

**HP LaserJet IIISi (HP 33491)
and
HP LaserJet 4Si (HP C2010A)
Combined Service Manual**



**HEWLETT
PACKARD**

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About This Manual

This manual provides detailed field service information on the Hewlett-Packard LaserJet IIISi and LaserJet 4Si printers. Since both printers are engineered around the same basic “print engine,” most of the service procedures are identical. Where the information being presented applies equally to either printer, this manual makes no distinction between the two. Where there are differences (such as in Control Panel layout), they are noted.

Conventions

This manual uses the following conventions:

The names of major printer parts and assemblies are Capitalized.

Bold is used for emphasis, particularly in situations where *italic* type would be confusing.

Italic type is used to indicate related documents or for emphasis.

COMPUTER type indicates text visible on the printer's display or commands as seen on a PC terminal.

KEYFACE indicates keys, such as **MENU**, on the printer's Control Panel or on a computer keyboard.

Note



Notes contain important information set off from the text.

Caution



Caution messages appear before or after procedures which, if not observed, could result in loss of data or in damage to equipment.

Warning



Warning messages signal a specific procedure or practice which, if not followed correctly, could cause personal injury.

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Product Information

INTRODUCTION

Standard Features

- 600 dpi dot size and placement (LaserJet IIISi = 300 dpi).
- High-performance processing up to 17 pages-per-minute.¹
- Two 500-page paper trays provide high-volume paper handling.
- Resolution Enhancement® technology and Microfine Toner.
- HP PCL5 printer language supports HP-GL/2 vector graphics.
- Automatic language switching (LaserJet 4Si).
- Bi-directional I/O (LaserJet 4Si).
- Job Offset supports separation of multiple print jobs.
- Two font cartridge slots.
- 2 Mbyte of base RAM memory (LaserJet IIISi= 1 Mbyte) with optional SIMM memory upgrades.
- A maximum duty cycle of 75,000 pages-per-month (LaserJet IIISi = 50,000).
- 200,000 page User Maintenance kit.

¹ Print speed may be affected by paper size, installed options, etc.

Optional Features

- Add up to 32 Mbytes of additional expansion memory (16 Mb maximum on LaserJet IIISi).
- PostScript® (LaserJet IIISi = level 1, LaserJet 4Si = level 2) to provide PostScript language operation.
- Duplex Unit to print on both sides of the page.
- Direct-connect interfaces for Ethernet®/802.3 and Token Ring® Local Area Networks.
- Powered envelope feeder (100 envelope capacity).
- 2000 sheet powered output stacker.
- 1500 sheet high capacity paper feeder.

Note



For more detailed information on options and accessories, refer to “Accessory Parts” in Chapter 8 and to individual product data sheets.

IDENTIFICATION

LaserJet IIISi

The model number is on a label placed on the outside Right Rear Cover of the printer, above the power cord outlet. The model number is an alphanumeric such as 33491A or 33491AB, and is found at the top of the label. Model number 33491A is the base number for all 110/115VAC printers. Model number 33491AB is the base number for all 220/240VAC printers. The model number label also has power rating and regulatory information (see Figure 1-3).

The serial number and printer model option can be found on the barcode label located to the right or above the model number. The serial number is located on the lower portion of the label (see Figure 1-1).



Figure 1-1. LaserJet IIISi Model & Serial Number Label

LaserJet 4Si

The model number is on a label placed on the outside Right Rear Cover of the printer (see Figure 1-2, callout 1). The model number is found at the top of the label. Model number C2009A is the base number for all LaserJet 4Si printers. The model number label also has power rating and regulatory information (see Figure 1-3).

The serial number is located on a separate label on the rear of the printer's Top Cover Assembly (see Figure 1-2, callout 2).

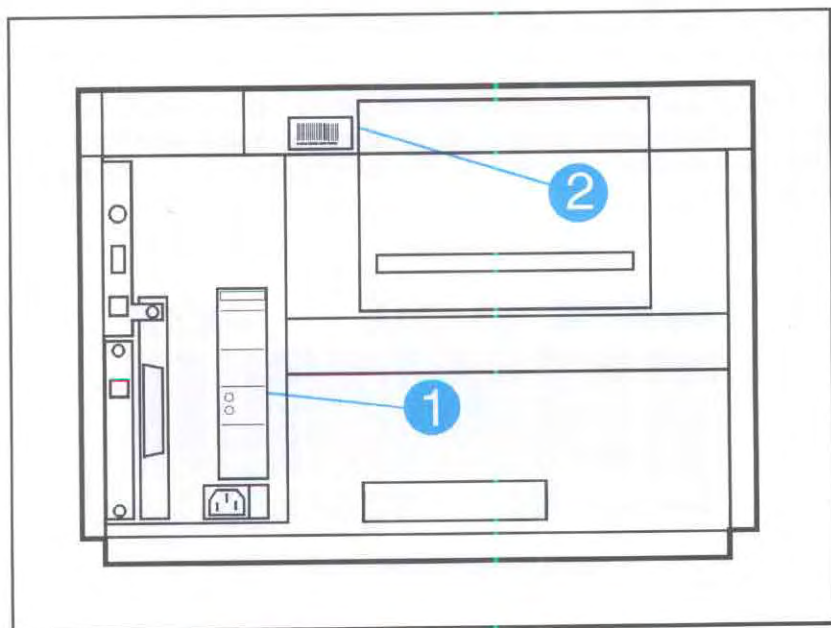


Figure 1-2. LaserJet 4Si Label Locations

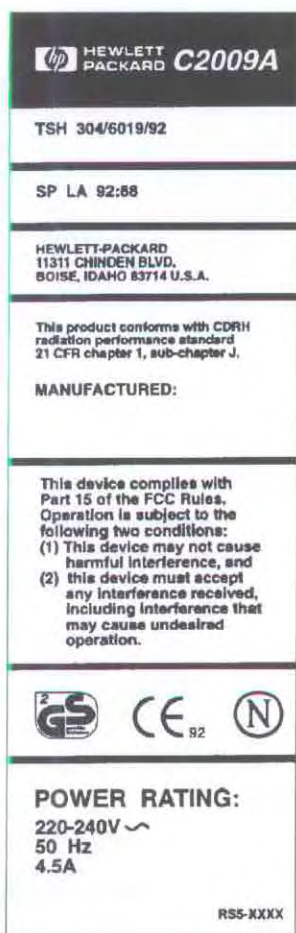
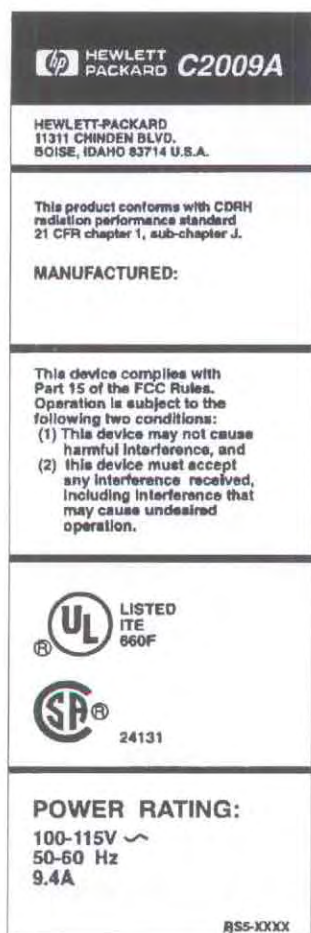


Figure 1-3. LaserJet 4Si Model Number Label

Note



Do not attempt to convert the voltage on the LaserJet IIISi/4Si printer. Any attempt to convert operating voltages will void the product warranty.

SPECIFICATIONS

Table 1-1. Physical Dimensions

Height:	420 mm (16.35 in.)
Width:	550 mm (21.5 in.)
Depth: (body)	600 mm (23.5 in.)
Depth: (letter trays installed)	760 mm (30.0 in.)
Depth: (legal trays installed)	805 mm (31.5 in.)
Weight: (includes letter trays and toner cartridge)	51.8 kg (114 lbs.)

Table 1-2. Line Voltages/Frequencies

115 V $\pm 10\%$	50 - 60 ± 2 Hz	220 V $\pm 10\%$	50 - 60 ± 2 Hz
100 V $\pm 10\%$	50 - 60 ± 2 Hz	240 V $\pm 10\%$	50 ± 2 Hz

Table 1-3. Power Consumption While Printing

100/115 V	Max 1100 Watts	220/240 V	Max 1100 Watts
-----------	----------------	-----------	----------------

Table 1-4. Operating Current Requirements

VOLTS	AMPS
100 V/115 V	9.4 Amperes
220 V/240 V	4.5 Amperes

**Table 1-5.
Printer and Toner Cartridge Environmental Specifications**

	TEMPERATURE	HUMIDITY
In Use	10 to 32.5° C (50 to 91° F)	20 to 80% RH
In Storage	0 to 35° C (32 to 95° F)	10 to 80% RH

Table 1-6. Acoustic Emissions

Operation Postion	Bystander 1m	Sound Power
$L_{PA} < 55$ dB(A) Printing	$L_{PA} < 50$ dB(A) Printing	$L_{WAD} = 6.5$ bels(A) Printing
$L_{PA} < 39$ dB(A) Standby	$L_{PA} < 37$ dB(A) Per ISO 7779, DIN 45635,T,19	$L_{WAD} = 5.2$ bels(A) Standby
Per ISO 9692, DIN 45635,T,19		Per ISO 9296

RELATED DOCUMENTATION

The documentation listed in Table 1-6 may be ordered from Hewlett-Packard's Support Materials Organization (SMO). The phone number for SMO is 800-227-8164.

Table 1-7. Related Documentation

Document ¹	HP Part Number	
	LaserJet IIISi	LaserJet 4Si
SHIPPED WITH PRINTER:		
Setting Up Guide ²	33491-90901	C2010-90903
User's Reference Manual ²	33491-90907	C2010-90901
Operator's Guide ²	33491-90913	C2010-90940
Software Application Guide ²	33491-90920	C2010-90938
SHIPPED WITH ACCESSORIES:		
Duplex Unit Installation Guide	C2061-90901	
PostScript Installation Guide	33494-90901	C2013-90901
Envelope Feeder Guide	C2060-90901	
ADDITIONAL INFORMATION:		
LaserJet Family Paper Specification Guide	5002-1801	
Technical Reference Manual ³	5961-0509	
Network Notes	33491-90950	C2010-90951
Notes:		
1. Titles are not exact. Order by part number.		
2. English version only - other translations available.		
3. Includes PCL 5 Comparison Guide.		

SAFETY INFORMATION

Laser Safety

The Center for Devices and Radiological Health (CDRH) of the U.S. Food and Drug Administration implemented regulations for laser products manufactured since August 1, 1976. Compliance is mandatory for products marketed in the United States.

This 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. Since radiation emitted inside this printer is completely confined within protective housings and external covers, the laser beam cannot escape during any phase of normal user operation.

Warning



Never operate or service the printer with the protective cover removed from the Laser/Scanner Assembly. The reflected beam, although invisible, can damage your eyes.



Figure 1-4. Sample Laser Safety Label

DECLARATION OF CONFORMITY

according to ISO/IEC Guide 22 and EN 45014

Manufacturer's Name: Hewlett-Packard Company

Manufacturer's Address: 11311 Chinden Boulevard
Boise, Idaho 83714-1021, USA

declares, that the product

Product Name: LaserJet 4Si*, 4SiMX**

Model Number: C2009A*, C2010A*, C2011A**

Product Options: All

conforms to the following Product Specifications:

Safety: EN 60950:1988 + A1, A2
IEC 825:1984 + A1:1990 laser class 1

EMC: CISPR-22:1985 / EN 55022:1988 Class A ¹⁾
CISPR-22:1985 / EN 55022:1988 Class B ¹⁾
EN 50082-1:1992
IEC 801-2:1991 / prEN55024-2:1992 -3kV CD, 8 kV AD
IEC 801-3:1984 / prEN55024-3:1991 - 3V/m
IEC 801-4:1988 / prEN55024-4:1992 - 0.5kV Signal Lines,
1 kV Power lines

Supplementary Information:

The product herewith complies with the requirements of the Low Voltage Directive 73/23/EEC and the EMC Directive 89/336/EEC.

- 1) The product was tested in a typical configuration with Hewlett-Packard Personal Computer and Test Systems.
- * When this printer is used without a Local Area Network (LAN) option, it meets the requirements of EN55022 Class B. If a LAN option is installed the printer meets the requirements of Class A.
- ** This printer contains a LAN option; therefore, it meets the requirements of EN55022 Class A.

Office of Quality Manager
Boise, Idaho USA
July 20, 1993

European Contact: Your Local Hewlett-Packard Sales and Service Office or Hewlett-Packard GmbH, Department ZQ
/ Standards Europe, Herrenberger Straße 130, D-7030 Böblingen (FAX: + 49-7031-14-3143)

Laser Statement (Finland)

LASERTURVALLISUUS

LUOKAN 1 LASERLAITE

KLASS 1 LASER APPARAT

HP LaserJet 4Si laserkirjoitin on käyttäjän kannalta turvallinen luokan 1 laserlaite. Normaalissa käytössä kirjoittimen suojakoteloitinta estää lasersäteiden pääsyn laitteen ulkopuolelle.

Kirjoittimen on hyväksynyt Suomessa laserturvallisuuden osalta Työsuojeluhallitus. Laitteen turvallisuusluokka on määritetty valtioneuvoston päätöksen N:o 472/1985 ja standardin EN 60825 (1991) mukaisesti.

VAROITUS !

Laitteen käyttäminen muulla kuin käyttöohjeessa mainitulla tavalla saattaa altistaa käyttäjän turvallisuusluokan 1 ylittävälle näkymättömälle lasersäteilylle.

VARNING !

Om apparaten används på annat sätt än i bruksanvisning specificerats, kan användaren utsättas för osynlig laserstrålning, som överskrider gränsen för laserklass 1.

HUOLTO

HP LaserJet 4Si -kirjoittimen sisällä ei ole käyttäjän huollettavissa olevia kohteita. Laitteen saa avata ja huoltaa ainoastaan sen huoltamiseen koulutettu henkilö. Tällaiseksi huoltotoimenpiteeksi ei katsota väriainekasetin vaihtamista, paperiradan puhdistusta tai muita käyttäjän käsikirjassa lueteltuja, käyttäjän tehtäväksi tarkoitettuja ylläpitotoimia, jotka voidaan suorittaa ilman erikoistyökaluja.

VARO !

Mikäli kirjoittimen suojakotelo avataan, olet alttiina näkymättömälle lasersäteilylle laitteen ollessa toiminnassa. -lä katso säteeseen.

VARNING !

Om laserprinterns skyddshölje öppnas då apparaten är i funktion, utsätts användaren för osynlig laserstrålning. Betrakta ej strålen.

Tiedot laitteessa käytettävän laserdiodin säteilyominaisuuksista:

Aallonpituus 777-795 nm

Teho 5 mW

Luokan 3B laser

Toner Safety

Toner is composed of plastic, iron, and a small amount of pigment. If toner gets on your clothes, wipe it off with a dry cloth and wash the clothes in cold water. Hot water sets toner into fabric. Take care to avoid breathing toner particles. Toner tends to break down vinyl materials, so avoid contact with vinyl.

A Material Safety Data Sheet (MSDS) for the toner cartridge used in the HP LaserJet IISi/4Si printers is available through Hewlett-Packard.

By Mail. To obtain a MSDS for the 92291A LaserJet Toner Cartridge through the mail, call the Customer Information Center (CIC) at 800-752-0900 between 6 A.M. and 5 P.M. Pacific Standard Time.

By Fax. To obtain a MSDS for the 92291A LaserJet Toner Cartridge by fax, call the HP FIRST number at 800-333-1917 and enter document number 1407.

Note



To get documents from HP FIRST by fax, use a Group 3 (touch tone) fax machine.

Outside the U.S. Contact your nearest HP Sales and Service Office.

Ozone Safety

The HP LaserJet IISi/4Si printer does not use high voltage corona wires in the electro-photographic process, and therefore generates no measurable ozone gas (O₃). The printer instead uses charging rollers in the toner cartridge and in the print engine.

FCC RFI Statement (Class B)

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense.

Any changes or modifications not expressly approved by Hewlett-Packard could void the user's authority to operate this equipment.

Note: Use of a shielded cable is required to comply with the Class A limits of Part 15 of FCC rules.

Note: In some configurations, this printer also meets the Class B emission standards. Refer to the appropriate data sheet for details of certification.

VCCI Statement (Japan)

The VCCI statement below is required in Japan. It is similar to the FCC regulatory statement.

この装置は、第一種情報装置（商工業地域において使用されるべき情報装置）で商工業地域での電波障害防止を目的とした情報処理装置等電波障害自主規制協議会（VCCI）基準に適合しております。

従って、住宅地域またはその隣接した地域で使用すると、ラジオ、テレビジョン受信機等に受信障害を与えることがあります。

取扱説明書に従って正しい取り扱いをして下さい。

WARRANTY STATEMENT

Warranty

This warranty gives specific legal rights. There may also be other rights which vary from state to state or province to province.

One Year Limited On-Site Warranty

Hewlett-Packard warrants the LaserJet III Si/4 Si printer against defects in materials and workmanship for a period of one year from receipt by the customer. During the warranty period, HP will, at its option, either repair or replace products which prove to be defective.

Note



User maintenance components are not covered under the LaserJet III Si/4 Si printer's factory warranty. A separate maintenance agreement may be written to cover these components.

Exclusions

The warranty on HP LaserJet III Si/4 Si printers shall not apply to defects resulting from:

- Improper or inadequate maintenance by customer.
- Customer supplied software or interfacing.
- Unauthorized modification or misuse.
- Operation outside of the environmental specifications for the printer.
- Operation of non-supported printing media.
- Duty cycle abuse (LaserJet 4 Si = 75,000 pages-per-month maximum, LaserJet III Si = 50,000).
- Operating the printer from a mechanical switchbox without a designated surge protector.
- Improper site preparation and maintenance.
- Failure to perform user maintenance every 200,000 pages (see note above).
- Damage resulting from the use of refilled or non-HP toner cartridges, memory, interface boards or font cartridges.

SERVICE AND REPAIR STRATEGY

The service and repair strategy for the LaserJet IIISi/4Si is defined by the following three levels:

Level 1: User Maintenance (PM)

The HP LaserJet IIISi/4Si printers are designed to function in a shared environment. Printer maintenance and configuration are the responsibility of a designated user. Refer any questions about maintenance history and failure symptoms to the user assigned to the printer.

When the printer has exceeded 200,000 pages, the control panel displays the message **USER MAINTENANCE**. Refer to Chapter 4, *Maintenance*, for complete User Maintenance instructions and product numbers.

Consumables may be ordered from HP's North American Distribution Organization (NADO) (or EDO in Europe). See "Ordering Consumables" later in this chapter for phone numbers.

Level 2: Field Replaceable Units (FRUs)

HP LaserJet IIISi/4Si printers are designed to be repaired by the replacement of Field Replaceable Units (FRUs). An exchange program for some FRUs and PCAs is available. Service parts may be ordered from HP's Support Material Organization (SMO) or Parts Center Europe (PCE). Part numbers are located in Chapter 8. See "Ordering Parts" later in this chapter for addresses and phone numbers.

Level 3: MIO Cards

Customer support for network MIO cards is to be provided by "qualified distributors" selling the cards. Other information may be found within their specific product support plans.

DOING BUSINESS WITH HP

HP Fax Information Retrieval Support Technology (HP FIRST)

HP FIRST enables HP authorized service providers to receive important PC and peripheral support information 24 hours a day over a fax machine.

Features and Benefits of HP FIRST

Service information (including graphics which are not available over HPNN) is available 24 hours a day, 7 days a week. Like HPNN, there is no charge for HP FIRST to HP authorized service providers. With HP FIRST you can receive:

- Service notes.
- Application notes.
- Product data sheets.
- Material Safety Data Sheets (MSDS).
- Typeface and accessories information.
- Printer support software information.
- Toner information.
- Driver request form and software matrix.

To Use HP FIRST

To access HP FIRST information, you need a group 3 (touch-tone 9600 baud) facsimile machine.

1. Dial **800-333-1917**.
2. Follow the voice prompts to access the part of the system you want. HP FIRST will call back and send the documents you request.

Ordering Parts

Field replaceable part numbers are found in Chapter 8 of this manual. Replacement parts may be ordered from HP's Support Material Organization (SMO) or from Parts Center Europe (PCE).

SMO	PCE
Hewlett-Packard Company Support Materials Organization 8050 Foothills Blvd. Roseville, CA 95678 Phone: 800-227-8164	Hewlett-Packard Company Parts Center Europe Wolf-Hirth Strasse 33 D-7030 Boeblingen, Germany Phone: (49) 7031 14-0

Ordering Consumables

Consumables may be ordered from HP's North American Distribution Organization (NADO) (or EDO in Europe). The phone numbers for ordering consumables are:

U.S:	800-538-8787
Canada:	800-387-3154
(Toronto)	416-671-8383
United Kingdom:	0734-441212
Germany:	0130-3322

Technical Assistance

For further technical assistance, service-authorized HP and dealer service personnel can contact the nearest Hewlett-Packard Customer Information Center (800-633-3600 in North America). The HP Customer Support Center, (208-323-2551) is available to answer technical user questions regarding software applications, configuration, etc. The Assist Line is available weekdays from 7 AM to 6 PM Mountain Time (Wednesdays until 4 PM).

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Site Planning and Requirements

INTRODUCTION

Correct location and placement of the LaserJet IIISi/4Si printer is important in maintaining the performance level set at the factory. The Service Representative must understand the printer's requirements to ensure selection of a suitable location.

SITE REQUIREMENTS

The environmental specifications, listed in the *Specifications* section of Chapter 1, must be maintained to ensure proper operation of the LaserJet IIISi/4Si printer. Consider the following points before installing the printer:

- Install the printer in a well-ventilated area.
- The printer should be installed on a sturdy, level surface.
- Install the printer where the temperature and humidity do not change abruptly. Do not position the printer near water sources, humidifiers, air conditioners, refrigerators, or other major appliances.
- Do not expose the printer to direct sunlight, dust, open flames, or ammonia fumes. If the printer is placed near a window, make sure the window has a curtain or blind to block the direct sunlight.
- Install the printer away from walls or other objects. There must be enough space around the printer for proper access and operation (see Figure 2-1).

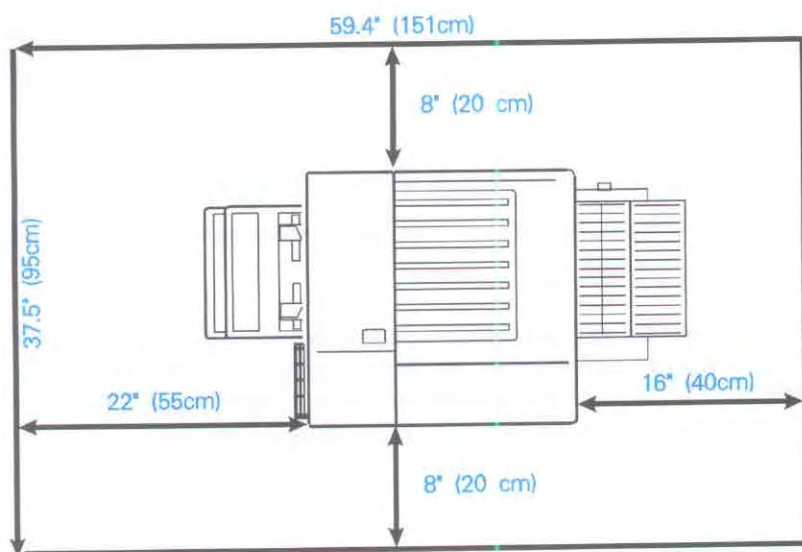


Figure 2-1. LaserJet III/4Si Space Requirements

Print Media Specifications

General specifications are listed here for paper used in the LaserJet III/4Si printers. Complete specifications and background information for paper, envelopes, and other print media are contained in *The HP LaserJet Family Paper Specifications Guide* (P/N 5002-1801). More detailed print media specifications can also be found in Appendix E of the printer *User's Reference Manual*.

Table 2-1. Paper Specifications

Basis Weight	16 to 28 pounds. (60 to 105 g/m ²).
Furnish (Composition)	100% chemical wood pulp and/or cotton fiber. Recycled paper with up to 5% groundwood may be used.
Grain	Long grain.
Moisture Content	4.7% ± 1% by weight.
Caliper	3.0 to 7.0 mils. (0.094 to 0.18 mm).
Curl	In-ream: flat within 0.2 inch (5 mm).
Cut Edge	Cut with sharp blades, no visible fray, no dust.
Finishing Precision	Cut sheet within ±0.03 inch (± 0.8 mm) of nominal, ±0.2° square.
Fusing Compatibility	Must not scorch, melt, offset, or release hazardous emissions when heated to 200° C (392° F) for 0.1 second.
Packaging	Polylaminated moisture-proof ream wrap.
Finish (or Smoothness)	100 to 250 (Sheffield).
Acid Content (pH)	5.5 pH minimum.
Brightness	83% minimum. Recycled paper may not be as bright.
Opacity	85% minimum.
Stiffness	1.6 minimum machine direction; 0.6 minimum cross direction (Taber).
Wax Pick (Surface Strength)	12 minimum (Dennison).
Electrical Surface Resistivity	2.0 to 15 x 10 ¹⁰ ohms per square (conditioned at 23° C and 50% relative humidity).
Electrical Volume Resistivity	1.2 to 15 x 10 ¹¹ ohms-cm (conditioned at 23° C and 50% relative humidity).

AC Power Line Considerations and Requirements

The current in the Fusing Assembly is controlled by a thermistor. The power consumption, therefore, is not at a steady state and will change as the fuser cycles ON and OFF (see Figure 2-2).

The correct method for measuring the power consumed by the printer is to use the average of the measurements taken with the fuser ON, *PLUS* the average power peaks above the ON level. Use the same method for measuring the idle mode power, except multiply the total by the ratio of the fuser ON time to the fuser OFF time.

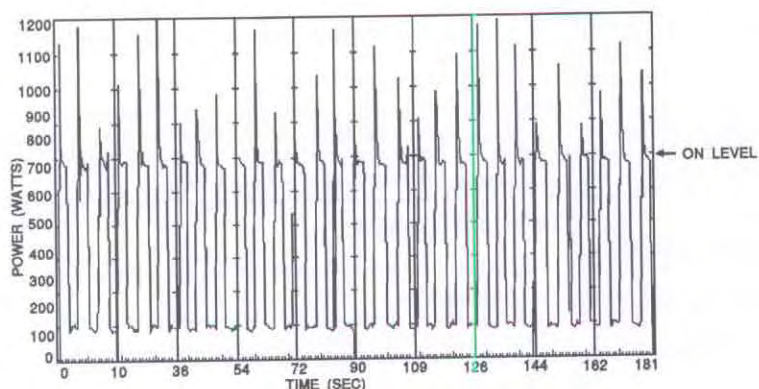


Figure 2-2. Sample Power Plot

Table 2-2. Power Measurements (Watts)

Status	100/115 V	220/240 V
Printing	1100 Watts	1100 Watts
Standby	200 Watts	200 Watts

Table 2-3. Current Measurements (Amps)

Status	100/115 V	220/240 V
Operating current	9.4 amps	4.5 amps
Standby Current	1.4 amps	.7 amps
Peak Inrush Current	14 amps	16.8 amps
25% Decay Time	40 msec	30 msec
Peak Fuser Current	30 amps	23.2 amps
Return-to-Average Time	780 msec	800 msec

This information is included to explain the current/wattage spikes that occur when the fuser cycles. The information in the above tables are measured values. Current and wattage specifications in Chapter 1 are maximums used for regulatory purposes.

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Installation and Configuration

INTRODUCTION

The Service Representative should understand the site requirements of the printer and verify that the printer is installed properly. Each printer is tested for performance and carefully inspected before leaving the factory. To maintain the performance levels set at the factory, the printer must be properly installed.

UNPACKING

Before unpacking the printer, inspect the shipping container for signs of damage. Since a damaged shipping box is an indication of improper handling during shipping, the printer may also be damaged.

Note



If the shipping container has any sign of damage, unpack the printer and power it **ON** with the carrier's agent present. If the printer displays any sign of physical damage, or if it fails self test, do not accept the printer.

Follow the unpacking and installation instructions in the *Setting Up* guide that is shipped with each printer.

The Control Panel on LaserJet IIISi and LaserJet 4Si printers have the same basic functionality, but differ in layout and method of usage.

The LaserJet IIISi Panel

The LaserJet IIISi Control Panel is similar to other LaserJet models, using the “press & hold” method to access secondary functions of some keys. This method involves pressing and holding down the key for a length of time until the Display Panel indicates that the secondary function has been accessed. For example, to access the “reset” function of the **Continue/Reset** key, press and hold down the **Continue/Reset** key for a few seconds until the 07 RESET message appears on the display.

The keys with secondary functions on the LaserJet IIISi are:

Continue/Reset, **Print Fonts/Test**, **Enter/Reset Menu**, and **Menu**.

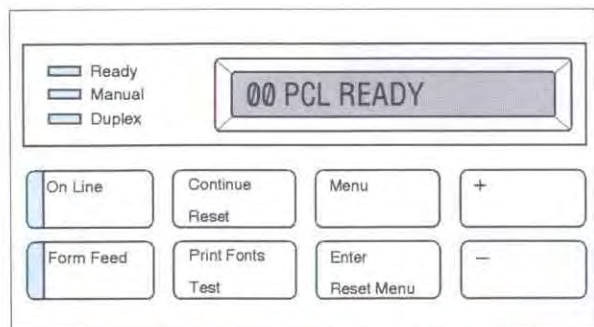


Figure 3-1. The LaserJet IIISi Control Panel

THE CONTROL PANEL

The LaserJet 4Si Panel

The LaserJet 4Si Control Panel makes use of a **Shift** key to access secondary key functions (see Figure 3-8). For example, to access the “reset” function of the **Continue/Reset** key, press **Shift** and **Continue/Reset** simultaneously. The keys with secondary functions on the LaserJet 4Si are: **Continue/Reset** and **+/-**.

In addition to accessing secondary key functions, the **Shift** key is used in conjunction with the **Menu** or **Item** keys to scroll in the reverse direction. For example, to return to the Printing Menu (the first menu) from the PCL Menu (the second menu), press **Shift** and **Menu** simultaneously.

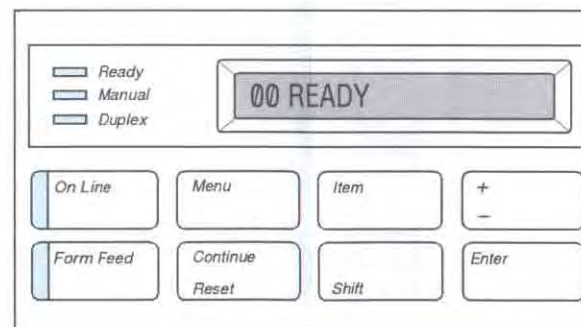
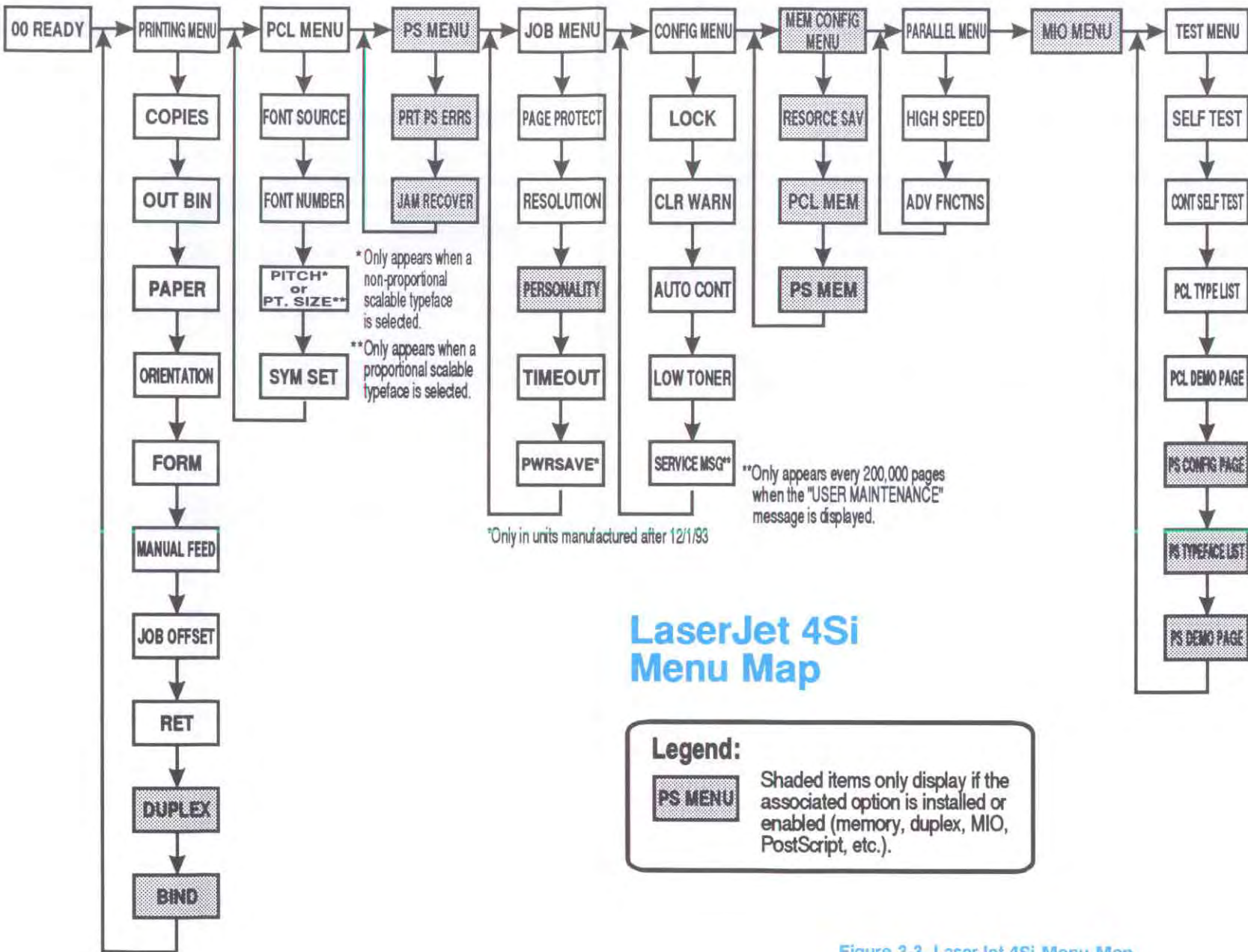


Figure 3-2. The LaserJet 4Si Control Panel



LaserJet 4Si Menu Map

Legend:

PS MENU

Shaded items only display if the associated option is installed or enabled (memory, duplex, MIO, PostScript, etc.).

Figure 3-3. LaserJet 4Si Menu Map

Localizing the Control Panel

The LaserJet IIISi Control Panel can be localized to display one of five languages: **English, French, German, Italian, or Spanish.** For the LaserJet 4Si printer, this has been expanded to eleven possible selections: the five already listed, plus **Swedish, Danish, Norwegian, Dutch, Finnish, and Portuguese.**

Use the following procedure to localize the Control Panel (same procedure on either printer).

1. Power **ON** the printer while holding down the **Enter** key.

The English message CONFIG LANGUAGE appears briefly, then the message 05 SELF TEST is displayed while a printer self test is performed. When the self test is finished the message LANGUAGE=ENG is displayed.

2. Use the **+** key to scroll forward through the menu item selections until the appropriate language is displayed.
3. Press the **Enter** key to select and save the displayed language. An asterisk (*) is placed next to the selected language.
4. Press the **On Line** key to exit the localization menu.

Configuring for Network Use

In addition to stand-alone DOS and PostScript installations, the LaserJet IIISi/4Si printers support Novell, 3Com, IBM Token Ring, Microsoft LAN Manager, Local Talk and UNIX network environments. (The LaserJet 4SiMX printer comes configured with network MIOs.) Configuration instructions for specific networks are contained in the network and system documentation for the various MIO cards and other hardware. Refer to the appropriate manuals for details.

Note



Also refer to “Interfaces and LAN Network Cards” in Chapter 8 for complete listings of supported MIO configurations.

Configuring Default Paper Size (LaserJet 4Si)

The LaserJet IIISi printer automatically changed the factory default paper size to A4 whenever the configured language was not English. Because of the wider range of possible language selections in the LaserJet 4Si printer, this is no longer adequate. Therefore, the LaserJet 4Si firmware allows customization of the factory default (or “Cold Reset”) paper size. The setting is specified in the CR PAPER= item of the Service Menu while the printer is in Service Mode. When a power ON “Cold Reset” is performed (by pressing **On Line** during power ON), the default paper size takes effect. Refer to “Service Mode” in Chapter 7 for more information.

SELF TESTS

General

Three types of self test routines, other than the Service Mode tests covered in Chapter 7, can be performed on the LaserJet IIISi/4Si printers. These self test routines are:

- 05 Self test
- 04 Self test (continuous self test)
- 15 Engine Test

05 Self Test

Each time the printer is powered ON or a self test is initiated from the Control Panel, 05 SELF TEST is displayed. During the print test portion of the self test, the message 06 PRINTING TEST will be displayed. The printer executes a self test that verifies operation in the following areas:

- Program ROM.
- Internal Font ROM.
- RAM on the Formatter PCA and any optional (accessory) RAM.
- DRAM Controller.
- Formatter logic.
- All LEDs.

Information about page count, date codes, and configuration selections is printed. The information is summarized in Figure 3-4 (LaserJet IIISi) and Figure 3-5 (LaserJet 4Si).

Running an 05 Self Test

LaserJet IIISi:

With the printer off-line, press and hold down the **Print Fonts/Test** key for 2 to 5 seconds until 05 SELF TEST is displayed. During the print test portion, the message 06 PRINTING TEST is displayed.

LaserJet 4Si:

1. With the printer off-line, press the **Menu** key repeatedly until TEST MENU is displayed.
2. Press the **Item** key once to display SELF TEST.
3. Press the **Enter** key. The message 05 SELF TEST is displayed. During the print test portion, the message 06 PRINTING TEST is displayed.

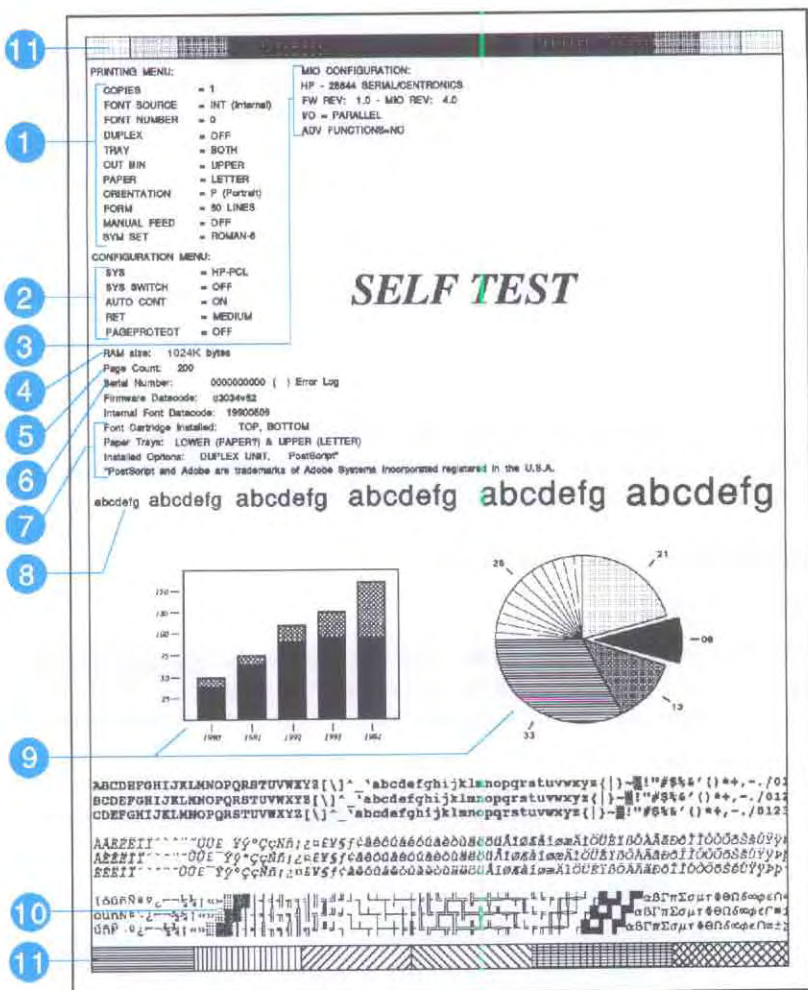


Figure 3-4. LaserJet III Si 05 Self Test Printout

LaserJet III Si Self Test Printout Description

The numbered items below refer to Figure 3-4.

1. **Printing Menu:** Shows the current Printing Menu selections in the order that they appear in the Control Panel display. Use this information to verify that the Menu selections are active.
2. **Configuration Menu:** Shows the current Configuration Menu selections. Use this information to verify how the printer is set up to communicate with the computer.
3. **MIO Configuration:** Shows the current I/O description and configuration. There may be extensive additional diagnostic information printed here.
4. **RAM Size:** Shows how much memory is installed in the printer. 1024 Kbytes is standard. If optional memory has been added, a self test can be used to verify installation.
5. **Page Count:** Shows approximately how many pages have been printed over the life of the printer. When the printer is powered OFF, the page count is rounded down to the nearest ten-page increment and recorded in non-volatile memory.
6. **Serial Number:** Shows the printer's serial number.
7. **Installed Devices:** Shows firmware and internal font date codes (in YYYYMMDD format), as well as installation of cartridges and media tray size.
8. **Scalable Typefaces:** Demonstrates the printer's ability to print with scalable typefaces.
9. **Graph/Pie Chart:** The bar graph and pie chart test the printer's HP-GL/2 vector graphics capability. The 33% portion of the pie chart also serves as a check on the Resolution Enhancement quality and proper adjustment (see the *User's Reference Manual* for information on adjusting).
10. **Ripple Print Patterns:** This area (always in Courier) is useful for checking print density and quality.
11. **Patterns:** Use the shading and crosshatch patterns in the blocks at the top and bottom of the page as well as in the charts to check print density and quality.



LaserJet 4Si Self Test Printout Description

The numbered items below refer to Figure 3-5.

1. **Menu Selections:** Shows the current selections for all available user menus in the order that they appear in the Control Panel display (refer to the Menu Map in Figure 3-3). Use this information to verify the various menu selections. (Note that there may be extensive additional diagnostic information printed under the MIO Configuration menu.)
2. **Serial Number:** Shows the printer's serial number.
3. **RAM Size:** Shows how much memory is installed in the printer. 2048 Kbytes is standard. If optional memory has been added, a self test can be used to verify installation.
4. **Page Count:** Shows how many pages have been printed over the life of the printer.
5. **Firmware Datecode:** Shows the datecode of the installed firmware (in YYYYMMDD format).
6. **Control Panel Lock and Password Status:** Shows the status of these security features which are set using PjL job stream commands.
7. **Installed Devices:** Lists recognized devices, options and personalities. Use to verify installation.
8. **Sample Print:** Shows ripple print pattern (always in Courier). This area is useful for checking print density and quality.

04 Self Test

A continuous self test prints multiple copies of the 05 SELF TEST printout page. The continuous self test mode is a good way to test the paper path, since it only tests the electronics once, and then prints the self test page continuously.

Running a 04 Self Test

LaserJet III Si:

Press and hold down the **Print Fonts/Test** key until 04 SELF TEST is displayed (about 5 seconds).

LaserJet 4 Si:

1. With the printer off-line, press the **Menu** key repeatedly until TEST MENU is displayed.
2. Press the **Item** key twice to display CONT SELF TEST.
3. Press the **Enter** key. The message 04 SELF TEST is displayed.

Terminating a 04 Self Test

Pressing the **On Line** or **Continue** key terminates the continuous test mode (**On Line** returns the printer to on-line state, **Continue** remains off-line). The 04 will flash while the buffered pages print and self test is being aborted. (Depending on the memory configuration, several pages may be buffered.)

15 Engine Test

The Test Print button access hole is located on the front of the printer, next to the font cartridge slots (see Figure 3-6). Press the Test Print button using a small diameter, non-conductive tool.

Pressing the Test Print button will initiate a 15 ENGINE TEST. This is an engine test only. The Formatter PCA is bypassed while printing this test. A page of vertical lines will be printed if the print engine is operating correctly (see Figure 3-6).

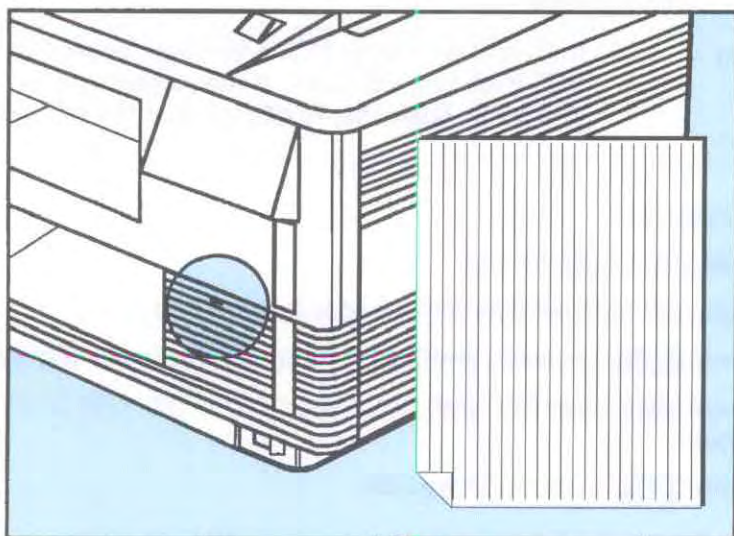


Figure 3-6. Engine Test Button and Page

Font Test Pages

The printer's font test pages provide samples of the PCL and PostScript typefaces and bitmapped fonts currently available in the printer. (The LaserJet IIISi printer generates a PCL font list only.)

LaserJet IIISi

- Take the printer off-line.
- Clear any buffered data (form-feed indicator OFF).
- Press **Print Fonts/Test** key.

Note



If the printer was in PCL 5 language mode, the PCL Font List will print. If the printer was in PostScript Mode, the PostScript font list will print.

LaserJet 4Si

- Take the printer off-line.
- Clear any buffered data (form-feed indicator OFF).
- Press **Menu** repeatedly until TEST MENU appears in the display.
- Press **Item** repeatedly until PCL TYPE LIST or PS TYPE LIST appears.
- Press **Enter** to print the type list.

Demo Pages (LaserJet 4Si Only)

The LaserJet 4Si printer can generate other self test pages which demonstrate the advanced capabilities of the printer. These are the PCL and PostScript Demo Pages. They are also accessed through the TEST MENU. Refer to Figure 3-3 for details.

Note



Service Mode includes a menu item for turning OFF the HP demo pages. This item, SKIP DEMO= is set at the factory, and should not need to be changed in the field.



Figure 3-8. LaserJet 4Si Demo Pages

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Maintenance

INTRODUCTION

The LaserJet III/4Si printers require routine user maintenance every 200,000 pages. Printer maintenance should be performed every time the USER MAINTENANCE message appears, or when there are print quality or paper feed problems.

User Maintenance Concept

The printer is designed to function in a shared environment. Routine maintenance and printer configuration are the responsibility of a designated user. Refer any questions about maintenance history and failure symptoms to the person assigned to the printer.

Note



User Maintenance is not covered under the factory one year on-site warranty or the standard extended warranty policies.

PRINTER CONSUMABLES

The printer consumables are:

- Part no. 92291A HP LaserJet Toner Cartridge.
- Part no. C2062A 100/110VAC Printer Maintenance Kit.
- Part no. C2087A 220/240VAC Printer Maintenance Kit.

Toner cartridges and printer maintenance kits are available through NADO (or EDO in Europe). See "Ordering Consumables" in Chapter 1 for details.

TONER CARTRIDGE LIFE EXPECTANCY

A toner cartridge will print approximately 8000 pages with text covering roughly 5% of the page. If more than 5% coverage (such as complex graphics) are routinely printed, the cartridge may not print the full 8000 pages (see Figure 4-1).

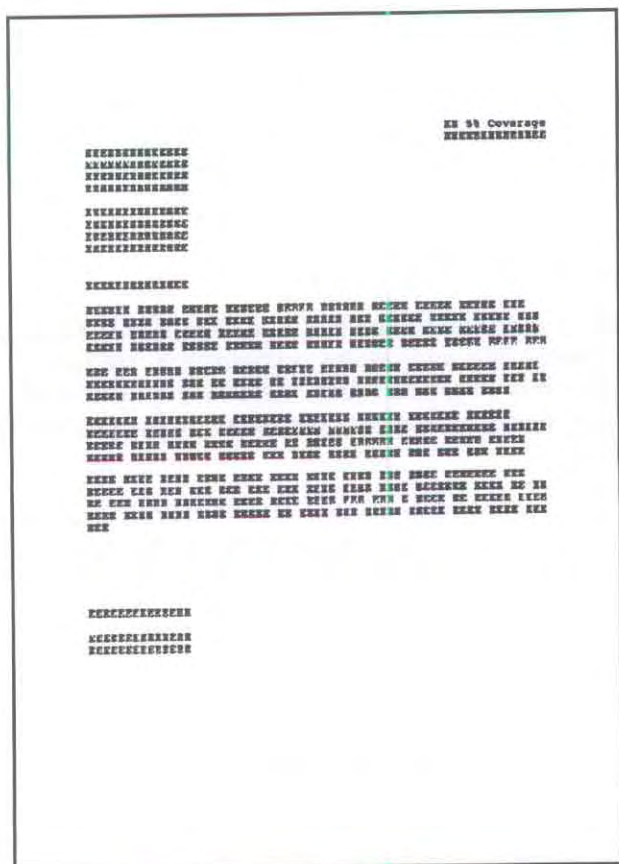


Figure 4-1. Sample 5% Page Coverage

VERIFYING PRINTER MAINTENANCE

Before servicing the LaserJet III/4Si, check that the 200,000 page maintenance was done on schedule. It is the customer's responsibility to replace defective parts if printer maintenance is not done at the 200,000 page interval. Use the guidelines below when inspecting printer maintenance parts (see Figure 4-2).

- | | |
|--------------------------------|--|
| 1. Pickup & Separation Rollers | Check for glazing. Replace these rollers if the printer has paper input jam problems. |
| 2. Transfer Roller | Replace the Transfer Roller if the printer exhibits poor print quality and repetitive defects associated with the Transfer Roller. |
| 3. Fusing Assembly | Replace the Fusing Assembly if paper jams in the Fusing Assembly or if print quality problems related to poor fusing occur. |
| 4. Duplex D-Roller | Replace as indicated by glazing and Duplex Unit failures. |

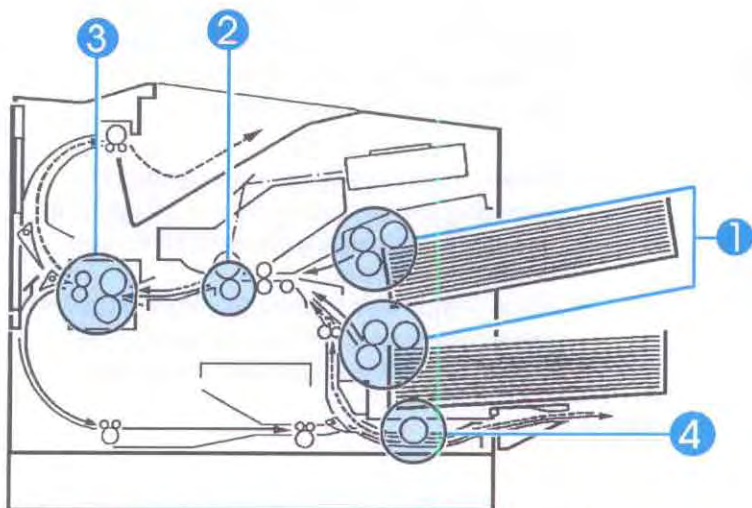


Figure 4-2. Location of Printer Maintenance Parts

USER MAINTENANCE

When the **USER MAINTENANCE** message is displayed, the printer has printed 200,000 pages and printer maintenance is required.

When the printer maintenance has been completed, clear the message and continue printing (see “Clearing the Service Message” in Chapter 7).

The parts to be replaced are:

1. Fusing Assembly.
2. Transfer Roller and retaining clip.
3. Pickup and Separation Rollers.
4. Duplex D-Roller (if Duplex Unit is installed).

Note



1. Unless specifically noted, replacement is the reverse of removal.
2. The terms, “right” and “left”, used in these procedures assume that you are facing the front of the printer.

Caution



Use the gloves provided when replacing the Transfer Roller. *Do not* touch the roller without using clean gloves. Natural skin oils will contaminate the Transfer Roller.

Warning



1. **Severe personal injury may result from servicing the printer while it is plugged in. Turn OFF and unplug the printer before beginning service.**
 2. **Allow the printer to cool for thirty minutes before beginning service to prevent burn injuries from the hot Fusing Assembly.**
-

Fusing Assembly

1. Turn OFF and unplug the printer. Allow the printer to cool for thirty minutes before beginning service.
2. Open the printer's Top Cover, and remove the toner cartridge. Store the toner cartridge out of direct light.
3. Remove the (4) screws attaching the Fusing Assembly to the printer (see Figure 4-3).

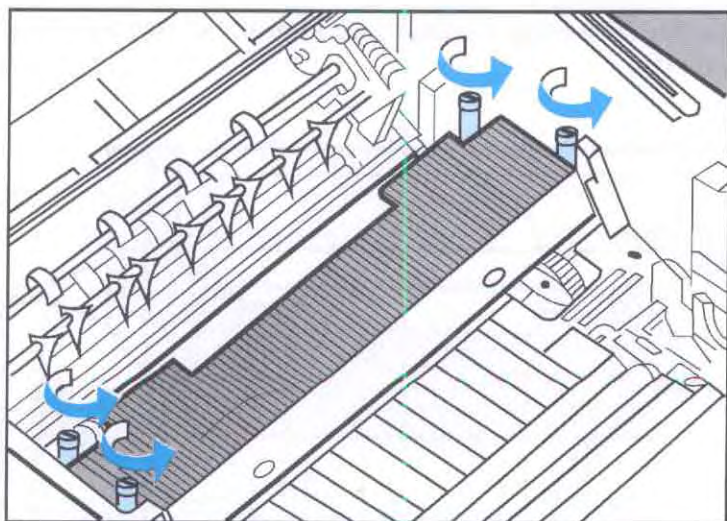


Figure 4-3. Removing the Fusing Assembly Screws

Caution



Be careful not to damage the sensor lever on the Fusing Assembly (callout A in Figure 4-4), or paper jams will result during printer operation. It is important that this sensor be free throughout its entire range of motion.

4. Slide the Fusing Assembly to the left, then slowly up and out toward the front of the printer (to avoid the toner cartridge holder).

For replacement, observe how the sensor lever on the Fusing Assembly (callout A in Figure 4-4) fits into the printer.

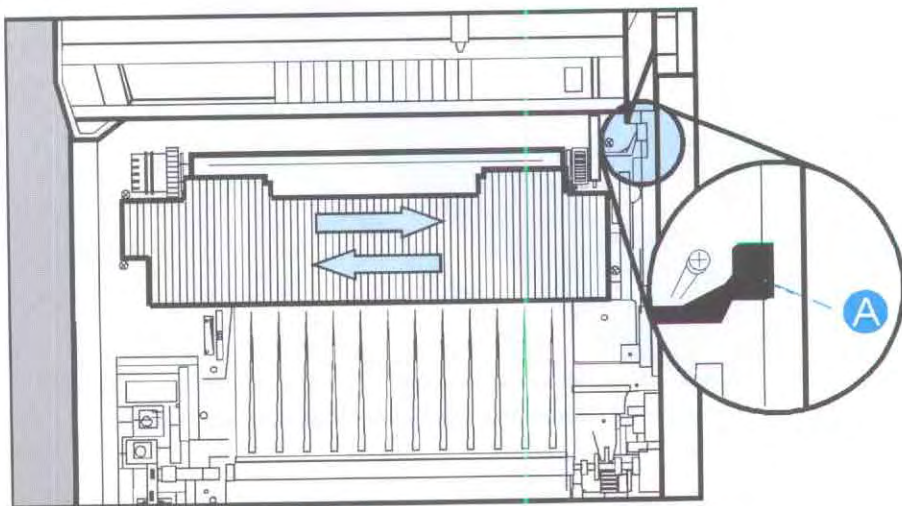


Figure 4-4. Removing the Fusing Assembly

Transfer Roller

The Transfer Roller is the black conductive sponge-rubber roller located inside the printer. *Use the gloves provided when replacing the Transfer Roller.* To remove and replace the roller, follow the steps below.

Caution



Do not attempt to clean or re-use the Transfer Roller.

Removal

1. Turn OFF and unplug the printer.
2. Remove the paper trays.
3. Open the printer's Top Cover.
4. Remove the plastic retaining clip (callout 1 in Figure 4-5), by pulling up on its rear-most edge.
5. Hold the Transfer Roller in place (with a gloved hand) and slide the bushing (callout 2 in Figure 4-5), to the right so that it separates from the Roller's Shaft. *For replacement, observe how the location pin fits into the slot of the Left Drive Gear.*
6. Remove the Transfer Roller by lifting its right end up and out.
7. Discard the used roller.

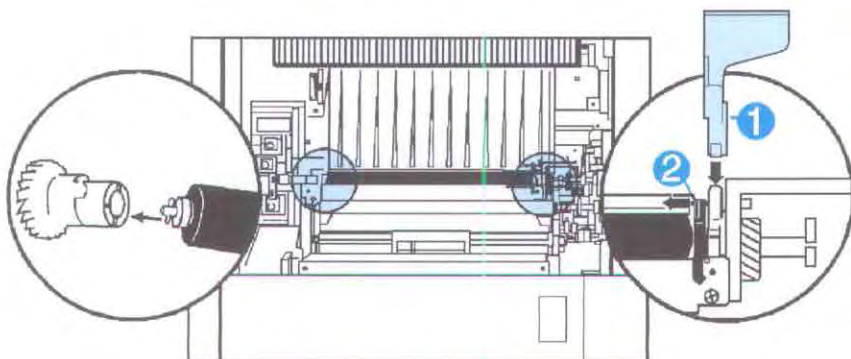


Figure 4-5. Removing the Transfer Roller

Transfer Roller Replacement

Note



Use the gloves provided when handling the Transfer Roller.

1. Slide the left end of the new roller into the left end bushing, carefully seating the roll pin into the slot in the bushing.
2. Align the right end of the roller with the right bushing and slide the bushing onto the roller shaft.
3. Replace the plastic retaining clip which holds the right end bushing in place. If the roller is installed correctly, the clip will snap over the shaft and guide, reducing lateral movement of the Transfer Roller and right end bushing.
4. Close the printer and run a self test. Check that paper will travel the full length of the paper path without jamming.

Pickup and Separation Rollers

The three upper and three lower Pickup and Separation Rollers are located inside the Paper Input Unit (see Figure 4-6). The replacement parts for the Pickup and Separation Rollers are identical.

To remove the rollers follow the steps below.

1. Turn OFF and unplug the printer.
2. Remove *both* paper trays.
3. Remove each roller by pinching the light blue plastic retaining clip at the end of the roller and sliding it off its shaft (see Figure 4-6). The roller may have to be rotated in order to access the clip.
4. Discard the used rollers.

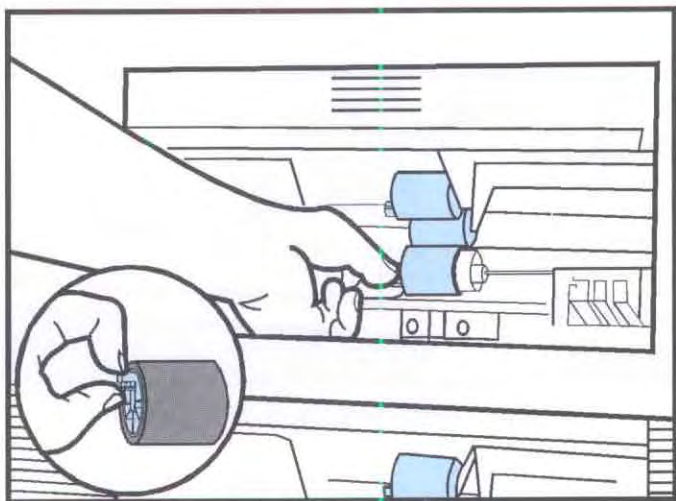


Figure 4-6. Removing the Pickup and Separation Rollers

Duplex D-Roller

If the optional Duplex Unit is installed, the Duplex D-Roller will need to be replaced during printer maintenance.

1. Turn OFF and unplug the printer.
2. Remove *both* paper trays.
3. With your left hand, lift the plate located above the roller. With your right hand, pinch the clip on the end of the roller and slide it off to the right. Figure 4-7 shows how to pinch and remove the roller.

The Roller Shaft is keyed. Be certain that the roller and the clutch are installed in the correct orientation and are fully seated. If not, duplex paper jams will occur.

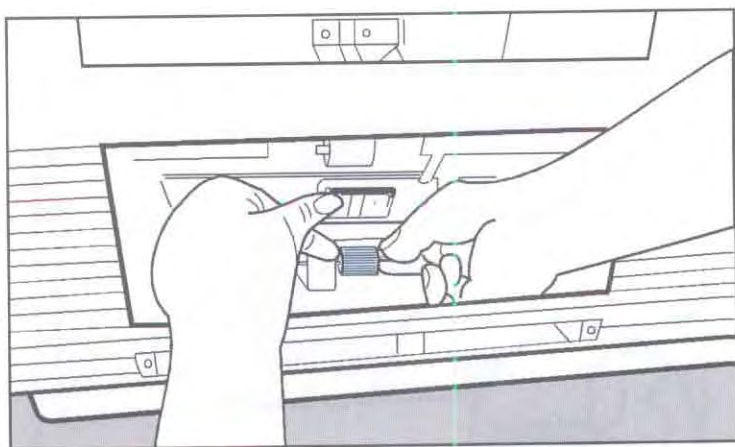


Figure 4-7. Removing the Duplex D-Roller

CLEANING THE PRINTER

Whenever the printer maintenance parts are replaced, the printer should also be cleaned. Use the instructions in this section when cleaning the printer.

Note



If toner gets on your clothes, wipe it off with a dry cloth and wash the clothes in *cold* water. Hot water sets toner into fabric. Take care to avoid breathing toner particles.

Caution



1. Do not touch or clean the Transfer Roller without gloves when servicing the printer. Finger oils or other contamination placed on the Transfer Roller may reduce print quality.
2. Never use ammonia-based cleaning solutions to clean the printer. Ammonia-based products cause permanent damage to the toner cartridge. Use a water dampened cloth to clean the printer.

Warning



Always turn the printer **OFF** and unplug the power cord before servicing the printer. Failure to follow this warning may result in severe personal injury.

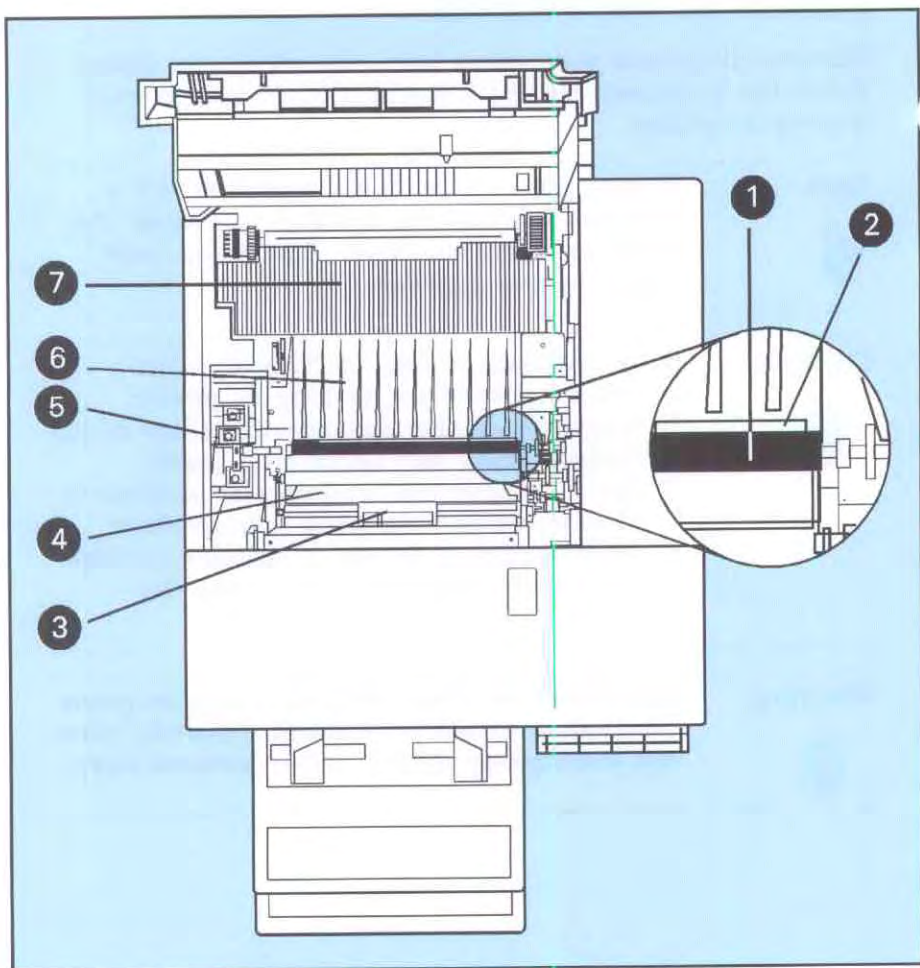


Figure 4-8. Printer Component Locations (Top Cover open)

- | | |
|----------------------------|--------------------|
| 1. Transfer Roller | 5. Cleaning Brush |
| 2. Anti-Static Teeth | 6. Transfer Guide |
| 3. Upper Paper Path Access | 7. Fusing Assembly |
| 4. Registration Guide | |

Registration Area

To clean the Upper and Lower Registration Guides:

1. Turn the printer OFF and unplug the power cord.
2. Open the printer's Top Cover.
3. With a damp (*use water only*) lint-free cloth, wipe residue off the Upper Registration Guide (see Figure 4-9).

Caution



Do not touch or clean the Transfer Roller when cleaning the printer. Reduced print quality may result.

4. Open the Upper Registration Guide by lifting the green handle. Wipe residue off the Lower Registration Guide.
5. Close the Upper Registration Guide.

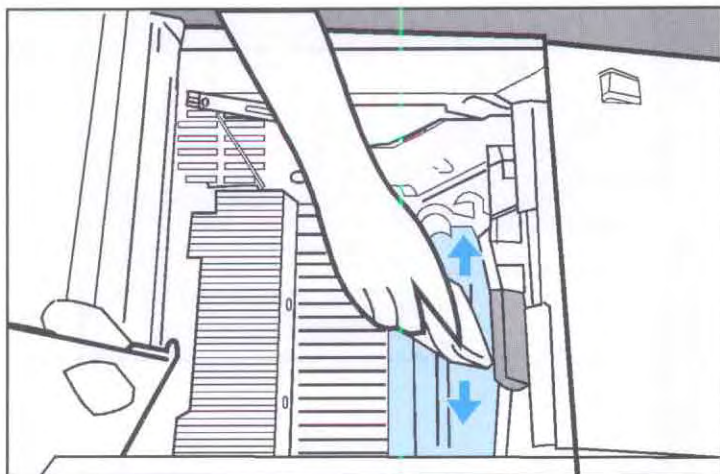


Figure 4-9. Cleaning the Registration Area

Antistatic Teeth

Use the brush provided to clean the Antistatic Teeth.

Caution



1. Be careful not to touch the Transfer Roller when cleaning the Antistatic Teeth.
2. The Antistatic Teeth are sharp. Use the brush provided to avoid injury to yourself, or damage to the teeth.

1. Locate the Antistatic Teeth in the long groove beside the Transfer Roller (see Figure 4-10).
2. Locate the Cleaning Brush (callout 5 in Figure 4-8).
3. Carefully brush paper and other foreign material from the Antistatic Teeth.
4. Replace the Cleaning Brush in its holder.

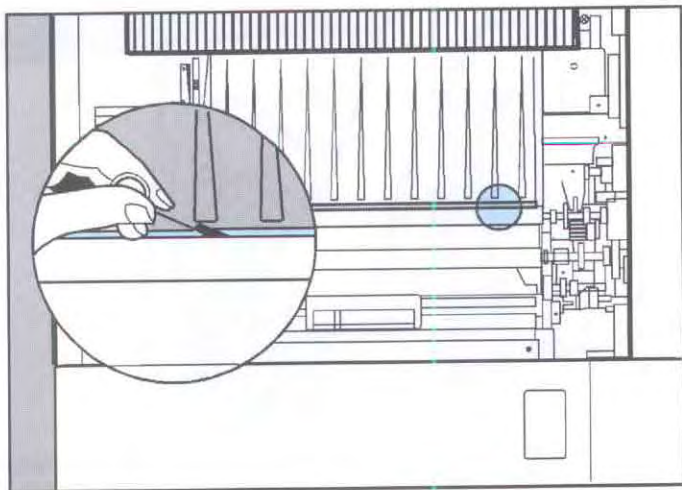


Figure 4-10. Cleaning the Antistatic Teeth

Transfer Guide

Wipe any dust or dirt off the Transfer Guide (see Figure 4-11) with a damp cloth (*use water only*). Be careful not to touch the Transfer Roller.

Warning

The Fusing Assembly remains hot for thirty minutes after turning the printer OFF.

