

UNISYS

**AP 9215
Printer**

**Installation and
Operations Guide**

Priced Item

December, 1986
Distribution Code EQ
Printed in U S America
1205267

UNISYS

**AP 9215
Printer
Installation and
Operations Guide**

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Errata Sheet

Errata Sheet for document:

AP 9215 Printer Installation and Operations Guide
Form Number 1205267
December 1986

Please add the following information to your copy of the manual described above.

***** Page 4-17 *****

Add the following sentence to Step 5:

Underneath the cleaning pad you will see the fusing unit roller.

***** Page 4-18 *****

Insert the following information between Figure 4-14 and Step 6:

Warning: To avoid burns, do not attempt to clean the fusing unit roller until the printer has been off at least 40 minutes and is completely cooled.

5a. If you notice an accumulation of paper lint and/or excess toner on the fusing unit roller, wipe the residue from the roller with a soft, clean, dry cloth.

***** Page 5-15 *****

In the column "Corrective Action" opposite the problem "Black spots (stray toner) are on the printed pages," add the following:

Clean the fusing unit roller.

About This Guide

The AP 9215 laser printer is a desktop, non-impact printer using a semiconductor laser and an electrophotographic process. The printer prints at a continuous-feed rate of 15 pages per minute with a resolution of 300 dots per inch both vertically and horizontally. The printer's high print density provides a letter-quality image. The AP 9215 has two paper trays, a high capacity paper stacker, and a 16-character display panel for printer status messages.

Purpose

The AP 9215 printer can be installed by the customer. This guide describes printer installation, operation, and maintenance.

Scope

This guide includes step-by-step instructions for unpacking, setting up, operating, and maintaining the printer.

Audience

This guide is intended for use by those who will install the printer and operate it in the course of normal use.

How to Use this Document

The reader should use this guide for step-by-step installation of the AP 9215 printer. After installation, Sections 3, 4, and 5 can be consulted for operation, maintenance, and troubleshooting instructions. The appendixes contain reference information.

Organization

This guide contains five sections.

Section 1: Unpacking and Inventory

Explains the proper procedures for unpacking the printer and taking inventory.

Section 2: Setting Up

Explains the procedures for setting up the printer at your workstation, including installing the paper trays, toner cartridge, and Organic Photoconductor (OPC) cartridge; loading the paper; setting the Dual Inline Pack (DIP) switches; plugging in the printer's power cord; and connecting the printer to your computer.

Section 3: Operating Your Printer

Describes the procedures for powering on the printer and using some of the features.

Section 4: Maintaining Your Printer

Describes the procedures for cleaning your printer, adding paper, replacing certain parts, and relocating your printer.

Section 5: Troubleshooting

Provides information for identifying and solving some common printer problems.

The appendixes provide information about printer specifications, default parameter values, supplies, resident fonts, and function control commands; using font cartridges with your printer; and configuring your printer with Burroughs systems.

Related Product Information

The following reference manual is available for the AP 9215 printer:

AP 9215 Printer Programming Reference Manual (form 1205275)

The following manual provides information about ordering font cartridges for use with the AP 9215 printer:

FC 9200 Font Cartridge Reference Manual (form 1205382)

Conventions Used in this Guide

In this guide, a “Note” is used to direct the reader’s attention to information that requires more emphasis than can be given in a normal paragraph.

A “Caution” directs the reader’s attention to procedures or practices that must be followed correctly to prevent damage to or destruction of equipment or loss of data.

A “Warning” directs the reader’s attention to procedures or practices that must be followed correctly to prevent personal injury or loss of life.

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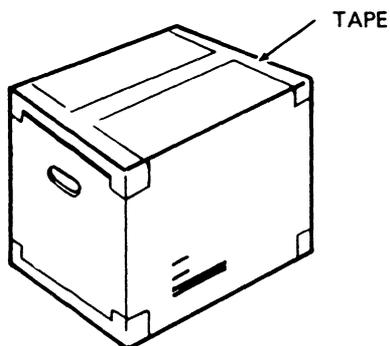
Unpacking and Inventory

Unpacking Your AP 9215 Printer

The following instructions will guide you through the proper procedure for unpacking your AP 9215 printer. Follow each step carefully to avoid accidental injury or damage to the equipment.

- 1 Verify the shipping carton is right side up (see Figure 1-1). Remove the tape securing the carton flaps.

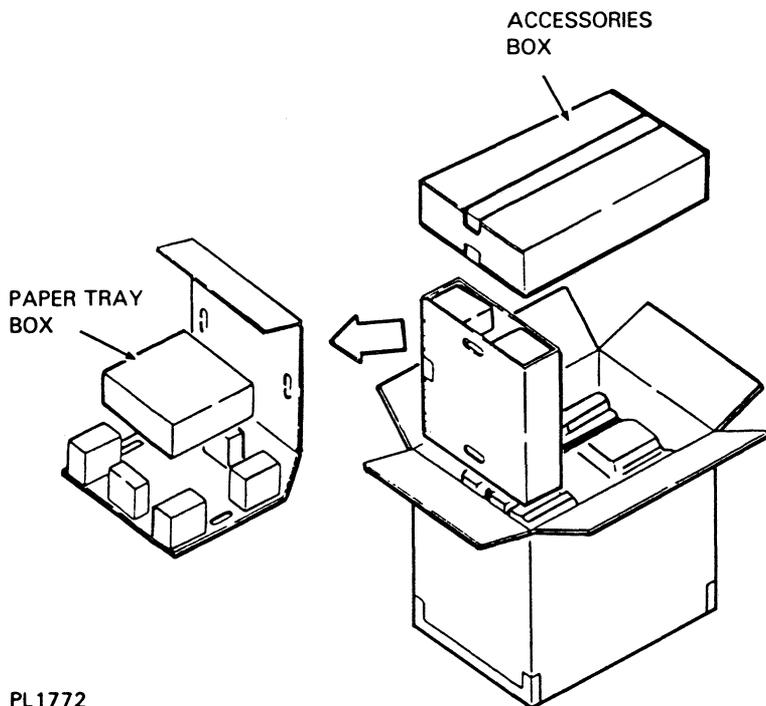
Figure 1-1 Opening the Shipping Carton



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2 Remove the accessories and paper tray boxes.

Figure 1-2 Removing the Accessories and Paper Tray Boxes

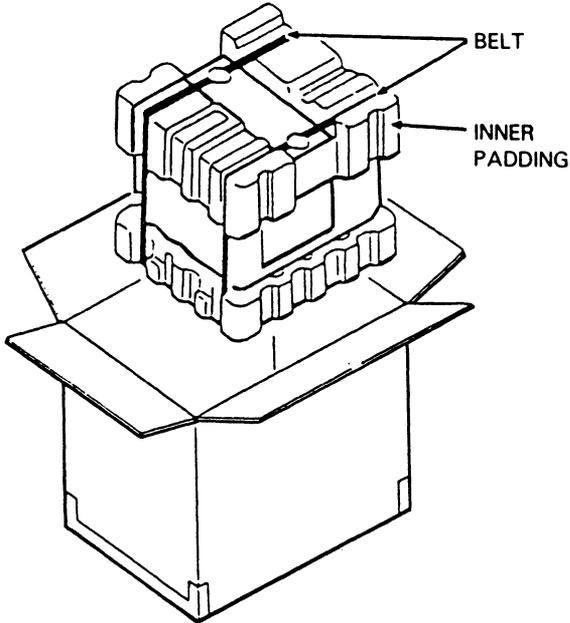


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Warning: To avoid injury, two persons should lift the printer from the carton.

- 3 Remove the printer from the carton by grasping the retaining belts and lifting up and out.

Figure 1-3 Removing the Printer from the Carton

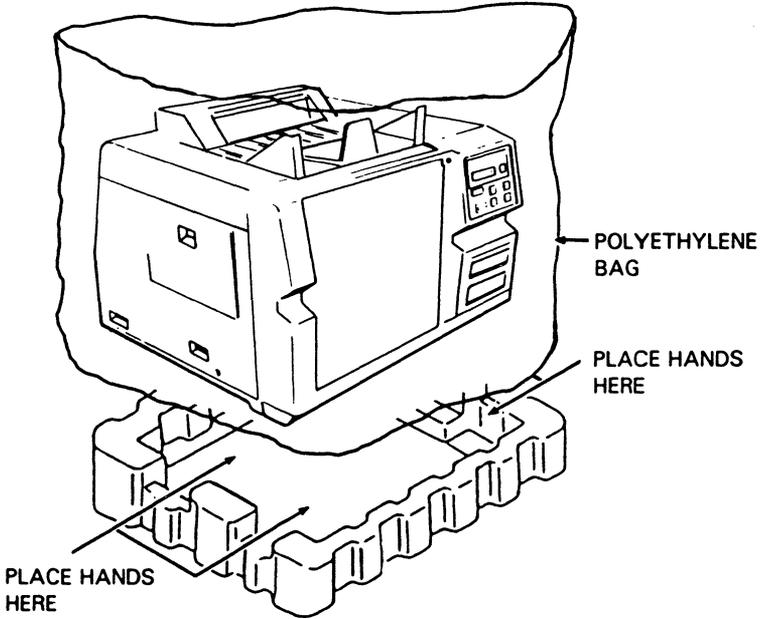


PL1729

- 4 Place the printer on a table or other surface capable of supporting the printer securely.
- 5 Remove the retaining belts and the styrofoam padding on top of the printer. Do not cut the belts since you will need them if you move your printer.
- 6 Open the protective polyethylene bag that contains the printer.

- 7 Remove the printer from the bag by reaching inside the bag, placing your hands (two persons) on either side of the printer in the locations illustrated, and lifting the printer from the bag.

Figure 1-4 Removing the Printer from the Bag

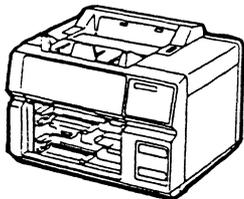


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Inventory

After unpacking the printer and the accessories and paper tray boxes, take an inventory of the equipment and material you have received. You should have the following (see Figure 1-5):

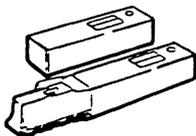
Figure 1-5 **Inventory**



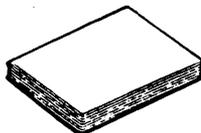
PRINTER



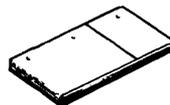
POWER CORD



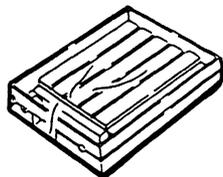
TONER CARTRIDGE,
2 PCS



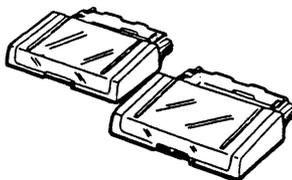
PAPER, 250 SHEETS



INSTRUCTION MANUAL,
1 SET



OPC CARTRIDGE



PAPER TRAYS

PL2071

- The printer.
- Power cord.
- This Installation and Operations Guide.
- Two paper trays.
- Paper.
- Two toner cartridges.
- Organic Photoconductor (OPC) cartridge.

Caution: Keep the OPC cartridge in its black vinyl bag until installation. Exposure to light can damage the cartridge.

In addition to the equipment mentioned above, you will also need an interface (I/F) cable to connect your host computer to the printer. If you ordered a cable when you ordered your printer, the cable should arrive with the printer in a separate container. If you have not yet ordered an I/F cable, or if you ordered one and it has not yet arrived, contact your Burroughs sales representative.

If a piece of equipment is missing, or if you see any obvious damage, contact your Burroughs sales representative.

After completing the checklist, place all the packing material back in the shipping carton. Save this material for safe storage or shipping of the printer in the future. Instructions for repacking the printer for shipping are in Section 4.

Setting Up Your Printer

Before beginning this section, you should have unpacked your printer and conducted an inventory of the equipment and material you have received. If your printer is not unpacked, refer to Section 1 of this guide.

In this section you will:

- Set up the printer in your work area.
- Install the paper trays.
- Familiarize yourself with the printer's parts.
- Install the toner and OPC cartridges.
- Load the paper.
- Set the Dual Inline Pack (DIP) switches.
- Plug in the printer's power cord.
- Connect the printer to your computer.
- Check the quenching lamp, toner collection bottle, transfer corona unit, charge corona unit, and shield lens.

Setting Up Your Work Area

Place your printer on a firm, level surface, such as a table or printer stand, near your host computer. Allow a minimum of one and one-half feet clearance on each side of the printer, one foot behind, and three feet in front.

Choose a location out of direct sunlight or other bright light. Exposure to bright light can damage the OPC cartridge.

Avoid areas where the printer will be exposed to excessive heat, cold, humidity, drafts, or dust. Also avoid small spaces or areas with poor ventilation which can cause excessive printer temperatures.

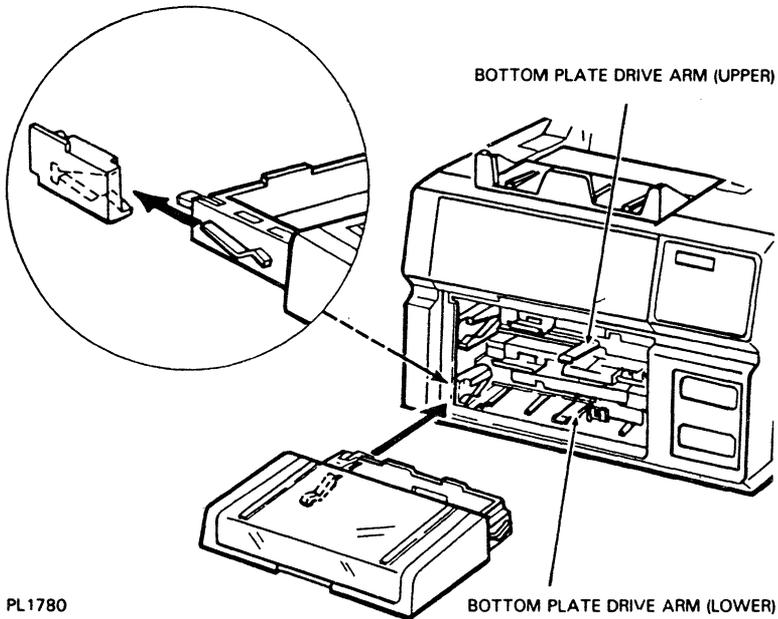
Installing the Paper Trays

Your printer comes with two paper trays. Each tray is designed to be used with one size of paper: letter, A4, or legal size. If the paper size does not match the paper tray, the paper may misfeed or jam the printer. If you need paper trays in addition to the ones you received with your printer, contact your Burroughs sales representative.

- 1 Remove the protective wrapping from the paper trays.
- 2 Remove the two pieces of tape on each end of the paper trays.
- 3 Remove the styrofoam blocks from inside the paper trays.
- 4 Remove the tape restraining the bottom plate drive arms (upper and lower).
- 5 Insert one paper tray into the lower part of the printer (see Figure 2-1). Make sure the tray sits squarely all the way in the printer.

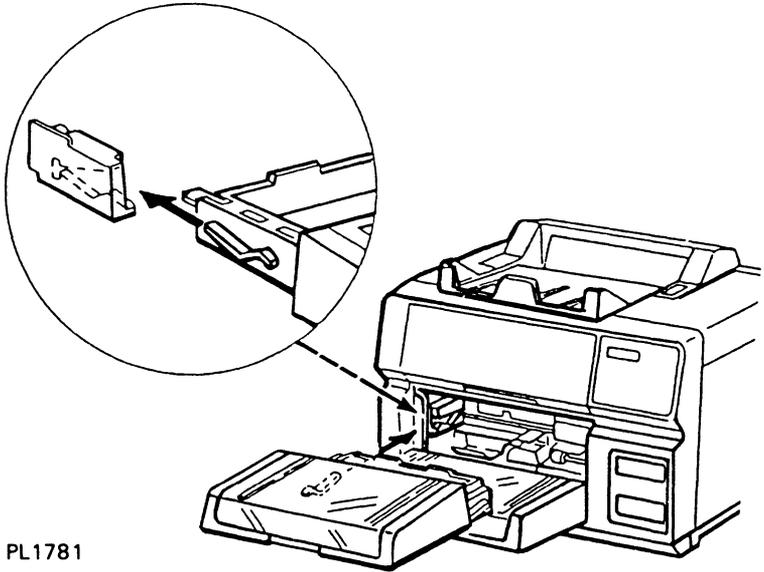
Note: The paper trays are interchangeable. Either tray can fit in either the lower or upper opening.

Figure 2-1 Installing the Lower Paper Tray



- 6 Insert the other paper tray into the upper part of the printer (see Figure 2-2). Make sure the tray sits squarely all the way in the printer.

