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OKIDATA®

Service Manual

DOC-IT 3000/4000
Multifunctional Products

Adobe Acrobat printable reference
copy of the OKIDATA Service Training Manual.
09/17/97

Note: This Adobe Acrobat version of the Okidata Service Training Manual was built with the pictures rendered at 300 dpi, which is ideal for printing, but does not view on most displays well.

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1.0 GENERAL DESCRIPTION

Designed for DOS and WINDOWS based personal computers, DOC-IT is a software controlled desktop document processor. It integrates four key office functions: printing, faxing, scanning and copying into a desktop system. This Desktop Document Processor is controlled by a PC-based graphical user interface and software manager, called DOC-IT Manager. From the desktop, users can print documents, scan and edit images, send and receive faxes (either electronically or in plain paper form) and make copies. These tasks can take place while the user is running other applications.

The DOC-IT System is comprised of three major units:

· The DOC-IT Desktop Document Processor (DDP)

- The DOC-IT DDP houses an automatic document feed scanner (which also can be used as a hand-held device), Okidatas innovative Light Emitting Diode (LED)-based presentation quality print mechanism used for printing and copying, and an easy to use Operator Control Panel.

- DOC-IT is available in two versions. DOC-IT 3000 provides presentation quality printing (300 dpi) to meet the text and image printing needs of most offices. DOC-IT 4000 supports an even higher quality level of printing (400 dpi).

- The DOC-IT Controller

- The DOC-IT Controller is a single PC add-in board that features a powerful Intel 32-bit i960 reduced instruction set computing (RISC) microprocessor. The DOC-IT Controller, which requires a full-sized 16-bit Industry Standard Architecture (ISA) slot, manages all functions in real time: scanning, faxing, printing and copying. DOC-IT software and printer emulators are stored on the PC hard disk and downloaded to the DOC-IT Controller as required. As a result, system functions can be upgraded via software and easily downloaded without affecting hardware requirements.

· DOC-IT Manager

- DOC-IT Manager is a Windows-based graphical user interface and software manager that enables users to easily access and manage multiple functions through pull-down menus, dialog boxes and icons. Users can access and manage all scanning, printing and faxing functions via DOC-IT Manager.

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1.1 GENERAL SPECIFICATIONS

1.1.01 Physical Dimensions

· Width
- 17.75 inches (Approximately 450mm)

· Depth
- 16.9 inches (Approximately 430mm)

· Height
- 7.1 inches (Approximately 180mm)

· Weight
- 36 lbs. (Approximately 15kg)

1.1.02 Ambient Temperature and Relative Humidity (RH)

· While Operating:
- 50° to 89° F
- 10° to 32° C
- 20 to 80% RH

· While in Storage
- 14° to 122° F
- -10° to 50° C

1.1.03 Acoustic Rating

· During Operation
- Less than 50 dB

· At Standby
- Less than 45 dB

1.1.04 Power Requirement

· 115 vac (103 vac to 127 vac)

1.1.05 Power Consumption

· 800 W Maximum

1.1.06 LCD Display

· 2-line by 16 digit display

1.1.07 Automatic Document Feeder

· Maximum 25 sheets of 8.5 x 11 inch, 20 lb. bond paper

Note:

Documents must be placed face up on the Automatic Document Feeder (ADF) Tray.

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1.2 DOC-IT CONTROLLER SPECIFICATIONS

1.2.01 Processor Type

· INTEL i80960KB RISC Processor

1.2.02 Processor Speed

· DOC-IT 3000: 16 Mhz
· DOC-IT 4000: 20 Mhz

1.2.03 Memory

Note: All memory is 80 nanoseconds / Zero Wait State

· DOC-IT 3000
5 MB Standard
Expandable to 7 MB in 1MB increments

· DOC-IT 4000
7 MB Standard

1.2.04 Computer Interface

· IBM PC/AT bus

1.2.05 DOC-IT Interface

· Video Interface
Printer Scanner Copier

· Asynchronous Serial Interface (9600 bps)
Facsimile

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1.3 PRINTER SPECIFICATIONS

1.3.01 Print Method

· Exposure Method
- Stationary LED Head

· Development Agent
- Dry Toner

· Fusing Method
- Heat/Pressure Rollers

1.3.02 Printer Emulations

Emulation	DOC-IT 3000	DOC-IT 4000
PCL 4.5 (HP IIP)	STANDARD	Not Available
PCL 5 (HP III)	OPTIONAL	STANDARD
Page Description Language: 13 typefaces (TrueImage)	OPTIONAL	STANDARD
Page Description Language: 35 typefaces (TrueImage)	OPTIONAL	OPTIONAL

1.3.03 Warm-up Time

· Power ON until Printer Ready
- Maximum of 50 seconds

1.3.04 Print Speed

· First print
- 28 seconds maximum (letter size)

· Continuous print
- 8 sheets per minute (letter size)

1.3.05 Paper Specifications

· Weight: 13 to 28 lb. bond paper
· Thickness: .02 to .05 inches (.06 to 0.13mm)
· Types:
    - Paper

- Transparencies
- Labels
- Envelopes

· Size:
- Letter
- Legal
- Executive
- A5
- A6
- B5
- Envelopes (Business #10)

Note:
All items must be able to withstand the heat (150° F) of the fusing process.
FACE-UP rear delivery is recommended for envelopes and labels.

1.3.06 Print Resolution

· DOC-IT 3000
- 300 x 300 dots per inch

· DOC-IT 4000
- 400 x 400 dots per inch

1.3.07 Maximum Printing Width

· 7.98 inches (approximately 200mm)

1.3.08 Paper Cassette Capacity

· First Cassette
- 200 sheets

· Second Cassette (Requires the installation of an optional Second Paper Feed Unit)
- 200 sheets

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1.4 FACSIMILE SPECIFICATIONS

1.4.01 Compatibility
· CCITT Group 3 ONLY

1.4.02 Telephone Line Requirement
· PSTN (Public Switched Telephone Network)

1.4.03 Communication Mode
· Half Duplex

1.4.04 Protocol
· CCITT Rec.T.30

1.4.05 Coding Schemes
· Modified Huffman (MH)

1.4.06 Error Correction
· CCITT Error Correction Mode (ECM)

1.4.07 High Speed Modem
· CCITT Rev. V.29 (9600/7200bps)
· CCITT Rev. V.27 (4800/2400bps)

1.4.08 Low Speed Modem
· CCITT Rev. V.21 channel 2 (300bps)

1.4.09 Transmission Time
· 10 seconds (CCITT No.1 sample document at 9600bps)

1.4.10 Transmit Resolution
· Normal
- 200 x 100 dots per inch

· Fine
- 200 x 200 dots per inch

· DOC-IT 3000
- 400 x 400 dots per inch

Note:
Although DOC-IT 3000 transmission occurs at 400 dpi, printed output is 300 x 300 dots per inch.

· DOC-IT 4000
- 400 x 400 dots per inch

1.4.11 Photo/Halftone Transmit Methods

- Line Art
- Error Diffusion
- Gray Scale with Course Fatting Dither
- Gray Scale with Fatting Dither
- Gray Scale with Bayer Dither
- Gray Scale with Vertical Line Dither

1.4.12 Ringer Equivalence Number

- 0.68

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1.5 SCANNER SPECIFICATIONS

1.5.01 Scanning Device
· 4,096 bit Charge Coupled Device (CCD)

1.5.02 Scanning Method
· Automatic Document Feeder (ADF)
· Handheld

1.5.03 Scanning Speed
· ADF: 4.4 seconds for a letter size sheet

1.5.04 Effective Reading Width
· Maximum: 10 inches (approximately 254 mm)

1.5.05 Scanning Resolution (Software Selectable)
· 200 x 200 dots per inch
· 300 x 300 dots per inch
· 400 x 400 dots per inch

1.5.06 Photo/Halftone Scanning Methods
· Line Art
· Error Diffusion
· Gray Scale with Course Fatting Dither
· Gray Scale with Fatting Dither
· Gray Scale with Bayer Dither
· Gray Scale with Vertical Line Dither

1.5.07 Special Scanning Effects
· Inverse Image
- Produces a "negative" of the scanned image

· Mirror Image

1.5.08 Scanned File Format
· Tag Image File (TIF/CCITT G3))

1.5.09 Image File Conversions
· Original File Formats
- TIF: Tag Image File
- PCX: ZSoft Image File
- BMP: WINDOWS Image File
- FAX: Class F TIFF

· Converted File Formats
- TIF: Uncompressed (TIFF)

- TIF: Packbits (TIFF)
- TIF: CCITT G3 (DOC-IT)
- FAX: Class F (TIFF)
- PCX: ZSoft Image File
- IMG: Digital Research (GEM) Image File
- BMP: WINDOWS Image File
- TIF: 16 Level Gray Scale

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1.6 COPIER SPECIFICATIONS

1.6.01 Number of Copies

· From 1 to 99

1.6.02 Types of Original

· Normal
· Text
· Photo

1.6.03 Copy Methods

· Normal Copy
- The page placed on the ADF Tray is reproduced.

· 2-Up Copy
- Two pages from the ADF Tray are scanned, reduced, then reproduced (side by side) on one sheet of paper.

· Merge Copy
- Multiple pages placed on the ADF Tray are scanned and stored in memory. The operator is then directed to LOAD ADF PAPER OR PRESS STOP TO FINISH. The stored images are then merged and reproduced (actual size) on a single sheet of paper.

1.6.04 Copier Resolution

· DOC-IT 3000
- 300 dots per inch

· DOC-IT 4000
- 400 dots per inch

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1.7 OPTIONS

1.7.01 Memory

· Additional memory can be installed on the DOC-IT Controller for the purpose of:
- Providing additional emulation capability
- Complex image requirements

1.7.02 Paper Trays

· Letter
· Legal
· Executive
· Envelope
· A4
· Universal

1.7.03 Second Paper Feed Unit

· The Second Paper Feed Unit is a mechanism which provides the DOC-IT Operator the capability to install an additional paper tray. An additional paper tray is NOT included with the feed unit. It must be purchased separately.

1.7.04 Printer Emulations

· Refer to Section 1.3.02 for available emulations

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1.8 CONSUMABLES

· Toner Cartridge Kit
- Toner Cartridge
- Fuser Cleaner Pad
- LED Lens Cleaner Pad

· Image Drum Cartridge Kit
- Image Drum
- Ozone Filter

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1.9 RELIABILITY DATA

1.9.01 Automatic Document Feeder Jam Rate

· Approximately one for every 500 operations

1.9.02 Lithium Battery Life (Menu Data)

· Approximately 5 years

1.9.03 Image Drum Life

· One Page Print Jobs
Approximately 7,500 pages
· Multiple Page Print Jobs
Approximately 15,000 pages

1.9.04 Toner Cartridge Life

· First Toner Cartridge placed in an Image Drum Assembly
Approximately 1,500 pages
· Replacement Toner Cartridge
Approximately 2,500 pages

1.9.05 Fuser Cleaner Pad Life

· Approximately 2,500 pages

1.9.06 Estimated Fuser Life

· Approximately 180,000 pages

1.9.07 Mean Time Between Failure (MTBF)

· Approximately 17,250 hours

1.9.08 Mean Time To Repair (MTTR)

· Approximately 30 minutes

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1.10 AGENCY APPROVALS

· Safety
- UL1950, version 3
- CSA C 22.2, NO.950

· Electro-Magnetic Interference (EMI)
- FCC Part 15, Class B

· Communication
- FCC Part 68

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2.1 ELECTRICAL PRINCIPLES OF OPERATION

{doclinks}

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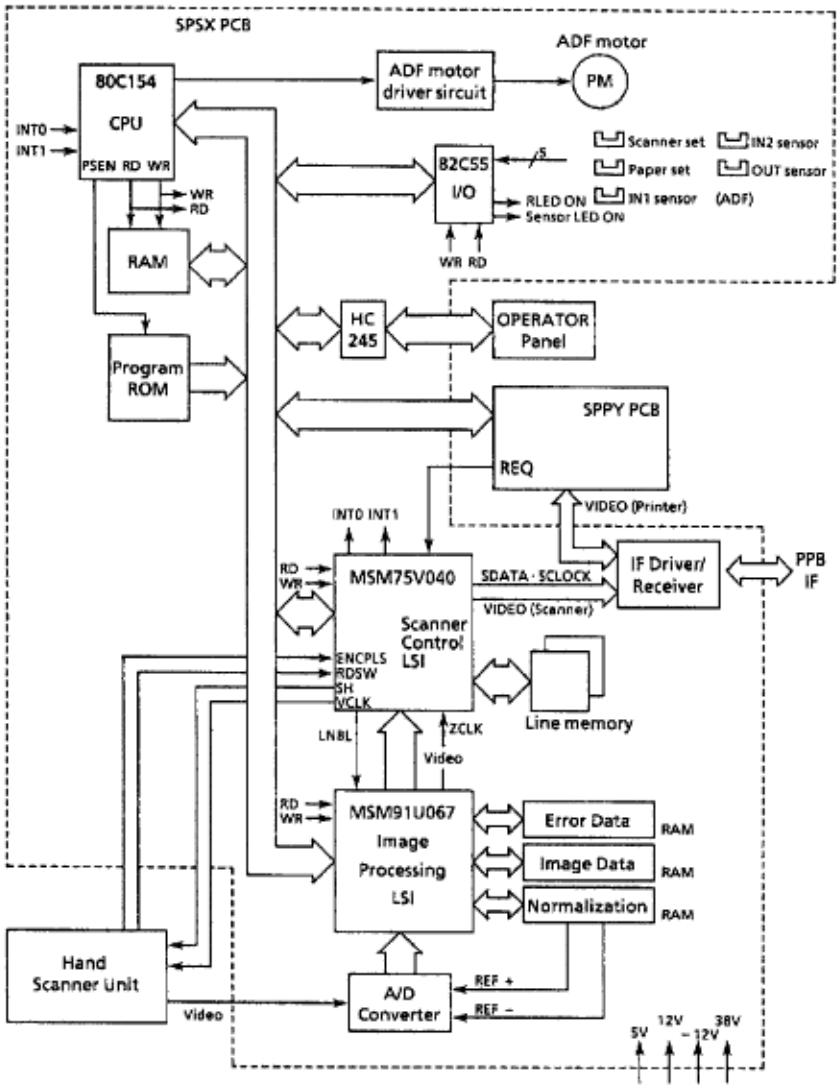
2.1.01 Main Control Board

The main control board controls reception of the data through a host I/F, processes command analysis, controls the scanner unit, outputs data, and controls the operation panel.
The hardware configuration of the main control board is as follows.

CPU (80C154)

- The CPU 80C154 is a one chip controller linked to many CPU peripheral units. The Controller uses an INT Timer
- Interrupt Controller: INT0 and INT1 are used to request an interrupt. The interrupt Controller has been programmed so that proper processing is selected when a signal is input according to an internal table of the CPU.

Memory Map (on Master CPU Side)
The memory layout of the Doc-It Engine is shown below.



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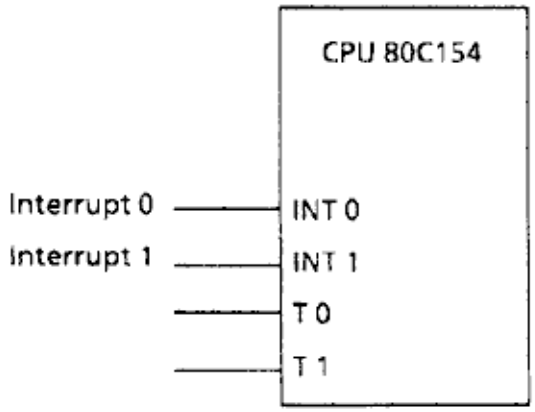

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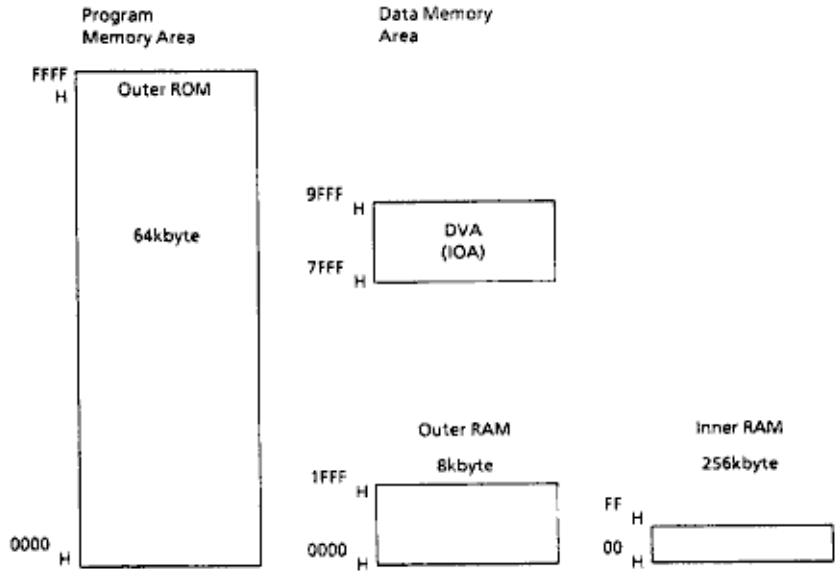
Memory Map (on Master CPU Side)

The memory layout of the Doc-It Engine is shown below.



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Address Decoder

- The memory area or I/O can be selected by decoding low-order addresses MA4 through MA7 and high-order addresses MA8 through MA15 output from the CPU 80C154 using 74S138.

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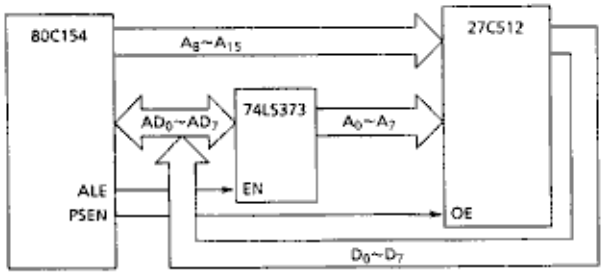
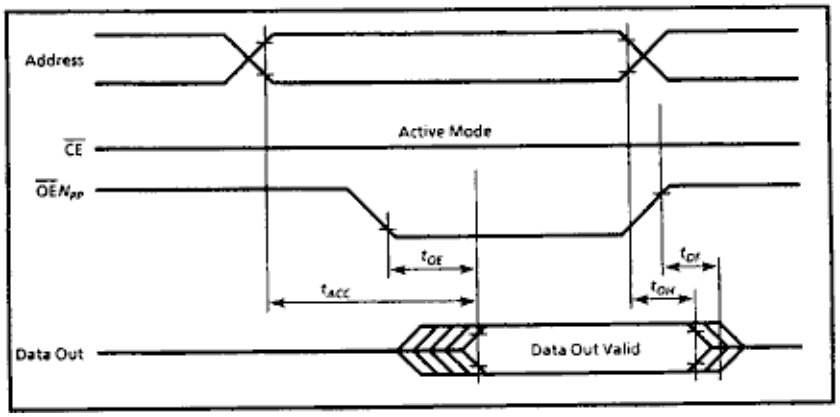
Program ROM

The standard capacity of the program ROM is 64K bytes.



- READ waveforms



Symbol	HN27C512G-17		Unit
	Min.	Max.	
t_{ACC}	—	170	ns
t_{OE}	—	75	ns
t_{DF}	0	60	ns
t_{OH}	0	—	ns

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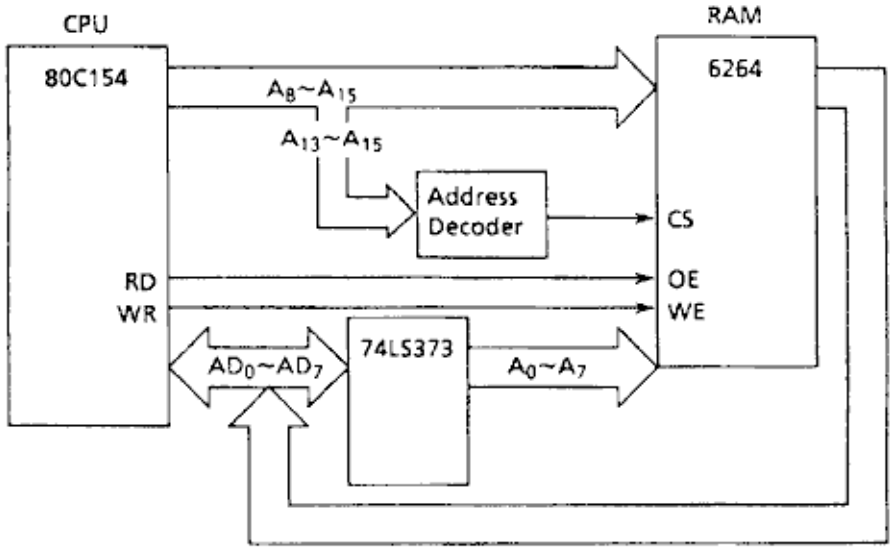
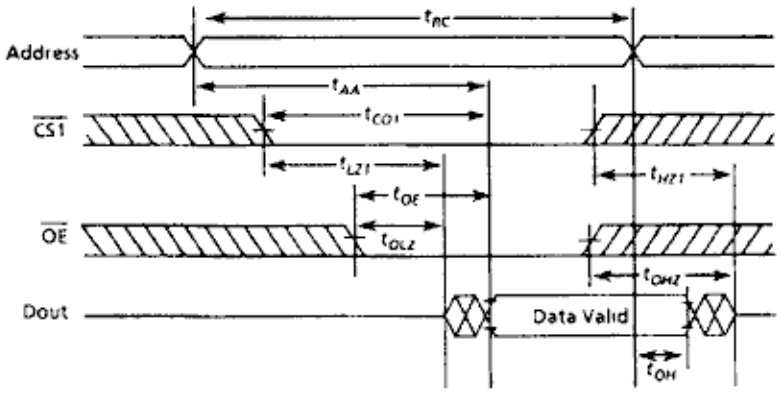
RAM

- The memory capacity of the RAM 6264 is 8K bytes. The RAM 6264 is selected by decoding high-order addresses A13 through A15 output from the CPU 80C154 using an address decoder. The RAM address space is 0000 to 1FFF.

RAM



- READ (*1)



Symbol	HM6264A-10	
	min.	max
t_{RC}	100	—
t_{AA}	—	100
t_{CO1}	—	100
t_{OE}	—	50
t_{LZ1}	10	—
t_{OLZ}	5	—
t_{HZ1}	0	35
t_{HZ2}	0	35
t_{OHZ}	0	35
t_{OH}	10	—

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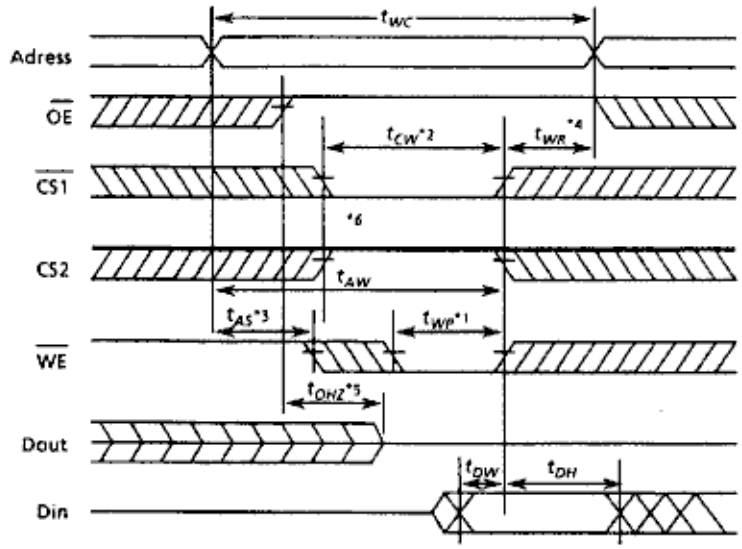
WRITE 1 Waveforms (OE Clock)



Symbol	HM6264A-10	
	min.	max.
t_{WC}	100	—
t_{CW}	80	—
t_{AS}	0	—
t_{AW}	80	—
t_{WP}	60	—
t_{WR}	0	—
t_{WHZ}	0	35
t_{DW}	40	—
t_{DH}	0	—
t_{ONZ}	0	35
t_{OW}	5	—

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Image Control LSI

· Outline

- The selective emphasis error diffusion LSI performs the binary processing of a multivalue image signal. This LSI can select and execute various binary processing methods such as:
- a simple binary method that attaches importance to the character quality
- a systematic dither method that reproduces a high-quality photograph and half-tone dot
- a selective emphasis error diffusion method that reproduces the high-quality coexistent image of a photograph, halftone dot, or character.

· Features

- Processing functions
- Simple binary processing (The slice level can be set.)
- Selective emphasis binary processing (The slice level can be set.)
- Binary processing of systematic dither method (64-scale, 8-bit pattern load system)
- Binary processing of error diffusion method (256 scales)
- Binary processing of selective emphasis error diffusion method (256 scales)
- Input digital, 8-bit
- Brightness can be compensated.
- (y) compensation can be performed. (Compensation coefficients load expression)
- Zoom can be specified in the range of 4% to 200% in 1% units.
- Processing speed is more than approximately 200ns per pixel.
- +5vdc single power supply

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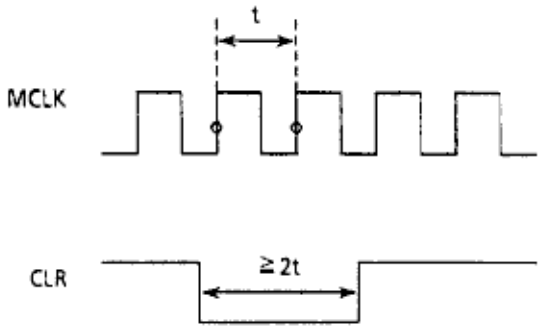
Memory Configuration

· Line buffer for error diffusion (8-bit, 1-line)
· Line buffer x2 for image area judgment (8-bit, 1-line for data holding, and 4-bit,l-line for image area judgment)
· Line buffer for brightness compensation (8-bit, 2-line)
· Clear (RESET) timing chart



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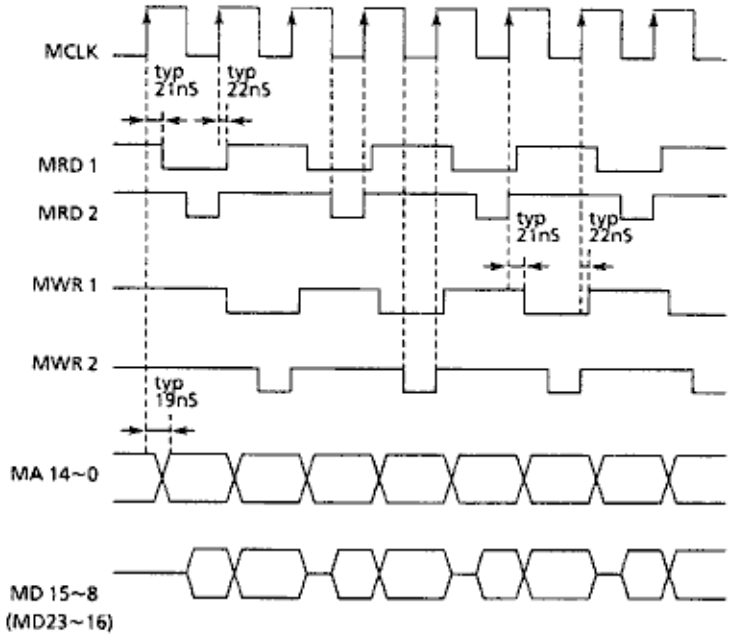
External RAM Access

External RAM access (Image area error)



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Scanner Control LSI

This LSI performs the following functions to control the scanner.

· Sensor control block
- Generates and outputs a start pulse signal and CLK signal for sensor control.
- Generates a line effective signal.
- Finely adjusts the timing of an ADC conversion CLK signal.

· Input/output data block
- Selects the input data from serial to parallel and vice versa.
- Converts the parallel data into the serial data.
- Controls the output data or output CLK signal mask.
- Selects the send clock signal.

· Line memory control block
- Address generator circuit
- RD/WR control circuit
- The transfer address can be set (a window function is provided).

· Interrupt control circuit
- Generates two interrupt signals (INT0 and INT1) to CPU.

· Input/output circuit
· Watchdog timer
· CPU interface block

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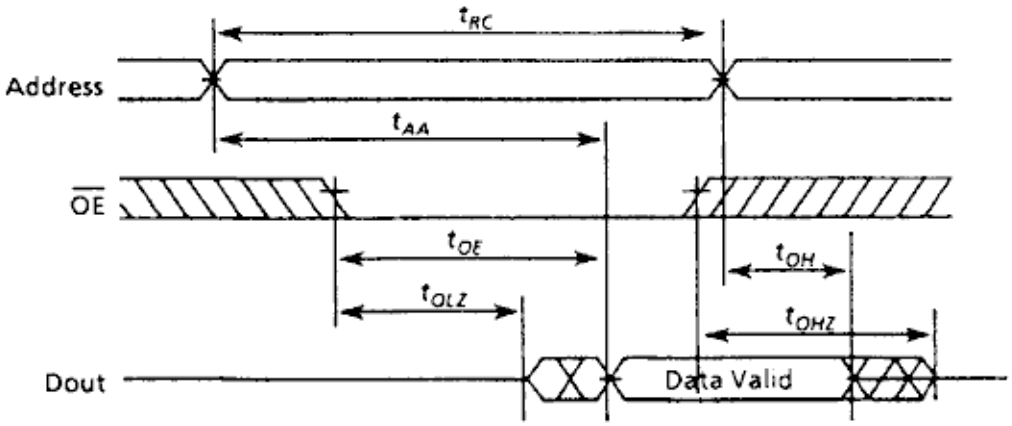
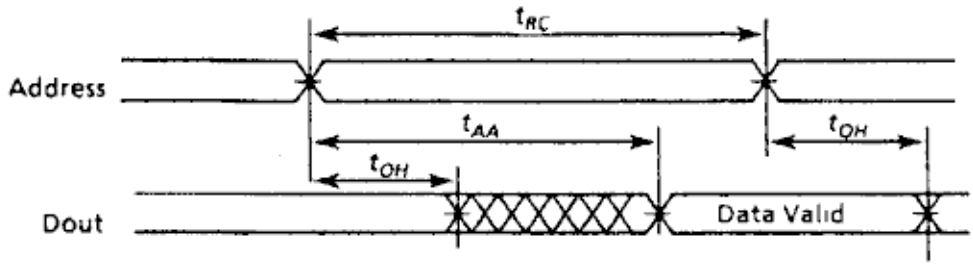
Line Memory Read/Write Waveforms

- READ 1 waveforms

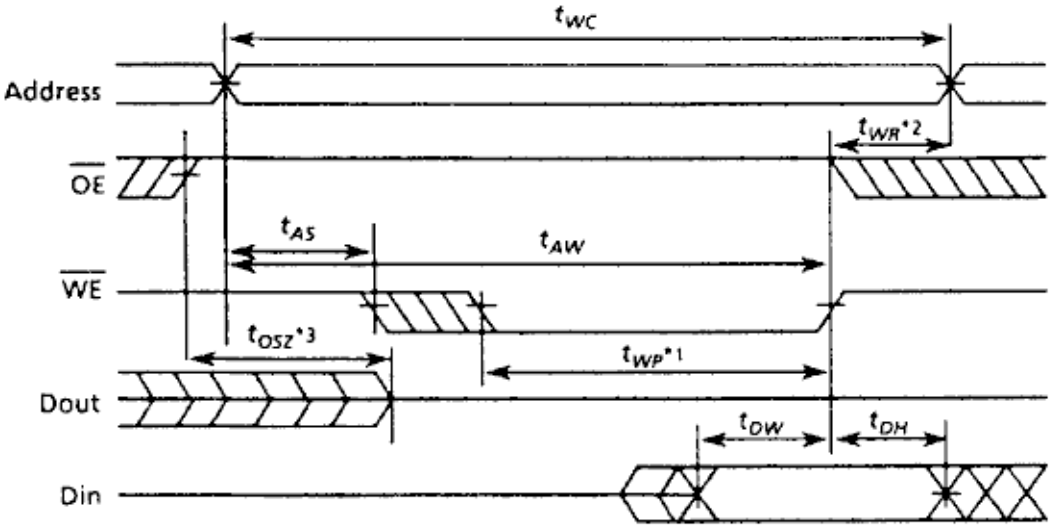


Symbol	HM62256-8	
	min.	max.
t_{RC}	85	—
t_{AA}	—	85
t_{OE}	—	45
t_{OH}	5	—
t_{CLZ}	10	—
t_{OLZ}	5	—
t_{OHZ}	0	30

- READ 2 waveforms



- WRITE 1 waveforms (OE clock)



Symbol	HM62256-8	
	min.	max.
t_{WC}	85	—
t_{AW}	75	—
t_{AS}	0	—
t_{WP}	60	—
t_{WR}	10	—
t_{WHZ}	0	30
t_{DW}	40	—
t_{DH}	0	—
t_{OHZ}	0	30
t_{OW}	5	—

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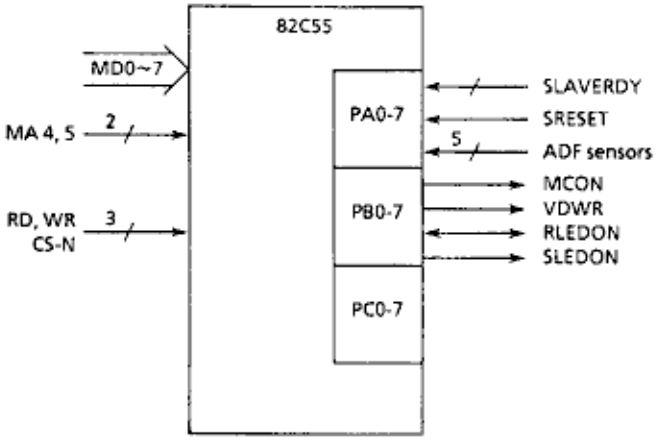
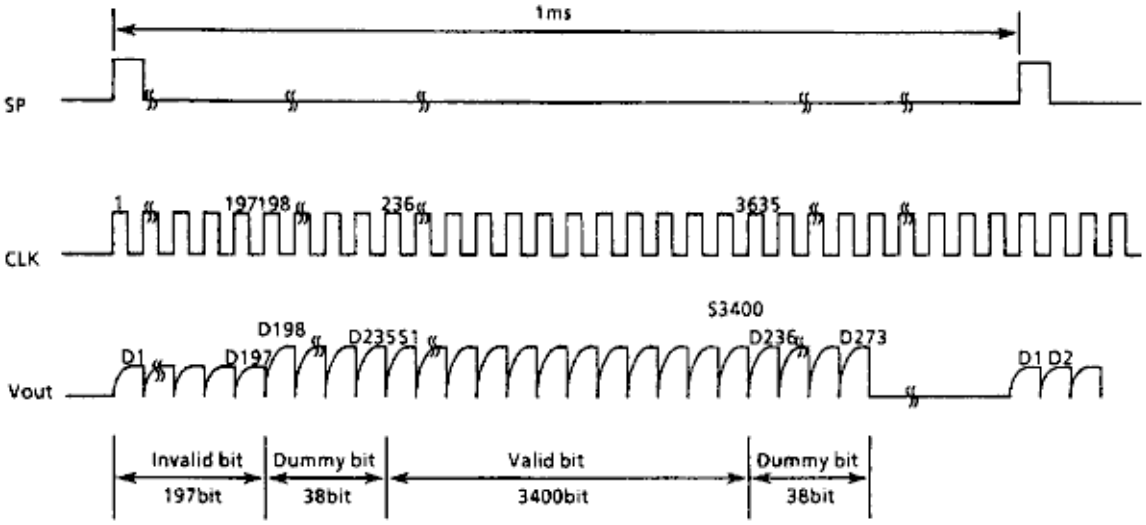
Peripheral Interface Controller

The information of sensor conditions on ADF, signals of print control CPU, and signals for A/D converter circuit are input and output.



Data output from scanner

Waveform



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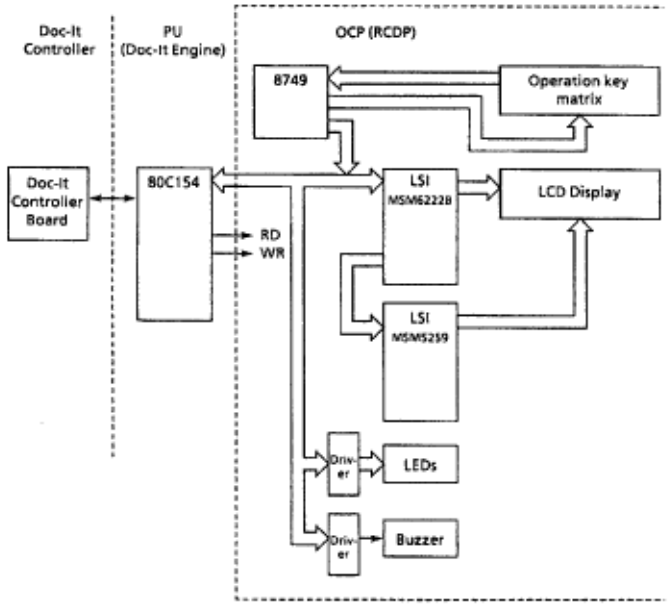
Operator Panel

The Operation panel (OCP) is connected to Doc-It Engine (PU). IT has 26 key switches, seven LED lamps, a 16-character x 2-line LCD, and a buzzer. The OCP sends the press/release data of the key switches to the Doc-It Controller Board via PU, then displays the LEDs and LCD and sounds the buzzer by the control of the PU that receives the command from Doc-It Controller.



· The following components make up the operation panel.
- 8 bit MPU (8749 or 8049)
- LCD control driver LSI (MSM6222B or HD44780)
- LCD driver LSI (MSM5259 or HD44100)
- LCD display (16 characters x 2 lines)
- LEDs
- Operation key switches
- Buzzer

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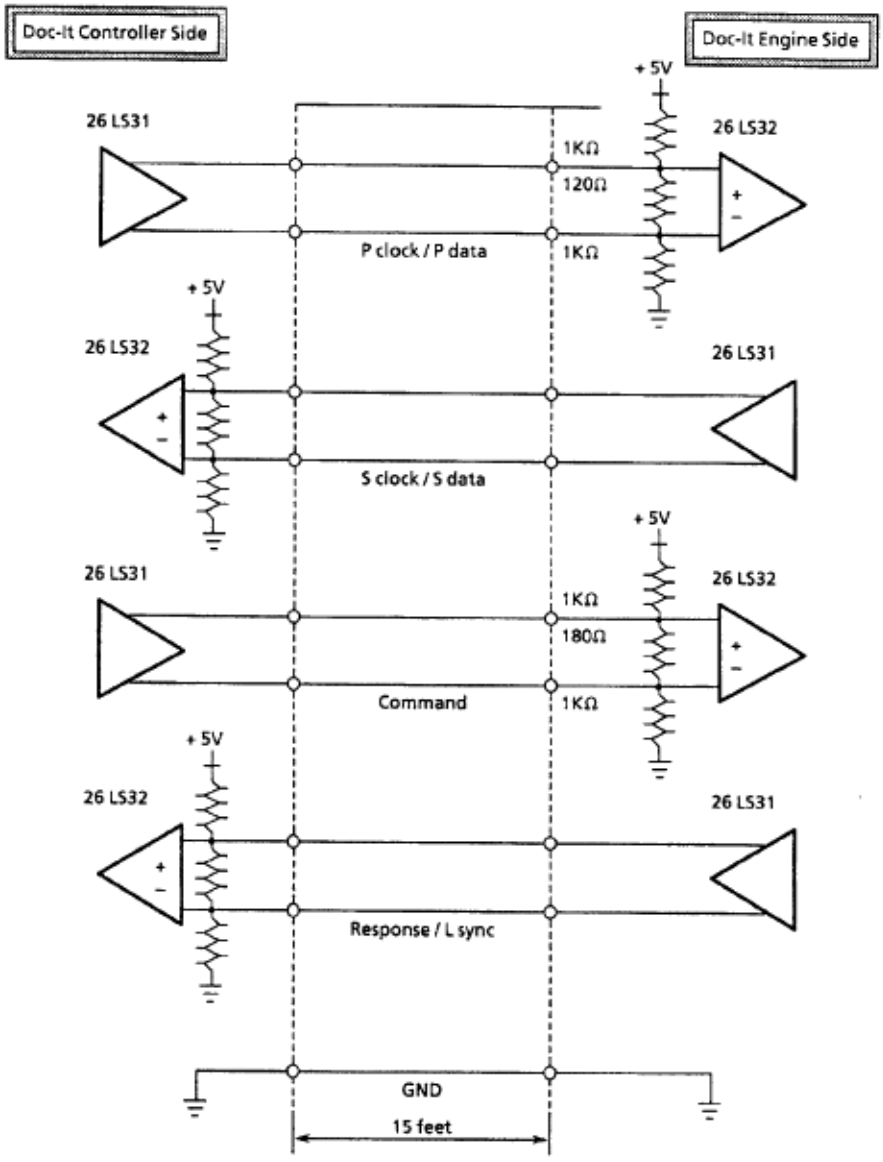
Serial Video Interface



· Electrical Condition of DPS Interface

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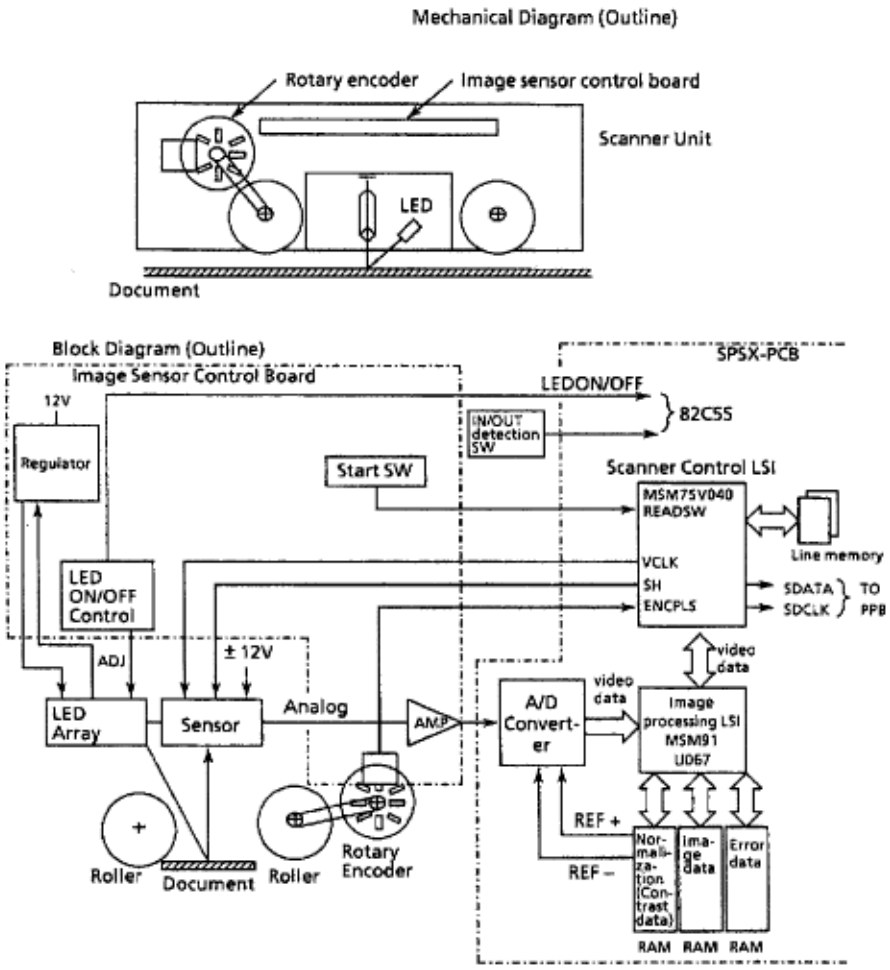
Image Sensor Control Board



The image sensor control board is incorporated into a hand scanner and has the functions below.

- · Analog output amplification
- · Output generation of rotary encoder
- · LED ON/OFF control
- · Start switch detection
- · Supply of CLK SH signal to image sensor

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2.2 PRINTER CONTROL

2.2.01 Hardware Configuration

The principal hardware components of the printer unit are listed below (Refer to the Printer Unit Block Diagram ( )).

- Printer Control Board (SPPY-PCB)
- Fuser Unit
- Main Motor (Drum motor)
- LED Array
- Sensors and Switches
- Resist Motor
- Fan
- Main Control Board
  - Video interfaces (MSM75V039-PPB interface)
  - Second tray interface (MSM75V039) (OPTION)

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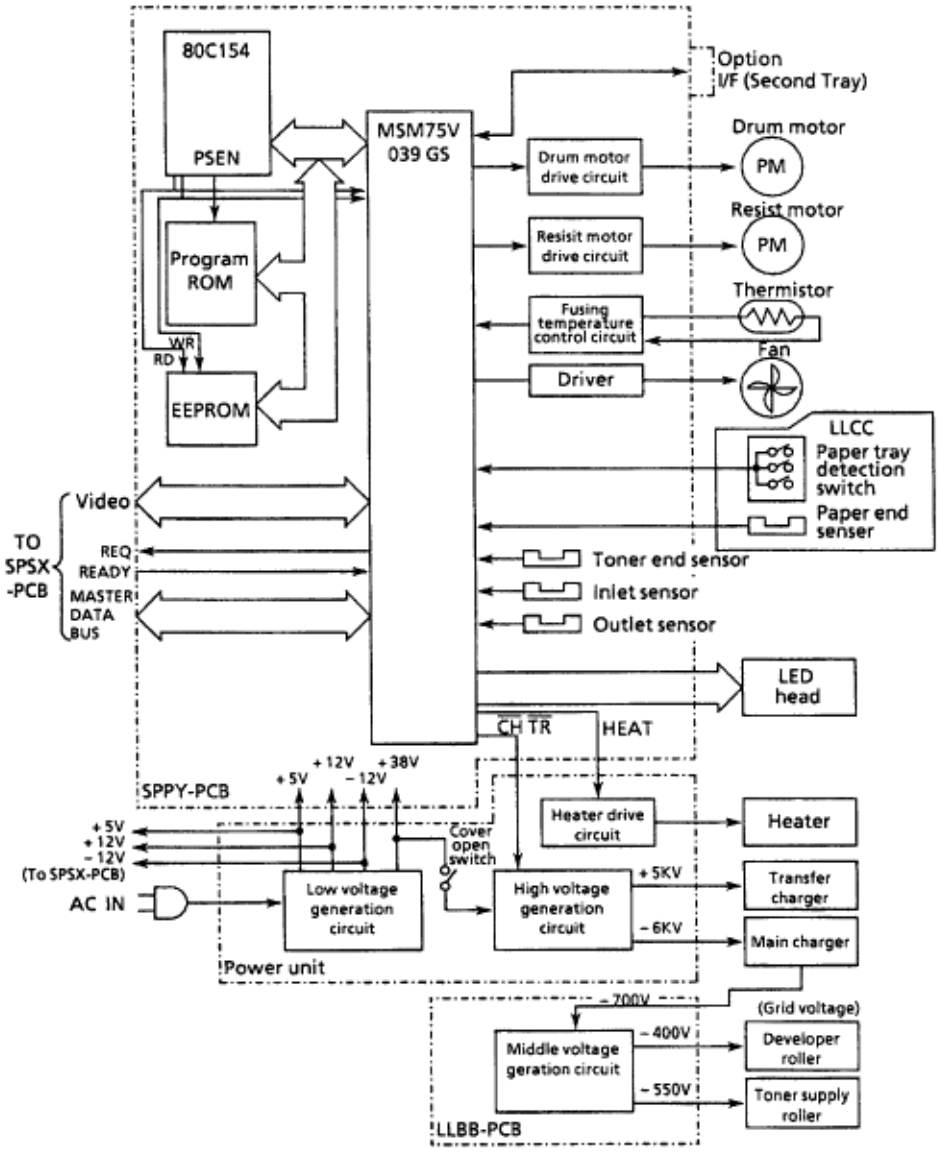
Printer Unit Block Diagram



Printer unit block diagram

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2.2.02 Printer Control Board

The Printer Control Board is composed of an MPU80C154, MSM75V039, ROM and EEPROM.

· **MPU80C154**
- 8-bit CPU
- Internal RAM: 128 bytes
- I/O ports: 32
- Internal ROM: 8K bytes (not used)
- Interrupt lines: 5

· **EEPROM**
- 8-kbit electrically erasable PROM (EEPROM), which is loaded with the following kinds of data:
- Total number of sheets printed after installation/Total modified number of sheets printed after installation
- Total number of sheets printed with the drum currently in use
- Total number of sheets printed with the fuser currently in use
- Setting of time required from completion of print to stand by
- Feed length needed to feed the paper to a printable position
- Print starting line on paper (Top margin)
- Time needed to turn on LEDs in the LED head
- Error log number
- Feed length needed to feed the paper to a readable position (ADF)
- Total number of sheets scanned with ADF
- Total number of sheets fed with ADF currently in use
- Slip correction values of document sheets on the ADF

· MSM75V039 (80 pin LSI)
- Data transfer to the LED head
- Address latch & address output
- 8 bit interface
- LSYNC cycle set counter
- Serial interface
- EPROM (contains the printer control program)

· Printer control gate array (MSM75V039)
- Frequency divider circuit
- A 1/6-frequency divided signal with the oscillator (11.059 MHz) connected to the external source is used as a system clock inside the gate array.
- Strobe pulse set circuit
- The strobe pulse set circuit has a strobe width register and can be set freely.
- The strobe width register sets the pulse width of a strobe signal that is output to the LED head.
- The pulse width of the strobe signal is usually set when the power of the Doc-It Engine is turned on and when the vertical resolution setting is altered.
- Setting range: 1.084 ns to 2.33 ms

- LSYNC period set circuit
- The LSYNC period set circuit sets the time of one LSYNC period corresponding to one line.
- The time of the LSYNC period is usually set when the power of the Doc-It Engine is turned on and when the vertical resolution setting and print speed setting are altered.
- Setting range: 1.085 us to 4.44 ms

(1 step = 1.085 us)

LED HEAD	VERTICAL RESOLUTION	PRINT SPEED	LYNC period
300 dpi HEAD	300	8PPM	1.67 ms
400 dpi HEAD	300	8PPM	1.67 ms
	400	8PPM	1.25 ms

- Dot pulse counter

The dot pulse counter sets the number of dots that are sent to one line of an LED head. It is also used to set the write amount in the main scanning direction. The write amount is usually set when the power of the Doc-It Engine is turned on.

Set register
I/O address

	MSB							LSB
8092H	7	6	5	4	3	2	1	0
8093H	---	---	---	---	11	10	9	8

Setting range: 0 to 4096 dots
Set value:
1) 300 dpi LED head: 2560 dots
2) 400 dpi LED head: 3456 dots

- Motor phase selection register
- The motor phase selection register sets the rotation speed during constant-speed rotation of the drum motor and register motor.
- The rotation speed is usually set when the power of the Doc-It Engine is turned on and when the print speed setting is altered.
- Setting range: 1.085 us to 404 ms
- Set value: 8ppm: 0.83 ms (768 counts)
- Interval timer
- The interval timer sets the time value used in an interval timer register.
- Setting range: 34.7 us to 35.6 ms
(1 step: 34.7 us)
- The Doc-It Engine uses the interval timer as a register motors interval timer. The interval timer is used to turn the motor drive off before and after the phase selection because a counter-electromotive force is generated when the phase of the register motor is selected.

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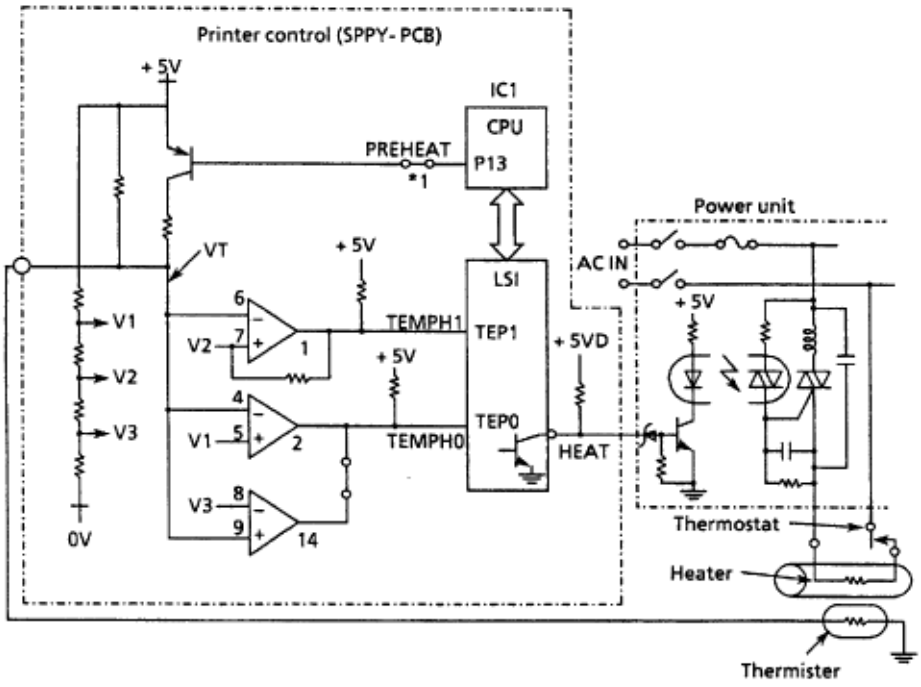
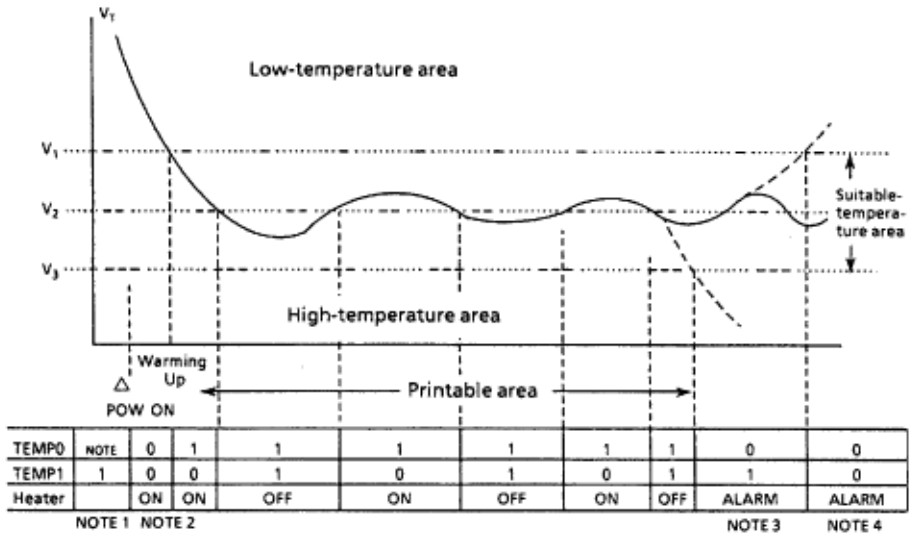
2.2.03 Fuser Unit

The fuser unit heater is controlled by a thermistor, a comparator, an LSI, and a CPU to keep the heat roller surface temperature within a predetermined range (about 180 degrees centigrade). The comparator output signals, TEMPH0 and TEMPH1, resulting from the comparison of the voltage level associated with changes in the thermistor resistance with the partial voltage of the reference resistance enter the LSI ports TEMP0 and TEMP1. The CPU read the status of these ports at fixed time intervals and turns on or off the HEAT signal according to the port status to control the temperature. The CPU also switches its port P13 output signal PREHEAT at power-on time to check for a blown or shorted wire in the thermistor according to the status of the TEMPH0 and TEMPH1 signals then in effect.

A thermostat within the fuser unit prevents abnormal temperature rises in the fuser unit if the thermistor fails.





TEMP0	NOTE	0	1	1	1	1	1	1	0	0
TEMP1	1	0	0	1	0	1	0	1	1	0
Heater		ON	ON	OFF	ON	OFF	ON	OFF	ALARM	ALARM
		NOTE 1	NOTE 2						NOTE 3	NOTE 4

#####

Notes:

1) The CPU checks for a blown or shorted wire in the thermistor at power-on time and at start from QUIET MODE, setting a fuser alarm if an error is detected.

2) The CPU also set a fuser alarm if the suitable-temperature area is not attained within a

specified period of time after power-on.

3,4) The CPU, on detection of a fuser alarm, comes to a halt after printing the current page.

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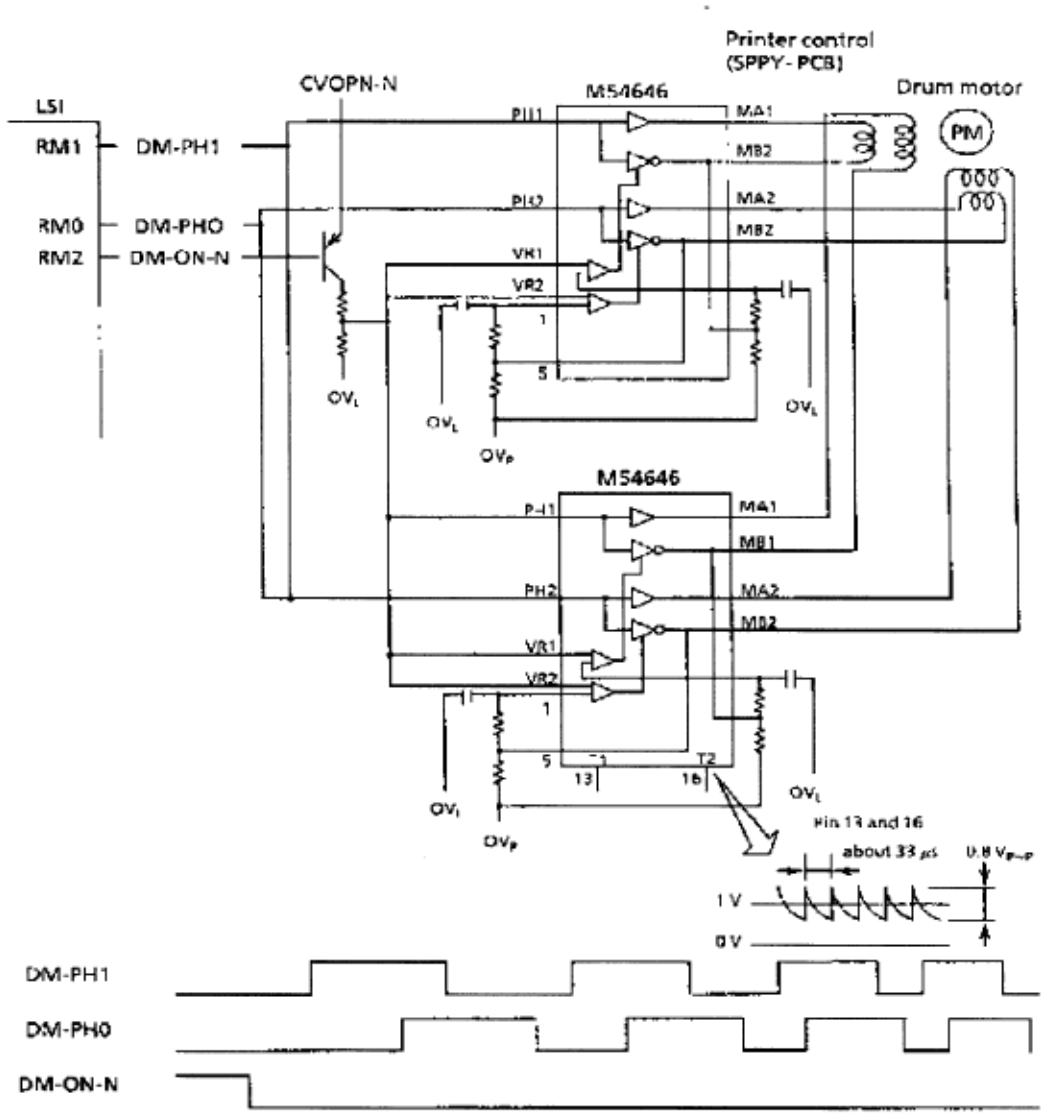
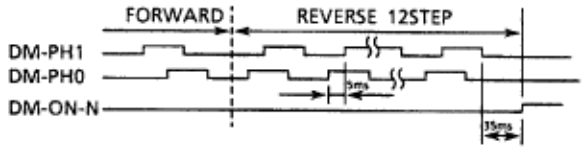
2.2.04 Main Motor

This pulse motor is driven by the motor drive IC(M54646). It is two-phase excited and bipolar-driven according to the DM-PH0 and DM-PH1 signals generated from the LSI. The level of the input voltage to the VR1 and VR2 terminals is compared with that of the voltage drop across R35, R36, R94 and R95 fed back to pins 1 and 28. The coil current is kept constant by cutting off the drive time temporarily when the feedback voltage is higher.

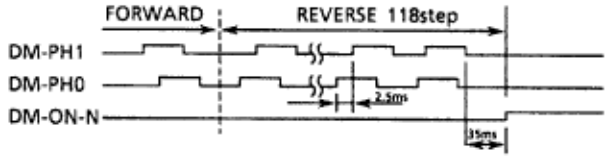


This pulse motor is driven in the reverse direction in the following case.

(i) STOPPING



(ii) AFTER WARMING UP and STOPPING AFTER EVERY 50 PAGES PRINT.



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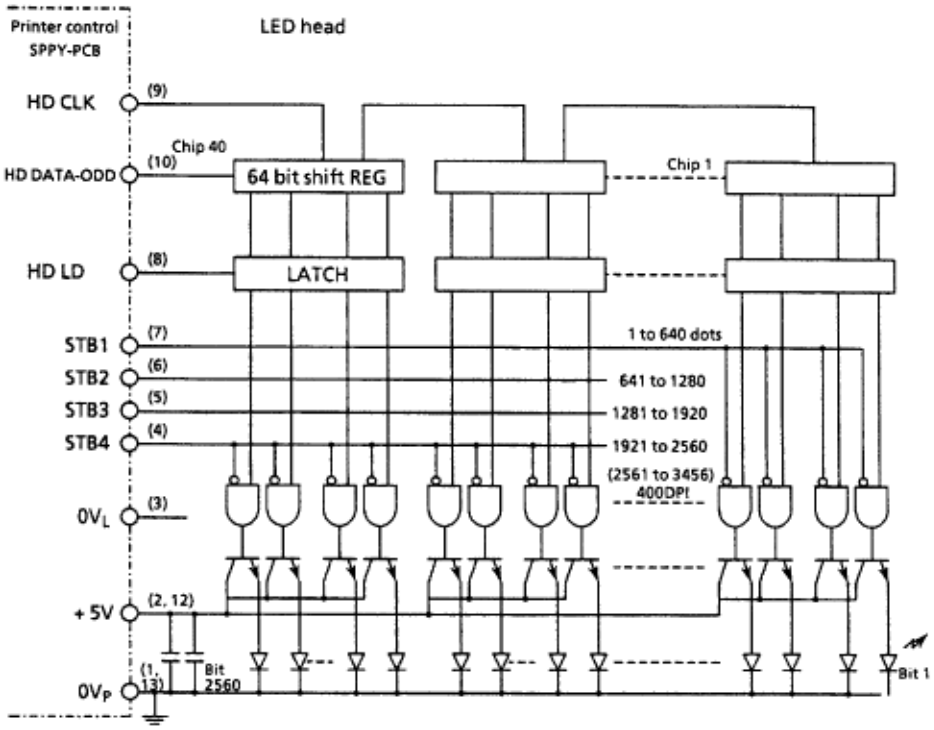
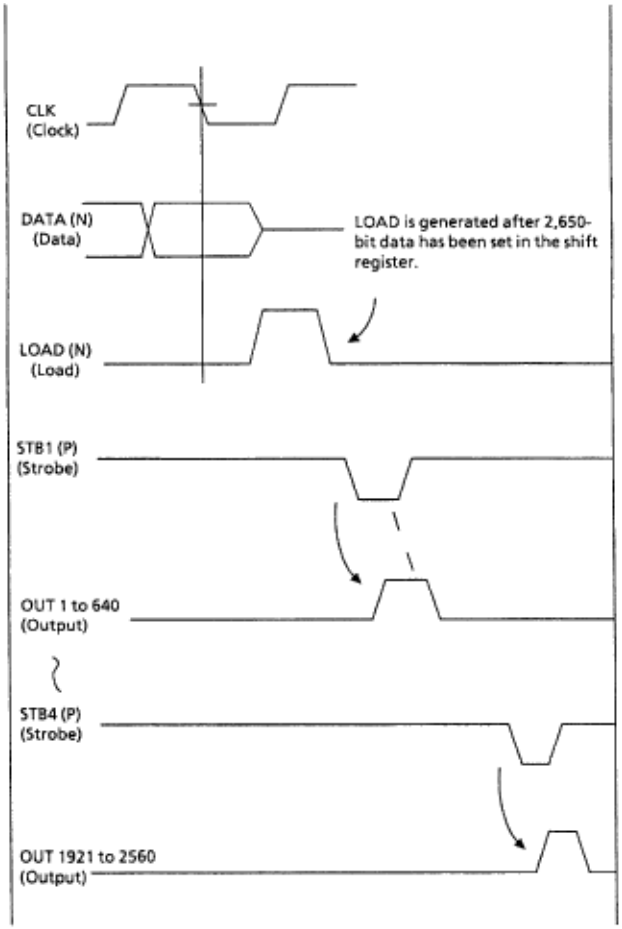
2.2.05 LED Array

Data on the 2,560 LEDs (300 dpi), 3,456 (400 dpi) in the LED head is set in the shift register by the HD CLK signal.

After the 2,560-bit data is thus set in the shift register, it is subsequently loaded in the latch circuit by the HD LD signal.

The on/off states of the LEDs are controlled by STB1-4; 640 bits are turned on or off at a time.





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2.2.06 Sensor and Switch Control

The sensors and switches are classified into five categories as listed below. All sensor and switch signals enter the IC3 (MSM75V039) ports, where they are read by the MPU for appropriate processing.

- Toner end sensor
- Inlet sensor
- Outlet sensor
- Paper tray identification switch
- Paper end sensor

Paper Tray Identification Switch Status			
S2	S1	S0	Paper Tray Size
L	L	L	Envelope, A6, Universal
L	L	H	Executive
L	H	L	Legal
L	H	H	Letter
H	L	L	B5
H	L	H	A5
H	H	L	A4
H	H	H	No Tray Installed

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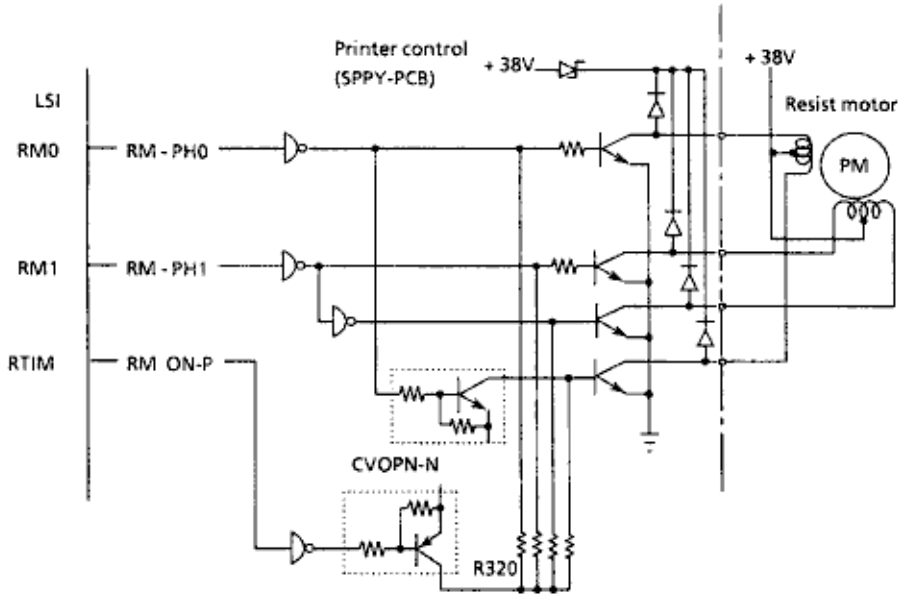
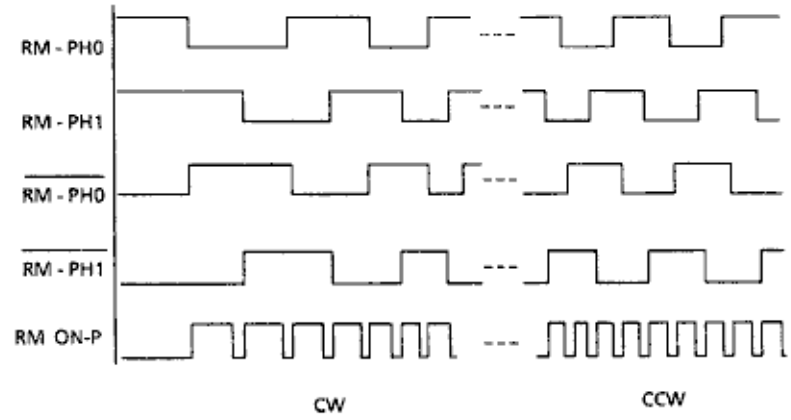
2.2.07 Resist Motor

This pulse motor is driven clockwise or counterclockwise. It is four-phase excited and unipolar-driven according to the RM-01, RM-02, and RM ON-P signals generated from the LSI.





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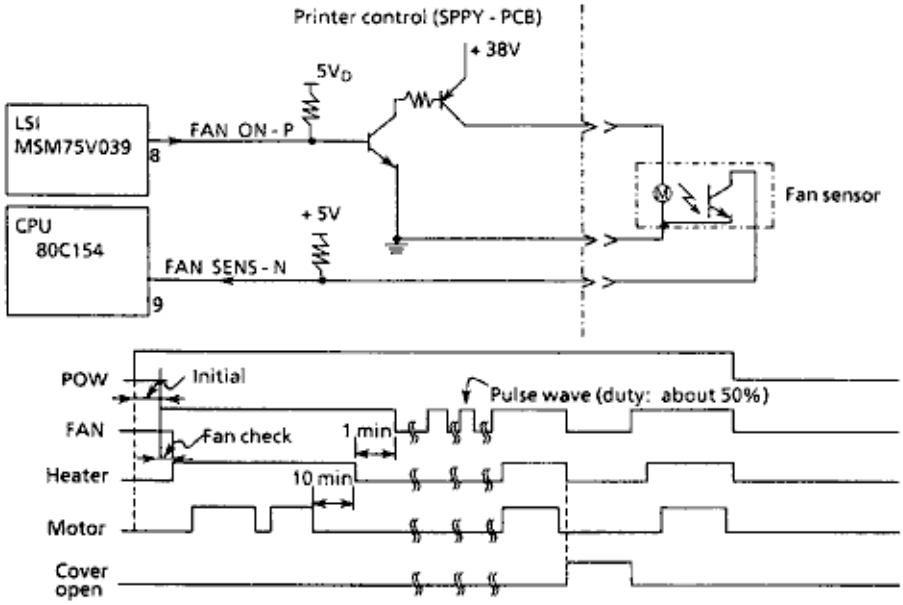
2.2.08 Fan

The fan is controlled by the FAN ON-P signal from the LSI (MSM75V039). Its operating status is supervised by FAN SENS-N.



Notes:

1. The fan turns off with a predetermined delay after the heater has turned off.

2. Neither the heater nor the fan is driven when the cover is open (reset).

3. If the fan to run, the heater turns off and an alarm is set, preventing the next printout. If FAN SENS-N is detected while printing, both the heater and the fan come to a halt after the end of printout of the current page.

4. A fan alarm is assumed when the fan is abnormal at power-on, and the heater does not turn on.

5. The heater is turned off if the next PRINT signal is not detected for several minutes (selected in the menu).

6. The fan is driven 1 minute after the heater has stopped. The fan speed is reduced if the next PRINT signal is not received during 1 minute.

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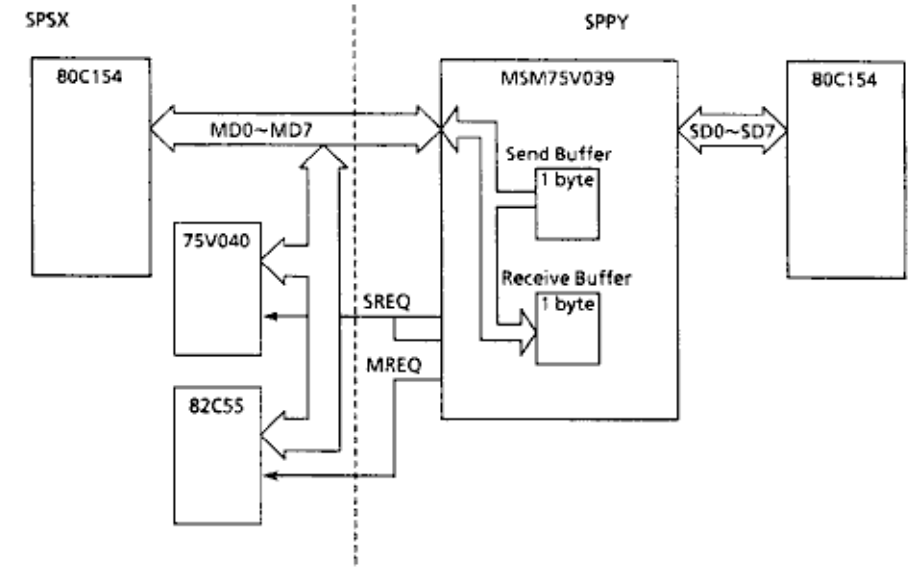
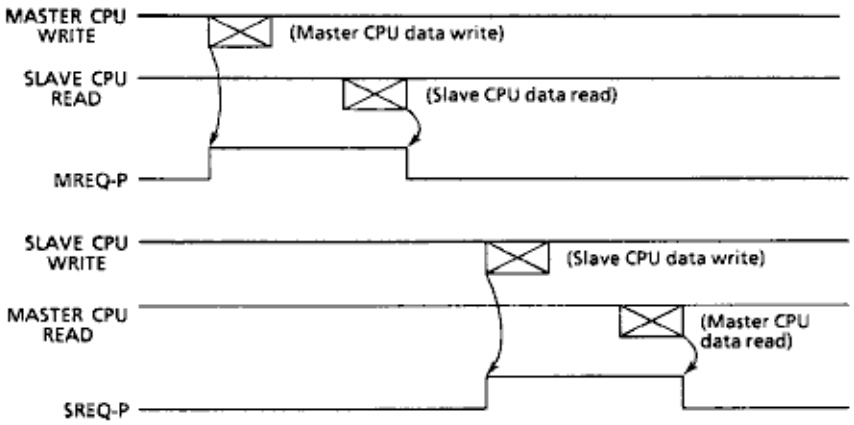
2.2.09 Main Control Board

CPU Interface

This LSI (MSM75V039) has a one-byte send buffer and one-byte receive buffer as the interface with a main CPU and supervises MREQ-P and SREQ-P signals mutually for communication.





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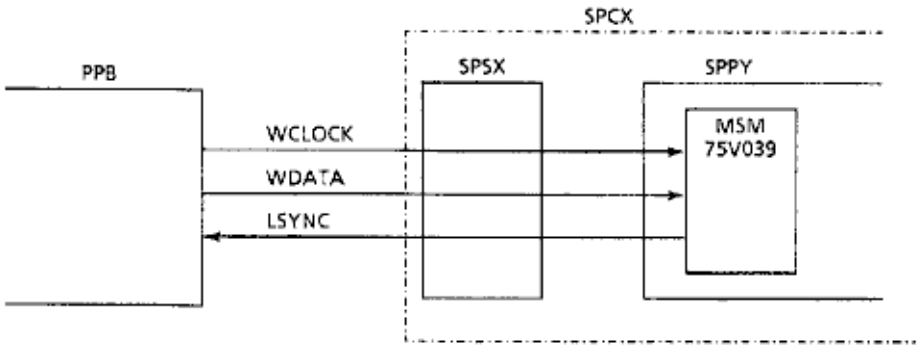
Video Interface

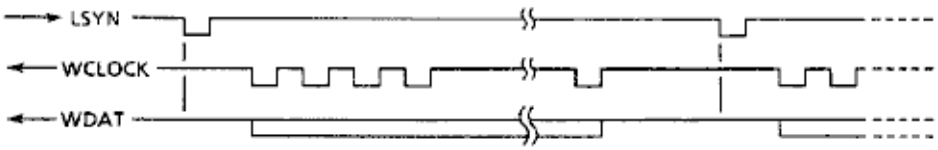
The print controller starts printing on receipt of the print command from the Controller. The image data generated by the Controller is transferred to the print LSI for printing by the serial image signal W DATA in synchronism with the serial image signal clock output from the Controller LSYNC, generated from the print LSI, is a line synchronizing signal. It is generated for each dot line.

Video interface (MSM75V039 - Doc-It Controller interface)



MSM75V039 P.P-B

MSM75V039 P.P-B



LSYN	:	Line sync signal
WCLOCK	:	Image data sync clock. LSI MSM75V039 loads image data at the rising edge of the WCLOCK.
WDAT	:	Image data. The high level indicates white data, and the low level indicates black data. The WDAT data changes at the falling edge of a WCLOCK.

Value of T1 to T4 (200 dpi LED head)

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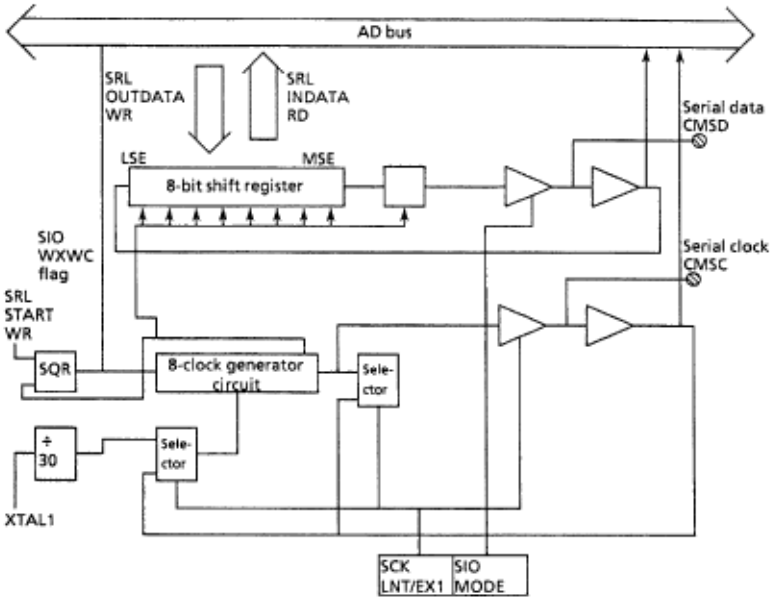
Second Tray Interface

The second tray interface consists of an 8-bit shift register, 2-bit mode register, 8-clock counter, and its related circuit. This interface is used to input or output serial data.



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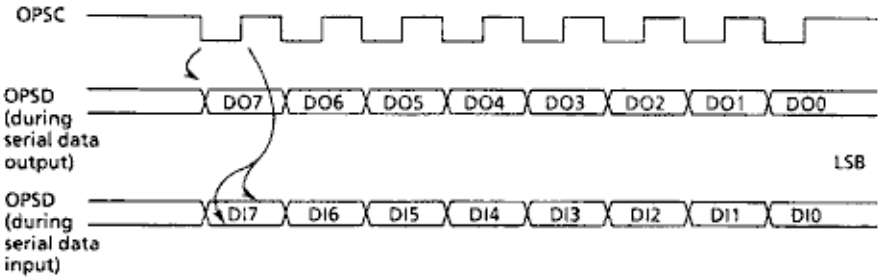
Block Diagram of Serial Interface

The input and output of serial data using this circuit are controlled by a serial clock signal. The most significant bit of a shift register is output to the serial data (OPSD) pin at the falling edge of a serial clock (OPSC) pin level when the serial data is output. After that, the contents of the shift register are shifted one bit at every falling edge of the serial clock pin level and output to the serial data pin.

The serial data pin latches data at the rising edge of a serial clock pin level when the serial data is input. After that, the serial data is sent to the shift register at every rising edge of the serial clock pin level.



Shift Timing Chart

Internal and external clock modes are available as a serial clock source. These modes are selected by mode register setting.

If the internal clock mode is selected, the internal clock selected using a START command is supplied to the serial interface as a serial clock to control the input and output of serial data and output from the OPSC pin. The operation stops when the internal clock is output from the OPSC pin by eight pulses. The output signal at the OPSC pin is then kept high.

