clutch")

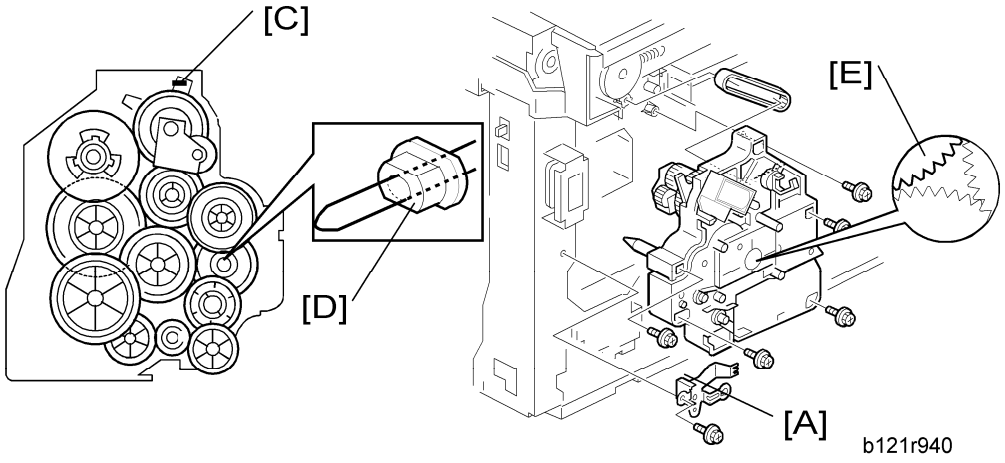


3. PCU (☛ "PCU")

Note

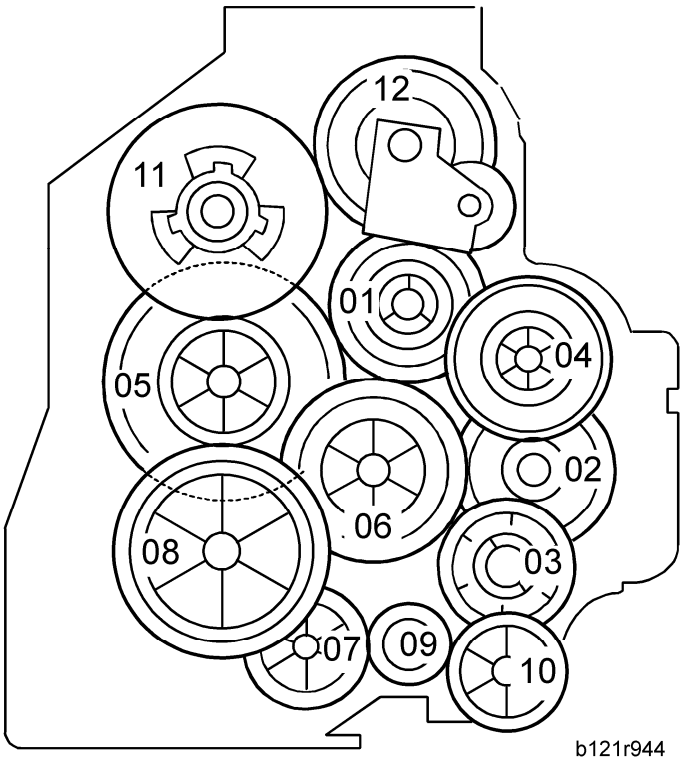
- This step releases the gear (on the gearbox) that drives the PCU.

4. Ground plate [A] (x 2)
5. Gearbox [B] (x 5, 1 belt)



Do not change the position of the spring [C] and make sure that the bushing [D] on the PCU drive shaft is in the correct position you when you reassemble. You can adjust its position by rotating the gear [E] seen from the opening of the gearbox.

Gear Arrangement in the Gearbox



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

3.13 COPY ADJUSTMENTS PRINTING/SCANNING

You need to perform copy adjustment after you do a Memory All Clear, or after you replace or adjust any of the following parts.

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

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

3.13.1 PRINTING

Note

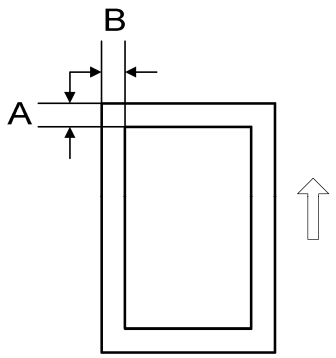
- Make sure that paper is installed correctly in each paper tray before you start these adjustments.
- Use the Trimming Area Pattern (SP 5902, No.10) to print the test pattern for the printing adjustments below.
- Set SP 5902 to "0" again after you complete these printing adjustments.

Registration - Leading Edge/Side-to-Side

1. Check the leading edge registration for each paper feed station, and adjust each of these registrations using SP 1001.
2. Check the side-to-side registration for each paper feed station, and adjust these registrations using SP 1002. (Adjust the trays in order: the 1st tray first, then the 2nd tray, etc.)

Tray	SP mode	Specification
Any paper tray	SP 1001-1	2 ± 1.5 mm
By-pass feed	SP 1001-2	
Duplex	SP 1001-3	
1st tray	SP 1002-1	
2nd tray	SP 1002-2	

Tray	SP mode	Specification
3rd tray (Optional PFU tray 1)	SP 1002-3	
4th tray (Optional PFU tray 2)	SP 1002-4	
By-pass feed	SP 1002-5	
Duplex	SP 1002-6	



b121r505

A: Leading Edge Registration

B: Side-to-side Registration

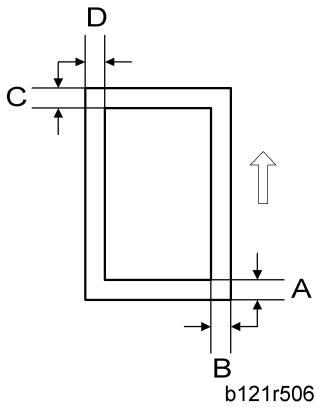
Blank Margin

Note

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

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

	SP mode	Specification
Trailing edge	SP 2101-2	2 +2.5/–1.5 mm
Right edge	SP 2101-4	
Leading edge	SP 2101-1	2 ± 1.5 mm
Left edge	SP 2101-3	



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 (SP 5902-1).
2. Check the magnification (the grid size should be 2.7 x 2.7 mm), and if necessary use SP 2998 to adjust it. The specification is 100 ± 1%.

3.13.2 SCANNING

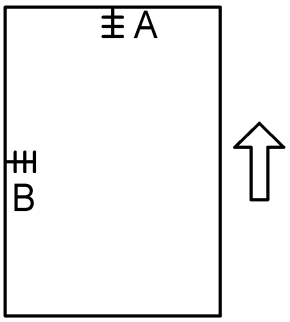
Note

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

Registration: Platen Mode

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

	SP mode	Specification
Leading edge	SP 4010	2 ± 1.5 mm
Side-to-side	SP 4011	

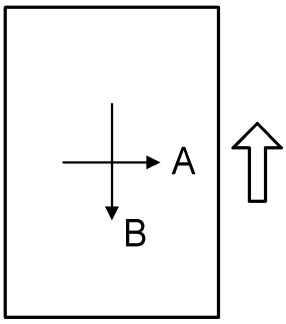


b121r507

A: Leading edge registration

B: Side-to-side registration

Magnification



b121r508

A: Main scan magnification

B: Sub-scan magnification

Main Scan Magnification

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

	SP mode	Specification
Main Scan Magnification	SP 4009	± 1.0%

Sub-Scan Magnification

1. Place the OS-A3 test chart on the exposure glass and make a copy from one of the feed stations.

2. Check the magnification ratio. If necessary, adjust the magnification with the following SP mode.

	SP mode	Specification
Sub-scan magnification	SP 4008	± 1.0%

Standard White Density Adjustment

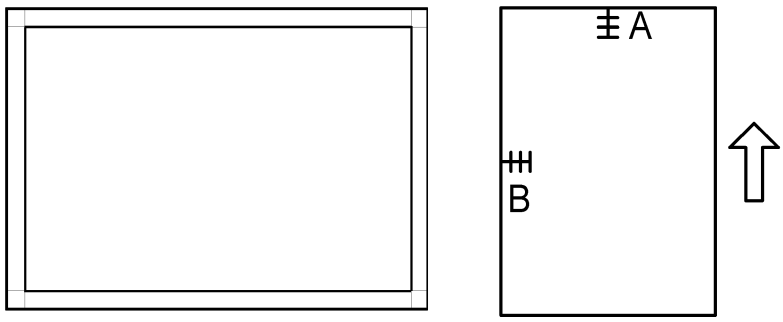
This procedure adjusts the standard white density level. Do this adjustment after you do any of the following:

- After you replace the standard white plate.
- After you replace the NVRAM on the BICU. (But note that you do not need to carry out this adjustment if you have replaced the BICU itself but retained the previous NVRAM board [by moving it over onto the new BICU].)
- After you perform a memory all clear (SP 5801-2).
- After you replace the scanner lens block.

Procedure:

1. Place 10 sheets of new A4/LTR paper (sideways, LEF) or new A3/DLT paper on the exposure glass, and close the platen cover or the ADF.
2. Enter SP 4605-2 and press “Execute”. The machine automatically adjusts the standard white density.

3.13.3 ARDF IMAGE ADJUSTMENT



b121r509

A: Leading edge registration

B: Side-to-side registration

Note

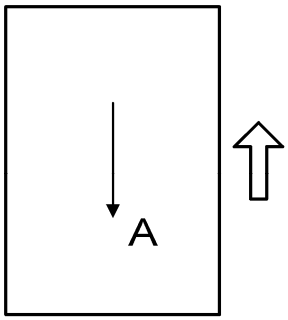
- Make a temporary test chart as shown above, using A3/11" x 17" paper.

1. Place the temporary test chart on the ARDF and make a copy from one of the feed stations.

2. Check the registrations, and adjust as necessary with the appropriate SP modes, as follows.

	SP mode
Side-to-side registration	SP 6006-1
Leading edge registration	SP 6006-2
Blank margin for the trailing edge	SP 6006-3
Side-to-side registration (Duplex: back side)	SP 6006-4

Sub-scan Magnification



b121r511

A: Sub-scan magnification

Note

- Make a temporary test chart as shown above, with A3/11" x 17" paper.

1. Place the temporary test chart on the ARDF and make a copy from one of the feed stations.
2. Check the registration, and if necessary adjust it with SP 6006-5. The specification is ±1.0%.

TROUBLESHOOTING

REVISION HISTORY		
Page	**Date**	**Added/Updated/New**
		None

4. TROUBLESHOOTING

4.1 SERVICE CALL CONDITIONS

4.1.1 SUMMARY

There are four levels of service call conditions.

Level	Definition	Reset Procedure
A	To prevent damage to the machine, the main 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	If the SC was caused by incorrect sensor detection, the SC can be reset by turning the main power switch off and on.	Turn the main power switch off and on.
C	The main machine can be operated as usual, excluding the unit related to the service call.	Turn the main power switch off and on.
D	The SC history is updated. The machine can be operated as usual.	The SC will not be displayed. Only the SC history is updated.

Note

- If the problem is related to electrical circuit boards, first disconnect then reconnect the connectors before replacing the PCBs.
- If the problem is related to a motor lock, first check the mechanical load before replacing motors or sensors.

4.1.2 SC CODE DESCRIPTIONS

No.	Definition	Symptom	Possible Cause
101	B	Exposure Lamp Error	
		The peak white level is 64/255 digit or less (8 bit) when scanning the white plate.	▪ Exposure lamp defective ▪ Exposure lamp stabilizer defective ▪ Exposure lamp connector defective ▪ Dirty scanner mirror or scanner mirror out of position ▪ SBU board defective ▪ SBU connector defective ▪ Lens block out of position ▪ Incorrect position or width of white plate scanning (SP4015)
120	B	Scanner home position error 1	
		The scanner home position sensor does not detect the off condition during initialization or copying.	▪ Scanner home position sensor defective ▪ Scanner drive motor defective ▪ Scanner home position sensor connector defective ▪ Scanner drive motor connector defective ▪ BICU board defective
121	B	Scanner home position error 2	
		The scanner home position sensor does not detect the on condition during initialization or copying.	▪ Scanner home position sensor defective ▪ Scanner drive motor defective ▪ Scanner home position sensor connector defective ▪ Scanner drive motor connector

No.	Definition	Symptom	Possible Cause
			defective ▪ BICU board defective
141	D	Black offset level correction error	
		The black level cannot be adjusted within the target value during the automatic SBU adjustment.	▪ SBU board defective
143	D	SBU white/black level correction error	
		The automatic SBU adjustment has failed to correct the black level. The automatic SBU adjustment has failed to correct the white level twenty times consecutively.	▪ Exposure lamp defective ▪ Dirty white plate ▪ Incorrect position or width of white plate scanning (SP4015) ▪ BICU board defective ▪ SBU board defective
144	B	Communication Error between BICU and SBU	
		The BICU board cannot detect the SBU connect signal.	▪ The flat cable between the BICU board and the SBU has a poor connection ▪ The flat cable between the BICU board and the SBU is damaged ▪ BICU board defective ▪ SBU defective
145	D	Automatic SBU adjustment error	
		During the automatic SBU adjustment, the machine detects that the white level read from the white plate or paper is out of range.	▪ Exposure lamp defective ▪ Dirty white plate ▪ Incorrect position or width of white plate scanning (SP4015) ▪ BICU board defective

Service Call Conditions

No.	Definition	Symptom	Possible Cause
		(SP4015)	▪ SBU board defective
193	B	Image transfer error	
		Scanned images are not transferred to the controller memory within 1 minute.	▪ BICU board defective ▪ Controller board defective
198	B	Memory address error	
		The BICU board does not receive memory addresses from the controller board.	▪ The firmware programs of the engine and the controller do not match. ▪ BICU board defective ▪ Controller board defective
202	B	Polygon Motor Error 1: ON Timeout	
		The machine does not detect the polygon motor lock signal for 10 seconds after the polygon motor has turned on.	▪ Polygon motor defective ▪ SCRATCH error ▪ I/F harness disconnected or loose
203	B	Polygon Motor Error 2: OFF Timeout	
		The machine does not detect the polygon motor unlock signal for 3 seconds after the polygon motor has turned off.	▪ Polygon motor defective ▪ SCRATCH error ▪ I/F harness disconnected or loose
204	B	Polygon Motor Error 3: XSCRDY Signal Error	
		The machine does detect the polygon motor unlock signal for 0.2 seconds after the polygon motor has turned on.	▪ Polygon motor defective ▪ SCRATCH error ▪ I/F harness disconnected or loose
220	B	Laser synchronization error	
		The main scan	▪ Poor connection between the LD unit

No.	Definition	Symptom	Possible Cause
		synchronization detector board cannot detect the laser synchronization signal for more than 5 consecutive 100 ms intervals.	and the BICU board ▪ Damaged cable between BICU and LD unit ▪ LD unit out of position ▪ LD unit defective ▪ BICU board defective
230	C	No laser writing signal (F-GATE) error	
		The laser-writing signal (F-GATE) fails to turn Low after the laser crosses 5 mm on the drum surface from the laser writing start position.	▪ BICU board defective ▪ The fax controller or printer controller has a poor connection ▪ Fax controller or printer controller defective
302	B	Charge roller current leak	
		A current leak signal for the charge roller is detected.	▪ Charge roller damaged ▪ High voltage supply board defective ▪ Poor connection of the PCU
390	B	TD sensor error	
		The TD sensor outputs less than 0.2 V or more than 4.0 V 10 times consecutively during copying.	▪ TD sensor abnormal ▪ Poor connection of the PCU
391	B	Development bias leak	
		A development bias leak signal is detected.	▪ Poor connection of the PCU ▪ High voltage supply board defective
392	B	TD sensor initial setting error	
		TD sensor initial setting is not performed correctly.	▪ ID sensor defective ▪ No developer ▪ Drum does not turn

Service Call Conditions

No.	Definition	Symptom	Possible Cause
			▪ Development roller does not turn ▪ Poor connection of the PCU ▪ The voltage is not applied to charge roller
401	B	Transfer roller leak error 1	
		A current leak signal for the transfer roller is detected. A current feedback signal for the transfer roller is not detected.	▪ High voltage supply board defective ▪ Poor connection of the PCU ▪ Transfer/separation unit set incorrectly ▪ Transfer roller damaged
402	B	Transfer roller leak error 2	
		A current leak signal for the transfer roller is detected. A current feedback signal for the transfer roller is not detected.	▪ High voltage supply board defective ▪ Poor connection of the PCU ▪ Transfer/separation unit set incorrectly ▪ Transfer roller damaged
411	B	Discharge leak error	
		High-voltage power supply board detects the 50% or more of PWM duty for 0.2 seconds.	▪ Discharge plate defective ▪ High-voltage power supply board defective
490	B	Toner supply motor: Excess current error	
		The machine detects the current of 1A or more supplied to the toner supply motor for 0.2 seconds.	▪ Toner supply motor short circuit
500	B	Main motor lock	
		A main motor lock signal is	▪ Too much load on the drive

No.	Definition	Symptom	Possible Cause
		not detected for more than 7 consecutive checks (700 ms) after the main motor starts to rotate, or the lock signal is not detected for more than 7 consecutive checks during rotation after the last signal.	mechanism ▪ Main motor defective
501	C	Tray 1 lift motor malfunction	
		The paper lift sensor fails to activate twice continuously after the tray lift motor has been on for 18 seconds.	▪ Paper lift sensor defective ▪ Tray lift motor defective ▪ Too much load on the drive mechanism ▪ Poor tray lift motor connection
502	C	Tray 2 lift motor malfunction	
		The paper lift sensor fails to activate twice continuously after the tray lift motor has been on for 18 seconds.	▪ Paper lift sensor defective ▪ Tray lift motor defective ▪ Too much load on the drive mechanism ▪ Poor tray lift motor connection
503	C	Tray 3 lift motor malfunction (optional paper tray units)	
		The paper lift sensor fails to activate twice continuously after the tray lift motor has been on for 18 seconds.	▪ Paper lift sensor defective ▪ Tray lift motor defective ▪ Too much load on the drive mechanism ▪ Poor tray lift motor connection
504	C	Tray 4 lift motor malfunction (optional two-tray paper tray unit)	
		The paper lift sensor fails to activate twice continuously after the tray lift motor has	▪ Paper lift sensor defective ▪ Tray lift motor defective ▪ Too much load on the drive

Service Call Conditions

No.	Definition	Symptom	Possible Cause
		been on for 18 seconds.	mechanism ▪ Poor tray lift motor connection
506	C	Paper feed 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 feed motor defective ▪ Too much load on the drive mechanism
541	A	Fusing thermistor open (center)	
		The fusing temperature detected by the thermistor is below 71°C and is not corrected after the main power switch is turned on.	▪ Fusing thermistor defective or out of position ▪ Power supply board defective ▪ Loose connectors
542	A	Fusing temperature warm-up error (center)	
		The fusing temperature rises less than 7 degrees in 2 seconds, and this continues 5 times consecutively. The fusing temperature is not detected in 25 or 35 seconds.	▪ Fusing thermistor defective or out of position ▪ Fusing lamp open ▪ Power supply board defective
543	A	Fusing overheat error (center)	
		The fusing temperature is over 230°C for 1 second (detected by the thermistor).	▪ Fusing thermistor defective ▪ Power supply board defective
544	A	Fusing overheat error (center) 2	
		The fusing temperature is over 250°C for 1 second	▪ Fusing thermistor defective ▪ Power supply board defective

No.	Definition	Symptom	Possible Cause
		(detected by the fusing temperature monitor circuit).	
545	A	Fusing lamp overheat error (center)	
		After the fusing temperature reaches the target temperature, the fusing lamp does not turn off for 12 consecutive seconds.	▪ Fusing thermistor defective or out of position ▪ Power supply board defective
546	A	Unstable fusing temperature (center)	
		The fusing temperature varies 50°C or more within 1 second, and this occurs 2 consecutive times.	▪ Thermistor defective or out of position ▪ Power supply unit defective
547	B	Zero cross signal malfunction	
		The relay terminal of the fusing unit is melted, zero cross signals are not detected within 3 seconds after the main power switch is turned on, or detected zero cross signals are 44 times or less.	▪ Discharge plate defective ▪ High-voltage supply board defective ▪ BICU defective
551	A	Fusing thermistor open (rear)	
		The fusing temperature detected by the thermistor is below 71°C and is not corrected after the main power switch is turned on.	▪ Fusing thermistor defective or out of position ▪ Power supply board defective ▪ Loose connectors
552	A	Fusing temperature warm-up error (rear)	

Service Call Conditions

No.	Definition	Symptom	Possible Cause
		The fusing temperature rises less than 7 degrees in 2 seconds, and this continues 5 times consecutively. The fusing temperature is not detected in 25 or 35 seconds.	▪ Fusing thermistor defective or out of position ▪ Fusing lamp open ▪ Power supply board defective
553	A	Fusing overheat error (rear)	
		The fusing temperature is over 230°C for 1 second (detected by the thermistor).	▪ Fusing thermistor defective ▪ Power supply board defective
555	A	Fusing lamp overheat error (rear)	
		After the fusing temperature reaches the target temperature, the fusing lamp does not turn off for 20 consecutive seconds.	▪ Fusing thermistor defective or out of position ▪ Power supply board defective
556	A	Unstable fusing temperature (rear)	
		The fusing temperature varies 50°C or more within 1 second, and this occurs 2 consecutive times.	▪ Thermistor defective or out of position ▪ Power supply unit defective
557	D	Zero cross frequency error	
		When the zero cross signal is 66 or more and it is detected 10 times or more in 11 detections, the machine determines that input 60 Hz and SC557 occurs.	▪ Noise (High frequency)

No.	Definition	Symptom	Possible Cause
559		Jam error detected 3 times in succession	
		▪ The exit sensor and the duplex sensor detect a paper jam 3 times in succession ▪ This condition can occur when SP 1159 1 is set to 'on'. The default is 'off'.	Paper jams can occur for the following reasons. ▪ Dampness ▪ Paper curl ▪ Incorrect paper setting in the paper tray ▪ Stripper pawls coming apart
590	B	Left exhaust fan motor error	
		The CPU detects an exhaust fan lock signal for more than 5 seconds.	▪ Loose connection of the exhaust fan motor ▪ Too much load on the motor drive
591	B	Rear exhaust fan motor error	
		The CPU detects an exhaust fan lock signal for more than 5 seconds.	▪ Loose connection of the exhaust fan motor ▪ Too much load on the motor drive
620	B	Communication error between BICU and ARDF	
		The BICU does not receive a response from the ARDF main board for 4 seconds or more. The BICU receives a break signal from the ARDF main board.	▪ Poor connection between the BICU and ARDF main board (DF connector) ▪ ARDF main board defective ▪ BICU defective
621	B	ARDF connection error	
		An incorrect ARDF (an ARDF for some other copier) is detected. (for Basic and	▪ ARDF incorrect (The other ARDF is installed on the D010.) ▪ The connector of the ARDF is

Service Call Conditions

No.	Definition	Symptom	Possible Cause
		DDST machines) An ARDF (including the correct ARDF) is installed while the copier is in the energy saver mode. (for DDST machine only)	removed while the machine is in the energy saver mode.
632	C	Accounting error	
		An error is detected during the communication with the MF accounting device.	▪ Accounting device defective ▪ Loose connection
634	C	Accounting RAM error	
		An error is detected in the RAM that saves the information on the MF accounting.	▪ Accounting device defective
635	B	Accounting battery error	
		An error is detected in the battery that is in the MF accounting device.	▪ Accounting device defective
692	B	Controller board communication abnormal	
		Communication error between the printer part of the controller board and BICU.	▪ The connector is abnormal between the controller board and the BICU board.
694	B	Controller board communication abnormal	
		Communication error between the scanner part of the controller board and BICU.	▪ The connector is abnormal between the controller board and the BICU board.

No.	Definition	Symptom	Possible Cause
740	B	Finisher corner stapler motor error	
		The stapler HP sensor does not detect "ON"/"OFF" signal even the stapler motor rotates from the "OFF"/"ON" position for 0.6 seconds. The stapler HP sensor does not detect "ON" when a stapling job is commanded or the stapler unit moves.	▪ Staple jam ▪ Motor overload ▪ Defective stapler motor
742	B	Finisher stapler movement motor error	
		The stapler unit HP sensor does not detect "OFF" signal even the stapler moves from the "ON" position for 0.35 seconds. The stapler HP sensor does not detect "ON" signal even the stapler moves from the "OFF" position for 5.5 seconds.	▪ Motor overload ▪ Loose connection of the stapler unit home position sensor ▪ Loose connection of the stapler movement motor ▪ Defective stapler unit home position sensor ▪ Defective stapler movement motor
750	B	Output tray motor error	
		The 1st detection failure issues a jam error, and the 2nd failure issues this SC code. ▪ The machine does not detect correctly the position of the output tray when the output tray	▪ Output tray motor defective ▪ Loose connection ▪ Motor overload ▪ Upper limit sensor and/ or stack near limit sensor defective

Service Call Conditions

No.	Definition	Symptom	Possible Cause
		motor starts to rotate.	
760	B	ARDF gate abnormal 1	
		The ARDF Gate signal line between the ARDF main board and the BICU is disconnected.	▪ ARDF main board defective ▪ Input/output board defective ▪ Poor connection (ARDF Gate line) between the ARDF main board and the BICU.
761	B	ARDF gate abnormal 2	
		The FGATE signal is not issued from the ARDF within 30 seconds after the ARDF starts feeding.	▪ ARDF connector defective ▪ SBU board defective
762	B	ARDF gate abnormal 3	
		The FGATE signal is not terminated by the ARDF within 60 seconds after the ARDF starts feeding.	▪ ARDF connector defective ▪ SBU board defective
792	B	Finisher error	
		The machine does not recognize the finisher, but recognizes the bridge unit.	▪ Defective connector ▪ Defective harness ▪ Incorrect installation
793	B	Front jogger motor error	
		▪ The machine does not detect that the front jogger HP sensor is OFF for 40 ms after the front jogger fence moved. ▪ The machine does not	▪ Defective front jogger motor ▪ Disconnected connector ▪ Overload to front jogger motor ▪ Defective front jogger fence HP sensor

No.	Definition	Symptom	Possible Cause
		detect that the front jogger fence HP sensor is ON for 830 ms after the front jogger fence returned to its home position.	
794	B	Rear jogger motor error	
		▪ The machine does not detect that the rear jogger HP sensor is OFF for 40 ms after the rear jogger fence moved. ▪ The machine does not detect that the rear jogger fence HP sensor is ON for 830 ms after the rear jogger fence returned to its home position.	▪ Defective rear jogger motor ▪ Disconnected connector ▪ Overload to rear jogger motor ▪ Defective rear jogger fence HP sensor
795	B	Pick-up roller HP sensor error	
		▪ The pick-up roller HP sensor does not turn off for 650 msec after the pick-up roller has lifted down. ▪ The pick-up roller HP sensor does not turn on for 650 msec after the pick-up roller has lifted up.	▪ Disconnected harness ▪ Defective pick-up roller contact motor ▪ Defective pick-up roller HP sensor

Service Call Conditions

No.	Definition	Symptom	Possible Cause
796	B	Transport belt solenoid error	
		The 1st detection failure issues a jam error, and the 2nd failure issues this SC code. ▪ The machine does not detect that the belt lift sensor is ON at initializing after the paper transport motor has rotated.	▪ Disconnected harness ▪ Defective paper transport motor ▪ Belt lift sensor defective
797	B	EEPROM data error	
		The job data is not transferred to the EEPROM.	▪ Defective EEPROM on the control board
901	B	Mechanical total counter	
		The mechanical total counter does not work properly.	▪ Mechanical total counter defective ▪ BICU defective ▪ Disconnected mechanical total counter
903	B	Engine total counter error	
		The checksum of the total counter is not correct.	▪ NVRAM on the BICU defective
928	B	Memory error	
		The machine detects a discrepancy in the write/read data during its write/read test (done at power off/on and at recovery from low power or	▪ Memory defective ▪ BICU defective ▪ Poor connection between BICU and memory

No.	Definition	Symptom	Possible Cause
		night/off mode).	
929	B	IMAC hardware error	
		IMAC error is registered when the DDST controller starts IMAC. Memory job does not complete after the DDST controller has started IMAC.	▪ IMAC defective ▪ IPU defective
954	B	Printer application program error	
		The printer status does not become ready when the printer application program is necessary for image processing.	▪ Application program defective
955	B	Image transfer error	
		The controller is not able to transfer images when the engine needs them.	▪ Application program defective
964	B	Status error (laser optics housing unit)	
		The optics-housing unit does not become ready within 17 seconds after the request.	▪ Software defective
981	B	NVRAM error	
		The machine detects a discrepancy in the NVRAM write/read data when attempting to save actual data to the NVRAM (i.e. during	▪ NVRAM defective ▪ Poor connection between BICU and NVRAM ▪ NVRAM is not connected ▪ BICU defective

Service Call Conditions

No.	Definition	Symptom	Possible Cause
		actual use).	
982	B	Localization error	
		The localization settings in the nonvolatile ROM and RAM are different (SP5807).	▪ First machine start after the NVRAM is replaced ▪ Incorrect localization setting ▪ NVRAM defective
984	B	Print image transfer error	
		Print images are not transferred.	▪ Controller defective ▪ BICU board defective ▪ Poor connection between controller and BICU

4.2 ELECTRICAL COMPONENT DEFECTS

4.2.1 SENSORS

Component	CN	Condition	Symptom
Registration	110-15 (BICU)	Open	A Paper Jam message will appear whenever a copy is made (paper has not reached the sensor).
		Shorted	A Paper Jam message appears even if there is no paper at the sensor.
Upper Relay	110-4 (BICU)	Open	A Paper Jam message will appear whenever a copy is made except for 1st and by-pass tray feeding.
		Shorted	A Paper Jam message appears even if there is no paper at the sensor.
Upper Paper End	108-2 (BICU)	Open	A Paper End indicator lights when the 1st paper tray is selected, even if there is paper in the tray.
		Shorted	A Paper End indicator does not light when the 1st paper tray is selected, even if there is no paper in the tray. The Paper Jam message will appear whenever a copy is made from the 1st paper tray.
Lower Relay	110-7 (BICU)	Open	A Paper Jam message will appear whenever a copy is made from an optional paper tray unit.
		Shorted	A Paper Jam message appears even if there is no paper at the sensor.
Lower Paper End	110-10 (BICU)	Open	A Paper End indicator lights when the 2nd paper tray is selected, even if there is paper in the tray.

Electrical Component Defects

Component	CN	Condition	Symptom
		Shorted	A Paper End indicator does not light when the 2nd paper tray is selected, even if there is no paper in the tray. The Paper Jam message will appear whenever a copy is made from the 2nd paper tray.
By-pass Paper End	136-7 (BICU)	Open	A Paper End indicator lights when the bypass tray is selected, even if there is paper in the tray.
		Shorted	A Paper End indicator does not light when the bypass tray is selected, even if there is no paper in the tray. The Paper Jam message will appear whenever a copy is made from the bypass tray.
Exit	124-2 (BICU)	Open	A Paper Jam message will appear whenever a copy is made (paper has not reached the sensor).
		Shorted	A Paper Jam message appears even if there is no paper at the sensor.
Toner Density	125-3 (BICU)	Open	SC390 is displayed.
		Shorted	
Image Density	123-2 (BICU)	Open	The toner density control process is changed (see the note below the table).
		Shorted	
Scanner H.P.	102-2 (BICU)	Open	SC120 shows.
		Shorted	
Platen Cover	102-5 (BICU)	Open	APS and Auto Reduce/Enlarge do not function correctly.
		Shorted	If the Start button is pressed with the platen cover or A(R) DF closed, “Cannot detect

Component	CN	Condition	Symptom
			original size" is displayed.
Original Width	148-3,4 (BICU)	Open	The CPU cannot detect the original size properly. APS and Auto Reduce/Enlarge do not function correctly.
		Shorted	
Original Length	148-8,9 (BICU)	Open	The CPU cannot detect the original size properly. APS and Auto Reduce/Enlarge do not function correctly.
		Shorted	
Duplex Entrance	111-2 (DCB)	Open	A Paper Jam message will appear whenever a duplex copy is made (paper has not reached the sensor).
		Shorted	A Paper Jam message appears even if there is no paper at the sensor.
Duplex Exit	111-5 (DCB)	Open	A Paper Jam message will appear whenever a duplex copy is made (paper has not reached the sensor).
		Shorted	A Paper Jam message appears even if there is no paper at the sensor.
Duplex Inverter	111-12 (DCB)	Open	A Paper Jam message will appear whenever a duplex copy is made (paper has not reached the sensor).
		Shorted	The Paper Jam message appears even if there is no paper at the sensor.
Tray 1 Paper Size 1/2/3	115-2/5/8 (BICU)	Open	The CPU cannot detect the proper paper size, and misfeeds may occur when a copy is made from the paper tray 1.
		Shorted	
Tray 2 Paper Size 1/2/3	115-13/16/19	Open	The CPU cannot detect the proper paper size, and misfeeds may occur when a copy is made from the paper tray 2.
		Shorted	

Electrical Component Defects

Component	CN	Condition	Symptom
Upper Tray Lift Sensor	114-2	Open	SC501 is displayed.
		Shorted	Paper jam may occur during copying.
Lower Tray Lift Sensor	114-5	Open	SC502 is displayed.
		Shorted	Paper jam may occur during copying.
Upper Tray Paper Height Sensor 1/2	113-2/5	Open	The CPU cannot detect the paper height of the upper tray.
		Shorted	
Lower Tray Paper Height Sensor 1/2	113-8/11	Open	The CPU cannot detect the paper height of the lower tray.
		Shorted	

Note

- SC392 occurs when the CPU detects an ID sensor error during developer initialization (SP 3016-1). However, the SC392 is not displayed on the LCD but simply logged in the SC log (SMC printout), unless the technician exits SP Mode as soon as an error message is displayed.

4.2.2 SWITCHES

Component	CN	Condition	Symptom
Vertical Transport Door	110-13 (BICU)	Open	The Cover Open indicator is lit even if the vertical transport door is closed.
		Shorted	The Cover Open indicator is not lit even if the vertical transport door is opened.
By-pass Paper Size	136-1,2,4,5 (BICU)	Open	The CPU misdetects or is not able to detect the size of the paper set in the bypass tray, causing possible misfeeds when feeding from this tray.
Right Door	124-5	Open	A Cover Open indicator is lit even if the

Component	CN	Condition	Symptom
	(BICU)		right door is closed.
		Shorted	A Cover Open indicator is not lit even if the right door is open.
Front/Right Cover	130-1 (BICU)	Open	A Cover Open indicator is lit even if doors are closed.
		Shorted	A Cover Open indicator is not lit even if doors are open.
Main	281-1,3 (PSU)	Open	The machine does not turn on.
		Shorted	The machine does not turn off.
Upper Tray Set	115-11	Open	The upper paper lift motor does not turn on when the main power switch is turned on or the upper tray is closed.
		Shorted	The upper paper lift motor does not turn on when the upper tray is closed.
Lower Tray Set	115-22	Open	The lower paper lift motor does not turn on when the main power switch is turned on or the lower tray is closed.
		Shorted	The lower paper lift motor does not turn on when the lower tray is closed.

4.3 BLOWN FUSE CONDITIONS

All the fuses in the following table are on the power supply board.

Fuse	Rating	
	120 V	**220 – 240 V**
FU1	15A/125V	8A/250V
FU2	6.3A/125V	3.15A/250V
FU3	1A/250V	1A/250V
FU4	4A/250V	4A/250V
FU5	4A/250V	4A/250V
FU6	4A/250V	4A/250V
FU7	4A/250V	4A/250V

4.4 LED DISPLAY

4.4.1 BICU

Number	Function
LED 1	Monitors the +5 V line for the CPU and the surrounding circuit. Usually, this LED is blinking.

SERVICE TABLES

REVISION HISTORY		
Page	**Date**	**Added/Updated/New**
29	07/13/2009	Updated Information – SP5801
30	07/13/2009	Updated Information – SP5824
31 ~ 34	09/16/2009	SP5985
35 ~ 37	07/13/2009	Updated Information – SP7501
61 ~ 63	07/13/2009	Updated Information – NVRAM Data Upload/Download

5. SERVICE TABLES

5.1 SERVICE PROGRAM MODE

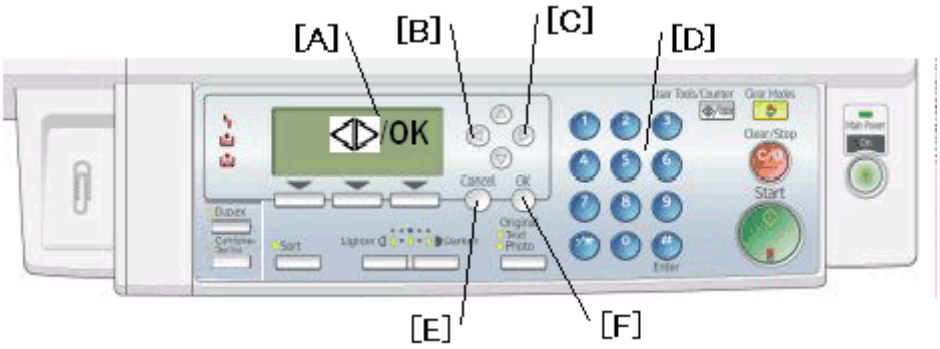
Note

- Do not let the user access the SP mode. Only service representatives are allowed to access the SP mode. The machine quality or its operation is NOT guaranteed if persons other than a qualified service representative accesses the SP mode.

5.1.1 HOW TO ENTER THE SP MODE

The following two modes are available:

- SP Mode (Service Program Mode): The SP Mode includes the programs that are necessary for standard maintenance work.
- SSP Mode (Special SP Mode): The SSP Mode includes SP-Mode programs and some special programs. For details on the SSP Mode, consult your supervisor.



Entering SP Mode

1. Press the following keys: [Clear Modes] > [1] > [0] > [7]
2. Press the [Clear/Stop] key and hold it down until the SP-mode menu is displayed (about 3 seconds).

Selecting Programs

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

Specifying Values

1. After locating a program, press the "OK" key. A blinking underscore (or several blinking underscores) indicates which value you can change. The value in parentheses is the

default value of the menu.

2. Type a necessary value from the numeric keypad. To switch between positive (plus) and negative (minus) values, press the [./*] (period/asterisk) key.
3. To validate the value, press the "OK" key. To cancel the value, press the cancel key [E].

Activating Copy Mode

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

1. Press the ⓐ key. The copy mode is activated.
2. Specify copy settings and press the "OK" key.
3. To return to the SP mode, press the C/⊘ key.

Note

- You cannot end the SP mode while the copy mode is activated.

Quitting Programs/Ending (S)SP Mode

Press the C/⊘ key or the "Cancel" key to quit the program. You can end the SP mode by pressing one of these keys several times.

5.2 COPIER SP MODE TABLES

The following codes are used:

- Asterisk (*): The settings are saved in the NVRAM. Most of them return to the default values when you execute SP 5801-2
- The DFU menu is for design or factory use only. You must not change the settings.
- Brackets ([ ]): The brackets enclose the setting rage, default value, and minimum step (with unit) as follows: [Minimum to Maximum / Default / Step].
- SSP: The program is in the SSP Mode only. Consult your supervisor before you use this program.

5.2.1 SP1-XXX (FEED)

1001*	Leading Edge Registration	
	Adjusts the printing leading-edge registration from paper trays.	
1001 1	All Trays	[–9.0 to 9.0 / **0.0** / 0.1 mm/step] (☛ "Copy Adjustments Printing/Scanning")
1001 2	By-pass	
1001 3	Duplex	

1002*	Side-to-Side Registration	
	Adjusts the printing side-to-side registration from each paper feed station, using the Trimming Area Pattern (SP 5902, No.10). Adjustments are supported for all 4 possible feed trays (including optional trays). The SP 1002-1 setting is applied to all trays, not just the 1st tray. Settings for trays 2 to 4 are offsets relative to the SP 1002 1 setting. For duplex copies, the value for the front side is determined by SP 1002-1 to -4, and the value for the rear side is determined by SP 1002-6.	
1002 1	1st tray	[–9.0 to 9.0 / **0.0** / 0.1 mm/step] (☛ "Copy Adjustments Printing/Scanning")
1002 2	2nd tray	
1002 3	3rd tray	

1002 4	4th tray	
1002 5	By-pass	
1002 6	Duplex	

1003*	Paper Feed Timing	
	Adjusts the amount of buckle the paper feed clutch applies to the paper after the registration sensor is activated. A higher setting applies greater buckling.	
1003 1	1st tray	[0 to 10 / **5** / 1 mm/step]
1003 2	2nd tray	[0 to 10 / **5** / 1 mm/step]
1003 3	Bank Trays	[0 to 10 / **5** / 1 mm/step]
1003 4	By-pass feed	[0 to 10 / **6** / 1 mm/step]
1003 5	Duplex	[0 to 20 / **6** / 1 mm/step]

1007	Display By-pass	
1007 1	Display By-pass	Displays the by-pass paper width switch output.

1103*	Fusing Idling	
	This program decides the action of the Fusing Drive Release Mechanism. When you select "1," the contact/release control is disabled and the drive power is always transmitted to the fusing unit. As a result, the machine takes a longer time to warm up the fusing unit. Use SP 1103-1 if fusing quality is low even when the room temperature is not very low.	
1103 1	Fusing Idling	[**0 = No** / 1 = Yes]

1105*	Fusing Temperature Adjustment	
	Adjusts the target fusing temperature. "Center" indicates the center of the roller; "End" indicates the front and rear ends.	

1105 1	Warm Up-Center	[140 to 180 / **170** / 1°C/step]
1105 2	Warm Up-End	
1105 3	Standby-Center	[140 to 170 / **165** / 1°C/step]
1105 4	Standby-End	[140 to 165 / **165** / 1°C/step]
1105 5	Copying-Center	[140 to 185 / **170** / 1°C/step]
1105 6	Copying-End	
1105 7	Low Level 2-Center	[0 to 80 / **60** / 1°C/step]
1105 8	Low Level 2-End	
1105 9	Thick-Center	[140 to 185 / **185** / 1°C/step]
1105 10	Thick-End	
1105 11	Warm Up Low-Center	[140 to 180 / **180** / 1°C/step]
1105 12	Warm Up Low-End	
1105 13	Copy-Low-Center	[140 to 185 / **185** / 1°C/step]
	Adjusts the target fusing temperature for the center of the roller when the inside temperature of the machine is 18C or less.	
1105 14	Copy-Low-End	[140 to 185 / **185** / 1°C/step]
	Adjusts the target fusing temperature for the end of the roller when the inside temperature of the machine is 18C or less.	
1105 15	Low-Temp-Time-1	[0 to 60 / **60** / 1 second/step]
	Adjusts the threshold time for the 1st temperature decrement. When the time of the first copy/print reaches this threshold, the target temperature is decreased by 5°C from the temperature specified with SP1105-13, -14.	
1105 16	Low-Temp-Time-2	[61 to 120 / **120** / 1 second/step]
	Adjusts the threshold time for the 2nd temperature decrement. When the time of the first copy/print reaches this threshold, the target temperature is	

	decreased by 10°C from the temperature specified with SP1105-13, -14.	
1105 17	Low-Temp-Time-3	[121 to 240 / **240** / 1 second/step]
	Adjusts the threshold time for the 3rd temperature decrement. When the time of the first copy/print reaches this threshold, the target temperature is decreased by 15°C from the temperature specified with SP1105-13, -14.	

1106	Display Fusing
1106 1	Displays the fusing temperature (center)
1106 2	Displays the fusing temperature (end)

1107*	Fusing Soft Start	
	Adjusts the number of zero-cross cycles of the fusing lamp AC supply needed to bring the fusing lamp power to 100% while bringing the lamp up to the standby temperature or while copying. Increase this value if the machine is experiencing sudden power dropouts (☛ "Fusing Temperature Control" in the chapter "Detailed Section Descriptions").	
1107 1	Warm Up Soft Start	[0 = 10 cycles / 1 = 20 cycles / **2 = 50 cycles**]
1107 2	Other Soft Start	[0 = 5 cycles / 1 = 10 cycles / **2 = 20 cycles**]

1108*	Set-Fusing Start	[0 = 1s / **1 = 1.5s** / 2 = 2s]
1108 1	Specifies the interval for fusing-temperature control (☛ "Fusing Temperature Control" in the chapter "Detailed Section Descriptions").	

1109	Nip Band Check
1109 1	Checks the fusing nip band (☛ "NIP Band Width Adjustment" in the "Replacement and Adjustment").

1110*	Fan Control Timer
1110 1	[30 to 60 / **30** / 1 s/step] Inputs the fan control time. The fan maintains normal speed for the specified time after occurrence of an SC or following entry into Warm-up mode, Low Power mode, or Night/Off mode.

1159*	Fusing Jam SC Code Setting	[**0=No** / 1=Yes]
1159 1	This SP mode detects SC559. Set this SP mode to 'Yes' if the machine experiences paper jam problems on a continual basis.	

1902	Display-AC Freq.
1902 1	Displays the fusing lamp power control frequency (as detected by the zero cross signal generator). The displayed value is 1/5 the actual frequency: 10 = 50 Hz, 12 = 60 Hz.

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

1908*	Optional Tray Adj.	
	Adjusts the reverse time for the upper and lower paper lift motors.	
1908 1	1st optional	[–2 to 2 / **0** / 1/step]
1908 2	2nd optional	

1911*	By-pass Envelope
1911 1	[**0 = No** / 1= Yes] The program dedicated to envelope printing runs when you enable this program (SP 1911-1) and you select "Thick Paper" as the paper type of the by-pass tray (System Settings > Tray Paper Settings > Paper Type: Bypass Tray).

5.2.2 SP2-XXX (DRUM)

2001*	Charge Roller Bias Adjustment	
2001 1	Printing	[–2100 to –1500 / **–1700** / 1 V/step]
	Adjusts the voltage applied to the charge roller when printing. The actually applied voltage changes automatically as charge roller voltage correction is carried out. The value you set here becomes the base value on which this correction is carried out.	
2001 2	ID sensor pattern	[0 to 400 / **300** / 1 V/step]
	Adjusts the voltage applied to the charge roller when generating the Vsdp ID sensor pattern (as part of charge roller voltage correction). The actual charge-roller voltage is obtained by adding this value to the value of SP 2001-1.	
2001 3	CR Bias Adj	[–2500 to 0 / **0** / 10 V/step]
	Temporally adjusts the voltage applied to the charge roller for debug. This value cannot be stored in the NVRAM.	

2101*	Erase Margin Adjustment	
2101 1	Leading Edge	[0.0 to 9.0 / **2.0** / 0.1 mm/step] (☛ "Copy Adjustments Printing/Scanning") Specification: 2 ± 1.5 mm
	Adjusts the leading edge erase margin.	

2101 2	Trailing Edge	[0.0 to 9.0 / **3.0** / 0.1 mm/step] (☛ "Copy Adjustments Printing/Scanning") Specification: 2 +2.5/–1.5 mm
	Adjusts the trailing edge erase margin. The rear trailing edge is this value plus 1.2 mm.	
2101 3	Left Side	[0.0 to 9.0 / **2.0** / 0.1 mm/step] (☛ "Copy Adjustments Printing/Scanning") Specification: 2 ± 1.5 mm
	Adjusts the left edge erase margin. The rear left edge is this value plus 0.3 mm.	
2101 4	Right Side	[0.0 to 9.0 / **2.0** / 0.1 mm/step] (☛ "Copy Adjustments Printing/Scanning") Specification: 2 +2.5/–1.5 mm
	Adjusts the right edge erase margin. The rear right edge is this value plus 0.3 mm.	

2201*	Development Bias Adjustment	
2201 1	Printing	[–1500 to –200 / **–650** / 1 V/step]
	Adjusts the voltage applied to the development roller when printing. This can be adjusted as a temporary measure if faint copies are being produced due to an aging drum.	
2201 2	ID sensor pattern	[–2 = LL (220 V) / –1 = L (260 V) / **0 = N (300 V)** / 1 = H (340 V) / 2 = HH (380 V)]
	Adjusts the voltage applied to the development roller when generating the ID sensor pattern. The actual voltage applied is this setting plus the value of SP 2201-1. The setting affects ID sensor pattern density, which in turn affects the toner supply.	

2301*	Transfer Current Adjustment

2301 1	Normal paper	[–2 = –4 mA / –1 = –2 mA / **0 = 0 mA** / 1 = 2 mA / 2 = +4 mA]
	Adjusts the current applied to the transfer roller when feeding from a paper tray. Use a high setting if the user normally feeds relatively thick paper (within spec) from a paper tray (☛ "Image Transfer Current Timing" in the chapter "Detailed Section Descriptions").	
2301 2	Thick/Special paper	[–2 = –4 mA / –1 = –2 mA / **0 = 0 mA** / 1 = 2 mA / 2 = +4 mA]
	Adjusts the current applied to the transfer roller when feeding from the by-pass tray. Use a high setting (a) if the user normally feeds relatively thick paper from the by-pass tray, or (b) if waste toner is re-attracted from the drum (which can occur when using transparencies). (☛ "Image Transfer Current Timing")	
2301 3	Duplex	[–2 = –4 mA / –1 = –2 mA / **0 = 0 mA** / 1 = 2 mA / 2 = +4 mA]
	Adjusts the current applied to the transfer roller when carrying out a duplex job. Use this SP if there is poor image transfer on the rear side of duplex copies (☛ "Image Transfer Current Timing").	
2301 4	Cleaning	[–10 to 1 / **–1** / 1 mA/step]
	Adjusts the current applied to the transfer roller for roller cleaning. Increase the current if toner remains on the roller after cleaning. (Remaining toner may cause dirty background on the rear side.) (☛ "Image Transfer Current Timing")	
2301 5	Input-Front	[0 to 30 / **0** / 1 mA/step]
	Adjusts the current for 1st side applied to the transfer roller for debug. This value cannot be stored in the NVRAM.	
2301 6	Input-Rear	[0 to 30 / **0** / 1 mA/step]
	Adjusts the current for 2nd side applied to the transfer roller for debug. This value cannot be stored in the NVRAM.	

2310*	Tr Clean Cnacel
2310 1	[**0=No** / 1=Yes] Selects the timing for the transfer roller cleaning. 0=No: The machine done the transfer roller cleaning after job end. 1=Yes: The machine done the transfer roller cleaning every 10 sheets.

2311*	T Roller Clean
2311 1	[**0 = No** / 1 = Yes] 0=No: The machine done the transfer roller cleaning after job end. 1=Yes: The machine done the transfer roller cleaning before job. Selects the timing for the transfer roller cleaning. Set this setting to "1" if the dirty background appears on the 2nd side of the first output. Note that this will increase the time required to generate the first copy or print.

2401*	Separation Voltage Adj.	
2401 1	Front-Leading Edge	[–4000 to –1000 / **–2000** / 20 V/step]
	Adjusts the separation voltage for leading edge (1st side) of paper.	
2401 2	Front-Image Area	[–4000 to –1000 / **–2000** / 20 V/step]
	Adjusts the separation voltage for image area (1st side) of paper.	
2401 3	Rear-Leading Edge	[–4000 to –1000 / **–2000** / 20 V/step]
	Adjusts the separation voltage for leading edge (2nd side) of paper.	
2401 4	Rear-Image Area	[–4000 to –1000 / **–2000** / 20 V/step]
	Adjusts the separation voltage for image area (2nd side) of paper.	

2906*	Tailing Correction	
2906 1	Shift value	[0.0 to 1.0 / **0.0** / 0.1 mm/step]

	Shifts the image writing position in intervals specified by SP 2906-2. When making many copies of an original that contains vertical lines (such as in tables), the paper may not separate correctly. This can cause tailing images (ghosts of the vertical lines continuing past the bottom of the table). This SP can be used to prevent this.	
2906 2	Interval	[1 to 10 / **1** / 1 page/step]
	Changes the interval for the image shift specified by SP 2906-1.	

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

2998*	Main Scan Magnification	[–0.5 ~ +0.5 / **0.0** / 0.1%/step]
2998 1	Adjusts the magnification along the main scan direction, for all print modes (copy, printing). The specification is 100 ± 1.0% (☛ "Copy Adjustments Printing/Scanning").	

5.2.3 SP3-XXX (PROCESS)

3011	Display TD Output
3011 1	Displays: 1. Vt: the current TD sensor output value and 2. Vref: the target TD output value Vts (SP 3201) + correction for ID sensor output.

	The TD sensor output value changes every copy. If 1 > 2, toner is supplied to the development unit.

3015	Forced Toner Supply
3015 1	Forces the toner bottle to supply toner to the toner supply unit. Press “Execute” to start. The machine continues to supply toner until the toner concentration in the development unit reaches the standard level, or for up to 2 minutes (whichever comes first).

3016	Developer Initialize
3016 1	Initializes both the TD sensor toner supply target voltage and the TD sensor gain value. Carry this out after replacing the developer or the TD sensor.

3017	Forced Developer Churning
3017 1	Initializes the developer and checks the TD sensor output (Vt). The machine mixes the developer for 2 minutes while reading and displaying the Vt value. The machine does not initialize the TD sensor output. If the machine has not been used for a long period of time, prints may have a dirty background. In this case, use this SP mode to mix the developer. The message "Completed" is displayed when the program ends normally.

3101*	Toner Supply Mode
3101 1	[**0 = Sensor 1** / 1 = Sensor 2 / 2 = Fixed 1 (**DFU**) / 3 = Fixed 2 (**DFU**)] Selects the toner supply mode. Under normal conditions this should be set to “0”. You can temporarily change this to “3” if the TD sensor is defective. Do not set to “1” or “2”, as these are for design use only (☛ "Toner Density Control" in the chapter "Detailed Section Descriptions").

3102*	Toner Supply Time
3102 1	[0.1 to 5.0 / **0.4** / 0.1 s/step]

	Adjusts the toner supply motor ON time for Sensor 1 and Sensor 2 toner supply mode. Accordingly, this setting is effective only if SP 3101 is set to “0” or “1” Raising this value increases the toner supply motor ON time. Set to a high value if the user tends to make many copies having high proportions of solid black image areas (☛ "Toner Density Control" in the chapter "Detailed Section Descriptions").

3103*	Toner Recovery Time
3103 1	[3 to 60 / **30** / 1 s/step] Adjusts the toner supply motor ON time used during toner recovery from Toner Near End or Toner End. This setting is effective only if SP 3101 is set to “0” Since toner recovery is carried out in 3-second cycles, the input value should be a multiple of 3 (3, 6, 9...). (☛ "Toner Density Control" in the chapter "Detailed Section Descriptions")

3104*	Toner Supply Rate
3104 1	Adjusts the toner supply time for fixed toner supply mode. This setting is effective only if SP 3101 is set to “2” or “3”. [0 to 7 / 0] t = 200ms, and settings are as follows 0 = t , 1 = 2t, 2 = 4t, 3 = 8t, 4 = 12t, 5 = 16t, 6 = on continuously, 7 = 0 s Raising this value increases the toner supply motor ON time. Set to a high value if the user tends to make many copies having high proportions of solid black image areas (☛ "Toner Density Control" in the chapter "Detailed Section Descriptions").

3105	Toner End Clear
3105 1	Clears the toner end condition without adding new toner. The following are cleared: ▪ Toner end indicator (goes out)· ▪ Toner near-end counter

	▪ Toner near-end level This function should generally not be used. If you clear the toner end condition without adding new toner, there is a risk that the drum may eventually begin to attract carrier after many more copies are made and toner runs out. This attracted carrier may damage the drum.

3106*	Outputs after Near End
3106 1	[**0 = 50 sheets** / 1 = 20 sheets] Sets the number of copy/print pages that can be made after toner near-end has been detected. Reduce the number of pages if the user normally makes copies with a high image ratio.

3201*	Standard Vt	
3201 1	[0.00 to 5.00 / **2.50** / 0.01 V/step] **DFU** Adjusts Vts (the Vt value for new developer). The TD sensor output is adjusted to this value during the TD sensor initial setting process]. This SP is effective only when SP 3101 is “0”, “1”, or “2”.	

3202*	Vref Limits	
	Adjust the upper or lower Vref limit.	
3202 1	Upper	[0.50 to 3.50 / **3.20** / 0.01V/step] **DFU**
3202 2	Lower	[0.50 to 3.50 / **0.70** / 0.01V/step] **DFU**

3203*	TD (V/wt%) Setting
3203 1	[0 to 1.5 / **0.4** / 0.01 V/step] Adjusts the TD sensor sensitivity.

3204*	Toner Density Adj
3204 1	[0 to 4 / **0** / 1 /step]

	Selects the toner density correction. 0 = Normal, 1 = Dark, 2 = Light, 3 = More Dark, 4 = More Light

3211*	Standard Vt-Factory	[0 to 5 / **2.5** / 0.01 V/step] **DFU**

3301*	ID Sensor Adj
3301 1	[0.5 to 3 / **1.0** / 0.1 /step] Adjusts the toner density compensation value.

3302*	CR Bias Vsdp	
3302 1	Min	[0 to 100 / **90** / 1 %/step]
	Adjust the minimum threshold for the charge roller bias correction. This value is calculated as following: Vsdp (output of the dirty background detection pattern)/ Vsg (output of the background)	
3302 2	Max	[0 to 100 / **95** / 1 %/step]
	Adjust the maximum threshold for the charge roller bias correction. This value is calculated as following: Vsdp (output of the dirty background detection pattern)/ Vsg (output of the background)	
3302 3	Step	[0 to 200 / **50** / 10 V/step]
	Adjust the correction value for the charge roller bias correction. ▪ If the Vsdp/Vsg is less than 90 (adjustable in SP3302-1), the machine subtracts this vale form the previous charge roller bias. ▪ If the Vsdp/Vsg is more than 95 (adjustable in SP3302-2), the machine adds this vale to the previous charge roller bias.	

3310	ID Error Analysis	
3310 1	Vsg	Displays the Vsg value.

3310 2	Vsp	Displays the Vsp value.
3310 3	Vsdp	Displays the Vsdp value.
3310 4	Vt	Displays the Vt value.
3310 5	Vts	Displays the Vts value.
3310 6	PWM	Displays the PWM value.

3350*	ID Detect Temperature	[30 to 90 / **30** / 1°C/step]
3350 1	While the machine is recovering from an energy saver mode, or while the machine starts, the controller ignores the ID-sensor signals if the fusing temperature is at the specified value or higher.	

3351*	ID Sensor Detection Interval	
3351 1	Number of Pages	[0 to 999 / **150** / 1 sheet/step]
	Adjusts the interval for the ID sensor control.	

3352*	ID Sensor Detection Timing	
3352 1	JobEnd/Interrupt	[**0 = Job End** / 1 = Interrupt]
	Selects the timing for the ID sensor control.	

3353*	ID Sensor Control On
3353 1	[0 = No / **1 = Yes**] Selects whether the ID sensor is or is not used for toner density control. This value should normally be left at “1”. If the value is “0”, dirty background may occur after long periods of non-use.

3901*	Process Data Disp
3901 1	[**0 = No** / 1 = Yes]

	Selects whether the process data display for the debug monitor is enabled or not.

5.2.4 SP4-XXX (SCANNER)

4008*	Sub-Scan Magnification (Scanner)	[-0.9 to +0.9 / **0.0** / 0.1%/step]
4008 1	Adjusts the actual sub-scan direction scanning magnification. The higher the setting, the lower the scanner motor speed.	

4009*	Main Scan Magnification (Scanner)	[–0.9 to +0.9 / **0.0** / 0.1%/step]
4009 1	Adjusts the magnification along the main scan direction, for scanning. The specification is 100 ± 1.0% Main scan magnification is implemented in steps of 0.5. Accordingly, your input value should be a multiple of 0.5 (–1.0, –0.5, 0, +0.5, or +1.0)	

4010*	Leading Edge Registration (Scanner)	[–5.0 to +5.0 / **0.0** / 0.1 mm/step]
4010 1	Adjusts the leading edge registration for scanning in platen mode (☛ "Copy Adjustments Printing/Scanning"). (–): The image moves toward the leading edge. (+): The image moves toward the trailing edge· The specification is 2 ± 1.5 mm.	

4011*	Side-to-side Registration (Scanner)	[–4.2 to +4.2 / **0.0** / 0.1 mm/step]
4011 1	Adjusts the side-to-side registration for scanning in platen mode (☛ "Copy Adjustments Printing/Scanning"). Increasing the value shifts the image to the right The specification is 2 ± 1.5 mm.	

4012*	Scan Erase Margin	
	Adjusts the scanning margin individually for each of the four edges. It is generally best to adjust the scanning margin as little as possible, and use the printing margin for image adjustments.	
4012 1	Leading Edge	[0 to 9.0 / **1.0** / 0.1 mm/step]
4012 2	Trailing Edge	
4012 3	Left Side	
4012 4	Right Side	

4013	Free Run Lamp	
4013 1	Lamp Off	
	Performs a scanner free run with the exposure lamp off. Press ON to start. Press OFF to stop.	
4013 2	Lamp On	
	Performs a scanner free run with the exposure lamp on. Press ON to start. Press OFF to stop.	

4014	1 Scan
4014 1	Executes the scanning movement once.

4015*	White Plate Scanning	
4015 1	Start position	[–3.0 to +6.0 / **0.0** / 0.1 mm/step]
	Adjusts the scanning start position on the white plate for auto shading. The base value stored in the machine is 15.2 mm toward the white plate from the scanner HP. This SP setting specifies the offset from this base value.	
4015 2	Scanning length	[–3.0 to +6.0 / **0.0** / 0.1 mm/step]

	Adjusts the length of the white plate scan, in the main scan direction. The scan begins at the start position set above [in SP 4015-1] and extends for the specified length. The base value stored in the machine is 4.76 mm. This SP setting specifies the offset from this base value.

4301	Display-APS Data
4301 1	Displays the status of the APS sensors and platen/DF cover sensor (☛ "ADF APS Sensor Output Display" (SP 6901)).

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

4305*	APS Priority	[**0 = Normal** / 1 = A4/LT / 2 = 8K/16K]
4305 1	1: A4/LT ▪ North America model: When the ASP detects the LT size, the controller interprets it as the A4 size. ▪ Other models: When the ASP detects the A4 size, the controller interprets it as the LT size. 2. 8K/16K (for the China model only) ▪ When the ASP detects the A3/B4 SEF, the controller interprets it as the 8K SEF. ▪ When the ASP detects the B5/A4 SEF, the controller interprets it as the 16K SEF. ▪ When the ASP detects the B5/A4 LEF, the controller interprets it as the 16K LEF. The Europe model interprets undetected original sizes as A5 LEF under the following conditions: SP 4303-1 is "Yes," and SP 4305-1 is "Normal"	

	The Europe model interprets undetected original sizes as LT SEF under the following conditions: 1. SP 4303-1 is "Yes," and 2. SP 4305-1 is "A4/LT"

4460*	Digital AE	
4460 1	ADS Level	[128 to 383 / **252** / 1 decimal/step]
	Adjusts the ADS level. Lower setting: background is lighter. Higher setting: background is darker.	
4460 2	ADS Low Limit	[0 to 255 / **80** / 1 decimal/step]
	Adjusts the ADS low limit.	

4605	White Adjust	
4605 1*	Flag Display	[**0** = Not adjusted / 1 = Adjusted]
	Display the status of standard white plate density adjustment.	
4605 2	Start	[**0**: Off / 1: On]
	Sets the machine in the standard white plate density adjustment mode (a message is displayed on the LCD). Place a T6200 text chart (or A3/DLT) on the exposure glass and press [1] to do the white level peak density adjustment with the standard white plate. After execution a message tells you whether the adjustment succeeded or not.	
4605 3	Flag Clear	
	Clears the flag that indicates the status of the standard white plate density adjustment.	
4605 4*	Error Flag	[**0** = Failure / 1 = Success]
	Display the error flag for white level correction.	

4610*	White Adjust Val.	
4610 1	This Time	[0 to 255 / **250** / 1/step]
	After the white peak level density has been adjusted manually with SP4605-2, this SP code detects the difference between the adjustment and the target reference and stores this value in NVRAM.	

4613*	White Adjust Val.	
4613 1	Last Time	[0 to 255 / **250** / 1/step]
	Displays the difference between the previous adjustment and the target reference, and stores this value in NVRAM.	

4616*	White Adjust Val.	
4616 1	At Factory	[0 to 255 / **250** / 1/step]
	Displays the difference between the factory adjustment and the target reference, and stores this value in NVRAM.	

4624*	DACSET Value	
4624 1	Value 1	[0 to 0xFF / **0x88** / 1/step]
	Displays the DACSET value of the black offset correction 1.	
4624 2	Value 2	[0 to 0xFF / **0x88** / 1/step]
	Displays the DACSET value of the black offset correction 2.	

4629	Gain This Time	
4629 1	EVEN	[0 to 255 / **0** / 1/step]
	Displays the gain adjustment value of even channel at the initial white level adjustment. You can change this value manually, but this value cannot be stored after	

	turning off the main power.	
4629 2	ODD	[0 to 255 / **0** / 1/step]
	Displays the gain adjustment value of odd channel at the initial white level adjustment. You can change this value manually, but this value cannot be stored after turning off the main power.	

4641	White Loop Count	
4641 1	White Loop Count	[0 to 255 / **0** / 1/step]
	Displays the number of the loops at the initial white level adjustment.	

4646	Auto Adj Err Flag	
4646 1	Auto Adj Err Flag	[00000 to 11111 / **11111** / 1/step]
	Displays the SBU automatic adjustment error. Bit0: GAIN_E_ERR, Bit1: GAIN_O_ERR Bit2: BLACK_ERR, Bit3: BLACK_OFFSET1_ERR Bit4: BLACK_OFFSET2_ERR	

4647*	HW Err Flag	[**0 = No Error**, 1 = Error / 1 /step]
	Displays the scanner hardware error flag.	
4647 1	SCRATCH_READ_ERR	Displays the SCRATCH_READ_ERR flag.
4647 2	GASBUP_READ_ERR	Displays the GASBUP_READ_ERR flag.
4647 3	LM98513_READ_ERR	Displays the LM98513_READ_ERR flag.
4647 4	GASBUP_WRITE_ERR	Displays the GASBUP_WRITE_ERR flag.

4659*	Gain Last Time	
4659 1	EVEN	[0 to 255 / **0** / 1/step]

	Displays the previous gain adjustment value of even channel at the initial white level adjustment.	
4659 2	ODD	[0 to 255 / **0** / 1/step]
	Displays the previous gain adjustment value of odd channel at the initial white level adjustment.	

4691*	White Peak	
4691 1	EVEN	[0 to 255 / **0** / 1/step]
	Displays the peak white level of even channel at the initial SBU automatic adjustment.	
4691 2	ODD	[0 to 255 / **0** / 1/step]
	Displays the peak white level of odd channel at the initial SBU automatic adjustment.	

4694*	Black Level	
4694 1	EVEN	[0 to 255 / **0** / 1/step]
	Displays the black level of even channel at the initial SBU automatic adjustment.	
4694 2	ODD	[0 to 255 / **0** / 1/step]
	Displays the black level of odd channel at the initial SBU automatic adjustment.	

4800*	Black Offset SW	[0 = OFF / **1 = ON**]
4800 1	Turns on or off the black offset compensation mode at the initial SBU automatic adjustment.	

4801*	Width of PWIND switch	[**0 = All** / 1 = One]

4801 1	Checks the whole area (0 = All) or the area between 15 mm and 90 mm from the left edge (1 = One) to adjust the ADS level.

4902*	Exposure Lamp ON	
4902 1	Turns the exposure lamp on or off. To turn off the exposure lamp, select "OFF". (The exposure lamp shuts off automatically after 180 seconds.)	

4921*	Image Adj Selection	
4921 1	Copy	[0 to 10 / **0** / 1]
	Selects which mode the settings from SP 4922 to SP 4932 and are used for: 0 = None, 1 = Text 1, 2 =Text 2, 3= Photo 1, 4 = Photo 2, 5 = Photo 3, 6 = Special 1, 7 = Special 2, 8 = Special 3, 9 = Special 4, 10 = Special 5	

4922*	Scanner Gamma	
	Selects "text" or "photo" as the priority output mode. This setting is applied to all image processing modes of SP 4921.	
4922 1	Copy	[**0=System default**/ 1=Text/ 2=Photo]

4923*	Notch Selection	
	Selects the value of the center ID adjustment notch for the ID adjustment LEDs. Normally the center notch is 3 (range 1-5). If –1 is selected, each notch shifts down (becomes lighter). If +1 is selected, each notch shifts up (becomes darker). This setting is applied to all image processing modes of SP 4921.	
4923 1	Notch Selection (Copy)	[–1 = Light / **0 = Normal** / +1 = Dark]

4926*	Texture Removal

	Adjusts the texture removal level that is used with error diffusion. 0: The default value for each mode is used. Text 1, Photo 2, Special 2, and Special 5 have a default of 3 and Photo 1, 3 have a default of 1. 1: No removal applied. 2 – 5: Removal applied at the level specified here. The higher the setting (level), the less clear the image will become (more texture removal). This setting is only applied to the originals in SP 4921.	
4926 1	Copy	[0 to 6 / **0** /step]

4927*	Line Width Correction	
	Adjusts the line width correction algorithm. Positive settings produce thicker lines; negative settings produce thinner lines. This setting is only applied to the originals in SP 4921.	
4927 1	Copy	[–2 to 2 / **0** / 1/step]

4928*	Independent Dot Erase	
	Selects the dot erase level. Higher settings provide greater erasure. This setting is only applied to the originals in SP 4921.	
4928 1	Copy	[–2 to 2 / **0** / 1/step]

4929*	Positive/Negative	[**0 = No**, 1 = Yes]
	Inverts white and black. This setting is only applied to the originals in SP 4921.	
4929 1	Copy	

4930*	Sharpness-Edge	[–2 to 2 / **0** / 1/step]
	Adjust the clarity. This setting is only applied to the originals in SP 4921.	
4930 1	Copy	

4931*	Sharpness-Solid	[–2 to 2 / **0** / 1/step]
	Adjust the clarity. This setting is only applied to the originals in SP 4921.	
4931 1	Copy	

4932*	Sharpness-Low ID	[–2 to 2 / **0** / 1/step]
	Adjust the clarity. This setting is only applied to the originals in SP 4921.	
4932 1	Copy	

4941*	White Line Erase	[0 to 2 / **1** / 1/step]
4941 1	Selects the white line erase level. 0: None, 1: Weak, 2: Strong This setting is effective only Photo 1, Photo 3, Special 3 or Special 4 mode. 0: White line erase is not used, and white level correction is used instead· This setting is applied regardless of what mode has been selected in SP 4921.	

4942*	Black Line Erase	[0 to 3 / **2** / 1/step]
4942 1	Selects the black line erase level. This setting is effective only when originals are scanned by the ARDF. [0 = No / 1 = Very weak / 2 = Weak / 3 = Strong] This setting is applied regardless of what mode has been selected in SP 4921.	

5.2.5 SP5-XXX (MODE)

5001	All Indicators On
5001 1	All LEDs turn on. The LCD turns on or off every 3 seconds. Press the reset key to end this program.

5045*	Display-Counter	[0 or 1 / **0** / -] 0: 1 counter (SP 8381-1) 1: 2 counters (SP 8381-1 and 8384-1)
5045 1	Selects the counting display for the total (mechanical) counter.	

5104*	A3 Double Count	[**0 = No** / 1 = Yes / 2 = As the case]
5104 1	Selects whether the machine counts twice for each sheet of A3/11"x 17". ▪ If this is set to “Yes”, the total (mechanical) counter and the current user counter will both increase by two for each A3/11" x 17" sheet. ▪ If this is set to "As the case", the total (mechanical) counter and the current user counter will increase by two for each A3/11" x 17" sheet without undefined paper size in the by-pass mode.	

5113*	Optional Counter Type	**0: None** 1: Key card 20+ (Increment) 2: Key card 20- (Decrement) 11: Key card 4+ (Increment) 12: Key card 4- (Decrement)
5113 1	Selects the corresponding key for installed devices such as coin lock.	

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

5121*	Count Up Timing	[**0 = Feed In** / 1 = Exit]
5121 1	Selects whether the key counter increments at time of paper feed-in or at	

	time of paper exit.

5126*	F size setting	[**0 = 8 1/2 x 13** / 1 = 8 1/2 x 13 / 2 = 8 x 13]
5126 1	Selects F size setting.	

5127*	APS Mode	[**0 = Enabled** / 1 = Disabled]
5127 1	Enables or disables the APS mode.	

5501*	PM Alarm Interval	
5501 1	Printout	[0 to 9999 / **0** / 0K copies/step]
	Specifies when the PM alarm occurs.	

5801	Memory Clear (See **IMPORTANT NOTE** Section 5.4.8)	
5801 2	Engine (☛ "Memory Clear")	

5802	Machine Free Run
5802 1	Starts a free run of both the scanner and the printer. Press "ON" to start; press "OFF" to stop.

5803	Input Check
	(☛ "Input Check")

5804	Output Check
	(☛ "Output Check")

5805	Print Interval	[0 to 9999 / **0** / 1 sec/step]

5805 1	Specifies the interval between idling during stand-by mode.

5807*	Area Selection
5807 1	Selects the display language group. 1 = Japan, 2 = North America, 3 = Europe, 4 = Taiwan, 5 = Asia, 6 = China, 7 = Korea SP 5807 1 is not cleared by SP 5801 2 (☛ "Memory Clear").

5811*	Serial Num Input	
5811 1	Setting	Sets the machine serial number. **FA**
5811 3	ID 2 Code Display	This SP is not displayed on the LCD, but printed in the SMC (used for @Remote).

5812*	Service TEL
5812 1	Service TEL (Telephone)
	Use this to input the telephone number of the service representative. (The number is displayed when a service call condition occurs.) To input a dash, press #. To delete the current telephone number, press C/⊘.
5812 2	Service TEL (Facsimile)
	Use this to input the fax number printed on user counter reports. To input a dash, press #. To delete the current fax number, press C/⊘.

5824	NVRAM Upload (See **IMPORTANT NOTE** Section 5.4.8)
5824 1	(☛ "NVRAM Data Upload/Download (SP 5824/5825)")

5825	NVRAM Download
5825 1	(☛ "NVRAM Data Upload/Download (SP 5824/5825)")

5827	Program Download
5827 1	Downloads programs to the machine

5847	Program Download
5847 1	Finisher
	Downloads programs to the machine

5901	Printer Free Run
5901 1	Executes the free run. Press "ON" to start; press "OFF" to stop.

5902	Test Pattern Print
5902 1	(☛ "Test Pattern Print (SP 5902 1)")

5907*	Plug & Play Setting
5907 1	Selects the brand name and production name for the Plug and Play function. These names are registered in the NVRAM. If the NVRAM becomes defective, these names should be re-registered. Use the right-arrow or left-arrow key to scroll through the list of brand names. To select a brand name, press the OK key. An asterisk (*) indicates which manufacture is currently selected. (☛ "Memory Clear")

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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".	
001	On Board NIC	[0 to 2 / **0** / 1 /step] 0: OFF, 1: ON, 2: ON: Limited When the "Function limitation" is set, "On board NIC" is

Service Tables

001	On Board NIC	[0 to 2 / **0** / 1 /step] 0: OFF, 1: ON, 2: ON: Limited When the "Function limitation" is set, "On board NIC" is limited only for the @Remote or LDAP/NT authentication. Note ▪ Other network applications such as WebImageMonitor, @Remote, or LDAP/NT authentication are not available when this SP is set to "2". Even if you can change the initial settings of those network applications, settings may not actually work.
002	On Board USB	[0 or 1 / **0** / 1/step] 0: OFF, 1: ON

5987*	Counter Falsification Prevention	[**0 = Off** / 1 = On] NA only
5987 1	Enables or disables the counter falsification prevention. 1 = ON: The machine issues SC901 and stops an operation if the total counter is removed during an operation.	

5990	SMC Print	
5990 1	All	(☛ "SMC Print (SP 5990)")
5990 2	SP	
5990 3	User Program	
5990 4	Logging Data	
5990 5	Big font	

5.2.6 SP6-XXX (PERIPHERALS)

6006*	ADF Adjustment (☛ "ADF Image Adjustment") NOTE: Available menus depend on the machine model and its configuration.	
6006 1	StoS/Front Regist	[–5.0 to +5.0 / **0.0** / 0.1 mm/step]
	Adjusts the side-to-side registration for the front side of the original, for ADF mode. Use the ⊛ key to select "+" or "–" before entering the value	
6006 2	Leading Regist	[–5.0 to +5.0 / **0.0** / 0.1 mm/step]

	Adjusts the leading edge registration for ADF mode. Use the C/E key to select "+" or "–" before entering the value.	
6006 3	Trailing Erase	[–3.0 to +3.0 / **–1.0** / 0.1 mm/step]
	Adjusts the trailing edge erase margin for ADF mode. Use the C/E key to select "+" or "–" before entering the value.	
6006 4	StoS/Rear Regist	[–5.0 to +5.0 / **0.0** / 0.5 mm/step]
	Adjusts the side-to-side registration for the rear side of duplex originals, for ADF mode. Use the C/E key to select "+" or "–" before entering the value.	
6006 5	Sub-scan Magnif	[–0.9 to +0.9 / **0.0** / 0.1 %/step]
	Adjust the sub-scan magnification for the ADF.	
6006 6	Original Curl Adj	[0 = No / **1 = Yes**]
	Enables or disables the skew adjustment for the reverse sides of originals. When you enable SP 6006-6, adjust the distance of the skew adjustment (SP 6006-7).	
6006 7	Skew Correction	[–20 to +20 / **0** / 1 mm/step]
	Specifies the distance of the skew adjustment. SP 6006-7 is effective when you enable SP 6006-6 (ADF Adjustment [Original Curl Adj]).	

6009	ADF Free Run
6009 1	Performs an ADF free run. Press "ON" to start; press "OFF" to stop.

6123	Jogger Position Adj.	[–4.0 to +4.0 / **0** / 0.4 mm/step]
6123 1	Adjusts the jogger position.	

6124	FIN (KAN) INPUT Check (☛ "Input Check")

6128	FIN (KAN) OUTPUT Check (☛ "Input Check")

6133*	Staple Position Adjustment	
6133 1	Finisher 1	[–2.0 to +2.0 / **0** / 0.2 mm/step]
	Adjusts the staple position. + Value: Moves the staple position to the rear side. – Value: Moves the staple position to the front side.	

Service Tables

6134*	Shift Stack Exit Adj	
6134 1	Large Size	[**0: 30 sheets** / 1: 10 sheets]
	Selects the maximum sheets for stapling large size paper. Large size: 300 mm or more (length)	
6134 2	Small Size	[**0: 50 sheets** / 1: 20 sheets]
	Selects the maximum sheets for stapling small size paper. Small size: less than 300 mm (length)	

6901	Display ADF/APS
6901 1	Displays the status of the ADF original size sensors (☛ "ADF APS Sensor Output Display (SP 6901)").

6910*	ADF Shading Time	[0 to 60 / **10** / 1 s/step]
6910 1	Adjusts the interval used for the shading processing in the ADF mode. Light and heat in the room may affect the scanner response. Reduce this setting if copy quality indicates that the white level is drifting during ADF copy jobs.	

5.2.7 SP7-XXX (DATA LOG)

7001*	Total Operation
7001 1	Shows the total operation time (total drum rotation time).

7401*	Counter–SC Total	[0 to 9999 / **0** / 1/step]
7401 1	Shows how many times SC codes are generated.	

7403*	SC History
7403 1	Shows the histories of the latest 10 SC codes.

7502*	Counter–Paper Jam	[0 to 9999 / **0** / 1/step]
7502 1	Shows the total number of copy paper jams.	

7503*	Counter–Orgn Jam	[0 to 9999 / **0** / 1/step]
7503 1	Shows the total number of original jams,	

⇒

7504*	Counter-Each P Jam	[0 to 9999 / **0** / 1/step]
	Displays the total number of the paper jams classified by timing and location. **NOTE**: Codes SP7504-160 through 231 are for machines with the optional finisher installed.	

SP7504	**NRS Jam Code No.**	**Contents**
-001	1	At power on. Paper jam occurs at power on.
-010	17	Off-Regist No Feed. Paper does not reach the registration sensor (from a paper tray).
-011	11	Off-1 Vertical SN. Paper does not reach the upper relay sensor.
-012	51	On-1 Vertical SN. Paper is caught at the upper relay sensor.
-021	12	Off-2 Vertical SN. Paper does not reach the lower relay sensor.
-022	52	On-2 Vertical SN. Paper is caught at the lower relay sensor.
-031	13	Off-3 Vertical SN. Paper does not reach the vertical transport sensor in the optional paper feed unit.
-032	53	On-3 Vertical SN. Paper is caught at the vertical transport sensor in the optional paper feed unit.
-050	8	Off-Regist Bypass. Paper does not reach the registration sensor (from the by-pass tray).
-060	9	Off-Regist Duplex. Paper does not reach the registration sensor during reverse-side printing (for duplex printing).
-070	57	On-Regist SN. Paper is caught at the registration sensor.

⇒

-120	58	On-Exit SN. Paper is caught at the exit sensor (previous page).
-121	20	Off-Exit SN. Paper does not reach the exit sensor.
-122	60	On-Exit SN. Paper is caught at the exit sensor.
-123	26	Off-Dup Inverter. Paper does not reach the duplex inverter sensor (from the registration roller).
-125	64	On-Dup Inverter. Paper is caught at the duplex inverter sensor.
-126	27	Off-Dup Entrance. Paper does not reach the duplex entrance sensor.
-127	66	On-Dup Entrance. Paper is caught at the duplex entrance sensor.
-128	25	Off-Duplex Exit. Paper does not reach the duplex exit sensor.
-129	65	On-Duplex Exit. Paper is caught at the duplex exit sensor.
-130	28	Off-1 Bin Exit SN. Paper does not reach the 1-bin tray.
-131	68	On-1 Bin Exit SN. Paper is caught at the 1-bin tray.
-132	22	On-Brb Exit. Paper does not reach the bridge unit.
-133	62	Off-Brb Exit. Paper is caught at the bridge unit.
-160	160	On-Fin Entrance. Paper does not reach the finisher entrance sensor.
-161	161	Off-Fin Entrance. Paper is caught at the finisher entrance sensor.
-162	162	Fin Stack Exit. Stack paper jams at the exit area.
-163	163	Finisher Staple. Staple jams.

-164	164	Fin Staple Cancel. Staple function cannot be used.
-165	165	Fin Jogger Motor. Jogger motor is in abnormal condition.
-166	166	Fin PickUP Mtr. The motor which makes the pick-up roller up and down is in abnormal condition.
-167	167	Fin Staple Slide. Staple slide function is in abnormal condition.
-168	168	Fin Stack Tray. 1st abnormal condition at the finisher stack tray.
-169	169	Fin Belt Lift Sol. Finisher belt lift solenoid is in abnormal condition.
-230	230	Fin Exit No Response. Finisher exit has no response.
-231	231	Fin Communication Err. Finisher communication error.

7505*	Counter-Each O Jam	[0 to 9999 / **0** / 1/step]
	Displays the total number of the original jams on the ADF that have occurred at a certain timing or at a certain location.	
7505 210	Off-Regist SN	
	The original does not reach the registration sensor.	
7505 211	On-Regist SN	
	The original is caught at the registration sensor.	
7505 212	Off-Relay SN	
	The original does not reach the exit sensor.	
7505 213	On-Relay SN	
	The original is caught at the exit sensor.	
7505 214	Off-Inverter SN	
	The original does not reach the reverse sensor.	

7505 215	On Inverter SN
	The original is caught at the reverse sensor.
7505 216	Insufficient gap
	The distance between originals is not sufficient. This jam can occur when the original is not of the standard size.

7507*	Dsply-P Jam Hist
7507 1	Displays the latest 10 paper-jam history. The list below shows the possible 22 codes: 1, 10, 11, 12, 21, 22, 31, 32, 50, 60, 70, 120, 121, 122, 123, 125, 126, 127, 128, 129, 130, 131 The codes correspond to the menus of SP 7504. For example, the code 1 corresponds to SP 7504-1, and the code 10 corresponds to SP 7504-10.

7508*	Dsply-O Jam Hist
7508 1	Displays the latest 10 original-jams history. The following are the possible seven codes: 210, 211, 212, 213, 214, 215, 216 The codes correspond to the menus of SP 7505. For example, the code 210 corresponds to SP 7505-210, and the code 211 corresponds to SP 7505-211.

7801	Memory/Version/PN
7801 2	BICU
	Displays the version of the BICU board
7801 5	ADF
	Displays the P/N and suffix of the ADF ROM.
7801 7	FIN
	Displays the P/N and suffix of the Finisher ROM.

7801 15	Printer/Scanner
	Displays the P/N and suffix of the Printer/Scanner ROM.

7803*	Display–PM Count
7803 1	Displays the PM counter.

7804	Reset–PM Counter
7804 1	Resets the PM counter (SP 7803-1). When the program ends normally, the message "Completed" is displayed.

7807	Reset–SC/Jam Counters
7807 1	Resets the SC, paper, original, and total jam counters. When the program ends normally, the message "Completed" is displayed. SP 7807-1 does not reset the following logs: SP 7507 (Display-Paper Jam History) and SP 7508 (Display-Original Jam History).

7808	Reset–Counters
7808 1	Resets all counters except for the management counters. The management counters are the counters that are not changed by NVRAM Download (SP 5825-1) When the program ends normally, the message the message "Completed" is displayed.

7810	Reset–Key Op Code
7810 1	Resets the key operator code. Use SP 7810 1 when the customer has forgotten the key-operator code. When the program ends normally, the message "Completed" is displayed, if the program ends abnormally, an error message is displayed. If the customer forgets the key operator code. To specify a new key-operator code, use the User Tools: System Settings → Key Operator Tools → Key Operator Code → On → Enter Key → Operator Code.

7832*	Display-Self-Diag
7832 1	Displays the SC codes and the number of their occurrences. Each number is in the range of 0 to 9999.

7991*	Dsply–Info Count
	Displays the total operating time or the total number of operations. The time is displayed in the following format: day:hour:minute:second.
7991 1	Dsply-Timer Count
	The total of the time when the main switch is kept on (excluding the time when the safety switch is off (☛ "LD Safety Switch").
7991 2	Dsply-APS Working
	The total of the time when the APS is working.
7991 3	Dsply-ID S Work
	The total of the time when the ID sensor is working.
7991 4	Dsply-Dev Counter
	The total number of paper outputs.
7991 5	Dsply-ID Er Count
	The total number of ID-sensor errors.

7992*	Reset–Info Count
7992 1	Reset-Timer Count
	Clears the counter of SP 7991-1.
7992 5	Reset-ID Er Count
	Clears the counter of SP 7991-5.

5.2.8 SP8-XXX (DATA LOG 2)

8191*	T: Total Scan PGS	[0 to 9999999 / **0** / 1 sheet/step]
8191 1	Displays the total number of scanned pages. Both sides are counted when the front and reverse sides of an original (fed from the ADF) are scanned.	

8192*	C: Total Scan PGS	[0 to 9999999 / **0** / 1 sheet/step]
8192 1	Displays the total number of scanned copies. Both sides are counted when the front and reverse sides of an original (fed from the ADF) are scanned.	

8195*	S: Total Scan PGS	[0 to 9999999 / **0** / 1 sheet/step]
8195 1	Displays the total number of scanned originals. Both sides are counted when the front and reverse sides of an original (fed from the ADF) are scanned.	

8221*	ADF Org Feeds	[0 to 9999999 / **0** / 1 sheet/step]
8221 1	Front	
	Displays the total number of scanned front sides of originals fed from the ADF.	
8221 2	Back	
	Displays the total number of scanned reverse sides of originals fed from the ADF.	

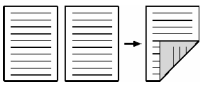
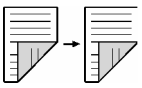
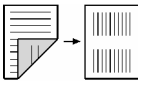
8381*	T: Total Prt PGS	[0 to 9999999 / **0** / 1 sheet/step]
8381 1	Displays the print count of all application programs.	

8382*	C: Total Prt PGS	[0 to 9999999 / **0** / 1 sheet/step]
8382 1	Displays the print count of the copier application program.	

8384*	P: Total Prt PGS	[0 to 9999999 / **0** / 1 sheet/step]
8384 1	Displays the print count of the printer application program.	

8391*	L size Prt PGS (A3/DLT, Larger)	[0 to 9999999 / **0** / 1 sheet/step]
8391 1	Displays the print count of the AS/DLT size or larger paper.	

8411*	Prints/Duplex	[0 to 9999999 / **0** / 1 sheet/step]
8411 1	Displays the total count of the duplex printing.	

8422*	C: PrtPGS/Dup Comb	[0 to 9999999 / **0** / 1 sheet/step]
	Displays the total print count of copier application classified by combination/duple type.	
8422 1	Simplex > Duplex	Original Print 
8422 2	Duplex > Duplex	Original Print 
8422 4	Simplex Combine	Original Print 
8422 5	Duplex Combine	Original Print 
8422 6	2>	Original Print 

8422 7	4>	Original Print 

8441*	T: PrtPGS/Ppr Size	[0 to 9999999 / **0** / 1 sheet/step]
	Displays the total print count classified by paper size. This is the total for all application programs.	
8441 1	A3	
8441 2	A4	
8441 3	A5	
8441 4	B4	
8441 5	B5	
8441 6	DLT	
8441 7	LG	
8441 8	LT	
8441 9	HLT	
8441 254	Other (Standard)	
8441 255	Other (Custom)	

8442*	C: PrtPGS/Ppr Size	[0 to 9999999 / **0** / 1 sheet/step]
	Displays the number of pages printed by the copier application program.	
8442 1	A3	
8442 2	A4	
8442 3	A5	
8442 4	B4	

8442 5	B5
8442 6	DLT
8442 7	LG
8442 8	LT
8442 9	HLT
8442 254	Other (Standard)
8442 255	Other (Custom)

8444*	P: PrtPGS/Ppr Size	[0 to 9999999 / **0** / 1 sheet/step]
	Displays the number of pages printed by the copier application program.	
8444 1	A3	
8444 2	A4	
8444 3	A5	
8444 4	B4	
8444 5	B5	
8444 6	DLT	
8444 7	LG	
8444 8	LT	
8444 9	HLT	
8444 254	Other (Standard)	
8444 255	Other (Custom)	

8451*	PrtPGS/Ppr Tray	[0 to 9999999 / **0** / 1 sheet/step]
	Displays the total print count classified by paper source.	

8451 1	Bypass Tray
8451 2	Tray 1
8451 3	Tray 2
8451 4	Tray 3
8451 5	Tray 4

8461*	T: PrtPGS/Ppr Type	[0 to 9999999 / **0** / 1 sheet/step]
	Displays the total print count classified by paper size. This is the total for all application programs.	
8461 1	Normal	
8461 4	Thick	
8461 7	OHP	
8461 8	Other	

8462*	C: PrtPGS/Ppr Type	[0 to 9999999 / **0** / 1 sheet/step]
	Displays the total print count classified by paper size.	
8462 1	Normal	
8462 4	Thick	
8462 7	OHP	
8462 8	Other	

8464*	P: PrtPGS/Ppr Type	[0 to 9999999 / **0** / 1 sheet/step]
	Displays the total print count classified by paper size. This is the total for all application programs.	
8464 1	Normal	

8464 4	Thick
8464 7	OHP
8464 8	Other

8522*	C: PrtPGS/FIN	[0 to 9999999 / **0** / 1 sheet/step]
	Displays the total number of printing classified by finishing method.	
8522 1	Sort	
8522 2	Stack	
8522 3	Staple	

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

5.2.9 SP9-XXX (ETC.)

Not used in this machine.

5.3 PRINTER/SCANNER SP MODE TABLES (DDST CONTROLLER ONLY)

The following codes are used:

- Asterisk (*): The settings are saved in the NVRAM. Most of them return to the default values when you execute SP 5801-2
- The DFU menu is for design or factory use only. You must not change the settings.
- Brackets ([ ]): The brackets enclose the setting rage, default value, and minimum step (with unit) as follows: [Minimum to Maximum / **Default** / Step].
- SSP: The program is in the SSP Mode only. Consult your supervisor before you use this program.

5.3.1 PRINTER SERVICE MODE

1003*	Clear Setting	
1003 1	Initialize System	

1005	Display Version	
1005 1	Printer Version	Displays the printer version.

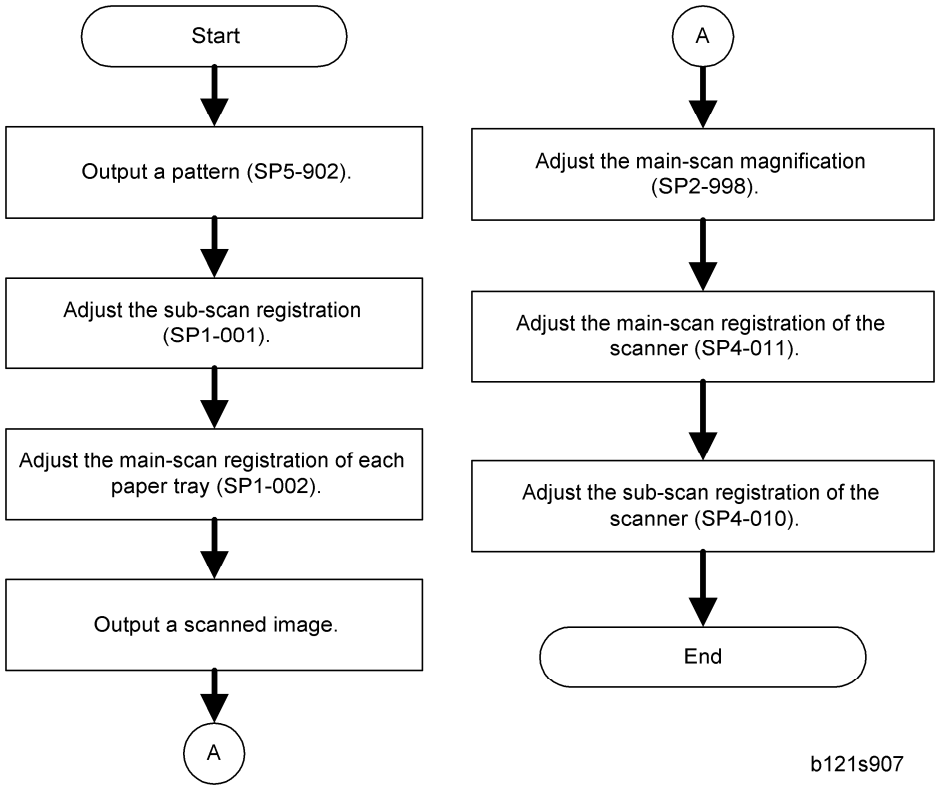
5.3.2 SCANNER SYSTEM AND OTHERS

1005*	Erase Margin	
	Creates an erase margin for all edges of the scanned image.	
1005 1	Range from 0 to 5mm	[0 to 5 / **0** / 1mm step]

5.4 USING SP MODES

5.4.1 ADJUSTING REGISTRATION AND MAGNIFICATION

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



5.4.2 ID SENSOR ERROR ANALYSIS (SP 3310)

The image quality may become very bad when the ID sensor does not operate properly. However, there is no such SC code that indicates ID-sensor malfunction; instead, SP 3310 shows you some information on the ID sensor. Check this information when the image quality is not very good.

