

Model K-C1b/C1c/C1c Duplex

PRINTER CONTROLLER

(Machine Code: B405)

SERVICE MANUAL

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1. INSTALLATION

1.1 INSTALLATION REQUIREMENTS

Please refer to section 1 of the main unit service manual.

1.2 PRINTER INSTALLATION

Accessory Check

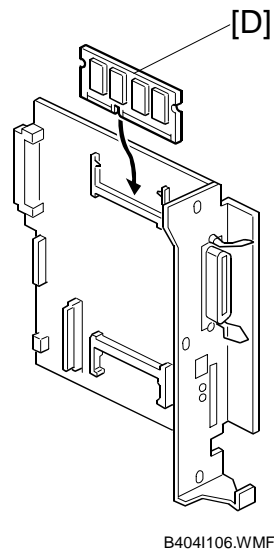
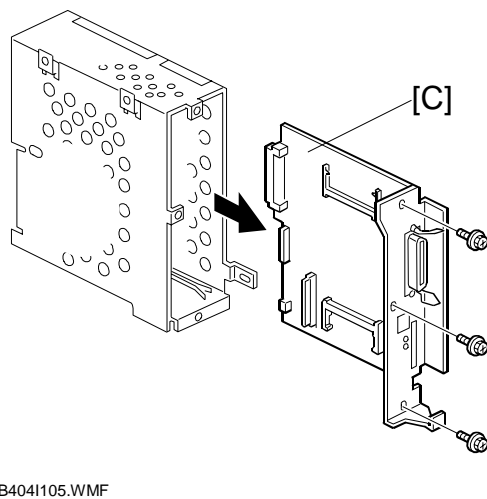
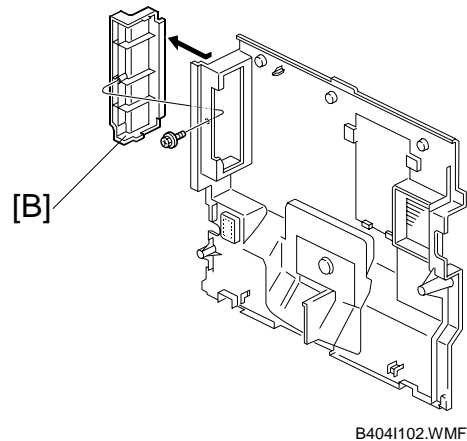
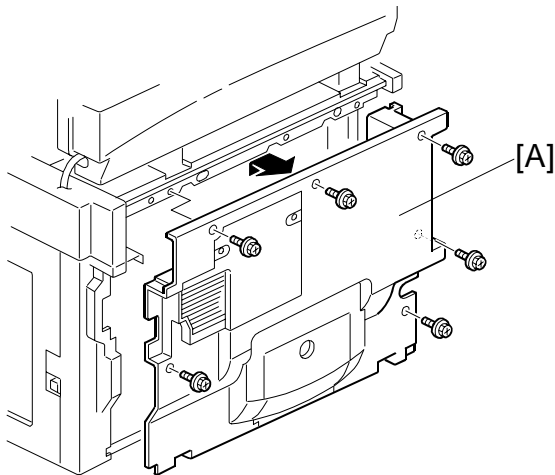
Check the accessories in the box against the following list:

No.	Description	Q'ty
1	CD ROM	1
2	Key Top - Printer	1
3	Key Top - Copy	1
4	Printer Key Cover	1
5	Main Switch Cover	1
5	Tapping Screw - M3x6	4
7	Installation Procedure	1
8	Software License Agreement	1

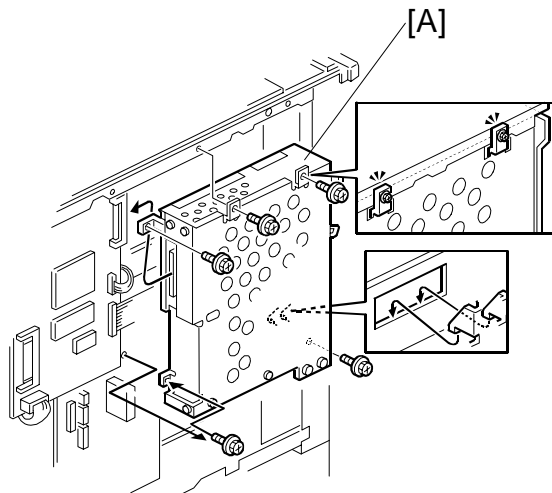
Printer Controller Installation

⚠ CAUTION

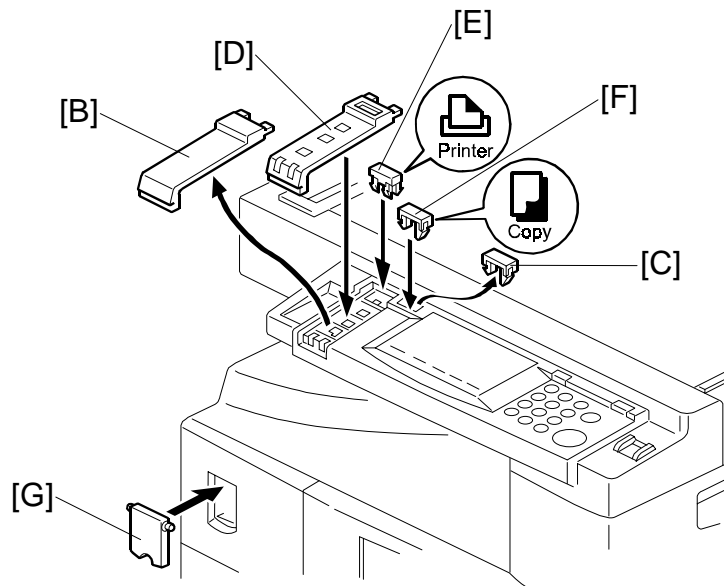
- Unplug the main machine power cord before starting the following procedure.
- If you install the fax option at the same time, the fax option must be installed first. Otherwise you cannot install the fax option.



1. Remove the rear cover [A] (6 screws).
2. Remove the small cover [B] from the rear cover (1 screw).
- When you install the printer memory at the same time, please do the following. Otherwise go to step 3.
 - 1) Remove the controller board [C] (3 screws).
 - 2) Connect the memory [D] to CN502 as shown.