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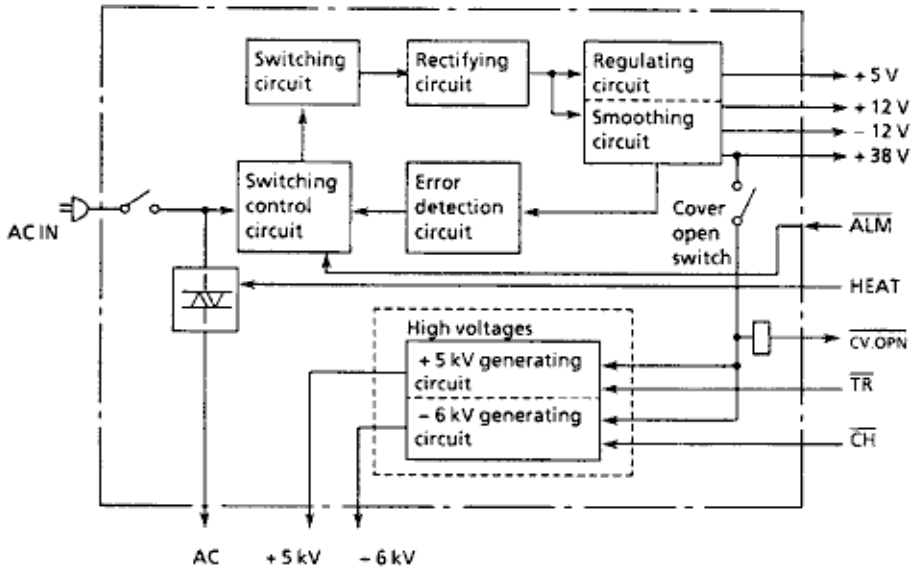
2.2.10 Power Supply Unit

The power supply unit generates the following low and high voltages from the AC input:

· Low voltages
+5 vdc IC,LSI, and LED head drive voltage
+12 vdc Image sensor drive voltage
-12 vdc Image sensor drive voltage
+38 vdc Motor and fan drive voltage, and high-voltage source voltage

· High voltages
+5 Kvdc Charge voltage (transfer)
-6 Kvdc Charge voltage (charging)



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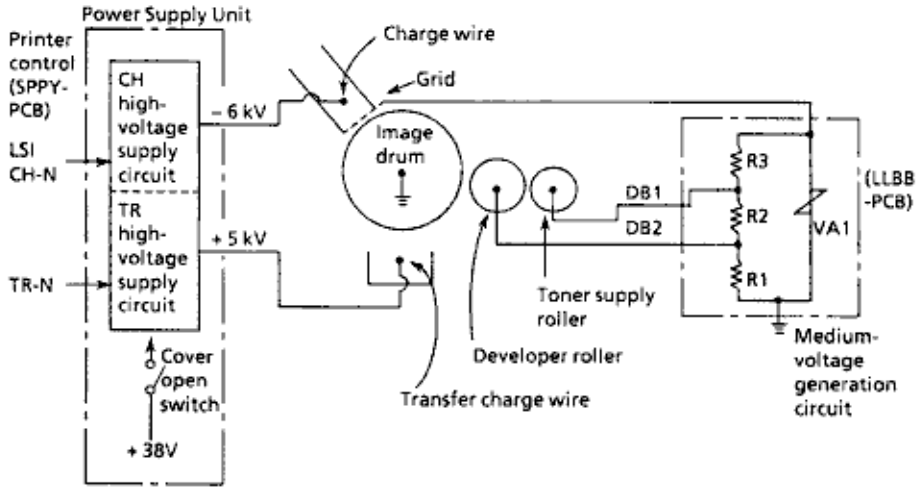
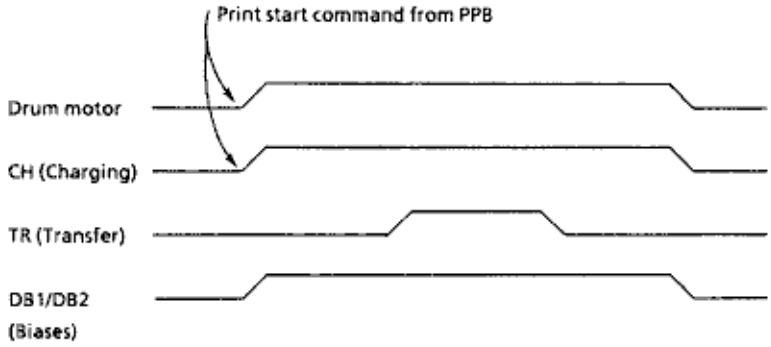
High-Voltage Generation

The high-voltage circuit provides a charge voltage (about -6 Kvdc), a transfer voltage (about +5 Kvdc), a grid voltage (about -700 vdc), and developer bias voltages (about -550 vdc and -400 vdc). Of these voltages, the first two are generated from a high-voltage power supply. The grid connects to the ground via a varistor on the medium-voltage generation circuit (LLBB-PCB). It is kept at about -700 vdc during charging.





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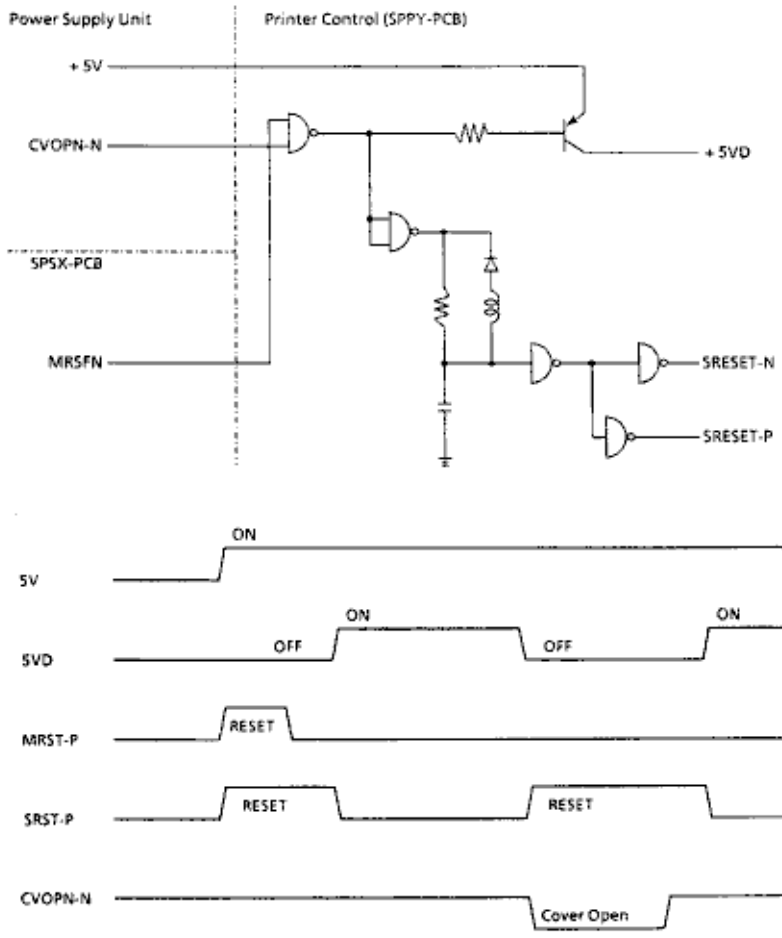
RESET Control

This circuit generates a reset signal for a predetermined period of time when +5 vdc is turned on or when the cover is opened. It turns on +5 vdc after generating a reset signal.

Reset + 5VD Control



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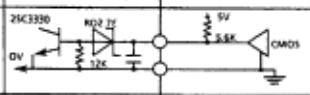
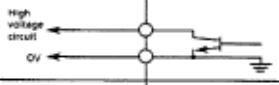
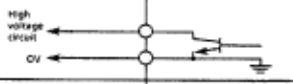
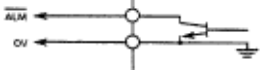
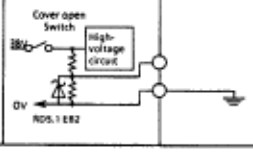
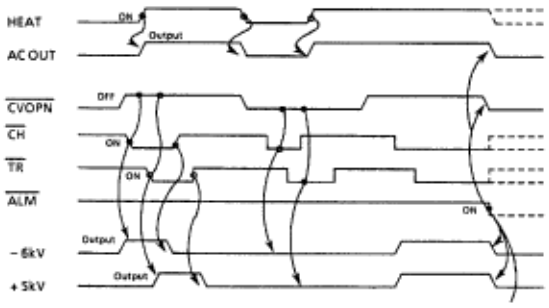
Power Supply Control Signals

Signal	External		Remarks
	Power supply	External	
HEAT			
$\overline{CH}$			
$\overline{TR}$			
$\overline{ALM}$			The ALM signal must be latched within the power supply. It is reset by turning on the main switch 4 or more minutes after turning it off. The ALM operation must be actuated by a voltage of 0.6 V or lower, with a pulse width of 20 ms or more.
$\overline{CVOPN}$			



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2.3 DOC-IT CONTROLLER

The function of the Doc-It Controller is to accelerate printing speed and data file manipulation by using the power of the Intel 80960 processor. The 80960 CPU controls all communications, printer emulations, print control, scan control and FAX control functions. The memory on board is used for local storage, program execution code and storage for composing/printing images. Data from the scanner and to the printer is handled by dedicated, on board DMA logic. The high speed Host Interface IC removes the data transfer bottleneck between the PC and the printer, and provides a means of route execution code on and off the board, such as printer emulations. This flexibility allows easy updates to software (firmware), printer emulation code, and fonts.

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2.3.01 Doc-It Controller Block Diagram

The Doc-It Controller has five major functional blocks. They are as follows.

· 80960KB Processor

- The 80960KB operating at 16MHz or 20MHz is a 32 bit processor designed for imbedded applications. The 512 byte on-chip cache, multiple 32 registers optimized for register to register instructions and pipeline instruction execution enable the 16MHz 80960 to run at sustained rates of 6 MIPS.

· Host Communications Controller

- The HCC is Okis proprietary ASIC which handles the communication between the PC host and the 80960 processor. The PC can communicate with the Doc-It Controller in one of three ways:
- 1) LPT port emulation. In this mode most applications can use the system printer directly as the Doc-It Controller emulates all three of the PC LPT ports. With a printer language such as PCL loaded in Doc-It Controller memory, an operation to print a file is identical to that of printing a file loaded directly to a PCL printer.
- 2) Oki I/O ports. These are the ports through which the PC controls the communications between itself and the board. Interrupt status and control are passed via the I/O ports.
- 3) Page window in PC memory. In this mode the HCC acts as a memory page controller for the PC host. Pages of memory on the Doc-It Controller are mapped to a programmable 16 Kbyte window in the PCs memory. In order to increase performance the HCC supports i960 Burst mode accesses. In the Burst mode, the HCC accesses 16 bytes (4x32 bits) of data per Doc-It Controller local bus request.

· Integrated Peripheral Controller

- The Integrated Peripheral Controller (IPC) ASIC consists of an 80960 interface module, a page interleaved memory controller, a DMA controller, timer and interrupt controllers and a Doc-It Engine and DAA (FAX) interface controller. The memory controller is designed to interface with 1 Mbit or 4 Mbit DRAMs in interleaved, fast page access mode. Physical banks can be logically mapped to any place in the address space to optimize speed or skip over a failed part without leaving a hole in the memory space. The controller arbitrates memory requests from three sources (in this priority) 80960 requests, DMA (on board) requests, and refresh requests. The Doc-It Engine interface consists of three sections; the Printer controller, the Scanner controller and the Doc-It command interface.

· Doc-It Controller Memory Subsystem

- The Doc-It Controllers memory subsystem consists of three banks of DRAMs (256x4) in ZIP packages and two available SIMM memory expansion connectors. The base memory for the Doc-It 3000 is 5 MB, meaning that base memory of banks 0, 1 and 2 are installed, with the memory expansion slots empty.
- The base memory for the Doc-It 4000 controller card is 7 MB, the base memory of banks 0, 1 and 2 plus 1 MB SIMM installed in location U52 or U53. Additional 2

MB SIMM memory can be ordered as an option on the Doc-It 3000 or the Doc-It 4000 systems.

- Each of the memory expansion SIMM sockets (U52 or U53) can support one of the 72 pin, 32/36 bit wide, card edge type (PS/2) SIMMs. The memory is 32 bits wide. 36 bit wide SIMMs can be supported, but the 4 parity bits will not be utilized in this design. 256K x 32 bit, 512K x 32 bit, 1M x 32 bit or 2M x 32 bit SIMM modules with 80ns (or faster) page mode memory parts can be supported.

· FAX modem and DAA circuitry

- The FAX modem is a synchronous, 9600bps, half-duplex modem with error detection. The modem supports group 3 (G3) facsimile transmission and reception. The modem satisfies standards specified by CCITT V.29, V.27ter, V.21, T4 and the signaling requirements of T.30. The modem can operate at 9600, 7200, 2400 and 300bps and perform HDLC framing at all speeds. The modem operates over a public switched telephone network (PSTN) through the Data Access Arrangement (DAA). The DAA controls hook switch, sends out dial pulses and detects rings.

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2.3.02 Doc-It Host Communication Controller

The Host Communications Controller (HCC) is an Oki proprietary ASIC which handles the communications between the PC host and the i80960 processor. The key features are listed below.

- Plastic quad flat pack-160 pins.
- Total power dissipation of 0.2W.
- Multiplexed address and data local bus, 16 or 32 bit width.
- Optional configuration EEPROM interface.
- System Time-out function.
- Local Bus memory read/write in i960 Burst Mode

The six major blocks of the HCC are discussed below.

AT Bus Interface
The AT Bus Interface block contains all of the signals which the Doc-It Controller board uses to communicate with the PC-AT host. The signals enter/exit on the card edge connector of the PC-AT. All signals with the exception of CLK14M (OSC) are routed through tri-state buffers or transceivers. The CLK14M signal goes directly to the IPC chip through a damping resistor. These signals (with the exception of the voltages and CLK14M) are then routed to the AT bus interface block of the HCC. The signals used by the Doc-It Controller to communicate with the PC are as follows.

BDATA 0-15	RESET	REFRESH	SBHE
IOCHRDY	+5vdc, -12vdc, -12vdc	IRQ7,10,12,14,15	LA17-23
AEN	IOR, IOW	BALE	MEMR
SA0-16	MEMCS16	OSC	MEMW

Besides acting as the interface block for the HCC chip, the AT interface contains the Time-Out interrupt function for the board. In the case of a "lock-up" on the Doc-It Controller (when a memory access from the host is not responded to within 2.5 microseconds) the Time-Out interrupt will result and the PC host will be released immediately.

Local Bus Address Generator
This Doc-It Controller Local Bus block translates the PC-AT expanded and extended memory addresses into the Local Bus memory address. There are two ways in which the HCC provides PC access to the Doc-It Controller boards memory:

· Page Window
In this mode (which is normal mode of operation for DPS software), the HCC acts as a paged DRAM controller for the PC host. The host can select any 16 Kbyte page of Doc-It Controller local memory through Doc-It Controller Page Registers 0 and 1.

· Extended Memory
In this mode, the Doc-It Controller memory can be used as extended memory for the PC, much in the same way that expansion memory cards provide additional memory to the system. In this

mode the address of the local bus memory is the result of offset address (programmed in the Doc-It Controller Extended Memory Configuration Register plus the Extended Memory Starting Address bits of the Extended Memory Configuration Register 1. This mode of operation is supported via the Developers Toolkit software.

Local Bus Data Interface

This Doc-It Controller Local Data Bus Interface supports two types of access by the system; a normal memory read/write access and a memory burst read/write access. The data bus is set normally to be 32 bits wide. The address and data bus on the i960 side, between the i960, IPC and HCC is a multiplexed address and data bus. All three parts use the CPUs status lines such as ADS (Address/Data Status), ALE (Address Latch Enable), and DEN (Data Enable) to determine the content of the bus. The CDASBEL signal can be pulled high to force the bus to 16 bits in width.

In a normal memory read/write access, the Local Bus Data Interface block (in response to a AT memory read/write cycle) directs the i960 CPU to get control of the local bus and send/receive data to or from the PC system. The translation from 16 bit AT data size to/from i960 32 bit data size is handled by the HCC.

In memory read/write burst mode, the HCC Local Bus Data Interface block will hold four 32 bit data words in a buffer before transferring the data to the PC or Doc-It Controller board memory. When the PC is writing to the Doc-It Controller, eight 16 bit data words will be written to the buffer before the HCC requests a local burst cycle. In response to this request, the Doc-It Controller board memory controller (in the IPC ASIC) will fetch four 32 bit words and write them to memory. In response to a PC memory read cycle, the HCC will pull the IOCHRDY signal low on the bus to indicate the board is busy. The IOCHRDY signal will remain in this state during the time while the memory controller is transferring four 32 bit words to the HCCs buffer. When the data is available the read cycle will complete. Burst mode can be dynamically controlled by the software as the burst signal is an I/O port bit in the Oki Control Register 0.

EEPROM Interface

The EEPROM Interface is designed to accept an optional OKI MSM16811, 1K serial EEPROM (128x8 mode). At this time, the EEPROM is not implemented on the standard product. The socket is installed for future use, and all the circuitry is active. The EEPROM can be read or written via the PC, through control ports (EEPROM Write Data Port, Write Address Port, Read Data Port, Read Address Port).

Local Bus Arbiter

The Local Bus Arbiter is in charge of arbitrating requests for the local bus and generating the HOLD signal to the i960. Printer requests, scanner requests and PC-AT requests share the local bus with the i960. In response to one of these three requests, the HCC establishes a priority for the request and generates the HOLD signal to the CPU. When the CPU grants the request to the local bus, HLDA is returned and the HCC signals the requesting device that the bus is available. The LPGNT and SCGNT signals are returned to the IPC, the requesting device. The grant signal allows the requestor to drive local bus control signals. The PC host request is different from the other two in that the request/grant also allows the local address and data bus to be controlled.

Programmable I/O Space

The PC Host I/O map given below show the I/O routes to the Doc-It Controller board. LPT1, LPT2 and LPT3 are mapped to standard PC-AT locations. The OKISELECT port is an I/O decode port which can reside at 4 possible locations. These locations are set by jumpers on the board (refer to Appendix A). The address decoded at this location provides the starting address for the OkiControl ports.

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2.3.03 Doc-It Integrated Peripheral Controller

The IPC (Integrated Peripheral Controller) is the Oki proprietary ASIC which serves as the control center of the Doc-It Controller. It is a highly integrated scan, print, FAX and copy control unit. The IPC is programmed by either the i960 CPU or the PC-AT (via the HCC ASIC). The part supports double or single bank DRAM access (the standard design is a double bank structure), 300 or 400 dpi printing, four mode scanning and supports international version DAAs for facsimile.

The key features are as follow:

Plastic quad flat pack-208 pins.
- 80960 Interface module.
- DMA controller function for the system.
- Timer and Interrupt controller logic.
- DAA interface logic.
- Memory controller logic.
- Programmable memory configuration table.
- Programmable memory I/O wait states.
- Programmable DRAM refresh control.
- Mirror image and inverted print scan functions.
- Maskable interrupts.
- Fully programmable timer control.

The IPC has seven major functional blocks. Each will be discussed separately.

80960 CPU Interface

The 80960 interface contains address selection, address latch, address decoder, and bus handshake control logic. There are three basic address sources with the IPC chip:

· 80960 CPU
· Scanner Controller Module
· Printer Controller Module

Sources 2 and 3 are 32 bit internal IPC buses. Source 1 is the 32 bit wide bi-directional address/data multiplexed bus which runs between the CPU, HCC and IPC. If the address source is the HCC or i960 CPU, the IPC requires an external address latch signal (ALE) to latch the address and free the bus for data transfer.

The IPC supports 5 categories of bus operation:

· Burst DRAM R/W bus cycle
- (address range 0000 0000 to 05FF FFFF and F000 0000 to FFFF FFFF)

· DRAM Read Modify Write bus cycle
- (address range 0600 0000 to 07FF FFFF)

· External device bus cycle
- (address range 0800 0000 to 0FFF FFFF)

· Fast I/O bus cycle

- (address range 8000 0000 to 87FF FFFF)

· Slow I/O bus cycle
- (address range 1000 0000 to 7FFF FFFF and 8800 0000 to EFFF FFFF)

The bus handshake control logic controls all the bus traffic and provides the request signals for the memory interface, DMA controller, Doc-It Engine interface and DAA interface. If external device bus cycles are active the IPC will be in the idle state, but will pass external ready signals to the i960 or the HCC to terminate the bus cycle.

Page Memory Interface
The page memory interface (memory controller) generates all roll/column addresses for the on board memory, contains CAS before RAS refresh logic, 16MHz/20MHz and 25MHz CAS timing control logic and supports interleave/non-interleave page access mode.
The local address/data bus LAD[31:0] is selected as the memory data bus (MDE[31:0] and MDO[31:0]) via the transceivers. Two banks of memory data (odd and even) are generated from the local address/data bus via the control lines LDEG_N and LDOG_N. Single bank memory can also be supported by cutting/setting the trace jumpers near U22. In this case, U27-30 would not be populated and the MDE [31:0] would be the single data bus for the memory array with the trace jumpers connected to tie the MDE and MDO busses together. The memory data lines can be followed directly to the DRAMs and expansion memory connectors.

RAS and CAS lines are fed directly from the IPC, through series resistors and then directly to the memory array. Page mode memory is utilized in this design. The RAS_# line indicates the physical # of the memory bank. The RAS signal going low is the latch for the memory row address.
The RAS signal is then held low for the duration of the cycle and the 4 even or odd CAS lines select the column address within the appropriate page. The memory address lines (MA0:9) are buffered from the IPC and sent directly to the memory array. The single memory write signal XMWR_N is also buffered and split into MWRO_N and MWRE_N, which can be traced to the memory array. The table below shows the mapping between the address source bits and the memory address bits. The column address bits should increment accordingly in a burst DRAM access.

Address Bit	MA 9	MA 8	MA 7	MA 6	MA 5	MA 4	MA 3	MA 2	MA 1	MA 0
Row Address	21	19	18	17	16	15	14	13	12	11
Column Address (Fast Mode)	22	10	9	8	7	6	5	4	3	20
Column Address (Normal Mode)	20	10	9	8	7	6	5	4	3	2

The DRAM refresh is handled by the internal memory Controller on the IPC. The refresh cycle should last for six or seven clock cycles (depending on the frequency of operation). The refresh

request has the highest priority of all requests for memory. The duration of refresh is programmable.

In order to achieve zero wait state timing under a variety of system speeds, there are two sets of CAS timing control logic (16 and 25MHz). One wait state is required for DRAM writes at 25MHz. All reads at any system speed and writes below 25MHz can operate at 0 wait states, assuming the 64 bit (odd/even, MDO[31:0] and MDE[31:0]) double banking path is chosen. The DRAM configuration register is programmable to choose DRAM access in either a double or single bank mode (as is the case where there is an odd number of memory banks..ex. 5 MB BANK 0/1 interleaved, BANK 2 non-interleaved, BANK 4/5 interleaved).

DMA Controller
The DMA Controller handles the data transfer between the IPC scan/print Controllers and DRAM. Whenever scan or print data is present, the DMS Controller requests bus usage and after arbitration and grant, will start to transfer data between the DRAM and the IPC. The DMA Controller logic has two page buffers and has print erase and automatic termination capabilities.

Timer Logic
There are three programmable system timers within the IPC chip. Their functions are as follows:

· Timer 1

16 bits wide - this timer is reserved for DRAM refresh control. It will automatically load its data from register and generate refresh request to the memory Controller whenever the count reaches 0.

· Timer 2

16 bits wide - user defined. It will automatically load data from register and issue an interrupt request to the interrupt control logic in the IPC whenever the count reaches 0.

· Timer 3

8 bits wide - this timer is used for 10 uS and 1 mS timing generation, and its output is a square wave. It will automatically load data from register and issue a request to the interrupt control logic in the IPC whenever the count reaches 0.

Interrupt Control
The interrupt control logic generates interrupt signals for i80960KA and KB processor. All interrupts are maskable via register.
INT0960,INT1960,INT2960 AND INT3960 are directly connected from the IPC to the processor.

Doc-It Engine Interface
The Doc-It Engine interface logic consists of scanner control, printer control and command interface.

The scanner control receives serial data from the Doc-It Engine and sends 32 bit bussed data to the DRAM via the on-board DMA logic. This logic has dual scan buffers and overrun protection. The scanner control logic is also capable of inverting data bits, adding pad bits to an uncompleted word, adding pack bits for an uncompleted byte, swapping nibbles in a byte, mirror image processing, swapping bytes in a word, swapping bits in a byte and looping back data to the printer.

The printer control receives 32 bit data from DRAM via on-board DMA logic and sends serial data to the printer. The printer control logic is capable of supporting 300 and 400 dpi print functions, including expand and shrink control, mirror image processing, reverse bit order in a word and inverting data bits.

The command interface provides serial communication between the i960 and the Doc-It Engine control panel. It receives 8 bit data from the i960 and sends a serial command to the Doc-It

Engine, or receives serial data from the Doc-It Engine and stores information in the Received Data Register. The command interface also supports programmable baud rate generation, stop bit, parity bit on/off, and odd/even parity bit selection.

DAA Interface Logic

The DAA interface is the Data Access Arrangement module which interfaces with the telephone subscriber line. The interface module and DAA provide the following functions.

· Two modular phone jacks. One connects to the subscriber line, the other connects to an optional telephone handset.

· Detection of subscriber line tones and signals. The DAA detects call progress tones, ring signals and DC current flow on the subscriber line.

· Control of the optional monitor speaker , to monitor the modem tones and voice chip tones which are transmitted or received on the subscriber line.

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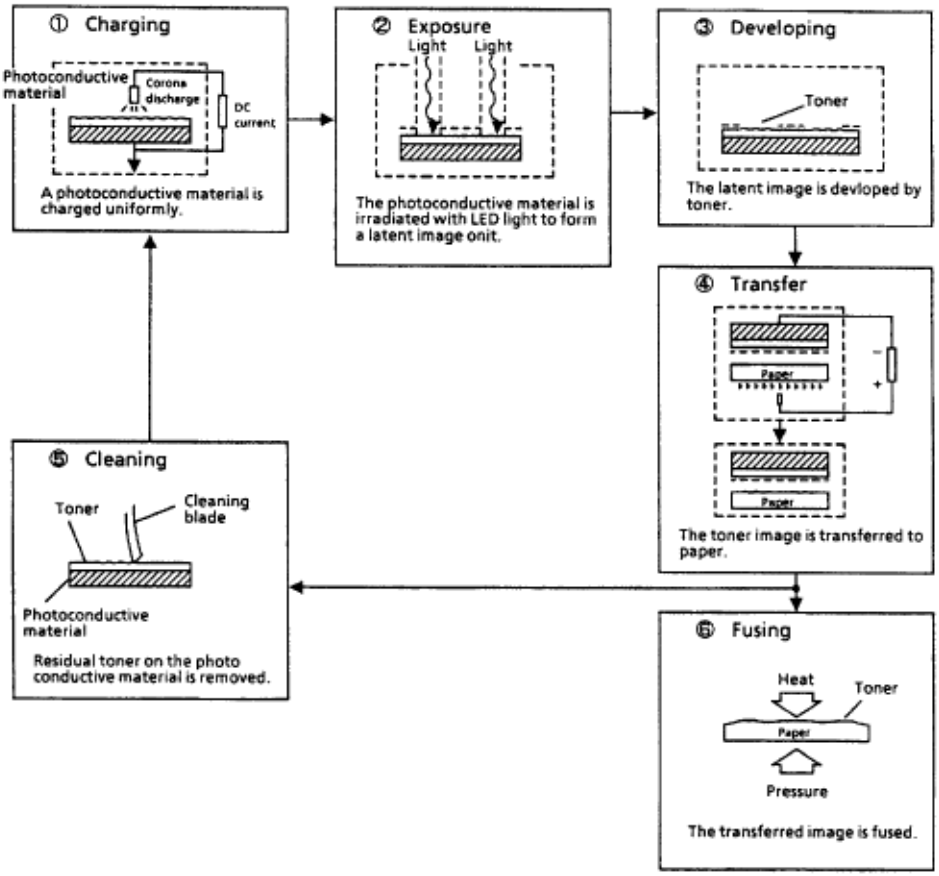
2.4 MECHANICAL OPERATION

2.4.01 Basic Principles of Electrostatic Printing

The printer illuminates the LED head according to the data, such as characters and patterns, received from the controller and exposes a photoconductive material with light, forming a latent image on the material. This latent image is developed by toner, with the resultant toner image being transferred to paper and fused for printing.

The electrophotographic technology used in this printer is similar to that embodied in general copying machines. The technology comprises the following processes.



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2.4.02 Electrostatic Printing - Overview

Charging

- The surface of the photoconductive material is uniformly charged with static charges by a corona discharge.

Exposure

- When the charged photoconductive material is exposed to light, the electrical resistance in the exposed photoconductive layer is lessened, allowing charges to escape. Then, a latent image associated with the print image is formed on the photoconductive material, depending on the irradiated and non-irradiated parts of the material.

Developing

- When negatively charged toner is brought into contact with the photoconductive material, the toner is attracted to the latent image by static electricity, making the image visible.

Transfer

- When paper is placed over the toner image on the photoconductive material and a positive charge, opposite in polarity to the toner, is applied to the paper from the reverse side of the paper by a corona discharge, the toner is attracted by the charge and is transferred to the paper.

- As a result, the toner image formed on the photoconductive material is transferred to the paper.

Cleaning

- Residual toner that remains on the photoconductive material without being transferred is scraped off by the cleaning blade.

Fusing

- The toner image transferred to the paper is fused under heat and pressure.

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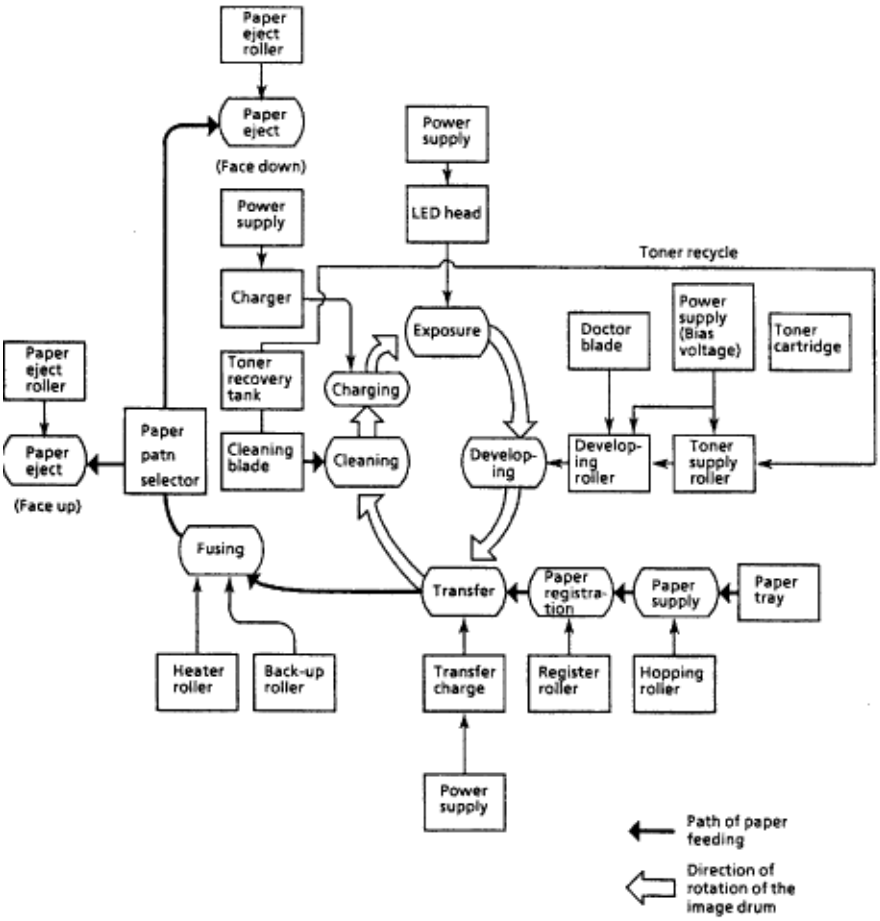
Printing Process

The diagram below illustrates the printing process. White arrows mark the direction of rotation of the image drum; black arrows designate the path of paper feeding. The following page shows the layout of the printing process hardware.



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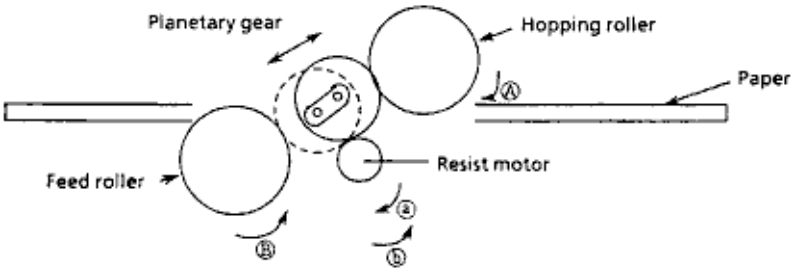
2.4.03 Electrostatic Printing Process - Operational Description

General Description
Hopping and feeding are accomplished by a single resist motor as shown below.



Turning the resist motor in the (a) direction drives the hopping roller in the (A) direction.
Turning the resist motor in the (b) direction drives the feed roller in the (B) direction.

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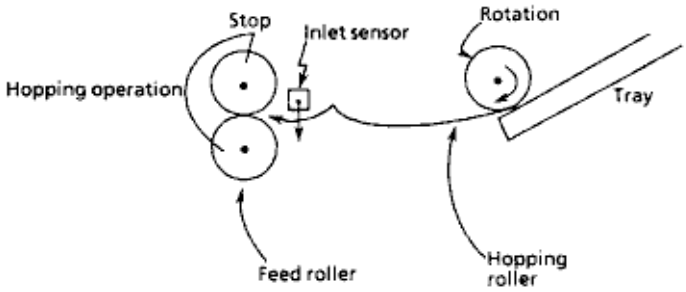
Hopping

Hopping turns the hopping roller to advance the paper until the inlet sensor turns on.
After the paper has turned on the inlet sensor, advances the paper further by a predetermined length until it hits the feed roller. (The skew in the paper can thus be corrected).



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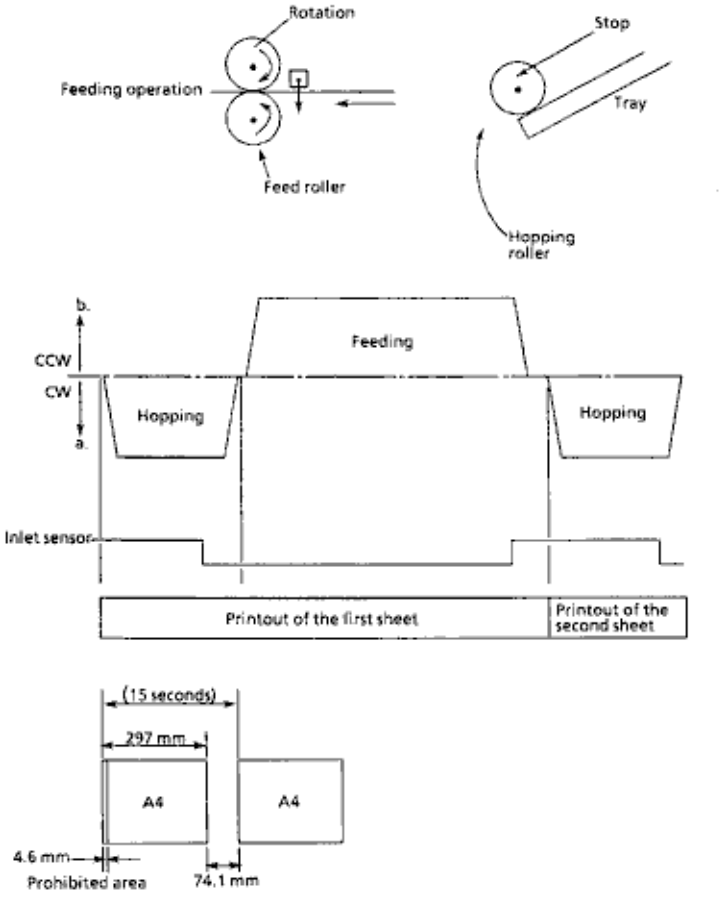
Feeding

After the end of hopping, the feed roller turns to advance the paper.



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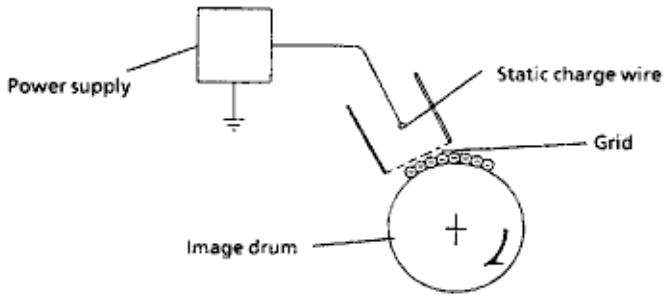
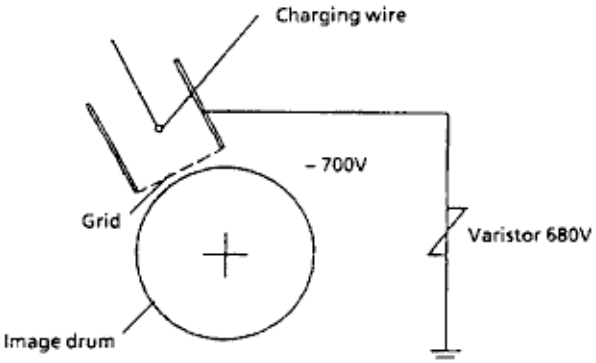
Charging

Charging is effected by making a corona discharge to the image drum from the charge wire.



The application of a high voltage (-6Kvdc) from the power supply to the charge wire generates negative ions in the vicinity of the charge wire through a corona discharge, which are discharged to the grid plate and the image drum surface. Positive charges are induced in the aluminum base of the image drum, allowing the negative charges on the image drum surface to be retained. The aluminum base of the image drum and the grid plate are connected to the ground and a varistor, respectively, so a rise in the grid plate potential above about -700vdc will lead the negative charges on the grid plate to the ground via the varistor. During charging, the grid plate is kept at a potential of about -700vdc, controlling the quantity of negative ions discharged to the image drum surface and preventing uneven discharging on the image drum surface. Charging allows the image drum surface to be kept at about -700vdc.



Ozone is generated by a corona discharge around the charge wire. If the ozone is attracted to the image drum surface, its charged condition would be altered, preventing image stability. To prevent this, a fan motor removes ozone around the charge wire.

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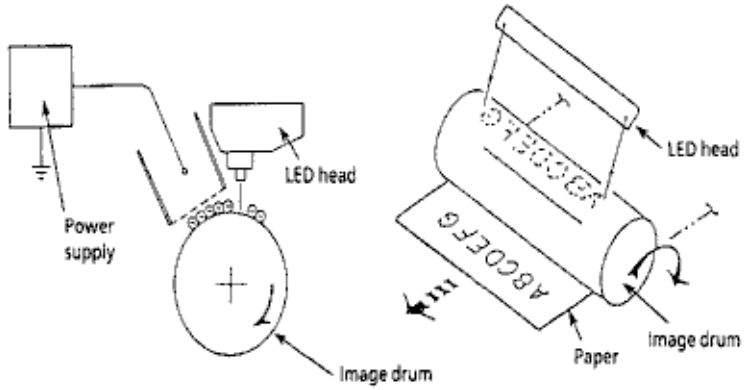
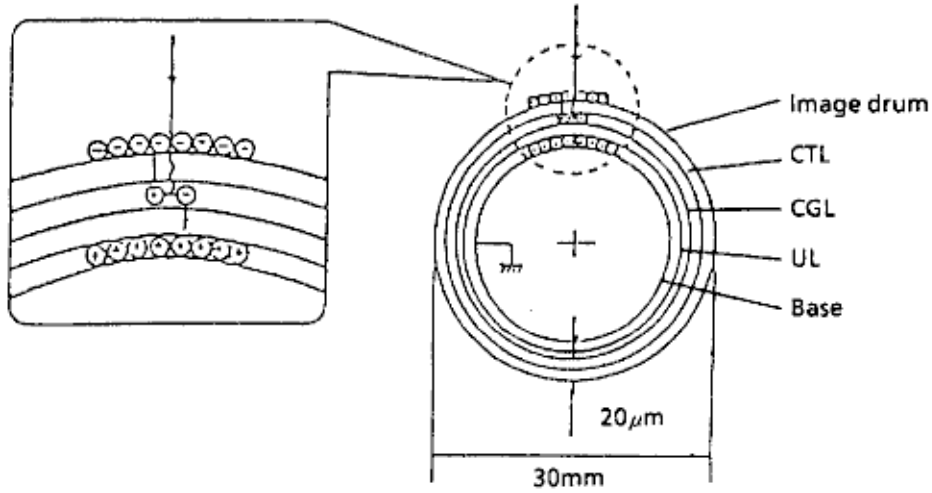
Exposure
Light emitted from the LED head is radiated to the image drum surface charged with negative charges. The surface potential falls on the irradiated part of the image drum surface, thereby forming a latent image associated with the image signal.



The image drum is coated with an underlayer (UL), a carrier generation layer (CGL), and a carrier transfer layer (CTL) on the aluminum base. The image drum layer, comprising a CTL and a CGL, is about 20um thick.

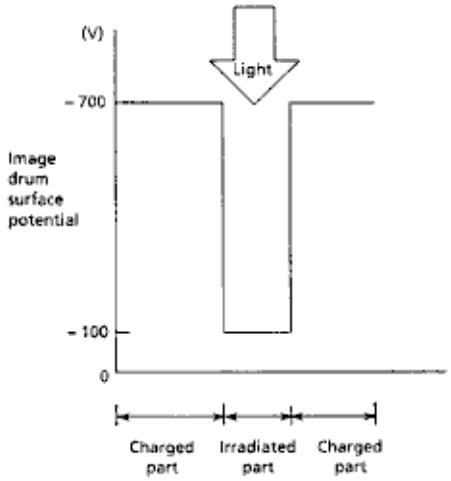


The corona discharge around the charge wire charges the image drum surface to about -700V. When light from the LED is radiated to the image drum surface, the light energy generates positive and negative carriers in the CGL, with the positive carrier being moved to the CTL by means of an electrical field acting on the image drum.

Likewise, the negative carrier flows into the aluminum layer (ground).

The positive carrier moved to the CTL combines with the negative charges on the image drum surface accumulated by corona discharge, lowering the potential on the image drum surface. The

resultant drop in the potential of the radiated part of the image drum surface forms a latent image on it. The radiated part of the image drum surface is kept at about -100vdc.



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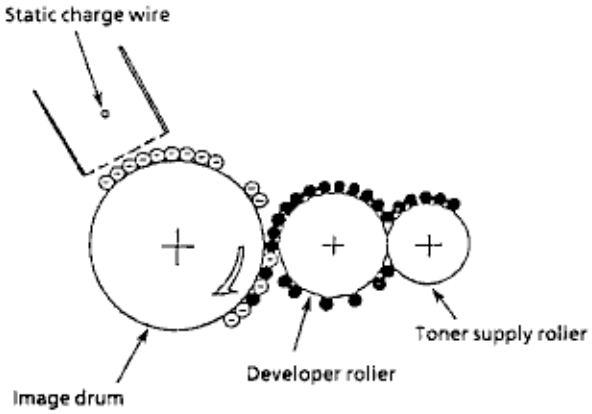
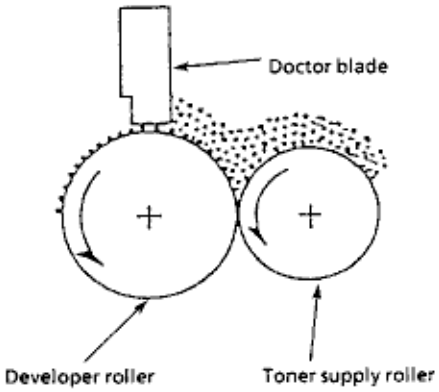
Developing
Toner is attracted to the latent image on the image drum surface to convert it into a visible toner image.

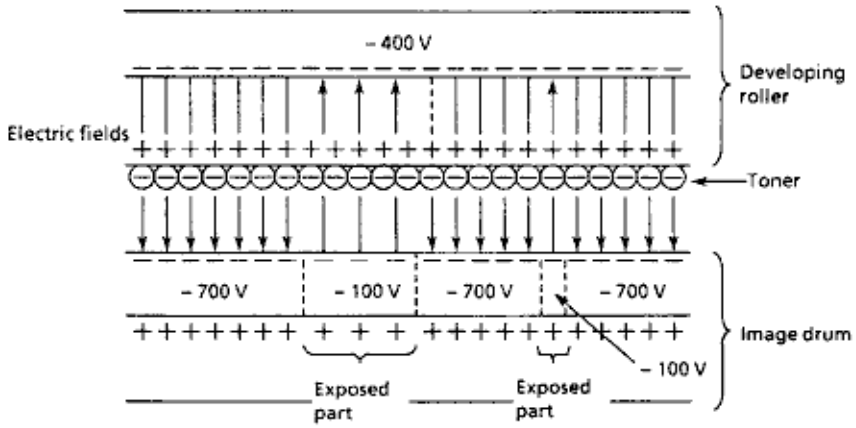
Developing takes place at the contact between the image drum and the developing roller.
As the toner supply roller rotates while rubbing on the developing roller, a friction charge is generated between the developing roller and the toner, allowing the toner to be attracted to the developing roller. The developing roller surface is charged positive. The toner is charged negative.



The toner attracted to the developing roller is scraped off by the blade, forming a thin coat of toner on the developing roller surface.

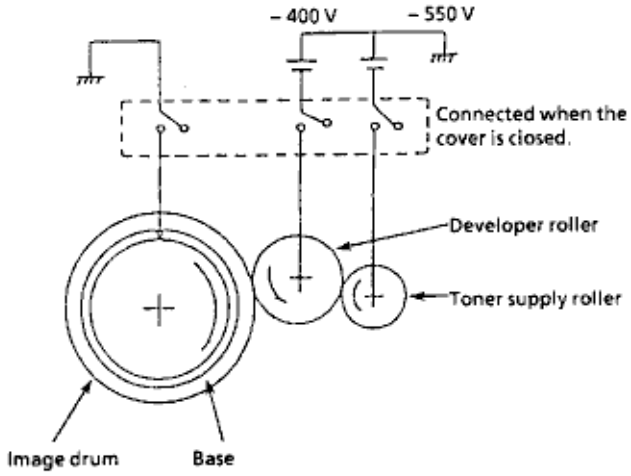


Toner is attracted to the exposed part (low-potential part) of the image drum surface, making the latent image visible.



The Arrows denote the attraction caused by the electrostatic field.

Note:
The toner supply roller and the developing roller are supplied with the bias voltages required during the developing process (as shown below). -500vdc is supplied to the toner supply roller, -400vdc to the developing roller.



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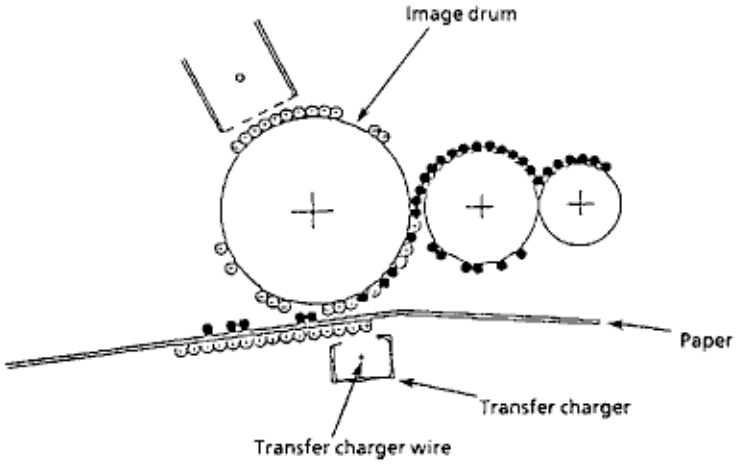
Transfer
Paper is placed over the image drum surface, and a positive charge, opposite in polarity to the toner, is applied to the paper from its reverse side.

The application of a high voltage (+5kV) from the power supply to the charge wire causes the paper to be charged positive through a corona discharge.

Negative charges are induced on the image drum surface, bringing the paper into close contact with the image drum. Toner charged negative that is attracted to the image drum surface is transferred to the paper by the positive charge on it.



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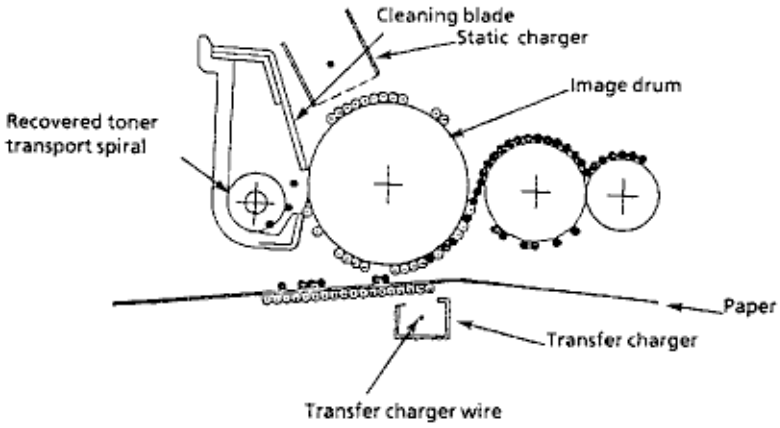
Cleaning

After the end of a transfer, residual toner on the image drum is scraped off by the cleaning blade to clean the image drum surface. The toner thus scraped off is returned from the toner recovery unit to the developer station by the toner recycling unit for reuse.



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Fusing
The toner image is fused on the paper as it passes between the heater roller and the back-up roller under heat and pressure. A 600 watt lamp is inside the teflon coated heater roller.

A thermistor regulates the heater roller at a predetermined temperature (about 180 Celsius). A safety thermostat cuts off voltage supply to the heater by opening the thermostat in the event of abnormal temperature rises.

The heater roller is held under a pressure of 3kg from the pressure spring on each side.

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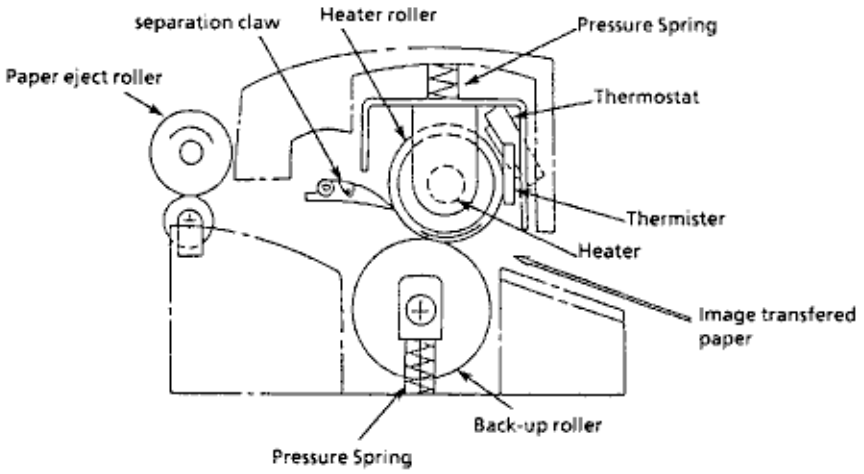
Paper Ejection

Once paper leaves the fuser unit, it is ejected from the Doc-it by the paper eject roller. The paper can be ejected with the printed side up or down.



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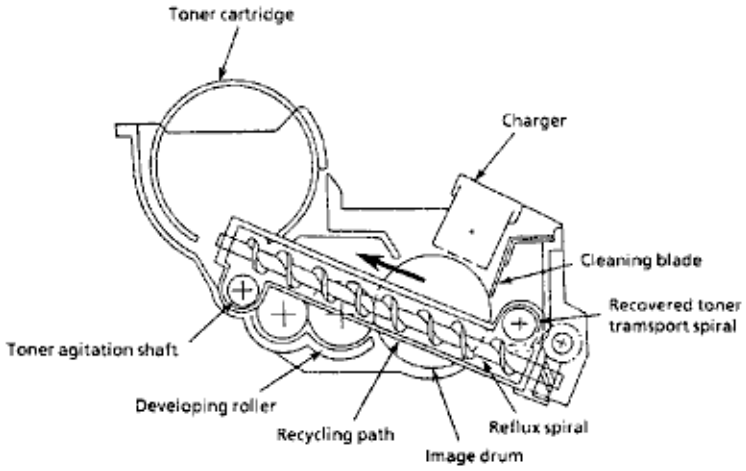
Toner Recycling

Toner recovered by the cleaning blade is collected in the toner recovery tank before it is moved to the toner cartridge by the toner recycling unit for reuse.



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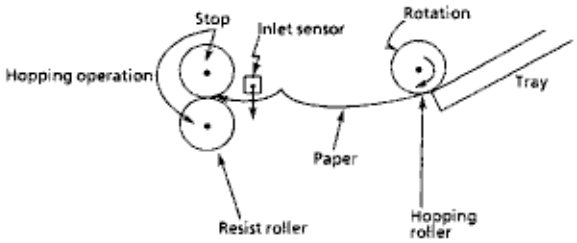
2.4.04 ADF Hopping and Feeding

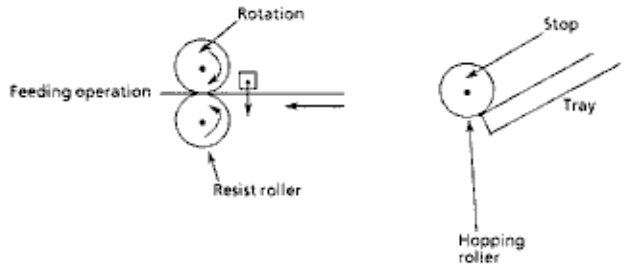
Hopping and feeding are accomplished by a single motor as shown below.

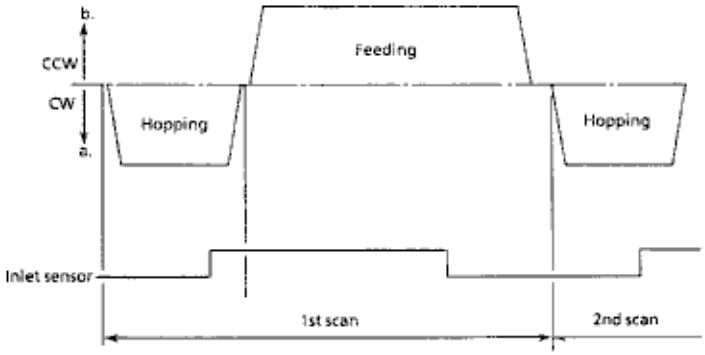


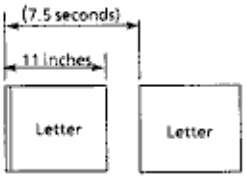
· **Hopping**
Hopping turns the hopping roller to advance the paper until the inlet sensor turns on.

After the paper has turned on the inlet sensor, advances the paper further by a predetermined length until it hits the resist roller. (The skew in the paper can thus be corrected.)

· **Feeding**
Upon completion of the hopping operation, the resist roller turns to advance the paper.







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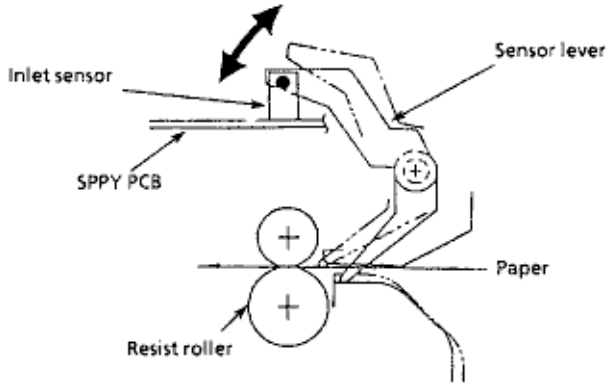
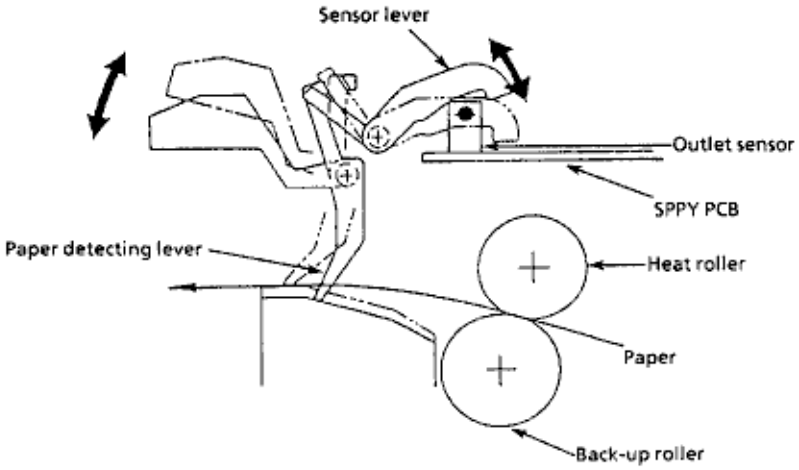
2.4.05 Sensors and Switches

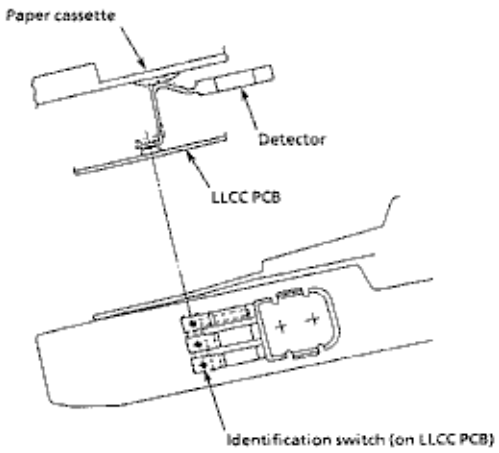
Inlet Sensor (Photosensor)



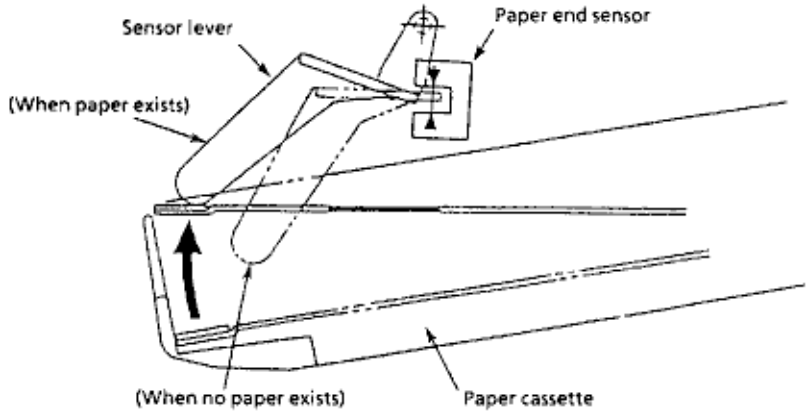
Outlet Sensor (Photosensor)



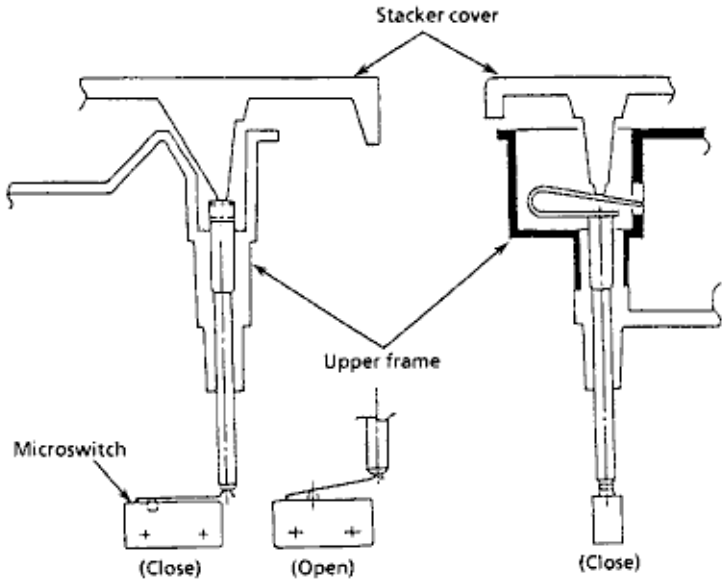
Paper Tray Identification Switch



Paper End Sensor (Photosensor)



Cover Open Switch



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2.4.06 Alarm Detection

At Power On
The inlet and outlet sensors are checked for their on and off states at power on time.

Inlet sensor on: Inlet jam error (Paper jam)

Outlet sensor on: Outlet jam error (Paper jam)
The thermistor sensor detects if the temperature of the fusing unit reaches the normal temperature
within the specified time. When it does not reach the normal temperature within the specified time, the thermistor sensor turns OFF the heater.

The fan sensor checks the rotation of the fan. When the fan is not in motion, it turns OFF of the heater, and stops the fan.

When the paper cassette does not contain paper, and the power is turned ON, a sensor sends no-paper information to the Control Unit (CU).

When the power supply is turned ON, the number of printed papers of the fusing unit and drum cartridge is checked.

During Hopping Operations
Whenever the inlet sensor fails to detect paper within a predetermined period of time after a feed command has been issued to the document table, a failure is counted. An inlet jam error (Paper feed jam) is established.

During Paper Feeding Operations
If the leading part of the paper does not reach the outlet sensor within a predetermined period of time after the start of feeding by the resist motor, a feed jam error is established.

During ADF Feeding
If the leading part of the paper does not reach the timing sensor within a predetermined period of time after start of feeding by the resist motor, a feed jam error is established.
If the leading part of the paper does not reach the outlet sensor within a predetermined period of time after the timing sensor is on, a feed jam error is established.

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2.5 SOFTWARE CONFIGURATION

The Doc-It Manager software is primarily designed to run under Microsoft Windows 3.0 or higher and therefore is mouse and icon-driven in a friendly, easy to use environment. The user has the choice, however, of using either the Doc-It Manager Windows software, DOS software or the Operator Control Panel on the Doc-It Page Processor to operate the system.

Because the system is based on the powerful Intel i80960 RISC processor and the Multi-Tasking Kernel, concurrent operation is possible. Most facsimile functions can be executed while scanning or printing operations are being processed at the same time. With the aid of a small memory resident program on the users host computer, facsimiles can be received and transmitted while the user is also running another application program.

2.5.01 Software Features

· Microsoft Windows 3.0 or above based user interface.
· Dynamically downloadable software architecture.
· Modular and portable program structure.
· Scanner driver support for popular software applications.
· A third party software developers tailcoat (API).
· Scalable font support.
· Embedded Multi-Tasking Kernel.
· Multiple parallel selection of LPT1, LPT2, LPT3
· Image conversion and support for .OKI/.FAX/.PCX/.BMP/.IMG

2.5.02 Operation Environment

· Minimum requirements
- 80286 PC/AT
- 640 Kbyte base memory
- 10 Mbyte disk drive
- DOS 3.3 or higher

· Recommended environment
- 80386 PC/AT
- 4 Mbyte memory (base and extended)
- Windows 3.0 or above
- DOS 3.3 or above
- At least 10 Mbytes of disk space
- Mouse

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2.5.03 File Descriptions

The following table describes the main files that are included with the Doc-It Manager software.

File	Description
BDDP.COM	Memory resident program (TSR) which installs itself at system boot time and handles communications between the PC and the Doc-It Controller board.
DOCSCAN.SYS	Scanner driver installed at powerup.
POWERON.EXE	Executed during PC powerup performs the following tasks. - check and set Controller memory. - optionally run Controller diagnostic tests. - download Doc-It system control programs from disk to the Controller.
CONFIG.EXE	DOS program used to setup the hardware configuration of the Controller.
DOCIT.BAT	A small batch program which first disables the BDDP TSR then runs POWERON.EXE and finally re-enables the TSR.
DDP.OUT	Doc-It system control programs (80960 executable code).
DDPPWRON.OUT	Controller diagnostic tests (80960 executable code).
CONVERT.DLL	Microsoft Windows Dynamic Link Library (DLL) used by the Doc-It Windows version software. Includes functions to convert between various image file formats.
DDPPC.DLL	Resource for MS-Windows version of the Doc-It Manager. It includes information for such elements as icon and button bitmaps dialog boxes etc.
DOCITWIN.EXE	Microsoft Windows version of the Doc-It Manager.
DDP.HLP	Help information used by the MS-Windows version of Doc-It Manager.

DOCITDOS.EXE	DOS version of the Doc-It Manager.
ADMIN.SYS	Doc-It administration information such as FAX passwords etc. Used by both versions of Doc-It Manager.
PUBLIC.TEL	Phone book containing FAX phone numbers. Used by both versions of Doc-It Manager.
UNTITLED.TEL	Extra user phone book.
COVER.STY	Fax cover sheet in ASCII format.
PDLKV.300	300 DPI True Type Emulation firmware.
PDLKV.400	400 DPI True Type Emulation firmware.
TRUETYPE.350	True Type font data. Includes outlines for 35 fonts.

File	**Description**
DDP.CFG	Doc-It configuration information. This file can be edited using CONFIG.EXE program and is examined by POWERON.EXE during powerup configuration. In addition to hardware setup information it also contains FAX setup information which is essential to the operation of the FAX.
Sub-Directories	
DOCIT/INFAX	Holds received FAX.
DOCIT/OUTFAX	Holds outgoing FAX - Those that have been sent or will be sent.
DOCIT/IMAGE	Holds image files - supports file formats. TIFF FAX and OKI

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2.5.04 Software Power-up Sequence

After the Doc-It board and software have been installed (by running the INSTALL.EXE program) and the configuration has been set (by running the CONFIG.EXE program), the following sequence will occur when the PC is powered up or rebooted and the DDPRUN.BAT is executed. This sequence assumes that during installation the user specified the DOC-IT directory to be C:\DOCIT.

The CONFIG.SYS file is executed at power-on by the PC.
- The Doc-It scanner driver DDPSCAN.SYS is installed into DOS by the line.

DEVICE=C:/DOCIT/DOCSCAN.SYS
When the AUTOEXEC.BAT files is processed the following four commands are executed.

C:/DOCIT/BDDP/R
This command will unload the Do-It TSR program from the DOS memory if it is installed. POWERON.EXE may not execute correctly if the TSR is running.

SET DOCIT=C:/DOCIT
This line will set the DOS environment variable. POWERON.EXE will subsequently read this value from the environment to determine the correct path to the DOCIT directory.

C:/DOCIT/POWERON
This line will execute the POWERON.EXE program. Its main job is to download the DOC-IT system control modules to the Controller board and start it running.

C:/DOCIT/BDDP/Pnnn
This line will load and run the Doc-It TSR program. The value of nnn is the location of the Okiport specified by the user in the CONFIG/.EXE program.

Note:
See Section 4 ( ) for more information regarding possible error messages from the POWERON.EXE program.

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2.5.05 Software Functional Components

Multi-Tasking Kernel
The heart of the DOC-IT 3000/4000 system is the Multi-Tasking Kernel (MTK). This kernel permits multiple system functions to run concurrently, providing both a hardware and software interface as well as services to the Doc-It control modules. The modules include Printer Emulations, Scan, Facsimile and Copy functions.

All of the tasks running on the Controller are scheduled based on their priority. In some cases, when two tasks share the same priority number, their scheduling is determined by a time slice allocation. The front panel task and printer emulations, for example, use time slice allocation for scheduling because they use the same priority number.

Tasks	Purpose	Priority
Host I/O	PC-Controller communications	20
Fax	Interpret incoming message	30
Run_Fax	Outgoing scheduler	40
Prt_Fax	Print fax queue	50
Scan	Scan control	50
Copy and Print	Copy and Print control	53
Front Panel	Front Panel control	80
Printer Emulation(s)		80

Note: The smaller the number, the higher the priority.

Because of the task scheduling and priority assignments, background and foreground tasks are executed simultaneously. However, concurrent operation may be limited by the availability of hardware resources (the printer engine, scanner engine and memory).

Task Executed Later	App to Print	Copy	Scan to Doc-It Mgr	RX FAX to HD	RX Fax to Print	Fax from App	Fax from file or buffer	Fax from scanner
App to Print	-----	YES	YES	YES	YES	YES	YES	YES
Copy	YES	-----	NO	YES	YES	YES	YES	NO
Scan to Doc-It Mgr	YES	NO	-----	YES	YES	YES	YES	NO
RX FAX to HD	YES	YES	YES	-----	YES	YES	YES	YES
RX FAX to Print	YES	YES	YES	YES	-----	YES	YES	YES
FAX from App	NO	YES	YES	YES	YES	-----	YES	YES
FAX from file of buffer	YES	YES	YES	YES	YES	YES	-----	YES
FAX from scanner	YES	NO	NO	YES	YES	YES	YES	-----

Note:

Boxes which are blanked out indicate cases which are not applicable.

Time slice allocation for the front panel task and printer emulations are described in the table below.

	Front Panel	Printer Emulation
When printer emulation is initializing.	100 ms	200 ms
When printer emulation is idle.	100 ms	50 ms
When printer emulation is busy.	100 ms	1000 ms

This table is based on the users point of view and assumes there is a 1K byte page buffer.

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Kernel Primitives

The kernel primitives fall into the following categories:

· Kernel Initialization which establishes the kernel operating environment.

· Task Management with primitives to create, manage, and schedule tasks in a multi-tasking environment. The kernel offers priority scheduling combined with optional time slice (round robin) scheduling.

· Interrupt Management by immediately switching control to a specified interrupt service routine when an interrupt occurs. Most of the kernel primitives can be executed direct from the interrupt service routine.

· Time Management providing one-shot alarm, repetitive alarm and a real-time clock. Alarms can be reset to implement watchdog timers.

· Memory Management that provides fixed (static) and variable (dynamic) block allocation.

· Inter-Task Communications and synchronization includes:
- Semaphore used for inter-task signaling and synchronization.
- Binary Semaphores used to ensure mutual exclusion and prevent deadlock.

· Message Queues are queues that can hold any number of messages and are used to exchange data between tasks.

· Fault Handling that services or corrects faults by the 80960 processor.

Kernel Service Routines

Kernel service routines fall into the following categories:

· Resource Manager
- By allocating memory to different tasks, the Resource Manager manages the printer engine, scanner engine and the page buffer to guarantee the mutually exclusive access to these hardware resources. The memory size on the Controller determines the number of page buffers that can be allocated to each task. For example, if two page buffers are available, then the scan and print tasks can be processed simultaneously.

· Error Handler
- A set of routines that pass messages back and forth to the Resource Manager to handle error conditions.

Host-Controller Communications

This section describes how the PC host to Controller communications mechanism works. There are two major functional modules involved; the TSR module on the PC host and the HOST I/O

module on the Controller.

The communications between the PC and the Controller is achieved by using a Page Frame technique which is used by Expanded Memory Manager (EMM) implementations. By using this technique, any segment of the controllers memory can be mapped and accessed directly from the PC host side.

The default segment used by the Doc-It system is 0xD0000-0XD3FFF. Since this address is widely used by a number of PC add-on products, users have the option to choose another page frame which is not used by someone else. As soon as the page frame is determined, the Doc-It system will use it to transmit and receive data/messages/status between the PC and the Controller.
The OkiPort (addresses between 0x200 and 0x3FF) are registers used to program the system working environment. One of the examples is to program which page frame is going to be used for PC-Controller communication as described above.

The Okiselect registers (0xE3BF, 0xE378, 0xE372 and 0xE20F) are used to store the information of the OkiPort configuration, which is referenced by Controller hardware each time upon power up. One of these registers is selected by the user at the time of installation. The value of these registers selected by the user has to match the OkiPort settings on the Controller board, since the settings that users make will be referenced by the Doc-It system software only. The position of the OkiPort jumpers is the only means for the Controller hardware to know where to look for this information.

TSR Module
Communications between the PC host and the Controller is done through a TSR program which resides on the host computer. There is only one way to communicate to the Controller, and that is through this TSR program. This prevents conflict during communication and gives total control to only one module. Not only will the communication be bulletproof but also, if there are any changes in the future, hardware or software, it will only be necessary to modify the TSR program.

The TSR consists of three modules:

· Low-level API (i.e. software interrupt handler) for handling the communication between the high level API and the Controller.

· IRQ interrupt handler (a hardware interrupt generated by the Controller) to receive the message from the Controller.

· Timer interrupt handler (timer clicks generated by the PC hardware) to handle the disk read/write operations (Disk I/O) requested by the Controller.

Host I/O Module

The Host I/O module on the Controller will be called up by the host interrupt (e.g. INT 0x62...0x67). The TSR sends messages to the incoming message queue on the Controller memory and then the Host I/O module gets the commands from the incoming queue. The Host I/O module will identify the function calls and call up the tasks (Fax, Scan, Print and Copy) accordingly.

The Host I/O is also responsible for sending the message and the status back to the PC host using the hardware interrupt (IRQ 10, 12, 15). If one of the tasks needs to send a message or status to the host, it will send a message to the outgoing message queue first and then call up the Host I/O module. The Host I/O module will generate the IRQ interrupt to signal the PC host that

the message and the status are available in the outgoing message queue on the Controller memory.

Command structure format

Dst Task	Src Task	Task ID	# of Bytes	Cmd	Information

Respond structure format

Dst Task	Src Task	Task ID	# of Bytes	Cmd+80	Information

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3.1 MAINTENANCE

3.1.01 General Information

This section lists the parts replacement, adjustment, cleaning, and lubrication procedures. Disassembly should not be performed unless absolutely necessary. **NEVER** perform disassembly on a malfunctioning printer until you have followed the failure analysis procedures in Section Four of this Service Handbook.

Follow the procedures listed in Adjustments and Service Settings (). Counters may have to be reset and adjustments may be required when either consumables or parts are replaced. Failure to perform these procedures could result in unnecessary service calls.

The Doc-It 3000/4000 is a xerographic device. Cleaning procedures must be performed correctly if high print quality is to be achieved.

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3.1.02 Maintenance Precautions

· Do not disassemble the Doc-It 3000/4000 if it is operating normally.

· Before starting disassembly and reassembly, always turn the AC power switch OFF and pull out the AC plug.

· Detach the interface cable, if installed.

· Do not remove parts unnecessarily: try to keep disassembly to a minimum.

· Use the recommended maintenance tools.

· When disassembling, follow the listed sequence. Failure to follow the correct sequence may result in damaged parts.

· Since screws, collars and other small parts are easily lost, they should be temporarily attached to the original positions.

· When handling circuit boards use extreme care. ICs such as microprocessors, ROM and RAM can be destroyed by static electricity.

· Do not place printed circuit boards directly on conductive surfaces.

· Follow the recommended procedures when replacing assemblies and units.

· After replacing the drum cartridge, clear the drum counter by following the Drum Counter Reset Procedure in Section 3.3 of this Service Handbook.

· After replacing the fusing unit, clear the fusing unit counter by following the Fuser Counter Reset Procedure in Section 3.3 of this Service Handbook.

· After replacing the LED head, check to see if the LED Head Drive Time rating needs to be set. Use the Setting the LED Head Drive Time Procedure in Section 3.3 of this Service Handbook.

· After replacing the automatic document feed unit (ADF), perform these two procedures:
Reset the ADF counter by following the ADF Counter Reset Procedure in Section 3.3. of this Service Handbook

Perform the ADF Slip adjustment by following the procedure in Section 3.3 of this Service Handbook.

· After replacing the scanner unit, reset the Total Scanned Document Counter to zero. Use the Procedure in Section 3.3. of this Service Handbook.

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3.1.03 Maintenance Tools

The following tools are required to service the Doc-It 3000/4000 printer.

- #2 Phillips Screwdriver (with magnetic tip)
- Straight-slot Screwdriver
- Needle Nose Pliers (4 Inch)
- Feeler Gauge (capable of measuring .04 to .05 inches)
- Digital Multimeter

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3.2 DISASSEMBLY/ASSEMBLY PROCEDURES

This section contains the disassembly procedures. Only the removal procedures are explained here. Reverse the procedure for the installation.

At the bottom of each procedure is a listing of Okidata part numbers, item descriptions, and cross-references to Appendix B. Items included in the Recommended Spare Parts List are designated RSPL. N/A will appear where a part number is not available.

We have listed disassembly procedures for major components of the Doc-It 3000/4000. Remember that Okidata does NOT recommend disassembling a unit which is functioning normally. If you decide to perform disassembly during this training, we recommend that you perform **only** the disassembly procedures for RSPL items. All other procedures are provided to assist you in identifying parts. It is not likely that you will perform these procedures while servicing a Doc-It 3000/4000.

On the following pages is a flowchart of disassembly procedures and an index for the flowchart.

Follow these steps when disassembling the Doc-It 3000/4000.

1. Identify the item you need to replace.
2. Determine which procedure contains the instructions for this item. Refer to the Table of Contents or Appendix B.
3. Use the Flowchart Index to find the page of the flowchart which contains the procedure you will use.
4. Go to the appropriate page of the flowchart.
5. Locate the box of the procedure you will use.
6. Plot your order of disassembly, moving from the procedure you identified and ending with START. We recommend that you write the procedure numbers on another sheet of paper.
7. Perform the disassembly procedures you have plotted, beginning with START and ending with the procedure for the part you wish to replace.

For example:

1. You have determined that the engine controller board (SPPY) needs to be replaced.
2. The disassembly procedure for the engine controller board is 3.2.29.
3. The flowchart index tells us that this procedure is on page two.
4. Go to page two of the flowchart.
5. Locate the box for the engine controller board, 3.2.29.
6. Write 3.2.29 on another sheet of paper.

Follow the flow line back to the box for the main controller board (SPSX), 3.2.23.
Write 3.2.23 on your other sheet of paper.

Follow the flow line back to the box for upper cover, 3.2.06.
Write 3.2.06 on your other sheet of paper.

Follow the flow line back to the box for the operator panel assembly, 3.2.05.
Write 3.2.05 on your other sheet of paper.

Follow the flow line back to the box for Preliminary Items, 3.2.01.
Write 3.2.01 on your other sheet of paper.

Follow the flow line back to the box for START.
Write START on your other sheet of paper.

7. To replace the engine controller board, you would perform the following procedures: 3.2.01, 3.2.05, 3.2.06, 3.2.23, and 3.2.29.

