Model AR-P2

(Machine Code: G139/G149)

SERVICE MANUAL

27 December 2005
Subject to change

⚠IMPORTANT SAFETY NOTICES

PREVENTION OF PHYSICAL INJURY

1. Before disassembling or assembling parts of the copier and peripherals, make sure that the printer power cord is unplugged.
2. The wall outlet should be near the printer and easily accessible.
3. Note that some components of the printer and the paper tray unit are supplied with electrical voltage even if the main power switch is turned off.
4. 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.
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

The printer and its peripherals must be installed and maintained by a customer service representative who has completed the training course on those models.

⚠WARNING

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

SAFETY AND ECOLOGICAL NOTES FOR DISPOSAL

1. Do not incinerate toner bottles or used toner. Toner dust may ignite suddenly when exposed to an open flame.
2. Dispose of used toner, developer, and organic photoconductors in accordance with local regulations. (These are non-toxic supplies.)
3. Dispose of replaced parts in accordance with local regulations.

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 Unit section. Laser beams can seriously damage your eyes.

CAUTION MARKING:

Beforehand

The sections below are almost same as the "Model AR-P1 (G081/G092) SERVICE MANUAL". Keep its manual when you use this manual, and then refer to its manual about these sections.

Section 1: INSTALLATION

Section 2: PREVENTATIVE MAINTENANCE

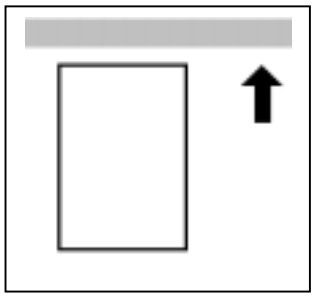
Section 3: REPLACEMENT AND ADJUSTMENT

Section 6: DETAILED SECTION DESCRIPTIONS

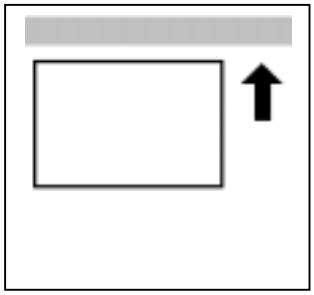
Conventions in this Manual

This manual uses several symbols.

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



Lengthwise, SEF (Short Edge Feed)



Sideways, LEF (Long Edge Feed)

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1. INSTALLATION

This section is almost same as the "Model AR-P1 (G081/G092) SERVICE MANUAL". Keep its manual when you use this manual, and then refer to its manual about this section.

2. PREVENTATIVE MAINTENANCE

This section is almost same as the "Model AR-P1 (G081/G092) SERVICE MANUAL". Keep its manual when you use this manual, and then refer to its manual about this section.

3. REPLACEMENT AND ADJUSTMENT

This section is almost same as the "Model AR-P1 (G081/G092) SERVICE MANUAL". Keep its manual when you use this manual, and then refer to its manual about this section.

4. TROUBLESHOOTING

4.1 SERVICE CALL CONDITIONS

4.1.1 SUMMARY

1. All SCs are logged.
2. If the problem concerns electrical circuit boards, first disconnect then reconnect the connectors before replacing the PCBs.
3. If the problem concerns a motor lock, first check the mechanical load before replacing motors or sensors.

There are 4 levels of service call conditions. These levels are indicated under the SC number in the SC table list.

Level	Definition	Reset Procedure
A	To prevent damage to the machine, the main machine cannot be operated until a service representative has reset the SC.	This machine does not have this level.
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	The SC history is updated. The machine can be operated as usual.	The SC will not be displayed. Only the SC history is updated.
D	Turning the main power switch off then on resets SCs displayed on the operation panel. These are redisplayed if the error occurs again.	Turn the main power switch off and on.

4.1.2 SC CODE DESCRIPTIONS

NOTE: When replacing the engine control board, remove the EEPROM from the original engine control board and install it on the new one.

- The SC level is indicated under SC number in the below list.
- The symbol "●" that is in the "Possible Cause/ Requirement Action" column indicates the possible cause.
- The figure "1,etc." that is in the "Possible Cause/Requirement Action" column indicates the requirement action.

SC	Symptom	Possible Cause/Required Action
201 [D]	Polygon motor error	
	After the main power switch turns on, the polygon motor is not phase-locked in several seconds.	• Incorrect cable connection • Defective engine control board 1. Connect the cable correctly. 2. Replace the engine control board. 3. Replace the laser scanning unit. 4. Check or replace the cable.
230 [D]	V-Sync error	
	Subscan signals are not asserted.	See SC201.
302 [D]	Charge or transfer bias error	
	Charge bias in out of the normal range.	• Defective PCU charge terminal • Defective transfer belt unit bias terminal • Defective terminal springs on bias terminal unit • Incorrect cable connection between high voltage supply and engine control board • Defective high voltage board 1. Replace the PCU. 2. Replace the transfer belt unit. 3. Replace the bias terminal unit. 4. Connect the cable correctly. 5. Replace the high voltage board.
440 [D]	PCU BK motor error	
	The drive motor of the black PCU is not locked.	• Defective gear • Defective gear on transfer belt unit • Voltage between pins 1 and 13 (CN12 on engine control board) abnormal (not +24V), or pin 11 (CN12 on engine control board) unable to send motor clock • Defective black PCU drive motor 1. Replace the black PCU. 2. Replace the transfer belt unit. 3. Replace the engine control board. 4. Replace the main drive unit assembly.

SC	Symptom	Possible Cause/Required Action
441 [D]	PCU (CMY) motor error	
	The drive motor of the CMY PCU is not locked.	• Defective gear • Voltage between pins 2 and 14 (CN12 on engine control board) abnormal (not +24V), or pin 12 (CN12 on engine control board) unable to send motor clock • Defective CMY PCU drive motor 1. Replace the CMY PCU. 2. Replace the engine control board. 3. Replace the main drive unit assembly.
471 [D]	Belt tension unit cam error	
	Even though the belt tension unit tries to return to its home position several times, the home position sensor is not activated.	• Defective transfer belt unit • Pin 3 (CN25 on engine control board) unable to send signal • Defective transfer belt tension unit 1. Replace the transfer belt unit. 2. Replace the engine control board. 3. Replace the transfer belt tension unit.
486 [D]	BK solenoid error	
	The BK solenoid cannot drive the black PCU.	• Defective connection between engine control board (CN21) and BK solenoid • Pin 1 (CN21 on engine control board) unable to send solenoid control signal • Defective drive unit 1. Connect the cable between the engine control board (CN21) and BK solenoid correctly. 2. Replace the engine board. 3. Replace the drive unit.
487 [D]	Solenoid error	
	Any of the following solenoids has caused a short circuit: changer solenoid, paper feed solenoid, toner supply solenoid.	• Solenoid drive transistor short-circuited 1. Replace the engine controller board. 2. Replace the defective solenoid.
530 [D]	Fusing fan motor error	
	The fusing unit fan motor does not operate.	• Voltage between pins 1 and 2 (CN44 on engine control board) abnormal (not +24V) • Defective fusing unit fan 1. Replace the engine control board. 2. Replace the fusing unit fan.
531 [D]	PSU cooling fan error	
	The PSU cooling fan does not operate.	• Voltage between pins 1 and 2 (CN8 on engine control board) abnormal (not +24V) • Defective PSU cooling fan 1. Replace the engine control board. 2. Replace the PSU cooling fan.

SC	Symptom	Possible Cause/Required Action
532	Fusing unit sub-cooling fan (left) error	
[D]	The fusing unit sub-cooling fan does not operate.	• Voltage between pins 1 and 2 (CN30 on engine control board) abnormal (not +24V) • Defective sub-cooling fan 1. Replace the engine control board. 2. Replace the sub-cooling fan.
543	Heating belt overheat	
[D]	The temperature of the heating belt is out of the normal range.	• Pin 1 (IC6) unable to turn to lower level • Defective IH power supply board • Thermistor short-circuited • Defective cable connection between CN15 and thermistor 1. Replace the control board. 2. Replace the IH power supply board. 3. Replace the fusing unit. 4. Connect the cable between CN15 and the thermistor correctly.
544	Heating belt low temperature error (1)	
[D]	The fusing unit thermistor in the middle of the unit has detected low temperature.	• Defective connection between engine control board (CN15) and fusing unit • Defective thermistor • Defective connection between fusing unit and thermistor • Pin 7 (CN32 on engine control board) unable to send signal • Defective IH unit or IH power supply board 1. Replace the IH unit or IH power supply board. 2. Connect the cable between the engine board and fusing unit correctly. 3. Replace the thermistor. 4. Connect the cable between fusing unit and thermistor correctly. 5. Replace the engine control board.
551	Heating roller low temperature error (3)	
[D]	The thermistor for the pressure roller has detected much lower temperature than the other fusing unit thermistor does.	• Defective connection between engine control board (CN15) and fusing unit • Defective thermistor • Defective connection between fusing unit and thermistor 1. Connect the cable between the engine board and fusing unit correctly. 2. Replace the thermistor. 3. Connect the cable between fusing unit and thermistor correctly. 4. Replace the engine control board.
554	Heating roller low temperature error (2)	
[D]	The fusing unit thermistor at the left end of the unit has detected much lower temperature than the other fusing unit thermistor does.	See SC544.

SC	Symptom	Possible Cause/Required Action
580 [D]	Fusing belt rotation error	
	The rotation of the fusing unit is not normal.	• Defective fusing belt, gear, or rotation plate • Defective connection between engine control board (CN15) and fusing unit • Defective connection of fusing unit connector • Pin 6 (CN15) unable to send 1.4-second (or less) encoder pulse 1. Replace the fusing unit. 2. Connect the cable between the engine control board (CN15) and fusing unit correctly. 3. Connect the fusing unit connector correctly. 4. Replace the engine control board.
581 [D]	Fusing unit low voltage error	
	The voltage applied to the fusing unit is out of the normal range.	• Defective IH power supply board • Defective thermostat 1. Replace the IH power supply board. 2. Replace the IH unit.
622 [D]	Option paper unit communication error	
	After the system starts, the communication with the paper tray is unexpectedly interrupted.	• Defective cable connection 1. Connect the cable to the paper tray correctly.
680 [D]	EEPROM error	
	Data is not write to or read from the EEPROM.	• Defective EEPROM (IC5) • Defective engine control board 1. Replace the EEPROM. 2. Replace the engine control board.

4.2 CONTROLLER ERROR

The following table describes the controller error codes. These codes are displayed at power-on, or after the power-on self diagnostic test, if an error occurs.

CAUTION: Always try turning the main power switch off and on and check if the problem persists.

SC	Symptom	Possible Cause/Required Action
670 [D]	Engine start-up error	
	The ready signal from the engine board is not detected.	• Defective engine board. Replace the engine board.
819 [D]	[0696e] Kernel stop: Process error	
	System completely down	• Defective RAM DIMM • Defective SD card in slot 1 • Defective controller • Software error 1. Check and/or replace the RAM DIMM. 2. Check and/or replace the SD card in slot 1. 3. Replace the controller. 4. See **NOTE** at the end of the SC table.
	[0766d] Kernel stop: VM full error	
	Unexpected system memory size	• Defective RAM DIMM • Defective SD card in slot 1 • Defective controller • Software error 1. Check and/or replace the RAM DIMM. 2. Check and/or replace the SD card in slot 1. 3. Replace the controller. 4. See **NOTE** at the end of the SC table.
	[4361] Kernel stop: Cache error	
	Cache error in the CPU	• Defective CPU 1. Replace the controller board.
	[----] Kernel stop: The others	
	Error in OS	• Defective memory • Defective flash memory • Defective CPU 1. Replace the controller board.
820 [D]	[0001-0015] [000A-000D] Self-diagnostic error– CPU: Detailed error code	
	During the boot monitor program and self-diagnostic, any exception or cut-in are not supposed to happen. If these happen, it is defined as SC.	• Defective CPU device • Defective boot monitor program or self-diagnostic program 1. Replace the controller board. 2. Reinstall the system firmware.

SC	Symptom	Possible Cause/Required Action
820 [D]	[00FF] Self-diagnostic error– CPU: Detailed error code	
	Cache access error in the CPU	• Defective CPU • Defective local bus 1. Turn the main power switch off and on. 2. Reinstall the system program. 3. Replace the controller board.
	[0601, 0602, 0605, 0606, 0607, 0609] Self-diagnostic error– CPU: Detailed error code	
	Exceptional command does not operate even though it is executed on purpose.	• Defective CPU devices 1. Replace the controller board
	[060A-060E] Self-diagnostic error– CPU: Detailed error code	
	Cut-in command does not operate when it is executed.	• Defective CPU devices • Defective ASIC devices 1. Replace the controller board
	[0610] Self-diagnostic error– CPU: Detailed error code	
	Timer cut-in does not operate even though it is set.	• Defective CPU devices 1. Replace the controller board
	[0612] Self-diagnostic error– CPU: Detailed error code	
	Cut-in in ASIC occurs.	• Defective ASIC • Defective devices in which ASIC detects cut-in. 1. Replace the controller board.
	[06FF] Self-diagnostic error– CPU: Detailed error code	
	The pipeline clock frequency rate is different from the prescribed value.	• Defective CPU devices • Mode bit data error, which is used for initializing CPU. 1. Replace the controller board
	[0702] Self-diagnostic error– CPU: Detailed error code	
	The result when the program is executed in the command cache is different from desirable value.	• Insufficient CPU cache • Insufficient memory process speed 1. Replace the controller board. 2. Replace the RAM DIMM.
	[0709, 070A] Self-diagnostic error– CPU: Detailed error code	
	Even you write the data in the only cache of memory, the data is actually written in another area (not cache) of memory.	• Defective CPU devices • Incorrect SPD • Boot mode setting error 1. Replace the controller board. 2. Replace the RAM DIMM.
	[0801, 0804, 0807, 0808, 0809, 80A] Self-diagnostic error– CPU: Detailed error code	
	An error occurs when checking the TLB.	• Defective CPU devices 1. Replace the controller board.
	[4002-4005] Self-diagnostic error– CPU: Detailed error code	
	The calculation error in the CPU occurs.	• Defective CPU 1. Replace the CPU.

SC	Symptom	Possible Cause/Required Action
821 [D]	[0D05] Self-diagnostic error– ASIC	
	The CPU checks if the ASIC timer works properly compared with the CPU timer. If the ASIC timer does not function in the specified range, this SC code is displayed.	• System firmware problem • Defective RAM-DIMM • Defective controller 1. Reinstall the controller system firmware. 2. Replace the RAM-DIMM. 3. Replace the controller board.
822 [B]	[3004] Self-diagnostic error– HDD: Command error	
	When the main power switch is turned on or starting the self-diagnostic, the diagnostic error from HDD occurs.	• Defective HDD 1. Replace the HDD.
823 [B]	[6101] Self-diagnostic error – NIC: MAC address check sum error	
	The result of the MAC address check sum does not match the check sum stored in ROM.	• Defective controller 1. Replace the controller.
	[6104] Self-diagnostic error – NIC: PHY IC error	
	The PHY IC on the controller cannot be properly recognized.	Same as [6101]
	[6105] Self-diagnostic error – NIC: PHY IC loop back error	
	An error occurred during the loop-back test for the PHY IC on the controller.	Same as [6101]
824 [D]	[1401] Self-diagnostic error – NVRAM	
	The controller cannot recognize the standard NVRAM installed or detects that the NVRAM is defective.	• Loose connection • Defective standard NVRAM • Defective controller 1. Check the standard NVRAM is firmly inserted into the socket. 2. Replace the NVRAM. 3. Replace the controller.
826 [D]	Self-diagnostic error - RTC/ Optional NVRAM	
	The time count difference between RTC device and CPU is over 1 second.	• RTC defective • NVRAM without RTC installed • Backup battery discharged 1. Replace the NVRAM with another RTC installed NVRAM.
827 [D]	[0201] Self-diagnostic error – RAM: Verification error	
	Error detected during a write/verify check for the standard RAM (SRAM DIMM).	• Loose connection • Defective RAM DIMM • Defective controller 1. Replace the RAM DIMM. 2. Replace the controller.

SC	Symptom	Possible Cause/Required Action
829 [B]	[0302] Self-diagnostic error – RAM: Composition error (Slot 0)	
	The result of checking the composition data of the RAM in Slot 0 on the controller is incorrect.	• Not specified RAM DIMM installed • Defective RAM DIMM 1. Replace the RAM DIMM. 2. Replace the controller board.
	[0401] Self-diagnostic error – RAM: Verification error (Slot 1)	
	The data stored in the RAM in Slot 1 does not match the data when reading.	Same as SC 829 [0302]
	[0402] Self-diagnostic error – RAM: Composition error (Slot 1)	
	The result of checking the composition data of the RAM in Slot 1 on the controller is incorrect.	Same as SC 829 [0302]
838 [D]	Verification error	
	The verification data of the clock generator is read via the communication bus. → The data contradicts the normal value.	• Defective controller board 1. Replace the controller board.
851 [B]	IEEE1394 interface error	
	IEEE1394 interface error detected.	• Defective IEEE1394 • Defective controller. 1. Replace the IEEE1394 interface board. 2. Replace the controller
853 [B]	IEEE802.11b error - card not detected (power-on)	
	The wireless LAN card is not detected before communication is established, though the wireless LAN board is detected.	• Loose connection 1. Check the connection.
854 [B]	IEEE802.11b error - card not detected (during operation)	
	The wireless LAN card not detected during operation.	• Poor connection • Defective wireless LAN card • Defective controller 1. Check the wireless LAN card connection. 2. Replace the wireless LAN card.
855 [B]	IEEE802.11b error	
	The wireless LAN card error detected.	• Poor connection • Defective wireless LAN card • Defective controller 1. Check the wireless LAN card connection. 2. Replace the wireless LAN card.
856 [B]	IEEE802.11b interface board error	
	Wireless LAN interface board error detected.	• Poor connection • Defective wireless LAN interface board 1. Check the wireless LAN interface board connection. 2. Replace the interface board.

