

Model 3300 Series Ruggedized Laser Printer Table Top Mount

Operation and Maintenance Manual

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1. CONFIGURATION

1.1. Introduction

This chapter defines the configuration of a specific Model 3300 Series printer. Information is provided concerning system configuration (Table 1-1), field-replaceable units (Table 1-2), external cabling (Table 1-3), and external connector signal assignments (Table 1-4).

Table 1-1. System Configuration

| Characteristic | Description |
|----------------------------|-------------------------|
| Top Assembly Part No. | |
| Input Power | 115 or 230 VAC 50/60 Hz |
| Memory, No Options | 8 Mb Standard |
| 1 DIMM Slot | 16 Mb or 32 Mb Optional |
| 2 DIMM Slot | 16 Mb or 32 Mb Optional |
| Installation Configuration | Table Top Mount |

Table 1-2. Field Replaceable Units

| Description | Part No. | Quantity Per Chassis |
|--|----------|----------------------|
| Toner Cartridge | | 1 |
| Dust Filter | | 1 |
| Formatter Board | | 1 |
| Paper Cassette Tray | | 1 |
| Print Engine Assembly | | 1 |
| Jet Direct 600N | | Option |
| DC Controller | | 1 |
| Memory Module, 16 Mb | | Option |
| EMI Filter | | 1 |
| 220VAC Circuit Breaker/Power Switch Assembly or 115VAC Circuit Breaker/Power Switch Assembly | | 1 |
| Control Panel | | 1 |

⁽¹⁾ Hewlett Packard part number.

Table 1-3. External Cables

| Function | Part No. |
|-----------------------|----------|
| Power Input Connector | |
| | |

Table 1-4. External Connector Signal Assignments

| Connector | Function | Pin | Signal |
|-----------|--------------------|---|---|
| J1 | AC Line Power | A B C | AC HOT NEUTRAL CHASSIS GROUND |
| J2 | Parallel Interface | 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 | DATA STROBE DATA BIT 0 DATA BIT 1 DATA BIT 2 DATA BIT 3 DATA BIT 4 DATA BIT 5 DATA BIT 6 DATA BIT 7 ACKNLG BUSY PAPER OUT SELECT AUTO LF NC LOGIC GND CHASSIS GND +5V GND INIT FAULT GND UNDEFINED UNDEFINED DSL |
| J3 | 10BaseT Ethernet | 1 2 3 6 | TRANSMIT+ TRANSMIT- RECEIVE+ RECEIVE- |

2. GENERAL INFORMATION

2.1. Scope

This manual provides information and instructions required for the operation and maintenance of the Model 3300 Series printer manufactured by Peripheral Equipment Corporation.

2.2. Applicable Documents

Military Standards

| | |
|--------------|--|
| MIL-STD-461C | Electromagnetic Emission and Susceptibility Requirements for the Control of Electromagnetic Interference |
|--------------|--|

Commercial Standards

| | |
|------------|--|
| IEEE-1284B | Standard Signaling Method, Bidirectional Parallel Peripheral Interface |
|------------|--|

Hewlett Packard

| | |
|-------------|---|
| C7058-90956 | HP LaserJet 2200 Series Printer User's Manual |
| 5969-8517 | HP JetDirect Print Server Installation Guide |

2.3. Printer Description

The Model 3300 Series printer is a ruggedized, general-purpose laser printer that is configured in a single enclosure. The equipment is packaged using environmental management techniques that protect internal components from shock, vibration, temperature extremes, and EMI/RFI. The chassis may be configured for tabletop or rack-mount operation. The printer includes the following primary functional elements:

- Power subsystem
- Printing subsystem
- Control console
- Cooling system
- External interfaces

2.3.1. Power Subsystem

The Model 3300 Series printer operates with either 115 Vac or 230 Vac input power. The input power configuration is established at the factory. The power subsystem includes an EMI filter, circuit breaker/power switch and a step down transformer if input power is 230 Vac.. DC voltages required for various printer functions are generated within the commercial print engine.

2.3.2. Printing Subsystem

The Model 3301 Series printer incorporates a Hewlett Packard LaserJet 2200d print engine that provides true 1200 x 1200 dpi resolution text and graphics with a print speed of 19 pages per minute. The printer formatter includes an Motorola RISC-based formatter and 8 Mb memory, which is expandable to 72 Mb. Memory Enhancement Technology (MEt) automatically compresses data, which allows printing of images that are more complex than available memory would normally permit.

The printer may be operated with any host computer that supports Windows 3.1x, Windows 95, 96, 2000, Millennium, NT 4.0, XP and Macintosh System 7.5.5. The printer supports the PCL6 printer language, which includes 45 scalable TrueType fonts and one bitmapped line printer font. Built-in HP-GL/2 vector graphics are included to produce up to 128 shades of gray. The printer supports HP PostScript, Level 2, with 35 built-in PostScript language fonts. The printer automatically detects and switches to the appropriate language for the print job.

The printer automatically loads Letter, A4, Executive, B5, or Legal paper from the 250-sheet cassette. Paper may be manually fed through the upper front-panel access door. The toner cartridge will support printing of 5,000 typical single-sided pages. The standard printer configuration incorporates an IEEE-1284B bi-directional parallel Centronics interface.

2.3.3. Control Console

The control console is located on the right side of the printer front panel. This console is the operator interface for print operations other than those controlled from the host computer. Controls and indicators are described in Chapter 4.

2.3.4. Cooling System

The ruggedized Model 3300 Series printer utilizes the cooling mechanism of the commercial print engine. A single fan is located on the upper left side of the inner chassis.

2.3.5. External Interfaces

The rear panel of the printer includes connectors for prime power and the host computer data interface. A chassis ground lug is located on the rear panel adjacent to the power connector.

2.4. Specifications

Equipment specifications for the Model 3300 Series printer are defined in Tables 2-1 through 2-3.

2.5. Options

The Model 3300 Series printer may be configured with the optional features listed in the following paragraphs. Options included in a delivered configuration are defined in Chapter 1.

2.5.1. Memory

The printer includes provisions for two memory expansion modules. The base system includes 8 Mb memory, which can be expanded to a total of 72 Mb. Memory modules are available in 16 Mb and 32 Mb configurations.

2.5.2. PostScript Level 2

The printer is equipped with HP PostScript Level 2 printer language emulation with 35 built-in PostScript language fonts and 8 Mb RAM.

2.5.3. Ethernet Interface

The HP JetDirect EX Plus option provides a 10baseT interface. The external Ethernet interface is located at the rear panel of the unit.

2.6. Supplementary Documentation

Supplementary information pertaining to the commercial hardware and software that forms a part of the Model 3300 Series printer is provided in the HP LaserJet 2200 Series Printer User's Guide (C7058-90956)

Table 2-1. Physical Specifications

| Characteristic | Description |
|----------------|-----------------|
| Dimensions | See Figure 3-1. |
| Weight | 50 lb max |

Table 2-2. Electrical Specifications

| Characteristic | Description |
|--------------------------|---|
| Input Voltage | |
| 115 Vac input (standard) | 90 to 132 Vac, single-phase, 47 to 440 Hz |
| 230 Vac input (optional) | 198 to 264 Vac, single phase, 50 to 60 Hz |
| Input Current | |
| 115 Vac input (standard) | 0.07 A / 1.5 A at 115 Vac ⁽¹⁾ |
| 230 Vac input (optional) | 0.03 A / 0.75 A at 230 Vac ⁽¹⁾ |

⁽¹⁾ Sleep mode/active printing mode.