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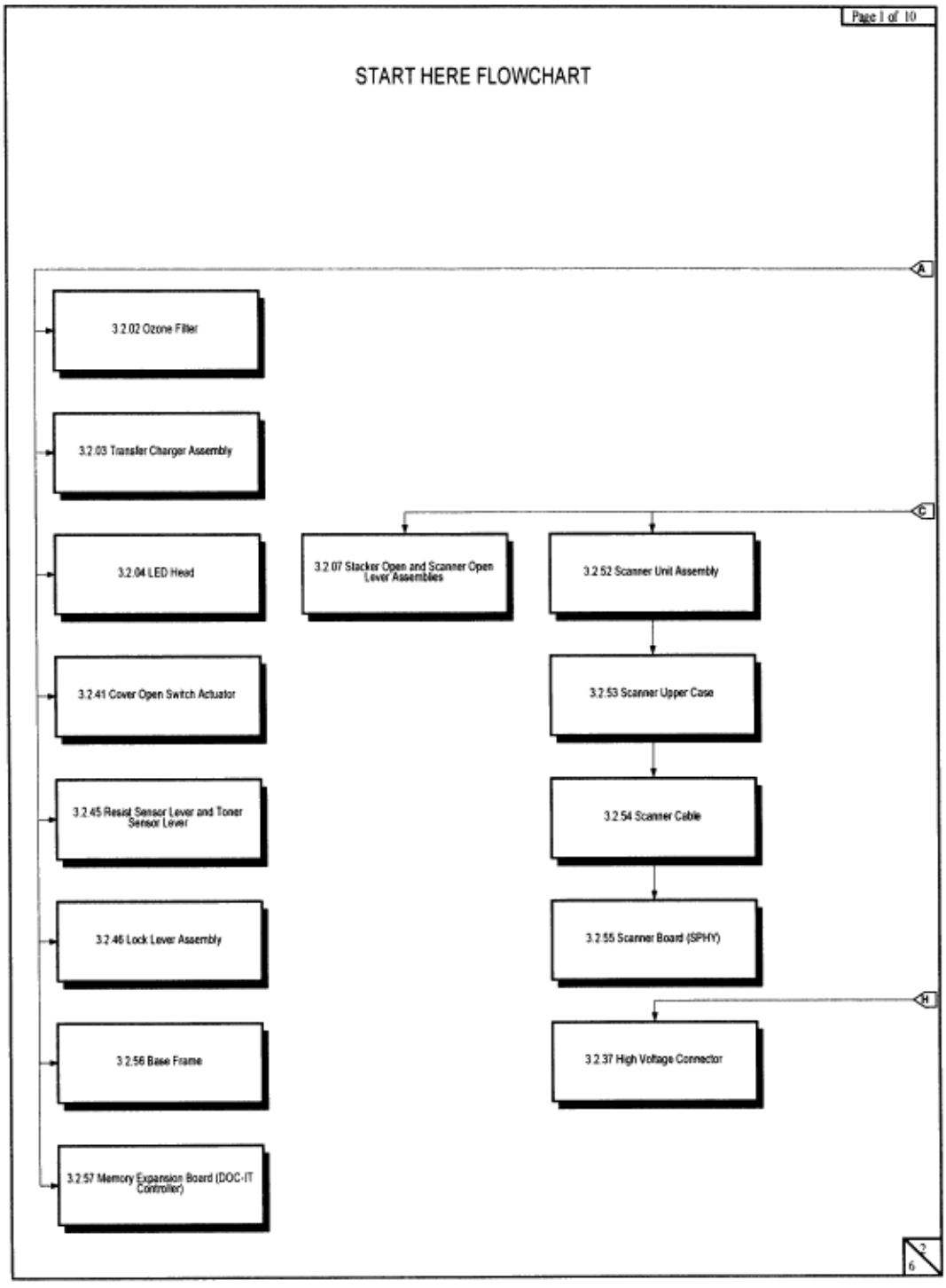

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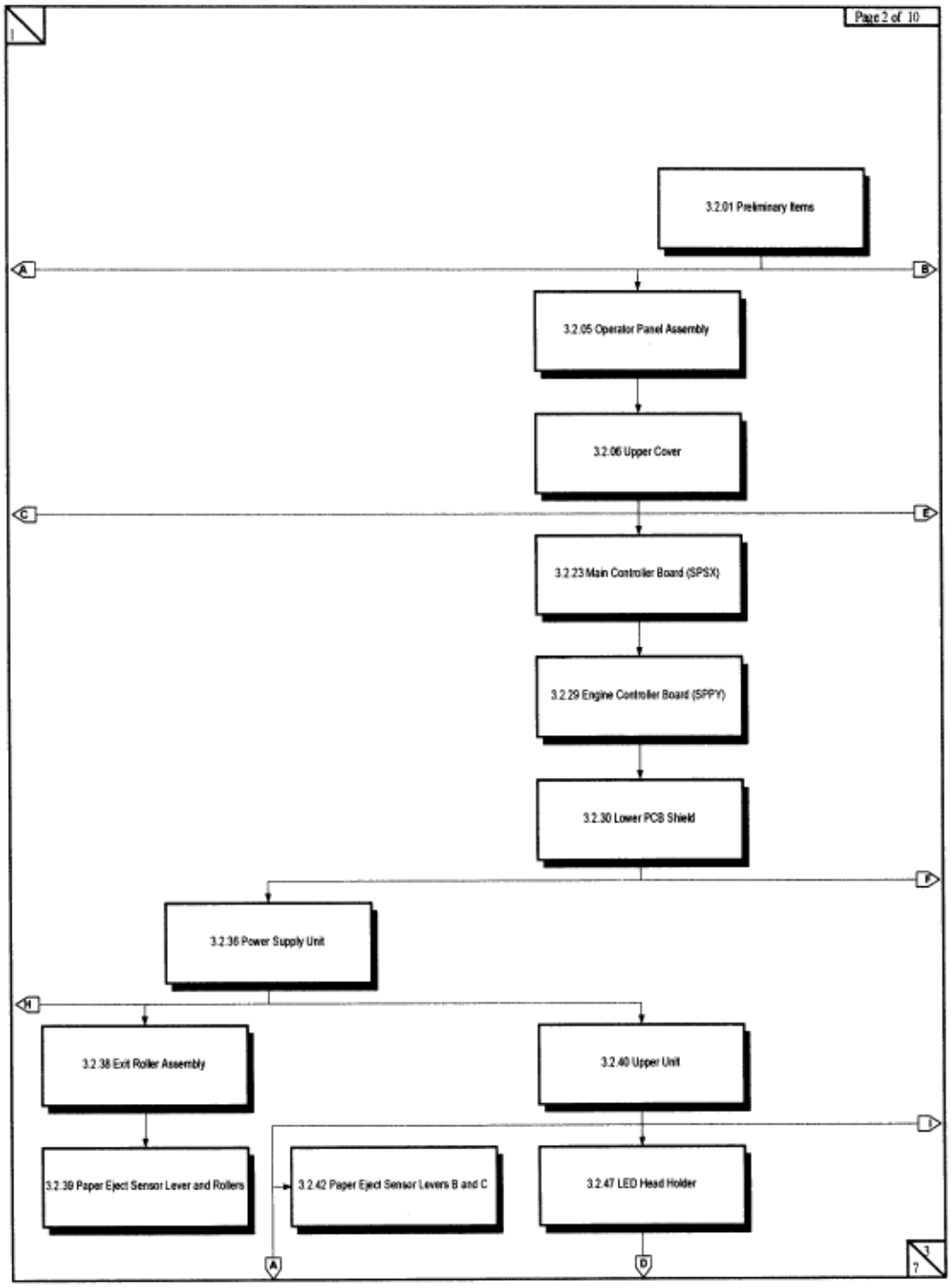

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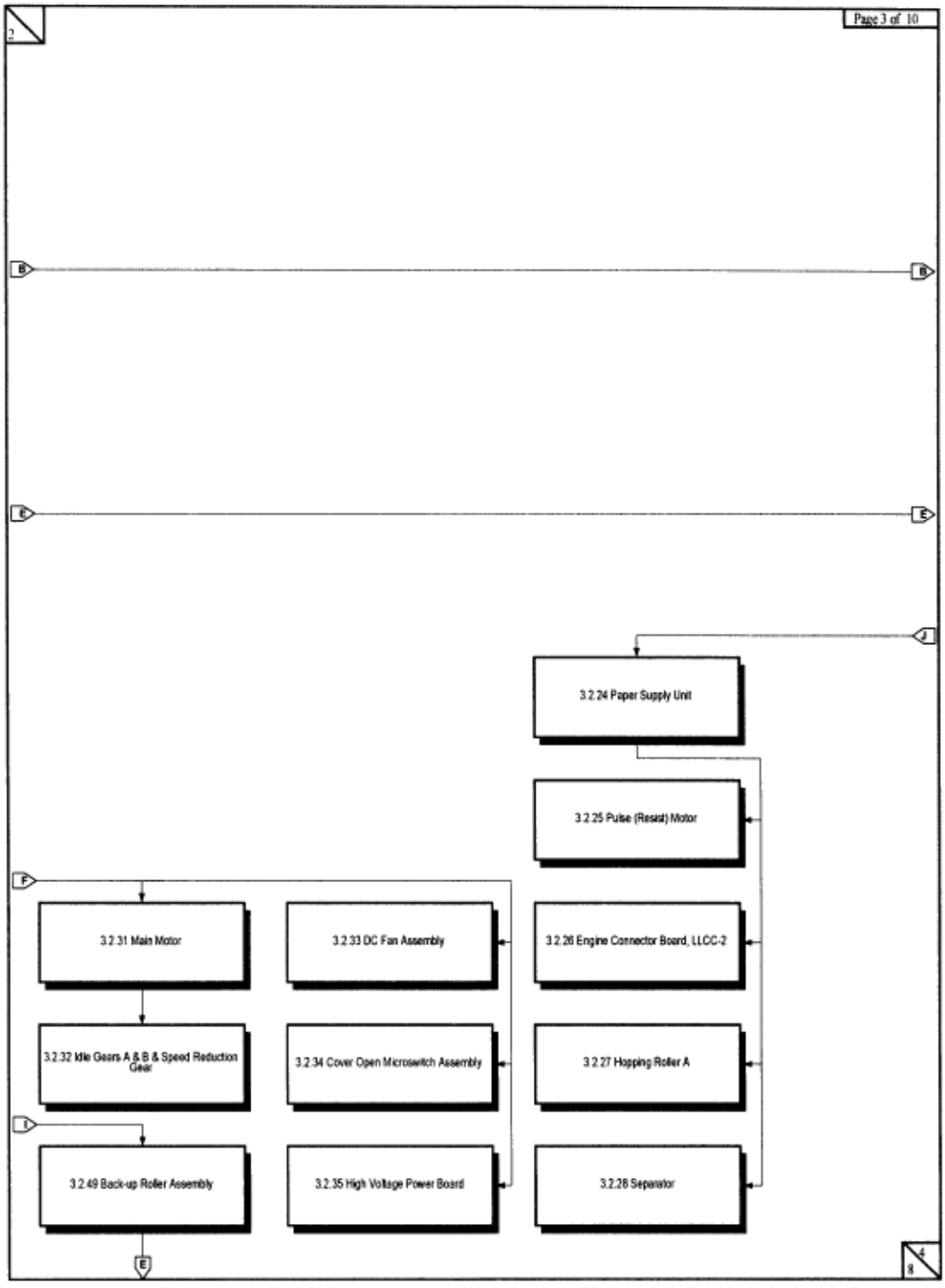

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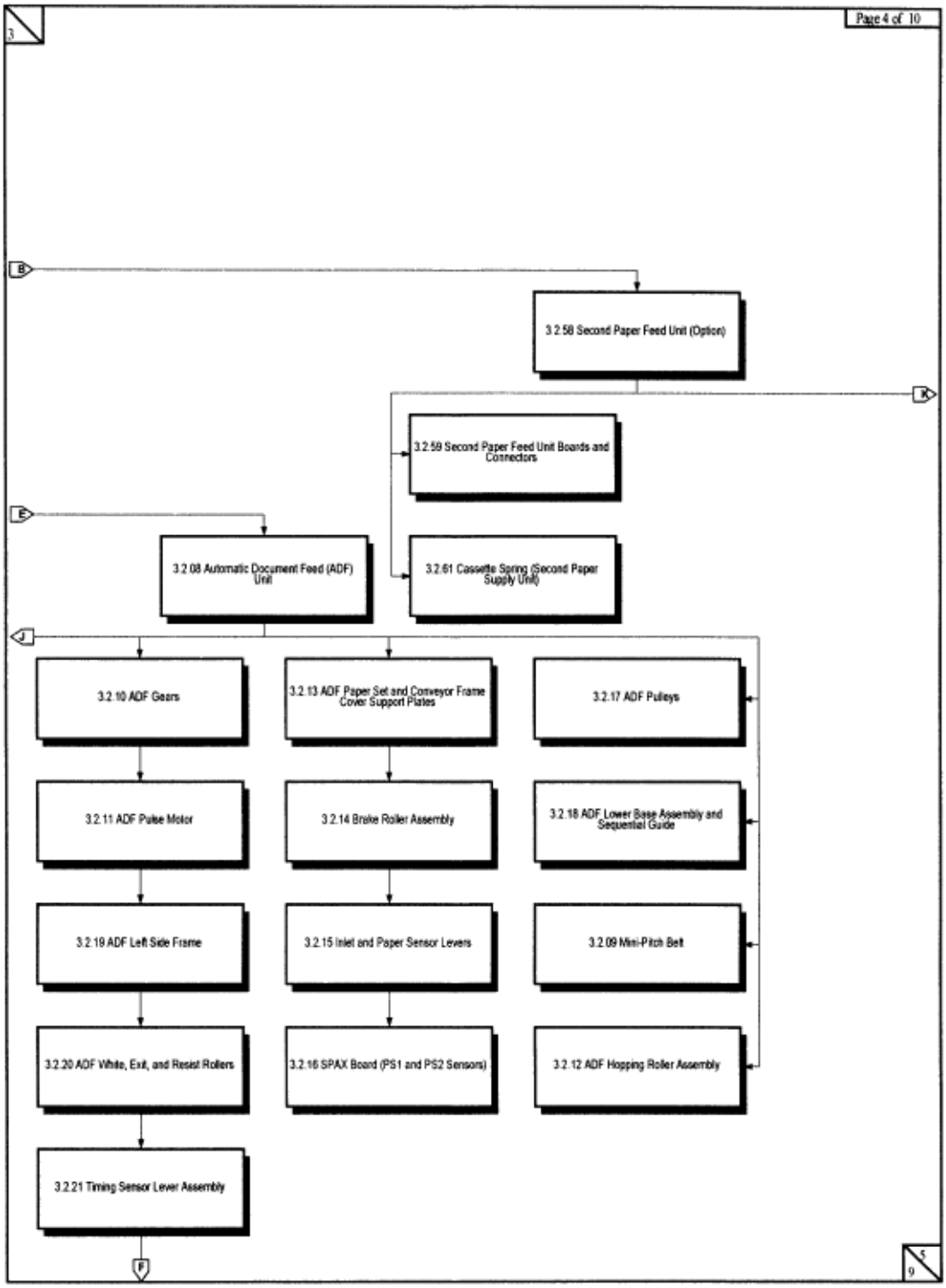
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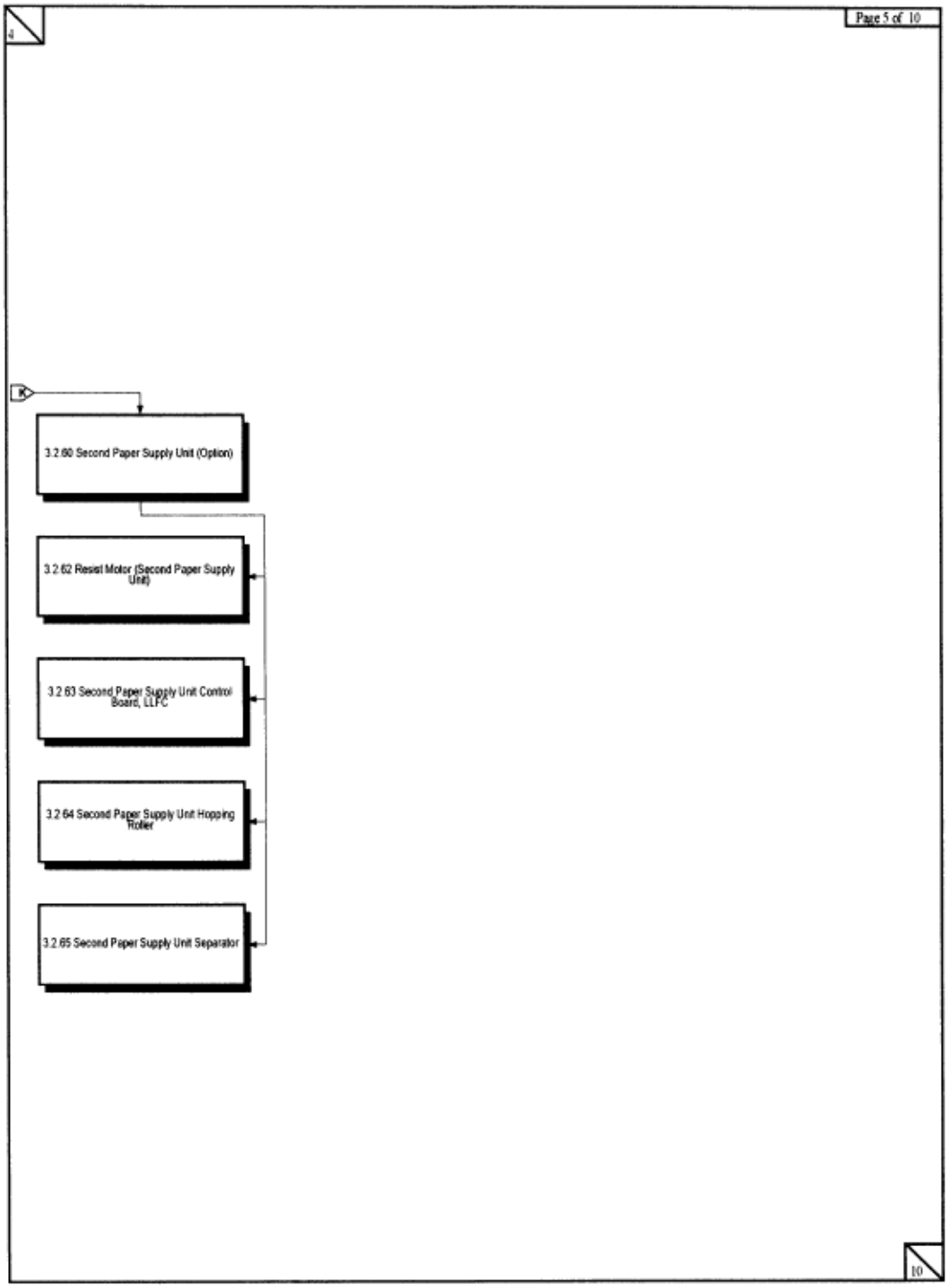
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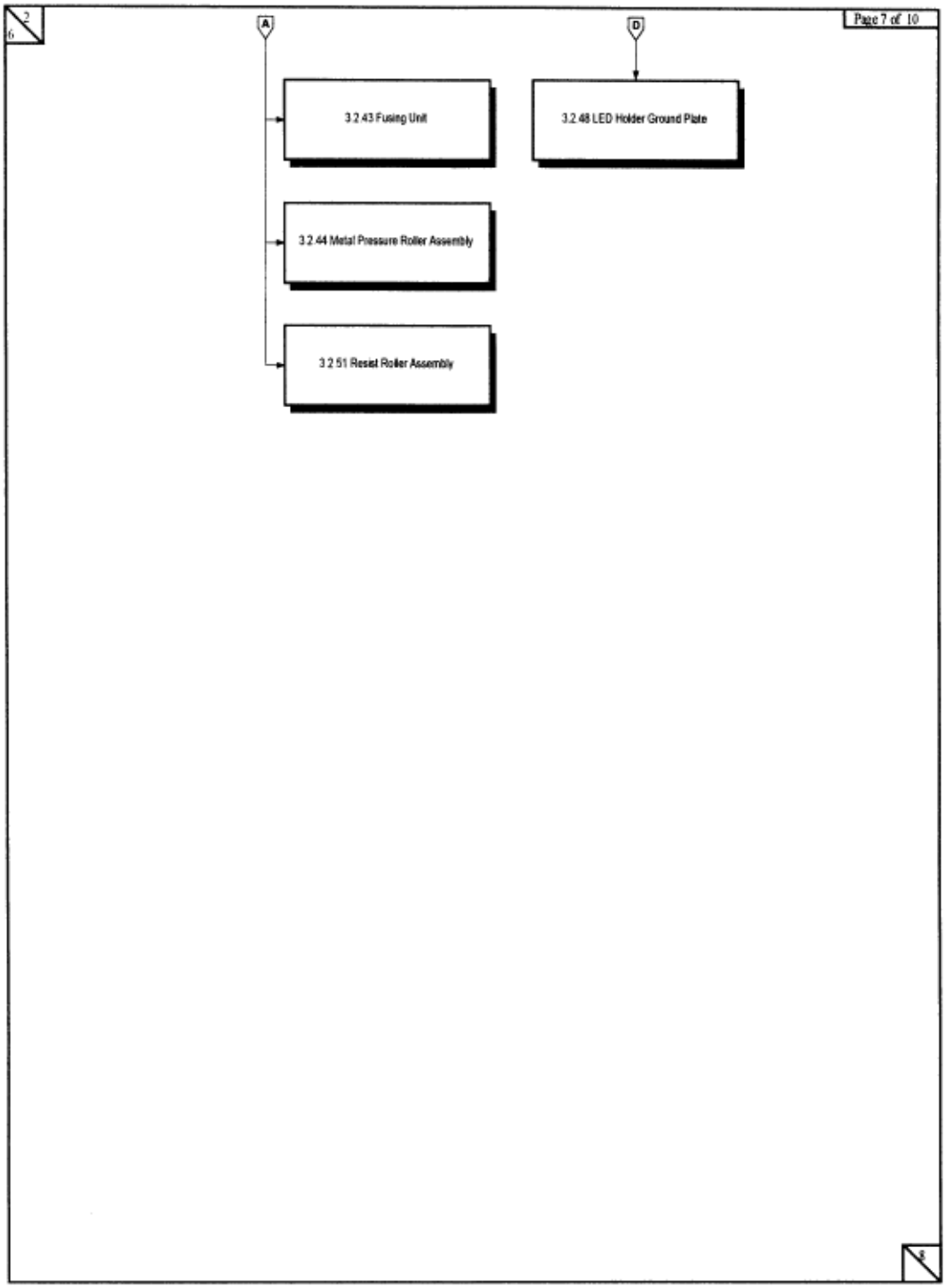
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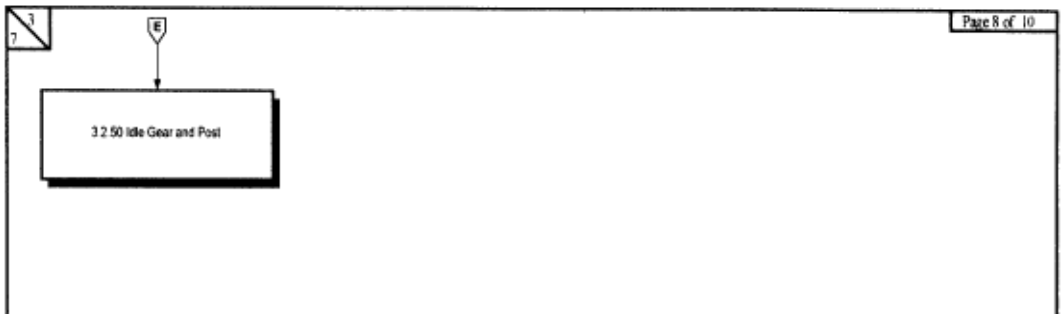

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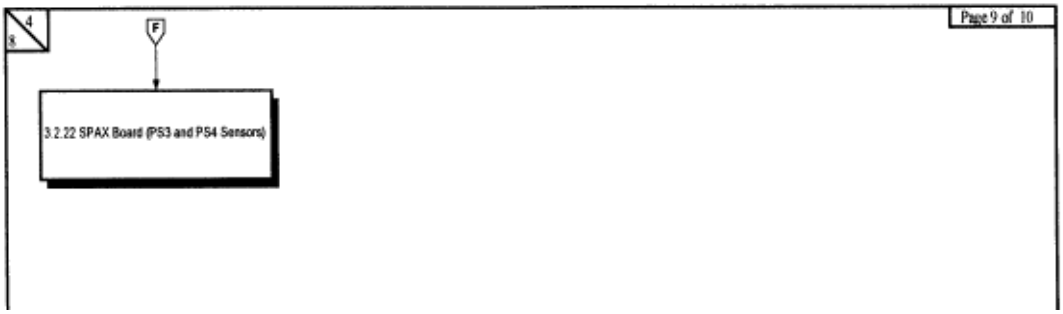

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3.2.01 Preliminary Items

· Turn the power switch (1) OFF.
· Detach the AC power cord (2).
· Detach the interface cable (3).
· Detach the phone cord. (Not shown)
· Remove the document tray (4)
· Remove the paper tray (5).
· Press the OPEN lever (6) and raise the stacker cover (7).
· Push the lock levers toward the rear of the printer and open the LED holder.
· Lift and remove the image drum cartridge (8). To protect the image drum cartridge, place it back in the styrofoam shipping package.

Notes:

The image drum counter should be reset when a new image drum is installed.
Refer to Section 3.3 of this Service Handbook for details ( ).

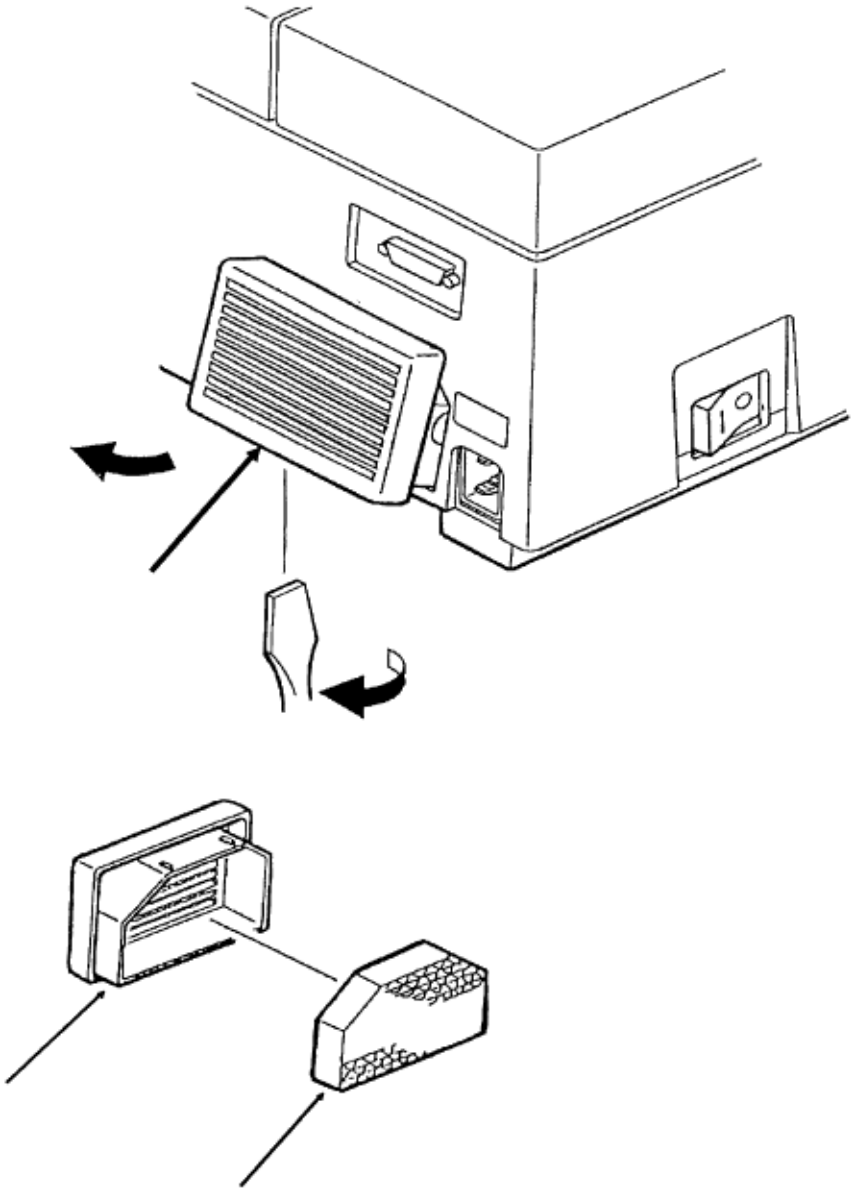
Refer to Section 3.4 of this Service Handbook for cleaning information ( ).

See Appendix B for paper tray part numbers ( ).

The image drum and the toner cartridge are available in the consumables kits listed below.

####

P/N 56609701	Cord: AC 120v	RSPL	B.2.01
P/N 50090101	Tray: Scanner Paper	RSPL	B.2.01
P/N 50213602	Unit: Lower	RSPL	B.2.01
P/N 50066601	Stacker: Face-up (Assembly)	RSPL	B.2.01
P/N 56626901	Cable: 6ft DOC-IT I/F Molded	RSPL	B.2.01
P/N 56626101	Cord: Modular Phone	RSPL	B.2.01
P/N 56106601	Image Drum Kit	Consumable	B.2.15
P/N 52104201	Toner Cartridge Kit	Consumable	B.2.15



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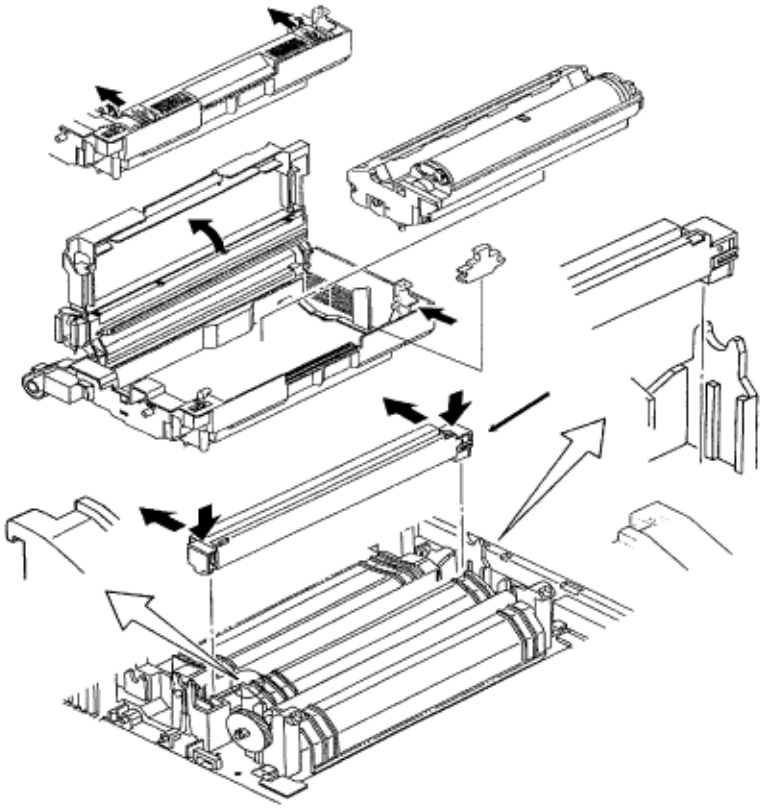
3.2.02 Ozone Filter

Note:
A replacement ozone filter is provided with the image drum cartridge kit. The filter should be replaced when the image drum cartridge is replaced.

· Using a screwdriver, insert the blade under the lower portion of the fan cover (1) and twist the screwdriver to remove the fan cover.

· Remove the ozone filter (2) from the fan cover.

P/N N/A	Filter Cover		B.2.02
P/N 55503501	Ozone Filter	Consumable	B.2.02/15
P/N 56106601	Image Drum Kit (Includes an image drum cartridge and an ozone filter)	Consumable	B.2.15



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3.2.03 Transfer Charger Assembly

Note:

Make sure the image drum cartridge is removed before performing this procedure.
The image drum cartridge must be protected from light when it is not installed.

· Open the stacker cover.
· Open the LED holder.
· Firmly push down, then back, on both sides (1) of the transfer charger assembly (2) until the square holes on each end of the transfer charger assembly disengage from the claws

of the base.

CAUTION:
When removing the transfer charger assembly, be careful not to break the tabs.

· Lift and remove the transfer charger assembly.
· Remove the end caps of the transfer charger assembly.
· Using a needle nose pliers, detach the spring.
· Detach the transfer wire from the clip and remove.
· When installing the transfer wire, place it so the notch matches the dot in the diagram engraved at the bottom of the assembly.

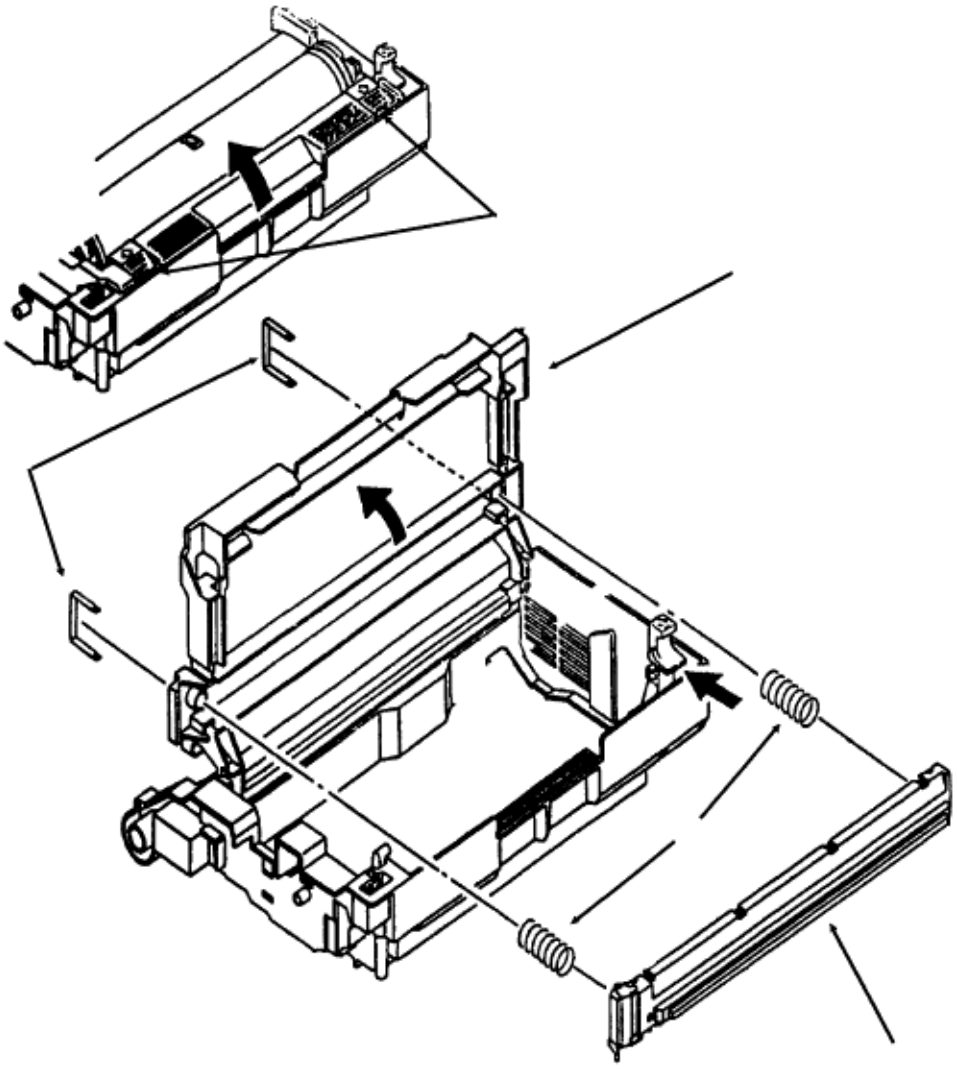
CAUTION:
When installing the transfer charger assembly, make sure the assembly is locked under the claws.
If the assembly is not locked, the image drum will be scratched.

Note:

When cleaning the transfer wire, use the cleaning tool (3) located under the LED holder

Refer to Section 3.4, of this Service Handbook for further cleaning information ( ).

P/N 53528001	Transfer Wire Cleaner		B.2.03
P/N 50087401	Charger: Transfer (Assembly)	RSPL	B.2.06



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3.2.04 LED Head

· Open the stacker cover.
· Push the two blue lock levers (1) toward the rear of the printer and open the LED holder (2).
· Squeeze the LED head (3) and the LED holder together. This eases the tension on the springs (4).
· Use a screwdriver to remove the two clamps (5) on either side of the LED head.
· Remove the LED head.
· Remove the springs.

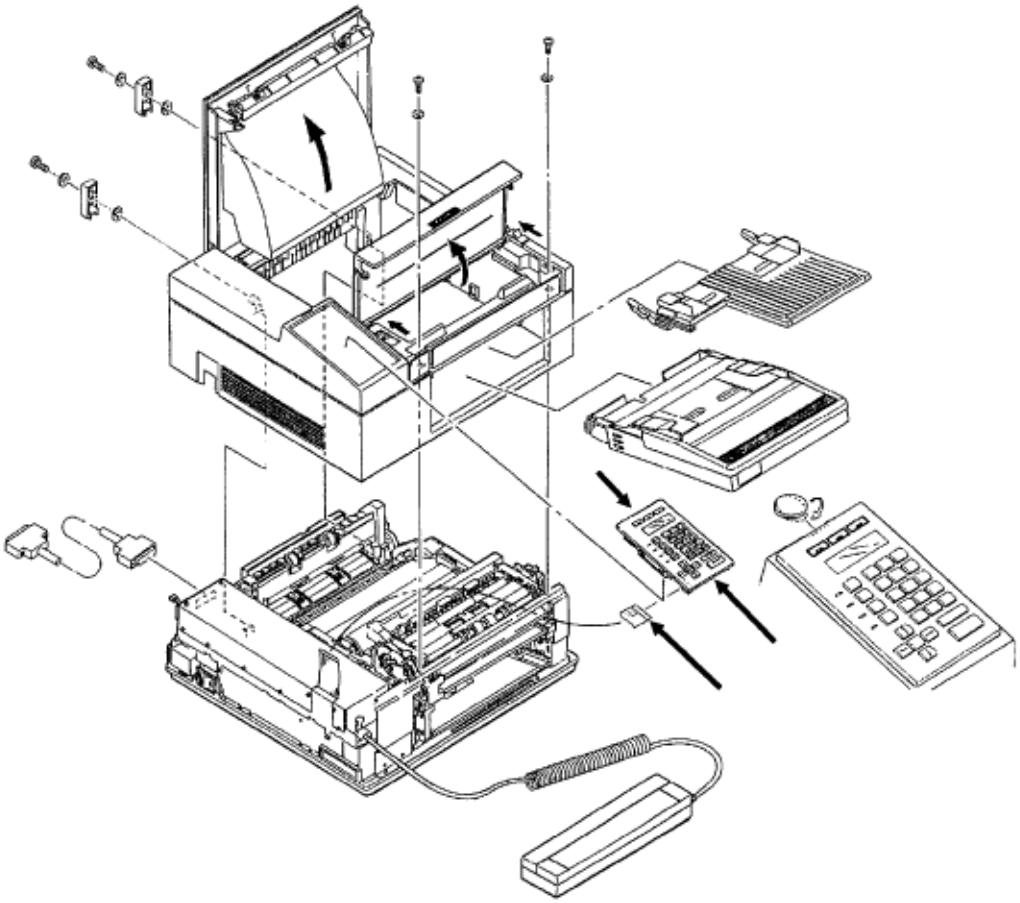
Notes:

Avoid touching the LED array when squeezing the LED head.
Always clean the LED array with the LED lens cleaner provided in the toner cartridge kit.
Refer to Section 3.4 of this Service Handbook for cleaning information ( ).

LED Head Replacement

When you replace one LED head with another, the LED head drive time may need to be reset.
Refer to Section 3.3 of this Service Handbook for further information ( ).

P/N 55619501	Unit: LED Head (300 DPI)	RSPL	B.2.05
P/N 55622201	Unit: LED Head (400 DPI)	RSPL	B.2.05
P/N 50914301	Spring: Clamp (LED)	RSPL	B.2.05
P/N 50914101	Spring: Bias (LED Head)	RSPL	B.2.05
P/N 52104201	Toner Cartridge Kit (Includes a Toner Cartridge, a Fuser Cleaner Pad, and an LED Lens Cleaner Pad)	Consumable	B.2.15



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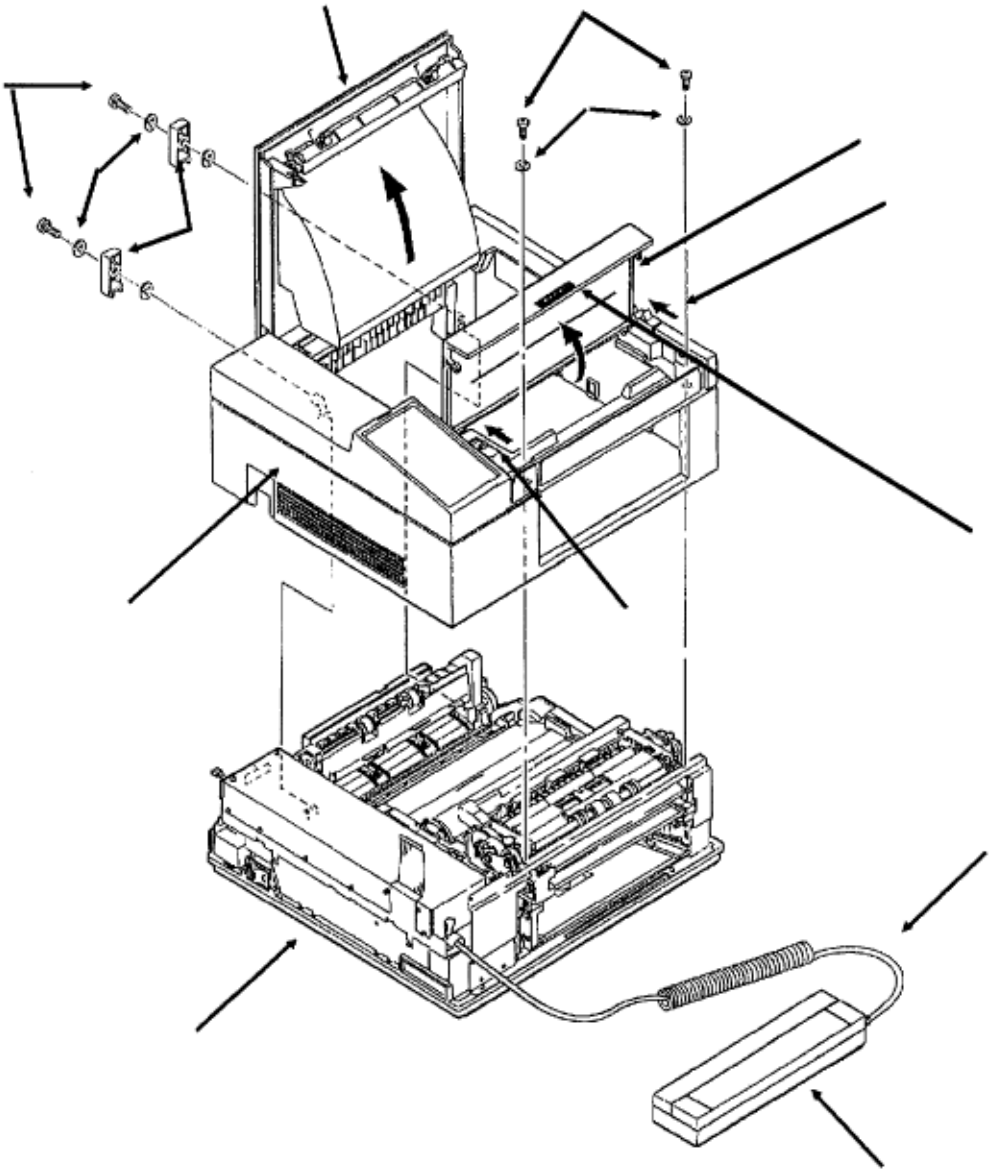
3.2.05 Operator Panel Assembly

· Press at A and lift the operator panel assembly (1).
· Turn the assembly over.
· Detach the cable (2) from connector CN1.
· Remove the assembly.

Note:
When reassembling, the blue strip on the cable faces away form the operator panel board.

P/N 53064101	Panel: Operation Assembly	RSPL	B.2.02 (without cable)
P/N 53505430	Cable: Control Panel	RSPL	B.2.02



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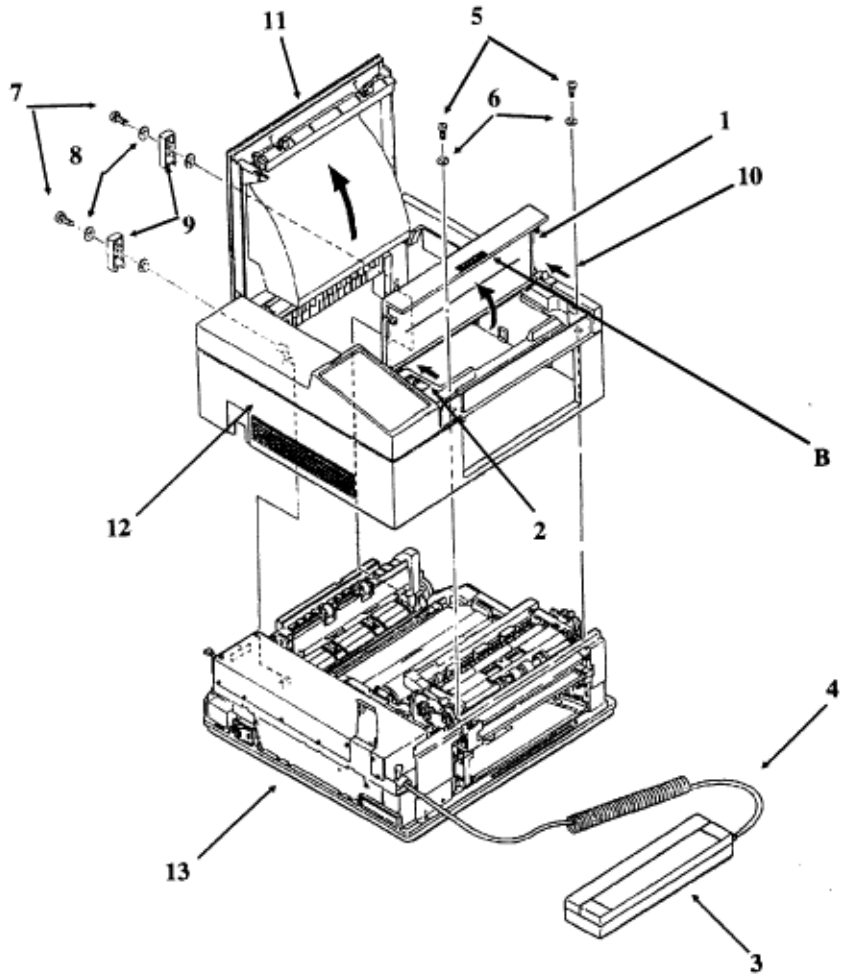
3.2.06 Upper Cover

· Press at B and open the scanner cover (1).
· Press the scanner eject lever (2) back and lift out the handheld scanner unit (3), working the scanner cable (4) free of the guides
· Remove the two cover screws (5) and cover screw washers (6) near the scan unit
· Loosen the two cover screws (7) located at the rear of the unit, and remove screws, the cover screw washers (8) and rear cover brackets (9).
· Lower the face-up stacker assembly (Not shown), which is located at the rear of the unit.
· Press the OPEN lever (10) and raise the stacker cover (11).
· Lift the upper cover (12).
· Pass the scanner unit through the opening in the cover for the paper cassette.
· Remove the stacker cover.
· Remove the scanner cover by pressing at its center to slightly bow the cover. This frees the arms from the extensions.
· Remove the face-up stacker assembly.
· The lower unit (13) contains the boards, shields, paper feed mechanism, transfer charger assembly and rollers.

P/N 53064001	Cover: Upper Assembly	RSPL	B.2.02 (without logo)
P/N 50316201	Screw: Cover	RSPL	B.2.02
P/N 50515202	Washer: Cover Screw	RSPL	B.2.02
P/N 51708101	Brackets: Rear Cover	RSPL	B.2.02
P/N 52054301	Logo: Plate (DOC-IT 3000)	RSPL	B.2.02
P/N 52054401	Logo: Plate (DOC-IT 4000)	RSPL	B.2.02



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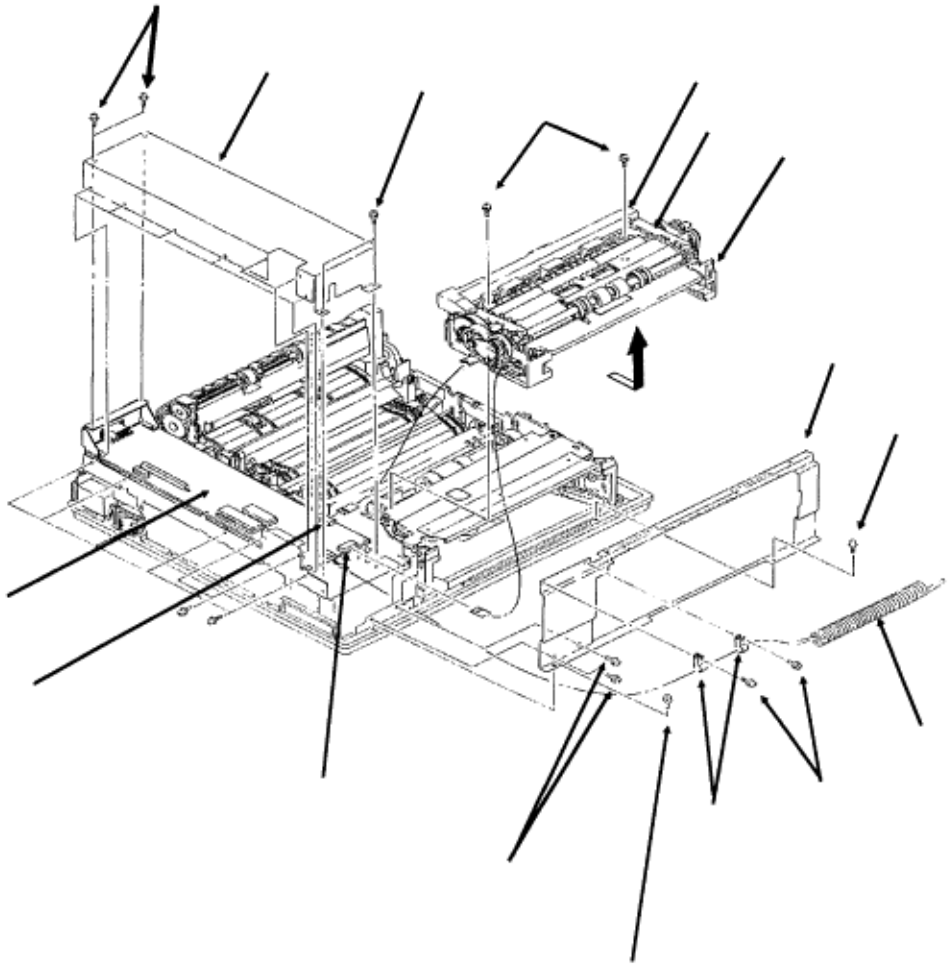
3.2.07 Stacker Open and Scanner Open Lever Assemblies

· Turn the upper cover over.
· Detach the spring.
· Loosen the screw and remove the stacker open lever.
· Remove the screw, metal plate, and bracket with spring.
· Remove the screw, bracket, and scanner cover lever.

Note:
The metal springs and rollers are located at the rear of the cover.



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3.2.08 Automatic Document Feed (ADF) Unit

· Remove the two screws (1).
· Remove the scanner cable (2) with the two cable clamps (3).
· Remove the four screws (4). Screws 4A are larger than screws 4B.
· Raise the left edge of front reinforcing panel (5) and rotate it to detach it. The panel must clear the projections of the base frame and paper feed mechanism. Be careful not to bend the ground plate (6).
· Remove the three screws (7).
· Remove the shield plate (8).
· Detach the cable J3 (9) and cable J4 (10). The cables run between the board (SPSX) (11) and the automatic document feed (ADF) unit (12).

Note:
When installing J3 and J4, the blue strips face up.

· Press the release lever and raise the upper unit.
· Lower the sequential guide (13).
· Remove two screws (14).

CAUTION:

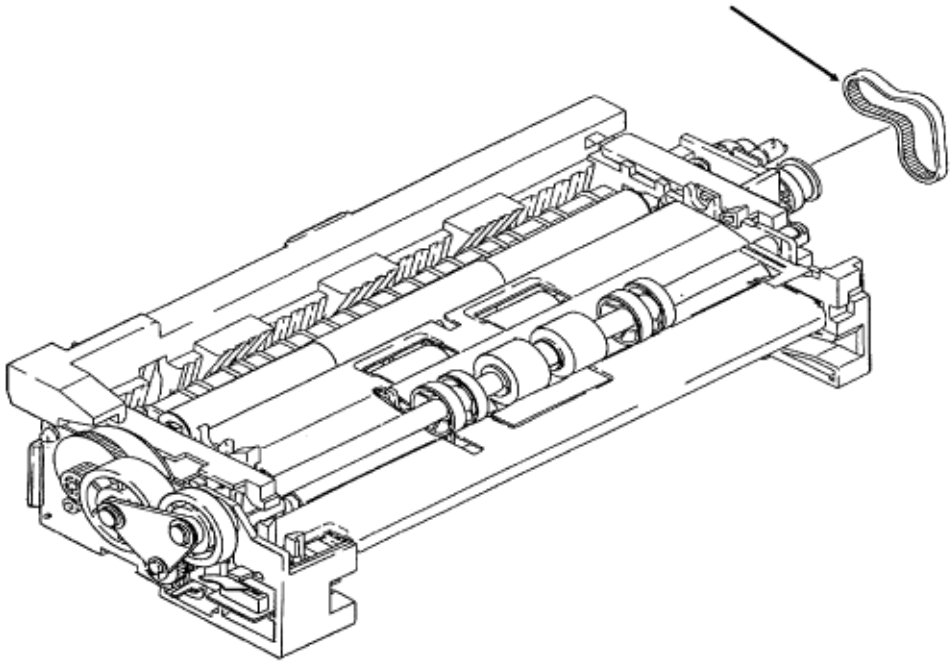
Use slow and steady pressure when performing the next step or you will break the sequential guide and tear connector J3.

· Very carefully pull the ADF unit up and towards you to unlock it. You must feed connector J3 through the opening under the LLCC-2 board while lifting the ADF unit free of the paper feed mechanism.

CAUTION:
The ADF Unit Assembly is an RSPL item. Okidata DOES NOT recommend disassembling this unit. The parts, boards and sensors contained in the ADF Unit Assembly are not available as spare parts.

Refer to Section 3.3 of this Service Handbook for adjustment and counter information.

P/N 50216401 Assembly: ADF RSPL B.2.11 & B.2.12



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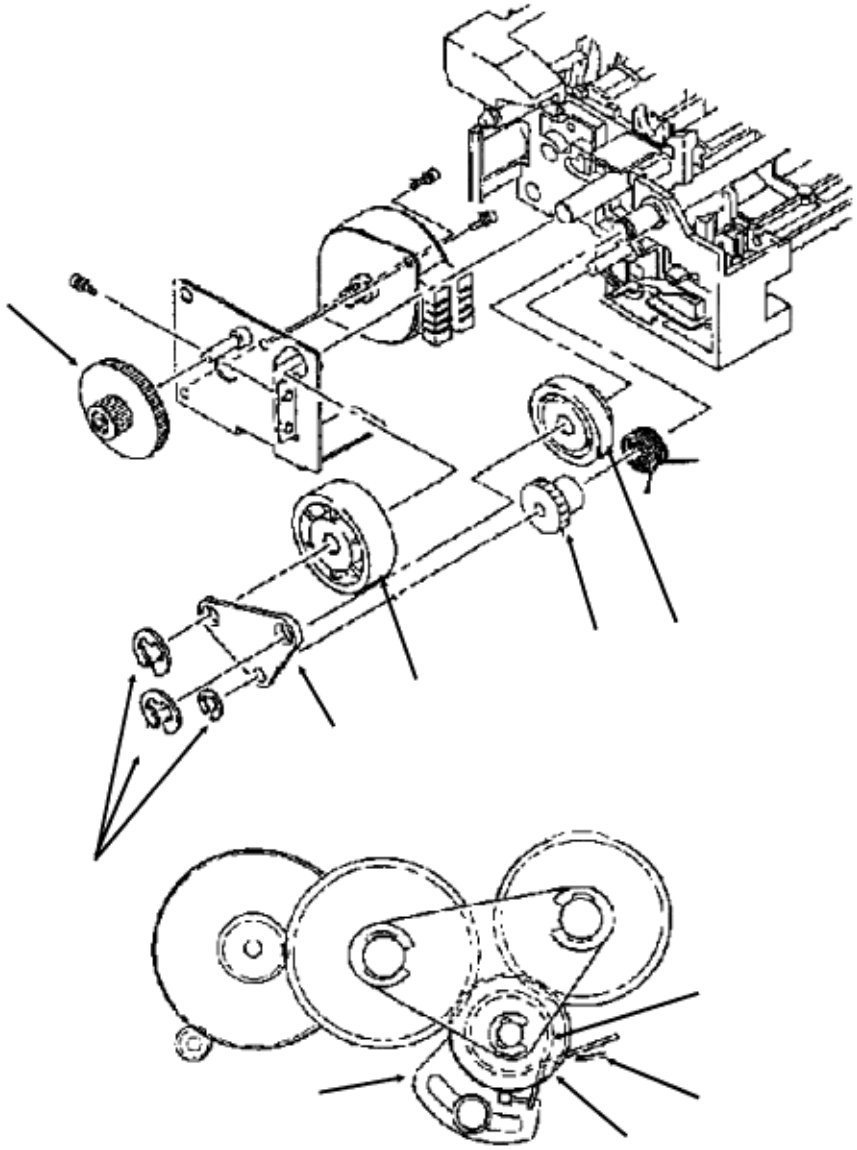
3.2.09 Mini-Pitch Belt (ADF)

- Remove the preliminary items.
- Remove the upper cover.
- Remove the ADF unit.
- Remove mini-pitch belt (1).

P/N 51304601 Mini-Pitch Belt (ADF)	RSPL	B.2.12



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3.2.10 ADF Gears

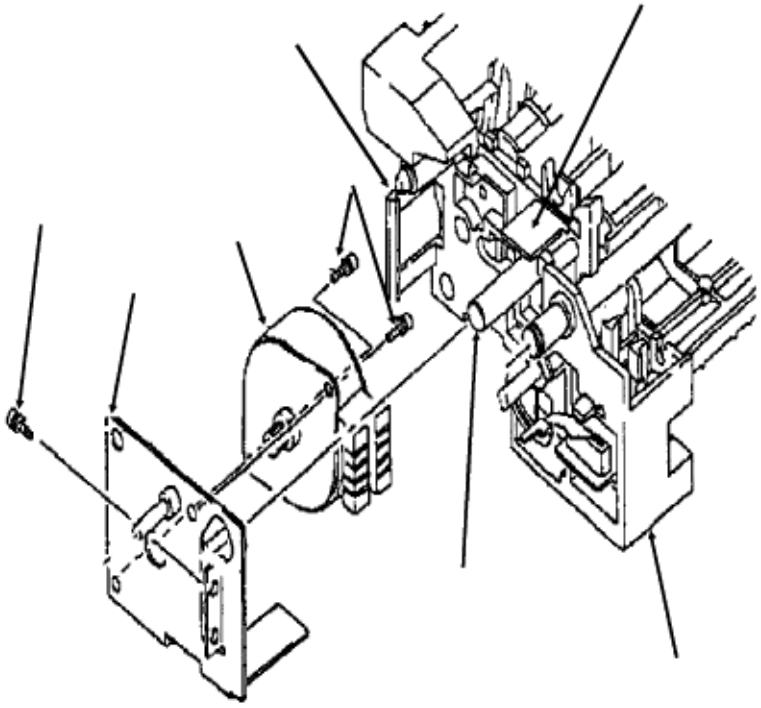
· Remove the three E-clips (1).
· Remove the support plate (2).
· Remove the cutter gear (3), the idle gear (4), the one-way clutch gear (5), and the reduction gear (6).

The cutter gear is medium sized with large teeth.
The idle gear is is small sized with a spring attached.
The one-way clutch gear is large with large teeth.
The reduction gear is very narrow with small teeth.

Note:
The following procedures must be done when installing the idle gear.

- The clutch spring stopper must be set.
- Position the clutch spring as shown in Figure A.
- The clutch stopper must be adjusted to set the gap between the brake roller and the hopping roller. To set the gap:
Remove the scanner hopper.
Rotate the clutch stopper until the gap measures 0.04 to 0.05 inches.

P/N N/A	Support Plate	B.2.11
P/N 51227001	Idle Gear	B.2.11
P/N 51227101	One-way Clutch Gear	B.2.11
P/N 51213401	Cutter Gear	B.2.11
P/N 51227201	Reduction Gear	B.2.11



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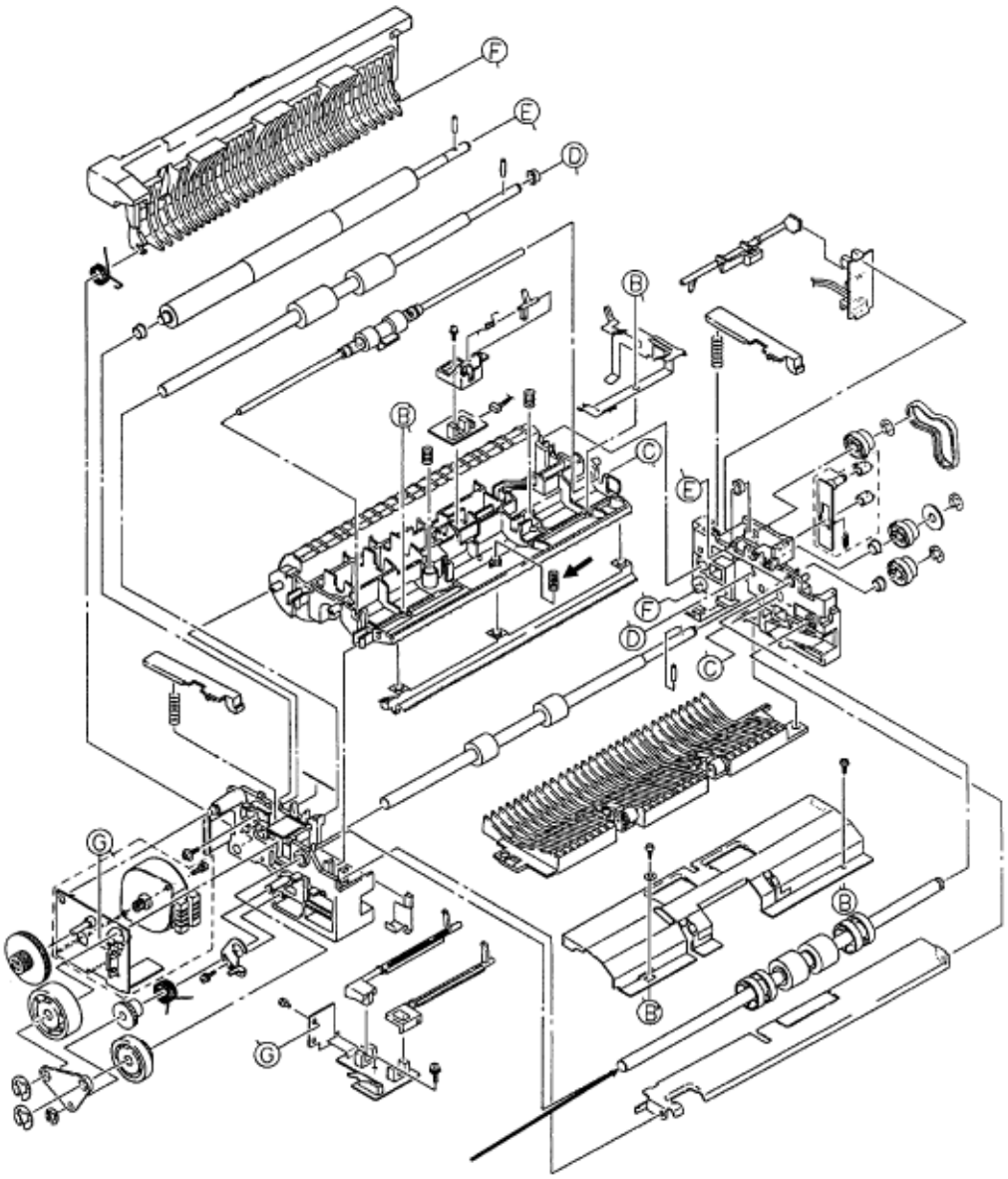
3.2.11 ADF Pulse Motor

· Press the tab (1) away from the bracket (2).
· Pull the bracket towards you, and turn it to work the motor (3) and bracket free.
· Work the bracket free of the shaft (4).
· Unlock the pulse motor assembly from the housing (5).
· Detach the pulse motor assembly from the guide of the left side frame (6) and rotate the pulse motor assembly.
· Remove the screw (7).
· Remove the pulse motor assembly, being careful not to damage the inlet sensor PCB and cable. The cable feeds through a plastic mylar guide attached to the motor bracket.
· Remove two screws (8).
· Remove the pulse motor from the motor bracket.

P/N 56509901	Motor Assembly	B.2.11
P/N N/A	Motor Bracket	B.2.11
P/N 56507301	Pulse Motor	B.2.11



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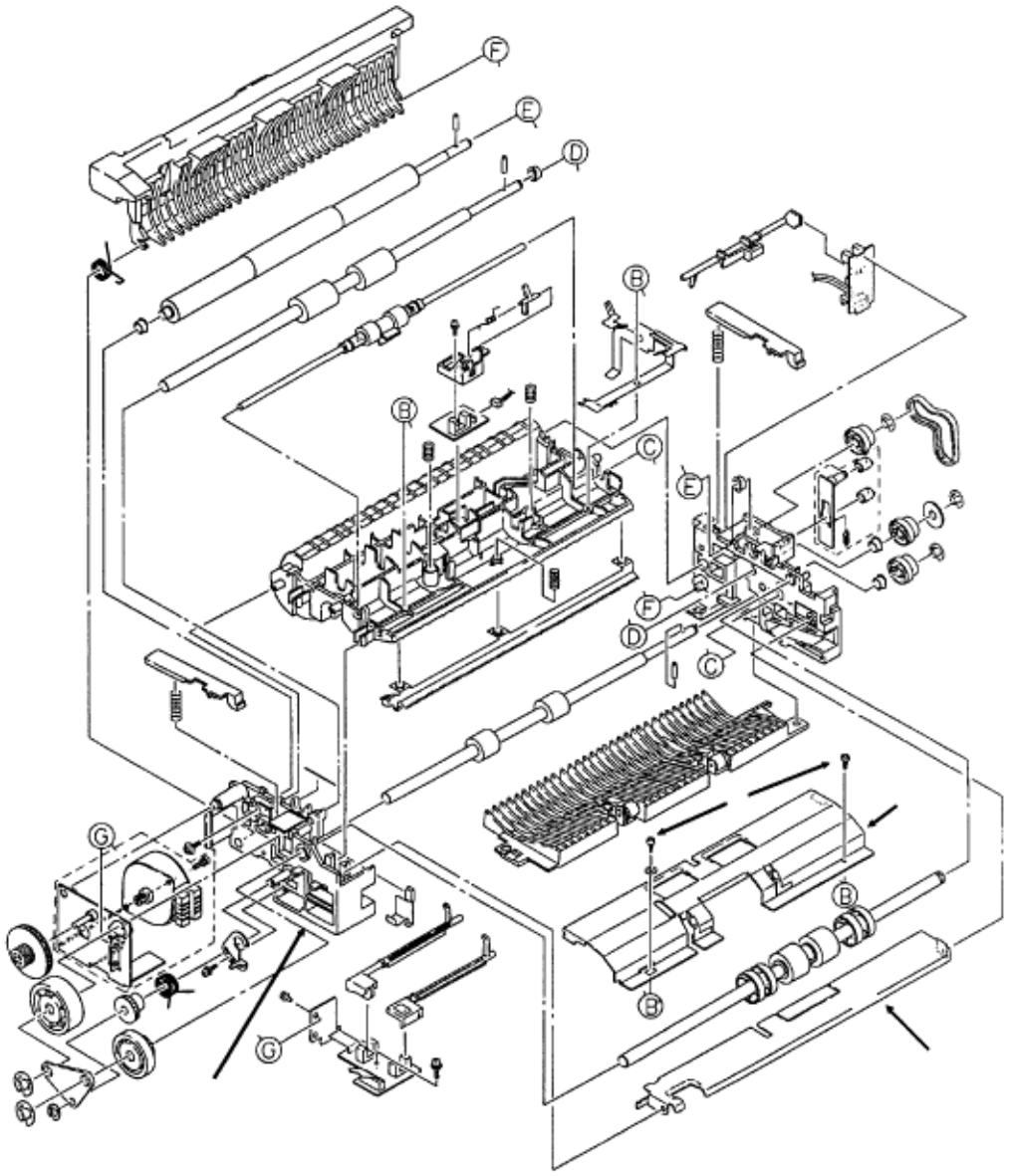
3.2.12 ADF Hopping Roller Assembly

· Use a needle nose pliers to separate the claws and release the hopping roller shaft assembly (1).
· Push the shaft to free one end from the ADF frame.
· Work the shaft until the other end is free.
· Remove the ADF hopping roller assembly. Be careful not to lose the hopping spring (2).

P/N N/A	Hopping Roller Assembly	B.2.11
P/N N/A	Hopping Spring	B.2.11



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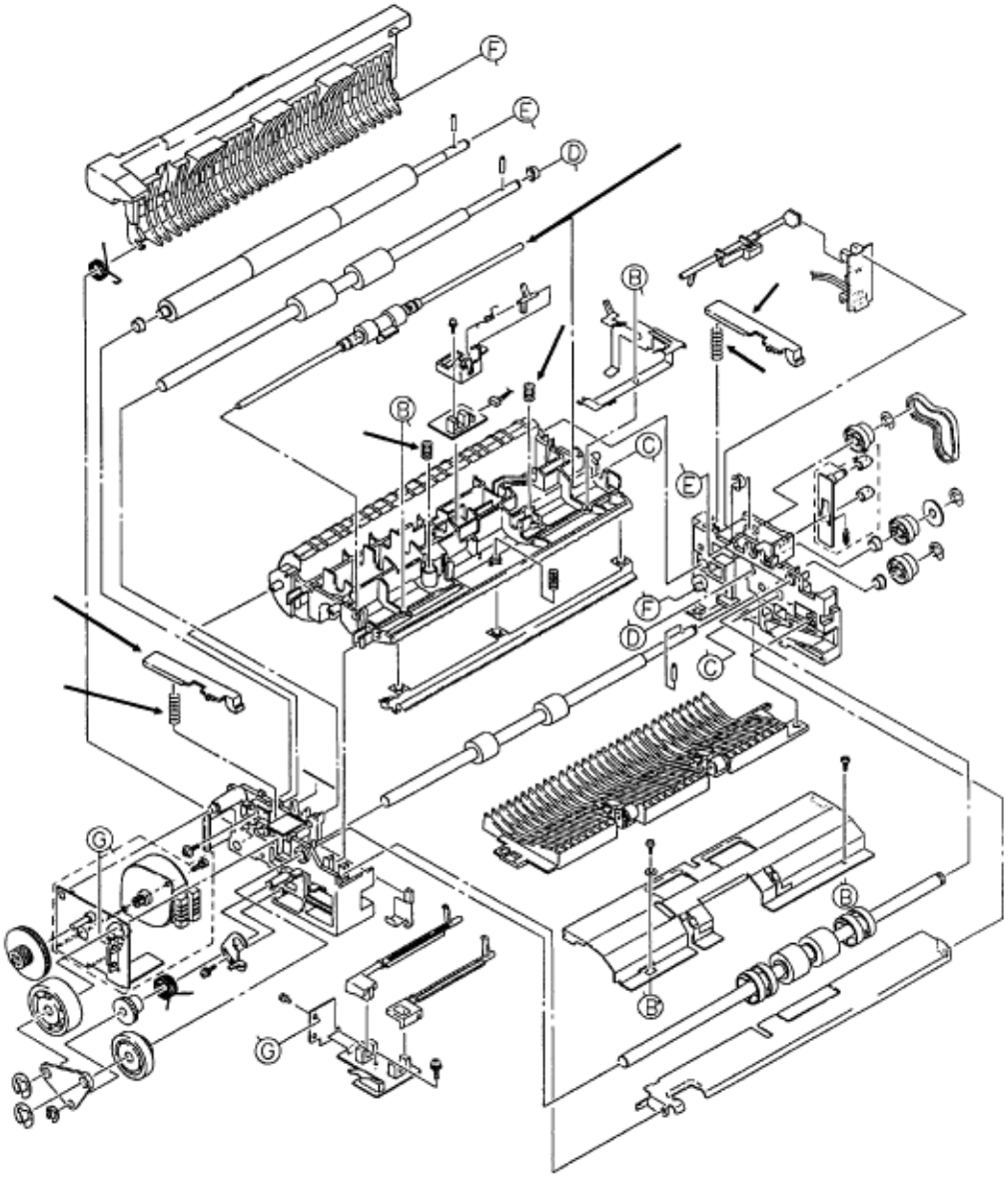
3.2.13 ADF Paper Set and Conveyor Frame Cover Support Plates

· Use a straight slot screwdriver and press the black tab to release the right side of the ADF paper set plate (1).
· Work the paper set plate free of the left side frame (2) and remove the plate.
· Remove the two screws (3).
· Remove the support plate/conveyor frame cover (4). Be careful not to lose the washer located on the left side.

P/N N/A	Paper Set Plate	B.2.11
P/N N/A	Support Plate	B.2.11 (Conveyor Frame Cover)



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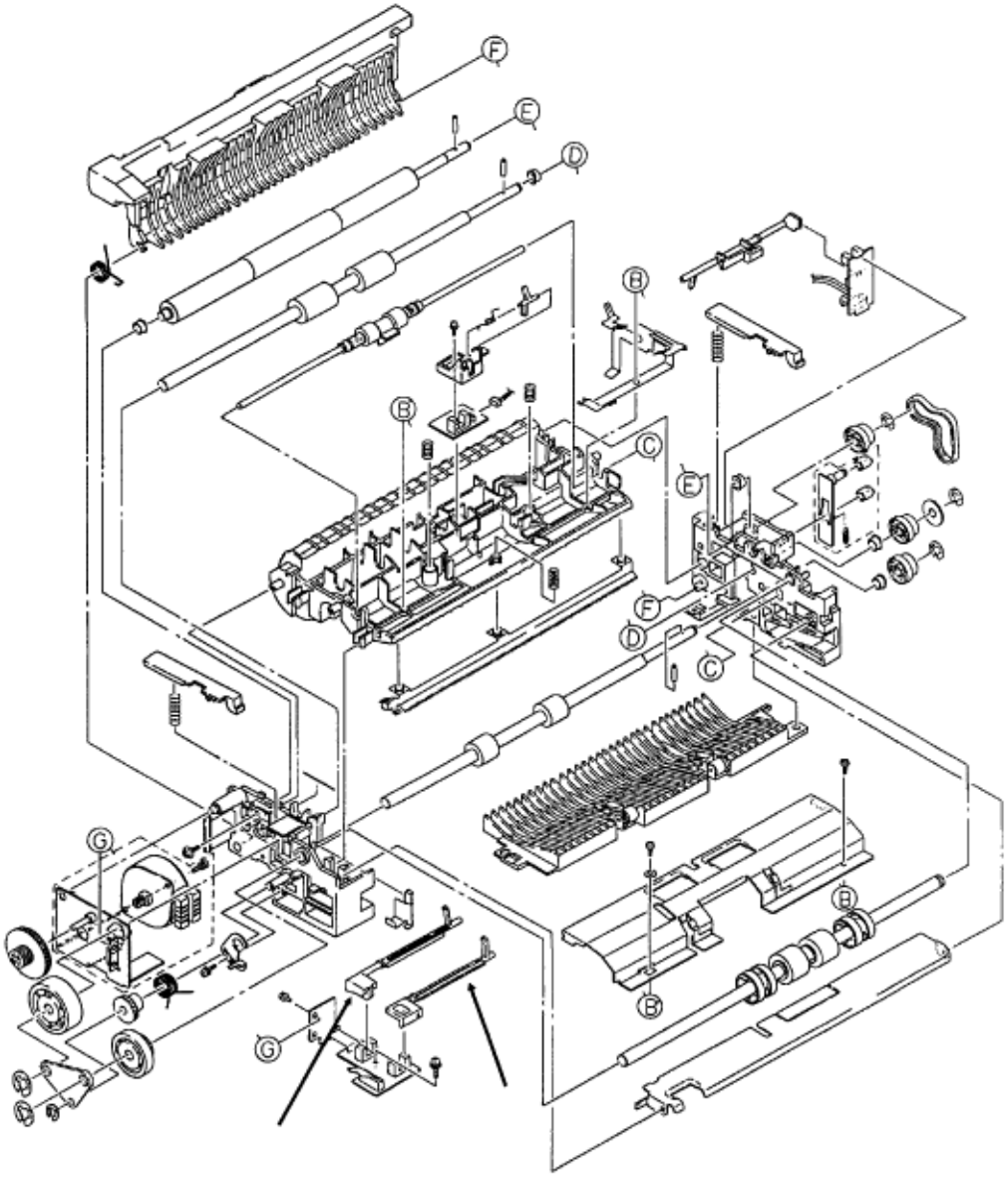
3.2.14 Brake Roller Assembly

· Remove the left scanner hopper spring (1) and left scanner hopper (2).
· Remove the right scanner hopper spring (3) and right scanner hopper (4).

Note:
The right spring is larger than the left spring.

· Work the brake roller assembly (5) free and remove it.
· Remove the brake roller springs (6).

P/N N/A	Scanner Hopper	B.2.11
P/N 50922201	Scanner Spring	B.2.11
P/N N/A	Scanner Hopper	B.2.12
P/N 50922301	Scanner Spring	B.2.12
P/N N/A	Brake Roller Assembly	B.2.12
P/N N/A	Brake Spring	B.2.12



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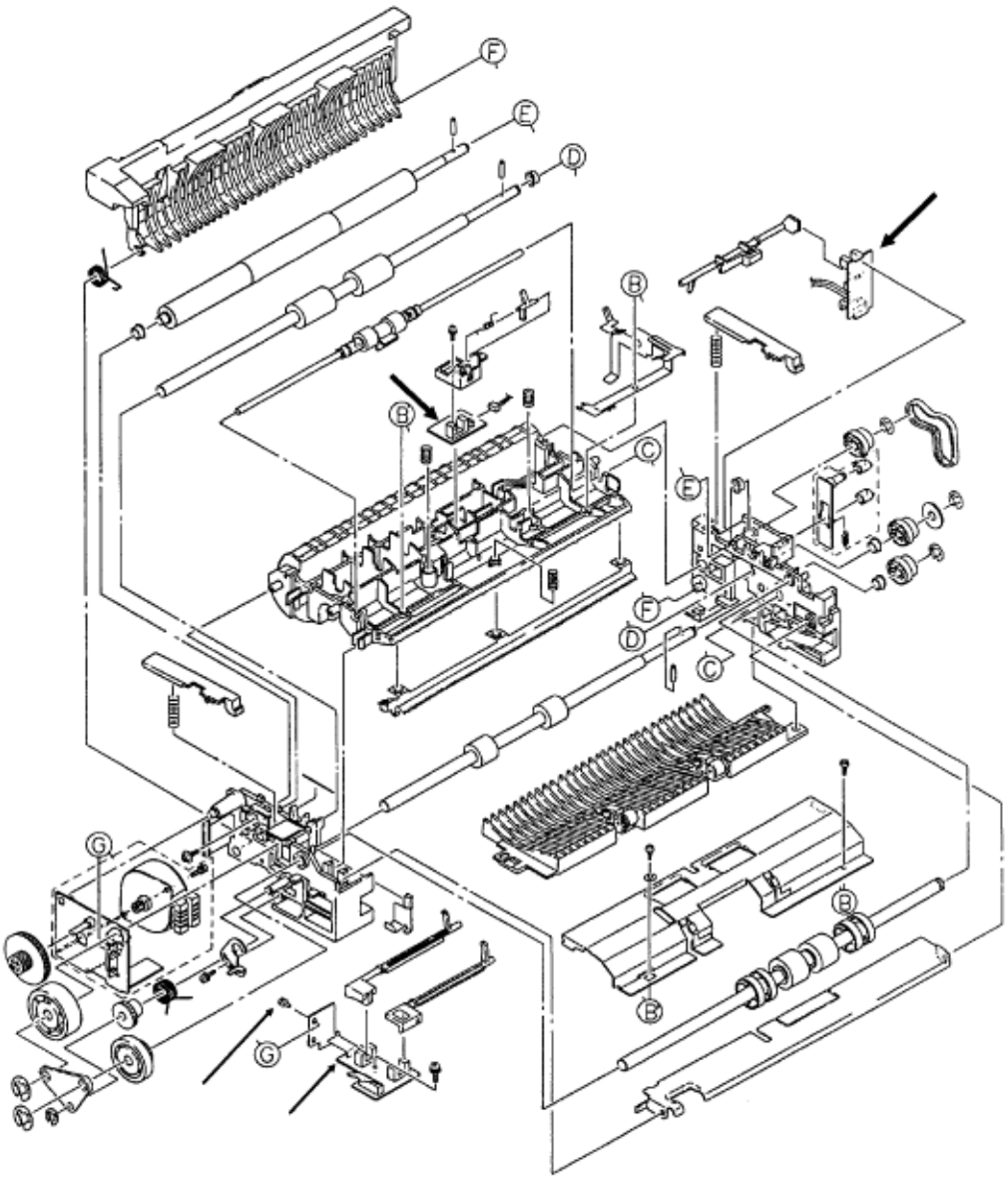
3.2.15 Inlet and Paper Sensor Levers

· Remove the inlet sensor lever (1). This lever has a solid block at the end.
· Remove the paper sensor lever (2). This lever has a cut out at the end.