B4041101.WMF



B4051101.WMF

3. Install the controller [A] (5 screws) as shown.
4. Replace the rear cover.
5. Remove the covers [B] and [C] from the operation panel.
6. Install the printer key cover [D], printer key top [E], and copy key top [F].
7. Install the main switch cover [G].

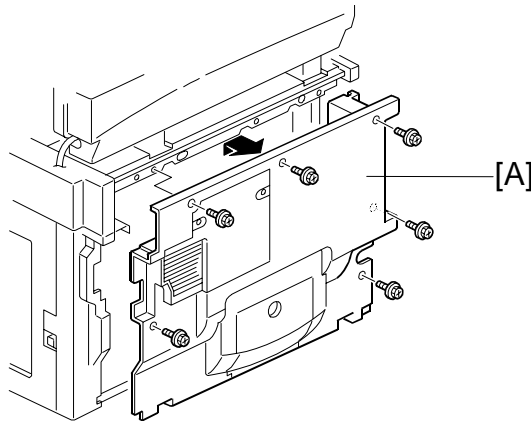
1.3 PS 2 EMULATION BOARD (B431)

⚠ CAUTION

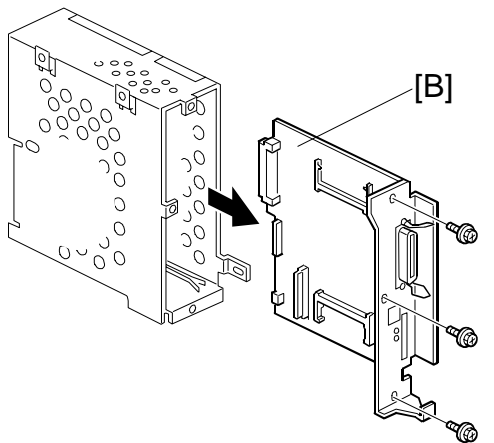
Unplug the main machine power cord before starting the following procedure.



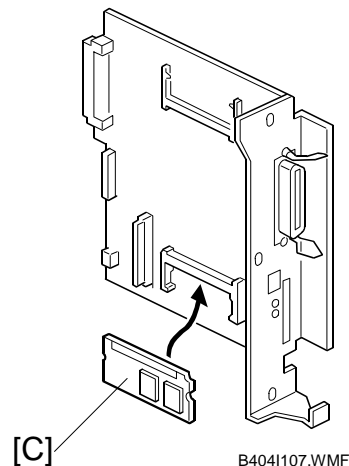
NOTE: To install the Postscript option, the printer option (B405) must be installed also. Please refer to section 1.2 for the printer controller installation procedure.



B039R901.WMF



B404I105.WMF



B404I107.WMF

1. Remove the rear cover [A] (6 screws).
2. Remove the controller board [B] from the machine (3 screws).
3. Connect the PS 2 emulation board [C] to CN505 on the controller board.
4. Replace the controller board ass'y in the machine.
5. Replace the rear cover.

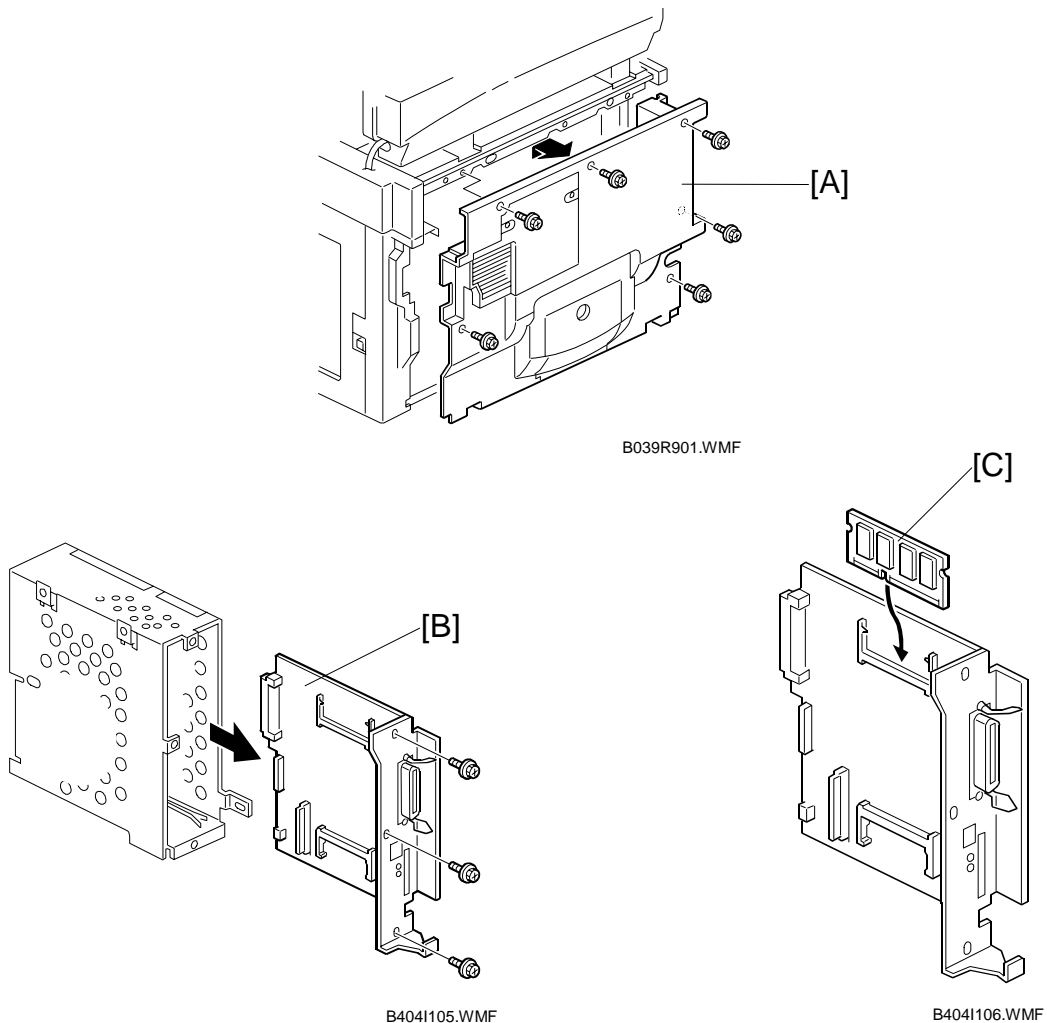
1.4 MEMORY BOARD (G578/G579/G580)

⚠ CAUTION

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

Installation

NOTE: To install the memory option, the printer option (B405) must be installed also. Please refer to section 1.2 for the printer controller installation procedure.



