LaserWriter   Pro   810

Service   Technical   Documentation
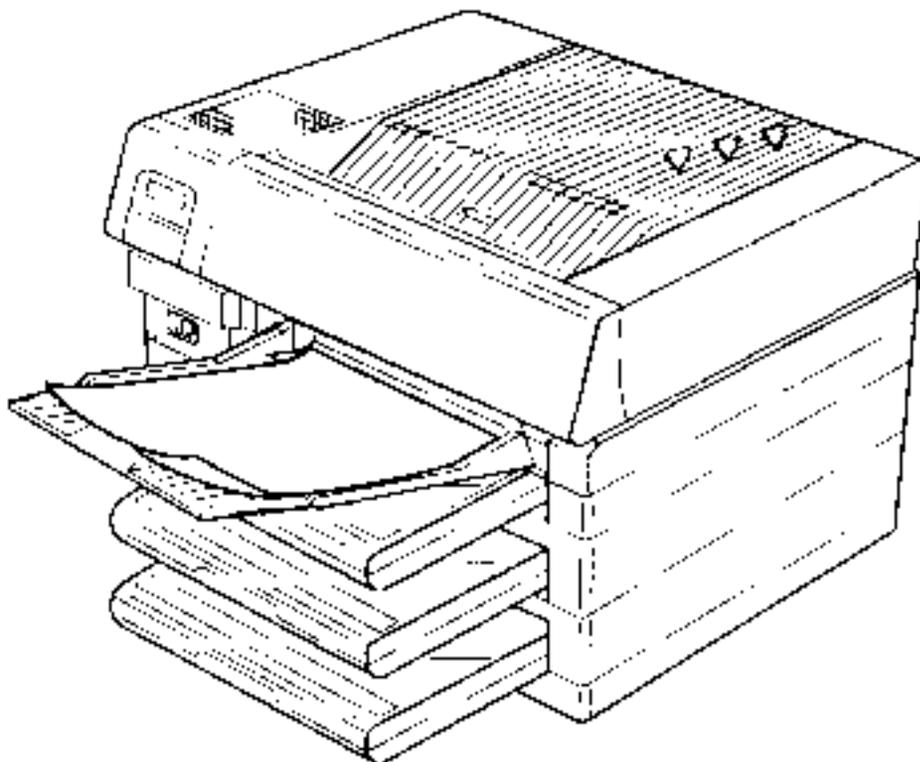
Table of   Contents

TRADEMARK ACKNOWLEDGEMENTS

HP Laserjet Series IIP is a trademark of Hewlett Packard, Inc.
PostScript is a registered trademark of Adobe System Incorporated.
Apple and LaserWriter are a registered trademarks of Apple Computer, Inc.
Macintosh is a trademark licensed to Apple Computer, Inc.
First Edition June 1993

WARNING

FCC Regulations state that any unauthorized changes or modifications to the equipment not expressly approved by the manufacturer could void the user's authority to operate this equipment.

NOTE

This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

NOTE

In order to maintain compliance with FCC regulations, shielded data cables must be used with this equipment.

BESCHEINIGUNG DES HERSTELLERS/IMPORTEURS

Hiermit wird bescheinigt, daß der Laser Drucker Typ LaserWriter Pro 810 in Übereinstimmung mit den Bestimmungen der Vfg. 1046/1984 funk-entstört ist.

Der Deutchen Bundespost wurde das Inverkehrbringen dieses Gerätes angezeigt und die Berechtigung zur Überprüfung der Serie auf Einhaltung der Bestimmungen eingeräumt.

Apple Computer, Inc.

CERTIFICATE OF MANUFACTURER/IMPORTER

This is to certify that the Laser Printer Model LaserWriter Pro 810 is shielded against radio interference with the provisions of Vfg. 1046/1984.

The German Postal services have been advised that this device is being put on the market and are entitled to inspect the series for compliance with the regulations.

Apple Computer, Inc.

USER SAFETY

The Printer is certified as a Class 1 laser product under the U. S. Department of Health and Human Services (DHHS) Radiation Performance Standard according to the Radiation Control for Health and Safety Act of 1968. The product is safe to use during normal operation and maintenance.

Protective housing and external covers completely confine the laser light emitted inside the printer. The laser beam cannot escape from the machine during any phase of normal user operation.

CAUTION

Performance of procedures other than those specified in this manual could result in hazardous radiation exposure.

Regulations implemented on August 2, 1976, by the Center for Devices and Radiological Health (CDRH) of the U. S. Food and Drug Administration (FDA) apply to laser products manufactured from August 1, 1976. Laser products sold in the United States must comply with these regulations.

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le present appareil numerique n'emet pas de bruits redioelectriques depassant les limites applicables aux appareils numeriques de la class A prescrites dans le Reglement sur le brouillage radioelectrique edicte par le ministetre des Communications du Canada.

LITHIUM BATTERY INFORMATION

CAUTION

Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

A "dead" lithium battery is considered hazardous waste and has some potential for explosion if improperly handled. Mark the battery "Dead". Place it in a zip-lock wrapper and the packaging used to ship the replacement battery, and return the dead battery to Apple, where it will be disposed of following EPA guidelines. Exception: If the battery is physically damaged, do not return it to Apple. Dispose of the battery locally according to local ordinances.

(Instructions for replacing the battery are given in this manual.)

CAUTION

Invisible laser radiation when open and interlocks defeated. Avoid exposure to laser beam.

LaserWriter Pro 810

Section 1: Introduction

GENERAL

The printer consists of two major blocks—the controller and the print engine. The controller functions as the interpreter of the source print data and creates dot pattern information. The print engine prints the data based upon the dot pattern information it receives from the controller.

The print engine includes the Laser Scanner Unit (laser/optical unit), EP cartridge (developer, drum, toner, main charger), and paper feed mechanisms. The print engine mechanisms are controlled by the DC Controller.

This section of the manual describes the overall print process, Laser Scanner Unit functions, and DC Controller functions. Locations of other major parts and assemblies are provided as well as a brief description of their functions.

NOTE: Many of the drawings in this manual show a two-tray model of the LaserWriter Pro laser printer. All pictures of the two-tray model used in this manual accurately represent the three-tray LaserWriter 810.

Apple Computer does not include a two-tray printer in the LaserWriter 810 product offering. If this manual is revised in the future the graphics will be changed to reflect the three-tray configuration.

PRINTING PROCESS
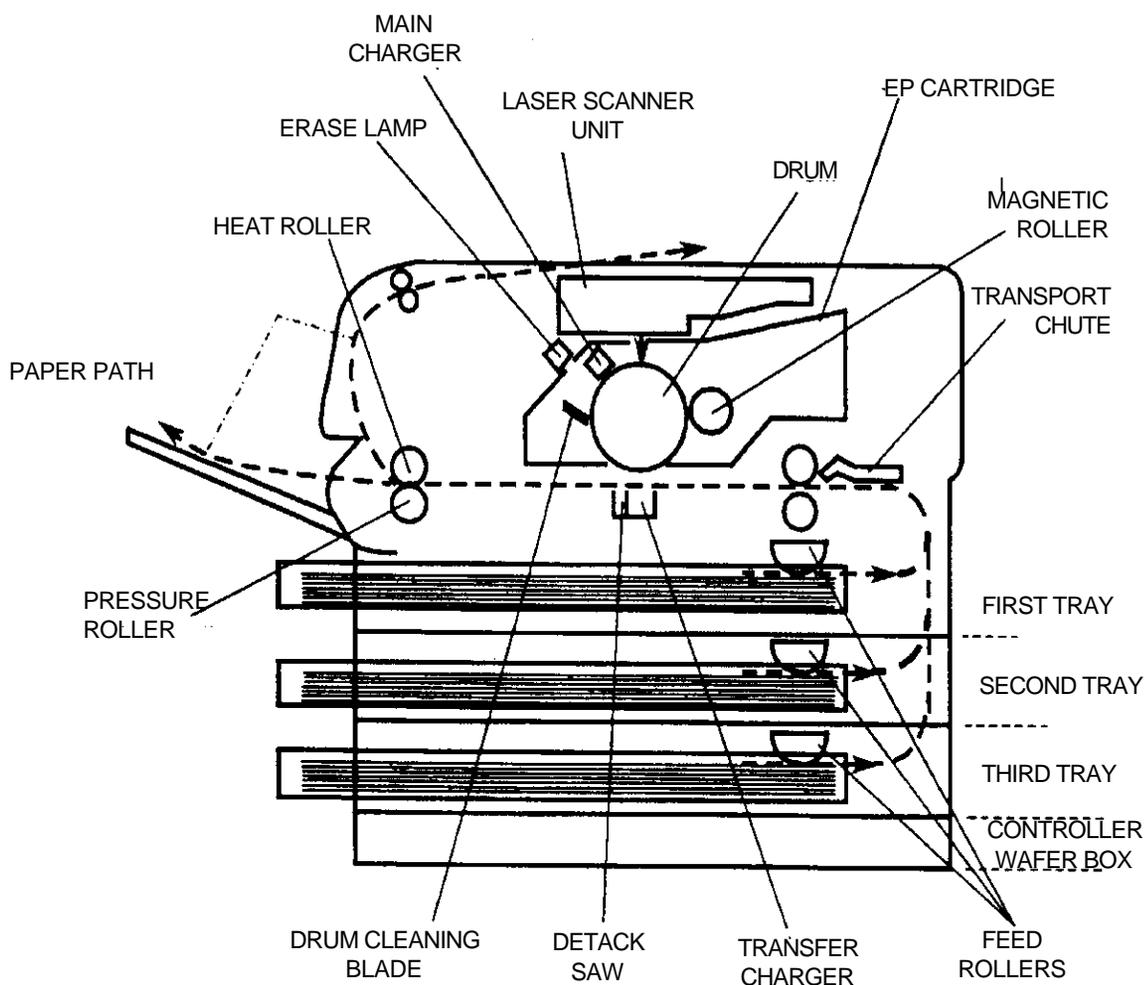
Charging   The main charger places a negative charge on the drum.

Exposure   When an image signal is received, the laser emits light to the drum and erases the negative charges to form an electrostatic latent image.

Developing   The magnetic roller is covered by a thin film of magnetic toner. The toner (negatively charged) is attracted to the latent image on the drum and forms a visible image on the drum.

Transfer   The transfer charger applies a positive charge to the bottom surface of paper that transfers the toner image from the drum to the paper.

Separation   The paper is separated from the drum by a combination of the detack saw bias voltage and the paper's characteristics.

Fusing   The toner image is fused to the paper by the heat and pressure applied by the fuser rollers.

Cleaning   The cleaning blade scrapes off any residual toner on the drum. At the same time, the erase lamp transmits light to the drum and erases any residual electrical charge. Following the cleaning process the print process starts again from the charging cycle.
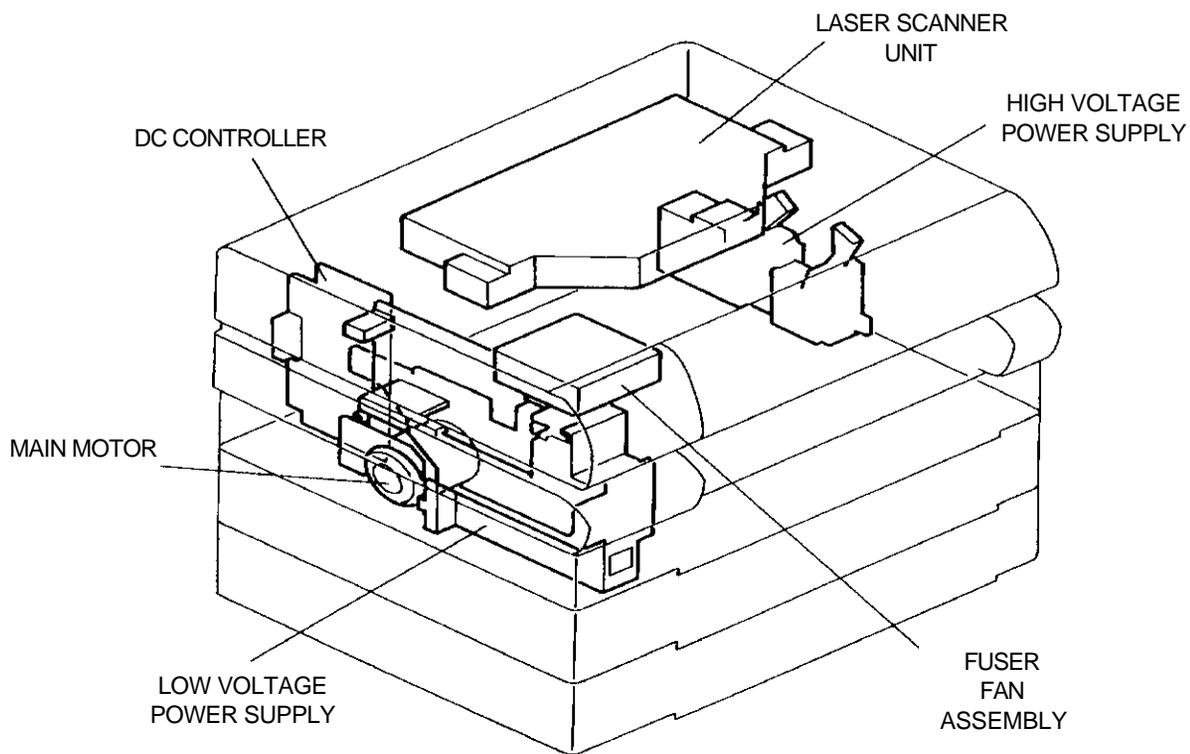
PART NAMES AND PART FUNCTIONS

TABLE 1-1. PART NAMES AND FUNCTIONS

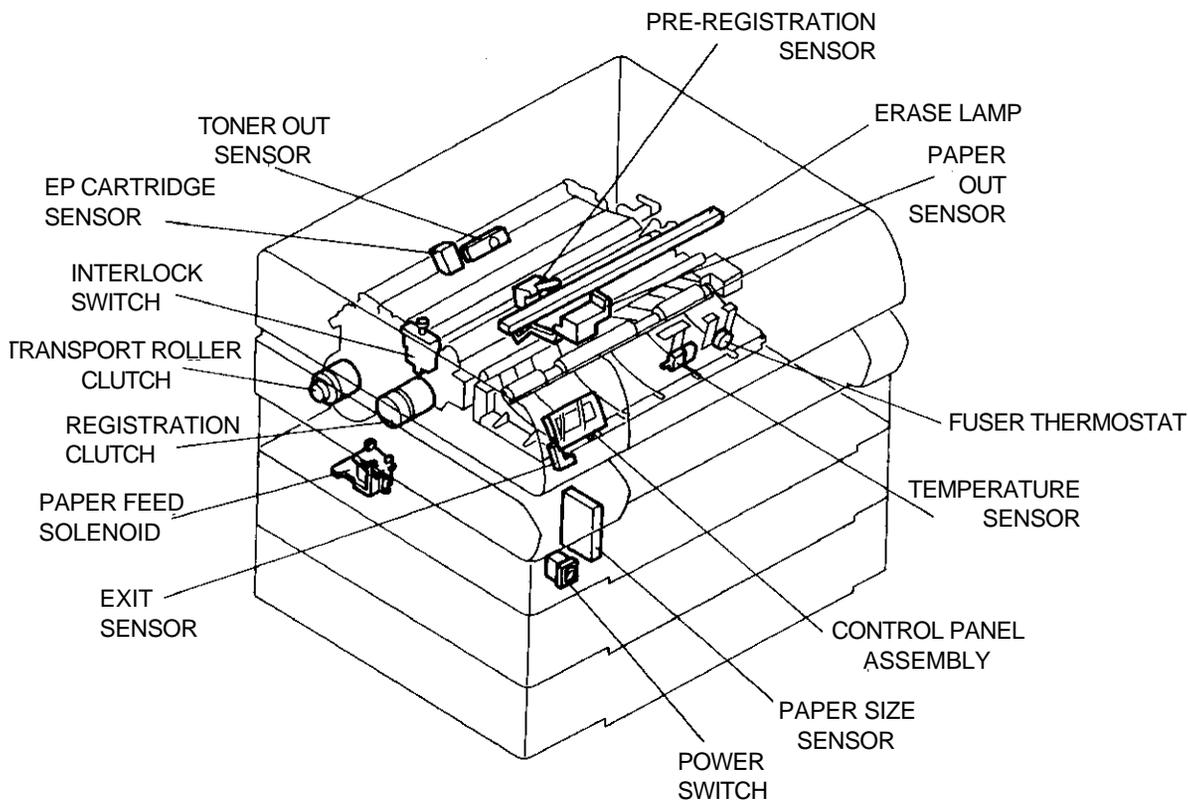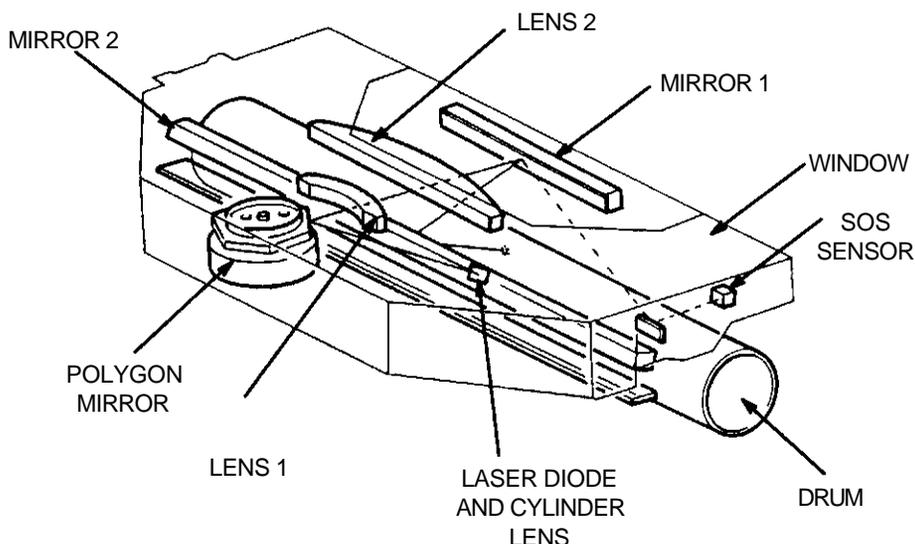| Name	Main function
Main Motor	Supplies the main mechanical drive for the printer. A fan on the motor shaft cools the drive unit.
Laser Scanner Unit	Receives a signal from the user system through the DC Controller board, and converts the signal into a laser beam that is transmitted to the drum to form an electrostatic latent image.
Low Voltage Power Supply (LVPS)	Generates the +5, +15, and +24 voltages for the various printer assemblies from the AC voltage input. Includes the main power switch.
High Voltage Power Supply (HVPS)	Generates the high DC/AC voltage for the transfer charger, main charger, and magnetic roller.
DC Controller	Controls the whole operation of the printer based on data from each sensor and commands from the user system.
Fuser Fan Assembly	Serves as the exhaust fan to prevent temperature in the printer from rising.

PRE-REGISTRATION
SENSER

(diagram labels)

TONER OUT
SENSOR

ERASE LAMP

PAPER
OUT
SENSOR

EP CARTRIDGE
SENSOR

INTERLOCK
SWITCH

TRANSPORT ROLLER
CLUTCH

FUSER THERMOSTAT

REGISTRATION
CLUTCH

TEMPERATURE
SENSOR

PAPER FEED
SOLENOID

EXIT
SENSOR

CONTROL PANEL
ASSEMBLY

PAPER SIZE
SENSOR

POWER
SWITCH

TABLE 1-1. PART NAMES AND FUNCTIONS (CONTINUED)

Name	Main function
Control Panel Assembly	Displays the printer's operating status, error messages, and corrective actions. The keypad is used for setting printer operating parameters.
Erase Lamp	Light Emitting Diodes (LED) used to erase any residual charge on the drum.
Power Switch	Turns AC power supply ON and OFF. The switch is part of the LVPS.
Cartridge Sensor	Determines that the EP cartridge is seated correctly.
Temperature Sensor	Detects the surface temperature of the heat roller and transmits a signal to the DC Controller board to keep the heat roller temperature constant.
Fuser Thermostat	Shuts off AC voltage to the fuser bulb when heater roller temperature gets too high because of trouble with the temperature sensor, DC Controller, etc.
Paper Size Sensor	Detects the size of a cassette installed in the printer by a combination of "ON" and "OFF" signals transmitted by four independent sensors.
Paper Out Sensor	Detects the absence of paper in the paper cassette.
Interlock Switch	When the top cover is opened, the AC power for the fuser bulb, 24 VDC, and 15 VDC is interrupted and the printer stops immediately.
Exit Sensor	Detects a paper jam at the paper exit.
Toner Empty Sensor	Detects a no toner condition in the EP cartridge.
Pre-Registration Sensor	Detects paper movement as well as no paper conditions when using the manual feed guide.
Registration Clutch	Rotates and stops the registration roller to position paper for a toner image transfer from the drum.
Paper Feed Solenoid	Electrically controls the rotation/stop operation of the feed roller that moves the paper from a cassette.
Transport Roller Clutch	Controls rotation/stop operation of the transport roller that moves the paper from the cassette to the upper transport roller or registration roller.

EXPOSURE PROCESS

MIRROR 2

LENS 2

MIRROR 1

WINDOW

SOS
SENSOR

POLYGON
MIRROR

LENS 1

LASER DIODE
AND CYLINDER
LENS

DRUM

Except for the semiconductor, diode-type laser, the printer uses the same Xerographic process as conventional copiers. When the printer receives a print start signal from the I/O Controller, the laser diode starts emitting light.

The laser beam from the laser diode is collimated by a cylinder lens before being transmitted to the polygon mirror. The six-sided polygon mirror is driven by the scanner motor that rotates at a constant speed (RPM). Each rotation of the polygon mirror causes one scan line.

The laser beam, reflected by the polygon mirror, is transmitted to the drum through lenses 1 and 2, mirrors 1 and 2, and the window. On the right side of mirror 2 is a mirror for the Start of Scan (SOS) sensor. This configuration keeps a constant scanning position for each scan line.

DC CONTROLLER FUNCTIONS

The DC Controller has the following main functions.

User System/Printer Communications
Receives video data synchronized with the video clock signal from the I/O
Controller and sends the video data synchronization signal and status signal
to the I/O Controller.

Sensor And Switch Signal Detection
Inputs signals from the sensors and switches that detect the status of the
printer before and during the print sequence.

Laser Scanner Unit Control
Monitors the scanner motor RPM and receives the SOS (Start of Scan)
signal to synchronize the start of laser beam scanning. Sends the video
print data to the Laser Scanner Unit in synchronization with the SOS signal.

Control Panel Display and Input
Displays error and status messages. Receives the input signals from the
keypad.

Print Sequence Control
Using sensor data and timers, it controls the print sequence of paper feed,
movement, and discharge.

Engine Self-Test and Diagnostics
The self-test print and diagnostic functions aid in the detection of print
engine errors and malfunctions.

LASER SCANNER UNIT BOARD FUNCTIONS

The board in the Laser Scanner Unit has the following functions:

Receives video data from the DC Controller board and uses it to control the
laser beam to form a latent image on the drum.

Controls the scanner motor so that it keeps rotating at a constant speed.

PRINTER SPECIFICATIONS

TABLE 1-2. PRINTER SPECIFICATIONS

ITEM	DESCRIPTION
Type	Desk top type
Page description language/Emulation	Postscript Level 2 and HP LaserJet IIP
Printing system	Laser xerography system; Write black.
Print speed, maximum	20 sheets per minute
Resolution	300,400,600, and 800 dots/inch.
Paper feed	Cassette paper feed Manual paper feed Multi media power feeder (Option)
Paper cassettes, standard	Standard in 115 volt printers: Letter (8.5" x 11") Ledger (11" x 17") Standard in 220/240 volt printers: A3 (297 mm x 420 mm) A4 (210 mm x 297 mm)
Optional cassette sizes	Letter (8.4" x 11") US Ledger (11" x 17") Universal - all standard sizes
Paper sizes, manual feed	Paper size: A4LEF, A4SEF, Executive, Legal, Letter LEF, Letter SEF, Folio, B4, B5 and Invoice. Envelope Size: Com-10, Monarch, C5, and DL
Paper weight	Cassette feed: 52-82 g/m^2 paper Manual feed: 52-139 g/m^2 paper or postcard stock 190 g/m^2
Paper capacity	Cassette: 250 sheets (64 g/m^2 paper) Multi media power feeder: 100 sheets (64 g/m^2 paper) 15 envelopes
Exit tray capacity	Face up: 250 sheets (64 g/m^2 letter -size paper Face down: 250 sheets (64 g/m^2 letter-size paper)
Printer size in millimeters	Width Depth Height 519 410 487
Printer size in inches	Width Depth Height 20.4 16.14 19.17
Printer weight	24.6 Kg, 54.23 lbs.
Warm-up time	approximately 1 minute, at room temperature (22°C to 35°C or 72°F to 95°F).
Time to first print	approximately 20 seconds
Noise level	During operation: 53 dBA or less During standby: 40 dBA or less
Power supply	115 $\pm$10 VAC, 50/60 $\pm$2 Hz or 220/240 VAC, 50/60 $\pm$2 Hz (International market)
Power consumption	Maximum 0.8 kW or less
Working Temperature	10° to 35°C (50° to 95° F)
Humidity	15% to 85% RH non-condensing

STORING CONSUMABLES

Paper should be stored in a cool, dry place. Keep it out of direct sunlight. Avoid storing paper in an area with high humidity. When the printer isn't going to be used for a long time, remove all the paper from the cassettes and wrap it in the original wrapper.

EP Cartridges should be stored in a cool, dry place. Do not store them in direct light. Avoid storing the EP cartridges in areas with high temperature and humidity (0-35° C, 32-95° F and 10-80% relative humidity). Do not store the cartridges on their sides or on end.

Be especially careful of conditions that could cause condensation to form on the drum.

LaserWriter Pro 810

Section 2: Setup Menu

GENERAL

This section tells you how to use the Setup Menu to change the printer's operating parameters. Operating parameters, such as input port, printer type, and paper source are set through the Setup Menu.

Setup Menu Keys

The control panel keys that are used to get around in the setup menu are illustrated and described below. See the User's Manual for more detailed instructions for using the Setup Menu.
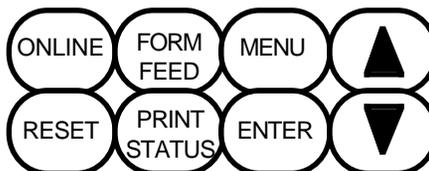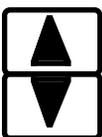

MENU   **MENU KEY**

Press to enter the Setup Menu after the printer is off-line. Press ENTER to select a value.

ENTER   **ENTER KEY**

Press to select a menu item or a displayed value. Press to permanently save any changes made to the setup menu. The changes are retained even if the printer is turned off.

ARROW KEYS

Press to scroll through a menu or sub-menu level.

ONLINE   **ONLINE KEY**

Press to exit the setup menu. Press in response to a SAVE SETTING? message to temporarily save any changes made to the menu settings. These changes are lost when the printer is turned off.

FORM FEED   **FORM FEED**

The form feed key is not operational

Setup Menu Messages

The messages that you may encounter while using the setup menu are listed and described in Table 2-1. Instructions for using the setup menu are in the User's Manual.

TABLE 2-1.   MENU MESSAGES

Menu Message	Description
SAVE SETTINGS? ENTER=PERMANENT ONLINE=TEMPORARY	After changes have been made to the setup menu, the ENTER and ONLINE prompts are displayed alternately until the ONLINE or ENTER key is pressed.
TEMPORARY	After setup menu changes have been temporarily saved by pressing the ONLINE key, this message is displayed.
PERMANENT	After setup menu changes have been permanently saved by pressing the ENTER key, this message is displayed.
FACTORY SETUP? ENTER=RESTORE ONLINE=CANCEL	When RESTORE FACTORY SETUP is selected from the Misc. menu, the ENTER and ONLINE prompts are displayed alternately until the ONLINE or ENTER key is pressed.

Setup Menu Description

The Setup Menu for the printer works like many menu-driven software packages. When you select an item in one menu, another menu may be called up. You can continue to choose from each new menu until you get to the selection you need.

The Setup Menu is illustrated in the diagram on the following pages.   In the diagram, the first item listed in a sub-menu is the factory default. After changes have been made, the newly selected items or values are listed first in the sub-menus. Each time you enter the Setup Menu, you are returned to the menu or sub-menu that was displayed when you left it.

NOTE: An asterisk (*) appears in the message window when an item is selected.

SETUP MENU

Level 1	Level 2	Level 3	Level 4	Level 5
MENU: POSTSCRIPT RESOLUTION				
	POSTSCRIPT RESOLUTION 300, 400, 600, 800			
MENU: INPUT PORT				
	INPUT PORT PARALLEL			
		PARALLEL ENABLE		
			ENABLE YES (NO)	
		PARALLEL PRINTER TYPE		
			PRINTER TYPE POSTSCRIPT (LJETIIP)	
	INPUT PORT RS232			
		RS232 ENABLE		
			ENABLE YES (NO)	
		RS232 BAUD		
			BAUD 9600 (19200, 38400, 300, 600, 1200, 2400, 4800)	
		RS232 PARITY		
			PARITY NONE (EVEN, ODD, MARK, SPACE)	
		RS232 FLOW CONTROL		
			FLOW CONTROL XON-XOFF (DTR)	
		RS232 STOP BITS		
			STOP BITS 1 (2)	
		RS232 DATA BITS		
			DATA BITS 8 (7)	
Level 1	Level 2	Level 3	Level 4	Level 5

SETUP MENU (Continued)

Level 1	Level 2	Level 3	Level 4	Level 5
MENU: INPUT PORT		RS232 PRINTER TYPE		
			PRINTER TYPE POSTSCRIPT (LJET IIP)	
	INPUT PORT LOCALTALK			
		LOCALTALK ENABLE		
			ENABLE YES (NO)	
		PRINTER TYPE POSTSCRIPT (LJET IIP)		
MENU: MISC				
	MISC RESTORE FACTORY SETUP			
	MISC EXIT JAM REPRINT			
		EXIT JAM REPRINT DISABLE (ENABLE)		
	MISC START-UP PAGE			
		START-UP PAGE ENABLE (DISABLE)		
	MISC SCSI DELAY			
		SCSI DELAY: OFF (20, 40, 60)		
Level 1	Level 2	Level 3	Level 4	Level 5

SETUP MENU (Continued)

Level 1	Level 2	Level 3	Level 4	Level 5
MENU: PAPER SOURCE				
	PAPER SOURCE TRAY 1 (TRAY 2, TRAY 3)			
	PAPER SOURCE AUTO CASCADE			
		AUTO CASCADE TRAY 1 & 2 & 3 (TRAY 1 & 2, TRAY 1 & 3, TRAY 2 & 3)		
	PAPER SOURCE M-M PWR FEEDER			
		M-M PWR FEEDER LETTER(8.5X11) [LEGAL(8.5X14), STAT(5.5X8.5), EXEC(7.25X10.5), FOLIO(210X330), A4(210X297), A5(210X148.5), B5(182X257), COM-10 ENV, MONARCH ENV, INT'L DL ENV, INT'L C5 ENV]		
	PAPER SOURCE MANUAL FEED			
		MANUAL FEED LETTER, LEF (LEDGER, SEF LEGAL, SEF STATEMENT, SEF EXECUTIVE, SEF LETTER, SEF A4, SEF A4, LEF A5, SEF A5, LEF B5, LEF B4, SEF ENV COM-10, SEF ENV MONARCH SEF ENV DL SEF ENV C5, SEF		
Level 1	Level 2	Level 3	Level 4	Level 5

MENU POSTSCRIPT:/RESOLUTION

The POSTSCRIPT RESOLUTION menu selects either 300, 400, 600 or 800 Dots-Per-Inch (DPI) resolution whenever POSTSCRIPT is the selected printer type. Changing the resolution to 400, 600 or 800 (DPI) has no effect when the printer type is LJET IIP (HP LaserJet IIP).

MENU:/INPUT PORT

The printer has three Input/Output (I/O) connectors available. Since a different system can be connected to each of the I/O connectors, the printer can be shared by three user systems.

NOTE: PostScript documentation refers to the printer interfaces (I/O) as channels. Port is another word sometimes used to refer to the interface connectors and circuitry.

When the printer is shared by two or more systems, the interfacing circuitry checks or polls each interface for incoming data. When data is received on a port, that job is processed without interruption. Once the job is completed, polling for incoming data resumes.

The Input Port Menu lets you disable an interface and/or set up the required operating parameters that control communication between the computer system(s) and the printer. The two serial channels can each be set up with different protocols and baud rates.

The Input Port Menu also lets you select the PRINTER TYPE for each channel. All three ports can be setup with PostScript as the Printer Type. However, a combination of PostScript and HP LaserJet Series IIP can be implemented. The printer type factory default for all three ports is Postscript.

MENU:/MISC

The Miscellaneous Menu is a selection of several miscellaneous features and functions of the printer.   It includes:

- resetting the printer to the factory defaults (RESTORE FACTORY SETUP)
- enabling the EXIT JAM REPRINT function
- disabling the START-UP PAGE function
- setting a delay time for a hard disk drive
- selecting the language for the control panel messages

RESTORE FACTORY SETUP can be used whenever the printer needs to be reset to the factory defaults. This is useful if changes have been made that do not seem to be functioning as planned.

Three factory defaults, one of which is selectable from the Setup Menu, cannot be changed by the RESTORE FACTORY SETUP. The three are Display Language, printer name, and page count.

The EXIT JAM REPRINT function enables the printer to reprint a page that may be in the exit area when a jam occurs. This means that two pages, instead of one, are reprinted. Because reprinting two pages uses more of the printer memory, the function can be turned off to free more memory.

The START-UP PAGE function can be turned off after the printer is set up. However, printing the start-up page is a good way to be sure that the printer is operating correctly.

The SCSI DELAY function sets the length of time the printer will wait for a hard disk drive to come ready during the power on cycle. Some disk drives may take longer than the printer to power up. The delay avoids the possible problem of the printer not seeing the disk drive.

A DISPLAY LANGUAGE menu is displayed when this feature is supported. It lets you select the language that is used for the messages that are displayed on the control panel. English is the default.

MENU:/PAPER SOURCE

The PAPER SOURCE Menu is used to select a paper source. If the printer model has only one cassette and the multi media power feeder is not installed, only manual feed and tray one are displayed on the Setup Menu. Manual feed and the multi-media power feeder both have sub-menus for selecting the paper and envelope sizes.

The Auto Cascade function can be enabled in this menu. For this feature to work, each cassette (tray) must contain the same paper size.

LaserWriter Pro 810

Section 3:   Preventive Maintenance

GENERAL

This section describes a preventive maintenance procedure that should be carried out whenever other service is required by the user. By checking the printer on a service call, you can instruct the user about printer care and possibly prevent future problems. The procedure can be completed in 10 minutes or less.

PREVENTIVE MAINTENANCE PROCEDURE

1. Record the total number of pages fed through the printer to date.

    • Turn the printer on while pressing the DOWN arrow key to enter the diagnostic mode.

    • Press the DOWN arrow key once again to enter the total counter display. The LED displays a cumulative count in six digits.

    • Estimate the life of the consumables from the counter reading.

2. Check overall printer operation by doing the following:

    • Turn off the printer.

    • Turn the printer on while pressing the ENTER key to enter the print test mode.

       NOTE: If the multi media power feeder is installed, make several prints using it as the paper source. See Section 5 for more information about using the print test mode.

    • Make several prints in the test print mode.

    • Listen for abnormal noises as the test printout is printing.

    • Check the test printout for print quality problems.

3. Check the transfer charger assembly.

       CAUTION**:** Be careful not to break the charger and guide wires while cleaning the transfer charger.

    • Take out the transfer charger and clean it with a brush or a dry cloth.

    • Be sure to clean the transport rollers.

       CAUTION**:** Do not expose the drum to light for more than five minutes. Print quality can deteriorate.

    • If the transfer charger is badly soiled, clean it with a cloth slightly moistened with water and then with a dry cloth.

4. Check the fuser heat roller cleaner for paper dust and dirt build-up.

    • Remove the fuser heat roller cleaner from the fuser.

    • Remove deposits of paper dust and toner from the cleaning felt. A firm bristled brush may help.

5.   Check the registration roller and transport chute.

   • Clean them with a brush and dry cloth.

   • If they are badly soiled, clean them with a cloth slightly moistened with water and then with a dry one.

     NOTE: Do not leave any rollers dirty. Dirty rollers can cause print quality and paper handling problems.

6.   Check the fan exhaust inlet.

   • If the top cover is removed during maintenance, use a brush to remove the dirt, toner, and paper dust from the fan exhaust.

7.   Recheck printer operation.

   • Make several more test prints.

