# Model U-P1
## (Machine Code: G071)

# SERVICE MANUAL

# ⚠IMPORTANT SAFETY NOTICES

**PREVENTION OF PHYSICAL INJURY**

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

**HEALTH SAFETY CONDITIONS**

Toner 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**

1. The printer and its peripherals must be serviced by a customer service representative who has completed the training course on those models.
2. The NVRAM module (option) installed on the controller has a lithium battery which can explode if replaced incorrectly. Replace the NVRAM only with an identical one. The manufacturer recommends replacing the entire NVRAM. Do not recharge or burn this battery. Used NVRAM must be handled in accordance with 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, 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.
   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.
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**

**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:**


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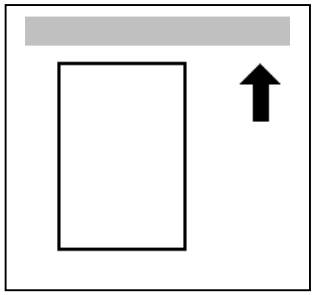
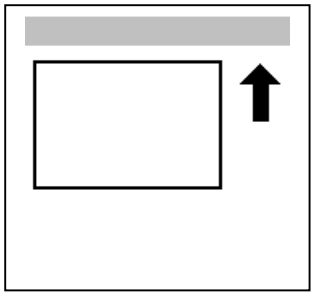
### *Conventions in this Manual*

This manual uses several symbols.

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



Lengthwise, SEF (Short Edge Feed)



Sideways, LEF (Long Edge Feed)

# TABLE OF CONTENTS


**1. INSTALLATION ..... 1-1**
1.1 INSTALLATION REQUIREMENTS ..... 1-1
1.1.1 ENVIRONMENT ..... 1-1
1.1.2 MACHINE LEVEL ..... 1-1
1.1.3 SPACE REQUIREMENTS ..... 1-2
1.1.4 POWER REQUIREMENTS ..... 1-2
1.2 MACHINE INSTALLATION ..... 1-3
1.3 OPTIONS ..... 1-4
1.4 REMARKS FOR INSTALLATION ..... 1-5

**2. PREVENTIVE MAINTENANCE ..... 2-1**
2.1 OVERVIEW ..... 2-1
Users Do the User PM Procedures ..... 2-1
All PM Done by Technicians ..... 2-1
Counters ..... 2-1
2.2 USER MAINTENANCE ..... 2-1
Main Unit ..... 2-1
Optional Paper Tray Unit ..... 2-2
2.3 SERVICE MAINTENANCE ..... 2-2
Main Unit ..... 2-2
Optional Units ..... 2-3

**3. REPLACEMENT AND ADJUSTMENT ..... 3-1**
3.1 SPECIAL TOOLS ..... 3-1
3.2 EXTERIOR COVERS ..... 3-2
3.2.1 REAR COVER ..... 3-2
3.2.2 LOWER LEFT COVER ..... 3-3
3.2.3 UPPER COVER, OPERATION PANEL ..... 3-3
3.3 ELECTRICAL COMPONENTS ..... 3-4
3.3.1 PRINTER CONTROLLER ..... 3-4
3.3.2 CONTROLLER BOX ..... 3-4
3.3.3 BCU BOARD ..... 3-4
3.3.4 I/O BOARD ..... 3-5
3.3.5 PSU ..... 3-5
3.3.6 HIGH VOLTAGE SUPPLY BOARD ..... 3-6
3.4 DRIVE UNITS ..... 3-7
3.4.1 DEVELOPMENT CLUTCHES ..... 3-7
K/Y Development Units ..... 3-7
C/M Development Units ..... 3-7
3.4.2 DEVELOPMENT MOTOR ..... 3-8
3.4.3 MAIN MOTOR ..... 3-8
3.4.4 PCU GEAR BOX AND OPC BELT CLEANING CLUTCH ..... 3-9
3.4.5 FUSING UNIT MOTOR ..... 3-9
3.4.6 PAPER FEED MOTOR ..... 3-10

3.4.7 PAPER FEED CLUTCH ..... 3-10
3.4.8 REGISTRATION CLUTCH ..... 3-10
3.5 LASER OPTICS SECTION ..... 3-11
3.5.1 CAUTION DECAL LOCATION ..... 3-11
3.5.2 LASER OPTICS HOUSING UNIT ..... 3-12
Adjusting for Image Skew ..... 3-14
Laser Beam Pitch Adjustment ..... 3-15
3.5.3 POLYGONAL MIRROR MOTOR AND LSD ..... 3-16
3.6 DEVELOPMENT UNIT ..... 3-17
3.7 PHOTOCONDUCTOR UNIT (PCU) ..... 3-19
3.7.1 MAIN UNIT ..... 3-19
3.7.2 WASTE TONER BOTTLES ..... 3-20
3.7.3 CHARGE CORONA WIRE ..... 3-21
3.7.4 CHARGE CORONA WIRE CLEANER MOTOR ..... 3-22
3.7.5 OPC BELT CLEANING UNIT ..... 3-22
3.7.6 IMAGE TRANSFER BELT CLEANING UNIT ..... 3-22
3.8 PAPER TRANSFER UNIT ..... 3-23
3.8.1 VERTICAL TRANSPORT UNIT ..... 3-23
3.8.2 TRANSFER ROLLER ..... 3-23
Cleaning the Paper Dust Mylar ..... 3-24
3.9 FUSING/PAPER EXIT ..... 3-25
3.9.1 FUSING UNIT ..... 3-25
3.9.2 OIL SUPPLY UNIT ..... 3-25
3.9.3 LAMPS ..... 3-26
3.9.4 FUSING INNER UNIT ..... 3-27
3.9.5 PRESSURE ROLLER THERMOFUSE ..... 3-27
3.9.6 FUSING BELT UNIT AND PRESSURE ROLLER UNIT ..... 3-27
3.9.7 PRESSURE ROLLER THERMISTOR ..... 3-28
3.9.8 HOT ROLLER STRIPPERS ..... 3-28
3.9.9 PRESSURE ROLLER ..... 3-29
3.9.10 OIL ABSORBERS ..... 3-30
3.9.11 PAPER EXIT UNIT AND PAPER EXIT/ OVERFLOW SENSOR ..... 3-31
3.10 PAPER FEED AND TRANSPORT ..... 3-32
3.10.1 FEED ROLLER AND FRICTION PAD ..... 3-32
3.10.2 REGISTRATION SENSOR ..... 3-33
3.10.3 PAPER FEED SENSOR ..... 3-35
3.10.4 PAPER NEAR-END SENSOR ..... 3-35
3.10.5 PAPER END SENSOR ..... 3-35
3.11 BYPASS TRAY ..... 3-36
3.11.1 PICKUP/FEED ROLLER ..... 3-36
3.11.2 PAPER FEED CLUTCH ..... 3-37
3.11.3 REVERSE ROLLER ..... 3-37

**4. TROUBLESHOOTING ..... 4-1**
4.1 SERVICE CALL ..... 4-1
4.1.1 SERVICE CALL CONDITIONS ..... 4-1
4.1.2 SC TABLE ..... 4-2

4.2 CONTROLLER ERROR TABLE ..... 4-9
4.3 BLOWN FUSE CONDITIONS ..... 4-12
4.4 CHECK POINTS FOR IMAGE PROBLEMS AT REGULAR INTERVALS ..... 4-12

**5. SERVICE TABLES ..... 5-1**
5.1 SERVICE PROGRAM MODE ..... 5-1
5.1.1 OPERATION PANEL KEYS ..... 5-1
5.1.2 STARTING SERVICE PROGRAM MODE ..... 5-2
Procedure 1 ..... 5-2
Procedure 2 ..... 5-2
5.1.3 MAIN MENU ..... 5-2
5.1.4 SPECIFYING A VALUE OR SETTING ..... 5-3
5.1.5 LEAVING SERVICE MODE ..... 5-3
5.2 SP MODE TABLES ..... 5-4
5.2.1 SERVICE (CONTROLLER SERVICE MODES) ..... 5-4
Bit Switch Settings ..... 5-6
Gamma Adjustment ..... 5-8
5.2.2 ENGINE SERVICE MODES ..... 5-11
SP1-XXX: (Feed) ..... 5-11
SP2-XXX: (Drum) ..... 5-15
SP3-XXX: (Process) ..... 5-27
SP5-XXX: (Mode) ..... 5-30
SP7-XXX: (Data Log) ..... 5-38
Input Check Table ..... 5-46
Table 1: Tray 1 Paper Size ..... 5-49
Table 2: 1st/2nd Bank Paper Size ..... 5-49
Table 3: 1st/2nd Bank Near End ..... 5-49
Output Check Table ..... 5-50
5.3 CONTROLLER SELF-DIAGNOSTICS ..... 5-52
5.3.1 OVERVIEW ..... 5-52
5.3.2 DETAILED SELF-DIAGNOSTICS ..... 5-53
5.4 USER PROGRAM MODE ..... 5-54
5.5 UPGRADING SOFTWARE ..... 5-55
5.5.1 OVERVIEW ..... 5-55
5.5.2 UPGRADING ..... 5-56
Procedure ..... 5-56
Error Recovery ..... 5-57
5.6 DIP SWITCHES ..... 5-58
Controller Board ..... 5-58
BCU Board ..... 5-58
5.7 PRINTING A TEST PATTERN ..... 5-59

**6. DETAILED SECTION DESCRIPTIONS ..... 6-1**
6.1 OVERVIEW ..... 6-1
6.1.1 MAJOR COMPONENTS ..... 6-1
6.1.2 PAPER PATH ..... 6-2
6.1.3 DRIVE COMPONENTS ..... 6-3

6.1.4 ELECTRICAL COMPONENTS ..... 6-4
Image Transfer ..... 6-4
Development Units ..... 6-5
Paper Path ..... 6-6
Drive Components ..... 6-7
Circuit Boards ..... 6-8
6.2 PRINTING PROCESS OVERVIEW ..... 6-9
6.3 PROCESS CONTROL ..... 6-11
6.3.1 OVERVIEW ..... 6-11
6.3.2 PROCESS CONTROL STEPS ..... 6-12
Six Steps ..... 6-12
When is Process Control Done? ..... 6-12
6.4 PHOTOCONDUCTOR UNIT (PCU) ..... 6-13
6.4.1 OVERVIEW ..... 6-13
6.4.2 NEW PHOTOCONDUCTOR UNIT DETECTION ..... 6-14
New PCU Sensor ..... 6-14
Mechanism ..... 6-14
PCU Counter ..... 6-14
6.4.3 CHARGE CORONA UNIT ..... 6-15
Power Supply ..... 6-15
Wire Cleaning ..... 6-15
Cleaning Interval ..... 6-15
Quenching ..... 6-16
6.4.4 OPC BELT DRIVE ..... 6-16
6.4.5 OPC BELT CLEANING UNIT ..... 6-17
Toner Collection Augers ..... 6-17
Counter Blade + Brush ..... 6-17
Waste Toner Bottle Sensors ..... 6-17
Drive ..... 6-18
6.4.6 IMAGE TRANSFER BELT UNIT ..... 6-19
Drive ..... 6-19
Belt Mark Sensor ..... 6-19
Bias Roller ..... 6-20
6.4.7 TRANSFER BELT CLEANING UNIT ..... 6-21
Bias Brush ..... 6-21
Bias Roller and Cleaning Blade ..... 6-21
Collecting Coil ..... 6-21
Waste Toner Bottle Sensors ..... 6-21
Contact Mechanism ..... 6-22
Power Supply ..... 6-23
Drive ..... 6-23
6.5 LASER EXPOSURE ..... 6-24
6.5.1 OVERVIEW ..... 6-24
Dust Shield Glass Cleaning ..... 6-25
LD Unit Adjustment ..... 6-25
Polygonal Mirror ..... 6-25
Laser Diode Power Control ..... 6-25
Maintenance Adjustment ..... 6-25
6.5.2 LD SAFETY SWITCH ..... 6-26

Operation Panel Message and Switch Mechanism ..... 6-27
6.6 DEVELOPMENT ..... 6-28
6.6.1 OVERVIEW ..... 6-28
6.6.2 DEVELOPMENT UNIT ..... 6-29
Rollers and Agitators ..... 6-29
Replacing Units ..... 6-29
Memory Chip ..... 6-29
6.6.3 TONER SUPPLY MECHANISM ..... 6-30
Toner Cartridge Agitators ..... 6-30
Drive Power Path ..... 6-30
Development Unit Agitator ..... 6-30
Toner Supply Roller and Doctor Roller ..... 6-30
Shutter ..... 6-30
6.6.4 TONER END DETECTION ..... 6-31
Mechanism ..... 6-31
Toner Near-End Detection ..... 6-31
Toner End Detection ..... 6-32
Toner End Recovery ..... 6-32
6.6.5 DEVELOPMENT UNIT CONTACT MECHANISM ..... 6-33
Mechanism ..... 6-33
Reverse Rotation ..... 6-33
6.6.6 POWER SOURCE ..... 6-34
Development, Toner Supply, and Doctor Rollers ..... 6-34
Doctor Roller ..... 6-34
6.7 PAPER FEED ..... 6-35
6.7.1 OVERVIEW ..... 6-35
Transport Speed ..... 6-36
Friction Pad ..... 6-36
6.7.2 STANDARD TRAY DRIVE ..... 6-36
Feed and Vertical Transport Rollers ..... 6-36
Registration Roller ..... 6-36
6.7.3 STANDARD TRAY – BOTTOM PLATE LIFT ..... 6-37
Lift Mechanism ..... 6-37
Paper Near End Detection ..... 6-37
Paper End Detection ..... 6-37
6.7.4 STANDARD TRAY - PAPER SIZE DETECTION ..... 6-38
Mechanism ..... 6-38
Switch Pattern ..... 6-38
6.7.5 BYPASS TRAY ..... 6-39
Paper Feed Mechanism ..... 6-39
Bypass Tray Drive Power Path ..... 6-39
Pick-up Solenoid ..... 6-39
Paper End Sensor ..... 6-39
6.8 PAPER TRANSFER AND SEPARATION ..... 6-40
6.8.1 OVERVIEW ..... 6-40
Jammed Paper Release ..... 6-40
Image Transfer and Paper Separation ..... 6-40
6.8.2 MECHANISM ..... 6-41
Timing ..... 6-41

Mechanism ..... 6-41
6.8.3 POWER SUPPLY ..... 6-42
Electric Power Path ..... 6-42
Transfer Roller Bias ..... 6-42
Discharge Plate ..... 6-42
Temperature/Humidity Control ..... 6-42
Roller Cleaning ..... 6-43
6.9 FUSING UNIT AND OIL SUPPLY UNIT ..... 6-44
6.9.1 OVERVIEW ..... 6-44
6.9.2 FUSING UNIT CONFIGURATION ..... 6-45
Fusing Belt ..... 6-45
Oil Supply ..... 6-45
Heating Roller Lamp ..... 6-45
Pressure Roller Lamp ..... 6-45
Pressure Roller Pawls ..... 6-45
Fusing Bias ..... 6-46
Fusing Unit SCs ..... 6-46
6.9.3 TEMPERATURE CONTROL ..... 6-47
6.9.4 OIL SUPPLY AND CLEANING ..... 6-48
Oil Supply ..... 6-48
Oil Path ..... 6-48
Oil Recycling ..... 6-48
Belt Cleaning ..... 6-48
Oil End Detection ..... 6-49
Fusing unit switch ..... 6-49
6.9.5 DRIVE ..... 6-49
Drive Power Path (Fusing Unit and Oil Supply Roller) ..... 6-49
Drive Power Path (Pressure Roller) ..... 6-49
6.9.6 ENERGY SAVER MODE ..... 6-50
Level 1 Energy Saver Mode (default: off) ..... 6-50
Level 2 Energy Saver Mode ..... 6-50
Ready Mode ..... 6-50
6.9.7 PAPER EXIT ..... 6-51
Drive Power Path ..... 6-51
Paper Jam Detection ..... 6-51
6.9.8 OVERFLOW DETECTION ..... 6-51
6.10 PRINTED CIRCUIT BOARDS ..... 6-52
6.10.1 PRINTER CONTROLLER ..... 6-52
Function ..... 6-52
Memory ..... 6-52
Interfaces ..... 6-52
Slots ..... 6-53
Options ..... 6-53
DIP Switch ..... 6-53
LED Indicators ..... 6-53
6.10.2 BASE ENGINE CONTROL UNIT (BCU) ..... 6-54
Function ..... 6-54
Upgrading ..... 6-54
Nonvolatile Random Access Memory (NVRAM) ..... 6-54

DIP Switch ..... 6-54
6.10.3 INPUT/OUTPUT (I/O) BOARD ..... 6-55
6.10.4 POWER SUPPLY UNIT (PSU) ..... 6-55
6.10.5 HIGH VOLTAGE SUPPLY ..... 6-55
6.11 CONTROLLER ..... 6-56
6.11.1 OVERVIEW ..... 6-56
6.11.2 BOARD LAYOUT ..... 6-58
6.11.3 PRINT DATA PROCESSING ..... 6-59
RPCS Driver ..... 6-59
PCL5c Driver ..... 6-59
PS3 Driver ..... 6-60
CMS (Color Management System) ..... 6-60
Gray Correction ..... 6-60
BG/UCR (Black Generation/Under Color Removal) ..... 6-60
Gamma Correction ..... 6-60
Toner Limitation ..... 6-61
Dither Processing and ROP/RIP ..... 6-61
6.11.4 CONTROLLER FUNCTIONS ..... 6-62
Sample Print ..... 6-62
Locked Print ..... 6-62
Paper Source Selection ..... 6-63
Auto Continue ..... 6-64
Paper Output Tray ..... 6-65
Stapling ..... 6-66
6.12 IEEE1394 INTERFACE ..... 6-67
6.12.1 SPECIFICATIONS ..... 6-67
Hardware Specification ..... 6-67
System Requirements ..... 6-67
6.12.2 IEEE1394 ..... 6-67
6.12.3 BLOCK DIAGRAM ..... 6-68
6.12.4 PIN ASSIGNMENT ..... 6-68
6.12.5 REMARKS ABOUT THIS INTERFACE KIT ..... 6-69
6.12.6 TROUBLESHOOTING NOTES ..... 6-69
6.12.7 IP OVER IEEE 1394 ..... 6-70
6.13 IEEE 802.11B (WIRELESS LAN) ..... 6-71
6.13.1 SPECIFICATIONS ..... 6-71
6.13.2 BLOCK DIAGRAM ..... 6-71
6.13.3 TRANSMISSION MODE ..... 6-72
Ad hoc Mode ..... 6-72
Infrastructure Mode ..... 6-72
6.13.4 SECURITY FEATURES ..... 6-73
Using the SSID in Ad hoc mode ..... 6-73
6.13.5 TROUBLESHOOTING NOTES ..... 6-74
Communication Status ..... 6-74
Channel Settings ..... 6-74
Troubleshooting Steps ..... 6-75
6.14 USB ..... 6-76
6.14.1 SPECIFICATIONS ..... 6-76
6.14.2 USB 1.1/2.0 ..... 6-76

6.14.3 USB CONNECTORS ..... 6-77
6.14.4 PIN ASSIGNMENT ..... 6-77
6.14.5 REMARKS ..... 6-78
Related SP Mode ..... 6-78

# PERIPHERALS

## PAPER TRAY UNIT (G313)

**1. REPLACEMENT AND ADJUSTMENT ..... G313-1**
1.1 REAR COVER ..... G313-1
1.2 PAPER FEED CLUTCH ..... G313-1
1.3 LIFT MOTOR ..... G313-2
1.4 PAPER FEED MOTOR ..... G313-2
1.5 CONTROLLER BOARD ..... G313-2
1.6 PICK-UP/FEED/SEPARATION ROLLERS ..... G313-3

**2. DETAILED DESCRIPTIONS ..... G313-4**
2.1 MECHANICAL COMPONENT LAYOUT ..... G313-4
Feed and Reverse Roller (FRR) ..... G313-4
Drive Path ..... G313-4
Paper End Feeler Method ..... G313-4
2.2 ELECTRICAL COMPONENT LAYOUT ..... G313-5
2.3 DRIVE LAYOUT ..... G313-6
2.4 PAPER SIZE DETECTION ..... G313-7
2.5 PAPER LIFT ..... G313-8
2.6 PAPER HEIGHT AND END DETECTION ..... G313-9
Paper Height Detection ..... G313-9
Paper End Detection ..... G313-9

## INTERCHANGE UNIT (G305)

**1. REPLACEMENT AND ADJUSTMENT ..... G305-1**
1.1 EXTERIOR COVER AND PAPER EXIT SENSOR ..... G305-1
1.2 CONTROL BOARD ..... G305-1

**2. DETAILED DESCRIPTIONS ..... G305-2**
2.1 ELECTRICAL COMPONENTS ..... G305-2
2.2 DRIVE ..... G305-2
2.3 MECHANISM ..... G305-3

## DUPLEX UNIT (G303)

**1. REPLACEMENT AND ADJUSTMENT ..... G303-1**
1.1 EXTERIOR COVER ..... G303-1
1.2 ENTRANCE/EXIT SENSORS ..... G303-1

1.3 INVERTER MOTOR ..... G303-2
1.4 CONTROLLER BOARD ..... G303-2
1.5 TRANSPORT MOTOR ..... G303-2

**2. DETAILED DESCRIPTIONS ..... G303-3**
2.1 OVERVIEW ..... G303-3
2.2 ELECTRICAL COMPONENT LAYOUT ..... G303-4
2.3 DRIVE LAYOUT ..... G303-5
2.4 DUPLEX PAPER FEED ORDER ..... G303-6
2.4.1 LONGER THAN A4/LT LEF ..... G303-6
2.4.2 UP TO A4/LT LEF ..... G303-7
2.5 REVERSE MECHANISM ..... G303-8

**500-SHEET FINISHER (G314)**

**1. REPLACEMENT AND ADJUSTMENT ..... G314-1**
1.1 EXTERIOR COVERS ..... G314-1
Front Cover ..... G314-1
Rear Cover ..... G314-1
Lower Guide ..... G314-2
Upper Cover ..... G314-3
Right Cover ..... G314-3
1.2 ENTRANCE UPPER GUIDE AND PAPER EXIT UNIT ..... G314-4
1.3 MOTORS ..... G314-5
1.3.1 MAIN MOTOR ..... G314-5
1.3.2 JOGGER MOTOR ..... G314-5
1.4 STAPLER ..... G314-6
1.5 PADDLE ROLLER SOLENOID ..... G314-6
1.6 MAIN CONTROL PCB ..... G314-7
1.7 OUTPUT TRAY UNIT ..... G314-8

**2. DETAILED DESCRIPTIONS ..... G314-10**
2.1 OVERALL MACHINE INFORMATION ..... G314-10
2.1.1 COMPONENT LAYOUT ..... G314-10
2.1.2 DRIVE LAYOUT ..... G314-11
2.1.3 ELECTRICAL COMPONENTS ..... G314-12
2.2 DETAILED SECTION DESCRIPTIONS ..... G314-14
2.2.1 OUTPUT TRAY ..... G314-14
Stack Height Detection ..... G314-14
Output Tray Up/Down Mechanism ..... G314-15
2.2.2 PAPER FEED ..... G314-16
Overview ..... G314-16
Straight Feed-out Mode ..... G314-16
Shift Sorting Mode ..... G314-17
Stapling Mode ..... G314-19
2.2.3 JAM CONDITIONS ..... G314-20
2.2.4 ERROR DETECTION ..... G314-20

## FOUR-BIN MAILBOX (G312)


**1. REPLACEMENT AND ADJUSTMENT ..... G312-1**
1.1 EXTERIOR COVER ..... G312-1
1.2 MAIN MOTOR AND CONTROLLER BOARD ..... G312-1
1.3 VERTICAL TRANSPORT AND PAPER OVERFLOW SENSORS ..... G312-2

**2. DETAILED DESCRIPTIONS ..... G312-3**
2.1 OVERVIEW ..... G312-3
2.2 DRIVE ..... G312-4
Drive Path ..... G312-4
2.3 ELECTRICAL COMPONENT LAYOUT ..... G312-5
2.4 PAPER DISTRIBUTION ..... G312-6
Mechanism ..... G312-6
Paper Overflow Sensor ..... G312-6
2.5 BASIC OPERATION ..... G312-7
2.6 PAPER MISFEED DETECTION TIMING ..... G312-7


# SPECIFICATIONS


**SPECIFICATIONS ..... Spec-1**
1. GENERAL SPECIFICATIONS ..... Spec-1
1.1 MAIN UNIT ..... Spec-1
2. SUPPORTED PAPER SIZES ..... Spec-4
2.1 MAIN TRAY, BYPASS TRAY, AND DUPLEX UNIT ..... Spec-4
2.2 FINISHER, MAIL BOX, AND PAPER TRAY UNIT ..... Spec-5
3. SOFTWARE ACCESSORIES ..... Spec-6
3.1 PRINTER DRIVERS ..... Spec-6
3.2 UTILITY SOFTWARE ..... Spec-6
4. MACHINE CONFIGURATION ..... Spec-7
4.1 SYSTEM COMPONENTS ..... Spec-7
Exterior ..... Spec-7
Interior ..... Spec-8
Maintenance Kits ..... Spec-8
4.2 OPTIONAL EQUIPMENT ..... Spec-9
Paper Tray Unit ..... Spec-9
Finisher ..... Spec-9
Mail Box ..... Spec-10
Duplex Unit ..... Spec-10
Interchange Unit ..... Spec-10

# 1. INSTALLATION

## 1.1 INSTALLATION REQUIREMENTS

### 1.1.1 ENVIRONMENT

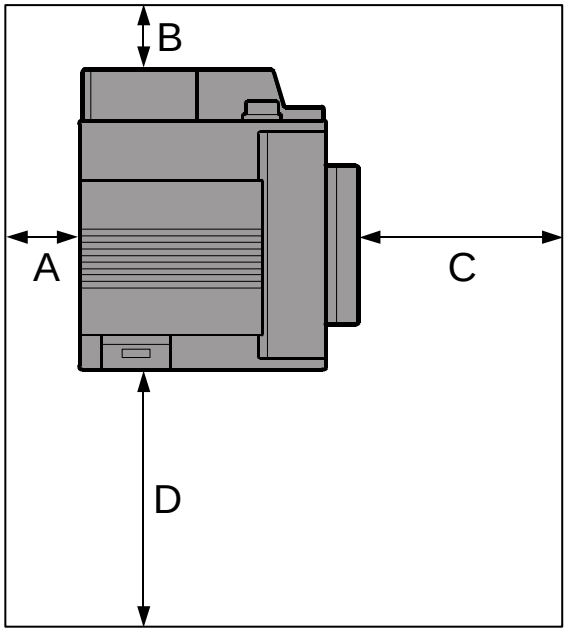
1. Temperature Range: 10°C to 32°C (50°F to 89°F)
2. Humidity Range: 20% to 80% RH
3. Ambient Illumination: Less than 2,000 lux (keep the machine out of direct sunlight.)
4. Ventilation: 3 times/hr/person or more
5. Avoid exposing the machine to sudden temperature changes, which include:
   1) Direct cool air from an air conditioner
   2) Direct heat from a heater
6. Avoid installing the machine in areas that may be exposed to corrosive gas.
7. Install the machine at a location lower than 2,500 m (8,200 ft.) above sea level.
8. Install the machine on a strong, level base. (☛ 1.1.2)
9. Avoid installing the machine in areas that may be subjected to strong vibration.

### 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 SPACE REQUIREMENTS

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A: Over 100 mm (4")
B: Over 100 mm (4")
C: Over 550 mm (22")
D: Over 750 mm (30")

## 1.1.4 POWER REQUIREMENTS

**⚠CAUTION**

1. **Insert the plug firmly in the outlet.**
2. **Avoid using an outlet extension plug or cord.**
3. **Ground the machine.**

1. Input voltage level:
   120 V, 60 Hz, More than 11 A
   220 to 240 V, 50/60 Hz, More than 7 A
2. Permissible voltage fluctuation: ±10%
3. Do not put or place anything on the power cord.

# 1.2 MACHINE INSTALLATION



Refer to the Operating Instructions for details.

If the customer has a service contract, change the settings of the following SP modes depending on the contract type.

| Item | SP No. | Function | Default |
|---|---|---|---|
| Meter charge | SP5-930-1 (Meter_ Charge) | Specifies whether the meter charge mode is enabled or disabled.<br>If the user is doing the user PM procedures, set meter charge to 'Off'.<br>If the technician is doing all the PM, set meter charge to 'On'.<br>**Meter charge mode enabled:**<br>• The Counter menu appears immediately after the Menu key is pressed.<br>• The counter type selected by the counting method (SP5-045-1, Counter Method) can be displayed with the Counter menu.<br>• The counter values can also be printed with the Counter menu.<br>• The selected counter starts from a negative number.<br>**Meter charge mode disabled:**<br>• The Counter menu is not displayed.<br>• The total counter starts from 0. | Off |
| Counting method | SP5-045-1 (Counter Method) | Specifies whether the counting method used in meter charge mode is based on developments or prints.<br>**Important:**<br>This SP can only be done before the negative counters are reset with SP7-825-001 (Counter Reset) | Developments |
| A3/11" x 17" double counting | SP5-104-1 (Double Count) | Specifies whether the counter is doubled for A3/11" x 17" paper. | No: Single counting |
| PM warning display 1 | SP5-931-1 (PM_Display – Charger) | Specifies whether the PM warning for the charge corona unit is displayed when the replacement time arrives.<br>1: Displayed<br>0: Not displayed | 1 |
| PM warning display 2 | SP5-931-2 (PM_Display – PCU) | Specifies whether the PM warning for the PCU is displayed.<br>1: Displayed<br>0: Not displayed | 1 |

| Item | SP No. | Function | Default |
|---|---|---|---|
| PM warning display 3 | SP5-931-3 (PM_Display - Bank_ Feed) | Specifies whether the PM warning for the feed rollers in the optional paper feed unit is displayed.<br>1: Displayed<br>0: Not displayed | 0 |
| Fax No. setting | SP5-812-2 (FAX TEL No.) | Programs the service station fax number.<br>The number is printed on the counter list when the meter charge mode is selected, so that the user can fax the counter data to the service station. | |
| Counter reset | SP7-825-1 (Counter Reset) | Resets the counters to 0.<br>**Important:** This must be done at installation after all the above settings have been finished. The negative counters used in meter charge mode will be reset to zero. | |

**NOTE:** 1) The default setting for this machine is meter-charge mode off.
2) The meter-charge counter cannot be reset.

## 1.3 OPTIONS

Refer to the Option Setup Guide for details.

| No. | Optional Unit | Alternative | Requirements |
|---|---|---|---|
| 1 | 500-sheet finisher | No. 2 | • No. 3<br>• Hard disk or memory (extra 64 MB or more) for sort mode |
| 2 | 4-bin mailbox | No. 1 | • No. 3 |
| 3 | Interchange unit | | |
| 4 | Duplex unit | | • No. 3 |
| 5 | Paper tray unit | | |
| 6 | Printer hard disk | | |
| 7 | DIMM memory (64, 128, or 256 MB modules available) | | |
| 8 | IEEE1394 interface unit | | • Extra 64 MB (or more) optional SDRAM module |
| 9 | User account enhancement unit | | |
| 10 | IEEE802.11b (Wireless LAN) | | |

**NOTE:** 1) You cannot install the finisher and mailbox on the same machine.
2) You can install either 1 or 2 paper tray units.

# 1.4 REMARKS FOR INSTALLATION

In case you install this printer or you instruct customers to install, please note the following remark for development unit installation and replacement:

After installation or replacement of the development unit, print out the development unit check sheet by user mode (User Mode – Maintenance – Development Unit Check).

**NOTE:** For details please refer to the Quick Installation Guide.

# 2. PREVENTIVE MAINTENANCE

## 2.1 OVERVIEW



### *Users Do the User PM Procedures*

The user does PM for the items in section 2.2. The technician does PM for the items in section 2.3. Meter-charge mode must be set to “off” (SP5-930 [Meter_Charge], ☛ 5.2).

### *All PM Done by Technicians*

The technician does PM for the items in sections 2.2 and 2.3. Meter-charge mode must be set to “on” (SP5-930, [Meter_Charge], ☛ 5.2).

### *Counters*

When a maintenance counter for a unit has reached the limit, the corresponding message is displayed on the operation panel. After completing the maintenance procedure for that item, reset the counter (SP7-804, [PM_Clear ], ☛ 5.2).

## 2.2 USER MAINTENANCE

**Abbreviations:**
**C**lean, **I**nspect, **L**ubricate, **R**eplace, **K**ilo**P**rints, **K**ilo**D**evelopments, **W**henever**N**ecessary

### *Main Unit*

| Item | KD | | KP | | Detection | Reset | Machine stops |
|---|---|---|---|---|---|---|---|
| | 50 | 120 | 30 | 120 | | | |
| T/B waste toner bottle | | R* | | | Waste toner sensors | Auto-reset (sensor) | Yes |
| O/B waste toner bottle | R* | | | | Waste toner sensors | Auto-reset (sensor) | Yes |
| Oil supply unit | | | R** | | Oil end sensor/Oil supply unit counter | Manual reset | Yes |
| Fusing unit with paper feed roller | | | | R | Exit sheet counter | Manual reset | Yes |

* : Replacement period calculated for a 50% color ratio (the actual waste toner bottle condition is detected with the sensors)
** : Standard replacement period (the actual oil amount is detected with the sensor)

| Item | KD | | | Detection | Reset | Machine stops |
|---|---|---|---|---|---|---|
| | 60 | 120 | 240 | | | |
| Black development unit | | R | | Dev. Bk counter* | Auto-reset (memory chip) | Yes |
| Color development unit | R | | | Dev. color counter* | Auto-reset (memory chip) | Yes |
| PCU (includes charge corona unit & dust filters) | | R | | PCU counter* | Auto-reset (new PCU sensor) | No |

*Displayed with SP7-906 (PMCounter-PREV)

| Item | WN | Detection | Reset | Machine stops | Remarks |
|---|---|---|---|---|---|
| Registration roller | C | None | None | No | ① damp cloth and ② dry cloth |
| Dust shield glass (LD unit) | C | None | None | No | Built-in cleaning brush |
| Bottom plate pad | C | None | None | No | ① damp cloth and ② dry cloth |

### *Optional Paper Tray Unit*

| Item | 150KP | Detection | Reset | Machine stops | Remarks |
|---|---|---|---|---|---|
| Feed, pick-up, and separation rollers | R | None | None | No | ① damp cloth and ② dry cloth |

# 2.3 SERVICE MAINTENANCE

**Abbreviations:**
**C**lean, **I**nspect, **L**ubricate, **R**eplace, **K**ilo**P**rints, **K**ilo**D**evelopments, **W**henever**N**ecessary

### *Main Unit*

#### *Bypass Tray*

| Item | WN | Remarks |
|---|---|---|
| Feed Roller | C | ① damp cloth and ② dry cloth |
| Pick-up Roller | C | ① damp cloth and ② dry cloth |
| Separation Roller | C | ① damp cloth and ② dry cloth |

## *Optional Units*

### *Paper Tray Unit*

| Item | WN | Remarks |
|---|---|---|
| Relay Roller | C | ① damp cloth and<br>② dry cloth |
| Bottom Plate Pad | C | ① damp cloth and<br>② dry cloth |

### *Finisher*

| Item | WN | Remarks |
|---|---|---|
| Rollers | C | ① damp cloth and<br>② dry cloth |
| Sensors | C | Blower blush or dry cloth |
| Anti-Static Brush | C | Blower blush or dry cloth |
| Bushings | L | Launa oil when abnormal noise occurs |
| Stapler | R | Every 200K staples (estimated replacement period) |

### *Mail Box*

| Item | WN | Remarks |
|---|---|---|
| Rollers | C | ① damp cloth and<br>② dry cloth |
| Tray Paper Sensors | C | Blower blush or dry cloth |

### *Duplex Unit*

| Item | WN | Remarks |
|---|---|---|
| Rollers | C | ① damp cloth and<br>② dry cloth |
| Feed/exit sensors | C | Blower blush or dry cloth |

### *Interchange Unit*

| Item | WN | Remarks |
|---|---|---|
| Paper Exit Sensor | C | Blower blush or dry cloth |

# 3. REPLACEMENT AND ADJUSTMENT

**⚠CAUTION**

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

**NOTE:** This manual uses the following symbols.

☛ : See or Refer to  : Screws  : Connector  : Clip ring
 : E-ring



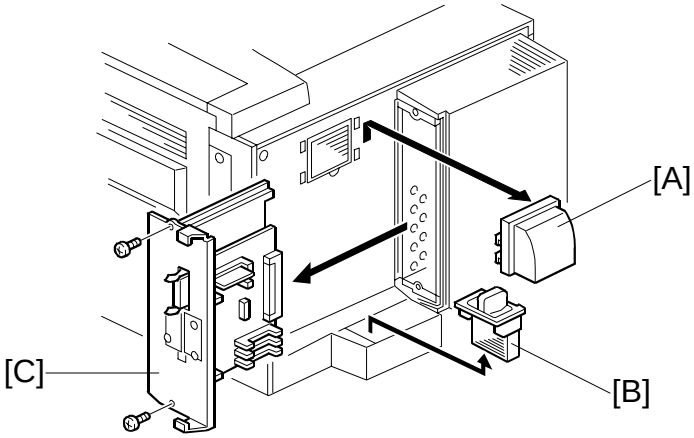
## 3.1 SPECIAL TOOLS

| Part Number | Part Name |
|---|---|
| N8036701 | Flash Memory Card - 4MB |
| G0219350 | Loop-back connector - Parallel |

# 3.2 EXTERIOR COVERS

## 3.2.1 REAR COVER

1. Duct cover [A] (4 hooks)
2. Ozone filter [B]
3. Printer controller [C] (x 2)

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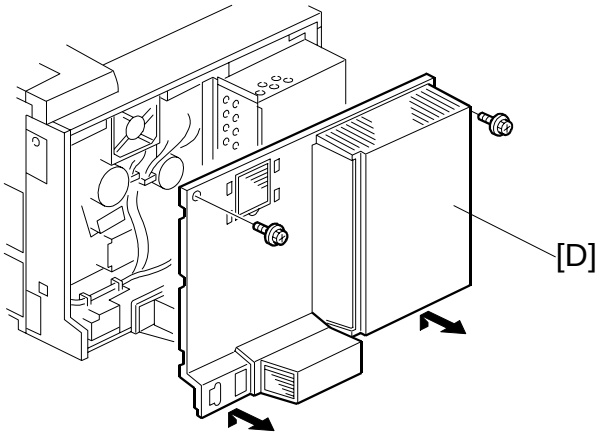
4. Rear cover [D] (x 2)

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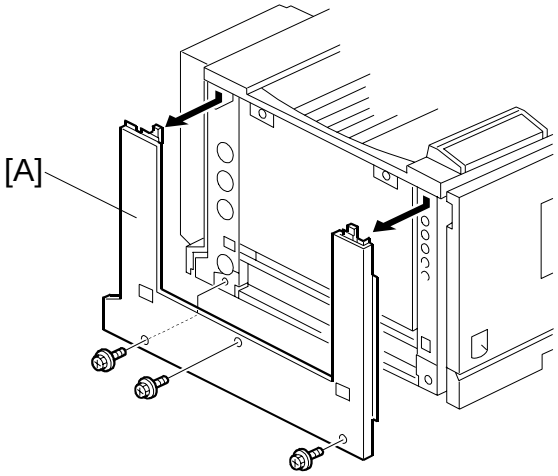
## 3.2.2 LOWER LEFT COVER

1. Lower left cover [A] (x 3)

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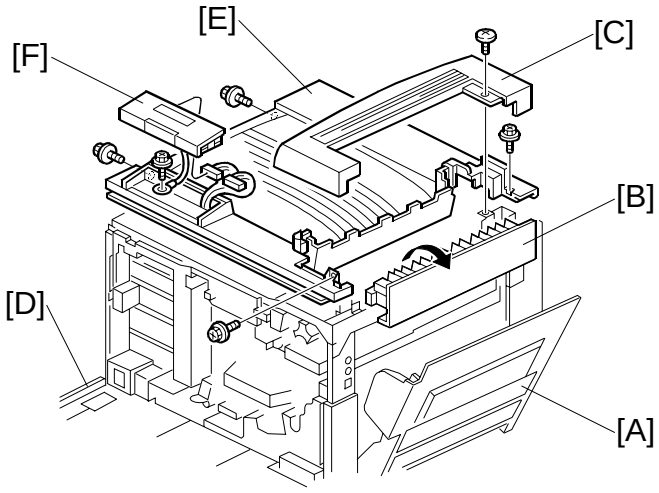
## 3.2.3 UPPER COVER, OPERATION PANEL

1. Open the right cover [A].
2. Upper right cover [B]
3. Paper exit cover [C] (x 1)
4. Open the front cover [D].
5. Upper cover [E] (x 4)
6. Operation panel [F] (4 hooks, x 2, x 1)

**NOTE:** Insert a screwdriver between the upper cover and the main unit and unhook the panel.

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# 3.3 ELECTRICAL COMPONENTS

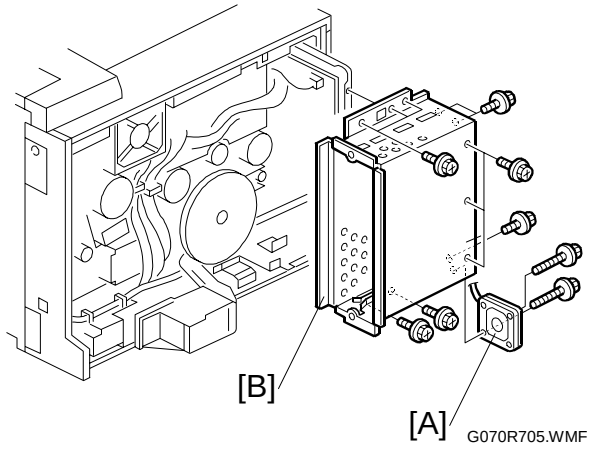
## 3.3.1 PRINTER CONTROLLER

☛ 3.2.1

**NOTE:** Remove the NVRAM from the old controller board, and install it on the new one.
If the controller NVRAM is defective, reset the total counter to 0 after changing the NVRAM, if meter charge mode is enabled.

## 3.3.2 CONTROLLER BOX

1. Rear cover (☛ 3.2.1)
2. Cooling fan [A] (🔩 x 2)
   **NOTE:** When reassembling, install the fan with the label facing the inside.
3. Controller box [B] (🔩 x 11)
   **NOTE:** 1) Do not remove the BCU board base with the controller box.
   2) When putting back the controller box, take care not to pinch the cable from the I/O board.



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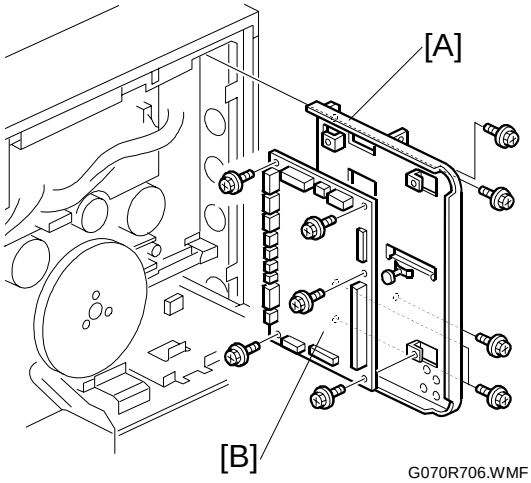
## 3.3.3 BCU BOARD

1. Controller box (☛ 3.3.2)
2. All 🤚 (12)
3. 1 flat cable
4. BCU board base [A] (🔩 x 5)
5. BCU board [B] (🔩 x 5)

**NOTE:** Remove the NVRAM from the old BCU board, and install it on the new one.



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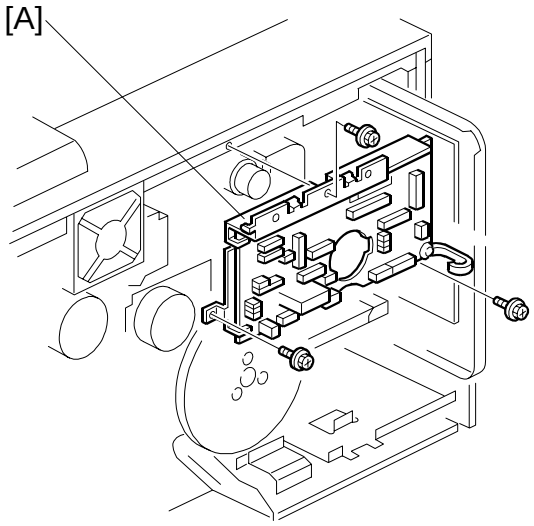
## 3.3.4 I/O BOARD

1. Controller box (☛ 3.3.2)
2. All ☞ (33)
3. I/O board [A] (☞ x 4)

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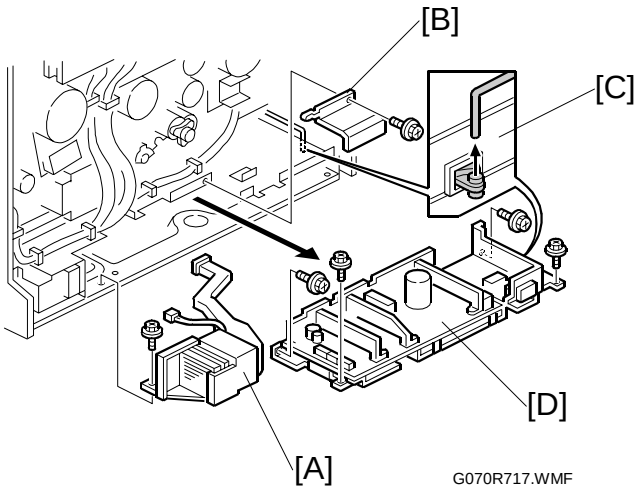
## 3.3.5 PSU

1. Controller box (☛ 3.3.2)
2. Flywheel (☞ x 3) (☛ 3.4.1)
3. Duct [A] (☞ x 1, ☞ x 1)
   **NOTE:** When removing and reassembling the fan, install it with the label facing the outside.
4. PSU protector [B] (☞ x 1)
5. Unlink the main switch [C].
6. PSU base (☞ x 8, ☞ x 4)
   **NOTE:** 1) Remove the PSU [D] with the PSU base.
   2) When reassembling, check that the main switch is linked to the PSU.

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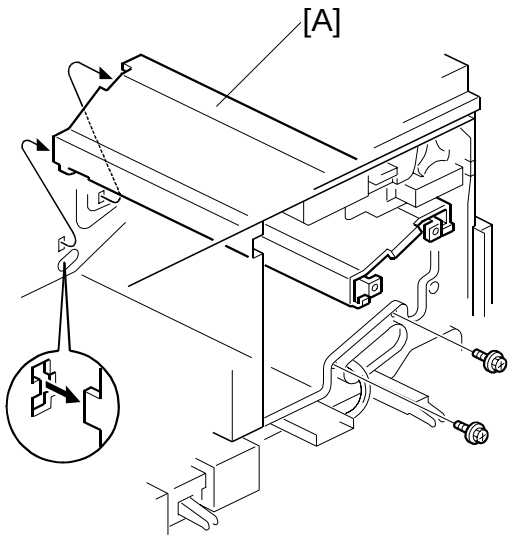
## 3.3.6 HIGH VOLTAGE SUPPLY BOARD

1. Photoconductor unit (☛ 3.7)
2. Right inner cover (☛ 3.10.2)
3. Photoconductor unit rail [A] (☞ x 2)

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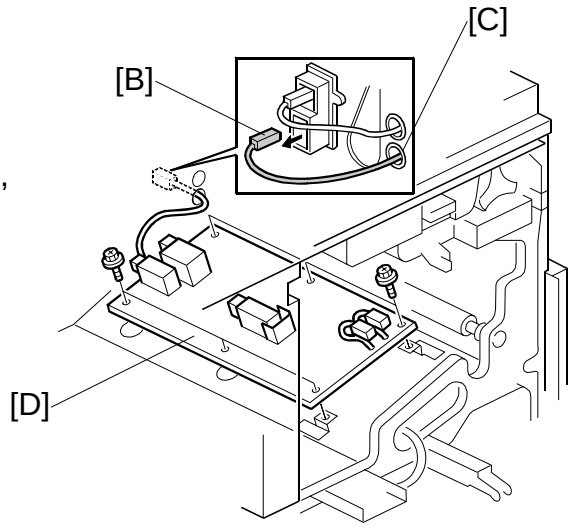
4. ☞ [B] x 1
5. Bushing [C] x 1
6. High voltage supply board [D] (☞ x 17, ☞ x 6)

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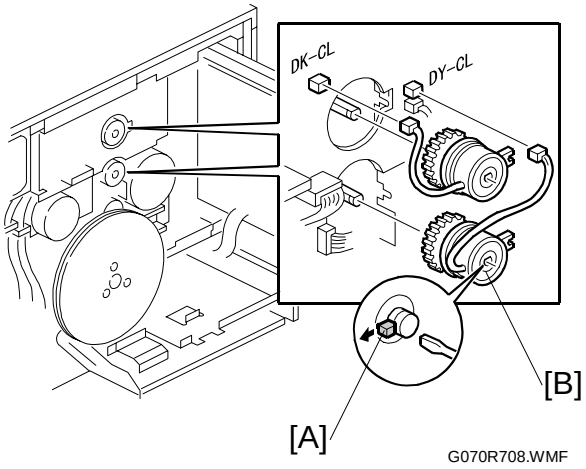
# 3.4 DRIVE UNITS

## 3.4.1 DEVELOPMENT CLUTCHES

1. Controller box (☛ 3.3.2)

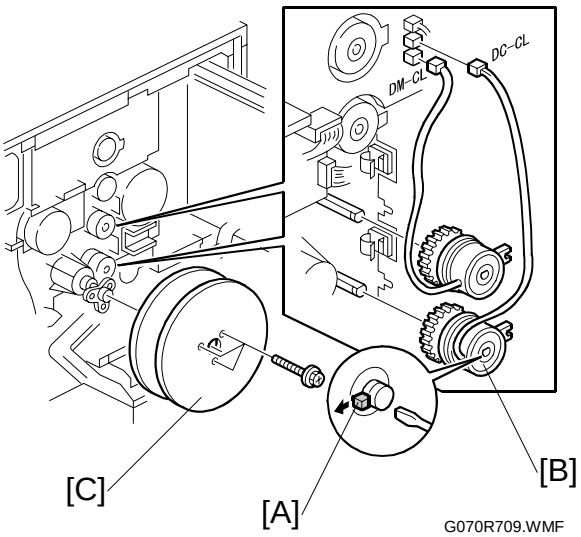
### *K/Y Development Units*

1. Unhook the lock [A] and pull out the clutch [B] (✋ x 1).



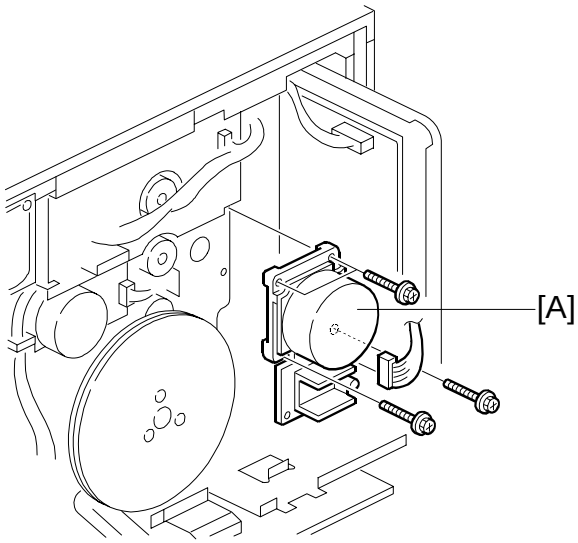

### *C/M Development Units*

1. Flywheel [A] (🔩 x 3)
2. Unhook the lock [B] and pull out the clutch [C] (✋ x 1).



## 3.4.2 DEVELOPMENT MOTOR

1. Controller box (☛ 3.3.2)
2. Development motor [A] (✋ x 1, 🔩 x 3)

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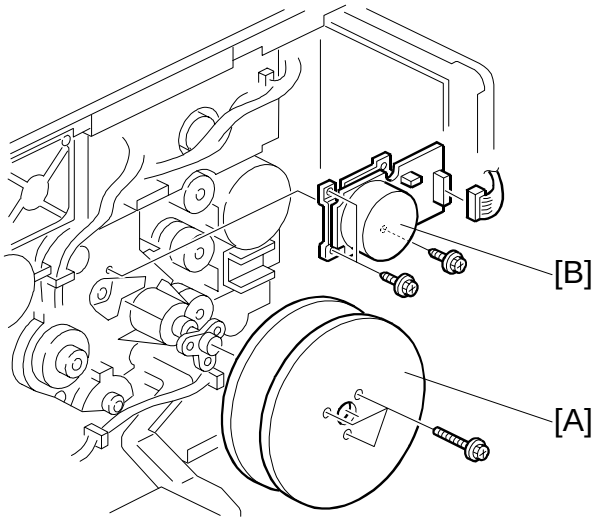
## 3.4.3 MAIN MOTOR

1. Controller box (☛ 3.3.2)
2. Flywheel [A] (🔩 x 3)
3. Main motor [B] (✋ x 1, 🔩 x 3)

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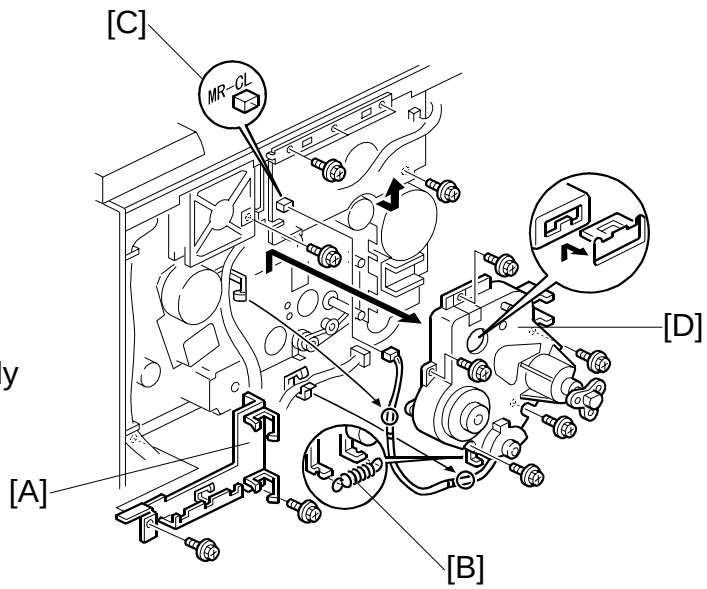
## 3.4.4 PCU GEAR BOX AND OPC BELT CLEANING CLUTCH

1. I/O board (☛3.3.4 )
2. Main motor (☛ 3.4.3)
3. C/M development unit clutch (☛ 3.4.1)
4. Bracket [A] (☞ x 2)
5. Tension spring [B]
6. ☞ x 1 [C]
7. Gear box and clutch assembly [D] (☞ x 5)

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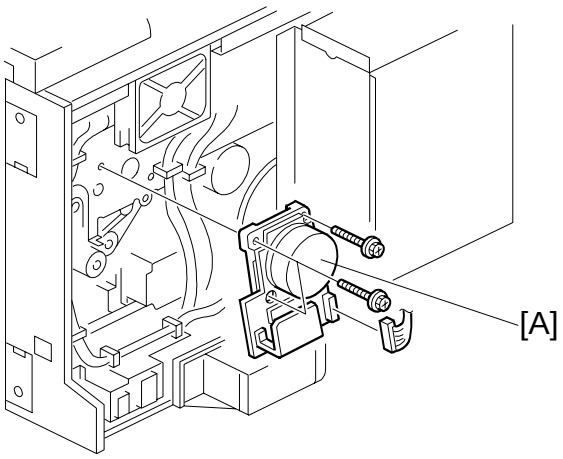
## 3.4.5 FUSING UNIT MOTOR

1. Rear cover (☛ 3.2.1)
2. Fusing unit motor (☞ x 1, ☞ x 3) [A]

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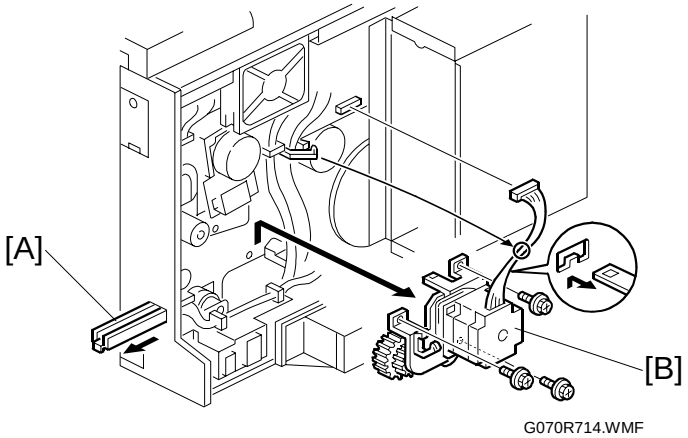
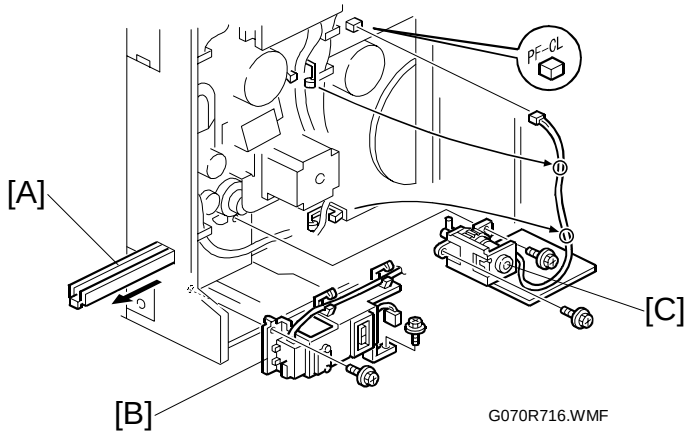
## 3.4.6 PAPER FEED MOTOR

1. Rear cover (☛ 3.2.1)
2. Pull out the handle [A].
3. Paper feed motor [B] (✋ x 1, 🔩 x 3)



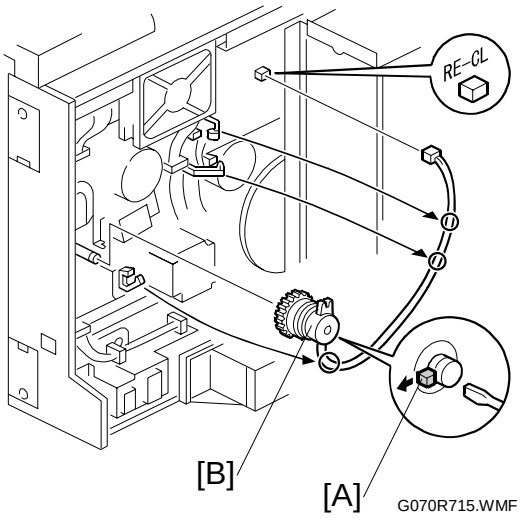

## 3.4.7 PAPER FEED CLUTCH

1. Rear cover (☛ 3.2.1)
2. Pull out the handle [A].
3. Connector bracket [B] (✋ x 6, 🔩 x 2)
4. Paper feed clutch [C] (✋ x 1, 🔩 x 2)




## 3.4.8 REGISTRATION CLUTCH

1. Rear cover (☛ 3.2.1)
2. Unhook the lock [A] and pull the clutch out [B] (✋ x 1).



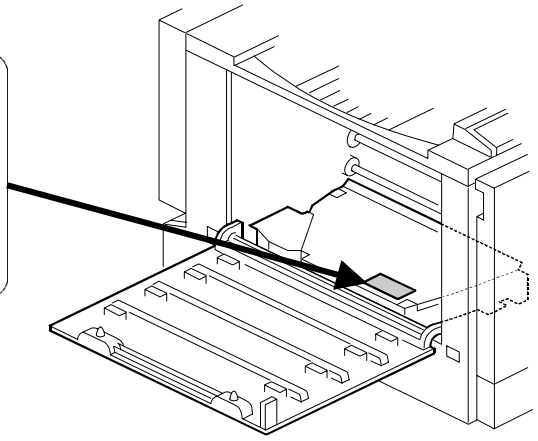
# 3.5 LASER OPTICS SECTION

**⚠WARNING**
**Turn off the main switch and unplug the machine before beginning any of the procedures in this section. Laser beams can cause serious eye injury.**

## 3.5.1 CAUTION DECAL LOCATION




LD_CAUTION.TIF

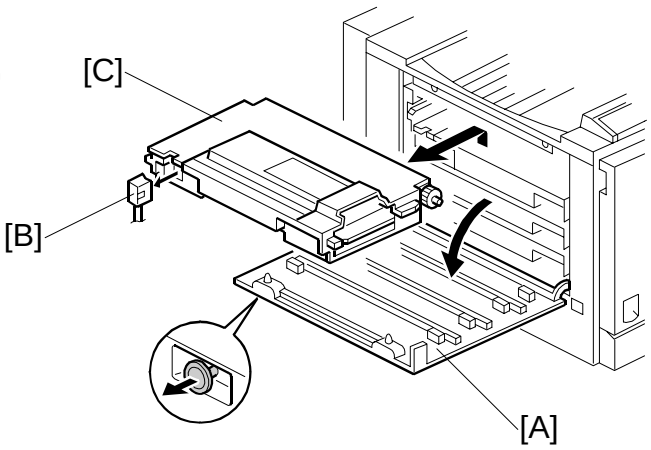


G070R208.WMF

**⚠DANGER**
**Turn off the main switch and disconnect the power plug from the power outlet before beginning any disassembly or adjustment of the laser unit. This printer uses a class-1 laser beam with a wavelength of 650 nm and an output of 7 mW. The laser can cause serious eye injury.**

## 3.5.2 LASER OPTICS HOUSING UNIT

1. Open the left cover [A].
2. ID chip connectors [B] (☞ x 4)
3. Development units [C] x 4

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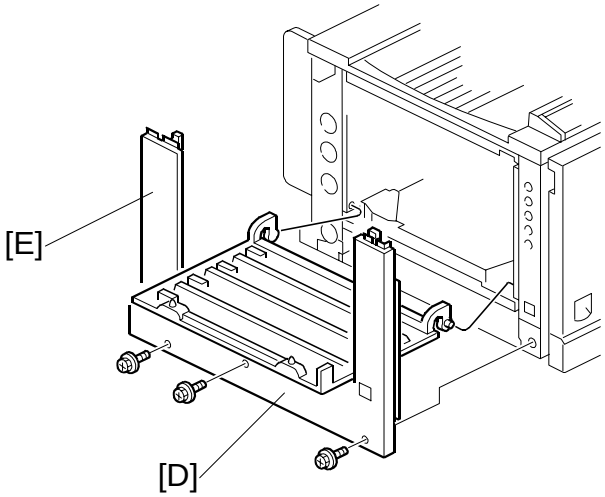
4. Rear cover (☛ 3.2.1)
5. Left cover [D]
6. Lower left cover [E] (☞ x 3)

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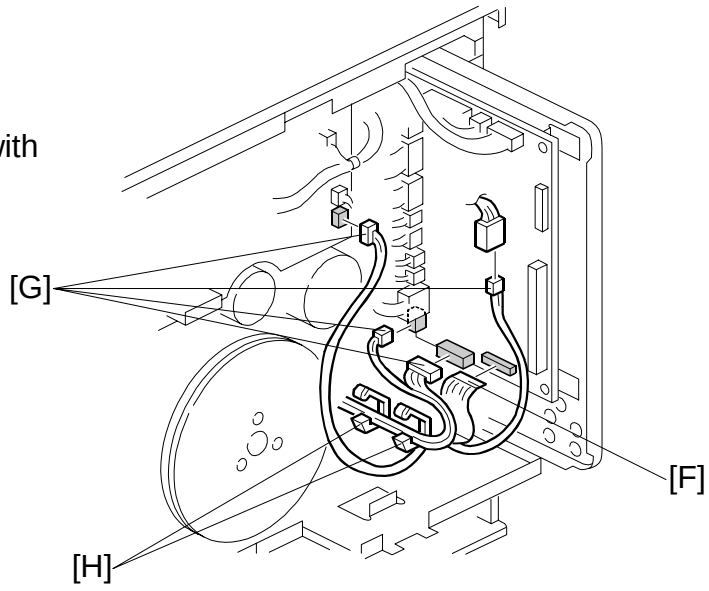
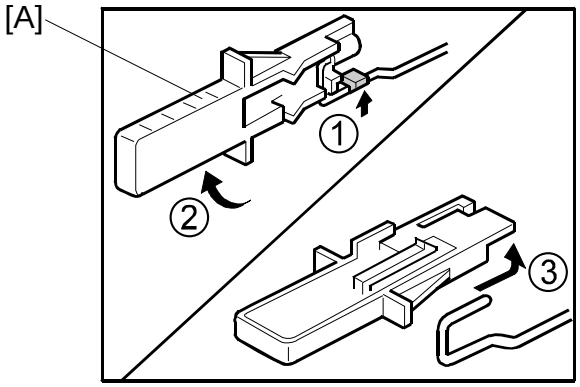
7. Controller box (☛ 3.3.2)
8. Flat cable [F]
   **NOTE:** When reassembling, connect the flat cable with the blue side up.
9. ☞ x 4 [G]
10. Harness clamps [H]



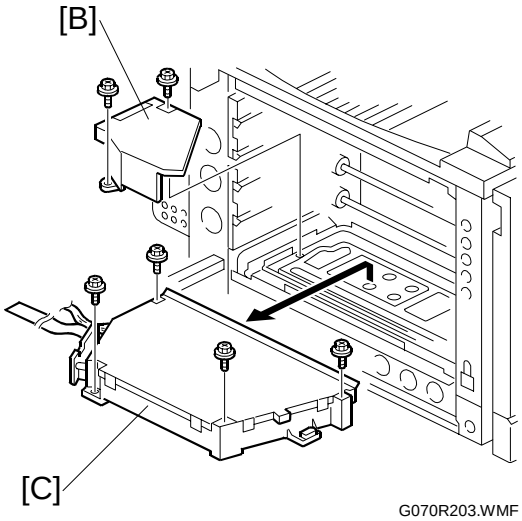

G070R202.WMF

11. Open the front cover.
12. Remove the dust shield glass cleaner lever [A] from the dust shield glass cleaner.
    **NOTE:** The dust shield glass cleaner lever is the blue lever at the right side of the main switch.