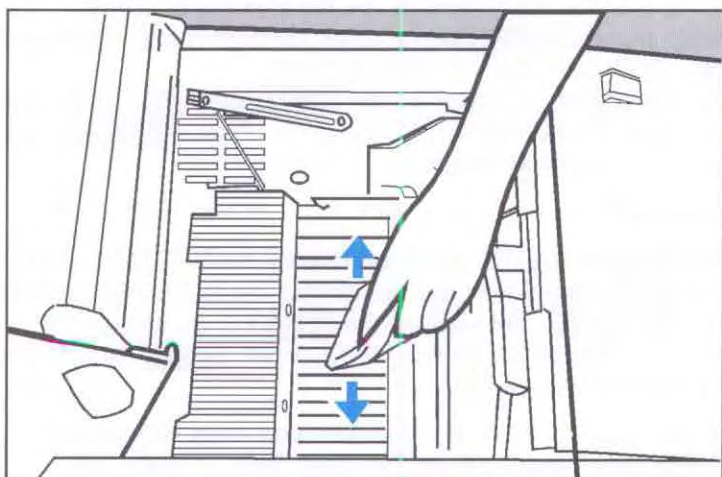


Figure 4-11. Cleaning the Transfer Guide

Clearing the User Maintenance Message

The USER MAINTENANCE message is displayed in place of the 00 READY message when the printer has printed 200,000 pages. Before clearing this message, perform the maintenance tasks described in this chapter.

To clear the display and reset the maintenance count to zero, take the printer off-line and perform the following:

LaserJet IIISi

- Press and hold the **Menu** key until the message PCL CONFIG MENU appears in the Control Panel display.
- Briefly press the **Menu** key to scroll through the configuration menu until SERVICE MSG=ON* appears.
- Press the **+** key, followed by the **Enter/Reset Menu** key to change the display to read SERVICE MSG=OFF*. Press **On Line** to exit the menu and return on-line.

LaserJet 4Si

- Press **Menu** repeatedly until the display reads CONFIG MENU.
- Press **Item** repeatedly until the display reads SERVICE MSG=ON*.
- Press the **+** key, followed by the **Enter** key to change the display to read SERVICE MSG=OFF*. Press **On Line** to exit the menu and return on-line.

The USER MAINTENANCE message has now been cleared and the maintenance page counter has been reset to zero. The USER MAINTENANCE message will be displayed again after printing another 200,000 pages.

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Functional Overview

INTRODUCTION

This chapter provides a basic functional overview of the printer's primary systems. More detailed theory of operation for specific areas of the printer can be found in the appropriate sections of Chapter 7, "Troubleshooting."

IMAGE FORMATION SYSTEM

Laser printing requires the interaction of several technologies (mechanics, electronic, optic, electrophotographic, etc.) which are coordinated to produce a printed page. The first in the sequence of processes, image formation, is where the video information, encoded in digital signals on the Formatter PCA, is converted to a latent image on the surface of the photosensitive drum. From there it is transferred to paper by the Transfer Charging Roller as a visible image. Before and after each image is processed the photosensitive drum is cleaned in preparation for the next image.

The image formation process centers around the photosensitive drum contained in the toner cartridge and consists of the following progressive stages:

1. **Cleaning:** The photosensitive drum is cleaned before each image.
2. **Conditioning:** The Primary Charging Roller applies a uniform negative charge to the photosensitive drum.
3. **Writing:** The laser removes the charge where the beam strikes the drum surface.

4. **Developing:** Toner is transferred to the areas of the drum exposed by the laser beam.

Two additional stages, performed outside the toner cartridge, are:

5. **Transfer:** The toner image is transferred to the paper and held in place by a slight electrostatic charge on the Transfer Roller.
6. **Fusing:** Heat and pressure fuse the image onto the paper.

Note



Because replacing the toner cartridge is an operator's task, it eliminates the need for a service call when these parts must be replaced. A cross-section of the toner cartridge detailing the image formation system and its relationship to other printer components is illustrated in Figure 5-1.

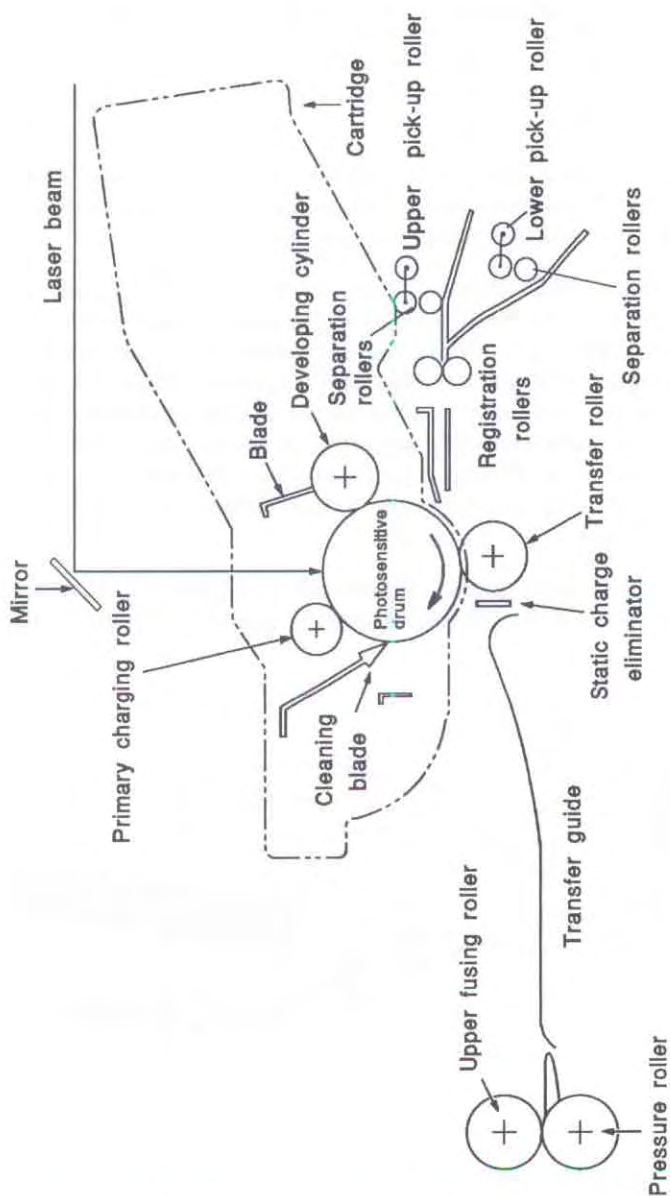


Figure 5-1. Diagram of the Image Formation System

PAPER PICKUP AND FEED SYSTEM

The Paper Pickup Unit consists of the Paper Feed Motor, Paper Feed PCA, the Paper Pickup Feed Roller, and the Separation Rollers.

The Paper Pickup Feed Motor drives the Pickup Roller, Feed Roller, and Separation Roller. This causes one sheet of paper to be presented to the Registration Assembly.

At the Registration Assembly, the leading edge of the paper is aligned with the leading edge of the toner image on the photosensitive drum. When the alignment is correct, the paper is fed through the toner cartridge and the toner image is transferred to the paper. The paper is then passed by the Antistatic Teeth where it is electrostatically separated from the drum and transferred to the Fusing Assembly where the toner image is fused to the paper. The printed page is then delivered to either the face-up or face-down paper tray.

The printer's paper path is illustrated in Figure 5-2. A functional diagram of the Pickup/Feed System is shown in Figure 5-3.

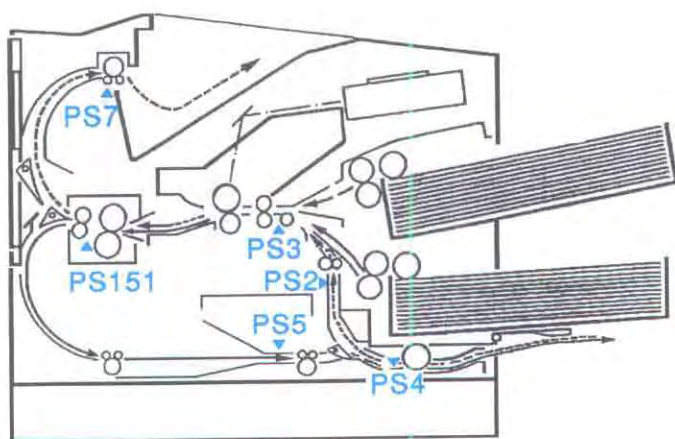


Figure 5-2. The Paper Path

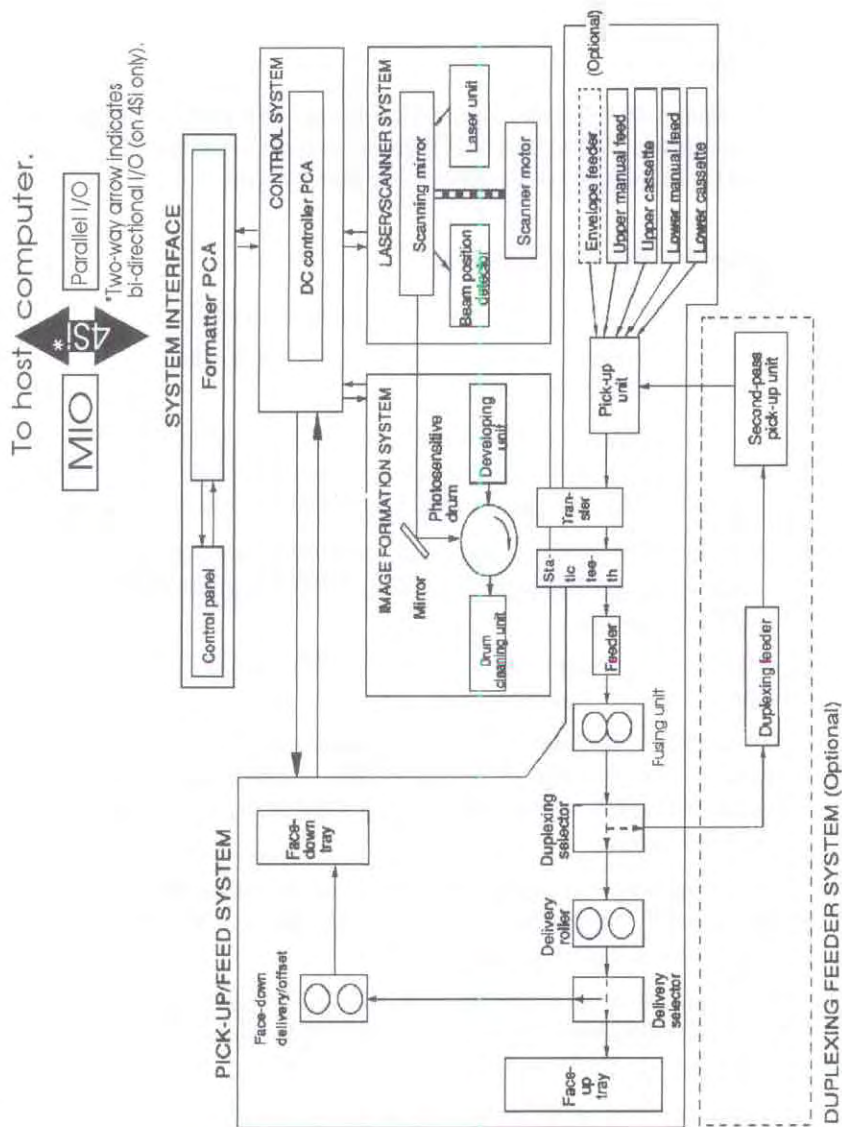


Figure 5-3. Printer Functional Block Diagram

BASIC SEQUENCE OF OPERATION

Overview

The Formatter and the DC Controller share information during printer operation. This allows printer status and command information to be passed between both controllers.

Standard Printer Operation

The following events take place during printer operation:

1. After the printer's power has been turned **ON**, the printer enters the Warm-up period.
2. After the printer has completed the Warm-up period and is ready to print, the DC Controller sends a READY signal ($\overline{\text{RDY}}$) to the Formatter to report that the printer is ready.
3. After the $\overline{\text{RDY}}$ signal is true and print data is ready to be transmitted, the Formatter sends a PRINT signal ($\overline{\text{PRNT}}$) to the DC Controller.
4. After the DC Controller receives the $\overline{\text{PRNT}}$ signal, the Initial Rotation period begins.
5. At the end of the Initial Rotation period, the DC Controller sends a TOP OF PRINT signal ($\overline{\text{TOP}}$) synchronized with a BEAM DETECT signal ($\overline{\text{BD}}$) to the Formatter. This initiates the Print period.
6. Each time the Formatter receives a synchronized $\overline{\text{BD}}$ signal from the DC Controller, the Formatter sends a VIDEO signal ($\overline{\text{VDO}}$) to the DC Controller.
7. After the DC Controller receives the $\overline{\text{VDO}}$ signal, the DC Controller translates it into a VIDEO OUT signal ($\overline{\text{VDOUT}}$) that switches the laser diode **ON** and **OFF**.
8. The laser beam is reflected off the mirror assembly and onto the photosensitive drum to form a latent electrostatic image, and creates a single line of dots.

9. After the last $\overline{\text{VDO}}$ signal is sent from the Formatter, the DC Controller then checks for another $\overline{\text{PRNT}}$ signal.
10. If another $\overline{\text{PRNT}}$ signal is detected, the Print period continues with another page.
11. If the DC Controller fails to receive a $\overline{\text{PRNT}}$ signal before the end of the page passes over the Input Paper Sensor (PS3), the DC Controller initiates the Last Rotation period.

Timing Diagram

The timing diagram (Figure 5-4, next page) was developed by running two consecutive prints on A4 paper. This diagram is provided to help the technician understand the sequence of events that occur when a print image is generated.

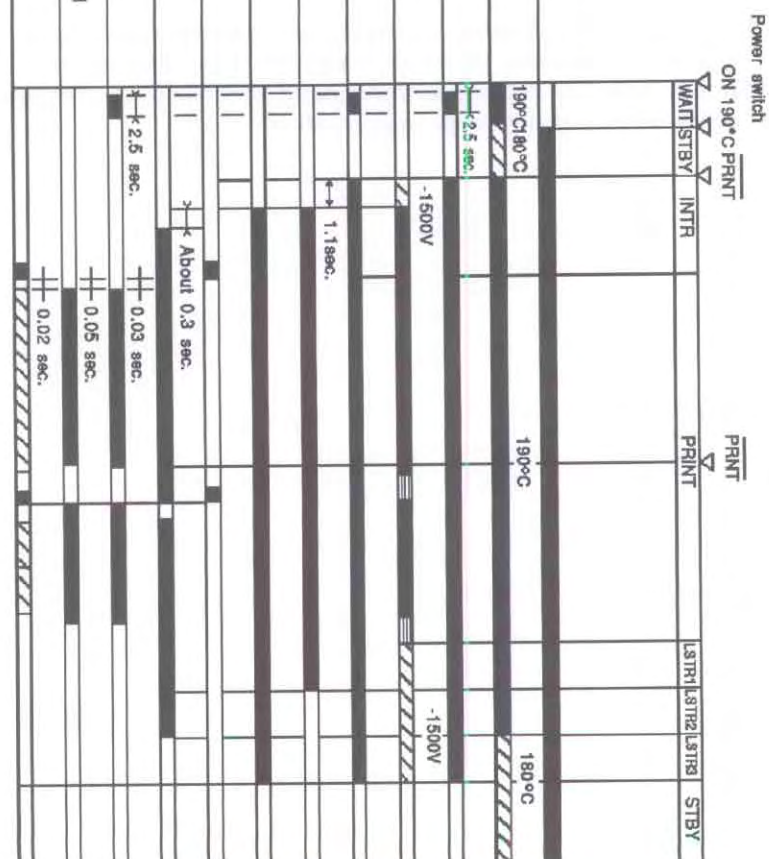


Figure 5-4. Printer Timing Diagram

MIO

The LaserJet IIISi/4Si printers are equipped to accept modular I/O interface cards (MIO). The MIO network interface cards available from HP (HP JetDirect cards) provide increased printer performance when printing from a network. In addition, the HP JetDirect cards provide the ability to place the printer anywhere on the network. HP offers JetDirect interface cards for a variety of networks such as Ethernet, EtherTalk, LocalTalk, Token Ring, and Unix in various operating systems.

Note



New versions of the MIO cards utilize a different I/O architecture and are not supported in the LaserJet IIISi printer. In the LaserJet 4Si, the older MIO cards are supported in the **lower MIO slot only**.

Refer to “Interfaces and LAN Network Cards” in Chapter 8 for complete listings of supported MIO configurations.

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Removal and Replacement

INTRODUCTION

This chapter documents removal and replacement of Field Replaceable Units (FRUs) only. No attempt should be made to repair component failures within these assemblies at the customer site. Exchange assemblies should be sent to SMO for repair.

Unless specifically stated otherwise, replacement is the reverse of removal. Occasionally, notes are included to provide direction for difficult replacement procedures.

Note



1. Always remove the toner cartridge from the printer before removing or replacing printer parts.
2. The terms, “right” and “left”, used in these procedures assume that you are facing the front of the printer.

Caution



The LaserJet IIISi/4Si contains parts that are electrostatic discharge (ESD) sensitive. Always service printers at an ESD-protected workstation.

Warning



Power OFF the printer and unplug the power cord from the power outlet before attempting to service the printer. If this warning is not followed, severe injury may result.

REQUIRED TOOLS

QTY	TOOL
2	#2 Magnetized Phillips Screwdriver (one 6-inch and one 10-inch shaft)
1	#1 Flat-head Screwdriver
1	Small Needle Nose Pliers
1	Small Flat-head Screwdriver (2-inch x $\frac{1}{8}$ -inch)

HARDWARE REVIEW

All screws used in this printer are Phillips head screws which require a Phillips screwdriver. Figure 6-1 shows the difference between a Phillips and a Pozidriv screwdriver.

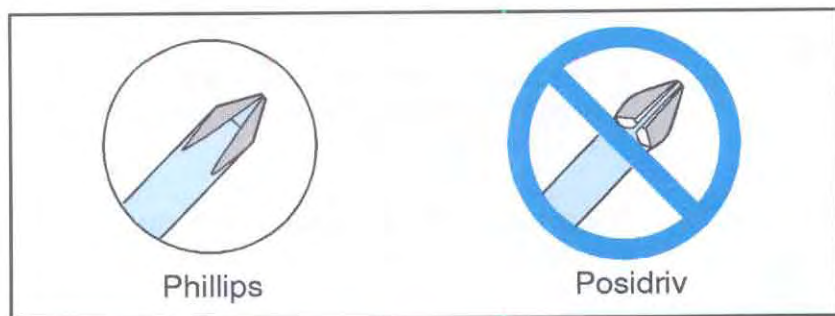


Figure 6-1. Comparing Phillips and Pozidriv Screwdrivers

Caution



Do not use Pozidriv screwdrivers in this printer. Damage to the screw heads will result.

COVERS

This section lists procedures for removing the following covers and their subassemblies:

1. Right Side Cover
2. Front Upper Cover
3. Front Cover
 - A. Control Panel Assembly
4. Left Side Cover
5. Lower Rear Cover
6. Right Rear Cover

Right Side Cover

1. Remove the (2) screws securing the Right Side Cover (see Figure 6-2, callout 1).
2. Slide the cover to the rear until it stops. Slide the cover down and remove it from the printer. Note that the Right Side Cover has tabs that fit into slots on the Front Upper Cover.

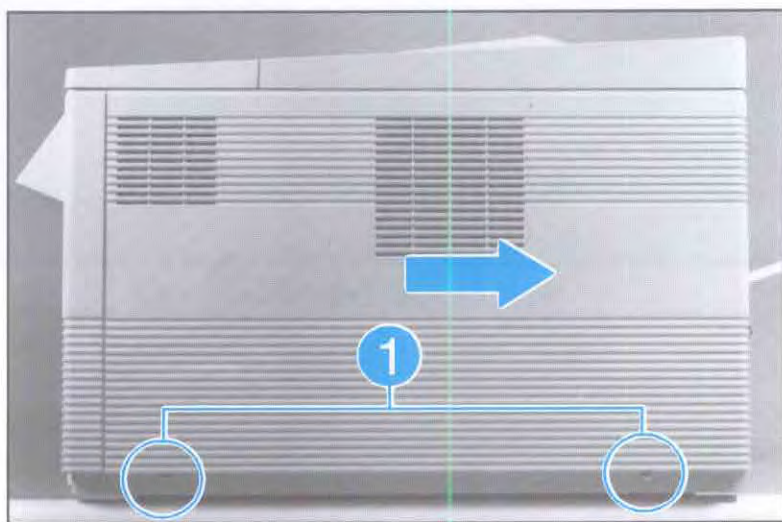


Figure 6-2. Right Side Cover

Front Upper Cover Assembly

1. Remove all paper trays.
2. Remove the Right Side Cover (see Figure 6-2).
3. Slide downward on the center of the Feeder Cover to remove (see Figure 6-3).
4. From the front of printer, remove the (2) screws shown in Figure 6-3, callout 1. These (2) screws are on steel flanges.
(continued on next page)

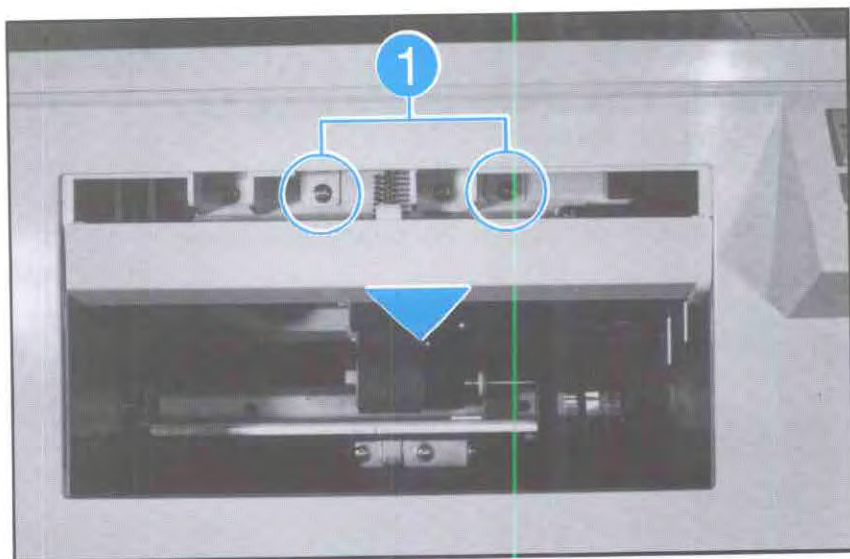


Figure 6-3. Front Upper Cover

Front Upper Cover Assembly (continued)

5. Open the printer and remove the (3) screws shown in Figure 6-4, callout 1. Lift the Front Upper Cover Assembly up to remove.

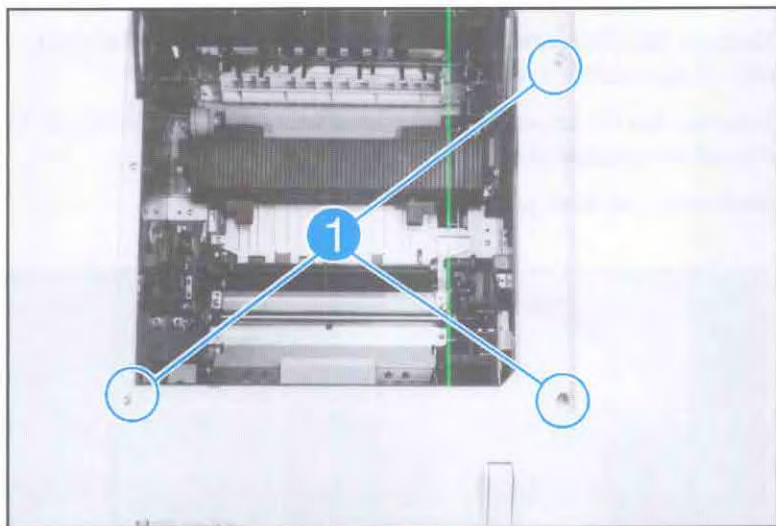


Figure 6-4. Front Upper Cover (continued)

Front Cover

1. Remove any paper trays.
2. Remove the Right Side Cover (see Figure 6-2).
3. Remove the Front Upper Cover (see Figure 6-3 and Figure 6-4).
4. Remove the (2) screws securing the Front Cover on the right side of the printer (see Figure 6-5, callout 1).
5. Remove the (1) screw securing the Front Cover on the lower left side of the printer (not shown).

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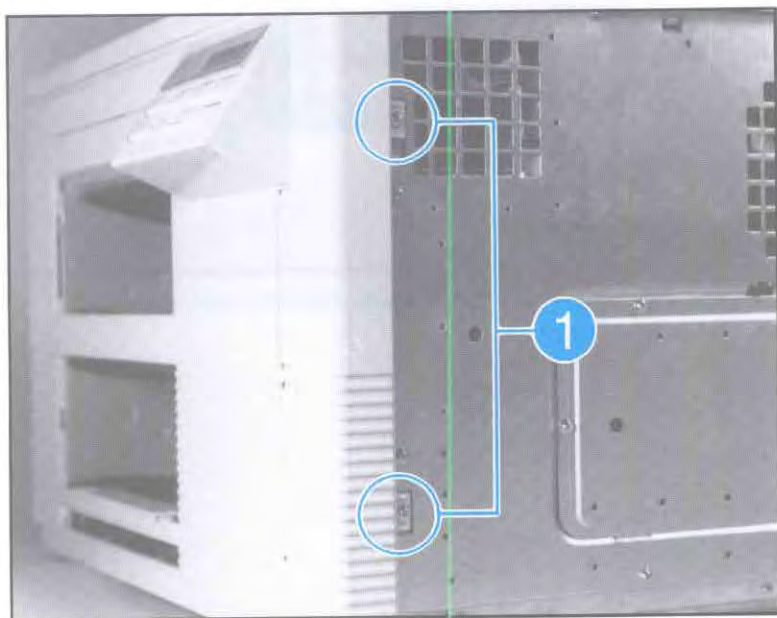


Figure 6-5. Front Cover

Front Cover (continued)

6. Remove the (4) screws (2 upper and 2 lower), shown in Figure 6-6, callout 1.
7. Grasp the crossmember between the two cassette cavities and pull outward to release the (2) pressure clips (see Figure 6-6, callout 2).

(continued on next page)

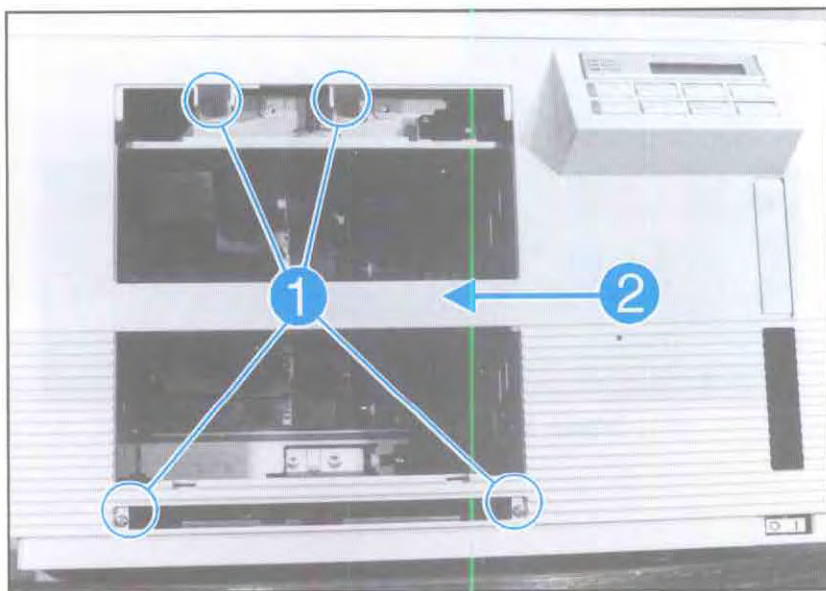


Figure 6-6. Front Cover (continued)

Front Cover (continued)

8. Tilt the cover outward at the top to access and unplug the Control Panel connector (push connector clips outward to release). Remove the Front Cover (see Figure 6-7).

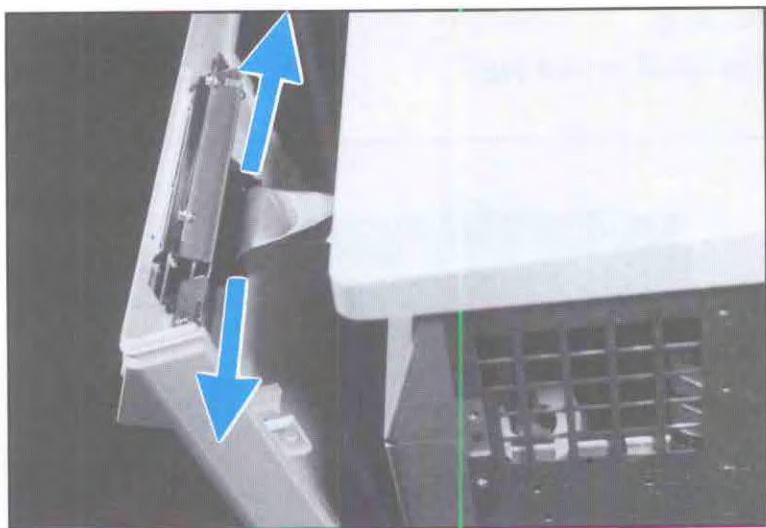


Figure 6-7. Front Cover (continued)

Control Panel Assembly

1. Remove the Front Cover and lay the cover face-down on a flat surface.
2. Remove the (4) screws securing the Control Panel and remove the Control Panel from the Front Cover (see Figure 6-8, callout 1).

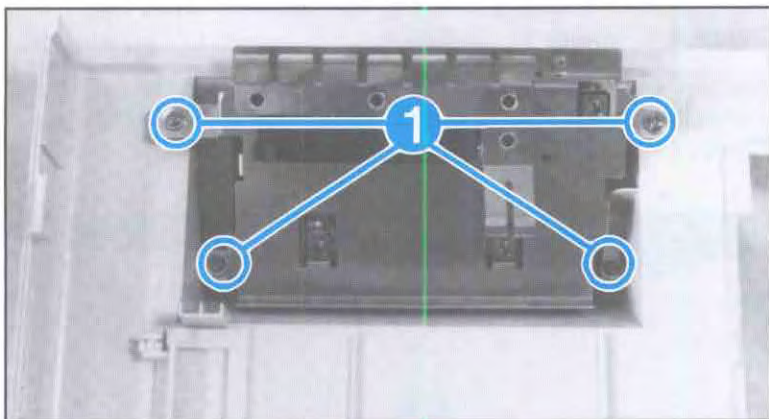


Figure 6-8. Control Panel

Left Side Cover

1. Remove any paper trays.
2. Remove the Right Side Cover (see Figure 6-2).
3. Remove the Front Upper Cover (see Figure 6-3).
4. Remove the Front Cover (see Figure 6-5).
5. Remove the (4) screws securing the Left Side Cover (see Figure 6-9, callout 1).
6. Remove the (1) screw located on the top edge of the Left Side Cover (see Figure 6-9, callout 2), and remove the Left Side Cover.

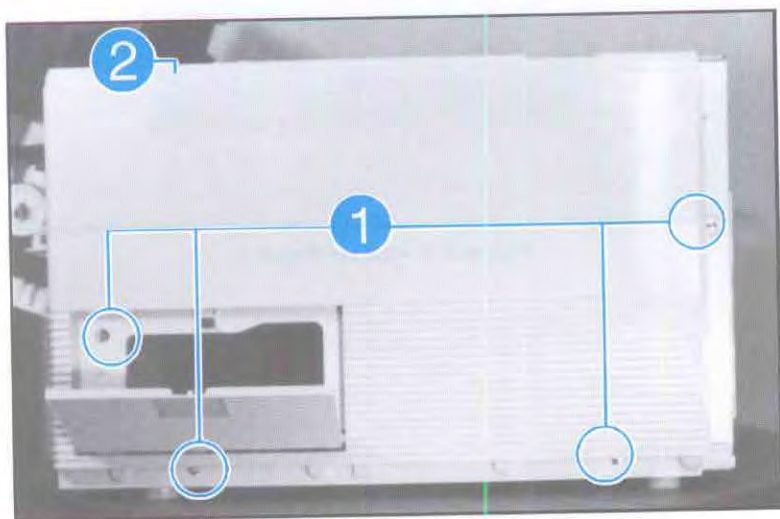


Figure 6-9. Left Side Cover

Right Rear Cover

1. Remove the (1) screw securing the Right Rear Cover (see Figure 6-10, callout 1).
2. Slide the cover down to free it from its mounts and remove the cover.

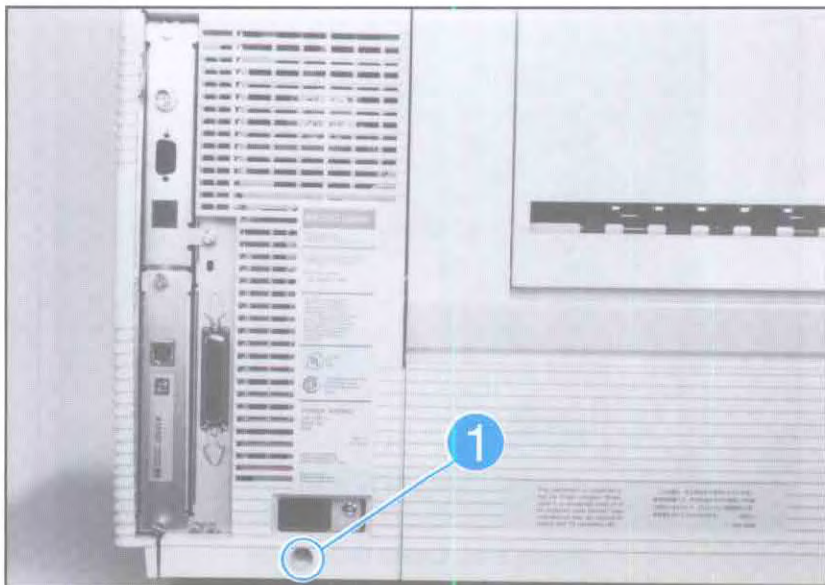


Figure 6-10. Right Rear Cover

Lower Rear Cover

1. Remove the Right Rear Cover (see Figure 6-10).
2. Remove the (1) screw securing the Lower Rear Cover (see Figure 6-11, callout 1).
3. Slide the cover to the left to remove it.

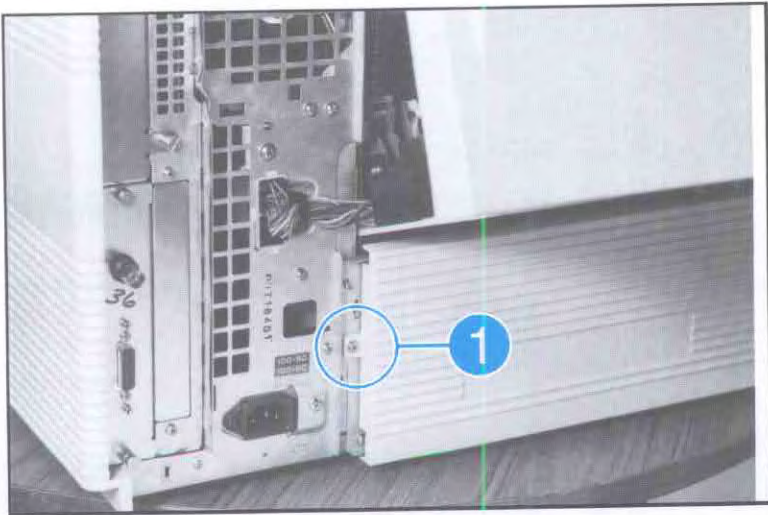


Figure 6-11. Lower Rear Cover

RIGHT SIDE ASSEMBLIES

This section lists procedures for removing the following Right Side Assemblies:

1. Formatter Pan Cover
 - A. Fan FM3
2. Formatter PCA and Pan Assembly
3. Fan FM1
4. Fan FM2
5. AC Power Inlet Assembly
6. DC Power Supply PCA
7. DC Controller PCA

Formatter Pan Cover

1. Remove the Right Side Cover (see Figure 6-2).
2. Remove the (8) screws securing the Formatter Cover (see Figure 6-12, callout 1).
3. Pull the bottom of the cover outward and lift up to remove. When part way out, unplug the fan connector (FM3) (see Figure 6-13, callout 1).

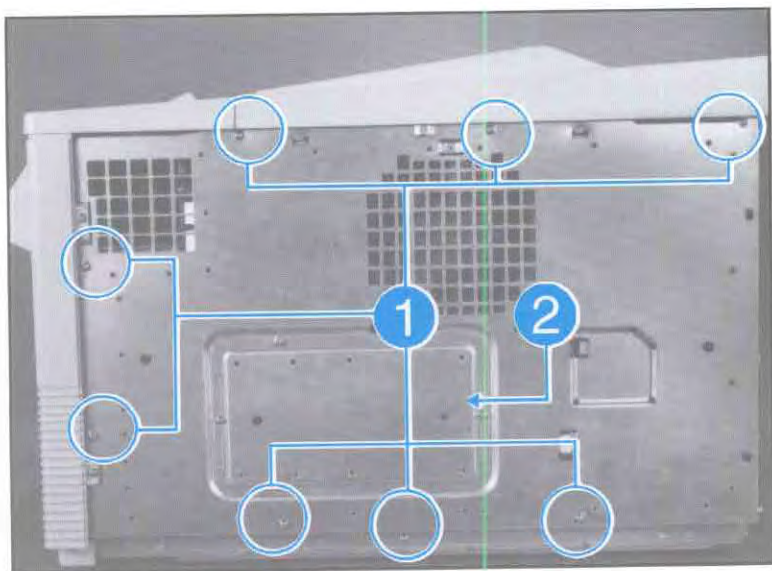


Figure 6-12. Formatter Pan Cover

Note



The Panel Door in the middle of the Formatter Pan Cover (callout 2 in Figure 6-12) allows access to the SIMM cards. Remove or replace the SIMM cards through this Panel Door. Do not remove the Formatter Pan Cover to access the SIMM card sockets.

RFI Fingers

The Formatter Pan Cover has RFI fingers around its periphery. *Carefully locate the RFI fingers so they are not damaged when the cover screws are tightened. Take special care not to crimp the RFI fingers around FM2 in the upper left corner.*

Formatter Pan Cover Reassemble

1. Plug in the fan FM3 (see Figure 6-13, callout 1).
2. Hook the two slots on the upper edge of the Formatter Pan Cover over the tabs on the Frame Assembly.
3. Ensure that the three tabs along the bottom edge of the Pan Cover slip into the three slots of the Frame Assembly. Failure to fit the upper or lower tabs properly will distort the Pan Cover and disable the RFI fingers.
4. Start the screw in the center top of the Pan Cover (do not tighten yet).
5. Align the cover to its final location and start the lower center screw.
6. At the upper left corner, carefully seat the RFI fingers around the periphery of the fan (FM2). Be certain the fingers are not crimped when the remaining screws are installed.
7. Install the remaining screws and tighten all (8) screws.

Fan FM3

1. Remove the Right Side Cover (see Figure 6-2).
2. Remove the Formatter Pan Cover (see Figure 6-12).
3. Unclip the connector to Fan FM3 (see Figure 6-13, callout 1).
4. Remove the fan connector from its sheet metal clip.
5. Remove the (2) screws securing the fan motor and remove the fan FM3 (see Figure 6-13, callout 2).

Note



New fan assemblies do not include the fan adaptor plate.

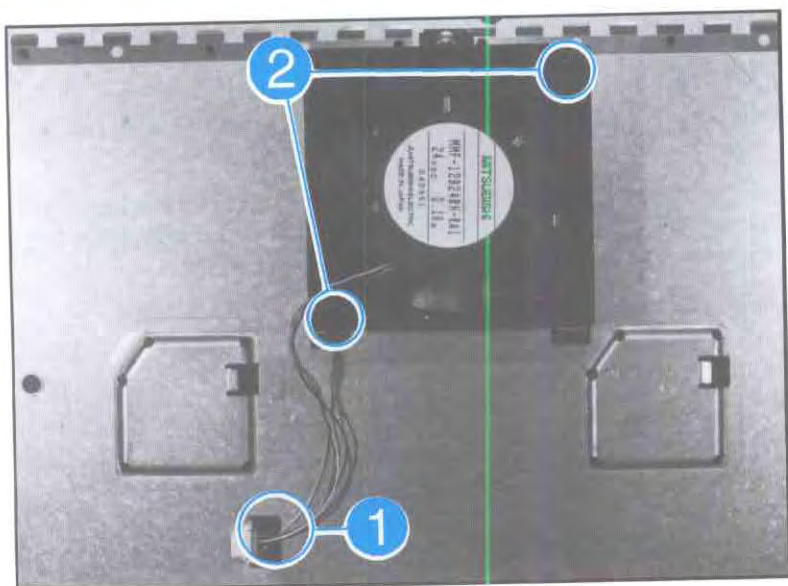


Figure 6-13. Fan FM3

Formatter PCA and Pan Assembly

The Formatter Pan Assembly houses the Formatter PCA and MIO cards in a protective metal “shield plate” (pan).

ROM and SIMM Locations

Before removing or replacing the Formatter Pan Assembly, note whether or not the PostScript option and/or any optional memory has been installed on the Formatter PCA.

If PostScript and/or additional memory is installed on the Formatter, the PostScript and memory SIMMs must be removed and installed on the new Formatter.

Formatter PCA Redesign at Serial Number 3200J.

LaserJet IIISi printers with serial number prefixes 3199J and below used ROM chips for installing the PostScript option (see Figure 6-15). Later LaserJet IIISi (3200J and above) and all LaserJet 4Si printers use PostScript SIMMs instead of ROMs.

Another change in Formatter design at this time was the addition of support for 8 Mbyte SIMMs. Prior to serial number 3200J, the LaserJet IIISi supported only 1 and 4 Mbyte SIMMs. Serial numbers 3200J and above support 1, 4 and 8 Mbyte SIMMs.

Note



Although the 1 and 4 Mbyte SIMMs are supported, it is recommended that 8 Mbyte SIMMs be used whenever possible, because of the limited number of SIMM slots available (4). This is especially important when PostScript is installed, because the PostScript SIMM uses one of the available slots (in Formatters 3200J and above), and PostScript applications require more memory.

When servicing LaserJet IIISi Formatters 3200J and above, and all LaserJet 4Si Formatters, be aware that:

- The user-installable PostScript SIMM (33494C) is loaded in slot 1 of the 4 SIMM slots (the lowest slot). PostScript ROMs (33494B) can not be installed on Formatters 3200J and above.
- An 8 Mbyte SIMM (C2066-60001) must be used in the next SIMM slot (slot 2) to compensate for the loss of one SIMM location.
- In the remaining slots, install SIMMs with the greater capacity in the lower slots (in ascending order from the lower slots upward). If the SIMMs are installed in the wrong order, a 61.x error may result.

Note



Refer to “Recommended Memory Requirements” in Chapter 8 for a list of memory recommendations for various printing configurations.

PostScript Installation

When installing PostScript, follow the instructions in the *Installation Guide*. Be certain to use proper ESD precautions such as using grounding straps, and not touching any conductive pins.

LaserJet IIISi Formatter PCA Removal

When replacing the Formatter PCA on the LaserJet IIISi, the entire Formatter Pan Assembly is replaced as a unit (although the shield plate is orderable as a separate item). When installing an exchange LaserJet IIISi Formatter PCA, return the entire Formatter Pan Assembly to HP. Follow the “Formatter Pan Assembly” removal procedures, later in this section.

LaserJet 4Si Formatter PCA Removal

1. Remove the Right Side Cover (see Figure 6-2).
2. Remove the Formatter Cover (see Figure 6-12).
3. Remove any MIO cards by removing the (2) mounting plate screws on the rear of the printer and sliding the card(s) out the rear (Figure 6-14, callout 1).
4. Remove any memory or PostScript SIMM modules (for reinstallation on the new Formatter).
5. Unplug the (4) connectors on the PCA (Figure 6-14, callout 2). (The parallel cable connector is hidden behind the lower MIO card in Figure 6-14.)
6. Use a #1 Phillips screwdriver to remove the (3) shoulder screws securing the PCA (Figure 6-14, callout 3). (The right screw is hidden behind the lower MIO card in Figure 6-14.)
7. Unclip the (5) plastic retaining clips around the periphery of the PCA (Figure 6-14, callout 4). (The right two clips are hidden behind the MIO cards in Figure 6-14.)
8. Carefully remove the PCA from the Shield Plate.

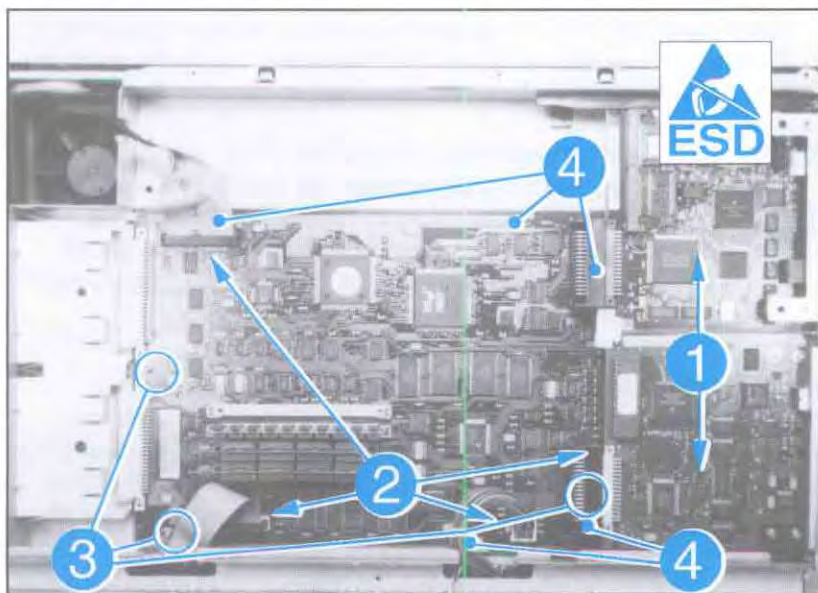


Figure 6-14. Formatter PCA (LaserJet 4Si)

Formatter Pan Assembly (LaserJet IIISi/4Si)

To remove the Formatter Pan Assembly (including the Shield Plate, Formatter PCA, and any MIO cards):

1. Remove the Right Side Cover (see Figure 6-2).
2. Remove the Formatter Cover (see Figure 6-12).
3. Unplug the (3) connectors on the Formatter PCA
LaserJet IIISi = J1, J10, J11; (LaserJet 4Si = J11, J10, and J7).
(See Figure 6-16 or Figure 6-17, callout 1.)
4. Remove the (1) screw securing the Formatter Pan Assembly
(Figure 6-16 or Figure 6-17, callout 2). Remove the assembly by pulling it from the top and tilting it out.

Caution



When removing the Formatter Pan Assembly, do not pull on the black MIO guide rails. Instead, grasp the metal frame of the Formatter Pan (see Figure 6-17, callout 3).

5. If the Formatter Pan Assembly needs to be replaced, remove the MIO card, all the memory and PostScript SIMMs (or ROMs on older LaserJet IIISi). Reinstall these items on the replacement Formatter Assembly and test the Formatter Assembly with the Extended Diagnostic Tests as described in Chapter 7.

Note



After replacing a Formatter PCA, re-enter the printer's serial number, set the Page Count to match the original Formatter, and set the Maintenance Count to reflect the useful life of consumable parts. (See "Setting the Page Count" in Chapter 7.)

LaserJet IIISi Only: When installing a new Formatter Pan Assembly, swap the MIO card and the blanking plate with the shipping bracket that came with the new Formatter Pan Assembly. Return the defective Formatter with the shipping bracket. When returning a defective Formatter to the factory, do not remove the Formatter PCA from the Pan Assembly. Install the Formatter Pan Assembly as a unit, and return the defective unit (Formatter PCA and Pan) to the factory for repair.

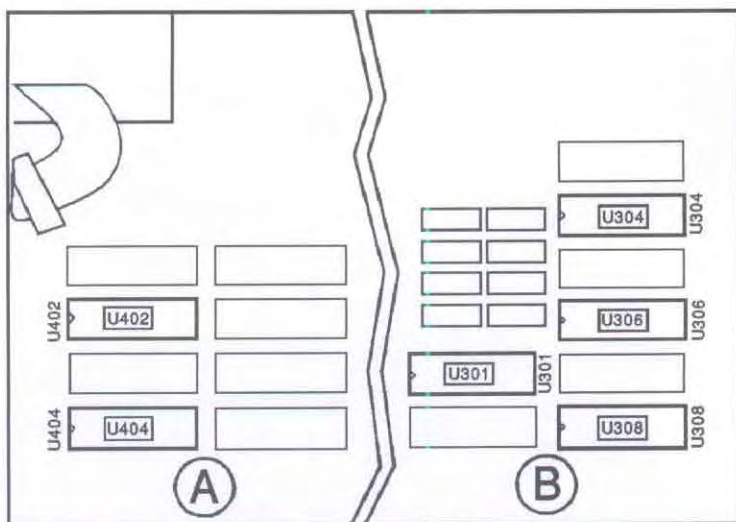


Figure 6-15. LaserJet IIISi PostScript ROM Locations (prior to 3200J)

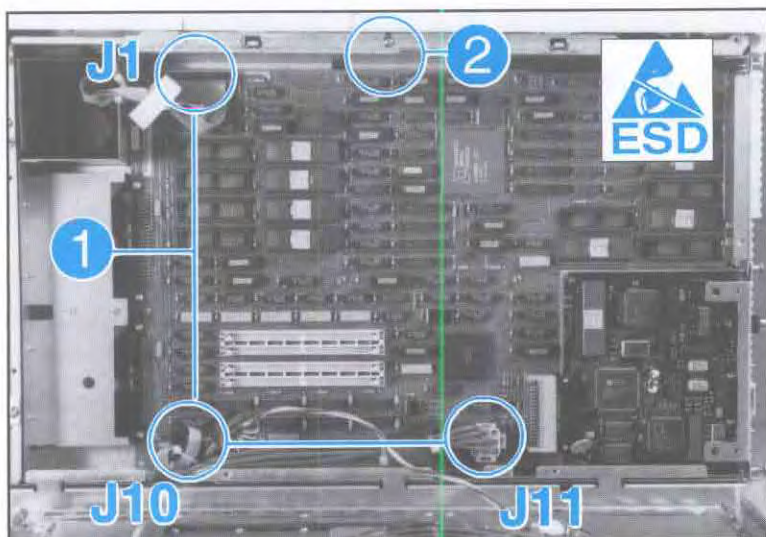


Figure 6-16. LaserJet IIISi Formatter Pan Assembly

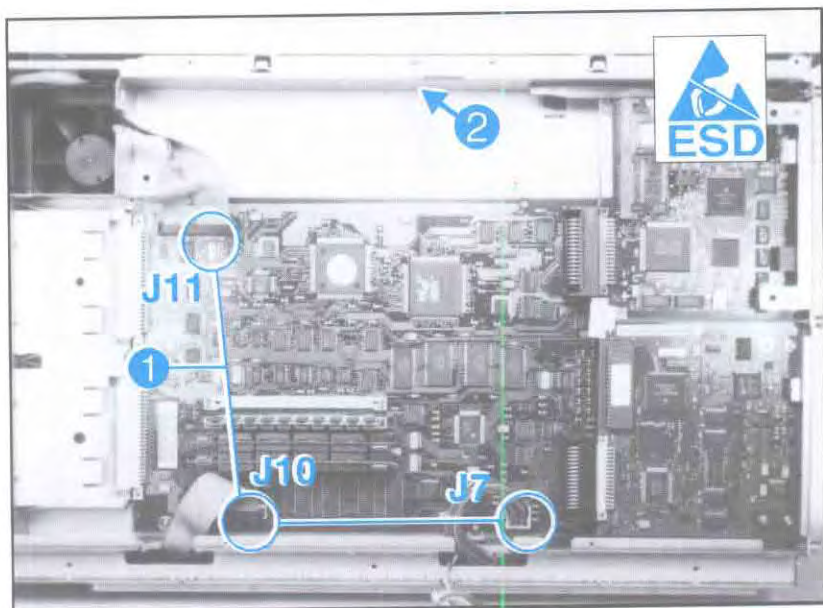


Figure 6-17. LaserJet 4Si Formatter Pan Assembly

Formatter Pan Reassembly Tips

Caution



When replacing the Formatter Pan Assembly, do not pull on the black MIO guide rails. Instead, grasp the metal frame of the Formatter Pan (see Figure 6-17, callout 3).

1. Ensure that the cables are routed correctly to prevent their being damaged when the covers are tightened into position.
2. Tilt the top of the Formatter Pan outward and insert the tabs into their slots on the bottom edge of the printer frame.
3. Tilt the top of the pan into place and slightly lift the pan when placing it in position.

Fan FM1

1. Remove the Right Side Cover (see Figure 6-2).
2. Remove the Formatter Cover (see Figure 6-12).
3. Remove the Formatter Pan Assembly (see Figure 6-16 or Figure 6-17).
4. Unplug the (1) connector (J204) from the Sensor PCA (see Figure 6-18, callout 1).
5. Remove the (1) screw securing Fan FM1 and remove the fan (see Figure 6-18, callout 2).

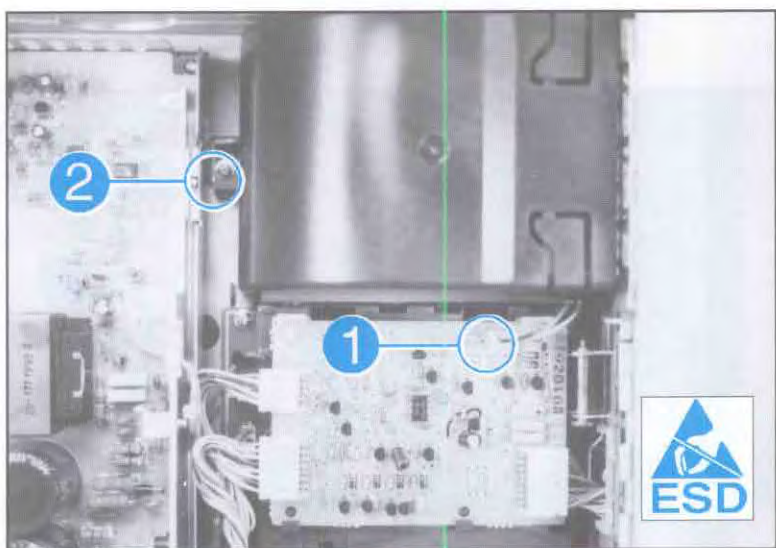


Figure 6-18. Fan FM1

Fan FM2

1. Remove the Right Side Cover (see Figure 6-2).
2. Remove the Formatter Cover (see Figure 6-12).
3. Remove the Formatter Pan Assembly (see Figure 6-16 or Figure 6-17).
4. Unplug the (1) connector (J7) from the DC Power Supply (see Figure 6-19, callout 1).
5. Two tabs on the fan housing mount the Fan Assembly to the printer frame. Release the fan from its mounts by sliding it one inch straight out the right side of the printer. Lower the Fan Assembly from the frame to remove it.

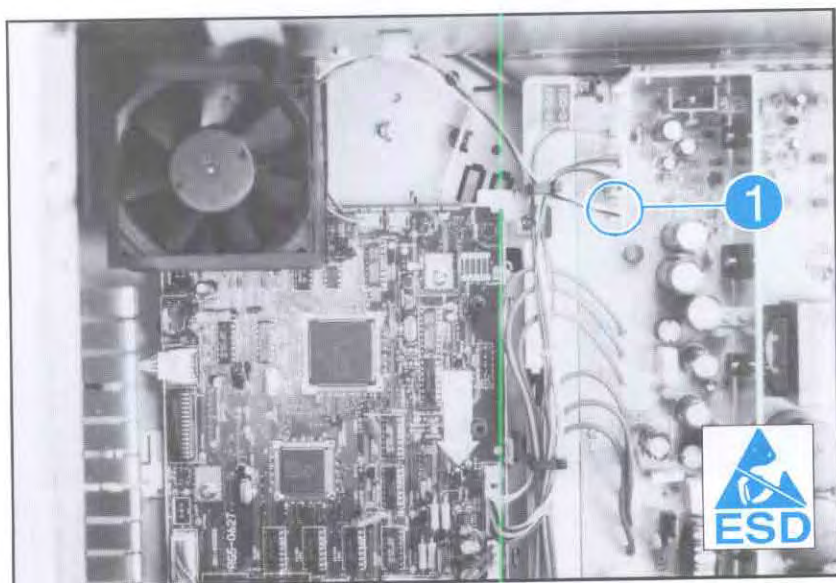


Figure 6-19. Fan FM2

AC Power Inlet Assembly (AC Power Supply/Sensor PCA)

1. Remove the Right Rear Cover (see Figure 6-10).
2. Remove the Right Side Cover (see Figure 6-2).
3. Remove the Formatter Cover (see Figure 6-12).
4. Remove the Formatter Pan Assembly (see Figure 6-16 or Figure 6-17).
5. Unplug (3) connectors (J202, J203 and J204) from the Sensor PCA (see Figure 6-20, callout 1).
6. Unplug (1) connector (J152) from the AC Driver PCA (behind the Sensor PCA - see Figure 6-20, callout 2).
7. Unplug (2) connectors J1 and J6 from the DC Power Supply (see Figure 6-20, callout 3).
8. Unplug the (1) connector from the left side of the Main Power Switch (see Figure 6-20, callout 4).

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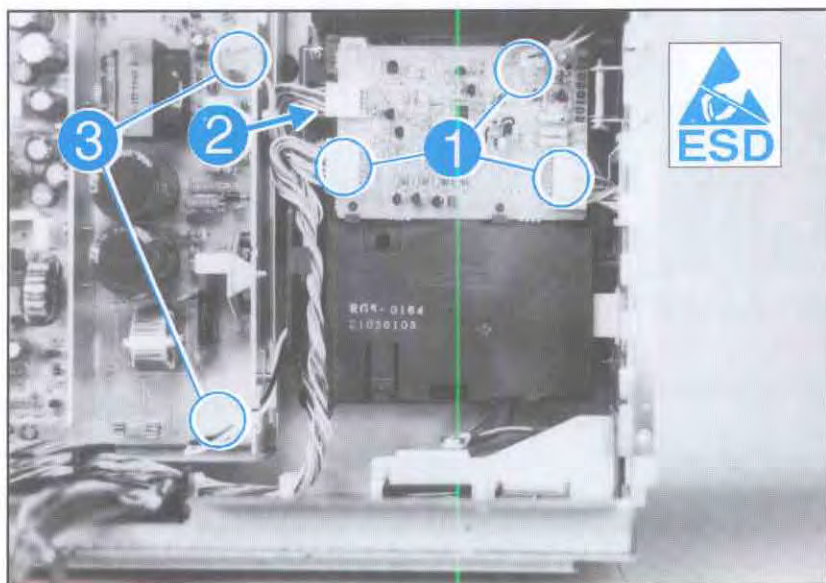


Figure 6-20. AC Power Inlet Assembly

AC Power Inlet Assembly (continued)

9. Remove the (2) screws securing the AC Power Inlet Assembly (see Figure 6-21, callout 1). *Note that the lower left screw of the AC Power Inlet Assembly has a star washer.* Be certain to replace the star washer in its correct location.
10. Remove the (2) screws (in plastic standoffs) located at the rear of the printer which secure the AC Power Inlet Assembly (see Figure 6-21, callout 2). Remove the AC Power Inlet Assembly.

Note



When reinstalling the assembly, be certain to align the two mounted connectors on the rear of the AC Driver PCA carefully before pushing into place.

The Power Inlet Assembly is easier to re-install if the Fusing Assembly is installed in the printer (this helps to align the assembly pins).

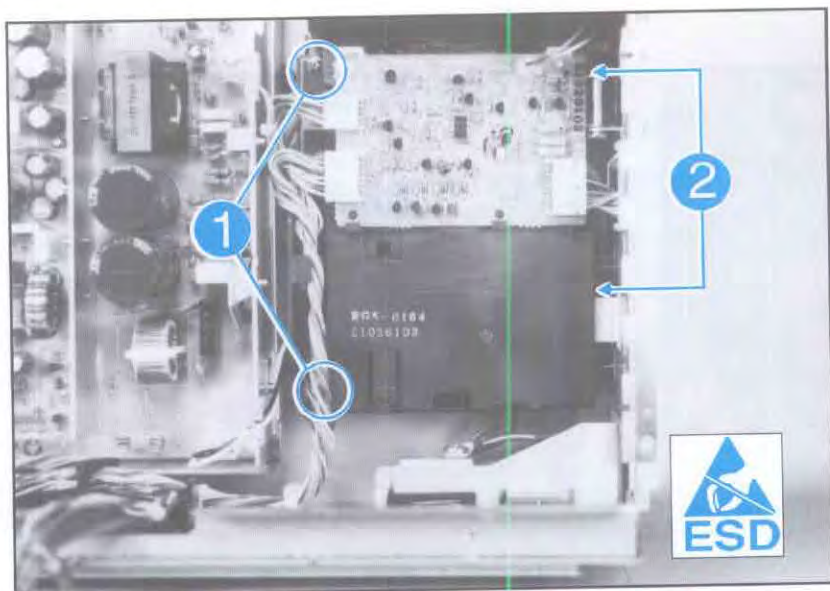


Figure 6-21. AC Power Inlet Assembly (continued)

DC Power Supply

1. Remove the Right Side Cover (see Figure 6-2).
2. Remove the Formatter Cover (see Figure 6-12).
3. Remove the Formatter Pan Assembly (see Figure 6-16 or Figure 6-17).
4. Unplug the (6) connectors from the DC Power Supply (see Figure 6-22, callout 1). These connectors are J1, J2, J4, J5, J6, and J7.
5. Unsnap the (3) clips securing the cables (see Figure 6-22, callout 2).
6. Cut the cable ties securing the six power cables. (The power cables are permanently attached to new DC Power Supply PCAs.)
7. Remove the (2) screws securing the DC Power Supply (see Figure 6-22, callout 3). *Note that the upper left screw has a star washer.*
8. Remove the cable harness from the clip on the DC Power Supply (see Figure 6-22, callout 4).
9. Lift the DC Power Supply up and out to remove it.

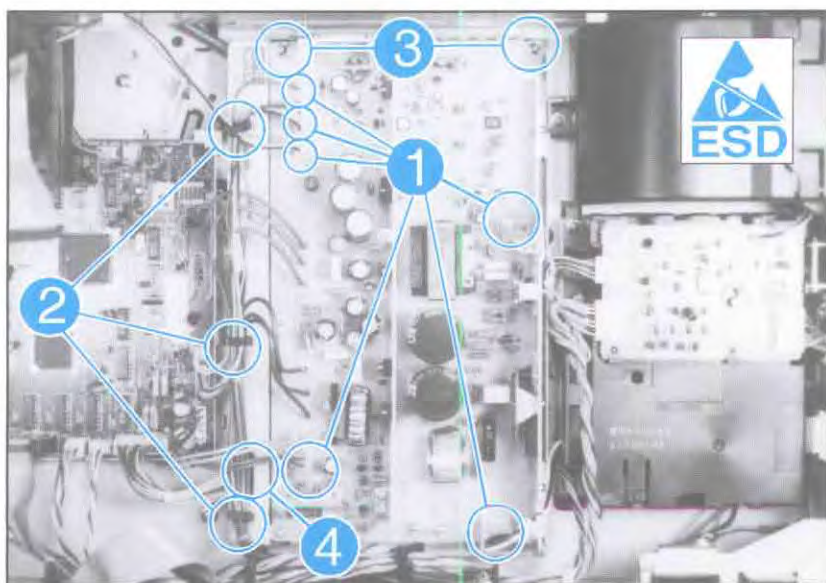


Figure 6-22. DC Power Supply

DC Controller PCA

1. Remove the Right Side Cover (see Figure 6-2).
2. Remove the Formatter Cover (see Figure 6-12).
3. Remove the Formatter Pan Assembly (see Figure 6-16 or Figure 6-17).
4. Remove Fan FM2 (see Figure 6-19).
5. Unplug the (1) connector (J5) from the DC Power Supply (see Figure 6-23, callout 1).
6. Unplug the (11) connectors from the DC Controller PCA (see Figure 6-23, callout 2). These connectors are: J1, J2, J4, J7, J8, J10, J11, J12, J13, J15, and J18 (or J1001, J1002, etc.).

Note



Connector J1 (or J1001) is the beam detect fiber-optic cable. When replacing, be sure connector is fully seated. Connectors J1005 and J1014 are factory test connectors and are not used in the field.

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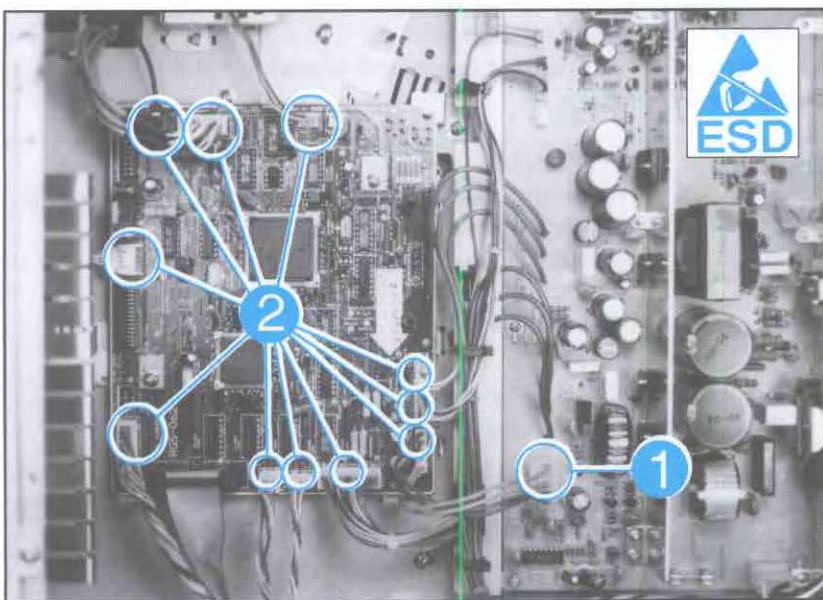


Figure 6-23. DC Controller

DC Controller PCA (continued)

7. Remove the (2) screws in callout 3.
8. Loosen or remove the (1) screw and retaining bracket (see Figure 6-24, callout 5).

Caution



In addition to holding the PCA in place, the retaining bracket ensures that the toner cartridge sensitivity switches are located correctly. Be careful not to damage this bracket or the sensitivity switches when replacing the DC Controller PCA.

9. Unlatch the (4) retaining clips securing the DC Controller PCA and remove the PCA (see Figure 6-24, callout 4).



Figure 6-24. DC Controller (continued)

Power Switch

1. Remove the power cord from the printer.
2. Remove the Right Side Cover (see Figure 6-2).
3. Remove the Formatter Cover (see Figure 6-12).
4. Remove the Formatter Pan Assembly (see Figure 6-16 or Figure 6-17).
5. Unplug the (2) AC Power connectors (see Figure 6-25, callout 1).
6. Push the Power Switch Rod downward to remove it from the Power Switch (see Figure 6-25, callout 2).
7. Use a small flat-head screwdriver to depress the Power Switch tabs, and remove the switch (see Figure 6-25, detail A).

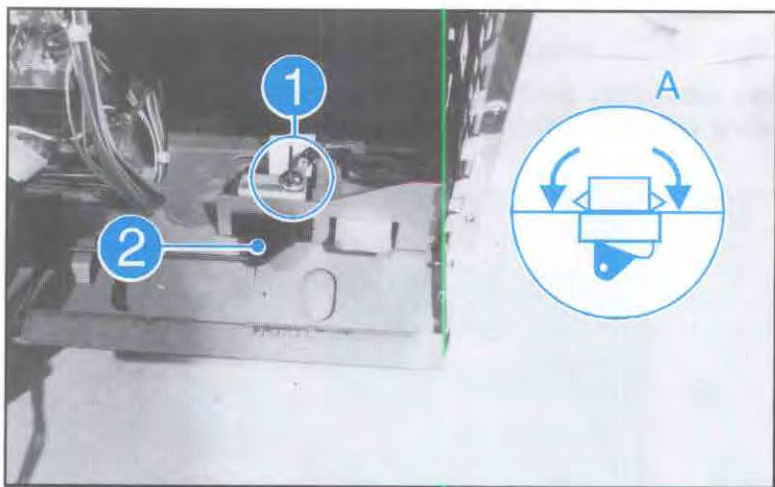


Figure 6-25. Power Switch

PAPER INPUT UNIT (PIU) AND SUBASSEMBLIES

This section lists procedures for removing the PIU and its PCA.

Paper Input Unit (PIU)

1. Remove the Right Side Cover (see Figure 6-2).
2. Remove the Front Upper Cover (see Figure 6-3).
3. Remove the Front Cover (see Figure 6-5).
4. Remove the (4) screws securing the PIU (see Figure 6-26, callout 1).
5. Unplug the (1) connector (J301) from the Paper Input Unit PCA (see Figure 6-26, callout 2).
6. Slide the PIU straight out the front of the printer.

When reinstalling the PIU, be sure to mount it on the upper locating rails before sliding it into the printer.

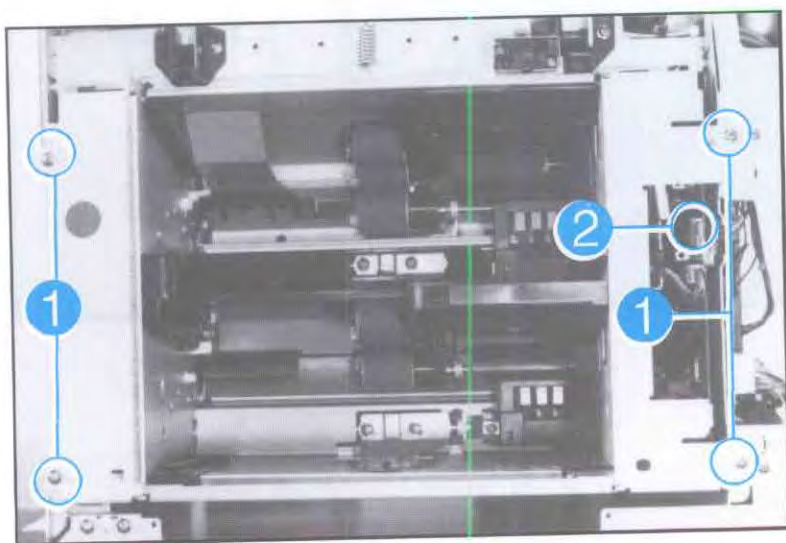


Figure 6-26. Paper Input Unit (PIU)

Paper Input Unit (PIU) PCA

1. Remove the Right Side Cover (see Figure 6-2).
2. Remove the Front Upper Cover (see Figure 6-3).
3. Remove the Front Cover (see Figure 6-5).
4. Remove the Paper Input Unit (see Figure 6-26).
5. Unplug the (3) connectors on the component side of the PIU PCA (see Figure 6-27, callout 1). These connectors are: J302, J305, and J306.
6. Disconnect the upper and lower tray size switches (see Figure 6-27, callout 3).
7. Remove the (4) screws securing the PIU PCA and remove the PCA (see Figure 6-27, callout 2).