Figure 2-2 Installing the Upper Paper Tray

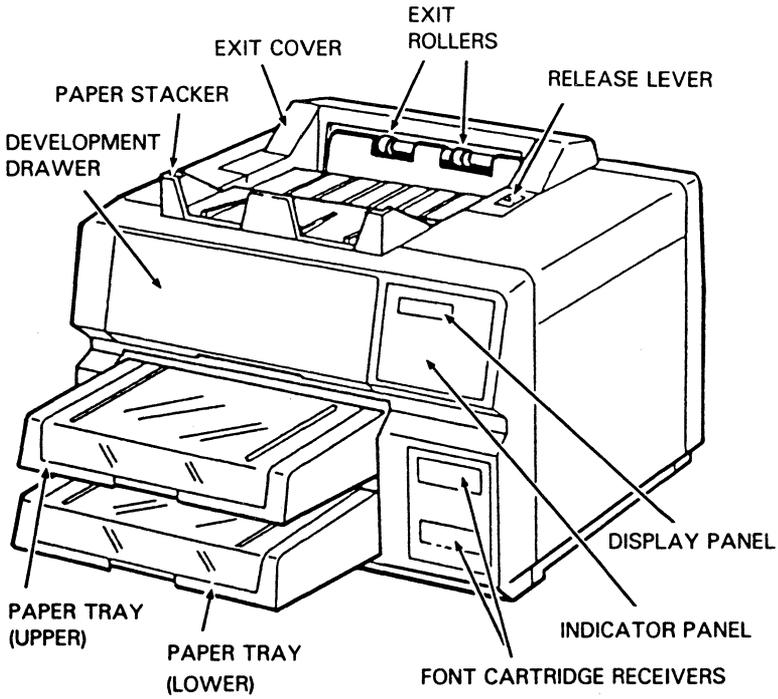


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Becoming Familiar with Your Printer

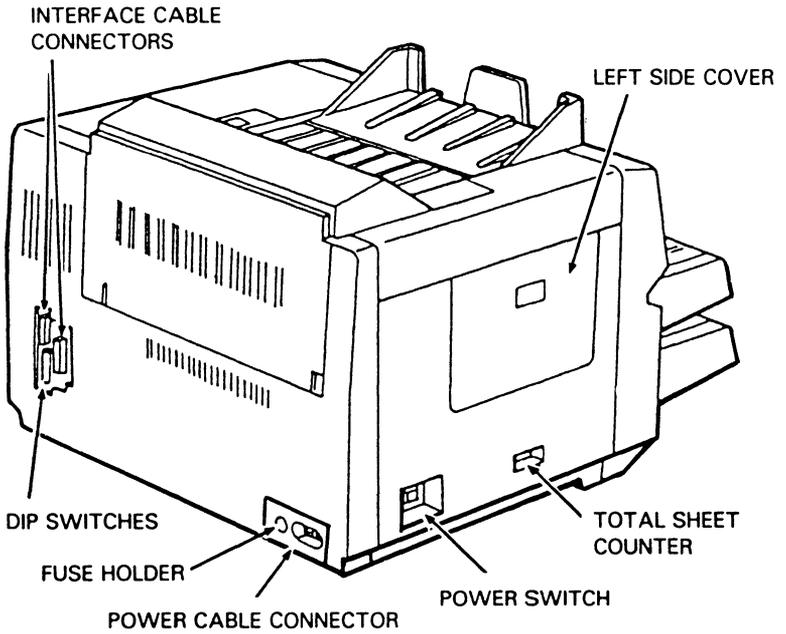
Figures 2-3 and 2-4 show some of the parts that you will need to be familiar with to properly operate and maintain your printer. Take a few minutes to locate these parts on the printer. We will describe these parts as we go along.

Figure 2-3 Front View of the Printer



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Figure 2-4 Rear View of the Printer

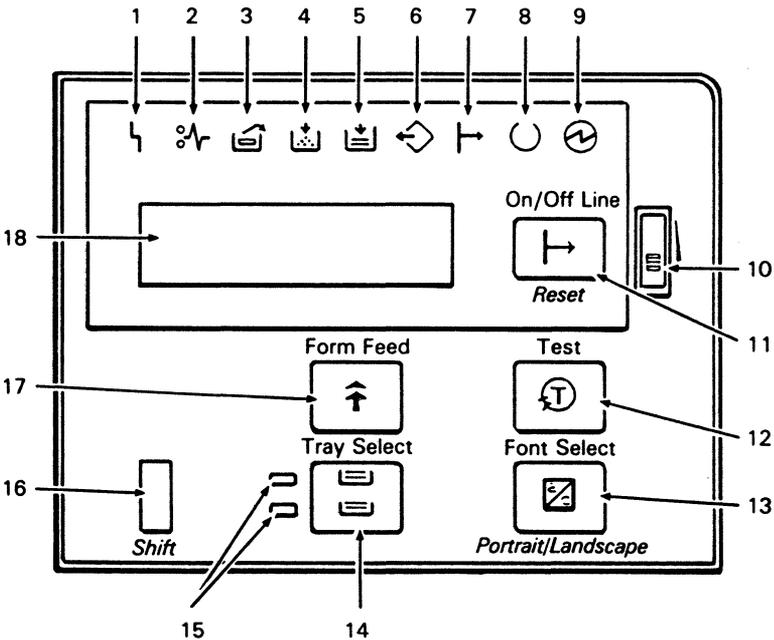


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Indicator Panel

Figure 2-5 shows the AP 9215 indicator panel, located on the front of the printer. The 11 indicators inform you of the printer's operational status or of a situation which may require your attention. The seven control buttons allow you to perform certain manual operations with the printer.

Figure 2-5 Indicator Panel



PL1762

These indicators and controls are described in Table 2-1 on the following pages. Take a minute to become familiar with the displays on this panel before beginning printer operation. Many of these functions are discussed in more detail in Section 3, "Operating Your Printer."

Table 2-1 Description of Indicator Panel Indicators and Controls

(1)		Error	This indicator flashes if an error occurs. The error condition is indicated on the display panel.
(2)		Paper Jam	This indicator flashes if a paper jam occurs. The paper jam location is indicated on the display panel.
(3)		OPC Cartridge Change	This indicator lights when the OPC cartridge needs replacement.
(4)		Toner Empty	This indicator lights when the toner cartridge needs replacement.
(5)		Paper Empty	This indicator flashes when the selected paper tray is empty.
(6)		Data In Buffer	This indicator lights when data to be printed is present in the controller memory.
(7)		On-Line	This indicator is on when the printer is ready to receive data from the host computer and print (on-line) and off when the printer is not ready to receive data from the host computer (off-line).
(8)		Ready	This indicator is off while the printer is warming up and while it is printing. When the printer is ready to accept data from the host computer, the indicator lights.
(9)		Power	This indicator lights when the power is on.
(10)		Brightness Adjustment	Sliding this switch adjusts the brightness of the display panel.
(11)		On/Off Line/ Reset	Pressing this button puts the printer in on-line mode (ready to receive data from the host computer and print) or off-line mode (not ready to receive data from the host computer). Pressing this button while pressing the Shift button (16) resets the printer.

(12)	Test	Pressing this button produces a test summary sheet. (The printer must be off-line when performing this test.)
(13)	Font Select/ <i>Portrait/ Landscape</i>	Pressing this button changes the font. (The printer must be off-line when performing this function.) Pressing this button while pressing the Shift button (16) switches the page orientation between portrait and landscape. (The printer must be off-line when performing this function.)
(14)	Tray Select	Pressing this button selects either the upper or lower paper tray. (The printer must be off-line when performing this function.) Pressing this button while pressing the Shift button (16) puts the printer in endless feed mode. (The printer must be off-line when performing this function.)
(15)	Tray Select Indicators	These indicators light to show which paper tray has been selected.
(16)	<i>Shift</i>	Pressing this button while pressing the On/Off Line button (11) resets the printer. Pressing this button while pressing the Font Select button (13) switches the page orientation between portrait and landscape. (The printer must be off-line when performing this function.) Pressing this button while pressing the Tray Select button (14) puts the printer in endless feed mode. (The printer must be off-line when performing this function.)
(17)	Form Feed	Pressing this button while data is in the printer's buffer prints out that data. (The printer must be off-line when performing this function.) If this button is pressed when data is not present in the buffer, this function is ignored.
(18)	Display Panel	This panel displays "READY" when the printer is on-line and ready to receive data. This panel displays "DATA PRESENT" when the printer is receiving data. This panel also displays messages to supplement indicators (1)-(9). For a complete list of error messages, consult Section 5.

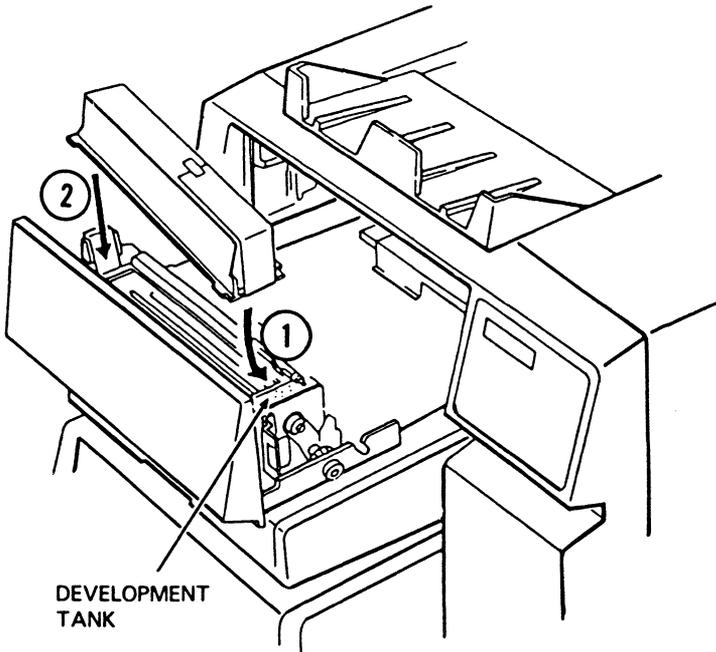
Note: When you perform a function using one of the indicator panel control buttons, you must return the printer to on-line mode before performing the next function. Returning to on-line mode reads the function into the printer's memory. If you perform two or more functions before returning to on-line mode, the printer will only recognize the last function.

Installing the Toner Cartridge

The AP 9215 printer uses a non-toxic toner, the same kind used in most photocopiers. For ease of installation, the toner is packaged in toner cartridges.

- 1 Remove one of the two toner cartridges from its package and shake it vigorously twenty or more times to distribute the toner.
- 2 With the upper paper tray in position, pull out the development drawer until it stops.
- 3 Hold the toner cartridge so the seal is on the right and align the projections on the cartridge with the notches on the development tank.
- 4 Push the toner cartridge down into the toner cartridge holder. Check that the cartridge is firmly fitted to the holder.

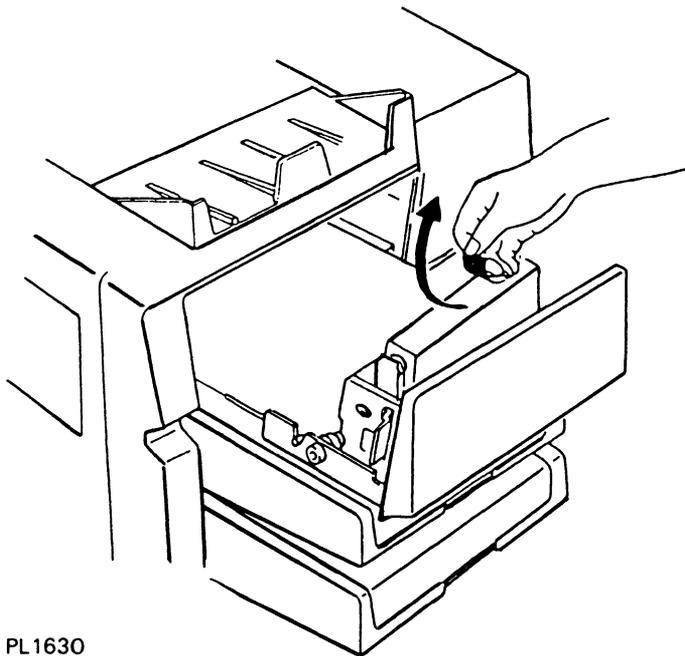
Figure 2-6 Installing the Toner Cartridge



PL1628

- 5 Peel down the end of the toner cartridge seal.

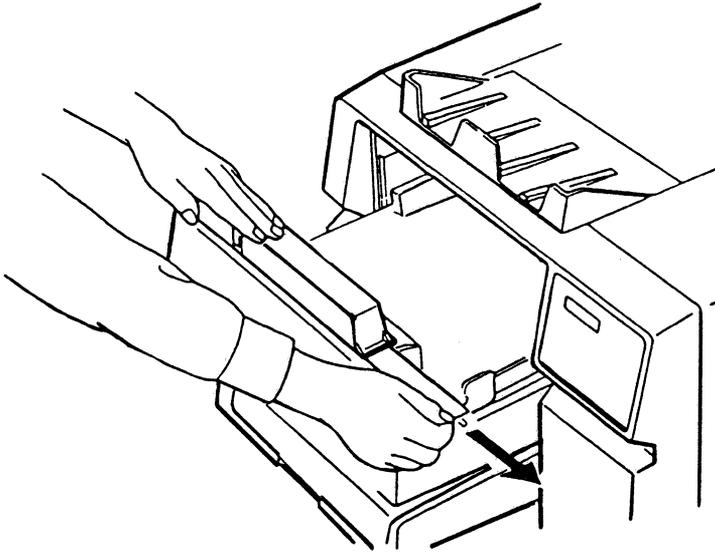
Figure 2-7 Peeling the Toner Cartridge Seal



PL1630

- 6 Hold the toner cartridge with one hand and pull the seal horizontally until a green tab becomes visible.

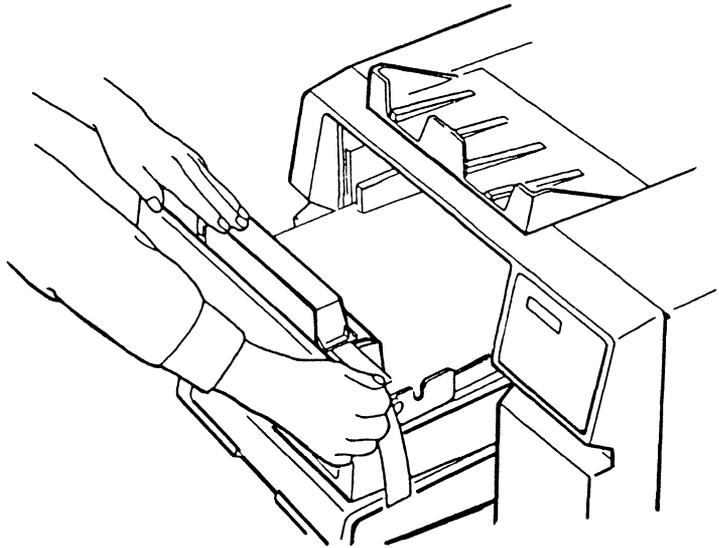
Figure 2-8 Pulling the Seal



PL1623

- 7 Hold the green tab and pull the seal further until it is out completely. Then peel off the tab.

Figure 2-9 Peeling Off the Tab



PL1625

- 8 Slide the development drawer back to its operating (closed) position.

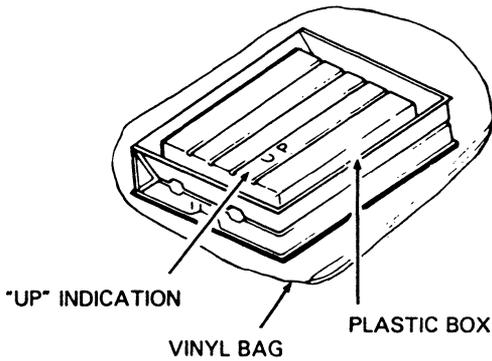
Installing the OPC Cartridge

Caution: The following procedure (Steps 1 through 8) must be accomplished within five minutes. If the OPC cartridge is exposed to light for more than five minutes, the OPC belt will deteriorate, affecting print quality.

Note: Review the illustrations and instructions for installing the OPC cartridge before starting. If you are interrupted while performing this procedure, place the OPC cartridge back in its plastic case and then into the black vinyl bag. Close the bag until you are ready to resume installation.

- 1 Pull the development drawer out until it stops, sliding it on the tracks of the upper paper tray.
- 2 Open the black vinyl bag, take out the plastic box containing the OPC cartridge, and set the case on a flat surface with the side labeled "UP" facing up.

Figure 2-10 Packing of the OPC Cartridge



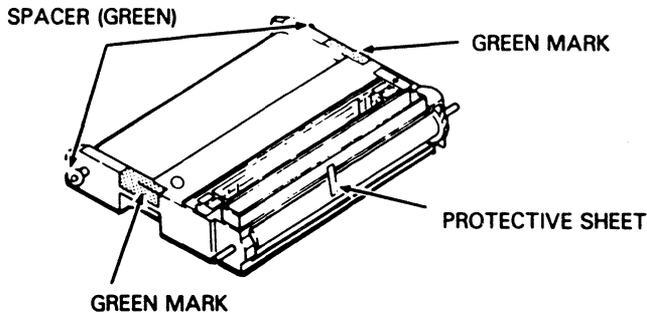
PL1763

- 3 Remove the securing tape and open the plastic case.

Caution: When handling the OPC cartridge, touch only the green areas. Be careful not to touch the surface of the belt itself. Touching the belt could affect the print quality.

- 4 Remove the two green, ring-shaped spacers from the forward shaft of the cartridge.
- 5 Remove the protective sheet from the cartridge, gripping only the securing tape.

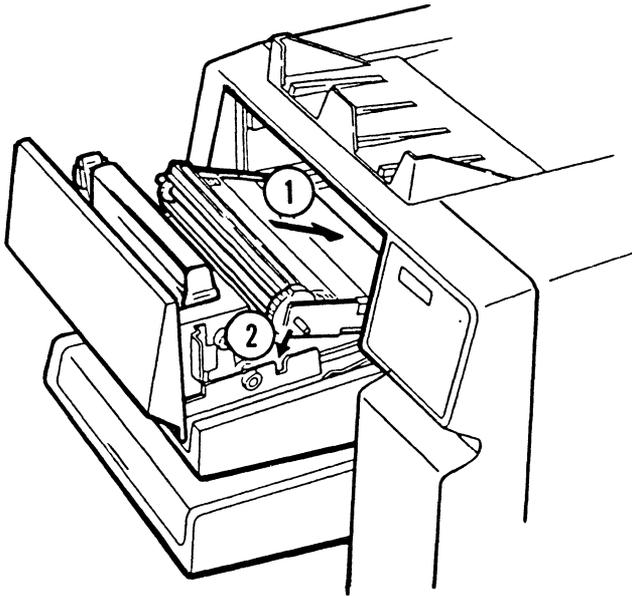
Figure 2-11 Handling the OPC Cartridge



PL1764

- 6 Grip the green area on each side of the OPC cartridge and lift the cartridge from the plastic box. The ridged side of the cartridge should be facing down.
- 7 Insert the OPC cartridge into the development drawer as follows:
 - a Tilt the rounded side of the OPC cartridge (opposite the gears) down into the drawer.
 - b Push down gently on the OPC cartridge so the rear two metal shafts settle into the U-shaped brackets.