G070R209.WMF

13. LD cover [B] (🔩 x 2)
14. Laser optics housing unit [C] (🔩 x 4)

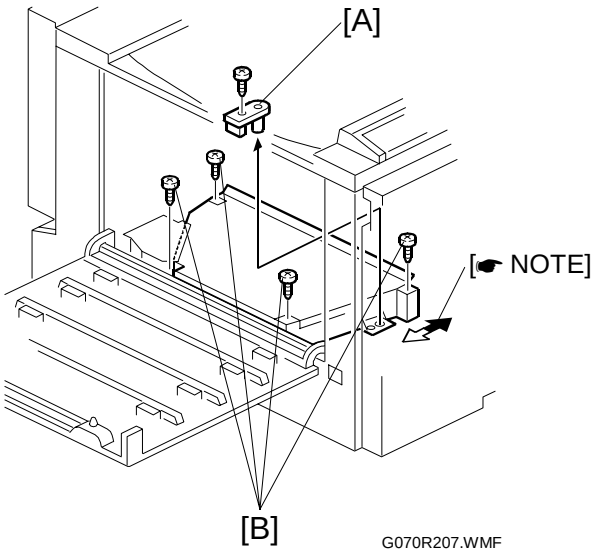


G070R203.WMF

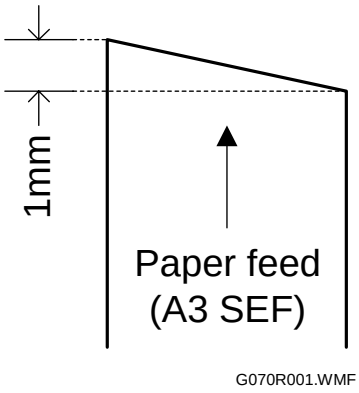
### *Adjusting for Image Skew*

1. Positioning pin [A] (🔩 x 1)
2. Loosen 🔩 (x 4) [B].
3. Adjust the position of the laser optics housing unit [☛ NOTE].
4. Fasten 🔩 (x 4) [B].

   **NOTE:** After changing the position of the laser optics housing unit, do not reinstall the positioning pin. Keep the pin in a safe place.




**NOTE:** When the image skews as shown, move the unit 1 mm in the direction of the black arrow as shown in the **upper** diagram.



### *Laser Beam Pitch Adjustment*

1. Select test pattern 15 with SP5-955-1 (Test Pattern – Pattern).
2. Check if vertical black stripes can be seen.
   a) If stripes cannot be seen (Figure 2), laser beam pitch adjustment is not required.
   b) If stripes can be seen (Figure 1), laser beam pitch adjustment is required. Go on to the next step.

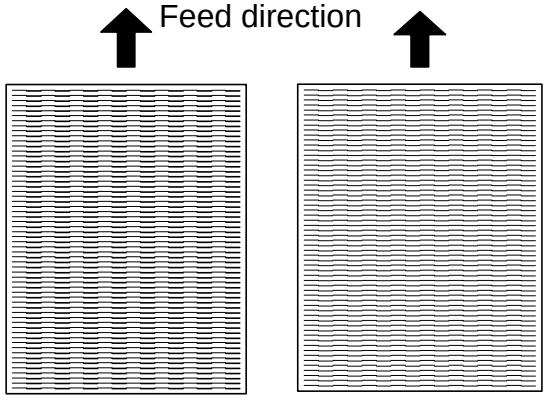
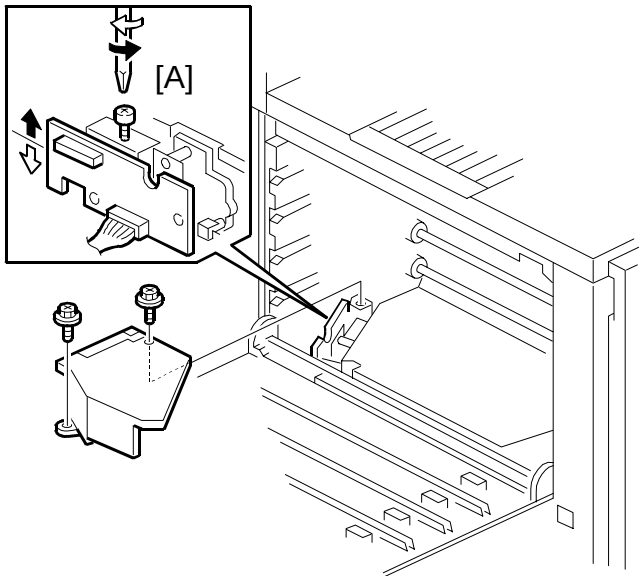



Figure 1 Figure 2

G070R952.WMF



3. To adjust the laser beam pitch, tighten or loosen the screw [A] on the LD unit holder.
4. Set SP 2-917 (Test Pattern) to 'On'. Then send a one-page job to the printer, or print an SMC list (SP 5-990-6, SP Print mode – Non default).
5. Repeat steps 2 through 4 until the black stripes disappear (Figure 2).



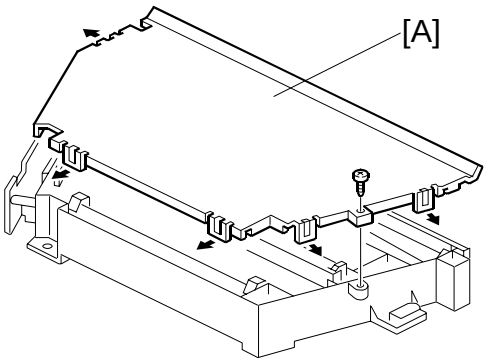

G070R820.WMF

## 3.5.3 POLYGONAL MIRROR MOTOR AND LSD

**⚠WARNING**

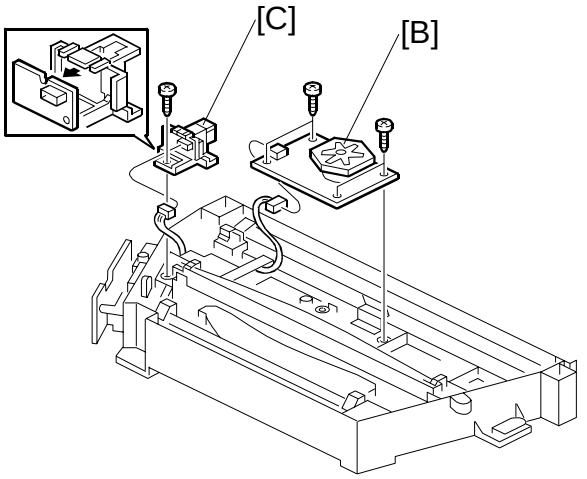
**Do not touch any edges of the polygon mirror, spring, or bracket. These edges can cause serious injury.**

1. Development units, LD cover (☛ 3.5.2)
2. Cover [A] (🔩 x 1)
   **NOTE:** Before removing the cover, clean the cover to prevent toner from entering into the unit.




G070R204.WMF

3. Polygonal mirror motor [B]
   (🔌 x 1, 🔩 x 4)
   **NOTE:** Do not touch the surface. of the polygonal motor.
4. Synch. detection board (LSD) [C]
   (🔌 x 1, 🔩 x 1)



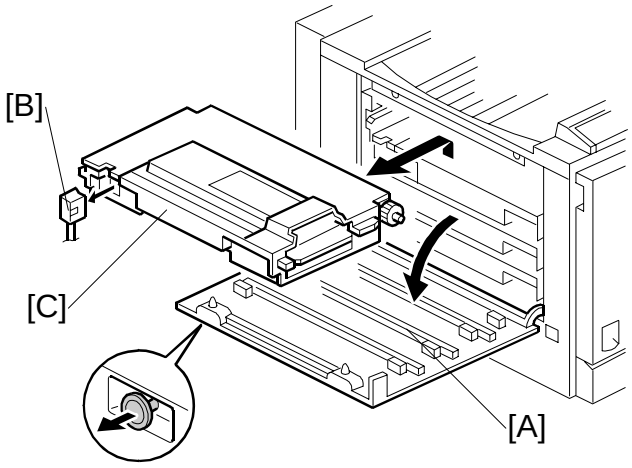

G070R205.WMF

# 3.6 DEVELOPMENT UNIT

**⚠CAUTION**
**Do not touch the development unit sleeves or ID chip terminals.**

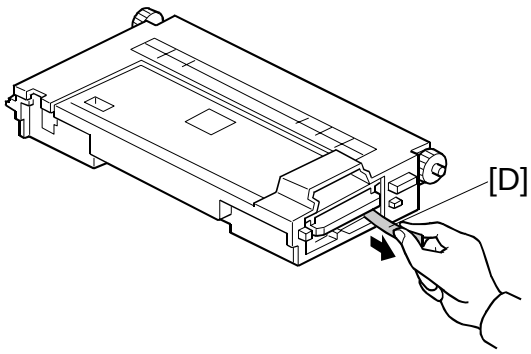
1. Open the left cover [A].
2. ID chip connector [B]
3. Lift up the development unit [C] slightly, and pull it out of the machine.

**NOTE:** Remove the units in the order K, Y, C, M. For example, before removing the M unit, remove the K, Y, and C units first.



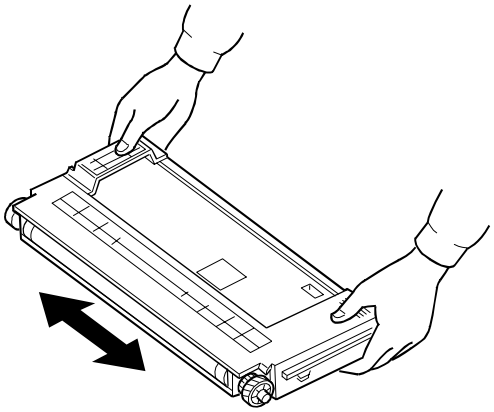

G070R301.WMF

4. Peel off the toner cartridge seal [D].
5. Reinstall the toner cartridge in the development unit.



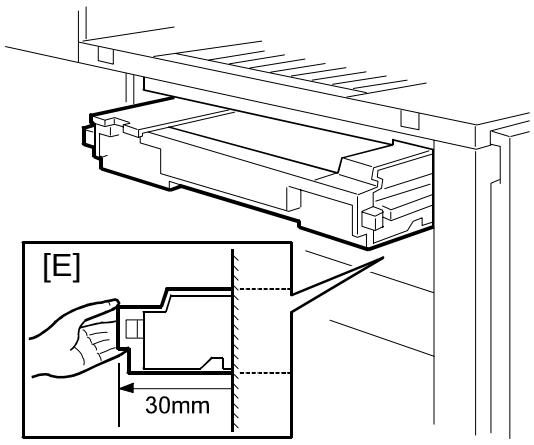

G070R901.WMF

6. Keep the development unit level and shake the development unit about 10 times from side to side.
   **NOTE:** 1) Do not touch the development roller or the development roller gear.
   2) Use caution not to drop the cartridge or to damage it.
   3) If the cartridge has not been shaken well, the machine takes a longer time to initialize the development unit, or an error message or SC350 is displayed. When either of them is displayed, turn the main switch off and on.



G070R902.WMF

7. Install the development unit in the machine.




G070R457.WMF

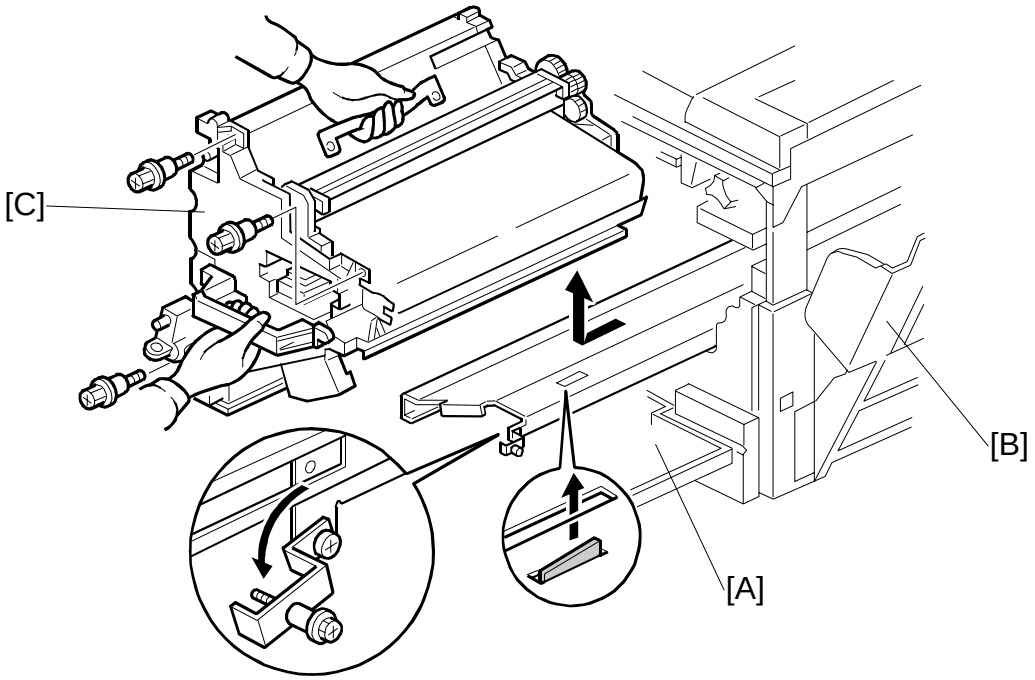
8. After installing the development unit, print out the "development unit check" sheet to confirm the correct installation of the development unit (Menu — Maintenance — Devp.UnitCheck).
   **NOTE:** A white line or band may appear on one end of the paper if a development is incorrectly installed. To correct this, pull out the development unit partially (about 30 mm) [E] and slowly reinstall it.

# 3.7 PHOTOCONDUCTOR UNIT (PCU)

## 3.7.1 MAIN UNIT

**NOTE:** 1) Before replacing any of the parts or consumables in this section, cover the floor with cloth or some sheets of paper.
2) Never tilt the unit. The toner may come out of the unit.
3) When handling the unit, grasp the brown (front) and green (top) grips. Never touch the OPC (left) or transfer (right) belts.
4) After removing the photoconductor unit, cover it with a light-proof sheet. Keep it in a dark place.



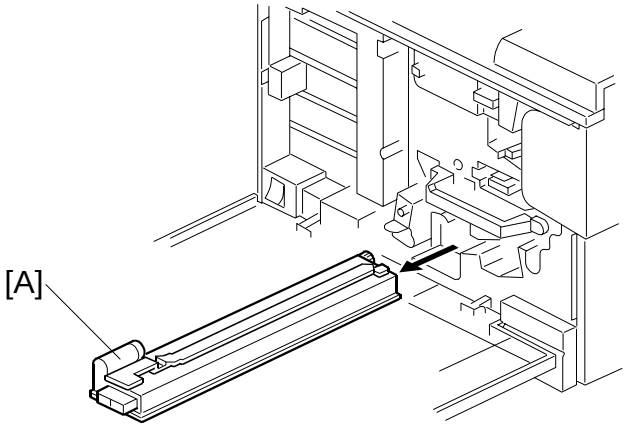



G070R308.WMF

1. Open the front cover [A].
2. Open the right cover [B].
3. x 4
4. Pull the OPC unit [C] out of the machine.
5. Grasp the brown and green grips.
6. Lift the unit and remove it.

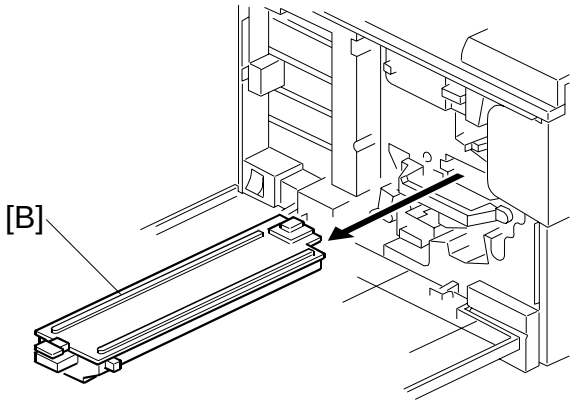
## 3.7.2 WASTE TONER BOTTLES

1. O/B waste toner bottle [A]




G070R302.WMF

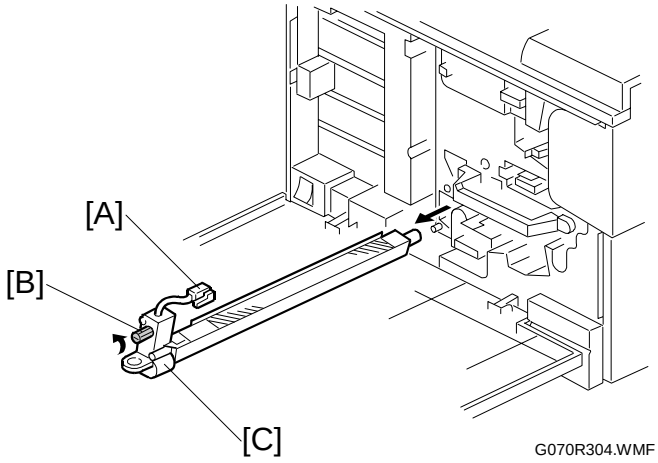
2. T/B waste toner bottle [B]




G070R303.WMF

## 3.7.3 CHARGE CORONA WIRE

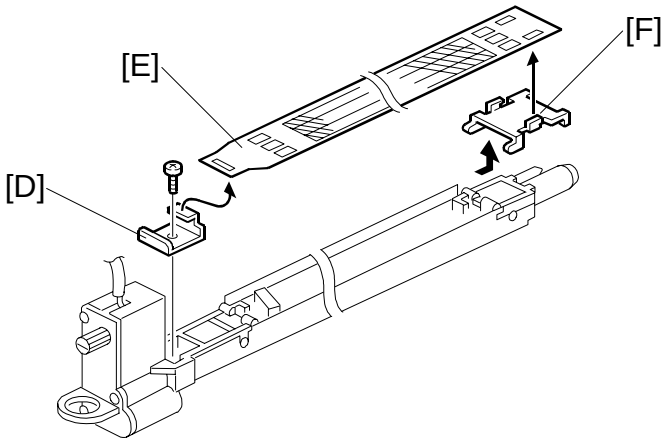
1. Modular cable [A]
2. Loosen (x 1) [B]
3. Charge corona unit [C]



G070R304.WMF

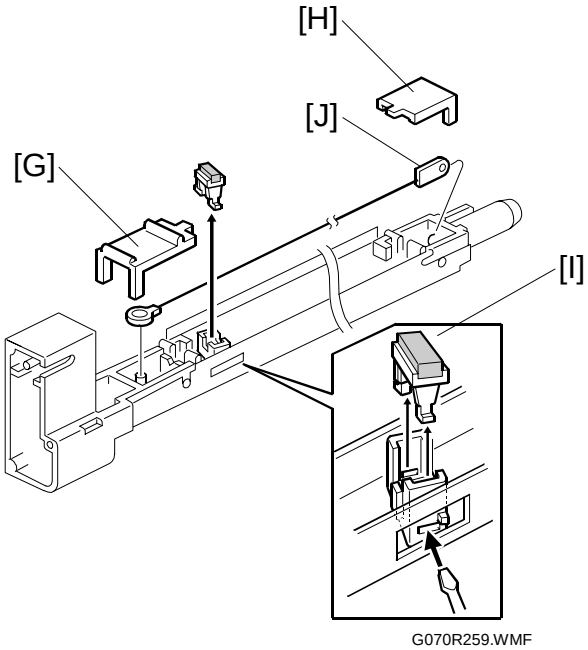


4. Front bracket ( x 1) [D]
5. Grid [E]
6. Rear bracket [F]



G070R305.WMF

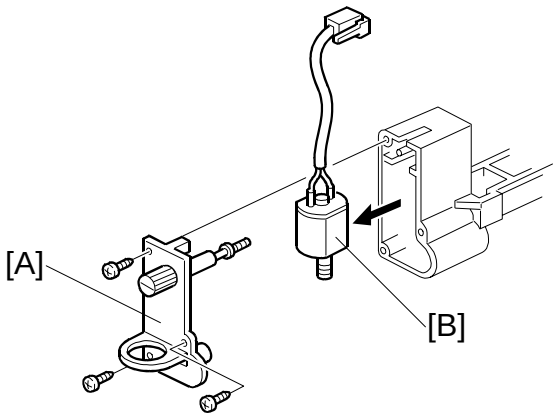
7. Front wire cover [G]
8. Rear wire cover [H]
9. Wire cleaner [I]
10. Unhook the corona wire [J].



G070R259.WMF

## 3.7.4 CHARGE CORONA WIRE CLEANER MOTOR

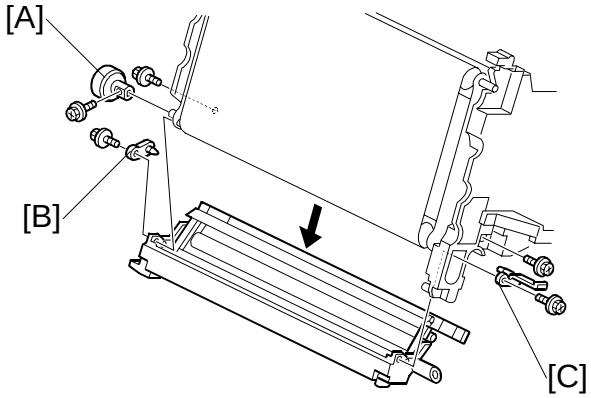
1. Charge corona unit (☛ 3.7.3)
2. Front motor cover [A] (☞ x 3)
3. Motor [B]




G070R306.WMF

## 3.7.5 OPC BELT CLEANING UNIT

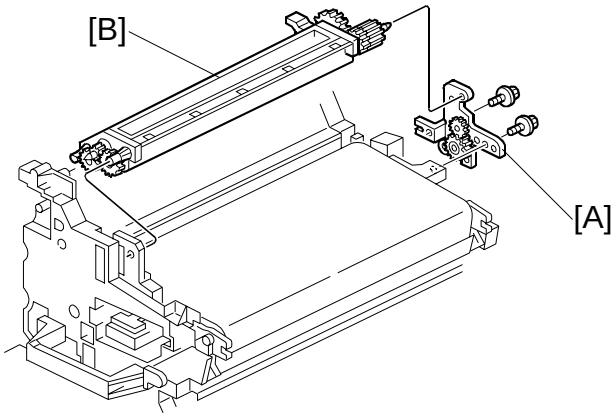
1. Photoconductor unit (☛ 3.7.1)
2. Charge corona unit (☛ 3.7.3)
3. Drive gear [A] (☞ x 1)
4. Rear brace [B] (☞ x 1)
5. Front brace [C] (☞ x 1)
6. OPC belt cleaning unit [D] (☞ x 2)
   **NOTE:** Hold up the photoconductor unit while removing the OPC belt cleaning unit.




G070R315.WMF

## 3.7.6 IMAGE TRANSFER BELT CLEANING UNIT

1. Photoconductor unit (☛ 3.7.1)
2. Bracket [A] (☞ x 2)
3. Image transfer belt cleaning unit [B]

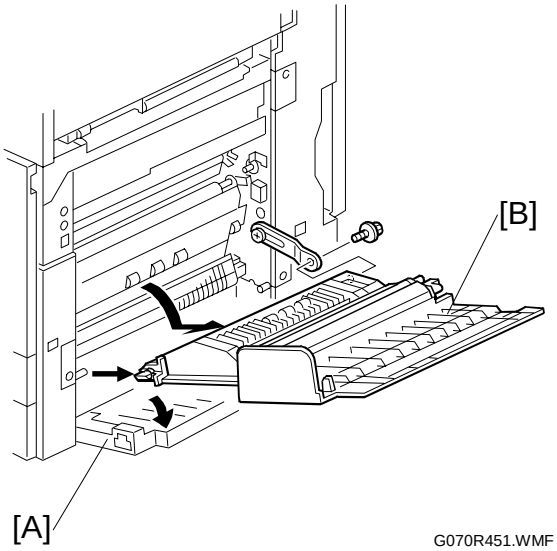



G070R309.WMF

# 3.8 PAPER TRANSFER UNIT

## 3.8.1 VERTICAL TRANSPORT UNIT

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

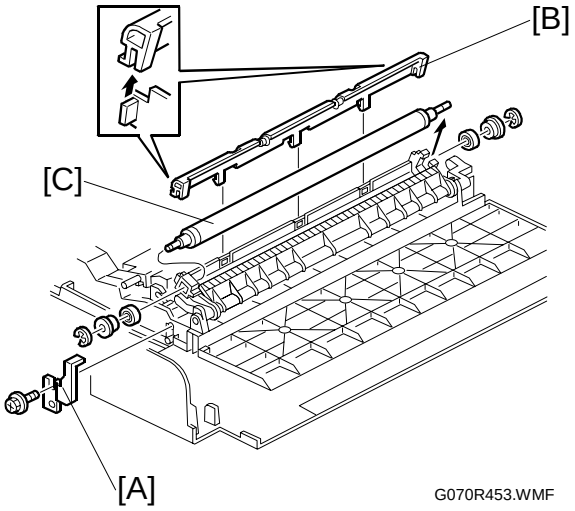


G070R451.WMF



## 3.8.2 TRANSFER ROLLER

1. Brace [A] (x 1)
2. Guide [B]
   **NOTE:** To remove the screws, turn the roller unit on its pivot.
3. Transfer roller [C]
   (x 2, Bushing x 2, Bearing x 2)

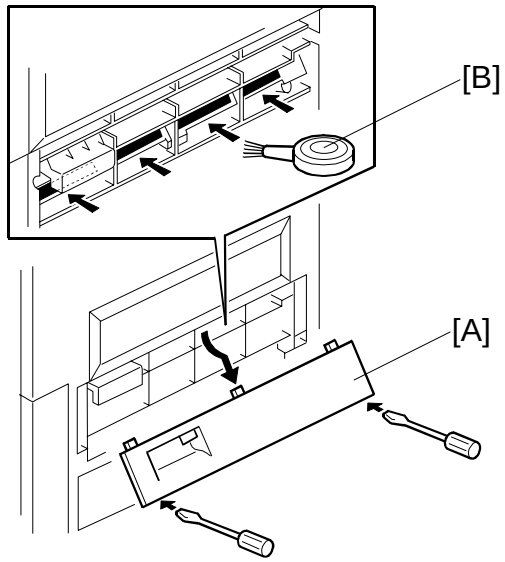


G070R453.WMF

## *Cleaning the Paper Dust Mylar*

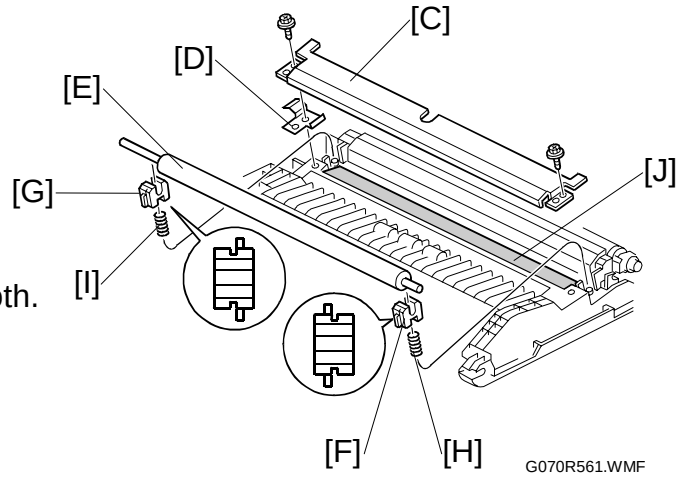
### –Quick Method–

1. Cover [A]
2. Sweep away paper dust with a blower brush [B].




### –When the paper dust has to be removed completely–

1. Bracket [C] (🔩 x 2)
2. Plate spring [D]
3. Metal roller [E]
4. Bearing [F][G]
5. Spring [H][I]
6. Clean the mylar [J] with a dry cloth.



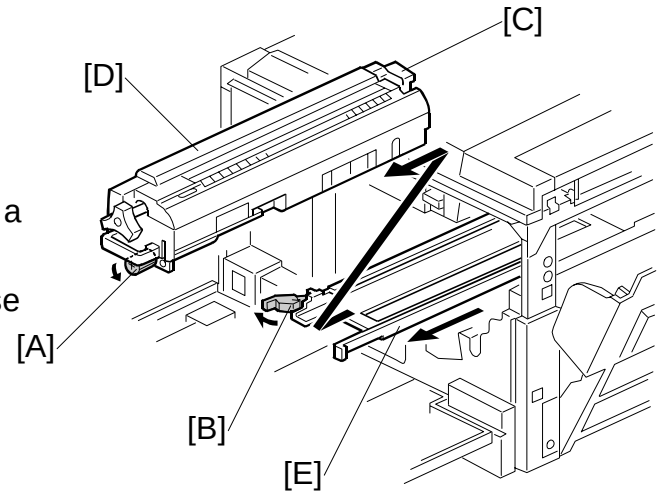
# 3.9 FUSING/PAPER EXIT

**⚠CAUTION**

**Turn off the main switch and wait until the fusing unit cools down before beginning any of the procedures in this section. The fusing unit can cause serious burns.**

## 3.9.1 FUSING UNIT

1. Loosen the knob screw [A].
2. Pull the unit out of the machine.
3. Unhook the bottom stopper [B].
4. Grasp the rear end (marked with a green label) [C].
5. Release the unit [D] from the base plate [E].



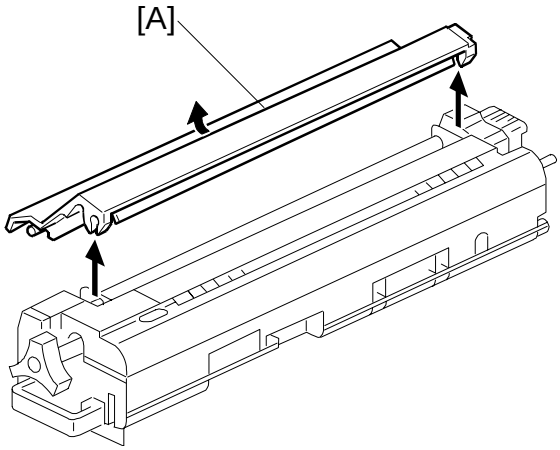

G070R501.WMF



## 3.9.2 OIL SUPPLY UNIT

**NOTE:** When removing either of the lamps (☛ 3.9.3), remove the knob screw (☛ 3.9.1) before removing the oil supply unit.

1. Fusing unit (☛ 3.9.1)
2. Put the fusing unit on a level place.
3. Oil supply unit [A]

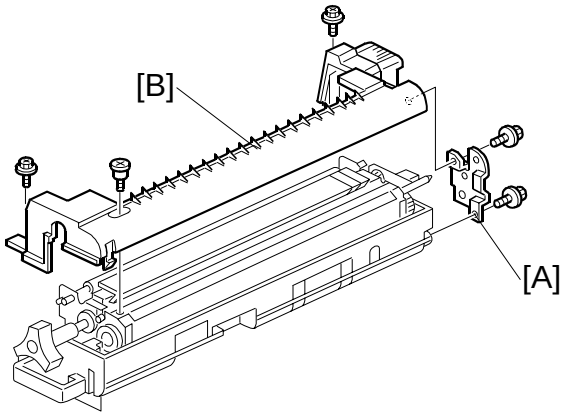



G070R502.WMF

**NOTE:** 1) Do not touch the oiling felt.
2) When reassembling, push the top of the oil supply unit so that the front and rear hinges are correctly set.

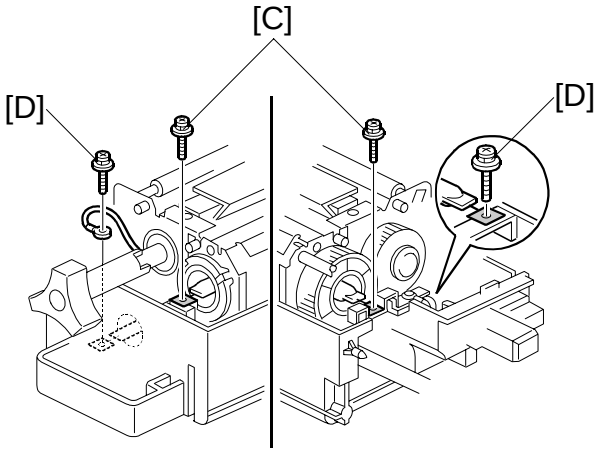
## 3.9.3 LAMPS

1. Oil supply unit (☛ 0)
2. Gear bracket [A] (🔩 x 2)
3. Upper cover [B] (🔩 x 2, shoulder screw x 1)




G070R503.WMF

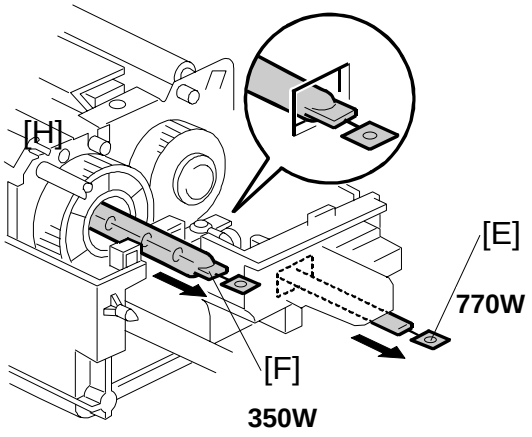
4. Terminals [C], [D] (🔩 x 5)
   **NOTE:** [C]: Pressure roller lamp terminals
   [D]: Heating roller lamp terminals




G070R504.WMF

5. Pull out the lamp (350 W) [E].
6. Pull out the lamp (770 W) [F].

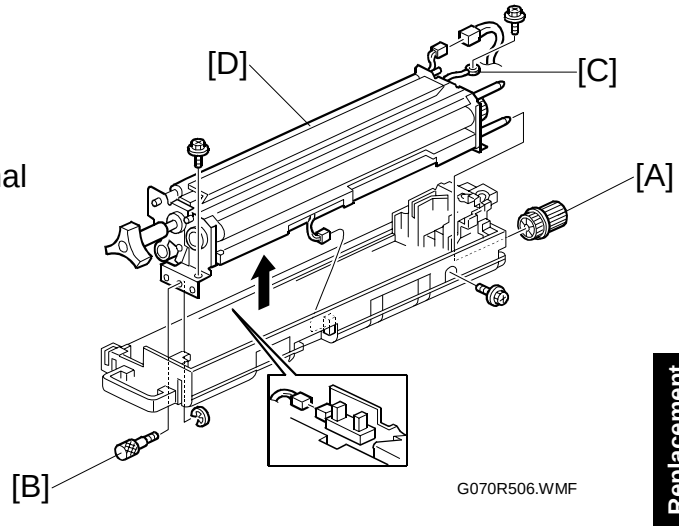
**NOTE:** "350 W" and "770 W" are etched on the respective terminals.




G070R510.WMF

## 3.9.4 FUSING INNER UNIT

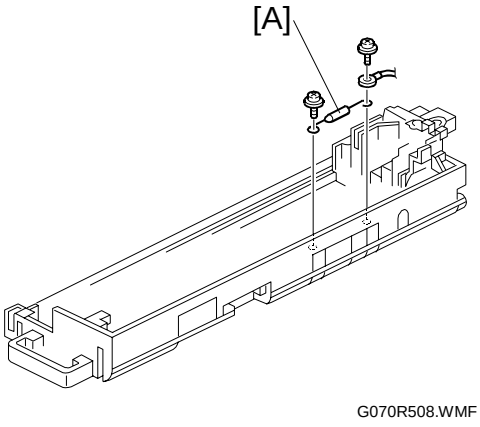
1. Lamps (☛ 3.9.3)
2. Drive gear [A]
3. Knob screw [B] (ℂ x 1)
4. Heating roller lamp harness terminal [C] (☞ x 1)
5. Fusing inner unit [D] (☞ x 2, ☞ x 3)





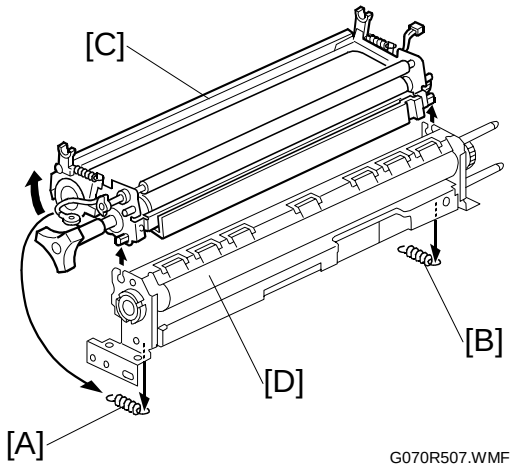

## 3.9.5 PRESSURE ROLLER THERMOFUSE

1. Fusing inner unit (☛ 3.9.4)
2. Pressure roller thermofuse [A] (☞ x 2)



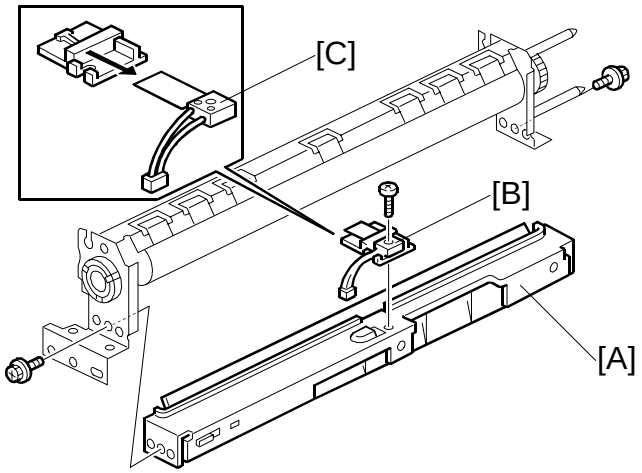

## 3.9.6 FUSING BELT UNIT AND PRESSURE ROLLER UNIT

1. Fusing inner unit (☛ 3.9.4)
2. Springs [A] [B]
3. Separate the fusing belt unit [C] and pressure roller unit [D].



## 3.9.7 PRESSURE ROLLER THERMISTOR

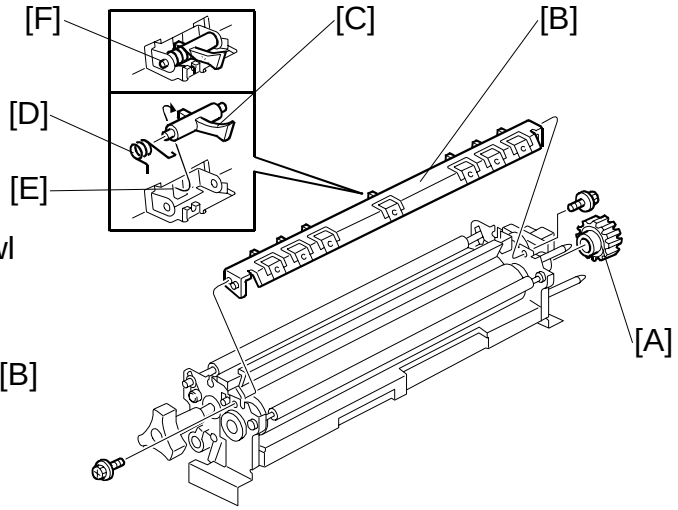
1. Pressure roller unit (☛ 3.9.6)
2. Pressure roller lower stay [A] (☞ x 2)
3. Pressure roller thermistor holder [B] (☞ x 1)
4. Pressure roller thermistor [C]




G070R509.WMF

## 3.9.8 HOT ROLLER STRIPPERS

1. Oil supply unit (☛ 3.9.2)
2. Fusing lamps (☛ 3.9.3)
3. Fusing inner unit (☛ 3.9.4)
4. Gear [A]
   **NOTE:** Remove the gear before removing the stripper pawl assembly; otherwise, the gear may be damaged.
5. Hot roller stripper pawl assembly [B] (Spring x 1, ☞ x 2)
6. Hot roller stripper pawl [C]

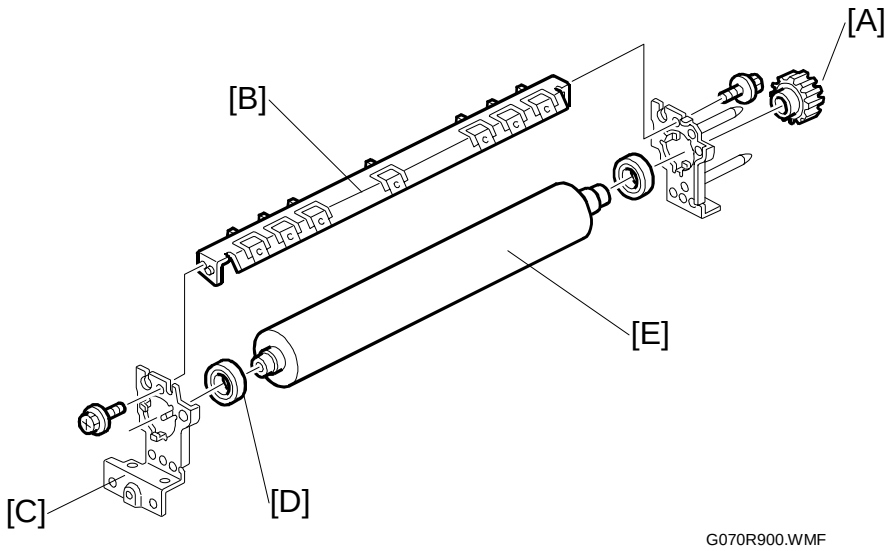



G070R552.WMF

***Reassembling***

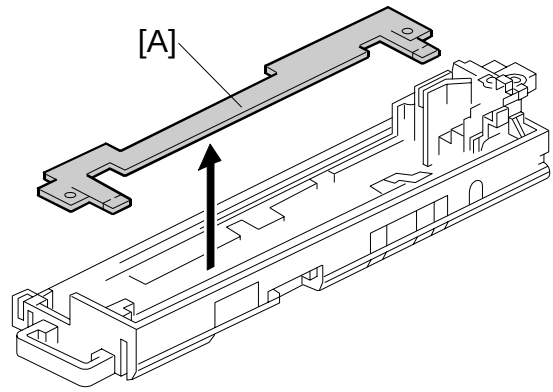
1. Put the spring [D] on the pawl.
2. Put the left end of the pawl in the square opening [E].
3. Put the front and rear ends of the pawl in the holder [F].
4. Confirm that the pawl moves correctly.

## 3.9.9 PRESSURE ROLLER

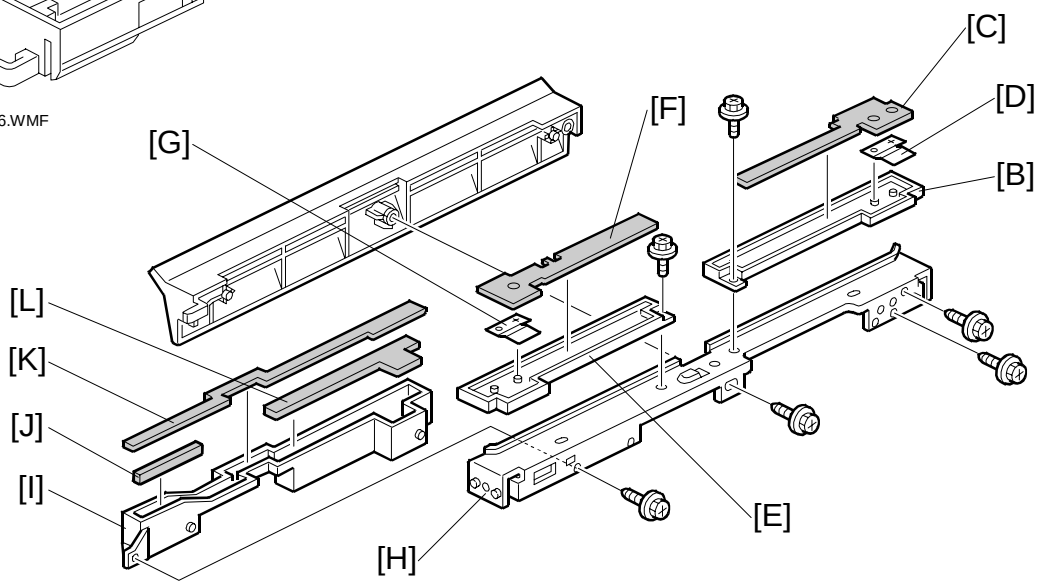



1. Pressure roller unit (☛ 3.9.6)
2. Gear [A]
3. Hot roller stripper assembly [B] (☞ x 2)
4. Front bracket [C] (☞ x 1)
5. Bearing [D]
6. Pressure roller [E]

## 3.9.10 OIL ABSORBERS




G070R516.WMF




G070R825.WMF

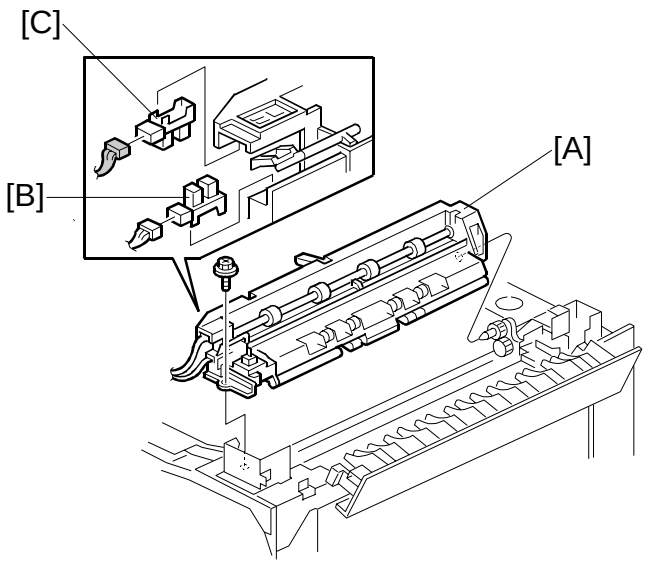
1. Fusing inner unit (☛ 3.9.4)
2. Absorber 1 [A]
3. Pressure roller unit (☛ 3.9.6)
4. Absorber holder [B] (☞ x 1)
5. Absorber 2 [C]
6. Spring [D]
7. Absorber holder [E] (☞ x 1)
8. Absorber 3 [F]
9. Spring [G]
10. Base bracket [H] (☞ x 2)
11. Absorber holder [I] (☞ x 1)
12. Absorber 4 [J]
13. Absorber 5 [K]
14. Absorber 6 [L]

## 3.9.11 PAPER EXIT UNIT AND PAPER EXIT/OVERFLOW SENSOR

**⚠CAUTION**

**Turn off the main switch and wait until the paper exit unit cools down before beginning any of the procedures in this section. The paper exit unit can cause serious burns.**

1. Paper exit cover (☛ 3.2.3)
2. Paper exit unit [A] (✋ x 3, 🪛 x 1)
   **NOTE:** Remove 2 connectors before removing the unit. To remove the last connector, remove the unit and turn it. The connector is on the bottom side.
3. Paper exit sensor [B]
4. Paper overflow sensor [C]

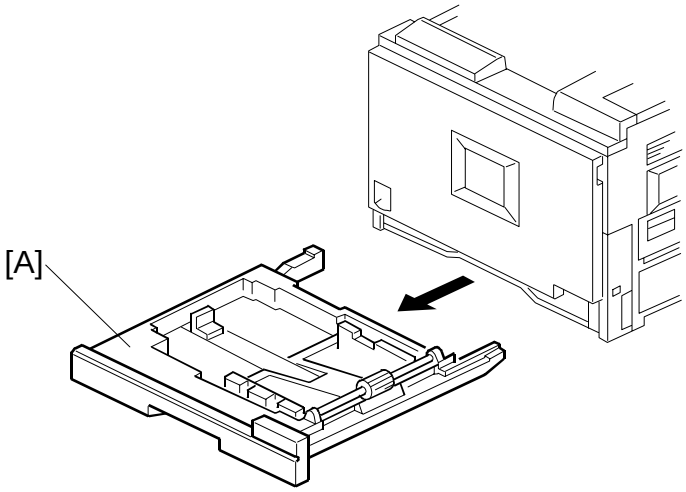



G070R601.WMF

# 3.10 PAPER FEED AND TRANSPORT

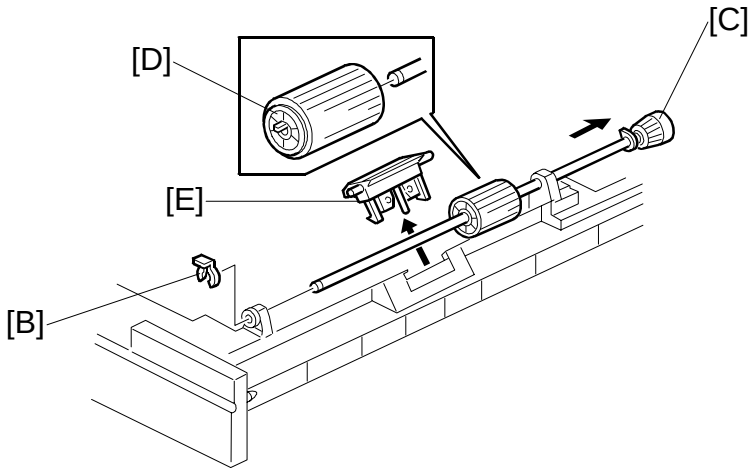
## 3.10.1 FEED ROLLER AND FRICTION PAD

1. Paper tray [A]




G070R101.WMF

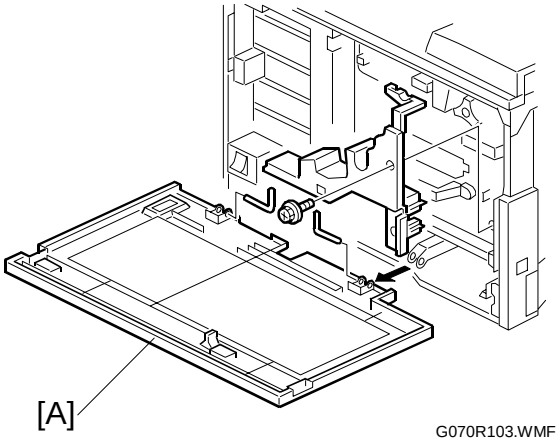
2. ⓒ x 1 [B]
3. Slide the shaft [C].
4. Feed roller [D] (1 hook)
5. Friction pad [E]




G070R102.WMF

## 3.10.2 REGISTRATION SENSOR

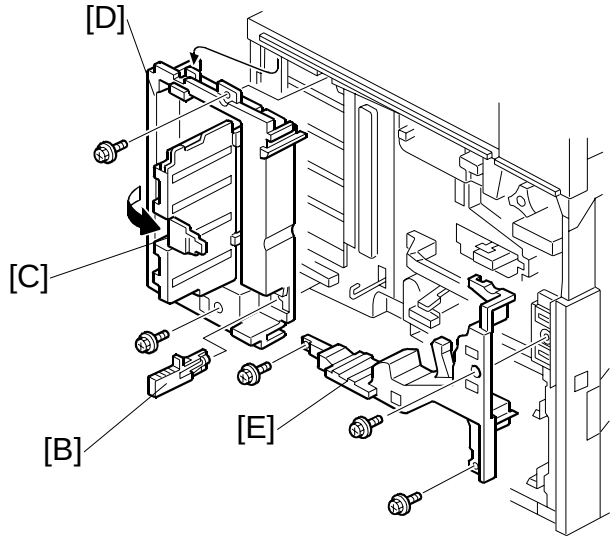
1. Front cover [A] (L-shaped-pin x 2)
2. Rear cover (☛ 3.2.1)
3. Upper cover (☛ 3.2.3)
4. Lower left cover (☛ 3.5.2)




G070R103.WMF

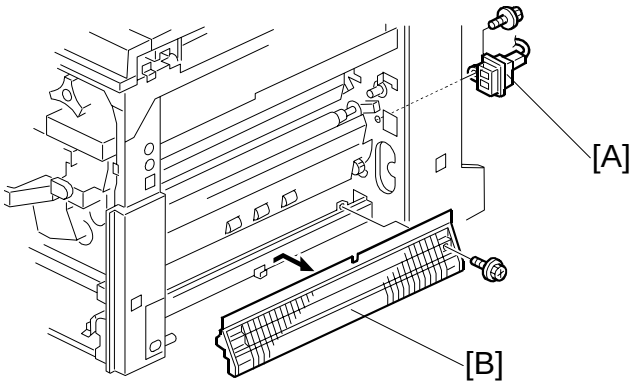


5. Dust shield glass cleaning lever [B] (☛ 3.5.2)
6. Charge corona unit (☛ 3.7.3)
7. Right cover (☛ 3.8.1)
8. Left inner cover door [C]
9. Left inner cover [D] (🔩 x 2)
10. Right inner cover [E] (🔩 x 3)



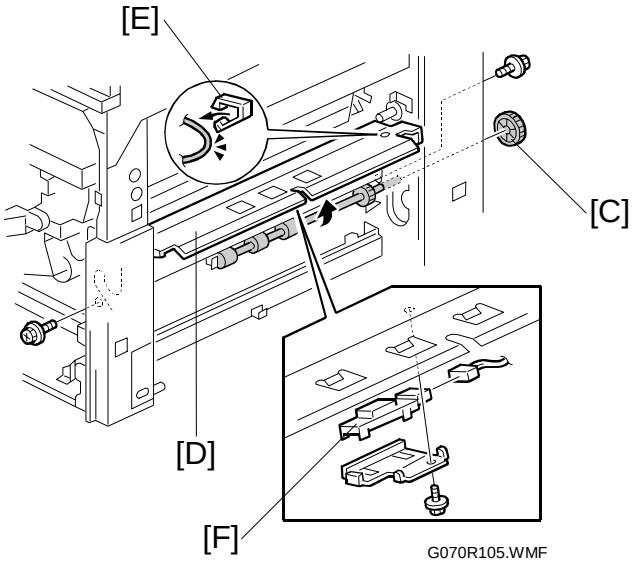

G070R653.WMF

11. Terminal [A] (☞ x 1)
    **NOTE:** You have to remove the terminal to lift the transport stay (☛ step 14).
12. Transport guide [B] (☞ x 1)




G070R104.WMF

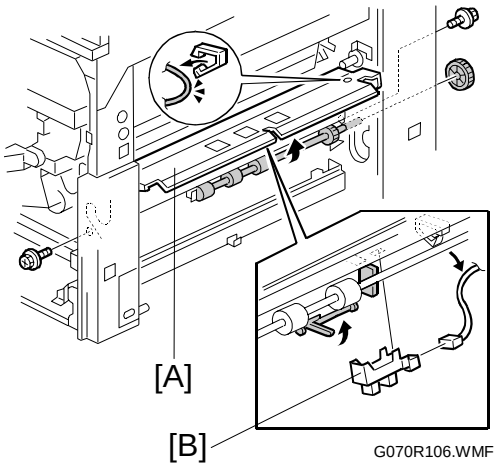
13. Drive gear [C] (1 hook)
14. Lift the transport stay [D] (☞ x 2) and release the wire [E].
    **NOTE:** You can see the wire clip from the rear of the machine.
15. Registration sensor [F] (☞ x 1, ☞ x 1)




G070R105.WMF

## 3.10.3 PAPER FEED SENSOR

1. Lift the transport stay [A] (☛ 3.10.2)
2. Paper feed sensor [B] (✋ x 1)
   **NOTE:** Unhook the rear two pawls first, move the feeler, and unhook the front pawl.