Table 2-3. Environmental Specifications

| Characteristic | Description |
|------------------------------------|--|
| Temperature | |
| Operating | 0 to 55°C |
| Non-operating | -40 to 70°C |
| Relative humidity (non-condensing) | 10 to 90% |
| Altitude | |
| Operating | 15,000 ft |
| Non-operating | 50,000 ft |
| Random vibration (non-operating) | 0.01 g ² /Hz at 10 to 2,000 Hz |
| Shock (non-operating) | 20 g, 11 ms |
| Acoustic noise | < 50 dBA at 1 m |
| EMI/EMC | MIL-STD-461, Methods CE03, CS01, CS02, CS06, RE02, RS02, and RS03. |
| Fungus | No fungus-nutrient materials |

2.7. Introduction

This chapter provides information and instructions required for installation of the Model 3300 Series printer. Information is included concerning chassis installation configuration, unpacking, toner cartridge installation, paper supply provisions, connecting of external cabling, software installation, and storage.

2.8. Chassis Installation Configuration

The Model 3300 Series printer is table top mounting configuration. Chassis dimensions applicable to the installation environment are identified in Figure 3-1.

2.9. Unpacking

Follow the steps listed below to unpack the Model 3300 Series printer and prepare the unit for installation. Packing materials should be retained for future use.

- a. Carefully remove the printer from the shipping container. Inspect the unit for any evidence of damage.
- b. Open the paper cassette tray access door. Slide the paper tray out of the printer and remove the shipping retainer from the tray.

2.10. Toner Cartridge Installation

The Model 3300 Series printer is shipped without the toner cartridge installed. Follow the procedure defined below to install the cartridge.

- a. Remove the toner cartridge from its packaging. Gently shake the cartridge to evenly distribute the toner.

Caution

To prevent damage, do not expose the cartridge to light for more than a few minutes.

- b. Remove the sealing tape from the cartridge.
- c. Open the top cover of the printer.
- d. Unfasten and lift the toner cartridge retainer located on the right side of the print engine.
- e. Insert the cartridge in the print-engine carriage in the direction of the arrows provided on the cartridge. Move the cartridge into the guides until it stops securely in the printer.
- f. Fasten the toner cartridge retainer.
- g. Close the top cover of the printer.

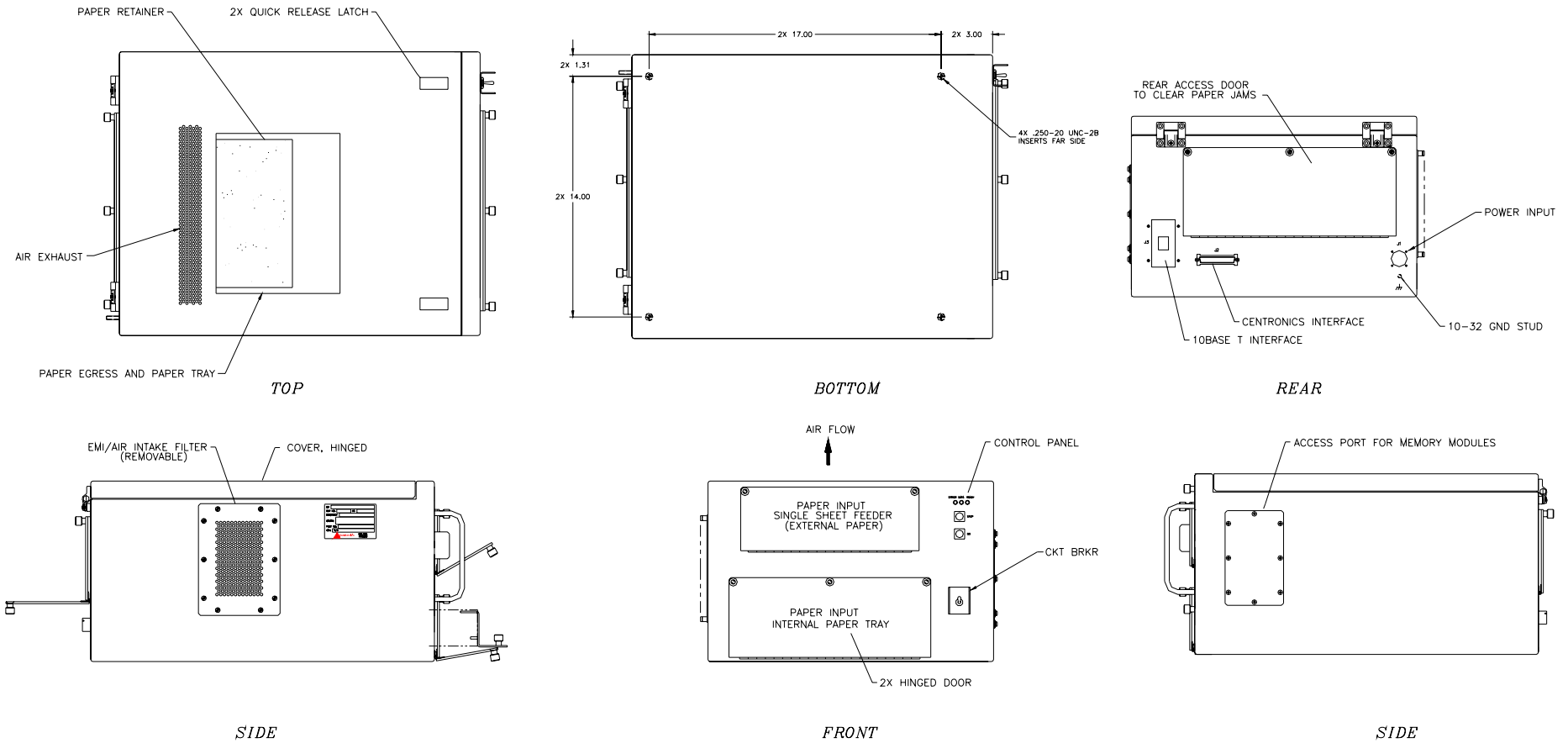


Figure 3-1. Installation Dimensions

2.11. Paper Supply

The paper cassette tray will accommodate approximately 250 sheets of letter, A4, executive, B5 (ISO), B5 (J15), legal or 8.5 in. x 13 in. paper. The cassette is accessible through the lower front panel door. Cassette guides may be adjusted to accommodate the supported media sizes. Paper supply specifications are provided in Table 3-1. Paper can be manually fed at the entry point accessible through the upper front panel door.

Table 3-1. Paper Supply Specifications

| Paper Source | Paper Type | Dimensions | Weight |
|-------------------------------|--------------------------------|--|---|
| Manual Feed Tray 1 (upper) | Bond | 3 x 5 in. minimum (76 x 127 mm) | 16 to 43 lb (60 to 163 g/m ²) |
| | | 8.5 x 14 in. maximum (216 x 356 mm) | |
| | Transparency | Same as bond paper | 0.0039 to 0.0045 in. thick (0.099 to 0.114 mm) |
| | Labels | Same as bond paper | 0.005 to 0.007 in. thick (0.127 to 0.178 mm) |
| | Envelopes | Same as bond paper | 24 lb maximum (90 g/m ²) |
| Cassette Tray 2 (lower) | Letter | 8.5 x 11 in. (216 x 279 mm) | 16 to 28 lb (60 to 105 g/m ²) |
| | A4 | 8.3 x 11.7 in. (210 x 297 mm) | |
| | Executive | 7.3 x 10.5 in. (191 x 267 mm) | |
| | B5 (ISO) | 6.9 x 9.9 in. (176 x 250 mm) | |
| | B5 (JIS) | 7.2 x 10 in. (182 x 257 mm) | |
| | Legal | 8.5 x 14 in. (216 x 356 mm) | |
| 8.5 x 13 in. | 8.5 x 13 in. (216 x 330 mm) | | |

2.12. External Cable Installation

All external interfaces for the Model 3300 Series printer are located at the rear panel (Figure 3-2). External connector signal assignments are defined in Chapter 1. Perform the following steps to connect external cabling.