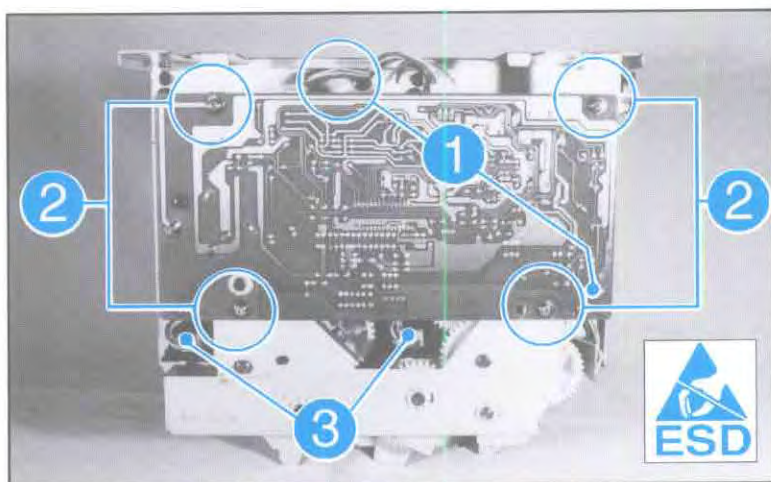


Figure 6-27. Paper Input Unit PCA

INTERNAL ASSEMBLIES

This section lists procedures for removing the following Internal Assemblies:

1. Laser/Scanner Assembly
2. Registration Assembly
3. Paper Refeed Unit (PRU)
4. Transfer Guide
5. High Voltage Power Supply
6. Main Motor Drive Train

Note



Internal Assemblies also include the Transfer Roller and Fusing Assembly. Refer to Chapter 4 for removal procedures.

Laser/Scanner Assembly

1. Remove the Right Side Cover (see Figure 6-2).
2. Remove the Front Upper Cover (see Figure 6-3).
3. Unplug the (2) Laser/Scanner connectors (see Figure 6-28, callout 1).
4. Disconnect the (1) fiber-optic cable (see Figure 6-28, callout 2).

Note



The fiber-optic connector fits securely in its retaining slot. Be careful not to damage the cable when releasing it from its retainer.

5. Remove the (4) screws securing the Laser/Scanner Assembly and remove the assembly (see Figure 6-28, callout 3).

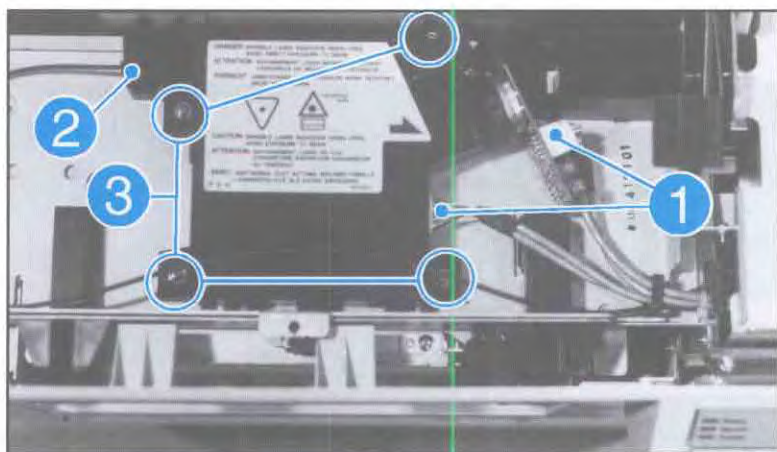


Figure 6-28. Laser/Scanner Assembly

Registration Assembly

1. Open the printer.
2. On the right end of the Transfer Roller, remove the (1) retaining clip (see Figure 6-29, callout 1).
3. Remove the (2) screws securing the Registration Assembly Guide and lift off the guide (see Figure 6-29, callout 2).
4. Lift the green handle on the Registration Assembly Cover (see Figure 6-29, callout 3) and remove the (2) final screws securing the assembly (see Figure 6-29, callout 4).

Note



The Registration Assembly Guide is keyed. Be certain to fully seat this guide during reassembly to prevent paper jams.

During reassembly, hold the Registration Assembly clutch solenoid in its fully actuated position, and carefully mate the Registration Assembly gears to the solenoid.

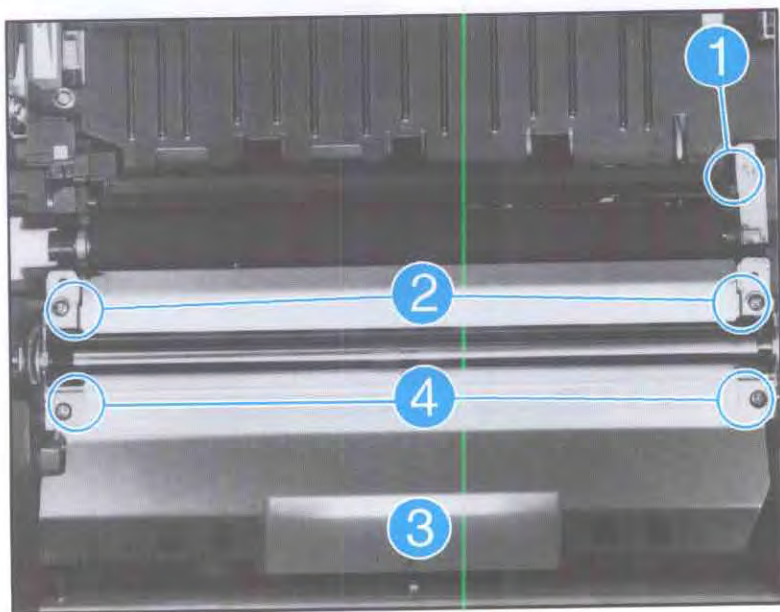


Figure 6-29. Registration Assembly

Paper Refeed Unit (PRU)

1. Remove the Right Side Cover (see Figure 6-2).
2. Remove the Front Upper Cover (see Figure 6-3).
3. Remove the Front Cover (see Figure 6-5).
4. Remove the Paper Input Unit (see Figure 6-26).
5. Push in on the center snap of the black hood and pull to unplug the (1) Paper Refeed Unit connector (see Figure 6-30, callout 1).
6. Remove the (2) screws securing the Paper Refeed Unit and remove the unit (see Figure 6-30, callout 2).

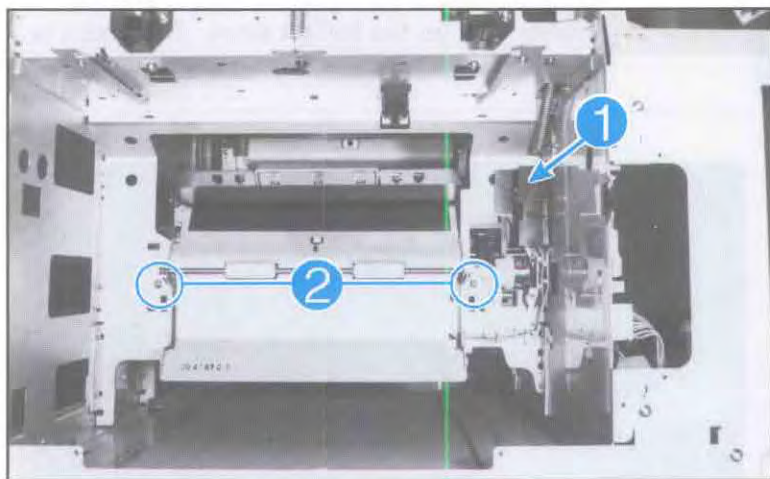


Figure 6-30. Paper Refeed Unit

Transfer Guide

1. Open the printer.
2. Remove the Transfer Roller's plastic retaining clip from the right end of the Transfer Roller.
3. From the left inner side of the printer, slide the plastic Side Cover *upward* to remove. **DO NOT PULL OUTWARD.** This cover is not secured with screws. It is held firmly in place with tabs that hold it to the side of the printer.
4. Remove the (3) screws securing the Transfer Guide and remove the guide (see Figure 6-31, callout 1).

Note



Older models of the LaserJet IIISi use a star washer only on the far left screw. Be certain to replace the star washer in its correct location.

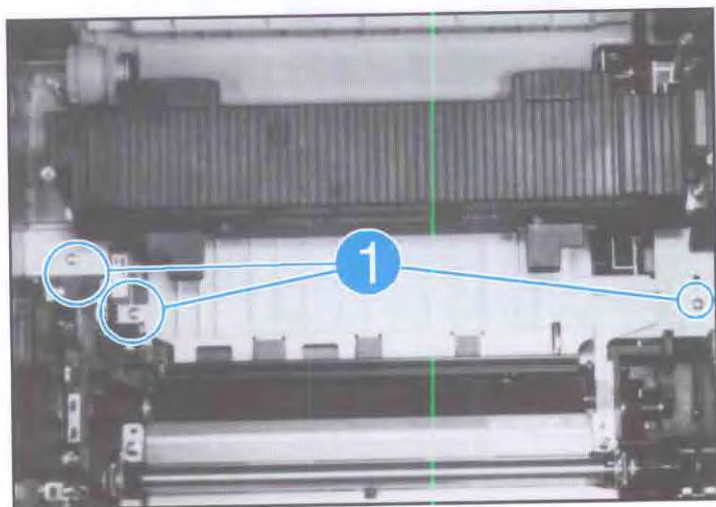


Figure 6-31, Transfer Guide

High Voltage Power Supply

1. Open the printer.
2. Remove the Fusing Assembly (see Chapter 4).
3. Remove the Transfer Roller (see Chapter 4). Use gloves when handling the Transfer Roller.
4. Remove the Transfer Guide (see Figure 6-31).
5. Unplug the (1) single-pin connector (Figure 6-32, callout 1).
6. Remove the (4) screws shown in Figure 6-32, callout 2.
7. Slide the High Voltage Power Supply toward the rear of the unit, unplug the (1) multi-pin connector and remove the Power Supply (see Figure 6-32, callout 3).

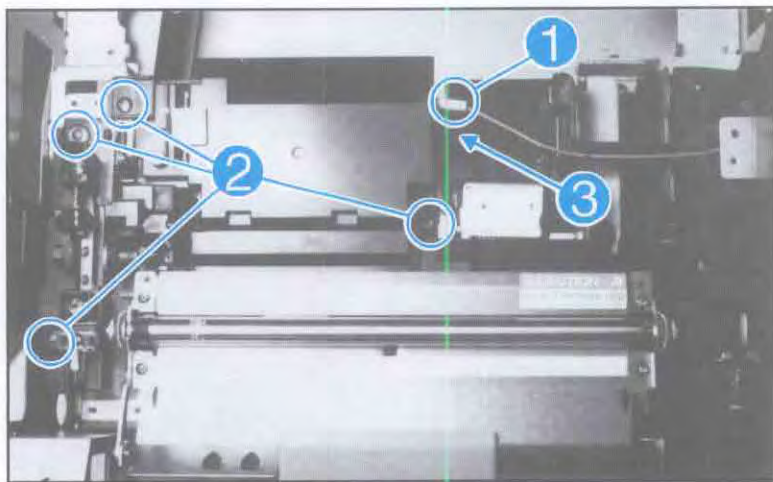


Figure 6-32. High Voltage Power Supply

Main Motor Drive Train

1. Open the printer.
2. Remove the Registration Assembly (see Figure 6-29).
3. Remove the Transfer Roller (see Chapter 4). Use gloves when handling the Transfer Roller.
4. Remove the Fusing Assembly (see Chapter 4).
5. Remove the Transfer Guide (see Figure 6-31).
6. Remove the High Voltage Power Supply (see Figure 6-32).
7. Remove the (2) screws securing the Main Motor Cover and remove the cover (see Figure 6-33, callout 1).

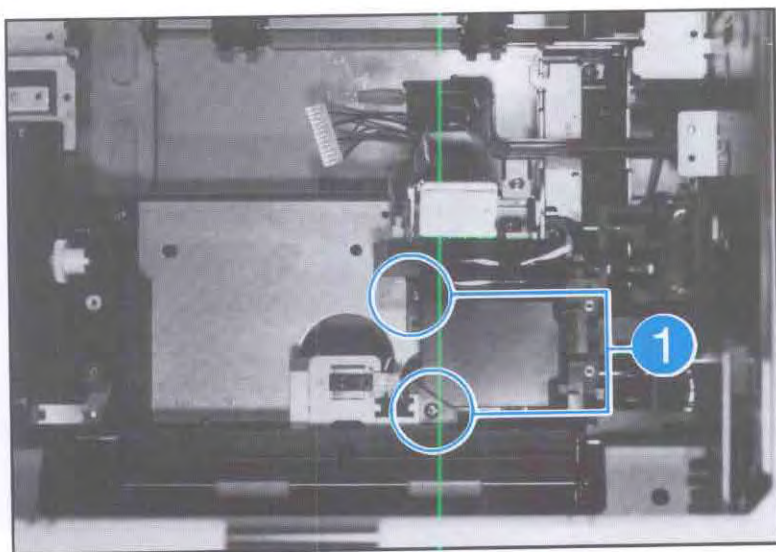


Figure 6-33. Main Motor Drive Train

Main Motor Drive Train (continued)

8. Unplug the (1) connector on the Main Motor PCA (see Figure 6-34, callout 1).
9. Remove the (1) screw for the high voltage cable guide tray (see Figure 6-34, callout 2). Route the cables clear to prevent damage.
10. Remove the (1) screw securing the Main Motor PCA (see Figure 6-34, callout 3).
11. Slide the PCA toward the left to unplug it from the connector and remove.

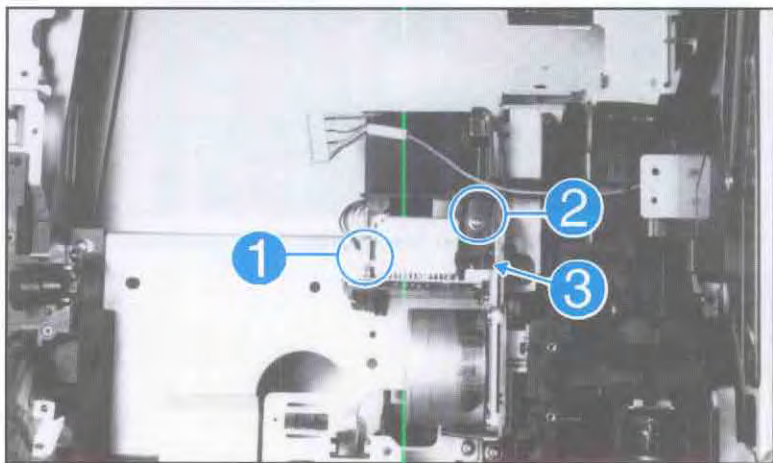


Figure 6-34. Main Motor Drive Train (continued)

Main Motor Drive Train (continued)

12. Remove the (4) washer-head screws securing the Main Motor Drive Train and remove the assembly by sliding toward the left and lifting upward (see Figure 6-35, callout 1).

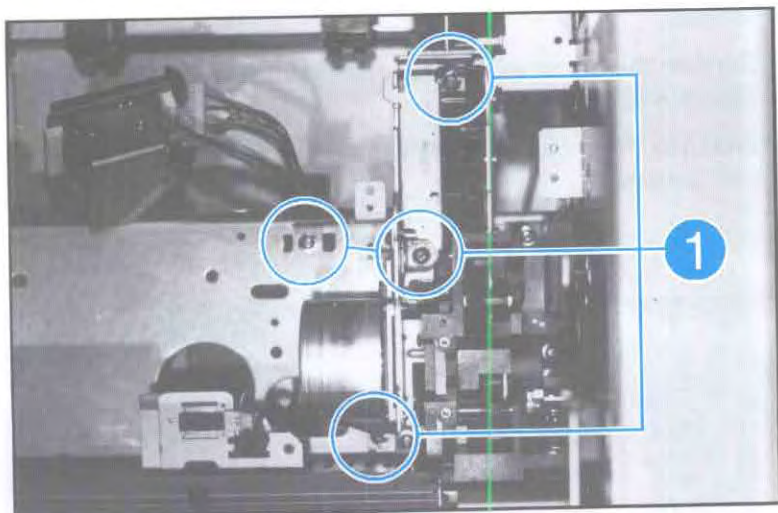


Figure 6-35. Main Motor Drive Train (continued)

Left Block

Read this entire procedure before starting the removal. Because many other assemblies must be removed to access the Left Block Assembly, be sure to put all the screws back in their holes after the assembly is removed.

To access the Left Block Assembly, remove:

1. The Left Side Cover (see Figure 6-9).
2. The Right Side Cover (see Figure 6-2).
3. The Front Cover (see Figure 6-5).
4. The Transfer Roller (see Chapter 4).
5. The Fusing Assembly (see Chapter 4).
6. The Registration Assembly (see Figure 6-29).
7. The Transfer Guide (see Figure 6-31).
8. The High Voltage Power Supply (see Figure 6-32).
9. The Paper Input Unit (see Figure 6-26).
10. The Paper Refeed Unit (see Figure 6-30).

Place the screws removed to this point, back in their holes before continuing the procedure. Complete the removal as follows:

11. From the left side of the printer, remove the (2) screws which secure the left fuser support bracket (see Figure 6-36, callout 1).
12. From the left side of the printer, remove the (1) self-tapping screw (see Figure 6-36, callout 2).
13. Remove the (3) screws securing the Left Block (see Figure 6-37, callout 1).
14. The Left Block has a tab that snaps into the frame. Carefully separate the tab from the frame.
15. Remove the Left Block by lifting up and sliding towards the rear of the printer.

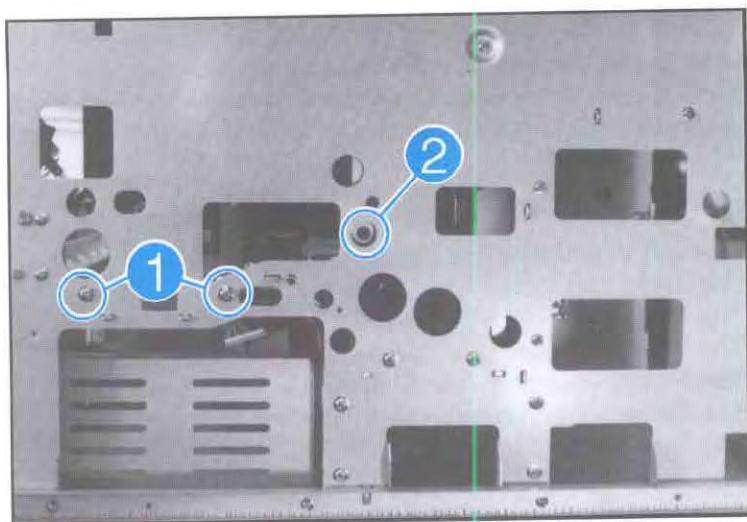


Figure 6-36. Left Block

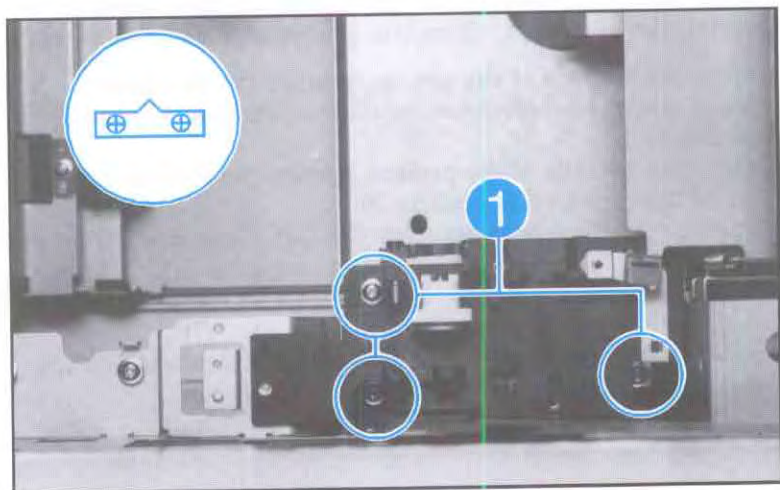


Figure 6-37. Left Block (continued)

Right Block

Read this entire procedure before starting the removal. Because many other assemblies must be removed to access the Right Block Assembly, be sure to put all the screws back in their holes after the assembly is removed. To access the Right Block Assembly, remove:

1. The Right Side Cover (see Figure 6-2).
2. The Front Cover (see Front Cover Removal).
3. The (1) screw securing the Top Cover Assembly support bracket (see Figure 6-41, callout 1).
4. The Inner Right Cover.
5. The Transfer Roller (see Chapter 4). Use gloves when handling the Transfer Roller.
6. The Fusing Assembly (see Chapter 4).
7. The Registration Assembly (see Figure 6-29).
8. The Transfer Guide (see Figure 6-31).
9. The Main Motor Drive Train (see Figure 6-33 through Figure 6-35).
10. The Formatter Pan Assembly (see Figure 6-16 or Figure 6-17).
11. The DC Power Supply (see Figure 6-22).
12. The Paper Input Unit (see Figure 6-26).
13. The Paper Refeed Unit (see Figure 6-30).

Place the screws removed to this point, back in their holes before continuing the procedure. Complete the removal as follows:

14. Unplug connector J007 on the DC Controller.
15. Remove the (3) screws securing the Right Block (see Figure 6-38, callout 1).
16. Remove the (2) self tapping screws securing the Right Block (see Figure 6-39, callout 1. These screws are behind the DC Power Supply).
17. The Right Block has a tab that snaps into the frame. Press the tab near the back right side of the Right Block.
18. While pressing in on the sheet metal, carefully lift the Right Block up and towards the center of the printer.

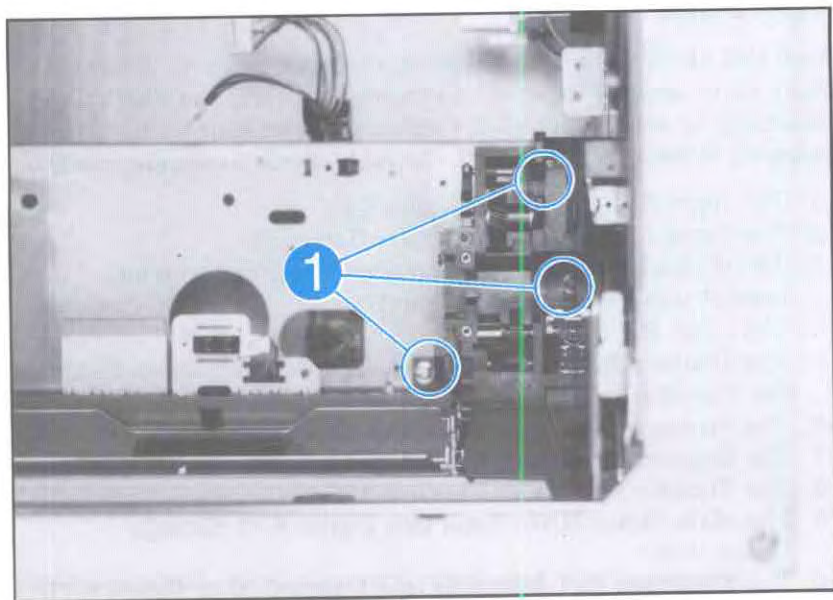


Figure 6-38. Right Block

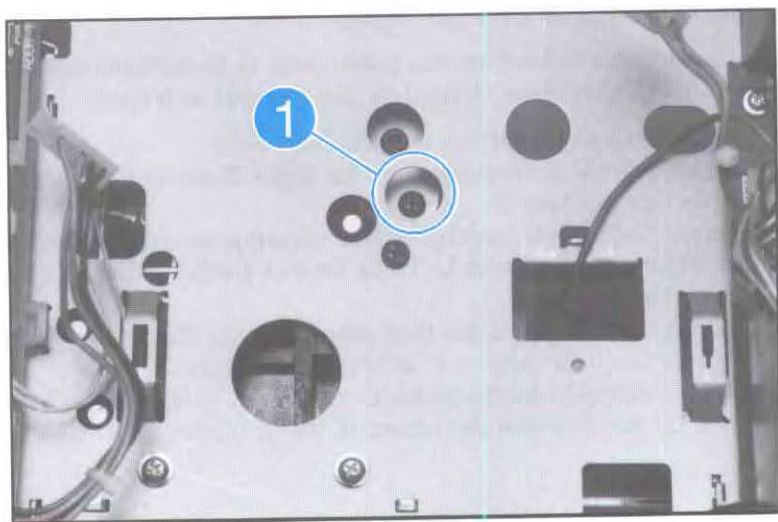


Figure 6-39. Right Block (continued)

TOP COVER ASSEMBLY AND SUBASSEMBLIES

This section lists procedures for removing the Top Cover Assembly and its subassemblies:

1. Top Cover Assembly
 - A. Job Offset Assembly
 - B. Solenoid Adjustments
 - C. Delivery Roller Assembly

Top Cover Assembly/Hinge Pins

1. Open the printer.
2. Remove the toner cartridge.
3. Remove the Right Rear Cover (see Figure 6-10).
4. Unlatch (1) cable clamp (see Figure 6-40, callout 1).
5. Disconnect (1) cable from the AC Power Inlet Assembly (see Figure 6-40, callout 2). (continued on next page)

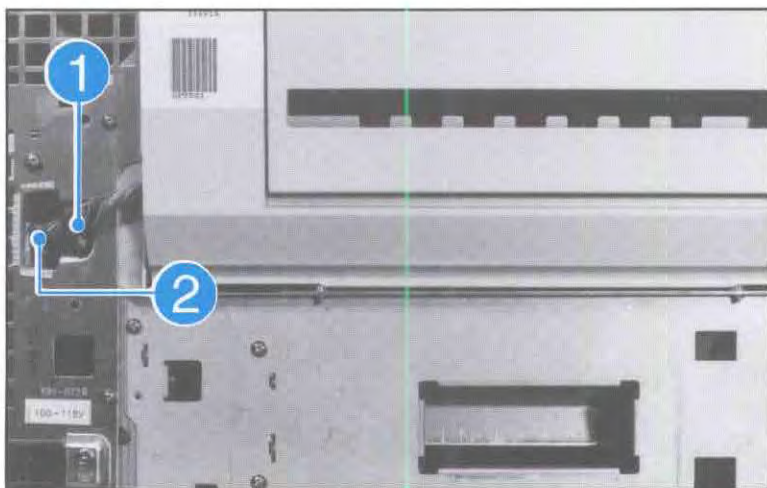


Figure 6-40. Top Cover Assembly

Top Cover Assembly (continued)

6. Remove the (1) shoulder screw securing the Top Cover Assembly support bracket (see Figure 6-41, callout 1).

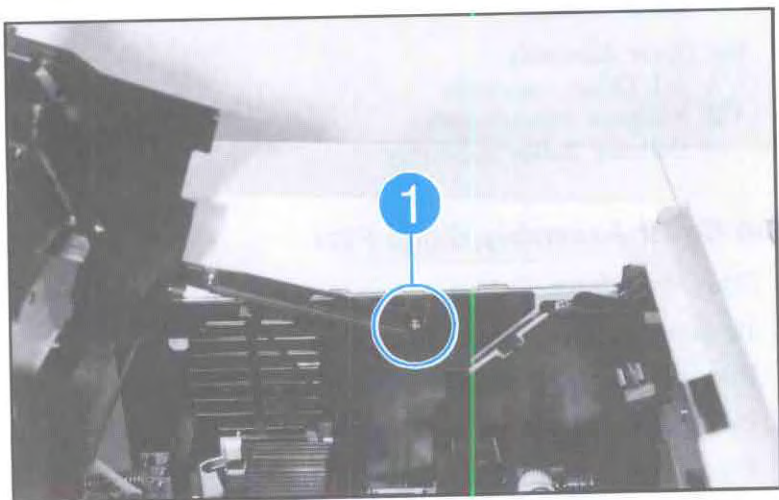


Figure 6-41. Top Cover Support Bracket

Top Cover Assembly (continued)

7. Remove the left and right hinge springs from their slots (see Figure 6-42, callout 1).
8. Remove the (2) screws securing the left hinge plate, and the (2) screws securing the right hinge plate (see Figure 6-42, callout 2).
9. Carefully, separate and remove the Top Cover Assembly from the printer.

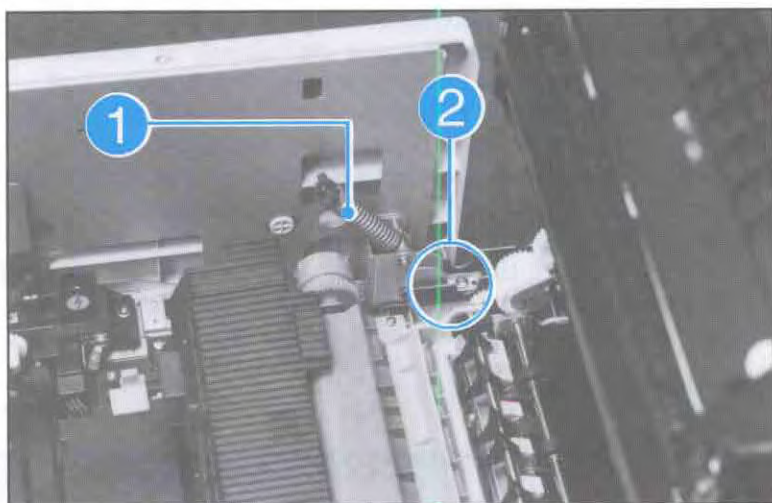


Figure 6-42. Top Cover Assembly (continued)

Job Offset Assembly

To remove the Job Offset Assembly:

1. Release the Top Cover support bracket (see Figure 6-41).
2. Remove the Right Rear Cover (see Figure 6-10).
3. From the right end of the Top Cover Assembly, remove the (2) screws that hold the plastic Solenoid Cover (see Figure 6-43, callout 1).
4. From the left end of the printer, push the Job Offset Roller gear inward until it latches (see Figure 6-44, callout 1). (This allows easier access to the sensor flag removed in the next step.) In some instances, the gear may already be latched.
5. Use a long shank screwdriver to remove the (1) screw and the Sensor Flag on the right side of the Output Roller Shaft. Access this screw from the right end of the Top Cover Assembly. It is 2 inches behind the silver bracket, next to the E-clip on the Output Roller Shaft (see Figure 6-43, callout 2.)
6. Note how the solenoid linkages connect to the Job Offset Assembly, then lift the ends upward to detach the (2) solenoid linkages between the Job Offset Assembly and the Delivery Roller Assembly (see Figure 6-43, callout 3).

(continued on next page)

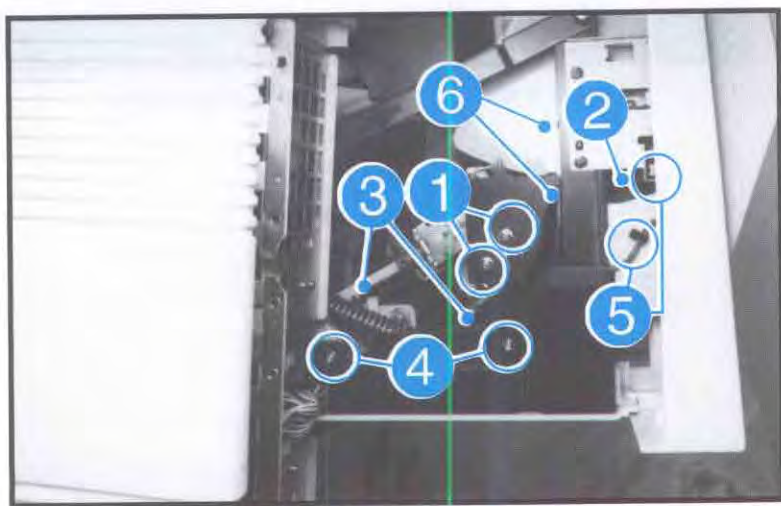


Figure 6-43. Job Offset Assembly

Job Offset Assembly (continued)

7. Note how the cable is routed in the plastic housing then remove the (2) screws securing the Cable Cover (see Figure 6-43, callout 4). Remove the Cable Cover.
8. Unplug the (1) connector from the photosensor and remove the cable from the retaining clamp (see Figure 6-43, callout 5).
9. On the right rear of the printer, unplug the 18-pin Job Offset cable connector from the AC Power Inlet Assembly.
10. Remove the (4) screws (2 on each side), securing the Job Offset Assembly and remove the assembly (see Figure 6-44, callout 2 and Figure 6-43, callout 6).
11. Carefully rotate the assembly back and forth until it becomes free, then lift it out of the printer.

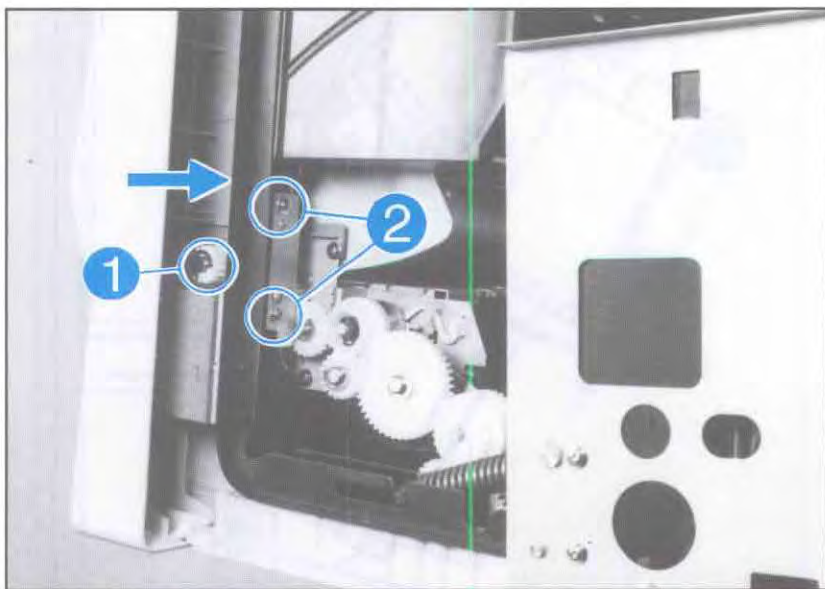


Figure 6-44. Job Offset Assembly (continued)

Solenoid Clearance Adjustment

The Job Offset Assembly solenoid clearances must be calibrated if the solenoids are removed. To calibrate the solenoids, hold the pawls against their stops (in their fully actuated position) and place a 0.5mm shim (a small paper clip will work) between the solenoid body and the stop ring on the solenoid shaft (see Figure 6-45). Tighten the solenoid into position while holding this clearance. This procedure applies to all adjustable solenoids in the printer.

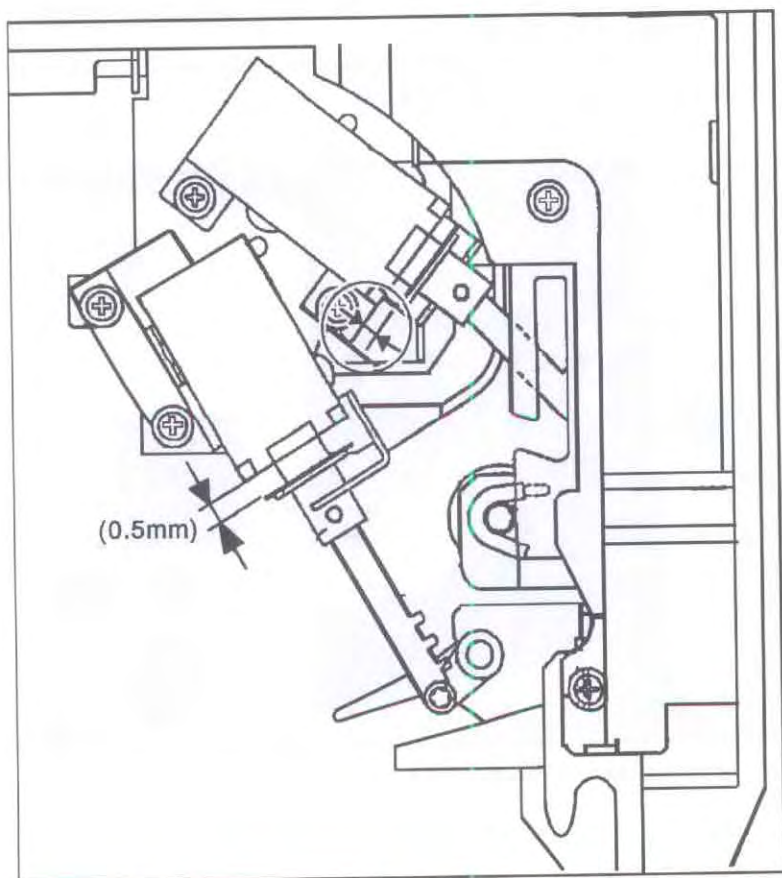


Figure 6-45. Setting Clearance Between Stop Ring Solenoid Body

Delivery Roller Assembly

To remove the Delivery Roller Assembly:

1. Remove the Top Cover Assembly (see Figure 6-40).
2. Note the orientation of the solenoid linkages for reference during re-installation, then detach the (2) solenoid linkages between the Job Offset Assembly and the Delivery Roller Assembly (see Figure 6-43, callout 3). *Do not* remove the solenoids.
3. Remove the (4) screws securing the Delivery Roller Assembly (see Figure 6-46, callout 1), to remove the assembly from the Top Cover.
4. Open the face-up output tray to release its latch.
5. Remove the Delivery Roller Assembly by sliding the assembly away from the Top Cover Assembly.

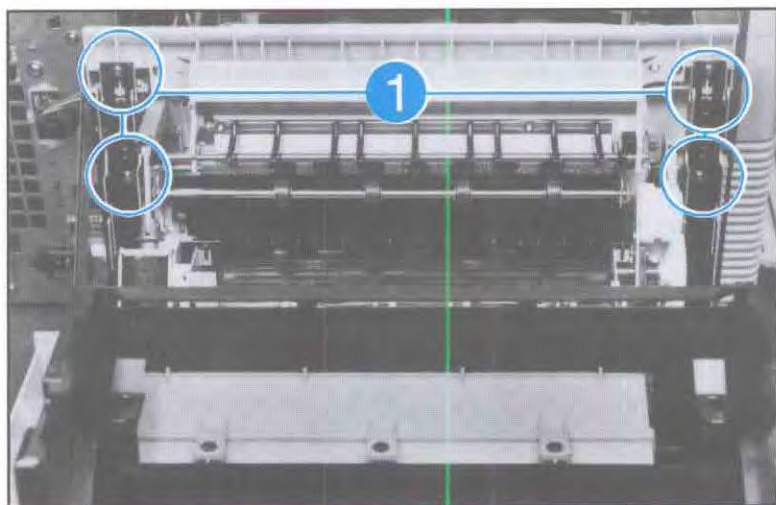


Figure 6-46. Delivery Roller Assembly

DUPLEX UNIT SUBASSEMBLIES

This section lists procedures for removing the following Duplex Unit Subassemblies:

1. Duplex Unit
2. Duplex PCA

Duplex Unit

1. Remove the Right and Left Side Covers (see Figure 6-2 and Figure 6-9).
2. Remove the (4) screws that attach each corner of the Duplex Unit to the printer frame (see Figure 6-47).
3. Lift and pull the Duplex Unit straight out the rear of the printer.

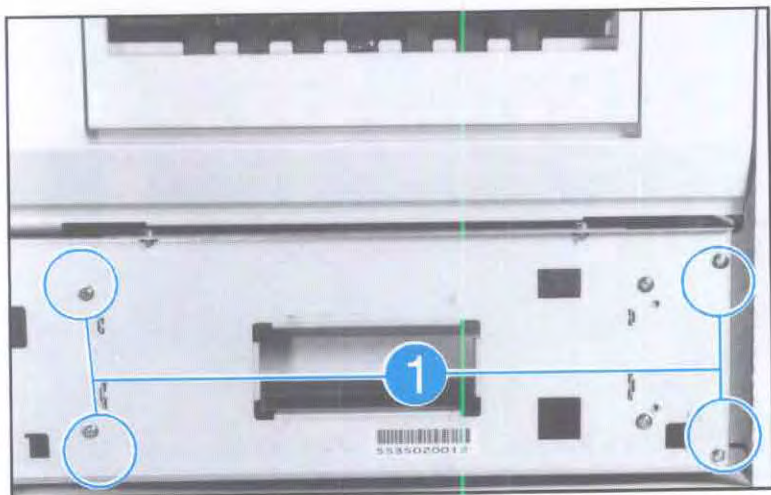


Figure 6-47. Duplex Unit

Duplex PCA

1. Remove the Duplex Unit.
2. Unplug the (5) connectors from the Duplex PCA (see Figure 6-48, callout 1). These connectors are; J401, J402, J403, J404, and J406.
3. Remove the (2) screws securing the Duplex PCA, and remove the PCA (see Figure 6-48, callout 2).

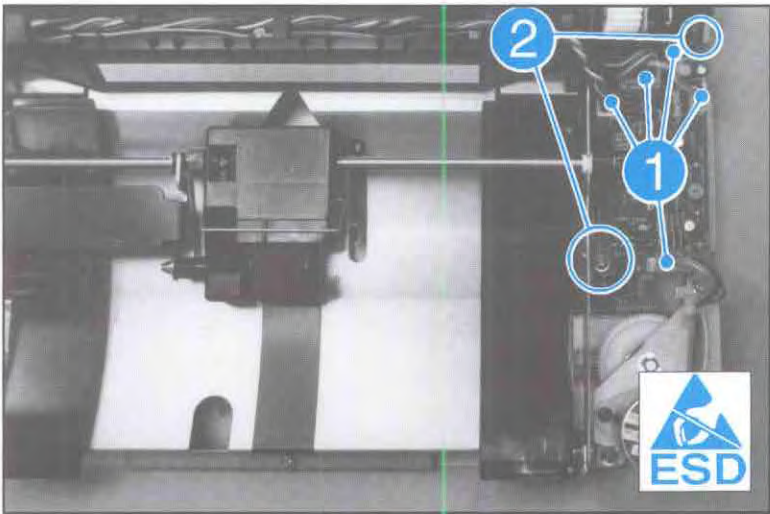


Figure 6-48. Duplex PCA



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Troubleshooting

INTRODUCTION

This chapter provides detailed troubleshooting guidelines for the LaserJet III^{Si}/4^{Si} printers. The recommended approach is to begin with the “Pre-Troubleshooting” sections first. This may help diagnose and remedy the problem without need for going further.

If necessary, use the Chapter Contents to branch off to the later sections to troubleshoot persistent or more complex problems. For example, if there is a printer error message, start with the “Message Summary” tables. If it is a persistent error which needs more in-depth troubleshooting, go to the “Message Details” section. If there is no display panel error, but there are print quality defects, go directly to the “Image Defects” section.

Be sure to check-out the diagnostic tools and reference material provided in the section “Aids to Troubleshooting.”

Note



Component identifiers (connectors, switches, etc.) are subject to change without notice.

Refer to “Doing Business With HP” in Chapter 1 for information on ordering parts.

PRE-TROUBLESHOOTING PROCEDURES

Talk to the Customer!

The seemingly obvious but often overlooked first step in any troubleshooting process should always be to talk with the customer. In the case of a printer which is usually a shared resource such as the LaserJet IIISi/4Si, this might be a designated specialist or support person within the group. In some situations, it may not be possible to converse in person, but some sort of contact should be attempted, either by telephone, fax, or in writing. Following are some examples of typical questions which might be appropriate to ask:

- **Problem Description:** What are the symptoms noticed by the customer? When and how often do they occur? How long have they been occurring? What were the circumstances of the first occurrence of the problem?
- **Configuration:** What software/hardware was being used at the time of the problem? Were there any recent changes in configuration?
- **Print Media:** What print media is being used? How has it been stored and handled? Is the customer familiar with the media requirements? Verify that paper and other print media meets the specs detailed in *The HP LaserJet Family Paper Specifications Guide* (P/N 5002-1801).
- **Printer Maintenance:** Has the printer been cleaned and maintained on a regular basis as described in Chapter 4 of this manual? Is the printer due for User Maintenance? (Check page count.)

Preliminary Operating Checks

Prior to troubleshooting a specific printer problem, ensure that:

- The printer is installed on a solid, level surface.
- The line voltage providing power to the printer does not vary more than 10% from the nominal rated value as specified on the Power Rating label.
- The operating environment for the printer and paper is within the temperature and humidity specifications listed in Chapter 1 and Chapter 2 of this manual.
- The printer is operated in a well-ventilated area.
- The printer is not located in a hot or humid area (near water taps, boilers, or humidifiers), a cold area, near open flames, or in a dusty area.
- The printer is never exposed to ammonia gas such as that produced by diazo copiers or office cleaning materials.
- The printer is not exposed to direct sunlight at any time during the day.
- Non-HP components are removed from the printer such as refilled toner cartridges, font cartridges, and memory boards.

Pre-Troubleshooting Checklist

The following list is provided to aid in checking for user-responsible problems before they become service calls.

■ BLANK DISPLAY

- ☐ Verify that the power cord is firmly connected to both the printer and the power source.
- ☐ The customer may have accidentally entered the Service Mode or extended diagnostics (if so, all Control Panel LEDs will be on). Power cycle the printer to resume normal operation.

■ SLOW PRINTER

- ☐ The optimal 17 page-per-minute specification does not take into account the additional time required to format complex data such as HP-GL/2 commands and non-resident scalable fonts. A complex page may take up to several minutes to format before printing. The READY indicator should flash while formatting.
- ☐ Paper larger than letter-size (such as legal), or duplex printing will reduce print speed.

■ SHORT TONER CARTRIDGE LIFE

- ☐ A new Hewlett-Packard toner cartridge is rated for 8,000 images at 5% coverage. If more than 5% coverage (such as complex graphics) are routinely printed, the cartridge may not print the full 8000 pages.
- ☐ Paper with high surface abrasion (typical of good writing or general purpose bond paper), can prematurely wear the surface of the toner drum. Recommend a good quality Xerographic bond paper.

■ FONT CARTRIDGE NOT RECOGNIZED

- ☐ Power OFF the printer. Push the cartridge until it clicks into position and power ON the printer.

■ PRINT QUALITY PROBLEMS

- Thoroughly clean the printer per the instructions in Chapter 6 of the *User's Reference Manual*.
- Verify that printer has been maintained properly according to Chapter 4.
- Verify that the paper being used meets all specifications shown in *The HP LaserJet Family Paper Specifications Guide* (P/N 5002-1801).

■ SMEARED PRINT

- Paper with a surface texture that is too smooth will exhibit this problem.

■ PARTIAL PAGES

- Set AUTO CONT=OFF in the Configuration Menu and troubleshoot the resultant error message. If no message is generated, the probable cause is an application and/or printer setup problem.

■ COMMUNICATION PROBLEMS

- If used with an MS-DOS system, ensure that the AUTOEXEC.BAT file properly reflects the I/O configuration, via the MODE and COM commands, and reboot.
- Verify that the cable is good and is installed correctly between the printer and the host. Cable length is 10 feet maximum for parallel, 50 feet maximum for RS-232.
- Verify that the host system and the printer Control Panel configurations match.

■ 13 PAPER JAM

- The media may be unsuitable for LaserJet applications. Try a xerographic bond paper per *The HP LaserJet Family Paper Specifications Guide* (P/N 5002-1801).
- Verify that printer has been maintained properly according to Chapter 4.
- The printer may need to be cleaned. Refer to Chapter 6 of the *User's Reference Manual* for instructions on cleaning the printer.
- If all looks well, but the printer jams just prior to delivery, the printer setup is probably at fault. Check that the correct media size is selected and that the manual feed is not selected.

■ 18 MIO NOT READY (LaserJet 4Si)

This message will remain on the display if the printer not connected to an active LAN.

■ 20 MEMORY OVERFLOW (LaserJet IIISi)

24 JOB MEMORY FULL (LaserJet 4Si)

- Printer memory is insufficient to format the current page. Additional user memory may be freed-up by removing any soft fonts or macros.
- User may need to install more memory.

■ 21 PRINT OVERRUN

- The current page is too complex to be printed in its entirety. The user must install additional memory and enable the Page Protect feature in the configuration menu.

■ 22 ERROR

- The printer's I/O buffer has overrun, possibly caused by the printer and host not handshaking properly. Verify cabling per the *User's Reference Manual*. Check the host's interface/configuration and the printer's Control Panel configuration.

■ 23 I/O NOT READY (LaserJet IIISi Only)

- The MIO card is unable to accept data or cannot talk to the host. Perform a self test printout for more details on this failure.
- Check that the MIO card is properly configured on the LAN.
- Check that the LAN is up.
- Check the cabling and configuration settings for the printer and the host.
- Replace the MIO card.

■ 40 DATA TRANSFER ERROR

- The printer is receiving data in an unrecognizable format, a common result of having powered down the host with the printer on-line. This is also caused by non-matching baud rates or host configuration other than an 8-bit, 1 start/stop bit, no parity ASCII character.

■ 59 ADD MEMORY

- Postscript is installed without enough memory to support the application. Install additional memory.

Basic Troubleshooting Flowchart

All HP LaserJet printers go through a similar power ON sequence. During this sequence, the printer verifies that its components are operating correctly. If the printer fails to power ON correctly, use the six steps shown in Figure 7-1 to help isolate the failure.

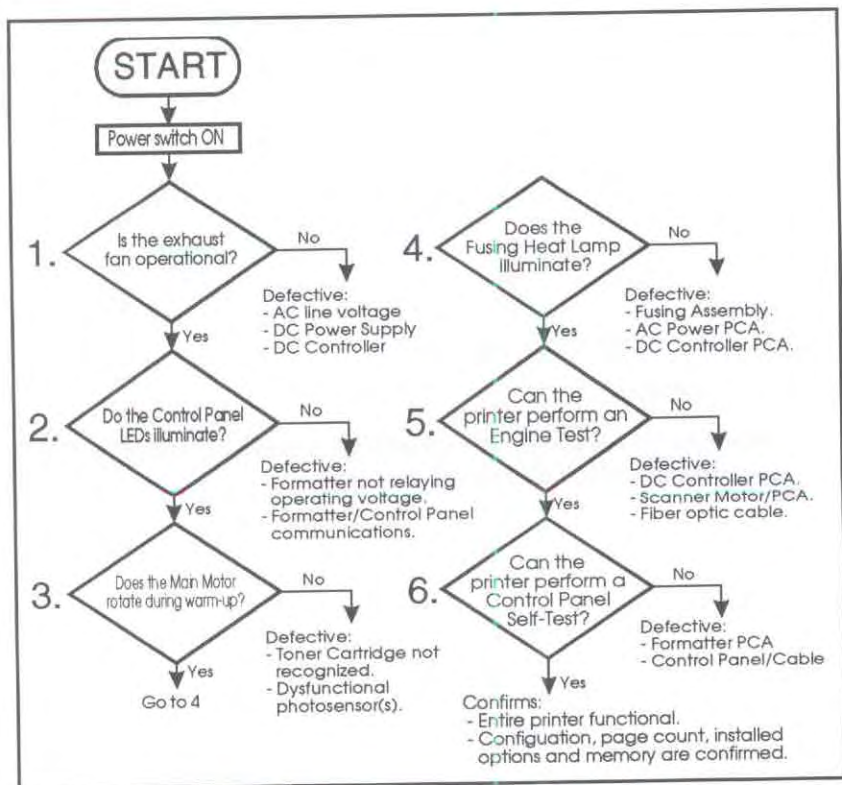


Figure 7-1. Basic Troubleshooting Flowchart

PRINTER MESSAGE SUMMARIES

“Printer Messages,” refer to all status, attendance, error, warning, and service messages affecting the HP LaserJet IIISi/4Si printers. All messages along with the suggested action required to correct the situation are listed in Table 7-1 and Table 7-2.

In the following tables, messages that are exclusive to the LaserJet IIISi or LaserJet 4Si are noted. If no notation is given, the message can apply to either printer.

Note



Use the Message Summary tables for basic summary error message troubleshooting. More detailed error message information can be found in the section “Printer Message Details,” located after the tables.

Table 7-1. Printer Message Summaries

MESSAGE	SYMPTOMS AND RECOMMENDATIONS
<i>Blank Display</i>	Check and reseal J1, J3 and J11. Check that CB101 is not tripped. Refer to the "Blank Display" section.
00 READY (LaserJet 4Si)	Proceed. The printer is ready to use.
00 PCL READY (LaserJet IIISi)	
00 PCL READY* (LaserJet IIISi)	PCL has been permanently selected from the Control Panel. Postscript is not available from the data stream. Proceed; printer is ready to use.
00 PS READY* (LaserJet IIISi)	Postscript has been permanently selected from the Control Panel. PCL is not available from the data stream. Proceed; printer is ready.
02 WARMING UP	Wait until printer signals ready.
02 WARMING UP [Continuously]	Refer to "02 WARMING UP [continuous] Message" section.
04 SELF TEST	Continuous self test printing. Press On Line to return to 00 READY.
05 SELF TEST	Non-printing portion of self test in progress. Wait for the printer to display the 00 READY message.
06 CONFIG PAGE (LaserJet 4Si)	The configuration page is being formatted and printed. Wait for the printer to display the 00 READY message.
06 DEMO PAGE (LaserJet 4Si)	The demonstration page is being formatted and printed. Wait for the printer to display the 00 READY message.
06 PRINTING TEST	Self test printing. Wait for the printer to display the 00 READY message.
06 START PAGE	Printing a PostScript "Start Page." This option can be turned off using the menu item START PAGE=OFF.
06 TYPEFACE LIST (LaserJet 4Si)	Printing sample characters from available fonts. Wait for the printer to display the 00 READY message.
06 FONT PRINTOUT (LaserJet IIISi)	
06 PRINTING TEST	Self test printing. Wait for the printer to display the 00 READY message.

Table 7-1. Printer Message Summaries (continued)

MESSAGE	SYMPTOMS AND RECOMMENDATIONS
07 RESET	Returns all printer settings to Printing Menu settings and clears buffered pages, temporary soft fonts, and macros. Wait for the printer to display the 00 READY message.
08 COLD RESET	Returns both Configuration and Printing Menu selections to the factory settings. Check that the configuration menu settings are correct before placing the printer on-line. Wait for the printer to display the 00 READY message.
09 MENU RESET	Returns all Printing Menu items to factory settings and clears buffered pages, temporary soft fonts, and macros. Wait for the printer to display the 00 READY message.
09 RESET ALL I/O (LaserJet 4Si)	Resetting all I/O's from the Control Panel. Clears all 110 channels of data and resets to defaults. Wait for the printer to display the 00 READY message.
09 RST ACTIVE I/O (LaserJet 4Si)	Resetting an active I/O from the Control Panel. Wait for the printer to display the 00 READY message.
10 RESET TO SAVE	The configuration has been changed and there is buffered data, temporary fonts and macros, and user-defined patterns or symbol sets. Press Reset (press and hold on LaserJet IIISi) to confirm the acceptance of Printing Menu selections (buffered data, temporary fonts and macros, and user-defined patterns or symbol sets will be deleted), or press Continue or On Line (no changes to any selections will be made at this time).
12 PRINTER OPEN	Close the Top Cover Assembly. If the problem continues, refer to the 12 PRINTER OPEN Message section. Check and reseal J4 on the DC Controller.
13.x PAPER JAM .1 INTERNAL .2 INPUT .3 DUPLEX .4 OUTPUT	Open printer and clear any paper in the entire paper path, including input and paper stacker devices, if installed. Close the printer and press Continue or On Line to reprint the page. If the problem persists, refer to 13 PAPER JAM Message section. Error 13.4 may be caused by jams in the optional paper stacker. If these occur, paper will need to be cleared from the entire paper path.

Table 7-1. Printer Message Summaries (continued)

MESSAGE	SYMPTOMS AND RECOMMENDATIONS
14 NO TONER CART	Install a new toner cartridge or check that the present cartridge is installed correctly. Make sure that the Top Cover is closed firmly. If the problem continues, refer to the 14 NO TONER CART Message section.
15 ENGINE TEST	Executing a print engine self test. When this test is complete, the printer returns to the ready state, but remains off-line.
16 TONER LOW _x	"x" = 1, 2, or 3. The toner cartridge is almost depleted. At the "3" stage, the toner cartridge is almost completely empty. Replace the toner cartridge or if the error message is flashing, press Continue to place the message in the background. If the problem continues, refer to 16 TONER LOW Message section.
17 MEMORY CONFIG	Indicates memory reconfiguration is in operation as a result of changing the Page Protection setting.
18 MIO _x NOT READY (LaserJet 4Si)	The MIO card (x = U, for Upper, or L for Lower) is in the process of initializing. Since LaserJet 4Si supports I/O switching, the printer remains on-line and this message is displayed during MIO initialization.
21 PRINT OVERRUN	The information being sent to the printer is too complex (the formatting capabilities of the printer cannot keep up with the formatting instructions being sent to it by the computer). Pressing Continue will resume printing, but some data will be lost. If the error persists, it may be necessary to <i>simplify</i> the job (reduce the number of characters or number of different fonts used; reduce the number of cursor repositions; or reduce addressing the same pixel location multiple times). This problem can also be resolved by adding at least one additional memory SIMM and setting PAGEPROTECT=[LTR, LGL or A4].
22 ERROR (LaserJet 4Si)	The printer's input buffer has overflowed (possibly caused by the printer and host not handshaking properly). Pressing Continue will resume printing, but some data will be lost.
22 I/O CONFIG ERR (LaserJet IIISi)	

Table 7-1. Printer Message Summaries (continued)

MESSAGE	SYMPTOMS AND RECOMMENDATIONS
23 I/O NOT READY	The I/O card is unable to accept data, or is not connected to the network. Perform a printer self test for more information on this error.
24 JOB MEM FULL (LaserJet 4Si)	Indicates a memory overflow; too much data is being sent to the printer and the printer has run out of memory. Pressing the Continue key causes the printer to print only the amount of data that fits in the memory (some data will be lost). If the error persists, it may be necessary to <i>simplify</i> the print job (i.e., fewer fonts and less graphics information) or have the customer purchase additional memory.
20 MEM OVERFLOW (LaserJet IIISi)	
25 xxx MEM FULL (LaserJet 4Si)	The personality environment save area is full. "xxx" indicates the name of the personality, either PCL or PS (PostScript). To continue printing, click the Continue key. Some data will be lost.
30 PS ERROR (LaserJet IIISi)	This error may be caused by sending a PCL file while the printer is in the PostScript Mode. It may also be associated with the PostScript application being used. If this error occurs with a large number of different applications, the PostScript SIMMs (or ROMs) may need to be replaced.
40 ERROR	An error occurred during the transfer of data from the computer to the printer. To continue printing press Continue. Note: This error occurs if the computer is powered down while the printer is on-line or when attempting to use baud rates which do not match.

Table 7-1. Printer Message Summaries (continued)

MESSAGE	SYMPTOMS AND RECOMMENDATIONS
41 ERROR	A temporary error occurred in the printed page. If this error occurs, press the Continue key and the printer will repeat the page. If the error persists, refer to 41 ERROR checks in the 51 ERROR Message section. Note: This error most frequently occurs with a Beam Detect Error. If the printer cannot correct the error condition after two seconds, a Beam Detect Malfunction (51 ERROR) will occur.
48 INVALID JOB (LaserJet IIISi)	Indicates that the wrong print language command has been received for the selected job. Pressing Continue will resume printing, but the message will remain until the correct language command is received.
49 REMOVE PAGE	Media is detected in one or both of the manual input slots during power ON, or tray insertion. Remove the media from the manual feed slots or repair the defective sensor to clear this error. Check and reseal J15.
50 SERVICE	Power OFF the printer for a minimum of twenty minutes. Check and reseal J201 on the Sensor PCA. If the problem continues, refer to the 50 SERVICE Fuser Malfunction section.
51 ERROR	Indicates loss of laser beam for over 2 seconds. Press Continue to clear this error. If the error persists, refer to the 51 ERROR Message section.
52 ERROR	Scanner Motor is unable to maintain the proper speed. Press Continue to clear this error. Check and reseal J2. If the error persists, refer to the 52 ERROR Scanner Malfunction section.

Table 7-1. Printer Message Summaries (continued)

MESSAGE	SYMPTOMS AND RECOMMENDATIONS
53 SERVICE	Indicates a laser malfunction. Power cycle the printer to clear this error. Check and reseal J1.
53-XY-ZZ ERROR (LaserJet 4Si)	Indicates an error on a RAM SIMM. Press the Continue key to resume printing. If a SIMM module caused the error, the module will not be configured. The meanings of X, Y, and ZZ values are defined as follows: X - Hardware Type 0: ROM 1: RAM Y - Hardware Device 0: On board RAM/ROM 1: SIMM slot one (closest to the edge of the board) 2: SIMM slot two 3: SIMM slot three 4: SIMM slot four ZZ - Error Number 0: Unsupported memory 1: Unrecognized memory 2: Undefined 3: Failed RAM test 4: Exceeded maximum RAM size 5: Exceeded maximum ROM size 6: Invalid SIMM speed 7: SIMM reporting information incorrectly 8: SIMM RAM parity error
54 SERVICE	The Duplex Feed Assembly shift plate is bad. Try power cycling the printer to clear this error.
55 ERROR	Indicates a communications problem between the DC Controller PCA and the Formatter PCA. Pressing Continue should clear the error and resume printing. Perform the Test Print operation to verify DC Controller functionality. If the message persists, check for any cable damage, and check the DC voltages. Finally, replace the DC Controller.
55 SERVICE	The printer failed to initialize properly at power ON. Try to clear this error by power cycling the printer. Reseat connectors J4 and J5 on the DC Power Supply, and J8, J9, and J10 on the DC Controller PCA. If the error persists, replace the Paper Pickup PCA, the DC Controller PCA, the DC Power Supply PCA, and finally, the Formatter PCA.

Table 7-1. Printer Message Summaries (continued)

MESSAGE	SYMPTOMS AND RECOMMENDATIONS
56 ERROR	The envelope feeder is detected while the printer is in Duplex Mode. Press Continue to clear the error. Put the printer in Simplex Mode or determine why the printer is detecting the envelope feeder.
57.0 ERROR	A general motor failure has occurred. Power cycle the printer. If the error persists, replace the motors, one at a time to clear error.
57.x SERVICE	57.1 indicates a Main Motor failure. Check and reseal J1010 on the DC Controller PCA. 57.2, 3, or 4 indicate that Fan Motor 1, 2, or 3 (respectively) has failed. Attempt to clear by power cycling. Check that the fans are plugged in and not shorted to frame ground. If the error persists, replace the indicated fan.
59 ADD MEMORY	The PostScript option is installed without enough memory to support the application. The PostScript option requires a minimum of 4 Mbytes for proper operation.
60.x ERROR (LaserJet IIISi)	One of the DRAM expansion cards is out of order. The order of the cards is from bottom (slot 1) to top (slot 4). Press Continue to clear this error.
61.x ERROR (LaserJet IIISi)	One of the DRAM cards is the wrong size or speed. The HP LaserJet IIISi supports 1 and 4 Mbyte, 36-bit SIMMs, rated at 80 NS. Check that the SIMMs meet these specifications. The printer will still use the RAM below the faulty location. The order of the cards is from bottom (slot 1) to top (slot 4). Press Continue to clear this error.
61.x SERVICE (LaserJet 4Si)	Indicates a parity error when accessing the SIMM in slot x. Attempt to clear the error by power cycling the printer. If the error persists, replace the Formatter PCA.
62 SERVICE (LaserJet IIISi)	A checksum error was detected in the Formatter PCAs internal font ROM. If the message persists, replace the Formatter PCA.
62.x SERVICE (LaserJet 4Si)	Indicates a problem with memory. The x value is: 0 indicates internal memory, 1-4 indicates SIMM slots, and 5-6 indicates cartridges (upper and lower respectively).

Table 7-1. Printer Message Summaries (continued)

MESSAGE	SYMPTOMS AND RECOMMENDATIONS
63.0 SERVICE	An error was detected in the on-board DRAM. Run extended diagnostics and replace the indicated assembly.
63.x ERROR (LaserJet IIISi)	Indicates a faulty DRAM card. Replace the memory card indicated in the message. Press Continue to clear this error.
63.5 SERVICE (LaserJet IIISi)	Indicates a faulty on-board SRAM. Power cycle the printer. Replace the Formatter if the error persists.
64 SERVICE	Indicates a laser scan buffer error. Try to clear the error by power cycling the printer. If the error persists reseal the connectors and check the cabling. Finally, replace the Formatter PCA.
65 SERVICE (LaserJet 4Si)	Indicates a dynamic RAM controller error. The user can attempt to clear the error by power cycling the printer. If the error persists, replace the Formatter PCA.
67 SERVICE (LaserJet 4Si)	Indicates a miscellaneous interface hardware error. Attempt to clear the error by power cycling the printer. If the error persists, replace the Formatter PCA.
68 COLD RESET	Indicates that the NVRAM is new or that the on-board battery is dead. If this error persists it confirms that the battery is dead.
68 ERROR	Recoverable NVRAM error. Press Continue to clear the error. Check the Front Panel settings to see if any were set back to the factory default settings.
68 READY/SERVICE (LaserJet 4Si)	An NVRAM failure has occurred and replacement of the part is required. The 00 READY message becomes 68 READY/SERVICE to remind the operator of the problem.
68 SERVICE	Indicates a defective NVRAM (requires replacement of the part). Power cycle the printer to clear this error.
70 ERROR (LaserJet 4Si)	The firmware cartridge cannot be executed. The cartridge is not designed for this Formatter or the cartridge parameters are inappropriate for this hardware environment.

Table 7-1. Printer Message Summaries (continued)

MESSAGE	SYMPTOMS AND RECOMMENDATIONS
71 ERROR (LaserJet 4Si)	An attempt was made to use a "personality" firmware cartridge. Personality cartridges are not supported on the LaserJet IIISi/4Si.
72 SERVICE (LaserJet 4Si)	A font cartridge has been removed while the firmware was trying to read it. This causes an address error. The error can be cleared by power cycling the printer.
79 SERVICE XXXX	An unexpected Formatter firmware error has been encountered. Document error message including the error type listed at "xxx". Power the printer OFF, then back ON. If the message persists, proceed as follows: Continuous: Remove memory PCAs and font, or macro cartridges one at a time. If the problem persists and the printer has an I/O PCA installed, try a different interface (parallel or serial) if possible. If the problem continues, replace the Formatter PCA. Intermittent: Have the <i>customer</i> remove, for a period of time, any non-HP hardware/firmware products attached to the printer. If the problem continues during this test period, replace the Formatter PCA. There is a possibility of getting a 79 ERROR when an MIO card fails to initialize within 40 seconds. In this case the error code will read 79 ERROR with a subcode 08H2. Error message documentation should be returned with the defective component.
80 SERVICE (LaserJet IIISi)	Indicates an MIO failure. Check for bent pins on the Formatter MIO connection. Replace the MIO if the error persists. Finally, replace the Formatter.
89 SERVICE (LaserJet IIISi)	Indicates a Postscript ROM failure. Check for bent or broken pins on the PostScript ROMs. Check that the ROMs are in the correct location and orientation. Power cycle the printer. Replace the Postscript ROMs if the error persists.

Table 7-1. Printer Message Summaries (continued)

MESSAGE	SYMPTOMS AND RECOMMENDATIONS
CONFIG LANGUAGE	This message is the result of holding down the Enter key while powering ON the printer. Following self test, the user will need to select the desired display language using the + , - , and Enter keys.
EE LOAD [Envelope size]	A request has been received for an envelope size that is not currently installed in the printer. "Envelope size" may be one of the following: "COM10, MONARC," or "DL". If the requested envelope size does not match the size of the envelopes in the requested tray, pressing the Continue key allows the operator to print on the loaded envelopes; however, the output is formatted for the requested envelope size. Thus, image clipping may occur.
EE TRAY EMPTY	The large capacity envelope tray is not currently selected and is empty. Add envelopes.
EE TRAY = [Envelope size]	This message is displayed when envelopes are added to the large capacity envelope tray. "Envelope size" may be one of the following: "COM10, MONARC," or "DL."
FC TOP FC BOTTOM FC BOTH (LaserJet IIISi)	The upper, lower, or both font cartridges were removed while the printer was off-line and contained buffered data. To clear this error, power OFF the printer, reinsert the indicated cartridge(s) and power ON.
FC TOP NO FONT FC BTM NOFONT FC BOTH NO FONT (LaserJet IIISi)	A bad font cartridge is installed in the indicated slot. Power OFF the printer, remove the indicated font cartridge and install a known good cartridge. Power ON the printer.
FE CARTRIDGE (LaserJet 4Si)	The font cartridge was removed when the printer was on-line. Power cycle the printer to clear this error.
FE FONT CART ERR (LaserJet IIISi)	

Table 7-1. Printer Message Summaries (continued)

MESSAGE	SYMPTOMS AND RECOMMENDATIONS
FI INSERT TOP FI INSERT BTM (LaserJet 4Si)	A cartridge was removed while the printer was in an error state. To properly insert the cartridge, first power OFF the printer, then remove the specified cartridge, clear any pending error conditions, and then insert the cartridge. Power ON the printer.
FR REMOVE TOP FR REMOVE BTM (LaserJet 4Si)	A cartridge was inserted while the printer was in an error state. To properly insert the cartridge, first power OFF the printer, then remove the specified cartridge, clear any pending error conditions, and then re-insert the cartridge. Power ON the printer.
ME FEED [Envelope size] (LaserJet 4Si)	A request has been received for an envelope to be manually fed. "Envelope size" may be one of the following: "COM10, MONARC," or "DL". The message may be overridden and paper fed from the installed cassette by pressing Continue .
MENUS LOCKED (LaserJet 4Si)	Control Panel security is in effect and changes to most menu items has been disallowed. This message is automatically cleared after approximately 5 seconds.
MF FEED [Paper size] (LaserJet 4Si)	A request has been received for a sheet of paper to be manually fed. "Paper size" is either A4, Exec, Letter, or Legal. The message may be overridden and paper fed from the installed cassette by pressing Continue .
PF FEED [Paper size] (LaserJet IIISi)	
OUTPUT BIN-FULL	The UPPER bin-full Sensor indicates to the Formatter that the UPPER output bin is full. Remove the paper and lower the Sensor Arm to clear. This message will occur if the arm is stuck in the up position.
UC/LC LOAD [Paper size]	Add media to the input tray. If problem continues, refer to the "UC/LC LOAD" Message section.
xC TRAY EMPTY	A cassette not currently selected has run out of paper. The "x" indicates the upper or lower tray. If the problem persists, see the UC/LC LOAD Message section.