Figure 2-12 Inserting the OPC Cartridge



PL1765

- 8 Slide the development drawer back to its operating (closed) position.

Loading Paper

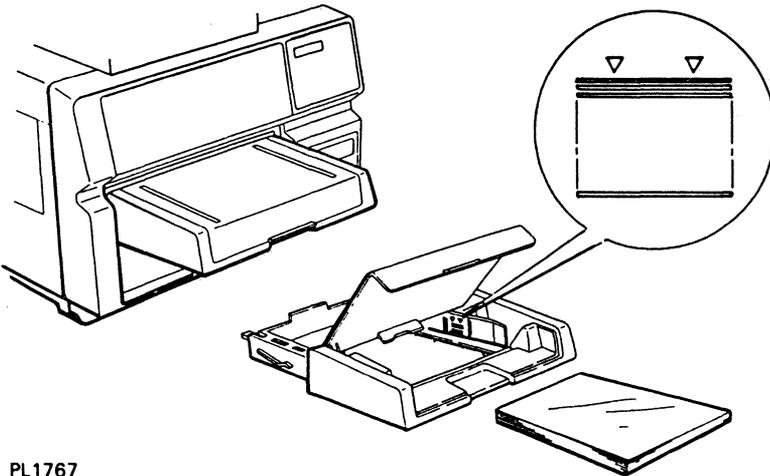
When loading paper into the paper trays,

- Make sure the paper size is the same as the paper tray size (letter, A4, or legal). If the paper size and paper tray size are different, the paper will jam at the exit.
- Do not add paper above the limit line.
- Load the paper with the printing surface facing up and the top of the page pointing toward the printer.
- You can print on the back side of paper that has already gone through the printer.

Loading Paper into the Lower Paper Tray

- 1 Remove the lower paper tray by lifting it up and pulling it out.
- 2 Open the paper tray cover.
- 3 Place the paper into the tray as far as it can go. Up to 250 sheets of 20 lb paper can be loaded at one time. A supply of paper is included in the accessories box.

Figure 2-13 Loading Paper into the Lower Paper Tray



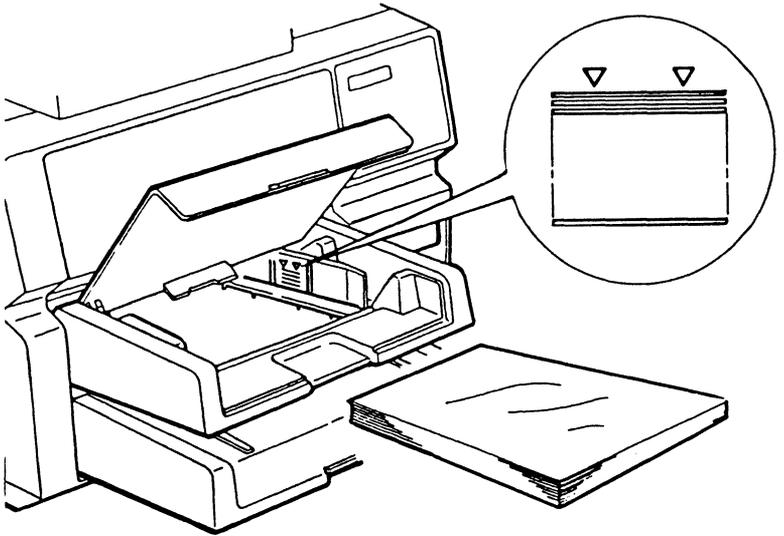
PL1767

- 4 Close the paper tray cover.
- 5 Replace the lower paper tray. Make sure the tray sits squarely all the way in the printer.

Loading Paper into the Upper Paper Tray

- 1 Open the paper tray cover.
- 2 Place the paper into the tray as far as it can go. Up to 250 sheets of 20 lb paper can be loaded at one time. A supply of paper is included in the accessories box.

Figure 2-14 Loading Paper into the Upper Paper Tray



PL1066

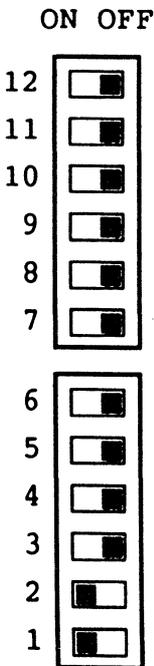
- 3 Close the paper tray cover.

Setting the DIP Switches

The printer's DIP switches control various format and data communications functions. Some of the switches control certain functions by default if the function is not otherwise controlled by the host software. You may need to adjust the DIP switches to configure your printer with your host computer system.

The following illustration and two tables describe the individual DIP switch settings and the functions they control. The DIP switches are located on the rear of the printer next to the interface cable connectors. There are two banks of six switches each. Refer to Figure 2-15 for the locations of the individual switches.

Figure 2-15 **DIP Switches**



You can determine the current DIP switch settings by conducting a test of the printer controller. To do this, turn on the printer and wait for it to warm up. Then press the On/Off Line button to place the printer in off-line mode and press the Test button on the indicator panel. The printer will produce a summary sheet that includes a graphic display of the current DIP switch settings and their meanings. For more information about the summary sheet, refer to "Producing a Test Summary Sheet" in Section 3 of this guide.

Set the DIP switches as required for your computer, referring to Tables 2-2 and 2-3 and the switch descriptions for information about the function of each switch setting. Set the printer power switch to OFF (O) before setting the DIP switches. After setting the DIP switches, set the printer power switch to ON (I) to read the new switch settings into the printer's memory.

Notes:

- 1 On the printer itself, the DIP switches are in two sets, each numbered from bottom to top 1 through 6. On the summary sheet, however, the switches are numbered from bottom to top 1 through 12. In the tables that follow, we have adopted the summary sheet's numbering system. Therefore, Switch 1 in the top set is called Switch 7, Switch 2 is called Switch 8, and so on.
- 2 For information about configuring the AP 9215 printer with Burroughs B 20 and ET computer systems, refer to Appendix F of this guide.

Table 2-2 DIP Switch Settings and Functions (Serial Mode)

SWITCH POSITION		FUNCTION
<u>SW1</u>		<u>Parallel/Serial</u>
ON		Parallel
OFF		Serial
<u>SW2</u>		<u>Half Duplex/Full Duplex</u>
ON		Half Duplex
OFF		Full Duplex
<u>SW3</u>		<u>Auto Line Feed</u>
ON		Auto Line Feed On
OFF		Auto Line Feed Off
<u>SW4</u>		<u>Stop Bits</u>
ON		2 Stop Bits
OFF		1 Stop Bit
<u>SW5</u>		<u>Data Bits</u>
ON		7 Bits
OFF		8 Bits
<u>SW6</u>	<u>SW7</u>	<u>Protocol</u>
ON	ON	DTR Active (non-modem mode)
ON	OFF	DTR Active (non-modem mode)
OFF	ON	ETX/ACK
OFF	OFF	XON/XOFF
<u>SW8</u>	<u>SW9</u>	<u>Parity</u>
		7 Bit:
ON	ON	Even Parity
ON	OFF	Odd Parity
OFF	ON	Space
OFF	OFF	Mark
		8 Bit:
		Even Parity
		Odd Parity
		No Parity
		No Parity

<u>SW10</u>	<u>SW11</u>	<u>SW12</u>	<u>Baud Rate</u>
OFF	OFF	ON	110
OFF	ON	OFF	300
OFF	ON	ON	600
ON	OFF	OFF	1200
ON	OFF	ON	2400
ON	ON	OFF	4800
OFF	OFF	OFF	9600
ON	ON	ON	19200

Table 2-3 **DIP Switch Settings and Functions (Parallel Mode)**

SWITCH POSITION	FUNCTION
<u>SW1</u>	<u>Parallel/Serial</u>
ON	Parallel
OFF	Serial
<u>SW2</u>	<u>Command Set 630</u>
ON	SW2 must be ON in parallel mode
<u>SW3</u>	<u>Auto Line Feed</u>
ON	Auto Line Feed On
OFF	Auto Line Feed Off
<u>SW4</u>	<u>Line Spacing</u>
ON	3 lines per inch (1/3")
OFF	6 lines per inch (1/6")
<u>SW5</u>	<u>ACK In Busy/ACK Out Busy</u>
ON	ACK In Busy
OFF	ACK Out Busy
<u>SW6</u>	No Function in Parallel Mode
<u>SW7</u>	<u>Page Orientation</u>
ON	Landscape
OFF	Portrait
<u>SW8</u>	No Function in Parallel Mode
<u>SW9</u>	No Function in Parallel Mode
<u>SW10</u>	No Function in Parallel Mode
<u>SW11</u>	<u>SW12</u>
OFF	OFF
OFF	ON
ON	OFF
ON	ON
	<u>Character Spacing</u>
	10 characters per inch
	12 characters per inch
	15 characters per inch
	Proportional Spacing

Description of Switch Functions

Switch 1 - Serial/Parallel

This switch selects either parallel or serial communication with the computer.

Switch 2 (Serial) - Half Duplex/Full Duplex

Half duplex mode allows unidirectional (one way) transmission of data. Full duplex mode allows independent, simultaneous transmission and reception of data.

Switch 2 (Parallel) - Command Set 630

In parallel mode, this switch allows command set selection. Always select 630 (ON).

Switch 3 - Auto Line Feed On/Off

When some host computers send a line of characters to the printer, they end the line with only a carriage return. Unless a line feed is also issued, the paper does not advance. If your host computer sends only a carriage return, selecting Auto Line Feed ON will automatically generate a line feed at each carriage return. If you select Auto Line Feed OFF, a return will be generated and the carriage will return to the left margin, but it will remain on the same printing line. A separate Line Feed command will then be required if a new printing line is desired. Most host system software is set to provide the line feed, so this switch is usually OFF.

Switch 4 (Serial) - Stop Bits

When a computer sends data in serial mode, it sends either 1 or 2 stop bits at the end of each data byte. The setting of this switch must conform with the setting for your computer.

Switch 4 (Parallel) - Line Spacing

In parallel mode, this switch allows the operator to select the size of line feed increments, either 1/3 inch (3 lines per vertical inch) or 1/6 inch (6 lines per vertical inch).

Switch 5 (Serial) - Data Bits

This switch controls whether the data byte is seven or eight bits long.

Switch 5 (Parallel) - ACK In Busy/ACK Out Busy

In parallel mode, the normal setting for this switch is ACK In Busy (ON). Refer to the *AP 9215 Printer Programming Reference Manual* for more detailed information about these settings.

Switches 6 and 7 (Serial) - Protocol

In serial mode, these switches select the method for coordinating communication between your computer and printer. For more details about specific protocols, refer to the *AP 9215 Printer Programming Reference Manual*.

Switch 6 has no function in parallel mode.

Switch 7 (Parallel) - Portrait/Landscape

In parallel mode, this switch allows the operator to select either portrait or landscape as the default page orientation. Note that setting this switch to ON (landscape) selects only the print **direction** (that is, parallel to the long edge of the paper). Setting the page orientation with the DIP switch does **not** rotate the font. For information about rotating fonts, refer to the *AP 9215 Printer Programming Reference Manual*. For information about selecting the page orientation with the indicator panel, see Section 3 of this guide.

Switches 8 and 9 (Serial) - Parity

Parity is an error checking method used to detect if bits have been lost or changed during transmission. Set these switches to correspond with the type of parity used by your computer.

Switches 8 and 9 have no function in parallel mode.

Switches 10, 11, and 12 (Serial) - Baud Rate

In serial mode, these three switches select the speed at which data is received and transmitted between the computer and the printer. You must select a baud rate which matches the speed at which your computer transmits data.

Switch 10 has no function in parallel mode.

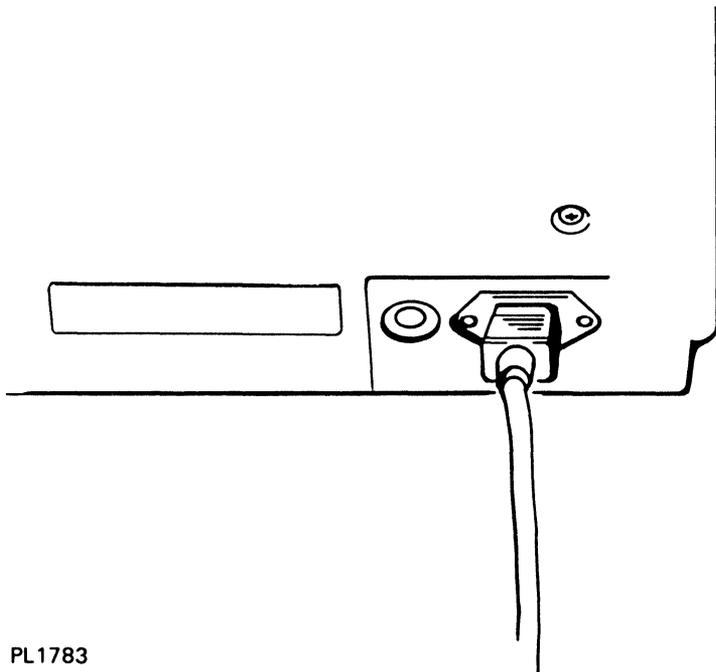
Switches 11 and 12 (Parallel) - Character Spacing

In parallel mode, these switches allow the operator to select the character spacing.

Connecting the AC Power Cord

- 1 Make sure the power switch on the left side of the printer is set to the OFF (O) position.
- 2 Plug the AC power cord into the AC power receptacle on the printer's rear side (see Figure 2-16).

Figure 2-16 Connecting the AC Power Cord



PL1783

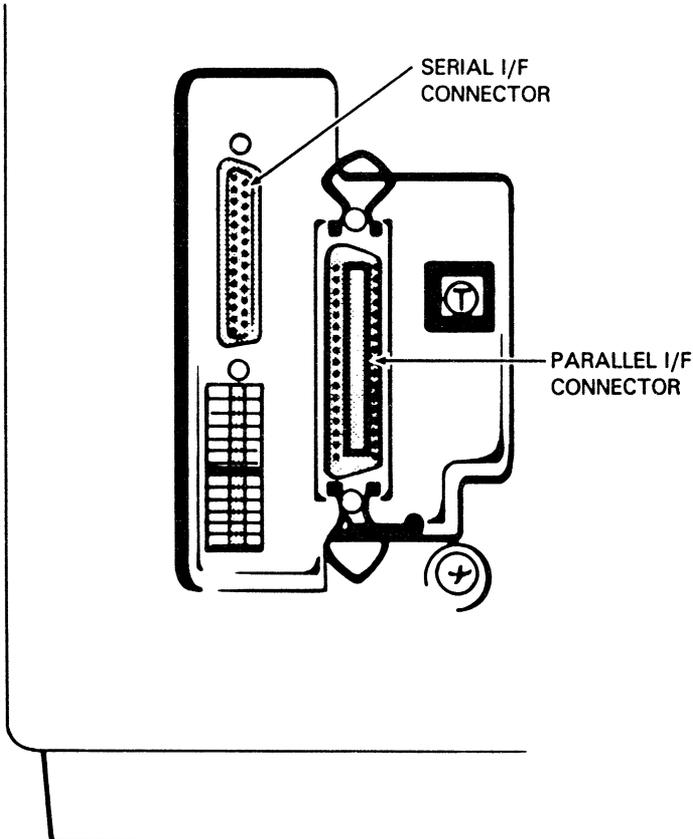
- 3 Insert the other end of the power cord into an AC power outlet which has power supplied to it and which is not supporting other equipment.

Connecting the Interface (I/F) Cable to the Computer

Note: You must order an interface (I/F) cable appropriate for your host computer. An I/F cable is not supplied with your printer. If you have not ordered an I/F cable, contact your Burroughs sales representative.

- 1 Connect one end of the I/F cable to your host computer system. Check the operations manual for your host computer for information about connecting the I/F cable.
- 2 Identify the printer's serial and parallel I/F connectors as shown in Figure 2-17.

Figure 2-17 Location of the Printer Interface Cable Connectors

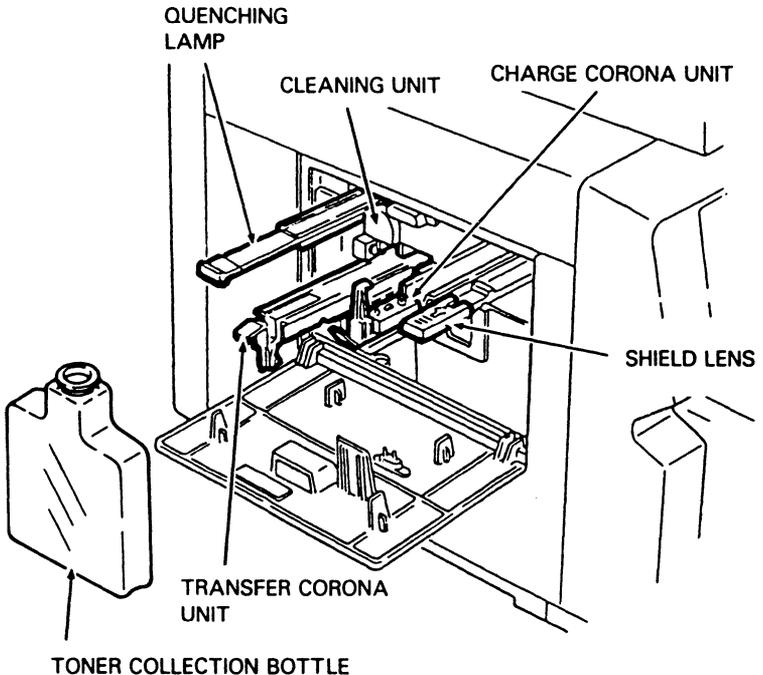


- 3 Connect the other end of the I/F cable to the appropriate connector on the rear of the printer. Note that there is only one way the I/F cable can be installed on the I/F connector.

Checking the Quenching Lamp, Toner Collection Bottle, Transfer Corona Unit, Charge Corona Unit, and Shield Lens

- 1 Open the left side cover and pull out the toner collection bottle. If the bottle's cap is on, remove it.