- a. Verify that the front panel circuit breaker is in the “off” position.
- b. Connect the system ground cable to the ground stud on the rear panel.
- c. Install the host computer data interface cable.
- d. Connect the power cable to the ac input connector on the rear panel.

Caution

Verify that the ac power source conforms to the input power configuration defined in Chapter 1.

2.13. Software Installation

The HP LaserJet 2200d software must be installed before the Model 3301 Series printer can be used. Information and instructions required for installation and configuration of printer software are provided in the HP LaserJet 2200d Series Printer User’s Manual (C7058-90956).

2.14. Limited Operation, Storage, and Transportation

If the printer is not operated for more than 1 week, the toner cartridge should be removed and stored in a humidity-controlled environment. This provision is particularly important when the equipment is used in a high-humidity environment. If the printer is to be stored or transported, the unit should be packaged as originally shipped. The printer can be stored or transported in any manner that is consistent with the environmental conditions identified in Table 2-3.

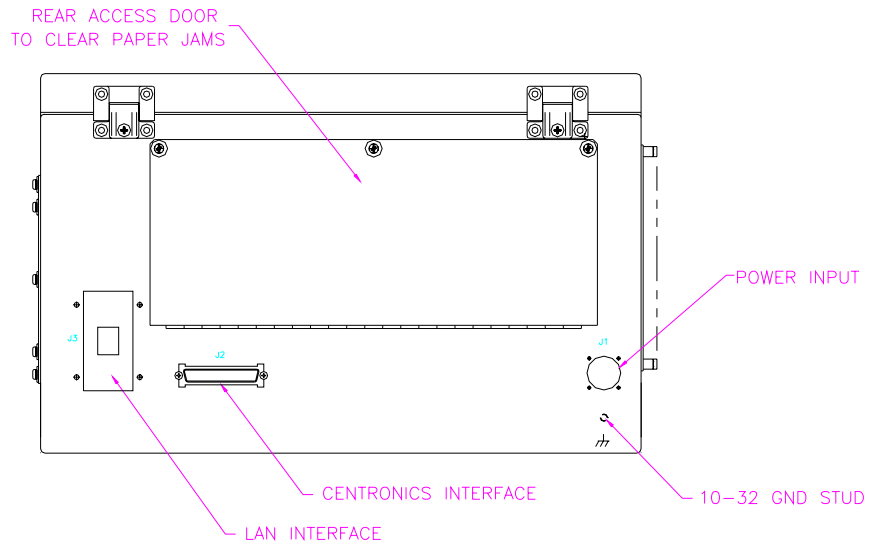


Figure 3-1. Rear Panel

3. OPERATION

3.1. Introduction

This chapter provides information concerning printer controls and indicators, test printing, normal operation, error conditions, and shutdown. Before the unit is powered up for the first time, verify that the installation procedures defined in Chapter 3 have been performed.

3.2. Controls and Indicators

All controls and indicators required for operation of the Model 3300 Series printer are located at the front panel of the unit (Figure 4-1). Control console switches and indicators are shown in Figure 4-2. Controls and indicators are described in Table 4-1. Printer status indications for normal operation are identified in Table 4-2.

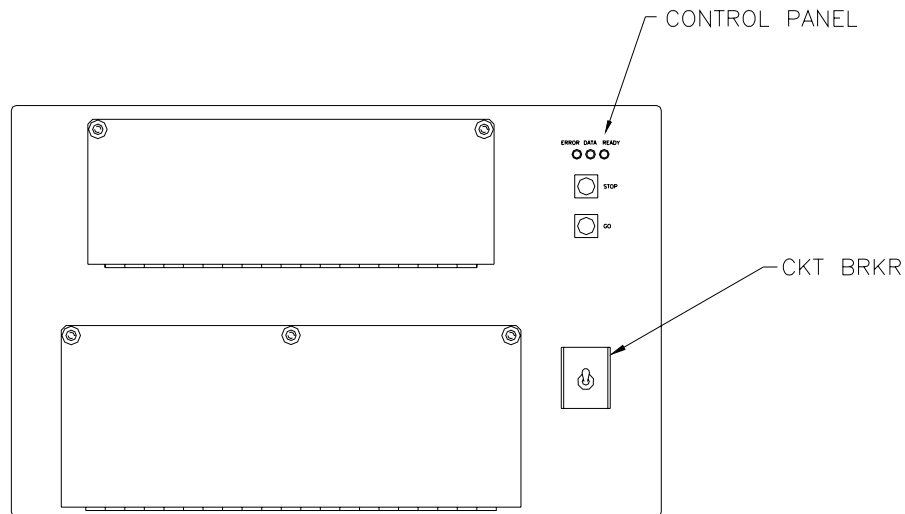
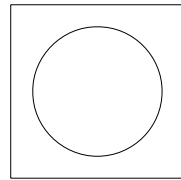
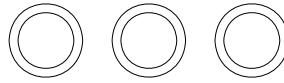
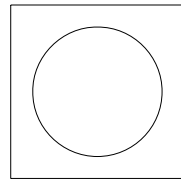


Figure 4-1. Front Panel

ERROR DATA READY



STOP



GO

Figure 4-2. Control Console

Table 4-1. Controls and Indicators

| Identification | Description | Function |
|----------------|------------------------|---|
| | Circuit breaker/switch | On/off switch and over current-protection device for prime power. |
| ERROR | Yellow LED | Illumination indicates that the printer has incurred an error condition. |
| DATA | Green LED | Illumination indicates that the printer is receiving or processing data from the host. |
| READY | Green LED | Illumination indicates that the printer is ready to perform print operations. |
| STOP | Membrane switch | Terminates a print job that is in progress. When pressed, the ERROR and DATA LED's will blink until memory is cleared. When printer memory is cleared, the READY LED will illuminate. |
| GO | Membrane switch | When pressed: <ul style="list-style-type: none"> • Printing will resume if the printer is paused or if unprinted data is in memory. • A demonstration page will be printed if the printer is in the ready state. • Certain print errors will be cleared. |

Table 4-2. Printer Status Indications During Normal Operation

| Indicator Status | | | Status Description |
|------------------|----------|----------|--|
| ERROR | DATA | READY | |
| BLINKING | BLINKING | BLINKING | Startup; indicators cycle one after the other; no action required. |
| OFF | OFF | ON | Ready; no action required; pressing the GO button prints demo page. |
| OFF | OFF | BLINKING | Processing; printer is receiving or processing data; pressing STOP cancels current job. |
| OFF | ON | BLINKING | Data; data is in printer memory waiting to be printed; pressing the GO button prints from Tray 1 or from another tray if Tray 1 is empty. |
| BLINKING | ON | OFF | Manual feed with pause; pressing the GO switch prints from Tray 1 or from another tray if Tray 1 is empty; pressing STOP cancels current job. |
| BLINKING | OFF | OFF | Paper out; the ERROR light will stay on until paper is added; pressing STOP or GO has no effect. |
| BLINKING | ON | OFF | Paper out (requested tray); adding paper to requested tray causes the printer to start print job; pressing the GO switch prints from another tray. |
| BLINKING | OFF | OFF | Attention; toner cartridge missing, paper out or paper jam; pressing the GO switch causes the printer to attempt to clear the paper jam. |
| BLINKING | ON | OFF | Continuable error; pressing the GO switch causes the printer to attempt to recover; if unsuccessful, the printer returns to the continuable error state. See “Continuable Error” on Page 35. |
| ON | ON | ON | Service error; printer has experienced an error and cannot recover. See “Service Error” on Page 34. |
| BLINKING | BLINKING | BLINKING | Accessory error; the printer has experienced an error and cannot recover. See “Accessory Error” on page 37. |