   • Check again for print quality, paper feed, and abnormal noises.

8.   Turn the printer off and on to enter the normal mode.

9.   Make a final print test by sending data from the users system.

10. Report to the user any potential or real problems that you found.

LaserWriter Pro 810

Section 4:   Take Apart Procedures

GENERAL

Section 4 does not cover all printer parts. Some parts are omitted because they require neither adjustment nor special consideration in removing or installing them. If no Take Apart procedure is provided in this section, carefully check an installed part before removing it. For plug and connector locations, see the figures and table at the end of this section.

CAUTION: Turn the printer off and unplug the power cord before starting any Take Apart procedure.

Recommended Tools

The only tools needed to remove or install any assembly are:

1.   Screwdrivers, Philips head, several sizes and lengths (magnetized would be useful).

2.   Chip puller.

3.   Blade screwdriver (various sizes).

4.   Wire cutters.

LIST OF TAKE APART PROCEDURES

POWER CORD COVER

Removal   **To remove the power cord cover:**

1.   Carefully pull the rear end of the power cord cover away from the side of the printer. Use a coin, or similar object, if needed, to pry the cover loose.

2.   Slide the whole cover toward the front of the printer until it can be removed.
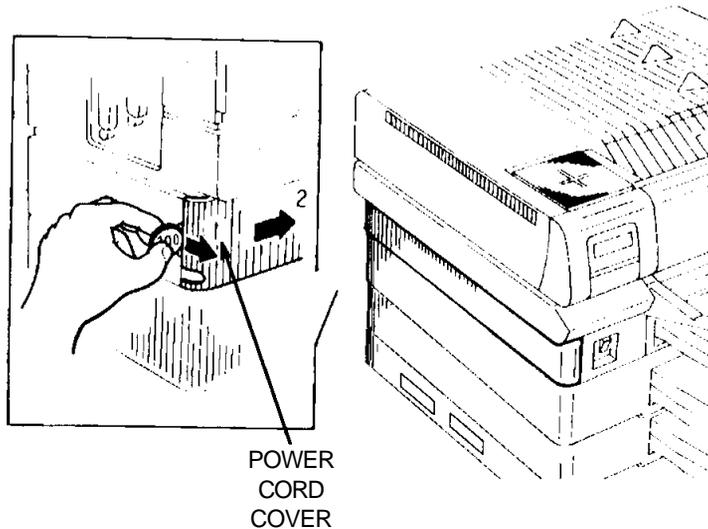

POWER
CORD
COVER

FIGURE 4-1. POWER CORD COVER REMOVAL

Installation   **To install the power cord cover:**

1.   Lay the power cord along the base of the printer. Be sure the power cord is secured by the hooks provided

POWER
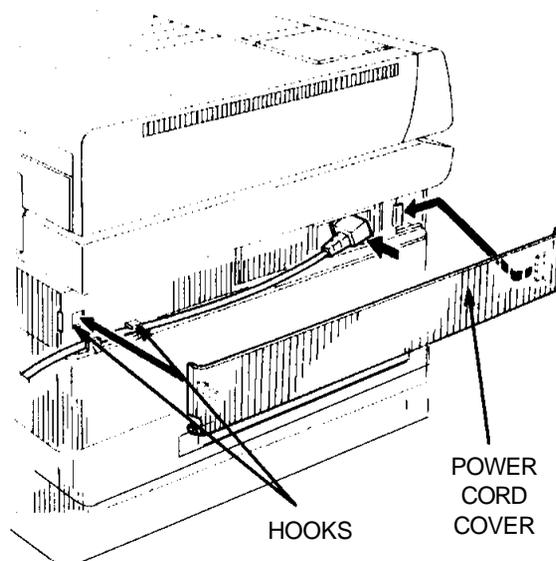CORD
COVER

HOOKS

FIGURE 4-2. POWER CORD COVER INSTALLATION

2.   Attach the front of the power cord cover to the printer.

3.   Carefully press on the rear end of the cover to lock it in place.

TOP COVER

Removal   **To remove the top cover:**

1.   Turn off the printer and unplug the power cord from the electrical outlet.

2.   Open the top cover. Remove the EP cartridge and put it in a safe place.

3.   Raise the top cover as far as possible.

4.   Loosen the two front screws with the silver flanges.

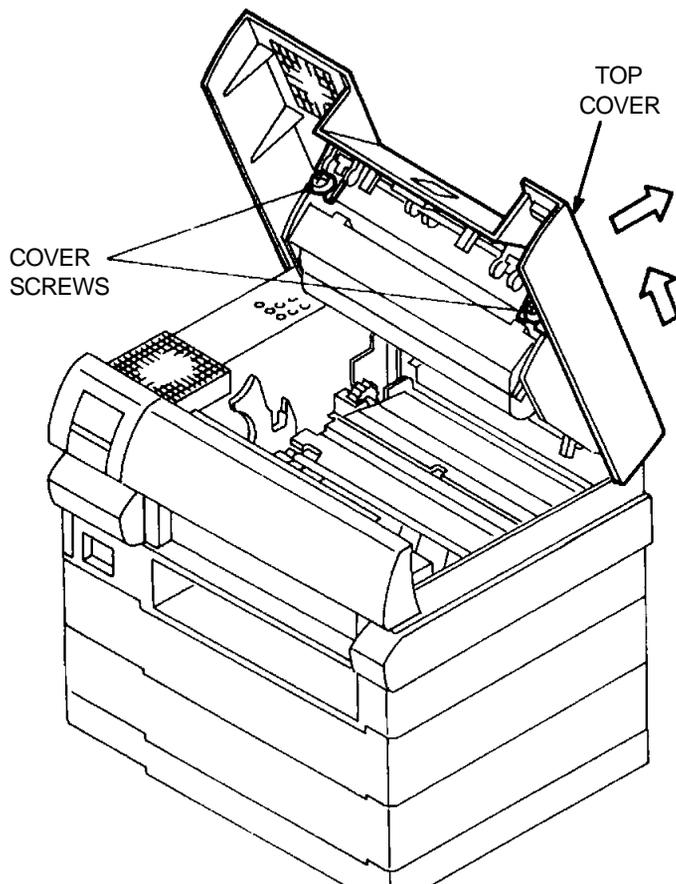5.   Push back on the top cover and then lift it upward to remove it.

FIGURE 4-3. TOP COVER REMOVAL

Installation   **To install the top cover:**

Reverse the removal procedure.

CAUTION: Be sure that the hooks on the rear of the cover are engaged with the frame.

FRONT COVER

Removal   **To remove the front cover:**

1. Remove the two screws with silver flanges from the front cover.

2. Push down on the front cover as you move it toward you. The lower edge must be unhooked from the frame. Use a thin tool such as a T-pin or a jewler's screwdriver to unhook the tabs.
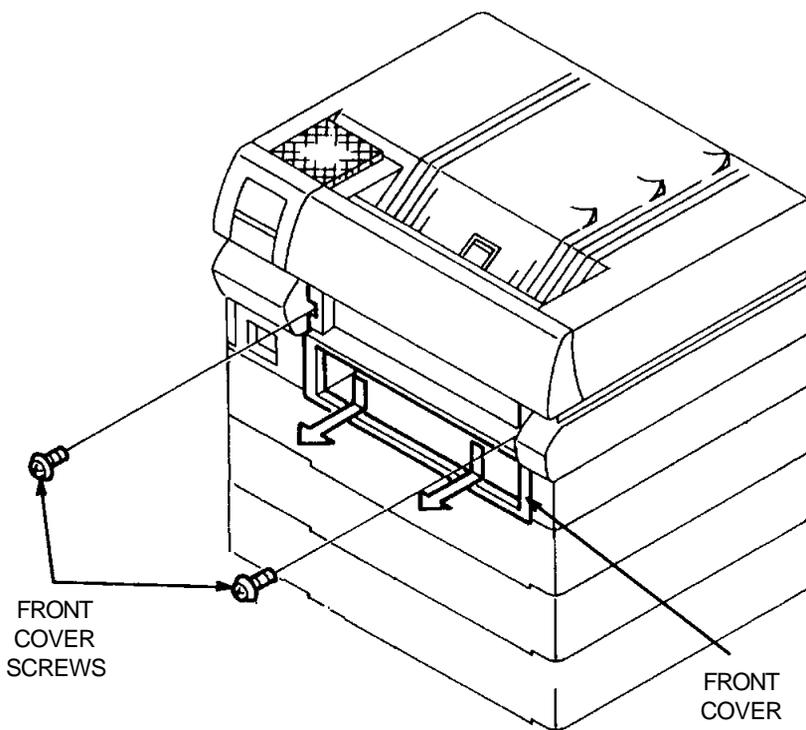
FRONT
COVER
SCREWS

FRONT
COVER

FIGURE 4-4. FRONT COVER REMOVAL

Installation   **To install the front cover:**

Reverse the removal procedure.

LEFT COVER

Removal   **To remove the left cover:**

1. Remove the power cord cover. Disconnect the power cord.

2. Remove the top cover.

3. Remove the front cover.

4. Remove the four screws with silver flanges from the left cover.

5. While pulling the left cover assembly toward you, carefully pull out on the front edge of the cover to unhook it from the power switch.

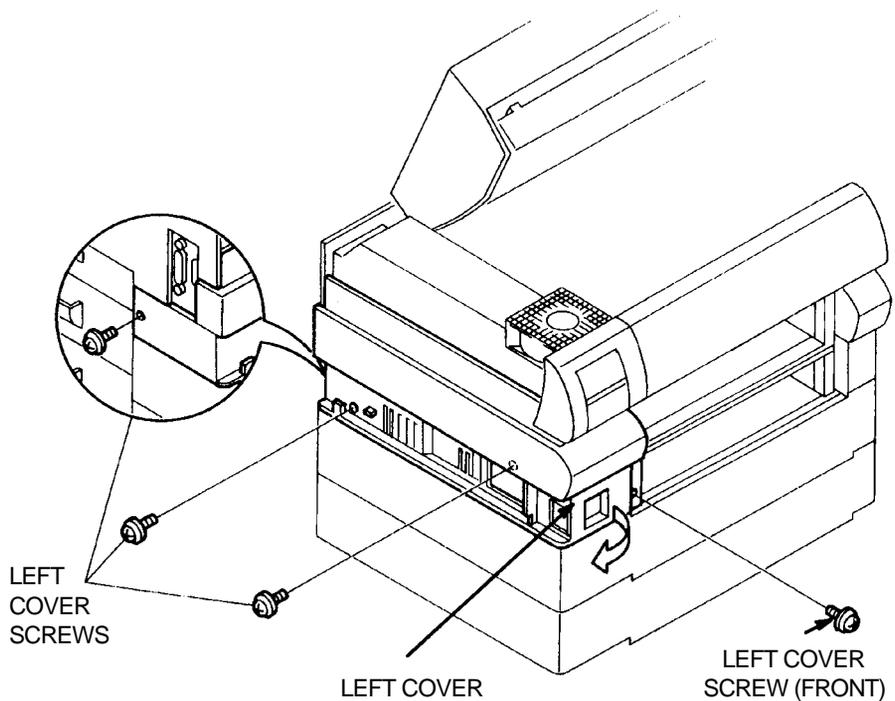6. Carefully move the left cover assembly toward the left to remove it.

LEFT COVER SCREWS

LEFT COVER

LEFT COVER SCREW (FRONT)

FIGURE 4-5. LEFT COVER REMOVAL

Installation   **To install the left cover:**

Reverse the removal procedure.

RIGHT COVER

Removal   **To remove the right cover:**

1.   Remove the top cover.

2.   Remove the front cover.

3.   Remove the outer exit-chute assembly.

4.   Remove the three screws with silver flanges from the right cover.

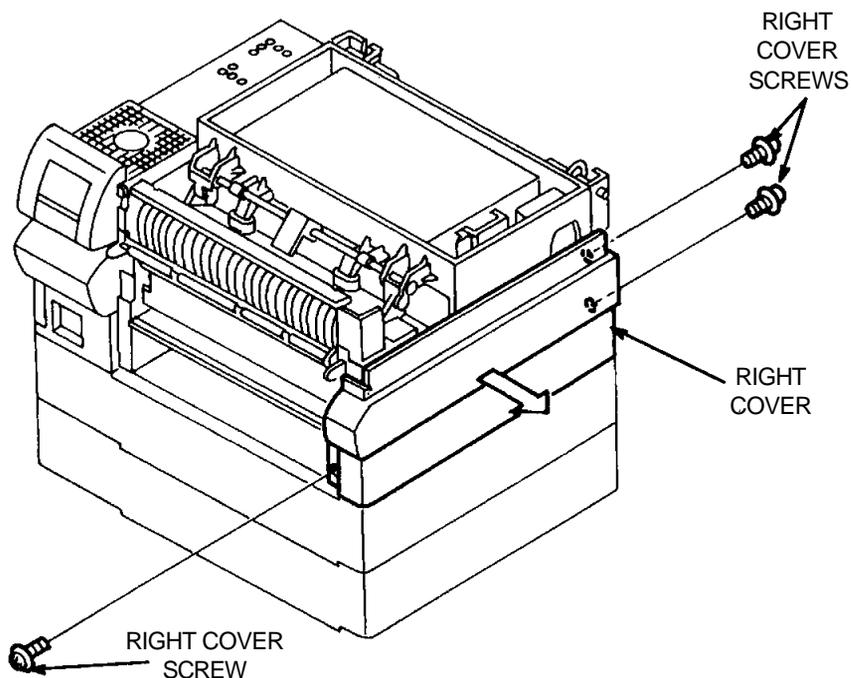5.   Lift the right cover and carefully pull it straight out and away from the frame.

FIGURE 4-6. RIGHT COVER REMOVAL

Installation   **To install the right cover:**

Reverse the removal procedure.

REAR COVER

Removal   **To remove the rear cover:**

1.   Remove the power cord cover.

2.   Remove the manual feed tray or the multi media power feeder.

3.   Remove the top cover.

4.   Remove the front cover.

5.   Remove the left cover.

6.   Remove the right cover.

7.   Remove the remaining two screws with silver flanges that attaches the
      rear cover to the frame.

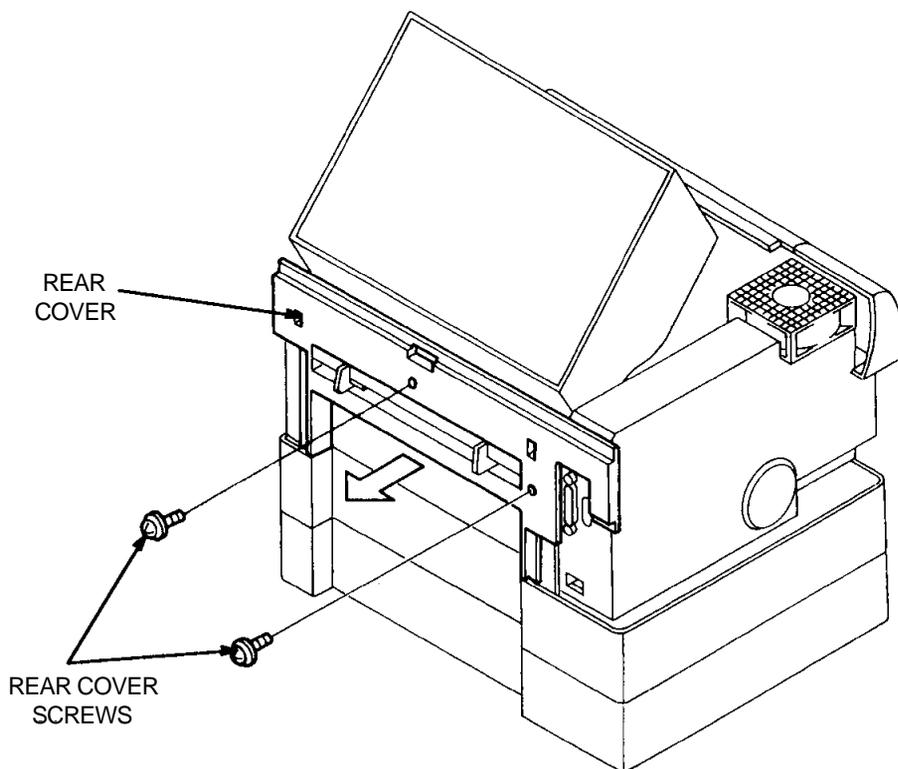8.   Pull the rear cover straight out and away from the frame.

REAR
COVER

REAR COVER
SCREWS

FIGURE 4-7. REAR COVER REMOVAL

Installation   **To install the rear cover:**

Reverse the removal procedure.

ELECTRICAL BOX COVER

Removal   **To remove the electrical box cover:**

1. Remove the power cord cover.

2. Remove the top cover.

3. Remove the front cover.

4. Remove the left cover.

5. Remove the fuser fan.

6. Remove the seven screws with silver flanges from the electrical box cover.

7. Move the electrical box cover straight out and away from the printer.

BEFORE REMOVING THE ELECTRICAL
BOX COVER SCREWS, NOTE THE
LOCATION OF THE TWO
HOLES FOR THE LEFT
COVER SCREWS.

COVER
SCREWS

GROUND
WIRE
TERMINAL

COVER
SCREWS

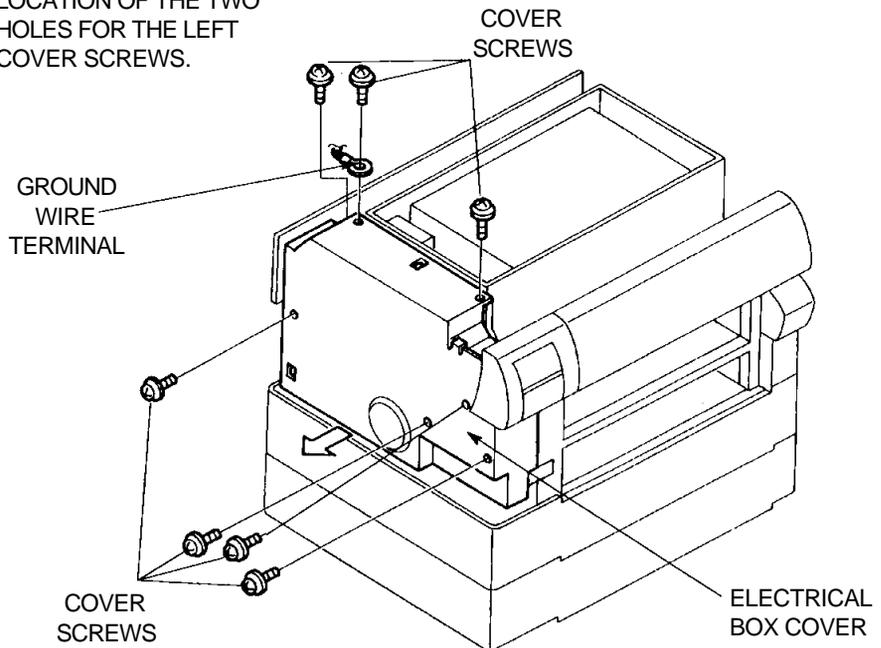ELECTRICAL
BOX COVER

FIGURE 4-8. ELECTRICAL BOX COVER REMOVAL

Installation   **To install the electrical box cover:**

1. Reverse the removal procedure. Be sure that the electrical box cover screws are not installed in the left cover screw holes.

CAUTION: Be sure the ground wire is attached when installing the electrical box cover mounting screws.

TRANSFER CHARGER/DETACK SAW ASSEMBLY

Removal   **To remove the transfer charger/detack saw assembly:**

1. Open the top cover.

2. Raise the right side of the transfer charger/detack saw assembly slightly. See Figure 4- 9

3. Slide the transfer charger/detack saw assembly to the right until it can be lifted from the printer.
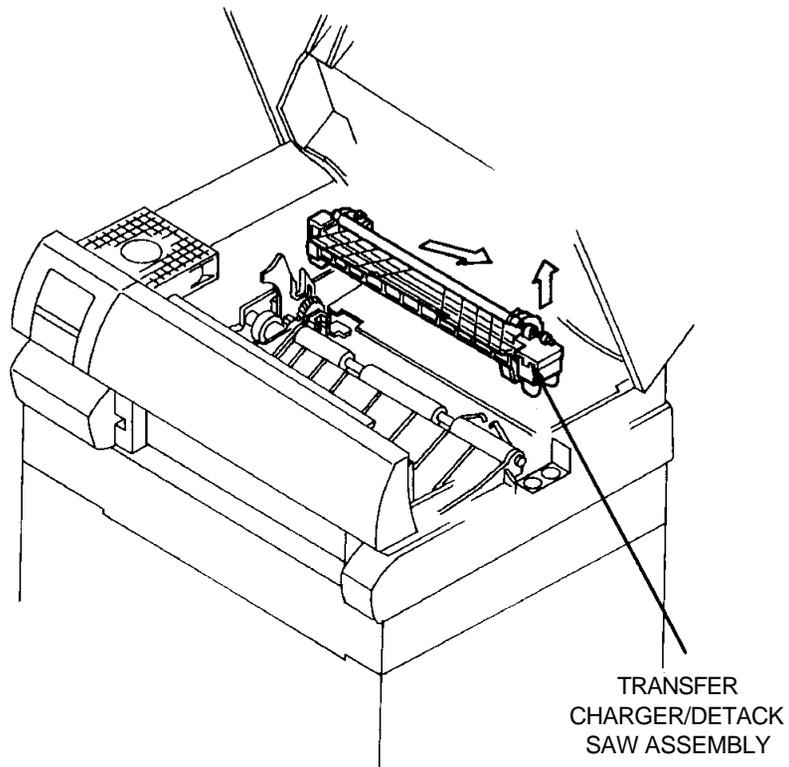
TRANSFER
CHARGER/DETACK
SAW ASSEMBLY

FIGURE 4-9. TRANSFER CHARGER/DETACK SAW ASSEMBLY REMOVAL

Installation   **To install the transfer charger/detack saw assembly:**

Reverse the removal procedure.

PAPER TRANSFER UNIT

Removal   **To remove the Paper Transfer Unit:**

1. Open the top cover. Remove the EP cartridge and keep it in a safe place.

2. Remove the transfer charger/detack saw assembly.

3. Remove the registration clutch connector P/J9 from the DC Controller.

4. Remove the two black screws from the inlet chute to remove it.

5. Remove the two screws with silver flanges from the Paper Transfer Unit.

6. Raise the Paper Transfer Unit.

7. Move the Paper Transfer Unit forward in the direction of arrow.

CAUTION: To prevent the ground plate on the left side from dropping, hold it securely when removing the Paper Transfer Unit.
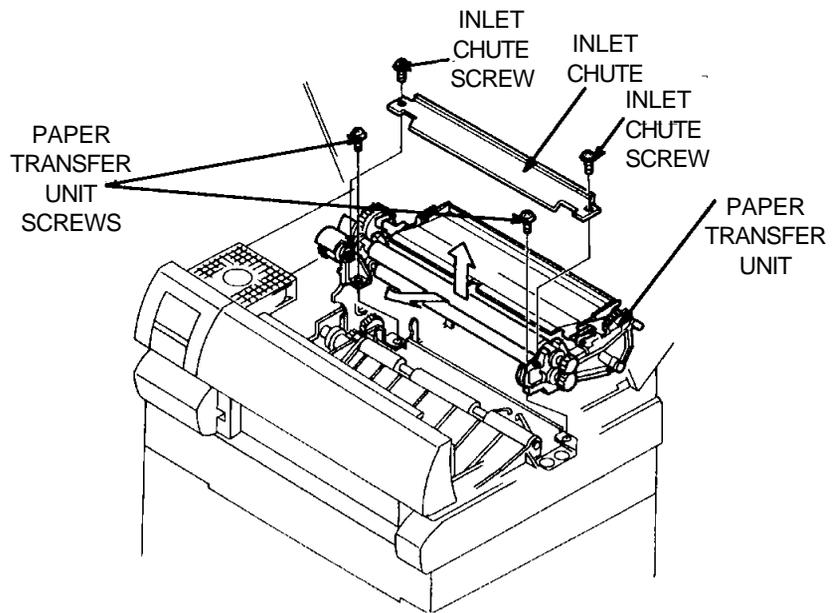
FIGURE 4-10. PAPER TRANSFER UNIT REMOVAL

Installation   **To install the Paper Transfer Unit:**

Reverse the removal procedure.

NOTE: Before securing the Paper Transfer Unit, position the ground plate to the left and route the ground wire to the right. Be sure that the unit rests on the frame.

REGISTRATION CLUTCH

Removal   **To remove the registration clutch:**

1.   Open the top cover. Remove the EP cartridge and keep it in a safe place.

2.   Remove the transfer charger/detack saw assembly.

3.   Remove the Paper Transfer Unit.

4.   Remove the C-ring from the gear and slide the gear from the frame.

5.   Disconnect the transport clutch connector P/J51 and the pre-registration sensor connector P/J52.

6.   Remove the E-ring from the registration clutch and slide the clutch out of the frame.
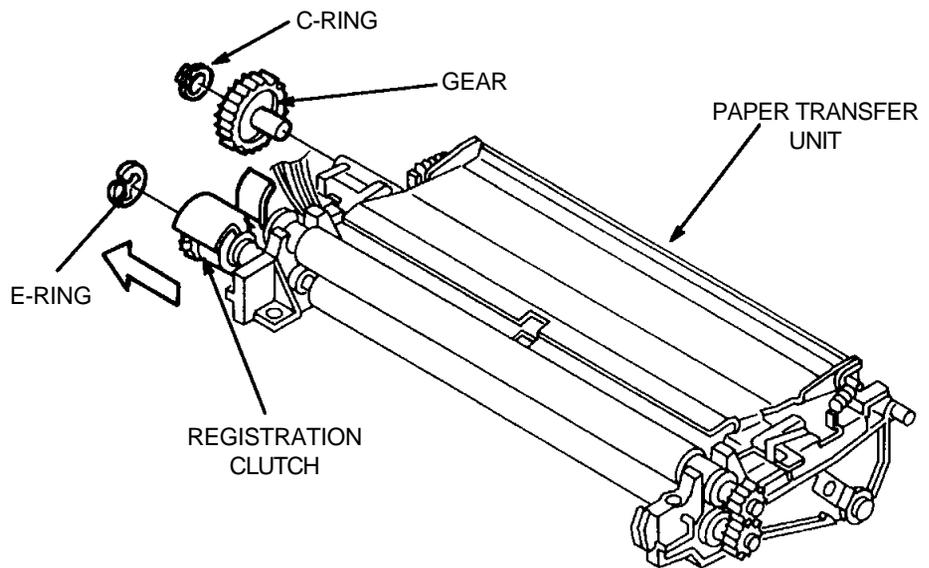

FIGURE 4-11. REGISTRATION CLUTCH REMOVAL

Installation   **To install the registration clutch:**

Reverse the removal procedure.

PRE-REGISTRATION SENSOR

Removal

To remove the pre-registration sensor:

1. Open the top cover. Remove the EP cartridge, and keep it in a safe place.

2. Remove the transfer charger/detack saw assembly.

3. Remove the Paper Transfer Unit.

4. To remove the pre-registration sensor, release the four clips that secure the pre-registration sensor to the Paper Transfer Unit.
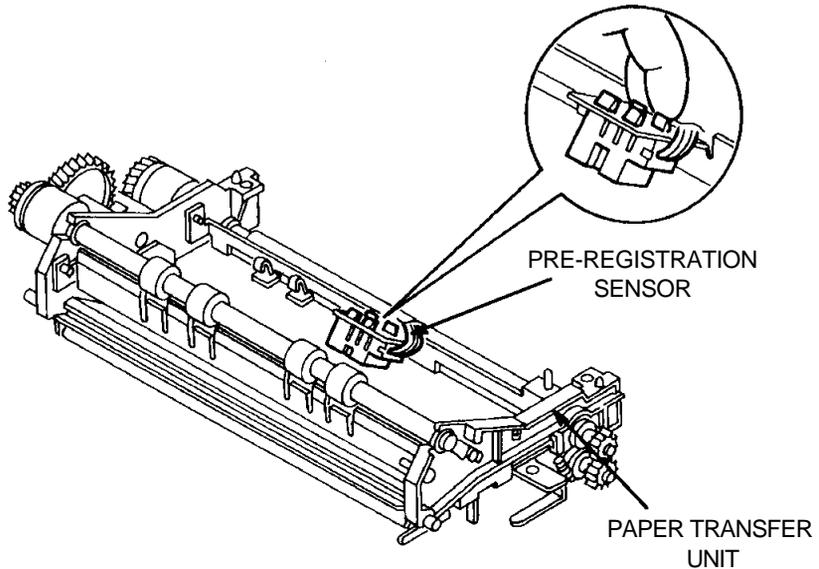

PRE-REGISTRATION
SENSOR

PAPER TRANSFER
UNIT

FIGURE 4-12. PRE-REGISTRATION SENSOR REMOVAL

Installation

To install the pre-registration sensor:

Reverse the removal procedure.

TRANSPORT CLUTCH (TRAY 1)

Removal   **To remove the transport clutch:**

1. Open the top cover. Remove the EP cartridge, and keep it in a safe place.

2. Remove the transfer charger/detack saw assembly.

3. Remove the Paper Transfer Unit.

4. Remove the C-ring from the gear and slide it from its shaft.

5. Disconnect the transport clutch connector P/J51.

6. Remove the E-ring from the transport clutch.

7. Lift the transport roller shaft out of the Paper Transfer Unit frame.

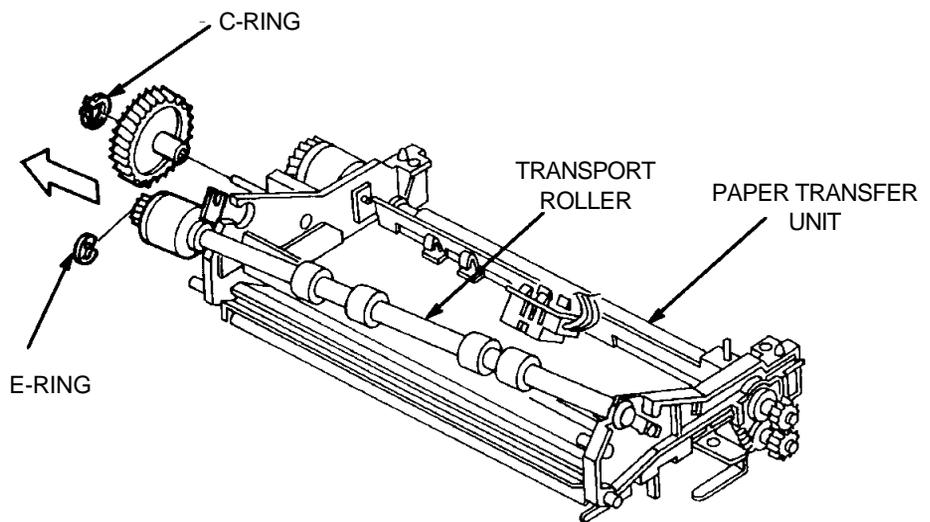8. Slide the transport clutch from the roller shaft.

FIGURE 4-13. TRANSPORT CLUTCH REMOVAL

Installation   **To install the transport clutch:**

Reverse the removal procedure.

PAPER FEED ROLLER ASSEMBLY

Removal   **To remove the feed roller assembly:**

1.   Open the top cover. Remove the EP cartridge, and keep it in a safe place.

2.   Remove the transfer charger/detack saw assembly.

3.   Remove the Paper Transfer Unit.

4.   Remove the KL clip on the right side of the feed roller shaft.

5.   Move the feed roller assembly to the right then raise it until it can be removed from the printer.
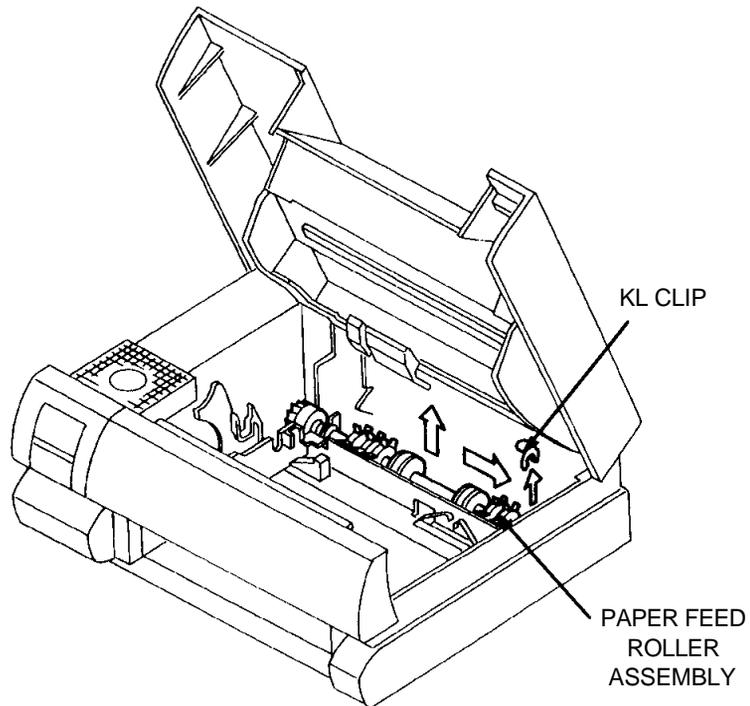

FIGURE 4-14. FEED ROLLER ASSEMBLY REMOVAL

Installation   **To install the feed roller assembly:**

Reverse the removal procedure.

CAUTION: Be sure the flange side of KL clip faces inward when it is installed.

PAPER FEED SOLENOID (TRAY 1)

Removal   **To remove the paper feed solenoid:**

1. Open the top cover. Remove the EP cartridge and keep it in a safe place.

2. Remove the transfer charger/detack saw assembly.

3. Remove the Paper Transfer Unit.

4. Remove the feed roller assembly.

5. Remove the electrical box cover.

6. Remove connector P/J8 from the DC Controller.

7. Remove the screw with the black flange from the paper feed solenoid.

8. Lift the paper feed solenoid up and out of the printer base.
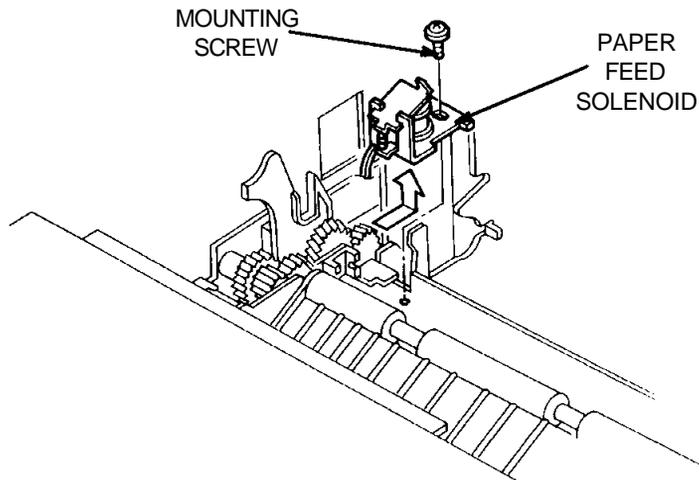
FIGURE 4-15. PAPER FEED SOLENOID REMOVAL

Installation   **To install the paper feed solenoid:**

Reverse the removal procedure.

PAPER OUT SENSOR (TRAY 1)

Removal   **To remove the paper out sensor:**

1.   Open the top cover. Remove the EP cartridge and keep it in a safe place.

2.   Remove the transfer charger/detack saw assembly.

3.   Remove the Paper Transfer Unit.

4.   Disconnect P/J42.

5.   Release the four clips securing the paper out sensor, and remove it.
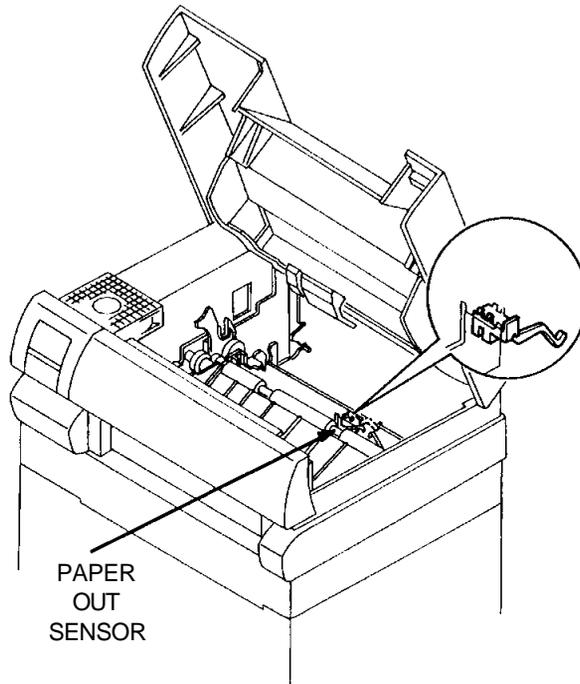

PAPER
OUT
SENSOR

FIGURE 4-16. PAPER OUT SENSOR REMOVAL

Installation   **To install the paper out sensor:**

Reverse the removal procedure.