SC	Symptom	Possible Cause/Required Action
857 [B]	USB I/F Error	
	USB interface error detected.	• Defective controller 1. Check the USB connections, make sure that they are securely connected. 2. Replace the controller board.
860 [B]	HDD start-up error	
	HDD initialization error detected.	• Defective HDD 1. Check the HDD connection. 2. Reformat the HDD. 3. Replace the HDD.
861 [D]	HDD: Reboot error	
	The HDD does not become ready within 30 seconds after the power is supplied to the HDD.	• Loose connection • Defective HDD • Defective controller 1. Turn the main power switch off and on. 2. Check the connection between the HDD and controller. 3. Replace the HDD. 4. Replace the controller.
863 [D]	HDD data unable to read	
	Data stored in the HDD cannot be properly read.	• Defective HDD 1. Check the HDD connection. 2. Reformat the HDD. 3. Replace the HDD.
864 [D]	HDD data access error	
	HDD access error detected.	• Defective HDD 1. Replace the HDD.
865 [D]	HDD access error	
	An error detected during HDD operation.	• Defective HDD 1. Replace the HDD.
866 [B]	SD card authentication error	
	A correct license is not found in the SD card.	• SD-card data is corrupted. 1. Store correct data in the SD card.
867 [D]	SD card error	
	The SD card for applications is ejected from the SD card slot.	• The SD card for applications is ejected from the SD card slot. 1. Install the SD card.
868 [D]	SD card access error	
	SD card error occurs when an SD card is activated.	• Defective SD card • Defective SD card controller 1. For a file system error, format the SD card on your PC. 2. For a device error, turn the mains switch off and on. 3. Replace the SD card. 4. Replace the controller.

SC	Symptom	Possible Cause/Required Action
870 [B]	Address data error	
	An error is detected in the data copied to the address book over a network.	• Defective software program • Defective HDD • Incorrect path to the sever 1. Initialize the address book data (SP5-846-50). 2. Initialize the user information (format the hard disk with SP5-832). 3. Replace the HDD.
900 [D]	Electric counter error	
	Abnormal data is stored in the counters.	• Defective NVRAM • Defective controller 1. Turn the main power switch off and on. 2. Check the connection between the NVRAM and controller. 3. Replace the NVRAM. 4. Replace the controller.
920 [B]	Printer function error	
	The error that causes the malfunction in the software application is detected.	• Unexpected hardware structure (insufficient memory or hard disk space.) 1. Turn the main power switch off/on, or install Printer Application firmware.
921 [B]	Printer font error	
	No font is detected in the machines that have the font in the SD card when the printer application is run.	1. Install the System, Printer Application, NIB, and Web System firmware.
990 [D]	Unexpected software error	
	Unexpected software error detected.	• Defective controller 1. Replace the controller if the error is frequent. 2. See **NOTE** at the end of the SC table.
991 [C]	Unexpected software error	
	Unexpected software error detected, which does not affect operation of the machine.	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).

SC	Symptom	Possible Cause/Required Action
998	Application start error	
[D]	No applications start within 60 seconds after the power is turned on.	• Loose connection of RAM-DIMM, ROM-DIMM • Defective controller • Software problem 1. Turn the main power switch off and on. 2. Check if the RAM-DIMM and ROM-DIMM are properly connected. 3. Reinstall the controller system firmware. 4. 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 (SP 5990 2)
- Logged data (SP 5990 4)
- 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 TROUBLESHOOTING GUIDE

NOTE: When replacing the engine control board, remove the NVRAM from the original engine control board and install it on the new one.

4.3.1 BLANK PRINT

Symptom	Possible cause	Necessary actions
No image is printed.	Defective laser scanning unit	Replace the laser scanning unit.
	Defective PCU	Replace the PCU.
	Defective transfer belt unit	Replace the transfer belt unit.
	Defective transfer belt tension unit	Replace the transfer belt tension unit.
	Defective toner cartridge drive unit	Replace the toner cartridge drive unit.
	Defective toner cartridge agitator	Replace the toner cartridge.
	Incorrect action of transfer roller	Check the guide and the transfer roller.
	Defective high voltage supply board	Replace the high voltage supply board.
	Defective engine control board	Replace the engine control board.

4.3.2 ALL-BLACK PRINT

Symptom	Possible cause	Necessary actions
All the paper is black.	Incorrectly installed PCU	Install the PCU correctly.
	Defective PCU	Replace the PCU.
	Defective high voltage supply board	Replace the high voltage supply board.
	Defective laser scanning unit	Replace the laser scanning unit.
	Defective engine control board	Replace the engine control board.
	Defective main board	Replace the main board.

4.3.3 MISSING CMY COLOR

Symptom	Possible cause	Necessary actions
C, M, or Y is missing.	Defective PCU	Replace the PCU.
	Loose connection between printer cartridge and engine control board	Replace the connection spring.
	Transfer belt not contacting PCU	Check the belt tension unit.
	Defective cable on belt tension unit	Replace the belt tension unit.
	Defective PCU motor	Replace the PCU motor.
	Defective engine control board	Replace the engine control board.

4.3.4 LIGHT PRINT

Symptom	Possible cause	Necessary actions
Printed images are too weak.	Loose connection between transfer roller and high voltage supply unit	Check the connection between the transfer roller and the high voltage supply unit.
	Dust in the laser beam path	Clean the laser beam path.
	Transfer belt not contacting PCU	Check the belt tension unit.
	Defective PCU	Replace the PCU.
	Defective transfer roller	Repair the transfer roller.
	Defective fusing unit	Replace the fusing unit.
	Defective engine control board	Replace the engine control board.

4.3.5 REPEATED SPOTS OR LINES ON PRINTS

Symptom	Possible cause	Necessary actions
The same spots or lines appear at regular intervals.		
At intervals of 28.3 mm (1.114 inches)	Defective transfer roller unit	Replace the transfer roller assembly.
At intervals of 31.4 mm (1.236 inches)	Defective charge roller	Replace the PCU.
At intervals of 36.0 mm (1.417 inches)	Defective belt transfer roller	Replace the transfer belt unit.
At intervals of 38 mm (1.496 inches)	Defective development roller	Replace the PCU.
At intervals of 44.7 mm (1.759 inches)	Defective transfer belt drive roller	Replace the transfer belt unit.
At intervals of 45.6 mm (1.795 inches)	Defective waste toner disposal screw	Replace the PCU.
At intervals of 46.2 mm (1.82 inches)	Defective registration roller	Replace the registration roller.
At intervals of 69.1 mm (2.721 inches)	Defective transfer roller	Replace the transfer roller.
At intervals of 74.5 mm (2.933 inches)	Defective toner supply roller	Replace the PCU.
At intervals of 75.4 mm (2.968 inches)	Defective OPC drum	Replace the PCU.
At intervals of 75.4 mm (2.968 inches)	Defective belt tension roller	Replace the transfer belt unit.
At intervals of 95.0 mm (3.740 inches)	Defective pressure roller	Replace the fusing unit.
At intervals of 142 mm (5.6 inches)	Defective fusing belt	Replace the fusing unit.

4.3.6 DARK VERTICAL LINE IN PRINT

Symptom	Possible cause	Necessary actions
A dark line appears. The line is parallel to the paper feed direction.		
Of one CMY color	Defective PCU	Replace the PCU.
Of any color (not C, M, or Y)	Dust in the laser beam path	Clean the laser beam path.
	Defective transfer belt unit	Replace the transfer belt unit.
	Defective fusing unit	Replace the fusing unit.

4.3.7 WHITE HORIZONTAL LINES OR BANDS

Symptom	Possible cause	Necessary actions
White lines or bands appear in images of all toner colors. They are vertical to the paper feed direction.	Defective PCU	Replace the PCU.
	Defective transfer belt unit	Replace the transfer belt unit.
	Defective transfer roller	Replace the transfer roller.

4.3.8 MISSING PARTS OF IMAGES

Symptom	Possible cause	Necessary actions
Some parts of images are missing.	Defective PCU	Replace the PCU.
	Defective transfer belt unit	Replace the transfer belt unit.
	Defective transfer roller	Replace the transfer roller.
	Defective fusing unit	Replace the fusing unit.

4.3.9 DIRTY BACKGROUND

Symptom	Possible cause	Necessary actions
Backgrounds are too dense.		
Of one CMYK color	Defective PCU	Replace the PCU.
Of more than one CMYK color	Defective high voltage supply board	Replace the high voltage supply board.

4.3.10 PARTIAL CMY COLOR DOTS

Symptom	Possible cause	Necessary actions
Unexpected dots of the same color appear at irregular intervals.	Defective PCU	Replace the PCU.
	Defective transfer belt unit	Replace the transfer belt unit.
	Defective fusing unit	Replace the fusing unit.

4.3.11 DARK IRREGULAR STREAKS ON PRINTS

Symptom	Possible cause	Necessary actions
Unexpected streaks appear at irregular intervals.	Defective transfer belt	Replace the transfer belt unit.

4.3.12 CMY COLOR IRREGULAR STREAKS

Symptom	Possible cause	Necessary actions
Unexpected streaks of the same color appear at irregular intervals.	Defective PCU	Replace the PCU.
	Defective transfer belt unit	Replace the transfer belt unit.

4.3.13 GHOSTING

Symptom	Possible cause	Necessary actions
The same or similar image appears two or more times. They get weaker and weaker.	Defective PCU	Replace the PCU.

NOTE: 1) Ghosting is sometimes unavoidable. This is because the charge is not completely quenched while the transfer belt makes one rotation.
2) Older toner cartridges tend to cause ghosting.

4.3.14 UNFUSED OR PARTIALLY FUSED PRINTS

Symptom	Possible cause	Necessary actions
Some parts of images are not fused very well.	Nonstandard paper in use	Use recommended paper.
	Incorrect media type mode	Select an appropriate media mode.
	Defective fusing unit	Replace the fusing unit.

4.3.15 IMAGE SKEW

Symptom	Possible cause	Necessary actions
Images are skewed	Incorrect installation of paper	Install the paper correctly.
	Incorrect paper guide position	Adjust the paper guide correctly.
	Defective intermediate or registration roller	Repair the paper feed unit.
	Incorrect action of transfer roller	Check the transfer roller.
	Defective engine control board	Replace the engine control board.
	Defective corner separator	Replace the corner separator
	Defective spring	Replace the spring

4.3.16 BACKGROUND STAIN

Symptom	Possible cause	Necessary actions
The reverse side of the paper is not clean.	Unclean transfer roller	Clean the transfer roller.
	Unclean paper path	Clean the paper path.
	Unclean intermediate or registration roller	Clean the intermediate or registration roller.
	Unclean fusing unit exit	Clean the fusing unit exit.
	Defective fusing unit	Replace the fusing unit.

4.3.17 NO PRINTING ON PAPER EDGE

Symptom	Possible cause	Necessary actions
Images are not printed in the areas around the paper edges.	Defective PCU	Replace the PCU.
	Defective toner cartridge	Replace the toner cartridge.
	Defective transfer belt unit	Replace the transfer belt unit.
	Transfer belt not contacting PCU	Check the belt tension unit.

4.3.18 IMAGE NOT CENTERED WHEN IT SHOULD BE

Symptom	Possible cause	Necessary actions
Images do not come to the center.	Incorrect installation of paper	Install the paper correctly.
	Incorrect paper guide position	Adjust the paper guide correctly.
	Incorrect margin setting	Adjust the margin setting.
	Defective engine control board	Replace the engine control board.

4.4 ELECTRICAL COMPONENT DEFECTS

4.4.1 SENSORS

No.	Sensor Name/ Sensor Board Name	Signal Name	Active	CN No./ Pin No. (Switch)	Position
1	BK PCU Virgin Sensor Board	PIKFUSEK	Analog	CN6/1	Black PCU
2	CMY PCU Virgin Sensor Board	PIKFUSEYMC	Analog	CN6/3	CMY PCU
3	Front/Right Door Open Detection Switch	DOPEN	H	CN7/1	Right side of Chassis (front side)
4	Black Toner Empty Sensor	NEMPK	L	CN10/1	Toner Empty Sensor Board on Toner Cartridge Drive Unit
5	Cyan Toner Empty Sensor	NEMPC	L	CN10/2	
6	Yellow Toner Empty Sensor	NEMPY	L	CN10/7	
7	Magenta Toner Empty Sensor	NEMPM	L	CN10/8	
8	Toner Cartridge Access Cover Detection Switch	TCDOPEN	H	CN11/2	Top Cover
9	CMY PC Home Position Sensor	YMCZPH	H	CN13/2	OPC Cam Home Position Sensor Board on Main Drive Unit
10	Black PC Home Position Sensor	KZPH	H	CN13/3	
11	Accumulator Cam Home Position Sensor	ITHOME1	H	CN14/2	Accumulator Tension Unit
12	Fusing Unit Detection Sensor	FSRFUSE	L	CN15/1	Fusing Unit
13	Thermistor 1	TH1HIGH	Analog	CN15/4	
14	Thermistor 2	TH2HIGH	Analog	CN15/3	
15	Pressure Roller Thermistor	THFUSE	Analog	CN15/5	
16	Heat Roller Rotation Sensor	ROTATE	H	CN15/6	
17	Fusing Jam (Paper Ejection) Sensor	NFSRJAM	L	CN15/7	
18	Paper Full Sensor	EXITFULL	H	CN17/3	Paper Full Sensor Board in paper exit block
19	Paper Empty Sensor	STPNON	H	CN18/2	Paper Empty/Registration Sensor Board on Paper Feed Unit
20	Registration Sensor	NREGSEN	L	CN18/3	
21	MPT Home Position Sensor	MPTHOME	H	CN23/3	Left side of Chassis (front side)
22	MPT Paper Empty Sensor	MPPSEN	H	CN23/5	
23	Waste Toner Full Sensor	TBFUL	H	CN27/8	By Power Switch

No.	Sensor Name/ Sensor Board Name	Signal Name	Active	CN No./ Pin No. (Switch)	Position
24	Left Side Color Registration Sensor	SNS_L	Analog	CN27/1	Color Registration Sensor Board
25	Waste Toner Detection Sensor	WTB_NON	H	CN27/6	
26	Right Side Color Registration Sensor	SNS_R	Analog	CN27/3	
27	Paper Size 1 Switch	STPSZ1	**Table 1**	CN28/1	Rear side of Chassis (paper size detector)
28	Paper Size 2 Switch	STPSZ2	**Table 1**	CN28/2	
29	Paper Cassette Detection Switch	STNON	H	CN28/4	
30	Temperature Sensor	TEMP	Analog	CN29/4	Humidity/Temperature Sensor Board at left side of Chassis
31	Humidity Sensor	HUM	Analog	CN29/2	
32	ADU Detection Sensor	ADUNON	H	CN39/2	Inner Cover (at Front side of Chassis)
33	ADU Jam Detection Sensor	NADUJAM	L	CN39/5	
34	Paper Jam Sensor	ACFJAM	H	CN6/3	Option Feeder
35	Paper Empty Sensor	ACFPNON	H	CN6/2	
36	Option Cassette Paper Size 1 Switch	STPSZ1	**Table 2**	CN5/1	
37	Option Cassette Paper Size 2 Switch	STPSZ2	**Table 2**	CN5/2	
38	Option Cassette Detection Switch	STNON	H	CN5/3	

Table 1

Paper Size	Letter	A4	B5	Lega;
STPSZ2	L	L	H	H
STPSZ1	L	H	L	H

Table 2

Paper Size	Letter	A4	B5	Lega;
ACFPSZ2	L	L	H	H
ACFPSZ	L	H	L	H

4.5 BLOWN FUSE CONDITIONS

Power supply unit

Fuse	Rating		Symptom when turning on the main power switch
	120 V	220 – 240 V	
F1	8 A/125 V	4 A/250 V	No response
F2	4 A/125 V	4 A/250 V	No response
F3	4 A/125 V	4 A/250 V	No response
F4	4 A/125 V	4 A/250 V	No response
F5	4 A/125 V	4 A/250 V	No response
F6	4 A/125 V	4 A/250 V	No response
F7	4 A/125 V	4 A/250 V	No response

High voltage unit

Fuse	Rating		Symptom when turning on the main power switch
	120 V	220 – 240 V	
IP101	1.5 A/50 V	1.5 A/50 V	No response

4.6 LEDS

No LEDs are used for this model (except for the Network Interface).

5. SERVICE TABLES

5.1 SERVICE PROGRAM MODE

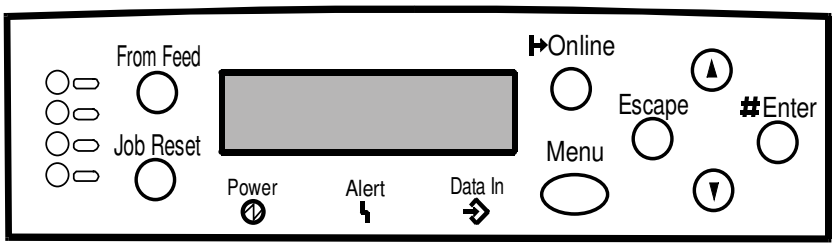
⚠CAUTION

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 SERVICE MODE OPERATION

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 this condition, product quality cannot be guaranteed.



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Entering the Service Mode

The following show the two ways to enter the service mode.

Method 1: Turn the machine on while pressing the “Online” key and “Escape” key together until the message "SYSTEMver x.xx" shows on the display.

NOTE: If you switch the machine off, all jobs stored on the hard disk using the sample print and protected print features get deleted.
Check first with the user tools to see if there are any jobs stored with these features
(Menu key - Sample Print, or Protected Print).

Method 2: Press the “Up/Down arrow” keys together for about 5 seconds. Then press the “#Enter” key.
The above message shown in the illustration shows on the display.

NOTE: The machine automatically goes off line when you enter the service mode.

Accessing the Required Program

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

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

To select an item, press the “Enter” key. Then the sub-menu shows.
Scroll through the sub menu items with the “Up/Down arrow” keys.
Press the “Escape” key to go back to a higher level.

Inputting a Value or Setting for a Service Program

Enter the required program mode as explained above. The setting shown on the display is the current setting.
Select the required setting with the “Up/Down arrow” keys. Then press the “Enter” key. The previous value stays if the “Enter” key is not pressed.

Exiting Service Mode

Select “3. End” from the service mode main menu. Then press the “Enter” key.

NOTE: To keep the settings, turn the main switch off and on after you exit the service mode.

5.2 PRINTER CONTROLLER SERVICE MODE

NOTE: In the Function/[Setting] column:

- The related pop-up screen name and function name (if any) show in parenthesis following the function description.
- Comments are in *italics*.
- The setting range is enclosed in brackets, with the default setting shown 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 SP modes return to their factory settings.
- **DFU** stands for **D**esign/**F**actory **U**se only. Values marked **DFU** should not be changed.
- **FA** stands for **F**actory **A**djustment only. Values marked **FA** should not be changed.