3.3. Configuration and Test Printouts

3.3.1. PCL/PostScript

PCL test pages may be printed from the printer control panel. PostScript test pages can be printed in the same manner if the unit is configured with the PostScript option. Configuration and test printouts contain the following information:

| Test Type | Description | Test Execution |
|--------------------|--|--|
| Self test | Identifies the current settings and options for the printer. | Press GO and STOP simultaneously when the printer is in the ready state. |
| Demonstration page | Identifies the current printer setup and provides an example of overall print quality. | Press GO when the printer is in the ready state. |
| Font list | Identifies fonts that are currently installed in the printer. | Accessible from the HP LaserJet Utility area of the system software. |

3.3.2. Ethernet Print Server

When the unit is configured with the optional EIO (Ethernet I/O Card) and a configuration test print is invoked, a second page will print listing all of the EIO information.

3.4. Normal Operation

Follow the instructions defined below to operate the printer under normal conditions.

- a. Power-up the host computer.
- b. Place the printer power switch in the “on” position.
- c. Verify that the READY LED illuminates after completion of the self-test/warm-up sequence. Once the printer has achieved a ready state, no manual intervention is required to conduct routine print tasks. Operational parameters are not affected by normal power on/off cycles.

3.4.1. Manual Paper Feeding

Specifications for manual-feed media are defined in Table 3-1. Follow the instructions defined below to conduct print operations with media fed manually.

- a. Lower the TRAY 1 (upper) access door.
- b. Slide the paper guides slightly wider than the media.
- c. Position the media in the center of the paper guides with the print side up.
- d. Move the media into the manual-feed entry point of the print engine.
- e. Verify that operational software is configured for manual feed.
- f. Initiate the print job. If the “manual feed pause” option is selected with the operational software, printing of individual pages is initiated by pressing the front panel GO switch.

Note

Introduction of media into the manual feeder while a print job is in progress may cause a jam to occur.

- f. When manual feed operations are complete, raise and secure the front panel door.

3.4.2. Stopping a Print Job

A print job can be terminated from the application software, from a print queue, or by pressing the front panel STOP switch. If a job has not started printing, terminate the process with the application software or at the print queue. If printing has started, terminate the process by pressing the STOP switch. The printer will finish any pages that are already moving through the printer and delete the rest of the job. Pressing the STOP switch during a print operation will cancel only the current job.

3.5. Error Conditions

When the printer incurs an error condition, a status indication will be displayed at the control console. Refer to Chapter 6 for a description of console error indications and recommended corrective action.

3.5.1. Clearing Paper Jams

Paper jams are most commonly caused by one of the following conditions:

- Paper cassette tray loaded improperly or overfilled.
- Paper cassette tray removed.
- Print media does not meet specifications (Table 3-1).
- Paper guide at rear of print engine is not secured in closed position.

Paper jams normally occur in the paper feed, toner cartridge, or rear paper guide areas (Figure 4-3). Procedures for clearing obstructions in the paper path are identified in the following paragraphs.

3.5.1.1. Paper Feed Area

- a. Open the paper cassette tray access door.
- b. Remove the cassette tray.
- c. If media has lodged between the paper feed and toner cartridge areas, try first to remove the paper from the toner cartridge area.
- d. To remove media from the paper feed area, move the media to the right and then pull it out the front of the printer.
- e. Verify that media is positioned correctly in the paper cassette tray.
- f. Install the paper cassette tray. Raise and secure the front panel door.

3.5.1.2. Toner Cartridge Area

- a. Open the top cover of the printer.
- b. Unfasten the toner cartridge retainer.
- c. Pull the toner cartridge toward the front panel and remove the cartridge from the chassis.

Caution

To prevent damage, do not expose the cartridge to light for more than a few minutes.

- d. If the leading edge of the media is visible, gently pull the paper out of the printer.
- e. If the media has entered the output area, refer to 4.5.1.3.
- f. Insert the cartridge in the print-engine carriage in the direction of the arrows provided on the cartridge. Move the cartridge into the guides until it stops securely in the printer.
- g. Fasten the toner cartridge retainer.
- h. Close and secure the top cover of the printer.

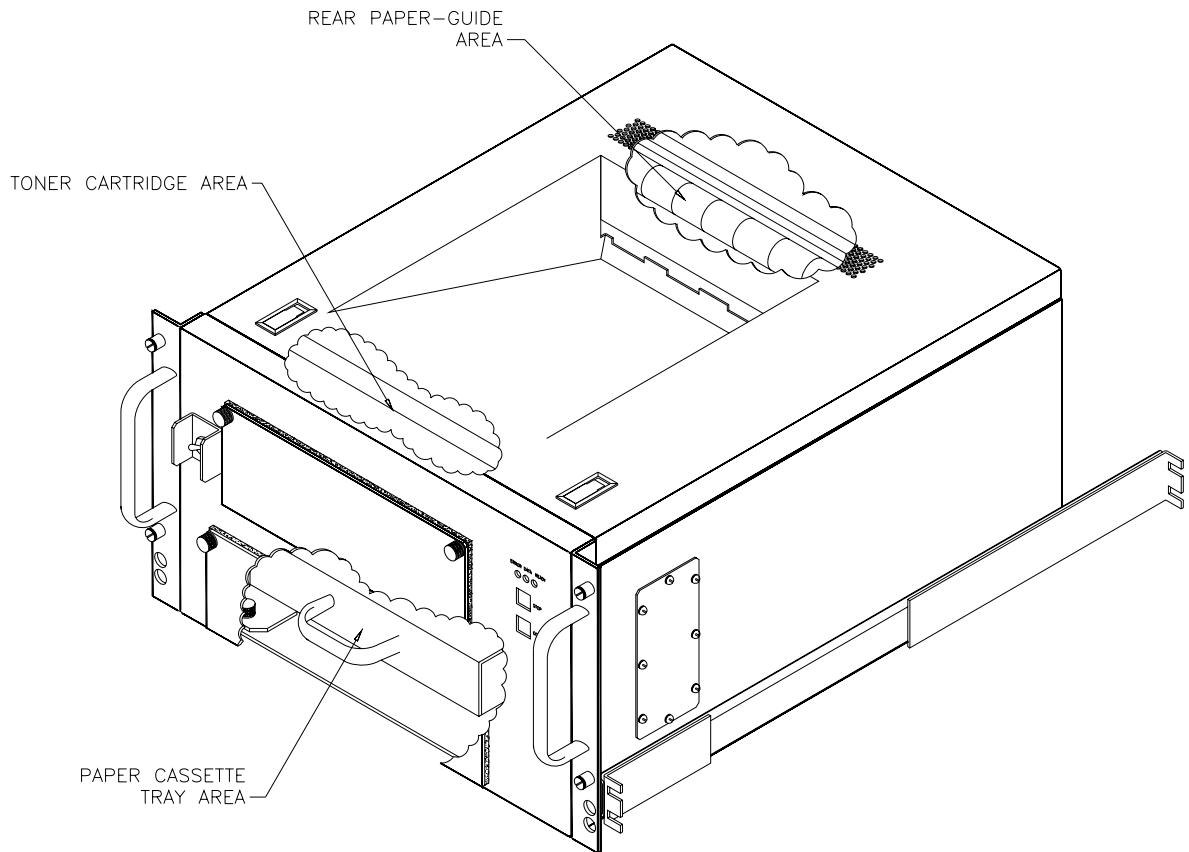


Figure 4-3. Paper Jam Areas

Note

If the ERROR indicator remains illuminated after paper is removed, there is still jammed paper inside the printer.