PAPER SIZE SENSOR (TRAY 1)

Removal   **To remove the paper size sensor:**

1.   Open the top cover. Remove the EP cartridge and keep it in a safe place.

2.   Remove the power cord cover.

3.   Remove the top cover.

4.   Remove the front cover.

5.   Remove the left cover.

6.   Remove the fuser assembly.

7.   Remove the electrical box cover.

8.   Remove the low voltage power supply. See page 4-43 for instructions.

9.   Use a small blade screwdriver to release the three clips securing the paper size sensor. See Figure 4-17.

10. Disconnect P/J10 from the DC Controller.

11. Carefully pull the sensor harness from the printer to remove the paper size sensor.
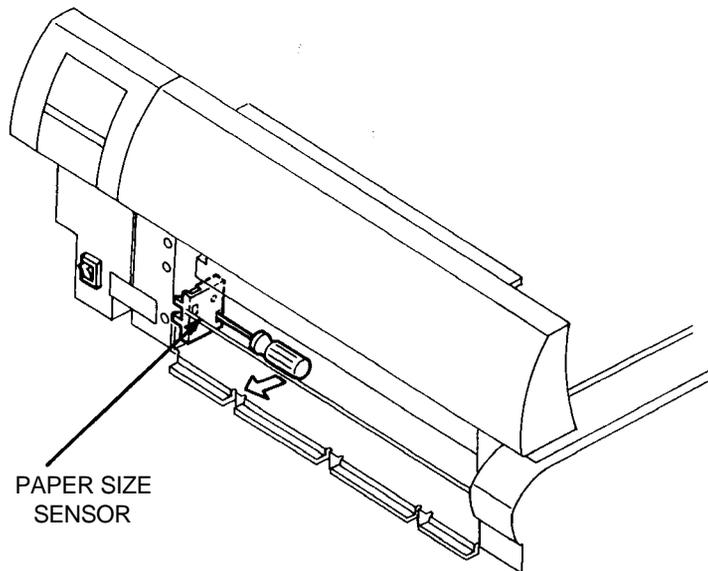
FIGURE 4-17. PAPER SIZE SENSOR REMOVAL

Installation   **To install the paper size sensor:**

Reverse the removal procedure.

OUTER TURN-CHUTE ASSEMBLY

Removal   **To remove the outer turn-chute assembly:**

1. Open the top cover. Remove the EP cartridge and keep it in a safe place.

2. Remove the transfer charger/detack saw assembly.

3. Remove the Paper Transfer Unit.

4. Remove the power cord cover.

5. Remove the top cover.

6. Remove the front cover.

7. Remove the left cover.

8. Remove the right cover.

9. Remove the rear cover.

10. Remove the right and left springs from the outer turn-chute assembly. Be sure to save the washers.

11. Carefully pull the outer turn-chute assembly out of the back of the printer.

FIGURE 4-18. OUTER TURN-CHUTE ASSEMBLY

Installation   **To install the outer turn-chute assembly:**

Reverse the removal procedure.

CAUTION: Be sure to install the washers for the turn-chute assembly.

INNER TURN-CHUTE ASSEMBLY

Removal   **To remove the inner turn-chute assembly:**

1.   Open the top cover. Remove the EP cartridge and keep it in a safe place.

2.   Remove the transfer charger/detack saw assembly.

3.   Remove the Paper Transfer Unit.

4.   Remove the power cord cover.

5.   Remove the top cover.

6.   Remove the front cover.

7.   Remove the left cover.

8.   Remove the right cover.

9.   Remove the rear cover.

10.   Remove the outer turn-chute assembly.

11.   Remove the right and left springs from each side of the inner turn-chute assembly.

12.   Slide the inner turn-chute to the left or right to free the shaft and remove the turn-chute.

SPRING

INNER
TURN-CHUTE
ASSEMBLY

SPRING
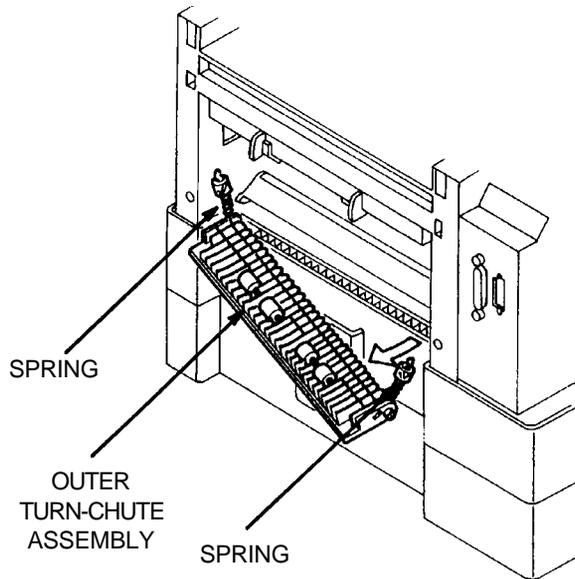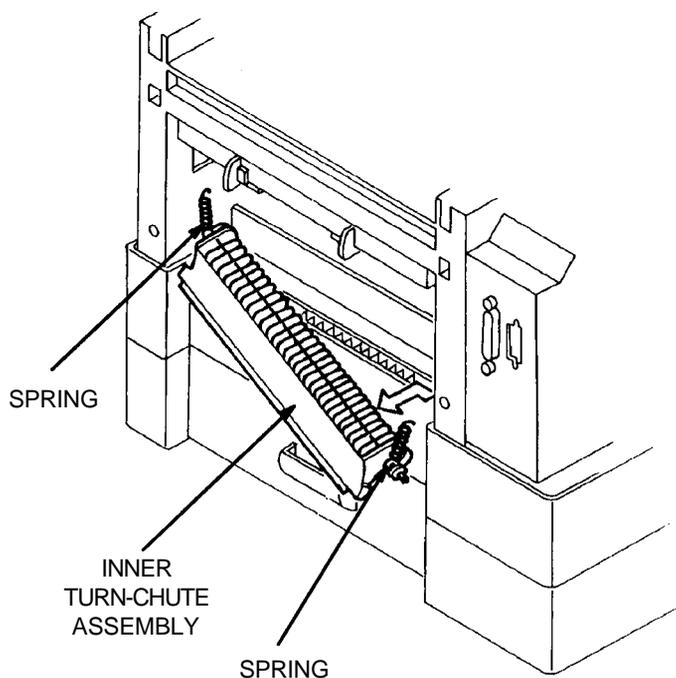
FIGURE 4-19. INNER TURN-CHUTE ASSEMBLY REMOVAL

Installation   **To install the inner turn-chute assembly:**

Reverse the removal procedure.

TRANSPORT CHUTE ASSEMBLY

Removal   **To remove the transport chute assembly:**

1.   Open the top cover. Remove the EP cartridge and keep it in a safe place.

2.   Loosen the two captive screws on each side of the transport chute assembly.

3.   Lift the transport chute assembly out of the printer.
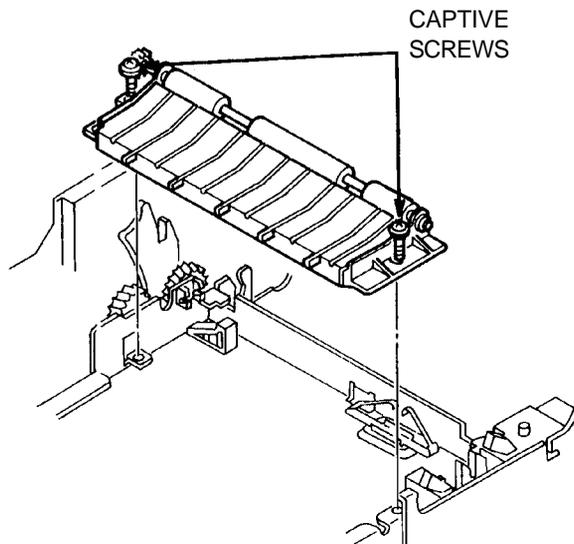
FIGURE 4-20. TRANSPORT CHUTE ASSEMBLY REMOVAL

Installation   **To install the transport chute assembly:**

Reverse the removal procedure.

FUSER UNIT

Removal   **To remove the fuser unit:**

1. Open the top cover. Remove the EP cartridge and keep it in a safe place.

CAUTION: The fuser unit is very hot when the printer is first turned off. Wait for the fuser unit to cool before continuing.

2. Remove the transfer charger/detack saw assembly.

3. Remove the transport chute assembly.

4. Disconnect the three plugs located under the fan.

FAN

P62 FUSER BULB
P31 TEMPERATURE SENSOR
P32 EXIT SENSOR
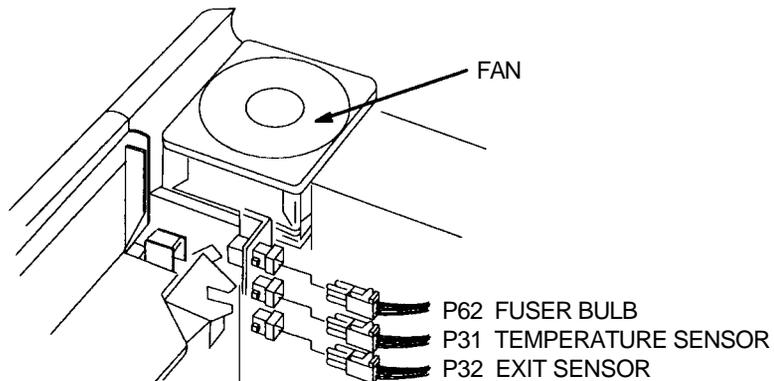
FIGURE 4-21. FUSER UNIT HARNESS REMOVAL

5. Loosen the two captive screws on the fuser unit.
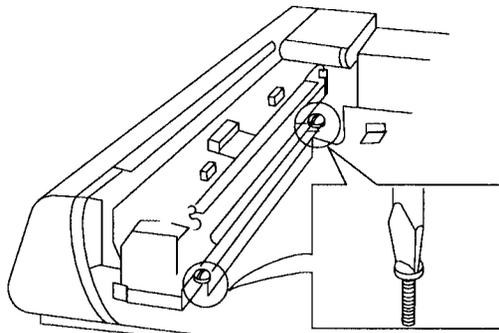
FIGURE 4-22. FUSER UNIT REMOVAL

NOTE: When lifting the fuser unit out of the printer, do not press on the roller cleaner cover.

6. Hold the fuser unit by the two metal flanges sticking out of the top, and lift it diagonally out of the printer.
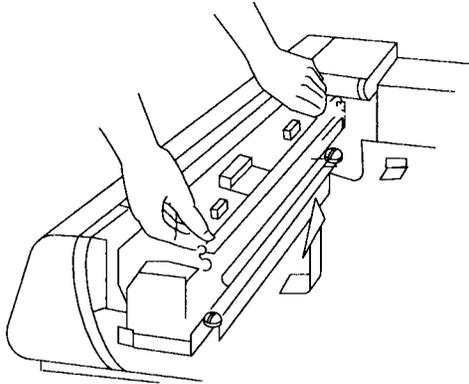
FIGURE 4-23. FUSER UNIT REMOVAL

Installation   **To install the fuser unit:**

1.   Set the fuser unit down on the guides and align the inner sides.

2.   Make sure the fuser is seated correctly. There should be no space between the fuser unit screws and the printer frame.
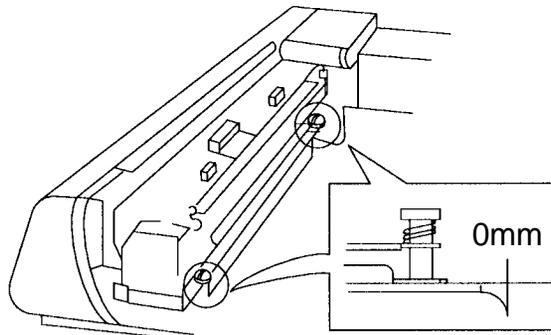
FIGURE 4-24. FUSER UNIT INSTALLATION

CAUTION: If the fuser unit is not perfectly seated inside of the guides, paper jam problems can occur.

3.   Tighten the two captive screws on the fuser unit. Check to be sure the unit is secure.

4.   Plug the three connectors from the fuser unit wires into the connectors under the fan. See Figure 4-21.

5.   Install the transfer charger.

6.   Install the transport chute/detack saw assembly.

7.   Close the top cover.

8.   Plug in the printer.

FUSER BULB

Removal   **To remove the fuser bulb:**

1.   Open the top cover. Remove the EP cartridge and keep it in a safe plate.

2.   Remove the fuser unit.

3.   Remove the screw with a gold flange from the right end of the roller cleaner cover, and remove it.

4.   Remove the roller cleaner.

5.   Remove the two screws with black flanges from the outer cover, and remove it.

6.   Carefully pull outward on the metal clamp securing the fuser bulb.

7.   Slide the fuser bulb out of the heat roller.
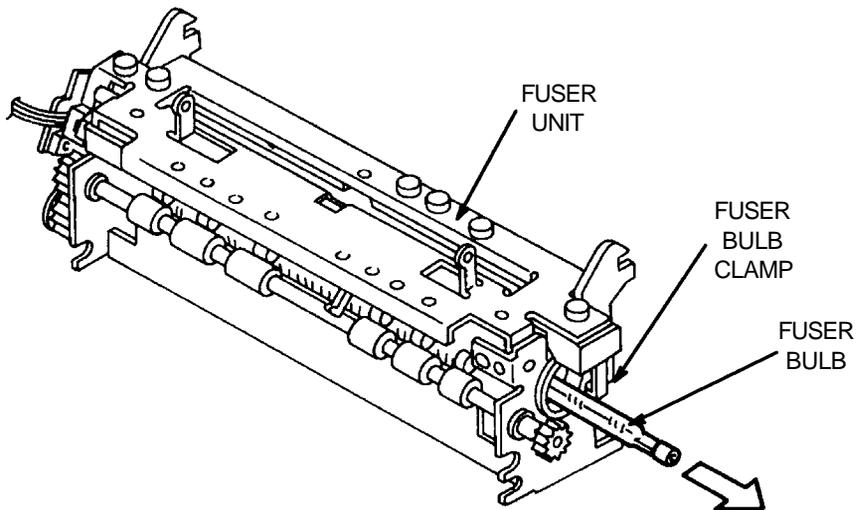
FIGURE 4-25. FUSER BULB REMOVAL

Installation   **To install the fuser bulb:**

Reverse the removal procedure.

FUSER THERMOSTAT

Removal   **To remove the fuser thermostat:**

1. Open the top cover. Remove the EP cartridge and keep it in a safe place.

2. Remove the fuser unit.

3. Remove a screw with a gold flange from the right side of roller cleaner cover assembly and remove it.

4. Remove the roller cleaner.

5. Remove the right and left screws with black flanges from the outer cover, and remove it.

6. Remove the fuser bulb.

7. Remove the four screws with black flanges from the inner cover assembly, and remove it.

8. Remove the two gold screws from the fuser thermostat to remove it.
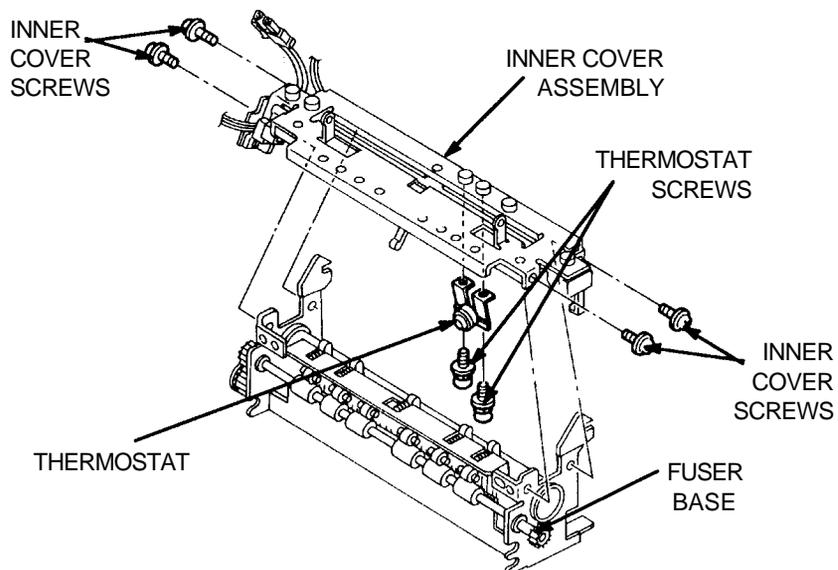
FIGURE 4-26. FUSER THERMOSTAT REMOVAL

Installation   **To install the fuser thermostat:**

Reverse the removal procedure.

FUSER TEMPERATURE SENSOR

Removal   **To remove the fuser temperature sensor:**

1. Open the top cover. Remove the EP cartridge and keep it in a safe place.

2. Remove the fuser unit.

3. Remove the screw with a gold flange from the right end of the roller cleaner cover assembly, and remove it.

4. Remove the roller cleaner.

5. Remove the right and left screws with black flanges from the outer cover, and remove it.

6. Remove the fuser bulb.

7. Remove four screws with black flanges from the inner cover, and remove it.

8. Remove the gold screw from the temperature sensor, and remove it.

INNER COVER
ASSEMBLY

TEMPERATURE
SENSOR
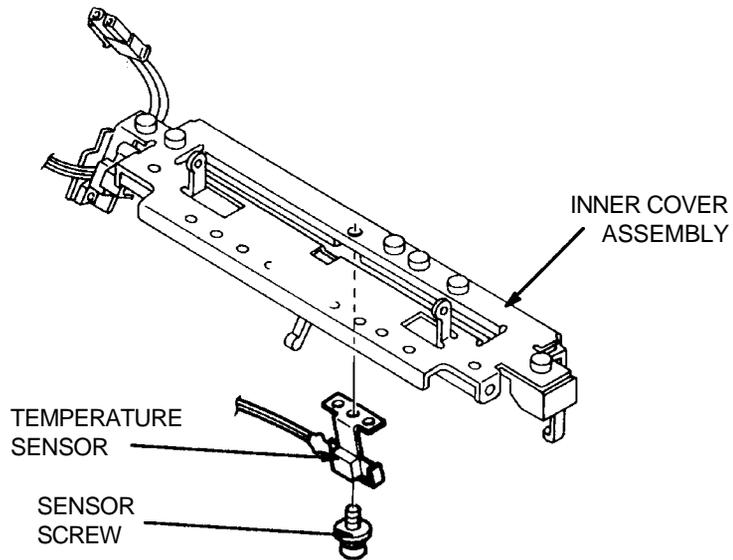
SENSOR
SCREW

FIGURE 4-27. FUSER TEMPERATURE SENSOR REMOVAL

Installation   **To install the fuser temperature sensor:**

Reverse the removal procedure.

PAPER EXIT SENSOR

Removal   **To remove the paper exit sensor:**

1.   Open the top cover. Remove the EP cartridge and keep it in a safe place.

2.   Remove the fuser unit.

3.   Remove the screw with a gold flange from the right end of the roller cleaner cover assembly, and remove it.

4.   Remove the roller cleaner.

5.   Remove right and left screws with black flanges from the outer cover, and remove it.

6.   Remove the fuser bulb.

7.   Remove the four screws with black flanges from the inner cover assembly and remove it.

8.   Remove the gold screw from the paper exit sensor to remove it.

INNER COVER ASSEMBLY

EXIT SENSOR

SENSOR SCREW
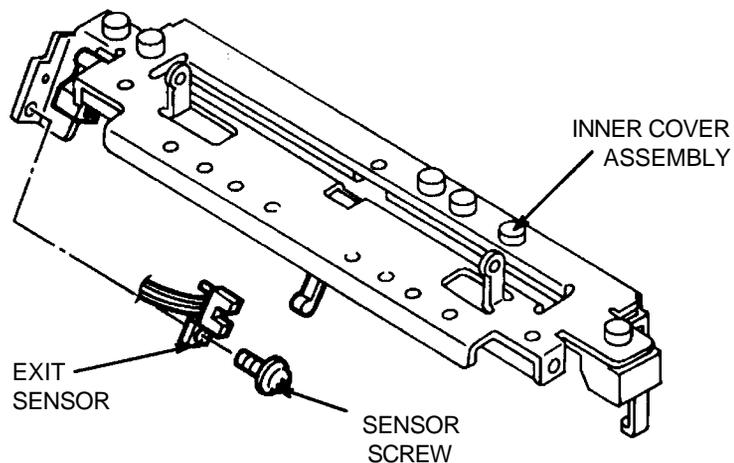
FIGURE 4-28. PAPER EXIT SENSOR REMOVAL

Installation   **To install the paper exit sensor:**

Reverse the removal procedure.

OUTER EXIT-CHUTE ASSEMBLY

Removal   **To remove the outer exit-chute:**

1. Open the outer exit-chute assembly.

2. Carefully pull outward on the right and left bearings until the outer exit-chute assembly can be removed.
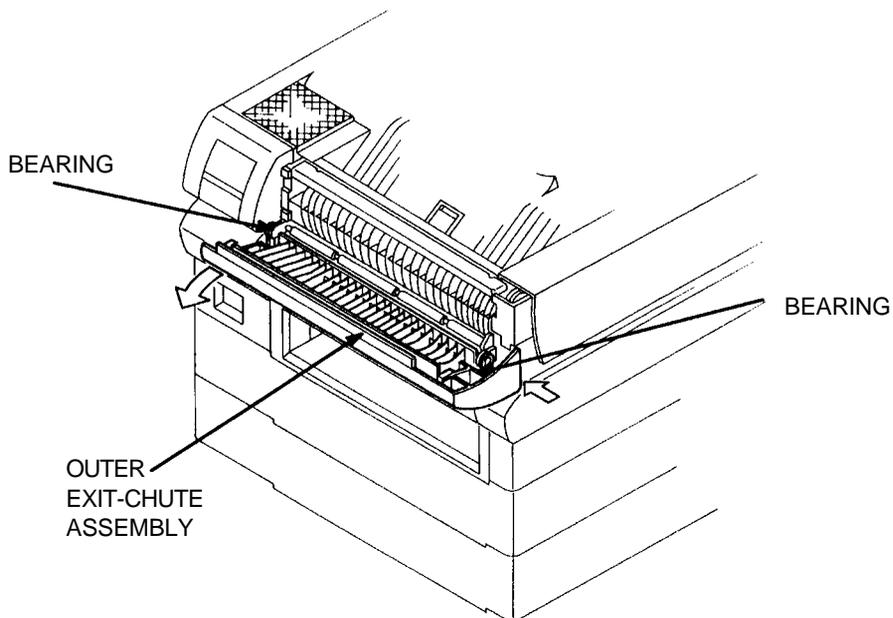
FIGURE 4-29. OUTER EXIT-CHUTE REMOVAL

Installation   **To install the outer exit-chute assembly:**

Reverse the removal procedure.

DIRECTION CHUTE

Removal   **To remove the direction chute:**

1.   Remove the outer exit-chute assembly.

2.   Remove the E-ring and spring from the direction chute to remove it.
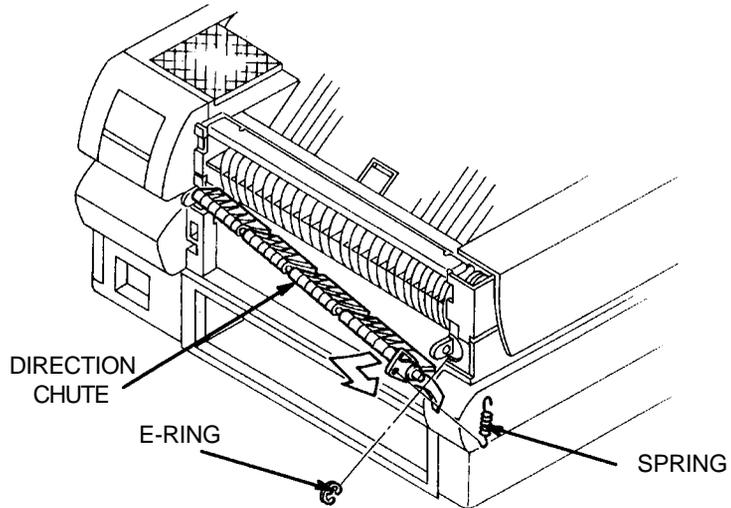
FIGURE 4-30. DIRECTION CHUTE REMOVAL

Installation   **To install the direction chute:**

Reverse the removal procedure.

INNER EXIT-CHUTE

Removal   **To remove the inner exit-chute:**

1.   Remove the outer-exit chute assembly.

2.   Remove the direction chute.

3.   Remove screws with silver flanges from each side of the inner exit-chute inner to remove it.

SCREWS
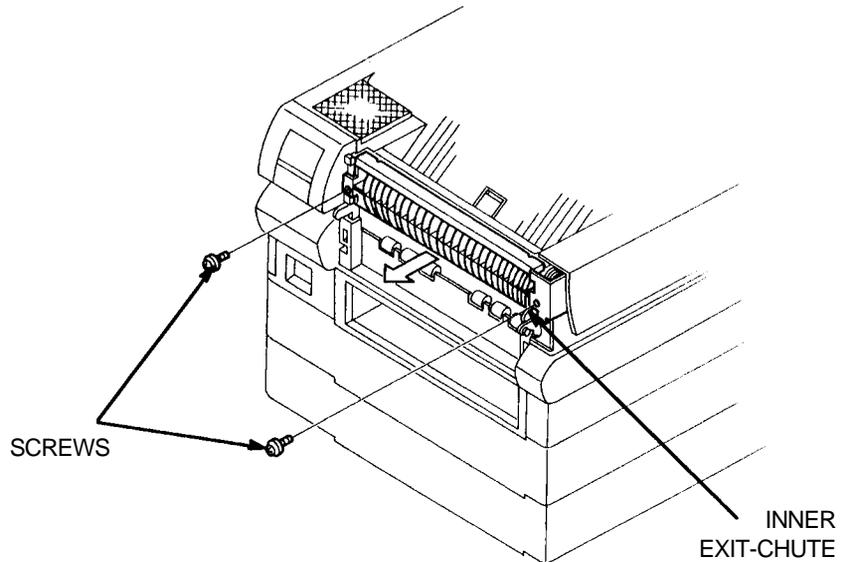
INNER
EXIT-CHUTE

FIGURE 4-31. INNER EXIT-CHUTE REMOVAL

Installation   **To install the inner exit-chute:**

Reverse the removal procedure.

EXIT ROLLER ASSEMBLY

Removal   **To remove the exit roller assembly:**

1. Remove the outer exit-chute assembly.

2. Remove the direction chute.

3. Remove the inner exit-chute.

4. Remove the fuser fan. See page 4-40 for instructions.

5. Remove the belt on the right end of the exit roller assembly. See the next procedure for instructions.

6. Remove the E-rings from each end of the roller shaft.

7. Slide the pulley and bearing off of the right end of the exit roller shaft.

8. Slide the exit roller shaft to the left and remove the exit roller assembly from the printer.
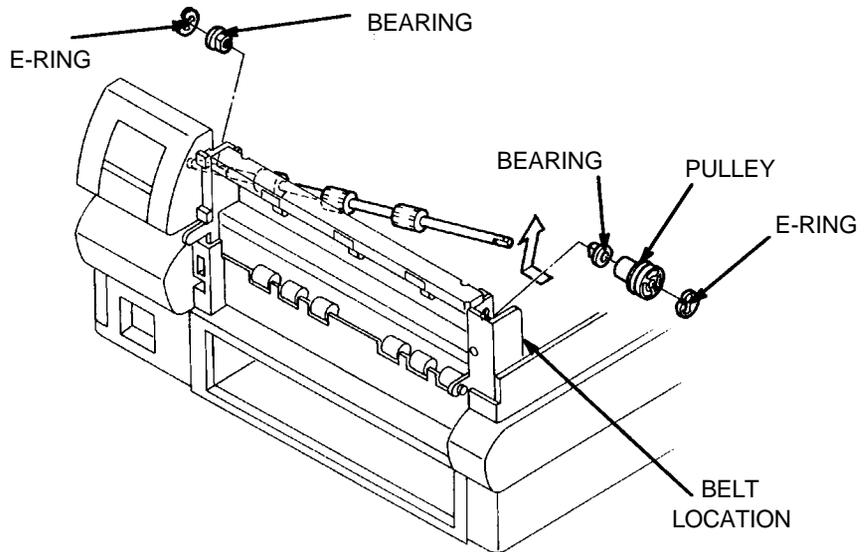
FIGURE 4-32. EXIT ROLLER ASSEMBLY

Installation   **To install the exit roller assembly:**

Reverse the removal procedure.

BELT (FUSER AREA)

Removal   **To remove the belt:**

1.   Remove the top cover.

2.   Remove the front cover.

3.   Remove the right cover.

4.   Remove the outer exit chute assembly.

5.   Remove the E-ring.

6.   Slide the idler shaft inward.

7.   Remove the belt.

BELT

IDLER
SHAFT

E-RING
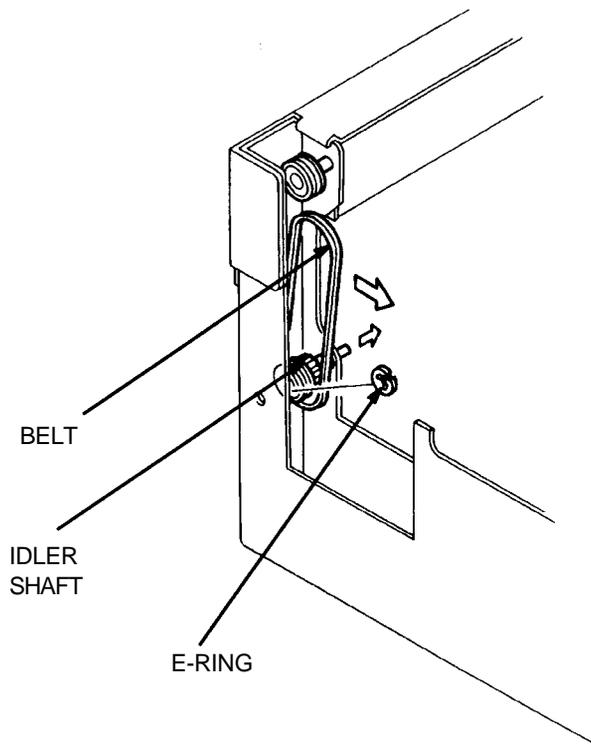
FIGURE 4-33. FUSER AREA BELT REMOVAL

Installation   **To install the belt:**

Reverse the removal procedure.

LASER SCANNER UNIT

Removal   **To remove the Laser Scanner Unit:**

1.   Remove the top cover.

2.   Remove right and left screws with silver flanges from the laser scanner unit.

3.   Disconnect P21 from J21.

4.   Open the laser scanner unit shield and lift the laser scanner unit out of the printer.

CAUTION: Keep the Laser Scanner Unit in a safe place.
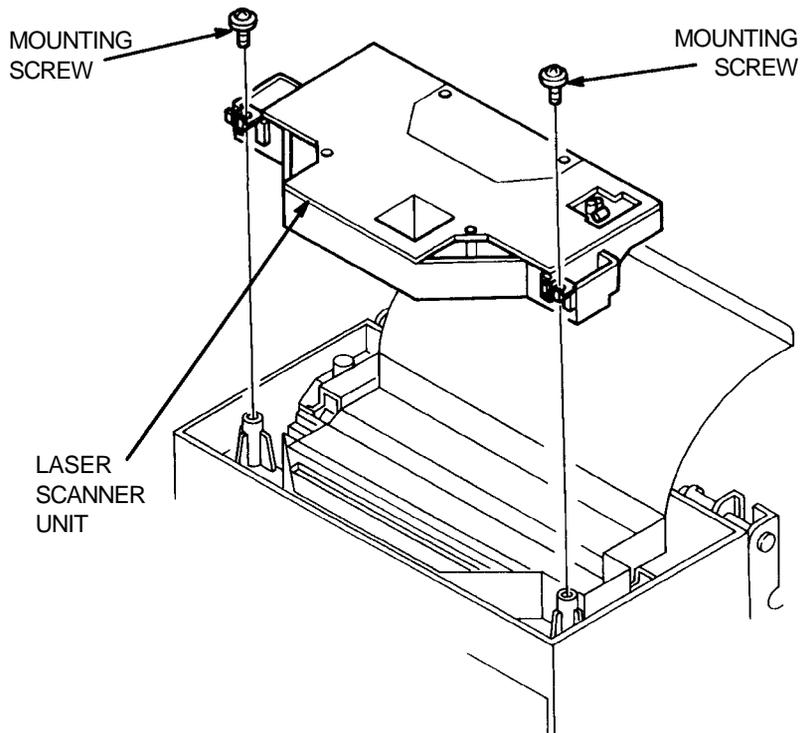
FIGURE 4-34. LASER SCANNER UNIT REMOVAL

Installation   **To install the Laser Scanner Unit:**

Reverse the removal procedure.

ERASE ASSEMBLY

Removal   **To remove the erase assembly:**

1.   Open the top cover. Remove the EP cartridge and keep it in a safe place.

2.   Remove the top cover.

3.   Remove the two black screws from the erase assembly.

4.   Disconnect P22 from J22. Remove the erase assembly.
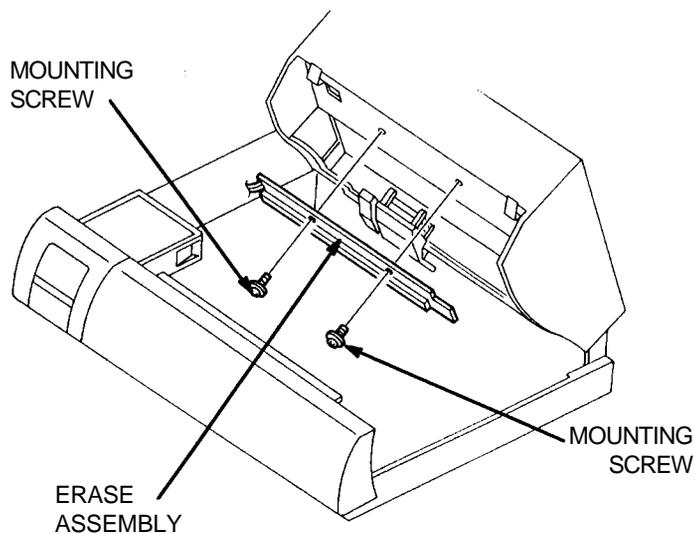
FIGURE 4-35. ERASE ASSEMBLY REMOVAL

Installation   **To install the erase assembly:**

Reverse the removal procedure.

TONER SENSOR

Removal   **To remove the toner sensor:**

1.   Open the top cover. Remove the EP cartridge and keep it in a safe
      place.

2.   Remove the top cover.

3.   Disconnect P23 from J23.

4.   Release the four clamps that secure the toner sensor to the bracket to
      remove the toner sensor.
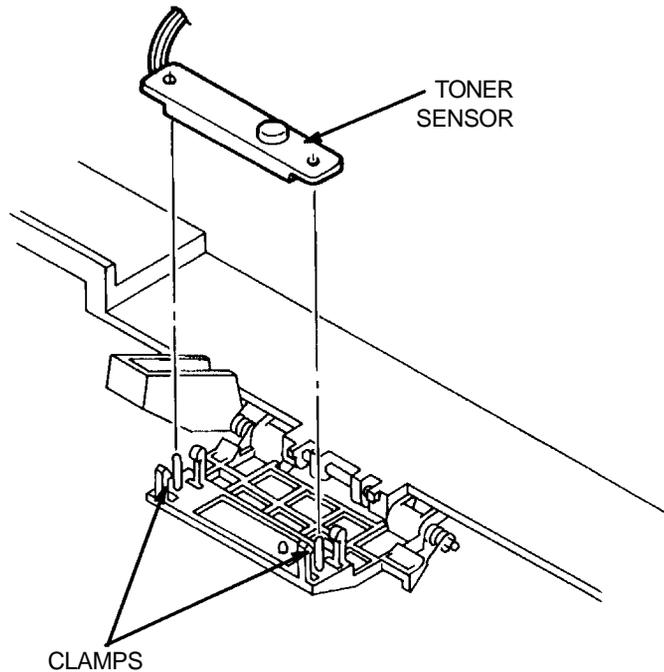
FIGURE 4-36. TONER SENSOR REMOVAL

Installation   **To install the toner sensor:**

Reverse the removal procedure.