P/N N/A	Paper Sensor Lever	B.2.11
P/N N/A	Inlet Sensor Lever	B.2.11



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3.2.16 SPAX Board (PS1 and PS2 Sensors)

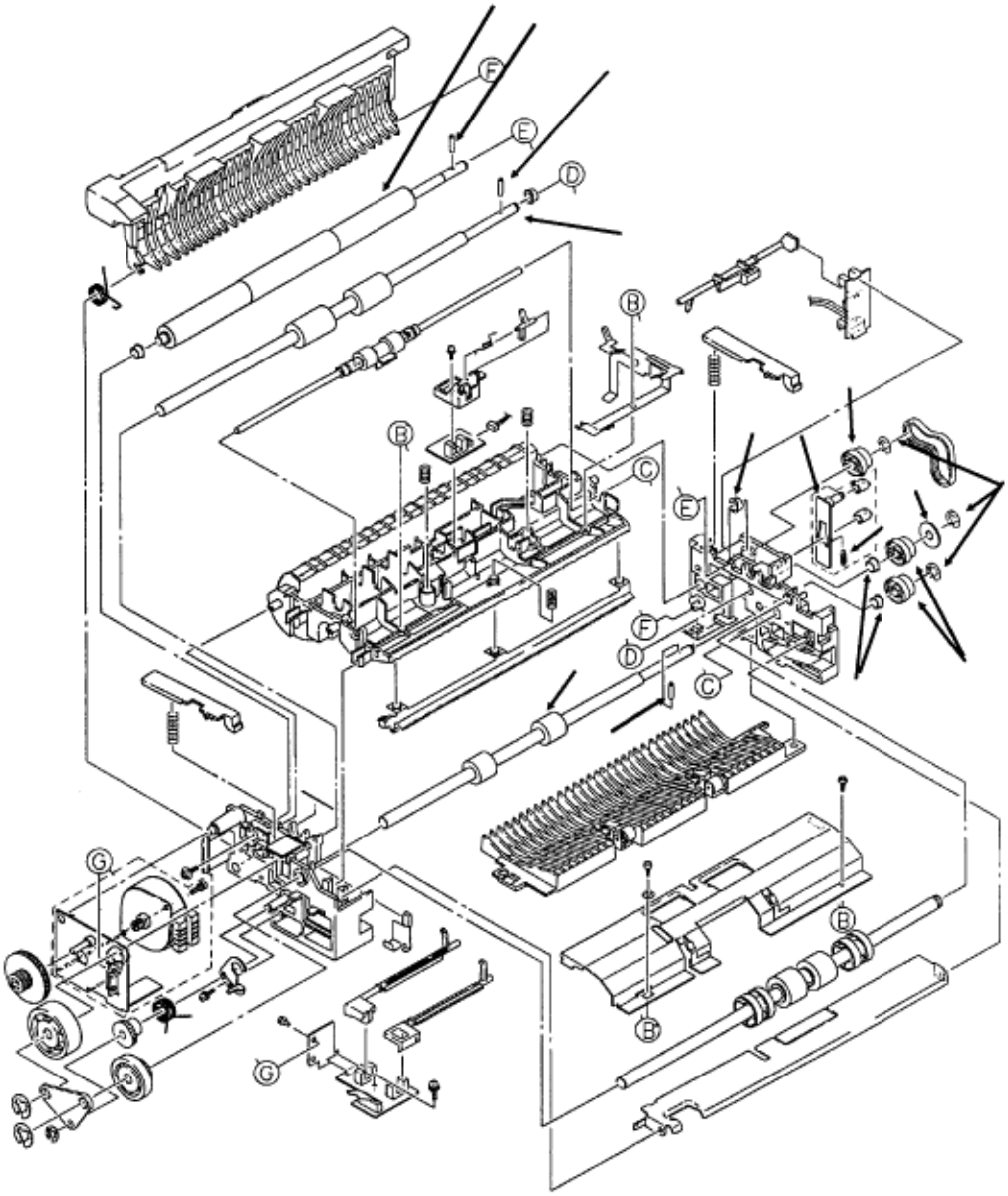
Note:
These two parts of the SPAX board contain the PS1 and PS2 sensors and connectors CN1, CN2, and CN5.

· Remove the screw (1).
· Remove the SPAX board (2).

Note:
The SPAX board is separated into three sections. Sensor PS1 and PS2 are on this section (2). Sensor PS5 is on this section (3). Sensors PS3 and PS4 are on this section (4).

Refer to procedures 3.2.21( ) and 3.2.22( ) for further information.

P/N 55067201 SPAX PCB (1/3) B.2.11/12



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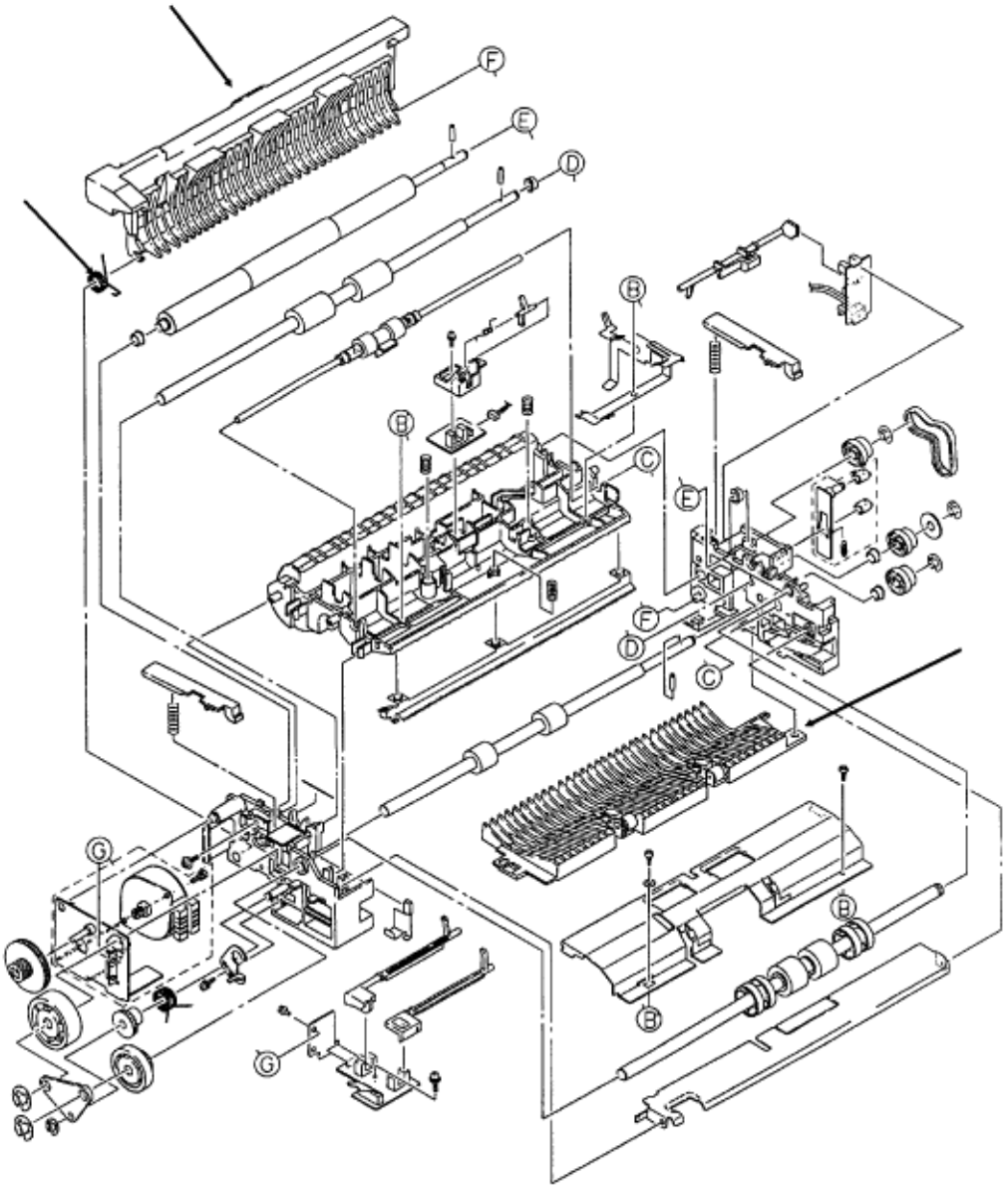
3.2.17 ADF Pulleys

· Remove the three E-clips (1).
· Remove the three pulleys (2). Note the position of the flange (3). Be careful not to lose the pins (4) on the exit roller (5), the white roller (6), and the resist roller (7).
· Remove the spring (8).
· Remove the tension plate assembly (9).
· Remove the bushings (10).

P/N 50804401	Flange	B.2.12
P/N 51227301	Pulley	B.2.12
P/N 51008001	Tension Plate Assembly	B.2.12
P/N 50922101	Spring	B.2.12
P/N 51607301	Bush	B.2.12



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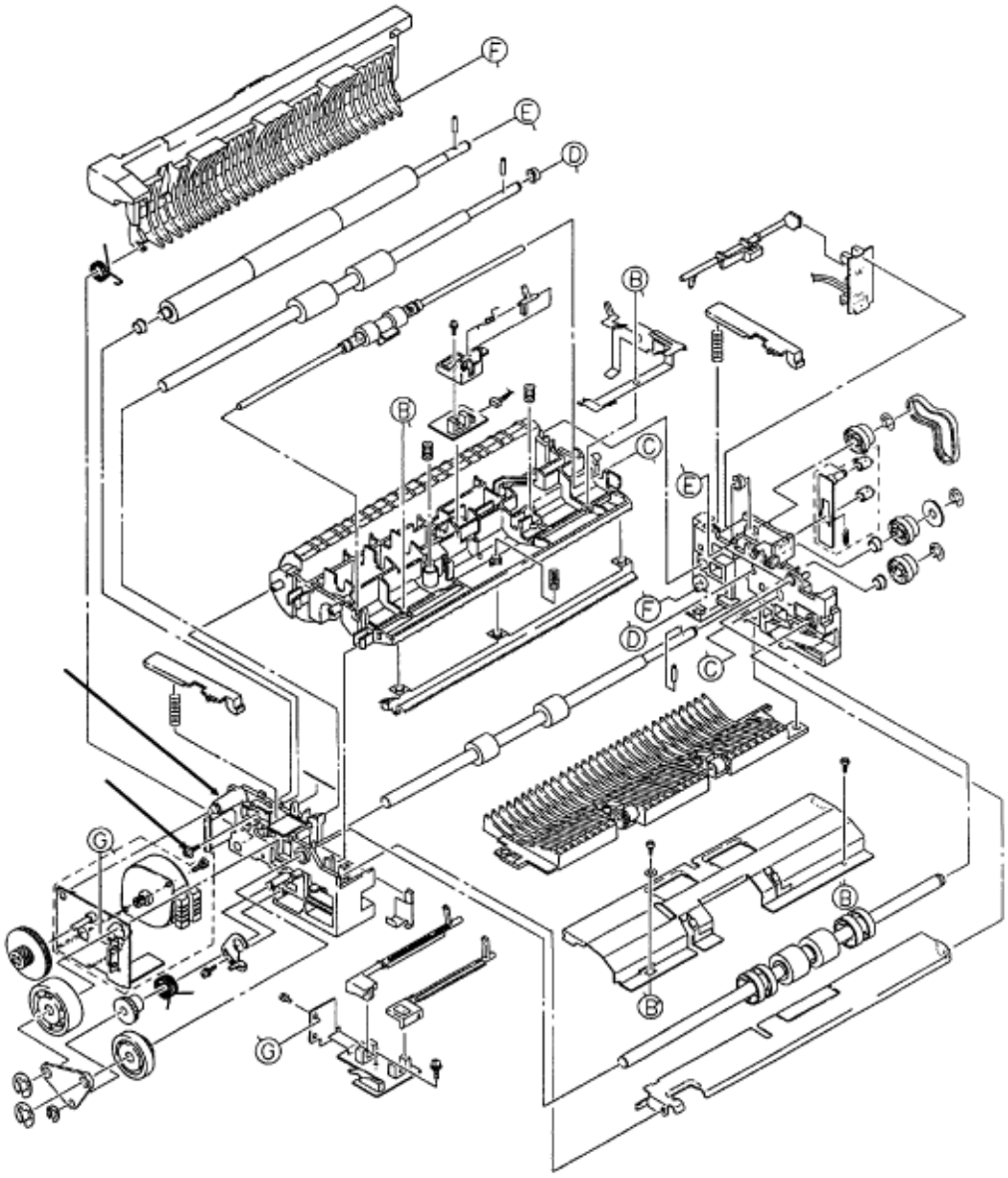
3.2.18 ADF Lower Base and Sequential Guide Assemblies

Note

The sequential guide assembly may be removed when the ADF unit has been removed.

· Remove the sequential guide assembly (1) and wire spring (2).
· Carefully work the cable free and remove the lower base assembly (3).

P/N 51010601	Guide: Sequential (ADF)	RSPL	B.2.12
P/N N/A	Wire Spring		B.2.12
P/N N/A	Lower Base Assembly		B.2.11



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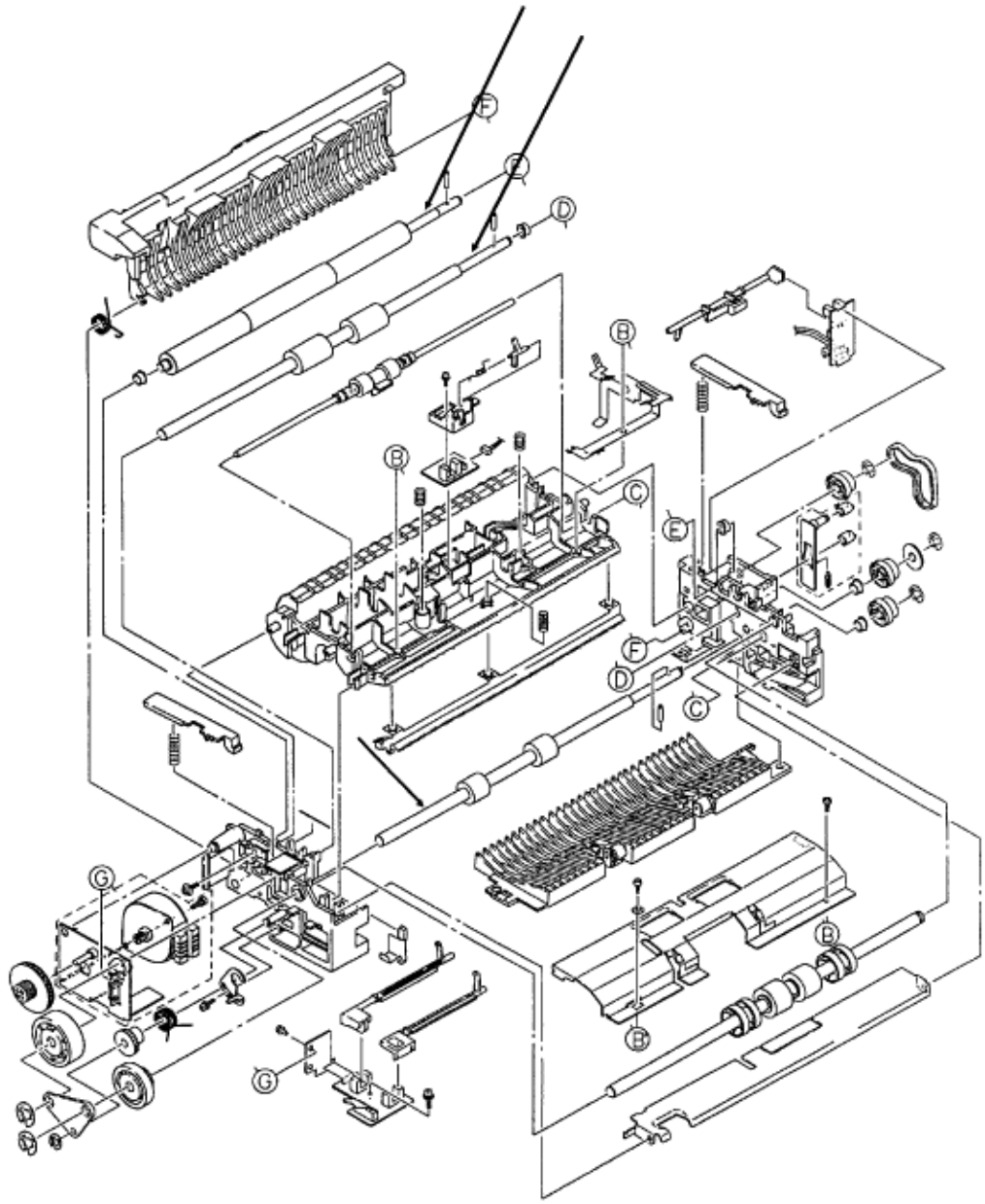
3.2.19 ADF Left Side Frame

· Remove the screw (1).
· Remove the ADF left side frame (2).

P/N N/A	Side Frame (Left)	B.2.11
P/N N/A	Screw	B.2.11



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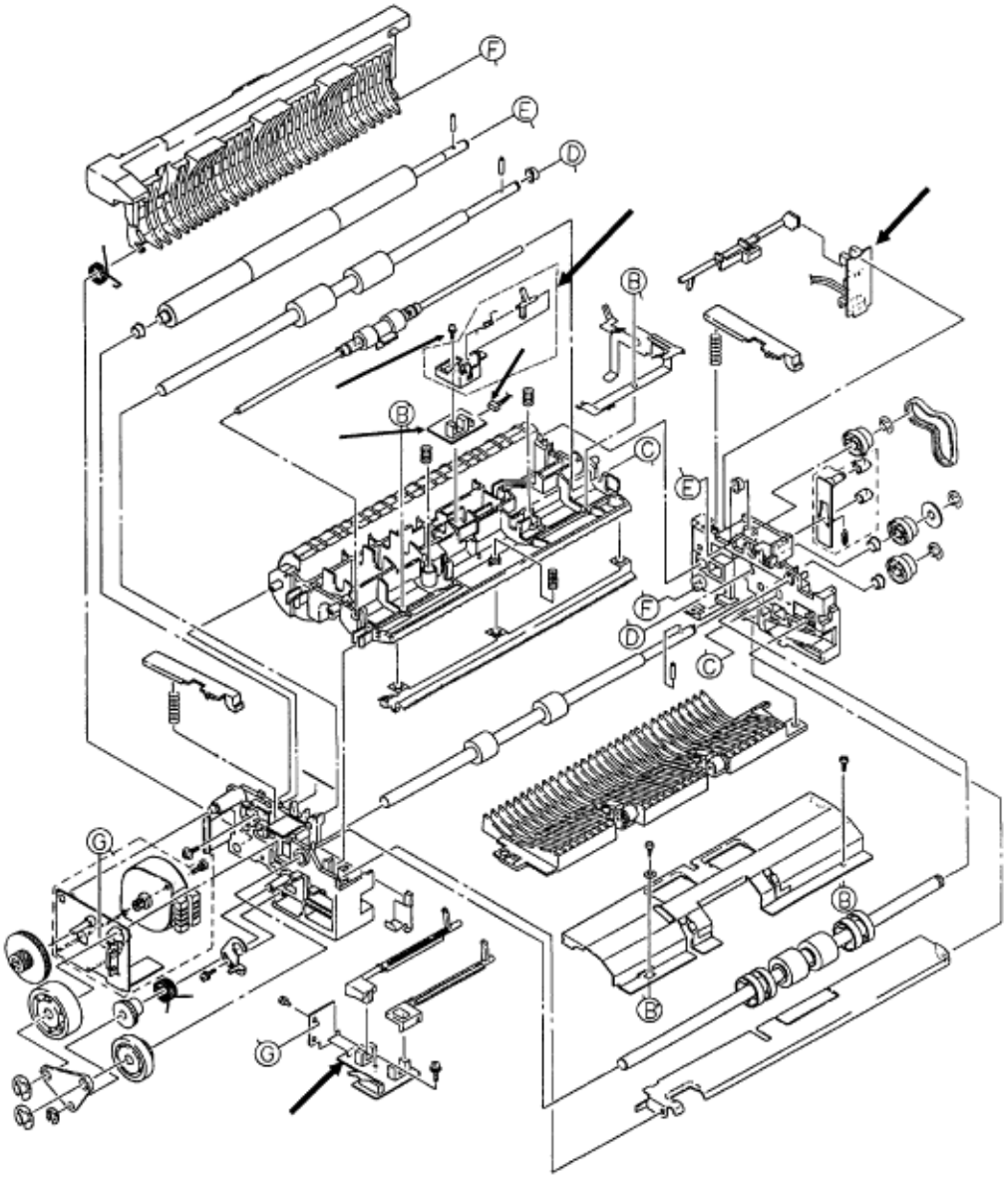
3.2.20 ADF White, Exit, and Resist Rollers

· Carefully work the white roller (1) free and remove it.
· Carefully work the exit roller (2) free and remove it.
· Carefully work the resist roller (3) free and remove it.

P/N N/A	White Roller	B.2.12
P/N N/A	Resist Roller	B.2.12
P/N N/A	Exit Roller	B.2.11



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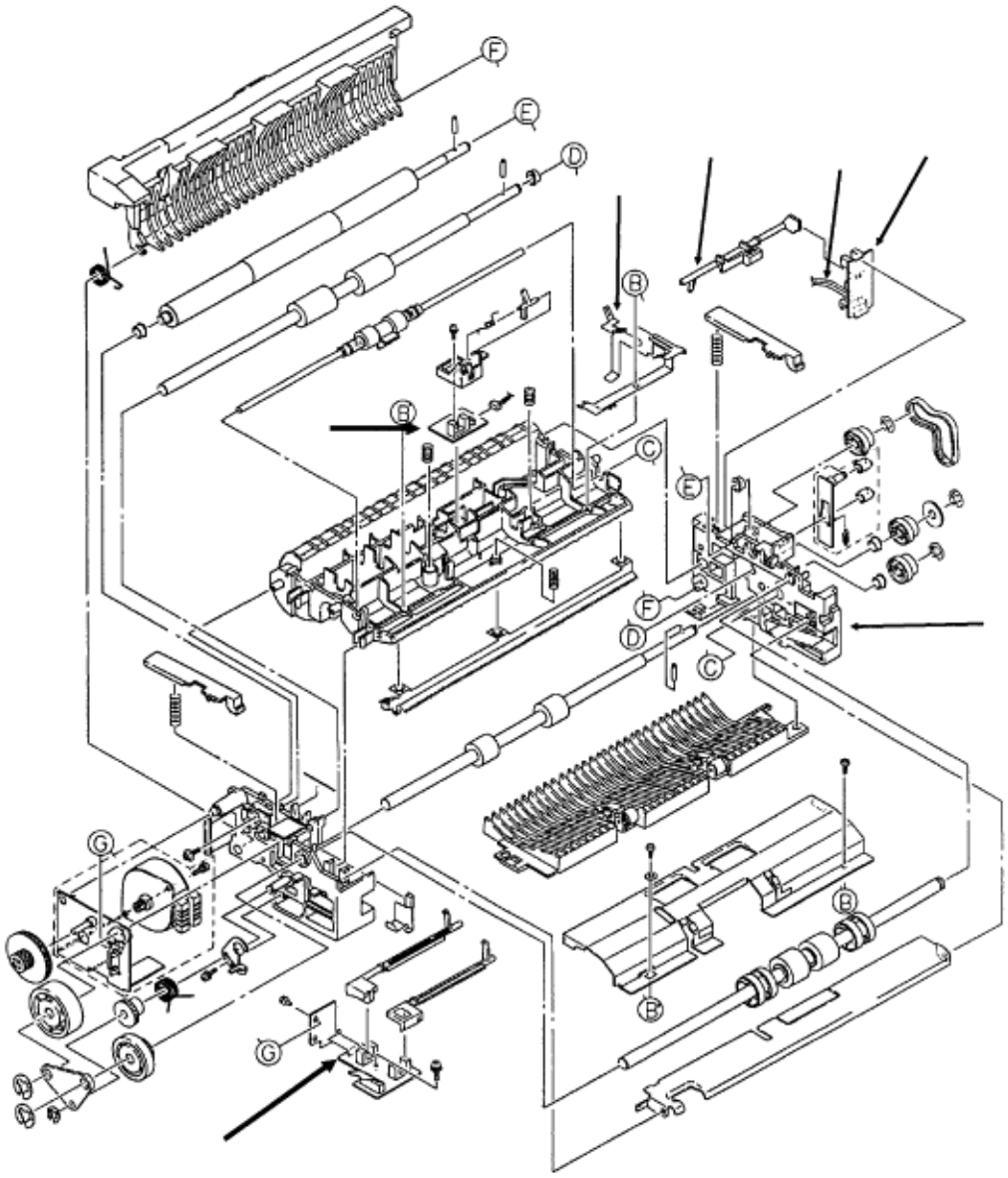
3.2.21 Timing Sensor Lever Assembly

· Remove the screw (1).
· Remove the timing sensor lever assembly (2).
· Detach connector CN6 (3) from the board.
· Remove the board (4). This board contains connector CN6 and sensor PS5.

Note:
The SPAX board is separated into three sections. Sensor PS5 is on this section (4). Sensor PS1 and PS2 are on this section (5). Sensors PS3 and PS4 are on this section (6). Refer to procedures 3.2.16 () and 3.2.22 () for further information.

P/N N/A	Timing Sensor Lever	B.2.12
P/N 55067201	SPAX PCB (1/3)	B.2.12



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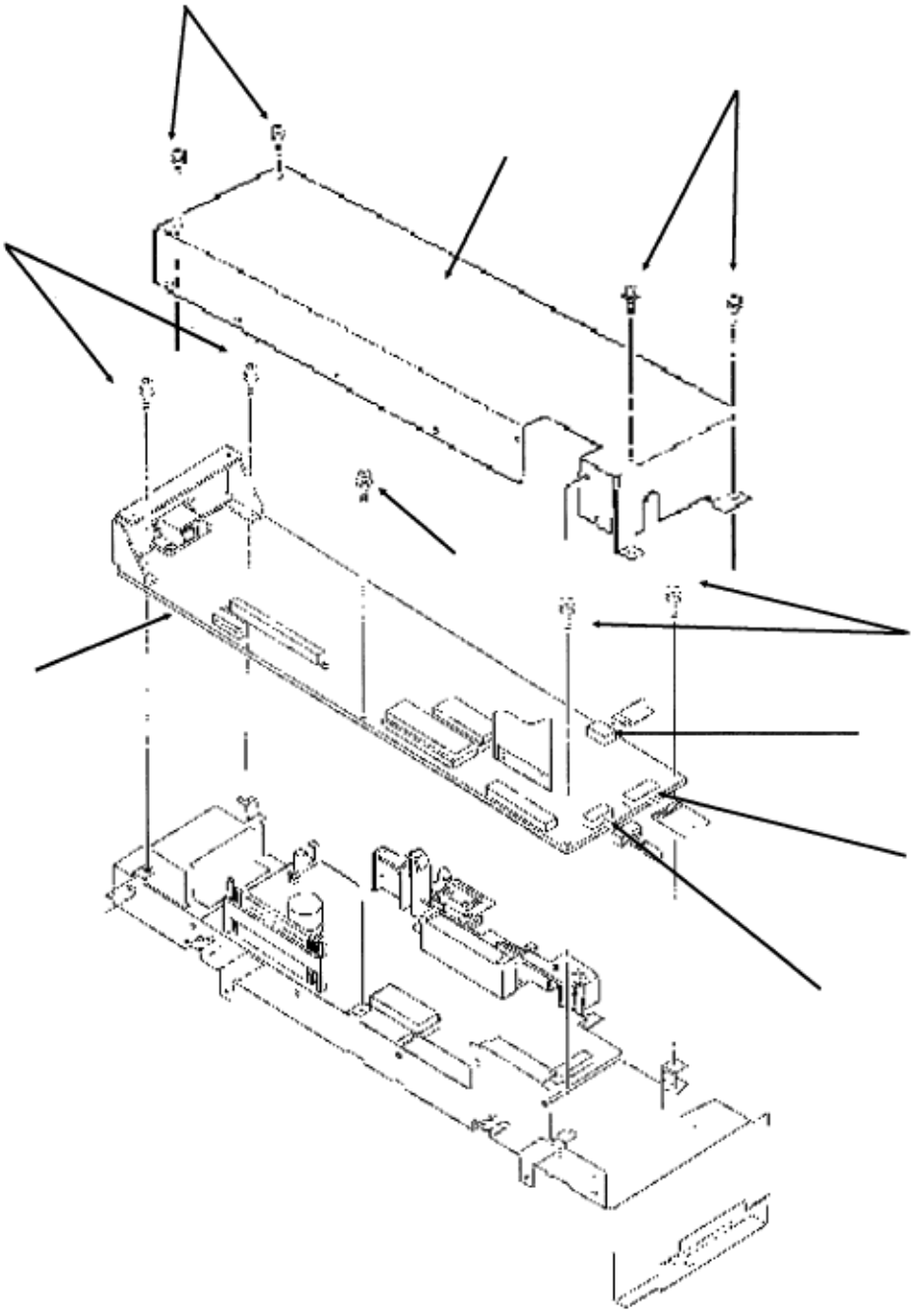
3.2.22 SPAX Board (PS3 and PS4 Sensors)

- Carefully work the cable (1) free of the guides.
- Use a needle nose pliers to release the two claws, located on the ADF right side frame (2).
- Turn the outlet sensor lever (3) until it clears sensor PS4 and work the ADF right side frame free.
- Remove the ADF right side frame.
- Using a straight slot screwdriver, release the tab at the top of the SPAX board (4).
- Carefully work the board and its connectors through the bottom opening and remove the board. This board contains the sensors PS3 and PS4 and connectors CN3 and CN4.
- Remove the right ground plate (5).
- Remove the outlet sensor lever.

Note:
The SPAX board is separated into three sections. Sensors PS3 and PS4 are on this section (4). Sensor PS1 and PS2 are on this section (6). Sensor PS5 is on this section (7).
Refer to procedures 3.2.16() and 3.2.21() for further information.

Installation
Turn the outlet sensor lever to clear PS3 when installing the right side frame. When the frame is installed, check the location and movement of the sensor lever.
Make sure the bottom tab of the board is fully seated in the lower frame opening. The top of the board should be under the tab.

P/N N/A	Outlet Sensor Lever	B.2.12
P/N N/A	Side Frame (Right)	B.2.12
P/N N/A	Ground Plate (Right)	B.2.12
P/N N/A	Conveyer Frame	B.2.12
P/N 55067201	SPAX PCB (1/3)	B.2.11/12



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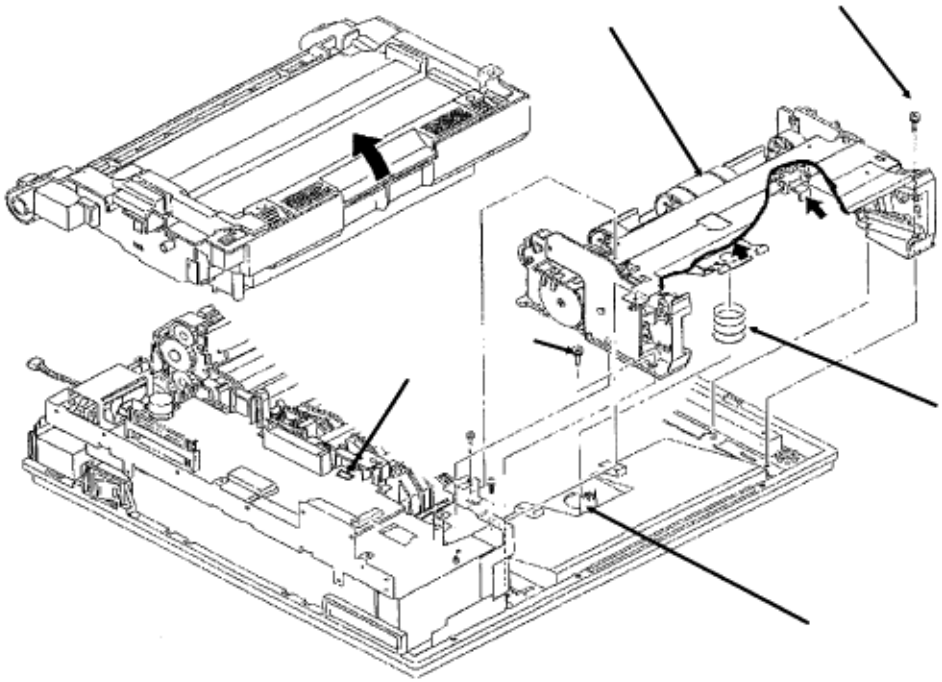
3.2.23 Main Controller Board (SPSX)

· Remove the upper cover.
· Remove the four screws (1).
· Remove shield cover (2).
· Remove the five screws (3).
· Disconnect connectors J3 (4), J4 (5), and J5 (6).
· Lift and remove the main controller circuit board (7).

Note:

When replacing the main controller board with a different main controller board, the EPROM from the original board must be removed and installed on the replacement board.

P/N N/A	Upper PCB Shield		B.2.08
P/N 55066902	PCB: SPSX w/o ROM	RSPL	B.2.08 Main Controller
P/N 31086101	EPROM for SPSX		B.2.08



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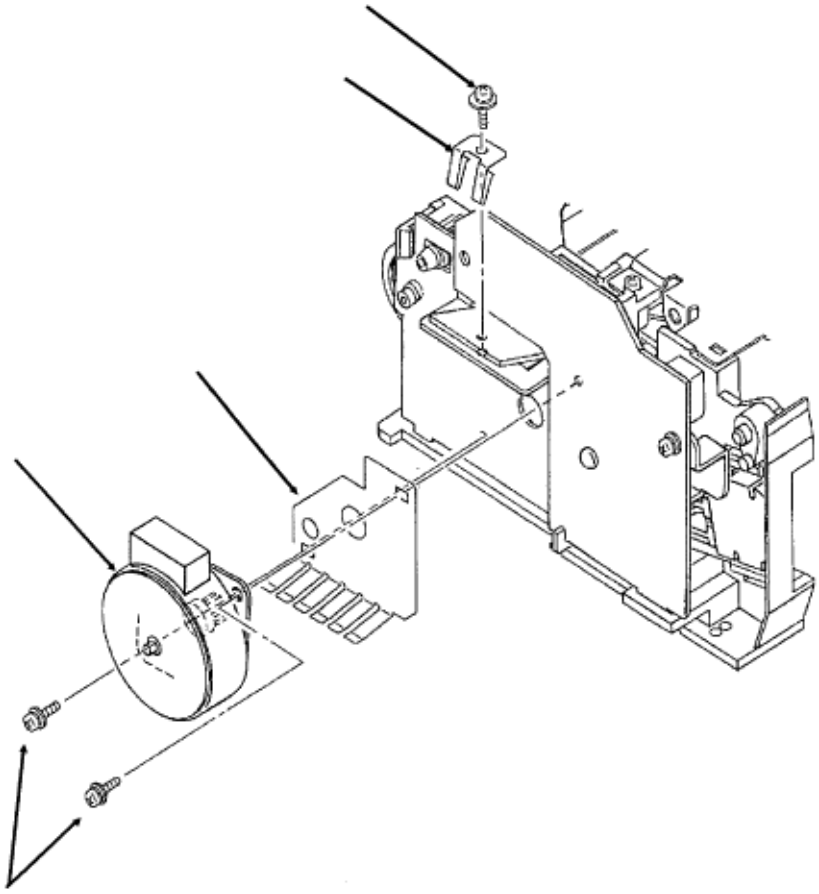
3.2.24 Paper Supply Unit

· Remove the preliminary items.
· Remove the upper cover.
· Press the lock lever backward and raise the upper unit.
· Disconnect the cable from connector J5 (1) on the engine controller circuit board.

Note:
When installing the cable, the blue strip faces up.

· Remove the two mounting screws (2).
· Lift the paper supply assembly (3) at its front until the frame of the unit comes off the guide pins, then move the unit towards you for removal.
· Be careful not to lose the cassette spring (4).
· Note the position of the diselectrification discharge cloth (5).

P/N 50215205	Unit: Paper Supply	RSPL	B.2.06
P/N 50917001	Spring: Cassette	RSPL	B.2.06
P/N 51802501	Diselectrification Cloth		B.2.06



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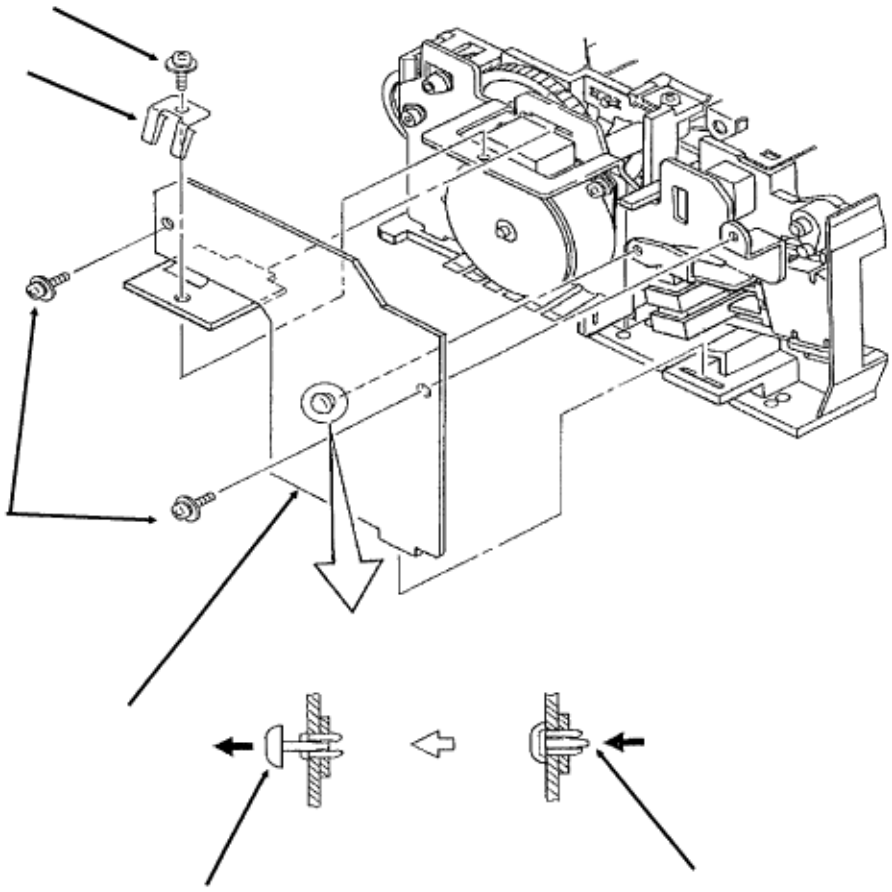
3.2.25 Pulse (Resist) Motor

· Remove the screw (1) and ground plate (2).
· Remove the two mounting screws (3).
· Detach the resist motor (4) from the motor bracket (5).

P/N 56507401	Motor: Pulse (Resist)	RSPL	B.2.10
P/N 53335002	Motor Bracket		B.2.10



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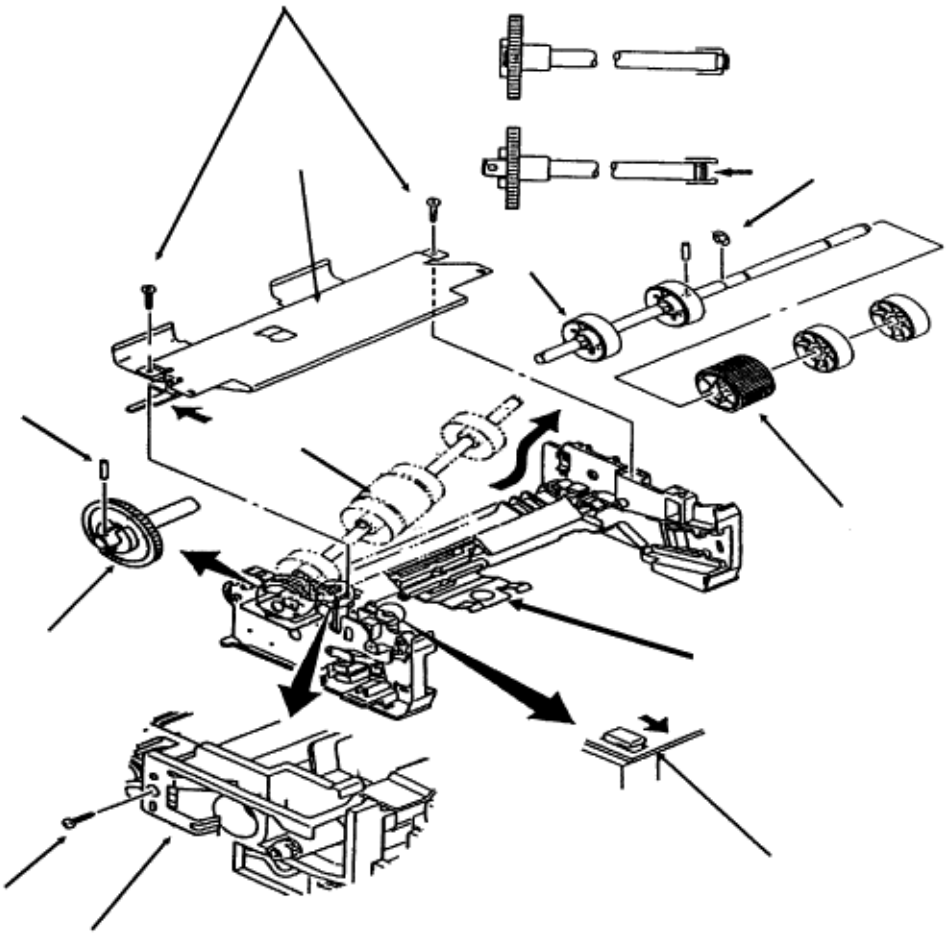
3.2.26 Engine Connector Board, LLCC-2

· Remove the screw (1) and ground plate (2).
· Remove the two mounting screws (3).
· On the paper supply unit, press the pointed end of the nylon latch (4) to push out the head (5)
· Remove the latch.
· Remove the engine connection board (6).

P/N 55044602 PCB: LLCC-2 RSPL B.2.10



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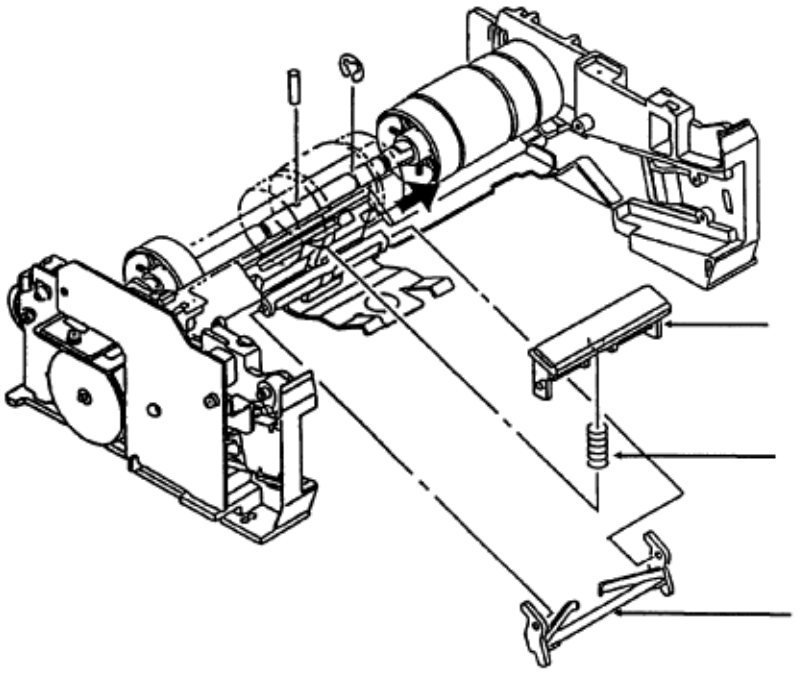
3.2.27 Hopping Roller A

· Remove the two screws (1) and slide the upper plate assembly (2) until the claws (3) are unlocked.
· Remove the upper plate assembly.
· Push the paper lever (4) down.
· Remove the screw (5).
· Remove the ground plate (6).
· Push the hopping roller shaft (7), until you can access the pin (8) with a needle nose pliers. Then remove the pin from the hopping roller gear (9).
· Lift the right side of the hopping roller shaft and remove it.
· Remove hopping roller B (10).
· Remove the E-ring (11).
· Remove hopping roller A (12).

P/N 50081701	Hopping Roller Assembly		B.2.10
P/N 51111501	Hopping Roller Shaft		B.2.10
P/N 53334901	Hopping Roller B		B.2.10
P/N 51223201	Idle Gear	RSPL	B.2.10



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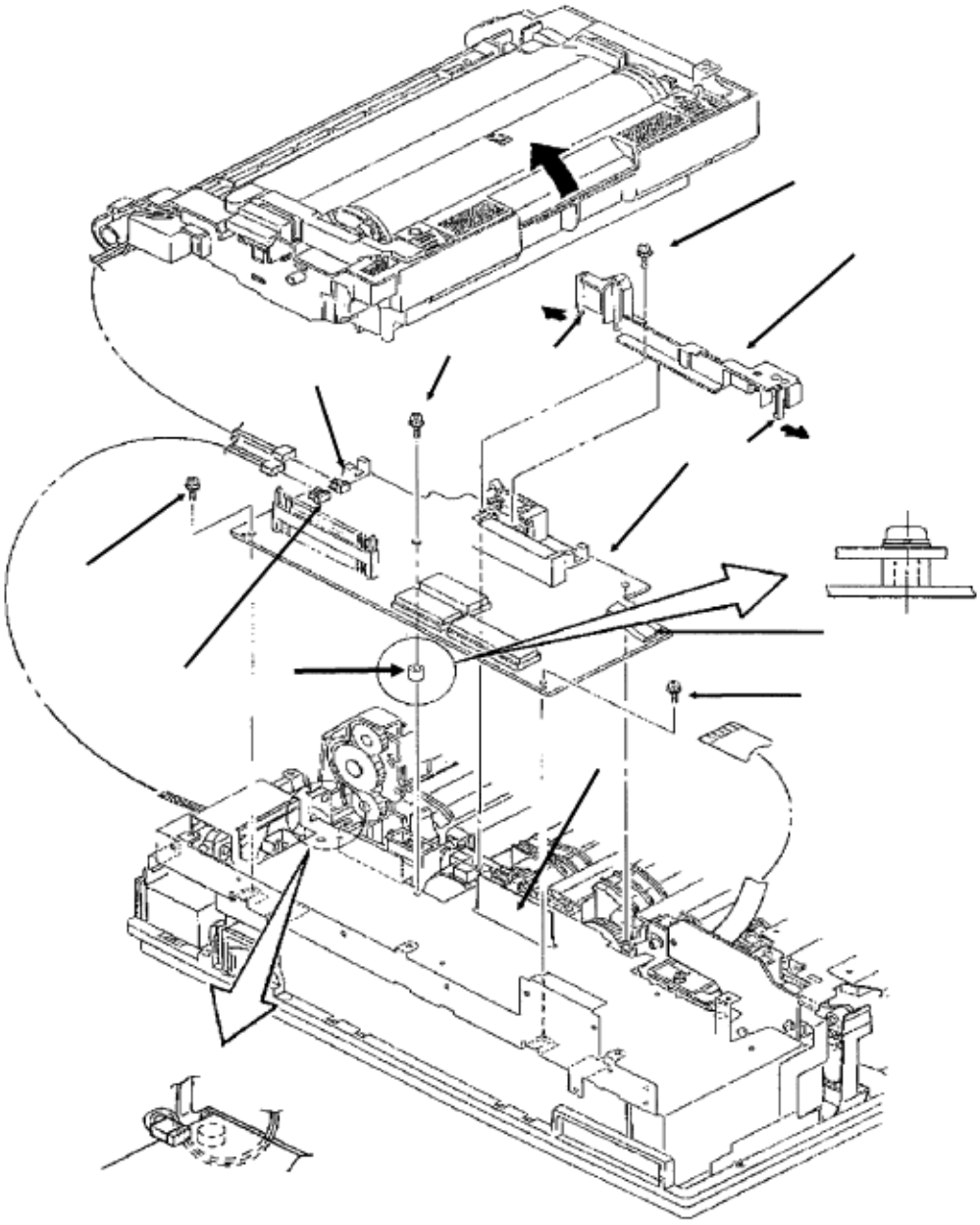
3.2.28 Separator

- Hold the separator (1) down and remove the escape lever (2) from the pins on the paper supply unit. Be careful not to lose the separator spring (3).
- Remove the separator.

P/N 53500501	Separator	B.2.10
P/N 50917101	Separator Spring	B.2.10
P/N 53528601	Escape Lever	B.2.10



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3.2.29 Engine Controller Board (SPPY)

· Disconnect the cables from the connectors J1 - DC fan (1), J2 - fuser thermistor (2), and J5 - paper supply unit (3).
· Open the LED holder to allow access to the engine board mounting screw (4) and remove the mounting screw.
· Close the LED holder and raise the upper unit.
· Remove the three remaining mounting screws (5 A and B).
· Lift the engine controller board (6) to disconnect it from the interconnect board (7).

CAUTION:
Be careful not to lose the plastic spacer (8) located between the shield frame and the engine controller board. When installing the engine controller board, be sure that the spacer is in place or the engine controller board will short against the shield frame.

· On the engine controller board, press the pawls (9) to unlock and remove the board cover (10).

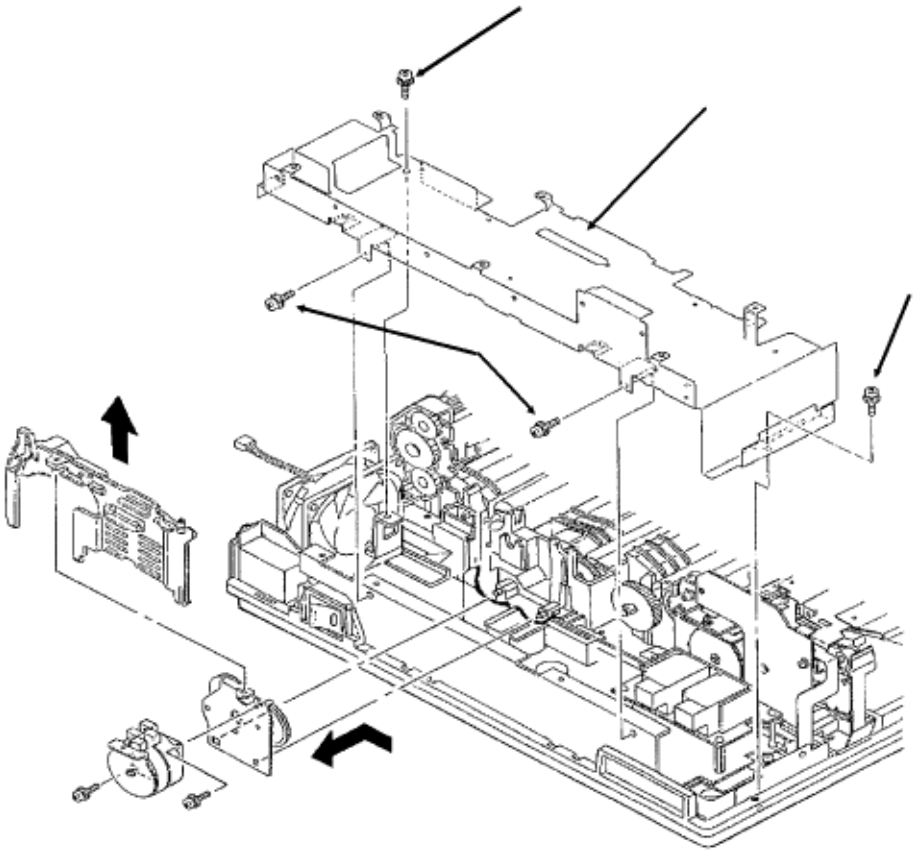
Board Replacement

· Remove EEPROM and EPROM. Install the EEPROM and EPROM on the new board. If you do not move the EEPROM and EPROM from the old board to the new board, all customized set-up information will be lost.

Board Installation

· Be sure that the spacer is in place.
· Route the thermistor cable to J2 so it does not obstruct the movement of the outlet sensor.
· Connect the paper supply unit cable to the engine controller circuit board via the groove in the shield plate.
· Mounting screws 4A and 5A are longer than the two mounting screws 5B.

P/N 53528401	Cover: Board	RSPL	B.2.08
P/N 31086001	EPROM for SPPY		B.2.08
P/N 55934301	IC: EEPROM for SPPY	RSPL	B.2.08
P/N 55066802	PCB: SPPY w/o ROM	RSPL	B.2.08 Engine Controller



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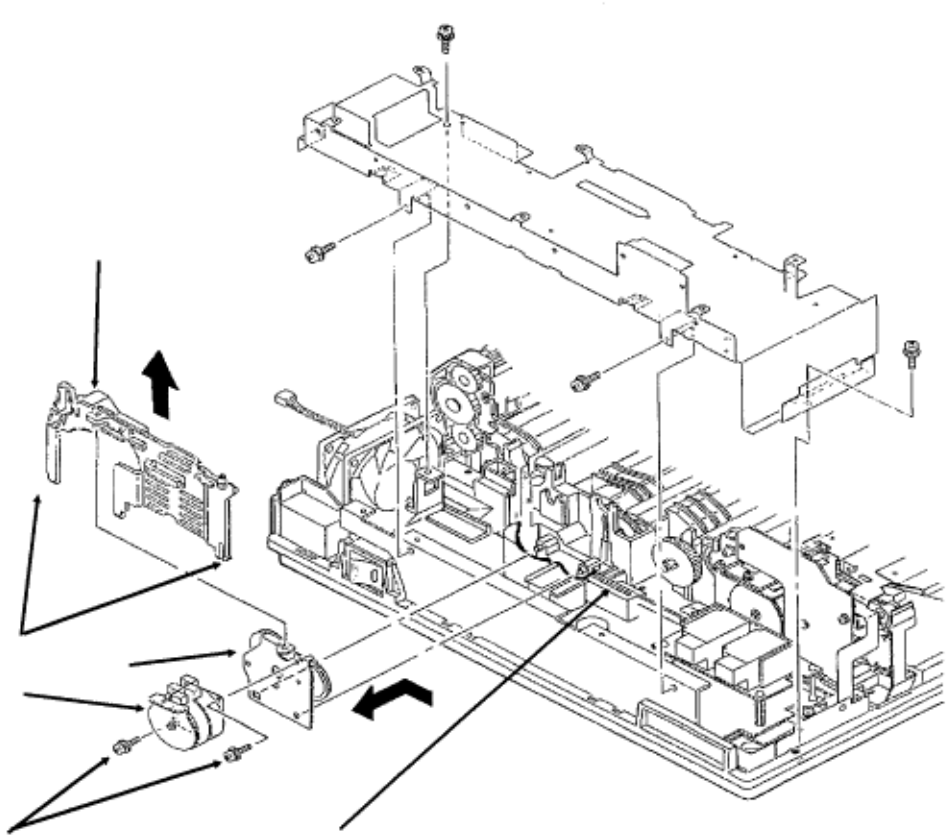
3.2.30 Lower PCB Shield

· Remove the screw and detach the scanner cable with bracket. (Not shown)
· Remove the four mounting screws (1). Screw 1A has a larger washer than the others.
· Remove the lower PCB shield (2).

P/N N/A Lower PCB Shield B.2.08



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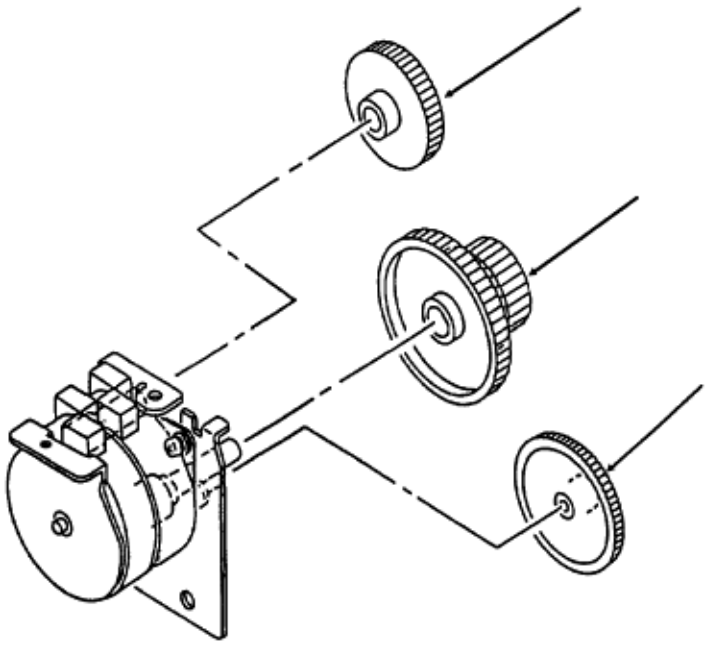
3.2.31 Main Motor

· Remove the interconnect board (1). (Only the location of the board is shown)
· Remove the two high voltage wires from the motor cover. *Not shown*
· Working from the bottom of the printer, remove the motor cover (2) by pushing the extension free and by releasing the two black claws (3).
· Remove the motor cover.
· Shift the main motor assembly (4) in the direction of arrow A and detach it from the posts of the lower unit.
· Rotate the main motor assembly towards the DC fan assembly until the gears are clear of obstructions.
· Remove the main motor assembly.
· Remove the two screws (5).
· Remove the main motor from the motor bracket (6).

P/N 53528301	Motor Cover		B.2.06
P/N 56507701	Motor: Pulse (Main)	RSPL	B.2.06
P/N 53329301	Motor Bracket		B.2.06
P/N 55044701	PCB: LLIE (Power Connection)	RSPL	B.2.08
P/N 53335601	Reinforcement Plate		B.2.07



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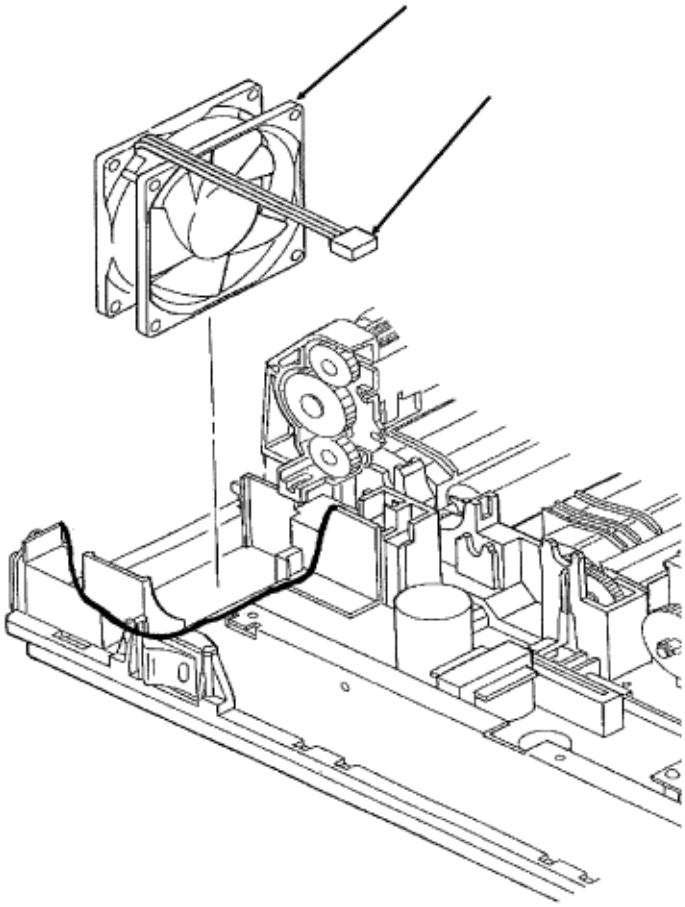
Partner Exchange (BPX) for any updates to this material. (http://bpx.okidata.com)

3.2.32 Idle Gear A, Idle Gear B, and Speed Reduction Gear

· Remove the idle gear B (1). This is the white gear with large teeth.
· Remove the deceleration gear (2). This is the black double gear.
· Remove idle gear A (3). This is the white gear with small teeth.

P/N 51218501	Gear: Idle "B"	RSPL	B.2.06
P/N 51218701	Gear: Speed Reduction	RSPL	B.2.06
P/N 51225701	Gear: Idle "A"	RSPL	B.2.06



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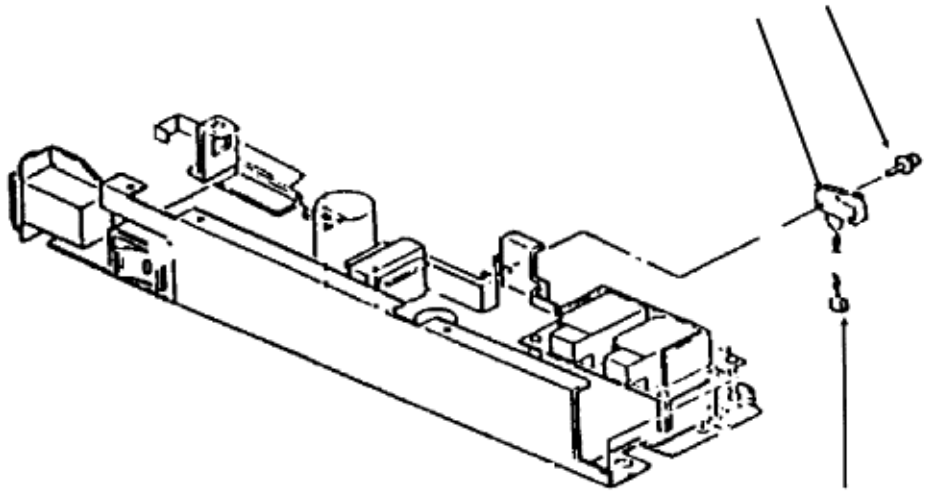
3.2.33 DC Fan Assembly

· Disconnect the cable (1) to connector J1.
· Remove the DC fan assembly (2).

P/N 56508501	Fan: DC (Assembly)	RSPL	B.2.06



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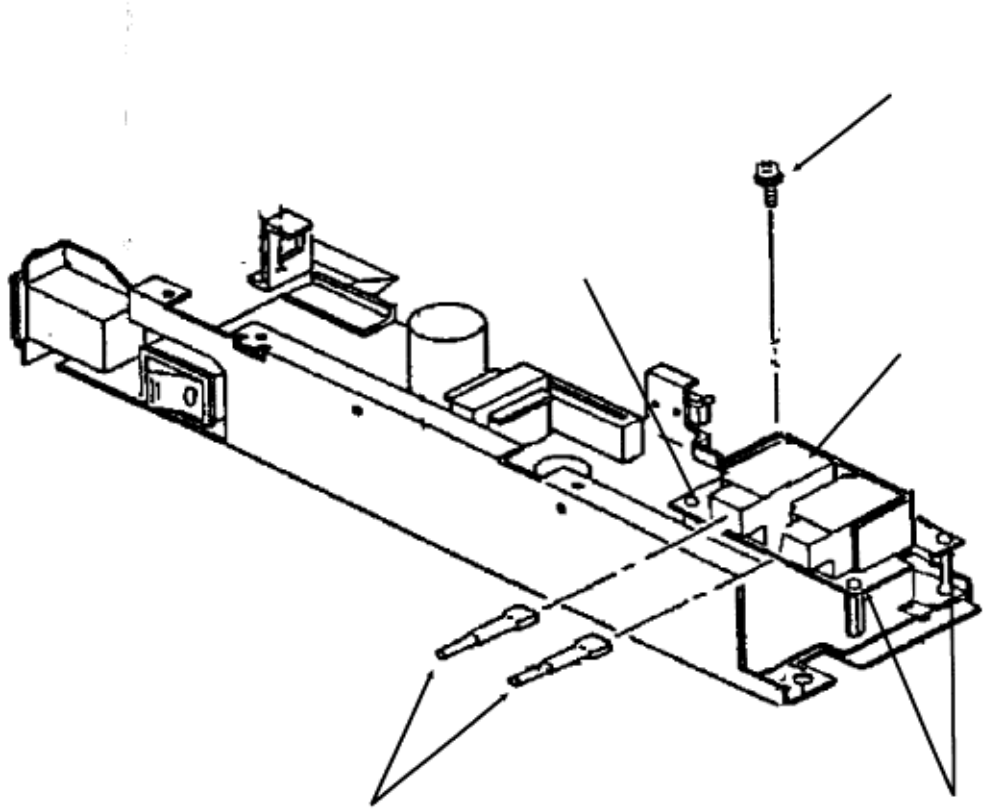
3.2.34 Cover Open Microswitch Assembly

· Remove the screw (1).
· Detach connector CN2 (2) from the power supply board.
· Remove the microswitch assembly (3).

P/N 55050701 Microswitch: RSPL B.2.08 Cover Open (Assembly)



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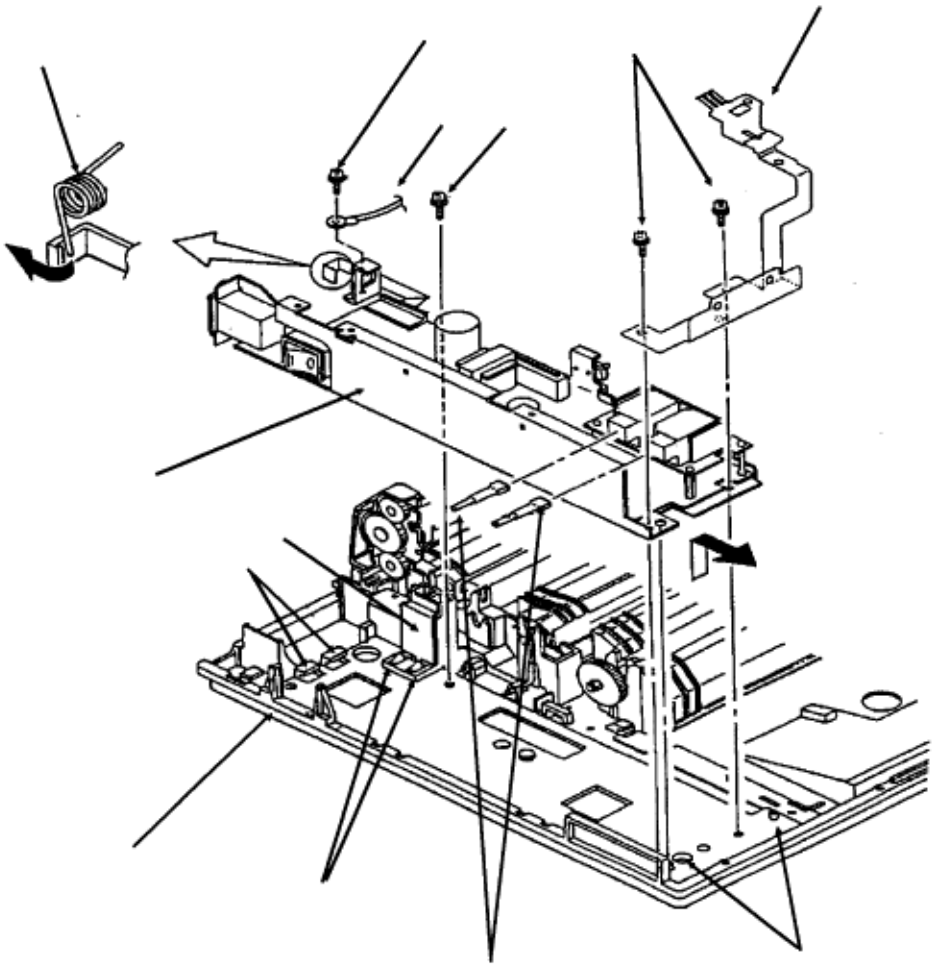
3.2.35 High Voltage Power Board

· Disconnect the two high-voltage cables (1).

Note:

When installing, the cables are keyed for correct placement. The larger connector is to the front of the printer.

· Detach the connector CN3. (Not shown)
· Remove the screw (2).
· Using a needle nose pliers, release the three supporting mounts (3) and remove the high voltage power board, HV-257 (4).



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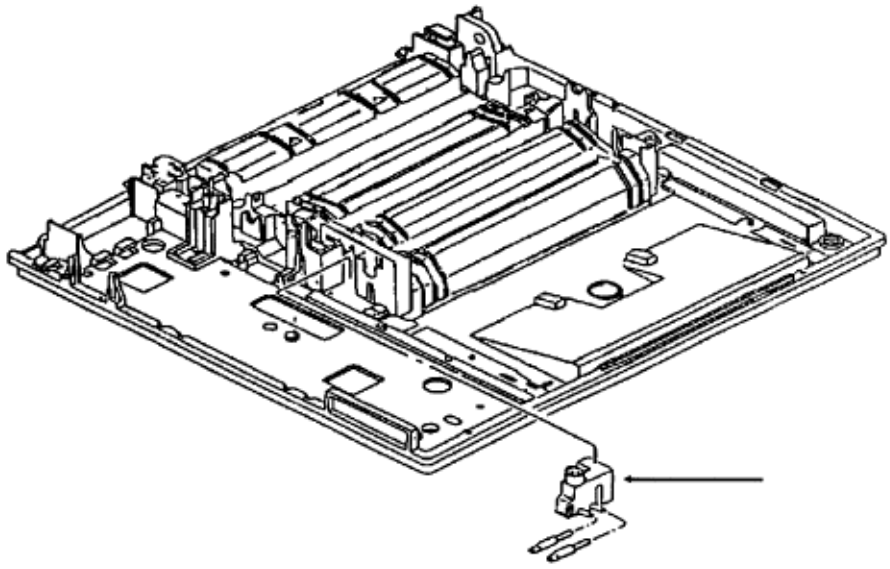
3.2.36 Power Supply Unit

· Remove the upper cover, main controller pcb, engine controller pcb, paper supply unit, motor assembly, DC fan assembly.
· Disconnect the two high-voltage cables (1).

Note:
When installing, the cables are keyed for correct placement. The larger connector is to the front of the printer.

· Remove the screw (2) and detach the ground cable (3). [Only for 200 volt]
· Remove the three screws (4). The longest screw (4A) goes in back.
· Remove the ground plate (5).
· Raise the upper unit (Not shown).
· Use needle nose pliers to remove the left torsion spring (6).
· Lift the power supply unit (7) until it comes off the front guide (8) of the lower unit (9).
· Slide the power supply unit towards the front to detach it from the rear claws (10) for removal.
· Working from the underside of the unit, release the AC cover claws. (Not shown)
· Remove the AC cover (11) and AC contact plate (12). These items are located in the base frame. You must remove the power supply unit to access these items. However, you do not have to remove these items to remove the power supply unit.

P/N 56411401	Power Supply 120 V	RSPL	B.2.08
P/N N/A	Ground Plate		B.2.08
P/N 53502301	AC Cover		B.2.08
P/N 53057901	Contact Plate AC		B.2.08



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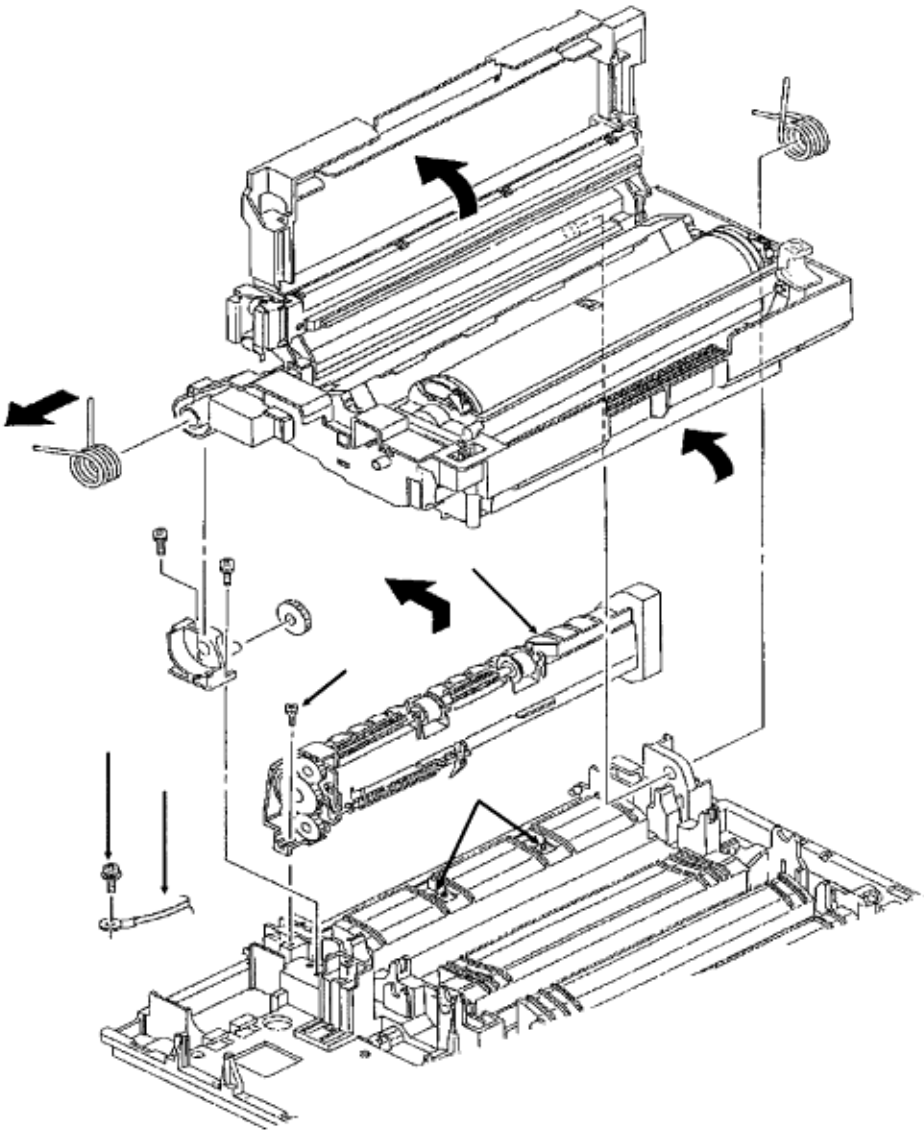
3.2.37 High Voltage Connector

· Working from the bottom of the unit, release the claw of the high voltage connector (1).
· Set the unit down.
· Use a straight-slot screwdriver and work the high voltage connector free.
· Remove the high voltage connector.

P/N 56725901 Connector: High Voltage RSPL B.2.06



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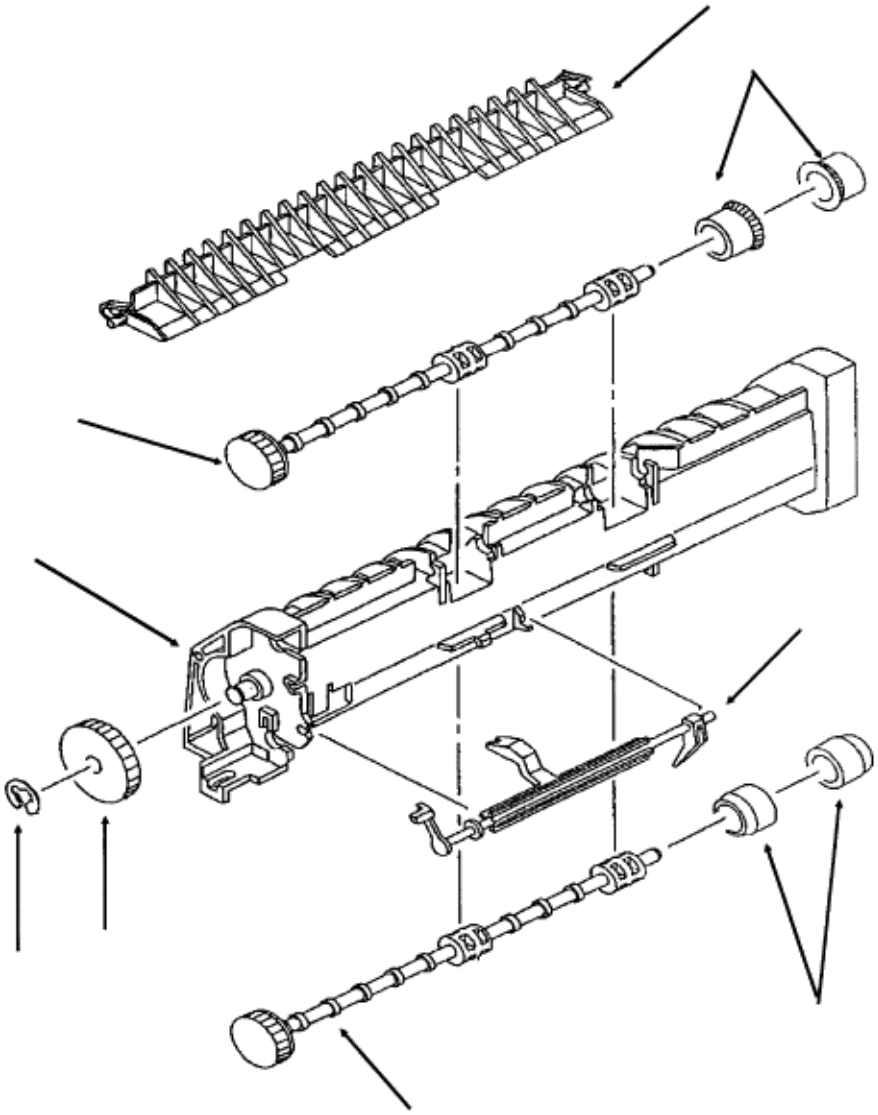
3.2.38 Exit Roller Assembly

· Place the face-up stacker assembly, located at the rear of the printer, down.
· Press the lock lever and raise the upper unit.
· Remove the mounting screw (1).
· Remove the screw (2) and detach the ground cable (3) at the power supply 220/240 volt only).
· Slightly lift the paper eject roller assembly (4) at its left end and slide the left end backward using the right end as a pivot.
· Remove the paper eject roller assembly.
· Separate the left and right springs and remove the bias rollers (5 - position only).

P/N 50066501	Roller: Exit (Assembly)	RSPL	B.2.09



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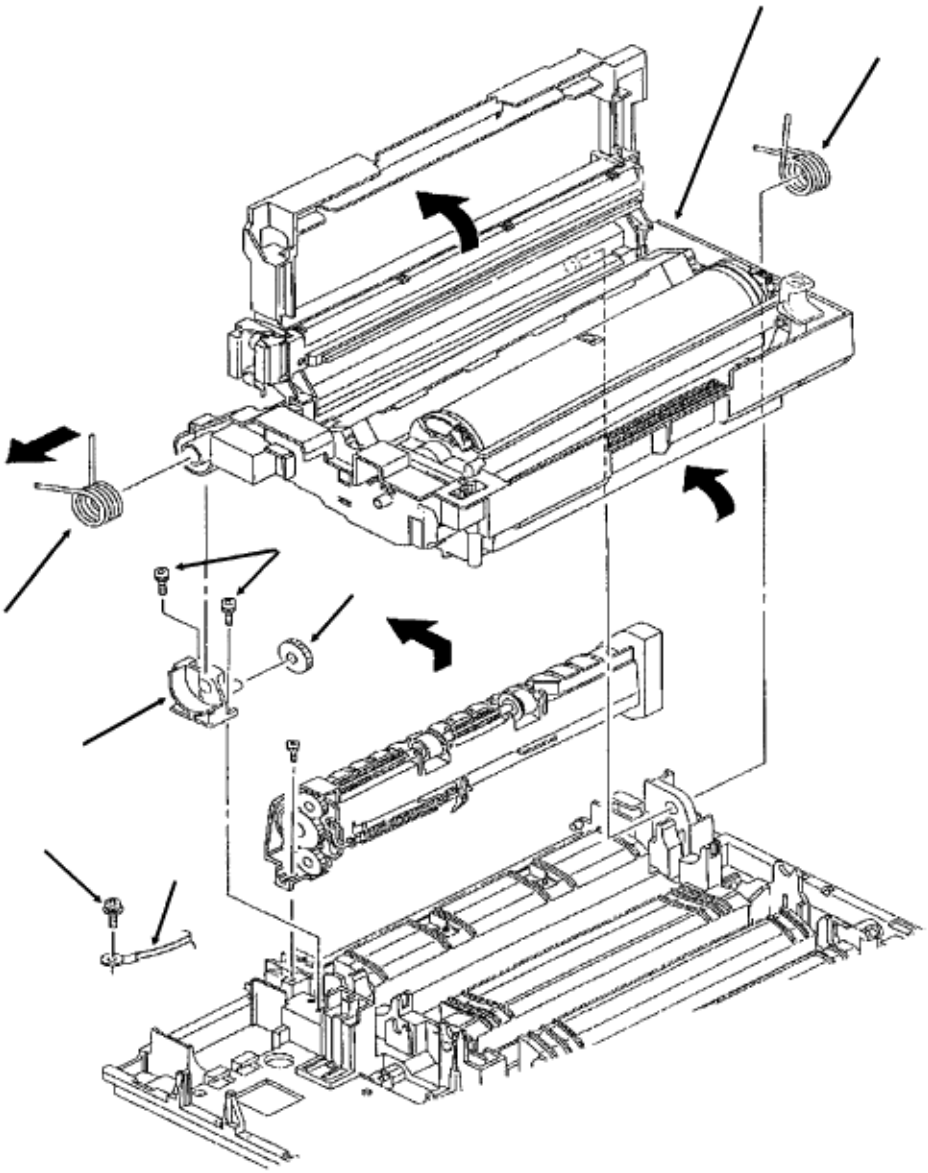
3.2.39 Paper Eject Sensor Lever and Rollers

· Turn the paper eject roller assembly over and remove the paper eject sensor lever (1).
· Remove the E-clip (2) and remove the paper eject idle gear (3) from the sheet guide (4).
· Remove the face-up paper eject roller shaft (5) with paper eject rollers (6).
· Remove the paper eject roller shaft (7) with face-up paper eject rollers (8).
· Detach the sheet separator (9).