If torn media remains in the printer and is not accessible, cycle printer power to rotate print engine rollers. Reopen the printer and remove media fragments.

3.5.1.3. Rear Paper-Guide Area

- a. Open the top cover of the printer.
- b. Lift the captive fastener that secures the hinged paper guide at the rear of the print engine and lower.
- c. If the leading edge of the media has reached the output (top) area, pull the release lever located at right rear of printer engine and pull the paper out the top. If the media has not reached the top of the printer, pull the release lever and pull the paper out the back of the printer. It may be necessary to open the access door located at the rear of the printer to aid in pulling the paper out.
- d. Close and secure the hinged paper guide at the rear of the print engine.
- e. Close and secure the top cover of the printer.

3.5.1.4. Duplexer Area

- a. Open the paper cassette tray access door.
- b. Remove the cassette tray
- c. Pull the green lever on the front of the printer to open the bottom of the duplexer.
- d. Reach in and pull out the jammed paper.
- f. Lift the bottom of the duplexer back up until it clicks into place.
- g. Reinstall the cassette tray
- h. Close the paper cassette tray access door.

3.6. Shutdown

The printer enters standby mode when no data is being received from the host computer. It is not necessary to power down the printer when the unit is not used for limited periods. When the printer is to be taken out of service, perform the following shutdown sequence:

- a. Ensure that the printer is not receiving data from the host computer.
- b. Place the printer power switch in the “off” position.

4. FUNCTIONAL DESCRIPTION

4.1. Introduction

This chapter describes the major functional elements of the Model 3300 Series printer. Information is provided concerning power distribution, the printing subsystem, control console, and cooling system. Chassis interconnections are identified in Figure 5-1.

4.2. Printer Description

The Model 3300 Series printer provides laser hardcopy output of data received from a host computer. The standard printer configuration incorporates an IEEE-1284B bi-directional parallel interface (Centronics). The unit may be configured with optional 10base-T Ethernet. The mechanical and electrical subsystems of the printer are described in the following paragraphs.

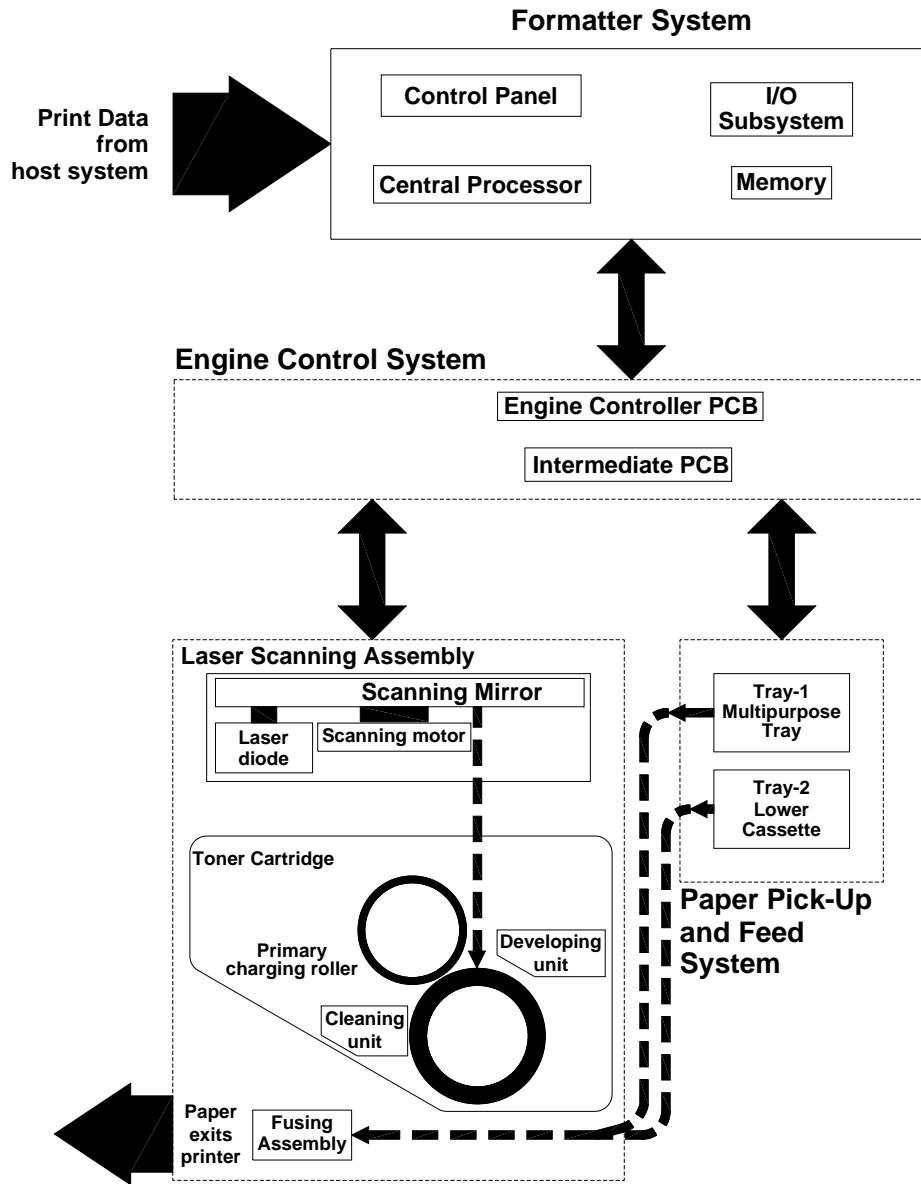
4.2.1. Power Distribution

The Model 3300 Series printer utilizes the 115Vac primary power subsystem of the commercial print engine. Prime power enters the chassis at the rear panel J1 connector. 115Vac power is sent through an EMI filter that provides attenuation of interference related to input voltage and output current. Prime power exits the filter and is routed to a 5-ampere circuit breaker/power switch at the front panel for 115Vac. For the 230Vac Model 3300 Series printer, a step down transformer is inserted between the filter and the 5-ampere to provide the 115Vac primary power. The load side of the circuit breaker provides ac power to the print engine input-power connector. A chassis ground stud is located on the rear panel of the unit.

4.2.2. Printing Subsystem

The Model 3300 Series printer incorporates the printing subsystem architecture of the Hewlett Packard LaserJet 2200d as follows:

- “Formatter System” – Receives print data from the host, processes the image, and transfers it to the Engine Control System. The Formatter System also provides the interface between the user and the printer (Control Panel).
- “Engine Control System” – Monitors and controls all of the printer’s mechanical and electrical subsystems. It is the center of the printer’s operation.
- “Image Formation System” – Produces the actual physical image on the page.
- “Paper Pick and Feed System” – Moves paper or other print media through the printer from one of the selected input trays (Tray 1, 2) to the selected output bin (top or rear).



4.2.2.1. Print Cycle

The formatter system and the engine control assembly system share information during printer operation. The engine controller assembly – intermediate PCB – formatter connector forms a link which operates as a data bus. This lets printer status, command information, and dot-image data to be passed between the two systems. The events described in the table below take place during normal printer operation.

