SCANNER KIT

(Code: A695)

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1. OVERALL MACHINE INFORMATION

1.1 SPECIFICATIONS

Scanning Resolution:	Main scan/Sub scan Binary Picture Processing 100 ~ 1600 dpi (in 1 dpi steps) Grayscale Processing 100 ~ 400 dpi (in 1 dpi steps)
Grayscales:	8 bits/pixel
Scanning Speed:	4 s/200 dpi (A4 lengthwise, Binary, Book mode)
Scanning Throughput:	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:	SCSI-2, high density
Interface Connector:	50 pin, half-pitch (x 1)
Video Memory Capacity:	2 MB
Power:	DC 5V, 2A (from the main machine)

1.2 SOFTWARE

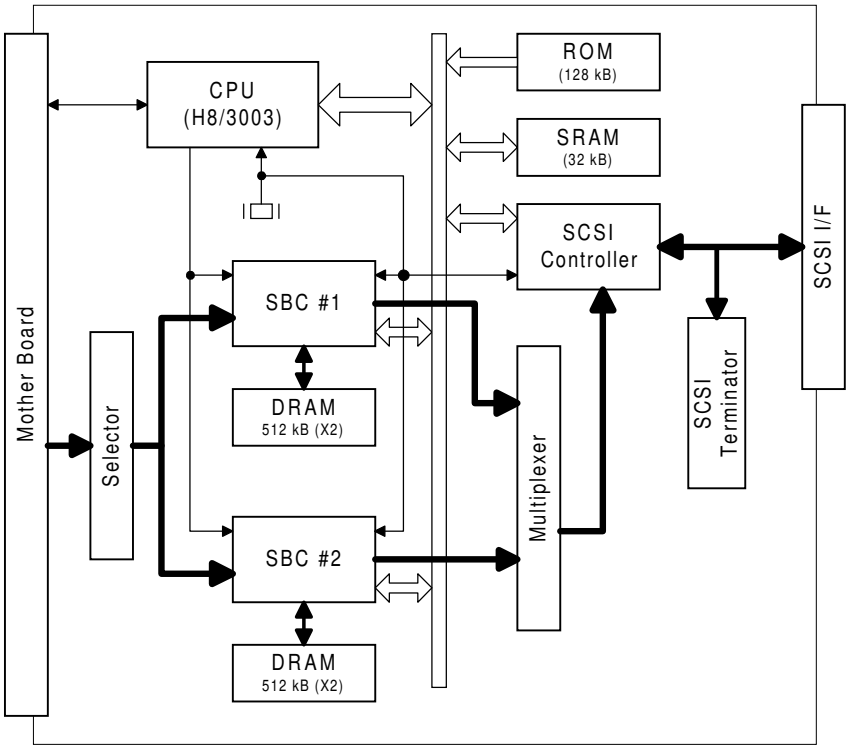
1.2.1 SCANNER DRIVER

The following scanner driver is included in the CD-ROM.

- TWAIN Driver for Windows 3.1/95/98/NT

2. DETAILED SECTION DESCRIPTIONS

2.1 HARDWARE OVERVIEW



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The functions of each component are as follows.

CPU: HD6413002F

- Scanner sequence control
- Clock/time control
- DMA control

SBC (Scan Buffer Controller):

- Stores the image data from the BICU board in the main machine to the buffer memory (DRAM).
- Address control when recalling the data from the memory.

SCSI Controller: SCSI interface controller.

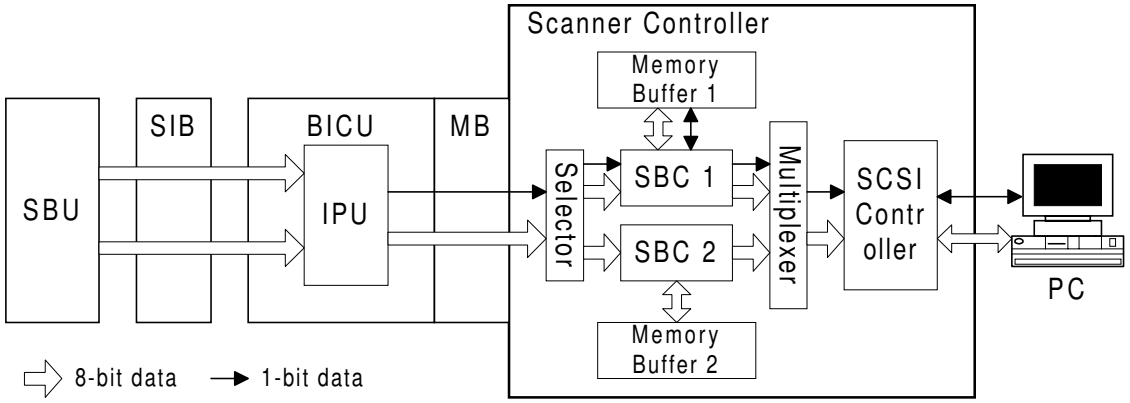
SRAM: Working area (32 kbytes)

ROM: Contains the program (128 kbytes)

DRAM: Stores the image data from the main machine.