5.2.1 SERVICE (CONTROLLER SERVICE MODES)

1	Mode No. (Class 1, 2, and 3)		Function / [Setting]
001*	**[Bit Switch]**		
	1	Bit Switch 1	Adjusts bit switch settings. **DFU**
	2	Bit Switch 2	Bit 0 to 2: Not used. Do not change settings. Bit 3: Changing print language (PCL <-> PS) 0: Enabled 1: Disabled (No change) Bit 4 to 7: Not used. Do not change settings.
	3	Bit Switch 3	Bit 0: PostScript3 Euro glyph 0: Disabled 1: Enabled (Even if there is no Euro Glyph in ROM, it is possible to load the Euro Glyph data.) Bit 1: Not used. Do not change setting. Bit 2:PCL5e/5c (HP4000/HP8000) The left space command is set to "0", the machine is changed to "1" 0: Disabled 1: Enabled Bit 3: PCL5e/GL2: pen # of PW 0: Normal 1: Patch Bit 4: Tray selecting 0: Select tray is determined auto tray selecting 1: Like HP *Machines can take different actions depending on this setting when a tray is selected using PCL5e commands, and if the tray does not have any paper.* • If this bit is set to "0", the machine goes to alert status and waits for the user to take action. • If this bit is set to "1", the machine searches for another tray that has the same paper size or type. Bit 5 to 7: Not used. Do not change settings.

1	Mode No. (Class 1, 2, and 3)		Function / [Setting]
	4	Bit Switch 4	Adjusts bit switch settings. **DFU**
	5	Bit Switch 5	Bit 0 to 2: Not used. Do not change settings. Bit 3: Enabled the "%%" command of the PostScript detection condition for the auto print language selection function. 0: Enabled 1: Disabled Bit 4 to 7: Not used. Do not change settings.
	6	Bit Switch 6	Adjusts bit switch settings. **DFU**
	7	Bit Switch 7	
	8	Bit Switch 8	
003	**[Clear Setting]**		
	1	Init System	Initializes the settings in the "System" menu of the user tools.
	3	Delete Program	**DFU**
004	**[Print Summary]**		
	1	Print Summary	Prints the service summary sheet (a summary of all the controller settings).
005	**[Disp. Version]** Display Version		
	1	Printer Version	Displays the version of the controller firmware.
101	**[ToneCtlSet]** Toner Control Setting		
	1	Tone (Factory)	Recalls a set of gamma settings. This can be either a) the factory setting, b) the previous setting, or c) the current setting.
	2	Tone (Prev.)	
	3	Tone (Current)	
102	**[ToneCtlSet]** Toner Control Setting		
	1	ToneCtlSet	Sets the printing mode (resolution) for the printer gamma adjustment. The asterisk (*) shows which mode is set. • ***1200x1200Photo** • 600x600Text • 1200x600Text • 600x600Photo • 1200x600Photo
103	**[PrnColorSheet]** Print Color Sheet		
	1	ToneCtlSheet	Prints the test page to check the color balance before and after the gamma adjustment.
	2	ColorChart	
104	[ToneCtlValue] Toner Control Value		
	Adjusts the printer gamma for the mode selected with the "Tone Ctl Set" setting.		
	1	Set Black 1	[0 ~ 255 / **16** / 1/step]
	21	Set Cyan 1	
	41	Set Magenta 1	
	61	Set Yellow 1	
	2	Set Black 2	[0 ~ 255 / **32** / 1/step]
	22	Set Cyan 2	
	42	Set Magenta 2	
	62	Set Yellow 2	
	3	Set Black 3	[0 ~ 255 / **48** / 1/step]
	23	Set Cyan 3	
	43	Set Magenta 3	
	63	Set Yellow 3	

1	Mode No. (Class 1, 2, and 3)		Function / [Setting]
104	4	Set Black 4	[0 ~ 255 / **64** / 1/step]
	24	Set Cyan 4	
	44	Set Magenta 4	
	64	Set Yellow 4	
	5	Set Black 5	[0 ~ 255 / **80** / 1/step]
	25	Set Cyan 5	
	45	Set Magenta 5	
	65	Set Yellow 5	
	6	Set Black 6	[0 ~ 255 / **96** / 1/step]
	26	Set Cyan 6	
	46	Set Magenta 6	
	66	Set Yellow 6	
	7	Set Black 7	[0 ~ 255 / **112** / 1/step]
	27	Set Cyan 7	
	47	Set Magenta 7	
	67	Set Yellow 7	
	8	Set Black 8	[0 ~ 255 / **128** / 1/step]
	28	Set Cyan 8	
	48	Set Magenta 8	
	68	Set Yellow 8	
	9	Set Black 9	[0 ~ 255 / **144** / 1/step]
	29	Set Cyan 9	
	49	Set Magenta 9	
	69	Set Yellow 9	
	10	Set Black 10	[0 ~ 255 / **160** / 1/step]
	30	Set Cyan 10	
	50	Set Magenta 10	
	70	Set Yellow 10	
	11	Set Black 11	[0 ~ 255 / **176** / 1/step]
	31	Set Cyan 11	
	51	Set Magenta 11	
	71	Set Yellow 11	
	12	Set Black 12	[0 ~ 255 / **192** / 1/step]
	32	Set Cyan 12	
	52	Set Magenta 12	
	72	Set Yellow 12	
	13	Set Black 13	[0 ~ 255 / **208** / 1/step]
	33	Set Cyan 13	
	53	Set Magenta 13	
	73	Set Yellow 13	
	14	Set Black 14	[0 ~ 255 / **224** / 1/step]
	34	Set Cyan 14	
	54	Set Magenta 14	
	74	Set Yellow 14	
	15	Set Black 15	[0 ~ 255 / **240** / 1/step]
	35	Set Cyan 15	
	55	Set Magenta 15	
	75	Set Yellow 15	

1	Mode No. (Class 1, 2, and 3)		Function / [Setting]
105	**[ToneCtlSave]** Toner Control Value Save		
	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.
106	**[Toner Limit]**		
	Adjusts the maximum toner amount for image development.		
	1	TonerLimitPhot	[100 ~ 400 / **260** / 1%/step]
	2	TonerLimitText	[100 ~ 400 / **200** / 1%/step]
107	**[FactoryTestPrt]** Factory Test Page Print		
	1	Image Density	Prints the image density test page for the factory line. **DFU**
108	**[Ext. TonerSave]**		
	1	Mode 1: Text	**DFU**
	2	Mode 2: Text	
	3	Mode 1: Image	
	4	Mode 2: Image	
	5	Mode 1: Line	
	6	Mode 2: Line	
	7	Mode 1: Paint	
	8	Mode 2: Paint	

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 x.xx” shows the machine’s firmware version.

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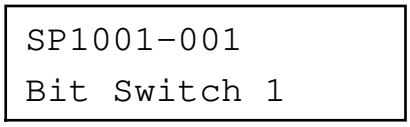
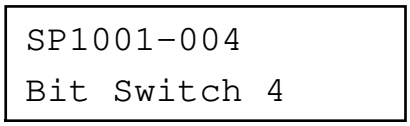
2. Press the enter key 2 times.



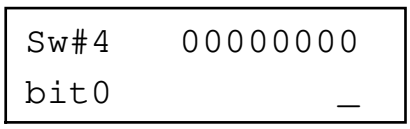
G139S502A.WMF

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



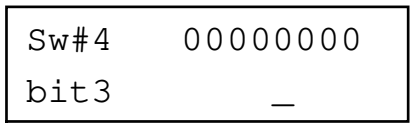
G139S503A.WMF

4. Press the enter key.



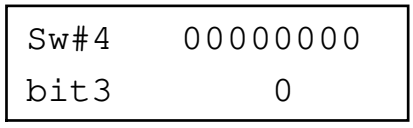
G139S504A.WMF

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



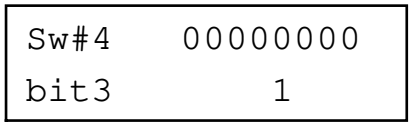
G139S505.WMF

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



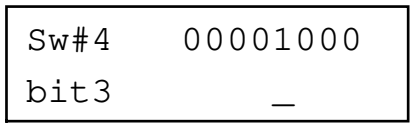
G139S506.WMF

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



G139S507.WMF

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



G139S508.WMF

9. Press the escape key 3 times.

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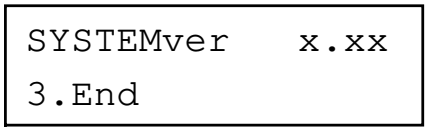
10. Select “3. End.”



G139S503.WMF

Gamma Adjustment

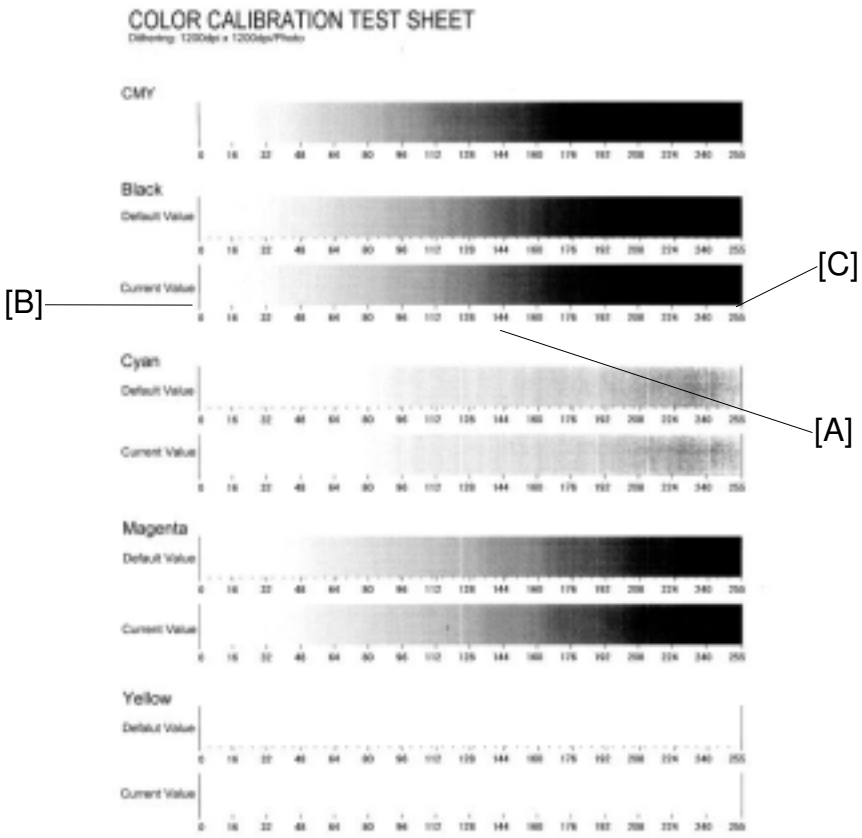
NOTE: To solve color quality problems, clean and/or replace related parts first. Do the procedure in this section if you need to make adjustments.

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. There should be no coloration.

The below illustration shows the color adjustment sheet.



G139S900.JPG

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 the following 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” (SP1102). Then press the Enter key.
3. Use the up/down key to select the mode you want to calibrate. Then press the Escape key until you get back to the controller service mode menu.
4. Use the down arrow key to select “PrnColorSheet” (SP1103) and press the Enter key.
5. Use the up/down key to select “ToneCtlSheet” (SP1103-001) (normally this is shown by default) and press the Enter key.
6. Press the Enter key to print out the “color calibration test sheet” when “Execute?” shows.
7. When “Execute OK” shows, 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” (SP1104) and press the enter key.

9. Use the up/down arrow key to select the setting you want to adjust. Then press the enter key. The three digits in the display (example “016”) show 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
: :	: :
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: Do the following to decide what density value to input.
1) Look at the color adjustment sheet.
2) For the color you are adjusting, look at the gradation scale entitled “Default”.
3) Go along the scale until you get to the density that you want to input.
4) 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.
5) 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. Do the adjustment again if there is an anomaly (normally, repeat this procedure 3 to 5 times).

11. Do the following if the adjustment results are satisfactory.
    1) Use “ToneCtlSave” in the controller service menu, to keep 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 stay in the controller NVRAM unless you reset the controller.

5.3 PRINTER ENGINE SERVICE MODE

An asterisk (*) after the mode number means that this mode's value is stored in the NVRAM.

A sharp (#) means that this mode's value is stored in the EEPROM. If you do a RAM reset, these SP modes return to their factory settings.

5.3.1 SERVICE MODE TABLE ("2. ENGINE")

SP1-XXX (Feed)

1	Mode No. (Class 1, 2, and 3)		Function / [Setting]
001 #	**[Lead Edge Reg.]** Leading Edge Registration Process Speed		
	1	TOP 100	Adjusts the leading edge registration by changing the registration clutch operation timing for each mode. [–30 ~ 30 / **0** / 2 line/step]
	2	TOP 124	
	3	TOP 50	
002 #	**[S-to-S Reg.]** Side-to-Side Registration		
	1	Paper Tray 1	Adjusts the side-to-side registration by changing the laser main scan start position for each mode. [–15 ~ 15 / **0** / 2 pixel/step]
	2	By-pass Table	
	3	Paper Tray 2	
	4	Paper Tray 3	
	5	Duplex	
003 #	**[Paper Buckle]** Paper Buckle (Process Speed, Tray)		
	1	100 Tray1	Adjusts the amount of paper buckle at the registration roller by changing the paper feed timing. [–5 ~ 5 / **0** / 1 mm/step]
	2	100 Bypass	
	3	100 Tray2	
	4	100 Tray3	
	5	100 Dpx	
	6	124 Tray1	[–5 ~ 5 / **0** / 1.24 mm/step]
	7	124 Bypass	
	8	124 Tray2	
	9	124 Tray3	
	10	124 Dpx	
	11	50 Tray1	[–5 ~ 5 / **0** / 1 mm/step]
	12	50 Bypass	
	13	50 Tray2	
	14	50 Tray3	
	15	50 Dpx	
105 #	**[Fusing Temp.]** Fusing Temperature (Paper Type, Process Speed) Paper Type → N: Normal, Thin OHP. Card Envelope Label Coated Paper Japanese PostCard(**DFU**)		
	1	N 100	Adjusts the fusing belt temperature for the printing ready condition. The fusing temperature is depended on the paper type. Ready temperature = (Fusing temperature + Temperature specified in this SP mode. [–10 ~ 10 / **0** / 1°C/step] 1-105-12, 13: **DFU (used in Japan only)**
	2	N 124	
	3	N 50	
	4	Thin 100	
	5	Thin 124	
	6	Thin 50	
	7	OHP	
	8	Card	
	9	Envelope	

Service Tables

1	Mode No. (Class 1, 2, and 3)		Function / [Setting]
105 #	10	Coated Paper	Adjusts the fusing belt temperature for the printing ready condition. The fusing temperature is depended on the paper type. Ready temperature = (Fusing temperature + Temperature specified in this SP mode. [–10 ~ 10 / **0** / 1°C/step] 1-105-12, 13: DFU (used in Japan only)
	11	Label	
	12	PostCard Doc	
	13	PostCard Adr	
	14	Index	

SP2-XXX (Drum)

2	Mode No. (Class 1, 2, and 3)		Function / [Setting]
201 #	**[Dev. Bias]** Development Bias ([Color], Process Speed)		
	1	[K] Over All	Adjusts the development bias. [–10 ~ 10 / **0** / 1 V/step] **DFU**
	2	[C] Over All	
	3	[M] Over All	
	4	[Y] Over All	
	5	[K] 100	
	6	[C] 100	
	7	[M] 100	
	8	[Y] 100	
	9	[K] 124	
	10	[C] 124	
	11	[M] 124	
	12	[Y] 124	
	13	[K] 50 600dpi	
	14	[C] 50 600dpi	
	15	[M] 50 600dpi	
	16	[Y] 50 600dpi	
	17	[K] 50 1200dpi	
	18	[C] 50 1200dpi	
	19	[M] 50 1200dpi	
	20	[Y] 50 1200dpi	
	21	OHP [K] 50	
	22	OHP [C] 50	
	23	OHP [M] 50	
	24	OHP [Y] 50	
208 #	**[Toner Control]**		
	1	Set Flag	Sets the toner supply control flag. Toner is supplied to the development unit at the following times when the flag is set: • When the main power switch is turned off and on. • When the machine recovers from the energy saver mode. *After the toner has been supplied to the development unit, the toner control flag is reset (the flag is turned off).*
	2	Reset Flag	**DFU**
310 #	**[Transfer Bias]** Transfer Bias (Paper Type, Process Speed, Tray) Paper Type → N: Normal, Thin, OHP, Card, Envelope, Coated Paper, Label, PostCard Tray → B: By-pass Tray Postcard DFU (used in Japan only)		
	1	N 100	Adjusts the transfer roller bias for paper type and each print mode. [–15 ~ 15 / **0** / 63.16 V/step]
	2	N 124	
	3	N 50	
	4	Thin 100	
	5	Thin 124	
	6	Thin 50	
	7	OHP B	
	8	Card B	
	9	Envelop 1 B	
	10	Coated Paper B	
	11	Label B	

2	Mode No. (Class 1, 2, and 3)		Function / [Setting]
310 #	12	PostCard Doc (Postcard Document)	Adjusts the transfer roller bias for paper type and each print mode. [–15 ~ 15 / **0** / 63.16 V/step]
	13	PostCard Adr (Postcard address)	
	14	Index	
311	**[STR Type]** Second Transfer Roller, Bias Type Selection		
	Selects the bias type for the paper transfer roller.		
	1	STR Type	[0 ~ 2 / **0** / 1/step] 0: Center (Middle), 1: High, 2: Low

SP5-XXX (Mode)

5	Mode No. (Class 1, 2, and 3)		Function / [Setting]
024*	**[mm/inch display]**		
	1	mm/inch display	Display units (mm or inch) for custom paper sizes. 0: mm (Europe/Asia) 1: inch (USA)
045*	**[Accounting count]** Accounting Count Adjustment		
	1	Counter Method	Switches the counter display. The setting can only be changed once. [0 ~ 1 / **1** / 1/step] • *0: Developments* • *1: Prints*
049*	**[LCDcontrast]**		
	1	LCD contrast	Adjusts the contrast of LCD. [16 ~ 31 / **25** / 1/step]
051*	**[Toner Refill Displ]** Toner Refill Display Adjustment		
	1	Toner Refill Displ	Enable or disable the warning display when you install a toner bottle that has been refilled by third party venders. [0 or 1 / **0** / 1/step] 0: enable, 1: disable
055*	**[Display IP add]** IP Address Display Setting		
	1	Display IP add	Display or does not display IP address on the LCD. [0 or 1 / **0** / 1/step] 0: No, 1: Yes
150	**[Bypass Length Se]** Bypass Length Setting		
	1	Bypass Length Se	Lets or does not let the by-pass tray feed extra long paper (up to 1260 mm). [0 or 1 / **0** / 1/step] 0: OFF, 1: ON
302*	**[Set Time]**		
			Adjusts the RTC (real time clock) time setting for the local time zone. [–1440 ~ 1440 / **NA, EU, CH** / 1 minute/step] NA: **–300**, EU: **60**, CH: **480**
307*	**[Summer Time]** Daylight Saving Time Adjustment		
	1	Setting	Enables or disables the daylight saving time mode. [0 or 1 / **1** / -] Alphanumeric 0: Off, 1: On