TONER SENSOR BRACKET

Removal   **To remove the toner sensor bracket:**

1.   Open the top cover. Remove the EP cartridge and keep it in a safe place.

2.   Remove the top cover.

3.   Remove the toner sensor.

4.   Remove the E-ring from the left end of the shaft.

5.   Move the shaft to the left.

6.   Remove the toner sensor bracket.

CAUTION: Keep the spring in a safe place for the installation procedure.
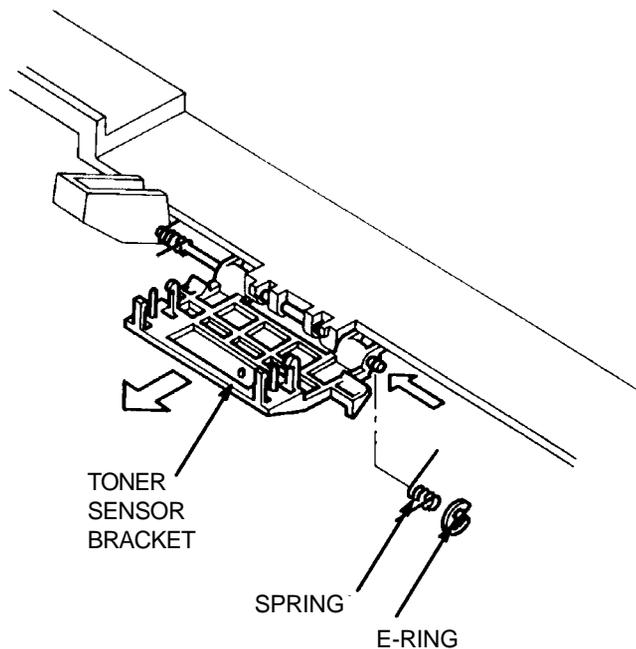
FIGURE 4-37. TONER SENSOR BRACKET REMOVAL

Installation   **To install the toner sensor bracket:**

Reverse the removal procedure.

EP CARTRIDGE SENSOR BRACKET

Removal   **To remove the EP cartridge sensor bracket:**

1. Open the top cover. Remove EP cartridge and keep it in a safe place.
2. Remove the top cover.
3. Remove the E-ring from the end of the shaft.
4. Slide the shaft to the right.
5. Slide the EP cartridge sensor bracket out of the printer.
6. Remove the EP Cartridge sensor if needed.

CAUTION: Do not lose or discard the spring. It must be installed again.
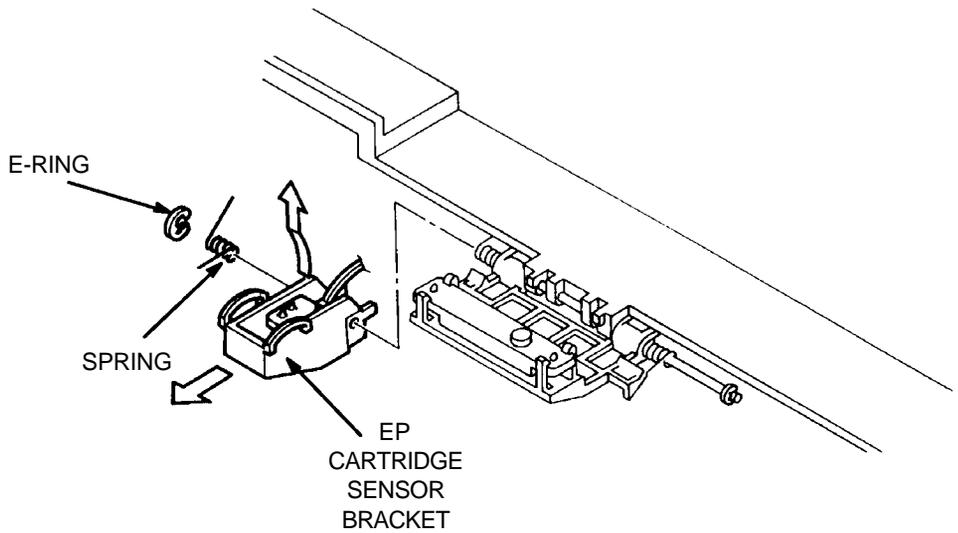
FIGURE 4-38. EP CARTRIDGE SENSOR BRACKET REMOVAL

Installation   **To install the EP cartridge sensor bracket:**

Reverse the removal procedure.

EP CARTRIDGE SENSOR

Removal   **To remove the EP cartridge sensor:**

1. Open the top cover. Remove the EP cartridge and keep it in a safe place.

2. Remove the top cover.

3. Remove the EP cartridge sensor bracket.

4. Disconnect P24 from J24.

5. Release the upper and lower clips that secure the sensor to the EP cartridge sensor bracket.

6. Remove the EP cartridge sensor.

EP CARTRIDGE SENSOR
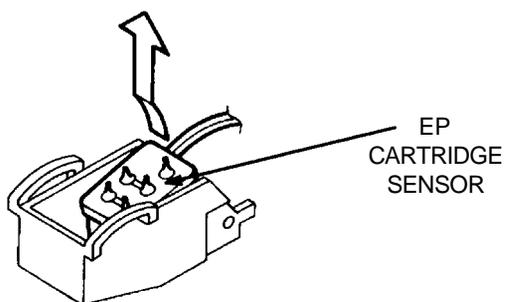
FIGURE 4-39. EP CARTRIDGE SENSOR REMOVAL

Installation   **To install the EP cartridge sensor:**

Reverse the removal procedure.

FUSER FAN

Removal   **To remove the fuser fan:**

1. Remove the three long, gold screws from the fuser fan.

2. Disconnect P33 from J33.

3. Remove the fan wire harness from the wire clamp.

4. Remove the fan cover and fuser fan.
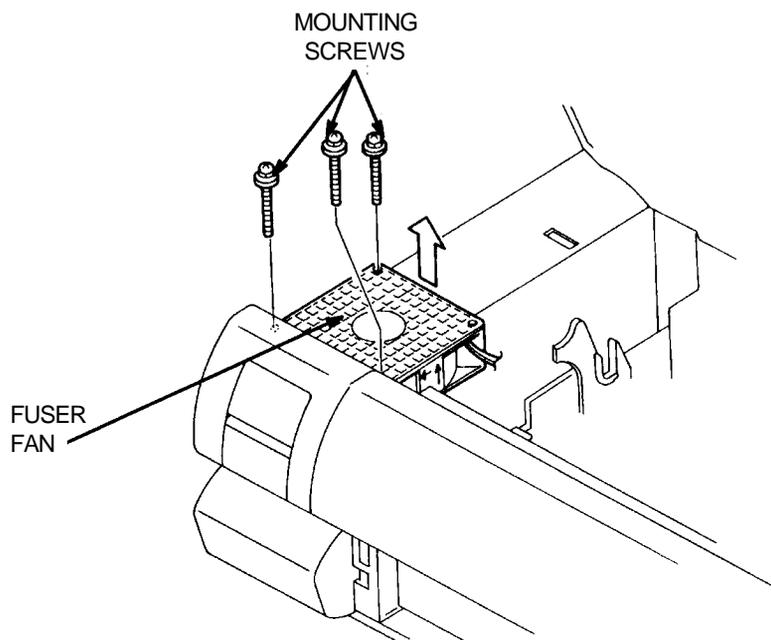
FIGURE 4-40. FUSER FAN REMOVAL

Installation   **To install the fuser fan:**

Reverse the removal procedure.

DRIVE UNIT

Removal

To remove the drive unit:

1. Remove the power cord cover.

2. Remove the top cover.

3. Remove the front cover.

4. Remove the left cover.

5. Remove the fuser fan.

6. Remove the electrical box cover.

7. Remove the control panel assembly.

8. Remove the following connectors (see "Plug/Connector Locations" at the end of this section):

    •P/J61 (on the Low Voltage Power Supply PCB)

    •P/J73 (on the Drive Unit PCB)

    •P/J62 (Fuser Bulb)

    •P/J31 (Temperature Sensor)

    •P/J32(Exit Sensor)

    •P/J1, P/J4, P/J7, P/J8, P/J9, and P/J10 (DC Controller)

9. Remove the screw that secures the cables to the DC Controller connectors P/J81, P/J82, P/J83, P/J84, P/J91, P/J92, P/J93, and P/J94, and the green ground wire.

10. Remove the four screws with silver flanges from the side frame assembly and remove it from the printer.
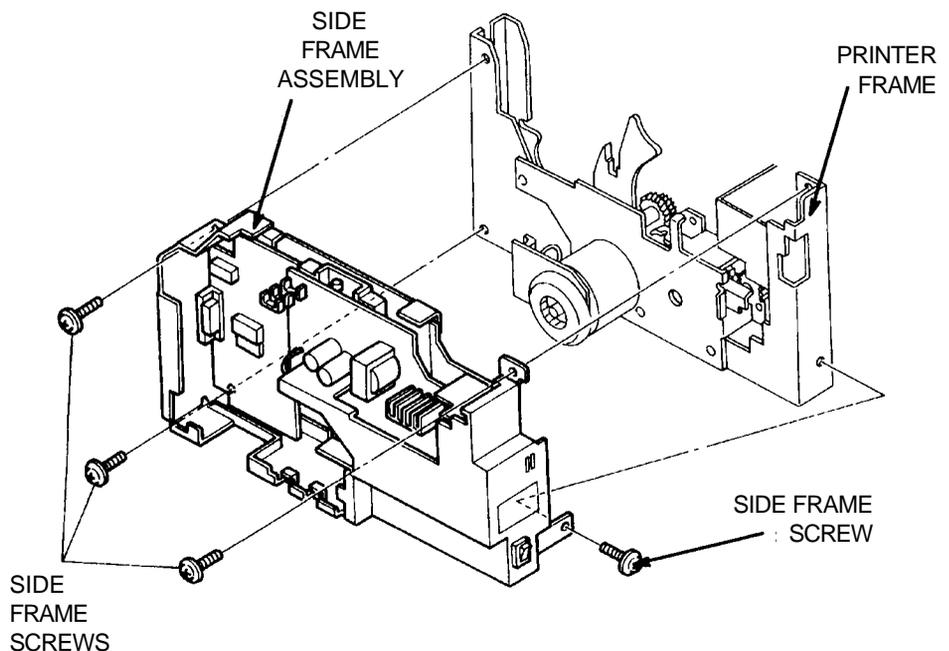
FIGURE 4-41. SIDE FRAME ASSEMBLY REMOVAL

CAUTION: While doing the following step, be careful NOT to tilt the unit and let the drive gears fall from their shafts.

11. Remove the five gold screws and the black hex head screw from the drive unit to remove it from the side frame assembly.

PRINTER
FRAME

DRIVE
UNIT
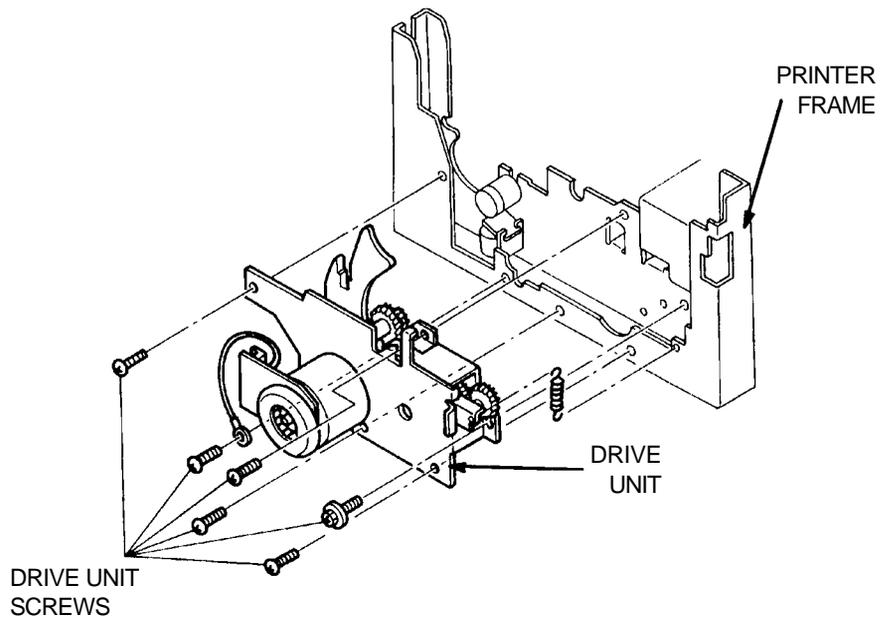
DRIVE UNIT
SCREWS

FIGURE 4-42. DRIVE UNIT REMOVAL

Installation   **To install the drive unit:**

1. Reverse the installation procedure. See "Plug/Connector Locations" at the end of this section for wire and cable routing.

LOW VOLTAGE POWER SUPPLY (LVPS)

Removal

To remove the low voltage power supply:

1. Open the top cover. Remove the EP cartridge and keep it in a safe place.

2. Remove the power cord cover.

3. Remove the top cover.

4. Remove the front cover.

5. Remove the left cover.

6. Remove the electrical box cover.

7. Remove the fuser fan.

8. Remove the control panel assembly.

CAUTION: To avoid damage, hold the Low Voltage Power Supply PCB while disconnecting P61 from J61.

9. Disconnect P/J61 and P/J62 from the Low Voltage Power Supply PCB.

10. Remove the four screws from the low voltage power supply to remove it.
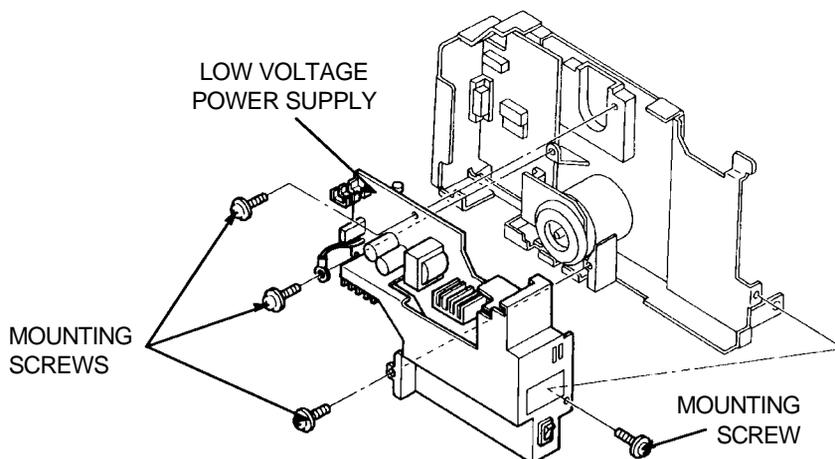
FIGURE 4-43. LOW VOLTAGE POWER SUPPLY REMOVAL

Installation

To install the low voltage power supply:

1. Reverse the removal procedure. See "Plug/Connector Locations" at the end of this section for help in routing and connecting cables.

CAUTION: When installing the fuser fan, be sure the its harness is secured by the wire clamp.

CAUTION: The connectors P2 and P3 on the DC Controller must be connected and routed prior to replacement of the Low Voltage Power Supply.

CONTROL PANEL ASSEMBLY

Removal   **To install the control panel assembly:**

1. Open the top cover. Remove the EP cartridge and keep it in a safe place.

2. Remove the power cord cover.

3. Remove the top cover.

4. Remove the front cover.

5. Remove the left cover.

6. Remove the electrical box cover.

7. Remove the fuser fan.

NOTE: The keypad should remain open while doing the following steps.

8. Open the control panel keypad.

9. Remove the three screws with silver flanges from the control panel assembly.
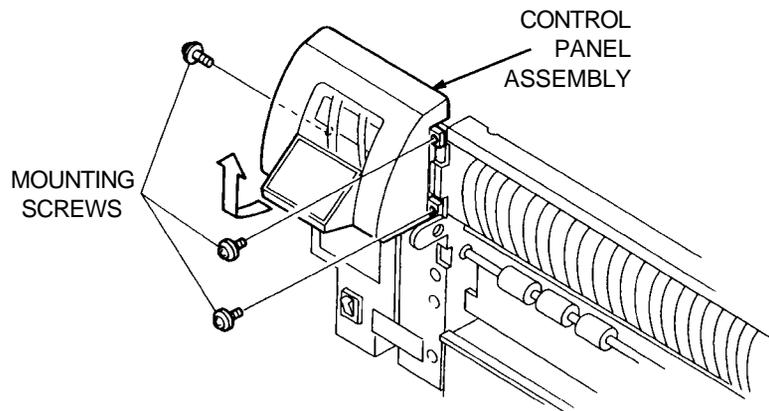
FIGURE 4-44. CONTROL PANEL ASSEMBLY REMOVAL

10. Remove the low voltage power supply.

CAUTION: Note the location and routing of the wire harness before disconnecting and removing it.

11. Disconnect the plugs from the DC Controller connectors P/J2 and P/J3.

12. Carefully free the wire harness from the printer frame before removing the control panel assembly.

Installation   **To install the control panel assembly:**

1. Reverse the removal procedure. See "Plug/Connector Locations" at the end of this section for help in routing and connecting cables.

NOTE: Wire leads for the back-light break easily from the LCD panel. During installation, be careful to position the Control Panel PCB correctly. If the Control Panel PCB is not aligned properly the wires may be damaged.

CAUTION: When installing the fuser fan, be sure the its harness is secured by the wire clamp.

HIGH VOLTAGE POWER SUPPLY (HVPS)

Removal

To remove the high voltage power supply:

1. Open the top cover. Remove the EP cartridge and keep it in a safe place.

2. Remove the top cover.

3. Remove the front cover.

4. Remove the outer exit chute assembly.

5. Remove the right cover assembly.

6. Remove the transfer charger/ detack saw assembly.

7. Remove the Paper Transfer Unit.

8. Remove the feed roller assembly.

9. Disconnect P41 from J41.

10. Remove the screw with a silver flange from the high voltage power supply.

11. Move the high voltage power supply to the left then lift it out of the printer base as shown by the arrows in Figure 4-46.
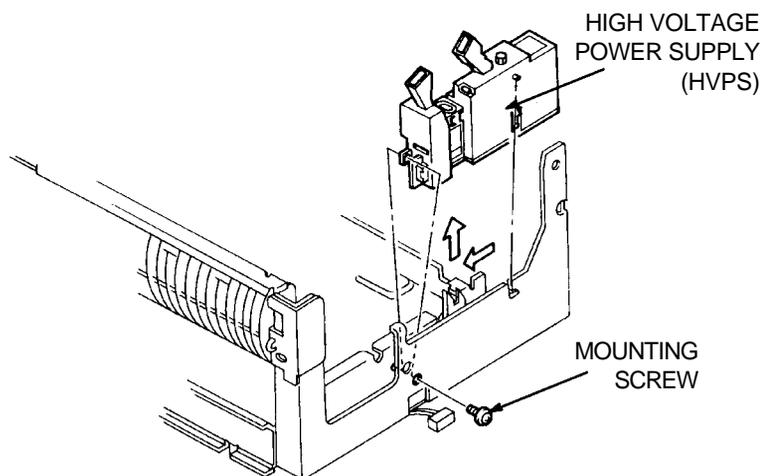
FIGURE 4-45. HIGH VOLTAGE POWER SUPPLY REMOVAL

Installation

To install the high voltage power supply:

Reverse the removal procedure.

DC CONTROLLER

Removal   **To remove the DC Controller:**

1.   Open the top cover. Remove the EP cartridge and keep it in a safe place.

2.   Remove the power cord cover.

3.   Remove the top cover.

4.   Remove the front cover.

5.   Remove the left cover.

6.   Remove the electrical box cover.

7.   Remove the following connectors:

•P/J61 (on the Low Voltage Power Supply PCB)

•P/J73 (on the Drive Unit PCB)

•P/J1, P/J2, P/J3, P/J4, P/J7, P/J8, P/J9, P/J10 P12 (DC Controller)

•Remove connectors P/J81, P/J82, P/J83, and P/J84, P/J91, P/J92, P/J93, and P/J94.

8.   Remove the two screws with silver flanges from the back panel and remove it.

9.   To remove the DC Controller, remove the two screws with silver flanges that attach it to the back panel.
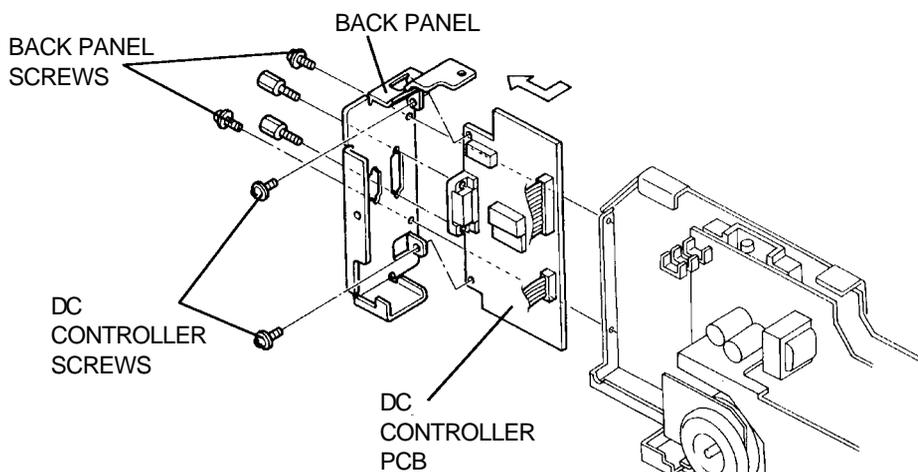
4-46. DC CONTROLLER REMOVAL

Installation   **To install the DC Controller:**

Reverse the removal procedure. See "Plug/Connector Locations" at the end of this section for help in routing and connecting cables.

CAUTION: When reinstalling the DC Controller, make sure that cables are installed in the connectors P81-P84, P91-94 and P12.

I/O CONTROLLER

Removal   **To remove the I/O Controller:**

1. Remove the screw from the front corner of the wafer box cover.

2. Remove the screw from the back corner of the wafer box cover.

3. Remove the four screws that attach the I/O Controller to the interface bracket.
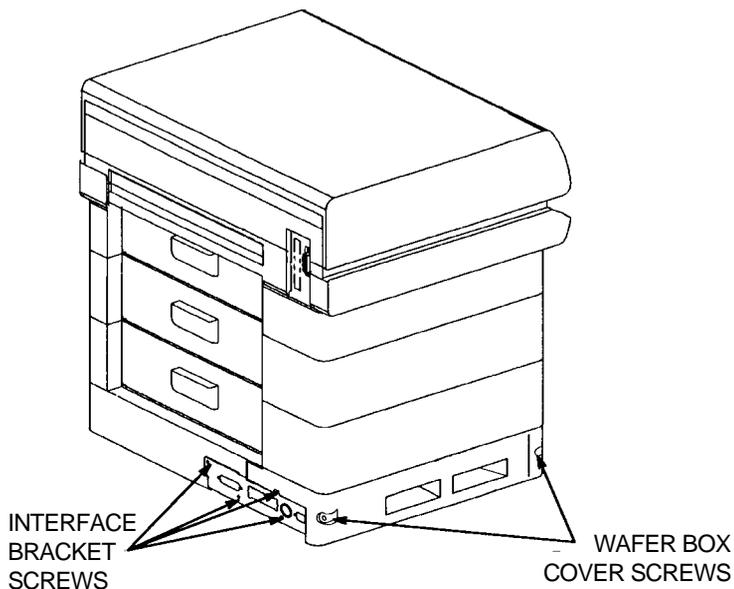
FIGURE 4-47. WAFER BOX COVER REMOVAL

4. Holding onto to the wafer box cover, slide the I/O Controller out of the printer until the power and ribbon cables can be reached.

5. Note the cable connector directions and disconnect the power and ribbon cables.

6. Slide the I/O Controller completely out of the wafer box.

7. If replacing the I/O Controller, remove the two screws that attach the PCB to the wafer box brackets.

8. Remove the I/O Controller from the wafer box bracket.

CAUTION: When the I/O Controller board is removed, the printer can collapse preventing the I/O board from seating correctly. This collapse can result from moving or applying pressure to the top of the printer while the I/O board is removed.

POWER CABLE
PLUG (J7)

I/O CONTROLLER

WAFER BOX

RIBBON
CABLE PLUG
(J6)
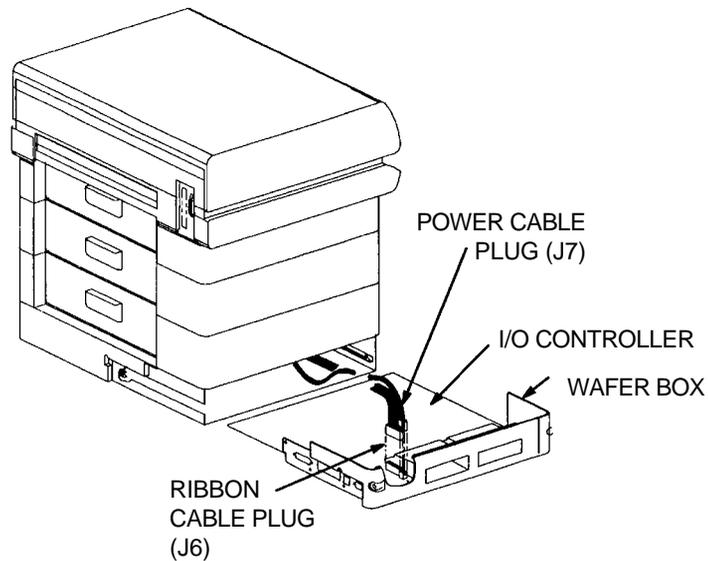
FIGURE 4-48. I/O CONTROLLER REMOVAL

Installation   **To install the I/O Controller:**

1.   Position the I/O Controller on the wafer box cover brackets with the edge of the I/O Controller Board in the slots.

2.   Install the two mounting screws.

3.   Slide the I/O Controller into the right guide in the wafer box.

4.   Continue to insert the I/O Controller into the wafer box until it slides into the left guide that begins about halfway.

5.   Plug in the power and ribbon cables when the I/O Controller Board is almost fully inserted.

6.   Fully insert the I/O Controller Board.

7.   Install two screws on each side of the wafer box cover.

8.   Install the four screws removed from the interface bracket.

FEEDER UNIT

Removal

To remove the feeder unit:

1. Remove the power cord cover.

2. Remove the top cover.

3. Remove the front cover.

4. Remove the left cover.

5. Remove the right cover.

6. Remove the electrical box cover.

7. Remove the four screws with silver flanges that attach the feeder unit to the print engine body.

8. Remove the following connectors:

   •P/J81, P/J82, P/J83, P/J84.

   •P/J91, J/J92, P/J93, P/J94.

9. Remove the screw that attaches the two feeder unit ground wires to the print engine. It is located in front of the DC Controller.

10. Lift the print engine from the feeder unit.

11. To separate the two feeder units, remove the four screws that attach the upper feeder unit to the lower feeder unit.

12. Lift the upper feeder unit off of the lower feeder unit, if needed.

MOUNTING SCREWS

MOUNTING SCREWS

UPPER FEEDER UNIT
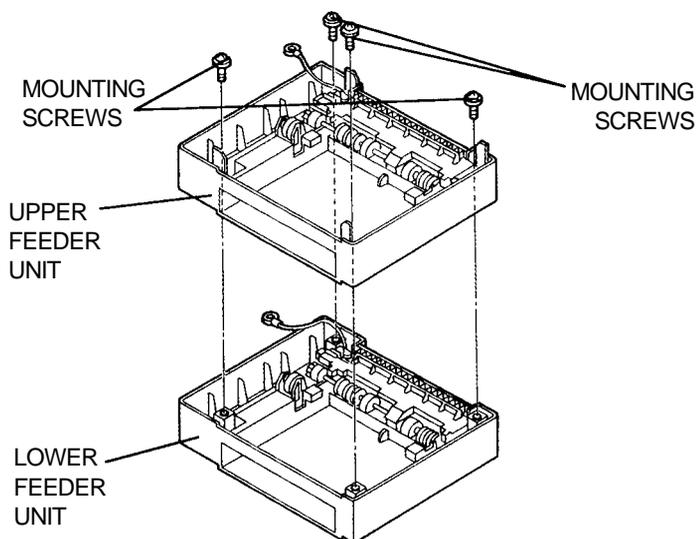
LOWER FEEDER UNIT

FIGURE 4-49. FEEDER UNIT REMOVAL

Installation

To install the feeder unit:

Reverse the removal procedure.

LOWER CHUTE ASSEMBLY

Removal   **To remove the lower chute assembly from a feeder unit:**

1. Remove the feeder unit.

2. Remove the five screws from the lower chute assembly.

3. Lift and remove it.
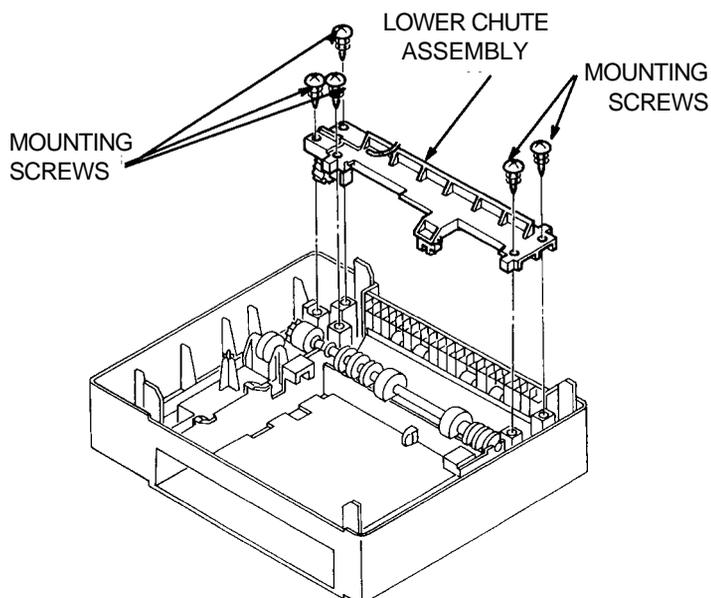
FIGURE 4-50. LOWER CHUTE ASSEMBLY REMOVAL

Installation   **To install the lower chute assembly in a feeder unit:**

Reverse the removal procedure.

PAPER OUT SENSOR

Removal   **To remove the paper out sensor from a feeder unit:**

1.   Remove the feeder unit.

2 .   Release the four spring clips that attach the paper out sensor to the lower chute assembly.
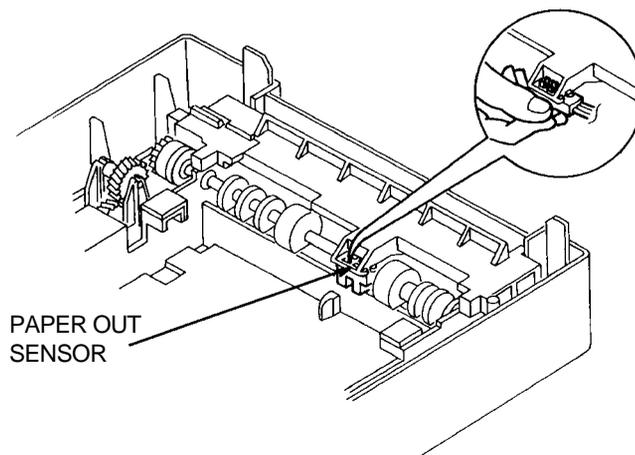
PAPER OUT
SENSOR

FIGURE 4-51. PAPER OUT SENSOR (FEEDER UNITS)

Installation   **To install the paper out sensor in a feeder unit:**

Reverse the removal procedure.

PAPER FEED ROLLER ASSEMBLY

Removal   **To remove the paper feed roller assembly from a feeder unit:**

1.   Remove the feeder unit.

2.   Remove the lower chute assembly.

3.   Lift the paper feed roller assembly out of the feeder unit.
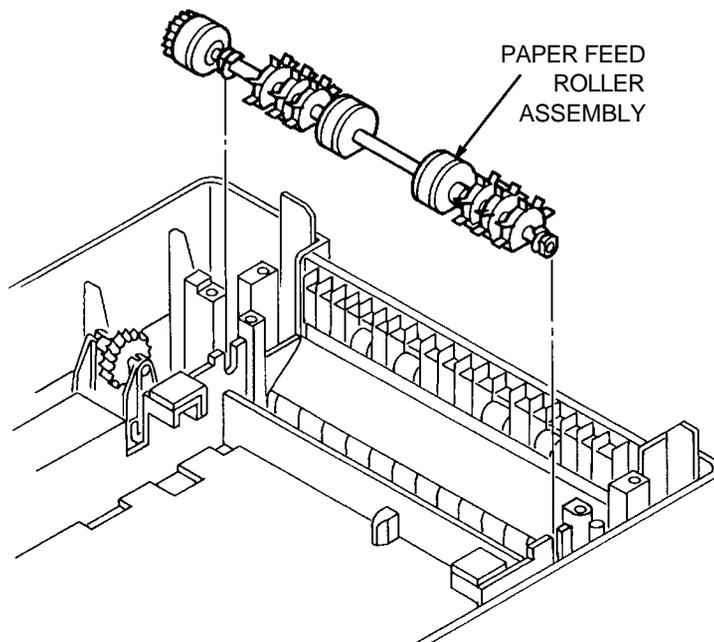
FIGURE 4-52. PAPER FEED ROLLER ASSEMBLY (FEEDER UNITS)

Installation   **To install the paper feed roller assembly in a feeder unit:**

Reverse the removal procedure.

PAPER FEED SOLENOID (TRAYS 2 & 3)

Removal   **To remove a paper feed solenoid from a feeder unit:**

1.   Remove the feeder unit.

2.   Remove the lower chute assembly.

3.   Remove the paper feed roller assembly.

4.   Remove the screw with a black flange that attaches the paper feed solenoid to the feeder unit.

5.   Slide the paper feed solenoid to one side and lift it out of the feeder unit.
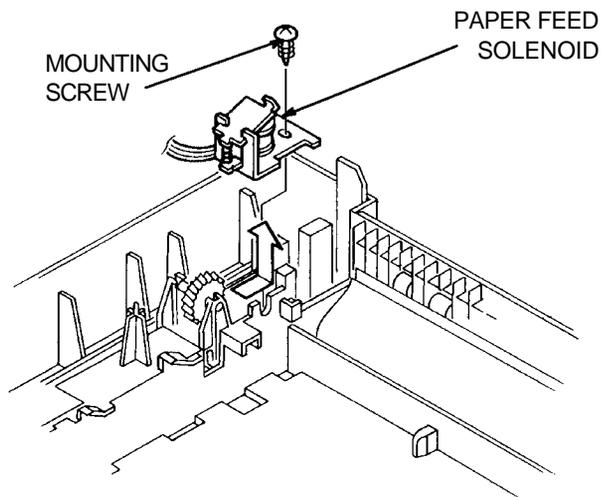
4-53. PAPER FEED SOLENOID REMOVAL (FEEDER UNITS)

Installation   **To install a paper feed solenoid in a feeder unit:**

Reverse the removal procedure.

PAPER SIZE SENSOR (TRAYS 2 & 3)

Removal   **To remove the paper size sensor from a feeder unit:**

1.   Remove the feeder unit.

2.   Using a screwdriver release the three clamps that attach the paper size sensor to the side frame of the feeder unit.
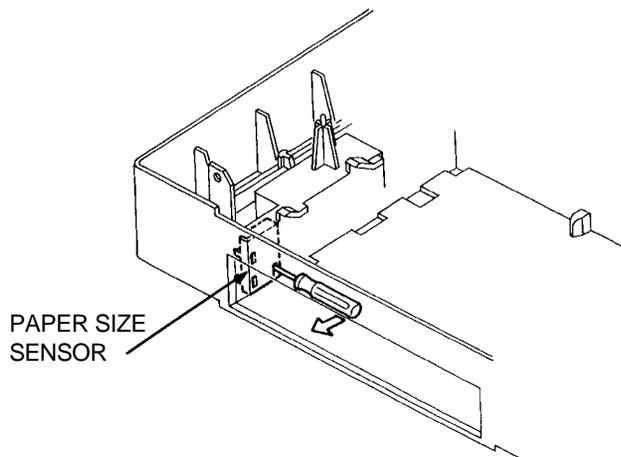
PAPER SIZE
SENSOR

FIGURE 4-54. PAPER SENSOR REMOVAL (FEEDER UNITS)

Installation   **To install the paper size sensor in a feeder unit:**

Reverse the removal procedure.

OUTER TURN-CHUTE ASSEMBLY

Removal   **To remove the outer turn-chute assembly from a feeder unit:**

1.   Remove the feeder unit.

2.   Remove the lower chute assembly.

3.   Remove the spring on each side of the outer turn-chute assembly.

4.   Move the turn chute assembly downward and out of the feeder unit.

NOTE: To remove the outer turn chute assembly from the top tray of a 2-tray feeder unit, separate the two units first.

