Model J P1c
(Machine Code: G082)

SERVICE MANUAL

April, 2002
Subject to change

⚠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 controller has a lithium battery which can explode if replaced incorrectly. Replace the battery only with an identical one. Do not recharge or burn this battery. Used battery 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.

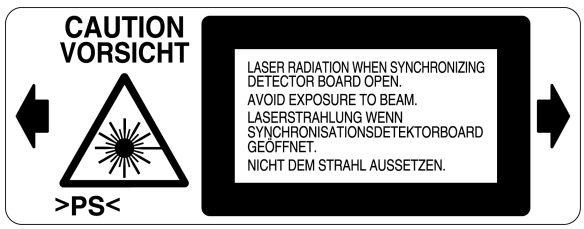
⚠WARNING

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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Symbols and Abbreviations

This manual uses the symbols and abbreviations shown below.

Symbol	Meaning
☛	"See," "Refer to"
	Clip ring
	Screw
	Connector
SEF	Short Edge Feed
LEF	Long Edge Feed

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1. INSTALLATION

1.1 INSTALLATION REQUIREMENTS

1.1.1 ENVIRONMENT

1. Temperature Range: 10°C to 32°C (50°F to 89.6°F)
2. Humidity Range: 15% to 80% RH
3. Ambient Illumination: Less than 2,000 lux (do not expose to 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 might 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. (Inclination on any side must be no more than 5 mm.)
9. Avoid installing the machine in areas that may be subjected to strong vibration.

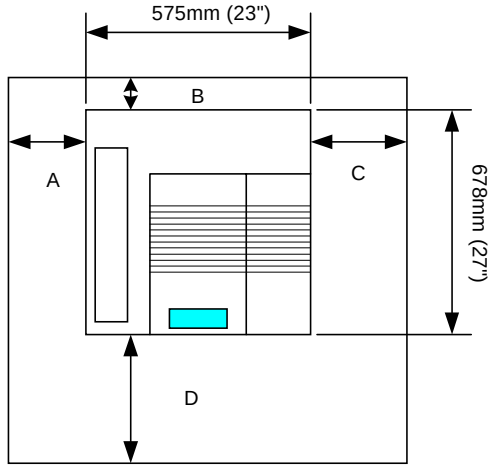
1.1.2 MACHINE LEVEL

Front to back: Within 5 mm (0.2")

Right to left: Within 5 mm (0.2")

1.1.3 MACHINE SPACE REQUIREMENT

Place the machine near the power source, providing clearance as shown.



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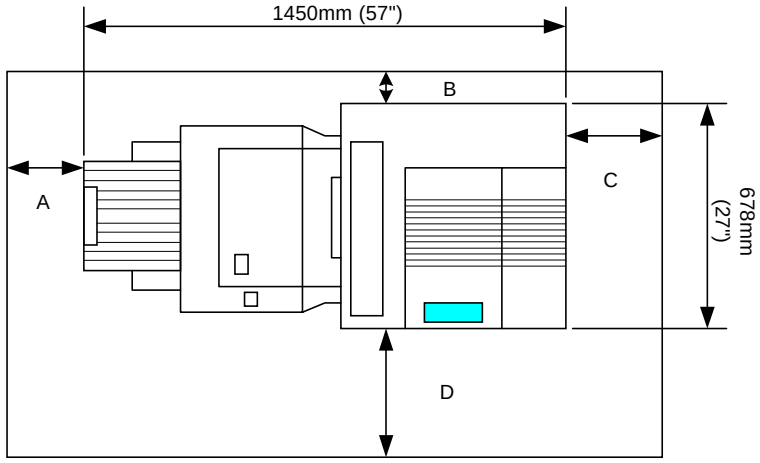
A: Over 460 mm (18")
B: Over 100 mm (4")
C: Over 550 mm (22")
D: Over 700 mm (28")



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1.1.4 POWER REQUIREMENTS

⚠CAUTION

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

1. Input voltage level: 120 V, 60 Hz: 11 A
   220 V ~ 240 V, 50 Hz/60 Hz: 6.6 A
2. Permissible voltage fluctuation: ±10 %
3. Do not put or place anything on the power cord.

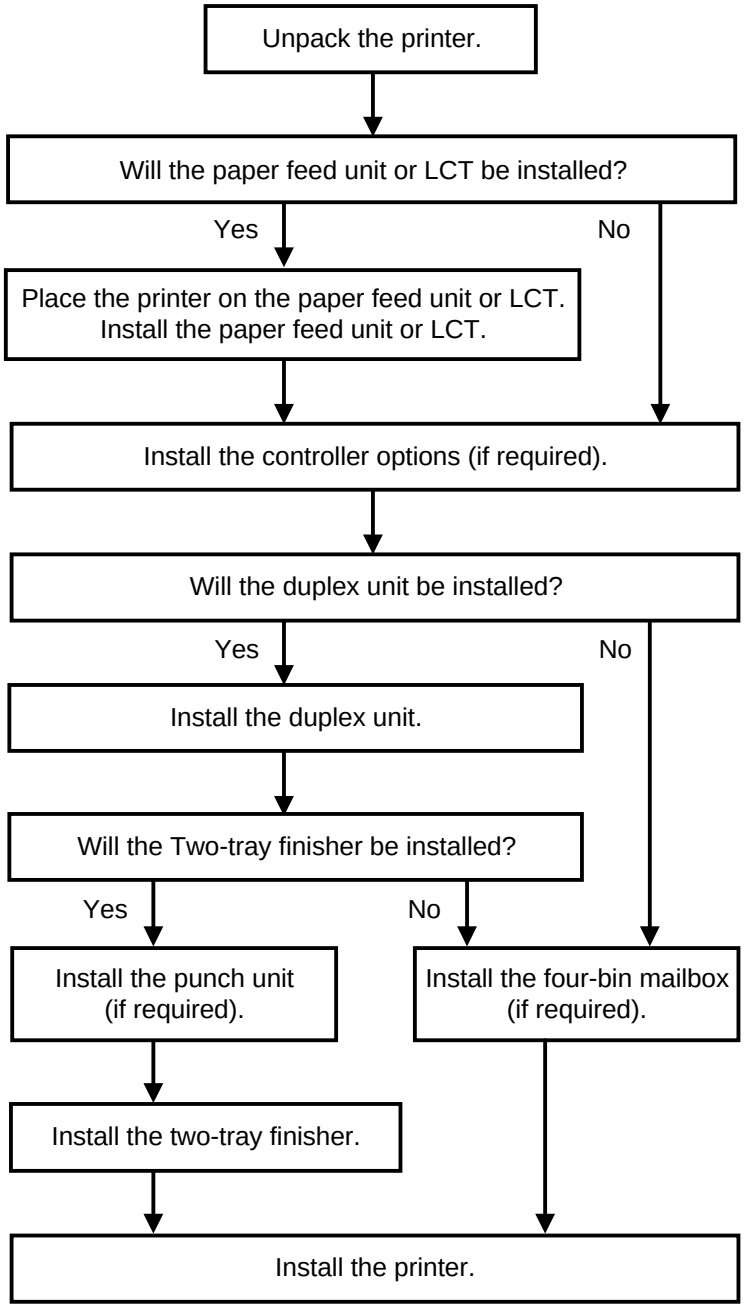
1.2 OPTIONAL UNIT COMBINATIONS

Item No.	Options	Alternative	Required
1	PFU (1 Tray)	Items 2, 3	
2	PFU (2 Trays)	Items 1, 3	
3	LCT	Items 1, 2	
4	Two-tray finisher	Item 6	• Item 7 • Item 1, 2 or 3
5	3 types of punch kit		Item 4
6	Four-bin mailbox	Items 4, 5	
7	Duplex unit		
8	2 types of memory DIMM		

NOTE: Two memory DIMMs (up to 256 MB) can be installed.

1.3 INSTALLATION FLOW CHART

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



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Two-tray Finisher: Needs the duplex unit and a paper tray unit or LCT.
Punch Unit: Needs the finisher.

1.4 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	Specifies whether the meter charge mode is enabled or disabled. **Important:** This SP can be used only once, and it cannot be changed back to the original setting. **Meter charge mode enabled:** • The Counter menu appears immediately after the Menu key is pressed. • The counter type selected by the counting method (SP5-045-1) can be displayed with the Counter menu. • The counter values can also be printed with the Counter menu. • The selected counter starts from a negative number. **Meter charge mode disabled:** • The Counter menu is not displayed. • The total counter starts from 0.	Off
Counting method	SP5-045-1	Specifies whether the counting method used in meter charge mode is based on developments or prints. **Important:** This SP can only be done before the negative counters are reset with SP7-825-001.	Developments
A3/11" x 17" double counting	SP5-104-1	Specifies whether the counter is doubled for A3/11" x 17" paper.	No: Single counting
PM warning display 1	SP5-930-3	Specifies whether the PM warning for PCUs and development units is displayed when the replacement time arrives. Type 1: Displayed Type 2: Not displayed	Type 1
PM warning display 2	SP5-930-4 to SP5-930-5	Specifies whether the PM warning for the paper feed roller and transfer unit is displayed.	Off:
Fax No. setting	SP5-812-2	Programs the service station fax number. 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.	

Item	SP No.	Function	Default
Counter reset	SP7-825-1	Resets the counters to 0. **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.