Figure 2-18 Checking the Quenching Lamp, Toner Collection Bottle, Transfer Corona Unit, Charge Corona Unit, and Shield Lens



PL1791

- 2** Verify that the quenching lamp, located to the left of the toner collection bottle, is properly installed by pushing the visible end (green tab) of the unit in as far as it will go.
- 3** Verify that the transfer corona unit, located in the toner collection bottle recess, is properly installed by pushing the visible end (green tab) of the unit in as far as it will go.
- 4** Verify that the charge corona unit, located to the right of the toner collection bottle, is properly installed by pushing the visible end of the unit (green tab) in as far as it will go.
- 5** Verify that the shield lens, located to the right of the charge corona unit, is properly installed by pushing the visible end of the unit (green tab) in as far as it will go.
- 6** Replace the toner collection bottle by inserting it in the recess and pushing down and in. Make sure the neck of the bottle lines up with the cleaning unit spigot.
- 7** Close the left side cover.

Operating Your Printer

To begin this section, your printer should be unpacked, set up, and ready to operate. If your printer is not yet installed, refer to Sections 1 and 2 for unpacking and installation instructions.

In this section you will learn to:

- Power on the printer.
- Produce a test summary sheet.
- Select the paper tray for printing.
- Invoke the job stacking function.
- Select fonts.
- Use multiple fonts in a single document.
- Select the page orientation.

Note: The functions in the latter part of this section are performed using indicator panel buttons while the printer is in off-line mode. After completing a function, you must return the printer to on-line mode before performing the next function. Returning to on-line mode reads the function into the printer's memory. If you perform two or more functions before returning to on-line mode, the printer will recognize only the last function.

Operator Safety

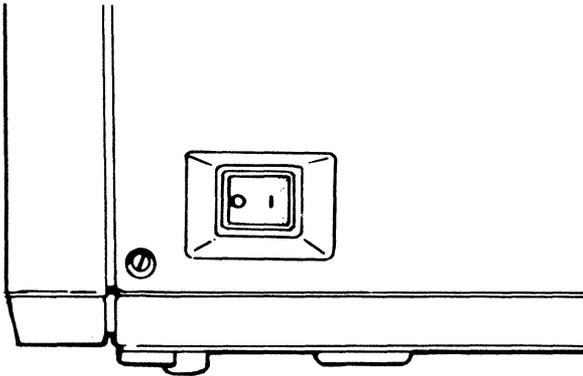
Warning: Using controls or adjustments or performing procedures other than those specified in this guide may expose the operator to hazardous laser light.

The AP 9215 printer contains a 5 milliwatt, 760-810 nanometer wavelength, GaA2As laser diode. Direct, or indirect reflected, eye contact with the laser beam may cause serious eye damage. Safety precautions and interlock mechanisms have been designed into the printer to prevent any possible laser beam exposure to the operator when the printer is operated according to the procedures in this guide.

Powering On the Printer

- 1 Set the power switch on the left side of the printer to the ON (I) position. This action will cause the following events to occur:
 - a The fan motor starts rotating.
 - b The bottom plates of the paper trays rise.
 - c The Power indicator lights.
 - d The Ready indicator remains OFF.

Figure 3-1 Location of the Power Switch



PL1793

- 2 After approximately 90 seconds, the Ready indicator will light and the display panel will show the message "READY". The printer is now ready for operation.

When the power is turned on, the printer comes up in on-line mode. The printer is set to print from the upper paper tray using the Courier 10 font. Some of the other parameters match the default values established by the DIP switches. To determine the DIP switch settings, produce a test summary sheet (see "Producing a Test Summary Sheet" below). A table listing all default values is in Appendix B.

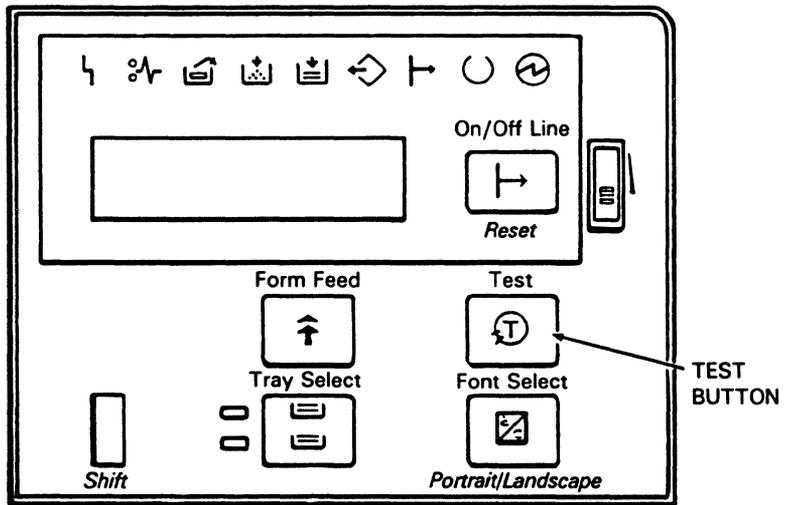
Producing a Test Summary Sheet

Conducting a print test produces a summary sheet that provides important information about the printer, such as the current DIP switch settings. A sample of this form is shown in Figure 3-3.

- 1 Press the On/Off Line button to place the printer in the off-line mode. The On-line indicator will go out.
- 2 Press the Test button located on the indicator panel (see Figure 3-2).

Note: Do not confuse the Test button and its functions with the Self Test button on the back of the printer. Pressing the Self Test button tests the engine drive system. This test is normally performed by a Burroughs field engineer to check print alignment and is not needed during normal printer operation.

Figure 3-2 Location of the Test Button



PL1778

- 3** The printer will print a summary sheet (see Figure 3-3). This summary sheet includes the following information:
 - a** The revision level of the printer's firmware.
 - b** The type of paper tray located in the upper and lower paper tray slots.
 - c** The total printer memory available to the user and the amount of unused memory at the time the summary sheet was printed. This printer memory is used for such things as storing downloaded fonts (the resident fonts have their own portion of printer memory) and graphics. For more information about downloading fonts and storing graphics, consult the *AP 9215 Printer Programming Reference Manual*.
 - d** The printer's emulation setting. All AP 9215 printers are set at the factory to emulate a Diablo 630 daisy wheel printer. This setting cannot be changed.
 - e** A graphic depiction of the current DIP switch settings with a description of their meanings. DIP switch settings are described in more detail in Section 2.
 - f** A graphic depiction of the internal switch settings, which are set at the factory and cannot be changed.
 - g** The names of the available typefaces, including typefaces that have been downloaded or installed using font cartridges and assigned to the printer for use. For more information about assigning fonts, consult the *AP 9215 Printer Programming Reference Manual*.
 - h** Statistics provided for use by Burroughs field engineers.
 - i** An indication of whether a typeface is a primary (P) or secondary (S) character set. The primary set usually consists of the standard alphabet in both upper and lower case letters, the numbers 0 through 9, and standard symbols, such as the asterisk (*) and ampersand (&). More unusual symbols, accents, and diacritical marks are in the secondary set.
 - j** The sequence number of each typeface.
 - k** A partial sample of the indicated typeface.
 - l** A list of printer errors, if any.

4. Press the On/Off Line button to return the printer to on-line mode. The On-line indicator will light.

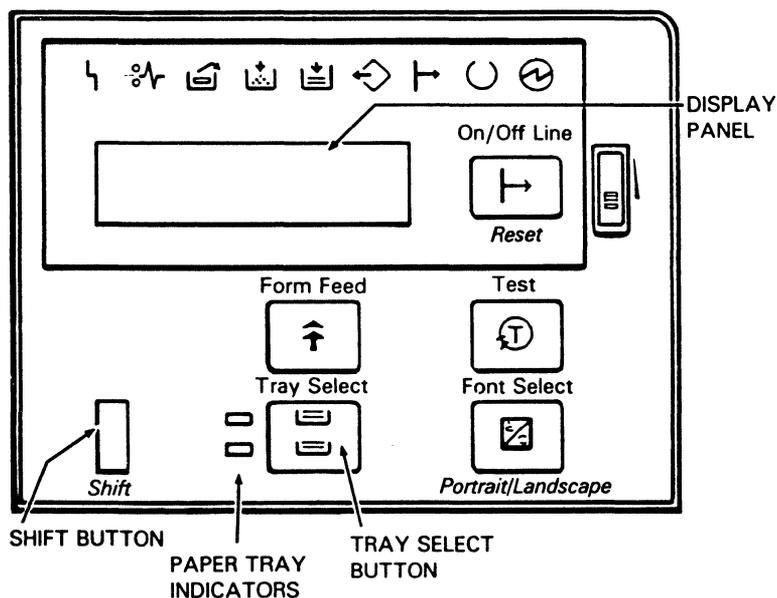
Selecting the Paper Tray

You can use the indicator panel to select the upper or lower paper tray for printing. If the upper and lower trays are for the same size paper, you also have the option of selecting Endless Feed mode. In the Endless Feed mode, the printer starts printing from the last specified paper tray. If the tray being used runs out of paper, however, the printer automatically starts picking up paper from the other tray.

For information about using software codes to select paper trays, consult the *AP 9215 Printer Programming Reference Manual* or the manual for your application software.

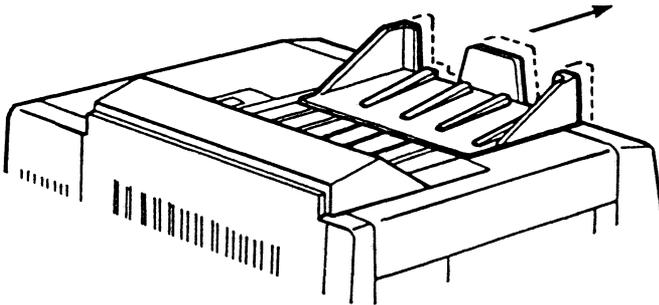
- 1 Press the On/Off Line button to place the printer in the off-line mode. The On-line indicator will go out.
- 2 To select the upper or lower paper tray for input, press the Tray Select button. The indicators next to the button will light to show which paper tray has been selected (see Figure 3-4). The message "SELECTED" will appear in the display panel.

Figure 3-4 Location of Shift and Tray Select Buttons, Paper Tray Indicators, and Display Panel



PL1813

- 3 To select Endless Feed mode, press the Shift and Tray Select buttons simultaneously. Both paper tray indicators will light.
- 4 If you are using a legal size paper tray, pull out the paper stacker on the top of the printer until it stops.

Figure 3-5 Pulling out the Paper Stacker

PL1814

- 5 Press the On/Off Line button to return the printer to on-line mode. The On-line indicator will light.
- 6 If you selected Endless Feed mode, the indicator for the paper tray that is being used will flash during printing.

Invoking the Job Stacking Function

The AP 9215 printer is able to eject printed pages to either the left or right side of the output tray. This function, called “job stacking,” is useful for separating different printing jobs or multiple copies of the same job. You must use software codes to choose the job stacking function. For more information, consult the *AP 9215 Printer Programming Reference Manual* or the manual for your application software.

Choosing the Font

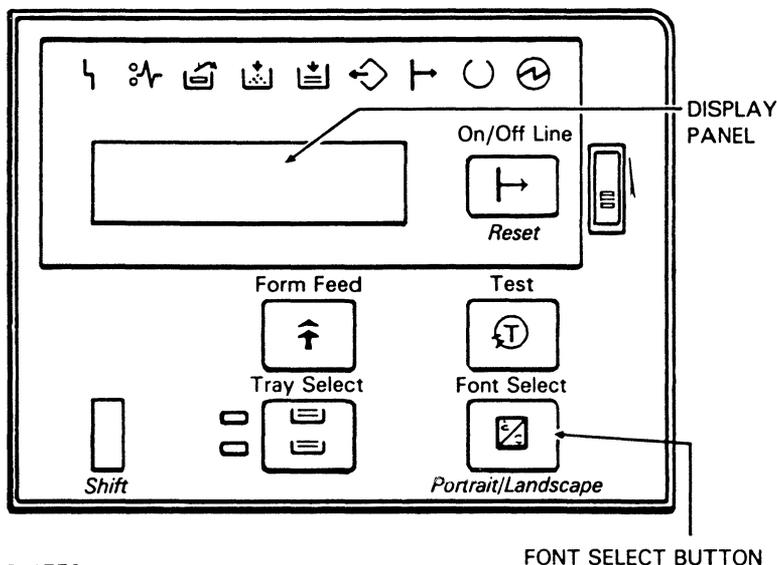
The AP 9215 printer comes with eight typefaces, or fonts, resident in its memory. These resident fonts are shown in Appendix D of this guide. You can add extra fonts to your printer with font cartridges. For more information about font cartridges, consult Appendix E of this guide. To obtain a list of the fonts currently available on your printer, produce a test summary sheet (described earlier in this section).

When you turn your printer on, it defaults to the primary character set of the first resident font, Courier 10. To select a different font, follow the procedure below. For information about using software codes to select fonts, consult the *AP 9215 Printer Programming Reference Manual* or the manual for your application software.

Note: With the following procedure, you can only select a font's primary character set. To select a font's secondary character set, you must use software codes.

- 1 Press the On/Off Line button to place the printer in the off-line mode. The On-line indicator will go out.
- 2 Press the Font Select button until the name of the font you require is displayed in the display panel.

Figure 3-6 Location of Font Select Button and Display Panel



PL1779

- 3 Press the On/Off Line button to return the printer to on-line mode. The On-line indicator will light.

Using Multiple Fonts in a Single Document

The AP 9215 printer emulates a daisy wheel printer. Therefore, the procedure for indicating font changes within a document is the same as that for indicating daisywheel changes. The method for doing this will vary, depending on your applications software. Consult your application software manual for information about changing fonts using your application software.

An example of this procedure using BTOS Secretarial Word Processing (SWP) Version 1.3.3 and a B 20 Series computer is shown below.

Example

- 1 Configure each of your fonts as print wheels for SWP in the Wp.Wheels file. Their names will be added to the Print Wheel menu after you execute the command Make Wheel Set. The first print wheel in the Wp.Wheels file will be your default. For detailed instructions, consult the *BTOS Secretarial Word Processing Operations Guide*.
- 2 Open your document and put the cursor at the point where you want the font to change. If the text you want in a different font is already typed, select the text.
- 3 At Home Base, press the Home (F1) key.
- 4 Press the Print (F2) key.
- 5 Press the Wheel (F5) key.
- 6 If the font you want is not named on the first screen, press the W key to display more choices. Then, press the number specifying the font.

- 7 If you selected existing text, the text will now be set for the new font. To verify this:
 - a Position the cursor in the selected text.
 - b At Home Base, press the **Attribt** (F10) key.
 - c Press the **Current** (F5) key.
 - d A screen will appear listing the attributes of the text where the cursor is positioned. These attributes should include the name of the new font. If not, repeat steps 2 through 6.
- 8 If the font you selected is for new text, type the text to be printed in the new font. To return to the original font, repeat Steps 5 and 6.
- 9 When you have completed your document, send it to the printer. Then press the **Status** (F1) key to access the Printer Status form.
- 10 When the host computer encounters a font change, it will stop sending data to the printer to allow you to change the font. A Printer Status message will appear informing you that the print wheel must be changed. Go to the printer and select the new font (see "Choosing the Font" in this section).
- 11 Return to the terminal and press the **R** key. The host computer will resume sending data to the printer.
- 12 Repeat Steps 10 and 11 for each font change in your document.

Consult the *BTOS Secretarial Word Processing Operations Guide* for more information.

Selecting the Page Orientation

Your printer can print pages in two page orientations: portrait (lines of type are parallel to the short side of the page) and landscape (lines of type are parallel to the long side of the page). Your printer defaults to one of these orientations each time you turn the power on. If you are operating in serial mode, the default page orientation is portrait. If you are operating in parallel mode, the default page orientation is set with the printer DIP switches as described in Section 2. To determine the default setting, produce a test summary sheet as described earlier in this section.

You can change the default page orientation in one of three ways:

- If you are in parallel mode, you can change the DIP switch setting as described in Section 2.
- You can change the page orientation using software codes. For more information, consult the *AP 9215 Printer Programming Reference Manual* or the manual for your application software.
- You can use the Portrait/Landscape button on the indicator panel.

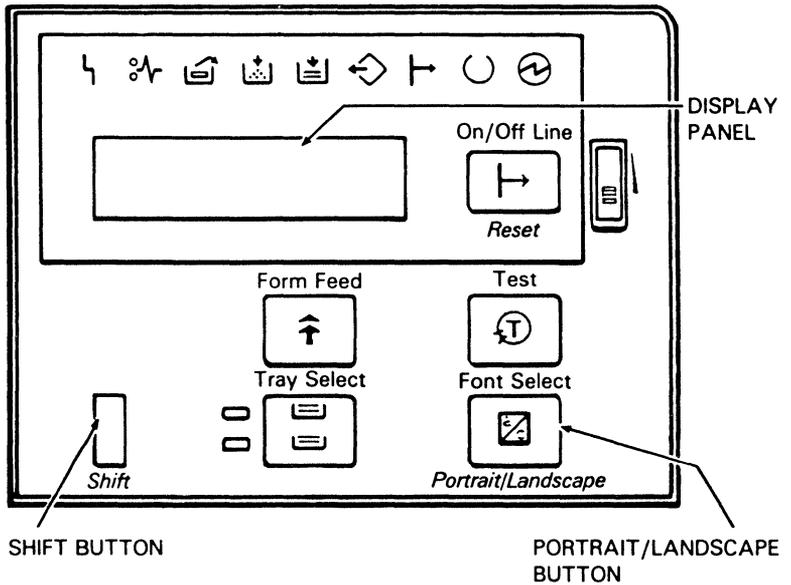
The Portrait/Landscape button changes both the print direction and the font rotation. On the other hand, changing the page orientation with the DIP switch changes only the print direction, not the font rotation. For example, selecting “Landscape” with the DIP switch produces lines of print that are parallel to the long side of the paper; but, unless you rotate the font using software codes, the characters will be sideways in relation to the lines of print. Selecting “Landscape” with the Portrait/Landscape button produces both lines of print parallel to the long side of the paper and characters that are upright in relation to the printed lines.