SPRING

OUTER
TURN-CHUTE   SPRING
ASSEMBLY
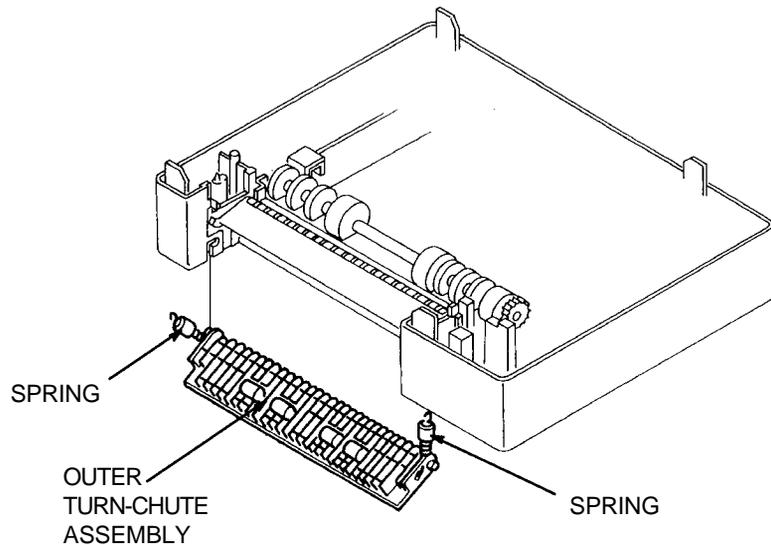
FIGURE 4-55.   OUTER TURN-CHUTE ASSEMBLY REMOVAL (FEEDER UNITS)

Installation   **To install the outer turn-chute assembly in a feeder unit:**
Reverse the removal procedure.

INNER TURN-CHUTE ASSEMBLY

Removal   **To remove the inner turn-chute assembly from a feeder unit:**

1. Remove the feeder unit.

2. Remove the lower chute assembly.

3. Remove the spring from each side of the inner turn-chute assembly.

4. Push the shaft of the inner turn chute assembly inward to remove it from the feeder unit.

INNER
TURN-CHUTE
ASSEMBLY
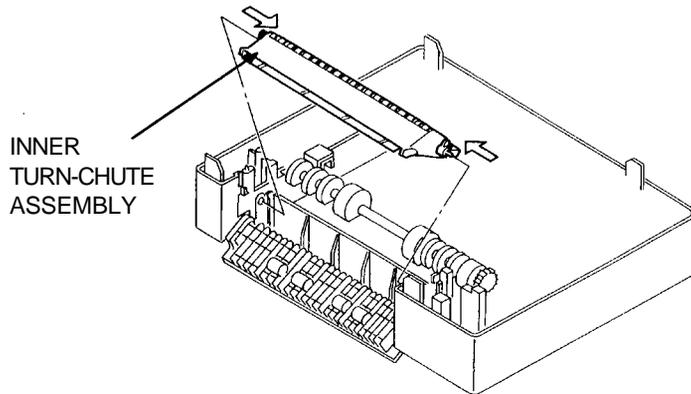
FIGURE 4-56. INNER TURN-CHUTE ASSEMBLY REMOVAL (FEEDER UNITS)

Installation   **To install an inner turn chute assembly in a feeder unit:**

Reverse the removal procedure.

MULTI MEDIA POWER FEEDER

Removal   **To remove the multi media power feeder:**

1.   Turn off the printer and disconnect the multi media power feeder interface cable from its connector on the printer.

2.   Loosen the knobs on both sides on the bottom of the multi media power feeder sensor.
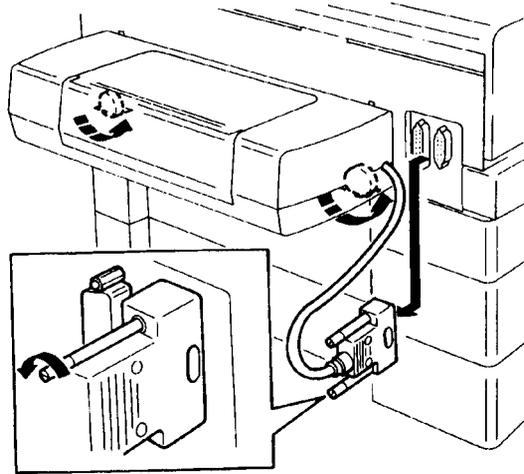
FIGURE 4-57 MULTI MEDIA POWER FEEDER REMOVAL

3.   Remove the guide chute from the manual feed guide.
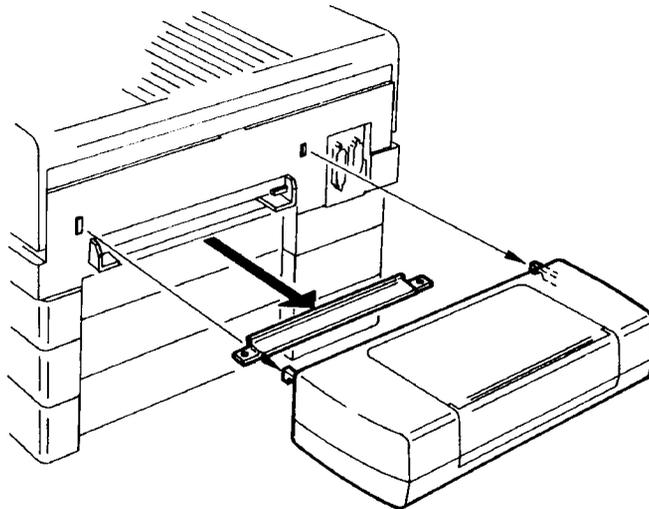
FIGURE 4-58 MULTI MEDIA POWER FEEDER REMOVAL

Installation   **To install the multi media power feeder:**

Reverse the removal procedure.

TOP COVER (MULTI MEDIA POWER FEEDER)

Removal   **To remove the top cover of the multi media power feeder:**

1. Remove the multi media power feeder as required.

2. Remove the two long screws (black, with hexagonal flanges) on both sides of the bottom of the multi media power feeder.

3. Remove the top cover.

SCREW   SCREW

MULTI MEDIA
POWER FEEDER
BOTTOM VIEW
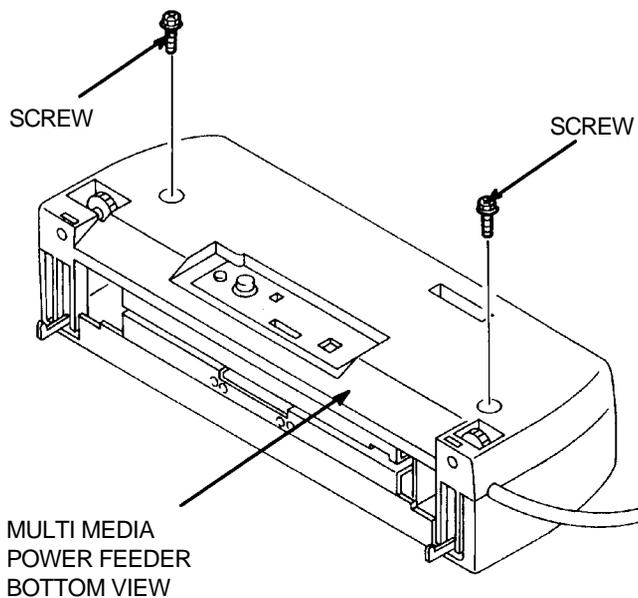
FIGURE 4-59 TOP COVER   REMOVAL (MULTI MEDIA POWER FEEDER)

Installation   **To install the multi media power feeder top cover:**

Reverse the removal procedure.

TRAY ASSEMBLY (MULTI MEDIA POWER FEEDER)

Removal

To remove the multi media power feeder tray assembly:

1. Remove the multi media power feeder as required.

2. Remove the top cover.

3. Carefully pull outward on both sides of the tray assembly to clear the bearings and remove the tray.
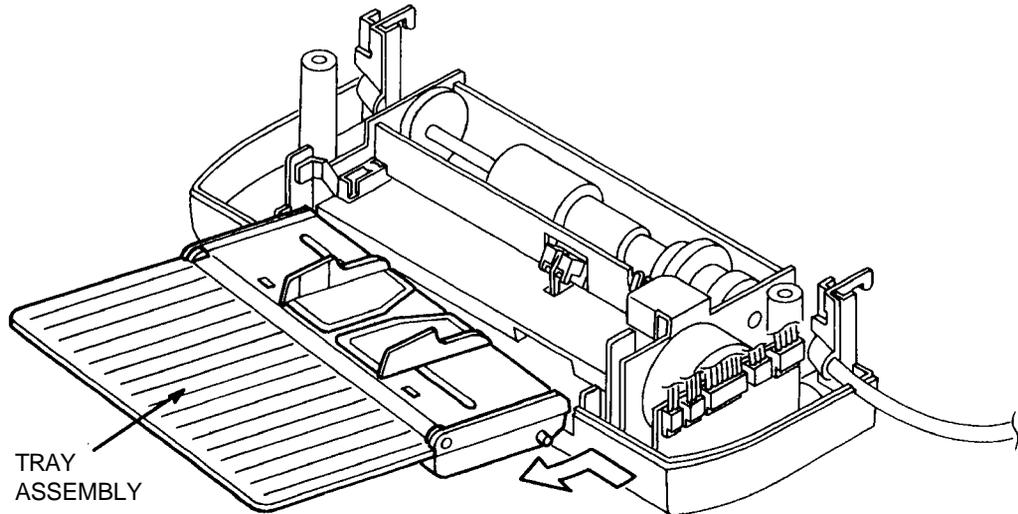
TRAY
ASSEMBLY

FIGURE 4-60 TRAY ASSEMBLY (MULTI MEDIA POWER FEEDER) REMOVAL

Installation

To install the tray assembly:

Reverse the removal procedure.

CAUTION: When installing the tray assembly, hold the paper guide closed so that it does not interfere with the paper size switch.

MULTI MEDIA POWER FEEDER PCB

Removal   **To remove the Multi Media Power Feeder PCB:**

1.   Remove the multi media power feeder, as required.

2.   Remove the top cover.

3.   Remove the tray assembly to prevent possible damage to it.

4.   Disconnect the plugs from connectors CN1 to CN5 on the PCB.

5.   Pull the Multi Power Feeder PCB straight up and out of the feeder.

MULTI MEDIA
POWER FEEDER PCB
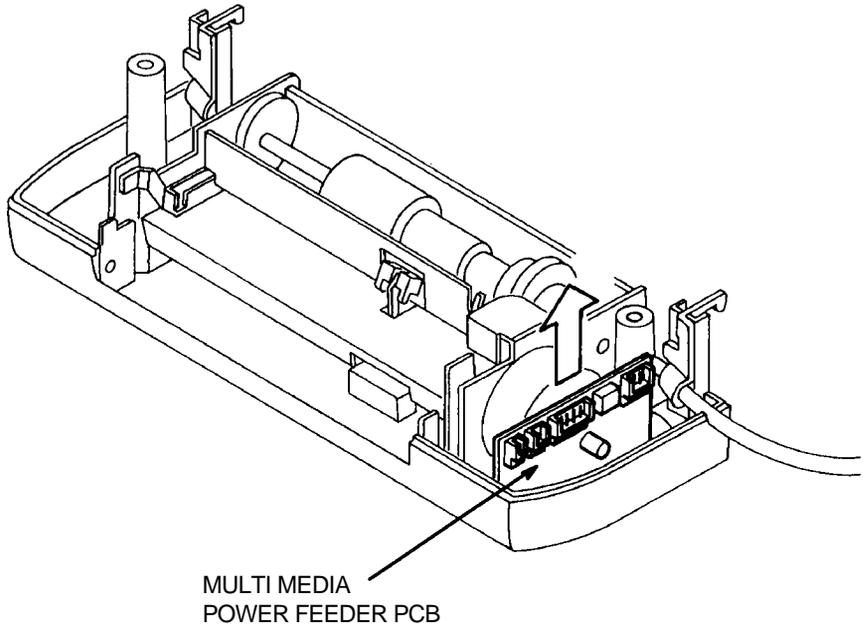
FIGURE 4-61 MULTI MEDIA POWER FEEDER PCB REMOVAL

Installation   **To install the Multi Media Power Feeder PCB:**

Reverse the removal procedure.

PAPER FEED SOLENOID (MULTI MEDIA POWER FEEDER)

Removal   **To remove the paper feed solenoid:**

1.   Remove the multi media power feeder as required.

2.   Remove the top cover.

3.   Remove the tray assembly to prevent possible damage to it.

4.   Remove the black screws with square flanges that attach connector CN3 and the paper feed solenoid to the multi media power feeder frame.

5.   Remove the paper feed solenoid.
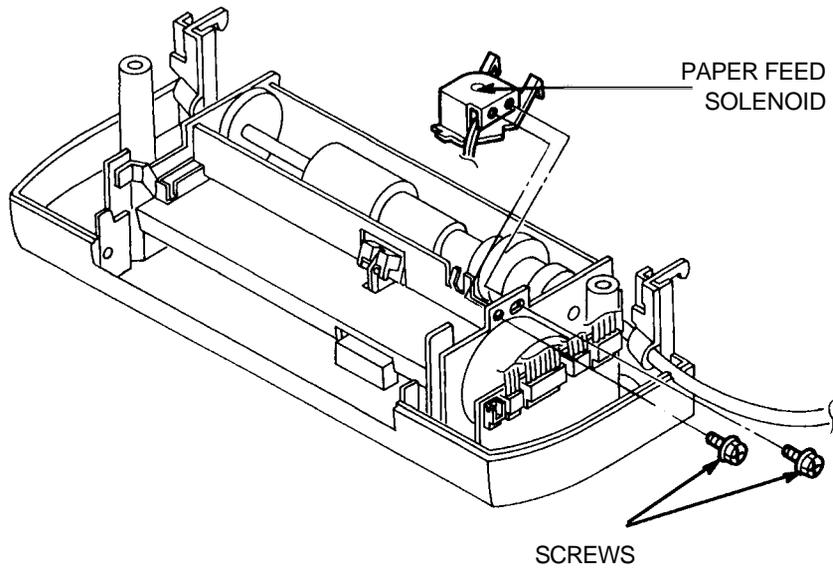
FIGURE 4-62 PAPER FEED SOLENOID (MULTI MEDIA POWER FEEDER) REMOVAL

Installation   **To install the paper feed solenoid:**

Reverse the removal procedure.

PAPER OUT SENSOR

Removal   **To remove the paper out sensor:**

1.   Remove the multi media power feeder from the printer.

2.   Remove the top cover.

3.   Release the four clips that attach the paper out sensor to the multi media power feeder base.

4.   Remove the paper out sensor.
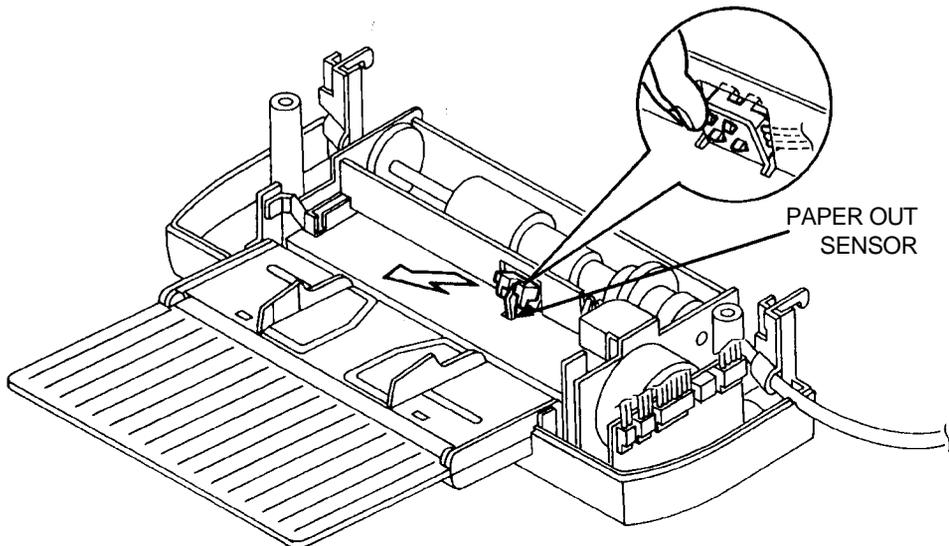
FIGURE 4-63 PAPER OUT SENSOR (MULTI MEDIA POWER FEEDER) REMOVAL

Installation   **To install the paper out sensor:**

Reverse the removal procedure.

MOTOR ASSEMBLY (MULTI MEDIA POWER FEEDER)

Removal   **To remove the motor assembly:**

1. Remove the multi media power feeder from the printer.

2. Remove the top cover.

3. Remove the Multi Media Power Feeder PCB.

4. Remove the two black screws with hexagonal flanges that attaches the motor assembly to the frame.
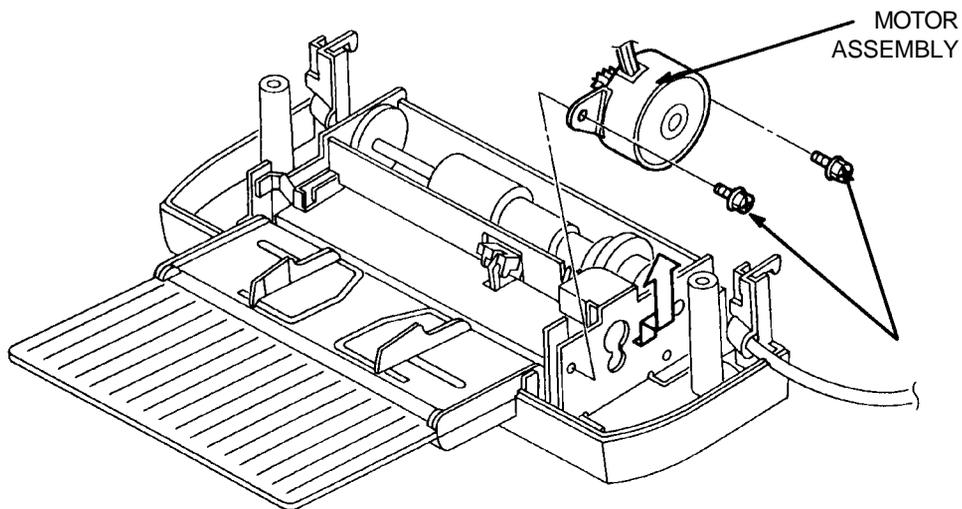
FIGURE 4-64 MOTOR ASSEMBLY (MULTI MEDIA POWER FEEDER) REMOVAL

Installation   **To install the motor assembly:**

Reverse the removal procedure.

FEED ROLLER ASSEMBLY (MULTI MEDIA POWER FEEDER)

Removal   **To remove the feed roller assembly:**

1.   Remove the multi media power feeder as required.

2.   Remove the top cover.

3.   Remove the feed solenoid

4.   Remove the E-rings on each end of the feed roller shaft.

5.   Move the feed roller shaft to the left until it is free of the cam then lift it out of the printer.
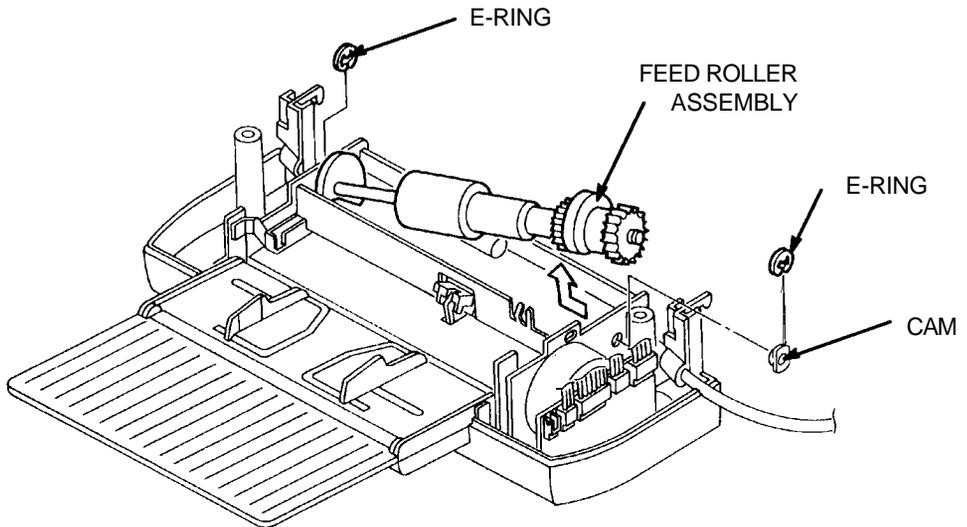
FIGURE 4-65 FEED ROLLER ASSEMBLY (MULTI MEDIA POWER FEEDER) REMOVAL

Installation   **To install the feed roller assembly:**

Reverse the removal procedure.

CAUTION: Be sure the cam is positioned correctly when installing the feed roller assembly.

TAKE-AWAY ROLLER ASSEMBLY (MULTI MEDIA POWER FEEDER)

Removal   **To remove the take away roller assembly:**

1.   Remove the multi media power feeder as required.

2.   Remove the top cover.

3.   Remove the black screw with a hexagonal flange that secures the ground wire.

4.   Remove the connector CN2 from the motor assembly, connector CN3 from the paper feed solenoid, and connector CN4 from the paper out sensor.

5.   Remove the harness from the wire clamp on the bracket assembly.

6.   Remove the four gold screws from the bracket assembly.

7.   While pressing the JAM CLEAR button on the bottom of the bracket, move the bracket upward.

8.   Remove the E-rings on each side of the take-away roller assembly to remove it.
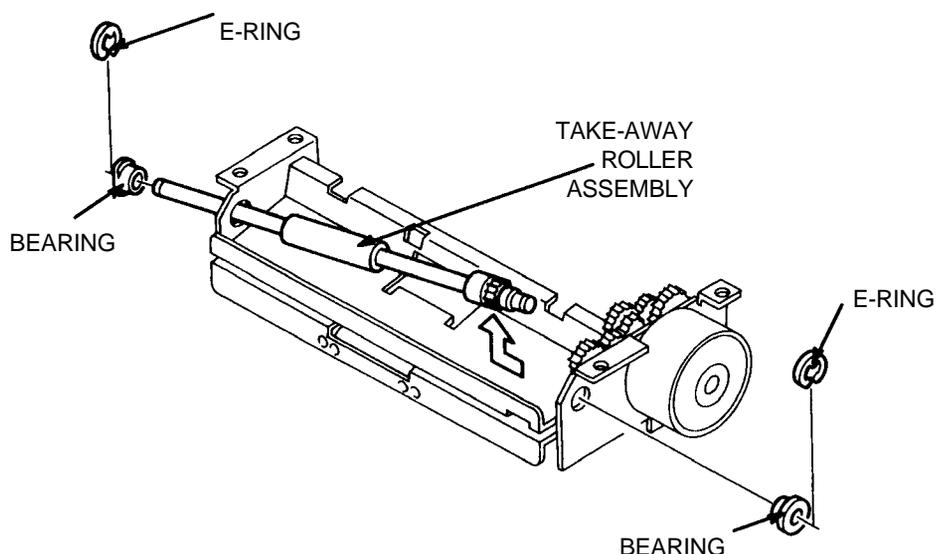
FIGURE 4-66 TAKE AWAY ROLLER ASSEMBLY (MULTI MEDIA POWER FEEDER) REMOVAL

Installation   **To install the take away roller assembly:**

Reverse the removal procedure.

CAUTION: Do not interchange the right and left bearings. Be sure that the bracket assembly and retard chute assembly are in position.

RETARD ASSEMBLY (MULTI MEDIA POWER FEEDER)

Removal   **To remove the retard assembly:**

1.   Remove the multi media power feeder as required.

2 .   Remove the long black screw with a hexagonal flange that attaches the retard assembly at the bottom of the multi media power feeder.

3 .   Remove the retard assembly.

SCREW

RETARD
ASSEMBLY

MULTI MEDIA
POWER FEEDER-
BOTTOM VIEW
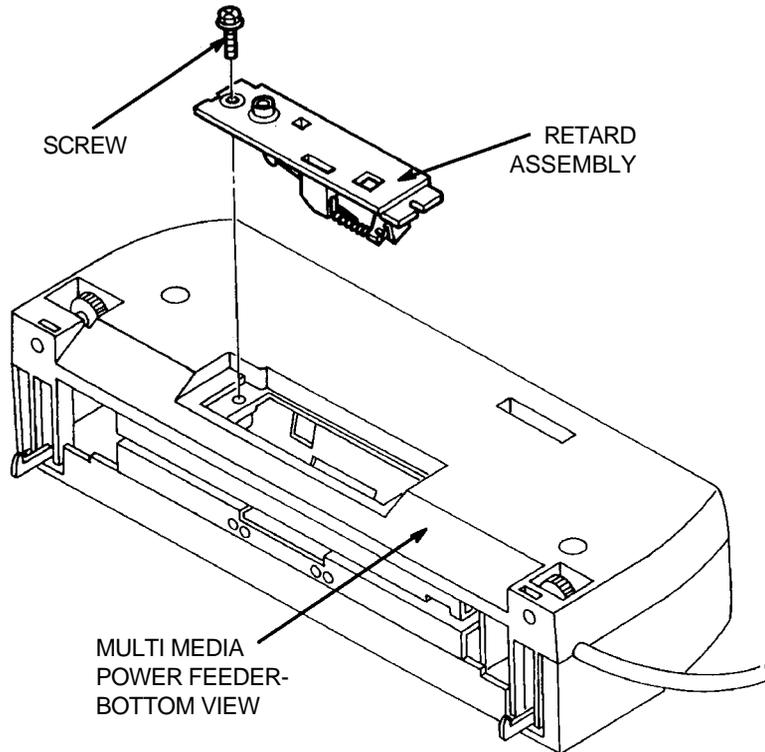
FIGURE 4-67 MULTI MEDIA POWER FEEDER REMOVAL

Installation   **To install the retard assembly:**

Reverse the removal procedure.

NOTE: To install the bracket assembly, press and hold the JAM CLEAR button while positioning the bracket assembly..

FAX CARTRIDGE INSTALLATION AND CONFIGURATION

Installation   **To install the fax cartridge:**

The fax cartridge plugs into the front slot on the left side of the printer. (The same side as the power cord.)

CAUTION: Be sure the printer's power is turned off before the fax cartridge is installed.
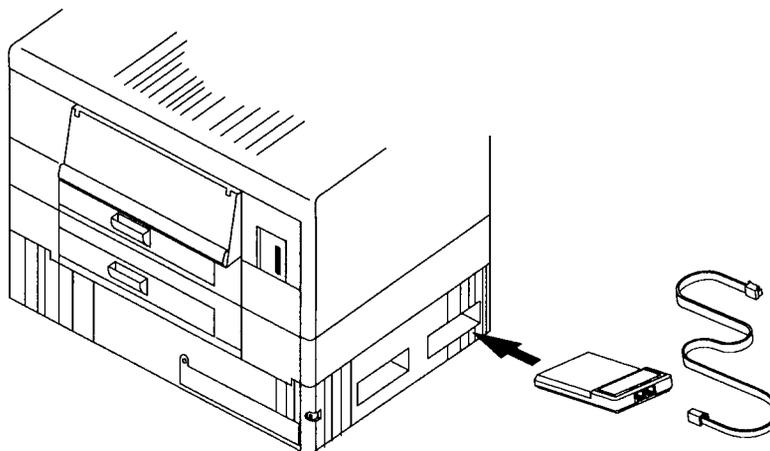
The fax cartridge plugs into the front slot on the left side of the printer. (The same side as the power cord.)

There are two phone jack sockets on the fax cartridge labeled LINE and PHONE.

- The socket to the rear (labeled LINE) must be connected to a telephone wall socket. The telephone cord provided in the fax kit should be used.

- The socket to the front (labeled PHONE) can be connected to a telephone. This allows the fax printer to share a line with a standard telephone.

CAUTION: Do not attempt to use the fax printer on any phone line with a call-waiting feature.
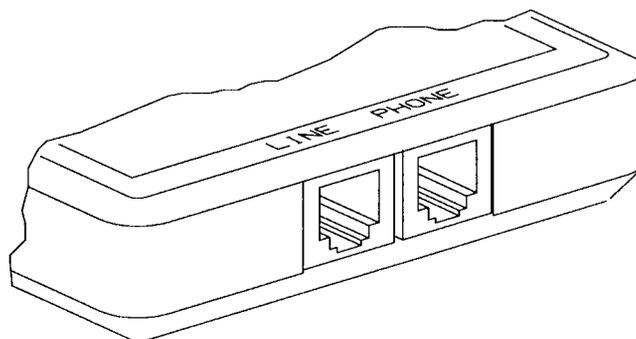
Configuration   **Configuring the Fax card to the printer**

When the fax cartridge has been installed and connected to the phone line, the printer's power switch can be turned on. The printer will automatically recognize the fax cartridge and a new set of control panel options will be available for use in the printer's display window.

The fax menu structure is illustrated in the table.

Options	Selections
ENABLE	Send and Receive
	Disabled
	Receive Only
	Send Only
CLOCK SETUP	Set Date
	Set Time
SEND SETUP	Retry Count (0 thru 9)
	Retry Interval (00 thru 99)
	Resolution (Standard / Fine)
	Speaker (Enable / Disable)
	Header (Enable / Disable)
RECEIVE SETUP	Answer Ring

Replacing the Lithium Battery in the Fax Cartridge

The fax cartridge contains a small battery that controls the time and date clock. This battery will should be changed every two to three years.

To replace the battery, turn off the power to the printer. Disconnect the phone cables from the jacks and remove the fax cartridge.

CAUTION: Be sure the printer's power is turned off before the fax cartridge is installed.
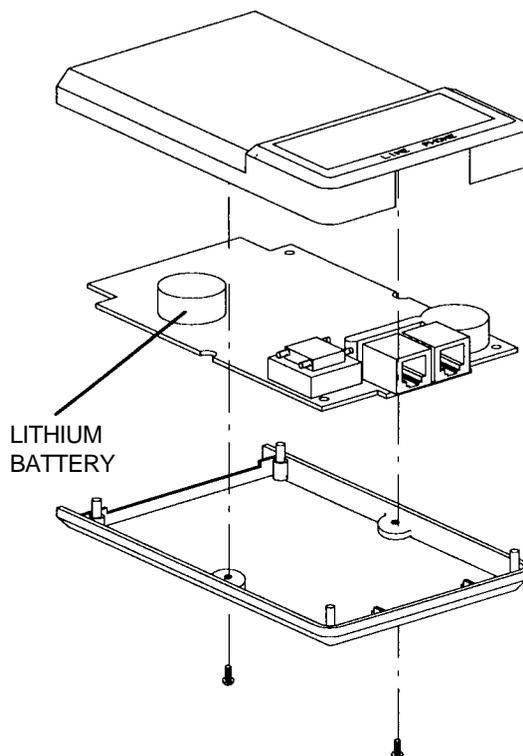
LITHIUM
BATTERY

1.   Remove two screws from the fax cartridge case.

2.   Gently pry the case apart to expose the circuit board.

3.   Remove the old battery.

4.   Replace the old battery with a new 2032 lithium coin cell battery.

The battery will be marked with a plus sign (+) on one side and a minus sign (-) on the other side. Make sure that the plus (+) side is facing up when the new battery is installed.

5.   Put the cartridge case back together and replace the screws.

6.   Place the cartridge back in the printer and replace the phone cables.

Once the power is turned back on to the printer, the time and the date must be reset. (See "Clock Setup" in the Fax User's Manual.)

PLUG/CONNECTOR LOCATIONS

The illustrations that follow can be used to locate the plugs and connectors that must be disconnected and then reconnected when parts and assemblies are removed from the printer.
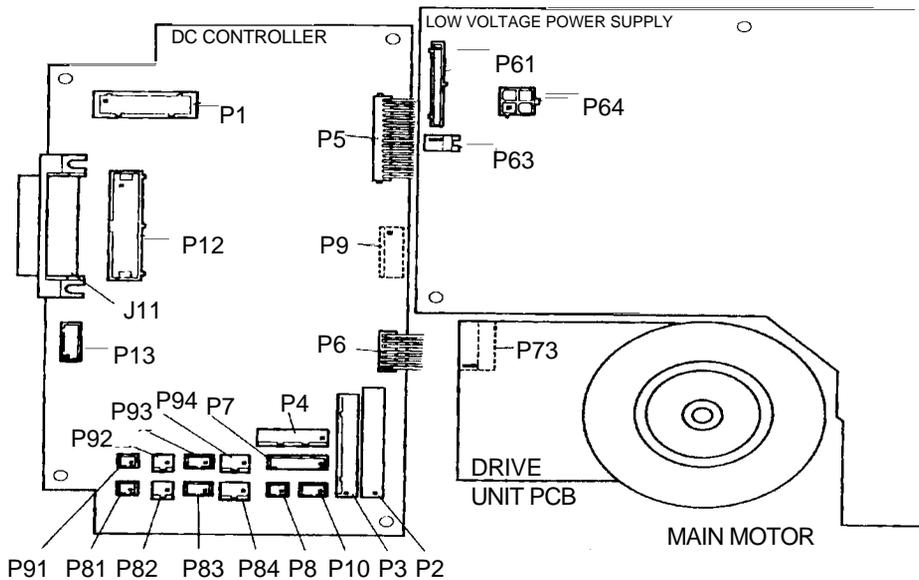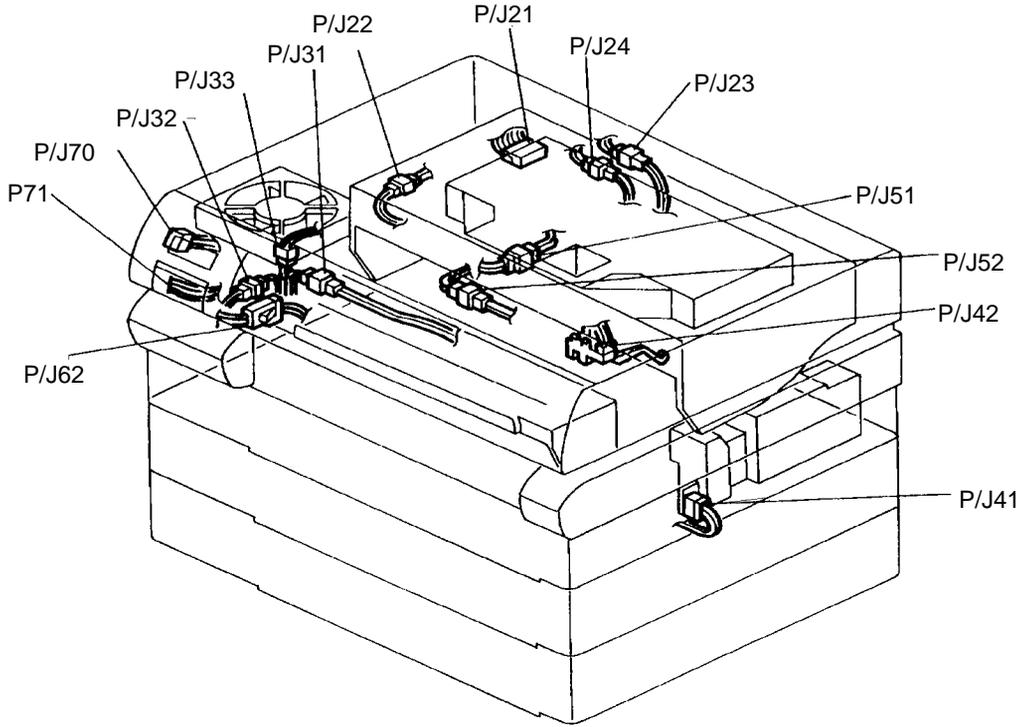
TABLE 4-1. PLUG/CONNECTOR LOCATIONS

Plug/ Connector	Connector Location	To Locations
P-1	DC Controller	To Laser Scanner Unit P/J-21 To Erase Assembly P/J-22 To Toner Sensor P/J-23 To EP Cartridge Switch P/J 24
P-2	DC Controller	P/J70, partly connected directly to Control Panel LCD
P-3	DC Controller	Control Panel Keypad-P-71
P-4	DC Controller	To Temperature Sensor P/J 31 To Exit Sensor P/J 32 To Fuser Fan P/J 33
P-5	DC Controller	Low Voltage Power Supply P-61
P-6	DC Controller	Motor Drive PCB P-73
P-7	DC Controller	High Voltage Power Supply P-41 Paper Out Sensor P-42
P-8	DC Controller	Paper Feed Solenoid
P-9	DC Controller	Registration Clutch Transport Clutch P/J 51 Pre-Registration Sensor P/J 52
P-10	DC Controller	Paper Size Sensor (tray 1)
J-11	DC Controller	External connector for Multi Media Power Feeder to DC Controller P-13.
P-12	DC Controller	I/O Controller J-6
P-13	DC Controller	Back Panel (Multi Media Power Feeder)
P/J-21	Upper Unit Laser Scanner Unit	Laser Scanner Unit to DC Controller P-1
P/J-22	Upper Unit	Erase Assembly to DC Controller P-1
P/J-23	Upper Unit	Toner Sensor to DC Controller P-1
P/J-24	Upper Unit	EP Cartridge Sensor to DC Controller P-1
P/J-31	Left side of fuser unit	Fuser Thermistor to DC Controller P-4
P/J-32	Left side of fuser unit	Exit Sensor to DC Controller P-7
P/J-33	Fuser Fan	DC Controller P-4
P-41	High Voltage Power Supply (HVPS)	DC Controller P-7

TABLE 4-1. PLUG/CONNECTOR LOCATIONS (Continued)

Plug/ Connector	Connector Location	To Locations
P-41	High Voltage Power Supply (HVPS)	DC Controller P-7
P-42	Paper Out Sensor (tray 1)	DC Controller P-7
P/J-51	Upper Unit	Transport Clutch (tray 1) to DC Controller P-9
P/J-52	Upper Unit	Pre-Registration Sensor to DC Controller P-9
P-61	Low Voltage Power Supply	DC Controller P-5
P/J-62	Left side of fuser unit	From Low Voltage Power Supply to fuser bulb
P-63	Low Voltage Power Supply	Wafer Box Fan
P-64	Low Voltage Power Supply	I/O Controller Power J-7
P-70	Control Panel LCD	Low Voltage Power Supply
P-71	Control Panel Keypad (directly connected)	DC Controller P3
P-73	Drive Unit PCB	DC Controller P-6
P-74	Multi Media Power Feeder PCB	Multi Media Power Feeder
P-81	DC Controller	Paper Feed Solenoid (tray 2)
P-82	DC Controller	Transport Clutch (tray 2)
P-83	DC Controller	Paper Size Sensor (tray 2)
P-84	DC Controller	Paper Out Sensor(tray 2)
P-91	DC Controller	Paper Feed Solenoid (tray 3)
P-92	DC Controller	Transport Clutch (tray 3)
P-93	DC Controller	Paper Size Sensor (tray 3)
P-94	DC Controller	Paper Out Sensor (tray 3)

MAIN CONTROL
UNIT PCB

P3

P2

LOW VOLTAGE
POWER SUPPLY

P/J31   P/J32

P/J33

P/J62

P/J70
P/J71

P4

P7

P10

CONTROL PANEL
LOCATION

FUSER FAN
LOCATION

CABLE CLAMP
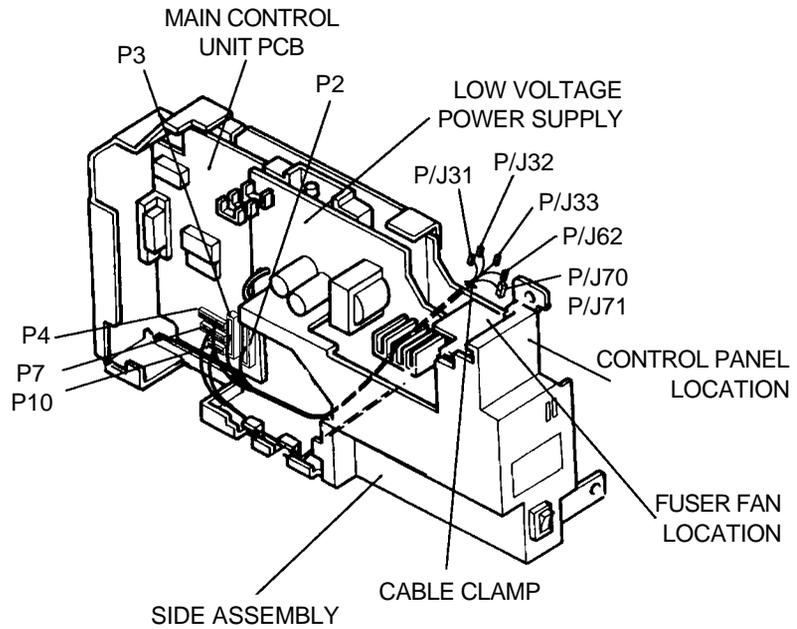
SIDE ASSEMBLY

NOTE:

THE WIRE HARNESSES FOR P2, P3, AND P4 ARE
ROUTED UNDER THE DRIVE MOTOR. THE DRIVE
MOTOR IS NOT SHOWN IN THIS FIGURE.