The table lists the information shown with SP 3310 (ID Sensor Error Analysis).

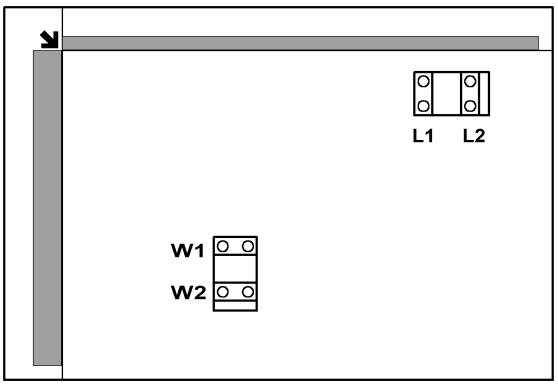
SP	Error condition	Possible cause	Remarks
SP 3310 -1 Vsg (VG in the display)	Vsg < 2.5V or (Vsg – Vsp) < 1.00V	▪ ID sensor defective ▪ ID sensor dirty ▪ Drum not charged	

SP	Error condition	Possible cause	Remarks
SP 3310 -2 Vsp (VP in the display)	Vsp > 2.5V or (Vsg – Vsp) < 1.00V	▪ Toner density very low ▪ ID sensor pattern not created	
SP 3310-3 Vsdp	No Error Conditions		
SP 3310-4 Vt	Vt > 4.5V or Vt < 0.2V	▪ TD sensor defective	
SP 3310-5 Vts			
SP 3310-6 Power (PW in the display)	Vsg < 3.5V when maximum power (979) is applied	▪ ID sensor defective ▪ ID sensor dirty ▪ Drum not get charged	Power source for the ID-sensor light

5.4.3 DISPLAY APS DATA (SP 4301-1)

- Sensor Positions -

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



- Reading the Data -

Example 1	Example 2
▪ Paper Size: 11000000 $8^1/_2$x13 ▭ ▪ DF Open: 1	▪ Paper Size: 00110000 A4 ▯ ▪ DF Open: 0

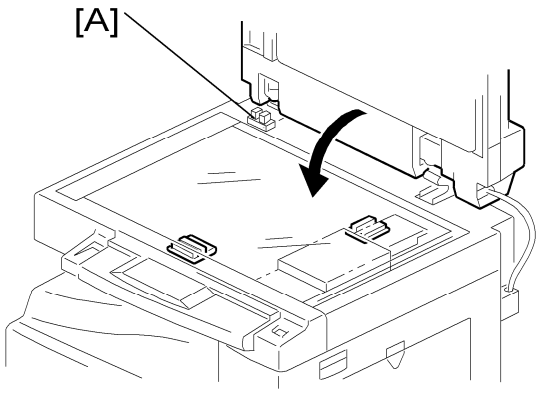
Using SP Modes

Example 1 indicates that the paper size and its orientation is "$8^1/_2$ x 13 SEF," and that the document feeder (or platen cover) is open. Example 2 indicates that the paper size and its orientation is "A4 LEF," and that the document feeder (or platen cover) is closed.

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

In Example 2, APS sensors W2 and W1 detect paper (L2 and L1 do not). The paper size and its orientation is based on the outputs of these four APS sensors.

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



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5.4.4 MEMORY CLEAR

The basic machine (the machine without the optional controller box) stores all the data in the NVRAM on the BICU. The data is cleared by SP 5801-2 (see exceptions)

The DDST machine (the machine with the optional controller box) stores the engine data in the NVRAM on the BICU, and stores the other data in the NVRAM on the optional controller. To distinguish between the engine data and the other data, see SP 5801-3 through 15. This service program (SP 5801) handles the controller data. Any data that is not handled by SP 5801 is the engine data. The data in the BICU NVRAM (engine data) is cleared by SP 5998-1 while the data in the controller NVRAM (controller data) is cleared by SP 5801-xxx (see exceptions)

Machine	Data	NVRAM	Cleared by	Remarks
Basic	All data	BICU	SP 5801-2	

Machine	Data	NVRAM	Cleared by	Remarks
DDST	Engine data	BICU	SP 5998-1	Any data other than controller data

[Exceptions]

SP 5801-2 (basic machine) and SP 5998-1 (DDST machine) clears most of the settings and counters stored in the NVRAM on the BICU (the values return to their default values). However, the following settings are not cleared:

- SP 5807 (Area Selection)
- SP 5811-1 (Serial Num Input [Code Set])
- SP 5811-3 (Serial Num Input [ID2 Code Display])
- SP 5812-1 (Service TEL [Telephone])
- SP 5812-2 (Service TEL [Facsimile])
- SP 5907 (Plug & Play)
- SP 7 (Data Log)
- SP 8 (History)

Use SP 5802-2 (basic machine) or SP 5998-1 (DDST machine) after you have replaced the BICU NVRAM or when the BICU NVRAM data is corrupted. When the program ends normally, the message "Completed" shows. When you have replaced the controller NVRAM or when the controller NVRAM data is corrupted, use SP 5801-1. The message is the same as the basic machine.

With Flash Memory Card

1. Upload the NVRAM data to a flash memory card (☛ "NVRAM Data Upload/Download (SP 5824/5825)").
2. Print out all SMC data lists (☛ "SMC Print (SP 5990)").

   Note

   - Be sure to print out all the lists. You have to manually change the SP settings if the NVRAM data upload ends abnormally.
3. Select SP 5801-2.
4. Press the OK key.
5. Select "Execute." The messages "Execute?" followed by "Cancel" and "Execute" shows.
6. Select "Execute."
7. When the program has ended normally, the message "Completed" shows. If the

program has ended abnormally, an error message shows.

8. Press the cancel key.
9. Turn the main switch off and on.
10. Download the NVRAM data from a flash memory card (☛ "NVRAM Data Upload/Download (SP 5824/5825)")

Without Flash Memory Card

1. Print out all SMC data lists (* "SMC Print (SP 5990)").
2. Select SP 5-801 (basic machine) or SP 5998-1
3. Press the OK key.
4. Select "Execute." The messages "Execute?" followed by "Cancel" and "Execute" show.
5. Select "Execute."
6. When the program has ended normally, the message "Completed" is displayed. If the program has ended abnormally, an error message shows.
7. Turn the main switch off and on.
8. Adjust the printer and scanner registration and magnification (* "Copy Adjustments Printing/Scanning").
9. Refer to the SMC lists, and enter any values that differ from the factory settings. Double-check the values for SP xxxx.
10. Adjust the standard white level (SP 4605-2).
11. Initialize the TD sensor (SP 3016).
12. Check the copy quality and the paper path.

5.4.5 INPUT CHECK

Conducting an Input Check

1. Select SP 5803 (Mainframe) or SP 6124 (Finisher).
2. Select the number (see the table below) corresponding to the component.
3. Select "Execute." The copy mode is activated.
4. The sign "01H" or "00H" show (see the table below).

Input Check Table for Mainframe (SP 5803)

Num.	Sensor/Switch	01H	00H
001	Safety SW	Open	Closed

Num.	Sensor/Switch	01H	00H
002	Safety SW-LD 5V	Open	Closed
003	Right Cover SW	Open	Closed
004	Right Low Cover SW	Open	Closed
005	Tray Cover SW	Open	Closed
006	Upper Relay S	Paper detected	Not detected
007	Lower Relay S	Paper detected	Not detected
008	Vertical Trans S	Paper detected	Not detected
009	Registration Sensor	Paper detected	Not detected
010	Exit Sensor	Paper detected	Not detected
011	Duplex Inverter S	Paper detected	Not detected
012	Duplex Entrance S	Paper detected	Not detected
013	Duplex Exit S	Paper detected	Not detected
014	By-pass PE S	Paper detected	Not detected
015	By-pass P Size S	*1	
016	Upper PE S	Paper detected	Not detected
017	Lower PE S	Paper detected	Not detected
018	Upper P Size SW	*1	
019	Lower P Size SW	*1	
020	BK-Upper Paper End S	Paper detected	Not detected
021	BK-Lower Paper End S	Paper detected	Not detected
022	BK-Up P Size SW	*1	
023	BK-Low P Size SW	*1	

Num.	Sensor/Switch	01H	00H
024	BK-Up P Height S	*2	
025	BK-Low P Height S	*2	
026	BK-Upper Lift S	At upper limit	Not at upper limit
028	BK type	*3	
030	Duplex Installed	Installed	Not installed
031	Lower Lift S	At upper limit	Not at upper limit
032	Main M Lock	Locked	Not locked
033	Polygon M Lock	Locked	Not locked
034	BK-Lift M Lock	Locked	Not locked
035	Total CO Install	Installed	Not installed
036	Key CO Install	Installed	Not installed
037	L-Synchronization	Detected	Not detected
038	DF-Position S	Detected	Not detected
039	DF-Cover Open S	Detected	Not detected
040	DF-Original Set S	Detected	Not detected
041	DF-Registration S	Detected	Not detected
042	DF-Exit S	Detected	Not detected
043	DF-Trailing S	Detected	Not detected
044	DF-Reverse S	Detected	Not detected
045	Platen Cover S	Open	Closed
046	1 bin Installed	Installed	Not installed
047	1 bin Exit S	Paper detected	Not detected

Num.	Sensor/Switch	01H	00H
048	1 bin Paper S	Paper detected	Not detected
049	1 bin Tray S	Open	Closed
050	Fan Motor Lock	High speed	Not high speed
051	2 Tray BK Install	Installed	Not installed
053	HP Sensor	Detected	Not detected
054	Duplex Fan M Lock	Locked	Not locked

- *1 Paper Size -

Copier	00	01	02	03	04	05	06	07
Europe	Not set	A4 LEF	8Hx13 SEF	A4 SEF	A5 LEF	LT LEF	--	A3 SEF
North America	Not set	A4 LEF	8Hx13 SEF	LT SEF	LG SEF	LT LEF	--	DLT SEF
China	Not set	A4 LEF	B5 LEF	A4 SEF	A5 LEF	B4 SEF	--	A3 SEF

Paper Feed Unit	00	01	03	04	05	0A	0C	0E	0F
Europe	Not set	LT SEF	LG SEF	A4 LEF	--	DLT SEF	A4 SEF	LT LEF	A3 SEF
North America	Not set	LT SEF	LG SEF	A4 LEF	--	DLT SEF	A4 SEF	LT LEF	A3 SEF
China	Not set	LT SEF	LG SEF	A4 LEF	--	DLT SEF	A4 SEF	LT LEF	A3 SEF

Using SP Modes

By-Pass Tray	04	0C	08	00	01	03	02	06
Europe	A5 SEF	A5 SEF	A5 SEF	A5 SEF	8x13 SEF	A4 SEF	A3 SEF	A3 SEF
North America	HLT SEF	HLT SEF	HLT SEF	HLT SEF	HLT SEF	LG SEF	DLT SEF	DLT SEF
China	B6 SEF	B6 SEF	A5 SEF	A5 SEF	B5 SEF	A4 SEF	B4 SEF	A3 SEF

- *2 Paper Amount -

10	Near end
11	About 25%
00	About 75%
00	About 100%

- *3 Available Paper Feed Unit -

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

Input Check Table for Finisher (SP 6124)

Num.	Sensor/Switch	01H	00H
001	Entrance Sensor	Not detected	Paper detected
002	Empty Sensor	Paper detected	Not detected
003	Front Jogger HP Sensor	Not home	Home position

Num.	Sensor/Switch	01H	00H
	(Front Jogger Fence HP Sensor)		
004	Rear Jogger HP Sensor (Rear Jogger Fence HP Sensor)	Not home	Home position
005	Paper Detection Sensor 1 (Lever Sensor)	See the table 1 as shown below.	
006	Paper Detection Sensor 2 (Stack Height Sensor)		
007	Tray Upper Sensor (Tray Upper Limit Sensor)	Upper limit	Not upper limit
008	Tray Lower Sensor (Stack Near-limit Sensor)	Lower limit	Not lower limit
009	Belt Sensor	Home position	Not home
010	Staple Slide HP Sensor	Not home	Home position
011	Jogger Plate HP Sensor (Jogger Position Sensor)	Home position	Not home
012	Pick Roller Sensor (Pick-Up Roller Unit HP Sensor)	Home position	Not home
013	Staple HP Sensor	Home position	Not home
014	Staple Near Empty Sensor	Staple remaining	Staple near empty
015	Staple Self Prime Sensor (End Fence Detection Sensor)	Staple detected	Not detected
016	Top Cover Sensor	Open	Close
017	Staple Cover Sensor (Front Cover Switch)	Open	Close

- Table 1 -

Using SP Modes

	Home Position (Lever)	Paper detected	Hope Position (Output Tray)	Paper not detected
SP6-141-5	0	1	1	0
SP6-141-6	1	1	0	0

5.4.6 OUTPUT CHECK

Conducting an Output Check for Mainframe

Note

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

1. Select SP 5804 (Mainframe) or SP 6128 (Finisher).
2. Select the number (see the table below) corresponding to the component.
3. Select "ON."
4. To stop the operation, select "OFF."

Output Check Table for Mainframe (SP 5804)

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

Num.	Component
001	Main Motor Forward
002	Main Motor Reverse
003	Quenching Lamp
004	Toner Supply Motor Forward
005	Fan Motor High (Rear Exhaust)
006	Fan Motor Low (Rear Exhaust)
007	Registration Clutch
008	By-pass Feed Clutch
009	Upper Feed Clutch

Num.	Component
010	Lower Feed Clutch
011	BK-Low Lift Motor Up
012	BK-Low Lift Motor Down
013	Relay Clutch
014	BK-Relay Clutch
015	BK-Upper Feed Clutch
016	BK-Lower Feed Clutch
017	BK-Lift Motor
018	BK-Up Lift Motor Up
019	BK-Up Lift Motor Down
020	Duplex Inv Motor Reverse
021	Duplex Inv Motor Forward
022	Duplex Trans Motor
023	Duplex Gate Solenoid
024	Duplex Inv Motor Hold
025	Dup Trans Motor Hold
026	Polygon Motor
027	Polygon M/LD
028	LD
029	DF-Feed Motor
030	DF-Transport Motor
031	DF-Feed Clutch

Num.	Component
032	DF-Pickup Solenoid
033	DF-Stamp Solenoid
034	DF-Gate Solenoid
035	1 bin Gate Solenoid
036	1 bin Tray Motor
037	1 bin Tray Motor Hold
038	Fusing Solenoid
040	Duplex Fan Motor High
041	Duplex Fan Motor Low
042	PSU Fan Motor High Speed

Output Check Table for Finisher (SP 6128)

Num.	Component
001	Relay Pulse Motor (Paper Transport Motor)
002	Front Jogger Pulse Motor (Front Jogger Motor)
003	Rear Jogger Pulse Motor (Rear Jogger Motor)
004	Staple Slide Pulse Motor (Stapler Unit Movement Motor)
005	Stuck Exit Pulse Motor (Pick-Up Roller Motor)
006	Pick Roller Pulse Motor

Num.	Component
	(Pick-Up Roller Contact Motor)
007	Staple DC Motor (Staple Unit Motor)
008	Paper Tray Lift DC Motor (Output Tray Motor)
009	Paper Detection SOL (Stack Height Lever Solenoid)
010	Paddle Rotation SOL (Paddle Roller Solenoid)
011	Belt SOL (Belt Lift Solenoid)

5.4.7 SERIAL NUMBER INPUT (SP 5811)

Specifying Characters

SP 5811-1 specifies the serial number. For the basic machine (the machine without the optional controller), you use the numeric keypad. For the DDST machine (the machine with the optional controller), you use the numeric keypad and the optional operation panel.

A serial number consists of 11 characters. You can change each character by pressing one of the first 11 keys on the numeric keypad (①, ②, ③, …⑨, ⊙, ⓪).
For example, when you press the ① key, the first character of the serial number changes as follows:
0 ⇒ 1 ⇒ 2 ⇒ ... ⇒ 8 ⇒ 9 ⇒ A ⇒ B ⇒ ... ⇒ X ⇒ Y ⇒ Z.
When you press the ② key, the second character changes likewise.
You can specify a digit ("0" to "9") or a capital letter ("A" to "Z") for the first four characters of a serial number, and you can specify a digit in the other seven characters (not capital letters).

5.4.8 NVRAM DATA UPLOAD/DOWNLOAD (SP 5824/5825)

This procedure is for the basic machine only.

Note

- Make sure that you turn OFF the main switch before inserting or removing a flash memory card. Installing or removing a flash memory card while the main switch is on may damage the BICU or memory.

Overview

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

SP 5824-1 (NVRAM Upload)	From the BICU to a flash memory card
SP 5825-1 (NVRAM Download)	From a flash memory card to the BICU

You should execute NVRAM Upload before replacing the NVRAM or before executing SP 5801-2 (☛ "Memory Clear"). You can copy back the data from the flash card to the NVRAM as necessary. The content of the NVRAM can be uploaded to and downloaded from an SD card.

⟹ **IMPORTANT NOTE:**

The following data stored in the NVRAM will not be saved on the SD Card when performing an NVRAM Data Upload (SP5824):

- Total count categories (SP7-003-*** Copy Counter)
- C/O, P/O Counter (SP7-006-*** C/O, P/O Count Display)
- Dupelx, A3/DLT/Over 420 mm, Stapler and Scanner application scanning counters (system settings).
- Engine SP Data

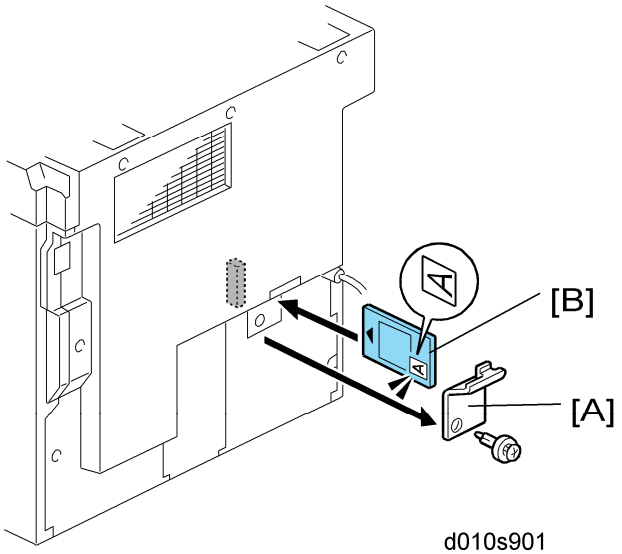
Therefore, whenever an NVRAM Upload/Download is performed, make sure to print out the SP Data List efore performing SP5801-001 (Memory Clear: All Clear) or SP5801-002 (Memory Clear: Engine).

NVRAM Upload/Download Procedure:

1) Print out the SP Data list from SP5990-002.
2) Perform the NVRAM Data Upload (to the SD Card) according to the procedure below.
3) Perform the Memory Clear (SP5801-001 or 002).
4) Perform the NVRAM Data Download (from the SD Card) according to the procedure below.
5) Manually input the data listed above.

NVRAM Upload (SP 5824-1)

1. Turn OFF the main switch.
2. Remove the card cover [A] (1 x).
3. Turn the face of the flash memory card [B] ("A" is printed on the face) toward your left-hand side, and insert it into the card slot.
4. Turn ON the main switch.
5. Start the SP mode and select SP 5824-1.



d010s901

6. The machine erases the settings on the card (if any), then writes the machine's settings to the flash memory card. This takes about 20 seconds. If uploading fails, an error message appears. If an error message appears, retry the upload procedure.
7. Turn OFF the main switch.
8. Remove the memory card.

NVRAM Download (SP 5825-1)

SP 5825 1 copies the data from the flash memory card to the NVRAM. The following data is NOT copied (the data in the NVRAM remains unchanged).

- SP 8221-1 (ADF Original Feed [Front])
- SP 8221-2 (ADF Original Feed [Back])
- SP 8381-1 (Total: Total Printer Pages)
- SP 8382-1 (Copy Application: Total Print Pages)
- SP 8391-1 (Large Size Print Pages [A3/DLT, Larger])
- SP 8411-1 (Prints Duplex)

1. Turn OFF the main switch.
2. Remove the card cover [B] (1 x).
3. Turn the face of the flash memory card [A] ("A" is printed on it) toward your left-hand side, and insert it into the card slot.
4. Turn ON the main switch.
5. Start the SP mode and select SP 5825-1.
6. The machine erases the current settings, then writes the new settings onto the NVRAM on the BICU board. This takes about 1 second. If downloading fails, an error message appears. If an error message appears, retry the download procedure.
7. Turn OFF the main switch.
8. Remove the memory card.

5.4.9 FIRMWARE UPDATE PROCEDURE

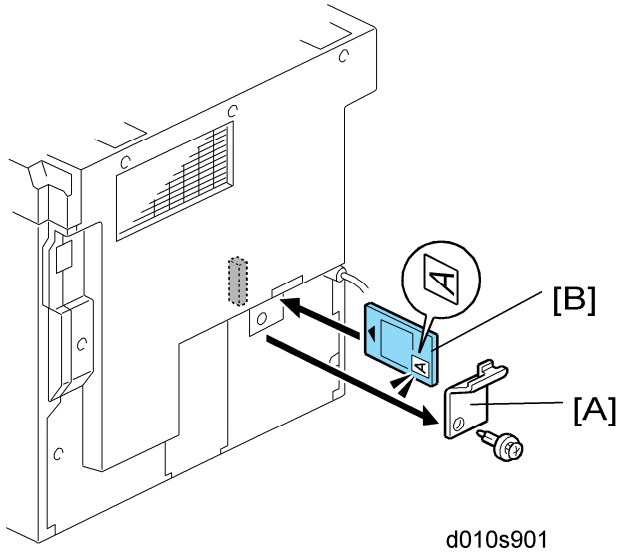
This section shows how to update the firmware.
The machine has the following firmware programs

Firmware Type	SP Mode
Engine (BICU)	7801-2
ADF	7801-5
FIN (KAN)	7801-7

Using SP Modes

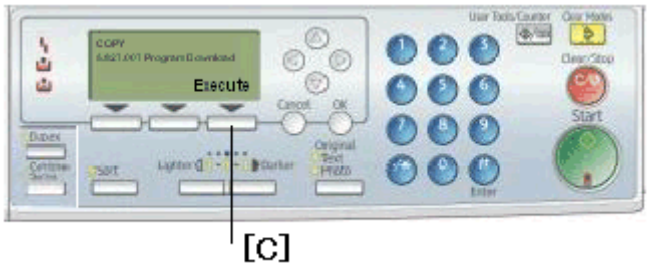
Firmware Type	SP Mode
DDST (Printer/Scanner)	7801-15

Engine (BICU) Firmware Update Procedure



d010s901

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



4. Press the power switch on the operation panel and hold it, while turning on the main switch.
5. Select "Execute" [C].



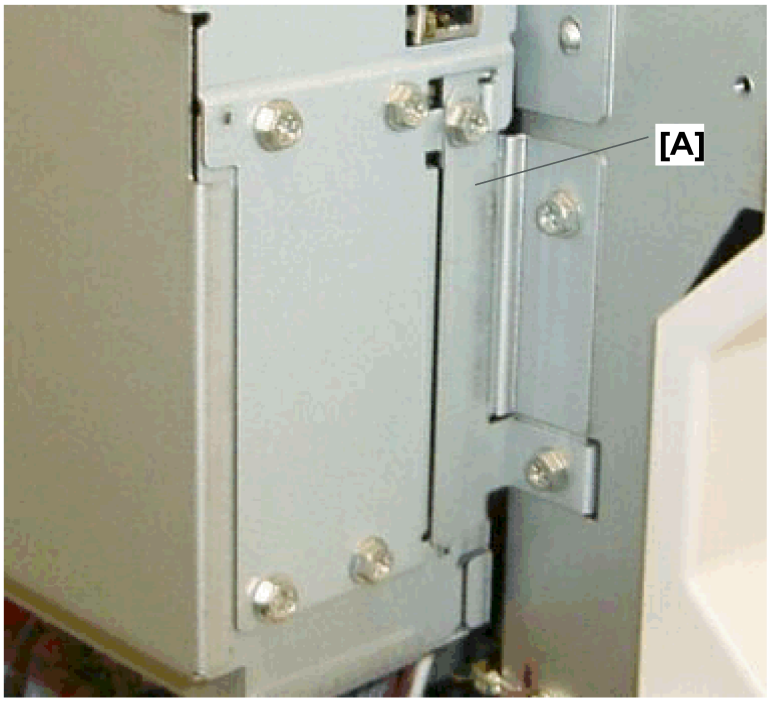
6. Do not touch any key while the message "Load Status..." shows. This message

indicates that the program is running.

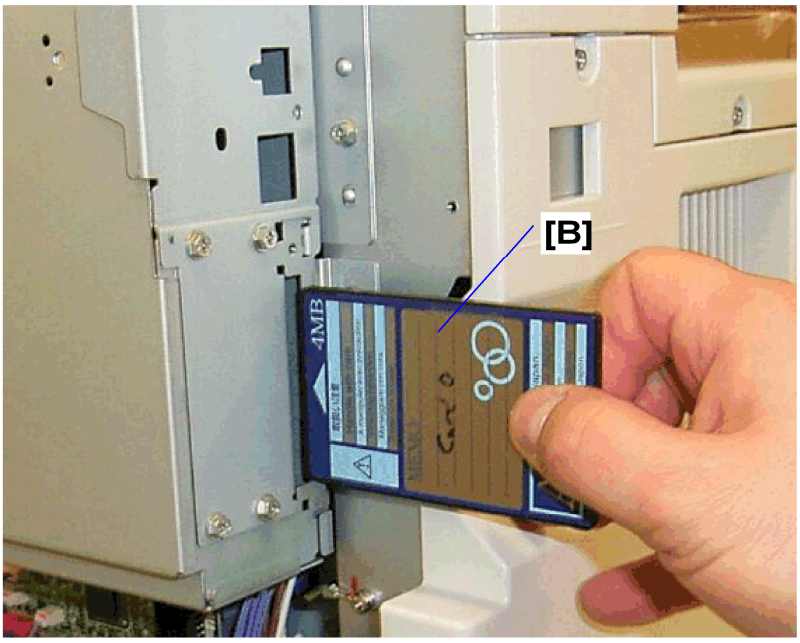


7. Make sure the message "End Sum..." shows. This message indicates that the program has ended normally.
8. Turn off the main switch.
9. Remove the flash memory card.
10. Replace the card cover [B] (1 rivet).
11. Turn the main switch on.
12. Check the operation.

DDST (Printer Scanner) Update Procedure



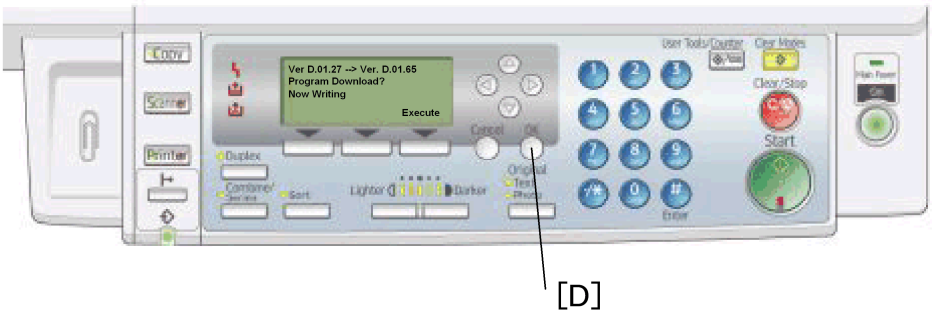
1. Turn the main switch off.
2. Remove the slot cover [A] (1 x).



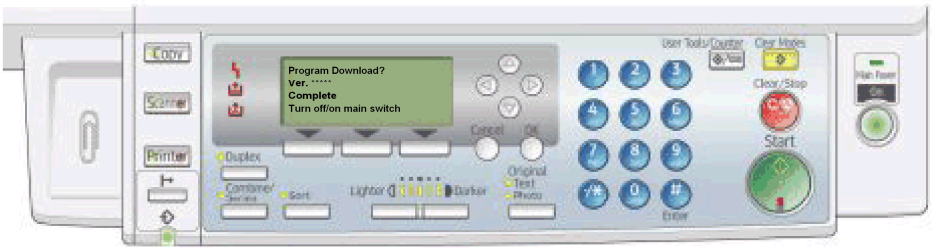
3. Insert the flash memory card [B] as shown above.



4. Turn on the main power switch.
5. Push the printer application key [C].



6. Push the OK key [D] and then push Execute.



Note

- Do not turn the machine off while the message “Now Writing” shows. This message indicates the program is running.
- Make sure the message “Completed” shows before completing the procedure. This message indicates the program has successfully ended.

7. Turn off the main switch.
8. Remove the flash memory card.
9. Replace the slot cover [A] (1 x).

5.4.10 TEST PATTERN PRINT (SP 5902-1)

Executing Test Pattern Printing

1. Specify the pattern number and press the OK key.
2. Press the copy start key. The copy mode is activated
3. Specify copy settings and press the ⓪ key.
4. To return to the SP mode, press the ⓯ key.

Test Patterns

Test Patterns Using VCU	
No.	**Pattern**
0	(No print)
1	Vertical Lines (Single Dot)
2	Horizontal Lines (Single Dot)
3	Vertical Lines (Double Dot)
4	Horizontal Lines (Double Dot)
5	Grid Pattern (Single Dot)

Test Patterns Using VCU	
6	Grid Pattern (Double Dot)
7	Alternating Dot Pattern
8	Isolated one dot
9	Black Band (Horizontal)
10	Trimming Area
11	Argyle Pattern (Single Dot)
12	Grayscales (Horizontal)
13	Grayscales (Vertical)
14	Grayscales (Vertical/Horizontal)
15	Grayscales (Vertical/Horizontal Overlay)
16	Grayscales With White Lines (Horizontal)
17	Grayscales with White Lines (Vertical)
18	Grayscales with White Lines (Vertical/Horizontal)

Test Patterns Using IPU	
No.	**Pattern**
30	Vertical Lines (Single Dot)
31	Horizontal Lines (Single Dot)
32	Vertical Lines (Double Dot)
33	Horizontal Lines (Double Dot)
34	Isolated Four Dots
35	Grid Pattern (Double Dot)
36	Black Band (Vertical, 1024 Dots)

Test Patterns Using IPU	
37	Grayscales (Horizontal, 512 Dots)
38	Grayscales (Vertical, 256 Dots)
39	ID Patch
40	Cross
41	Argyle Pattern (128-Dot Pitch)
42	Square Gradation (64 Grades)
43	Square Gradation (256 Grades)
44	Grayscales (Horizontal, 32-Dot Width)
45	Grayscales (Vertical, 32-Dot Width)
46	Trimming Area (A3)
47	A4 Gradation Patches 1 (128 Grades)
48	A4 Gradation Patches 2 (128 Grades)
49	Trimming Area (A4)

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

5.4.11 PAPER JAM COUNTERS (SP 7504)

The table lists the menu numbers (the last three digits of SP 7504 XXX) and the paper jam timings and locations.

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

Code	
131	Paper is caught at the one-bin tray.

5.4.12 SMC PRINT (SP 5990)

SP 5990 outputs machine status lists.

1. Select SP 5990.
2. Select a menu:
   - Basic machine/DDST machine: 001 All, 002 SP, 003 UP, 004 Log, or 005 Big Font

   Note
   - The output given by the menu "Big Font" is suitable for faxing.
3. Press the "Execute" key.
   - Basic machine: The copy mode is activated
   - Specify copy settings and press the ⓪ key. The machine status lists is output.
   - DDST machine: The machine status list is output.
4. To return to the SP mode, press the ⓒ key.

5.4.13 ORIGINAL JAM HISTORY DISPLAY (SP 7508)

Viewing the Copy Jam History

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

Note
- The information on jam history is saved in the NVRAM.

1. Select SP 7508.
2. Select one of the menu items ("Latest 1" through Latest 10").
3. Press the OK key. The summary of the jam history shows.
4. To view more information, select "Detail."

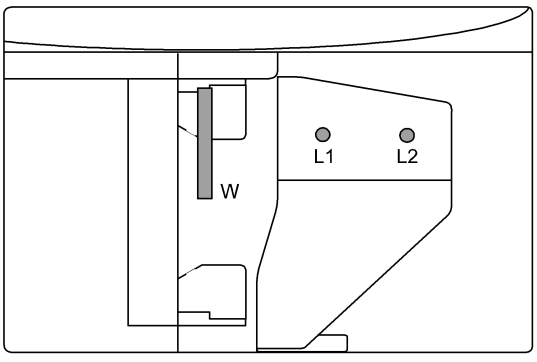
Jam History Codes

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

5.4.14 ADF APS SENSOR OUTPUT DISPLAY (SP 6901)

Sensor Positions

	Large to Small			
W1	1	0	0	1
W2	0	0	1	1



b121s921

Reading Data

W1	W2	L1	L2	Paper Size	
				NA	EU/AA
0	0	0	0	—	B5 LEF
0	0	1	1	11" x 17"	B4
0	1	0	0	$8^1/_2$" x $5^1/_2$" LEF	A5 LEF
0	1	1	0	$8^1/_2$" x 11" SEF	A4 SEF
1	1	1	1	$8^1/_2$" x 14"	$8^1/_2$" x 13"
1	0	0	0	11" x $8^1/_2$" LEF	A4 LEF
1	0	1	1	11" x 17"	A3
1	1	0	0	$5^1/_2$" X $8^1/_2$" SEF	A5 SEF
1	1	1	0	—	B5 SEF

1: Detected

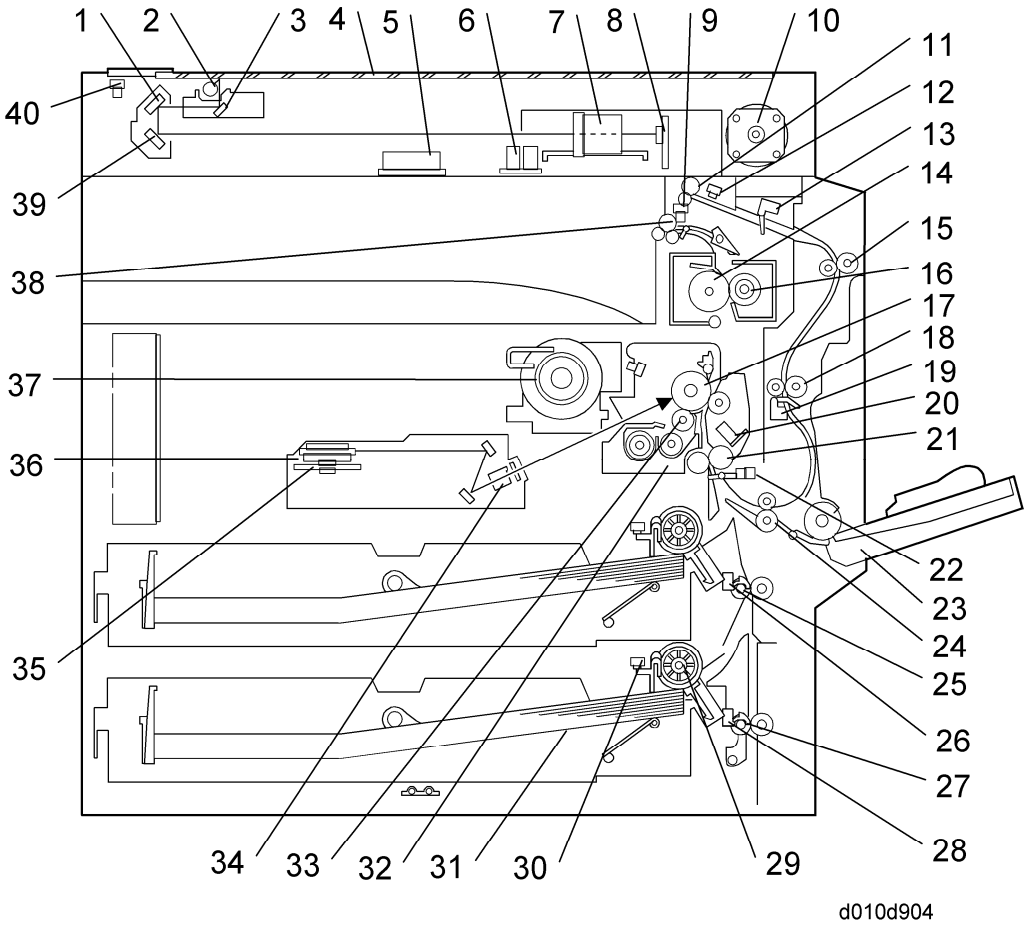
DETAILED DESCRIPTIONS

REVISION HISTORY		
Page	**Date**	**Added/Updated/New**
		None

6. DETAILED SECTION DESCRIPTIONS

6.1 OVERVIEW

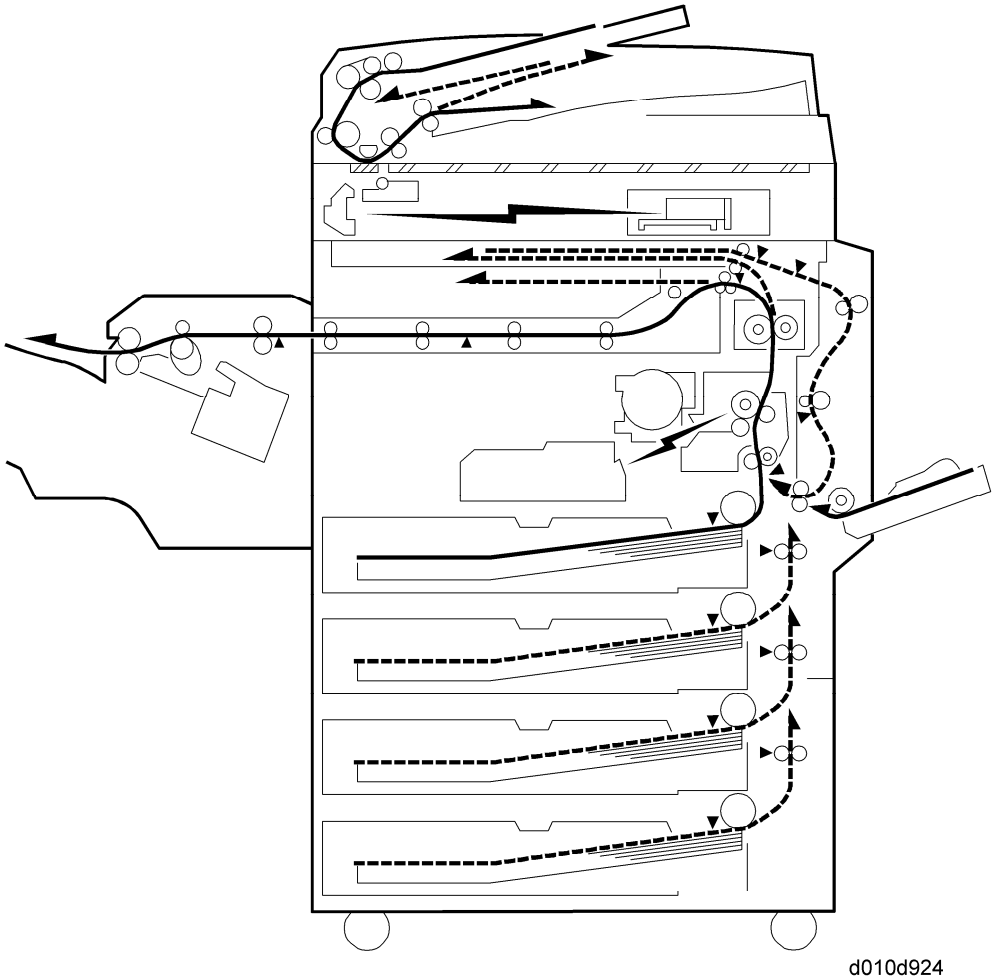
6.1.1 COMPONENT LAYOUT



1. 2nd Mirror	21. Registration Roller
2. Exposure Lamp	22. Registration Sensor
3. 1st Mirror	23. By-pass Tray
4. Exposure Glass	24. Lower Transport Roller
5. Original Width Sensors	25. Upper Relay Roller
6. Original Length Sensors	26. Relay Sensor
7. Lens Block	27. Lower Relay Roller
8. SBU	28. Lower Relay Sensor

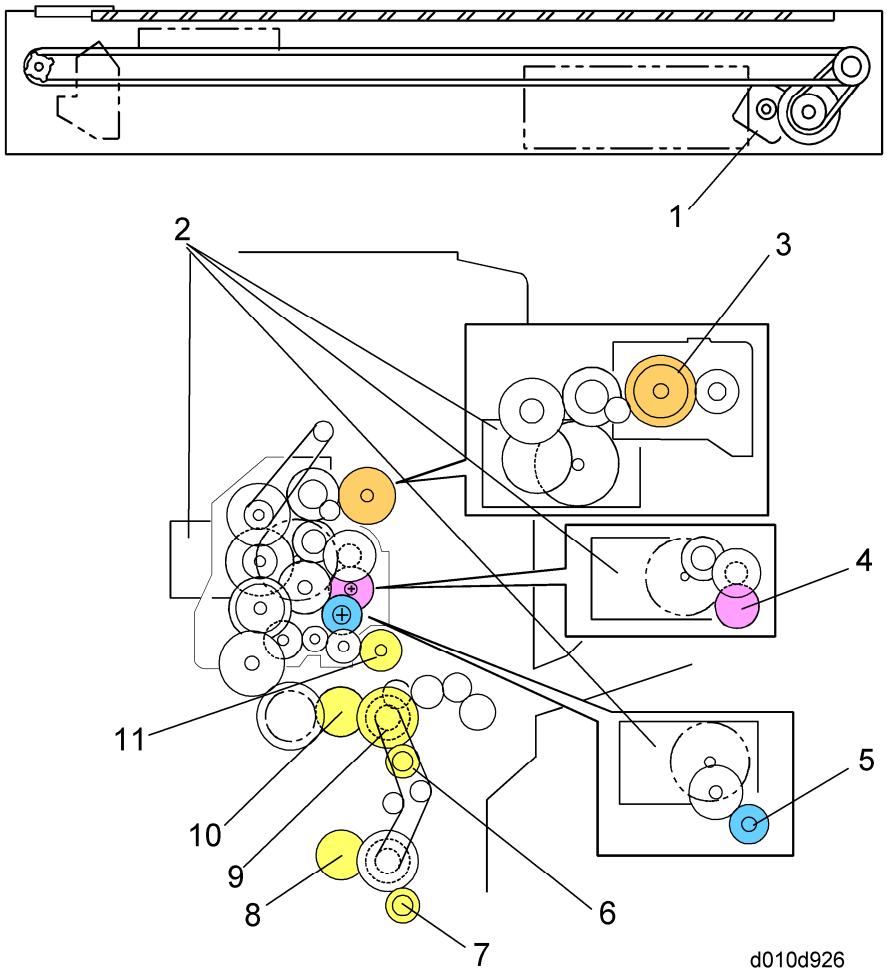
9. Exit Sensor	29. Paper Feed Roller
10. Scanner Motor	30. Paper End Sensor
11. Inverter Roller	31. Bottom Plate
12. Duplex Inverter Sensor	32. PCU
13. Duplex Entrance Sensor	33. Development Roller
14. Hot Roller	34. WTL
15. Upper Transport Roller	35. Polygon Mirror Motor
16. Pressure Roller	36. Laser Unit
17. OPC Drum	37. Toner Supply Bottle Holder
18. Middle Transport Roller	38. Exit Roller
19. Duplex Exit Sensor	39. 3rd Mirror
20. Image Density Sensor	40. Scanner HP Sensor

6.1.2 PAPER PATH



d010d924

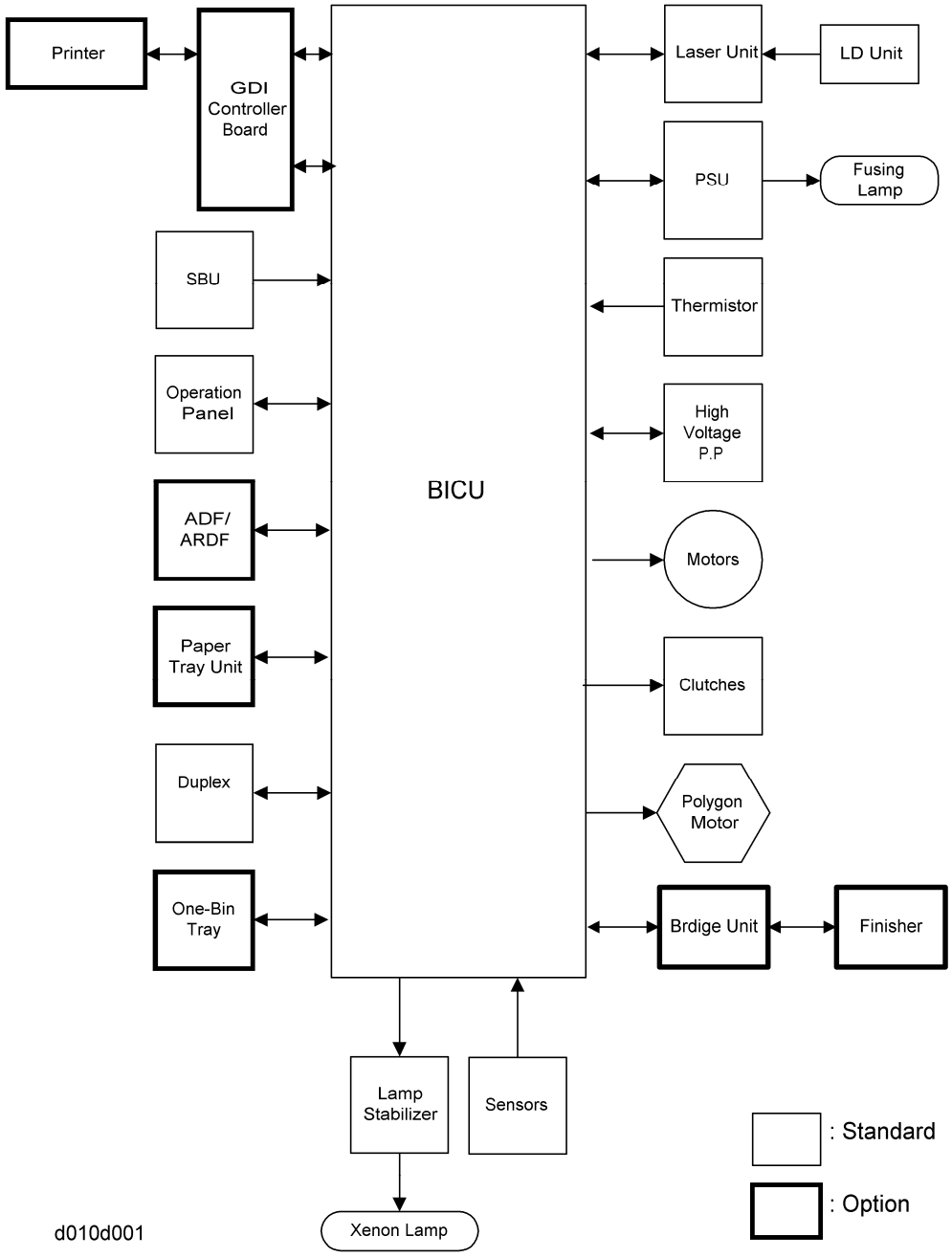
6.1.3 DRIVE LAYOUT



1. Scanner Motor	7. Lower Relay Clutch
2. Main Motor	8. Lower Paper Feed Clutch
3. Hot Roller	9. By-pass Feed Clutch
4. OPC Drum	10. Upper Paper Feed Clutch
5. Development Roller	11. Registration Clutch
6. Upper Relay Clutch	

6.2 BOARD STRUCTURE

6.2.1 BLOCK DIAGRAM



6.2.2 BICU (BASE ENGINE AND IMAGE CONTROL UNIT)

The main board controls the following functions:

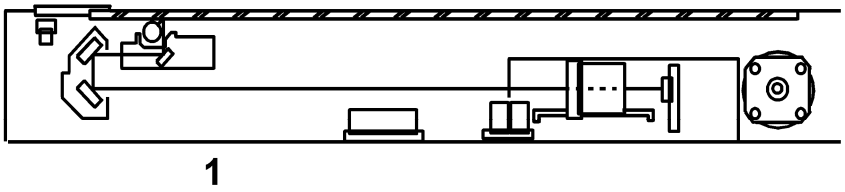
- Engine sequence

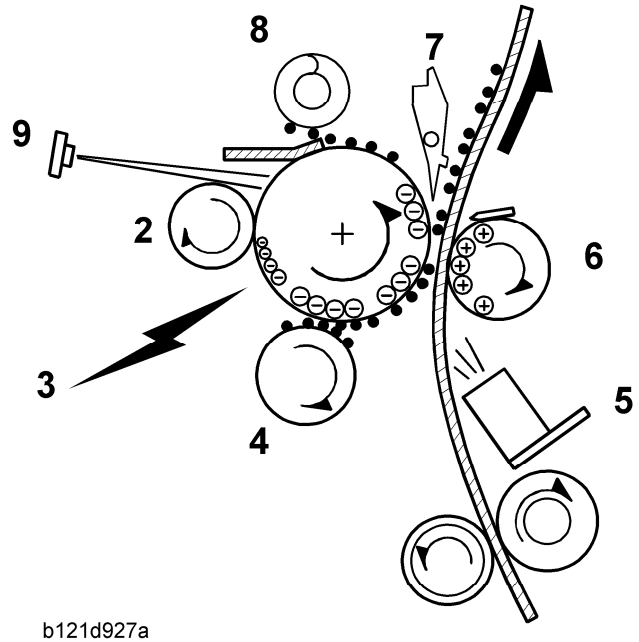
- Timing control for peripherals
- Image processing, video control
- Operation control, system control (Basic machine only)
- Machine control
- Drive control for the sensors, motors, and clutches of the printer and scanner
- High voltage supply board control
- Serial interfaces with peripherals
- Fusing control

6.2.3 SBU (SENSOR BOARD UNIT)

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

6.3 COPY PROCESS OVERVIEW





1. **Exposure**

A xenon lamp exposes the original. Light reflected from the original passes to the CCD, where it is converted into an analog data signal. This data is converted to a digital signal, processed and stored in the memory. At the time of printing, the data is retrieved and sent to the laser diode.

2. **Drum Charge**

In the dark, the charge roller applies a negative charge to the organic photo-conductive (OPC) drum. The charge remains on the surface of the drum because the OPC layer has a high electrical resistance in the dark.

3. **Laser Exposure**

The processed data scanned from the original is retrieved from the memory and transferred to the drum by a laser beam, which forms an electrical latent image on the drum surface. The amount of charge remaining as a latent image on the drum depends

on the laser beam intensity, which is controlled by the BICU board.

4. **Development**

A magnetic developer brush on the development roller comes in contact with the latent image on the drum surface. Toner particles are electrostatically attached to the areas of the drum surface where the laser reduced the negative charge on the drum.

5. **ID Sensor**

The laser forms a sensor pattern on the drum surface. The ID sensor measures the reflectivity of the pattern. The output signal is one of the factors used for toner supply control. Also, the ID sensor measures the reflectivity of the drum surface. The output signal is used for charge roller voltage control.

6. **Image Transfer**

Paper is fed to the area between the drum surface and the transfer roller at the proper time for aligning the copy paper and the developed image on the drum surface. Then, the transfer roller applies a high positive charge to the reverse side of the paper. This positive charge pulls the toner particles from the drum surface onto the paper. At the same time, the paper is electrostatically attracted to the transfer roller.

7. **Paper Separation**

Paper separates from the drum as a result of the electrostatic attraction between the paper and the transfer roller. The discharge plate (grounded) helps separate the paper from the drum.

8. **Cleaning**

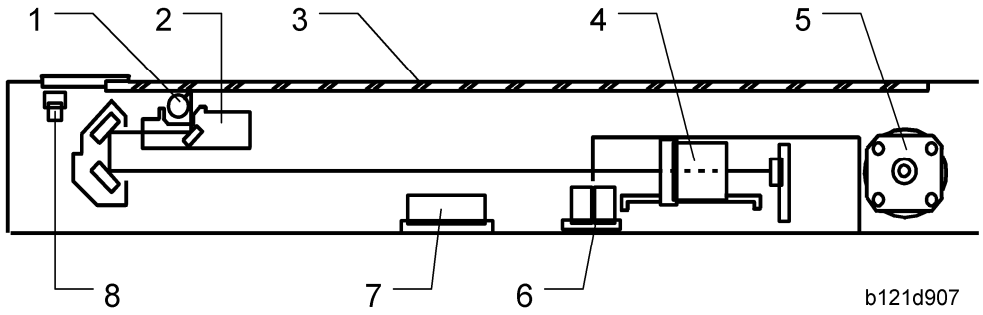
The cleaning blade removes any toner remaining on the drum surface after the image transfers to the paper.

9. **Quenching**

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

6.4 SCANNING

6.4.1 OVERVIEW



1. Exposure Lamp	5. Scanner Motor
2. 1st Scanner	6. Original Length Sensor
3. Exposure Glass	7. Original Width Sensors
4. Lens Block	8. Scanner HP Sensor

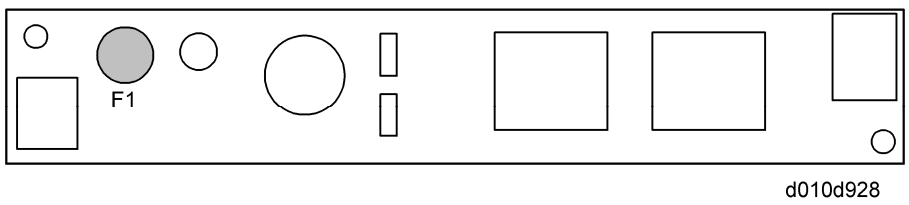
The original is illuminated by the exposure lamp (a xenon lamp). The image is reflected onto a CCD (charge coupled device) on the lens block via the 1st, 2nd, and 3rd mirrors, and through the lens on the lens block.

The 1st scanner consists of the exposure lamp, a reflector, and the 1st mirror.

A lamp stabilizer energizes the exposure lamp. The light reflected by the reflector is of almost equal intensity, to reduce shadows on pasted originals.

An optics anti-condensation heater is available as an option. It can be installed on the left side of the scanner. It turns on whenever the power cord is plugged in.

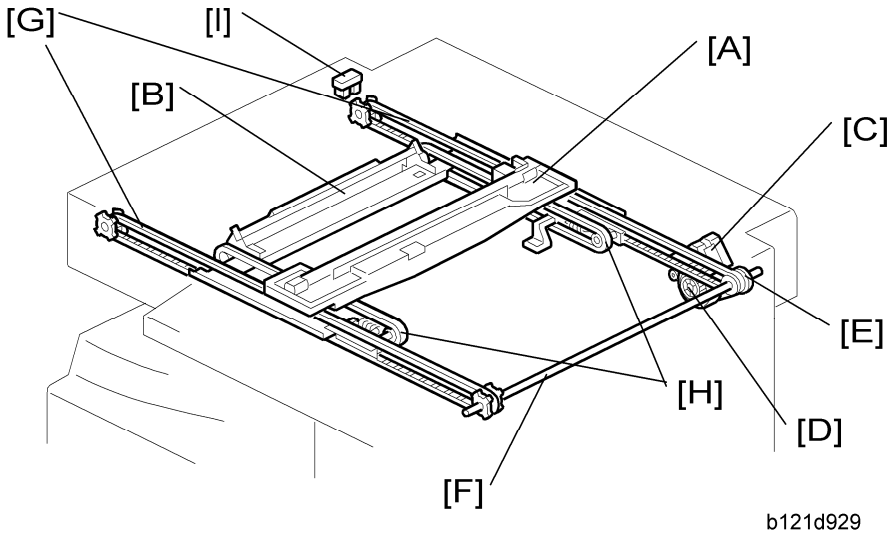
Lamp Stabilizer Fuse



	Rating	Manufacturer	Type

F1	T1.6A/250V	SKY GATE	SRT
	T1.6A/250V	SKY GATE	HTM
	T1.6A/250V	WALTER	2000

6.4.2 SCANNER DRIVE



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

- Book mode -

The BICU controls and operates the scanner drive motor. In full size mode, the 1st scanner speed is 122 mm/s during scanning. The 2nd scanner speed is half that of the 1st scanner. In reduction or enlargement mode, the scanning speed depends on the magnification ratio. The returning speed is always the same, whether in full size or magnification mode. The image length change in the sub scan direction is done by changing the scanner drive motor speed, and in the main scan direction it is done by image processing on the BICU board. Magnification in the sub-scan direction can be adjusted by changing the scanner drive motor speed using SP 4008. Magnification in the main scan direction can be adjusted using SP 4009.

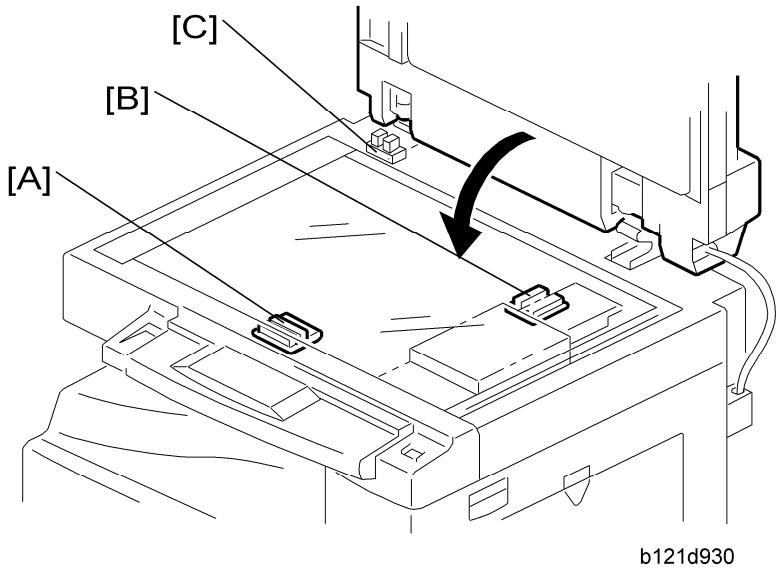
- ADF mode -

The scanners are always kept at their home position (the scanner HP. sensor [I] detects the 1st scanner) to scan the original. The ADF motor feeds the original through the ADF. In

reduction/enlargement mode, the image length change in the sub-scan direction is done by changing the ADF motor speed. Magnification in the main scan direction is done in the BICU board, like for book mode.

Magnification in the sub-scan direction can be adjusted by changing the ADF motor speed using SP 6006-5. In the main scan direction, it can be adjusted with SP 4009, like for book mode.

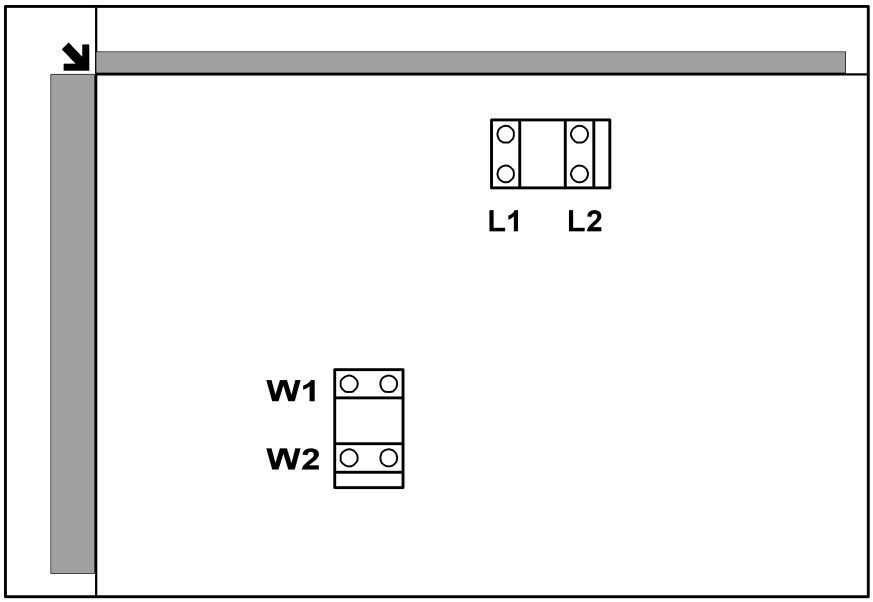
6.4.3 ORIGINAL SIZE DETECTION IN PLATEN MODE



In the optics cavity for original size detection, there are four reflective sensors. The original width sensors [A] detect the original width, and the original length sensors [B] detect the original length. These are the APS (Auto Paper Select) sensors. Each APS sensor is a reflective photosensor.

While the main switch is on, these sensors are active and the original size data is always sent to the CPU. However, the CPU checks the data only when the platen cover sensor [C] is activated. This is when the platen is positioned about 15 cm above the exposure glass, for example while it is being closed. The CPU can recognize the original size from the combination of on/off signals from the APS sensors.

If the copy is made with the platen fully open, the CPU decides the original size from the sensor outputs when the Start key is pressed.



b121d931

Original Size		Length Sensors		Width Sensors		SP 4301 display
A4/A3 version	LT/DLT version	L2	L1	W2	W1	
A3	11" x 17"	1	1	1	1	11110000
B4	8.5" x 14"	1	1	0	1	11010000
8.5" x 13"	—	1	1	0	0	11000000
A4-SEF	8.5" x 13"	0	1	0	0	01000000
A4-LEF	11" x 8.5"	0	0	1	1	00110000
B5-LEF	8.5" x 11"	0	0	0	1	00010000
A5-LEF	8.5" x 5.5"	0	0	0	0	00000000
—	8.5" x 13"	0	1	0	1	01010000

Note

- 0: High (no paper), 1: Low (paper present)

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

productivity.

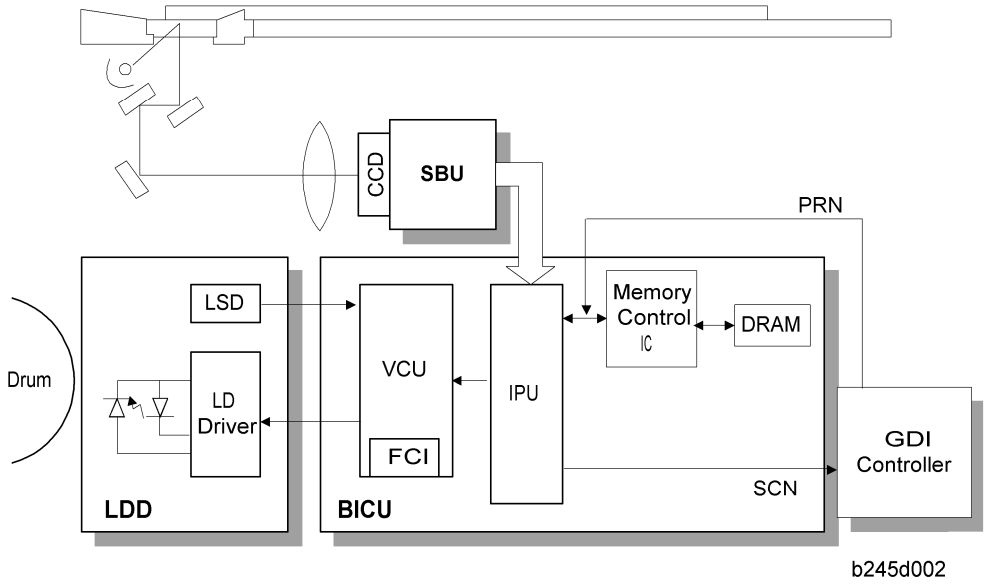
For other combinations, “Cannot Detect Original Size” will be indicated on the operation panel display (if SP 4303 is kept at the default setting).

However, if the by-pass feeder is used, note that the machine assumes that the copy paper is short-edge first. For example, if A4 paper is placed long-edge first on the by-pass tray, the machine assumes it is A3 paper and scans the full A3 area for the first copy of each page of the original, disregarding the original size sensors. However, for each page, the data signal to the laser diode is stopped to match the copy paper length detected by the registration sensor. This means that copy time for the first page may be slower (because of the longer time required for scanning), but it will be normal for the rest of the job.

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

6.5 IMAGE PROCESSING

6.5.1 OVERVIEW



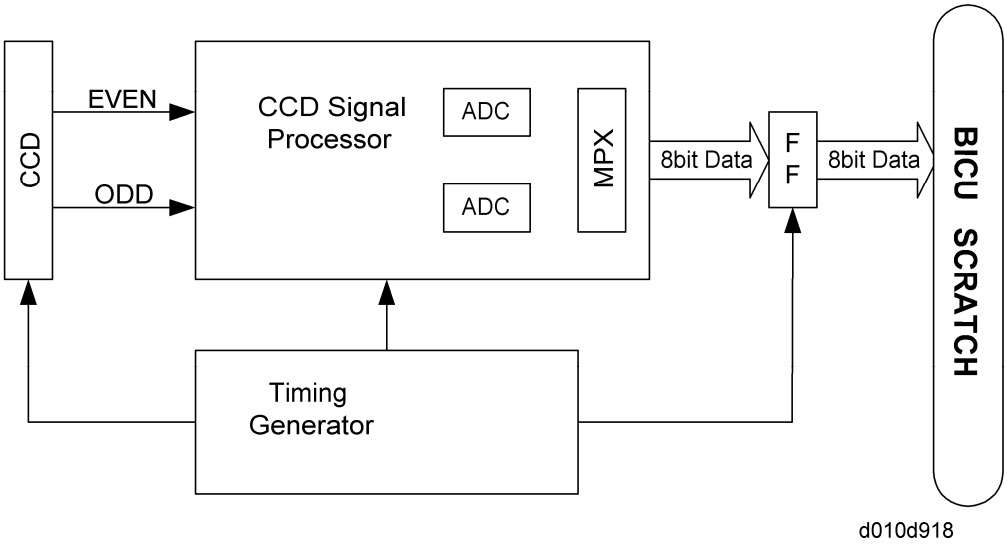
The CCD generates an analog video signal. The SBU (Sensor Board Unit) converts the analog signal to an 8-bit digital signal, then it sends the digital signal to the BICU board. The BICU board can be divided into three image-processing blocks: the IPU (Image Processing Unit), FCI (Fine Character Image), and VCU (Video Control Unit).

- IPU: Auto shading, filtering, magnification, scanner gamma correction, ID gamma correction
- VCU: Printer gamma correction, LD print timing control and laser power PWM control
- FCI (inside the VCU): Smoothing

Note

- The IPU and VCU are contained in the same IC called SCRATCH on the BICU.

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 CCD signal processor.

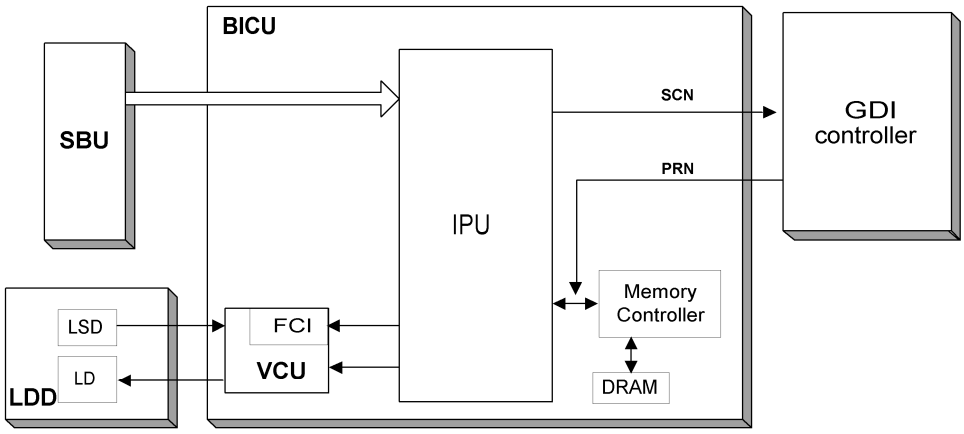
The CCD signal processor performs the following operations on the signal form the CCD.

- Sample and Hold
- Programmable Gain Amplifier
- Black Level Correction
- Black Level Clamp
- Analog to Digital Conversion

The CCD signal processor outputs 10bit data. However, only 8bit data is transmitted to the BICU.

6.5.3 IPU (IMAGE PROCESSING UNIT)

Overview



b245d003

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

Auto shading

White/black line correction

ADS

Scanner gamma correction

Magnification (main scan)

Filtering (MTF and smoothing)

ID gamma correction

Binary picture processing

Error diffusion

Dithering

Video path control

Test pattern generation

The image data then goes to the VCU (basic machine) or to the DDST controller (DDST machine).

Note

- The IPU and VCU are contained in the same IC (called SCRATCH) on the BICU.

Image Processing Modes

The user can select Text, Photo and Special original types. However, each of these original types has a range of different choices (such as “sharp”, “photographs”, etc), which are listed in the table below.

- All modes can be customized with a range of SP modes that can be adjusted to meet

Detailed Descriptions

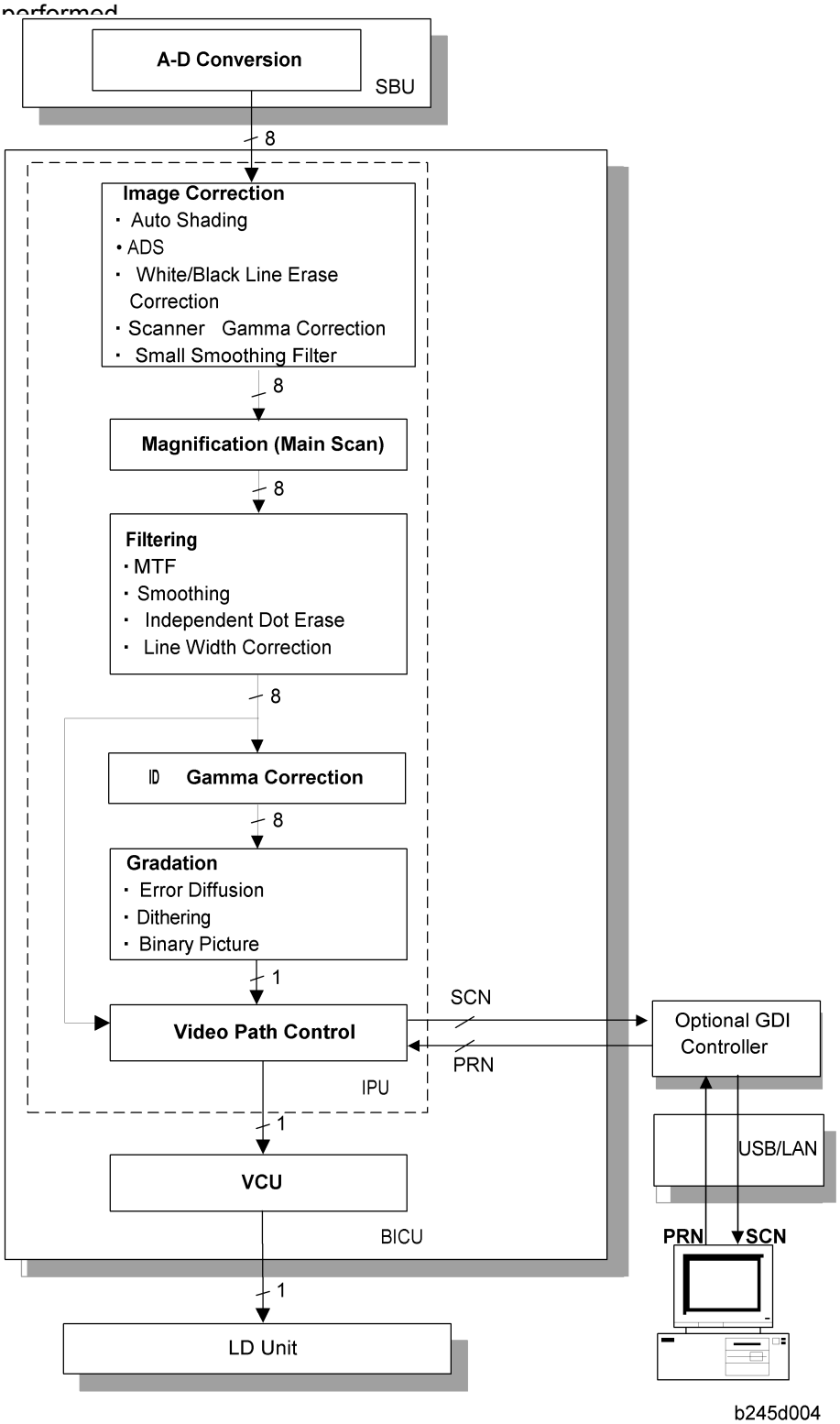
user requirements.

- The user can select the mode that best suits their original with the following user tool:
  Original Type: User Tools – Copier Features – Image Adjustment

Original Type	Mode	Targeted Original Type
Text	Normal	Normal text originals
	Sharp	Newspapers, originals through which the rear side is moderately visible as faint text.
Photo	Photo priority	Text/photo images which contain mainly photo areas
	Text priority	Text/photo images which contain mainly text areas
	Photographs	Actual photographs
Special	Unneeded background	Originals through which the rear side is extremely visible (or have a colored background) with faint text. Also for originals with very grainy backgrounds (some newspapers) and faint text.
	Colored text	Originals with colored text and lines.
	Normal Pixel Photo	Photo images created by dither patterns (dots visible), such as newspaper photos – normal resolution.
	Coarse Pixel Photo	Photo images created by dither patterns (dots visible), such as newspaper photos – coarse resolution.
	Preserved Background (Normal Text)	Use instead of Normal Text if, e.g. an embedded white area causes Auto Image Density to initially remove the surrounding (darker) background but leave the rest. Use if the customer wishes to keep this background.

Image Processing Path

The following diagram shows the various stages of image processing and where they are performed.



Original Modes

The machine has 10 original modes. There are two text modes, three photo modes, and five “special” modes.

The original mode key on the operation panel has two settings, text and photo. With the default settings, the machine uses “Normal Text (Text 1)” when the Text indicator is lit, and uses “Photo Priority (Photo 1)” when the Photo indicator is lit.

The customer can allocate different modes to the Text and Photo indicators with User Tools – Copier Features – Image Adjustment. Note that the Text indicator does not have to be allocated to a Text mode and the Photo key does not have to be allocated to a Photo mode. For example, the Text indicator can be allocated to Photo 3, and the Photo indicator can be allocated to Special 4.

If the user wishes to customize one of the original modes, the technician can change the settings using SP 4922 to SP 4942. Refer to “SP Modes for Each Image Processing Step”. However, only one of the original modes can be customized at any one time.

SP Modes for Each Image Processing Step

The table on the next page shows which SP modes are used for each step of image processing.

- 4921: Selects **which original mode** the settings from SP 4922 to SP 4932 will be applied to.
- 4922: Selects the scanner γ curve. You can select either a curve for text-based originals (brings out text) or a curve for photo originals (better distinctions between shades of dark colors).
- 4923: Selects the central notch position for the ID adjustment LEDs.
- 4926: Adjusts the texture removal level (used with error diffusion).
- 4927: Adjusts the line width.
- 4928: Selects the dot erase level.
- 4929: Converts white to black, and black to white
- 4930: Adjusts the clarity of line images and the edges of solid images.
- 4931: Adjusts the clarity of solid image areas.
- 4932: Adjusts the clarity of low ID lines.
- 4941: Selects the white line erase level.
- 4942: Selects the black line erase level.

If a fax and/or scanner/printer option is installed, you can make separate settings for copier, fax, and scanner/printer mode with these SPs.

NOTE: The gray area means the setting cannot be changed using SP mode.

		Text		Photo			Special				Note
		Normal	Sharp	Photo Priority	Text Priority	Photographs	Unneeded Background	Colored Text	Normal Pixel Photo	Coarse Pixel Photo	Preserved Background	
SBU	ADS	ADS			ADS		ADS					
–												
Shading Correction	Shading Line Correction	Enabled			Enabled				Enabled			
	White Line Correction	Enabled			Enabled							SP4-941
	Black Line Correction	Enabled (DF only)		Enabled (DF only)			Enabled (DF only)					SP4-942
	Scannerg Correction	Text (Reflection Ratio ID Linear)		Photo (Density Linear)	Text (Refreicion Ratio ID Linear	Photo (Density Linear)	Text (Reflection Ratio ID Linear)		Text (Reflection Ratio ID Lineare	Photo (Density Linear)	Text (Reflection Ratio ID Linear)	SP4-922
	Small Smoothing Filter	Weak			Normal			Normal	Strong	Strong	Weak	Connected with MTF filter (Edge)
–												
Magnification	Main Scar Magnification	Enabled			Enabled				Enabled			
	Mirroring	Enabled (DF only)			Enabled (DF only)				Enabled (DF only)			
	Side-to-side Registration (Left Side)	Enabled			Enabled				Enabled			
–												
Filtering	MTF Filter (Edge)	Normal	Strong	Weak (All Area)	Normal	Weak (All Area)	Strong	Normal			Normal	SP4-930
	MTF Filter (Solid)		Normal				Normal					SP4-931
	MTF Filter (Low ID)	Normal	Normal		Normal			Normal			Normal	SP4-932
	Smoothing Filter								Normal			
	Independent Dot Erase	Weak			Weak		Strong	Weak			Weak	SP4-928
	Line Width Correction	Disabled			Disabled		Disabled	Thick			Disabled	SP4-927
–												
Graduation	IDg Correction	Normal	Sharp	Photo Priority	Text Priority	Photographs	Sharp	Normal	Normal Pixel Photo	Coarse Pixel Photo	Preserved Background	SP4-923
–												
Image Correction	Graduation	Error Diffusion	Binary		Error Difusion		Binary	Error Diffusion	Dithering (105 Lines)	Dithering (53 Lines)	Error Diffusion	SP4-926 (Error diffusion only)
–												
Path Control	Video Path Control	Enabled			Enabled				Enabled			
–												
VCU	FCI		Enabled				Enabled					
	Edge Correction	Enabled			Enabled				Enabled			
	Printerg Correction	Enabled			Enabled				Enabled			

Auto Shading

Overview

There are two auto shading methods: black level correction and white level correction. Auto

shading corrects errors in the signal level for each pixel.

Black and white level correction is always done.

Black Level Correction

The IPU detects the black dummy data from one end of the CCD signal (32 pixels at the end are blacked off) and takes the average of the black dummy data. Then, the black level value from each image pixel is detected.

White Level Correction

Previous machines used 8-bit data (256 gradations), but this machine uses 6-bit data (64 gradations). When white level correction is applied to 8-bit data, white lines are more easily generated. This is because the normal variations in CCD pixel response (which are very slight), when rounded off by white level correction, will show up much easier on the copy when the data is divided into 256 gradations.

Before scanning the original, the machine reads a reference waveform from the white plate. The average of the white video level for each pixel is stored as the white shading data in the FIFO memory in the IPU (SCRATCH) chip.

The video signal information for each pixel obtained during image scanning is corrected by the IPU (SCRATCH) chip. If the maximum value of the video level is 64 or less, SC101 (exposure lamp error) is generated.

Auto shading is done before scanning for the first original as well as after scanning each page to prepare for the next page.

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

White Line Erase

The white line erase feature is validated (default) when you specify a value other than "0" in SP 4941-1. This feature works as follows:

1. The copier scans the original.
2. The density level of each pixel is compared with its adjacent pixels.
3. If the density level of a pixel is extremely lower then adjacent pixels, the level is corrected. The density levels of the adjacent pixels are considered.

When you validate the white line erase feature, the feature works for all originals. This feature erases the white lines of 1- through 6-pixel width (approximately, up to 0.25 mm). The white lines that exceed this width are not erased.

When you specify "2," instead of "1," in SP 4941-1, the feature erases darker white lines (namely, less whiter lines). Note that this SP does not affect the width of white lines to be erased.

Black Line Erase

The black line erase feature is the function that erases black lines made by the dust or dirt on the exposure glass. The feature is validated (default) when you specify a value other than "0" in SP 4942-1.

When you specify a larger value in this SP, the feature erases weaker black lines (namely, less blacker lines). This SP also affects the width of black lines to be erased. If you specify "1" or "2," the feature erases the black lines of 1- through 4-pixel width (approximately, up to 0.17 mm); if you specify "3," the feature erases the black lines of 1- through 6-pixel width (approximately, up to 0.25 mm). Note that some black lines on the original may be erased when you specify a larger value in the SP.

Auto Image Density (ADS)

In the SBU

ADS prevents the background of an original from appearing on copies. As the scanner scans down the page, the IPU on the BICU detects the peak white level for each scan line. The IPU 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 ADS, and the machine will use both settings when processing the original.

By Original Type

ADS mode is only enabled when the user has selected:

- Text mode 1 or 2 (Normal or Sharp), Photo mode 2 (Text/Priority), or Special mode 1 or 2 (Unneeded background or Colored Text).

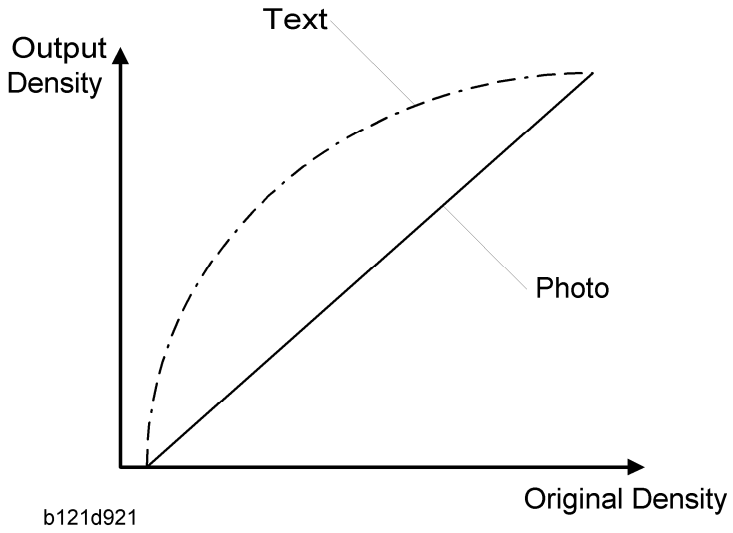
This can be done using Adjust Original Mode (3) in User Tools (Copier Features).

Scanner Gamma Correction

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

The machine has two possible scanner gamma curves: Text and Photo. When selecting Text, the machine does not use scanner gammą correction. As a result, the output is darker than the image density on the original. The advantage of this is that the machine can bring out gradations in paler areas. The disadvantage is that the machine cannot bring out gradations in darker areas, i.e. differences in shades of dark colors are hard to distinguish.

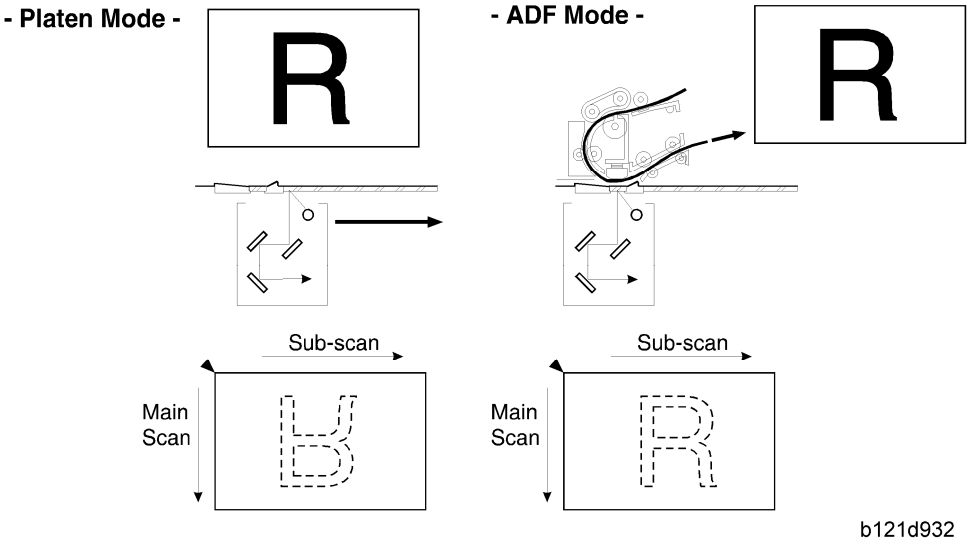
When selecting Photo, the machine uses scanner gammą correction. One advantage of this is that the machine can bring out gradations in dark areas of photo image originals. The disadvantage is that it in some cases images come out lighter than the customer desires.



Main Scan Magnification

Changing the scanner speed enables enlargement and reduction along the sub scan direction. However, enlargement and reduction along the main scan direction is handled by the IPU (SCRATCH) chip. The processing for main scan enlargement/reduction is the same as in previous digital machines.

Mirroring for ADF Mode



When making copies using the ADF, the magnification circuit creates a mirror image. This

is because the scanning start position along the main scan direction in ADF mode is at the opposite corner of platen mode.

In platen mode, the original is placed face down on the exposure glass. The main scan start position is at corner [A], and the scanner moves down the page. In ADF mode, the ADF feeds the leading edge of the original to the DF exposure glass. Therefore as mentioned above, the main scan start position will be at the opposite corner.

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

Filtering

Overview

There are several software filtering processes for enhancing the desired image qualities of the selected original mode. There are three MTF filters, a smoothing filter, independent dot erase, and line width correction. Each can be used only when certain modes are selected (details below) and are automatically applied.

The strength levels for the MTF are controlled by SP 4932. The levels for line width correction and independent dot erase are controlled by SP 4927 and 4928, respectively.

The MTF filters bring out sharpness. The three MTF filters are Edge, Solid Image and Low ID Line. Line width correction adjusts the line width. Independent dot erase removes unwanted dots from the image.

MTF Filter Adjustment - Edge

In order to determine whether a given dot is part of an edge or not, the IPU checks all surrounding dots (vertical, horizontal, and diagonal). If the IPU determines that the dot is part of an edge, the machine applies the MTF filter for edges, using the value set in SP 4930. The higher the setting, the sharper the image. However, this is only used when the customer uses Text 1, Text 2, Photo 1-3, Special 1, Special 2, or Special 5.

The default value is “0” for each mode. However the actual strength of “0” differs from mode to mode.

MTF Filter Adjustment - Solid

If the IPU detects that the dot is not part of an edge, the machine applies the MTF filter for solid areas using the value set in SP 4931. The higher the setting, the sharper the image. However, this is only used when the customer uses Text 2.

The default value is “0” for each mode. However the actual strength of “0” differs from mode to mode.

MTF Filter Adjustment - Low ID Line

The IPU also checks the image density of all dots. If a succession of low-density dots is detected, the machine interprets this as a low ID line and applies the MTF filter for low ID lines, using the value set in SP 4932. The higher the setting, the sharper the image.

However, this is only used when the customer uses Text 1, Text 2, Photo 2, Special 1, Special 2, or Special 5.

The default value is “0” for each mode. However, the actual strength of “0” differs from mode to mode.

Independent Dot Erase

When the user selects Text 1 and 2, Photo 2, and Special 1, 2, and 5 modes, independent dots are detected using a matrix and erased from the image. The detection level can be adjusted with SP 4928.

The higher setting, the greater number of dots the machine will erase. The machine erases the dots regardless of their image density. However, note that dots in mesh-like images may be mistakenly detected as independent dots.

Line Width Correction

When the user selects Text 1 and 2, Photo 2, Special 1, 2, and 5, the thickness of lines is adjusted using the setting of SP4-927. Note that the default for all modes except Special 2 is OFF.

Line width correction is done by the IPU (SCRATCH) chip.

ID Gamma Correction

The machine automatically selects the most appropriate ID gamma correction based on the selected original type and the operation panel ID setting.

In all modes, ID gamma correction can be adjusted with SP 4923.

Gradation Processing

Overview

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

- Binary picture processing
- Error diffusion
- Dithering

Binary Picture Processing

The 8-bit image data is converted into 1-bit data (black and white image data). This is done when the user selects Text 2 or Special 1. The threshold for deciding whether a pixel is black or white cannot be adjusted.

Error Diffusion

Error diffusion reduces the difference in contrast between light and dark areas of a halftone image. Each pixel is corrected using the difference between it and the surrounding pixels.

The corrected pixels are compared with an error diffusion matrix.

Error diffusion is applied when the user selects Text 1, Photo 1-3 and Special 2 and 5.

As the final step in error diffusion, a process called Texture Removal is applied to Text 1, Photo 2, Special 2, and Special 5 by default, but can also be applied to Photo 1 and 3 by changing the value of SP 4926.

Texture removal uses 256 threshold values in an 8 x 8 matrix. The value of SP 4926 controls the application of Texture Removal for each of the 6 modes listed above. The settings are as follows:

0: The default value for each mode is used. Text 1, Photo 2, Special 2, and Special 5 have a default of 3 (see below) and Photo 1 and 3 have a default of 1.

1: No removal applied.

2 – 6: Removal applied at the level specified here. The higher the setting (level), the less clear the image will become (more texture removal).

Dithering

Each pixel is compared with the threshold in a dither matrix. Several matrices are available to bring out half-tone areas in images such as newspaper-type photographs. Dithering is only used for Special 3 and Special 4.

6.5.4 VIDEO CONTROL UNIT (VCU)

Fine Character and Image (FCI)

The FCI performs image smoothing. This functions only affects binary picture processed images for certain original modes.

Fig. A

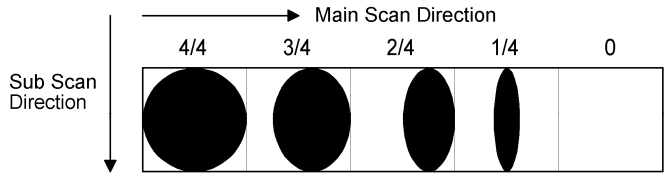


Fig. B

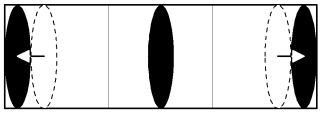
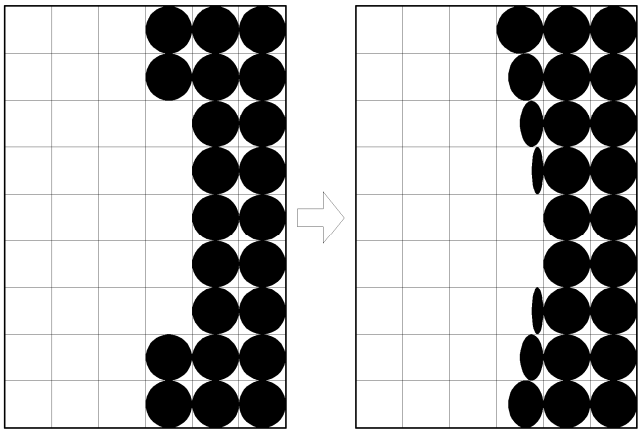


Fig. C



b121d933

Usually, binary picture processing generates jagged edges on characters, as shown in the above illustration. These are reduced using edge smoothing. The FCI changes the laser pulse duration and position for certain pixels.

Fig. A shows the four possible pulse durations, and Fig. B shows how the laser pulse can be in one of three positions within the pixel. Fig. C shows an example of how edge smoothing is used.

FCI smoothing is only effective when Text 2 or Special 1 is selected. There is no SP adjustment for this.

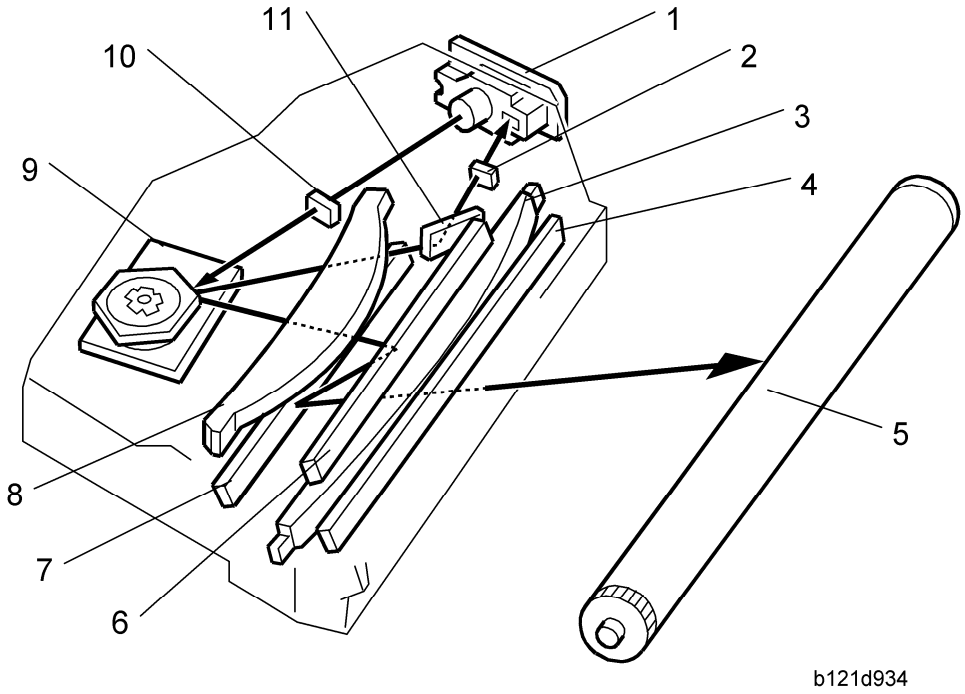
Printer Gamma Correction

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

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

6.6 LASER EXPOSURE

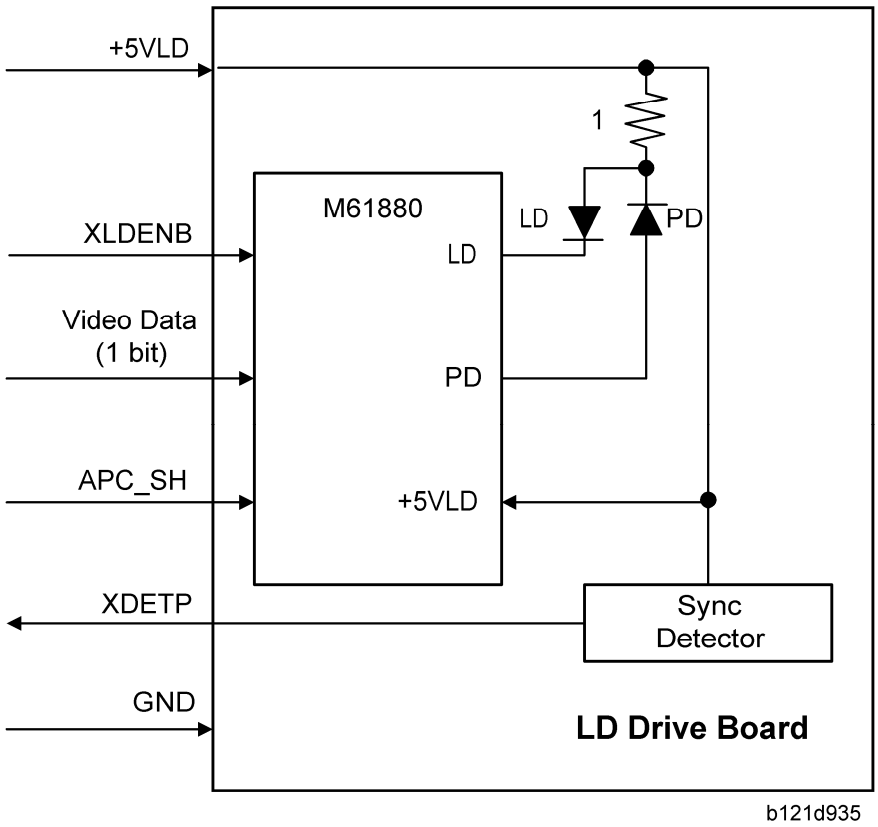
6.6.1 OVERVIEW



1. LD unit 2. Synchronization detector lens 3. Double toroidal lens 4. Shield glass 5. OPC drum 6. 1st mirror	7. 2nd mirror 8. F-theta lens 9. Polygon mirror 10. Cylindrical lens 11. Synchronization detector mirror

- The LD drive board controls both the laser output and laser synchronization mechanism.
- The machine cuts off the power supply to the LD drive board if the front or right cover is opened.