Table 5.1 Print Period Descriptions

| Period | Timing | Purpose |
|-------------------------|---|--|
| WAIT | From the time power is switched on to the end of the main motor's initial rotation. | Clears the drum surface potential and cleans the transfer roller. Also detects whether or not the toner cartridge is installed. |
| Standby (STBY) | From the end of the WAIT period until the input of the PRINT signal from the formatter. OR From the end of the last rotation period until either the input of the PRINT signal from the formatter or the power is switched off. | Maintains the printer in a ready state. |
| Initial Rotation (INTR) | From the input of the PRINT signal from the formatter until the paper reaches the top-of-page sensor. | Stabilizes the sensitivity of the photosensitive drum in preparation for printing. |
| PRINT | From the end of the INTE period until 2 seconds after the top-of-page sensor detects the trailing edge of the paper. | Forms images on the photosensitive drum based on the /VDO signal from the formatter and transfers the image to the paper. |
| Last Rotation (LSTR) | From the completion of printing until the main motor stops rotating. Returns to the INTR period if the formatter sends another PRINT signal. Otherwise, returns to the STBY period. | Delivers the last sheet of paper. Also cleans the transfer roller. |

Figure 5-1. Chassis Interconnections

4.2.2.2. Paper Movement

The paper feed system automatically picks print media from either Tray 1 or Tray 2 and delivers it to the registration roller. Before the media reaches the registration roller, the separation pad separates any excess sheets of media and the registration shutter corrects the media's skew.

A top-of-page sensor detects the leading edge of the page. The paper is synchronized to the leading edge of the image on the photosensitive drum and transferred to the paper. After the transferring stage of the image formation process, the paper is fed to the fusing assembly and fused.

The paper exits the printer through the top or rear output bins.

4.2.3. Control Console

All controls and indicators required for printer operation are located at the front panel of the unit. The primary control panel includes the ERROR/DATA/READY indicators and the STOP/GO switches. The control panel assembly interfaces with the print engine formatter circuit board. The circuit breaker/power switch interfaces with the line filter and print engine power-input connector. Printer controls and indicators are described in Chapter 4.

4.2.4. Cooling

The ruggedized Model 3300 Series printer utilizes the cooling mechanism of the commercial print engine. Cooling air is drawn into the unit by a single fan located on the upper left side of the inner chassis. The fan is powered by the print engine dc power subsystem. Air is forced across print engine components and exhausted at the top of the chassis. The printer has a nominal power dissipation of 225 watts (average) during print operations and 12 - 14 watts in standby mode.

5. MAINTENANCE

5.1. Introduction

This chapter provides information and instructions concerning Model 3300 Series printer tools and test equipment, periodic maintenance, fault isolation, and the removal and installation of replaceable components and subassemblies.

5.2. Tools and Test Equipment

The following tools and test equipment are required to maintain the printer:

- Common hand tools
- TORX #10 screwdriver
- Digital voltmeter
- Host computer with compatible data interface

5.3. Periodic Maintenance

5.3.1. Print Engine

Normal print operations result in the depositing of residual paper and toner particles within the printer interior. The print mechanism may be cleaned with a lint-free cloth and the brush located in the toner cartridge cavity. As a minimum, the printer interior should be cleaned whenever the toner cartridge is replaced. Detailed information pertaining to cleaning of the printer interior is provided in the HP LaserJet 2200d Series Printer User's Guide (C7058-90956).

5.3.2. Dust Filter

The air-inlet filter on the left side of the chassis may be removed and replaced or washed with a mild detergent. The required frequency of cleaning is a function of the particulate concentration of the operating environment.

5.4. Fault Isolation

If front panel status indicators reflect a normal operational state (Table 4-2) and the printer will not function properly, refer to Table 6-1. If indicators reflect an error condition, refer to the status descriptions and recommended corrective action provided in Table 6-2. A description of secondary status indications is provided in Table 6-3 and Table 6-4.

WARNING

POTENTIALLY LETHAL VOLTAGES EXIST WITHIN THE PRINTER. SERIOUS INJURY MAY RESULT IF SAFETY PRECAUTIONS ARE NOT OBSERVED. FAULT DIAGNOSIS PROCEDURES REQUIRE THAT INTERNAL COMPONENTS BE TESTED WHEN PRIME POWER IS APPLIED. THESE COMPONENTS MUST ONLY BE TOUCHED WITH THE APPROPRIATE TEST EQUIPMENT.

Table 6-1. General Fault Isolation

| Fault Condition | Recommended Action |
|---|--|
| Printed page is not produced when job is issued from host computer. | <p>Verify that host software is configured for the correct media location (cassette or manual feed).</p> <p>Press the front panel GO switch to print a demonstration page. If page does not print:</p> <ul style="list-style-type: none"> • Check the paper supply in the cassette tray. • Verify that the print queue is clear and that the printer has not been paused. • If a jam occurs, refer to 4.5.1. |
| Printed page is blank or of poor quality. | <p>Redistribute toner in cartridge.</p> <p>Clean inside of printer (6.3.1).</p> <p>Check paper type and quality (Table 3-1).</p> <p>Adjust print density through the host software.</p> <p>Verify that EconoMode is deselected in the host software.</p> <p>Verify that printer and host computer are configured for the same language (PCL/ Postscript).</p> <p>Install a new toner cartridge.</p> <p>Verify that sealing tape is removed from toner cartridge.</p> |
| Front panel indicators reflect an error state. | Refer to Table 4.2 |
| Print operations are conducted successfully, but control panel switches or indicators do not respond correctly. | Replace control panel. If control panel replacement does not correct problem, replace formatter board. |

Table 6-2. Error Indications

| ERROR INDICATIONS | | | PROBABLE CAUSE / RECOMMENDED ACTION |
|-------------------|------|-------|---|
| ERROR | DATA | READY | |
| BLINKING | OFF | OFF | <p>Paper Out</p> <p>The printer is out of paper in the requested tray. Filling the trays with paper will cancel this message and allow you to continue with the print job.</p> <p>Print job.</p> |
| BLINKING | OFF | OFF | <p>Attention</p> <ul style="list-style-type: none"> • Toner cartridge missing • Paper jam <p>After the cause of the problem has been addressed, pressing the Go switch will cause the printer to attempt to recover from the cause of the error. If there is a paper jam, the printer will attempt to clear the jam. If the printer is unsuccessful, it will continue to display the Blinking Error message until the cause is remedied.</p> <p>Pressing the Stop switch will cancel the print job and the printer will return to Ready unless there is a paper jam still in the printer. See “Clearing Paper Jams” on page 24.</p> |
| BLINKING | ON | OFF | <p>Continuable Error</p> <p>An error has occurred that has caused the printer to halt the current print job. Pressing the Go switch causes the printer to attempt to recover from the error and print whatever data it can. If the attempt to recover from the error is successful, the Ready light will blink while the printer completes the job. If the printer cannot recover, it will display the Continuable Error message.</p> <p>Pressing the Stop switch will cancel the print job and the printer will return to ready if the cause of the error has been fixed.</p> <p>Pressing the Go and Stop switch simultaneously and then releasing the buttons will cause the printer to display a secondary light pattern that will indicate the error code corresponding to the current error condition. See “Continuable Error” on page 35.</p> |

| ERROR INDICATIONS | | | PROBABLE CAUSE / RECOMMENDED ACTION |
|-------------------|----------|----------|--|
| ERROR | DATA | READY | |
| ON | ON | ON | <p>Service Error</p> <p>An error has occurred that has caused the printer to halt the current print job. Pressing the Go switch or Stop switch with this message has no effect.</p> <p>To clear the error, turn the printer off and then on again. If the problem persists, leave the printer off for 15 minutes to reset the formatter. If the problem continues, contact HP Service.</p> |
| BLINKING | BLINKING | BLINKING | <p>Accessory Error</p> <p>An error has occurred with one of the accessories, either the EIO port or the DIMM slots that has caused the printer to halt the current print job. Pressing the Go switch or the Stop switch with this message has not effect.</p> <p>Pressing the Go and Stop switch simultaneously and then releasing the buttons will cause the printer to display a secondary light pattern that will indicate the error code corresponding to the current error condition. See “Accessory Error” on page 37.</p> |