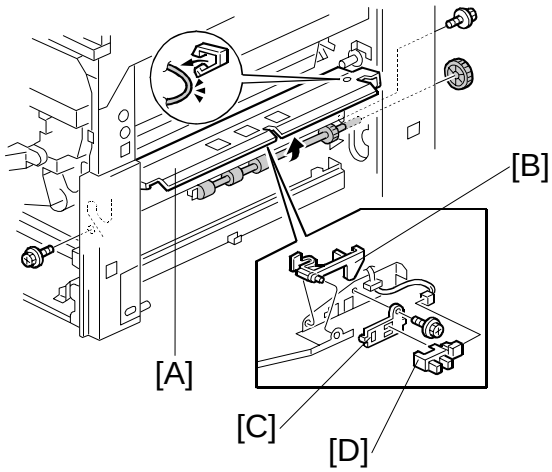


G070R106.WMF



## 3.10.4 PAPER NEAR-END SENSOR

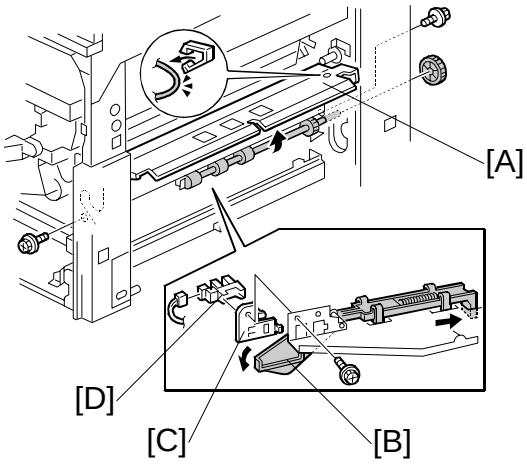
1. Lift the transport stay [A] (☛ 3.10.2)
2. Feeler [B]
3. Sensor bracket [C] (🔩 x 1)
4. Paper near-end sensor [D] (✋ x 1)



G070R107.WMF

## 3.10.5 PAPER END SENSOR

1. Lift the transport stay [A] (☛ 3.10.2)
2. Feeler [B]
3. Sensor bracket [C] (🔩 x 2)
4. Paper end sensor [D] (✋ x 1)

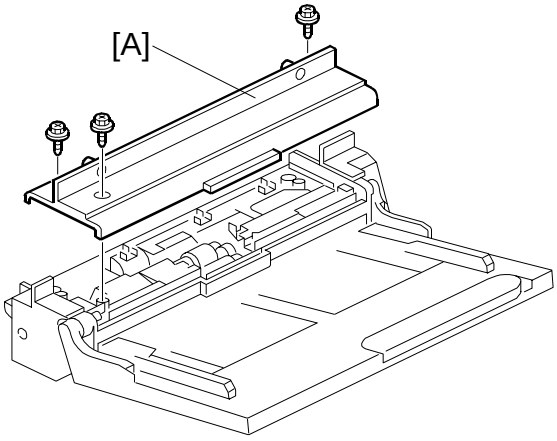


G070R108.WMF

# 3.11 BYPASS TRAY

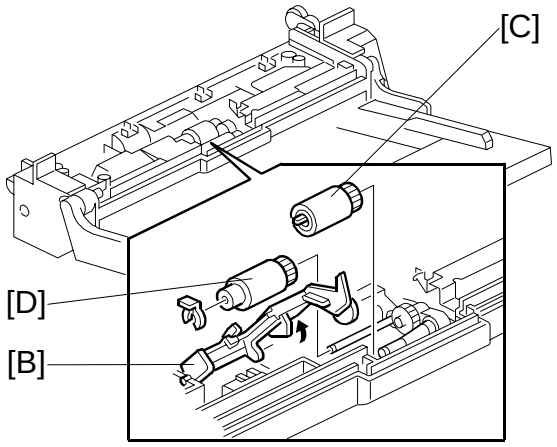
## 3.11.1 PICKUP/FEED ROLLER

1. Bypass tray (☞ x 3)
2. Upper cover [A] (☞ x 3)




G070R151.WMF

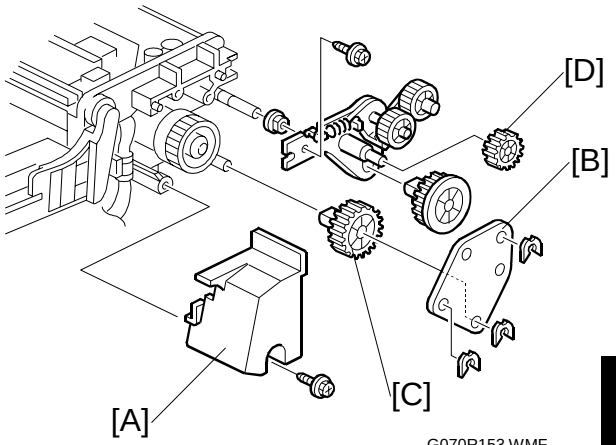
3. Lift the paper end sensor feeler [B].
4. Pick-up roller [C] (1 hook)
5. Paper feed roller [D] (⟲ x 1)




G070R152.WMF

## 3.11.2 PAPER FEED CLUTCH

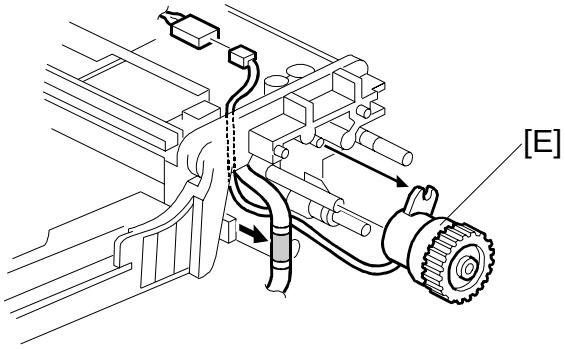
1. Upper cover (☛ 3.11.1)
2. Rear cover [A] (☞ x 1)
3. Gear holder [B] (ℂ x 3)
4. Gears [C][D]




G070R153.WMF



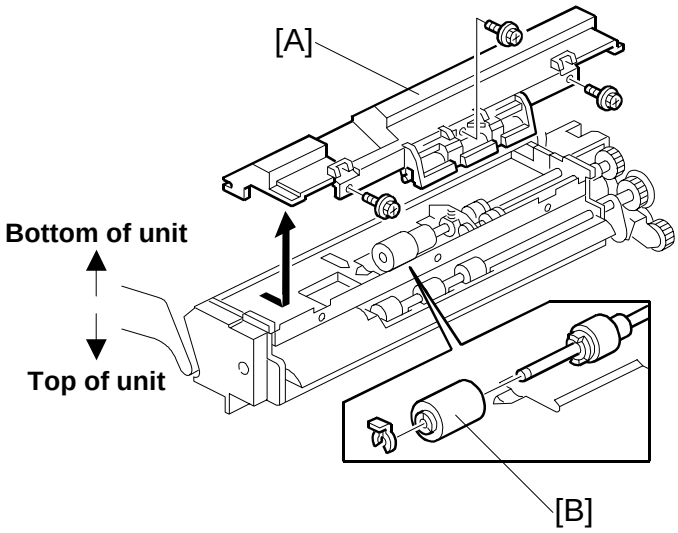
5. Clutch [E] (☜ x 1)




G070R154.WMF

## 3.11.3 REVERSE ROLLER

1. Bypass tray (☛ 3.11.1)
2. Turn the unit upside down.
3. Bottom cover [A] (☞ x 3)
4. Reverse roller [B] (☟ x 1)




G070R155.WMF

# 4. TROUBLESHOOTING

## 4.1 SERVICE CALL

### 4.1.1 SERVICE CALL CONDITIONS

| Level | Definition | Reset Procedure |
|---|---|---|
| A | Fusing unit SCs displayed on the operation panel. The machine is disabled. The user cannot reset the SC. | Turn the main switch off then on before entering SP mode. Reset the SC (set SP5-810 [SC_Reset] to 1), then turn the main switch off then on again. |
| B | SCs that disable only the features that use the defective item. Although these SCs are not shown to the user under normal conditions, they are displayed on the operation panel only when the defective feature is selected. | Turn the main power switch off and on. |
| C | SCs that are not shown on the operation panel. They are internally logged. | Logging only |
| D | Turning the operation switch or main power switch off then on resets the SC. The SC is displayed on the operation panel. It is redisplayed if it occurs after the main power switch is turned on again. | Turn the main power switch off and on. |

**NOTE:** 1) All SCs are logged.
2) When an electrical circuit board has a problem, check the connections before replacing the PCBs.
3) When a motor has a problem, check the mechanical load before replacing the motor or sensor.

## 4.1.2 SC TABLE

| No. | Definition | Symptom | Possible Cause |
|---|---|---|---|
| 201 | D | Polygon motor error<br>• The polygon motor starts operating. → The lock signal is not detected within 20 seconds.<br>• The polygon motor starts operating. → The lock signal is detected within 20 seconds. → After a 3-second waiting time, no lock signal is detected within 20 seconds.<br>• The polygon motor strops operating. → The lock signal is not detected within 20 seconds.<br>• The polygon motor is operating. → The lock signal remains undetected for 0.5 seconds. | • Defective polygon motor<br>• Defective harness |
| 220 | D | 1st beam synchronization error<br>A polygon motor lock is detected; the LD door is closed; the LD remains on. → The LD error (1st beam synchronization error) continues for 0.5 seconds. | • Disconnected synchronization detector board<br>• Defective LD unit<br>• Defective BCU |
| 221 | D | 2nd beam synchronization error<br>A polygon motor lock is detected; the LD door is closed; the LD remains on. → The LD error (2nd beam synchronization error) continues for 0.5 seconds. | • Disconnected synchronization detector board<br>• Defective LD unit<br>• Defective BCU |
| 230 | D | FGATE on error<br>A transfer belt mark is detected. → No FGATE on signal is detected within 175+50 milliseconds. | • Defective BCU |
| 231 | D | FGATE off error<br>A FGATE assert signal is detected. → The FGATE negate signal is not detected within 30 seconds. | • Defective BCU |
| 241 | D | LD error<br>An LD error continues for 0.5 seconds. (After an LD error is detected, an LD error release is written to the GAVD chip during monitoring.) | • Defective LD unit |
| 280 | D | Image transfer belt mark detection error<br>• An imaging process starts. → No belt mark is detected in 1 revolution.<br>• A color imaging process starts. → A mono color image is transferred. → FGATE becomes active. → No belt mark is detected in 1 revolution.<br>• Thick paper or OHP film is used. → The belt slows down. → No belt mark is detected in 1 revolution. | • Defective BCU<br>• Poor electrical connection<br>• Noise |
| 281 | D | GAPCI communication error<br>Data is transferred. → The CPU does not detect the communication ACK signal from GAPCI. | • Defective BCU |
| 282 | D | GAVD communication error<br>Data is transferred. → The CPU does not detect the communication ACK signal from GAVD. | • Defective BCU |

| No. | Definition | Symptom | Possible Cause |
|---|---|---|---|
| 300 | D | Charge corona unit electrical leak<br>The charge corona unit keeps outputting; the unit is operating at the minimum PWM duty value. → 4.5 Volt (or more) is returning for 60 milliseconds. | • Short circuit in the charge corona unit<br>• Defective high voltage supply board<br>• Defective harness (BCU - high voltage supply board) |
| 301 | D | Charge corona unit disconnection<br>The charge corona unit keeps outputting. → The unit is operating at the maximum PWM duty value for 60 milliseconds. | • Defective PCU installation<br>• Defective high voltage supply board<br>• Defective harness (BCU - high voltage supply board) |
| 302 | D | Charge grid electrical leak<br>The charge grid keeps outputting. → The returning voltage exceeds the target by 0.5 Volt or more for 120 milliseconds. | • Short circuit in the charge grid<br>• Defective high voltage supply board<br>• Defective harness (BCU - high voltage supply board) |
| 305 | D | Charge corona unit cleaner error<br>• Cleaning starts. → The lock signal is not detected within 30 seconds.<br>• Cleaning starts. → The cleaner turns. → The lock signal is detected within 6 seconds.<br>• The lock signal is detected while the unit is moving away from the HP. → The next lock signal is detected within 6 seconds after the unit has turned toward the HP. | • Defective cleaner |
| 350 | D | Development error 1 (K/Y)<br>A development process starts. → The returning voltage exceeds the target by 0.5 Volt or more for 60 milliseconds. | • Short circuit in the development unit<br>• Defective high voltage supply board<br>• Defective harness (BCU - high voltage supply board) |
| 351 | D | Development error 2 (C/M)<br>A development process starts. → The returning voltage exceeds the target by 0.5 Volt or more for 60 milliseconds. | • Short circuit in the development unit<br>• Defective high voltage supply board<br>• Defective harness (BCU - high voltage supply board) |
| 352 | D | Development motor error<br>• The development motor starts or changes speed. → The motor does not detect a 1-second lock signal within 3 seconds.<br>• The development motor starts. → The lock signal is detected during normal operation. → The lock signal is interrupted for 1 second or more. | • Defective development motor |

| No. | Definition | Symptom | Possible Cause |
|---|---|---|---|
| 400 | D | 1st transfer (image transfer) electric leakage (+) | |
| | | Image transfer starts. → The process operates at the minimum PWM duty value. The returned current exceeds 1.8 V for 180 milliseconds. | • Short circuit in the image transfer unit<br>• Defective image transfer belt<br>• Defective high voltage supply board<br>• Defective harness (BCU - high voltage supply board) |
| 401 | D | 1st transfer (image transfer) electric leakage (–) | • Short circuit in the image transfer belt<br>• Defective high voltage supply board<br>• Defective harness (BCU - high voltage supply board) |
| | | Image transfer starts. → The negative (–) output is at the maximum PWM duty value for 60 milliseconds. | |
| 410 | D | 2nd transfer (paper transfer) electric leakage (+) | • Short circuit in the paper transfer unit<br>• Defective high voltage supply board<br>• Defective harness (BCU - high voltage supply board) |
| | | Paper transfer starts. → The positive (+) output is at the minimum PWM duty value. → The returning voltage stays at 2.7 V or more for 60 milliseconds. | |
| 411 | D | 2nd transfer (paper transfer) electric leakage (–) | • Short circuit in the paper transfer unit<br>• Defective high voltage supply board<br>• Defective harness (BCU - high voltage supply board) |
| | | Paper transfer starts. → The negative (–) output is at the minimum PWM duty value. → The returning voltage stays at 4.5 V or more for 60 milliseconds. | |
| 412 | D | 2nd transfer (paper transfer) disconnection (+) | • Right cover not closed<br>• Defective transfer roller contact mechanism<br>• Defective high voltage supply board<br>• Defective harness (BCU - high voltage supply board) |
| | | Paper transfer starts. → The positive (+) output is at the maximum PWM duty value for 60 milliseconds. | |
| 413 | D | 2nd transfer (paper transfer) disconnection (–) | • Right cover not closed<br>• Defective transfer roller contact mechanism<br>• Defective high voltage supply board<br>• Defective harness (BCU - high voltage supply board) |
| | | Paper transfer starts. → The negative (–) output is at the maximum PWM duty value for 60 milliseconds. | |

| No. | Definition | Symptom | Possible Cause |
|---|---|---|---|
| 420 | D | Discharge error (fusing bias)<br>The discharge circuit is operating at the maximum PWM duty value for 60 milliseconds. | • Discharge pin short circuit<br>• Defective high voltage supply board<br>• Defective harness (BCU - high voltage supply board)<br>• Scratched fusing belt |
| 421 | D | Discharge plate error<br>During discharging, the leakage detection signal is low for 60 milliseconds. | • Short circuit in the discharge plate<br>• Defective high voltage supply board<br>• Defective harness (BCU - high voltage supply board) |
| 430 | D | Transfer belt cleaning error<br>Cleaning is operating at the maximum PWM duty value for 60 milliseconds. | • Short circuit in the transfer belt cleaning unit<br>• Defective high voltage supply board<br>• Defective harness (BCU - high voltage supply board) |
| 440 | D | Main motor error<br>• The main motor starts or changes speed. → The lock signal does not continue for 1 second within 3 seconds.<br>• The main motor starts. → The lock signal is detected and operation proceeds normally. → The lock signal is interrupted for 1 second. | • Defective main motor |
| 460 | D | Temperature sensor error<br>The output is 4.5 V (or higher) or 0.3 V (or lower) for 12 seconds. | • Short circuit in the temperature sensor<br>• Defective circuit<br>• Defective connector |
| 461 | D | Humidity sensor error<br>The output is 4.5 V (or higher) or 0.3 V (or lower) for 12 seconds. | • Short circuit in the humidity sensor<br>• Defective circuit<br>• Defective connector |
| 480 | D | ID sensor error<br>The ID sensor is being calibrated (process control, step 1) → While the LED is off, the output voltage is 0.5 V or lower. | • Defective ID sensor<br>• Defective connector |
| 481 | D | Transfer belt mark detection error<br>The main motor is operating; and the lock signal is detected. → The belt mark sensor signal does not change for 120 milliseconds. | • Defective main motor<br>• Image transfer belt out of position<br>• Belt mark blurred or absent |
| 502 | B | 2nd tray error<br>• The tray lift motor turns on. → The top of the paper stack is not detected for 13 seconds.<br>• The tray is set. → The top of the paper stack is detected. → The bottom plate is lowered. → The stack detection is not cleared within 5 seconds. → These steps are repeated 4 times. | • Defective paper height sensor<br>• Defective tray lift motor |

| No. | Definition | Symptom | Possible Cause |
|---|---|---|---|
| 503 | B | 3rd tray error<br>• The tray lift motor turns on. → The top of the paper stack is not detected for 13 seconds.<br>• The tray is set. → The top of the paper stack is detected. → The bottom plate is lowered. → The stack detection is not cleared within 5 seconds. → These steps are repeated 4 times. | • Defective paper height sensor<br>• Defective tray lift motor |
| 515 | D | Duplex unit communication error<br>• A connection error occurs.<br>• The signal is sent from the printer to the duplex unit every 3 seconds while paper is not transported by the unit. However, the duplex unit does not respond within 5 seconds. | • Defective duplex unit board<br>• Defective BCU<br>• Defective IOB<br>• Defective connection (Main unit - Duplex unit) |
| 520 | D | Paper feed motor error<br>• The motor starts or changes speed. → The lock signal does not continue for 1 second within a 3-second interval.<br>• The motor starts. → The lock signal is detected and operation proceeds normally. → The lock signal is interrupted for 1 second. | • Defective paper feed motor |
| 541 | A | Thermistor disconnection (heating roller)<br>The fusing unit starts warm up to the print ready temperature. → The temperature does not reach 7°C for 10 seconds. | • Defective thermistor<br>• Thermistor loose connection<br>• Defective connector |
| 542 | A | Fusing warm-up timeout (heating roller)<br>The main switch is turned on or a cover is closed. → The heating roller does not reach the warm-up temperature within 50 seconds. | • Defective lamp (loose connection, thermostat failure, PSU, thermostat)<br>• Incorrect detection (loose thermistor connection, fusing - drawer loose connection) |
| 543 | A | Overheat error (heating roller)<br>The heating roller thermistor detects 220°C for 5 seconds. | • Short circuit<br>• Defective BCU board<br>• Defective PSU |
| 544 | A | Low temperature error (heating roller)<br>During standby or operation, the heating roller thermistor detects 100 °C or less for 5 seconds. | • Defective lamp (loose connection, thermostat failure, PSU, thermostat)<br>• Incorrect detection (loose thermistor connection, fusing - drawer loose connection) |
| 545 | A | Full power error (heating roller)<br>Fusing unit warm-up is complete. → The heating roller stops turning. → The heating roller lamp keeps outputting the maximum power for 30 seconds. | • Thermistor loose connection<br>• Fusing - drawer loose connection |

| No. | Definition | Symptom | Possible Cause |
|---|---|---|---|
| 546 | A | Unstable temperature (heating roller)<br>• The heating roller thermistor detects unstable temperature increases or decreases within 60 seconds. | • Thermistor loose connection<br>• Fusing - drawer loose connection |
| 551 | A | Thermistor disconnection (pressure roller)<br>The pressure roller thermistor detects7°C or lower for 30 seconds. | • Thermistor loose connection<br>• Defective harness<br>• Defective connector |
| 552 | A | Warm-up time over (pressure roller)<br>The main switch is turned on or a cover is closed. → The fusing pressure roller does not reach the ready temperature within 200 seconds. | • Defective lamp (loose connection, thermostat failure, PSU, thermostat)<br>• Incorrect detection (thermistor loose connection, fusing - drawer loose connection) |
| 553 | A | Overheat error (pressure roller)<br>The pressure roller thermistor detects 220°C for 5 seconds. | • Loose connection<br>• Defective BCU board<br>• Defective PSU |
| 554 | A | Low temperature error (pressure roller)<br>During standby or operation, the pressure roller thermistor detects 80°C or less for 5 seconds. | • Defective lamp (loose connection, thermostat failure, PSU, thermostat)<br>• Incorrect detection (thermistor loose connection, fusing - drawer loose connection) |
| 555 | A | Full power error (pressure roller)<br>Fusing unit warm-up is complete.→ The fusing pressure roller stops turning. → The pressure roller lamp keeps outputting the maximum power for 200 seconds. | • Thermistor loose connection<br>• Fusing - drawer loose connection |
| 556 | A | Unstable temperature (pressure roller)<br>• The pressure roller thermistor detects unstable temperature increases or decreases within 60 seconds. | • Thermistor loose connection<br>• Fusing - drawer loose connection |
| 560 | D | Zero cross error<br>The main switch is turned on; the fusing relay turns on. → 50 Hz or 60 Hz is not detected within 5 seconds. | • Defective relay circuit<br>• Defective PSU<br>• Incorrect power supply |
| 670 | D | No response from BCU at power on | • Loose connection<br>• Defective controller<br>• Defective BCU |
| 680 | D | EEPROM error<br>The main switch is turned on.→ EEPROM is not connected. | • Incorrect EEPROM connection |

| No. | Definition | Symptom | Possible Cause |
|---|---|---|---|
| 687 | D | PER command error<br>• Some image data is transferred. → The controller does not report the necessary memory address.<br>• The PES command is issued. → The controller does not issue the necessary memory report (PER) command within 6 seconds.. | • Poor connection between BCU and controller<br>• Defective BCU<br>• Defective controller |
| 730 | D | Four-bin mail box communication error<br>• A connection error occurs.<br>• The UART reports a communication error.<br>• In other cases than paper transport, after an every-3-second command is sent, the mail box does not respond within 5 seconds. | • Defective mail box control board<br>• Defective BCU<br>• Defective IOB<br>• Incorrect installation |
| 740 | D | Finisher communication error<br>• A connection error occurs.<br>• The UART reports a communication error.<br>• In other cases than paper transport, after an every-3-second command is sent, the finisher does not respond within 5 seconds. | • Defective finisher control board<br>• Defective board<br>• Defective BCU<br>• Defective IOB<br>• Incorrect installation |
| 741 | D | Finisher jogger motor error<br>The jogger home position sensor (on/off) is not detected in a given time. | • Defective jogger motor<br>• Defective jogger home position sensor |
| 742 | D | Finisher stapler unit error<br>• The stapler does not return to home position within 1 second. | • Defective stapler unit |
| 743 | D | Finisher output tray motor error<br>The stack height and lever sensors do not detect paper. | |
| 744 | D | Finisher output tray motor lock<br>The tray is locked for 10 seconds. | • Defective motor |
| 745 | D | Finisher paper detection error<br>The stack height and lever sensors do not correctly detect paper. | |
| 750 | D | 1st paper tray unit communication error<br>• A connection error occurs.<br>• The UART reports a communication error.<br>• In other cases than paper transport, after an every-3-second command is sent, the paper tray unit does not respond within 5 seconds. | • Defective paper tray unit control board<br>• Defective BCU<br>• Defective IOB<br>• Defective connection (Paper tray - main unit) |
| 751 | D | 2nd paper tray unit communication error<br>• After the 1st paper tray has recognized the 2nd paper tray, the trays cannot communicate with each other.<br>• After the 1st paper tray has recognized the 2nd paper tray, an ATM (CPU reset) is sent from the 2nd paper tray. | • Defective paper tray unit control board<br>• Defective connection (1st - 2nd paper tray |

# 4.2 CONTROLLER ERROR TABLE

The table lists the controller error codes. If an error occurs, the code is displayed when the main switch is turned on or after the startup self-diagnostics.

**NOTE:** For the startup self-diagnostics, see section 5.3.

| Code | Description | Required Action |
|---|---|---|
| 640 | BCU – Controller communication error (no response) | Turn the main switch off and on.<br>Replace the controller.<br>Replace the BCU. |
| 641 | BCU – Controller communication error (no response) | Turn the main switch off and on.<br>Check the connection between BCU and controller.<br>Replace the controller.<br>Replace the BCU. |
| 800 | Video output error (K) | Data transfer starts to the BCU, but the transfer completion command does not return to the controller within the required time.<br>Defective controller board |
| 801 | Video output error (Y) | |
| 802 | Video output error (M) | |
| 803 | Video output error (C) | |
| 818 | Watchdog error | Turn the main switch off and on.<br>Replace the controller.<br>See **NOTE** at the end of this table |
| 819 | Fatal error | Turn the main switch off and on.<br>Check and/or replace the RAM DIMM.<br>Check and/or replace the ROM DIMM.<br>Replace the controller.<br>See **NOTE** at the end of this table |
| 820 | Self-diagnostics error: CPU [XXXX]: Detailed error code | Turn the main switch off and on.<br>Reinstall the controller system firmware.<br>Replace the controller. |
| 821 | Self-diagnostics error: ASIC | Turn the main switch off and on.<br>Reinstall the controller system firmware.<br>Replace the RAM DIMM.<br>Replace the controller board. |
| 822 | Self-diagnostics error: HDD (Hard Disk Drive) [XXXX]: Detailed error code | Turn the main switch off and on.<br>Check that the HDD is properly connected to the controller.<br>Replace the HDD.<br>Replace the controller. |
| 823 | Self-diagnostics error: NIB [XXXX]: Detailed error code | Turn the main switch off and on.<br>Replace the controller. |
| 824 | Self-diagnostics error: Standard NVRAM | Turn the main switch off and on.<br>Check that the standard NVRAM is firmly inserted into the socket.<br>Replace the NVRAM.<br>Replace the controller. |
| 827 | Self-diagnostics error: Standard SRAM DIMM [XXXX]: Detailed error code | Turn the main switch off and on.<br>Replace the SRAM DIMM.<br>Replace the controller. |

| Code | Description | Required Action |
|---|---|---|
| 828 | Self-diagnostics error : ROM [XXXX]: Detailed error code | Turn the main switch on and off.<br>Replace the ROM DIMM<br>Replace the controller. |
| 829 | Self-diagnostics error: optional RAM [XXXX]: Detailed error code | Turn the main switch off and on.<br>Replace the RAM DIMM.<br>Replace the controller board. |
| 835 | Self-diagnostics error: Centronics interface [XXXX]: Detailed error code | Turn the main switch off and on.<br>Check the connection between the Centronics connector and loop-back connector.<br>Reconnect the loop-back connector.<br>Replace the controller. |
| 836 | Self-diagnostics error: Font ROM (standard) | Turn the main switch off and on.<br>Replace the standard ROM-DIMM. |
| 838 | Self-diagnostics error: Font ROM (clock generator) | Replace the controller. |
| 850 | Network interface error | Turn the main switch off and on.<br>Replace the controller. |
| 851 | IEEE1394 interface error | Turn the main switch off and on.<br>Replace the IEEE1394 interface board.<br>Replace the controller. |
| 853 | IEEE802.11b error - card not detected (power-on) | Check the wireless LAN card connection.<br>Replace the wireless LAN card. |
| 854 | IEEE802.11b error - card not detected (during operation) | Check the wireless LAN card connection.<br>Replace the wireless LAN card. |
| 855 | IEEE802.11b error | Check the wireless LAN card connection.<br>Replace the wireless LAN card. |
| 856 | IEEE802.11b interface board error | Check the wireless LAN interface board connection.<br>Replace the interface board. |
| 857 | USB interface error detected. | Check the USB connections, make sure that they are securely connected.<br>Replace the controller board. |
| 860 | HDD: Error detected at power up (partition error, unformatted disk, incorrect disk type) | Turn the main switch off and on.<br>Reformat the HDD (SP 5-832-1 [HDD Init]).<br>Replace the HDD. |
| 861 | HDD: Reboot error | Turn the main switch off and on.<br>Check the connection between HDD and controller.<br>Check and replace the cables.<br>Replace the HDD.<br>Replace the controller. |
| 862 | Defective sector management maximum | Replace the HDD. |
| 863 | HDD: Read error | Turn the main switch off and on.<br>Replace the HDD.<br>Replace the controller. |
| 864 | HDD: CRC error | Turn the main switch off and on.<br>Replace the HDD. |
| 865 | HDD: Access error | Turn the main switch off and on.<br>Replace the HDD. |

| Code | Description | Required Action |
|---|---|---|
| 900 | Electrical counter error | Turn the main switch off and on.<br>Check the connection between NVRAM and controller.<br>Replace the NVRAM.<br>Replace the controller. |
| 990 | Software performance error | Turn the main switch off and on.<br>Reinstall the controller and/or engine main firmware.<br>See **NOTE** at the end of this table. |
| 991 | Unexpected software error | The machine does not stop and the SC code is not displayed. The machine automatically recovers. However, the SC code is logged in the engine summary sheet (SMC). |
| 998 | Application start error | Turn the main switch off and on.<br>Check that the RAM DIMM and ROM DIMM are properly connected.<br>Reinstall the controller system firmware.<br>Replace the controller. |
| 999 | Program installation error | Controller DIP SW1 setting incorrect.<br>Defective software on IC card.<br>Controller software download error.<br>Replace the controller. |



**NOTE:** If a problem always occurs in a specific situation (for example, same printer driver settings, same image file), the problem may be caused by a software error. In this case, send the following data and information to your product specialist.

- Symptom/Possible causes/Action taken
- Summary sheet (SP mode '1 Service', [Print Summary])
- SMC All (SP5-990-2, SP print mode - All)
- Logged data (SP5-990-4, SP print mode - Logging)
- 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

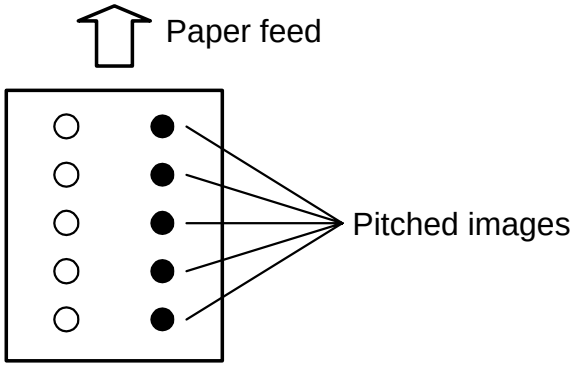
# 4.3 BLOWN FUSE CONDITIONS

| Fuse | Rating | | Symptom when turning on the main switch |
|---|---|---|---|
| | 115V | 220 ~ 240V | |
| **Power Supply Board** | | | |
| FU1 (N.A.)/ CB1 (Eur./Asia) | 15A/125V | 8A/250V | No response |
| FU2 | 6.3A/250V | 3.15A/250V | No response |
| FU3 | 4A/125V | 4A/125V | "Tray 2 Hardware Problem" is displayed. The optional tray does not operate.*1 |
| FU4 | 4A/125V | 4A/125V | "Ready" is displayed. The interchange unit (and the finisher and/or the 4-bin mail box and/or duplex) does not operate.*2 |

*1: Vaa (+24V) for the optional tray is cut.
*2: Vaa (+24V) for the interchange unit is cut.

# 4.4 CHECK POINTS FOR IMAGE PROBLEMS AT REGULAR INTERVALS

Symptoms for image problems at regular intervals depend on the circumference of certain components. The following diagram shows the possible symptoms (black or white dots at regular intervals).




G070T801.WMF

Color spots at 54-mm intervals: Development roller in the development unit
Abnormal image at 68-mm intervals: Transfer roller
Abnormal image at 188-mm intervals: Fusing belt in the fusing unit
Abnormal image at 125-mm intervals: Pressure roller in the fusing unit

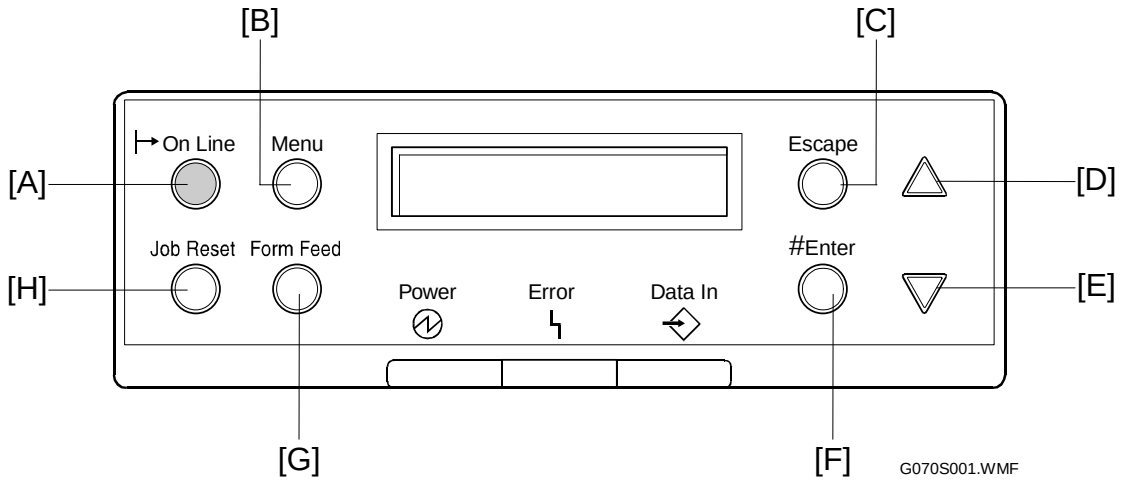
# 5. SERVICE TABLES

## 5.1 SERVICE PROGRAM MODE

**⚠CAUTION**

**Before starting a service program, check that no data is coming into the printer. If data is coming in, wait until the data is completely processed.**

### 5.1.1 OPERATION PANEL KEYS




[A]: Online
[B]: Menu
[C]: Escape
[D]: Up arrow
[E]: Down arrow
[F]: Enter
[G]: Form feed
[H]: Reset

## 5.1.2 STARTING SERVICE PROGRAM MODE

You can enter service mode with either of the following procedures.

### *Procedure 1*

1. Turn the main switch off.
2. Press the online key and the escape key at the same time, and hold them.
3. Turn the main switch on.
4. Wait until “SYSTEM ver V.x.xx. 1. Service” is displayed.
   **NOTE:** “ver V.x.xx.” indicates the machine’s firmware version.

### *Procedure 2*

1. Press the up arrow key and the down arrow key at the same time, and hold them for about 5 seconds.
   **NOTE:** At this moment, the display does not change.
2. Press the enter key. “SYSTEM ver V.x.xx. 1. Service” is displayed.
   **NOTE:** “ver V.x.xx.” indicates the machine’s firmware version.

## 5.1.3 MAIN MENU

1. The main menu has three sub menus (see below). Press the up arrow key or the down arrow key to scroll through these sub menus.
   1) Service: Goes to the controller service modes
   2) Engine: Goes to the engine service modes
   3) End: Exits from the main menu
2. Press the enter key.
3. Press the up arrow key or the down arrow key to scroll through the items in the selected sub menu.
4. To exit from the sub menu, press the escape key.

## 5.1.4 SPECIFYING A VALUE OR SETTING

1. Select the required item from the sub menu. The current setting is displayed.
2. Use the up arrow key or down arrow key to specify a new setting.
3. Press the enter key.
   **NOTE:** If you do not press the enter key, the previous setting remains valid.
4. To exit from the sub menu item, press the escape key.

## 5.1.5 LEAVING SERVICE MODE

1. Select “3. End.”
2. Press the enter key.

**NOTE:** You cannot exit from the main menu by pressing the escape key.

# 5.2 SP MODE TABLES

**NOTE:** In the Function/[Setting] column:

- The related pop-up screen name and function name (if any) appear in parenthesis following the function description.
- Comments are in *italics*.
- The setting range is enclosed in brackets, with the default setting written in **bold**.
- An asterisk (*) after the mode number means that this mode's value is stored in the NVRAM. If you do a RAM reset, all these SP modes will be returned to their factory settings.
- **DFU** stands for **D**esign/**F**actory **U**se only. Values marked **DFU** should not be changed.

## 5.2.1 SERVICE (CONTROLLER SERVICE MODES)

| Mode No. (Class 1 and 2) | | Function / [Setting] |
|---|---|---|
| Bit Switch | | |
| 1 | Bit Switch 1 | (See "Bit switch Settings".)<br>For use in Japan only. |
| 2 | Bit Switch 2 | |
| 3 | Bit Switch 3 | |
| 4 | Bit Switch 4 | |
| Clear Setting | | |
| 1 | Clear Setting | Initializes the settings in the "System" menu of the user tools. |
| Print Summary | | |
| 1 | Print Summary | Prints the service summary sheet (a summary of all the controller settings). |
| DispVersion | | |
| 1 | Disp Version | Displays the version of the controller firmware. |
| ToneCtlSet | | |
| 1 | Tone (Factory) | Recalls the gamma settings. Select the factory, previous, or current setting. |
| 2 | Tone (Prev.) | |
| 3 | Tone (Current) | |
| ToneCtlSet | | |
| 1 | *600 x 600 x 2 Photo | Selects the printing mode (resolution) for the printer gamma adjustment. When selecting a print mode, an asterisk (*) is displayed in the front of the mode. |
| 2 | 600 x 600 x 2 Graph | |
| 3 | 600 x 600 Text | |
| 4 | 600 x 600 x 2 Text | |
| 5 | 600 x 600 Photo | |
| PrnColorSheet | | |
| 1 | ToneCtlSheet | Prints the test page to check the color balance before and after the gamma adjustment. |
| 2 | ColorChart | |

| Mode No. (Class 1 and 2) | | Function / [Setting] |
|---|---|---|
| TonerCtlValue | | |
| 1 | Black/Cyan/Magenta/Yellow 1 | Adjusts the printer gamma for the mode selected with the “Tone Ctl Set” setting.<br>[0 to 255 / 16 / 1/step] |
| 2 | Black/Cyan/Magenta/Yellow 2 | [0 to 255 / 32 / 1/step] |
| 3 | Black/Cyan/Magenta/Yellow 3 | [0 to 255 / 48 / 1/step] |
| 4 | Black/Cyan/Magenta/Yellow 4 | [0 to 255 / 64 / 1/step] |
| 5 | Black/Cyan/Magenta/Yellow 5 | [0 to 255 / 80 / 1/step] |
| 6 | Black/Cyan/Magenta/Yellow 6 | [0 to 255 / 96 / 1/step] |
| 7 | Black/Cyan/Magenta/Yellow 7 | [0 to 255 / 112 / 1/step] |
| 8 | Black/Cyan/Magenta/Yellow 8 | [0 to 255 / 128 / 1/step] |
| 9 | Black/Cyan/Magenta/Yellow 9 | [0 to 255 / 144 / 1/step] |
| 10 | Black/Cyan/Magenta/Yellow 10 | [0 to 255 / 160 / 1/step] |
| 11 | Black/Cyan/Magenta/Yellow 11 | [0 to 255 / 176 / 1/step] |
| 12 | Black/Cyan/Magenta/Yellow 12 | [0 to 255 / 192 / 1/step] |
| 13 | Black/Cyan/Magenta/Yellow 13 | [0 to 255 / 208 / 1/step] |
| 14 | Black/Cyan/Magenta/Yellow 14 | [0 to 255 / 224 / 1/step] |
| 15 | Black/Cyan/Magenta/Yellow 15 | [0 to 255 / 240 / 1/step] |
| ToneCtlSave | | |
| 1 | ToneCtlSave | Stores the print gamma adjusted with the “Toner Ctl Value” menu item as the current setting. Before the machine stores the new “current setting”, it moves the data currently stored as the “current setting” to the “previous setting” memory storage location. |
| Toner Limit | | |
| 1 | TonerLimitPhot | Adjusts the maximum toner amount for image development.<br>[100 to 400 / 260 / 1%/step] |
| 2 | TonerLimitText | [100 to 400 / 260 / 1%/step] |

### *Bit Switch Settings*

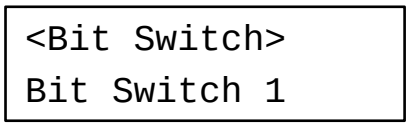
**NOTE:** These bit switches are all for use in Japan only.

#### *How to Change Bit Switch Settings*

1. Select “1. Service”.
   **NOTE:** “ver V.x.xx.” indicates the machine’s firmware version.

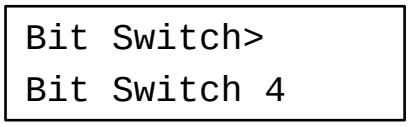

G070S501.WMF

2. Press the enter key 2 times.



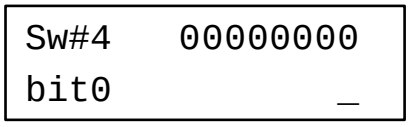

G070S502.WMF

3. Press the up arrow key or down arrow key to display bit switches 1 through 4.



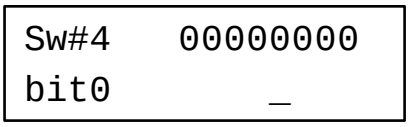

G070S503.WMF

4. Press the enter key.



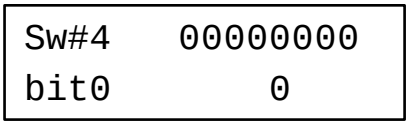

G070S504.WMF

5. Press the up arrow key or down arrow key to select a column.



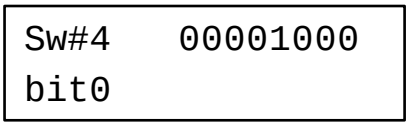

G070S505.WMF

6. Press the enter key. The current value appears in the column.



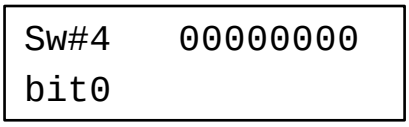

G070S506.WMF

7. Press the up arrow key or down arrow key to change the value.



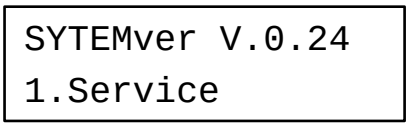

G070S507.WMF

8. Press the enter key. The changed value is stored.



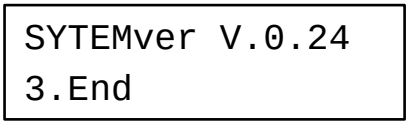

G070S508.WMF

9. Press the escape key 3 times.




G070S509.WMF

10. Select “3. End”.




G070S510.WMF

***Bit Switch 1***

| Bit | Function | Default |
|---|---|---|
| **0** | Key protect [0: Not activated, 1: Activated] **DFU** | 0 |
| **1** | (Not used.) **DFU** | 0 |
| **2** | (Not used.) **DFU** | 0 |
| **3** | (Not used.) **DFU** | 0 |
| **4** | (Not used.) **DFU** | 0 |
| **5** | (Not used.) **DFU** | 0 |
| **6** | (Not used.) **DFU** | 0 |
| **7** | Emulation print area (RPCS only). [0: Not printed, 1: Printed]**DFU** | 0 |

***Bit Switch 2***

| Bit | Function | Default |
|---|---|---|
| **1** | Overlap job mode (njob) [0: Not activated, 1: Activated] **DFU** | 1 |
| **4** | "Letterhead mode" display in UP mode (*NOTE) [0: Not activated, 1: Activated] | 0 |

**NOTE:** In addition to 2-4 Bit Switch setting, press the following keys to enter the hidden menu display mode.

#Enter ➔ Escape ➔ Menu

The hidden indication "Letterhead mode" appears at the bottom of "system" menu. You can select the letterhead mode in this menu.



***Bit Switch 3***

Not used

***Bit Switch 4***

| Bit | Function | Default |
|---|---|---|
| **0** | Background areas of simple graphics (RPDL, R16, R55, R98) [0: Not painted, 1: Painted] **DFU** | 0 |
| **1** | Unknown 2-byte characters (R98) [0: Cleared, 1: Not cleared] **DFU** | 0 |
| **2** | Specifies portrait/landscape reset (R16) [0: Reset by the reset command, 1: Not reset by the reset command] **DFU** | 0 |
| **3** | Changes line thickness adjustment mode [0: Mode 1, 1: Mode 2] **DFU** | 0 |
| **4** | Displays or not displays error messages No. 84 through DF (RPDL, R16, R55, R98, GL/GL2). [0: Displays, 1: Not displays] **DFU** | 0 |
| **5** | Displays or not displays error messages No. E1 and higher (RPDL, R16, R55, R98, GL/GL2). [0: Displays, 1: Not displays] **DFU** | 0 |
| **6** | Changes the tray setting (GL/GL2). [0: LP, 1: MFP] **DFU** | 0 |
| **7** | Changes the default tray. [0: LP (Tray 1), 1: MFP (System default)] **DFU** | 0 |

## *Gamma Adjustment*

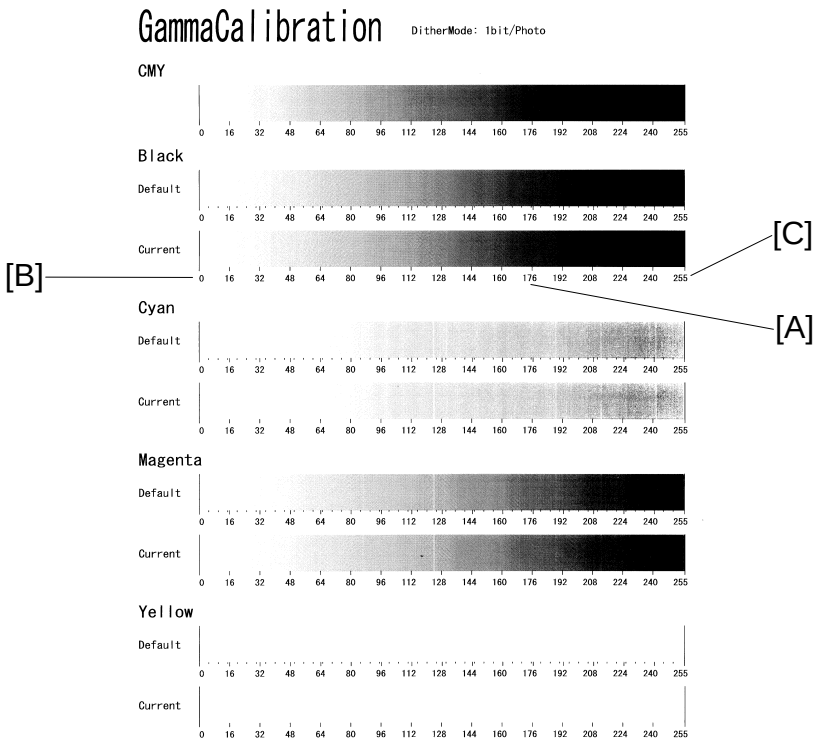
**NOTE:** To solve color quality problems, clean and/or replace related parts first. If adjustments are required, follow the procedure in this section.

### *Summary*

To adjust the printer gamma:

- Select the print mode that needs calibrating
- Print a color calibration test sheet
- Make the gradation scales on the printout smooth from the lowest to the highest density. Adjust the CMY gradation scale at the top of the chart by balancing the density of the C, M, and Y gradation scales – the CMY gray scale should change smoothly from minimum to maximum, and there should be no coloration.

The color adjustment sheet is as follows.




G070S013.PCX

For each color, you can adjust 15 points (example [A]) between 0 (lowest density) [B] and 255 (highest density) [C]. For each point, you can adjust the density within 0 and 255.

The gradation scales marked ‘Default’ are printed according to the default gamma settings in the flash ROM in the controller. The gamma adjustment changes the densities at the adjustable points in the gradation scale. The gradation scale marked “Current” shows the current settings.

During the adjustment procedure, compare the “Current” gradation scale with the ‘Default’. Select the density for each of the 15 adjustable points, excluding points 0 and 255, from the ‘Default’ gradation scale.

The NVRAM holds three sets of controller gamma settings:

- Those saved this time: ToneCtlSet - Tone (Current)
- Those saved in the previous adjustment: ToneCtlSet - Tone (Prev)
- The factory settings: ToneCtlSet - Tone (Factory).

### *Adjustment Procedure*

1. Enter the controller service mode.
2. Use the down arrow key to select “ToneCtlSet” (the second of the two) and press the Enter key.
3. Use the up/down key to select the mode that requires calibrating, then press the Escape key until you get back to the controller service mode menu.
4. Use the down arrow key to select “PrnColorSheet” and press the Enter key.
5. Use the up/down key to select “ToneCtlSheet” (normally this is displayed by default) and press the Enter key.
6. When “Execute?” is displayed, press the Enter key to print out the “color calibration test sheet”.
7. When “Execute OK” is displayed, press the Escape key 2 times to exit from the menu. (You return to “PrnColorSheet” in the controller service menu.)
8. Use the down arrow key to select “ToneCtlValue” and press the enter key.

9. Use the up/down arrow key to select the setting you are adjusting, then press the enter key. The three digits in the display (example '016') indicate a position on the color calibration test sheet.

| Operation Panel Display | Color Calibration Test Sheet |
|---|---|
| Set Black 1 | Default Value 16 |
| Set Black 2 | Default Value 32 |
| Set Black 3 | Default Value 48 |
| :<br>: | :<br>: |
| Set Black 13 | Default Value 208 |
| Set Black 14 | Default Value 224 |
| Set Black 15 | Default Value 240 |
| Set Cyan 1 ~ 15 | See Set Black 1 ~ 15 |
| Set Magenta 1 ~ 15 | See Set Black 1 ~ 15 |
| Set Yellow 1 ~ 15 | See Set Black 1 ~ 15 |

Adjust the color density at each of the 15 points for each of the four colors.

**NOTE:** 1) To decide what density value to input, do the following.
2) Look at the color adjustment sheet.
3) For the color you are adjusting, look at the gradation scale entitled 'Default'.
4) Go along the scale until you reach the density that you wish to input.
5) Read off the value on the scale and store it in the machine.
   a) Use the up/down key to move the cursor along the three-digit display, then press the Enter key.
   b) Use the up/down key to change the digit at the cursor, then press the Enter key.
   c) Press the Escape key to exit from the menu.
6) Do the same for all 15 points.

10. When the density setting is complete for all colors, print out a color adjustment sheet again and make sure that the gradation scale for each printed color is smooth and that the CMY gradation scale is gray. Repeat the adjustment if there is an anomaly (normally, repeat this procedure 3 to 5 times).

11. When the adjustment results are satisfactory, do the following:
    1) Use "ToneCtlSave" in the controller service menu, to store the new settings in the controller.
    2) Reset the controller (press the **[Reset]** key when the machine is off line") to use the new settings.

**NOTE:** The new settings will not be saved in the controller NVRAM unless you reset the controller.

## 5.2.2 ENGINE SERVICE MODES

The SP numbers do not appear on the screen, but they may appear on reports.

**NOTE:** The Service Program Mode is for use by service representatives only, so that they can properly maintain product quality. If this mode is used by anyone other than service representatives for any reason, data might be deleted or settings might be changed. In such case, product quality cannot be guaranteed any more.

### *SP1-XXX: (Feed)*

| 1 | Mode No. (Class 1, 2, and 3) | | Function / [ Setting ] |
|---|---|---|---|
| 001* | Lead_Edge_Reg. | | |
| | 1 | Tray: Plain | Adjusts the leading edge registration by changing the registration clutch operation timing for each mode.<br>[–4.0 ~ 4.0 / **0.0** / 0.1 mm/step]<br>• *The user mode cannot adjust the settings for thick paper or OHP sheets.* |
| | 2 | Tray: Thick | |
| | 3 | Tray: OHP | |
| | 4 | Bank1 | |
| | 5 | Bank2 | |
| | 6 | By-pass: Plain | |
| | 7 | By-pass: Thick | |
| | 8 | By-pass: OHP | |
| | 9 | Duplex | |
| 002* | S-to-S_Reg. | | |
| | 1 | By-pass | Adjusts the side-to-side registration by changing the laser main scan start position for each mode.<br>[–4.0 ~ 4.0 / **0.0** / 0.1 mm/step] |
| | 2 | Tray1 | |
| | 3 | Bank1 | |
| | 4 | Bank2 | |
| | 5 | Duplex | |
| 003* | Paper_Buckle | | |
| | 1 | Tray: Plain | Adjusts the amount of paper buckle at the registration roller by changing the paper feed timing.<br>[–9 ~ 9 / **0** / 1 mm/step] |
| | 2 | Tray: Thick | [–9 ~ 9 / **–2** / 1 mm/step] |
| | 3 | Tray: OHP | [–9 ~ 9 / **–2** / 1 mm/step] |
| | 4 | Tray: SmallSize | [–9 ~ 9 / **–2** / 1 mm/step] (Small size: A4/LT or narrower) |
| | 6 | By-pass: Plain | [–9 ~ 9 / **0** / 1 mm/step] |
| | 7 | By-pass: Thick | [–9 ~ 9 / **–2** / 1 mm/step] |
| | 8 | By-pass: OHP | [–9 ~ 9 / **–2** / 1 mm/step] |
| | 9 | Duplex | [–9 ~ 9 / **0** / 1 mm/step] |
| 105* | Fusing_Temp. | | |
| | 1 | H: Pre | Sets the temperature at which the heating roller starts idling.<br>[100 ~ 180 / **145** / 1°C/step] |
| | 2 | H: _Ready | Sets the temperature at which the heating roller enters the print ready condition.<br>[100 ~ 180 / **165** / 1°C/step] |

| 1 | Mode No. (Class 1, 2, and 3) | | Function / [ Setting ] |
|---|---|---|---|
| 105* | 3 | H: _Standby | Sets the heating roller temperature for the ready (standby) condition. After the main switch has been turned on, the machine enters this condition when the heating roller temperature reaches the temperature specified in this SP mode. When the machine is recovering from energy saver or auto off mode, the machine becomes ready when both heat and pressure roller temperatures reach the specified temperature. Pressure roller: SP1-105-16<br>[100 ~ 180 / **175** / 1°C/step ] |
| | 4 | H: Plain/1C | Sets the heating roller temperature for plain paper in single-color mode.<br>[120 ~ 190 / **160** / 1°C/step] |
| | 5 | H: Plain/FC | Sets the heating roller temperature for plain paper in full-color mode.<br>[120 ~ 190 / **170** / 1°C/step] |
| | 6 | H: M-Thick/1C | Sets the heating roller temperature for medium thickness paper in single-color mode.<br>[120 ~ 190 / **170** / 1°C/step] |
| | 7 | H: M-Thick/FC | Sets the heating roller temperature for medium thickness paper in full-color mode.<br>[120 ~ 190 / **180** / 1°C/step] |
| | 8 | H: Thick/1C | Sets the heating roller temperature for thick paper in single-color mode.<br>[120 ~ 190 / **170** / 1°C/step] |
| | 9 | H: Thick/FC | Sets the heating roller temperature for thick paper in full-color mode.<br>[120 ~ 190 / **175** / 1°C/step] |
| | 10 | H:OHP/1C | Sets the heating roller temperature for OHP sheets in single-color mode.<br>[120 ~ 190 / **170** / 1°C/step] |
| | 11 | H: OHP/FC | Sets the heating roller temperature for the OHP sheets in full-color mode.<br>[120 ~ 190 / **180** / 1°C/step] |
| | 12 | H: Duplex/1C | Sets the heating roller temperature for duplex printing (both sides) in single-color mode.<br>[120 ~ 190 / **155** / 1°C/step] |
| | 13 | H: Duplex/FC | Sets the heating roller temperature for duplex printing (both sides) in full-color mode.<br>[120 ~ 190 / **165** / 1°C/step] |
| | 14 | P: Pre | Sets the temperature at which the pressure roller starts idling.<br>[30 ~ 100 / **30** / 1°C/step] |
| | 15 | P: _Ready | Sets the temperature at which the pressure roller becomes ready for printing.<br>[60 ~ 150 / **80** / 1°C/step] |

| 1 | Mode No. (Class 1, 2, and 3) | | Function / [ Setting ] |
|---|---|---|---|
| 105* | 16 | P: _Standby | Sets the pressure roller temperature for the ready (standby) condition. After the main switch has been turned on, the machine enters this condition when the pressure roller temperature reaches the temperature specified in this SP mode. When the machine is recovering from energy saver or auto off mode, the machine becomes ready when both heat and pressure roller temperatures reach the specified temperature. Heating roller: SP1-105-3<br>[60 ~ 150 / **120** / 1°C/step] |
| | 27 | H: OFFSET+ | Sets the heating roller temperature correction for when room temperature is 15°C or lower.<br>[0 ~ 20 / **5** / 1°C/step] |
| | 28 | P: OFFSET+ | Sets the pressure roller temperature correction for when room temperature is 15°C or lower.<br>[0 ~ 20 / **0** / 1°C/step] |
| | 29 | H: OFFSET– | Sets the heating roller temperature correction for when room temperature is 30°C or higher.<br>[0 ~ 20 / **5** / 1°C/step] |
| | 30 | P: OFFSET– | Sets the pressure roller temperature correction for when room temperature is 30°C or higher.<br>[0 ~ 20 / **0** / 1°C/step] |
| 106 | Temp._Display | | |
| | 1 | H_Roller | Displays the current temperature of the heating or pressure roller.<br>[0 ~ 255 / **0** / 1/step] |
| | 2 | P_Roller | |
| 109 | Fusing_Nip | | |
| | 1 | ExecuteMode | Checks the fusing nip width using an OHP sheet.<br>[0 ~ 1 / **0** / 1/step]<br>• *The OHP sheet stops in the fusing unit for the specified time (☛ SP1-109-2).*<br>• *The nip width should be 9 ± 0.5 mm at front and rear. If this requirement is not met, change the fusing unit.* |
| | 2 | Stop_Duration | Adjusts the stoppage time for the OHP sheet in the fusing unit (☛ SP1-109-1).<br>[0 ~ 100 / **10** / 1 s/step] |
| 902* | PaperSize | | |
| | 1 | B4/LG | Specifies how the machine interprets the paper size sensor output for the main unit tray.<br>[0 ~ 1 / **0** / 1/step]<br>• ***For Europe:***<br>*0: B4 SEF, 1: LG SEF*<br>• ***For N. America:***<br>*0: LG SEF, 1: B4 SEF* |
| | 2 | A3/DLT | Specifies how the machine interprets the paper size sensor output for the main unit tray.<br>[0 ~ 1 / **0** / 1 /step]<br>• ***For Europe:***<br>*0: A3 SEF, 1: DLT SEF*<br>• ***For N. America:***<br>*0: DLT SEF, 1: A3 SEF* |

Service Tables

| 1 | Mode No. (Class 1, 2, and 3) | | Function / [ Setting ] |
|---|---|---|---|
| 902* | 3 | A4/LT | Specifies how the machine interprets the paper size sensor output for the main unit tray.<br>[0 ~ 1 / **0** / 1/step]<br>• ***For Europe:***<br>*0: A4 SEF, 1: LT SEF*<br>• ***For N. America:***<br>*0: LT SEF, 1: A4 SEF* |
| | 4 | B5/Executive | Specifies how the machine interprets the paper size sensor output for the main unit tray.<br>[0 ~ 1 / **0** / 1/step]<br>• ***For Europe:***<br>*0: B5 SEF, 1: Executive (10.5" x 7.25") SEF*<br>• ***For N. America:***<br>*0: B5 SEF, 1: Executive (10.5" x 7.25") SEF* |
| 910 | EmptyRev | | |
| | | | Specifies the settings for when fusing idling is done after printing on A4/LT LEF or smaller paper sizes.<br>[0 ~ 2 / **0** / 1/step]<br>• *After printing on small-width paper (A4 LEF/LT LEF or smaller), fusing idling evens the oil thickness on the roller surface.*<br>• *0 (Int): Enables printing during fusing idling.*<br>• *1 (NoRev): Disables this type of fusing idling.*<br>• *2 (NoInt): Disables printing during fusing idling.* |

