SCANNER KIT
(Code: B359)

The B359 scanner kit option has a network interface, but there is no SCSI interface.

Both hardware and software are completely different from the A695 scanner option for the NAD30/40.

Therefore, the only comparison with the A695 in this manual is the specification table, which compares the B359 with the A695.

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TABLE OF CONTENTS

1. OVERALL MACHINE INFORMATION

1.1 SPECIFICATIONS

1.1.1 SCANNER CONTROL BOARD

	B359	A695
Standard Scanner Resolution:	Main scan/Sub scan 600 dpi	Main scan/Sub scan 400 dpi
Available Scanning Resolution Range:	Main scan/Sub scan Book Mode Binary processing: 100 ~ 2400 dpi (in 1 dpi step) Grayscale Processing: 100 ~ 600 dpi (in 1 dpi step) ADF Mode Binary processing: 100 ~ 2400 dpi (in 1 dpi step) Grayscale Processing: 100 ~ 600 dpi (in 1 dpi step)	Main scan/Sub scan Binary Processing: 100 ~ 1600 dpi (in 1 dpi steps) Grayscale Processing: 100 ~ 400 dpi (in 1 dpi steps)
8 bits/pixel	8 bits/pixel	8 bits/pixel
Scanning Speed:	0.8 s/200 dpi (A4 lengthwise, Binary, Book mode, MMR Compression)	4 s/200 dpi (A4 lengthwise, Binary, Book mode)
Scanning Throughput:	30 spm for TWAIN (Adonis-C1b/C1c) (local peer-to-peer scanning) 33 spm for Delivery mode (Adonis-C1b/C1c) (network scanning to a server) (A4 lengthwise, Binary, ADF mode, MMR Compression)	Simplex mode (ADF): NAD30S/30: 19 ppm/200 dpi (A4 lengthwise, Binary) NAD40: 21 ppm/200 dpi (A4 lengthwise, Binary) Duplex mode (ARDF): NAD30S/30: 17 ppm/200 dpi (A4 lengthwise, Binary) NAD40: 18 ppm/200 dpi (A4 lengthwise, Binary)
Interface:	Network interface x 1 Ethernet (100 base-TX/10 base-T for TCP/IP)	SCSI-2, high density Interface Connector: 50 pin, half-pitch (x 1)
Compression Method:	MH, MR, MMR (Binary Picture Processing) JPEG (Grayscale Processing)	
Video Memory Capacity:	9 MB (Standard – 4 MB for image storage, 5MB for a work area) 1 DRAM SIMM slot (16 MB or 32 MB) Up to 36 MB (4MB + 32 MB)	2 MB
Power:	DC 5 V, 3 A (from the main machine)	DC 5 V, 2 A (from the main machine)

1.1.2 DRAM SIMM

Number of Pins:	72 pins
Access Speed:	60 ns or faster
Capacity:	16 or 32 MB
Parity:	Any setting is OK
Type:	EDO required

1.2 SOFTWARE

1.2.1 SCANNER DRIVERS

The following scanner drivers are included on the CD-ROM.
- Network TWAIN Driver for Windows 95/98/NT4.0/NT3.51