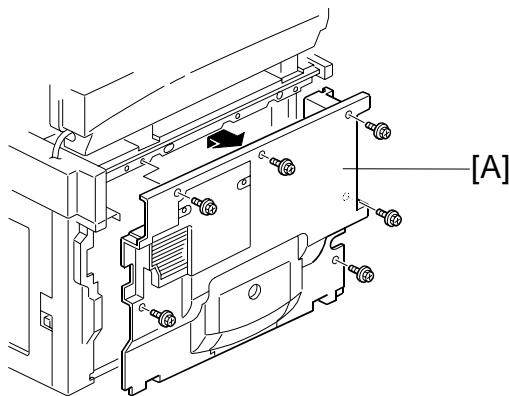
1. Remove the rear cover [A] (6 screws).
2. Remove the controller board [B] from the machine (3 screws).
3. Connect the memory board [C] to CN502 on the controller board.
4. Replace the controller board ass'y in the machine.
5. Replace the rear cover.

1.5 NIB (B430)

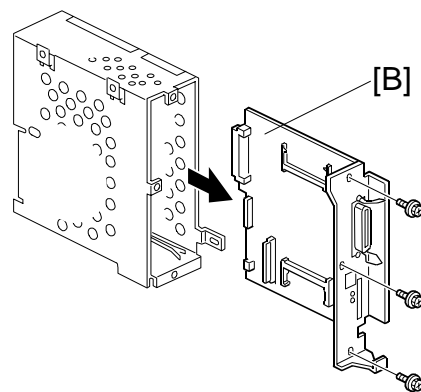
CAUTION

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

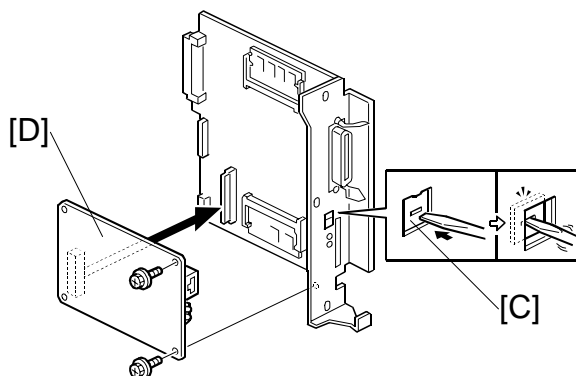
NOTE: To install the NIB option, the printer option (B405) must be installed also. Please refer to section 1.2 for the printer controller installation procedure. The display takes a few minutes to initialize after installing the NIB.



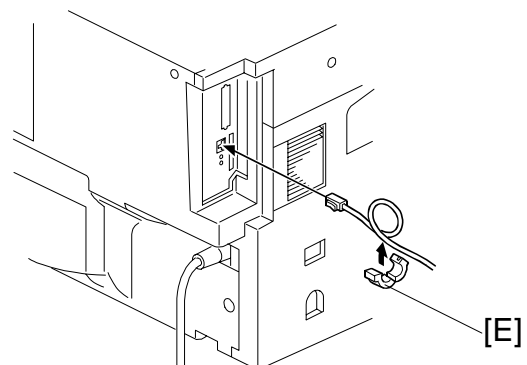
B039R901.WMF



B404I105.WMF



B404I108.WMF



B405I106.WMF

1. Remove the rear cover [A] (6 screws)
2. Remove the controller board [B] from the machine (3 screws).
3. Remove the small window [C] on the controller board bracket.
4. Connect the network interface board [D] to the controller board (2 screws) as shown.
5. Replace the controller board ass'y in the machine.
6. Replace the rear cover.
7. Wrap the network cable around the core [E], close the core, then connect the cable to the machine.

2. TROUBLESHOOTING

2.1 ERROR CODES

The following table lists the controller error codes. If an error occurs, SC2001 and one of the following codes are displayed together at power-on, or after the power-on self-test.

Please refer to section 3.4 for details of the power-on self-test.