## *SP2-XXX: (Drum)*

| 2 | Mode No. (Class 1, 2, and 3) | | Function / [ Setting ] |
|---|---|---|---|
| 001* | Charge_Bias | | |
| | 1 | [M] | Adjusts the charge corona unit grid voltage.<br>[300 ~ 800 / **500** / 1 Volt/step]<br>Only effective is SP3-003 (Lub_Interval) is set to 0. |
| | 2 | [C] | |
| | 3 | [Y] | |
| | 4 | [K] | |
| | 5 | NoImageArea | |
| | 6 | ChargerCurrent | Adjusts the charge corona unit current.<br>[400 ~ 800 / **500** / 1 μA/step] |
| 100* | Mag._Adjust | | |
| | 1 | MainDirection | Adjusts the magnification in the main scan direction.<br>[–12.8 ~ 12.7 / **0.0** / 0.1%/step] |
| 101* | Mag._Adjust | | |
| | 1 | SubDirection | Adjusts the magnification in the sub scan direction.<br>[–12.8 ~ 12.7 / **0.2** / 0.1%/step] |
| 201* | DevelopBiasAdj | | |
| | 1 | [M] | Adjusts the development bias.<br>[0 ~ 500 / **220** / 1 Volt/step]<br>Only effective is SP3-003 (Lub_Interval) is set to 0. |
| | 2 | [C] | |
| | 3 | [Y] | |
| | 4 | [K] | |
| 208 | Forced_Toner | | |
| | 1 | [K] | Forces toner to be supplied to the development unit.<br>[0 ~ 1 / **0** / 1/step] |
| | 2 | [C] | |
| | 3 | [M] | |
| | 4 | [Y] | |
| | 5 | AllColor | |
| 301 | TransBeltBias | | |
| | 1 | 1C/1st/1 | Adjusts the transfer belt current.<br>[3.0 ~ 14.0 / **8.0** / 0.1 μA/step]<br>*The front side image of 1-color duplex printing* |
| | 2 | 1C/2nd/2 | [3.0 ~ 14.0 / **8.0** / 0.1 μA/step]<br>*The rear side image of 1-color duplex printing* |
| | 3 | 2C/--/1 | [3.0 ~ 14.0 / **13.0** / 0.1 μA/step]<br>*The first color toner image of 2-color printing* |
| | 4 | 3C/--/1 | [3.0 ~ 14.0 / **13.0** / 0.1 μA/step]<br>*The first color toner image of 3-color printing* |
| | 5 | 4C/--/1 | [3.0 ~ 14.0 / **7.5** / 0.1 μA/step]<br>*The first color toner image of 4-color printing* |
| | 6 | 2C/--/2 | [3.0 ~ 14.0 / **13.0** / 0.1 μA/step]<br>*The second color toner image of 2-color printing* |
| | 7 | 3C/--/2 | [3.0 ~ 14.0 / **13.0** / 0.1 μA/step]<br>*The second color toner image of 3-color printing* |
| | 8 | 4C/--/2 | [3.0 ~ 14.0 / **13.0** / 0.1 μA/step]<br>*The second color toner image of 4-color printing* |
| | 9 | 3C/--/3 | [3.0 ~ 14.0 / **13.0** / 0.1 μA/step]<br>*The third color toner image of 3-color printing* |
| | 10 | 4C/--/3 | [3.0 ~ 14.0 / **13.0** / 0.1 μA/step]<br>*The third color toner image of 4-color printing* |
| | 11 | 4C/--/4 | [3.0 ~ 14.0 / **13.0** / 0.1 μA/step]<br>*The fourth color toner image of 4-color printing* |

| 2 | Mode No. (Class 1, 2, and 3) | | Function / [ Setting ] |
|---|---|---|---|
| 301 | 12 | --/--/1 | [3.0 ~ 14.0 / **7.0** / 0.1 μA/step]<br>*After the first color toner image* |
| | 13 | --/--/2 | [3.0 ~ 14.0 / **7.0** / 0.1 μA/step]<br>*After the second color toner image* |
| | 14 | --/--/3 | [3.0 ~ 14.0 / **7.0** / 0.1 μA/step]<br>*After the third color toner image* |
| | 15 | --/--/last | [3.0 ~ 14.0 / **7.0** / 0.1 μA/step]<br>*After the final color toner image* |
| | 16 | DevStart | [3.0 ~ 14.0 / **7.0** / 0.1 μA/step]<br>*Development start* |
| | 17 | DevEnd | [3.0 ~ 14.0 / **7.0** / 0.1 μA/step]<br>*Development end* |
| | 18 | 1C/1st/-- | [3.0 ~ 14.0 / **7.0** / 0.1 μA/step]<br>*Waiting for thick paper or OHP before creating the front side image for 1-color printing* |
| | 19 | 1C/2nd/-- | [3.0 ~ 14.0 / **7.0** / 0.1 μA/step]<br>*Waiting for thick paper or OHP before creating the rear side image for 1-color duplex printing* |
| | 20 | 2C/--/-- | [3.0 ~ 14.0 / **7.0** / 0.1 μA/step]<br>*Waiting for thick paper or OHP before creating an image for 2-color printing* |
| | 21 | 3C/--/-- | [3.0 ~ 14.0 / **7.0** / 0.1 μA/step]<br>*Waiting for thick paper or OHP before creating an image for 3-color printing* |
| | 22 | 4C/--/-- | [3.0 ~ 14.0 / **7.0** / 0.1 μA/step]<br>*Waiting for the thick paper or OHP before creating an image for 4-color printing* |
| | 23 | PowerOnRecovery | [3.0 ~ 14.0 / **7.0** / 0.1 μA/step]<br>*Machine start and jam recovery* |
| 303* | TransBeltEnv | | |
| | 1 | 1 | Adjusts the environmental threshold for the transfer belt.<br>[0 ~ 100.0 / **3.5** / 0.1 g/m$^3$/step] **DFU** |
| | 2 | 2 | [0 ~ 100.0 / **19.0** / 0.1 g/m$^3$/step] **DFU** |
| 305* | TransBeltStart | | |
| | 1 | BiasOnOff | Sets the bias for the image transfer start to on or off.<br>[0 ~ 1 / 1 / 1/step] **DFU**<br>• *0: Bias off*<br>• *1: Bias on* |
| 306 | TransBeltFirst | | |
| | 1 | 1C | This value is added to the transfer current for the first page to improve insufficient transfer of solid images.<br>[3.0 ~ 14.0 / **9.0** / 0.1 μA/step] |
| | 2 | 2C–4C | [3.0 ~ 14.0 / **13.0** / 0.1 μA/step] |

| 2 | Mode No. (Class 1, 2, and 3) | | Function / [ Setting ] |
|---|---|---|---|
| 310* | PaperTrans_LL1 (Paper Transfer LL1)<br>The display indicates: Paper Weight/Side 1 or 2/Paper Width (mm) | | |
| | 1 | Nrml/1st/-297 | Sets the paper transfer current when absolute humidity AH (g/m$^3$) is in the following range:<br>0 < AH ≤ 3.5 (this is the 'LL1' humidity range)<br>Adjust only if there are problems with insufficient transfer in the image area of the copy for a particular paper type or mode, or in response to field problems as directed by technical support staff.<br>[0 ~ 70.0 / **32.0** / 0.2 µA/step] |
| | 2 | Nrml/1st/257-296 | [0 ~ 70.0 / **34.0** / 0.2 µA/step] |
| | 3 | Nrml/1st/210-256 | [0 ~ 70.0 / **36.0** / 0.2 µA/step] |
| | 4 | Nrml/1st/129-209 | [0 ~ 70.0 / **39.0** / 0.2 µA/step] |
| | 5 | Nrml/1st/-128 | [0 ~ 70.0 / **42.0** / 0.2 µA/step] |
| | 6 | Mid/1st/-297 | [0 ~ 70.0 / **33.0** / 0.2 µA/step] |
| | 7 | Mid/1st/257-296 | [0 ~ 70.0 / **35.0** / 0.2 µA/step] |
| | 8 | Mid/1st/210-256 | [0 ~ 70.0 / **37.0** / 0.2 µA/step] |
| | 9 | Mid/1st/129-209 | [0 ~ 70.0 / **40.0** / 0.2 µA/step] |
| | 10 | Mid/1st/-128 | [0 ~ 70.0 / **43.0** / 0.2 µA/step] |
| | 11 | Thk/1st/-297 | [0 ~ 70.0 / **16.0** / 0.2 µA/step] |
| | 12 | Thk/1st/257-296 | [0 ~ 70.0 / **19.0** / 0.2 µA/step] |
| | 13 | Thk/1st/210-256 | [0 ~ 70.0 / **21.0** / 0.2 µA/step] |
| | 14 | Thk/1st/129-209 | [0 ~ 70.0 / **24.0** / 0.2 µA/step] |
| | 15 | Thk/1st/-128 | [0 ~ 70.0 / **27.0** / 0.2 µA/step] |
| | 16 | Nrml/2nd/-297 | [0 ~ 70.0 / **38.0** / 0.2 µA/step] |
| | 17 | Nrml/2nd/257-296 | [0 ~ 70.0 / **40.0** / 0.2 µA/step] |
| | 18 | Nrml/2nd/210-256 | [0 ~ 70.0 / **42.0** / 0.2 µA/step] |
| | 19 | Nrml/2nd/129-209 | [0 ~ 70.0 / **43.0** / 0.2 µA/step] |
| | 20 | Nrml/2nd/-128 | [0 ~ 70.0 / **44.0** / 0.2 µA/step] |
| | 21 | Mid/2nd/-297 | [0 ~ 70.0 / **39.0** / 0.2 µA/step] |
| | 22 | Mid/2nd/257-296 | [0 ~ 70.0 / **41.0** / 0.2 µA/step] |
| | 23 | Mid/2nd/210-256 | [0 ~ 70.0 / **43.0** / 0.2 µA/step] |
| | 24 | Mid/2nd/129-209 | [0 ~ 70.0 / **44.0** / 0.2 µA/step] |
| | 25 | Mid/2nd/-128 | [0 ~ 70.0 / **45.0** / 0.2 µA/step] |
| | 26 | Thk/2nd/-297 | [0 ~ 70.0 / **16.0** / 0.2 µA/step] |
| | 27 | Thk/2nd/257-296 | [0 ~ 70.0 / **19.0** / 0.2 µA/step] |
| | 28 | Thk/2nd/210-256 | [0 ~ 70.0 / **21.0** / 0.2 µA/step] |
| | 29 | Thk/2nd/129-209 | [0 ~ 70.0 / **24.0** / 0.2 µA/step] |
| | 30 | Thk/2nd/-128 | [0 ~ 70.0 / **26.0** / 0.2 µA/step] |
| | 31 | OHP/297 | [0 ~ 70.0 / **16.0** / 0.2 µA/step] |
| | 32 | OHP/210 | [0 ~ 70.0 / **22.0** / 0.2 µA/step] |
| 311* | PaperTrans_LL2 (Paper Transfer LL2)<br>The display indicates: Paper Weight/Side 1 or 2/Paper Width (mm) | | |
| | 1 | Nrml/1st/-297 | Sets the paper transfer current when absolute humidity AH (g/m$^3$) is in the following range:<br>3.5 < AH ≤ 8.0 (this is the 'LL2' humidity range)<br>See SP2-310 for comments.<br>[0 ~ 70.0 / **36.0** / 0.2 µA/step] |

| 2 | Mode No. (Class 1, 2, and 3) | | Function / [ Setting ] |
|---|---|---|---|
| 311* | 2 | Nrml/1st/257-296 | [0 ~ 70.0 / **38.0** / 0.2 µA/step] |
| | 3 | Nrml/1st/210-256 | [0 ~ 70.0 / **40.0** / 0.2 µA/step] |
| | 4 | Nrml/1st/129-209 | [0 ~ 70.0 / **43.0** / 0.2 µA/step] |
| | 5 | Nrml/1st/-128 | [0 ~ 70.0 / **46.0** / 0.2 µA/step] |
| | 6 | Mid/1st/-297 | [0 ~ 70.0 / **37.0** / 0.2 µA/step] |
| | 7 | Mid/1st/257-296 | [0 ~ 70.0 / **39.0** / 0.2 µA/step] |
| | 8 | Mid/1st/210-256 | [0 ~ 70.0 / **41.0** / 0.2 µA/step] |
| | 9 | Mid/1st/129-209 | [0 ~ 70.0 / **44.0** / 0.2 µA/step] |
| | 10 | Mid/1st/-128 | [0 ~ 70.0 / **47.0** / 0.2 µA/step] |
| | 11 | Thk/1st/-297 | [0 ~ 70.0 / **20.0** / 0.2 µA/step] |
| | 12 | Thk/1st/257-296 | [0 ~ 70.0 / **21.0** / 0.2 µA/step] |
| | 13 | Thk/1st/210-256 | [0 ~ 70.0 / **23.0** / 0.2 µA/step] |
| | 14 | Thk/1st/129-209 | [0 ~ 70.0 / **24.0** / 0.2 µA/step] |
| | 15 | Thk/1st/-128 | [0 ~ 70.0 / **26.0** / 0.2 µA/step] |
| | 16 | Nrml/2nd/-297 | [0 ~ 70.0 / **40.0** / 0.2 µA/step] |
| | 17 | Nrml/2nd/257-296 | [0 ~ 70.0 / **43.0** / 0.2 µA/step] |
| | 18 | Nrml/2nd/210-256 | [0 ~ 70.0 / **45.0** / 0.2 µA/step] |
| | 19 | Nrml/2nd/129-209 | [0 ~ 70.0 / **47.0** / 0.2 µA/step] |
| | 20 | Nrml/2nd/-128 | [0 ~ 70.0 / **50.0** / 0.2 µA/step] |
| | 21 | Mid/2nd/-297 | [0 ~ 70.0 / **41.0** / 0.2 µA/step] |
| | 22 | Mid/2nd/257-296 | [0 ~ 70.0 / **44.0** / 0.2 µA/step] |
| | 23 | Mid/2nd/210-256 | [0 ~ 70.0 / **46.0** / 0.2 µA/step] |
| | 24 | Mid/2nd/129-209 | [0 ~ 70.0 / **48.0** / 0.2 µA/step] |
| | 25 | Mid/2nd/-128 | [0 ~ 70.0 / **51.0** / 0.2 µA/step] |
| | 26 | Thk/2nd/-297 | [0 ~ 70.0 / **20.0** / 0.2 µA/step] |
| | 27 | Thk/2nd/257-296 | [0 ~ 70.0 / **24.0** / 0.2 µA/step] |
| | 28 | Thk/2nd/210-256 | [0 ~ 70.0 / **27.0** / 0.2 µA/step] |
| | 29 | Thk/2nd/129-209 | [0 ~ 70.0 / **31.0** / 0.2 µA/step] |
| | 30 | Thk/2nd/-128 | [0 ~ 70.0 / **34.0** / 0.2 µA/step] |
| | 31 | OHP/297 | [0 ~ 70.0 / **19.0** / 0.2 µA/step] |
| | 32 | OHP/210 | [0 ~ 70.0 / **26.0** / 0.2 µA/step] |
| 312* | PaperTrans_NN1 (Paper Transfer NN1)<br>The display indicates: Paper Weight/Side 1 or 2/Paper Width (mm) | | |
| | 1 | Nrml/1st/-297 | Sets the paper transfer current when absolute humidity AH ($g/m^3$) is in the following range:<br>$80 < AH \leq 14$ (this is the 'NN1' humidity range)<br>See SP2-310 for comments.<br>[0 ~ 70.0 / **40.0** / 0.2 µA/step] |
| | 2 | Nrml/1st/257-296 | [0 ~ 70.0 / **42.0** / 0.2 µA/step] |
| | 3 | Nrml/1st/210-256 | [0 ~ 70.0 / **44.0** / 0.2 µA/step] |
| | 4 | Nrml/1st/129-209 | [0 ~ 70.0 / **47.0** / 0.2 µA/step] |
| | 5 | Nrml/1st/-128 | [0 ~ 70.0 / **50.0** / 0.2 µA/step] |
| | 6 | Mid/1st/-297 | [0 ~ 70.0 / **41.0** / 0.2 µA/step] |
| | 7 | Mid/1st/257-296 | [0 ~ 70.0 / **43.0** / 0.2 µA/step] |
| | 8 | Mid/1st/210-256 | [0 ~ 70.0 / **45.0** / 0.2 µA/step] |
| | 9 | Mid/1st/129-209 | [0 ~ 70.0 / **47.0** / 0.2 µA/step] |
| | 10 | Mid/1st/-128 | [0 ~ 70.0 / **51.0** / 0.2 µA/step] |

| 2 | Mode No. (Class 1, 2, and 3) | | Function / [ Setting ] |
|---|---|---|---|
| 312* | 11 | Thk/1st/-297 | [0 ~ 70.0 / **23.0** / 0.2 µA/step] |
| | 12 | Thk/1st/257-296 | [0 ~ 70.0 / **23.0** / 0.2 µA/step] |
| | 13 | Thk/1st/210-256 | [0 ~ 70.0 / **24.0** / 0.2 µA/step] |
| | 14 | Thk/1st/129-209 | [0 ~ 70.0 / **24.0** / 0.2 µA/step] |
| | 15 | Thk/1st/-128 | [0 ~ 70.0 / **24.0** / 0.2 µA/step] |
| | 16 | Nrml/2nd/-297 | [0 ~ 70.0 / **42.0** / 0.2 µA/step] |
| | 17 | Nrml/2nd/257-296 | [0 ~ 70.0 / **45.0** / 0.2 µA/step] |
| | 18 | Nrml/2nd/210-256 | [0 ~ 70.0 / **48.0** / 0.2 µA/step] |
| | 19 | Nrml/2nd/129-209 | [0 ~ 70.0 / **51.0** / 0.2 µA/step] |
| | 20 | Nrml/2nd/-128 | [0 ~ 70.0 / **55.0** / 0.2 µA/step] |
| | 21 | Mid/2nd/-297 | [0 ~ 70.0 / **43.0** / 0.2 µA/step] |
| | 22 | Mid/2nd/257-296 | [0 ~ 70.0 / **46.0** / 0.2 µA/step] |
| | 23 | Mid/2nd/210-256 | [0 ~ 70.0 / **49.0** / 0.2 µA/step] |
| | 24 | Mid/2nd/129-209 | [0 ~ 70.0 / **52.0** / 0.2 µA/step] |
| | 25 | Mid/2nd/-128 | [0 ~ 70.0 / **56.0** / 0.2 µA/step] |
| | 26 | Thk/2nd/-297 | [0 ~ 70.0 / **23.0** / 0.2 µA/step] |
| | 27 | Thk/2nd/257-296 | [0 ~ 70.0 / **28.0** / 0.2 µA/step] |
| | 28 | Thk/2nd/210-256 | [0 ~ 70.0 / **32.0** / 0.2 µA/step] |
| | 29 | Thk/2nd/129-209 | [0 ~ 70.0 / **37.0** / 0.2 µA/step] |
| | 30 | Thk/2nd/-128 | [0 ~ 70.0 / **42.0** / 0.2 µA/step] |
| | 31 | OHP/297 | [0 ~ 70.0 / **22.0** / 0.2 µA/step] |
| | 32 | OHP/210 | [0 ~ 70.0 / **30.0** / 0.2 µA/step] |
| 313* | PaperTrans_NN2 (Paper Transfer NN2)<br>The display indicates: Paper Weight/Side 1 or 2/Paper Width (mm) | | |
| | 1 | Nrml/1st/-297 | Sets the paper transfer current when absolute humidity AH ($g/m^3$) is in the following range:<br>$14 < AH \leq 19$ (this is the 'NN2' humidity range)<br>See SP2-310 for comments.<br>[0 ~ 70.0 / **36.0** / 0.2 µA/step] |
| | 2 | Nrml/1st/257-296 | [0 ~ 70.0 / **38.0** / 0.2 µA/step] |
| | 3 | Nrml/1st/210-256 | [0 ~ 70.0 / **39.0** / 0.2 µA/step] |
| | 4 | Nrml/1st/129-209 | [0 ~ 70.0 / **40.0** / 0.2 µA/step] |
| | 5 | Nrml/1st/-128 | [0 ~ 70.0 / **42.0** / 0.2 µA/step] |
| | 6 | Mid/1st/-297 | [0 ~ 70.0 / **37.0** / 0.2 µA/step] |
| | 7 | Mid/1st/257-296 | [0 ~ 70.0 / **39.0** / 0.2 µA/step] |
| | 8 | Mid/1st/210-256 | [0 ~ 70.0 / **40.0** / 0.2 µA/step] |
| | 9 | Mid/1st/129-209 | [0 ~ 70.0 / **41.0** / 0.2 µA/step] |
| | 10 | Mid/1st/-128 | [0 ~ 70.0 / **43.0** / 0.2 µA/step] |
| | 11 | Thk/1st/-297 | [0 ~ 70.0 / **25.0** / 0.2 µA/step] |
| | 12 | Thk/1st/257-296 | [0 ~ 70.0 / **25.0** / 0.2 µA/step] |
| | 13 | Thk/1st/210-256 | [0 ~ 70.0 / **24.0** / 0.2 µA/step] |
| | 14 | Thk/1st/129-209 | [0 ~ 70.0 / **24.0** / 0.2 µA/step] |
| | 15 | Thk/1st/-128 | [0 ~ 70.0 / **24.0** / 0.2 µA/step] |
| | 16 | Nrml/2nd/-297 | [0 ~ 70.0 / **43.0** / 0.2 µA/step] |
| | 17 | Nrml/2nd/257-296 | [0 ~ 70.0 / **45.0** / 0.2 µA/step] |
| | 18 | Nrml/2nd/210-256 | [0 ~ 70.0 / **46.0** / 0.2 µA/step] |
| | 19 | Nrml/2nd/129-209 | [0 ~ 70.0 / **48.0** / 0.2 µA/step] |

| 2 | Mode No. (Class 1, 2, and 3) | | Function / [ Setting ] |
|---|---|---|---|
| 313* | 20 | Nrml/2nd/-128 | [0 ~ 70.0 / **50.0** / 0.2 µA/step] |
| | 21 | Mid/2nd/-297 | [0 ~ 70.0 / **44.0** / 0.2 µA/step] |
| | 22 | Mid/2nd/257-296 | [0 ~ 70.0 / **46.0** / 0.2 µA/step] |
| | 23 | Mid/2nd/210-256 | [0 ~ 70.0 / **47.0** / 0.2 µA/step] |
| | 24 | Mid/2nd/129-209 | [0 ~ 70.0 / **49.0** / 0.2 µA/step] |
| | 25 | Mid/2nd/-128 | [0 ~ 70.0 / **51.0** / 0.2 µA/step] |
| | 26 | Thk/2nd/-297 | [0 ~ 70.0 / **28.0** / 0.2 µA/step] |
| | 27 | Thk/2nd/257-296 | [0 ~ 70.0 / **32.0** / 0.2 µA/step] |
| | 28 | Thk/2nd/210-256 | [0 ~ 70.0 / **36.0** / 0.2 µA/step] |
| | 29 | Thk/2nd/129-209 | [0 ~ 70.0 / **41.0** / 0.2 µA/step] |
| | 30 | Thk/2nd/-128 | [0 ~ 70.0 / **45.0** / 0.2 µA/step] |
| | 31 | OHP/297 | [0 ~ 70.0 / **23.0** / 0.2 µA/step] |
| | 32 | OHP/210 | [0 ~ 70.0 / **33.0** / 0.2 µA/step] |
| 314* | PaperTrans_HH (Paper Transfer HH).<br>The display indicates: Paper Weight/Side 1 or 2/Paper Width (mm) | | |
| | 1 | Nrml/1st/-297 | Sets the paper transfer current when absolute humidity AH ($g/m^3$) is in the following range:<br>19 < AH (this is the 'HH' humidity range)<br>See SP2-310 for comments.<br>[0 ~ 70.0 / **32.0** / 0.2 µA/step] |
| | 2 | Nrml/1st/257-296 | [0 ~ 70.0 / **33.0** / 0.2 µA/step] |
| | 3 | Nrml/1st/210-256 | [0 ~ 70.0 / **33.0** / 0.2 µA/step] |
| | 4 | Nrml/1st/129-209 | [0 ~ 70.0 / **34.0** / 0.2 µA/step] |
| | 5 | Nrml/1st/-128 | [0 ~ 70.0 / **34.0** / 0.2 µA/step] |
| | 6 | Mid/1st/-297 | [0 ~ 70.0 / **33.0** / 0.2 µA/step] |
| | 7 | Mid/1st/257-296 | [0 ~ 70.0 / **34.0** / 0.2 µA/step] |
| | 8 | Mid/1st/210-256 | [0 ~ 70.0 / **34.0** / 0.2 µA/step] |
| | 9 | Mid/1st/129-209 | [0 ~ 70.0 / **35.0** / 0.2 µA/step] |
| | 10 | Mid/1st/-128 | [0 ~ 70.0 / **35.0** / 0.2 µA/step] |
| | 11 | Thk/1st/-297 | [0 ~ 70.0 / **26.0** / 0.2 µA/step] |
| | 12 | Thk/1st/257-296 | [0 ~ 70.0 / **25.0** / 0.2 µA/step] |
| | 13 | Thk/1st/210-256 | [0 ~ 70.0 / **25.0** / 0.2 µA/step] |
| | 14 | Thk/1st/129-209 | [0 ~ 70.0 / **24.0** / 0.2 µA/step] |
| | 15 | Thk/1st/-128 | [0 ~ 70.0 / **24.0** / 0.2 µA/step] |
| | 16 | Nrml/2nd/-297 | [0 ~ 70.0 / **44.0** / 0.2 µA/step] |
| | 17 | Nrml/2nd/257-296 | [0 ~ 70.0 / **44.0** / 0.2 µA/step] |
| | 18 | Nrml/2nd/210-256 | [0 ~ 70.0 / **44.0** / 0.2 µA/step] |
| | 19 | Nrml/2nd/129-209 | [0 ~ 70.0 / **44.0** / 0.2 µA/step] |
| | 20 | Nrml/2nd/-128 | [0 ~ 70.0 / **44.0** / 0.2 µA/step] |
| | 21 | Mid/2nd/-297 | [0 ~ 70.0 / **45.0** / 0.2 µA/step] |
| | 22 | Mid/2nd/257-296 | [0 ~ 70.0 / **45.0** / 0.2 µA/step] |
| | 23 | Mid/2nd/210-256 | [0 ~ 70.0 / **45.0** / 0.2 µA/step] |
| | 24 | Mid/2nd/129-209 | [0 ~ 70.0 / **45.0** / 0.2 µA/step] |
| | 25 | Mid/2nd/-128 | [0 ~ 70.0 / **45.0** / 0.2 µA/step] |
| | 26 | Thk/2nd/-297 | [0 ~ 70.0 / **28.0** / 0.2 µA/step] |
| | 27 | Thk/2nd/257-296 | [0 ~ 70.0 / **32.0** / 0.2 µA/step] |
| | 28 | Thk/2nd/210-256 | [0 ~ 70.0 / **36.0** / 0.2 µA/step] |

| 2 | Mode No. (Class 1, 2, and 3) | | Function / [ Setting ] |
|---|---|---|---|
| 314* | 29 | Thk/2nd/129-209 | [0 ~ 70.0 / **40.0** / 0.2 μA/step] |
| | 30 | Thk/2nd/-128 | [0 ~ 70.0 / **44.0** / 0.2 μA/step] |
| | 31 | OHP/297 | [0 ~ 70.0 / **24.0** / 0.2 μA/step] |
| | 32 | OHP/210 | [0 ~ 70.0 / **36.0** / 0.2 μA/step] |
| 320* | PaperTrans_Col (Paper Transfer Correction)<br>The display indicates: Paper Type/Side 1 or 2/Printing mode | | |
| | 1 | Nrml/1st/1C | Corrects the electric current for paper transfer. **DFU**<br>[0 ~ 100 / **45** / 1%/step] |
| | 2 | Nrml/1st/2C | [0 ~ 100 / **90** / 1%/step] |
| | 3 | Nrml/1st/3C | [0 ~ 100 / **100** / 1%/step] |
| | 4 | Nrml/2nd/1C | [0 ~ 100 / **45** / 1%/step] |
| | 5 | Nrml/2nd/2C | [0 ~ 100 / **90** / 1%/step] |
| | 6 | Nrml/2nd/3C | [0 ~ 100 / **100** / 1%/step] |
| | 7 | Thick/1st/1C | [0 ~ 100 / **45** / 1%/step] |
| | 8 | Thick/1st/2C | [0 ~ 100 / **90** / 1%/step] |
| | 9 | Thick/1st/3C | [0 ~ 100 / **100** / 1%/step] |
| | 10 | Thick/2nd/1C | [0 ~ 100 / **45** / 1%/step] |
| | 11 | Thick/2nd/2C | [0 ~ 100 / **90** / 1%/step] |
| | 12 | Thick/2nd/3C | [0 ~ 100 / **100** / 1%/step] |
| | 13 | OHP/1C | [0 ~ 100 / **60** / 1%/step] |
| | 14 | OHP/2C | [0 ~ 100 / **90** / 1%/step] |
| | 15 | OHP/3C | [0 ~ 100 / **100** / 1%/step] |
| 400* | ClnBiasLL1 | | |
| | 1 | 1C | Adjusts the transfer belt cleaning bias voltage when absolute humidity AH ($g/m^3$) is in the following range:<br>$0 < AH \leq 3.5$ (this is the 'LL1' humidity range) **DFU**<br>[0 ~ 2000 / **1200** / 10 Volt/step] |
| | 2 | 2C-4C | [0 ~ 2000 / **1200** / 10 Volt/step] |
| | 3 | HalfSpeed/1C | [0 ~ 2000 / **1200** / 10 Volt/step] |
| | 4 | HalfSpeed/2C-4C | [0 ~ 2000 / **1200** / 10 Volt/step] |
| | 5 | Ppattern | [0 ~ 2000 / **1600** / 10 Volt/step] |
| | 6 | NoImageArea | [0 ~ 2000 / **1400** / 10 Volt/step] |
| | 7 | JamRecovery | [0 ~ 2000 / **1600** / 10 Volt/step] |
| 401* | ClnBiasLL2 | | |
| | 1 | 1C | Adjusts the transfer belt cleaning bias voltage when absolute humidity AH ($g/m^3$) is in the following range:<br>$3.5 < AH \leq 8.0$ (this is the 'LL2' humidity range) **DFU**<br>[0 ~ 2000 / **1600** / 10 Volt/step] |
| | 2 | 2C-4C | [0 ~ 2000 / **1600** / 10 Volt/step] |
| | 3 | HalfSpeed/1C | [0 ~ 2000 / **1600** / 10 Volt/step] |
| | 4 | HalfSpeed/2C-4C | [0 ~ 2000 / **1600** / 10 Volt/step] |
| | 5 | Ppattern | [0 ~ 2000 / **1600** / 10 Volt/step] |
| | 6 | NoImageArea | [0 ~ 2000 / **1400** / 10 Volt/step] |
| | 7 | JamRecovery | [0 ~ 2000 / **1600** / 10 Volt/step] |
| 402* | ClnBiasNN1 | | |
| | 1 | 1C | Adjusts the transfer belt cleaning bias voltage when absolute humidity AH ($g/m^3$) is in the following range:<br>$8.0 < AH \leq 14$ (this is the 'NN1' humidity range) **DFU**<br>[0 ~ 2000 / **1700** / 10 Volt/step] |

Service Tables

| 2 | Mode No. (Class 1, 2, and 3) | | Function / [ Setting ] |
|---|---|---|---|
| 402* | 2 | 2C-4C | [0 ~ 2000 / **1700** / 10 Volt/step] |
| | 3 | HalfSpeed/1C | [0 ~ 2000 / **1700** / 10 Volt/step] |
| | 4 | HalfSpeed/2C-4C | [0 ~ 2000 / **1700** / 10 Volt/step] |
| | 5 | Ppattern | [0 ~ 2000 / **1600** / 10 Volt/step] |
| | 6 | NoImageArea | [0 ~ 2000 / **1400** / 10 Volt/step] |
| | 7 | JamRecovery | [0 ~ 2000 / **1600** / 10 Volt/step] |
| 403* | ClnBiasNN2 | | |
| | 1 | 1C | Adjusts the transfer belt cleaning bias voltage when absolute humidity AH (g/m$^3$) is in the following range:<br>14 < AH ≤ 19 (this is the 'NN2' humidity range) **DFU**<br>[0 ~ 2000 / **1700** / 10 Volt/step] |
| | 2 | 2C-4C | [0 ~ 2000 / **1700** / 10 Volt/step] |
| | 3 | HalfSpeed/1C | [0 ~ 2000 / **1700** / 10 Volt/step] |
| | 4 | HalfSpeed/2C-4C | [0 ~ 2000 / **1700** / 10 Volt/step] |
| | 5 | Ppattern | [0 ~ 2000 / **1600** / 10 Volt/step] |
| | 6 | NoImageArea | [0 ~ 2000 / **1400** / 10 Volt/step] |
| | 7 | JamRecovery | [0 ~ 2000 / **1600** / 10 Volt/step] |
| 404* | ClnBiasHH | | |
| | 1 | 1C | Adjusts the transfer belt cleaning bias voltage when absolute humidity AH (g/m$^3$) is in the following range:<br>19 < AH (this is the 'HH' humidity range) **DFU**<br>[0 ~ 2000 / **1700** / 10 Volt/step] |
| | 2 | 2C-4C | [0 ~ 2000 / **1700** / 10 Volt/step] |
| | 3 | HalfSpeed/1C | [0 ~ 2000 / **1700** / 10 Volt/step] |
| | 4 | HalfSpeed/2C-4C | [0 ~ 2000 / **1700** / 10 Volt/step] |
| | 5 | Ppattern | [0 ~ 2000 / **1600** / 10 Volt/step] |
| | 6 | NoImageArea | [0 ~ 2000 / **1400** / 10 Volt/step] |
| | 7 | JamRecovery | [0 ~ 2000 / **1600** / 10 Volt/step] |
| 500* | FusingBias (Discharge pin) | | |
| | 1 | Nrml/1C/1st | Adjusts the discharge pin voltage (paper separation) and fusing bias voltage. **DFU**<br>[4000 ~ 1000 / **3000** / 100 Volt/step]<br>• *Same bias voltage is applied to the fusing unit and the discharge pin.* |
| 500* | 2 | Nrml/1C/2nd | [4000 ~ 1000 / **3000** / 100 Volt/step] |
| | 3 | Nrml/FC/1st | [4000 ~ 1000 / **2500** / 100 Volt/step] |
| | 4 | Nrml/FC/2nd | [4000 ~ 1000 / **2500** / 100 Volt/step] |
| | 5 | Thk/1C/1st | [4000 ~ 1000 / **3000** / 100 Volt/step] |
| | 6 | Thk/1C/2nd | [4000 ~ 1000 / **3000** / 100 Volt/step] |
| | 7 | Thk/FC/1st | [4000 ~ 1000 / **2500** / 100 Volt/step] |
| | 8 | Thk/FC/2nd | [4000 ~ 1000 / **2500** / 100 Volt/step] |
| 510* | Fu_Bias_SW | | |
| | 1 | Fu_Bias_SW | Switches the fusing and discharge pin bias control on or off.<br>[0 ~ 1 / **1** / 1/step] **DFU**<br>• *0: Control off*<br>• *1: Control on* |
| 801* | ChrgClnIntval | | |
| | 1 | ChrgClnIntval | Sets the charge corona unit cleaning interval.<br>[0 ~ 5000 / **600** / 100 counts/step]<br>Refer to section 6 for details. |

| 2 | Mode No. (Class 1, 2, and 3) | | Function / [ Setting ] |
|---|---|---|---|
| 802 | ChargerCln | | |
| | 1 | Charger Cln | Executes a forced charge corona unit cleaning.<br>Set to 1 to start cleaning.<br>[0 ~ 1 / **0** / 1/step] |
| 901* | EnvControl | | |
| | 1 | EnvControl | Switches environment control on or off.<br>[0 ~ 1 / **1** / 1/step] **DFU**<br>• *0: Control off (The paper transfer and cleaning bias environments are set to NN1. The image transfer bias environment is set to MM.)*<br>• *1: Control on* |
| 903 | PaperTrans_Low | | |
| | 1 | LL1/Nrml | Adjusts the paper transfer current applied when the machine is at low temperature.<br>[0.0 ~ 70.0 / **8.0** / 0.1 μA/step]<br>*The specified value is subtracted from the value specified by SP2-310 (PaperTrans_LL1) under the following conditions:*<br>• *The machine is in the LL1 environment.*<br>• *400 images or less are created after the machine starts* |
| 904 | 1CBiasAdj | | |
| | 1 | [M] | Adjusts the development bias applied during the mono-color mode. **DFU**<br>[0 ~ 100 / **50** / 1 V/step] |
| | 2 | [C] | [0 ~ 100 / **0** / 1 V/step] |
| | 3 | [Y] | [0 ~ 100 / **0** / 1 V/step] |
| | 4 | [K] | [0 ~ 100 / **0** / 1 V/step] |
| 912 | Temp_HumDisp | | |
| | 1 | Temp | Displays the temperature measured by the temperature sensor inside the machine.<br>[–127 ~ 127 / 0 / 1°C/step] |
| | 2 | Humidity_1 | Displays the humidity measured by the humidity sensor inside the machine.<br>[0 ~ 255 / **0** / 1%/step] |
| | 3 | Humidity_2 | Displays the absolute humidity calculated from the temperature/humidity sensor readings.<br>[0 ~ 65535 / **0** / 0.1 g/m$^3$/step] |
| 912 | 4 | EnvLevel | Displays the current humidity level calculated from the absolute humidity.<br>[0 ~ 1 / **0** / 1/step]<br>• *LL1: 0 < AH ≤ 3.5*<br>• *LL2: 3.5 < AH ≤ 8.0*<br>• *NN1: 8.0 < AH ≤ 14*<br>• *NN2: 14 < AH ≤ 19*<br>• *HH: 19 < AH*<br>** AH = absolute humidity* |

| 2 | Mode No. (Class 1, 2, and 3) | | Function / [ Setting ] |
|---|---|---|---|
| 917 | Test Pattern | | |
| | 1 | Test Pattern | Allows you to print out the test pattern.<br>[0 ~ 1 / **0** / 1/step]<br>• *1: Print out the test patterns listed in SP5-955 (Test Pattern – Pattern).*<br>To print the selected chart, change the setting from 0 to 1, then print out the demo sheet (user tool) or send a print job from a PC. |
| 930* | TrimAdjust | | |
| | 1 | Front | Adjusts the white margin on printouts.<br>[0 ~ 65535 / **0** / 1/step] |
| | 2 | Back | [0 ~ 65535 / **0** / 1/step] |
| | 3 | Lead | [0 ~ 65535 / **20** / 1/step] |
| | 4 | Trail | [0 ~ 65535 / **20** / /step] |
| 939 | OPC_Lub_Int | | |
| | 1 | OPC_Lub_Int | Executes/does not execute OPC lubrication by interrupting the job. **DFU**<br>[0 ~ 1 / **0** / 1/step]<br>• *0: Off*<br>• *1: On*<br>*SP2-942-1 (OPC_Lub_Intrvl) specifies the lubrication interval.* |
| 940 | OPC_Lub_Mode | | |
| | 1 | OPC_Lub_Mode | Executes a forced OPC lubrication to reduce the friction on the OPC belt.**DFU**<br>[0 ~ 1 / **0** / 1/step]<br>• *The OPC belt and the lubricant brush operate for 2 minutes.* |
| 941 | OPC_Lub_Time | | |
| | 1 | job end | Determines how long the OPC belt is lubricated for after the end of every job.<br>[0 ~ 30 / **20** / 1 s/step] |
| | 2 | OPC_Lub_Int | Determines how long the OPC belt is lubricated at the forced lubrication<br>[0 ~ 60 / **10** / 1 s/step] |
| 942 | OPC_Lub_Intrvl | | |
| | 1 | OPC_Lub_Intrvl | [10 ~ 200 / **50** / 10/step] **DFU**<br>*When SP2-939 (OPC_Lub_Int) is set to on, the machine lubricates the OPC belt and image transfer belt at the interval (number of prints) set with this SP. Incoming print jobs do not interrupt the lubrication.* |
| 943 | DischargeTsld (Discharge Threshold) | | |
| | 1 | DischargeTsld | Adjusts the threshold of discharge. **DFU**<br>[13.0 ~ 22.0 / **17.0** / 1.0 g/m$^3$/step] |

| 2 | Mode No. (Class 1, 2, and 3) | | Function / [ Setting ] |
|---|---|---|---|
| 944 | OPCLub:LrgArea | | |
| | 1 | Int | Enables/disables OPC lubrication after a certain amount of images are printed. The lubrication timing depends on SP2-944-2 to -5.<br>When high coverage images are continuously printed, cleaning of the OPC may not be enough. To correct this, OPC lubrication is carried out during printing (lubrication time: around 34 seconds).<br>• *On*<br>• *Off*<br>*When "on" is set, OPC lubrication is executed under either of the following conditions:*<br>***Condition 1.** The number of printouts since the previous lubrication reaches the value in SP2-944-4; and the average pixel coverage of those printouts exceeds the value in SP2-944-2.*<br>***Conditions 2.** The number of printouts since the previous lubrication reaches the value in SP2-944-5; and the average pixel coverage of those printouts exceeds the value in SP2-944-3.* |
| | 2 | ImgAreaValue1 | Adjusts the average pixel.<br>[50 ~ 800 / **500** / 10 /step] |
| | 3 | ImgAreaValue2 | [50 ~ 800 / **350** / 10 /step] |
| | 4 | Sheets1 | [10 ~ 80 / **20** / 1 /step] |
| | 5 | Sheets2 | [10 ~ 80 / **40** / 1 /step] |
| 950 | S_Reg._Adj. | | |
| | 1 | M(2:P1b) | Colour registration adjustment: adjusts the start timing of imaging for each color. **DFU**<br>[–3 ~ 3 / **–1** / 2 line/step]<br>• *2 lines = 0.047566 ms (about 85 μm)*<br>• *+: Delays the start timing.*<br>• *–: Advances the start timing.*<br>• *The start timing is adjusted only in plain paper mode, and when one of the following conditions is satisfied:*<br>*1) Between the two images on the transfer belt (when two images are developed on the OPC at the same time (☛6.2))*<br>*2) B4 SEF or larger (multi-print job)* |
| | 2 | C(2:P1b) | [–3 ~ 3 / **0** / 2 line/step] |
| | 3 | Y(2:P1b) | [–3 ~ 3 / **0** / 2 line/step] |
| | 4 | K(2:P1b) | [–3 ~ 3 / **0** / 2 line/step] |
| | 5 | M(1:P1b) | [–3 ~ 3 / **–1** / 2 line/step] |
| | 6 | C(1:P1b) | [–3 ~ 3 / **0** / 2 line/step] |
| | 7 | Y(1:P1b) | [–3 ~ 3 / **0** / 2 line/step] |
| | 8 | K(1:P1b) | [–3 ~ 3 / **0** / 2 line/step] |
| | 9 | M(P1a) | For use in Japan only.<br>[–3 ~ 3 / **0** / 2 line/step] |
| | 10 | C(P1a) | |
| | 11 | Y(P1a) | |
| | 12 | K(P1a) | |

| 2 | Mode No. (Class 1, 2, and 3) | | Function / [ Setting ] |
|---|---|---|---|
| 960 * | Tray_Heater | | |
| | 1 | Tray_Heater | Optional tray heaters installed or not<br>[0 ~ 1 / **0** / 1/step]<br>0: No, 1: Yes |
| 970 | OilClearMode | | |
| | 1 | Mode | Enables/disables the settings of SP2–970–2 through 4.<br>[0 ~ 1 / **1** / 1 /step]<br>• *0: Does not clear*<br>• *1: Clears*<br>Oil on duplex copies gets on the transfer belt, and this can cause uneven image density. To remove this oil, printing stops, the PCU turns, and the cleaning unit removes the oil. |
| | 2 | Print_Int | Enables/disables interruption of the oil removal process.<br>[0 ~ 1 / **0** / 1 /step]<br>• *0: Users cannot interrupt*<br>• *1: Users can interrupt*<br>*If interruption is enabled, the user does not need to wait until the oil removal process ends, but the output image may be poor.* |
| | 3 | Repetition_Num | Specifies how many times the oil removal process is repeated.<br>[1 ~ 20 / **5** / 1 /step]<br>*The more times the oil removal is repeated, the better the output images are; but the longer it takes* |
| | 4 | Dup_Sheets | Specifies how often the oil removal process is done. The unit is the number of duplex prints. The counter counts down once every narrow (A4 SEF or less) duplex sheet, and counts back up 1 for every other type of sheet.<br>[1 ~ 50 / **10** / 1 /step] |

## *SP3-XXX: (Process)*

| 3 | Mode No. (Class 1, 2, and 3) | | Function / [ Setting ] |
|---|---|---|---|
| 001 | ProcessCtrl | | |
| | 1 | ProcessCtrl | Does a forced process control, and displays the result as one of the following codes.<br>[0 ~ 1 / **0** / 1/step]<br>• *0: Normal termination*<br>• *103: Error (ID sensor inactive → Defective ID sensor, Defective circuit, Defective BCU board)*<br>• *104: Error (ID sensor unable to receive light → Defective OPC belt, Dirty OPC belt, Defective ID sensor, Defective circuit, Defective BCU board)*<br>• *105: Error (ID sensor unable to receive reflection from OPC → Same as "104")*<br>• *254: Execution impossible (Executed while not in the ready status)*<br>• *255: Execution aborted (due to an SC or a cover opened)* |
| 003* | Lub_Interval | | |
| | 1 | Lub_Interval | Sets the process control interval.<br>[0 ~ 1000 / **200** / 10 sheet/step]<br>• *0: Disables automatic process control* |
| 004* | EnvChange | | |
| | 1 | Temp | Sets the temperature/humidity change that triggers process control (process control is done if temperature or humidity has changed by this amount since the previous process control).<br>[0 ~ 255 / **15** / 1°C/step] |
| | 2 | Humidity | [0 ~ 65535 / **15.0** / 1.0 g/m$^3$/step] |
| 005* | ProconPreRound | | |
| | 1 | ProconPreRound | PCU and development unit idling is done before process control. This value determines the amount of idling rotation.<br>[1 ~ 5 / **1** / 1 turn/step]<br>• *1 turn: A3 length* |
| 006* | DensityAdjust | | |
| | 1 | M/A AdjustLevel | Select the toner density compensation level for process control.<br>[0 ~ 3 / **0** / 1/step]<br>• *0: None*<br>• *1: Weak*<br>• *2: Medium*<br>• *3: Strong*<br>*The higher the value, the darker the prints will be.* |
| | 2 | Vh_ AdjustLevel | |

Service Tables

| 3 | Mode No. (Class 1, 2, and 3) | | Function / [ Setting ] |
|---|---|---|---|
| 910* | DoctorIntval | | |
| | 1 | print(FC) | Sets the doctor roller reverse rotation interval.<br>[0 ~ 50 / **50** / 1 sheet/step]<br>• *The value indicates how many sheets are output before the doctor roller is reversed. (Sheet counts are converted into equivalent A4-LEF sheet counts.)*<br>• *Reversing the roller removes toner blockages.*<br>• *The sheet count is reset after reverse rotation.*<br>• *Decrease the value when vertical white lines appear on prints.* |
| | 2 | print(MC) | [0 ~ 65535 / **50** / 1 sheet/step] |
| | 3 | job end | [0 ~ 65535 / **20** / 1 sheet/step] |
| 920* | Lub._CL_Time | | |
| | 1 | Lub._CL_Time | Sets the OPC belt lubrication period. **DFU**<br>[0 ~ 100 / **100** / 10%/step]<br>• *When 100 is specified, the OPC belt cleaning clutch is always on whenever the OPC is turning, so the OPC gets lubricated. When 50 is specified, the clutch is only on half the time that the motor is on.* |
| 940 | JobEnd_Int | | |
| | 1 | JobEnd_Int | The OPC belt is lubricated after the end of every job. This SP determines whether the lubrication is interrupted when a job arrives at the printer.<br>[0 ~ 1 / **0** / 1/step]<br>• ***0:** Interrupted*<br>• *1: Not interrupted* |
| 941 | OPC_Ide_PwrOn | | |
| | 1 | Idling_Time | The image transfer belt tends to curl after a long period without rotation.<br>To correct this, image transfer belt idling is done if the fusing temperature is not high enough to print just after the main switch is turned on.<br>This SP determines how long the idling rotation is done.<br>[3 ~ 5 / **3** / 1 minute/step] |
| | 2 | PrintingReady | Select when the machine can accept a print job after the idling starts.<br>• *0: Immediately*<br>• *1: After idling has been done for 1 minute*<br>• *2: After idling finishes.*<br>[0 ~ 2 / **0** / 1/step] |
| 942 | OPC_Ide_E_Svr | | |
| | 1 | Idling_Time | The image transfer belt has curl tendency after long period without rotation.<br>The image transfer belt tends to curl after a long period without rotation.<br>To correct this, image transfer belt idling is done if the fusing temperature is not high enough to print when returning from energy saver mode.<br>This SP determines how long the idling rotation is done.<br>[3 ~ 5 / **3** / 1 minute/step] |

| 3 | Mode No. (Class 1, 2, and 3) | | Function / [ Setting ] |
|---|---|---|---|
| 942 | 2 | PrintingReady | Select when the machine can accept a print job after the idling starts.<br>• *0: Immediately*<br>• *1: After idling has been done for 1 minute*<br>• *2: After idling finishes.*<br>[0 ~ 2 / **0** / 1/step] |
| 970 | ImgAreaRate | | |
| | 1 | M | Specifies the minimum image area (expressed as a percentage of an A4 page) required to maintain optimum development unit condition (☛ Toner Revitalization: SP3–971 [AutoTnrConsume]).<br>[0 ~ 10.0 / **2.0** / 0.1 %/step]<br>*After 20 sheets over a number of small jobs (or after 50 sheets in one job), if the developed area is less than the value of this SP mode, toner is transferred to the image transfer belt and cleaned off. This is performed during the doctor roller reverse rotation.* |
| | 2 | C | [0.0 ~ 10.0 / **2.0** / 0.1 %/step] |
| | 3 | Y | [0.0 ~ 10.0 / **2.0** / 0.1 %/step] |
| | 4 | Bk | [0.0 ~ 10.0 / **3.0** / 0.1 %/step] |
| 971 | AutoTnrConsume | | |
| | 1 | AutoTnrConsume | Enables/disables the toner revitalization.<br>[0 or 2 / **2** / 1 /step]<br>• *0: Disables*<br>• *2: Enables*<br>*Continuous printing with a relatively low coverage ratio (CMYK less than 5% each) tends to reduce the charge potential of the toner, because the toner remains in the hopper for a long time. This can lead to spots on the copy. Toner revitalization removes this defective toner periodically.* |
| 980 | EmptyRev(Bk) | | |
| | 1 | EmptyRev(Bk) | Activates/deactivates 1-color idling after paper transfer.<br>[0 ~ 1 / **0** / 1/step]<br>• *0: Deactivates*<br>• *1: Activates*<br>*Set this to 1 if the user complains about diagonal lines in solid areas of prints that only use one toner color (M, C, or Y). It is especially noticeable in black areas.* |

## *SP5-XXX: (Mode)*

| 5 | Mode No. (Class 1, 2, and 3) | | Function / [ Setting ] |
|---|---|---|---|
| 009* | Language | | |
| | 1 | | Selects the language for the operation panel.<br>After changing the setting, turn the main switch off and on for initialization.<br>[2 ~ 16 / **2** / 1 /step]<br>• *2: British*<br>• *3: American*<br>• *4: French*<br>• *5: German*<br>• *6: Italian*<br>• *7: Spanish*<br>• *8: Dutch*<br>• *9: Norwegian*<br>• *10: Danish*<br>• *11: Swedish*<br>• *12: Polish*<br>• *13: Portuguese*<br>• *14: Hungarian*<br>• *15: Czech*<br>• *16: Finnish* |
| 024 | mm/inch Display | | |
| | 1 | mm/inch Display | Changes the unit on the display.<br>[0 ~ 1 / **0** / 1/step]<br>• *0: mm*<br>• *1: inch* |
| 045* | Counter Method | | |
| | 1 | Counter Method | Switches the counter display.<br>The setting can only be changed once.<br>[0 ~ 1 / **0** / 1/step]<br>• *0: Developments*<br>• *1: Prints* |
| 046* | RomUpdateDisp | | |
| | 1 | ROM Update | Enables or disables the ROM Update utility. When enabled, this utility will be displayed in the user program mode.<br>[0 ~ 1 / **1** / 1/step]<br>• *0: Enabled*<br>• *1: Disabled* |
| 101* | Energy Saver | | |
| | 3 | Level 1 | Sets the energy saver timers.<br>[0 ~ 60 / **0** / 10 s/step]<br>• *To enable Energy Saver, use the user program mode. When Energy Saver Level 1 is enabled, the value is initialized to 30 seconds.*<br>• *0: Energy saver level 1 is disabled* |
| | 4 | Level 2 | [0 ~ 3600 / **1800** / 60 s/step]<br>• *To enable Energy Saver, use the user program mode. When Energy Saver Level 2 is enabled, the value is initialized to 1,800 seconds.*<br>• *0: Energy saver level 2 is disabled* |

| 5 | Mode No. (Class 1, 2, and 3) | | Function / [ Setting ] |
|---|---|---|---|
| 104* | Double Count | | |
| | 1 | Double Count | The counters count double for A3/11" x 17".<br>[0 ~ 1 / **0** / 1/step]<br>• *0: Normal count*<br>• *1: Double count* |
| 305* | ES Level 2 set | | |
| | 1 | ES Level 2 set | Activates energy saver level 2.<br>[0 ~ 1 / **0** / 1/step]<br>• *0: Enables*<br>• *1: Disables* |
| 401* | UlimitAutoSet | | |
| | 44 | ULimitAutoSet | Activates the auto user code registration function (prints are counted and logged for each user code and the counts can be viewed with SmartNetMonitor).<br>[0 ~ 1 / **1** / 1/step]*0: Inactivated*<br>• *1: Activated* |
| 801 | Memory Clear | | |
| | 1 | All | Clears the settings from the NVRAM and initializes the settings.<br>• *Enter key: Clears*<br>• *Escape key: Does not clear* |
| | 2 | ENG_All | Clears the engine settings.<br>• *Enter key: Clears*<br>• *Escape key: Does not clear* |
| | 3 | SCS (System Control Service) | Clears the system settings.<br>• *Enter key: Clears*<br>• *Escape key: Does not clear* |
| | 4 | IMH (Image Memory Handler) | Clears IMH data. **DFU**<br>• *Enter key: Clears*<br>• *Escape key: Does not clear* |
| | 5 | MCS (Memory Control Service) | Clears MCS data. **DFU**<br>• *Enter key: Clears*<br>• *Escape key: Does not clear*<br>*MCS is for network settings.* |
| | 8 | PRT | Clears the user tool settings.<br>• *Enter key: Clears*<br>• *Escape key: Does not clear* |
| | 11 | NCS | Clears the network settings.<br>• *Enter key: Clears*<br>• *Escape key: Does not clear* |
| 803 | InputCheck (See section 5.3.2.) | | |
| 804 | OutputCheck (See section 5.3.3.) | | |
| 810 | SC_Reset | | |
| | 1 | SC_Reset | Resets a fusing-related SC.<br>[0 ~ 1 / **0** / 1/step]<br>*Resets a type A service call condition.*<br>***NOTE:*** *Turn the main switch off and on after using this SP.* |
| 811 | MachineSerial | | |

| 5 | Mode No. (Class 1, 2, and 3) | | Function / [ Setting ] |
|---|---|---|---|
| | 2 | Display | Displays the machine serial number.<br>[0 ~ 1 / **0** / 1/step] |
| 812* | FAX TEL No. | | |
| | 2 | FAX TEL No. | Sets the fax or telephone number for a service representative by using the enter key and the down arrow key.<br>[0 ~ 0 / **0** / 0/step]<br>• *Both numbers and alphabetic characters can be input.* |
| 813* | HV_SC_Sens | | |
| | 1 | HV_SC_Sens | Activates/deactivates detection of SC conditions for the high voltage power supplies.<br>[0 ~ 1 / **0** / 1/step]<br>• *0: Activated*<br>• *1: Deactivated*<br>• *The following SCs are affected:* SC300, 301, 302, 350, 351, 400, 410, 411, 412, 413, 420, 421, 430 |
| 814* | Jam_OFF/ON | | |
| | 1 | Jam_OFF/ON | Activates/deactivates jam detection.<br>[0 ~ 1 / **0** / 1/step]<br>• *0: Jam sensor activated*<br>• *1: Jam sensor deactivated* |
| 816* | RMS Setting | | |
| | 1 | RMS Setting | Enables/disables the RMS function. **DFU**<br>[0 ~ 1 / **0** / 1/step]<br>• *0: Disable*<br>• *1: Enable* |
| 828 | Network | | |
| | 66 | HD job Clear | Clears/prints the jobs spooled on the HDD (before the main power was turned off) after initialization.<br>[0 ~ 1 / **0** / 1 /step]<br>• *0: Clears*<br>• *1: Prints* |
| | 67 | JobSpool(LPR) | Spools/does not spool jobs.<br>[0 ~ 1 / **0** / 1 /step]<br>• *0: Does not spool*<br>• *1: Spools* |
| | 68 | JopSpool(IPP) | Spools/does not spool jobs.<br>[0 ~ 1 / **0** / 1 /step]<br>• *0: Does not spool*<br>• *1: Spools* |
| 832 | HDD Init | | |
| | 1 | HDD Init. | Initializes the hard disk.<br>[0 ~ 0 / **0** / 0 /step]<br>*Use this SP mode only for hard disk error recovery.* |
| 833* | JobLog ON/OFF | | |

| 5 | Mode No. (Class 1, 2, and 3) | | Function / [ Setting ] |
|---|---|---|---|
| | 7 | JobLog ON/OFF | Saves the results of jobs in the job log.<br>[0 ~ 1 / **0** / 1 /step]<br>• *If this mode is enabled, the result data is written on the HDD. If no HDD is installed, this feature is disabled even if this SP is set to "enabled".*<br>• *0: Disabled*<br>• *1: Enabled* |
| 839 | IEEE1394 | | |
| | 4 | Device Name | Displays the host name. |
| | 7 | Cycle Master | Activates/deactivates the cycle master function.<br>[0 ~ 1 / **1** / 1 /step]<br>• *0: Deactivates*<br>• *1: Activates* |
| | 8 | BCR mode | Specifies the setting of the broadcast channel register (BCR).<br>[0 ~ 3 / **3** / 1 /step]<br>• *0: Does not operate until IRM writes data*<br>• *1: Wait awhile; copies the BCR of IRM if IRM does not write data*<br>• *2: (Reserved)*<br>• *3: Always validates the BCR* |
| | 9 | IRM 1394a Check | Executes/does not execute the 1394a check of IRM (1 bit).<br>[0 ~ 1 / **0** / 1 /step]<br>• *0: Does not execute*<br>• *1: Executes* |
| | 10 | Unique ID | Shows/does not show node unique IDs.<br>[0 ~ 1 / **1** / 1 /step]<br>• *0: Does not show*<br>• *1: Shows* |
| | 11 | Logout | Specifies how the initiators are handled.<br>[0 ~ 1 / **1** / 1 /step]<br>• *0: Rejects the initiator if it tries to log in once again after having logged off*<br>• *1: Rejects the initiator if it tries to log on once again after having logged off; then forcefully makes the initiator log in* |
| | 12 | Login | Validates/invalidates exclusive logon processing.<br>[0 ~ 1 / **0** / 1 /step]<br>• *0: Invalidates exclusive logon processing*<br>• *1: Validates exclusive logon processing* |
| | 13 | Login MAX | Specifies the maximum number of initiators that are able to log on.<br>[0 ~ 63 / **8** / 1 /step] |
| 840 | IEEE 802.11b | | |
| | 4 | Current SSID | Displays the current SSID. |
| | 6 | Channel Max | Specifies the maximum number of channels.<br>[0 ~ 14 / **0** / 1 /step] |
| | 7 | Channel Min | Specifies the minimum number of channels.<br>[0 ~ 14 / **0** / 1 /step] |
| | 11 | WEP key number | Displays the WEP key number. |
| 844 | USB | | |

| 5 | Mode No. (Class 1, 2, and 3) | | Function / [ Setting ] |
|---|---|---|---|
| | 1 | TransferRate | Specifies the transfer rate.<br>• ***HS/FS Auto***<br>• *FS Fixation* |
| | 2 | Vendor ID | Specifies the vendor ID.<br>[0000 ~ FFFF / **05CA** / 1 /step] |
| | 3 | Product ID | Specifies the vendor ID.<br>[0000 ~ FFFF / **0403** / 1 /step] |
| | 4 | DevReleaseNum (Device Release Number) | Specifies the device release number.<br>[0 ~ 9999 / **100** / 1 /step] |
| 851 | Bluetooth | | |
| | 1 | Bluetooth | Selects the Bluetooth mode. **DFU**<br>• ***Public***<br>• *Private* |
| 907 | Plug/Play | | |
| | 1 | Plug/Play | Specifies the Plug and Play setting.<br>[0 ~ 6 / **0** / 1 /step]<br>• *0: Ricoh Asia & EU*<br>• *1: Ricoh US*<br>• *2: SAVIN*<br>• *3: GES*<br>• *4: NRG*<br>• *5: Infotec*<br>• *6: LANIER* |
| 930* | Meter_Charge | | |
| | 1 | Meter_Charge | Activates the meter charge function.<br>[0 ~ 1 / **0** / 1 /step]<br>• *0: Off*<br>• *1: On* |
| 931 | PM_Display | | |

| 5 | Mode No. (Class 1, 2, and 3) | | Function / [ Setting ] |
|---|---|---|---|
| | 1 | Charger | Specifies whether the PM warning for the charge corona unit is displayed when the replacement time arrives.<br>• ***1: Displayed***<br>• *0: Not displayed* |
| | 2 | PCU | Specifies whether the PM warning for the PCU is displayed when the replacement time arrives.<br>• ***1: Displayed***<br>• *0: Not displayed* |
| | 3 | Bank_Feed | Specifies whether the PM warning for the feed rollers in the optional paper feed unit is displayed when the replacement time arrives.<br>• *1: Displayed*<br>• ***0: Not displayed*** |
| 945* | MidThickPaper | | |
| | 1 | Tray1 | Defines whether a tray contains 'normal' or 'middle thick' paper, when the user tool setting for the tray is set to 'plain'.<br>[0 ~ 1 / **1** / 1 /step]<br>• *0: Yes (>90g/m$^2$, 24lb)*<br>• *1: No (Normal)*<br>• *The user tool setting (Paper Input – Paper Type) defines whether each tray contains 'normal', thick, or OHP. SP5-945 defines what 'normal' means for each tray (either 'normal' or '>90g/m$^2$, 24lb').*<br>• *Thick: Use this for paper heavier than 105 g/m2 (28 lb)*<br>***NOTE:*** *'>90g/m$^2$, 24lb' means 'greater than or equal to 90g/m$^2$, 24lb'.* |
| | 2 | Tray2 | |
| | 3 | Tray3 | |
| | 6 | Bypass Tray | |
| 955* | Test Pattern | | |

| 5 | Mode No. (Class 1, 2, and 3) | | Function / [ Setting ] |
|---|---|---|---|
| | 1 | Pattern | Selects the test pattern. ⇒ Enable with SP2-917 (Test Pattern), then send a job from a PC or print an SMC list.<br>[0 ~ 255 / **0** / 1 /step]<br>• *0: Normal operation*<br>• *1: Vertical 1 dot & 1 line*<br>• *2: Horizontal 1 dot & 1 line*<br>• *3: Vertical 2 dots & 1 line*<br>• *4: Horizontal 2 dots & 1 line*<br>• *5: Grid – 1 dot & 1 line*<br>• *6: Grid – 1 dot & dual lines*<br>• *7: Independent dot pattern*<br>• *8: 2 independent dots pattern*<br>• *9: Black*<br>• *10: Belt pattern*<br>• *11: Trimmed area*<br>• *12: 2 dots & 1 trimmed area*<br>• *13: Slant grid*<br>• *14: 2 dots & a slant grid*<br>• *15: Horizontal (dots & a stitch pattern)*<br>• *16: Check Flag*<br>• *19: 4 independent dots*<br>• *20: Horizontal 1 dot & a line (LD 1/2 reversals)*<br>• *21: Grid – 1 dot & a line (LD 1/2 reversals)*<br>• *22: Grid – 1 dot & dual lines (LD 1/2 reversals)*<br>• *23: Independent 1 dot pattern (LD 1/2 reversals)*<br>• *24: 3 line gray scale*<br>• *25: Horizontal gray scale*<br>• *26: Vertical gray scale*<br>• *29: Horizontal gray scale extended*<br>• *30: Vertical gray scale extended*<br>• *31: Horizontal gray scale 600 dpi*<br>• *32: Vertical gray scale 600 dpi*<br>• *35: Horizontal gray scale with white spots*<br>• *36: Vertical gray scale with white spots*<br>• *38: Horizontal gray scale extended with white spots*<br>• *39: Vertical gray scale extended with white spots*<br>• *40: Horizontal gray scale 600 dpi with white spots*<br>• *41: Vertical gray scale 601 dpi with white spots*<br>• *43: White - for process evaluation*<br>• *50: Vertical stitch & dot pattern*<br>• *51: 2 beam density pattern*<br>• *52: Trimmed area & cross pattern*<br>• *53: Grid – 1 dot & 1 line (2)*<br>• *54: Grid – 1 dot & dual lines (2)*<br>• *55: Independent 2 dot pattern – 40 mm sub scan*<br>• *56: Independent 2 dot pattern – 102.5 mm sub scan*<br>• *57: Process control pattern*<br>*Reset to 0 after finishing the tests.* |
| | 2 | Density | Adjusts the test pattern density<br>[0 ~ 255 / **255** / 1 /step] |
| 970 | DebugSerial | | |

| 5 | Mode No. (Class 1, 2, and 3) | | Function / [ Setting ] |
|---|---|---|---|
| | 1 | DebugSerial | [0 ~ 0xff / **0x00** / 0 /step] **DFU** |
| 990* | SP print mode | | |
| | 1 | SP all print | Prints SP setting data.<br>[0 ~ 255 / **0** / 0 /step]<br>• SP all print: All items printed out with SPs 5-990-2, -4, -6, and -7.<br>• All: All SP mode settings<br>• Non-Default: SP settings that have been changed from the defaults |
| | 2 | All | |
| | 4 | Loging | |
| | 6 | Non-Default | |
| | 7 | NIB Summry | |
| 998 | ColorAdjExe | | |
| | 1 | ColorAdjExe | Executes charge corona wire cleaning and forced process control.<br>[0 ~ 1 / **0** / 1 /step] |