1.5 OPTIONAL UNIT INSTALLATION

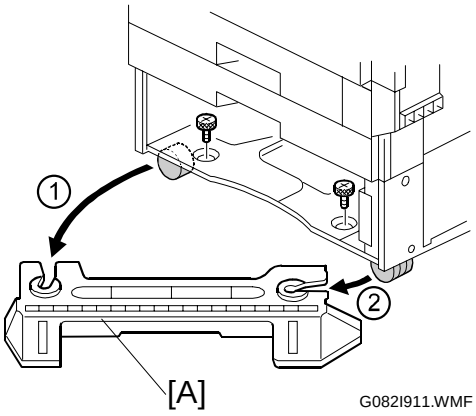
1.5.1 LIST OF OPTIONS

The available options are listed below. Except for the punch unit and DIMM memories, installation is explained in the Operating Instructions.

- Paper Feed Unit (500 sheets x 1)
- Paper Feed Unit (500 sheets x 2)
- Large Capacity Tray
- Two-tray Finisher
- Punch Unit
- Four-bin Mailbox
- DIMM Memory (64/128 MB)

Note for Transporting the Machine

If it is difficult to slide the machine across the floor after installing the optional paper feed unit or LCT, remove the two stands with the following procedure.



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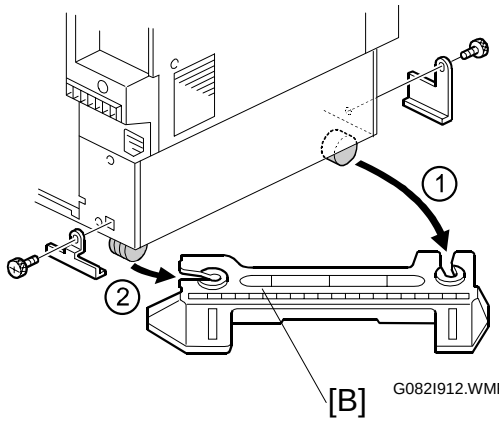

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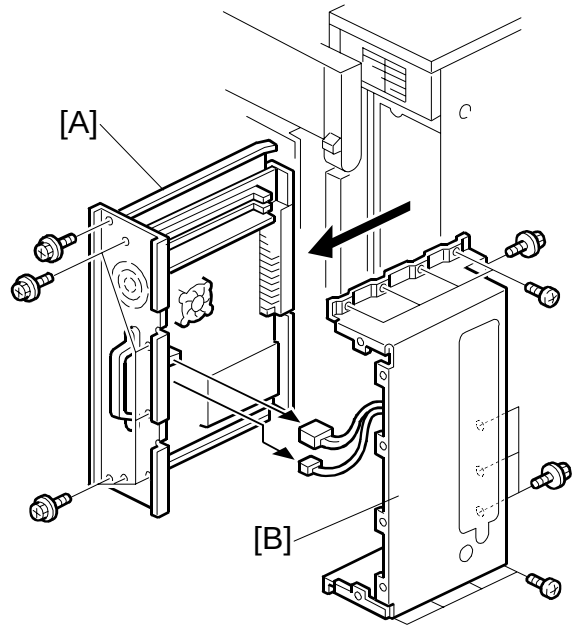
1. Remove all trays in the optional paper feed unit or LCT.
2. Remove the front stand [A] (☞ x 2).
3. Remove the rear stand [B] (☞ x 2, 2 brackets).

CAUTION: Reinstall the two stands in their original positions, or the machine might tip over when drawing out the paper trays and so on.

1.5.2 DIMM MEMORY INSTALLATION



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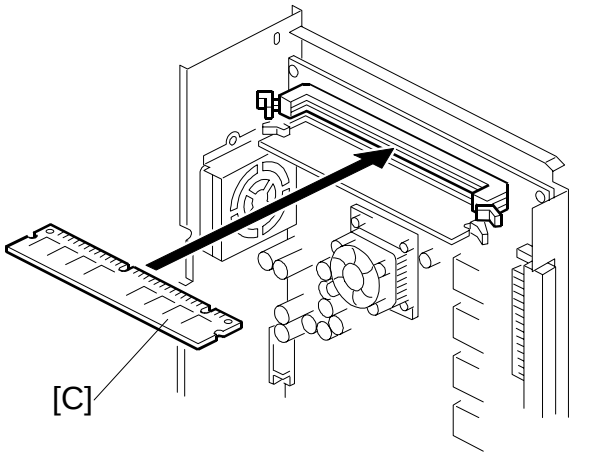

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⚠CAUTION

Make sure no data is coming into the machine. Turn the main switch off before removing the controller box.

1. Remove the controller box [A] (☞ x 2).
2. Remove the controller cover [B] (☞ x 18, ☞ x 2).
3. Insert the DIMM memory [C].
4. Reassemble the controller cover, and install the controller box.

1.5.3 PUNCH UNIT INSTALLATION

☛ G060 Printer Service Manual, Section 1: Installation.

2. PREVENTIVE MAINTENANCE

☛ G060 Printer Service Manual, Section 2: Preventive Maintenance.

NOTE: LED behavior is different from the G060 printer as follows.

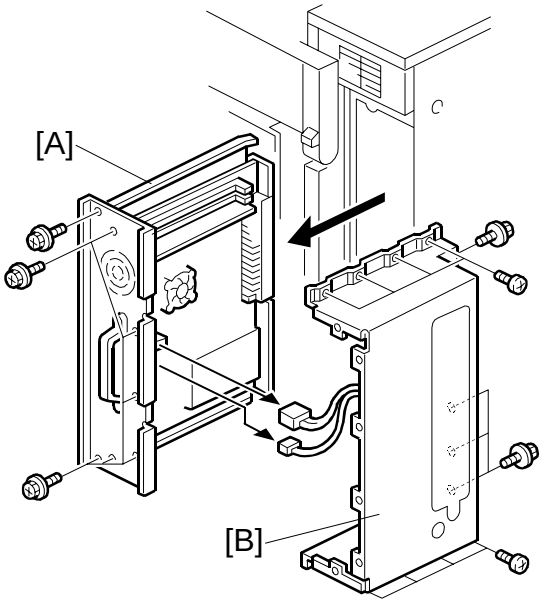
PRODUCT	NEAR END CONDITION	END CONDITION
G082 Printer	Blinking	Lighting
G060 Printer	Lighting	Lighting

3. REPLACEMENT AND ADJUSTMENT

3.1 CONTROLLER

NOTE: After replacing the controller, remove the NVRAM, HDD, DIMM, BIOS ROM, and battery on the old board and install them on the new board.

1. Controller box [A] (☞ x 2)
2. Controller cover [B] (☞ x 18, ☞ x 2)



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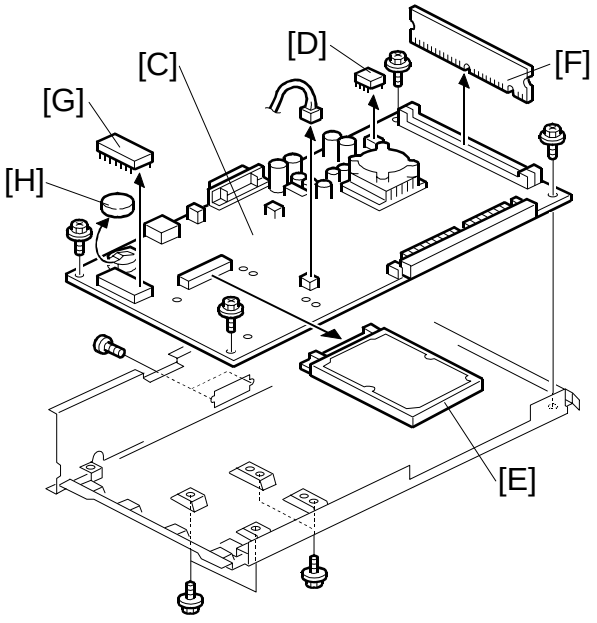
3. Controller [C] (☞ x 11, ☞ x 1)
4. After replacing the controller, remove the NVRAM [D], HDD [E], DIMM [F], BIOS ROM [G], and battery [H] on the old board and install them on the new board.

NOTE: The controller as a service part does not include the NVRAM, HDD, DIMM, BIOS ROM, and battery.



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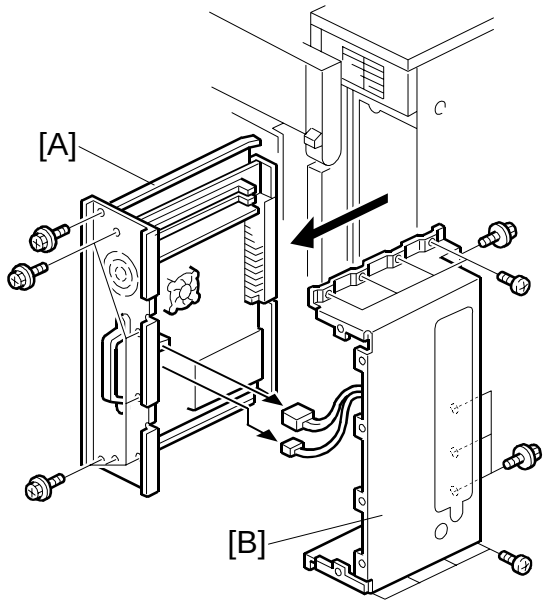
3.2 CONTROLLER PSU

1. Controller box [A] (x 2)
2. Controller cover [B] (x 18, x 2)



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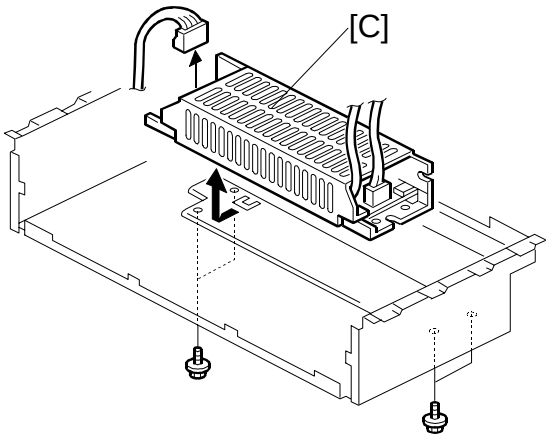
3. Controller PSU [C] (x 4, x 1)



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3.3 PRINTER ENGINE

☛ G060 Printer Service Manual, Section 3: Replacement and Adjustment.