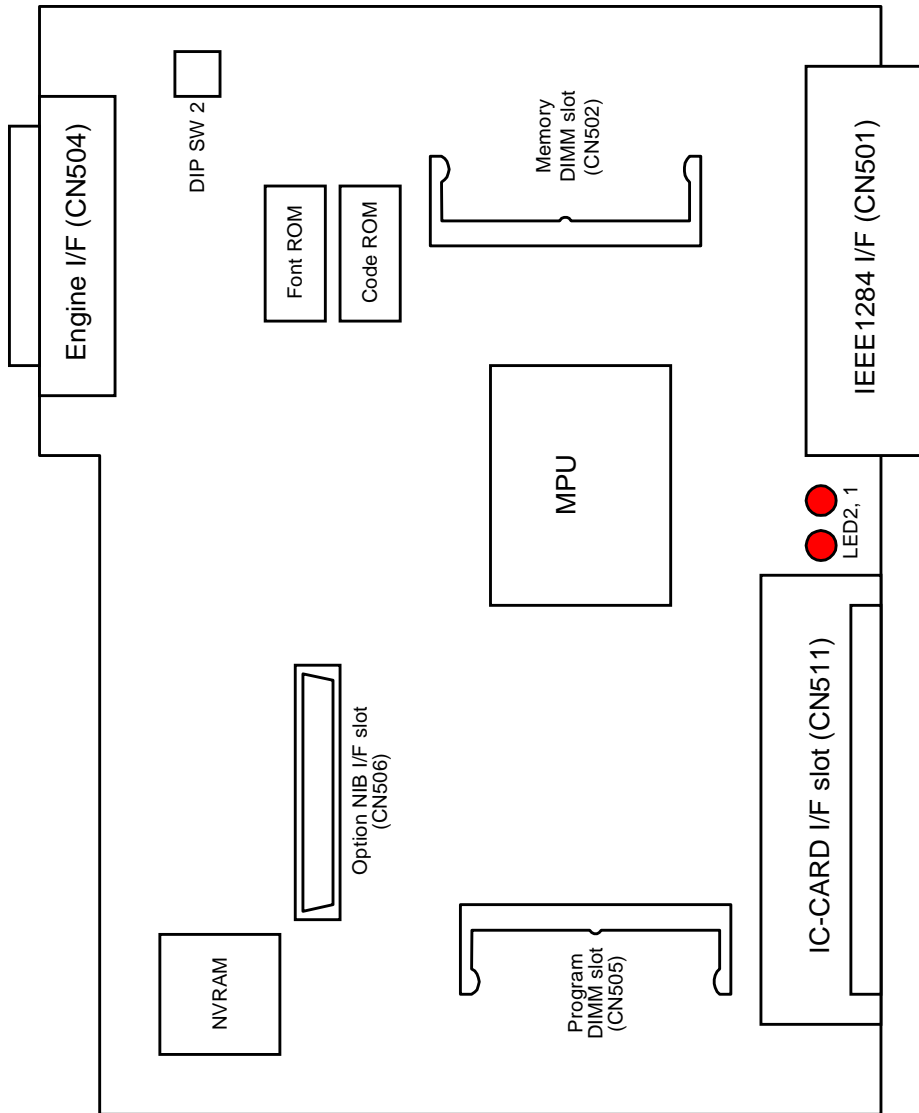
Code	Description	Required Action
00xx	Exceptional operation error	<ul style="list-style-type: none"> Replace the controller if the error is frequent.
0101	Code ROM error	<ul style="list-style-type: none"> Replace the controller if the error is frequent.
0201	Resident RAM error	<ul style="list-style-type: none"> Replace the controller if the error is frequent.
0301	Optional RAM error	<ul style="list-style-type: none"> Replace the optional DIMM if the error is frequent.
06xx	CPU error	<ul style="list-style-type: none"> Replace the controller if the error is frequent.
0Fxx	Engine interface and video data error	<ul style="list-style-type: none"> Check the connection between the engine board and the controller
11xx	Centronics parallel interface error	<ul style="list-style-type: none"> Replace the controller if the error is frequent.
1401	NVRAM error	<ul style="list-style-type: none"> Replace the NVRAM if the error is frequent.
1601	Font ROM error	<ul style="list-style-type: none"> Replace the controller if the error is frequent.
1Bxx	NIB interface error	<ul style="list-style-type: none"> Replace the controller if the error is frequent.
1Cxx	Parallel interface error	<ul style="list-style-type: none"> Replace the controller if the error is frequent.
25xx	PS2 error	<ul style="list-style-type: none"> Replace the PS DIMM if the error is frequent.

2.2 LED DISPLAY

2.2.1 LOCATION

The controller uses two LEDs to display error status even while the LED message is not active.

To see these LEDs, remove the machine's rear cover.



B405D507.WMF

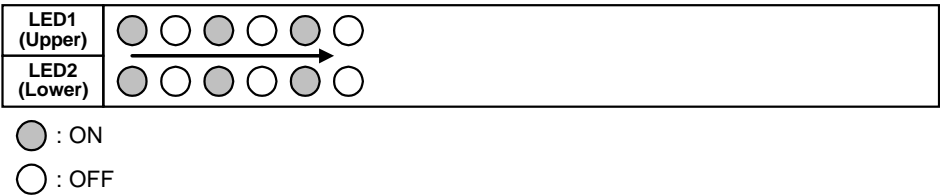
When the machine is operating normally, LED 1 blinks (on/off) and LED 2 remains always off. LED 2 only comes on if there is an error; see the next section of the manual.

2.2.2 FATAL ERROR

If the controller detected a fatal error during the power-on self-test, it uses 2 LEDs to notify the cause of the error.

If one of the following fatal errors happens, the LED status changes as shown (read from the left of the diagram to the right).

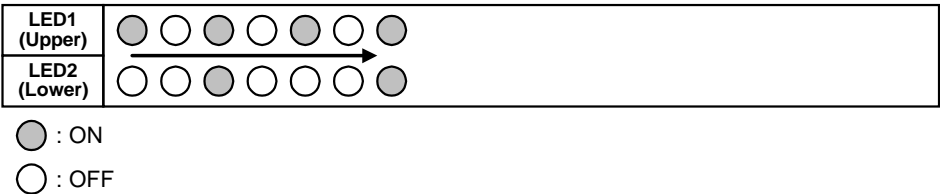
Code ROM Error



B405T502.WMF

Turn off the machine and turn it back on. If the controller detects the same error, replace the controller.

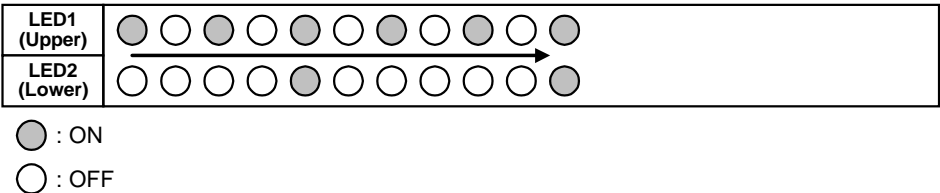
Resident RAM Error



B405T503.WMF

Turn off the machine and turn it back on. If the controller detects the same error, replace the controller.

CPU Error

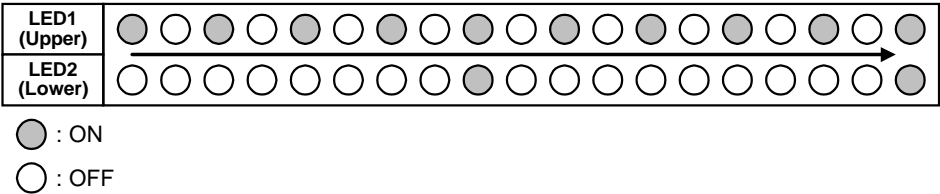


B405T504.WMF

Turn off the machine and turn it back on. If the controller detects the same error, replace the controller.

Trouble-
shooting

Abnormal Termination



B405T506.WMF

Turn off the machine, check the connection to the optional components, and turn on the machine. If the controller detects the same error, replace the controller or NIB.

3. SERVICE TABLES

3.1 SERVICE PROGRAM MODE OVERVIEW

⚠ 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.