Clearable Warnings (LaserJet 4Si Only)

Clearable warnings indicate a transient condition which are important for the user to acknowledge, but not critical enough to take the printer off-line and stop the printing process.

Clearable warnings appear each time the printer alters resolution or page protections settings to allow completion of a job. If the printer receives a print request which is too complex for the amount of installed memory, it will first attempt to satisfy the request by reducing resolution, then by lowering the level of page protection, then by compressing the data if possible. For example, the printer may automatically reduce resolution from 600 to 300, and change page protection setting from legal to letter.

Clearable warnings are identified by a W as the first character followed by a single place digit or alpha character. Clearable warnings appear in place of the **PP READY** message and will remain there until the user presses **Continue**.

Table 7-2. Clearable Warning Messages

MESSAGE	SYMPTOMS AND RECOMMENDATIONS
W1 IMAGE ADAPT (LaserJet 4Si)	Adaptive data compression had to resort to Lossy compression to fit the raster graphics in the available memory. This has caused a data loss in the raster output.
W2 INVALID PERS (LaserJet 4Si)	PJL encountered a request for a personality that did not exist in the printer. The job was aborted and no page was printed.
W3 JOB ABORTED (LaserJet 4Si)	The personality for the current job could not be run in the available memory. The job was aborted and no page was printed.
W4 JOB 300/OFF (LaserJet 4Si)	The job parameter of resolution and page protection could not be met with the available memory. The job was downgraded to a resolution of 300 dpi and page protect of OFF to fit the available memory.

Table 7-2. Clearable Warning Messages (continued)

MESSAGE	SYMPTOMS AND RECOMMENDATIONS
W5 JOB 300/LTR (LaserJet 4Si)	The job parameter of resolution and page protection could not be met with the available memory. The job was downgraded to a resolution of 300 dpi and page protect of LTR (Letter) to fit the available memory.
W6 JOB 300/A4 (LaserJet 4Si)	The job parameter of resolution and page protection could not be met with the available memory. The job was downgraded to a resolution of 300 dpi and page protect of A4 (A4) to fit the available memory.
W7 JOB 300/LGL (LaserJet 4Si)	The job parameter of resolution and page protection could not be met with the available memory. The job was downgraded to a resolution of 300 dpi and page protect of LGL (Legal) to fit the available memory.
W8 JOB 600/OFF (LaserJet 4Si)	The job parameter of resolution and page protection could not be met with the available memory. The job was downgraded to a resolution of 300 dpi and page protect of OFF to fit the available memory.
W9 JOB 600/LTR (LaserJet 4Si)	The job parameter of resolution and page protection could not be met with the available memory. The job was downgraded to a resolution of 300 dpi and page protect of LTR (Letter) to fit the available memory.
W0 JOB 600/A4 (LaserJet 4Si)	The job parameter of resolution and page protection could not be met with the available memory. The job was downgraded to a resolution of 300 dpi and page protect of A4 (A4) to fit the available memory.
WM CHECK MEM MGT (LaserJet 4Si)	There is still sufficient memory for environment saving but the current setting cannot be satisfied by available memory. Re-configure the extended memory for the current personality (using the MEM CONFIG MENU).
WM MEM MGT N/A (LaserJet 4Si)	Memory management of environment saving is now not available because of configuration changes. If environment saving is still desired, print a self test page and check the configuration settings.

PRINTER MESSAGE DETAILS

This section gives further details on selected printer messages. Read the appropriate sections here if there is a persistent error which cannot be resolved by following the recommendations in the previous “Printer Message Summary” tables.

“02 WARMING UP” (continuous) Message

During normal operation, the printer displays a 00 READY message within 90 seconds of power ON. If the 02 WARMING UP message persists for longer than 90 seconds, perform the checks for Blank Display and 02 Warming up.

Table 7-3. 02 WARMING UP (continuous) Checks

CHECKS	ACTION
1. Are there host system interface problems? (LaserJet IIISi only.)	Disconnect the interface cable from the printer, power printer OFF, then ON. The problem may be caused by a parallel cable connected to a serial port or vice-versa, both serial and parallel cables attached, or a bad host interface.
2. Is the Fusing Assembly defective?	Check if Fusing Assembly is warming up. If not, replace the Fusing Assembly.
3. Is the DC Controller PCA inoperative?	Replace the DC Controller PCA.
4. Is the DC Power Supply inoperative?	Replace the DC Power Supply.
5. Is the Formatter PCA inoperative?	Replace the Formatter PCA.

“UC/LC LOAD” Message

Three conditions result in the UC/LC LOAD messages: first, the absence of either input tray; second, the absence of media in either tray; third, the tray size switches may be defective and not recognize the presence of the paper tray. The tray is sensed as the tray identifier tabs contact one or more of the three tray identifier microswitches in the tray input cavity of the printer. Under normal conditions, the UC/LC LOAD message is also generated when a paper size other than what is loaded in the printer is called for by the user or software.

The Paper Sensing Arms are located in the paper input areas of the printer. During normal operation, the Paper Sensing Arm flag rests on the media installed in the paper tray. The Sensing Arm flag is attached to a shaft. The opposite end of the shaft is a photo-interrupter that rotates through the sensors on the Paper Control PCA. These sensors are:

- PS372 Paper out-upper tray.
- PS382 Paper out-lower tray.

The presence of paper in the paper tray is sensed by the Paper Sensor Arm. During normal operation the Sensor Arm rests on top of the paper in the tray. At this point the sensors are not blocked. When the tray is empty, the arm swings through the opening in the tray, the photo-interrupter attached to the Paper Sensor Arm Shaft rotates and blocks the sensor diode PS372 on the paper control PCA (upper tray) or PS382 (lower tray). Sensor diode PS373 (upper tray) or PS 383 (lower tray) are the home position sensors for the tray lifters. As the lifter assembly lifts the paper, the photo-interrupter attached to the Paper Sensor Arm Shaft blocks the sensor diode. At this point it recognizes its upper travel limit and indicates to the Formatter that paper is installed in the cassette.

Table 7-4. "UC/LC LOAD" Message Checks

CHECKS	ACTION
1. Is there any media in the paper tray?	Install media.
2. Are the proper paper trays fully inserted in the printer?	Reseat the paper trays. Make sure each tray is pushed into the printer until it contacts the tray identifier microswitches.
3. Does the Control Panel's paper setting match the tray being used?	Correct setting to match tray type.
4. Is the software application requesting correct paper size?	Verify application request.
5. Is the expected tray size being called for?	Check that the image is correctly sized (formatted) for the paper size selected.
6. Are any of the tray identifier protrusions broken on either paper tray?	Inspect the tray for damage. If damaged, replace the tray.
7. Is either Paper Sensing Arm broken?	Inspect the arms for damage; if broken, replace the PIU.
8. Is anything hindering movement of either Paper Sensing Arm?	Verify that the Sensing Arms swing through their full range of motion.
9. Are the lifter solenoids operational?	1. Watch the tray move into position. 2. Replace the lifter. 3. Replace the Paper Feed PCA. 4. Replace the DC Controller.

Cassette Size Switches (SW2301, 2302,2303) Functional Check

The Paper Cassette size microswitch levers are located on the lower right side of each Paper Cassette cavity. The microswitches indicate the size of the installed Paper Cassette to the DC Controller. The switches are activated by protrusions located on the rear of the Paper Cassette. When the tray is inserted, the protrusions activate (engage) the microswitches (refer to Figure 7-2 below).

Table 7-5. Configuration of Tray Size Sensing Switches

Paper Tray Size	SW2301	SW2302	SW2303
Executive	ON	ON	ON
A4	ON	ON	OFF
Legal	OFF	OFF	ON
Letter	ON	OFF	OFF
No Tray Installed	OFF	OFF	OFF

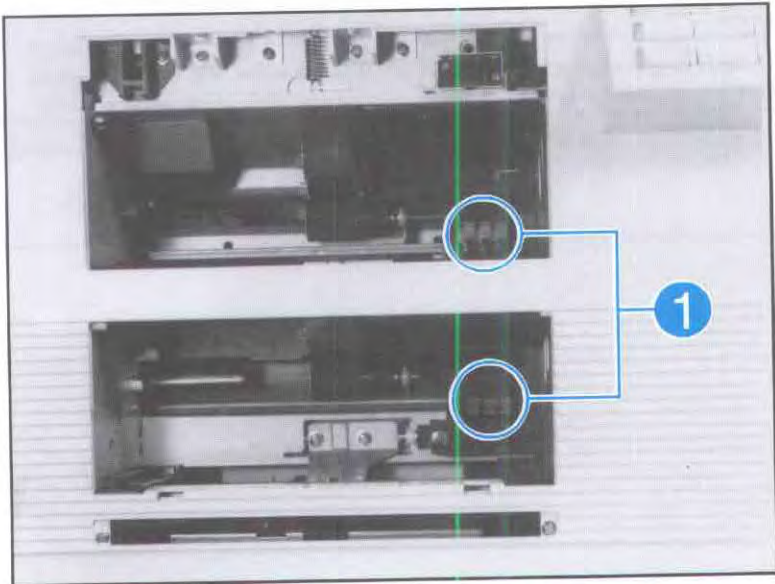


Figure 7-2. Tray Size Sensing Microswitches Locations

“12 PRINTER OPEN” Message

The 12 PRINTER OPEN error indication tells the operator to close the printer's Top Cover Assembly. The DC Controller PCA detects this condition when PS1 is blocked by the latch flag which engages the photosensor diode when the printer Top Cover is open. In addition, when the Top Cover is open, SW101 on the AC Power Inlet Assembly also opens and disables the 24BVDC to the printer.

Table 7-6. “12 PRINTER OPEN” Checks

CHECKS	ACTION
1. Is the Top Cover Assembly open?	Ensure the Top Cover Assembly is firmly closed.
2. With the Top Cover open, check that the Sensor Flag is clear (above) sensor PS1 (see Figure 7-3).	Reform or replace the latch flag.
3. With the Top Cover open, depress the door actuator lever and check that the Sensor Flag fully blocks the sensor (see Figure 7-3).	Reform or replace the latch flag.
4. Close the Top Cover, remove the Formatter, and check that the photosensor voltage at the PS1 connector (J004) on the DC Controller changes.	Reseat or Replace the photosensor if bad.
5. With the Left Side Cover removed, power ON the printer and check that the fusing light is coming on.	If the fusing light is not visible from the left side of the printer, check SW101.
6. Are the DC Power Supply connectors fully seated?	Visually inspect. Reseat module if necessary.
7. Is the DC Controller PCA defective?	See the “+24B VDC Electrical Check”.
8. Is SW1002/SW1003 actuated?	See “14 NO TONER CART” message.

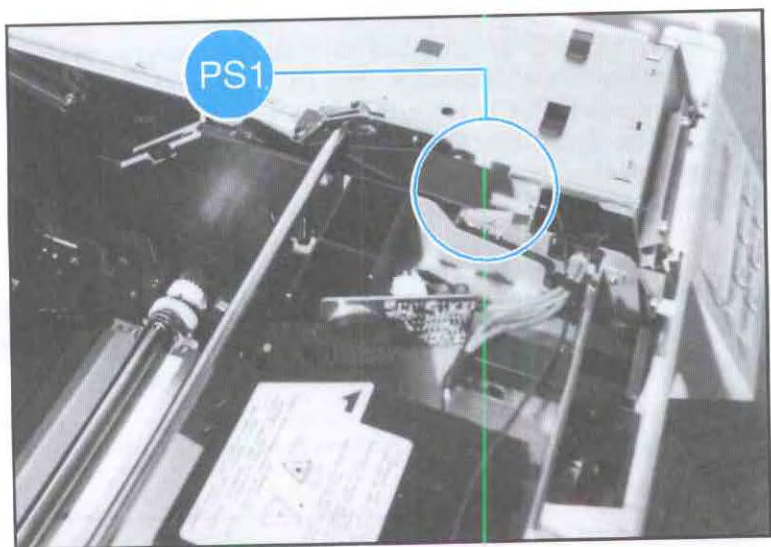


Figure 7-3. PS1: Top Cover Closed Photosensor and Actuator Mechanism

“13 PAPER JAM” Message

Paper jams occur when paper fails to arrive at, or to clear the paper path sensors in the allotted time. Paper movement is monitored by (4) paper sensors in the main printer body. These are:

- PS3, the sensor located in the Registration Assembly.
- PS151, located in the Fusing Assembly.
- PS7, the face-down Output Sensor.
- PS2, Paper Refeed Sensor.

These sensors detect both the leading and trailing edge of the paper. Additional paper sensors located in the Duplex Assembly are:

- PS4 Switchback Sensor.
- PS5 Duplex Assembly Sensor.

The DC Controller monitors these sensors to check that the paper arrives at this location in the allotted time. Should the paper fail to arrive at the sensor in the allotted time, the appropriate error message will be displayed.

Note



When troubleshooting paper jams, be sure to remove paper from the entire paper path, including any optional media accessories.

When troubleshooting jams, it may also be helpful to defeat the top cover interlocks to verify drive train movement and certain other printer functions. For the procedure, refer to the section ““DEFEATING THE TOP COVER INTERLOCK”,” later in this chapter.

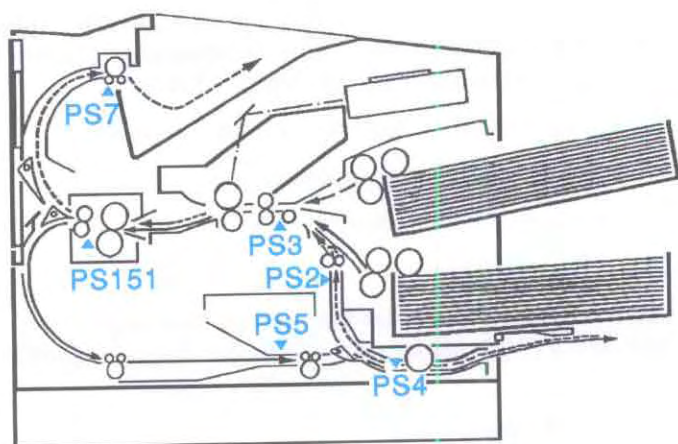


Figure 7-4. Paper Motion Sensors

The paper jam codes are:

- 13.1 INTERNAL JAM. Paper is detected within the printer at power ON, or paper did not clear a sensor in the allotted time. Check the function of PS3 in the Registration area. Check the fusing exit Sensor Flag (see Figure 4-4) and sensor, (PS151 on the AC Power Inlet Assembly), or the inner side of the Delivery Cover Assembly (PS7) for jammed paper. Check that PS 151 is not broken and that it trips the sensor on the Power Input PCA. Check the operation of PS2 in the Refeed Assembly. Make certain that the Transfer Charge Roller is properly seated and that its retainer clip is in place. This error can also be caused by a defective 24VDC solenoid on the Right Main Block Assembly.
- 13.2 INPUT JAM. A paper jam is detected at the input section of the printer. This could be PS2 (Refeed Sensor), or PS371 (Manual Feed Sensor) if the envelope feeder is installed. PS2 (Paper Refeed Sensor) can also detect a 13.1 paper jam when the printer is operating in the Duplex Mode. Check the front of the Duplex Assembly and the Paper Refeed Assembly for jammed paper. If paper does not reach PS3 in time, an input jam will occur. Remove the jammed paper from the front of the printer at the paper input section.
- 13.3 DUPLEXER JAM. This message indicates that paper is detected at power ON, or did not clear PS4 or PS5 (Duplex Paper Sensor or Switchback Paper Sensor) in the allotted time. Clear the jammed paper through the door on the left side of the printer.
- 13.4 OUTPUT JAM. Paper is detected at power ON, or paper did not clear PS7 in the allotted time. Remove the jammed paper. In this case paper will be jammed at the face-down output port of the printer.

If one of the paper path sensors is broken, it may appear to the microprocessor as a paper jam, even if no paper is in the paper path. If a “13 Paper Jam” message occurs and no paper is in the paper path, perform the checks listed in the following pages.

Paper Jam Reporting Priority

If more than one sensor detects jammed paper, the reporting priority is:

1. Internal Paper Jams.
2. Duplex Paper Jams (if the Duplex Assembly is installed).
3. Input Paper Jams.
4. Output Paper Jams.

Outline of “13 PAPER JAM” Causes

Paper Jams will occur at incremental points along the paper path and the message displayed at the Front Panel will indicate where the microprocessor detected the jam. The message the Front Panel displays may not reflect the actual cause of the jam.

The following outline describes the cause and effect of paper jams as they occur along the paper path.

Media

- Check that the media is supported as described in the *LaserJet Family Paper Specification Guide* (5002-1801).
- If print defects occur with paper jams, check that the media is not damp and that it is being stored properly.
- Try media that is supported to determine if the failure is associated with the media the customer is using.

General Paper Jam Hints

- Clean the printer. Dirt in the paper path will inhibit free movement of paper through the printer.
- Remove the Duplex Assembly if one is installed. This will help to isolate the source of the problem. If paper jams are a result of a defective Duplex Assembly, replace the Duplex Assembly.

- Vary the input and output selection to determine if a particular input source or output destination is causing the problem.

Input Area Paper Jams

- If paper does not leave the cassette properly check the Pickup and Separation Rollers for wear. Check that the lift mechanism is functioning properly.
- Check that the media is supported as described in the *LaserJet Family Paper Specification Guide* (5002-1801). Media that is very smooth will sometimes cause multiple feeds.
- Multiple feeds from the cassette can be caused by incorrect installation of the Separation Roller clutch and the Pickup/Separation Rollers. Check that the clutch is not installed backwards and that the Pickup/Separation Rollers are fully seated and latched as shown in Chapter 4.
- Defective paper tray size switches may cause a paper jam by indicating the wrong size paper to the Formatter. If this is the case, paper may jam at the face-down output tray, and a 13.4 PAPER JAM message will occur. Replace the Paper Input Unit.

Registration Area Jams

- If paper is jammed at the Registration Assembly, remove the toner cartridge, lift the drum shutter and inspect the gears under the shutter. If the gears are worn or damaged, replace the toner cartridge.
- Replace the Registration Assembly if the printed image starts early or late on the page, or if the Registration Assembly causes jams.
- If paper is damaged at the Transfer Charge Roller, check that the Transfer Charge Roller and its retaining clip are correctly installed. If the Transfer Charge Roller is not properly seated accordion jams may occur in that area. Check the Charge Roller coupler and gear for damage or wear. Replace the Left Block if necessary.

Fusing Assembly Jams

If paper jams at the Fusing Assembly check:

- That all the shipping spacers have been removed from between the fuser and the Pressure Roller. Chips from the shipping spacers can become lodged around the Fusing Roller and cause paper jams at the Fusing Assembly.
- If paper jams at the fuser, check that the Sensor Flag movement is free and that the Sensor Arm is installed correctly in its mounting clip on the fuser.
- Replace the Fusing Assembly if:
 - The Fusing Assembly is installed correctly, but the Fusing Assembly Sensor (PS151) is damaged, or has interference in its travel.
 - If paper wrinkles along the vertical axis.
- If the printer runs in continuous Duplex Mode when Duplex is not selected, check for toner build up at the exit of the Fusing Assembly. Replace the fuser if necessary, and perform the solenoid checks as described in the next section.

Face-up/Face-down and Duplex Diverter Paper Jams

Paper jams at the face-up/face-down selector and at the Duplex diverters are caused by:

- Check the Duplex deflector pawls for damage, wear, or contamination.
- Improperly mounted or calibrated solenoids. (See the solenoid adjustment procedure in Chapter 6.)
- Check that the solenoid linkages are fully attached and are not damaged.
- Check that the Sensor PCA cables are not damaged and that the sensors and connectors are fully seated.
- If possible, replace the Sensor PCA with one known to be good. Replace the Sensor PCA if this clears the problem.

Face Down output, Job Offset and Delivery Paper Jams

If paper jams at the facedown output check:

That the Output Bin-Full Sensor (PS8) is fully seated and is working properly. Replace PS8 if the output bin-full message remains when the bin is empty.

Check the cabling to the Job Offset Assembly.

Replace the Job Offset Assembly if the problem persists.

Duplex Assembly Paper Jams

Most paper jams in the Duplex Assembly require that the Duplex Assembly be replaced.

Before replacing the Duplex Assembly, remove the Duplexer and test Paper Transport through the simplex paper path. If paper is diverted to the Duplex Assembly when the assembly is removed, check the Fusing Assembly Output for toner buildup, and check the Duplex diverter solenoid and linkages for proper adjustment as described in chapter six.

Check that the Duplex D-Roller is installed correctly and is fully seated on its keyed shaft.

Refer to the Duplex Assembly Troubleshooting section of this chapter for more information.

“14 NO TONER CART” Message

The 14 NO TONER CART message occurs when neither of the drum sensitivity switches (SW1002 and SW1003) on the Paper Control PCA is activated. When the toner cartridge is installed and the Top Cover Assembly is closed, the toner cartridge drum sensitivity tabs contact microswitches SW1002 and SW1003 on the Paper Control PCA. The input from these switches is fed directly to the sub-microprocessor on the DC Controller PCA. This microprocessor uses these signals to regulate laser power output.

Table 7-7. “14 NO TONER CART” Checks

CHECKS	ACTION
1. Is a toner cartridge installed in the printer?	Install cartridge if necessary.
2. Is there at least one sensitivity tab on the right side of the toner cartridge?	Visually inspect. The toner cartridge must have at least one sensitivity tab on the right side of the cartridge. If the cartridge has no tab, replace the toner cartridge.
3. Is the tab engaging the microswitch on the DC Controller PCA?	1. Try another cartridge. 2. Verify that the metal tab on the upper right corner of the DC Controller PCA is installed correctly. (This tab keeps the board from pushing away from the cartridge.)
4. Does the error go away when one of the sensitivity switches is taped down?	Tape one of the sensitivity switches down as described in the following procedure.
5. Ensure that the DC Controller PCA is installed correctly and fully seated. Is DC Controller PCA defective?	See the “Drum Sensitivity Switches (SW1002 and SW1003) Functional Check” following this table.

Drum Sensitivity Switches (SW1002 and SW1003) Functional Check

The toner cartridge Drum Sensitivity microswitches (SW1002 and SW1003) are located on the inner right side of the printer (see Figure 7-3). Test the switches as described below. If either switch is bad, replace the DC Controller.

1. Open the printer's Top Cover Assembly.
2. Note the position of the drum sensitivity tab on the right side of the toner cartridge (if no tab is present, replace the cartridge). Tape the corresponding drum sensitivity switch down to ensure the switch is actuated.
3. Close the Top Cover and press the **On Line** key. The display should change from 14 NO TONER CART to 00 READY.
4. Remove the toner cartridge and tape the other switch down.
5. Close the Top Cover and press the **On Line** key. Again, the display should change from 14 NO TONER CART to 00 READY.

If this test fails for either switch, the DC Controller PCA is defective, poorly mounted, the switch actuator is bent, or the tab on the upper right corner of the DC Controller PCA is not installed correctly. It may be possible to re-form the switch actuator as a temporary fix to finish the print job.

“16 TONER LOW” Message

A toner sensing mechanism is located in the toner cavity of the toner cartridge. The function of this mechanism is similar to an antenna, sensing the AC Developer Bias voltages applied to the developer mixture by the High Voltage Power Supply Assembly. If the toner level in the cartridge falls below the minimum level, the 16 TONER LOW message is displayed. The toner low message will be displayed three times as the amount of toner diminishes. As the cartridge becomes more empty, print defects will occur.

Table 7-8. “16 TONER LOW” Checks

CHECKS	ACTION
1. Is the Top Cover closed and is PS1 activated by the Door Open Sensor Flag?	Check that the Door Open Sensor Flag (sheet metal) is activating PS1. Check that PS1 is not bent, broken or hanging up on its surrounding housing. Open the Top Cover and check that it is free to close properly.
2. Photosensor PS1 may be defective.	Replace PS1.
3. Is the toner cartridge out of toner?	Shake the toner cartridge. If the message persists, replace the cartridge.
4. Is the toner level sensor connector damaged?	Inspect connector for damage (see Figure 7-5 callout 1 and Figure 7-6).
5. Is the toner cartridge defective?	Replace the toner cartridge if visibly damaged.
6. Is the DC Controller PCA defective?	See the “Toner Low Functional Check” following this table.
7. Is the High Voltage Power Supply Assembly defective?	See the “Toner Low Functional Check” following this table.

Toner Low Functional Check

Since there is no good way to measure whether the toner low sensing system is malfunctioning (i.e., the warning message is constantly being displayed or is never displayed), replace the following components in the order listed:

1. Try a known good toner cartridge.
2. DC Controller PCA.
3. High Voltage Power Supply Assembly.

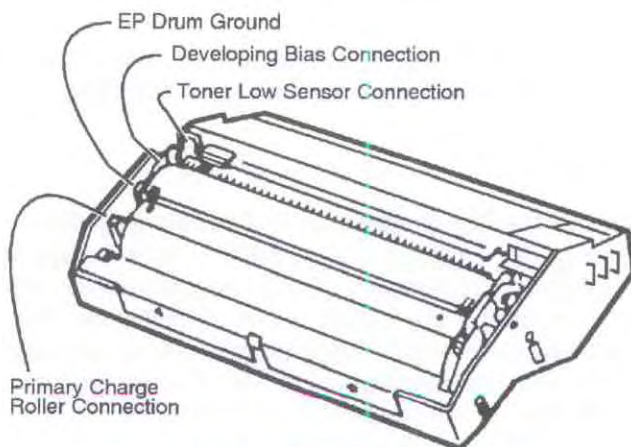


Figure 7-5. Toner Cartridge Connections

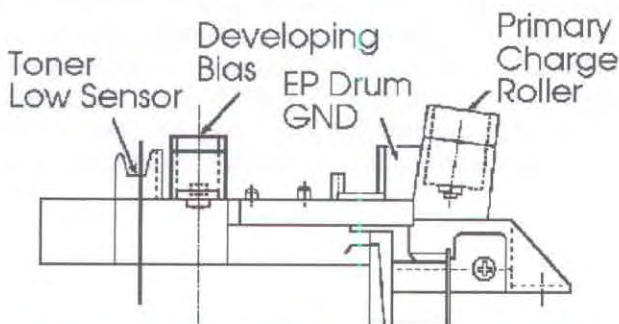


Figure 7-6. Corresponding Print Engine Connections

“41 ERROR” Message

Two displays, 41 ERROR and 51 ERROR, indicate a laser beam detect problem. The 41 ERROR is displayed when the beam is “lost” for less than 2 seconds. An error condition of greater than 2 seconds will result in a 51 ERROR message. See the 51 ERROR Message section for a discussion of the 41 ERROR message condition.

“50 SERVICE” Fuser Malfunction

Warning



The Fusing Assembly is HOT. Allow the assembly to cool thirty minutes before servicing.

The purpose of the fusing system is to maintain a constant temperature on the Fusing Roller so that the toner image is permanently fused to the paper. A high intensity fusing lamp, located in the center of the Fusing Roller, provides the high temperature required for the fusing process. While the printer is in Standby Mode, a temperature of 180° C is maintained on the Fusing Roller. While the printer is in Printing Mode, a temperature of 190° C is maintained.

The main components of the fusing system are the fusing lamp and its associated Fusing and Pressure Rollers, a Thermistor, Thermo-protector, and the AC Controller/safety circuitry in the AC Power Module. The Thermo-protector is a switch designed for over-temperature protection and opens when the temperature reaches 210° C. The Thermo-protector may not reset when the fuser cools. It may be necessary to replace the Fusing Assembly.

The following conditions result in a fusing error:

1. A temperature below 140° C.
2. A temperature above 230° C.
3. A condition wherein a temperature of 165° C is NOT reached within 90 seconds after power ON.

If any of the fusing error conditions occur, the DC Controller posts a 50 SERVICE error. To clear 50 SERVICE error, you must:

- Wait a minimum of twenty minutes to allow the printer time to reset itself, or short CP 005 on the DC Controller (see Figure 7-14, for the IIISi, or Figure 7-15 for the 4Si), to frame ground. This technique will clear the 50 SERVICE immediately.
- Check and reseat J1, J3 and J11. Check that CB101 is not tripped. Refer to the “Blank Display” section, later in this chapter.

Warning

The Fusing Assembly may be hot.



Table 7-9. “50 SERVICE” Fuser Malfunction Checks

CHECKS	ACTION
1. Is the Fusing Assembly correctly seated into its connectors on the AC Power Inlet Assembly and base plate (right and left ends)?	Visually inspect. Ensure that the AC Power Inlet Assembly and its connectors are properly seated (no bent pins or pins outside their receptacles).
2. Does the problem persist?	Replace the Fusing Assembly.
3. Is the Cable Assembly defective?	If the fault is intermittent, replace the Cable from the DC Sensor PCA to the DC Controller.
4. Check connector J201 on the Sensor PCA.	Reseat the connector.
5. Is the fuser enable switch (SW101) engaged when the Top Cover is closed?	Open the Top Cover and verify that the 12 OPEN message is displayed.

“41/51 ERROR” Message

Two displays, 41 ERROR and 51 ERROR, indicate a laser beam detect problem. The 41 ERROR is displayed when the beam is “lost” for less than 2 seconds. An error condition of greater than 2 seconds will result in a 51 ERROR message.

A 41 ERROR (temporary Beam Detect Error) may occur during Laser/Scanner operation. This error results when the beam detect signal falls outside the timing window established by the DC Controller PCA. If this situation occurs for longer than an interval of two seconds, a 51 ERROR beam detect malfunction will occur.

The BEAM DETECT ($\overline{BD}$) signal is the horizontal synchronization signal indicating the beginning of a scan line. Once beam detect synchronization is achieved, video data may be transferred from the Formatter PCA to the DC Controller PCA to turn the laser diode ON and OFF, thereby writing print data (in the form of dots) on the photosensitive drum.

At the beginning of printer operation, the DC Controller enables the Laser/Scanner Assembly and sets up a timing window. The DC Controller expects to receive a beam detect signal during this window. Once received, all data transfer is synchronized from the last beam detect signal.

“51 ERROR” Message

A “Beam Detect Malfunction” (51 ERROR) indicates that the laser beam is not being detected. Typical causes for beam detection failure are: a defective DC Controller, Laser/Scanner, or condensation on the mirror. Mirror condensation occurs when the printer is moved from a cold to a warm room. If the printer is allowed to stand for a few hours the condensation will dissipate.

Table 7-10. "51 ERROR" Beam Detect Checks

CHECKS	ACTION
1. Has the printer been moved from a cold to a warm room?	Allow the printer to stand six hours until any condensation has dissipated.
2. Is the laser shutter protrusion tab on the toner cartridge broken or damaged?	Visually inspect. Replace the toner cartridge if necessary.
3. Is the fiber-optic cable between the Laser/Scanner Assembly and J001 of the DC Controller PCA correctly seated into each assembly?	Inspect the cable for damage and ensure that it is seated properly. If necessary, remove the fiber-optic cable and shine a light through the cable to verify light continuity. Replace the cable if damaged. Warning: Do not use the laser light to perform this test.
4. Are connectors J002 on the DC Controller and J601 on the Laser Drive PCA properly seated?	Inspect connectors and wiring. Reseat or replace cables if necessary.
5. Is 12 VDC present at J601-2 of the Laser Drive PCA?	Verify voltage with voltmeter. If voltage is not present, replace cable to DC Controller.
6. Is the Laser/Scanner Cable Assembly damaged?	Closely inspect Cable Assembly. Examine for damaged wire crimps at the connector ends of the assembly. Replace harness assembly if damage is suspected.
7. Is the Laser Unit defective?	Replace the Laser/Scanner Assembly. If the error persists, replace the DC Controller PCA.

Note



The Laser Power Checker tool is not supported for use on the LaserJet 4Si printer.

“52 ERROR” Scanner Malfunction

The Scanner Motor is a flat, brushless, +24 VDC motor. Motor operation is completely controlled by the DC Controller main microprocessor and motor speed is controlled by the SCANNER CONTROL (SCNCONT) signal. Motor speed is monitored via the FG- and FG+ feedback signals. LED 003 on the DC Controller PCA is illuminated when the Scanner Motor is at its operational speed.

The Scanner Motor is enabled briefly when the printer is powered ON (during the printer's power ON self test) or whenever the PRINT (PRNT) command is received by the Formatter PCA. The Scanner Motor makes a distinctive sound, identified as a “variable pitch whirring noise,” when starting up.

Scanner Motor Functional Check

Check and reseat connector J2 on the Laser/Scanner Assembly. If the problem persists, do the following:

While performing Test Print, *listen* for the distinct noise of the Scanner Motor starting up. If this noise cannot be detected, and LED 003 does not illuminate during the engine test print, replace the following assemblies in the order listed:

1. Laser/Scanner Cable Assembly to the DC Controller.
2. DC Controller PCA.
3. Laser/Scanner Assembly.

Table 7-11. Scanner Malfunction Checks

CHECKS	ACTION
1. Are the Scanner Motor connectors (J701 on the Scanner Motor PCA and J002 on the DC Controller PCA) firmly seated in their connectors?	Visually inspect. Ensure that connectors are properly seated. If the cable is damaged, replace the cable.
2. Is the problem intermittent?	Replace the Cable Assembly to the DC Controller.
3. Does the Scanner Motor run continuously?	Replace the Cable Assembly to the DC Controller.
5. Is 24B VDC present on J701-1 of the Scanner Motor PCA?	Measure the voltage. If voltage is not present, replace the cable to the DC Controller PCA. Check that the 24B VDC is present on the DC Controller.
6. Is the Scanner Motor defective?	See the "Scanner Motor Functional Check" on the previous page.
7. Is the DC Controller defective?	See the "Scanner Motor Functional Check" on the previous page.

"53 SERVICE" Laser Malfunction

The "53 Service" message indicates a laser malfunction. Power cycle the printer to clear this error. If the error persists, continue troubleshooting along the laser generation path.

1. Listen for the distinctive whine of the Laser/Scanner Motor coming up to speed.
2. Check that the fiber-optic cable is properly connected at both ends.
3. Check that J701 and J601 are connected properly.
4. Press the test print button to check that LED 003 on the DC Controller illuminates.

Note



The Laser Power Checker tool is not supported for use on the LaserJet 4Si printer.

“54 SERVICE” Duplex Feed Error

The “54 Service” Error indicates that the Duplex Feed Horizontal Registration Guide is defective (warped) or out of position. Photosensor PS401 on the Duplex Assembly monitors the position of the Duplex switch plate which is driven by M2 on the front right corner of the Duplex Assembly. The troubleshooting sequence for this problem is:

1. Check that the Horizontal Registration Guide can move freely and does not bind anywhere in its travel.
2. Check that the voltage at J011, pin 1, on the DC Controller has 24 volts to frame ground. If this voltage is present, and the motor does not move, replace the motor.
3. If the voltage is not present, replace the Duplex Driver PCA, the DC Controller or the Cable Assembly in that order.

See the “Duplex Assembly Troubleshooting” section for information on the Duplex Assembly components.

“55 SERVICE” Initialization Error

The “55 Service” error indicates that the printer failed to initialize correctly at power ON. This means that the Formatter cannot communicate with the engine in order to establish the initial condition of the engine. This problem can be caused by a bad Formatter, bad cable, or by problems with the line voltage. Check and reseat connectors J4 and J5 on the DC Power Supply, and J8, J9, and J10 on the DC Controller PCA. Cycle the power several times to clear the error or to get another error that may better indicate the cause of the problem. If this clears the error, run an engine test print. If the error persists, replace the Paper Pickup PCA, the DC Controller PCA, the DC Power Supply PCA, the Formatter PCA. Finally, replace the Paper Input Unit. If these fail to correct the problem, check all associated cables for damage and replace if required. Any 57.1 Main Motor problem can also cause this error.

“55 ERROR”

This error indicates that there is a communication failure between the DC Controller and the Formatter PCA. Press **Continue** to clear the error and resume printing. Perform an engine test print.

“56 ERROR”

The “56 Error” message indicates that the Formatter detects a request to print an envelope while Duplex Mode is enabled. This is an illegal condition because envelopes can only be printed in Simplex Mode. The printer detects the presence of an envelope feeder when the voltage at J111, (the envelope feeder connection) pin 6 is shorted to frame ground. To troubleshoot this problem:

1. Disable the Duplex function.
2. Remove the envelope feeder from the printer, and restart the printer.
3. Determine what is holding the signal at J111 pin 6 at a low state.

“57.0 ERROR”

The 57.0 error indicates that the Formatter has detected a general Main Motor failure. This failure occurs such that the processor is unable to obtain further information related to the cause of the failure. Should this failure occur, power cycle the printer to try to get another error that may be more specific about the cause of the failure. If the error persists, replace the motors, (Fan Motors first), one at a time until the error is cleared.

“57.1 SERVICE”

The “57.1 Service” message indicates that the Formatter detects a Main Motor failure. The Main Motor drives all moving components in the paper path. The printer’s Main Motor is a four-phase stepping motor controlled by the DC Controller PCA. The drive voltage (24 VDC) for the Main Motor is supplied through J010, pin 1, on the DC Controller.

The Formatter detects a Main Motor failure when:

- The Main Motor does not come up to speed within one second of receiving drive voltage.
- The Main Motor deviates from the correct speed for one second after attaining the correct speed.

The Main Motor, under normal conditions, is driven for one second at printer power ON. To verify that the Main Motor is operational, check that LED 004 on the DC Controller is illuminated during a test print. The troubleshooting sequence is as follows:

1. Inspect the Gear Train for wear and to be sure there is no debris in the gears that would prevent their turning freely.
2. Reseat the toner cartridge.
3. Reseat J701 on the Main Motor and J010 on the DC Controller.

Restart the printer after performing the above steps. If the problem persists, perform the Main Motor checks as shown in “DEFEATING THE TOP COVER INTERLOCK”. Motor operation begins as soon as the Test Print button is pressed. If the Main Motor is not operating, check that J010, pin 14 has 24 VDC. If the 24 VDC is present, replace: 1) The DC Controller PCA, then 2) The Main Motor.

If the 24VDC is missing from J010, pin 14 replace the DC Power Supply PCA.

Note



If the printer does not perform an Engine Test, ensure that manual feed has not been selected (it should be set to OFF) and that the fuser is warmed up (00 READY).

“57.2, .3, or .4 SERVICE”

57.2, .3, or .4 indicate that the Formatter detects a defective fan (1, 2, or 3 respectively). Check that the fans are connected correctly and that the wires are not shorted to frame ground. If these conditions are met, replace the indicated fan.

Fan 1 cools the Fusing Assembly. This fan is connected to the Sensor PCA on J204 and J6. Fan 2 cools the DC Controller and DC Power Supply. This fan connects to the DC Power Supply on J7. Fan 3 cools the Formatter PCA. This fan connects to the DC Controller on J018. The fan locations are illustrated in Figure 7-9.

“59 ADD MEMORY” Error

This error may occur when the PostScript option is installed without enough additional memory to support the application. PostScript operation requires at least 4 Mbytes of additional memory. If this error occurs, refer to the *PostScript Installation Guide* to determine if the minimum requirements for PostScript operation have been met. Verify that any SIMM cards are installed and seated properly. If the 59 ADD MEMORY persists, run the extended diagnostic tests as described in this chapter to determine which components to replace.

BLANK DISPLAY

The Formatter PCA enables all voltages and display information to the Control Panel. The Control Panel cable connects the Control Panel to the Formatter PCA. A blank Display Panel is the result of one of the following malfunctions:

- Service Mode or extended diagnostics was initiated with no follow through (if so, all Control Panel LEDs will be on). Power cycle the printer to resume normal operation. (See “Accessing the Service Mode” section later in this chapter.)
- The printer cannot generate sufficient voltages to illuminate (enable) the Display Panel.
- The Display Panel, its related cabling, or its drive circuitry is defective. Check the following cables:
 - Check and reseal J7 (J11 on LaserJet IIISi) on the Formatter PCA. The other end of this cable connects to J3 on the DC Power Supply.
 - Check and reseal J1 and J3 on the DC Power Supply.
- The circuit breaker, CB101 has been tripped. This will also sometimes result in a 50 SERVICE error. Allow the printer to cool for twenty minutes, remove the Right Rear Cover, and reset the green circuit breaker button through the square access hole above the AC Power Inlet receptacle.
- Defective Formatter PCA. Replace.

Table 7-12. Blank Display

CHECKS	ACTION
1. Is the printer's Power Switch set to ON? Is it plugged in correctly?	Check that the Control Panel cable is plugged in at the Control Panel and at the Formatter.
2. Is the Power Supply cooling fan (FM2) operational? (Indicates +5 and +24A voltages are present).	If no airflow can be detected, check the DC Voltage.
3. Is AC Power available at the input power receptacle?	Verify input power.
4. Are the display electronics malfunctioning? Try an engine test print before replacing the Formatter to verify that the Formatter is defective.	Perform the following steps and power cycle the printer after each step: 1. Remove any I/O cables to the host. 2. Reseat the Control Panel Cable. 3. Replace the Control Panel Cable. 4. Replace the Control Panel. 5. Replace the Formatter PCA. 6. Replace the DC Controller PCA. 7. Replace the DC Power Supply.

DEFEATING THE TOP COVER INTERLOCK

Defeating the Top Cover interlock allows you to visually check that the Main Motor and Drive Train is functioning properly, that the Registration clutch solenoid engages, and that the fuser lamps come on. This is especially helpful in troubleshooting paper movement problems. To perform this procedure, two interlocks and one switch must be engaged as follows.

Caution



Be careful not to damage any interlock tabs when performing this procedure.

- Remove the Right Rear Cover (refer to Chapter 6).
- Open the Top Cover 45°, and, standing behind the printer, engage the fuser safety switch (SW101) actuator at the rear of the printer, next to the right side of the Rear Top Cover. This actuator is hard to find. Look for the square, bright silver tab next to the right hinge spring (see Figure 7-7).
- While holding the switch, open the Top Cover to the fully open position. The fuser safety switch is now held in place by the Top Cover and is defeated.
- To defeat the Top Cover Closed Sensor (PS1), press a screwdriver into the channel where the right front corner of the Top Cover would meet the printer body and hold the interlock switch down (see Figure 7-8, callout 1). Then push down on either of the two toner cartridge sensitivity switches (see Figure 7-8, callout 2).

The printer will begin to warm up, as it does, check the following:

1. That the Main Motor starts.
2. That all the Drive Train Gears rotate properly.
3. That the Registration Solenoid engages properly.
4. That the fuser light comes on.

At this point there should be a 13.% PAPER JAM error message. This test does not work from the lower paper tray.

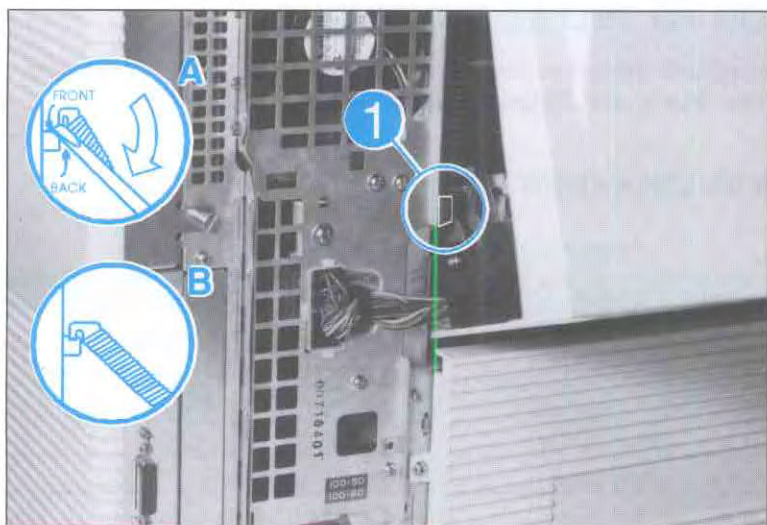


Figure 7-7. Defeating SW101 Actuator.

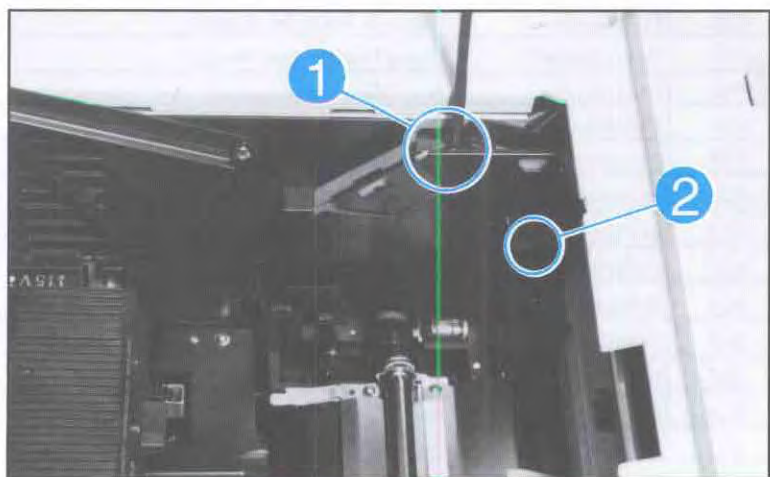


Figure 7-8. Defeating PS1 Sensor.

AIDS TO TROUBLESHOOTING

This section describes helpful tools such as component diagrams, Service Mode, and Extended Diagnostics

Printer Component Table

Table 7-13. PRINTER COMPONENT TABLE

Symbol	Name	Function
PM1	Paper Pickup Motor	Drive Motor for Pickup Rollers
FM1	Fan Motor 1	Fusing Assembly Exhaust (rear of printer).
FM2	Fan Motor 2	DC Controller and DC Power Supply intake.
FM3	Fan Motor 3	Intake fan at Formatter PCA.
H1	Heat lamp	Fusing Roller Heat Lamp.
TH1	Thermistor	Senses Fusing Roller temperature.
TP1	Thermal Protector	Protects fuser against high temperature.
PS1	Photosensor 1	Top Cover open Sensor.
PS2	Photosensor 2	Paper in Refeeder Sensor.
PS3	Photosensor 3	Paper Registration Sensor.
PS6	Photosensor 4	Job Offset home Sensor.
PS7	Photosensor 5	Face-down Output Sensor.
PS8	Photosensor 6	Face-down tray full Sensor.
SL1	Solenoid 1	Registration Roller clutch solenoid.
SL2	Solenoid 2	Refeed Roller clutch Sensor.
SL3	Solenoid 3	Upper lifter solenoid.
SL4	Solenoid 4	Lower lifter solenoid.
SL6	Solenoid 6	Face-up/face-down solenoid.
SL7	Solenoid 7	Duplex deflector solenoid.
SL8	Solenoid 8	Job Offset solenoid.
SL9	Solenoid 9	Job Offset Reset solenoid.
SW1	Switch	Main Power Switch.
SW1001	Switch	Test Print Switch.
SW1002/3	Switch	Drum Sensitivity Switch.
SW101	Switch	Power Switch for Fusing Assembly.

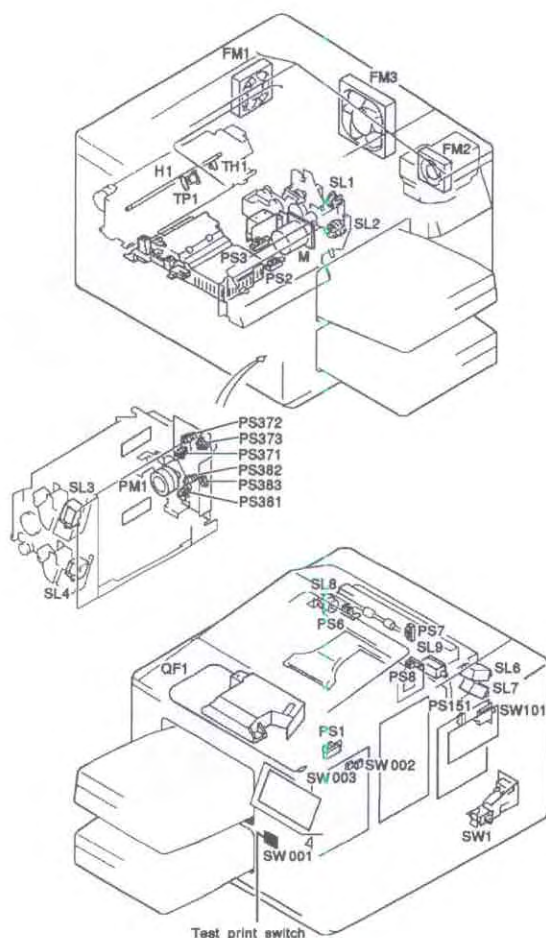
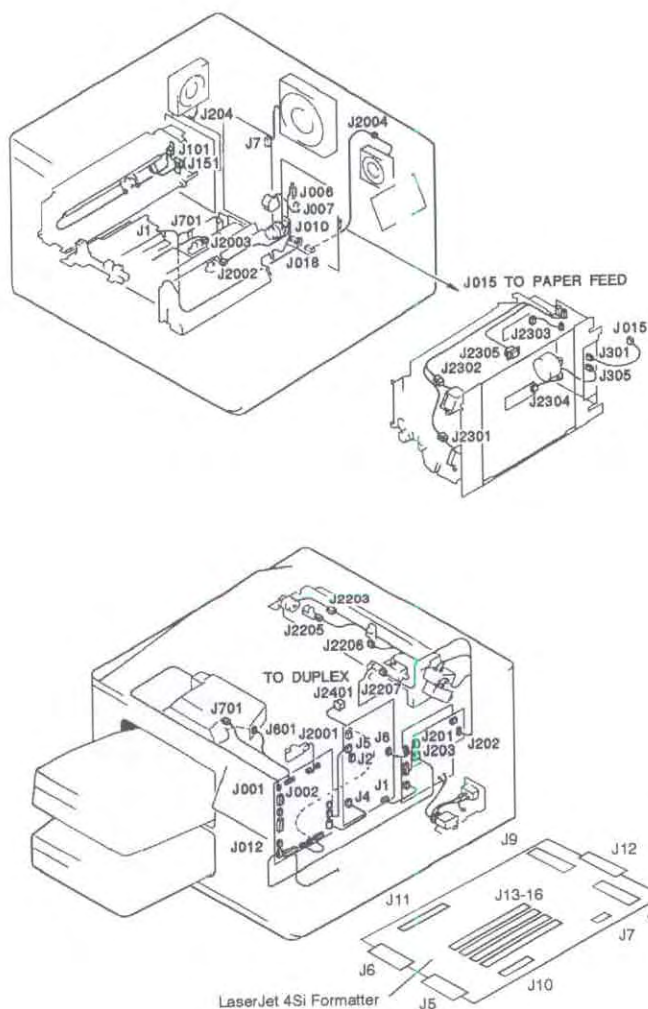


Figure 7-9. Location of Sensors, Solenoids, Switches and Fans



PC Board Components

Formatter PCA (LaserJet 4Si)

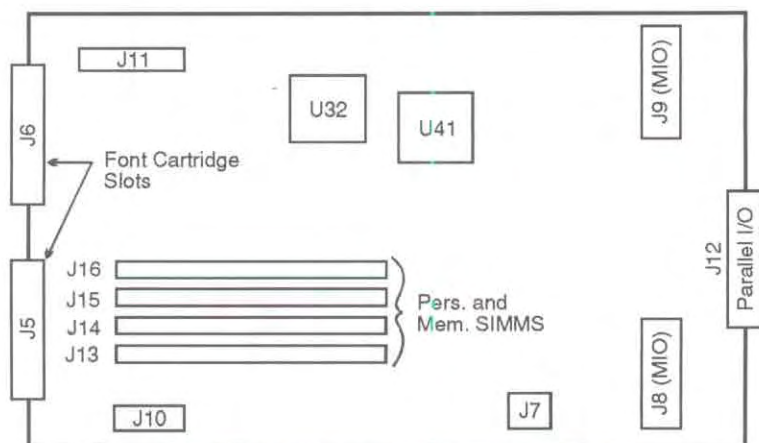


Figure 7-11. Formatter PCA Components

Table 7-14. Formatter PCA Components

Component	Function
J13	SIMM slot number 1. Used for PostScript SIMM (if installed).
J14 - J16	SIMM slot number 2 through 4. Used for memory SIMMs.
J5 - J6	Lower (J5) and Upper (J6) Font Cartridge slots.
J11	Control Panel connector.
J8 - J9	MIO1 (J8) and MIO2 (J9) connectors.
J12	Built-in Parallel I/O.

DC Power Supply PCA

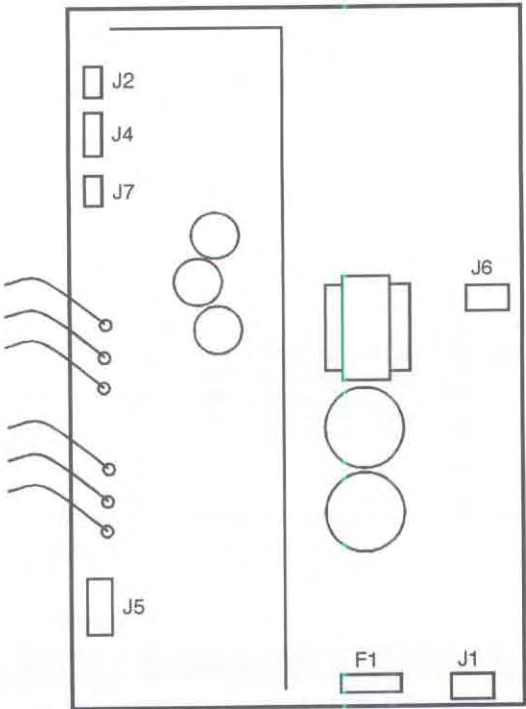


Figure 7-12. DC Power Supply PCA Components

Table 7-15. DC Power Supply PCA Components

Component	Function
J1, J6	To AC Power Supply PCA. J6 is 24V "A" and "B."
J2, J3	To Formatter PCA. J2-1 is +12V, J3-1, 2 and 3 are +5V.
J4, J5	To DC Controller PCA. J4-1 is +5V, J5-1 and J5-2 are +24V "A" and "B."
J7	To FM2 (DC Controller and DC Power Supply cooling fan). J7-1 is +24V.

Paper Feed PCA

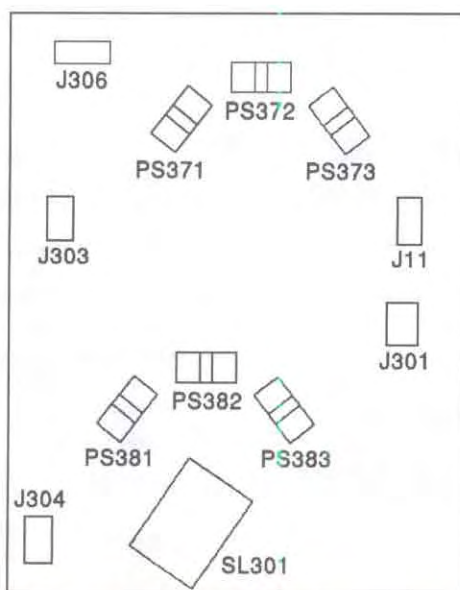


Figure 7-13. Paper Feed PCA Components

Table 7-16. Paper Feed PCA Components

Component	Function
PS 371	Detects the position of the upper lifter.
PS 372	Detects Paper Pickup from the upper manual feed port.
PS 373	Detects the presence/absence of paper in the upper cassette.
PS 381	Detects the position of the lower lifter.
PS 382	Detects Paper Pickup from the lower manual feed port.
PS 383	Detects the presence/absence of paper in the lower cassette.
SL 301	Sets the Pickup Roller.

DC Controller PCA

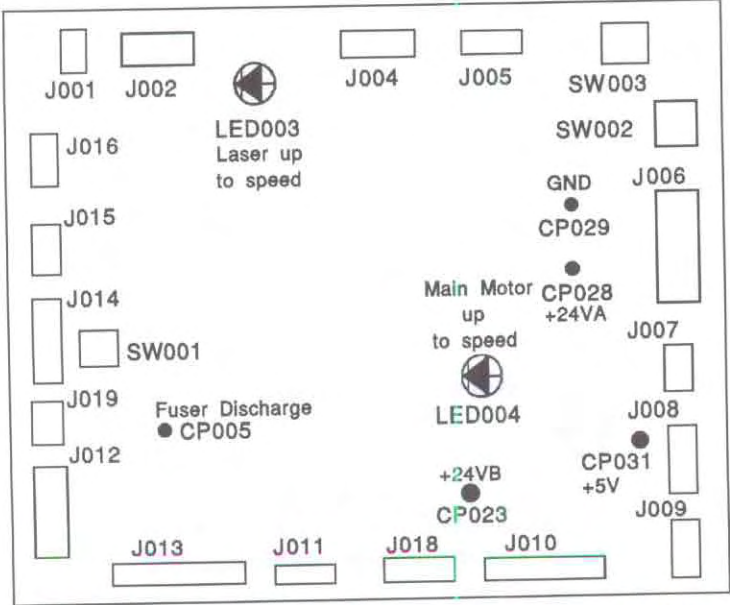


Figure 7-14. DC Controller PCA Components - LaserJet III Si

DC Controller PCA

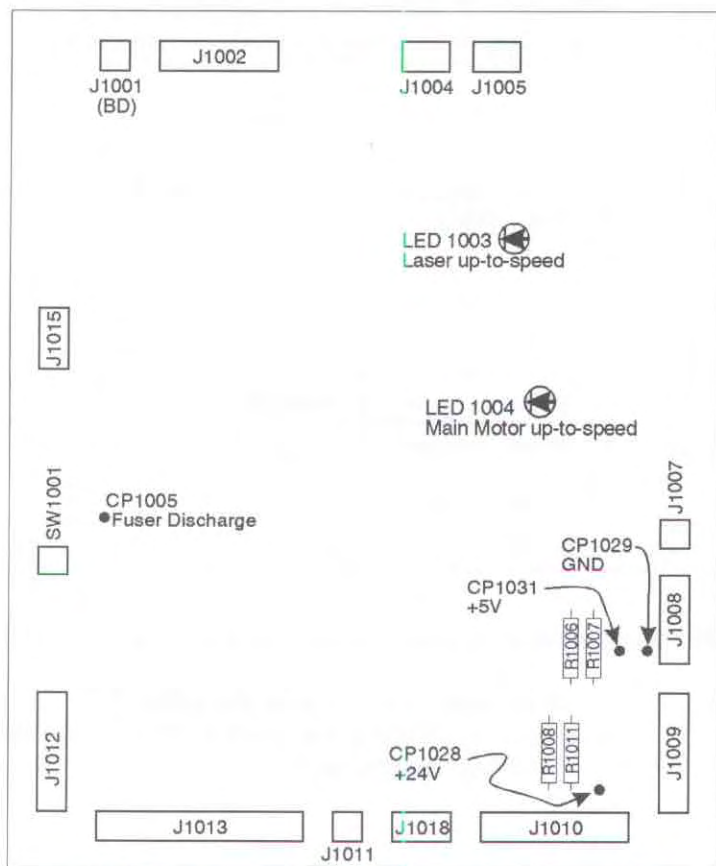


Figure 7-15. DC Controller PCA Components - LaserJet 4Si

Table 7-17. LEDs on the DC Controller LaserJet IIISi/4Si

LED (IIISi/4Si)	Function
003/1003	Lights when the Scanner Motor reaches the correct speed.
004/1004	Lights when the Main Motor reaches the correct speed.

Table 7-18. DC Controller Test Points

Voltage*	Test Point IIISi/4Si	Notes
Grnd	CP029 / CP1029	Present with Power Switch on.
None	CP005 / CP1005	Error 50 reset point.
+5	CP031 / CP1031	Present with Power Switch on.
+24A	CP028 / CP1028	Present with Power Switch on.
+24B	CP023 / CP1023 and the top of resistor R006 / R1006	OFF when Top Cover OPEN.
*All voltages are with respect to frame ground.		

12 VDC is available at J14, pin 5 when the Top Cover is CLOSED.

Note



Immediately recover from the ERROR 50 failure by shorting test point CP005 (on the DC Controller) to ground.

AC Driver PCA

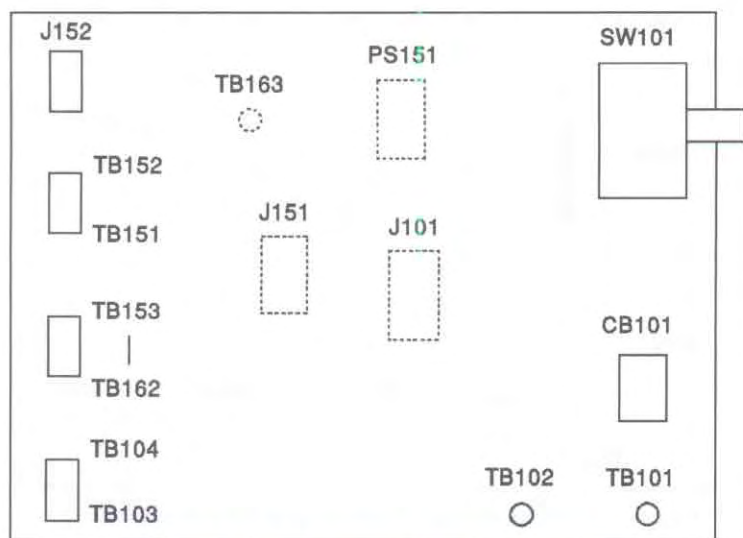


Figure 7-16. AC Driver PCA Components

Table 7-19. AC Driver PCA Components

Component	Function
PS 151	Detects paper in the Fusing Assembly.
SW 101	This switch opens when the Top Cover is opened and disables the 24B voltage. The 24B voltage powers the Scanner Assembly, the Main Motor and the fuser.

High Voltage Power Supply PCA

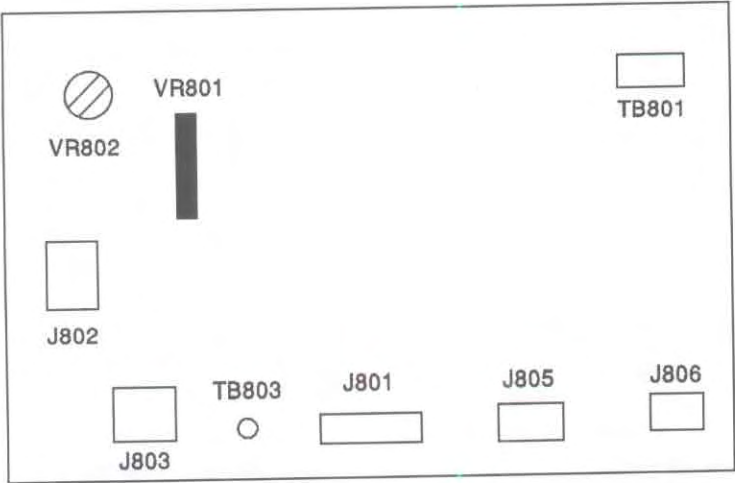


Figure 7-17. High Voltage Power Supply PCA Components

Table 7-20. High Voltage Power Supply PCA Components

Component	Function
VR801	Print Density Adjustment

Voltage Test Points

You can quickly verify the voltages on the printer by:

1. Listening for the fans. Running fans indicate that the +5VDC and the +24AVDC voltages are present. (The fans run on +24VDC, and the +5VDC enables the +24VDC).
2. The 24AVDC is also available at pin 3 (the second pin from the top in the outer row) of J203 on the Sensor PCA. This point is mentioned because it is a convenient place to attach a voltmeter.
3. Listen for the Main Motor to start. If the Main Motor runs, the +24BVDC is enabled. This means that the +24AVDC is also present. The voltages are available at test points on the DC Controller (see Figure 7-14 and Figure 7-15).

Formatter Service Configuration

Troubleshooting problems that require voltage tests can only be done with the Formatter Pan removed from the printer. To remove the pan from the printer, remove the Formatter Pan Cover, the Formatter Pan, and the Front Panel Assembly. Remove the tie-wraps that hold the cables at J1. Arrange the assemblies as shown in Figure 7-18. When the boards are connected to the cabling as shown, the signals and test points on the DC Controller are accessible, and the printer functions can be exercised and monitored. Also use this procedure to ensure that the printer works before reassembly. Be careful not to damage the Control Panel or its cables while troubleshooting.

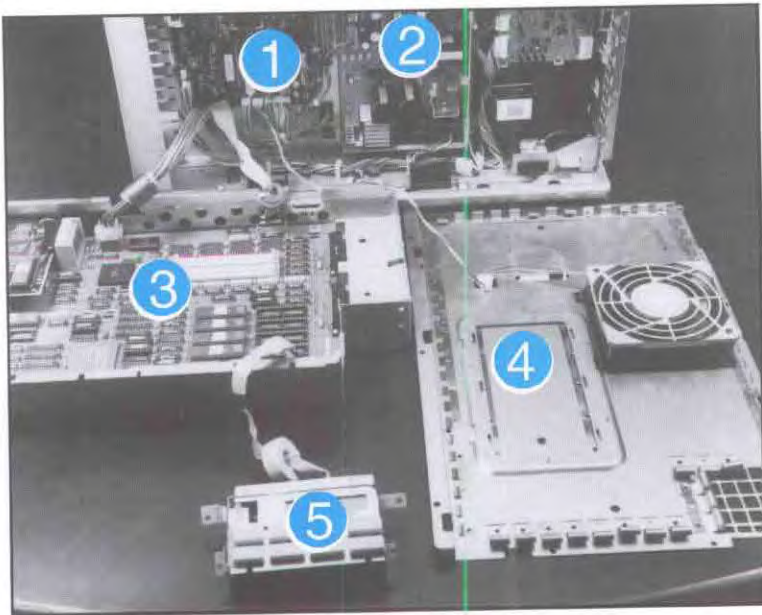


Figure 7-18.
Formatter Service Configuration
Accessing the DC Controller

Cold Reset

A Cold Reset clears all data from the print buffer, and returns the Printing Menu and the Configuration Menu to the Factory Default Settings.

To perform a Cold Reset, press the **On Line** key while powering **ON** the printer. The Cold Reset is complete when the display reads **00 READY**. A Cold Reset **will not** reset the page count.

Accessing the Error Log

The printer retains the latest fifty entries in its Error Log. These errors are limited to service errors (50-89) and paper jam entries. Perform the following steps to access the Error Log:

LaserJet IIISi

1. Hold down the **Form Feed** key while powering ON the printer. ERROR LOG MODE will be displayed after the self test, followed by the 05 SELF TEST, and the 02 WARMING UP messages. Finally, the error code will be displayed in the screen. See Table 7-21 for the help interpreting the error code. The most current error will be displayed first.
2. Press the **+** or **-** key to scroll through the Error Log.
3. The Front Panel will display one line of the error log. To print the error log, press **Print Fonts**.
4. To exit the Error Log Mode, press either the **On Line** key or the **Continue** key.

LaserJet 4Si

The Error Log is accessed from within Service Mode on the LaserJet 4Si printer (see “Accessing the Service Mode” later in this chapter). Once in Service Mode, perform the following steps to access the Error Log:

1. Press **Menu** to display SERVICE MENU.
2. Press **Item** repeatedly until ERR LOG is displayed.
3. Press **Enter** to display the first error.
4. Press the **+** or **-** key to scroll through the Error Log.
5. The Front Panel will display one line of the Error Log. To print the Error Log, press **Item** to display PRT ERR LOG, then press **Enter**.
6. To clear the Error Log, press **Item** to display CLR ERR LOG=NO. Press the **+** key to change to YES, then press **Enter**.
7. To exit the Error Log Mode, press either the **On Line** key or the **Continue** key.

Table 7-21. Understanding the Error Log Message Code

ERROR NUMBER	ERROR TYPE	SUB-ERROR	PAGE COUNT
01	50	0001	000561
02	54	0001	000320

This code is displayed on the screen as 01 500001 000561. The order of information is the same as shown in the table.

Service Mode

The Service Mode should be used only by qualified service personnel.

The Service Mode is useful for:

- Viewing and setting the page count.
- Viewing and setting the maintenance count.
- Viewing and setting the serial number.
- Initiating a Chart A printout (LaserJet IIISi only).

Note



When a defective Formatter is replaced, note the page count, maintenance count, and serial number of the defective Formatter and transfer these to the new Formatter after installation.

Accessing the Service Mode

In addition to the steps listed below, refer to Figure 7-19 for an overview of the Service Mode menu items.

1. Hold down **On Line**, **Form Feed** (**Continue** on LaserJet IIISi), and **Enter** while powering **ON** the printer. If the display is blank and all indicators are lit, the Service Mode can be entered.
2. Press **Form Feed** (**Continue** on LaserJet IIISi).
3. Press **Enter**.
4. The message **05 SELF TEST**, followed by **02 WARMING UP**, will be displayed. After the power **ON** self tests are complete, **SERVICE MODE** will be displayed. If the printer passed the power **ON** self test, the **On Line** and **Form Feed** Indicators are **OFF**, and the **Ready** Indicator is **ON**. (If the printer failed while in User Mode, the same message will be displayed while in Service Mode.)
5. To exit the Service Mode, press either the **On Line** key or the **Continue** key. Pressing the **On Line** key will return the printer to normal status.

When leaving the Service Mode check the printer configuration. The printer will return to the factory default (letter) paper size after having been in Service Mode.