5	Mode No. (Class 1, 2, and 3)		Function / [Setting]
307*	3	Rule Set(Start)	Specifies the start setting for the summer time mode. There are 8 digits in this SP. For months 1 to 9, the "0" cannot be input in the first digit, so the eight-digit setting for SP 5307 2 or 5307 3 becomes a seven-digit setting. 1st and 2nd digits: The month. [1 to 12] 3rd digit: The week of the month. [1 to 5] 4th digit: The day of the week. [0 to 6 = Sunday to Saturday] 5th and 6th digits: The hour. [00 to 23] 7th digit: The length of the advanced time. [0 to 9 / 1 hour /step] 8th digit: The length of the advanced time. [0 to 5 / 10 minutes /step] For example: 3500010 (EU default) The timer is advanced by 1 hour at am 0:00 on the 5th Sunday in March • The digits are counted from the left. • Make sure that SP 5307 1 is set to "1".
	4	Rule Set(End)	Specifies the end setting for the summer time mode. There are 8 digits in this SP. 1st and 2nd digits: The month. [1 to 12] 3rd digit: The week of the month. [0 to 5] 4th digit: The day of the week. [0 to 6 = Sunday to Saturday] 5th and 6th digits: The hour. [00 to 23] The 7th and 8 digits must be set to "00". • The digits are counted from the left. • Make sure that SP 5307 1 is set to "1".
404	**[UCodeCtrClr]** Use Code Counter Clear		
	UcodeCtrClr		Clear all counters for users.
501*	**[PM Alarm]** PM Alarm Level		
			Sets the PM alarm Interval. [0 to 9999 / **0** / 1k prints/step] • *The alert is sent to the e-mail address that is specified for the system administrator using a browser and web server (Web Image Monitor).* 0: Disables the PM alarm When SP 5866 1 is set to "1", this SP is enabled.
504*	**[Jam Alarm]** Jam Alarm Level		
	1	Jam Alarm	Sets the jam alarm level. If a paper jam occurs, the jam alarm counter increases by +1. If no paper jam occurs while the set number of paper is output, the jam alarm counter decreases by -1. The jam alarm occurs when the jam alarm counter gets to +10. [0 to 3 / **3** / 1/step] 0: Disables the jam alarm 1: 1.5K, 2: 3K, 3: **6K** *The alert is sent to the e-mail address that is specified for the system administrator using a browser and web server (Web Image Monitor).* When SP 5866 1 is set to "1", this SP is enabled.

5	Mode No. (Class 1, 2, and 3)		Function / [Setting]
505*	**[Error Alarm]**		
			Sets the error alarm level. If an SC code occurs, the error alarm counter increases by +1. If no SC code occurs while the set number of paper is output, the jam alarm counter decreases by -1. The error alarm occurs when the error alarm counter reaches +5. [0 to 255 / **30** / 1/step] 0: Disables the error alarm *The alert is sent to the e-mail address that is specified for the system administrator using a browser and web server (Web Image Monitor).* When SP 5866 1 is set to 1, this SP is enabled.
507*	**[Supply Alarm]**		
	1	Paper Supply Ala	Enables or disables the supply alarm. [0 or 1 / **0** / -] 0: OFF, 1: ON
	2	Toner Supply Ala	
	128	Interval: Others	Sets the paper supply alarm level. A paper supply alarm counter increases by +1 when a sheet of the related size is used. The paper supply alarm occurs when one of the paper supply alarm counters gets to the set value. [250 to 10000 / **1000** / 1/step] *The alert is sent to the e-mail address that is specified for the system administrator using a browser and web server (Web Image Monitor).* When SP 5866 1 is set to 1, this SP is enabled.
	133	Interval: A4	
	134	Interval: A5	
	142	Interval: B5	
	164	Interval: LG	
	166	Interval: LT	
	172	Interval: HLT	
801	**[Memory Clear]**		
	1	All	Resets the SP 5801 2 through 16 except the security related data in 801-3, -10, -11and -15. These cannot be reset with SP mode.
	2	Engine Setting	Clears all the engine settings. Engine settings and engine counters can be cleared independently with SP 5998 1 and -2.
	3	SCS (System Control Service)	Clears the system settings.
	4	IMH (Image Memory Handler)	Clears IMH data. **DFU**
	5	MCS (Memory Control Service)	Clears MCS data. **DFU** • *MCS is for network settings.*
	8	PRT	Clears the printer application settings.
	10	Web Service	Clears the web service data and the network application data.
	11	NCS	Initializes the system default and interface settings (IP address also), SmartNetMonitor for Admin, WebStatusMonitor settings, and the TELNET settings.
	14	DCS Setting	Resets or deletes the DCS-related data.
	15	Clear UCS Setting	Resets or deletes the UCS-related data.
	16	MIRS Setting	Resets or deletes the MIRS-related data.
	17	CSS	Resets or deletes the CSS-related data. **FA**
803	**[Input Check]**		See section 5-3-2.
804	**[Output Check]**		See section 5-3-3.

5	Mode No. (Class 1, 2, and 3)		Function / [Setting]
808	**[Destination]** Destination Code Display		
	1	Destination	Displays the destination code. [0 = JP, 1 = NA, 2 = EU, 3 = AS]
811	**[Serial Number]** Serial Number Display		
	2	DispCntl SN (Display Controller Serial Number)	Display the machine serial number
	10 #	DisEng SN (Display Engine Serial Number)	Display the mechanical engine serial number
	11	SetEng SN (Set Engine Serial Number)	Set the mechanical engine serial number when the EEPROM on the engine control board is replaced.
812*	**[TEL No. Setting]** Telephone No. Setting		
	1	Service	Sets the telephone number for a service representative. This number is printed on the Counter List, which can be printed with the user's "Counter" menu. This can be up to 16 characters (both numbers and alphabetic characters can be input).
	2	FAX TEL No.	Sets the fax or telephone number for a service representative by using the enter key and the down arrow key. *Both numbers and alphabetic characters can be input.*
816*	**[Remote Service]** *These settings are used for NRS*		
	1	I/F Setting	Selects the remote service setting. [0 or 2 / **2** / 1/step] 0: Off, 2: Network (The remote service function is on.)
	2	CE Call	Performs the CE Call at the start or end of the service. [0 or 1 / **0** / 1 /step] 0: Start, 1: End
	3	Function Flag	Enables or disables the remote service function. [0 or 1 / **0** / 1 /step] 0: Disabled, 1: Enabled
	6	Device Informati	Shows or does not show the device information call in the user tools mode. [0 or 1 / **0** / 1 /step] 0: Not displayed, 1: Displayed
	7	SSL Disable	Uses or does not use the RCG certification by SSL when calling the RCG. [0 or 1 / **0** / 1 /step] 0: Uses the RCG certification 1: Does no use the RCG certification
	8	RCG Connect Time	Specifies the timeout interval when calling the RCG. [1 to 90 / **10** / 1 second /step]
	9	RCG Write Timeou	Specifies the timeout interval when writing to the RCG. [1 to 100 / **60** / 1 second /step]
	10	RCG Read Timeout	Specifies the timeout interval when reading from the RCG. [1 to 100 / **60** / 1 second /step]
	11	Port 80 Enable	Enables or disables the access to the SOAP method via port 80. [0 or 1 / 0 / –] 0: Disabled, 1: Enabled

5	Mode No. (Class 1, 2, and 3)		Function / [Setting]
821*	**[Remote Service A]** Remote Service Address		
	1	CSS-PI Device Co	[0 ~ 4 / **0** / 1/step] **DFU**
	2	RCG IP Address (used for NRS)	Sets the IP address of the RCG (Remote Communication Gate). [00000000h ~ FFFFFFFFh / **00000000h** / 1/step]
824	**[NVRAM Upload]** NVRAM Data Upload		
			Uploads the UP and SP mode data (except for counters and the serial number) from the NVRAM to an SD card. *See the 5.4.5 about details.*
825	**[NVRAM Download]** NVRAM Data Download		
			Downloads the UP and SP mode data from an SD card to the NVRAM. *See the 5.4.5 about details.*
828*	**[Network]** Job spool settings/ Interface selection for Ethernet and wireless LAN		
	50	1284 Compatible	Switches Centronics IEEE1284 compatibility on/off for the network. [0 or 1 / **1** / -] 0: Disabled, 1: Enabled *Selecting "0" disables bi-directional data transmission.*
	52	ECP	Switches the ECP setting for Centronics off/on. [0 or 1 / **1** / -] 0: Disabled, 1: Enabled *With "1" selected, SP5-828-50 must be enabled for 1284 mode compatibility.*
	65	Job Spool	Switches the job spool on/off. [0 or 1 / **0** / -] 0: Disabled, 1: Enabled
	66	HD job Clear	Selects the treatment of the job when a spooled job exists at power on. [0 or 1 / **1** / -] 0: OFF (Data is cleared.) **1: ON (Automatically printed)**
	69	Job Spool (Protocol)	Switches job spooling off or on and enables settings for job spooling protocols. [0 to 1 / **1** / 1/step] 0: Off, 1: On Bit switch: • Bit 0: LPR • Bit 1: FPT • Bit 2: IPP • Bit 3: SMB • Bit 4: Not used. • Bit 5: DIPRINT • Bits 6 and 7: Reserved
	84	Print Settings List	Prints a list of NCS related parameters.
	90	TELNET	Enables or disables the Telnet protocol. [0 or 1 / **1** / –] 0: Disabled, 1: Enabled
	91	Web	Enables or disables the Web monitor. [0 or 1 / **1** / 1/step] 0: Disabled, 1: Enabled

5	Mode No. (Class 1, 2, and 3)		Function / [Setting]
832	**[HDD Init.]** HDD Initialization		
	1	HDD Init.	Initializes the hard disk. *Use this SP mode only for hard disk error recovery.*
839*	**[IEEE1394]**		
	4	Host Name	Shows the 1394 host name. [Text up to 64 bytes / **NULL** / – /step]
	7	Cycle Master	Turns the cycle master function on/off. [0 or 1 / **1** / 1 /step] 0: OFF, 1: ON
	8	BCR mode	Selects either 'Standard', 'IRM Color Copy', or '**Always Effective**'.
	9	IRM 1394a Check	Turns the IRM 1394a check on/off. [0 or 1 / **0** / -] 0: OFF, 1: ON *If the IRM is not defined as 1394a standard, its node is used as IRM.*
	10	Unique ID	[0 or 1 / **1** / -] 0: OFF, 1: ON
	11	Logout	Prevents initiators from logging on, or, makes initiators log off. [0 or 1 / **1** / -] 0: OFF (Prevents the initiators, having already logged on, to log on if they try to log on.) 1: ON (Makes initiators, having already logged on, to log off if they try to log on.)
	12	Login	Allows/disallows an initiator to exclusively log on. [0 or 1 / **0** / -] 0: OFF (Disallows), 1: ON (Allows)
	13	Login MAX	Specifies the maximum initiators able to log on. [0 ~ 63 / **8** / 1 /step]
840*	**[IEEE802.11b]**		
	6	Channel Max	Sets the maximum value for the wireless LAN channel adjustment. **DFU** [1 ~ 11 or 13 / **13** / 1 /step] Europe/Asia: 1 to 13 USA: 1 to 11 **NOTE:** Do not change the setting, or the machine may be out of compliance with local regulations.
	7	Channel Min	Sets the minimum value for the wireless LAN channel adjustment. **DFU** [1 ~ 11 or 13 / **1** / 1 /step] Europe/Asia: 1 to 13 USA: 1 to 11 **NOTE:** Do not change the setting, or the machine may be out of compliance with local regulations.

5	Mode No. (Class 1, 2, and 3)		Function / [Setting]
840*	11	WEP key number	Selects the WEP key. [00 ~ 11 / **00** / 1 binary] 00: Key #1 01: Key #2 (Reserved) 10: Key #3 (Reserved) 11: Key #4 (Reserved)
842*	**[NFA analysis]** Net File Application Analysis **DFU**		
			Default: **00000000** – do not change Netfiles: Jobs to be printed from the document server using a PC and the DeskTopBinder software
844*	**[USB]** USB settings		
	1	Transfer Rate	Adjusts the USB transfer rate. [0 or 1 / **0** / 1/step] 0: **Auto Change** 1: Full speed *Do not change the setting unless there is a data transfer error using the USB high speed mode.*
	2	Vendor ID	Displays the vendor ID. **DFU**
	3	Product ID	Displays the product ID. **DFU**
	4	Dev Release Num	Displays the development release version number. **DFU**
845*	**[Delivery Srv]** Delivery Server		
	3	Retry Interval	Specifies the retry interval. [60 ~ 900 / **300** / 1 second/step]
	4	No. of Retries	Specifies the maximum number of retries. [0 ~ 99 / **3** / 1/step]
846*	**[UCS Setting]**		
	3	Maximum Entries	Displays the number of maximum entries.
	50	Init All Dir	Initializes all address information data except the administration account.
848*	**[Web Service]**		
	4	ac: ud	Enables or disables the udirectory access limitation. 0000: Disabled, 0001: Enabled
	11	ac: dm	Enables or disables the device management access limitation. 0000: Disabled, 0001: Enabled
856	**[Remote Update]**		
	2	Local Port	Allows the technician to update the firmware with a parallel cable. [0 or 1 / **0** / 1/step] 0: disable, 1: enable
857*	**[Save Debug Log]**		
	1	On/ Off	Enables or disables the debug log saving function. [0 or 1 / **0** / 1/step] 0: OFF, 1: ON
	2	Target	Sets the storage location for the debug log. [2 or 3 / **2** / 1/step] 2: HDD, 3: SD
	5	Save to HDD	Sets the key number of the debug log.
	6	Save to SD	Sets the key number of the debug log.
	9	HDD to SD (4MB)	Copies the most recent 4 MB of the debug log from the hard disk to the SD card.

5	Mode No. (Class 1, 2, and 3)		Function / [Setting]
857*	10	HDD to SD (Any)	Sets the key number of the debug log copied from the hard disk to the SD card.
	11	Erase HDD Log	Deletes the debug log from the hard disk.
	12	Erase SD Log	Deletes the debug log from the SD card.
	13	Free Space on SD	Shows the free space on the SD card.
	14	SD to SD (4MB)	Copies the most recent 4 MB of the debug log from an SD card to a different SD card.
	15	SD to SD (Any)	Sets the key number of the debug log copied from an SD card to a different SD card.
	16	Make HDD Log File	Makes a log file on the HDD to save debug logs. To save debug logs, the controller makes a log file first, then writes data in the file. (This procedure can take a long time). The user can switch off the main power switch before the log is written in the file. To prevent this possible problem, prepare a log file in advance. By doing this, the controller uses less time to save logs because the log file is prepared.
	17	Make SD Log File	
858*	**[Debug Save When]**		
	1	Engine SC Error	Saves debug logs to the specified location with SP 5857 2 when an engine-related SC code occurs. [0 or 1 / **0** / 1/step] 0: OFF, 1: ON
	2	System SC Error	Saves debug logs to the specified location with SP 5857 2 when a controller-related SC code occurs. [0 or 1 / **0** / 1/step] 0: OFF, 1: ON
	3	Any SC Error	Sets the SC code whose log is saved. [00000 to 65535 / **0** / 1/step]
	4	Jam	Saves debug logs to the specified location with SP 5857 2 when a paper jam occurs. [0 or 1 / **0** / 1/step] 0: OFF, 1: ON
859*	**[Log Save Key No.]**		
	1	Key 1	Sets the key number of a specific event (☛ NOTE) whose log is saved in the specified storage (☛ NOTE). When multiple key numbers are assigned, the logs are collected in this order: Key 1, Key 2, ..., Key 9, Key 10. **NOTE:** The event is set with SP5-857-2. The storage is set with SP5-858. [0000000 ~ 9999999 / **0** / 1/step]
	2	Key 2	
	3	Key 3	
	4	Key 4	
	5	Key 5	
	6	Key 6	
	7	Key 7	
	8	Key 8	
	9	Key 9	
	10	Key 10	
860*	**[SMTP/ POP3/ IMAP]**		
	2	SMTP Srv Port No	Adjusts the number of the SMTP server ports. [1 ~ 65535 / **25** / 1/step]
	3	SMTP Auth.	Enables or disables the SMTP authentication for mail transfers. [0 or 1 / **0** / 1/step] 0: Disable, 1: Enable

5	Mode No. (Class 1, 2, and 3)		Function / [Setting]
860*	6	SMTP Auth. Encryp	Encrypts or does not encrypt passwords for POP3/IMAP4 authentications. [0 ~ 2 / **0** / 1/step] 0: Automatic, 1: Not encrypt, 2: Encrypt
	7	POP before SMTP	Enables or disables the authentication that is executed on the POP server before the communication is established with the SMTP server to transfer mails. [0 or 1 / **0** / 1/step] 0: Disable, 1: Enable
	8	POP to SMTP Wait	Adjusts the waiting time to access the SMTP server after the authentication on the POP server. [0 ~ 10000 / **300** / 1 ms/step]
	9	Rcv Protocol	Sets the protocol for receiving e-mail. [0 ~ 2 / **0** / 1/step] 0: Not receive, 1: POP3, 2: IMAP4
	13	POP Auth. Encryption	Encrypts or does not encrypt passwords for POP3/IMAP4 authentications. [0 ~ 2 / **0** / 1/step] 0: Automatic, 1: Not encrypt, 2: Encrypt
	14	POP Srv Port No.	Adjusts the port number for the POP server. [1 ~ 65535 / **110** / 1/step]
	15	IMAP Srv Port No	Adjusts the port number for the IMAP4 server. [1 ~ 65535 / **143** / 1/step]
	17	Receive Interval	Adjusts the interval for receiving e-mail. [2 ~ 1440 / **3** / 1 minute/step]
	19	Mail Keep Sett.	Sets the method to keep e-mail on the server. [0 ~ 2 / **0** / 1/step] 0: Not keeping 1: Keeping All 2: Keeping the only error e-mail
	20	Part. Mail Rcv Tm	Adjusts the time to keep partial e-mails. These emails get deleted if the partial e-mails are not received during the set time. [1 ~ 168 / **72** / 1 h/step]
	21	MDN Res RFC2298	Uses or does not use the RFC2298 standard when transmitting the MDN response mail. [0 or 1 / **1** / -] 0: Not use the RFC2298 standard. 1: Use the RFC2298 standard.
	22	SMTP From Replace	Determines whether the FROM item of the mail header is switched to the validated account after the SMTP server is validated. [0 or 1 / **0** / 1/step] 0: No. “From” item not switched, 1: Yes. “From” item switched.