6.6.2 AUTO POWER CONTROL (APC)



The LD driver IC drives the laser diode. To prevent the intensity of the laser beam from changing because of the temperature, the machine monitors the current passing through the laser diode (LD). The machine adjusts the current to the laser diode by comparing it with the reference level from the reference circuit.

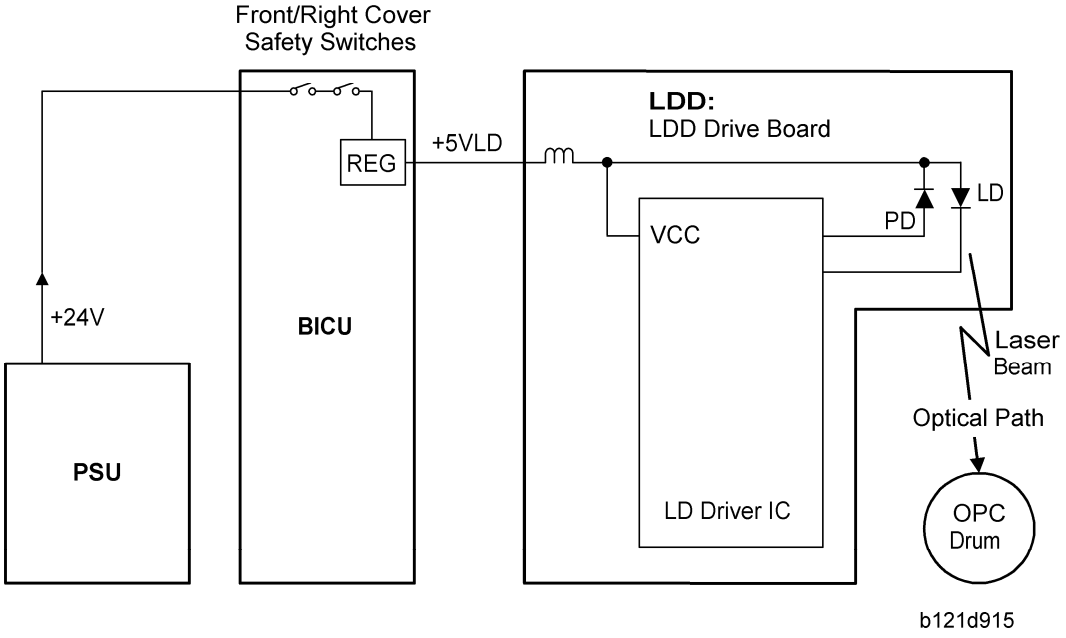
This auto power control is done just after the machine is turned on and during printing.

The laser diode power is adjusted on the production line.

Note

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

6.6.3 LD SAFETY SWITCH

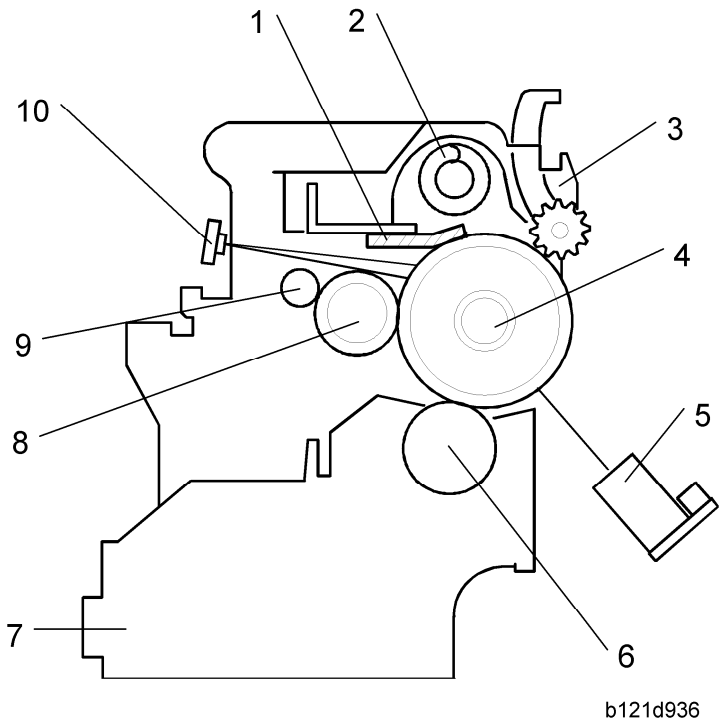


To ensure technician and user safety and to prevent the laser beam from inadvertently switching on during servicing, there are safety switches at the front and right covers. When the front cover or the right cover is opened, the power supply to the laser diode is interrupted.

The switches are installed on the +24V line coming from the power supply unit, then the +5VLD is generated from the +24V supply after it goes through the interlock switches.

6.7 PHOTOCONDUCTOR UNIT (PCU)

6.7.1 OVERVIEW



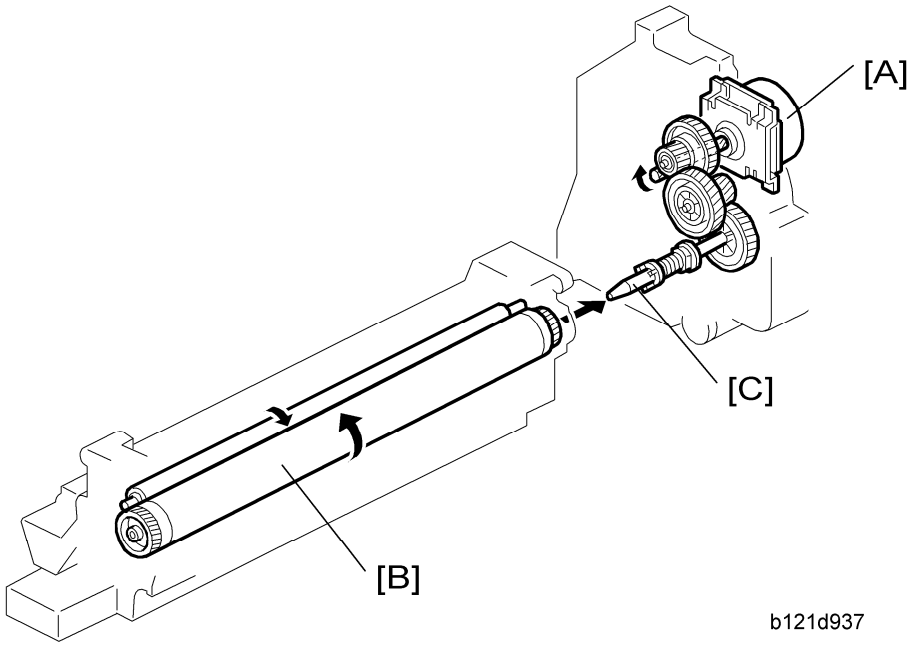
The PCU consists of the components shown in the above illustration. An organic photoconductor (OPC) drum (diameter: 30 mm) is used in this machine.

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

Note

- The ID sensor and quenching lamp are not included in the PCU.

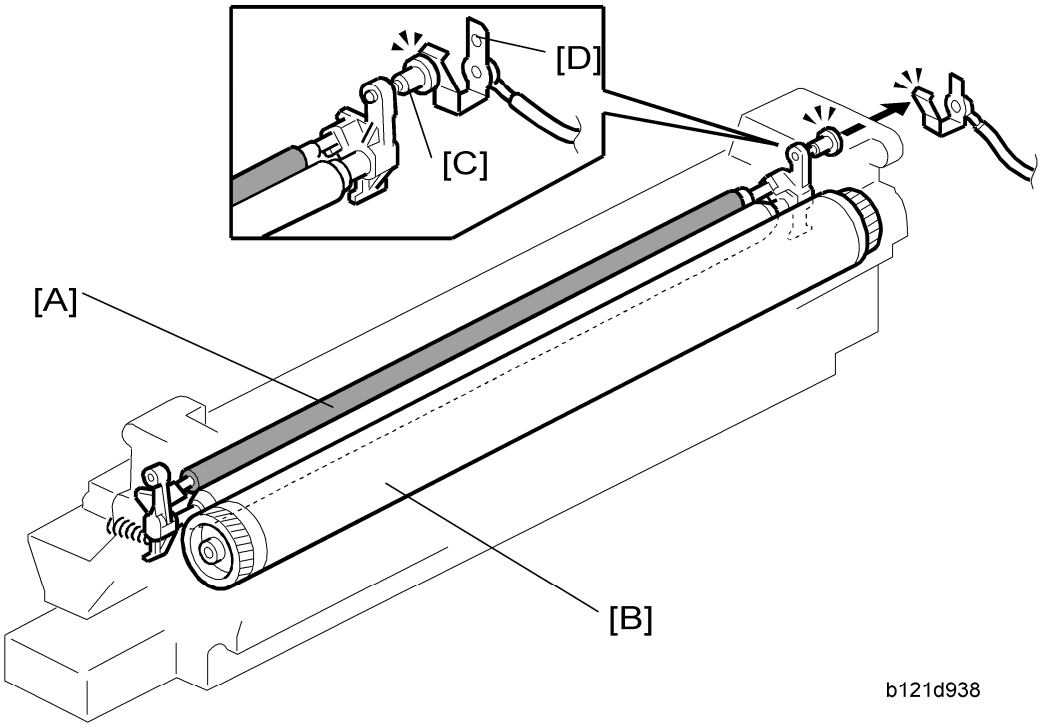
6.7.2 DRIVE



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

6.8 DRUM CHARGE

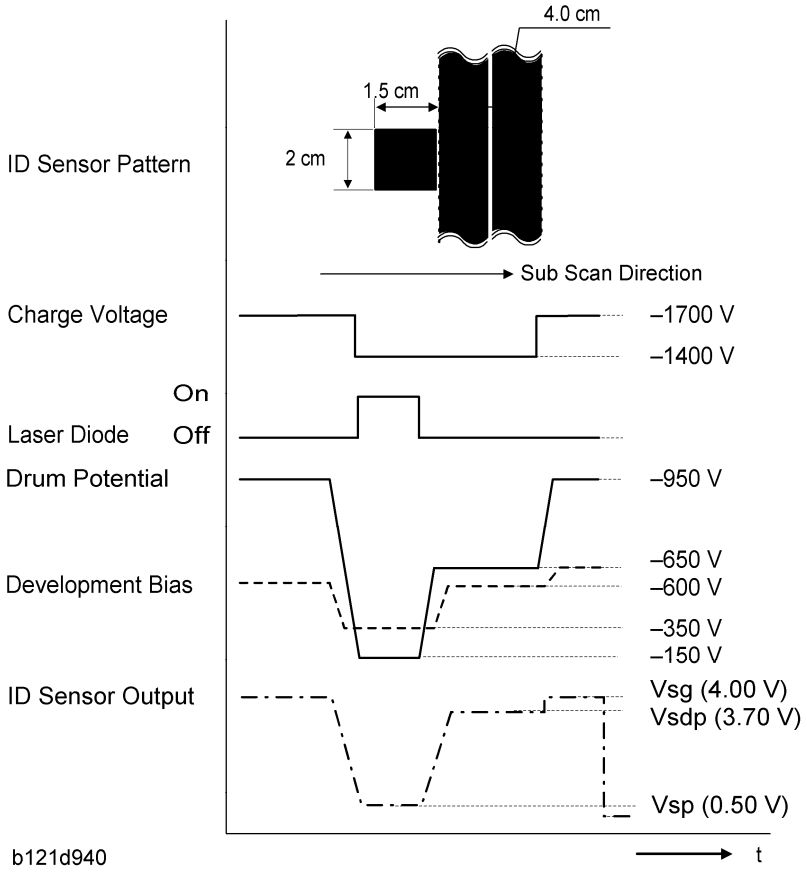
6.8.1 OVERVIEW



This copier uses a drum charge roller to charge the drum. The drum charge roller [A] always contacts the surface of the drum [B] to give it a negative charge of –950 V.
The high voltage supply board gives a negative charge of –1700 V to the drum charge roller through the screw [C] and terminal plate [D]. This voltage can be changed using SP 2001-1.

6.8.2 CHARGE ROLLER VOLTAGE CORRECTION

Correction for Environmental Conditions



With a drum charge roller system, the voltage transferred from roller to drum varies with the temperature and humidity around the drum charge roller. The higher the temperature or humidity is the higher the applied voltage required.

To compensate, the machine uses the ID sensor to measure the effects of current environmental conditions. For this measurement, the process control parameters are balanced so that any small change in drum potential caused by environmental effects is reflected in a change in the amount of toner transferred to the drum.

This measurement is made immediately after the ID sensor pattern for toner density control. Immediately after making ID sensor pattern [A], the charge roller voltage stays the same, but the development bias goes up to –600 V; as a result the drum potential is reduced to –650 V. The laser diode is not switched on, and the drum potential is now slightly higher than the development bias, so a very small amount of toner transfers to the drum. The ID sensor measures the density of this pattern [B], and the output voltage is known as Vsdp. This voltage is compared with Vsg (read from the bare drum at the same time).

Drum Charge

If the humidity drops, the drum potential goes up (to a higher negative 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 = Make the drum charge voltage less negative (smaller) by 50 V
- Vsdp/Vsg < 0.90 = Make the drum charge voltage more negative (larger) by 50 V

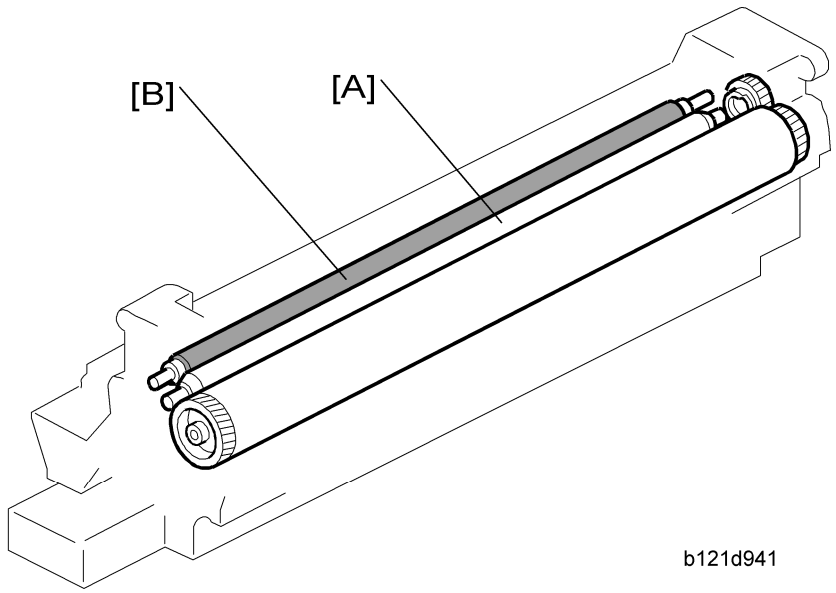
6.8.3 ID SENSOR PATTERN PRODUCTION TIMING

The ID sensor pattern is not made every page or every job.

It is only made in the following conditions:

- During warm-up at power on
- When the machine starts warming up from energy saver mode and the temperature is less than the target temperature as set with SP Mode.
- When the machine starts warming up from energy saver mode and the machine prints more than 100 prints after generating the p-pattern.

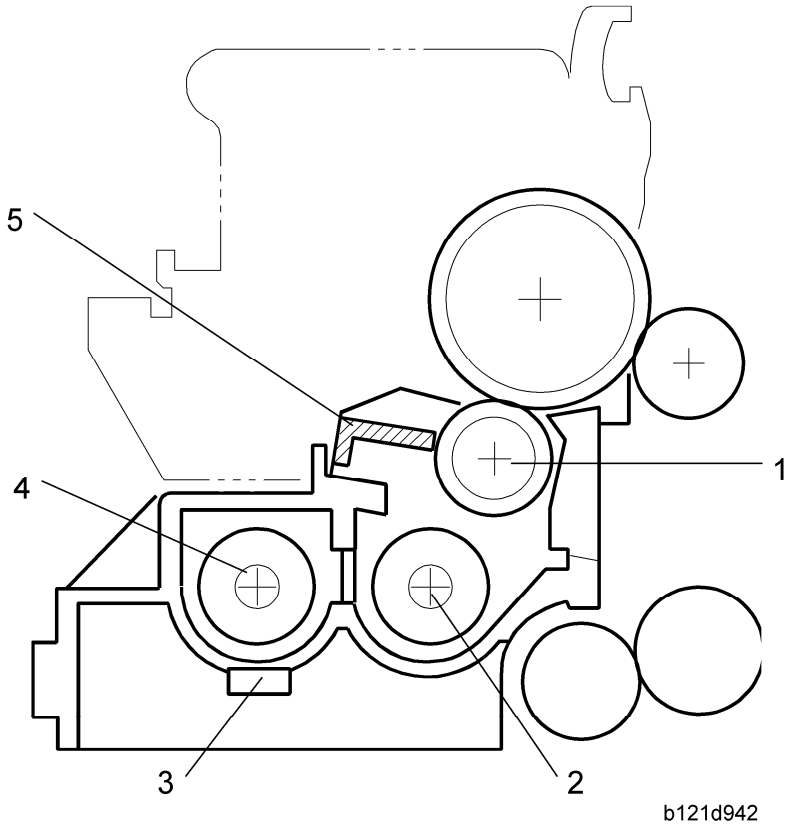
6.8.4 DRUM CHARGE ROLLER CLEANING



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

6.9 DEVELOPMENT

6.9.1 OVERVIEW

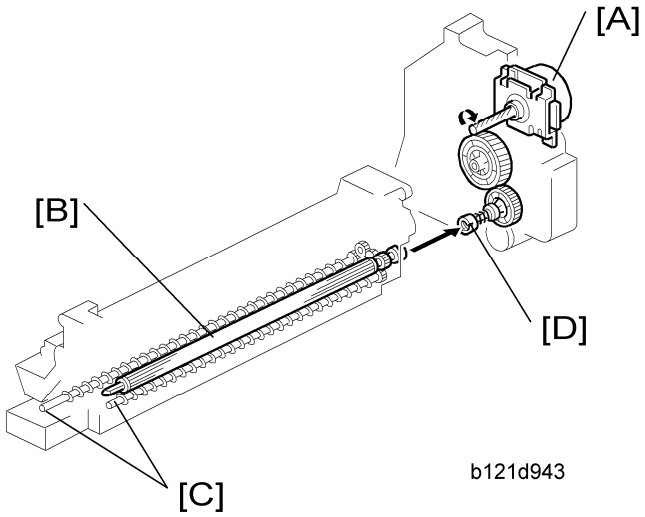


The development unit consists of the following parts.

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

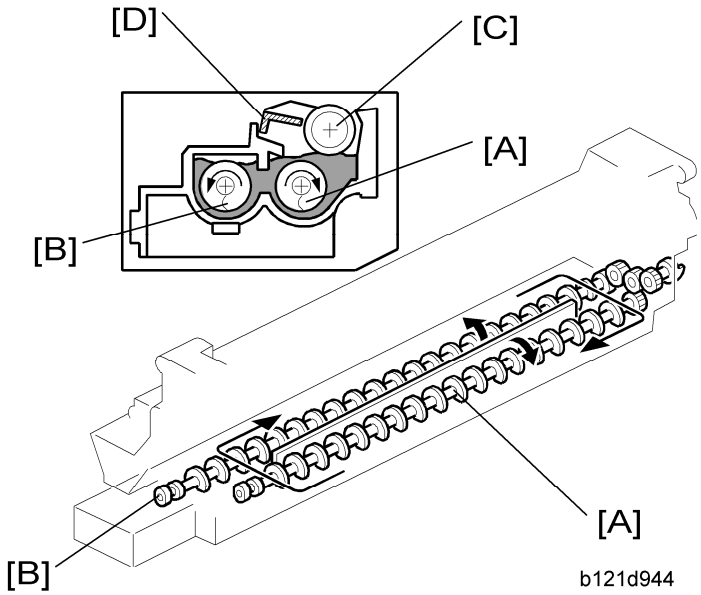
This machine uses a single-roller development system. Two mixing augers mix the developer. The toner density (TD) sensor and image density (ID) sensor (see the illustration in the PCU section) are used to control the image density on the copy.

6.9.2 DRIVE



The main motor [A] drives the development roller [B] and mixing augers [C] through a train of gears and the development drive shaft [D]. When the PCU is pushed in, the development drive shaft engages the development roller gear.
The development drive gears (except for the gears in the development unit) are helical gears. These gears are quieter than normal gears.

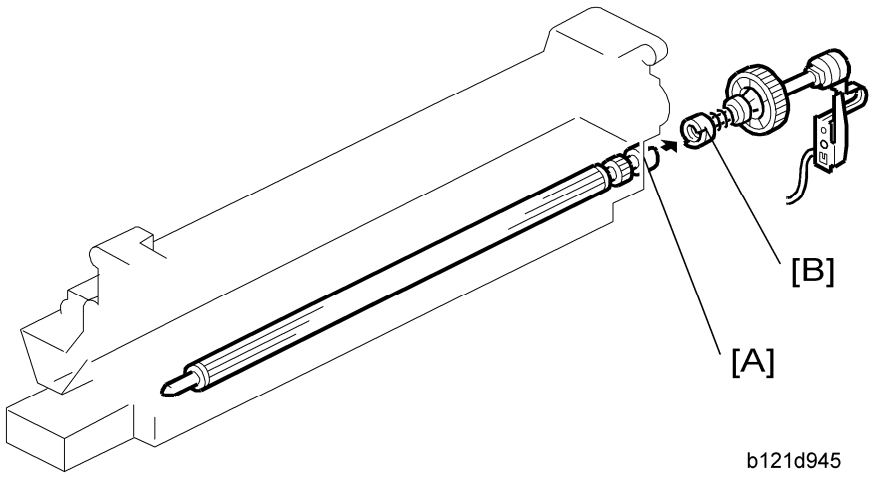
6.9.3 DEVELOPER MIXING



The two mixing augers, [A, B] 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



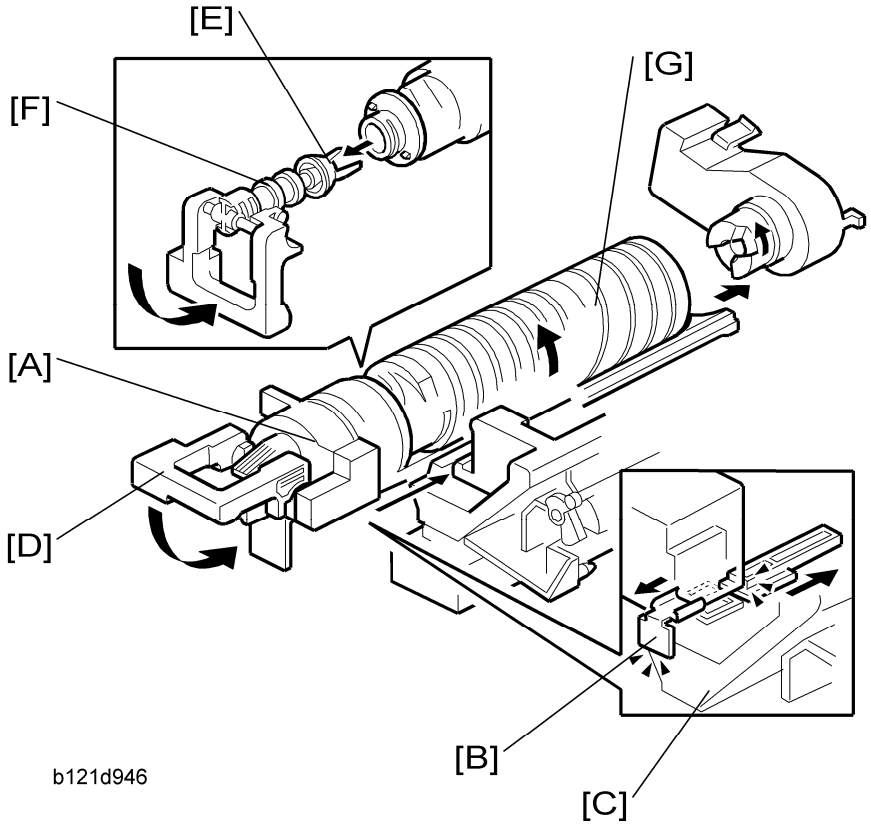
This machine uses a negative-positive development system, in which black areas of the latent image are at a low negative charge (about –154 ± 50 V) and white areas are at a high negative charge (about –950 V).

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 SP 2201-1.

6.9.5 TONER SUPPLY

Toner Bottle Replenishment Mechanism



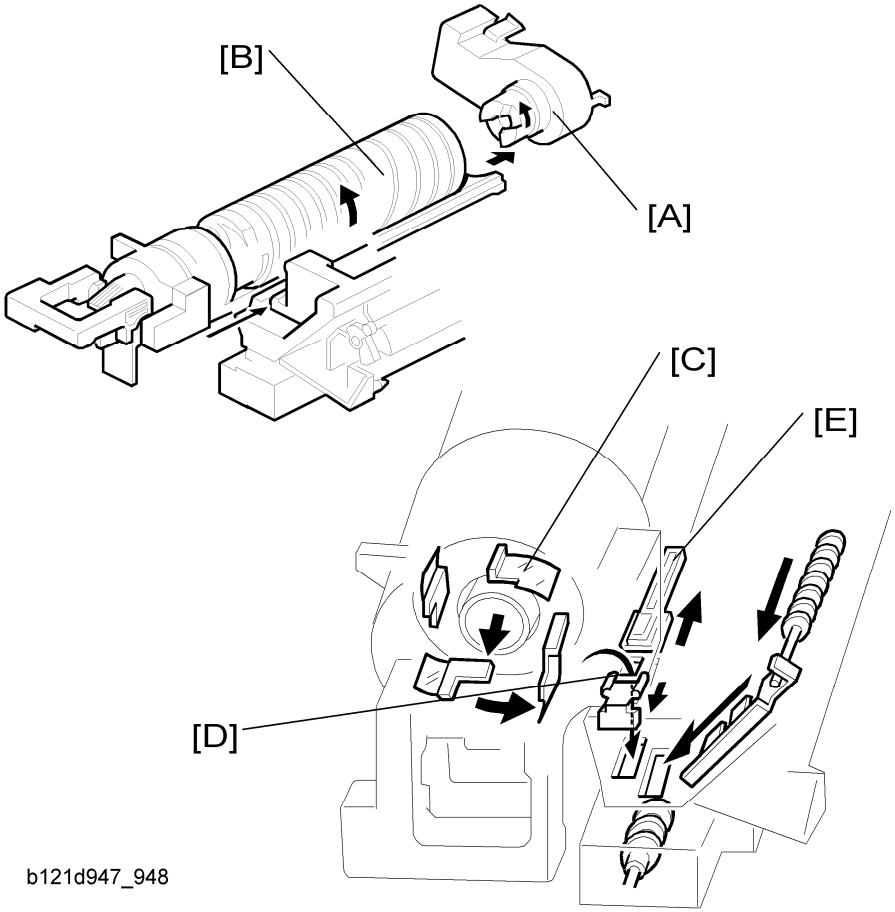
When a toner bottle is placed in the bottle holder unit [A] and the unit is pushed in completely, toner shutter [B] moves against the side [C] of the PCU. When the toner bottle holder lever [D] is put back in the original position, the cap [E] on the toner bottle is pulled away and kept in place by the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

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

To add a new toner bottle, first lift the toner bottle holder. When this is done, the chuck releases the toner bottle cap into its proper position to prevent toner from scattering.

Then, when the bottle holder unit is pulled out to add a new toner bottle, the toner shutter shuts to block the opening as a result of pressure from a spring.

6.9.6 TONER SUPPLY MECHANISM



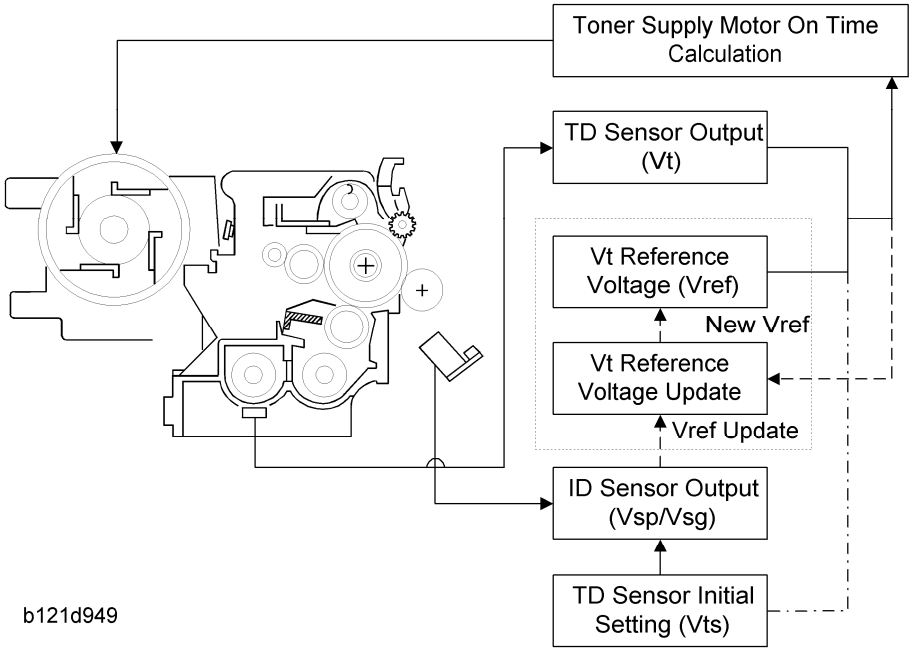
The toner supply motor [A] drives the toner bottle [B] and the mylar blades [C]. First, the toner falls down into the toner bottle holder. The toner supply mylar blades transfer the toner to the slit [D]. When the PCU is installed in the machine, the shutter [E] above the PCU is opened by the toner bottle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

6.9.7 TONER DENSITY CONTROL

Overview

There are four modes for controlling toner supply as shown in the following tables, which can be changed with by SP 3101. The factory setting is sensor control 1 mode.
Basically, the toner concentration in the developer is controlled using the standard TD sensor voltage (Vts), toner supply reference voltage (Vref), actual TD sensor output voltage (Vt), and ID sensor output data (Vsp/Vsg).

Development



The four-toner density control modes are as follows.

Sensor control 1

Mode	Sensor control 1 (SP 3101, “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 with 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

Sensor control 2

Mode	Sensor control 2 (SP 3101, “1”): For designer’s use only; do not use in the field
Toner supply decision	Compare Vt with a reference voltage (Vts)
Toner control process	This toner control process is the same as sensor control 1 mode. However, the reference voltage used is always Vts.
Toner supply amount	Varies
Toner end detection	Performed

Fixed control 1

Mode	Fixed control 1 (SP 3101, “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 (SP 3104)
Toner end detection	Performed

Fixed control 2

Mode	Fixed control 2 (SP 3101, “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.

Development

Toner supply amount	Fixed (SP 3104)
Toner end detection	Not performed

Toner Density Sensor Initial Setting

The TD sensor initial setting (SP 3016: Developer Initialize) procedure must be done after replacing the developer. During TD sensor initial setting, the TD sensor is set so that the TD sensor output is the value of SP 3201 (default: 2.5 V). This value will be used as the standard reference voltage (Vts) of the TD sensor.

Toner Concentration Measurement

The toner concentration in the developer is detected once every copy cycle. The sensor output voltage (Vt) during the detection cycle is compared with the standard reference voltage (Vts) or the toner supply reference voltage (Vref).

Vsp/Vsg Detection

The ID sensor detects the following voltages.

- Vsg: The ID sensor output when checking the drum surface
- Vsp: The ID sensor output when checking the ID sensor pattern

In this way, the reflectivity of both the drum surface and the pattern on the drum are checked, compensating for any variations in the reflectivity of the pattern on the drum or the reflectivity of the drum surface.

The ID sensor pattern is made on the drum by the charge roller and laser diode.

Vsp/Vsg is not detected every page or job; it is detected at the following times to decide Vref.

- During warm-up at power on

If the machine starts warming up when the fusing temperature is 30°C or less (default) after entering night mode or low power mode (SP 3350 specifies the temperature setting).

- Page count

If the number of outputs reaches the 150 pages (SP 3351 specifies this threshold). The outputs size more than letter size is counted two pages.

Toner Supply Reference Voltage (Vref) Determination

The toner supply reference voltage (Vref) is used for toner supply determination (see below). Vref is determined using the following data:

- ID sensor output (Vsp/Vsg)
- (Vts or the current Vref) - Vt

Toner Supply Determination

The reference voltage (Vts or Vref) is the threshold voltage for determining whether or not to supply toner. If Vt becomes greater than the reference voltage, the machine supplies additional toner.

This can be checked using SP 3011.

Toner Supply Motor On Time Determinations

For fixed control mode, the toner supply motor on time is specified by the setting of SP 3104, and does not vary. The default setting is 200 ms for each copy. The toner supply motor on time for each value of SP 3104 is as follows.

Value of SP3-104	Motor On Time (t = 200 ms)
0	T
1	2t
2	4t
3	8t
4	12t
5	16t
6	Continuously
7	Not supplied

For sensor control modes 1 and 2, the toner supply motor on time is decided by the following factors.

- Vt
- Vref or Vts
- TD sensor sensitivity (coefficient: S, value is 0.4)

There are seven levels for toner supply motor on time as shown below.

Level	Decision	Motor On Time (seconds)
1	(Vts or Vref) < Vt ≤ (Vts or Vref) + S/16	t (0.4)

Development

2	(Vts or Vref) < Vt ≤ (Vts or Vref) + S/8	t x 2 (0.8)
3	(Vts or Vref) < Vt ≤ (Vts or Vref) + S/4	t x 4 (1.6)
4	(Vts or Vref) < Vt ≤ (Vts or Vref) + S/2	t x 8 (3.2)
5	(Vts or Vref) < Vt ≤ (Vts or Vref) + 4S/5	t x 16 (6.4)
6	Vt ≥ (Vts or Vref) + 4S/16 (near-end)	T (30); see note 3
7	Vt ≥ (Vts or Vref) + S (toner end)	T (30); see note 3

Note

- The value of “t” can be changed using SP 3102 (default: 0.4 second)
- The value of “T” can be changed using SP 3103 (default: 30 seconds)
- T (30) means that toner is supplied intermittently in a 1/3 duty cycle (1 s on, 2 s off) for 30 seconds

6.9.8 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 (979) is applied
- Vsp ≥ 2.5V
- (Vsg – Vsp) < 1.0V
- Vt ≥ 4.5V or Vt ≤ 0.2V

The above ID sensor values can be checked using SP 3310.

When this is detected, the machine changes the value of Vref to 2.5 V then does the toner density control process (in a similar way to sensor control mode 2).

No SC code is generated if the ID sensor is defective.

TD Sensor

The TD sensor output is checked every copy. If the readings from the TD sensor become abnormal, the machine changes the toner density control mode to fixed supply mode 2, and the toner supply amount per page is always 200 ms, regardless of the value of SP 3104. If the machine detects the TD sensor error condition 10 times consecutively, an SC code is generated (SC390) and the machine must be repaired.

6.9.9 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 3103 (see the previous page).

Toner Near End Recovery

If the machine detects “Vt < (Vref or Vts) + 4S/5” twice consecutively in any of the following situations, the machine clears the toner near end condition.

- While in the toner recovery cycle (supplying toner on and off for 30 seconds) after the machine has detected a toner near end condition.
- During copying in the toner near end condition.
- If the front cover is opened and closed for more than 10 seconds while a toner near end condition exists.

Toner End Detection

There are two situations for entering the toner end condition.

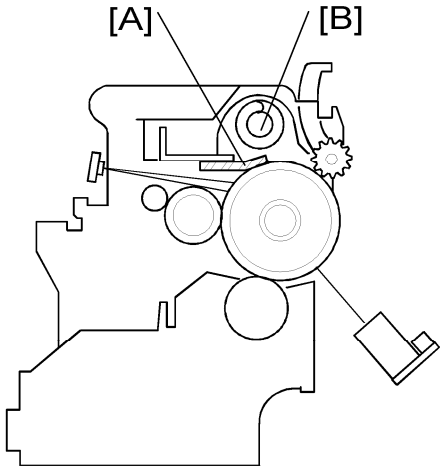
- When Vt is level 7 three times consecutively, the machine enters the toner end condition.
- When 50 copies have been made since entering the toner near end condition. The number of copies between toner near-end and toner end can be changed using SP 3106.

Toner End Recovery

While turning on the main switch, if the front cover is opened for 10 seconds or more and then closed while a Toner End condition exists (following toner bottle replacement), the machine clears the Toner End condition. The recovery procedure is the same as for toner near end. It takes about two minutes.

6.10 DRUM CLEANING AND TONER RECYCLING

6.10.1 DRUM CLEANING



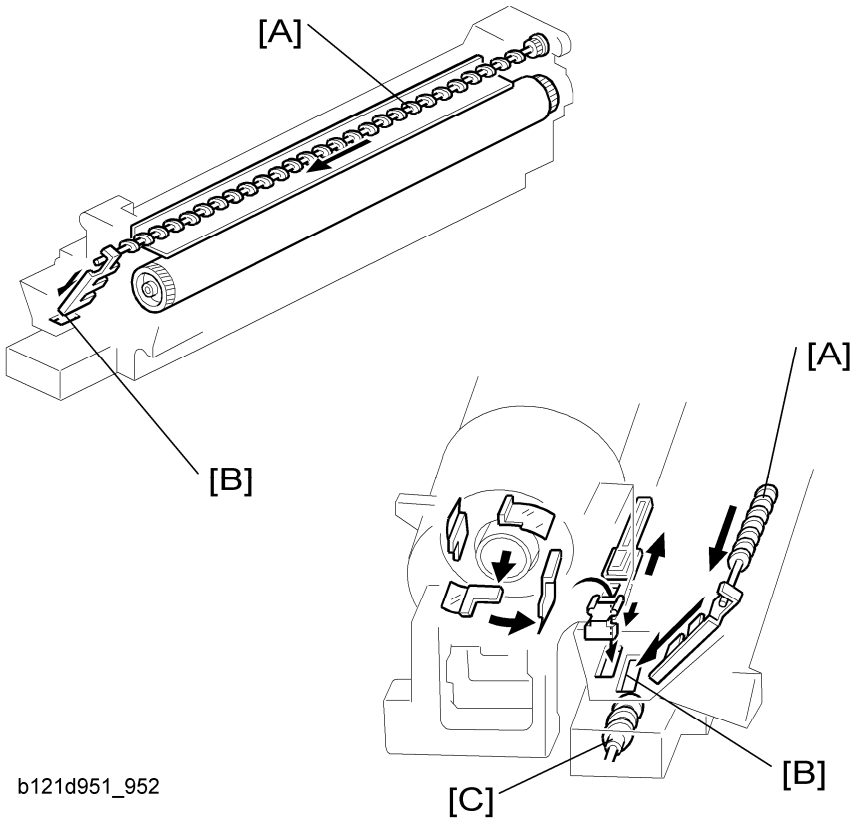
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The cleaning blade [A] removes any toner remaining on the drum after the image is transferred to the paper. This model uses a counter blade system.

The cleaning blade scrapes off toner remaining on the drum. When toner builds up in the cleaning unit, toner at the top of the pile is removed by the toner collection coil [B].

To remove the toner and other particles that are accumulated at the edge of the cleaning blade, the drum turns in reverse for about 5 mm at the end of every copy job.

6.10.2 TONER RECYCLING

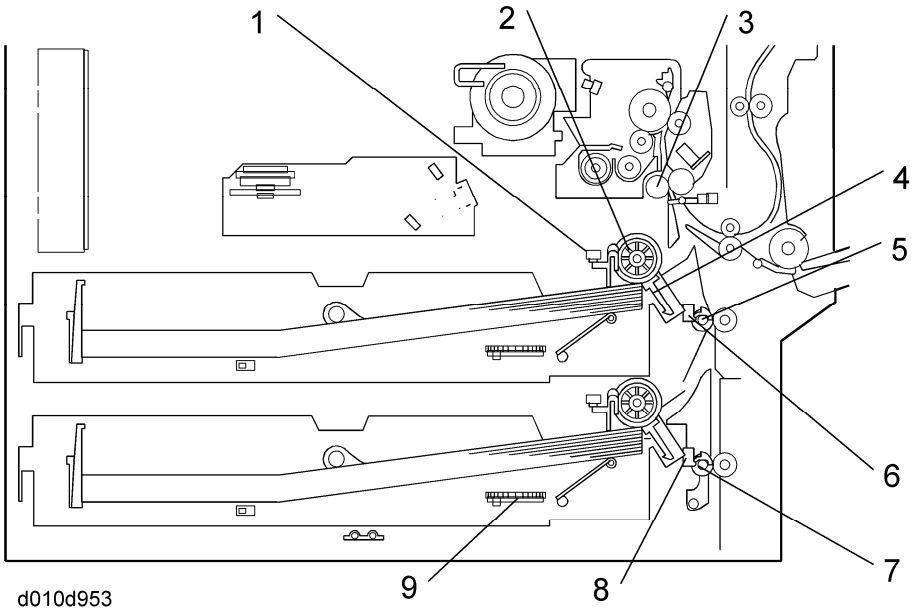


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Toner picked up by the toner collection coil [A], is transported to the opening [B] in the side of the PCU. Then, this toner falls into the development unit with new toner coming from the toner bottle and it is all mixed together by mixing auger 1 [C] and used again.

6.11 PAPER FEED

6.11.1 OVERVIEW



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

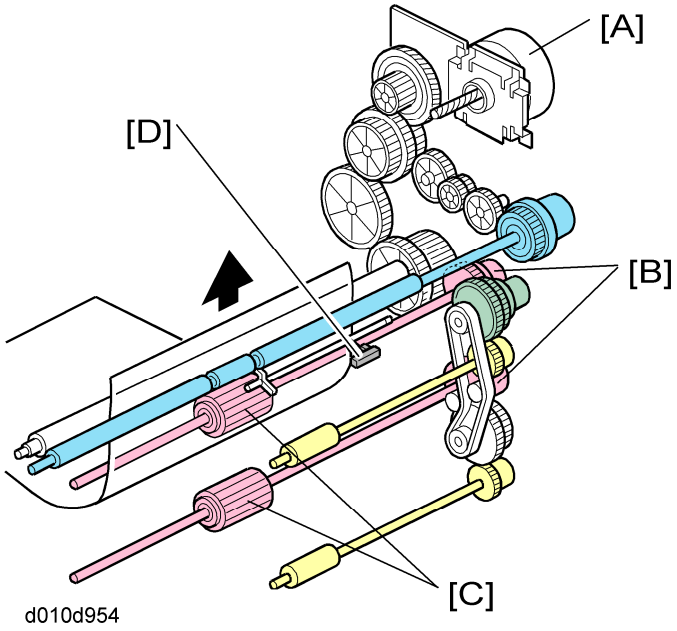
The paper tray feed stations use a friction pad system. To prevent paper from getting caught inside the machine when the tray is pulled out, the paper feed roller and shaft do not separate from the tray when the tray is pulled out.

The two relay sensors are used for paper jam detection. The lower one detects jams when paper is fed up from the optional paper feed unit.

The components of the paper feed station are as follows.

1. Paper End Sensor 2. Paper Feed Roller 3. Registration Roller 4. Friction Pad 5. Upper Relay Roller	6. Upper Relay Sensor 7. Lower Relay Roller 8. Lower Relay Sensor 9. Paper Size Switch

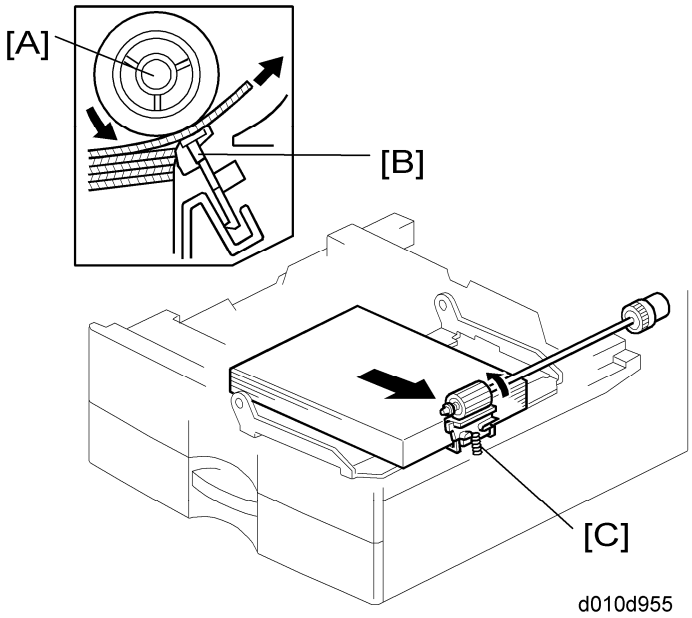
6.11.2 PAPER FEED DRIVE MECHANISM



The main motor [A] drives the pick-up and feed mechanism of both the first and second paper trays. The paper feed clutches [B] transfer drive from this motor to the paper feed rollers [C].

When the paper feed clutch turns on, the feed roller starts to feed the paper. The paper feed clutch stays on until shortly after the registration sensor [D] has been activated.

6.11.3 PAPER FEED AND SEPARATION MECHANISM

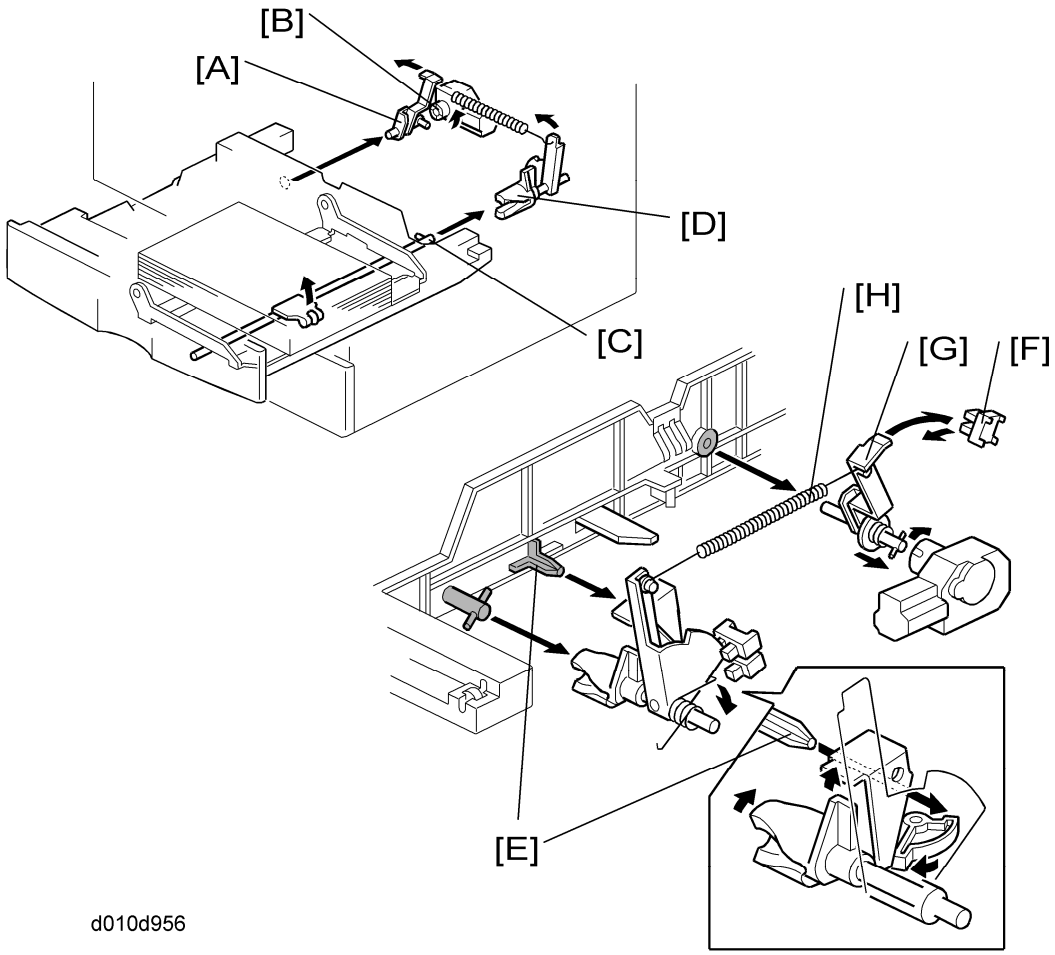


The paper feed roller [A] drives the top sheet of paper from the paper tray to the copier. The

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 [H] pulls the bottom plate pressure lever, and this lifts the tray bottom plate.

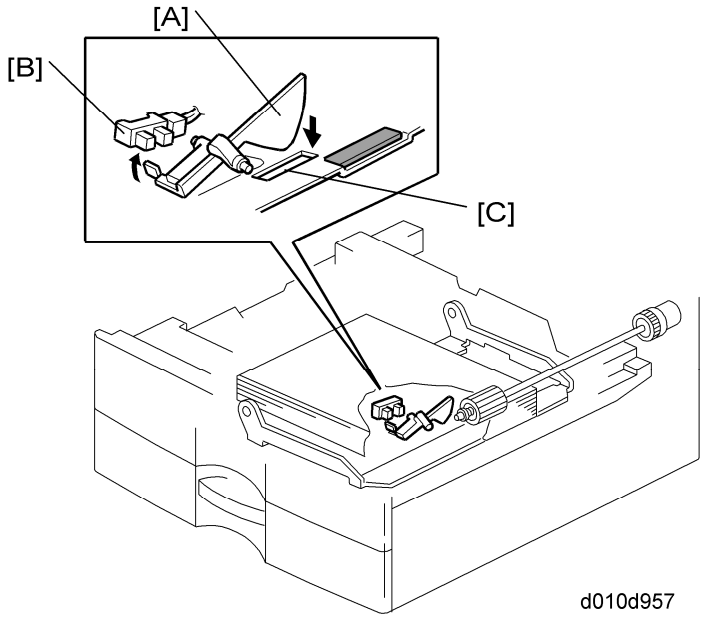
When the top of the stack touches the feed roller, the motor cannot pull up the plate any more, so it pulls the actuator [G] into the lift sensor [F]. Then the lift motor stops.

The pressure of the feed roller on the paper is now too high, so the lift motor reverses a

certain time, depending on the paper size, to reduce this pressure. For smaller paper, it reverses the larger amount to reduce the pressure more.

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 to return the bottom plate pressure lever coupling [D] to the original position.

6.11.5 PAPER END DETECTION

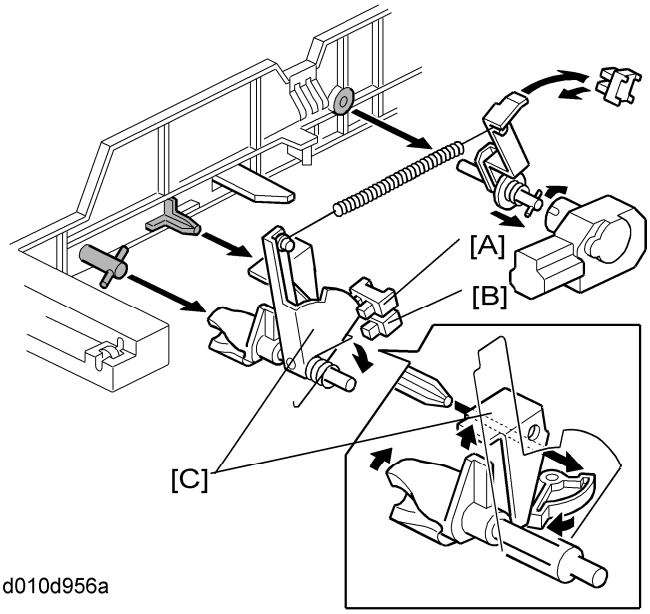


If there is any paper in the paper tray, the paper stack lifts the feeler, the paper end sensor [A] is deactivated.

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

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

6.11.6 PAPER 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.

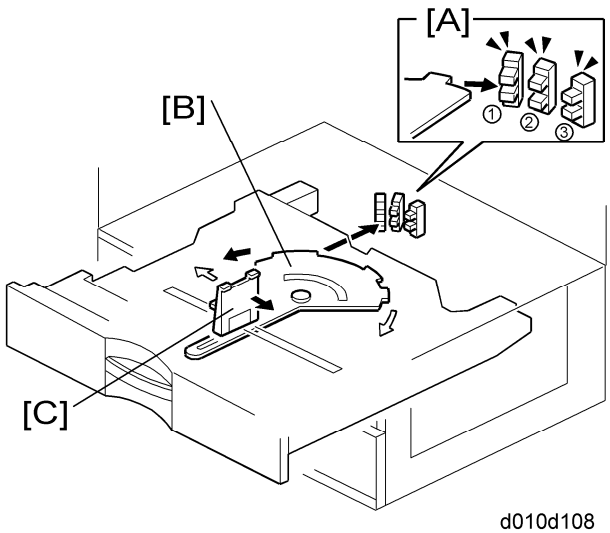
Amount of Paper	Paper Height Sensor 1 [A]	Paper Height Sensor 2 [B]
Near End	OFF	ON
30%	ON	ON
70%	ON	OFF
100%	OFF	OFF

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.

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 PAPER SIZE DETECTION

Paper Tray



There are three paper size sensors [A] (SN1, SN2 and SN3) on the paper tray unit. Each paper tray has its own actuator [B], with a unique combination of notches. This actuator is moved when the paper end fence [C] is adjusted for the installed paper. To determine which size has been installed, the CPU reads which paper size sensors the actuator has switched off. Refer to the size detection lists as shown below.

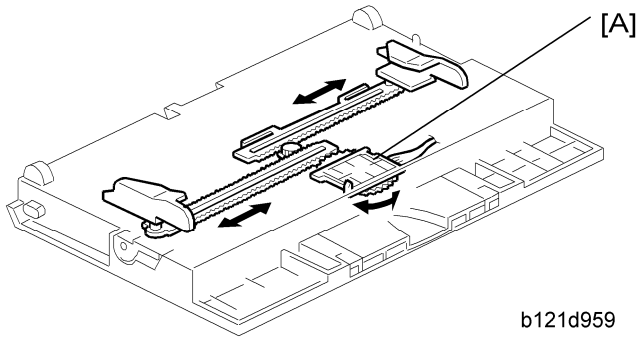
EU/ AISA Size		SN1	SN2	SN3	SP Setting
A6 SEF	148 x 105	OFF	ON	OFF	A5 LEF
B5 LEF	182 x 257	ON	OFF	ON	B6 SEF/ Exe LEF
A4 LEF	210 x 297	ON	ON	OFF	LT LEF/ A5 SEF/ HLT SEF
B5 SEF	257 x 182	OFF	OFF	ON	

Paper Feed

LT SEF	279 x 216	OFF	OFF	OFF	
A4 SEF	297 x 210	ON	OFF	OFF	LG SEF
B4 SEF	364 x 257	ON	ON	ON	
A3 SEF	420 x 297	OFF	ON	ON	DLT SEF
NA Size		**SN1**	**SN2**	**SN3**	**SP Setting**
A6 SEF	148 x 105	OFF	ON	OFF	A5 LEF
B5 LEF	182 x 257	ON	OFF	ON	Exe LEF/ B6 SEF
LT LEF	210 x 297	ON	ON	OFF	A4 LEF/ A5 SEF/ HLT SEF
B5 SEF	257 x 182	OFF	OFF	ON	
LT SEF	279 x 216	OFF	OFF	OFF	
A4 SEF	297 x 210	ON	OFF	OFF	
LG SEF	364 x 257	ON	ON	ON	
DLT SEF	420 x 297	OFF	ON	ON	A3 SEF

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.

By-pass Tray



The by-pass feed paper size switch [A] monitors the paper width. The side fence is connected to the terminal plate gear. When the side fences move to match the paper width, the circular terminal plate rotates over the wiring patterns on the rectangular part of the

paper size switch. The patterns for each paper width in the paper size switch are unique.

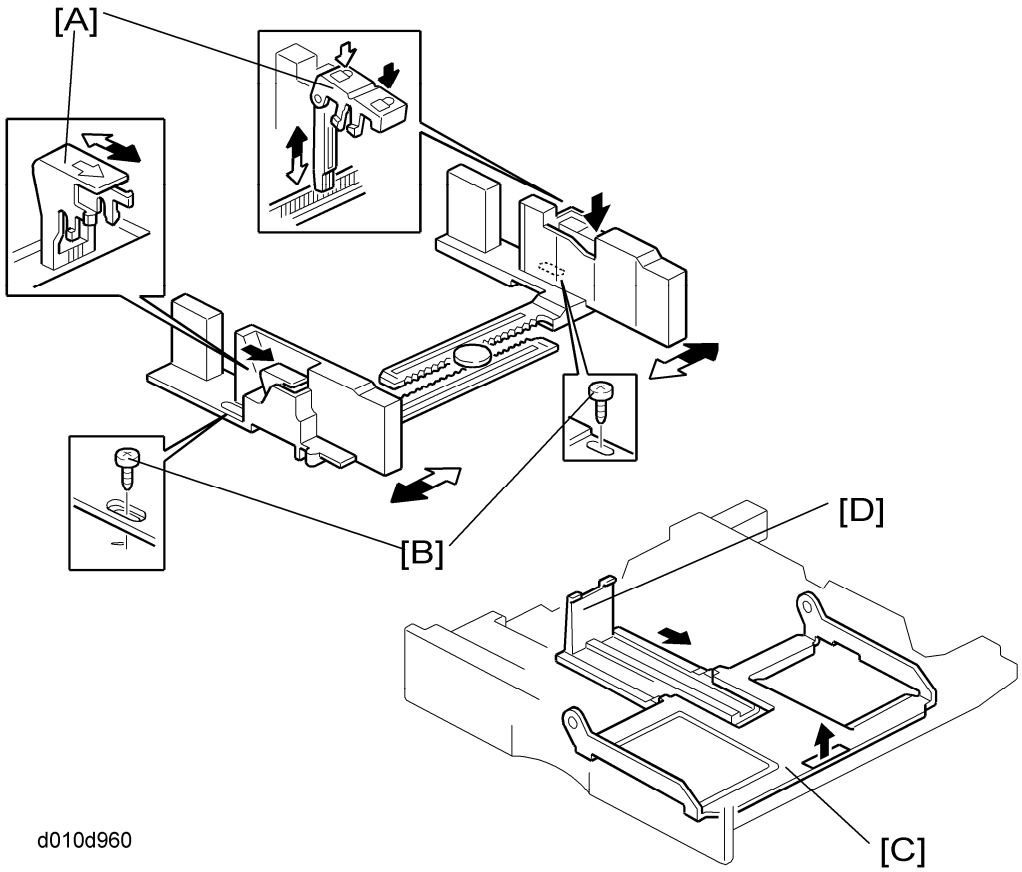
North America

CN No. (BICU)	11" x 17"	$8^1/_2$" x 14"	$5^1/_2$" x $8^1/_2$"		
CN136-1	ON/OFF	OFF	OFF	OFF	OFF
CN136-2	OFF	OFF	OFF	ON	OFF
CN136-3 (GND)	OFF	OFF	OFF	OFF	OFF
CN136-4	OFF	ON	OFF	OFF	ON
CN136-5	ON	ON	OFF	OFF	OFF

Europe/Asia

CN No. (BICU)	A3	A4 SEF	8" x 13"	A5 SEF
CN136-1	ON/OFF	OFF	OFF	OFF
CN136-2	OFF	OFF	OFF	ON/OFF
CN136-3 (GND)	OFF	OFF	OFF	OFF
CN136-4	OFF	ON	ON	OFF
CN136-5	ON	ON	OFF	OFF

6.11.8 SIDE FENCES



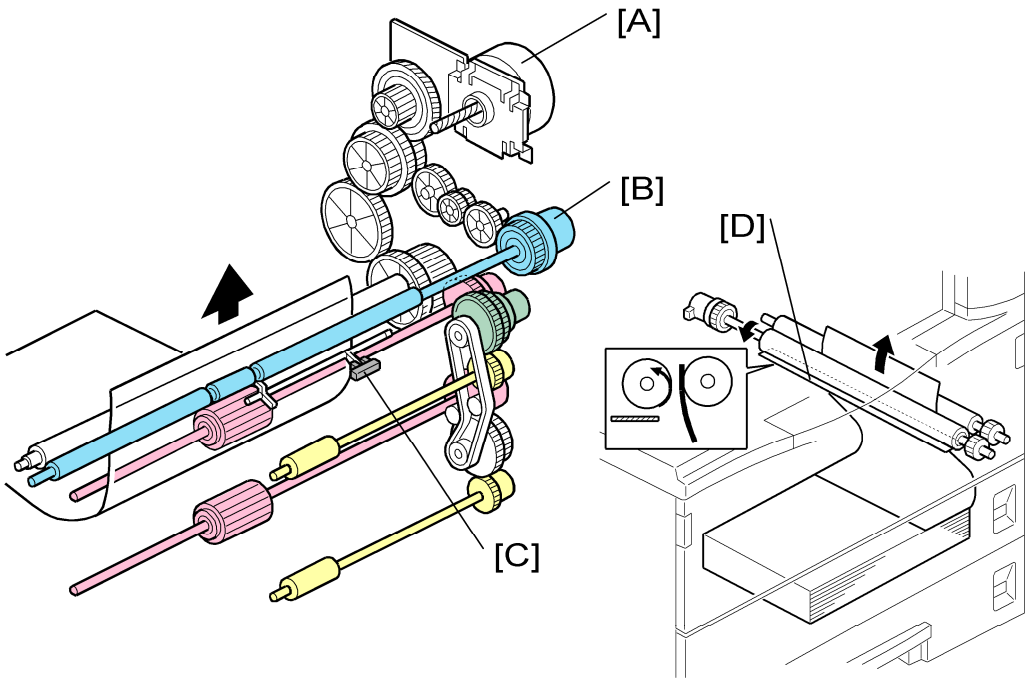
Side Fences

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.

6.11.9 PAPER REGISTRATION



d010d954a

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.

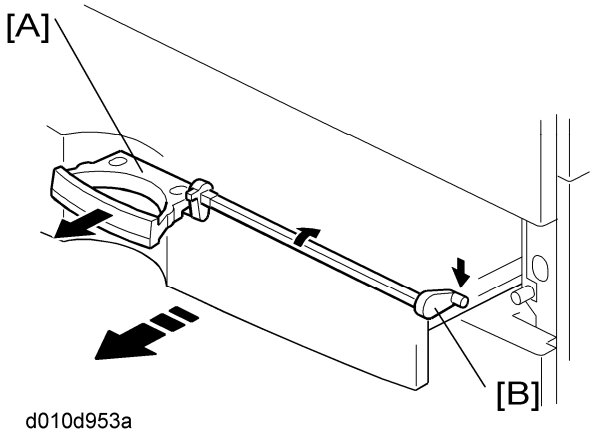
The amount of paper buckle at the registration roller to correct skew can be adjusted with SP 1003.

If jams frequently occur after registration, SP 1903 can be used to activate the relay clutch so that the relay roller assists the registration roller in feeding the paper along. When feeding from the by-pass tray, the by-pass feed clutch is activated, turning the by-pass feed roller. This feature may be needed when feeding thick paper, and cannot be used for the first paper feed tray.

6.11.10 TRAY LOCK MECHANISM

This machine has the tray lock mechanism.

Paper Feed

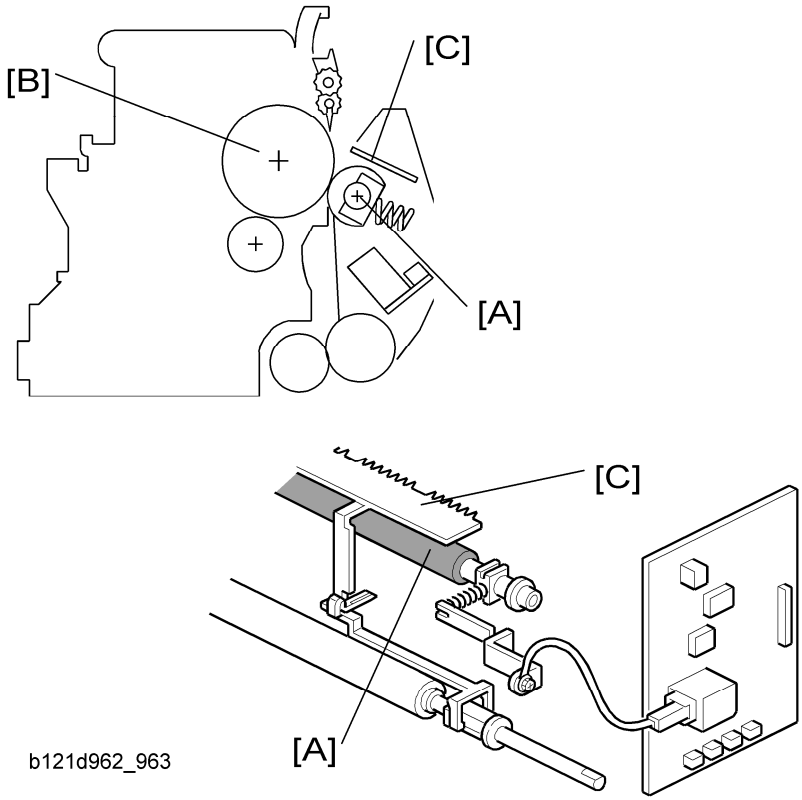


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The lock at the front prevents the tray from coming out of the machine during transporting or shipping. When you pull the handle [A], the lock lever [B] is lowered. As a result, you can pull out the tray.

6.12 IMAGE TRANSFER AND PAPER SEPARATION

6.12.1 OVERVIEW



The transfer roller [A] touches the surface of the drum [B]. The high voltage supply board supplies a positive current to the transfer roller, which attracts the toner from the drum onto the paper. The current depends on the paper width, paper type, and paper feed tray.
The curvature of the drum and the discharge plate [C] help the paper to separate from the drum. The discharge plate is biased (Simplex: -1800 V, Duplex: -1600 V).

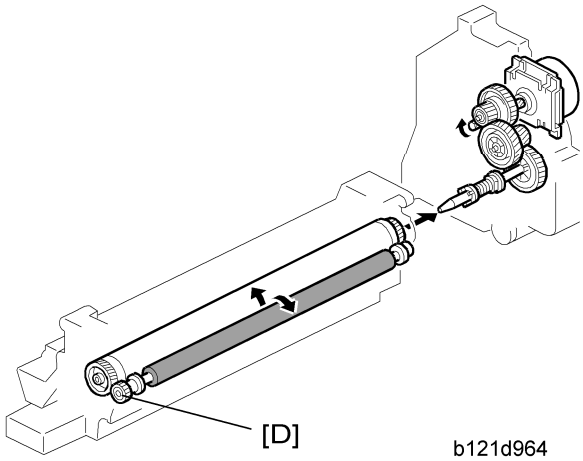


Image Transfer and Paper Separation

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

6.12.2 IMAGE TRANSFER CURRENT TIMING

There are two transfer current levels: low and high. The image transfer procedure is as follows:

1. When the CPU receives the image writing start signal, the CPU instructs the high voltage supply board to supply +10 microamperes (low transfer current level) to the roller. This prevents any positively charged toner on the drum surface from transferring to the transfer roller.
2. At a certain time after the low transfer current has been supplied to the roller, high transfer current is applied to the roller to transfer the toner to the paper (see the table below).
3. After the trailing edge of the paper has passed through the roller, transfer current turns off. In multiple copy mode, the transfer current shifts again to the low transfer current.

The high transfer current levels (default) are as shown in the following table. With SP 2301, the high transfer current level used for the paper feed trays, duplex tray, by-pass tray, and cleaning can be adjusted.

	By-pass Tray (Thick/OHP)	Paper Tray/ By-pass Tray (Normal)	By-pass Tray (Special/ Envelope)	Duplex (1st Side)	Duplex (2nd Side)
A3/A4 LEF	11 μA	12 μA	13 μA	12 μA	17 μA
DLT	12 μA	18 μA	15 μA	18 μA	17 μA
B4 SEF	12 μA	12 μA	15 μA	12 μA	18 μA
LT SEF	17 μA	17 μA	15 μA	17 μA	24 μA
A4 SEF	21 μA	15 μA	28 μA	15 μA	24 μA
B5 SEF	22 μA	19 μA	28 μA	19 μA	22 μA
A5 SEF	22 μA	19 μA	28 μA	19 μA	28 μA
HLT SEF	22 μA	19 μA	28 μA	—	—
B6 SEF	22 μA	19 μA	28 μA	—	—

	By-pass Tray (Thick/OHP)	Paper Tray/ By-pass Tray (Normal)	By-pass Tray (Special/ Envelope)	Duplex (1st Side)	Duplex (2nd Side)
A6 SEF	22 μA	19 μA	34 μA	—	—
Post card/ Envelope	22 μA	19 μA	34 μA	—	—

Be careful when increasing the transfer current. This may cause a ghosting effect, in which part of the image at the top of the page is repeated lower down the page at a lower density. In the worst case, it may also damage the OPC drum.

6.12.3 TRANSFER ROLLER CLEANING

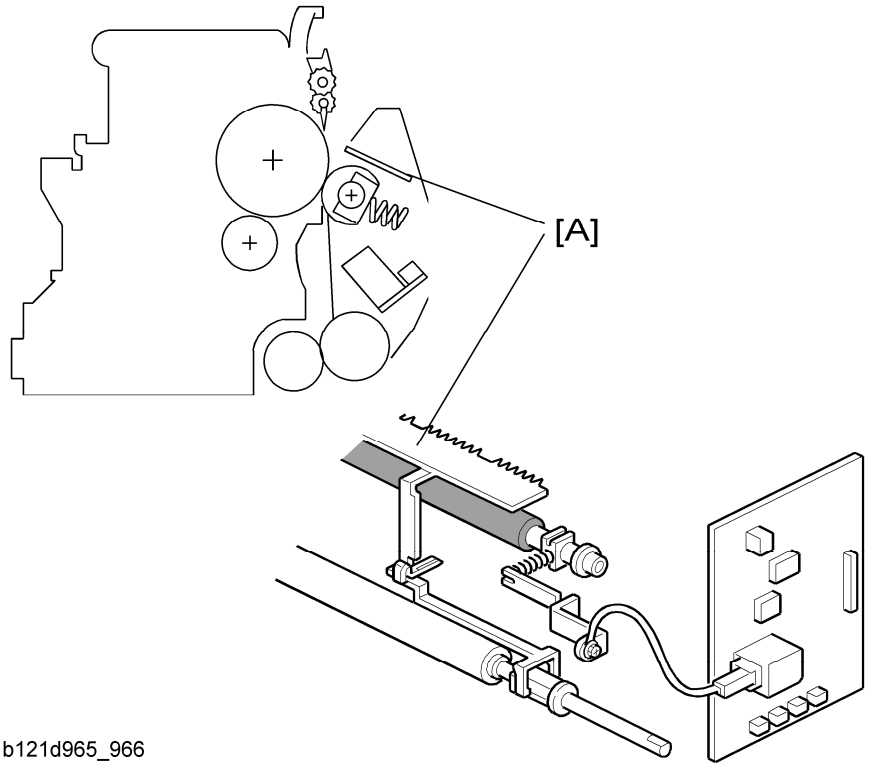
If the paper size is smaller than the image, or if a paper jam occurs during printing, toner may be transferred to the roller surface. To prevent the toner from transferring to the back side of the printouts, the transfer roller requires cleaning before the next printing run. During transfer roller cleaning, the high voltage supply unit supplies a negative cleaning voltage (about –1 kV) to the transfer roller. Any negatively charged toner on the transfer roller is then transferred back to the drum. Then a positive cleaning current (+10 microamperes) 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 SP 2311; note that the default setting is off).
- Just after the power is switched on.
- After a copy jam has been cleared.
- After 10 or more sheets of paper have been copied and the copy job has finished.

Also, the transfer roller cleaning current can be adjusted using SP 2301-4.

6.12.4 PAPER SEPARATION MECHANISM

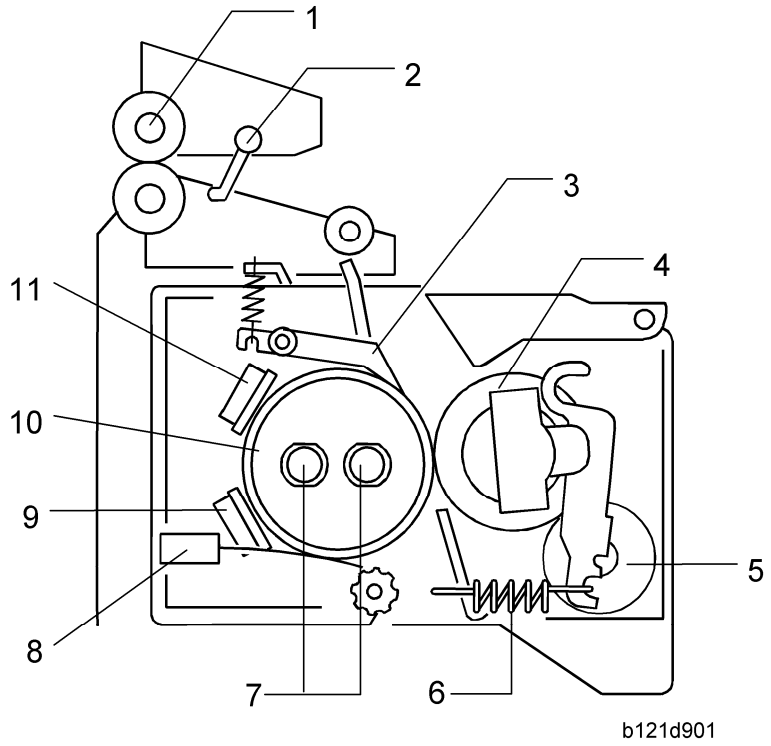


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The discharge plate [A] and the drum curvature of the drum help the paper to separate away from the drum. The discharge plate is biased (Simplex: -1800 V, Duplex: -1600 V).

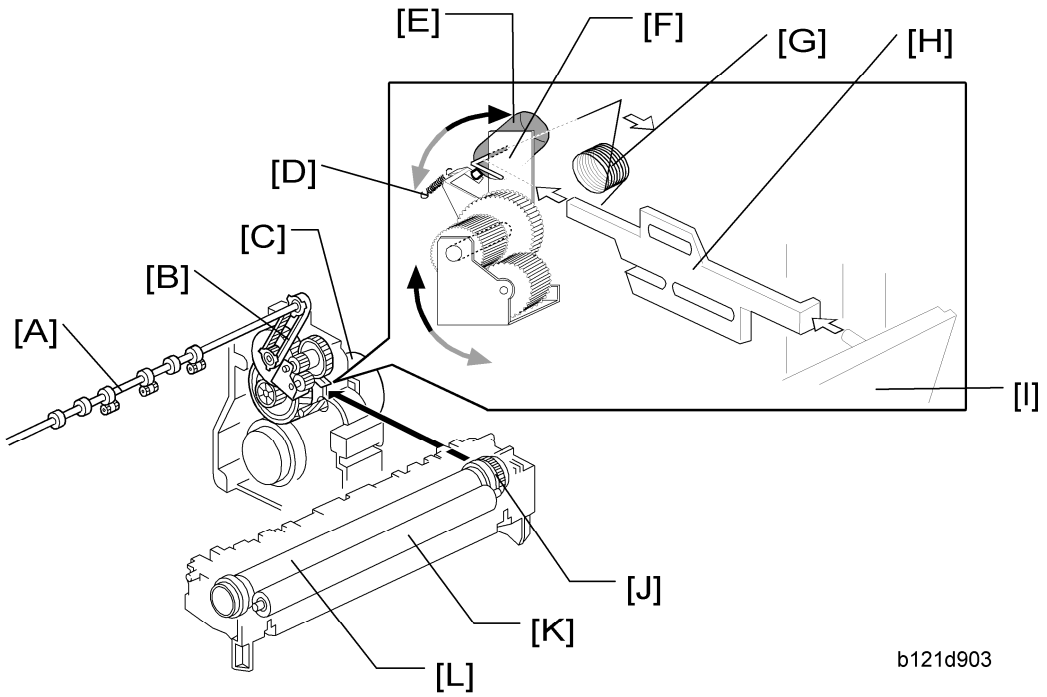
6.13 IMAGE FUSING AND PAPER EXIT

6.13.1 OVERVIEW



1. Paper exit roller 2. Exit sensor 3. Hot roller strippers 4. Pressure roller 5. Cleaning roller 6. Pressure spring	7. Fusing lamps 8. Thermistor 9. Thermostat 10. Hot roller 11. Thermostat

6.13.2 FUSING UNIT DRIVE AND RELEASE MECHANISM



Fusing Unit Drive

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

Drive Release Mechanism

When the right door [I] is open, the spring [G] pushes the top end of the gear holder [F] to the right. The drive gear is released from the fusing-unit drive gear [J]. When you close the right door, the mechanical link [H] pushes the spring [G]. The gear holder turns counterclockwise by the force of another spring [D], and engages with the fusing-unit drive gear.

Contact/Release Control

The drive power is not transmitted to the fusing unit during warming up when the fusing temperature (at the start) is 18°C or higher. The drive power is transmitted when the fusing temperature is less than 18°C. This contact/release control is based on the following conditions.

Fusing Temp.	Contact/Release
18°C or higher	Release
Less than 18°C	Contact

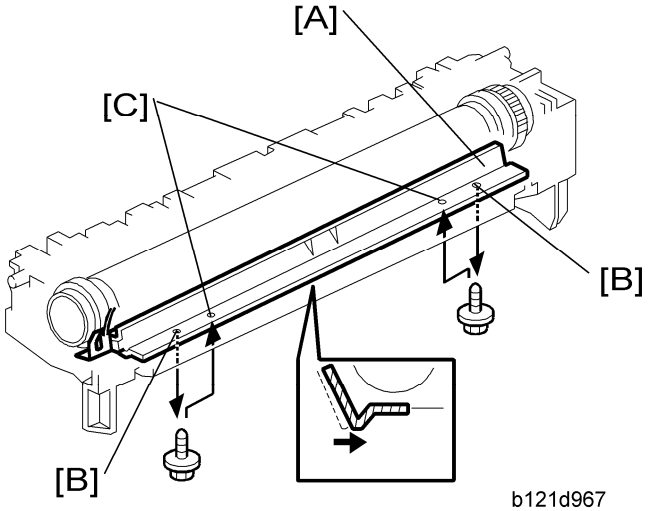
The hot roller [L] takes a shorter time to become hot enough if it is not turning during warming up. When, however, the fusing temperature (at the start) is low, the temperature of the hot-roller surface may become uneven.
You can disable this control (SP1103-1).

Drive Release Solenoid

Solenoid	Drive gear
Off	Engaged
On	Released

The fusing drive release solenoid [E] is on the rear end of the gear holder. When the solenoid is off, the spring [D] pulls the gear holder, and the drive gear engages with the fusing unit drive gear. When the solenoid is on, it pulls the top end of the gear holder to the right, and the gear holder turns clockwise. As a result, the drive gear is released from the fusing unit drive gear.
The release solenoid comes on when you turn on the main switch if the fusing temperature is 18°C or higher. The solenoid releases the drive gear from the fusing unit drive gear. The fusing lamps heat the hot roller [L] more effectively since the heat is not conducted to the pressure roller [K]. When the hot roller becomes hot enough, the release solenoid turns off, letting the drive gear engage with the fusing unit drive gear.

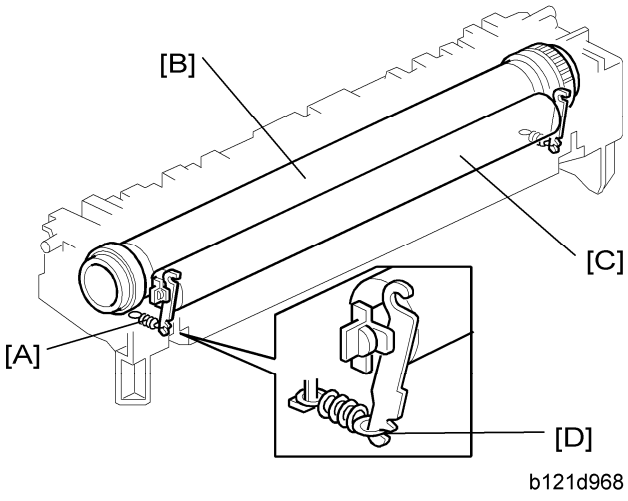
6.13.3 FUSING ENTRANCE GUIDE SHIFT



The entrance guide [A] is adjustable for paper thickness to prevent creasing. The outer screw holes [B] on each side are used as the default setting.

If creasing occurs frequently in the fusing unit, adjust the entrance guide to the right, by securing it with the inner holes [C]. This allows more direct access to the gap between the hot roller and the pressure roller.

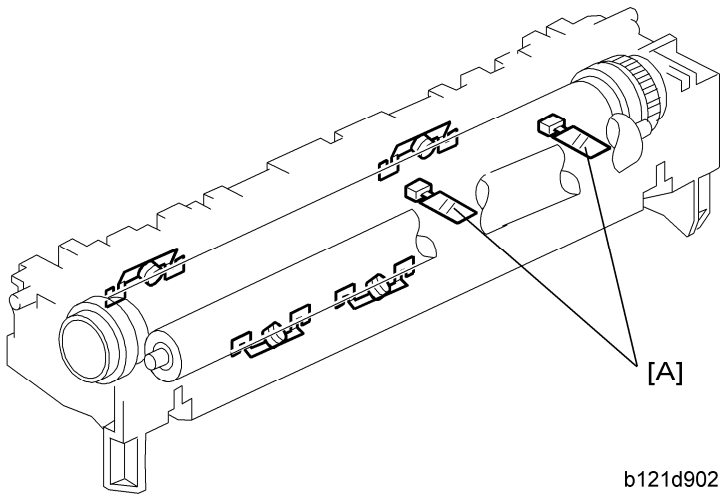
6.13.4 PRESSURE ROLLER



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 end [D] as the default setting.

6.13.5 FUSING TEMPERATURE CONTROL

Overview



There are two fusing lamps (not identical), two thermistors, and four thermostats.

The fusing temperature is controlled using the thermistors [A].

The CPU checks the output from the fusing thermistor once every 1.5 seconds. The CPU decides how long the lamps must be switched on during the next 1.5 seconds by comparing the following temperatures:

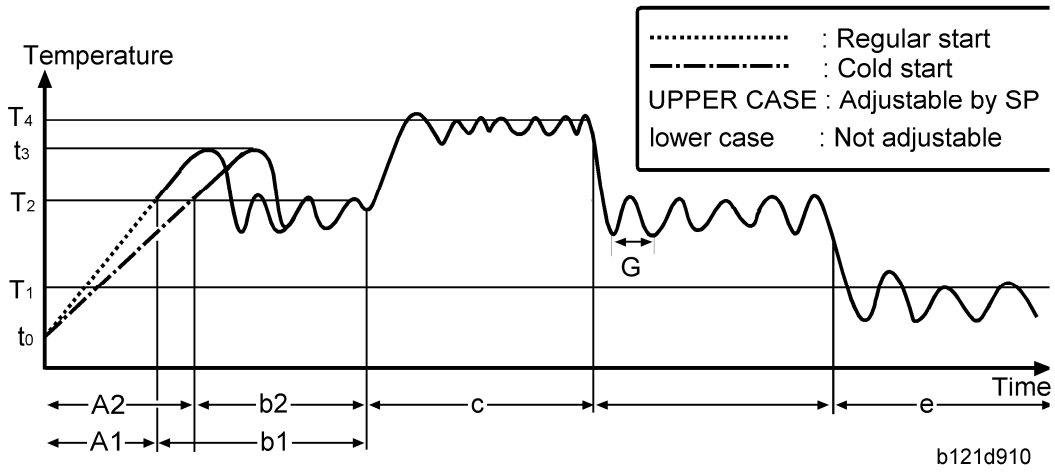
- The center thermistor temperature and the target center temperature
- The end thermistor temperature and the target end temperature

The fusing lamp works to maintain a target fusing temperature of 170°C during copying.

Temperature Control

According to the operation mode, the fusing temperature is controlled. The diagram illustrates the transition of fusing temperature. After you turn the main switch on, the fusing temperature rises from the room temperature (t0) to one of the specified temperatures. You can adjust some of the temperatures.

Image Fusing and Paper Exit



A1: Regular Start Mode/A2: Cold Start Mode (SP 1107-1, -2)

Turning the fusing lamp on and off may affect the voltage of the power source in the room, causing the fluorescent lights in the room to flicker. To lighten this problem, you can reduce the checking repetition to 20 times.

When machine initialization ends, the fusing temperature is set to one of the following temperatures:

- The Standby Temperature (T2: SP 1105-3, -4) when there is no print job.
- The First Print Temperature when the copier has received a print request during machine initialization.
- The First Print Temperature (SP 1105-13, -14) when the temperature inside the machine is 18°C or less.
- The First Multiple Print Temperature (SP 1105-15, -16, -17) when the temperature inside the machine is 18°C or less.

You cannot directly adjust the First Print Temperature. This temperature is 10°C or 15°C higher (up to 185°C) than the Copying Temperature (☛ "**C: Copying Mod**").

C: Copying Mode

When the copier is making copies, the fusing temperature is set to one of the following temperatures:

- The Warm Up Temperature (SP 1105-1, -2) to output the first print after the Low Power Mode (☛ "**e: Low Power Mode**")
- The Copying Temperature (T4: SP 1105-5, -6) to output the second print (and after the second)

You can raise the Warm Up Temperature to make better the fusing quality of the first print. While the copier is adjusting the fusing temperature to the Warm Up Temperature, the message "Copy starts after warm up" is displayed.

c : Thick Paper Mode

When the machine is making copies on thick paper, the fusing temperature is set to the Thick Paper Temperature (SP 1105-9, -10). When thick paper reaches the registration sensor, the copier checks the fusing temperature, and executes one of the following processing:

- Stops feeding the thick paper (and keeps it at the registration sensor) and waits for the fusing temperature to reach the predefined temperature–the temperature 5°C lower than the Thick Paper Temperature. (The fusing temperature keeps rising until it reaches the Thick Paper Temperature while the thick paper travels from the registration sensor to the fusing unit.)
- Continues feeding paper and executes the print job if the fusing temperature is high enough.

b1/b2: Standby Mode

When the copier is not making copies, the fusing temperature is set to the Standby Temperature (T2: SP 1105-3, -4). You can adjust this temperature. However, if you have raised this temperature, the BICU may be unable to generate an SC code in the event of fusing lamp error.

While in the Standby Mode, the copier checks the fusing temperature every 1.5 seconds (G: SP 1108-1). Turning on and off the fusing lamp may affect the voltage of the power source (in the room), causing the fluorescent lights (in the room) to flicker. To lighten such trouble, you can adjust the control period. However, if you elongate this period (to two seconds or longer), the BICU may be unable to generate an SC code in the event of a fusing lamp error.

e: Low Power Mode

When the Energy Saver Timer (> System Settings > Timer Settings > Energy Saver Timer) expires, the fusing temperature is set to the Low Power Temperature (T1: SP 1105-7, -8).

6.13.6 OVERHEAT PROTECTION

This machine protects its hardware from overheat by three features. Normally, the first feature can fully protect the hardware. The second feature works as the fail-safe feature for the first one. The third feature works as the fail-safe feature for the second one.

First Feature:

If the fusing temperature reaches 230°C (or higher) and stays so for one second, the controller turns the fusing lamp off. In a case like this, SC543 or SC553 shows.

Second Feature:

If the fusing feature reaches 250°C, the controller cuts off the 24V line. (The fusing lamps

Image Fusing and Paper Exit

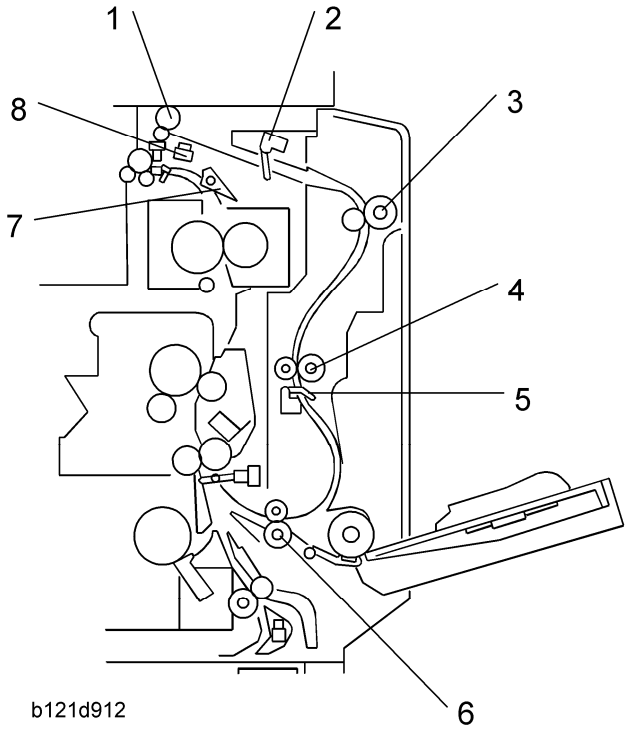
are on the 24V line.)

Third Feature:

Two thermostats are attached on each line of the two fusing lamps. (four thermostats in total). One of the two thermostats cuts the power supply to the fusing lamp at 179°C, and the other cuts the power supply at 180°C. (Note that the thermostat temperature is somewhat lower than the fusing temperature.)

6.14 DUPLEX UNIT

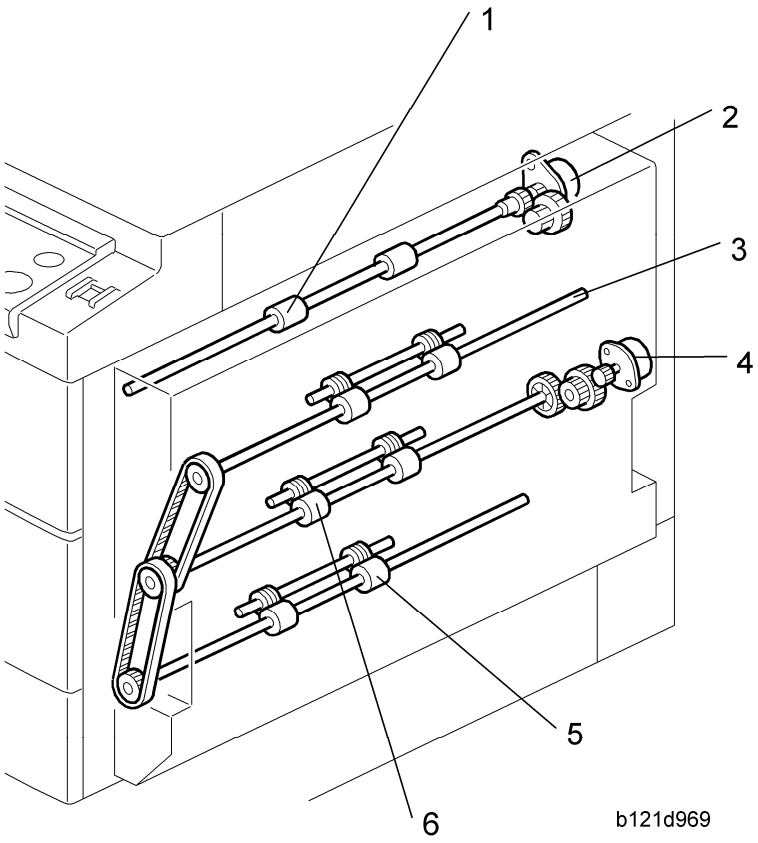
6.14.1 OVERALL



The printed page from the fusing unit goes straight through to the exit tray, or upward to the inverter section, depending on the position of the junction gate.
If the user selects duplex mode, the page is directed to the inverter tray, then reversed through the duplex unit, and back into the machine for printing the second side.

1. Duplex Inverter Roller	5. Duplex Exit Sensor
2. Duplex Entrance Sensor	6. Lower Transport Roller
3. Upper Transport Roller	7. Junction Gate
4. Middle Transport Roller	8. Duplex Inverter Sensor

6.14.2 DRIVE MECHANISM

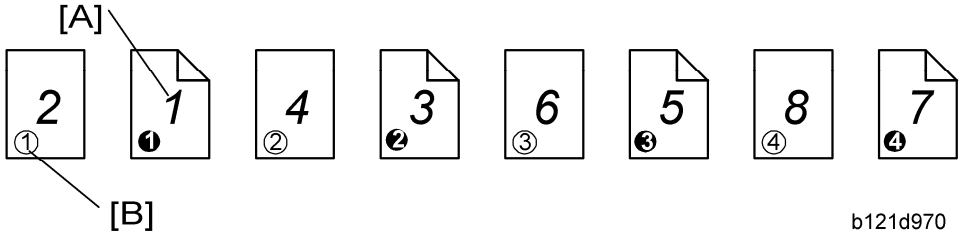


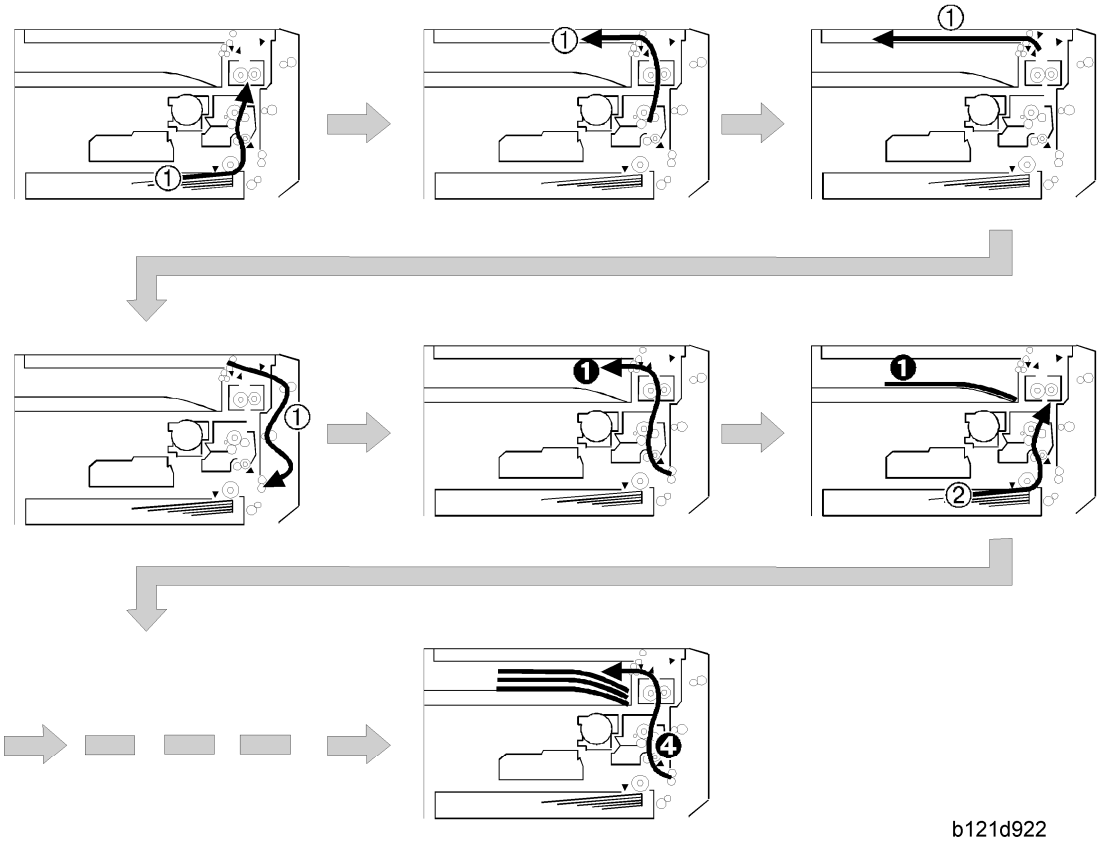
1. Duplex Inverter Roller	4. Duplex Transport Motor
2. Duplex Inverter Motor	5. Lower Transport Roller
3. Upper Transport Roller	6. Middle Transport Roller

6.14.3 BASIC OPERATION

To increase the productivity of the duplex unit, copies are printed as follows.