Note:

The face-up paper eject roller shaft and the paper eject roller shaft are the same roller and have the same part number.

P/N 51111401	Paper Eject Roller Shaft	B.2.09
P/N 53334501	Paper Eject Roller (Face-up)	B.2.09
P/N 53528101	Sensor Lever (Paper Eject)	B.2.09
P/N 51005201	Sheet Guide	B.2.09
P/N 50705301	E-Clip	B.2.09
P/N 51222801	Idle Gear (Paper Eject)	B.2.09
P/N 53528201	Separator: Sheet	B.2.09
P/N 53334401	Paper Eject Roller	B.2.09



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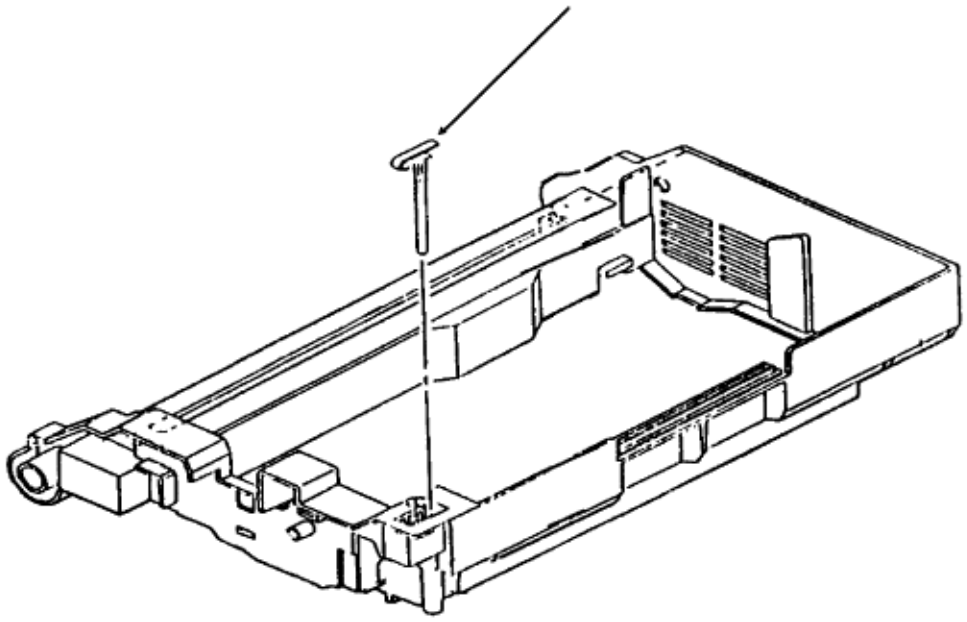
3.2.40 Upper Unit

· Remove the screw (1) and detach the ground cable (2). This is only found on the 200 volt units.
· Press the lock lever backwards and raise the upper unit (3).
· Use needle nose pliers to remove the left torsion spring (4).
· Use needle nose pliers to remove the right torsion spring (5).
· Loosen the two mounting screws (6).
· Lift the upper unit.
· Slide the upper unit to the right and work it free of the right slot to remove it.

CAUTION:
Be careful not to drop the fulcrum block (7) and the idle gear (8) when removing the upper unit.

P/N 50918101	Torsion Spring (Left)		B.2.03
P/N 50213701	Upper Unit 120 VAC 300 DPI		B.2.01
P/N 50918201	Torsion Spring (Right)		B.2.03
P/N N/A	Upper Unit 120 VAC 400 DPI		B.2.01
P/N 51005001	Fulcrum Block		B.2.03
P/N 51218501	Gear: Idle "B"	RSPL	B.2.03



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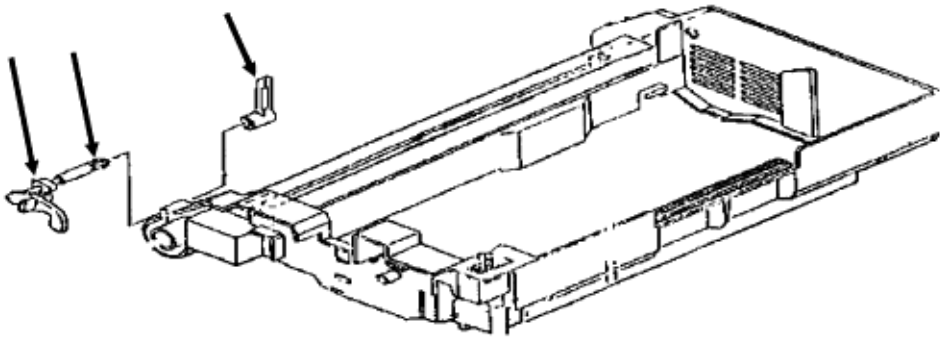
3.2.41 Cover Open Switch Actuator

· Press the OPEN switch and raise the stacker cover.
· Push the lock lever back and raise the upper unit.
· Using a small screwdriver, push the actuator (1) from the bottom until it is released from the upper unit.
· Remove the actuator.

P/N 50312501 Actuator B.2.03



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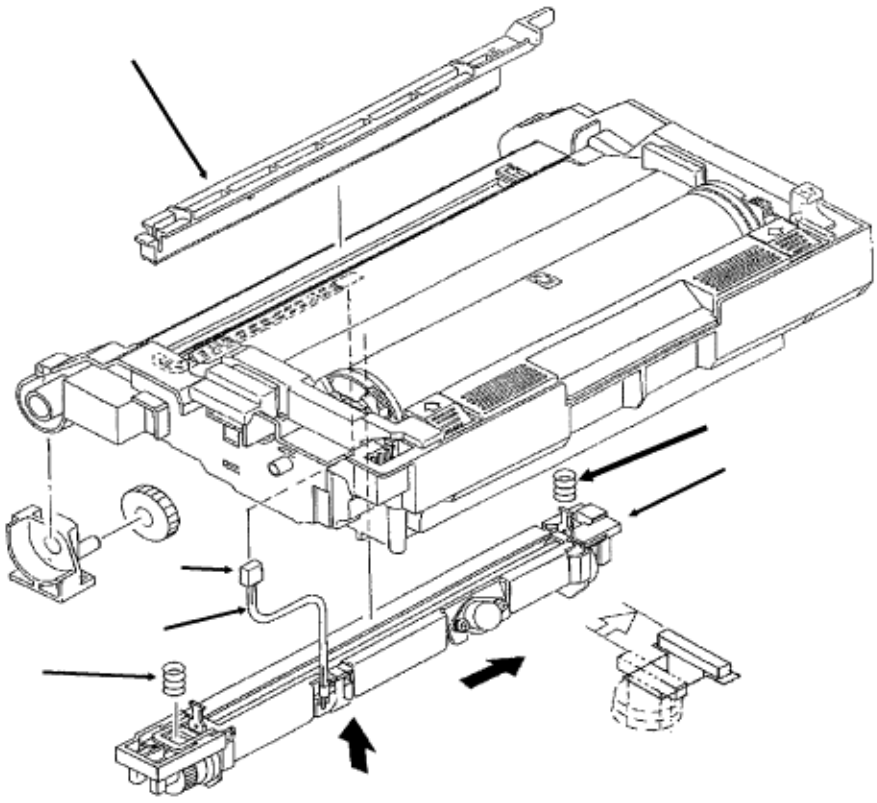
3.2.42 Paper Eject Sensor Levers B and C

· Use needle nose pliers to squeeze the claws (1) of the eject sensor "B" lever (2) to disengage it from the eject sensor "C" lever (3).
· Remove both levers.

P/N 53527801	Paper Eject Sensor Lever B	B.2.03
P/N 53527901	Paper Eject Sensor Lever C	B.2.03



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3.2.43 Fusing Unit

WARNING:
Allow the printer to cool before servicing the fusing unit.

Note:
The message "Fuser Life" will be displayed by the operator panel after 180,000 pages have been fused.

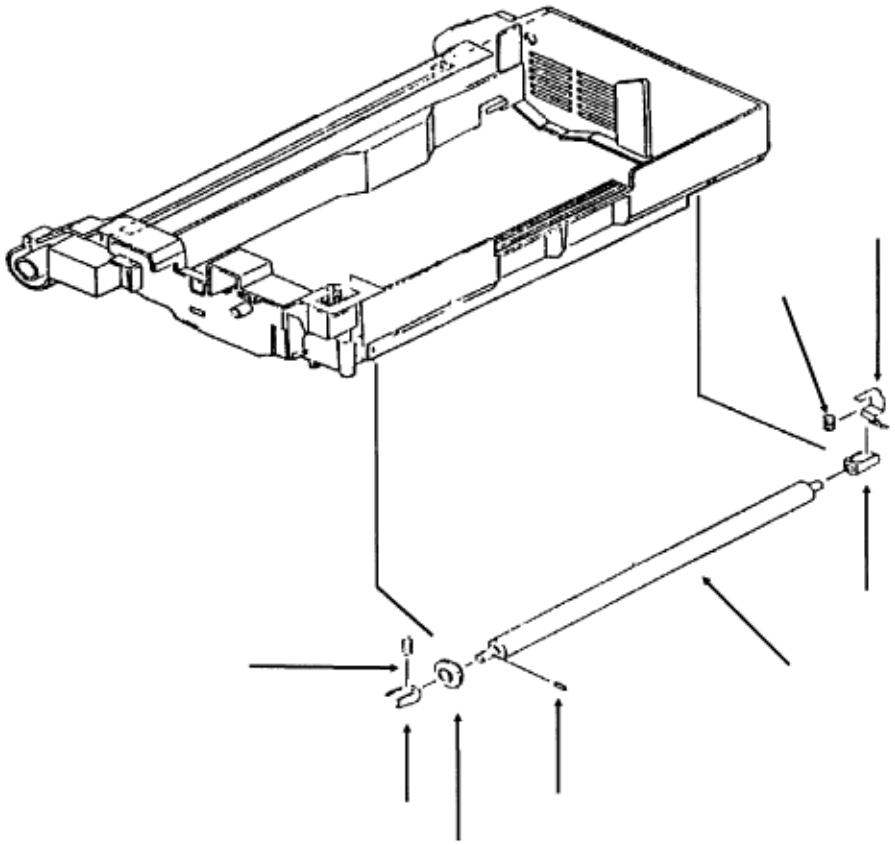
· Remove fuser cleaner pad (1).
· Detach the cable (2) from the cable guide of the upper unit.
· Pass the connector (3) through the slot in the upper unit and work the cable from the upper unit guides.
· Position the upper unit, its underside is facing you, with the fusing unit (4) at the top.
· Squeeze the fusing unit against the upper unit until the two lock plates protrude from their slots. (Not shown)
· Slide the fusing unit to the right until the lock plates disengage from the grooves of the upper unit. (Not shown)
· Remove the fusing unit, being careful not to lose the springs (5).

Installation
The four separator claws must move freely within their grooves or paper jams will result. Carefully position the fusing springs. At the grounding point, the latch plate will be positioned through the spring.

Be careful not to pinch the thermistor cable as you install the fusing unit. Be sure that the cable is placed in the notch. Make sure that the fuser temperature cable is behind the heat shield and out of the path of the fuser cleaner pad.

After installing the fusing unit, reset the fusing unit counter. Refer to Section 3.3 of this Service Handbook ().

P/N 55044901	Unit: Fusing (120v)	RSPL	B.2.04
P/N 50914601	Spring: Fusing Unit	RSPL	B.2.04
P/N 53500901	Fuser Pad Consumable		B.2.03/15



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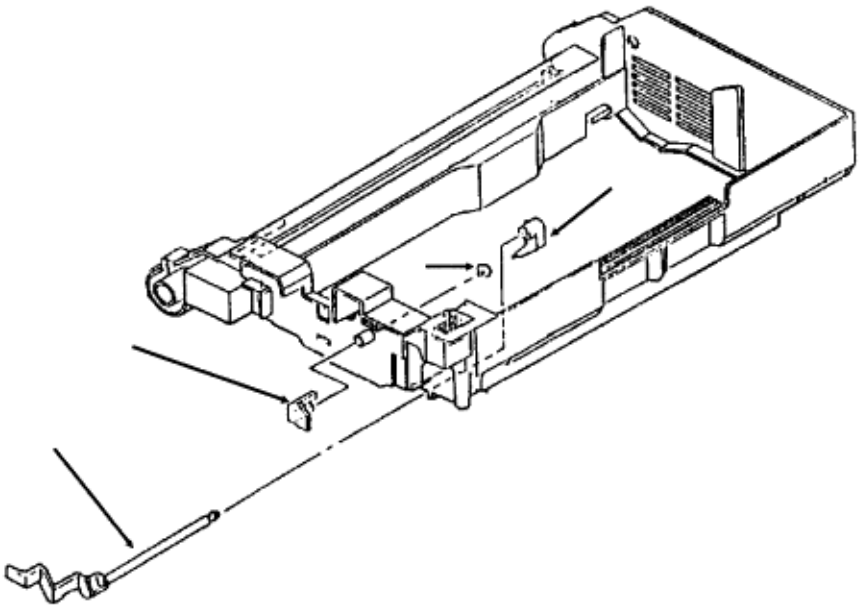
3.2.44 Metal Pressure Roller Assembly

· Turn the upper unit over.
· Firmly push down on both ends of the metal pressure roller (1) and slide the roller until the brackets (2) clear the guides. Be careful not to lose the springs (3).
· Remove the brackets.
· Remove the knock pin (4).
· Remove the pressure roller gear (5).
· Remove the resist ground plate (6).

P/N 53058501	Ground Plate (Resist)	B.2.04
P/N 53334302	Pressure Roller B.2.04	
P/N 51605802	Bearing	B.2.04
P/N 50914501	Pressure Spring	B.2.04
P/N 51222701	Pressure Roller Gear	B.2.04
P/N 50606208	Knock Pin	B.2.04



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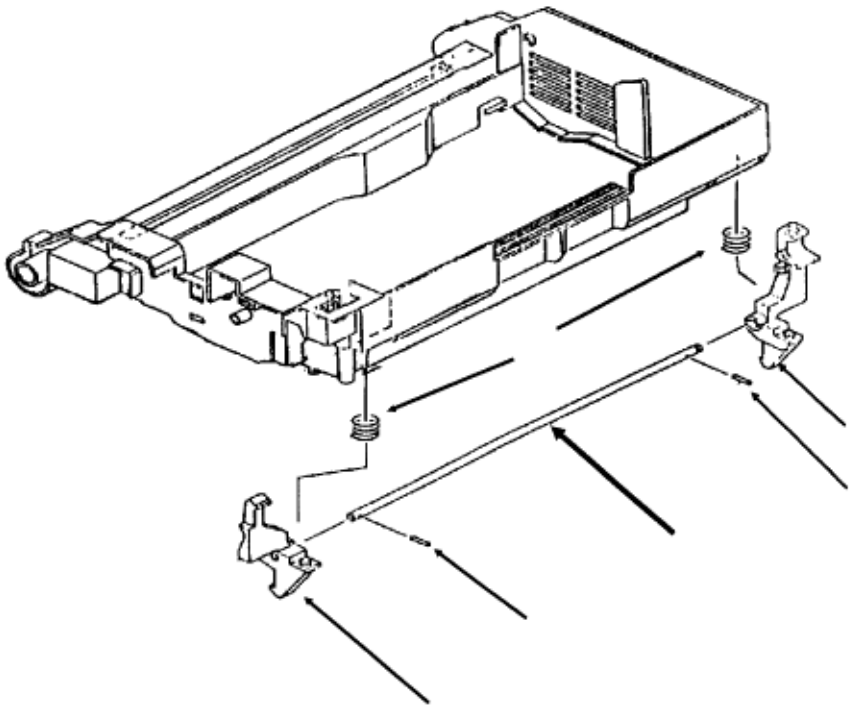
3.2.45 Resist Sensor Lever and Toner Sensor Lever

· Press the lock lever and raise the upper unit.
· Use needle nose pliers to squeeze the claws of the resist sensor flag (1) together and remove it from the resist sensor lever (2).
· Use a small straight-slot screwdriver and detach the nylon rivet (3) from the toner sensor lever (4).

P/N 53329601	Sensor Flag (Resist)	B.2.03
P/N 53503001	Sensor Lever (Resist)	B.2.03
P/N 50606001	Rivet	B.2.03
P/N 53527701	Sensor Lever (Toner)	B.2.03



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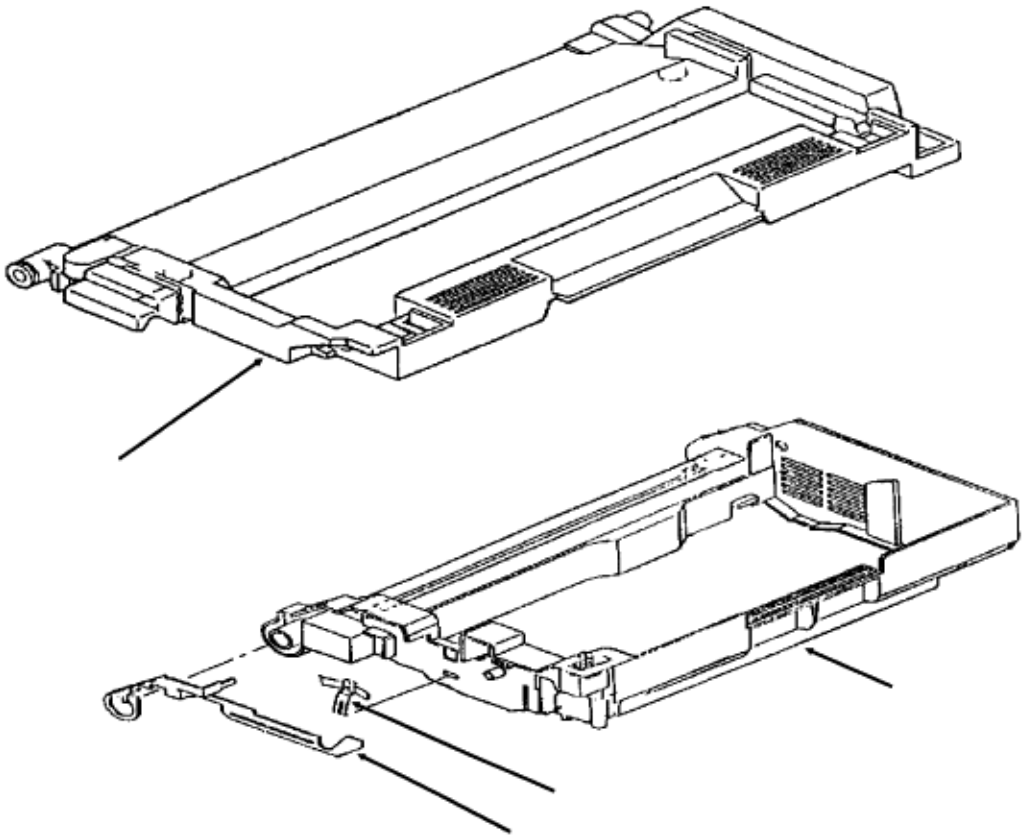
3.2.46 Lock Lever Assembly

· Press the lock lever and raise the upper unit.
· Detach the pressure springs (1) from the left (2) and right (3) lock levers.
· Detach the claw of the left lock lever from the lock lever shaft (4).
· Slide the left lock lever from the shaft until you can access the knock pin (5).
· Use needle nose pliers to remove the knock pin.
· Slide the lock lever shaft until you can remove the left lock lever.
· Use needle nose pliers to remove the knock pin.
· Remove the lock lever shaft and the right lock lever.

P/N 50917205	Spring: Image Drum Tray		B.2.04	
P/N 53502602	Lock Lever (Left)	RSPL	B.2.04	
P/N 50606216	Knock Pin		B.2.04	
P/N 51110201	Lock Lever Shaft		B.2.04	
P/N N/A	Lock Lever (Right)		B.2.04	Upper Frame DOC-IT



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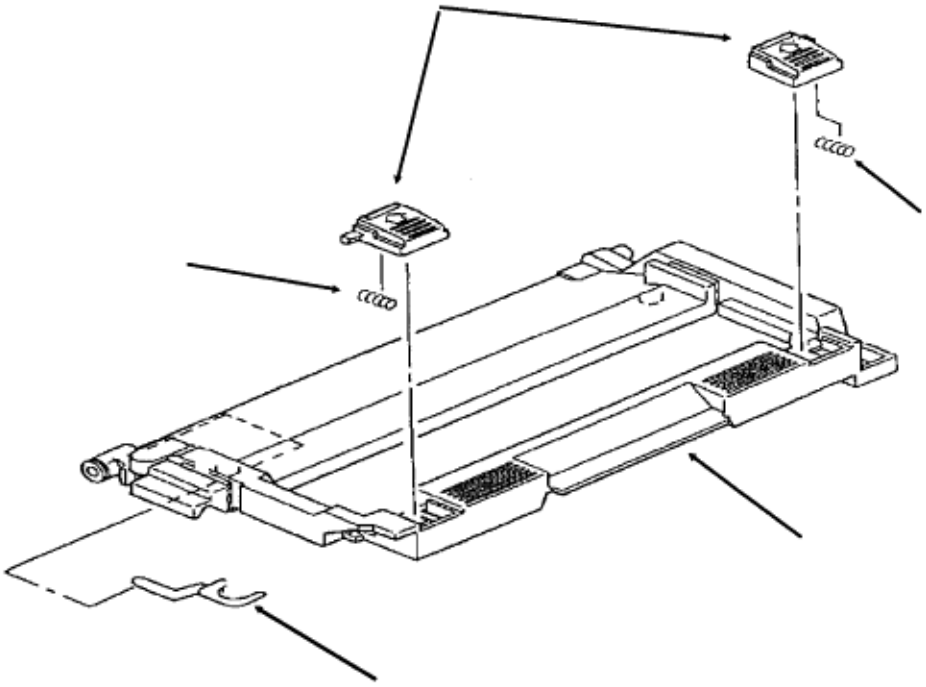
3.2.47 LED Head Holder

· Press the release switches and open the LED head holder.
· Using a straight-slot screwdriver, work the left support plate (1) free, being careful not to lose the drum ground plate (2).
· Slide the LED head holder (3) until the shaft of the holder disengages from the point of the bracket of the upper frame (4).
· Work the extension free of the opening and remove the LED head housing.

P/N 55619601	LED Holder	B.2.05
P/N 53058901	Support Plate (Left)	B.2.03
P/N 53058201	Ground Plate (Image Drum)	B.2.03



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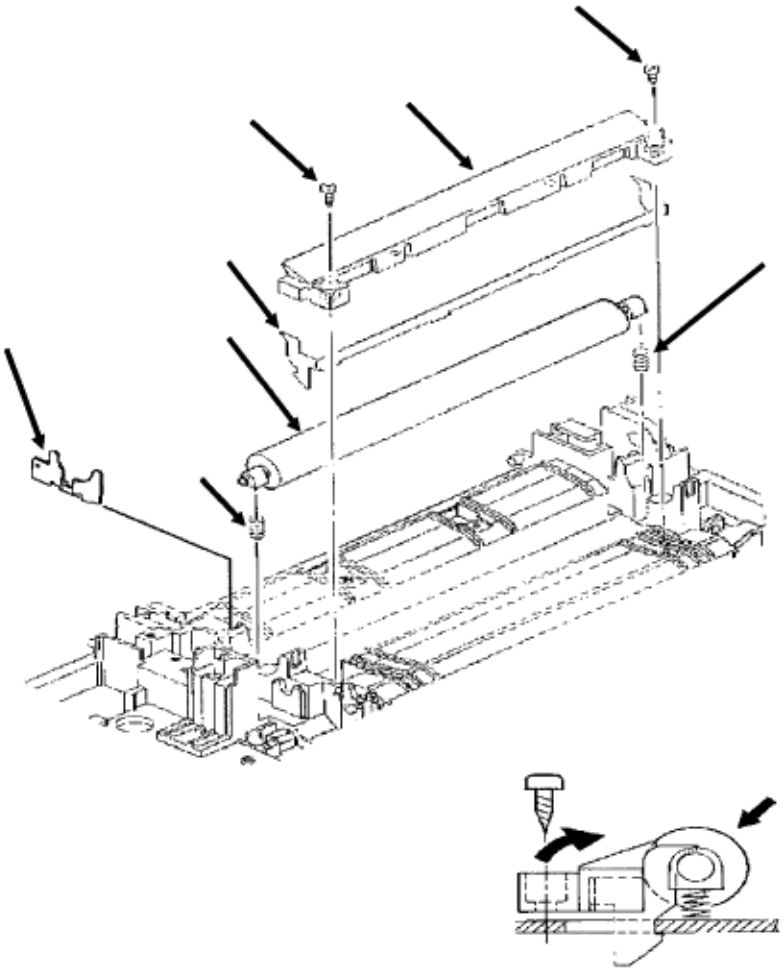
3.2.48 LED Holder Ground Plate

· Press the release switches (1) and open the LED holder (2).

CAUTION:
DO NOT REMOVE THE RELEASE KNOBS AND SPRINGS (3).

· Use a small straight slot screwdriver to pry the ground plate (4) free.
· Remove the ground plate.

P/N 53058401	Ground Plate (LED Head)	B.2.05
P/N 51901301	Knob (Left)	B.2.05
P/N 51901401	Knob (Right)	B.2.05
P/N 50918301	Pressure Spring	B.2.05



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3.2.49 Back-up Roller Assembly

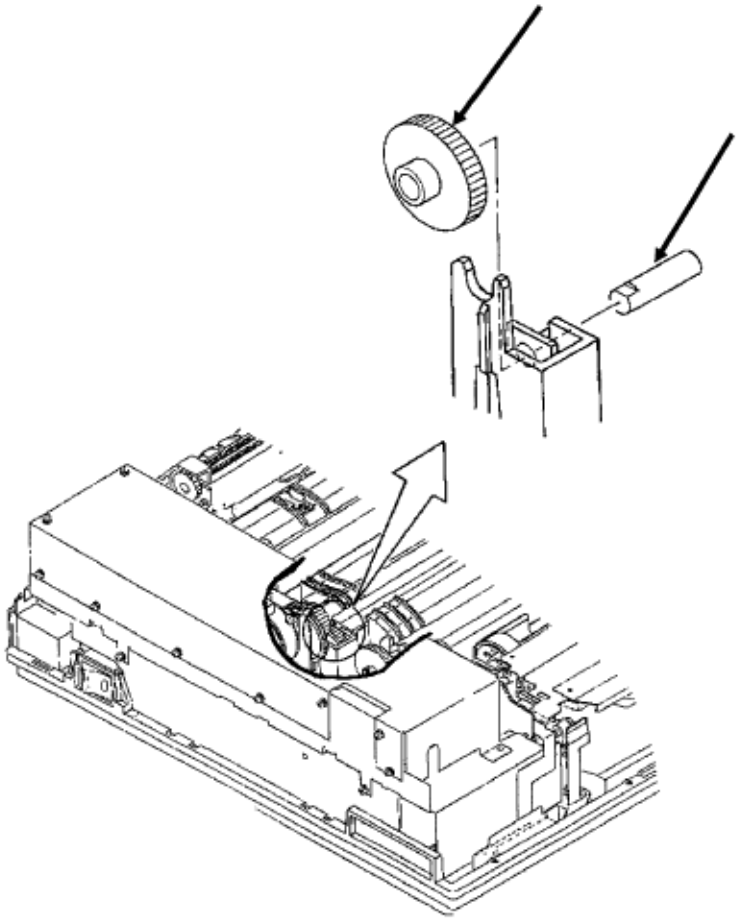
· Remove the two mounting screws (1).
· Remove the sheet guide (2) and fusing guide (3).

Note:
You may have to use a straight slot screwdriver to detach the guides.

· Remove the back-up roller (4).
· Remove the back-up roller springs (5).
· Remove the reinforcement plate (6).

Installation
Make sure that the springs are correctly aligned with the roller.

P/N 51005101	Fusing Guide		B.2.07
P/N 51003601	Sheet Guide		B.2.07
P/N 50079201	Roller: Back-up (Assembly)	RSPL	B.2.07
P/N 50914801	Spring: Backup Roller	RSPL	B.2.07



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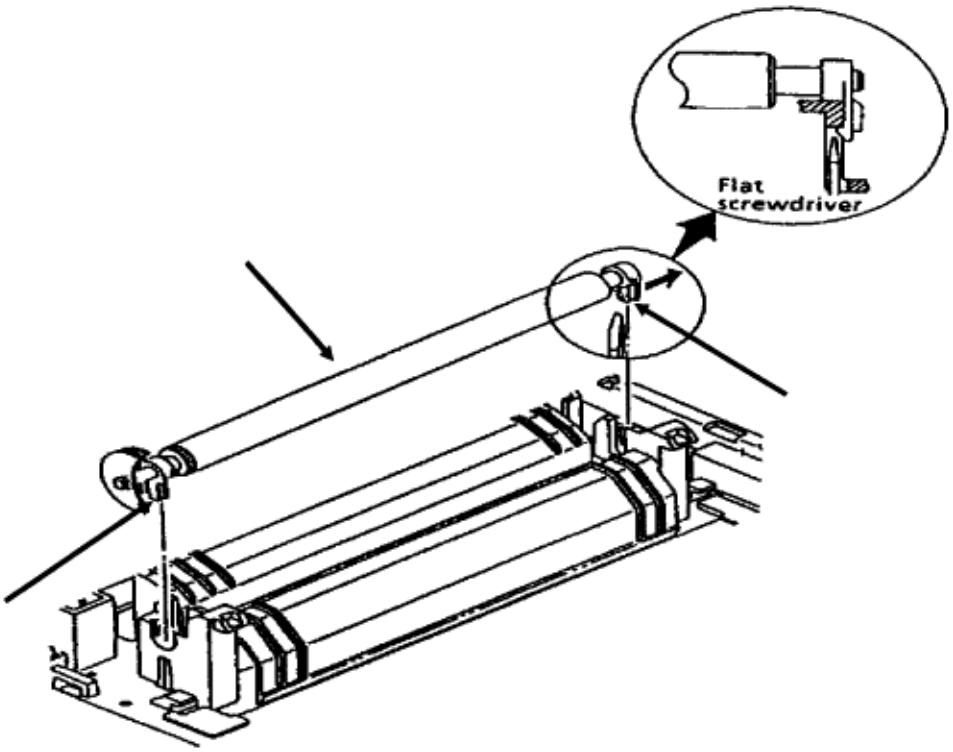
3.2.50 Idle Gear and Post

· Use needle nose pliers to work the post (1) free of the guides.
· Remove the post.
· Remove idle gear C (2).

Note:
The cutout (3) on the post should be positioned to the left side of the printer and on the top when installing.

P/N 53329501	Post	RSPL	B.2.06
P/N 51218601	Gear: Idle (Base)	RSPL	B.2.06



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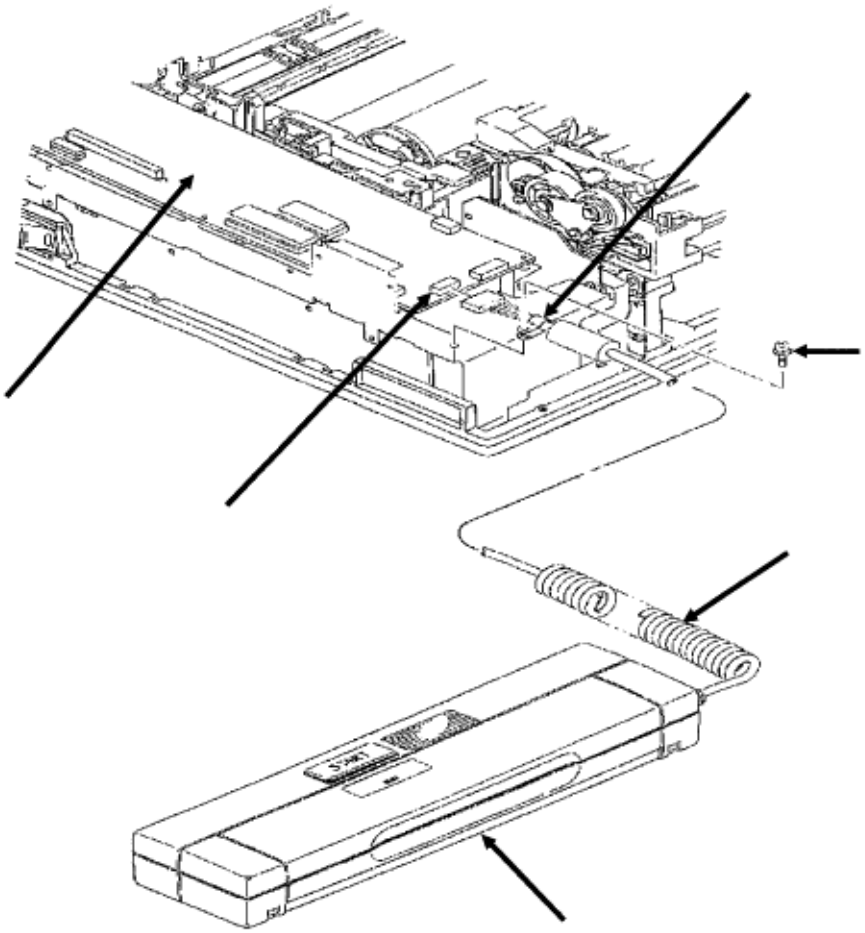
3.2.51 Registration Roller Assembly

· Push the lock lever towards the rear of the unit and raise the upper unit.
· Working from underneath the unit and using a standard screwdriver, release the claws
(1) from both sides of the registration roller assembly (2).

CAUTION:
The claws can be accessed from the bottom of the printer. Be careful when pushing on the claws. Too much force could break them.

· Remove the assembly.

P/N 50079101 Roller: Registration (Assembly) RSPL B.2.07



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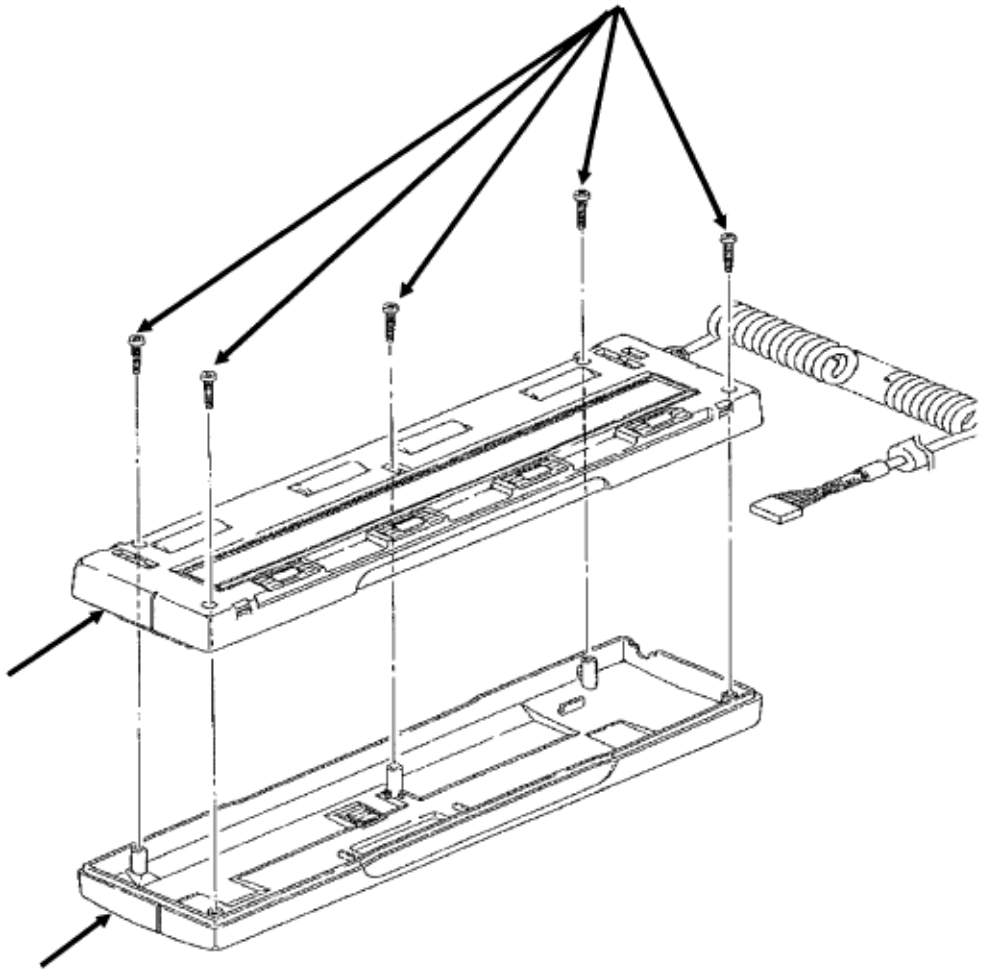
3.2.52 Scanner Unit Assembly

· Remove the upper cover.
· Remove the front reinforcing panel.
· Remove the shield plate.
· Remove the screw (1).
· Remove the cable clamp (2).
· Detach the scanner cable (3) from connector J5 (4) of the SPSX board (5).
· Remove the scanner unit.

Note:
Refer to Section 3.3 of this Service Handbook for adjustment and counter information ().

P/N 50216501	Unit: Scanner Assembly	RSPL	B.2.01/06 (without cable)
P/N 50706901	Clamp: Ground (Scanner Cable)		B.2.01



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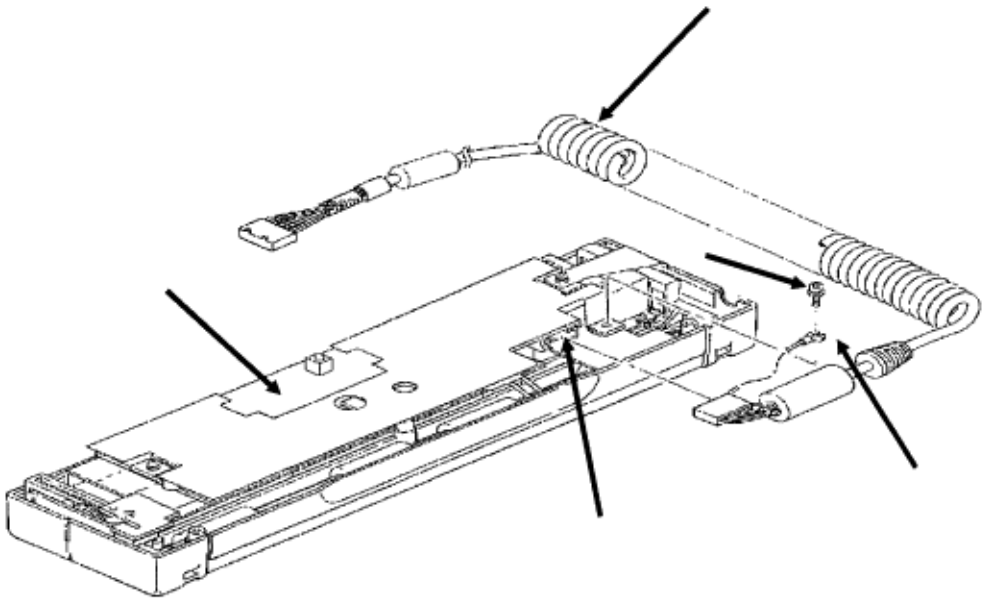
3.2.53 Scanner Upper Case

· Open the cover of the scanner.
· Press the scanner eject button.
· Lift out the scanner unit.
· Position the scanner unit with the scanner at the top.
· Remove five screws (1).
· Lift the lower unit (2) and remove the upper case (3) with START button.

P/N 50316901	Screw: Tapping (Scanner)	RSPL	B.2.13
P/N 53063901	Cover: Upper (Scanner)	RSPL	B.2.13
P/N 56109701	Button: Start (Scanner)	RSPL	B.2.13



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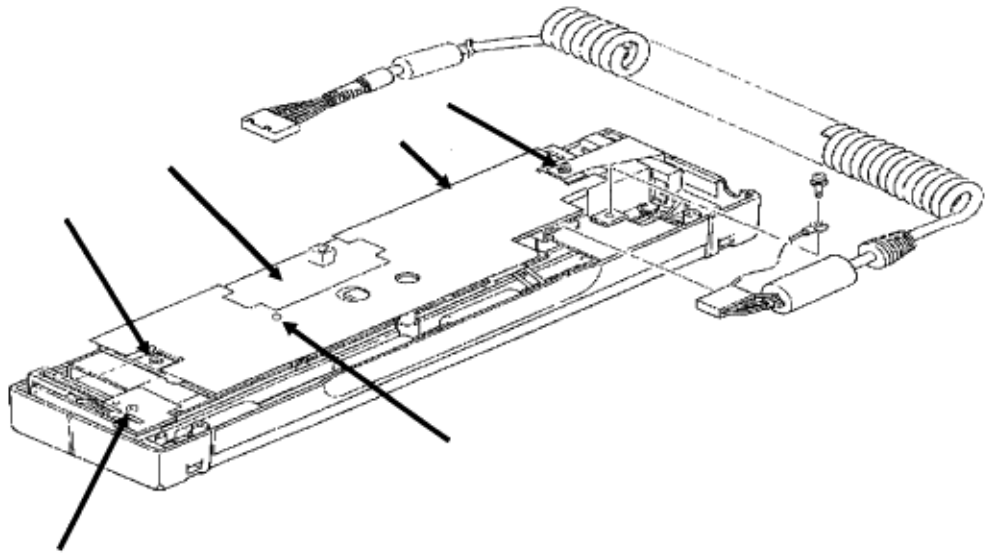
3.2.54 Scanner Cable

· Remove the scanner unit.
· Remove the scanner upper case.
· Remove the screw (1) and detach the ground clip (2).
· Detach the scanner cable (3) from connector CN2 (4) of the SPHY board (5).

P/N 56625701 Cable: Scanner RSPL B.2.01/13



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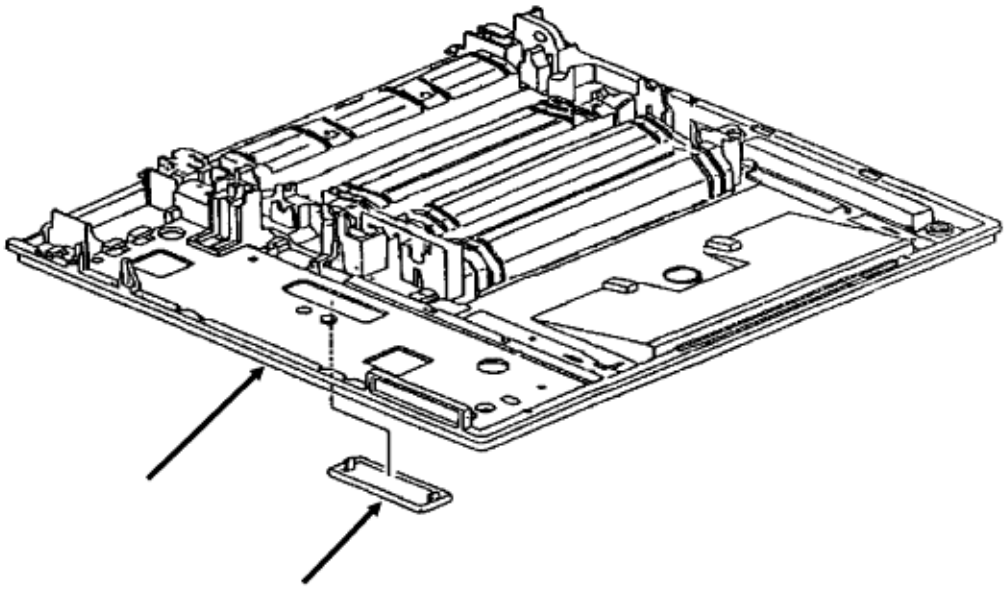
3.2.55 Scanner Board (SPHY)

- Remove the two screws (1).
- Remove the ground plate. (Not shown)
- Loosen the screw (2).
- Remove the screw (3).
- Lift the scanner board (4) until you can access CN1 (5).
- Detach CN1.
- Remove the scanner board.

P/N N/A	Lower Case	B.2.13
P/N N/A	Plate	B.2.13
P/N 55067401	Scanner Board SPHY PCB	B.2.13
P/N N/A	Plate	B.2.13
P/N N/A	Gear Assembly	B.2.13
P/N 50093701	Image Sensor	B.2.13
P/N N/A	Main Roller	B.2.13



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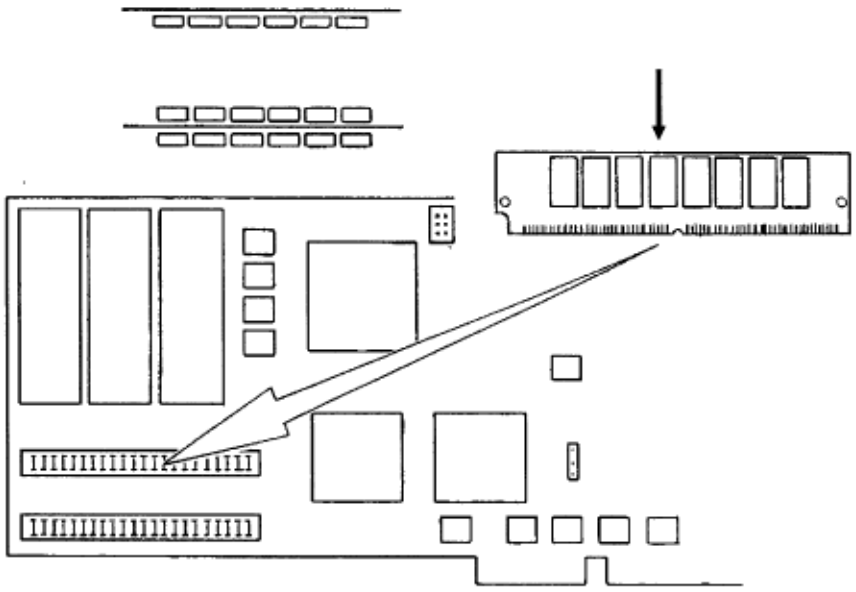
3.2.56 Base Frame

Note:

The base frame (1) is the plastic base for the Doc-It 3000/4000. All previous disassembly procedures must be performed to reach the base frame.

The connector cap (2) may be accessed from the underneath the printer. No other disassembly procedures are required to access this part.

P/N 53057801 Frame: Base RSPL B.2.06



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3.2.57 Memory Expansion Board (DOC-IT Controller)

Note:

Two memory expansion boards (SIMM) are available for the DOC-IT controller board. One board has one megabyte of RAM. The other has 2 megabyte of RAM. The boards may be installed in either of the two available sockets. RAM is mapped correctly, regardless of where the expansion boards are installed.

- Remove the DOC-IT controller board from the computer.
- Release the right locking tab.
- Release the left locking tab.
- Lift the memory board (1) until it is released from the tab.
- Rotate and remove the memory board.

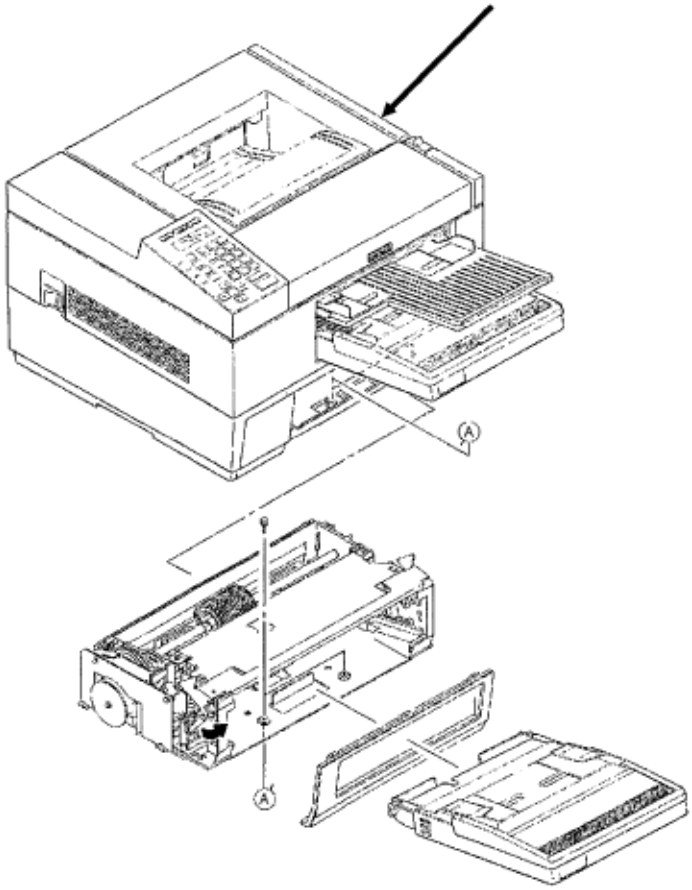
Installation

- Position the expansion board so the key is facing to the left.
- Slide the board into the connector slot.
- Push the board until the locking tabs snap over the edges. You may have to push at the edges of the expansion board to engage the tabs.

CAUTION:
When the amount of memory on the DOC-IT controller is upgraded, the CONFIG.EXE program must be run for the DOC-IT. This will change the amount of memory detected by the DOC-IT Manager. If the CONFIG.EXE program is not run, the expanded memory will not be detected.

Replacement
When replacing a DOC-IT controller board, move the original memory to the replacement board.

P/N 21025501	PCB: DOC-IT 4000 Controller	RSPL	B.2.01 Assembly
P/N 55927901	SIMM: 2 MB (512K x 32)	RSPL	B.2.01
P/N 55927801	SIMM: 1MB (256K x 32)	RSPL	B.2.01



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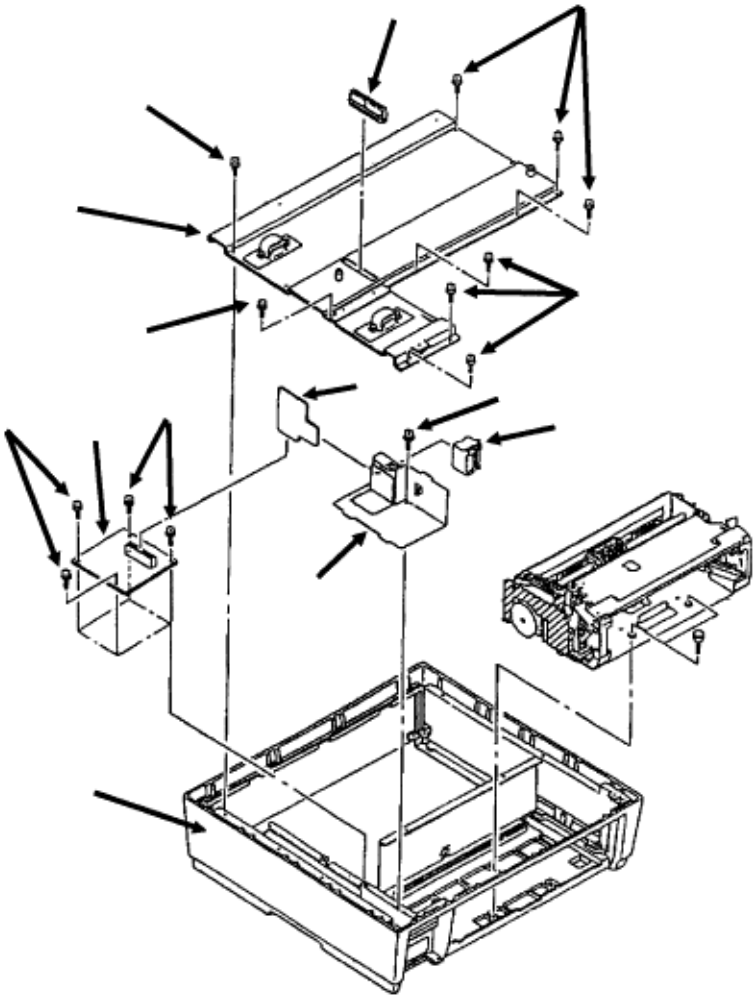
3.2.58 Second Paper Feed Unit (Option)

· Lift the DOC-IT from the second paper feed unit (1).

Installation
When installing the optional second paper feed unit, your must remove the connector cap. The cap is accessed from the bottom of the DOC-IT.

· Use a small straight-slot screwdriver to release the tabs of the cap.
· Remove the cap.

P/N 70018601	Second Tray Unit Option	B.2.16/17
P/N 53505301	Rubber Foot	B.2.17
P/N N/A	Cap	B.2.06



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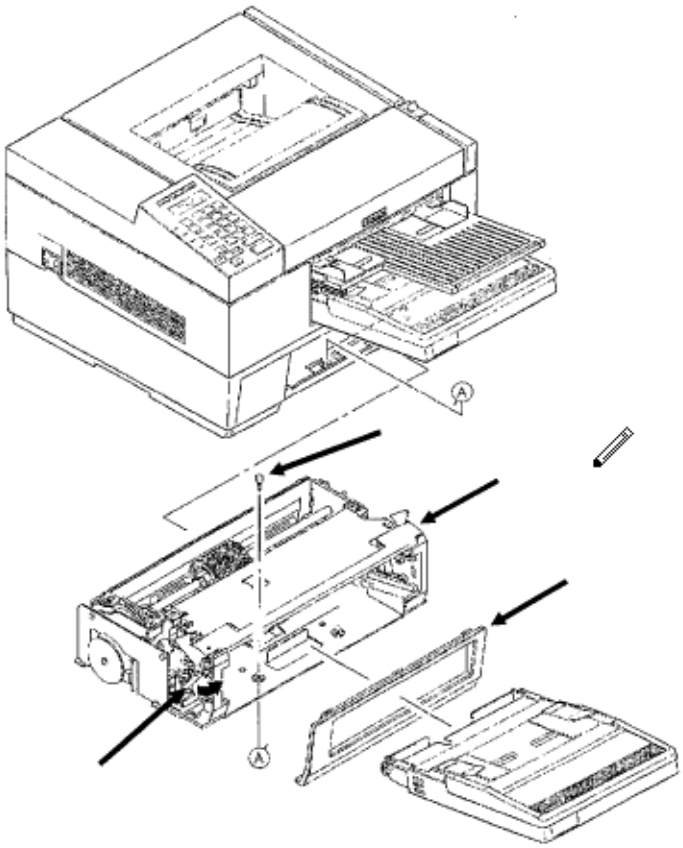
3.2.59 Second Paper Feed Unit Boards and Connectors

· Squeeze the clamps on the ends of the connector (1) and lift to remove it.
· Remove the eight screws (2).
· Remove the shield (3).
· Remove the connection board, LLIG (4).
· Remove the four screws (5).
· Remove the LLIF board (6).
· Remove the screw (7).
· Remove the shield (8) with connector AKJ-40AG (9).
· Work the connector free of the bracket and remove the connector.
· The lower base (10) is the housing.

P/N 56725201	Connector: AKJ-40AG Option	RSPL	B.2.17	
P/N N/A	Cover		B.2.17	
P/N 53059401	Base: Lower Option	RSPL	B.2.17	
P/N 56726001	Connector: PM8DOX Option	RSPL	B.2.17	
P/N 55067101	PCB: LLIG (Connection) Option	RSPL	B.2.17	
P/N 55067001	PCB: LLIF 2nd Tray Connection Option		RSPL	B.2.17



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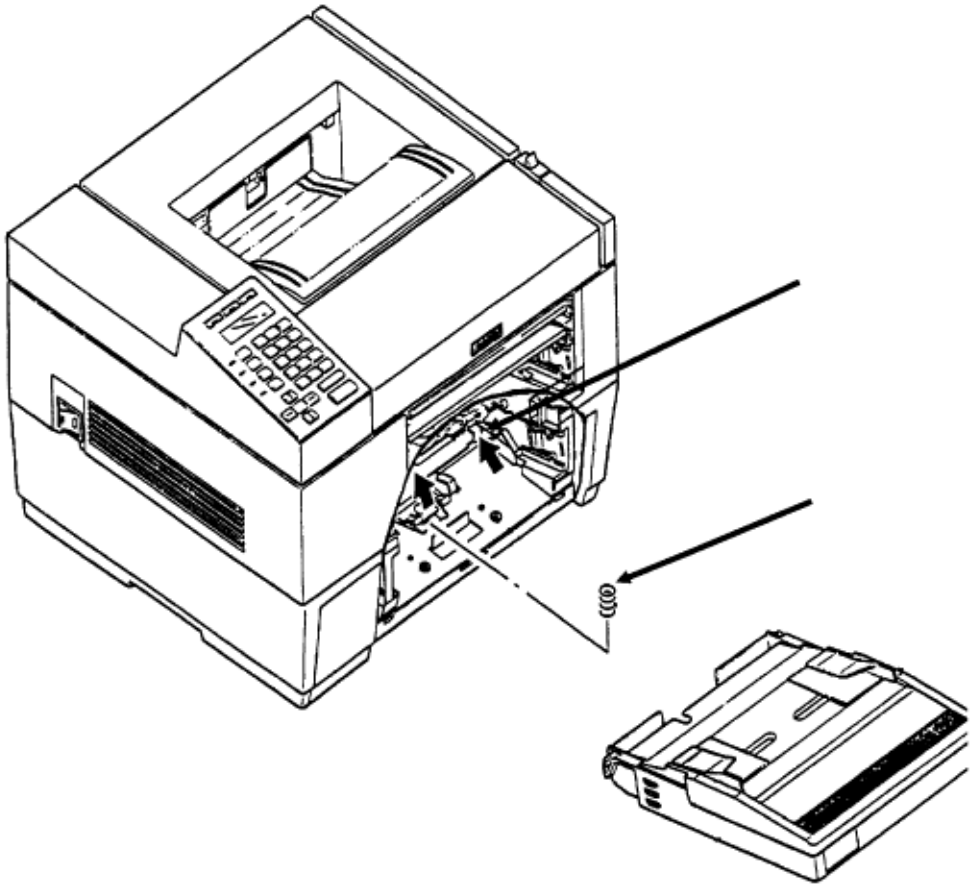
3.2.60 Second Paper Supply Unit (Option)

· Remove the front panel (1).
· Remove the two screws (2).
· Press the paper supply unit release lever (3) down.
· Remove the second paper supply unit (4).

P/N 50063501	Unit: Second Paper Tray	B.2.17
P/N 53059501	Front Panel (R)	B.2.17



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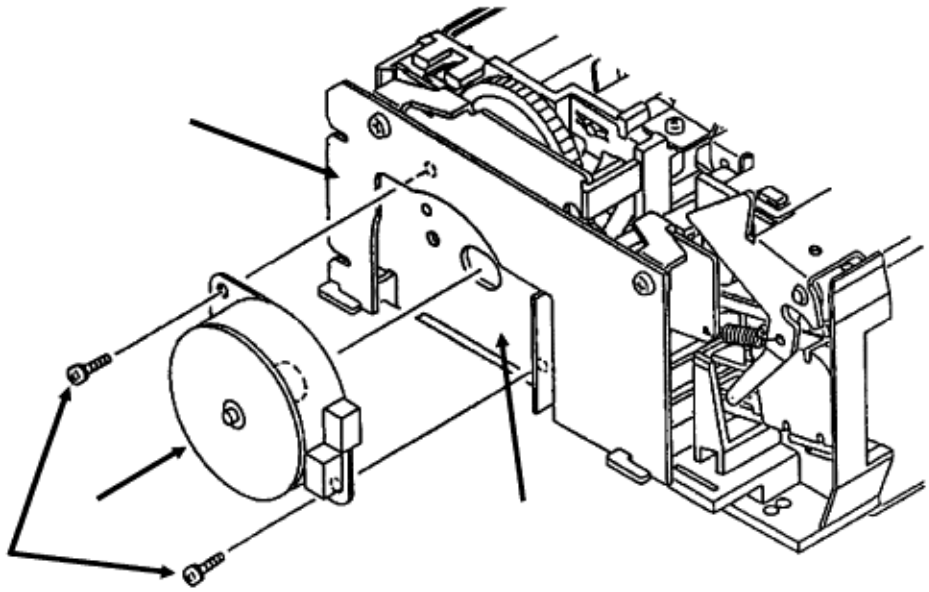
3.2.61 Cassette Spring (Second Paper Supply Unit)

· Raise the latch lever (1).
· Remove the cassette spring (2).

Installation
When installing the cassette spring, keep the latch lever pressed down and the cassette set lever (3) pushed up. After the cassette spring is installed, press the cassette set lever down.

P/N N/A Cassette Spring B.2.17



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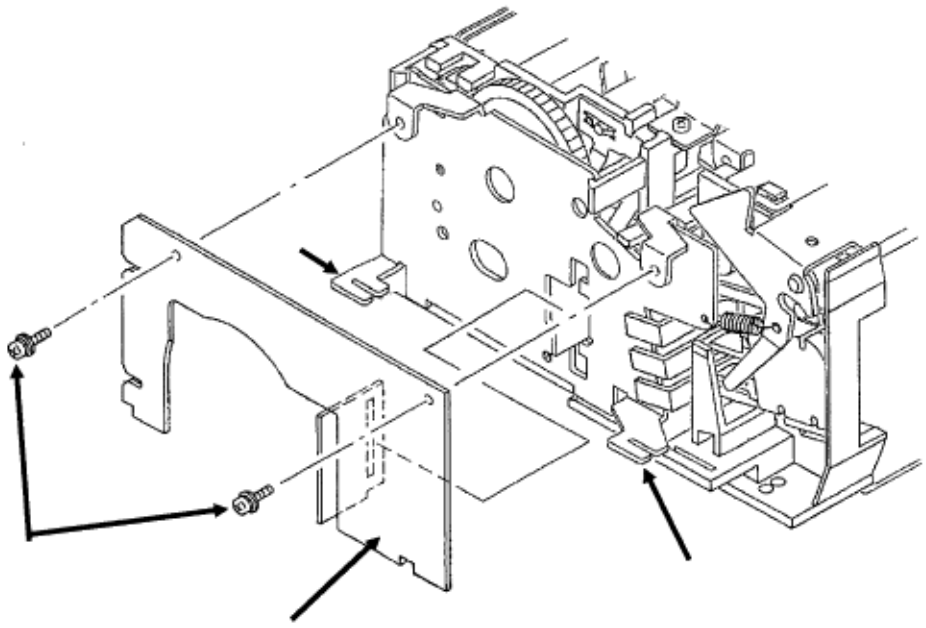
3.2.62 Resist Motor (Second Paper Supply Unit)

· Remove the two screws (1) and detach the pulse motor (2), being careful not to damage the pins.

Installation
Set the pulse motor on the bracket (3). Be careful not to scrape the pins against the LLFC Circuit Board (4).

Check that the pins of the pulse motor are securely in contact with the LLFC Circuit Board. Then, attach the pulse motor with the two screws.

P/N N/A Resist Motor (Second Tray) B.2.17



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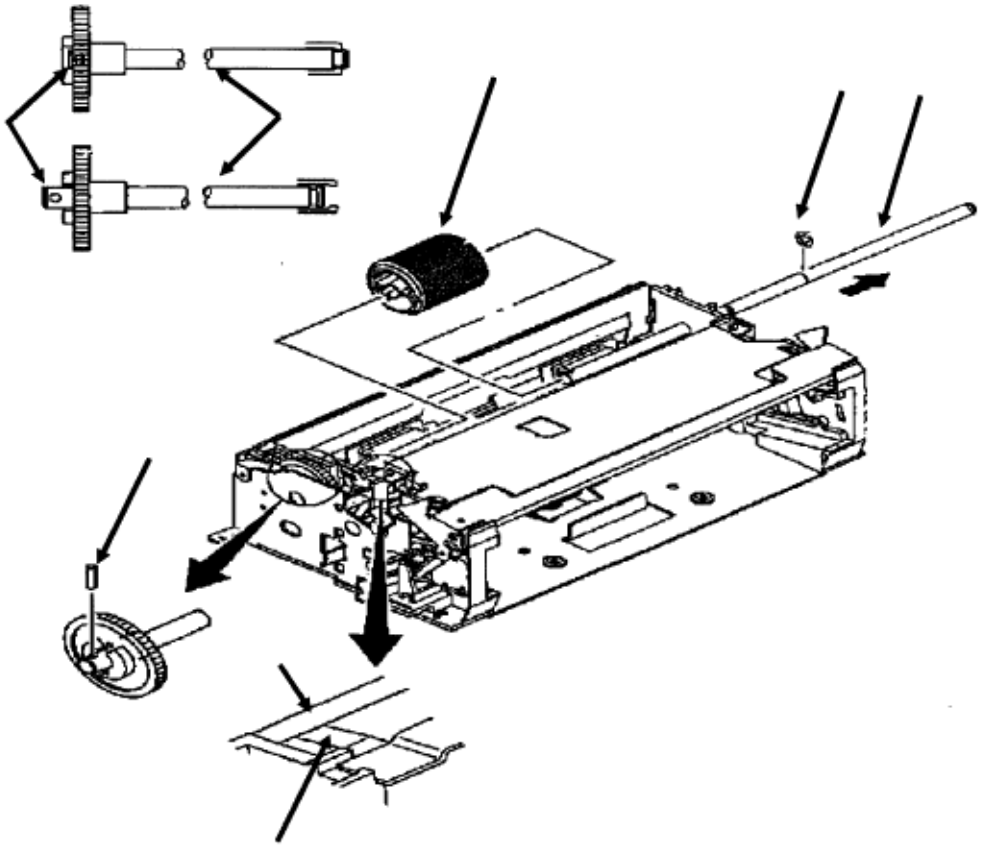
3.2.63 Second Paper Supply Unit Control Board, LLFC

· Remove the two screws (1).
· Remove the second paper supply unit control board (2) from the guides (3).

P/N 55051401 PCB: LLFC (2nd Tray Controller) Option RSPL B.2.17



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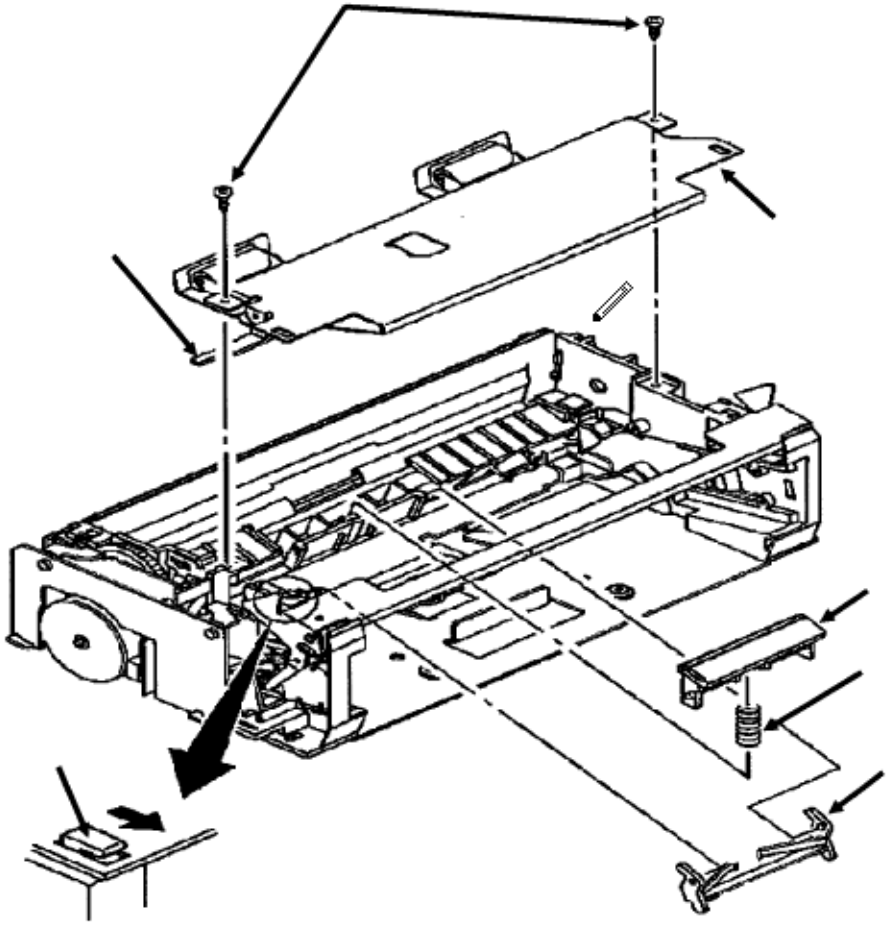
3.2.64 Second Paper Supply Unit Hopping Roller

· Slide the hopping roller shaft (1) to the left to unlock it.
· Remove the hopping gear pin (2) and the E-clip (3).
· Slide the hopping roller shaft (1) to the right and remove the hopping roller (4).

Note:
Installation
Install the hopping roller shaft so the ground plate (5) comes in contact with the bottom of the shaft.

P/N N/A Hopping Roller (Second Tray) B.2.17



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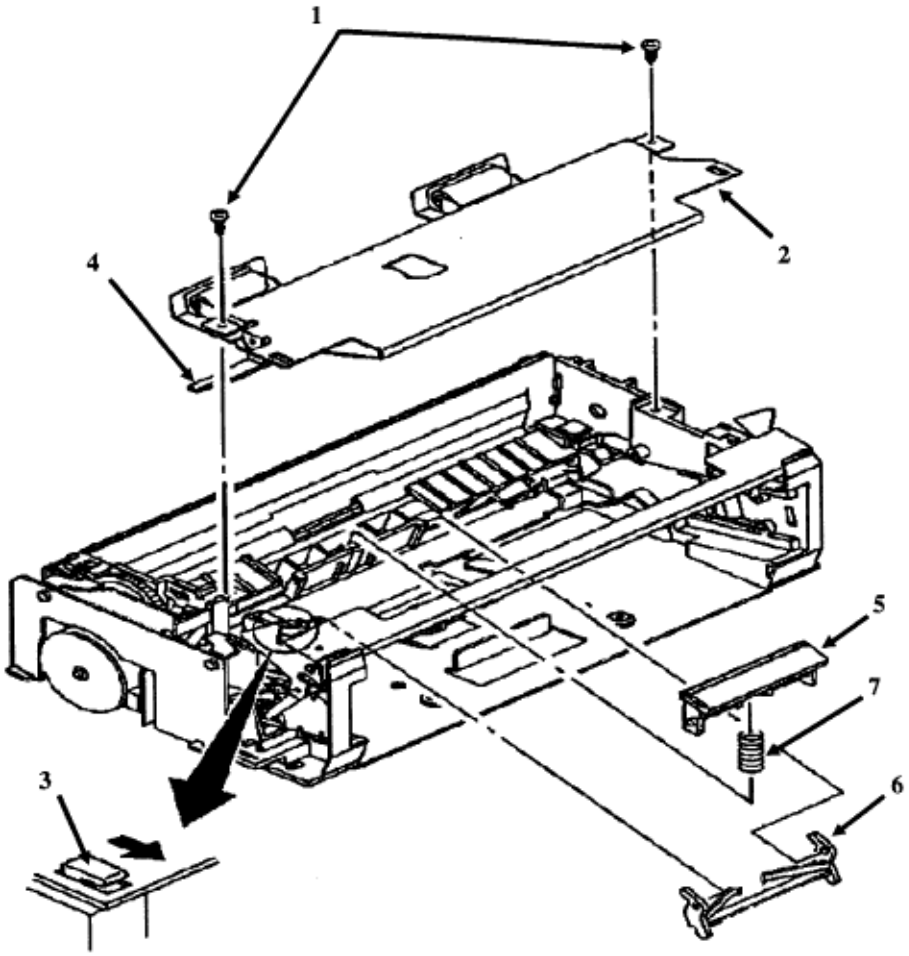
3.2.65 Second Paper Supply Unit Separator

· Remove the two screws (1).
· Slide the upper plate assembly (2) until the pawl (3) is unlocked.
· Press the paper end lever down (4) and remove the upper plate assembly (2).
· Hold the separator (5) down and remove the escape lever (6). Then remove the separator. Be careful not to lose the separator spring (7).



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3.3 ADJUSTMENTS AND SERVICE SETTINGS

This section contains the procedures for checking and resetting counters and performing adjustments and service settings on the Doc-It 3000/4000. These procedures may be required when replacing either consumables or parts. The disassembly/reassembly procedures list the required adjustments and refer you to this section. Failure to perform these procedures may result in unnecessary service calls.

The adjustments and service settings are accomplished through the operator panel. Three different modes are used: maintenance, administration, and service. Charts 3.3A and 3.3B show the three modes and the adjustments and service checks.

Firmware changes are saved in the EEPROM located on the engine controller board.

The items listed below provide information on the Doc-It Engine service life and are automatically updated.

- Automatic Document Feeder (ADF) Paper Feed Counter
- Drum Counter
- Engine Version
- Fuser Counter
- Software Version
- Toner Counter
- Total Printed Page Counter
- Total Scanned Document Counter

End users may adjust the following.

- Buzzer Level
- Keyclick Length
- Print Darkness Control
- Print Start Position Adjustment
- Scan Start Position Adjustment
- Time to Quiet

When the image drum is replaced, perform the following.

- Drum Counter Reset

When the LED printhead is replaced, perform the following.

- 300/400 dpi LED Head Drive Time Setting
- 300/400 dpi LED Head Type Selection

When the fuser is replaced, perform the following.

- Fuser Counter Reset

When the scanner is replaced, perform the following.

- Scanner Shading Adjustment
- Total Scanned Document Counter Reset

When the Automatic Document Feeder (ADF) is replaced, perform the following.

- ADF Paper Feed Counter Reset
- ADF Slip Adjustment

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Chart 3.3A Adjustments, Modes, and Service Checks Listed by Adjustment

Adjustment	Mode	View Only	View and Clear	Clear Only	View and Modify	Modify Only
Automatic Document Feeder (ADF) Paper Feed Counter	Service		X			
Automatic Document Feeder (ADF) Slip Adjustment	Maintenance					X
Buzzer Level	Administration				X	
Drum Counter	Service		X			
Drum Counter	Administration			X		
Engine Version	Administration	X				
Fuser Counter	Service		X			
Keyclick Length	Administration				X	
LED Head Type Selection (300/400)	Maintenance					X
LED Head Drive Time Setting	Maintenance					X

Print Darkness Control	Administration				X	
Prt Stat Position Adjustment	Administration				X	
Scan Stat Position Adjustment	Administration				X	
Scanner Shading Adjustment	Maintenance					X
@Z_TBL_BODY = TABLE P/N	TABLE P/N	TABLE P/N	TABLE P/N	TABLE P/N	TABLE P/N	TABLE TEXT
Software Version	Administration	X				
@Z_TBL_BODY = TABLE P/N	TABLE P/N	TABLE P/N	TABLE P/N	TABLE P/N	TABLE P/N	TABLE P/N
Time to Quiet	Administration				X	
Toner Counter	Service	X				
Total Printed Page Counter	Service	X				
Total Scanned Document Counter	Service		X			

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Chart 3.3B Adjustments, Modes, and Service Checks Listed by Mode

Mode	Adjustment	View Only	View and Clear	Clear Only	View and Modify	Modify Only
Administration	Buzzer Level				X	
Administration	Drum Counter			X		
Administration	Engine Version	X				
Administration	Keyclick Length				X	
Administration	Print Darkness Control				X	
Administration	Print Start Position Adjustment				X	
Administration	Scan Start Position Adjustment				X	
Administration	Software Version	X				
Administration	Time to Quiet				X	
Maintenance	Automatic Document Feeder (ADF) [illegible] Adjustment					X
Maintenance	LED Head Type Selection (300/400)					X
Maintenance	LED Head Drive Time Setting					X
Maintenance	Scanner Shading Adjustment					X
Service	Automatic Document Feeder (ADF) Paper Feed Counter		X			
Service	Drum Counter		X			

Service	Fuser Counter		X			
Service	Toner Counter	X				
Service	Total Printed Page Counter	X				
Service	Total Scanned Document Counter		X			

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3.3.01 Maintenance Mode

The maintenance mode may be entered without the Doc-It Engine being connected to the Doc-It Controller Card.

- Verify that the top cover is closed.
- Verify that the paper tray contains paper.
- Verify that no error messages are displayed on the LCD control panel.
- Raise the scanner cover.
- Power ON the Doc-It while pressing the START button on the scanner unit.
- The LCD will display:

  Replace Unit?
  1:PRN 2:SCN,STOP

Note:

If an error message appears, please refer to Section 4 of this Service Handbook ().

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Chart of Maintenance Mode Adjustments and Service Checks

Mode	Adjustment	View Only	View and Clear	Clear Only	View and Modify	Modify Only
Maintenance	Automatic Document Feeder (ADF) Slip Adjustment					X
Maintenance	LED Head Type Selection (300/400)					X
Maintenance	LED Head Drive Time Setting					X
Maintenance	Scanner Shading Adjustment					X

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LED Head Type Selection and Drive Time Setting

This procedure is performed when a new LED head is installed as a replacement for an old LED head, and the two heads have different resolutions and/or ratings.
Before performing this procedure, check the resolutions and the ratings of the two heads. Verify that it is necessary to perform this procedure.
This procedure will reset the resolution and rating for the LED head. If incorrect settings are entered, printer output will be distorted.

Refer to Section 3.2 of this Service Handbook for installation instructions for the LED head ().

· Verify that the top cover is closed.
· Verify that the paper tray contains paper.
· Verify that no error messages are displayed on the LCD control panel.
· Raise the scanner cover.
· Power ON the Doc-It while pressing the START button on the scanner unit.
· The LCD will display:

Replace Unit?
1:PRN 2:SCN,STOP

Note:
If an error message appears, please refer to Section 4 of this Service Handbook ().

· Press the 1 key on the numeric keypad.
· The LCD will display:

Print Head DPI?
1:300, 2:400 STOP

· Press the 1 key on the numeric keypad for a 300 dpi LED head. Press the 2 key on the numeric keypad for a 400 dpi LED head.
· The LCD will display:

Intensity No ___ ?

· Enter the luminous intensity number of the new LED head. Refer to this diagram when identifying the luminous intensity number.
· The LCD will display:

No. xx Set START or STOP?

· You must confirm the luminous intensity number you just entered. Press the START key to accept the setting. Press the STOP key to reject the setting.
· If you pressed the START key, the change will be saved automatically in the EEPROM.
· Press the STOP key to exit the printhead replacement menu.
· The LCD will display

Print Head DPI?
1:300, 2:400 STOP

· Press the STOP key to exit. Press 1 or 2 to redo.
· If you press the STOP key, the LCD will display:

Replace Unit?
1:PRN 2:SCN,STOP

· Press the STOP key to exit Maintenance Mode.
· Power off the unit.
· Power on the unit.

Note:

If you do not power off the unit, the message WARMING UP will be displayed on the operator panel. The message will remain until the unit is powered off, then on.

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ADF Slip Adjustment

The ADF Slip Adjustment should be performed when a new ADF unit is installed to replace an old ADF unit. This adjustment prevents the elongation of a read image. If this adjustment is not performed, the ADF roller may slip during document feeding.

Okidata recommends performing this procedure every 75,000 pages (use the Total Printer Page Count) or if scanned images are elongate.

Refer to Section 3.2 of this Service Handbook for installation instructions for the ADF unit ().

- Verify that the top cover is closed.
- Verify that the paper tray contains paper.
- Verify that no error messages are displayed on the LCD control panel.
- Raise the scanner cover.
- Power ON the Doc-It while pressing the START button on the scanner unit.
- The LCD will display:

  Replace Unit?
  1:PRN 2:SCN,STOP

Note:

If an error message appears, please refer to Section 4 of this Service Handbook ().

- Press and hold the 7 key on the numeric keypad. Then press the START key.
- Release the 7 and START keys.
- The LCD will display:

  ADF slip Adjust START or STOP

- Press the START key to select the adjustment. Press the STOP key to cancel the adjustment.
- If selecting the adjustment, place a sheet of paper in the ADF tray.
- The LCD will display:

  Document set & START Key Push

- Press the START key to begin the slip adjustment.
- While the adjustment is in progress, the LCD will display:

  ADF slip Adjusting!

- When the adjustment is completed, the LCD will display:

  Replace Unit?
  1:PRN 2:SCN,STOP

- Press the STOP key to exit the Maintenance Mode.
- Power off the unit.
- Power on the unit.

Note:

If you do not power off the unit, the message WARMING UP will be displayed on the operator panel. The message will remain until the unit is powered off, then on.