5	Mode No. (Class 1, 2, and 3)		Function / [Setting]
860*	25	SMTP Auth Direct	Selects directly the way of SMTP authentication if all SMTP authentications fail due to the error in the SP5-860-6. *This SP is activated only when SP 5860 3 is set to "Enable".* Bit switch 0: LOGIN Bit switch 1: PLAIN Bit switch 2: CRAM MD5 Bit switch 3: DIGEST MD Bit switch 4 - 7: Not used
866*	**[E-Mail Alert]**		
	1	Notice Func E-Ma	Enables or disables the alert notice function by e-mail. [0 or 1 / **0** / 1/step] 0: Off, 1: On
	5	Add Date Field	Enables or disables the add the date field on the alert notice e-mail. [0 or 1 / **0** / 1/step] 0: Off, 1: On
869*	**[RAM Disk Setting]**		
	1	Mail Function	Enables or disables the e-mail transfer function. This SP sets the RAM disk size for the e-mail transfer function. [0 or 1 / **0** / 1/step] 0: ON, 1: OFF
870	**[Common Key Info W]** Common Key Information Writing		
	1	Writing	Writes the authentication data (used for NRS) to the memory.
	3	Initialize	Initializes the authentication data in the memory.
873	**[SD Card Appli Move]**		
	1	Move Exec	☛ 5.5.2
	2	Undo Exec	☛ 5.5.3
886*	**[ROM update]**		
	1	ROM update	[0 or 1 / **0** / 1 /step] **DFU** 0: Yes, 1: No
907*	**[Plug/Play] Plug and Play**		
	1	Plug/Play	Specifies the Plug and Play setting. [0 ~ 4 / **0** / 1 /step] • *0: Ricoh Aficio CL3500N* • *1: SAVIN CLP22* • *2: GES C7521n* • *3: NRG C7521n* • *4: LANIER LP222cn/LP221c*

5	Mode No. (Class 1, 2, and 3)		Function / [Setting]
917 #	**[Printable Area]**		
	1	Extended	Enlarges the width of the printable area. The sides of images are sometimes not printed even if "Wide-A4" is selected with PCL. Set this SP mode to 1 to enlarge the printable area, but the quality of the image will be slightly poorer. [0 or 1 / **0** / –] 0: No, 1: Yes
920 #	**[Pre Heat Mode]**		
	1	Pre Heat Mode	This feature warms the fusing belt when in standby mode to reduce the first page print time. [0 or 1 / **1** / –] 0: Off, 1: ON
930*	**[Meter Charge]**		
	1	On/Off	Enable or disable meter-charge mode. **Important:** Turn the main switch off/on after changing this setting. On: Enabled OFF: Disabled **Meter charge mode enabled:** • "Replace Maintenance Kit" is <u>not</u> shown on the operation panel when the PM counter runs out (the technician replaces the maintenance kit items) • The meter charge counter is shown immediately after the Menu key is pressed. • The technician must reset the PM counter after replacing the fusing unit. **Meter charge mode disabled:** • "Replace Maintenance Kit" is displayed on the operation panel when the PM counter runs out (the user replaces the maintenance kit items) • The meter charge counter is not shown when the Menu key is pressed. • The PM counter resets automatically after the user replaces the fusing unit.
	2	MenteStyle (Maintenance Style)	Selects "**Year Contract** / Click Charge / M-Pac".

5	Mode No. (Class 1, 2, and 3)		Function / [Setting]
945*	**[PlainPaperType]**		
	1	Bypass tray	Defines whether a tray contains “normal” or “thin” paper, when the user tool setting for the tray is set to “plain”. [0 or 1 / **1** / 1 /step] *0: Yes (Thin)* *1: Normal* *The user tool setting defines whether each tray contains “normal”, thin, or OHP. SP 5945 defines what “normal” means for each tray (either “normal” or “thin”).* *The paper thickness terminology reflects Japanese market conditions.* *Normal (plain): Use this for thin paper* *Middle thick: Use this for normal paper* *Thick: Use this for paper heavier than 105 g/m^2 (28 lb)*
	2	Tray 1	
	3	Tray2	
	4	Tray3	
946	[EnvelopeType]		
	1	Bypass Tray	Selects the default envelope type from "**Envelope 1** (default)" or "Envelope 2".
950	**[Exit Tray Full]**		
	1	Print Action	Selects where the printing stops or does not stop when the exit tray full sensor detects paper full. [0 or 1 / **0** / 1 /step] 0: Stop, 1: Continue
990*	**[SP Print Mode]**		
	1	All (Data List)	Does SP 5990 2, 4, 5, 6, and 7.
	2	SP (Mode Data List)	Prints an SMC report on all SP modes.
	4	Logging Data	Prints an SMC report on the SPs that save logs.
	5	Diagnosic Report	Prints the Self-Diagnosis Report.
990*	6	Non-Default	Prints an SMC report on the SPs that have settings, which are different from the defaults.
	7	NIB Summary	Prints the network configuration report.
991	**[Jam OFF]** Jam ON/OFF		
	1	Jam OFF	Executes the no Jam detection function mode. This SP is reset when you turn off the main power.
992	**[Supply Alert]** Supply Alert Setting		
	Selects the near end alert timing for each maintenance unit.		
	1	PC (PCU)	[1 ~ 3 / **2** / 1 /step] 1: Earlier (Near end message shows earlier than the specified timing.) 2: Default (Near end message shows at a specified timing.) 3: Nearly Limit (Near end message shows later than the specified timing.)
	2	TC (Toner cartridge)	
	3	AU (Transfer belt)	
	4	FSR (Fusing unit)	
993	**[Line Adj.]** Line Point Adjustment		
	1 #	Timing(pages)	The automatic line position adjustment is done after printing the number of pages that is set with this SP. [0 ~ 2000 / **250** / 1/page] **NOTE:** 0: Never done
	2	Manual	Use to make a line position adjustment.

5	Mode No. (Class 1, 2, and 3)		Function / [Setting]
994	**[Eng Err Stat]** Engine Error Status		
	1	(7) 00000000 (0)	Display the engine error status. Bit 7: The fuse did not blow after installing a new PCU(K) Bit 6: The fuse did not blow after installing a new PCU(YMC) Bit 5: By-pass tray and duplex unit motor error Bit 4: The color registration sensor cannot be calibrated. Bit 3: Cannot measure the color registration sensor value. Bit 2: Cannot correct the color registration. Bit 1: PCU(YMC) home position error. Bit 0: Not used
995 #	**[Skew Adj.]** Skew Adjustment		
	1	Skew Adj.	Select color skew correction ON or OFF. [0 or 1 / **1** / -] 0: Off, 1: On
996	**[Engine Print]**		
	1	Composite Line	Prints the engine pattern to check the color registration, vertical line or four solid colors.
	2	Streaks Check	
	3	4C Single Solid	
997*	**[Eng Control Type]** Engine Control Type		
	1	Eng Control Type	Displays the engine type. **DFU** [0 or 1 / **1** / -] 0: Rated voltage, 1: Rated current
998	**[ENG Mem Clear]** Engine Memory Clear		
	2	Color Mis-Reg	Clears the correction values for the color registration. Do this SP mode after replacing the color registration board. The correction values are set after the main power has been turned on.
	3	PJ Counter	Clear the P/J counter.

SP7-XXX (Data Log)

7	Mode No. (Class 1, 2, and 3)		Function / [Setting]
401*	**[SC Counter]**		
	1	SC Counter	Shows how many times SC codes have been output. [0 ~ 9999 / **0** / 0 time/step]
502*	**[Total Jam]**		
	1	Total Jam	Shows the total number of jams detected. [0 ~ 9999 / **0** / 0 /step]
504*	**[Jam Location]**		
	Displays the number of jams according to the location where they were detected. [0 ~ 9999 / **0** / 0 /step]		
	1	Initial	Paper is not fed at power on.
	19	Fuser : OFF1	Paper arrives at the fusing exit sensor and then goes back to the fusing unit.
	20	Fuser : OFF2	Paper does not pass the fusing exit sensor.
	24	PaperSizeErr (Paper Size Error)	The registration sensor recognized that paper was too short.
	25	Tray 2: ON2	Paper does not pass the registration roller.
	26	Tray 3: ON2	Paper does not pass the registration roller.
	27	Duplex: ON	Paper does not get to the duplex unit sensor.
	32	Tray 1: ON1	Paper does not reach the registration sensor.
	33	Tray 2: ON1	Paper does not reach the gate sensor of tray 2.
	34	Tray 3: ON1	Paper does not reach the gate sensor of tray 3.
	35	Multi: ON1	Paper from the by-pass tray does not reach the registration sensor.
	36	Duplex: ON1	Paper does not reach the duplex unit sensor.
	37	Regist: ON1	Paper from the by-pass tray does not pass the registration roller.
	38	Regist: ON2	Paper from the tray 1, 2 or 3 does not pass the registration roller.
	39	Fuser: ON1	Paper from the by-pass tray does not reach the fusing exit sensor.
	40	Fuser: ON2	Paper from the tray 1, 2 or 3 does not reach the fusing exit sensor.
506*	**[Jam Paper Size]**		
	133	A4 SEF	Shows the number of jams according to paper size. [0 ~ 9999 / **0** / 1 /step]
	134	A5 SEF	
	142	B5 SEF	
	164	LG SEF	
	166	LT SEF	
	172	HLT SEF	
	255	Others	
803 #	**[PM Counter Displ]** PM Counter Display Shows the number of pages printed for each current maintenance unit.		
	1	Paper	**DFU**
	2	Page Total	Shows the total number of pages printed. [0 ~ 99999999 / **0** / 1 page]
	3	Page Mono	Shows the total number of monochrome pages printed. [0 ~ 99999999 / **0** / 1 page]
	4	PC(K) Page	Shows the number of pages calculated from drum rotation. [0 ~ 99999999 / **0** / 1 page]
	5	PC(YMC) Page	

7	Mode No. (Class 1, 2, and 3)		Function / [Setting]
803 #	6	Toner(K) Pixel	[0 ~ 9999999999 / **0** / 1/1024 pixel]
	7	Toner(C) Pixel	
	8	Toner(M) Pixel	
	9	Toner(Y) Pixel	
	10	Fusing Page	[0 ~ 99999999 / **0** / 1 page]
	11	Trans Page	Shows the number of pages calculated from the transfer belt rotation. [0 ~ 99999999 / **0** / 1 page]
804	**[PM Counter Clear]**		
	(Unit [Color])		
	1	Paper	**DFU**
	2	PC [K]	Clears the PM counter. Press the Enter key after the machine prompts "Execute?". The machine automatically detects that the new unit is installed when a unit is replaced. Then, the current PM counter value is automatically reset to "0".
	3	PC [YMC]	
	4	Fusing	Clears the PM counter.
	5	Transfer	
	6	Toner:Bk	
	7	Toner:C	
	8	Toner:M	
	9	Toner:Y	
805	**[TonerBotolInfo]** Toner Bottle Information		
	17	TonerRest:Bk	Shows how much toner remains in the bottle. [0 ~ 1 / **100** / 1 %]
	18	TonerRest:C	
	19	TonerRest:M	
	20	TonerRest:Y	
807	**[SC/Jam Clear]**		
	1	SC/Jam Clear	Clears the counters related to SC codes and paper jams.
832*	**[Diag. Result]** Diagnosis Result		
	1	Diag. Result	Shows the result of the diagnostics. Refer to section 4.2 for the error codes.
833 #	**[Coverage]** Pixel Coverage Ratio		
	1	Last: Bk	**Shows the pixel coverage ratio for each color of the last output.** [0 ~ 100.00 / - / 0.01 %/step]
	2	Last: C	
	3	Last: M	
	4	Last: Y	
	5	Average: Bk	Shows accumulated average value of pixel coverage ratio for each color. [0 ~ 100.00 / - / 0.01 %/step]
	6	Average: C	
	7	Average: M	
	8	Average: Y	
834 #	**[P/J Count]** Paper per Job Counter		
	1	1 Page	Shows the number of printed pages with each job command. [0 ~ 99999999 / **0** / 1 page/step]
	2	2 Page	
	3	3 Page	
	4	4 Page	
	5	5 Page	
	6	6–10 Page	
	7	11–20 Page	
	8	21– Page	
	9	Dplx 2 Page	Shows the number of duplex printed pages with each job

7	Mode No. (Class 1, 2, and 3)		Function / [Setting]
834 #	10	Dplx 4 Page	command. [0 ~ 99999999 / **0** / 1 page/step]
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.
	2	# of Lines (Number of lines)	
	3	Location	
905 #	**[Alert Display]**		
	51	PC(K) Page	Shows the threshold of the number of pages for the alert display for each maintenance unit.
	52	PC(YMC) Page	
	53	TC(K) starter	
	54	TC(K) option	
	55	TC(3C) starter	
	56	TC(3C) opt 3K	
	57	TC(3C) opt 6K	
	58	Fusing Page	
	60	Trans Page	
910	**[ROM No]** ROM Number Display		
	1	System	Shows the part number.
	18	NIB	
	131	Bluetooth	
	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)	
	162	PDF	
	163	BMLinks	
	180	FONT	
	181	FONT1	
	182	FONT2	
	183	FONT3	
	200	Factory	
	202	Net File	
	204	Printer	
	209	Test Suite	
	210	MIB	
	211	WebSystem	
911	**[Firmware Ver.]** Firmware Version display		
	1	System	Shows the firmware version.
	18	NIB	
	131	Bluetooth	
	150	RPCS	
	151	PS	
	152	RPDL	
	153	R98	

7	Mode No. (Class 1, 2, and 3)		Function / [Setting]
911	154	R16	Shows the firmware version.
	155	RPGL	
	156	R55	
	157	RTIFF	
	158	PCL	
	159	PCLXL	
	160	MSIS	
	161	MSIS (OPTION)	
	162	PDF	
	163	BMLinks	
	180	FONT	
	181	FONT1	
	182	FONT2	
	183	FONT3	
	200	Factory	
	202	Net File	
	204	Printer	
	209	Test Suite	
	210	MIB	
	211	WebSystem	
950	**[Page Count]**		
#	1	PC(K) Page	Shows the number of pages for each PCU.
	2	PC(YMC) Page	
	3	Toner(K) Page	Shows the number of pages for each toner bottle.
	4	Toner(C) Page	
	5	Toner(M) Page	
	6	Toner(Y) Page	
	7	Trans Page	Shows the number of pages for the transfer belt unit.
	8	WTB Page	Shows the number of pages for the toner correction bottle.

SP8-XXX (Data Log 2)

The counters in Data Log 2 are commonly used in multiple machines. Data Log 2 includes the counters of the functions or units that are not supported by this machine. The counters in Data Log 2 are cleared by SP 5801 (Memory Clear) or SP 7808 (Counter Reset).

Keys and abbreviations in Data Log 2

- **Program-related keys and abbreviations**

T: The grand total of the counters of all application programs

P: The counter of the printer application program excluding the events related to the document server

O: The counter of other application programs including remote application programs

8001	**[T: 1–0–01]**	*CTL	Total jobs
8004	**[P: 1–0–01]**	*CTL	
	The number of times the application program starts a job [0~9999999/ **0** / 1]		

- Jobs interrupted by paper jams or some other errors are also counted.
- Jobs executed by SPs are not counted.

8021	**[T: 1–0–03]**	*CTL	Print job / Local storage; document server
8024	**[P: 1–0–03]**	*CTL	
8027	**[O: 1–0–03]**	*CTL	
	The number of times the application program stores data on the document server [0~9999999/ **0** / 1]		

- When images stored on the document server by a network application (including Palm 2), are printed with another application, the O: counter increments.

8031	**[T: 1–0–04]**	*CTL	Print job/ Designated application program
8034	**[P: 1–0–04]**	*CTL	
8037	**[O: 1–0–04]**	*CTL	
	The number of times the application program retrieves data from the document server [0~9999999/ **0** / 1]		

- When documents already stored on the document server are printed, the counter of the application program that executes the print job increases.

8061	**[T: 1–0–07]**	*CTL	Finish, post-print processing jobs
8064	**[P: 1–0–07]**	*CTL	
8067	**[O: 1–0–07]**	*CTL	
	The number of times the application program uses the finisher [0~9999999/ **0** / 1]		
001	Sort	The number of times the application program starts the sort mode	
002	Stack	The number of times the application program starts the tack mode	
003	Staple	The number of times the application program starts the staple mode	
004	Booklet	The number of times the application program starts the booklet mode **NOTE:** The counter of the staple mode (003) can also increase.	
005	Z-Fold	The number of times the application program starts the Z-fold mode **NOTE:** The booklet mode is not included.	
006	Punch	The number of times the application program starts the punch mode **NOTE:** The counter of the printer application program (P:) can also increase.	
007	Other	(Reserved)	

8071	**[T: 1–0–08]**	*CTL	Jobs/ Pages
8074	**[P: 1–0–08]**	*CTL	
8077	**[O: 1–0–08]**	*CTL	
	The number of jobs that try to output a specific number of pages [0~9999999/ **0** / 1]		

-001	1 Page	-008	21~50 Pages
-002	2 Pages	-009	51~100 Pages
-003	3 Pages	-010	101~300 Pages
-004	4 Pages	-011	301~500 Pages
-005	5 Pages	-012	501~700 Pages
-006	6~10 Pages	-013	701~1000 Pages
-007	11~20 Pages	-014	1001~ Pages

- Jobs interrupted by paper jams or some other errors are also counted.
- Job is suspended and restarted later, the job is seen as one job.

8381	**[T: 2–2–01]**	*CTL	Total print pages
8384	**[P: 2–2–01]**	*CTL	
8387	**[O: 2–2–01]**	*CTL	
	The number of sheets that the application program tries to print (excluding the pages printed in the SP mode) [0~9999999/ **0** / 1]		

- The following pages are not counted as printed pages:
  - Blank pages in a duplex printing job
  - Blank pages inserted as document covers, chapter title sheets, and slip sheets
  - Reports printed to confirm counts
  - All reports done in the service mode (service summaries, engine maintenance reports, etc.)
  - Test prints for machine image adjustment
  - Error notification reports
  - Partially printed pages as the result of a printer jam

8391	**[T: 2–2–02]**		
	Large size print pages	*CTL	The number of sheets printed on A3/DLT and larger sizes [0~9999999/ **0** / 1]

8411	**[T: 2–2–04]**		
	Prints/Duplex	*CTL	The number of sheets used in duplex printing [0~9999999/ **0** / 1]

- The counter increases by +1 when both sides (front/back) are printed. The counter does not increase when one of the two sides is not printed (e.g., the last page of the documents that have three pages, five pages, seven pages, and so on).