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

| 7 | Mode No. (Class 1, 2, and 3) | | Function / [ Setting ] |
|---|---|---|---|
| 003* | M/C Counter | | |
| | 1 | P: Total | Displays the values of the color counters.<br>[–3000 ~ 9999999 / **0** / 1/step] |
| | 7 | P: B&W | [0 ~ 9999999 / **0** / 1/step] |
| | 8 | P: Full Color | [0 ~ 9999999 / **0** / 1/step] |
| | 10 | D: Color | [–3000 ~ 9999999 / **0** / 1/step]<br>*This SP mode is development counter for meter charge mode.* |
| | 11 | D: B&W | [–2000 ~ 9999999 / **0** / 1/step]<br>*This SP mode is development counter for meter charge mode.* |
| | 20 | P: Full color | [–1000 ~ 9999999 / **0** / 1/step]<br>*This SP mode is used for the Japanese market only.* |
| | 21 | P: B&W/Single | [–2000 ~ 9999999 / **0** / 1/step]<br>*This SP mode is used for the Japanese market only.* |
| | 22 | P: Single | [–2000 ~ 9999999 / **0** / 1/step]<br>*This SP mode is used for the Japanese market only.* |
| | 23 | P: B&W | [–2000 ~ 9999999 / **0** / 1/step]<br>*This SP mode is used for the Japanese market only.* |
| | 25 | P: Full Color | [–1000 ~ 9999999 / **0** / 1/step]<br>*This SP mode is used for the Japanese market only.* |
| | 28 | P: Color (except for B&W) | [–1000 ~ 9999999 / **0** / 1/step]<br>*This SP mode is print counters for meter charge mode. This SP mode is used in all markets.* |
| | 29 | P: B&W | [–2000 ~ 9999999 / **0** / 1/step]<br>*This SP mode is print counters for meter charge mode. This SP mode is used in all markets.* |
| | 30 | P: Color Total | [–1000 ~ 9999999 / **0** / 1/step]<br>*This SP mode is print counters for meter charge mode. This SP mode is used in all markets.* |
| 007* | Other Counter | | |
| | 1 | Duplex | Displays counter values.<br>[0 ~ 9999999 / **0** / 0 sheet/step] |
| | 2 | A3/DLT/Over420 | |
| | 3 | Staple | |
| 101* | Size Counter | | |
| | 4 | A3 | Displays the counter values for each paper size.<br>[0 ~ 9999999 / **0** / 0 sheet/step] |
| | 5 | A4 | |
| | 6 | A5 | |
| | 13 | B4 | |
| | 14 | B5 | |
| | 32 | 11" x 17" | |
| | 36 | 8 1/2" x 14" | |
| | 38 | 8 1/2" x 11" | |
| | 44 | 5 1/2" x 8 1/2" | |
| | 128 | Other | |
| 106* | WasteTnrFull | | |
| | 1 | OPC | Displays the waste toner bottle counter.<br>[0 ~ 65535 / **0** / 1 /step] |
| | 2 | Belt | [0 ~ 65535 / **0** / 1 /step] |

| 7 | Mode No. (Class 1, 2, and 3) | | Function / [ Setting ] |
|---|---|---|---|
| 107* | OilCounter | | |
| | 1 | EndCounter | Displays the oil supply unit counter.<br>[0 ~ 65535 / **0** / 1 /step] |
| | 2 | NearEndCounter | |
| 204* | Feed Counter | | |
| | 1 | Tray1 | Displays the number of sheets fed from each paper feed station.<br>[0 ~ 9999999 / **0** / 0 sheet/step] |
| | 2 | Tray2 | |
| | 3 | Tray3 | |
| | 5 | By-pass | |
| | 6 | Duplex | |
| 502* | Total Jam | | |
| | 1 | Total Jam | Displays the total number of jams detected.<br>[0 ~ 9999 / **0** / 0 /step] |
| 504* | Jam Location | | |
| | 3 | Tray1:NonFeed | Displays the number of jams according to the location. where they were detected.<br>[0 ~ 9999 / **0** / 0 /step] |
| | 4 | Tray2:NonFeed | |
| | 5 | Tray3:NonFeed | |
| | 6 | Bypass:NonFeed | |
| | 8 | VerticalTrans1 | |
| | 9 | VerticalTrans3 | |
| | 12 | Regist.1 | |
| | 13 | Regist.3 | |
| | 14 | Fusing_Unit1 | |
| | 16 | Exit1 | |
| | 17 | Relay1 | |
| | 19 | EntDuplex1 | |
| | 20 | EntDuplex:Rev1 | |
| | 23 | ExitDuplex1 | |
| | 40 | Ent.Fin. | |
| | 41 | Exit_Fin. | |
| | 42 | Base_Fin. | |
| | 52 | Tray2: OFF | |
| | 53 | Tray3: OFF | |
| | 58 | VerticalTrans1 | |
| | 59 | VerticalTrans2 | |
| | 60 | VerticalTrans3 | |
| | 63 | Regist.2 | |
| | 64 | Regist.4 | |
| | 66 | Exit2 | |
| | 67 | Relay2 | |
| | 69 | EntDuplex2 | |
| | 70 | EntDuplex:Rev2 | |
| | 73 | ExitDuplex2 | |
| | 100 | Finisher entrance/Upper Mail box | |
| | 101 | Finisher Exit/Lower Mail box | |
| | 102 | Finisher Print removed | |
| | 103 | Finisher Base sensor | |
| | 104 | Finisher Staple Error | |

| 7 | Mode No. (Class 1, 2, and 3) | | Function / [ Setting ] |
|---|---|---|---|
| 504* | 105 | Finisher Tray Shift Error | Displays the number of jams according to the location. where they were detected.<br>[0 ~ 9999 / **0** / 0 /step] |
| | 106 | Finisher Tray Lift Error | |
| | 133 | Finisher Exit: off | |
| 506* | Jam Paper Size | | |
| | 4 | A3 | Displays the number of jams according to paper size.<br>[0 ~ 9999 / **0** / 1 /step] |
| | 5 | A4 | |
| | 13 | B4 | |
| | 14 | B5 | |
| | 32 | 11" x 17" | |
| | 36 | 8 1/2" x 14" | |
| | 38 | 8 1/2" x 11" | |
| | 44 | 5 1/2" x 8 1/2" | |
| | 128 | Other | |
| 508* | Replace_Cnter | | |
| | 1 | PCU | Displays how many times the parts/consumables have been replaced.<br>[0 ~ 255 / **0** / 1 /step] |
| | 2 | Development: M | |
| | 3 | Development: C | |
| | 4 | Development: Y | |
| | 5 | Development: Bk | |
| | 6 | FusingUnit | |
| | 7 | Charger | |
| | 8 | Oil | |
| | 9 | WesteTnr: OPC | |
| | 10 | WesteTnr: Belt | |
| 508* | 11 | Tonner: M | Displays how many times the parts/consumables have been replaced.<br>[0 ~ 255 / **0** / 1 /step] |
| | 12 | Tonner: C | |
| | 13 | Tonner: Y | |
| | 14 | Tonner: Bk | |
| | 15 | Bank1_Feed | |
| | 16 | Bank2_Feed | |
| 509* | Proc_Cont_Cnter | | |
| | 1 | Proc_Cont_Cnter | Displays the process control counter.<br>[0 ~ 9999999 / **0** / 1 /step] |
| 510* | Chgr_Cln_Cntr | | |
| | 1 | Chgr_Cln_Cntr | Displays the charge corona unit cleaning counter.<br>[0 ~ 9999999 / **0** / 1 /step] |

| 7 | Mode No. (Class 1, 2, and 3) | | Function / [ Setting ] |
|---|---|---|---|
| 603* | Proc_ErrorLog | | |
| | 1 | Log 1 | Displays the process control error log.<br>[0 ~ 9999999 / **0** / 1 /step]<br>• *103: ID sensor unable to receive light*<br>*Reasons: ID sensor failure or incorrect installation, BCU failure*<br>• *104: ID sensor unable to receive reflection*<br>*Reasons: As for 103, plus: Uneven OPC belt surface, foreign material on OPC belt*<br>• *105: ID sensor unable to receive OPC reflection*<br>*Reasons: As for 103, plus: Uneven OPC belt surface, foreign material on OPC belt*<br>• *110: ID sensor defective imaging – Cyan*<br>*Reasons: Abnormal development bias, dirty bias terminal, development unit incorrectly installed, BCU failure*<br>• *111: ID sensor defective imaging – Magenta*<br>*Reasons: As for 110*<br>• *113: ID sensor defective imaging – Cyan*<br>*Reasons: As for 110, plus: Laser writing failure, abnormal charge, loss of synchronization*<br>• *114: ID sensor defective imaging – Magenta*<br>*Reasons: As for 110, plus: Laser writing failure, abnormal charge, loss of synchronization*<br>• *115: ID sensor defective imaging – Yellow*<br>*Reasons: As for 110, plus: Laser writing failure, abnormal charge, loss of synchronization*<br>• *116: ID sensor defective imaging – Black*<br>*Reasons: As for 110*<br>• *118: Black not detected*<br>*Reasons: As for 110*<br>• *123: ID sensor defective imaging – Black*<br>*Reasons: As for 110, plus: Laser writing failure, abnormal charge, loss of synchronization* |
| | 2 | Log 2 | |
| | 3 | Log 3 | |
| 803* | PM_Counter | | |
| | 1 | PCU | Displays the number of sheets printed for each current unit.<br>[0 ~ 9999999 / **0** / 1 sheet/step]<br>• *For clearing the counters, see SP7-804.* |
| | 2 | Development: M | |
| | 3 | Development: C | |
| | 4 | Development: Y | |
| | 5 | Development: Bk | |
| | 6 | FusingUnit | |
| | 7 | Charger | |
| | 8 | Bank1_Feed | |
| | 9 | Bank2_Feed | |
| 804 | PM_Clear | | |
| | 6 | FusingUnit | Clears the PM counters.<br>[0 ~ 1 / **0** / 1 /step]<br>• *For displaying the counter, see SP7-803.* |
| | 7 | Charger | |
| | 8 | Bank1_Feed | |
| | 9 | Bank2_Feed | |
| | 100 | AllReset | |

Service Tables

| 7 | Mode No. (Class 1, 2, and 3) | | Function / [ Setting ] |
|---|---|---|---|
| 807 | SC/Jam Clear | | |
| | 1 | SC/Jam Clear | Clears the counters related to SC codes and paper jams.<br>[0 ~ 1 / **0** / 0 /step] |
| 808 | Counter Clear | | |
| | 1 | Counter Clear | Clears all counters except for SP7-003 and –007.<br>[0 ~ 1 / **0** / 0 /step] |
| 816 | Tray Clear | | |
| | 1 | Tray1 | Clears the tray counters (SP7-204).<br>[0 ~ 1 / **0** / 0 /step] |
| | 2 | Tray2 | |
| | 3 | Tray3 | |
| | 5 | BypassTray | |
| | 6 | Duplex | |
| 819 | OilCntRst | | |
| | 1 | OilCntRst | Resets the oil counter values to “0.”<br>[0 ~ 1 / **0** / 0 /step]<br>• *0: Does not clear*<br>• *1: Clears* |
| 825 | Counter Reset | | |
| | 1 | Counter Reset | Resets the total counter values to “0.”<br>[0 ~ 0 / **0** / 0 /step] |
| 832* | Diag. Result | | |
| | 1 | Diag. Result | Displays the result of the diagnostics. Refer to section 4.2 for the error codes.<br>[0 ~ 0 / **0** / 0 /step] |
| 833 | Covrage | | |
| | 1 | Last:M | Displays coverage ratios.<br>[0.00 ~ 100.0 / **0.00** / 0.01 %step]<br>*This SP mode displays the “coverage ratio” of the output, i.e. the ratio of the total pixel area of the image data to the total printable area on the paper.*<br>*Do not use this counter for billing purposes. This is because this value is not directly proportional to the amount of toner consumed, although of course it is one factor that affects this amount. The other major factors involved include: the type, total image area and image density of the original, toner concentration and developer potential.*<br>*Last: This is the coverage for the previous sheet.*<br>*Average: This is the average coverage for each sheet.* |
| | 2 | Last:C | |
| | 3 | Last:Y | |
| | 4 | Last:Bk | |
| | 5 | Average: M | |
| | 6 | Average: C | |
| | 7 | Average: Y | |
| | 8 | Average: Bk | |
| 834 | TnrConsume | | |
| | 1 | M | Displays the coverage ratios, including toner revitalization mode.<br>[0 ~ 9999999 / **0** / 1 /step]<br>*This displays the average coverage ratio, including toner consumed during printing and toner consumed during toner revitalization mode (SP3-971).*<br>*Do not use this counter for billing purposes* |
| | 2 | C | |
| | 3 | Y | |
| | 4 | Bk | |

| 7 | Mode No. (Class 1, 2, and 3) | | Function / [ Setting ] |
|---|---|---|---|
| 835 | HighDutyCnt | | |
| | 1 | M | Used for the toner revitalization process (SP3-971). Counts the number of developments made during the past 12 hours. |
| | 2 | C | |
| | 3 | Y | |
| | 4 | Bk | |
| 836 | Total Memory | | |
| | 1 | Total Memory | Displays the memory capacity in the controller system. |
| 850 | P/J | | |
| | 1 | P/J(1) | Print per job counters are displayed. |
| | 2 | P/J(2) | |
| | 3 | P/J(3) | |
| | 4 | P/J(4) | |
| | 5 | P/J(5) | |
| | 6 | P/J(6–10) | |
| | 7 | P/J(11–20) | |
| | 8 | P/J(21–) | |
| 901 | Assert Info (Assert Information) | | |
| | 1 | File Name | Records the location where the last problem (SC990) was detected in the program. The data stored in this SP is used for problem analysis. [0 ~ 0 / **0** / 0 /step] |
| | 2 | # of Lines | |
| | 3 | Location | |
| 906* | PMCounter-PREV | | |
| | 1 | PCU | Displays the counters for the previous units. [0 ~ 9999999 / **0** / 1 /step] |
| | 2 | Development: M | |
| | 3 | Development: C | |
| | 4 | Development: Y | |
| | 5 | Development: Bk | |
| | 6 | FusingUnit | |
| | 7 | Charger | |
| | 8 | Oil | |
| | 9 | WasteTnr: OPC | |
| | 10 | WasteTnr: Belt | |
| | 11 | Toner: M | |
| | 12 | Toner: C | |
| | 13 | Toner: Y | |
| | 14 | Toner: Bk | |
| | 15 | Bank1_Feed | |
| | 16 | Bank2_Feed | |
| | 17 | Development: M | |
| | 18 | Development: C | |
| | 19 | Development: Y | |
| | 20 | Development: Bk | |
| | 21 | PCU | |
| | 22 | FusingUnit | |
| 910 | Firmware PN | | |
| | 1 | System | Displays the part numbers. [0 ~ 0 / **0** / 0 /step] |
| | 2 | Engine | |
| | 7 | Finisher | |
| | 9 | Bank1 | |
| | 11 | Mail Box | |

| 7 | Mode No. (Class 1, 2, and 3) | | Function / [ Setting ] |
|---|---|---|---|
| 910 | 13 | Duplex | Displays the part numbers.<br>[0 ~ 0 / **0** / 0 /step] |
| | 18 | NIB | |
| | 19 | Bank2 | |
| | 150 | RPCS | |
| | 151 | PS | |
| | 152 | RPDL | |
| | 153 | R98 | |
| | 154 | R16 | |
| | 155 | RPGL | |
| | 156 | R55 | |
| | 157 | RTIFF | |
| | 158 | PCL | |
| | 159 | PCLXL | |
| | 160 | MSIS | |
| | 161 | MSIS(OPTION) | |
| | 200 | Factory | |
| | 204 | Printer | |
| | 209 | Test | |
| | 210 | MIB | |
| 911* | Firmware Version | | |
| | 1 | Controller | Displays the firmware versions.<br>[0 ~ 0 / **0** / 0 /step] |
| | 2 | Engine | |
| | 7 | Finisher | |
| | 9 | Bank1 | |
| | 11 | Mail Box | |
| | 13 | Duplex | |
| | 18 | NIB | |
| | 19 | Bank2 | |
| | 150 | RPCS | |
| | 151 | PS | |
| | 152 | RPDL | |
| | 153 | R98 | |
| | 154 | R16 | |
| | 155 | RPGL | |
| | 156 | R55 | |
| | 157 | RTIFF | |
| | 158 | PCL | |
| | 159 | PCLXL | |
| | 160 | MSIS | |
| | 161 | MSIS(OPTION) | |
| | 200 | Factory | |
| | 204 | Printer | |
| | 209 | Test | |
| | 210 | MIB | |
| 920 | PM Interval | | |
| | 1 | Fusing Unit | Adjusts the PM interval for each unit.<br>[60 ~ 120 / **120** / 5/step] |
| | 3 | Charger | |
| | 4 | PCU | |
| | 5 | Development (K) | |
| | 6 | Development (MCY) | |

| 7 | Mode No. (Class 1, 2, and 3) | | Function / [ Setting ] |
|---|---|---|---|
| 930 | PM counter correction | | |
| | 1 | Development:M | A unit can be replaced before its PM counter reaches the predicted value (☛ 2.2). In this case the PM counter is automatically set to "0." When you want the PM counter to take over the previous value, the counter value of the old unit can be input. After inputting the value of this SP mode, turn the main switch off and on. |
| | 2 | Development:C | |
| | 3 | Development:Y | |
| | 4 | Development:Bk | |
| | 5 | PCU | |

### *Input Check Table*

The SP numbers do not appear on the screen. Just scroll through the menu with the up/down arrow keys until the required item appears on the display.

| SP5-803 -XXX | | Description | Reading | |
|---|---|---|---|---|
| | | | 0 | 1 |
| 1 | Tray1 | Tray set (standard tray) | Set | Not set |
| 2 | Tray1PaperEnd | Paper end sensor (standard tray) | End | Not end |
| 3 | Tray1NearEnd | Paper near-end sensor (standard tray) | Not near end | Near end |
| 4 | Tray1PaperSize | Paper size sensor (standard tray) | (See table 1.) | |
| 5 | RegistSensor | Registration sensor | Detected | Not detected |
| 6 | V Trans Sensor | Paper feed sensor | Detected | Not detected |
| 7 | ExitSensor | Exit sensor | Detected | Not detected |
| 8 | ExitFull | Paper overflow sensor | Full | Not full |
| 9 | ExitCover | Exit cover switch | Closed | Open |
| 10 | IntChngSensor | Interchange unit exit sensor | Detected | Not detected |
| 11 | By-passPaper | By-pass paper end sensor | Detected | Not detected |
| 12 | By-passSet | By-pass tray set | Not set | Set |
| 13 | FusingUSet | Fusing unit set | Set | Not set |
| 14 | OilEnd | Oil supply unit empty | End | Not end |
| 17 | TonerEnd: M | Toner end sensor: M | Not end | End |
| 18 | TonerEnd: C | Toner end sensor: C | Not end | End |
| 19 | TonerEnd: Y | Toner end sensor: Y | Not end | End |
| 20 | TonerEnd: K | Toner end sensor: K | Not end | End |
| 21 | TonerCart. M | Toner cartridge memory chip: M | Not set | Set |
| 22 | TonerCart. C | Toner cartridge memory chip: C | Not set | Set |
| 23 | TonerCart. Y | Toner cartridge memory chip: Y | Not set | Set |
| 24 | TonerCart. K | Toner cartridge memory chip: K | Not set | Set |
| 27 | WasteToner OPC | OPC belt waste toner sensor | Full | Not full |
| 28 | W.T.Bottle OPC | OPC belt waste toner bottle switch | Set | Not set |
| 31 | BeltMark | Belt mark sensor | Not detected | Detected |
| 32 | PCUNew | New PCU sensor | Not new | New |
| 33 | WasteToner Blt | Transfer belt waste toner sensor | Full | Not full |
| 34 | W.T.Bottle Blt | Transfer belt waste toner bottle switch | Set | Not set |
| 35 | LD5VCover | Interlock switch | Closed | Open |
| 36 | LeftCover | “Close Left Cover” status | Closed | Open |
| 37 | RightCover | Right cover | Closed | Open |
| 38 | FrontCover | Front cover | Closed | Open |
| 39 | Cover 24V | Interlock switch (24V) | Closed | Open |
| 41 | I’changeUnit | Interchange unit | Set | Not set |

| SP5-803 -XXX | | Description | Reading | |
|---|---|---|---|---|
| | | | 0 | 1 |
| 42 | DevMotorLock | Development motor lock | Locked | Not locked |
| 43 | OpcMotorLock | Main motor lock | Locked | Not locked |
| 44 | PfdMotorLock | Paper feed motor lock | Locked | Not locked |
| 45 | PolyMotorLock | Polygon motor lock | Locked | Not locked |
| 46 | FusingSensor | Fusing exit | Detected | Not detected |
| 55 | DplxConnect | Duplex unit | Not connected | Connected |
| 56 | Bank1Connect | 1st optional paper tray | Not connected | Connected |
| 57 | Bank2Connect | 2nd optional paper tray | Not connected | Connected |
| 58 | ExitOptConnect | Exit Option Connection | Not connected | Connected |
| 60 | Fin.EntSensor | Finisher: Entrance sensor | Not detected | Detected |
| 61 | Fin.ExitSensor | Finisher: Exit sensor | Not detected | Detected |
| 62 | Fin.HPSensor | Finisher: Jogger HP sensor | Not positioned | Positioned |
| 63 | Fin.TopCover | Finisher: Top cover sensor | Closed | Open |
| 64 | Fin.PaperHgt. | Finisher: Stack height sensor | Lever is lowered | Lever is raised |
| 65 | Fin.Upper | Finisher: Tray upper limit sensor | Not uppermost | Uppermost |
| 66 | Fin.NearFull | Finisher: Stack near-limit sensor | Not near limit | Near limit |
| 67 | Fin.StplCover | Finisher: Stapler cover | Closed | Open |
| 68 | Fin.StplHP | Finisher: Stapler HP sensor | Not at HP | At HP |
| 69 | Fin.StplEmpty | Finisher: Staple end | Detected | Not detected |
| 70 | Fin.StplCtrg | Finisher: Staple cartridge | Not detected | Detected |
| 71 | Fin.StplLock | Finisher: Stapler unit lock | Not locked | Locked |
| 72 | Fin.BaseSensor | Finisher: Base sensor | Not detected | Detected |
| 73 | Fin.BaseCover | Finisher: Right cover switch | Closed | Open |
| 74 | Fin.PaperPress | Finisher: Lever sensor | Lever is raised | Lever is lowered |
| 80 | 4binFeedSens1 | Mailbox: Lower vertical transport sensor | Paper present | No paper |
| 81 | 4binFeedSens2 | Mailbox: Upper vertical transport sensor | Paper present | No paper |
| 84 | 4binFullSens1 | Mailbox: Tray 1 overflow | Not full | Full |
| 85 | 4binFullSens2 | Mailbox: Tray 2 overflow | Not full | Full |
| 86 | 4binFullSens3 | Mailbox: Tray 3 overflow | Not full | Full |
| 87 | 4binFullSens4 | Mailbox: Tray 4 overflow | Not full | Full |
| 88 | 4binPaperSens1 | Mailbox: Tray 1 paper | Detected | Not detected |
| 89 | 4binPaperSens2 | Mailbox: Tray 2 paper | Detected | Not detected |
| 90 | 4binPaperSens3 | Mailbox: Tray 3 paper | Detected | Not detected |
| 91 | 4binPaperSens4 | Mailbox: Tray 4 paper | Detected | Not detected |
| 92 | 4binDoorSens | Mailbox: Door safety sw. | Open | Closed |
| 100 | BankFeedSens1 | 1st optional tray: Relay sensor | No paper | Paper present |
| 101 | BankFeedSens2 | 2nd optional tray: Relay sensor | No paper | Paper present |

| SP5-803 -XXX | | Description | Reading | |
|---|---|---|---|---|
| | | | 0 | 1 |
| 102 | BankCover1 | 1st optional tray: Right cover (vertical guide switch) | Closed | Open |
| 103 | BankCover2 | 2nd optional tray: Right cover (vertical guide switch) | Closed | Open |
| 104 | Bank1Set | 1st optional tray: Set | Not set | Set |
| 105 | Bank2Set | 2nd optional tray: Set | Not set | Set |
| 106 | Bank1PaperEnd | 1st optional tray: Paper end | Not end | End |
| 107 | Bank2PaperEnd | 2nd optional tray: Paper end | Not end | End |
| 108 | Bank1PaperSize | 1st optional tray: Paper size | (See table 2.) | |
| 109 | Bank2PaperSize | 2nd optional tray: Paper size | | |
| 110 | Bank1NearEnd | 1st optional tray: Paper height | (See table 3.) | |
| 111 | Bank2NearEnd | 2nd optional tray: Paper height | | |
| 120 | DplxEntSens | Duplex: Entrance sensor | Not detected | Detected |
| 121 | DplxExitSens | Duplex: Exit sensor | Detected | Not detected |
| 122 | DplxOpen | Duplex unit open switch | Closed | Open |
| 123 | DplxCover | Duplex cover sensor | Open | Closed |

### *Table 1: Tray 1 Paper Size*

| Switch | North America | Europe/Asia | Value |
|---|---|---|---|
| 0000 | LG SEF* | B4 SEF* | 00000000 |
| 0001 | DLT SEF** | A3 SEF** | 00100000 |
| 0010 | B5 LEF | B5 LEF | 00010000 |
| 0011 | B5 SEF**** | B5 SEF**** | 00110000 |
| 0100 | LT LEF*** | A4 LEF*** | 00001000 |
| 0101 | HLT LEF | A5 LEF | 00101000 |
| 0110 | A4 SEF | A4 SEF | 00011000 |
| 0111 | LT SEF | LT SEF | 00111000 |

* : Selected with SP1-902-1 [PaperSize - B4/LG], (LG SEF/B4 SEF)
** : Selected with SP1-902-2 [PaperSize - A3/DLT], (DLT SEF/A3 SEF)
*** : Selected with SP1-902-3 [PaperSize - A4/LT], (LT LEF/A4 LEF)
**** : Selected with SP1-902-4 [PaperSize - B5/Executive], (B5 SEF/10.5" x 7.25" SEF)

0: pushed
1: not pushed

### *Table 2: 1st/2nd Bank Paper Size*

The paper size is displayed in the ASAP paper size code. For example, 000001001 (0x05) is displayed for A4 LEF.

| Size | North America | Europe/Asia | Code |
|---|---|---|---|
| A3 SEF | Detected | Detected | 10000100 |
| B4 SEF | None | Detected | 10100100 |
| A4 SEF | None | Detected | 10100110 |
| A4 LEF | Detected | Detected | 00000101 |
| B5 LEF | Detected | Detected | 00001110 |
| A5 LEF | None | Detected | 00101100 |
| DLT SEF | Detected | Detected | 10100000 |
| LG SEF | Detected | None | 10100100 |
| LT SEF | Detected | None | 10100110 |
| LT LEF | Detected | Detected | 00100110 |
| HLT LEF | Detected | None | 00101100 |

### *Table 3: 1st/2nd Bank Near End*

| Remaining paper | Paper height sensor 2 | Paper height sensor 1 | Code |
|---|---|---|---|
| Full | ON | ON | 01100100 |
| Nearly full | OFF | ON | 00110010 |
| Near end | OFF | OFF | 00001010 |

### *Output Check Table*

The SP numbers do not appear on the screen. Just scroll through the menu with the up/down arrow keys until the required item appears on the display.

| SP5-804 -XXX | | Description |
|---|---|---|
| 1 | PF Mtr:89mm/s | Paper feed motor: 89 mm/s |
| 2 | PF Mtr:178mm/s | Paper feed motor: 178 mm/s |
| 3 | PF Mtr:240mm/s | Paper feed motor: 240 mm/s |
| 4 | PF CL (1) | Paper feed clutch (standard tray) |
| 6 | FusingMtr | Fusing unit motor |
| 7 | FusingMtr: Half | Fusing unit motor: Half Speed |
| 8 | FusingFan: High | Fusing unit fan: High speed |
| 9 | FusingFan: Low | Fusing unit fan: Low speed |
| 12 | Regist CL | Registration clutch |
| 13 | I'changeSol1 | Upper gate solenoid |
| 14 | I'changeSol2 | Lower gate solenoid |
| 15 | By-pass CL | By-pass paper feed clutch |
| 16 | Pick-up SOL | By-pass pick-up solenoid |
| 17 | GAPCISleepMode | GAPCIS Sleep Mode Trigger Signal |
| 18 | QL/TonerEnd | QL/Toner End |
| 19 | DevCl: M | Development clutch: M |
| 20 | DevCl: C | Development clutch: C |
| 21 | DevCl: Y | Development clutch: Y |
| 22 | DevCl: K | Development clutch: K |
| 23 | DevMtr | Development motor |
| 24 | DevMtr: Half | Development motor: Half Speed |
| 25 | DevMtr: Rev | Development motor: Reverse |
| 26 | DevMtr: RevHalf | Development motor: Reverse Half Speed |
| 27 | Lub. Cl | OPC belt cleaning clutch |
| 28 | IDsensLED | ID sensor LED |
| 29 | OPCMtr | Main motor: Regular Speed |
| 30 | OPCMtr: Half | Main motor: Half Speed |
| 31 | OPCMtr: Rev | Main motor: Reverse |
| 32 | OPCMtr: RevHalf | Main motor: Reverse Half Speed |
| 33 | PolygonMtr | Polygon motor |
| 34 | LD | LD |
| 35 | PaperTransSol | Paper transfer solenoid |
| 36 | BeltClnCl | Transfer belt cleaning clutch |
| 37 | EngineReady | Engine Ready |
| 39 | GAVDReset | GAVD Reset |
| 40 | BeltClnSol | Transfer belt cleaning contact solenoid |
| 45 | PolyMtr+LD | Polygon Motor + LD |
| 46 | Forced Lub. | Forced Lubrication to OPC belt |
| 47 | OzonFan | Ozone Fan |
| 48 | Fan3 | 3rd Fan (Not Used) |
| 49 | TonerEnd | Toner End LED |
| 50 | Charger | Charge corona unit output |
| 51 | Dev.Bias: KY | Development bias: K |

| SP5-804 -XXX | | Description |
|---|---|---|
| 52 | Dev.Bias: CM | Development bias: MCY |
| 53 | Trans. Belt | Image transfer power supply |
| 54 | PaperTrans.: P | Paper transfer: + |
| 55 | PaperTrans.: N | Paper transfer: – |
| 56 | BeltCln: P | Image transfer belt cleaning: + |
| 57 | FusingBias | Fusing bias |
| 58 | QuenchingBias: L | Discharge pin power supply: L |
| 59 | QuenchingBias: H | Discharge pin power supply: H |
| 60 | Fin.AllOff | Finisher All Off |
| 61 | Fin.FeedMtr | Finisher: Main motor |
| 62 | Fin.JoggerMtr | Finisher: Jogger motor |
| 63 | Fin.PdlSol1 | Finisher: Paddle roller solenoid |
| 64 | Fin.PEUSol1 | Finisher: Exit unit gear solenoid |
| 65 | Fin.LeverSol | Finisher: Stack height lever solenoid |
| 66 | Fin.TrayMtr | Finisher: Output tray motor |
| 67 | Fin.StplMtr | Finisher: Stapler motor |
| 68 | Fin.FreeRun | Finisher: Free run |
| 80 | 4bin AllOff | Mailbox: All Off |
| 81 | 4bin Motor | Mailbox: Main motor |
| 82 | 4bin SOL1 | Mailbox: Turn gate solenoid 1 |
| 83 | 4bin SOL2 | Mailbox: Turn gate solenoid 2 |
| 84 | 4bin SOL3 | Mailbox: Turn gate solenoid 3 |
| 85 | 4bin FreeRun | Mailbox: Free run |
| 100 | BankCl1 | 1st optional paper tray unit: Paper feed clutch |
| 101 | BankCl2 | 2nd optional paper tray unit: Paper feed clutch |
| 102 | Bank1Mtr | 1st optional paper tray unit: Paper feed motor |
| 103 | Bank1Mtr: Half | 1st optional paper tray unit: Paper feed motor - half speed |
| 104 | Bank1Mtr: High | 1st optional paper tray unit: Paper feed motor - high speed |
| 105 | Bank2Mtr | 2nd optional paper tray unit: Paper feed motor |
| 106 | Bank2Mtr: Half | 2nd optional paper tray unit: Paper feed motor - half speed |
| 107 | Bank2Mtr: High | 2nd optional paper tray unit: Paper feed motor - high speed |
| 108 | "Bank1,2Half" | 1st and 2nd optional paper tray units: Half speed |
| 109 | "Bank1,2Mtr" | 1st and 2nd optional paper tray units: Paper feed motor |
| 120 | DplxRevMtr | Duplex: Inverter motor |
| 121 | DplxRevMtrRev | Duplex: Inverter motor - reverse |
| 122 | DplxFeedMtr | Duplex: Transport motor |
| 123 | DplxFeedMtrRev | Duplex: Transport motor - reverse |
| 124 | DplxSol | Duplex: Inverter gate solenoid |
| 125 | DplxFreeRun | Duplex: Free run |

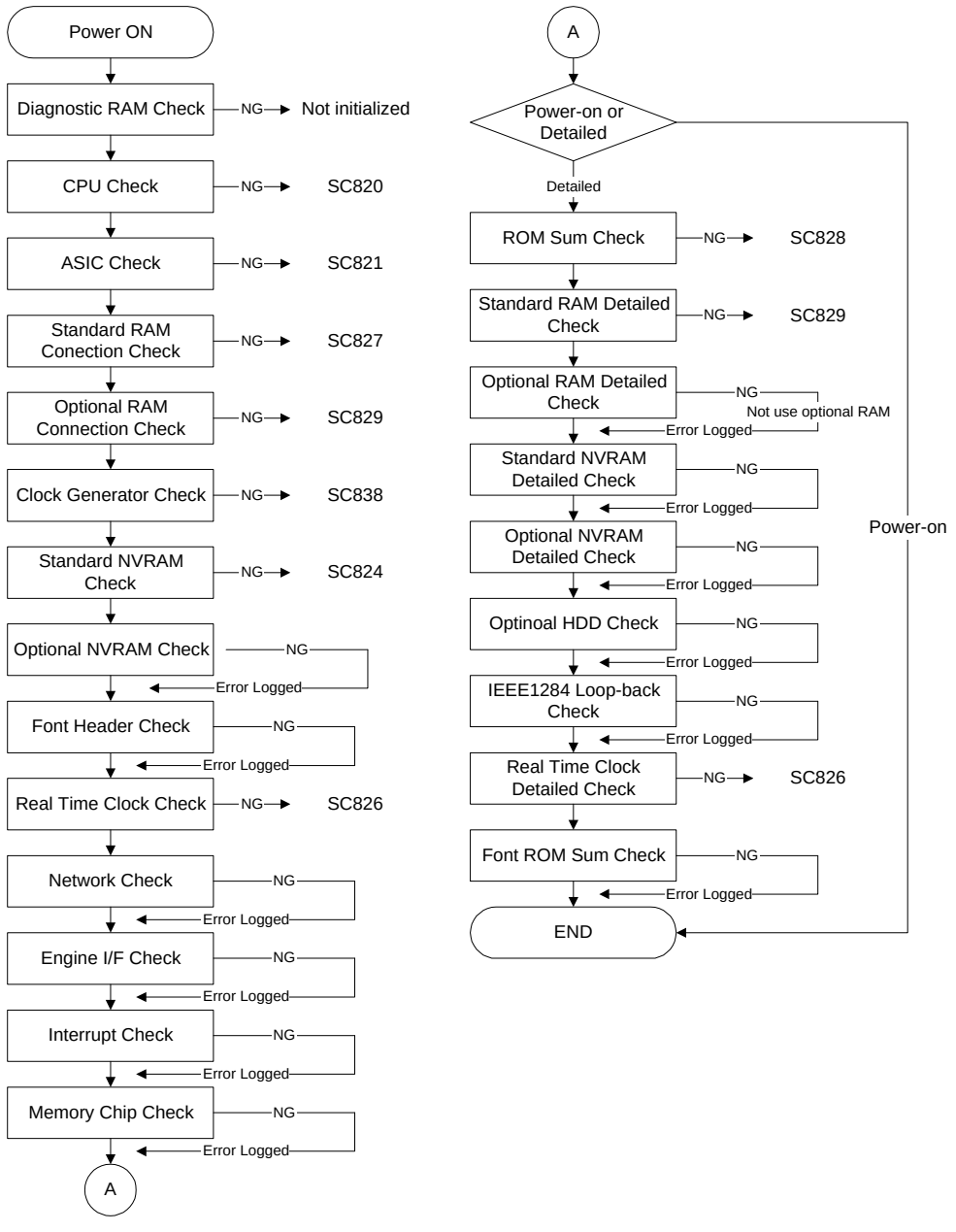
# 5.3 CONTROLLER SELF-DIAGNOSTICS

## 5.3.1 OVERVIEW

There are three types of self-diagnostics for the controller.

- Power-on self-diagnostics: The machine automatically starts the self-diagnostics just after the power has been turned on.
- Detailed self-diagnostics: The machine does the detailed self-diagnostics by using a loop-back connector (P/N G0219350)
- SC detection: The machine automatically detects SC conditions at power-on or during operation.

The following shows the workflow of the power-on and detailed self-diagnostics.




G070S516.WMF

## 5.3.2 DETAILED SELF-DIAGNOSTICS

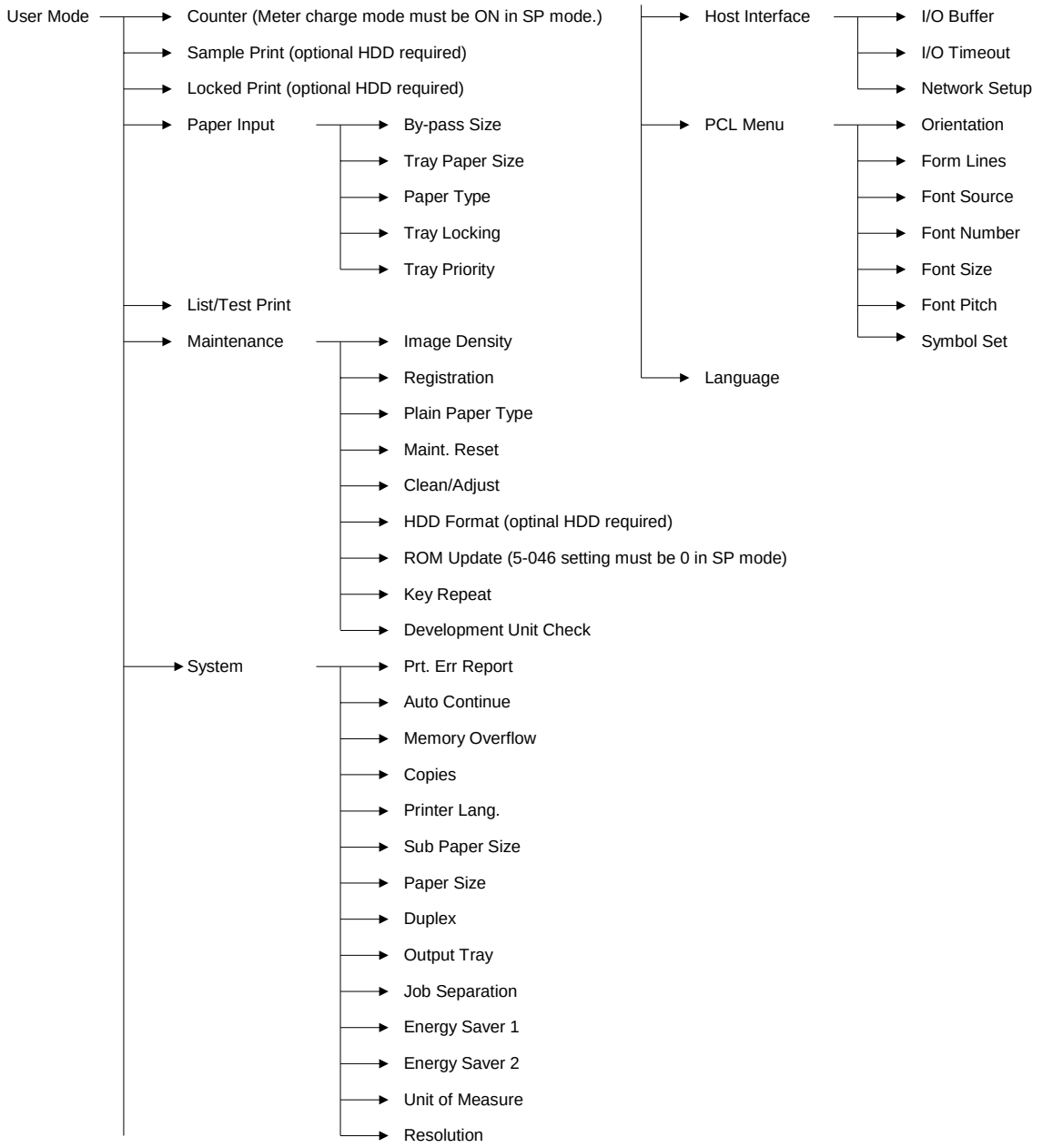
This detailed self-diagnostic test requires a loop-back connector (P/N: G0219350).

1. Turn off the machine and attach the loop-back connector to the parallel interface.
2. Turn on the machine while pressing the “Online” key and “# Enter” key together.
3. The machine automatically starts the self-diagnostics and prints the diagnostic report after completing the test.
   - Refer to the diagnostics report for the detected errors. The errors detected during self-diagnostics can be checked with SP7-832-001 (Diag. Result).
   - Refer to section 4.2 for details about the error codes.

# 5.4 USER PROGRAM MODE

To activate the user program mode, press the menu key and use the up/down arrow keys to scroll through the menu. To go back to a higher level, press the escape key. After changing the settings, press the online key. The user menu list can be printed using ‘menu list’ in the “List/Test Print” user mode.

## User Mode Tree




G070S517.WMF

# 5.5 UPGRADING SOFTWARE

**⚠CAUTION**

1. **Before upgrading the software, print out the system settings and check the current software versions.**
2. **Check that your IC card contains a later version of the software. Machine performance is not guaranteed if you install an older version.**

**NOTE:** Open the front cover when upgrading the firmware. This is to prevent the printer from going in the process control session.

## 5.5.1 OVERVIEW

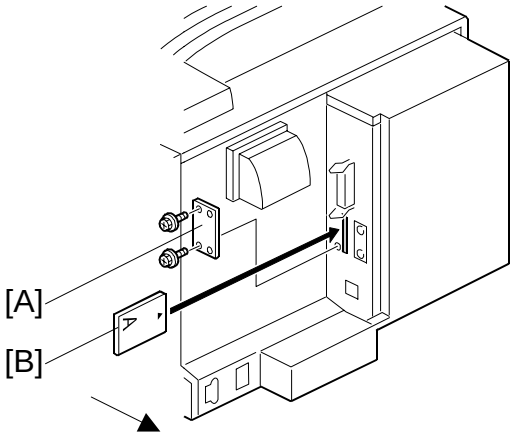
You can upgrade the following software modules:

- Engine software (BCU board software) – 1 card
- Controller system software (Controller board software) – 2 cards (no special order required)
- Network card system software – 1 card

## 5.5.2 UPGRADING

### *Procedure*

1. Turn the main switch off.
2. IC card cover [A] (🔩 x 2)
3. Insert the IC card [B].




G070R721.WMF

4. Open the front cover and turn the main switch on. The message on the right appears on the operation panel.

```
Engine
```

G070S511.WMF

5. Press the enter key.

```
Engine
*
```

G070S512.WMF

6. Press the down arrow key.

```
Update Data
```

G070S513.WMF

7. Press the enter key.

```
Updating...
**********
```

G070S514.WMF

8. Wait until the message on the right appears on the operation panel.
9. Turn the main switch off.

```
Updated
Power Off On
```

G070S515.WMF

10. Remove the IC card.
11. If upgrading two or more software modules, insert the next IC card and repeat the steps above.
12. Put back the IC card cover.
13. Turn the main switch on.

## *Error Recovery*

### *Installation Error*

If the software upgrade is unsuccessful, “NG!” or “ERR” appears on the operation panel. When either of the messages is output, do the following:

1) Turn the main switch off.
2) Check that the IC card is correctly inserted.
3) Turn the main switch on.
4) Start upgrading software from the beginning.

### *Power Failure*

If the power supply is interrupted, an error code may appear on the operation panel. Then, do the following:

1) Turn the main switch off.
2) Failure during BCU firmware download: Turn DIP switch 1 on the BCU board to ON
   Failure during controller, emulation, or network firmware download: Turn DIP switch 1 on the controller board to ON
3) Turn the main switch on.
4) Start upgrading software from the beginning.
5) Turn the DIP switch off again after finishing.

# 5.6 DIP SWITCHES

### *Controller Board*

| DIP SW No. | OFF | ON |
|---|---|---|
| 1 | Boot-up from machine | Boot-up from IC card |
| 2 to 4 | Factory Use Only: Keep these switches OFF. | |

If a download attempt failed, you must boot the machine from the IC card. To do this, set DIP SW 1 on the controller board to ON.

### *BCU Board*

| DIP SW No. | OFF | ON |
|---|---|---|
| 1 | Boot-up from machine | Boot-up from IC card |
| 2 to 4 | Factory Use Only: Keep these switches OFF. | |

If a download attempt failed, you must boot the machine from the IC card. To do this, set DIP SW 1 on the BCU board to ON.

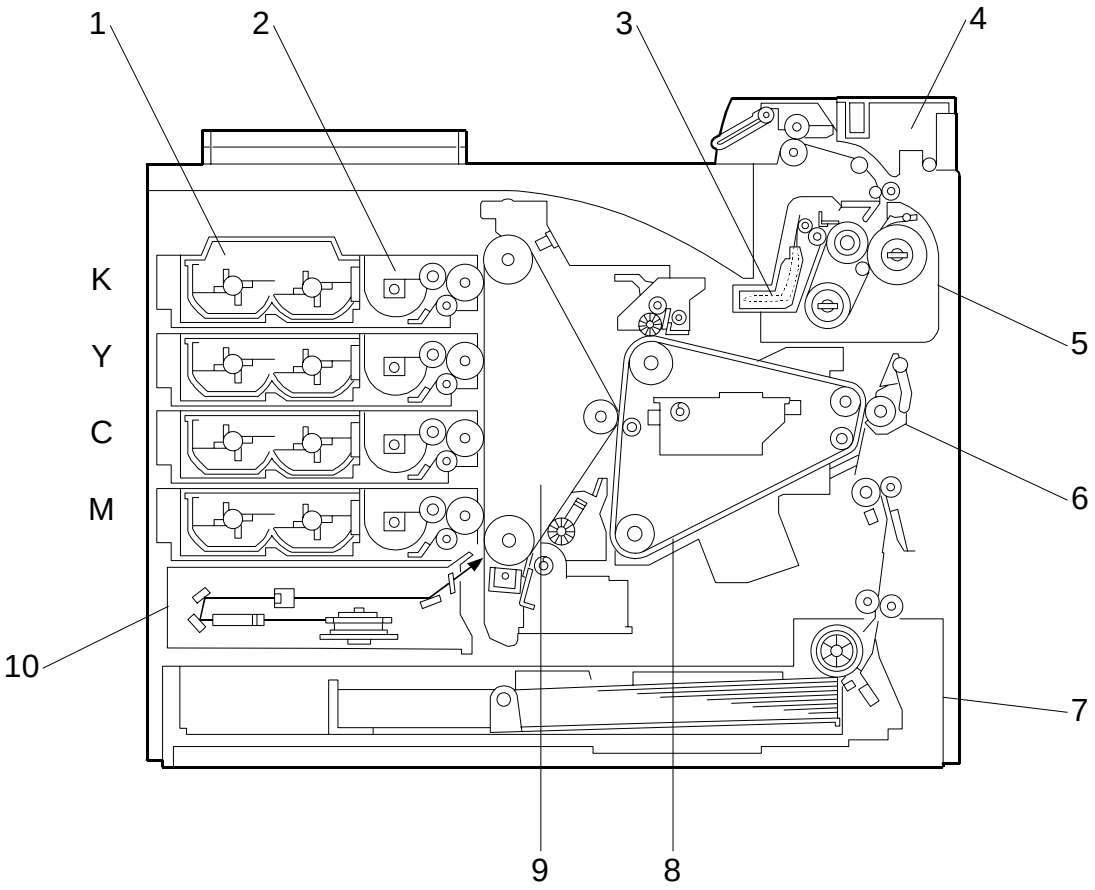
# 5.7 PRINTING A TEST PATTERN

1. Use SP5-955-1 (Test Pattern – Pattern) to select the pattern that you wish to print.
2. Enable test pattern printing by setting SP2-917 (Test Pattern) to 'On'.
3. To print the test pattern, send a one-page job to the printer, or print an SMC list (try using SP5-990-6, SP Print mode – Non default).
4. After finishing the test patterns, return SP2-917 (Test Pattern) to 'Off', or switch the machine off/on

# 6. DETAILED SECTION DESCRIPTIONS

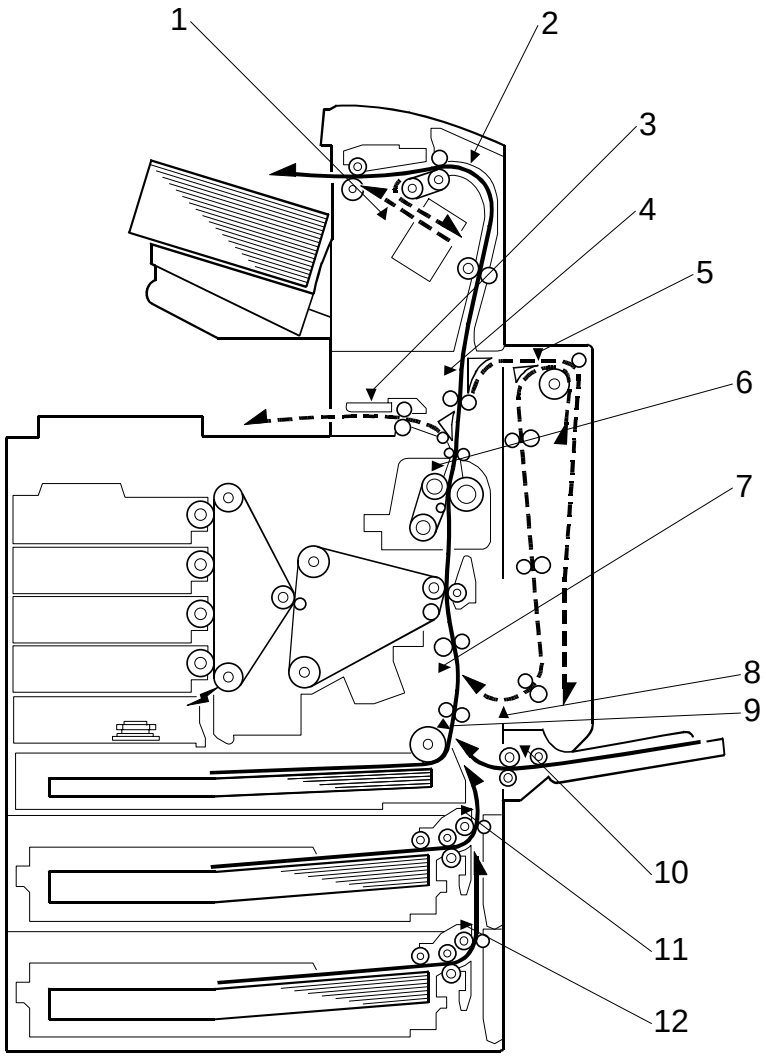
## 6.1 OVERVIEW

### 6.1.1 MAJOR COMPONENTS




1. Toner cartridge
2. Development unit
3. Oil supply unit
4. Paper exit unit
5. Fusing unit
6. Transfer roller unit
7. Paper tray
8. Transfer belt
9. OPC belt unit
10. Laser optics unit

## 6.1.2 PAPER PATH




G070V109.WMF

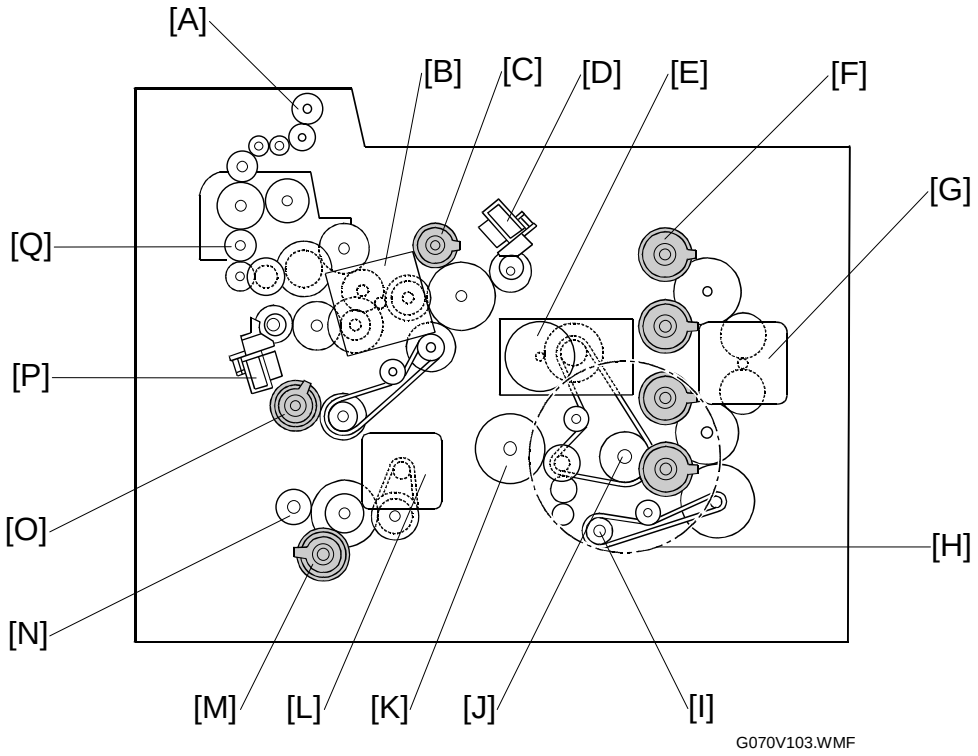
1. Finisher exit sensor
2. Finisher feed sensor
3. Exit sensor (main unit)
4. Exit sensor (interchange unit)
5. Duplex unit feed sensor
6. Fusing exit sensor
7. Registration sensor
8. Duplex unit exit sensor
9. Paper feed sensor
10. Bypass tray feed sensor
11. 1st paper tray unit feed sensor
12. 2nd paper tray unit feed sensor

The illustration shows a machine with the following equipment:

- Two paper tray units
- Interchange unit
- Duplex unit
- 500-sheet finisher

## 6.1.3 DRIVE COMPONENTS

This is a rear view of the machine.