FIGURE 4-68. SIDE ASSEMBLY WIRE ROUTING

LaserWriter Pro 810

Section 5:   Troubleshooting

GENERAL

This troubleshooting section is divided into five parts. The first part explains the troubleshooting tools available in the printer. The rest of the section describes possible remedies for each of following problem areas:

•   Control panel error messages

•   Paper handling

•   Abnormal noise

•   Print quality

•   Electrical

Diagnostics

The printer has two types of troubleshooting tools. The Test Print Mode is used to check print quality, image placement, and overall printer operation. The Diagnostic mode is used to check the electrical and mechanical operation and make some adjustments to the printer.

TEST PRINT MODE

The Test Print Mode is used to print a test pattern to check print density and unprintable area alignment. It can also be used to check the operation of the printer. When the Test Print Mode is entered, a test pattern is continuously printed out at the maximum rated speed for the paper-size used.

Test Printing   **To start test printing:**
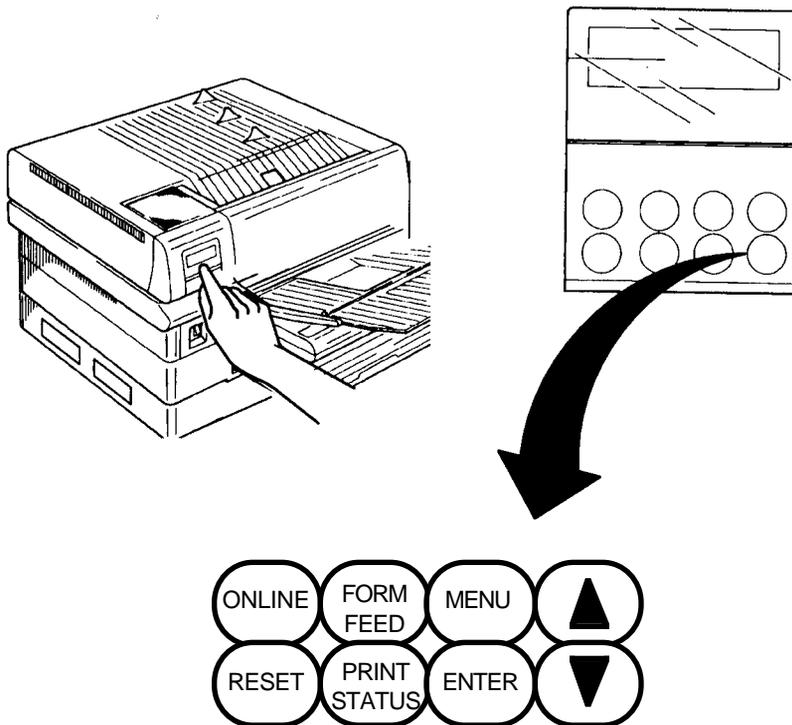
1.   Remove all paper sources except for the cassette that is to supply the paper for the test print.

2 .   Open the control panel keypad and turn on the printer while pressing the ENTER key. Release the ENTER key. The following message is displayed.

> PLEASE WAIT
> TEST PRINT 00

3 .   When the fuser reaches operating temperature, the message READY TO PRINT/TEST PRINT 00 is displayed to show that the printer is ready for test printing.

4 .   Press the ▼ key to start printing. Paper is fed from the installed cassette.

NOTE: Each time a sheet of paper is ejected, the exit sensor turns off and the control panel display increments by one.

5 .   Press the ▼ key to stop printing. The total number of ejected sheets is displayed on the control panel.

6 .   Press the ▼ key again to restart the Test Print Mode or turn off the printer to get out of the Test Print Mode.

DIAGNOSTIC MODE

The Diagnostic Mode is used to check the total page count, sensors, keys, and mechanical operations. See Table 5-1 for a description of the Diagnostic Mode codes.

The three levels of diagnostics are:

1.   Total page count

2.   Input test--sensor, key, and switch checks.

3.   Output test--solenoids, fuser, motor, power supply.

Diagnostics   **To enter the Diagnostic Mode:**
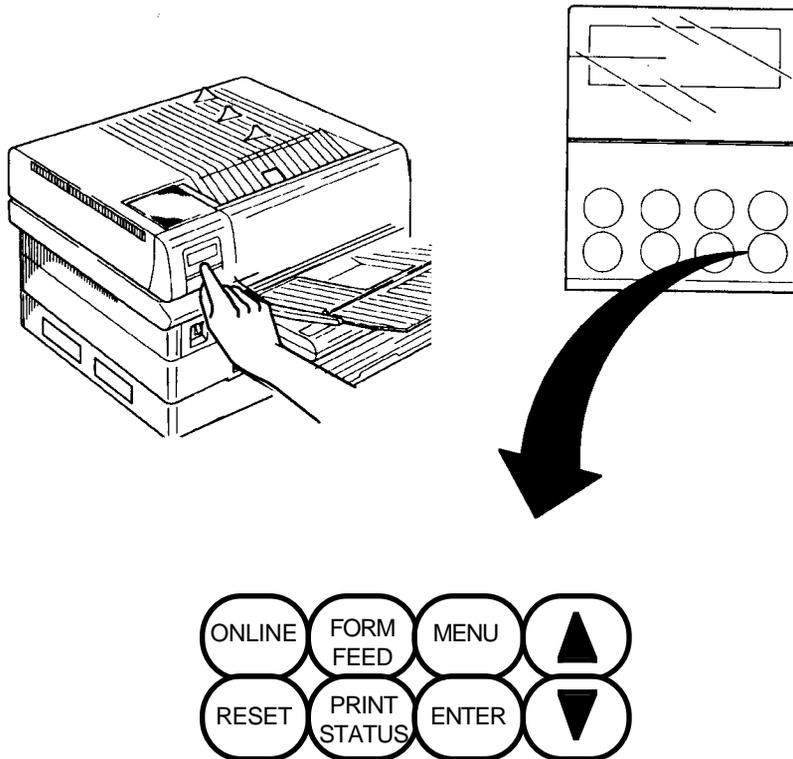
1.   While turning on the printer, press the ▼ key.

2.   The control panel displays the first level of diagnostics--the total page count code:

<div align="center">

PRINT COUNTER
SELECTING DG 30

</div>

Note: DG 30 refers to Diagnostic Code number "30"

3.   You are now in the Diagnostic Mode.

Total Page Count   **To display the total page count:**
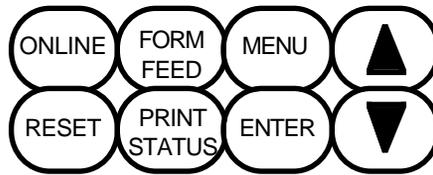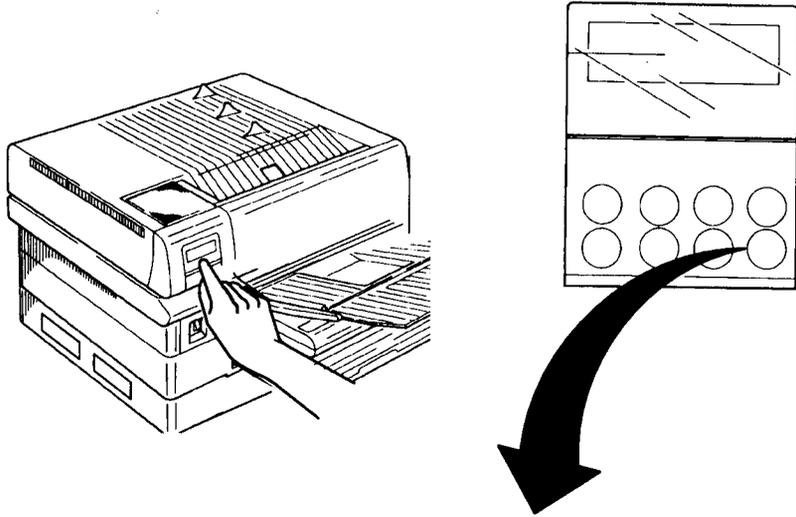
1.   Press the ▼ key. An example of the display for 999 pages is:

                              PRINT COUNTER
                              000999   DG 30

2.   Press the ENTER key to move to the Input level of the Diagnostic
     Mode, or turn off the printer to exit the Diagnostic Mode if only the
     total page count is needed.

NOTE: Press the ▼ key to return to the beginning of the Diagnostic Mode in
which PRINT COUNTER/ SELECTING DG 30 is displayed.

Input Test   **To get to the input test of the Diagnostic Mode:**
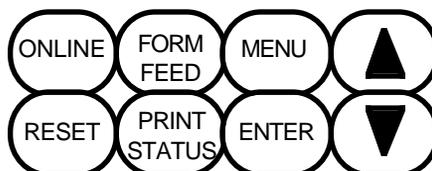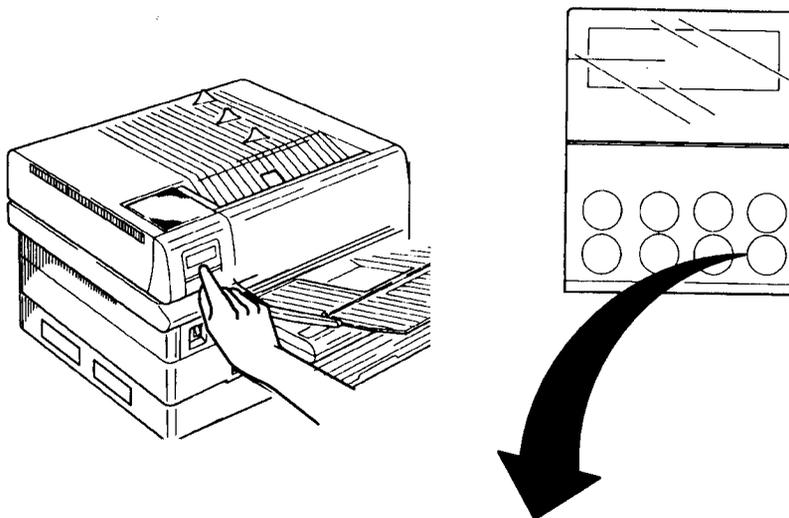
1.   Press the ENTER key from the PRINT COUNTER/SELECTING DG 30 or
     the PRINT COUNTER/XXXXXX DG 30 display. The display changes to:

                         SENSOR CHECK
                         SELECTING DG 02

2.   Press the ▼ key to begin the input tests. The display changes to:

                         SENSOR CHECK
                         EXECUTING DG 00

NOTE: Each time the input from a key, sensor, or switch is turned on, the
display DG 00 increases by one (1). FOR EXAMPLE, when a cassette is
removed the number increases by one (1). When the cassette is re-
installed, the increase is two (2) because both the paper size and cassette
out sensors are checked.

3.   Now any or all of the following sensors, keys, or switches can be
     tested by following the directions below:

     • Control panel keys (except the ▼ key)--press and release a key.
        Each time you press and release a key the counter will increment
        by one (1).

     • Paper exit sensor--press and release the actuator.

- Paper size sensor--remove and reinstall each cassette or use a magnet to activate the sensor.

- Cassette out sensor--remove and reinstall each cassette or manually press the actuator.

- Pre-registration sensor--press and release the actuator.

- Toner out sensor--open the top cover and the counter should increase by three (3).

- Interlock switch--disconnect the toner sensor harness before opening and closing the top cover and the counter will increase by one (1).

- EP cartridge switch--press and release the switch actuator.

4. Press the ▼ key to exit the input test and return to the SENSOR CHECK/SELECTING DG 02 display.

5. At this point, you can:

- Turn off the printer to exit the Diagnostic Mode.

- Press the ENTER key to enter the output test level.

Output Test   **To get to the first output test in the Diagnostic Mode:**
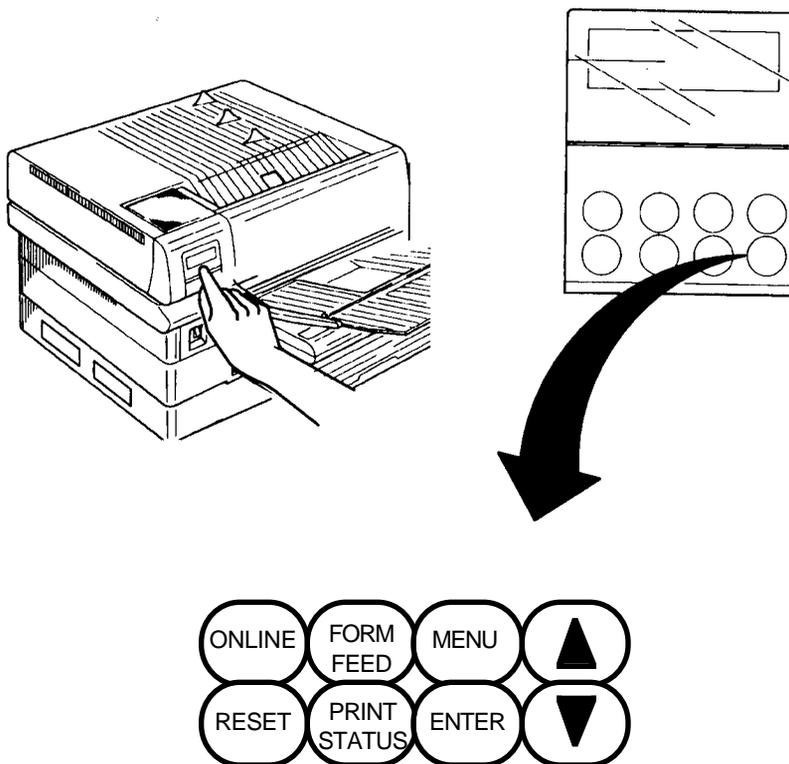
1. Press the ENTER key two times from the PRINT COUNTER/SELECTING DG 30 or the PRINT COUNTER/XXXXXX DG 30 display or once from the sensor check display. The display changes to:

    > FUSER TEMP. SET
    > SELECTING DG 07

2. Press the ▼ key to execute the fuser temperature check The display message displays the fuser temperature non-volatile memory setting (shown here as 88):

    > FUSER TEMP. SET
    > EXECUTING DG 88

3. Press the ENTER key to move to the next output test. See Table 5-1 for the diagnostic code sequence.

4. Press the ▼ key to stop a test and/or return to the "selecting" status and the diagnostic code menu. The solenoid tests turn off automatically after 0.5 seconds.

5. To exit an output test, press ENTER key until the display changes to:

    > EXIT DIAG
    > SELECTING DG 00

6. Turn off the printer to completely exit the Diagnostic Mode.

TABLE 5-1.   DIAGNOSTIC CODE DESCRIPTION

Control Panel Display Message	Diag. Code	Operation/ Execution	Remarks
PRINT COUNTER SELECTING DG 30	30	Total page count	
SENSOR CHECK SELECTING DG 02	02	Sensor, key, and switch input check/test	Press the down arrow key to execute.
FUSER TEMP. SET SELECTING DG 07	07	Heat roller temperature setting displayed.	Press the down arrow key to execute.
FUSER TEMP. SELECTING DG 08	08 88	Current heat roller temperature displayed	Press the down arrow key to execute.
SOLENOID TRAY1 SELECTING DG 80	80	Tray 1 feed solenoid turned on.	Turns off automatically in 0.5 seconds.
SOLENOID TRAY3 SELECTING DG 81	81	Tray 3 feed solenoid turned on.	Turns off automatically in 0.5 seconds.
SOLENOID TRAY2 SELECTING DG 86	86	Tray 2 feed solenoid turned on.	Turns off automatically in 0.5 seconds.
REG. CLUTCH SELECTING DG 82	82	Registration clutch turned on.	Press the down arrow key to execute.
T.CLUTCH TRAY1 SELECTING DG 84	84	Tray 1 transport roller turned on.	Press the down arrow key to execute.
T.CLUTCH TRAY2&3 SELECTING DG 85	85	Trays 2 & 3 transport roller clutch turned on.	Press the down arrow key to execute if tray 2 and/or tray 3 installed.
SOLENOID MBF SELECTING DG 83	83	Multi media power feeder solenoid turned on.	Turns off automatically in 0.5 seconds.
MOTOR MBF SELECTING DG 87	87	Multi media power feeder motor turned on.	Press the down arrow key to execute if multi media power feeder installed.
MOTOR MAIN &LEDS SELECTING DG 90	90	Main motor and erase lamp LEDs turned on.	Press the down arrow key to execute.
HVPS(C.COROTRON) EXECUTING DG 91	91	Voltage to main charger turned on.	WARNING! Do not touch the high voltage power supply during this test.
HVPS(DEV. BIAS) EXECUTING DG 92	92	Developer bias turned on.	WARNING! Do not touch the high voltage power supply during this test.
HVPS(T.COROTRON) EXECUTING DG 93	93	Voltage to transfer charger turned on.	WARNING! Do not touch the high voltage power supply during this test.
EXIT DIAG. DG 00 EXECUTING DG 00	00	Turns off a test in process that does not turn off automatically. Press the ENTER key to return to the beginning of the diagnostic tests.	

NON-VOLATILE MEMORY SET MODE

The Non-Volatile Memory Set Mode can be used to set resolution and to adjust print registration (unprintable area on top and left side of the page) and fuser temperature. See Table 5-2 for a complete list of the non-volatile memory codes, their functions, and the factory-set values.

CAUTION: DO NOT make changes to the non-volatile memory settings without a complete understanding of what you are doing.

Entering   **To enter the Non-Volatile Memory Set Mode:**
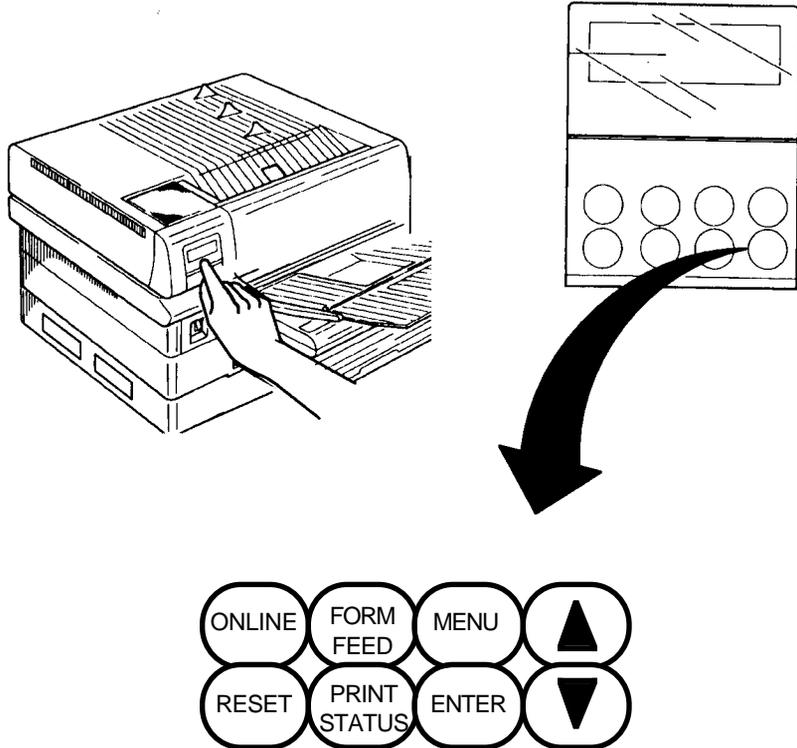
1.   Turn the printer on while pressing both the ENTER key and the ▼ key.

2.   As soon as the printer starts up, release only the ▼ key. The control panel display will changes to the following message within a few seconds:

RELEASE THE KEY

0

NOTE: In the next step, keep holding down the ENTER key if you miss the 3 the first time. The numbers continue to sequence from 0 to 9.

3.   Watch the control panel display and release the ENTER key when the 0 (zero) increments to 3. When the ENTER key is released, the control panel display should be:

RELEASE THE KEY
3

4.   Repeat steps 1 and 2, if the display is blank after releasing the ENTER key. You released the ENTER key when a number other than 3 was displayed.

5.   When the Non-Volatile Memory Set Mode is entered, the following message is displayed:

CONFIGURATION
SELECTING NV 09

Changing: **To change or check a Non-volatile Memory setting:**

1.   Follow steps 1 through 3 in the previous section, Entering the Set Mode.

2.   Press the ENTER key to scroll through the nine non-volatile memory settings until you reach the setting that needs changing. See Table 5-2 for a description of the possible settings.

CAUTION: Not all non-volatile memory settings can be changed. Do not try to change a setting listed as unchangeable in Table 5-2. The control panel may display WRITING and no change will be made.

3.   Press the ▼ key when the setting that needs changing is displayed. This makes it possible to change certain settings.

4.   Press the ▼ key again until the right side of the setting number is the value you want. See the example below that changes the resolution setting from 400 to 300 Dots-per-Inch (DPI).

RESOLUTION
SELECTING NV 72

RESOLUTION
SELECTING NV 71

The left digit in the Non-volatile Memory setting number indicates which Non-volatile Memory setting is selected. In the example above, the seven (7) indicates that the RESOLUTION setting is selected. The right digit in the setting number indicates the setting's value. In the example above, the possible settings range from 71 to 74, each of which corresponds to a different resolution. Other Non-volatile Memory settings may have up to 16 values, ranging from 0 to 9, and from A to F. For example, the FUSER TEMP.SET setting can range from 50 to 59 and from 5A to 5F. See Table 5-2 for a complete listing of the different settings.

5.   Press the ENTER key to display the new setting and save it in the non-volatile memory.

NOTE: If the ENTER key is not pressed before the printer is turned off, the new setting is not saved in memory. The next time the printer is turned on, the old value will be used.

6.   Turn off printer.

TABLE 5-2.   NON-VOLATILE MEMORY CODE LIST

Control Panel Display Message	Factory Value	Function/Variables	Can Be Changed?
CONFIGURATION SELECTING NV 0X	0 9	Printer configuration as defined by purchase order. 08 = 3 trays standard 09 = 3 trays w/manual feed or multi media power feeder	N O **
VIDEO MODE SELECTING NV 1X	1 0	Video data received as defined by purchase order. 0 = Through (standard) 2 = Through (standard) 1 = Latched at a fall of video clock signal. 3 = Latched at a fall of video clock signal.	N O **
REG. PROCESS SELECTING NV 2X	2 9 *	Registration adjustment value in process direction (leading edge of paper). Steps 0 - F for 16 adjustments. Each step = about 0.5 mm.	YES
REG. SCAN SELECTING NV 3X	3 4	Registration adjustment value in scan direction (left edge of paper). Steps 0 - 9 for 10 adjustments. Each step = about 0.5 mm .	YES
TEST PRINT SELECTING NV 4	4	This code does not change setting values. Use this code to obtain a test print after a registration value is changed with code 2X or 3X.	NO
FUSER TEMP. SET SELECTING NV 5X	5 8	Fuser temperature setting. Steps 0 - F for 16 adjustments. Each step = about 0.8^{o} C.	YES

**Although these Non-volatile Memory Settings cannot be changed, if you attempt to change them by using the procedure described, the control panel may display the word "WRITING". No changes, however, will be entered into Non-volatile Memory for these values.

*If you have an older printer this value may be set to 28.

TABLE 5-2.   NON-VOLATILE MEMORY CODE LIST (Continued)

Control Panel Display Message	Factory Value	Function/Variables	Can Be Changed?
LASER POWER SELECTING NV 6X	68	Laser Diode power signal adjustment. 0 - F for 16 displayed. C = 240 DPI, 300 DPI 8 = 400 DPI 5 = 480 DPI, 504 DPI	NO**
RESOLUTION SELECTING NV 7X	72	Print resolution selection. 0 - F displayed, but only changeable between 1 = 300 DPI 2 = 400 DPI	YES
PAPER MATRIX SELECTING NV 80	80	Selection of paper size. 0 - F displayed 0 = domestic (standard) 2 = overseas	NO
OPTION SELECTING NV 9X	90	Option function selection 0 - F displayed 0 = standard 1 = automatic selection of manual feed or multi media power feeder. Add 2 to above values if counter status is used.	NO

**Although these Non-volatile Memory Settings cannot be changed, if you attempt to change them by using the procedure described, the control panel may display the word ``WRITING''. No changes, however, will be entered into Non-volatile Memory for these values.

TROUBLESHOOTING CONTROL PANEL ERROR MESSAGES

Table 5-3 describes the conditions that cause a service call message to be displayed on the control panel. The POWER OFF/ON OR CALL SERVICE MESSAGE is controlled by the printer's controller.

Table 5-4 lists the print engine error messages and their causes. These messages appear when the printer is in one of the print engine diagnostic modes and an error condition occurs. Notice that the POWER OFF/ON OR CALL SERVICE MESSAGE covers the first four messages listed in Table 5-4, *Print Engine Error Message Troubleshooting*.

TABLE 5-3.   CONTROLLER SERVICE CALL MESSAGE

Display	Description
POWER OFF/ON OR CALL SERVICE	This message is caused by one of the following faults or failures: motor failure laser scanner failure fuser failure non-volatile RAM fault Turn the printer off and then on. If the message clears, continue operations. If the message continues, call for service.

TABLE 5-4. PRINT ENGINE ERROR MESSAGE TROUBLESHOOTING

Message	Causes	Operation	How to Clear
U1:POWER OFF THEN ON AGAIN	A motor alarm signal becomes active if the main motor does not reach 1530 RPM $\pm$ 10% within 500 microseconds after the motor turns on.	Main motor off. Laser motor off. Fuser off after it cycles down.	Turn off printer.
U2:POWER OFF THEN ON AGAIN	The optical unit is warmed up and 20 seconds have passed but a Start of Scan (SOS) interval is longer then the READY reference value. (warm-up fault) After the optical unit is warmed up, the Start of Scan (SOS) interval is longer than the FAIL reference value.	Main motor off. Laser motor off. Fuser off after it cycles down.	Turn off printer.
U4:POWER OFF THEN ON AGAIN	After the fuser is warmed up, fuser temperature drops below the specified low temperature. The fuser does not warm up within 50 seconds. The fuser temperature sensor is disconnected. Fuser temperature raises above the specified high temperature. Though the main motor stops after the fuser has warmed up, the fuser bulb is held on for 20 seconds.	Fuser off immediately. Main motor off. Laser motor off after it cycles down.	Turn off printer.
U6:POWER OFF THEN ON AGAIN	When the printer is turned on, the non-volatile memory was found defective.	Main motor off immediately. Laser motor off immediately. Fuser off immediately.	Turn off printer.

**TABLE 5-4.   PRINT ENGINE ERROR MESSAGE TROUBLESHOOTING
(Continued)**

Message	Causes	Operation	How to Clear
E2:OPEN COVERS CLEAR PAPER JAM	When in the cassette feed mode, the pre-registration sensor keeps turning off within 2.1 seconds (tray 1), 3.1 seconds (tray 2), or 4.1 seconds (tray 3) after the feed roller turns on. The pre-registration sensor turns on, within 1.5 seconds (tray 1), 2.5 seconds (tray 2), or 3.5 seconds (tray 3) after the feed roller turns on. The pre-registration sensor stays on during standby.	Main motor off. Laser motor off. Fuser off after it cycles down.	Open top cover and remove paper. Close top cover.
E3:OPEN COVERS CLEAR PAPER JAM	The exit sensor keeps turning off within 4.2 seconds after the registration roller turns on.	Main motor off. Laser motor off. Fuser off	Open top cover and remove paper. Close top cover.
E4:OPEN COVERS CLEAR PAPER JAM	The exit sensor keeps turning on in 10.8 seconds after the registration roller turns on. The exit sensor turns on when the printer is turned on. The exit sensor turns on when the interlock switch is closed.	Main motor off. Laser motor off. Fuser off	Open top cover and remove paper. Close top cover.
E5:CLOSE TOP COVER	The interlock switch is open.	Main motor off. Laser motor off. Fuser off.	Close top cover.
J3:CARTRIDGE NOT IN POSITION	The toner cartridge switch turns off when the top cover switch is held off.	Main motor off. Laser motor off. Fuser off.	Re-install the EP cartridge.

**TABLE 5-4. PRINT ENGINE ERROR MESSAGE TROUBLESHOOTING
(Continued)**

Message	Causes	Operation	How to Clear
J5:CARTRIDGE END OF LIFE	The message is displayed when the EP cartridge is completely out of toner as determined by the number of pages printed since the toner out sensor was turned on.	Main motor off. Laser motor off. Fuser off after it cycles down.	Replace EP cartridge.
C3:CASSETTE NOT IN PLACE (TRAY1) C3:CASSETTE NOT IN PLACE (TRAY2) C3:CASSETTE NOT IN PLACE (TRAY3)	The paper size sensor for the selected cassette turns off.	The printer cycles down.	Replace the selected cassette with one of the correct size.
C5:ADD PAPER TO TRAY1 CASSETTE C5:ADD PAPER TO TRAY2 CASSETTE C5:ADD PAPER TO TRAY3 CASSETTE	The paper out sensor for the selected tray turns on. If single sheet feed is requested, the message is displayed when the pre-registration sensor turns off.	The printer cycles down.	Load paper in the selected cassette.
C9:REMOVE PAPER FROM MANUAL TRAY	The pre-registration sensor turns on when a cassette is selected as the paper source and the printer is not in the process of printing.	The printer cycles down.	Remove paper from the manual feed tray.
REPLACE CARTRIDGE	The message is displayed after 10 sheets of paper have been fed through the printer and the toner out sensor stays on.		Replace EP cartridge or get ready to replace it.

TABLE 5-5. ERROR MESSAGES

SYMPTOM	Possible Causes
U1: MAIN MOTOR FAULT	1. EP cartridge defect. 2. Fuser unit defect. 3. Drive unit overload. 4. Drive gear defective. 5. DC Controller defect. 6. Low voltage power supply defect. 7. Main motor defective.
U2: ROS FAULT*	1. Non-volatile memory code 06 set wrong. 2. Low voltage power supply defect. 3. DC Controller defect. 4. ROS assembly defect.
U4: FUSER FAULT	1. Fuser temperature sensor dirty. 2. Fuser temperature sensor not positioned correctly. 3. Fuser temperature sensor defect. 4. Low voltage power supply defect. 5. DC Controller defect.
U6: NON-VOLATILE MEMORY FAULT	1. Data has been scrambled. 2. EEPROM defective. 3. DC Controller defect.
EP CARTRIDGE NOT IN POSITION IS FALSE.	1. EP cartridge sensor defect. 2. DC Controller defect.
REPLACE EP CARTRIDGE IS FALSE.	1. Toner sensor defect. 2. DC Controller defect.

*The ROS FAULT error refers to a laser scanner unit error. The ROS unit is the same as the laser scanner unit.

TROUBLESHOOTING FREQUENT PAPER JAMS

Table 5-6 lists the possible problem areas when frequent paper jams occur. Notice that dirty or worn parts are often the cause of the problem.

TABLE 5-6. FREQUENT PAPER JAMS

SYMPTOM	POSSIBLE CAUSES
The paper feed roller doesn't feed paper.	1. Non-standard paper being used. 2. Cassette not installed correctly. 3. Paper feed roller dirty or worn. 4. Cassette defective. 5. Paper feed solenoid defective. 6. Main motor defective.
The paper feed roller feeds paper, but paper jams inside the printer.	1. Transport clutch defective. 2. Registration clutch defective. 3. Main motor not up to speed. 4. Detack saw defective. 5. Paper feed rollers are dirty or worn. 6. Transport rollers are dirty or worn. 7. Registration rollers are dirty or worn. 8. Outer turn-chute pressure springs are worn. 9. Registration roller springs are worn. 10. Top cover not closed correctly. 11. Transfer charger/detack saw not seated correctly.
Exit jams occur often.	1. Paper fragments stuck in fuser area. 2. Exit roller and pinch rollers defective. 3. Fuser pressure roller dirty or worn. 4. Fuser heat roller dirty or worn. 5. Fuser roller bearings worn. 6. Fuser stripper fingers out of position. 7. Fuser stripper fingers worn. 8. Detack saw defective.

TROUBLESHOOTING ABNORMAL NOISE

Abnormal noise is usually caused by a mechanical failure. Table 5-7 lists the possible problem areas when abnormal noise occurs.

TABLE 5-7. ABNORMAL NOISE TROUBLESHOOTING

SYMPTOM	POSSIBLE CAUSES
Abnormal noise	1. Fan harness or cover interfering with fan.
	2. Laser Scanner Unit harness or cover rattling.
	3. Main motor assembly
	4. Registration roller
	5. Fuser unit
	6. Exit rollers
	7. EP cartridge
	8. Paper feed roller assembly
	9. Paper feed solenoid
	10. Drive gears need lubrication

PRINT QUALITY PROBLEMS

GENERAL   **Installation environments**

Since print quality can be related to the environmental conditions of the site where the printer is located, check that the following conditions are met:

1. Make sure the power supply is stable.

2. Check whether the printer is installed in a place subject to high temperature, high humidity or dirt.

3. The printer should not be installed in an area where it could be exposed to ammonia gas.

4. The printer should not be exposed to direct sunlight.

5. The printer should be placed in a well ventilated place.

6. Be sure the printer is level.

FAINT PRINT
The density of one or a few characters is less
than the density of the printout as a whole.