SCSI Terminator: It is always enabled.

2.2 IMAGE SCANNING



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The image data for the scanner comes from the IPU chip on the BICU board in the main machine through the MB board. Most image processing for the scanner is performed in the IPU. However, gamma patterns and dither patterns which stored in the RAM on the scanner board are used.

The 8-bit image data (in grayscale processing mode) from the IPU chip goes to the selector, where the data is divided into two image data signals: odd-pixel data and even-pixel data. This is to match the data transfer speed between the input data (20 MHz – grayscale processing mode) and the process speed in the SBC chips (10 MHz each). Then, some filters and patterns are used to process the data and the data is merged in the multiplexer, then it goes to the PC through the SCSI controller.

1-bit data (in binary picture processing mode) is not divided into two data signal and it will be used only the SBC 1 chip.

The image data is stored in the memory buffer. The total memory size is 2 MB. When the memory is full, the scanner stops scanning until the memory is empty. Then the scanner starts scanning again.

2.3 SCANNER FUNCTIONS

2.3.1 SELF DIAGNOSTICS

Whenever the main power switch is turned on the scanner board performs the self diagnostics and the following items will be checked automatically.

- SRAM read/write check
- Initializes the SBC chip
- Initializes the SCSI controller
- Connection check between the scanner board and main machine

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

2.3.2 ENTERING THE SCANNER MODE

There is no scanner function key on the operation panel. Instead of this, the machine enters the scanner mode when the machine receives the scanner command from a PC. However, the machine cannot enter the scanner mode in one of the following conditions.

- Using the scanner or ADF (copying, scanning for facsimile transmission, etc)
- Interrupt copy mode
- In the UP or SP modes
- ADF jam or ADF cover open
- In Auto Off mode or Night mode

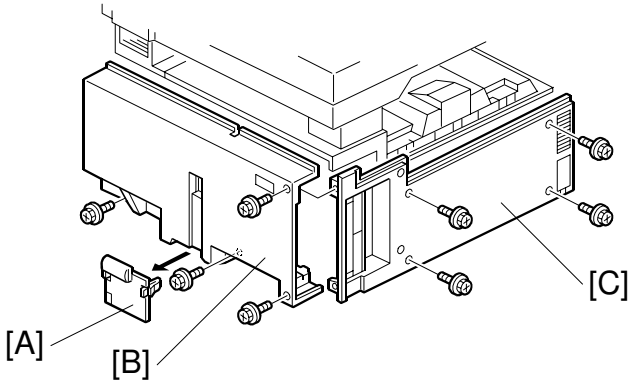
2.3.3 LEAVING THE SCANNER MODE

The machine leaves scanner mode when the system reset timer has run out or when another function key (Copy or Fax or Printer) is pressed.

2.3.4 SCSI ID

The SCSI ID can be selected using UP mode (1. System – 21. Scanner SCSI ID). The SCSI terminator is on the scanner controller board and it is always activated. So, when installing the machine in the SCSI chain, this machine must be at the end of the SCSI chain.

3. INSTALLATION PROCEDURE



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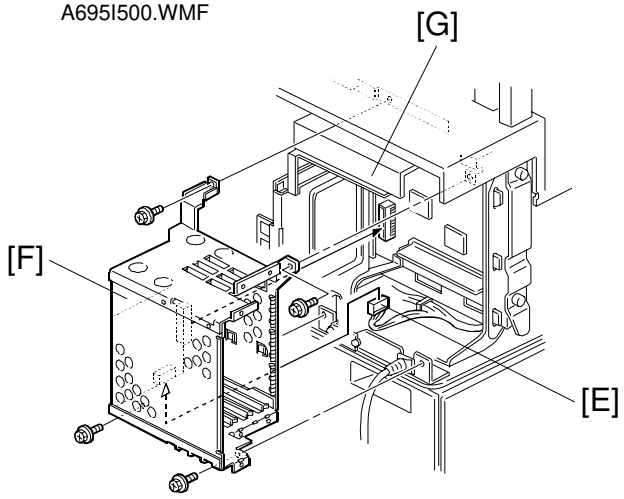