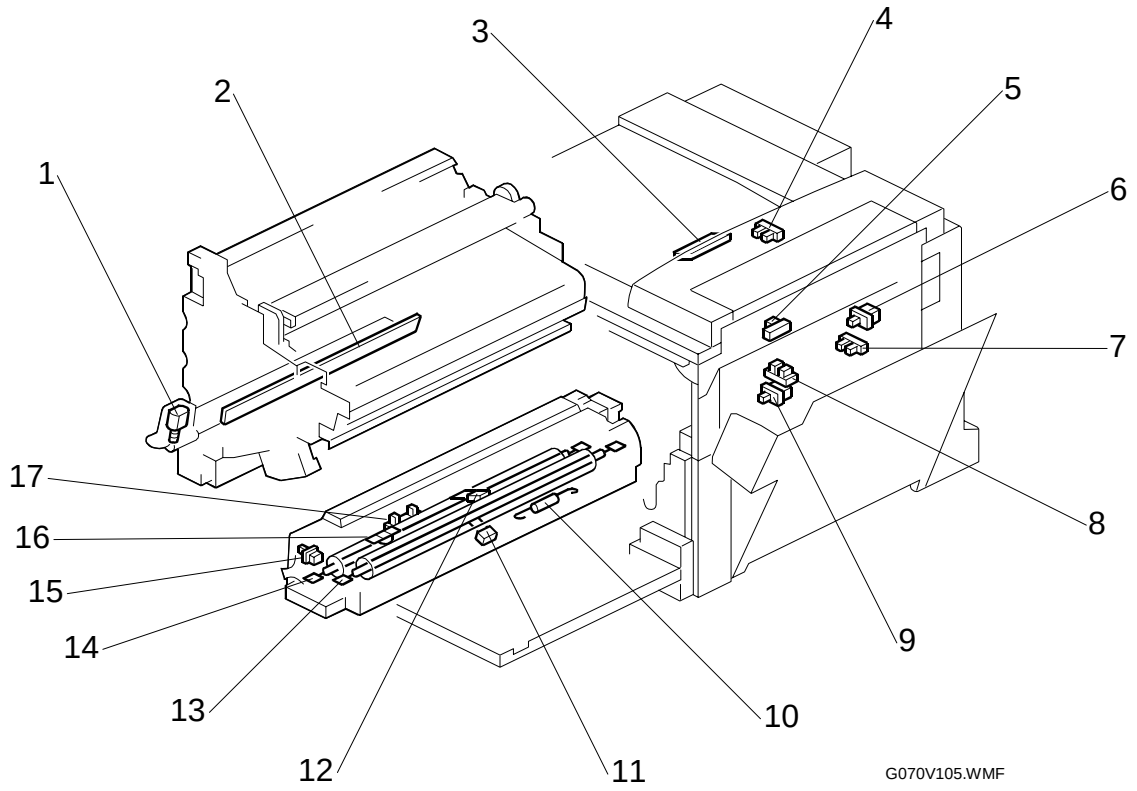



| Motor name | Motor type | Drives ... |
|---|---|---|
| Development [G] | DC brushless | • Development units *1<br>• OPC belt cleaning unit [I] *2 |
| Main [E] | DC brushless | • OPC belt [J] *3<br>• Transfer belt [K] |
| Fusing Unit [B] | DC brushless | • Fusing unit [Q]<br>• Paper exit unit [A]<br>• Transfer belt cleaning unit *4<br>• Registration roller *5<br>• Paper transfer roller<br>• Transfer belt cleaning unit contact mechanism *6<br>• Paper transfer roller contact mechanism *7 |
| Paper Feed [L] | Stepper | • Paper pick-up roller *8<br>• Vertical transport roller [N] |

*1: Drive delivered through the development clutches [F]
*2: Drive delivered through the OPC belt cleaning clutch (not shown here).
*3: Stabilized by the flywheel [H]
*4: Drive delivered through the transfer belt cleaning clutch [C]
*5: Drive delivered through the registration clutch [O]
*6: Drive delivered through the belt cleaning contact solenoid [D]
*7: Drive delivered through the paper transfer solenoid [P]
*8: Drive delivered through the paper feed clutch [M]

## 6.1.4 ELECTRICAL COMPONENTS

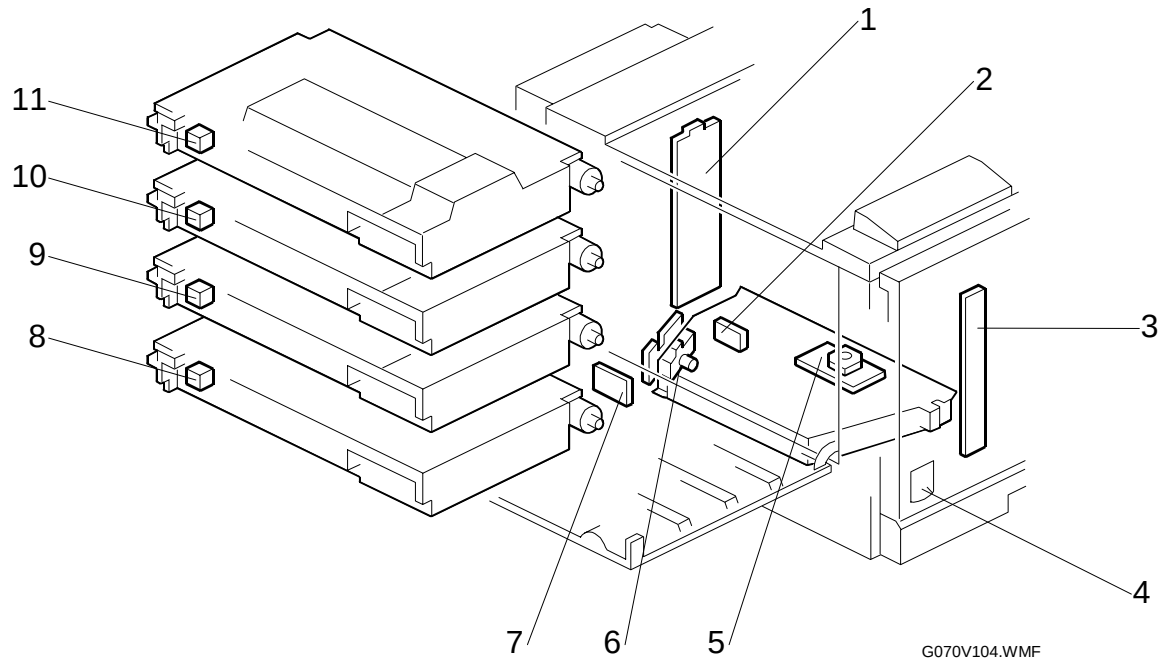
### *Image Transfer*




1. Charge corona wire cleaner motor
2. Quenching lamp
3. ID sensor
4. New PCU sensor
5. Belt mark sensor
6. T/B waste toner bottle switch
7. T/B waste toner sensor
8. O/B waste toner sensor
9. O/B waste toner bottle switch
10. Pressure roller thermofuse
11. Pressure roller thermistor
12. Heating roller thermistor
13. Pressure roller fusing lamp
14. Heating roller fusing lamp
15. Oil unit switch
16. Heating roller thermostat
17. Oil end sensor

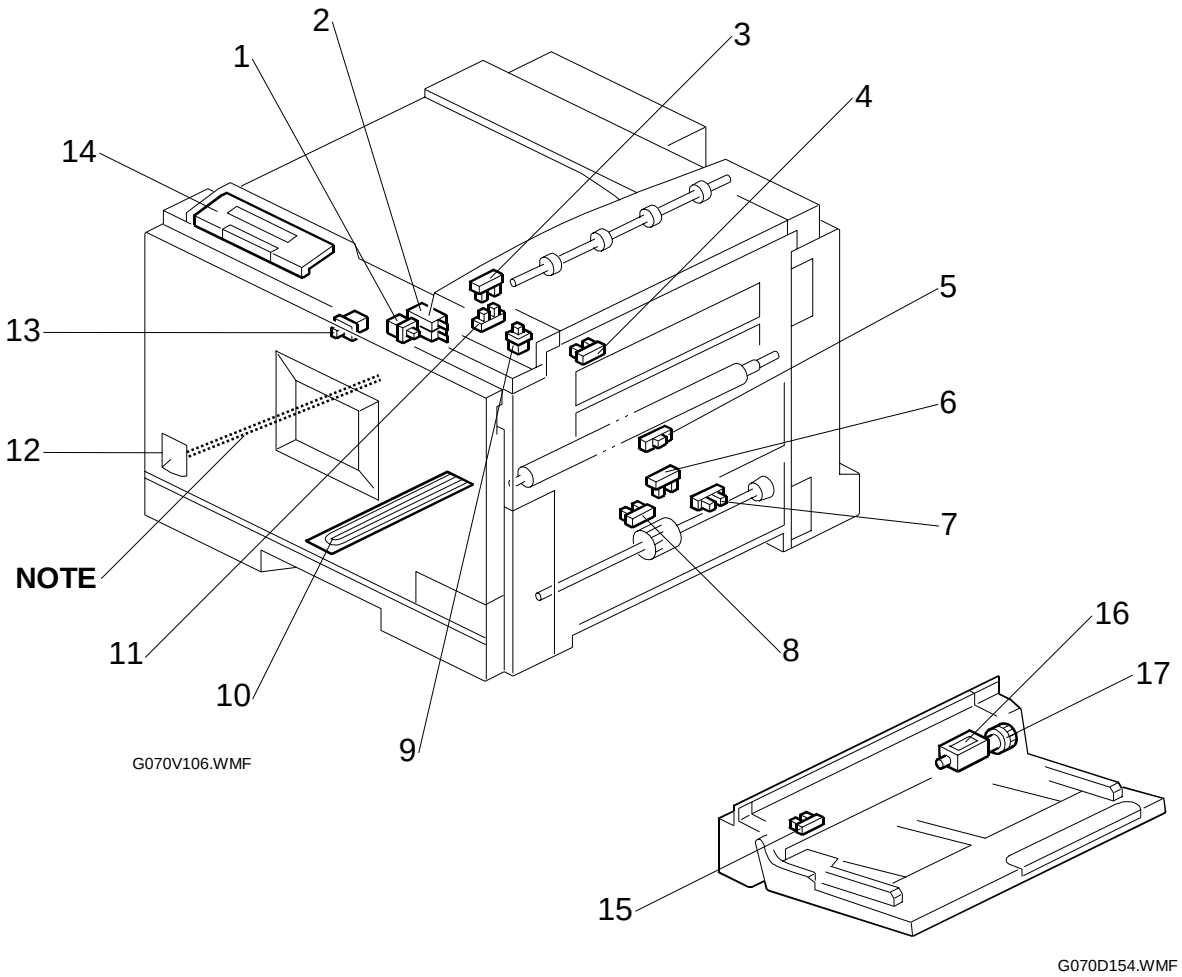
T/B: Transfer belt
O/B: OPC belt

### *Development Units*




1. Rear development board
2. Laser sync. detection board
3. Front development board
4. Main switch
5. Polygonal mirror motor
6. LD unit
7. Memory chip I/F
8. Memory chip M
9. Memory chip C
10. Memory chip Y
11. Memory chip K

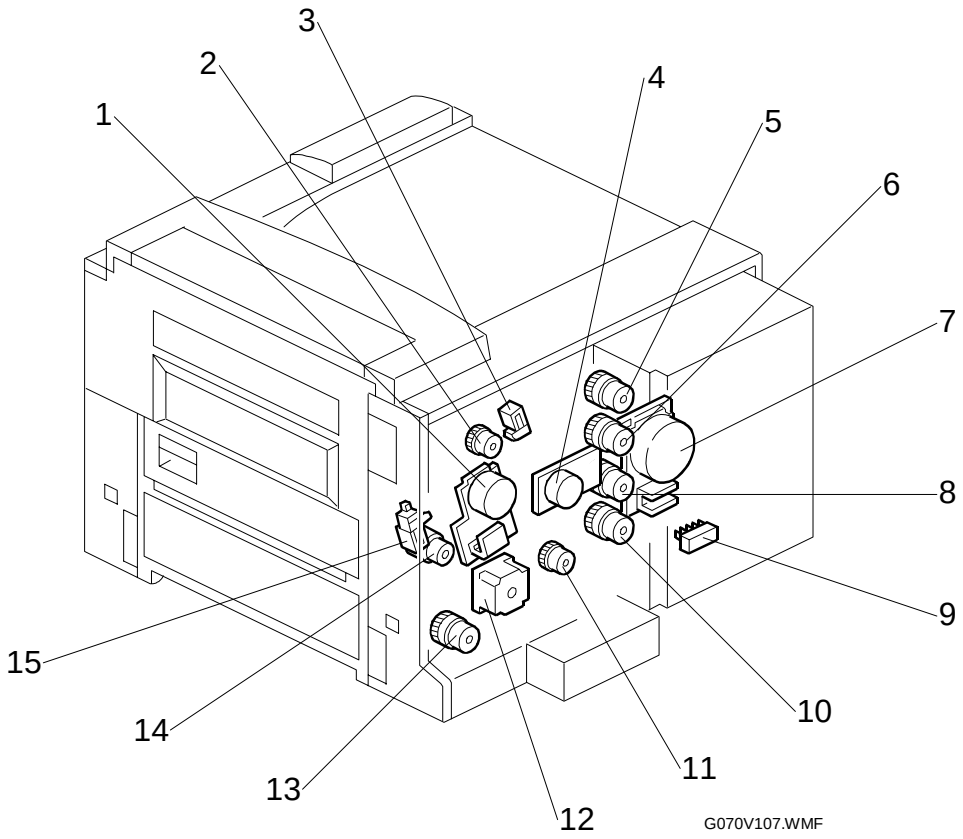
### *Paper Path*




1. Right cover switch
2. Interlock switch
3. Paper overflow sensor
4. Fusing exit sensor
5. Registration sensor
6. Paper feed sensor
7. Paper near-end sensor
8. Paper end sensor
9. Exit cover switch
10. Tray heater (option)
11. Paper exit sensor
12. Main switch (See the Note after the table)
13. Front cover switch
14. Operation panel
15. By-pass paper end sensor
16. By-pass pick-up solenoid
17. By-pass paper feed clutch

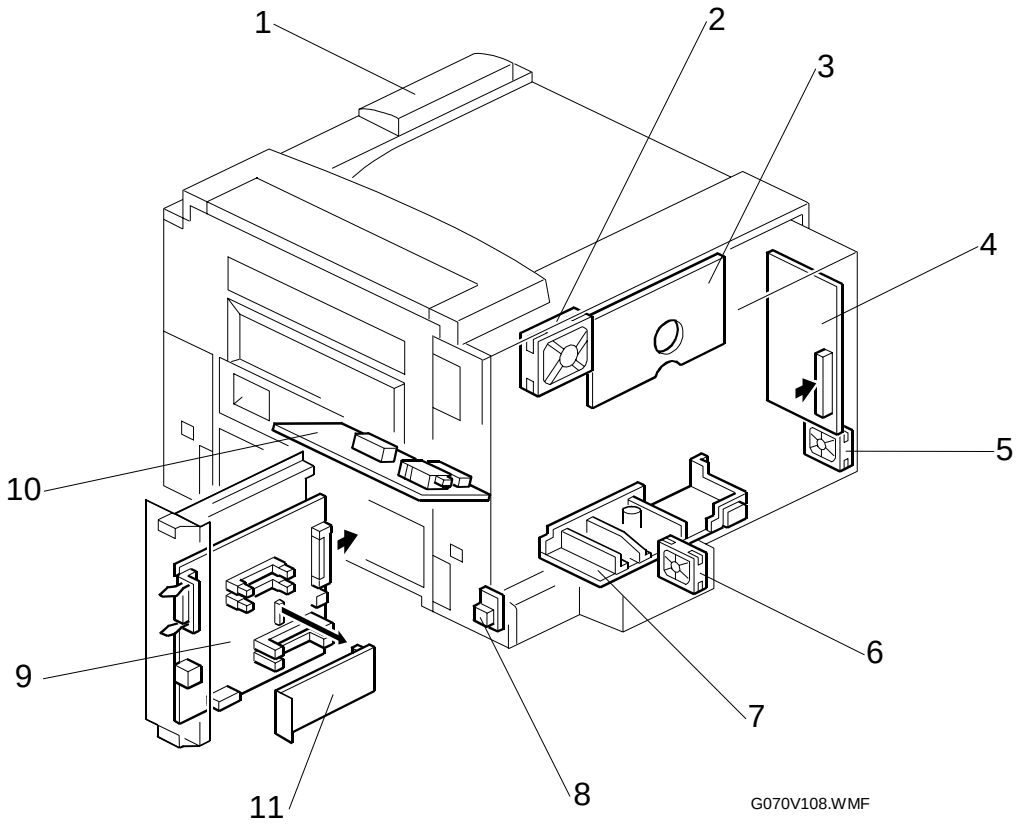
**NOTE:** Main Switch: The red switch at the front of the machine is connected to a switch on the PSU with a mechanical link (☛ 3.3.5).

### *Drive Components*



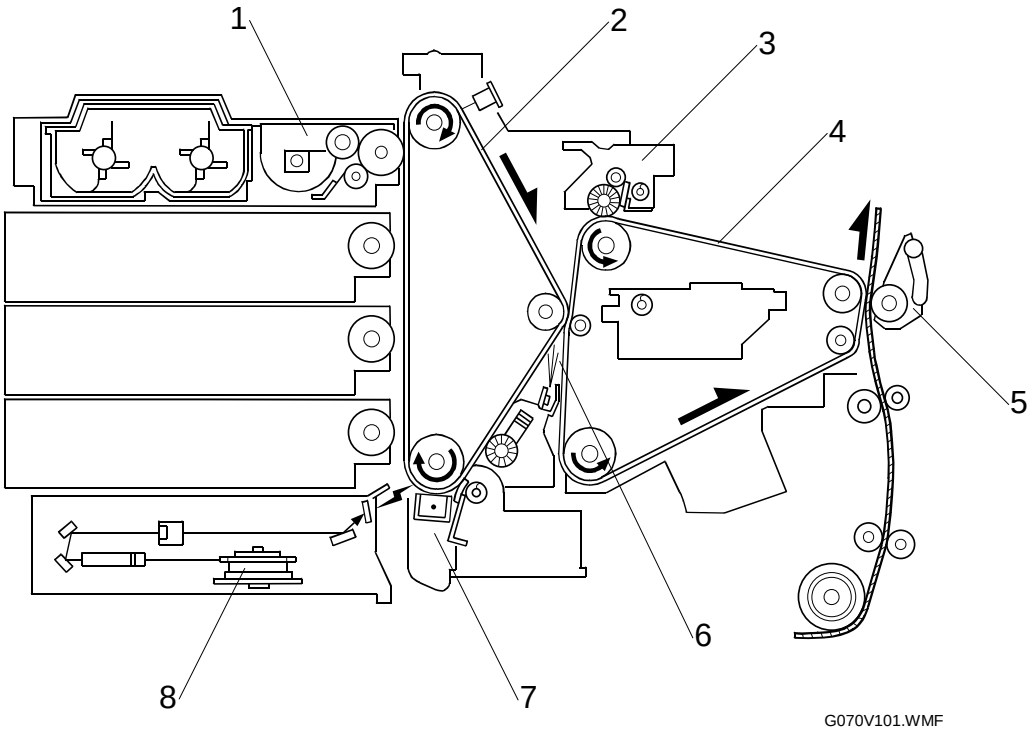

1. Fusing unit motor
2. Transfer belt cleaning clutch
3. Transfer belt cleaning contact solenoid
4. Main motor
5. Development clutch - K
6. Development clutch - Y
7. Development motor
8. Development clutch - C
9. Paper size switch
10. Development clutch - M
11. OPC belt cleaning clutch
12. Paper feed motor
13. Paper feed clutch
14. Registration clutch
15. Paper transfer solenoid

### *Circuit Boards*




1. Operation panel
2. Fusing unit fan
3. IOB
4. BCU
5. Controller fan
6. Ozone fan
7. PSU
8. Temperature-humidity sensor
9. Printer controller
10. High voltage supply board
11. USB 2.0 board

# 6.2 PRINTING PROCESS OVERVIEW




1. Development unit
2. OPC belt
3. Transfer belt cleaning unit
4. Transfer belt
5. Transfer roller unit
6. Quenching lamp
7. OPC belt cleaning unit
8. Polygonal mirror

1. **Drum Charge**
   The corona wire gives the drum a negative charge.

2. **Black (K) Image Creation**
   **a) Laser Exposure**
   The laser diode (LD) emits two laser beams. The laser beams create a latent image on the OPC surface.
   **b) Development**
   The development roller transfers negatively charged toner to the latent image. The OPC belt surface holds only one toner color at one time.
   **c) Image Transfer**
   The OPC belt transfers the single-color toner image to the image transfer belt.
   **d) Cleaning**
   The OPC belt cleaning unit cleans the image transfer belt.

3. **Magenta (M) Image Creation**
   Same as 2 a) through 2 d) above.

4. **Cyan (C) Image Creation**
   Same as 2 a) through 2 d) above.

5. **Yellow (Y) Image Creation**
   Same as 2 a) through 2 d) above.

6. **Paper Transfer**
   The paper transfer roller transfers the combined CMYK toner image to the paper.
   The OPC belt and the transfer belt can hold two A4-size LEF images on their surfaces. When printing on A4 LEF or smaller paper, the OPC and transfer belts process two images in one cycle. At this time, two sheets of paper are consecutively output with little interval between them. This speeds up color print output.

7. **Separation**
   The paper is separated from the transfer belt when the belt curves away from it. A discharge pin assists this process.

8. **Fusing**
   The fusing unit rollers fuse the image to the paper.

9. **Cleaning**
   The transfer belt cleaning unit cleans the belt.

10. **Quenching**
    The quenching lamp erases any remaining charge on the OPC belt.

# 6.3 PROCESS CONTROL

## 6.3.1 OVERVIEW

The printer adjusts the following process control parameters:

- Development bias ($V_B$)
- Charge corona grid voltage ($V_G$)

These 2 parameters maintain a consistent gamma for the engine.

**NOTE:** This printer uses only the ID sensor. (There is no TD or potential sensor.)

## 6.3.2 PROCESS CONTROL STEPS

### *Six Steps*

Depending on the machine's condition, some or all of the following steps may occur:

①: ID sensor calibration
②: Color development bias initialization (M, then C, then Y)
③: K development bias initialization
④: M, C, Y, and K bias fine adjustment
⑤: Charge grid bias voltage adjustment
⑥: Process control interval counter reset

If the main power is turned off (or the cover opened) during a process control session, the session is aborted. Turning the power on (or closing the cover) restarts the process control session.

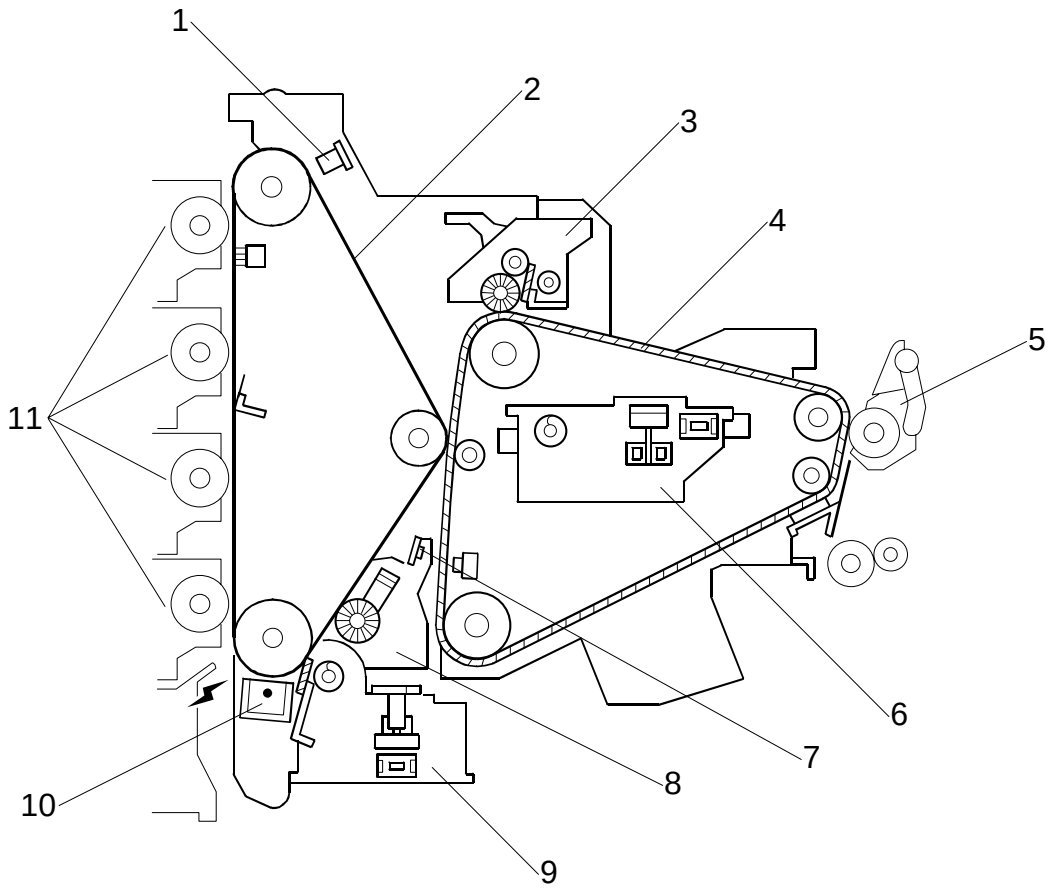
### *When is Process Control Done?*

When an event arises, the specified steps are performed.

| Event | Condition | Steps |
|---|---|---|
| Forced process control | When forced process control is done (engine SP mode 3-001-1 [ProcessCtrl]) | ① → ⑥ |
| Process control regular interval | When more than 200 sheets have been printed upon completion of a job. (The interval can be changed with engine SP3-003-1 [Lub_Interval].) | ①, ④, ⑤, ⑥ |
| Power on | When the fusing pressure roller temperature is 60°C or lower immediately after the power is turned on. | ①, ④, ⑤, ⑥ |
| Environmental change | When the change in the temperature/humidity sensor output since the previous process control exceeds a certain value. SP3-004 (EnvChange) can be used to change the threshold temperature and humidity values. | ①, ④, ⑤, ⑥ |
| K toner cartridge or K development unit replacement | This is done after clearing the K toner near-end state (i.e., when a new K development unit is added). The machine idles and when the development roller stops for 10 seconds, indicating that idling is over, process control occurs. | ①, ③, ④, ⑤ |
| Color development unit replacement | After the color toner end or near-end state is reset, the machine idles to transfer color toner to the development unit. After idling, process control occurs. | ① → ⑥ |
| Color toner cartridge replacement | After the color toner end or near-end state is reset, the machine idles to transfer color toner to the development unit. After idling, process control occurs. | ①, ④, ⑤, ⑥ |
| 24 hours after previous process control | Same as 'power on' process control | ①, ④, ⑤, ⑥ |
| PCU replacement | After a new PCU is detected, it is lubricated (new OPC belt lubricant application mode). Then process control occurs. | ① → ⑥ |

# 6.4 PHOTOCONDUCTOR UNIT (PCU)

## 6.4.1 OVERVIEW



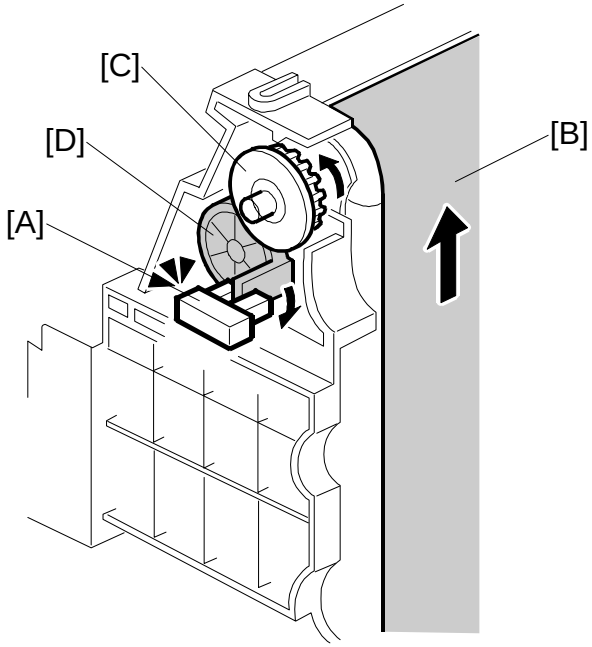

1. ID sensor
2. OPC belt
3. Transfer belt cleaning unit
4. Transfer belt
5. Transfer roller unit
6. T/B waste toner bottle
7. Quenching lamp
8. OPC belt cleaning unit
9. O/B waste toner bottle
10. Charge corona unit
11. Development unit

**NOTE:** The ID sensor, the transfer roller unit, and the development unit are not included in the photoconductor unit.

The photoconductor unit handles steps 2 through 6 in *Printing Process Overview* (☛ 6.2).

## 6.4.2 NEW PHOTOCONDUCTOR UNIT DETECTION

[A]: New PCU sensor
[B]: OPC belt
[C]: Gear 1
[D]: Gear 2

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### *New PCU Sensor*

The new PCU sensor [A] detects when a new photoconductor unit is installed. The machine then executes process control (☛ 6.3.2).

### *Mechanism*

When a new PCU is placed into the machine, the actuator on gear 2 [D] enters the new PCU sensor (new PCU detected). When the OPC belt starts rotating, gear 1 [C] also starts rotating. Gear 1 also turns gear 2, so the actuator moves down. Gear 2 disengages from gear 1 when the actuator reaches its lowest position, and the actuator never returns to the new PCU sensor.

### *PCU Counter*

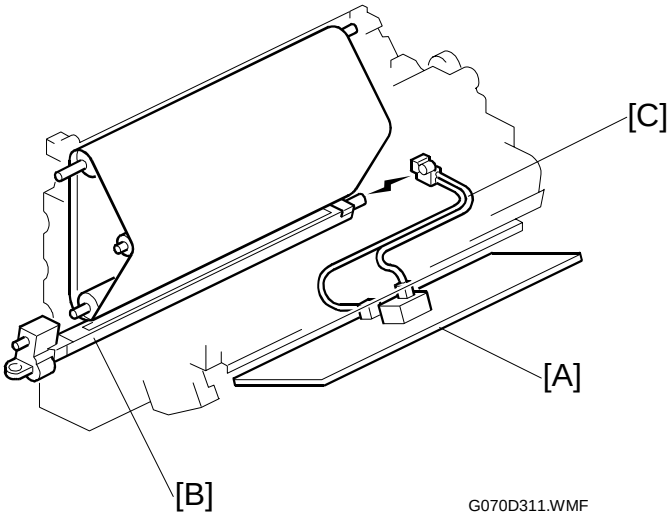
The photoconductor unit can be used for 120 kilo-developments (☛ 2.2). When the unit has been used for 120 kilo-developments, a message is displayed on the operation panel. To check the PCU counter, use SP7-803, PM_Counter (☛ 5.2.2).

## 6.4.3 CHARGE CORONA UNIT

### *Power Supply*

High voltage supply [A] → Harness [C] → Charge corona unit [B] (negative charge)

[A]: High voltage supply
[B]: Charge corona unit
[C]: Harness

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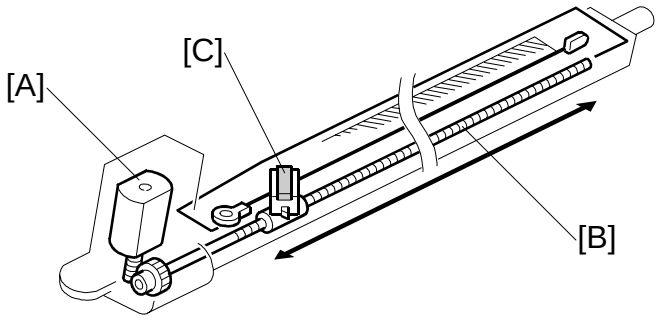
### *Wire Cleaning*

The motor [A] drives the bottom screw [B], which moves the wire cleaner [C] forward or backward, cleaning the corona wire.

[A]: Motor
[B]: Screw
[C]: Wire cleaner




G070D310.WMF



### *Cleaning Interval*

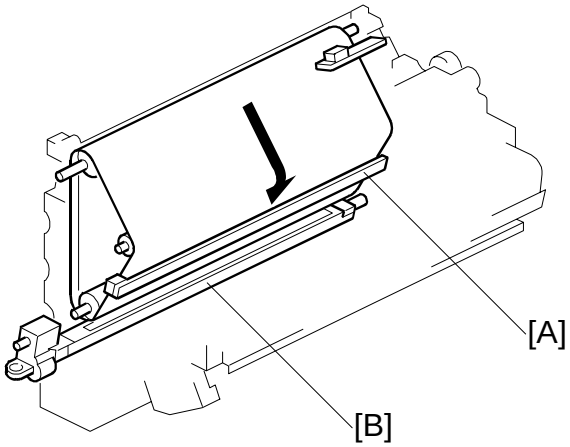
The cleaning feature is activated after 600 development counts (default), at the end of the job. However, if 1000 counts is reached in the middle of a job, printing pauses while the wire is cleaned. The counter counts up as shown in the table.

| | Black & White | Color |
|---|---|---|
| A4 (LT) LEF (or smaller) | 1 count | 4 counts |
| Others | 2 counts | 8 counts |

To set the counter, use SP2-801, ChrgClnIntval (☛ 5.2.2).

### *Quenching*

[A]: Quenching lamp
(☛ CT Photocopying Processes – Quenching)
[B]: Charge corona unit
(☛ CT Photocopying Processes – Charge – Corona Charge – Scorotron Method)

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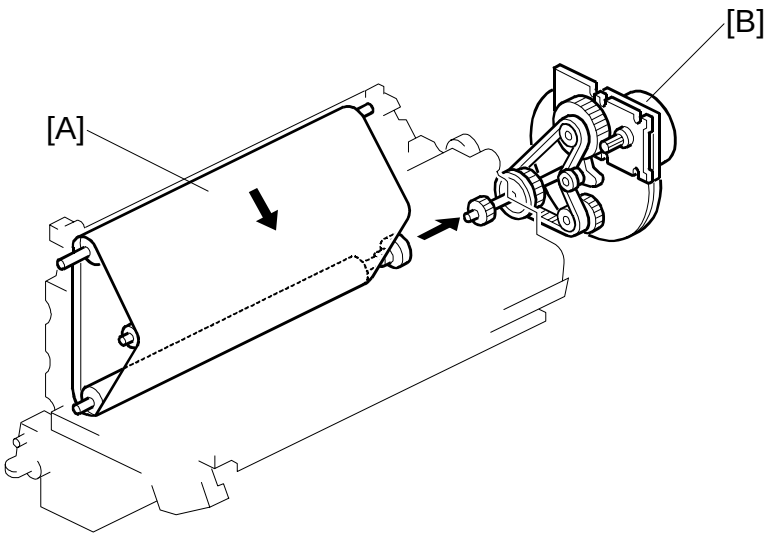
## 6.4.4 OPC BELT DRIVE

Main motor [B] → Gear → Timing belt → Bottom shaft

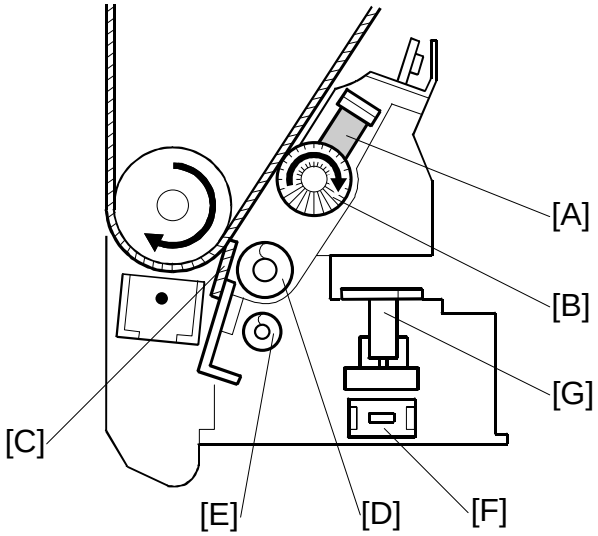
[A]: OPC belt
[B]: Main motor




G070D308.WMF

## 6.4.5 OPC BELT CLEANING UNIT

[A]: Lubricant bar
[B]: Lubricant brush
[C]: Counter blade
[D]: Toner collection auger 1
[E]: Toner collection auger 2
[F]: Waste toner bottle switch
[G]: Waste toner bottle sensor

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### *Toner Collection Augers*

Toner collection auger 1 [D] collects waste toner; toner collection auger 2 [E] levels the toner in the waste toner bottle.

### *Counter Blade + Brush*

The lubricant brush [B] applies lubricant to the OPC belt.

☛ CT Photocopying Processes – Cleaning – Counter Blade and Brush



### *Waste Toner Bottle Sensors*

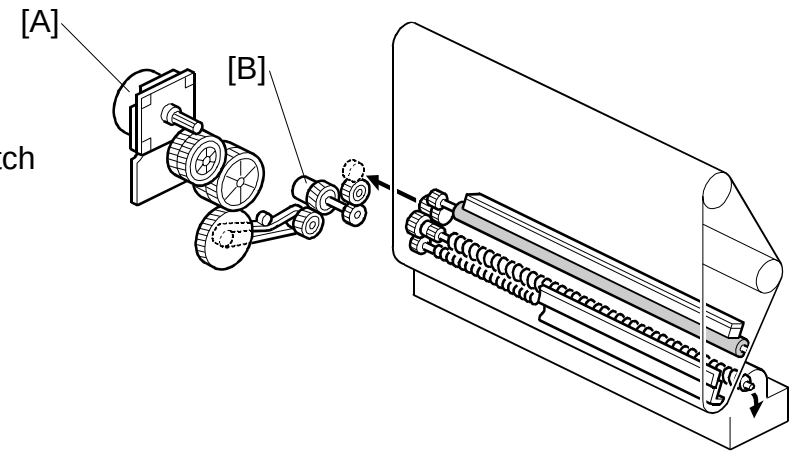
The waste toner bottle switch [F] and the waste toner bottle sensor [G] are at the back of the cleaning unit. The switch detects whether the toner bottle is installed correctly. The sensor detects when the bottle is full.

When the bottle becomes full, a message is displayed on the operation panel. After the message is displayed, the machine can output 100 prints, then further printing is disabled.

### *Drive*

Development motor [A] → Gear → Timing belt → OPC belt cleaning clutch [B] → OPC belt cleaning unit (including the brush and toner collection coil)

[A]: Development motor
[B]: OPC belt cleaning clutch

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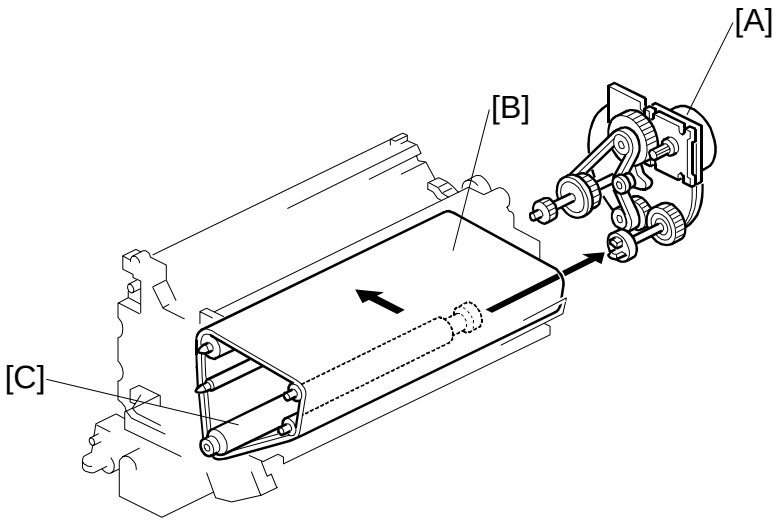
While the development motor is operating, the OPC cleaning clutch is always on.

The clutch cuts the drive to the cleaning unit when the development motor reverses (this is done at intervals to prevent toner blockages in the development unit).

## 6.4.6 IMAGE TRANSFER BELT UNIT

### *Drive*

[A]: Main motor
[B]: Image transfer belt
[C]: Bottom shaft (rubber coated)

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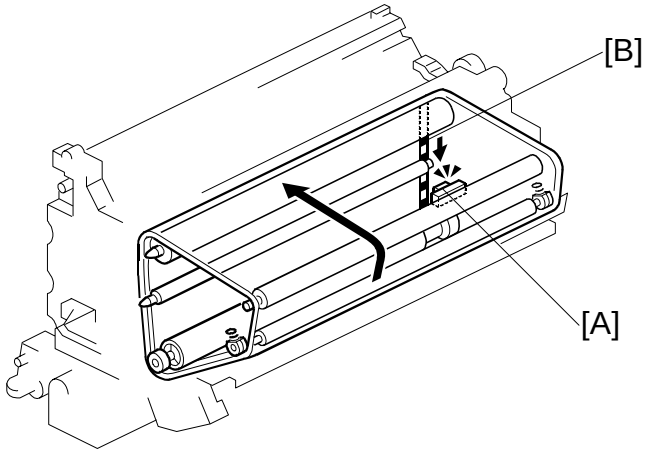
Main motor [A] ➔ Gears & timing belt ➔ Bottom shaft [C]

The bottom shaft drives the transfer belt by the friction between the belt [B] and the rubber coating on the shaft [C].

**NOTE:** The transfer belt and OPC belt contact each other. If you wish to inspect the transfer belt by turning it, you must also turn the OPC belt at the same time to avoid damaging the surfaces of the belts.

### *Belt Mark Sensor*

[A]: Belt mark sensor
[B]: Mark



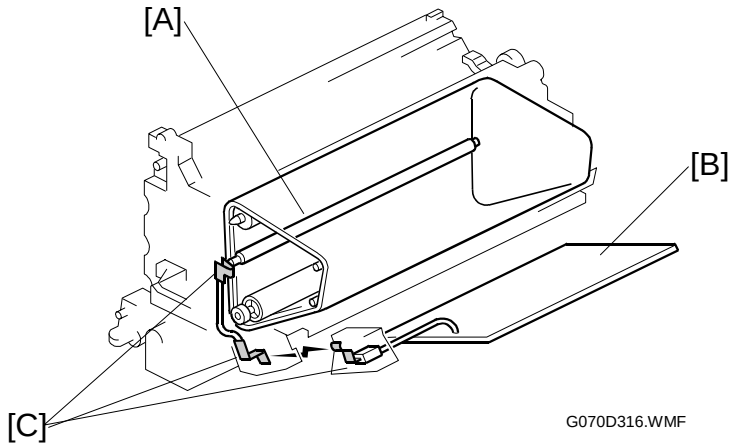

G070D315.WMF

The belt mark sensor is a reflective photosensor.

To exactly synchronize the four mono-color toner images on the image transfer belt, the belt mark sensor [A] monitors the belt speed. The sensor detects the light reflected by the marks [B] at the rear end of the belt (25 marks per rotation; mark frequency: 21 mm). The sensor output is used to control the belt speed.

### *Bias Roller*

[A]: Bias roller
[B]: High voltage supply
[C]: Terminal plates



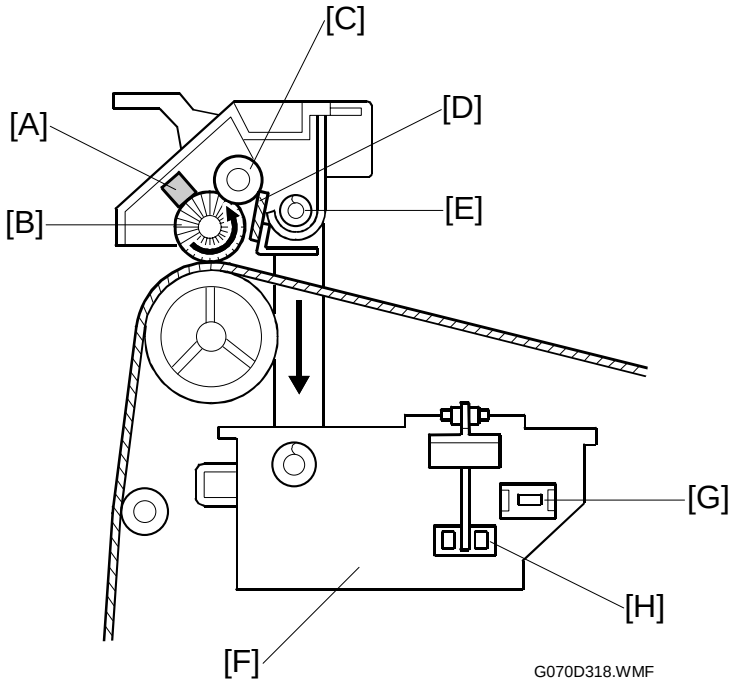

The transfer roller [A] attracts toner from the OPC belt to the image transfer belt by using a positive charge.

The terminal in the middle of the PCU contacts the terminal on the transfer roller shaft when the image transfer belt unit is installed in the PCU.

The current is adjusted based on environmental temperature and humidity.

## 6.4.7 TRANSFER BELT CLEANING UNIT

[A]: Lubricant bar
[B]: Bias brush
[C]: Bias roller
[D]: Cleaning blade
[E]: Collecting coil
[F]: Waste toner bottle
[G]: Waste toner bottle switch
[H]: Waste toner bottle sensor




### *Bias Brush*

The lubricant bar [A] lubricates the bias brush [B]. The brush applies this to the transfer belt surface. The bias brush is positively charged to attract residual toner from the belt surface.

### *Bias Roller and Cleaning Blade*

The bias roller [C] removes toner from the bias brush. The cleaning blade [D] removes the residual toner off the bias roller.



### *Collecting Coil*

The collecting coil [E] transports waste toner to the rear of the transfer belt cleaning unit. The waste toner bottle [F] collects the toner through its opening shutter.

### *Waste Toner Bottle Sensors*

The waste toner bottle switch [G] and the waste toner bottle sensor [H] are at the back of the cleaning unit. The switch detects whether the toner bottle is installed correctly.

The toner bottle sensor detects when the bottle is full, and a message is displayed on the operation panel. After the message is displayed, 100 prints can be output then the machine stops and printing is disabled.

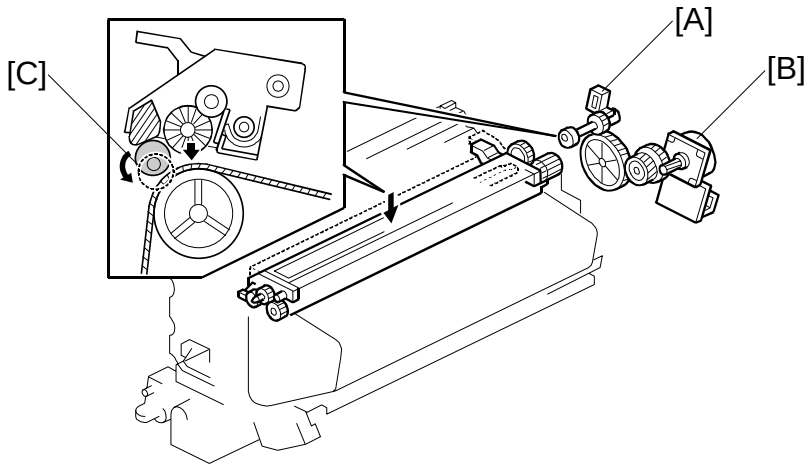
### *Contact Mechanism*

During standby mode, the cleaning unit is away from the transfer belt.

When the toner images are being transferred from the OPC belt to the transfer belt, this mechanism holds the transfer belt cleaning unit away from the belt.

When the solenoid [A] activates, it transmits power from the fusing unit motor [B] to the gear and the cam [C]. The cam moves the bias brush roller into contact with the transfer belt.

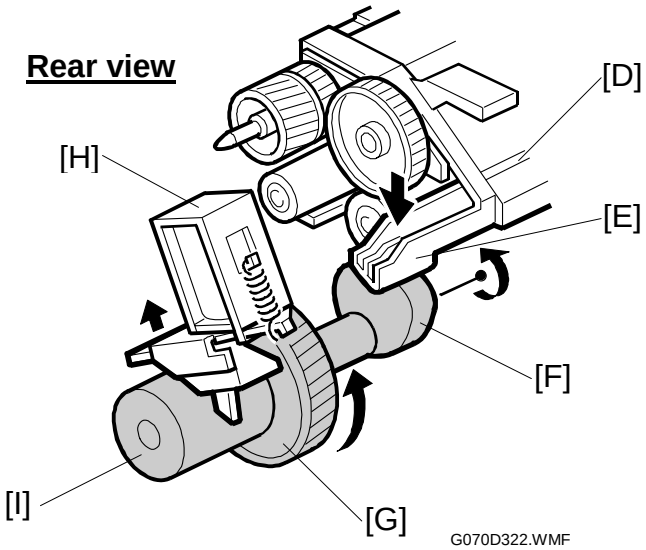
[A]: Transfer belt cleaning contact solenoid
[B]: Fusing unit motor
[C]: Cam




G070D320.WMF

The transfer belt cleaning unit [D] has a lever [E] on its rear side. When the lever rests on the high point of the cam [F], the cleaning unit is away from the transfer belt; when the lever rests on the low point, the cleaning unit contacts the transfer belt.

[D]: Transfer belt cleaning unit
[E]: Lever
[F]: Cam
[G]: Gear
[H]: Transfer belt cleaning contact solenoid
[I]: Half-turn clutch

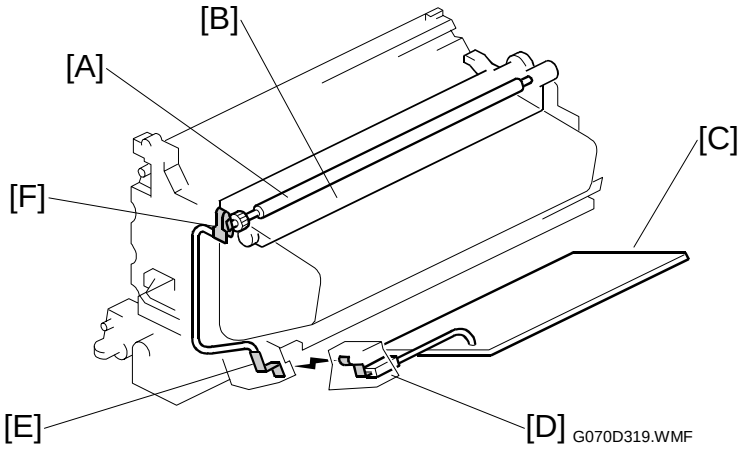



G070D322.WMF

The transfer belt cleaning contact solenoid [H] operates a half-turn clutch [I] to control the contact mechanism.

### *Power Supply*

[A]: Cleaning brush
[B]: Cleaning roller
[C]: High voltage supply
[D]: Contact spring
[E]: Contact spring
[F]: Contact spring

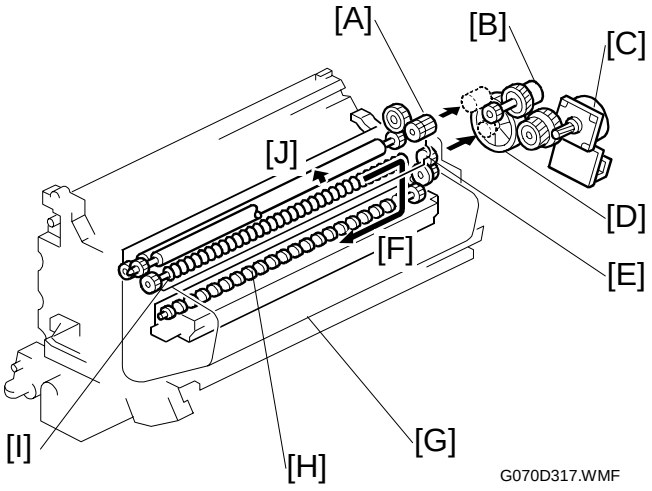



The cleaning roller [B] charges the cleaning brush, and attracts toner from it.

The high voltage supply [C] supplies positive charge to the cleaning roller via the harness and contact springs (leaf springs) [D, E, and F].

### *Drive*

[A]: Gear 1
[B]: Image transfer belt cleaning clutch
[C]: Fusing unit motor
[D]: Drive gear
[E]: Gear 2
[F]: Toner path
[G]: Image transfer belt
[H]: Toner collection auger 1
[I]: Toner collection auger 2
[J]: Turning direction of the cleaning brush

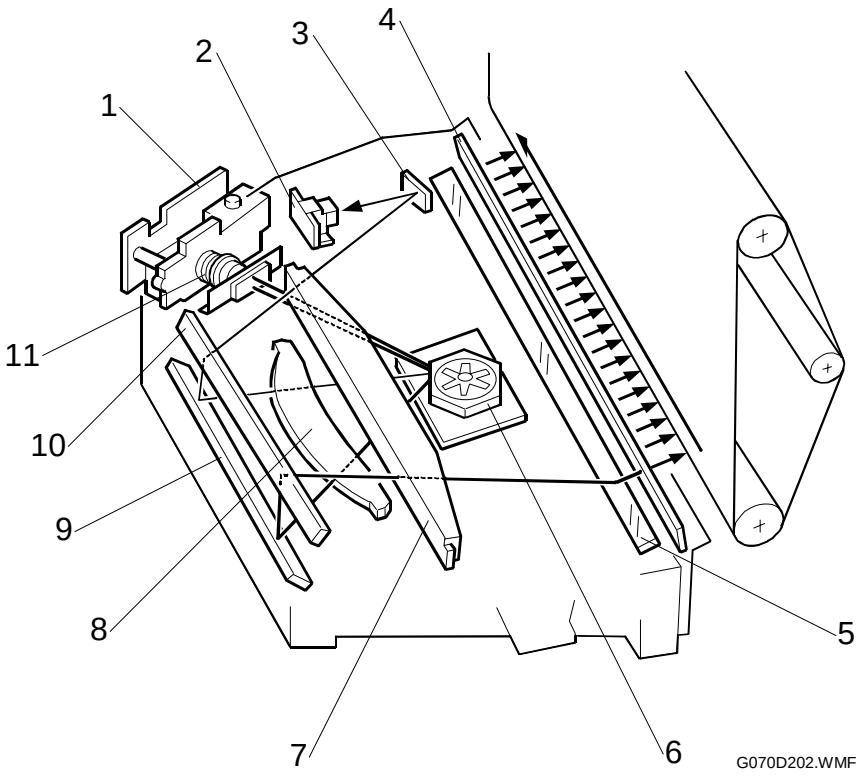



Fusing unit motor [C] ➔ drive gear [D] ➔ gears [A] and [E] ➔ cleaning brush [J] and toner collection augers [H and I]

The clutch [B] controls the on/off timing of the mechanism.

# 6.5 LASER EXPOSURE

## 6.5.1 OVERVIEW




1. LD unit
2. Laser synchronization detection board
3. Synchronization detection mirror
4. Dust shield glass
5. 3rd mirror
6. Polygonal mirror motor
7. WT lens
8. F theta lens
9. 1st mirror
10. 2nd mirror
11. Cylindrical lens

1. The LD unit simultaneously emits two laser beams. This is true both in full-color mode and in single-color mode.
2. The polygonal mirror motor rotates at 21,024 rpm (both in the full-color mode and in the single-color mode).
3. Laser beam path: LD unit → Polygonal mirror → WTL lens → F theta lens → 1st mirror → 2nd mirror → Synchronization detection mirror
   **NOTE:** The synchronization detection board simultaneously monitors both laser beams.

### *Dust Shield Glass Cleaning*

The user cleans the dust shield glass by pushing and pulling the lever at the front of the cleaner.

### *LD Unit Adjustment*

There are no field service adjustments for this LD unit.

### *Polygonal Mirror*

☛ CT Digital Processes – Printing – Laser Printing – Optical Components

### *Laser Diode Power Control*

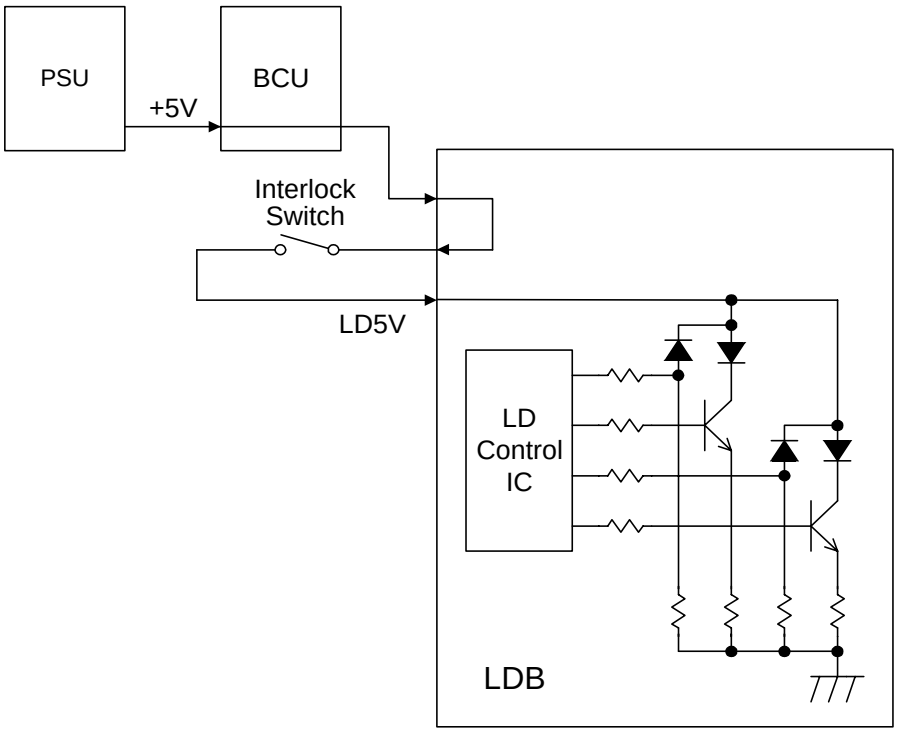
☛ CT Digital Processes – Printing – Laser Printing – Laser Diode Power Control

Done by the LD control board

### *Maintenance Adjustment*

The LD unit does not need adjustment when replaced.

## 6.5.2 LD SAFETY SWITCH




G070D999.WMF

The interlock switch is at the top of the front cover.

This switch is in series with the 5-V circuit leading to the LD unit.

When the front, left, or right cover is opened, the switch interrupts the power supply, preventing laser emission.

### *Operation Panel Message and Switch Mechanism*

If the covers are all closed, all three switches are on.

If a cover is opened, the indication on the display panel depends on the combination of signals from the interlock switch and the two cover switches.

The interlock switch turns off when any of these three covers is opened.

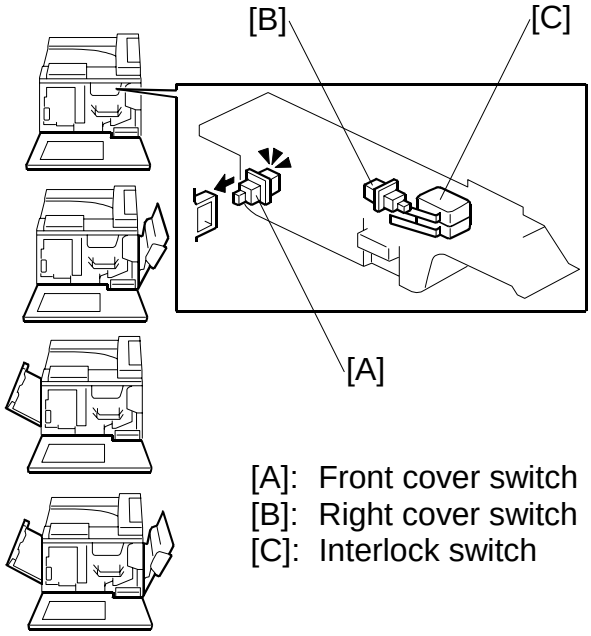
***"Close Front Cover"***

| | |
|---|---|
| Front cover switch | Off |
| Right cover switch | On |
| Interlock switch | Off |

| | |
|---|---|
| Front cover switch | Off |
| Right cover switch | Off |
| Interlock switch | Off |

| | |
|---|---|
| Front cover switch | Off |
| Right cover switch | On |
| Interlock switch | Off |

| | |
|---|---|
| Front cover switch | Off |
| Right cover switch | Off |
| Interlock switch | Off |



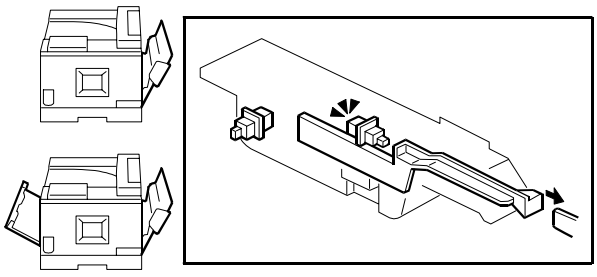

[A]: Front cover switch
[B]: Right cover switch
[C]: Interlock switch

G070D701.WMF

***"Close Right Cover"***

| | |
|---|---|
| Front cover switch | On |
| Right cover switch | Off |
| Interlock switch | Off |

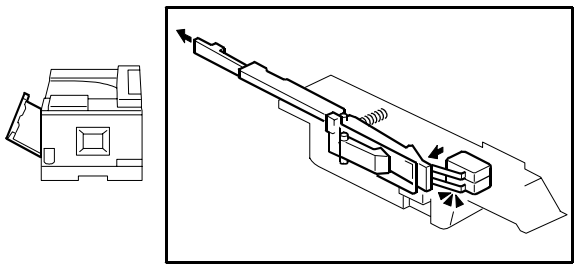
| | |
|---|---|
| Front cover switch | On |
| Right cover switch | Off |
| Interlock switch | Off |



G070D702.WMF

***"Close Left Cover"***

| | |
|---|---|
| Front cover switch | On |
| Right cover switch | On |
| Interlock switch | Off |

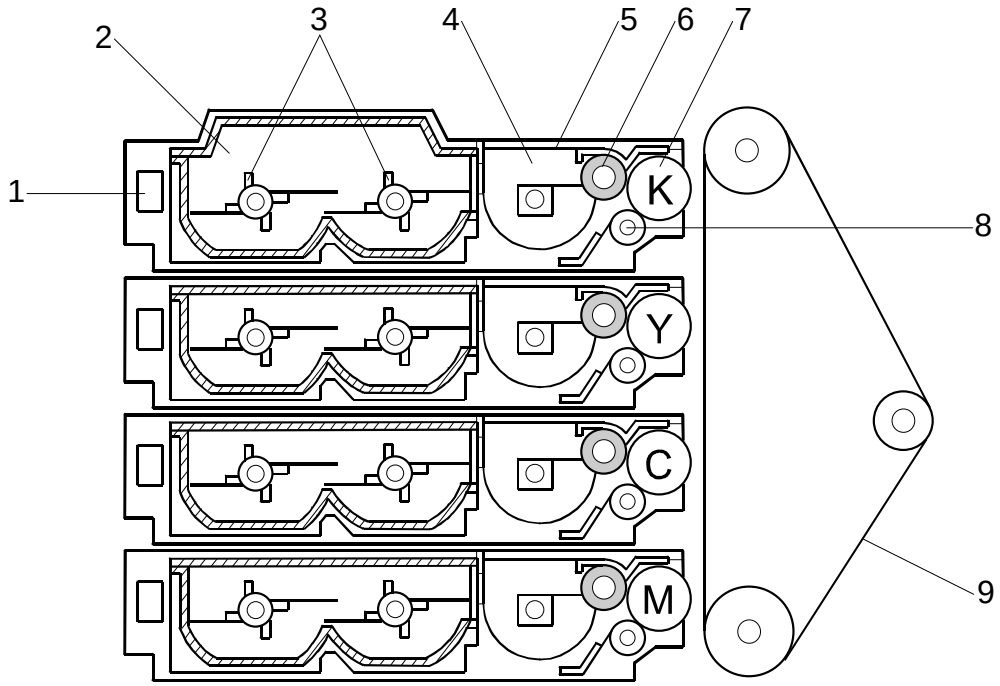


G070D703.WMF

Off: Switch open

# 6.6 DEVELOPMENT

## 6.6.1 OVERVIEW




G070D301.WMF

**K**: black, **Y**: yellow, **C**: cyan, **M**: magenta

1. Memory chip
2. Toner cartridge
3. Toner cartridge agitators
4. Development agitator
5. Development unit
6. Toner supply roller
7. Development roller
8. Doctor roller
9. OPC belt

☛ CT: Development – Mono-component Development – Double Development Roller Process

The development units operate in the following order: K → M → C → Y.

## 6.6.2 DEVELOPMENT UNIT

### *Rollers and Agitators*

Each development unit has 3 rollers and 3 agitators (2 toner cartridge agitators and 1 development agitator):

| | |
|---|---|
| Toner cartridge agitators: | Evenly mixes the toner in the cartridge, and sends it to the development unit |
| Development agitator: | Evenly mixes the toner in the development unit, and sends it to the toner supply roller |
| Toner supply roller: | Supplies the development roller with toner |
| Development roller: | Transfers the toner to the OPC |
| Doctor roller: | Regulates the amount of the toner on the development roller |

### *Replacing Units*

Near-end condition: “Replace Development Unit, xxxx-unit” is displayed when a development unit has made the ‘PM period’ number of prints (K: 120K, CMY: 60K). If more than one unit reaches PM period at the same time, the messages for each unit will be displayed one after the other.

End condition: When toner end is detected while the development unit is in a near-end condition, that unit enters the end condition. The machine cannot print. The end condition is cleared when that unit is replaced. There is no need to replace all 4 units. However, if each colour (C, M, Y) is used at the same rate, they will enter the end condition at about the same time.

The user can replace only the K unit, the color units (Y, C, and M), or all units (K, Y, C, and M) at the same time.

The color units are available for the user as a set, but can be replaced individually if required (individual units are available as spare parts).

Recovery: Each new development unit contains a starter toner cartridge. When the machine detects the memory chip on the new starter cartridge, it will clear the development unit end condition. The memory chip on a normal toner cartridge cannot clear the development unit end condition.

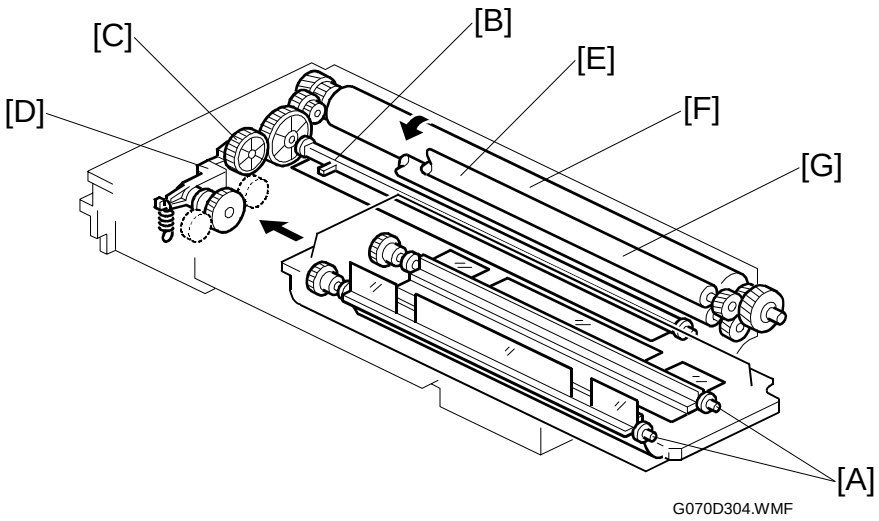
A starter toner cartridge has more paddles on the toner cartridge agitators than a normal toner cartridge does. This is to transport toner more quickly from the cartridge into the toner hopper.

When a development unit has to be replaced, use a starter toner cartridge in the development unit even if toner remains in the used normal toner cartridge. After the toner in the starter toner cartridge is all used up, the normal toner cartridge can be loaded into the development unit.

### *Memory Chip*

Each toner cartridge contains a memory chip, which contains information on whether the cartridge is “new” or “not new”.