Possible Cause	Test Activity/Correction
Damp paper	Replace paper with some from a new ream. Store paper in a less humid area.
EP Cartridge	Replace EP cartridge and reprint data. If problem solved, leave new EP cartridge in the printer.
Transfer Charger/Detack Saw Assembly	Is the transfer charger wire dirty, bent or broken? Replace transfer charger/detack saw assembly.

TOTALLY WHITE PRINT (BLANK)

Possible Cause	Test Activity/Correction
EP Cartridge Gear	Check the EP cartridge gears for wear, dirt or broken parts. Replace the EP cartridge if gear is broken.
Laser Beam blocked	Check for foreign matter in the light path between the Laser Scanner Unit and drum. Remove the foreign matter.
EP Cartridge	Was the EP cartridge exposed to sunlight? Replace EP cartridge. Note that the EP cartridge deteriorates in a very short time if exposed to direct sunlight. The EP cartridge should not be exposed to indoor light for more than 5 minutes.
Transfer Charger	Replace the transfer charger/detack saw assembly.

PRINT WITH WHITE BAND
A white band is formed in the paper run direction on a print
on which a character image is partially missing or faint.

Possible Cause	Test Activity/Correction
Paper	Print data on paper from a new ream of paper. (Paper is damp or wrinkled.) Store paper in less humid place.
Transfer Charger	Is the transfer charger wire soiled? Clean the transfer charger wire or replace the transfer charger/detack saw assembly.
Main charger and drum	Is problem solved if another EP cartridge is used? Replace the EP cartridge in use.
Magnetic roller	Is the problem solved if another EP cartridge is used? Replace the EP cartridge in use.

PRINT WITH WHITE STREAKS
White streaks appear in the solid part and half-tone part in the
paper running direction, and partially erase a character image.

Possible Cause	Test Activity/Correction
Laser Scanner Unit	Is the Laser Scanner Unit window soiled? Clean the window. Is the Laser Scanner Unit window surface flawed? Replace the Laser Scanner Unit.
Laser light path blocked	Is any foreign matter in the laser light path between the Laser Scanner Unit and drum? Remove foreign matter.
Transfer charger	Is the charger wire soiled? Clean the transfer charger wire, or replace the transfer charger/detack saw assembly.
Main charger and drum	Is problem corrected with another EP cartridge? Replace the EP cartridge in use.
EP cartridge	Is the problem solved when another EP cartridge is installed? Replace the EP cartridge.
Heat roller	Is the heat roller scratched? Replace the fuser unit.

PRINT WITH WHITE BANDS
White bands appear at a right angle to the paper path
and characters are partially missing or very faint.

Possible Cause	Test Activity/Correction
Transfer charger	Check the transfer charger wire for dirt, bends or kinks. Replace transfer charger/detack saw assembly.
Drum	Was the EP cartridge exposed to light? Replace EP cartridge. Note that the EP cartridge deteriorates in a short period if exposed to direct sunlight. Do not expose it to indoor light for more than 5 minutes.

WHITE SPOTS ON PRINTOUT
White spots overprint characters in the printout.

Possible Cause	Test Activity/Correction
Paper	Print data on paper from a new ream of paper. (Paper is damp or wrinkled.) Store paper in less humid place.
Drum	Spots occur at intervals of about 125 mm. Drum surface has deteriorated. Replace EP cartridge.
Heat roller	Spots occur at intervals of about 78 mm. Heat roller surface is dented or has deteriorated. Replace fuser unit.

BLACK DOTS ON PRINTOUT
Small black dots appear in the white area of an image.

Possible Cause	Test Activity/Correction
Paper	Print data on paper from a new ream of paper. (Paper is damp or wrinkled.) Store paper in less humid place.
Heat or pressure roller	Check the heat roller and pressure roller for dirt build-up on their surfaces. Clean the pressure and/or heat rollers.
Drum	Spots occur at intervals of about 125 mm. Drum surface has deteriorated. Replace EP cartridge.
Heat roller	Spots occur at intervals of about 78 mm. Heat roller surface is dented or has deteriorated. Replace fuser unit.
Magnetic roller	Black dots appear at intervals of about 56 mm. Replace EP cartridge.

RESIDUAL IMAGE ON PRINTOUT
The toner image is not erased during roller
cleaning and is printed on the next printout.

Possible Cause	Test Activity/Correction
Paper	Check the paper being used by printing data on another recommended type of paper. If not a recommended paper, replace it with one that is recommended.
Erase lamp	The residual image is printed about 125 mm from the true image. Replace erase lamp.
Environmental conditions	Is the temperature and humidity low? Improve operating conditions.
EP cartridge	Print data with another EP cartridge. Replace EP cartridge if problem is solved.
Heat roller	Check the heat roller for dirt build-up. The residual image is spaced about 78 mm from the true image. Clean the heat roller.

SKEWED IMAGE
Image is not printed straight on the paper.

Possible Cause	Test Activity/Correction
Cassette	Remove the cassettes and check that the paper is loaded correctly. Reload the paper and install the cassette.
Registration roller	Check the registration roller in relation to the pinch roller position. Are paper scraps stuck between them? Clean the rollers and/or correct the position of the pinch rollers.
Turn chute cover	Is the turn chute cover set correctly? Are the springs worn? Reset the turn chute cover or replace the turn chute cover springs.
Detack saw	Check for paper dust and toner in the detack saw area of the transfer charger. Clean the detack saw. Replace the transfer charger/detack saw assembly.

IMAGE ERASES EASILY
The image on the printout is easily
erased by rubbing by hand.

Possible Cause	Test Activity/Correction
Paper	Reprint data on paper from a new ream. The paper may be damp. Replace paper. Store paper in a less humid place. If special paper such as coated paper is being used, reprint data on standard paper. Either do not use coated paper or expect some fusing problems to occur. Frequent use of any paper that causes fuser problems is not recommended.
Fuser	Check for low fuser temperature. Adjust the fuser temperature. Check the fuser roller pressure spring tension. A worn spring reduces the fuser pressure. Replace the spring. Check the fuser rollers for wear and distortion. Replace the fuser unit.

PAPER WRINKLES
Paper is wrinkled as it passes through the printer.

Possible Cause	Test Activity/Correction
Paper	Reprint data on paper from a new ream. The paper may be damp. Replace paper. Store paper in a less humid place.
Paper feed and transport rollers	Check all paper feed and transport rollers for misalignment or trapped paper scraps. Adjust or replace any misaligned paper feed or transport rollers. Remove any foreign matter trapped by the rollers.
Fuser	Check for paper wound around the heat roller. Remove the paper from the heat roller. Check the fuser pressure spring for wear or metal fatigue. Replace fuser unit.
Transfer charger/detack saw assembly	Check that the transfer charger/detack saw assembly is seated correctly. Reseat the assembly if needed. Check that the transfer charger/detack saw assembly is not warped or bent. Replace transfer charger.
EP cartridge	Is the EP cartridge seated correctly? Reinstall the EP cartridge. Check the EP cartridge for physical or mechanical defects. Replace EP cartridge.

PRINTOUT IS BLACK
Printout is totally black.

Possible Cause	Test Activity/Correction
EP cartridge	Install another EP cartridge and reprint data. Replace EP cartridge.

BLACK LINES IN PRINTOUT
Thin black lines appear in the direction of the paper movement.

Possible Cause	Test Activity/Correction
Drum	Check the drum surface for scratches or flows. Replace the EP cartridge. Check for toner streaks on the drum that may indicate that the drum is not being cleaned completely. Replace the EP cartridge.
Heat roller	Check the heat roller for surface scratches. Replace fuser unit. Check the fuser stripper fingers for cracks and chips. Replace stripper fingers.
Transfer charger	Check to see if the paper rubs against the EP cartridge as it passes the Paper Transfer Unit. Replace transfer charger.

BLACK LINES IN PRINTOUT
Black lines appear across printout.

	Thin
Possible Cause	Test Activity/Correction
Drum	Replace EP cartridge
Developer bias	Replace EP cartridge
Scorotron grid	Replace EP cartridge

WHITE SPOTS IN BLACK AREAS
White spots appear in the black areas of the image.

Possible Cause	Test Activity/Correction
Heat or pressure roller	Check the rollers for dirt build-up. Clean the rollers.
Drum	If white spots appear at about 125 mm intervals, check the drum surface for signs of deterioration. Replace EP cartridge.
Magnetic roller	If white spots appear at about 56 mm intervals, check the magnetic roller is dented or deteriorated. Replace EP cartridge.

GENERAL

Descriptions of the following interfaces are contained in this section.

RS-232-C SERIAL INTERFACE

Pin Configuration

The connector on the back of the printer is a male, 9-pin DE-9P and requires a cable with a female 9-pin DE-9S connector. The maximum recommended cable length is 15 meters (50 feet). The cable should be shielded.

The pin numbers and signal names are listed in Table 6-2.

TABLE 6-2.   RS-232 SERIAL CONNECTOR PIN ASSIGNMENTS

Pin	Signal Name	Source
1	DCD (Data Carrier Detect)	User System
2	RXD (Received Data)	User System
3	TXD (Transmitted Data)	Printer
4	DTR (Data Terminal Ready)	Printer
5	GND (Frame Ground)	
6	DSR (Data Set Ready)	User System
7	RTS (Request to Send)	Printer
8	CTS (Clear to Send)	User System
9	RING (Ring Indicator)	

Signal Descriptions

DCD Signal from a modem indicating that the carrier is detected.

RXD User-generated to transmit data from the user system to printer.

TXD Data from the printer to user system.

DTR High signal indicates the printer is ready to receive data. A low signal indicates the printer is busy.

DSR A signal that indicates the status of the user system.

RTS High signal sent to the user system requesting data.

CTS User-generated signal that tells the printer that the user system is ready to send data.

RING Not implemented.

LOCALTALK SERIAL INTERFACE

The Local Talk connector can be used for connecting the printer to a Local Talk Local Area Network (LAN). To connect the printer to an Local Talk LAN, you need a Local Talk adapter that can be purchased at any computer supply store that sells Apple products.

Pin Configuration

The interface cable should be shielded. Maximum cable length is 300 meters (984 feet) for Local Talk operation. Table 6-3 lists the names and pin numbers for each signal used.

TABLE 6-3. LOCALTALK SERIAL CONNECTOR PIN ASSIGNMENTS

Pin	Signal Name	Source
1	(NC)	
2	(NC)	
3	TXD- (Transmitted Data Minus)	Printer
4	GND	
5	RXD- (Received Data Minus)	User System
6	TXD+ (Transmitted Data Plus)	Printer
7	(NC)	
8	RXD+ (Received Data Plus)	User System

Signal Descriptions

TXD- Low true data line from the printer to user system.

RXD- Low true data line from the user system to the printer.

TXD+ High true data line from the printer to the user system.

RXD+ High true data line from the user system to the printer.

SCSI INTERFACE (HARD DISK I/O)

The SCSI connector on the back of the printer lets you connect a hard disk drive to the printer.

About Hard Disk Drives

Many hard disk drives made for the Macintosh can be plugged into the printer. The recommended disk drives are self-contained units that connect to the printer through an external cable and plug into a separate electrical outlet.

Hard disk drives do **not** function as extended memory and cannot be used for spooling print jobs or caching fonts. A hard disk drive does provide additional data storage for the printer. A hard drive is useful in the following situations:

- Downloaded information that needs to be stored permanently in the printer.

- Downloaded information requirements exceed the maximum available printer memory capacity.

A disk drive can be used for storing downloaded fonts and commonly used PostScript programs. Fonts and programs stored on the disk do not have to be sent to the printer each time they are used.

A hard disk drive cannot be used to cache fonts, patterns, or forms. However, this data can be stored on the disk and retrieved by specific PostScript commands. Using the disk drive for storage can free up some of the printer's memory for other purposes.

Disk Drive Startup

To set up for using a hard disk drive, enter the Setup Menu and scroll to the MISC:MENU. Enter the MISC:menu and scroll to the SCSI DELAY, sub-menu. Set this delay to a minimum of 20 seconds. Turn on the disk drive before or at the same time that you turn on the printer.

The following PostScript command sequence must be sent to the printer to initialize a disk drive:

(%Disk#%)<</InitializeAction 2>>setdevparams ^D

In the command sequence, replace # with the ID number from your disk drive. Terminate the sequence with a Control D (^D).

From a Macintosh system, use the LaserWriter Utility to initialize the disk drive. In the File menu, select "Initialize Printer's Disk" to send the needed commands to the printer.

Troubleshooting a Disk Drive Installation

If you have a problem using a hard disk drive with the printer, check for the following:

• Was the disk drive in a ready condition when the printer was initializing?

• Was the disk drive initialized by the printer?

No Disk Icon on start up page:

If the disk icon is not printed on the start up page, the printer did not sense the disk drive during its power on initialization routine. If this happens, turn the printer off. Make sure the disk drive is on and ready. You should also check any cable connections, etc.

Turn the printer on and check the start up again. If the disk icon is still not on the start up page, enter the Setup Menu and increase the SCSI DELAY.

The disk drive connector on the back of the printer is a female 25-pin DB-25S and requires a cable with a male 25-pin DB-25P connector.   Table 6-4 lists the signal names for each connector pin number used.

TABLE 6-4.   SCSI CONNECTOR PIN ASSIGNMENTS

Pin #	Signal Name	Pin #	Signal Name
1	REQ*	14	GND
2	MSG*	15	C/D*
3	I/O*	16	GND
4	RST*	17	ATN*
5	ACK*	18	GND
6	BSY*	19	SEL*
7	GND	20	PARITY
8	DB0	21	DB1
9	GND	22	DB2
10	DB3	23	DB4
11	DB5	24	GND
12	DB6	25	(NC)
13	DB7		

NOTE: Signals with an asterisk (*) are low active.

SCSI Interface Signal Definitions

ACK   Indicates an acknowledgement for a REQ/ACK data transfer
            handshake. ACK is received as a response to the REQ signal.

ATN   Indicates an attention condition.

BSY   Indicates the SCSI bus is being used.

C / D   Indicates Control or Data information is on the data bus.

I / O   Controls the direction of data movement on the SCSI bus. True
            indicates input to the initiator. Also used to distinguish between
            selection and reselection.

MSG   Signal driven by the target during the message phase.

REQ   Indicates a request for a REQ/ACK data transfer handshake. Driven
            by target and received by initiator.

RST   Indicates a SCSI bus RESET condition.

DB0-DB7, **PARITY**

            Forms the data bus. DB7 is MSB and has highest priority in
            arbitration phase (Select/Reselect). Data parity is odd. Parity is
            always generated and optionally checked.

SEL   Selects a target or reselects an initiator.

ETHERNET INTERFACE

The Ethernet interface is standard on the 20 page per minute Laser Writer Pro 810.

I/O Connector Types

The printer can be connected to the network using one of the two Communications I/O connector types:

• BNC ThinWire (10Base2).

• RJ45 UTP twisted pair (10BaseT).

Both Communications I/O boards have an RJ12 serial maintenance port connector that can be used for printing or displaying status and error messages.

10 BASE 2

OR

10 BASE T

COAX BNC   RJ12 MAINTENANCE PORT   RJ45 TWISTED PAIR   RJ12 MAINTENANCE PORT

RJ12 Maintenance Port Cabling

This diagram shows how to cable a terminal or serial printer to the RJ12 maintenance port. The cable type is 6-wire modular with cross over and adapters.

MODULAR CABLE W/CROSSOVER (RJ12 MODEL NO. P00006/x)

TO TERMINAL ➝

PRINTER RJ12 MAINTENANCE PORT

ADAPTER

ENGINE INTERFACE SIGNAL DEFINITIONS

The controller's print engine interface (J6) is a 26-pin connector mounted on the I/O Controller. A cable connected to J12 on the print engine's DC Controller is plugged into J6. All interface signals between the controller and the printer are transmitted through this connection. Table 6-5 lists the signal names and the J12 connector pin numbers. Note that signals with an asterisk (*) are low active.

Power for the I/O Controller is provided by the low voltage power supply in the print engine. A four-pin connector (J-7) on the I/O Controller connects to P-64 on the low voltage power supply. Pins 1 and 2 are +5 volts; pins 3 and 4 are ground.

Pin Configuration

TABLE 6-5. PRINT ENGINE/CONTROLLER INTERFACE PIN ASSIGNMENTS

Signal Name	Pin No.	Signal Name	Pin No.
N/C	1 A	SG (Signal Ground)	1B
N/C	2 A	SG (Signal Ground)	2B
N/C	3 A	SG (Signal Ground)	3B
N/C	4 A	SG (Signal Ground)	4B
COMMAND.BUSY	5 A	SG (Signal Ground)	5B
DC.ON*	6 A	SG (Signal Ground)	6B
STATUS	7 A	SG (Signal Ground)	7B
VIDEO.CLOCK	8 A	SG (Signal Ground)	8B
VIDEO.DATA	9 A	SG (Signal Ground)	9B
LINE.SYNC	10 A	SG (Signal Ground)	10B
PAGE.SYNC	11 A	SG (Signal Ground)	11B
START.ENABLE	12 A	SG (Signal Ground)	12B
COMMAND	13 A	SG (Signal Ground)	13B

Signal Descriptions

PAGE.SYNC   PAGE.SYNC (P.SYNC) is the synchronizing video signal that defines one page and the image area for the processing scan.

LINE.SYNC   LINE.SYNC (L.SYNC) is the synchronizing video signal that defines one line and image area of the laser scan.

VIDEO.CLOCK   VIDEO.CLOCK (V.CLK) is the synchronizing video signal that defines one pixel. The signal phase is corrected in every laser scan.

VIDEO.DATA   VIDEO.DATA (V.DATA) is the image data from the controller. Every pixel is latched.

COMMAND   COMMAND (CMND) is the control command signal sent from the controller (user system) to the DC Controller.

STATUS   STATUS (STTS) reports printer engine status information to the controller (user system).

COMMAND.BUSY   COMMAND.BUSY (C.BSY) is sent from the DC Controller to the controller (user system) to indicate that the print engine is busy and cannot receive a COMMAND signal.

START.ENABLE   START.ENABLE (S.ENBL) is sent from the Main Controller Unit PCB to the controller (user system) to indicate that COMMAND signals can be received.

DC.ON*   DC.ON* (D.ON*) shows the status of the COMMAND, STATUS, COMMAND.BUSY, and START.ENABLE signals.

LaserWriter Pro 810

Appendix A: Memory Expansion Upgrade

GENERAL

The LaserWriter Pro 810 controller hardware contains 8 MB of Random Access Memory. RAM expansion kits can be purchased for the LaserWriter Pro in units of 4 and 8 MB. A maximum of 24 MB RAM can be added to the controller to bring the total amount to 32 MB.

The expansion kits are as follows (see Illustrated Parts for more information:

• LaserWriter Pro 8 MB Memory Upgrade

• LaserWriter Pro 4 MB Memory Upgrade

REMOVING THE CONTROLLER BOARD

CAUTION: Take precautions against static buildup when handling circuit boards.

1. Turn the printer power switch to off (0) and remove the AC plug from its power source.

2. Remove all cables from the printer's interface connectors.

INTERFACE
BRACKET
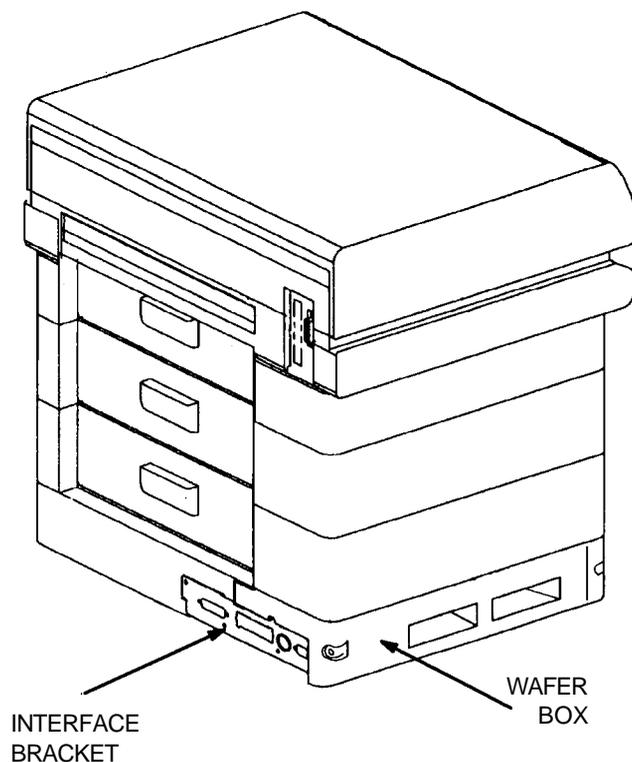
WAFER
BOX

3. Remove two screws from the wafer box.

4. Remove four screws from the interface bracket.

5. Slide the wafer box with attached controller board partially out of the printer base.

POWER CABLE
CONNECTOR (J7)

CONTROLLER BOARD

WAFER BOX

VIDEO CABLE
CONNECTOR (J6)
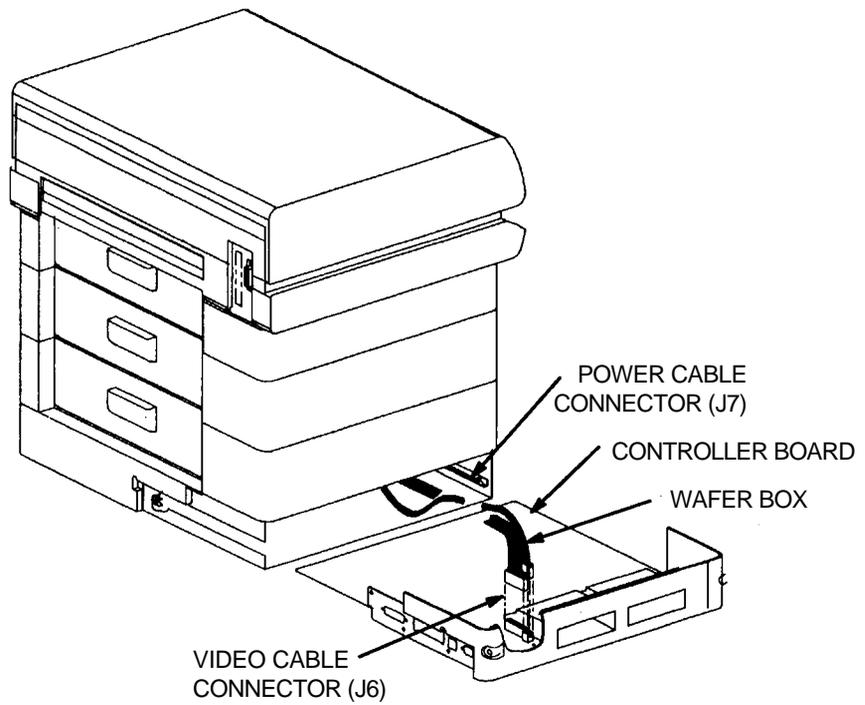
6. Disconnect the power and video cable plugs from the controller board. (Connectors J7 and J6)

7. Remove the controller board from the printer.

INSTALL THE MEMORY EXPANSION BOARD

1. Place the memory expansion board with the DRAM toward the edge of the controller board. The first memory expansion board goes in Bank 1, the second in Bank 1, and the third in Bank 3.

2. Align the four connectors as shown. Insert the memory expansion connectors J1 and J2 into the controller connectors J10 and J11. Note the pin 1 location on the connectors.

3. Press down on the J1 and J2 connectors to seat the board in place.

4. Repeat steps 1, 2, and 3 for bank 2 and bank 3.
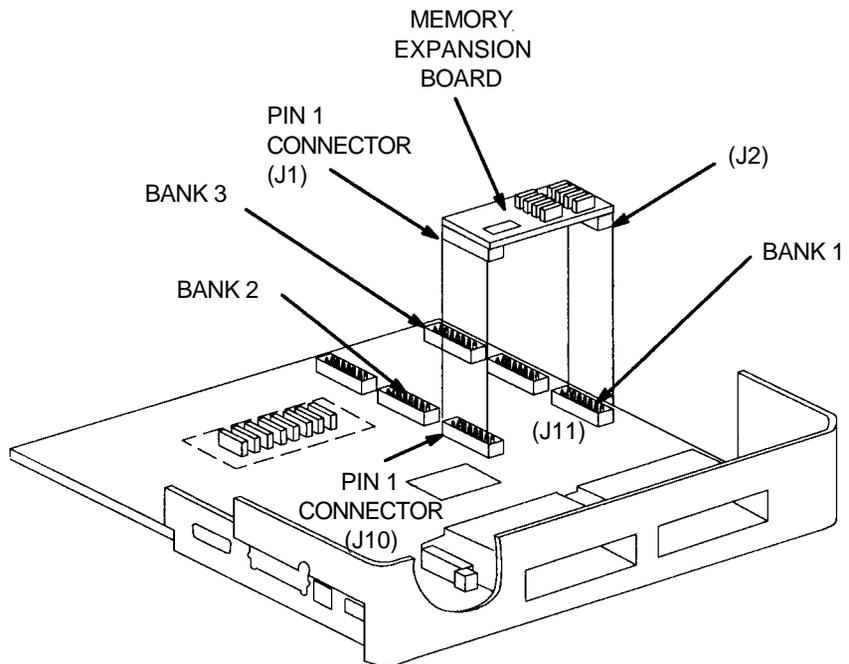
REINSTALL THE CONTROLLER BOARD

1. Slide the controller board into the right guide in the wafer box.

2. Continue to insert the controller board into the wafer box until it slides into the left guide that begins about halfway into the opening

3. Plug the power (J7) and video (J6) cable plugs into the controller board when it is almost fully inserted.

4. Fully insert the controller board.

RIGHT PCB GUIDE

CONTROLLER BOARD

POWER CABLE PLUG (J7)

VIDEO CABLE PLUG (J6)
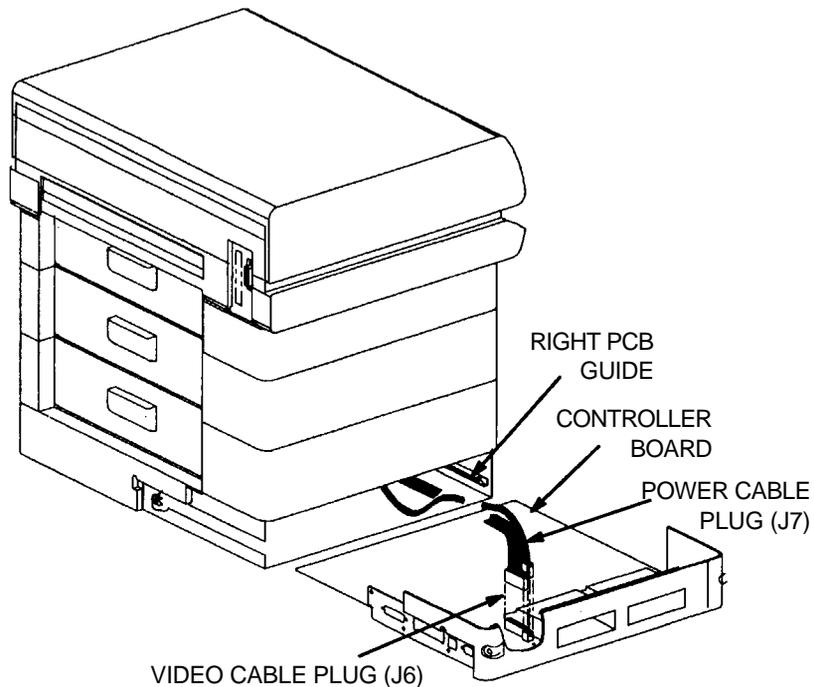
5. Install the wafer box cover screws.

6. Install the four screws into the interface bracket.

7. Connect the I/O cables to the correct interface connectors.

8. Connect the printer's AC power plug into the wall.

INTERFACE
BRACKET

WAFER BOX
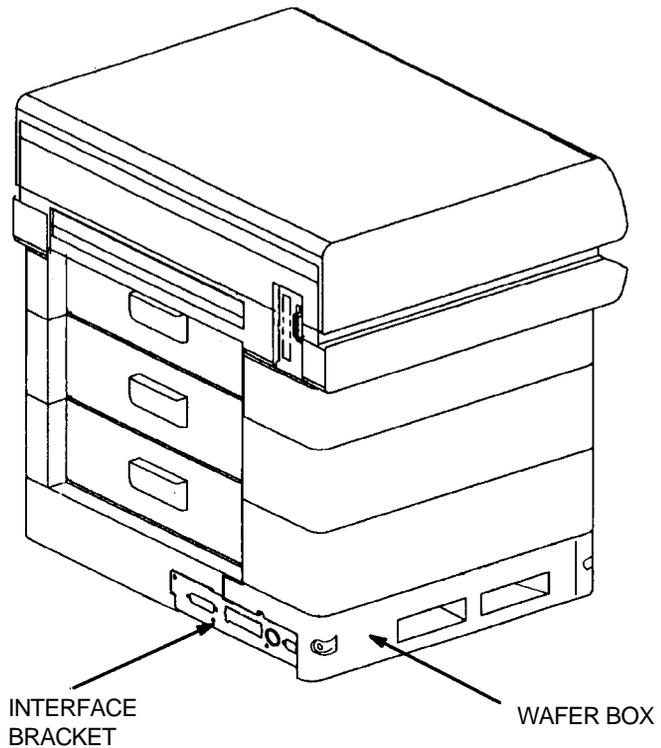
TESTING THE MEMORY UPGRADE

A memory expansion installation can be tested by printing a configuration page. (Press the **OFFLINE** key, then the **PRINT STATUS** key to print a printer configuration page.) The number of installed Kbytes shown on the printer configuration page should include the memory installed in

LaserWriter Pro 810

Appendix B: Illustrated Parts

GENERAL

The parts list provides assembly and subassembly information for the printer's components. The illustrations and lists are divided into functional groups.

The item number corresponds to an assembly or piece part number on the illustration. The lists give a description and part number for each assembly, subassembly, or piece part that can be purchased.

Parts that are indented in the Description column are available only as part of the preceding outdented assembly. No reference and part number are listed for these subassemblies and parts.

Screws and clips are identified by letters in the figures. The following letters identify the listed hardware.

Hardware Identification List

A　　Phillips head screw with flange (silver)

B　　Phillips head screw with hex flange (black)

C　　Phillips head screw (gold)

D　　Phillips head screw with flange (black)

E　　E-ring

F　　Tap screw

K　　KL clip

GROUP 1 - COVERS

Item No.	Description	Part No.	Qty
1	Top Cover Assy	-	1
2	Left Cover Assy	-	1
3	Right Cover Assy	-	1
4	Power Cord Cover	922-0917	1
5	Rear Cover	-	1
6	Front Cover	-	1
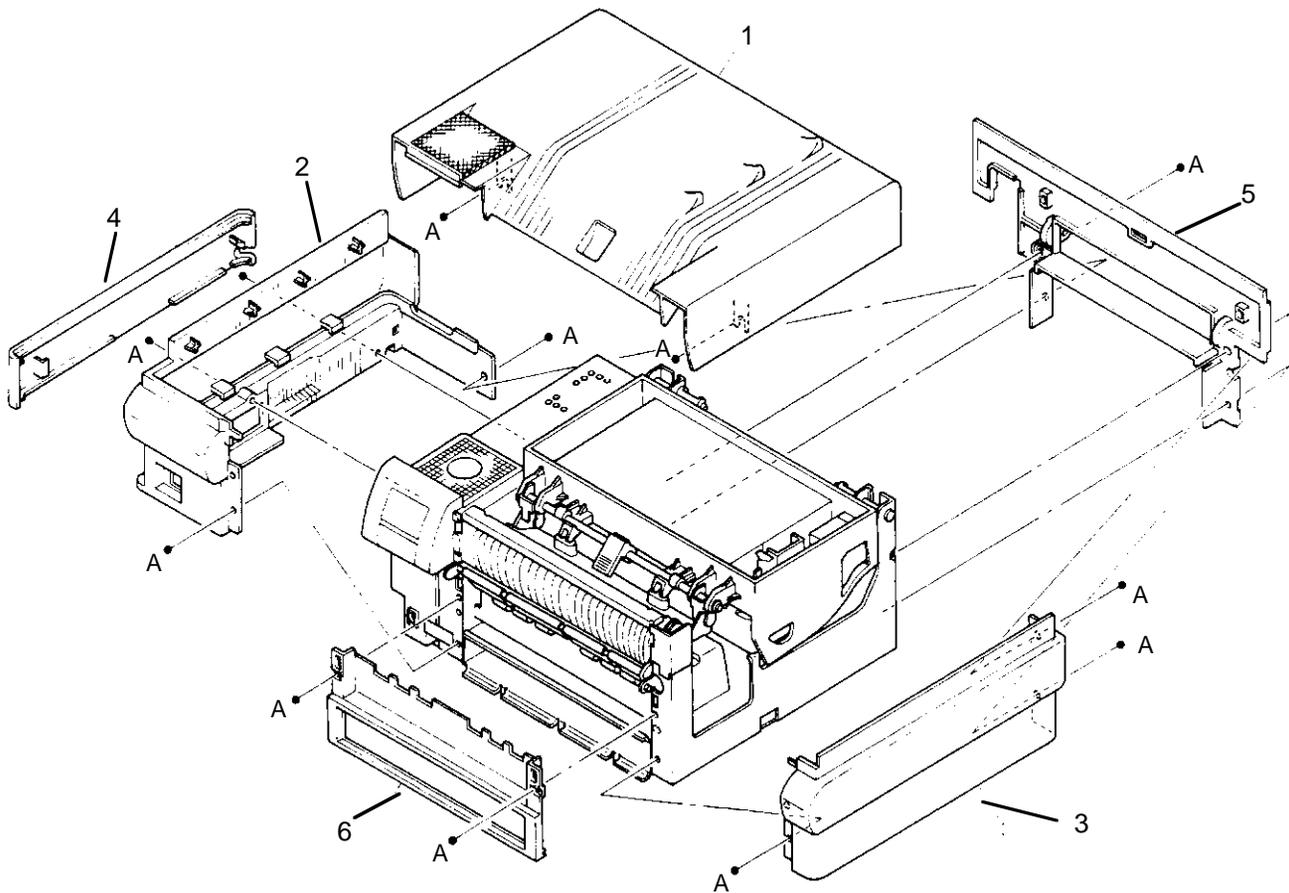
GROUP 2 - PAPER FEED ASSEMBLIES