1.2.2 SCANNER UTILITIES

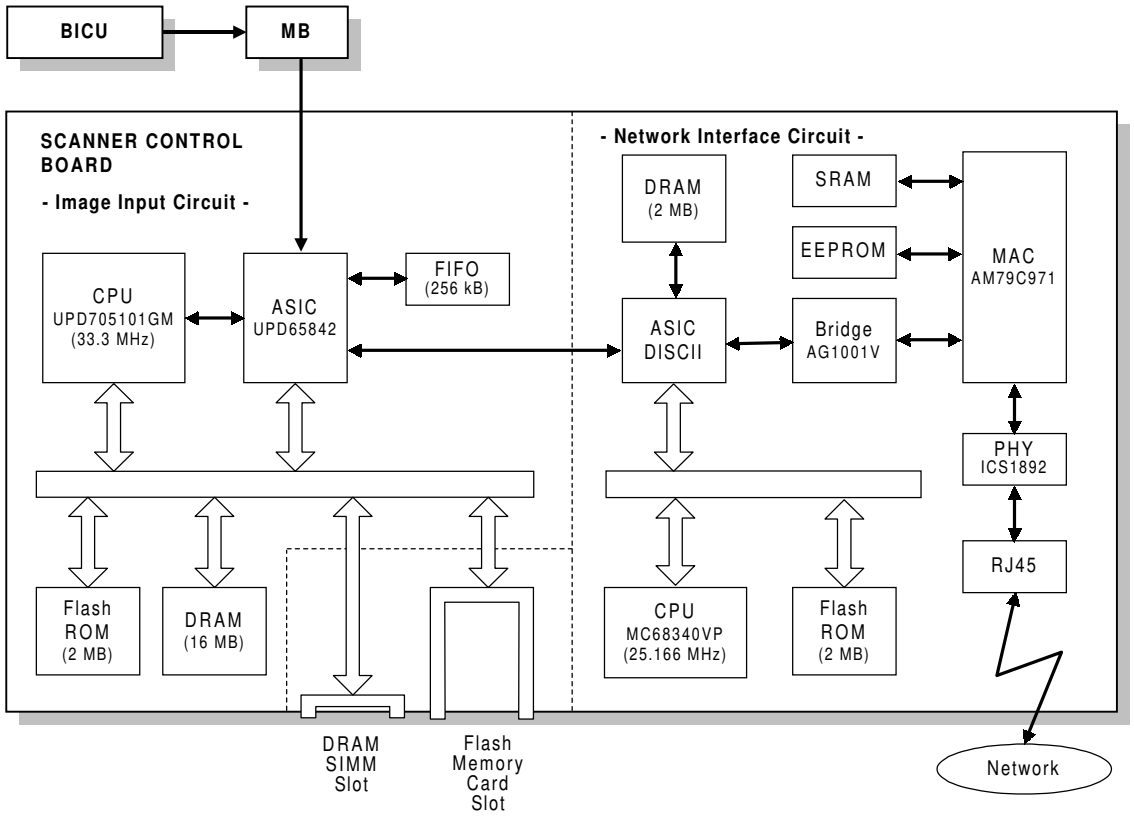
The following scanner utilities are included on the CD-ROM.
- Scan Router for Windows 95/98/NT4.0
- Aficio Manager for Admin/Client (Windows 95/98/2000/NT4.0)

1.2.3 SCANNER UTILITY (OPTION)

- Scan Router Professional (Windows NT4.0 and service pack 4)

2. DETAILED SECTION DESCRIPTIONS

2.1 HARDWARE OVERVIEW



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The scanner controller contains image input and network interface circuits.

The image data from the BICU is compressed in the image input circuit, then the data goes to the network through the network interface circuit.

Each circuit has a CPU and flash memory IC. The functions of each major component are as follows.

1. Image input circuit

   CPU: UPD705101GM
   - Sequence control for the image input circuit
   - Clock/time control
   - DMA control

   ASIC: UPD65842
   - Stores the image data from the BICU board in the main machine into the buffer memory (DRAM)
   - Address control when recalling the data from the memory
   - DMA control for the network interface circuit

   DRAM:
   Compresses and stores the image data from the main machine (Total 16 MB. 9MB for work area, 4MB for buffer area, 3 MB for the working program)

   Flash ROM:
   Contains the scanner controller program and stores the UP/SP settings for the scanner (2 MB)

2. Network interface circuit

   CPU: MC58340VP
   - Sequence control for the network interface circuit
   - Clock/time control
   - DMA control

   ASIC (DISCII):
   - Bus interface between the image input circuit and network interface circuit

   Bridge: AG1001V
   This is an ISA-PCI bridge; it corrects the timing and decodes the commands between the ISA bus and the PCI bus.

   MAC: AM79C971
   This is a LAN controller; it covers the same functions as the Data Link Layer of the OSI model.

   PHY:
   This device covers the same functions as the Physical Layer of the OSI model.

   Flash ROM:
   Contains the program for the network interface (2 MB)

   EEPROM:
   Contains UP/SP settings for the network interface

2.2 SCANNER FUNCTIONS

2.2.1 SELF DIAGNOSTICS

Every time the main power switch has just been turned on, the scanner board performs the self diagnostics and the following items will be done automatically.

- SRAM read/write test
- Flash ROM read test
- Battery test
- Initializes the network interface circuit
- Application software for scanner controller test
- Connection test between the scanner board and the main body

If an error is detected, an appropriate error message or condition will be generated (refer to the Troubleshooting section).

2.2.2 IMAGE PROCESSING IN THE SCANNER CONTROLLER

The image processing for scanner mode is done in the IPU chip on the BICU board. However, the following processes are done in the scanner controller.