3.1.1 HOW TO ENTER THE SP MODE

Entering the Service Mode

 → ① → ② → ⑦ →  (Hold for more than 3 seconds until the SP mode menu is displayed.)

Select “3” to enter the printer SP mode.

Exiting the Service Mode

Select “2” to exit from the printer SP mode.

NOTE: To make the settings effective, turn the main switch off and on after exiting service mode.

3.1.2 SERVICE MENU TABLE

	Description	Function
A	BitSw#1 Set	Adjusts bit switch settings. Note: Currently the bit switches are not being used.
B	NVRAM Clear 1	Initializes the controller NV RAM except bit switches, NIB settings, and log data.
C	NVRAM Clear 2	Initializes the controller NV RAM except NIB settings.
D	NVRAM Clear 3	Initializes the NIB NV RAM (NIB settings).
E	Counter Clear	Initializes all counters to zero.
F	Diagnostic Error	Displays the most recent diagnostic error codes on the LCD.
G	Service Print	Prints the service summary sheet.

3.2 SERVICE MENU

3.2.1 BIT SWITCH SETTINGS

The bit switches are not used at the moment.

3.2.2 NV RAM CLEAR

⚠ CAUTION

Print the service summary report, controller configuration page, and NIB configuration page before resetting the NV RAM(s).

1. Enter the printer SP mode, and select "1. Service Menu".
2. Select the appropriate menu, and then press "OK".
 - B: NV RAM Clear 1
 - C: NV RAM Clear 2
 - D: NV RAM Clear 3
3. Ensure that you have printed the appropriate configuration sheet, then press "OK".
 - B: Service Summary Sheet
 - C: Service Summary sheet and Controller Configuration Sheet
 - D: NIB Configuration Sheet
4. Press "OK" to execute. Or press "Cancel" to exit.

3.2.3 COUNTER CLEAR

1. Enter the printer SP mode, and select "1. Service Menu".
2. Select "E. Counter Clear", then press "OK".
3. Press "OK" to execute. Or press "Cancel" to exit.

3.2.4 DIAGNOSTIC ERROR

This displays the latest 8 error codes that were found during the power-on self-test. Refer to section 2.1 for details of the error codes.

1. Enter the printer SP mode, and select "1. Service Menu".
2. Select "F. Diagnostic Error ", then press "OK".
3. Look through the error codes by using the right and left cursor keys.
4. Press "Cancel" to exit.

3.2.5 SERVICE PRINT

This prints the summary sheet, which contains the following items:

- Model Number/System Version/Unit Number
- Program List
- Bit Switch (These are not set at the moment.)
- Counters
- Exception Information
- System Logging 1/2
- Options

1. Enter the printer SP mode, and select "1. Service Menu".
2. Select "G. Service Print", then press "OK".
3. Press "Cancel" to exit.

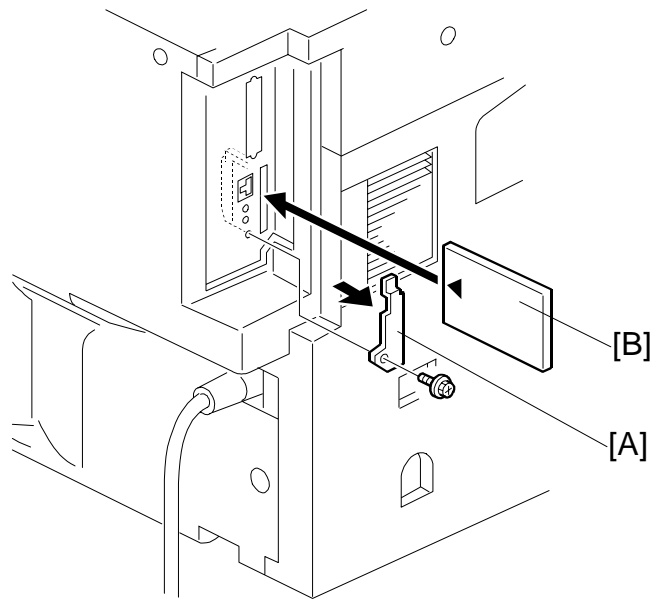
3.3 FIRMWARE UPDATE PROCEDURE

3.3.1 CONTROLLER/PS2 FIRMWARE UPDATE

This procedure is for upgrading the firmware for the controller and PS2 DIMM module.

⚠ CAUTION

Do not turn off the machine while downloading the firmware.



B405S102.WMF

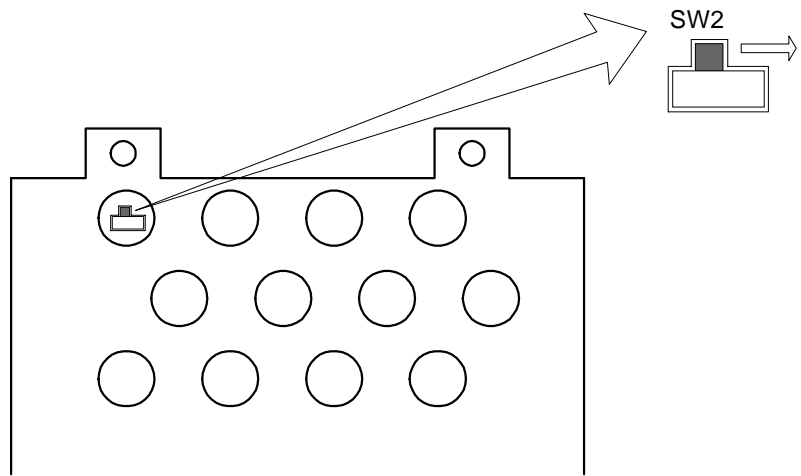
1. Prepare an IC card that contains the required firmware.
2. Turn off the machine and remove the cover [A] (1 screw).
3. Insert the card [B] into the IC card slot.
NOTE: The "A" side of the card must face towards the rear of the machine.
4. Turn on the machine. Press the "Printer" key.
5. Start downloading the new firmware by pressing the "OK" key.
6. After the firmware download has finished, turn off the machine, and remove the card. Then, replace the cover.
7. Turn on the machine, and print the printer configuration sheet to confirm that the new firmware version has been installed.