The Portrait/Landscape button provides four page orientation options: Portrait, Landscape, Portrait 16.7, and Landscape 16.7. If you select “Portrait 16.7” or “Landscape 16.7,” the printer automatically uses the Letter Gothic 15 font and a character spacing of 16.7 characters per inch. The printer also adjusts the space between lines to fit 66 lines of print on each page. This smaller size makes Portrait 16.7 and Landscape 16.7 a good choice for printing charts and spreadsheets.

The procedures for using the Portrait/Landscape button are given below.

- 1** Press the On/Off Line button to place the printer in the off-line mode. The On-line indicator will go out.
- 2** Press the Portrait/Landscape and the Shift buttons simultaneously. The current page orientation will appear in the display panel. Continue pressing the Portrait/Landscape and Shift buttons until the page orientation you require appears in the display panel.

Figure 3-7 Location of Portrait/Landscape and Shift Buttons



PL1830

- 3 Press the On/Off Line button to return the printer to on-line mode. The On-line indicator will light.

Maintaining Your Printer

This section describes the procedures necessary to maintain the highest print quality from your AP 9215 printer, as well as instructions for relocating your printer. These procedures include:

- Cleaning your printer.
- Adding paper.
- Replacing the toner collection bottle.
- Replacing the toner cartridge and cleaning pad.
- Replacing the OPC cartridge, shield lens, charge corona unit, and transfer corona unit.
- Cleaning the quenching lamp.
- Cleaning the separation pawls.
- Replacing the separation and feed rollers.
- Moving your printer.

The AP 9215 indicator panel has several indicators to warn you when most of the maintenance procedures need to occur. Table 4-1 shows the indicator or other signal and the associated procedure(s).

Table 4-1 Maintenance Schedule

Indicator/ Other Signal	Meaning	Procedure(s)
 SUPPLY PAPER	Selected paper tray is empty.	Add paper.
 TONER OVERFLOW	Toner collection bottle is full.	Replace toner collection bottle.
	Toner level is low.	Replace toner cartridge. Replace cleaning pad.
 150,000 pages	OPC cartridge needs to be replaced.	Replace OPC cartridge. Replace shield lens. Replace charge corona unit. Replace transfer corona unit. Clean quenching lamp. Clean separation pawls. Replace separation and feed rollers.

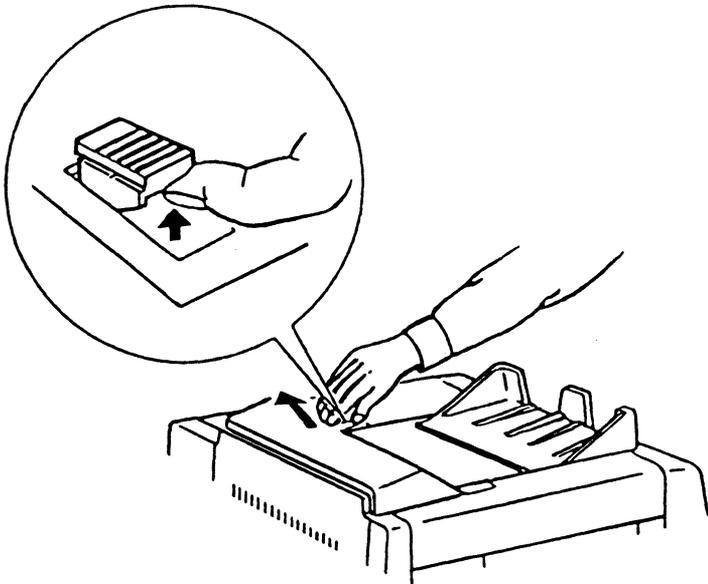
Cleaning Your Printer

You should not clean the interior of the printer beyond performing the maintenance procedures given in this section.

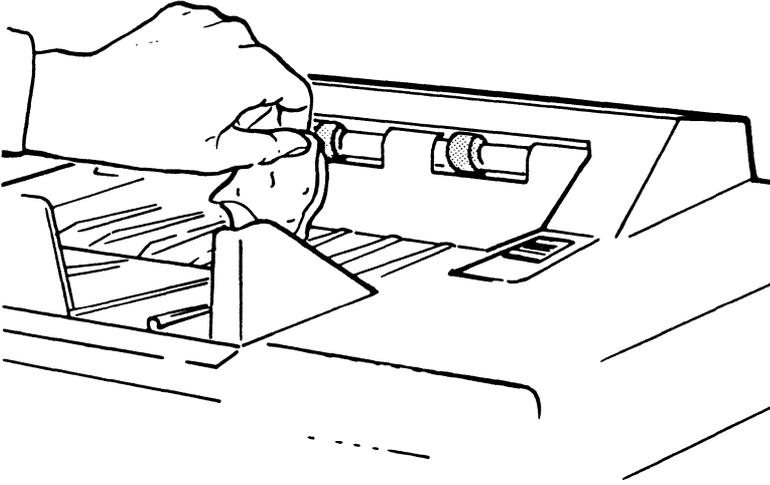
Clean the exterior of your printer on an “as needed” basis. Clean the paper trays and printer cover with a mild detergent or spray cleaner made for use on hard plastic. To clean the exit rollers, open the exit cover with the release lever and close it again. This will cause the rollers to turn. Then, hold a soft, damp cloth against the rollers while they are turning.

Caution: Do not spill or drip any cleaning fluids into the printer.

Figure 4-1 Opening the Exit Cover



PL1810

Figure 4-2 Cleaning the Exit Rollers

PL1833

Adding Paper

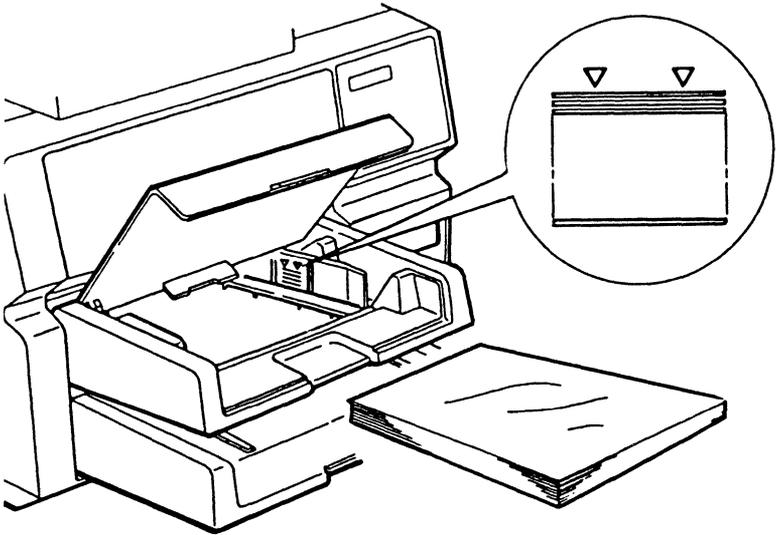
When adding paper to the paper trays,

- Do not turn off the printer. If you turn off the printer, any data stored in the printer's memory that has not yet printed will be lost.
- Make sure the paper size is the same as the paper tray size (letter, A4, or legal). If the paper size and paper tray size are different, the paper will jam at the exit.
- Do not add paper above the limit line.
- Load the paper with the printing surface facing up and the top of the paper pointing into the printer.
- You can print on the back side of paper that has already gone through the printer.

Adding Paper to the Upper Paper Tray

- 1 Open the paper tray cover.
- 2 Place the paper into the tray as far as it can go. Up to 250 sheets of 20 lb paper can be loaded at one time.

Figure 4-3 Adding Paper to the Upper Paper Tray



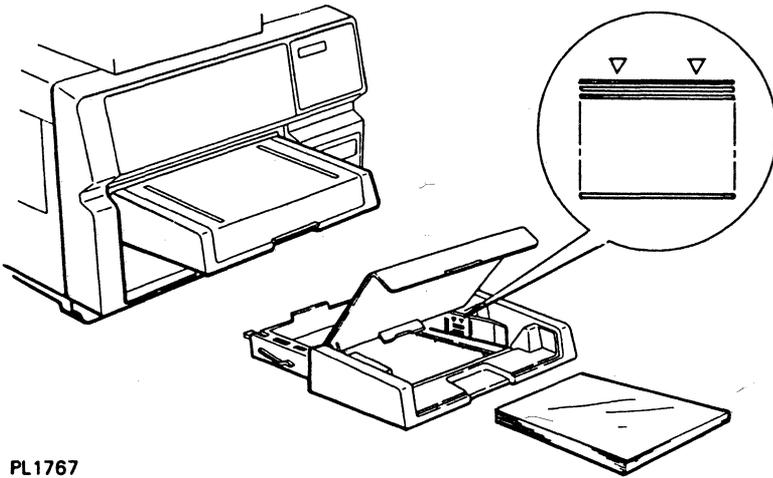
PL1066

- 3 Close the paper tray cover.

Adding Paper to the Lower Paper Tray

- 1 Remove the lower paper tray by lifting it up and pulling it out.
- 2 Open the paper tray cover.
- 3 Place the paper into the tray as far as it can go. Up to 250 sheets of 20 lb paper can be loaded at one time.

Figure 4-4 Adding Paper to the Lower Paper Tray



PL1767

- 4 Close the paper tray cover.
- 5 Replace the lower paper tray. Make sure the tray sits squarely all the way in the printer.

Adding Paper in Endless Feed Mode

If the printer is in Endless Feed mode, when one paper tray empties, the printer automatically starts printing from the other tray. If you fill the first tray before the second tray empties, the printer will continue to switch back and forth between trays without stopping.

If both trays run out of paper, you will first need to fill both trays with paper. Then the display panel will read "CANCEL LIMITLESS." To eliminate this error, you must reset the printer in one of the following ways:

- Set the printer power switch to OFF (O) and then set it back to ON (I).
- Reset the printer by pressing the Shift and On/Off Line buttons simultaneously.
- Send a Remote Error Reset command to the printer (ESC SUB R). For more information about printer commands, consult the *AP 9215 Printer Programming Reference Manual*.

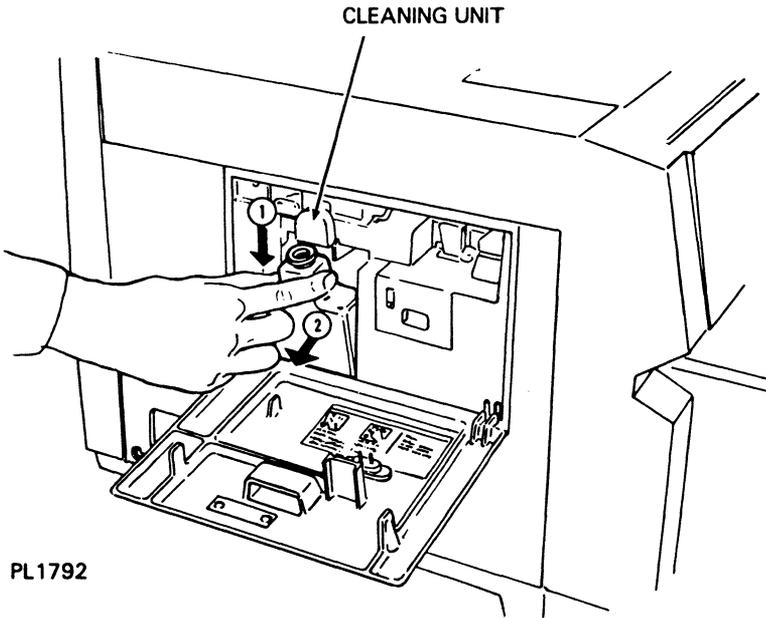
The first two ways of resetting the printer will clear the printer memory and return the printer parameters and settings to the default values they hold at start up (see Appendix B). Sending a Remote Error Reset command will clear the error without changing the existing parameters and settings.

Replacing the Toner Collection Bottle

Notes:

- 1 A replacement toner collection bottle is in Kit A. (Refer to Appendix C for a description of the supply kits and the items they contain.) The bottle will need to be replaced approximately every 6,000 pages.
- 2 It is not necessary to set the power switch to OFF while performing this procedure.
 - 1 Open the left side cover.
 - 2 Press down on the toner collection bottle and carefully remove it.

Figure 4-5 Removing the Toner Collection Bottle



PL1792

- 3 Cap the removed bottle with the cap in the supply kit.
- 4 Install the replacement toner collection bottle by pressing down on the bottle and pushing it in toward the printer. Make sure the neck of the bottle lines up with the cleaning unit spigot.
- 5 Close the left side cover.
- 6 Dispose of the removed bottle as noncombustible waste.

Caution: Do not reuse the toner in the bottle. The used toner contains paper lint and other impurities that could damage your printer.

Replacing the Toner Cartridge

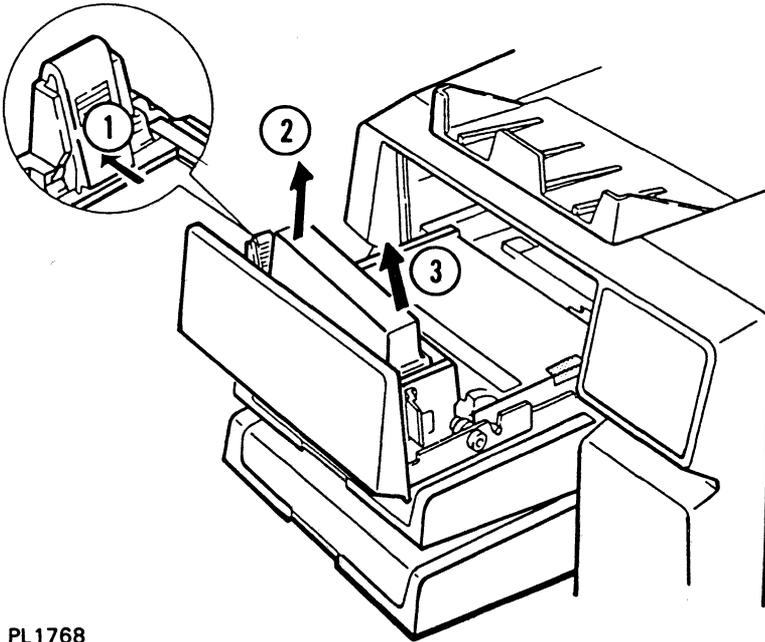
Warning: Disconnect the power cord before performing this procedure.

Caution: The following procedure exposes the OPC cartridge to light and so must be accomplished within five minutes. If the OPC cartridge is exposed to light for more than five minutes, the OPC belt will deteriorate, affecting print quality.

Notes:

- 1 Review the illustrations and instructions for replacing the toner cartridge before starting. If you are interrupted while performing this procedure, slide the development drawer back into place and leave it closed until you are ready to resume.
- 2 A replacement toner cartridge and cleaning pad are in Kit A. (Refer to Appendix C for a description of the supply kits and the items they contain.) The toner cartridge will need to be replaced approximately every 3,000 pages.
 - 1 Remove one of the toner cartridges from the kit and shake it vigorously twenty or more times to distribute the toner.
 - 2 With the upper paper tray in position, pull out the development drawer until it stops.
 - 3 Push in the green toner cartridge holder and lift the empty toner cartridge up and out.

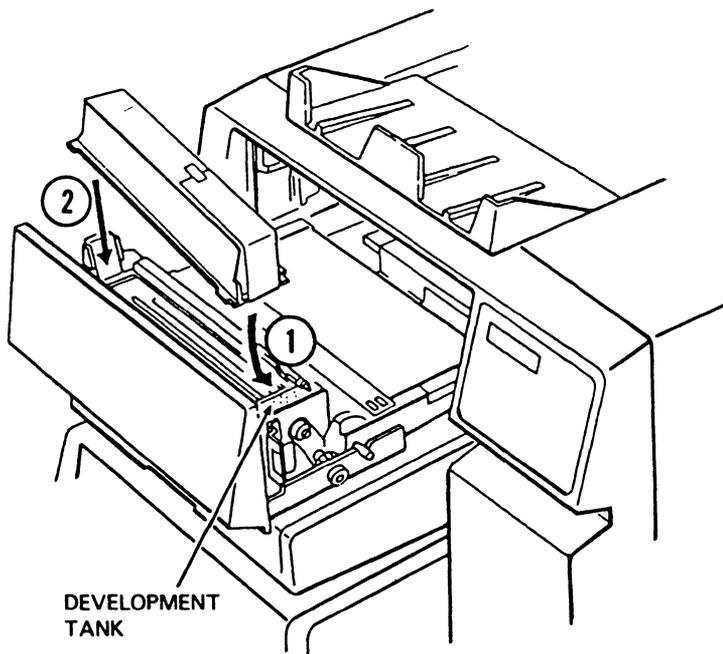
Figure 4-6 Removing the Toner Cartridge



PL1768

- 4 Hold the toner cartridge so the seal is on the right and align the projections on the cartridge with the notches on the development tank.
- 5 Push the toner cartridge down into the toner cartridge holder. Check that the cartridge is firmly fitted to the holder.