Larger than A4 Short-edge/LT Short-edge



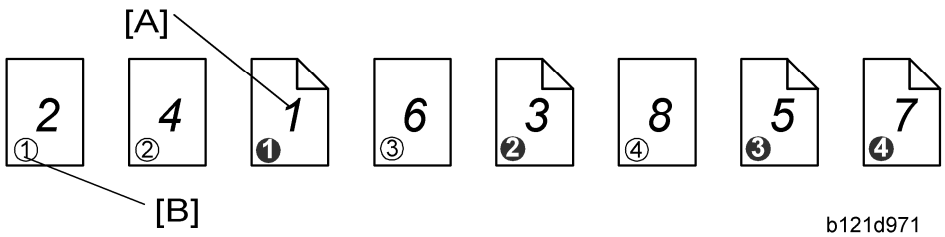


b121d922

The paper feed path can hold only one sheet of copy paper at a time.

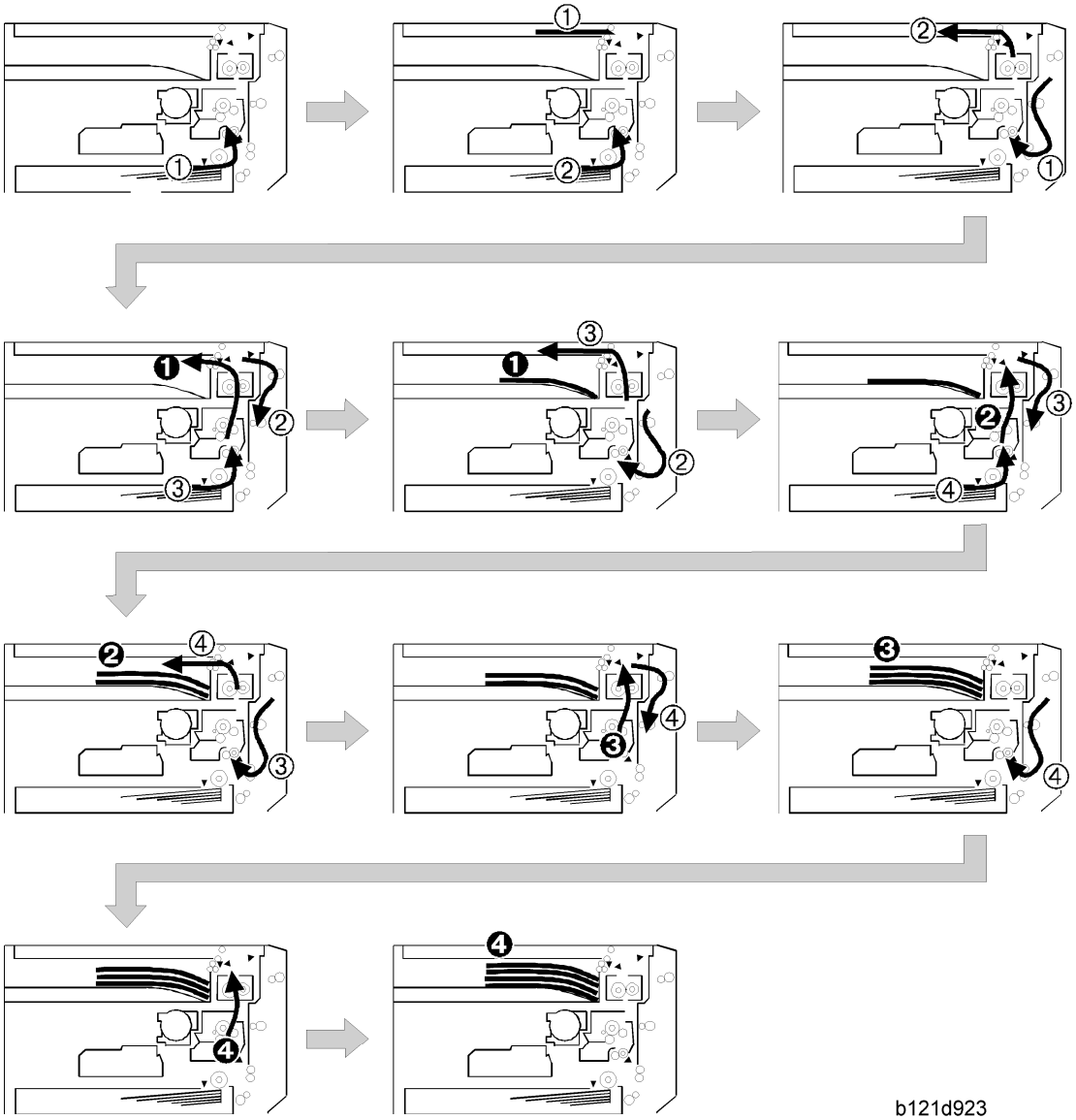
Example: 8 pages. The number [A] in the illustration shows the order of pages. The number [B] in the illustration shows the order of sheets of copy paper (if black, this indicates the second side).

Up to A4 Short-edge/LT Short-edge



b121d971

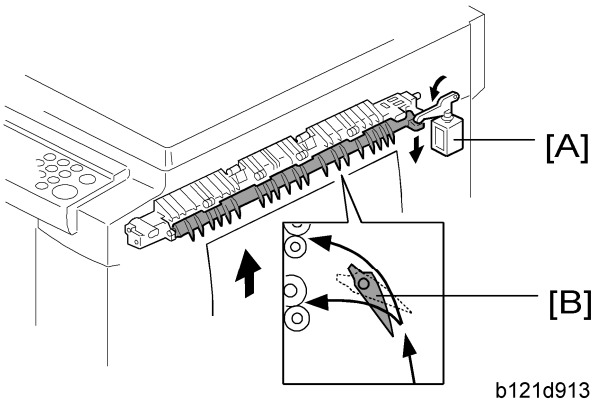
Duplex Unit

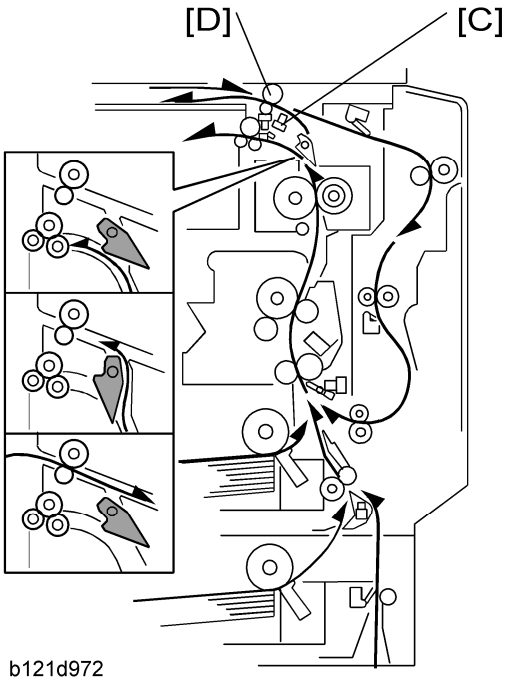


The paper feed path can hold two sheets of copy paper.

Example: 8 pages. The number [A] in the illustration shows the order of pages. The number [B] in the illustration shows the order of sheets of copy paper (if black, this indicates the second side).

6.14.4 FEED IN AND EXIT MECHANISM





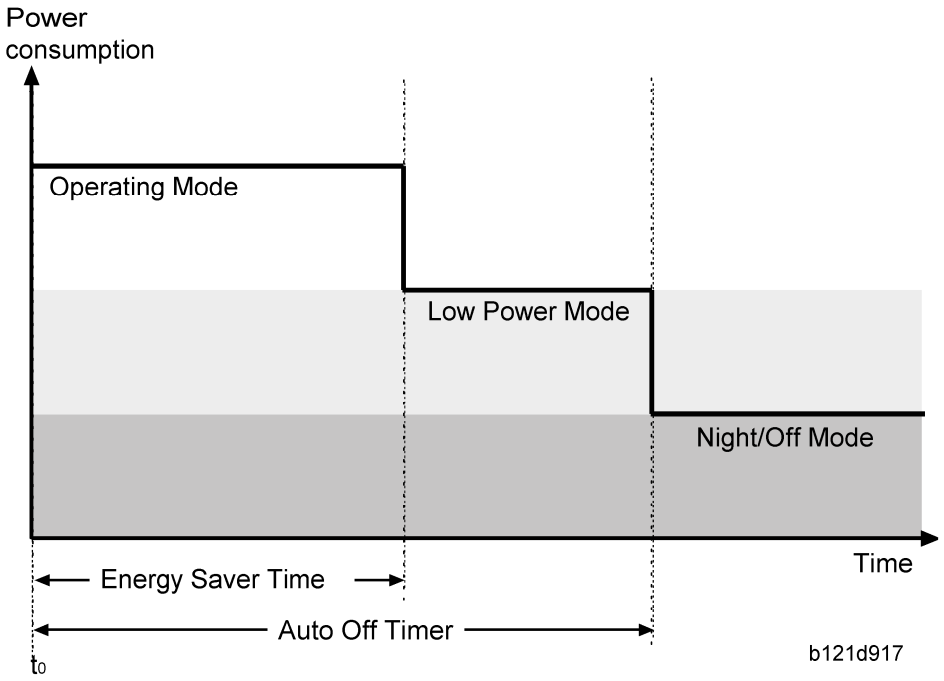
During duplex copying, the inverter gate solenoid [A] switches on and the junction gate [B] switches over to direct the paper to the inverter. When the paper trailing edge reaches the duplex inverter sensor [C], the inverter roller [D] reverses its rotation direction and the paper goes to the duplex unit. The paper is then sent to the mainframe registration rollers to print the reverse side.

If there are two or more copies being made with A4/8$^{1}/_{2}$" x 11" SEF (or smaller), the next sheet waits at the registration sensor for the current sheet to exit the inverter.

6.15 ENERGY SAVER MODES OF BASIC MACHINES

This section illustrates the energy saver modes of the basic machine (the machine without the optional controller). For the energy saver modes of the DDST machine (the machine with the optional controller), see the section of "Energy Saver Modes of DDST Machines".

6.15.1 OVERVIEW



The machine has two energy-saver modes: the Low Power Mode and the Night/Off Mode. The table lists the status of several components. For the fusing temperature, see the section of "Fusing Temperature Control".

	Operation panel	Engine	Exhaust fan
Operating Mode*	On	On	On
Low Power Mode	Off	On	Off
Night/Off Mode	Off	Off**	Off

* The "Operating Mode" here refers to all the modes (and status) other than the Low Power Mode and Night/Off Mode. Actual power consumption (during the Operating Mode)

depends on job status and environmental conditions.

** The SRAM is alive and backs up the engine controller.

6.15.2 AOF

When AOF is off, the engine controller is unable to start the Night/Off Mode. The user should keep AOF on (> System Settings > Key Operator Tools > AOF).

6.15.3 TIMERS

The engine controller references the Energy Saver Timer to start the Low Power Mode, and references the Auto Off Timer to start the Night/Off Mode. The user can set these timers (> System Settings > Timer Settings).

The Energy Saver Timer and the Auto Off Timer start at the same time (t_0) when the machine ends all jobs or when the user ends all manual operations. Note that the Auto Off Timer does not wait for the Energy Saver Timer. Therefore, if the user specifies a smaller value in the Energy Saver Timer, the Auto Off Timer expires earlier than the Energy Saver Timer. In a case like this, the Low Power Mode is not activated. Instead, the engine controller starts the Night/Off Mode when the Auto Off Timer expires.

Specified value	Low Power Mode	Night/Off Mode
Energy Saver Timer > Auto Off Timer	Can start	Can start
Energy Saver Timer = Auto Off Timer	Cannot start	Can start
Energy Saver Timer < Auto Off Timer	Cannot start	Can start

6.15.4 RECOVERY

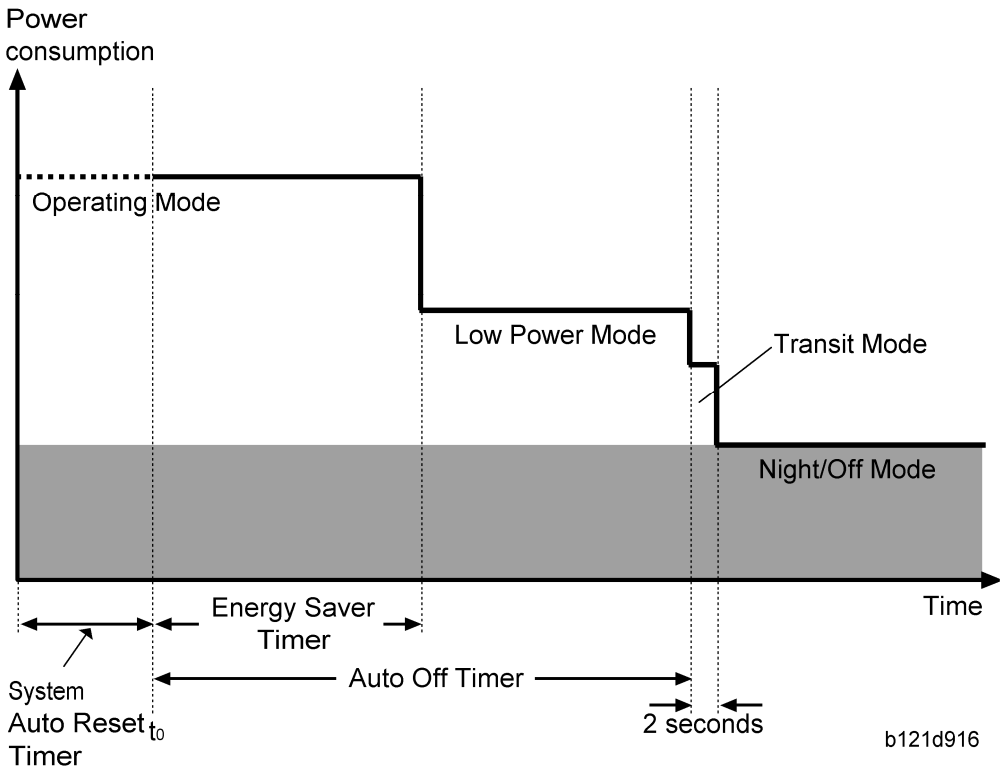
Any of the following operations brings the machine back to the Operating Mode:

- The power switch is pressed.
- Originals are set on the document feeder.
- The platen cover (or document feeder) is opened.

6.16 ENERGY SAVER MODES OF DDST MACHINES

This section illustrates the energy saver modes of the DDST machine (the machine with the optional controller). For the energy saver modes of the basic machine (the machine without the optional controller), see the section of "Energy Saver Modes of Basic Machines".

6.16.1 OVERVIEW



The machine has three energy-saver modes: the Low Power Mode, the Transit Mode, and the Night/Off Mode. The Transit Mode continues for about two seconds (probably, the user does not recognize this mode when it occurs). The table lists the status of several components. For the fusing temperature, see the section of "Fusing Temperature Control".

	Operation panel	Engine	Exhaust fan
Operating Mode*	On	On	On
Low Power Mode	Off	On	Off
Transit Mode	Off	On	Off

Night/Off Mode	Off	Off**	Off

* The "Operating Mode" here refers to all the modes (or status) other than the Low Power Mode and Night/Off Mode. Actual power consumption (during the Operating Mode) depends on job status and environmental conditions.

** The SRAM is alive and backs up the engine controller.

6.16.2 AOF

See "AOF" in the section of "Energy Saver Modes of Basic Machines".

6.16.3 TIMERS

The Energy Saver Timer and Auto Off Timer start at the same time (t0) when the machine ends all jobs, when the user ends all manual operations, or when the controller starts the default application program (the program specified by the user (> System Settings > General Features > Function Priority]). The default application program starts when the System Auto Reset Timer expires (> System Settings > Timer Settings > System Auto Reset Timer).

For more information, see "Timers" in the section of "Energy Saver Modes of Basic Machines".

6.16.4 RECOVERY

Any of the following operations brings the machine back to the Operating Mode:

- The power switch is pressed.
- Originals are set on the document feeder.
- The platen cover (or document feeder) is opened.
- The controller receives a job over the network or the telephone line.
- An SC code is generated.

SPECIFICATIONS

REVISION HISTORY		
Page	**Date**	**Added/Updated/New**
		None

7. SPECIFICATIONS

7.1 GENERAL SPECIFICATIONS

Configuration:	Desktop		
Copy Process:	Dry electrostatic transfer system		
Originals:	Sheet/Book/Object		
Original Size:	Maximum: A3/11" x 17"		
Copy Paper Size:	Maximum:	A3/11" x 17"	
	Minimum:	A6 SEF/5½" x 8½" (Paper tray), A6 SEF/5½" x 8½" (Bypass) A5 SEF/8½" x 11" (Duplex)	
	Custom sizes in the bypass tray:	Width: 90 – 297 mm (3.55" – 11.69"), Length: 148 – 600 mm (5.83" – 23.62")	
	NOTE: Physically, the by-pass tray can handle the following size (but this size is not recognized by the application software): Width: 305 mm Length: 1,260 mm		
Copy Paper Weight:	Paper Tray 1: 60 – 105 g/m^2, 16 – 28 lb. Paper Tray 2: 52 – 157 g/m^2, 14 – 41 lb. Bypass: 52 – 162 g/m^2, 14 – 43 lb. Duplex: 64 – 105 g/m^2, 20 – 28 lb		
Reproduction Ratios:	3 enlargement and 4 reduction		
		A4/A3 Version	**LT/DLT Version**
Enlargement		200% 141% 122%	155% 129% 121%
Full Size		100%	100%

General Specifications

Reduction		93% 82% 71% 50%	93% 78% 65% 50%
Zoom:	50% to 200%, in 1% steps		
Power Source:	Taiwan:	110 V, 60 Hz, 12 A	
	North America:	120 V, 60 Hz, 12 A	
	Europe, Asia, China:	220 – 240 V, 50/60 Hz, 7 A	
Power Consumption:	Full System:	1.45 kW or less	
	Off Mode (DDST):	10 W or less	
	Off Mode (Basic):	1 W or less	
	Note ▪ Full system - Maximum possible power consumption (any combination of mainframe and options), excluding optional heaters, key counter, fax unit, and printer controller.		
Noise Emission:	Standby (Mainframe/Full system):	40 dB(A) or less	
	Operating (Mainframe only):	63 dB(A) or less	
	Operating (Full System):	67 dB(A) or less	
	Note ▪ The above measurements were made in accordance with ISO 7779. Measurements were taken from the normal position of the operator.		
Dimensions (W x D x H):	550 x 568 x 860 mm (" x " x ") **Measurement Conditions** With bypass feed table closed With optional PTU Without the A(R)DF		

Weight:	Approx. 49 kg (xx lb.) (Excluding ARDF, platen cover, toner, and developer)

Copying Speed in Multicopy Mode (copies/minute):

Mode			
1-sided ↓ 1-sided	Memory copy	A3 SEF/11" × 17"	14
		A4 LEF/11" x 8½"	25
-	DF 1-to-1	A3 SEF/11" × 17"	13
		A4 LEF/11" x 8½"	22
1-sided ↓ 2-sided	Memory copy	A3 SEF/11" × 17"	7
		A4 LEF/11" x 8½"	25

Note

- Measurement Conditions:
- Figures are for one-sided original to one-sided copy except where stated otherwise
- Not APS mode
- 100% size

Warm-up Time:	Basic model: 12 seconds or less (at 20°C [68°F]) DDST model: 15 seconds or less (at 20°C [68°F])
First Copy Time:	6 seconds or less **Measurement Conditions** 1. From the ready state, with the polygonal mirror motor operating. 2. A4/LT copying 3. Not APS mode 4. 100%size 5. Paper feed from the upper tray

General Specifications

Copy Number Input:	Numeric keypad, 1 to 99 (increment, decrement)
Manual Image Density:	5 steps
Automatic Reset:	Default is 60 seconds. Can be set from 10 to 999 seconds with user tools.
Automatic Shut-off:	Default is 1 minute. Can be set from 1 to 240 minutes with user tools.
Copy Paper Capacity:	Paper Tray: ▪ 500 sheets x 2 Optional Paper Tray Unit: ▪ 500 sheets x 1, or 500 sheets x 2 Bypass Tray: ▪ 100 sheets (sheets up to 432 mm [17"]) ▪ 40 postcards ▪ 10 envelopes Copy weight: 80 g/m^2 (20 lb.)
Toner Replenishment:	Cartridge replacement (260 g/cartridge)
Optional Equipment:	▪ Platen cover ▪ Auto-reverse document feeder ▪ Paper tray unit (2 trays) ▪ 1-bin tray ▪ Tray heater ▪ Optics anti-condensation heater ▪ DDST controller board
Toner Yield:	9k copies (A4 LEF, 6% full black, 1 to 2 copying, normal text mode)
Copy-Tray Capacity	Internal tray: 250 sheets Internal tray with bridge unit: 125 sheets
Memory	Basic Model: 16 MB (BICU) DDST Model: 16 MB (BICU) + 32 MB Controller DDST + NIC Model: 16 MB (BICU) + 64 MB Controller

7.2 SUPPORTED PAPER SIZES

7.2.1 ORIGINAL SIZE DETECTION

North America, Europe, Asia, Taiwan

Paper	Size (W x L)	North America		Europe/Asia/Taiwan	
		Platen	ARDF	Platen	ARDF
A3 SEF	297 x 420 mm	O	O	X	X
B4 SEF	257 x 364 mm	O	O	X	X
A4 SEF	210 x 297 mm	A4/LT	A4/LT	X	X
A4 LEF	297 x 210 mm	A4/LT	A4/LT	X	X
B5 SEF	182 x 257 mm	O	O	O	X
B5 LEF	257 x 182 mm	O	O	X	X
A5 SEF	148 x 210 mm	O	O	O	X
A5 LEF	210 x 148 mm	O	O	S[a]	X
B6 SEF	128 x 182 mm	O	O	O	O
B6 LEF	182 x 128 mm	O	O	O	O
8K SEF	267 x 390 mm	O	O	O	O
16K SEF	195 x 267 mm	O	O	O	O
16K LEF	267 x 195 mm	O	O	O	O
DLT SEF	11" x 17"	X	X	O	O
SEF	11" x 15"	O	O	O	O
LG SEF	$8^1/_2$" x 14"	X	X	O	O
LT SEF	$8^1/_2$" x 11"	X	X	A4/LT	A4/LT
LT LEF	11" x $8^1/_2$"	X	X	A4/LT	A4/LT

Supported Paper Sizes

Paper	Size (W x L)	North America		Europe/Asia/Taiwan	
		Platen	ARDF	Platen	ARDF
HLT SEF	$5^1/_2$" x $8^1/_2$"	O	X	O	O
HLT LEF	$8^1/_2$" x $5^1/_2$"	S	X	O	O
F/GL (F4) SEF	8" x 13"	F	O	F	F
Foolscap SEF	$8^1/_2$" x 13"	F	O	F	F
Folio SEF	$8^1/_4$" x 13"	F	O	F	F
USB4 SEF	10" x 14"	O	O	O	O
Eng Quarto SEF	8" x 10"	O	O	O	O
Eng Quarto LEF	10" x 8"	O	O	O	O

Key:

X:	Detected
O:	Not detected
F:	Detected as F ($8^1/_2$" x 13")
S:	Detected as specified
A4/LT:	Detected as A4 or LT as specified

Note

- [a]When the settings of SP 4305 1 is "1: A4/LT," the settings of SP 4303 is invalidated (A5 LEF is not detected).

China, Korea

Paper	Size (W x L)	China/Korea		China/Korea (localized)	
		Platen	ARDF	Platen[b]	ARDF[c]
A3 SEF	297 x 420 mm	X	X	X	O

Paper	Size (W x L)	China/Korea		China/Korea (localized)	
		Platen	ARDF	Platen[b]	ARDF[c]
B4 SEF	257 x 364 mm	X	X	O	O
A4 SEF	210 x 297 mm	X	X	X	O
A4 LEF	297 x 210 mm	X	X	X	O
B5 SEF	182 x 257 mm	X	X	O	O
B5 LEF	257 x 182 mm	X	X	O	O
A5 SEF	148 x 210 mm	O	X	O	X
A5 LEF	210 x 148 mm	S	X	S	X
B6 SEF	128 x 182 mm	O	O	O	O
B6 LEF	182 x 128 mm	O	O	O	O
8K SEF	267 x 390 mm	O	O	X	X
16K SEF	195 x 267 mm	O	O	X	X
16K LEF	267 x 195 mm	O	O	X	X
DLT SEF	11" x 17"	O	O	O	O
SEF	11" x 15"	O	O	O	O
LG SEF	$8^1/_2$" x 14"	O	O	O	O
LT SEF	$8^1/_2$" x 11"	A4/LT	A4/LT	O	O
LT LEF	11" x $8^1/_2$"	A4/LT	A4/LT	O	O
HLT SEF	$5^1/_2$" x $8^1/_2$"	O	O	O	O
HLT LEF	$8^1/_2$" x $5^1/_2$"	O	O	O	O
F/GL (F4) SEF	8" x 13"	O	F	O	F
Foolscap SEF	$8^1/_2$" x 13"	O	F	O	F

Supported Paper Sizes

Paper	Size (W x L)	China/Korea		China/Korea (localized)	
		Platen	ARDF	Platen[b]	ARDF[c]
Folio SEF	8 1/4" x 13"	O	F	O	F
USB4 SEF	10" x 14"	O	O	O	O
Eng Quarto SEF	8" x 10"	O	O	O	O
Eng Quarto LEF	10" x 8"	O	O	O	O

Key:

X:	Detected
O:	Not detected
F:	Detected as F (8 1/2" x 13")
S:	Detected as specified
A4/LT:	Detected as A4 or LT as specified

Note

- [b]Change the settings of SP 4305 1. Adjust the positions of the APS sensors.
- [c]Change the settings of SP 4305 1.

7.2.2 PAPER FEED AND EXIT

Main Frame, Duplex

Paper	Size (W x L)	Main frame tray				Duplex
		China/ Korea	North America	Europe	Asia/ Taiwan	
A3 SEF	297 x 420 mm	X	M	X	X	X
A3 LEF	420 x 297 mm	O	O	O	O	O
B4 SEF	257 x 364 mm	X	M	M	M	X
B4 LEF	364 x 257 mm	O	O	O	O	O

Supported Paper Sizes

Paper	Size (W x L)	Main frame tray				Duplex
		China/ Korea	North America	Europe	Asia/ Taiwan	
A4 SEF	210 x 297 mm	X	M	X	X	X
A4 LEF	297 x 210 mm	X	X	X	X	X
B5 SEF	182 x 257 mm	M	M	M	M	X
B5 LEF	257 x 182 mm	X	M	M	M	X
A5 SEF	148 x 210 mm	O	O	O	O	X
A5 LEF	210 x 148 mm	X	M	X	X	X
B6 SEF	128 x 182 mm	O	O	O	O	O
B6 LEF	182 x 128 mm	O	O	O	O	O
A6 SEF	105 x 148 mm	O	O	O	O	O
A6 LEF	148 x 105 mm	O	O	O	O	O
DLT SEF	11" x 17"	M	X	M	M	X
DLT LEF	17" x 11"	O	O	O	O	O
LG SEF	$8^1/_2$" x 14"	M	X	M	M	X
LG LEF	14" x $8^1/_2$"	O	O	O	O	O
Gov. LG SEF	$8^1/_4$" x 14"	M	M	M	M	X
Gov. LG LEF	14" x $8^1/_4$"	O	O	O	O	O
LT SEF	$8^1/_2$" x 11"	M	X	M	M	X
LT LEF	11" x $8^1/_2$"	M	X	X	X	X
HLT SEF	$5^1/_2$" x $8^1/_2$"	O	O	O	O	O
HLT LEF	$8^1/_2$" x $5^1/_2$"	M	M	M	M	O
Executive SEF	$7^1/_4$" x $10^1/_2$"	M	M	M	M	X

Supported Paper Sizes

Paper	Size (W x L)	Main frame tray				Duplex
		China/ Korea	North America	Europe	Asia/ Taiwan	
Executive LEF	$10^1/_2$" x 71/4"	M	M	M	M	X
F SEF	8" x 13"	M	M	M	M	X
F LEF	13" x 8"	O	O	O	O	O
Foolscap SEF	$8^1/_2$" x 13"	M	X	X	X	X
Foolscap LEF	13" x $8^1/_2$"	O	O	O	O	O
Folio SEF	$8^1/_4$" x 13"	M	M	M	M	X
Folio LEF	13" x $8^1/_4$"	O	O	O	O	O
8K SEF	267 x 390 mm	M	M	M	M	X
8K LEF	390 x 267 mm	O	O	O	O	O
16K SEF	195 x 267 mm	M	M	M	M	X
16K LEF	267 x 195 mm	M	M	M	M	X
C5 Env. SEF	162 x 229 mm	O	O	O	O	O
C6 Env. SEF	114 x 162 mm	O	O	O	O	O
DL Env. SEF	110 x 220 mm	O	O	O	O	O
Com10 SEF	$4^1/_8$" x $9^1/_2$"	O	O	O	O	O
Monarch SEF	$3^7/_8$" x $7^1/_2$"	O	O	O	O	O
Custom		O	O	O	O	O

Key:

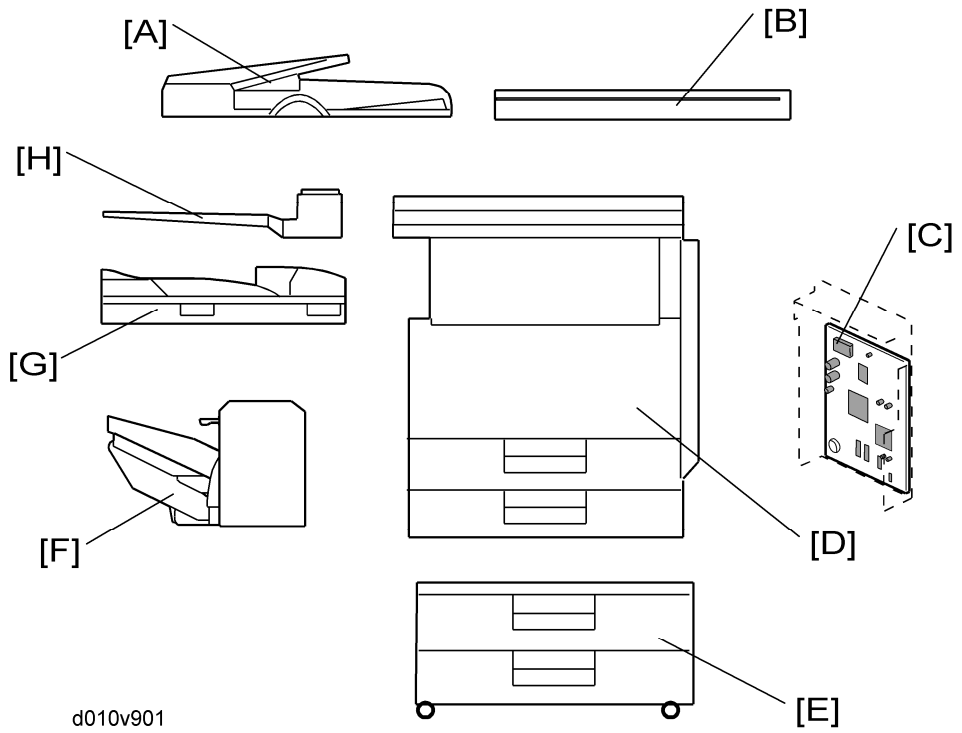
X:	Detected (Main frame tray)/Processed (Duplex)
O:	Not detected (Main frame tray)/Not processed (Duplex)

M:	Selected manually
K:	Specified from the key pad

Note

- Custom W: 90 to 297 mm, L: 148 to 600 mm

7.3 MACHINE CONFIGURATION



Unit/Component		Machine Code	Diagram
Copier	Copier	D010	[D]
	ARDF (optional)	D330	[A]
	Platen cover (optional)	B406	[B]
	Paper tray unit–2 trays (optional)	D331	[E]
	500-sheet finisher (optional)	B792	[F]
	Bridge unit (optional)	D340	[G]
	1-bin tray (optional)	D339	[H]
DDST	DDST controller (optional)	D326-17	[C]

Note

- The DDST controller comes with a dedicated controller box and printer/scanner panel.

7.4 OPTIONAL EQUIPMENT

7.4.1 ARDF

Original Size:	Single-sided mode: A3 to A5, 11" x 17" to $5^1/_2$" x 81/2" Double-sided mode: A3 to A5, 11" x 17" to $5^1/_2$" x 81/2"
Original Weight:	Single-sided mode: 40 – 128 g/m^2,10 – 34 lb Double-sided mode: 52 – 105 g/m^2,14 – 28 lb
Table Capacity:	50 sheets (80 g/m^2, 70 kg)
Original Standard Position:	Center
Separation:	FRR
Original Transport:	Roller transport
Original Feed Order:	From the top original
Reproduction Range:	32.6 to 200% (Sub scan direction only)
Power Source:	24 and 5 Vdc from the copier
Power Consumption:	75 W or less
Dimensions (W x D x H):	550 x 470 x 130 mm
Weight:	10.5 kg (23.1 lb)

7.4.2 TWO-TRAY PAPER TRAY UNIT

Paper Size:	A5 to A3, $5^1/_2$" x $8^1/_2$" SEF to 11" x 17"
Paper Weight:	60 – 105 g/m^2, 16 – 28 lb
Tray Capacity:	500 sheets (80 g/m^2, 20 lb) x 2 trays
Paper Feed System:	Feed roller and friction pad

Optional Equipment

Paper Height Detection:	4 steps (100%, 70%, 30%, Near end)	
Power Source:	▪ 24 Vdc and 5Vdc (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:	28 W (Copying/printing) 23 W (Optional Tray Heater On)
	Average:	17 W (Copying/printing) 15 W (Optional Tray Heater On)
Weight:	25 kg (55 lb)	
Size (W x D x H):	550 mm x 520 mm x 271 mm	

7.4.3 ONE-BIN TRAY

Paper Size:	Width: 140 to 297 mm Length: 140 to 432 mm
Output Standard Position:	Center
Paper Weight:	60 to 105 g/m², 16 to 28 lb
Tray Capacity:	100 sheets (A4 LEF 80 g/m^2, 20 lb)
Power Source:	5 VDC, 24 VDC (from the copier)
Power Consumption:	Max. 20 W
Weight:	1.55 kg (Base unit: 1.1 kg, Tray: 0.45 kg)
Size (W x D x H):	461 mm x 478 mm x 104 mm (508 mm x 478 mm x 104 mm when tray extended)

7.4.4 BRIDGE UNIT

Paper Size:	Standard sizes A6 SEF to A3, HLT to DLT
Paper Weight:	52 g/m^2 to 128m^2, 14 lb. to 34 lb.
Power Source:	DC 24 V, 5 V (form the copier/printer)
Dimensions (W x D x H):	455 mm x 465 mm x 123 mm (18.2" x 18.6" x 4.9")
Weight	2.75 kg (6.1 lb.)

7.4.5 500-SHEET FINISHER

Paper Size:	A3 to B6 (SEF), HLT to DLT
Paper Weight:	52 to 128 g/m^2 (14 to 34 lb.)
Tray Capacity:	500 sheets: A4, LT or smaller 250 sheets: B4, LG or larger
Staple capacity:	30 sheets (A3, B4, DLT, LG) 50 sheets (A4, LT or smaller)
Staple position:	3 positions 1-staple: 2 positions (Top right-oblique, Top left-oblique) 2-staples: 1 positions (Left)
Staple replenishment:	Cartridge (5000 staples)
Power Source:	5 VDC, 24 VDC (from the copier)
Power Consumption:	Max. 50 W or less
Weight:	12 kg or less
Size (W x D x H):	411 mm x 521 mm x 275 mm (with the tray closed)

FINISHER SR3000

B792

REVISION HISTORY		
Page	**Date**	**Added/Updated/New**
		None

FINISHER SR3000 B792

TABLE OF CONTENTS

1. REPLACEMENT AND ADJUSTMENT 1

1.1 EXTERIOR 1
1.1.1 MAIN FRAME 1
1.1.2 FRONT COVER 1
1.1.3 REAR COVER 2
1.1.4 TOP COVER 2
1.1.5 EXIT LOWER GUIDE 3
1.1.6 RIGHT COVER 3
1.2 STAPLER UNIT 4
1.3 STAPLER UNIT MOVEMENT MOTOR 4
1.4 JOGGER TRAY UNIT 5
1.5 JOGGER MOTORS 6
1.6 PICK-UP ROLLER CONTACT MOTOR 7
1.7 PAPER EXIT SENSOR 7
1.8 CONTROL BOARD 8
1.9 PAPER TRANSPORT AND PAPER REVERSE/EXIT MOTORS 9
1.10 OUTPUT TRAY UNIT 10

2. DETAILED DESCRIPTIONS 11

2.1 OVERALL MACHINE INFORMATION 11
2.1.1 COMPONENT LAYOUT 11
2.1.2 ELECTRICAL COMPONENT LAYOUT 13
2.2 DETAILED SECTION DESCRIPTIONS 15
2.2.1 OUTPUT TRAY MECHANISM 15
2.2.2 PAPER FEED 17
2.2.3 JOGGER MOVEMENT 18
2.2.4 STAPLER UNIT MOVEMENT 19
2.2.5 JAM CONDITIONS 20
2.2.6 ERROR DETECTION 21

Read This First

Safety and Symbols

Replacement Procedure Safety

⚠CAUTION

- Turn off the main power switch and unplug the machine before beginning any of the replacement procedures in this manual.

Symbols Used in this Manual

This manual uses the following symbols.

☛: See or Refer to

: Screws

: Connector

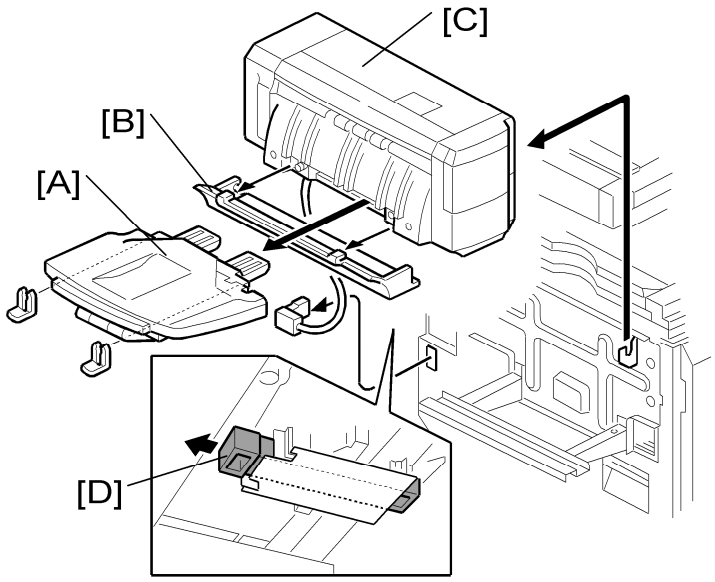
: Clip ring

: E-ring

1. REPLACEMENT AND ADJUSTMENT

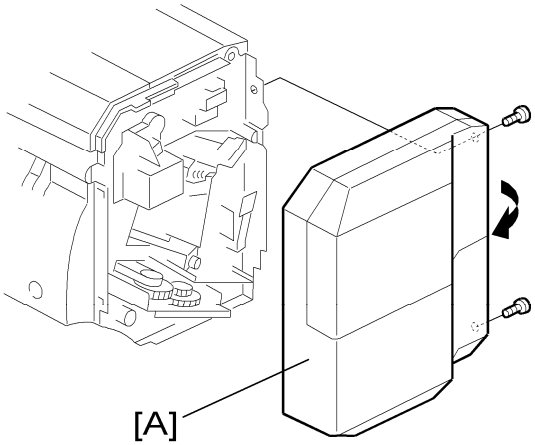
1.1 EXTERIOR

1.1.1 MAIN FRAME



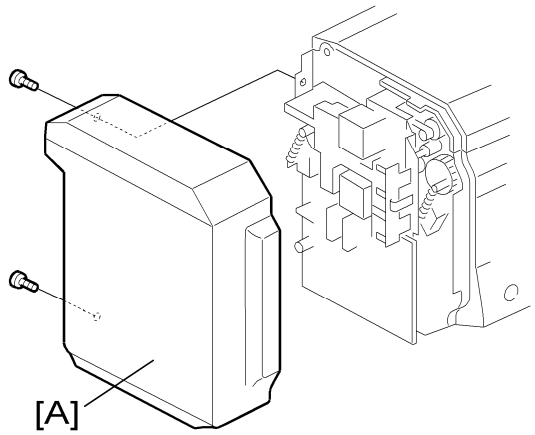
1. Plug out the 500-sheet finisher.
2. Output tray [A] (x 2)
3. Bracket cover [B]
4. Remove the 500-sheet finisher [C] while pulling the lock lever [D].

1.1.2 FRONT COVER



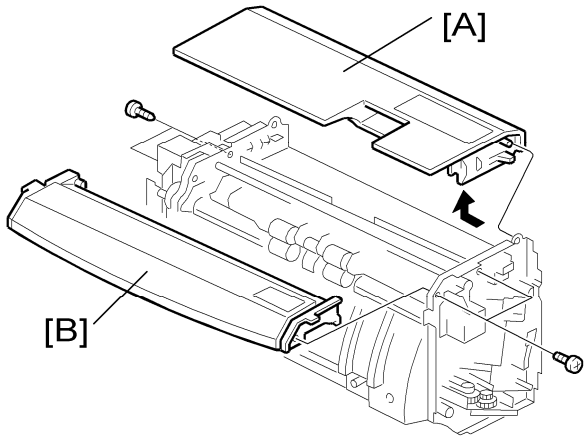
1. Front cover (x 2)

1.1.3 REAR COVER



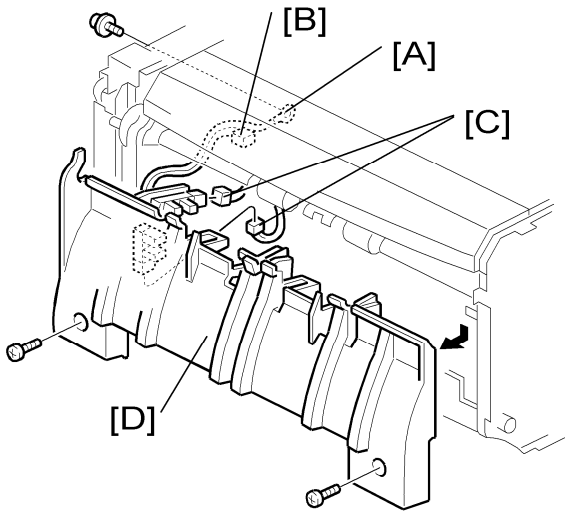
1. Rear cover [A] (x 2)

1.1.4 TOP COVER



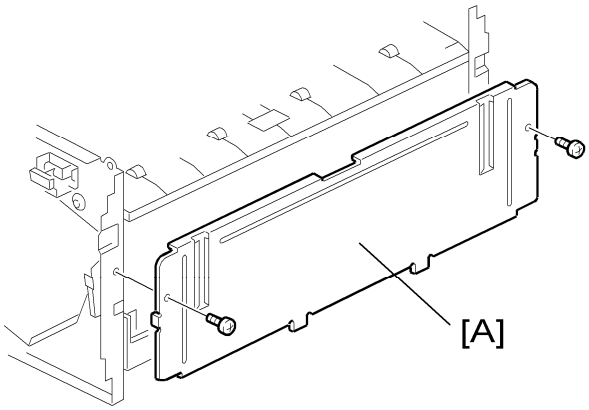
1. Front cover ("Front Cover")
2. Rear cover ("Rear Cover")
3. Top cover [A]
4. Top left cover [B] (x 4)

1.1.5 EXIT LOWER GUIDE



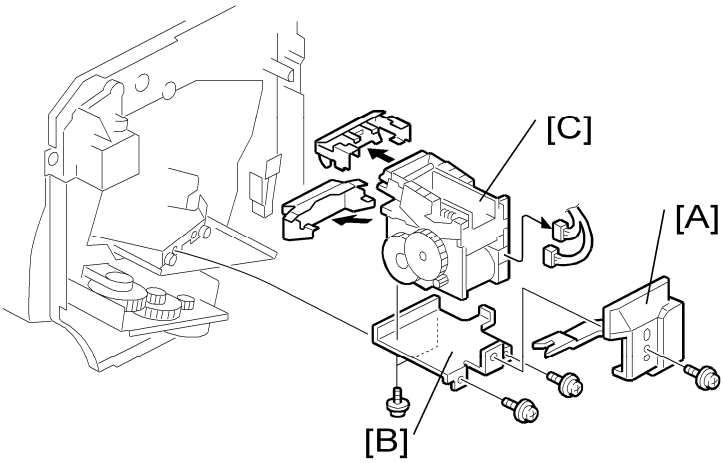
1. Output tray (☛ "Main Frame")
2. Front cover (☛ "Front Cover")
3. Rear cover (☛ "Rear Cover")
4. Right cover (☛ "Right Cover")
5. Remove the ground terminal [A] (🔩 x 1)
6. Disconnect the harness of the stack height lever solenoid [B].
7. Disconnect two sensor cables [C].
8. Exit lower guide [D] (🔩 x 2)

1.1.6 RIGHT COVER



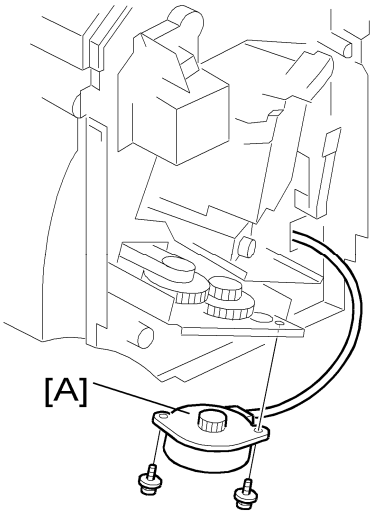
1. Front cover (☛ "Front Cover")
2. Rear cover (☛ "Rear Cover")
3. Right cover [A] (🔩 x 2)

1.2 STAPLER UNIT



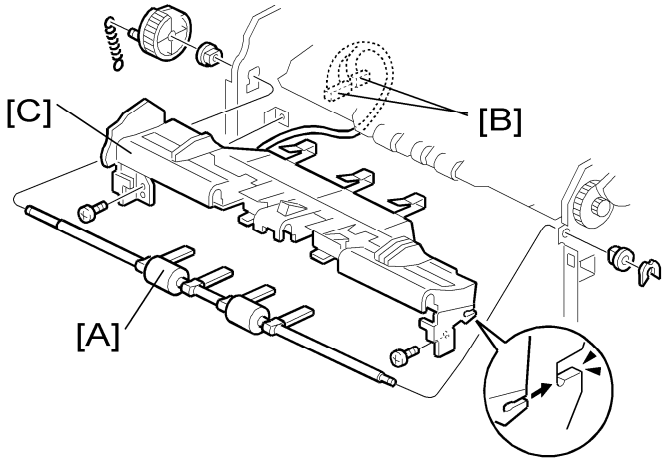
1. Front cover ("Front Cover")
2. Harness cover [A] (x 1)
3. Stapler unit bracket [B] (x 2, x 2)
4. Stapler unit (x 2)

1.3 STAPLER UNIT MOVEMENT MOTOR



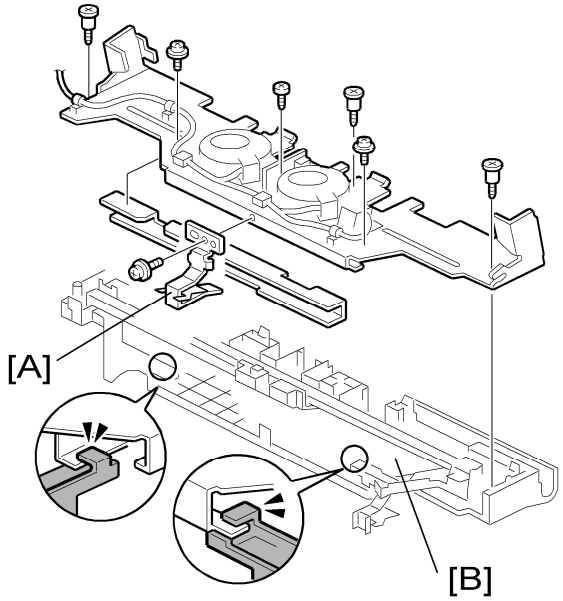
1. Front cover ("Front Cover")
2. Stapler unit movement motor [A] (x 2, x 1, x 1)

1.4 JOGGER TRAY UNIT

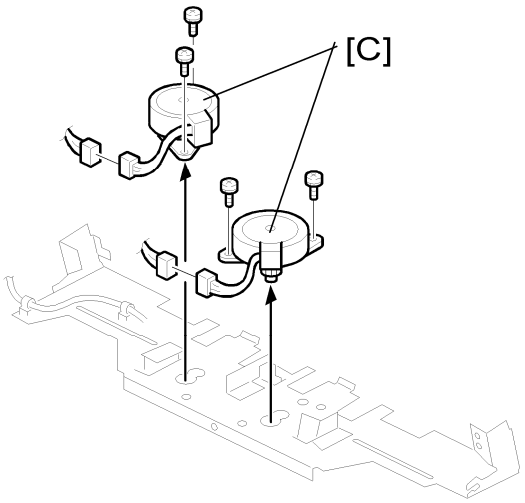


1. Front cover ("Front Cover")
2. Rear cover ("Rear Cover")
3. Exit lower guide (" Exit Lower Guide ")
4. Pick-up roller contact motor bracket (" Pick-up Roller Contact Motor ")
5. Paddle roller [A] (gear x 1, spring x 1, snap ring x1, bushing x 2)
6. Disconnect the two jogger motor harnesses [B]
7. Jogger tray unit [C] (x 2)

1.5 JOGGER MOTORS

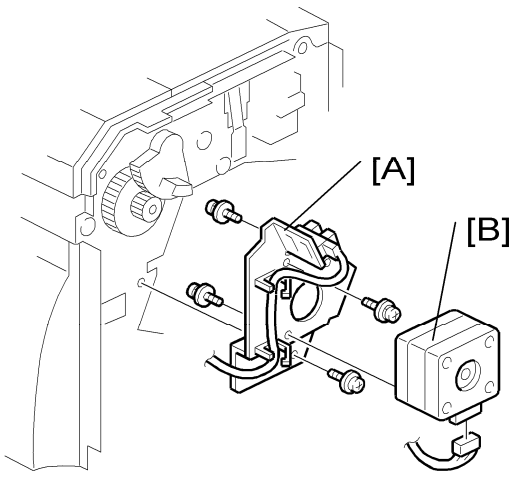


1. Jogger tray unit ("Jogger Tray Unit")
2. Stack bracket [A] (x 1)
3. Jogger tray cover [B] (x 6)



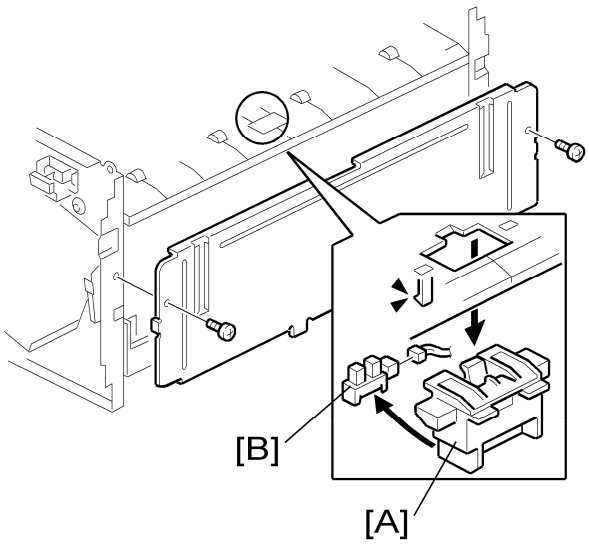
4. Jogger motors [C] (x 2, x 1 each)

1.6 PICK-UP ROLLER CONTACT MOTOR



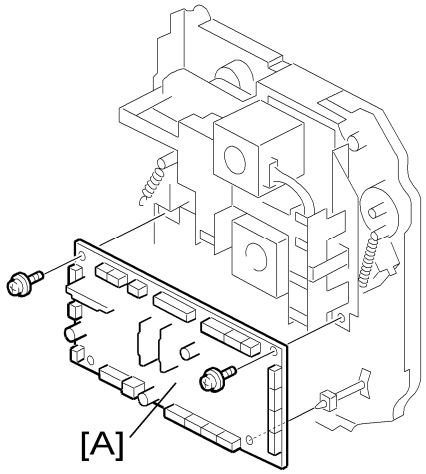
1. Front cover ("Front Cover")
2. Pick-up roller contact motor bracket [A] (x 2, x 1)
3. Pick-up roller contact motor [B] (x 2)

1.7 PAPER EXIT SENSOR



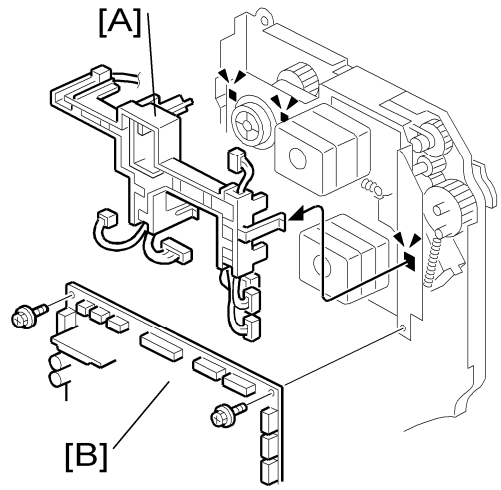
1. Right cover ("Right Cover")
2. Paper exit sensor holder [A] (hook x 2)
3. Paper exit sensor [B] (x 1)

1.8 CONTROL BOARD

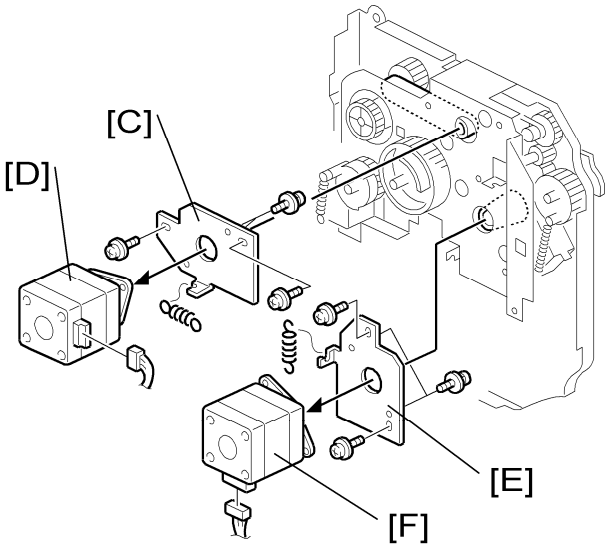


1. Rear cover ("Rear Cover")
2. Control board [A] (x 2)

1.9 PAPER TRANSPORT AND PAPER REVERSE/EXIT MOTORS

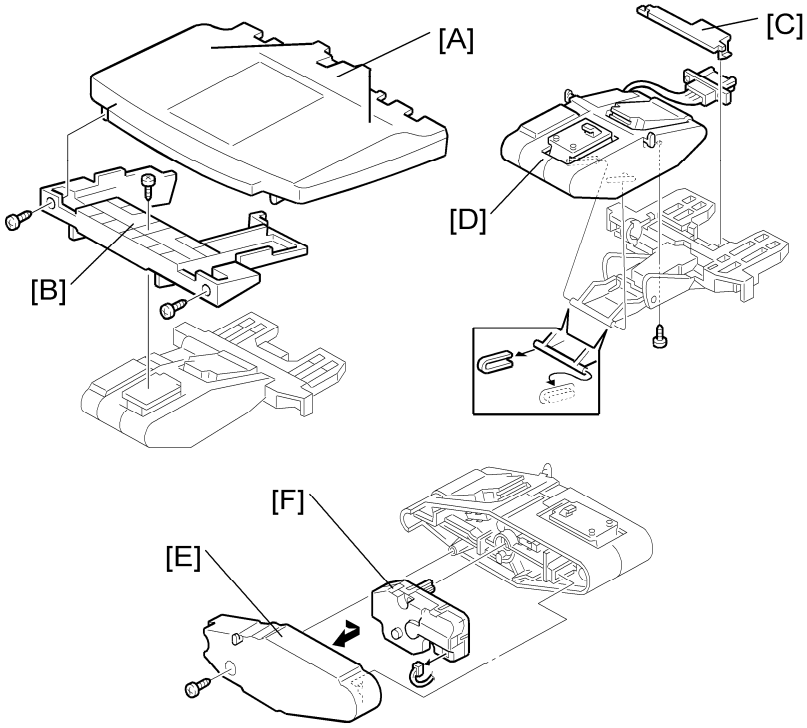


1. Rear cover ("Rear Cover")
2. Harness guide [A] (hook x 3)
3. Control board [B] (x 2, All s)

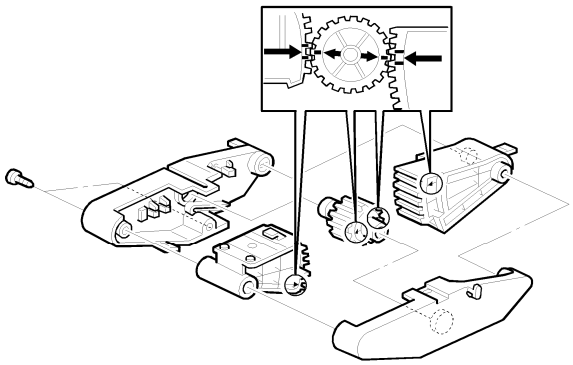


4. Paper transport motor bracket [C] (x 2, spring x 1, x 1)
5. Paper transport motor [D] (x 2)
6. Paper reverse/exit motor bracket [E] (x 2, spring x 1, x 1)
7. Paper reverse/exit motor [F] (x 2)

1.10 OUTPUT TRAY UNIT



1. Output tray ("Main Frame")
2. Output tray cover [A] (x 2)
3. Tray holder [B] (x 1)
4. Connector cover [C]
5. Output tray motor link unit [D] (x 1)
6. Rear cover [E] (x 1)
7. Output tray motor [F] (x 1)



Note

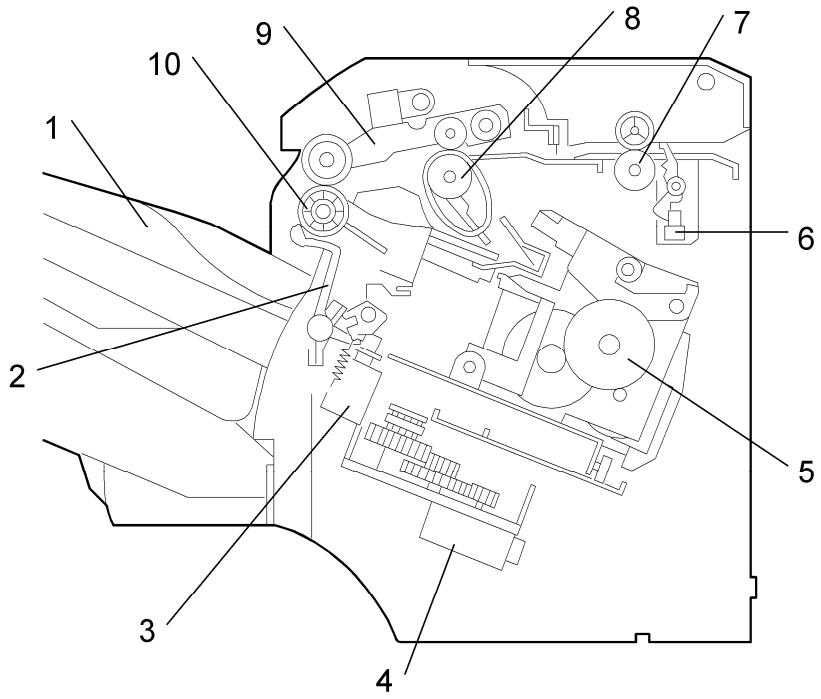
- When re-attaching the motor link unit, the arrows on each of the gears need to face each other as shown in the illustration.

2. DETAILED DESCRIPTIONS

2.1 OVERALL MACHINE INFORMATION

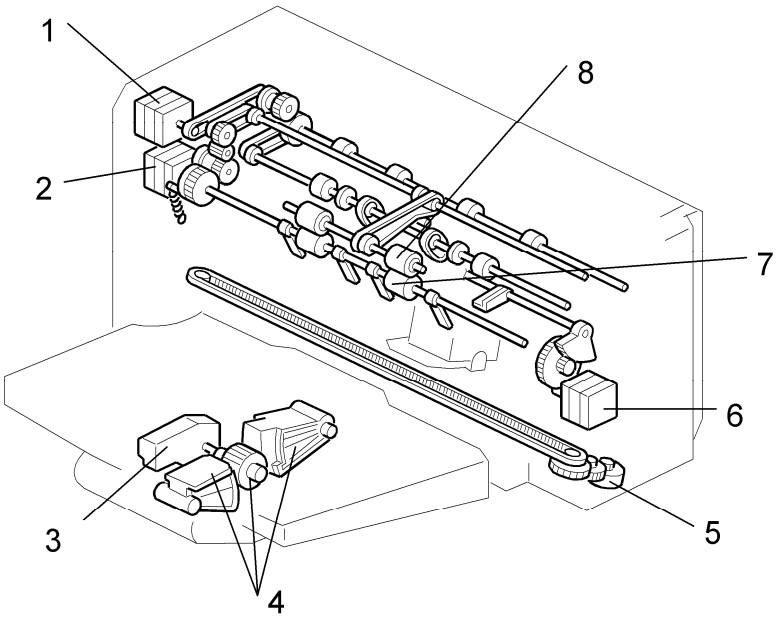
2.1.1 COMPONENT LAYOUT

Mechanical Component Layout



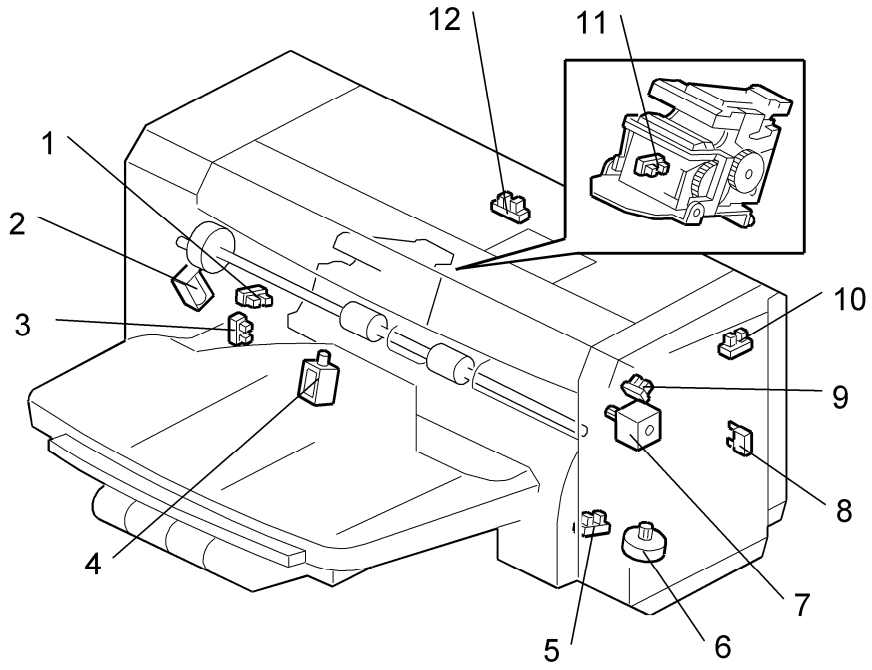
1. Output tray 2. Stack height detection lever 3. Stack height lever solenoid 4 .Stapler unit movement motor 5. Stapler unit	6. Entrance sensor 7. Entrance roller 8. Belt unit 9. Pick-up roller 10. Paddle roller

Drive Layout

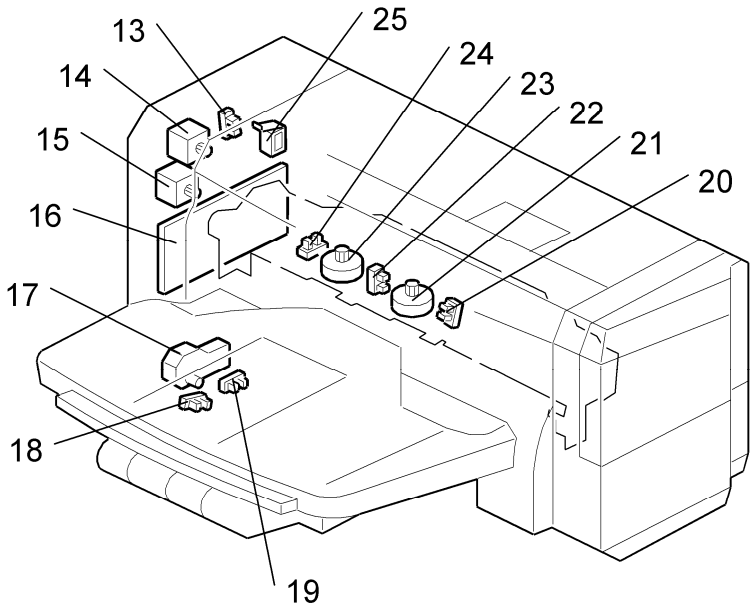


1. Paper transport motor 2. Pick-up roller motor 3. Output tray motor 4. Output tray link gears	5. Stapler unit movement motor 6. Pick-up roller contact motor 7. Paddle roller 8. Pick-up roller

2.1.2 ELECTRICAL COMPONENT LAYOUT



1. Lever Sensor	7. Pick-Up Roller Contact Motor
2. Paddle Roller Solenoid	8. Cover Switch
3. Stack Height Sensor	9. Pick-Up Roller HP Sensor
4. Stack Height Lever Solenoid	10. Top Cover Sensor
5. Stapler Unit HP Sensor	11. Stapler Safety Sensor
6. Stapler Unit Movement Motor	12. Entrance Sensor

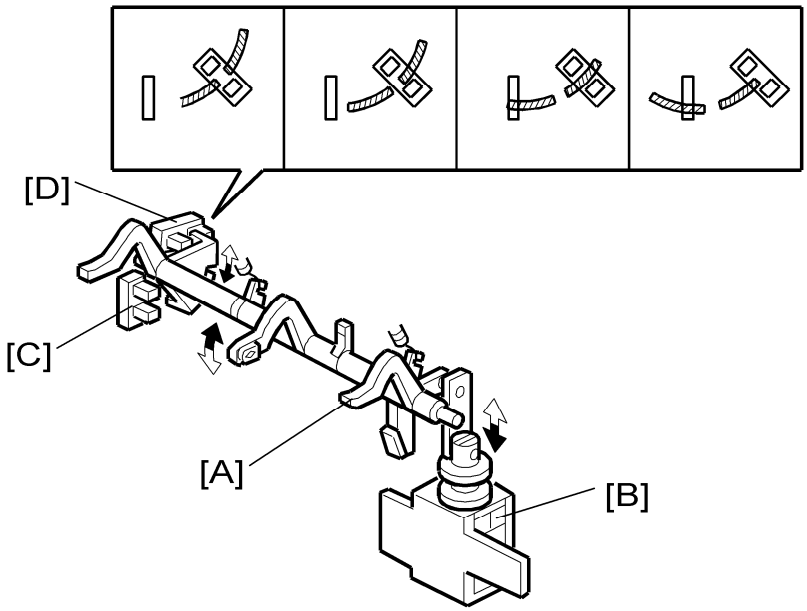


13. Belt Lift Sensor 14. Paper Transport Motor 15. Pick-up Roller Motor 16. Control Board 17. Output Tray Motor 18. Stack Near-limit Sensor 19. Tray Upper Limit Sensor	20. Front Jogger Fence HP Sensor 21. Front Jogger Motor 22. Rear Jogger Fence HP Sensor 23. Rear Jogger Motor 24. Jogger Position Sensor 25. Belt Lift Solenoid

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.

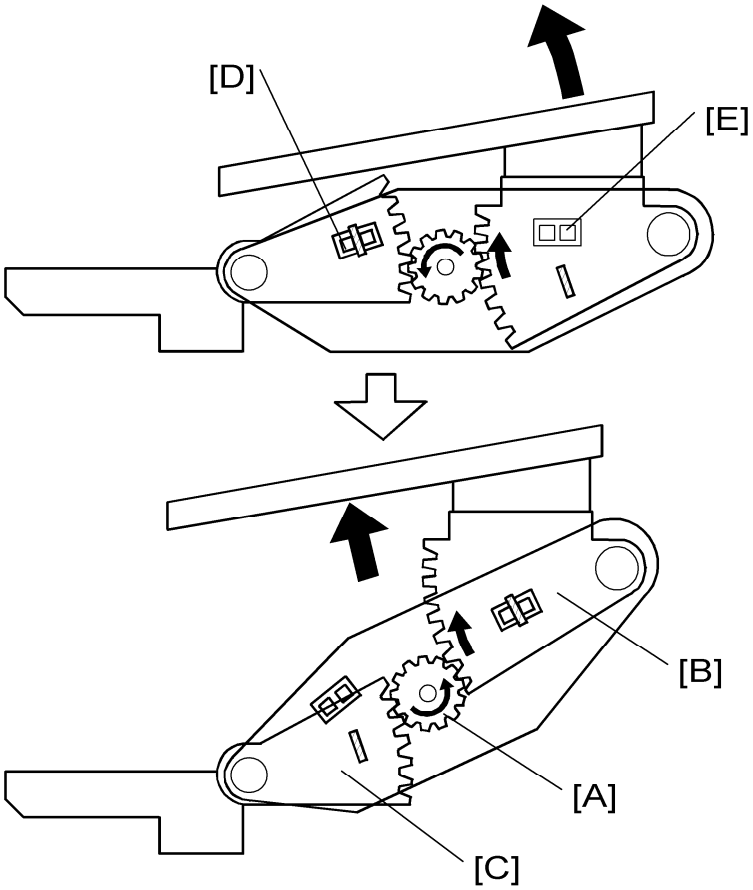
Stack height sensor	Lever sensor	Status
Off	Off	The stack height is below the target. The output tray is then lifted to the target position.
Off	On	Target stack height position
On	On	The stack height is above the target. The output tray is then lowered to the target position.
On	Off	The stack height 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 gear [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.

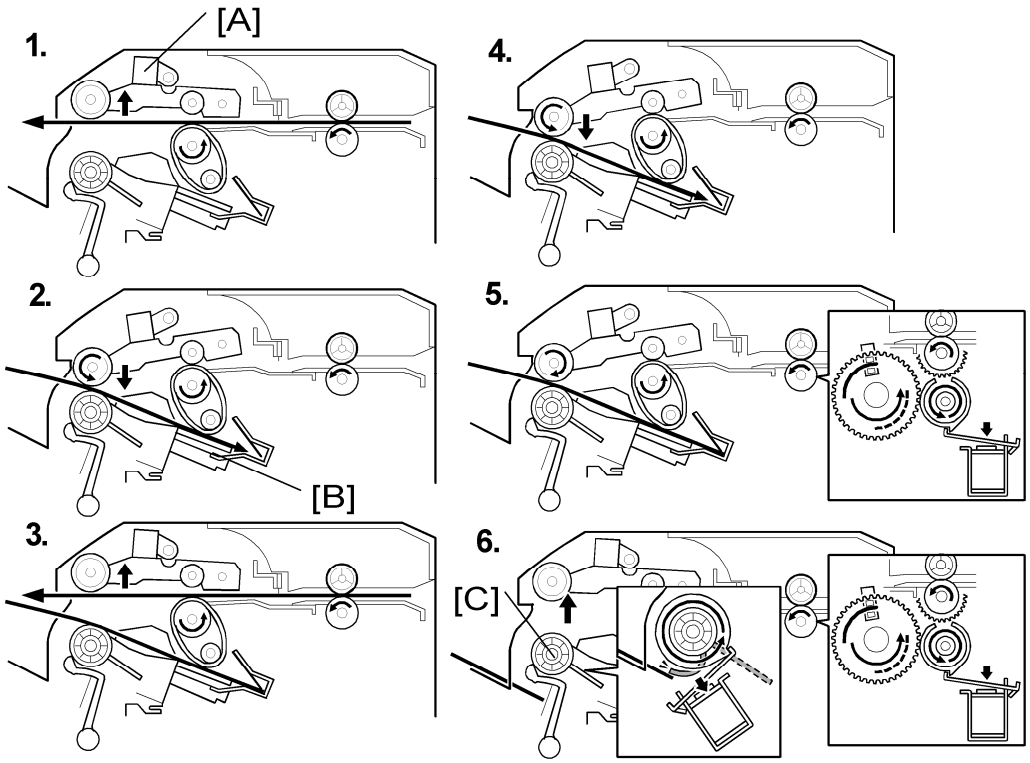
When the stack near-limit sensor [D] detects the actuator on gear [C], a stack near-limit signal is transferred to the main frame. The tray cannot move any lower. The next time the top of the stack height is above the target level, printing stops.

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



When a sheet of paper is fed, it is transported through the 500-sheet finisher as shown in these drawings.

To feed paper straight through the finisher, the pick-up roller [A] stays up.

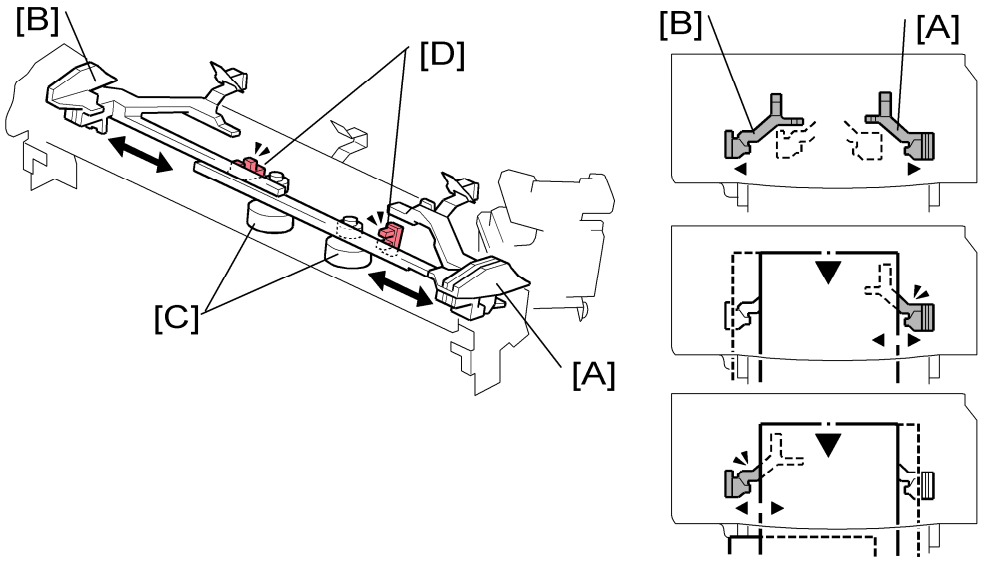
To send the paper to the jogger tray [B], when the trailing edge is almost out of the finisher, the pick-up roller moves down until the reverse/exit roller in the pick-up roller pushes the paper against the paddle roller [C]. The reverse/exit roller feeds the paper to the jogger tray.

The pick-up roller is lifted up and down by the pick-up roller contact motor.

The pick-up roller feeds the paper out after stapling, sorting, or stacking.

The reverse/exit motor controls the reverse/exit motor. The other rollers do not change direction, and are controlled by the paper transport motor.

2.2.3 JOGGER MOVEMENT



The jogger tray unit consists of the front [A] and rear [B] jogger fences, two jogger motors [C] and two jogger fence HP sensors [D].

Standby mode:

The jogger fences are placed at home position.

Sort mode:

The joggers move alternate sets to the front and rear, to separate the sets for the users.

At the start of the job, the jogger fences move to the front and rear sides.

When the first set of the job is fed to the jogger tray, the front jogger fence moves towards the rear to stack the paper neatly.

When the second set of the job is fed, the rear jogger fence moves towards the front to stack the paper neatly.

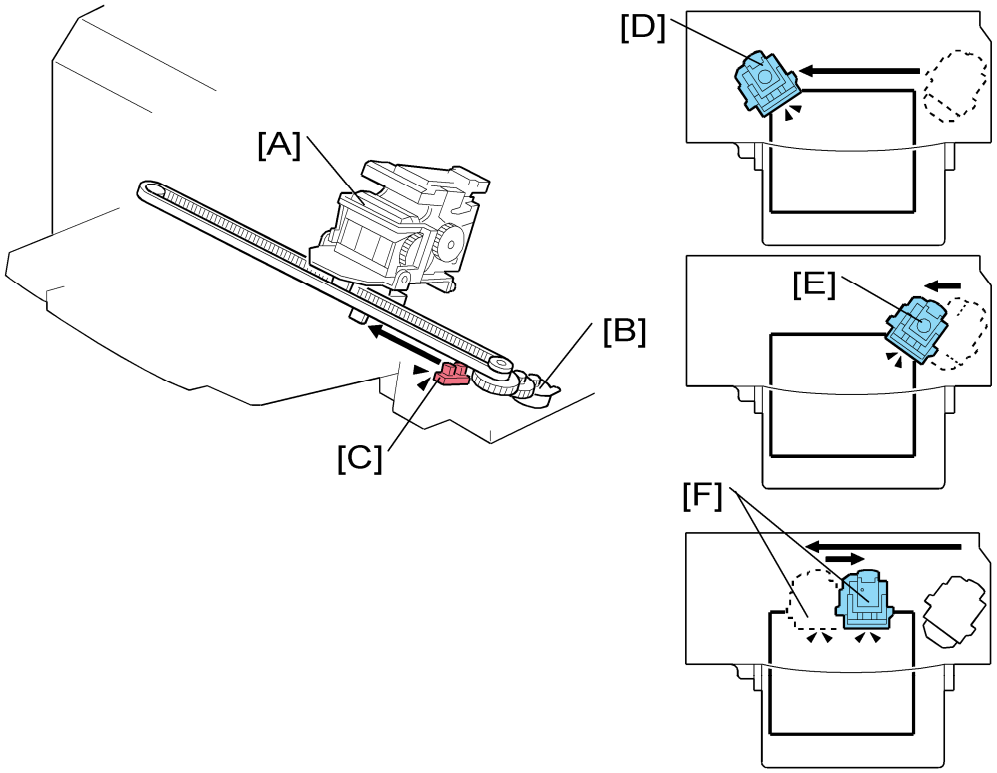
The front and rear fences continue to operate like this for alternate sets, until the end of the job.

Staple mode:

Only the front jogger fence moves in staple mode.

2.2.4 STAPLER UNIT MOVEMENT

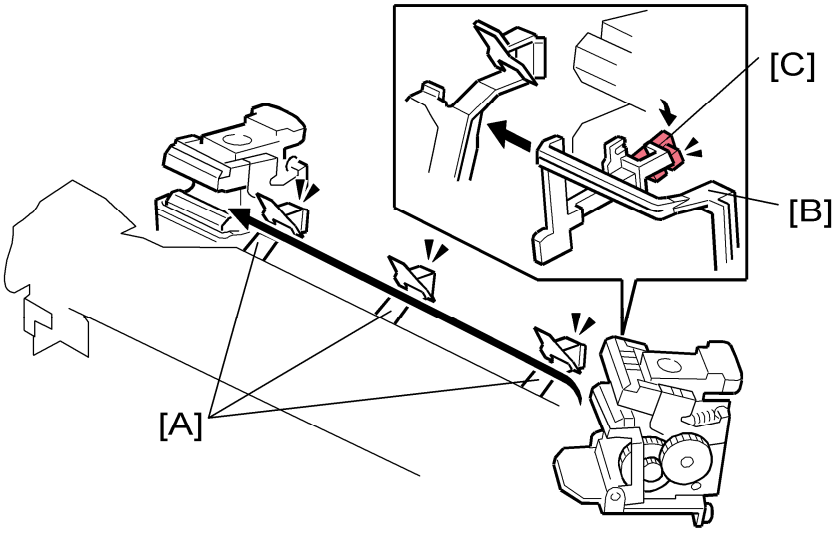
Overview



The stapler unit [A] is driven by the stapler unit movement motor [B]. The stapler unit HP sensor [C] detects when the stapler is at home position. The stapler unit stays at its home position in stand-by mode.

This finisher has three types of stapling. The stapler unit moves as shown: one staple at the rear corner [D], one staple at the front corner [E] and two staples [F].

Disabling the Stapling Mechanism



The stapler unit moves from front to rear. But there are three end fences [A] on the jogger tray unit in the stapler unit path. In order not to staple these fences, the stapler unit has the end fence detection sensor [C]. When the stapler unit passes the end fence, the end fence pushes the actuator [B], and then the sensor detects the end fence. While this sensor detects the end fence, stapling is disabled.

2.2.5 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.

2.2.6 ERROR DETECTION

	Conditions
Jogger motor error	The jogger home position sensor does not shut off after the jogger motor starts.
Jogger motor home position detection error	The jogger home position sensor does not turn on after paper shifting.
Stapler error	The stapler home position sensor (inside the stapler unit) does not turn on after stapling.
Output tray upper limit error	The 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.

AUTO REVERSE DOCUMENT FEEDER DF3020

D330

REVISION HISTORY		
Page	**Date**	**Added/Updated/New**
		None

ARDF DF3020 D330

TABLE OF CONTENTS

1. REPLACEMENT AND ADJUSTMENT 1

1.1 COVERS AND TABLE 1

1.1.1 DF EXIT TABLE AND COVERS 1

1.1.2 LEFT COVER 2

1.2 DOCUMENT FEED COMPONENTS 3

1.2.1 ORIGINAL FEED UNIT 3

1.2.2 PICK-UP ROLLER 3

1.2.3 FEED BELT 4

1.2.4 SEPARATION ROLLER 4

1.3 ELECTRICAL COMPONENTS 5

1.3.1 ORIGINAL SET/ORIGINAL REVERSE SENSOR 5

1.3.2 ORIGINAL SIZE SENSOR 6

1.3.3 REGISTRATION SENSOR 7

1.3.4 STAMP SOLENOID AND ORIGINAL EXIT SENSOR 8

1.4 ORIGINAL FEED DRIVE 9

2. DETAILED SECTION DESCRIPTIONS 10

2.1 COMPONENT LAYOUT 10

2.1.1 MECHANICAL COMPONENT LAYOUT 10

2.1.2 ELECTRICAL COMPONENT LAYOUT 11

2.1.3 ELECTRICAL COMPONENT DESCRIPTION 11

2.1.4 DRIVE LAYOUT 13

2.2 OVERVIEW 14

2.2.1 ORIGINAL SIZE DETECTION 14

2.2.2 MIXED ORIGINAL SIZE MODE 16

2.2.3 PICK-UP AND SEPARATION 17

2.2.4 ORIGINAL TRANSPORT AND EXIT 18

2.2.5 DOUBLE-SIDED ORIGINALS 19

2.2.6 ORIGINAL TRAILING EDGE SENSOR 20

2.2.7 STAMP 21

2.2.8 TIMING CHART 22

2.2.9 CONDITION OF JAM DETECTION 23
2.2.10 OVERALL ELECTRICAL CIRCUIT 24

3. SERVICE TABLES.....25
3.1 DIP SWITCHES 25

Read This First

Safety and Symbols

Replacement Procedure Safety

⚠CAUTION

- Turn off the main power switch and unplug the machine before beginning any of the replacement procedures in this manual.

Symbols Used in this Manual

This manual uses the following symbols.

☛: See or Refer to

: Screws

: Connector

: Clip ring

: E-ring

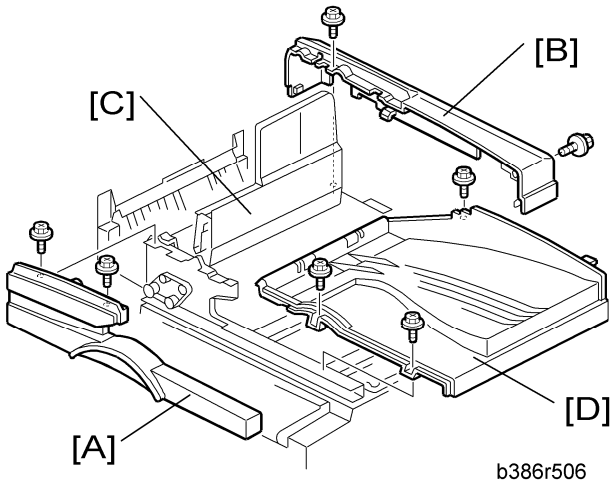
1. REPLACEMENT AND ADJUSTMENT

1.1 COVERS AND TABLE

CAUTION

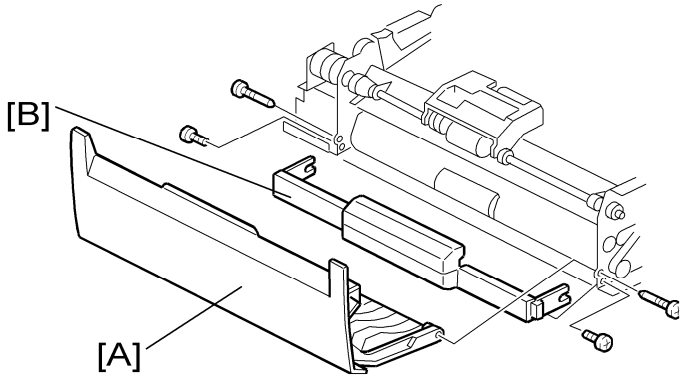
- Turn off the main power switch and unplug the machine before beginning any of the procedures in this section.

1.1.1 DF EXIT TABLE AND COVERS



1. Open the DF feed cover.
2. Remove the front cover [A] (3 x).
3. Remove the rear cover [B] (3 x).
4. Open the reverse table [C].
5. Remove the original exit table [D] (3 x).

1.1.2 LEFT COVER



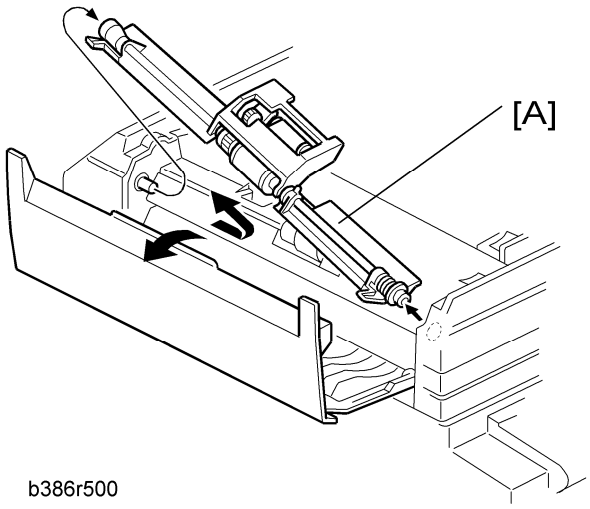
1. Remove the front and rear covers.
2. Remove the left cover [A].
3. Remove the lower left stay unit [B] (2 x).

1.2 DOCUMENT FEED COMPONENTS

⚠CAUTION

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

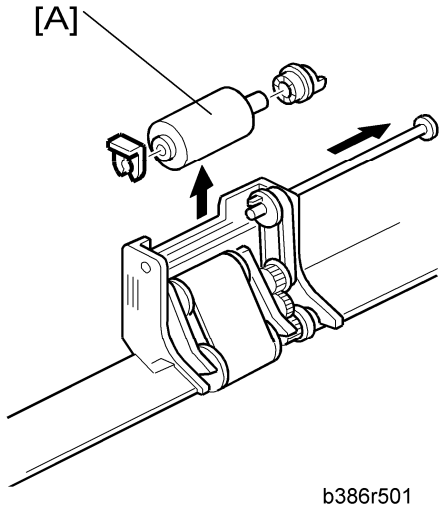
1.2.1 ORIGINAL FEED UNIT



b386r500

1. Open the left cover.
2. Detach the paper feed unit [A] by sliding it toward the front of the machine (spring-loaded side) and then lifting the far side.

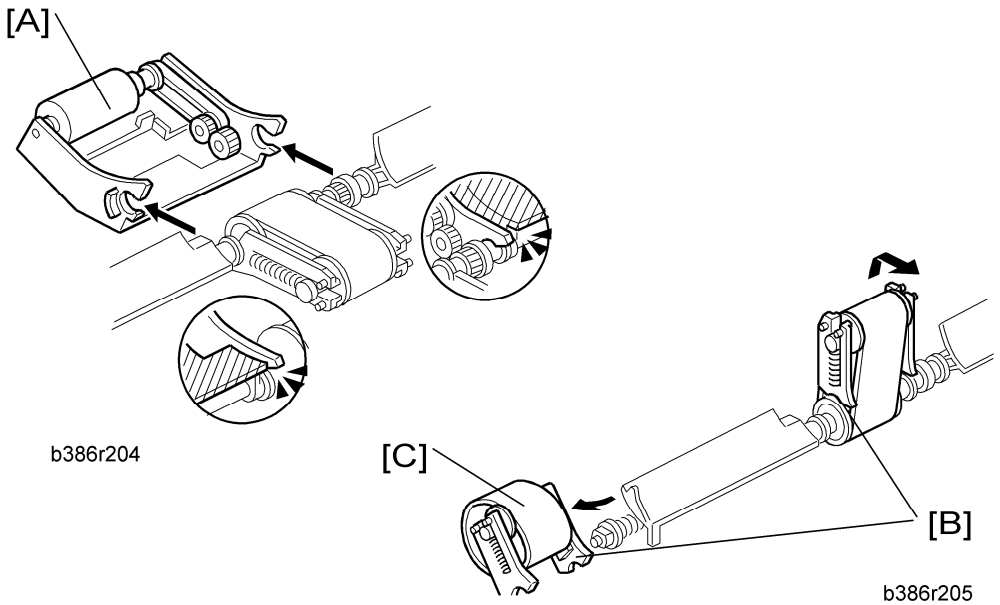
1.2.2 PICK-UP ROLLER



b386r501

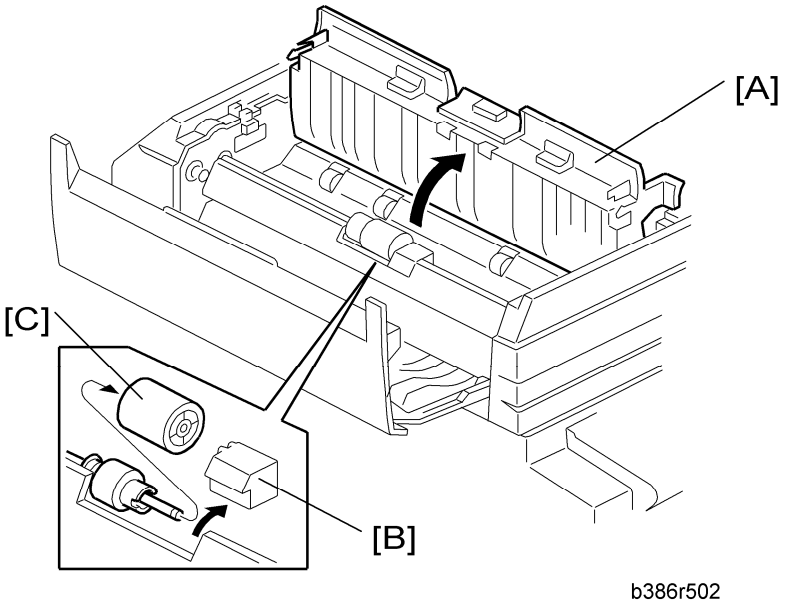
1. Remove the original feed unit.
2. Replace the pick-up roller [A] (1 snap ring).

1.2.3 FEED BELT



1. Remove the original feed unit.
2. Open the paper feed guide [A].
3. Remove the belt holders [B].
4. Replace the feed belt [C].

1.2.4 SEPARATION ROLLER



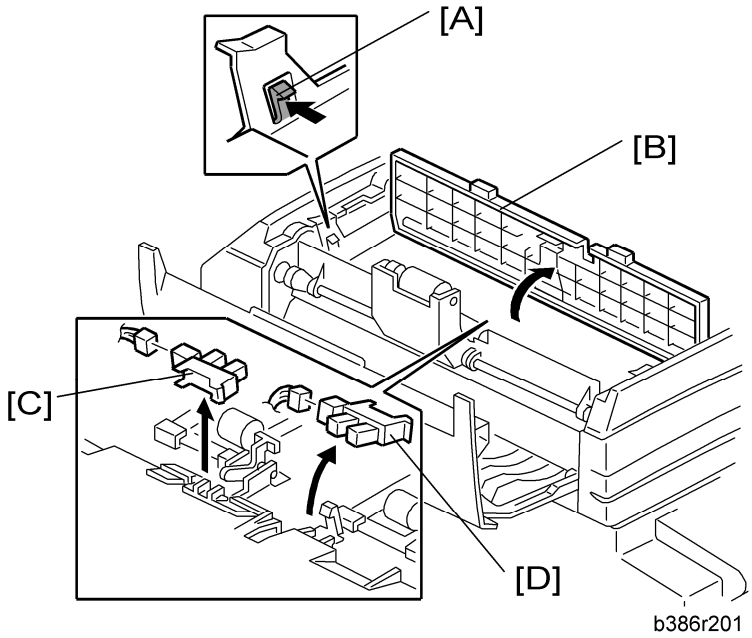
1. Lift the original feed guide [A].
2. Remove the separation roller cover [B].
3. Replace the separation roller [C].