Error Messages

Message	Description
Erasing failed ARD: xxxxxxxxxx	Retry the download.
Writing Failed ARDS: xxxxxxxxxx	
Melting Failed	The firmware file on the card may be damaged. Get a new firmware file and store it on the card. NOTE: 'Melting' means 'extraction of compressed data'.
DIMM installable program cannot find	Wrong type of firmware on the card.
CRC error. Please Retry install	The firmware file on the card may be damaged. Get a new firmware file and store it on the card.

3.3.2 ERROR RECOVERY

CONTROLLER



B405S104.WMF

If the controller does not start up after a failed firmware download, use the following procedure. This procedure will force the controller to boot from the IC card.

1. Prepare an IC card with the required controller firmware version on it.
2. Turn off the machine and remove the controller.
3. Slide DIP SW 2 to the right (as viewed from the rear of the machine), as shown above.
4. Put back the controller and install the card in the IC card slot on the controller.
NOTE: When you see the machine from the back, the "A" side of the card must face the rear of the machine.
5. Turn on the machine.
6. Wait until the LEDs between the IC card slot and the parallel interface are both lit.
7. Turn off the machine, remove the card, and reset DIP SW2. Then, put back the controller.
8. Turn on the machine, and print the configuration sheet.

PS2 DIMM

If a download attempt failed, try downloading the new firmware again.

3.4 POWER-ON SELF TEST

The controller tests the following devices at power-on. If an error is detected, an error code is stored in the NV RAM. Refer to section 3.2.4 for how to check the error codes, and section 2.1 for the details about error codes.


- CPU
- Flash ROM
- Font ROM
- Code ROM
- Resident and optional SDRAM
- Parallel interface
- NIB (If this board is installed)
- Centronics Interface (if a loop-back connector is present)
- NVRAM

3.5 SELF DIAGNOSTIC TEST

In addition to the power-on self-test, you can set the machine in a more detailed diagnostic mode to test other components and conditions. It requires a loop-back connector (P/N: G0219350).

1. Turn off the machine and attach the loop-back connector to the parallel interface.
2. Turn on the machine while pressing the “On Line” key and “OK” key together.
3. The machine prints the diagnostic report automatically.
 - Refer to section 3.2.4 for how to check the error codes.
 - Refer to section 2.1 for the details about the error codes.

3.6 USER PROGRAM MODE

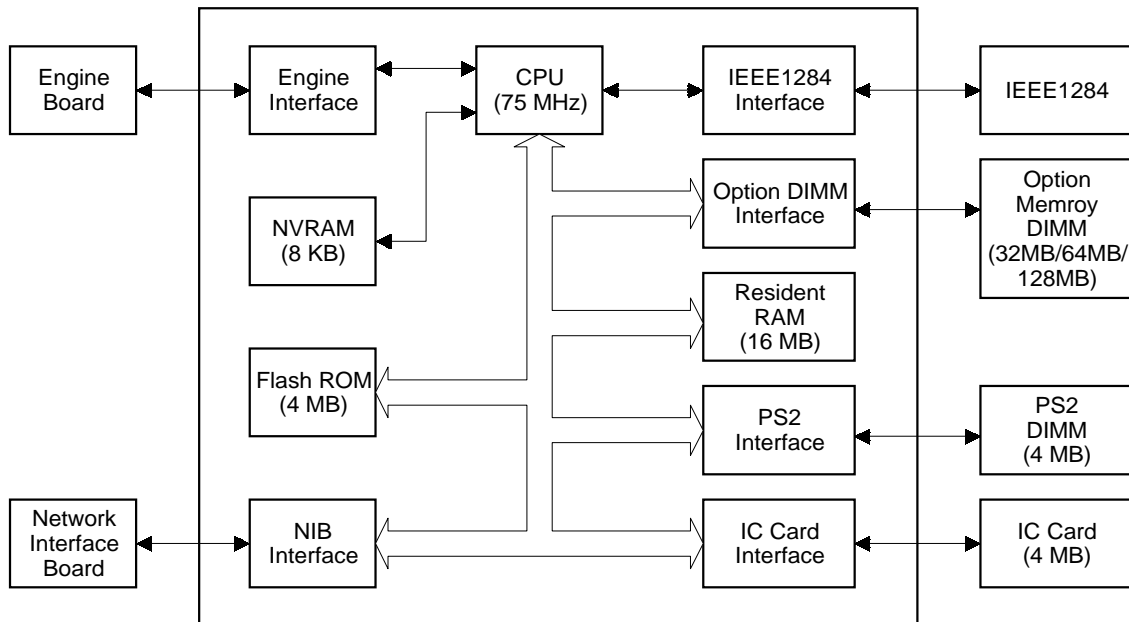
Press the “User Tools/Counter ”, then select “Printer Features” to change printer settings.

User Mode Table

Category	Function menu	
Job Control	Paper Input	Tray Priority
		Tray Locking
		Bypass Paper Size
		Standard Size Custom Size
	Print Quality	Edge Smoothing
		Resolution
		PCL PS
		Toner Saving
	System	Prints PS Errors
		I/O Time Out
		I/O Buffer
		Page Protect
		Auto Continue
	PCL menu	Orientation
		Form Lines
		Font Source
		Font Number
		Point Size
		Font Pitch
		Symbol Set
Network Setup	IP Address	
	Subnet Mask	
	Gateway Address	
Maintenance	Restart Printer	
	Menu Reset	
	Hex Dump	
List Print	Configuration Page	
	Menu List	
	PCL Font List	
	PS Font List	

4. DETAILED SECTION DESCRIPTIONS

4.1 BLOCK DIAGRAM



B405D500.WMF

The CPU (Destiny DB401A, 75MHz) controls the resident RAM, engine interface, ROM interface, IEEE1284 parallel interface, NIB interface, and an IC card interface for upgrading firmware.

There is one optional memory socket that can have either a 32MB, 64MB, or a 128MB memory DIMM to increase RAM capacity and enable RAM collation. With the 128MB memory DIMM, the RAM capacity is increased to 144MB. There is another memory socket for the optional PS2 DIMM.

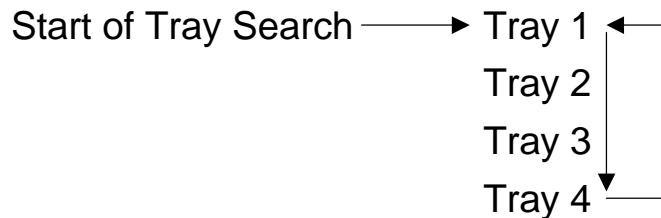
The NIB interface allows the user to install an Ethernet NIB. The IC card interface allows the interface for the controller and NIB to be updated.