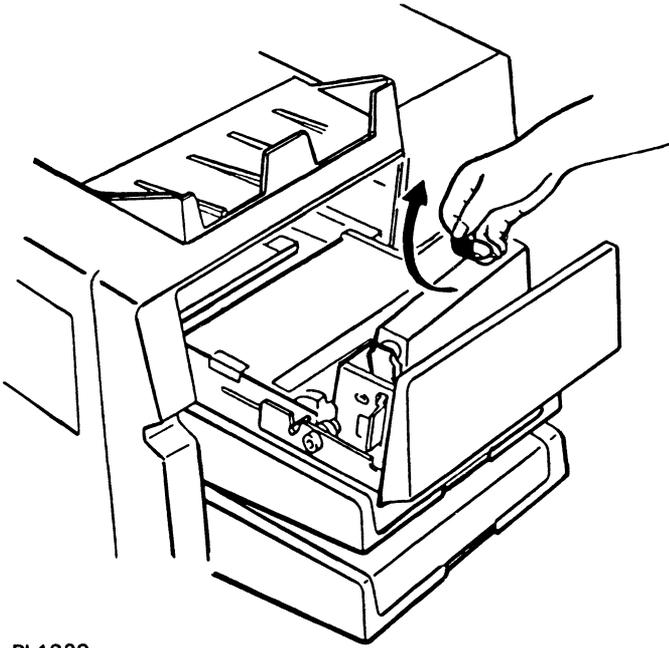
Figure 4-7 Installing the Toner Cartridge



PL1627

6 Peel down the end of the toner cartridge seal.

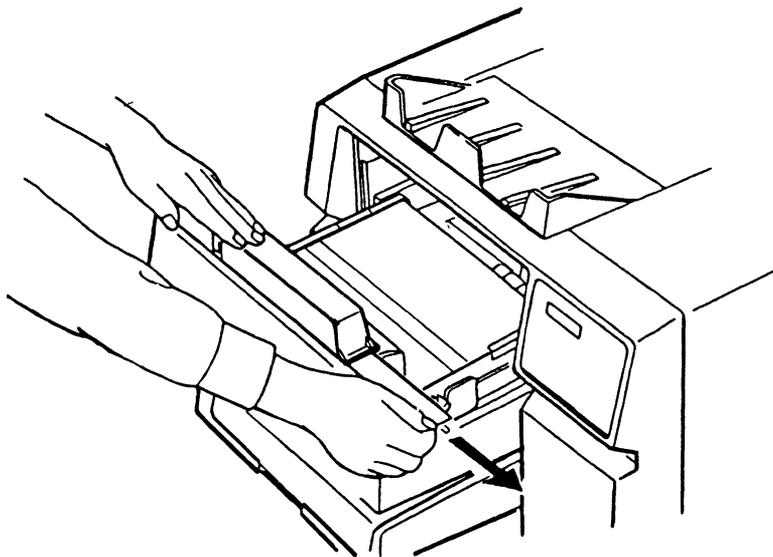
Figure 4-8 Peeling the Toner Cartridge Seal



PL1629

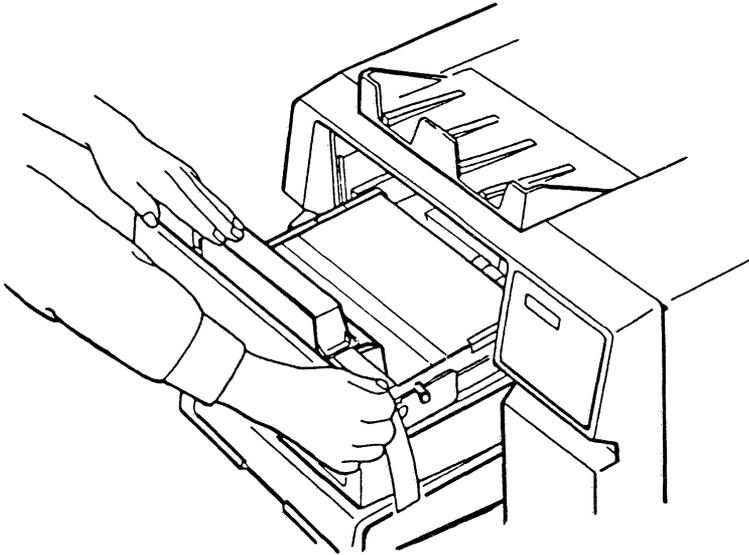
- 7 Hold the toner cartridge with one hand and pull the seal horizontally until a green tab becomes visible.

Figure 4-9 Pulling the Seal



PL1624

- 8** Hold the green tab and pull the seal further until it is out completely. Then peel off the tab.

Figure 4-10 Peeling Off the Tab

PL1626

- 9 Slide the development drawer back to its operating (closed) position.

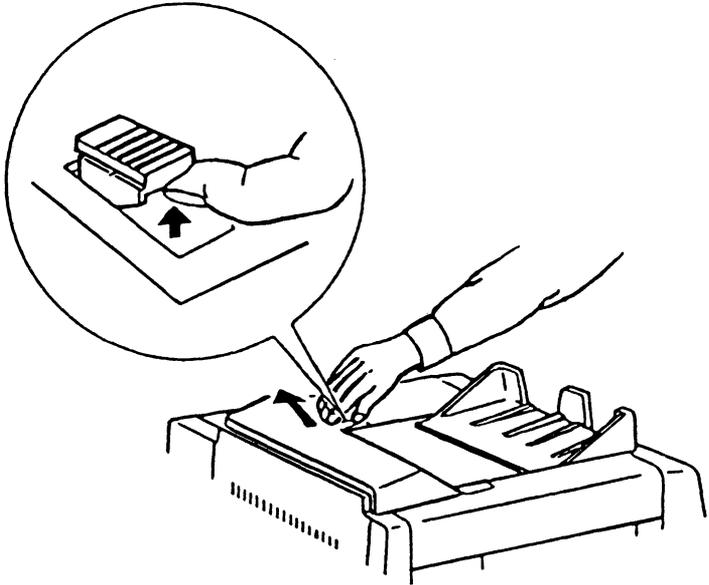
Replacing the Cleaning Pad

Warning: Disconnect the power cord before performing this procedure. To avoid burns, wait at least 40 minutes until the printer is completely cooled before touching the fusing unit. Touch only the green colored areas.

Caution: The following procedure exposes the OPC cartridge to light and so must be accomplished within five minutes. If the OPC cartridge is exposed to light for more than five minutes, the OPC belt will deteriorate, affecting print quality.

Notes:

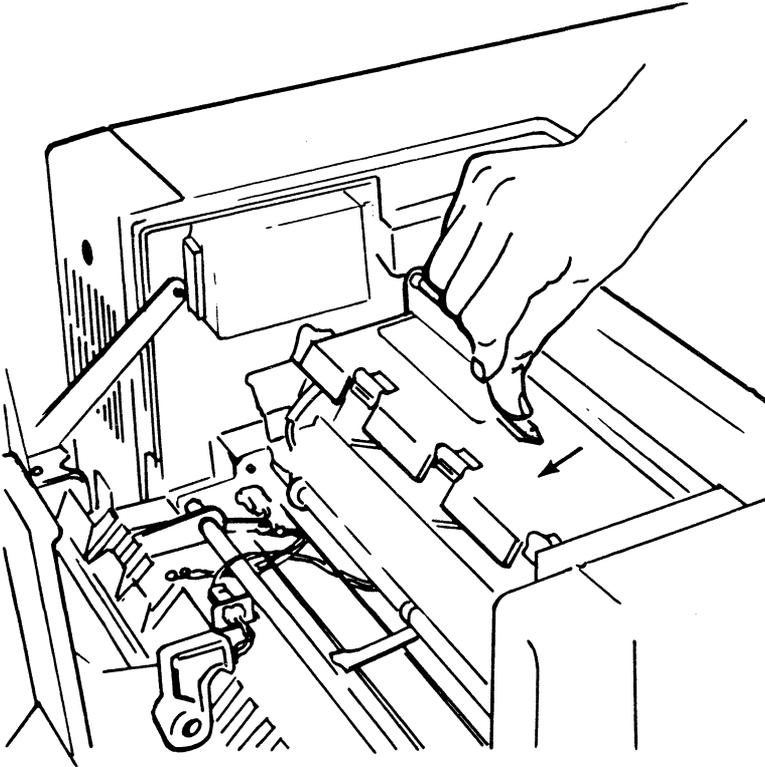
- 1 Review the illustrations and instructions for replacing the cleaning pad before starting. If you are interrupted while performing this procedure, close the fusing unit until you are ready to resume.
- 2 Concurrent illustrated instructions for replacing the cleaning pad are displayed under the paper exit cover.
 - 1 Make sure the printer power switch is positioned to OFF (O) and the power cord is disconnected from the power outlet. Also make sure the printer is sufficiently cooled.
 - 2 Lift the release lever and open the paper exit cover.

Figure 4-11 Unlocking the Exit Cover

PL1810

- 3 Push back the fusing unit lock lever and tilt the fusing unit toward the exit cover.

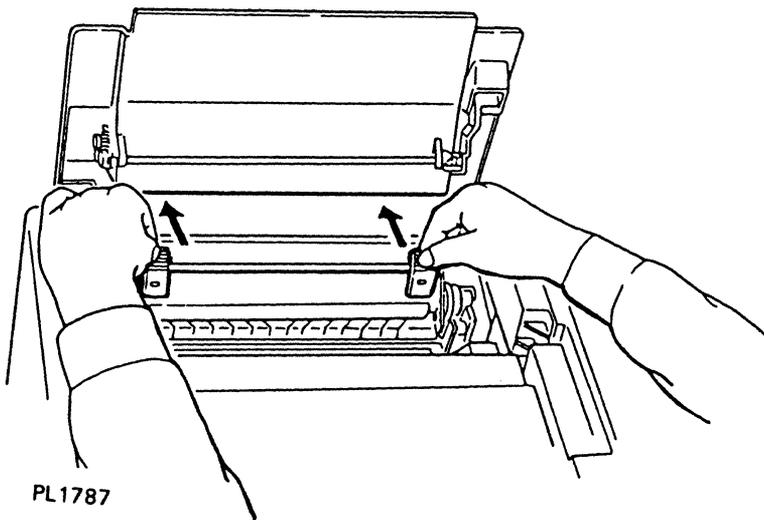
Figure 4-12 Unlocking the Fusing Unit



PL1809

- 4 Push back on the two ridged latches to the left and right of the fusing unit front cover and swing the cover toward the exit cover.

Figure 4-13 Opening the Fusing Unit Front Cover

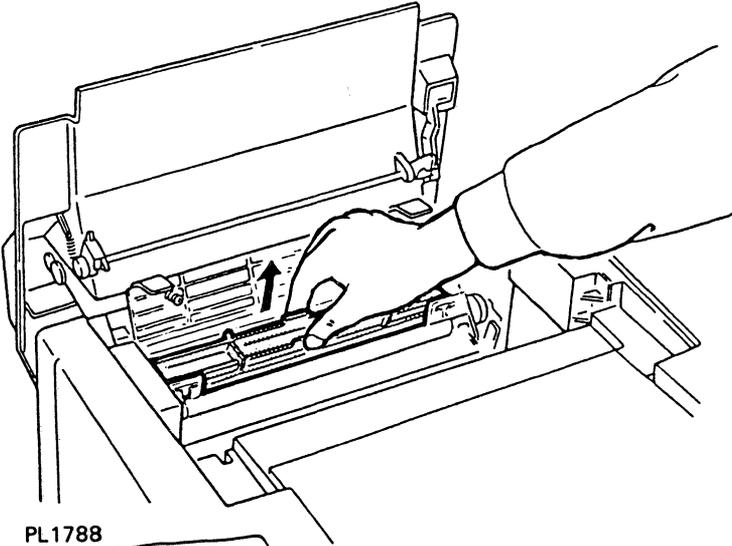


PL1787

- 5 Grip the raised edges of the cleaning pad and lift the pad up and out.

UNDERNEATH THE CLEANING PAD YOU WILL SEE THE FUSING UNIT ROLLER-

Figure 4-14 Removing the Cleaning Pad



PL1788

→ **WARNING**

- 6 Remove a new cleaning pad from the supply kit and place it on the fusing unit with the pad facing down on the roller.
- 7 Close the fusing unit cover by pressing down on the two ridge latches until the cover clicks into place.
- 8 Lock the fusing unit by pulling forward on the locking lever until the unit clicks into place.
- 9 Close the exit cover by pushing it forward until it clicks into place.

WARNING: TO AVOID BURNS, DO NOT ATTEMPT TO CLEAN THE FUSING UNIT ROLLER UNTIL THE PRINTER HAS BEEN OFF FOR AT LEAST 40 MINUTES AND IS COMPLETELY COOLED.

SA: IF YOU NOTICE AN ACCUMULATION OF PAPER LINT AND/OR EXCESS TONER ON THE FUSING UNIT ROLLER, Wipe the residue from the roller with a soft, clean, dry cloth.

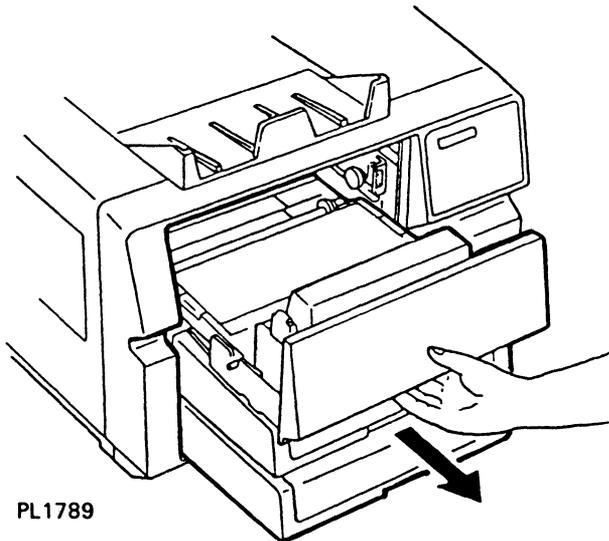
Replacing the OPC Cartridge

Warning: Disconnect the power cord before performing this procedure.

Note: A replacement OPC cartridge, shield lens, charge corona unit, and transfer corona unit are in Kit D. (Refer to Appendix C for a description of the supply kits and the items they contain.) You will need to replace the OPC cartridge approximately every 10,000 to 15,000 pages.

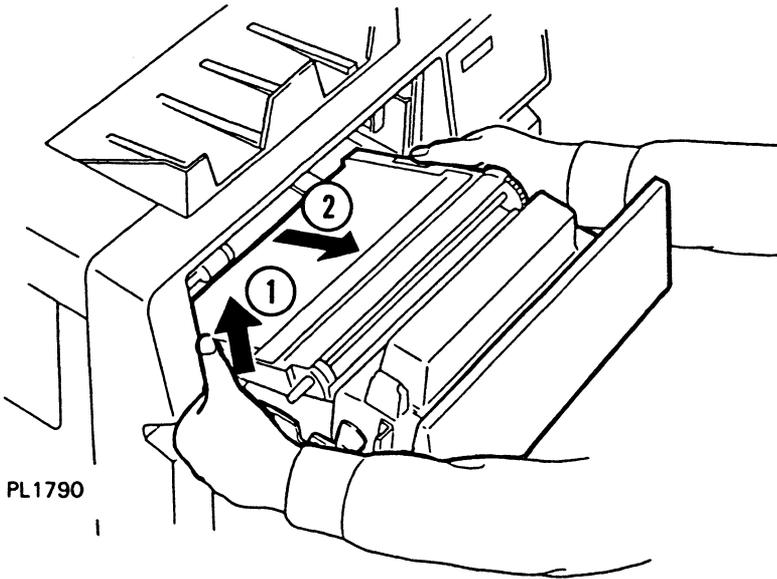
- 1 With the upper paper tray in position, pull out the development drawer until it stops.

Figure 4-15 Opening the Development Drawer



- 2 Grip the green colored areas on both sides of the OPC cartridge.
- 3 Tilt the front side of the OPC cartridge up and lift it out of the development drawer.

Figure 4-16 Removing the Old OPC Cartridge



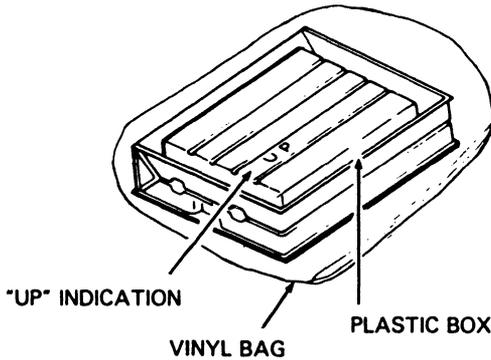
PL1790

Caution: The remainder of this procedure (Steps 4 through 10) must be accomplished within five minutes. If the OPC cartridge is exposed to light for more than five minutes, the OPC belt will deteriorate, affecting print quality.

Note: Review the illustrations and instructions for replacing the OPC cartridge before starting Step 4. If you are interrupted while performing the remainder of this procedure, place the OPC cartridge back in its plastic case and then into the black vinyl bag. Close the bag until you are ready to resume.

- 4 Remove the black vinyl OPC cartridge bag from the supply kit, open the bag, take out the plastic box containing the OPC cartridge, and set the case on a flat surface with the side labeled "UP" facing up.

Figure 4-17 Packing of the OPC Cartridge



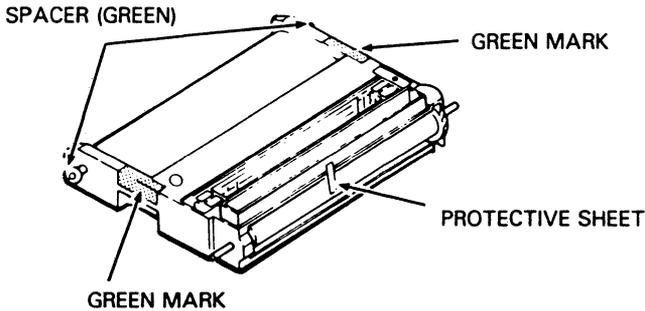
PL1763

- 5 Remove the securing tape and open the plastic case.

Caution: When handling the OPC cartridge, touch only the green areas. Be careful not to touch the surface of the belt itself. Touching the belt could affect the print quality.

- 6 Remove the two green, ring-shaped spacers from the forward shaft of the cartridge.
- 7 Remove the protective sheet from the cartridge, gripping only the securing tape.