1.3 ELECTRICAL COMPONENTS

⚠CAUTION

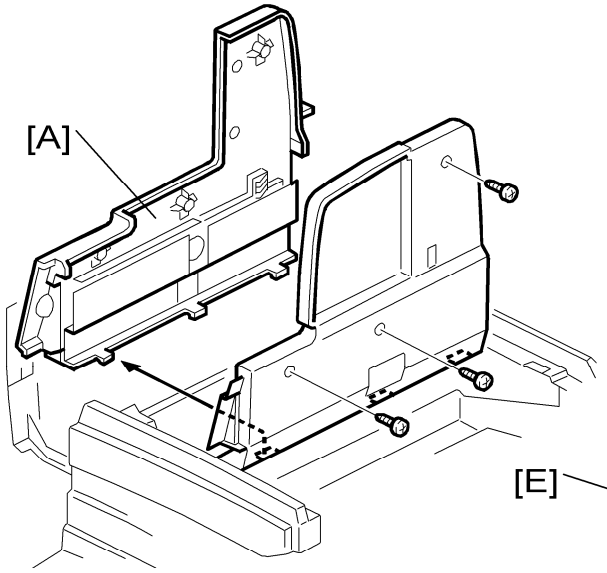
- Turn off the main power switch and unplug the machine before beginning any of the procedures in this section.

1.3.1 ORIGINAL SET/ORIGINAL REVERSE SENSOR

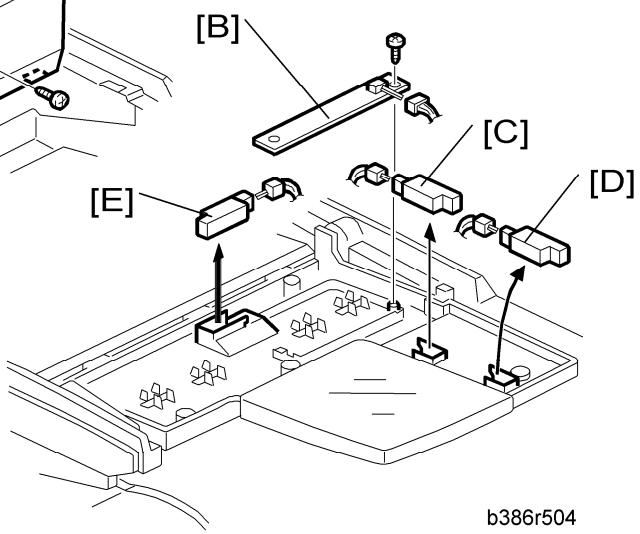


1. Open the left cover.
2. While pushing the left and right pawls [A], open the original feed guide plate [B].
3. Remove the original set sensor [C] (☞ x 1).
4. Remove the original reverse sensor [D] (☞ x 1).

1.3.2 ORIGINAL SIZE SENSOR

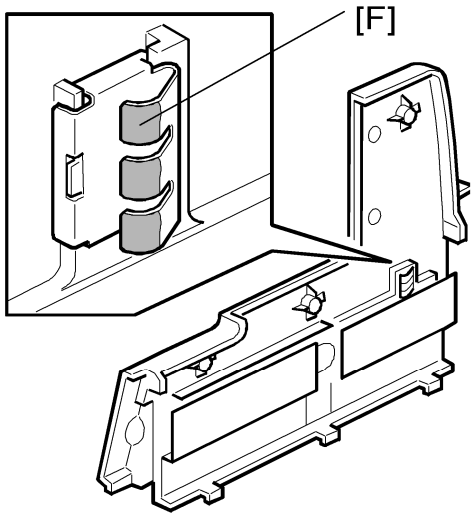


b386r503



b386r504

1. Open the original table [A].
2. Remove the upper part of the table (3 x).
3. Replace the width sensor board [B], length sensor (–1 [C] and –2 [D]) and trailing edge sensor [E] (x 1 each).

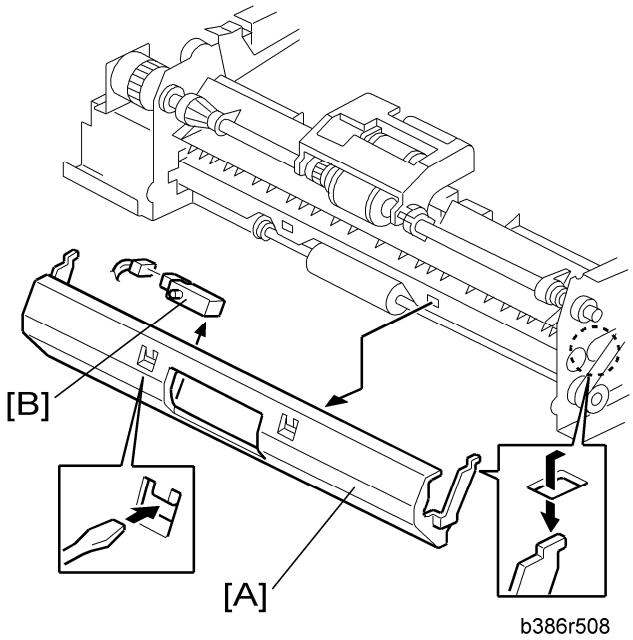


b386r505

Note

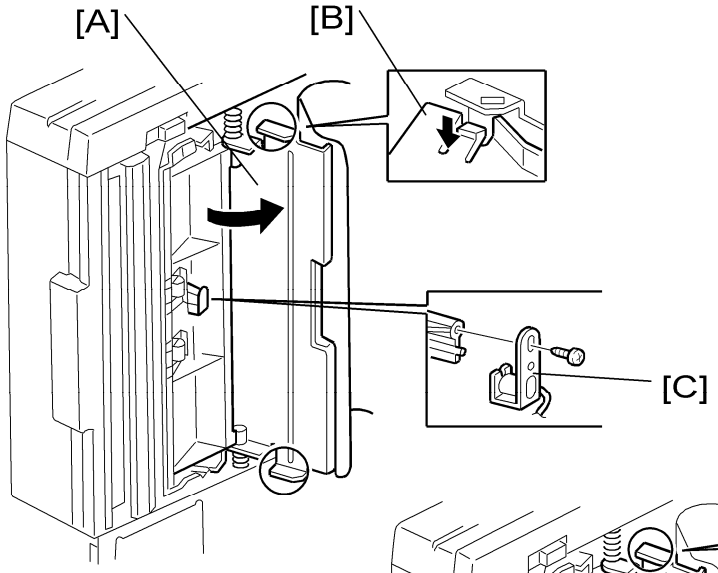
- To ensure proper detection of paper size, after wiping off the sensor board and terminal plate with a dry cloth (or cloth with alcohol), apply silicone grease (KS-660) to the terminal plate [F].

1.3.3 REGISTRATION SENSOR

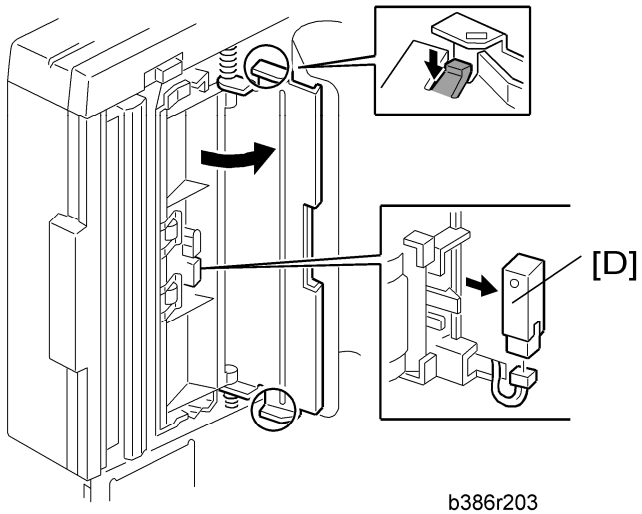


1. Remove the front and rear covers.
2. Remove the transport guide plate [A].
3. Replace the registration sensor [B] (☞ x 1).

1.3.4 STAMP SOLENOID AND ORIGINAL EXIT SENSOR



b386r509



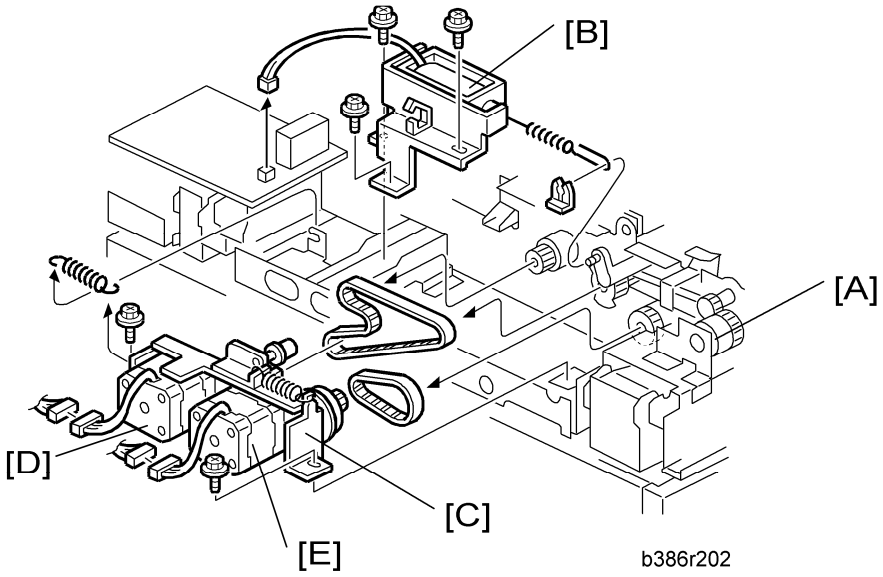
b386r203

1. Remove the rear cover (1 connector). Also remove the upper cover (the exit tray).
2. Open the exit guide plate [A]. Next, detach the unit by inserting a screwdriver or other tool into one of the small openings [B] on either side of the guide plate holder and pushing firmly.
3. Remove the stamp solenoid [C] (1 x , x 1).
4. Remove the original exit sensor [D] (x 1).

1.4 ORIGINAL FEED DRIVE

⚠CAUTION

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



First remove the rear cover. Then follow the instructions below for each part replacement:

DF Feed Clutch

1. Replace the DF feed clutch [A] (1 E-ring, 1 x).

Pick-up Solenoid

1. Replace the pick-up solenoid [B] (3 x , 1 snap ring, 1 x).

Transport Motor

1. Remove the bracket [C] (2 x).
2. Replace the transport motor [E] (2 x , 1 x).

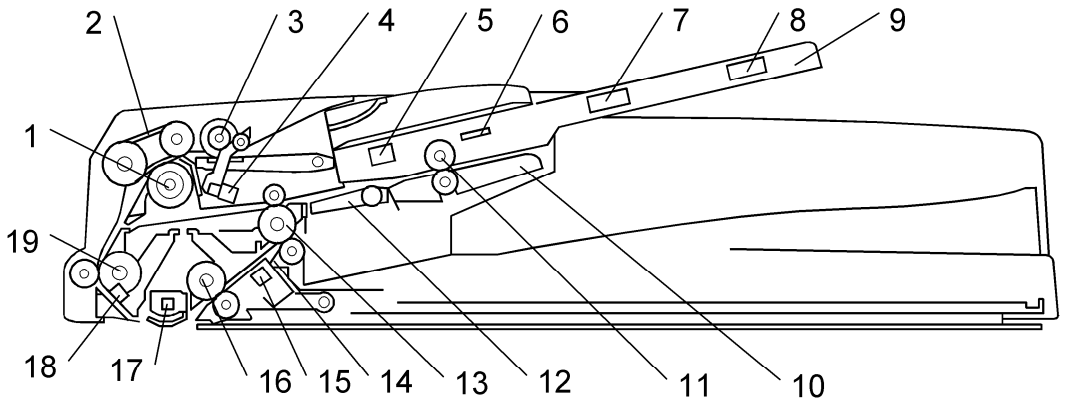
DF Feed Motor

1. Remove the bracket [C] (2 x).
2. Replace the DF feed motor [D] (2 x , 1 x).

2. DETAILED SECTION DESCRIPTIONS

2.1 COMPONENT LAYOUT

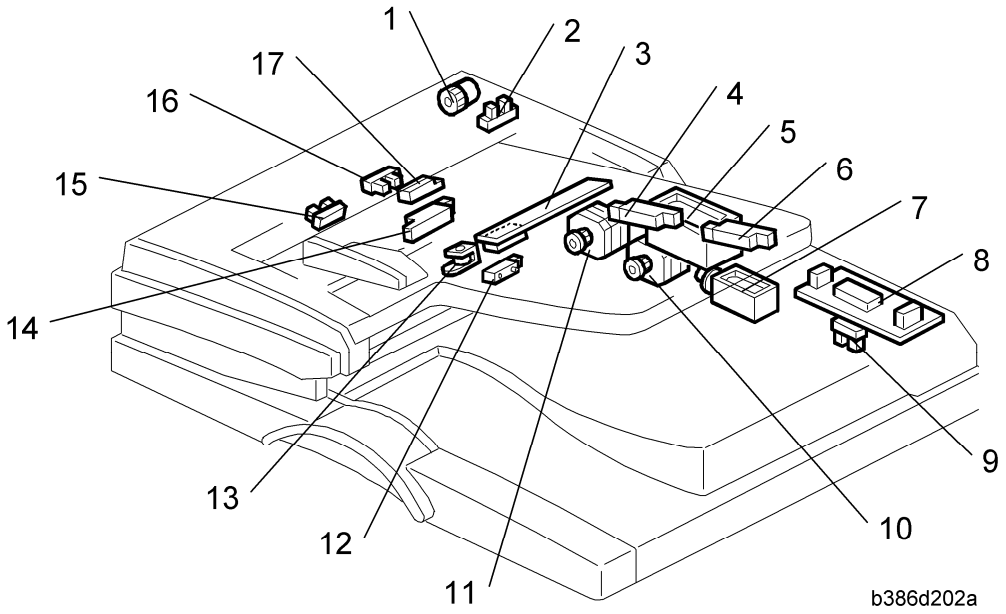
2.1.1 MECHANICAL COMPONENT LAYOUT



b386d201

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

2.1.2 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

2.1.3 ELECTRICAL COMPONENT DESCRIPTION

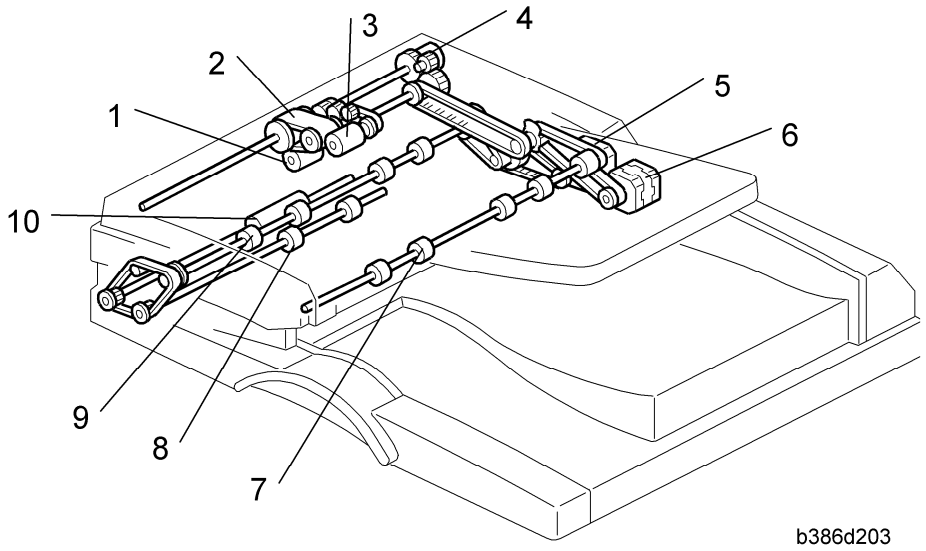
Symbol	Name	Function	Index No.
Motors			
M1	DF Feed	Drives the feed belt, separation, pick-up, and reverse table rollers.	10
M2	DF Transport	Drives the transport and exit rollers	11

Component Layout

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	5

		table.	
SOL2	Stamp	Energizes the stamper to mark the original.	13
SOL3	Junction Gate	Opens and closes the junction gate.	7
Clutches			
MC1	DF Feed	Transfers transport motor drive to the pick-up roller and feed belt.	1
PCBs			
PCB1	DF Drive	Interfaces the sensor signals with the copier, and transfers the magnetic clutch, solenoid and motor drive signals from the copier.	8

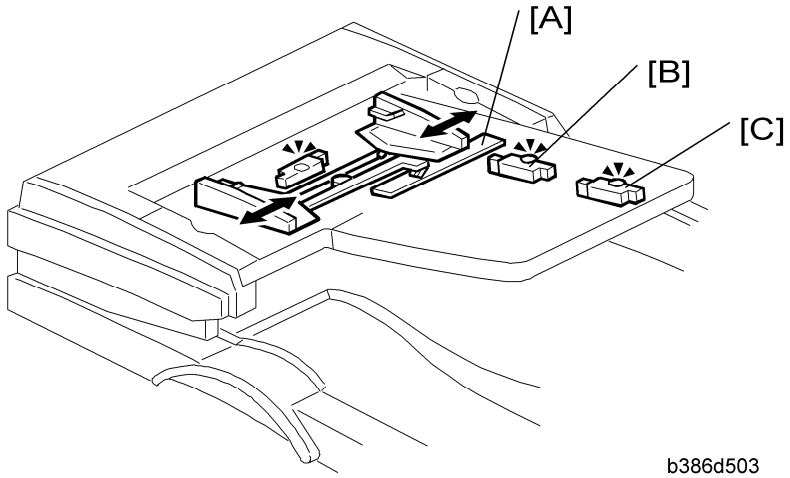
2.1.4 DRIVE LAYOUT



1. Separation Roller	6. DF Feed Motor
2. Original Feed Belt	7. Reverse Table Roller
3. Pick-up Roller	8. 2nd Transport Roller
4. DF Feed Clutch	9. Exit Roller
5. DF Transport Motor	10. 1st Transport Roller

2.2 OVERVIEW

2.2.1 ORIGINAL SIZE DETECTION



The original size detection mechanism consists of the original width sensor board [A] and two original length sensors-1 [B] and -2 [C]. Based on the combined output of the length sensors and the width sensor board, the machine can detect the size of the original. This integrated detection mechanism is detailed in the table on the next page.
Note that the width sensor's terminal plate is attached to the original guide, so the widths of the originals must all be the same.

P4	NA	EU	Original Width-1	Original Width-2	Original Width-3				Original Length-1	Original Length-2
					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

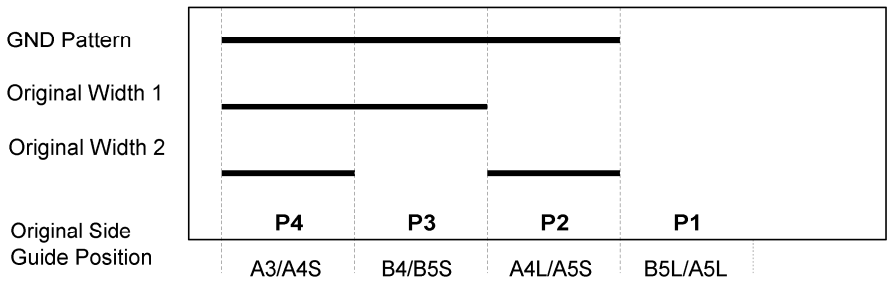
ON: Paper present

NA: North America, EU: Europe

Note

- 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.
- 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.
- 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.

b386d501

2.2.2 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

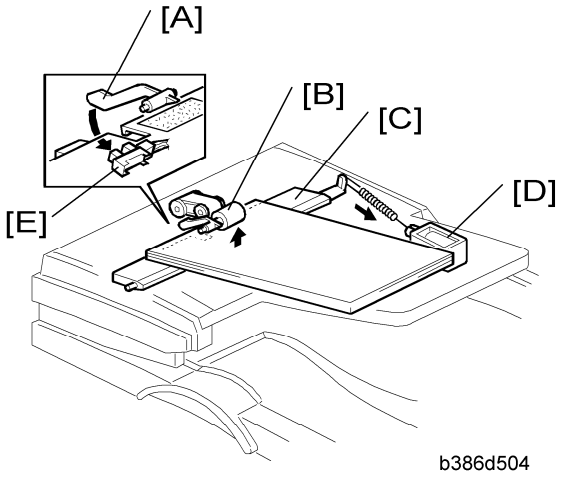
The originals follow this path:

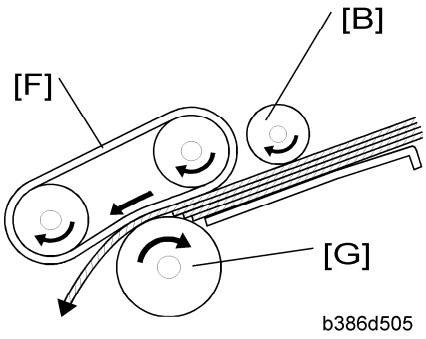
1. Length detection ➜ Scanning glass ➜ Inverter table
2. Inverter table ➜ Scanning glass ➜ Inverter table (restores the original order)
3. Inverter table ➜ Scanning glass (image scanned) ➜ Exit tray

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.

2.2.3 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.

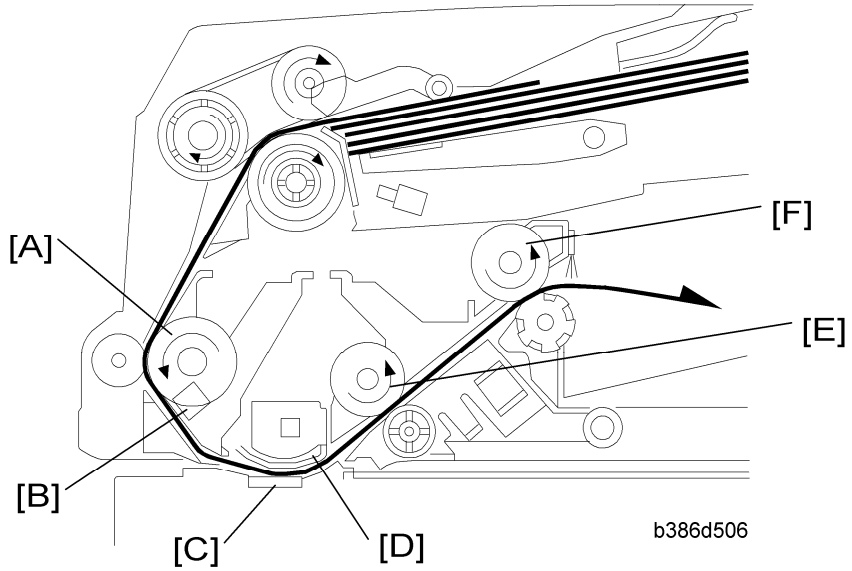
After pressing the start button, the pick-up solenoid [D] is activated and the lift plate [C] lifts the original up until it comes in contact with the pick-up roller [B]. The pick-up roller then feeds the top sheet of paper.

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].

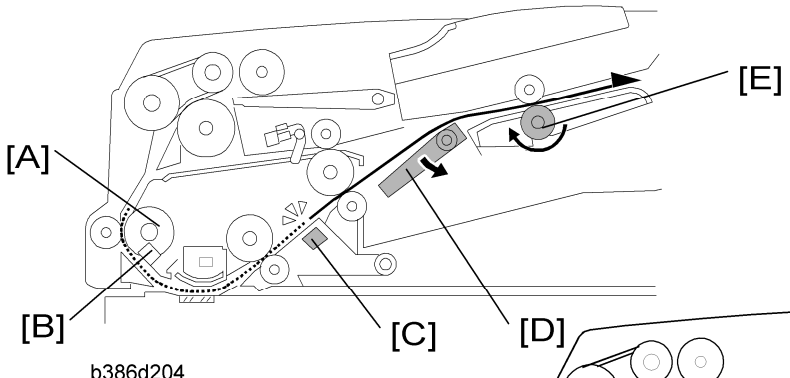
2.2.4 ORIGINAL TRANSPORT AND EXIT

Single-Sided Originals

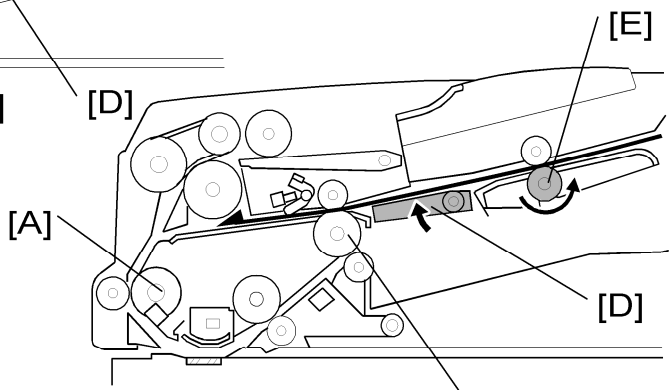


The DF feed motor feeds the separated original to the first transport roller [A] at maximum speed. When the registration sensor [B] detects the leading edge, the motor stops for a short while. Then the feed and transport motors turn on again, and feed the original through scanning area at a lower speed (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].

2.2.5 DOUBLE-SIDED ORIGINALS



b386d204

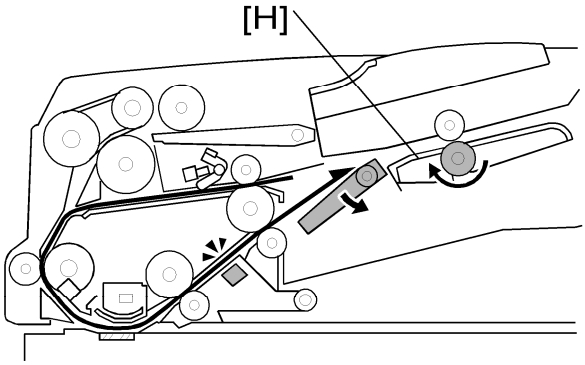


b386d205

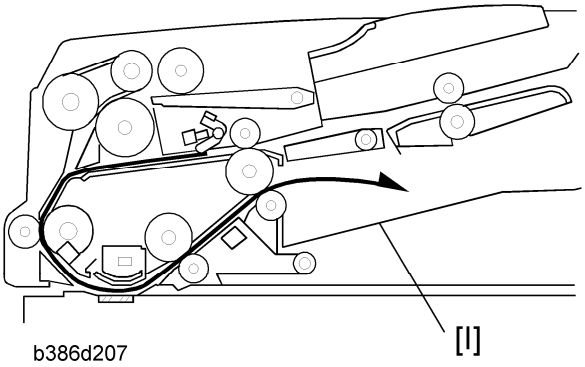
When the registration sensor [B] detects the leading edge of the original, the DF feed motor (which drives the feed roller) and transport motor (which drives the transport roller) both switch off. After a brief interval, the transport motor alone reactivates to drive the first [A] and second transport 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).



b386d206



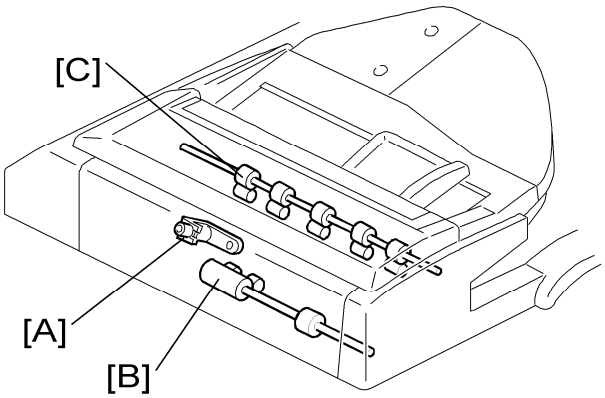
b386d207

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 [I] in the correct order.

2.2.6 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.

2.2.7 STAMP



b386d507

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.

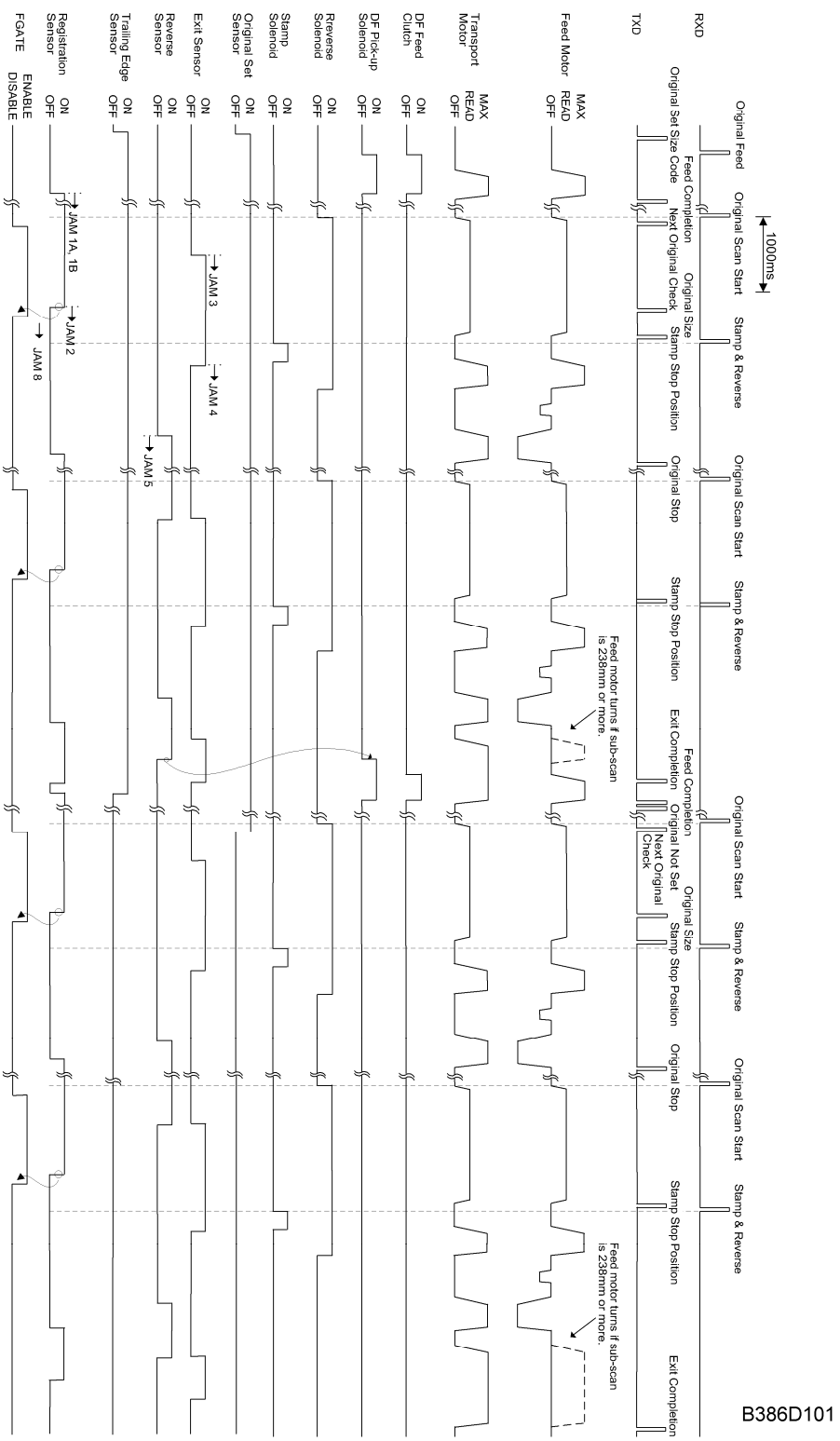
When the original reaches the stamp position, the DF feed motor stops. At 300 milliseconds after stopping the DF feed motor, the stamp solenoid turns on if the page was sent successfully (immediate transmission) or stored successfully (memory transmission).

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.

2.2.8 TIMING CHART

LT Sideways Stamp Mode (Double-Sided Original Mode)

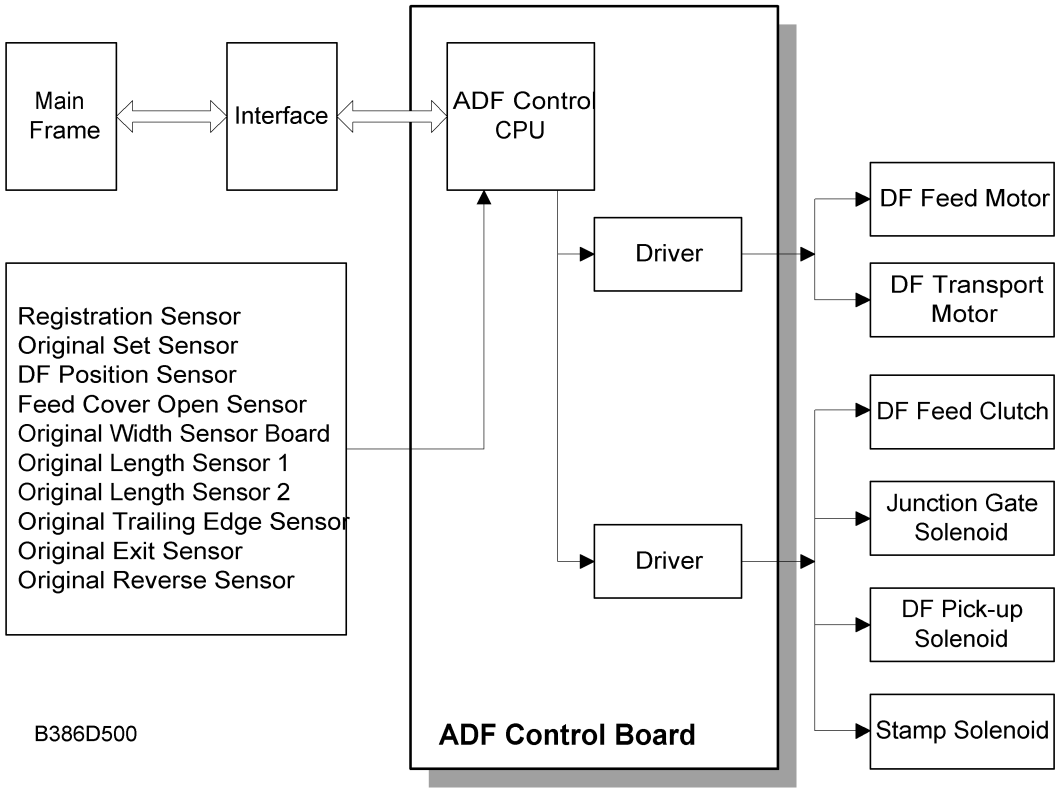


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2.2.9 CONDITION OF JAM DETECTION

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.

2.2.10 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%

PAPER TRAY UNIT PB3030
D331

REVISION HISTORY		
Page	**Date**	**Added/Updated/New**
		None

PAPER TRAY UNIT PB3030 D331

TABLE OF CONTENTS

1. REPLACEMENT AND ADJUSTMENT 1

1.1 COVERS AND ROLLER 1

1.1.1 COVERS 1

1.1.2 FEED ROLLER 2

1.2 DRIVE COMPONENTS 3

1.2.1 UPPER FEED CLUTCH 3

1.2.2 LOWER FEED CLUTCH 3

1.2.3 RELAY CLUTCH 4

1.2.4 PAPER FEED MOTOR 4

1.2.5 LIFT MOTORS 5

1.3 ELECTRICAL COMPONENTS 6

1.3.1 VERTICAL TRANSPORT SENSOR 6

1.3.2 PAPER END SENSOR 7

1.3.3 PAPER SIZE SENSORS 7

1.3.4 TRAY MAIN BOARD 8

2. DETAILED SECTION DESCRIPTIONS 9

2.1 COMPONENT LAYOUT 9

2.1.1 MECHANICAL COMPONENT LAYOUT 9

2.1.2 ELECTRICAL COMPONENT LAYOUT 10

2.1.3 ELECTRICAL COMPONENT DESCRIPTION 10

2.1.4 DRIVE LAYOUT 13

2.2 PAPER FEED AND SEPARATION MECHANISM 14

2.3 PAPER LIFT MECHANISM 15

2.4 PAPER END DETECTION 17

2.5 PAPER HEIGHT DETECTION 18

2.6 PAPER SIZE DETECTION 19

2.7 SIDE AND END FENCES 21

2.7.1 SIDE FENCES 21

2.7.2 END FENCE 21

Read This First

Safety and Symbols

Replacement Procedure Safety

⚠CAUTION

- Turn off the main power switch and unplug the machine before beginning any of the replacement procedures in this manual.

Symbols Used in this Manual

This manual uses the following symbols.

☛: See or Refer to

: Screws

: Connector

: Clip ring

: E-ring

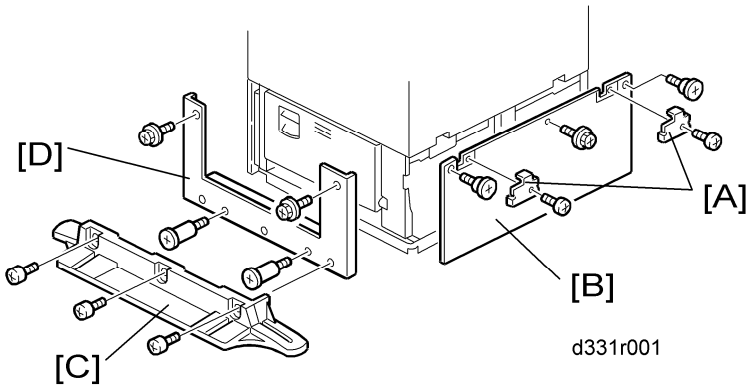
1. REPLACEMENT AND ADJUSTMENT

1.1 COVERS AND ROLLER

CAUTION

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

1.1.1 COVERS



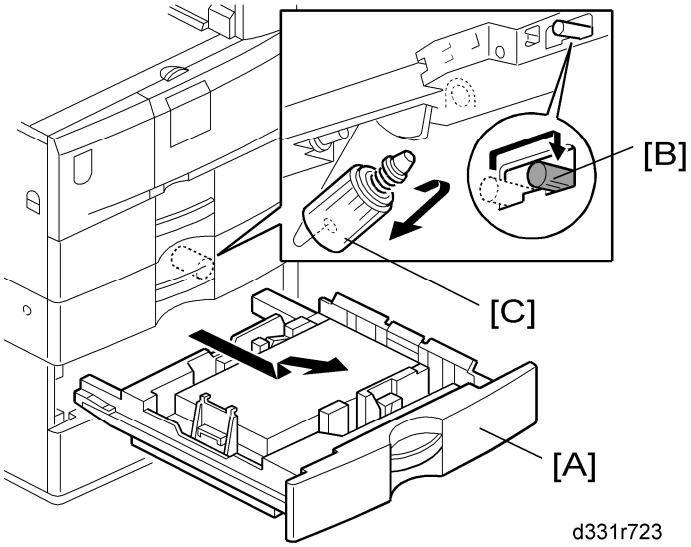
Rear Cover

1. Hold brackets [A] (☞ x 1 each)
2. Rear cover [B] (☞ x 3)

Right Cover

1. Right side stopper [C] (☞ x 3)
2. Right cover [D] (☞ x , knob screw x 2)

1.1.2 FEED ROLLER



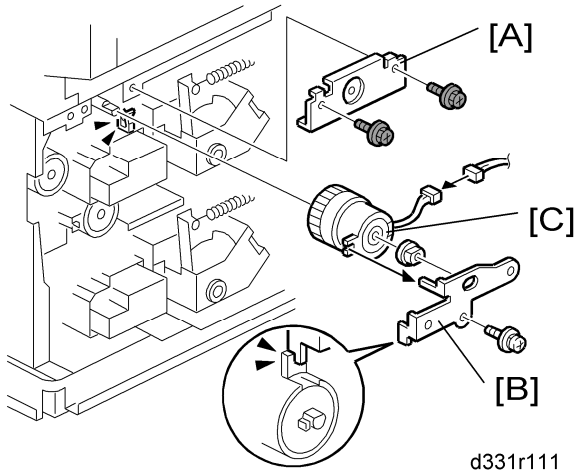
1. Pull out the tray [A].
2. Release the lock lever [B].
3. Feed roller [C]

1.2 DRIVE COMPONENTS

⚠CAUTION

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

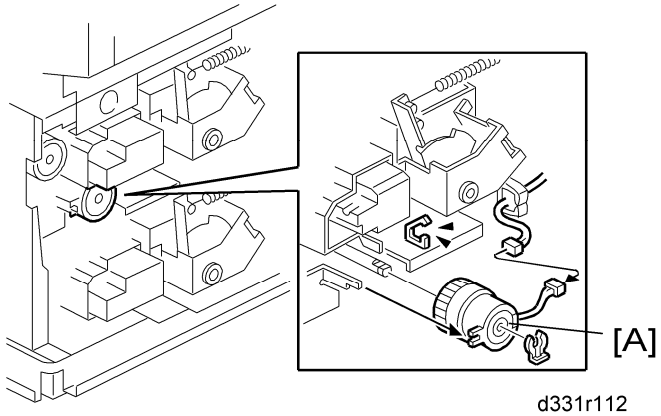
1.2.1 UPPER FEED CLUTCH



d331r111

1. Rear cover (☛ "Covers")
2. Bracket [A] (x 2)
3. Hold bracket [B] (x 1, bushing x 1)
4. Upper feed clutch [C] (x 1)

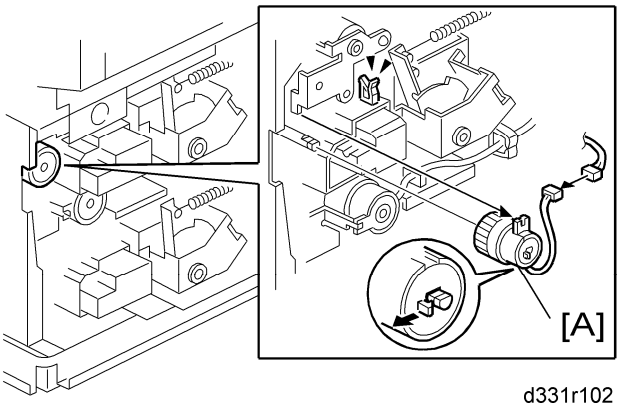
1.2.2 LOWER FEED CLUTCH



d331r112

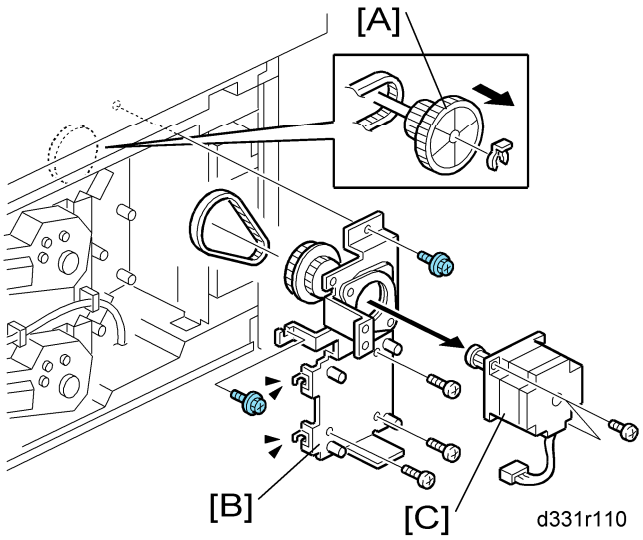
1. Rear cover (☛ "Covers")
2. Lower feed clutch [A] (x 1, x 1, x 1)

1.2.3 RELAY CLUTCH



1. Rear cover (☛ "Covers")
2. Relay clutch [A] (x 1, x 1)

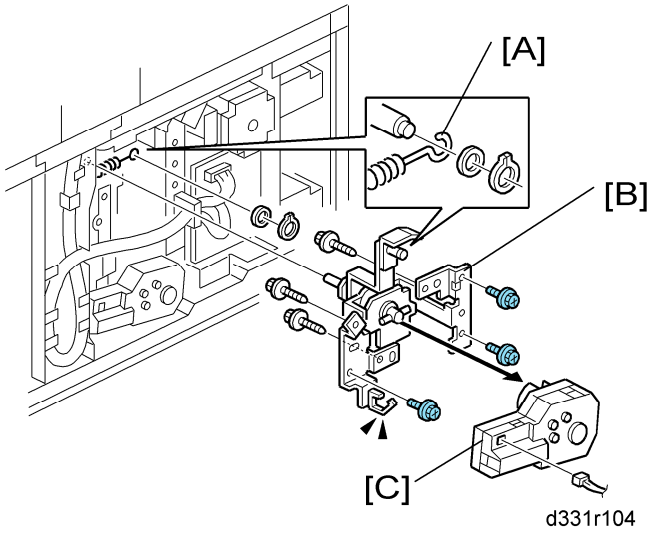
1.2.4 PAPER FEED MOTOR



1. Rear cover (☛ "Covers")
2. Tray main board (☛ "Tray Main Board")
3. Gear [A] (x 1)
4. Paper feed motor bracket [B] (x 5)
5. Paper feed motor [C] (x 2)

1.2.5 LIFT MOTORS

Upper Lift Motor



1. Rear cover (☛ "Covers")
2. Spring [A] (snap ring x 1, spacer x 1)
3. Lift motor bracket [B] (🖉 x 3, 🖅 x 1)
4. Upper lift motor [C] (🖉 x 3)

Lower Lift Motor

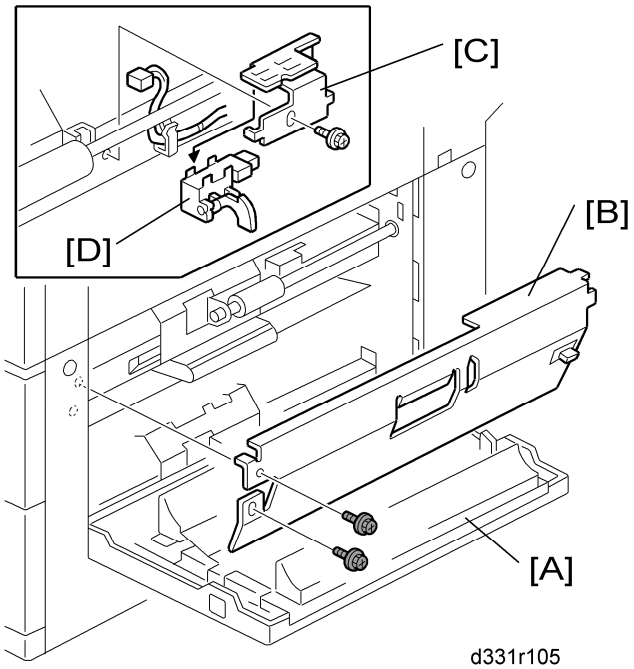
1. Rear cover (☛ "Covers")
2. Spring (snap ring x 1, spacer x 1)
3. Lift motor bracket (🖉 x 4, 🖅 x 1)
4. Lower lift motor (🖉 x 3)

1.3 ELECTRICAL COMPONENTS

⚠CAUTION

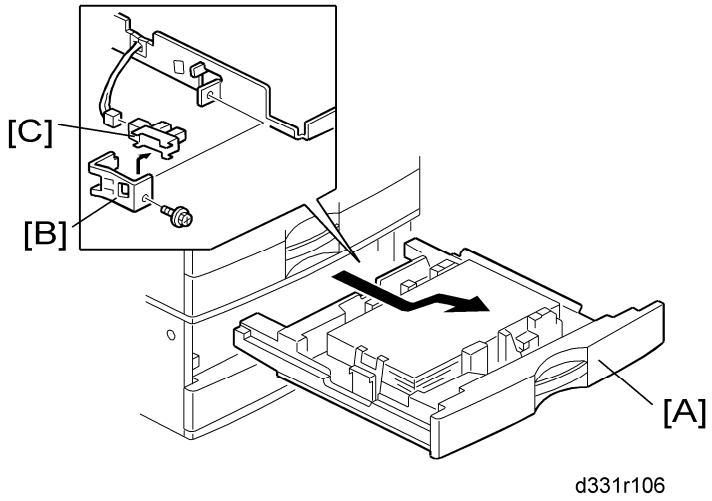
- Turn off the main power switch and unplug the machine before beginning any of the procedures in this section.

1.3.1 VERTICAL TRANSPORT SENSOR



1. Open the tray cover [A]
2. Guide plate [B] (x 2)
3. Sensor bracket [C] (x 1, x 1)
4. Vertical transport sensor [D] (hooks)

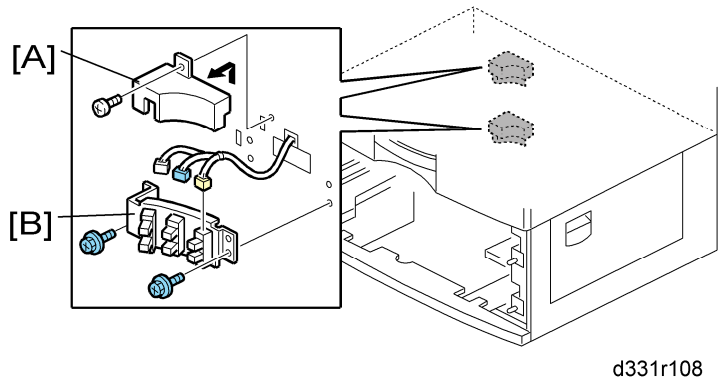
1.3.2 PAPER END SENSOR



d331r106

1. Pull out the tray [A]
2. Sensor bracket [B] (x 1, x 1)
3. Paper end sensor [C] (hooks)

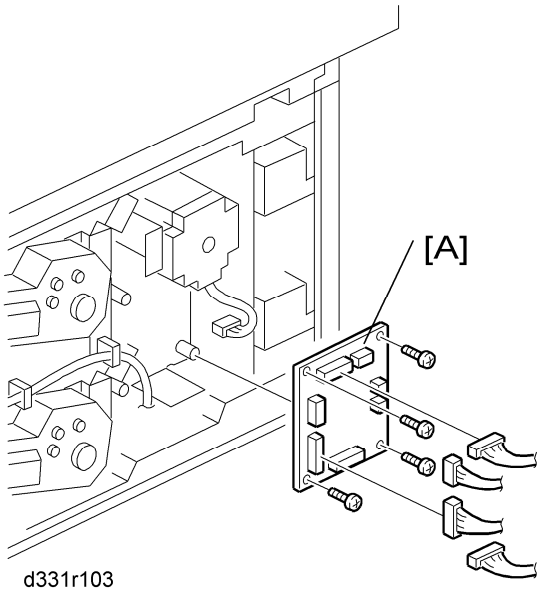
1.3.3 PAPER SIZE SENSORS



d331r108

1. Pull out the two trays.
2. Sensor bracket cover [A] (x 1)
3. Sensor bracket [B] (x 3, x 2)
4. Paper size sensors (hooks)

1.3.4 TRAY MAIN BOARD

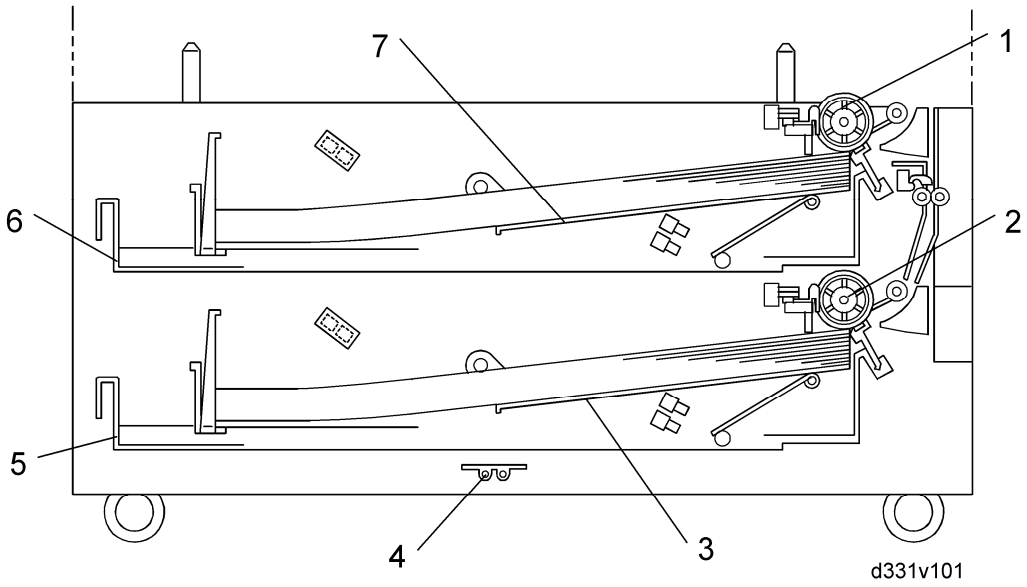


1. Rear cover (☛ "Covers")
2. Tray main board [A] (🔩 x 4, all 🖐's)

2. DETAILED SECTION DESCRIPTIONS

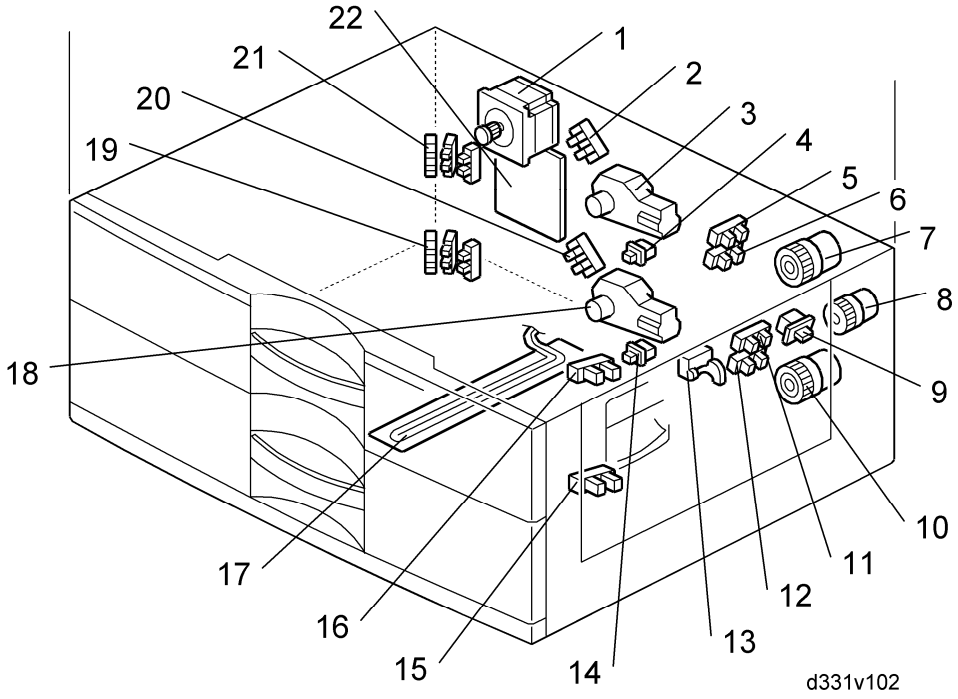
2.1 COMPONENT LAYOUT

2.1.1 MECHANICAL COMPONENT LAYOUT



1. Upper paper feed roller 2. Lower paper feed roller 3. Lower bottom plate 4. Optional tray heater	5. Lower tray 6. Upper tray 7. Upper bottom plate

2.1.2 ELECTRICAL COMPONENT LAYOUT



1. Paper feed motor	12. Lower paper height 1 sensor
2. Upper lift sensor	13. Vertical transport sensor
3. Upper lift motor	14. Lower tray set switch
4. Upper tray set switch	15. Lower paper end sensor
5. Upper paper height 2 sensor	16. Upper paper end sensor
6. Upper paper height 1 sensor	17. Optional tray heater
7. Upper paper feed clutch	18. Lower lift motor
8. Relay clutch	19. Lower paper size sensors
9. Tray cover switch	20. Lower lift sensor
10. Lower paper feed clutch	21. Upper paper size sensors
11. Lower paper height 2 sensor	22. Tray main board

2.1.3 ELECTRICAL COMPONENT DESCRIPTION

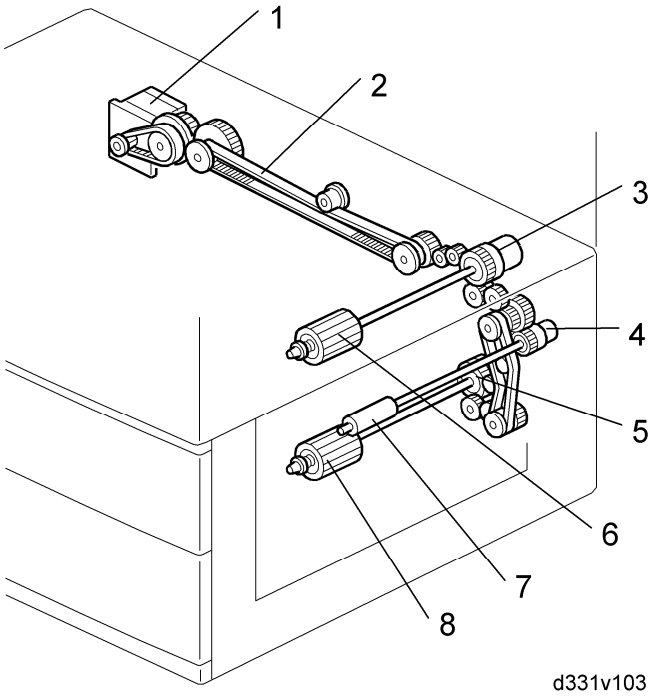
Symbol	Name	Function	Index No.

Motors			
M1	Paper Feed	Drives all rollers.	1
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.	20
S3	Upper Paper End	Informs the copier/printer when the upper tray runs out of paper.	16
S4	Lower Paper End	Informs the copier/printer when the lower tray runs out of paper.	15
S5	Vertical Transport	Detects misfeeds.	13
S6	Upper Paper Height 1	Detects the amount of paper in the upper tray.	6
S7	Upper Paper Height 2	Detects the amount of paper in the upper tray.	5
S8	Lower Paper Height 1	Detects the amount of paper in the lower tray.	12
S9	Lower Paper Height 2	Detects the amount of paper in the lower tray.	11
S10	Upper Paper Size	Determines what paper size is in the upper tray.	21
S11	Lower Paper	Determines what paper size is in the lower tray.	19

Component Layout

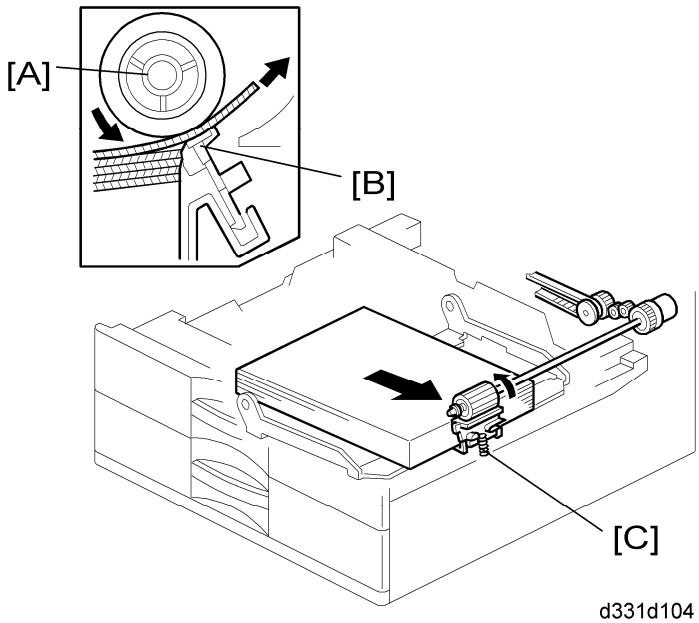
	Size		
Switches			
SW1	Tray Cover	Detects whether the tray cover is opened or not.	9
SW2	Upper Tray Set	Detects whether the upper tray is opened or not.	4
SW3	Lower Tray Set	Detects whether the lower tray is opened or not.	14
Magnetic Clutches			
MC1	Upper Paper Feed	Starts paper feed from the upper tray.	7
MC2	Lower Paper Feed	Starts paper feed from the lower tray.	10
MC3	Relay	Drives the relay rollers.	8
PCBs			
PCB1	Tray Main	Controls the paper tray unit and communicates with the copier/printer.	22
Others			
H1	Optional Tray Heater	Removes humidity from the paper in the trays.	17

2.1.4 DRIVE LAYOUT



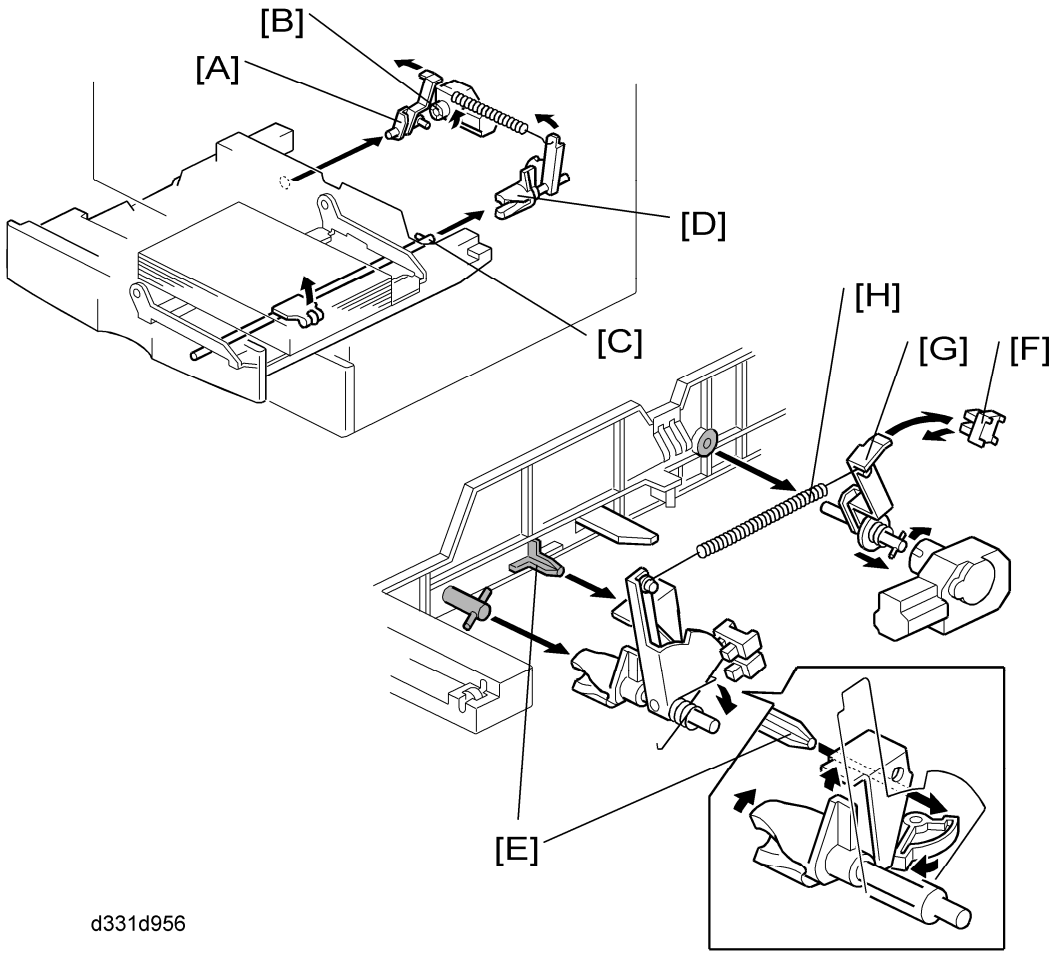
1. Paper feed motor	5. Lower paper feed clutch
2. Drive belt	6. Upper paper feed roller
3. Upper paper feed clutch	7. Relay roller
4. Relay clutch	8. Lower paper feed roller

2.2 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].

2.3 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 [H] pulls the bottom plate pressure lever, and this lifts the tray bottom plate.

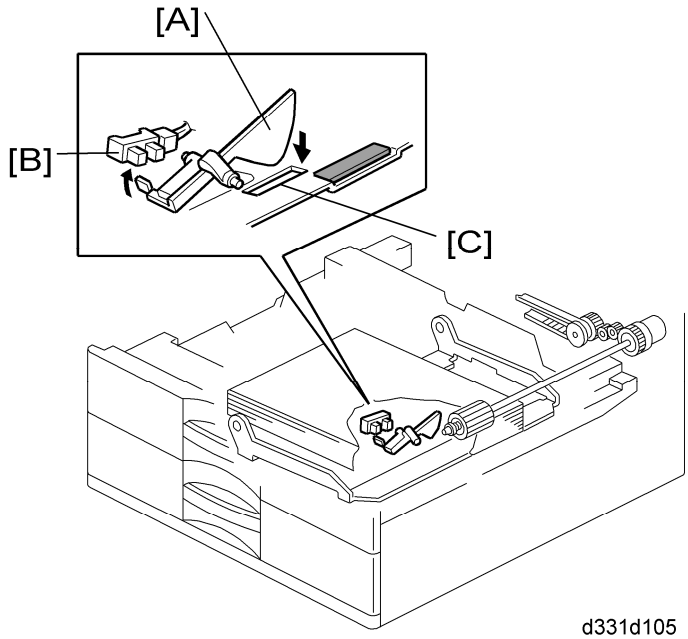
When the top of the stack touches the feed roller, the motor cannot pull up the plate any more, so it pulls the actuator [G] into the lift sensor [F].

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.

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.

2.4 PAPER END DETECTION



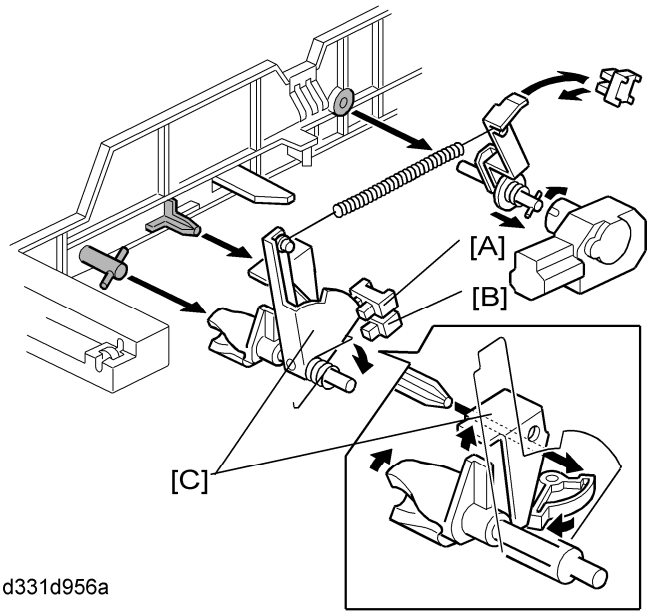
d331d105

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.

2.5 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].

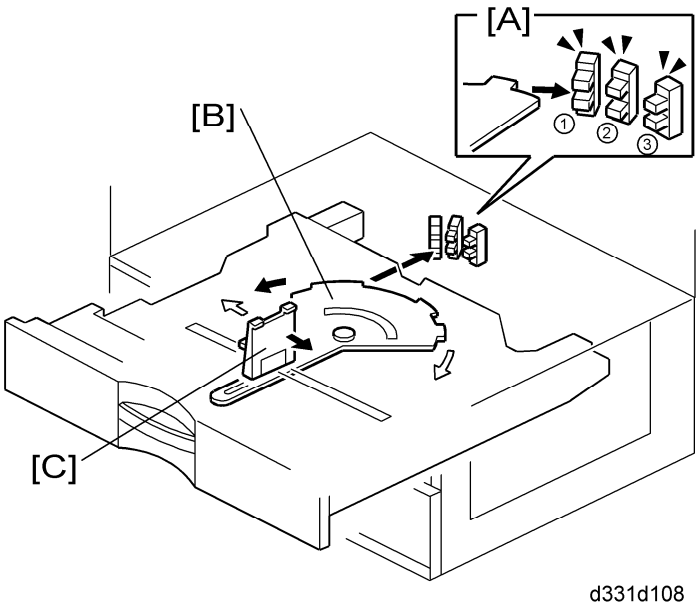
When the amount of paper decreases, the bottom plate pressure lever [C] moves the actuator up.

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.

2.6 PAPER SIZE DETECTION



There are three paper size sensors [A] (SN1, SN2 and SN3) on the paper tray unit. Each paper tray has its own actuator [B], with a unique combination of notches. This actuator is moved when the paper end fence [C] is adjusted for the installed paper. To determine which size has been installed, the CPU reads which paper size sensors the actuator has switched off. Refer to the size detection lists as shown below.

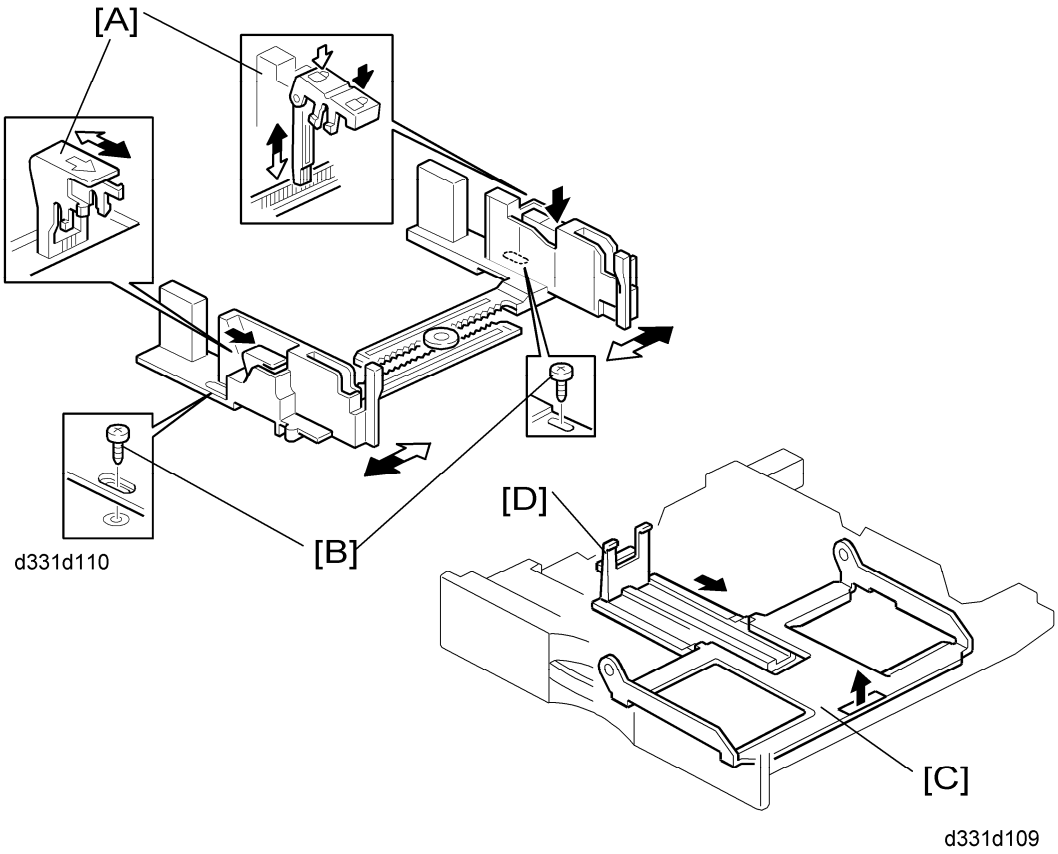
EU/ AISA Size		SN1	SN2	SN3	SP Setting
A6 SEF	148 x 105	OFF	ON	OFF	A5 LEF
B5 LEF	182 x 257	ON	OFF	ON	B6 SEF/ Exe LEF
A4 LEF	210 x 297	ON	ON	OFF	LT LEF/ A5 SEF/ HLT SEF
B5 SEF	257 x 182	OFF	OFF	ON	
LT SEF	279 x 216	OFF	OFF	OFF	
A4 SEF	297 x 210	ON	OFF	OFF	LG SEF
B4 SEF	364 x 257	ON	ON	ON	

Paper Size Detection

A3 SEF	420 x 297	OFF	ON	ON	DLT SEF
NA Size		**SN1**	**SN2**	**SN3**	**SP Setting**
A6 SEF	148 x 105	OFF	ON	OFF	A5 LEF
B5 LEF	182 x 257	ON	OFF	ON	Exe LEF/ B6 SEF
LT LEF	210 x 297	ON	ON	OFF	A4 LEF/ A5 SEF/ HLT SEF
B5 SEF	257 x 182	OFF	OFF	ON	
LT SEF	279 x 216	OFF	OFF	OFF	
A4 SEF	297 x 210	ON	OFF	OFF	
LG SEF	364 x 257	ON	ON	ON	
DLT SEF	420 x 297	OFF	ON	ON	A3 SEF

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.

2.7 SIDE AND END FENCES



2.7.1 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.

2.7.2 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.

1-BIN TRAY BN3020

D339

REVISION HISTORY		
Page	**Date**	**Added/Updated/New**
		None

1-BIN TRAY BN3020 D339

TABLE OF CONTENTS

1. REPLACEMENT AND ADJUSTMENT 1

1.1 ELECTRICAL COMPONENTS 1

1.1.1 TRAY OPEN SWITCH 1

1.1.2 PAPER SENSOR 4

1.1.3 EXIT SENSOR 4

2. DETAILED SECTION DESCRIPTIONS 5

2.1 COMPONENT LAYOUT 5

2.1.1 COMPONENT LAYOUT 5

2.2 SETTINGS 6

2.2.1 SETTINGS 6

2.2.2 LIMITATION 6

2.3 PAPER TRANSPORT 7

2.3.1 PAPER HANDLING 7

2.3.2 JUNCTION GATE 7

2.3.3 PAPER-SIZE LIMITATION 7

2.4 EXIT TRAY LED 8

2.5 TRAY OPEN SWITCH 9

3. TROUBLESHOOTING 10

3.1 PAPER JAM 10

3.1.1 PAPER JAM 10

3.1.2 PAPER-JAM HANDLING 11

3.1.3 COMPONENT-RELATED PAPER JAM 12

Read This First

Safety and Symbols

Replacement Procedure Safety

⚠CAUTION

- Turn off the main power switch and unplug the machine before beginning any of the replacement procedures in this manual.

Symbols Used in this Manual

This manual uses the following symbols.

☛: See or Refer to

: Screws

: Connector

: Clip ring

: E-ring

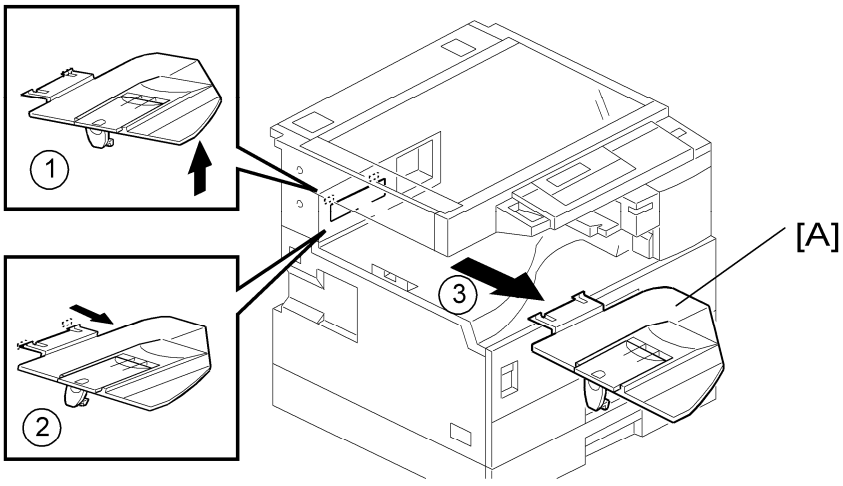
1. REPLACEMENT AND ADJUSTMENT

1.1 ELECTRICAL COMPONENTS

CAUTION

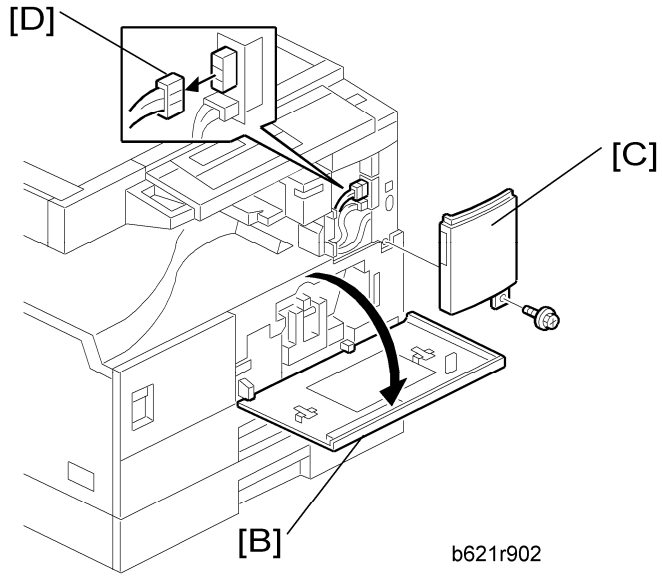
- Turn off the main power switch and unplug the machine before beginning any of the procedures in this section.

1.1.1 TRAY OPEN SWITCH

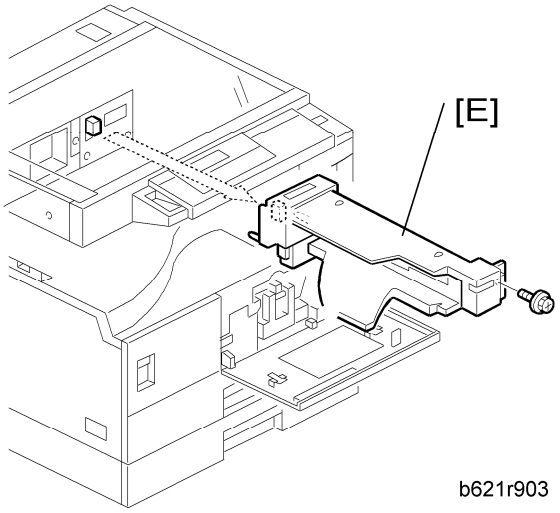


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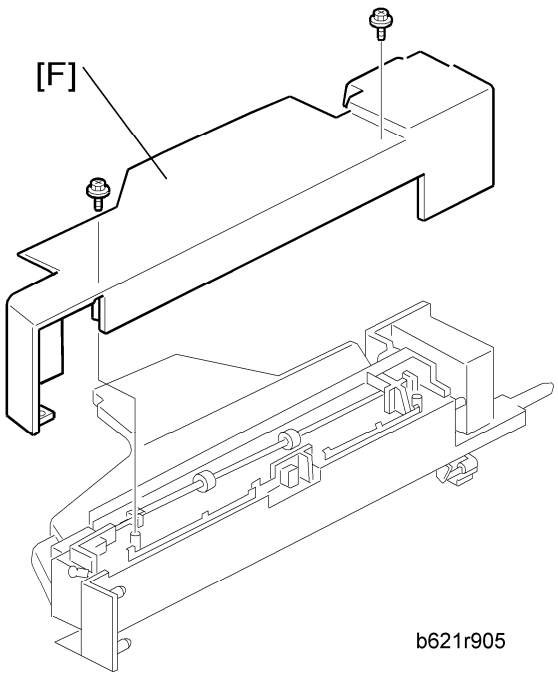
1. Remove the tray [A] as follows:
   ① Lift the front end of the tray.
   ② Pull the right hook off the copier.
   ③ Pull the whole tray off the copier.



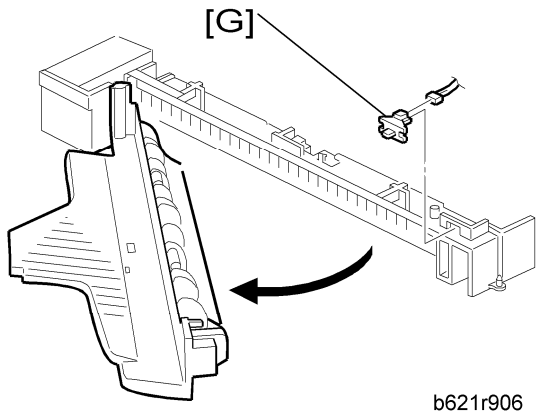
2. Open the front cover [B].
3. Front right cover [C] (🔩 x 1)
4. Disconnect the connector [D].



5. Base unit [E] (🔩 x 1)

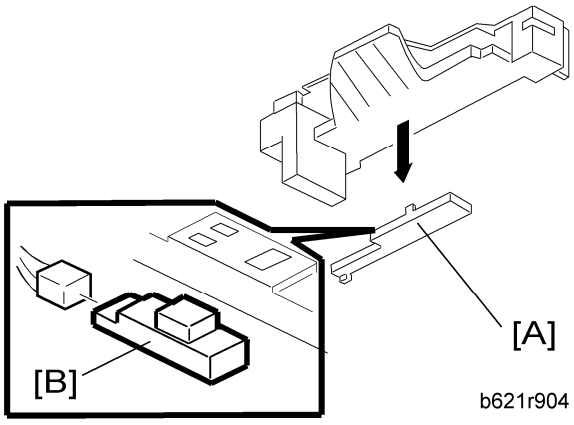


6. Top cover [F] (x 2)



7. Open switch [G] (x 1)

1.1.2 PAPER SENSOR

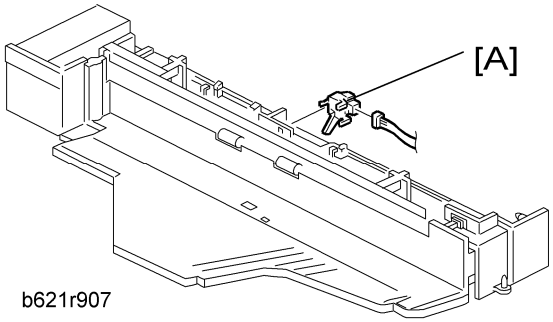


1. Base unit (☛ "Tray Open Switch")
2. Sensor cover [A]
3. Paper sensor [B] (✋ x 1)

Note

- When reassembling, place the sensor cable inside the sensor cover.

1.1.3 EXIT SENSOR

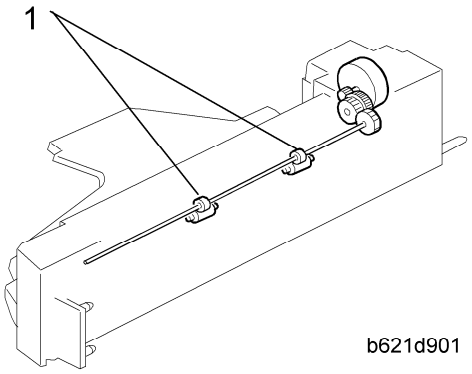


1. Top cover (☛ "Top Cover")
2. Exit sensor [A] (✋ x 1)

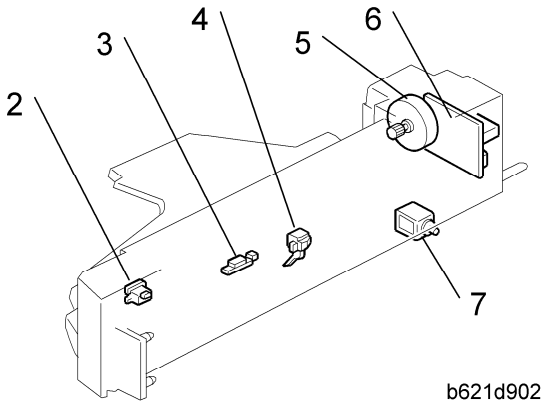
2. DETAILED SECTION DESCRIPTIONS

2.1 COMPONENT LAYOUT

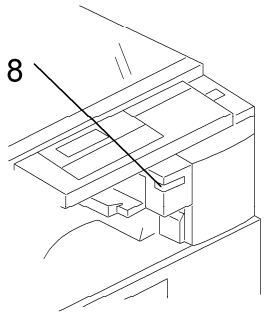
2.1.1 COMPONENT LAYOUT



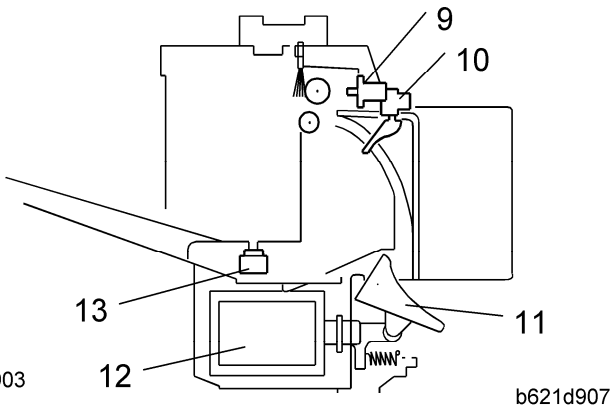
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b621d902



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b621d907

1. Exit rollers 2. Tray open switch 3. Paper sensor 4. Exit sensor 5. Tray motor 6. 1-bin tray board 7. Junction gate solenoid	8. Exit tray LED 9. Tray open switch 10. Exit sensor 11. Junction gate 12. Junction gate solenoid 13. Paper sensor

2.2 SETTINGS

2.2.1 SETTINGS

Use the User Tools to specify which application program (the copy, printer, or fax application program) uses the 1-bin tray. Locate the user tool as follows: U > System Settings > General Features > Output: Copier, Output: Facsimile, Output: Printer.

2.2.2 LIMITATION

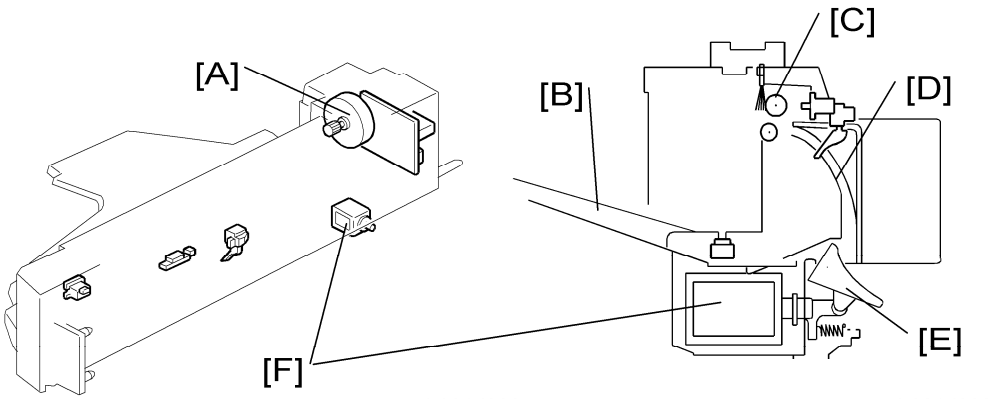
The machine can output to the 1-bin tray if the paper is fed from a regular tray or from an optional tray. Paper fed from the by-pass tray is not output to the 1-bin tray.

Setting	Paper source	Actual output
1-bin tray	Regular tray	1-bin tray
1-bin tray	Optional tray	1-bin tray
1-bin tray	By-pass tray	Copier tray

The paper source setting takes precedence over the paper exit setting. As a result, paper fed from the by-pass tray is output to the copier exit tray even if you have specified the 1-bin tray as the exit. In a case like this, no warning or message is displayed.

2.3 PAPER TRANSPORT

2.3.1 PAPER HANDLING



When the paper has passed the registration sensor (of the copier) and a predefined time (not adjustable) has elapsed, the tray motor [A] starts and the junction gate solenoid [F] turns on. The tray motor drives the exit rollers [C] and the junction gate solenoid opens the junction gate [E].

The junction gate feeds the leading edge of the paper upwards [D]. The paper, transported by the exit rollers of the copier, travels up to the exit rollers of the 1-bin tray base unit. The exit rollers transport the paper to the one-bin tray [B]. When the last sheet of paper has been output, the tray motor stops and the junction gate solenoid turns off.

2.3.2 JUNCTION GATE

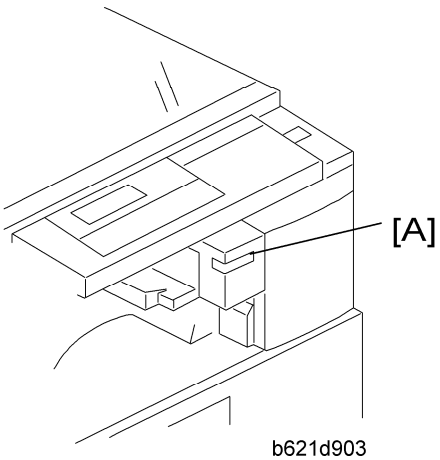
The junction gate is kept open (the junction gate solenoid remains on) under either of the following conditions:

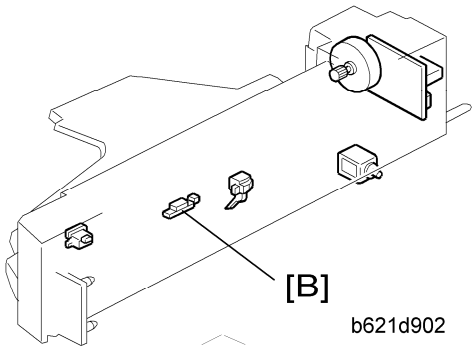
- Condition 1
  The copier is executing single-sided printing.
  The copier is outputting two sheets of paper or more.
- Condition 2
  The copier is executing duplex printing.
  The copier is outputting the last two sheets of paper.

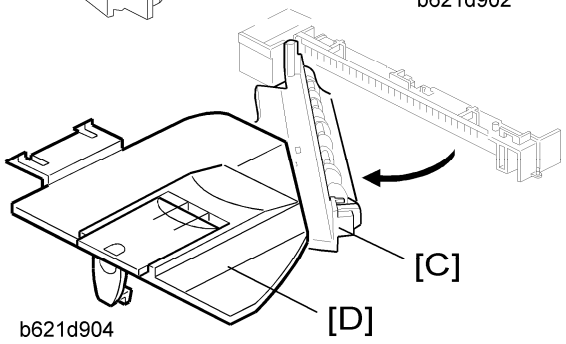
2.3.3 PAPER-SIZE LIMITATION

The 1-bin tray unit does not have any limitation on paper size. The 1-bin tray unit can handle all paper sizes that the copier outputs. However, it cannot handle very thick paper, so the bypass tray cannot feed to the one-bin tray.

2.4 EXIT TRAY LED



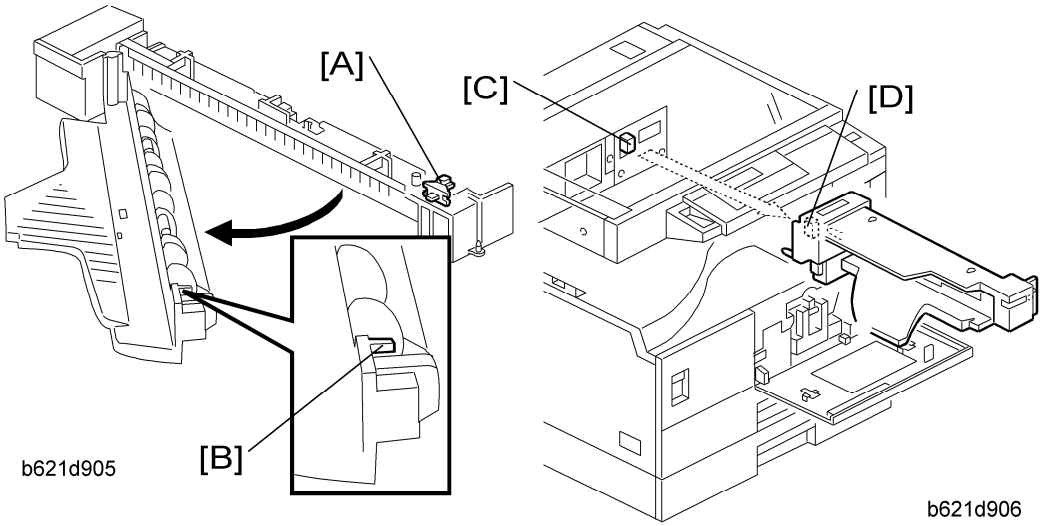




The exit tray LED [A] lights whenever the paper sensor [B] detects paper.

When you open the base unit to remove jammed paper, the exit tray LED may light. This is because the paper sensor [C] detects the tray [D].

2.5 TRAY OPEN SWITCH

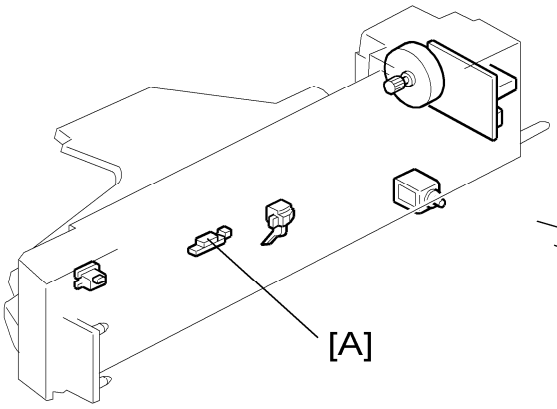


The tray open switch [A] detects the mechanical link [B] at the front end. When you open the base unit, the message "Cover Open" is displayed with a diagram indicating the location. The message "Cover Open" is also displayed when the connector of the one-bin tray base unit [D] disconnects from the connector of the copier [C]. In this case, the message is not cleared until you install the base unit correctly.

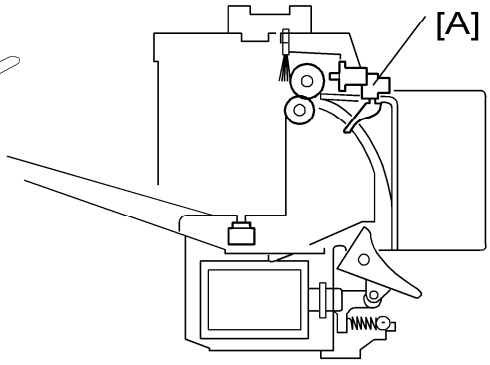
3. TROUBLESHOOTING

3.1 PAPER JAM

3.1.1 PAPER JAM



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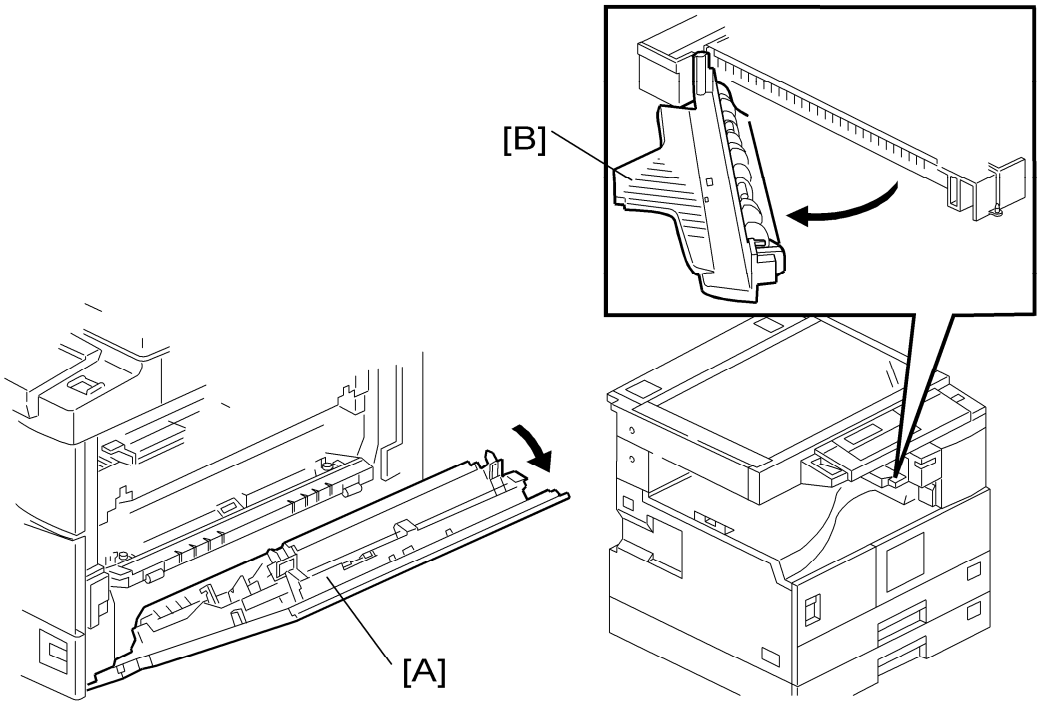
The paper-jam sign is displayed under either of the following conditions:

- Condition 1
  1. The paper has passed the registration sensor (of the copier), and
  2. The exit sensor [A] does not detect the paper in ① the predefined time (not adjustable).
- Condition 2
  1. The paper has passed the registration sensor (of the copier), and
  2. The exit sensor detects the paper in ② the predefined time (not adjustable), and
  3. The exit sensor keeps detecting the paper for a longer time than ③ the predefined time (not adjustable).