- Image compression
- Sub-scan magnification

Also, the scanner controller has a gamma table and dither matrix for scanner mode. When the user selects the image mode using the scanner driver, the appropriate gamma table and dither matrix are downloaded to the BICU board. Then the IPU chip does the image processing using these tables or matrixes.

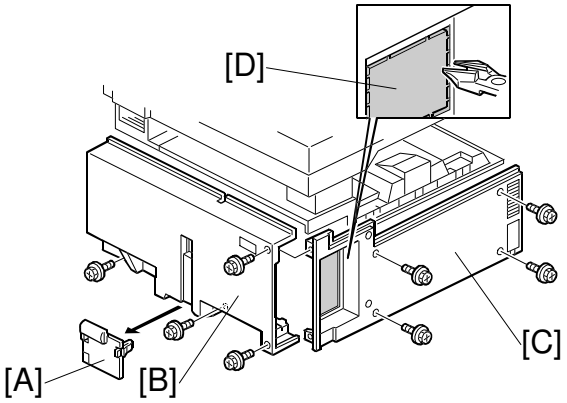
Image Compression

The image compression method for binary picture processing uses MH, MR, or MMR, depending on scanner SP mode 002. Grayscale processing uses JPEG. This is done by the software.

Sub-scan Magnification

Usually, the sub-scan magnification is done by changing the scanner motor speed. However, when the amount of data being transferred is high (e.g., low resolution in grayscale processing mode), the scanner controller deletes every other line.

3. INSTALLATION PROCEDURE



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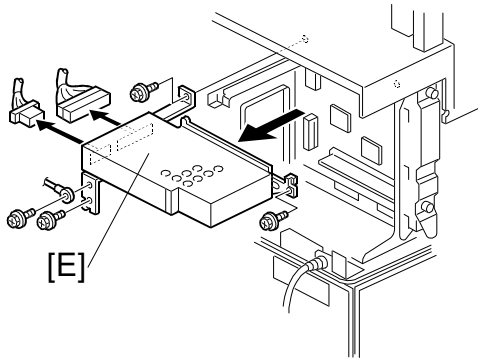

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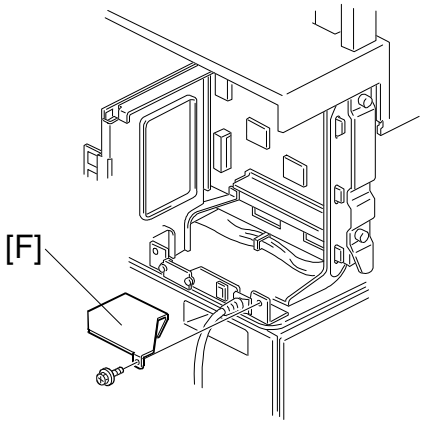

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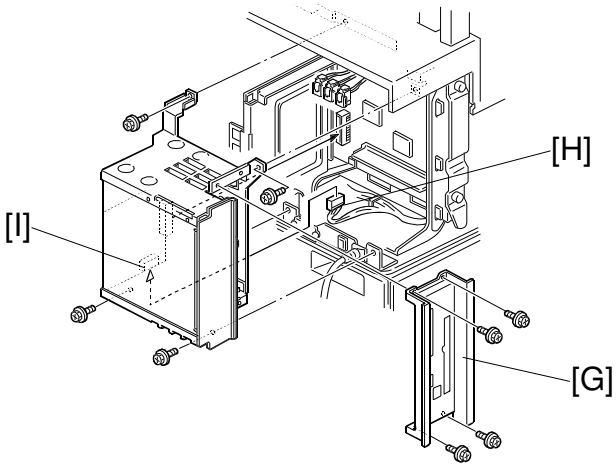

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⚠CAUTION

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

NOTE: If either the Printer Controller Type 450e or Fax Option Type 450e has been installed, skip steps 1 through 8.

1. Remove the connector cover [A], rear cover [B] (4 screws), and left cover [C] (4 screws).
2. Remove the cutout [D] in the left cover.
3. Remove the HDD [E] (4 screws, 2 connectors).
4. Remove the bracket [F] (1 screw).
5. Remove the plate [G] from the expansion box (4 screws).
6. Connect the cable [H] to the expansion box [I], then install the expansion box (4 screws).
7. Reinstall the HDD.
8. Reinstall the left, rear, and connector covers.