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Scanner Shading Adjustment

This procedure is performed when a new scanner unit is installed as a replacement for an old scanner unit. This adjustment occurs in two steps: the white shading adjustment and the black shading adjustment.

Refer to Section 3.2 of this Service Handbook for installation instructions for the scanner unit ().

· Verify that the top cover is closed.
· Verify that the paper tray contains paper.
· Verify that no error messages are displayed on the LCD control panel.
· Raise the scanner cover.
· Power ON the Doc-It while pressing the START button on the scanner unit.
· The LCD will display:

Replace Unit?
1:PRN 2:SCN,STOP

Note:

If an error message appears, please refer to Section 4 of this Service Handbook ().

· Press the 2 key on the numeric keypad.
· The LCD will display:

Shading Adjust START or STOP

· Remove the scanner from the ADF.
· Place the scanner on a white surface.
· Press the START key to select the white scanner shading adjustment. Press the STOP key to cancel the white scanner shading adjustment.
· If the START key is pressed, the LCD will display:

Set White Level Start or Stop?

· Press the START key to start the white scanner shading adjustment. Press the STOP key to cancel the white scanner shading adjustment.
· If the START key is pressed, the LED next to the Scanner key will begin to flash.

· The LCD will display:

White Level Shading Adjust

· When the LED next to the Scanner key stops flashing, you will perform the black scanner adjustment. Place the scanner on a black surface.
· The LCD will display:

Set Black Level Start or stop?

· Press the START key to start the black scanner shading adjustment. Press the STOP key to cancel the black scanner shading adjustment.
· If the START key is pressed, the LED next to the Scanner key will begin to flash.
· The LCD will display:

Black Level Shading Adjust

· When the LED next to the Scanner key stops flashing, the changes will have been automatically saved in the EEPROM.
· The LCD will display:

Shading Adjust START or STOP

· Press the STOP key to exit the scanner shading adjustment. Press the START key to redo the scanner shading adjustment procedure.
· The LCD will display:

Replace Unit?
1:PRN 2:SCN,STOP

· Press the STOP key to exit Maintenance Mode.
· Power off the unit.
· Power on the unit.

Note:

If you do not power off the unit, the message WARMING UP will be displayed on the operator panel. The message will remain until the unit is powered off, then on.

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3.3.02 Administration Mode

The Administration Mode allow the end user to customize features of the Doc-It 3000/4000.
To enter the Administration Mode,

- Verify that the Doc-It 3000/4000 is connected to the Doc-It controller.
- Verify that the Doc-It 3000/4000 is initialized.
- Press and hold the ENTER key for five seconds.
- Release the ENTER key.
- The word Administration will be displayed on the LCD.
- To move forward through the adjustments, press the down arrow key.
- To move back through the adjustments, press the up arrow key.
- Check marks indicate the current setting.
- To change settings, press the left and right arrow keys.

Changes made in the Administration Mode are in effect **only** until the Doc-It Controller is initialized. The settings may be saved when the controller is initialized if SAVE CONFIGURATION is selected in the Administration Mode.

To save changes in the Administration Mode,

- Make the desired changes in the Administration Mode.
- Press the down arrow key until the LCD displays

  Save config?
  Yes No

  A check mark will appear next to the current setting.

- Press the left arrow key to until the check mark appears next to the word Yes.
- Press the ENTER key to select yes.
- Exit the Administration Mode by pressing any of the four mode keys (Printer, FAX, Scanner, or Copier).

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Chart of Administration Mode Adjustments and Service Checks

Mode	Adjustment	View Only	View and Clear	Clear Only	View and Modify	Modify Only
Administration	Buzzer<R>Level				X	
Administration	Drum<R>Counter			X		
Administration	Engine<R>Version	X				
Administration	Keyclick<R>Length				X	
Administration	Print Darkness<R>Control				X	
Administration	Print Start Position<R>Adjustment				X	
Administration	Scan Start Position <R>Adjustment				X	
Administration	Software Version	X				
Administration	Time to Quiet				X	
Administration	Save Configuration					
Administration	Restore Defaults					

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Buzzer Level

To restore factory default settings:

- Verify that the Doc-It 3000/4000 is connected to the Doc-It controller.
- Verify that the Doc-It 3000/4000 is initialized.
- Press and hold the ENTER key for five seconds.
- Release the ENTER key.
- The word Administration will be displayed on the LCD.
- To move through the adjustments until the LCD displays

  Buzzer level:
  SETTINGS

  Settings are Low, Medium, or High
  A check mark will indicate the current setting.

- Press the left or right arrow key to move to the desired level.
- Press the ENTER key.
- Exit the Administration Mode by pressing any of the four mode keys (Printer, FAX, Scanner, or Copier).

Note:

SAVE CONFIGURATION must be specified in the Administration Mode or the change will not be saved when the Doc-It controller initializes.

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Engine Version

Viewing the Engine Version in the Administration Mode allows you to identify the master EEPROM and slave EEPROM revision.

To view the Engine Version:

· Verify that the Doc-It 3000/4000 is connected to the Doc-It controller.
· Verify that the Doc-It 3000/4000 is initialized.
· Press and hold the ENTER key for five seconds.
· Release the ENTER key.
· The word Administration will be displayed on the LCD.
· Press the up or down arrow keys to move through the adjustments until the LCD displays

Engine version:
M xxxx / S xxxxx

The M number refers to the revision of the master EEPROM.
The S number refers to the revision of the slave EEPROM.

· Exit the Administration Mode by pressing any of the four mode keys (Printer, FAX, Scanner, or Copier).

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Keyclick Length

To adjust the key click length:

- Verify that the Doc-It 3000/4000 is connected to the Doc-It controller.
- Verify that the Doc-It 3000/4000 is initialized.
- Press and hold the ENTER key for five seconds.
- Release the ENTER key.
- The word Administration will be displayed on the LCD.
- Press the up or down arrow keys to move through the adjustments until the LCD displays

Keyclick length
SETTING
Settings are Off, Short, Medium, Long

- Press the left arrow key until the desired setting is reached.
- Press the ENTER key.
- Exit the Administration Mode by pressing any of the four mode keys (Printer, FAX, Scanner, or Copier).

Note:

SAVE CONFIGURATION must be specified in the Administration Mode or the change will not be saved when the Doc-It controller initializes.

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Print Darkness Control

To adjust the printer darkness control

- Verify that the Doc-It 3000/4000 is connected to the Doc-It controller.
- Verify that the Doc-It 3000/4000 is initialized.
- Press and hold the ENTER key for five seconds.
- Release the ENTER key.
- The word Administration will be displayed on the LCD.
- Press the up or down arrow keys to move through the adjustments until the LCD displays

Print Darkness
SETTING

The settings are -2, -1, 0, +1, +2. The lightest setting is -2. The darkest setting is +2.

- Press the left or right arrow key until the desired setting is reached.
- Press the ENTER key.
- Exit the Administration Mode by pressing any of the four mode keys (Printer, FAX, Scanner, or Copier).

Note:

SAVE CONFIGURATION must be specified in the Administration Mode or the change will not be saved when the Doc-It controller initializes.

When printing envelopes, the darkness control may require adjustment for the best print quality.

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Print Start Position Adjustment

The Print Start Adjustment is used to set the beginning of the printable area. Use this adjustment to correct print start variations among different Doc-It Engines, or to achieve a 4.6 mm vertical start position. The default value of the print start position is 4.6 mm.

To adjust the print start position:

- Verify that the Doc-It 3000/4000 is connected to the Doc-It controller.
- Verify that the Doc-It 3000/4000 is initialized.
- Press and hold the ENTER key for five seconds.
- Release the ENTER key.
- The word Administration will be displayed on the LCD.
- Press the up or down arrow keys to move through the adjustments until the LCD displays

  Print start pos:
  SETTING

The settings are 0.6, 1.1, 1.6, 2.1, 2.6, 3.1, 3.6, 4.1, 4.6, 5.1, 5.6, 6.1, 6.6, 7.1, 7.6, and 8.1 mm. The default value is 4.6 mm

- Press the left arrow key until the desired setting is reached.
- Press the ENTER key.
- Exit the Administration Mode by pressing any of the four mode keys (Printer, FAX, Scanner, or Copier).

Note:

SAVE CONFIGURATION must be specified in the Administration Mode or the change will not be saved when the Doc-It controller initializes.

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Drum Counter Reset

The drum counter is **NOT** an actual count of the pages printed by an image drum. The count is a combination of the main motor revolution time and the number of printed sheets. Thus, the *type* of printing being performed becomes a factor in determining drum life. If the printer performs many single page print jobs, the drum ages more quickly than if the printer performs many multiple page print jobs.

The image drum has an estimated lifespan of 14,500 to 15,000 pages at 100 pages per job. The lifespan is 11,500 to 12,000 pages at three pages per job. **These figures will vary!**
The drum counter should be reset when a new image drum is installed.

The drum counter may be accessed from both the Administration Mode and the Service Mode. The drum counter in the Administration Mode allows the end user to reset the drum counter when replacing an image drum.

The drum counter in the Service Mode allows the service technician to view the drum count and/or reset the drum counter.

Note:
The Service Mode should not be made available to the end user. Refer to Section 3.3.03 f or information regarding the Service Mode.

To reset the drum counter from the Administration Mode:
· Verify that the Doc-It 3000/4000 is connected to the Doc-It controller.
· Verify that the Doc-It 3000/4000 is initialized.
· Press and hold the ENTER key for five seconds.
· Release the ENTER key.
· The word Administration will be displayed on the LCD.
· Press the up or down arrow keys to move through the adjustments until the LCD displays

Reset drum ctr?
Yes No

· A check mark will indicate the current setting.
· Press the left arrow key to move the check mark next to the word "Yes"
· Press the ENTER key.
· Exit the Administration Mode by pressing any of the four mode keys (Printer, FAX, Scanner, or Copier).

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Scan Start Position Adjustment

The Scan Start Position Adjustment is used to set the top of form position for the Automatic Document Feeder (ADF) . Use this adjustment to correct scan start position variations among different Doc-It Engines. The default value for the Scan Start Position is 0.0 mm.

To adjust the scan start position:

- Verify that the Doc-It 3000/4000 is connected to the Doc-It controller.
- Verify that the Doc-It 3000/4000 is initialized.
- Press and hold the ENTER key for five seconds.
- Release the ENTER key.
- The word Administration will be displayed on the LCD.
- Press the up or down arrow keys to move through the adjustments until the LCD displays

  Scan start pos:
  SETTING

  The settings are -4.0, 0.0, and +4.0 mm.
  The default value is 0.0 mm

- Press the left or right arrow key until the desired setting is reached.
- Press the ENTER key.
- Exit the Administration Mode by pressing any of the four mode keys (Printer, FAX, Scanner, or Copier).

Note:

SAVE CONFIGURATION must be specified in the Administration Mode or the change will not be saved when the Doc-It controller initializes.

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Software Version

Viewing the Software Version in the Administration Mode allows you to identify the software version of the Doc-It 3000/4000.

To view the Software Version:

· Verify that the Doc-It 3000/4000 is connected to the Doc-It controller.
· Verify that the Doc-It 3000/4000 is initialized.
· Press and hold the ENTER key for five seconds.
· Release the ENTER key.
· The word Administration will be displayed on the LCD.
· Press the up or down arrow keys to move through the adjustments until the LCD displays

Software version (Version)

· Exit the Administration Mode by pressing any of the four mode keys (Printer, FAX, Scanner, or Copier).

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Time to Quiet

The time to quiet setting is the amount of time that the printer waits while the buffer is empty **before** reducing power consumption. In quiet mode,

- the fan runs at 50%
- 50% less power is used
- the fuser is turned off
- operating noise is reduced
- the Doc-It Engine will take longer to print the first page of incoming data while in this mode.

When Disable is selected as the Time to Quiet setting, the fuser stays on.
To adjust the time to quiet setting:

- Verify that the Doc-It 3000/4000 is connected to the Doc-It controller.
- Verify that the Doc-It 3000/4000 is initialized.
- Press and hold the ENTER key for five seconds.
- Release the ENTER key.
- The word Administration will be displayed on the LCD.
- Press the up or down arrow keys to move through the adjustments until the LCD displays

Time to quiet:
SETTING

The settings are 1 minute, 4 minutes , 8 minutes, or DISABLE. The default value is 8 minutes.

- Press the left or right arrow key until the desired setting is reached.
- Press the ENTER key.
- Exit the Administration Mode by pressing any of the four mode keys (Printer, FAX, Scanner, or Copier).

Note:

SAVE CONFIGURATION must be specified in the Administration Mode or the change will not be saved when the Doc-It controller initializes.

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Save Configuration Setting

To adjust the time to quiet setting:

· Verify that the Doc-It 3000/4000 is connected to the Doc-It controller.
· Verify that the Doc-It 3000/4000 is initialized.
· Press and hold the ENTER key for five seconds.
· Release the ENTER key.
· The word Administration will be displayed on the LCD.
· Press the up or down arrow keys to move through the adjustments until the LCD displays

Save config?
Yes No

· Press the left or right arrow key until the desired setting is reached.
· Press the ENTER key.
· Exit the Administration Mode by pressing any of the four mode keys (Printer, FAX, Scanner, or Copier).

Note:
SAVE CONFIGURATION must be specified in the Administration Mode or changes made using Administration Mode will not be saved when the Doc-It controller initializes.

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Restoring Factory Defaults

To restore factory default settings:

- Verify that the Doc-It 3000/4000 is connected to the Doc-It controller.
- Verify that the Doc-It 3000/4000 is initialized.
- Press and hold the ENTER key for five seconds.
- Release the ENTER key.
- The word Administration will be displayed on the LCD.
- To move through the adjustments until the LCD displays

  Restore defaults
  Yes No

- A check mark will indicate the current setting.
- Press the left arrow key to move the check mark next to the word "Yes"
- Press the ENTER key.
- Exit the Administration Mode by pressing any of the four mode keys (Printer, FAX, Scanner, or Copier).

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3.3.03 Service Mode

Note:
The Service Mode **should not be** accessed by end users.

The Service Mode is accessed through the Administration Mode.
To access the Service Mode:

- Verify that the Doc-It 3000/4000 is connected to the Doc-It controller.
- Verify that the Doc-It 3000/4000 is initialized.
- Press and hold the ENTER key for five seconds.
- Release the ENTER key.
- ADMINISTRATION will be displayed on the LCD.
- Open the scanner cover.
- While pressing the START button of the scanner unit, press and release the ENTER key.
- The word Service will be displayed on the LCD.
- To move forward through the adjustments, press the down arrow key.
- To move back through the adjustments, press the up arrow key.
- Check marks indicate the current setting.
- Press the STOP key twice to exit the service menu. This will return you to the administration menu.
- Exit the Administration Mode by pressing any of the four mode keys (Printer, FAX, Scanner, or Copier).

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Chart of Service Mode Adjustments and Service Checks

Mode	Adjustment	View Only	View and Clear	Clear Only	View and Modify	Modify Only
Service	Automatic Document Feeder (ADF) Paper Feed Counter		X			
Service	Drum Counter		X			
Service	Fuser Counter		X			
Service	Toner Counter	X				
Service	Total Printed Page Counter	X				
Service	Total Scanned Document Counter		X			

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Automatic Document Feeder (ADF) Paper Feed Counter

Note:
The ADF Paper Feed Counter is viewed in the Service Mode. It should ***not*** be accessed by end users.

The ADF Paper Feed Counter counts the pages which have been fed by the ADF unit. You may view the counter and/or reset it. The counter should be reset ONLY when the ADF assembly is replaced with a different ADF assembly.

Refer to Section 3.2 when installing the ADF assembly ( ).

To access the ADF Paper Feed Counter:

· Verify that the Doc-It 3000/4000 is connected to the Doc-It controller.
· Verify that the Doc-It 3000/4000 is initialized.
· Press and hold the ENTER key for five seconds.
· Release the ENTER key.
· ADMINISTRATION will be displayed on the LCD.
· Open the scanner cover.
· While pressing the START button of the scanner unit, press and release the ENTER key.
· The word Service will be displayed on the LCD.
· Move through the adjustments by pressing the down or up arrow keys until the LCD displays

ADF ctr (VALUE) Reset?
No Yes

· Check marks indicate the current setting.
· If replacing the ADF assembly, press the right arrow key until the check mark appears next to the word Yes.
· Press the ENTER key.
· Press the STOP key twice to exit the service menu. This will return you to the administration menu.
· Exit the Administration Mode by pressing any of the four mode keys (Printer, FAX, Scanner, or Copier).

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Drum Counter

The drum counter is **NOT** an actual count of the pages printed by an image drum. The count is a combination of the main motor revolution time and the number of printed sheets. Thus, the **type** of printing being performed becomes a factor in determining drum life. If the printer performs many single page print jobs, the drum ages more quickly than if the printer performs many multiple page print jobs.

The image drum has an estimated lifespan of 14,500 to 15,000 pages at 100 pages per job. The lifespan is 11,500 to 12,000 pages at three pages per job. **These figures will vary!**
The drum counter should be reset when a new image drum is installed.

Refer to Sections 3.2 Disassembly and 3.4 Cleaning when installing the image drum ().

The drum counter may be accessed from both the Administration Mode and the Service Mode. The drum counter in the Administration Mode allows the end user to reset the drum counter when replacing an image drum.

The drum counter in the Service Mode allows the service technician to view the drum count and/or reset the drum counter.

Note:
The Service Mode should not be made available to the end user.

To view and/or reset the drum counter from the Service Mode:

- Verify that the Doc-It 3000/4000 is connected to the Doc-It controller.
- Verify that the Doc-It 3000/4000 is initialized.
- Press and hold the ENTER key for five seconds.
- Release the ENTER key.
- ADMINISTRATION will be displayed on the LCD.
- Open the scanner cover.
- While pressing the START button of the scanner unit, press and release the ENTER key.
- The word Service will be displayed on the LCD.
- Move through the adjustments by pressing the down or up arrow keys until the LCD displays

  Reset Drum ctr ?
  No Yes
- Check marks indicate the current setting.
- If replacing the Drum, press the right arrow key until the check mark appears next to the word Yes.
- Press the ENTER key.
- Press the STOP key twice to exit the service menu. This will return you to the administration menu.
- Exit the Administration Mode by pressing any of the four mode keys (Printer, FAX, Scanner,

or Copier).

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Fuser Counter

Note:
The Service Mode should not be accessed by end users.

The message Fuser Life will be displayed by the operator panel after 180,000 pages have been fused.

To view and/or reset the fuser counter from the Service Mode:

· Verify that the Doc-It 3000/4000 is connected to the Doc-It controller.
· Verify that the Doc-It 3000/4000 is initialized.
· Press and hold the ENTER key for five seconds.
· Release the ENTER key.
· ADMINISTRATION will be displayed on the LCD.
· Open the scanner cover.
· While pressing the START button of the scanner unit, press and release the ENTER key.
· The word Service will be displayed on the LCD.
· Move through the adjustments by pressing the down or up arrow keys until the LCD displays

Fuser ctr (VALUE) Reset?
No Yes

Check marks indicate the current setting.
· If replacing the fuser assembly, press the right arrow key until the check mark appears next to the word Yes.
· Press the ENTER key.
· Press the STOP key twice to exit the service menu. This will return you to the administration menu.
· Exit the Administration Mode by pressing any of the four mode keys (Printer, FAX, Scanner, or Copier).

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Total Printed Page Counter

Note:
The Service Mode should not be accessed by end users.

The total printed page counter is the accumulated total of the actual number of sheets printed by the DOC-IT. This counter cannot be reset.

To view the total printed page counter from the Service Mode:

· Verify that the Doc-It 3000/4000 is connected to the Doc-It controller.
· Verify that the Doc-It 3000/4000 is initialized.
· Press and hold the ENTER key for five seconds.
· Release the ENTER key.
· ADMINISTRATION will be displayed on the LCD.
· Open the scanner cover.
· While pressing the START button of the scanner unit, press and release the ENTER key.
· The word Service will be displayed on the LCD.
· Move through the adjustments by pressing the down or up arrow keys until the LCD displays

Page ctr (VALUE)

· Press the STOP key twice to exit the service menu. This will return you to the administration menu.
· Exit the Administration Mode by pressing any of the four mode keys (Printer, FAX, Scanner, or Copier).

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Scan Counter

Note:
The Service Mode should not be accessed by end users.

To view and/or reset the scan counter from the Service Mode:

- Verify that the Doc-It 3000/4000 is connected to the Doc-It controller.
- Verify that the Doc-It 3000/4000 is initialized.
- Press and hold the ENTER key for five seconds.
- Release the ENTER key.
- ADMINISTRATION will be displayed on the LCD.
- Open the scanner cover.
- While pressing the START button of the scanner unit, press and release the ENTER key.
- The word Service will be displayed on the LCD.
- Move through the adjustments by pressing the down or up arrow keys until the LCD displays

Scan ctr (VALUE) Reset?
No Yes

- Check marks indicate the current setting.
- If replacing the scanner assembly, press the right arrow key until the check mark appears next to the word Yes.
- Press the ENTER key.
- Press the STOP key twice to exit the service menu. This will return you to the administration menu.
- Exit the Administration Mode by pressing any of the four mode keys (Printer, FAX, Scanner, or Copier).

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Toner Counter

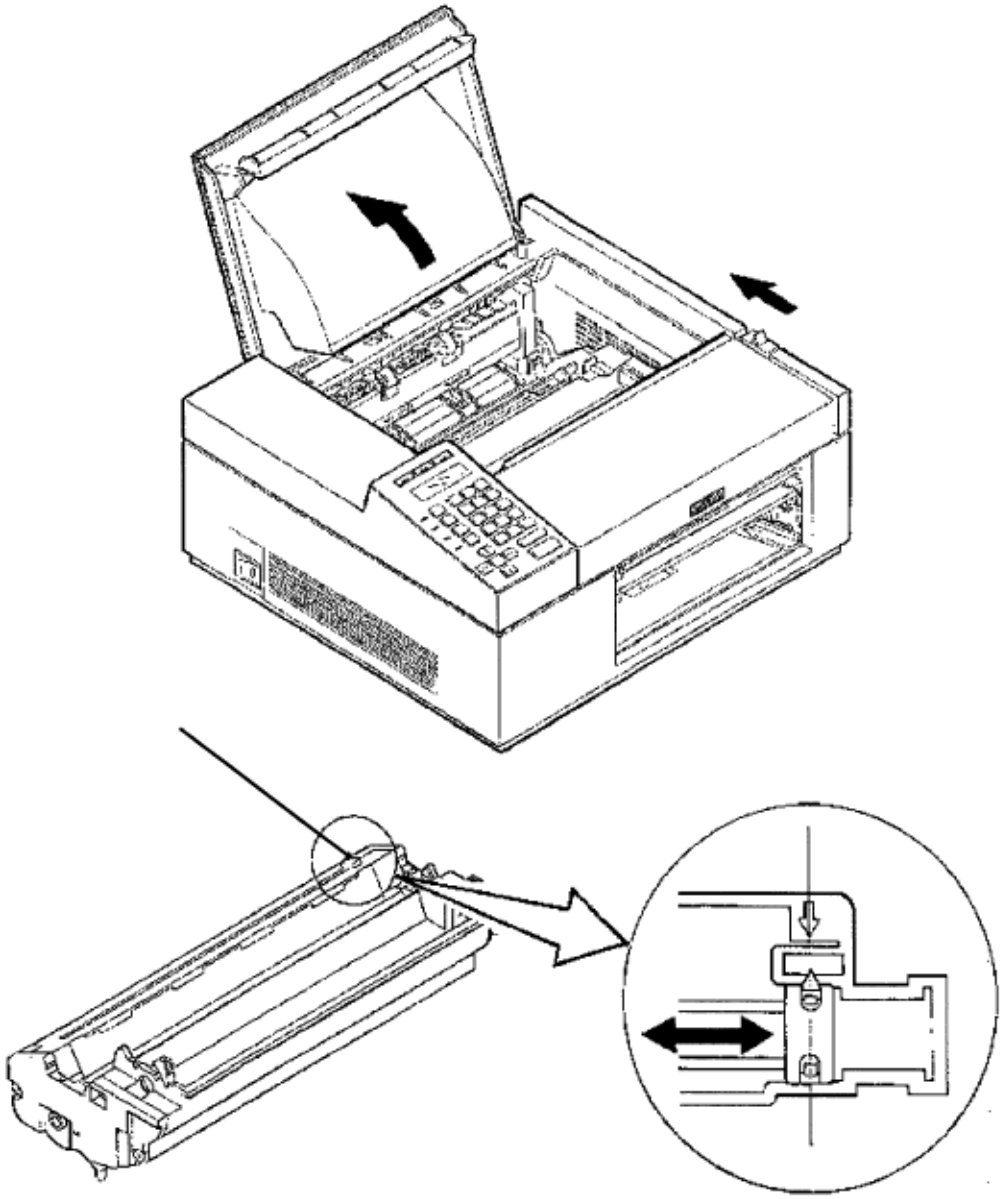
Note:
The Service Mode should not be accessed by end users.

The toner page counter is the accumulated total of the actual number of sheets printed by the DOC-IT. This counter cannot be reset.
To view the toner counter from the Service Mode:

· Verify that the Doc-It 3000/4000 is connected to the Doc-It controller.
· Verify that the Doc-It 3000/4000 is initialized.
· Press and hold the ENTER key for five seconds.
· Release the ENTER key.
· ADMINISTRATION will be displayed on the LCD.
· Open the scanner cover.
· While pressing the START button of the scanner unit, press and release the ENTER key.
· The word Service will be displayed on the LCD.
· Move through the adjustments by pressing the down or up arrow keys until the LCD displays

Toner ctr (VALUE)

· Press the STOP key twice to exit the service menu. This will return you to the administration menu.
· Exit the Administration Mode by pressing any of the four mode keys (Printer, FAX, Scanner, or Copier).



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3.4 Cleaning

The following sections describe the cleaning process for many of the DOC-IT components.

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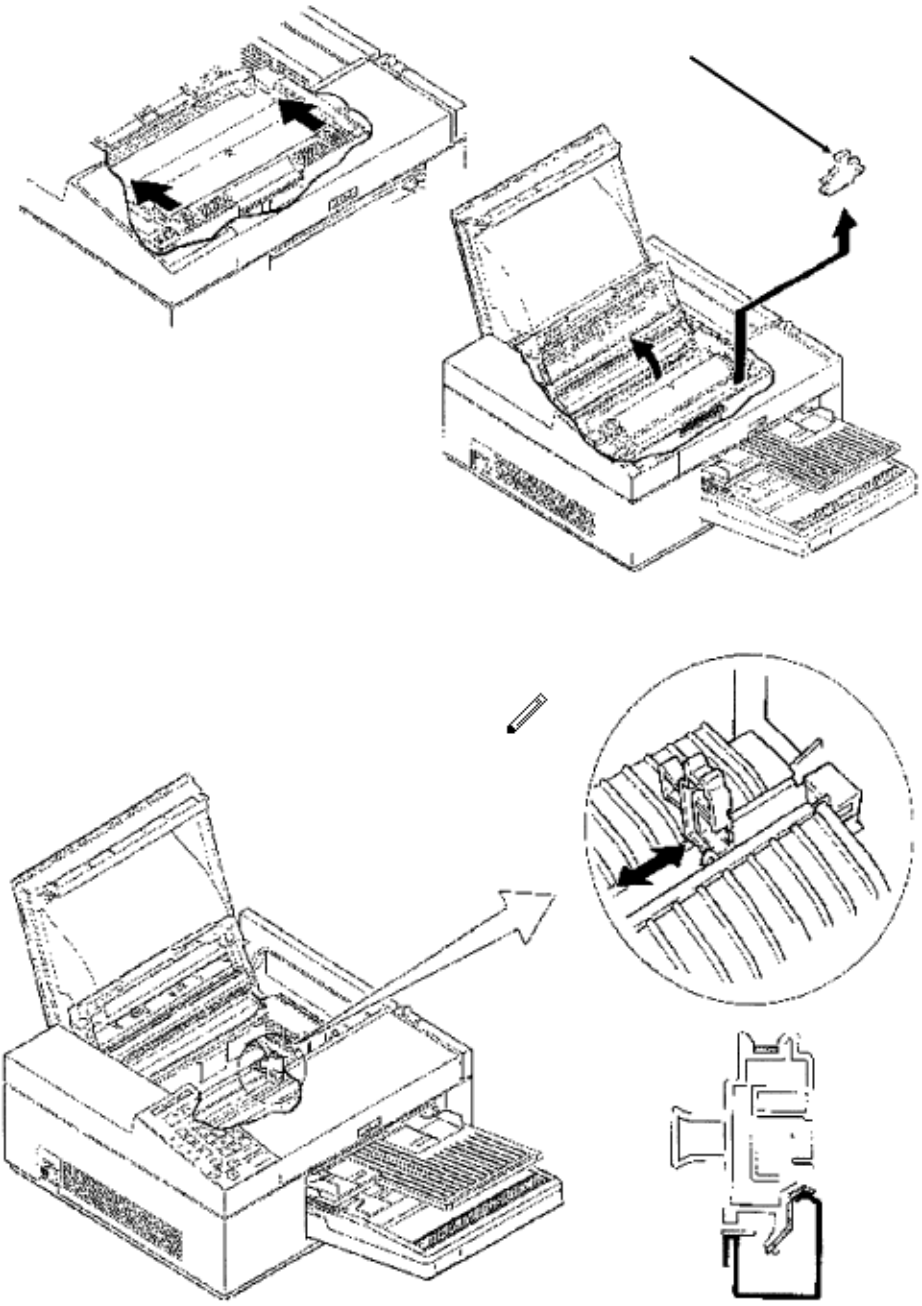
3.4.02 Static Charger

Clean the static charger when vertical black lines, vertical black stripes, or toner blotching are present on printer output.

· Power OFF the printer.
· Press the OPEN switch raise the stacker cover.
· Move the wire cleaner (1) of the image drum cartridge all the way to the left and then back to the right.

Note:

After the cleaning, be sure to slide the wire cleaner to its original position. If you do not, a vertical black stripe will appear on printer output.



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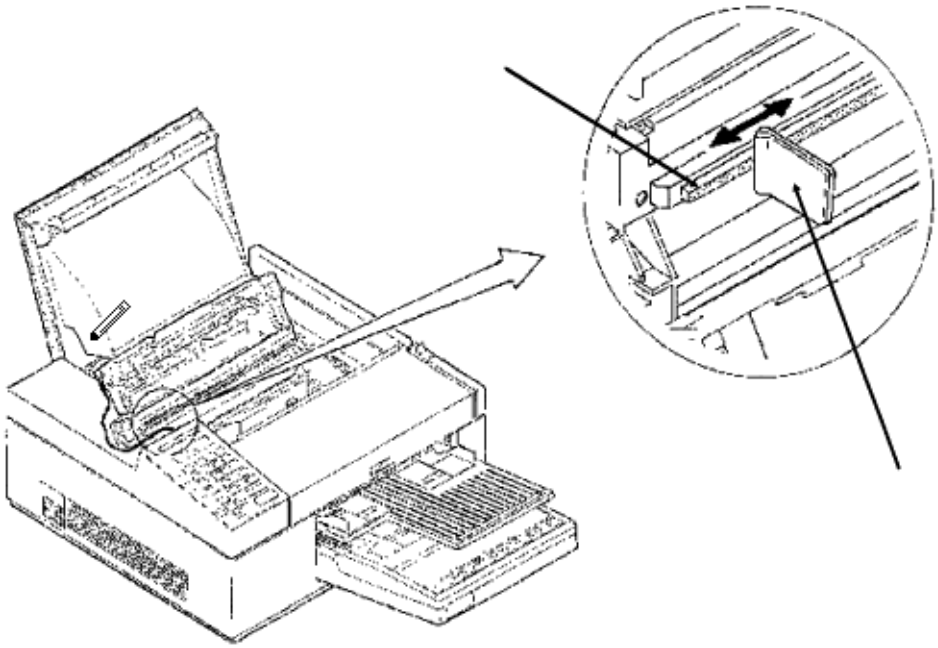
3.4.03 Transfer Charger

Clean the transfer charger when vertical white lines or stripes (printed lightly) are present on printer output.

- Turn OFF the power supply switch.
- Press the OPEN switch and raise the stacker cover.
- Push the lock lever backward to lift the LED holder.
- Take out the wire cleaner (1).
- Position the wire cleaner in the transfer charger assembly as shown.
- Slide the wire cleaner left and right several times across the wire. This cleans the transfer wire. Do not press strongly when wiping or you will break the wire.
- Return the wire cleaner to its storage clip.



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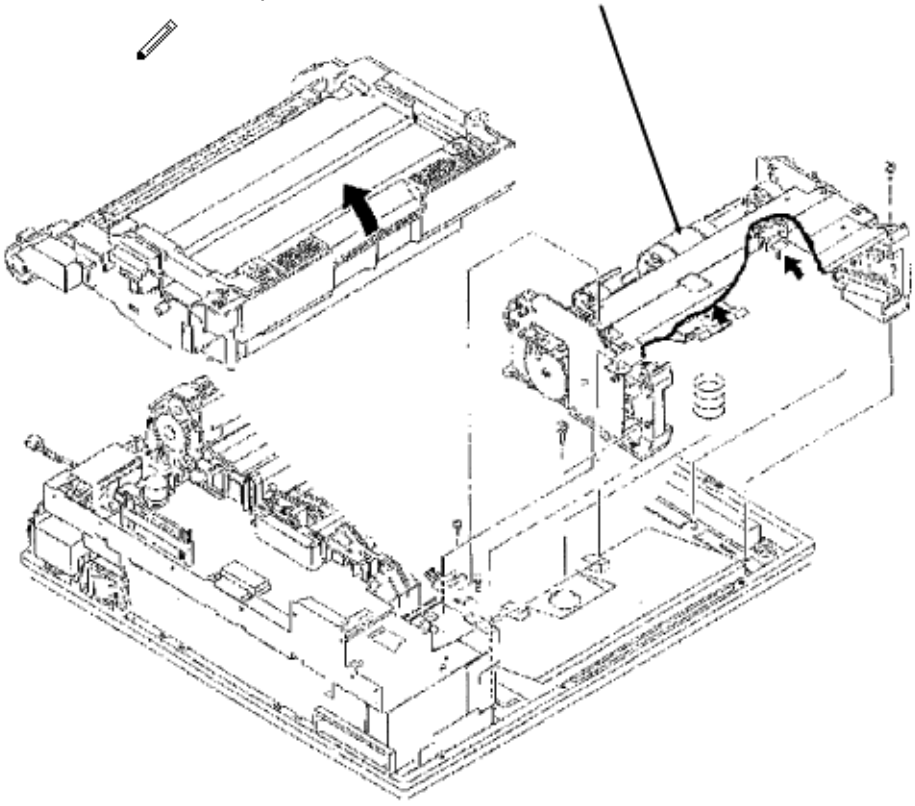
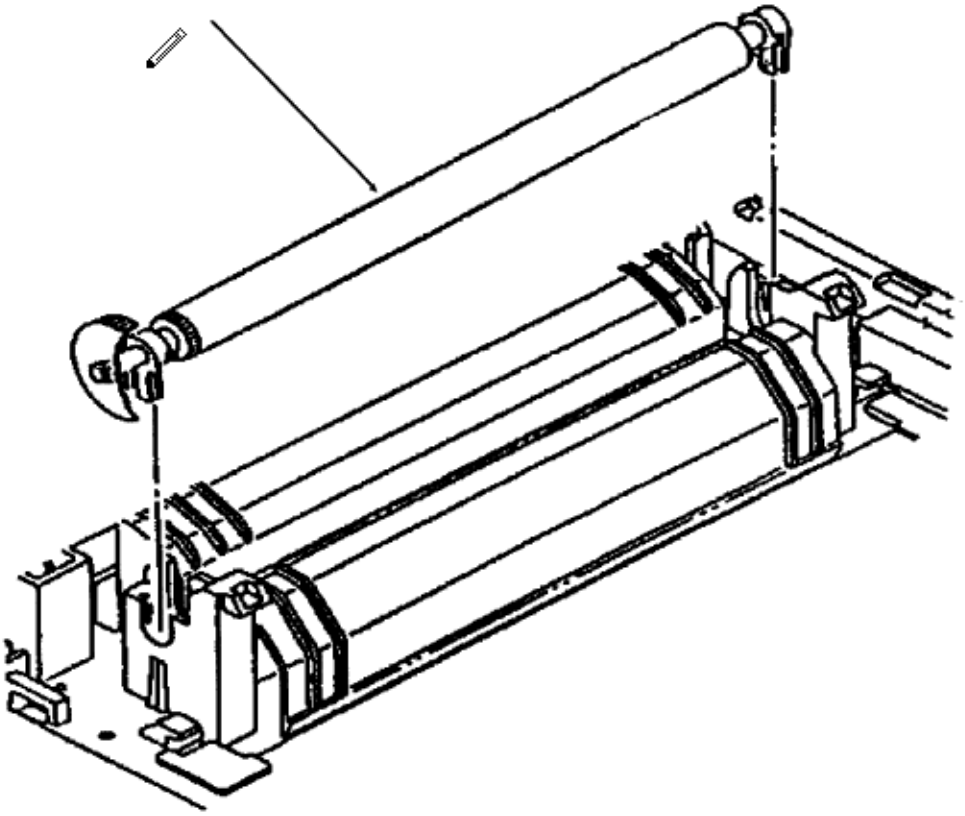
3.4.04 LED Lens Array

Clean the LED lens array when vertical white lines or stripes (voids and/or light printing) are present on printer output.

· Use the LED lens cleaner provided in the image drum kit.
· Place the LED head cleaner pad (1) against the LED lens array (2).
· Slide the cleaner pad across the lens array several times to clean the head. Use a clean portion of the pad on each pass.
· Discard the used pad.





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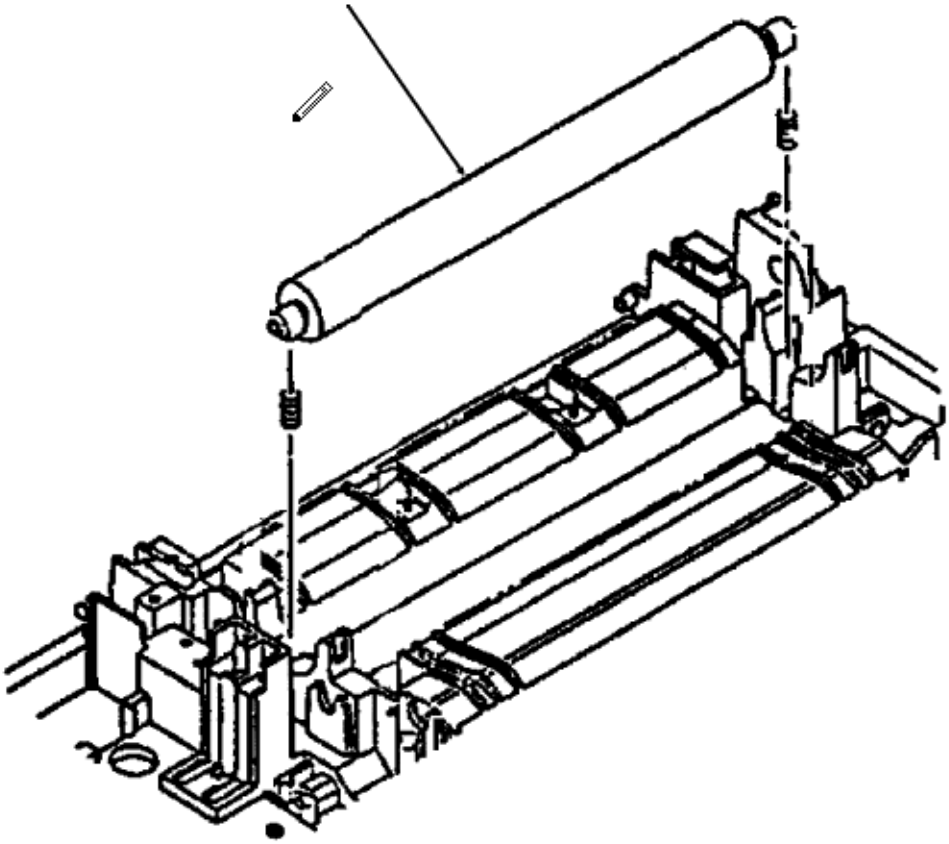
3.4.05 Hopping Roller

· Clean with ethyl alcohol.

Note:

If you remove the paper tray, you can access the hopping roller for cleaning.
Remember to clean the hopping roller on the second paper supply, if installed.



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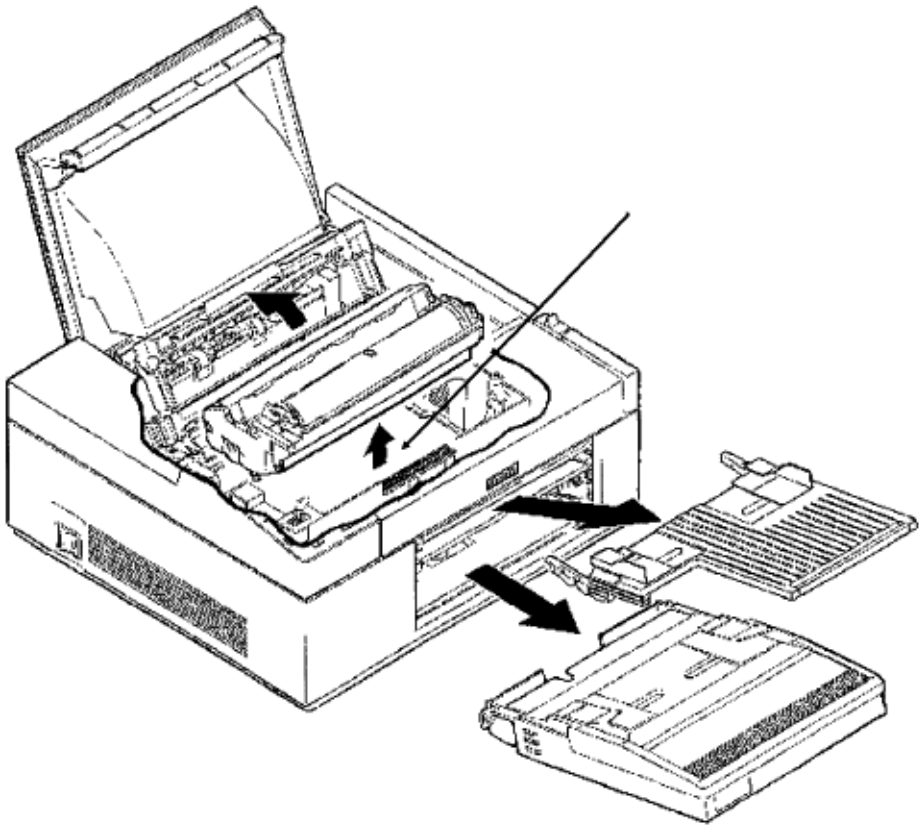
3.4.06 Resist Roller

· Clean with ethyl alcohol.



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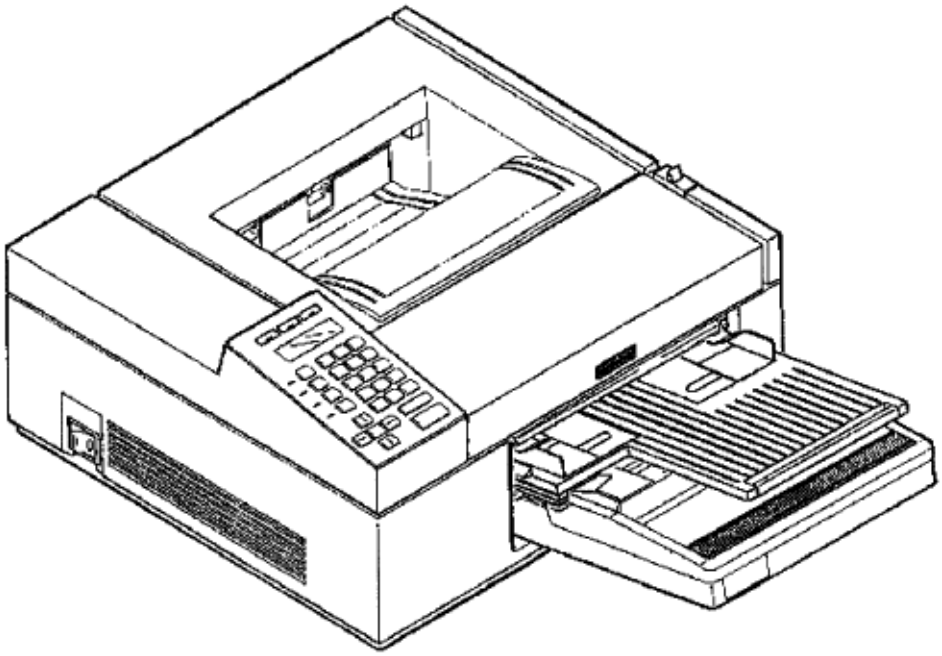
3.4.07 Back-up Roller

· Clean with ethyl alcohol.



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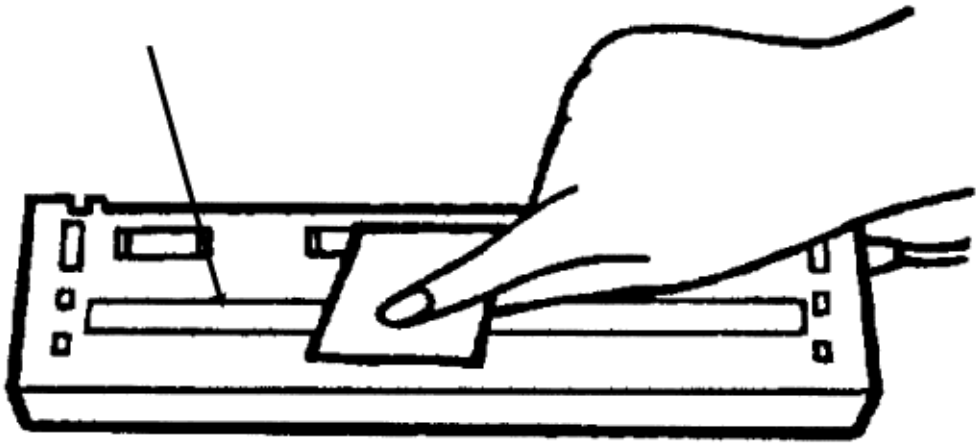
3.4.08 Printer Unit

· Clean the inside of the unit with a vacuum cleaner designed to handle toner. If you use a vacuum cleaner that does not have a toner filter, you may severely damage the vacuum cleaner.



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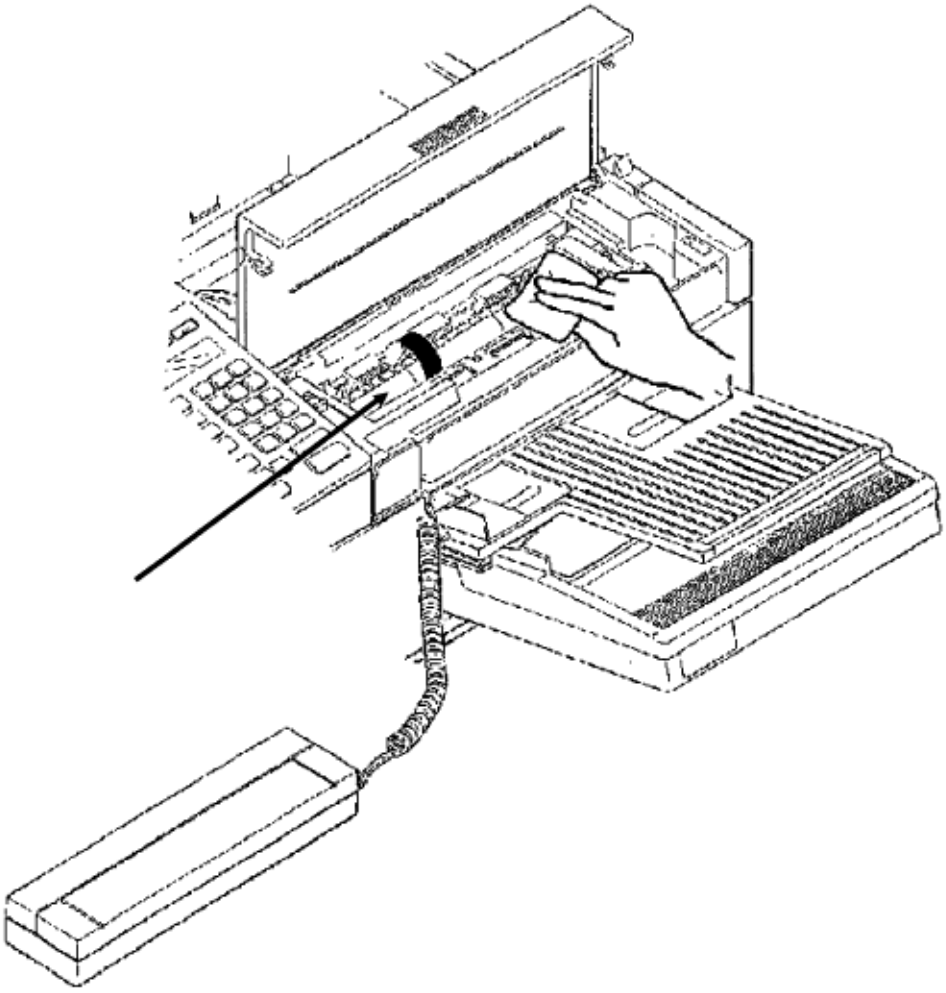
3.4.09 Covers

· Clean as needed.
· Use a soft, clean cloth and a general purpose cleaner.



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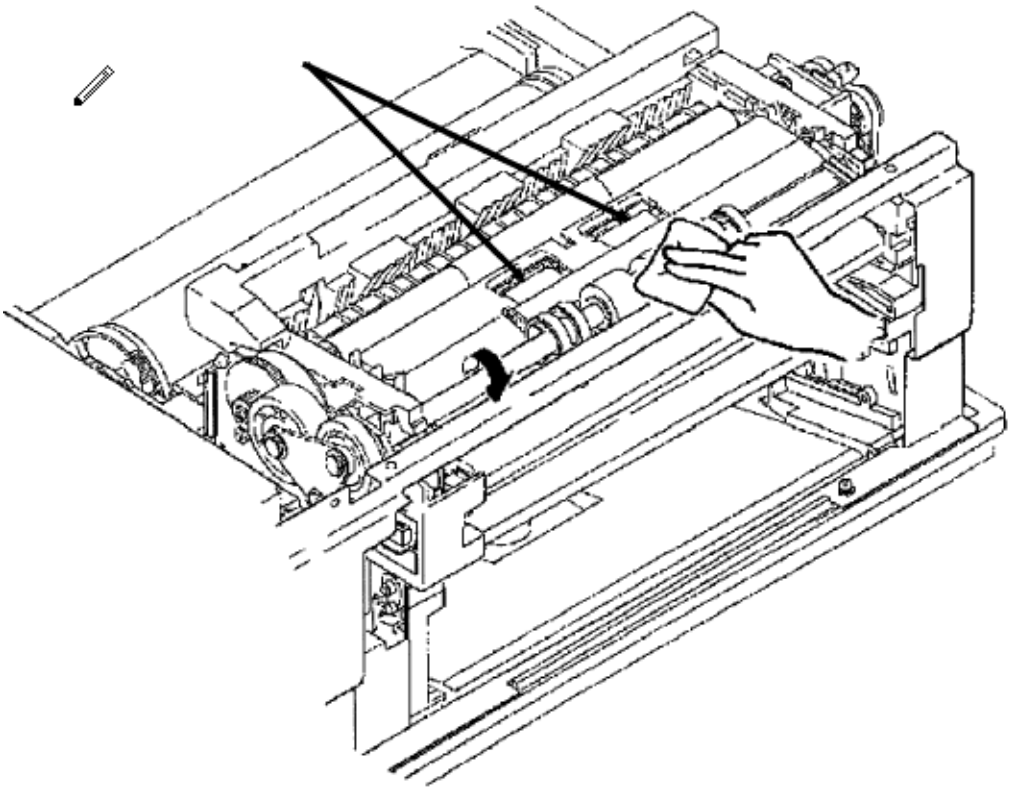
3.4.10 Scanner Glass

· Use a clean, lint-free cloth and a general purpose cleaner to clean the scanner glass.



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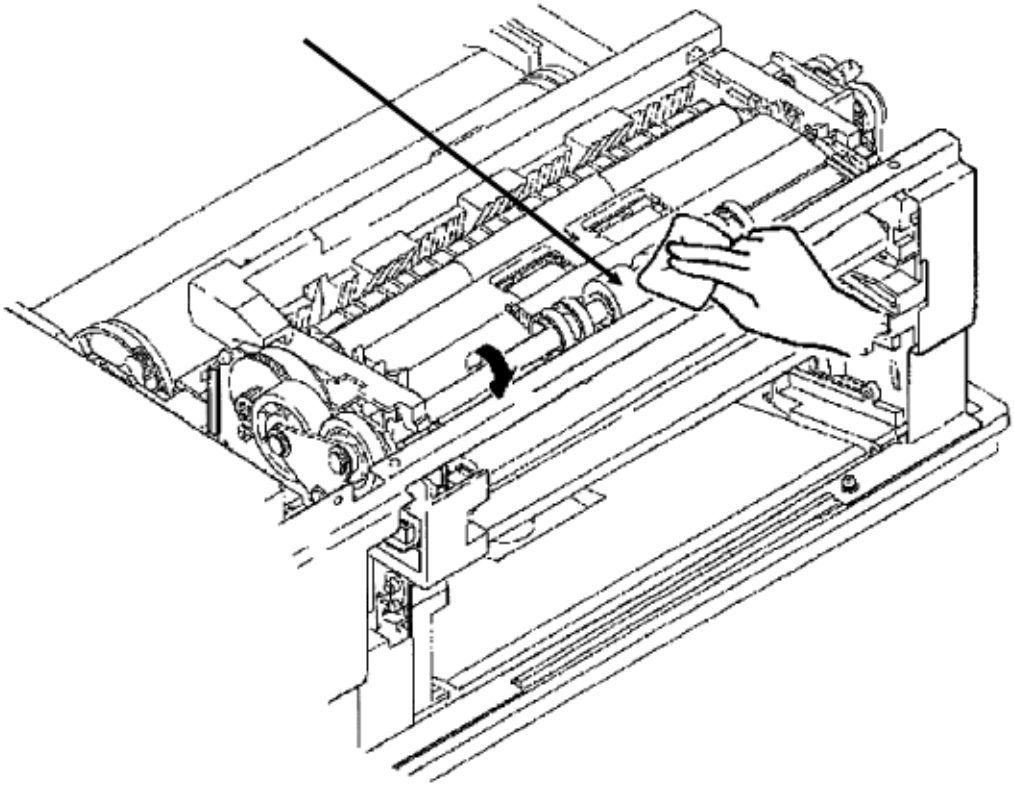
3.4.11 ADF White Roller

· Clean with ethyl alcohol.



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3.4.12 ADF Resist Rollers

· Clean with ethyl alcohol.

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3.4.13 ADF Hopping Roller

· Clean with ethyl alcohol.

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3.5 LUBRICATION

3.5.01 General Information

Lubrication should be performed once a year or as needed.

Place a small amount of silicon oil on the gears of the main motor.
Do **NOT** allow lubricant to contact the surface of any rollers or paper guides.

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4.1 GENERAL INFORMATION

4.1.01 Using This Section

This training course was designed for use in isolating DOC-IT 3000/4000 problems to the assembly level. No attempt has been made to address application problems or to identify faulty components on the printed circuit boards.

When troubleshooting a defective Doc-It, proceed through the "START HERE" Flowchart (Section 4.2.02). This flowchart will assist you in categorizing the failure. You will be directed to the appropriate section of the Service Handbook.

The troubleshooting method you will use is the Repair Analysis Procedure (RAP). When using this method of failure analysis, the RAP will ask you questions. The answers to these questions will determine the next course of action to be taken.

If, when applying these procedures to actual failures, you encounter a situation that is not addressed by the RAPs or is not resolved by using these RAPs, please complete the form in Appendix C and return it to the Okidata Training Department at the following address:

Technical Training Group
Okidata
532 Fellowship Road
Mt. Laurel, NJ 08054-3499

Your assistance in making this document an invaluable troubleshooting aid is greatly appreciated. Please feel free to send all comments and suggestions to the address listed above or to the Technical Training Group, via OKIDATAs Electronic Bulletin Board Service, OKILINK II.

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4.1.02 OKILINK II

OKILINK II, Okidatas Electronic Bulletin Board Service, is an additional Troubleshooting Tool available to Okidata Authorized Service Technicians. You can download files, such as Technical Information Bulletins, Recommended Spare Parts Lists, and Printer Drivers. You can also receive specifications on any of Okidatas products.

On OKILINK II, you can send messages to our Dealer Service/Support Engineers, Training Department or to other Service Technicians. All messages left on OKILINK receive a response within one working day. If you leave a message, please sign-on again to read the response.

You will not be contacted in any other manner - if you do not sign-on, you cannot receive a response.

This is just a sample of the power that OKILINK II gives you. Call 1-800-283-5474 (this line is attached to our modem) and try OKILINK II today.

You will need:

· Asynchronous Communications Software set to:
- 1200 to 9600 bps
- 8 data bits
- No Parity
- 1 Stop Bit

· Asynchronous Modem (up to 9600 bps)

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4.2 TROUBLESHOOTING PROCEDURES

4.2.01 Using the RAPs

When using the Repair Analysis Procedures, follow these steps:

· Use the RAP INDEX to find the RAP which is associated with your Doc-Its problem.

· Go to the appropriate RAP. Some RAPs are more than one page. To make moving between the pages of a RAP easier, the following conventions have been used:

- Page numbers are listed on the upper right hand corner of each page. For example, **page 1 of 10** in the upper right hand corner of the RAP means you are working on page 1 of a RAP that contains 10 pages. Due to limitations of our flowchart generation software, some pages may be blank. These pages will be marked accordingly.

- Lines that leave or enter a page are marked with letters in boxes. To determine where these lines go to/come from, refer to the boxed numbers in the corner of the RAP. For example, on page 4-4, line B (vertical) goes to page 6 of 10 on the START HERE FLOWCHART.

· If the RAPs do not lead you to the solution of a problem, complete a RAP Problem Report (from Appendix C of this Service Handbook) and return it to the Okidata Technical Training Group.

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"START HERE" Flowchart
START
Power ON the Doc-It.
Identify the Error Type

1. Operator panel LEDs are not lit
Refer to RAP 21.

2. Doc-It does not initialize
Refer to RAP 24.

3. Operator panel error display
Refer to Section 4.6 of this Service Handbook.

4. Facsimile operation error
What type of facsimile failure occurred?
Transmit Refer to RAP 22.
Receive Refer to RAP 23.

5. Second paper tray cannot be selected
Refer to RAP 20.

6. Poor quality output from Doc-It
Refer to the following pages.
Perform the Print Test. Refer to Section 4.8 of this Service Handbook.

Does the print test pass?

NO Identify the image problem.

Light Image Refer to RAP 07.
Dark Background Refer to RAP 09.
Blank Output Refer to RAP 11.
Vertical Black Stripes Refer to RAP 13.
Repetitive Spaced Marks Refer to RAP 15.
Missing Print Refer to RAP 16.
White Vertical Stripes Refer to RAP 18.

YES Copy a document using the Doc-It.
Has the problem been resolved?
YES Is the poor quality image a received fax image?
YES Check the scanning capability of the remote facsimile.
NO Contact Technical Support.
NO Identify the image problem.

Light Image

Refer to RAP 08.

Dark Background
Refer to RAP 10.

Blank Output
Refer to RAP 12.

Vertical Black Stripes
Refer to RAP 14.

White Vertical Stripes
Refer to RAP 19.

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4.2.03 RAP Index

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24	Doc-It Does Not Initialize	4-92
25	Black Output	

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RAP#1 - Paper Feed Error

RAP 01: Paper Feed Jam Alarm
START
JAM ALARM is displayed on the operation panel.
Does a jam alarm occur as soon as the power is turned on?
YES Go to A.
NO Go to B.
A
Locate the jam and clear the paper path.
Is the paper at the inlet sensor?
YES Remove the paper from the inlet sensor.
Has the problem been resolved?
YES End of procedure.
NO Replace the resist motor.
NO Is the jam alarm cleared by covering the inlet sensor on the engine control board?
YES Check that the inlet sensor lever moves freely.
Has the problem been resolved?
YES End of procedure.
NO Replace the resist motor.
Go to B.
NO Replace the engine control board.
Has the problem been resolved?
YES End of procedure.
NO Replace the resist motor.
Go to B.

B
Does a JAM ALARM occur when paper is fed?
NO Contact Technical Support.
YES Is the paper fed under the inlet sensor lever?
YES Is the sensor signal present at Pin 75, MSM75V039 of the engine control board?
YES Are the planetary gears switching?
NO Replace the paper supply unit.
Has the problem been resolved?
YES End of Procedure
NO Contact Technical Support
YES Has the problem been resolved?
YES End of procedure.
NO Contact Technical Support.
NO Replace the engine control board.
Has the problem been resolved?
YES End of procedure.
NO Contact Technical Support.
NO Replace the paper supply unit.
Has the problem been resolved?

YES End of procedure.
NO Contact Technical Support.

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RAP#2 - Paper Jam Error

RAP 02: Paper Delivery Jam
START.
The message No. E4 CPU ERROR is displayed on the operation panel, in the maintenance mode.
Does a paper jam alarm occur as soon as the power is turned on?
YES Locate the jam and clear the paper path.
Go to A.
NO Perform the printer unit test.
Go to A.
A
Is the paper at the outlet sensor?
YES Remove the paper and perform the printer unit test again.
Has the problem been resolved?
YES End of procedure.
NO Go to B.
NO Check the outlet sensor signal.
Go to B.
B
Does the outlet sensor signal on the engine control board toggle MSM75V039 Pin 81?
YES Check the outlet sensor lever for normal operation (the lever should move freely).
Go to C.
NO Replace the engine control board.
Go to C.

C
Has the problem been resolved?
YES End of procedure.
NO Is the resist roller rotating?
YES Clear the paper path of any obstructions.
NO Verify the main motor is making proper contact with the engine control board.
Has the problem been resolved?
YES End of procedure.
NO Replace the main motor.
Then, check the following items in the listed order:
1. Planetary gears
2. Hopping roller assembly
3. Paper tray
4. Paper path
Has the problem been resolved?
YES End of procedure.
NO Contact Technical Support.

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RAP#3 - Paper Size Error

RAP 03: Paper Size Error
START.
The message PAPER SIZE ERROR is displayed on the operation panel.
Is paper present in the paper tray?
YES Check the paper size.
Go to A.
NO Fill the paper tray.
Has the problem been resolved?
YES End of procedure.
NO Go to A.
A
Is the paper the correct size?
YES Check to see that the paper tray is installed correctly. Then, go to B.
NO Use paper of specified length. Then, go to B.
B
Is the paper tray installed correctly?
YES Check the paper path. Then, go to C.
NO Install the paper tray correctly. Then, go to C.
C
Has the problem resolved?
YES End of procedure.
NO Replace the engine connection board.
Has the problem been resolved?
YES End of Procedure.
NO Replace the engine control board.
Has the problem been resolved?
NO Contact Technical Support.
YES End of Procedure.

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RAP#4 - Fuser Unit Error

START.
The message NO. E2 CPU ERROR is displayed on the operation panel, in the maintenance mode.
Power OFF the unit. Then, power ON the unit.
Does a fuser unit alarm occur immediately?
YES Measure the resistance between pins 1 and 2 of J2 on the engine control board (resistance should be approximately 100k ohms).
Is the resistance approximately 100k ohms?
YES Replace the engine control board.
Has the problem been resolved?
YES End of procedure.
NO Contact Technical Support.
NO Replace the fusing unit.
Has the problem been resolved?
YES End of procedure.
NO Contact Technical Support.
NO Power OFF the unit, then power ON the unit.
Is the fuser lamp lit?
YES Ensure proper contact between the fusers AC contact and the power supply. Then, go to A.
NO Replace the fuser unit. Then, go to A.

A
Has the problem been resolved?
YES End of procedure.
NO Is the heat signal turned on? Check the voltage at J6 Pin 37. It should be approximately 1.9 vdc.
YES Replace the power supply.
NO Replace the engine control board.
Has the problem been resolved?
YES End of procedure.
NO Contact Technical Support.

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RAP#5 - Engine Error

RAP 05: Engine Error
START.
The message ENGINE ERROR is displayed on the operation panel.
Replace the engine control board.
Has the problem been resolved?
YES End of procedure.
NO Replace the DC fan assembly.
Has the problem been resolved?
YES End of procedure.
NO Contact Technical Support.

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RAP#6 - ADF Jam Error

RAP 06: Automatic Document Feeder (ADF) Jam Alarm
START.
The message (NO.D5 CPU ERROR) is displayed on the operation panel, in the maintenance mode.
Make sure the paper path is clear.
Check the input of the sensor signals to the 8255 pins 38, 40, 41, 42, 43 of the main control board.
Check if the signals toggle while feeding paper.
Are all sensor signals being received?
YES Check that the sensor lever moves freely. Then, go to A.
NO Replace the ADF unit.
After replacing the ADF, perform the ADF slip adjustment. Refer to Section 3.3 of this Service Handbook.
Then, go to A.
A
Has the problem been resolved?
YES End of procedure.
NO Replace the main control board.
Has the problem been resolved?
YES End of procedure.
NO Contact Technical Support.

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RAP#7 - Image Light or Blurred

RAP 07: Images are Light or Blurred as Whole
START.
The following procedure is for troubleshooting printed images prepared on PC.
Is the message Toner Low or (NO. EA CPU ERROR) displayed on the operation panel?
YES Supply toner. Then, go to A.
NO Make sure you are using paper of the correct specified grade. Then, go to A.

A
Perform the following operations in the listed order. Then, go to B.
1. Verify that lens surface of the LED head is clean.
2. Make sure that the LED head is installed correctly.
3. Visually inspect the transfer wire. If it is broken, replace it.
4. Clean the transfer charge wire if it is dirty.

B
Perform the printer unit test. Refer to Section 4.8 of this Service Handbook.
Raise the stacker to stop print cycle just as the bottom of the paper goes under the hopping roller.
Lift the upper unit,remove the paper and look at the image drum.
Is there a dark toner image on the drum?
YES Replace the transfer charger assembly or high voltage power supply
NO Clean the LED head.
Has the problem been resolved?
YES End of procedure.
NO Contact Technical Support.

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RAP#8 - Scanned Images Light or Blurred

RAP 08: Scanned Images are Light or Blurred as a Whole
NOTE:
Poor quality output might be due to a lack of toner. Please check your toner level before continuing through this RAP.
START
The output scanned image is blurred or light as a whole.
Check the quality of the original document.
Does the quality of the original document match the quality of the output image?
YES Original is not suitable for scanning. Obtain better quality original.
End of procedure.
NO Check the surface of the hand scanner.
Is the glass surface of the hand scanner dirty?
YES Clean the glass.
NO Visually inspect the quality of the scanned image as displayed on the PC monitor.
Is the displayed image light or blurred as a whole?
YES Replace the hand scanner.
After replacing the hand scanner, perform the scanner shading adjustment. Refer to Section 3.3 of this Service Handbook.
End of procedure.
NO Replace the main control board.
Has the problem been resolved?
YES End of procedure.
NO The following assemblies might be defective. Replace in the order listed.
1. Hand Scanner Assembly
2. Image Drum Cartridge
3. Power Supply Unit
Has the problem been resolved? YES End of procedure.
NO Contact Technical Support.

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RAP#9 - Dark Background Density

START.
The following procedure is for troubleshooting printed images prepared on the PC.
Clean the transfer wire.
Is the problem resolved?
YES End of procedure.
NO Has the image drum been exposed to external light?
YES Test the unit after 30 minutes. This will allow the drum surface to recover its photoconductive properties.
Is the problem resolved?
YES End of procedure.
NO Go to A.
NO Replace the fuser cleaner pad.
Is the problem resolved?
YES End of procedure.
NO Go to A.
A
Replace these possible defective assemblies in the listed order. Test the operation of the unit between each item.
1. Image drum cartridge
2. High voltage power supply
3. Engine control board
Is the problem resolved?
YES End of procedure.
NO Contact Technical Support.

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RAP#10 - Scanned Image (Dark Backgrond Density)

RAP 10: Scanned Images with Dark Background Density
START.
The reproduced scanned image is in dark background density.
Check the quality of the original document.
Does the quality of the original document match the quality of the output image?
YES Original is not suitable for scanning. Obtain better quality original.
End of procedure.
NO Check the surface of the hand scanner.
Is the glass surface of the hand scanner dirty?
YES Clean the glass.
End of procedure.
NO Visually inspect the quality of the scanned image as displayed on the PC monitor.
Is the displayed image also in dark background density?
NO Contact Technical Support.
YES Perform scanner shading adjustment. Refer to Section 3.3 of this Service Handbook.
Has the problem been resolved? YES End of procedure.
NO Replace hand scanner.
Has the problem been resolved?
Continued on the next page.

YES End of procedure.
NO The possible defective assemblies are listed below. Replace in the order listed. 1. Image drum cartridge
2. High voltage power supply
3. Engine control board
4. Main control board Has the problem been resolved? YES End of procedure.
NO Contact Technical Support.

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RAP#11 - Blank Paper is Output

RAP 11: Blank Paper is Output
START.
Images that are prepared on the PC output as blank paper.
Inspect the transfer wire.
Is the transfer wire broken?
YES Replace the transfer wire.
NO Replace the high voltage power supply.
Is the problem resolved?
YES End of procedure.
NO Clean the ground contact of the image drum cartridge.
Perform the printer unit test. Refer to Section 4.8 of this Service Handbook.
Are the horizontal ruled lines printed?
YES Replace the main control board.
NO Insure that the LED head is connected properly.
Has the problem been resolved?
YES End of procedure.
NO Perform the following in the order listed:
1. Make sure the image drum cartridge is connected properly)
2. Replace the engine control board.
3. Replace the LED head
After replacing the LED head, set the head drive time.

Has the problem been resolved?
YES End of procedure.
NO Verify that the engine control board is connected properly.
Has the problem been resolved?
YES End of procedure.
NO Replace the Doc-It control.
Has the problem been resolved? YES End of procedure.
NO Contact Technical Support.

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RAP#12 - Scanned Image (Blank paper is Output)

START.
Images that are scanned screen output is blank pages.
Is the hand scanner connected properly?
YES Make sure you selected hand scanner from the menu or operation panel.
NO Connect the hand scanner properly.
Has the problem been resolved?
YES End of procedure.
NO Replace the hand scanner.
After replacing the hand scanner, perform the sensor shading adjustment.
Refer to Section 3.3 of this Service Handbook.
Has the problem been resolved?
YES End of procedure.
NO Replace the main control board.
Has the problem been resolved?
YES End of procedure.
NO Contact Technical Support.

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RAP#13 - Vertical Black Stripes on the Output

START.
Output images has vertical black stripes and belts.
Run the Poweron /d/t (debug/diagnostic mode). If you get an error message, refer to Section 4.6 of this Service Handbook.
Is the charging wire dirty?
YES Clean the charging wire.
NO Replace the image drum cartridge.
After replacing the image drum cartridge, reset the drum counter. Refer to Section 3.3 of this Service Handbook.
Has the problem been resolved?
YES End of procedure.
NO Replace the LED head.
After replacing the LED head, reset the head drive time.
Refer to Section 3.3 of this Service Handbook.
Has the problem been resolved?
YES End of procedure.
NO Replace the engine control board.
Has the problem been resolved?
YES End of procedure.
NO Contact Technical Support.

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RAP#14 -Printed Scanned Images with Vertical Black Stripes

START.
The output image has vertical black stripes or belts.
Is the charging wire dirty?
YES Clean it.
NO Check that the charger assembly is seated correctly.
Has the problem been resolved?
YES End of procedure.
NO Replace the hand scanner.
After replacing the hand scanner perform the sensor shading adjustment.
Run the Poweron /d/t (debug/diagnostic mode). If you get an error message, refer to Section 4.6 of this Service Handbook.
Has the problem been resolved?
YES End of procedure.
NO The following boards should be replaced in the order listed:
1. Main control board
2. Engine control board
3. Doc-It control board
Has the problem been resolved?
YES End of procedure.
NO Contact Technical Support.

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RAP#15 - Repetitive Spaced Marks on printed Output

START.
Measure the vertical distance between the marks.
Locate the measurement in the table shown below.
Take the recommended action for your measurement.

Inches	Millimeters	Cause	Action
2.0	50.8	Dirty or defective registration rollers.	Clean / replace the registration rollers.
2.27	57.6	Defective development roller.	Replace the image drum cartridge.
2.47	62.8	Defective fuser pad. Defective fusing unit.	Replace the fuser pad.Replace the fusing unit.
2.72	69.1	Defective back-up roller.	Replace the back-up roller.
3.71	94.2	Defective image drum.	Replace the image drum cartridge.
4.75	120.65	Dirty or defective hopping roller.	Clean / replace the hopping roller.

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RAP#16 - Print Missing from Output

START.
Set the darkness level in administration menu. Refer to Section 3.3 of this Service Handbook.
Is there sufficient toner in the unit?
NO Add toner.
YES Is the paper of the specified grade?
NO Use paper of the specified grade. Then, go to A.
YES Verify that the LED head is connected properly. Then, go to A.
A
Is the paper folded, bent, or scratched?
YES Replace the paper.
Has the problem been resolved?
YES End of procedure.
NO Go to the next step listed below.
NO Clean the corona wire in the transfer charger.
Has the problem been resolved?
YES End of procedure.
NO Perform the printer unit test. Refer to Section 4.8 of this Service Handbook.
Raise the stacker cover to stop the print cycle just as the bottom of the paper goes under the hopping roller.
Lift the upper unit, remove the paper and look at the image drum.
Is there a complete toner image on the drum?
Continued on the next page.

YES Listed below are the possible defective assemblies.
Replace in the order listed, checking the operation of the unit between each assembly. 1. High voltage power supply
2. Engine control board
3. Uneven temperature on the fuser roller can be caused by a dirty roller.
4. Fuser cleaner pad
5. Transfer charger assembly
6. Fuser assembly Has the problem been resolved? YES End of procedure.
NO Contact Technical Support.
NO Clean the LED head.
Has the problem been resolved? YES End of procedure.
NO Contact Technical Support.

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RAP#17 - Poor Fusing

START.
The toner is not being fused to the paper properly.
Does the pressure spring on the back-up roller compress and decompress normally?
YES Replace the fusing unit.
Has the problem been resolved?
YES Reset the fusing unit control. Refer Section 3.3 of this Service Handbook.
End of procedure.
NO Replace the back-up roller.
Has the problem been resolved?
YES End of procedure.
NO Replace the engine control board.
Has the problem been resolved?
YES End of procedure.
NO Contact Technical Support.
NO Replace the pressure spring.
Has the problem been resolved?
YES End of procedure.
NO Replace the back-up roller.
Has the problem been resolved?
YES End of procedure.
NO Replace the engine control board.
Has the problem been resolved?
YES End of procedure.
NO Contact Technical Support.

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RAP#18 - White Vertical Stripes on printed output

RAP 18: White Vertical Stripes
START.
The output image(s) have vertical white streaks.
Is the transfer charge wire broken?
YES Replace the transfer charge wire.
Has the problem been resolved?
YES End of procedure.
NO Go to the next step listed below.
NO Is the LED lens array dirty?
YES Clean the LED array.
Has the problem been resolved?
YES End of procedure.
NO Go to A.
NO Replace the LED head.
After replacing, set LED head drive time. Refer Section 3.3 of this Service Handbook.
Has the problem been resolved?
YES End of procedure.
NO Go to A.

A
Replace the image drum cartridge.
Has the problem been resolved?
YES Reset the drum counter. Refer Section 3.3 of this Service Handbook.
End of procedure.
NO Replace the possible defective assemblies in the listed order.
1. Engine control board
2. Fuser assembly
3. High voltage power supply
4. Main control board
Has the problem been resolved?
YES End of procedure.
NO Contact Technical Support.

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RAP#19 - Scanned Image (Display on Screen With) White Vertical Stripes

RAP 19: White Vertical Stripes on Scanned Images
START.
The following troubleshooting is for screen images scanned by the hand scanner.
Are the Doc-It settings correct?
NO Refer to your Users Documentation.
Has the problem been resolved?
YES End of procedure.
NO Go to the next step listed below.
YES Is the glass surface of the scanner dirty?
YES Clean the glass.
Has the problem been resolved?
YES End of procedure.
NO Go to the next step listed below.
NO Are the images displayed on the PC screen OK?
YES Refer to RAP 18 for further troubleshooting.
NO Replace the scanner.
After replacing, perform sensor shading adjustment.
Refer Section 3.3 of this Service Handbook.
Has the problem been resolved?
YES End of procedure.
NO Replace the main control board.
Has the problem been resolved?
YES End of procedure.
NO Replace the Doc-It control. Has the problem been resolved?
YES End of procedure.
NO Contact Technical Support.

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RAP#20 - 2nd Paper Tray Cannot be Selected

RAP 20: Second Paper Tray Error
START.
Second paper tray cannot be selected.
Check the + 5 vdc supply lines.
Is the + 5 vdc supply at pin (17) IC1 on the second tray control board present?
YES Check Reset-IN signal.
Go to A.
NO Check that the power connector board is making proper contact.
Disconnect, then reconnect, the second tray connection board.
Go to A.
A
Is the (Reset-In) signal Pin(19) IC1 on the second tray control board high?
YES Check that the second tray is properly connected.
NO Verify that all of the connectors on the engine control board are properly connected.
Has the problem been resolved?
YES End of procedure.
NO Check the control signals for the second paper tray.
NOTE:
The second paper tray is selected by serial output data and is controlled by a serial clock.
Are the OPO-SDP-N and the OP-SCLK-N signals input correctly at Pins (4,5) on IC1 of the second tray control board?
YES Replace the second tray control board.
NO Replace the engine control board.
Has the problem been resolved?
YES End of procedure.
NO Contact Technical Support.

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RAP#21 - No Operation Panel Functions

START.
No operator panel display.
Turn the Doc-It system Off.
Disconnect the main control board from the engine control board.
Wait approximately 20-30 seconds.
Reconnect the main control board to the engine control board.
Has the problem been resolved?
YES End of procedure.
NO Check that the engine control board is not being shorted.
Verify that a spacer is placed between the soldered side of the engine control board and the metal base frame. Insert a spacer if one is needed.
Check that there is no foreign particles inside the case that would cause the operation panel to short out. Remove all foreign particles.
Has the problem been resolved?
YES End of procedure.
NO Replace the operation panel board.
Has the problem been resolved?
YES End of procedure.
NO The items listed below could be defective. 1. Main control board
2. Engine control board Has the problem been resolved? YES End of procedure.
NO Contact Technical Support.

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RAP#22 - Facsimile Transmit Error

RAP 22: Facsimile Transmit Problem
START.
Cannot transmit a document.
Run the Poweron /d/t (debug/diagnostic mode).
If you get an error message, refer to Section 4.6 of this Service Handbook.
Does the DAA test pass?
YES Check your telephone line network.
NO Replace the Doc-It control board.
Has the problem been resolved?
YES End of procedure.
NO Recheck your telephone line at a lower speed, resend fax.
Has the problem been resolved?
YES End of procedure.
NO Make sure your configuration program is functioning properly.
Has the problem been resolved?
YES End of procedure.
NO Change the modem speed setting to lowest possible speed.
Has the problem been resolved?
YES End of procedure.
NO Check that the system default settings in the administration menu have (enable fax transmit) selected.
Has the problem been resolved? YES End of procedure.
NO Contact Technical Support.

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RAP#23 - Facsimile Receive Error

RAP 23: Facsimile Reception Problem
START.
Cannot receive a faxed document.
Run the Poweron /d/t (debug/diagnostic mode). If you get an error message, refer to Section 4.6 of the Service Handbook.
Does the DAA test pass?
YES Check your telephone line network.
NO Replace the Doc-It control board.
Has the problem been resolved?
YES End of procedure.
NO Have the party at the remote sight check their telephone line network at a lower speed, then try to fax a document.
Has the problem been resolved?
YES End of procedure.
NO Make sure your configuration program is functioning properly
Has the problem been resolved?
YES End of procedure.
NO Verify that your phone line is operating correctly.
Has the problem been resolved?
YES End of procedure.
NO Turn your system off. Disconnect the line going to the Doc-It control board. Wait approximately 30 seconds. Then, reconnect the line.
Has the problem been resolved? YES End of procedure.
NO Check your software error codes. Refer to Section 4.6 of the Service Handbook.