Table 6-3. Secondary “Continuable-Error” Indications

Note

When the ERROR and DATA LED’s are illuminated, press the front panel GO and STOP switches simultaneously to access the secondary data-error indication.

| SECONDARY CONTINUABLE ERROR INDICATIONS | | | PROBABLE CAUSE / RECOMMENDED ACTION |
|---|----------|-------|--|
| ERROR | DATA | READY | |
| ON | OFF | OFF | <p>Memory Overflow</p> <p>The printer memory is full. Press Go to resume printing. If you lose some data, try to free some printer memory by removing any unnecessary fonts, macros, or any data currently in printer memory. If you continue to lose data, you may need to add more printer memory. For a temporary solution, simplify the image or print at a 600-dpi resolution.</p> |
| OFF | OFF | ON | <p>Temporary Engine Error</p> <p>The printer has experienced a temporary engine error. Reset the printer by briefly turning the printer off and back on again.</p> |
| ON | ON | OFF | <p>Print Overrun</p> <p>The print job was too complex for available printer memory. Press Go to resume printing. If you lose some data, you may need to add more printer memory. For a temporary solution, simplify the image or print at a 600-dpi resolution.</p> |
| OFF | BLINKING | OFF | <p>IO Error</p> <p>The cable between the printer and computer has a bad connection or the cable is of poor quality. Check the cable connections to see if they are secure. Make sure you are using a high-quality cable.</p> |
| OFF | OFF | ON | <p>Temporary Engine Error</p> <p>The printer has experienced a temporary engine error. Reset the printer by briefly turning the printer off and back on again.</p> |

| | | | |
|----------|-----|----------|--|
| BLINKING | OFF | OFF | <p>NVRAM Error</p> <p>The nonvolatile memory (NVRAM) is temporarily full. Press Go to clear the message. Check the printer settings to ensure they are correct. If the problem persists, contact your dealer or HP service representative.</p> |
| OFF | OFF | BLINKING | <p>EIO Error</p> <p>The printer has experienced a temporary EIO error. Reset the printer by turning the printer off and back on again.</p> |

Table 6-4. Secondary “Accessory Error “Indications

Note

When the ERROR and DATA LED’s are illuminated, press the front panel GO and STOP switches simultaneously to access the secondary data-error indication.

| ERROR | DATA | READY | |
|-------|------|-------|--|
| ON | OFF | OFF | <p>EIO Port Error</p> <p>Remove the accessory from the EIO Port of DIMM Slot indicated by the error to continue printing.</p> |
| OFF | ON | OFF | <p>DIMM Slot 1 Error</p> <p>Remove the accessory from the EIO Port or DIMM Slot indicated by the error to continue printing.</p> |
| OFF | OFF | ON | <p>DIMM Slot 2 Error</p> <p>Remove the accessory from the EIO Port or DIMM Slot indicated by the error to continue printing.</p> |
| | | | |

5.5. Replaceable Components and Subassemblies

The following paragraphs include information concerning replaceable components and subassemblies. Item locations are shown in Figure 6-1. The following items are replaceable within an organizational-level maintenance activity:

- Toner Cartridge
- Dust Filter
- Control Panel
- EMI Filter
- Circuit Breaker/Power Switch
- Memory Modules
- Formatter Board
- Print Engine Assembly
- Paper Cassette Tray
- Jet Direct

WARNING

POTENTIALLY LETHAL VOLTAGES EXIST WITHIN THE PRINTER. SERIOUS INJURY MAY RESULT IF SAFETY PRECAUTIONS ARE NOT OBSERVED. DISCONNECT THE POWER SOURCE BEFORE PERFORMING REPAIR PROCEDURES.

Note

Observe precautions relating to electrostatic discharge (ESD) when handling components that include integrated circuitry.

5.5.1. Toner Cartridge Replacement

Removal:

- a. Open the top cover of the printer.
- b. Unfasten the toner cartridge retainer.
- c. Pull the toner cartridge toward the front panel and remove the cartridge from the chassis.

Installation:

- a. Remove the new toner cartridge from the packaging material.
- b. Gently shake the cartridge to evenly distribute the toner.
- c. Remove the sealing tape from the cartridge.
- d. Insert the cartridge in the print-engine carriage in the direction of the arrows provided on the cartridge. Move the cartridge into the guides until it stops securely in the printer.
- e. Fasten the toner cartridge retainer.
- f. Close and secure the top cover of the printer.