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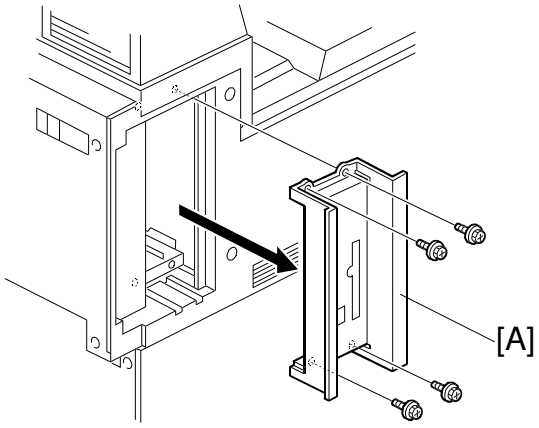

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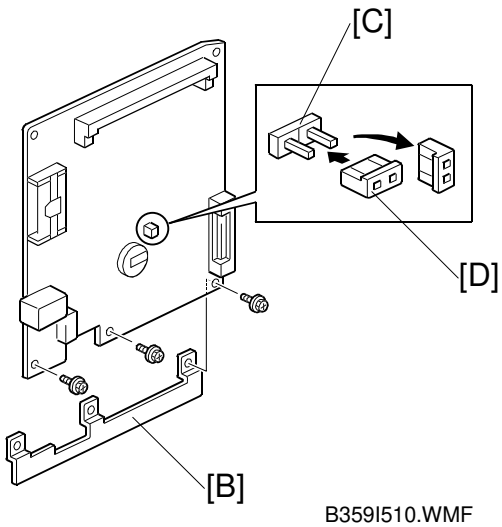

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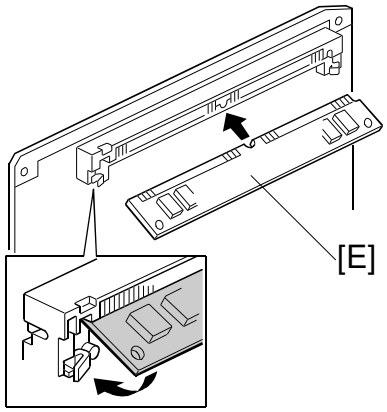

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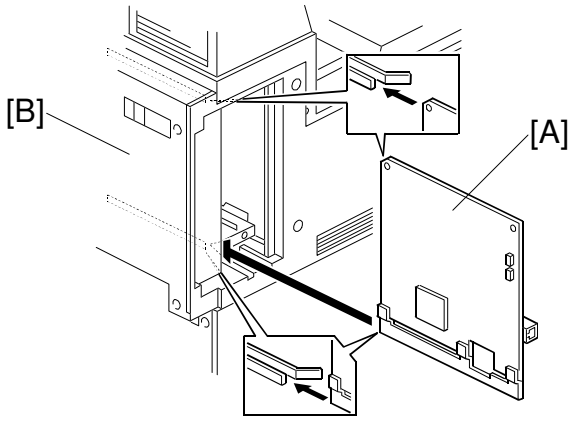
Scanner Controller Installation

NOTE: If either the Scanner Option Type 450e or Fax Option Type 450e has been installed, perform step 9. If neither have been installed, skip step 9.

9. Remove plate [A] (4 screws).
10. Attach the guide plate [B] to the scanner controller board (3 screws).
11. Short TB4 [C] on the scanner board with the jumper [D].
12. If requested by the customer, install the optional SIMM memory [E] on the scanner board.



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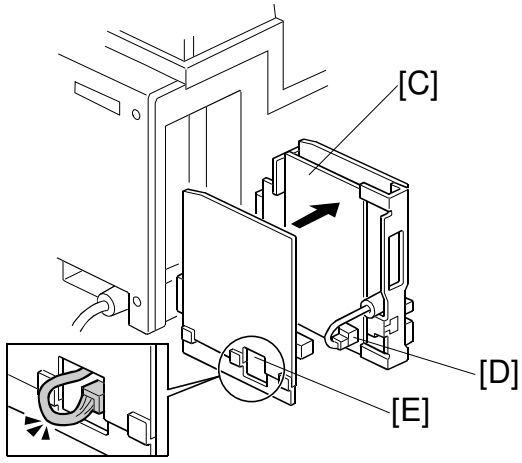