4. TROUBLE SHOOTING

4.1 CONTROLLER SELF-DIAGNOSTICS ERRORS

When a controller self-diagnostic error occurs, the error code number is displayed on the operation panel LCD and booting up stops. After pressing “Enter” key, the machine will continue to boot up.

Error Code	Symptom	Possible Cause/ Required Action
1	Memory Test	1. Turn the main switch off and on. 2. Replace the memory. 3. Replace the controller.
	Read/write test	
2	Memory Speed Test	
	Error if memory speed is less than 60 MB/s	
3	CPU Tick Test	1. Turn the main switch off and on. 2. Replace the controller.
	Error if CPU cycle counter is not running	
4	System Timer Test	
	Error if vxWorks timer is not accurate	
5	BX Host Bridge Test U3	
	Not found on PCI bus, or error read/write to the device	
6	BX AGP Bridge Test U3	
	Not found on PCI bus, or error read/write to the device	
7	PIIX4 PCI-ISA Bridge Test U5	
	Not found on PCI bus, or error read/write to the device	
8	21152 PCI-PCI Bridge Test U21	
	Not found on PCI bus, or error read/write to the device	
9	IX Test U7	
	Not found on PCI bus, or error read/write to the device	
12	Strata Flash Boot Block Integrity Test U13	
	Data checksum check	
13	Strata Flash File System Integrity Test U13	
	Data checksum check	
14	Ethernet Test U27	
	Not found on PCI bus, or error read/write to the device	
15	Video 0 Test U9	
	Not found on PCI bus, or error read/write to the device	
16	Video 1 Test U10	
	Not found on PCI bus, or error read/write to the device	
17	Video 2 Test U12	
	Not found on PCI bus, or error read/write to the device	
18	Video 3 Test U11	
	Not found on PCI bus, or error read/write to the device	
19	JP3 Engine PCI Test	
	Not found on PCI bus, or error read/write to the device	

Error Code	Symptom	Possible Cause/ Required Action
20	Disk Identify	1. Turn the main switch off and on. 2. Replace the memory. 3. Replace the controller.
	Can't identify drive	
21	Disk Read/Write Test	
	Drive has retry errors	
22	Disk Read Capability Test	
	Can't read from drive	
23	Disk Write Capability Test	
	Can't write to drive	
24	Disk Data Format Check	
	Disk partition check	
25	Memory Config Check	
	Memory DIMM configuration	

4.2 INTERNAL ERROR

When an internal error occurs, the message ”Printer Error Power Off On / Error Reoccur Call Service” is displayed on the operation panel LCD.

4.3 SERVICE CALL CONDITIONS

☛ G060 Printer Service Manual, Section 4: Troubleshooting.

5. SERVICE TABLES

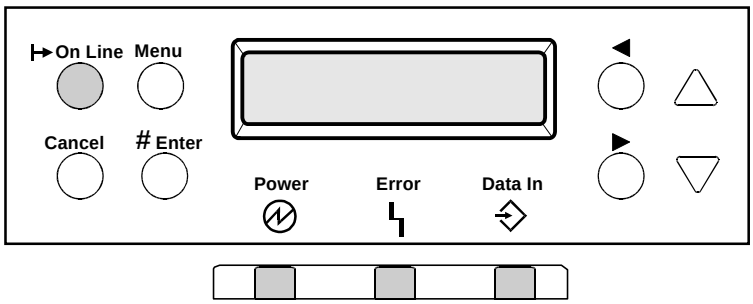
5.1 SERVICE PROGRAM MODE

⚠CAUTION

Before accessing the service menu, do the following:

Confirm that there is no print data in the printer buffer (the Data In LED must not be lit or blinking).
If there is some data in the buffer, wait until all data has been printed.

5.1.1 ENABLING AND DISABLING SERVICE PROGRAM MODE



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Entering the Service Mode

To enter the service mode, press the “Up/Down arrow” keys together for about 5 seconds, then press the right arrow key.

NOTE: 1) The machine automatically goes off line when you enter the service mode.
2) While the service mode is activated, the *Online* LED does not go out.

Accessing the Required Program

Use the “Up/Down arrow” keys to scroll through the menu listing.

1. Service: Controller service modes
2. Engine: Engine service modes
3. End: Exit service mode

To select an item, press the right-arrow key. Then the sub-menu will appear.
Scroll through the sub menu items using the “Up/Down arrow”keys.
To go back to a higher level, press the “left-arrow”key.

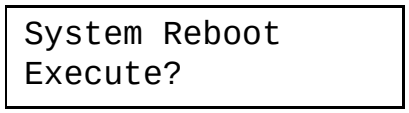
Inputting a Value or Setting for a Service Program

Enter the required program mode as explained above. The setting appearing on the display is the current setting.
Select the required setting using the “Up/Down arrow” keys, then press the “right-arrow” key. The previous value remains if the “right-arrow” key is not pressed.

Exiting Service Mode

NOTE: When you exit the service mode, the printer automatically reboots.

Select “3. End” from the service mode main menu. After the following message has appeared, press the “right-arrow” key.



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NOTE: If the settings of SP modes 5-993-013 to 015 are changed, these changes will affect the next line position adjustment.

5.2 PRINTER CONTROLLER SERVICE MODE

5.2.1 SERVICE MODE MENU ("1. SERVICE")

Mode No. (Class 1 and 2)			Function / [Setting]
[Clear Setting]			
1	Clear Setting		Initializes settings in the "System" menu of the user mode. This is the same as "Restore Default" in user mode.
[Bit Switch]			
2	Bit Switch 2	*	When bit 4 of bit switch 2 is set to 1, the Letterhead Mode is enabled. **NOTE:** Currently the other bit switches are not used. These switches have to be set to "0."
[Password Clear]			
1	Password Clear		Clears the password that was specified by the user program mode – this password prevents access to some user tools. **NOTE:** Use this function to clear the password when the user forgets it.
[Key Repeat]			
1	Key Repeat	*	When enabled (On), this function allows the display to continually advance (scroll) when a key is held down, and makes the LEDs blink more slowly. This was introduced to help users who may be physically challenged operate the machine more freely.

An asterisk (*) to the right hand side of the mode number column means that this mode is stored in the NVRAM. If you do a RAM clear, this SP mode will be reset to the default value.

5.2.2 BIT SWITCH PROGRAMMING

1. Enter the SP mode, select "Service Menu", then press ►, then press ▼.

```
<Service>
Bit Switch >>
```

2. Press ►.

```
Bit Switch
Bit switch 2
```

3. Adjust the bit switch using the following keys.
   - ▲/▼: Move to the next bit.
   - ◄: Exit without saving changes.
   - ►: Exit and save changes.

   NOTE: The left digit on the display is bit 7 and the right digit is bit 0.

```
Sw#2  00000000
bit0         _
```

4. Press ► to save changes and exit.

5.3 PRINTER ENGINE SERVICE MODE

☛ G060 Printer Service Manual, Section 5.3: Printer Engine Service Mode.

5.4 FIRMWARE UPDATE PROCEDURE

5.4.1 TYPE OF FIRMWARE

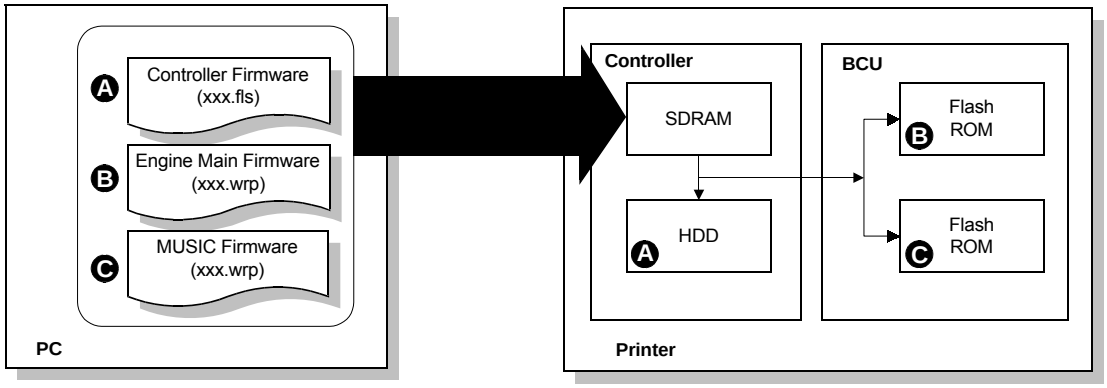
There are three types of firmware as shown below.

Type of firmware		Function	Location of firmware
Printer Engine	1. Main	Printer engine control	BCU Flash ROM
	2. MUSIC	Line position adjustment	BCU Flash ROM
Printer Controller	3. Controller	Boot program System program	HDD

☛ G060 Printer Service Manual, Section 5.4.4: Firmware Upgrade.