## 6.6.3 TONER SUPPLY MECHANISM




[A]: Toner cartridge agitators
[B]: Development unit agitator
[C]: Development clutch
[D]: Lever
[E]: Toner supply roller
[F]: Development roller
[G]: Doctor roller

### *Toner Cartridge Agitators*

Each toner cartridge contains two agitators [A]. They are equipped with several mylar sheets, which agitate the toner and send it to the development unit agitator [B].

### *Drive Power Path*

Development motor → Development clutch [C] → Lever [D] → One-way clutch → Agitators

### *Development Unit Agitator*

The development unit agitator [B] agitates the toner and sends it to the toner supply roller [E].

### *Toner Supply Roller and Doctor Roller*

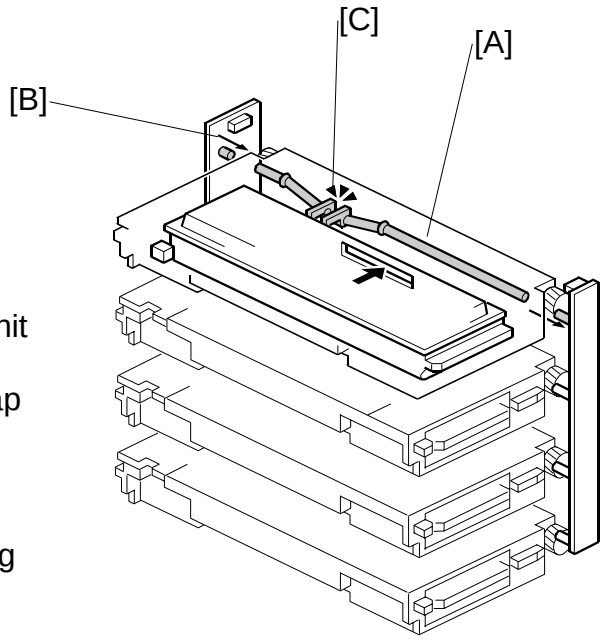
The toner supply roller [E] sends the toner to the development roller [F]. The doctor roller [G] controls the thickness of toner on the development roller, before the toner is transported to the OPC belt.

### *Shutter*

Each toner cartridge has a shutter. The shutter is pushed open when the cartridge is installed in the development unit.

## 6.6.4 TONER END DETECTION

### *Mechanism*




G070D306.WMF

[A]: Optic fiber
[B]: Light emission
[C]: Gap

An optic fiber [A] in each development unit detects toner end. Light is emitted from the rear end [B] of the unit. There is a gap [C] in the optic fiber.

When the development unit is filled with toner, the toner breaks the light path through the gap. When the unit is running out of toner, the light path is not broken.

### *Toner Near-End Detection*

The machine uses two methods simultaneously: pixel count, and toner end sensor. If either of these methods detects near-end, the machine indicates near-end.

#### *Near-End by Pixel Count*

The machine counts how many pixels have been printed with each toner cartridge. When there are 1000 (starter toner) or 2000 (normal toner) prints remaining until the estimated toner end condition, toner near-end is indicated.

#### *Near-End by Toner End Sensor*

- If the toner end sensor output drops to toner end level, counter 1 is set to 1.
- If the above condition (counter 1 is 1) is detected twice accumulated 14 seconds while the development clutch is activated, counter 2 is set to 1.
- If the above condition (counter 2 is 1) is detected twice continuously, the machine enters the toner supply mode after the job.

The above detection is carried out while the development clutch is activated.

Toner supply mode after the job:

- The development unit with the almost-empty cartridge idles for 40 s.
- Then, it idles again for another 20 s.
- During this 20 s period, the toner end sensor is checked every 10 ms. If a low toner condition is not detected during this 20 s period, the machine returns to standby mode after idling all development units for 90 s.
- However, if a low toner condition was detected during that 20 s period, the machine indicates toner near-end.

### *Toner End Detection*

When any one of the following conditions occurs, toner end is indicated.

1. If near-end was detected by pixel count:
   The remaining pixel count reaches 0.
2. If near-end was detected by toner end sensor:
   Either 100 developments or 100 prints at 5% coverage are made since near-end was detected.
3. If near-end was detected by pixel count, and later it was detected by toner end sensor again before toner end:
   Either the remaining pixel count reaches 0, or 100 developments or 100 prints at 5% coverage are made since near-end by toner end sensor was detected.

### *Toner End Recovery*

When the machine detects a new toner cartridge, it drives the development unit for that cartridge for about 3 minutes.

During this time, the development clutch is repeatedly activated for 10 s and deactivated for 1 s.

The machine checks the toner end condition every 20 s. The end and near-end conditions are cleared if the sensor detects sufficient toner. However, if the sensor does not detect sufficient toner after 5 minutes of development unit drive, the toner end condition remains and a new cartridge must be added.

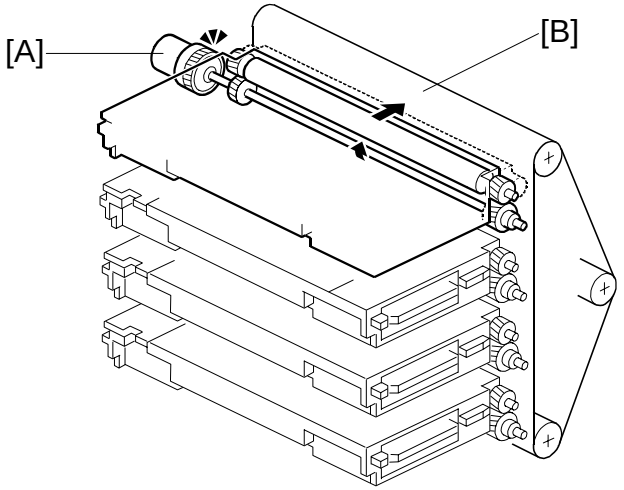
## 6.6.5 DEVELOPMENT UNIT CONTACT MECHANISM

### *Mechanism*

Each development unit has an independent clutch. When a development clutch turns on, a gear under the development unit moves the development unit into contact with the OPC belt. When the clutch turns off, two springs (one at the front and one at the rear) detach the development unit from the OPC belt.

☛ CT Color Processes – Color Development – Fixed Position Development Systems – Similar to Example 2: Model G033

[A]: OPC belt
[B]: Development clutch



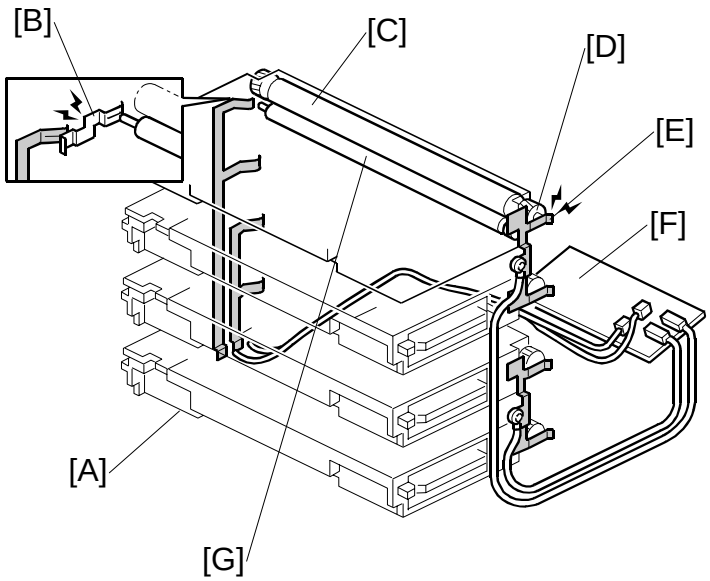

G070D305.WMF

### *Reverse Rotation*

The gears reverse at intervals to prevent toner from clumping.

## 6.6.6 POWER SOURCE

[A]: Development unit
[B]: Rear-side terminal
[C]: Development roller
[D]: Bias terminal
[E]: Harness terminal
[F]: High voltage supply
[G]: Doctor roller




### *Development, Toner Supply, and Doctor Rollers*

When a development unit [A] comes into contact with the OPC belt, the bias terminal [D] comes into contact with the harness terminal [E]. Then, a negative charge is supplied to the unit.

The negative charge on the doctor roller is the same size as the charge on the development roller and toner supply roller.

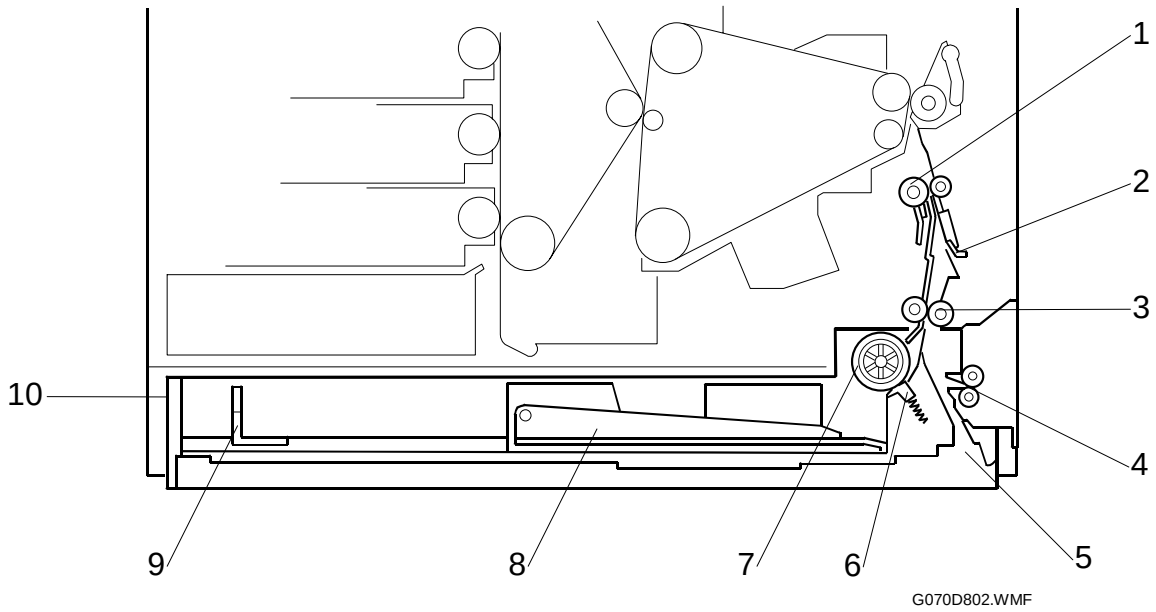
### *Doctor Roller*

The doctor roller [G] restricts the amount of toner on the development roller [C]. The high voltage supply [F] applies a charge to the doctor roller through the rear-side terminal cable [B]. This charge is the same as the charge applied to the development roller. However, the development roller charge is applied through a different terminal [E].

☛ CT Mono-component Development – Toner Metering Blade (similar principle)

# 6.7 PAPER FEED

## 6.7.1 OVERVIEW




1. Registration roller
2. Path from duplex
3. Vertical transport roller
4. Path from by-pass tray
5. Path from optional paper tray
6. Friction pad
7. Feed roller
8. Base plate
9. Paper end fence
10. Standard tray



The printer comes with two paper feed stations. It can be equipped with up to four paper feed stations.

| Tray | Number | Main/Optional |
|---|---|---|
| Standard tray | 1 | Main unit |
| Bypass tray | 1 | |
| Paper tray unit | 1 or 2 | Optional units |

### *Transport Speed*

Until the registration roller, the paper travels at 240 mm/s. This high initial speed ensures that the first output time is as short as possible.

From the registration roller to the exit, the paper travels at the following speeds:

178 mm/s (plain paper)
89 mm/s (thick paper or OHP films)

### *Friction Pad*

☛ CT Handling Paper – Paper Feed – Paper Feed Methods – Friction Pad

**NOTE:** The roller and pad are packaged as a maintenance kit, with the fusing unit. Replace the roller and pad as a unit (not separately).

## 6.7.2 STANDARD TRAY DRIVE

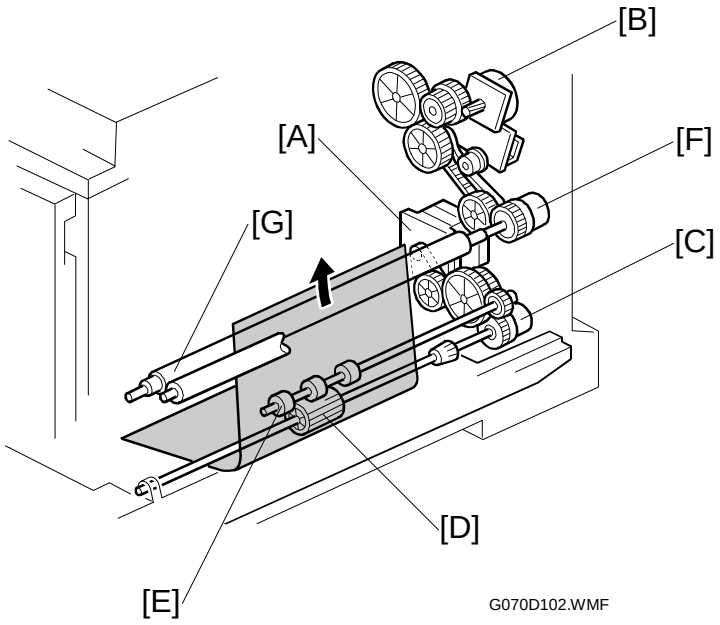
### *Feed and Vertical Transport Rollers*

Feed motor [A] → Feed clutch [C] → Feed roller [D]/vertical transport roller [E]

### *Registration Roller*

Fusing unit motor [B] → Registration clutch [F] → Registration roller [G]

[A]: Feed motor
[B]: Fusing unit motor
[C]: Feed clutch
[D]: Feed roller
[E]: Vertical transport roller
[F]: Registration clutch
[G]: Registration roller

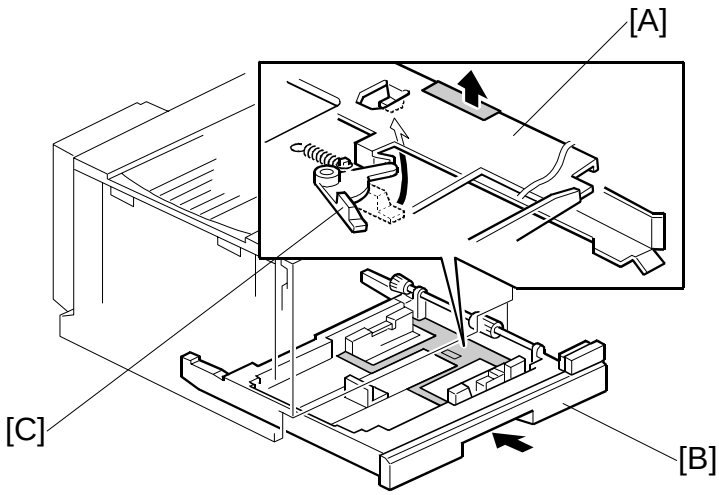


## 6.7.3 STANDARD TRAY – BOTTOM PLATE LIFT

### *Lift Mechanism*

The spring under the bottom plate [A] presses the plate upward. When you press the bottom plate as far down as possible, the hook on lever [C] holds the plate. The lever releases the bottom plate when it is pressed by the protruding part on the right tray rail; this happens when the tray [B] is completely pushed into the machine.

[A]: Bottom plate
[B]: Tray
[C]: Lever




G070D103.WMF

### *Paper Near End Detection*

The bottom plate gradually rises as paper is fed. The bottom plate position is checked with a feeler which is linked to the paper near-end sensor (☛ 6.1.4). The sensor is actuated when about 50 sheets are left in the tray, and the paper near end message appears on the operation panel.

### *Paper End Detection*

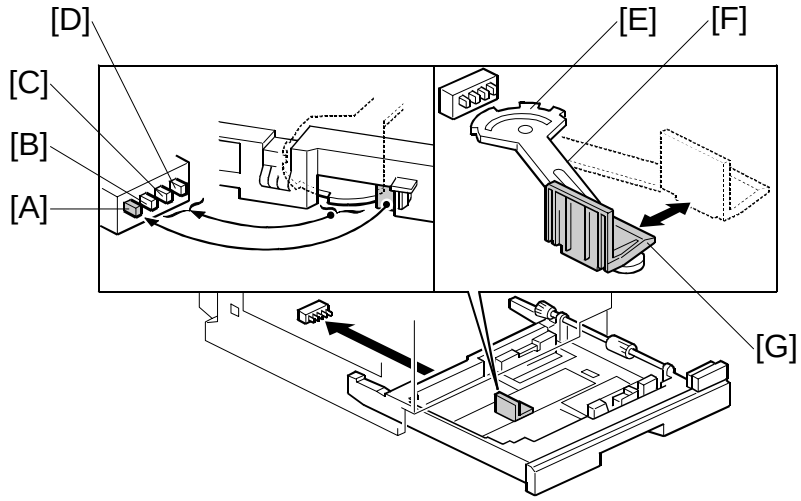
When paper runs out, the paper end sensor (☛ 6.1.4) feeler drops through the opening in the bottom plate. Then, the paper end message appears on the operation panel.

## 6.7.4 STANDARD TRAY - PAPER SIZE DETECTION

### *Mechanism*

The end fence [G] moves the lever [F], which moves a different set of notches on the actuator [E] into contact with the paper size switches [B]~[D]. When you put the tray in the main unit, the rear fence of the tray and the actuator activate the switches; from this the machine detects the presence of the tray, and the paper size.

[A]: Tray set switch
[B]: Paper size switch
[C]: Paper size switch
[D]: Paper size switch
[E]: Actuator
[F]: Lever
[G]: End fence




G070D104.WMF

### *Switch Pattern*

When the tray is pushed into the machine, the leftmost switch [A] is always activated by the rear fence of the tray; this switch detects the presence of the tray. The combination of the other 3 switches [B]~[D] detects the paper size.

| Paper Size | | Switch*1 | | | |
|---|---|---|---|---|---|
| **North America** | **Europe/Asia** | **[A]** | **[B]** | **[C]** | **[D]** |
| DLT SEF*3 | A3 SEF*3 | On | Off | On | On |
| LG SEF*2 | B4 SEF*2 | On | On | On | On |
| A4 SEF | A4 SEF | On | On | Off | Off |
| LT SEF | LT SEF | On | Off | Off | Off |
| B5 SEF*5 | B5 SEF*5 | On | Off | Off | On |
| LT LEF*4 | A4 LEF*4 | On | On | On | Off |
| B5 LEF | B5 LEF | On | On | Off | On |
| — | A5 LEF | On | Off | On | Off |
| (No tray) | | Off | Off | Off | Off |

*1 On: Pushed Off: Not pushed
*2 Selected with SP1-902-1 [PaperSize - B4/LG], (LG SEF/B4 SEF)
*3 Selected with SP1-902-2 [PaperSize - A3/DLT], (DLT SEF/A3 SEF)
*4 Selected with SP1-902-3 [PaperSize - A4/LT], (LT LEF/A4 LEF)
*5 Selected with SP1-902-4 [PaperSize - B5/Executive], (B5 SEF/10.5" x 7.25" SEF)

**NOTE:** 1) For the input check table, ☛ 5.2.2.
2) Other paper sizes are not detected. Use the Paper Input – Tray Paper Size user tool to set paper sizes.

## 6.7.5 BYPASS TRAY

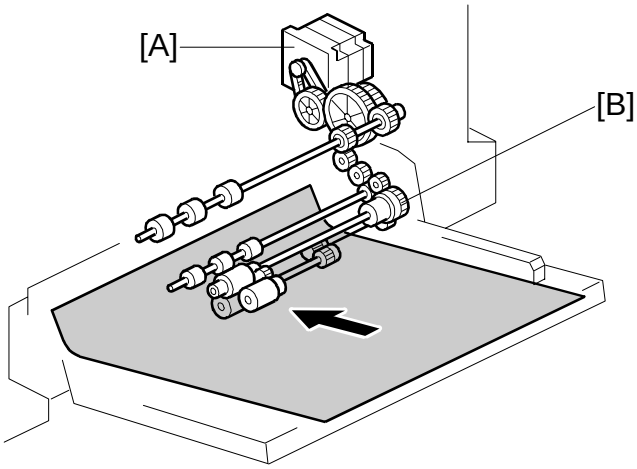
### *Paper Feed Mechanism*

The FRR (feed and reverse roller) feed mechanism (☛ CT) is used.

### *Bypass Tray Drive Power Path*

Paper feed motor [A] → Gears → Feed clutch [B] → Rollers

[A]: Paper feed motor
[B]: By-pass paper feed clutch

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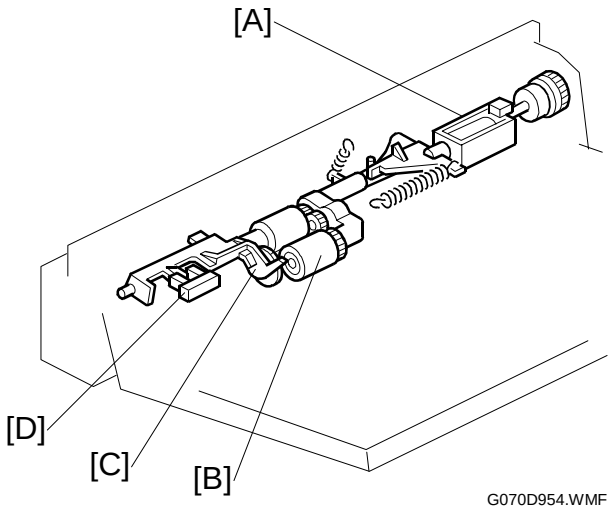
### *Pick-up Solenoid*

The by-pass pick-up solenoid [A] is mechanically linked to the pick-up roller [B]. When the solenoid turns on, the pick-up roller touches the top sheet of the paper.

[A]: By-pass pick-up solenoid
[B]: Pick-up roller
[C]: Feeler
[D]: Paper end sensor

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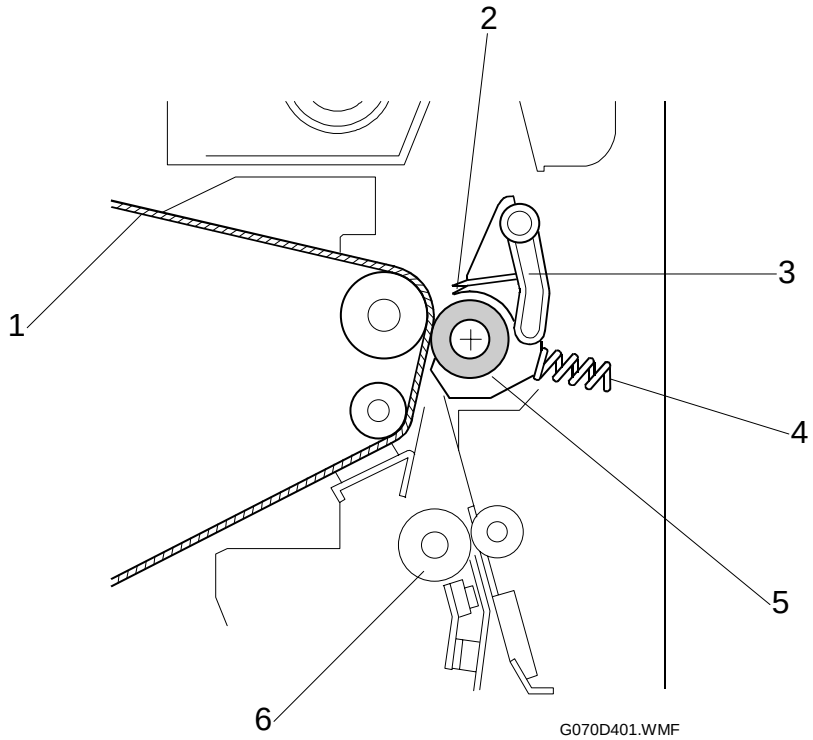
### *Paper End Sensor*

The feeler [C] is linked with the paper end sensor [D]. The paper end sensor functions not only as a paper end sensor but also as a paper set sensor.

# 6.8 PAPER TRANSFER AND SEPARATION

## 6.8.1 OVERVIEW




1. Image transfer belt
2. Discharge plate
3. Separation lever
4. Spring
5. Paper transfer roller
6. Registration roller

### *Jammed Paper Release*

When you open the right cover, the units release the paper. This mechanism helps clear paper jams quickly.

### *Image Transfer and Paper Separation*

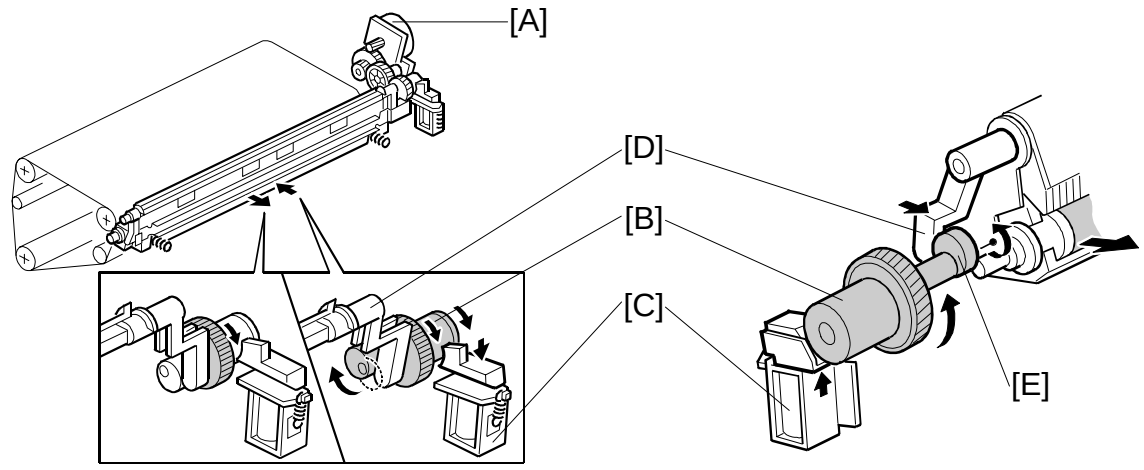
CT Photocopying Processes – Image Transfer and Paper Separation – Transfer Roller + Discharger – Example 2: Models A172/A199

The current is adjusted based on paper weight and environmental temperature and humidity.

A user tool (Paper Input – Paper Type) specifies the paper weights. If “Plain” is selected, then either SP 5-945 (MidThickPaper) or another user tool (Maintenance – Plain Paper Type) defines when the paper is “normal” or “> 90 g/m$^2$, 24lb”.

- “Plain” means normal or > 90 g/m$^2$, 24lb.
- “Thick” means paper heavier than 105 g/m$^2$ (28 lb).

## 6.8.2 MECHANISM




[A]: Fusing unit motor
[B]: Half-turn clutch
[C]: Paper transfer solenoid
[D]: Contact/separation lever
[E]: Cam

### *Timing*

When transferring toner to paper, the paper transfer roller unit contacts the image transfer belt. At other times during printing, the unit stays away from the image transfer belt. After printing, the unit contacts the belt and stays there.

**NOTE:** During standby mode, the unit stays away from the image transfer belt.



### *Mechanism*

Fusing unit motor [A] → Gear → Paper transfer solenoid [C] → Cam [E] → Contact/separation lever [D] → Paper transfer roller unit movement

The fusing unit motor [A] drives the mechanism. (It also drives the paper transfer roller).

The cam [E] is controlled by the half-turn clutch [B] and the paper transfer solenoid [C].

When the solenoid is off, it catches a hook on the surface of the half-turn clutch [B]. As a result, the high point of the cam pushes the contact/separation lever [D], and the paper transfer roller unit is away from the belt.

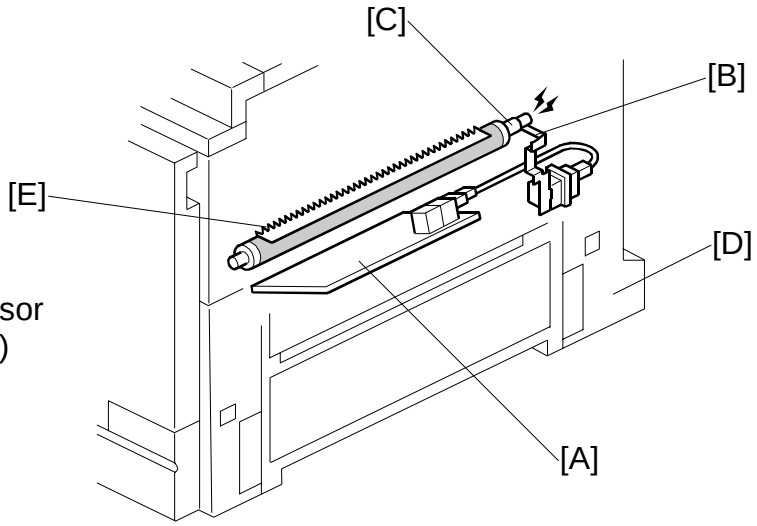
When the solenoid is activated, the hook is released, so the half-turn clutch makes a half-turn—the unit moves to the right and contacts the image transfer belt.

## 6.8.3 POWER SUPPLY

### *Electric Power Path*

High voltage supply [A] → Terminal [B] → Transfer roller axis [C]

[A]: High voltage supply
[B]: Terminal
[C]: Transfer roller axis
[D]: Temperature-humidity sensor (inside the rear-right cover)
[E]: Discharge plate (negative charge)

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### *Transfer Roller Bias*

Normally, a constant current is applied to the transfer roller shaft [C].

The conductive bearing allows the electrical connection between the bias terminal [B] and the transfer roller shaft.

The current varies with paper type, size, and thickness as well as humidity.

### *Discharge Plate*

The discharge plate [E] discharges the remaining charge on the paper going past the transfer roller. This helps the paper separate from the transfer belt.

### *Temperature/Humidity Control*

The temperature-humidity sensor [D] is inside the rear-right cover. The sensor is used to control the power for the transfer roller (☛ 5.2.2).

The temperature and humidity can be read with SP2-912 (Temp_HumDisp).

### *Roller Cleaning*

The transfer roller is cleaned at the following times:

- After the user clears a paper jam
- After the user closes the front cover
- Just after the main power has been switched on
- While the doctor roller is reversing. This is done every 50 prints (SP 3-910, DoctorIntval), to remove toner blockages in the development unit; if the 50-print interval expires in the middle of a job, it is done at the end of the job.

After paper passes the transfer roller, the paper transfer solenoid releases the transfer roller from the image transfer belt.

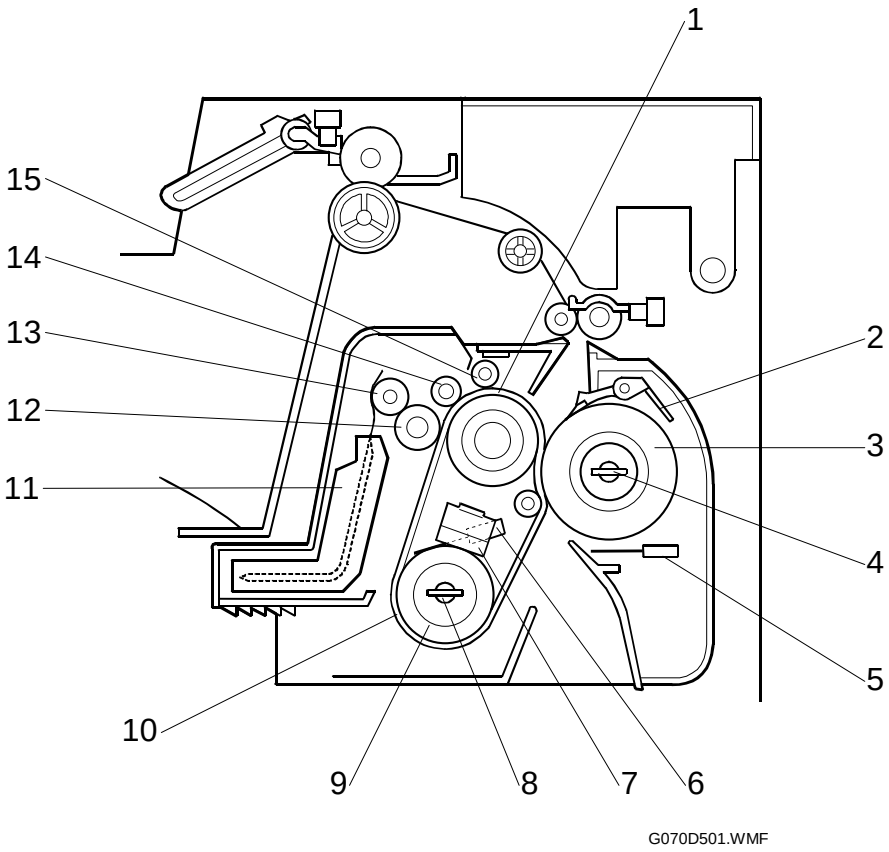
Then, a certain time after the trailing edge of the paper passes the registration sensor, the following steps occur:

1) The paper transfer solenoid turns on again, and the transfer roller contacts the transfer belt.
2) A negative charge is applied to remove toner stuck to the transfer roller.
3) Positive and negative charge is applied alternately to remove any toner that is still stuck to the transfer roller.

Toner removed from the transfer roller goes back to the transfer belt, where it is removed by the transfer belt cleaning unit.

# 6.9 FUSING UNIT AND OIL SUPPLY UNIT

## 6.9.1 OVERVIEW

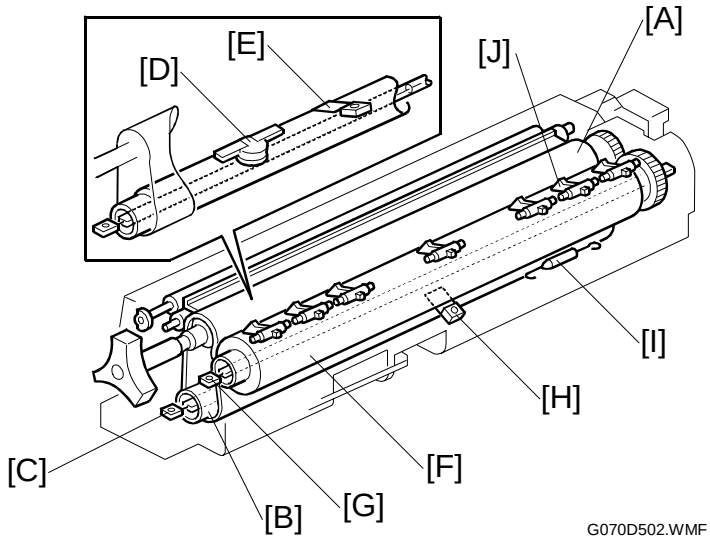



1. Hot roller
2. Pressure roller separation pawl
3. Pressure roller
4. Pressure roller fusing lamp
5. Pressure roller thermistor
6. Heating roller thermistor
7. Thermostat
8. Heating roller fusing lamp
9. Heating roller
10. Fusing belt
11. Oil supply unit
12. Oiling roller
13. Oil supply roller
14. Sponge cleaning roller
15. Metal cleaning roller

**NOTE:** The fusing unit and the oil supply unit are user-replaceable. After 119 k prints, fusing unit near-end is indicated. After 120 k prints, fusing unit end is indicated, and printing stops until a new unit is added and the counter has been reset.

## 6.9.2 FUSING UNIT CONFIGURATION

[A]: Fusing belt
[B]: Heating roller
[C]: Lamp (770 W)
[D]: Thermostat
[E]: Thermistor
[F]: Pressure roller
[G]: Lamp (350 W)
[H]: Thermistor
[I]: Thermofuse
[J]: Pawl




### *Fusing Belt*

This machine uses a fusing belt [A]. The paper goes between the fusing belt and the pressure roller [F].

### *Oil Supply*

The oil supply unit contains a piece of felt. The felt absorbs the silicone oil in the unit and supplies it to the oil supply roller.

### *Heating Roller Lamp*

The center of the heating roller [B] contains a lamp (770 W) [C]. The thermostat [D] and thermistor [E] control the temperature of the roller surface. The machine cuts power to the lamp when it detects 220°C. The thermostat cutoff point is 200°C.

### *Pressure Roller Lamp*

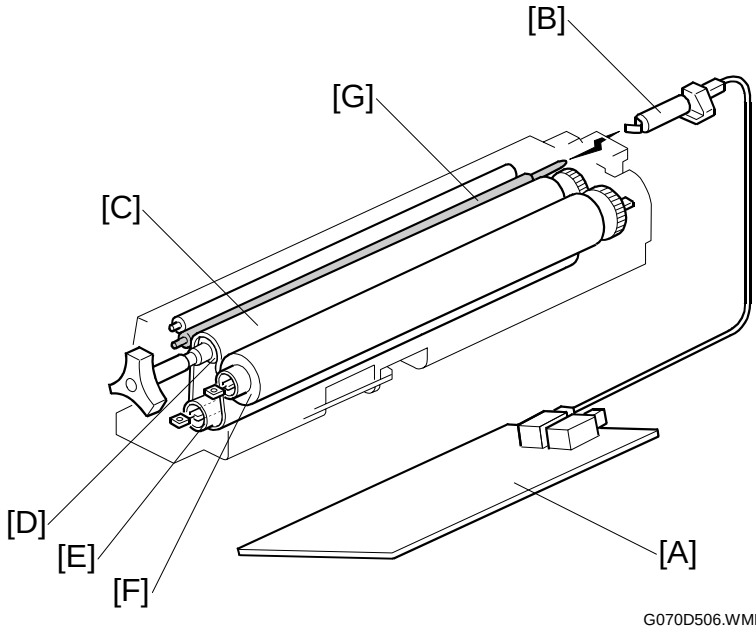
The center of the pressure roller [F] contains a lamp (350 W) [G]. The thermistor [H] and thermofuse [I] control the temperature of the roller surface.

The temperature of the surface of the pressure roller reaches to 250 °C when the pressure roller temperature rises gradually or it reaches 300 °C when it rises rapidly. Normally, the machine cuts the lamp power when the thermistor detects 220 °C.

### *Pressure Roller Pawls*

The pawls [J] above the pressure roller help prevent paper jams.

[A]: High voltage supply
[B]: Terminal
[C]: Fusing belt
[D]: Hot roller
[E]: Heating roller
[F]: Pressure roller
[G]: Oiling roller



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### *Fusing Bias*

The high voltage supply [A] provides the fusing bias. The fusing bias is a negative bias. It quenches static electricity created on the belt [C] and rollers [D]~[F] by the paper. This prevents the belt and rollers from attracting dust and dirt.

### *Fusing Unit SCs*

If a thermistor/thermostat problem occurs, a fusing unit SC may be displayed on the operation panel. Fusing unit SCs disable the machine (☛ 4.1.1). To reset fusing unit SCs, use SP5-810 [SC_Reset] (☛ 5.2.2).

## 6.9.3 TEMPERATURE CONTROL

The table lists default settings and variable ranges for temperature control.

<table>
<tr><td colspan="3">External temperature (*1)</td><td colspan="2">More than 15°C ~ less than 30°C</td><td colspan="2">15°C or lower</td><td colspan="2">30°C or higher</td></tr>
<tr><td colspan="3">Roller</td><td>Heating</td><td>Press.</td><td>Heat.</td><td>Press.</td><td>Heat.</td><td>Press.</td></tr>
<tr><td colspan="3">Fusing idling start (*2)</td><td>160</td><td>30</td><td>160</td><td>30</td><td>160</td><td>30</td></tr>
<tr><td colspan="3">Print ready (*3)</td><td>165</td><td>75</td><td rowspan="15">Heat.: +5<br>Adjustable with SP1-105-27 (Fusing_Temp - H: OFFSET+)<br><br>Press.: +0<br>Adjustable with SP1-105-28 (Fusing_Temp - P: OFFSET+)</td><td colspan="2" rowspan="15">Heat.: –5<br>Adjustable with SP1-105-29 (Fusing_Temp - H: OFFSET-)<br><br>Press.: +0<br>Adjustable with SP1-105-30 (Fusing_Temp - P: OFFSET-)</td></tr>
<tr><td colspan="3">Ready (standby mode)</td><td>175</td><td>120</td></tr>
<tr><td colspan="2" rowspan="2">Energy saver</td><td>1</td><td>100</td><td>110</td></tr>
<tr><td>2</td><td>Room temp.</td><td>Room temp.</td></tr>
<tr><td rowspan="10">Printing</td><td rowspan="2">Normal paper</td><td>Mono color</td><td>160</td><td>Lamp off</td></tr>
<tr><td>Full color</td><td>170</td><td>Lamp off</td></tr>
<tr><td rowspan="2">‘>90 g/m2, 24 lb (*4)</td><td>Mono color</td><td>170</td><td>Lamp off</td></tr>
<tr><td>Full color</td><td>180</td><td>Lamp off</td></tr>
<tr><td rowspan="2">Thick</td><td>Mono color</td><td>165</td><td>Lamp off</td></tr>
<tr><td>Full color</td><td>175</td><td>Lamp off</td></tr>
<tr><td rowspan="2">OHP</td><td>Mono color</td><td>170</td><td>Lamp off</td></tr>
<tr><td>Full color</td><td>180</td><td>Lamp off</td></tr>
<tr><td rowspan="2">Duplex (*5)</td><td>Mono color</td><td>155</td><td>Lamp off</td></tr>
<tr><td>Full color</td><td>165</td><td>Lamp off</td></tr>
<tr><td colspan="3">Variable range (*6)</td><td>100 ~ 190</td><td>30 ~ 200</td><td colspan="2">0 ~ +20</td><td colspan="2">0 ~ –20</td></tr>
</table>

*1: External temperature is measured (temperature/humidity sensor) when the main switch is turned on and when a job start signal is received.

*2: The pressure and heating rollers start idling.

*3: Fusing idling stops when both roller temperatures reach the print ready condition. The printer can process jobs when the rollers reach this temperature during warm-up.

*4: A user tool (Paper Input – Paper Type) specifies the paper type in each tray (plain, thick, or OHP). If ‘plain’ is selected, then either SP 5-945 (MidThickPaper) or another user tool (Maintenance – Plain Paper Type) defines whether the paper in the tray is ‘normal’ or ‘>90 g/m2, 24 lb’. (☛ 5.2.2). ‘>90 g/m2, 24 lb’ means ‘*greater than or equal to* 90 g/m2, 24 lb’.

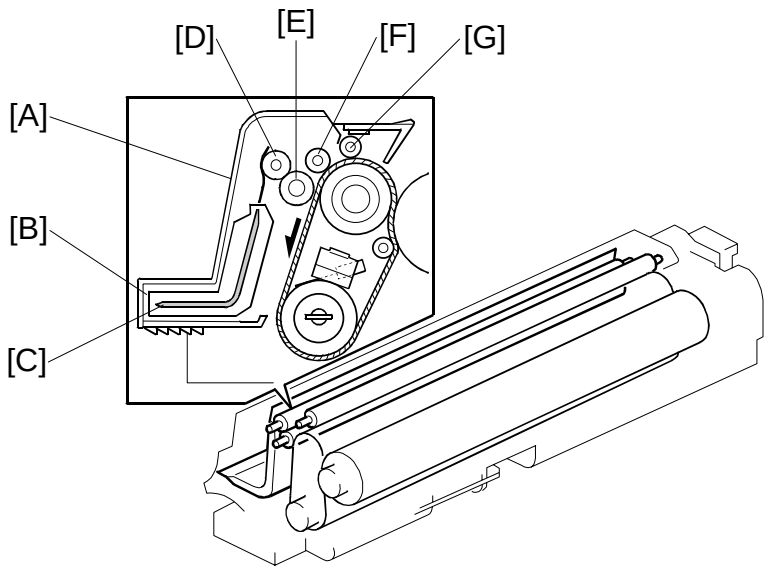
- ‘Thick’ means paper heavier than 105 g/m$^2$ (28 lb).

*5: Both sides of the paper are processed with the same roller temperatures.

*6: Use SP1-105 (Fusing_Temp) to adjust the fusing temperatures (☛ 5.2.2).

## 6.9.4 OIL SUPPLY AND CLEANING

[A]: Oil supply unit
[B]: Oil tank
[C]: Felt
[D]: Oil supply roller
[E]: Oiling roller
[F]: Sponge cleaning roller
[G]: Metal cleaning roller

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### *Oil Supply*

☛CT Photocopying Processes – Fusing – Oil Supply

### *Oil Path*

The oil goes to the fusing belt as follows:

| | |
|---|---|
| Oil tank [B]: | Contains silicone oil |
| Felt [C]: | Absorbs oil for transfer to the oil supply roller |
| Oil supply roller [D]: | Supplies the oiling roller with a small amount of oil |
| Oiling roller [E]: | Supplies oil the fusing belt |

### *Oil Recycling*

The sponge cleaning roller [F] removes excess oil and foreign substances from the belt. This oil returns to the oil supply roller [D] via the felt on the oil roller, and is recycled. The metal cleaning roller [G] also removes foreign substances from the belt.

### *Belt Cleaning*

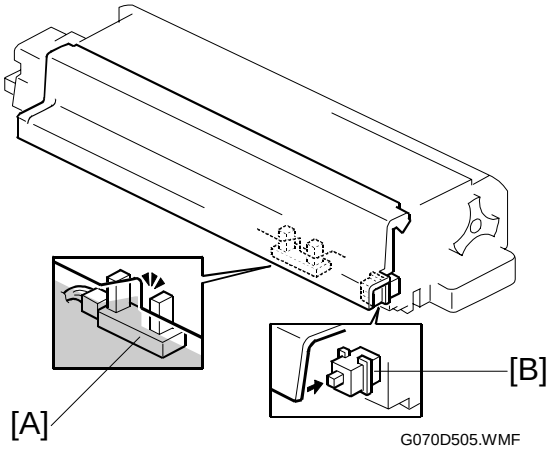
The roller carries a negative charge that removes foreign material from the belt.

### *Oil End Detection*

The oil supply unit has an oil tank with a capacity of 70 grams. The sensor [A] under the tank passes a beam through part of the transparent tank bottom. When the oil volume becomes low or oil counter reaches 30 kp (whichever is first), the oil tank empty message appears on the operation panel. Then, the machine can output 1000 prints. After that, the machine stops and printing is disabled.

The oil end condition can be cleared by pressing and holding the reset key for more than 3 seconds.

[A]: Oil end sensor
[B]: Fusing unit switch



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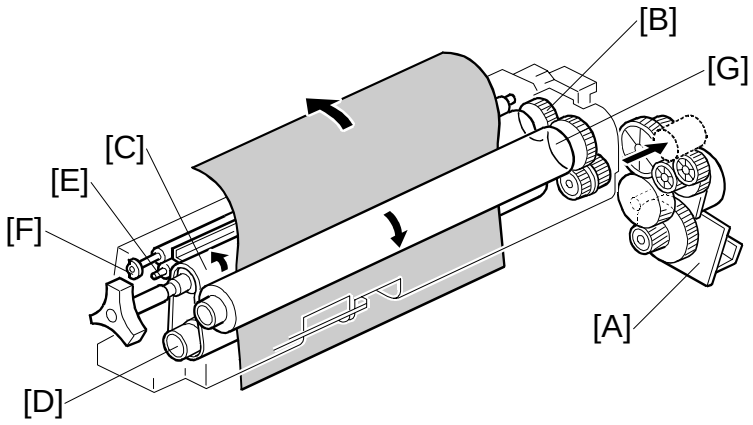
### *Fusing unit switch*

If the fusing unit is out of position, the fusing unit switch [B] turns off. The message “reset fusing unit correctly” is displayed on the operation panel.

## 6.9.5 DRIVE

[A]: Fusing unit motor
[B]: Hot roller gear
[C]: Fusing belt
[D]: Heating roller
[E]: Oiling roller
[F]: Oil supply roller
[G]: Pressure roller



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### *Drive Power Path (Fusing Unit and Oil Supply Roller)*

Fusing unit motor [A] → Gears → Hot roller gear [B] → Fusing belt [C] → Heating roller [D] → Oiling roller [E] → Oil supply roller [F]

### *Drive Power Path (Pressure Roller)*

Fusing unit motor [A] → Gears → Pressure roller [G]

## 6.9.6 ENERGY SAVER MODE

When the machine is not being used, the energy saver feature reduces power consumption by switching off the fusing lamp. This machine has two energy saver modes. To turn on energy saver modes, use the user tool. To adjust energy saver mode settings, use SP5-101 [Energy Saver] (☛ 5.2.2).

### *Level 1 Energy Saver Mode (default: off)*

Level 1 energy saver mode starts a certain time after the machine has completed a print (timer: SP 5-101-3 [Energy Saver – Level 1], from 0 to 60 s in steps of 10 s). In this mode, the fusing lamps intermittently turn on and off to keep the heating roller and pressure roller at the appropriate temperature (☛ 6.9.3).

The machine returns to ready (standby) mode when one of the following happens.

- Print command received from the PC
- Any cover opened and closed
- Any operation panel keys pressed

### *Level 2 Energy Saver Mode*

Level 2 energy saver mode starts after the machine has been idle for a certain time. This time is specified by a user tool or by SP 5-101-4 [Energy Saver – Level 2]. During level 2 energy saver mode, both lamps switch off.

- Off (energy saver mode never activates)
- 5 minutes
- 15 minutes
- 30 minutes (default)
- 45 minutes
- 60 minutes

When the machine is in this mode, the machine turns off +24V, +12V, and +5V lines. However, only +5VE lines, for the controller and circuit (voltage monitoring) on the BCU, are still active.

The machine returns to ready (standby) mode when one of the following happens.

- Print command received from the PC
- Any operation panel keys pressed

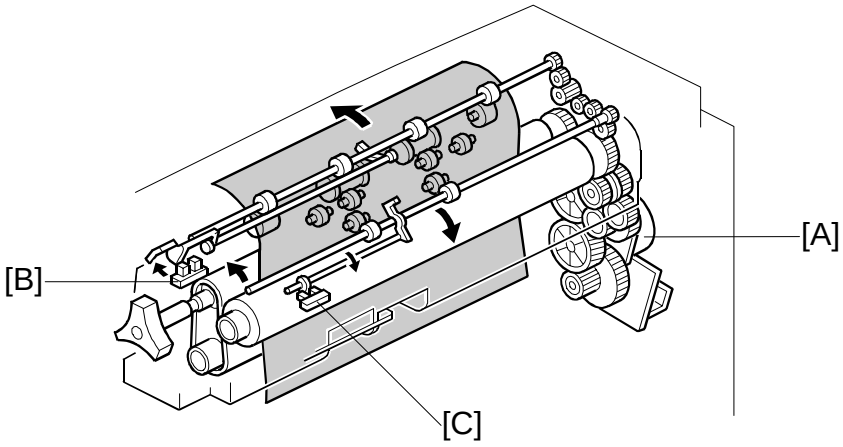
**NOTE:** The machine does not leave level 2 energy saver mode when covers are opened and closed, because the CPU on the BCU is not active.

### *Ready Mode*

When an energy saver mode ends, the machine goes to the ready mode.

## 6.9.7 PAPER EXIT

[A]: Fusing unit motor
[B]: Paper exit sensor
[C]: Fusing exit sensor

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### *Drive Power Path*

Fusing unit motor [A] → Gears → Rollers

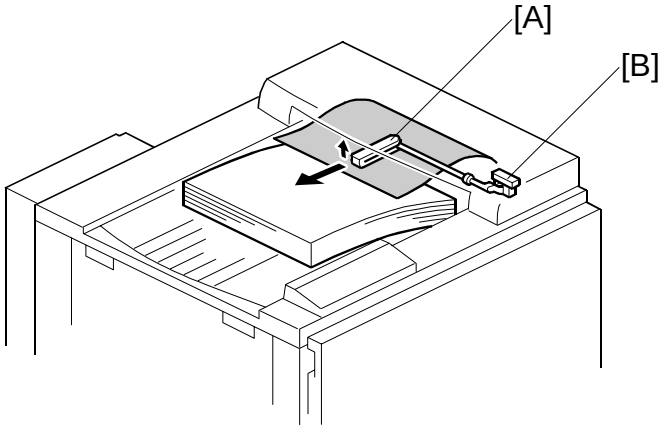
### *Paper Jam Detection*

The paper exit sensor [B] and the fusing exit sensor [C] detect paper jams.

## 6.9.8 OVERFLOW DETECTION

When the paper lifts the feeler [A], the feeler turns on the sensor. If the sensor stays on for 10 seconds, the printer interrupts processing and a message is output to the PC screen.

[A]: Feeler
[B]: Paper overflow sensor

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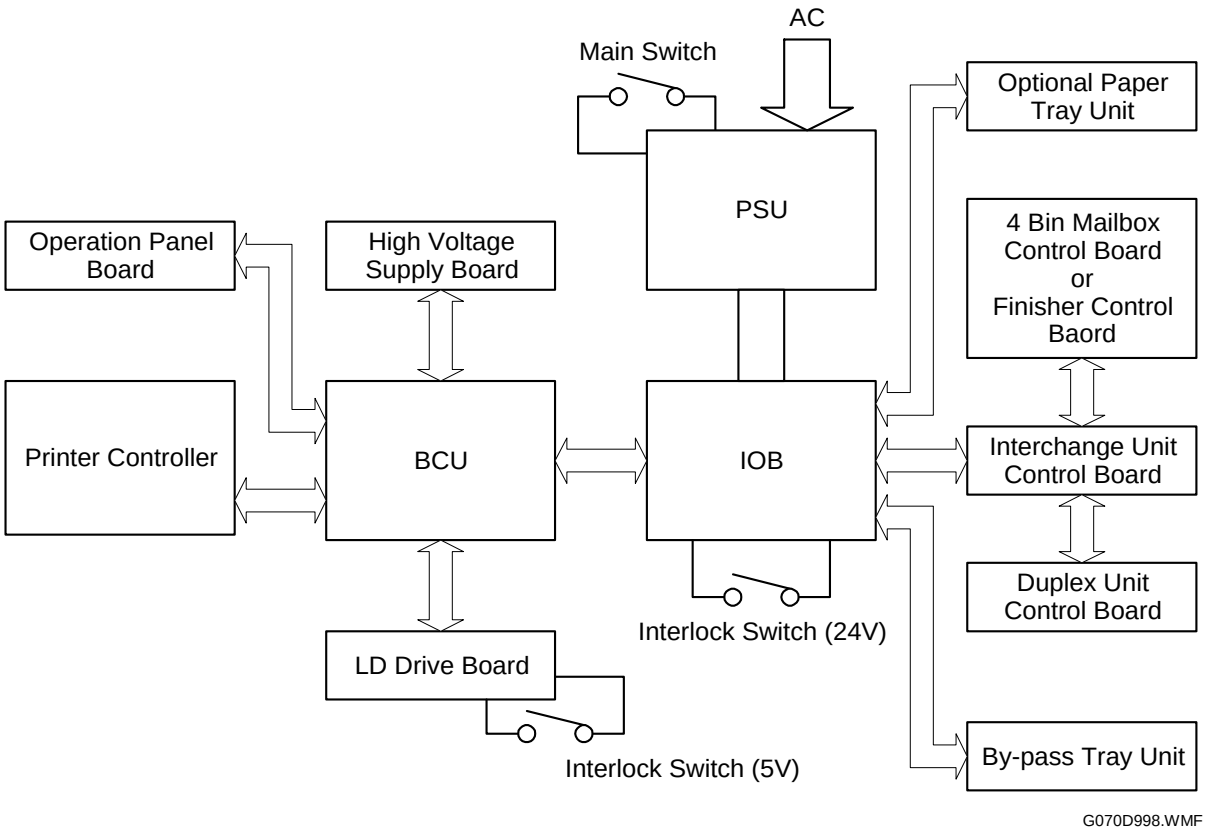
# 6.10 PRINTED CIRCUIT BOARDS

## 6.10.1 PRINTER CONTROLLER




### *Function*

The printer controller manages the printing processes and computer interface functions.

### *Memory*

A single, non-volatile random access memory (NVRAM) stores counter information and printer settings.

When the controller board is replaced, install the NVRAM from the old board on the new board.

### *Interfaces*

Centronics (IEEE1284 Nibble, ECP)
Ethernet (100Base-TX/10Base-T)
USB 2.0

### *Slots*

There are 4 slots. Two are for memory, one is for printer application software (PostScript) and the other is for GL emulation (GL – Japan only).

### *Options*

IEEE1394 board

Hard disk drive (HDD)

User account enhancement module

### *DIP Switch*

| DIP SW No. | OFF | ON |
|---|---|---|
| 1 | Boot-up from machine | Boot-up from IC card |
| 2 to 4 | Factory Use Only: Keep these switches OFF. | |

If a controller firmware download attempt failed, you must boot the machine from the IC card. To do this, set DIP SW 1 on the controller board to ON.

### *LED Indicators*

| | On | Off |
|---|---|---|
| **Green** | Linked | Not linked |
| **Yellow** | 100 Mbps | 10 Mbps |

## 6.10.2 BASE ENGINE CONTROL UNIT (BCU)

### *Function*

The BCU is at the rear-left corner of the main unit, on the left fence. The BCU controls:

System I/O
High-voltage supply
AC supply
Optional unit operations
Engine sequence

### *Upgrading*

To upgrade the BCU software, you must insert an IC card in the controller's IC card slot.

### *Nonvolatile Random Access Memory (NVRAM)*

The NVRAM on the BCU stores the engine settings. These include the process control and the maintenance kit counter settings.

When the BCU board is replaced, install the NVRAM from the old board on the new board.

### *DIP Switch*

| DIP SW No. | OFF | ON |
|---|---|---|
| 1 | Boot-up from machine | Boot-up from IC card |
| 2 to 4 | Factory Use Only: Keep these switches OFF. | |

If a BCU firmware download attempt failed, you must boot the machine from the IC card. To do this, set DIP SW 1 on the BCU board to ON.

## 6.10.3 INPUT/OUTPUT (I/O) BOARD

The board controls the following:

I/O
Motor and clutch operation
Sensors
Solenoids

## 6.10.4 POWER SUPPLY UNIT (PSU)

The PSU supplies power to each unit.

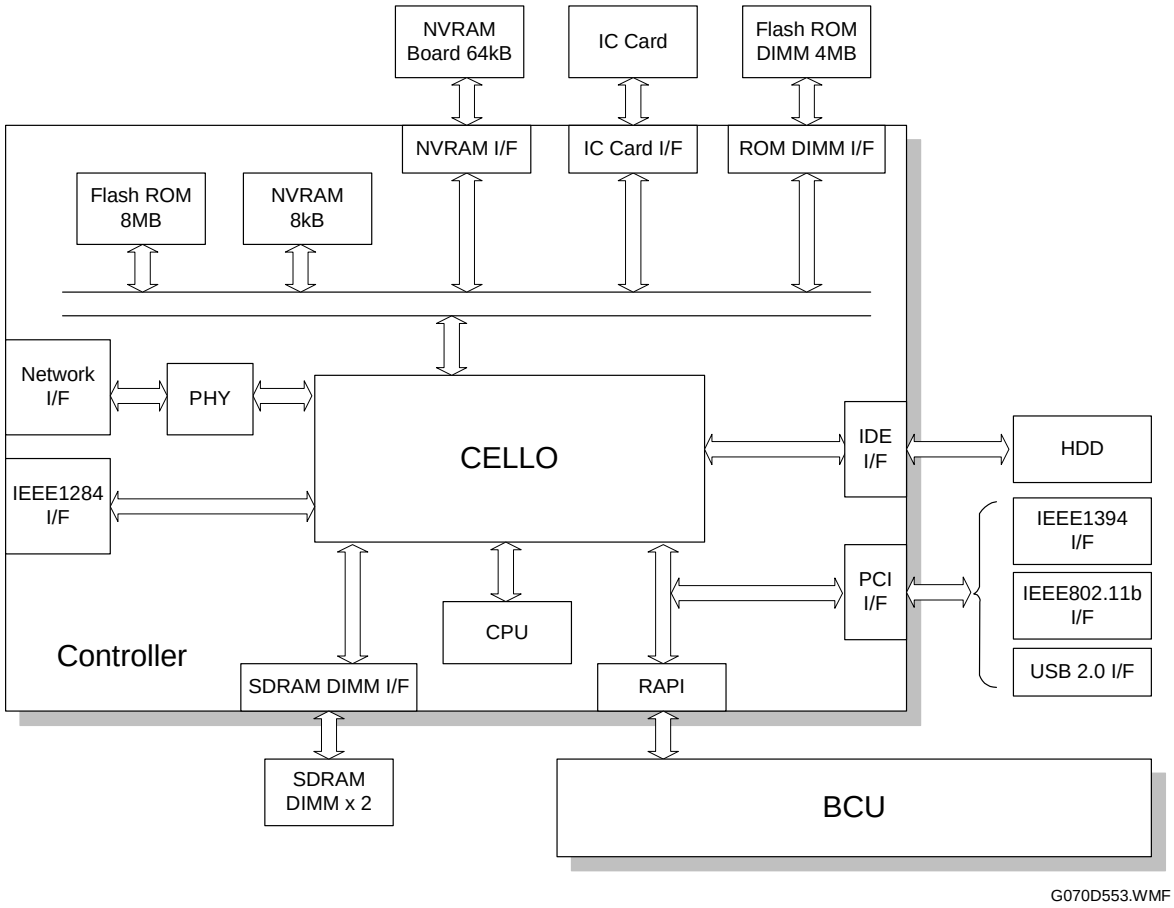
## 6.10.5 HIGH VOLTAGE SUPPLY

This supplies the following units with high voltage:

Charge corona unit
Image transfer unit
Image transfer belt cleaning unit
Development units
Paper transfer roller

# 6.11 CONTROLLER

## 6.11.1 OVERVIEW




The controller uses GW (Ground Work) architecture.

1. **CPU:**
   QED RM5261 (250 MHz)
2. **CELLO:**
   GW architecture ASIC. It uses a 124 MHz bus (64 bit) for interfacing with CPU and memory. It controls the interface with the CPU and also controls the following functions: memory, local bus, interrupts, PCI bus, video data, HDD, network, operation panel, IEEE1284, and image processing.
3. **SDRAM DIMM (2 slots):** 64 MB SDRAM (resident), expandable up to 384 MB with a 64 MB, 128 MB, or 256 MB SDRAM.
4. **Flash ROM:**
   8 MB flash ROM programmed for system and network applications.
5. **ROM DIMM (2 slots):**
   The DIMM installed in the machine includes 4 MB flash ROM programmed for printer applications. This DIMM also includes 4 kB of Mask ROM for storing internal printer fonts. Currently the remaining DIMM slot is not being used.