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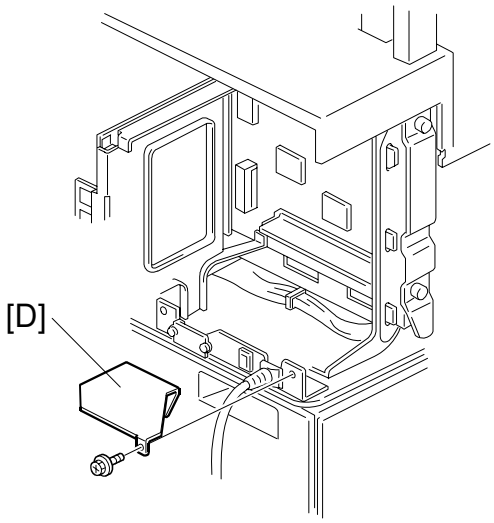

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⚠CAUTION

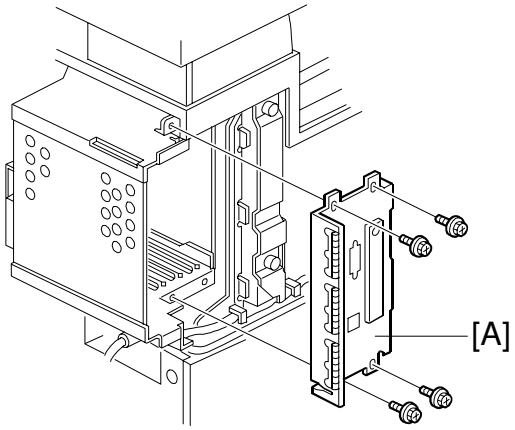
Unplug the main machine power cord before starting the following procedure.

Expansion Box Installation

NOTE: 1) If the Image Enhance Kit Type 450 (HDD) [G] has been installed, remove it, then install the expansion box.
2) If the Fax Option Type 450 and/or the Printer Controller Type 450 have been installed, skip steps 2 and 3.

1. Remove the connector cover [A], rear cover [B] (4 screws), and left cover [C] (4 screws).
2. Remove the bracket [D] (1 screw).
3. Connect the cable [E] to the expansion box [F], then install the expansion box (4 screws).

Scanner Board Installation



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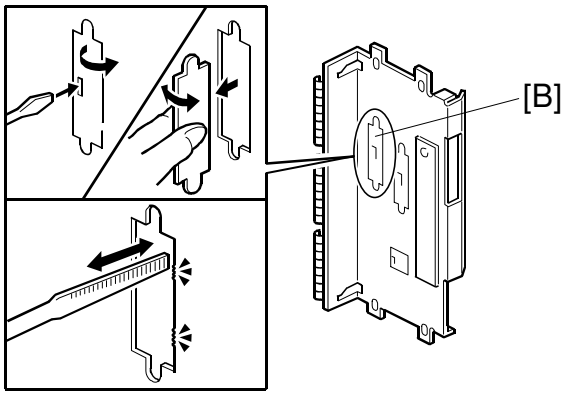

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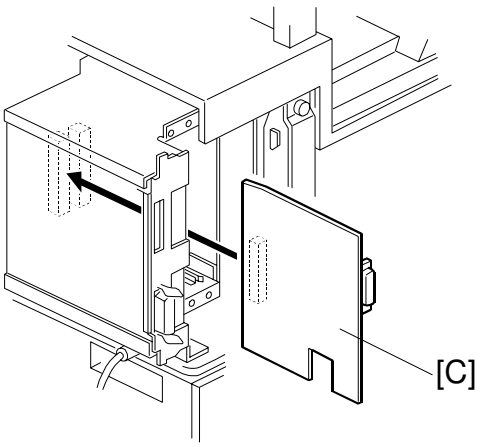

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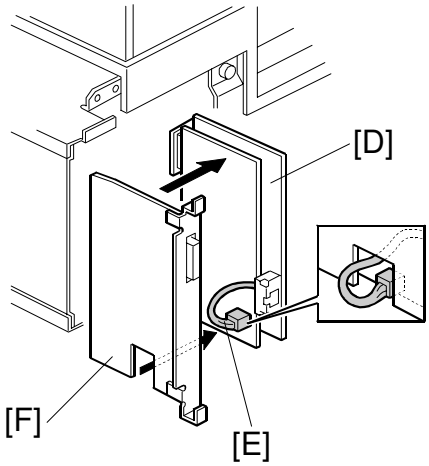