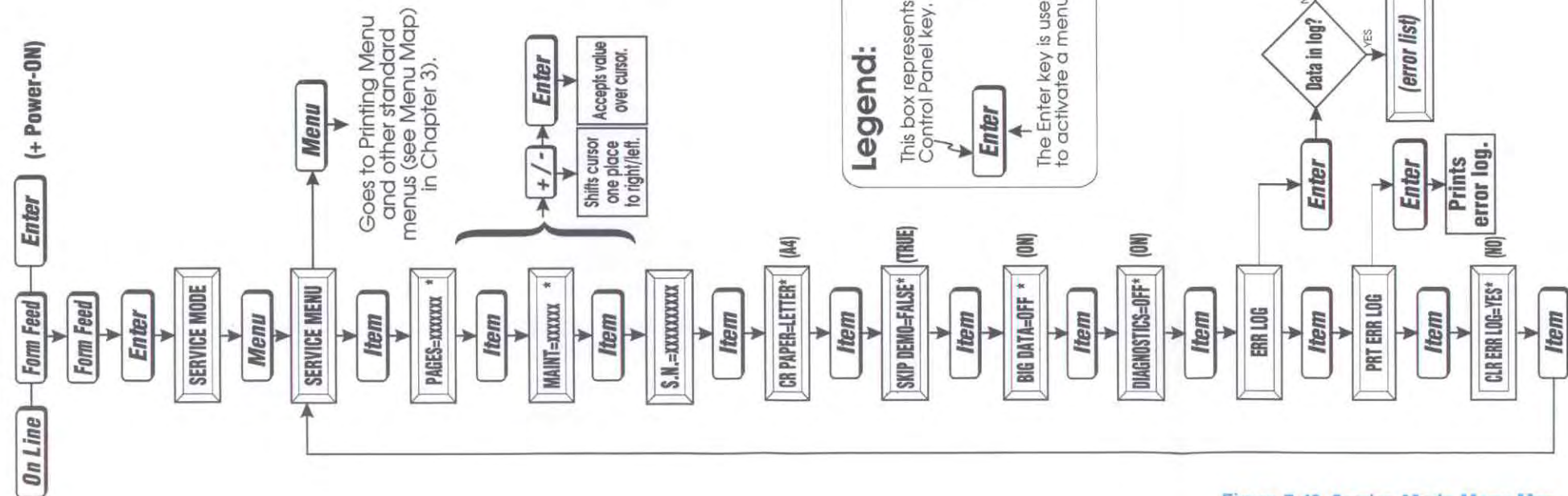


Figure 7-19. Service Mode Menu Map

Setting the Page Count, Maintenance Count, and Serial Number

The page count is stored in the printer's Non-Volatile Memory. The page count is incremented by one for each page printed. The maintenance count is incremented by 50,000 as counted with the page count. For example, if the page count reads 20,000, the maintenance count will read 0. If the page count reads 163,000, the maintenance count will read 150,000. When the maintenance count reaches 200,000, the USER MAINTENANCE message is displayed. The maintenance count is set to zero when the USER MAINTENANCE is cleared (as described under the heading "Clearing the Service Message," later in this chapter).

When the Formatter PCA is replaced, set the page count and serial number to match that of the original Formatter and set the maintenance count to reflect the useful life of the consumable parts. Use the following procedure to reset the counts:

Note



Before removing the old Formatter PCA, enter the Service Mode and check the Maintenance and Page Counts, as described below. Record these values.

1. From within Service Mode, press **Menu** then **Item** (**Menu** only on LaserJet III_{Si}). The first item lists the page count, the second lists the maintenance count, and the third lists the serial number field. For each item, the method for setting the count is described below.
2. PAGES=XXXXXXX * is displayed.
XXXXXXX represents the actual page count stored in the printer's Non-Volatile Memory. The underlined character denotes the cursor position.
3. Press the **+/-** key to increment or decrement the value for the underlined digit.
4. Press the **Enter** key to select the correct digit. The cursor will automatically move one place to the right.

5. Set each digit in the same manner as above. When the last digit's value has been selected, press **Item** to go to the MAINT=XXXXXXXX field (the LaserJet IIISi does this automatically).
6. The printer is now ready to set the maintenance count. Press **+/-** to increment or decrement the counter by 50,000. Press **Enter** to save the selection, and press **Item** to continue (**Menu** on LaserJet IIISi).
7. When the maintenance count has been set, the printer will display SN=XXXXXXXXXX. Again, use the procedure described above to set the serial number in the printer memory.
8. To exit the Service Mode press either the **On Line** key or the **Continue** key.

Setting the Power Save Timeout Value

This function allows the user to adjust the time the printer remains ON before going into Power Save mode. The PWRSAVE menu item is located in the JOB Menu. To change the timeout value:

1. Press the **ONLINE** key to take the printer offline.
2. Press the **MENU** key to access the JOB menu.
3. Press the **ITEM** key to select the PWRSAVE mode.
4. Press + or - key to change the timeout value.
5. Press **ENTER** to save the selection.

The selections are, 15 minutes, 30 minutes, 1, 2, or 3 hours. Accessing the PWRSAVE feature through the Service Mode allows the timeout value to be set to zero. This means the printer enters the Power Save mode immediately after completing the print job.

Initiating a Chart A Printout (LaserJet IIISi Only)

The LaserJet IIISi's Chart A printout (Service Mode Self test) can be used to check print quality and print density. Use the following procedure to print a Chart A printout:

1. Enter the Service Mode (see "Accessing the Service Mode").
2. Hold down the **Test** key for two to five seconds until the message 05 SELF TEST is displayed. The Chart A printout shown in Figure 7-20 will be printed.

The Chart A printout can be printed in portrait or landscape orientation.

Note



Holding down the **Test** key for more than five seconds will cause the message 04 SELF TEST to be displayed and continuous Chart A printouts to be printed. Press **Continue** to return the printer to its operating condition.

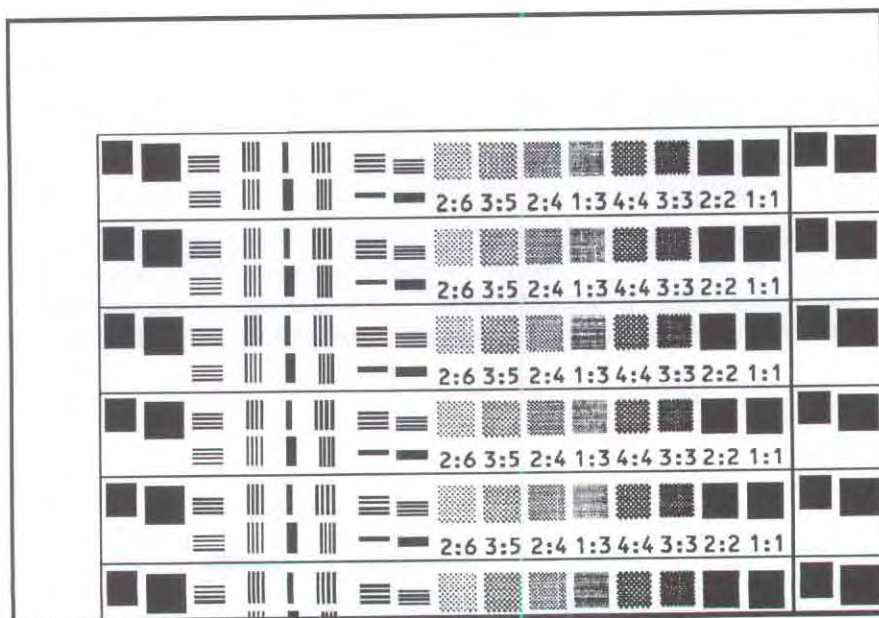


Figure 7-20. Sample of Service Mode (Chart A) Self test

Clearing the Service Message (Setting the Maintenance Count to Zero)

The USER MAINTENANCE message is displayed in place of 00 READY when the printer has printed 200,000 pages. Before clearing this message, perform the maintenance tasks described in Chapter 4, Printer Maintenance.

To clear the USER MAINTENANCE message and reset the maintenance count to zero:

1. Take the printer off-line and enter the Configuration Menu:

LaserJet IIISi: Press and hold the **Menu** key until PCL CONFIG MENU is displayed.

LaserJet 4Si: Press **Menu** repeatedly until CONFIG MENU is displayed.

2. Scroll through the configuration menu until you see SERVICE MSG=ON*.
3. Press the **+** key, followed by the **Enter** key to change the display to read SERVICE MSG=OFF*.
4. Press **On Line** to return on-line.

The USER MAINTENANCE message will be displayed again after printing another 200,000 pages.

Demo Page On/OFF (LaserJet 4Si Only)

When the LaserJet 4Si printer is in Service Mode, there is a menu item SKIP DEMO=. This option has been included to allow locking out the demonstration page printout for printers which HP might OEM to other manufacturers. *This item should always be set to FALSE for HP LaserJet 4Si printers.* If the item PCL DEMO PAGE does not appear in the printer's "TEST" menu, then this Service Mode selection has probably been inadvertently set to SKIP DEMO=TRUE*. In that case, enter Service Mode (see "Accessing the Service Mode," in this chapter) and change the item to FALSE.

Extended Diagnostic Tests

Hewlett-Packard provides a tool to more effectively troubleshoot problems in the printer's electronic assemblies. Refer to Figure 7-22 (LaserJet IIISi) or Figure 7-21 (LaserJet 4Si) for an overview of the extended diagnostics menu items. One mode of operation is dedicated to use in the field. Another mode was designed for production use. In all cases use the field mode as the default.

The extended diagnostic tests are designed specifically to test the SIMM boards, the Formatter PCA, the MIO PCA and the communication between the Formatter and MIO. These tests should be run in all cases where one of the PCAs listed above is suspected as the cause of printer problems. These tests will help to quickly isolate the problem to a specific PCA and will help to reduce printer downtime.

The default extended diagnostic test will print two pages as part of the test procedure. *These test pages will have no information on the results of the test.* Errors in the printouts are related to hardware failures, and are not part of the extended diagnostic test. See the fault log for the results of the extended diagnostic test.

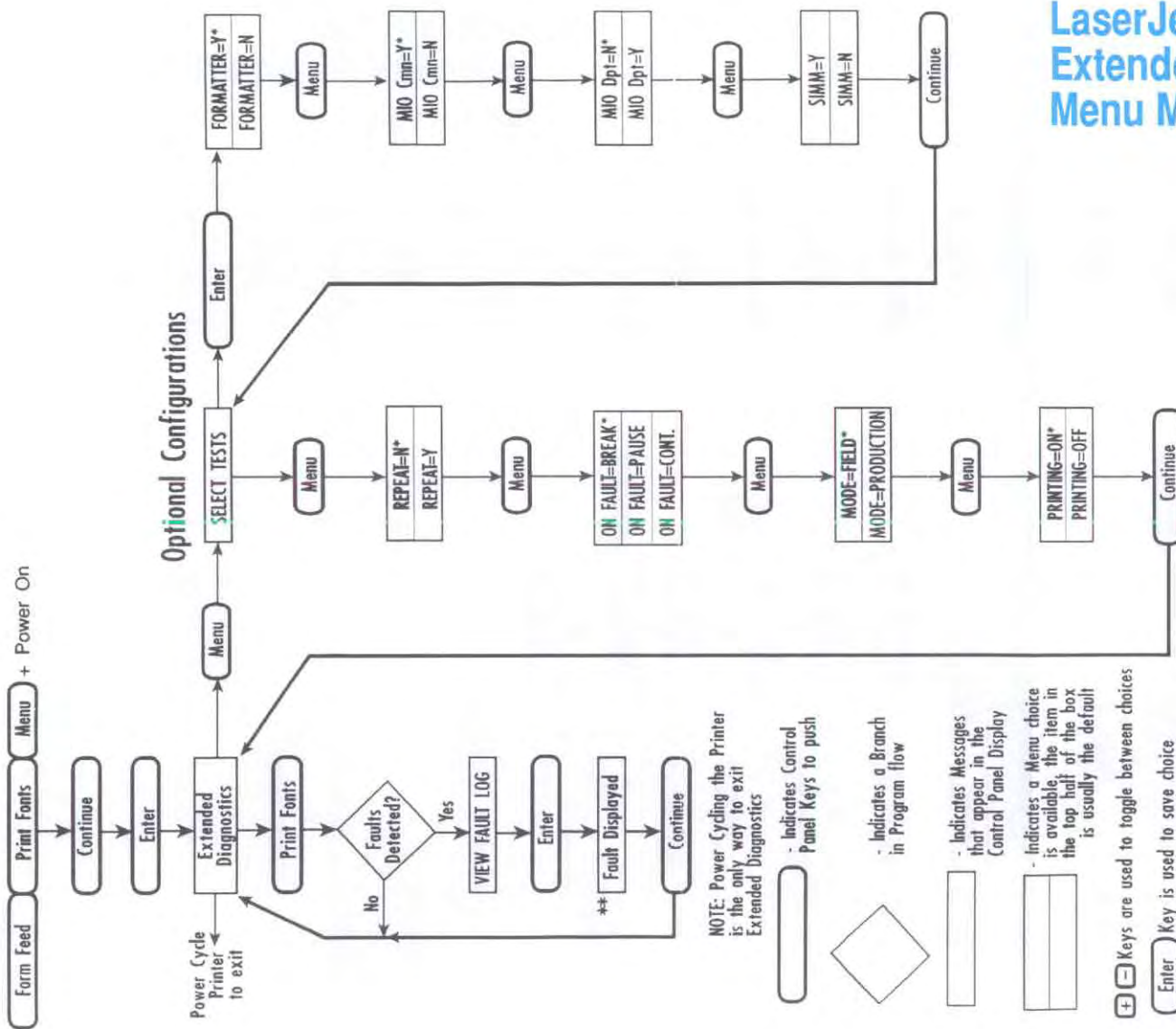
The requirements for a valid extended diagnostic test (with printing option enabled) are that the upper cassette contains paper, that the engine be warmed up, and that a toner cartridge is installed. If these items are not detected, the test will log it as a failure and possibly halt the test, depending on the test selection.

The following table will help isolate the cause of extended diagnostic test failures. There are various message numbers associated with each message type. These numbers are used for factory testing and failure analysis. The recommended field repair will be the same for any message type as indicated in the table.

Table 7-22. Fault Log Messages

MESSAGE TYPE	RECOMMENDATIONS
SRAM_# ...	Replace the Formatter.
NVRAM_# ...	Replace the Formatter.
DRAM_# ...	Replace the Formatter.
DataROM_# ...	Replace the Formatter.
processor_# ...	Replace the Formatter.
SIMM_# ... SIMM #n	Replace SIMM number <i>n</i> . SIMM slots are numbered 0 to 3, bottom to top (SIMM 0 is the bottom - elsewhere referred to as SIMM 1). If the problem persists, replace the Formatter.
MIOU_# ... MIOL_# ...	Replace the Upper (MIO2) or Lower (MIO1) MIO card. If the problem persists, replace the Formatter.
EASY_# ... EqIL_# ... Video_# ... ENG_# ...	Check that the printer has warmed up and that the upper paper tray is full. Check for paper jams. Check for a print engine failure. Check the <i>error</i> log and the service messages. If there is no indication of an engine failure, (service messages 50-59), replace the Formatter. Otherwise, troubleshoot the engine failure.

Default Test



LaserJet III Si Extended Diagnostics Menu Map

⊕ ⊖ Keys are used to toggle between choices

Enter Key is used to save choice

* After Message indicates choice has been saved
Default choices are SHADED, when neither choice
is SHADED the Default depends on Printer Configuration

Print Fonts - Runs the Extended Diagnostics tests (Ready light will flash until tests are complete)

Continue - Takes you back to the previous Menu set

Menu - Takes you to the next set of choices in the existing Menu set

** Hold down the On Line key and press + or - to scroll the message

Figure 7-21. LaserJet III Si
Extended Diagnostics Flowchart

LaserJet 4Si Extended Diagnostics Menu Map

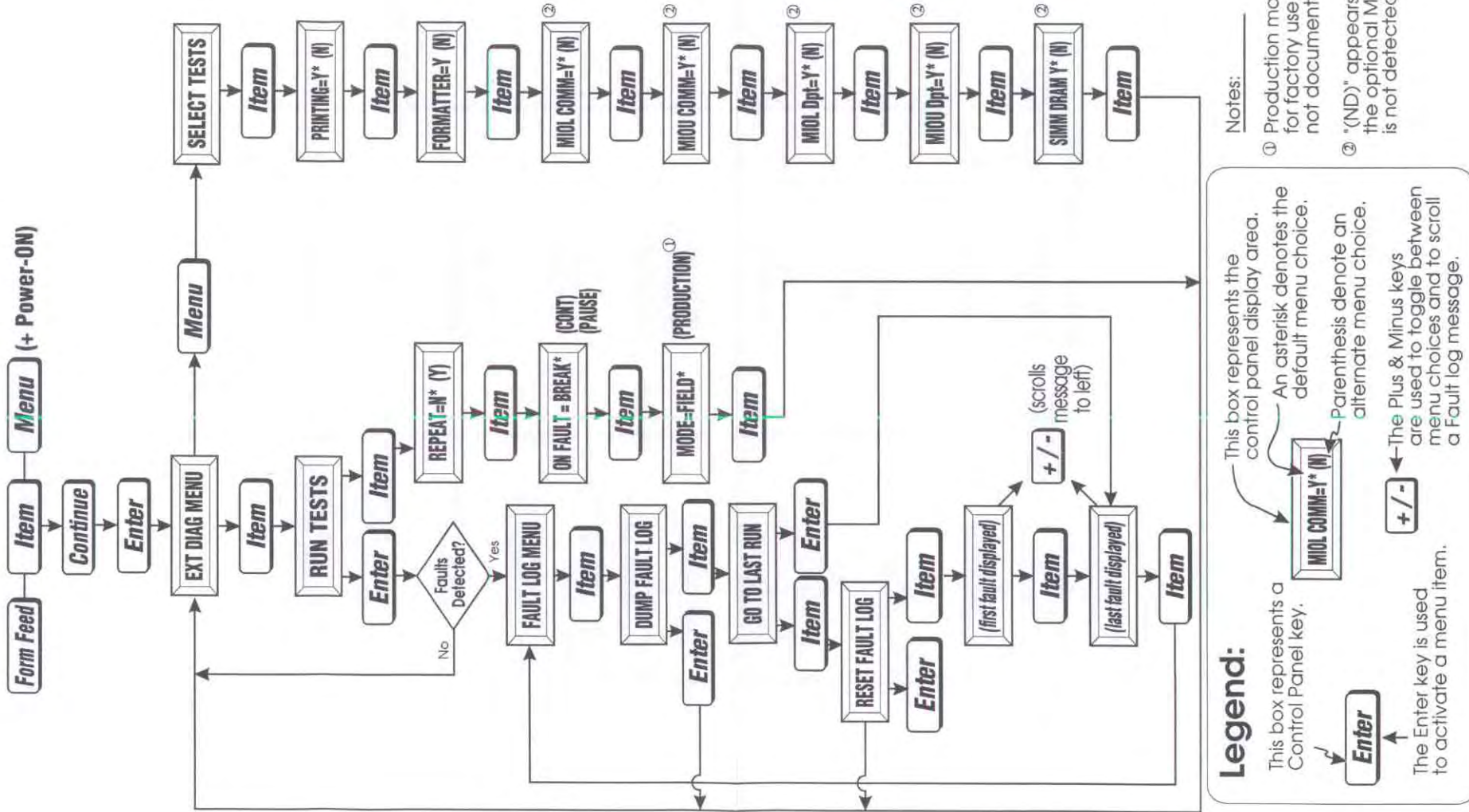


Figure 7-22. LaserJet 4Si Extended Diagnostics Flowchart

Accessing the Default Extended Diagnostic Tests

The default extended diagnostics tests are shown in Figure 7-22 (LaserJet IIISi) or Figure 7-21 (LaserJet 4Si). Generally, the default extended diagnostic test is the best choice for most applications. To access the extended diagnostic tests:

1. Turn the Power Switch **OFF**.
2. While powering the printer **ON**, hold down **Form Feed**, **Item** (**Print Fonts** on LaserJet IIISi), and **Menu**.
3. The LEDs will illuminate in sequence from bottom to top (form feed to ready).
4. When all five LEDs are illuminated, release the keys and press the **Continue** key, followed by the **Enter** key.
5. After a slight delay, the Control Panel will read EXT DIAG MENU (EXTENDED DIAG on LaserJet IIISi), and the green **READY** LED will be illuminated.

Note



If the Front Panel continues to read ACCESSING MIO instead of EXTENDED DIAG, and the green **READY** LED is not blinking, the processor is unable to access the MIO card. Replace the MIO card and continue the test.

Initiating the Extended Diagnostic Tests

Initiate the tests by pressing **Item** then **Enter** (**Print Fonts** on LaserJet IIISi). Various test messages will appear on the screen and the green **READY** LED will flash while the tests are running.

During the tests two sheets of paper will be fed through the printer if the printing and formatter test options are on. These sheets have no information about the outcome of the tests. In the Default Mode, the tests of the MIO card and the SIMM card(s) will continue after the two sheets have been ejected. The **READY** LED will continue to flash during the tests. *The green LED will stop flashing and the yellow manual LED will be continuously illuminated should a failure be detected.*

The Control Panel will return to the EXT DIAG MENU to indicate successful completion of the tests.

Note



The fault log created in the Extended Diagnostic Mode is different from the error log that the printer keeps during normal run time. Any errors stored in the extended diagnostic fault log will be lost when the printer is power cycled.

Viewing the Fault Log

To view the faults logged while in the Extended Diagnostic Mode:

LaserJet IIISi.

- Press the **Enter** key when the display reads VIEW FAULT LOG.
- Scroll through the list of entries with the **+** or **-** key.

LaserJet 4Si.

When the display reads FAULT LOG MENU, press **Item** repeatedly to view and scroll through the list of entries.

Note



Other options are available when viewing the fault log. Refer to Figure 7-22 (LaserJet IIISi) or Figure 7-21 (LaserJet 4Si) for details.

Sending the Fault Log Over a Bitronics Port

The fault log may also be dumped to the built-in Bitronics port using the menu item "DUMP FAULT LOG." A PC with a Bitronics port and appropriate software must be connected to the built-in parallel port of the LaserJet 4Si printer.

Extended Diagnostic Test Options

The extended diagnostic test options are shown in Figure 7-22 (LaserJet IIISi) or Figure 7-21 (LaserJet 4Si). Use the optional tests for multiple iterations of the extended diagnostic tests, or to test specific components (such as memory or MIO cards). Some of the available choices include:

- **Default Tests.** *This is the recommended mode for testing the printer electronics.* In the Default Mode all the PCAs and their communication functions are tested.
- **Formatter Y/N.** You can choose not to include the Formatter PCA in the diagnostic tests by pressing the  key, followed by the enter key to save the selection.
- **MIO Communications Y/N.** This test exercises the MIO communications. The LaserJet 4Si allows selection of upper (MIO2) or lower (MIO1).
- **MIO DPT.** MIO Dependent tests - allows whichever MIO is installed to respond. Do not change this setting.
- **SIMM DRAM Y/N.** Tests the SIMM modules, if installed. If no SIMMs are installed, the display will read SIMM DRAM = (ND) (None Detected). This means that the printer does not detect the presence of extended memory in the SIMM location.
- **REPEAT N/Y.** This screen indicates whether or not the tests will repeat. The default is **NO**. Selecting **YES**, causes the diagnostics to enter a continuous loop. Press and hold  to exit the loop.

- **ON FAULT Break/Pause/Continue.** The default setting BREAK, stops the tests when a failure is detected in the test loop. The failure is recorded in the fault log and the yellow **MANUAL LED** is illuminated to indicate that a failure message is available. Other options available by pressing the **[+]** key are:
 - **ON FAULT=PAUSE.** In this mode the Extended Diagnostic Mode will stop when the first error is encountered, and continue the test where is left off when the **[Menu]** or **[Item]** key is pressed.
 - **ON FAULT=CONT.** In this mode the printer will log the failure in the fault log and continue to the end of the test.
- **MODE Field/Production.** This is the default setting for the set of tests that are to be performed in the field. Do not change this setting.

Exiting Extended Diagnostics

To exit Extended Diagnostic Mode and reset the printer to its operating condition, power cycle the printer.

PRINT QUALITY DEFECT SUMMARY

The quality of the printer's output is always subject to the judgment of the user. This section of the manual is intended to assist in defining print quality and understanding what factors may affect print quality.

The print samples depicted in Figure 7-23 and Figure 7-24 illustrate some print quality defects. It is recommended that you also keep copies of print quality defects with an explanation of their causes for future reference.

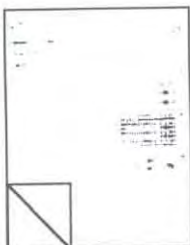
Notes



- Before attempting to troubleshoot image defects, first ensure that the print media being used meets all specifications (see *The HP LaserJet Family Paper Specifications Guide* (P/N 5002-1801)). In addition, be certain that the toner cartridge being used is a genuine HP cartridge.
- Use the half self test functional check in section “Image Formation Troubleshooting” to help isolate the cause of defective print.



Black Pages
(Table 7-23)



Very Faint Print
(Table 7-24)



Faulty Registration
(Table 7-25)



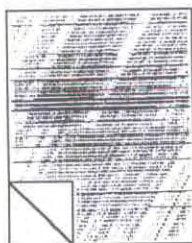
Vertical White Streaks
(Table 7-26)



**Right-Hand Text
Missing/Distorted**
(Table 7-27)



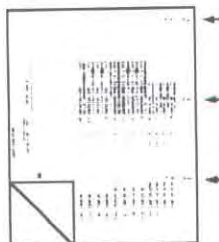
Small Voids
(Table 7-28)



**Random Horizontal
Black Lines**
(Table 7-29)



Slightly Faint Print
(Table 7-24)



Repetitive Defects
(Table 7-30)



**Smeared Print/
Improper Fusing**
(Table 7-31)



Distorted Print
(Table 7-32)

Figure 7-23. Image Defect Samples (1 of 2)



**Black Pages with
Horizontal White Strips**
(Table 7-33)



Image Skew
(Table 7-34)



Improperly Sized Image
(Table 7-35)



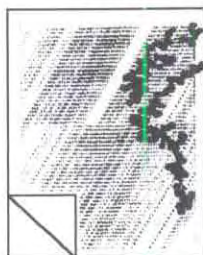
Vertical Dark Streaks
(Table 7-36)



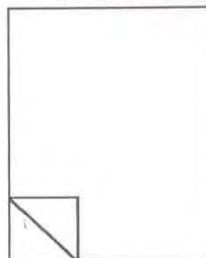
**Large Print
Voids (Table 7-37)**



Background
(Table 7-38)



Bubble Print
(Table 7-39)



**White or
Blank Pages**
(Table 7-40)

Figure 7-24. Image Defect Samples (2 of 2)

Table 7-23. Black Pages

POSSIBLE CAUSE	ACTION
1. Bad Primary Charging Roller. The Primary Charging Roller applies a negative charge to the drum's surface which repels the less-negatively-charged toner, except in those areas exposed to the laser light. Without the Primary Roller's charge, because of the erase lamps, the drum's surface would be neutral, attracting the less-negatively-charged toner and, therefore, creating a totally black image.	Replace the toner cartridge.
2. Scanner Cable Assembly (defined border). Low-level signals exchanged between the Laser/Scanner Assembly and the DC Controller may be affecting laser output.	Replace the Laser/Scanner Cable Assembly.
3. Scanner Assembly (defined border). Circuitry in the assembly is causing the laser to run out of control.	Replace the Laser/Scanner Assembly.
4. DC Controller PCA (defined border). If the laser drive circuitry is damaged so that the laser is always on, the surface of the drum would be constantly discharged by the laser.	Replace the DC Controller PCA followed by the Formatter PCA as required.

Table 7-24. Any Faint Print Condition

POSSIBLE CAUSE	ACTION
1. Toner cartridge	No toner available for printing. Replace the toner cartridge.
2. Print density set improperly. The higher the print density setting (more toward the thick part of the scale), the more toner that is transferred to the drum.	Set the print density to a darker level. Replace the High Voltage Power Supply if this has no effect.
3. Defective drum sensitivity switches. Defective switches may cause the microprocessor to adjust the laser power incorrectly.	Perform the "Drum Sensitivity Switch Functional Test" as described in this section.
4. The paper finish, conductivity, or moisture content may not be suitable for the Electrostatic-Photographic printing process.	Try a known good source of paper. Refer to the <i>LaserJet Family Paper Specification Guide</i> (5002-1801) for media specifications.
5. The Transfer Roller functionality may not be at peak, or the roller may not be properly seated.	Replace or reseal the roller (use gloves).
6. Weak or no Developer Bias.	If inadequate or no Developer Bias is produced, toner will not be attracted to the image written on the drum. (See Table 7-42, "High Voltage Systems Check.")
7. Low laser power	Low laser power will inadequately discharge the surface of the photoconductive drum. This will cause too little toner to be transferred from the drum to the page.

Table 7-25. Faulty Registration

POSSIBLE CAUSE	ACTION
1. Paper. The surface of the paper may be too smooth for the Pickup Roller to move the paper through the paper path.	Change paper. Try a brand of paper that is known to be good.
2. Worn Feed Roller Assembly.	If the Paper Pickup or the Separation Rollers are sufficiently worn, the leading edge of the paper may not reach the Registration Assembly in time. Replace the Feed Roller Assembly.
3. Registration Assembly. The Paper Pickup Unit positions the leading edge of the paper at the Registration Rollers. A worn roller, spring, clutch, or paper dust build-up on the gears of the Registration Assembly will prevent the Pickup Unit Rollers from grasping the paper at the proper time and moving it smoothly through the printer.	Replace the Registration Assembly.
4. Drive Gears. If any gear within the Gear Drive Train becomes excessively worn or dirty, erratic paper movement would result, leading to image mis-registration.	Closely examine the gears along the paper path for wear and contamination. Clean and inspect the gears. Replace any assembly that has broken or defective gears.
5. Paper Tray. The paper tray may be preventing the paper from freely moving through the printer.	Verify that the tray is correctly loaded. Verify that the tab in the upper right corner of the tray is not broken. Verify that the paper tray is fully seated into the printer. Switch trays to verify that the problem follows the tray. Replace the paper tray.
6. Duplex Assembly.	If the problem occurs in Duplex Mode, replace the Duplex Assembly to isolate the cause. Replace the Duplex Assembly if the problem is caused by the Duplexer.

Table 7-26. Vertical White Streaks

POSSIBLE CAUSE	ACTION
1. Dirty beam-to-drum mirror. The beam-to-drum mirror reflects the laser light from the scanner to the surface of the photoconductive drum. If the mirror is dirty, the image is not written properly on the drum.	Clean the beam-to-drum mirror with a quality camera lens cleaning fluid and tissue.
2. No toner is available for print.	Replace the toner cartridge.
3. The focusing lenses within the Laser/Scanner Assembly may be contaminated, blocking (or diffusing) the laser light.	Replace the Laser/Scanner Assembly.

Table 7-27. Right-Hand Text Missing

POSSIBLE CAUSE	ACTION
1. No toner available for print.	Replace the toner cartridge.
2. Beam-to-drum mirror incorrectly installed. The beam-to-drum mirror reflects the laser light from the scanner's mirror to the photoconductive drum. If the mirror is installed incorrectly (end-for-end) or is not resting on the mirror supports, the scan plane of the laser will not be parallel. The resulting image written on the drum will be distorted, missing, or out of parallel alignment.	Verify that the mirror is resting firmly on the moulded plastic supports. Note that the mirror is spring loaded and should rest squarely on the supports. If the mirror had been removed during maintenance, ensure that the mirror has been correctly reinstalled. Refer to Chapter 6 for proper mirror installation.

Table 7-28. Small Voids Print

POSSIBLE CAUSE	ACTION
1. Small voids on black or near-black printed images may be caused by imbedded toner on the Electrostatic-Photographic drum. Cartridges that are run for long periods of time in high temperature and humidity conditions may develop this problem.	Replace the toner cartridge. If the printer is installed in a hot or humid location, advise the customer to move the printer to a more suitable location. Refer to the <i>User's Reference Manual</i> for environmental specifications.

Table 7-29. Random Horizontal Black Lines

POSSIBLE CAUSE	ACTION
1. Defective or improperly seated fiber-optic cable. If the beam is not detected after two seconds, a 51 ERROR message is displayed on the Control Panel.	Replace or reseat the fiber-optic cable. Horizontal black lines could occur with a beam detect error (41 or 51 ERROR).
2. Laser/Scanner Assembly misaligned or damaged.	Replace the Laser/Scanner Unit.
3. DC Controller PCA	Replace the DC Controller PCA.

Table 7-30. Repetitive Defects

POSSIBLE CAUSE	ACTION
1. Toner cartridge. The circumference of the photoconductive drum is 3.75 inches (95.25mm). The circumference of the Developer Roller is 2 inches (50.8mm). If a defect appears in the print image at these intervals, assume the defect is associated with the toner cartridge.	Replace the toner cartridge.
2. Fusing Assembly. The Fusing Roller's circumference is approximately 3.75 inches (94mm). If a defect appears at this interval, assume the defect is associated with the Fusing Assembly.	Clean the Fusing Assembly Rollers. Replace the assembly if necessary.
3. Dirty Roller. Any dirty roller along the paper path may result in a pattern of repetitive print image defects.	Examine and clean rollers along the paper path.
4. Bad High Voltage Power Supply Assembly or DC Controller. A defective HVPS may leave inadequate charges on the electrophotographic (EP) drum or may not properly charge the Developer Roller. If the Primary or Transfer Roller are left on when the printer is idle, repetitive image defects will temporarily appear.	Replace the HVPS. If the problem persists, replace the DC Controller.
5. Transfer Roller bad or dirty	Replace the Transfer Roller.

Repetitive Defect Templates

Repetitive print defects are usually associated with a specific roller within the printer or the toner cartridge. The following templates are provided to help quickly isolate the cause of repetitive print defects. For vertical print defects, align the first occurrence of the defect with the top of the “ruler” and measure to the next occurrence of the defect to determine the roller in question. For defects that occur in the horizontal axis of the page, use the appropriate template to verify the cause of the specific defect. When certain that the defect pattern matches the pattern of the template, replace the indicated roller.

Full Width Rollers



Figure 7-25. Vertical Repetitive Defect Ruler

TEMPLATE DEFECTS RELATING TO FUSER ASSEMBLY

Lower Output Fuser Roller

Upper Output Fuser Roller

PRINT
DIRECTION
←

Fuser Separation Pawls

Input Cowl (Underside of Black Plastic Top Cover on Fusing Assembly)

Print Quality Problems within the outlined bands could be related to the Fuser Thermo Protector or Thermistor

Fuser Thermoprotector

Fuser Thermistor

Figure 7-26. Horizontal Repetitive Defect Ruler

TEMPLATE
DEFECTS RELATED TO THE LOWER REGISTRATION ROLLER (4Si)
Lower Registration Roller (III Si)



Lower Registration Roller (4Si)



Upper Face-Up Delivery Roller



Lower Face-Up Delivery Roller



PRINT
DIRECTION

TEMPLATE DEFECTS RELATING TO FACE DOWN ASSEMBLY

Duplex Down Deflector Claws



Upper Face Down Output Rollers



Lower Face Down Output Rollers



Table 7-31. Smeared Print/Improper Fusing

POSSIBLE CAUSE	ACTION
1. Media. The media may not be acceptable for the printing process and for laser printing.	Verify that the media meets specifications as shown in the <i>LaserJet Family Paper Specification Guide</i> (5002-1801).
2. Fusing Assembly dirty. The print will smear if the Fusing Assembly is dirty.	Replace the Fusing Assembly and clean the printer.
3. Bent Static Teeth. If the Static Teeth are defective, the print could smear prior to the paper entering the Fusing Assembly.	If the teeth are bent or defective, replace the Static Teeth Assembly.
4. Worn Gears. If the drum, and paper are not moving at the same speed the characters may be smudged.	Replace the toner cartridge, Feed Drive Assembly, Main Motor, or Fusing Assembly as necessary.
5. Foreign object in paper path. Something is smearing the unfused toner image on the surface of the paper.	Remove any foreign material. Try a new toner cartridge.

Table 7-32. Distorted Print

POSSIBLE CAUSE	ACTION
1. Paper Path. If any component within the paper path is preventing the paper from moving at a uniform rate, the print image would be affected (e.g., the Main Motor rotating too fast or too slow, the transport gears excessively worn, etc.). Characters that are either too tall or too short (in the direction of paper motion) are usually a result of drive mechanism problem.	Closely examine the Paper Transport Rollers along the paper path for wear. Replace if excessive wear is observed. Inspect and replace the toner cartridge, Feed Drive Assembly, Main Motor and Drive Assembly, or Fusing Assembly as necessary.
2. Laser/Scanner Assembly. Wavy, irregular-shaped characters, or irregular line margins in the scan direction of printing are usually a result of a defective Laser/Scanner Assembly.	Replace the Laser/Scanner Assembly.
3. Laser/Scanner Cable Assembly. See explanation above.	Replace the Cable Assembly.

Table 7-33. Black Pages with Horizontal White Stripes

POSSIBLE CAUSE	ACTION
1. Defective (damaged) fiber-optic cable. The pattern results from the printer's firmware attempting to locate Beam Detect (the horizontal synchronization signal). The white horizontal lines result from retry efforts by the firmware (e.g., the turning ON/OFF of the laser). The black areas show where the laser is continuously on, discharging the surface of the drum. This printout is usually associated with a 51 ERROR.	Ensure the fiber-optic cable is properly seated. If the error persists, replace the fiber-optic cable.
2. Laser/Scanner Assembly or DC Controller PCA.	Replace the Laser/Scanner Assembly followed by the DC Controller PCA, if necessary.

Table 7-34. Image Skew

POSSIBLE CAUSE	ACTION
1. Registration Assembly. The Paper Pickup Roller positions the leading edge of the paper at the Registration Rollers. If these rollers do not grasp the paper at the proper time and move it smoothly through the printer (due to worn rollers, springs, or clutch), mis-registration will occur.	Replace the Registration Assembly.
2. Drive Gears. If any gear within the Gear Drive Train becomes excessively worn or is excessively dirty, erratic paper movement would result, leading to image mis-registration.	Closely examine the gears along the paper path for wear and contamination. Clean and inspect the gears. Replace any defective gear.
3. Paper Tray. The paper tray may be preventing the paper from freely moving through the printer.	Verify that the tray is correctly loaded. Verify that the tab in the upper left corner of the tray is not bent. Verify that the paper tray is fully seated into the printer. Switch trays to verify that the problem follows the tray. Replace the paper tray.
4. Paper. The surface of the paper may be too smooth for the Pickup Roller to move the paper through the paper path.	Change paper. Try a brand of paper that is known to be good.
5. Duplex Assembly.	If the problem occurs in Duplex Mode, replace the Duplex Assembly to isolate the cause.

Paper Registration Specs

CATEGORY	SIMPLEX SPEC	DUPLEX SPEC
Skew	1.5 mm / 26 cm length	2.0 mm / 6 cm length
Leading Edge	5± 2.5 mm	5± 2.5 mm
Left Margin	5± 2.5 mm	5± 3.0 mm

Table 7-35. Improperly Sized Image

POSSIBLE CAUSE	ACTION
1. Paper Tray Microswitches. The paper tray microswitches indicate what size paper tray is installed. This information is used to format the print image to the size of the paper installed in the tray. If the paper tray microswitches are defective, the image will be formatted incorrectly.	Perform the "Tray Size Switches (SW2301, SW2302, SW2303) Functional Check" in Section 7. Check that the correct envelope size is selected if appropriate.

Table 7-36. Vertical Dark Streaks

POSSIBLE CAUSE	ACTION
1. Dirty Primary Charge Roller. A dirty Primary Charge Roller will leave areas under the contaminated portion with an inadequate charge to repel unwanted toner.	Change the toner cartridge.
2. Bad toner cartridge. Contaminants lodged within the cartridge can cause non-uniform characteristics.	Replace the toner cartridge.
3. Incompatible media. During media manufacture, inks or other finishing processes may interfere with the electrophotographic or fusing process.	Change type of media.
4. Old toner cartridge.	Change the toner cartridge.

Table 7-37. Large Print Voids

POSSIBLE CAUSE	ACTION
1. Bad transparencies. Transparencies will exhibit this problem if they are not designed for proper toner adhesion.	Use Hewlett-Packard approved transparencies (refer to the <i>LaserJet Family Paper Specification Guide</i> (5002-1801).
2. Bad paper lot. The surface of the paper may be too smooth for proper toner adhesion.	Try a known good paper (refer to the <i>LaserJet Family Paper Specification Guide</i> (5002-1801).
3. Poor fusing. Toner may not be properly fused to the media.	Perform the "Fusing Check" at the end of this section.
4. Print image fusing may not occur correctly.	Replace Fusing Assembly.
5. Wet paper. The paper may be damp.	Try a new batch of paper. Store the paper in a dry area.
6. Transfer Roller is dirty.	Replace the Transfer Roller.

Table 7-38. Background Scatter

POSSIBLE CAUSE	ACTION
1. Defective toner cartridge. The toner cartridge may be internally damaged.	Replace the toner cartridge.
2. Bad paper lot. The paper moisture content, conductivity, or surface finish may be incompatible with the electrophotographic process.	Try a different paper lot. Refer to the <i>LaserJet Family Paper Specification Guide</i> (5002-1801).
3. Print density set incorrectly. If the print density is set incorrectly, background scatter can result, particularly with envelopes.	Adjust the print density.
4. Inside of printer dirty. If toner dust has leaked out of the toner cartridge, this problem can occur.	Clean the inside of the printer.

Table 7-39. Bubble Print

POSSIBLE CAUSE	ACTION
1. Defective toner cartridge.	Install a new or known good toner cartridge.
2. The electrophotographic (EP) drum ground connector on the High Voltage Power Supply is dirty, bent or otherwise defective.	Clean or straighten the connector on the High Voltage Power Supply. Check the connector on the toner cartridge. If the problem persists, replace the High Voltage Power Supply.

Table 7-40. White or Blank Pages

POSSIBLE CAUSE	ACTION
1. Toner cartridge. No toner is available for print.	Remove sealing tape or replace the toner cartridge.
2. No Transfer Roller voltage. Without Transfer Charge Roller voltage, toner cannot be attracted from the surface of the drum to the paper.	Perform the "Image Development (Half Self test) Functional Check" which follows to check all other electrophotographic processes.
3. No Developing Bias. With no Developing Bias charge, toner will not be attracted to the drum.	Refer to "High Voltage System Checks."
4. No drum ground path. With no ground path the drum cannot be discharged. The negative charge on the drum will repel toner and leave a white page.	Refer to "High Voltage System Checks."
5. Bad Laser/Scanner Cable Assembly. Low-level signals exchanged between the Laser/Scanner Assembly and the DC Controller may be affecting laser output.	Replace the Laser/Scanner Cable Assembly.
6. Bent Top Cover Assembly hinge brackets. With bent hinge brackets, the beam-to-drum mirror may improperly reflect the laser beam or the drum drive gear may not engage.	Replace the Top Cover Assembly hinge brackets.
7. Blocked laser beam. If the beam-to-drum mirror or toner cartridge shutters do not open when the toner cartridge is installed, the beam will not reach the drum, resulting in an all-white page.	Verify the laser beam is not blocked.

IMAGE FORMATION TROUBLESHOOTING

Half Self Test Functional Check

The electrophotographic process can be subdivided into the following stages:

- Cleaning (Physical and Electrostatic).
- Conditioning (Primary Charge Roller).
- Writing (Laser Modulation).
- Development (Formation of the Toner Image).
- Transfer (Charge to transfer the image to paper).

The purpose of the Half Self test Check is to determine which process is malfunctioning. Perform the test as follows:

1. Press the Test Print (Engine Test) button (refer to Chapter 3).
2. After the paper has advanced halfway through the printer (the leading edge of the paper should have advanced at least past the Transfer Charge Roller), open the Top Cover Assembly.
3. Open the toner cartridge's drum shield to view the drum's surface.

If a dark and distinct toner image is present on the drum's surface, assume that the first four functions of the electrophotographic process are functioning, and concentrate troubleshooting efforts to a transfer problem. If NO image is present on the photoconductive drum, concentrate troubleshooting efforts on the earlier stages of the process as follows:

- The Drum Rotation Functional Check.
- High Voltage Power Supply Check.

Drum Rotation Functional Check

The photoconductive drum, located in the toner cartridge, must rotate for the process to function. The photoconductive drum receives its drive from the Main Motor Gear Train. To verify whether the drum is rotating, proceed as follows:

1. Open the printer's Top Cover Assembly. Open the toner cartridge's drum shield (cover) to view the photoconductive drum.
2. With a felt-tipped marker, draw a line on the *edge* of the drum (away from the print image area). Note the position of the line.
3. Close the printer and power it on. The one-second start-up sequence should rotate the drum enough to move the mark. Open the printer and inspect the drum. Verify that the mark drawn in Step 2 of this procedure has moved.

If the mark has not moved, inspect the Gear Train to ensure that it is meshing with the toner cartridge gears. If the Main Motor and Drive Gears appear to be functional and yet the drum does not move, the Top Cover Assembly hinge brackets may have been bent and require replacement.

High Voltage Power Supply Assembly

The High Voltage Power Supply Assembly provides the necessary voltages for the printer's Electrostatic-Photographic processes. The +24B VDC supply is used to power the High Voltage Power Supply Assembly. A summary of the major components of the high voltage system and their functions is given in the table below.

Table 7-41. High Voltage Power Supply Assembly Summary

COMPONENT	FUNCTION
1. Drum ground.	Provides a discharge ground path for the drum's surface charge through the photoconductor after being struck by the laser.
2. Developing bias.	The developing bias is a negative DC voltage superimposed on a square wave. This bias is applied to the Developer Roller in the toner cartridge. Toner particles obtain this negative bias by rubbing against the Developer Roller. The AC Bias on the developer helps the toner overcome the magnetic attraction of the Developer Roller.
3. Transfer Roller.	Deposits a positive charge to the back of the paper to attract the negatively charged toner from the drum's surface.
4. Toner Sensing.	Provides a variable voltage level to the DC Controller, depending on the toner level in the toner cartridge.
5. Static Teeth.	A high negative potential is applied to a row of Static Teeth. These negatively charged teeth assist in discharging the positive charge placed on the paper at the transfer station. The result of this discharge action is to weaken the paper's attraction to the photoconductive drum.

Table 7-42. High Voltage System Checks

CHECKS	ACTION
1. Are the connectors for the Primary Charge Roller, Drum Ground, Developing Bias, Toner Level Sensor damaged, corroded, dirty, or missing? Check the toner cartridge also.	Visually inspect each item. If any are damaged, correct as necessary. Replace the High Voltage Power Supply if the connection is unable to be corrected. Ensure that all wires are connected to their respective terminals.
2. Are the light-blocking shutters on the toner cartridge opening? (A closed laser shutter will result in white pages.)	Inspect the toner cartridge's top to verify that the shutter tabs are not broken or damaged. Inspect the Top Cover Assembly to verify that the plastic protrusions which open the toner cartridge shutters are not damaged.
3. Is the protective shutter concealing the Top Cover's reflecting mirror being released when the toner cartridge is installed?	Install the toner cartridge. Visually inspect to see if the mirror's protective shield swings open as the Top Cover Assembly is closed.
4. Is the beam-to-drum mirror dirty?	Inspect the mirror. If dirty, clean per the procedure described in Chapter 4.
5. Are connectors J010 and J014 on the DC Controller PCA properly connected?	Remove the Bottom Cover and visually inspect the connectors. Reseat or replace if necessary.
6. Do the toner cartridge's sensitivity switches function?	Refer to the "Drum Sensitivity Switches (SW1002 and SW1003) Functional Check" in Section 7-2.

INTERFACE TROUBLESHOOTING

Communications Check

Note



Communication problems are normally the customer's responsibility. Time spent attempting to resolve these problems may not be covered by the product's Hewlett-Packard warranty.

HP's Customer Service Center (CSC) is available to the customer at no charge to help with these problems. The CSC telephone number is: 208-323-2551.

Network Installations

Customer support for network MIO cards is to be provided by "qualified distributors" selling the cards. Limited communication verification procedures can be found in the *Installation and Configuration Guide* that was included with the MIO card.

MS-DOS Installations

Test Message

After the printer is installed, verify communications between the printer and the computer using MS-DOS by entering the following at the computer:

Type:	<Prompt> COPY CON: LJTEST	Enter
Type:	LASERJET COMMUNICATIONS OK!	Enter
Press:	Ctrl and Z (simultaneously)	
Press:	Enter	
Displayed:	1 file(s) copied	
Type:	<Prompt> PRINT LJTEST	Enter
Displayed:	name list dev [PRN]	
Press:	Enter	

The printer should print a page with the following text:
"LASERJET COMMUNICATIONS OK!"

AUTOEXEC.BAT Standard Configuration Test

Serial I/O only: If the previous check did not produce the desired result, ensure that the AUTOEXEC.BAT file contains the following statements for serial interface communications:

MODE COM2: 96 , N , 8 , 1 , B

In sequence, the parameters of this statement means:

COM2	PC Serial Communications Port 2.
96	Baud Rate ÷ 100 (9600).
N	Parity (none).
8	Word length (data bits)
1	Number of stop bits.
B	Continuous retries on time-out errors (MS-DOS 4.0 and later).

This statement redirects LPT1 output to the COM2 port:

MODE LPT1:=COM2:

Note



If COM2 is not available on your computer, substitute COM1 for COM2 in the above statements.

Configure the printer for RS-232 at 9600 baud. Install it to the COM2 (or COM1) port on the PC using the appropriate cable and repeat the test message procedure above. See the pamphlet, *Your Guide to Setting up Your LaserJet Si*, for the appropriate cable.

If the problem persists, proceed with Table 7-43.

Table 7-43. Communications Checks

CHECKS	ACTION
1. Is the host computer configured to the parameters described in the configuration instructions?	These parameters are required to communicate with the printer. Verify the computer's communications port configuration matches these parameters. Note: If these parameters are not set properly, it may also yield a 40, 20, or 22 ERROR on the printer's Control Panel.
2. Does the printer's baud rate match that of the computer's communications port?	Run the printer's self test to verify the baud rate setting. At the computer, verify that the baud rate is correctly set in any configuration files. Note: A baud rate problem may also yield a printer 40 ERROR.
3. Are you using the correct cable for communications between the computer and the printer?	See the cable wiring. Hint: On an RS-232 cable, pins 2 and 3 may need to be reversed at the printer end of the cable.
4. Are you using the correct RS-232-C protocol?	During the communications "handshake," the printer transmits both the XON/XOFF signal and the DTR signal. The DTR (Data Terminal Ready) signal may be either negative going or positive going. DTR polarity is set at the printer's Control Panel. The XON may be set to normal (only transmitted when data is needed) or Robust XON (transmitted every second). This feature is also configurable from the Control Panel. DTR is available at pin 20 and XOFF is transmitted from pin 2 of the printer.
<i>(continued on next page)</i>	

Table 7-43. Communications Checks (continued)

CHECKS	ACTION
5. If using a serial interface, is the cable longer than 50 feet (15 meters)?	The maximum recommended cable length for RS-232 serial communications is 50 feet. Use RS-422 or move the printer closer to the host.
6. If using a Centronics parallel cable, is it over 10 feet (3 meters) long?	Consider using a serial interface connection or move the printer closer to the host.
7. Do all the current Control Panel Configuration Menu items match the host system's parameters?	Make appropriate changes. If host system changes are made, be sure to reboot the system or otherwise ensure the changes are in effect.
8. Does the printer have a bad interface port?	If possible, try a different printer interface than the one having a problem and reconfigure the printer and host.
9. Does the host have a bad interface port?	If possible, try a different host system port than the one having a problem and reconfigure both the host and printer appropriately.

If the host system and printer are still not communicating and steps 1 through 9 have been completed, replace the Formatter PCA and the interface card and reconfigure the printer. If the problem persists, a protocol analyzer may be required to determine the source of the problem.

Caution



HP LaserJet printers are not designed to work with mechanical switch-box products that don't have proper surge protection. These devices can generate high transient voltages that will cause permanent damage to the Formatter PCA. This circumstance is not covered by the Hewlett-Packard warranty.

DUPLEX ASSEMBLY TROUBLESHOOTING

Troubleshooting Procedures

Before performing the procedures described in this section:

- Clean the Duplex Assembly. Vacuum out any loose toner.
- Check that the belt is correctly tracking on the gears.
- Look for any debris that may have fallen into the Gear Train or paper path.
- Check the Duplex Assembly gears for worn or broken teeth.
- Check that the mylar paper guide strip is not damaged and is properly seated.
- Check that the Switchback D-Roller is not worn.
- Check that the connectors are properly seated.
- Check that the Duplex Feed Assembly shift plate is free and does not bind in its travel.

The following tables provide guidance on problems associated with the Duplex Assembly.

Table 7-44. Duplex Paper Jam Troubleshooting

POSSIBLE CAUSE	CHECK	ACTION
Duplex D-Roller not turning	Look through the Duplex Side Cover to check the Duplex Feed Roller.	Replace the solenoid, (SL5), then replace the Duplex Driver PCA.
Duplex Driver PCA Failure	Is the Switchback Roller at the home position? (Flat side down.)	Replace the Switchback Motor (PM3) of the Duplex Driver PCA.
Horizontal Registration Guide	Does the Horizontal Registration Guide move smoothly?	Replace the Duplex Assembly.

Table 7-45. Duplex Assembly Malfunctions

SYMPTOM	CAUSE	ACTION
No DC Voltage	Defective DC Power Supply, Duplex Driver PCA, or cable.	Remove the Duplex Unit from the printer. Check that J011, pin 1, has +24VDC to frame ground. If it does, replace the DC Controller or cable. If it does not, replace the Power Supply.
Switchback Motor failure	1. J403 disconnected. 2. Defective Switchback Motor. 3. Defective Duplex Driver PCA.	1. Reseat J403. 2. Measure the winding resistance of the motor. J403 should measure about 175 ohms between pin 1 and pins 3, 4, 5, and 6. All readings should be about the same. If they are not, replace the motor. 3. If the readings are good, replace the Duplex Driver PCA.
Horizontal Registration Motor failure	1. J403 disconnected. 2. Defective Registration Motor. 3. Defective Duplex Driver PCA.	1. Reseat J402. 2. Measure the winding resistance of the motor. J402 should measure about 80 ohms between pin 1 and pins 3, 4, 5, and 6. All readings should be about the same. If they are not, replace the motor. 3. If the readings are good, replace the Duplex Driver PCA.

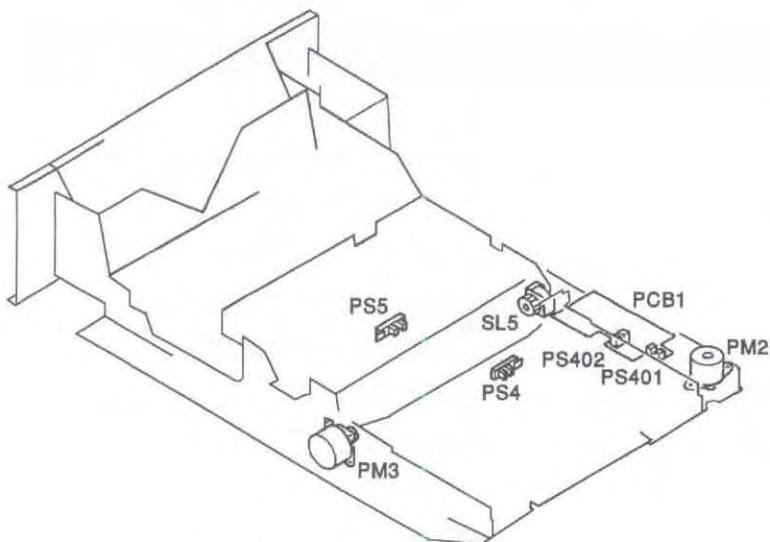


Figure 7-29. Location of Duplex Assembly Components

Table 7-46.

Duplex Assembly Photosensors, Solenoids, and Motors

Component	Symbol	Function
Photosensor	PS4	Detects paper in Switchback Unit.
Photosensor ¹	PS5	Detects paper in Duplex Feed Unit.
Photosensor ¹	PS401	Detects home position of Horizontal Registration Guide.
Photosensor ¹	PS402	Detects home position of Switchback Roller.
Solenoid	SL5	Operates Feed Roller.
Horizontal Registration Guide Motor	PM2	Drives the Horizontal Registration Guide.
Switchback Roller Motor	PM3	Drives the Switchback Roller.
Duplex Driver PCA	PCB1	Operates the motors, solenoids and sensors.

1 On the Duplex Driver PCA.

Table 7-47. Duplex Assembly Connectors

CONNECTOR	PIN	FUNCTION
J401	7	DC Controller and Power
J402	6	Horizontal Registration Motor (PM2)
J403	6	Switchback Motor (PM3)
J404	6	Sensors (PS401, PS402)
J406	2	Duplex D-Roller Solenoid (SL5)
J2401		Mother connector to printer
J2402		Connector to PS4
J2403		Connector to PS5

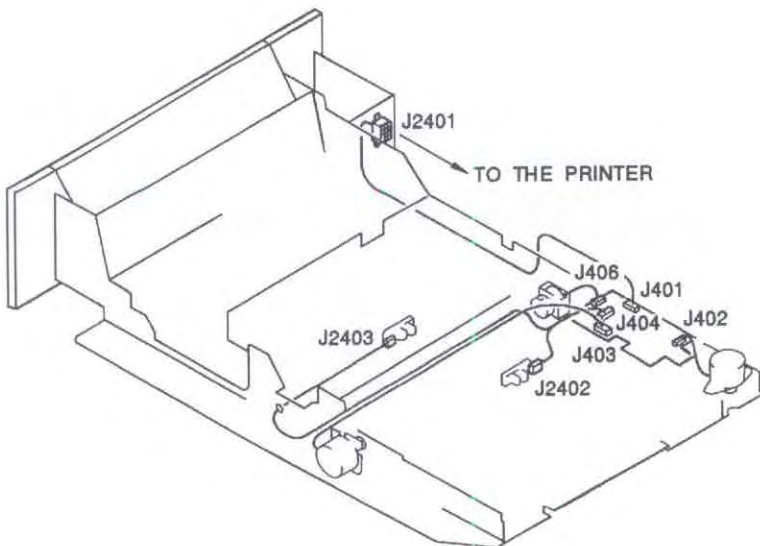
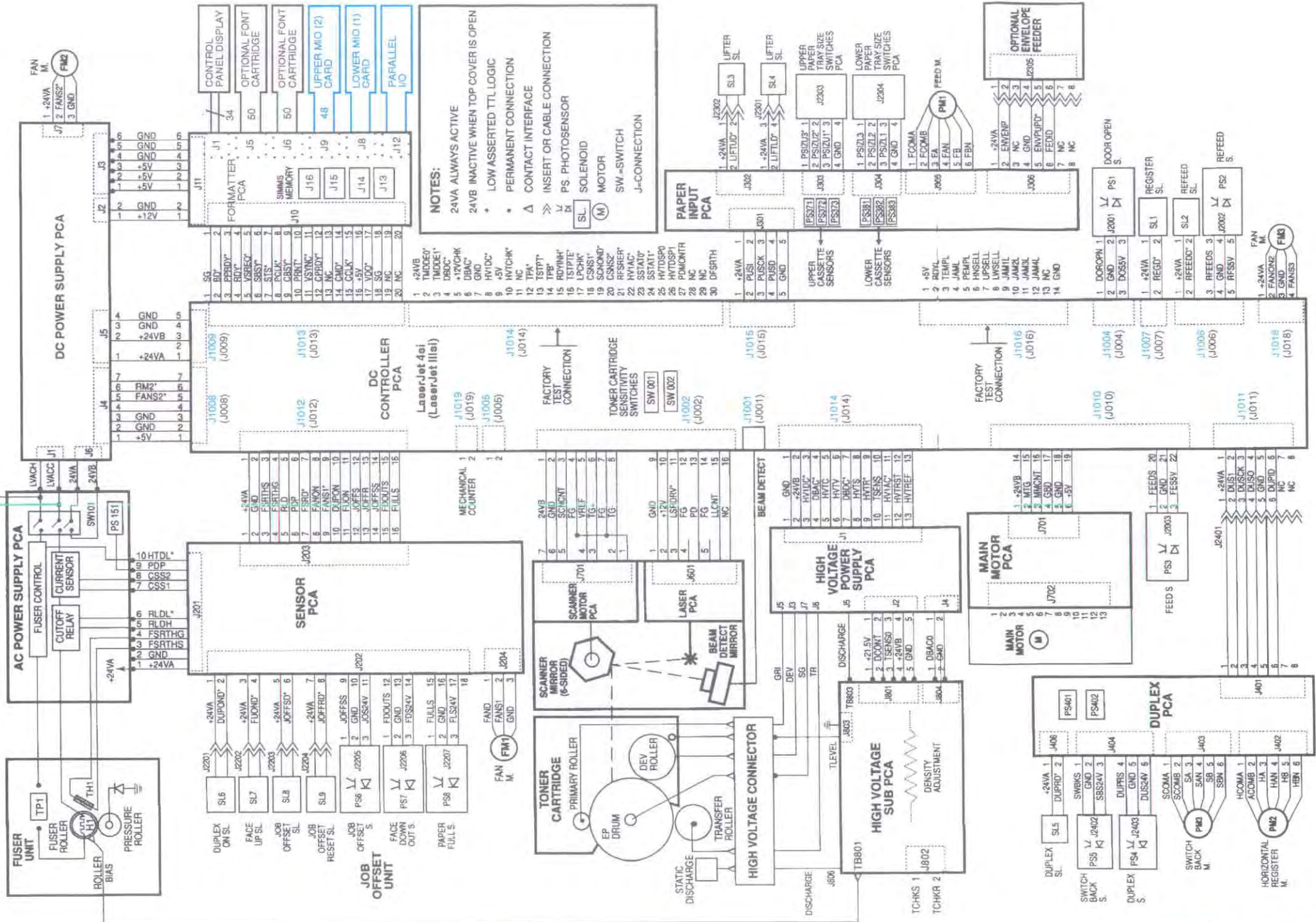


Figure 7-30. Location of Duplex Assembly Connectors



DC Controller Pin-Outs

PIN	COLOR	NAME	FUNCTION
J001		BD	Beam Detect Signal (Laser)

PIN	COLOR	NAME	FUNCTION
J002-1	RED	24 VB	Scanner Power (24 Volts B)
J002-2	YELLOW	GND	Ground
J002-3	WHITE	SCNGNT	Scanner Control
J002-4	GREEN	FG	Frame Ground
J002-5	RED	VREF	Voltage Reference
J002-6	YELLOW	TG+	Tachometer Generator +
J002-7	GREEN	FG	Frame Ground
J002-8	WHITE	TG-	Tachometer Generator -
J002-9	RED	GND	Ground
J002-10	YELLOW	+12V	12 Volts
J002-11	WHITE	LSRDRV	Laser Driver (Video Switch Signal)
J002-12	N/C	FG	Frame Ground (No connection)
J002-13	RED	PD	Laser Power Monitor
J002-14	N/C	FG	Frame Ground (No connection)
J002-15	WHITE	LLCNT	Laser Light Control Sensor
J002-16	N/C	NC	No Connection

PIN	COLOR	NAME	FUNCTION
J004-1	LT. BLUE	DOROPN	Door Open Sensor Activated
J004-2	DK. BLUE	GND	Ground
J004-3	BROWN	DOS5V	5 Volts

PIN	COLOR	NAME	FUNCTION
J006-1	WHITE	+24VA	24 Volts A
J006-2	WHITE	RFEEDD	Refeed Solenoid Activated
J006-3	PINK	RFEEDS	Refeed Sensor Activated
J006-4	DK. BLUE	GND	Ground
J006-5	BROWN	RFSSV	5 Volts

PIN	COLOR	NAME	FUNCTION
J007-1	YELLOW	+24VA	24 Volts A
J007-2	YELLOW	REGD	Registration Solenoid Activated

PIN	COLOR	NAME	FUNCTION
J008-1	BROWN	+5V	5 Volts
J008-2	DK. BLUE	GND	Ground
J008-3	DK. BLUE	GND	Ground
J008-4	YELLOW		
J008-5	PINK	FANS2	Fan2 Activated
J008-6	LT. BLUE	RM2	24 Volts B Activated
J008-7	VIOLET		

PIN	COLOR	NAME	FUNCTION
J009-1	RED	+24VA	24 Volts A
J009-2	NA	N/C	No Connect
J009-3	RED	+24VB	24 Volts B
J009-4	DK. BLUE	GND	Ground
J009-5	DK. BLUE	GND	Ground

PIN	COLOR	NAME	FUNCTION
-----	-------	------	----------

J010-3	LT. BLUE	HV1DC	High Voltage Primary DC
J010-4	GRAY	DBAC	Developing Bias AC
J010-5	VIOLET	HVTC	High Voltage Transfer Voltage Signal
J010-6	LT. BLUE	HVTV	High Voltage Transfer Current Signal
J010-7	ORANGE	DBDC	Developing Bias Control
J010-8	VIOLET	HVTS	High Voltage Transfer Monitoring Signal
J010-9	LT. BLUE	HVTR	High Voltage Transfer Reverse Bias
J010-10	ORANGE	TSNS	Toner Sensor
J010-11	VIOLET	HVIAC	High Voltage Primary AC
J010-12	LT. BLUE	HVTRST	High Voltage Transfer Stop Signal
J010-13	ORANGE	HVTREF	High Voltage Transfer Reference Voltage
J010-14	PINK	+24VB	24 Volts B (Main Motor Power)
J010-15	ORANGE	MTG	Motor Tachometer
J010-16	LT. BLUE	MMCNT	Main Motor Control
J010-17	DK. BLUE	GND	Ground
J010-18	DK. BLUE	GND	Ground
J010-19	BROWN	+5V	5 Volts
J010-20	GRAY	FEEDS	Feed Sensor Activated
J010-21	DK. BLUE	GND	Ground
J010-22	BROWN	FE55V	5 Volts DC

PIN	COLOR	NAME	FUNCTION
J011-1	RED	+24VA	24 Volts A
J011-2	ORANGE	DUSI	Duplex Serial In
J011-3	YELLOW	DUSCK	Duplex Signal Clock
J011-4	VIOLET	DUSO	Duplex Serial Out
J011-5	BLUE	GND	Ground
J011-6	PINK	DUPID	Duplex ID (Senses Presence)

PIN	COLOR	NAME	FUNCTION
J012-1	RED	+24VA	24 Volts A
J012-2	DK. BLUE	GND	Ground
J012-3	PINK	FSRTHS	Fuser Thermistor
J012-4	LT. BLUE	FSRTHG	Fuser Thermistor Ground
J012-5	YELLOW	RLD	Roller Drive
J012-6	ORANGE	PDP	Paper Detect Photosensor
J012-7	VIOLET	FSRD	Fuser Drive
J012-8	GRAY	FANON	Fan On
J012-9	PINK	FANSI	Fan Signal
J012-10	LT. BLUE	DUPON	Duplex Deflector Solenoid On
J012-11	YELLOW	FUON	Face Up Deflector Solenoid On
J012-12	ORANGE	JOFFS	Job Offset Solenoid On
J012-13	VIOLET	JOFFR	Job Offset Solenoid Reset
J012-14	GRAY	JOFFSS	Job Offset Complete Sensor
J012-15	PINK	FDOUTS	Face Down Paper Out Sensor
J012-16	LT. BLUE	FULLS	Output Bin Full Sensor

PIN	COLOR	NAME	FUNCTION
J013-1	RIBBON	SG	Signal Ground
J013-2		BD	Beam Detect (Horizontal Sync Pulse)
J013-3		PPRDY	Printer Power Ready
J013-4		RDY	Printer Ready
J013-5		VSRED	Vertical Sync Request
J013-6		SBSY	Status Busy (DC Control talking to Formatter)
J013-7		STS	DC Controller Status

J013-10		PRNT	Initiates Printing Operation
J013-11		VSUNC	Vertical Sync Pulse
J013-12		CPRDY	Controller (Formatter PCA) Power Ready
J013-13		NC	No Connect
J013-14		CMD	Formatter PCA Command
J013-15		CCLK	Controller (Formatter PCA) Clock
J013-16		+5V	5 Volts
J013-17		VDO	Video Data from Formatter PCA
J013-18		SG	Signal Ground
J013-19		NC	No Connect
J013-20		NC	No Connect

PIN	COLOR	NAME	FUNCTION
J014-1	NO CABLE	+24VB	+24VB Vdc
J014-2		TMODE0	Test Print Mode 0
J014-3		TMODE1	Test Print Mode 1
J014-4		DBDC	DC Voltage Added to Developing Bias (when low)
J014-5		+12VCHK	-5 Vdc
J014-6		DBAC	AC Voltage Added to Developing Bias (when low)
J014-7		GND	Ground
J014-8		HV1DC	High Voltage Primary Transfer DC Applied (low)
J014-9		+5V	+5 Vdc
J014-10		HVTCHK	High Voltage Transfer Check On
J014-11		NC	No Connect
J014-12		TPA	Test Print Pattern A
J014-13		TSTPT	Test Print Start
J014-14		TPB	Test Print Pattern B
J014-15		RDYINH	Ready Inhibit - PRT RDY, Error override (low)
J014-16		TSTPTE	Test Print Selection Control (A and B)
J014-17		LPCHK	Laser Power Check (CSNS1 or CSNS2 power level)
J014-18		CSNS1	Cartridge Sensitivity Switch 1 power level
J014-19		SCNOND	Scanner On - Scanner Motor Starts (when low)
J014-20		CSNS2	Cartridge Sensitivity Switch 2 power level
J014-21		RFSRER	Reset Fuser Error
J014-22		HV1AC	High Voltage Primary AC
J014-23		SSTAT0	Scanner Status 0
J014-24		SSTAT1	Scanner Status 1
J014-25		HVTDSP0	High Voltage Transfer Drive Set Point 0
J014-26		HVTDSP1	High Voltage Transfer Drive Set Point 1
J014-27		PDMONTR	Photodetect Monitor
J014-28		NC	No Connect
J014-29		NC	No Connect
J014-30		DFSRTH	Fuser Thermistor

PIN	COLOR	NAME	FUNCTION
J015-1	RED	+24VA	24 Volts A
J015-2	YELLOW	PUSI	Paper Input Unit Serial In
J015-3	LT. BLUE	PUSCK	Paper Input Unit Serial Clock
J015-4	PINK	PUSO	Paper Input Unit Serial Out
J015-5	DK. BLUE	GND	Ground

PIN	COLOR	NAME	FUNCTION
J016-1	RED	+24VA	24 Volts A
J016-2	YELLOW	FANS3	Fan3 Activated
J016-3	DK. BLUE	GND	Ground

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Parts and Diagrams

HOW TO USE THE PARTS LISTS

The figures in this chapter illustrate the major subassemblies and the component parts of the LaserJet IIISi/4Si printers. Each figure is followed by a table which lists the item number for each part given in the illustration, the associated part number for the item, the quantity required, any special notes, and the description of that part. While looking for a part number, pay special attention that the part chosen has the correct voltage rating for the machine under repair.

LaserJet IIISi vs LaserJet 4Si Parts

Parts listed which are exclusively for the LaserJet IIISi printer have the notation "(IIISi)" in the "Description" column. Parts which are exclusive to the LaserJet 4Si add the notation "(4Si)." If there is no notation, that part is interchangeable for both printers.