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RAP#24 - Doc-It Does Not Initialize

START.
After the initial (set-up) of the Doc-It system, the Doc-It control board does not initialize.
Make sure that the Doc-It control board is connected to a 16 bit expansion slot.
Run the Doc-It.BAT file program or reboot your PC.
Does an error message appear on the PC screen?
YES Refer to Section 4.6 of this Service Handbook.
NO Run the config.exe and perform "R" recheck reboot your PC.
Has the problem been resolved?
YES End of procedure.
NO Verify the Okiselect register values match the Okiport settings.
Has the problem been resolved?
YES End of procedure.
NO Verify that the interrupt is not being used by any other option card or
device in the system (config.exe).
Has the problem been resolved?
YES End of procedure.
NO Run the Poweron /d/t (debug/diagnostic mode)
Does "Doc-It control board initialization in process" appear on the PC screen?
YES Reboot the system to verify that the problem has been corrected.
NO What are the error messages? Refer to Section 4.6 of this Service Handbook..
Has the problem been resolved? YES End of procedure.
NO Remove any TSR programs (Run the DOCIT.BAT)

Has the problem been resolved?
YES End of procedure.
NO Replace the Doc-It control board.
Has the problem been resolved?
YES End of procedure.
NO Contact Technical Support.

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RAP 25: Black Page is Output

START
Examine the charge wire (you can see it through the top of the image drum cartridge).
Is the charge wire broken?
YES Replace the image drum cartridge. Reset the drum counter. Refer to Section 3.3 of this Service Handbook.
NO Replace the high voltage power supply.
Is the problem resolved?
YES End of procedure
NO Replace the LED Head.
Is the problem resolved?
YES End of procedure
NO Replace the engine control board.
Is the problem resolved?
YES End of procedure
NO Replace the image drum cartridge. Reset the drum counter. Refer to Section 3.3 of this Service Handbook.
Is the problem resolved? YES End of procedure
NO Contact Technical Support

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4.3 LCD ERROR MESSAGES

4.3.01 Introducton

If the Doc-It displays an error message, refer to the index in Section 4.3.02. The index will direct you to the appropriate table. The tables list LCD messages, PC messages, failure descriptions, causes, and recommended corrective actions. Some recommended actions may refer you to a specific RAP.

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4.3.02 Index to Tables

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4.3.03 Immediate Error Message Displayed

LCD INDICATION	FAILURE DESCRIPTION	CAUSE	RECOMMENDED ACTION
No.00 MECH.ERR INTERNAL RAM	Internal RAM check error	RAM write\ read check error	Replace the (SPSX) main control board
No.01 MECH.ERR.PG-ROM CHECK	Program ROM Sum check error	External write\read ROM sum check	Replace the (SPSX) main control board
No. 02 MECH.ERR EX-RAM CHECK	External RAM check error	External write\read RAM check error	Replace the (SPSX) main control board
No. 03 MECH. ERR DITHER RAM	DITHER RAM check error	Dither write\read RAM check error	Replace the (SPSX) main control board
No. 04 MECH ERR GAMMA-RAM CHECK	Gamma RAM check error	Gamma write\read RAM check error	Replace the (SPSX) main control board
No. 05 MECH. ERR. SHADING RAM	Shading RAM check error	Shading write\read RAM check error	Replace the (SPSX) main control board
No. 06 MECH ERR KEY LSI ERROR	Key LSI error	Incorrect data from the LSI or data not available in the key LSI	Replace the (SPSX) main control board
No. 07 MECH ERR SLAVE COMMUNICATION	Slave communication error	Response from the slave is incorrect or is not available in the slave communication check	Replace the (SPSX) main control board
No. 08 MECH ERR INT 1 IPT	INT-1 IPT error	IPT Present when no IPT factor exists	Replace the (SPSX) main control board

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4.3.04 Maintenance Mode Error Messages

LCD INDICATION	FAILURE DESCRIPTION	RECOMMENDED ACTION
No. D1 CPU ERROR	SCL Parameter error	Replace the (SPSX) main control board
No. D2 CPU ERROR	SCL Window error	Replace the (SPSX) main control board
No. D3 CPU ERROR	SCL Scale Factor	Replace the Scanner
No. D4 CPU ERROR	SCL Dither ID error	Replace the Scanner
No. D5 CPU ERROR	SCL Tone Map ID error	Replace the Scanner
No. D6 CPU ERROR	Auto Document Feeder error	Clean the ADF Rollers Make sure you are using the correct paper replace the ADF Unit
No. D7 CPU Error	Scan take-off error	Verify that the Scanner is seated firmly Replace the SPSX Replace the ADF Unit

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4.3.05 Doc-It Engine Error Messages

LCD INDICATION	FAILURE DESCRIPTION	RECOMMENDED ACTION
No. E0 CPU ERROR	Engine error	Refer to RAP# 5
No. E1 CPU ERROR	Fan motor error	Replace Fan (SPPY) Engine control board Power supply
No. E2 CPU ERROR	Fuser error	Refer to RAP#4
No. E3 CPU ERROR	Stacker jam error	Refer to RAP#1 then 2
No. E4 CPU ERROR	Paper feed jam error	Refer to RAP#1
No. E5 CPU ERROR	Hopping error	Refer to RAP#1
No. E6 CPU ERROR	Paper size error	Refer to RAP#2
No. E7 CPU ERROR	Fuser life over error	Replace the fuser and reset the counter
No. E8 CPU ERROR	Drum life over error	Replace the image drum and reset the counter
No. E9 CPUERROR	Paper out tray 1 error	Replace the paper LLCC-2 board (SPPY) Engine control board
No. EA CPU ERROR	Toner end error	Replace the toner and reset Counter
No. EB CPU ERROR	Cassette out 1 error	Replace paper cassette LLCC-2 board
No. EC CPU ERROR	Paper out tray 2 error	Replace the paper the (SPPY) Engine control board

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4.3.06 POWERON.EXE - Operational Error Messages

MESSAGE INDICATION	FAILURE DESCRIPTION	CAUSE	RECOMMENDED ACTION
Could not open the DDP.CFG file	The program could not find or open the DDP.CFG file	The Doc-It environment path is incorrect	Close a few of the DOS files that are already open
Could not find the errors file name	The program could not find the specified error file	Incorrect number of characters in file name	Check to make sure that you are using a legal DOS file
Invalid switch value	An invalid switch value was used in the POWERON .EXE program	Incorrect key was entered	Enter the correct character
Invalid number of wait states	An invalid numerical value was used	An invalid number was entered with the \w command	Use only (01) for number of wait states
Doc-It controller board not found	The presence of the Doc-It controller board was not detected by the program	The Doc-It controller board is not connected correctly or the configuration is incorrect	Make sure the Doc-It controller board is installed correctly and check that there is not a conflict with other boards and verify that the configuration is correct
Doc-It poweron test: the 16K I/O address is in use	The page frame specified in DDP.CFG file is used by some other hardware	Conflict between devices	Run the CONFIG .EXE program and choose another address base
Memory Bank : n 1MB SIMMS installed in this bank failed	1 or 2 MB memory module in bank n but the memory bank failed	Defective SIMM or SIMMs	Replace the SIMM or replace the Doc-It controller board

Memory Bank : n Memory test failed in a bank	This message is only written to the errors file specified with the \f switch	1 or 2 MB memory module in bank n failed	Replace the defective SIMM or replace the Doc-It controller board
Warning : Memory amount detected does not match configuration setup	DDP.CFG file memory amount does match that of the POWERON .EXE program	Defective SIMM	Replace the defective SIMM or replace Doc-It controller board

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4.3.07 POWERON.EXE - Diagnostic Error Messages

MESSAGE INDICATION	FAILURE DESCRIPTION	CAUSE	RECOMMENDED ACTION
Doc-It Power On Test: could not load the POWERON test to the Doc-It controller	DDPWRON.OUT could not be found	File not in the DOS path	Check to make sure that this file is in your DOS path
PC-Controller board communications failed	Communications failed between the Doc-It system and the Doc-It controller	Dip switch address setting in the CONFIG.EXE program	Reset the Dip switch address to a new value
Timer tests on the controller failed	The timer circuit on the Doc-It controller has failed	Defective Doc-It controller board	Replace the Doc-It controller board
Memory unique address test failed	The i960 cannot correctly access the on board memory	Defective SIMMs or defective Doc-It controller board	Replace the SIMMs or replace the Doc-It controller board
Controller - DMA test failed	The ASIC on the Doc-It controller board has failed	Defective Doc-It controller board	Replace the Doc-It controller board
IRQ interrupt tests failed	The Doc-It controller cannot be reached using the selected IRQ interrupt	No acknowledgement of the Doc-It controller board	Check the IRQ jumpers verify that the Doc-It controller is connected properly
Host interrupt tests failed	The ASIC on the controller board has failed	Defective Doc-It controller board	Replace the Doc-It controller board

DAA registers tests failed	The FAX modem section has failed on the controller	Defective Doc-It controller board	Replace the Doc-It controller board

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4.4 DOC-IT CONTROLLER - DIAGNOSTIC TESTS

4.4.01 Procedures

When troubleshooting the Doc-It Controller use the POWERON.EXE program. When the Poweron program is run in the Debug (\d) and Diagnostic mode (\t). The program will assist in determining if the problem is application, installation, or hardware failure related.
POWERON.EXE is a DOS based program that can be run from the DOS prompt, but is usually executed as part of the PCs AUTO EXE .BAT procedure. The purpose of the Poweron program is to:

- Initialize the Doc-It Controller Board.
- Check the amount of memory installed on the board and report if this amount does not match the amount listed in the configuration file.
- Test the memory and report any failures detected.
- Run hardware diagnostic tests.
- Download and run the Doc-It control modules.

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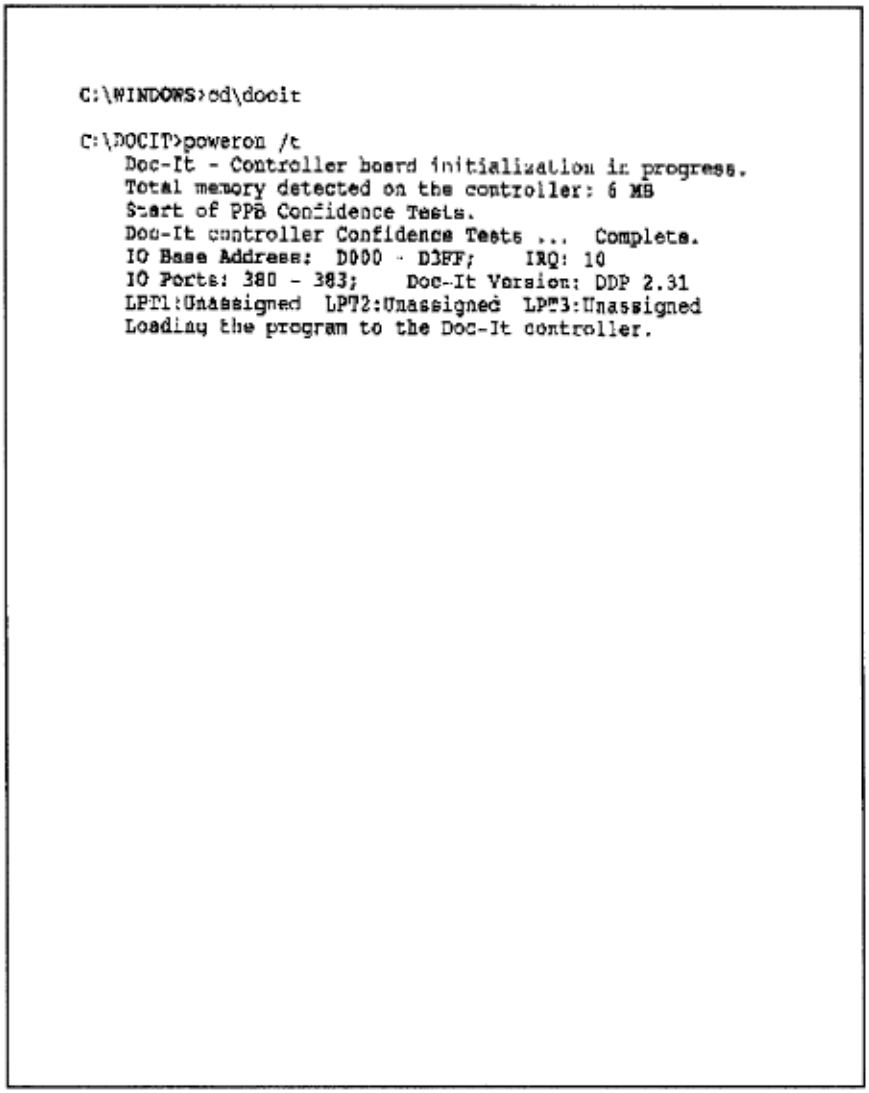
4.4.02 Confidence Test

· This is a test of the circuitry on the Doc-It Controller Board, if any circuit fails the test a message will be displayed on your PC screen. If all of the circuits pass the test, you will see "controller confidence test completed" on the PC screen



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4.4.03 Using the Poweron Test With /t and /d Commands

· The /t enable you to run the Doc-It controller diagnostic test, the /d command is responsible for displaying messages to the PC screen. Running the Poweron test in the /t /d mode is an aid in isolating problems.
· These commands must be separated by a space.

```
C:\DOCIT>Poweron /t /d
    Doc-It - Controller board initialization in progress.
    Memory Bank 0:  1 MB installed in this bank..... Passed
    Memory Bank 1:  1 MB installed in this bank..... Passed
    Memory Bank 2:  1 MB installed in this bank..... Passed
    Memory Bank 3:  1 MB installed in this bank..... Passed
    Memory Bank 4:  1 MB installed in this bank..... Passed
    Memory Bank 5:  1 MB installed in this bank..... Passed
    Memory Bank 6:  No memory installed in this bank
    Memory Bank 7:  No memory installed in this bank
    Total memory detected on the controller: 6 MB
    Start of PPB Confidence Tests.
Communication with PPB ..  OK
Checking Timer - 1 ... PPB
Calling SetupTimer1Int..... PPB
Timer1 ... OK..... PPB
Timer 1 Test Successful
Checking Timer - 2 ... PPB
Calling SetupTimer2Int..... PPB
Timer2 ... OK..... PPB
Timer 2 Test Successful
Memory Unique Address Test Start
Memory Unique Address Test Successful
DAA tests
Read/Write the following registers is successful:
DAA Control register.
DAA Interrupt Enable register.
Ring Frequency register.
CPT Low Frequency register.
CPT High Frequency register.
Starting the IRQ test
    IRQ interrupt test successful
Starting the host int test
Waiting for host to interrupt
Host Int test successful
DMA Loopback test Start
Start Writing the printer registers
wait for the DMA to be done
Going to compare the buffers
Test Successful
    Doc-It controller Confidence Tests ...  Complete.
    IO Base Address:  D000 - D3FF;    IRQ: 10
    IO Ports: 380 - 383;    Doc-It Version: DOP 2.31
    LPT1:Unassigned  LPT2:Unassigned  LPT3:Unassigned
    Loading the program to the Doc-It controller.

C:\DOCIT>
```

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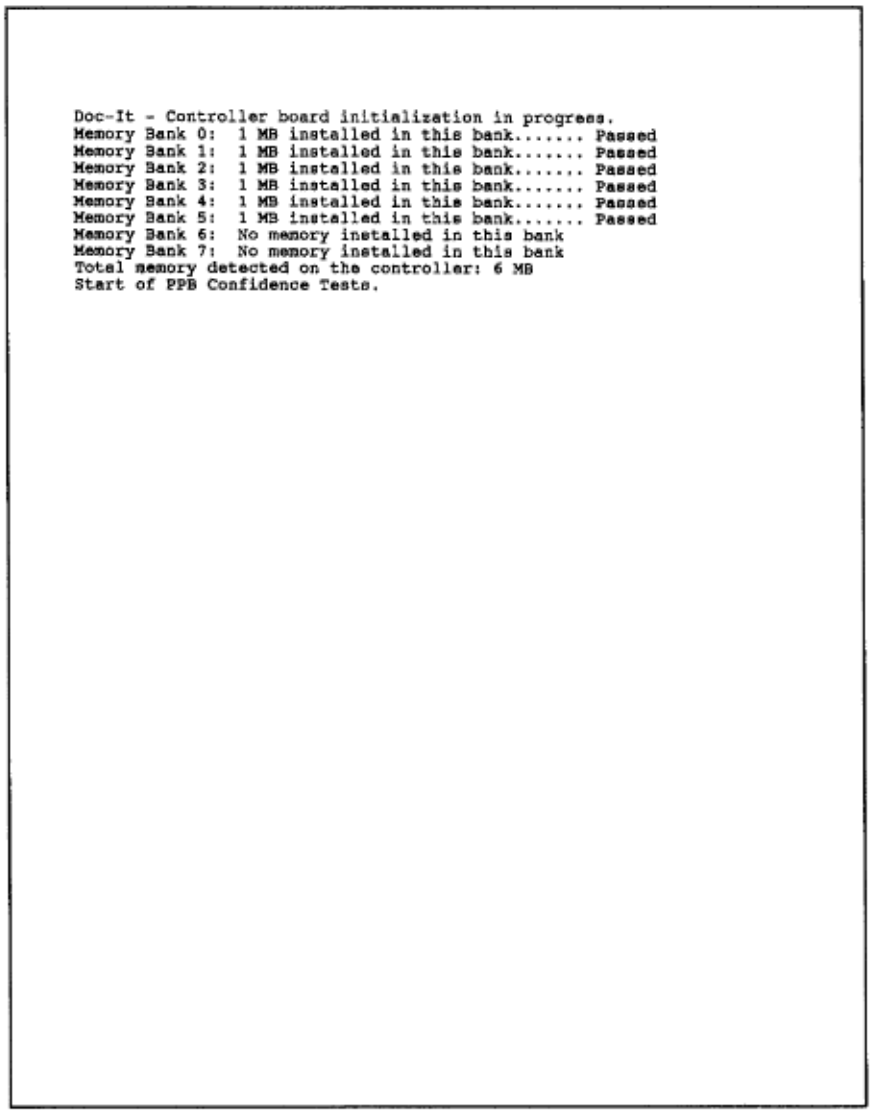
4.4.04 Memory Test

· The initialization test informs you of the total amount of memory recognized by the Doc-It Controller. It also informs you of the present I/O Base Address, which is the specified page frame in the CONFIG.EXE program. During this test you are given, port availability and downloading information. The Doc-It Controller Board downloads specified program modules to the Doc-It Engine.



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4.4.05 Controller Board Test

· The Controller Board Test is performed by the i960 microprocessor. The primary function of this test is to verify that the Doc-It Controller can access the onboard memory. If a failure occurs during this test and you receive a memory bank error, you should replace that bank (if that bank is replacable). Otherwise you must replace the entire Doc-It Controller Board. Additionally, the IRQ, host IRQ, and DMA loopback tests are performed. The IRQ test checks that the Doc-It Controller Board can signal the PC. If this test fails, make sure that you do not have an IRQ conflict with any other hardware device. The host IRQ test checks that the PC can signal the Doc-It Controller Board. The DMA test is used to check the direct memory acess ability of the Doc-It Controller Board.

```
Memory Unique Address Test Successful
DAA tests
Read/Write the following registers is successful:
DAA Control register.
DAA Interrupt Enable register.
Ring Frequency register.
CPT Low Frequency register.
CPT High Frequency register.
Starting the IRQ test
    IRQ interrupt test successful
Starting the host int test
Waiting for host to interrupt
Host Int test successful
DMA Loopback test Start
Start Writing the printer registers
wait for the DMA to be done
Going to compare the buffers
Test Successful
    Doc-It controller Confidence Tests ...  Complete.
    IO Base Address:  D000 - D3FF;     IRQ: 10
    IO Ports: 380 - 383;    Doc-It Version: DDP 2.31
    LPT1:Unassigned  LPT2:Unassigned  LPT3:Unassigned
    Loading the program to the Doc-It controller.

C:\DOCIT>
```

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4.5 MAINTENANCE MODE

4.5.01 General Information

The maintenance mode is used to perform certain adjustments and run LED, Key Pad, Printer Unit, and Scanner test. The maintenance mode performs these functions with or without being connected to the Doc-It Controller Board. To enter the maintenance mode (Refer to the Chart in SECTION 4.5.2 of the Service Handbook ( ). The charts provide you with a brief description of the test. The purpose of these tests is to assist you in troubleshooting the Doc-It Controller Board.

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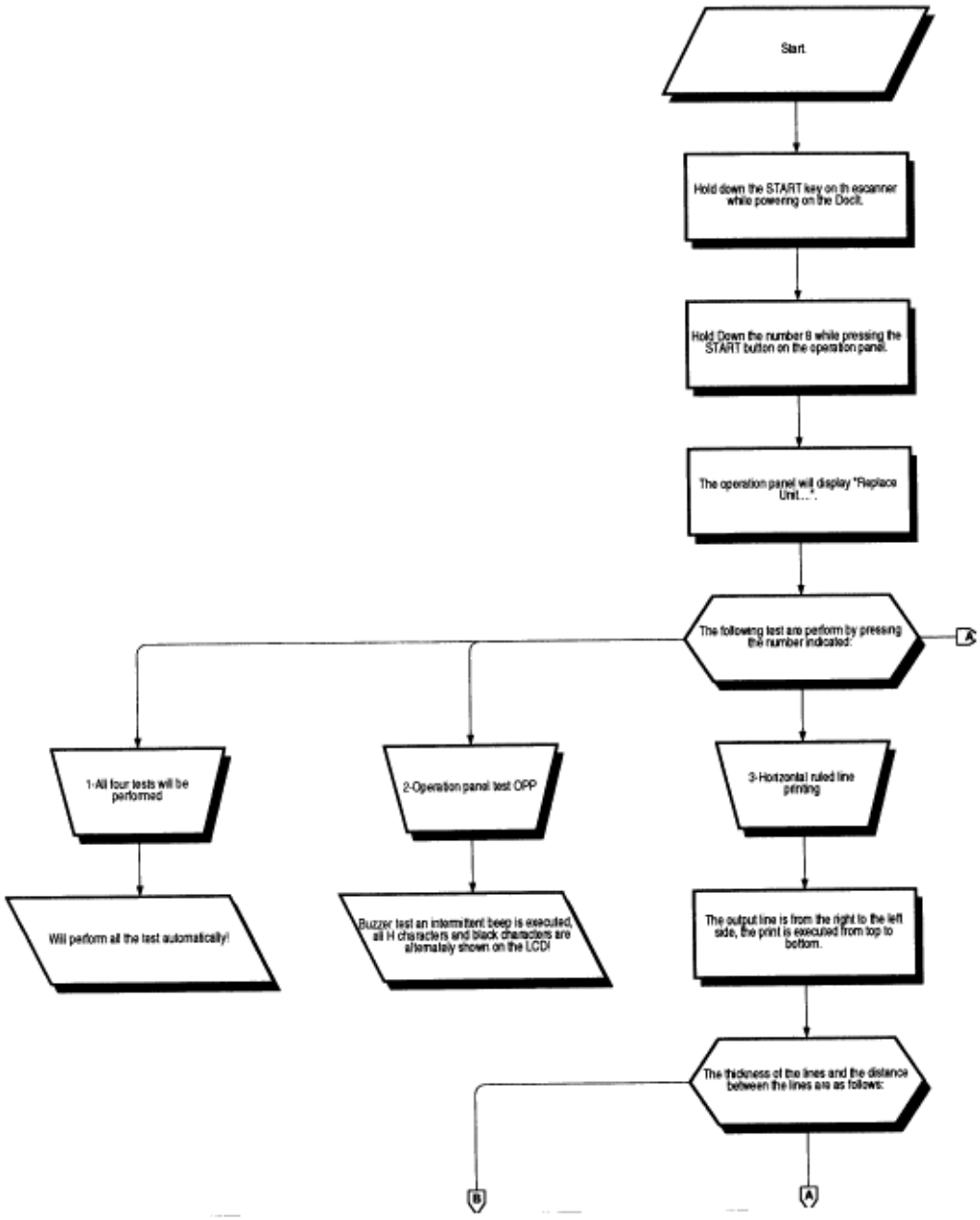
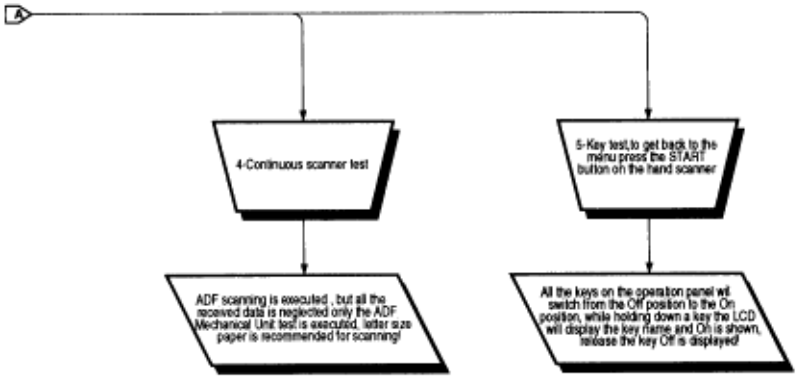
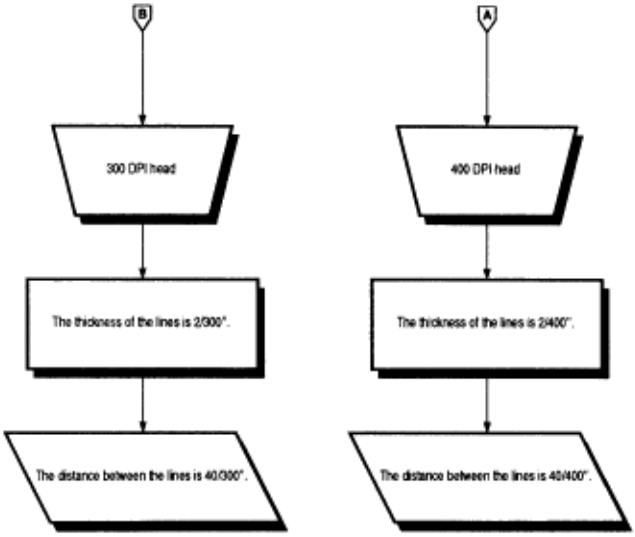
4.5.02 Maintenance Mode Selection

The following charts show how to perform the indicated test in the maintenance mode.







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A.1.01 General Information

This section describes the characteristics of the printed circuit boards used in the DOC-IT Document Processing System. The following areas are covered.

- Switches
- Sensors
- Jumpers
- Fuses
- Test Points
- Firmware

Where an item is not applicable, the word NONE will be listed.

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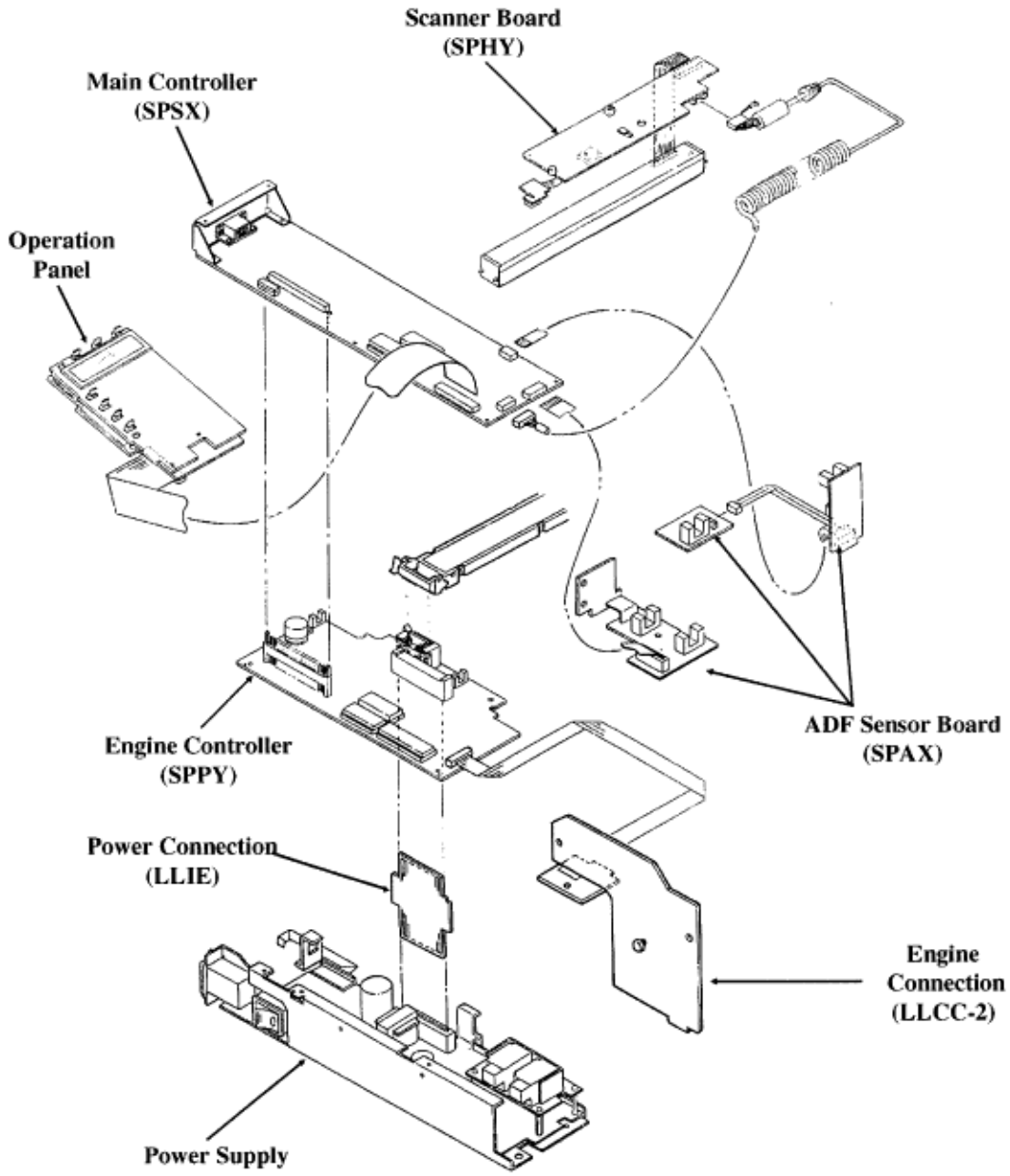
A.2 INDEX TO CHARTS

Description	Board Designation	Section
Main Controller Board w/o ROM	SPSX	A.2.01
Engine Controller Board w/o ROM	SPPY	A.2.02
Operator Panel Board	RCDP	A.2.03
Engine Connection Board	LLCC-2	A.2.04
Scanner Board	SPHY	A.2.05
ADF Sensor Board	SPAX	A.2.06
Second Tray Controller Board	LLFC	A.2.07
Second Tray Connection Board	LLIF	A.2.08
Power Connection Board	LLIE	A.2.09
Second Tray Connection Board	LLIG	A.2.10
Power Supply Board	NONE	A.2.11
DOC-IT Controller Board	PPB	A.2.12



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A.2.01 Main Controller Board (SPSX) w/o ROM

Switches

- NONE

Sensors

- NONE

Jumpers

- NONE

Fuses

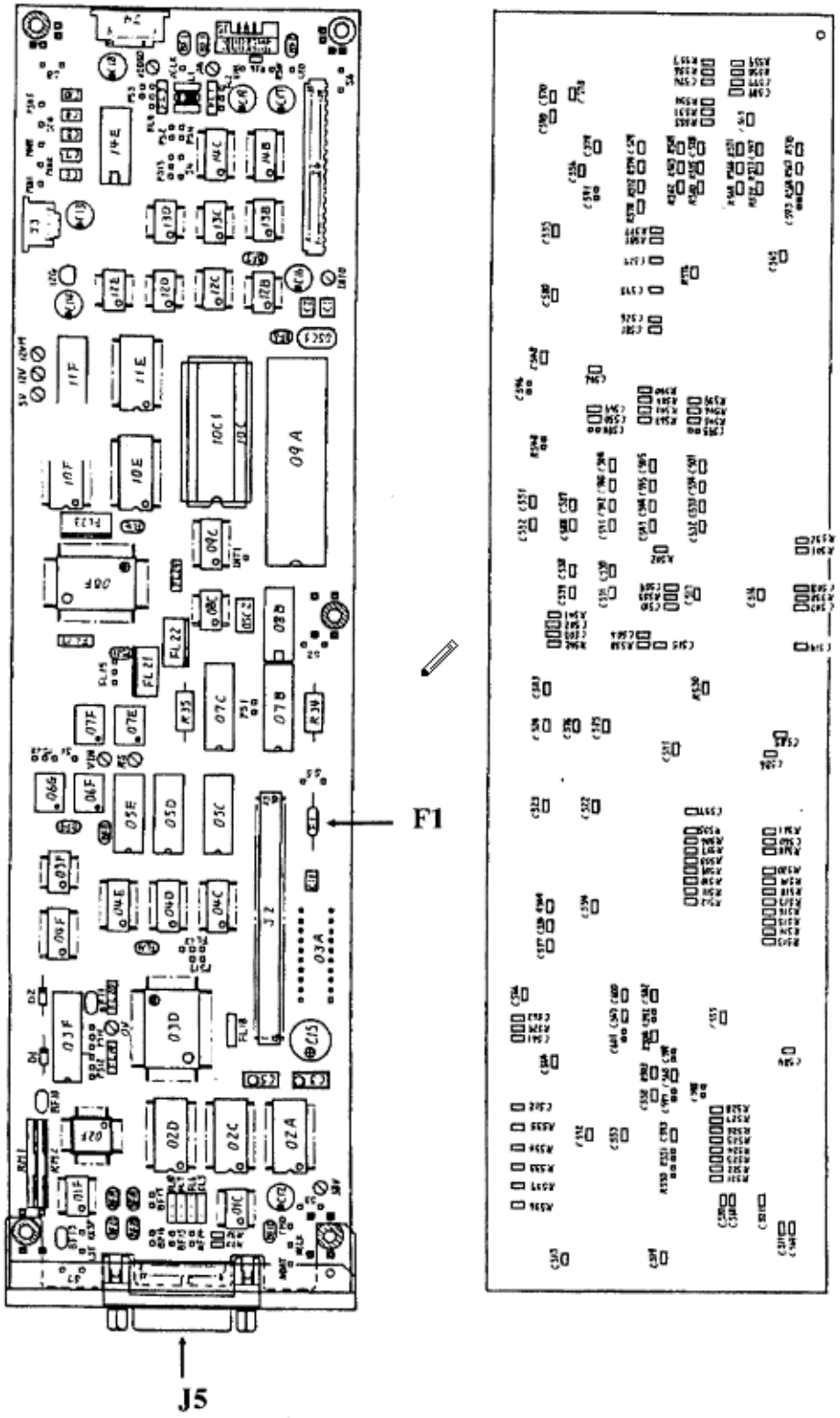
- F1: soldered - 1 amp (protects +38vdc circuit)

Test Points

- +5vdc : (J5, Pin A4)
- +12vdc: (J5, Pin A7)
- -12vdc: (J5, Pin B7)
- +38vdc: (Check at Fuse F1)
- GROUND: (J5, Pin B3)

Firmware

- Program ROM (Location 10C)


F1
J5

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A.2.02 Engine Controller Board (SPPY) w/o ROM

Switches

- NONE

Sensors

- PS1: Paper Exit Sensor
- PS2: Registration Sensor
- PT1: Toner End Sensor

Jumpers

- NONE

Fuses

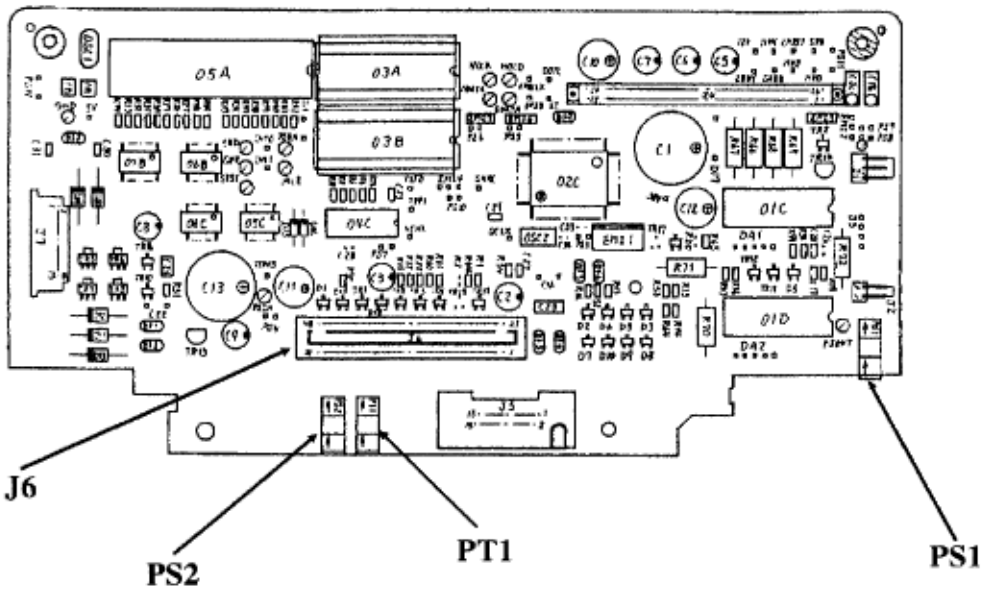
- NONE

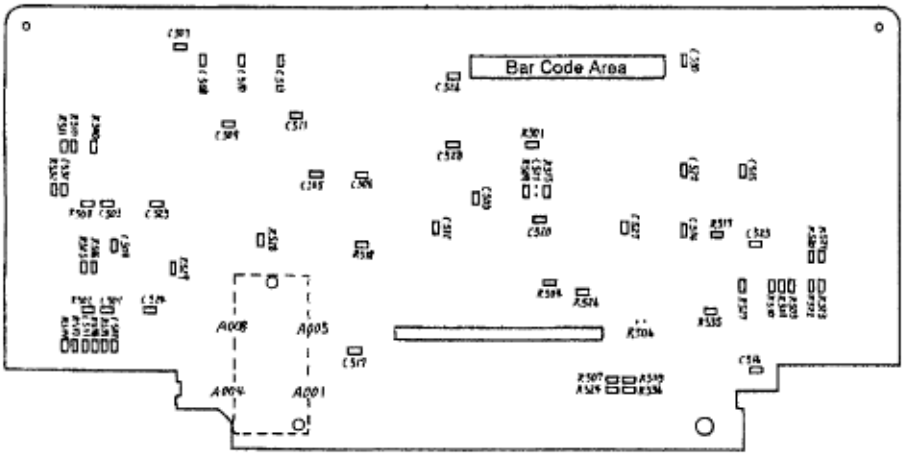
Test Points

- -12vdc (Image Sensor Drive Voltage): (J6, Pin 11)
- +12vdc (Image Sensor Drive Voltage): (J6, Pin 12)
- +38vdc (Motor and Fan Drive Voltage): (J6, Pin 15)
- +5vdc (IC, LSI power): (J6, Pins 13, 31, and 32)

Firmware

- Program ROM (Locations 03A and 03B)





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A.2.03 Operation Panel Board (RCDP)

Switches
- SW1 through SW26: Function Keys

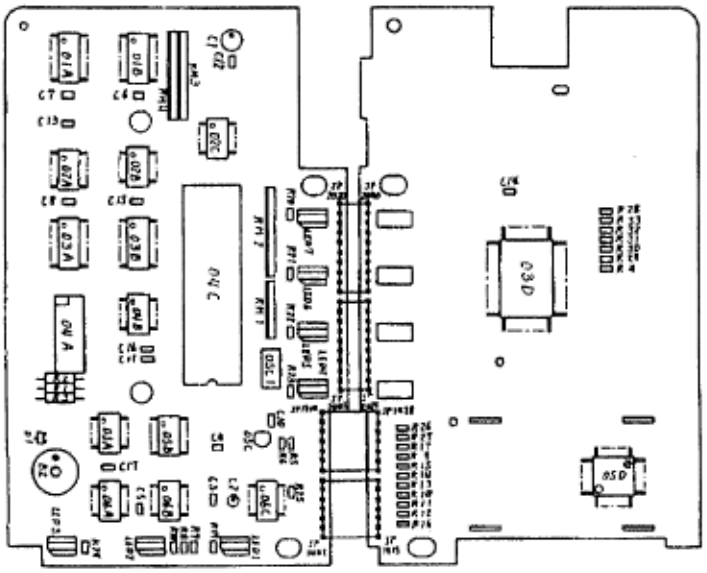
Sensors
- NONE

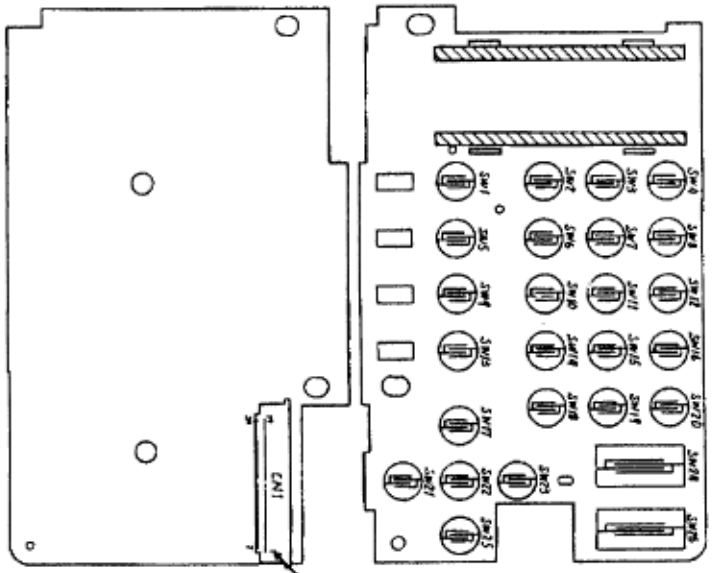
Jumpers
- NONE

Fuses
- NONE

Test Points
- +5vdc: (CN1, Pins 1 and 2)
- GROUND: (CN1, Pin 3)

Firmware
- NONE





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A.2.04 Engine Connection Board (LLCC-2)

Switches

· SW1, SW2, SW3: Tray Identification Switches

Sensors

· SEN1: Paper-End Sensor

Jumpers

· NONE

Fuses

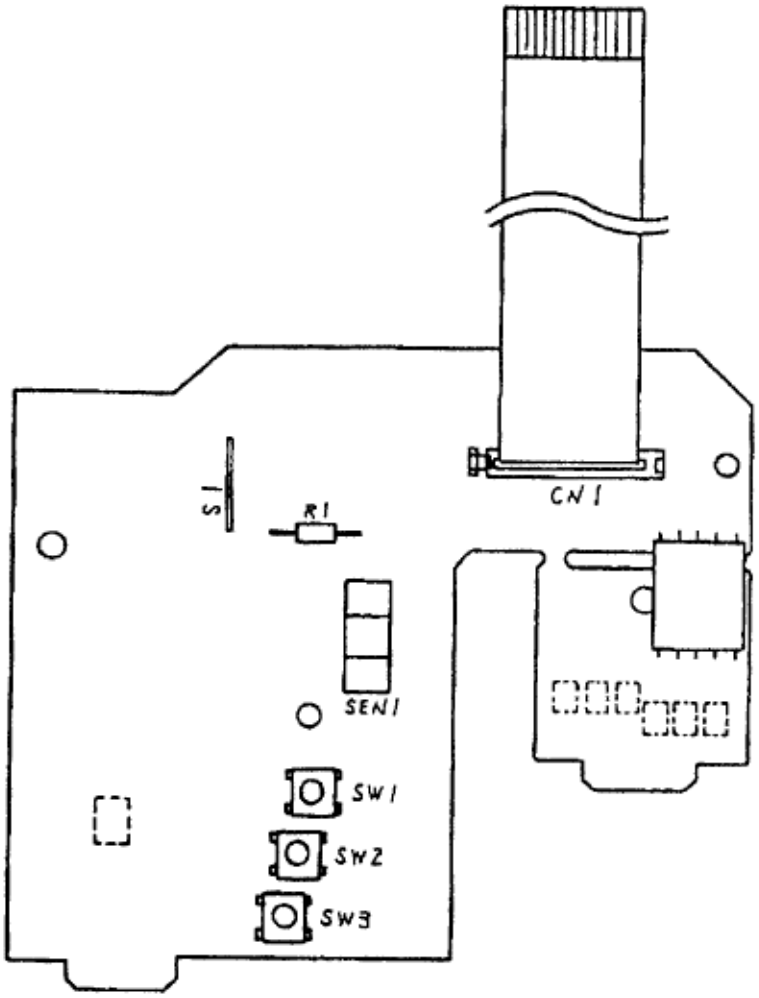
· NONE

Test Points

· NONE

Firmware

· NONE



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A.2.05 Scanner Board (SPHY)

Switches

· SW1: Scan Select Switch

Sensors

· PS1: Hand Scan Timing Sensor

Jumpers

· NONE

Fuses

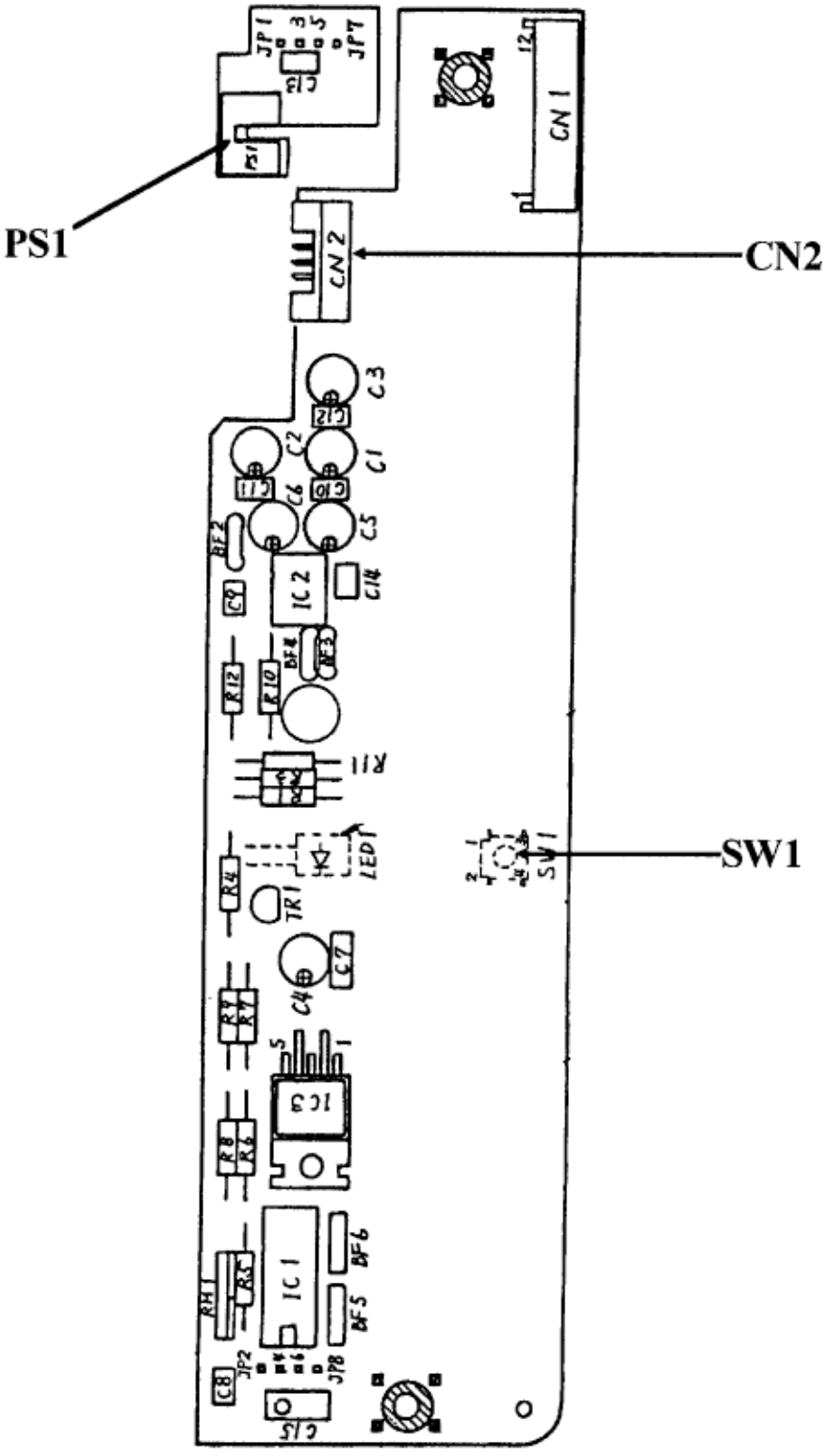
· NONE

Test Points

· +12vdc: (CN2, Pin B1)
· -12vdc: (CN2, Pin A1)
· +5vdc: (CN2, Pin B4)
· GROUND: (CN1, Pin 4)
· SW1 Output: (CN2, Pin B2)

Firmware

· NONE


PS1
CN2
SW1
JP1
JP7
CN1
IC2
IC3
IC1
LED
TR1
JP2
JP8

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A.2.06 ADF Sensor Board (SPAX)

Switches

- NONE

Sensors

- PS1: Paper In - 1
- PS2: Paper Set
- PS3: Scanner Set
- PS4: Paper Out
- PS5: Paper In - 2

Jumpers

- NONE

Fuses

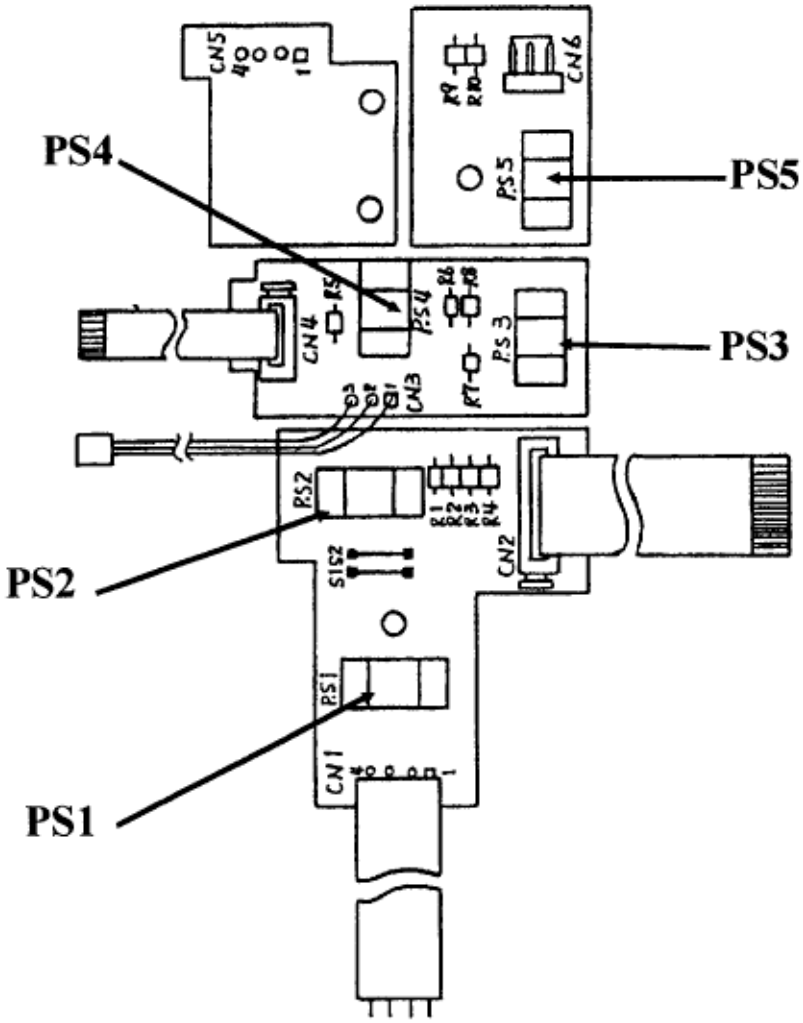
- NONE

Test Points

- +5vdc: (CN2, Pin 9)
- GROUND: (CN2, Pin 10)
- + 5vdc: (CN4, Pin 2)
- GROUND: (CN4, Pin 1)
- +5vdc: (CN3, Pin 2)
- GROUND: (CN3, Pin 1)
- +5vdc: (CN6, Pin 2)
- GROUND: (CN6, Pin 1)

Firmware

- NONE



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A.2.07 Second Tray Controller Board (LLFC)

Switches

· SW1, SW2, SW3: Tray Identification Switches

Sensors

· SEN1: Paper-end Sensor (2nd Tray)

Jumpers

· NONE

Fuses

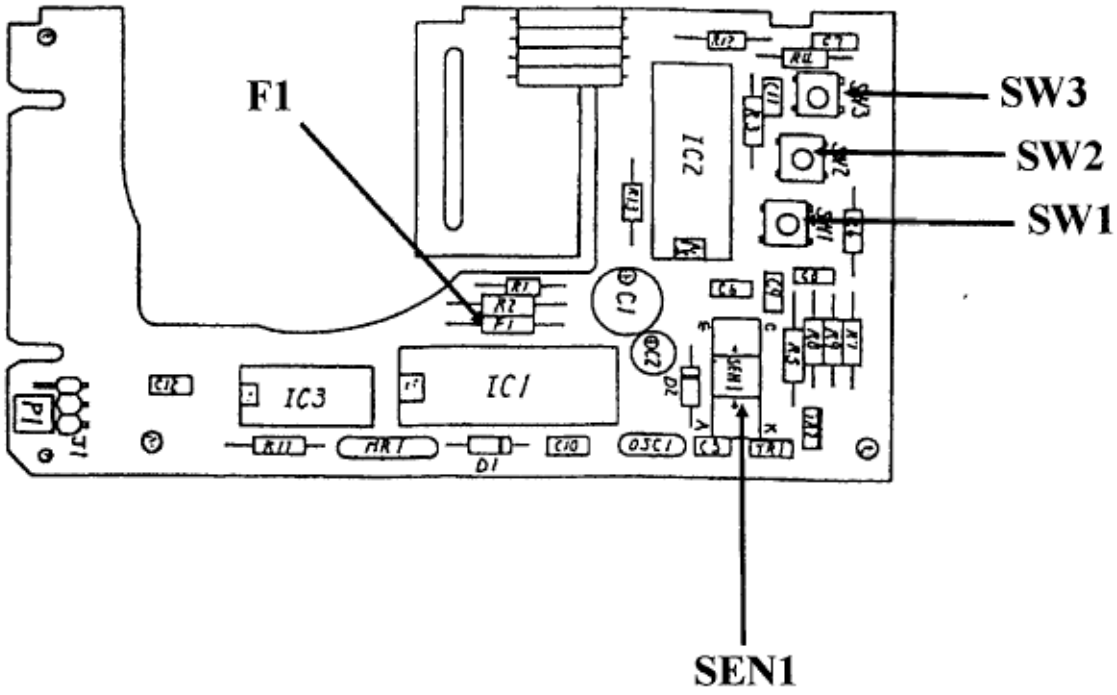
· F1: soldered - 1 amp (protects +38 vdc circuit)

Test Points

· NONE

Firmware

· NONE



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A.2.08 Second Tray Connection Board (LLIF)

Switches
- NONE

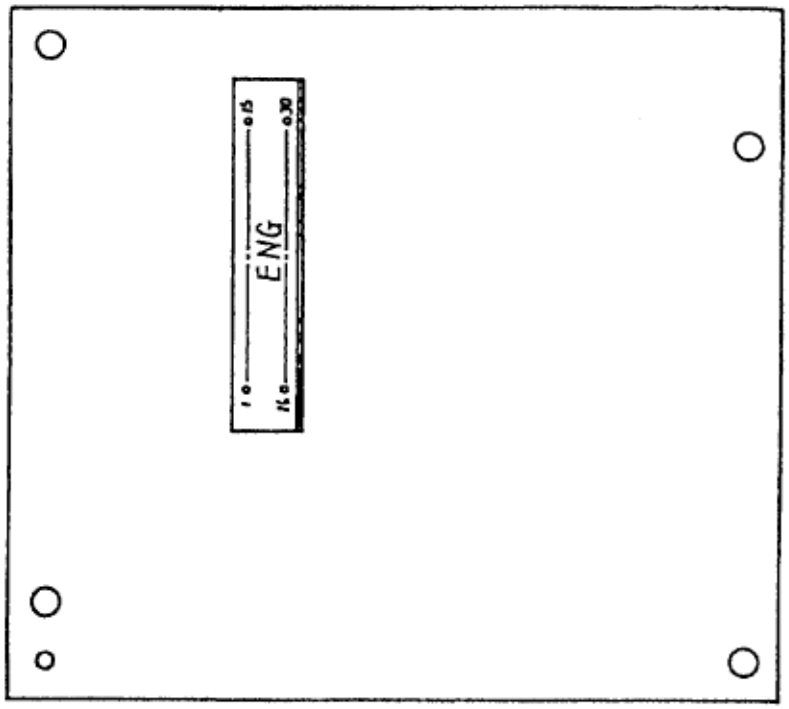
Sensors
- NONE

Jumpers
- NONE

Fuses
- NONE

Test Points
- NONE

Firmware
- NONE



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A.2.09 Power Connector Board (LLIE)

Switches
· NONE

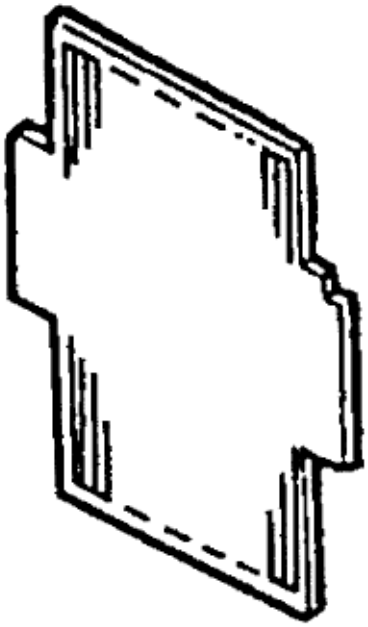
Sensors
· NONE

Jumpers
· NONE

Fuses
NONE

Test Points
· NONE

Firmware
· NONE



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A.2.11 Power Supply Assembly

Switches

- SW1: AC Power Switch
- SW2: Cover Open Switch

Sensors

- NONE

Jumpers

- NONE

Fuses

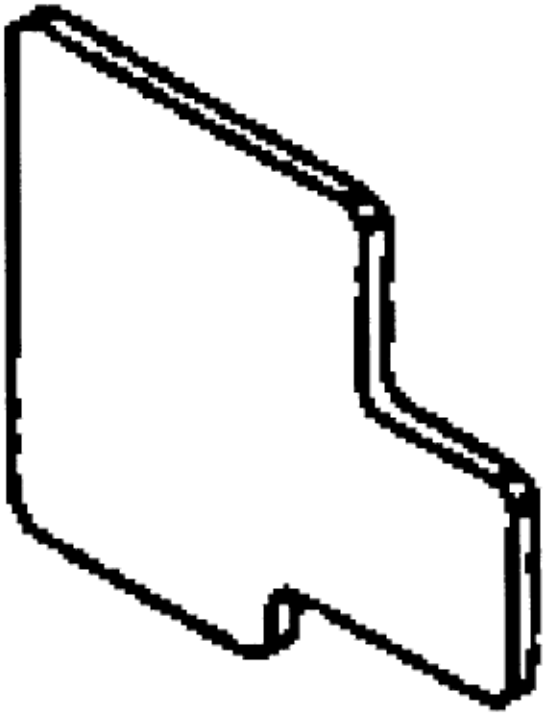
- F1: 250V/8A (AC line fuse)
- F2: 125V/5A (Protects +5vdc circuit)
- F3: 125V/3.15A (Protects the +38vdc circuit)

Test Points

- -12vdc: (CN1, Pin 11)
- +12vdc: (CN1, Pin 12)
- +5vdc: (CN1, Pin 13,31,32)
- +38vdc: (CN1, Pin 3)
- GROUND: (CN1, Pin 27,29,34)

Firmware

- NONE



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A.2.12 DOC-IT Controller Board (PPB)

Switches

· NONE

Sensors

· NONE

Jumpers

· IRQ Select
See illustration for settings

· OkiSelect
See illustration for settings

Fuses

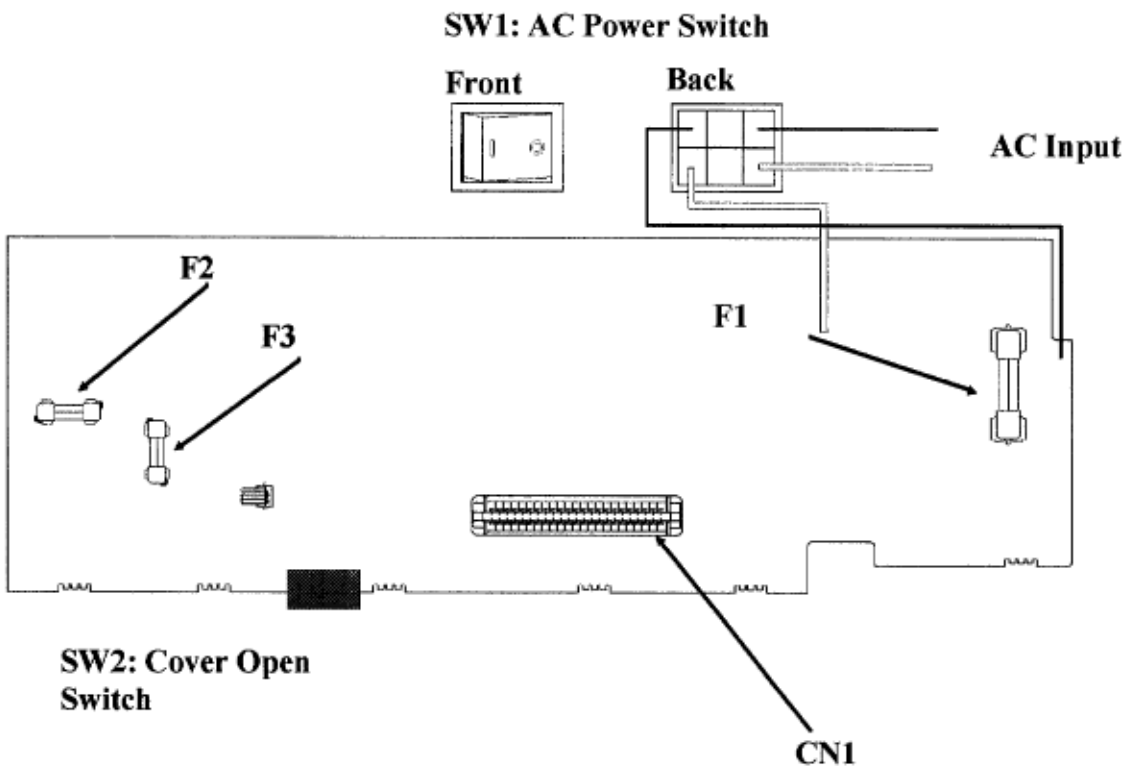
· NONE

Test Points

· NONE

Firmware

· Program ROM - Location 10C



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A.2.10 Second Tray Connection Board (LLIG)

Switches
- NONE

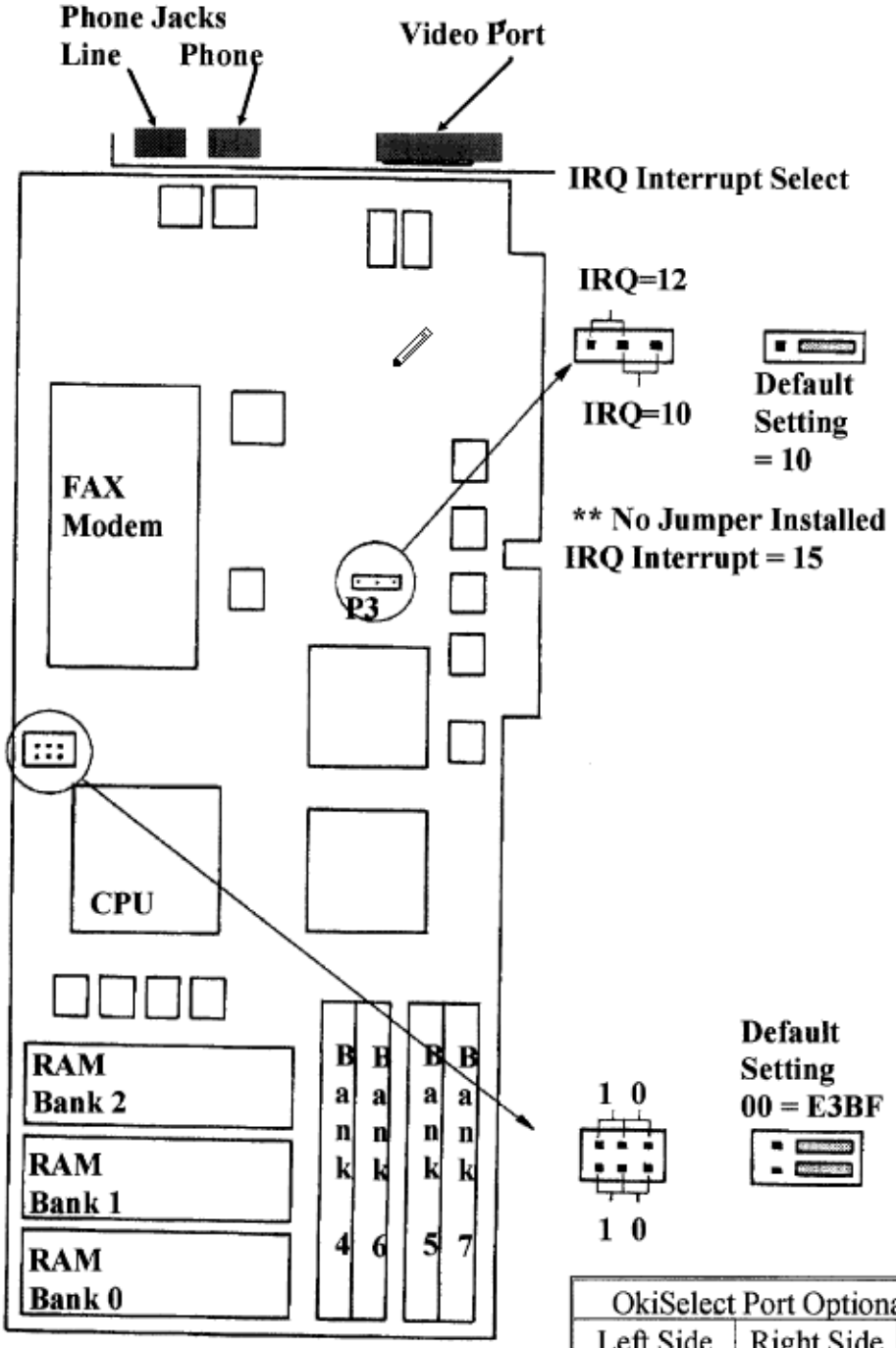
Sensors
- NONE

Jumpers
- NONE

Fuses
- NONE

Test Points
- NONE

Firmware
- NONE



OkiSelect Port Optional Settings		
Left Side	Right Side	OkiSelect
0	0	E3BF
0	1	E37B
1	0	E372
1	1	E20F

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B.1.01 General Information

This appendix will assist you in identifying the assemblies and parts of the DOC-IT 3000/4000. Once you have used Section Four (Failure Analysis) to find a defective part, you can locate the PART NUMBER in this section. This appendix is cross-referenced to Section Three (Maintenance) to assist you in servicing the DOC-IT 3000/4000.

The format for this appendix is a series of tables with diagrams. The table contains the item reference number, the Okidata and Oki-Japan (Oki-J) part numbers, the part description, a comments section, and the disassembly procedure. Items with the comment RSPL (Recommended Spare Parts List), Consumable, or Option are available from Okidata. Items without these comments are usually not stocked. Also note that some items are only available as assemblies. Every effort has been made to clearly indicate which items are in assemblies and which are not.

Please refer to the RSPL, which can be found on our Electronic Bulletin Board (OKILINK II), for current part numbers, prices, and recommended stocking levels for each item listed as a recommended spare part. For instructions on accessing OKILINK II, refer to Section 4 of this Service Handbook ().

N/A will appear where a part number is not available.

Please read the Definition of Terms in the following section carefully. It is important that you understand the different types of classifications and their availability.

REMEMBER
Current part numbers, recommended stocking levels, and pricing information are available through OKILINK II. Refer to Section 4 of this Service Handbook for information on accessing OKILINK II ().

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B.1.02 Definition of Terms

RSPL
Okidata recommends that this part/assembly be on hand for servicing.

Consumable
A supply item which has a specified life and needs to be replaced periodically. It is purchased and installed by the end user. Okidata machines are designed to work *exclusively* with Okidata consumables. By using genuine Okidata consumable products, the investment made in the equipment will be protected.

Option
An option is a part/assembly which is added to a DOC-IT 3000/4000. The option expands the DOC-ITs functionality. An option may or may not be installed by the end-user. Instructions for installation accompany each option.

Option RSPL
Okidata recommends that this part/assembly be on hand for servicing installed options.

Blank
Okidata does not recommend stocking this item. This item should be purchased on an **As Required Basis** only. The availability of this item is not guaranteed by Okidata.

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B.1.03 Parts Ordering Information

All authorized Okidata resellers may order spare parts and consumables for Okidata products. Orders are placed through our Logistics Department.

When a technician has successfully completed a product certification course and the dealer has become service authorized, an information package will be provided to the dealer. The Okidata Service Center Reference Guide outlines:

- responsibilities of Okidata Service Centers
- spare parts and consumables information
- procedures for warranty repairs
- product training, certification, and authorization
- product support information
- Okidata depot information and services
- third party service information
- information about Okidatas Customer Information Center
- Okidata service and support telephone numbers.

The Service Center Reference Guide contains detailed procedures to follow when ordering parts. Please **read, understand**, and **follow** these procedures. Service authorization for a specific product **must** be obtained before a dealer can submit warranty claims.

Questions regarding the Service Center Reference Guide should be directed to the Okidata Repair Depot for your area. Please refer to the Training Guide for information on contacting your depot.

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B.2 CHARTS

Below is an index to the illustrated parts breakdown charts.