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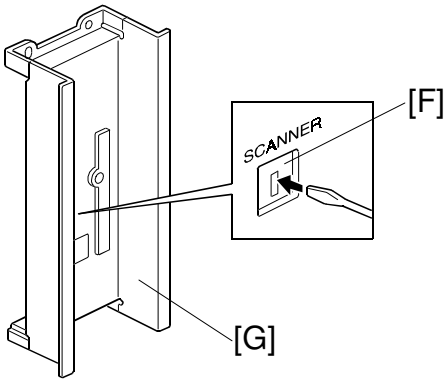

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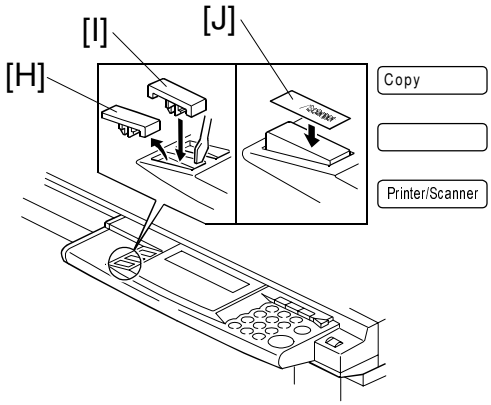

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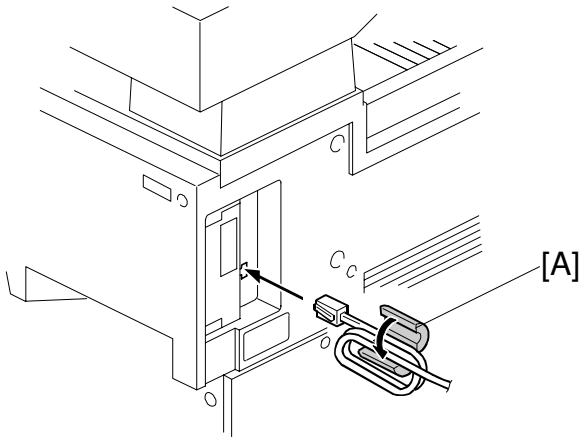
13. Install the scanner controller board [A] in the third slot from the right of the expansion box [B].

If the ISDN Option Type 450 has not been installed, skip steps 14 through 16.

14. Slide out the ISDN board [C].
15. Thread the ISDN modular cable [D] through the opening [E] in the scanner board, as shown.
16. Insert the scanner board and ISDN board into the expansion box at the same time.
17. Remove the cutout [F] in the plate [G] and file down any sharp edges. Reinstall the plate.
18. Remove the bottom cap [H] of the operation panel.
    NOTE: If both Printer Controller Type 450e and Fax Option Type 450e have not been installed, also remove the top cap of the operation panel.
19. Install the **Printer** key [I] on the operation panel and attach the **Scanner** label [J] to the Printer key as shown.
    NOTE: If both Scanner Option Type 450e and Fax Option Type 450e have not been installed, install the **Copy** key on the operation panel as well (see the illustration).



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20. Turn the machine on. If SC4003 occurs, perform the following procedure to clear the SC condition:
    NOTE: SC4003 indicates that the battery is worn out. Even if TB4 has been shorted with the jumper, the battery level will be low the first time the machine is turned on after the scanner controller board is installed. This SC condition will not occur about 30 minutes after TB4 has been shorted.
    1) Enter SP mode (→ 1 → 0 → 7 → C/⊘), pressing C/⊘ for more than 3 seconds.
    2) Select 4 (Scanner SP mode).
    3) Press the Next button 4 times to access SP005 (Error Log Indication).
    4) Exit the SP mode.
    5) Turn the machine off and on. If SC4003 still occurs, check the jumper position.
21. Make sure that the parallel cable is not connected to the printer controller and check the setting of the following copier SP mode (enter SP mode and select 1):
    - SP5-907: Plug & Play Brand Name and Production Name Setting – select the correct one.
22. Attach the core [A] to the STP (Shielded Twisted Pair) cable, then connect the cable to the scanner controller.
    NOTE: The STP cord should be coiled twice inside the core as shown.
23. If the customer wishes to use the machine as a delivery fax, perform the following.
    1) Install the Fax Option Type 450e (A874) and PC Fax Expander (B368).
    2) Enter the Fax SP mode and check that bit 0 of System Switch 1C is at “1”.
    3) Set bit 6 of System Switch 1F to “1”.
    4) Set bits 0 and 1 of User Parameter Switch 31 to “1” depending on the delivery fax function (refer to the ScanRouter Professional Operation Instructions Scanner & Fax Reference Type 450e for more detail).