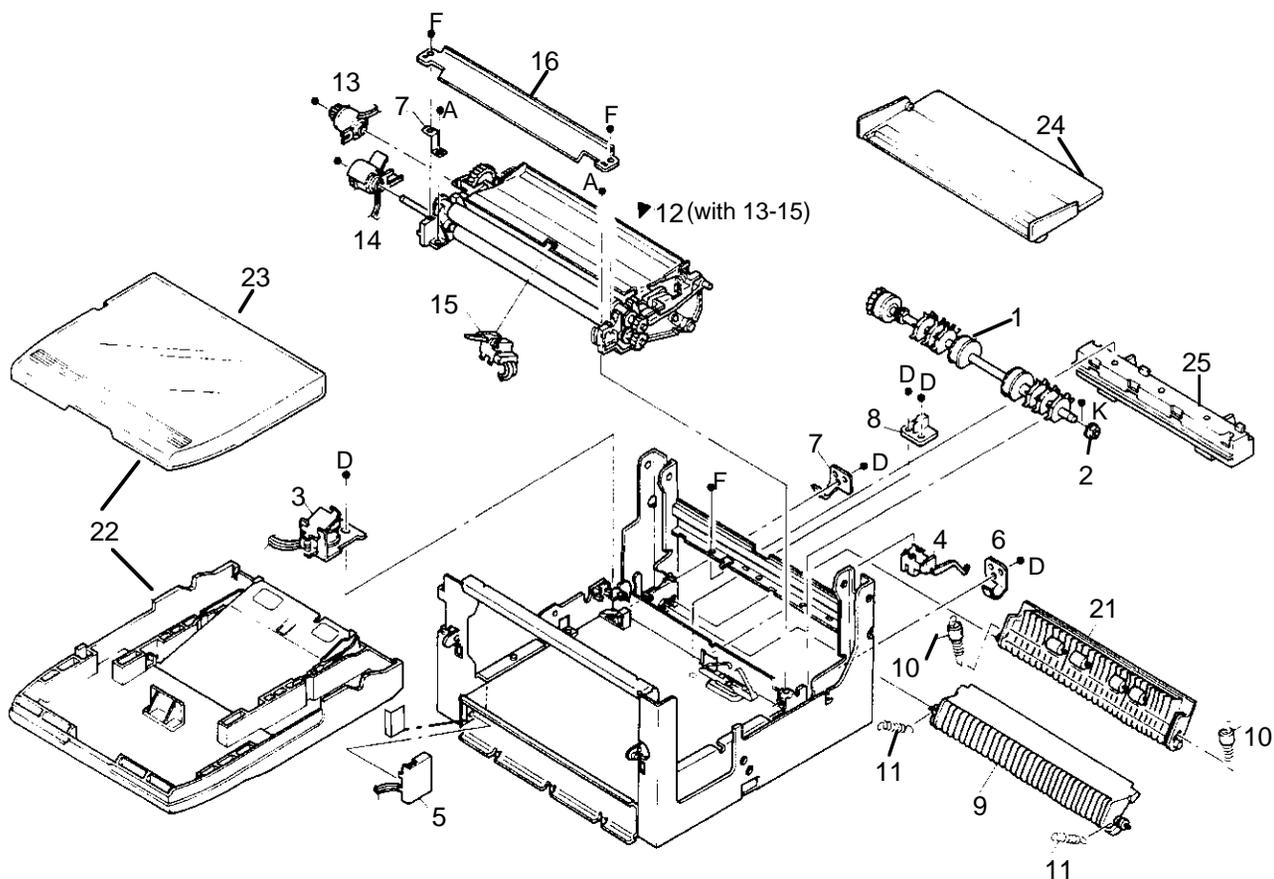| Item No.	Description	Part No.	Qty
1	Paper Feed Roller Assy	922-0918	1
2	Bearing D	-	1
3	Paper Feed Solenoid (Tray 1)	922-0628	1
4	Paper Out Sensor (Tray 1)	922-0625	1
5	Paper Size Sensor (Tray 1)	922-0626	1
6	Cassette Spring (R)	-	1
7	Cassette Spring (L)	-	1
8	N/F Core	-	1
9	Inner Turn-Chute Assy	922-0919	1
10	Outer Turn Chute Spring w/Tube	922-0920	2
11	Inner Turn-Chute Spring	922-0921	2
12	Paper Transfer Unit	922-0631	1
13	Transport Clutch (Tray 1)	922-0627	1
14	Registration Clutch	922-0604	1
15	Pre-registration Sensor	922-0593	1
16	Inlet Chute Assy	-	1
17	Inlet Chute Ground Plate	-	1
21	Outer Turn-Chute Assy	922-0922	1
22	Cassette Assy	-	2
23	Cassette Cover	-	1
24	Manual Feed Tray Assy	922-0923	1
25	Manual Feed Guide Assy	-	1

GROUP 3 - FRAME AND TOP COVER

Item No.	Description	Part No.	Qty.
1	Drum Support (O/B)	-	1
2	Base Frame Assy	-	
3	High Voltage Power Supply Cable	922-0632	1
4	Rear Tie Plate		
5	Torsion Spring (I/B)	-	1
6	Torsion Spring (O/B)	-	1
7	Pivot Pin	-	2
8	Saddle Edge	-	1
9	Ground Plate, Transfer Charger	-	1
10	Transfer Charger Guide Frame	-	1
21	Top Frame Assy	-	1
22	Erase Assy	922-0606	1
23	Toner Low Sensor	922-0594	1
24	EP Cartridge Sensor	922-0595	1
25	Toner Sensor Bracket	922-0924	1
26	EP Cartridge Sensor Bracket	922-0925	1
27	Laser Scanner Shield	-	1
28	Lever, Push Latch	922-0610	1
38	Transfer Charger/Detack Assy	922-0927	1
39	Charger Wire	-	1
40	Guide Wire	-	1
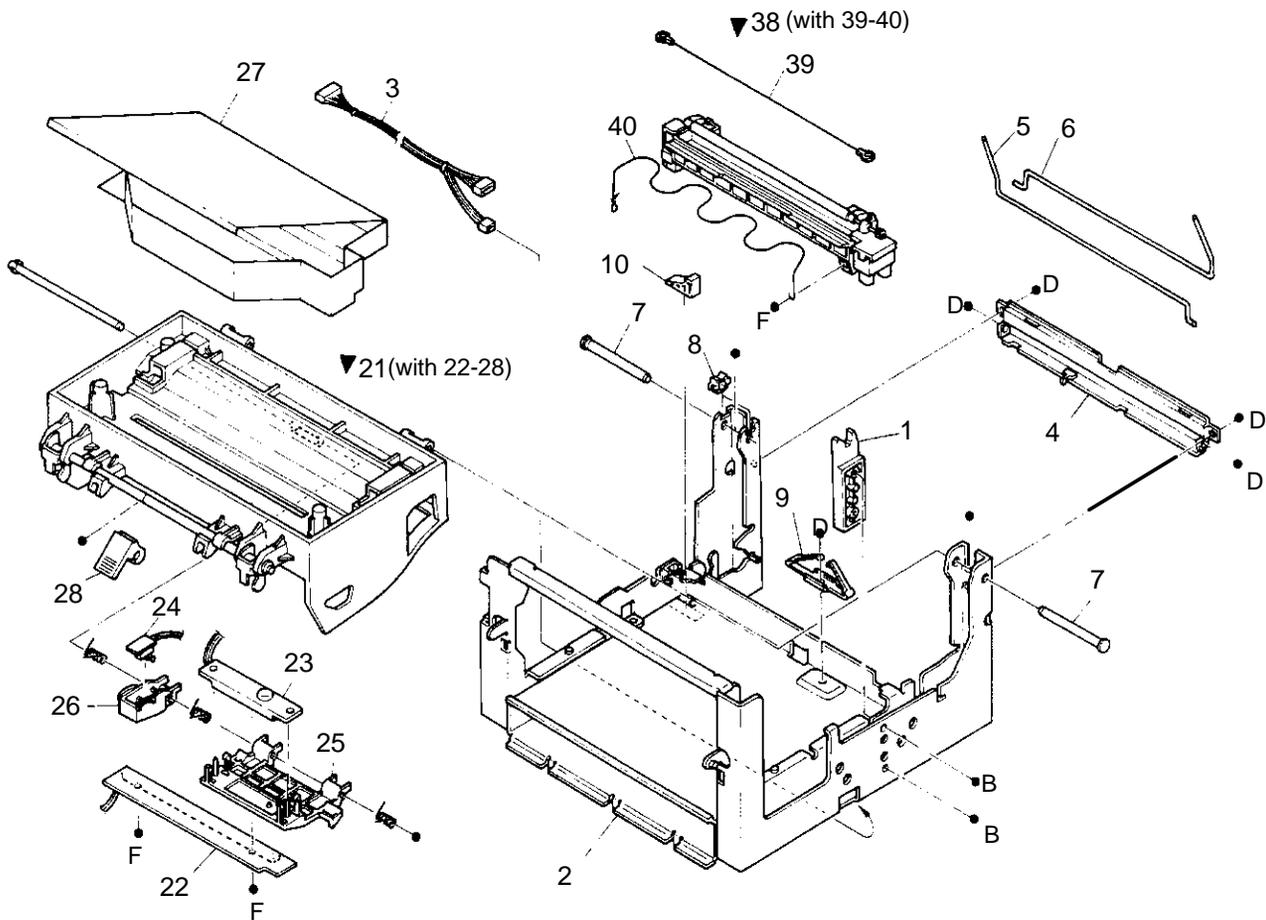
GROUP 4 - PAPER REGISTRATION AND FUSER EXIT

Item No.	Description	Part No.	Qty.
1	Transport Chute Assy	922-0603	1
2	Direction Chute Spring	-	1
3	Exit Tie Plate Assy (1-N)	-	1
4	Roller Assy, Exit	922-0611	1
5	Exit Bearing	-	2
6	Exit Gear Pulley	-	1
7	Exit Pulley	-	1
8	Idler Shaft	-	1
9	Belt	922-0615	1
21	Outer Exit-Chute Assy	-	1
22	Inner Exit-Chute Assy	-	1
23	Direction Chute	-	1
24	Exit Tray Assy (N-1)	922-0928	1
25	Heat Roller Cleaner	(with EP cartridge)	1
26	Fuser, (110V), 810	661-0857	1
	Fuser, (220V), 810	661-0858	1
27	Fuser Roller	922-0634	1
28	Pressure Roller	-	1
29	Inner Cover Assy, Fuser	-	1
30	Temperature Sensor, Fuser	-	1
31	Thermostat, Fuser	-	1

(list continued next page)
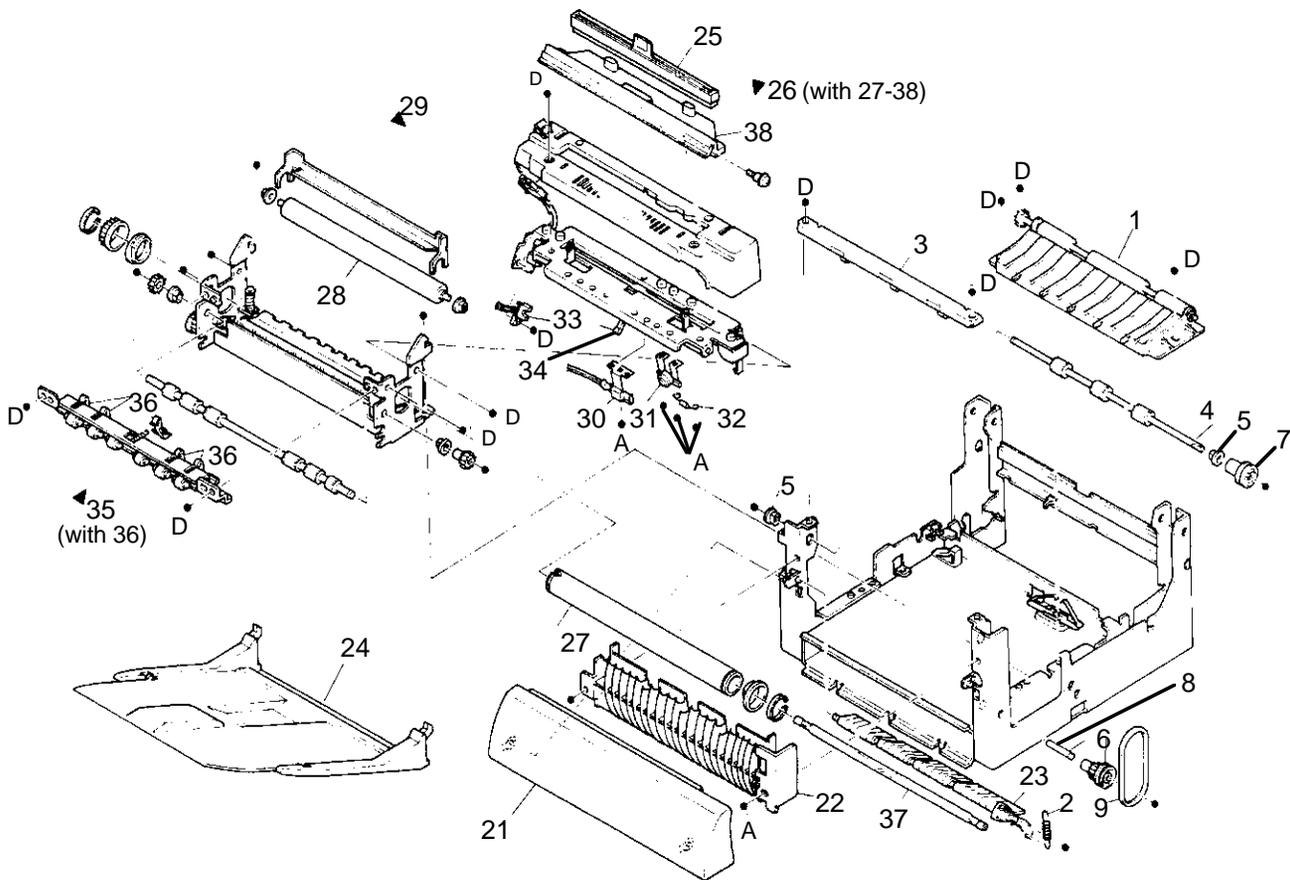
3 2	Temperature Fuse	-	1
3 3	Exit Sensor	922-0635	1
3 4	Exit Sensor Actuator	-	1
3 5	Fuser Exit Bracket Assy	922-0633	1
3 6	Stripper Finger	-	4
3 7	Fuser Bulb (115V)	922-0636	1
	Fuser Bulb (220V)	922-0637	
3 8	Heat Roller Cleaner Cover	-	1

GROUP 5 - DRIVE UNIT AND LASER ASSEMBLY

Item No.	Description	Part No.	Qty
1	Laser Scanner Unit, 810	661-0865	1
2	Drive Unit	-	1
3	Ground Spring, Drum	-	1
4	Drum Support	-	1
5	Motor Assy, Drive, 810	922-0630	1
REF	EP Cartridge		
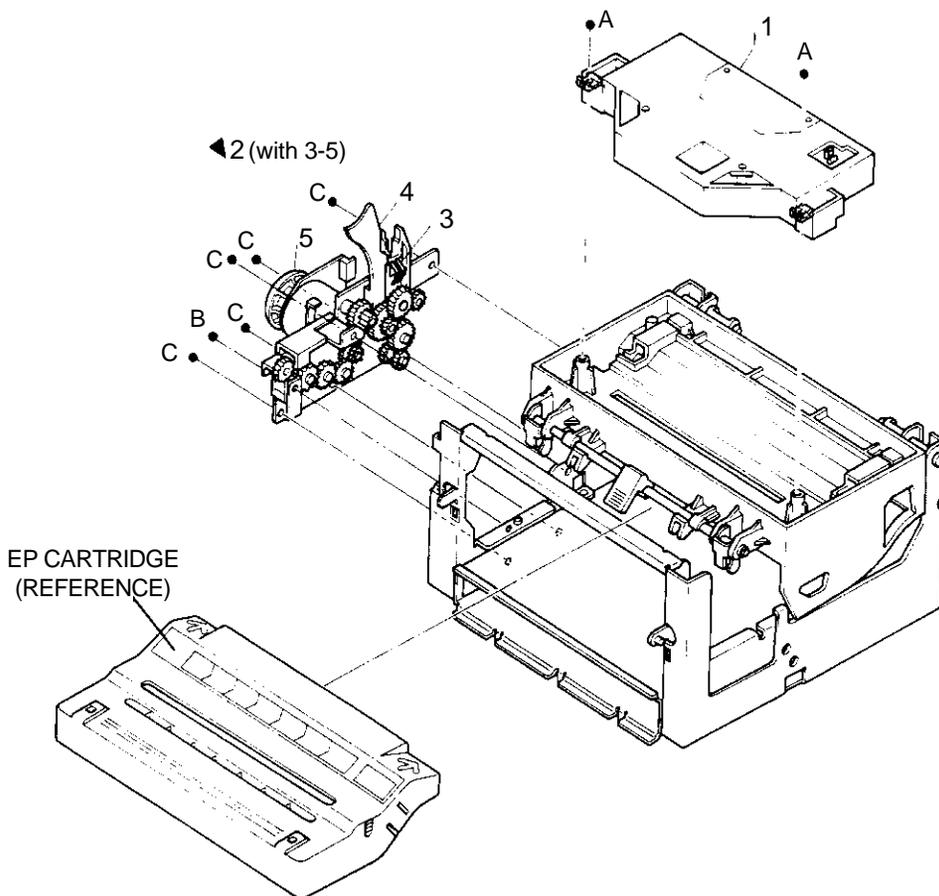
Note: The EP cartridge comes with the heat roller cleaner and the transfer charger/detack assembly.

GROUP 6 - ELECTRICAL

Item No.	Description	Part No.	Qty.
1	Electrical Box Chassis	-	1
2	Interlock Switch Cover	-	1
3	Insulation	-	1
4	Edging	-	
21	Power Supply, 115V	661-0836	1
	Power Supply, 220V	661-0837	1
22	High Voltage Power Supply	661-0860	1
23	DC Controller	661-0833	1
24	Control Panel Cover Assy	922-0616	1
26	Harness Assy, Pop-Up	922-0607	1
27	Wire Assy (Laser Scanner Ground)	-	1
28	Power Cord (U.S.)	-	1
29	Harness Assy, Exit	922-0608	1
30	Fuser Fan	922-0592	1
31	Electrical Box Cover	-	1
32	Fan Cover	-	2
33	Latch, Push, Control Panel	922-0609	1
34	EPROM	-	1
35	EEPROM	-	1
	Controller Circuit Card Assy	-	1
	PROM Kit, Controller Firmware		
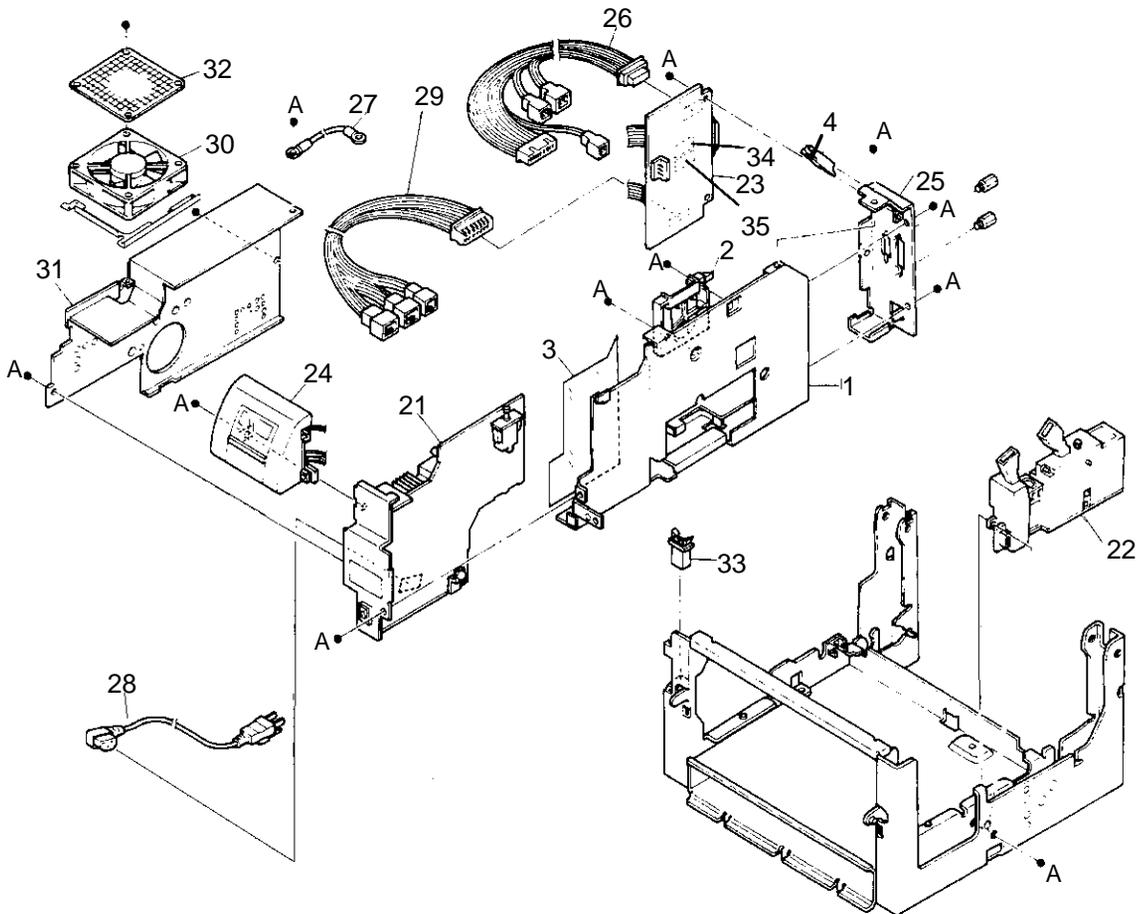
GROUP 7 - FEEDER UNIT FOR 2-TRAY MODEL

Item No.	Description	Part No.	Qty.
21	Feeder Unit (Tray 2)	-	1
22	Roller Assy, Feed	922-0612	1
23	Bearing D	-	1
24	Paper Feed Solenoid (Tray 2)	922-0600	1
25	Paper Size Sensor (Tray 2)	922-0613	1
26	Cassette Spring, Right	-	1
27	Cassette Spring, Left	-	1
28	Inner Turn-Chute Assy	-	1
29	Outer Turn-Chute Spring w/ Tube	-	2
30	Inner Turn-Chute Spring	-	2
31	Outer Turn-Chute Assy	-	1
32	Lower Chute Assy (Tray 2)	-	1
33	Transport Clutch (Tray 2)	922-0598	1
34	Paper Out Sensor (Tray 2)	922-0596	1
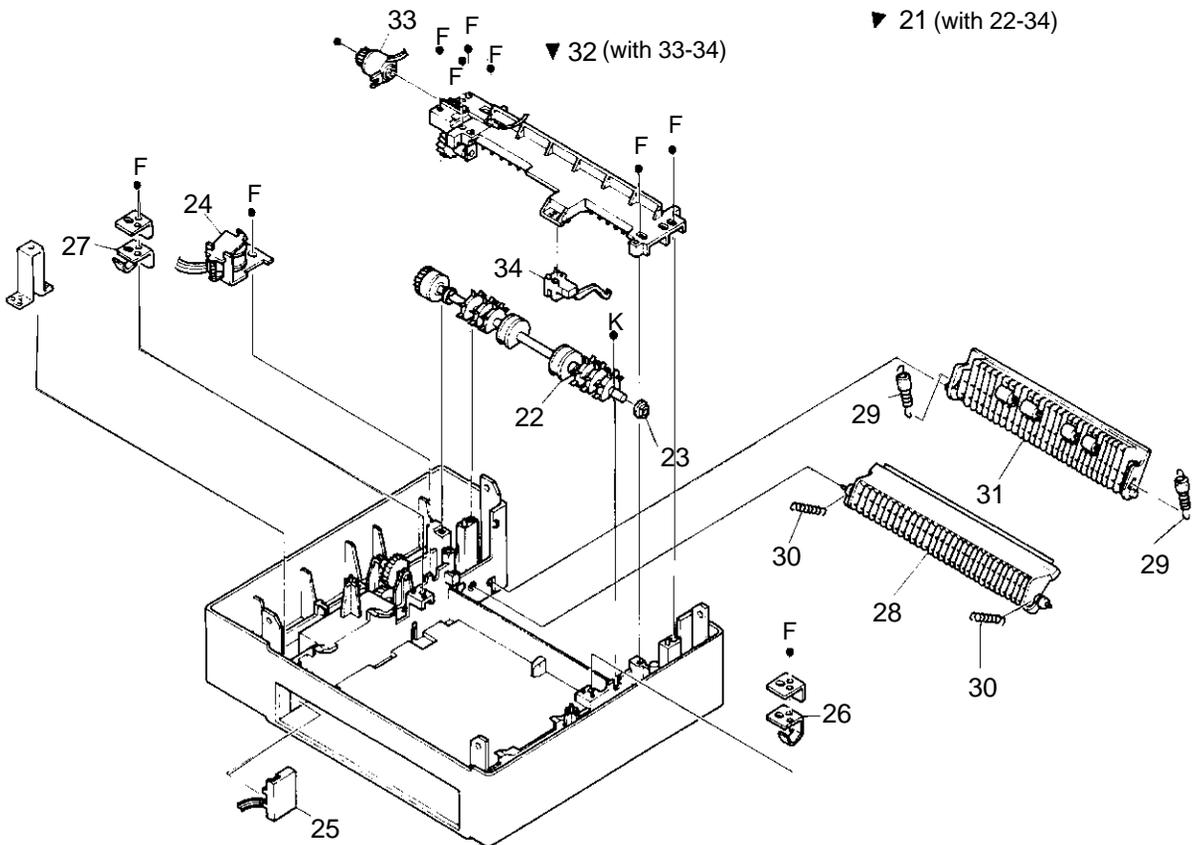
GROUP 8 - FEEDER UNIT FOR 3-TRAY MODEL

Item No.	Description	Part No.	Qty.
21	Feeder Unit (Tray 3)	-	1
22	Feed Roller Assy	-	1
23	Bearing D	-	1
24	Paper Feed Solenoid (Tray 3)	922-0601	1
25	Paper Size Sensor (Tray 3)	922-0614	1
26	Cassette Spring, Right	-	1
27	Cassette Spring, Left	-	1
28	Outer Turn-Chute Assy	-	1
29	Outer Turn-Chute Spring w/Tube	-	2
30	Inner Turn-Chute Spring	-	2
31	Outer Turn-Chute Assy	-	1
32	Lower Chute Assy (Tray 3)	-	1
33	Transport Clutch (Tray 3)	922-0599	1
34	Paper Out Sensor (Tray 3)	922-0598	1
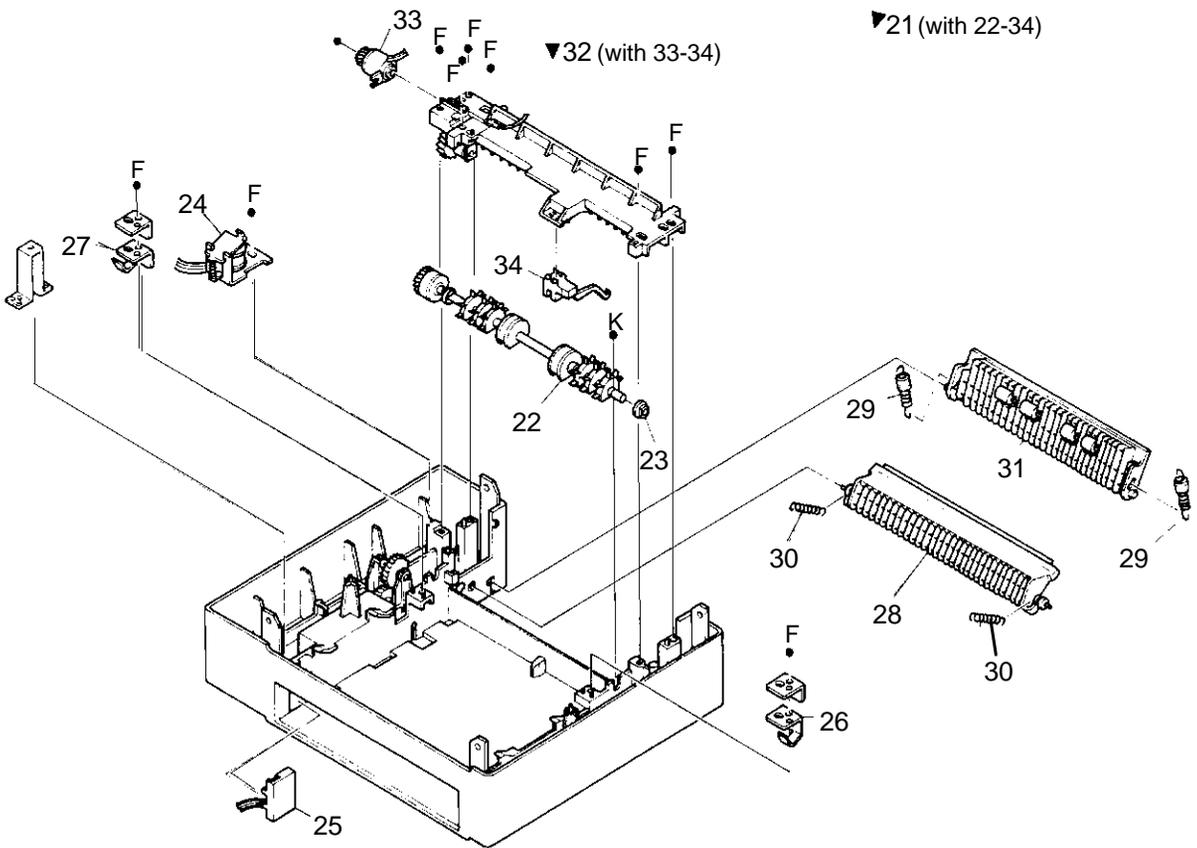
GROUP 9 - MULTI-MEDIA POWER FEEDER

Item No.	Description	Part No.	Qty.
	Feeder, Power, Multi-Media	922-0931	
1	Motor Assy	-	1
2	Paper Out Sensor	-	1
3	Feed Solenoid	-	1
4	Feed Roller Assy	-	1
5	Bearing	-	3
7	Retard Assy	-	1
8	Take Away Roller	-	1
9	Bearing	-	1
10	Tray Assy	-	1
11	Bottom Housing	-	1
12	Top Cover	-	1
13	Multifeeder PCB	-	1
14	Pinch Roller	-	1
15	Bearing	-	2
16	Spring	-	2
17	Guide Chute	-	1
18	Retard Chute Assy	-	1
19	Spring	-	2
20	Harness Assy	-	1
21	Harness Assy	-	1
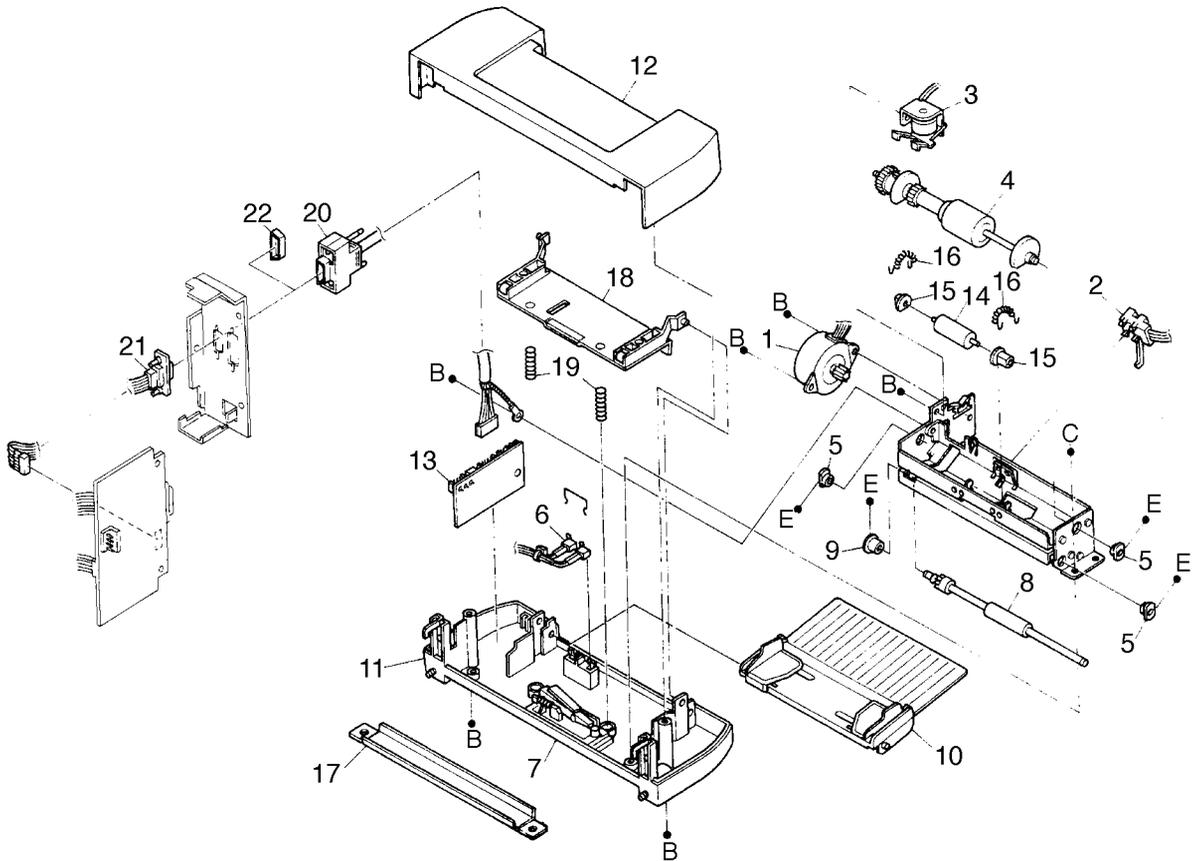
ADDITIONAL SPARE PARTS

Item No.	Description	Part No.	Qty.
1			
2	I/O Connector, Roman, 810	661-0842	
3	4-Meg Memory	661-0846	
4	8-Meg Memory	661-0847	
5			
6	High Resolution, 810	661-0849	
7			
8	Fax Board	661-0851	
9	Ethernet Card	661-0852	
10	Ethernet, 10 Base T	661-0853	
11	Ethernet, 10 Base 2	661-0854	
12			
13			
14	Fuser, (110V), 810	661-0857	
15	Fuser, (220V), 810	661-0858	

661-0853 10 BaseT
661-0854 10 Base2

VPT Board
Ethernet Card
661-0852

High-Resolution 810
661-0849

Main Logic Board 661-0842
I/O Connector, Roman 810

661-0846 4 MB RAM Upgrade
661-0847 8 MB RAM Upgrade
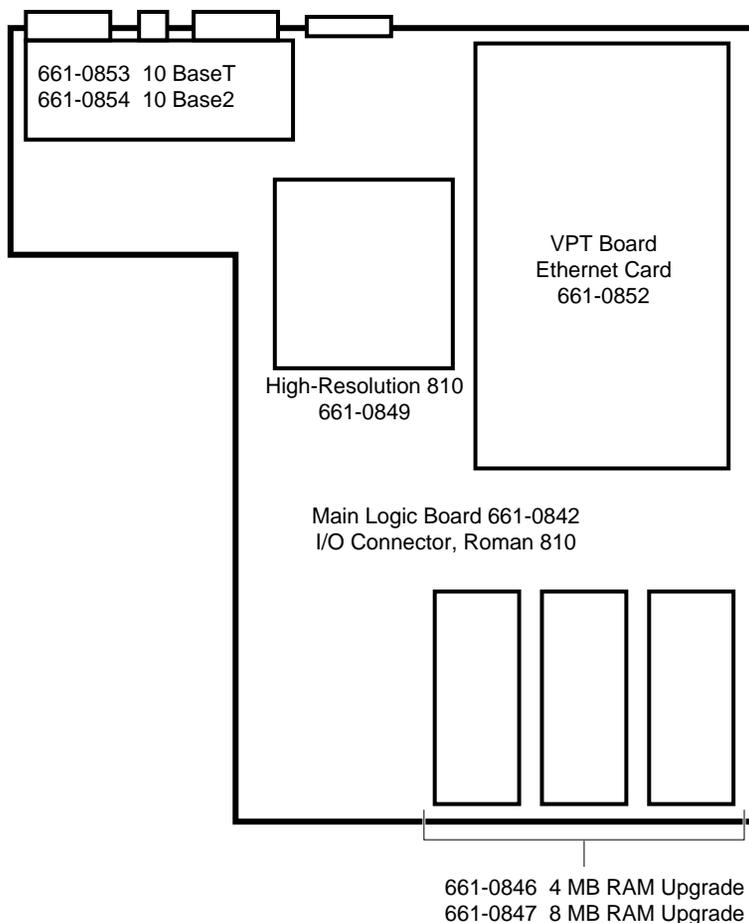
PARTS ADDED AUGUST 1994

Item No.	Description	Part No.	Qty.
1	Cover, Power Cord	922-0917	
2	Roller, Paper Feed	922-0918	
B-7, #28	Inner Turn-Chute Assembly	922-0919	
B-8, #29	Spring, Outer Turn-Chute w/Tube	922-0920	
B-8, #30	Spring, Inner Turn-Chute w/Tube	922-0921	
B-2, #21	Outer Turn Chute	922-0922	
B-2, #24	Tray, Manual Feed	922-0923	
8	Bracket, Toner Sensor	922-0924	
9	Bracket, EP Cartridge Sensor	922-0925	
10	Transfer Charger/Detack Assembly	922-0927	
11	Tray, Exit	922-0928	
B-8, #31	Outer Turn Chute	922-0930	
13	Feeder, Power, Multi-Media	922-0931	
14	Cassette, Paper, 11 x 8.5	922-0932	
15	Power Cord U.S.	922-0937	

PART ADDED FEBRUARY 1995

Item No.	Description	Part No.	Qty.
1	Fan, Lower, LW Pro 810	922-1233	

LaserWriter Pro 810- 'Q' Gear Identification

Joe Wilson 5/9/97

LaserWriter Pro 810 customers who are experiencing paper jams at the fuser assembly may have a damaged 'Q' gear that needs replacing. The 'Q' gear is the drive gear that makes contact with and drives the fuser assembly. Under certain conditions the 'Q' gear, may unexpectedly fail under load. When this occurs the fuser rollers stop rotating preventing the paper from passing through the fuser assembly to the delivery sensor.

To reduce 'Q' gear failures the gear is now manufactured out of a new heat resistant material that is dark in color. The service part number for the redesigned gear is 922-1276. Use the pictures below to identify the differences between the gears and to locate where it is installed on the motor drive asssembly. To reduce the chance for repeat failures inspect the fuser roller cleaning wand (922-0929). and replace it if it is contaminated with a large amount of toner.

①

New 'Q' Gear   **Original 'Q' Gear w/damaged teeth**

②

New 'Q' Gear Installed In Printer

'Q' Gear