Note that ① and ② are the same predefined time and that ③ is different from the other two.

3.1.2 PAPER-JAM HANDLING

Resetting the Copier



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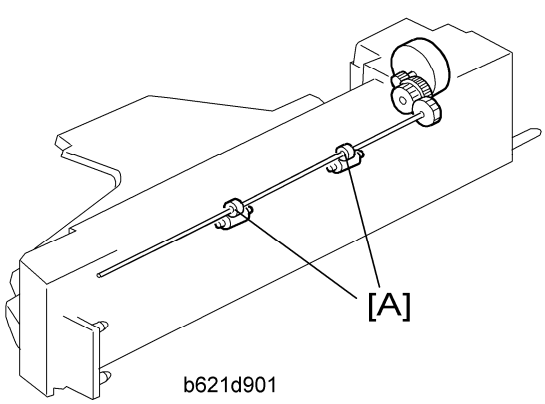
The paper-jam sign is displayed when one of the two conditions (☛ "Paper Jam") is met. To get the copier ready for normal operation, you must:

1. Remove the paper.
2. Open and close the right cover [A] of the copier.
3. Open and close the base unit [B].

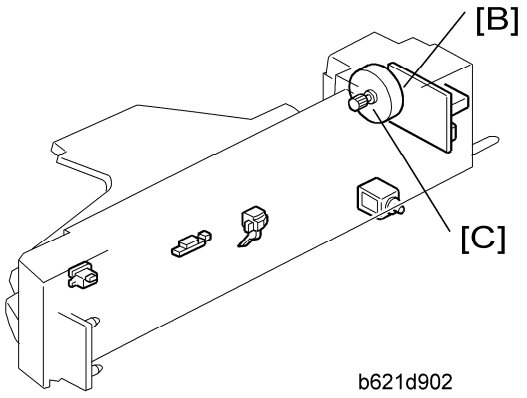
Note that you must open and close the right cover of the copier to reset the copier when the 1-bin tray unit has caused a paper jam.

3.1.3 COMPONENT-RELATED PAPER JAM

Motor-Related Paper Jam



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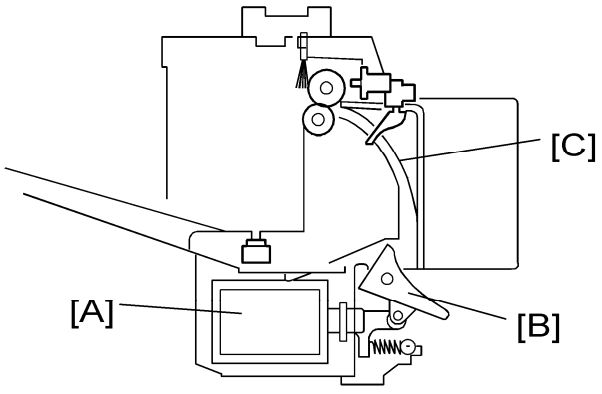


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The 1-bin tray unit does not know if the tray motor [C] is working properly. No error message is displayed even when, for example, the tray-motor cable comes off the 1-bin tray board [B].
When the tray motor does not work properly, the leading edge of the paper is caught by the exit rollers [A]. The paper stays between the exit rollers (of the 1-bin tray unit) and the fusing unit. In this case, the copier controller detects that the paper jam has occurred in the copier (not in the 1-bin tray unit). To get the copier ready for normal operation, you must:

1. Remove the paper.
2. Open and close the right cover of the copier.

Solenoid-Related Paper Jam



b621t903

The 1-bin base unit does not know if the junction gate solenoid [A] is working properly. No error message is displayed even when, for example, the solenoid cable comes off the 1-bin tray board.
When the junction gate solenoid does not work properly, the junction gate [B] does not lead the paper to the paper path [C]. The paper stays between the paper exit rollers of the copier.

In this case, the copier controller detects that the paper jam has occurred in the 1-bin base unit. To get the copier ready for normal operation, you must:

1. Remove the paper.
2. Open and close the right cover of the copier.
3. Open and close the base unit.

BRIDGE UNIT BU3010

D340

REVISION HISTORY		
Page	**Date**	**Added/Updated/New**
		None

BRIDGE UNIT BU3010 D340

TABLE OF CONTENTS

1. REPLACEMENT AND ADJUSTMENT 1
1.1 MOTOR 1
1.1.1 BRIDGE UNIT DRIVE MOTOR 1
1.2 ELECTRICAL COMPONENTS 2
1.2.1 TRAY EXIT SENSOR 2
1.2.2 BRIDGE MAIN BOARD 3

2. DETAILED SECTION DESCRIPTIONS 4
2.1 COMPONENT LAYOUT 4
2.1.1 MECHANICAL COMPONENT LAYOUT 4
2.1.2 ELECTRICAL COMPONENT LAYOUT 5
2.1.3 ELECTRICAL COMPONENT DESCRIPTION 5
2.1.4 DRIVE LAYOUT 6
2.2 OVERVIEW 7
2.2.1 JUNCTION GATE MECHANISM 7

Read This First

Safety and Symbols

Replacement Procedure Safety

⚠CAUTION

- Turn off the main power switch and unplug the machine before beginning any of the replacement procedures in this manual.

Symbols Used in this Manual

This manual uses the following symbols.

☛: See or Refer to

: Screws

: Connector

: Clip ring

: E-ring

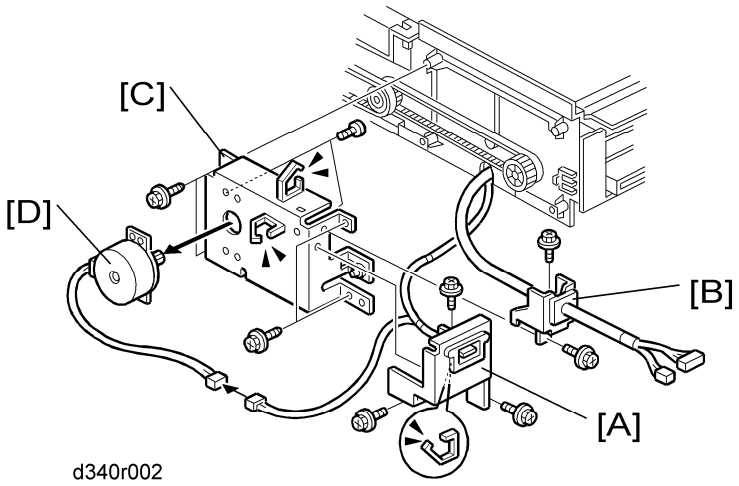
1. REPLACEMENT AND ADJUSTMENT

1.1 MOTOR

CAUTION

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

1.1.1 BRIDGE UNIT DRIVE MOTOR



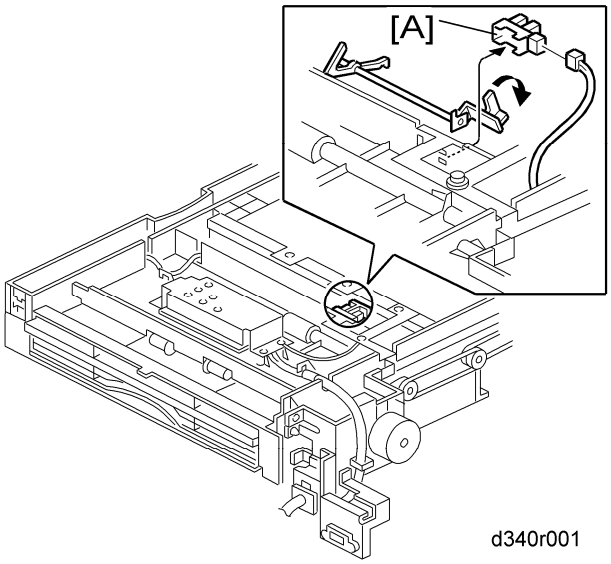
1. Bridge unit (☛ "Installation Procedure in the base copier manual")
2. I/F socket bracket [A] (☞ x 3)
3. I/F connector bracket [B] (☞ x 2)
4. Motor bracket [C] (☞ x 4)
5. Bridge unit drive motor [D] (☞ x 2)

1.2 ELECTRICAL COMPONENTS

⚠CAUTION

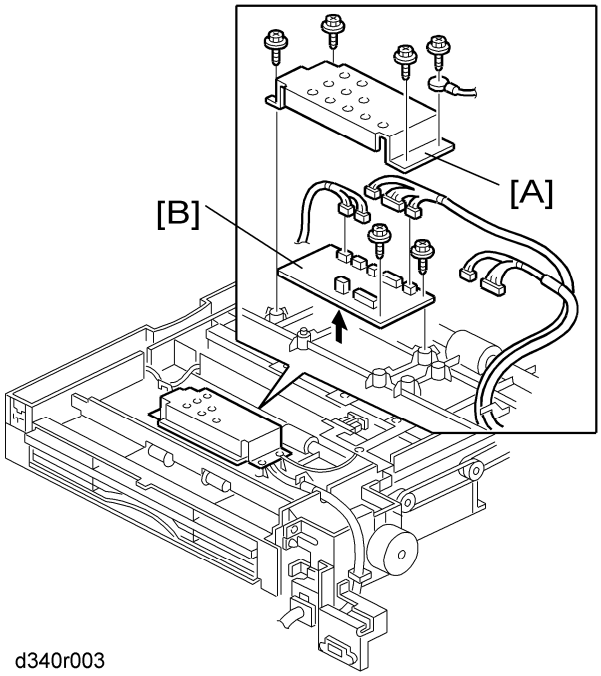
- Turn off the main power switch and unplug the machine before beginning any of the procedures in this section.

1.2.1 TRAY EXIT SENSOR



1. Turn over the bridge unit.
2. Tray exit sensor [A] (☞ x 1, hooks)

1.2.2 BRIDGE MAIN BOARD



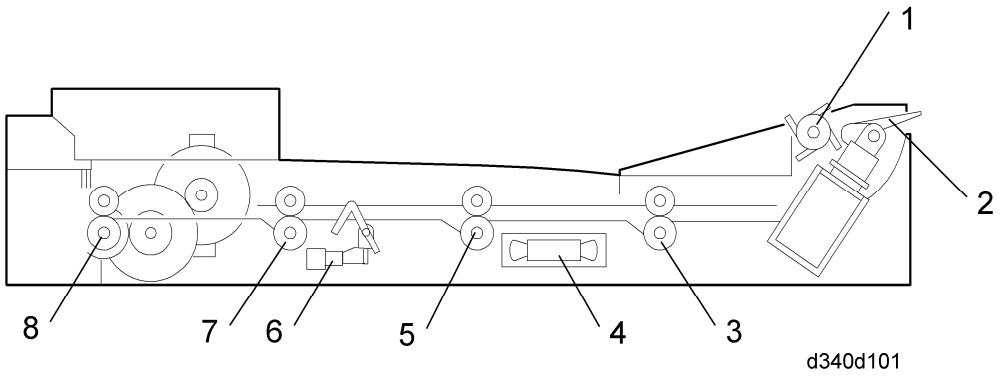
d340r003

1. Turn over the bridge unit.
2. Cover bracket [A] (x 4, ground cable x 1)
3. Bridge main board [B] (x 2, all s)

2. DETAILED SECTION DESCRIPTIONS

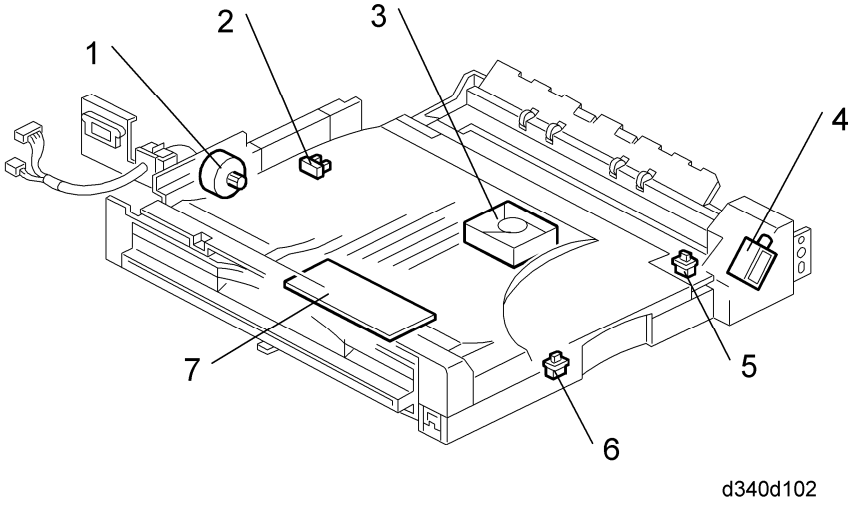
2.1 COMPONENT LAYOUT

2.1.1 MECHANICAL COMPONENT LAYOUT



1. Upper Exit Roller	5. 2nd Transport Roller
2. Junction Gate	6. Tray Exit Sensor
3. 1st Transport Roller	7. 3rd Transport Roller
4. Cooling Fan	8. Left Exit Roller

2.1.2 ELECTRICAL COMPONENT LAYOUT



1. Bridge Unit Drive Motor 2. Tray Exit Sensor 3. Cooling Fan 4. Junction Gate Solenoid	5. Right Guide Switch 6. Left Guide Switch 7. Bridge Unit Control Board

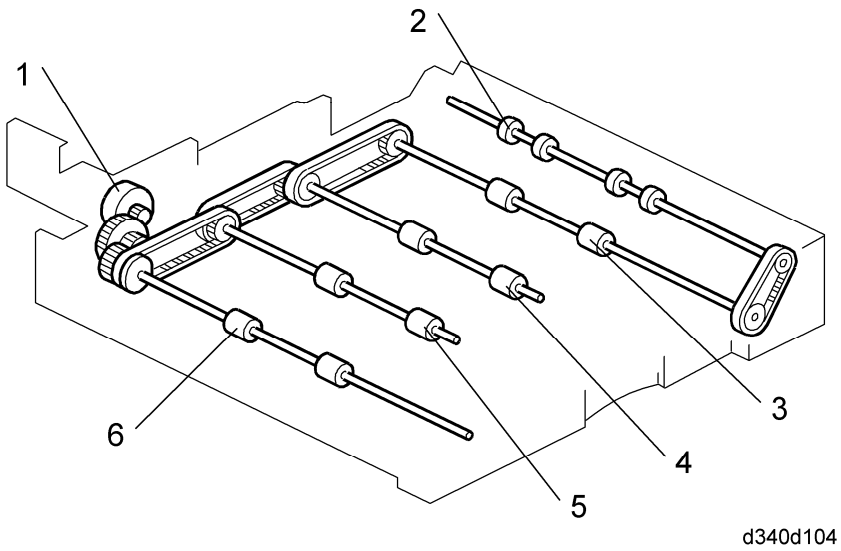
2.1.3 ELECTRICAL COMPONENT DESCRIPTION

Symbol	Name	Function	Index No.
Motors			
M1	Bridge Unit Drive	Drives the bridge unit.	1
M2	Cooling Fan	Cools the transport unit.	3
Sensors			
S1	Tray Exit	Checks for misfeeds.	2
Switches			
SW2	Right Guide	Detects when the right guide is opened.	5

Component Layout

Symbol	Name	Function	Index No.
SW3	Left Guide	Detects when the left guide is opened.	6
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.	4
PCBs			
PCB1	Bridge Unit Control Board	Controls the bridge unit.	7

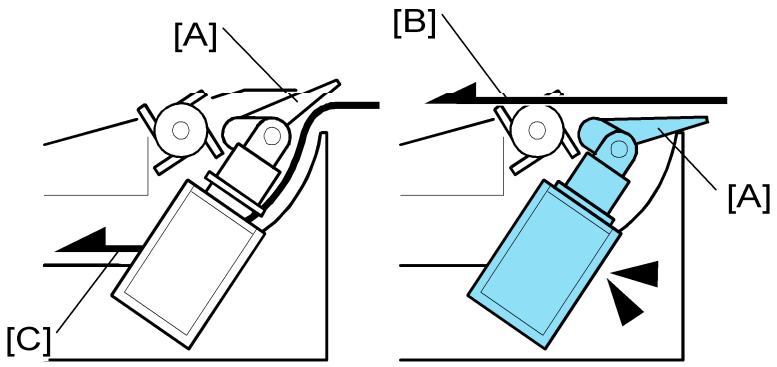
2.1.4 DRIVE LAYOUT



1. Bridge Unit Drive Motor	4. 2nd Transport Roller
2. Upper Exit Roller	5. 3rd Transport Roller
3. 1st Transport Roller	6. Left Exit Roller

2.2 OVERVIEW

2.2.1 JUNCTION GATE MECHANISM



d340d103

The junction gate [A] 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 has been activated, the junction gate [A] points downward and directs the paper to the upper tray [B] (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 left exit rollers (solid line).

FAX OPTION TYPE 2500
D345

REVISION HISTORY		
Page	**Date**	**Added/Updated/New**
21	10/03/2008	SIP Server references changed to “Do Not Use”.
30 ~ 31	10/08/2009	Error Code 31-21 added.
45	10/03/2008	SIP Server references changed to “Do Not Use”.
94	10/03/2008	SIP Server references changed to “Do Not Use”.
95	10/03/2008	SIP Server references changed to “Do Not Use”.
130	10/03/2008	SIP Server references changed to “Do Not Use”.
131	10/03/2008	SIP Server references changed to “Do Not Use”.
132	10/03/2008	SIP Server references changed to “Do Not Use”.
152	10/03/2008	SIP Server references changed to “Do Not Use”.

FAX OPTION TYPE 2500 D345

TABLE OF CONTENTS

1. INSTALLATION 1

1.1 FAX UNIT (D345) 1

1.1.1 ACCESSORY CHECK 1

1.1.2 INSTALLATION PROCEDURE 1

1.1.3 INSTALLING PANELS AND KEYS 6

1.1.4 SETTINGS 6

1.2 FAX UNIT OPTION 8

1.2.1 HANDSET (B433) 8

2. REPLACEMENT AND ADJUSTMENT 9

2.1 FCU 9

3. TROUBLESHOOTING 11

3.1 ERROR CODES 11

3.2 IFAX TROUBLESHOOTING 32

3.3 IP-FAX TROUBLESHOOTING 35

3.3.1 IP-FAX TRANSMISSION 35

3.3.2 IP-FAX RECEPTION 38

4. SERVICE TABLES 42

4.1 BEFOREHAND 42

4.2 SERVICE TABLES 43

4.2.1 SP1-XXX (BIT SWITCHES) 43

4.2.2 SP2-XXX (RAM DATA) 44

4.2.3 SP3-XXX (TEL LINE SETTINGS) 44

4.2.4 SP4-XXX (ROM VERSIONS) 45

4.2.5 SP5-XXX (INITIALIZING) 46

4.2.6 SP6-XXX (REPORTS) 47

4.2.7 SP7-XXX (TEST MODES) 49

4.3 BIT SWITCHES 49

4.3.1 SYSTEM SWITCHES 49

4.3.2 I-FAX SWITCHES 63

4.3.3 PRINTER SWITCHES 70
4.3.4 COMMUNICATION SWITCHES 76
4.3.5 G3-1 SWITCHES 84
4.3.6 IP FAX SWITCHES 93
4.4 NCU PARAMETERS 101
4.5 DEDICATED TRANSMISSION PARAMETERS 116
4.5.1 PROGRAMMING PROCEDURE 116
4.5.2 PARAMETERS 116
4.6 SERVICE RAM ADDRESSES 124

5. DETAILED SECTION DESCRIPTIONS 134
5.1 OVERVIEW 134
5.2 BOARDS 135
5.2.1 FCU 135
5.2.2 MBU 136
5.3 FAX COMMUNICATION FEATURES 137
5.3.1 INTERNET MAIL COMMUNICATION 137
5.4 IP-FAX 146
5.4.1 WHAT IS IP-FAX? 146

6. SPECIFICATIONS 147
6.1 GENERAL SPECIFICATIONS 147
6.2 IFAX SPECIFICATIONS 149
6.3 IP-FAX SPECIFICATIONS 151
6.4 FAX UNIT CONFIGURATION 152

Read This First

Important Safety Notices

⚠WARNING

- Never install telephone wiring during a lightning storm.
- Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.
- Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
- Use caution when installing or modifying telephone lines.
- Avoid using a telephone (other than a cordless type) during an electrical storm. There may be remote risk of electric shock from lightning.
- Do not use a telephone or cellular phone to report a gas leak in the vicinity of the leak.

⚠CAUTION

- Before installing the fax unit, switch off the main switch, and disconnect the power cord.
- The fax unit contains a lithium battery. The danger of explosion exists if a battery of this type is incorrectly replaced. Replace only with the same or an equivalent type recommended by the manufacturer. Discard batteries in accordance with the manufacturer's instructions and local regulations.

Note

- **Note for Australia**:
- Unit must be connected to Telecommunication Network through a line cord which meets the requirements of ACA Technical Standard TS008.

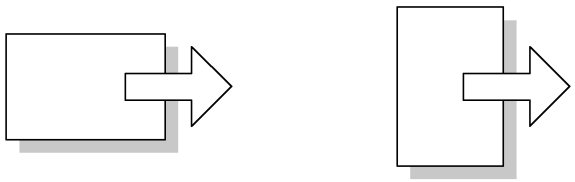
Symbols and Abbreviations

Conventions Used in this Manual

This manual uses several symbols.

Symbol	What it means
☛	Refer to section number
	Screw

	Connector
	E-ring
	Clip ring
	Clamp



Short Edge Feed (SEF) **Long Edge Feed (LEF)**

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.
- 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.

1. INSTALLATION

1.1 FAX UNIT (D345)

1.1.1 ACCESSORY CHECK

Fax	1	Installation procedure	1
	2	Fax application panel	1
	3	Key top-fax	2
	4	Copy key panel	2
	5	FCU	1
	6	SG3 label	1
	7	Fax sheet	1
	8	Handset bracket (-00)	1
	9	Modular cord (-00)	1
	10	User function key decal (-00)	1
	11	Connector cover-Tel line (-00)	1
	12	Serial number decal	1
	13	SD card	1
	14	FCC label (-00)	1

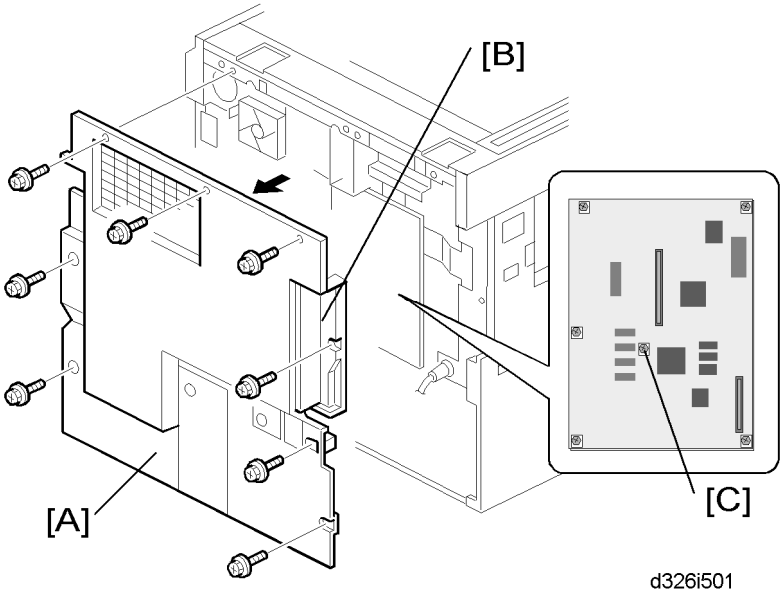
1.1.2 INSTALLATION PROCEDURE

⚠CAUTION

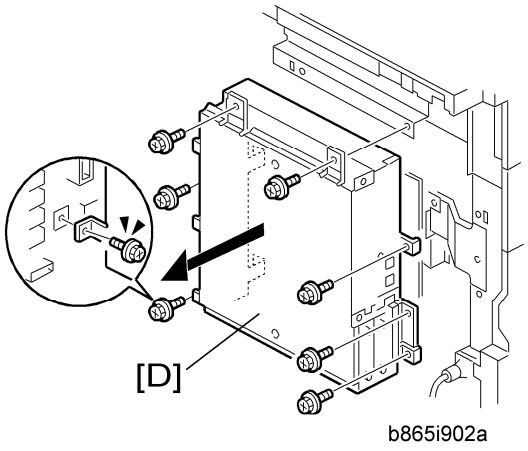
- Before installing the fax option:
- Print out all data in the printer buffer (if the printer option is installed).
- Turn the main switch off and disconnect the power cord and the network cable.

Fax Unit (D345)

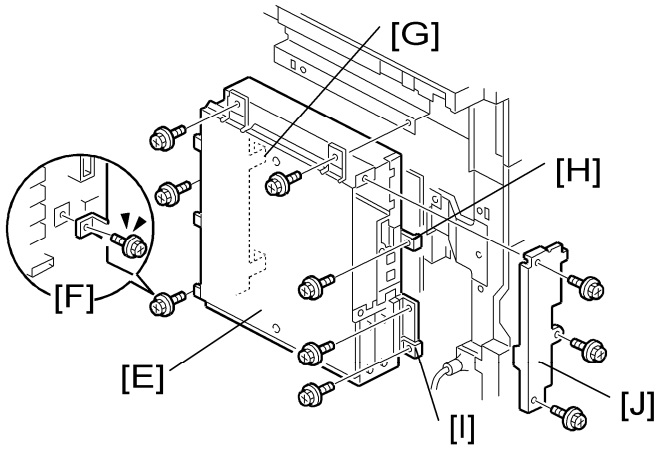
Step 1–Controller Box



1. Remove the rear cover [A] (☞ x 8).
2. Remove the slot cover [B].
3. Remove one screw [C] from the BICU.

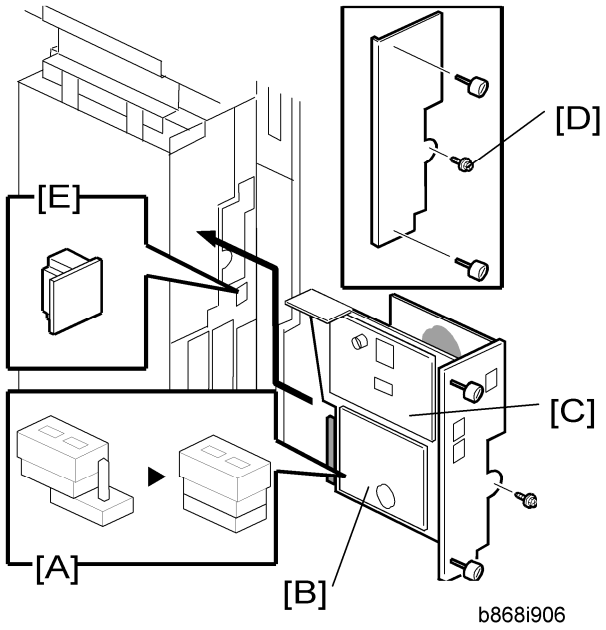


4. Remove the GDI controller box [D] if it has been installed (☞ x 7).



5. Connect the controller box [E] to the BICU. Make sure that the BICU is not damaged [F] and that the three openings [G][H][I] hold the controller box.
6. Fasten the screws (x 7 [including the screw [C]).
7. Remove the FCU cover [J] (x 3).

Step 2–Fax



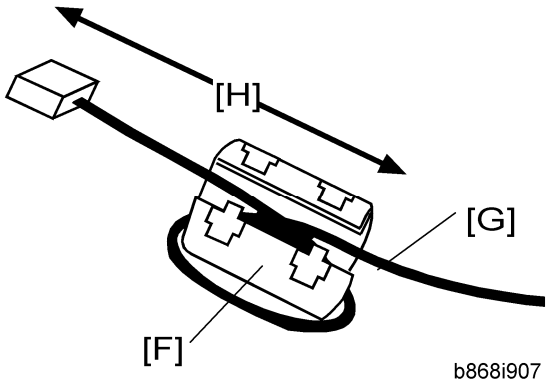
1. Short the jumper [A] on the MBU [B].

Note

- The jumper works as the battery switch.

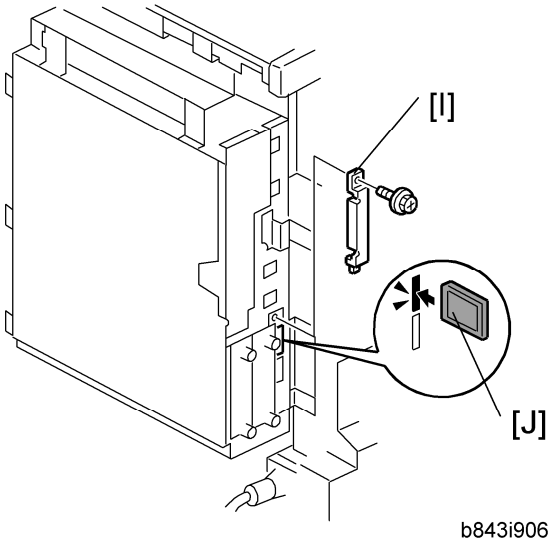
2. Before installing the Fax unit, push the MBU [B] and confirm that the MBU is properly connected to the FCU [C].
3. Install the FCU [C] into the slot (x 3 [including the screw [D] removed in Step 1]).

4. **For NA model only,** attach the connector cover to the "TEL" slot if a handset or an external telephone is not installed.

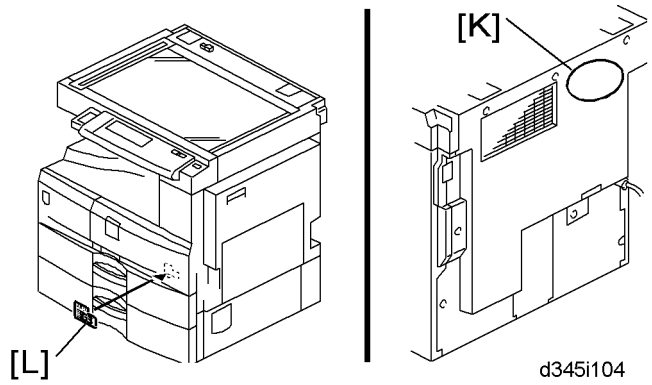


5. **For models except NA model,** attach the ferrite core [F] to the telephone cable [G]. The end of the ferrite core must be about 13 cm (5.3") from the end of the cable [H].
6. Connect the telephone cable to the "LINE" jack.

   If the printer/scanner option has already been installed, skip steps 7 and 8.



7. Remove the SD-card cover [I] (☞ x 1).
8. Insert the SD card [J] in the SD card slot 2 (second from the bottom).



9. After removing the accessories from the box, read the serial number on the box and write it on the serial decal provided.
10. Attach the serial number decal to the rear left [K] on the rear cover of the mainframe.
11. Attach the SG3 decal [L] to the right side corner of the front cover.
12. **For NA model only,** attach the FCC decal below the serial number decal of the fax unit.

If you install the printer /scanner option after installing the FCU, do the following procedure.

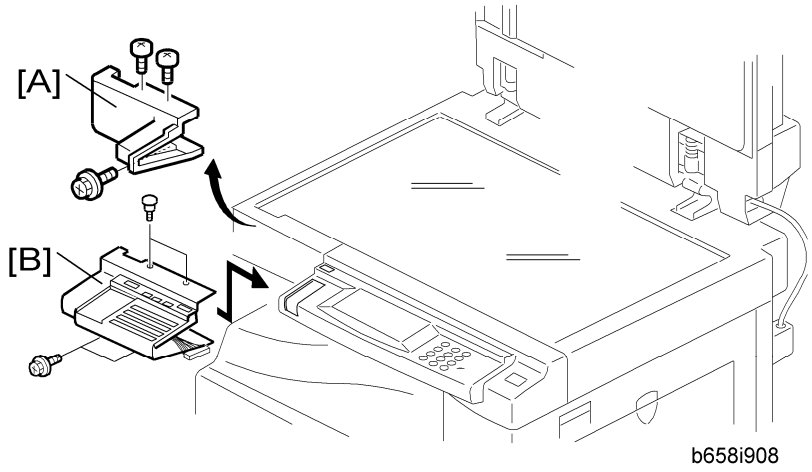
1. Do "Step 2-Printer/Scanner" in the "MFP EXPANSION INSTALLATION PROCEDURE".
2. Turn on the main power switch, and then enter the SP mode.
3. Confirm that the address book data is in the SD card, which is installed in the SD card slot 2 (second from the bottom) with SP5-846-043.
4. Copy the address book data in the SD card (slot 2) to the SD card of the printer/scanner (slot 1) with SP5-846-042.
5. Turn off the main power switch after completing copying.
6. Remove the SD card in the SD card slot 2.
7. Reassemble the machine.
8. Keep it in the safe place.

Step 3–Reassembling

1. Install the rear cover.

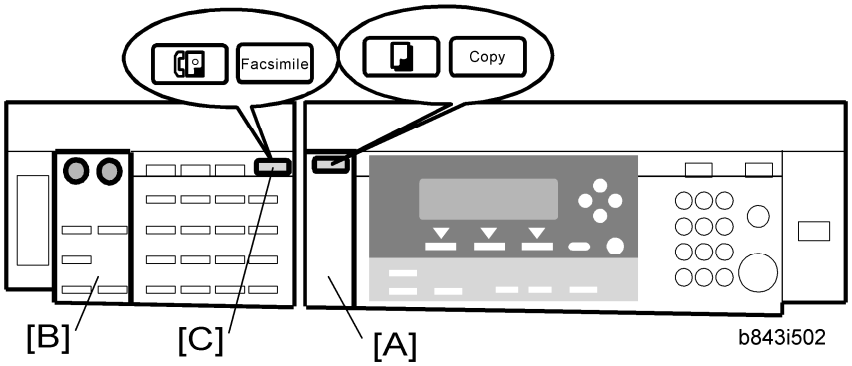
1.1.3 INSTALLING PANELS AND KEYS

Step 4–Panel



1. Remove the front upper left cover [A] (x 3).
2. Install the optional operational panel [B] (x 1, x 4 [including three screws removed in step 1]).

Step 5–Fax Keys



1. Remove the dummy cover (from the basic operation panel) and install the copy key panel [A].
2. Install the fax application panel [B].
3. Remove the dummy key (from the optional operation panel) and install the fax key [C] to the optional operation panel.

1.1.4 SETTINGS

Step 6–Fax Settings

Initializing the Fax unit

When you press the Fax key for the first time after installation, the error "SRAM problem occurred / SRAM was formatted" will show on the LCD for initializing

the program of the fax unit. Turn the main power switch off/on to clear the error display.

Note

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

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

For Fax option only (without printer/scanner option)

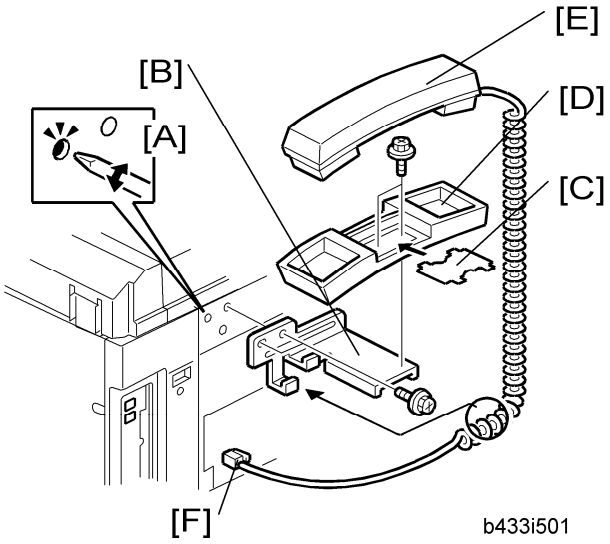
1. Turn the main switch on.
2. Start the SP mode.
3. Select SP5-985-001 (NIC setting) and change the setting value to "0" (OFF).
4. Select SP5-985-002 (USB setting) and change the setting value to "0" (OFF).
5. Turn the main switch off and on.

1.2 FAX UNIT OPTION

1.2.1 HANDSET (B433)

Note

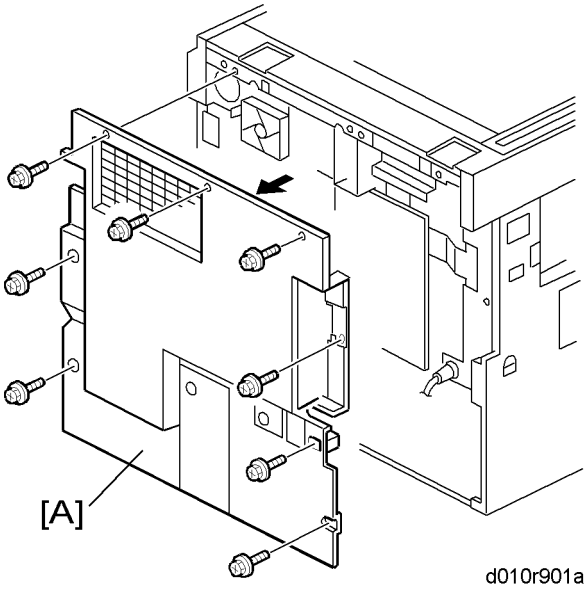
- The optional handset is available for the NA version only.



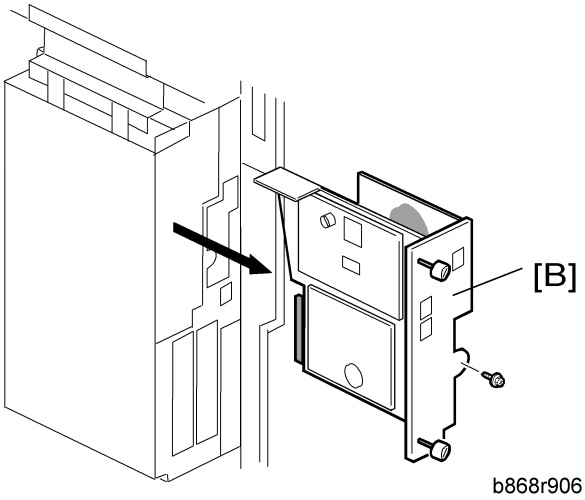
1. Make two holes [A] in the scanner left cover.
2. Attach the bracket [B] enclosed with the fax unit to the scanner left cover (x 2).
3. Remove the label [C] from the handset cradle [D]. Attach the cradle [D] to the bracket [B] (x 2), and then replace the label [C].
4. Install the handset [E] on the cradle [D].
5. Attach the ferrite core to the cable (see step 6 in the "Step2-Fax" of the fax unit installation procedure). The end of the ferrite core must be about 8 cm (3.2") from the end of the cable.
6. Connect the cable [F] to the “TEL” jack at the rear of the machine.

2. REPLACEMENT AND ADJUSTMENT

2.1 FCU



1. Remove the rear cover [A] (🔩 x 8).



2. FCU [B] (🔩 x 3)

When installing the new 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

FCU

Note

- Do not turn off the battery switch (SW1).
- Do SP6-101 in the "Fax SP" 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. ▪ 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. ▪ Try changing the tx level and/or cable equalizer settings. ▪ Replace the FCU. ▪ 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)

Error Codes

Code	Meaning	Suggested Cause/Action
		Cable equalizer - G3 Switch 07 (PSTN) Dedicated Tx parameters in Service Program Mode
0-05	Modem training fails even G3 shifts down to 2400 bps.	▪ Check the line connection. ▪ Try adjusting the tx level and/or cable equalizer. ▪ Replace the FCU. ▪ Check for line problems. **Cross reference** See error code 0-04.
0-06	The other terminal did not reply to DCS	▪ Check the line connection. ▪ 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. ▪ 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. ▪ Replace the NCU or FCU. ▪ The other end may have jammed, or run out of paper or memory space.

Code	Meaning	Suggested Cause/Action
		▪ 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 in Service Program Mode
0-14	Non-standard post message response code received	▪ 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.
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. ▪ 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

Error Codes

Code	Meaning	Suggested Cause/Action
		line problem. **Cross reference** See error code 0-08.
0-20	Facsimile data not received within 6 s of retraining	▪ Check the line connection. ▪ 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. ▪ Replace the NCU or FCU. ▪ Defective remote terminal. ▪ Check for line noise or other line problems. ▪ Try adjusting the acceptable modem carrier drop time. **Cross reference** Acceptable modem carrier drop time - G3 Switch 0A, bits 0 and 1
0-23	Too many errors during reception	▪ Check the line connection. ▪ Replace the NCU or FCU.

Code	Meaning	Suggested Cause/Action
		▪ 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. ▪ 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.
0-33	The data reception (not ECM) is not completed within 10 minutes.	▪ Check the line connection. ▪ The other terminal may have a defective modem/NCU/FCU.
0-52	Polarity changed during communication	▪ Check the line connection. ▪ Retry communication.
0-55	FCU does not detect the SG3.	▪ FCU firmware or board defective. ▪ SG3 firmware or board defective.
0-56	The stored message data exceeds the capacity of the mailbox in the SG3.	SG3 firmware or board defective.
0-70	The communication mode	▪ The other terminal did not have a compatible

Error Codes

Code	Meaning	Suggested Cause/Action
	specified in CM/JM was not available (V.8 calling and called terminal)	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.
0-76	The calling terminal fell back to T.30 mode, because it could not detect a JM in response to 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	▪ The guard timer expired while starting

Code	Meaning	Suggested Cause/Action
	due to a timeout in V.34 phase 2 – line probing.	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	▪ The receiving terminal restarted the control

Error Codes

Code	Meaning	Suggested Cause/Action
	after an unsuccessful primary channel.	channel because data reception in the primary channel was not successful. ▪ This does not result in an error communication.
0-88	The line was disconnected because PPR was transmitted/received 9 (default) times within the same ECM frame.	▪ Try using a lower data rate at the start. ▪ Try adjusting the cable equalizer setting.
2-11	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.
2-24	JBIG ASIC error	Turn off the machine, then turn it back on.
2-25	JBIG data reconstruction error (BIH error)	▪ JBIG data error ▪ 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.

Code	Meaning	Suggested Cause/Action
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 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.
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.
5-25	SAF file access error	▪ Replace an SD card or HDD.

Error Codes

Code	Meaning	Suggested Cause/Action
		▪ Replace the FCU.
6-00	G3 ECM - T1 time out during reception of facsimile data	▪ Try adjusting the rx cable equalizer. ▪ Replace the FCU.
6-01	G3 ECM - no V.21 signal was received	
6-02	G3 ECM - EOR was received	
6-04	G3 ECM - RTC not detected	▪ Check the line connection. ▪ Check for a bad line or defective remote terminal. ▪ Replace the FCU.
6-05	G3 ECM - facsimile data frame not received within 18 s of CFR, but there was no line fail	▪ Check the line connection. ▪ Check for a bad line or defective remote terminal. ▪ Replace the FCU. ▪ 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. **Cross reference** See code 6-05.

Code	Meaning	Suggested Cause/Action
6-10	G3 ECM - error frames still received at the other end after all communication attempts at 2400 bps	▪ Check for line noise. ▪ 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	▪ Not used
13-18	SIP server access error	▪ Not used
13-24	SIP authentication password error	▪ Not used
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.

Error Codes

Code	Meaning	Suggested Cause/Action
		▪ 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.

Code	Meaning	Suggested Cause/Action
		▪ 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.
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.

Error Codes

Code	Meaning	Suggested Cause/Action
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.
14-14	Security Locked File Error	Update the software because of the defective software.
14-15	Mail Data Error	▪ The transmitting a mail is interrupted via DCS due to the incorrect data. ▪ Update the software because of the defective software.
14-16	Maximum Division Number Error	▪ When a mail is divided for the mail transmission and the division number of a mail are more than the specified number, the mail transmission is interrupted. ▪ Update the software because of the defective software.
14-17	Incorrect Ticket	Update the software because of the defective software.
14-18	Access to MCS File Error	▪ The access to MCS file is denied due to the no permission of access.

Code	Meaning	Suggested Cause/Action
		▪ Update the software because of the defective software.
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.
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:

Error Codes

Code	Meaning	Suggested Cause/Action
		▪ 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.
14-62	Transmission Error due to the existence of zero line page	When the 0 line page exists in received pages with G3 communication, the transmission is interrupted.
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.

Code	Meaning	Suggested Cause/Action
		▪ 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.
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.

Error Codes

Code	Meaning	Suggested Cause/Action
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

Code	Meaning	Suggested Cause/Action
		the Return Receipt, or there is a problem with the firmware.
15-74	MDN 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).
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

Code	Meaning	Suggested Cause/Action
		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.

Code	Meaning	Suggested Cause/Action
31-21	LAN Fax Error	• It was cancelled received LAN Fax images during store the image to SAF of FCU. • The LAN Fax transmission of a message was cancelled by the LAN Fax driver.
F0-xx	V.34 modem error	Replace the FCU.
F6-xx	SG3 modem error	▪ Update the SG3 modem ROM. ▪ Replace the SG3 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	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.

Communication Route	Item	Action [Remarks]
		If there is an IP address conflict, inform the administrator.]
Between machine and e-mail server	1. 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.]
	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.]
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.]

IFAX Troubleshooting

Communication Route	Item	Action [Remarks]
	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.
Between e-mail server and internet	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	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

3.3.1 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

Check Point		Action
		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.

Check Point		Action
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

IP-Fax Troubleshooting

Check Point		Action
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.

3.3.2 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	Request the sender to specify the port

Check Point		Action
	fax (if required)?	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.

Check Point		Action
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

Check Point		Action
		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

4.1 BEFOREHAND

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.

4.2 SERVICE TABLES

4.2.1 SP1-XXX (BIT SWITCHES)

☛ "Bit Switches"

1	Mode No.		Function
101	System Switch		
	001 – 032	00 – 1F	Change the bit switches for system settings for the fax option. (☛ "Bit Switches")
102	Ifax Switch		
	001 – 016	00 – 0F	Change the bit switches for internet fax settings for the fax option. (☛ "Bit Switches")
103	Printer Switch		
	001 – 016	00 – 0F	Change the bit switches for printer settings for the fax option. (☛ "Bit Switches")
104	Communication Switch		
	001 – 032	00 – 1F	Change the bit switches for communication settings for the fax option. (☛ "Bit Switches")
105	G3-1 Switch		
	001 – 016	00 – 0F	Change the bit switches for the protocol settings of the standard G3 board. (☛ "Bit Switches")
111	IP fax Switch		
	001 – 016	00 – 0F	Change the bit switches for optional IP fax parameters. (☛ "Bit Switches")

4.2.2 SP2-XXX (RAM DATA)

2	Mode No.		Function
101	RAM Read/Write		
	001		Change RAM data for the fax board directly. (☛ "Service RAM Addresses")
102	Memory Dump		
	001	G3-1 Memory Dump	Print out RAM data for the fax board. (☛ "Service RAM Addresses")
103	G3-1 NCU Parameters		
	001 – 023	CC, 01 – 22	NCU parameter settings for the standard G3 board. (☛ "NCU Parameters")

4.2.3 SP3-XXX (TEL LINE SETTINGS)

3	Mode No.		Function
101	Service Station		
	001	Fax Number	Enter the fax number of the service station.
102	Serial Number		
	101		Enter the fax unit's serial number.
103	PSTN-1 Port Settings		
	001	Select Line	[0 to 3 / **0** / 1 /step] Select the line type setting for the G3-1 line. If the machine is installed on a PABX line, select "1: PABX", "2: PABX(GND)" or "3: PABX(FLASH)".
	002	PSTN Access Number	Enter the PSTN access number for the G3-1 line.

3	Mode No.		Function
	003	Memory Lock Disabled	If the customer does not want to receive transmissions using Memory Lock on this line, turn this SP on.
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" (SIP Not used)
201	FAX SW		
	001 – 032	00 – 1F	-

4.2.4 SP4-XXX (ROM VERSIONS)

4	Mode No.		Function
101	002 – 007	FCU ROM Version	Displays the FCU ROM version.
102	002 – 065	Error Codes	Displays the latest 64 fax error codes.
103	002 – 004	G3-1 ROM Version	Displays the G3-1 modem version.

4.2.5 SP5-XXX (INITIALIZING)

5	Mode No.	Function
101	Initialize SRAM	
	001	Initializes the bit switches and user parameters, user data in the SRAM, files in the SAF memory, and clock.
102	Erase All Files	
	001	Erases all files stored in the SAF memory.
103	Reset Bit Switches	
	001	Resets the bit switches and user parameters.
104	Factory setting	
	001	Resets the bit switches and user parameters, user data in the SRAM and files in the SAF memory.
105	Reset All Bit Switches	
	001	Initializes all the current bit switch settings.
106	Reset Security Bit Switches	
	001	Initializes only the security bit switches. If you select automatic output/display for the user parameter switches, the security settings are initialized.

4.2.6 SP6-XXX (REPORTS)

6	Mode No.		Function
101	System Parameter List		
	001	-	Touch the “ON” button to print the system parameter list.
102	Service Monitor		
	001	-	Touch the “ON” button to print the service monitor report.
103	G3 Protocol Dump List		
	002	G3-1 (All Communications)	Prints the protocol dump list of all communications for the G3-1 line.
	003	G3-1 (1 Communication)	Prints the protocol dump list of the last communication for the G3-1 line.
105	All Files print out		
	001	-	Prints out all the user files in the SAF memory, including confidential messages. Note ▪ Do not use this function, unless the customer is having trouble printing confidential messages or recovering files stored using the memory lock feature.
106	Journal Print out		
	001	All Journals	The machine prints all the communication records on the report.
	002	Specified Date	The machine prints all communication records after the specified date.

6	Mode No.		Function
107	Log List Print out		
	001	All log files	These log print out functions are for designer use only.
	002	Printer	
	003	SC/TRAP Stored	
	004	Decompression	
	005	Scanner	
	006	JOB/SAF	
	007	Reconstruction	
	008	JBIG	
	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.

4.2.7 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	Message Test

4.3 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.

4.3.1 SYSTEM SWITCHES

System Switch 00 [SP No. 1-101-001]		
No	**FUNCTION**	**COMMENTS**

Bit Switches

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 (1) // 32 (2) V34 (3) // 288 (4) // 264 (5) // L0100 (6) 03 (7) 04 (8) (1): EQM value (Line quality data). A larger number means more errors. (2): Symbol rate (V.34 only) (3): Final modem type used (4): Starting data rate (for example, 288 means 28.8 kbps) (5): Final data rate (6): Rx revel (refer to the note after this table for how to read the rx level) (7): Total number of error lines that occurred during non-ECM reception. (8): Total number of burst error lines that occurred during non-ECM reception. Note ▪ EQM and rx level are fixed at “FFFF” in tx mode. ▪ The seventh and eighth numbers are fixed at “00” for transmission records and ECM reception records.	
	Rx level calculation Example: 0000 // 32 V34 // 288/264 // L 01 00 03 04 The four-digit hexadecimal value (N) after “L” indicates the rx level. The high byte is given first, followed by the low byte. Divide the decimal value of N by -16 to get the rx level. In the above example, the decimal value of N (= 0100 [H]) is 256. So, the actual rx level is 256/-16 = -16 dB	
3	**Not used**	Do not change 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: OFF 1: ON (display)	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.

System Switch 01 - Not used (Do not change the factory settings.)

System Switch 02 [SP No. 1-101-003]		
No	**Function**	**Comments**
0-1	**Not used**	Do not change 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.
3-5	**Not used**	Do not change these settings.
6-7	Memory read/write by RDS Bit 7: 0, Bit 6: 0 Always disabled Bit 7: 0, Bit 6: 1 User selectable Bit 7: 1, Bit 6: 0 User selectable	(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

Bit Switches

	Bit 7: 1, Bit 6: 1 Always enabled	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**
0-7	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: OFF 1: ON (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 - Not used (Do not change the factory settings.)
System Switch 07 - Not used (Do not change the factory settings.)
System Switch 08 - Not used (Do not change the factory settings.)

System Switch 09 [SP No. 1-101-010]		
No	**FUNCTION**	**COMMENTS**
0	**Not used**	Do not change these settings.
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 >	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.

Bit Switches

	RTI > CSI	

System Switch 0A [SP N0. 1-101-011]		
No	**Function**	**Comments**
0-3	**Not used**	Do not change these settings.
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	**Not used**	This machine does not have the capture function.
3	Action when the external handset goes off-hook 0: Manual tx and rx operation 1: Memory tx and rx operation	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 display remains the same)	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
0-7	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
	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	

Bit Switches

	0F: Israel	23: Czech	
	10: ---	24: Poland	

System Switch 10 [SP No. 1-101-017]		
No	**FUNCTION**	**COMMENTS**
0-7	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	**Not used**	Japan Only
2-7	**Not used**	Do not change the factory settings.

System Switch 12 [SP No. 1-101-019]		
No	**FUNCTION**	**COMMENTS**
0-7	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: 0, Bit 4: 0 1 min Bit 5: 0, Bit 4: 1 30 min1 Bit 5: 1, Bit 4: 0 1 hour Bit 5: 1, Bit 4: 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: The machine sends messages simultaneously using all available ports during broadcasting.

Bit Switches

	1: Enabled	
1-7	**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**
0-6	**Not used**	Do not change the settings.
7	Special Original mode 0: Disabled 1: Enabled	1: If the customer frequently wishes to transmit a form or letterhead which has a colored or printed background, change this bit to “1”. “Original 1” and “Original 2” can be selected in addition to the “Text”, “Text/Photo” and “Photo” modes.

System Switch 1A - Not used (do not change these settings)

System Switch 1B [SP No. 1-101-028]			
In this switch setting, there is a limitation. Do not select the same image quality in two modes. e.g) these setting combination is not allowed: [Bit1: 0, Bit 0: 0 = **Text**] [Bit3: 0, Bit 2:0 = Text/ Photo] [Bit 6: 0, Bit 5: 0, Bit 4: 0 = **Text**]			
No.	**FUNCTION**	**COMMENTS**	
0-1	Image Quality in Text mode Bit 1: 0, Bit 0: 0 = Text Bit 1: 0, Bit 0: 1 = Text/ Picture	This setting determines the desirable scanning image quality when the text mode is selected with the operation panel.	
2-3	Image Quality in Photo mode Bit 3: 0, Bit 2: 0 = Photo/	This setting determines the desirable scanning image quality when the photo mode is selected	

	Diffusion Bit 3: 0, Bit 2: 1 = Photo/ Dithering				with the operation panel.	
4-6	Image Quality in Special Original mode				This setting determines the desirable scanning image quality when the special original mode is selected with the operation panel.	
	Bit 6	Bit 5	Bit 4	Mode		
	0	0	0	Text		
	0	0	1	Text/ Sharp		
	0	1	0	Text/ Diffusion		
	0	1	1	Photo/ Dithering		
	1	0	0	Dropout color		
	1	0	1	-		
7	**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: ON 1: OFF	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	PIN code transmission setting 0: OFF, 1: ON	When "1" is selected, the PIN code can be adjusted in the IP-fax mode.
3	Operation selection without	0: When "0" is selected without PIN code

Bit Switches

	PIN code registered 0: Transmission interrupted 1: No interrupted transmission	registration, transmission is interrupted and an alert message shows on the LCD.
4-7	**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 jam, 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.

Bit Switches

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”

4.3.2 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
1	200x200 Detail	
2	200x400 Fine	

Bit Switches

3	300 x 300 Reserve	both Bit 0 and Bit 2 are set to “1” then the resolution is set for "Bit 2 200 x 400.
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. 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 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.

Bit Switches

	0: Does not add the media accept feature to the answer mail 1: Adds the media accept feature to the answer mail. 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**
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 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 - Not used (do not change the settings) [SP No. 1-102-004]

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, delivery specified by F code or SMTP reception is done. 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	Comment
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	I-Fax Automatic Re-dial Setting 0: OFF 1: ON	Determines whether the I-fax automatically redials when an error occurs.
2-7	**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]

Bit Switches

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**

4.3.3 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	0: The next page continues from where the previous page stopped without any repeated text. 1: Default. 10 mm of the trailing edge of the previous page are repeated at the top of the next page.
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: 0, Bit 3: 0 = Not used Bit 4: 0, Bit 3: 1 = A3 Bit 4: 1, Bit 3: 0 = B4 Bit 4: 1, Bit 3: 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.

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
1	2nd paper feed station usage for fax printing 0: Enabled 1: Disabled	

Bit Switches

2	3rd paper feed station usage for fax printing 0: Enabled 1: Disabled	used for the Specified Cassette Selection feature.
3	4th paper feed station usage for fax printing 0: Enabled 1: Disabled	
4-7	**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.
4-7	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
0-4	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	Bit 3	Bit 2	Bit 1	Bit 0	Setting
0	0	0	0	0	0 mm
0	0	0	0	1	5 mm
0	0	1	0	0	20 mm
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. Bit 6: 0, Bit 5: 0 = 4 mm Bit 6: 1, Bit 5: 0 = 10 mm Bit 6: 0, Bit 5: 1 = 15 mm Bit 6: 1, Bit 5: 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	Cross reference Just size printing on/off – User switch 05, bit 5

Bit Switches

	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.	
1-7	**Not used**	Do not change the settings.

Printer Switch 07 [SP No. 1-103-008]		
No	**FUNCTION**	**COMMENTS**
0-3	**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.
3-4	Printing the sample image on reports Bit 4: 0, Bit 3: 0 = The upper half only Bit 4: 0, Bit 3: 1 = 50% reduction in sub-scan only Bit 4: 1, Bit 3: 0 = Same size Bit 4: 1, Bit 3: 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: 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.

Bit Switches

	0: Enabled 1: Disabled	Other pages are printed without reduction.

Printer Switch 0F [SP No. 1-103-016]		
No	**FUNCTION**	**COMMENTS**
0-1	Smoothing feature Bit 1: 0 Bit 0: 0 = Disabled Bit 1: 0 Bit 0: 1 = Disabled Bit 1: 1 Bit 0: 0 = Enabled Bit 1: 1 Bit 0: 1 = **Not used**	(0, 0) (0, 1): Disable smoothing if the machine receives halftone images from other manufacturers fax machines frequently.
2-7	**Not used**	Do not change the settings.

4.3.4 COMMUNICATION SWITCHES

Communication Switch 00 [SP No. 1-104-001]		
No	**FUNCTION**	**COMMENTS**
0-1	Compression modes available in receive mode Bit 1: 0 Bit 0: 0 = MH only Bit 1: 0 Bit 0: 1 = MH/MR Bit 1: 1 Bit 0: 0 = MH/MR/MMR Bit 1: 1 Bit 0: 1 = MH/MR/MMR/JBIG	These bits determine the compression capabilities to be declared in phase B (handshaking) of the T.30 protocol.
2-3	Compression modes available in transmit mode Bit 3: 0 Bit 2: 0 = MH only Bit 3: 0 Bit 2: 1 = MH/MR Bit 3: 1 Bit 2: 0 = MH/MR/MMR Bit 3: 1 Bit 2: 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	**Not used**	Do not change the settings.

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.
1-5	**Not used**	Do not change the setting.
6-7	Maximum printable page length available Bit 7: 0 Bit 6: 0 = No limit Bit 7: 0 Bit 6: 1 = B4 (364 mm) Bit 7: 1 Bit 6: 0 = A4 (297 mm) Bit 7: 1 Bit 6: 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).

Bit Switches

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.	
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**
0-7	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 [SP No. 1-104-010]		
No	**FUNCTION**	**COMMENTS**
0-7	I-Fax dial interval setting	Adjusts the interval of the I-fax dialing. The interval of I-fax dialing is calculated by following formula. [Interval time = specified value with this switch x 2 sec]

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.

Bit Switches

Communication Switch 0B – Not used (do not change the settings)
Communication Switch 0C – Not used (do not change the settings)

Communication Switch 0D [SP No. 1-104-014]		
No	**FUNCTION**	**COMMENTS**
0-7	The available memory threshold, below which ringing detection (and therefore reception into memory) is disabled.	00 to FF (Hex), unit = 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**
0-7	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**
0-7	Memory transmission:	01 – FE (Hex) times

	Maximum number of dialing attempts to the same destination	

Communication Switch 11 – Not used (do not change the settings.)

Communication Switch 12 [SP No. 1-104-019]		
No	**FUNCTION**	**COMMENTS**
0-7	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.
6-7	Available unit of resolution in	For the best performance, do not change the

Bit Switches

	which fax messages are received Bit 7: 0, Bit 6: 0 = mm Bit 7: 0, Bit 6: 1 = inch Bit 7: 1, Bit 6: 0 = mm and inch (default) Bit 7: 1, Bit 6: 1 = **Not used**	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 – Not used (do not change the settings)
Communication Switch 17 – Not used (do not change the settings)
Communication Switch 18 - Not used (do not change the settings)
Communication Switch 19 - Not used (do not change the settings)
Communication Switch 1A - Not used (do not change the settings)

Communication Switch 1B [SP No. 1-104-028]		
No	**FUNCTION**	**COMMENTS**
0-7	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**
0-1	Extension access code (8 and 9) to turn V.8 protocol On/Off	Refer to communication switch 1B. Example: If “8” is the PSTN access code, set bit 0

	0: On 1: Off	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)

4.3.5 G3-1 SWITCHES

G3 Switch 00 [SP No. 1-105-001]		
No	**FUNCTION**	**COMMENTS**
0-1	Monitor speaker during communication (tx and rx) Bit 1: 0, Bit 0: 0 = Disabled Bit 1: 0, Bit 0: 1 = Up to Phase B Bit 1: 1, Bit 0: 0 = All the time Bit 1: 1, Bit 0: 1 = Reserved	(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**
0-1	**Not used**	Do not change the settings.
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)
1-6	**Not used**	Do not change the settings.
7	Short preamble 0: Disabled 1: Enabled	0: The machine transmits a normal preamble (1 second). 1: The machine transmits a short preamble (200 ms). This setting can be activated only for RICOH IP protocol machines.

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	Keep this bit at “0” in most cases.

Bit Switches

	0: 256 bytes 1: 64 bytes	
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. $\sqrt{\text{NTransmit} \leq \text{NResend}}$ NTransmit- Number of transmitted frames NResend- 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**
0-3	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
0-3	Initial Tx modem rate					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
	Bit 3	Bit 2	Bit 1	Bit 0	bps	
	0	0	0	1	2.4k	
	0	0	1	0	4.8k	
	0	0	1	1	7.2k	
	0	1	0	0	9.6k	
	0	1	0	1	12.0k	
	0	1	1	0	14.4k	
	0	1	1	1	16.8k	
	1	0	0	0	19.2k	
	1	0	0	1	21.6k	
	1	0	1	0	24.0k	
	1	0	1	1	26.4k	
	1	1	0	0	28.8k	
	1	1	0	1	31.2k	
	1	1	1	0	33.6k	
	Other settings - **Not used**					
4-5	Initial modem type for 9.6 k or 7.2 kbps.					These bits set the initial modem type for 9.6 and 7.2 kbps, if the initial modem rate is set at these

Bit Switches

	Bit 5: 0, Bit 4: 0 = V.29 Bit 5: 0, Bit 4: 1 = V.17 Bit 5: 1, Bit 4: 0 = V.34 Bit 5: 1, Bit 4: 1 = Reserved	speeds.
6-7	**Not used**	Do not change the settings.

G3 Switch 06 [SP No. 1-105-007]

No	FUNCTION					COMMENTS
0-3	Initial Rx modem rate					▪ 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
	Bit 3	Bit 2	Bit 1	Bit 0	bps	
	0	0	0	1	2.4k	
	0	0	1	0	4.8k	
	0	0	1	1	7.2k	
	0	1	0	0	9.6k	
	0	1	0	1	12.0k	
	0	1	1	0	14.4k	
	0	1	1	1	16.8k	
	1	0	0	0	19.2k	
	1	0	0	1	21.6k	
	1	0	1	0	24.0k	
	1	0	1	1	26.4k	
	1	1	0	0	28.8k	
	1	1	0	1	31.2k	
	1	1	1	0	33.6k	
	Other settings - **Not used**					

<table>
<tr><td rowspan="8">4-7</td><td colspan="5">Modem types available for reception</td><td rowspan="8">▪ 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</td></tr>
<tr><td>Bit 7</td><td>Bit 6</td><td>Bit 5</td><td>Bit 4</td><td>Setting</td></tr>
<tr><td>0</td><td>0</td><td>0</td><td>1</td><td>V.27ter</td></tr>
<tr><td>0</td><td>0</td><td>1</td><td>0</td><td>V.27ter, V.29</td></tr>
<tr><td>0</td><td>0</td><td>1</td><td>1</td><td>V.27ter, V.29, V.33</td></tr>
<tr><td>0</td><td>1</td><td>0</td><td>0</td><td>V.27ter, V.29, V.17/V.33</td></tr>
<tr><td>0</td><td>1</td><td>0</td><td>1</td><td>V.27ter, V.29, V.17/V33, V.34</td></tr>
<tr><td colspan="5">Other settings - Not used</td></tr>
</table>

G3 Switch 07 [SP No. 1-105-008]		
No	**FUNCTION**	**COMMENTS**
0-1	PSTN cable equalizer (tx mode: Internal) Bit 1: 0, Bit 0: 0 = 0 km Bit 1: 0, Bit 0: 1 = 1.8 km Bit 1: 1, Bit 0: 0 = 3.6 km Bit 1: 1, Bit 0: 1 = 7.2 km	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.

Bit Switches

2-3	PSTN cable equalizer (rx mode: Internal) Bit 3: 0, Bit 2: 0 = 0 km Bit 3: 0, Bit 2: 1 = 1.8 km Bit 3: 1, Bit 2: 0 = 3.6 km Bit 3: 1, Bit 2: 1 = 7.2 km	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	**Not used**	Do not change the settings.
6	Parameter selection for dial tone detection 0: Normal parameter 1: Specific parameter	0: This uses the fixed table in the ROM for dial tone detection. 1: This uses the specific parameter adjusted with SRAM (69ECBEH - 69ECDEH). Select this if the dial tone cannot be detected when the "Normal parameter: 0" is selected.
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**
0-1	Maximum allowable carrier drop during image data	These bits set the acceptable modem carrier drop time.

	reception Bit 1: 0, Bit 0: 0 = 200 Bit 1: 0, Bit 0: 1 = 400 Bit 1: 1, Bit 0: 0 = 800 Bit 1: 1, Bit 0: 1 = Reserved	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 Switch 0B Not used (do not change the settings).
G3 Switch 0C Not used (do not change the settings).

Bit Switches

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”.
2-3	**Not used**	Do not change the settings.
4	Sidaa manual calibration setting 0: Off 1: On	1: manually calibrates for communication with a line, whose current change occurs such as an optical fiber line.
5-6	**Not used**	Do not change the settings.

4.3.6 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 communication via 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.

IP-Fax Switch 01 [SP No. 1-111-002]

<table>
<tr><th>No.</th><th>FUNCTION</th><th>COMMENTS</th></tr>
<tr><td rowspan="8">0-3</td><td colspan="5">Select IP FAX Delay Level</td><td rowspan="8">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 to 2: 3 Redundant packets
Level 3: 4 Redundant packets</td></tr>
<tr><td>Bit3</td><td>Bit2</td><td>Bit1</td><td>Bit0</td><td>Setting</td></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>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>4-7</td><td colspan="5">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.
(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</td><td>Not used</td></tr>
</table>

	0: TCP 1: UDP	
3	CCM connection 0: No CCM connection 1: CCM connection	When "1" is selected, only the connection call message with H.323 or no tunneled H.245 is transmitted via CCM.
4	Message reception selection from non-registered SIP server 0: Answer 1: Not answer	Not used
5	ECM communication setting 0: No limit for image compression 1: Limit for image compression	0: This does not limit the type of the image compression with ECM communication. 1: When the other end machine is Ciscco, this permits the image compression other than JBIG or MMR with ECM communication.
6-7	**Not used**	Do not change these settings.

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	**Not used**	Do not change this setting.

Bit Switches

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 Switches

	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

4-5	Modem setting for transmission Sets the modem for transmission. The default is "00" (V29). Bit 5: 0, Bit 4: 0 = V29 Bit 5: 0, Bit 4: 1 = V17 Bit 5: 1, Bit 4: 0 = V34* Bit 5: 1, Bit 4: 1 = **Not used** *V34 is not supported for IP-Fax communication.	
6-7	**Not used**	Do not change these settings.

IP Fax Switch 06 [SP No. 1-111-007]

Bit Switches

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).				
	Bit 3	Bit 2	Bit 1	Bit 0	
	0	0	0	1	2400 bps
	0	0	1	0	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
4-7	Modem setting for reception Sets the modem type for reception. The default is "0100" (V27ter, V29, V17).				
	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*
	*V34 is not supported for IP-Fax communication.				

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.

Bit Switches

IP Fax Switch 08 [SP No. 1-111-009]		
No.	**FUNCTION**	**COMMENTS**
0-1	T1 timer adjustment Adjusts the T1 timer. The default is "00" (35 seconds). Bit 1: 0, Bit 0: 0 = 35 sec Bit 1: 0, Bit 0: 1 = 40 sec Bit 1: 1, Bit 0: 0 = 50 sec Bit 1: 1, Bit 0: 1 = 60 sec	-
2-3	T4 timer adjustment Adjust the T4 timer. The default is "00" (3 seconds). Bit 3: 0, Bit 2: 0 = 3 sec Bit 3: 0, Bit 2: 1 = 3.5 sec Bit 3: 1, Bit 2: 0 = 4 sec Bit 3: 1, Bit 2: 1 = 5 sec	-
4-5	T0 timer adjustment Bit 5: 0, Bit 4: 0 = 75 sec Bit 5: 0, Bit 4: 1 = 120 sec Bit 5: 1, Bit 4: 0 = 180 sec Bit 5: 1, Bit 4: 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).
6-7	**Not used**	Do not change these settings.

4.4 NCU PARAMETERS

The following tables give the RAM addresses and the parameter calculation units that the machine uses for ringing signal detection and automatic dialing. The factory settings for each country are also given. Most of these must be changed by RAM read/write (SP2-102), but some can be changed using NCU Parameter programming (SP2-103); if SP2-103 can be used, this will be indicated in the Remarks column. The RAM is programmed in hex code unless (BCD) is included in the Unit column.

<table>
<tr><th>Address</th><th colspan="6">Function</th></tr>
<tr><td rowspan="14">680500</td><td colspan="6">Country/Area code for NCU parameters</td></tr>
<tr><td colspan="6">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.</td></tr>
<tr><td>Country /Area</td><td>Decimal</td><td>Hex</td><td>Country /Area</td><td>Decimal</td><td>Hex</td></tr>
<tr><td>France</td><td>00</td><td>00</td><td>USA</td><td>17</td><td>11</td></tr>
<tr><td>Germany</td><td>01</td><td>01</td><td>Asia</td><td>18</td><td>12</td></tr>
<tr><td>UK</td><td>02</td><td>02</td><td>Hong Kong</td><td>20</td><td>14</td></tr>
<tr><td>Italy</td><td>03</td><td>03</td><td>South Africa</td><td>21</td><td>15</td></tr>
<tr><td>Austria</td><td>04</td><td>04</td><td>Australia</td><td>22</td><td>16</td></tr>
<tr><td>Belgium</td><td>05</td><td>05</td><td>New Zealand</td><td>26</td><td>17</td></tr>
<tr><td>Denmark</td><td>06</td><td>06</td><td>Singapore</td><td>24</td><td>18</td></tr>
<tr><td>Finland</td><td>07</td><td>07</td><td>Malaysia</td><td>25</td><td>19</td></tr>
<tr><td>Ireland</td><td>08</td><td>08</td><td>China</td><td>26</td><td>1A</td></tr>
<tr><td>Norway</td><td>09</td><td>09</td><td>Taiwan</td><td>27</td><td>1B</td></tr>
<tr><td>Sweden</td><td>10</td><td>0A</td><td>Korea</td><td>28</td><td>1C</td></tr>
</table>

NCU Parameters

Address	Function					
	Switzerland	11	0B	Turkey	32	20
	Portugal	12	0C	Greece	33	21
	Holland	13	0D	Hungary	34	22
	Spain	14	0E	Czech	35	23
	Israel	15	0F	Poland	36	24

Address	Function	Unit	Remarks
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)		
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		

Address	Function	Unit	Remarks
	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

NCU Parameters

Address	Function	Unit	Remarks
68051A	PABX dial tone frequency lower limit (low byte)		detection is disabled.
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.
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

Address	Function	Unit	Remarks
680529	PABX busy tone frequency lower limit (low byte)		detection is disabled.
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, Bit 0: 0 = 75% Bits 2 and 3 must always be kept at 0. Bit 1: 0, Bit 0: 0 = 50% Bits 2 and 3 must always be kept at 0. Bit 1: 0, Bit 0: 0 = 25% Bit 1: 0, Bit 0: 0 = 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

NCU Parameters

Address	Function	Unit	Remarks
680537	International dial tone frequency lower limit (low byte)		detection is disabled.
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)		-
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 /
680544	Country dial tone reset time (LOW)		

Address	Function	Unit	Remarks
680545	Country dial tone reset time (HIGH)		680549).
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.

NCU Parameters

Address	Function	Unit	Remarks
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.
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

Address	Function	Unit	Remarks
			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: 0, Bit 6: 0, Bit 5: 0 = -25.0 dBm Bit 7: 0, Bit 6: 0, Bit 5: 1 = -35.0 dBm Bit 7: 0, Bit 6: 1, Bit 5: 0 = -30.0 dBm Bit 7: 1, Bit 6: 0, Bit 5: 0 = -40.0 dBm Bit 7: 1, Bit 6: 1, Bit 5: 0 = -49.0 dBm 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	1000/ N	SP2-103-003

NCU Parameters

Address	Function	Unit	Remarks
	frequency: range 1, upper limit	(Hz).	(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).
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

Address	Function	Unit	Remarks
680582	Bits 0 and 1 - Handset off-hook detection time Bit 1:0, Bit 0: 0 = 200 ms Bit 1:0, Bit 0: 1 = 800 ms Other Not used Bits 2 and 3 - Handset on-hook detection time Bit 3: 0, Bit 2: 0 = 200 ms Bit 3: 0, Bit 2: 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)		
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		

NCU Parameters

Address	Function	Unit	Remarks
	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.	

Address	Function	Unit	Remarks
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	
6805E0 bit 3	Maximum wait time for post message	0: 12 s 1: 30 s	1: Maximum wait time for post message (EOP/EOM/MPS) can be changed to 30 s. Change this bit to “1” if communication errors occur frequently during V.17 reception.
6805E4	Bit 1 sets the level of the call signal, Bit 3 sets the call signal impedance	Bit 1: 0 RT=0 (Low); 1 RT=1 (High) Bit 3: 0 RZ=0 (High)	-

NCU Parameters

Address	Function			Unit	Remarks
			1	RZ=1 (Composite)	
6805E5	Bit 0 sets the ring detection method, Bit 1 sets the ring detection method when fixed.	Bit 0	0	Auto	If any setting is changed, select a setting that is higher than the default setting.
			1	Fixed	
		Bit 1	0	Use RDTP	
			1	Use RDTN	
	Bits 2 to 7: Not used				

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:
   - $-0.5 \times N_{680552}/_{680554} - 3.5$ dBm
   - $-0.5 \times N_{680555}$ dBm

Low frequency tone:

- $-0.5 \times (N_{680552}/_{680554} + N_{680553}) - 3.5$ dBm
- $-0.5 \times (N_{680555} + N_{680553})$ 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.

4.5 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.

4.5.1 PROGRAMMING PROCEDURE

1. Set the bit 0 of System Bit Switch 00 to 1.
2. Enter Address Book Management mode ([User Tools]> System Settings> Administrator Tools > Address Book Management).
3. Select the address book that you want to program.
4. Press the "Dest." Key to enter the fax and e-mail parameter settings.
5. For the fax parameter, select "Fax Settings", for the E-mail parameter, select "E-mail Settings".
6. Press the "OK" key, and then press "Start" key. Make sure that the LED of the Start button lights green.
7. The settings for the switch 00 are now displayed. Press the bit number that you wish to change.
8. To scroll through the parameter switches, either:
9. Select the next switch: press "Next" or Select the previous switch: "Prev." until the correct switch is displayed. Then go back to step 6.
10. After the setting is changed, press "OK" key.
11. After finishing, reset bit 0 of System Bit Switch 00 to 0.

4.5.2 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
0-4	Tx level						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.
	Bit4	Bit3	Bit2	Bit1	Bit0		
	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	
5-7	Cable equalizer Bit 7: 0, Bit 6: 0, Bit 5: 0 = None Bit 7: 0, Bit 6: 0, Bit 5: 1 = 1.8 km Bit 7: 0, Bit 6: 1, Bit 5: 0 = 3.6 km Bit 7: 0, Bit 6: 1, Bit 5: 1 = 7.2 km Bit 7: 1, Bit 6: 1, Bit 5: 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
0-3	Initial Tx modem rate					If training with a particular remote terminal always takes too long, the initial modem rate may be too high. Reduce the initial Tx modem rate using these bits. 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.
	Bit3	Bit2	Bit1	Bit0	bps	
	0	0	0	0	Not used	
	0	0	0	1	2400	
	0	0	1	0	4800	
	0	0	1	1	7200	
	0	1	0	0	9600	
	0	1	0	1	12000	
	0	1	1	0	14400	
	0	1	1	1	16800	
	1	0	0	0	19200	
	1	0	0	1	21600	
	1	0	1	0	24000	

	1	0	1	1	26400	
	1	1	0	0	28800	
	1	1	0	1	31200	
	1	1	1	0	33600	
	1	1	1	1	Disabled	
	Other settings: **Not used**					
4-7	**Not used**					Do not change the settings.

Switch 03		
No	**FUNCTION**	**COMMENTS**
0-1	Inch-mm conversion before tx Bit 1: 0, Bit 0: 0 = Inch-mm conversion available Bit 1: 0, Bit 0: 1 = Inch only Bit 1: 1, Bit 0: 0 = Not used Bit 1: 1, Bit 0: 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.
2-3	DIS/NSF detection method Bit 3: 0, Bit 2: 0 = First DIS or NSF Bit 3: 0, Bit 2: 1 = Second DIS or NSF Bit 3: 1, Bit 2: 0 = Not used Bit 3: 1, Bit 2: 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.

Dedicated Transmission Parameters

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: 0, Bit 6: 0 = Off Bit 7: 0, Bit 6: 1 = On Bit 7: 1, Bit 6: 0 = Not used Bit 7: 1, Bit 6: 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 ▪ 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	MH Compression mode for e-mail attachments **0**: Off 1: On	Switches MH compression on and off for files attached to e-mails for sending.

1	MR Compression mode for e-mail attachments **0**: Off 1: On	Switches MR 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		
No	**FUNCTION**	**COMMENTS**
0	Full mode address selection 0: Full mode address 1: No full mode (simple mode)	If the other ends have the addresses, which have the full mode function flag ("0"), this machine determines them as full mode standard machines. ▪ This machine attaches the "demand of reception confirmation" to a message when transmitting. ▪ This machine updates the reception capability to the address book when receiving.
1-7	**Not used**	Do not change these settings.

Switch 05		
No	**FUNCTION**	**COMMENTS**
0	Directr transmission selection to SMTP server 0: ON 1: OFF	Allows or does not allow the direct transmission to SMTP server.
1-7	Not used	Do not change these 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)

4.6 SERVICE RAM ADDRESSES

⚠CAUTION

- Do not change the settings which are marked as “Not used” or “Read only.”

680000(H) - Machine code

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)

680005(H) - Machine code 2 (check ram2)

680006 to 680015(H) - Machine’s serial number (16 digits - ASCII)

680016(H) - Language code

Bit0: Japanese, Bit1: English (UK), Bit2: English (USA), Bit3: French,

Bit4: German, Bit5: Spanish, Bit6: Italian, Bit7: Dutch, Bit8: Swedish,

Bit9: Norwegian, Bit10: Danish, Bit11: Finnish, Bit12: Czech,

Bit13: Hungarian, Bit14: Polish, Bit15: Portuguese, Bit16: Russian,

Bit17: Traditional Chinese, Bit18: Simplified Chinese, Bit19: Hangul

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: Not used

6800A0 to 6800AF(H) - G3-3 bit switches: Not used

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: OFF, 1: ON (Print)

Bit 1: Center mark printing on received copies

(This switch is not printed on the user parameter list.)

0: OFF, 1: ON (Print)

Bit 2: Reception time printing

(This switch is not printed on the user parameter list.)

0: OFF, 1: ON (Print)

Bit 3: TSI print on received messages 0: OFF, 1: ON (Print)

Bit 4: Checkered mark printing

(This switch is not printed on the user parameter list.)

0: OFF, 1: ON (Print)

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: Not used

Bit 7: Journal 0: Off, 1: On

6800D4(H) - User parameter switch 04 (SWUSR_04: Automatic report printout)

Bit 0: Not used

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: 0, Bit 1: 0 = The machine receives all the fax messages.

Bit 2: 0, Bit 1: 1 = The machine receives the fax messages with RTI or CSI.

Bit 2: 1, Bit 1: 0 = The machine receives the fax messages with the same ID code.

Bit 2: 1, Bit 1: 1 = The machine does not receive anything.

Bits 3 and 4: Not used

Bit 5: Just size printing 0: Off, 1: On

Bit 6: Not used

Bit 7: Add paper display when a cassette is empty 0: Off, 1: On

6800D6(H) - User parameter switch 06 (SWUSR_06): Not used

6800D7(H) - User parameter switch 07 (SWUSR_07)

Bits 0 and 1: Not used

Bit 2: Parallel memory transmission 0: Off, 1: On

Bits 3 to 7: Not used

6800D8(H) - User parameter switch 08 (SWUSR_08)

Bits 0 and 1: Not used.

Bit 2: Authorized reception

0: Only faxes from senders whose RTIs/CSIs are specified for this feature are accepted.

1: Only faxes from senders whose RTIs/CSIs are not specified for this feature are accepted.

Bits 3 to 7: Not used.

6800D9(H) - User parameter switch 09 (SWUSR_09): Not used

6800DA(H) - User parameter switch 10 (SWUSR_0A)

Bits 0 to 2: Not used

Bit 3: Page reduction 0: Off, 1: On

Bits 4 and 5: Not used

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)

Bits 0 and 1: Not used

Bit 2: White original detection 0: Off, 1: On (alarm and alert message on the LCD)

Bits 3 and 4: Not used

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

Bit 7: Not used

6800DC(H) - User parameter switch 12 (SWUSR_0C): Not used

6800DD(H) - User parameter switch 13 (SWUSR_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: Not used

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 7: Not used

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: 0, Bit 1: 0, Bit 0: 1 = 1st paper feed station

Bit 2: 0, Bit 1: 1, Bit 0: 0 = 2nd paper feed station

Bit 2: 0, Bit 1: 1, Bit 0: 1 = 3rd paper feed station

Bit 2: 1, Bit 1: 0, Bit 0: 0 = 4th paper feed station

Bit 2: 1, Bit 1: 0, Bit 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)

Bits 0 and 1: Not used

Bit 2: Inclusion of the “Add” button when a sequence of Quick/Speed dials is selected for broadcasting 0: Not needed, 1: Needed

Bits 3 to 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

Service RAM Addresses

Bits 4 to 7	Not used

6800E3(H) - User parameter switch 19 (SWUSR_13)

Bit 0: Not used

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: Not used

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	Bit 4	Bit 3	Bit 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

Bits 1 to 7: Not used

6800E7(H) - User parameter switch 23 (SWUSR_17): Not used

6800E8(H) - User parameter switch 24 (SWUSR_18): Not used

6800E9(H) - User parameter switch 25 (SWUSR_19)

Bits 0 to 3: Not used

Bit 4: RDS operation 0: Not acceptable, 1: Acceptable for the limit specified by system switch 03



- 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) and 6800EB(H) - User parameter switches 26 and 27 (SWUSR_1A and 1B): Not used

6800EC(H) - User parameter switch 28 (SWUSR_1C)

- Ringing times setting in the TEL line priority mode: 00 to 99 (BCD)

6800ED(H) - User parameter switch 29 (SWUSR_1D): Not used

6800EE(H) and 6800EF(H) - User parameter switches 30 and 31 (SWUSR_1E and 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 – Not used

Bits 2 to 7: Not used

680100 to 68010F(H) - G4 Parameter Switches – Not used

680110 to 68012F(H) - G4 Internal Switches – Not used

680130 to 68016F(H) - Service Switches (SCU) – 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) – Not used

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) - Not used

680230 to 680246(H) - PSTN-3 RTI (Max. 20 characters - ASCII) - Not used

680247 to 680286(H) - TTI 1 (Max. 64 characters - ASCII) - See the following note.

680287 to 6802C6(H) - TTI 2 (Max. 64 characters - ASCII) - Not used

6802C7 to 680306(H) - TTI 3 (Max. 64 characters - ASCII) - Not used

680307 to 68031A(H) - PSTN-1 CSI (Max. 20 characters - ASCII)

68031B to 68032E(H) - PSTN-2 CSI (Max.20 characters - ASCII) - Not used

68032F to 680342(H) - PSTN-3 CSI (Max.20 characters - ASCII) - Not used

680343(H) - Number of PSTN-1 CSI characters (Hex)

680344(H) - Number of PSTN-2 CSI characters (Hex) - Not used

680345(H) Number of PSTN-3 CSI characters (Hex) - Not used

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.

680370(H) ID for transmission and reception (Read only – Do not change the settings)

680374 to 680375(H) - Memory Lock ID for the memory reception (BCD)

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 – 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

680401 to 68040D – Not used

680410(H) - G3-1 Modem ROM version (Read only)

680412(H) - G3-2 Modem ROM version – Not used

680414(H) - G3-3 Modem ROM version – Not used

680420(H) - Number of multiple sets print (Read only)

680476(H) - Time for economy transmission – Not used

68048C(H) - Dial in (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)

6804A8(H) - Machine code (Check ram 4)

6804D2(H) - Serial number (Max. 8 characters ASCII)

685E6C to 685E6F(H) - Transmission counter (HEX)

685E70 to 685E73(H) - Reception counter (HEX)

685EDC to 685EDF(H) - E-mail transmission counter (HEX)

685EE0 to 685EE3(H) - E-mail reception counter (HEX)

⇒ **688E8E to 68918D(H)** - SIP server address (Read only) – Not used

⇒ 688E8E(H) - Proxy server - Main (Max. 128 characters - ASCII) – Not used

⇒ 688F0E(H) - Proxy server - Sub (Max. 128 characters - ASCII) – Not used

⇒688F8E(H) - Redirect server - Main (Max. 128 characters - ASCII) – Not used

⇒68900E(H) - Redirect server - Sub (Max. 128 characters - ASCII) – Not used

⇒68908E(H) - Registrar server - Main (Max. 128 characters - ASCII) – Not used

⇒68910E(H) - Registrar server - Sub (Max. 128 characters - ASCII) – Not used

68918E(H) - Gatekeeper server address - Main (Max. 128 characters - ASCII)

68920E(H) - Gatekeeper server address - Sub (Max. 128 characters - ASCII)

68928E(H) - Arias Number (Max. 128 characters - ASCII)

⇒**68930E(H)** - SIP user name (Max. 128 characters - ASCII) – Not used

⇒**68938E(H)** - SIP authentication password (Max. 128 characters - ASCII) – Not used

⇒**68938E3(H)** - SIP digest authentication password Max. 128 characters - ASCII – Not used

68940E(H) - Gateway address information (Max. 7100 characters - ASCII)

68AFCA(H) - Stand-by port number for H.232 connection

⇒**68AFCC(H)** - Stand-by port number for SIP connection – Not used

68AFCE(H) - RAS port number

68AFD0(H) - Gatekeeper port number

68AFD2(H) - Port number of data waiting for T.38

⇒**68AFD4(H)** - Port number of SIP server – Not used

⇒**68AFD6(H)** - Priority for SIP and H.323 0: H.323, 1: SIP – Not used

⇒**68AFD7(H)** - SIP function 0: Disabled, 1: Enabled – Not used

68AFD8(H) - H.323 function 0: Disabled, 1: Enabled

⇒**68AFD9(H) - SIP digest authentication function** 0: Disabled, 1: Enabled – Not used

68AFDA(H) - IP-Fax backup data 00 - 600 (H)

69ECBE(H) - 69ECDE(H) - Dial tone detection parameter (Max. 11 x 3 lines)

69ECBE(H)	Dial tone frequency upper limit (high byte)	Hz (BCD)
69ECBF(H)	Dial tone frequency upper limit (low byte)	
69ECC0(H)	Dial tone frequency lower limit (high byte)	Hz (BCD)
69ECC1(H)	Dial tone frequency lower limit (low byte)	
69ECC2(H)	Dial tone detection time	(x 20 ms)
69ECC3(H)	Dial tone reset time (low)	(x 20 ms)
69ECC4(H)	Dial tone reset time (high)	
69ECC5(H)	Dial tone continuous tone time	(x 20 ms)

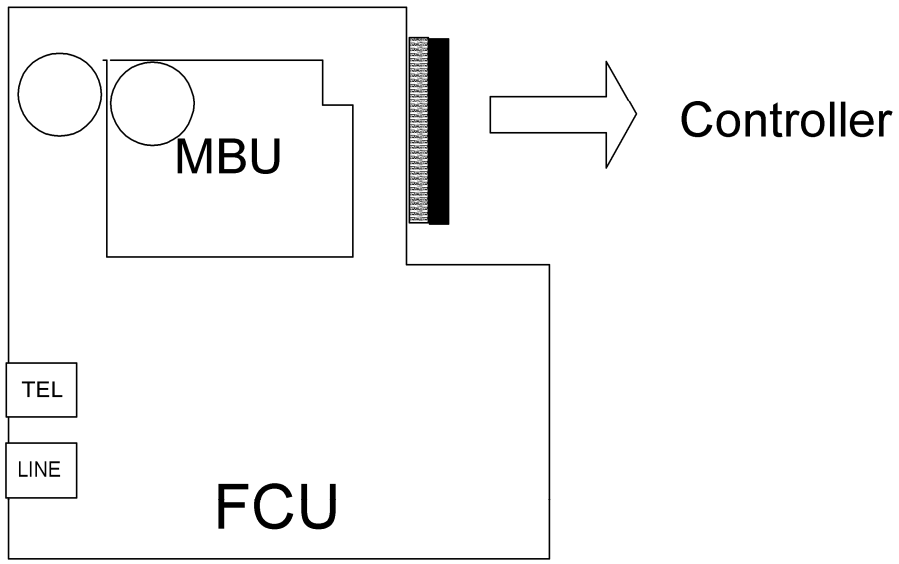
69ECC6(H)	Dial tone permissible drop time	(x 20 ms)
69ECC7(H)	Wait interval (low)	(x 20 ms)
69ECC8(H)	Wait interval (high)	

Default values

	NA	EU	Asia, Finland
Dial tone frequency upper limit	650 Hz	650 Hz	650 Hz
Dial tone frequency lower limit	360 Hz	360 Hz	360 Hz
Dial tone detection time	2000 ms	540 ms	1000 ms
Dial tone reset time	10 s	10 s	10 s
Dial tone continuous tone time	2000 ms	2000 ms	2000 ms
Dial tone permissible drop time	340 ms	300 ms	340 ms
Wait interval	4000 ms	4000 ms	4000 ms

5. DETAILED SECTION DESCRIPTIONS

5.1 OVERVIEW



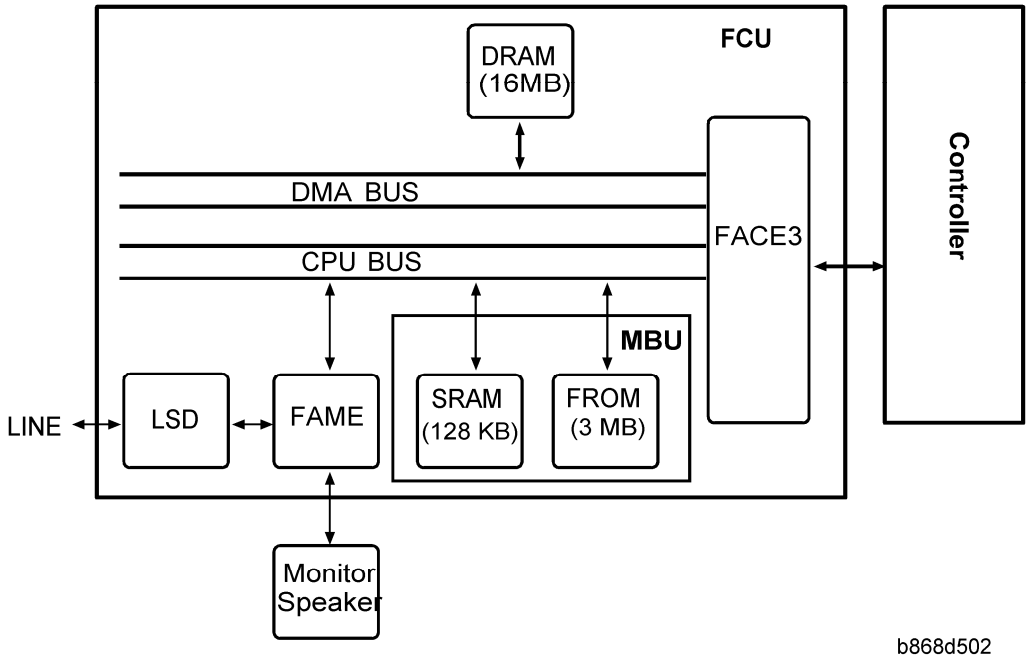
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The basic fax unit consists of two PCBs: an FCU and an MBU.

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.

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: 8MB
  Page memory: 4MB
- The SAF memory is backed up by a rechargeable battery.

Boards

Memory Back-up

- A Rechargeable battery backs up the SAF memory (DRAM) for 12 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 128 KB SRAM for system and user parameter storage is backed up by a lithium battery.

Memory Back-up

A lithium battery backs up the system parameters and programmed items in the SRAM, in case the base copier's main switch is turned off.

Switches

Item	Description
SW1	Switches the SRAM backup battery on/off.

5.3 FAX COMMUNICATION FEATURES

5.3.1 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

Fax Communication Features

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	Blind carbon copy
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.

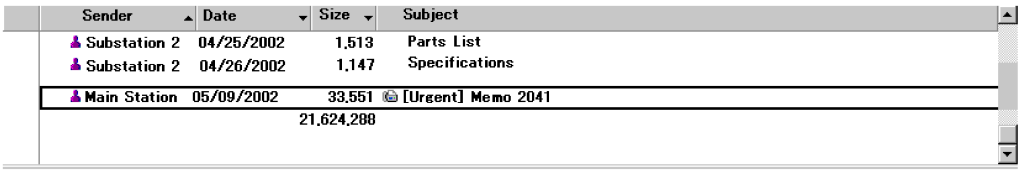
How the Subject Differs According to Mail Type

<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</td></tr>
<tr><td>4. None</td><td>CSI, RTI not registered</td></tr>
</table>

				(processed/error)
Mail delivery, memory transfer, SMTP receiving and delivery	From	RTI or CSI of the station designated for delivery	Mail delivery	Fax Message No. + File Number
		RTI or CSI of sender	Mail sending from G3 memory	
		Mail address of sender	Memory sending	
		Mail address of sender	SMTP receiving and delivery (Off Ramp Gateway)	
Mail error notification	---	Error Message No. xxxx From CSI (RTI)		

Items ① ② ③ of the table above are in the Subject.