4. SERVICE TABLE

4.1 SERVICE PROGRAM MODE

4.1.1 SERVICE PROGRAM ACCESS PROCEDURE

The service program access procedure, such as “Entering Service Program (SP) Mode” and “Exiting SP Mode” is the same as for copier and fax, as follows.

Entering SP mode

User Tools → 1 → 0 → 7 → Clear Modes (hold it for more than 3 seconds.)

Exiting SP mode

Press the “Back” and “Exit” keys until the standby mode display appears.

4.1.2 SERVICE PROGRAM MODE TABLES

NOTE: 1) In the Function column, comments are in italics.
2) In the Settings column, the default value is in bold letters.

No.		Function	Setting
001	FTP Port Number	Changes the FTP port number. *After changing this value, do the following:* *1. Run the Registry Editor.* *2. Access /HKEY_LOCAL_MACHINE/SOFTWARE/Ricoh/NetworkScanner* *3. Change the value of PortNo to this SP mode’s value.*	00000 ~ 65536 1/step **3670**
002	Compression Type	Selects the compression type for binary picture processing.	1: MH 2: MR **3: MMR**
003	Software Version	Displays the software version.	
004	Program Number	Displays the program’s part number.	
005	Error Log Display	Displays the error logging data *Check this data when SC4005 occurs. Then inform it to the service center.*	
006	Scan Data Reset	Resets all scanner data (UP and SP modes) except for the network interface data (UP-Network-1 ~ 8) *Press “1” three times to reset.*	
007	All Data Reset	Resets all UP and SP settings *Press “1” three times to reset.*	

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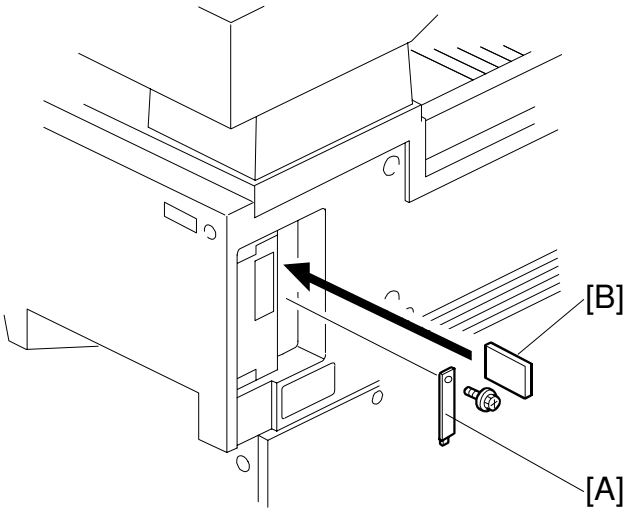
No.		Function	Setting
008	NIC Data Reset	Resets all network interface data (UP-Network-1 ~ 8) *Press "1" three times to reset.*	
009	Density Adjustment 1	Adjusts the image density for each image density level which can be selected with UP mode (UP-Scan-Density)	0 ~ 255 1/step **40**
010	Density Adjustment 2		0 ~ 255 1/step **70**
011	Density Adjustment 3		0 ~ 255 1/step **100**
012	Density Adjustment 4		0 ~ 255 1/step **130**
013	Density Adjustment 5		0 ~ 255 1/step **160**
014	Density Adjustment 6		0 ~ 255 1/step **190**
015	Density Adjustment 7		0 ~ 255 1/step **220**
016	ROM Disk Format	Initializes the flash ROM. *Press "1" three times to initialize.*	

4.2 DOWNLOADING NEW SOFTWARE

4.2.1 SOFTWARE DOWNLOAD PROCEDURE

The software for the scanner controller contains the system software, application software, and network interface software. The new software can be downloaded from a flash memory card.



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1. Prepare a flash memory card that has been programmed with the latest software.
2. Turn off the machine and disconnect the Ethernet (STP) cable from the scanner controller.
3. Remove the cover [A], and insert the flash memory card [B] into the slot so that the “A” side of the card faces the front of the machine.
4. Turn the machine on and press the Scanner Mode key.
5. Press the INSTALL key on the display in reply to the message. Software download will take several minutes.
6. Make sure that the machine displays the scanner SP mode, then after new software has been downloaded successfully, turn off the machine, remove the card, connect the Ethernet cable, and turn the machine back on.