Description	Section
Cabinet Assembly	B.2.01
Cabinet Assembly	B.2.02
Upper Unit	B.2.03
Upper Unit	B.2.04
Upper Unit	B.2.05
Lower Unit	B.2.06
Lower Unit	B.2.07
Lower Unit	B.2.08
Paper Exit Assembly	B.2.09
Paper Supply Unit	B.2.10
Automatic Document Feeder Unit	B.2.11
Automatic Document Feeder Unit	B.2.12
Scanner Unit	B.2.13
Packing Materials	B.2.14
Consumables	B.2.15

Options	B.2.16
Second Tray Unit	B.2.17
Second Tray Unit Packing Materials	B.2.18

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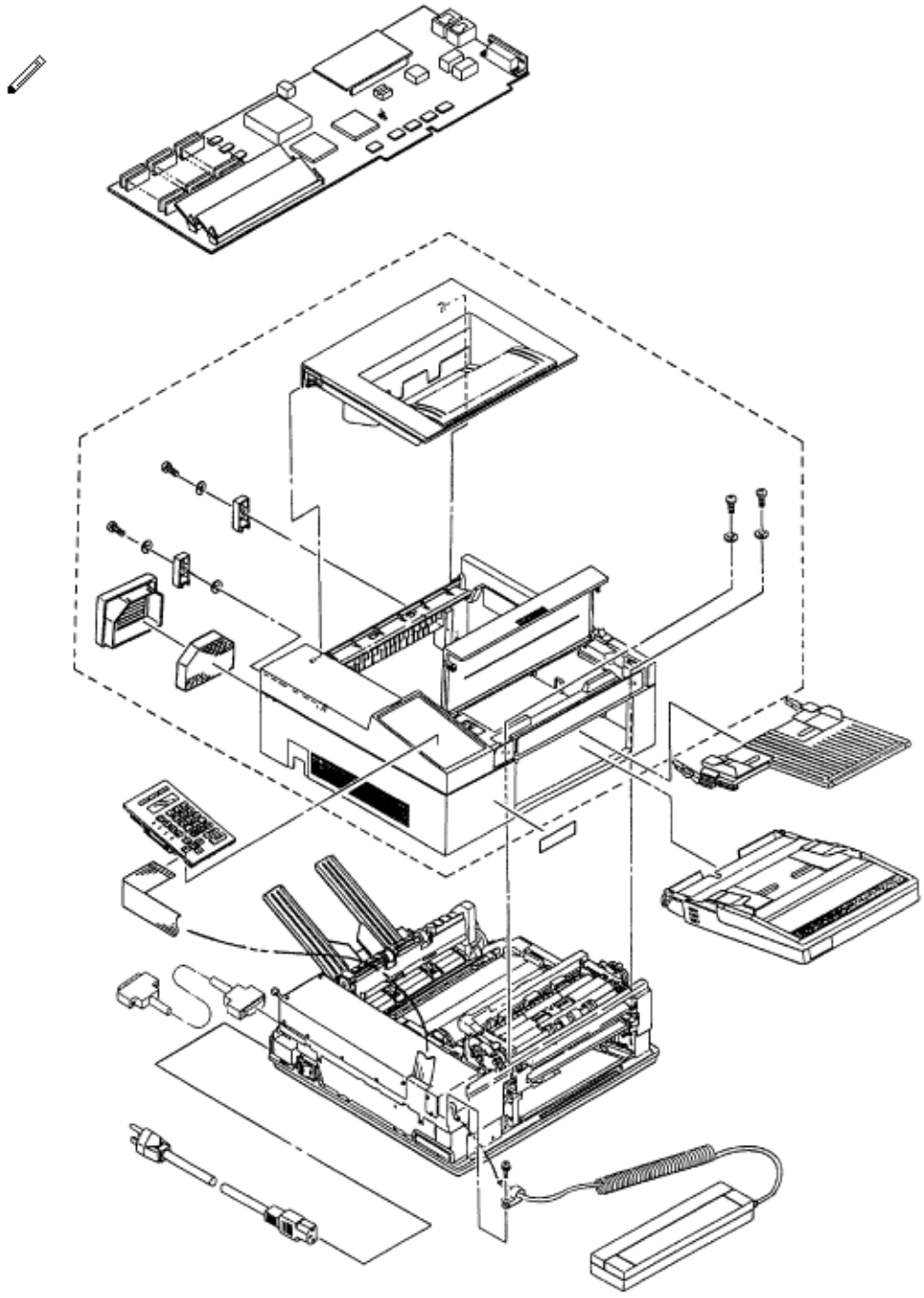

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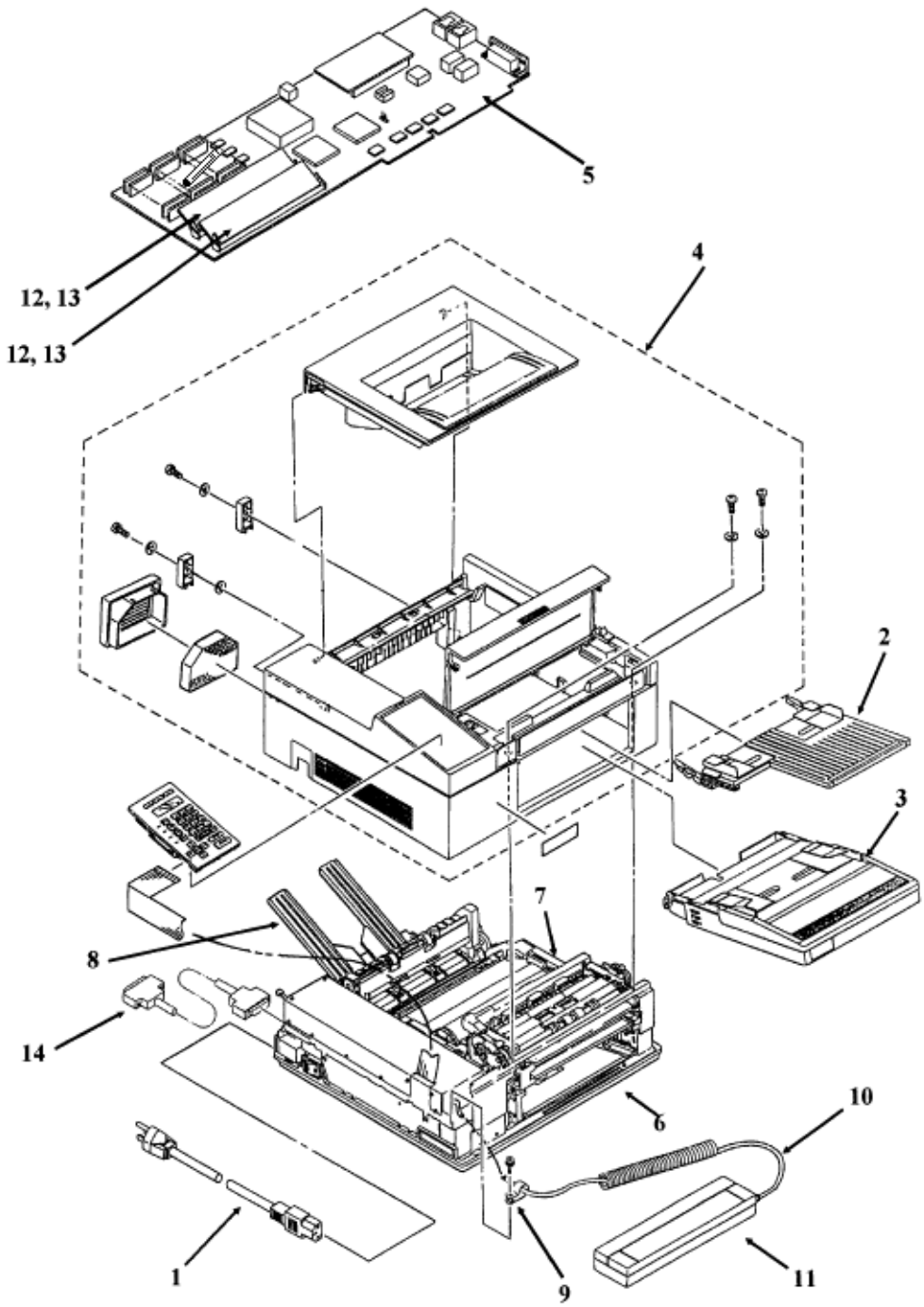
B.2.01 Cabinet Assembly

Item	Okidata P/N<R>Oki-J P/N	Description	Comments <R>Refer to B.1.02	Disassembly<R>Procedure
1	56609701<R>3YS4011-1026P1	Cord: AC 120v	RSPL	3.2.01
2	50090101 3PA4076-3600G1	Tray: Scanner Paper	RSPL	3.2.01
3	50089501 N/A	Paper Cassette (Letter)		3.2.01
3	70020501 4YA4076-3662G1	Paper Cassette (Legal)	Option	3.2.01
3	70020601 4YA4076-3664G1	Paper Cassette (Envelope)	Option	3.2.01
3	70020801 4YA4076-3664G1	Paper Cassette (Executive)	Option	3.2.01
3	70020701 4YA4076-3677G1	Paper Cassette (A4)	Option	3.2.01
3	70020901 4YA4076-3663G1	Paper Cassette (Universal)	Option	3.2.01
4	53064001 2PA4094-5551G1	Cover: Upper Assembly without logo	RSPL	3.2.06

5	21025501 N/A	PCB: DOC-IT 4000 Controller Assembly	RSPL	3.2.57
6	50213602 1YX4083-2002G 2	Unit: Lower	RSPL	3.2.01
7	50213701 1YX4083-2060G 9	Upper Unit 120 VAC 300 DPI		3.2.40
7	N/A 1YX4083-2060G 11	Upper Unit 120 VAC 400 DPI		3.2.40
8	50066601 2PA4083-2055G 1	Stacker: Face-up (Assembly)	RSPL	3.2.01
9	50706901 4PP4076-3637P 1	Clamp: Ground (Scanner Cable)		3.2.52
10	56625701 3YS4111-2081P 1	Cable: Scanner	RSPL	3.2.54
11	50216501 3YX4076-3621G 1	Unit: Scanner Assembly without cable	RSPL	3.2.52
12	55927901 N/A	SIMM: 2 MB (512K x 32)	RSPL	3.2.57
13	55927801 N/A	SIMM: 1MB (256K x 32)	RSPL	3.2.57
14	56626901 N/A	Cable: 6ft DOC-IT I/F Molded	RSPL	3.2.01
14	56626902 N/A	Cable: 15ft DOC-IT I/F Molded	Option RSPL	3.2.01
15	56626101 N/A	Cord: Modular Phone	RSPL	3.2.01



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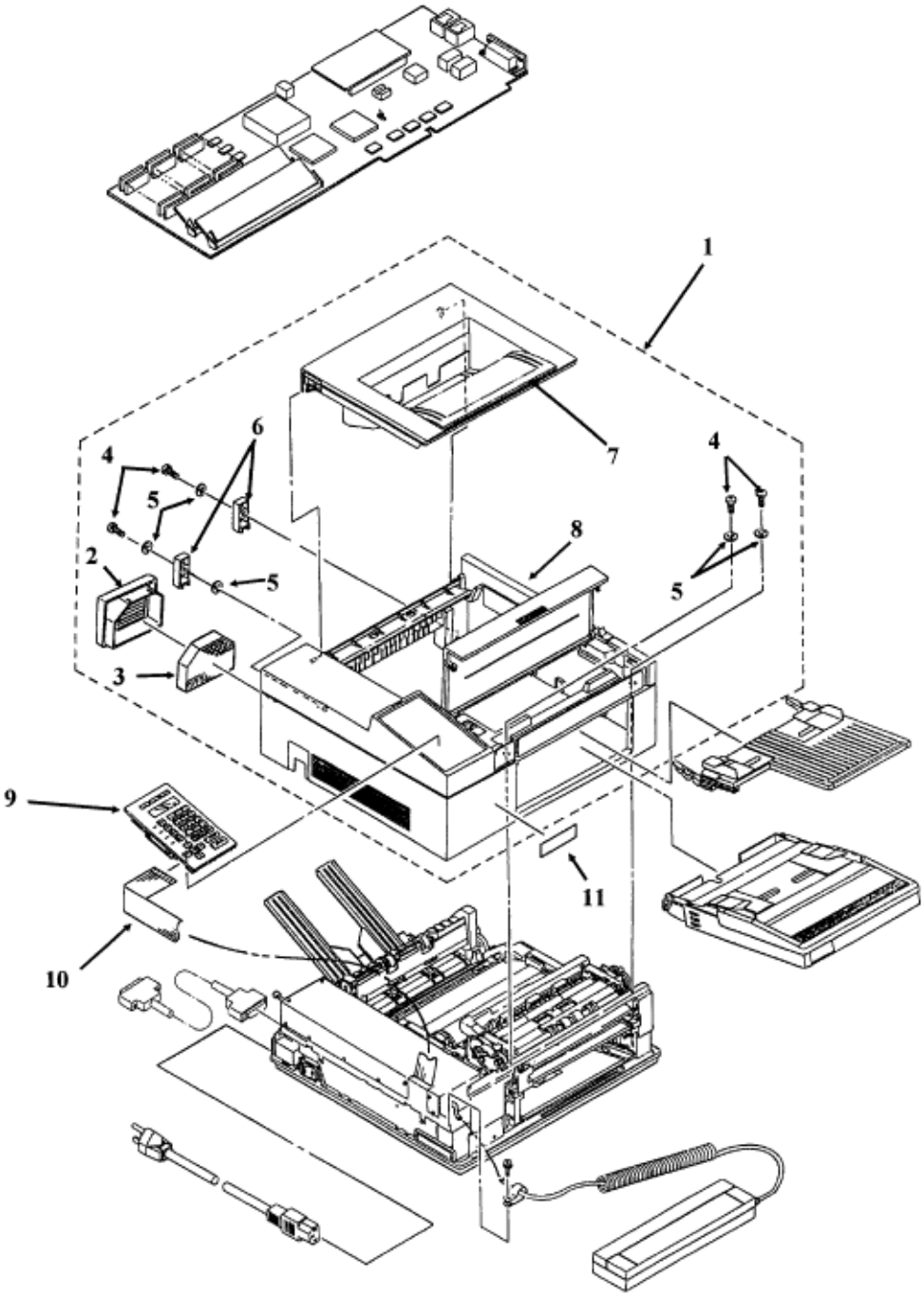
B.2.02 Cabinet Assembly

Item	Okidata P/N Oki-J P/N	Description	Comments Refer to B.1.02	Disassembly Procedure
1	53064001 2PA4094-5551G1	Cover: Upper Assembly without logo	RSPL Incl. 2 7 and 8	3.2.06
2	N/A N/A	Filter Cover		3.2.02
3	55503501 3PB4083-2816P2	Ozone Filter	Consumable Refer to B.2.15	3.2.02
4	50316201 +D4-10-G	Screw: Cover	RSPL	3.2.06
5	50515202 4LP-7046-2	Washer: Cover Screw	RSPL	3.2.06
6	51708101 3PP4094-5561P1	Brackets: Rear Cover	RSPL	3.2.06
7	N/A 2PA4094-5563G1	Stacker Cover Assembly		3.2.06
8	N/A 2PA4094-6876G1	Upper Cover		3.2.06
9	53064101 4YA4014-4041G1	Panel: Operation Assembly without cable	RSPL	3.2.05
10	53505430 4LP-5463-30	Cable: Control Panel	RSPL	3.2.05
11	52054301 4PB4012-2507P1	Logo: Plate (DOC-IT 3000)	RSPL	3.2.06
11	52054401 4PB4012-2507P2	Logo: Plate (DOC-IT 4000)	RSPL	3.2.06



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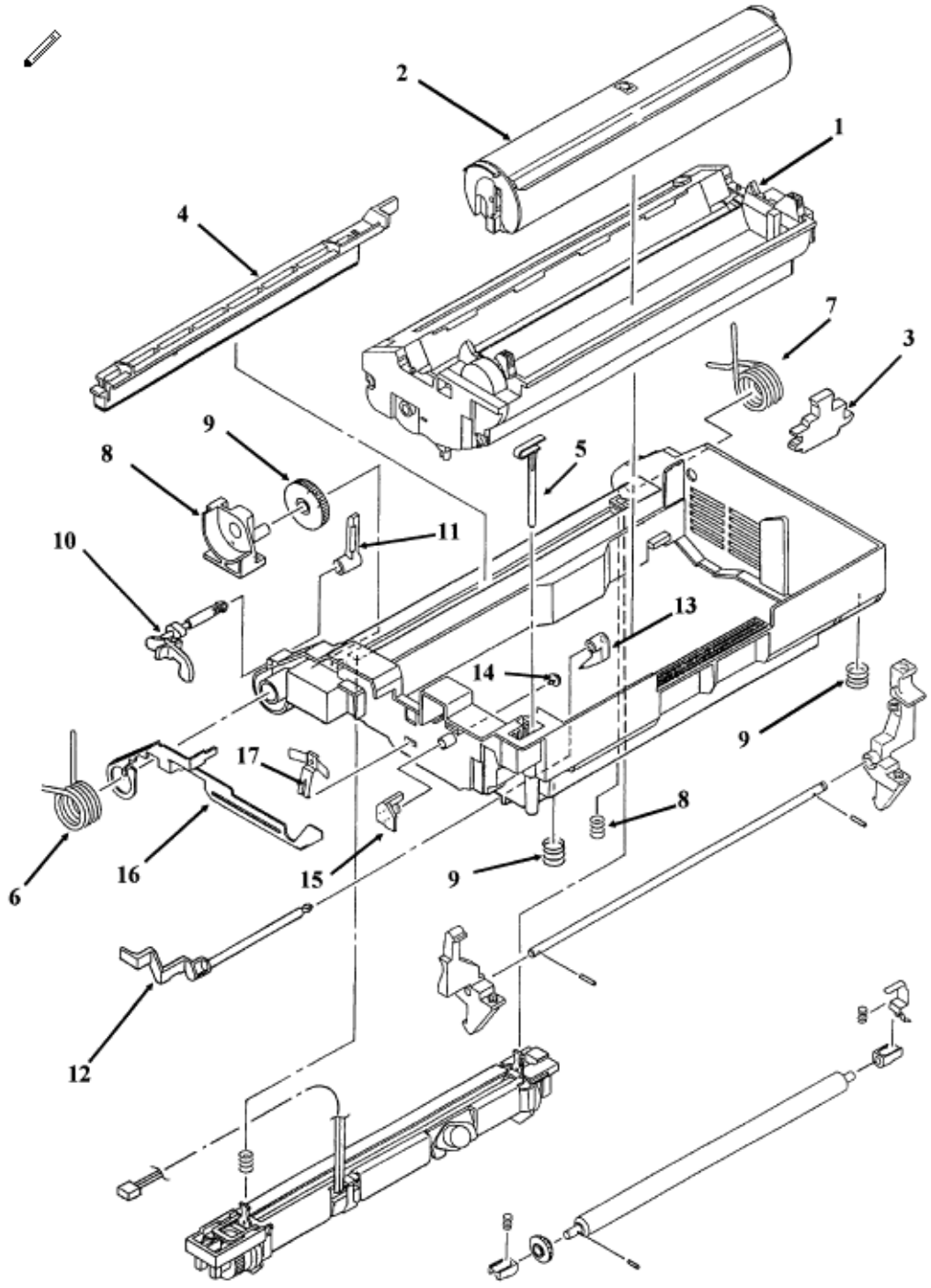
B.2.03 Upper Unit



Item	Okidata P/N Oki-J P/N	Description	Comments Refer to B.1.02	Disassembly Procedure
1	56109802 N/A	Image Drum Cartridge	Consumable Refer to B.2.15	3.2.01
2	52105602 N/A	Toner Cartridge	Consumable Refer to B.2.15	3.2.01
3	53528001 4PP4083-2757G1	Transfer Wire Cleaner		3.2.03
4	53500901 3PB4083-2096P1	Fuser Pad	Consumable Refer to B.2.15	3.2.43
5	50312501 4PP4083-2095P1	Actuator		3.2.41
6	50918101 4PP4083-2093P1	Torsion Spring (Left)		3.2.40
7	50918201 4PP4083-2094P1	Torsion Spring (Right)		3.2.40
8	51005001 3PP4083-2092P1	Fulcrum Block		3.2.40
9	51218501 4PP4083-3130P1	Gear: Idle "B"	RSPL	3.2.40
10	53527801 4PP4083-2578P1	Paper Eject Sensor Lever B.		3.2.42
11	53527901 4PP4083-2589P1	Paper Eject Sensor Lever C		3.2.42
12	53329601 3PP4083-2069P1	Sensor Flag (Resist)		3.2.45
13	53503001 4PP4083-2068P1	Sensor Lever (Resist)		3.2.45
14	50606001 4PP4083-2584P1	Rivet		3.2.45
15	53527701 4PP4083-2732G1	Sensor Lever (Toner)		3.2.45
16	53058901 3PP4083-2065P1	Support Plate (Left)		3.2.47
17	53058201 4PP4083-2067P1	Ground Plate (Image Drum)		3.2.47

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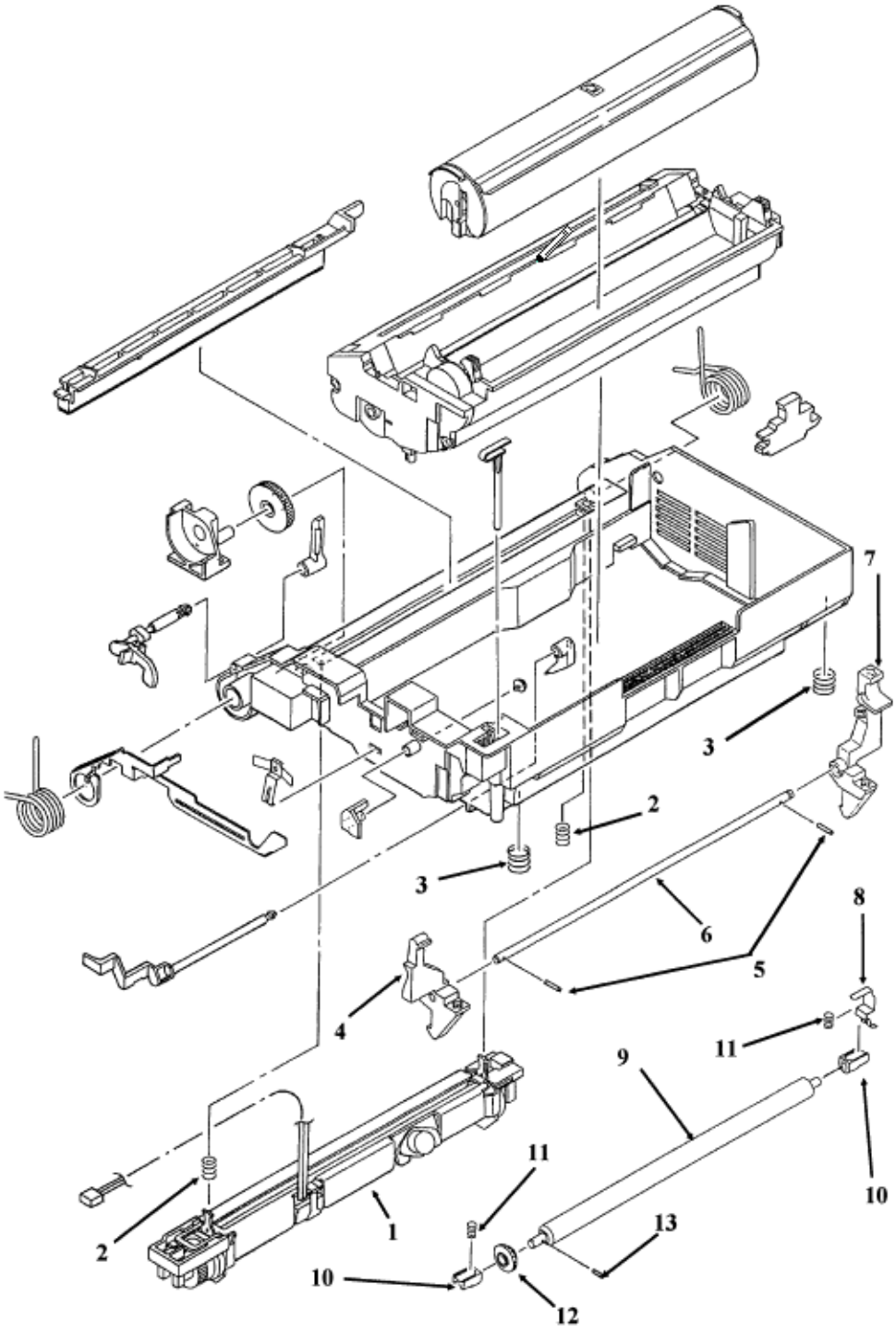
B.2.04 Upper Unit



Item	Okidata P/N Oki-J P/N	Description	Comments Refer to B.1.02	Disassembly Procedure
1	55044901 2YX4083-2073G1	Unit: Fusing (120v)	RSPL	3.2.43
2	50914601 4PP4083-2091P1	Spring: Fusing Unit	RSPL	3.2.43
3	50917205 LB-191200-5	Spring: Image Drum Tray		3.2.46
4	53502602 3PP4076-3648P1	Lock Lever (Left) Upper Frame DOC-IT	RSPL	3.2.46
5	50606216 NK2-16-SUS	Knock Pin		3.2.46
6	51110201 4PP4083-2064P1	Lock Lever Shaft		3.2.46
7	N/A N/A	Lock Lever (Right) Upper Frame DOC-IT		3.2.46
8	53058501 4PP4083-2066P1	Ground Plate (Resist)		3.2.44
9	53334302 4PP4083-2848P1	Pressure Roller		3.2.44
10	51605802 4PP4083-2071P2	Bearing		3.2.44
11	50914501 4PP4083-2072P1	Pressure Spring		3.2.44
12	51222701 4PP4083-2819P1	Pressure Roler Gear		3.2.44
13	50606208 NK1-6-8-SUS	Knock Pin		3.2.44

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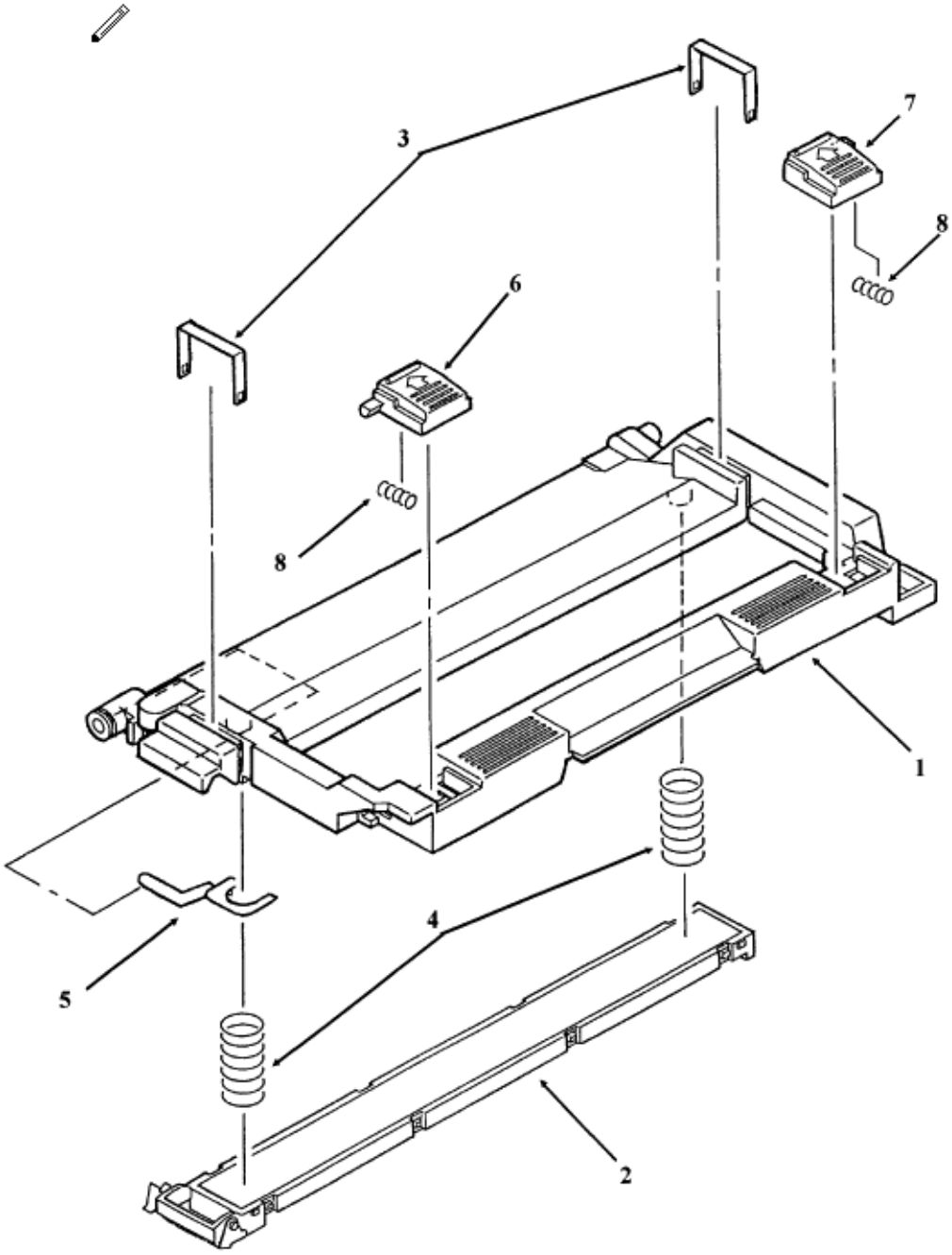
B.2.05 Upper Unit



Item	Okidata P/N Oki-J P/N	Description	Comments Refer to B.1.02	Disassembly Procedure
1	55619601 1PP4083-2087P1	LED Holder		3.2.47
2	55619501 4YA4083-2230G1	Unit: LED Head (300 DPI) Non OST	RSPL	3.2.04
2	55622201 4YA4045-1185G1	Unit: LED Head (400 DPI) Non OST	RSPL	3.2.04
3	50914301 4PP4083-2099P1	Spring: Clamp (LED)	RSPL	3.2.04
4	50914101 4PP4083-2088P1	Spring: Bias (LED Head)	RSPL	3.2.04
5	53058401 4PP4083-2090P1	Ground Plate (LED Head)		3.2.48
6	51901301 3PP4083-2594P1	Knob (Left)		3.2.48
7	51901401 3PP4083-2595P1	Knob (Right)		3.2.48
8	50918301 4PP4083-2596P1	Pressure Spring		3.2.48

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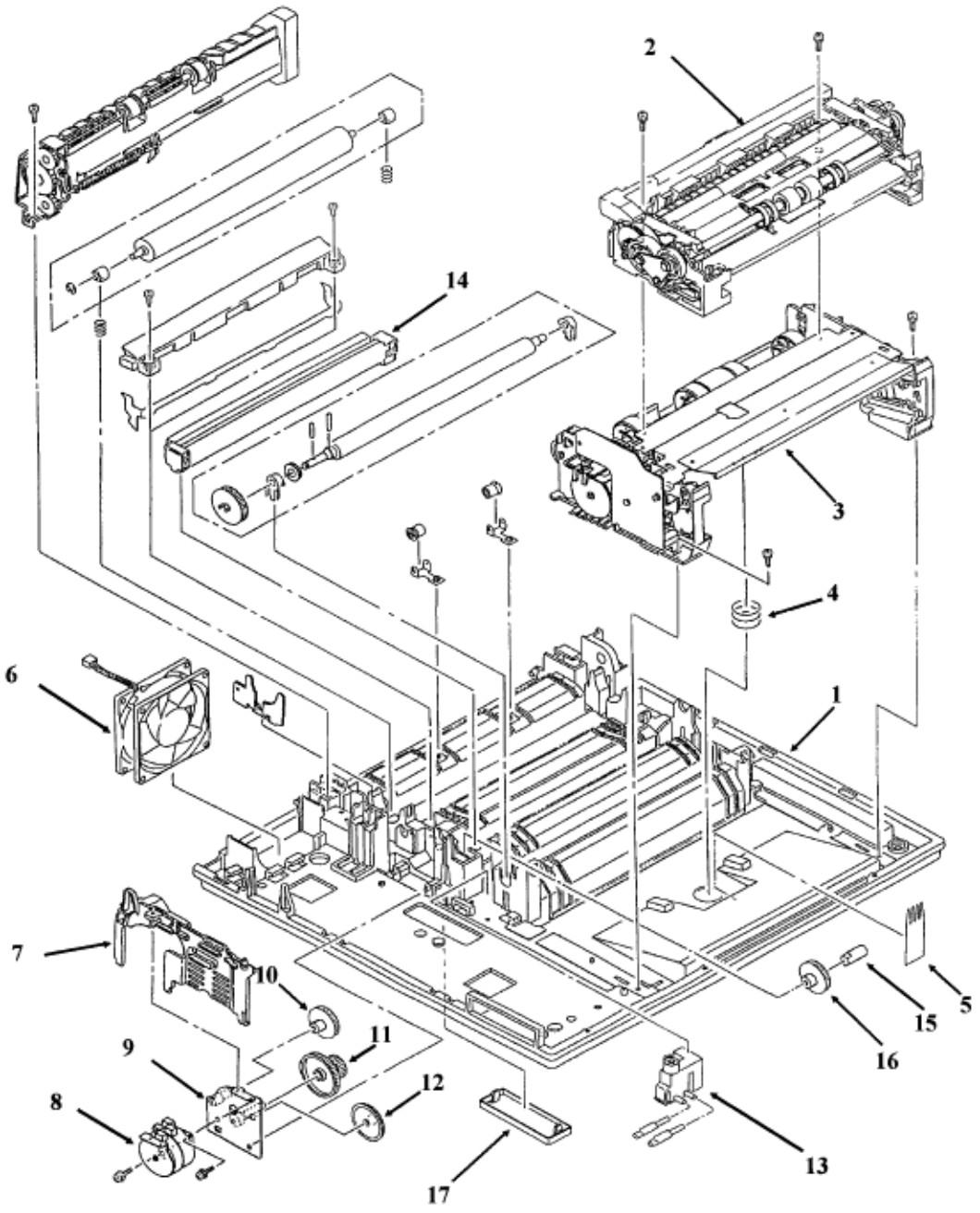
B.2.06 Lower Unit

Item	Okidata P/N Oki-J P/N	Description	Comments Refer to B.1.02	Disassembly Procedure
A	50213602 1YX4083-2002G2	Unit: Lower	RSPL Inc. 1 5 13 - 17	3.2.01
1	53057801 1PP4083-2003P1	Frame: Base	RSPL	3.2.56
2	50216501 3YX4076-3621G1	Unit: Scanner Assembly without cable	RSPL	3.2.52
3	50215205 4YA4083-2124G8	Unit: Paper Supply	RSPL	3.2.24
4	50917001 4PP4083-2295P1	Spring: Cassette	RSPL	3.2.24
5	51802501 N/A	Diselectification Cloth		3.2.24
6	56508501 270A2290P001	Fan: DC (Assembly)	RSPL	3.2.33
7	53528301 N/A	Motor Cover		3.2.31
8	56507701 3PB4083-2110P1	Motor: Pulse (Main)	RSPL	3.2.31
9	53329301 4PP4083-3059P1	Motor Bracket		3.2.31
10	51218501 4PP4083-3130P1	Gear: Idle "B"	RSPL	3.2.32

11	51218701 3PP4083-2044P1	Gear: Speed Reduction	RSPL	3.2.32
12	51225701 4PP4083-2593P1	Gear: Idle "A"	RSPL	3.2.32
13	56725901 3PB4083-2108P1	Connector: High Voltage	RSPL	3.2.37
14	50087401 3PA4083-3143G1	Charger: Transfer (Assembly)	RSPL	3.2.03
15	53329501 4PP4083-2046P1	Post	RSPL	3.2.50
16	51218601 4PP4083-2045P1	Gear: Idle (Base)	RSPL	3.2.50
17	N/A N/A	Cap		3.2.58



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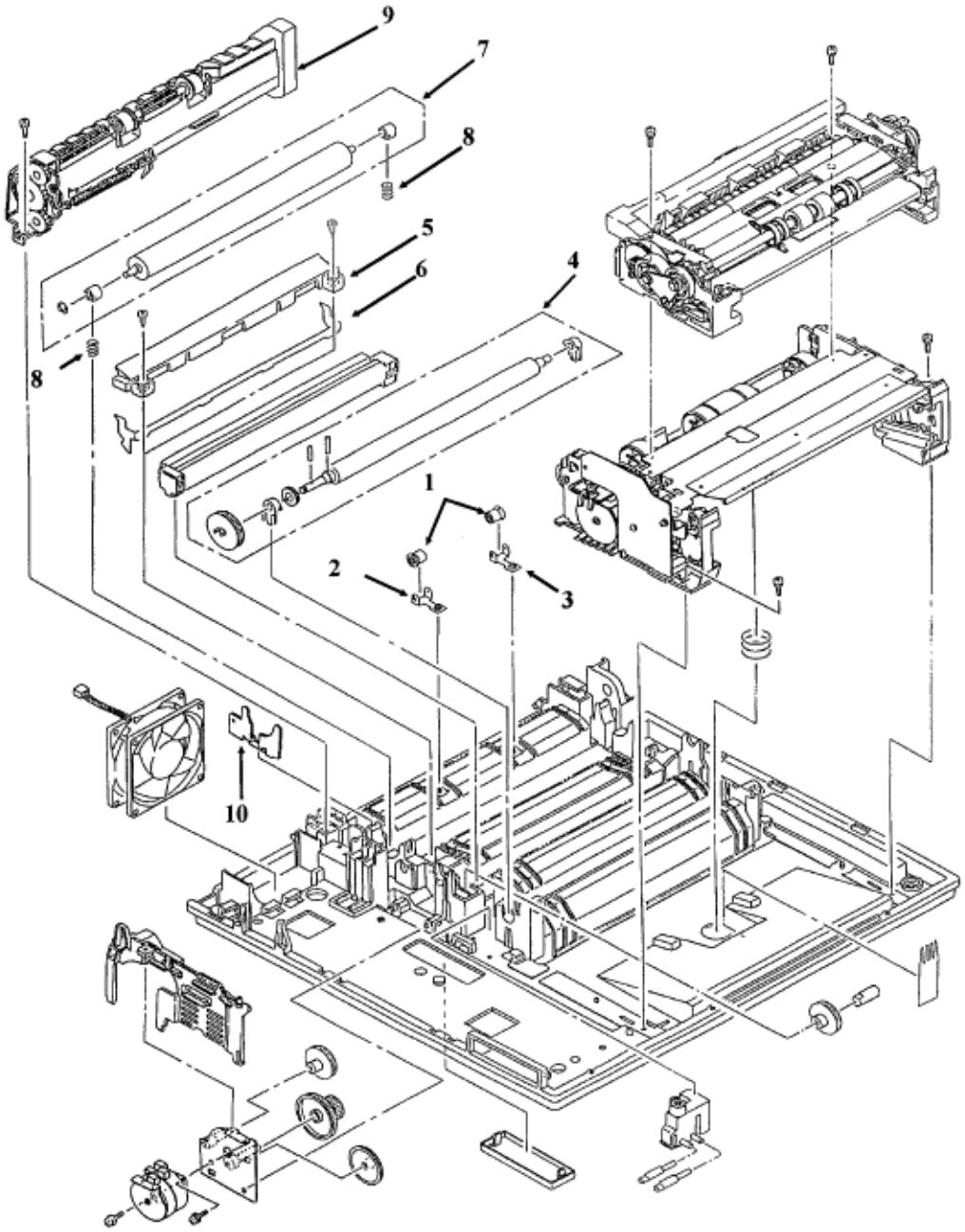
B.2.07 Lower Unit



Item	Okidata P/N Oki-J P/N	Description	Comments Refer to B.1.02	Disassembly Procedure
B	50213602 1YX4083-2002G2	Unit: Lower	RSPL Inc. B.2.06 (A) & 1-8	3.2.01
1	53334601 4PP4083-2760P1	Bias Roller		3.2.38
2	50918401 4PP4083-2776P1	Bias Spring (Left)		3.2.38
3	50918501 4PP4083-2777P1	Bias Spring (Right)		3.2.38
4	50079101 3PA4083-2897G1	Roller: Registration (Assembly)	RSPL	3.2.51
5	51005101 3PP4083-2566G1	Fusing Guide		3.2.49
6	51003601 3PP4083-2035P1	Sheet Guide		3.2.49
7	50079201 4PA4083-2896G1	Roller: Back-up (Assembly)	RSPL	3.2.49
8	50914801 4PP4083-2023P1	Spring: Backup Roller	RSPL	3.2.49
9	50066501 2YX4083-2026G1	Roller: Exit (Assembly)	RSPL	3.2.38
10	53335601 4PP4083-3041P1	Reinforcement Plate		3.2.31

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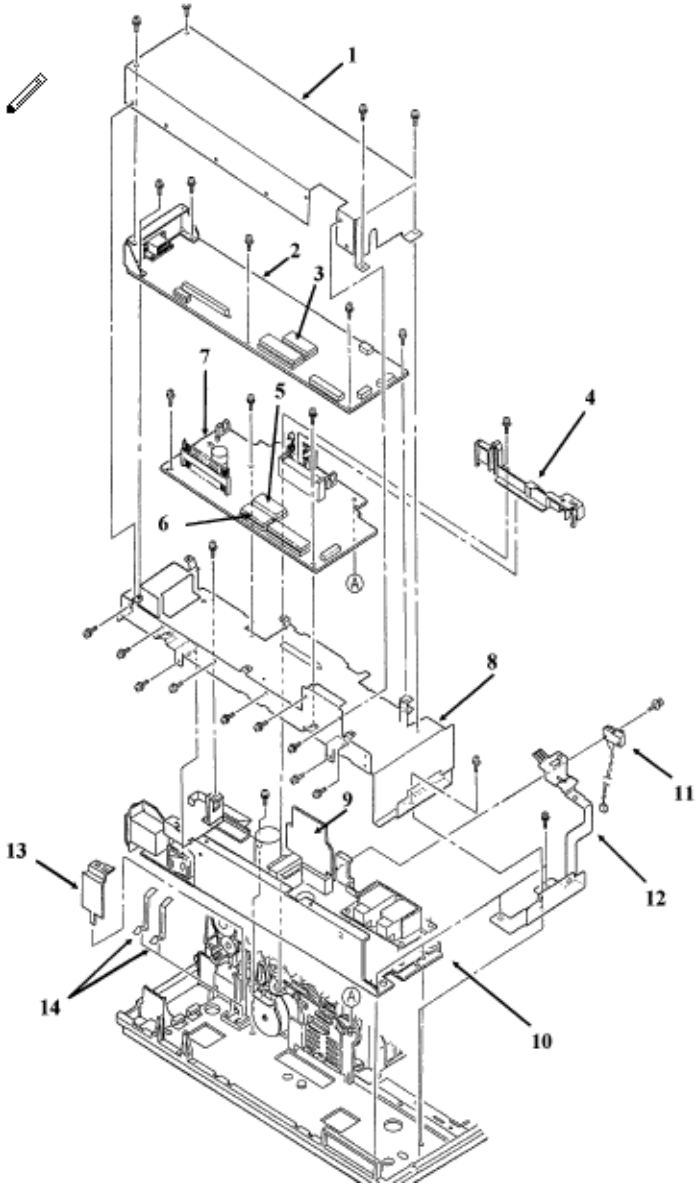
B.2.08 Lower Unit



Item	Okidata P/N Oki-J P/N	Description	Comments Refer to B.1.02	Disassembly Procedure
1	N/A N/A	Upper PCB Shield		3.2.23

2	55066902 4YA4045-1197G2	PCB: SPSX w/o ROM Main Controller	RSPL	3.2.23
3	31086101 4YR4077-1445G1	EPROM for SPSX		3.2.23
4	53528401 3PP4083-2742P1	Cover: Board	RSPL	3.2.29
5	31086001 4YR4067-1854G1	EPROM for SPPY		3.2.29
6	55934301 816A6338F0000	IC: EEPROM MSM28C64A for Engine Controller (SPPY)	RSPL	3.2.29
7	55066802 4YA4045-1198G2	PCB: SPPY w/o ROM Engine Controller	RSPL	3.2.29
8	N/A N/A	Lower PCB Shield		3.2.30
9	55044701 3PU4003-5942P1	PCB: LLIE (Power Connection)	RSPL	3.2.31
10	56411401 4YA4045-1200G1	Power Supply 120 V	RSPL	3.2.36
11	55050701 4YX4056-3735G1	Microswitch: Cover Open (Assembly)	RSPL	3.2.34
12	N/A 3PP4076-3649P1	Ground Plate		3.2.36
13	53502301 4PP4083-2103P1	AC Cover		3.2.36
14	53057901 4PP4083-2048P1	Contact Plate AC		3.2.36

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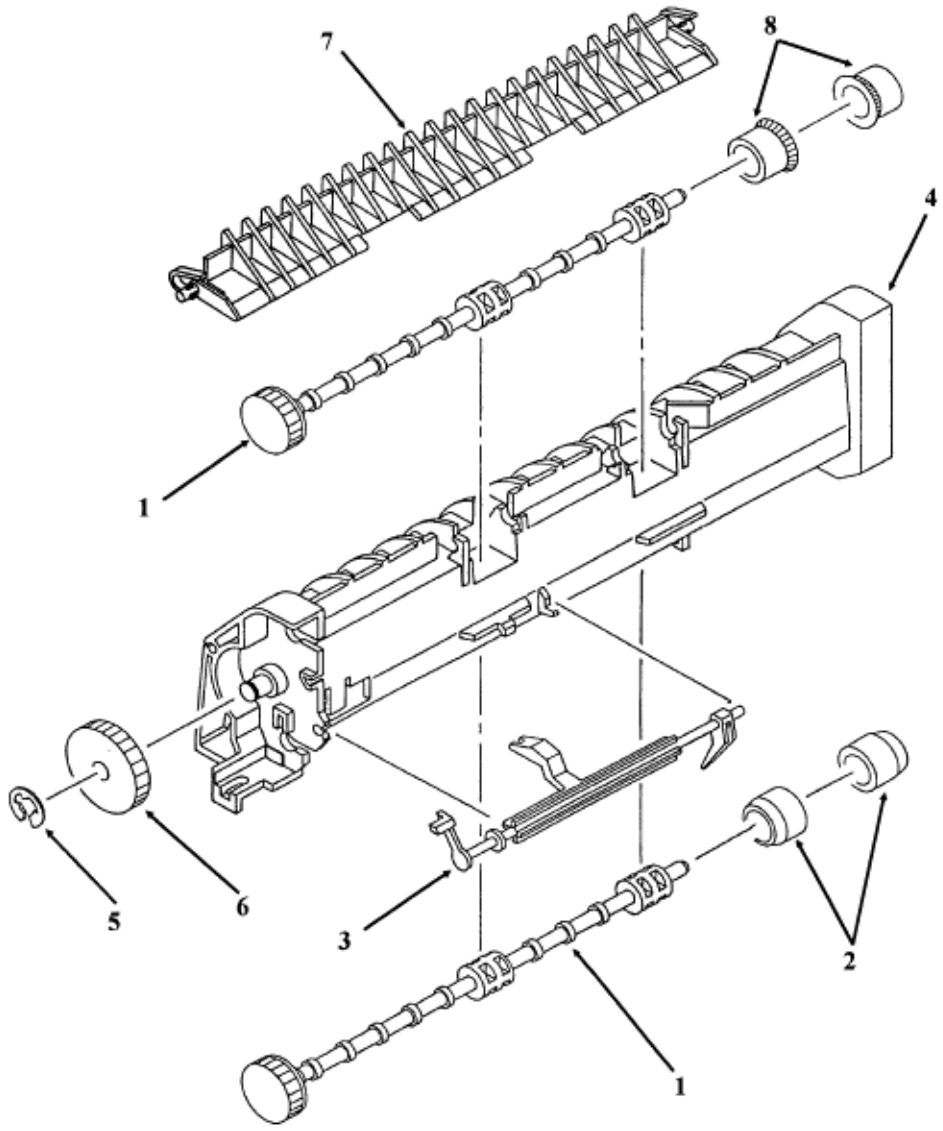
B.2.09 Paper Exit Assembly



Item	Okidata P/N Oki-J P/N	Description	Comments Refer to B.1.02	Disassembly Procedure
0	50066501 2YX4083-2026G1	Roller: Exit (Assembly)	RSPL Includes items 1- 8	3.2.38

1	51111401 3PP4083-2029P1	Paper Eject Roller Shaft		3.2.39
2	53334501 4PB4083-2515P1	Paper Eject Roller (Face-up)		3.2.39
3	53528101 3PP4083-2032P1	Sensor Lever (Paper Eject)		3.2.39
4	51005201 2PP4083-2027P1	Sheet Guide		3.2.39
5	50705301 RE6-SUS	E-Clip		3.2.39
6	51222801 4PP4083-2344P1	Idle Gear (Paper Eject)		3.2.39
7	53528201 3PP4083-2881P1	Separator: Sheet		3.2.39
8	53334401 4PB4083-2028P1	Paper Eject Roller		3.2.39

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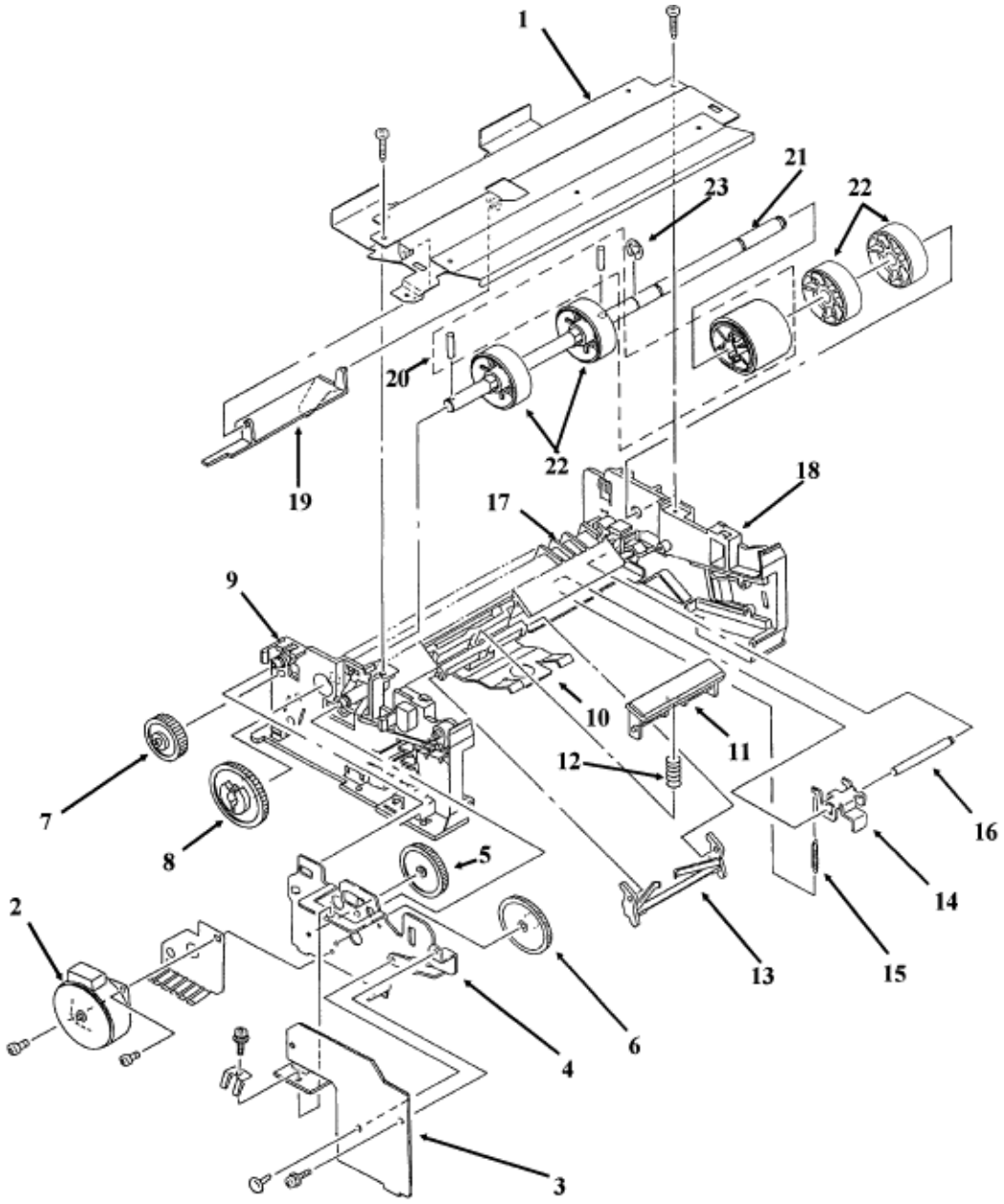
B.2.10 Paper Supply Unit



Item	Okidata P/N Oki-J P/N	Description	Comments Refer to B.1.02	Disassembly Procedure
1	N/A N/A	Upper Plate		3.2.27

2	56507401 4PB4083-2275P1	Motor: Pulse (Resist)	RSPL	3.2.25
3	55044602 4YA4083-5011G2	PCB: LLCC-2	RSPL	3.2.26
4	53335002 N/A	Motor Bracket		3.2.25
5	51223101 4PP4083-2279P1	Idle Gear B		3.2.27
6	51223201 4PP4083-2280P1	Idle Gear	RSPL	3.2.27
7	51223001 4PP4083-2282P1	Planet Gear		3.2.27
8	51222901 3PP4083-2265P1	Hopping Gear		3.2.27
9	53335201 3PA4083-2562G1	Side Frame Assembly (Left)		3.2.27
10	53528701 3PP4083-2266P1	Setting Lever		3.2.27
11	53500501 4PP4083-2255G1	Separator		3.2.28
12	50917101 4PP4083-2270P1	Separator Spring		3.2.28
13	53528601 3PP4083-2256P1	Escape Lever		3.2.28
14	53528801 4PP4083-2267P1	Latch Lever		3.2.27
15	50918601 4PP4083-2271P1	Latch Spring		3.2.27
16	51111601 4PP4083-2296P1	Latch Shaft		3.2.27
17	53335401 1PP4083-2253P1	Separator Frame		3.2.27
18	53335301 1PP4083-2252P1	Side Frame Assembly (Right)		3.2.27
19	53528501 3PP4083-2268P1	Paper End Lever		3.2.27
20	50081701 4PA4083-3105G1	Hopping Roller Assembly		3.2.27

21	51111501 3PP4083-3092P1	Hopping Roller Shaft		3.2.27
22	53334901 3PP4083-2261P1	Hopping Roller B		3.2.27
23	50705401 RE6-SUS	E-Clip		3.2.27

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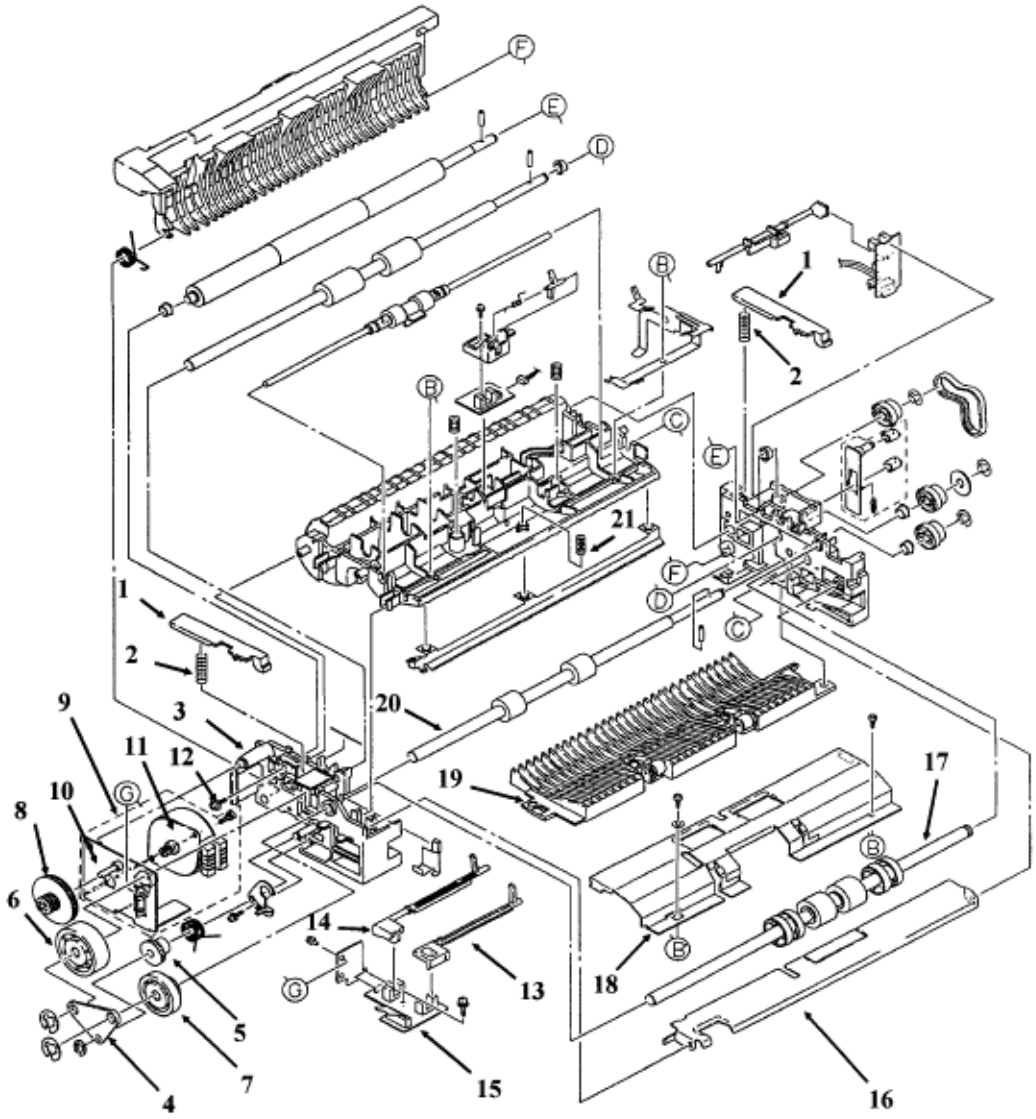
B.2.11 Automatic Document Feed (ADF) Unit



Item	Okidata P/N Oki-J P/N	Description	Comments Refer to B.1.02	Disassembly Procedure
0	50216401 1YX4076-3505G1	Assembly: ADF Includes all items	RSPL	3.2.08

1	N/A 3PP4076-3548P1	Scanner Hopper		3.2.14
2	50922201 N/A	Scanner Spring		3.2.14
3	N/A 4PA4076-3622G1	Side Frame (Left)		3.2.19
4	N/A 4PP4076-3609P1	Support Plate		3.2.10
5	51227001 4PP4076-3680G1	Idle Gear		3.2.10
6	51227101 4LR-197717	One-way Clutch Gear		3.2.10
7	51213401 4PP35201085P1	Cutter Gear		3.2.10
8	51227201 4PP4076-3540P1	Reduction Gear		3.2.10
9	56509901 4YX4076-3533G1	Motor Assembly		3.2.11
10	N/A 4PP4076-3534G1	Motor Bracket		3.2.11
11	56507301 N/A	Pulse Motor		3.2.11
12	N/A 4PB4083-2500P10	Screw		3.2.19
13	N/A 3PP4076-3510P1	Paper Sensor Lever		3.2.15
14	N/A 3PP4076-3511P1	Inlet Sensor Lever		3.2.15
15	55067201 3YU5003-6028G1	SPAX PCB (1/3)		3.2.16 3.2.22
16	N/A 3PP4076-3566G1	Paper Set Plate		3.2.13
17	N/A 3PA4076-3518G1	Hopping Roller Assembly		3.2.12
18	N/A 3PP4076-3665G1	Support Plate Conveyor Frame Cover		3.2.13
19	N/A 2PA4076-3531G1	Lower Base Assembly		3.2.18

20	N/A 3PB4076-3517P1	Exit Roller		3.2.20
21	N/A 4PP4076-3560P1	Hopping Spring		3.2.12

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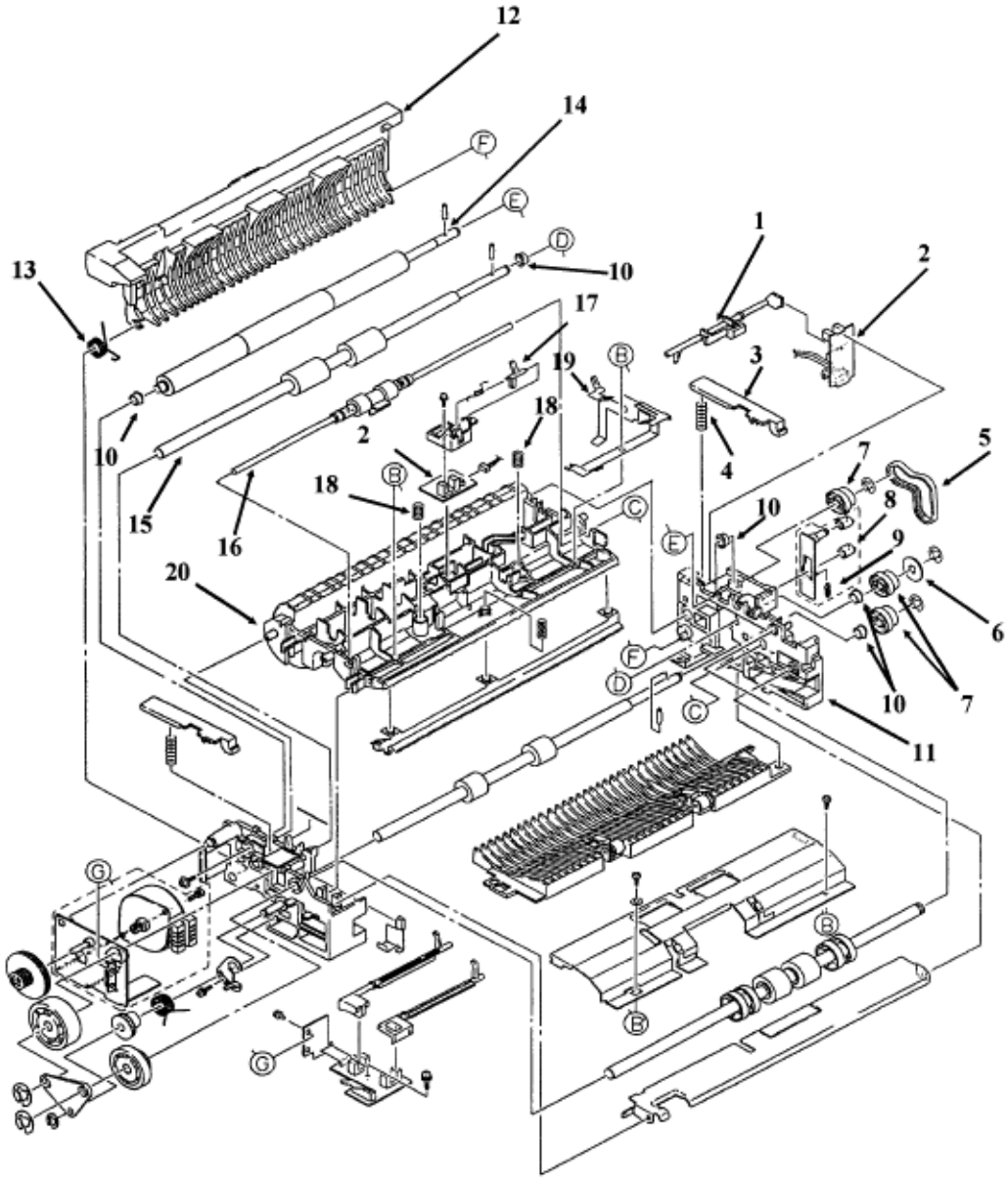
B.2.12 Automatic Document Feed (ADF) Unit



Item	Okidata P/N Oki-J P/N	Description	Comments Refer to B.1.02	Disassembly Procedure
0	50216401 1YX4076-3505G1	Assembly: ADF Includes all items	RSPL	3.2.08

1	N/A 3PP4076-3552P1	Outlet Sensor Lever		3.2.22
2	55067201 3YU5003-6028G1	SPAX PCB (1/3)		3.2.16 3.2.22
3	N/A 3PP4076-3548P1	Scanner Hopper		3.2.14
4	50922301 4PP4076-3562P1	Scanner Spring		3.2.14
5	51304601 4LP-1313-168	Belt: Mini-Pitch (ADF)	RSPL	3.2.09
6	50804401 4PP4076-3542P1	Flange		3.2.17
7	51227301 4PP4076-3541P1	Pulley		3.2.17
8	51008001 4PA4076-3650G1	Tension Plate Assembly		3.2.17
9	50922101 4LB-192500-5	Spring		3.2.17
10	51607301 4PP4076-3949P1	Bush		3.2.17
11	N/A 4PA4076-3623G1	Side Frame (Right)		3.2.22
12	51010601 1PP4076-3528P1	Guide: Sequential (ADF)	RSPL	3.2.18
13	N/A 4PP4076-3563P1	Wire Spring		3.2.18
14	N/A 3PB4076-3516P1	White Roller		3.2.20
15	N/A 3PB4076-3690G1	Resist Roller		3.2.20
16	N/A 3PA4076-3522G1	Brake Roller Assembly		3.2.14
17	N/A 4PP4076-3512P1	Timing Sensor Lever		3.2.21
18	N/A 4PP4076-3561P1	Brake Spring		3.2.14
19	N/A 3PP4076-3555P1	Ground Plate (Right)		3.2.22

20	N/A 3PP4076-3624G1	Conveyer Frame		3.2.22

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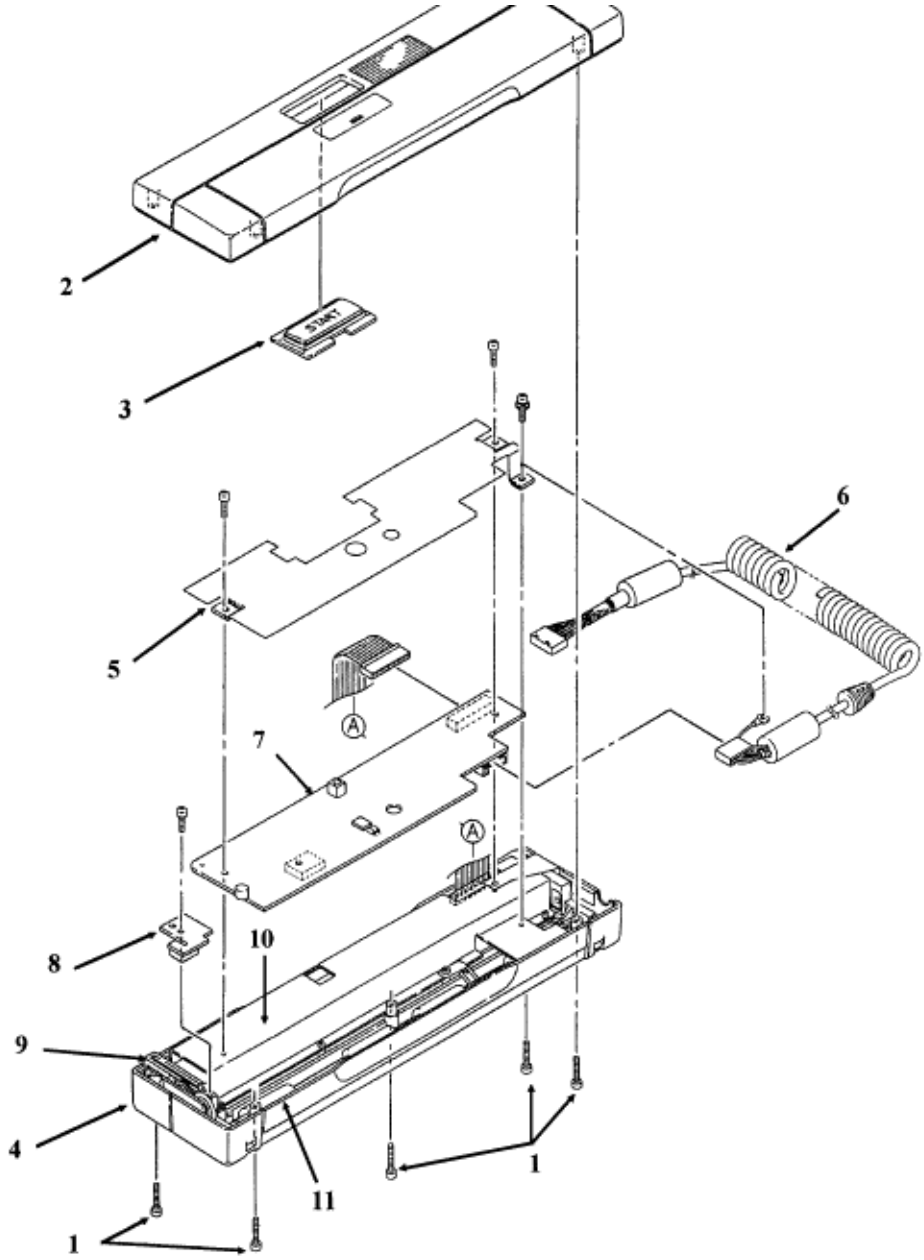
B.2.13 Scanner Unit



Item	Okidata P/N Oki-J P/N	Description	Comments Refer to B.1.02	Disassembly Procedure

1	50316901 4PB4076-3612P1	Screw: Tapping (Scanner)	RSPL	3.2.53
2	53063901 4PP4076-3572G1	Cover: Upper (Scanner)	RSPL	3.2.53
3	56109701 4PP4076-3575P1	Button: Start (Scanner)	RSPL	3.2.53
4	N/A N/A	Lower Case		3.2.55
5	N/A N/A	Plate		3.2.55
6	56625701 3YS4111-2081P1	Cable: Scanner	RSPL	3.2.54
7	55067401 4YA4045-1201G1	Scanner Board SPHY PCB		3.2.55
8	N/A N/A	Plate		3.2.55
9	N/A N/A	Gear Assembly		3.2.55
10	50093701 N/A	Image Sensor		3.2.55
11	N/A N/A	Main Roller		3.2.55

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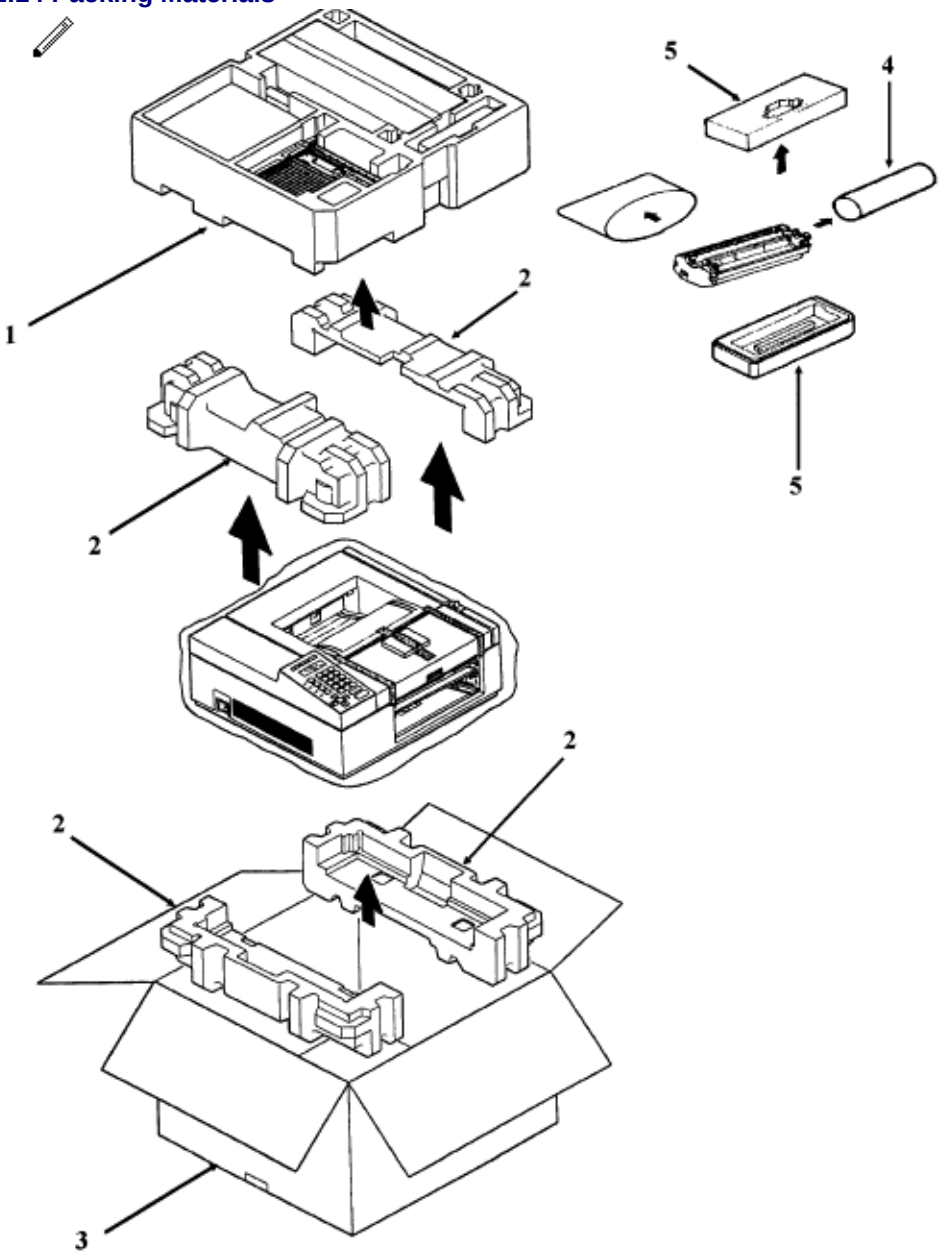
B.2.14 Packing Materials



Item	Okidata P/N Oki-J P/N	Description	Comments Refer to B.1.02	Disassembly Procedure

1	53556601 2PP4076-3658P1	Tray: Accessories (DOC-IT)	RSPL	N/A
2	53556501 2PP4076-3657P1	End Caps (Set of 4)	RSPL	N/A
3	53565701 N/A	Box: Graphics DOC-IT (Spares)	RSPL	N/A
4	53531803 4PP4083-3026P3	Foam: Packaging EP Cartridge	RSPL	N/A
5	53562003 N/A	Assembly: Image Drum Repacking		N/A
6	53556701 3PP4076-3670P001	Tray: Diskette Storage (DOC-IT)	Not Shown	N/A

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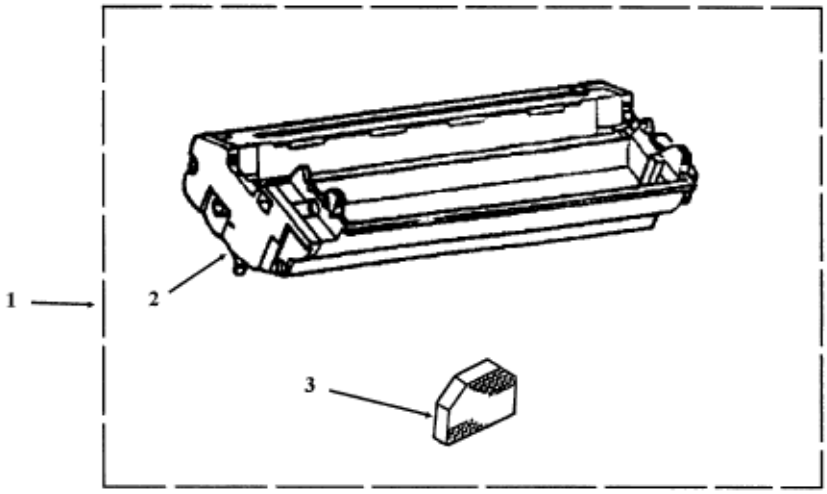
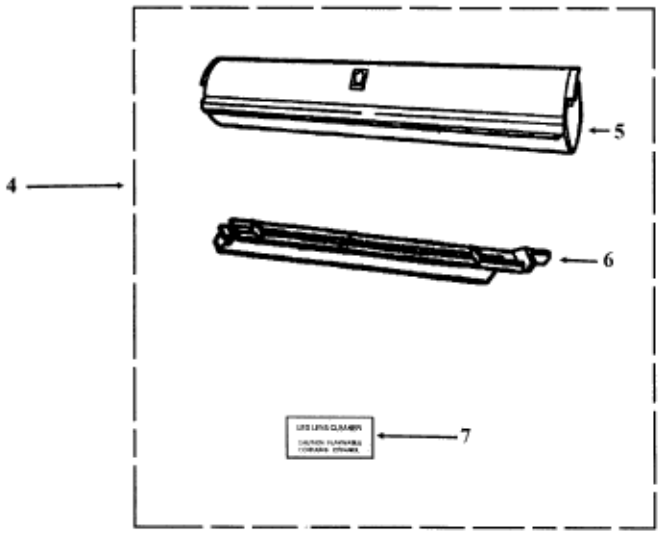
B.2.15 Consumables





Item	Okidata P/N Oki-J P/N	Description	Comments Refer to B.1.02	Disassembly Procedure
1	56106601 N/A	Image Drum Kit	Consumable Includes 2 and 3	N/A
2	56109802 N/A	Image Drum Cartridge	Consumable	3.2.01

3	55503501 3PB4083-2816P2	Ozone Filter	Consumable	3.2.02
4	52104201	Toner Cartridge Kit	Consumable Includes 5 6 and 7	N/A
5	52105602 N/A	Toner Cartridge	Consumable	3.2.01
6	53500901 3PB4083-2096P1	Fuser Pad	Consumable	3.2.43
7	N/A N/A	LED Lens Cleaner	Consumable	N/A

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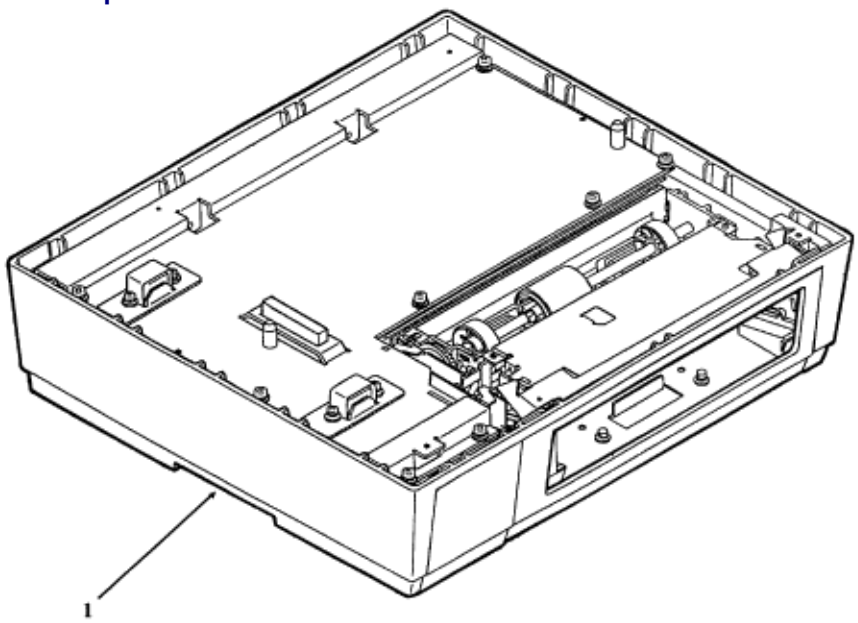
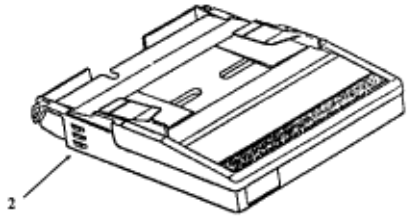
B.2.16 Options





Item	Okidata P/N Oki-J P/N	Description	Comments Refer to B.1.02	Disassembly Procedure
1	70018601 N/A	Second Tray Assembly	Option	3.2.58
2	70020501 4YA4076-3662G1	Paper Cassette (Legal)	Option	3.2.01
2	70020601 4YA4076-3664G1	Paper Cassette (Envelope)	Option	3.2.01

2	70020801 4YA4076-3664G1	Paper Cassette (Executive)	Option	3.2.01
2	70020701 4YA4076-3677G1	Paper Cassette (A4)	Option	3.2.01
2	4YA4076-3678G1	Paper Cassette (B4)	Option	3.2.01
2	4YA4076-3679G1	Paper Cassette (A5)	Option	3.2.01
2	70020901 4YA4076-3663G1	Paper Cassette (Universal)	Option	3.2.01
3	56626902 N/A	Cable: 15ft DOC-IT I/F Molded	Option RSPL	3.2.01
4	70020001 N/A	Software Kit: Phoenix Page	Option	N/A
4	70020101 N/A	Software Kit: TrueImage (+13 Fonts)	Option	N/A
4	70025501 N/A	Software Kit: TrueImage (+35 Fonts)	Option	N/A

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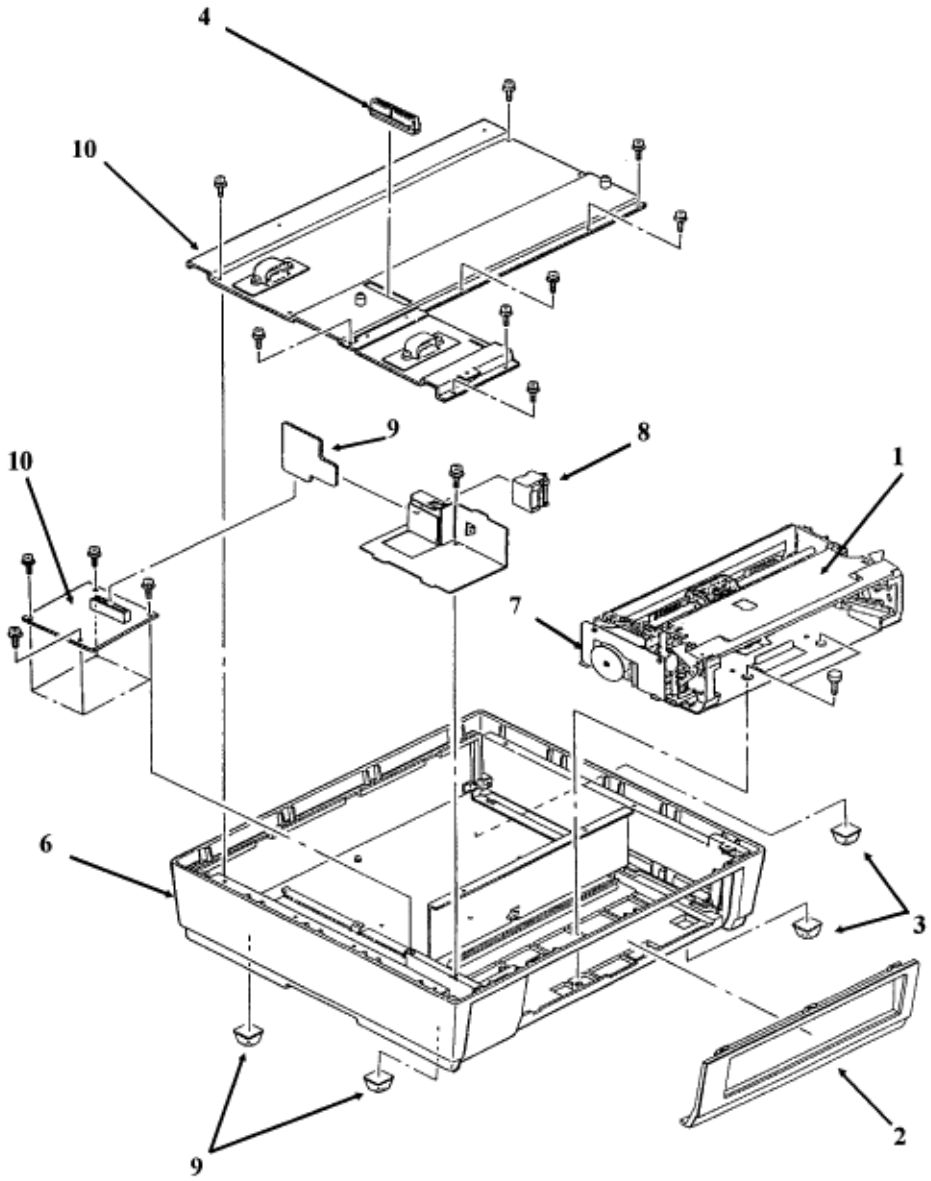
B.2.17 Second Tray Unit



Item	Okidata P/N Oki-J P/N	Description	Comments Refer to B.1.02	Disassembly Procedure
0	70018601 N/A	Second Tray Unit	Option Inc. all items shown	3.2.58

1	50063501 1YX4083-2285 G1	Unit: Second Paper Tray		3.2.60
2	53059501 N/A	Front Panel (R)		3.2.60
3	53505301 4PB4-20-1510P 1	Rubber Foot		3.2.58
4	56725201 224A1157P040 1	Connector: AKJ-40A	Option RSPL	3.2.59
5	N/A N/A	Cover		3.2.59
6	53059401 1PP4016-6791 P1	Base: Lower	Option RSPL	3.2.59
7	55051401 4YA4083-5015 G1	PCB: LLFC (2nd Tray Controller)	Option RSPL	3.2.63
8	56726001 224A1282P008 1	Connector: PM8DOX	Option RSPL	3.2.59
9	55067101 3PU4009-1238 P1	PCB: LLIG (Connection)	Option RSPL	3.2.59
10	55067001 4YR4046-1496 G1	PCB: LLIF (2nd Tray Connection)	Option RSPL	3.2.59

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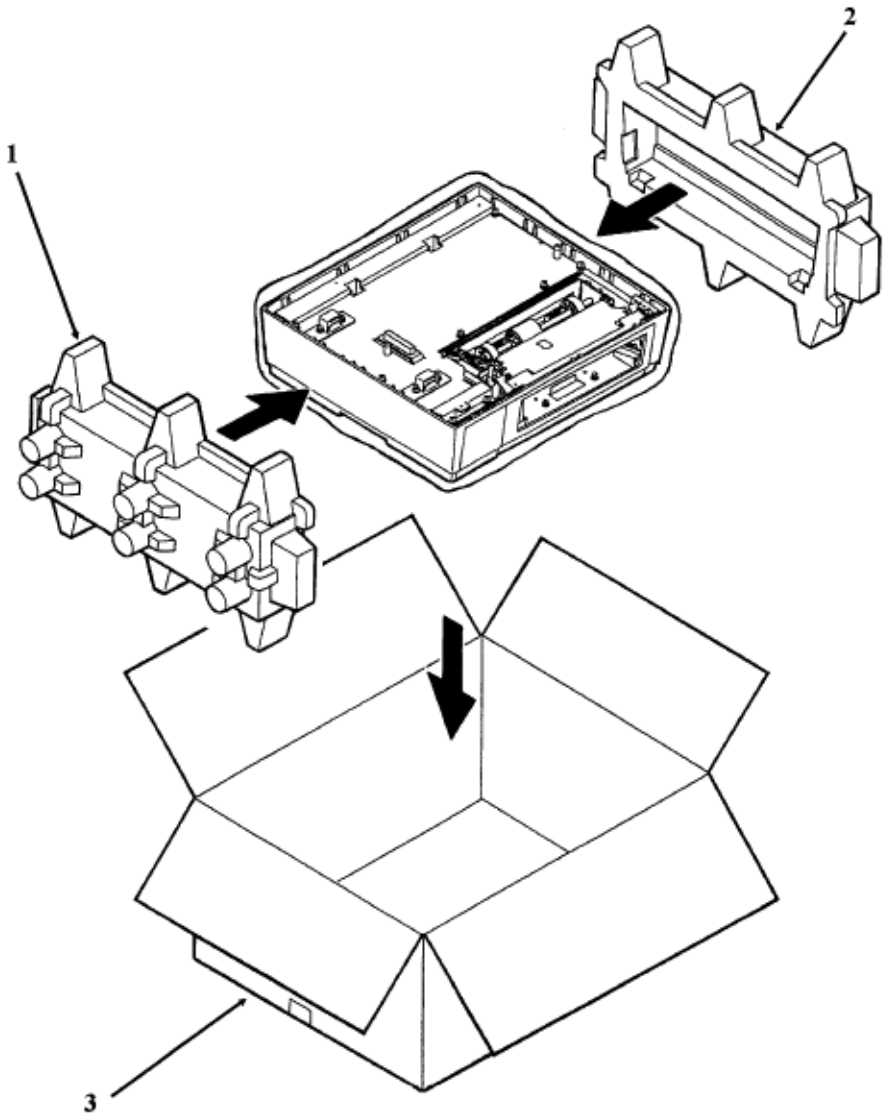
B.2.18 Second Tray Unit Packing Materials



Item	Okidata P/N Oki-J P/N	Description	Comments Refer to B.1.02	Disassembly Procedure
1	53553301 N/A	Foam Cushion Set	Includes 2 and 3	N/A
2	N/A N/A	Foam (Left)		N/A

3	N/A N/A	Foam (Right)		N/A
4	53551401 N/A	Graphic Box: DOC-IT Second Tray Unit		N/A

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C.1 PROBLEM REPORTS

C.1.01 General Information

Okidata wants to provide accurate and detailed service information through its training materials. The Technical Training Group realizes that service technicians have valuable experience, knowledge, and opinions. We strongly encourage you to report any problems you may encounter when using the materials of this training kit. Please be as specific and detailed as possible.
When you complete the self-paced training, complete the Course Critique provided in the Administration Package. Every Critique that is returned is read by the Technical Training Group. Your comments, suggestions, and criticisms are used to update and revise training kits.
You should reference the training materials when servicing Okidata products. Most problems can be solved by using the information provided in the training materials. If you encounter a situation that cannot be solved, please let Okidata know.

Refer to the Training Guide or Section C.1.02 of this Service Handbook about contacting Okidata.

If you have any comments, suggestions, or criticisms of Okidata's service training, please let us know!

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C.1.02 Reporting Problems

Okilink II
You may use Okilink II to report your findings. Please refer to Section Four of this Service Handbook for information on using Okilink II ().

Course Critique
Use the Course Critique when you are completing the self-paced training.

Problem Report
Use the Problem Reports when you encounter any problems/errors in the documentation which limits your ability to effectively service an Okidata product.

Fax Number
If you wish to fax your response, please use this number.
(609) 778-4184 Attn: Technical Training Group

Mailing Address
If you respond by mail, please use this address.

Technical Training Group
OKIDATA
532 Fellowship Road
Mt. Laurel, NJ 08054-3499

C.1.03 Problem Lists

Technicians frequently request a list of common problems specific to a product. Technical Training Kits are written before a product is shipped. Therefore, such information is not available when a product is first released.

However, Okidata wants to respond to these requests. Okilink II provides round table discussions of technical problems. Errors and corrections in the training materials are listed in the Training Section of the bulletin board. The Technical Service Bulletins (also known as Okidatas Monthly Mail) are available via Okilink II. Situations that are not addressed by referring to the reference documentation, technical service bulletins, and round tables may be reported to the Dealer Service and Support Engineers (DSSEs) or the Technical Training Group. You will receive a response to your message within one business day.

The information on Okilink is the most accurate and up-to-date technical information available from Okidata. This is only possible with your assistance. By reporting your suggestions, concerns, and problems, Okidata can provide the best possible information.
Your cooperation is greatly appreciated. Thank you for your help!

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