Subjects Displayed on the PC



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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

Fax Communication Features

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 function is enabled only when "I-FAX switch 02 Bit 4" is set to "1"This confirmation is done in four steps.

1. Send request for confirmation of mail reception. To enable or disable this request (known as MDN):
2. Sub TX Mode> E-mail Options
3. Mail reception (receive confirmation request)
4. Send confirmation of mail reception
5. 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	--

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5.4 IP-FAX

5.4.1 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

<table>
<tr><th colspan="7">IP-Fax Switch 01</th></tr>
<tr><th>No.</th><th colspan="5">FUNCTION</th><th>COMMENTS</th></tr>
<tr><td rowspan="8">0-3</td><td colspan="5">Select IP FAX Delay Level</td><td rowspan="8">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</td></tr>
<tr><td>Bit3</td><td>Bit2</td><td>Bit1</td><td>Bit0</td><td>Setting</td></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>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
</table>

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 PBX
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) 200 x 100 dpi (Standard) 200 x 200 dpi (Detail)
Transmission Time:	G3: 3 s at 28800 bps; Measured with G3 ECM using memory for an ITU-T #1 test document (Slerexe letter) at standard resolution
Data Compression:	MH, MR, MMR, JBIG

General Specifications

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: 5, 10, 20, or 40 ms/line
Memory Capacity:	ECM: 128 KB SAF Standard: 4 MB Page Memory: Standard: 4 MB (Print: 2 MB + Scanner: 2 MB)

6.2 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 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)

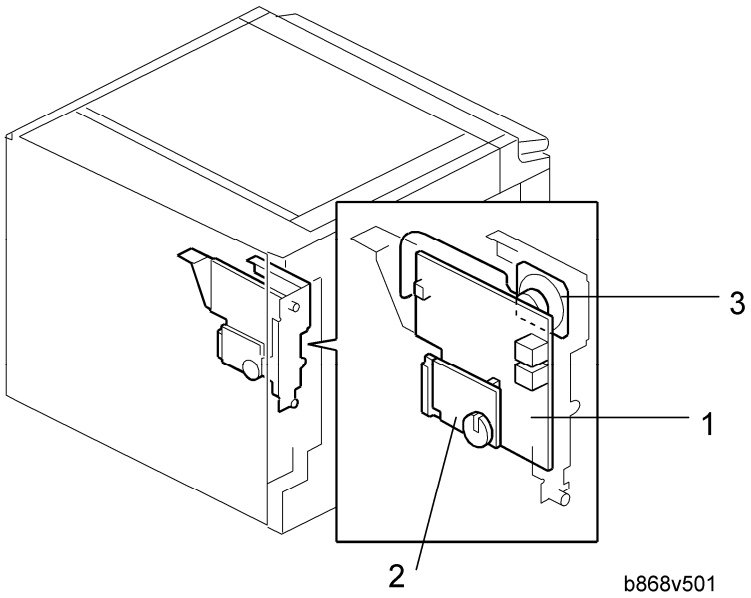
IFAX Specifications

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).

6.3 IP-FAX SPECIFICATIONS

Network:	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, 200 x 100dpi (standard characters) 8 x 7.7lines/mm, 200 x 200dpi (detailed characters)
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.

6.4 FAX UNIT CONFIGURATION



Component	Code	No.	Remarks
FCU	D345	1	Included with fax unit
MBU		2	
Speaker		3	
⇒ Handset Type 1018	B433	-	NA only. Common with B229

PRINTER/SCANNER UNIT TYPE 2500

D359

REVISION HISTORY		
Page	**Date**	**Added/Updated/New**
89	9/16/2009	SP5985

PRINTER/SCANNER UNIT (D359)

TABLE OF CONTENTS

1. INSTALLATION 1
1.1 CONTROLLER BOX AND PRINTER/SCANNER 1
1.1.1 ACCESSORY CHECK 1
1.1.2 INSTALLING EXPANSION COMPONENT 2
1.1.3 INSTALLING PANELS AND KEYS 6
1.1.4 SETTINGS 7
1.2 CONTROLLER OPTIONS 8
1.2.1 OVERVIEW 8
1.2.2 POSTSCRIPT3 INSTALLATION 9
1.2.3 JAVA VM OPTION INSTALLATION 9
1.2.4 WIRELESS LAN (IEEE 802.11B) INSTALLATION 10
1.2.5 IEEE 1284 INSTALLATION 12
1.2.6 BLUETOOTH INSTALLATION 13
1.2.7 REMOTE COMMUNICATION GATE INSTALLATION 14

2. REPLACEMENT AND ADJUSTMENT 17
2.1 MAIN BOARD 17
2.1.1 PRECAUTIONS 17
2.1.2 CONTROLLER BOARD 17

3. TROUBLESHOOTING 21
3.1 SERVICE CALL CONDITIONS 21
3.1.1 SERVICE CALL CONDITIONS 21
3.1.2 GW SC CODE DESCRIPTIONS 22

4. SERVICE TABLES 42
4.1 SERVICE PROGRAM MODE 42
4.1.1 ENABLING AND DISABLING SERVICE PROGRAM MODE 42
4.2 GW SP MODE TABLES 43
4.2.1 SP4-XXX (MODE) 43
4.2.2 SP5-XXX (MODE) 46
4.2.3 SP6-XXX (PERIPHERALS) 90

4.2.4 SP7-XXX (DATA LOG) 90
4.2.5 SP8-XXX (HISTORY) 95
4.3 PRINTER SERVICE MODE 121
4.3.1 SERVICE MODE TABLE 121
4.3.2 SP MODES RELATED TO PRINTER CONTROLLER 121
4.4 SCANNER SERVICE MODE 123
4.4.1 SCANNER PROGRAM MODE TABLE 123
4.5 USING SP MODE 124
4.5.1 MEMORY CLEAR 124
4.5.2 SERIAL NUMBER INPUT (SP5-811) 125
4.5.3 SMC PRINT (SP5-990) 126
4.5.4 COUNTER–EACH PAPER JAM (SP7-504) 126
4.5.5 ORIGINAL JAM HISTORY DISPLAY (SP7-508) 127
4.5.6 FIRMWARE UPDATE PROCEDURE 128
4.5.7 NVRAM DATA UPLOAD/DOWNLOAD 134
4.5.8 POWER-ON SELF TEST 135

5. DETAILED SECTION DESCRIPTIONS 136
5.1 OVERVIEW 136
5.2 CONTROLLER FUNCTIONS 138
5.2.1 PAPER SOURCE SELECTION 138
5.2.2 AUTO CONTINUE 139
5.2.3 PAPER OUTPUT TRAY 139
5.2.4 DUPLEX PRINTING 140
5.3 SCANNER FUNCTIONS 141
5.3.1 IMAGE PROCESSING FOR SCANNER MODE 141
5.4 NETWORK INTERFACE 142
5.4.1 LED INDICATORS 142
5.5 IEEE 802.11B (WIRELESS LAN) 143
5.5.1 SPECIFICATIONS 143
5.5.2 TRANSMISSION MODES 144
5.5.3 SECURITY FEATURES 145
5.5.4 WIRELESS LAN TROUBLESHOOTING NOTES 145
5.6 BLUETOOTH 148
5.6.1 SPECIFICATIONS 148
5.6.2 BLUETOOTH PROFILES 148

5.6.3 BLUETOOTH SECURITY FEATURES 149
5.7 USB CONNECTORS 150
5.7.1 PIN ASSIGNMENT 150

6. SPECIFICATIONS.....152
6.1 GENERAL SPECIFICATIONS 152
6.1.1 PRINTER 152
6.1.2 SCANNER 153
6.2 SOFTWARE ACCESSORIES 154
6.2.1 PRINTER 154
6.2.2 SCANNER 155
6.3 MACHINE CONFIGURATION 156
6.3.1 SYSTEM COMPONENTS..... 156

Read This First

Safety Notices

⚠Important Safety Notices

Prevention of Physical Injury

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

Health Safety Conditions

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

Observance of Electrical Safety Standards

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

⚠WARNING

- ⃠ Keep the machine away from flammable liquids, gases, and aerosols. A fire or an explosion might occur.

⚠CAUTION

- The Controller board on this machine contains a lithium battery. The danger of explosion exists if a battery of this type is incorrectly replaced. Replace only with the same or an equivalent type recommended by the manufacturer. Discard batteries in accordance with the manufacturer's instructions and local regulations.

Safety and Ecological Notes for Disposal

1. Do not incinerate toner bottles or used toner. Toner dust may ignite suddenly when exposed to an open flame.
2. Dispose of used toner, developer, and organic photoconductors in accordance with local

regulations. (These are non-toxic supplies.)

3. Dispose of replaced parts in accordance with local regulations.
4. When keeping used lithium batteries in order to dispose of them later, do not put more than 100 batteries per sealed box. Storing larger numbers or not sealing them apart may lead to chemical reactions and heat build-up.

Laser Safety

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

⚠WARNING

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

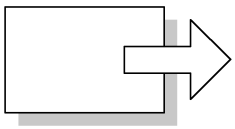
⚠WARNING FOR LASER UNIT
WARNING: Turn off the main switch before attempting any of the procedures in the Laser Unit section. Laser beams can seriously damage your eyes. **CAUTION MARKING:** 

Symbols and Abbreviations

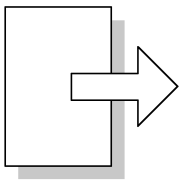
Conventions Used in this Manual

This manual uses several symbols.

Symbol	What it means
☛	Refer to section number
	Screw
	Connector
	E-ring
	Clip ring
	Clamp



Short Edge Feed (SEF)



Long Edge Feed (LEF)

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.
- 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.

1. INSTALLATION

1.1 CONTROLLER BOX AND PRINTER/SCANNER

When you install the printer/scanner option, the GW controller box must also be installed. This procedure shows the installation procedure for the GW controller box and printer/scanner option.

1.1.1 ACCESSORY CHECK

	No.	Description	Q'ty
Controller Box	1	Installation procedure	1
	2	Controller box	1
	3	Operation panel	1
	4	RAM DIMM	1
	5	Expansion decal	1
	6	Screw M3 x 8	1
	7	Tapping screw M3 x 6	6
	8	Ground cable	1
	9	Operating instructions	1 set
Printer Scanner	1	Installation procedure	1
	2	Dummy cover–fax	1
	3	Dummy key top	1
	4	CPS (Copy/Printer/Scanner) key top	2
	5	CPS (Copy/Printer/Scanner) key panel	2
	6	SD card	1

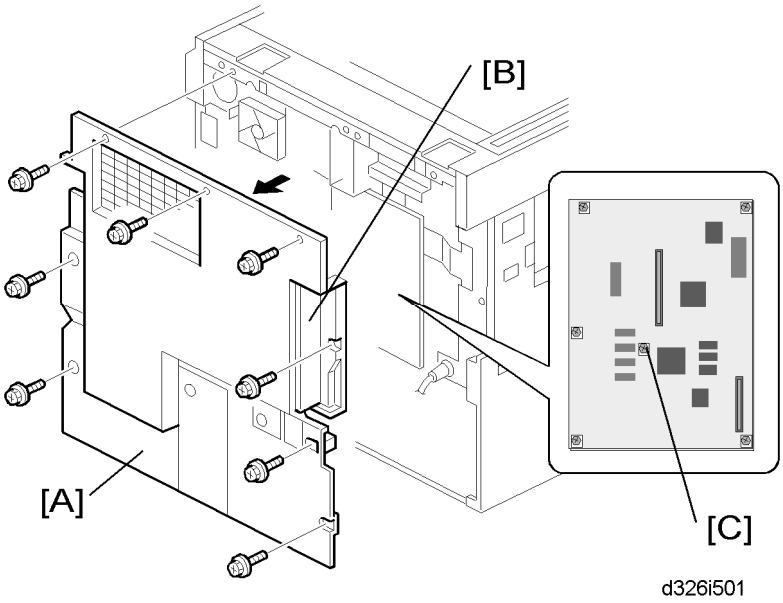
	7	Ferrite core	1
	8	FCC label (-17)	1
	9	CD-ROM: Driver	1 set

1.1.2 INSTALLING EXPANSION COMPONENT

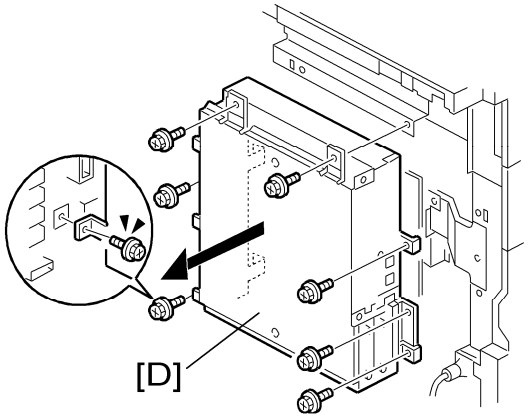
CAUTION

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

Step 1–Controller Box

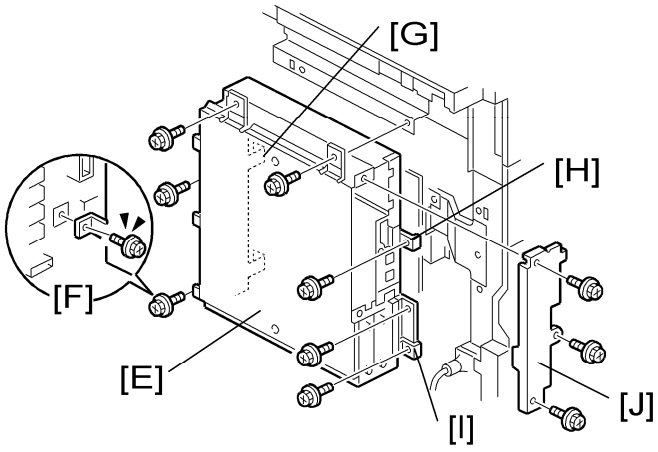


1. Remove the rear cover [A] (x 8).
2. Remove the slot cover [B].
3. Remove one screw [C] from the BICU.



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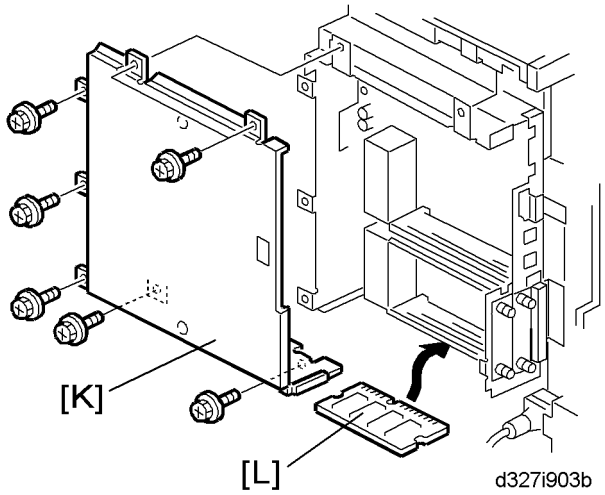
4. Remove the GDI controller box [D] if it has been installed (☞ x 7).



b843i902a

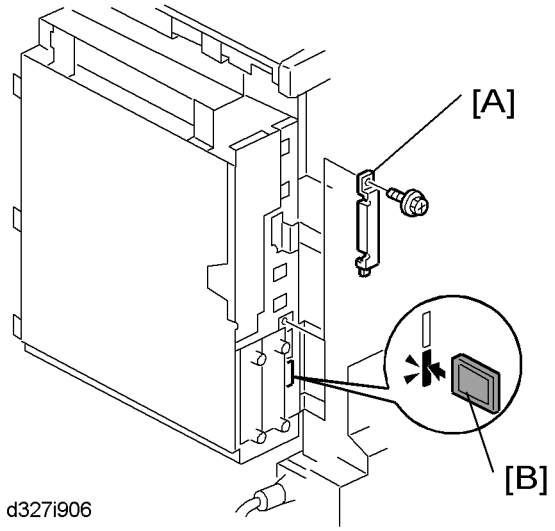
5. Connect the controller box [E] to the BICU. Make sure that the BICU is not damaged [F] and that the three openings [G][H][I] hold the controller box.
6. Fasten the screws (☞ x 7 [including the screw [C]).
7. Remove the FCU cover [J] (☞ x 3).

Controller Box and Printer/Scanner

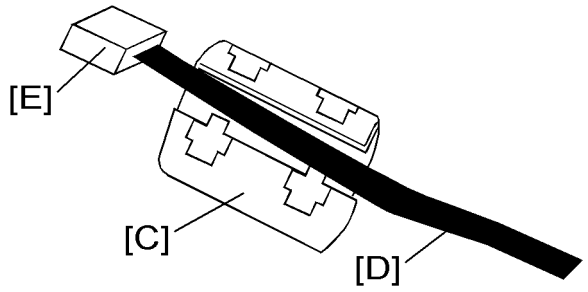


8. Remove the controller box cover [K] (🔩 x 7).
9. Install the RAM DIMM [L].
10. Reassemble the controller box cover.

Step 2–Printer/Scanner

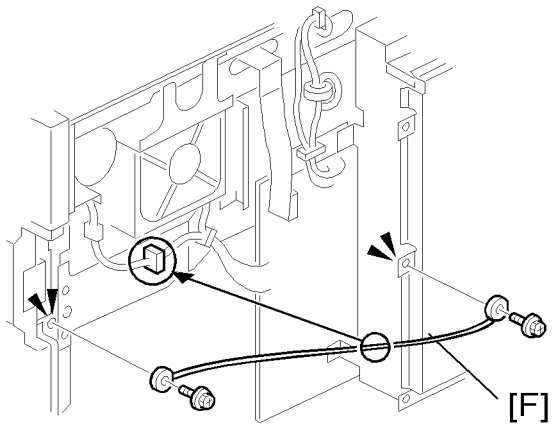


1. Remove the SD-card cover [A] (🔩 x 1).
2. Install the SD card [B] in the lowest slot.
3. Install the SD-card cover.



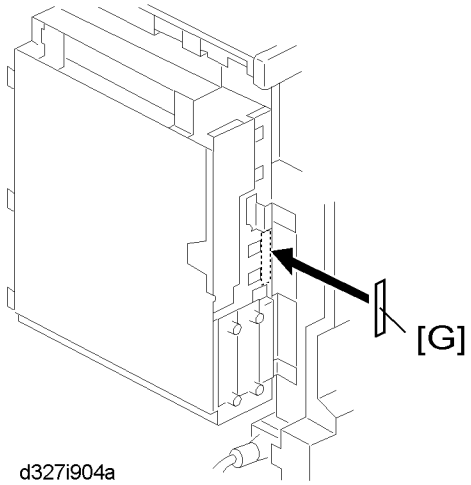
d327i912

4. Attach the ferrite core [C] to the network cable [D] as close as the connector [E].



d327i504

5. Install the ground cable [F] as shown, and then clamp the cable (x 2, x 1).
6. If you do not install the FCU, reinstall the FCU cover (which has been removed in Step 1), to the controller box.



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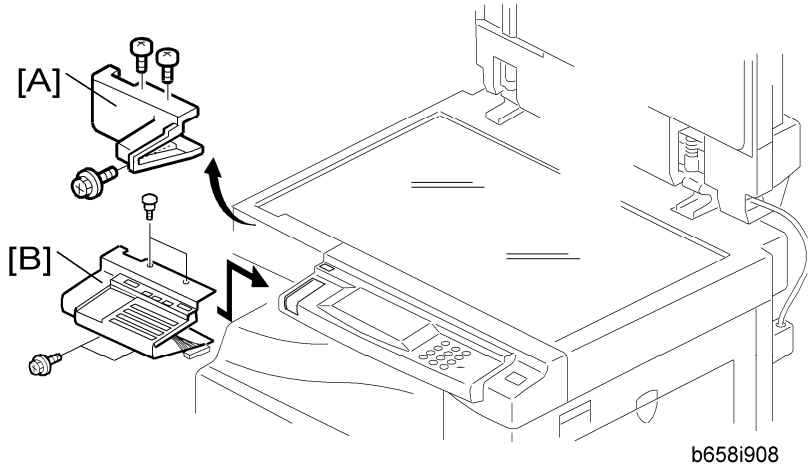
7. Attach the FCC label [G] at the right-hand side of the USB connector on the controller box (for the NA model only).

Step 4–Reassembling

1. Install the rear cover.

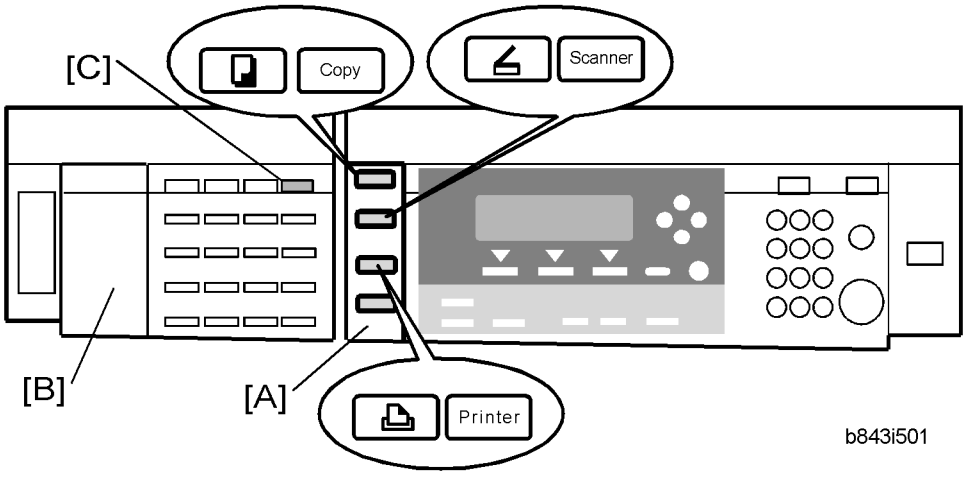
1.1.3 INSTALLING PANELS AND KEYS

Step 5–Panel



1. Remove the front upper left cover [A] (x 3).
2. Install the optional operational panel [B] (x 1, x 4 [including the three screws removed in step 1]).

Step 6–Printer/Scanner Keys



1. Remove the dummy cover (from the basic operation panel).
2. Attach the CPS (copy/printer/scanner) key top to the CPS (copy/printer/scanner) key panel and install it [A].
3. Install the dummy fax cover [B].
4. Install the dummy key top [C].

1.1.4 SETTINGS

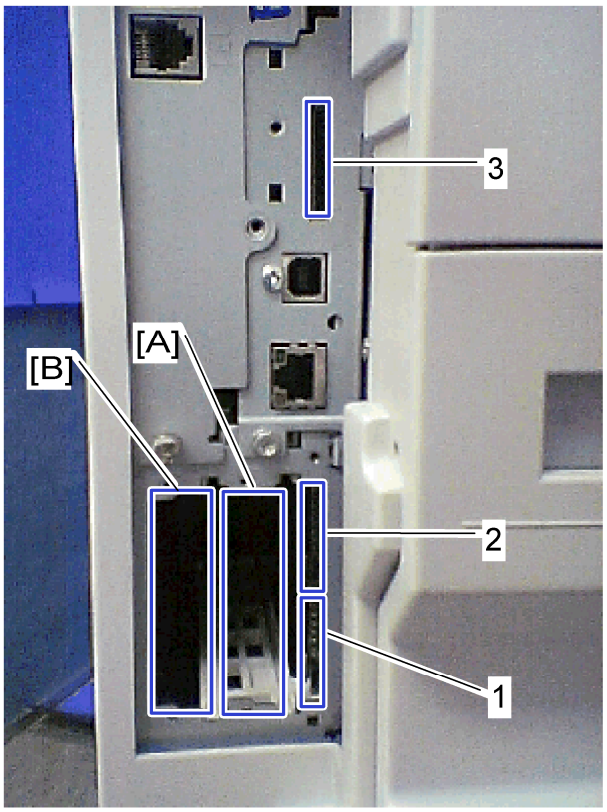
Step 9–Printer/Scanner Model Settings

1. Turn the main switch on.
2. Start the SP mode.
3. Select SP5-985-001 (NIC setting) and change the setting value to "1" (ON).
4. Select SP5-985-002 (USB setting) and change the setting value to "1" (ON).
5. Turn the main switch off and on.
6. Start the SP mode.
7. Select SP5-801-001 and initialize the all SP data.
8. Exit the SP mode, and then start the UP mode.
9. Select the "@Remote Service" ("User Tool" > "System Settings > Administrator Tools" > "Extended Security" > @Remote Service") and select "Prohibit".
10. Exit the UP mode, and then start the SP mode.
11. Select SP5-870-003 and execute initialization for @Remote.
12. Select SP5-907-001 and specifies the "Plug & Play".
13. Select SP5-870-001 and execute writing certification for @Remote.
14. Select SP5-302-002 and specify the time zone.
15. Select SP5-307-001, 003, and 004 and specify the daylight-saving time settings.
16. Exit the SP mode.
17. Turn the main switch off and on.
18. Start the UP mode.
19. Specifies the date and time with "Set Date" or "Set Time" (User Tool" > "System Settings" > "Set Date" or "Set Time").

1.2 CONTROLLER OPTIONS

1.2.1 OVERVIEW

This machine has I/F card slots and SD card slots for optional I/F connections and applications.



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I/F Card Slot

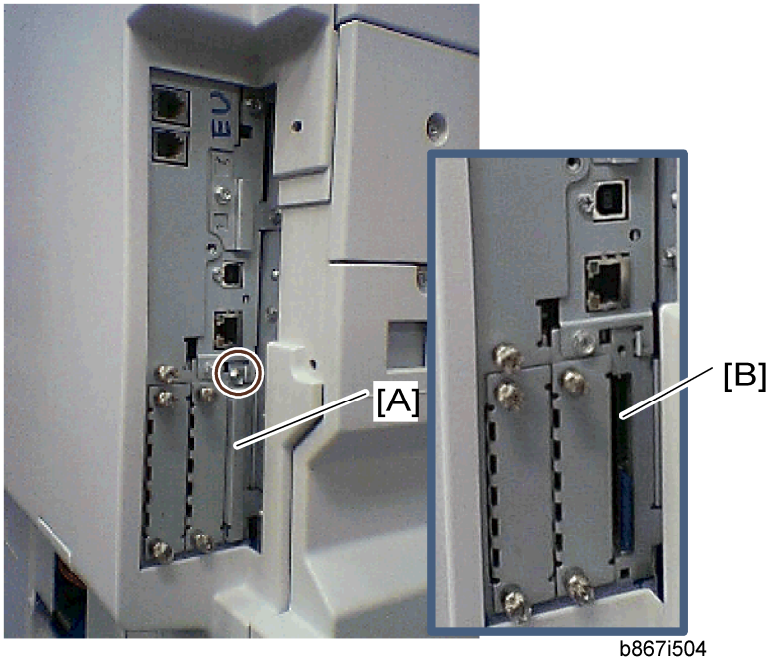
- Slot [A] is used for one of the optional I/F connections: (IEEE1284, IEEE802.11 (Wireless LAN), Bluetooth or Embedded RCG-M).
- Slot [B] is used for the USB Host.

SD Card Slot

- Slot [1] is used for optional printer/scanner application only.
- Slot [2] is used for the address book (Fax standard), PostScript3 or SDK applications (user use).
- Slot [3] is used for the Java VM Option, SDK applications (user use) or service use.

1.2.2 POSTSCRIPT3 INSTALLATION

Installation Procedure



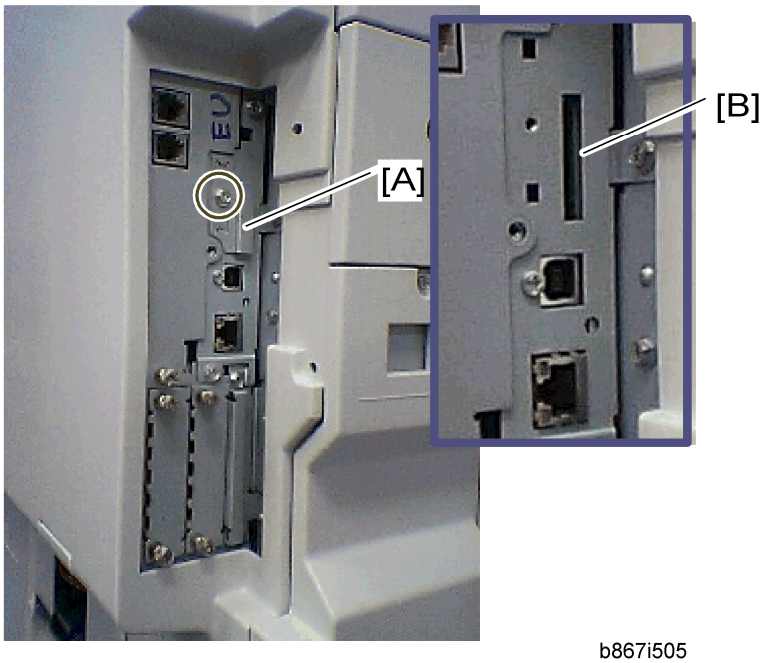
b867i504

1. Remove the SD card slot cover [A] (☞ x 1).
2. Install the PostScript3 SD card into the slot 2 [B].
3. Reinstall the SD card slot cover [A] (☞ x 1).
4. Turn on the main power switch.
5. Print out the configuration page (User Tools/ Counter > Printer Features > List/ Test Print), and then check that this device is detected.
6. Attach the "Adobe PostScript3" decal to the front cover of the machine.

1.2.3 JAVA VM OPTION INSTALLATION

Installation Procedure

SD card slot 3 is basically used only for service maintenance. Do not leave an SD card in slot 3 after installing an application.



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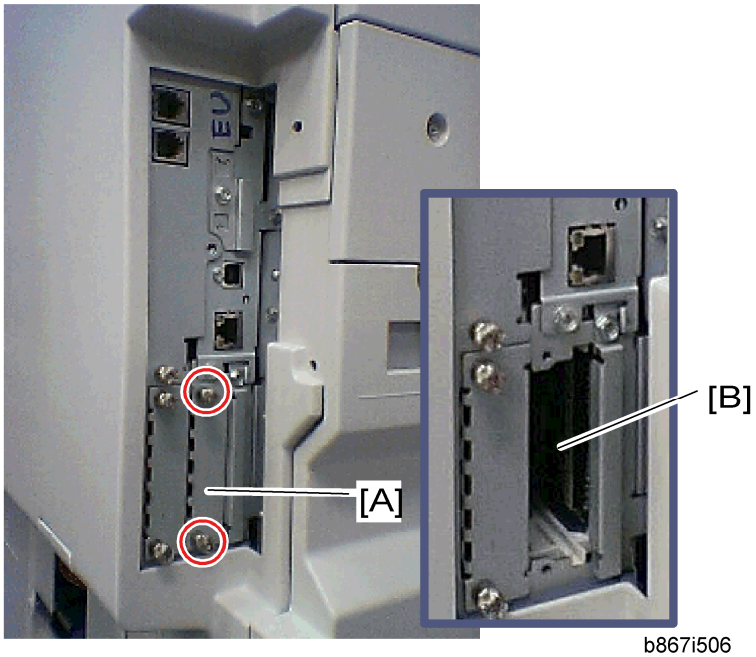
1. Remove the slot cover [A] from the SD card slot 3 (🔩 x 1).
2. Turn the SD-card label face to the rear of the machine. Then push it slowly into slot 3 [B] until you hear a click.
3. Turn on the main power switch.
4. Follow the vendor's installation procedure.
5. After installing, turn off the main power switch.
6. Remove the SD card from slot 3.
7. Attach the slot cover [A] (🔩 x 1).

1.2.4 WIRELESS LAN (IEEE 802.11B) INSTALLATION

Component Check

No.	Description	Q'ty
1	Wireless Adapter	1
2	Wireless LAN Card	1
3	LAN Card Cover	4
4	Caution Sheet	1
5	Label	1

Installation Procedure



b867i506

1. Remove the interface cover [A] (☞ x 2).
2. Install the Wireless adaptor to the slot A [B] (☞ x 2).
3. Install the Wireless LAN card to the wireless adaptor.
4. Attach the antenna cap to the wireless LAN card.
5. Turn on the main power switch.
6. Print out the configuration page (User Tools/Counter > Printer Features > List/Test Print), and then check that this device is detected.

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

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

SP Mode Settings for IEEE 802.11b Wireless LAN

The following SP commands can be set for IEEE 802.11b.

SP No.	Name	Function
5840 004	SSID	Used to confirm the current SSID setting.
5840 006	Channel MAX	Sets the maximum range of the channel settings for the country.

Controller Options

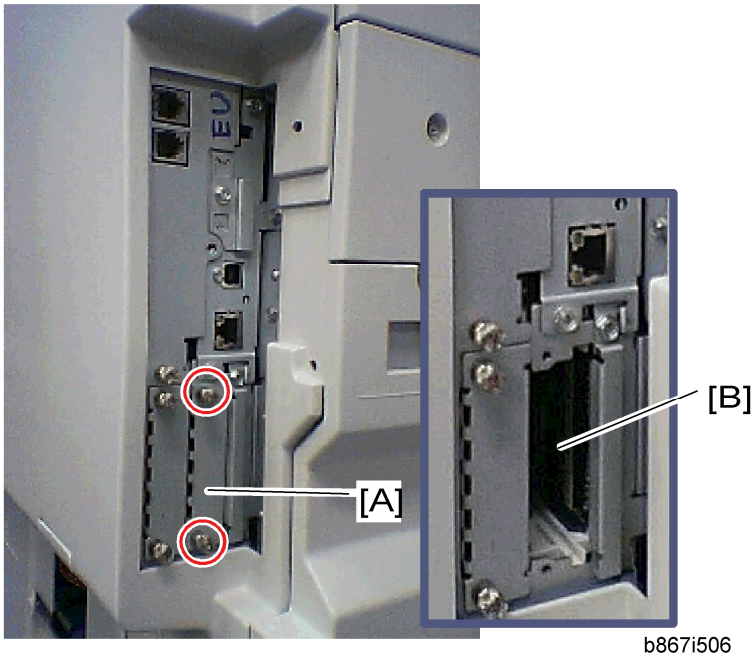
SP No.	Name	Function
5840 007	Channel MIN	Sets the minimum range of the channel settings allowed for your country.
5840 011	WEP Key Select	Used to select the WEP key (Default: 00).
5840 018	SSID Check	Used to check the SSID.
5840 020	WEP Mode	Used to display the maximum length of the string that can be used for the WEP Key entry.

1.2.5 IEEE 1284 INSTALLATION

Component Check

No.	Description	Q'ty
1	IEEE1284 Interface Ass'y	1
2	UL Sheet	1
3	Caution Sheet	1

Installation Procedure



b867i506

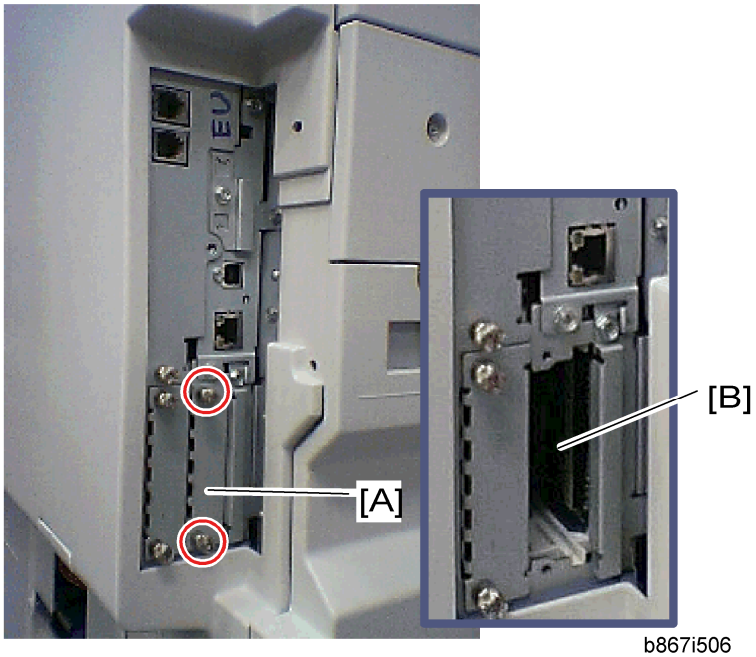
1. Remove the interface cover [A] (☞ x 2).
2. Install the IEEE 1284 board in interface slot A [B] (☞ x 2).
3. Turn on the main power switch.
4. Print out the configuration page (User Tools/Counter > Printer Features > List/Test Print), and then check that this device is detected.

1.2.6 BLUETOOTH INSTALLATION

Component Check

No.	Description	Q'ty
1	Wireless Adapter	1
2	Bluetooth Card	1
3	Bluetooth Card Adapter	1
4	Bluetooth Card Cover	1
5	UL/FCC Sheet	1
6	Caution Sheet	1

Installation Procedure



b867i506

1. Remove the interface cover [A] (☞ x 2).
2. Install the Wireless adaptor in interface slot A [B] (☞ x 2).
3. Select an appropriate FCC label from the FCC sheet, and then attach the FCC label to the non-label side of the Bluetooth card.
4. Install the Bluetooth card in the wireless adaptor.
5. Attach the antenna cap to the Bluetooth card.
6. Turn on the main power switch.
7. Print out the configuration page (User Tools/ Counter > Printer Features > List/ Test Print), and then check that this device is detected.

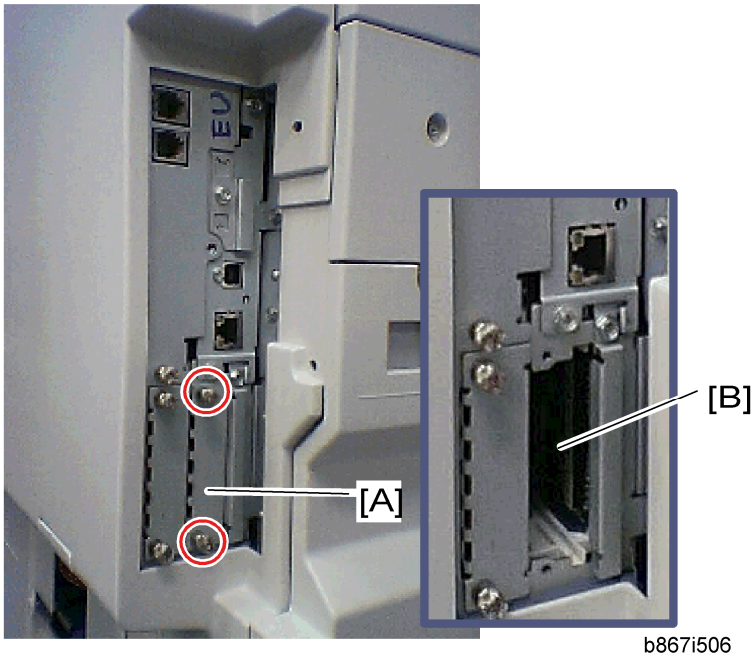
1.2.7 REMOTE COMMUNICATION GATE INSTALLATION

This option requires the printer/scanner application and DIMM 256 MB.

Component Check

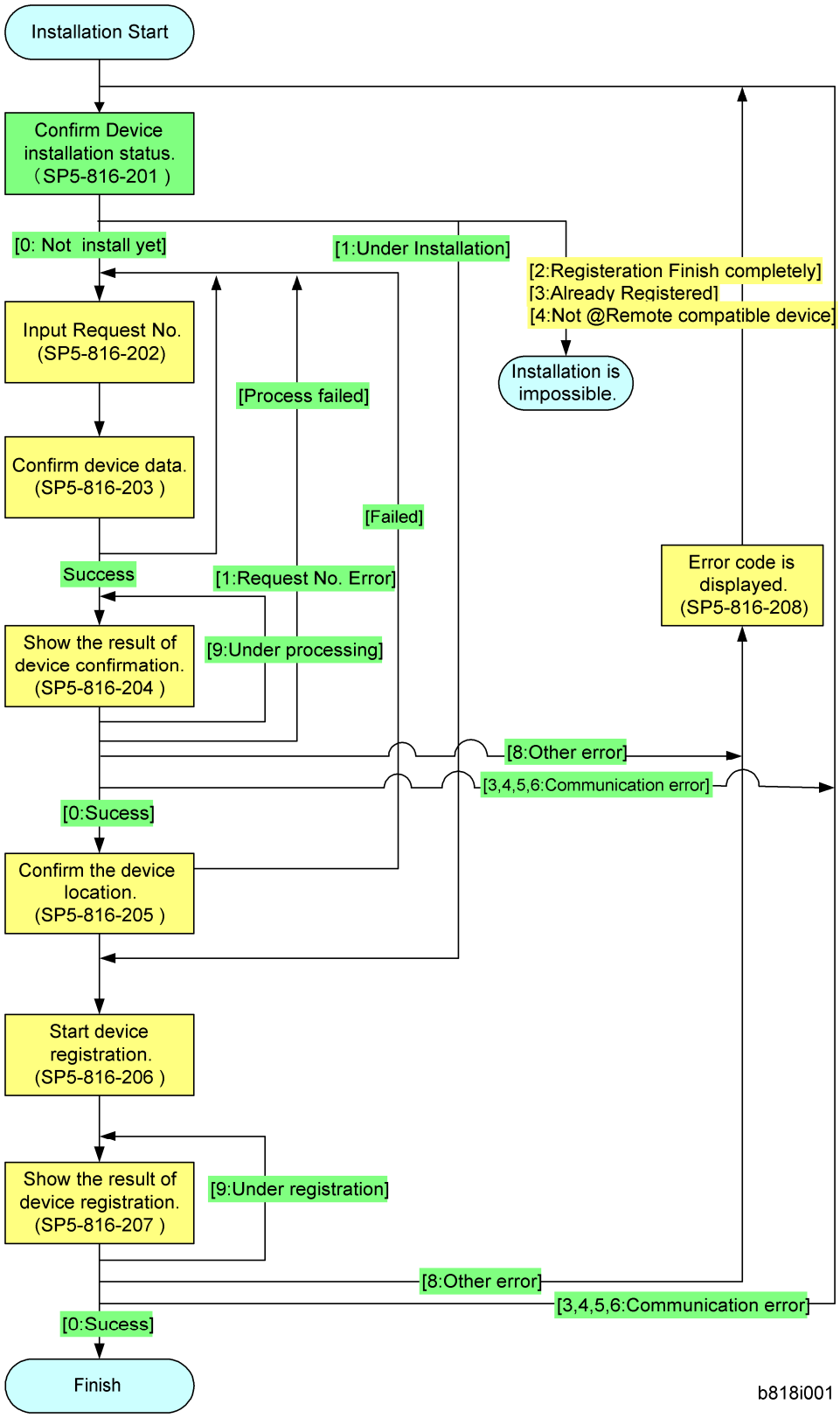
No.	Description	Q'ty
1	Remote Comm. Gate Interface Ass'y	1
2	Cover	1
3	Screw	3

Installation Procedure



b867i506

1. Remove the interface cover [A] (🔩 x 2).
2. Install the modem board into interface slot A [B] (🔩 x 2).
3. Confirm the following SP settings before starting installation flow.
   - SP5-985-001 ("On Board NIC" is set to "0: OFF".)
   - SP5-816-150 (To Select the country)
   - SP5-816-154 (To set an outside connection telephone number)
   - SP5-816-161 (To set a telephone number)
4. Follow the Installation flow as shown below with SP mode.


Installation Start
Confirm Device installation status. (SP5-816-201)
[0: Not install yet]
[1:Under Installation]
[2:Registeration Finish completely]
[3:Already Registered]
[4:Not @Remote compatible device]
Installation is impossible.
Input Request No. (SP5-816-202)
[Process failed]
Confirm device data. (SP5-816-203)
[Failed]
Success
[1:Request No. Error]
Error code is displayed. (SP5-816-208)
Show the result of device confirmation. (SP5-816-204)
[9:Under processing]
[8:Other error]
[3,4,5,6:Communication error]
[0:Sucess]
Confirm the device location. (SP5-816-205)
Start device registration. (SP5-816-206)
Show the result of device registration. (SP5-816-207)
[9:Under registration]
[8:Other error]
[3,4,5,6:Communication error]
[0:Sucess]
Finish
b818i001

2. REPLACEMENT AND ADJUSTMENT

2.1 MAIN BOARD

2.1.1 PRECAUTIONS

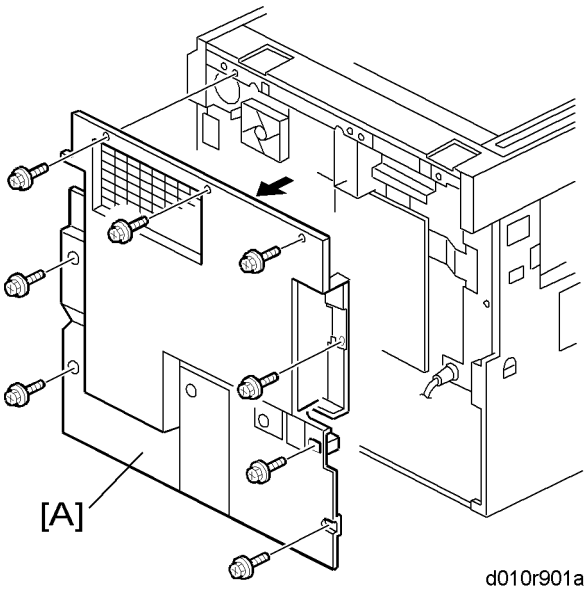
⚠CAUTION

- Turn off the main power switch and unplug the machine before starting replacement.
- Before turning off the main power switch, check that no mechanical component is operating. Mechanical components may stop out of their home positions if you turn off the main power switch while they are operating. The component may be damaged if you try to remove it when it is not in the home position.

2.1.2 CONTROLLER BOARD

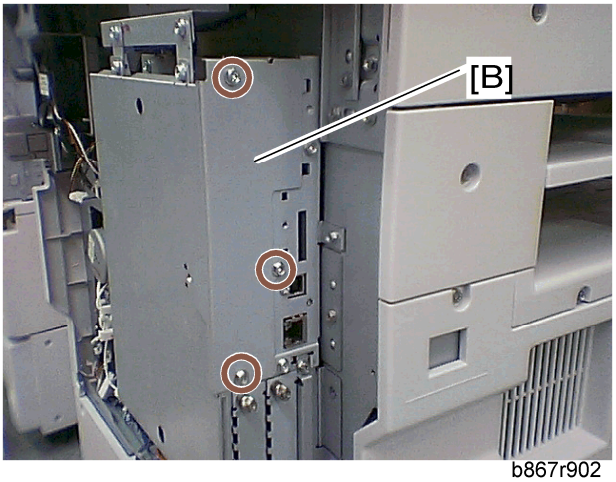
Preparation

- Before replacing the controller board, be sure to print out SMC or save the NVRAM data.
- Saving from the Controller NVRAM to an SD card (☛ "NVRAM Data Upload/Download [SP5-824/825]" in the chapter "Service Tables" of this manual)



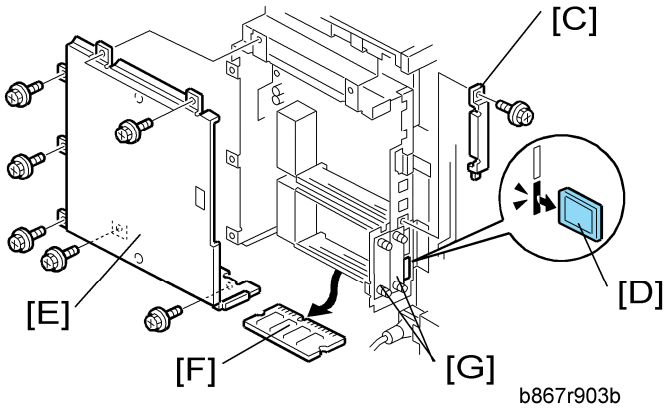
1. Remove the rear cover [A] (🔩 x 8).

Main Board



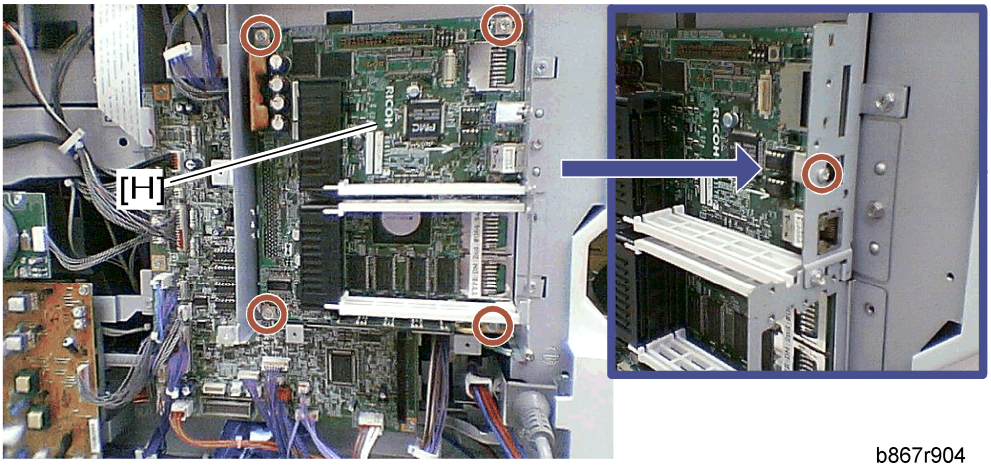
b867r902

2. Remove the FCU cover [B] (🔩 x 3).



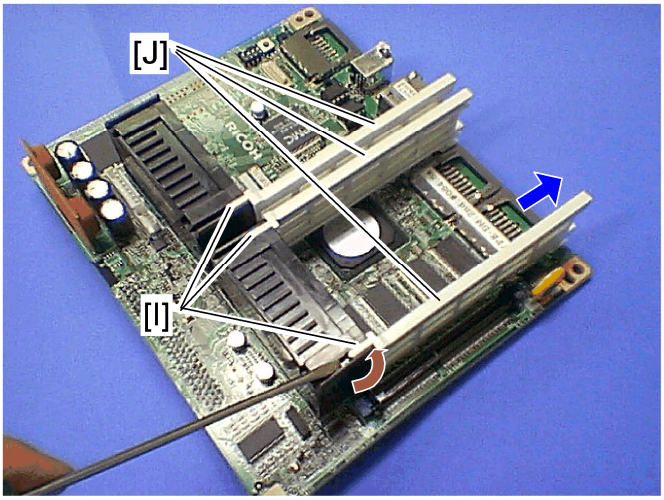
b867r903b

3. Remove the SD-card cover [C] (🔩 x 1), and then remove all SD cards [D] in the SD slots.
4. Remove the controller-box cover [E] (🔩 x 7).
5. Remove the RAM DIMM [F] if it has been installed.
6. Remove the two I/F covers [G] (or I/F options if they have been installed).



b867r904

7. Remove the controller board with the rails [H] (x 5).



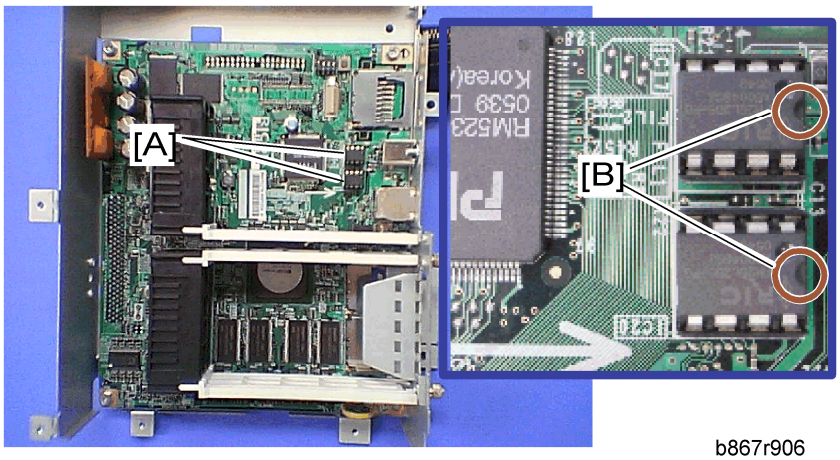
b867r905

8. Release the hooks [I], and then pull out the rails [J].
9. Controller board

Note

- When replacing the controller board, remove the NVRAMs from the board. Install the NVRAMs to the new board.

When replacing the NVRAM on the controller board



b867r906

1. When you replace the NVRAMs [A], make sure that the NVRAMs are correctly installed.
2. The mark [B] on the NVRAM should be directed to the right side (seem from the back side of the machine).
3. Reassemble the machine.
4. Copy the old NVRAM data to the new NVRAM with SP5-825 or input the SMC data in the machine. (For details, refer to the "NVRAM Data Upload/Download [SP5-824/825]" in the chapter "Service Tables" of the this manual)

3. TROUBLESHOOTING

3.1 SERVICE CALL CONDITIONS

3.1.1 SERVICE CALL CONDITIONS

There are four 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	The main machine can be operated as usual, excluding the unit related to the service call.	Turn the main power switch off and on.
C	The SC history is updated. The machine can be operated as usual.	Turn the main power switch off and on.
D	If the SC was caused by incorrect sensor detection, the SC can be reset by turning the main power switch off and on.	The SC will not be displayed. Only the SC history is updated.

Note

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

Important

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

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.

3.1.2 GW SC CODE DESCRIPTIONS

SC6xx

No. Definition		Symptom	Possible Cause/Countermeasure
632	B	MF accounting device error 1	
		The machine sends a data frame. → No normal end signal returns. → This symptom happens three times.	Defective or broken line between machine and device
633	B	MF accounting device error 2	
		The machine is communicating with the accounting device. → The break signal returns.	Defective or broken line between machine and device
634	B	MF accounting device error 3	
		A backup RAM error is reported from the accounting device.	▪ Defective accounting device controller ▪ Defective battery in the accounting device
635	B	MF accounting device error 4	
		A battery voltage error is reported from the accounting device.	▪ Defective accounting device controller ▪ Defective battery in the accounting device
636	SD Card Error		
-001	D	Expanded authentication module error	
		There is no expanded authentication module in the	1. Install the correct SD card or the file of the expanded

No.	Definition	Symptom	Possible Cause/Countermeasure
		machine. The SD card or the file of the expanded authentication module is broken. There is no DESS module in the machine.	authentication module. 2. Install the DESS module.
-002	D	Version error	
		The version of the expanded authentication module is not correct.	Install the correct file of the expanded authentication module.
650		Communication error of the remote service modem (Embedded RCG-M)	
-001	B	Authentication error	
		The authentication for the Embedded RCG-M fails at a dial up connection.	Check and set the correct user name (SP5816-156) and password (SP5816-157).
-004	B	Incorrect modem setting	
		Dial up fails due to the incorrect modem setting.	Check and set the correct AT command (SP5819-160).
-005	B	Communication line error	
		The supplied voltage is not sufficient due to the defective communication line or defective connection.	Consult with the user's local telephone company.
-011	B	Incorrect network setting	
		Both the NIC and Embedded RCG-M are activated at the same time.	Disable the NIC with SP5985-1.

Service Call Conditions

No.	Definition	Symptom	Possible Cause/Countermeasure
-012	B	Modem board error	
		The modem board does not work properly even though the setting of the modem board is installed with a dial up connection.	1. Install the modem board. 2. Check and reset the modem board setting with SP5816. 3. Replace the modem board.
651		Incorrect dial up connection	
-001	C	Program parameter error	
		The unexpected error occurs when the modem (Embedded RCG-M) tries to call the center with a dial up connection.	Software bug.
-002	C	Program execution error	
		Same as SC651-001.	Software bug.
670	D	Engine startup error	
		Just after the main power is turned on or the machine is recovering from auto off mode, the engine ready signal assertion fails. Just after the main power is turned on, the engine does not respond.	▪ Poor connection between the BICU and controller board ▪ Defective BICU ▪ Defective controller board
672	D	Controller-to-operation panel communication error at startup	
		After powering on the machine, communication between the controller and operation panel does not begin, or the communication is interrupted after a normal startup.	▪ Controller stalled ▪ Controller board installed incorrectly ▪ Defective controller board ▪ Operation panel connector loose or defective ▪ Poor connection of DIMM and

No. Definition		Symptom	Possible Cause/Countermeasure
			optional boards on the controller board 1. Check the setting of SP5875-001. If the setting is set to "1 (OFF)", change it to "0 (ON)".

SC8xx

No. Definition		Symptom	Possible Cause/Countermeasure
819	Kernel stop		
[0696e]	D	Process error	
		System completely down	▪ Defective RAM DIMM ▪ Defective SD card in slot 1 (lowest slot) ▪ Defective controller ▪ Software error ▪ Check and/or replace the RAM DIMM. 1. Check and/or replace the SD card in slot 1 (lowest slot). 2. Replace the controller. 3. See **NOTE** at the end of the SC table.
[0766d]	D	VM full error	
		Unexpected system memory size	▪ Defective RAM DIMM ▪ Defective SD card in slot 1 (lowest slot) ▪ Defective controller ▪ Software error 1. Check and/or replace the RAM DIMM. 2. Check and/or replace the SD card in slot 1 (lowest slot). 3. Replace the controller. 4. See **NOTE** at the end of the SC table.
[4361]	D	Cache error	

No. Definition		Symptom	Possible Cause/Countermeasure
		Cache error in the CPU	▪ Defective CPU 1. Replace the controller board.
[----]	D	The others	
		Error in OS	▪ Defective memory ▪ Defective flash memory ▪ Defective CPU 1. Replace the controller board.
820	Self-Diagnostic Error: CPU		
	D	[0001-0015] [000A-000D]: Detailed error code	
		During the boot monitor program and self-diagnostic, any exception or cut-in are not supposed to happen. If these happen, it is defined as SC.	▪ Defective CPU device ▪ Defective boot monitor program or self-diagnostic program 1. Replace the controller board. 2. Reinstall the system firmware.
	D	[00FF]: Detailed error code	
		Cache access error in the CPU	▪ Defective CPU ▪ Defective local bus 1. Turn the main power switch off and on. 2. Reinstall the system program. 3. Replace the controller board.
	D	[0601, 0602, 0605, 0606, 0607, 0609]: Detailed error code	
		Exceptional command does not operate even though it is executed on purpose.	▪ Defective CPU devices 1. Replace the controller board.
	D	[060A-060E]: Detailed error code	
		Cut-in command does not	▪ Defective CPU devices

Service Call Conditions

No.	Definition	Symptom	Possible Cause/Countermeasure
		operate when it is executed.	▪ Defective ASIC devices 1. Replace the controller board.
	D	[0610]: Detailed error code	
		Timer cut-in does not operate even though it is set.	▪ Defective CPU devices 1. Replace the controller board.
	D	[0612]: Detailed error code	
		Cut-in in ASIC occurs.	▪ Defective ASIC ▪ Defective devices in which ASIC detects cut-in. 1. Replace the controller board.
	D	[06FF]: Detailed error code	
		The pipeline clock frequency rate is different from the prescribed value.	▪ Defective CPU devices ▪ Mode bit data error, which is used for initializing CPU. 1. Replace the controller board.
	D	[0702]: Detailed error code	
		The result when the program is executed in the command cache is different from desirable value.	▪ Insufficient CPU cache ▪ Insufficient memory process speed 1. Replace the controller board. 2. Replace the RAM DIMM.
	D	[0709, 070A]: Detailed error code	
		Even you write the data in the only cache of memory, the data is actually written in another area (not cache) of memory.	▪ Defective CPU devices ▪ Incorrect SPD ▪ Boot mode setting error 1. Replace the controller board. 2. Replace the RAM DIMM.

No. Definition		Symptom	Possible Cause/Countermeasure
	D	[0801, 0804, 0807, 0808, 0809, 080A]: Detailed error code	
		An error occurs when checking the TLB.	▪ Defective CPU devices 1. Replace the controller board.
	D	[4002-4005]: Detailed error code	
		The calculation error in the CPU occurs.	▪ Defective CPU 1. Replace the CPU.
821	Self-Diagnostic Error: ASIC		
[0B00]	D	ASIC error	
		The write-&-verify check error has occurred in the ASIC.	▪ Defective controller board 1. Replace the controller.
[0B06]	D	ASIC not detected	
		The ASIC of the I/O is not detected.	▪ ASIC (controller board defective) ▪ Poor connection between North Bridge and PCI I/F. 1. Replace controller board.
[0B10]	B	SHM register check error	
		Failed to initialize or could not read connection bus. Data in SHM register incorrect.	▪ Defective bus connection ▪ Defective SHM 1. Replace controller board.
[0D05]	D	Timer error between ASIC and CPU	
		The CPU checks if the ASIC timer works properly compared with the CPU timer. If the ASIC timer does not function in the specified range, this SC code is displayed.	▪ System firmware problem ▪ Defective RAM-DIMM ▪ Defective controller 1. Reinstall the controller system firmware. 2. Replace the RAM-DIMM.

Service Call Conditions

No. Definition		Symptom	Possible Cause/Countermeasure
			3. Replace the controller board.
822	Self-Diagnostic Error: HDD		
[3003] [3004]	B	[3003]: Timeout error/ [3004]: Command error	
		When the main switch is turned on or starting the self-diagnostic, the HDD stays busy for the specified time or more.	▪ Loose connection ▪ Defective HDD ▪ Defective controller 1. Check that the HDD is correctly connected to the controller. 2. Replace the HDD. 3. Replace the controller.
823	Self-diagnostic Error: NIB		
[6101]	B	MAC address check sum error	
		The result of the MAC address check sum does not match the check sum stored in ROM.	▪ Defective controller 1. Replace the controller.
[6104]	B	PHY IC error	
		The PHY IC on the controller cannot be correctly recognized.	Same as SC823-[6101]
[6105]	B	PHY IC loop-back error	
		An error occurred during the loop-back test for the PHY IC on the controller.	Same as SC823-[6101]
824	D	Self-diagnostic Error: NVRAM	
		The controller cannot recognize the standard NVRAM installed or detects that the NVRAM is defective.	▪ NVRAM damaged or abnormal ▪ Backup battery has discharged ▪ NVRAM socket damaged 1. Replace the NVRAM.

No. Definition		Symptom	Possible Cause/Countermeasure
826	D	Self-diagnostic Error: RTC/Optional NVRAM	
		[1501]: Clock error	
		An RTC device is recognized, and the difference between the RTC device and the CPU exceeds the defined limit. No RTC device is recognized.	▪ RTC defective ▪ NVRAM without RTC installed ▪ Backup battery discharged 1. Replace the NVRAM with another NVRAM with an RTC device.
	D	[15FF]: RTC not detected	
		The RTC device is not detected.	▪ NVRAM without RTC installed ▪ Backup battery discharged 1. Replace the NVRAM with another NVRAM with an RTC device.
827	Self-diagnostic Error: RAM		
[0201]	D	Verification error	
		Error is detected during a write/verify check for the standard RAM (SDRAM DIMM).	▪ Loose connection ▪ Defective SDRAM DIMM ▪ Defective controller 1. Replace the SDRAM DIMM. 2. Replace the controller.
[0202]	D	Resident memory error	
		The SPD values in all RAM DIMM are incorrect or unreadable.	▪ Defective RAM DIMM ▪ Defective SPD ROM on RAM DIMM ▪ Defective 12C bus 1. Replace the RAM DIMM.
828	Self-diagnostic Error: ROM		

Service Call Conditions

No.	Definition	Symptom	Possible Cause/Countermeasure
[0101]	D	Boost lap code error	
		The boot monitor and OS program stored in the ROM DIMM is checked. If the check sum of the program is incorrect, this SC code is displayed.	▪ Defective ROM DIMM ▪ Defective controller 1. Replace the ROM DIMM. 2. Replace the controller.
[0104]	D	ROMFS error	
		All areas of the ROM DIMM are checked. If the check sum of all programs stored in the ROM DIMM is incorrect, this SC code is displayed.	▪ Defective ROM DIMM 1. Replace the ROM DIMM.
829	Self-diagnostic Error: Optional RAM		
[0401]	B	Verification error (Slot 1)	
		The data stored in the RAM in Slot 1 does not match the data when reading.	▪ Not specified RAM DIMM installed ▪ Defective RAM DIMM 1. Replace the RAM DIMM. 2. Replace the controller board.
[0402]	B	Composition error (Slot 1)	
		The result of checking the composition data of the RAM in Slot 1 on the controller is incorrect.	▪ Not specified RAM DIMM installed ▪ Defective RAM DIMM 1. Replace the RAM DIMM. 2. Replace the controller board.
851	B	IEEE1394 I/F abnormal	
		The IEEE1394 interface cannot be used, due to a driver error.	▪ IEEE1394 interface board defective

No. Definition		Symptom	Possible Cause/Countermeasure
			▪ Defective controller board
853	B	Wireless card startup error	
		The machine starts up. → The IEEE802 11b card connection board is recognized. → The wireless LAN card or bluetooth card is not recognized.	Loose connection between the wireless card and the connection board
854	B	Wireless card access error	
		The machine has been reading the data from the card. → The machine loses access to the card; the wireless LAN card or bluetooth card connection board is still recognized.	Loose connection between the wireless card and the connection board
855	B	Wireless card error	
		Some illegal data is found in the card.	Defective wireless card
856	B	Wireless card connection board error	
		An error is detected in the wireless LAN card or bluetooth card connection board.	Defective wireless card connection board
857	B	USB I/F Error	
		USB interface error is detected.	▪ Defective controller 1. Check the USB connections, and make sure that they are securely connected. 2. Replace the controller board.

Service Call Conditions

No.	Definition	Symptom	Possible Cause/Countermeasure
860	B	HDD startup error at main power on	
		HDD is connected but a driver error is detected. The driver does not respond with the status of the HDD within 30 s.	▪ No formatted HDD ▪ Label name input during formatting is corrupted. ▪ Defective HDD 1. Reformat the HDD. 2. Replace the HDD.
861	D	HDD reboot error	
		The HDD does not become ready within 30 seconds after the power is supplied to the HDD.	▪ Loose connection ▪ Defective cables ▪ Defective HDD ▪ Defective controller 1. Check the connection between the HDD and controller. 2. Check and replace the cables. 3. Replace the HDD. 4. Replace the controller.
863	D	HDD read error	
		The data stored in the HDD cannot be read correctly.	▪ Bad sector detected during operation of the HDD ▪ Defective HDD ▪ Defective controller 1. Reformat the HDD. 2. Replace the HDD when SC863 occurs more than ten times or it takes more than twenty seconds to get ready condition. 3. Replace the controller board.
864	D	HD data CRC error	

No. Definition		Symptom	Possible Cause/Countermeasure
		While reading data from the HDD or storing data in the HDD, data transmission fails.	Defective HDD
865	D	HD access error	
		An error other than SC863 and SC864 is detected while operating the HDD.	Defective HDD
866	B	SD card authentication error	
		A digital license error of an SD card application is detected.	▪ SD card data has corrupted. 1. Store correct data in the SD card.
867	D	SD card error	
		An application SD card is removed from the boot slot while an application is activated.	An application SD card is ejected.
868	D	SD card access error (-13 to -3: File system error, other number: Device error)	
		An error report is sent from the SD card reader.	▪ SD card not inserted correctly ▪ SD card defective ▪ Controller board defective 1. For a file system error, format the SD card on PC. 2. For a device error, turn the main switch off and on. 3. Remove and re-install the SD card. 4. Replace the SD card. 5. Replace the controller.

Service Call Conditions

No. Definition		Symptom	Possible Cause/Countermeasure
870	B	Address book data error	
		The address book in the hard disk is accessed. → An error is detected in the address book data; address book data is not read; or data is not written into the address book. Note ▪ To recover from the error, do any of the following countermeasures: ▪ Format the address book by using SP5-846-050 (all data in the address book–including the user codes and counters–is initialized).	▪ Data corruption ▪ Defective hard disk ▪ Defective controller software 1. Replace the hard disk (the user codes and counters are recovered when the main switch is turned on if those data are stored in Smart Device Monitor for Admin).
872	B	HDD received mail data error	
		An error is detected in the received mail data partition of the HDD at machine initialization.	▪ Defective HDD ▪ Power failure during an access to the HDD 1. Initialize the HDD partition (SP5-832-007). 2. Replace the HDD.
873	B	HDD sent mail data error	
		An error is detected in the sent mail data partition of the HDD at machine initialization.	▪ Defective HDD ▪ Power failure during an access to the HDD

No. Definition		Symptom	Possible Cause/Countermeasure
			1. Initialize the HDD partition (SP5-832-008). 2. Replace the HDD.
874	D	Delete All error 1: HDD	
		An error is detected while the all data of the HDD or NVRAM are formatted physically by the Data Overwrite Security Unit (B735).	▪ Not installed Data Overwrite Security Unit (SD card) ▪ Defective HDD 1. Install the Data Overwrite Security Unit (B735). 2. Replace the HDD.
875	D	Delete All error 2: Data area	
		An error is detected while the all data of the HDD or NVRAM are formatted logically by the Data Overwrite Security Unit (B735).	▪ The logical format for HDD fails. 1. Turn the main switch off/on and try the operation again.
876	Log Data Error		
-001	D	Log Data Error 1	
		An error was detected in the handling of the log data at power on or during machine operation. This can be caused by switching the machine off while it is operating.	▪ Damaged log data file in the HDD 1. Initialize the HDD with SP5832-004.
-002	D	Log Data Error 2	
		Same as -001	▪ An encryption module not installed 1. Disable the log encryption setting.

Service Call Conditions

No.	Definition	Symptom	Possible Cause/Countermeasure
			2. Install the encryption module.
-003	D	Log Data Error 3	
		Same as -001	▪ Invalid encryption key log due to defective NVRAM data 1. Initialize the HDD with SP5832-004. 2. Disable the log encryption setting.
-004	D	Log Data Error 4	
		Same as -001	▪ Unusual encryption function log due to the defective NVRAM data 1. Initialize the HDD with SP5832-004.
-005	D	Log Data Error 5	
		Same as -001	▪ Installed NVRAM or HDD, which is used in other machine 1. Reinstall the previous NVRAM or HDD. 2. Initialize the HDD with SP5832-004.
-099	D	Log Data Error 99	
		Same as -001	▪ Other than above causes 1. Ask your supervisor.
877	B	HDD Data Overwrite Security SD card error	
		The all delete cannot be executed even though the Data Overwrite Security Unit (B735) is	▪ Defective SD card (B735) ▪ Not installed SD card (B735) 1. Replace the NVRAM and then

No. Definition		Symptom	Possible Cause/Countermeasure
		installed and activated.	install the new SD card (B735). 2. Check and reinstall the SD card (B735).
880	D	File Format Converter (MLB) error	
		A request to get access to the MLB was not answered within the specified time.	MLB defective

SC9xx

No. Definition		Symptom	Possible Cause/Countermeasure
900	D	Electronic total counter error	
		The value of the total counter is out of the normal range.	Defective NVRAM
920	B	Printer error	
		An application error that stops the machine operation is detected.	▪ Defective software ▪ Unexpected hardware resource (e.g., memory shortage)
921	B	Printer font error	
		A necessary font is not found in the SD card when the printer application starts.	▪ A necessary font is not found in the SD card. ▪ The SD card data is corrupted. 1. Check that the SD card stores correct data.
990	D	Software performance error	
		The software attempted to	▪ Software defective

Service Call Conditions

No.	Definition	Symptom	Possible Cause/Countermeasure
		perform an unexpected operation. NOTE: When this error occurs, the file name, address, and data will be stored in NVRAM. This information can be checked by using SP7-403. See the data and the situation in which this SC occurs. Then report the data and conditions to your technical control center.	▪ Internal parameter incorrect ▪ Insufficient working memory
991	C	Software continuity error	
		The software attempted to perform an unexpected operation. However, unlike SC990, the process can keep on running.	Logged only; the machine can continue to operate
992	D	Undefined error	
		An error not controlled by the system occurred (the error does not come under any other SC code).	Defective software program
997	B	Application function selection error	
		The application selected by a key press on the operation panel does not start or ends abnormally.	▪ Software for that application is defective ▪ An option required by the application (RAM, DIMM, board) is not installed. ▪ Too complicated nest of the fax group address

No. Definition		Symptom	Possible Cause/Countermeasure
			1. As for the fax operation problem, simplify the nest of the fax group address.
998	D	Application start error	
		After switching the machine on, the application does not start within 60 s. (No applications start or end normally.)	▪ Software for that application is defective ▪ An option required by the application (RAM, DIMM, board) is not installed. 1. Check the setting of SP5875-001. If the setting is set to "1 (OFF)", change it to "0 (OFF)".

NOTE

If a problem always occurs in a specific condition (for example. printer driver setting, image file), the problem may be caused by a software error. In this case, the following data and information needs to be sent back to your product specialist. Please understand that it may take some time to get a reply on how to solve the problem, because in some cases the design staff in Japan must analyze the data.

- Symptom / Possible Causes / Action taken
- Summary sheet (SP mode “Printer SP”, SP1-004 [Print Summary])
- SMC - All (SP5-990-001)
- SMC - Logging (SP5-990-004)
- Printer driver settings used when the problem occurs
- All data displayed on the screen (SC code, error code, and program address where the problem is logged.)
- Image file which causes the problem, if possible

4. SERVICE TABLES

4.1 SERVICE PROGRAM MODE

⚠CAUTION

- Before accessing the service menu, do the following:
- Confirm that there is no print data in the printer buffer (the 'Data In' LED must not be lit or blinking).
- If there is some data in the buffer, wait until all data has been printed.

⚠CAUTION

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

Note

- The main power LED (✳) lights or flashes while the platen cover or ARDF is open; while the main unit is communicating with a facsimile or the network server; or while the machine is accessing the memory for reading or writing data.

4.1.1 ENABLING AND DISABLING SERVICE PROGRAM MODE

Entering the SP Mode

⌦	1.	Press the Clear Mode key.
①⓪⑦	2.	Use the keypad to enter "107".
C/⊗	3.	Hold down Clear/Stop for at least 3 seconds.
	4.	Enter the Service Mode.
Printer SP Scanner SP		Select "Printer SP" to enter printer SP mode. Select "Scanner SP" to enter scanner SP mode.

Exiting the Service Mode

Press the cancel key to exit from the service mode.

4.2 GW SP MODE TABLES

The tables in this section list the service programs (SPs).

The following codes are used:

- Asterisk (*): The settings are saved in the NVRAM. Most of them return to the default values when you execute SP 5801 2.
  CTL indicates that the data is contained in the NVRAM on the controller board.
- The DFU menu is for design or factory use only. You must not change the settings.
- Brackets ([ ]): The brackets enclose the setting rage, default value, and minimum step (with unit) as follows: [Minimum to Maximum / **Default** / Step].
- SSP: Consult your supervisor before you use this program.

4.2.1 SP4-XXX (MODE)

4921*	**[Image Adj Selection]**	
001	Copy	[0 to 10 / **0** / 1]
	Selects which mode the settings from SP4-922 to SP4-932 are used for. 0 = None, 1 = Text 1, 2 =Text 2, 3= Photo 1, 4 = Photo 2, 5 = Photo 3, 6 = Special 1, 7 = Special 2, 8 = Special 3, 9 = Special 4, 10 = Special 5	
002	Fax	[0 to 5 / **0** / 1]
	Selects which mode the settings from SP4-922 to SP4-932 are used for. 0 = None, 1 = Text 1, 2 = Text 2, 3 = Photo 1, 4 = Photo 2, 5 = Special 1	
003	Scanner	[0 to 4 / **0** / 1]
	Selects which mode the settings from SP4-922 to SP4-932 are used for. 0 = None, 1 = Text 1, 2 = Text 2, 3= Photo 1, 4 = Photo 2	

4922*	**[Scanner Gamma]**
	Selects “text” or “photo” as the priority output mode. This setting is applied to all image processing modes of SP4-921.

001	Copy	[**0**=System default/ 1=Text/ 2=Photo]
002	Fax	
003	Scanner	

4923*	**[Notch Selection]**	
	Selects the value of the center ID adjustment notch for the ID adjustment LEDs. ▪ Normally the center notch is 3 (range 1-5). If –1 is selected, each notch shifts down (becomes lighter). If +1 is selected, each notch shifts up (becomes darker). ▪ This setting is applied to all image processing modes of SP4-921.	
001	Copy	[–1 = Light / **0** = Normal / +1 = Dark]
002	Fax	
003	Scanner	

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

4927*	**[Line Width Correction]**

	Adjusts the line width correction algorithm. Positive settings produce thicker lines; negative settings produce thinner lines. This setting is only applied to the originals in SP4-921.	
001	Copy	[–2 to 2 / **0** / 1/step]
002	Fax	
003	Scanner	

4928*	**[Independent Dot Erase]**	
	Selects the dot erase level. Higher settings provide greater erasure. This setting is only applied to the originals in SP4-921.	
001	Copy	[–2 to 2 / **0** / 1/step]
002	Fax	
003	Scanner	

4929*	**[Positive/Negative]**	[**0 = No**, 1 = Yes]
	Inverts white and black. This setting is only applied to the originals in SP4-921.	
001	Copy	
002	Fax	

4930*	**[Sharpness-Edge]**	[–2 to 2 / **0** / 1/step]
	Adjust the clarity. This setting is only applied to the originals in SP4-921.	
001	Copy	
002	Fax	
003	Scanner	

4931*	**[Sharpness-Solid]**	[–2 to 2 / **0** / 1/step]
	Adjust the clarity. This setting is only applied to the originals in SP4-921.	
001	Copy	
002	Fax	
003	Scanner	

4932*	**[Sharpness-Low ID]**	[–2 to 2 / **0** / 1/step]
	Adjust the clarity. This setting is only applied to the originals in SP4-921.	
001	Copy	
002	Fax	
003	Scanner	

4.2.2 SP5-XXX (MODE)

5001	**[All Indicators On]**
001	All LEDs turn on. The LCDs turn on or off with "ON" or "OFF" key.

5045	**[Counter Model]**
001	Selects the counting display if the meter charge mode is enabled with SP5-930-001. Note ▪ You can change the setting only one time. [0 or 1 / **0** / 1 /step] 0: 1 counter (Total) 1: 2 counters (Total and Prints)

5055	**[Display IP address]**

001	Display IP address	CTL	Displays or does not display the IP address on the LCD. [0 or 1 / **0** / -] 0: No, 1: Yes

5056	**[Coverage Counter]**		
001	Coverage Counter	CTL	Displays or does not display the coverage counter on the LCD. [0 or 1 / **0** / -] 0: Not display, 1: Display

5104*	**[A3 Double Count] SSP**		
	A3 Double Count	CTL	[**0 = No** / 1 = Yes / 2 = No Unclear]
001	Selects whether the machine counts twice for each sheet of A3/11"x 17". If this is set to “Yes”, the total (mechanical) counter and the current user counter will both increment by two for each A3/11" x 17" sheet.		

5112	**[Non-Std. Paper Set]** Non-Standard Paper Set
001	Determines whether a non-standard paper size can be input for the universal cassette trays (Tray 2, Tray 3). [0 or 1 / **1** / -] 0: No 1: Yes. If “1” is selected, the customer will be able to input a non-standard paper size using the UP mode.

5113	**[Optional Counter Type]**		
001	Optional Counter Type 1	CTL	This program specifies the counter type. **0: None** 1: Key card (RK 3, 4) 2: Key card (down)

			3 to 10: Japan only 11: Exp. key card (Add) 12: Exp. key card (Deduct)
002	Optional Counter Type 2	CTL	This program specifies the external counter type. **0: None** 1: Expansion device 1 2: Expansion device 2 3: Expansion device 3

5114	**[Optional Coutner I/F]**		
001	MF Key Card Ext.	CTL	**Japan use** [**0: Not installed**/ 1: Installed (scanning accounting)]

5118	**[Disable Copying]**	CTL	[**0: Not disabled**/ 1: Disabled]
001	This program disables copying.		

5120*	**[Clr For Cnt Remove]**	CTL	[**0=Yes** / 1=Standby only / 2=No]
001	Determines under which conditions the copy job settings are reset when the key counter is removed. With 0, the settings are cleared if the counter is removed at the end of a job or midway through a job. With 1, they are only cleared if the counter is removed at the end of a job. With 2, they are not cleared at all, under either condition. With duplex copies, the job settings are always preserved, regardless of the setting of this SP mode.		

5121*	**[Counter Up Timing]**	CTL	[**0 = Feed In** / 1 = Exit]
001	Selects whether the key counter increments at time of paper feed-in or at time of paper exit.		

5127	**[APS Mode]**	CTL	[**0: Not disabled**/ 1: Disabled]
001	This program disables the APS.		

5150	**[By-pass Long Paper]**	CTL	[**0 = OFF** / 1 = ON]
001	Determines whether the transfer sheet from the by-pass tray is used or not. Normally the paper length for sub scanning paper from the by-pass tray is limited to 600 mm, but this can be extended with this SP to 1260 mm.		

5167	**[Fax Printing Cnt Off]**		
	Enables or disables the automatic print out without an accounting device. This SP is used when the receiving fax is accounted by an external accounting device.		
001	Fax Printing Counter Off	CTL	[0 or 1 / **0** / –] 0: Automatic printing 1: No automatic printing

5169	**[CE Login]**		
	If you change the printer bit switches, you must 'log in' to service mode with this SP before you go into the printer SP mode.		
001	CE Login	CTL	[0 or 1 / **0** / -] 0: Disabled 1: Enabled

5188	**[Copy NV Version]**		
001	Copy NV Version	CTL	Displays the NVRAM version in the controller board.

5302	**[Set Time]**

	Adjusts the RTC (real time clock) time setting for the local time zone. Examples: For Japan (+9 GMT), enter 540 (9 hours x 60 min.) DOM: +540 (Tokyo) NA :-300 (New York) EU :+ 60 (Paris) CH :+480 (Peking) TW :+480 (Taipei) AS :+480 (Hong Kong)		
002	Time Difference	CTL #	[-1440 to 1440 / **Area** / 1 min./step]

5307	**[Summer Time]**		
001	ON/OFF	-	[0 or 1 / **NA, EU, ASIA** / 1 /step] 0: Disabled 1: Enabled NA and EUR: 1, ASIA: 0
	Enables or disables the summer time mode. Note ▪ Make sure that both SP5-307-3 and -4 are correctly set. Otherwise, this SP is not activated even if this SP is set to "1".		
003	Start	-	-
	Specifies the start setting for the summer time mode. There are 8 digits in this SP. For months 1 to 9, the "0" cannot be input in the first digit, so the eight-digit setting for -2 or -3 becomes a seven-digit setting. 1st and 2nd digits: The month. [1 to 12] 3rd digit: The week of the month. [1 to 5] 4th digit: The day of the week. [0 to 6 = Sunday to Saturday] 5th and 6th digits: The hour. [00 to 23] 7th digit: The length of the advanced time. [0 to 9 / 1 hour /step] 8th digit: The length of the advanced time. [0 to 5 / 10 minutes /step] For example: 3500010 (EU default) The timer is advanced by 1 hour at am 0:00 on the 5th Sunday in March.		

	▪ The digits are counted from the left. ▪ Make sure that SP5-307-1 is set to "1".		
004	End	-	-
	Specifies the end setting for the summer time mode. There are 8 digits in this SP. 1st and 2nd digits: The month. [1 to 12] 3rd digit: The week of the month. [0 to 5] 4th digit: The day of the week. [0 to 6 = Sunday to Saturday] 5th and 6th digits: The hour. [00 to 23] The 7th and 8th digits must be set to "00". ▪ The digits are counted from the left. ▪ Make sure that SP5-307-1 is set to "1".		

5401	**[Access Control]**		
	When installing the SDK application, SAS (VAS) adjusts the following settings. **DFU**		
006	C	CTL	**SSP:** These SPs are not disclosed due to the security protection.
016	DS	CTL	
026	F	CTL	
036	S	CTL	
046	P	CTL	
076	SDK 1	CTL	
086	SDK 2	CTL	
096	SDK 3	CTL	
200	SDK1 Unique ID	CTL	This ID is overwritten by SAS (VAS) when you install or uninstall the SDK application.
201	SDK1 Certification	CTL	[0 to 255 / 0 / 1 /step] **DFU**

	Method		
210	SDK2 Unique ID	CTL	**DFU**
211	SDK2 Certification Method	CTL	[0 to 255 / 0 / 1 /step] **DFU**
220	SDK3 Unique ID	CTL	**DFU**
221	SDK3 Certification Method	CTL	[0 to 255 / 0 / 1 /step] **DFU**

5404	**[User Code Clear]**
001	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 Interval]**	CTL	-
001	Printout	[0 to 9999 / **0** / 1 /step] 0: Alarm off 1 to 9999: Alarm goes off when the PM counter reaches the specified value (1 to 9999) x 1000.	
002	ADF	[0 or 1 / **1** / –] 0: No alarm sounds 1: Alarm sounds after the number of originals passing through the ARDF ≥ 10,000	

5504	**[Jam Alarm]**	CTL	-
001	Sets the alarm to sound for the specified jam level (document misfeeds are not included).		

	[0 to 3 / **3** / 1 /step] 0: Zero (Off), 1: Low (2.5K jams), 2: Medium (3K jams), 3: High (6K jams)

5505*	**[Error Alarm]**
001	Sets the error alarm level. The error alarm counter counts "1" when any SC is detected. However, the error alarm counter decreases by "1" when any SC is not detected during specified sheets of copies (for example, default 1500 sheets). The error alarm occurs when the SC error alarm counter reaches "5". [0 to 255 / **35** / 100 copies per step]

5507	**[Supply Alarm]**	CTL	-
001	Paper Size	Enables or disables the automatic alarm call for each paper size (specified with SP5507-128 to -172). [**0: Off**, 1: On]	
002	Staple	Enables or disables the automatic alarm call for every 1000 staples. [**0: Off**, 1: On]	
003	Toner	Enables or disables the automatic alarm call at toner near end. [**0: Off**, 1: On]	
128	Interval :Others	[250 to 10000 / **1000** / 1 /step]	
132	Interval :A3		
133	Interval :A4		
134	Interval :A5		
141	Interval :B4		
142	Interval :B5		

160	Interval :DLT	
164	Interval :LG	
166	Interval :LT	
172	Interval :HLT	

5508*	**[Auto Call Setting]**	CTL	-
001*	Jam Remains	0: Disable, **1: Enable**	
	Enables/disables initiating a call for an unattended paper jam.		
002*	Frequent Jams	0: Disable, **1: Enable**	
	Enables/disables initiating a call for consecutive paper jams.		
003*	Door Open	0: Disable, **1: Enable**	
	Enables/disables initiating a call when the front door remains open.		
011*	Jam Remains: Time	[03 to 30 / **10** / 1 minute /step]	
	Sets the time a jam must remain before it becomes an “unattended paper jam”. This setting is enabled only when SP5508 004 is set to 1.		
012*	Freq Jam: # of Time	[02 to 10 / **5** / 1 /step]	
	Sets the number of consecutive paper jams required to initiate a call. This setting is enabled only when SP5508 004 is set to 1.		
013*	Door Open: Time	[03 to 30 / **10** / 1 minute/step]	
	Sets the length of time the door remains open before the machine initiates a call. This setting is enabled only when SP5508 004 is set to 1.		

5515	**[SC/Alarm Setting]**	CTL	-
	With @Remote in use, these SP codes can be set to issue an SC call when an SC error occurs. If this SP is switched off, the SC call is not issued when an		

	SC error occurs.	
001	SC Call	[0 or 1 / **1** / -] 0: Off, 1: On
002	Service Parts Near End	
003	Service Parts End	
004	User Call	
006	Communication Test	
007	Machine Information	
008	Alarm Notice	
010	Supply Automatic Order	
011	Supply Management Report	
012	Jam/Door Open Call	

5801	**[Memory Clear]** Before executing any of these SP codes, print an SMC Report.		
001	All Clear		
	Initializes items SP5801-002 to -014 below. Turn the main power switch off and on after executing this SP.		
003	SCS	-	-
	Clears the system settings.		
004	IMH	-	-
	Clears IMH data. **DFU**		
005	MCS	-	-
	Clears MCS data. **DFU**		
006	Copier	-	-

	Clears the copy application settings.		
007	Fax	-	-
	Clears the fax application settings.		
008	Printer	-	-
	Clears the printer application settings.		
009	Scanner	-	-
	Clears the scanner application settings.		
010	GWWS	-	-
	Delete the netfile application management files and thumbnails, and initializes the job login ID.		
011	NCS	-	-
	Initializes the system default and interface settings (IP address also), SmartNetMonitor for Admin, WebStatusMonitor settings, and the TELNET settings. Note ▪ The name of Apple talk is not cleared only if this SP is executed. Turns off and on after executing this SP.		
012	R-FAX	-	-
	Initializes the job login ID, SmartNetMonitor for Admin, job history, and local storage file numbers.		
014	Clear DCS Setting	-	-
	Initializes the DCS (Delivery Control Service) settings.		
015	Clear UCS Setting	-	-
	Initializes the UCS (User Information Control Service) settings.		
016	MIRS Setting	-	-
	Initializes the MIRS (Machine Information Report Service) settings.		

017	CCS	-	-
	Initializes the CCS (Certification and Charge-control Service) settings.		
018	SRM Memory Clr	-	-
	Initializes the SRM (System Resource Manager) settings.		
019	LCS	-	-
	Initializes the LCS (Log Count Service) settings.		

5811*	**[Machine No. Setting]**		
001	Code Set	-	(☛ "Serial Number Input")

5812	**[Service TEL]**		
001	Telephone	CTL	-
	Sets the telephone number for a service representative. This number is printed on the Counter List, which can be printed with the user's "Counter" menu. This can be up to 20 characters (both numbers and alphabetic characters can be input).		
002	Facsimile	CTL	-
	Sets the fax or telephone number for a service representative. This number is printed on the Counter List. This can be up to 20 characters (both numbers and alphabetic characters can be input).		

5816	**[NRS Function]**	CTL	-
001	I/F Setting	Selects the remote service setting. [0 to 2 / **2** / 1 /step] 0: Remote service off 1: CSS remote service on	

		2: @Remote service on
002	CE Call	Performs the CE Call at the start or end of the service. [0 or 1 / **0** / 1 /step] 0: Start of the service, 1: End of the service Note ▪ This SP is activated only when SP 5816-001 is set to “2”.
003	Function Flag	Enables or disables the remote service function. [0 or 1 / **0** / 1 /step] 0: Disabled, 1: Enabled
007	SSL Disable	Uses or does not use the RCG certification by SSL when calling the RCG. [0 or 1 / **0** / 1 /step] 0: Uses the RCG certification 1: Does no use the RCG certification
008	RCG Connect Timeout	Specifies the connect timeout interval when calling the RCG. [1 to 90 / **10** / 1 second/step]
009	RCG Write Timeout	Specifies the write timeout interval when calling the RCG. [1 to 100 / **60** / 1 second/step]
010	RCG Read Timeout	Specifies the read timeout interval when calling the RCG. [1 to 100 / **60** / 1 second/step]
011	Port 80	Enables/disables access via port 80 to the SOAP method. [0 or 1 / **0** / –] 0: Disabled, 1: Enabled
021	Function Flag	
	This SP displays the embedded RCG installation end flag.	

	1: Installation completed 2: Installation not completed
022	Install Status
	This SP displays the RCG device installation status. 0: RCG device not registered 1: RCG device registered 2: Device registered
023	Connect Mode (N/M)
	This SP displays and selects the embedded RCG connection method. 0: Internet connection 1: Dial-up connection
061	NotiTime ExpTime **DFU**
	Proximity of the expiration of the certification.
062	HTTP Proxy Use
	This SP setting determines if the proxy server is used when the machine communicates with the service center.
063	HTTP Proxy Host
	This SP sets the address of the proxy server used for communication between embedded RCG-N and the gateway. Use this SP to set up or display the customer proxy server address. The address is necessary to set up embedded RCG-N. Note ▪ The address display is limited to 127 characters. Characters beyond the 127th character are ignored. ▪ This address is customer information and is not printed in the SMC report.
064	HTTP Proxy Port Number
	This SP sets the port number of the proxy server used for communication between embedded RCG N and the gateway. This setting is necessary to set

	up embedded RCG-N. Note ▪ This port number is customer information and is not printed in the SMC report.	
065	HTTP Proxy Aut Usr	
	This SP sets the HTTP proxy authentication user name. Note ▪ The length of the name is limited to 31 characters. Any character beyond the 31st character is ignored. ▪ This name is customer information and is not printed in the SMC report.	
066	HTTP Proxy Aut Pass	
	This SP sets the HTTP proxy authentication password. Note ▪ The length of the password is limited to 31 characters. Any character beyond the 31st character is ignored. ▪ This name is customer information and is not printed in the SMC report.	
067	Cer Updt Cond	
	Displays the status of the certification update.	
	0	The certification used by embedded RCG 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 a 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 been 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 a 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.
068	Cer Abnml Cause	
	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 (after the certification has expired).
	3	Notification of shift from a common authentication 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.
069	Cert Updt ReqID	
	The ID of the request for certification.	
083	Firm Updating	
	Displays the status of the firmware update.	
084	Firm UpFlg No HDD	
	This setting determines if the firmware can be updated, even without the HDD installed.	
085	Firm Up Usr Conf	
	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.	
086	Firmware Size	
	Allows the service technician to confirm the size of the firmware data files during the firmware update execution.	
087	CERT: Macro Version	
	Displays the macro version of the @Remote certification.	
088	CERT: PAC Version	
	Displays the PAC version of the @Remote certification.	
089	CERT: ID2 Code	
	Displays ID2 for the @Remote certification. Spaces are displayed as underscores (_). Asterisks (*) indicate that no @Remote certification exists.	