6. **NVRAM:**
   8 kB NVRAM for storing the printer parameters and logged data
7. **IEEE 1284 Interface:**
   Supports compatible, nibble, and ECP modes
8. **Network Interface:**
   100BASE-TX/10BASE-T
9. **USB Interface:**
   See the USB Interface section.
10. **NVRAM board (option):**
    64 kB NVRAM used for storing a record of the number of pages printed under each “User Code”.
11. **IEEE 1394 Interface (option):**
    See the IEEE 1394 Interface section.
12. **IEEE 802.11b Interface (option):**
    See the IEEE 802.1b Interface section.
13. **HDD (option):**
    A 3.5" HDD (20.5 GB) can be connected using the IDE interface. The hard disk is partitioned as shown below. The sizes cannot be adjusted.

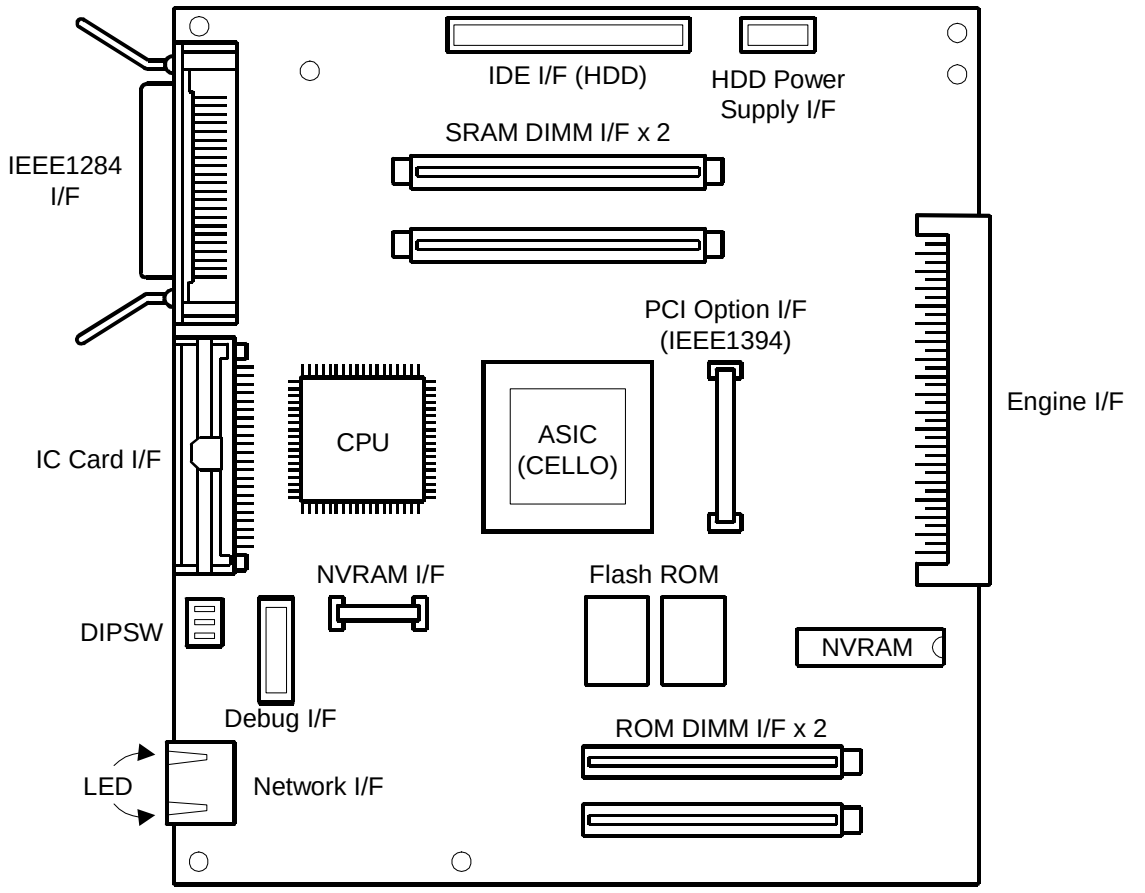
| Partition | Size | Function | Comment |
|---|---|---|---|
| File System 1 | 500 MB | Downloaded fonts, forms. | Remain stored even after cycling power off/on. |
| Image TMP | 9800 MB | Collation, sample print, locked print. | Commonly used area for applications, erased after power off. |
| Job Log | 10 MB | Job log. | Remains stored even after cycling power off/on. |

The system and application software for the following boards can be downloaded from the Controller IC Card.

- Controller (Flash ROM and flash ROM DIMM)
- BCU
- NIB

For details about downloading software from an IC card, see Service Tables – Firmware Update Procedure.

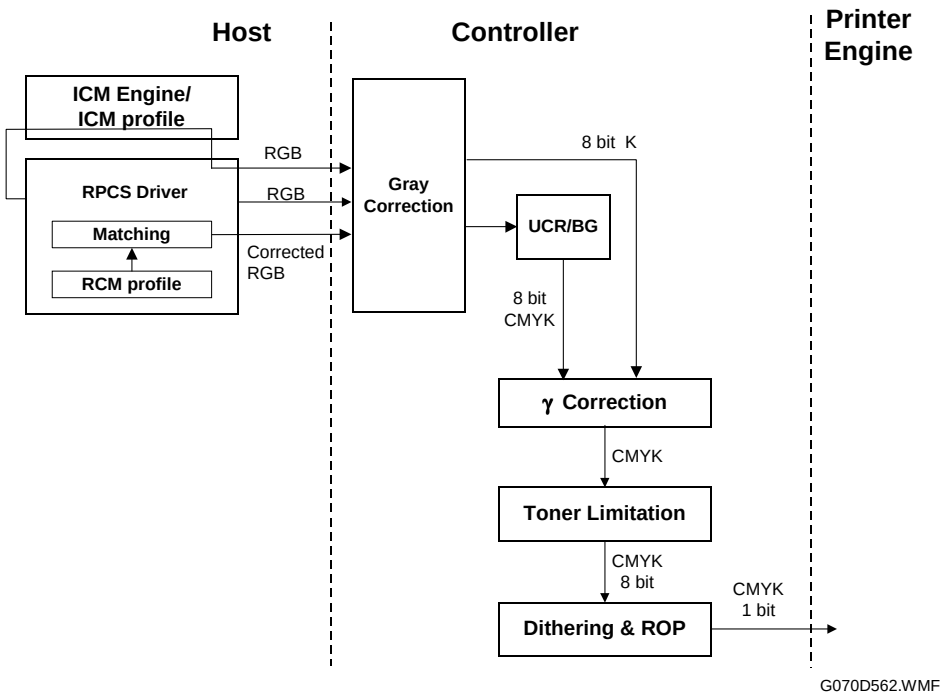
## 6.11.2 BOARD LAYOUT




G070D722.WMF

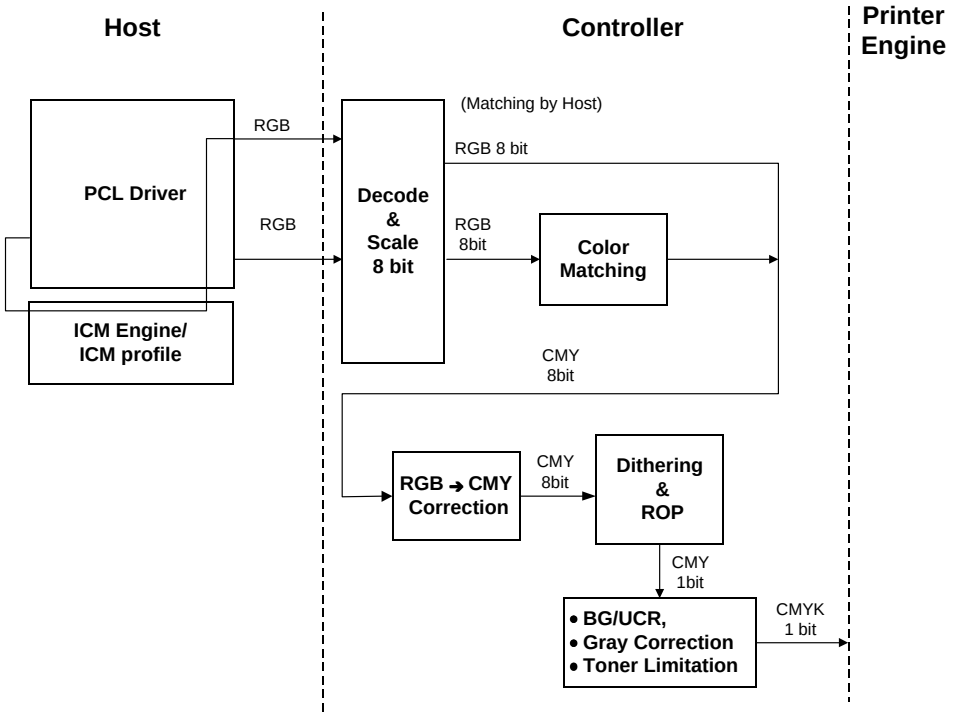
## 6.11.3 PRINT DATA PROCESSING

### *RPCS Driver*




G070D562.WMF

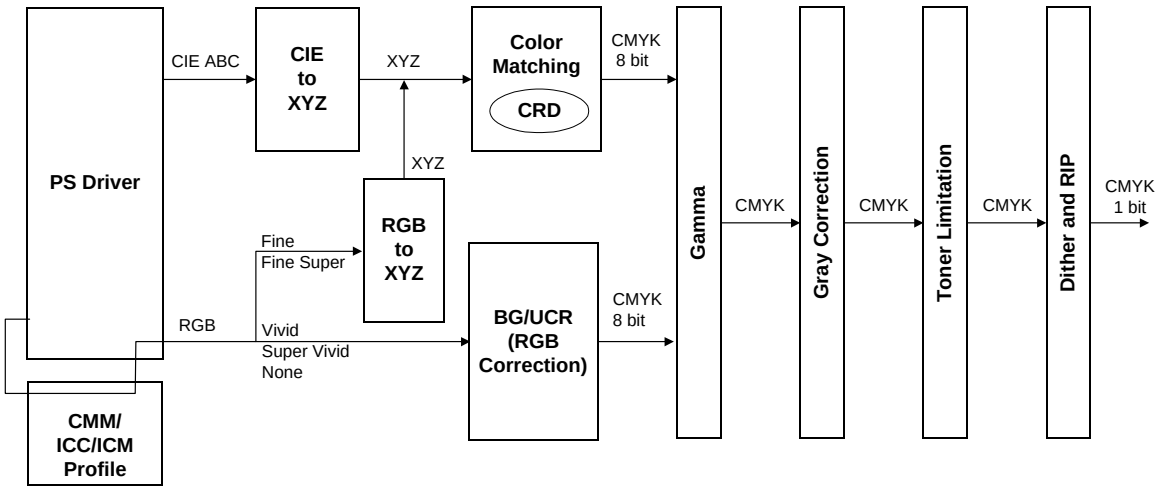
### *PCL5c Driver*




G070D563.WMF

Detailed Descriptions

### *PS3 Driver*




G070D564.WMF

### *CMS (Color Management System)*

CMS optimizes the color print quality using a color profile that is based on the characteristics of the printer. With RPCS, the color profile is applied by the driver. With PS3 and PCL5c, the color profile is applied in the matching/CRD module on the controller except when using CMM/ICC/ICM profiles.

CMS is not used when the color profile setting in the printer driver is set to “Off.”

### *Gray Correction*

Gray correction processes gray with K or CMYK toner depending on the driver settings.

### *BG/UCR (Black Generation/Under Color Removal)*

The RGB data is converted to CMYK data with BG/UCR. During CMYK conversion, some CMY data is replaced with K data by the BG/UCR algorithm.

### *Gamma Correction*

The printer gamma can be adjusted with controller SP mode (Gamma Adj.). For CMYK, there are15 points between 0 and 100%. The corrected gamma data is stored in NVRAM.

### *Toner Limitation*

Toner limitation prevents toner from being scattered around text or printed lines.

Maximum values have been prepared independently for text and photo. They can be adjusted with controller SP mode (Toner Limit).

- Default: 190% for text, 260% for photo
- Adjustable range: 100% to 400%

### *Dither Processing and ROP/RIP*

Dither patterns have been prepared for photo and text independently. Dithering converts the 8-bit data to 1-bit data. However, these dither patterns create the illusion of 256 gradations for high quality prints. The optimum dither pattern is selected depending on the selected resolution.

RIP: Raster Image Processing
ROP: Raster Operation

## 6.11.4 CONTROLLER FUNCTIONS

### *Sample Print*

This feature was formerly known as “Proof Print”. It requires installing an optional HDD. This function gives users a chance to check the print results before starting a multiple-set print run.

- The size of the hard disk partition for the sample print feature is 5.8 GB. This partition is also used by the collation and locked print features.
- The partition can hold up to 30 files, including files stored using locked print.
- The partition can hold a log containing up to 20 errors, excluding jobs stored using locked print.
- The maximum number of pages is 2,000, including jobs using locked print and collation.

### *Locked Print*

This feature requires installing an optional HDD. Using this feature, the print job is stored in the machine but will not be printed until the user inputs an ID at the machine’s operation panel. This ID must match the ID that was input with the printer driver.

- Stored data is automatically deleted after it is printed.
- Stored data can be manually deleted at the operation panel.
- The partition can hold up to 30 files, including files stored using sample print.
- The partition can hold a log containing up to 20 errors, excluding logs stored using locked print.
- The maximum number of pages is 2,000, including jobs using sample print and collation.
- Locked print uses the same hard disk partition as sample print and collation, which is 5.8 GB.

## *Paper Source Selection*

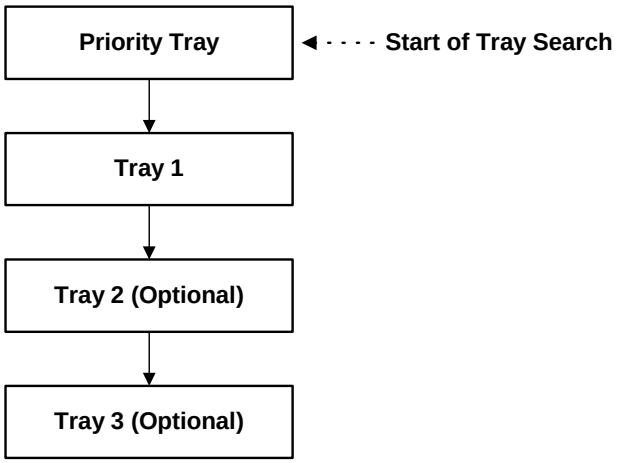
### *Tray Priority (Auto Tray Select)*

The “Tray Priority” setting determines the start of the tray search when the user selects “Auto Tray Select” with the driver. The machine searches for a paper tray with the specified paper size and type.

When no tray contains paper that matches the paper size and type specified by the driver, the controller stops printing until the user loads the correct paper.

The “Tray Priority” setting can be specified in the “Paper Input” menu. (Menu/ Paper Input/ Tray Priority)

**NOTE:** The by-pass feed table is not part of the tray search.




G070D555.WMF

### *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 in the “Paper Input” menu. (Menu/ Paper Input/ Tray Lock)

**NOTE:** The by-pass feed table cannot be unlocked (Tray Lock is always enabled).



### *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.

## *Auto Continue*

### *Overview*

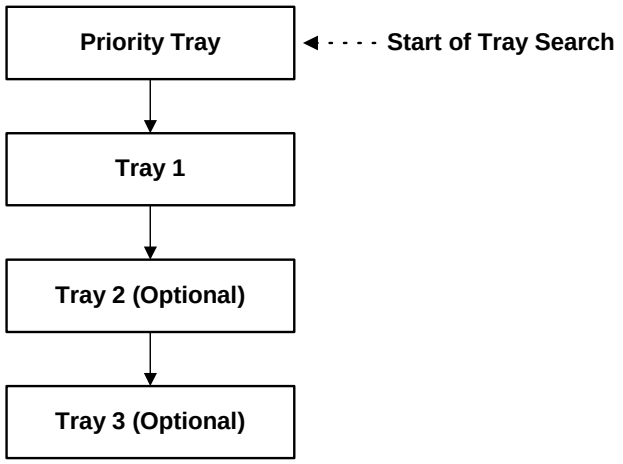
When this function is enabled, the machine waits for a specified period (0, 1, 5, 10, 15 minutes) for the correct paper size and type to be set in the tray. If the timer runs out, the machine starts printing, even if there is no paper tray which matches the paper size and paper type specified by the driver.
The machine searches for a paper tray in the following way.

- The interval can be set with the “System” menu in the User Tools. (Menu/ System/ Auto Continue)

**NOTE:** The default setting for this feature is ‘disabled’.

### *Auto Tray Select*

When there is no paper tray that matches the paper size and type specified by the driver, the machine searches for any tray that has paper, and prints from the first tray it finds. The start of the tray search is the tray selected as the “Priority Tray.”




G070D555.WMF

### *Manual Tray Select*

The machine prints from the selected tray even if the paper size and type do not match the setting specified from the driver.

If “Auto Continue” is disabled, the machine waits until the user loads the correct paper in the tray.

## *Paper Output Tray*

The output tray can be selected with the “Output Tray” setting in the “System” menu (Menu/ System/ Output Tray).

If a print job does not specify an output tray or if the driver specifies the default tray, the output tray selected with this user tool will be used.

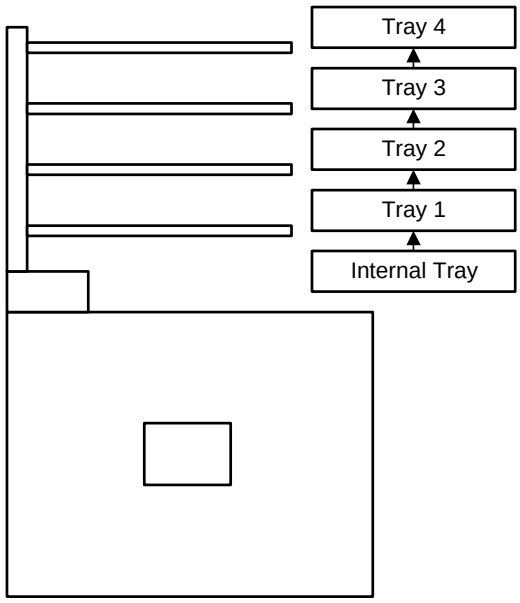
### *Output Tray Selected*

- If the machine cannot print to the selected output tray, it prints to the default paper output tray.
- If paper overflow is detected at the selected output tray, the controller stops printing until the overflow detector goes off.

### *Sequential Stacking*

When the 4-bin mailbox is installed, “Auto Tray SW” is selected as the output tray in the “System” menu, and “Printer Default” is specified as the output tray in the driver, the machine automatically sends the output to the lowest tray. When that tray fills up, the machine sends the output to the next lowest tray. When that tray also fills up, the machine sends the output to the next lowest tray sequentially.
This feature is called “Sequential Stacking”.

- If a tray becomes full and paper is detected in the next tray, the machine displays an error and stops printing. When paper in the next tray is removed, the machine automatically resumes printing to the next tray.
- If all trays become full (overflow detected in all trays), the machine displays an error and stops printing. This time, all paper in all trays must be removed.




**Rear view**

G070D556.WMF

### *Stapling*

Stapling is available when the finisher is installed.
The finisher has only one stapling position.

- Depending on the paper orientation, the image may have to be rotated. The controller rotates the image. If the paper cannot be physically stapled as specified by the driver, it will not be stapled.
- There is a limit for the number of sheets which can be stapled. If a job has more than this number, it will not be stapled.
  A3, B4, 11" x 17", LG: 20 sheets (80 g/$m^2$, 20 lb)
  A4, B5 sideways, LT: 30 sheets (80 g/$m^2$, 20 lb)

# 6.12 IEEE1394 INTERFACE

## 6.12.1 SPECIFICATIONS

### *Hardware Specification*

Interface: IEEE1394 (6 pins)
(no power supply, cable power repeated, IEEE1394a-2000 compliant)
Ports: 2 ports
Data rates: 400Mbps/200Mbps/100Mbps

### *System Requirements*

PC: Windows PC with IEEE1394 port
OS: Microsoft Windows 2000 upgraded with service pack 1
Cable length: 4.5m (15ft)

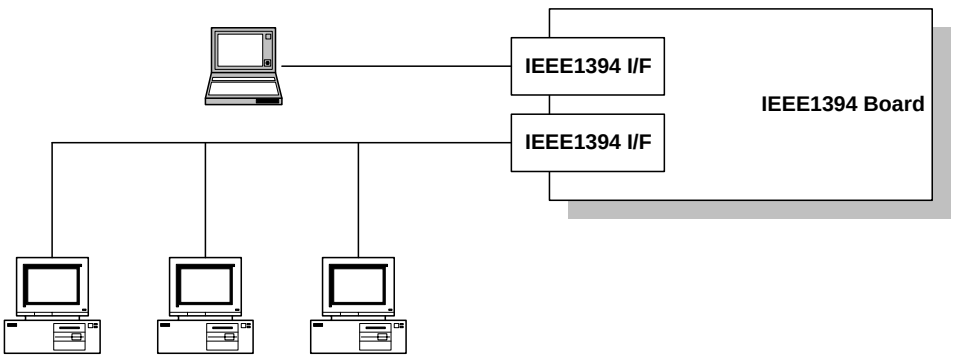
## 6.12.2 IEEE1394

IEEE1394, also known as FireWire (a name patented by Apple), is an easy-to-use peer-to-peer networking technology allowing speeds of up to 400 Mbps.

The current standard contains the following features, which are supported in most devices:

- Hot swapping (cables can be connected and disconnected while the computer and other devices are switched on)
- Peer-to-peer networking (no hub required)
- No terminator or device ID is required, unlike SCSI
- Automatic configuration of devices upon start-up, or “plug and play”.
- Real-time data transfer at 100, 200, and 400 Mbps
- Common connectors for different devices



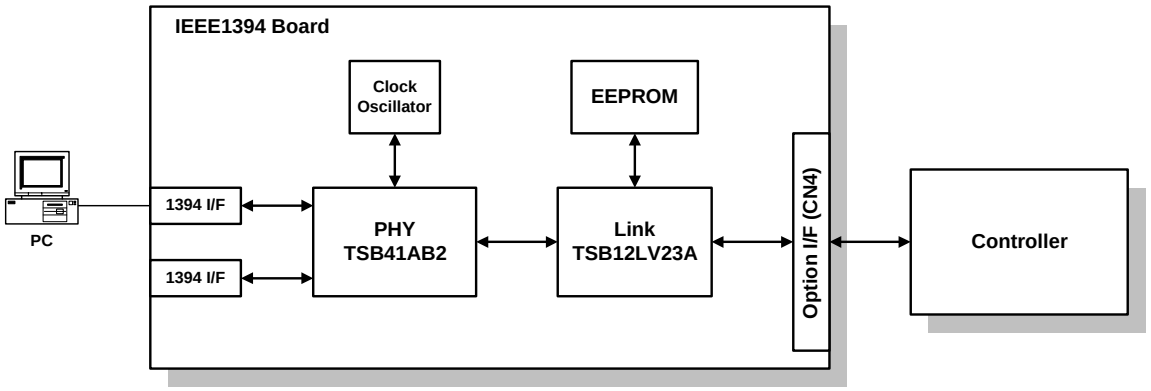



G070D559.WMF

The cable length is limited to 4.5 m (15ft). However, up to 16 cables and 63 devices can be connected to an IEEE1394 network.

IEEE1394 cables can be either 4-pin (data only) or 6-pin (data and power). IEEE1394 allows either 6-pin or 4-pin connectors. However, this machine only uses the 6-pin connectors. The machine has two 6-pin ports.

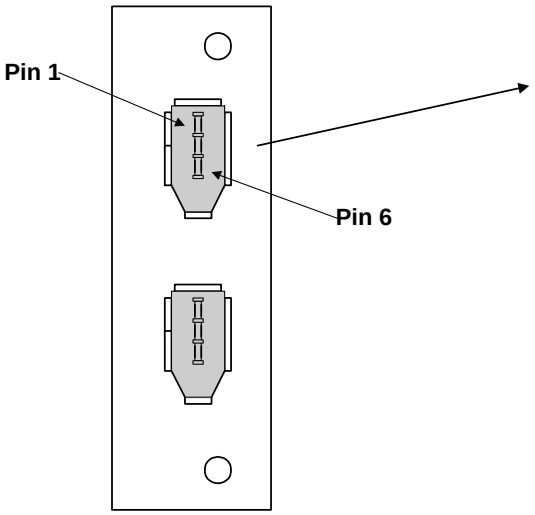
## 6.12.3 BLOCK DIAGRAM




G070D560.WMF

- PHY: Physical layer control device
- Link: Link layer control device
- EEPROM: 256-byte ROM

## 6.12.4 PIN ASSIGNMENT




| Pin assignment | |
|---|---|
| Pin 1 | Pin 4 |
| Pin 2 | Pin 3 |
| Pin 5 | Pin 6 |

G070D561.WMF

| Pin No. | Signal Description |
|---|---|
| 1 | Cable Power |
| 2 | GND |
| 3 | Receive strobe |
| 4 | Transmit data |
| 5 | Receive data |
| 6 | Transmit strobe |

## 6.12.5 REMARKS ABOUT THIS INTERFACE KIT

Note the following points about this unit.

- The machine does not print reports specifically for IEEE1394. Just print the Configuration Page at installation to check that the machine recognizes the card.
- There is no spooler or print queue. If a computer tries to print over the IEEE1394 while the printer is busy, the IEEE1394 interface card inside the printer will return a busy signal.
- After starting a job using IEEE1394, do not switch the printer off until the job has been completed. Even though the printer may appear to be dead, it may be in the middle of an IEEE1394 protocol exchange with the computer.
- When using IEEE1394, it is not possible to check the printer status from the computer with a utility such as Printer Manager for Client.

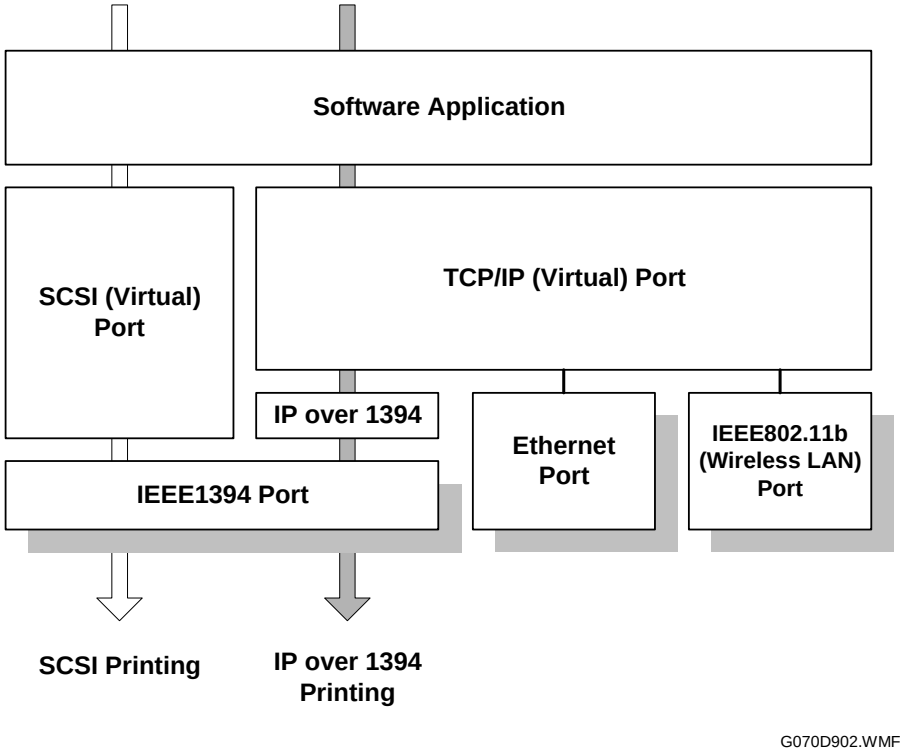
## 6.12.6 TROUBLESHOOTING NOTES

If there are problems printing using the IEEE1394 interface, check the following.

- Is the computer using Windows 2000 with service pack 1?
- Has the interface card been replaced recently? Each card has an individual address, similar to the MAC address in an Ethernet card. If the card was changed, the driver cannot find the old card. The new card is another device and a new printer appears in Windows Control panel, and this must be configured in the same way as the printer that was replaced (the old printer icon in Windows Control Panel should be deleted) has to be reconfigured.
- Is there a loop somewhere in the network? An IEEE1394 network must be a chain or a branched chain. There can be no loops.
- Try to find out where in the chain the problem is occurring. Test the machine one-to-one with the computer to determine if the printer is defective (when the printer's interface cable is plugged in, the computer should see 'Printer Ready'; when the cable is disconnected, the computer should see 'Offline').

## 6.12.7 IP OVER IEEE 1394

This machine supports IEEE1394 printing by setting an IP address. This feature is called ‘IP over 1394’.
The former IEEE1394 printing without IP address is known as ‘SCSI printing’.




**NOTE:** 1) IP over 1394 can only be used with Windows XP or Me. It only works with Windows Me if SmartNetMonitor for Client (version 5 or later) is installed.
2) Windows XP and 2000 supports IEEE1394 SCSI printing.

# 6.13 IEEE 802.11B (WIRELESS LAN)

## 6.13.1 SPECIFICATIONS

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.

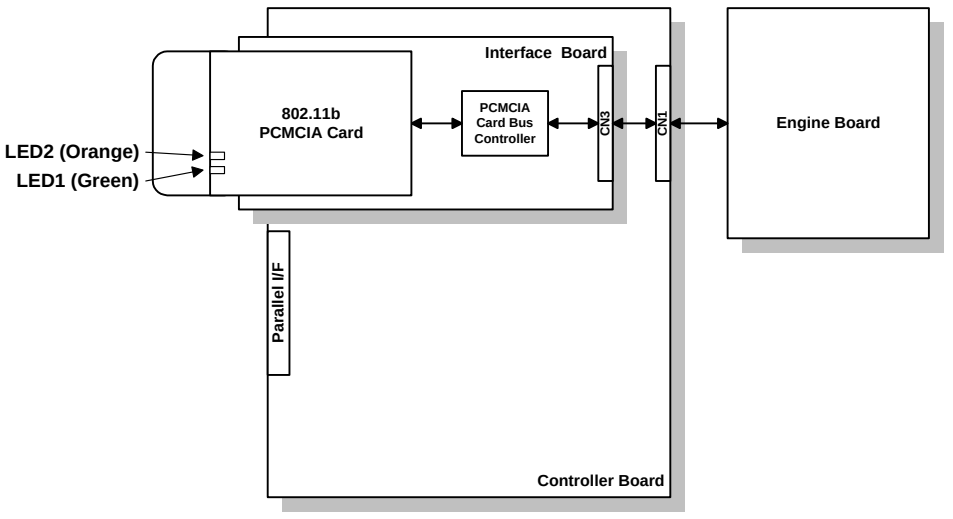
- With wireless LANs, users can access information on a network without looking for a place to plug into the network.
- Network managers can set up or expand networks without installing or moving wires.
- Most wireless LANs can be integrated into existing wired networks. Once installed, the network treats 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 transfer rates: | 11 Mbps/5.5 Mbps/2 Mbps/1 Mbps (auto sense) |
| Network protocols: | TCP/IP, Apple Talk, NetBEUI, IPX/SPX |
| Bandwidth: | 2.4GHz<br>(divided over 14 channels, 2400 to 2497 MHz for each channel) |

**NOTE:** The wireless LAN cannot be used together with the Ethernet. The “LAN Type” setting in the Host Interface menu determines the LAN interface to be used.

## 6.13.2 BLOCK DIAGRAM






G070D900.WMF

### LED Indicators

| LED | Description | On | Off |
|---|---|---|---|
| LED1 (Green) | Link status | Link success | Link failure |
| LED2 (Orange) | Power distribution | Power on | Power off |

## 6.13.3 TRANSMISSION MODE

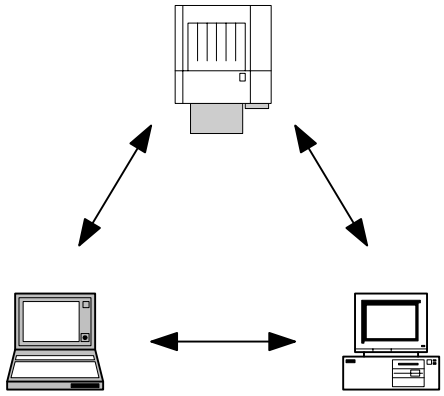
The following transmission modes are provided for wireless communication.

### *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

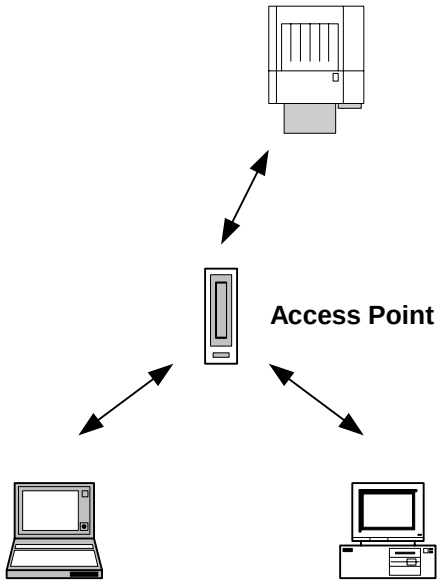


G070D907.WMF

### *Infrastructure Mode*

The infrastructure mode allows communication between each computer and the machine 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.




G070D908.WMF

## 6.13.4 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:** 3) If the SSID is not set, clients connect to the nearest access point.
4) 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.”

**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 is 128 bit WEP keys.

**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.

## 6.13.5 TROUBLESHOOTING NOTES

### *Communication Status*

Wireless LAN communication status can be checked with the UP mode “W.LAN Signal” in the Maintenance menu. This can also be checked using the Web Status Monitor or Telnet.
The status is described on a simple number scale.

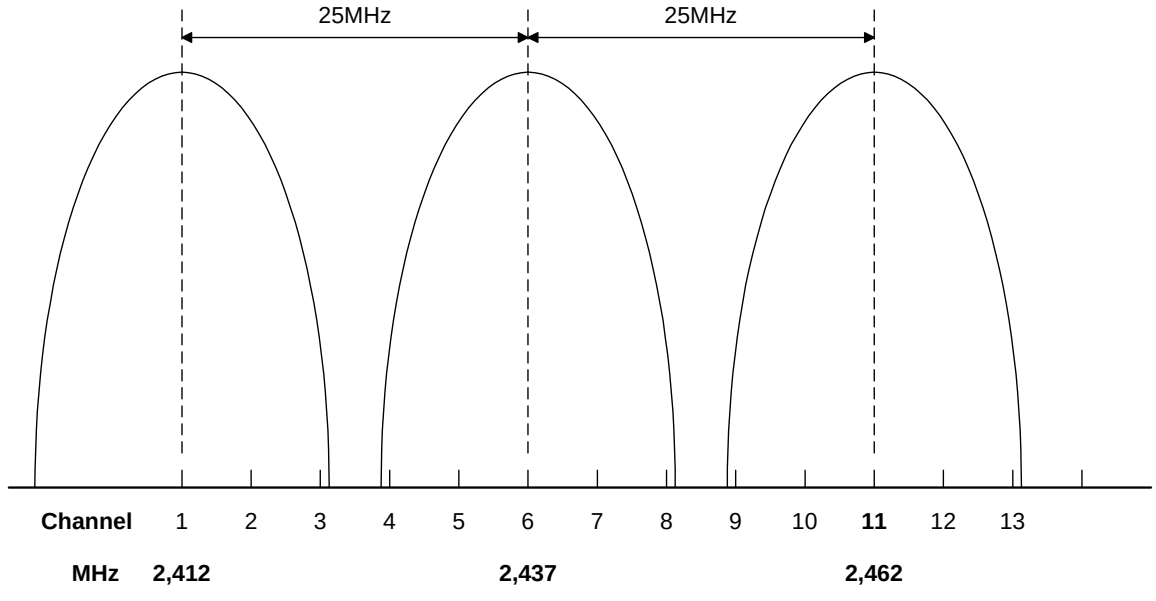
| Status Display | Communication Status |
|---|---|
| Good | 76~100 |
| Fair | 41~75 |
| Poor | 21~40 |
| Unavailable | 0~20 |

**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 to change by 3 channels. For example, if there are problems using channel 11 (default), try using channel 8.




G070D901.WMF

### *Troubleshooting Steps*

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 UP mode LAN Type in Network Setup in the Host Interface menu.
3) Check if the channel settings are correct.
4) Check if the SSID and WEP are correctly set.

If infrastructure mode is being used,

1) Check if the MAC address is properly set
2) Check the communication status
   If the communication status is poor, bring the machine closer to the access point, or check for any obstructions between the machine and the access point.
   If the problem cannot be solved, try changing the channel setting.

# 6.14 USB

## 6.14.1 SPECIFICATIONS

This model is equipped with standard USB.

Interface: USB 1.1, USB 2.0
Data rates: 480 Mbps (high speed), 12 Mbps (full speed), 1.5 Mbps (low speed);
High-speed mode is only supported by USB 2.0.

## 6.14.2 USB 1.1/2.0

USB (Universal Serial Bus) offers simple connectivity for computers, printers, keyboards, and other peripherals. In a USB environment, terminators, device IDs (like SCSI), and DIP switch settings are not necessary.

USB 1.1 contains the following features:

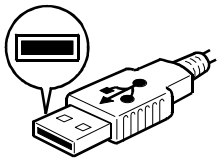
- Plug & Play
- Hot swapping (cables can be connected and disconnected while the computer and other devices are switched on)
- No terminator or device ID required
- Data rates of 12 Mbps (full speed), and 1.5 Mbps (low speed)
- Common connectors for different devices

USB 2.0 is a successor to the USB 1.1 specification. It uses the same cables, connectors, and software interfaces. It provides an easy-to-use connection to a wide range of products with a maximum data rate of 480 Mbps (high speed).

Up to 127 devices can be connected and six cascade connections are allowed. Power is supplied from the computer, and the maximum cable length is 5 m.

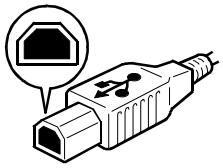
## 6.14.3 USB CONNECTORS

USB is a serial protocol and a physical link transmitting 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.



G070D945.WMF

Type “A” connector

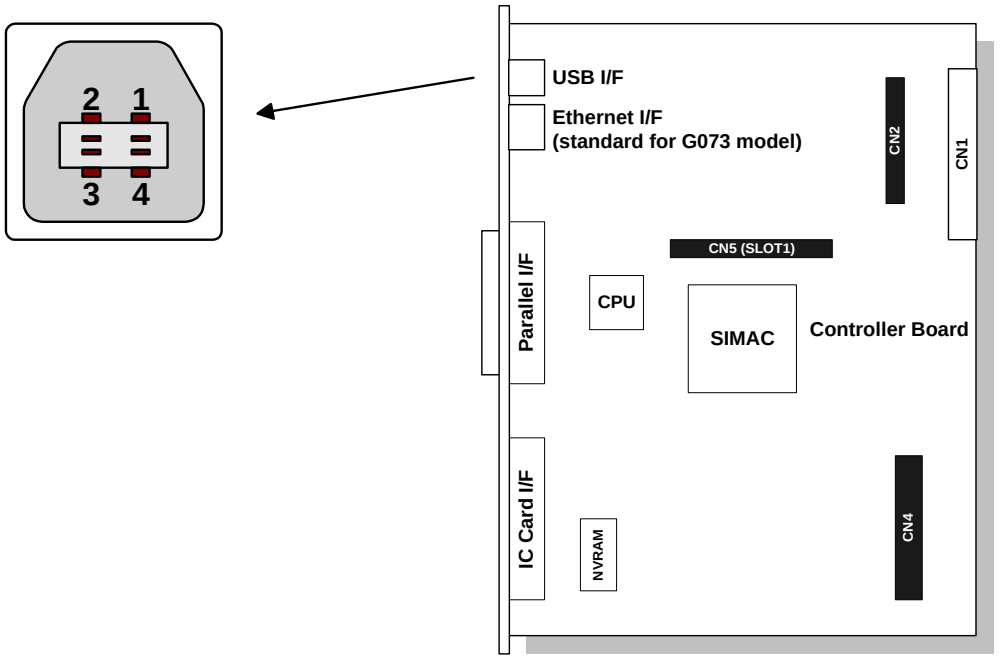


G070D952.WMF

Type “B” connector

## 6.14.4 PIN ASSIGNMENT

The controller has a type “B” receptacle (CN10).




G070D906.WMF

| Pin No. | Signal Description | Wiring Assignment |
|---|---|---|
| 1 | Power | Red |
| 2 | Data – | White |
| 3 | Data + | Green |
| 4 | Power GND | White |

## 6.14.5 REMARKS

- 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 and 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).

# SPECIFICATIONS

## 1. GENERAL SPECIFICATIONS

### 1.1 MAIN UNIT

Configuration: Desktop

Print Process: Laser beam scan & dry electrostatic transfer system

Resolution: 600 x 600 dpi

Warming-up Time: 99 seconds or less

1st Print (A4/LT LEF)*: Color: 18.0 seconds or less
Black & White: 7.5 seconds or less
*From the start of polygon mirror rotation.

Auto Paper Tray Switch: Available

Paper Size: Regular sizes:

| | Europe & Asia | N. America |
|---|---|---|
| Standard tray | A6 to A3 | HLT to DLT |
| Bypass tray | A6 to A3 | HLT to DLT |

Standard tray: Paper size is automatically detected
Bypass tray: Manual input at the operation panel

Custom sizes (Europe, Asia, N. America):

| | Min. | Max. |
|---|---|---|
| Standard tray | 100 x 148 mm (3.9" x 5.8") | 297 x 432 mm (11.7" x 17") |
| Bypass tray | 90 x 148 mm (3.5" x 5.8") | 305 x 457 mm (12" x 18")* |

*Printable area is 297 x 432 mm (11.7 x 17").

Paper Weight:

| | |
|---|---|
| Standard tray | 60 to 105 g/m$^2$, 16 lb. Bond to 28 lb. Bond |
| Bypass tray | 60 to 163 g/m$^2$, 16 lb. Bond to 43 lb. Bond |

Printing Speed:

| | Plain Paper | Thick | OHP |
|---|---|---|---|
| Color | 10 ppm | 4 ppm | 2 ppm |
| Black & White | 36 ppm | 6.5 ppm | 3.2 ppm |

Paper Feed:

| | |
|---|---|
| Standard tray | Friction pad |
| Optional paper tray unit | FRR |
| By-pass | FRR |

Paper Capacity:

| | |
|---|---|
| Main | 250 sheets x 1 tray |
| Optional paper tray unit | 500 sheets x 1 or 2 trays |
| By-pass | 100 sheets |

Fusing: Heating rollers and fusing belt

Paper Output: Face down

Output Tray Full: Detected
Capacity: 400 sheets (200 for A3/DLT)

Photoconductor: OPC belt

Charging: Corona wire with grid plate

Laser Beam: Semiconductor laser

Development: Mono component toner

Transfer: Image transfer: Transfer belt with bias roller
Paper transfer: Roller

Separation: Discharge pin

Cleaning: OPC belt: Blade
Image transfer belt: Cleaning brush

Quenching: Lamp

Toner Supply: Cartridge

Waste Toner Disposal: Toner bottle

Total Counter: Electrical

Maintenance Counters:

| Unit | Mechanical/ Electrical | Sheets/ Time | Reset |
|---|---|---|---|
| PCU | Electrical | 120KD | Automatic |
| Development Unit (K) | Electrical | 120KD | Automatic |
| Development Unit (Y,M,C) | Electrical | 60KD | Automatic |
| O/B Waste Toner Bottle | Mechanical | 50KD | Automatic |
| T/B Waste Toner Bottle | Mechanical | 120KD | Automatic |
| Fusing Oil | Electrical | 30KP | Manual |
| Fusing Unit | Electrical | 120KP | Manual |

Self-Diagnostics: Jam, Service Call

Memory
Standard: 64 MB
Options: 64 MB, 128 MB, 256 MB
Maximum allowable: 384 MB

Test Printing: Available

Power Source:

| | Voltage | Frequency | Amperage |
|---|---|---|---|
| NA | 120 V | 60 Hz | 11 A |
| EU & Asia | 220 to 240 V | 50/60 Hz | 7 A |

Power Consumption:
Regular mode: 1.2 KW (NA), 1.5 KW (EU & Asia)
Energy star mode: 35 W or less

Dimensions (W x D x H): 540 x 670 x 470 mm (by-pass tray not extended)

Weight: 60 Kg or less

Host Interfaces:
Bi-directional (Centronics) IEEE1284 parallel x 1
Ethernet (100 Base-TX/10 Base-T)
USB 2.0
IEEE1394 (IP over): Optional
IEEE802.11b (Wireless LAN): Optional

**NOTE:** 1) USB 2.0 is on another board which occupies the optional interface slot.
2) It is necessary to remove the USB board when an optional interface is installed.

# 2. SUPPORTED PAPER SIZES

## 2.1 MAIN TRAY, BYPASS TRAY, AND DUPLEX UNIT

| Paper | | Size | Main | | | By-pass | | | Duplex |
|---|---|---|---|---|---|---|---|---|---|
| | | | N.A. | EUR. | ASIA | N.A. | EUR. | ASIA | Common |
| A3 | SEF | 297 x 420 mm | Y# | Y | Y | Y# | Y# | Y# | Y |
| B4 | SEF | 257 x 364 mm | Y# | Y | Y | Y# | Y# | Y# | Y |
| A4 | SEF | 210 x 297 mm | Y | Y | Y | Y# | Y# | Y# | Y |
| A4 | LEF | 297 x 210 mm | Y# | Y | Y | Y# | Y# | Y# | Y |
| B5 | SEF | 182 x 257 mm | Y# | Y# | Y# | Y# | Y# | Y# | Y |
| B5 | LEF | 257 x 182 mm | Y | Y | Y | Y# | Y# | Y# | Y |
| A5 | SEF | 148 x 210 mm | Y# | Y# | Y# | Y# | Y# | Y# | Y |
| A5 | LEF | 210 x 148 mm | Y# | Y | Y | Y# | Y# | Y# | Y |
| B6 | SEF | 128 x 182 mm | Y# | Y# | Y# | Y# | Y# | Y# | N |
| B6 | LEF | 182 x 128 mm | N | N | N | N | N | N | N |
| A6 | SEF | 105 x 148 mm | Y# | Y# | Y# | Y# | Y# | Y# | N |
| A6 | LEF | 148 x 105 mm | N | N | N | N | N | N | N |
| DLT | SEF | 11" x 17" | Y | Y# | Y# | Y# | Y# | Y# | Y |
| LG | SEF | 8 1/2" x 14" | Y | Y# | Y# | Y# | Y# | Y# | Y |
| LT | SEF | 8 1/2" x 11" | Y | Y | Y | Y# | Y# | Y# | Y |
| LT | LEF | 11" x 8 1/2" | Y | Y# | Y# | Y# | Y# | Y# | Y |
| HLT | SEF | 5 1/2" x 8 1/2" | Y# | Y# | Y# | Y# | Y# | Y# | Y |
| HLT | LEF | 8 1/2" x 5 1/2" | Y# | Y# | Y# | N | N | N | N |
| Executive | SEF | 7 1/4" x 10 1/2" | Y# | Y# | Y# | Y# | Y# | Y# | Y |
| Executive | LEF | 10 1/2" x 7 1/4" | Y# | Y# | Y# | Y# | Y# | Y# | N |
| F | SEF | 8" x 13" | Y# | Y# | Y# | Y# | Y# | Y# | Y |
| Foolscap | SEF | 8 1/2" x 13" | Y# | Y# | Y# | Y# | Y# | Y# | Y |
| Folio | SEF | 8 1/4" x 13" | Y# | Y# | Y# | Y# | Y# | Y# | Y |
| 8 K | SEF | 267 x 390 mm | Y# | Y# | Y# | Y# | Y# | Y# | Y |
| 16 K | SEF | 195 x 267 mm | Y# | Y# | Y# | Y# | Y# | Y# | Y |
| 16 K | LEF | 267 x 195 mm | Y# | Y# | Y# | Y# | Y# | Y# | Y |
| Customized | Width | 100 to 297 mm | Y# | Y# | Y# | N | N | N | N |
| | Length | 148 to 432 mm | | | | | | | |
| | Width | 90 to 305 mm | N | N | N | Y# | Y# | Y# | N |
| | Length | 148 to 457 mm | | | | | | | |
| Com10 | SEF | 4 1/8" x 9 1/2" | N | N | N | Y# | Y# | Y# | N |
| Monarch | SEF | 3 7/8" x 7 1/2" | N | N | N | Y# | Y# | Y# | N |
| C6 | SEF | 114 x 162 mm | N | N | N | Y# | Y# | Y# | N |
| C5 | SEF | 162 x 229 mm | N | N | N | Y# | Y# | Y# | N |
| DL Env | SEF | 110 x 220 mm | N | N | N | Y# | Y# | Y# | N |

**Symbols**

Y: Automatically detected
Y#: Needs to be manually specified
N: Not supported

## 2.2 FINISHER, MAIL BOX, AND PAPER TRAY UNIT

| Paper | | Size | Finisher | | | Mail Box | Paper Tray Unit | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Clear | Shift | Staple | | | | |
| | | | Common | | | Common | N.A. | EUR. | ASIA |
| A3 | SEF | 297 x 420 | Y | Y | Y(30) | Y | Y | Y | Y |
| B4 | SEF | 257 x 364 | Y | Y | Y(30) | Y | Y# | Y | Y |
| A4 | SEF | 210 x 297 | Y | Y | Y(30) | Y | Y# | Y | Y |
| A4 | LEF | 297 x 210 | Y | Y | Y(30) | Y | Y | Y | Y |
| B5 | SEF | 182 x 257 | Y | N | N | Y | Y# | Y# | Y# |
| B5 | LEF | 257 x 182 | Y | Y | Y(30) | Y | Y | Y | Y |
| A5 | SEF | 148 x 210 | N | N | N | Y | Y# | Y# | Y# |
| A5 | LEF | 210 x 148 | Y | N | N | Y | Y# | Y | Y |
| B6 | SEF | 128 x 182 | N | N | N | N | N | N | N |
| B6 | LEF | 182 x 128 | N | N | N | N | N | N | N |
| A6 | SEF | 105 x 148 | N | N | N | N | N | N | N |
| A6 | LEF | 148 x 105 | N | N | N | N | N | N | N |
| DLT | SEF | 11" x 17" | Y | Y | Y(30) | Y | Y | Y | Y |
| LG | SEF | 8 1/2" x 14" | Y | Y | Y(30) | Y | Y | Y# | Y# |
| LT | SEF | 8 1/2" x 11" | Y | Y | Y(30) | Y | Y | Y# | Y# |
| LT | LEF | 11" x 8 1/2" | Y | Y | Y(30) | Y | Y | Y | Y |
| HLT | SEF | 5 1/2" x 8 1/2" | N | N | N | Y | N | N | N |
| HLT | LEF | 11" x 8 1/2" | N | N | N | Y | Y | Y# | Y# |
| Executive | SEF | 7 1/4" x 10 1/2" | Y | N | N | Y | Y# | Y# | Y# |
| Executive | LEF | 10 1/2" x 7 1/4" | N | N | N | Y | N | N | N |
| F | SEF | 8" x 13" | N | N | N | Y | Y# | Y# | Y# |
| Foolscap | SEF | 8 1/2" x 13" | Y | Y | Y(30) | Y | Y# | Y# | Y# |
| Folio | SEF | 8 1/4" x 13" | Y | N | N | Y | Y# | Y# | Y# |
| Folio | LEF | 13" x 8 1/4" | N | N | N | N | N | N | N |
| A3 Long | SEF | 12" x 18" | N | N | N | N | N | N | N |
| 8 K | SEF | 267 x 390 | Y | Y | Y(30) | Y | Y# | Y# | Y# |
| 16 K | SEF | 195 x 267 | N | N | N | Y | Y# | Y# | Y# |
| 16 K | LEF | 267 x 195 | Y | Y | Y(30) | Y | Y# | Y# | Y# |
| Customized | Width | 100 to 305 | N | N | N | N | N | N | N |
| | Length | 148 to 458 | N | N | N | N | N | N | N |

**Symbols**

Y: Automatically detected
Y#: Needs to be manually specified
N: Not supported
(30): Up to 30 sheets

Spec.

# 3. SOFTWARE ACCESSORIES

The printer drivers and utility software are provided on one CD-ROM. An auto-run installer allows you to select which components to install.

## 3.1 PRINTER DRIVERS

| Printer Language | Windows 95/98/ME | Windows NT4.0 | Windows 2000 | Windows XP | Macintosh |
|---|---|---|---|---|---|
| PCL 5c | Yes | Yes | Yes | Yes | No |
| PS3 | Yes | Yes | Yes | Yes | Yes |
| RPCS | Yes | Yes | Yes | Yes | No |

**NOTE:** 1) The printer drivers for Windows NT 4.0 are only for the Intel x86 platform. There is no Windows NT 4.0 printer driver for the PowerPC, Alpha, or MIPS platforms.
2) The PS3 drivers are all genuine AdobePS drivers, except for Windows 2000, which uses Microsoft PS. A PPD file for each operating system is provided with the driver.
3) The PS3 driver for Macintosh supports Mac OS 8.6, 9.x, 10.1.x, (10.0.x is not supported).
4) The following Unix versions are supported:
Solaris 2.6, 7, 8
HP-UX 11.0
Red Hat Linux 6.2, 7.0, 7.1, 7.2

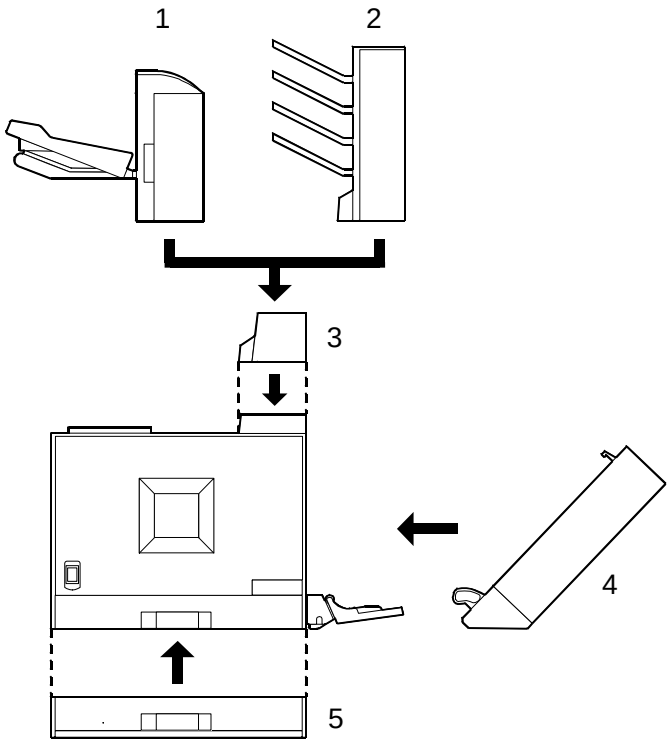
## 3.2 UTILITY SOFTWARE

| Software | Description |
|---|---|
| Agfa Monotype Font Manager (Win 95/98/ME, NT4, W2000, XP) | A font management utility with screen fonts for the printer. |
| SmartNetMonitor for Admin (Win 95/98/ME, NT4, W2000, XP) | A printer management utility for network administrators. NIB setup utilities are also available. |
| SmartNetMonitor for Client (Win 95/98/ME, NT4, W2000, XP) | A printer management utility for client users. |
| Printer Utility for Mac | This software provides several convenient functions for printing from Macintosh clients. |

# 4. MACHINE CONFIGURATION

## 4.1 SYSTEM COMPONENTS

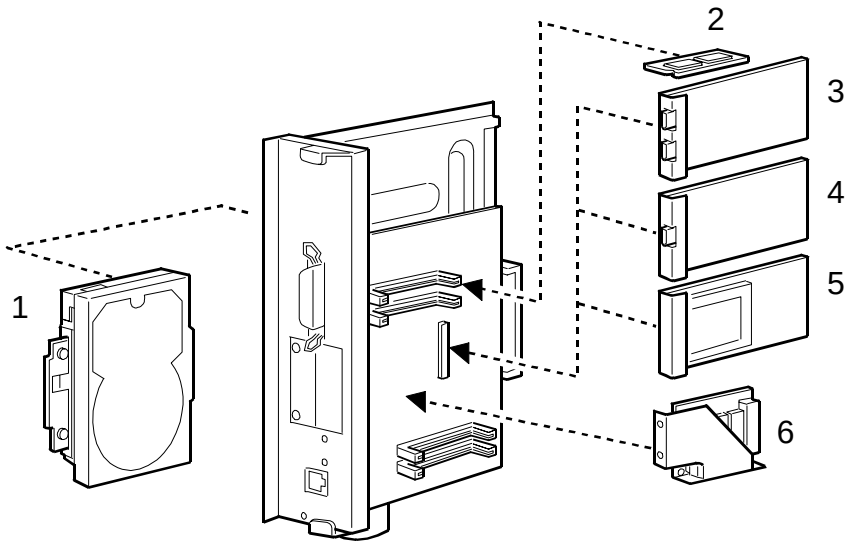
### *Exterior*




G070V001.WMF

| No. | Unit | Code |
|---|---|---|
| — | Main unit | G071 |
| **1** | 500-sheet finisher | G314 |
| **2** | 4-bin mailbox | G312 |
| **3** | Interchange unit | G305 |
| **4** | Duplex unit | G303 |
| **5** | Paper tray unit | G313 |

### *Interior*




G070V002.WMF

| No. | Unit | Code |
|---|---|---|
| **1** | Printer hard disk | G315 |
| **2** | 64 MB DIMM | G330 |
| | 128 MB DIMM | G331 |
| | 256 MB DIMM | G332 |
| **3** | IEEE 1394 board | G561 |
| **4** | USB 2.0 board (Standard) | — |
| **5** | IEEE802.11b (Wireless LAN) | G628 |
| **6** | User account enhancement unit | G311 |

### *Maintenance Kits*

| Unit | Code |
|---|---|
| O/B Waste toner bottle | G778-17 |
| I/B Waste toner bottle | G778-18 |
| Fusing unit oil | G779 |
| PCU | G780 |
| Bk development unit | G781 |
| CMY development unit | G782 |
| Fusing unit and paper feed roller/friction pad | G783 |

## 4.2 OPTIONAL EQUIPMENT

### *Paper Tray Unit*

| | |
|---|---|
| Paper Feed System: | FRR |
| Paper Height Detection: | 4 steps (100%, 50%, Near End, and Empty) |
| Capacity: | 500 sheets x 1 (up to 59 mm) |
| Paper Weight: | 60 to 128 g/m$^2$ (16 to 34 lb.) |
| Paper Size: | A3/11" x 17" to A5/5.5 x 8.5" (LEF) |
| Power Source: | DC24V, 5V (from the main frame) |
| Power Consumption: | Less than 50W |
| Dimensions (W x D x H): | 540 x 600 x 120 mm |
| Weight: | 15 kg (33 lb.) |

### *Finisher*

| | |
|---|---|
| Paper Size: | A3, B4, A4, B5 LEF, 11" x 17", LG, LT |
| Paper Weight: | 60 to 128 g/m$^2$ (14 to 34 lb.) |
| Staple Capacity: | 20 sheets (A3, B4, 11" x 17", LG : 80g/m$^2$, 20 lb)<br>30 sheets (A4, B5 sideways, LT : 80g/m$^2$, 20 lb) |
| Stack Capacity: | 500 sheets (A4/LT or smaller: 80 g/m$^2$, 20 lb.)<br>250 sheets (A3, B4, 11" x 17" and LG. 80 g/m$^2$, 20 lb.) |
| Staple Position: | 1 |
| Staple Replenishment: | Cartridge (3,000 staples/cartridge) |
| Power Source: | 24V DC, 5V DC (from the main frame) |
| Power Consumption: | 48 W |
| Weight: | 8.5 Kg (18.9 lbs) |
| Dimensions: | 506 x 164 x 328 mm (19.9" x 6.5" x 12.9") |

### *Mail Box*

| | |
|---|---|
| Trays: | 4 |
| Capacity: | 125 sheets (A4:LEF 80 g/m$^2$, 20 lb) |
| Paper Weight: | 60 to 128 g/m$^2$ (16 to 34 lb.) |
| Power Source: | DC24V, 5V (from the main frame) |
| Power Consumption: | Less than 17 W. |
| Paper Size: | A3/11" x 17" to A5/LT |
| Dimensions (W x D x H): | 440 x 520 x 370 mm (17.3" x 20.5" x 14.6") |
| Weight: | 7 kg (15.5 lb) |

### *Duplex Unit*

| | |
|---|---|
| Paper Size: | A3/11" x 17" to A5/5.5" x 8.5" |
| Paper Weight: | 60 to 105 g/m$^2$ (17 to 28 lb.) |
| Power Source: | DC 24V, 5V (from the main frame) |
| Power Consumption: | |
| Dimensions (W x D x H): | 121 x 479 x 504 mm (4.8" x 18.9" x 19.8") |
| Weight: | 6 kg (13 lbs.) |

### *Interchange Unit*

| | |
|---|---|
| Paper Size: | A3/11” x 17” to A5/5.5” x 8.5” |
| Paper Weight: | 60 to 128 g/m$^2$ |
| Dimensions (W x D x H): | 508 x 159 x 110 mm (20.0" x 6.3" x 4.3") |
| Weight: | 3 kg (6.6 lbs.) |