NOTE: When upgrading all three types of firmware at the same time, you can upgrade them in any order.

5.4.2 FIRMWARE UPGRADE OVERVIEW



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Firmware upgrading requires the PC and Ethernet cross cable.

5.4.3 SUPPORTED OS AND TOOLS

	Windows 95/98/ME	Windows NT 4.0	Windows 2000	Windows XP
Fiery WebTools Web browser	Yes	Yes	Yes	Yes
lpr Command	No	Yes	Yes	Yes

NOTE: In this section, Web browser indicates Internet Explorer 5.0 or later, or Netscape 4.5 or later."

5.4.4 FIRMWARE UPGRADE

⚠CAUTION
1. Open the front cover whenever updating the firmware.
2. Do not turn off the machine while downloading the firmware.

Upgrading Printer Firmware

To upgrade the firmware, you must connect the printer to your PC with the Ethernet cross cable. There are two ways:

1) Using Fiery WebTool: Sends the files by using a Web browser
2) Using the lpr command: Sends the files by using the command line

NOTE: In this section, Web browser indicates Internet Explorer 5.0 or later, or Netscape 4.5 or later."

Using Fiery WebTools

Preparation on the printer

1. Turn the main switch on.
2. Wait until Ready is displayed.

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3. Print out the *Configuration Page*.
4. Connect the printer and PC with the Ethernet cross cable.
5. Select the menu Network Protocol Setup."
6. Select the submenu TCP/IP-Ethernet, and change the setting from No to Yes."
7. Select the submenu “Eth. IP Address,” and input the IP address. (e.g. 133.139.157.101)
8. Select the submenu “Eth. Subnet Mask,” and input the address mask. (e.g. 255.255.255.0)
9. Select the submenu Gateway Address, and input the gateway address. (e.g. 133.139.157.001)
10. Select the submenu Enable AppleTalk, and change the setting from Yes to No."
11. Press the *Cancel* key. The system reboots automatically.
12. Open the front cover.

Preparation on the PC

1. Set the TCP/IP address for your PC (e.g. 133.139.157.010).

   NOTE: NOTE: Do not use the IP address of the printer.

2. Set the Subnet Mask (e.g. 255.255.255.0).
3. Reboot the PC.

Upgrade Procedure

1. Check that the printer front cover is open.
2. Run the Web browser.
3. Type the printer IP address into the Web browser to run Fiery WebTools.

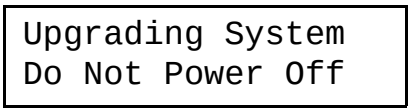
   NOTE: The printer IP address is the address you have input in the submenu Eth. IP Address."

4. Click the Web Downloader button of Fiery WebTool.
5. Click the Print Connection button, and select the following option:

   0: Direct Connection

6. Browse through the source file list, and select the firmware.
7. Click the Send file button.
8. Wait until the Data In LED blinks.
9. Check that the massages Upgrading System and Do Not Power Off are displayed.

   NOTE: Do NOT turn the main switch off before the messages disappear.



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10. Wait until the Data In LED goes out. The printer reboots automatically.
11. Close the front cover when “Close Front Cover” is displayed.

    NOTE: Fiery WebTools does not output any message or indication at the end of firmware upgrading. Quit Fiery WebTools by clicking the close button (x) after Ready is displayed.

12. Check the firmware version by printing *Configuration Page*.
13. Return all printer settings that were changed in order to perform the upgrade back to their original values.

Updating the lpr Command

Preparation on the printer

1. Turn the main switch on.
2. Wait until Ready is displayed.

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3. Print out *Configuration Page* in case you need to refer to the current settings.
4. Connect the printer and the PC with the Ethernet cross cable.
5. Select the menu Network Protocol Setup."
6. Select the submenu TCP/IP-Ethernet, and change the setting from No to Yes."
7. Select the submenu Eth. IP Address, and input the IP address. (e.g. 133.139.157.101)
8. Select the submenu Eth. Subnet Mask," and input the address mask. (e.g. 255.255.255.0)
9. Select the submenu Gateway Address, and input the gateway address. (e.g. 133.139.157.001)
10. Select the submenu Enable AppleTalk, and change the setting from Yes to No."
11. Press the *Cancel* key. The system reboots automatically.
12. Open the front cover.

Preparation on the PC

1. Set the TCP/IP address for your PC. (e.g. 133.139.157.010)

   NOTE: Do not use the IP address of the printer.
2. Set the Subnet Mask (e.g. 255.255.255.0).
3. Reboot the PC.

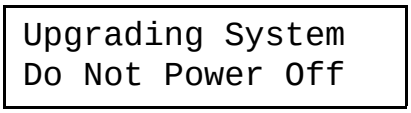
Upgrade Procedure

1. Check that the printer front cover is open.
2. Use Run in the Windows Start Menu.
3. Transfer the firmware to the printer by using the lpr command.
   (e.g. lpr -S 133.139.157.101 -P xjdirect "Firmware File Name")

   NOTE: In the example, Firmware File Name" indicates the file name of the firmware.

4. Wait until the Data In LED blinks.
5. Check that the massages Upgrading System and Do Not Power Off are displayed.

   NOTE: Do NOT turn the main switch off before the messages disappear.



G082S912.WMF

6. Wait until the Data In LED goes out. The printer reboots automatically.
7. Close the front cover when “Close Front Cover” is displayed.
8. Confirm the firmware version by printing *Configuration Page*.
9. Return all printer settings that were changed in order to perform the upgrade back to their original values.

5.4.5 ERROR RECOVERY

If a download attempt failed, try downloading the new firmware again using the procedure described in section 5.4.4.

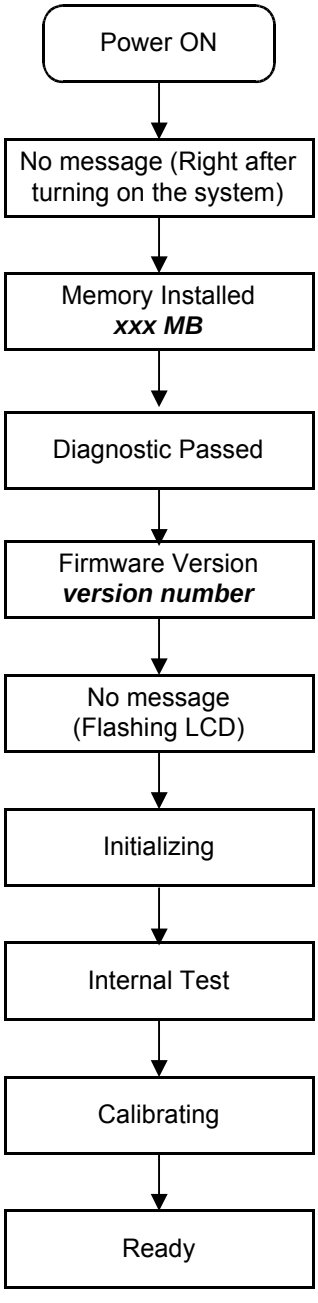
5.5 CONTROLLER SELF-DIAGNOSTICS

5.5.1 OVERVIEW

There are two 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.
- 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.



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The messages xxx MB and version number depend on the memory capacity and the firmware version respectively.

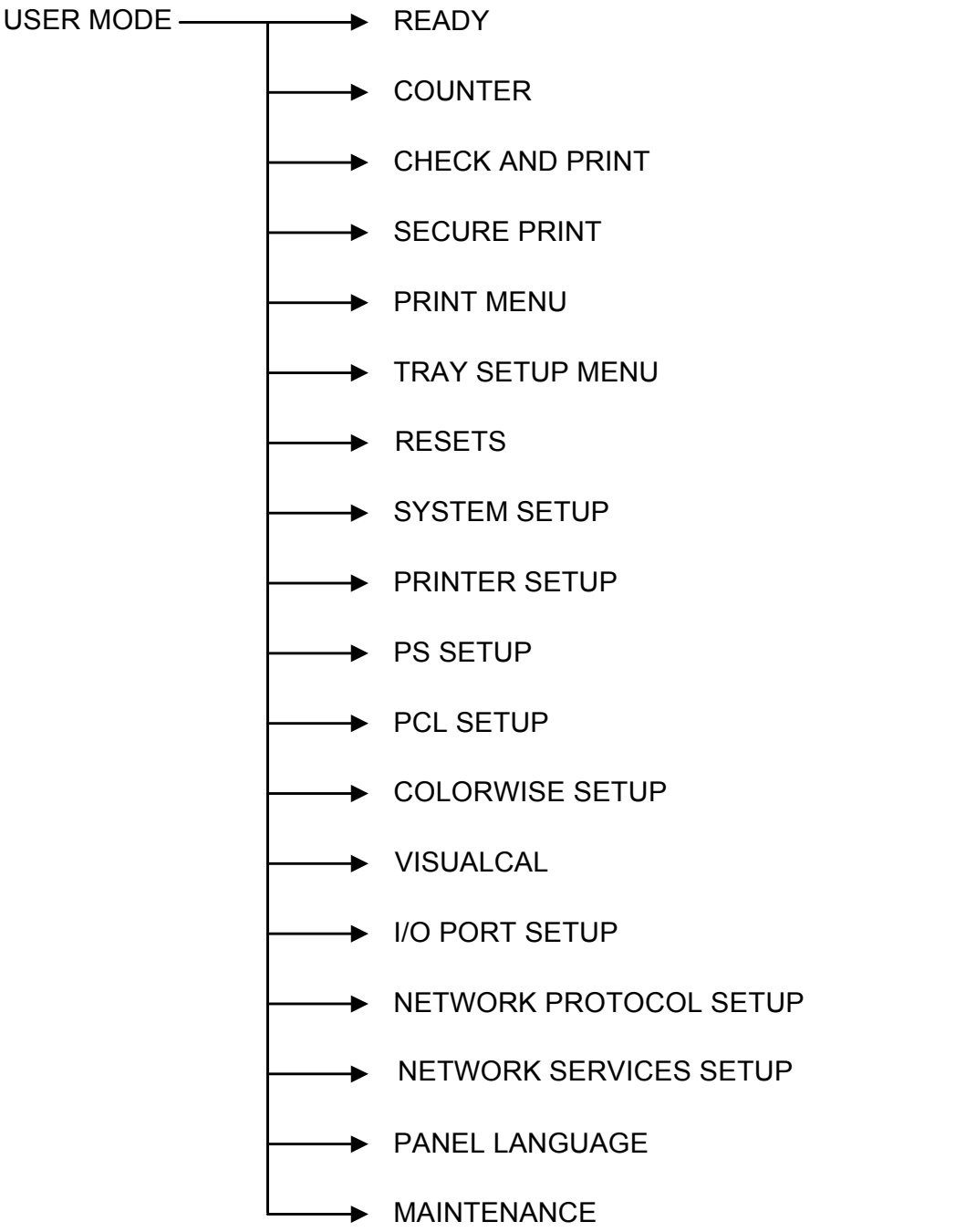
While the message Diagnostic Passed is displayed, the following tests and checks are conducted:

- Memory Test
- Memory Speed Test
- CPU Tick Test
- System Timer Test
- BX Host Bridge Test
- BX PCI-PCI Bridge Test
- PIIX4 PCI-ISA Bridge Test
- 21152 PCI-PCI Bridge Test
- IX Test
- Parameter Flash R/W Test
- Strata Flash R/W Test
- Strata Flash Boot Block Integrity Test
- Strata Flash File System Integrity Test
- Ethernet Test
- Video 0 Test
- Video 1 Test
- Vide 2 Test
- Vide 3 Test
- Disk Identify
- Disk Read/Write Test
- Disk Read Capability Test
- Disk Write Capability Test
- Disk Data Format Check
- Memory Config Check

5.6 USER PROGRAM MODE

Press the “Menu” key to scroll through the menu listing.

User Mode Tree



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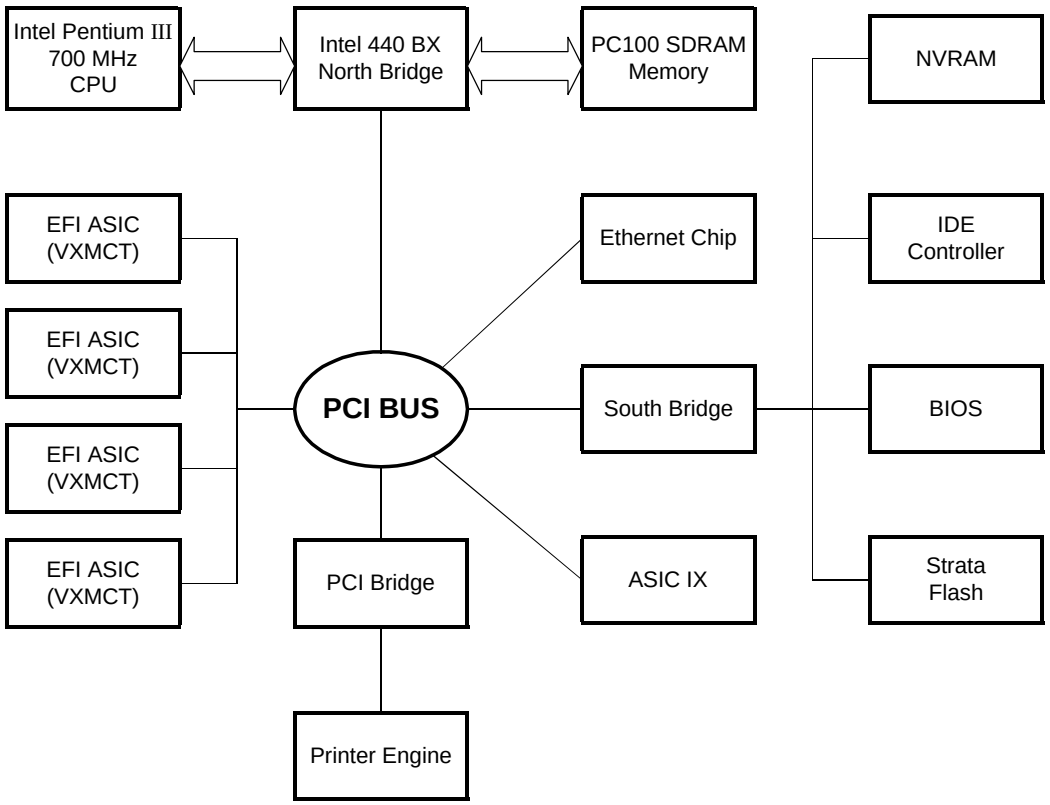
NOTE: 1) The arrow (→) stands for press the Enter key."
2) Pressing the Cancel” key exits menu operations and returns to Ready."

6. DETAILED SECTION DESCRIPTIONS

6.1 CONTROLLER

6.1.1 BLOCK DIAGRAM AND FUNCTIONS



G082D905.WMF

Components

Component	Type	Configuration
Processor	Intel Pentium III	700 MHz
Hard Drive	EIDE	10 GB
#DIMM slots	2	64 or 128MB
SDRAM MHz	PC 100	Individual 128, 256MB
BIOS memory	Flash	256KB
Flash memory	Flash	16MB
ASICs x 1		IX
ASICs x 4		VXMCT
Interface Connector	32-Bit PCI	Engine I/F
External Ports	Parallel (in)	IEEE 1284, Type C (high density)
	RJ-45 (Network)	Ethernet 10/100BaseT
NVRAM	Flash	8kB

Networking

The standard networks and cabling configuration includes:

- Ethernet 10BaseT (Unshielded Twisted Pair)
- Fast Ethernet 100Base-TX (Unshielded Twisted Pair)

IX ASIC

Increases the speed of I/O functions including:

- Parallel Port
- Peripheral Control

Engine Video Interface

The engine interface's responsibilities include:

- High speed data transmission
- High speed data decompression
- Engine output at maximum rated output speed
- Data buffering for fault-tolerant error recovery
- Multiple unique pages in the printer paper path

The video interface controls such aspects of the print job as:

- Hardware decompression
- Print quality enhancement technologies

Hard Disk Drive

The hard disk drive is used to optimize many parts of the printing system as well as improving throughput and ease-of-use. The hard disk drive stores the following information:

- System software
- Non-volatile spooled print jobs
- Additional storage for compressed pages
- Non-volatile record of printed jobs (Job Log)
- Resource storage space for downloaded fonts

Memory

The dynamic memory used for System and Frame Buffer memory PC100 Synchronous DRAM in 168 pin DIMMs.

Non-Volatile Memory

There are three types of nonvolatile memory used on this machine:

The 256KB Flash Memory contains the BIOS data, the 16MB Flash Memory contains the diagnostics and drivers to support firmware update, and the NVRAM contains various parameters such as SP and UP Mode data.

System Memory

The controller 's RAM is divided between system memory and frame buffer memory. The working space for the system occupies a fixed amount of memory. This space includes memory allocated to I/O buffers, PDL interpretation, and other dynamic system structures. The hard drive in the Fiery can be utilized, at the system's discretion, for the temporary storage of overflow objects that may result as by-products of file rasterization.

Frame Buffer Memory

Additional memory beyond the fixed system working space is allocated to frame/page buffer memory. In general, as more memory is added to the system, it is added to the page buffer memory pool. Pages are stored in memory in either compressed or uncompressed format, depending on the system configuration. In general, the more pages that can be stored in memory, the greater the throughput of the system.

The state in which the Fiery rasterizes pages or jobs while simultaneously printing is termed Rip-While-Print™.

Rip-While-Print™ enables the Fiery to begin processing new pages while current pages are printing, increasing throughput tremendously on multiple page documents and multiple jobs.

The state in which the Fiery controller contains enough rasterized pages in memory to maintain constant data flow to the print engine, therefore preventing the engine from cycling down between pages or jobs, is termed Continuous Print™.

Continuous Print™ allows the Fiery to drive the copier at full rated speed by enabling the engine to print unique pages without pausing (cycle down).

The controller is designed to hold multiple pages in memory at once to guarantee full error recovery in the case of paper jam, or other copier error state.