8421	**[T: 2–2–05]**	*CTL	Print pages/ Duplex printing combine
8424	**[P: 2–2–05]**	*CTL	
8427	**[O: 2–2–05]**	*CTL	
	The number of sheets used in binding and combining [0~9999999/ **0** / 1]		
001	Simplex> Duplex	*CTL	
004	Simplex Combine	*CTL	
005	Duplex Combine	*CTL	
006	2>	*CTL	2 pages on 1 side (2-Up)
007	4>	*CTL	4 pages on 1 side (4-Up)
008	6>	*CTL	6 pages on 1 side (6-Up)
009	8>	*CTL	8 pages on 1 side (8-Up)
010	9>	*CTL	9 pages on 1 side (9-Up)
011	16>	*CTL	16 pages on 1 side (16-Up)
012	Booklet	*CTL	
013	Magazine	*CTL	

- These counters let users know how much paper they have saved.
- Partially printed sheets are also counted as 1 page (e.g, the last page in the 4-Up mode is only partially printed when the documents have 5, 6, or 7 pages, 9, 10, or 11 pages, 13, 14, or 15 pages, and so on.).
- The following is a summary of how the counters work in the booklet and magazine modes.

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

8431	**[T: 2–2–06]**	*CTL	Print pages/ Image editing performed on the original with the copier GUI
8434	**[P: 2–2–06]**	*CTL	
8437	**[O: 2–2–06]**	*CTL	
	The number of pages that the application program handles in a specific way [0~9999999/ **0** / 1]		
001	Cover/Slip Sheet	*CTL	The number of cover sheets or slip sheets inserted **NOTE:** A duplex-printed cover is counted as two.
002	Series/Book	*CTL	The number of pages printed in series (one side) or in the booklet mode
003	User Stamp	*CTL	The number of pages where stamps were applied (including page numbering and date stamping)

8441	**[T: 2–2–07]**	*CTL	Print pages/ Paper size		
8444	**[P: 2–2–07]**	*CTL			
8447	**[O: 2–2–07]**	*CTL			
	The number of sheets of a specific paper size that the application program uses [0~9999999/ **0** / 1]				
001	A3		007	LG	
002	A4		008	LT	
003	A5		009	HLT	
004	B4		010	Full Bleed	
005	B5		254	Other (Standard)	
006	DLT		255	Other (Custom)	

- These counters do not distinguish between LEF and SEF.

8451	**[2–2–08]**	*CTL	Print pages/ Paper tray
	The number of sheets fed from a specific tray [0~9999999/ **0** / 1]		
8451 001	Bypass Tray	*CTL	By-pass Tray
8451 002	Tray 1	*CTL	Printer
8451 003	Tray 2	*CTL	Paper Tray Unit/LCT (Optional)
8451 004	Tray 3	*CTL	Paper Tray Unit (Optional)
8451 005	Tray 4	*CTL	(Not used)
8451 006	Tray 5	*CTL	(Not used)
8451 007	Tray 6	*CTL	(Not used)
8451 008	Tray 7	*CTL	(Not used)
8451 009	Tray 8	*CTL	(Not used)
8451 010	Tray 9	*CTL	(Not used)

8461	**[T: 2–2–09]**	*CTL	Print pages/ Paper type		
8464	**[P: 2–2–09]**	*CTL			
	The number of sheets of specific paper types [0~9999999/ **0** / 1]				
001	Normal		005	Normal (Back)	
002	Recycled		006	Thick (Back)	
003	Special		007	OHP	
004	Thick		008	Other	

- These counters increase when the paper is output. On the other hand, the PM counter increases (to measure the service life of each feed roller) when the paper is fed.
- Blank sheets (covers, chapter covers, slip sheets) are also counted.
- During duplex printing, a sheet printed on two sides and a sheet printed on one side are both counted as 1.

8471	**[2–2–10]**	*CTL	Print pages/ Magnification
	The number of pages magnified or reduced [0~9999999/ **0** / 1]		
8471 001	~49%	8471 004	101%~200%
8471 002	50%~99%	8471 005	201% ~
8471 003	100%		

- Some application programs (on the computer) can specify the magnification setting of the printer driver (e.g., MS Excel). In a case like this, SP 8471 recognizes the setting and increases the corresponding counter. Other application programs can magnify or reduce the print images on their own. In this condition, SP 8471 does not recognize the magnification setting of the application programs and increase the counter of 100%.
- Magnification adjustment conducted on the document server is not counted.
- Blank cover sheets and slip sheets are regarded as 100%.

8481	**[T: 2–2–11]**	*CTL	Print pages/ Toner save
8484	**[P: 2–2–11]**	*CTL	
	The number of pages printed with the toner save feature activated [0~9999999/ **0** / 1]		

- These counters show the same result.

8501	**[T: 2–2–12]**	*CTL	Print pages/ Color mode
8504	**[P: 2–2–13]**	*CTL	
	The number of pages printed in a specific color mode [0~9999999/ **0** / 1]		
001	B/W	003	Full Color
002	Single Color		

8511	**[T: 2–2–14]**	*CTL	Print pages/ Emulation
8514	**[P: 2–2–14]**	*CTL	
	The number of pages printed by the printer emulation mode [0~9999999/ **0** / 1]		
001	RPCS	008	RTIFF
002	RPDL	009	PDF
003	PS3	010	PCL5e/5c
004	R98	011	PCL XL
005	R16	012	IPDL-C
006	GL/GL2	013	BM-Links (for local models only)
007	R55	014	Other

- These counters show the same result.

8521	**[T: 2–2–15]**	*CTL	Print pages/ Finish post-print processing
8524	**[P: 2–2–15]**	*CTL	
	The number of pages processed by the finisher [0~9999999/ **0** / 1]		
001	Sort	005	Z-Fold
002	Stack	006	Punch
003	Staple	007	Other
004	Booklet		

- All pages get counted (including unstapled pages) even if the pages are more than the finisher can staple.
- The stapling counter (003) increases by +1 when the paper is transported from the printer to the tray of the finisher. Counter (003) increases even if a paper jam occurs on this path. If the same job is done again, the counter (003) also increases again.

8531	**[T: 2–2–16]**	*CTL	Staples
	The number of staples [0~9999999/ **0** / 1]		
8581	**[T: 2–2–23]**	*CTL	Total counter
	The number of outputs in a specific color mode [0~9999999/ **0** / 1]		
001	Total	010	Total: Color
002	Total: Full Color	011	Total: B/W
003	B&W/Single Color	012	Full Color: A3
004	Development: CMY	013	Full Color: ~B4
005	Development: K	014	Full Color Prin
008	Print: Color	015	Mono Color Prin
009	Print: B/W		

8584	**[P: 2–2–23]**	*CTL	Print counter
	The number of outputs in a specific color mode [0~9999999/ **0** / 1]		
8584 001	B/W	8584 003	Full Color
8584 002	Single Color		

8591	**[O: 2–2–23]**	*CTL	Other counter
	The number of A3/DLT, duplex printing, or staples [0~9999999/ **0** / 1]		
8591 001	A3/DLT	8591 001	Staple
8591 001	Duplex		

- Note that these counters are not for the printer application program.

8771	[3–0–01]	*CTL	Development counter
	The number of rotations of the development rollers [0~9999999/ **0** / 1]		
8771 001	Total	8771 004	M
8771 002	K	8771 005	C
8771 003	Y		

8801	[3–0–05]	*CTL	Toner remain
8801 001	K	*CTL	The percentage of the remaining toner [0~100/ **0** / 1/%]
8801 001	Y	*CTL	
8801 001	M	*CTL	
8801 001	C	*CTL	

8831	**[Coverage]** Coverage Display (Average, [Color])		
8831 001	Average: [K]	*EGB	The average coverage [0~100/ **0** / 0.01]
8831 002	Average: [Y]	*EGB	
8831 003	Average: [M]	*EGB	
8831 004	Average: [C]	*EGB	

8841	**[Coverage]** Coverage Display (Last Page, [Color]) L: Last Page		
8841 001	Last: [K]	*EGB	The coverage of the latest print [0~100/ **0** / 0.01]
8841 002	Last: [Y]	*EGB	
8841 003	Last: [M]	*EGB	
8841 004	Last: [C]	*EGB	

- SP8-841 displays the image coverage ratio for each color of the last output. 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. Note that 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.

8902	**[PM Count PREV1]** PM Counter Previous1 Setting Clear		
8902 001	PC(K)		Clear the last PM counter of the PCU (K).
8902 002	PC(YMC)		Clear the last PM counter of the PCU (YMC).

8903	**[Page Count PREV1]** PM Counter Previous1 Setting Clear		
8903 001	PC(K)		Clear the last page counter of the PCU (K).
8903 002	PC(YMC)		Clear the last page counter of the PCU (YMC).

8912	**[PM Count PREV2]** PM Counter Previous2 Setting Clear		
8912 001	PC(K)		Clear the last PM counter of the PCU (K) but one.
8912 002	PC(YMC)		Clear the last PM counter of the PCU (YMC) but one.

8913	**[Page Count PREV2]** PM Counter Previous2 Setting Clear		
8913 001	PC(K)		Clear the last page counter of the PCU (K) but one.
8913 002	PC(YMC)		Clear the last page counter of the PCU (YMC) but one.

8941	**[3–6–01]**	*CTL	Machine status
	The amount of time the machine spends in a specific mode [0~9999999/ **0** / 1]		
8941 001	Operation Time	*CTL	The engine is operating. The counter does not include the time when the data is being saved in the HDD (while engine is not operating).
8941 002	Standby Time	*CTL	The engine is not operating. The counter includes the time when the data is being saved in the HDD. The counter does not include the time when the machine is n the Energy Saver Mode, the Low Power Mode, or the Off Mode.
8941 003	Energy Save Time	*CTL	The machine is in the Energy Saver Mode. The counter includes the time when the background printing is being executed.
8941 004	Low Power Time	*CTL	The machine is in the Low Power Mode. The counter includes the time when the engine is on in the Energy Saver Mode. The counter also includes the time when the background printing is being executed.
8941 005	Off Mode Time	*CTL	The machine is in the Off Mode. The counter includes the time when the background printing is being executed. The counter does not include the time when the main power switch is off.
8941 006	Down Time/SC	*CTL	The total downtime caused by SC codes
8941 007	Down Time/PrtJam	*CTL	The total downtime caused by paper jams
8941 008	Down Time/OrgJam	*CTL	The total downtime caused by original jams
8941 009	Down Time/TonEnd	*CTL	The total downtime caused by toner ends

5.3.2 INPUT CHECK TABLE

When entering the Input Check mode, 8 digits show the result for a section. Each digit corresponds to a different device as shown in the table.

Bit No.	7	6	5	4	3	2	1	0
Result	0 or 1	0 or 1	0 or 1	0 or 1	0 or 1	0 or 1	0 or 1	0 or 1

SP5-803 -XXX	Bit	Description	Reading	
			0	1
1	**[Tray 1 Paper] Paper End Sensor (Tray 1)**			
	0	Paper End Sensor	Paper detected	Paper end
2	**[Regist] Registration Sensor**			
	0	Registration Sensor	Paper detected	No paper
3	**[Paper Tray 1] Cassette Sensor (Tray 1)**			
	0	Tray set	Not set	Set
	1	Paper Size Switch 1	See Table 1. 1: Pushed	
	2	Paper Size Switch 2		
4	**[By-pass Paper] By-pass Paper Sensor**			
	0	By-pass Paper Sensor	No paper	Paper detected
5	**[By-pass Home] By-pass Home Position Sensor**			
	0	By-pass Home Position Sensor	Not home position	Home position
6	**[Tray 2 Paper] Paper End Sensor (Tray 2)**			
	0	Paper End Sensor	Paper detected	Paper end
7	**[Tray 2 Jam] Jam Sensor (Tray 2)**			
	0	Jam Sensor	Paper detected	No paper
8	**[Paper Tray 2] Cassette Sensor (Tray 2)**			
	0	Tray set	Not set	Set
	1	Paper Size Switch 1	See Table 1. 1: Pushed	
	2	Paper Size Switch 2		
9	**[Tray 3 Paper] Paper End Sensor (Tray 3)**			
	0	Paper End Sensor	Paper detected	Paper end
10	**[Tray 3 Jam] Jam Sensor (Tray 3)**			
	0	Jam Sensor	Paper detected	No paper
11	**[Paper Tray 3] Cassette Sensor (Tray 3)**			
	0	Tray set	Not set	Set
	1	Paper Size Switch 1	See Table 1. 1: Pushed	
	2	Paper Size Switch 2		
12	**[P Exit Full] Exit Paper Full Sensor**			
	0	Exit Paper Full Sensor	Not full	Paper full
13	**[Paper Exit] Exit Sensor**			
	0	Exit Sensor	Paper detected	No paper
14	**[Dpx Jam] Duplex Jam Sensor**			
	0	Duplex Jam Sensor	Paper detected	No paper
15	**[Dpx Unit] Duplex Unit Sensor**			
	0	Duplex Unit Sensor	No unit	Duplex unit detected
16	**[Fusing JAM] Fusing Exit Sensor**			
	0	Fusing Exit Sensor	Paper detected	No paper
17	**[Fusing Roller] Fusing Roller Rotation Sensor**			
	0	Fusing Roller Rotation Sensor	Not rotating	Rotating

SP5-803 -XXX	Bit	Description	Reading	
			0	1
18	**[F Temp. Center] Fusing Temperature (Center)**			
	0-7	Fusing Temperature	Data range: 0 to 250, Unit: 1°C	
19	**[F Temp. Left] Fusing Temperature (Side)**			
	0-7	Fusing Temperature	Data range: 0 to 250, Unit: 1°C	
20	**[WstToner Full] Waste Toner Full Sensor**			
	0	Waste Toner Full Sensor	Not full	Near full
21	**[Toner Empty[Y]] Toner Empty Sensor (Y)**			
	0	Toner Empty Sensor (Y)	Empty	Not empty
22	**[Toner Empty[M]] Toner Empty Sensor (M)**			
	0	Toner Empty Sensor (M)	Empty	Not empty
23	**[Toner Empty[C]] Toner Empty Sensor (C)**			
	0	Toner Empty Sensor (C)	Empty	Not empty
24	**[Toner Empty[K]] Toner Empty Sensor (K)**			
	0	Toner Empty Sensor (K)	Empty	Not empty
25	**[Front/SideDoor] Front/Side Door Switch**			
	0	Front/Side Door Switch	Open	Closed
26	**[Toner Door] Top Cover Switch**			
	0	Top Cover Switch	Open	Closed
27	**[Mis-regist. 1] Color Registration Sensor 1**			
	0-10	Color Registration Sensor 1	Data range: 0 to 1024, Unit:3.3/1024V	
28	**[Mis-regist. 2] Color Registration Sensor 2**			
	0-10	Color Registration Sensor 2	Data range: 0 to 1024, Unit:3.3/1024V	
29	**[Temperature] Temperature Sensor**			
	0-7	**Temperature Sensor**	Data range: 0 to 60, Unit: 1°C	
30	**[Humidity] Humidity Sensor**			
	0-7	Humidity Sensor	Data range: 0 to 99, Unit:1%	
33	**[Accumulator] Transfer Belt Unit**			
	0	Cam Home Position Sensor	Not home position	Home position
34	**[PC(K) First]**			
	0-10	Resistance of new PCU detection	Data range: 0 to 1024, Unit:3.3/1024V	
35	**[PC(YMC) First]**			
	0-10	Resistance of new PCU detection	Data range: 0 to 1024, Unit:3.3/1024V	
37	**[F Press Temp.] Fusing Pressure Roller Temperature**			
	0-7	Fusing Pressure Roller Temperature	Data range: 0 to 250, Unit: 1°C	

Table 1: Paper Size Switch

0: Not Pushed, 1: Pushed

Models	Switch Location	
North America	**1**	**2**
Letter SEF	1	1
A4 SEF	1	0
B5 SEF	0	1
Legal SEF	0	0

1: Pushed

5.3.3 OUTPUT CHECK TABLE

SP5-804-XXX		Description
1	Check Reset (Initialize mechanical position)	Do this SP mode before printing after you finish the output checks.
2	P1 SOL (Pickup Solenoid: Tray1)	Turns the paper pickup solenoid for paper tray 1 ON for 1 second.
3	Regist CL	Turns the registration clutch ON for 1 second.
4	B Motor 100 (By-pass Pickup Motor: 100mm/s)	Turns the by-pass pickup motor ON with the process speed of 100 mm/s.
5	B Motor 124 (By-pass Pickup Motor: 124mm/s)	Turns the by-pass pickup motor ON with the process speed of 124 mm/s.
6	B Motor 50 (By-pass Pickup Motor: 50mm/s)	Turns the by-pass pickup motor ON with the process speed of 50 mm/s.
7	B Motor OFF (By-pass Pickup Motor: OFF)	Turns the by-pass pickup motor OFF.
8	P2 SOL (Pickup Solenoid: Tray2)	Turns the paper pickup solenoid for paper tray 2 ON for 1 second.
9	P2 Motor 100 (Tray 2 Feed Motor: 100mm/s)	Turns the tray 2 feed motor ON with a process speed of 100 mm/s.
10	P2 Motor 124 (Tray 2 Feed Motor: 124mm/s)	Turns the tray 2 feed motor ON with a process speed of 124 mm/s.
11	P2 Motor 50 (Tray 2 Feed Motor: 50mm/s)	Turns the tray 2 feed motor ON with a process speed of 50 mm/s.
12	P2 Motor OFF (Tray 2 Feed Motor: OFF)	Turns the tray 2 feed motor OFF.
13	P3 SOL (Pickup Solenoid: Tray3)	Turns the paper pickup solenoid for paper tray 3 ON for 1 second.
14	P3 Motor 100 (Tray 3 Feed Motor: 100mm/s)	Turns the tray 3 feed motor ON with a process speed of 100 mm/s.
15	P3 Motor 124 (Tray 3 Feed Motor: 124mm/s)	Turns the tray 3 feed motor ON with a process speed of 124 mm/s.
16	P3 Motor 50 (Tray 3 Feed Motor: 50mm/s)	Turns the tray 3 feed motor ON with a process speed of 50 mm/s.
17	P3 Motor OFF (Tray 3 Feed Motor: OFF)	Turns the tray 3 feed motor OFF.