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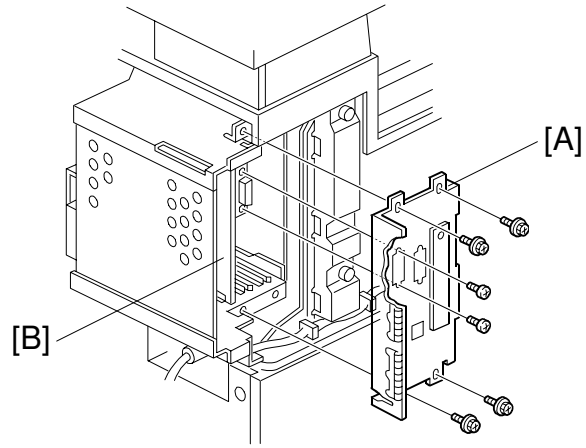
4. Remove the shield plate [A] (4 screws).
5. Open the SCSI I/F window [B] in the plate.
6. Insert the scanner kit [C] in the third slot from the right of the expansion box.

If the ISDN board has already been installed, do steps 7 to 9.

7. Slide out the ISDN board [D].
8. Thread the ISDN modular cable [E] through the opening [F] in the scanner board, as shown.
9. Install the scanner board and ISDN board in the expansion box at the same time.



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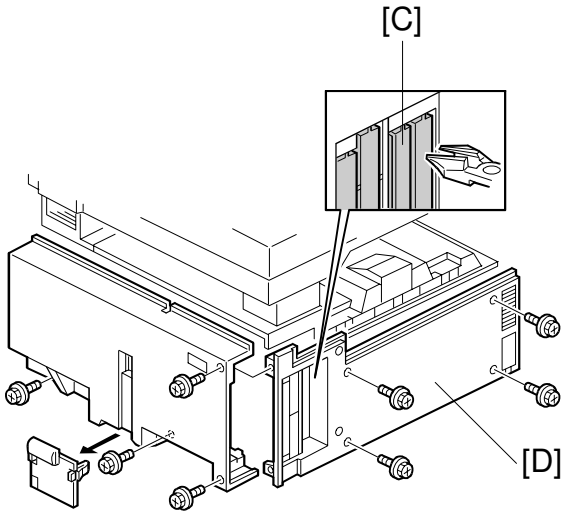

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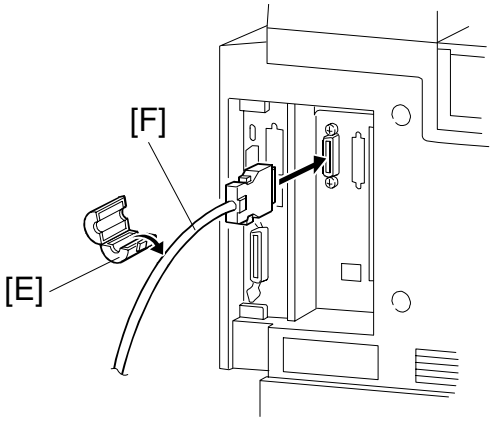

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10. Reinstall the shield plate [A] (4 screws) and secure the scanner board [B] (2 screws)
11. Cut away the cover [C] from the left cover [D].
12. Reassemble the machine.
13. Attach the ferrite core [E] to the SCSI cable [F], as shown.
    Then, turn the machine on.
14. Change the setting of Function Switch (User Tool - 1. System - 06. Function Switch) to “Instant”.
15. Set the SCSI ID number (User Tool - 1. System - 21. Scanner SCSI ID). Then turn the machine off and on to store the ID number.

NOTE: 1) Do not enter a SCSI ID number that is used by another SCSI device.
2) If the machine is connected to a SCSI chain, it must be connected as the last device. (The terminator on the scanner board is fixed).

16. Check the setting of the following copier SP mode.
    - SP5-907: Plug & Play Brand Name and Production Name Setting - select the correct one.

4. TROUBLESHOOTING

4.1 SELF-DIAGNOSTICS

The scanner board automatically performs the self diagnostics whenever the main power switch is turned on. If an error is detected, it displays the error message on the LCD or it informs the error using an LED on the scanner board.

4.1.1 ERROR INDICATION

Error Items	Conditions	Display	LED	SC code
SRAM Error	Scanner board cannot initialize	---	Stays on	---
SBC Error	The machine cannot scan the document	Error message: "Functional Problems" will be displayed	---	SC4001
SCSI Controller Error	The PC cannot detect the scanner board	---	Stays on	SC4001
Communication Error	The main machine cannot detect the scanner board	---	Blinking (1.5s on – 0.5s off)	---
Normal condition	---	---	Blinking (0.5s interval)	---