4.2.2 ERROR MESSAGES DURING THE SOFTWARE DOWNLOAD

If downloading failed, one of the following error messages appears. At this time, press the “CONFIRM” bottom in the display to re-try the download.

Message	Action
SYS Erasing Failed ADDR:XXXXXXXX	Re-try the download. If the download fails again, replace the scanner controller.
SYS Writing Failed ADDR:XXXXXXXX	
SYS Verify Failed ADDR:XXXXXXXX	
APL Erasing Failed ADDR:XXXXXXXX	
APL Writing Failed ADDR:XXXXXXXX	
APL Verify Failed ADDR:XXXXXXXX	
NIC board is not equipped	
NIC Initialization failed. CODE:XXXX	
NIC Download mode is disable	
NIC Writing Failed ADDR:XXXXXXXX	
NIC Host Service Error CODE:XXXX	Re-try the download. If the download fails again, replace the scanner controller. Check whether the STP cable is disconnected. If it is connected, disconnect the cable and re-try the downloading.

5. REPLACEMENT AND ADJUSTMENT

5.1 PRECAUTION

⚠CAUTION

Lithium Battery

The danger of explosion exists if a battery of this type is incorrectly replaced. Replace only with the same or an equivalent type recommended by the manufacturer. Discard used batteries in accordance with the manufacturer's instructions.

5.2 NOTE FOR REPLACING THE SCANNER CONTROLLER BOARD

The scanner controller does not have a configuration report and cannot upload/download settings to an IC card. So, before replacing the scanner controller board, check all UP mode and SP mode settings. After replacing the board, re-input these settings.

6. TROUBLESHOOTING

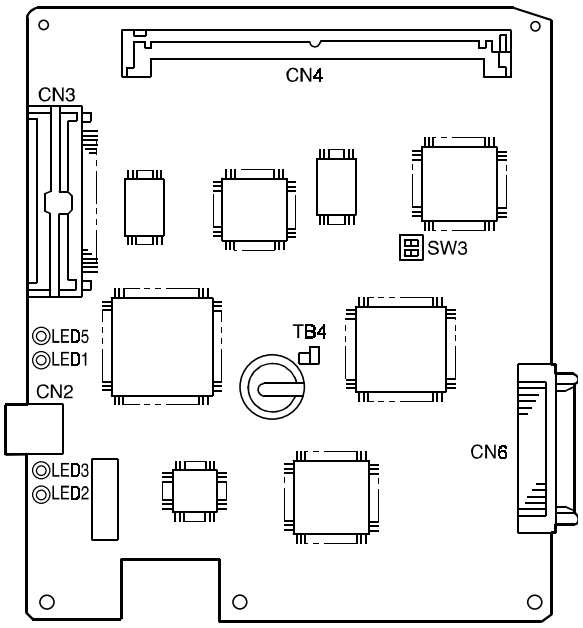
6.1 SERVICE CALL CONDITION

The scanner controller board automatically performs the self diagnostics whenever the main power switch is turned on. If an error is detected, it displays an error message on the LCD. Turn the main switch off and on to reset the SC condition.

6.1.1 SC CODE DESCRIPTIONS

SC code	Error Items	Conditions	Action
SC4001	DRAM Error	• SIMM defective • A SIMM type other than 16MB or 32MB SIMM is installed	Replace or re-install the SIMM
		• Standard SRAM defective	Replace the scanner controller board
SC4002	Flash ROM Error	The machine cannot scan	Defective firmware; try to download the software. If the download fails, replace the scanner controller.
SC4003	Battery Error	• The battery has run out	Replace the scanner controller board
		• The jumper TB4 is at the off position	Change the jumper position
SC4004	NIC Error	NIC circuit defective	Replace the scanner controller board
SC4005	Application Error	Logical error	Turn the main switch off and on, check the error log data (SP005), then inform it to the service center.

6.2 LEDS



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LED No.	Color	Status	Condition
LED1	Yellow	Lit	The network interface circuit is working properly.
		Off	The network interface circuit does not work.
LED2	Green	Lit	The scanner controller board is connected to the network properly.
		Off	The scanner controller board is not connected to the network.
LED3	Green	Lit	100 Base-TX
		Off	10 Base-T
LED5	Red	Lit	+ 5V is supplied
		Off	+ 5V is not supplied
		Blinking	Communication error between the scanner controller board and BICU.