4.2 CONTROLLER FUNCTIONS

4.2.1 PAPER SOURCE SELECTION

Tray Priority (Auto Tray Select)

The controller searches for the specified paper size, starting from Tray 1, and uses the first tray that has the specified paper size. If the selected tray is pulled out or runs out of paper during printing, the controller searches for another tray with the specific paper size and if found, automatically switches to it. If the controller cannot find another paper tray with the specified paper size, printing stops and the LCD displays the message "Load Paper".

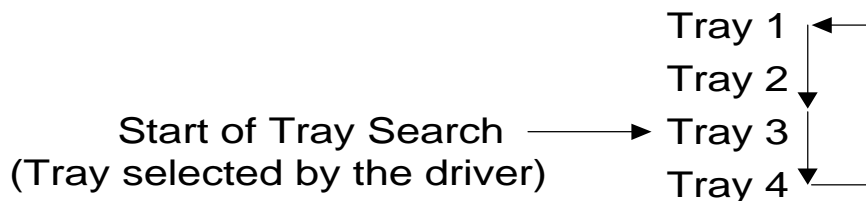


B405D501.WMF

The Tray Priority setting can be specified with a user tool.
(User Tools/Printer features/Job Control/Paper Input/Tray Priority)

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

Manual Tray Select



B405D503.WMF

When the printer driver specifies a tray, the selected tray becomes the first tray checked at the start of the tray search. If the selected tray does not have the size of paper specified by the driver, the controller searches the other trays for the same paper size.

NOTE: Tray Priority in the Job Control menu does not specify the start of the tray search, but specifies the paper size in the selected tray as the default paper size.

Tray Lock

If Tray Lock is enabled for a tray, the controller does not use the “locked” tray in the tray search process. If a tray has, for example, coloured A4 size paper for fax prints, enable tray lock for that tray so that the controller does not select the tray for printing.

If the user selects a “locked” tray with the printer driver, the controller uses the tray for printing only when the specified paper size matches the actual paper size in the tray.

The Tray Lock setting can be specified with a user tool.

(User Tools/Printer features/Job Control/Paper Input/Tray Locking)

NOTE: The by-pass tray cannot be locked.

By-pass Tray

To print from the by-pass tray, select the by-pass tray with the driver. The paper sizes that can only be fed from the by-pass tray (such as envelope sizes and custom sizes), can be fed from the by-pass tray using “Auto Tray Select”. But other paper sizes (LT, A4, etc), which can also be fed from the other paper trays, cannot be fed from the by-pass tray using “Auto Tray Select”.

4.2.2 COLLATION (SORTING)

This feature is available when the driver specifies it. Is not executed by the driver but by memory board on the controller.

4.2.3 DUPLEX PRINTING

Duplex printing is available for the B043 model only.

- If a jam occurs while printing on side 2 of a duplex print, both sides will be printed again after jam recovery.
- If a job specifies duplex printing but the paper size to be used cannot go through the duplex unit, the job will be printed single-sided.
- The by-pass tray cannot be used for duplex printing.

4.2.4 AUTO CONTINUE

When this function is enabled, the machine continues printing automatically (after 10 seconds) even if one of the following errors occurs. However, the page where the error occurred may not be printed out correctly.

- Print Overrun
- Memory Overflow
- Memory Full

If Auto Continue is disabled and the one of the above errors occurs, the machine will stop printing and will display an error message on the operation panel.

NOTE: The default setting for Auto Continue is "Disabled."

4.2.5 PAGE PROTECT

When a Print Overrun error occurs and this function is set to "Auto", this error can be avoided by changing the setting to "On". However, printing may slow down.

NOTE: The default setting for Page Protect is "Auto".

SPECIFICATIONS

1. SPECIFICATIONS

1.1 GENERAL SPECIFICATIONS

Printing Speed:	B039: Maximum 15 ppm (A4/LT LEF) B040/B043: Maximum 18 ppm (A4/LT LEF)
Printer Languages:	PCL6/PCL5e PostScript Level 2 Emulation (option)
Resolution:	600 dpi (PCL6/PCL5e/PS2) 300 dpi (PCL5e/PS2)
Resident Fonts:	PCL: 35 Intellifonts 10 True Type fonts PS2 (Optional): 80 PS fonts
Host Interfaces:	Bi-directional IEEE1284 parallel x 1 (standard) Ethernet (100 Base-TX/10 Base-T) (option)
Network Protocols:	TCP/IP, IPX/SPX, Apple Talk
Memory:	Standard 16 MB Options 48 MB (Standard 16 MB + 32 MB optional DIMM) 80 MB (Standard 16 MB + 64 MB optional DIMM) 144 MB (Standard 16 MB + 128 MB optional DIMM)