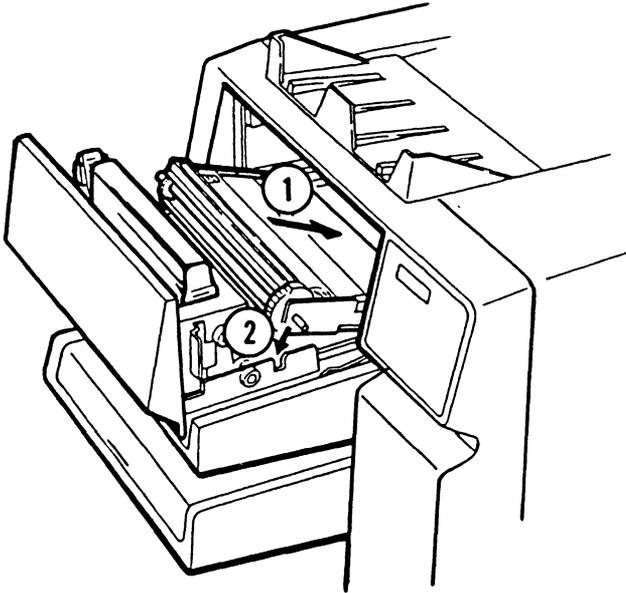
Figure 4-18 Handling the OPC Cartridge



PL1764

- 8** Grip the green area on each side of the OPC cartridge and lift the cartridge from the plastic box. The ridged side of the cartridge should be facing down.
- 9** Insert the OPC cartridge into the development drawer as follows:
 - a** Tilt the rounded side of the OPC cartridge (opposite the gears) down into the drawer.
 - b** Push down gently on the OPC cartridge so the rear two metal shafts settle into the U-shaped brackets.

Figure 4-19 Inserting the OPC Cartridge



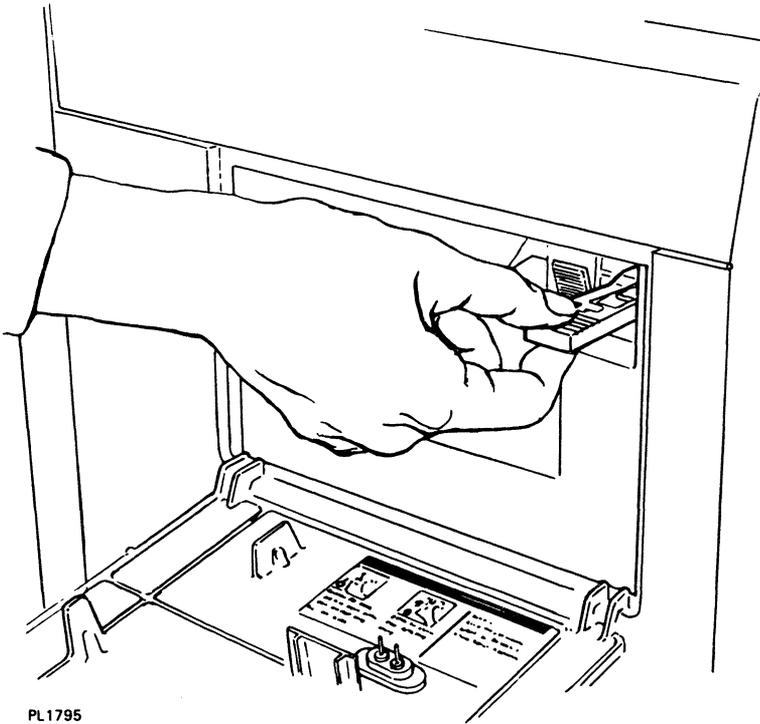
PL1765

- 10 Slide the development drawer back to its operating (closed) position.

Replacing the Shield Lens

Warning: Disconnect the power cord before performing this procedure.

- 1 Open the left side cover.
- 2 Grip the shield lens by the green, ridged end (with arrow) and slide it out from the printer.
- 3 Remove the new shield lens from the supply kit, hold the lens by the green ridged end with the arrow facing up, and slide the lens into the printer as far as possible until the lens is securely in place.

Figure 4-20 Replacing the Shield Lens

Replacing the Charge Corona Unit

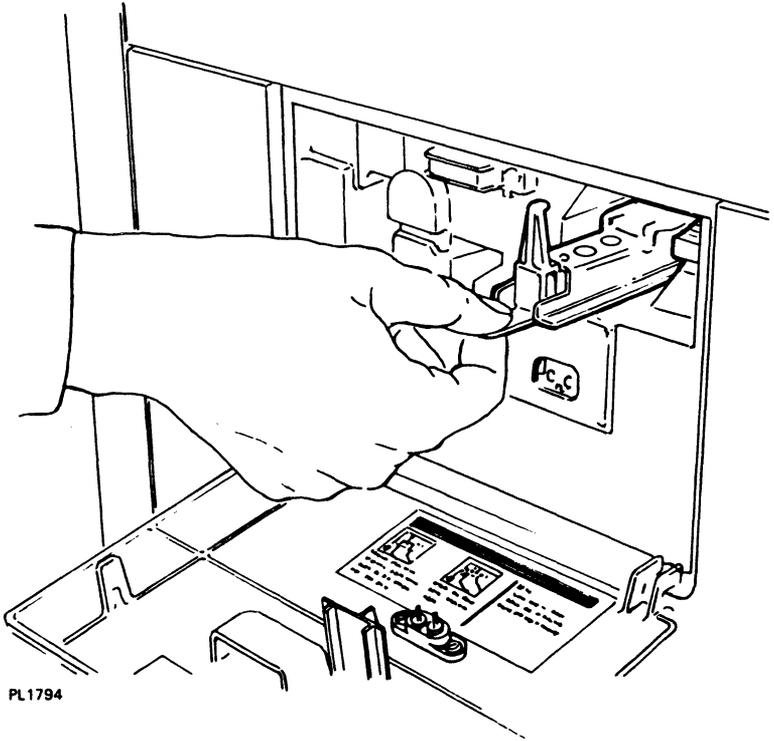
Warning: Disconnect the power cord before performing this procedure.

Note: The charge and transfer corona units are identical, interchangeable parts.

- 1 Grip the green, ridged tab of the charge corona unit, located to the left of the shield lens, and slide the unit from the printer.
- 2 Hold the end tab of the new charge corona unit and slide it into the printer as far as possible until it clicks.

Caution: Insert this unit firmly. When installation of the unit is faulty, print quality may be poor.

Figure 4-21 Replacing the Charge Corona Unit



PL1794

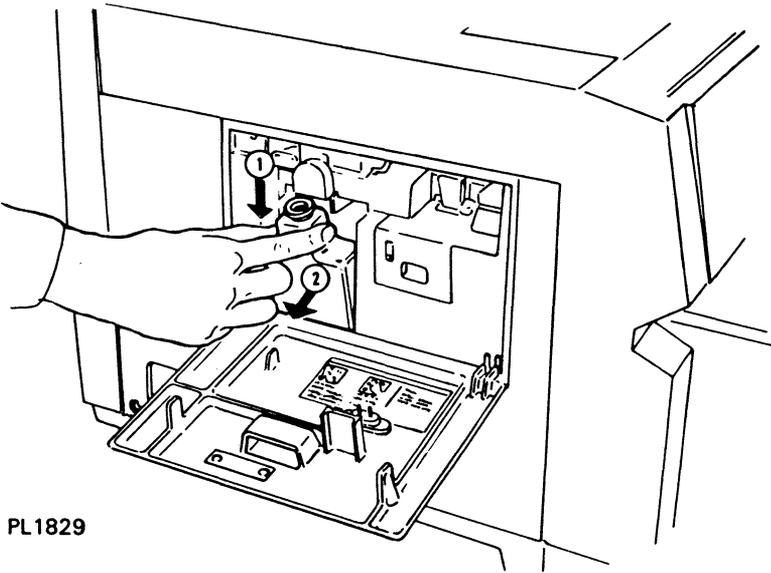
Replacing the Transfer Corona Unit

Warning: Disconnect the power cord before performing this procedure.

Note: The charge and transfer corona units are identical, interchangeable parts.

- 1 Carefully remove the toner collection bottle from the printer.

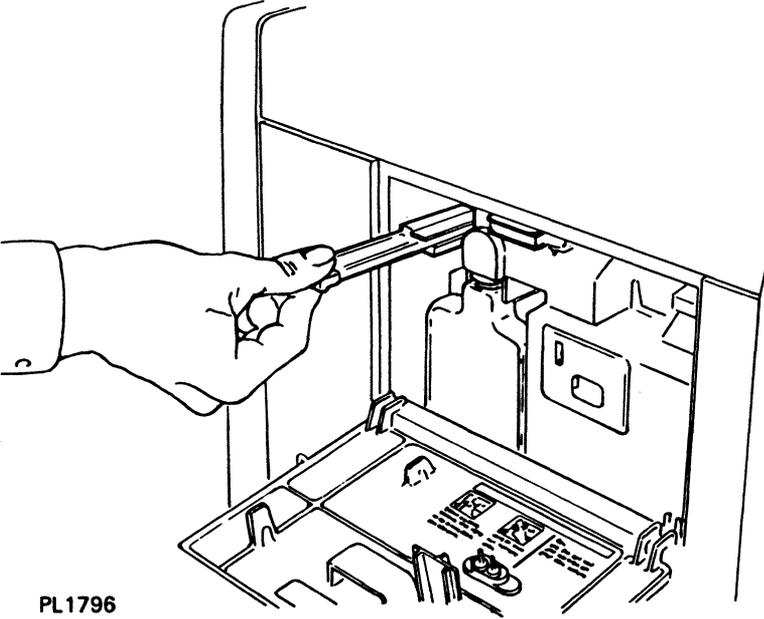
Figure 4-22 Removing the Toner Collection Bottle



PL1829

- 2 Grip the green, ridged tab of the transfer corona unit, located in the toner collection bottle recess, and slide the unit from the printer.
- 3 Hold the end tab of the new transfer corona unit and slide it into the printer as far as possible until it clicks.

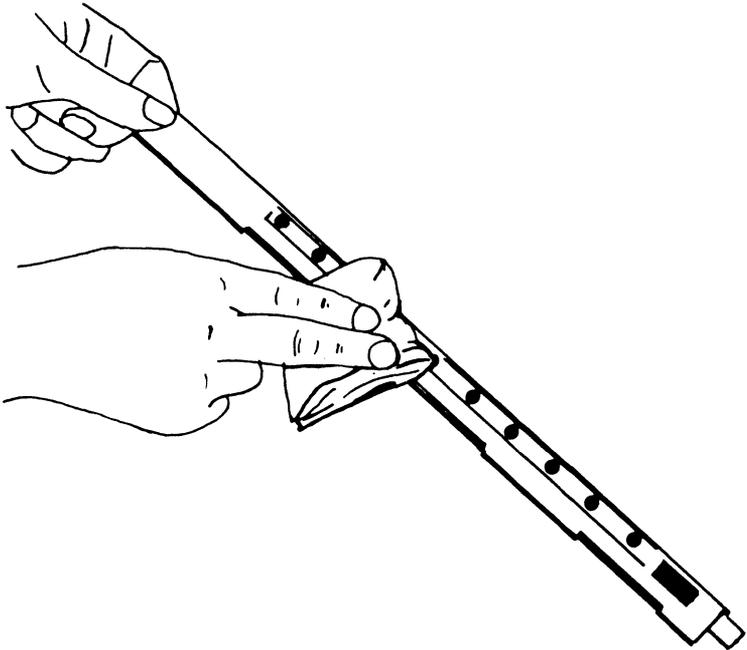
Caution: Insert this unit firmly. When installation of the unit is faulty, print quality may be poor.

Figure 4-24 Removing the Quenching Lamp

PL1796

- 2 Wipe the clear, plastic surface of the quenching lamp cover with a damp cloth.

Figure 4-25 Cleaning the Quenching Lamp



PL 1303

- 3 Slide the quenching lamp back into the printer as far as possible.
- 4 Close the left side cover.

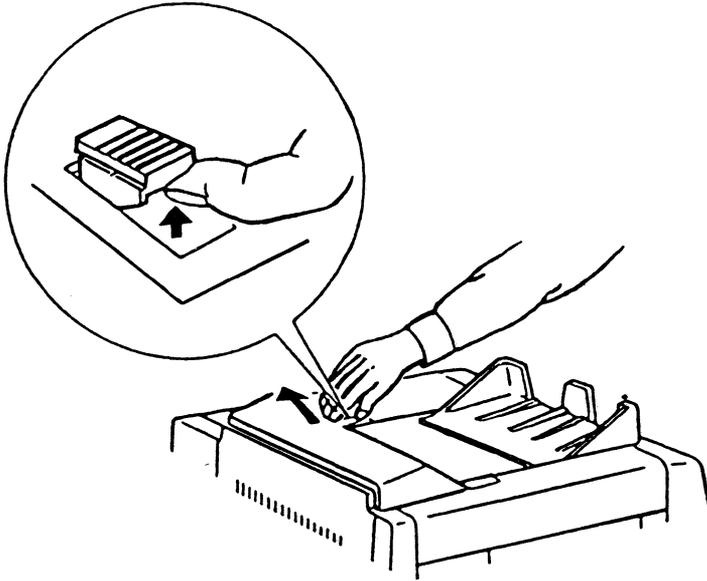
Cleaning the Separation Pawls

Warning: Disconnect the power cord before performing this procedure. To avoid burns, wait at least 40 minutes until the printer is completely cooled before touching the fusing unit. Touch only the green colored areas.

Note: Concurrent illustrated instructions for cleaning the separation pawls are displayed under the paper exit cover.

- 1 Make sure the printer power switch is positioned to OFF (O) and the power cord is disconnected from the power outlet. Also make sure the printer is sufficiently cooled.
- 2 Lift the release lever and open the paper exit cover.

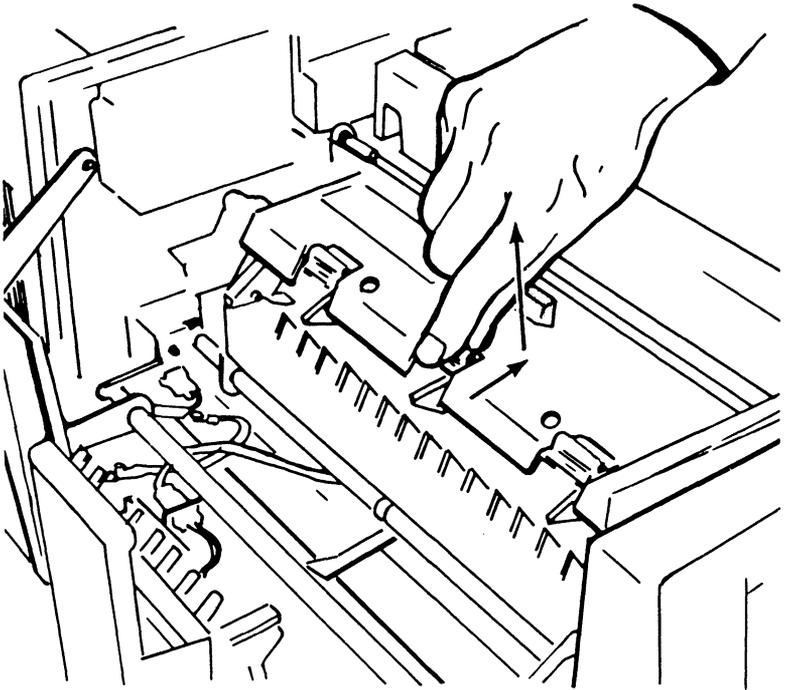
Figure 4-26 Unlocking the Exit Cover



PL1810

- 3** Remove the three separation pawls by gripping the raised edge of the pawl, pushing in the direction of the arrow (see Figure 4-27), and lifting the pawl out.

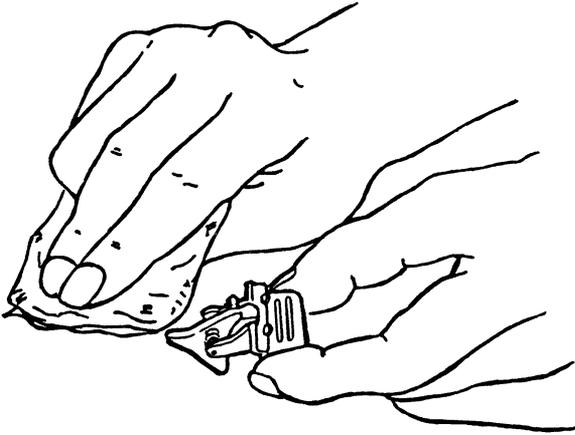
Figure 4-27 Removing the Separation Pawls



PL1812

- 4 Wipe each pawl clean with a soft, lint-free cloth or tissue paper.

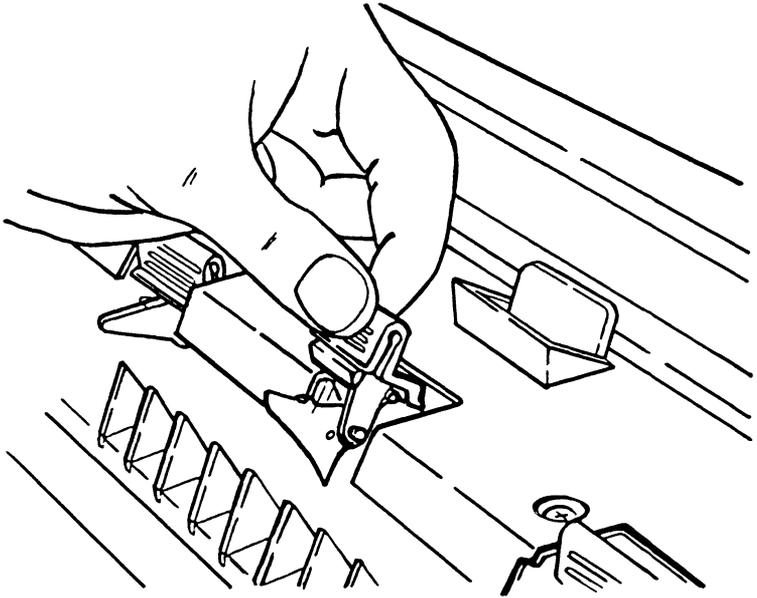
Figure 4-28 **Cleaning the Separation Pawls**



PL1769

- 5** Reinsert the three separation pawls by pressing them down into their slots until they lock into place.