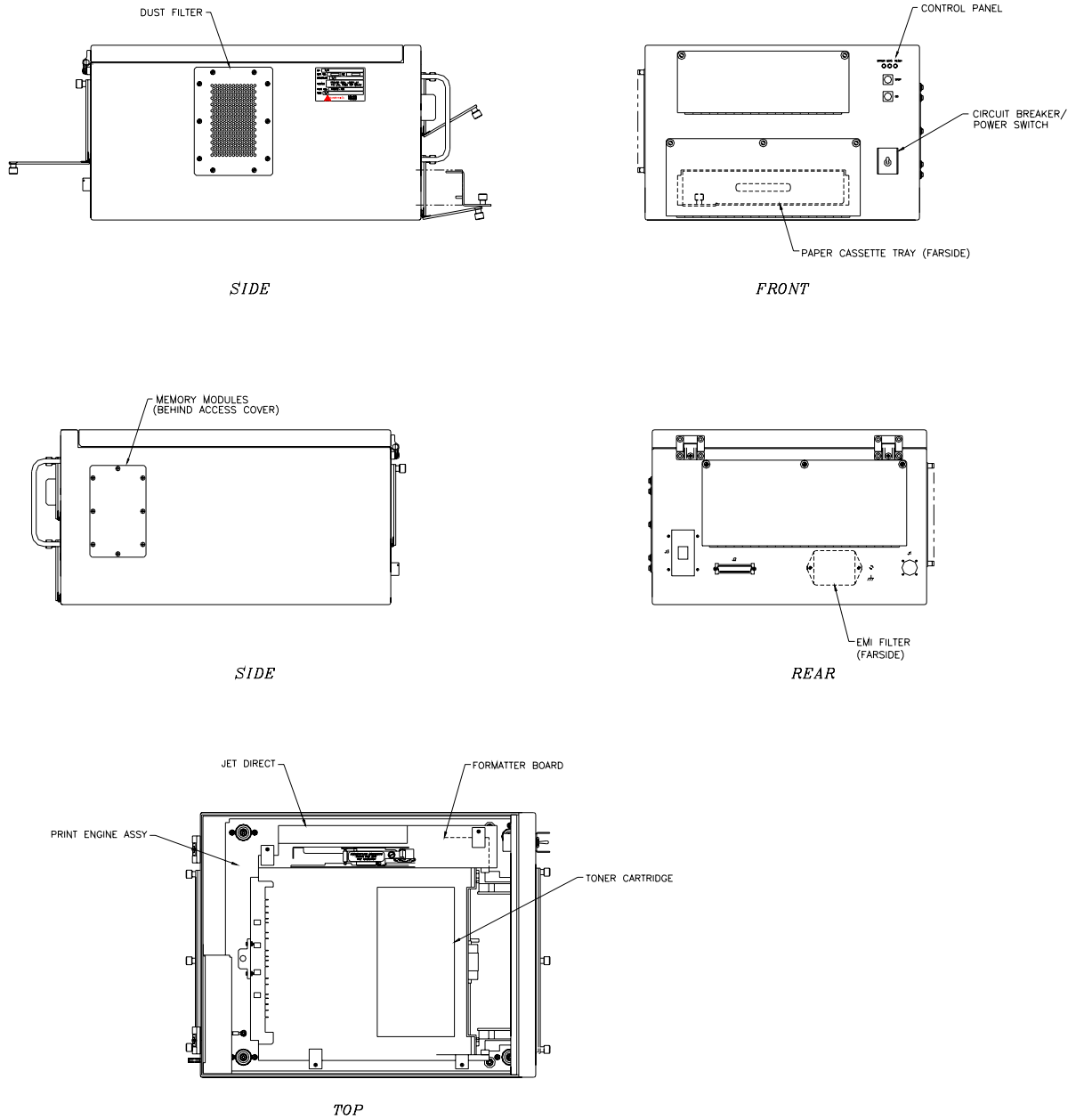


Figure 6-1. Field Replaceable Units

5.5.2. Dust Filter Replacement

Removal:

- a. Remove the filter assembly from the left side of the printer chassis wall. It contains the dust filter, and EMI shield to the inside of the chassis wall.
- b. Remove the dust filter from the filter assembly by removing the mounting hardware that retains the EMI shield.

Installation:

- a. Position the dust filter on the filter assembly and replace the EMI shield and its mounting hardware.
- b. Install the filter assembly to the chassis.

5.5.3. Control Panel Replacement

Removal:

- a. Open the top cover of the printer.
- b. Disconnect the control panel harness.
- c. Remove the six nuts that secure the control panel to the inside of the front panel.
- d. Remove the control panel from the inside of the front panel.

Installation:

- a. Position the control panel on the front of the chassis.
- b. Install the hardware that secures the control panel to the front panel.
- c. Connect the control panel harness.
- d. Close and secure the top cover of the printer.

5.5.4. EMI Filter Replacement

Removal:

- a. Open the top cover of the printer.
- b. Remove the two nuts that secure the EMI filter cover to the inside of the rear panel. Remove the cover from the chassis.
- c. Remove the two nuts that secure the EMI filter to the inside of the rear panel.
- d. Disconnect EMI filter harness terminals (note wire assignments).
- e. Remove the EMI filter from the chassis.

Installation:

- a. Position the EMI filter on the floor of the chassis near the filter mounting studs.
- b. Connect EMI filter harness terminals.
- c. Position the EMI filter on the inside of the rear panel and install the hardware that secures the filter.
- d. Position the EMI filter cover on the inside of the rear panel and install the hardware that secures the cover.
- e. Close and secure the top cover of the printer.

5.5.5. Circuit Breaker/Power Switch Replacement**Removal:**

- a. Open the top cover of the printer.
- b. Remove the two nuts that secure the EMI filter cover to the inside of the rear panel. Remove the cover from the chassis.
- c. Disconnect ac harness terminals from the load side of the EMI filter (note wire assignments).
- d. Disconnect the ac input power connector from the print engine.
- e. Cut the cable straps that secure the circuit breaker/power switch harness to the chassis.
- f. Remove the nut that secures the circuit breaker/power switch to the front panel. Remove the switch and ON/OFF faceplate from the front panel.

Installation:

- a. Position the circuit breaker/power switch in the front panel. Position the ON/OFF faceplate on the switch.
- b. Install the hardware that secures the circuit breaker/power switch to the front panel.
- c. Connect the ac input power connector to the print engine.
- d. Connect ac harness terminals to the load side of the EMI filter.
- e. Position the EMI filter cover on the inside of the rear panel and install the hardware that secures the cover.
- f. Secure the circuit breaker/power switch harness to the chassis with new cable straps.
- g. Close and secure the top cover of the printer.

5.5.6. Memory Module Replacement

Removal:

- a. Loosen the eight captive screws that secure the memory access cover on the right side of the chassis. Remove the cover from the chassis.
- b. Disengage the memory module retention clips and remove the module from the formatter board.

Installation:

- a. Position the memory module in the formatter board connector. Secure the module by engaging the retention clips.
- b. Position the memory access cover on the right side of the chassis and tighten the hardware that secures the cover.

5.5.7. Formatter Board Replacement

Removal:

- a. Open the top cover of the printer.
- b. Remove the print engine assembly per 6.5.8.
- c. Remove the TORX screws that secure the formatter board cover and formatter board to the print engine chassis.
- d. Gently pull the formatter board away from the print engine to disengage the mating connector.
- e. Remove the formatter board-to-print engine mating connector from the formatter board.
- f. Remove memory modules from the formatter board.

Installation:

- a. Install memory modules on the formatter board.
- b. Install the formatter board-to-print engine mating connector on the formatter board.

- c. Align the formatter board on the print engine and gently press inward to seat the mating connector.
- d. Position the cover on the formatter board and install the hardware that secures the cover and board to the print engine.
- e. Install the print engine assembly per 6.5.8.
- f. Close and secure the top cover of the printer.

5.5.8. Print Engine Assembly Replacement

Removal:

- a. Open the top cover of the printer.
- b. Disconnect the ac input power connector from the print engine.
- c. Disconnect the data I/O interface cable(s) from the formatter board.
- c. Disconnect the control panel interface cable connector.
- d. Remove the four nuts that secure the print engine base plate to the outer chassis floor.
- e. Lift the print engine out of the chassis.
- f. Remove the screws that secure each of the four, print engine mounting, clamps to the base plate.
- g. Remove the print engine from the base plate.

Installation:

- a. Position the print engine on the base plate.
- b. Position the four print engine mounting clamps onto the base plate, reinstall the hardware that secures the clamps. Ensure that the ground strap is installed with the clamp located at the rear of the formatter board.
- c. Lower the print engine assembly into the chassis. Ensure that the base plate is positioned on the four mounting studs on the chassis floor.
- d. Install the hardware that secures the base plate to the chassis floor.
- e. For 220V application re-install the transformer and transformer cover and re-connect the cabling.
- f. Connect the control panel interface cable connector.
- g. Connect the data I/O interface cable(s) to the formatter board.
- h. Connect the ac input power connector to the print engine.
- i. Close and secure the top cover of the printer.

5.5.9. Paper Cassette Tray Replacement

Removal:

- a. Open the paper cassette tray access door.
- b. Unfasten the captive screw that retains the paper cassette tray.
- c. Pull the cassette tray straight out of the compartment.

Installation:

- a. Load the required paper (Table 3-1) in the cassette tray.
- b. Slide the cassette tray into the printer chassis.
- j. Fasten the captive screw that retains the paper cassette tray.
- d. Raise and secure the cassette tray access door.

5.5.10. Ethernet Print Server Replacement

Removal:

- a. Disconnect the external Ethernet interface at the rear panel of the chassis.
- b. Open the top cover of the chassis
- c. Disconnect the 10BaseT interface cable from the print server assembly.
- e. Remove the two screws that secure the print server to the card guide in back of the formatter card on right-hand side of printer. Remove the print server assembly from the card guide.

Installation:

- a. Position the print server assembly on the right-hand side of the print engine and slide it into the card guide. Fasten the two screws that secure the print server to the card guide.
- b. Connect the 10BaseT interface cable to the print server assembly.
- c. Close the top cover of the chassis.
- d. Connect the external Ethernet interface cable(s) at the rear panel of the chassis.