Standard vs. Special Order Parts

Part numbers with no indicator in the *Notes* column are stocked and can be ordered through Hewlett-Packard's Support Materials Organization (SMO). Parts marked with an **S** in the *Notes* column are special order parts which can be ordered through SMO but may have an eight-week lead time.

Note



Not all parts shown in the drawings are orderable. The parts listed are the only orderable parts. Parts that have no reference designator or part number are not field replaceable and cannot be ordered through SMO.

Using the Parts Index

In the back of this manual you will find a *Parts Index*. The first section of the index is **sorted by part number**. The next section of the index is **sorted by part name**. All field-replaceable part numbers are listed there with cross-reference to the appropriate tables in this section. Use the *Parts Index* as a convenient means to find any part in the illustrations by its part number or name.

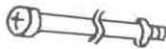
Ordering Printer Accessories

“Accessory Parts,” toward the end of this chapter, contains information on accessory items such as MIO and SIMM cards. Check this section for specialty items.

COMMON HARDWARE

Table 8-0 identifies common hardware used in the printers:

Table 8-0. Common Hardware

EXAMPLE	DESCRIPTION	PART NUMBER
	Plated (silver-colored) washer-head Phillips machine screw.	M3x8 - XA9-0267-000CN M3x4 - XA9-0434-000CN M3x6 - 0515-2186 M4x8 - XA9-0540-000CN M3x10 - XA9-0542-000CN
	Plated (silver-colored) pan-head Phillips machine screw.	M3x6 - XB1-2300-606CN M3x8 - 0515-1895 M4x6 - XB1-2400-606CN M4x8 - 0515-1912
	Coated (black) pan-head Phillips machine screw.	Use plated screws. (See above.)
	Coated (black) washer-head Phillips machine screw.	Use plated washer-head screws. (See above.)
	Coated (black) self-tapping Phillips screw for plastic.	M3x6 - XB4-7300-609CN M4x10 - XB4-7401-009CN
	Plated (silver colored) phillips screw w/captive star washer	M4x6 - XA9-0192-000CN M3x6 - XA9-0233-000CN
	Long screws for Fusing Assembly	RB1-0854-020CN
	Scanner Unit screws. Captive washer and lockwasher	XA9-0531-000CN

PARTS LISTS

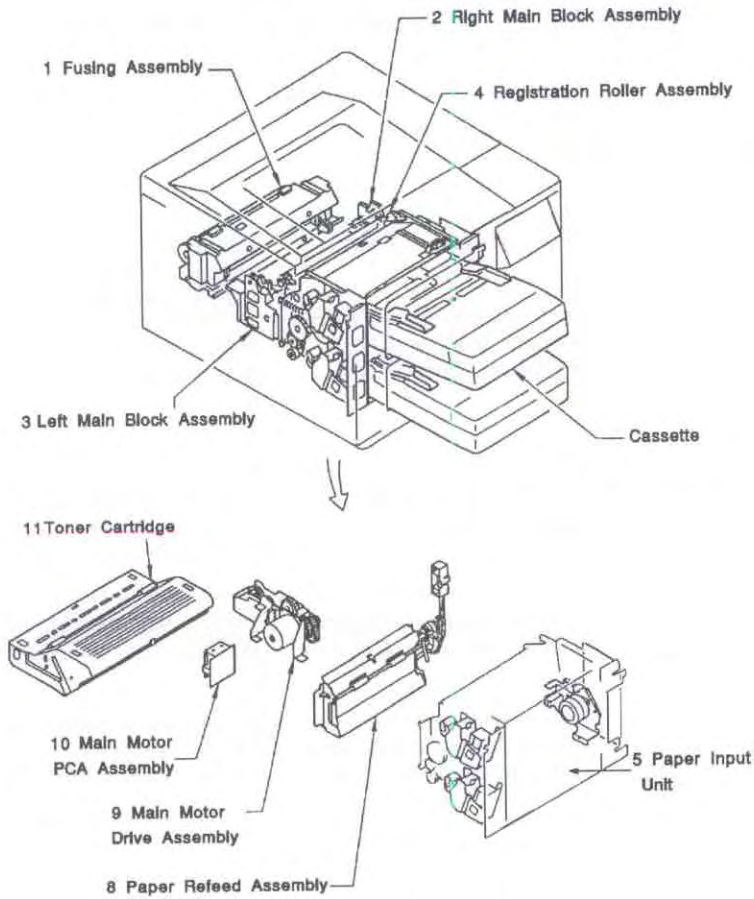


Figure 8-1. Major Assemblies (1 of 2)

Table 8-1. Major Assemblies (1 of 2)

Part #	REF	NOTES	DESCRIPTION
RG5-0046-000CN	1	Fig 8-18	Fusing Assembly (115V)
RG5-0047-000CN	1	Fig 8-18	Fusing Assembly (220V)
RG5-0039-000CN	2	Fig 8-23	Right Main Block Assembly
RG5-0038-000CN	3	Fig 8-24	Left Main Block Assembly
RG5-0161-000CN	4	Fig 8-17	Registration Roller Assembly
RG5-0025-220CN	5	Fig 8-10	Paper Input Unit
RG5-0056-000CN	8	Fig 8-20	Paper Refeed Unit
RG5-0040-000CN	9	Fig 8-14	Drive Assembly (Main Motor)
RG5-0042-000CN	10	Fig 8-6	Main Motor PCA
92291A	11	Fig 8-1	Toner Cartridge (Table 8-29)

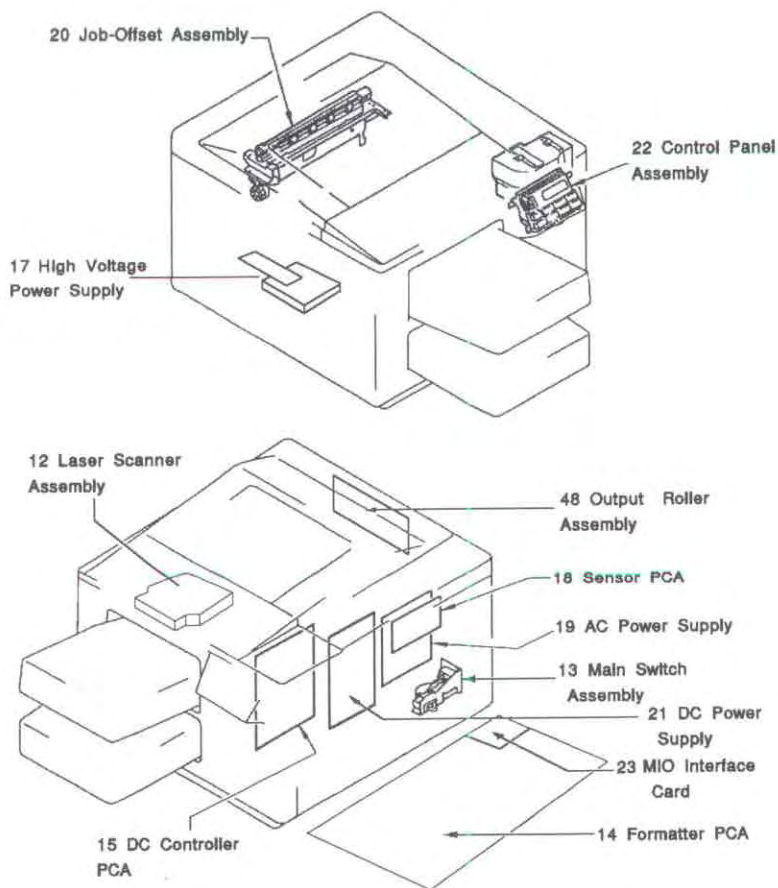


Figure 8-2. Major Assemblies (2 of 2)

Table 8-2. Major Assemblies (2 of 2)

Part #	REF	NOTES	DESCRIPTION
33491-60143	10	Fig. 8-8	Formatter/Pan Assy (IIISi) (new) ¹
33491-69143	10	Fig. 8-8	Formatter/Pan Assy (IIISi) (exchange) ¹
33491-60160	10	Fig. 8-8	Formatter/Pan Assy (IIISi) (new) ²
33491-69160	10	Fig. 8-8	Formatter/Pan Assy (IIISi) (exchange) ²
RG5-0021-000CN	12	Fig 8-7	Laser/Scanner Assembly (IIISi)
RG5-0153-000CN	12	Fig 8-7	Laser/Scanner Assembly (4Si)
RG5-0102-030CN	13	Fig 8-13	Main Switch Assembly
C2009-67901	14	Fig 8-8	Formatter PCA (4Si) (new)
C2009-69001	14	Fig 8-8	Formatter PCA (4Si) (exchange)
RG5-0089-110CN	15	Fig 8-8	DC Controller PCA (IIISi)
RG5-0627-000CN	15	Fig 8-8	DC Controller PCA (4Si)
RG5-0076-200CN	17	Fig 8-6	High Voltage Power Supply (IIISi)
RG5-0170-000CN	17	Fig 8-6	High Voltage Power Supply (4Si)
RG5-0094-000CN	18	Fig 8-8	Sensor PCA
RG5-0095-000CN	19	Fig 8-8	AC Power Supply PCA (115V) (IIISi)
RG5-0166-000CN	19	Fig 8-8	AC Power Supply PCA (115V) (4Si)
RG5-0096-000CN	19	Fig 8-8	AC Power Supply PCA (220V) (IIISi)
RG5-0167-000CN	19	Fig 8-8	AC Power Supply PCA (220V) (4Si)
RG5-0381-150CN	20	Fig 8-16	Job Offset Assembly
RG5-0085-060CN	21	Fig 8-8	DC Power Supply 115V (IIISi)
RG5-0168-000CN	21	Fig 8-8	DC Power Supply 115V (4Si)
RG5-0086-060CN	21	Fig 8-8	DC Power Supply 220V (IIISi)
RG5-0169-000CN	21	Fig 8-8	DC Power Supply 220V (4Si)
RG5-0088-000CN	22	Fig 8-9	Control Panel Assembly (IIISi)
RG5-0162-000CN	22	Fig 8-9	Control Panel Assembly (4Si)
28644-60002	23	Fig 8-2	Serial/Parallel MIO Interface (IIISi)
RG5-0067-000CN	48	Fig 8-5	Delivery Cover Assembly

1 For LaserJet IIISi serial number 3199J and below.

2 For LaserJet IIISi serial number 3200J and above.

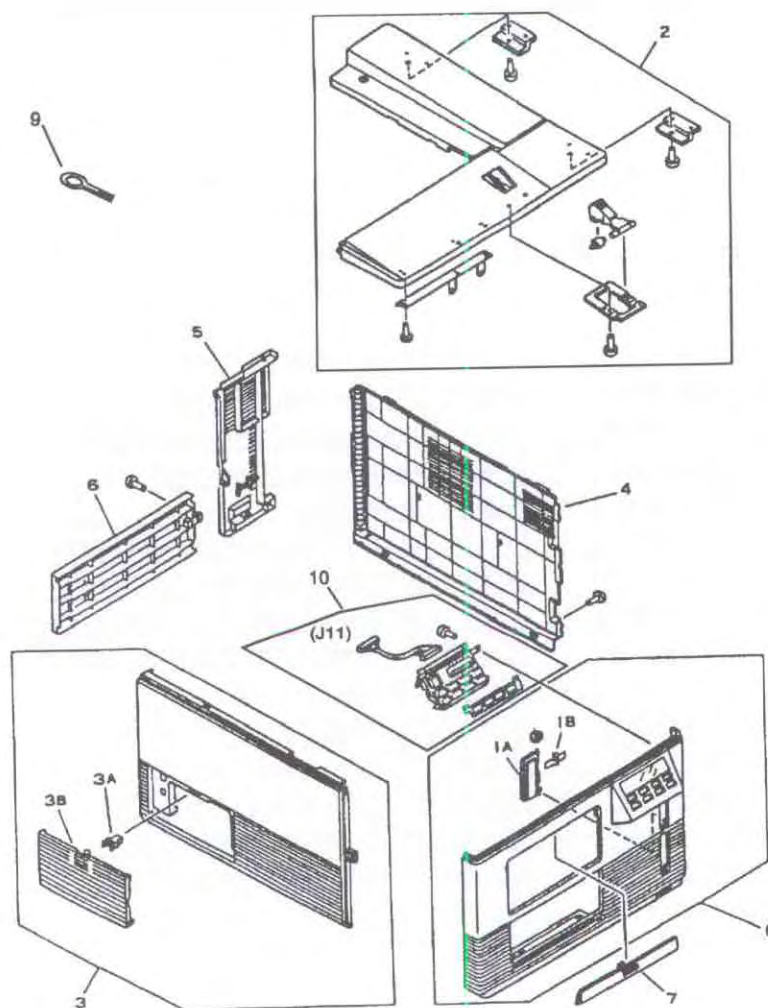


Figure 8-3. Covers and Panels

Table 8-3. External Covers

Part #	REF	NOTES	DESCRIPTION	QTY
RG5-0120-000CN	1		Front Cover Assembly (IIISi)	1
RG5-0174-000CN	1		Front Cover Assembly (4Si)	1
RB1-0732-000CN	1A	S	Cover, Front	2
RB1-0734-000CN	1B	S	Spring, Torsion	2
RG5-0121-000CN	2		Front Upper Cover Assy (IIISi)	1
RG5-0163-000CN	2		Front Upper Cover Assy (4Si)	1
RG5-0122-000CN	3		Left Cover Assembly	1
RA1-8288-000CN	3A	S	Latch, Duplex Access Door	1
RB1-0756-000CN	3B	S	Door, Duplex Access	1
RB1-0822-000CN	4		Cover, Right Side	1
RB1-0823-000CN	5		Cover, Right Rear	1
RB1-0824-000CN	6		Cover, Rear Lower	1
RB1-0825-000CN	7		Cover, Front Feeder	1
RB1-0832-000CN	9		Brush, Cleaning	1
RG5-0107-000CN	10		Cable, Front Panel (IIISi)	1
RG5-0156-000CN	10		Cable, Front Panel (4Si)	1

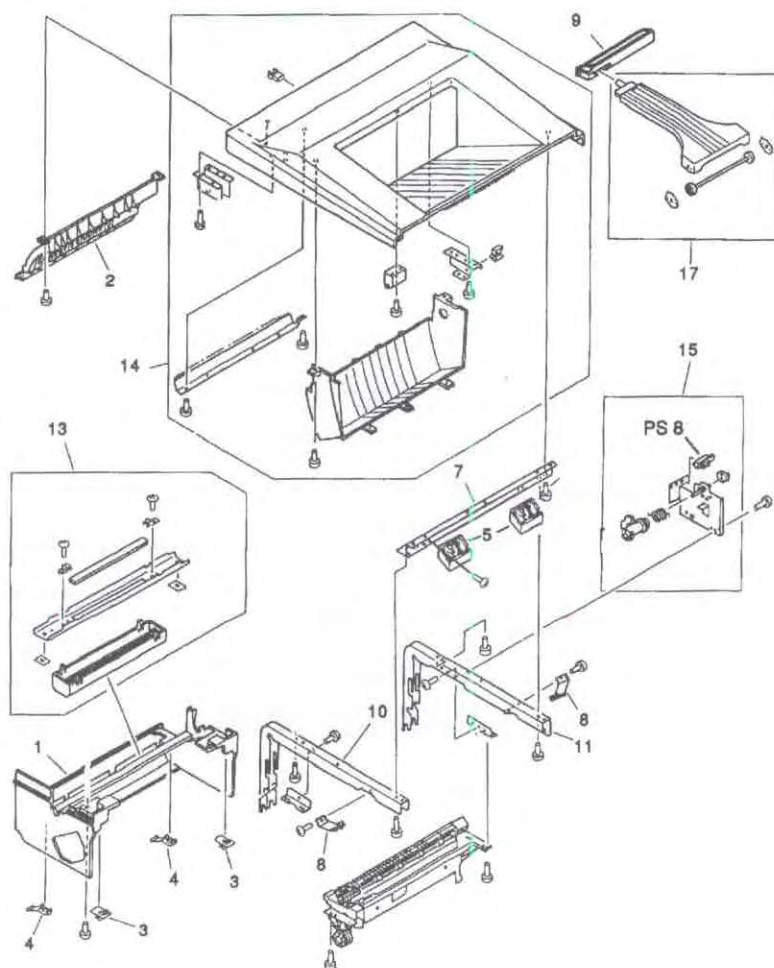


Figure 8-4. Top Cover Assembly (Figure 1 of 2)

Table 8-4. Top Cover Assembly (1 of 2)

Part #	REF	NOTES	DESCRIPTION	QTY
RB1-0471-000CN	1	S	Guide, Cartridge	1
RB1-0472-000CN	2	S	Guide, Upper Delivery	1
RB1-0477-000CN	3	S	Spring, leaf	2
RB1-0478-000CN	4	S	Spring, Leaf	2
RB1-0482-000CN	5	S	Catch	2
RB1-0582-000CN	7	S	Plate, Arm	1
RF5-0096-000CN	8	S	Spring, leaf	2
RB1-0485-000CN	9	S	Mount, Paper Holder	1
RF5-0098-000CN	10	S	Bar, Left	1
RF5-0099-000CN	11	S	Bar, Right	1
RG5-0069-000CN	13	S	Mirror Assembly	1
RG5-0071-100CN	14	S	Upper Panel Assembly	1
RG5-0072-000CN	15	S	Hinge Assembly	1
RG5-0070-000CN	17		Holder, Paper Assembly	1

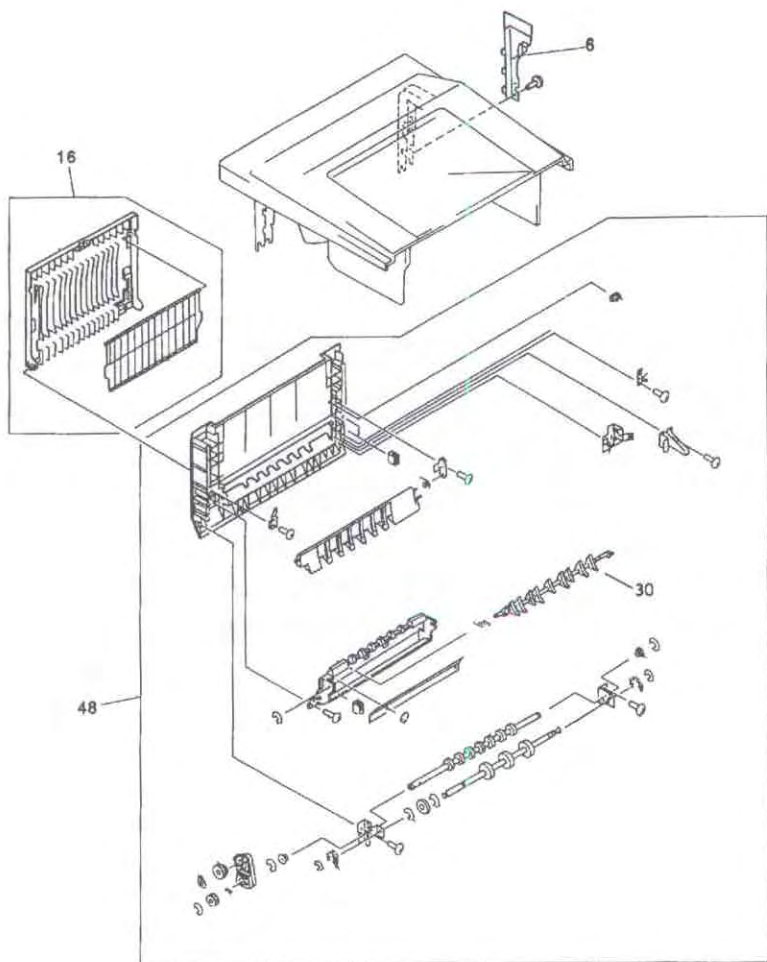


Figure 8-5. Top Cover Assembly (Figure 2 of 2)

Table 8-5. Top Cover Assembly (2 of 2)

Part #	REF	NOTES	DESCRIPTION	QTY
RB1-0484-000CN	6	S	Cable, guide	1
RG5-0073-000CN	16	S	Tray Assembly	1
RB1-0565-000CN	30		Flapper	1
RG5-0067-000CN	48		Delivery Cover Assembly	1

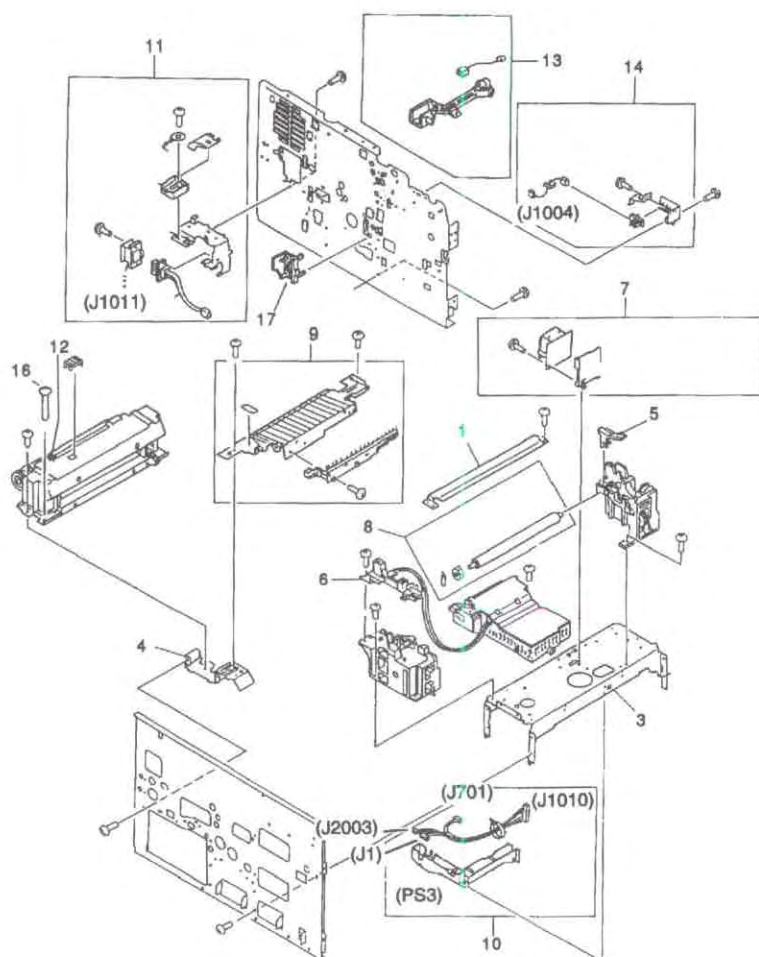


Figure 8-6. Internal Components (Figure 1 of 3)

Table 8-6. Internal Components (1 of 3)

Part #	REF	NOTES		DESCRIPTION	QTY
RB1-0221-000CN	1			Guide, Upper	1
RB1-0801-000CN	3	S		Crossmember	1
RB1-0804-000CN	4	S		Mount, Fusing Assembly	1
RB1-0818-000CN	5			Front support, stop	1
RG5-0076-200CN	6			High Voltage Power Supply (IIISi)	1
RG5-0170-000CN	6			High Voltage Power Supply (4Si)	1
RG5-0042-000CN	7			Main Motor PCA	1
RG5-0044-050CN	8	S		Transfer Roller Assembly	1
RG5-0045-000CN	9	S		Transfer Guide Assembly	1
RG5-0104-000CN	10	S		Cable, High Voltage Unit	1
RG5-0109-000CN	11	S		Cable, Duplex Harness	1
RB1-0855-000CN	12	S		Toothed Lockwasher	1
RG5-0136-000CN	13	S		Cable, High Voltage Bias Guide Assembly	1
RG5-0116-000CN	14	S		Door Sensor Assembly	1
RB1-0854-020CN	16	S		Screw, Fusing Assembly	4
RB1-0827-000CN	17	S		Guide, connector	1

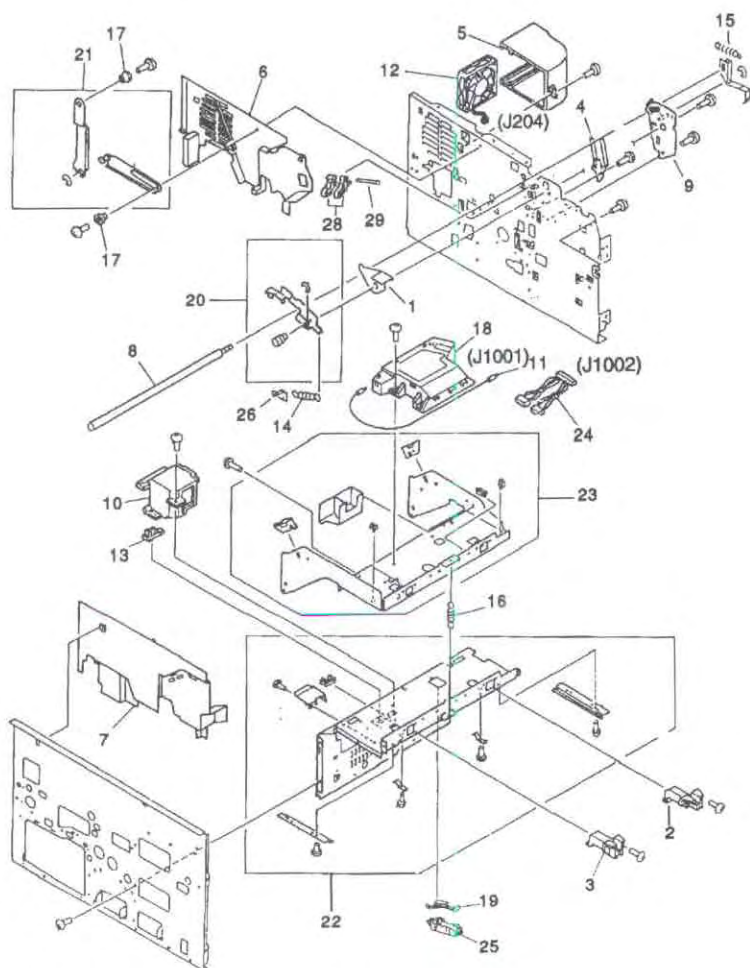


Figure 8-7. Internal Components (Figure 2 of 3)

Table 8-7. Internal Components (2 of 3)

Part #	REF	NOTES	DESCRIPTION	QTY
RB1-0711-000CN	1	S	Latch Plate	1
RB1-0802-000CN	2	S	Holder, Right	1
RB1-0803-000CN	3	S	Holder, Left	1
RB1-0805-000CN	4	S	Cartridge Switch Spring	1
RB1-0815-000CN	5	S	Duct, Fan	1
RB1-0830-030CN	6	S	Cover, Inner Right	1
RB1-0831-000CN	7	S	Cover, Inner Left	1
RB1-0849-030CN	8	S	Shaft	1
RF5-0111-000CN	9	S	Plate, Right	1
RF5-0113-000CN	10	S	Motor Cover	1
RH2-5129-000CN	11		Cable, Optical Fiber	1
RH7-1104-000CN	12		Fan, 24 VDC (FM1)	1
WG8-5038-020CN	13		Photo-Interrupter GP1S09C1	1
RS5-2062-000CN	14	S	Spring, Tension	1
RS5-2061-000CN	15	S	Spring, Tension	1
RS5-2063-000CN	16	S	Spring, Tension	1
RG5-6021-000CN	17	S	Bushing	2
RG5-0021-000CN	18		Laser/Scanner Assembly (IISi)	1
RG5-0153-000CN	18		Laser/Scanner Assembly (4Si)	1
RB1-0701-000CN	19	S	Arm	1
RG5-0117-000CN	20	S	Lock Link Assembly	1
RG5-0118-030CN	21	S	Link Assembly	1
RG5-0119-000CN	22	S	Front Crossmember Assembly	1
RG5-0125-000CN	23	S	Scanner Unit Mounting Assembly	1
RG5-0103-000CN	24		Cable, Laser/Scanner (IISi)	1
RG5-0384-000CN	24		Cable, Laser/Scanner (4Si)	1
RB1-0702-000CN	25	S	Holder, Arm	1
RB1-0816-000CN	26	S	Hook	1
RB1-0828-000CN	28	S	Latch (switch actuator)	2
RB1-0829-000CN	29	S	Shaft	1

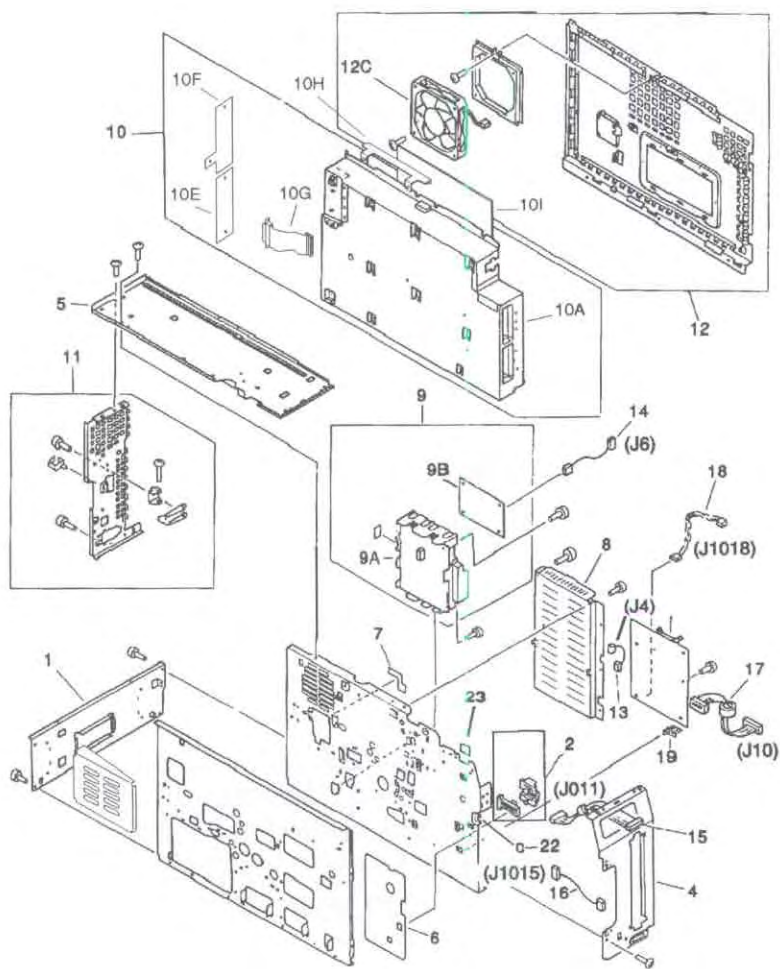


Figure 8-8. Internal Components (Figure 3 of 3)

Table 8-8. Internal Components (3 of 3)

Part #	REF	NOTES	DESCRIPTION	QTY
RB1-0401-000CN	1	S	Plate, Rear	1
RG5-0140-000CN	2	S	TP Rail Assembly (IIISi)	1
RB1-0820-000CN	4	S	Frame, Right Front	1
RB1-0821-000CN	5	S	Frame, Right Upper	1
RB1-0847-000CN	6	S	Sheet, insulating	1
RB1-0848-000CN	7	S	Sheet, insulating	1
RG5-0085-060CN	8		DC Power Supply PCA (115V) (IIISi)	1
RG5-0168-000CN	8		DC Power Supply PCA (115V) (4Si)	1
RG5-0086-060CN	8		DC Power Supply PCA (220V) (IIISi)	1
RG5-0169-000CN	8		DC Power Supply PCA (220V) (4Si)	1
RG5-0092-000CN	9		AC Power Inlet Assembly (115V) (IIISi)	1
RG5-0164-000CN	9		AC Power Inlet Assembly (115V) (4Si)	1
RG5-0093-000CN	9		AC Power Inlet Assembly (220V) (IIISi)	1
RG5-0165-000CN	9		AC Power Inlet Assembly (220V) (4Si)	1
RG5-0095-000CN	9A	S	AC Power Supply (115V) (IIISi)	1
RG5-0166-000CN	9A	S	AC Power Supply (115V) (4Si)	1
RG5-0096-000CN	9A	S	AC Power Supply (220V) (IIISi)	1
RG5-0167-000CN	9A	S	AC Power Supply (220V) (4Si)	1
RG5-0094-000CN	9B		Sensor PCA	1

Table 8-8. Internal Components (3 of 3) (continued)

Part #	REF	NOTES	DESCRIPTION	QTY
33491-69143	10		Formatter/Pan Assy (IIISi) ¹	
33491-69160	10		Formatter/Pan Assy (IIISi) ²	
RG5-0123-000CN	10A	S	Shield Plate Assembly (IIISi)	1
RG5-0160-000CN	10A	S	Shield Plate Assembly (4Si)	1
C2009-00006	10E		Lower MIO Cover Plate (4Si)	1
C2009-60109	10F		Upper MIO Cover Plate (4Si)	1
C2009-60105	10G		Cable, Parallel Assy (4Si)	1
C2009-40003	10H		MIO Guide Rail (4Si)	2
C2009-67901	10I		Formatter PCA (4Si) (New)	1
C2009-69001	10I		Formatter PCA (4Si) (Exchnage)	1
RG5-0126-000CN	11	S	Right Rear Frame Assembly	1
RG5-0127-000CN	12		Formatter Pan Cover (IIISi)	1
RG5-0154-000CN	12		Formatter Pan Cover (4Si)	1
RH7-1106-000CN	12C		Fan, 24 VDC (FM3)(IIISi)	1
RH7-1163-000CN	12C		Fan, 24 VDC (FM3)(4Si)	1
RG5-0091-000CN	13	S	Cable, DC Power Supply	1
RG5-0106-000CN	14	S	Cable, DC Driver PCA	1
RG5-0107-000CN	15	S	Cable, Front Panel (IIISi)	1
RG5-0156-000CN	15	S	Cable, Front Panel (4Si)	1
RG5-0108-000CN	16	S	Cable, Paper Input	1
RG5-0130-000CN	17		Cable, Interface (IIISi)	1
RG5-0157-000CN	17		Cable, Interface (4Si)	1
RG5-0131-000CN	18	S	Cable, Fan (FM3) (IIISi)	1
WT2-5025-000CN	19	S	Support, PCA	4
WT2-0204-000CN	22	S	Clip, Cord	1
WT2-5031-000CN	23	S	Clip, Cord	1

1 For LaserJet IIISi serial number 3199J and below.

2 For LaserJet IIISi serial number 3200J and above.

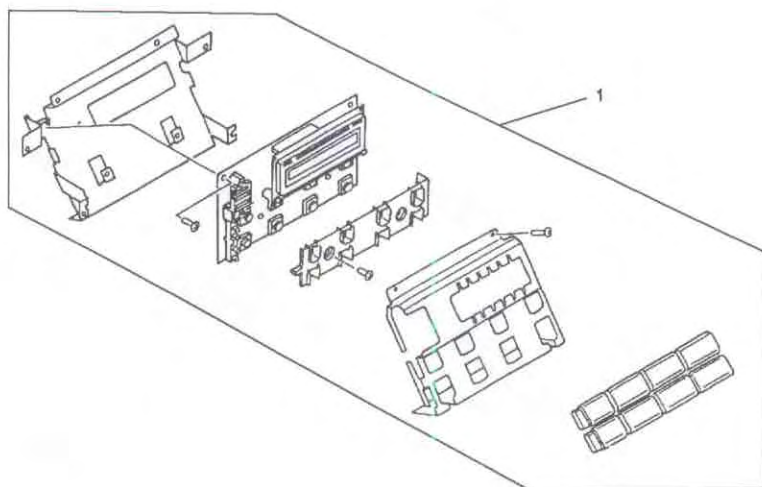


Figure 8-9. Control Panel Assembly

Table 8-9. Control Panel Assembly

Part #	REF	NOTES	DESCRIPTION	QTY
RG5-0088-000CN	1		Control Panel Assembly (IIISi)	1
RG5-0162-000CN	1		Control Panel Assembly (4Si)	1

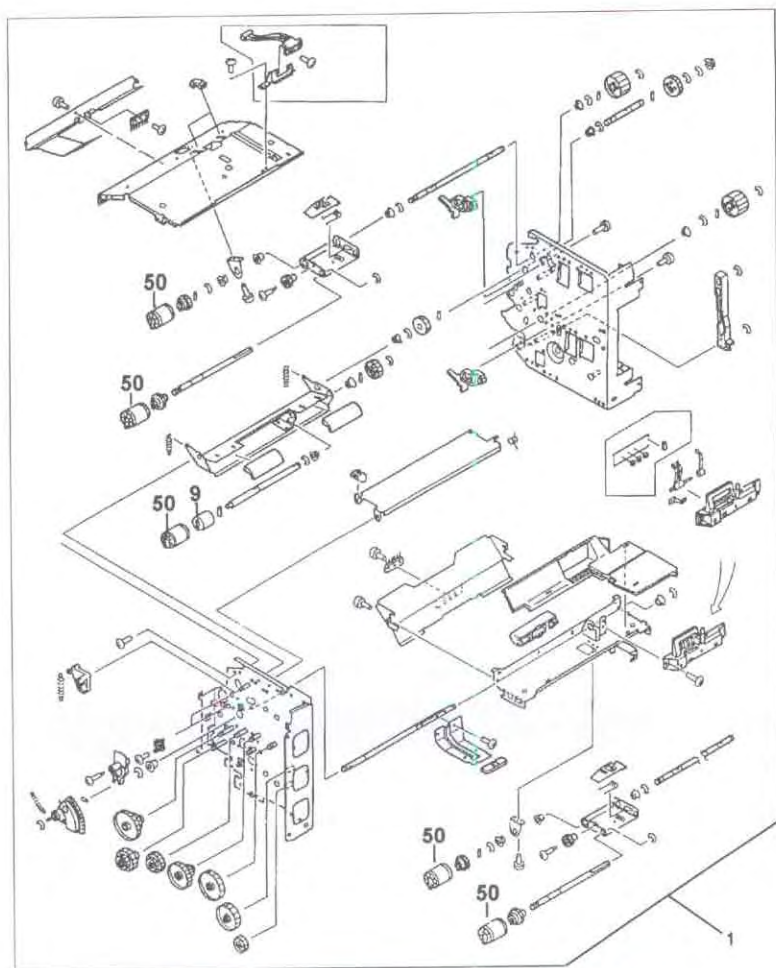


Figure 8-10. Paper Input Unit (Figure 1 of 2)

Table 8-10. Paper Input Unit (1 of 2)

Part #	REF	NOTES	DESCRIPTION	QTY
RG5-0025-220CN	1		Paper Input Unit (PIU)	1

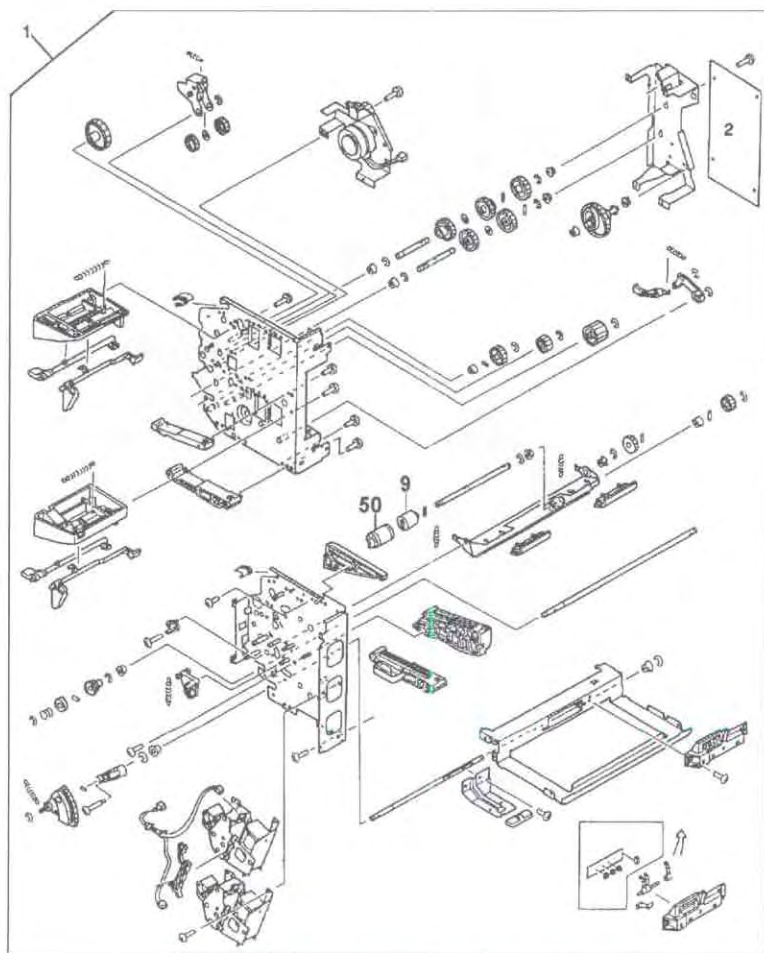


Figure 8-11. Paper Input Unit (Figure 2 of 2)

Table 8-11. Paper Input Unit (2 of 2)

Part #	REF	NOTES	DESCRIPTION	QTY
RG5-0034-700CN	2		Paper Pickup PCA	1
RB1-0109-000CN	9		Separation Clutch	2
RF5-0041-000CN	50		Pickup/Separation Rollers	6

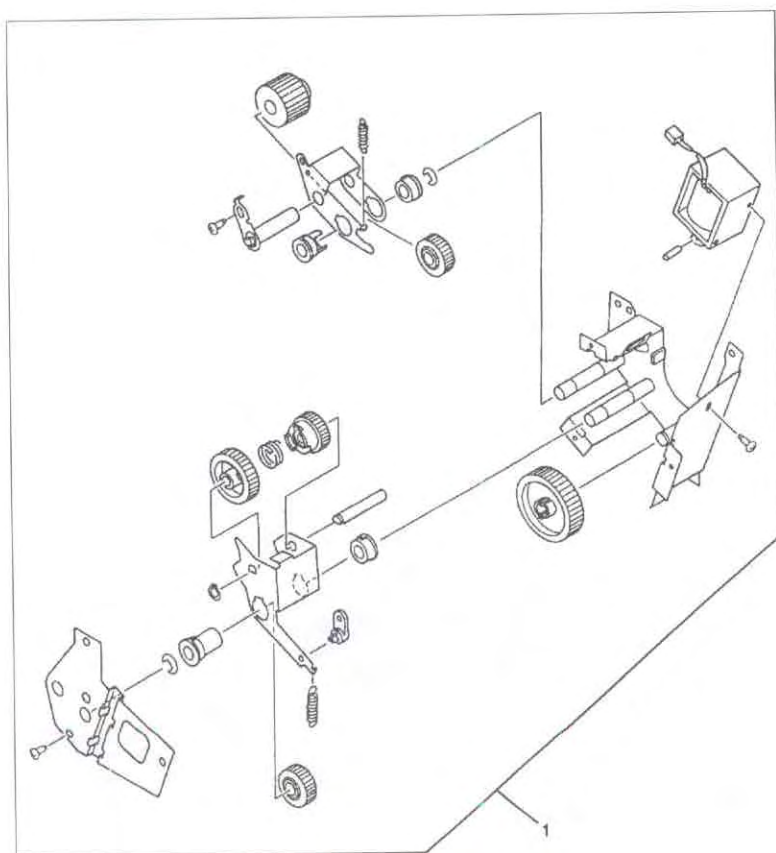


Figure 8-12. Lifter Assembly

Table 8-12. Lifter Assembly

Part #	REF	NOTES	DESCRIPTION	QTY
RG5-0026-000CN	1		Lifter Assembly	2

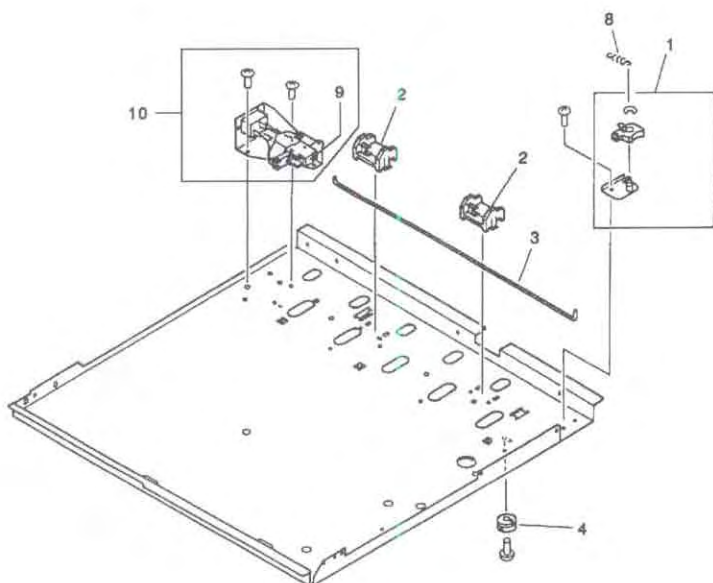


Figure 8-13. Main Switch Assembly

Table 8-13. Main Switch Assembly

Part #	REF	NOTES	DESCRIPTION	QTY
RG5-0128-000CN	1	S	Front Switch Button Assembly	1
RB1-0853-000CN	2	S	Linkage Guide Block	2
RB1-0811-000CN	3	S	Linkage, Main Switch	1
RB1-0692-000CN	4	S	Foot, Main Switch	4
RS5-2054-000CN	8	S	Spring	1
RH7-6020-000CN	9		Switch, Rocker, 250V, 16A	1
RG5-0102-030CN	10		Main Switch Assembly	1

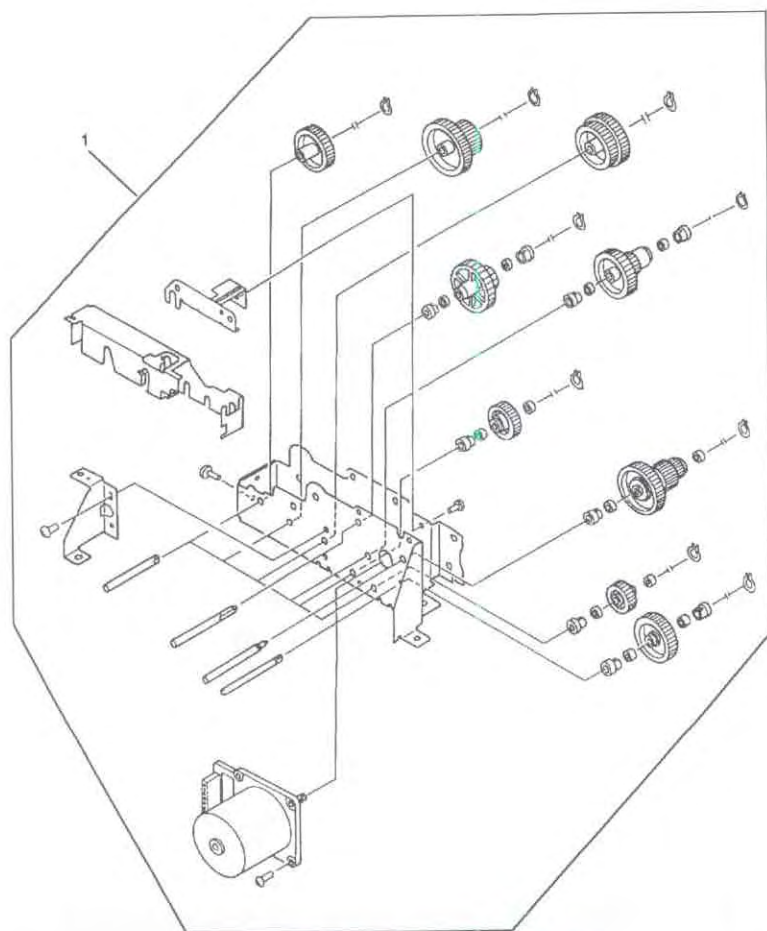


Figure 8-14. Main Motor Drive Train

Table 8-14. Main Motor Drive Train

Part #	REF	NOTES	DESCRIPTION	QTY
RG5-0040-000CN	1		Drive Assembly, Main Motor	1

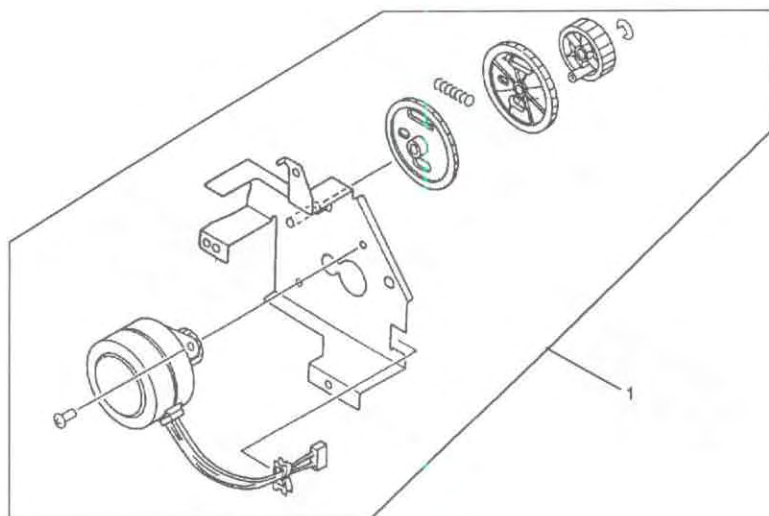


Figure 8-15. Pickup Roller Drive Assembly

Table 8-15. Pickup Roller Drive Assembly

Part #	REF	NOTES	DESCRIPTION	QTY
RG5-0027-000CN	1		not orderable - for reference only	:

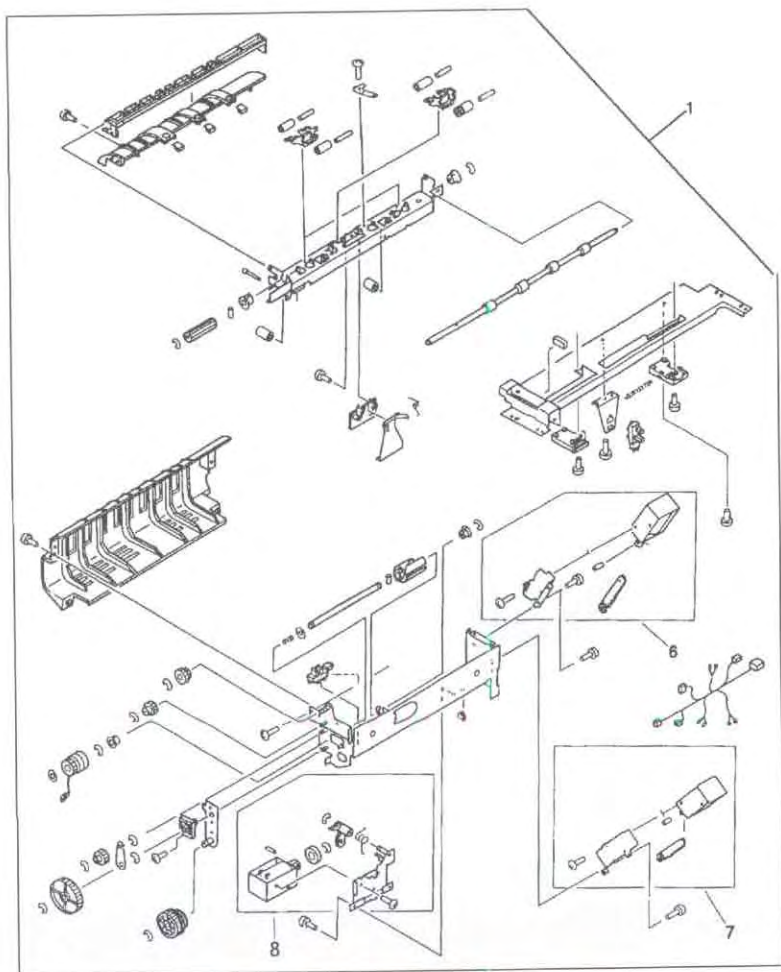


Figure 8-16. Job Offset Assembly
Table 8-16. Job Offset Assembly

Part #	REF	NOTES	DESCRIPTION	QTY
RG5-0381-150CN	1		Job Offset Assembly	1
RG5-0063-000CN	6	S	Flapper Solenoid Unit	1
RG5-0064-000CN	7	S	Feed Guide Solenoid Unit	1
RG5-0065-000CN	8	S	Offset Solenoid Unit	1

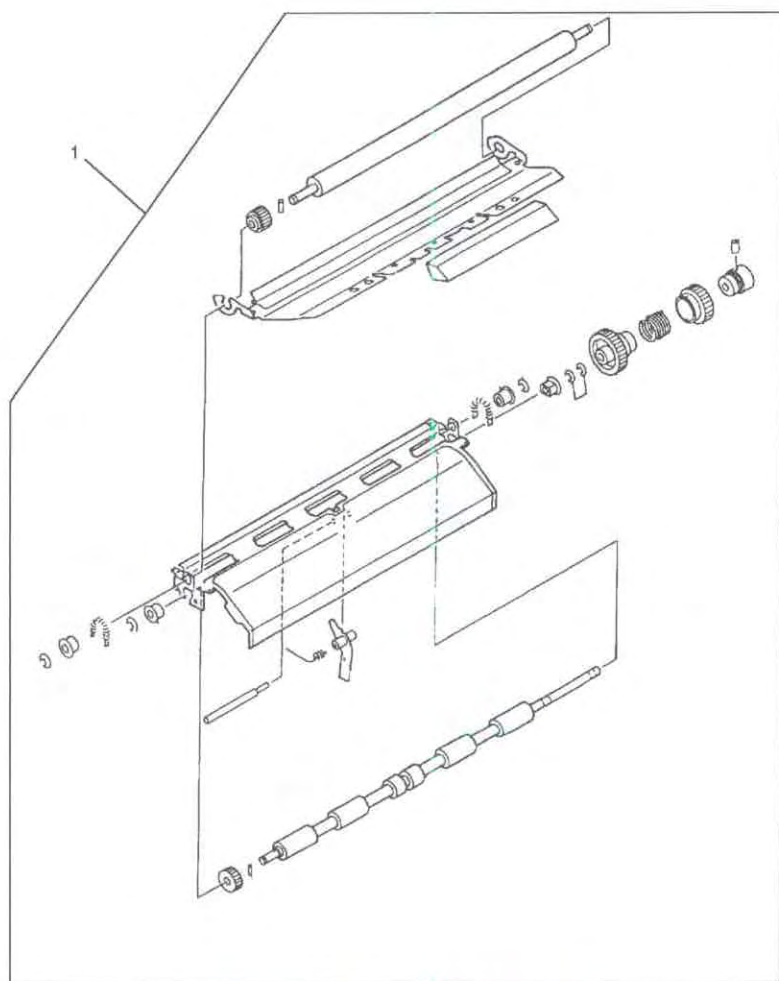


Figure 8-17. Registration Assembly

Table 8-17. Registration Assembly

Part #	REF	NTS	DESCRIPTION	QTY
RG5-0161-060CN	1		Registration Roller Assembly	1

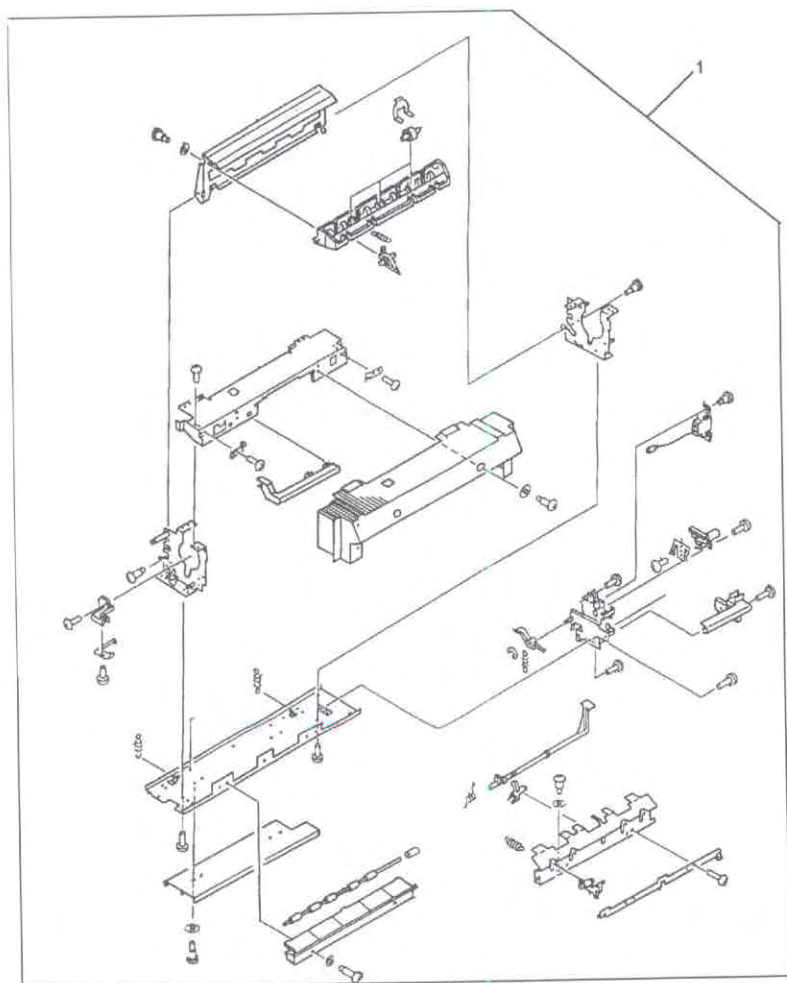


Figure 8-18. Fusing Assembly 1 of 2

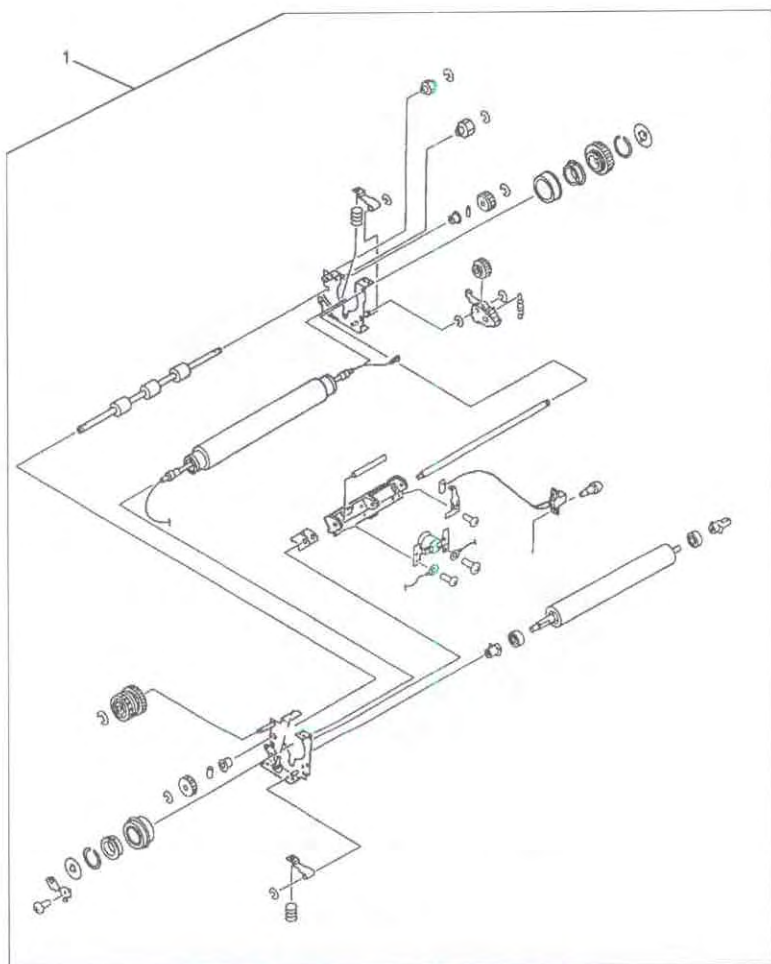


Figure 8-18b. Fusing Assembly 2 of 2

Table 8-18. Fusing Assembly

Part #	REF	NOTES	DESCRIPTION	QTY
RG5-0046-270CN	1		Fusing Assembly (110/115V)	1
RG5-0047-270CN	1		Fusing Assembly (220/240V)	1

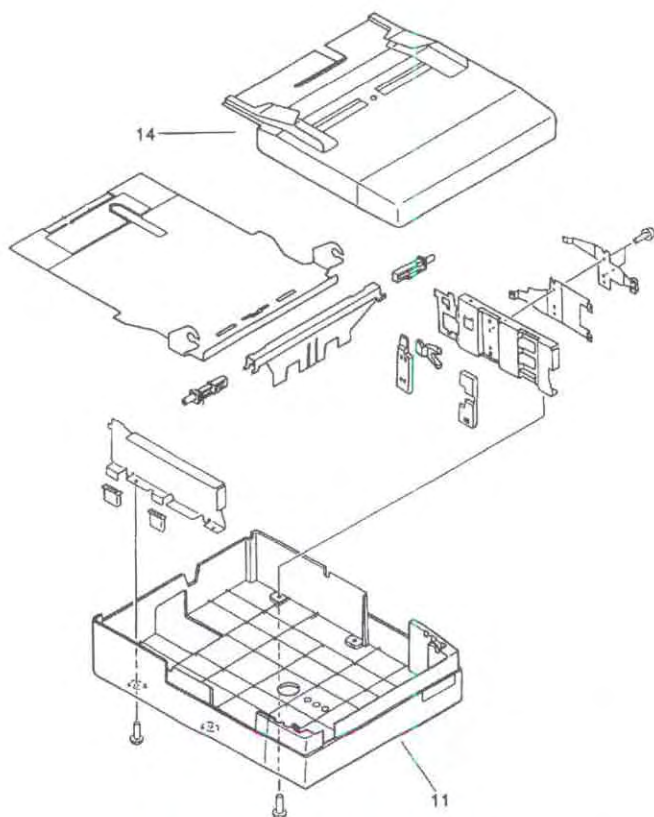


Figure 8-19. Cassette Assembly

Table 8-19. Cassette Assembly

Part #	REF	NOTES	DESCRIPTION	QTY
92291B	11		Paper Cassette (LTR)	1
92291D	11		Paper Cassette (A4)	1
92291C	11		Paper Cassette (LGL)	1
92291E	11		Paper Cassette (EXEC)	1
RG5-0171-000CN	14		Cassette Cover, A4, LTR, EXEC	1
RG5-0172-000CN	14		Cassette Cover, Legal	1
RG1-2802-000CN	14		Env. Feeder, Top Tray	1

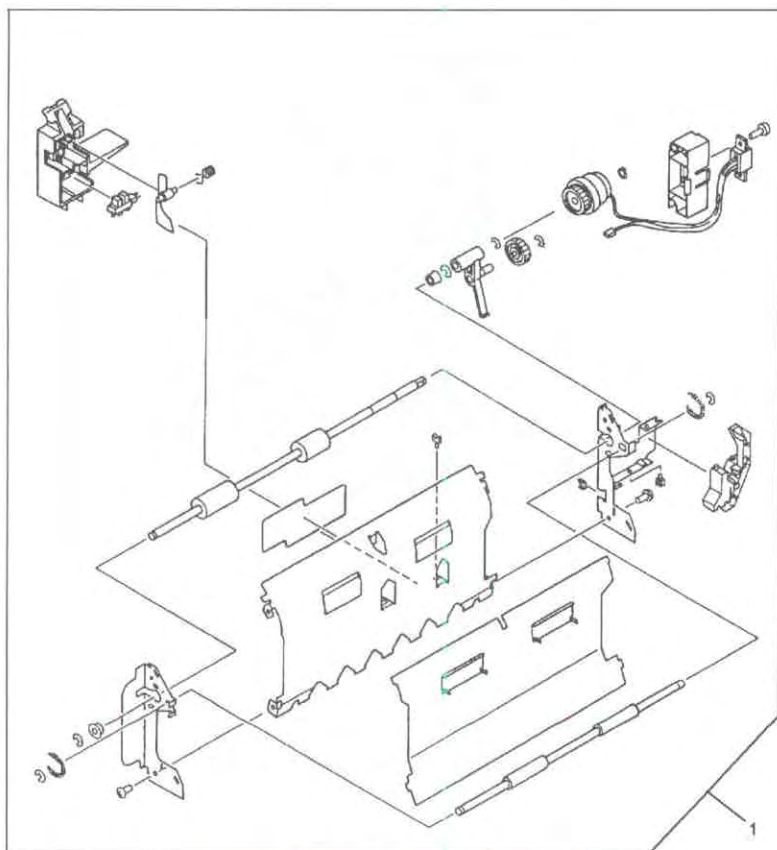


Figure 8-20. Paper Refeed Assembly

Table 8-20. Paper Refeed Unit (PRU)

Part #	REF	NOTES	DESCRIPTION	QTY
RG5-0056-000CN	1		Paper Refeed Unit	1

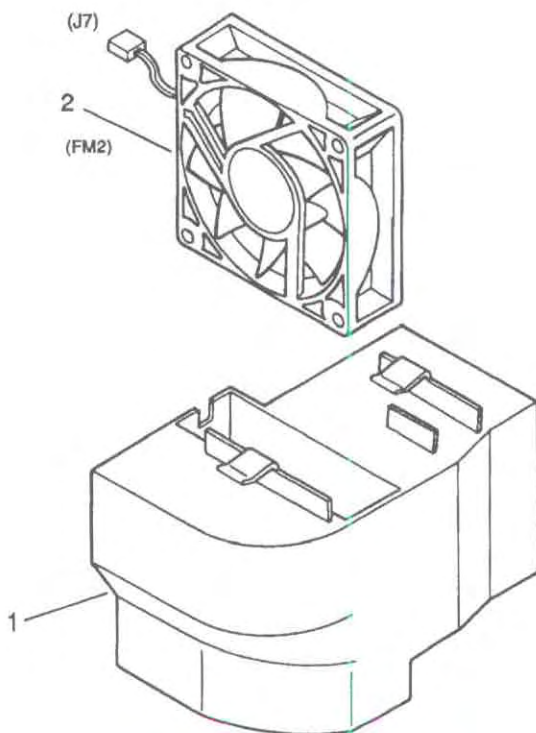


Figure 8-21. Fan Assembly (FM2)

Table 8-21. Fan Assembly (FM2)

Part #	REF	NOTES	DESCRIPTION	QTY
RB1-0792-000CN	1	S	DUCT, FAN	1
RH7-1105-000CN	2		FAN, 24VDC (IISi)	1
RH7-1162-000CN	2		FAN, 24VDC (4Si)	1

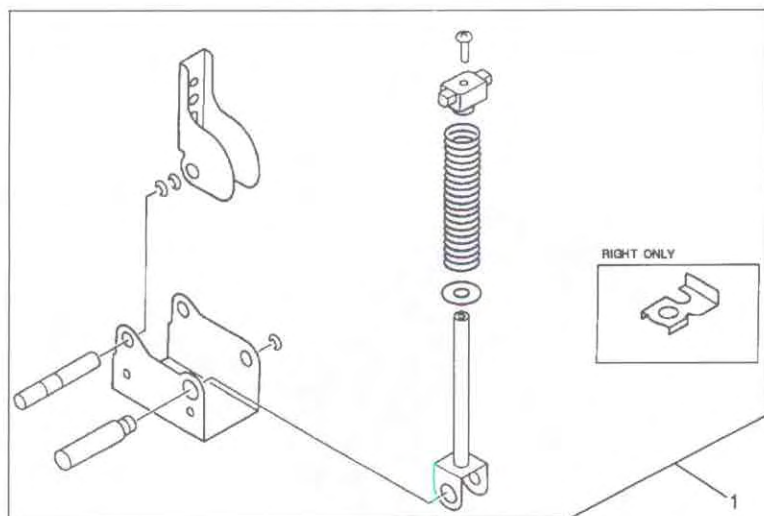


Figure 8-22. Hinge Assembly

Table 8-22. Hinge Assembly

Part #	REF	NOTES	DESCRIPTION	QTY
RG5-0074-000CN	1	S	Hinge Assembly, Left	1
RG5-0075-000CN	1	S	Hinge Assembly, Right	1

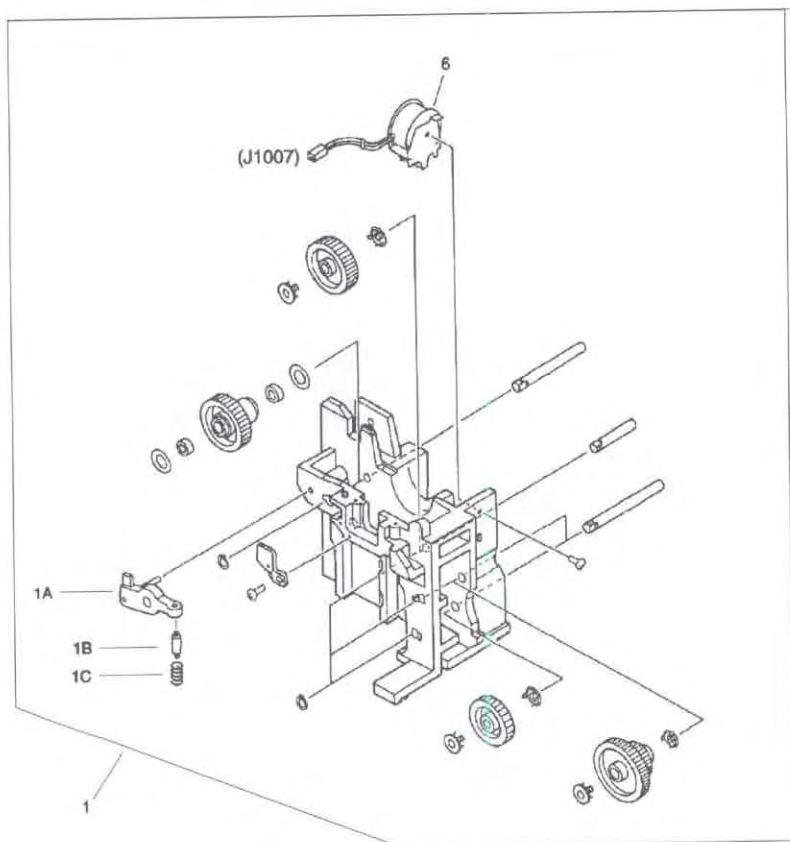


Figure 8-23. Right Main Block Assembly

Table 8-23. Right Main Block Assembly

Part #	REF	NOTES	DESCRIPTION	QTY
RG5-0039-000CN	1	S	Right Main Block Assembly	1
RH7-5031-000CN	6	S	Solenoid, 24 VDC	1
RB1-0260-000CN	1A	S	Arm, Lifting, right	1
RB1-0262-000CN	1B	S	Pivot	1
RB1-2021-000CN	1C	S	Spring, compression	1

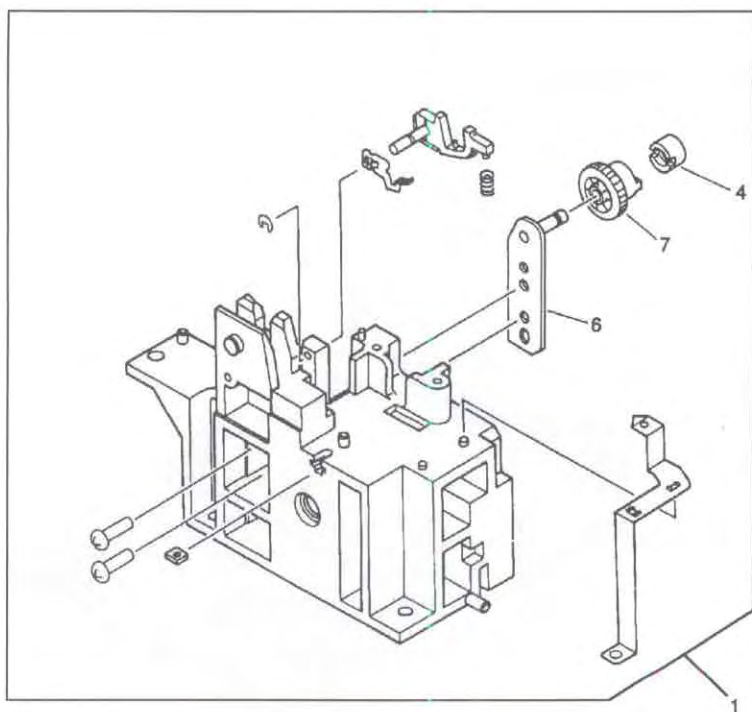


Figure 8-24. Left Main Block Assembly

Table 8-24. Left Main Block Assembly

Part #	REF	NOTES	DESCRIPTION	QTY
RG5-0038-000CN	1	S	Left Main Block Assembly	1
RB1-0244-000CN	4	S	Joint	1
RB1-0245-000CN	6	S	Plate, terminal	1
RS5-0036-000CN	7	S	Gear, 24 tooth	1

ACCESSORY PARTS

Duplex Assembly

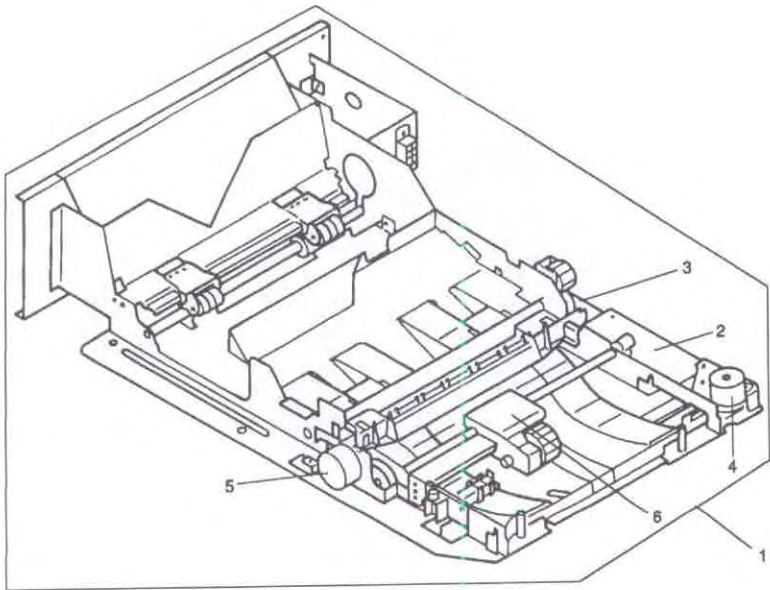


Figure 8-25. Duplex Unit Assembly

Table 8-25. Duplex Unit Assembly

Part #	REF	NOTES	DESCRIPTION	QTY
C2061-69001	1		Duplex Unit	1
RG5-0052-000CN	2	S	Duplex Driver PCA	1
RH7-5030-000CN	3	S	Solenoid	1
RH7-1103-000CN	4	S	Switchback Motor	1
RH7-1102-000CN	5	S	Horizontal Registration Motor	1
RF5-0081-000CN	6		D-Roller	1

Interfaces and LAN Network Cards

Table 8-26. LaserJet IIISi Supported MIO Configurations

Product No.	Network Operating System	Topology
C2059A	Novell Netware	802.3 ThinLAN, 10BASE-T, StarLAN
C2059B	MS LAN Mgr, 3COM	802.3 ThinLAN, 10BASE-T, StarLAN
C2059C	Novell Netware	802.5 Token Ring
C2059D	MS LAN Mgr IBM LAN Server	802.5 Token Ring
C2059E	Macintosh EtherTalk	802.3 ThinLAN, 10BASE-T, StarLAN
C2059F	Macintosh LocalTalk	LocalTalk
C2059T	UNIX TCP/IP	802.3 ThinLAN, 10BASE-T, StarLAN

Table 8-27. LaserJet 4Si Supported MIO Configurations

UPPER MIO SLOT (MIO2) ¹			
Printer	Description	New P/N	Exchange P/N
4Si MX	EtherNet MPS (10Base-T & BNC)	Standard	J2372-69001
4Si	EtherNet MPS (10Base-T ONLY)	J2371A	J2371-69001
4Si	EtherNet MPS (10Base-T & BNC)	J2372A	J2372-69001
4Si	TokenRing MIO	J2373A	J2373-69001
LOWER MIO SLOT (MIO1)			
Printer	Description	New P/N	Exchange P/N
4Si MX	LocalTalk MIO	Standard	J2341-69001
4Si	EtherNet MPS (10Base-T ONLY)	J2371A	J2371-69001
4Si	EtherNet MPS (10Base-T & BNC)	J2372A	J2372-69001
4Si	TokenRing MIO	J2373A	J2373-69001
4Si	LocalTalk MIO	J2341B	J2341-69001

- ¹ The 3 MIO cards listed under "UPPER MIO SLOT" (J2371A, J2372A, and J2373A) are the ONLY supported MIO cards for the Upper MIO slot (MIO2) because of the faceplate design.