1.2 SUPPORTED PAPER SIZES

Paper	Size (W x L)	Paper Trays Main Unit/Option		Duplex	By-pass Tray
		US	Eur/Asia		
A3	297 x 420 mm	Y [#] /Y	Y/Y	Y	Y [#]
B4	257 x 364 mm	Y [#] /Y [#]	Y [#] /Y [#]	Y	Y [#]
A4 SEF	210 x 297 mm	Y [#] /Y	Y/Y	Y	Y [#]
A4 LEF	297 x 210 mm	Y/Y	Y/Y	Y	Y [#]
B5 SEF	182 x 257 mm	Y [#] /Y [#]	Y [#] /Y [#]	Y	Y [#]
B5 LEF	257 x 182 mm	Y [#] /Y [#]	Y [#] /Y [#]	Y	Y [#]
A5 SEF	148 x 210 mm	N/Y [#]	N/Y [#]	Y	Y [#]
A5 LEF	210 x 148 mm	Y [#] /Y [#]	Y/Y [#]	N	Y [#]
Ledger	11 x 17"	Y/Y	Y [#] /Y	Y	Y [#]
Legal	8.5 x 14"	Y/Y	Y [#] /Y	Y	Y [#]
Letter SEF	8.5 x 11"	Y/Y	Y [#] /Y	Y	Y [#]
Letter LEF	11 x 8.5"	Y/Y	Y/Y	Y	Y [#]
Half Letter SEF	5.5 x 8.5"	Y [#] /Y [#]	Y [#] /Y [#]	N	Y [#]
Half Letter LEF	8.5 x 5.5"	N	N	N	Y [#]
Executive SEF	7.25 x 10.5"	Y [#] /Y [#]	Y [#] /Y [#]	Y	Y [#]
Executive LEF	10.5 x 7.25"	N/Y [#]	N/Y [#]	Y	Y [#]
F	8 x 13"	Y [#] /Y [#]	Y [#] /Y [#]	Y	Y [#]
Foolscap	8.5 x 13"	Y/Y [#]	Y/Y [#]	Y	Y [#]
Folio	8.25 x 13"	Y [#] /Y [#]	Y [#] /Y [#]	Y	Y [#]
Com10 Env.	4.125 x 9.5"	N	N	N	Y [#]
Monarch Env.	3.875 x 7.5"	N	N	N	Y [#]
C6 Env.	114 x 162 mm	N	N	N	Y [#]
C5 Env.	162 x 229 mm	N	N	N	Y [#]
DL Env.	110 x 220 mm	N	N	N	Y [#]
8K	267 x 390 mm	Y [#] /Y [#]	Y [#] /Y [#]	N	Y [#]
16K SEF	195 x 267 mm	Y [#] /Y [#]	Y [#] /Y [#]	N	Y [#]
16K LEF	267 x 195 mm	Y [#] /Y [#]	Y [#] /Y [#]	N	Y [#]
Custom	Minimum: 90 x 297 mm Maximum: 148 x 432 mm	N	N	N	Y ^C

Remarks:

Y	Supported. The paper size sensor detects the paper size.
Y [#]	Supported. The user has to select the correct paper size for the tray.
Y ^C	Supported. The user has to enter the width and length of the paper.
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.

PRINTER DRIVERS

Printer Language	Windows 3.1x	Windows 95/98/Me	Windows 2000/NT4.0	Macintosh 8.x/9.x
PCL 6	Yes	Yes	Yes	No
PCL 5e	Yes	Yes	Yes	No
PS2	No	Yes	Yes	Yes
PS PPD	No	Yes	Yes	Yes

- NOTE:** 1) The printer drivers for Windows NT 4.0 are only for the Intel x86 platform. There is no Windows NT 4.0 printer driver for the PowerPC, Alpha, or MIPS platforms.
 2) The PCL drivers for Windows 3.1x are not included on the CD. Web release only.
 3) There are mini-drivers on the web site also.
 4) Macintosh OS 10 is not supported.

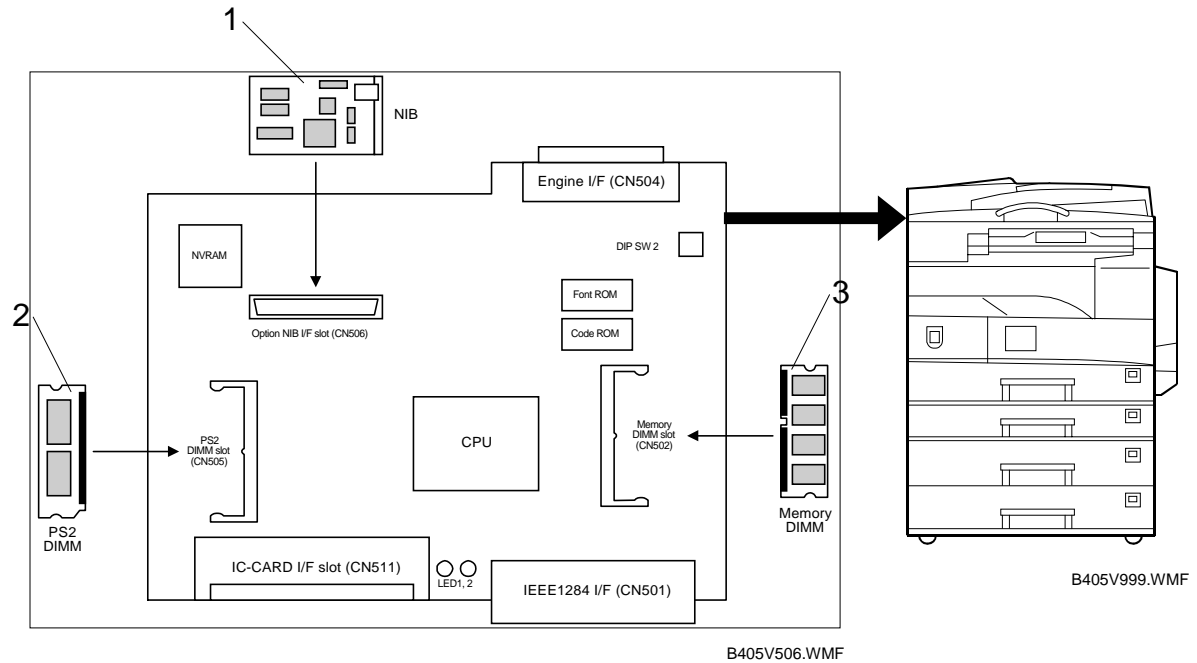
UTILITY SOFTWARE

Software	Description
Agfa Font Manager (Win 95/98/Me, NT4, 2000)	A font management utility with screen fonts for the printer.
SmartNetMonitor for Admin (Win 95/98/Me, NT4, 2000)	A printer management utility for network administrators. NIB setup utilities are also available.
SmartNetMonitor for Client (Win 95/98/Me, NT4, 2000)	A printer management utility for client users. Peer-to-peer printing utility and parallel/recovery printing functions are included.
Printer Utility for Mac	This software provides several convenient functions for printing from Macintosh clients.
Install Shell for Unix	This software allows the machine to be used with Unix. The supported OS are Solaris, HP-UX, and RedHat Linux. Sun OS and Unix Ware are not supported.

Spec.

3. MACHINE CONFIGURATION

3.1 SYSTEM COMPONENTS



Item	Machine Code	No.	Remarks
NIB	B430	1	
PostScript Level 2 Emulation	B431	2	
Memory 32 MB	G578	3	Used in common with the models K-P1, A-C2, J, etc.
Memory 64 MB	G579	3	Same as above
Memory 128 MB	G580	3	Same as above