Compression

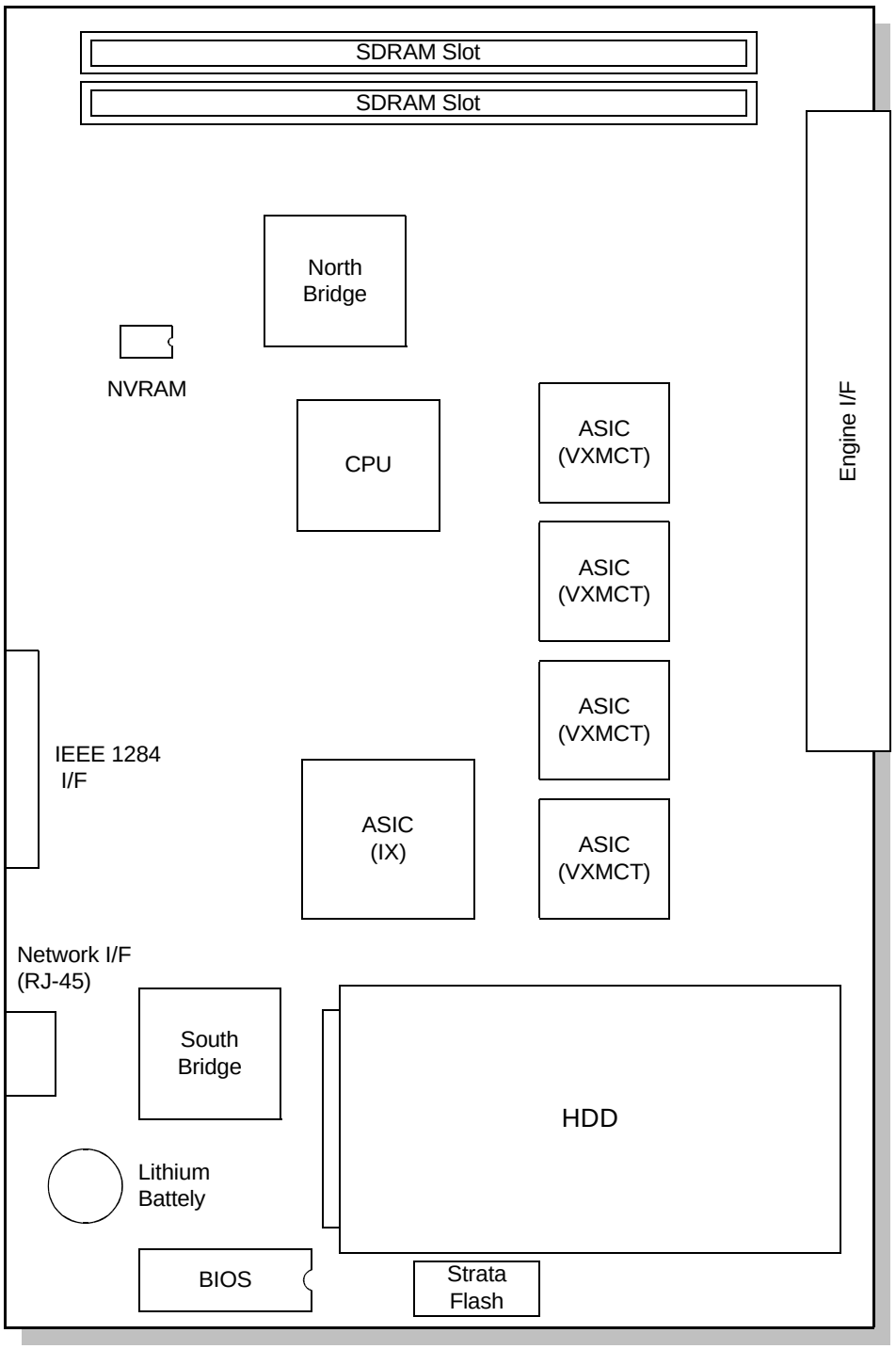
The Fiery uses ECT compression to optimize the use of memory by reducing file sizes using proprietary techniques. This step allows the Fiery to store many more pages in the frame buffer than would be available normally.

Options

The printer will be available with the following types of options:

- Memory upgrades (64MB DIMM or 128MB DIMM)
- Command WorkStation (software)

6.1.2 BOARD LAYOUT



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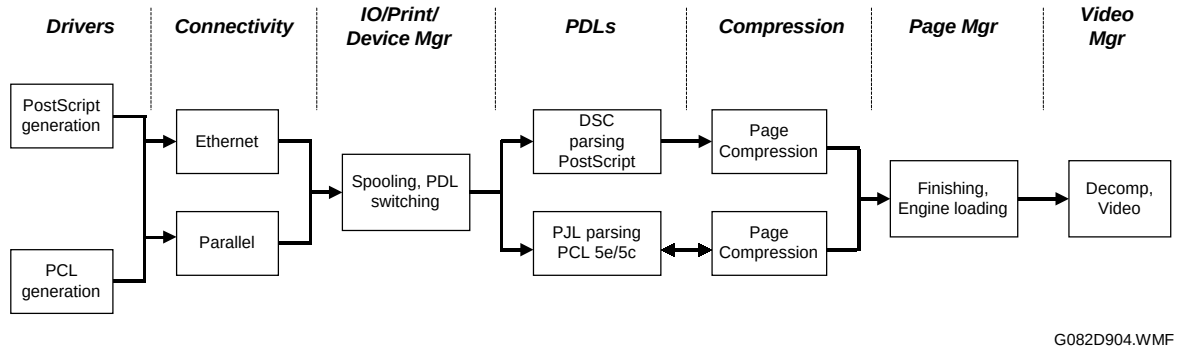
6.1.3 PRINT DATA PROCESSING



The key roles of each part of the print system are outlined below.

- The *drivers* are responsible for generating the page description on the host system and for transmitting data to the printer.
- The *I/O manager* mediates the connection between the parallel port or network interface and establishes a device or print manager connection.
- The *print manager* is responsible for spooling the job (if appropriate) and for feeding jobs to the correct PDL interpreter.
- The *PDL interpreters* are responsible for turning page descriptions into rendered pages and for parsing job management comments.
- The *compression* subsystem manages compressed pages in memory.
- The *page manager* coordinates pages for sending to the engine for the most efficient printing, finishing, and accessory handling.
- The *video* subsystem is responsible for decompressing pages and feeding the engine with appropriate engine signals. The video subsystem also handles certain print quality processing functions.

6.1.4 BUILT-IN COLOR MANAGEMENT

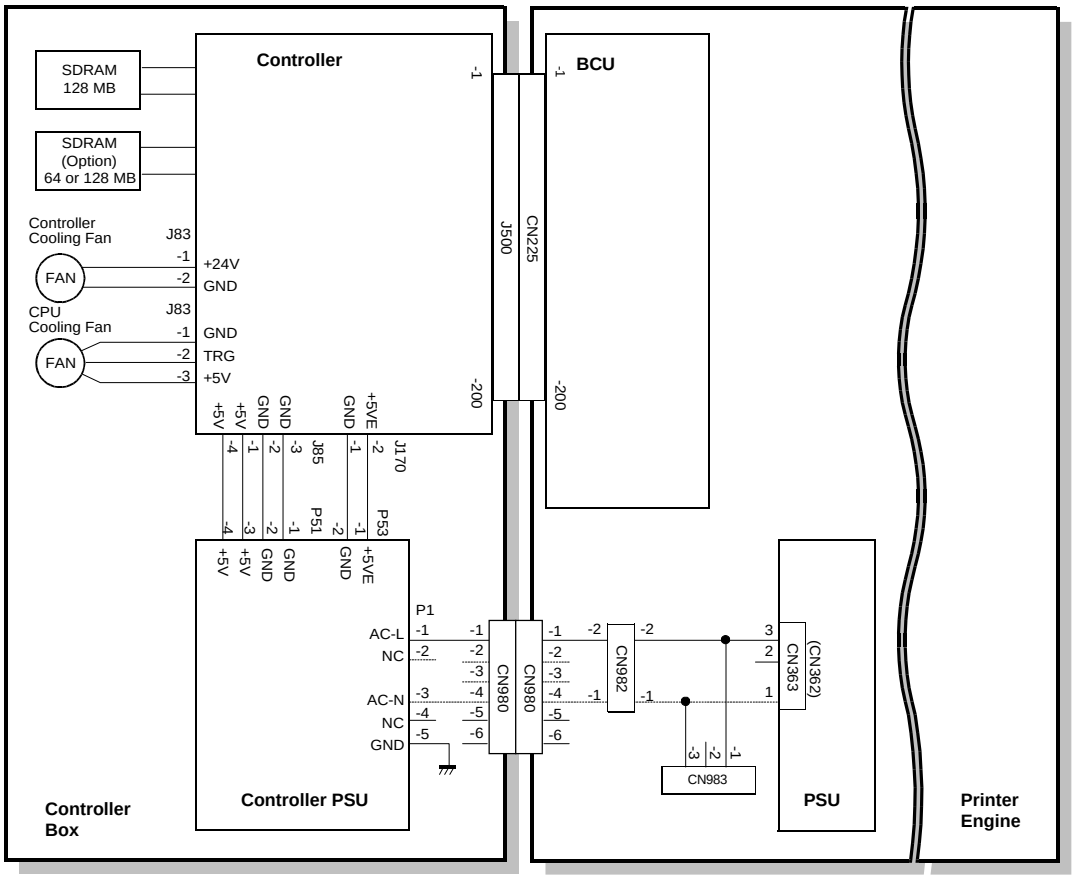
This controller has a full complement of built-in color management technologies.

Component	Description	Location/Platforms
PostScript color rendering dictionaries (CRDs)	CRDs optimized for photos, graphics, presentation objects; plain paper/transparency media types	Controller firmware (HDD)
Press simulation control	Lookup tables to simulate density characteristics of offset printing processes	Controller firmware (HDD)
Device profiles	ColorSync 2/ICM profiles compatible with Macintosh and Windows color management systems	Macintosh/Windows printer drivers

Macintosh: Mac OS 8.7.2 or later
Windows: Windows 95, 98, 2000, ME, XP, or NT (v4.0 with Service Pack 4)

6.1.5 POINT-TO-POINT DIAGRAM

The following shows the differences from the G060 printer.