Caution



LaserJet 4Si Only: Any MIO card installed in the UPPER MIO slot MUST have the faceplate from the LaserJet 4Si installed or exchanged with the standard card faceplate. Follow the installation instructions with each MIO card carefully. Failure to follow these instructions can damage BOTH the MIO card and the LaserJet 4Si printer.

UPPER MIO FACEPLATE REPLACEMENT
PART NUMBER: C2009-60109

The Lower MIO slot accepts each of the MIO cards listed without modification. Follow the instructions that are included with each MIO card.

Standard Dual Serial/Centronics MIO (LaserJet IIISi Only)

The LaserJet IIISi comes with a dual serial (RS232/422) and Centronix interface (28644A). The various serial options are configured by the customer at the Front Panel. The LaserJet IIISi is capable of handling odd, even, or no parity. The printer is interfaced with a hardware handshake (DTR) or Xon/Xoff protocol. The baud rate is also selectable from the Front Panel and can be set to either 300, 600, 1200, 2400, 4800, 9600, or 19200 baud for RS232C or RS422A operation. RS232/RS422 is selected via moveable jumpers on the MIO card. The Centronix interface is selected from the Front Panel and is the factory default.

Recommended Memory

1, 2, 4, and 8 Megabyte SIMM Memory modules will work in the LaserJet IIISi/4Si printers (see NOTE below for an exception). However, it is recommended that the 8 megabyte SIMMs be used whenever possible because of the limited number of SIMM slots available (4).

Note



LaserJet IIISi Only:

- Printers with serial number prefixes 3199J and below support only 1 and 4 Mbyte SIMMs. These earlier printers DO NOT SUPPORT 8 MBYTE SIMMs. Support for 8 Mbyte SIMMs was added with serial number 3200J and above.
- Although it is possible to install up to 32 MBytes of additional SIMMs on LaserJet IIISi printers with serial number 3200J and above, 16 Mbytes maximum is accessible.

Table 8-28. Recommended Memory

Printing Need	300DPI	600DPI
PCL only	2 Mb	2 Mb
PCL only w/PAGE PROTECT=LETTER	2 Mb	6 Mb
PCL only w/PAGE PROTECT=LEGAL	2 Mb	6 Mb
PCL AND PostScript simplex w/PAGE PROTECT=OFF	2 Mb	6 Mb
PCL AND PostScript simplex w/PAGE PROTECT=LETTER ¹	2 Mb	6 Mb
PCL AND PostScript simplex w/PAGE PROTECT=LEGAL ¹	2 Mb	6 Mb
PCL AND PostScript simplex w/Resource Saving	10 Mb	10 Mb
PCL AND PostScript DUPLEX w/Resource Saving	14 Mb	14 Mb

¹ NOTE: Page pipeline will be lost in 600 dpi.

Authentic Adobe PostScript Level 2 (LaserJet 4Si)

The SIMM PostScript Level 2 upgrade kit for the LaserJet 4Si (C2013A) provides true PostScript printing. The PostScript kit consists of a SIMM that is user installable directly onto the Formatter PCA. A MINIMUM of 6Mb total memory is necessary to run PostScript in simplex mode and 10Mb in duplex.

The LaserJet 4Si can be expanded to a maximum of 26 Megabytes of memory when the PostScript SIMM module is installed in one of the four available SIMM slots on the Formatter PCA.

Power Envelope Feeder Accessory

The Envelope Feeder for LaserJet 4Si (product number C2060A), will provide the option of automatically feeding envelopes. The envelope feeder can feed a maximum of 100 envelopes at a time and comes with a localized installation, operation and troubleshooting guide.

Note



Media weight specification for the envelope feeder is 16 to 24 lbs. Envelopes must meet criteria outlined in the *Envelope Feeder User's Manual*.

Miscellaneous Accessories

Table 8-29. Miscellaneous Accessories

Exchange Part #	Product No	DESCRIPTION
33494-60001	33494B	PostScript ROM Upgrade (IIISi) ¹
33494-69005	33494C	PostScript SIMM Upgrade (IIISi) ²
33494-60006	33494D	PostScript Level2 ROM Upgrade (IIISi) ¹
33494-60008	33494E	PostScript Level2 SIMM Upgrade (IIISi) ²
C2013-60001	C2013A	PostScript Level2 SIMM ³
C2063A	C2063A	1 Mbyte SIMM Card
C2065A	C2065A	4 Mbyte SIMM Card
C2066A	C2066A	8 Mbyte SIMM Card ⁴
	C2920A	1500 Sheet Feeder (A4)
	C2921A	1500 Sheet Feeder (LTR)
	C2801A	2000 Sheet Output Stacker (A4 or LTR)
	C2971A	Printer Cabinet
	C2061A	Duplex Upgrade
	92291B	Paper Cassette (Letter)
	92291C	Paper Cassette (Legal)
	92291D	Paper Cassette (A4)
	92291E	Paper Cassette (Executive)
	C2062A	Printer Maintenance Kit (115V)
	C2087A	Printer Maintenance Kit (220V)
	92291A	Toner Cartridge

1 LaserJet IIISi serial number 3199J and below only.

2 LaserJet IIISi serial number 3200J and above only.

3 LaserJet 4Si only.

4 LaserJet IIISi serial number 3200J and above or LaserJet 4Si only.

PARTS INDEX

This parts index references all part numbers for field replaceable parts which are contained in Chapter 8 of this manual. The first section of the index is sorted by **part number**, and the next section is sorted by **part name**. The listing is cross-referenced to the tables that accompany each of the Illustrated Parts Breakdown figures in Chapter 8.

LaserJet IIISi/4Si Parts Index - Sorted by Part Number

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33491-60160	Formatter PCA/Pan Assembly (4Si)	8-2, 8-8
33494B	PostScript ROM Upgrade (IIISi) ¹	8-29
33494C	PostScript SIMM Upgrade (IIISi) ²	8-29
33494D	PostScript Level2 ROM Upgrade ¹	8-29
33494E	PostScript Level2 SIMM Upgrade ²	8-29
92291A	Toner Cartridge	8-29
92291B	Body, Cassette (LTR)	8-19
92291C	Body, Cassette (LGL)	8-19
92291D	Body, Cassette (A4)	8-19
92291E	Body, Cassette (EXEC)	8-19
C2009-00006	Lower MIO Cover Plate (4Si)	8-8
C2009-40003	MIO Guide Assy (4Si)	8-8
C2009-60105	Cable, Parallel Assy (4Si)	8-8
C2009-60109	Upper MIO Cover Plate (4Si)	8-8
C2009-67901	Formatter PCA (New) (4Si)	8-2, 8-8
C2009-69001	Formatter PCA (Exchange) (4Si)	8-2, 8-8
C2013A	PostScript Level2 SIMM Upgrade ³	8-29
C2061A	Duplexer Upgrade	8-29
C2062A	Printer Maintenance Kit (115V)	8-29
C2063A	1 Megabyte SIMM Card	8-29
C2065A	4 Megabyte SIMM Card	8-29
C2066A	8 Megabyte SIMM Card ⁴	8-29
C2087A	Printer Maintenance Kit (220V)	8-29
C2801A	2000 Sheet Output Stacker (A4 or LTR)	8-29
C2920A	1500 Sheet Feeder (A4)	8-29
C2921A	1500 Sheet Feeder (LTR)	8-29

1 LaserJet IIISi serial number 3199J and below only.

2 LaserJet IIISi serial number 3200J and up only.

3 LaserJet 4Si only.

4 LaserJet IIISi serial number 3200J and up OR LaserJet 4Si.

LaserJet IIISi/4Si Parts Index - Sorted by Part Number
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PART NUMBER	DESCRIPTION	TABLE #
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J2341B	MIO Card (New)	8-26
J2371A	MIO Card (New)	8-26
J2372A	MIO Card (New)	8-26
J2373A	MIO Card (New)	8-26
J2341-69001	MIO Card (Exchange)	8-26
J2371-69001	MIO Card (Exchange)	8-26
J2372-69001	MIO Card (Exchange)	8-26
J2373-69001	MIO Card (Exchange)	8-26
RA1-8288-000CN	Latch, Duplex Access Door	8-3
RB1-0109-000CN	Separation Clutch	8-11
RB1-0221-000CN	Upper Guide	8-6
RB1-0244-000CN	Joint (Left Main Block Assy)	8-24
RB1-0245-000CN	Plate, terminal	8-24
RB1-0401-000CN	Wear Plate	8-8
RB1-0471-000CN	Guide, Cartridge	8-4
RB1-0472-000CN	Guide, Upper Delivery	8-4
RB1-0477-000CN	Spring, Leaf	8-4
RB1-0478-000CN	Spring, Leaf	8-4
RB1-0482-000CN	Catch (Top Cover Assy)	8-4
RB1-0484-000CN	Cable Guide (Top Cover Assy)	8-4
RB1-0485-000CN	Mount, Paper Holder	8-4
RB1-0565-000CN	Flapper	8-5
RB1-0582-000CN	Plate, Arm	8-4
RB1-0692-000CN	Foot, Main Switch	8-13
RB1-0701-000CN	Arm	8-7
RB1-0702-000CN	Holder, Arm	8-7
RB1-0711-000CN	Latch Plate	8-7
RB1-0732-000CN	Cover, Font	8-3
RB1-0733-000CN	Brush, Cleaning	8-3
RB1-0734-000CN	Spring, Torsion	8-3

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(continued)

PART NUMBER	DESCRIPTION	TABLE #
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RB1-0792-000CN	Fan Duct (FM2)	8-21
RB1-0801-000CN	Crossmember	8-6
RB1-0802-000CN	Holder, Right	8-7
RB1-0803-000CN	Holder, Left	8-7
RB1-0804-000CN	Mount, Fusing Assembly	8-6
RB1-0805-000CN	Spring, Leaf	8-7
RB1-0811-000CN	Main Switch Linkage	8-13
RB1-0815-000CN	Duct, Fan	8-7
RB1-0816-000CN	Hook	8-7
RB1-0818-000CN	Support, Stop	8-6
RB1-0820-000CN	Frame, Right Front	8-8
RB1-0821-000CN	Frame, Upper Right	8-8
RB1-0822-000CN	Cover, Right	8-3
RB1-0823-000CN	Cover, Right Rear	8-3
RB1-0824-000CN	Cover, Rear Lower	8-3
RB1-0825-000CN	Cover, Front Feeder	8-3
RB1-0828-000CN	Latch (switch actuator)	8-7
RB1-0829-000CN	Shaft (switch actuator latch)	8-7
RB1-0830-030CN	Cover, Inner Right	8-7
RB1-0831-000CN	Cover, Inner Left	8-7
RB1-0847-000CN	Sheet, Insulating	8-8
RB1-0848-000CN	Sheet, Insulating	8-8
RB1-0849-030CN	Shaft (Top Cover lock)	8-7
RB1-0853-000CN	Main Switch Linkage Guide Block	8-13
RB1-0854-020CN	Screw, Fusing Assembly	8-6
RB1-0855-000CN	Toothed Lockwasher (Fusing Assy mount)	8-6
RF5-0041-000CN	Pickup/Separation Rollers	8-11
RF5-0081-000CN	D-Roller	8-25
RF5-0096-000CN	Spring, Leaf	8-4

LaserJet IIISi/4Si Parts Index - Sorted by Part Number
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PART NUMBER	DESCRIPTION	TABLE #
RF5-0098-000CN	Bar, Left (Top Cover Assy)	8-4
RF5-0099-000CN	Bar, Right (Top Cover Assy)	8-4
RF5-0111-000CN	Plate, Right	8-7
RF5-0113-000CN	Motor Cover	8-7
RG1-2802-000CN	Env. Feeder, Top Tray	8-19
RG5-0021-000CN	Laser/Scanner Assembly (IIISi)	8-2, 8-7
RG5-0025-220CN	Paper Input Unit	8-1, 8-10
RG5-0026-000CN	Lifter Assembly	8-2, 8-12
RG5-0027-000CN	Pickup Roller Drive Assembly	8-2, 8-15
RG5-0034-030CN	Paper Pickup PCA	8-2, 8-9
RG5-0038-000CN	Left Main Block Assembly	8-1, 8-24
RG5-0039-000CN	Right Main Block Assembly	8-1, 8-23
RG5-0040-000CN	Drive Assembly, Main Motor	8-1, 8-14
RG5-0042-000CN	Main Motor PCA	8-1, 8-6
RG5-0044-050CN	Transfer Roller Assembly	8-6
RG5-0045-000CN	Transfer Guide Assembly	8-6
RG5-0046-000CN	Fusing Assembly (110/115V)	8-1, 8-18
RG5-0047-000CN	Fusing Assembly (220/240V)	8-1, 8-18
RG5-0052-000CN	Duplexer Driver PCA	8-25
RG5-0056-000CN	Paper Refeed Unit	8-1, 8-20
RG5-0063-000CN	Flapper Solenoid Unit	8-16
RG5-0064-000CN	Feed Guide Solenoid Unit	8-16
RG5-0065-000CN	Offset Solenoid Unit	8-16
RG5-0067-000CN	Delivery Cover Assembly	8-2, 8-4
RG5-0069-000CN	Mirror Assembly	8-4
RG5-0070-000CN	Holder, Paper Assembly	8-4
RG5-0071-100CN	Upper Panel Assembly	8-4
RG5-0072-000CN	Hinge Assembly	8-4
RG5-0073-000CN	Tray Assembly (Face-Up Output)	8-5
RG5-0074-000CN	Hinge, Left	8-22
RG5-0075-000CN	Hinge, Right	8-22
RG5-0076-200CN	High Voltage Power Supply (IIISi)	8-2, 8-6

LaserJet IIIiSi/4Si Parts Index - Sorted by Part Number
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PART NUMBER	DESCRIPTION	TABLE #
RG5-0085-060CN	DC Power Supply PCA 115V (IIISi)	8-2, 8-8
RG5-0086-060CN	DC Power Supply PCA 220V (IIISi)	8-2, 8-8
RG5-0088-000CN	Control Panel Assembly (IIISi)	8-2, 8-9
RG5-0089-110CN	DC Controller Assembly (IIISi)	8-2
RG5-0091-000CN	Cable, DC Power Supply	8-8
RG5-0092-000CN	AC Power Inlet Assembly (115V) (IIISi)	8-8
RG5-0093-000CN	AC Power Inlet Assembly (220V) (IIISi)	8-8
RG5-0094-000CN	DC Power Supply (Sensor PCA)	8-2, 8-8
RG5-0095-000CN	AC Power Supply 115V (IIISi)	8-2, 8-8
RG5-0096-000CN	AC Power Supply 220V (IIISi)	8-2, 8-8
RG5-0102-030CN	Main Switch Assembly	8-2, 8-13
RG5-0103-000CN	Cable, Laser/Scanner (IIISi)	8-7
RG5-0104-000CN	Cable High Voltage Unit	8-6
RG5-0106-000CN	Cable, DC Driver PCA	8-8
RG5-0107-000CN	Cable, Front Panel (IIISi)	8-3
RG5-0108-000CN	Cable, Paper Input	8-8
RG5-0109-000CN	Cable, Duplex Unit	8-6
RG5-0116-000CN	Door Sensor Assembly	8-6
RG5-0117-000CN	Lock Link Assembly	8-7
RG5-0118-030CN	Link Assembly	8-7
RG5-0119-000CN	Front Crossmember Assembly	8-7
RG5-0120-000CN	Front Cover Assembly (IIISi)	8-3
RG5-0121-000CN	Front Upper Cover Assembly (IIISi)	8-3
RG5-0122-000CN	Left Cover Assembly	8-3
RG5-0123-000CN	Shield Plate Assembly (IIISi)	8-8
RG5-0125-000CN	Scanner Unit Mounting Assembly	8-7
RG5-0126-000CN	Right Rear Frame Assembly	8-8
RG5-0127-000CN	Formatter Pan Cover (IIISi)	8-8
RG5-0128-000CN	Front Switch Button Assembly	8-13
RG5-0130-000CN	Cable, Interface (IIISi)	8-8
RG5-0131-000CN	Cable, Fan (FM2) (IIISi)	8-8
RG5-0136-000CN	Cable, High Voltage Bias Guide Assy	8-6

LaserJet IIISi/4Si Parts Index - Sorted by Part Number
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PART NUMBER	DESCRIPTION	TABLE #
RG5-0140-000CN	Plate, Rear (IIISi)	8-8
RG5-0153-000CN	Laser/Scanner Assembly (4Si)	8-2, 8-7
RG5-0154-000CN	Formatter Pan Cover (4Si)	8-8
RG5-0156-000CN	Cable, Front Panel (4Si)	8-8
RG5-0157-000CN	Cable, Interface (4Si)	8-8
RG5-0160-000CN	Shield Plate Assembly (4Si)	8-8
RG5-0161-000CN	Registration Roller Assembly	8-1, 8-17
RG5-0162-000CN	Control Panel Assembly (4Si)	8-2, 8-9
RG5-0163-000CN	Front Upper Cover Assembly (4Si)	8-3
RG5-0164-000CN	AC Power Inlet Assembly (115V)	8-8
RG5-0165-000CN	AC Power Inlet Assembly (220V)	8-8
RG5-0166-000CN	AC Power Supply 115V (4Si)	8-2, 8-8
RG5-0167-000CN	AC Power Supply 220V (4Si)	8-2, 8-8
RG5-0168-000CN	DC Power Supply PCA 115V (4Si)	8-2, 8-8
RG5-0169-000CN	DC Power Supply PCA 220V (4Si)	8-2, 8-8
RG5-0170-000CN	High Voltage Transformer Assy (4Si)	8-2, 8-6
RG5-0171-000CN	Cassette Cover, A4, LTR, EXEC	8-19
RG5-0172-000CN	Cassette Cover, Legal	8-19
RG5-0174-000CN	Front Cover Assembly (4Si)	8-3
RG5-0381-150CN	Job Offset Assembly	8-2, 8-16
RG5-0384-000CN	Cable, Laser/Scanner (4Si)	8-7
RG5-0627-000CN	DC Controller PCA	8-2
RG5-1002-000CN	Duplexer Assembly	8-25
RG5-6021-000CN	Bushing (Top Cover Link Assy)	8-7
RH2-5129-000CN	Cable, Optical Fiber	8-7
RH7-1102-000CN	Horizontal Registration Motor	8-25
RH7-1103-000CN	Switchback Motor	8-25

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RH7-1104-000CN	Fan, 24 VDC (FM1)	8-7
RH7-1105-000CN	Fan, 24 VDC (FM2) (IIISi)	8-21
RH7-1106-000CN	Fan, 24 VDC (FM3) (IIISi)	8-8
RH7-1162-000CN	Fan, 24 VDC (FM2) (4Si)	8-21
RH7-1163-000CN	Fan, 24 VDC (FM3) (4Si)	8-8
RH7-5030-000CN	Solenoid 24VDC (Duplex)	8-25
RH7-5031-000CN	Solenoid 24VDC (Right Main Block)	8-23
RH7-6020-000CN	Switch, Rocker, 250V, 16A	8-13
RS5-0036-000CN	Gear, 24 tooth (Left Main Block Assy)	8-24
RS5-2054-000CN	Spring, Tension	8-13
RS5-2061-000CN	Spring, Tension	8-7
RS5-2062-000CN	Spring, Tension	8-7
RS5-2063-000CN	Spring, Tension	8-7
WG8-5038-020CN	Photo-Interrupter GP1S09C1	8-7
WT2-0204-000CN	Clip, Cord	8-8
WT2-5025-000CN	Support, DC Power Supply PCA	8-8
WT2-5031-000CN	Clip, Cord	8-8
XA9-0233-000CN	Screw, M3x6	8-0
XA9-0540-000Cn	Screw, M4x8	8-0
XA9-0531-000CN	Screw w/washer	8-0

Parts Index (sorted by Part Name)

This portion of the parts index references all part numbers alphabetized by **part name**. The listing is cross-referenced to the tables that accompany each of the Illustrated Parts Breakdown figures in Chapter 8.

LaserJet IIISi/4Si Parts Index - Sorted by Part Name

DESCRIPTION	PART NUMBER	TABLE #
AC Power Inlet Assembly (115V)	RG5-0164-000CN	8-8
AC Power Inlet Assembly (220V)	RG5-0165-000CN	8-8
AC Power Inlet Assembly 115V (IIISi)	RG5-0092-000CN	8-8
AC Power Inlet Assembly 220V (IIISi)	RG5-0093-000CN	8-8
AC Power Supply 115V (IIISi)	RG5-0095-000CN	8-2, 8-8
AC Power Supply 115V (4Si)	RG5-0166-000CN	8-2, 8-8
AC Power Supply 220V (IIISi)	RG5-0096-000CN	8-2, 8-8
AC Power Supply 220V (4Si)	RG5-0167-000CN	8-2, 8-8
Arm	RB1-0701-000CN	8-7
Bar, Left (Top Cover Assy)	RF5-0098-000CN	8-4
Bar, Right (Top Cover Assy)	RF5-0099-000CN	8-4
Brush, Cleaning	RB1-0733-000CN	8-3
Bushing (Top Cover Link Assy)	RG5-6021-000CN	8-7
Cable Guide (Top Cover Assy)	RB1-0484-000CN	8-4
Cable, High Voltage Unit	RG5-0104-000CN	8-6
Cable, DC Driver PCA	RG5-0106-000CN	8-8
Cable, High Voltage Bias Guide Assy	RG5-0136-000CN	8-6
Cable, DC Power Supply	RG5-0091-000CN	8-8
Cable, Duplex Unit	RG5-0109-000CN	8-6
Cable, Fan (FM2) (IIISi)	RG5-0131-000CN	8-8
Cable, Front Panel (IIISi)	RG5-0107-000CN	8-3, 8-8
Cable, Front Panel (4Si)	RG5-0156-000CN	8-3, 8-8
Cable, Interface (IIISi)	RG5-0130-000CN	8-8
Cable, Interface (4Si)	RG5-0157-000CN	8-8
Cable, Laser/Scanner (IIISi)	RG5-0103-000CN	8-7
Cable, Laser/Scanner (4Si)	RG5-0384-000CN	8-7
Cable, Optical Fiber	RH2-5129-000CN	8-7
Cable, Paper Input	RG5-0108-000CN	8-8
Cable, Parallel Assy (4Si)	C2009-60105	8-8

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Cassette Body (EXEC)	92291E	8-19
Cassette Body (LGL)	92291C	8-19
Cassette Body (LTR)	92291B	8-19
Cassette Cover, A4, LTR, EXEC	RG5-0171-000CN	8-19
Cassette Cover, Legal	RG5-0172-000CN	8-19
Catch (Top Cover Assy)	RB1-0482-000CN	8-4
Clip, Cord	WT2-0204-000CN	8-8
Clip, Cord	WT2-5031-000CN	8-8
Control Panel Assembly (IIISi)	RG5-0088-000CN	8-2, 8-9
Control Panel Assembly (4Si)	RG5-0162-000CN	8-2, 8-9
Cover, Front Feeder	RB1-0825-000CN	8-3
Cover, Motor	RF5-0113-000CN	8-7
Cover, Font	RB1-0732-000CN	8-3
Cover, Inner Left	RB1-0831-000CN	8-7
Cover, Inner Right	RB1-0830-030CN	8-7
Cover, Rear Lower	RB1-0824-000CN	8-3
Cover, Right	RB1-0822-000CN	8-3
Cover, Right Rear	RB1-0823-000CN	8-3
Crossmember	RB1-0801-000CN	8-6
D-Roller	RF5-0081-000CN	8-25
DC Controller Assembly	RG5-0089-110CN	8-2
DC Controller PCA	RG5-0627-000CN	8-2
DC Power Supply (Sensor PCA)	RG5-0094-000CN	8-2, 8-8
DC Power Supply PCA 115V (IIISi)	RG5-0085-060CN	8-2, 8-8
DC Power Supply PCA 115V (4Si)	RG5-0168-000CN	8-2, 8-8
DC Power Supply PCA 220V (IIISi)	RG5-0086-060CN	8-2, 8-8
DC Power Supply PCA 220V (4Si)	RG5-0169-000CN	8-2, 8-8

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Door, Duplex Access	RB1-0756-000CN	8-3
Door Sensor Assembly	RG5-0116-000CN	8-6
Drive Assembly, Main Motor	RG5-0040-000CN	8-1, 8-14
Duct, Fan	RB1-0815-000CN	8-7
Duplexer Assembly	RG5-1002-000CN	8-25
Duplexer Driver PCA	RG5-0052 000CN	8-25
Duplexer Upgrade	C2061A	8-29
Env. Feeder, Top Tray	RG1-2802-000CN	8-19
Fan Duct (FM2)	RB1-0792-000CN	8-21
Fan, 24 VDC (FM1)	RH7-1104-000CN	8-7
Fan, 24 VDC (FM3) (IIISi)	RH7-1106-000CN	8-8
Fan, 24 VDC (FM3) (4Si)	RH7-1163-000CN	8-8
Fan, 24 VDC (FM2) (IIISi)	RH7-1105-000CN	8-21
Fan, 24 VDC (FM2) (4Si)	RH7-1162-000CN	8-21
Feed Guide Solenoid Unit	RG5-0064-000CN	8-16
Feeder, 1500 Sheet (A4)	C2920A	8-29
Feeder, 1500 Sheet (LTR)	C2921A	8-29
Flapper	RB1-0565-000CN	8-5
Flapper Solenoid Unit	RG5-0063-000CN	8-16
Foot, Main Switch	RB1-0692-000CN	8-13
Formatter Pan Cover (IIISi)	RG5-0127-000CN	8-8
Formatter Pan Cover (4Si)	RG5-0154-000CN	8-8
Formatter PCA (Exchange) (4Si)	C2009-69001	8-2, 8-8
Formatter PCA (New) (4Si)	C2009-67901	8-2, 8-8
Formatter PCA/Pan Assembly (IIISI)	33491-60143	8-2, 8-8
Formatter PCA/Pan Assembly (4Si)	33491-60160	8-2, 8-8
Frame, Right Front	RB1-0820-000CN	8-8
Frame, Upper Right	RB1-0821-000CN	8-8
Front Cover Assembly (IIISi)	RG5-0120-000CN	8-3
Front Cover Assembly (4Si)	RG5-0174-000CN	8-3
Front Crossmember Assembly	RG5-0119-000CN	8-7

LaserJet IIISi/4Si Parts Index - Sorted by Part Name
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DESCRIPTION	PART NUMBER	TABLE #
Front Switch Button Assembly	RG5-0128-000CN	8-13
Front Upper Cover Assembly (IIISi)	RG5-0121-000CN	8-3
Front Upper Cover Assembly (4Si)	RG5-0163-000CN	8-3
Fusing Assembly (110/115V)	RG5-0046-000CN	8-1, 8-18
Fusing Assembly (220/240V)	RG5-0047-000CN	8-1, 8-18
Gear, 24 tooth (Left Main Block Assy)	RS5-0036-000CN	8-24
Guide, Cartridge	RB1-0471-000CN	8-4
Guide, Upper Delivery	RB1-0472-000CN	8-4
High Voltage Power Supply (IIISi)	RG5-0076-200CN	8-2, 8-6
High Voltage Power Supply (4Si)	RG5-0170-000CN	8-2, 8-6
Hinge Assembly	RG5-0072-000CN	8-4
Hinge, Left	RG5-0074-000CN	8-22
Hinge, Right	RG5-0075-000CN	8-22
Holder, Arm	RB1-0702-000CN	8-7
Holder, Left	RB1-0803-000CN	8-7
Holder, Paper Assembly	RG5-0070-000CN	8-4
Holder, Right	RB1-0802-000CN	8-7
Hook	RB1-0816-000CN	8-7
Horizontal Registration Motor	RH7-1102-000CN	8-25
Job Offset Assembly	RG5-0381-150CN	8-2, 8-16
Joint (Left Main Block Assy)	RB1-0244-000CN	8-24
Laser/Scanner Assembly (IIISi)	RG5-0021-000CN	8-2, 8-7
Laser/Scanner Assembly (4Si)	RG5-0153-000CN	8-2, 8-7
Latch, Duplex Access Door	RA1-8288-000CN	8-3
Latch (switch actuator)	RB1-0828-000CN	8-7
Latch Plate	RB1-0711-000CN	8-7
Left Cover Assembly	RG5-0122-000CN	8-3
Left Main Block Assembly	RG5-0038-000CN	8-1, 8-24
Lifter Assembly	RG5-0026-000CN	8-2, 8-12
Link Assembly	RG5-0118-000CN	8-7
Lock Link Assembly	RG5-0117-000CN	8-7
Lower MIO Cover Plate (4Si)	C2009-00006	8-8

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DESCRIPTION	PART NUMBER	TABLE #
Main Motor PCA	RG5-0042-000CN	8-1, 8-6
Main Switch Assembly	RG5-0102-030CN	8-2, 8-13
Main Switch Linkage	RB1-0811-000CN	8-13
Main Switch Linkage Guide Block	RB1-0853-000CN	8-13
MIO Card (Exchange)	J2341-69001	8-26
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2 LaserJet IIISi serial number 3200J and up only.

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HP High-Capacity Paper Feeder for the HP LaserJet 4Si, 4Si MX, and III Si Service Manual



HP Part No. C2921-90003
Printed in USA 10/93

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Introduction

The HP Paper Feeder addresses the need for an increased paper capacity for the HP LaserJet 4Si, 4Si MX, and IIISi printers. The Paper Feeder increases the paper capacity of the LaserJet 4Si, 4Si MX, and IIISi printers to 2,000 sheets of paper. The Paper Feeder comes with the following items included:

1. Paper Feeder
2. Printer Pedestal
3. Power Adapter
4. Power Cord
5. Duplex Paper Guide
6. User's Guide
7. Unpacking Instructions

Identification

The model number and serial number are on a label placed on the outside rear of the Paper Feeder, below the nosepiece assembly. The alphanumeric model number for the Paper Feeder is found at the top of the label. The serial number is located directly below the model number and is also alphanumeric.

<u>Model</u>	<u>Model #</u>
Letter	C2921A
A4	C2920A

Specifications

Physical Dimensions

Dimension	Measurement
Height:	270 mm (10.5 in)
Width:	330 mm (13 in)
Depth:	350 mm (13.8 in)
Weight:	5.8 kg (13 lb)

Paper Requirements

	Dimensions
Size: Letter	216 x 279 mm (8.5 x 11 in)
A4	210 x 297 mm (8.5 x 11.67 in)
Weight:	60 to 90 grams (16 to 24 lb)

Recommended Paper Guidelines

The following table summarizes the specifications for paper recommended for use in your HP Paper Feeder.

Paper Specifications

Type	Specifications
Acid Content	5.5 pH Minimum
Ash Content	Not to Exceed 10%
Basis Weight	16 to 24 lb. (60 to 90 grams.)
Brightness	83% minimum
Caliper	3.0 to 7.0 mils (0.094 to 0.18 mm)
Curl	Inream: flat within 0.125 in. (3.125 mm)
Cut Edge Conditions	Cut with sharp blades, no visible fray
Finishing	Cut sheet to within ± 0.03 in. (0.8 of nominal, ± 0.2 degrees square)
Furnish (Fiber Composition)	No cotton content
Grain	Long grain
Moisture Content	4% to 6% by weight
Opacity	85% minimum
Packaging	Moisture proof ream wrap

Paper and Usages to Avoid

- paper previously fed through a laser printer or copier
- creased, wavy, or curled paper (paper flatness not to exceed 0.125 in. or 3.2 mm maximum total curl)
- a mix of different paper types or weights
- reams of paper with edges or corners folded or bonded
- damaged, clipped, windowed, or torn paper
- paper exposed to adverse temperature or humidity
- paper with special coating (clay, wax, varnish, thermal, etc.)
- vellum, translucent, or carbonless copy paper
- embossed, rough-textured, or relief paper
- multipart forms or preprinted forms requiring critical registration
- media using peel-off, pressure-sensitive labels
- paper that has been shrink-wrapped in plastic
- paper with cutouts or perforations
- paper that does not conform to the above Paper Feeder's specifications

Note

If you experience misfeeds or jams in your Paper Feeder, please refer to "Troubleshooting" (Chapter 3).

Environmental Specifications

Category	Temperature	Humidity
In Use	10 to 33 deg. C (50 to 91.4 deg. F)	20 to 80% RH
In Storage	0 to 35 deg. C (32 to 95 deg. F)	20 to 80% RH

Related Documentation

The following guide can be ordered from Hewlett-Packard:

HP LaserJet 4Si, 4Si MX, and IIISi Paper Feeder User's Guide, P/N C2921-90004.

Safety Information

Product Safety

The HP C2921A and C2920A Paper Feeders are UL listed and CSA 22.2 220M certified. They also meet IEC 950 and EN 60950 verifications.

Warranty Statement

Warranty

The HP LaserJet 4Si, 4Si MX, and IIISi Paper Feeder has a warranty against defects in materials and workmanship for one year from the date of purchase. If your LaserJet 4Si, 4Si MX, and IIISi Paper Feeder fails within the warranty period, return it to your place of purchase for servicing.

When returning your feeder, make sure you:

- Package it in the original carton.
- Include a copy of the purchase receipt and attach it to the returned unit.
- Write a brief explanation of the problem and place it inside the package with the paper feeder.

This warranty does not apply if the feeder has been damaged by accident, misuse, or as a result of service modification by other than an authorized Hewlett-Packard service facility. No other express warranty is given by Hewlett-Packard. Hewlett-Packard is not liable for consequential damages.

Warranty Exclusions

The aforementioned warranty shall not apply to defects resulting from improper or inadequate maintenance by the customer, customer applied software or interfacing, unauthorized modification or misuse, operation outside of the environmental specifications for the product, or improper site preparation and maintenance.

Warranty Limitations

Hewlett-Packard makes no warranty, whether written or oral, express or implied, with respect to this product. Hewlett-Packard specifically disclaims the implied warranties of merchantability and fitness for a particular purpose.

Some states or provinces do not allow limitations on how long an implied warranty lasts, so the above limitations or exclusions might not apply to you. However, any implied warranty of merchantability or fitness is limited to the one-year duration of this written warranty.

After Warranty

If your hardware fails after the warranty period, contact your authorized HP dealer or HP Service Center.

Customer Support

When a customer has a question or a problem regarding the Paper Feeder, refer to the User's Guide first. The guide provides information regarding unit set-up, use, and information on troubleshooting the feeder. If the guide does not provide sufficient information to answer the question or solve the problem, the customer should call their dealer. If the dealer cannot resolve the problem, the customer can then call support personnel in Boise, Idaho at 1-208-323-2551, Monday through Friday from 7 AM to 6 PM, Mountain Time (Wednesday 7 AM to 4 PM). The unit can be sent back to the service-authorized dealer or to an HP service center for repair if necessary.

Dealer and Service Center Support

The Paper Feeder is designed to be repaired by the dealers or service centers using the User's Guide and the Service Manual to troubleshoot the problem and fix it. If the problem cannot be fixed by the dealer or service center, call Dealer Support at 1-800-544-9976, Monday through Friday from 8 AM to 5 PM, Mountain Time for further information or recommendations. The Dealer Support can then refer the problem to the responsible Division for On-Line Support.

Introduction

This chapter documents the removal and replacement of parts that can be purchased directly through Hewlett-Packard's Support Materials Organization. In each section, there is a figure to facilitate removal and replacement of the particular part. These pictures contain numbers which refer to the action taken in the instructions. For example, taking off the wooden block is step number "1" in the removal instructions and is shown on the figure as a ①.

Unless specifically stated otherwise, replacement is the reversal of removal. Occasionally, notes are included to provide direction for difficult replacement procedures.

Two serial number ranges exist for each product number of the HP Paper Feeder, as a result of design changes to the product. The most obvious change is in the nosepiece assembly, where the location of the nosepiece sensor is moved closer to the body of the feeder and recessed under the top plate of the nosepiece assembly.

Figures 2-1 and 2-2 show the difference between the two serial number ranges.



Figure 2-1. (S/Ns H20 and H21)

Figure 2-2. (S/Ns H30 and H31)

Nosepiece Assemblies

Tools Needed For Repairs

The Paper Feeder requires very little disassembly and few tools are needed to repair the Paper Feeder. The following tools can handle most problems encountered with the Paper Feeder.

- Phillips head screwdriver
- Phillips head “stubby” screwdriver
- Nut Driver (3/16")
- Common screwdriver
- Needle-nose pliers
- Volt-Ohm meter (digital or analog)
- Rags (lint-free)
- Static wrist leash (for PCB work)

Use of power tools is not recommended; their use can damage the more sensitive components found in the Paper Feeder.

Maintenance Schedule (to be performed by user)

Roller and Unit Cleaning (Monthly)

Feed roller cleaning should be performed every month.

- Step
1. Remove the printer's upper tray, if installed.
 2. Open the smoked plastic door of your feeder; once the elevator platform stops at the bottom position, remove any paper that has been loaded.
 3. Close the feeder door. The elevator platform will begin to rise.
 4. When the elevator platform is approximately half-way to its uppermost position, disconnect the Adapter Plug from your Paper Feeder.
 5. Open the feeder door.

6. Lift the black top cover of the Paper Feeder to expose the unit's feed roller assembly, as shown in Figure 2-3.
7. Gently wipe the rubber feed roller surfaces (both left and right rollers) with a clean, lint-free cloth dampened with soap and water. This cleaning process will remove any dust, dirt, or contaminants, which causes reduced performance. These rollers should be replaced every 200,000 sheets (see section "Removing the Feed Rollers" for instructions).
8. Wipe the interior of your feeder with a clean, lint-free cloth to minimize any paper dust.
9. Re-insert your paper and close the rear door of the Paper Feeder.
10. Re-insert your printer's upper paper tray.
11. Re-attach the Adapter Plug to your Paper Feeder.

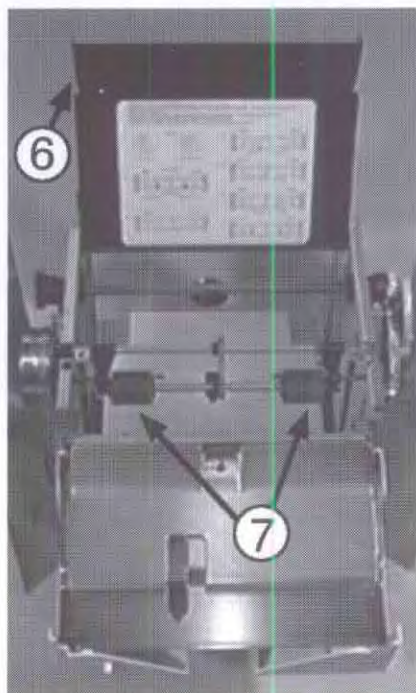


Figure 2-3. Top Cover and Feed Rollers

Removing Feeder Door (Refer to Figure 2-4.)

- Step
1. Ensure wood packaging block has been removed.
 2. Lightly deflect one of the attached arms to a point where the holding pivot point is freed.
 3. Remove the feeder door (cover) by tilting it at an angle that will allow it to be freed of the remaining pivot point.

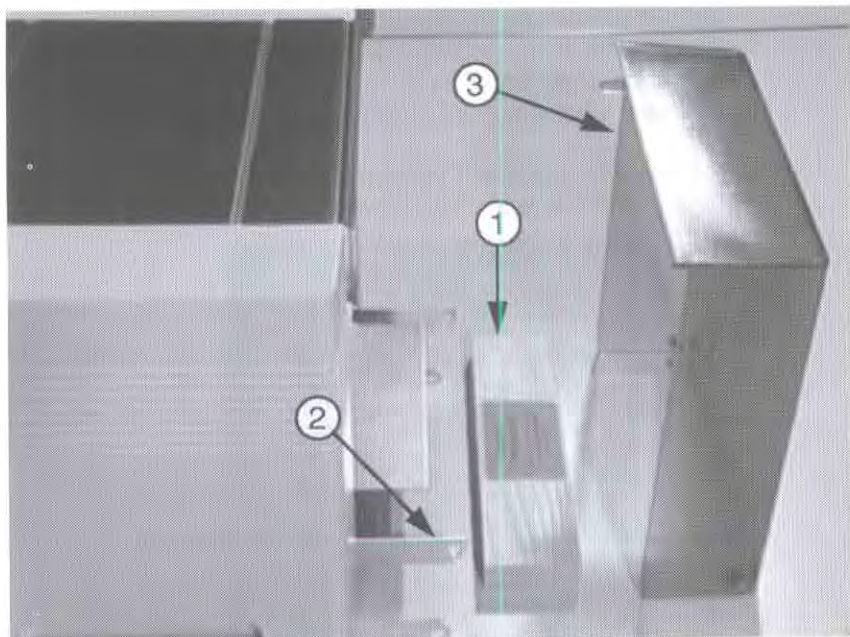


Figure 2-4. Removing the Feeder Door

Removing Side Covers (refer to Figure 2-5.)

- Step
1. Lift up the top cover of the unit.
 2. Remove the holding screws positioned near the nosepiece.
 3. Face the side cover you wish to remove.
 4. Grasp the top center of the cover at the point where the inner frame and cover meet, and pull up and outward. The cover will come off.
 5. Use the same procedure for either side.

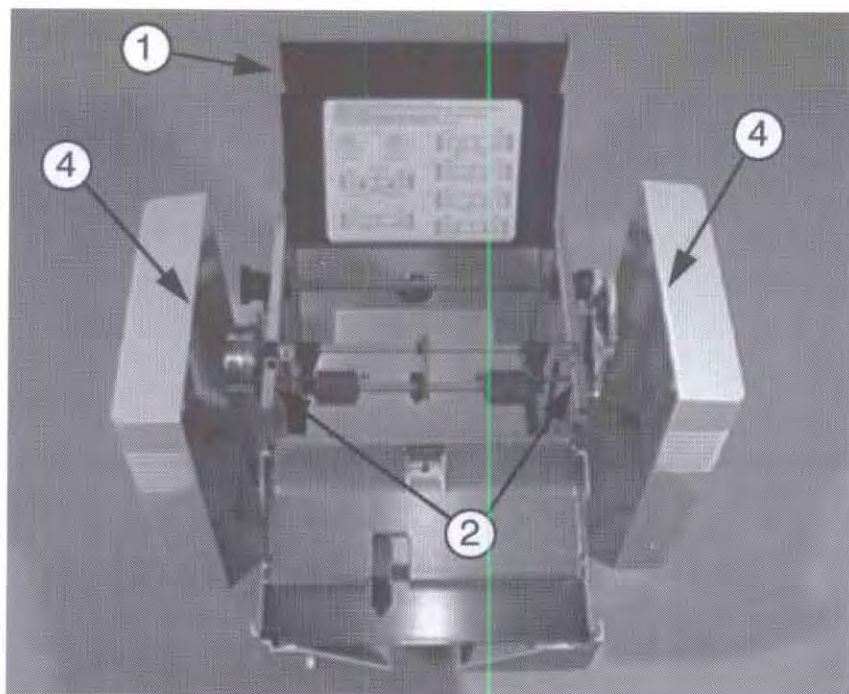


Figure 2-5. Removing the Side Covers

Removing the Top Cover (Refer to Figure 2-6.)

- Step
1. Remove the feeder door. (See “Removing the Feeder Door” section.)
 2. Remove both side covers. (See “Removing the Side Covers” section.)
 3. Remove the four Phillips screws (two on each side) holding the extrusion in place; remove the extrusion.
 4. Pull the side frame lightly to allow the top cover pivot nut to be freed.
 5. Pull the top cover free.

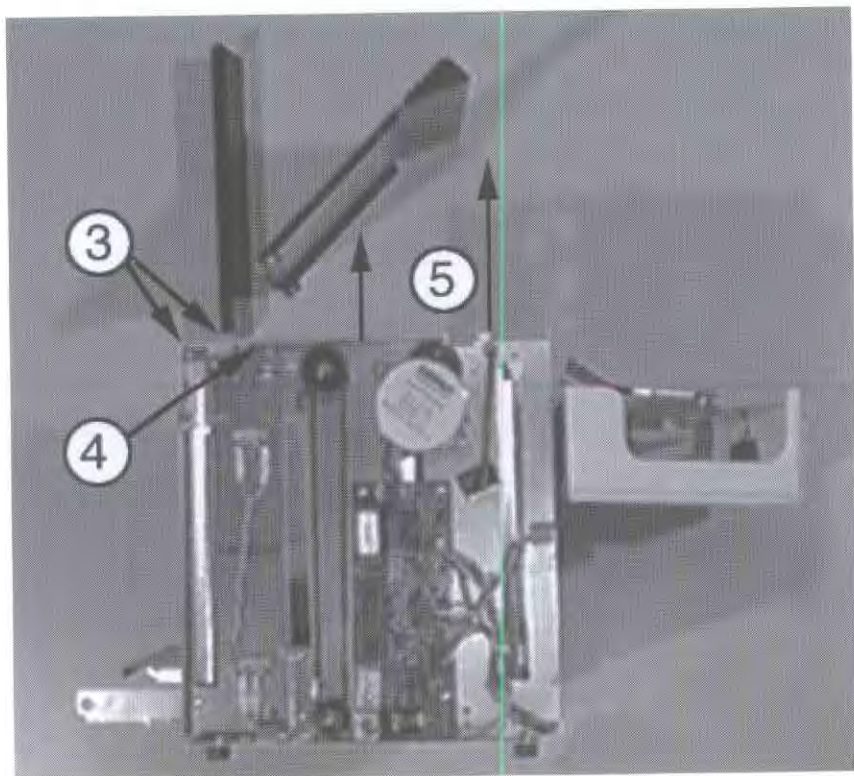


Figure 2-6. Removing the Top Cover

Removing the Nosepiece Assembly (Refer to Figure 2-7.)

- Step
1. Turn the unit so that it is resting on its back, with the nosepiece upward and the unit's feet toward you.
 2. Locate and remove the wire harness attached to the body of the photo-sensor by unplugging it. Then remove the wire from gray routing clips.
 3. Locate and remove the E-clips holding the nosepiece to the mounting posts.
 4. Remove the nylon washers from the mounting posts.
 5. Locate and unscrew or unclip the black grounding wire attached to the underside of the nosepiece.
 6. Lift the entire nosepiece assembly off of the mounting posts.

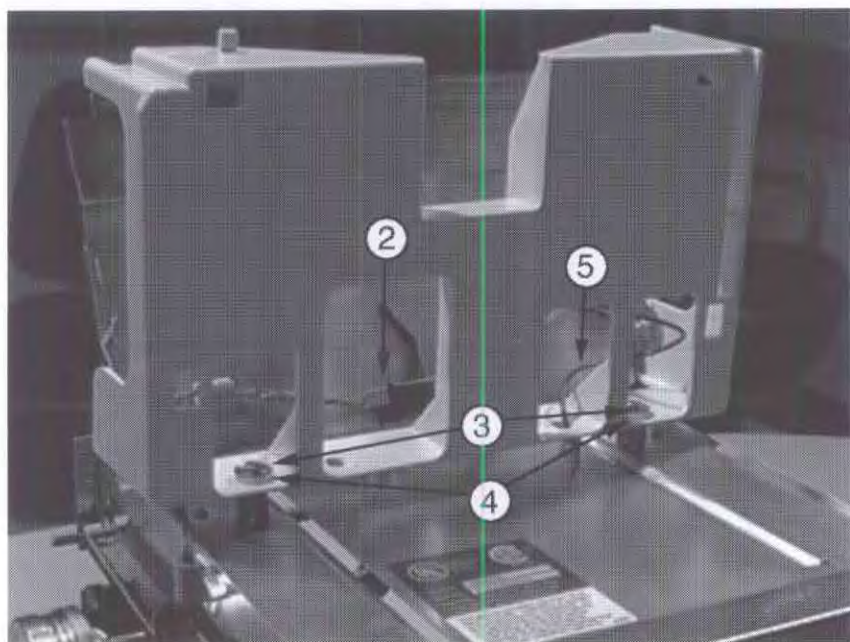


Figure 2-7. Removing the Nosepiece Assembly

Removing the Nosepiece Photo Sensor (Refer to Figure 2-8.)

- Step
1. Place unit in a “nosepiece upward” position, giving access to the underside of the nosepiece.
 2. By applying minimal downward pressure to the upper snap-in connectors of the sensor body, the sensor will become loosened in its holding bracket.
 3. Dislodge lower snap-in connectors and remove sensor from bracket.
 4. Unplug wire harness from sensor and plug in replacement.



Figure 2-8. Removing the Nosepiece Photo Sensor

Removing the Feed Rollers

The feed rollers should be replaced after every 200,000 sheets. (Refer to Figure 2-9.)

Note

Do not remove Drive Chain from sprockets at any time.

- Step
1. Identify new Roller-Left and Roller-Right from the Roller Replacement Kit as shown.
 2. Locate blue retainers on Shaft 1. Remove each retainer by firmly grasping and pulling upward.
 3. Slide Shaft 1 to right to disengage from Arm A.
 4. Remove old Roller-Left and replace with new Roller-Left; flange of Roller-Left must be on drive chain side.
 5. Slide end of Shaft 1 back into Arm A; slide Shaft 1 to left until disengaged from Arm B.
 6. Remove old Roller-Right and replace with new Roller-Right; flange of Roller-Right must be on drive chain side.
 7. Slide end of Shaft 1 back into Arm B. Position rollers against arms; reattach blue retainers by firmly pressing into grooves on Shaft 1.

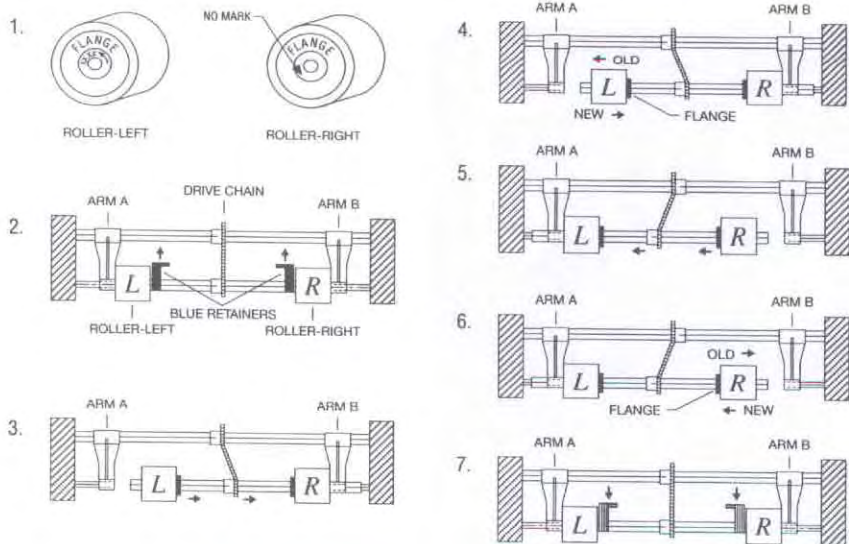


Figure 2-9. Removing Feed Rollers

Removing the Printed Circuit Board (Refer to Figures 2-10, 2-11, and 2-12.)

- Step
1. Put the ESD strap on your wrist.
 2. Remove the right side cover. (See “Removing the Side Covers” section.)
 3. Disconnect the harness and motor plugs.
 4. Remove the four (4) fastening screws (one in each corner).
 5. Remove the board and store it in a static free area.

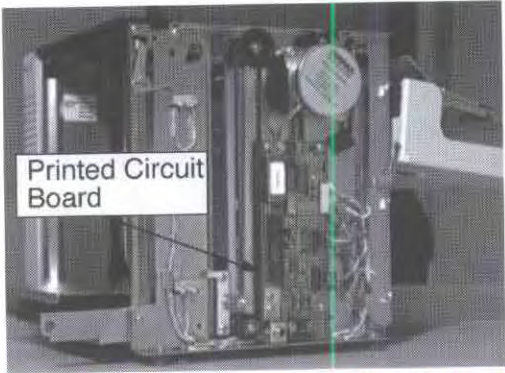


Figure 2-10. Removing Printed Circuit Board

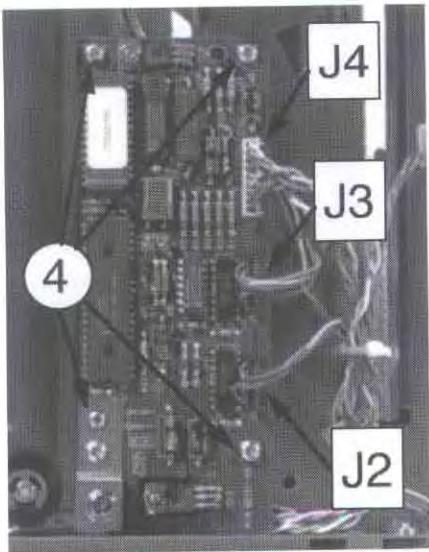


Figure 2-11. Close-up of Printed Circuit Board

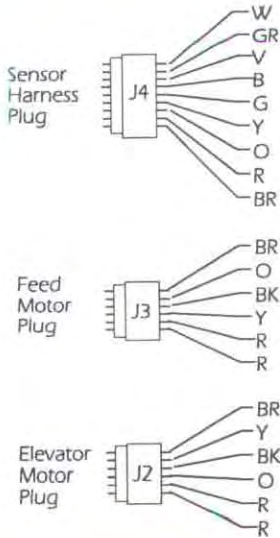


Figure 2-12.

Introduction

This chapter is divided into two parts:

1. Pre-troubleshooting procedures to check for common items which can inhibit proper operation.
2. Information to help quickly isolate a failure and correct the problem.

Intended Use Of This Guide

Though the Paper Feeder has been designed as “low-to-no maintenance equipment,” there may come a time when it is necessary to perform minor repairs. This chapter assists the dealer and service center technicians in troubleshooting procedures and repairs.

This chapter contains information to troubleshoot a problem, suggest possible causes, and recommend actions to be taken.

Pre-troubleshooting Procedures

Prior to troubleshooting a specific paper feeder problem, you should ensure that:

1. The paper feeder is being maintained on a regular basis as described in Chapter Four of the User’s Guide.
2. The customer is using paper as specified in the User’s Guide and the media is stored correctly (for example, no high humidity situations, media stored flat, and so on).
3. The operating environment for the printer and paper is within the temperature and humidity specifications listed in Chapter 1 of this manual.
4. The power cord is firmly plugged into both the paper feeder and wall outlet or power strip.
5. There is no visible damage to the feeder, for example, the feeder was not dropped.

Problem Isolation

One of the primary checks in problem isolation is to determine whether or not the Paper Feeder is the source of the problem. This is done by performing an “Out of Printer” test on the Paper Feeder. The Paper Feeder is essentially a simulation of the printer’s standard paper tray. The feed action of the Paper Feeder positions a sheet of paper on the nosepiece of the unit, much the same as loading paper into a standard cassette. By physically pulling a piece of paper off the end of the nosepiece of the Paper Feeder, you are in effect acting as the printer, and the Paper Feeder should continue to feed the next sheet of paper all the way to the edge of the nosepiece. This check will isolate the problem to the Paper Feeder or the printer.

Further troubleshooting may be necessary in order to determine the actual cause of the particular problem; and the following Symptom-Action Charts should help you troubleshoot any problems. If you experience a problem not documented here, or require further clarification of the contents of this manual, please contact the Hewlett-Packard Dealer Support Center at 1-800-544-9976, Monday through Friday from 8 AM to 5 PM, Mountain Time for assistance.

Symptom	Attention Area	Corrective Action
No power to feeder	Power Adapter	Ensure power adapter is: 1. Securely inserted into the side of the Paper Feeder unit. 2. Attached to a wall outlet or power strip that is known to be good and surge protected. 3. Verify that the power adapter is supplying the proper voltage by checking the adapter’s light. If the light is off or blinking, replace the adapter (refer to the part number list in Chapter 4).
Elevator does not raise	Elevator Actuation Arm	To check this component it will be necessary to remove the right side cover of the unit (See “Removing Side Covers” section). 1. After removal of the side cover, locate the arm at the top left of the frame. (Refer to Figure 3-2.)

Symptom	Attention Area	Corrective Action
		2. Ensure that this arm is positioned to rest atop the microswitch that is attached to the green/yellow wires. 3. If the arm is found to be positioned beneath the tongue of the microswitch, place it in the position described in the previous step.
Elevator raises, but does not feed	Nosepiece Sensor	Inspect the nosepiece by: 1. Removing the feeder from the printer. 2. Ensure power is disconnected. 3. Remove any paper from nosepiece. Then: 4. Verify that the sensor is present in the center of the nosepiece, and protruding at a slight angle above the metal guide. 5. From the underside of the nosepiece, verify that all four of the sensor body holding clips are securely fastened into the rearmost brackets provided. 6. Re-install unit on printer. 7. Re-apply power to unit. 8. Observe operation to verify that condition is no longer present. (Note: While installing unit, observe clearance between sensor tip and printer port. Improper installation can result in dislodging the sensor from its proper position.)
Elevator raises, feeds once, lowers	Nosepiece Sensor	1. Follow first 4 steps above. 2. If sensor is not present, locate it, and refer to step 5 above. 3. If sensor is present, inspect it to verify that the tip is not damaged or broken. 4. If sensor has been damaged, it should be replaced (refer to the part number list in Chapter 4).

Symptom	Attention Area	Corrective Action
Elevator raises, but does not stop; unit does not feed	Feed Motor/Upper Limit Switch	This switch is located on the left side of the unit. Access to this switch will require removal of the right side cover (see "Removing the Side Covers" section). 1. With the unit taken out of the printer, power disconnected, and the left side cover removed, locate the switch at the upper left of the frame. (Refer to Figure 3-2.) 2. The protruding arm of the feed roller shaft assembly should be positioned atop this switch. 3. With the feed roller assembly arm in the proper position, verify that the tongue of the microswitch is not bent downward. 4. Ensure the tongue is either flat, or exhibits an upward bend. (Note: The feed action is enabled when the paper has risen to the point where the roller assembly arm is lifted off of the microswitch tongue. This allows the "normally open" switch to "make" and results in disabling the elevator while the feed function is enabled.) 5. A quick check of the feed circuit can be made by re-applying power to the unit and allowing the elevator to begin its ascent. While the elevator is rising, lift the shaft that holds the feed rollers and observe whether or not the feed rollers are activated.
Elevator lowers, and does not stop	Lower Limit Switch	1. Remove unit from the printer. 2. Disconnect power from unit. 3. Remove cover from right side of unit (see "Removing the Side Covers" section).

Symptom	Attention Area	Corrective Action
		4. Locate microswitch attached to grey and white wires at the lower left of the frame. (Refer to Figure 3-2.) 5. Inspect switch for any deformity or visible damage to the body or tongue. 6. Re-apply power to the unit and allow the elevator to descend. 7. While descending, verify that when the tongue of the switch is depressed, all motion is halted. This will prove the proper operation of the switch.
After loading, elevator will raise, then abruptly drop	Elevator Gear Assembly	1. Remove unit from the printer. 2. Disconnect power from the unit. 3. Remove the left side cover of the unit (See "Removing the Side Covers" section). 4. Inspect the teeth of the gears in the assembly for damage or loss. (Refer to Figure 3-1.)
Paper is feeding short, causing paper jam ("Internal Jam" or "Input Jam") signal in printer	Feed Rollers Tension Springs	1. Remove unit from the printer. 2. Perform an Out of Printer Test to check operation by allowing the paper to raise to the upper limit and feed. While holding the nosepiece at an angle parallel to the table surface, observe the length to which the paper feeds from the edge of the nosepiece. 3. If the paper is more than one-half inch back from the edge of the metal guide, do the following: a) Inspect and clean feed roller(s) b) Position the tension springs in a lower hole on the tab. (Refer to Figure 3-2.)

Symptom	Attention Area	Corrective Action
Media is skewing while feeding	Feed Roller(s) Tension Springs	1. Remove the unit from the printer. 2. Operate the unit outside of the printer in order to observe the actual dynamics of the "feed." 3. Observe the angle (if any) that the media is skewing at, in relationship to the guide through which it is being fed. 4. Inspect the feed rollers for any difficulty in movement or improper installation. 5. Inspect tension spring position. It is best to have both springs in the same position on their respective sides.

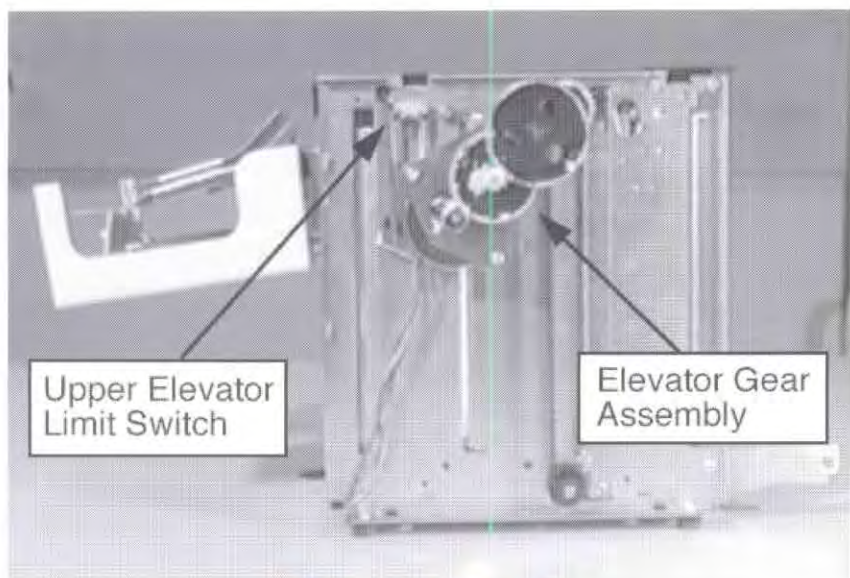


Figure 3-1. Left Side View

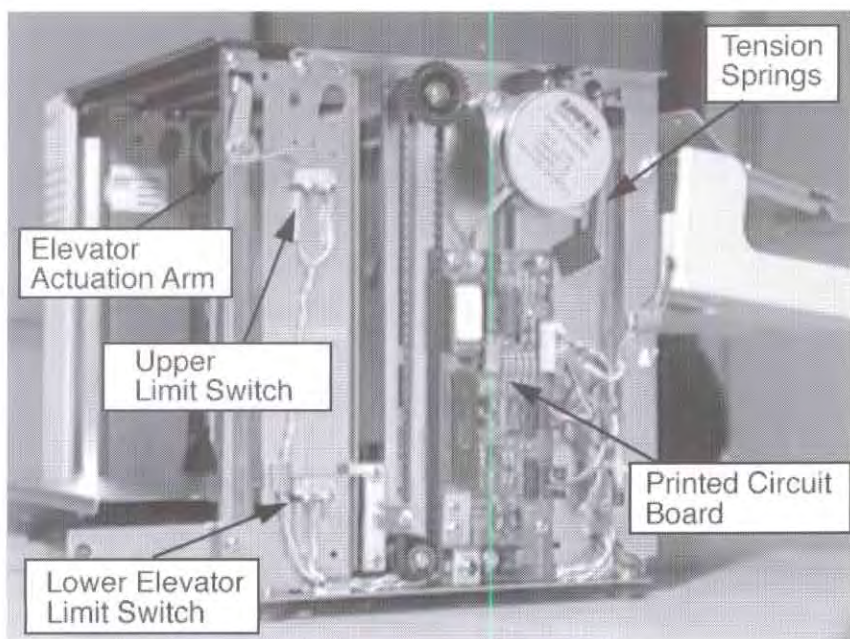


Figure 3-2. Right Side View

The following table identifies replaceable parts used in the HP LaserJet 4Si, 4Si MX, and IIISi Paper Feeder.

Parts List

Description	Part Number for S/N ≤H2004726 (A4) ≤H2108818 (Ltr)	Part Number for S/N ≥H3000001 (A4) ≥H3100001 (Ltr)
Nosepiece Sensor	5181-8719	5181-8763
Nosepiece Assembly (Letter)	5181-8721	5063-1261
Nosepiece Assembly (A4)	5181-8711	5063-1260
PC Board Assembly	5063-1219	5063-1249
Rear Door	5042-0302	5042-0302
Duplex Paper Guide	5181-8709	5181-8709
Roller Replacement Kit	5181-8708	5181-8708
Power Adapter	5042-0301	5181-8759
Printer Pedestal	5181-8710	5181-8710
User's Guide (A4 and Letter)	C2921-90004	C2921-90004
Service Manual (A4 and Letter)	C2921-90003	C2921-90003

HP LaserJet III Si, 4Si and 4Si MX Output Stacker Service Manual



HP Part No. C2801-90002
Printed in USA

First Edition

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Printing History

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Conventions

This manual uses the following conventions:

The names of major printer parts and assemblies are Capitalized.