SP5-804-XXX		Description
18	D SOL (Duplex Exit Solenoid)	Turns the duplex unit paper exit solenoid ON for 1 second.
19	Belt Cam SOL (Transfer Unit Cam Solenoid)	Turns the transfer unit cam solenoid ON for 1 second.
20	B/C SOL (Transfer Unit Changer Solenoid)	Turns the transfer unit changer solenoid ON for 1 second.
21	PC(K) SOL (Bk Solenoid)	Turns the PC(K) drive solenoid ON for 1 second.
22	PC(K) M 100 (Bk Motor: 100mm/s)	Turns the Bk motor ON with a process speed of 100 mm/s.
23	PC(K) M 124 (Bk Motor: 124mm/s)	Turns the Bk motor ON with a process speed of 124 mm/s.
24	PC(K) M 50 (Bk Motor: 50mm/s)	Turns the Bk motor ON with a process speed of 50 mm/s.
25	PC(K) M OFF (Bk Motor: OFF)	Turns the Bk motor OFF
26	PC(YMC) M 100 (PC/YMC Motor: 100mm/s)	Turns the PC(YMC) motor ON with a process speed of 100 mm/s.
27	PC(YMC) M 124 (PC/YMC Motor: 124mm/s)	Turns the PC(YMC) motor ON with a process speed of 124 mm/s.
28	PC(YMC) M 50 (PC/YMC Motor: 50mm/s)	Turns the PC(YMC) motor ON with a process speed of 50 mm/s.
29	PC(YMC) M OFF (PC/YMC Motor: OFF)	Turns the PC(YMC) motor OFF.
30	Toner SOL ON (Toner Supply Solenoid)	Turns the toner supply solenoid on.
31	Toner SOL OFF (Toner Supply Solenoid)	Turns the toner supply solenoid off.

5.4 FIRMWARE UPDATE PROCEDURE

5.4.1 TYPE OF FIRMWARE

The table lists the programs used by this machine

	Type of firmware	Function	Location of firmware	Message displayed
1	Engine - Main	Printer engine control	EGB flash ROM	Engine
2	System	Printer system management	Controller flash ROM	Onboard Sys
3	Printer Application	Feature application	SD card	Opt SD1 Prn
	NIB	NIB management	SD card	Opt SD1 Prn
	Web System	Web service application	SD card	Opt SD1 Prn

5.4.2 PRECAUTIONS

Handling SD Cards

Make sure you do the following precautions when you handle SD cards:

- Turn off the main power switch before you insert or remove a SD card. Data in the SD card can get corrupted if you insert or remove a SD card while the main power switch is on.
- Do not turn off the main power switch during downloading.
- Keep SD cards in a safe location. Do not store SD cards in the following areas:
  - Areas that get exposed to high temperature, high humidity, direct sunlight, or strong vibration
  - Areas where there are effects from magnetic forces
- Do not bend or scratch SD cards.
- Do not drop SD cards or expose them to shock or vibration.

NOTE: For the arrangement of files in SD cards, see 5.4.3.

Upload or Download

In this section (5.4), “upload” and “download” have the following meanings:

- Upload: To copy data from the printer to the SD card
- Download: To copy data from the SD card to the printer

Network Connection

Before you start, tell the user that they cannot use the printer during firmware update. Also, the user must disconnect the printer physically from the network. If a print job comes in, this can cause problems with the firmware update.

5.4.3 FILE ARRANGEMENT

How the Program Works

The firmware-update program for this machine searches the folder *romdata* for necessary firmware. When you save the firmware to a SD card, make the folder *romdata.* You must not make the folder *romdata* in another folder.

NOTE: Do not make another firmware-update program folder in the folder *romdata*. Otherwise, it may cause a malfunction for the firmware update procedure. Keep only one firmware update program folder in the folder *romdata*.

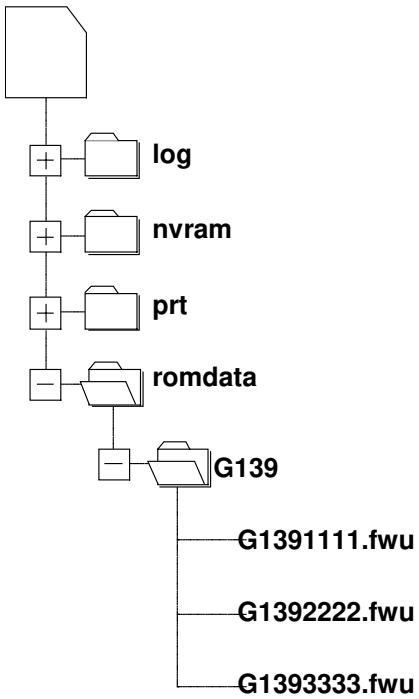
The firmware program contains the file information. The firmware-update program reads the file information before you download the firmware from a SD card. The firmware gets downloaded only when the file information is correct.

NOTE: The file information can identify the firmware. However this information does not guarantee that the data is not corrupted.

Example

We recommend that you arrange folders and files as follows when you save the firmware:

- In the folder *romdata,* make only one folder and use this folder for one model. Use the machine code (G139) as the name of this folder.
- Make a new folder outside *romdata* if you save some files other than firmware files. Save the files in this folder. Do not save any file outside the folders. (The diagram shows an example. Three folders, *log*, *nvramdata*, and *prt*, are outside *romdata.* These folders can store debug logs, NVRAM data, and captured files respectively.)



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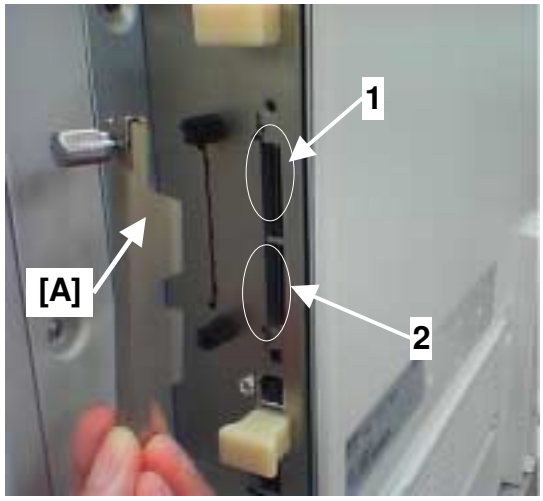
5.4.4 UPDATING

Procedure



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1. Turn off the main power switch.
2. Disconnect the printer from the network (☛ 5.4.2).
3. Remove the slot cover [A].
   NOTE: Do not use slot 1. Slot 1 is for customer use.
4. Turn the SD card face to the front side of the printer, and insert it into slot 2.
5. Slowly push the SD card into the slot until it clicks.
6. Make sure that the SD card is locked in place.
   NOTE: To remove the SD card, push it in until it clicks, and release it slowly. The slot pushes the SD card out.
7. Turn on the main power switch.
8. Wait until the firmware name shows on the display (about 1 minute).
   NOTE: The firmware name is read from inside the firmware. The firmware name does not change even if you change the file name on your PC.
9. Go to the next step if the necessary firmware name shows on the display. To use a different firmware, push the up-arrow key or the down-arrow key to find the necessary firmware.
10. To select the firmware, push the enter key. Make sure that a star (✱) is added to the firmware name. You can confirm the parts number and version number of each firmware, refer to the "Confirmation for firmware part and version number" as following this updating procedures.
11. If you update more than one firmware program at the same time, find each of them and select each of them. Make sure a star is added to each firmware name.
12. To select “Update Date”, push the up-arrow key or the down-arrow key.

NOTE: You need an empty slot for this procedure. If the customer has used all three slots, ask the customer to temporarily remove one of the SD cards in slots 1 or 2.

13. To start firmware update, push the enter key. While each firmware is downloaded, the underscores on the operation panel are replaced by stars.
14. Wait until the message “Updated” shows.
15. Turn off the main power switch.

16. Remove the SD card from the slot.
17. Attach the slot cover.
18. Connect the printer to the network physically.
19. Turn on the main power switch.
20. Print the Configuration Page to check that the every firmware is correctly updated: Menu > List/Test Print > Config.P/Er.Log

Error Handling

An error code shows if an error occurs during the download. Error codes have the letter “E” and a number. If an error occurs, the firmware is not correctly downloaded. In this condition, examine the error code table (5.4.6) and do the necessary steps. Then download the firmware again.

Power Failure

If firmware update is interrupted by power failure, the firmware is not correctly downloaded. In this condition, machine operation is not guaranteed. Download the firmware again.

Confirmation for Parts and Version Number of Firmware

You can confirm the parts and version number of each firmware during updating procedures.

1. Do the updating procedures from the step1 to 8.
2. Select a firmware to be confirmed with the up-arrow key or down-arrow key.
3. Press "Menu" key to show the parts number of a firmware.
4. Two lines parts number shows.
   NOTE: The upper number indicates the parts number of a firmware, which the machine has. The lower number indicates the parts number of a firmware, which as an SD card has.
5. Press "Menu" key again to show the version number of a firmware.
   NOTE: The upper number indicates the version number of a firmware, which the machine has. The lower number indicates the version number of a firmware, which as an SD card has.
6. Press "Menu" key again to return to the firmware selection mode.

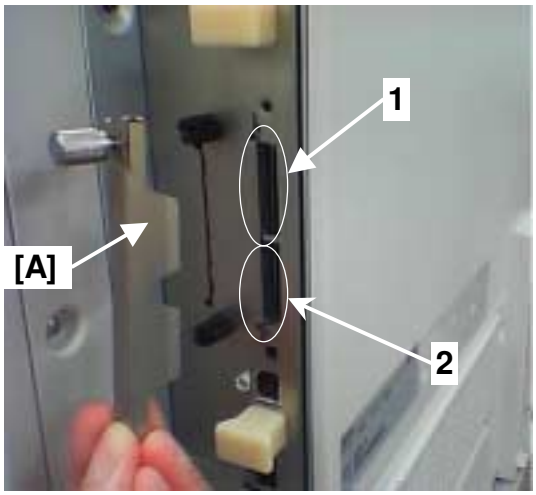
5.4.5 NVRAM DATA UPLOAD/DOWNLOAD

⚠CAUTION
Turn off the main power switch before you insert or remove a SD card. Make sure that the controller and the EGB are correctly connected.

Uploading NVRAM Data

Copy the data from the NVRAM to an SD card (referred to as “to upload NVRAM data” in this section) before you replace the NVRAM. If you cannot upload NVRAM data, manually input the necessary settings after you replace the NVRAM.

1. Start the SP mode.
2. Select SP 5-990-1 (ALL (Data List)).
3. Do the SP.
4. Make sure the SMC Report is correctly output.
   NOTE: You may need the SMC Report if the machine does not complete an NVRAM data upload or download (☛ Downloading NVRAM Data) correctly.
5. Go out of the SP mode.
6. Turn off the main power switch.
7. Remove slot cover [A].
8. Insert a SD card into slot 2.
9. Turn on the main power switch.
10. Start the SP mode.
11. Select SP 5-824-1(NVRAM Upload).
12. Push the enter key.
13. Push the enter key again after "<NVRAM Upload> execute?" has showed. Then the upload starts.
    - When uploading ends correctly, the following file is made:
      a) NVRAM\serial_number.nv where “nvram” is the folder name in the SD card and “serial_number.nv” is the file name with the extension “.nv”. The serial number of the printer is used as the file name. For example, if the serial number is G1350017, the file name is “G1350017.NV”.



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14. "<NVRAM Upload> result = OK" shows if it is uploaded correctly.
15. Go out of the SP mode.
16. Turn off the main power switch.
17. Remove the SD card, and then reattach the slot cover.
18. Mark the SD card with, for example, the machine code. You need this SD card when you download NVRAM data (☛ Downloading NVRAM Data).
    NOTE: One SD card can store the NVRAM data from two or more machines.

Downloading NVRAM Data

Copy the data from the SD card to the NVRAM (referred to as “to download NVRAM data” in this section) after you replace the NVRAM. If you cannot download NVRAM data, manually input the necessary settings.

NOTE: Be sure not to turn ON the write protect switch of the system SD card or application SD card on the machine. Otherwise, A download error (e.g. Error Code 44) occurs during a firmware upgrade.

1. Make sure that the main power switch is off.
2. Make sure that you have the correct SD card that contains the necessary NVRAM data.
3. Remove slot cover [A].
4. Insert the SD card into slot 2.
5. Turn on the main power switch.
6. Start the SP mode.
7. Select SP5-825-1 (NVRAM Download).
8. Push the enter key.
9. Push the enter key again after "<NVRAM Download> execute?" has showed. Then the download starts.
   NOTE: The machine cannot do the download if the file name in the SD card is different from the serial number of the printer (☛Uploading NVRAM Data).
10. "<NVRAM Download> result = OK" shows if it is downloaded correctly.
11. Go out of the SP mode.
12. Turn off the main power switch.
13. Remove the SD card, and then reattach the slot cover.
14. Turn on the main power switch.
15. Make sure that the NVRAM data is correctly downloaded.

This procedure does not download the following data to the NVRAM:

- Total Count
- Serial Number

5.4.6 ERROR CODE TABLE FOR FIRMWARE UPDATING

These error codes are used by more than one model. Some codes are not used by this machine.

Code	Cause	Solution
20	Cannot map logical address	Make sure the SD card inserted correctly, or use another SD card.
21	Cannot access memory	HDD connection incorrect or replace hard disks.
22	Cannot decompress compressed data	Incorrect ROM data on the SD card, or data is corrupted.
23	Error occurred when ROM update program started	Controller program abnormal. If the second attempt fails, replace controller board.
24	SD card access error	Make sure SD card inserted correctly, or use another SD card.
30	No HDD available for stamp data download	HDD connection incorrect or replace hard disks.
31	Data incorrect for continuous download	Insert the SD card with the remaining data required for the download, the re-start the procedure.
32	Data incorrect after download interrupted	Execute the recovery procedure for the intended module download, then repeat the installation procedure.
33	Incorrect SD card version	Incorrect ROM data on the SD card, or data is corrupted.
34	Module mismatch - Correct module is not on the SD card)	SD update data is incorrect. Acquire the correct data (Japan, Overseas, OEM, etc.) then install again.
35	Module mismatch – Module on SD card is not for this machine	SD update data is incorrect. The data on the SD card is for another machine. Acquire correct update data then install again.
36	Cannot write module – Cause other than E34, E35	SD update data is incorrect. The data on the SD card is for another machine. Acquire correct update data then install again.
40	Engine module download failed	Replace the update data for the module on the SD card and try again, or replace the EGB board.
42	Operation panel module download failed	Replace the update data for the module on the SD card and try again, or replace the LCDC.
43	Stamp data module download failed	Replace the update data for the module on the SD card and try again, or replace the hard disks.
44	Controller module download failed	Replace the update data for the module on the SD card and tray again, or replace controller board.
50	Electronic confirmation check failed	SD update data is incorrect. The data on the SD card is for another machine. Acquire correct update data then install again.

5.5 SD CARD APPLI MOVE

5.5.1 OVERVIEW

The service program “SD Card Appli Move” (SP5-873) lets you copy application programs from one SD card to another SD card.

There are two SD card slots. This machine uses slot 1 to store application programs. Slot 2 is for maintenance work. Because of this, if the application programs are stored in two SD cards or more, ① choose one SD card from these SD cards and ② store all the application programs on one card.

Use extreme caution when you use the SD Card Appli Move:

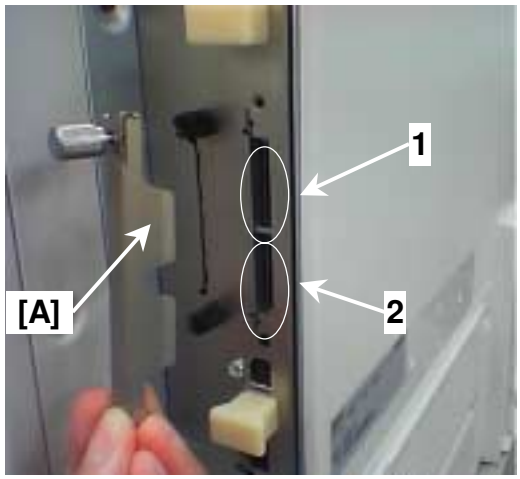
1. The authentication data is transferred with the application program from one SD card to another SD card. Authentication fails if you try to use the SD card after you copy the application program from this card to another SD card.
2. Do not use a SD card if it has been used for some other work, for example, on a computer. Normal operation is not guaranteed if a SD card in this condition is used.
3. Keep the SD card in the place (☛Note) after you copy the application program from one card to another card. This is because: ① The SD card can be the only proof that the user is licensed to use the application program. ② You may need to check the SD card and its data to solve a problem in the future.
   NOTE: Refer to “Keeping the SD card” at the end of this chapter.

5.5.2 MOVE EXEC

The menu “Move Exec” (SP5-873 1) lets you copy application programs from the original SD card to another SD card. The application programs are copied as follows:

- From slot 2 to slot 1 when SD cards are in slots 2, or in all slots

Note that the authentication data is also copied with the application program (☛ 5.5.1).



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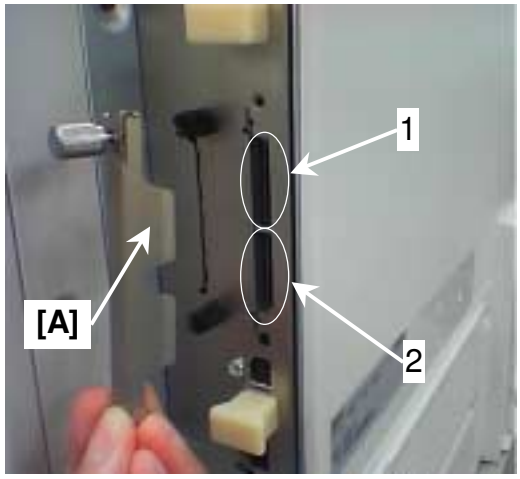
1. Turn off the main power switch.
2. Remove the slot cover [A].
3. Make sure that an SD card is in slot 1. The application program is copied to SD card in slot 1.
4. Insert the SD card (with the stored application program) to slot 2. The application program is copied from this SD card.
5. Turn on the main power switch.
6. Start the SP mode.
7. Select SP5-873-1 “Move Exec.”
8. Follow the messages that show on the operation panel.
9. Go out of the SP mode.
10. Turn off the main power switch.
11. Remove the SD card from slot 2 and then reattach the slot cover [A].
12. Turn on the main power switch.
13. Make sure that the application programs run correctly.