090	CERT: Subject
	Displays the common name of the @Remote certification subject. CN = the following 17 bytes. Spaces are displayed as underscores (_). Asterisks (*) indicate that no DESS exists.
091	CERT: Serial Number
	Displays serial number for the @Remote certification. Asterisks (*) indicate that no DESS exists.
092	CERT: Issuer
	Displays the common name of the issuer of the @Remote certification. CN = the following 30 bytes. Asterisks (*) indicate that no DESS exists.
093	CERT: St ExpTime
	Displays the start time of the period for which the current @Remote certification is enabled.
094	CERT: End ExpTime
	Displays the end time of the period for which the current @Remote certification is enabled.
150	Ins Country
	Select from the list the name of the country where embedded RCG-M is installed in the machine. After selecting the country, you must also set the following SP codes for embedded RCG-M: ▪ SP5816-153 ▪ SP5816-154 ▪ SP5816-161 0: Japan, 1: USA, 2: Canada, 3: UK, 4: Germany, 5: France 6: Italy, 7: Netherlands, 8: Belgium, 9: Luxembourg, 10: Spain
151	Aut Line Detect
	Press [Execute]. Setting this SP classifies the telephone line where embedded RCG-M is connected as either dial-up or push type, so embedded RCG-M can

	automatically distinguish the number that connects to the outside line. ▪ The current progress, success, or failure of this execution can be displayed with SP5816-152. ▪ If the execution succeeded, SP5816 153 will display the result for confirmation and SP5816-154 will display the telephone number for the connection to the outside line.
152	Line Detect Rst
	Displays a number to show the result of the execution of SP5816-151. Here is a list of what the numbers mean.
	0: Success 1: In progress (no result yet). Please wait. 2: Line abnormal 3: Cannot detect dial tone automatically 4: Line is disconnected 5: Insufficient electrical power supply 6: Line classification not supported 7: Error because fax transmission in progress – ioctl() occurred. 8: Other error occurred 9: Line classification still in progress. Please wait.
153	Dial/Push Select
	This SP displays the classification (tone or pulse) of the telephone line to the access point for embedded RCG-M. The number displayed (0 or 1) is the result of the execution of SP5816 151. However, this setting can also be changed manually. [0 to 1 / **0** / 1 /step] 0: Tone Dialing Phone 1: Pulse Dialing Phone Inside Japan "2" may also be displayed: 0: Tone Dialing Phone 1: Pulse Dialing Phone 10PPS 2: Pulse Dialing Phone 20PPS
154	Outline Phone #

	The SP sets the number that switches to PSTN for the outside connection for embedded RCG-M in a system that employs a PBX (internal line). ▪ If the execution of SP5816-151 has succeeded and embedded RCG-M has connected to the external line, this SP display is completely blank. ▪ If embedded RCG-M has connected to an internal line, then the number of the connection to the external line is displayed. ▪ If embedded RCG-M has connected to an external line, a comma is displayed with the number. The comma is inserted for a 2 sec. pause. ▪ The number setting for the external line can be entered manually (including commas).
155	Remove Service: PPP Recognition Timeout
	SSP: Sets the length of the timeout for the embedded RCG-M connection to its access point. The timeout is the time from when the modem sends the ATD to when it receives the result code. [1 to 65536 / 60 / 1 /step]
156	Dial Up User
	Use this SP to set a user name for access to remote dial up. Follow these rules when setting a user name: ▪ Name length: Up to 32 characters ▪ Spaces and # allowed but the entire entry must be enclosed by double quotation marks (").
157	Dial Up Password
	Use this SP to set a password for access to remote dial up. Follow these rules when setting a user name: ▪ Name length: Up to 32 characters ▪ Spaces and # allowed but the entire entry must be enclosed by double quotation marks (").
161	Phone Number
	Use this SP to set the telephone number of the line where embedded RCG-M is connected. This number is transmitted to and used by the Call Center to return calls.

	Limit: 24 numbers (numbers only)
162	Ans Timing Adj
	When the Call Center calls out to a embedded RCG-M modem, it sends a repeating ID tone (*#1#). This SP sets the time the line remains open to send these ID tones after the number of the embedded RCG-M modem is dialed up and connected. [0 to 24 / **1** /1 /step] The actual amount of time is this setting + 2 sec. For example, if you set "2" the line will remain open for 4 sec.
163	Access Point
	This is the number of the dial-up access point for embedded RCG-M. If no setting is done for this SP code, then a preset value (determined by the country selected) is used. Default: 0 Allowed: Up to 16 alphanumeric characters
164	Comm Line
	This SP sets the connection conditions for the customer. This setting dedicates the line to embedded RCG-M only, or sets the line for sharing between embedded RCG-M and a fax unit. [0 or 1 / **0** / -] 0: Line shared by embedded RCG-M/Fax 1: Line dedicated to embedded RCG-M only Note ▪ If this setting is changed, the copier must be cycled off and on. ▪ SP5816-187 determines whether the off-hook button can be used to interrupt an embedded RCG-M transmission in progress to open the line for fax transaction.
173	Modem Serial Number
	This SP displays the serial number registered for the embedded RCG-M.
174	Lmt Resend Cncl

	Normally, it is best to allow unlimited time for certification and ID2 update requests, and for the notification that the certification has been completed. However, embedded RCG-M generates charges based on transmission time for the customer, so a limit is placed upon the time allowed for these transactions. If these transactions cannot be completed within the allowed time, do this SP to cancel the time restriction.
187	FAX TX Priority
	This SP determines whether pushing the off-hook button will interrupt an embedded RCG-M transmission in progress to open the line for fax transaction. This SP can be used only if SP5816-164 is set to "0". [0 or 1/ **0** / -] 0: Disable. Setting the fax unit off-hook does not interrupt a fax transaction in progress. If the off-hook button is pushed during a embedded RCG-M transmission, the button must be pushed again to set the fax unit on-hook after the embedded RCG-M transmission has completed. 1: Enable. When embedded RCG-M shares a line with a fax unit, setting the fax unit off-hook will interrupt a embedded RCG-M transmission in progress and open the line for a fax transaction.
200	Polling Man Exc
	Executes the polling test.
201	Instl: Condition
	Displays a number that indicates the status of the @Remote service device. 0: Neither the registered device by the external RCG nor embedded RCG device is set. 1: The embedded RCG device is being set. Only Box registration is completed. In this status the this unit cannot answer a polling request from the external RCG. 2: The embedded RCG device is set. In this status the external RCG unit cannot answer a polling request. 3: The registered device by the external RCG is being set. In this status the embedded RCG device cannot be set.

	4: The registered module by the external RCG has not started.
202	Instl: ID#
	Allows entry of the number of the request needed for the embedded RCG.
203	Instl: Reference
	Executes the inquiry request to the @Remote GateWay URL.
204	Instl: Ref Rslt
	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
205	Instl: Ref Section
	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.
206	Instl: Rgstltn
	Executes Embedded RCG Registration.
207	Instl: Rgstltn Rst
	Displays a number that indicates the registration result. 0: Succeeded 2: Registration in progress 3: Proxy error (proxy enabled)

<table>
<tr><td></td><td colspan="3">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</td></tr>
<tr><td rowspan="12">208</td><td colspan="3">Instl Error Code</td></tr>
<tr><td colspan="3">Displays a number that describes the error code that was issued when either SP5816 204 or SP5816 207 was executed.</td></tr>
<tr><td>Cause</td><td>Code</td><td>Meaning</td></tr>
<tr><td rowspan="3">Illegal Modem Parameter</td><td>-11001</td><td>Chat parameter error</td></tr>
<tr><td>-11002</td><td>Chat execution error</td></tr>
<tr><td>-11003</td><td>Unexpected error</td></tr>
<tr><td rowspan="7">Operation Error, Incorrect Setting</td><td>-12002</td><td>Inquiry, registration attempted without acquiring device status.</td></tr>
<tr><td>-12003</td><td>Attempted registration without execution of an inquiry and no previous registration.</td></tr>
<tr><td>-12004</td><td>Attempted setting with illegal entries for certification and ID2.</td></tr>
<tr><td>-12005</td><td>@Remove communication prohibited</td></tr>
<tr><td>-12006</td><td>Confirmation requested again after confirmation completed.</td></tr>
<tr><td>-12007</td><td>Different numbers were used for registration and confirmation.</td></tr>
<tr><td>-12008</td><td>Update certification failed because device was in use.</td></tr>
</table>

208	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	External RCG not managed
		-2394	Device not managed
		-2395	Box ID for external RCG is illegal
		-2396	Device ID for external RCG is illegal
		-2397	Incorrect ID2 format
		-2398	Incorrect request number format
209	Instl Clear		
	Releases a machine from its embedded RCG setup.		
250	Print Com Log		
	Prints the communication log.		

5821	**[NRS Address]**	
001	CSS-PI Device	Sets the PI device code. After you change this setting, you must turn the machine off and on.
002	RCG IP Address	Sets the IP address of the RCG (Remote Communication Gate) destination for call processing at the remote service center.

		[00000000h to FFFFFFFFh/1]

5824	**[NVRAM Upload]**
001	(☛ "NVRAM Upload")

5825	**[NVRAM Download]**
001	(☛ "NVRAM Download")

5828	**[Network Setting]**	CTL	
050	1284 Compatibility (Centro)	Enables or disables 1284 Compatibility. [0 or 1 / **1** / 1 / step] 0: Disabled, 1: Enabled	
052	ECP (Centro)	Enables or disables ECP Compatibility. [0 or 1 / **1** / 1 / step] 0: Disabled, 1: Enabled NOTE: This SP is activated only when SP5-828-50 is set to "1".	
065	Job Spooling	Enables/disables Job Spooling. [0 or 1 / **0** / 1 / step] 0: Disabled, 1: Enabled	
066	Job Spooling Clear: Start Time	Treatment of the job when a spooled job exists at power on. 0: ON (Data is cleared) **1: OFF** (Automatically printed)	
069	Job Spooling (Protocol)	Validates or invalidates the job spooling function for each protocol. **0: Validates** 1: Invalidates bit0: LPR bit1: FTP	

GW SP Mode Tables

		bit2: IPP bit3: SMB bit4: BMLinkS bit5: DIPRINT bit6: (Reserved) bit7: (Reserved)
090	TELNET (0: OFF 1: ON)	Enables or disables the Telnet protocol. [0 or 1 / **1** / –] 0: Disable, 1: Enable
091	Web (0: OFF 1: ON)	Enables or disables the Web operation. [0 or 1 / **1** / –] 0: Disable, 1: Enable
145	Active IPv6 Link	
	This is the IPv6 local address link referenced on the Ethernet or wireless LAN (802.11b) in the format: "Link Local Address" + "Prefix Length" The IPv6 address consists of a total of 128 bits configured in 8 blocks of 16 bits each.	
147	Active IPv6 Status Address 1	These SPs are the IPv6 status addresses (1 to 5) referenced on the Ethernet or wireless LAN (802.11b) in the format: "Status Address" + "Prefix Length" The IPv6 address consists of a total of 128 bits configured in 8 blocks of 16 bits each.
149	Active IPv6 Status Address 2	
151	Active IPv6 Status Address 3	
153	Active IPv6 Status Address 4	
155	Active IPv6 Status Address 5	
156	IPv6 Manual Setting Address	
	This SP is the IPv6 manually set address referenced on Ethernet or wireless	

	LAN (802.11b) in the format: "Manual Set Address" + "Prefix Length" The IPv6 address consists of a total of 128 bits configured in 8 blocks of 16 bits each.
158	IPv6 Gateway Address
	This SP is the IPv6 gateway address referenced on Ethernet or wireless LAN (802.11b). The IPv6 address consists of a total of 128 bits configured in 8 blocks of 16 bits each.

5840	**[IEEE 802.11b]**		
006	Channel MAX	CTL	[1 to 11 or 13 / **11 or 13** / 1 /step] Europe: 1 to 13, default: 13 NA/ Asia: 1 to 11, default: 11
	Sets the maximum number of channels available for data transmission via wireless LAN. The number of channels available varies according to location. The default settings are set for the maximum end of the range for each area. Adjust the upper 4 bits to set the maximum number of channels. **DFU** Note ▪ Do not change the setting.		
007	Channel MIN	CTL	[1 to 11 or 13 / **1** / 1 /step] Europe: 1 to 13 NA/ Asia: 1 to 11
	Sets the minimum number of channels available for data transmission via the wireless LAN. The number of channels available varies according to location. The default settings are set for the minimum end of the range for each area. Adjust the lower 4 bits to set the minimum number of channels. DFU Note ▪ Do not change the setting.		

011	WEP Key Select	CTL	[00 to 11 / **00** / 1 binary] 00: Key #1 01: Key #2 (Reserved) 10: Key #3 (Reserved) 11: Key #4 (Reserved)
	Selects the WEP key.		

5842	**[GWWS Analysis] DFU**		
001	Setting 1	CTL	
	This is a debugging tool. It sets the debugging output mode of each Net File process. Default: Bit SW 1000 0000	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
		7	Debug log output
002	Setting 2	CTL	
	Default: Bit SW 0000 0000	Bit	Groups
		0-6	Not used
		7	Log time stamp setting 0: Date/Hour/Minute/Second 1: Minute/Second/Msecond

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

5845	**[Delivery Server Setting]**	CTL	-
	Provides items for delivery server settings.		
001	FTP Port Num	[0 to 65535 / **3670** / 1 /step]	
	Sets the FTP port number used when image files to the Scan Router Server.		
002	Srv IP (Primary)	Range: **000.000.000.000** to 255.255.255.255	
	Use this SP to set the Scan Router Server address. The IP address under the transfer tab can be referenced by the initial system setting.		
003	Retry Interval	[60 to 999 / **300** / 1 second /step]	
	Specifies the interval time for sending the scanned image data to the deliver		

	server or SMTP/FTP/NCP/SMB server after sending error.		
004	Number of Retries	[0 to 99 / **3** / 1 time/step]	
	Specifies the retry times for sending the scanned image data to the deliver server or SMTP/FTP/NCP/SMB server after sending error.		
006	Delivery Error Display Time	[0 to 999 / **300** / 1 second /step]	
	Use this setting to determine the length of time the prompt message is displayed when a test error occurs during document transfer with the NetFile application and an external device.		
008	Srv IP (Secondary)	Range: **000.000.000.000** to 255.255.255.255	
	Specifies the IP address assigned to the computer designated to function as the secondary delivery server of Scan Router. This SP allows only the setting of the IP address without reference to the DNS setting.		
009	Delivery Server Model	[0 to 4 / **0** / 1 /step]	
	Allows changing the model of the delivery server registered by the I/O device. 0: Unknown, 1: SG1 Provided, 2: SG1 Package, 3: SG2 Provided, 4: SG2 Package		
010	Delivery Svr Capability	[0 to 255 / **0** / 1 /step]	
	Bit7 = 1 Comment information exits		Changes the capability of the server that is registered as an I/O device.
	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”)	
011	Delivery Svr Capability (Ext)	[0 to 255 / **0** / 1 /step]
	Changes the capability of the server that is registered as an I/O device.	
	Bit7 = 1 Address book usage limitation (Limitation for each authorized user) Bit6 = 1 RDH authorization link Bit5 to 0: Not used	
013	Svr Schm (Primary)	-
	Specifies the scheme of the primary delivery server.	
014	Svr Port Num (Pri)	-
	Specifies the port number of the primary delivery server.	
015	Srv URL Path (Pri)	-
	Specifies the URL path of the primary delivery server.	
016	Svr Schm (Sec)	-
	Specifies the scheme of the secondary delivery server.	
017	Svr Port Num (Sec)	-
	Specifies the port number of the secondary delivery server.	
018	Srv URL Path (Sec)	-
	Specifies the URL path of the secondary delivery server.	
019	CapSvr Schm	-
	Specifies the scheme of the capture server.	
020	CapSvr Port Num	-
	Specifies the port number of the capture server.	
021	CapSrv URL Path	-

	Specifies the URL path of the s capture server.	
022	Rapid-fire Send	[0 or 1 / **1** / -] 0: Disable, 1: Enable
	Enables or disables the prevention function for the continuous data sending.	

5846	**[UCS Settings]**	CTL	-
001	Machine ID (Delivery Server)		Displays ID
	Displays the unique device ID in use by the delivery server directory. The value is only displayed and cannot be changed. This ID is created from the NIC MAC or IEEE 1394 EUI. The ID is displayed as either 6-byle or 8-byte binary.		
002	Machine ID Clear (Delivery Server)		Clears ID
	Clears the unique ID of the device used as the name in the file transfer directory. Execute this SP if the connection of the device to the delivery server is unstable. After clearing the ID, the ID will be established again automatically by cycling the machine off and on.		
003	Maximum Entries		[150 to 999 / **150** / 1 /step]
	Changes the maximum number of entries that UCS can handle. If a value smaller than the present value is set, the UCS managed data is cleared, and the data (excluding user code information) is displayed.		
006	Delivery Server Retry Timer		[0 to 255 / **0** / 1 /step]
	Sets the interval for retry attempts when the delivery server fails to acquire the delivery server address book.		
007	Delivery Server Retry Times		[0 to 255 / **0** / 1 /step]
	Sets the number of retry attempts when the delivery server fails to acquire the delivery server address book.		
008	Delivery Server Maximum Entries		[200 to 999 / **200** / 1/step]

	Sets the maximum number account entries of the delivery server user information managed by UCS.	
010	LDAP Search Timeout	[1 to 255 / **60** / 1 /step]
	Sets the length of the timeout for the search of the LDAP server.	
041	[AddrB Acl Info] Address Book Access Control List Information	
	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.	
042	Addr B Mig (SD → SD)	[0 to 10 / **0** / 1 /step] 0: Not decided yet 1: Slot 1 to 10: Slot 10
	This SP copies an address book data in an SD card to another SD card. Select the destination slot where you want to move an address book data, and then press "Execute" key. You can check where an address book data is in with SP5-846-043.	
043	Addr B Media	-
	Displays the slot number where an address book data is in.	
047	Initialize Local Addr Book	Clears the local address book information, including the user code.
048	Initialize Delivery Addr Book	Clears the distribution address book information, except the user code.
049	Initialize LDAP Addr Book	Clears the LDAP address book information, except the user code.
050	Initialize All Addr Book	Clears all directory information managed by UCS, including all user codes.

		Turn the main power switch off and on after executing this SP.
051	Backup All Addr Book	Uploads all directory information to the SD card.
052	Restore All Addr Book	Downloads all directory information from the SD card.
053	Clear Backup Info	
	Deletes the address book data from the SD card in the service slot. Deletes only the files that were uploaded from this machine. This feature does not work if the card is write-protected. Note ▪ After you do this SP, go out of the SP mode, and then turn the power off. Do not remove the SD card until the Power LED stops flashing.	
060	Search Option	
	This SP uses bit switches to set up the fuzzy search options for the UCS local address book. Bit0: Checks both upper/lower case characters Bit1: Japan only Bit2 to 7: Not used	
062	Compl Opt1	
	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 to 32 / **0** / 1 /step] 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.	
063	Compl Opt2	
	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 to 32 / **0** / 1 /step] 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.	
064	Compl Opt3	
	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 to 32 / **0** / 1 /step] 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.	
065	Compl Opt4	
	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 to 32 / **0** / 1 /step] 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.	
091	FTP Auth Port Setting	Specifies the FTP port for getting a distribution server address book that is used in the identification mode. [0 to 65535 / **3671** / 1 /step]
094	Encryption Stat	Shows the status of the encryption function for the address book data.

5848	**[Web Service]**	CTL	-
	SP5848-1 sets the 4-bit switch assignment for the access control setting. Setting of 0001 has no effect on access and delivery from Scan Router. ac: Access Control		
004	ac: UD (only Lower 4 bits)	Switches access control on and off. **0000:** No access control 0001: Denies access to DeskTop Binder.	
007	ac: Log Fax (Lower 4 bits)		
009	ac: Job Ctrl (Lower 4 bits)		
011	ac: Device Management (Lower 4 bits)		
022	ac: Uadmin (Lower 4bits)		
210	Log Type: Job1	Displays the log server settings. These can be adjusted with the Web Image Monitor.	
211	Log Type: Job2		
212	Log Type: Access		
213	Primary Srv		
214	Secondary Srv		
215	Start Time		
216	Interval Time	Specifies the transmit interval. [1 to 1000 / **1** / 1 hour/step] This SP is activated only when SP5848-217 is set to "2 (Transmit periodically)".	
217	Timing	Selects the transmit timing. [0 to 2 / **0** / 1/step] 0: No Transmit, 1: Transmit one by one 2: Transmit periodically	

5849	**[Installation Date]**	CTL	
	Displays or prints the installation date of the machine.		

001	Display	The “Counter Clear Day” has been changed to “Installation Date” or “Inst. Date”.
002	Print	Determines whether the installation date is printed on the printout for the total counter. [0 or 1/ **1** / 1/step] 0: No Print, 1: Print
003	Total Counter	Displays the total counter when the installation date is registered to the machine.

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

5856	**[Remote ROM Update]**		
	Allows the technician to upgrade the firmware using a parallel cable when updating the remote ROM.		
002	Local Port	CTL	[0 or 1 / **0** / 1/step] 0: Disallow 1: Allow

5857	**[Debug Log Save]**	CTL	-
001	On/Off	**0: OFF**, 1: ON	
	Switches the debug log feature on and off. The debug log cannot be captured until this feature is switched on.		
006	Save to SD Card		
	Specifies the debug log number for saving to an SD card.		
012	Erase SD Debug		

	Erases SD debug logs in the SD card. Turn off and on after executing this SP.
013	Dsply-SD Space
	Displays the remaining space in the SD card.
014	SD to SD Latest (Latest 4 MB)
	Saves the debug log (latest 4 MB) in memory 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 the SD card. 4 MB segments can be copied one by one to the SD card.
015	SD to SD Any (Latest 4 MB Any Key)
	Saves the specified debug log (with SP5-857-006) in memory 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 the SD card. 4 MB segments can be copied one by one to the SD card.
017	Make SD Debug
	Executes the making of a file (4MB) for saving debug logs.

5858	**[Debug Log Save: SC]**	CTL	-
	These SPs select the content of the debugging information to be saved to the destination selected by SP5857-2. SP5858-3 stores one SC specified by number. Refer to the chapter "Trouble Shooting" for a list of SC error codes.		
001	Engine SC	Turns the save function on/off for SC codes generated by copier engine errors. [0 or 1 / **0** / 1/ step] 0: OFF, 1: ON	
002	Controller SC	Turns the save function on/off for SC codes generated by GW controller errors. [0 or 1 / **0** / 1/ step]	

		0: OFF, 1: ON
003	Any SC	[0 to 65535 / 0 / 1 /step]
004	Jam	Turns the save function on/off for jam errors. [0 or 1 / **0** / 1/ step] 0: OFF, 1: ON

5859	**[Debug Log Save Key]**	CTL	-
001	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 to 9999999 / **0** / –]	
002	Key 2		
003	Key 3		
004	Key 4		
005	Key 5		
006	Key 6		
007	Key 7		
008	Key 8		
009	Key 9		
010	Key 10		

5860	**[SMTP/POP3/IMAP4]**	CTL	-
020	Partial Mail Receive Timeout		[1 to 168 / **72** / 1 hour/step]
	Sets the amount of time to wait before saving 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.		
021	MDN Response RFC2298 Compliance		[0 to 1 / **1** / –]
	Determines whether RFC2298 compliance is switched on for MDN reply mail. 0: No, 1: Yes		

022	SMTP Auth. From Field Replacement	[0 to 1 / **0** / –]
	Determines whether the FROM item of the mail header is switched to the validated account after the SMTP server is validated. 0: No. "From" item not switched. 1: Yes. "From" item switched.	
025	SMTP Auth. Direct Setting	[0 or 1 / **0** / –]
	Selects the authentication method for SMPT. Bit switch: Bit 0: LOGIN Bit 1: PLAIN Bit 2: CRAM MD5 Bit 3: DIGEST MD5 Bit 4 to 7: Not used Note ▪ This SP is activated only when SMTP authorization is enabled by UP mode.	

5866	**[E-mail Report]**		
001	Report Validity	-	[0 or 1 / **0** / –] 0: Enabled, 1: Disabled
	Enables or disables the E-mail alert function.		
005	Add Date Field	CTL	[0 or 1 / **0** / –] 0: Not add, 1: Add
	Adds or does not add the date field to the header of the alert mail.		

5869	**[RAM Disk Setting]**		
001	Mail Function	GWINIT	[0 or 1 / **0** / -] 0: ON, 1: OFF
	Turns on or off the e-mail function.		
002	PDL Storage	GWINIT	[0 to 255 / **4** / 1 /step]

	Specifies the RAM disk storage size for PDL.

5870	**[Common Key Info Writing]**		
001	Writing	CTL	Writes to flash ROM the common proof for validating the device for @Remote specifications.
003	Initialize	CTL	Formats the common proof area of the flash ROM. **FA**

5873	**[SD Card Appli Move]**	
001	Move Exec	This SP copies the application programs from the original SD card in SD card slot 3 to an SD card in SD card slot 2.
002	Undo Exec	This SP copies back the application programs from an SD card in the SD Card Slot 3 to the original SD card in the SD card slot 2. Use this menu when you have mistakenly copied some programs by using "Move Exec" (SP5873-1).

5875	**[SC Auto Reboot]**		
001	Reboot Mode	CTL	Enables or disables the automatic reboot function when an SC error occurs. [0 or 1 / **0** / –] 0: 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. 1: The machine does not reboot when an SC error occurs. The reboot is not executed for Type A, B or C SC codes.

002	Reboot Method	CTL	Selects the reboot method for SC. [0 or 1 / **0** / -] 0: Manual reboot, 1: Automatic reboot

5878	**[Option Setup]**		
001	Option Setup	-	Enables the Data Overwrite Security unit. Press "EXECUTE" on the operation panel. Then turn the machine off and on.

5881	**[Delete Fixed Sent]**		
001	Delete Fixed Sent	-	Deletes the fixed form sentence.

5886	**[Permit ROM Update] DFU**
001	This SP determines whether the ROM can be updated. [0 or 1 / 0 / 1/step] 0: Yes, 1: No

5887	**[SD GetCounter]**
001	This SP saves the counter list of the machine to an SD card in the slot 3. The folder of "SD_COUNTER" must be made in an SD card for this SP.

5913	**[Switch Permission]**
002	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 to 30 / **3** / 1 second/step]

5974	**[Cherry Server]**

001	Selects which version of the Scan Router application program, “Light” or “Full (Professional)”, is installed. [0 to 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".	
001	On Board NIC	[0 to 2 / **0** / 1 /step] 0: OFF, 1: ON, 2: ON: Limited When the "Function limitation" is set, "On board NIC" is limited only for the @Remote or LDAP/NT authentication. Note ▪ Other network applications such as WebImageMonitor, @Remote, or LDAP/NT authentication are not available when this SP is set to "2". Even if you can change the initial settings of those network applications, settings may not actually work.
002	On Board USB	[0 or 1 / **0** / 1/step] 0: OFF, 1: ON

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".	
001	All (Data List)	
002	SP (Mode Data List)	
003	User Program Data	

004	Logging Data
005	Diagnostic Report
006	Non-Default (Prints only SPs set to values other than defaults.)
007	NIB Summary
021	Copier User Program
022	Scanner SP
023	Scanner User Program

5998	**[Engine Memory Clear]**
001	See the section "Memory Clear" in this chapter.

4.2.3 SP6-XXX (PERIPHERALS)

6010*	**[Stamp Position]**	CTL	[-5 to 5 / **0** / 1 mm/step]
001	Adjusts the stamp position in the sub-scan direction for the fax mode. -5 mm: closest to the leading edge		

4.2.4 SP7-XXX (DATA LOG)

7401*	**[Counter–SC Total]**	CTL	[0 to 9999 / **0** / 1/step]
001	Displays how many times SC codes are generated.		

7403	**[SC History]**		
001	Latest	CTL	Logs the SC codes detected. The 10 most recently detected SC Codes
002	Latest 1		

003	Latest 2		are displayed on the screen. L: Asset line V: Assert location F: Assert file
004	Latest 3		
005	Latest 4		
006	Latest 5		
007	Latest 6		
008	Latest 7		
009	Latest 8		
010	Latest 9		

7502*	**[Counter–Paper Jam]**	[0 to 9999 / **0** / 1/step]
7502 1	Displays the total number of paper jams.	

7503*	**[Counter–Orgn Jam]**	[0 to 9999 / **0** / 1/step]
7503 1	Displays the total number of original jams,	

7504*	**[Paper Jam/Loc]**	[0 to 9999 / **0** / 1/step]
	Displays the total number of the paper jams classified by timing and location. ☛ "Counter-Each Paper Jam (SP7-504)", in this chapter.	

7505*	**[Original Jam/Loc]**	[0 to 9999 / **0** / 1/step]
	Displays the total number of the original jams on the ADF/ARDF that have occurred at a certain timing or at a certain location. ☛ "Original Jam History Display (SP7-508)", in this chapter.	

7506	**[Paper Jam/ Size]** Jam Counter: Paper Size

7506 5	A4 LEF	CTL	Displays the number of jams according to the paper size. [0 to 9999 / **0** / 1 sheet/step]
7506 6	A5 LEF		
7506 14	B5 LEF		
7506 38	LT LEF		
7506 44	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*	**[Disply-P Jam Hist]** Display: Paper Jam History	
7507 1	Last	Displays the copy jam history (the most recent 10 jams) Sample Display: CODE:007 SIZE:05h TOTAL:0000334 DATE:DEC 1 09:44/06 2005 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)
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	**DATE** is the date the jams occurred.
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*	**[Disply-O Jam Hist]** Display: Original Jam History	
	Displays the original jam history of the transfer unit in groups of 10, starting with the most recent 10 jams. Display contents are as follows: **CODE** is the SP7-505-*** number. **SIZE** is the paper size code in hex. (See “Paper Size Hex Codes” below.) **TOTAL** is the total jam error count (SP7-003) **DATE** is the date the previous jam occurred	
1*	Latest	Sample Display: CODE: 007 SIZE: 05h TOTAL: 0000334 DATE: Mon Mar 15 11:44:50 2000
2*	Latest 1	
3*	Latest 2	
4*	Latest 3	
5*	Latest 4	
6*	Latest 5	
7*	Latest 6	
8*	Latest 7	

9*	Latest 8	
10*	Latest 9	

7801	**[Memory/ Version/ PN]**		
	Displays the part number and version of all ROMs in the machine.		
7801 255	Memory/ Version/ PN		

7803	**[PM Counter]**		
	Displays the PM counter for each PM part.		
7803 1	Paper	CTL	[0 to 99999999 / **0** / 1/step]

7804	**[PM Count. Reset]**		
	Clears the PM counter for each PM part.		
7804 1	Paper	CTL	This clears the counter of SP7803-1.

7807	**[Reset–SC/Jam Counters]**
7807 1	Resets the SC, paper, original, and total jam counters. When the program ends normally, the message "Completed" is displayed. SP 7807-1 does not reset the following logs: SP 7507 (Display-Paper Jam History) and SP 7508 (Display-Original Jam History).

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

002	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*	**[Display-Self-Diag]**
7832 1	Displays the SC codes and the number of their occurrences. Each number is in the range of 0 to 9999.

7836	**[Resident Memory]**
	Displays the contents of the memory on the controller board.

7901	**[Assert Info]**		
	Records the location where a problem is detected in the program. The data stored in this SP is used for problem analysis. DFU		
7901 1	File Name	-	-
7901 2	Number of Lines	-	-
7901 3	Location	-	-

7992*	**[Reset-Info Count]**
7992 5	Reset-ID Er Count
	Clears the ID sensor error counter (SP7-991-005).

4.2.5 SP8-XXX (HISTORY)

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.	
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

Abbreviation	What it means
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.

GW SP Mode Tables

Abbreviation	What it means
LSize	Large (paper) Size
Mag	Magnification
MC	One color (monochrome)
NRS	NRS (@Remote), which allows a service center to monitor machines remotely. “@Remote” 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.
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
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.
RCG	Remote Communication Gate
Rez	Resolution

Abbreviation	What it means
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.

8 191	T:Total Scan PGS	CTL	These SPs count the pages scanned by each application that uses the scanner to scan images. [0 to 9999999 / 0 / 1]
8 192	C:Total Scan PGS	CTL	
8 193	F:Total Scan PGS	CTL	
8 195	S:Total Scan PGS	CTL	

- SP 8 191 to 8 196 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.

8 201	T:LSize Scan PGS	CTL	[0 to 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 is not counted. Note ▪ These counters are displayed in the SMC Report, and in the User Tools display.		
8 203	F:LSize Scan PGS	CTL	[0 to 9999999 / 0 / 1]
	These SPs count the number of large pages scanned by original type for Fax jobs.		
8 205	S:LSize Scan PGS	CTL	[0 to 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.		

8 221	ADF Org Feeds	CTL	[0 to 9999999 / 0 / 1]
	These SPs count the number of pages fed through the ADF for front and back side scanning.		
001	Front	Number of front sides fed for scanning:	

		With an ADF/ARDF 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/ARDF 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.)
002	Back	Number of rear sides fed for scanning: With an ADF/ARDF that can scan both sides simultaneously, the Back count is the same as the number of pages fed for duplex scanning. With an ADF/ARDF 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.

8 281	T:Scan PGS/TWAIN	CTL	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 to 9999999 / 0 / 1] Note ▪ At the present time, these counters perform identical counts.
8 285	S:Scan PGS/TWAIN	CTL	

8 291	T:Scan PGS/Stamp	CTL	These SPs count the number of pages stamped with the stamp in the ADF unit. [0 to 9999999 / 0 / 1]
8 293	F:Scan PGS/Stamp	CTL	
8 295	S:Scan PGS/Stamp	CTL	

8 301	T:Scan PGS/Size	CTL	[0 to 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].		
8 302	C:Scan PGS/Size	CTL	[0 to 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].		
8 303	F:Scan PGS/Size	CTL	[0 to 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].		
8 305	S:Scan PGS/Size	CTL	[0 to 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].		
-001	A3	-	
002	A4		
003	A5		
004	B4		
005	B5		
006	DLT		
007	LG		
008	LT		
009	HLT		
010	Full Bleed		

-254	Other (Standard)	
-255	Other (Custom)	

8 381	T:Total PrtPGS	CTL	These SPs count the number of pages printed by the customer. The counter for the application used for storing the pages increments. [0 to 9999999 / 0 / 1]
8 382	C:Total PrtPGS	CTL	
8 383	F:Total PrtPGS	CTL	
8 384	P:Total PrtPGS	CTL	
8 385	S:Total PrtPGS	CTL	
8 387	O:Total PrtPGS	CTL	

- 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 is 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.

8 391	LSize PrtPGS	CTL	[0 to 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.		

8 411	Prints/Duplex	CTL	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 to 9999999 / 0 / 1]

8 421	T:PrtPGS/Dup Comb	CTL	[0 to 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.		
8 422	C:PrtPGS/Dup Comb	CTL	[0 to 9999999 / 0 / 1]
	These SPs count by binding and combining, and n-Up settings the number of pages processed for printing by the copier application.		
8 423	F:PrtPGS/Dup Comb	CTL	[0 to 9999999 / 0 / 1]
	These SPs count by binding and combining, and n-Up settings the number of pages processed for printing by the fax application.		
8 424	P:PrtPGS/Dup Comb	CTL	[0 to 9999999 / 0 / 1]
	These SPs count by binding and combining, and n-Up settings the number of pages processed for printing by the printer application.		
8 425	S:PrtPGS/Dup Comb	CTL	[0 to 9999999 / 0 / 1]
	These SPs count by binding and combining, and n-Up settings the number of pages processed for printing by the scanner application.		
8 427	O:PrtPGS/Dup Comb	CTL	[0 to 9999999 / 0 / 1]
	These SPs count by binding and combining, and n-Up settings the number of pages processed for printing by Other applications.		
001	Simplex> Duplex	-	
002	Duplex> Duplex	-	

003	Book> Duplex	-
004	Simplex Combine	-
005	Duplex Combine	-
006	2>	2 pages on 1 side (2-Up)
007	4>	4 pages on 1 side (4-Up)
008	6>	6 pages on 1 side (6-Up)
009	8>	8 pages on 1 side (8-Up)
010	9>	9 pages on 1 side (9-Up)
011	16>	16 pages on 1 side (16-Up)
012	Booklet	-
013	Magazine	-

These counts (SP8-421 to SP8-427) 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:

8 391	LSize PrtPGS	CTL	[0 to 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.		

8 411	Prints/Duplex	CTL	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 to 9999999 / 0 / 1]

8 421	T:PrtPGS/Dup Comb	CTL	[0 to 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.		
8 422	C:PrtPGS/Dup Comb	CTL	[0 to 9999999 / 0 / 1]
	These SPs count by binding and combining, and n-Up settings the number of pages processed for printing by the copier application.		
8 423	F:PrtPGS/Dup Comb	CTL	[0 to 9999999 / 0 / 1]
	These SPs count by binding and combining, and n-Up settings the number of pages processed for printing by the fax application.		
8 424	P:PrtPGS/Dup Comb	CTL	[0 to 9999999 / 0 / 1]
	These SPs count by binding and combining, and n-Up settings the number of pages processed for printing by the printer application.		
8 425	S:PrtPGS/Dup Comb	CTL	[0 to 9999999 / 0 / 1]
	These SPs count by binding and combining, and n-Up settings the number of pages processed for printing by the scanner application.		
8 427	O:PrtPGS/Dup Comb	CTL	[0 to 9999999 / 0 / 1]
	These SPs count by binding and combining, and n-Up settings the number of pages processed for printing by Other applications.		
001	Simplex> Duplex	-	
002	Duplex> Duplex	-	
003	Book> Duplex	-	
004	Simplex Combine	-	
005	Duplex Combine	-	
006	2>	2 pages on 1 side (2-Up)	

007	4>	4 pages on 1 side (4-Up)
008	6>	6 pages on 1 side (6-Up)
009	8>	8 pages on 1 side (8-Up)
010	9>	9 pages on 1 side (9-Up)
011	16>	16 pages on 1 side (16-Up)
012	Booklet	-
013	Magazine	-

- These counts (SP8-421 to SP8-427) 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		**Magazine**	
Original Pages	**Count**	**Original Pages**	**Count**
1	1	1	1
2	2	2	2
3	2	3	2
4	2	4	2
5	3	5	4
6	4	6	4
7	4	7	4
8	4	8	4

8 441	T:PrtPGS/Ppr Size	CTL	[0 to 9999999 / 0 / 1]
	These SPs count by print paper size the number of pages printed by all		

	applications.		
8 442	C:PrtPGS/Ppr Size	CTL	[0 to 9999999 / 0 / 1]
	These SPs count by print paper size the number of pages printed by the copy application.		
8 443	F:PrtPGS/Ppr Size	CTL	[0 to 9999999 / 0 / 1]
	These SPs count by print paper size the number of pages printed by the fax application.		
8 444	P:PrtPGS/Ppr Size	CTL	[0 to 9999999 / 0 / 1]
	These SPs count by print paper size the number of pages printed by the printer application.		
8 445	S:PrtPGS/Ppr Size	CTL	[0 to 9999999 / 0 / 1]
	These SPs count by print paper size the number of pages printed by the scanner application.		
8 447	O:PrtPGS/Ppr Size	CTL	[0 to 9999999 / 0 / 1]
	These SPs count by print paper size the number of pages printed by Other applications.		
001	A3	-	
002	A4		
003	A5		
004	B4		
005	B5		
006	DLT		
007	LG		
008	LT		
009	HLT		

010	Full Bleed	
254	Other (Standard)	-
255	Other (Custom)	

- These counters do not distinguish between LEF and SEF.

8 451	PrtPGS/Ppr Tray	CTL	[0 to 9999999 / 0 / 1]
	These SPs count the number of sheets fed from each paper feed station.		
001	Bypass	Bypass Tray	
002	Tray 1	Copier	
003	Tray 2	Copier	
004	Tray 3	Paper Tray Unit (Option)	
005	Tray 4	Paper Tray Unit (Option)	
006	Tray 5	Currently not used.	
007	Tray 6	Currently not used.	
008	Tray 7	Currently not used.	
009	Tray 8	Currently not used.	
010	Tray 9	Currently not used.	

8 461	T:PrtPGS/Ppr Type	CTL	[0 to 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.		
8 462	C:PrtPGS/Ppr Type	CTL	[0 to 9999999 / 0 / 1]
	These SPs count by paper type the number pages printed by the copy application.		
8 463	F:PrtPGS/Ppr Type	CTL	[0 to 9999999 / 0 / 1]
	These SPs count by paper type the number pages printed by the fax application.		
8 464	P:PrtPGS/Ppr Type	CTL	[0 to 9999999 / 0 / 1]
	These SPs count by paper type the number pages printed by the printer application.		
001	Normal		
002	Recycled		
003	Special		
004	Thick		
005	Normal (Back)		
006	Thick (Back)		
007	OHP		
008	Other		

8 521	T:PrtPGS/FIN	CTL	[0 to 9999999 / 0 / 1]
	These SPs count by finishing mode the total number of pages printed by all applications.		
8 522	C:PrtPGS/FIN	CTL	[0 to 9999999 / 0 / 1]
	These SPs count by finishing mode the total number of pages printed by the Copy application.		

8 523	F:PrtPGS/FIN	CTL	[0 to 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.		
8 524	P:PrtPGS/FIN	CTL	[0 to 9999999 / 0 / 1]
	These SPs count by finishing mode the total number of pages printed by the Print application.		
8 525	S:PrtPGS/FIN	CTL	[0 to 9999999 / 0 / 1]
	These SPs count by finishing mode the total number of pages printed by the Scanner application.		
001	Sort		
002	Stack		
003	Staple		
004	Booklet		
005	Z-Fold		
006	Punch		
007	Other		

Note

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

8 531	Staples	*CTL	This SP counts the amount of staples used by the machine. [0 to 9999999 / 0 / 1]

8 581	T:Counter	CTL	[0 to 9999999 / 0 / 1]
	This SP counts 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.		
001	Total		

8 591	O:Counter	CTL	[0 to 9999999 / 0 / 1]
8 591 1	A3/DLT	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.	
8 591 2	Duplex		

8 601	Cvg Counter	CTL	[0 to 9999999 / 0 / 1]
8 601 1	Cvg: BW %	Displays the total coverage of each mode.	
8 601 11	Cvg: BW Pages	Displays the number of the printouts in each mode.	

8 631	T:FAX TX PGS	CTL	[0 to 9999999 / 0 / 1]
	This SP counts by color mode the number of pages sent by fax to a telephone number.		
8 633	F:FAX TX PGS	CTL	[0 to 9999999 / 0 / 1]
	This SP counts by color mode the number of pages sent by fax to a telephone number.		
001	B/W		

- 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.

8 641	T:IFAX TX PGS	CTL	[0 to 9999999 / 0 / 1]
	This SP counts by color mode the number of pages sent by fax to as fax images using I-Fax.		
8 643	F:IFAX TX PGS	CTL	[0 to 9999999 / 0 / 1]
	This SP counts by color mode the number of pages sent by Fax as fax images using I-Fax.		
001	B/W		

- 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.

8 651	T:S-to-Email PGS	CTL	[0 to 9999999 / 0 / 1]
	This SP counts by color mode the total number of pages attached to an e-mail for both the Scan and document server applications.		
8 655	S:S-to-Email PGS	CTL	[0 to 9999999 / 0 / 1]
	This SP counts by color mode the total number of pages attached to an		

	e-mail for the Scan application only.
001	B/W

Note

- 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.
- 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).
- 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).
- 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).

8 661	T:Deliv PGS/Svr	CTL	[0 to 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.		
8 665	S:Deliv PGS/Svr	CTL	[0 to 9999999 / 0 / 1]
	These SPs count by color mode the total number of pages sent to a Scan Router server by the Scan application.		
001	B/W		

Note

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

8 671	T:Deliv PGS/PC	CTL	[0 to 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.		
8 675	S:Deliv PGS/PC	CTL	[0 to 9999999 / 0 / 1]
	These SPs count by color mode the total number of pages sent with Scan-to-PC with the Scan application.		
001	B/W		

Note

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

8 681	T:PCFAX TXPGS	CTL	These SPs count the number of pages sent by PC Fax. These SPs are provided for the Fax application only, so the counts for SP8-681 and SP8-683 are the same. [0 to 9999999 / 0 / 1]
8 683	F:PCFAX TXPGS	CTL	

- 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.)

8 701	TX PGS/Port	CTL	[0 to 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.		

8 701 1	PSTN-1	-
8 701 2	PSTN-2	-
8 701 3	PSTN-3	-
8 701 4	ISDN (G3,G4)	-
8 701 5	Network	-

8 711	T:Scan PGS/Comp	CTL	[0 to 9999999 / 0 / 1]
8 715	S:Scan PGS/Comp	CTL	[0 to 9999999 / 0 / 1]
	These SPs count the number of pages sent by each compression mode.		
-001	JPEG/JPEG2000	-	
-002	TIFF M/S (Multi/Single)	-	
-003	PDF	-	
-004	Other	-	

8 771	Dev Counter	CTL	[0 to 9999999 / 0 / 1]
	This SP counts the total number of developed images.		
8 771 1	Total	-	

8 781	Toner Botol Info.	*BCU	[0 to 9999999 / 0 / 1]
	This SP displays the number of already replaced toner cartridges.		
8 781 1	BK	The number of black toner cartridges	

8 801	Toner Remain	CTL	[0 to 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 on the market that can only measure in increments of 10 (10% steps).
8 801 1	K

8 851	Cvr Cnt:0-10%	*BCU	[0 to 9999999 / 0 / 1]
	These SPs display the number of scanned sheets on which the coverage of each color is from 0% to 10%.		
8 851 11	0-2%:Bk		
8 851 21	3-4%: Bk		
8 851 31	5-7%: Bk		
8 851 41	8-10%: Bk		

8 861	Cvr Cnt: 11-20%	*BCU	[0 to 9999999 / 0 / 1]
	This SP displays the number of scanned sheets on which the coverage of each color is from 11% to 20%.		
8 851 1	BK		

8 871	Cvr Cnt: 21-30%	*BCU	[0 to 9999999 / 0 / 1]
	This SP displays the number of scanned sheets on which the coverage of each color is from 21% to 30%.		
8 871 1	BK		

8 881	Cvr Cnt: 31%-	*BCU	[0 to 9999999 / 0 / 1]
	This SP displays the number of scanned sheets on which the coverage of		

	each color is 31% or higher.
8 881 1	BK

8 891	Page/Toner Bottle	*BCU	[0 to 9999999 / 0 / 1]
	This SP displays the number of sheets output by the scan application.		
8 891 1	BK		

8 901	Page/Toner Prev1	*BCU	[0 to 9999999/ 0 / 1]
	This SP displays the number of sheets output by the scan application with the previously replaced units.		
8 901 1	BK		

8 911	Page/Toner Prev2	*BCU	[0 to 9999999 / 0 / 1]
	This SP displays the number of sheets output by the scan application with the unit replaced before the previously replaced unit (two steps back from the current unit).		
8 911 1	BK		

8 921	Cvr Cnt/Total	*BCU	[0 to 9999999 / 0 / 1]
8 921 1	Coverage(%): BK	These SPs display the total coverage percentage of sheets output by the machine.	
8 921 11	Covwerage/P: Bk	These SPs display the total coverage pages output by the machine.	

8 941	Machine Status	CTL	[0 to 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 of their compliance with ISO Standards.	
8 941 1	Operation Time	Engine operation time. Does not include time while controller is saving data to HDD (while engine is not operating).
8 941 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.
8 941 3	Energy Save Time	Includes time while the machine is performing background printing.
8 941 4	Low Power Time	Includes time in Energy Save mode with Engine on. Includes time while machine is performing background printing.
8 941 5	Off Mode Time	Includes time while machine is performing background printing. Does not include time machine remains powered off with the power switches.
8 941 6	SC	Total down time due to SC errors.
8 941 7	PrtJam	Total down time due to paper jams during printing.
8 941 8	OrgJam	Total down time due to original jams during scanning.
8 941 9	Spl PM Unit End	Total down time due to toner end.

8 999	AdominCounter	CTL	[0 to 9999999 / 0 / 1]
	Displays the user setting counter for administrator.		
8 999 1	Total	-	
8 999 3	Copy: BW	-	
8 999 7	Printer: BW	-	

GW SP Mode Tables

8 999 10	FaxP: BW	-
8 999 12	A3/DLT	-
8 999 13	Duplex	-
8 999 15	Cvr: BW %	-
8 999 17	Cvr: BW Pages	-
8 999 102	SendTtl: BW	-
8 999 103	FaxSend	-
8 999 105	FaxSend: BW	-

4.3 PRINTER SERVICE MODE

4.3.1 SERVICE MODE TABLE

SP No.	Description	Function and Setting
1001	BitSw#1 Set	Adjusts bit switch settings. Note: Currently the bit switches are not being used.
1003	Clear Setting	Not used
1004	Print Summary	Prints the service summary sheet (An error log is printed in addition to the configuration page).
1005	Display Version	Displays the version of the controller firmware.

4.3.2 SP MODES RELATED TO PRINTER CONTROLLER

The following SP modes are located in the copier SP mode. Refer to section 5.1 of the main unit service manual.

SP No.	Description	Function and Setting
5104	A3/DLT Double Count	Specifies whether the counter is doubled for A3/DLT. 0: No, 1: Yes If ① is selected, the total counter and the current user code counter count up twice when A3 or DLT paper is used.
5801	Memory All Clear	Resets data for process control and all software counters, and returns all modes and adjustments to their defaults values. ☛ section "Memory Clear" in this chapter for details.
5907	Plug & Play	Selects the brand name and the production name for Windows Plug & Play. This information is stored in

		NVRAM.
7832	Detailed Display of Self-Diagnostics	Displays the controller self-diagnostic result.

4.4 SCANNER SERVICE MODE

4.4.1 SCANNER PROGRAM MODE TABLE

Service Table Key

Notation	What it means
[range / **default** / step]	Example: [-9 to +9 / **+3.0** / 0.1 mm step]. The setting can be adjusted in the range ±9, value 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 your reference.
*	This value is stored in NVRAM. After a RAM reset, the default value (factory setting) is restored.
DFU	Denotes “Design or Factory Use”. Do not change this value.

SP1	Mode Number		Function and [Setting]
1001*	005	Scan Nv Version	Displays the scanner NV version.
1004*	001	Compression Type	Selects the compression type for binary picture processing. [**1: MH**, 2: MR, 3: MMR]
1005*	001	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 to 5 / **0mm** / 1mm step]
1009*	001	Remote scan disable	Enables or disables the remote scanner function (TWAIN). [**0: enable**, 1: disable]

For the settings of the image quality, see the copier SP-mode table.

4.5 USING SP MODE

4.5.1 MEMORY CLEAR

GW Machine

The GW machine (the machine with the optional controller box) stores the engine data in the NVRAM on the BICU, and stores the other data in the NVRAM on the optional controller. To distinguish between the engine data and the other data, see SP5-801-003 through 019. This service program (SP5-801) handles the controller data. Any data that is not handled by SP5-801 is the engine data. The data in the BICU NVRAM (engine data) is cleared by SP5-998-001 while the data in the controller NVRAM (controller data) is cleared by SP5-801-xxx (for exceptions, see "").

Machine	Data	NVRAM	Cleared by	Remarks
GW	Engine data	BICU	SP5-998-001	Any data other than controller data
	Controller data	Controller	SP5-801-xxx	SCS, IMH, MCS, Copier application, Fax application, Printer application, Scanner application, Web service/network application, NCS, R-Fax, DCS, UCS

Exceptions

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

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

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

Memory Clear Procedure

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

4.5.2 SERIAL NUMBER INPUT (SP5-811)

Specifying Characters

SP5-811-001 specifies the serial number. For the machine with the optional controller, you use the numeric keypad and the optional operation panel.

GW Machine

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

Serial Number and NVRAM

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

4.5.3 SMC PRINT (SP5-990)

SP5-990 outputs machine status lists.

1. Select SP5-990.
2. Select a menu:
   - GW machine: 001 All (Data List), 002 SP (Mode Data List), 003 User Program, 004 Logging Data, 005 Diagnostic Report, 006 Non-Default, 007 NIB Summary, 008 Net File Log, 021 Copier User Program, 022 Scanner SP, 023 Scanner User Program, 040 Parts Alarm Counter Print, 064 Normal Count Print, 065 User Code Counter, 066 Key Operator Counter, 067 Contact List Print, 069 Heading1 print, 071 Heading3 print, 072 Group List Print, 128 ACC Pattern, 129 User Color Pattern, or 160:ACC Pattern Scan

   Note

   - The output given by the menu "Big Font" is suitable for faxing.
3. Press the "Execute" key.
   - GW machine: The machine status list is output.
4. To return to the SP mode, press the ⎋ key.

4.5.4 COUNTER–EACH PAPER JAM (SP7-504)

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

Code	
001	Paper jam occurs at power on.
010	Paper does not reach the registration sensor (from a paper tray).
011	Paper does not reach the relay sensor.
012	Paper is caught at the relay sensor.
021	Paper does not reach the vertical transport sensor.
022	Paper is caught at the vertical transport sensor.
031	Paper does not reach the vertical transport sensor in the optional paper feed unit.
032	Paper is caught at the vertical transport sensor in the optional paper feed

	unit.
050	Paper does not reach the registration sensor (from the by-pass tray).
060	Paper does not reach the registration sensor during reverse-side printing (for duplex printing).
070	Paper is caught at the registration sensor.
120	Paper is caught at the exit sensor (previous page).
121	Paper does not reach the exit sensor.
122	Paper is caught at the exit sensor.
123	Paper does not reach the duplex inverter sensor (from the registration roller).
125	Paper is caught at the duplex inverter sensor.
126	Paper does not reach the duplex entrance sensor.
127	Paper is caught at the duplex entrance sensor.
128	Paper does not reach the duplex exit sensor.
129	Paper is caught at the duplex exit sensor.
130	Paper does not reach the one-bin tray.
131	Paper is caught at the one-bin tray.

4.5.5 ORIGINAL JAM HISTORY DISPLAY (SP7-508)

Viewing the Copy Jam History

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

Note

- The information on jam history is saved in the NVRAM.

1. Select SP7-508.
2. Select one of the menu items ("Latest 1" through Latest 10").
3. Press the OK key. The summary of the jam history is displayed.

4. To view more information, select "Detail."

Jam History Code

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

4.5.6 FIRMWARE UPDATE PROCEDURE

This section illustrates how to update the firmware of the GW machine (the machine with the optional controller box).

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

Before You Begin…

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

- Always switch the machine off before inserting an SD card. Never insert the SD card into the slot with the power on.
- When the power is switched on, never remove the SD card from the service slot.
- Never switch the machine off while the firmware is downloading from the SD card.
- Store SD cards in a safe location where they are not exposed high temperature, high humidity, or exposure to direct sunlight.
- Always handle SD cards with care to avoid bending or scratching them. Never drop an SD card or expose it to other shock or vibration.

Keep the following points in mind while you are using the firmware update software:

- “Upload” means to send data from the machine to the SD card, and “download” means to send data from the SD card to the machine.

- To select an item on the LCD screen, press the appropriate key on the operation panel, or press the appropriate number key on the 10-key pad of the operation panel.
- Before starting the firmware update procedure, always make sure that the machine is disconnected from the network to prevent a print job for arriving while the firmware update is in progress.

Firmware Update Procedure

Note

- Before beginning the following, first confirm which firmware version(s) are currently installed in the machine with SP7-801-255.

SD Card Preparation

1. Format an SD card with, for example, SD Formatter v1.1.
2. Create a “romdata” folder on the card.
3. Create the following folders within the “romdata” folder: D010/D327/D359, etc.
4. Download the firmware from the server and store the files in the folder with the corresponding model code on the SD card.

   Example:

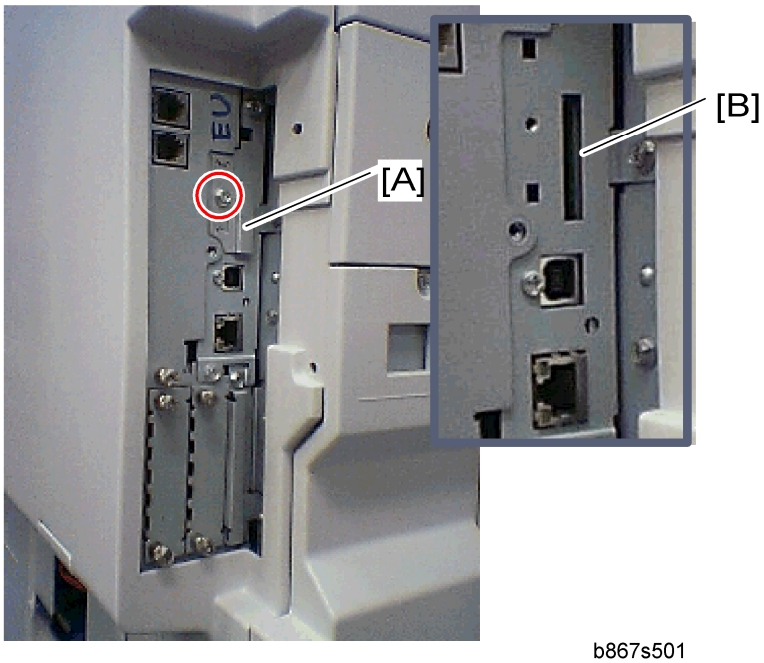
   File D0405540B should be stored in the “D040” folder, whereas files B6585902B, B6585903B, and B6585905B should be stored in the “B658” folder.

Firmware Update

Note

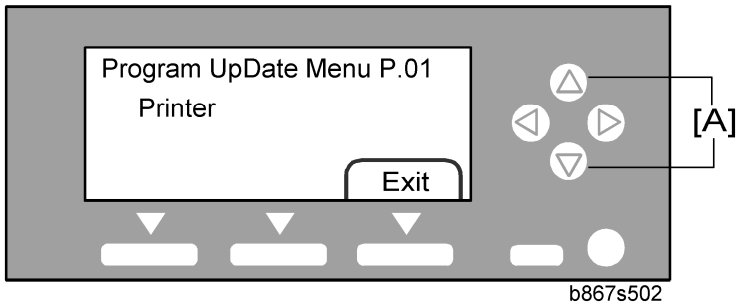
- It is strongly recommended to store only D010/D043 files on SD cards used for downloading to D010/D043. With the controller used on this model, a firmware update may sometimes be interrupted if there is software for multiple models stored on the same SD card.

Using SP Mode



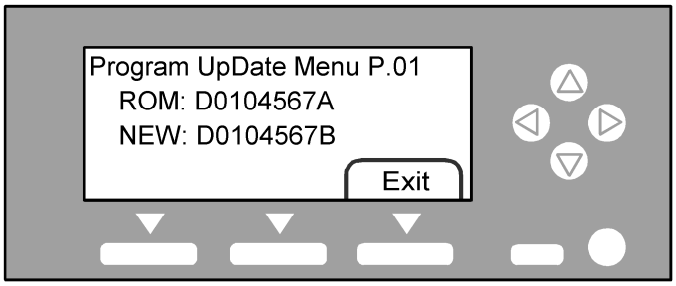
b867s501

1. Turn off the main power switch.
2. If the machine is connected to a network, disconnect the network cable from the copier.
3. Remove the slot cover [A] (🖉 x 1)
4. With the label on the SD card facing the rear side of the machine, insert the SD card into the upper slot [B] on the controller box. Slowly push the SD card into the slot so it locks in place.
5. Make sure the SD card is locked in place.
   (To remove the SD card, push it in to unlock the spring lock and then release it so it pops out of the slot.)
6. Switch the main power switch on. After about 5 seconds, the LCD will display “Please wait…” Then, about 60 seconds later, the LCD will display “Program UpDate Menu P.01” on the first line and the name of the firmware on the second line (e.g. System/Copy).



b867s502

1. Press the "OK" key to select a module.
   - To scroll through the menus, press the △ or ▽ keys [A].

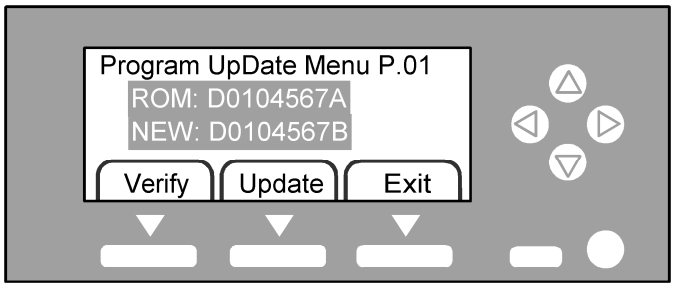


d359s503

- To view the firmware version, press the right key. "ROM" is the information on the current firmware. "NEW" is the information on the firmware in the SD card.
- To return to the menu, press the ◁ key.
- To select the module, press the OK key.
- To scroll through the module name, the serial number, and the version, press the ◁ key or ▷ key.
- If you wish to install the following firmware simultaneously, press the START key. The scroll keys can be used to confirm that this firmware has been selected (highlighted with a dark background).
  [Engine, FCU, Scanner, Printer, Printer Font, Security Module]

Important

- Please note that the following firmware cannot be updated simultaneously. The update procedure must be repeated for each individually.
- System/Copy, ServiceCardNetFile, ServiceCardNIB, ServiceCardFAX, ServiceCardWebSystem.



d359s504

- When you have selected a module, the text lines are highlighted, and the "Verify" key and the "Update" key are displayed.

2. Select a module and press the "Update" key.

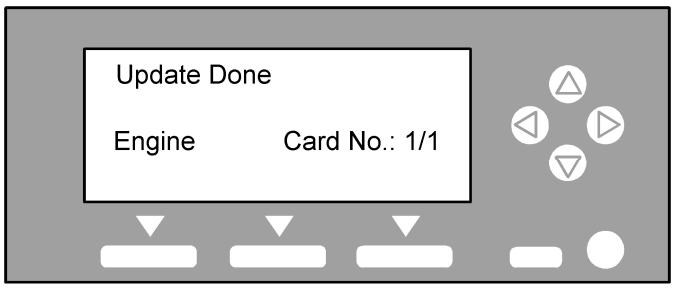
Important

- Do **NOT** press the “Verify” key.

3. The firmware update program starts and the message "Loading" is displayed.
   - The update will begin, and then will take a few minutes to complete. The LCD will

initially display, “Updating… ***---------“.

- When the update is completed, the LCD display will change to “Update done” or “Updated / Power Off On”.

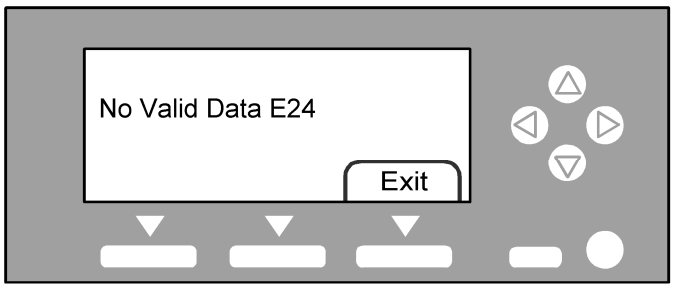


b867s505

4. Check that the message "Update Done" is displayed.

Confirmation

1. Turn the main power switch off and on.
   - The LCD will display “Please wait…” for about 60 seconds, after which it will return to the “Program UpDate Menu” screen.
2. Repeat Steps 1-8 above until all firmware updates are complete.
3. Turn the main power switch off.
4. Remove the SD card from the lower slot on the controller by pushing on the card to release the spring lock.



b867s506

If an error occurs, the error code is displayed. For a list of information on error codes, see the following table.

Code	Cause	Necessary Action
E20	Physical address mapping error	▪ Insert the SD card correctly. ▪ Use another SD card
E22	Decompression error	▪ Store correct data in the SD card.
E23	Update program error	▪ Update controller program.

Code	Cause	Necessary Action
		▪ Replace the controller.
E24	SD card access error	▪ Insert the SD card correctly. ▪ Use another SD card.
E31	Download data inconsistency*	▪ Insert the SD card that was used when the previous update procedure is interrupted.
E32	Download data inconsistency*	▪ Insert the SD card that stores the correct data.
E33	Version data error	▪ Store the correct data in the SD card.
E34	Locale data error	▪ Store the correct data in the SD card.
E35	Machine model data error	▪ Store the correct data in the SD card.
E36	Module data error	▪ Store the correct data in the SD card.
E40	Engine program error**	▪ Store the correct data in the SD card. ▪ Replace BICU.
E42	Operation panel program error*	▪ Store the correct data in the SD card. ▪ Replace the operation panel board.
E44	Controller program error*	▪ Store the correct data in the SD card. ▪ Replace the controller board.
E50	Authentication error	▪ Store the correct data in the SD card.

*You need to reinstall the program.

If the firmware update program is interrupted (for example, by a power failure), keep the SD card inserted and turn the mains switch off and on. The firmware update program restarts. If you do not do so, the message "Reboot after Card insert" is displayed when you turn the main switch on.

4.5.7 NVRAM DATA UPLOAD/DOWNLOAD

Uploading Content of NVRAM to an SD card

Follow this procedure to upload SP code settings from NVRAM to an SD card.

Note

- This data should always be uploaded to an SD card before the NVRAM is replaced.

1. Before switching the machine off, execute SP 5990-1 (SMC Print). You will need a record of the NVRAM settings if the upload fails.
2. Turn off the main power of the copier.
3. Remove the slot cover 3 (uppermost one) (🖉 x 1).
4. Insert the SD card into the service slot 3 (uppermost one), then turn on the main power of the copier.
5. Execute SP 5824-1 (NVRAM Data Upload) then press the “Execute” key.
   - When uploading is finished, a file is coped to an NVRAM folder on the SD card. The file is saved to the path and filename:
     NVRAM¥<serial number>.NV
     Here is an example with Serial Number “B0700017”:
     NVRAM¥B0700017.NV
6. In order to prevent an error during the download, be sure to mark the SD card that holds the uploaded (saved) data with the number of the machine from which the data was uploaded (saved).

Note

- NVRAM data from more than one machine can be uploaded (saved) to the same SD card.

1. Turn off the main power, and then remove the SD card from the slot 3 (the uppermost one).
2. Reassemble the machine.

Downloading an SD Card to NVRAM

Follow this procedure to download (save) SP data from an SD card to the NVRAM in the machine.

- If the SD card with the NVRAM data is damaged, or if the connection between the controller and BICU is defective, the NVRAM data download may fail.
- If the download fails, repeat the download procedure.
- If the second attempt fails, enter the NVRAM data manually using the SMC print you created before uploading the NVRAM data. (☛ above procedure)

1. Turn off the main power of the copier.

2. Remove the slot cover 3 (the uppermost one) (x 1).
3. Insert the SD card with the NVRAM data into the service slot 3 (the uppermost one).
4. Turn on the main power of the copier.
5. Execute SP 5825-1 (NVRAM Data Download) and press the “Execute” key.
6. Turn off the main power of the copier, and then remove the SD card from the slot 3 (the uppermost one).
7. Reassemble the machine.

Note

- In order for the NVRAM data to download successfully, the serial number of the file on the SD card must match the serial number of the machine. If the serial numbers do not match, the download will fail.

This procedure downloads (saves) the following data to the NVRAM:

- Total Count
- C/O, P/O Count

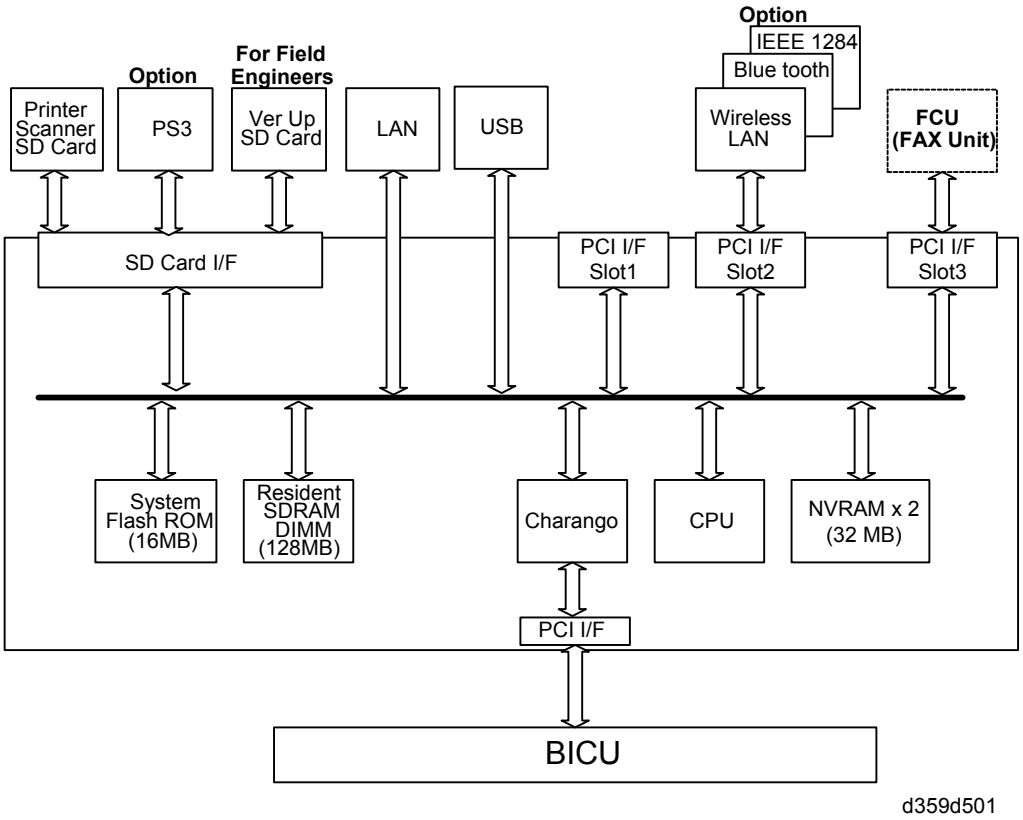
4.5.8 POWER-ON SELF TEST

The controller tests the following devices at power-on. If an error is detected, an error code is stored in the controller board.

- CPU, ASIC and clock
- Flash ROM
- Resident and optional SDRAM
- NVRAM
- PS fonts (if installed)

5. DETAILED SECTION DESCRIPTIONS

5.1 OVERVIEW



This machine uses the GW architecture. To enable printer features, install the printer option SD Card in the controller.

Main components:

- CPU: PMC-Sierra: RM5231A-400
- Charango: GW architecture ASIC. It controls all the functions of the controller board.
- Flash ROM: 16 MB Flash ROM for the system program
- SDRAM: On board 128 MB (resident)
- NVRAM: FRAM (SPI) 32 KB x **2**
- LAN interface
- USB 2.0 interface
- SD Card: Printer/Scanner program

Optional components:

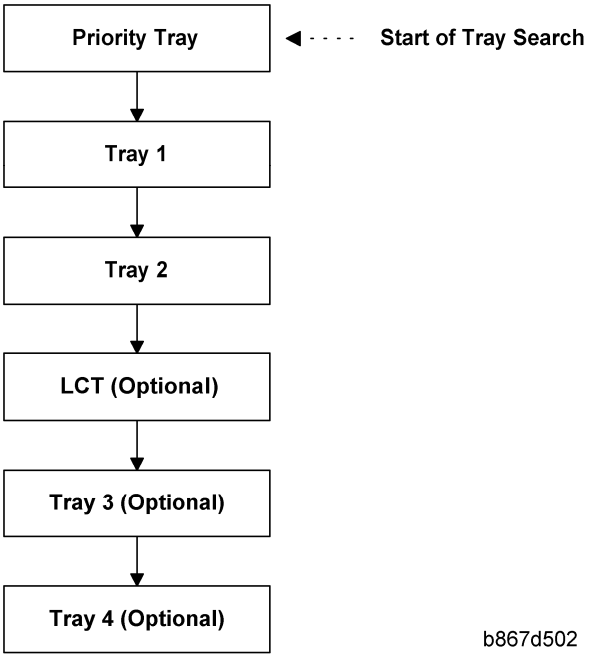
- PostScript3

- Bluetooth interface
- Wireless LAN interface
- IEEE1284 interface

5.2 CONTROLLER FUNCTIONS

5.2.1 PAPER SOURCE SELECTION

Tray Priority (Auto Tray Select)



b867d502

The Tray Priority setting determines the start of the tray search when the user selects “Auto Tray Select” with the driver.

The machine searches for a paper tray with the specified paper size and type.

When no tray contains paper that matches the paper size and type specified by the driver, the controller stops printing until the user loads the correct paper.

The Tray Priority setting can be specified using the Paper Size Setting in the user tools.

(User Tools/ System Settings/ Paper Size Settings)

Note

- The by-pass tray is not part of the tray search.

Tray Lock

If Tray Lock is enabled for a tray, the controller skips the “locked” tray in the tray search process.

The Tray Lock setting can be specified by selecting “No” for the “Apply Auto Paper Select” setting in the Paper Size Setting screen in the user tools.

(User Tools/ System Settings/ Paper Size Settings)

Note

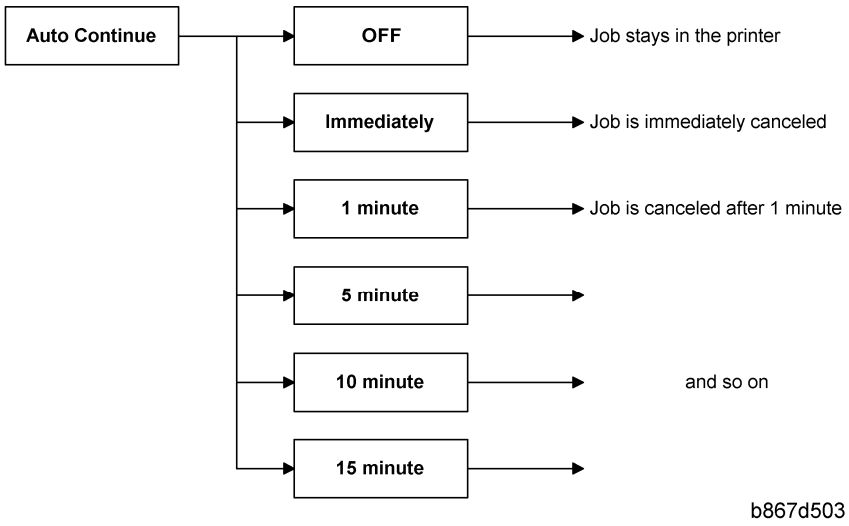
- The by-pass feeder cannot be locked.

Manual Tray Select

If the selected tray does not have the paper size and type specified by the driver, the controller stops printing until the user loads the correct paper.

5.2.2 AUTO CONTINUE

If no paper tray matches the paper size and paper type specified by the driver:



When this function is enabled, the machine stops printing and cancels the print job if there is no paper tray which matches the paper size and paper type specified by the driver.
If Auto Continue is enabled, the machine waits for a specified period (0, 1, 5, 10, 15 minutes) for the correct size paper to be set in the tray, then cancels the print job if the interval expires.

- The interval can be set via Printer Settings in the user tools.
  (User Tools/ Printer Settings/ System/ Auto Continue)

If Auto Continue is disabled, the machine will not print the job, but will not cancel it, so the job stays in the print queue.

Note

- The default setting for Auto Continue is “Off.”

5.2.3 PAPER OUTPUT TRAY

The default paper output tray for each application (copy/fax/printer) can be selected using the System Settings menu within User Tools.
(User Tools/ System Settings/ General Features)
If a print job does not specify an output tray or if the driver specifies the default tray, the default paper output tray is used.

Output Tray Selected

- If an output tray is specified by the driver, it overrides the default tray setting in User Tools.
- If the machine cannot print to the selected output tray, it prints to the default paper output tray.
- If the mailbox unit is installed, paper larger than B4 cannot be output to the standard (internal) tray.
- If paper overflow is detected at the selected output tray, the controller stops printing until the overflow detector indicates that the tray is no longer full.

Sequential Stacking

When the nine-tray mailbox is selected as the output tray and “Printer Default” is specified as the output tray in the driver, the machine automatically sends the output to the top tray (1st tray). When that tray fills up, the machine sends the output to the next tray.
This feature is called “Sequential Stacking.”

- If a tray becomes full and the next tray is also full, the machine displays an error and stops printing.
  When the paper in the next tray is removed, the machine automatically resumes printing to the next tray.
- If all trays become full (overflow detected in all trays), the machine displays an error and stops printing. This time, all paper in all trays must be removed.

5.2.4 DUPLEX PRINTING

Duplex printing is available with all output bin options but not all paper sizes. If a job specifies duplex printing but the paper size to be used cannot be used by the duplex unit, the job will be printed single-sided.

- When the by-pass feeder is selected as the paper source, duplex printing is automatically disabled.

5.3 SCANNER FUNCTIONS

5.3.1 IMAGE PROCESSING FOR SCANNER MODE

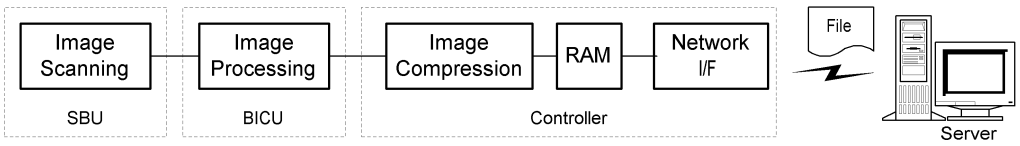
The image processing for scanner mode is done in the IPU chip on the BICU board. The IPU chip chooses the most suitable image processing methods (gamma tables, dither patterns, etc) depending on the settings made in the driver.

The image compression method can be selected with SP mode (MR/MH/MMR for binary picture processing).

Whether the user selects the image mode using the driver (TWAIN mode) or from the operation panel (Delivery mode), the IPU chip does the image processing using the appropriate image processing methods mentioned above.

Image Data Path

1. Image Store/Image Delivery Mode



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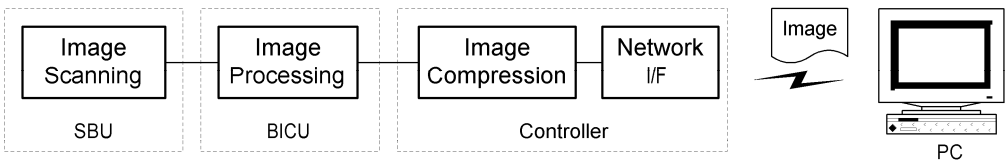
The user can select the following modes from the LCD.

- Delivery only

After image processing and image compression, all image data for the job are stored in the printer controller RAM using TIFF file or PDF file format (binary picture processing). The type of file format used depends on the user's scanner settings.

When the delivery mode is selected, the controller creates a file which contains the destination and page information, and then the controller sends the file to a server.

2. Twain Mode



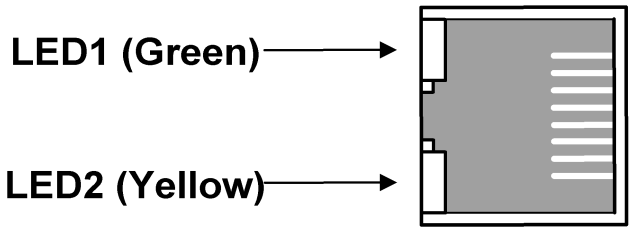
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After image processing and image compression, the data (TIFF or PDF) is sent to the scanner Twain driver directory on the computer.

5.4 NETWORK INTERFACE

5.4.1 LED INDICATORS

The LEDs are on the optional controller box.



Description	On	Off
LED1 (Green): Link status	Link success	Link failure
LED2 (Yellow): Data rate	100 Mbps	10 Mbps

5.5 IEEE 802.11B (WIRELESS LAN)

5.5.1 SPECIFICATIONS

The IEEE 802.11b wireless LAN interface card is available as an option for this machine. A wireless LAN is a flexible data communication system used to extend or replace a wired LAN. Wireless LAN employs radio frequency technology to transmit and receive data over the air and minimize the need for wired connections.

- With wireless LANs, users can access information on a network without looking for a place to plug into the network.
- Network managers can set up or expand networks without installing or moving wires.
- Most wireless LANs can be integrated into existing wired networks. Once installed, the network treats wireless nodes like any other physically wired network component.
- Flexibility and mobility make wireless LANs both effective extensions of and attractive alternatives to wired networks.

Standard applied:	IEEE802.11b	
Data transmission rates:	Speed	Distance
	11 Mbps	140 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	
Bandwidth:	2.4GHz (divided over 14 channels, 2400 to 2497 MHz for each channel)	

Note

- The wireless LAN cannot be active at the same time as the Ethernet LAN. The following user tool setting determines which LAN is active: System Settings - Interface Settings - Network - LAN Type.

IEEE 802.11b (Wireless LAN)

LED Indicators

LED	Description	ON	OFF
LED 1 (Green)	Link Status	Linked	No Link
LED 2 (Orange)	Power Distribution	Power On	Power Off

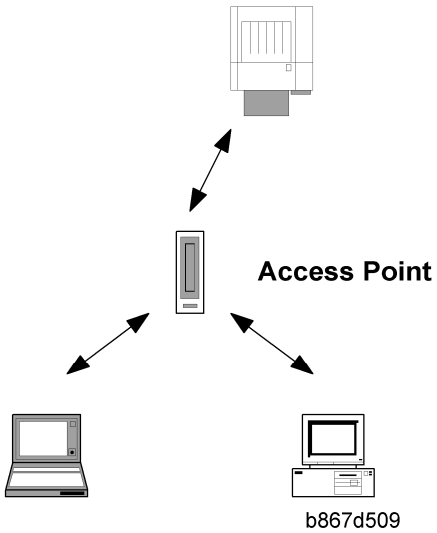
5.5.2 TRANSMISSION MODES

Wireless communication has two modes: 1) ad hoc mode, and 2) infrastructure mode.

Ad Hoc Mode

The ad hoc mode allows communication between each device (station) in a simple peer-to-peer network. In this mode, all devices must use the same channel to communicate. In this machine, the default transmission mode is ad hoc mode and the default channel is 11. First, set up the machine in ad hoc mode and program the necessary settings, even if the machine will be used in the infrastructure mode.
To switch between ad hoc and infrastructure modes, use the following user tool: Host Interface Menu - IEEE802.11b - Comm Mode

Infrastructure Mode



The infrastructure mode allows communication between each computer and the printer via an access point equipped with an antenna and wired into the network. This arrangement is used in more complex topologies. The wireless LAN client must use the same SSID (Service Set ID) as the access point in order to communicate.

5.5.3 SECURITY FEATURES

SSID (Service Set ID)

The SSID is used by the access point to recognize the client and allow access to the network. Only clients that share the same SSID with the access point can access the network.

Note

- If the SSID is not set, clients connect to the nearest access point.
- The SSID can be set using the web status monitor or telnet.

Using the SSID in Ad hoc mode

When the SSID is used in ad hoc mode and nothing is set, the machine automatically uses "ASSID" as the SSID. In such a case, "ASSID" must also be set at the client.

Note

- SSID in ad hoc mode is sometimes called "Network Name."

Some devices automatically change from ad hoc mode to infrastructure mode when the same SSID is used in ad hoc mode and infrastructure mode. In such a case, to use the device in ad hoc mode, use a specified SSID in infrastructure mode and use "ASSID" in the ad hoc mode.

WEP (Wired Equivalent Privacy):

WEP is a coding system designed to protect wireless data transmission. In order to unlock encoded data, the same WEP key is required on the receiving side. There are 64 bit and 128 bit WEP keys. However, this machine supports only 64 bit WEP.

Note

- The WEP key can be set using the Web Status Monitor or Telnet.

MAC Address:

When the infrastructure mode is used, access to the network can also be limited at the access points using the MAC address. This setting may not be available with some types of access points.

5.5.4 WIRELESS LAN TROUBLESHOOTING NOTES

Communication Status

Wireless LAN communication status can be checked with the UP mode "W.LAN Signal" in the Maintenance menu. This can also be checked using the Web Status Monitor or Telnet. The status is described on a simple number scale.

IEEE 802.11b (Wireless LAN)

Status Display	Communication Status
Good	76 ~ 100
Fair	41 ~ 75
Poor	21 ~ 40
Unavailable	0 ~ 20

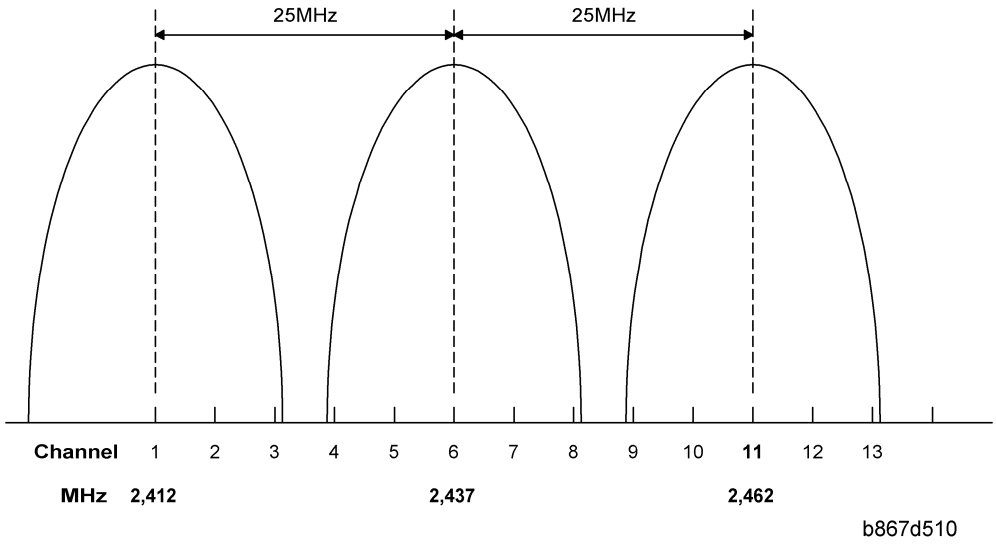
Note

- Communication status can be measured only when the infrastructure mode is being used.

Channel Settings

If a communication error occurs because of electrical noise, interference with other electrical devices, etc., you may have to change the channel settings.

To avoid interference with neighboring channels, it is recommended that you use a channel separated from another in use by 3 channels. For example, if there are problems using channel 11 (default), try using channel 8.



Troubleshooting Procedure

If there are problems using the wireless LAN, check the following.

1. Check the LED indicator on the wireless LAN card.
2. Check if “IEEE802.11b” is selected in the following user tool: Host Interface menu - Network Setup - LAN Type.
3. Check if the channel settings are correct.

4. Check if the SSID and WEP are correctly set.

If infrastructure mode is being used,

1. Check if the MAC address is properly set.
2. Check the communication status.
3. If the communication status is poor, bring the machine closer to the access point, or check for any obstructions between the machine and the access point. If the problem cannot be solved, try changing the channel setting.

5.6 BLUETOOTH

5.6.1 SPECIFICATIONS

Bluetooth wireless provides radio links between mobile computers, mobile phones and other portable handheld devices.

Bluetooth contains the following features.

- Cheaper compared to the IEEE802.11b wireless LAN.
- Many protocols for infrared transmission (IrDA) can be used with Bluetooth.
- A Bluetooth device can connect to other Bluetooth devices without any settings.

Standard applied:	Bluetooth 1.1 (Bluetooth Special Interest Group)
Data transfer rates:	1 Mbps
Bandwidth:	2.4GHz Frequency Hopping Spread Spectrum (FHSS)

Piconet:

Bluetooth devices communicate with other Bluetooth devices in the ad hoc mode. This network is called a "Piconet". A Piconet may contain a maximum of 8 Bluetooth devices. There is one master device and seven slave devices in a Piconet. The master device controls the hopping frequency and timing, as well as storing the ID codes of the slave devices. The master and slave devices can be swapped. Once the master device leaves the Piconet, a slave device becomes the new master.

Machines with the Bluetooth option become potential slave devices to connect to a PC.

FHSS (Frequency Hopping Spread Spectrum):

The Bluetooth device divides 2402 to 2480 MHz into 79 channels of 1 MHz width, and changes the channel 1600 times per second. If other devices in the LAN are using the same radio band, Bluetooth can avoid interference from the other devices.

5.6.2 BLUETOOTH PROFILES

A Bluetooth device will not operate if it is located overly close to another Bluetooth device. However, the Bluetooth device should support the protocols to communicate with each other. There are many types of Bluetooth and service protocols. These are listed below.

Here are 14 profiles for Bluetooth, as follows.

- Generic Access Profile

- Service Discovery Profile
- Cordless Telephony Profile
- Intercom Profile
- Serial Port Profile
- Headset Profile
- Dial-up Networking Profile
- Fax Profile
- LAN Access Profile
- Generic Object Exchange Profile
- Object Push Profile
- File Transfer Profile
- Synchronization Profile
- Hardcopy Cable Replacement Profile

Serial Port Profile (SPP) and Hardcopy Cable Replacement Profile (HCRP) are used for the printer products.

SPP is used in place of the serial port, while HCRP is used in place of the parallel port.

5.6.3 BLUETOOTH SECURITY FEATURES

Public and Private Mode.

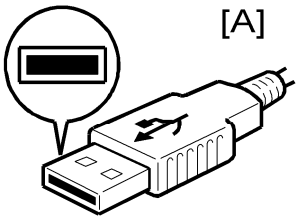
A computer can browse Bluetooth devices. The machine's default is public mode. A computer cannot browse the machine if it has been changed to private mode.

PIN Code (Personal Identification Number).

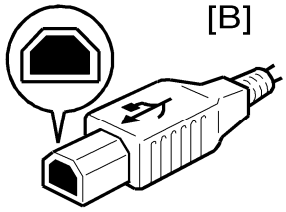
When the PIN code is used, a computer connects to the device that sent the PIN code. The PIN code is a 4 digit number. This machine uses the last four digits of the machine's serial number. It cannot be changed.

5.7 USB CONNECTORS

USB is a serial protocol and a physical link, which transmits all data on a single pair of wires. Another pair provides power to downstream peripherals. The USB standard specifies two types of connectors, type “A” connectors for upstream connection to the host system, and type “B” connectors for downstream connection to the USB device.

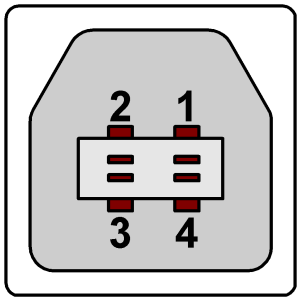


B622D919



B622D918

5.7.1 PIN ASSIGNMENT



b622d906

The controller has a type “B” receptacle.

Pin No.	Signal Description	Wiring Assignment
1	Power	Red
2	Data –	White
3	Data +	Green
4	Power GND	White

Remarks about USB

- The machine does not print reports specifically for USB.
- Only one host computer is allowed for the USB connection.
- After starting a job using USB, do not switch the printer off until the job has been

completed. When a user cancels a print job, if data transmitted to the printer has not been printed at the time of cancellation, the job will continue to print up to the page where the print job was cancelled.

- When the controller board is replaced, the host computer will recognize the machine as a different device.

Related SP Mode

"USB Settings" in the printer engine service mode. Data rates can be adjusted to full speed fixed (12 Mbps). This switch may be used for troubleshooting if there is a data transfer error using the high speed mode (480 Mbps).

Data rates can also be adjusted using the UP mode "USB Setting" in the Host Interface in the System menu. This mode can be accessed only when the "Enter", "Escape", then "Menu" keys are pressed to enter the UP mode.

6. SPECIFICATIONS

6.1 GENERAL SPECIFICATIONS

6.1.1 PRINTER

Printing Speed:	Maximum 25 ppm (A4/LT LEF)
Printer Languages:	PCL6/PCL5e PostScript 3 (option) RPCS (Refined Printing Command Stream) - an original Ricoh PDL)
Resolution:	600 dpi (PCL 6/PCL5e/PS3/RPCS) 300 dpi (PCL6 PCL5e/PS3) 200 dpi (RPCS)
Resident Fonts:	PCL: 35 Intellifonts 10 True Type fonts PS3: 136 fonts (24 Type 2 fonts, 112 Type 14 fonts)
Host Interfaces:	USB 2.0 interface (standard) Ethernet (100 Base-TX/10 Base-T) (standard) Bi-directional IEEE1284 parallel x 1 (option) IEEE802.11 (Wireless LAN) (option) Bluetooth (option)
Network Protocols:	TCP/IP, IPX/SPX, AppleTalk, SMB
Memory:	128 MB + 256 MB (RAMM DIMM)
Supported Paper Size	See the copier service manual.

6.1.2 SCANNER

Standard Scanner Resolution:	Main scan/Sub scan 600 dpi
Available scanning Resolution Range:	Twain Mode: 100 to 600 dpi E-mail/Network Delivery Scanner: 100 dpi, 200 dpi, 300 dpi, 400 dpi, 600 dpi
Scanning Throughput:	40 spm for Delivery mode (A4L, ADF mode)
Interface:	Ethernet (100 Base-TX/10 Base-T for TCP/IP), IEEE 802.11b (Wireless LAN)
Compression Method:	Binary: TIFF (MH, MR, MMR)

6.2 SOFTWARE ACCESSORIES

6.2.1 PRINTER

The printer drivers and utility software are provided on one CD-ROM. An auto-run installer allows you to select which components to install.

Printer Drivers

Printer Language	Windows 95/98/ME	Windows NT4.0	Windows 2000/XP/2003	Macintosh OS8.6 to 9.x/10.1 or later
PCL 6	Yes	Yes	Yes	No
PCL 5e	Yes	Yes	Yes	No
PS3	Yes	Yes	Yes	Yes
RPCS	Yes	Yes	Yes	No

Note

- 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.
- The PS3 drivers are all genuine AdobePS drivers, except for Windows 2000, which uses Microsoft PS. A PPD file for each operating system is provided with the driver.

Utility Software

Software	Description
Agfa Font Manager (Win 95/98/ME, NT4, 2000, XP)	A font management utility with screen fonts for the printer.
SmartNetMonitor for Admin (Win 95/98/ME, NT4, 2000, XP)	A printer management utility for network administrators. NIB setup utilities are also available.

Software	Description
SmartNetMonitor for Client (Win 95/98/ME, NT4, 2000, XP)	A printer management utility for client users. Peer-to-peer printing utility and parallel/recovery printing functions are included.
LAN-Fax (Win 95/98/ME, NT4, 2000, XP)	PC LAN FAX driver
Bitmap Installer (Win 95/98/ME, NT4, 2000, XP)	-
Install Manager (Win 95/98/ME, NT4, 2000, XP)	-
Install Manager Configuration (Win 95/98/ME, NT4, 2000, XP)	-
Printer Utility for Mac	This software provides several convenient functions for printing from Macintosh clients.

6.2.2 SCANNER

The scanner driver and utility software are provided on one CD-ROM.

Scanner Driver

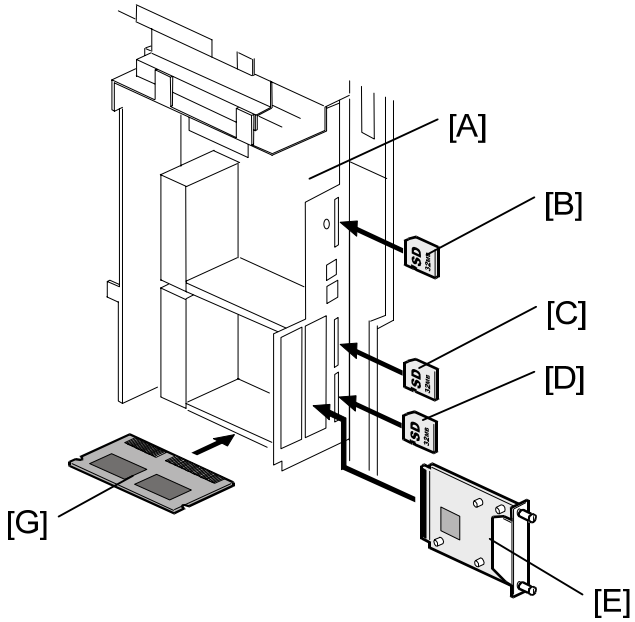
- Network Twain Driver for Win95/98/ME/NT3.51/NT4.0/2000

Scanner Utilities

- Scan Router V2 Lite for Win95/98/ME/NT4.0/2000/XP
- Desk Top Binder V2 Lite for Win95/98/ME/NT4.0/2000/XP

6.3 MACHINE CONFIGURATION

6.3.1 SYSTEM COMPONENTS



d359v901

Item	Machine Code		Remarks
GW Board	D327	[A]	Required to install the printer/scanner unit
Printer/Scanner unit	D359-17	[D]	-
RAM DIMM	—	[G]	Distributed with the GW controller
PostScript 3	D359-00	[C]	-
VM Card	G874	[B]	-
IEEE 1284	B679	[E]	One from the five
Wireless LAN	G813	[E]	
Bluetooth	B826	[E]	
Embedded RCG-M	B818	[E]	
NRS Cumin-M	B818	[E]	