Bold is used for emphasis, particularly in situations where *italic* type would be confusing.

Italic type is used to indicate related documents or for emphasis.

COMPUTER type indicates text visible on the printer's display or commands as seen on a PC terminal.

KEYFACE indicates keys, such as **MENU**, on the printer's Control Panel or on a computer keyboard.

Note



Notes contain important information set off from the text.

Caution



Caution messages appear before or after procedures which, if not observed, could result in loss of data or in damage to equipment.

Warning



Warning messages signal a specific procedure or practice which, if not followed correctly, could cause personal injury.

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Installation

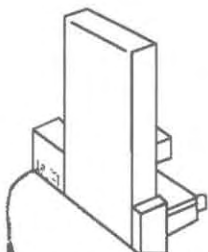
Carton Contents

Components of the Output Stacker

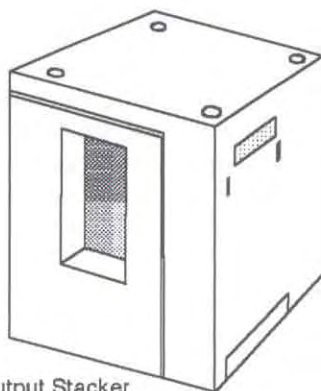
Prior to installation please check that the following items have been received:



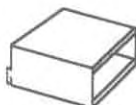
Paper Feeder
Power Adapter
Holder



Transport Module



Output Stacker
Cabinet



Paper Feeder
Support Shelf
(With Wing Nuts
and Washers)



Printer Interface Cable



Casters: Two braking
Four non-braking

Figure 1-1. Contents of the Carton

Note

Do not dispose of the shipping carton and packaging materials until proper performance has been determined. If the unit must be returned, it must be packaged in the original carton and packaging materials to prevent transit damage. The warranty becomes void if you return the product without the original packaging and the product is damaged.

Caution

Verify that the voltage rating of the Output Stacker is compatible with the printer and the local line voltage. The voltage rating is located on the rear of the Transport Module.

Installation/Retrofit of LaserJet IIISi Printer

The Output Stacker can be retrofitted to the IIISi printer by installing a new Delivery Cover Assembly (HP P/N RG5-0067-000CN). See Chapter 6 of the LaserJet IIISi/4Si Printer Combined Service Manual for detailed replacement procedures.

Installation Instructions

Installation of the output stacker is required to be performed by an HP authorized dealer or an HP service engineer.

Required Tools

A #1 Phillips head screwdriver.

Mounting the Casters

After removing the box from the stacker, place the cabinet on its back, or on the side opposite the door.

Insert the casters into the holes on the bottom of the stacker. The two braking casters are installed on the door side of the stacker cabinet. The remaining casters are located on the side opposite the door, and on the support shelf, as shown in Figure 1-2.

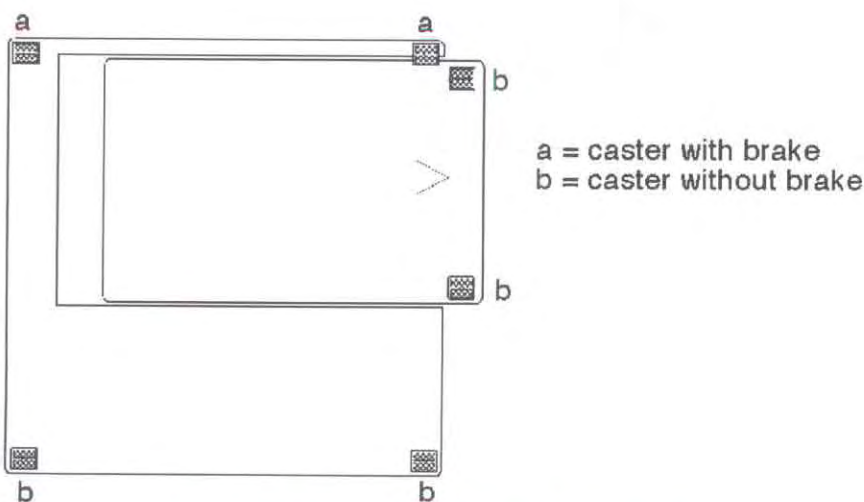


Figure 1-2. Bottom-view of Caster Placement

Turn the stacker upright after installing the casters.

Placing the Printer on the Stacker Cabinet

Turn off the printer and remove the power cord. Remove the printer's standard paper trays.

Have someone help you with the next step. With you and your partner on either side of the printer, lift the printer and position it on the top of the stacker cabinet, so that all four of the printer's feet fit into the recessed areas on the cabinet top. The stacker door should be on the left of the control panel side of the printer, as shown in Figure 1-3.

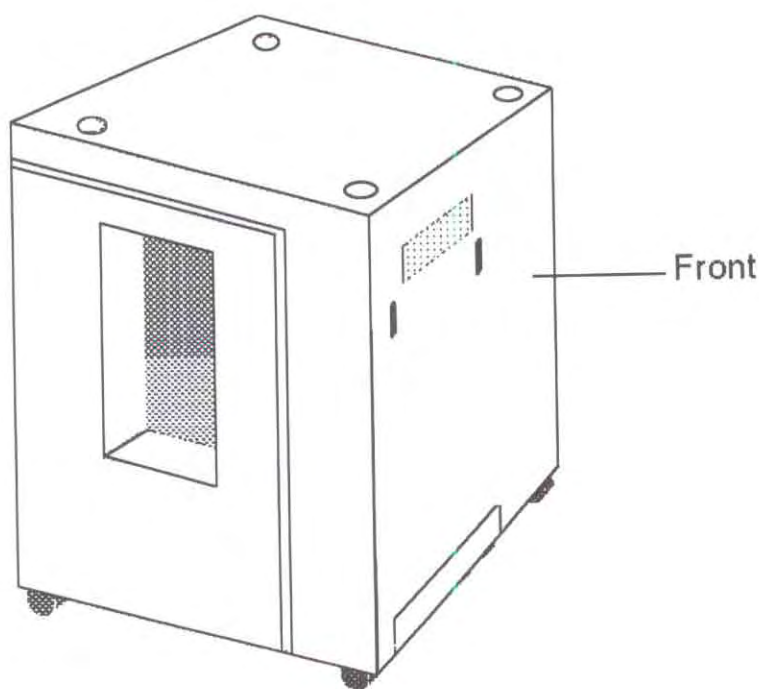


Figure 1-3. Front and Door View of Cabinet

Extending the Cabinet Support Plate

Slowly pull the lower cabinet support plate out until it is fully extended and it locks into position, as shown in Figure 1-4.

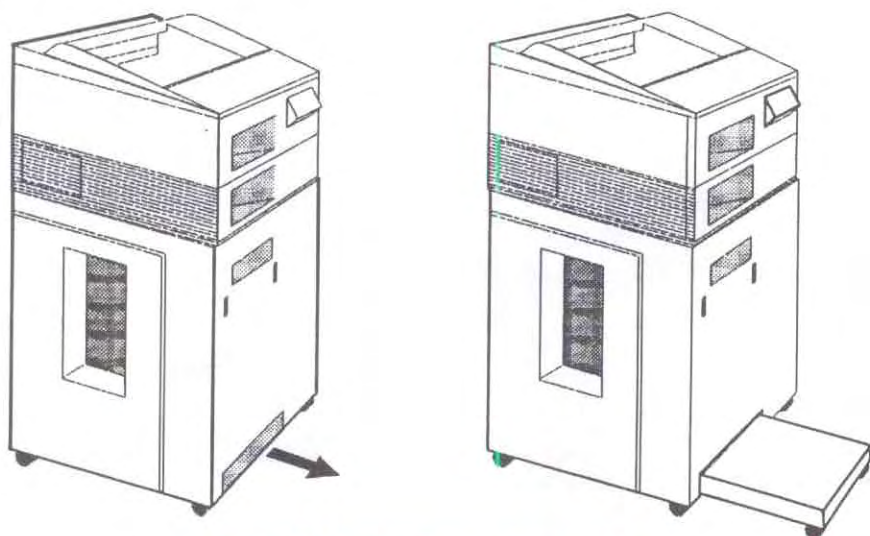


Figure 1-4. Extending the Support Plate

Mounting the Paper Feeder Support Shelf

If you are using the optional HP Paper Feeder, attach the feeder shelf to the front of the stacker cabinet. An example is shown in Figure 1-5.

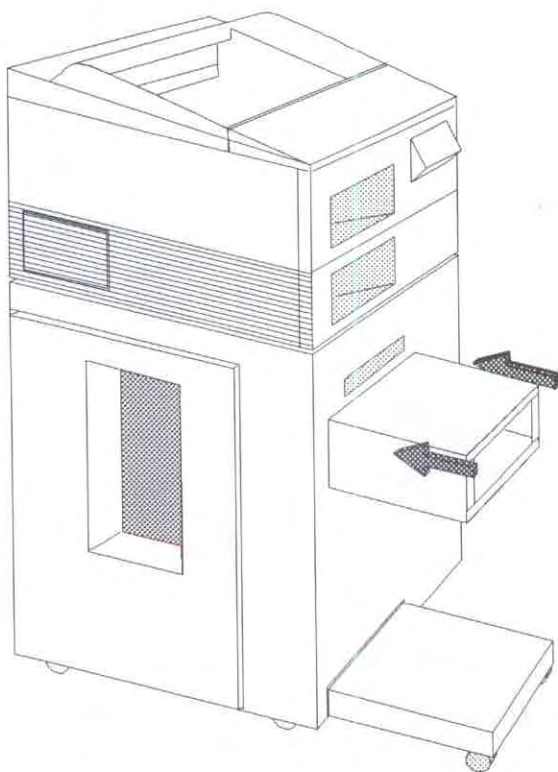


Figure 1-5. Installing the Support Shelf

Slide the paper feeder support shelf down onto the protruding hooks on the front of the cabinet, aligning the holes in the shelf with those in the cabinet. Secure the shelf with the screws, washers and wing nuts provided in the carton, as shown in the sequence in Figure 1-6.

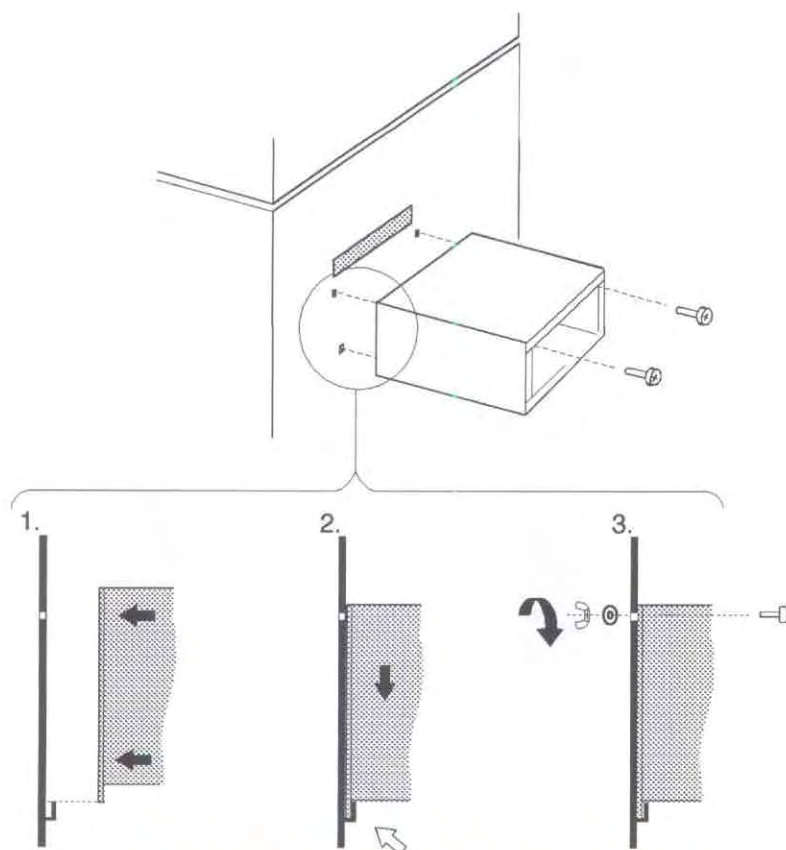


Figure 1-6. Detailed View of Shelf Installation

Installing the Duplex Paper Guide

If you are using the HP Paper Feeder, install the duplex paper guide provided with the paper feeder. This step is very important when the printer has the duplexing option for double-sided printing.

Insert the bottom lip of the duplex paper guide into the opening of the output stacker cabinet and insert the two mounting tabs into the printer's slots, as shown in Figure 1-7. Press the tabs down to lock the guide into place.

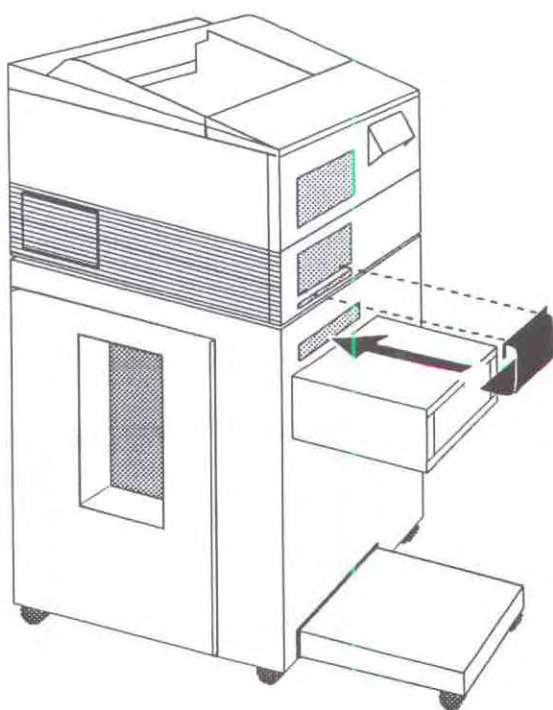


Figure 1-7. Placement of the Duplex Paper Guide

Mounting the Feeder Power Adapter Holder

If you are using the HP Paper Feeder, attach the power adapter holder to the lower rear side of the cabinet. Mount the holder in the slots on the cabinet as shown in Figure 1-8. Insert the power adapter provided with the paper feeder, then connect the cord as shown in the exploded view in Figure 1-8.

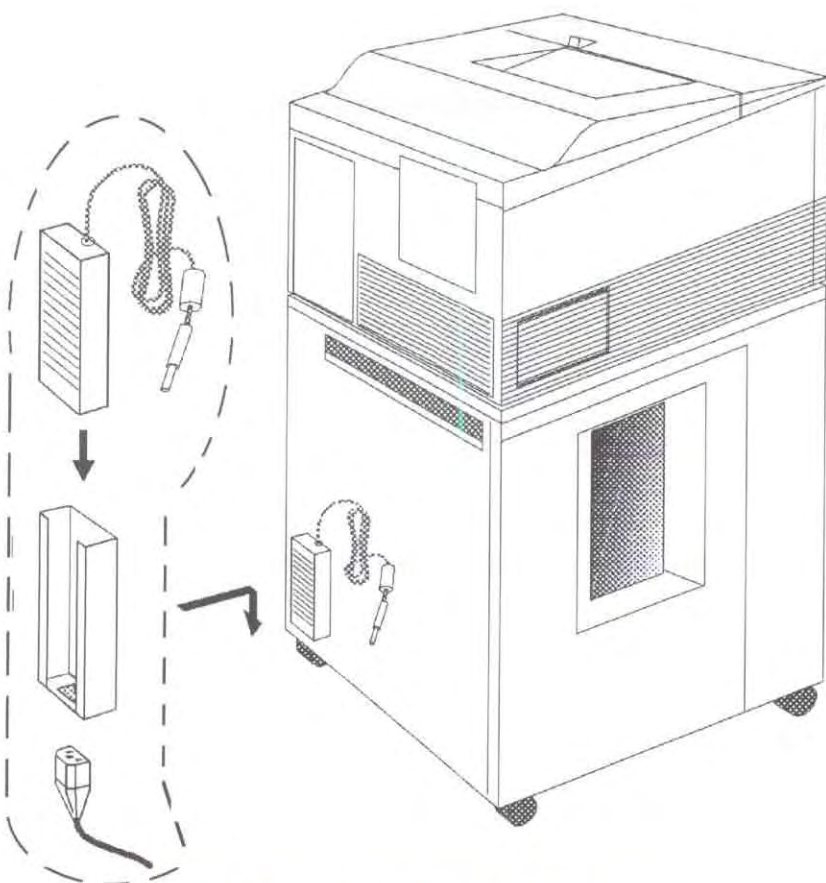


Figure 1-8. Installing the Power Adapter Holder

Run the adapter cord along the base of the printer toward the feeder, as shown in Figure 1-9.

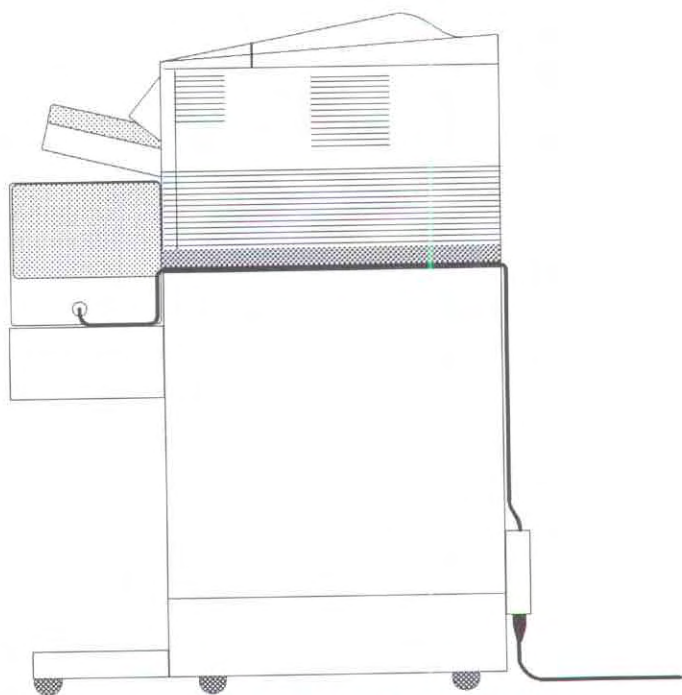


Figure 1-9. Running the Cord to the Feeder

Installing the Stacker Interface Cable

Warning



Power-off the printer and disconnect the power cord before attempting to remove any printer covers. Severe injury can result if this warning is not followed.

Caution



Wear an ESD strap to avoid damaging the printer components.

The stacker sends status conditions to the printer through a stacker interface cable, which is attached to both the stacker and the printer's sensor PCA. When the output stacker drawer is full or when a paper jam has occurred in the Transport Module, the cable allows the stacker to send a signal to the printer to stop printing until the problem is resolved.

Please refer to the *LaserJet IIISi/4Si Combined Printer Service Manual* for details about removal and replacement of printer parts in order to gain access to the printer's sensor PCA. Specifically, see the section on Removal and Replacement of the **AC Power Supply / Sensor PCA** in Chapter Six.

1. Remove the printer's right side cover (2 screws).
2. Remove the cover on the right rear of the printer (1 screw).
3. Remove the format controller cover (8 screws) and disconnect the fan.
4. Disconnect three connectors and remove the format controller/pan assembly (1 screw). When reinstalling the formatter cover, be sure to tuck in the RFI grounding tabs. This prevents damage which can cause the printer to create electrical noise.

The sensor PCA is located below the fan (FM1) and is now accessible, as shown in Figure 1-10.

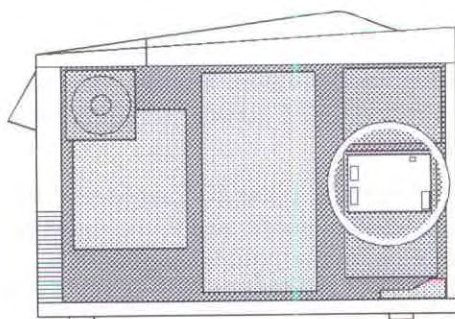


Figure 1-10. Sensor PCA Location

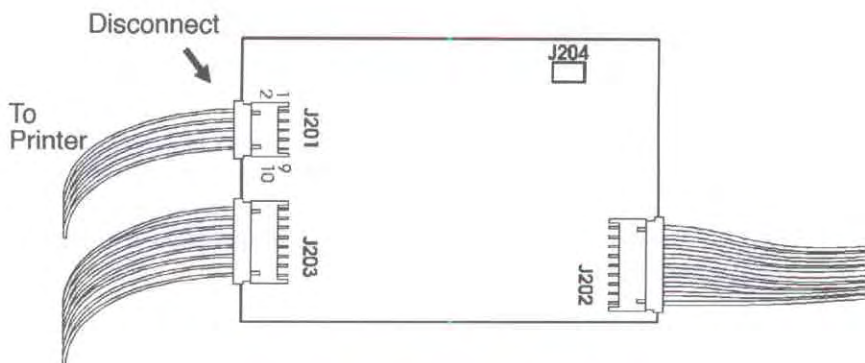


Figure 1-11. Location of the J201 Cable

5. Disconnect the printer's cable from J201 on the sensor PCA, as shown in Figure 1-11.
6. Connect one end of the stacker interface cable to the J201 connector on the sensor PCA, and connect the other side of the stacker's cable to the printer's cable, as shown in Figure 1-12. The pigtail will be routed out the rear of the printer to be attached to the Transport Module.

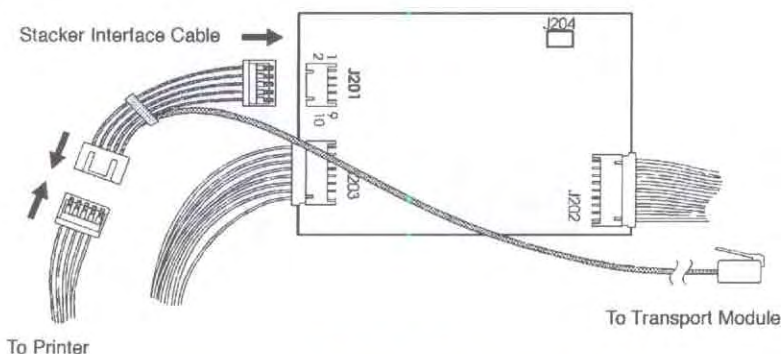


Figure 1-12.
Correct Cabling for the Stacker Interface Cable

7. Route the stacker interface cable's pigtail through the same chassis frame cutout where the J202 cable is led. Feed the stacker interface cable through the cable harness which holds the J202 cable, as shown in Figure 1-13.
8. Next, feed the interface cable through the diagonal notch on the side of the right rear cover, as you reinstall the cover (see Figure 1-13). Route the cable outside and down, pressing it into the groove between the rear covers. Fix it to this position with a self-adhesive cable holder.

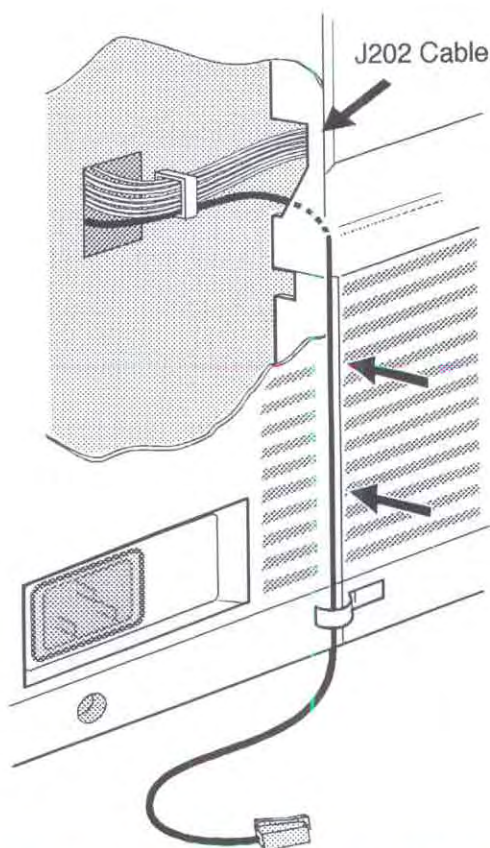


Figure 1-13. Routing and Securing the Stacker Interface Cable

Verify that the cable will not be squeezed by the printer's cover when opened.

9. Replace the format controller/pan assembly, and reconnect the three connectors.
10. Reconnect the fan, replace the format controller cover, and replace right side cover.

Installing the Transport Module

Caution



Avoid damaging the sensor arm, located at the front of the Transport Module shown in Figure 1-14.

Before inserting the Transport Module, ensure that the sensor arm is fixed in a horizontal position, held by the stiff label.

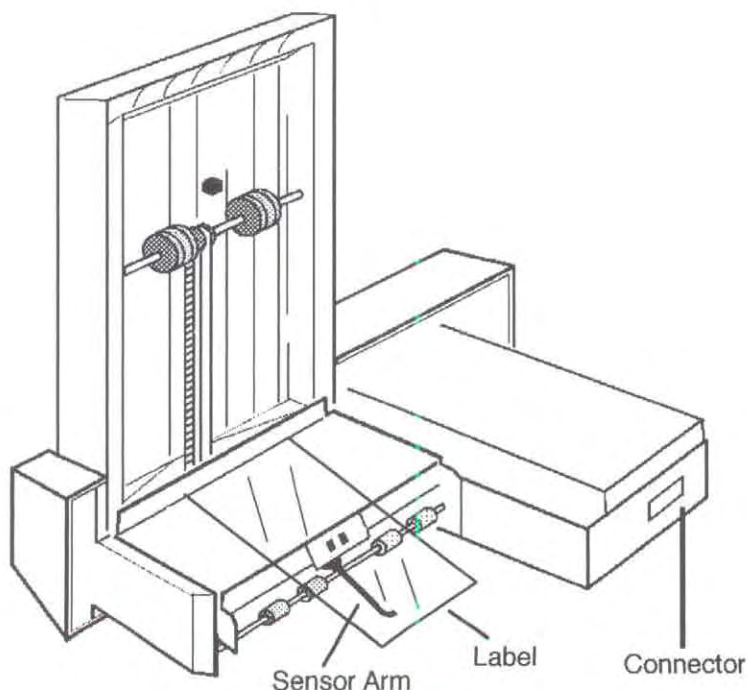


Figure 1-14. The Transport Module

1. Locate the stacker connection cable inside the stacker cabinet. Feed it out through the cutout in the rear of the cabinet.
2. Plug the stacker connection cable into the matching connector at the front of the Transport Module (see Figure 1-14).
3. Install the Transport Module into the rear cut-out of the stacker cabinet, as shown in Figure 1-15.

Note

The Transport Module will “lock” solidly into place when it is properly positioned. Make sure both tabs, located at the bottom of the Transport Module, are properly engaged with the stacker cabinet.

Note

After installation, open the stacker door and lift the cardboard to release the sensor arm, so it can drop down freely.

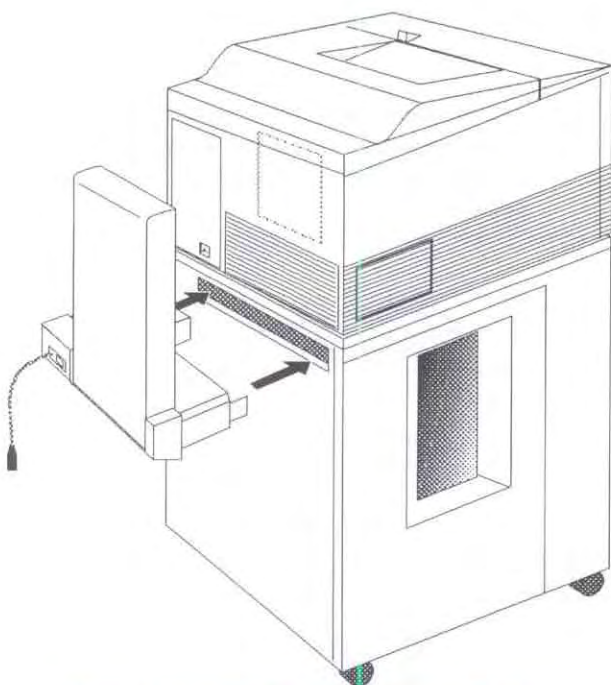


Figure 1-15. Installing the Transport Module

Caution



Ensure that the printer is positioned on the stand so there is less than 1mm between the printer and the Transport Module. A gap will cause paper jams.

Connecting the Power Cords and Stacker Interface Cable

The following steps are illustrated in Figure 1-16.

1. Plug the stacker interface cable into the matching RJ-11 receptacle on the side of the Transport Module.
2. Plug the short power cord coming from the Transport Module into the printer's power receptacle.

3. Plug the printer's power cord into the power receptacle in the Transport Module, then insert the three-prong plug into a proper wall outlet.

Note



The stacker cabinet's elevator is shipped in the fully down position. When the power connection is made, the elevator will automatically rise to its "ready" position.

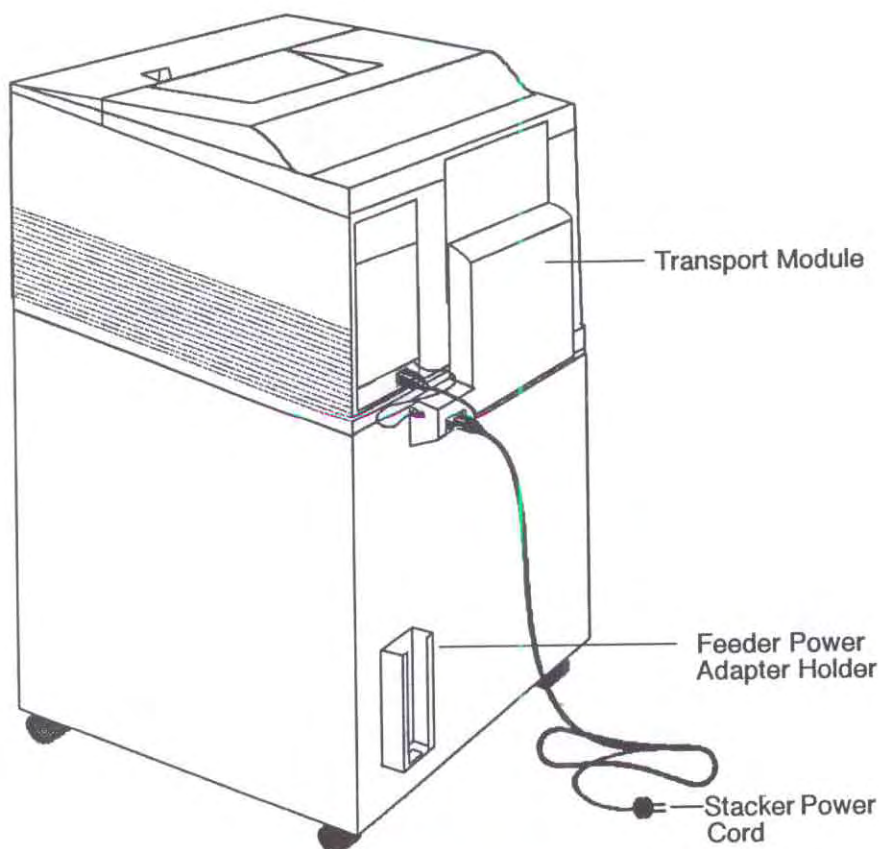


Figure 1-16.
Power Cord and Stacker Interface Cable Installation

Aligning the Printer With the Output Stacker

The following steps are critical for optimum stacker performance. Before operating the stacker, check for the following:

1. The printer's feet must be placed in the stacker cabinet's related dimples.
2. The rear of the printer must be set squarely against the stacker's Transport Module, so there is no gap or skew between the Transport Module's cover and the printer, as shown in Figures 1-17 and 1-18.

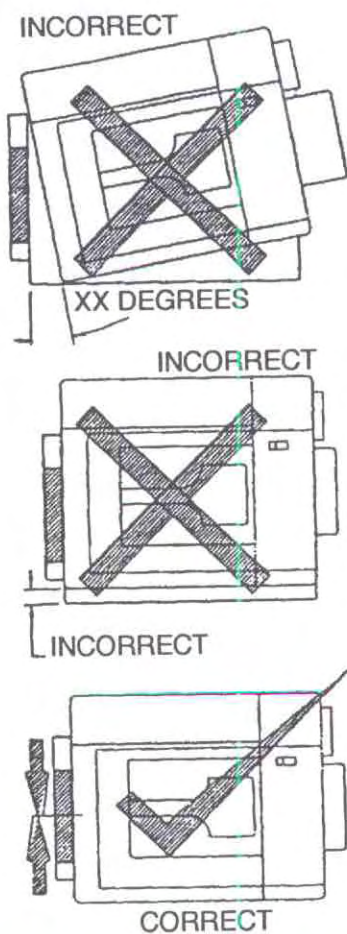


Figure 1-17.
The Correct Alignment of the Printer to the Stacker (Top View)

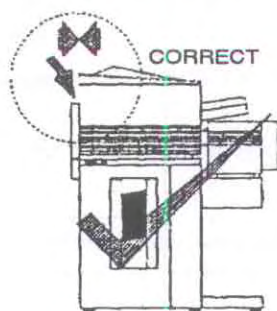
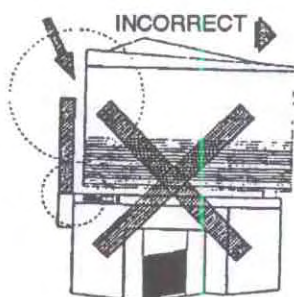
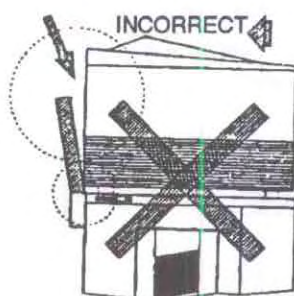


Figure 1-18.
The Correct Alignment of the Printer to the Stacker (Side View)

3. Ensure that the printer's rear exit opening is centered evenly between the two tips of the Transport Module's inner guide, as shown in Figure 1-19. You can view the alignment by opening the Transport Module's cover.

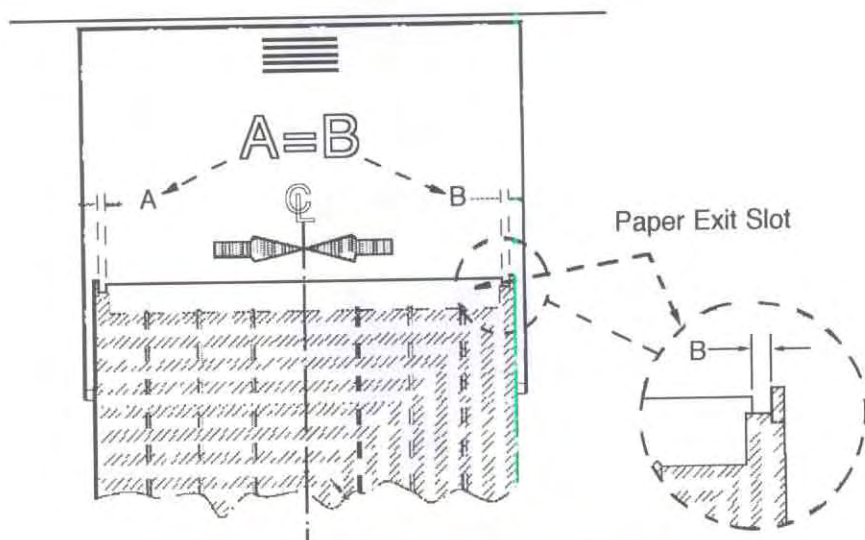


Figure 1-19. The Correct Lateral Alignment

Readjust the printer within the stacker cabinet's feet dimples as necessary.

Note



The printer's feet might not be centered in the dimples when you achieve the proper alignment.

Using the Output Stacker

Preparing the Printing System After Installation

1. Position the stacker cabinet in the desired location and lock the two locking casters to ensure stability.

Note

To prevent damage to floors or carpeting, always unlock the casters before moving the stacker cabinet.

2. Reinstall the printer's paper trays, or complete the procedures for installing the HP Paper Feeder by referring to the HP Paper Feeder User's Guide.

Diagrams showing the key components of the Output Stacker are provided in Figure 2-1 and Figure 2-2.

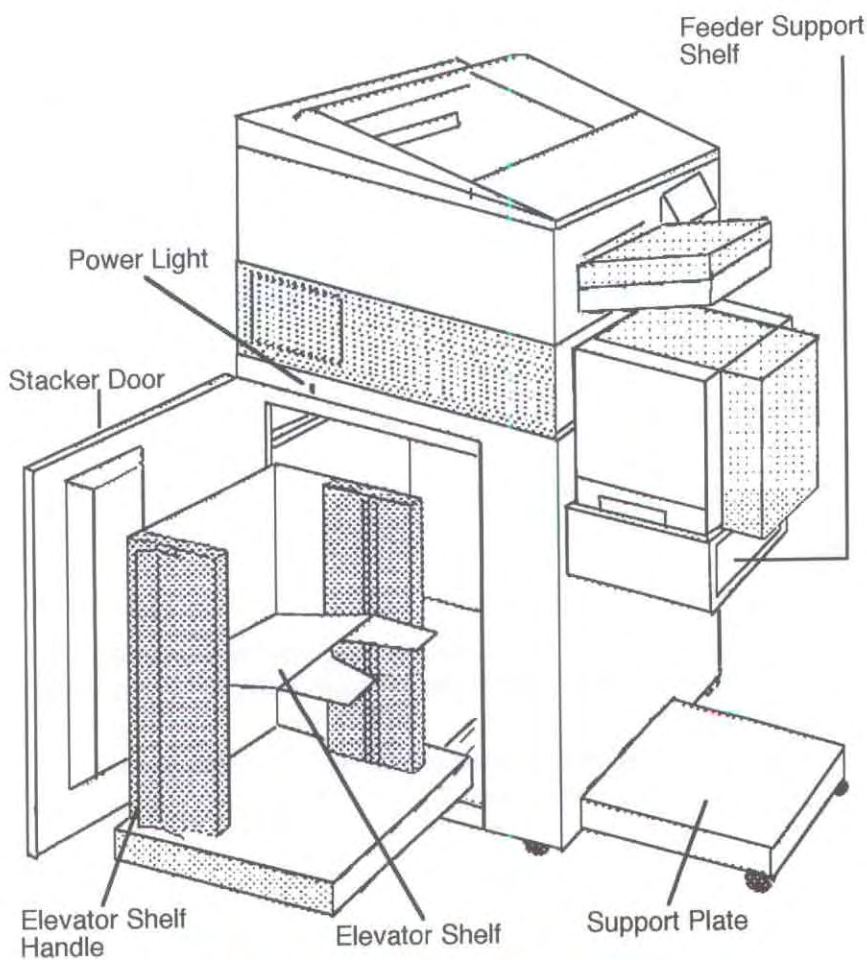


Figure 2-1. Output Stacker Components (Door View)

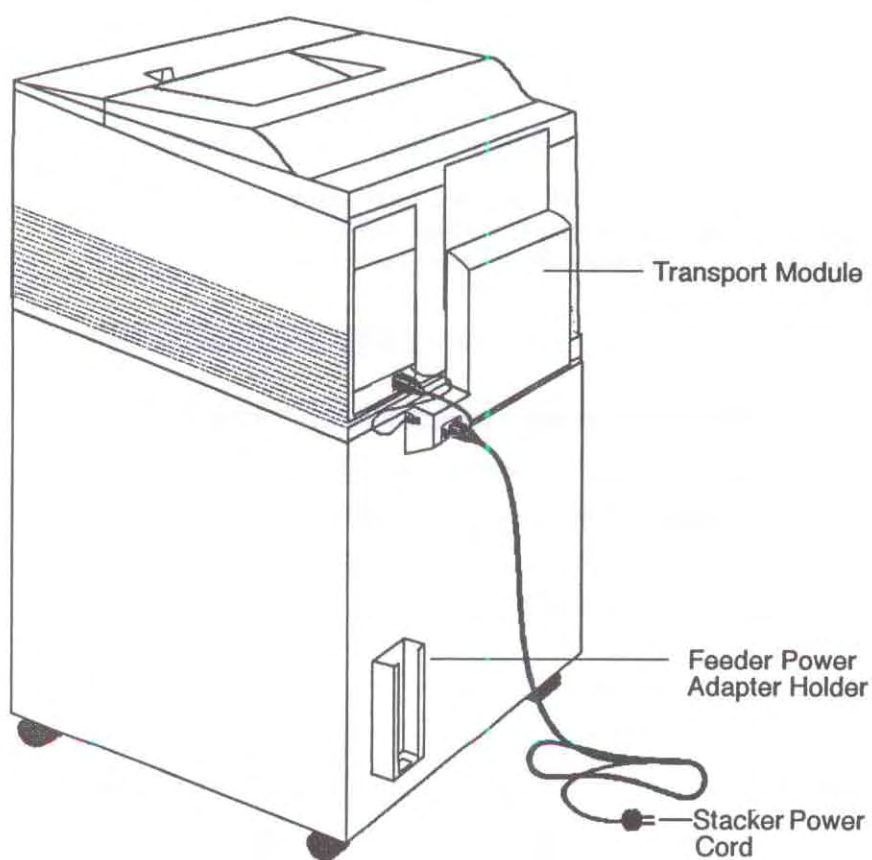


Figure 2-2. Output Stacker Components (Rear View)

Configuring the Printer

Selecting the Lower (Rear) Paper Output Path

To use the Output Stacker, the lower (rear) paper output path must be selected from the printer's operator panel or from the software application. To select the lower (rear) paper output path, use the following steps:

1. Take the printer off line and press **MENU** once to get the PRINT menu.
2. Press **ITEM** until the menu item OUT BIN = UPPER is displayed.
3. Press **+/-** to change the setting to OUT BIN = LOWER.
4. Press **ENTER** to store the selection and place the printer on-line.

For details on selecting the lower (rear) paper output path, please refer to the printer's Reference Manual.

Testing the Printing System

To run the continuous self-test on the printer, use the following steps:

1. Take the printer off line.
2. Hold down **TEST** until CONTINUOUS SELF TEST is displayed (about 5 seconds). This causes a continuous self-test to run.
3. To stop the self-test, press **ON LINE** key.

The pages should exit the printer through the lower path, through the Transport Module, and onto the stacker's elevator shelf. Confirm that the printer's paper exit is properly aligned with the Transport Module. If you observe any skew, realign the printer.

Note



The Transport Module moves slightly as it transfers paper to the stacker. This movement is normal, and the range of motion varies depending on the weight and flexibility of the paper.

As you run the Self Test, open the Stacker door so you can watch the paper being delivered onto the elevator shelf. If the pages do not slide under the paper break, or any signs of reverse curling are exhibited (where the pages curl back toward the Transport Module), stop the self test immediately and refer to the Troubleshooting section for help with Paper Curl problems.

The system is now ready for use.

Technical Specifications

Technical Description

Figures 3-1, 3-2, and 3-3 show the technical detail for the Electronic Box and Transport Mechanism, the location of the paper path, and the location of the opto sensors, respectively.

Block Diagram

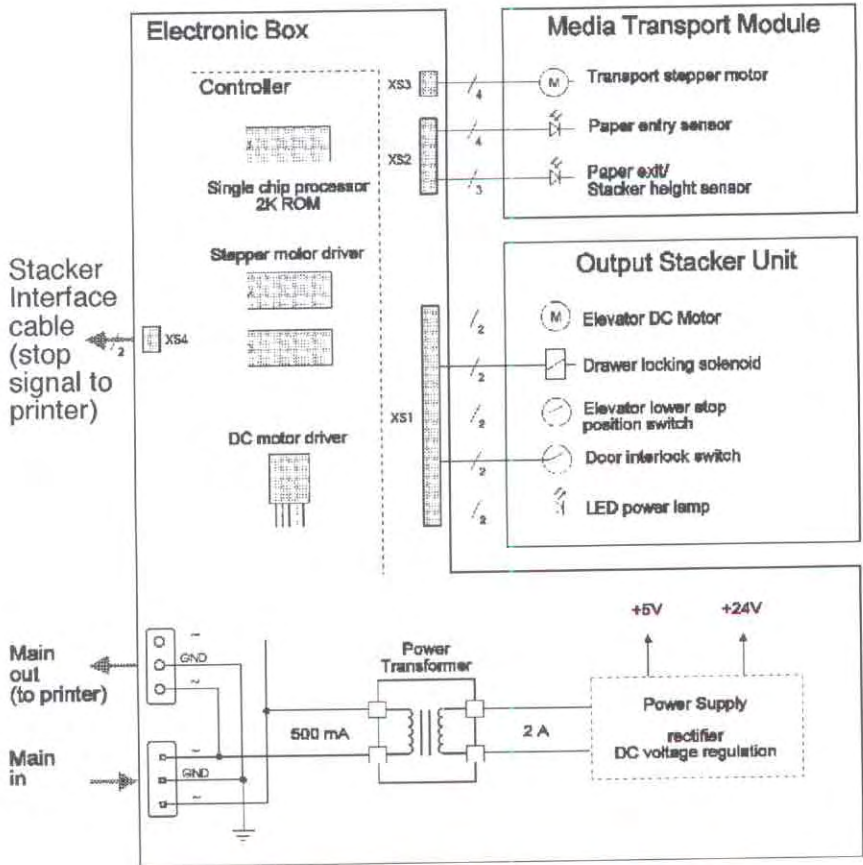


Figure 3-1. Electronic Box and Transport Mechanism

Paper Path

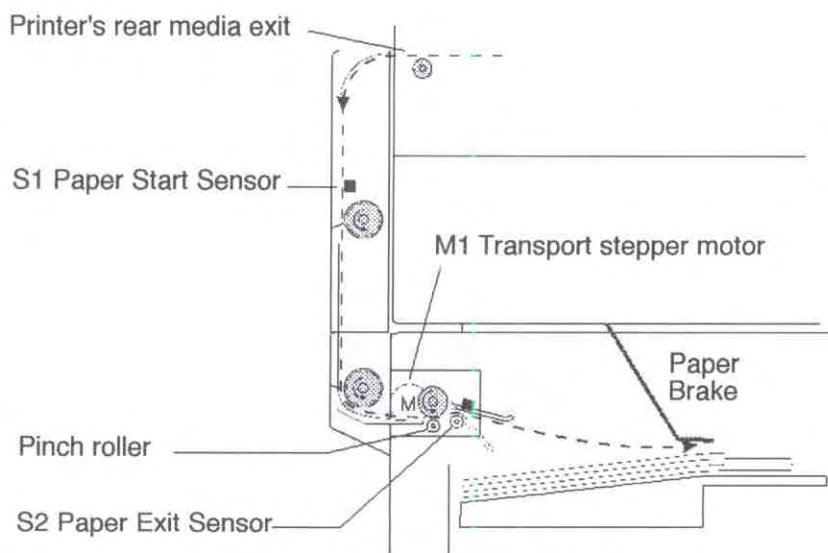


Figure 3-2. Transport Module Detail

Opto Sensors

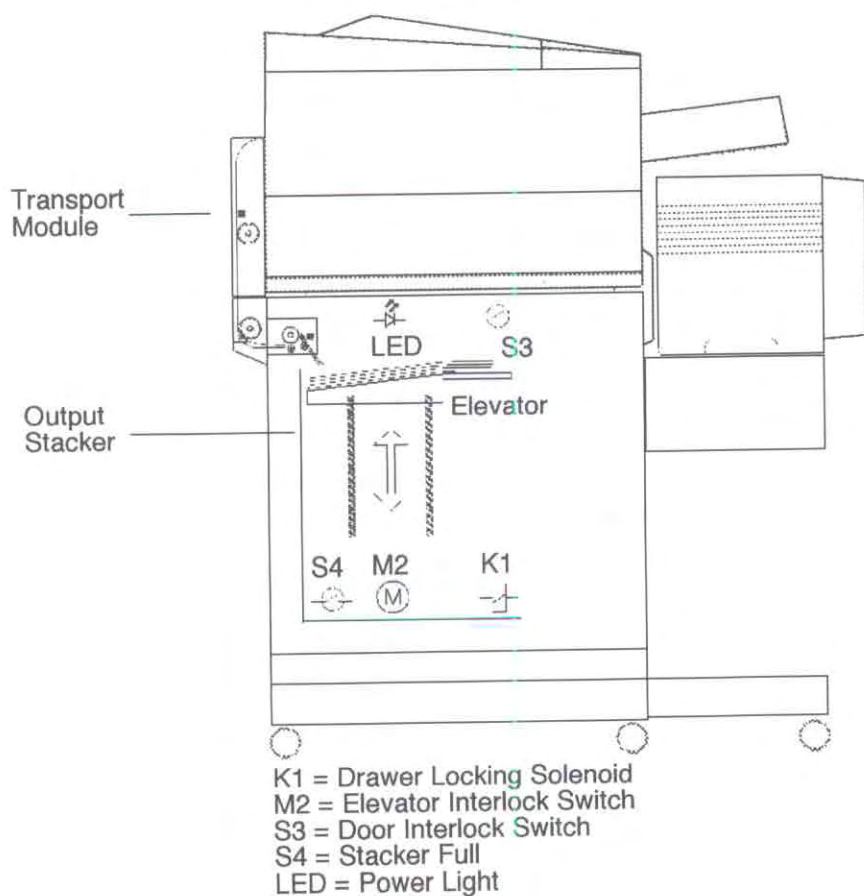


Figure 3-3. Stacker Detail

Theory of Operation

When the Output Stacker is to be used, the lower (rear) paper output path must be selected as the default setting from the printer's operator panel.

S1 Start Sensor

A printed page exits the printer's lower (rear) paper output path and is accepted by the Transport Module. The leading edge of the paper triggers the start sensor (S1), which starts the transport stepper motor. The stepper motor drives all transport rollers, moving the paper and transporting it into the stacker cabinet.

If the start sensor is not released within a time out interval, a "jam" is detected and a signal sent to the printer via the stacker interface cable. This signal simulates a "jam" condition in the printer and stops the printing process. The power light begins blinking.

S2 Paper Exit / Stack Height Sensor

Each sheet of paper triggers the exit sensor and is fed onto the elevator shelf. When the exit sensor (also the stacker height sensor at the same time) is not released after a sheet of paper has passed, the sensor signal is detected as a stacker height signal. This causes the DC motor to jog the elevator down.

If the stacker height sensor cannot be cleared, a "jam" signal is sent to the printer and the power light begins blinking.

S4 Stacker Full Switch

When the stacker is full and the elevator reaches its lowest stop position, a micro switch is activated. The stacker controller sends a signal through the stacker interface cable to the printer to stop printing (a "jam" signal is sent to the printer); the power light begins blinking.

Note



Users should empty the printout paper from the the stacker each time paper is added to the printer's paper trays. This ensures uninterrupted jobs.

S3 Door Interlock Switch

The door interlock switch sends a signal to the logic circuit of the stacker. This signal, combined with information from the paper sensors, determines whether to lock the interface drawer. The door interlock switch also acts as the reset switch for the stacker's logic. Note that the stacker must be reset prior to resetting the printer if an error condition occurs.

K1 Drawer Locking Solenoid

The elevator drawer locking solenoid, situated at the bottom rear side of the elevator drawer, mechanically locks the drawer to prevent it from being pulled out while the printer is feeding paper to the Transport Module. When the solenoid is activated, the drawer is released only when the door interlock switch is open and no more sheets of paper are passing through the Transport Module (the transport motor is not running). During this condition the drawer may be pulled out to remove the paper stack.

Power Light

The power light indicates power ON during normal operation while connected to a wall outlet. If "paper jam" or "stacker full" conditions occur the power light starts blinking and a "jam" signal is sent to the printer.

Troubleshooting

This chapter is organized in two main sections:

- **Common Areas of Concern.** This initial section provides solutions for the most common problems you might experience with the Output Stacker.
- **Diagnostic Decision Charts.** This section contains four decision flowcharts, to help you diagnose problems by following a logical path (typically the path the media travels from printer to stacker).

Common Areas of Concern

No Power

- If the printer has no power or the stacker power light (located above the stacker door) is not on, verify that the power cord is properly inserted in the Transport Module's receptacle and the short power cord from the Transport Module is plugged into the printer's receptacle.
- Verify that the wall outlet has the correct line voltage.
- Verify that the stacker has the correct power option for the local line voltage.

Power Light Is Not On

- Turn the printer off and disconnect the power cord from the Transport Module.
- Remove the Transport Module and verify that the stacker connection cable is properly inserted into the matching connector at the front of the Transport Module.

Note



When replacing the unit, pay attention to the stacker height sensor arm—remember to keep it in a horizontal position during installation to prevent breakage.

Wrong Paper Exit

To use the Output Stacker, the lower (rear) paper output path must be selected and stored as the default setting from the printer's operator panel (refer to the "Configuring the Printer" section in Chapter Two).

Output Stacker's Elevator Does Not Move

- Check the status of the power light. The light should be on and not blinking.
 - If the elevator shelf is stuck in the top or bottom position, remove the elevator mechanism from the cabinet (see steps below) and manually move the shelf by rotating the pulley located beneath the base plate.
 1. Pull the elevator out of the cabinet.
 2. Reach under the elevator and pull the two releases located on the inside of the rails.
 3. Pull the elevator firmly toward you.
- Check that the stacker height sensor arm is not damaged (missing stacker height signal to controller), or prevented from floating freely.
- Ensure that the stacker drawer is fully closed and latched (solenoid disengaged).

Power Light is Blinking

- Verify that the stacker is not full.
- Verify that the paper entry sensor, located at the paper entry of the Transport Module, is not stalled or stuck. Also, check that the stacker height sensor arm, located at the paper exit of the Transport Module, is released and not stuck.
- If power light continues to blink, even though no problem is evident, remove the power cord from the Transport Module, and reinstall to reset.

Note



The paper path through the printer and stacker **must** be cleared following any error condition.

Paper Jam Inside the Transport Module

Power light is blinking and “13.1 INTERNAL JAM” is displayed on the printer’s front panel.

- Open the Transport Module cover and slowly remove any paper.
- Check to see that no paper is partially stuck in the exit rollers of the Transport Module. Look inside the cabinet and slowly remove any jammed paper.
- Close the cabinet door.
- Open the printer and remove any paper in the paper path.
- Close the printer and restore the printer to on line status.

Note



Pages which have left the printer’s exit will not be reprinted.

To determine whether jam problems are caused by the Transport Module or by the printer, select the upper output paper exit tray from the printer’s operator panel or open the lower output tray in order to bypass the Transport Module.

- If the printer is functioning properly, verify if the printer's feet are properly seated in the round recesses on the stacker cabinet.
- Verify that the Transport Module is properly engaged with the stacker cabinet and latched (refer to "Installation Instructions" section in Chapter One) to ensure a straight paper path without skew.
- Ensure that the printer is aligned on the stand so that there is minimum distance between the printer and the Transport Module. The pages should be centered between the sides of the Transport Module as they are fed from the printer.

Paper Curl Problems

Some paper types exhibit significant curling after printing. Extreme curling can cause the paper to deflect backwards after contacting the paper brake inside the stacker unit, instead of sliding under the brake as it should. This can cause the paper to be pulled back into the exit rollers of the Transport Module, resulting in a catastrophic jam and possible damage to the Transport Module.

To clear the jam:

1. Disconnect the power and remove the Transport Module.
2. Carefully inspect the paper path through the Transport Module for any jammed pages.
3. Remove jammed pages by placing the Transport Module on its back to allow full access to the roller section of the paper path.
4. Manually turn the steel pressure shaft in the direction that ejects the jammed paper.

Warning



Permanent damage to the gears can occur if paper is forcibly removed by directly pulling on the paper.

To prevent curl-related jams, test the paper being used or considered. Run a self test of at least 50 sheets, with the stacker door open, while watching the pages as they are delivered onto the elevator shelf. If any tendency of reverse curl upon contact with the paper brake is observed, or if the paper does not slide under the brake, immediately

discontinue the test and discuss paper alternatives with the customer. If the customer must use this particular paper, fasten the paper brake to the ceiling of the cabinet with the provided clip. Rerun the self test, and be aware that the paper stacking registration without the paper brake can be severely compromised.

Printer Does Not Stop Printing After Stacker Jam or Stacker Full

If the printer does not stop printing, although a paper jam has occurred inside the Transport Module or the stack height has reached the maximum level (the power light should blink):

- Check that the stacker interface cable, which is transmitting the stop signal from the Output Stacker to the printer, is properly plugged into the Transport Module's RJ-11 receptacle.
- Check the stacker height sensor arm is not damaged or held out of position (not floating freely).

Note



Even when the "JAM" signal is set, two or three sheets more may leave the printer.

Printer Indicates "Internal Paper Jam" After Power On

- Verify that the stacker is not full.
- Switch off the printer. To determine whether the problem is with the Output Stacker, disconnect the stacker interface cable from the Transport Module and switch the printer on again. If the failure now disappears, the error is with the Output Stacker.
- Verify that the paper entry sensor and the stacker height sensor arm are functioning properly. Check that the opto sensors are properly connected to the controller PCB.
- If the failure occurs upon the first installation of the Output Stacker, also verify that the stacker height sensor arm is released and floating freely (refer to "Installing the Transport Module" in Chapter One).

Note



If a jam occurred in the **stacker**, the printer reprints the jammed page(s) in the printer, but **does not** reprint the jammed page(s) in the stacker. The user should reprint the jammed pages in the stacker or the job that experienced the jam.

Diagnostic Decision Charts

This section contains four decision charts (Figures 4-1 through 4-4) that will help you diagnose problems with the Output Stacker. The first chart is the “main” diagnostic tool; it will lead you through a series of questions, then refer you to one of three “sub-charts” for the final diagnosis.

The charts follow the same path the media does as it exits the printer, travels through the Transport Module, and ends up on the elevator shelf.

The Main Chart

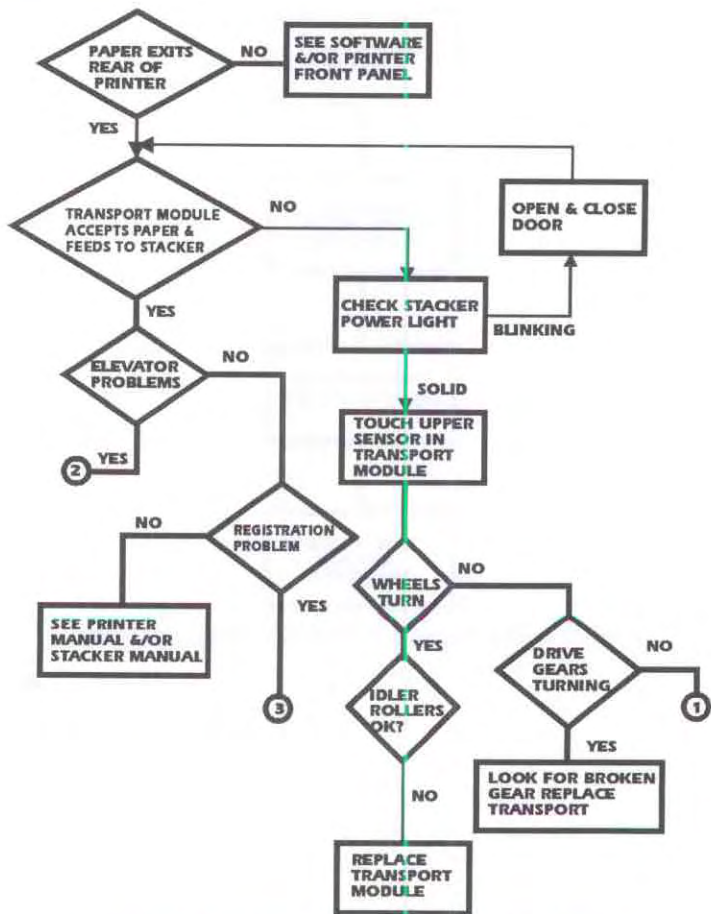


Figure 4-1. The Main Diagnostic Decision Chart

1: Transport Mechanism Issues

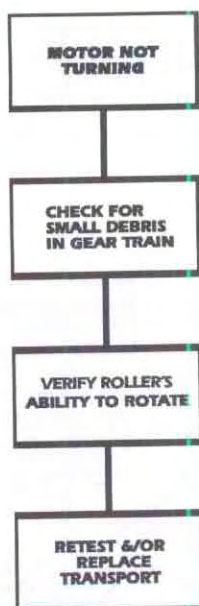


Figure 4-2. The Transport Mechanism Diagnostic Chart

2: Elevator Issues

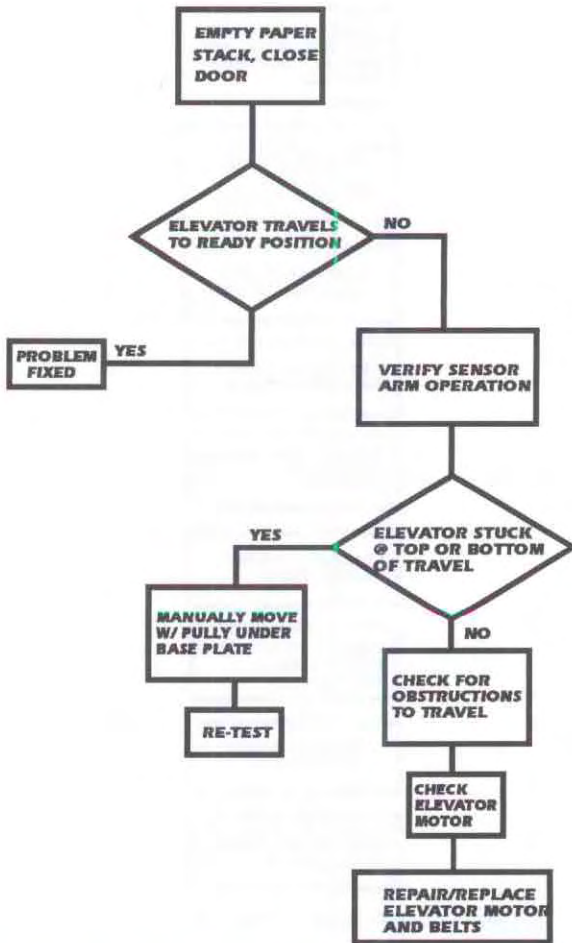


Figure 4-3. The Elevator Mechanism Diagnostic Chart

3: Registration Issues

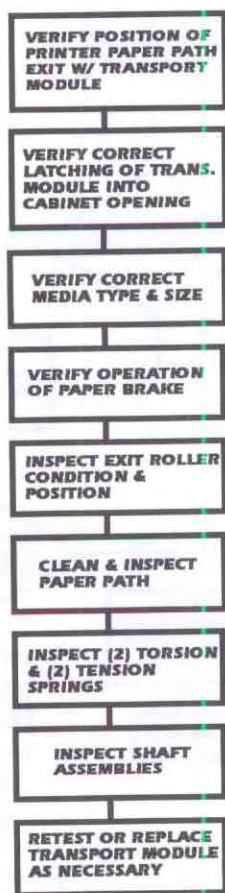


Figure 4-4. The Registration Diagnostic Chart

Service and Parts

Required Tools

A #1 and #2 Phillips screwdriver, a standard flat head screwdriver, and a 7mm wrench or nut driver.

Removal and Replacement of Spare Parts

Basically, replacement is the reverse of removal unless otherwise noted.

Transport Module Assembly

Warning



Switch off the printer, then remove power and stacker interface cables.

To disengage the Transport Module from the stacker cabinet, press up against the latches on the bottom of the module (a diagram of the Transport Module is shown in Figure 5-1). Pull out the complete assembly and unplug the stacker connection cable. Since the Transport Module fits very snugly into the cabinet, removal can require downward pressure on the top of the Transport Module frame, above the paper path, by reaching inside the cabinet.

Caution



Do not damage the stacker height sensor arm, located at the front of the Transport Module. Keep it protected by securing it into the slit in the stiff label, which is mounted on top of the Transport Module frame.

Note



When replacing the module, first configure the spare module by attaching the sensor arm and side covers.

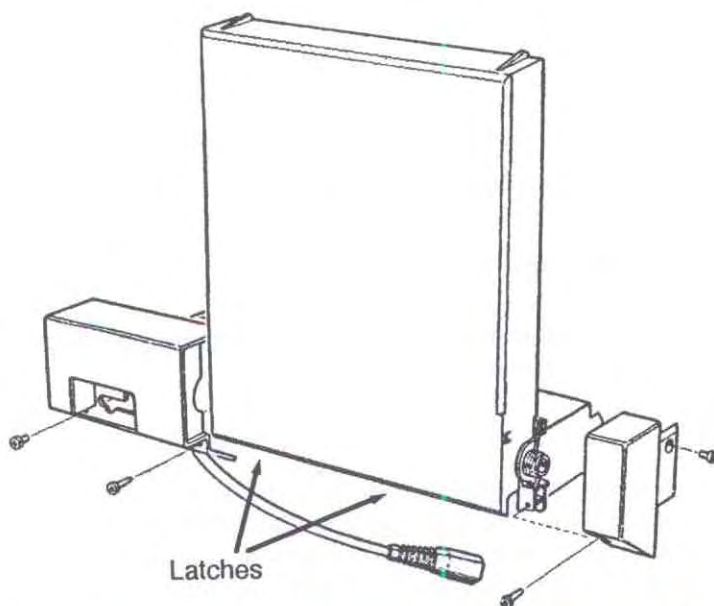


Figure 5-1. Rear View of Transport Module and Electronic Box

Side Covers

Left cover: remove 2 screws and take off.

Right cover: remove 2 screws and take off.

Electronic Box

The Electronic Box (E-box) is attached to the right side of the Transport Module frame, as shown in Figure 5-1. The right rear cover protects the E-box power receptacle, and is attached directly to the E-box.

If you determine that the E-box needs replacement, use the following procedure (requiring a 7mm wrench or nut driver and a #1Phillips head screwdriver):

1. Remove the two Phillips screws that secure the right rear cover to the E-box.
2. Remove the Phillips screw holding the right rear cover to the bottom guide.
3. Remove the 7mm nut that secures the E-box cover to the E-box.
4. Loosen the remaining 7mm nut.
5. Remove the Phillips screw that holds the side of the E-box to the frame.
6. Disconnect the cables from the E-box connectors shown in Figure 5-2.

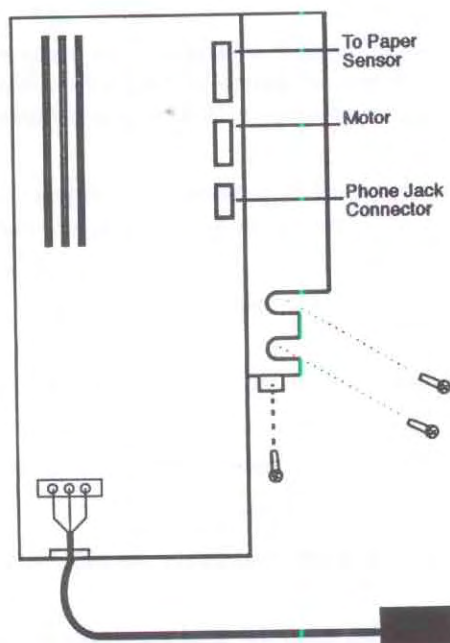


Figure 5-2. Top View of the E-box

7. Install the new E-box by reversing the previous steps.

Output Stacker's Sensor Arm

To replace the sensor arm, pry it off the shaft (using a flat blade screw driver) and clip on the new one. Make sure the sensor arm can float freely. See Figures 5-3 and 5-4 for more detail.

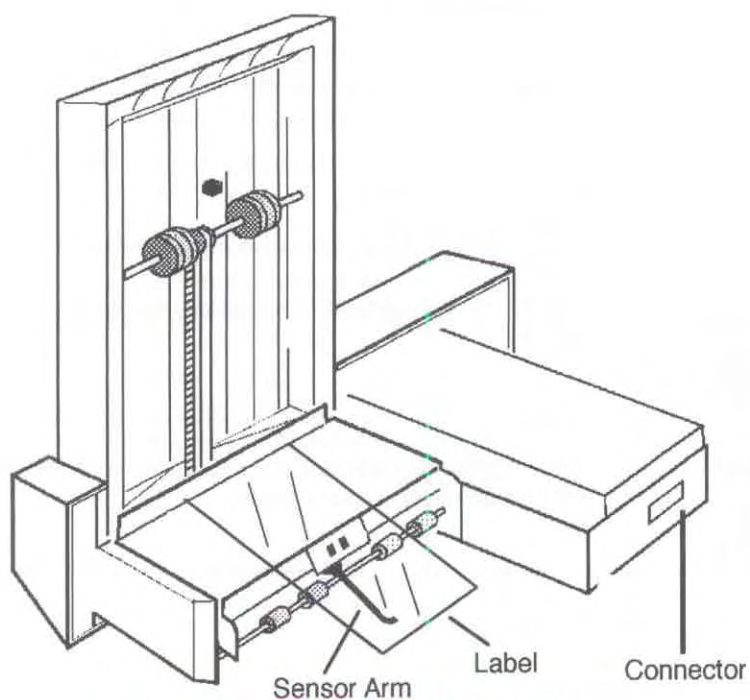


Figure 5-3. Interior View of Transport Module



Figure 5-4. Detail View of Sensor Arm

Stacker Cabinet Casters

Disconnect power cords, remove the printer, remove the Transport Module, and remove all paper from the stacker elevator shelf. Turn the cabinet onto its back or the side opposite the door.

- Removing—Pull out the casters. Use a flat blade screw driver to help pry the casters out, if necessary.
- Mounting—Push the caster's shaft into the mounting slot.

Caution



Gloves are recommended to protect hands from injury.

Note



When replacing casters, note the position of casters with brakes and without brakes.

Spare Parts Listing

Table 5-1. Spare Parts List

Pos.	Description	Part Number
1	Stacker height sensor arm	C2801-40001
2	Electronic Box, 115 V version	C2801-60001
	Electronic Box, 230 V version	C2801-60002
3	Caster without brake	1492-0167
4	Caster with brake	1492-0168
5	Left cover (end of Transport Module), Transport Module	C2801-40002
6	Right cover (E-box), Transport Module	C2801-40003
7	Transport Module assembly, not including pos. 1, 2, 5, 6	C2801-60004
8	Stacker interface cable	C2801-60003
9	User's Guide	C2801-90003
10	Service Manual	C2801-90002
11	Installation/Service Video (VHS/NTSC)	C2801-90007
12	Installation/Service Video (VHS/PAL)	C2801-90008
13	Retrofit Kit for IIISi: Delivery Cover Assembly	RG5-0067-000CN

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