5.5.3 UNDO EXEC

The menu “Undo Exec” (SP5-873-2) lets you copy back application programs from a SD card to the original SD card. You can use this program when, for example, you have mistakenly copied some programs with Move Exec (SP-5873-1). The application programs are copied as follows:

- From slot 1 to slot 2 when SD cards are in slots 2 or in all slots.

NOTE: 1) Be sure not to turn ON the write protect switch of the system SD card or application SD card on the machine. A download error (e.g. Error Code 44) occurs during an application merge.
2) Note that the authentication data is also copied with the application program (☛ 5.5.1).



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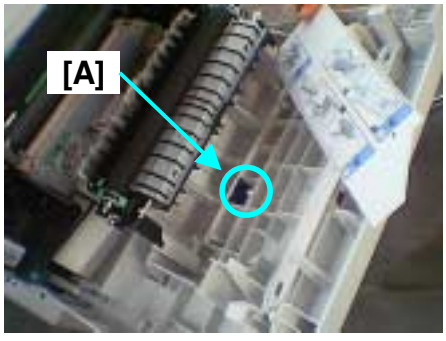
1. Turn off the main power switch.
2. Remove the slot cover [A].
3. Insert the original SD card in slot 2. The application program is copied back to this card.
4. Make sure that the SD card (with the stored the application program) is in slot 1. The application program is copied back from this SD card.
5. Turn on the main power switch.
6. Start the SP mode.
7. Select SP 5873 2 “Undo Exec.”
8. Follow the messages that show on the operation panel.
9. Go out of the SP mode.
10. Turn off the main power switch.
11. Remove the SD card from slot 2, and then reattach the slot cover [A].
12. Turn on the main power switch.
13. Make sure that the application programs run correctly.

Keeping the SD card

You must keep the original SC card after you do the Move Exec. Place the SD card to the place [A] shown in the picture.



G139S905.JPG

5.6 POWER ON SELF-TEST

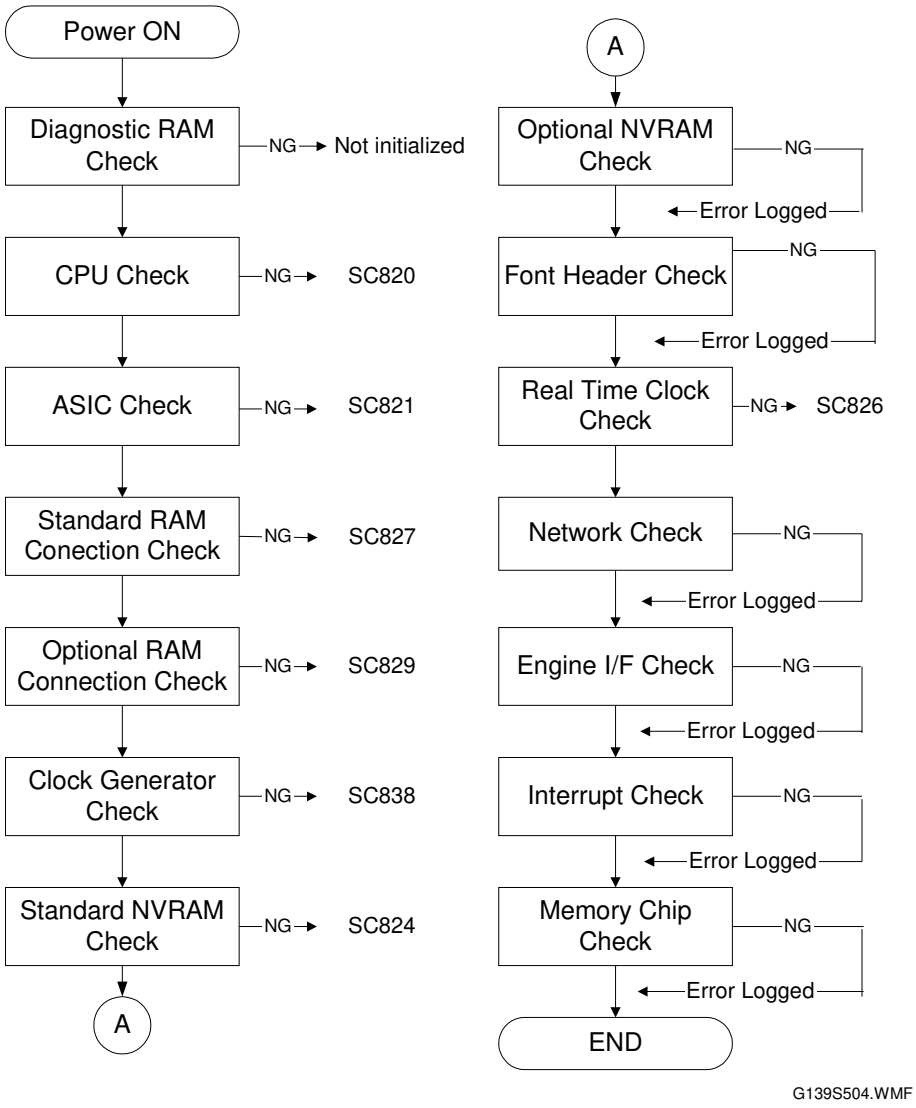
5.6.1 CONTROLLER SELF-DIAGNOSTIC

Overview

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

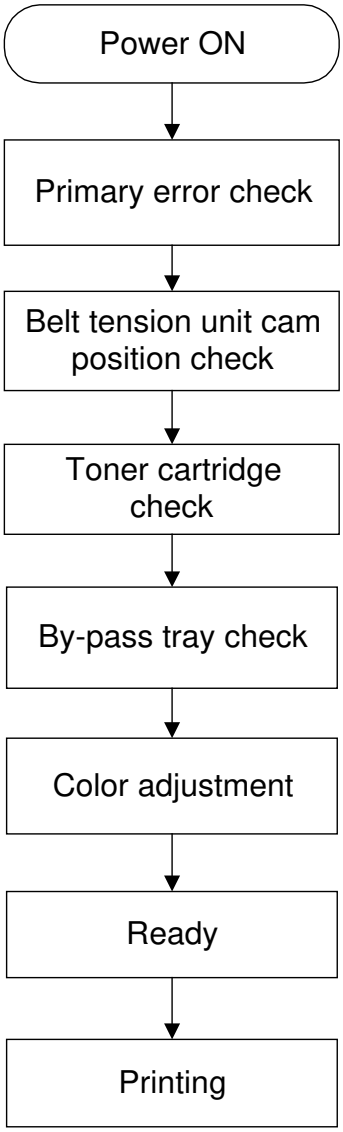
- Power-on self-diagnostics: The machine automatically starts the self-diagnostics just after the power has been turned on.
- SC detection: The machine automatically detects SC conditions at power-on or during operation.

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



G139S504.WMF

5.6.2 ENGINE SELF-DIAGNOSTIC



G139S517.WMF

Some processes of the engine self-diagnostic test are executed whenever the main power switch is turned on, until the printer goes in to the ready status. Others are executed only when a print job comes to the printer, when the printer goes in to the printing status.

5.7 USER PROGRAM MODE

Press the “Menu” button and use the “Up/Down arrow” keys to scroll through the menu listing. To go back to a higher level, press the “Escape” key. Press the “On Line” key after you change a setting. The user menu list can be printed using “Menu List” in the “List/Test Print” user mode.

User Menu Chart

Category	Function Menu	Category	Function Menu
Counter	*1	System	Printer Lang.
Sample Print	*2		Sub Paper Size
Locked Print	*2		Page Size
Paper Input	Bypass Size		Def. Print Lang.
	Paper Type		Duplex *6
	Tray Locking		Blank Pages
	Tray Priority		Energy Saver 1
List/ Test Print	Config.P/Er. Log		Energy Saver 2
	Config. Page		Auto Reset Time
	Error Log		Unit of Measure
	Menu List		B& W Page Detect
	Color Demo Page		Letterhead Mode
	PCL Config. Page		Spool Printing *2
	PS Config. Page		Bypass Priority
	Hex Dump		RAM Disk
Maintenance	Color Regist.		Notify by Email
	Color Calibrate	Host Interface	I/ O Buffer
	Image Density		I/ O Timeout
	Registration		Network Setup
	Plain Paper		IEEE 1394 Setup *7
	Maint. Reset		IEEE 802.11b *4
	HDD Format *2	PCL Menu	Orientation
	ROM Update *3		Form Lines
	4C. Graphic Mode		Font Source
	Replacmnt Alert		Font Number
	WL. LAN Signal *4		Point Size
	WL. LAN Defaults *4		Font Pitch
	Key Repeat		Symbol Set
	Menu Protect *5		Courier Font
	Series Print. Job *5		Ext. A4 Width
System	Prt. Err Report		Append CR to LF
	Auto Continue		Resolution
	Memory Overflow	Language	
	Copies		

NOTE:

1) Meter charge mode must be ON in SP mode.
2) Option HDD required
3) ROM Update is not currently used.
4) IEEE802.11b option required
5) Displayed after pressing [Enter], [Escape] and then [Menu]
6) Duplex unit option required.
7) IEEE1394 option required.

5.8 DIP SWITCHES

Controller Board

DIP SW No.	OFF	ON
1	**DFU:** Keep this switch ON.	
2 to 4	Factory Use Only: Keep these switches OFF.	

6. DETAILED SECTION DESCRIPTIONS

This section is almost same as the "Model AR-P1 (G081/G092) SERVICE MANUAL". Keep its manual when you use this manual, and then refer to its manual about this section.

SPECIFICATIONS

1. GENERAL SPECIFICATIONS

Configuration: Desktop

Print Process: Dry electrostatic transfer system

Printer Languages: RPCS (Refined Printing Command Stream)
PCL5c/e
PCL-6
Adobe PostScript 3
PDF

Resolution: RPCS:
1200 x 1200 dpi, 1200 x 600 dpi, 600 x 600 dpi
PCL5c/e:
600 x 600 dpi 300 x 300 dpi
PCL-6:
1200 x 1200 dpi, 1200 x 600 dpi, 600 x 600 dpi
Adobe PostScript 3:
1200 x 1200 dpi, 1200 x 600 dpi, 600 x 600 dpi
PDF:
1200 x 1200 dpi, 1200 x 600 dpi, 600 x 600 dpi

Gradation 1 bit/pixel

Printing speed:

	Resolution	Plain paper	Thick/OHP
Monochrome	600 x 600 dpi	21 ppm	8 ppm
	1200 x 600 dpi	21 ppm	8 ppm
	1200 x 1200 dpi	9 ppm	8 ppm
Color	600 x 600 dpi	21 ppm	8 ppm
	1200 x 600 dpi	21 ppm	8 ppm
	1200 x 1200 dpi	9 ppm	8 ppm

Resident Fonts: PCL5c:
35 Manager Intelli fonts
10 TrueType fonts
1 Bitmap font
Adobe PostScript 3:
136 fonts (24 Type 2 fonts, 112 Type 14 fonts)

Host Interfaces: Ethernet (10/100 Base-TX): Standard
USB2.0: Standard

IEEE1394 (SCSI print, IP over 1394): Optional
IEEE802.11b (Wireless LAN): Optional
Parallel (IEEE1284: Optional): Optional
Bluetooth (Wireless): Optional

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

First Print Speed: Color: 14.5 seconds or less (from tray 1)
B/W: 13.5 seconds or less (from tray 1)

Warm-up Time: Less than 30 seconds (at 23 °C/50%)

Print Paper Capacity: (80 g/m2, 20lb)
Standard tray: 530 sheets
By-pass tray: 100 sheets
Optional paper feed tray: 530 sheets x 2

Print Paper Size: (Refer to "Supported Paper Sizes".)

	Minimum	Maximum
Standard Tray	A4/B5/8 1/2" x 11"/8 1/2" x 14" (SEF)	
By-pass	90 x 148 mm	216 x 356 mm
Optional Tray	A4/B5/8 1/2" x 11"/8 1/2" x 14" (SEF)	

Printing Paper Weight:
Standard tray: 60 to 105 g/m^2 (16 to 28 lb.)
Optional paper tray: 60 to 105 g/m^2 (16 to 28 lb.)
By-pass tray: 60 to 199 g/m^2 (16 to 53 lb.)

Output Paper Capacity: Standard exit tray: 250 sheets (face down)

Memory: Standard 128 MB, up to 512 MB with optional DIMM

Power Source:
120 V, 60 Hz: More than 10 A (for North America)
220 V - 240 V, 50/60 Hz: More than 6 A (for Europe/Asia)

Power Consumption:

	120V	230V
Maximum	1200 W or less	1300 W or less
Energy Saver	9 W or less	9 W or less

Noise Emission: (Sound Power Level)

	Mainframe Only	Full System
Printing	63 dB or less	63 dB or less
Stand-by	49 dB or less	49

NOTE: The above measurements were made in accordance with ISO9296 at the operator position.

Dimensions (W x D x H):419 x 536 x 398 mm (16.5" x 21.1" x 15.7")

Weight: Less than 32kg (70.5 lb.)

1.1 SUPPORTED PAPER SIZES

Paper	Size (W x L)	Paper Trays Main Unit/Options		By-pass Tray	Duplex
		US	Eur/Asia		
A3	297 x 420 mm	N	N	N	N
A4 SEF	210 x 297 mm	Y	Y	Y#	Y
A4 LEF	297 x 210 mm	N	N	N	N
A5 SEF	148 x 210 mm	N	N	Y#	N
A5 LEF	210 x 148 mm	N	N	N	N
A6 SEF	105 x 148 mm	N	N	Y#	N
B4 SEF	257 x 364 mm	N	N	N	N
B5 SEF	182 x 257 mm	Y	Y	Y#	Y
B5 LEF	257 x 182 mm	N	N	N	N
B6 SEF	128 x 182 mm	N	N	N	N
Ledger	11" x 17"	N	N	N	N
Letter SEF	8.5" x 11"	Y	Y	Y#	Y
Letter LEF	11" x 8.5"	N	N	N	N
Legal SEF	8.5" x 14"	Y	Y	Y#	Y
Half Letter SEF	5.5" x 8.5"	N	N	Y#	N
Executive SEF	7.25" x 10.5"	N	N	Y#	N
Executive LEF	10.5" x 7.25"	N	N	N	N
F SEF	8" x 13"	N	N	Y#	N
Foolscap SEF	8.5" x 13"	N	N	Y#	N
Folio SEF	8.25" x 13"	N	N	Y#	N
8K	267 x 390 mm	N	N	N	N
16K SEF	195 x 267 mm	N	N	Y#	N
16K LEF	267 x 195 mm	N	N	N	N
Custom	Minimum: 90 x 148 mm Maximum: 216 x 356 mm	N	N	Y#	N
Com10 Env.	4.125" x 9.5"	N	N	Y#	N
Monarch Env.	3.875" x 7.5"	N	N	Y#	N
C6 Env.	114 x 162 mm	N	N	Y#	N
C5 Env.	162 x 229 mm	N	N	Y#	N
DL Env.	110 x 220 mm	N	N	Y#	N

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

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

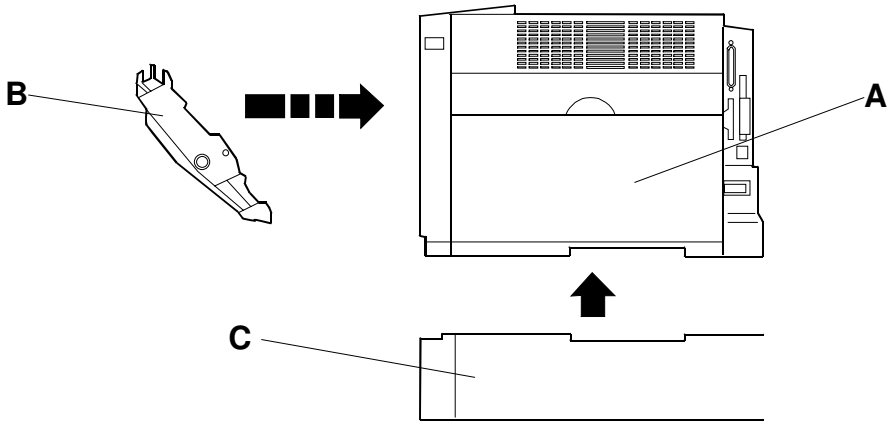
Printer Language	Windows 95/98/ME	Windows NT4.0	Windows 2000	Windows XP	Macintosh
PCL 5c/6	Yes	Yes	Yes	Yes	No
PS3	Yes	Yes	Yes	Yes	Yes
RPCS	Yes	Yes	Yes	Yes	No

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 7.6 or later versions.

2.2 UTILITY SOFTWARE

Software	Description
Font Manager 2000 (Win95/98/Me, NT4.0, 2000, XP, Server2003)	A font management utility with screen fonts for the printer
Smart Device Monitor for Admin (Win95/98/Me, NT4.0, 2000, XP, Server2003)	A printer management utility for network administrators. NIB setup utilities are also available.
Smart Device Monitor for Client (Win95/98/Me, NT4.0, 2000, XP, Server2003)	• A printer management utility for client users. • A utility for peer-to-peer printing over a NetBEUI or TCP/IP network. • A peer to peer print utility over a TCP/IP network. This provides the parallel printing and recovery printing features.
Printer Utility for Mac (Mac)	This software provides several convenient functions for printing from Macintosh clients.
IEEE1394 Utility (Win2000, XP, Server2003)	This utility solves problems with Windows 2000, XP, Server2003.
DeskTopBinder V2 Lite (Win95/98, 2000, NT4, XP, Server2003)	DeskTopBinder V2 Lite itself can be used as personal document management software and can manage both image data converted from paper documents and application files saved in each client's PC.

3. MACHINE CONFIGURATION



G139V900.WMF

Item	Machine Code	No.	Remarks
Main Unit	G139/G149	A	
Options			
Duplex Unit	G837	B	Standard unit for model G149
Paper Feed Unit (530)	G836	C	Up to two tray units can be installed.
Internal Options			
128 MB DIMM Memory	B584		Common with model G-P1
256 MB DIMM Memory	B818		Common with model G-P1
NVRAM Memory	G395		Common with model G-P1
IEEE1284 I/F Board	B679		Common with model G-P1
IEEE1394 I/F Board	B581		Common with model G-P1
IEEE802.11b Board	G813		Common with model G-P1
Bluetooth Board	B736		Common with model G-P1
HDD Type 3000	G345		Common with model AR-P1
Network Data Protection Unit Type A	G820		

NOTE: The IEEE1394, IEEE802.11b, Bluetooth, and IEEE1284 cannot be installed at the same time.