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6.2 PRINTER ENGINE

☛ G060 Printer Service Manual, Section 6: Detailed Section Descriptions.

SPECIFICATIONS

1. GENERAL SPECIFICATIONS

Configuration: Desktop

Print Process: Dry electrostatic transfer system

Printer Languages: PCL5c:
CLJ5 class compatible
Adobe PostScript 3 (Genuine):
Interpreter 3011.103

Resolution: PCL5c : 600 x 600 dpi
PS3 : 600 x 600 dpi, 1200 x 1200 dpi

Gradation 1 bit/pixel

Printing speed:

	Resolution	Plain paper	Thick/OHP
Monochrome	600 x 600 dpi	38 ppm	10 ppm
	1200 x 1200 dpi	28 ppm	10 ppm
Color	600 x 600 dpi	28 ppm	10 ppm
	1200 x 1200 dpi	14 ppm	10 ppm

Resident Fonts: PCL5c : 46 fonts (45 fonts + 1 bit map font)
PS : 136 fonts (126 fonts Adobe Type 1 Font + 10 TrueType Font)

Host Interfaces: Parallel : IEEE1284 I/F Type C
NIB : 10/100Base-TX (RJ45)

Network Protocols: TCP/IP, IPX/SPX, AppleTalk

First Print Speed: Color : 12.0 seconds or less (A4 / LT - LEF, Tray 1)
Monochrome : 9.0 seconds or less (A4 / LT - LEF, Tray 1)

Warm-up Time Less than 190 seconds

Print Paper Capacity: (80 g/m2, 20 lb)
Standard tray : 500 sheets x 2
By-pass tray : 100 sheets
Optional paper feed tray : 500 sheets x 1, 500 sheets x 2,
Optional LCT : 2000 sheets

Print Paper Size: (Refer to “Supported Paper Sizes”.)

	Minimum	Maximum
Tray 1	A4/8 1/2" x 11" (LEF)	
Tray 2	A5 (LEF)/8 1/2" x 11"	A3/11" x 17"
By-pass	90 x 148 mm	305 x 458 mm/12" x 18"
Optional Tray	A5 (LEF)/8 1/2" x 11"	A3/11" x 17"
LCT	A4/8 1/2" x 11" (LEF)	

Printing Paper Weight:
Standard tray : 60 to 105 g/m^2 (16 – 28 lbs.)
By-pass tray : 60 to 163 g/m^2 (16 – 43 lbs.)
Optional paper tray : 60 to 105 g/m^2 (16 – 28 lbs.)

Output Paper Capacity:
Standard exit tray : 500 sheets (face down)
External exit tray : 100 sheets (face up)

Memory: Standard 128 MB, up to 256 MB with optional DIMM

Power Source:
120 V, 60 Hz : 11 A (for North America)
220 V – 240 V, 50/60 Hz : 6.6 A (for Europe)

Power Consumption:
Less than 1,200W (for North America)
Less than 1,550W (for Europe)

Noise Emission:
(Sound Power Level)

	Mainframe Only	Full System
Printing	68 dB or less	72 dB or less
Stand-by	42 dB or less	
Low power mode	40 dB or less	

NOTE: The above measurements were made in accordance with Ricoh standard methodology.

Dimensions (W x D x H): 575 x 678 x 715 mm (22.7" x 26.7" x 28.2")

Weight: Less than 81 kg (179 lb.) without consumables

1.1 SUPPORTED PAPER SIZES

1.1.1 PAPER FEED

Paper	Size (W x L)	North America			Europe/Asia			By-pass Tray
		Tray 1	Tray 2/3/4	LCT	Tray 1	Tray 2/3/4	LCT	
A3 W	12" x 18"	N	N	N	N	N	N	Y#
A3 SEF	297 x 420 mm	N	Y	N	N	Y	N	Y#
A4 SEF	210 x 297 mm	N	Y#/Y*	N	N	Y	N	Y#
A4 LEF	297 x 210 mm	Y*	Y	Y*	Y	Y	Y	Y#
A5 SEF	148 x 210 mm	N	N	N	N	N	N	Y#
A5 LEF	210 x 148 mm	N	Y	N	N	Y	N	Y#
A6 SEF	105 x 148 mm	N	N	N	N	N	N	Y#
B4 SEF	257 x 364 mm	N	Y#/Y*	N	N	Y	N	Y#
B5 SEF	182 x 257 mm	N	Y#/Y*	N	N	Y#/Y*	N	Y#
B5 LEF	257 x 182 mm	N	Y	N	N	Y	N	Y#
B6 SEF	128 x 182 mm	N	N	N	N	N	N	Y#
Ledger	11" x 17"	N	Y	N	N	Y	N	Y#
Letter SEF	8.5" x 11"	N	Y	N	N	Y#/Y*	N	Y#
Letter LEF	11" x 8.5"	Y	Y	Y	Y*	Y	Y*	Y#
Legal SEF	8.5" x 14"	N	Y	N	N	Y#/Y*	N	Y#
Half Letter SEF	5.5" x 8.5"	N	N	N	N	N	N	Y#
Executive SEF	7.25" x 10.5"	N	Y#	N	N	Y#	N	Y#
Executive LEF	10.5" x 7.25"	N	N	N	N	N	N	Y#
F SEF	8" x 13"	N	Y#	N	N	Y#	N	Y#
Foolscap SEF	8.5" x 13"	N	Y#	N	N	Y#	N	Y#
Folio SEF	8.25" x 13"	N	Y#	N	N	Y#	N	Y#
8K	267 x 390 mm	N	Y#	N	N	Y#	N	Y#
16K SEF	195 x 267 mm	N	Y#	N	N	Y#	N	Y#
16K LEF	267 x 195 mm	N	Y#	N	N	Y#	N	Y#
Custom	Minimum: 90 x 148 mm Maximum: 305 x 457 mm	N	N	N	N	N	N	Y#
Com10 Env.	4.125" x 9.5"	N	N	N	N	N	N	Y#
Monarch Env.	3.875" x 7.5"	N	N	N	N	N	N	Y#
C6 Env.	114 x 162 mm	N	N	N	N	N	N	Y#
C5 Env.	162 x 229 mm	N	N	N	N	N	N	Y#
DL Env.	110 x 220 mm	N	N	N	N	N	N	Y#

NOTE: To feed B6 SEF from the by-pass tray, custom setting is required.

Remarks:

Y	Supported: the sensor detects the paper size.
Y#	Supported: the user specifies the paper size.
Y*	Supported: depends on a technician adjustment
N	Not supported

1.1.2 PAPER EXIT

Paper	Size (W x L)	Internal Tray (Face Down)	External Tray (Face Up)	Finisher	4-bin Mailbox	Duplex
A3 W	12" x 18"	N	Y	N	N	N
A3 SEF	297 x 420 mm	Y	Y	Y	Y	Y
A4 SEF	210 x 297 mm	Y	Y	Y	Y	Y
A4 LEF	297 x 210 mm	Y	Y	Y	Y	Y
A5 SEF	148 x 210 mm	Y	Y	N	N	N
A5 LEF	210 x 148 mm	Y	Y	Y	Y	Y
A6 SEF	105 x 148 mm	Y	Y	N	N	N
B4 SEF	257 x 364 mm	Y	Y	Y	Y	Y
B5 SEF	182 x 257 mm	Y	Y	Y	Y	Y
B5 LEF	257 x 182 mm	Y	Y	Y	Y	Y
B6 SEF	128 x 182 mm	Y	Y	N	N	N
Ledger	11" x 17"	Y	Y	Y	Y	Y
Letter SEF	8.5" x 11"	Y	Y	Y	Y	Y
Letter LEF	11" x 8.5"	Y	Y	Y	Y	Y
Legal SEF	8.5" x 14"	Y	Y	Y	Y	Y
Half Letter SEF	5.5" x 8.5"	Y	Y	N	Y	N
Executive SEF	7.25" x 10.5"	Y	Y	Y	Y	Y
Executive LEF	10.5" x 7.25"	Y	Y	N	N	N
F SEF	8" x 13"	Y	Y	Y	Y	Y
Foolscap SEF	8.5" x 13"	Y	Y	Y	N	Y
Folio SEF	8.25" x 13"	Y	Y	Y	N	Y
8K	267 x 390 mm	Y	Y	Y	N	Y
16K SEF	195 x 267 mm	Y	Y	Y	Y	Y
16K LEF	267 x 195 mm	Y	Y	Y	Y	Y
Custom	Minimum: 90 x 148 mm Maximum: 305 x 457 mm	Y	Y	N	N	N
Com10 Env.	4.125" x 9.5"	N	Y	N	N	N
Monarch Env.	3.875" x 7.5"	N	Y	N	N	N
C6 Env.	114 x 162 mm	N	Y	N	N	N
C5 Env.	162 x 229 mm	N	Y	N	N	N
DL Env.	110 x 220 mm	N	Y	N	N	N

Remarks:

Y	Supported
N	Not supported

2. SOFTWARE ACCESSORIES

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

2.1 PRINTER DRIVERS

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

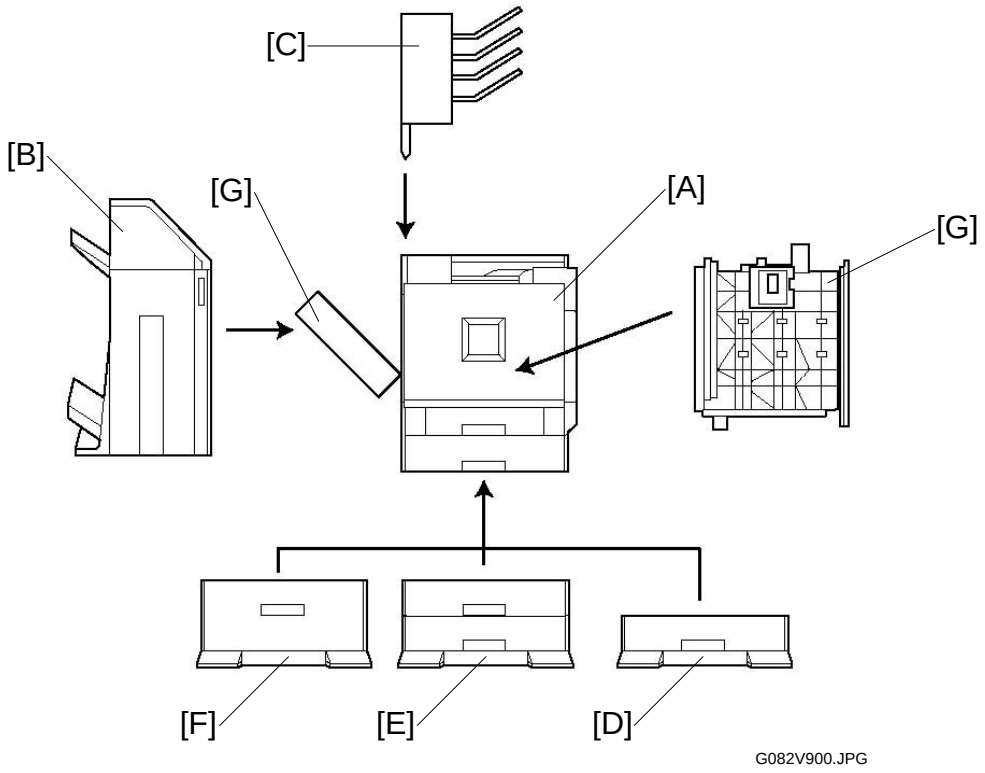
NOTE: 1) The printer drivers for Windows NT 4.0 are only for the Intel x86 platform. There is no Windows NT 4.0 printer driver for the PowerPC, Alpha, or MIPS platforms.
2) The PS drivers are all genuine AdobePS drivers, except for Windows 2000, which uses Microsoft PS. A PPD file for each operating system is provided with the driver.
3) The PS driver for Macintosh supports Mac OS 8.6 or later versions.

2.2 UTILITY SOFTWARE

Software	Description
SmartNetMonitor for Admin (Win9x/Me, 2000, NT4.0, XP)	A printer management utility for network administrators.
SmartNetMonitor for Client (Win9x/Me, 2000, NT4.0, XP)	• A printer management utility for client users. • A utility for peer-to-peer printing over TCP/IP network.
ColorWise Pro Tools (Windows/Macintosh)	This is a color management tool set for the Fiery 3850C. It is composed of the following modules: • Calibrator • Color Editor • Profile Manager • Color Setup

NOTE: 1) For ColorWise Pro Tools, Densitometer (X-Rite DTP32/X-Rite DTP41) is compatible.

3. MACHINE CONFIGURATION



Item	Machine Code	No.	Remarks
Main Unit	G060	A	
Options			
Finisher	G565	B	Requires the duplex unit and one of the three paper feed options. Finisher and mailbox cannot both be installed.
Four-bin Mailbox	G566	C	Finisher and mailbox cannot both be installed.
Paper Feed Unit (500 x 1)	G567	D	Install any one of these three units.
Paper Feed Unit (500 x 2)	G568	E	
LCT	G569	F	
Duplex Unit	G571	G	
Punch Unit	B377		Requires the finisher
Internal Options			
64MB DIMM Memory	G346		
128MB DIMM Memory	G347		

NOTE: All the above items are user installable except for the punch unit and memories.

4. OPTIONAL EQUIPMENT

4.1 500-SHEET TRAY

Paper Size:	Maximum: A3/11" x 17" (SEF) Minimum: A5 (LEF)/8 1/2" x 11"
Paper Weight:	60 to 105 g/m^2 (16 to 28 lb.)
Tray Capacity:	500 sheets (80 g/m^2, 20 lb.)
Paper Feed System:	FRR system
Paper Height Detection:	3 steps (100%, 50%, Near End)
Power Source:	DC 24V, 5V (from the main unit)
Power Consumption:	50 W
Dimensions (W x D x H):	540 x 600 x 172 mm (21.3" x 23.7" x 6.8")
Weight	18 kg (39.7 lb.)

4.2 1000-SHEET TRAY

Paper Size:	Maximum: A3/11" x 17" (SEF) Minimum: A5 (LEF)/8 1/2" x 11"
Paper Weight:	60 to 105 g/m^2 (16 to 28 lb.)
Tray Capacity:	500 sheets x 2 (80 g/m^2, 20 lb.)
Paper Feed System:	FRR system
Paper Height Detection:	3 steps (100%, 50%, Near End)
Power Source:	DC 24V, 5V (from the main unit)
Power Consumption:	50 W
Dimensions (W x D x H):	540 x 600 x 270 mm (21.3" x 23.7" x 10.7")
Weight	25 kg (55.2 lb.)

4.3 2000-SHEET LARGE CAPACITY TRAY

Paper Size:	A4/8 1/2" x 11" (LEF)
Paper Weight:	60 to 105 g/m^2 (16 to 28 lb.)
Tray Capacity:	2000 sheets (80 g/m^2, 20 lb.)
Paper Feed System:	FRR system
Paper Height Detection:	5 steps (100%, 75%, 50%, 25%, Near End)
Power Source:	DC 24V, 5V (from the main unit)
Power Consumption:	30 W
Dimensions (W x D x H):	540 x 600 x 270 mm (21.3" x 23.7" x 10.7")
Weight	25 kg (55.2 lb.)

4.4 TWO-TRAY FINISHER & PUNCH UNIT

Print Paper Size:	No punch mode: A3/11" x 17" to A5 (LEF)/8 1/2" x 11" Punch mode: 2 holes: A3/11" x 17" to A4/8 1/2" x 11" (SEF) A4/8 1/2" x 11" to A5 (LEF) 3 holes: A3, B4, 11" x 17" (SEF) A4, B5, 8 1/2" x 11" (LEF) 4 holes (Europe): A3, B4, 11" x 17" (SEF) A4, B5, 8 1/2" x 11" (LEF) 4 holes (North Europe): A3, B4, 11" x 17" (SEF) A4, B5, 8 1/2" x 11" (LEF) Staple mode: A3/11" x 17" to B5/8 1/2" x 11"
Paper Weight:	No punch mode: 60 to 105 g/m^2 (16 to 28 lb.) Punch mode: 60 to 105 g/m^2 (16 to 28 lb.) Staple mode: 64 to 90 g/m^2 (17 to 23 lb.) Label/Thick paper/OHP cannot be stapled
Tray Capacity:	Upper tray: 500 sheets: A4, 8 1/2" x 11" , B5, A5 (LEF) 250 sheets: 11" x 17", A3, 8 1/2" x 14", B4 Lower tray (default mode – stapled output only goes to tray 2): 2000 sheets: A4, 8 1/2" x 11" (LEF) 750 sheets: A3, B4, A4, B5, 8 1/2" x 14", 11" x 17", 8 1/2" x 11" (SEF) 500 sheets: A5 (LEF) Lower tray (multi-tray staple mode – stapled output can go to either tray): 1500 sheets: A4, 8 1/2" x 11" (LEF) 750 sheets: A3, B4, A4, B5, 8 1/2" x 14", 11" x 17", 8 1/2" x 11" (SEF) 500 sheets: A5 (LEF)
Staple capacity:	Single size: 50 sheets: A4, 8 1/2" x 11" , B5 30 sheets: A3, B4, 8 1/2" x 14", 11" x 17" Mixed size: 30 sheets: A4 (LEF) & A3, B5 (LEF) & B4, 8 1/2" x 11" (LEF) & 11" x 17"
Staple position:	7 positions 1-staple: 4 positions (Top Left, Top Right, Top Left-Oblique, Top Right-Oblique) 2-staples: 3 positions (Left, Top, Right)

Staple replenishment:	Cartridge (5000 staples)	
Power consumption:	48 W	
Dimensions (W x D x H):	680 x 620 x 1030 mm (26.8" x 24.4" x 40.6")	
Weight	Without punch unit:	53 kg (116.9 lb.)
	With punch unit:	55 Kg (121.3 lb.)

4.5 FOUR-BIN MAILBOX

Number of bins	4 bins
Stack Capacity:	125 sheets x 4 (80 g/m^2, 20 lb.)
Paper Size for Trays:	Maximum: A3/11" x 17" (SEF) Minimum: A5 (LEF)/8$\frac{1}{2}$" x 11"
Print Paper Weight:	60 to 105 g/m^2 (16 to 28 lb.)
Power Source:	DC 24V, 5V (from the main unit)
Power Consumption:	17 W
Dimensions (W x D x H):	540 x 600 x 400 mm (21.3" x 23.6" x 15.8") (when installed in the machine)
Weight	7 kg (15.5 lb.)