Figure 4-29 Reinserting the Separation Pawls



PL1770

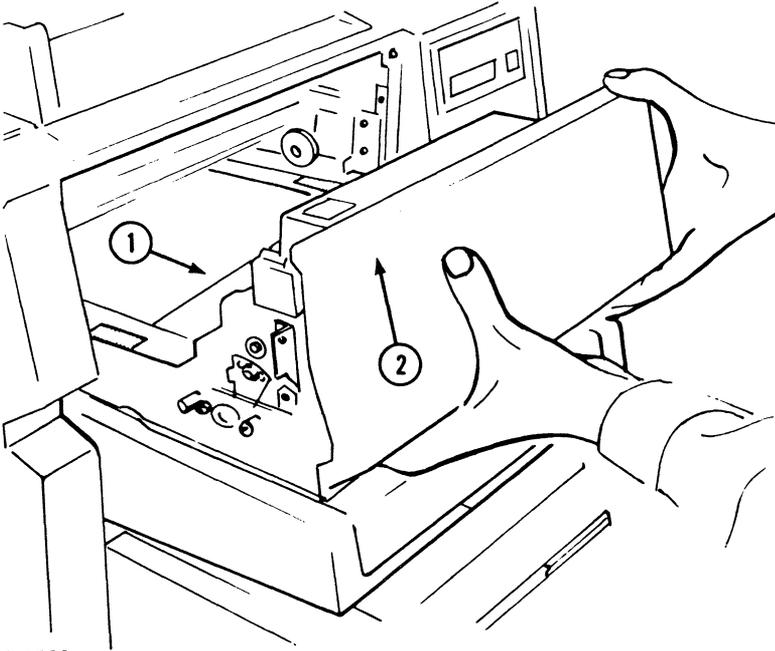
- 6 Close the paper exit cover.

Replacing the Separation and Feed Rollers

Notes:

- 1 Before performing this procedure, contact your local Burroughs sales representative to order replacement separation and feed rollers.
- 2 If you prefer, a Burroughs field engineer will perform this operation for you.
 - 1 Check the total sheet counter on the left side of the printer to verify the total sheet count has reached 150,000 pages.
 - 2 Slide the development drawer out, then lift it and remove it completely from the printer.

Figure 4-30 Removing the Development Drawer



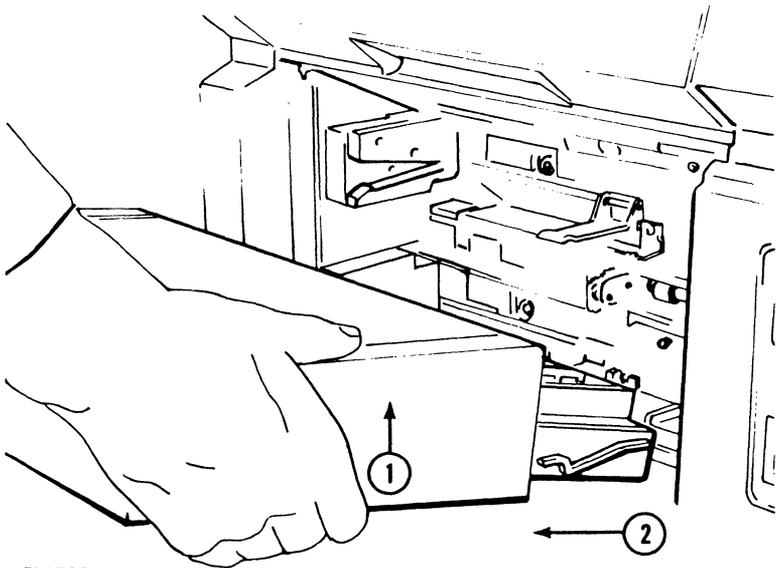
PL1802

- 3 Set the development drawer to one side out of direct light.

Caution: If the OPC cartridge is exposed to light for more than five minutes, the OPC belt will deteriorate, affecting print quality. Cover the OPC cartridge in the development drawer with two or three sheets of paper to protect the cartridge from overexposure.

- 4 Remove the paper trays by lifting up on the front end of each tray and pulling the tray out of the printer.

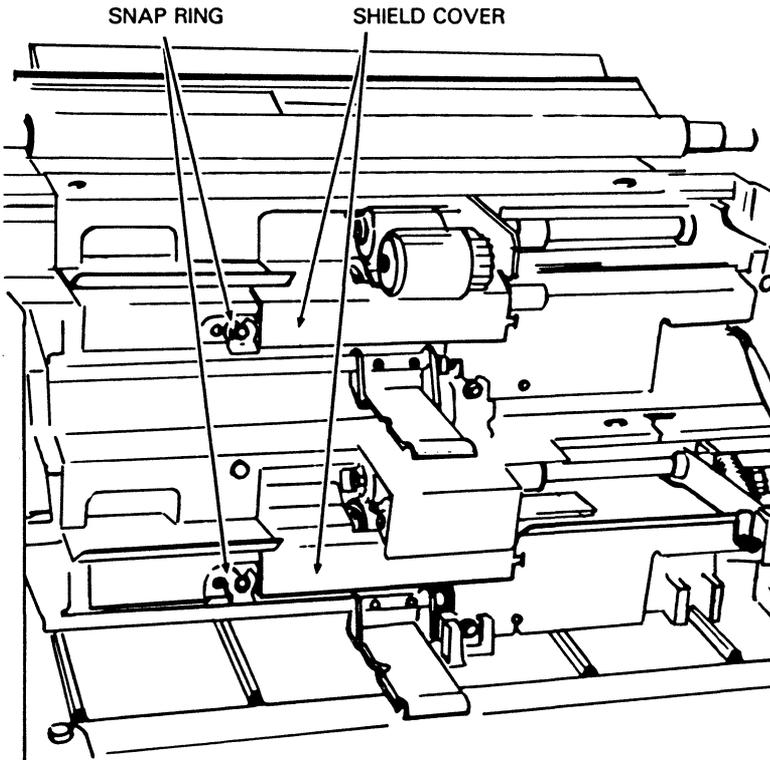
Figure 4-31 Removing the Paper Trays



PL1786

- 5 Remove the plastic snap rings securing the upper and lower shield covers.

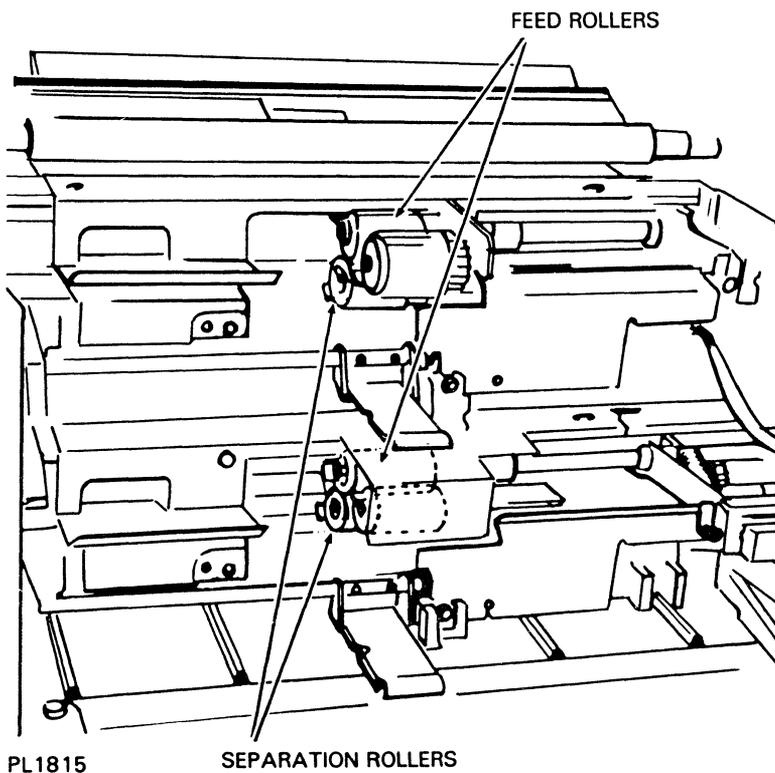
Figure 4-32 Location of the Shield Covers



PL1806

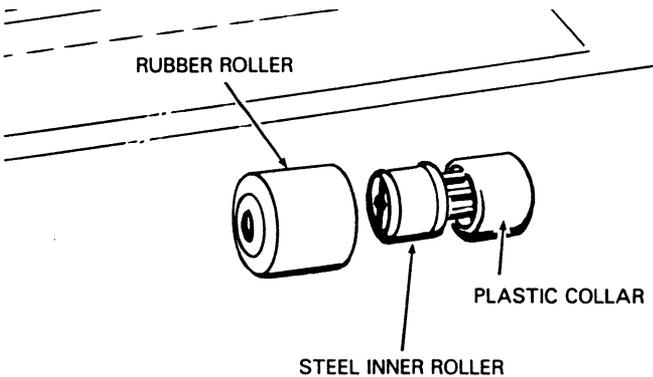
- 6** Remove the shield covers by lifting the left end of each cover off its post and sliding the cover to the left.
- 7** Remove the plastic snap ring on the upper and lower separation roller shafts. (The separation roller is the lowest roller in each set of three.)

Figure 4-33 Location of the Separation and Feed Rollers



- 8** Slide each separation roller assembly to the left and remove it from the shaft. The roller assembly consists of two parts: a steel inner roller (with coil) covered by a white, plastic collar; and the rubber roller.

Figure 4-34 Separation Roller Assembly

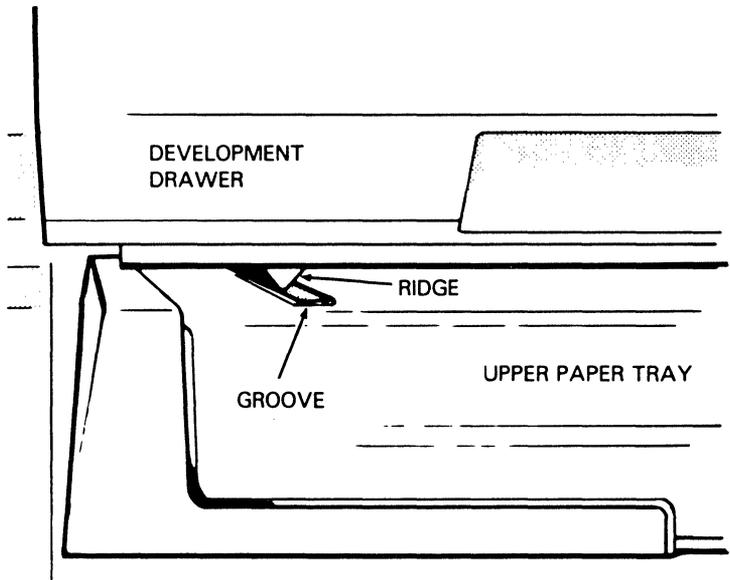


PL1807

- 9 Replace the feed roller on each feed roller shaft as follows:
 - a Remove the snap ring from the feed roller shaft. (The feed roller is the upper rear roller in each set of three. See Figure 4-33.)
 - b Slide the feed roller to the left and off the shaft.
 - c Slide the replacement feed roller onto the shaft. Make sure the end with the solid white plastic cover is to the left.
 - d Replace the snap ring on the feed roller shaft.
- 10 Install a new separation roller assembly on each separation roller shaft as follows:
 - a Slide the new steel inner roller (with the white cover in place over the coil end) onto the shaft. Make sure the end of the steel inner roller with the two notches is on the right.
 - b Make sure the two notches on the steel inner roller fit onto the two pins on the roller shaft.
 - c Slide the new rubber roller onto the roller shaft, making sure the end of the roller with the larger center hole is to the right, abutting the white cover on the inner roller.
 - d Rotate the rubber roller until you feel its two teeth (inside) fit into the two notches on the inner roller.
 - e Push the snap rings onto the separation roller shafts. Make sure the snap rings lock in place.

- 11 Place the shield covers back in place as follows:
 - a Insert the right end tab of the cover into the hole and position the left end hole of the cover on the post.
 - b Push the snap ring onto the post. Make sure the snap ring locks in place.
- 12 Replace the paper trays by matching each tray's guides with the grooves on the printer, sliding the tray in, and pushing down on the tray.
- 13 Remove the paper covering the OPC cartridge.
- 14 Position the development drawer on the paper tray so the ridges on the drawer fit exactly into the grooves between the rails on the paper tray.

Figure 4-35 Reinserting the Development Drawer



PL1808

- 16 Slide the development drawer along the rails back to its operating (closed) position.

Moving Your Printer

To move your printer a short distance (for example, within an office or a building), simply disconnect your printer from its power source and the host computer and transfer it to a cart for moving.

Warning: To avoid injury, two people should lift the printer.

Caution: Do not tilt the printer. Toner from the toner cartridge, development tank, toner collection bottle, or cleaning unit could come in contact with the electrical components in the printer's interior and seriously damage the printer.

If you need to move your printer a long distance, pack the printer securely to prevent damage to the printer.

- 1 Remove the OPC cartridge and place it in its plastic storage box and black vinyl bag.

Caution: Remove as much toner from the printer as possible. If toner comes in contact with the electrical components in the printer's interior, the printer can be seriously damaged.

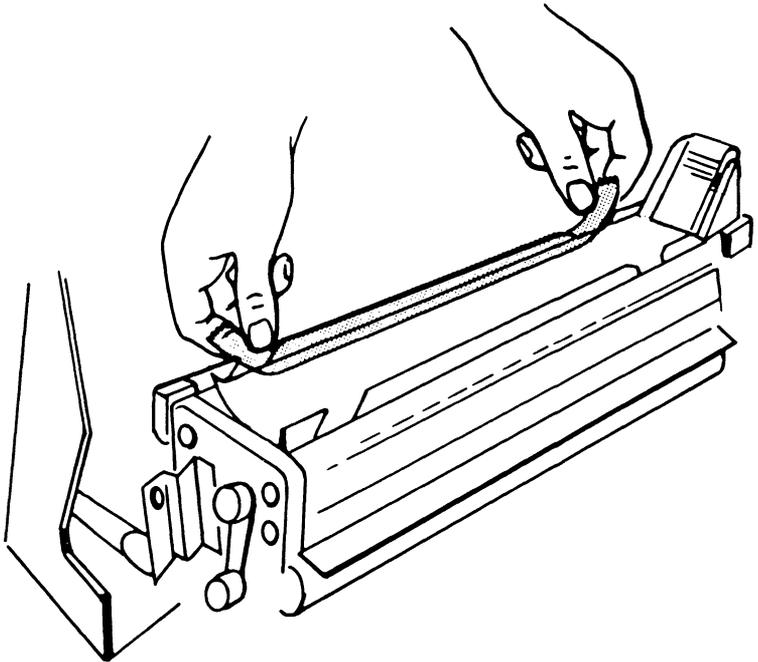
- 2 Remove the toner cartridge and empty the toner from the development tank.
- 3 With a vacuum cleaner, clean the development tank and the area around it.

Caution: Use a vacuum cleaner equipped with a special filter and bag for vacuuming the toner. Because toner is very fine, it cannot be contained by most regular vacuum cleaner bags and filters and may escape into the air and/or damage your vacuum cleaner motor. You can equip a vacuum cleaner such as Hoover model S-1015-030 with a specially designed bag which can be ordered by contacting your Burroughs sales representative.

- 4 To avoid possible contamination from any remaining toner, remove the development drawer from the printer, place it in a plastic bag, and ship it in a carton separate from the printer.

- 5 If it is not possible to ship the development drawer separately, do the following:
 - a Cut a piece of paper, 20 lb or heavier, into a rectangle approximately 2 by 9 3/4 inches.
 - b Place the paper over the opening to the development tank and tape it in on all four sides with cellophane tape.

Figure 4-36 Sealing the Development Tank Opening

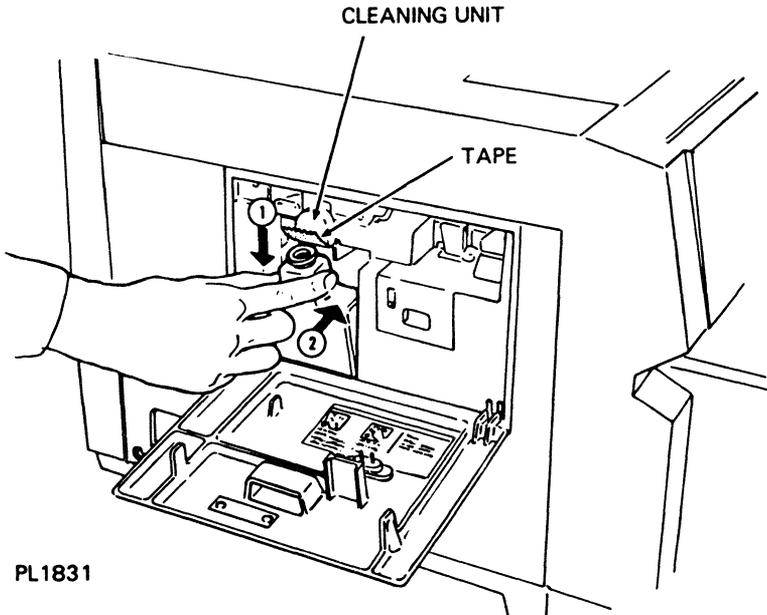


PL1834

- c Reinsert the empty toner cartridge over the paper.
- d Replace the development drawer in the printer.

- 6 Seal off the cleaning unit by doing the following:
 - a Remove the toner collection bottle and place tape over the cleaning unit spigot.
 - b Reinsert the toner collection bottle, making sure the neck of the bottle fits snugly against the taped spigot.

Figure 4-37 Sealing the Cleaning Unit Spigot



PL1831

- 7 Use the original shipping materials to repack the printer and accessories, reversing the unpacking instructions in Section 1. If the original shipping materials are not available, use a large, strong carton capable of holding the printer and accessories securely. Be sure to cushion the printer against damage during shipping.

Troubleshooting

This section provides information to help you answer questions you may have about the operation of your AP 9215 printer. Included are instructions for:

- Reading error messages on the indicator panel.
- Clearing paper jams.
- Correcting printing problems.
- Correcting other problems you may encounter.

Check this information before calling for service. If you are still unable to resolve your problem, contact a Burroughs field engineer or your Burroughs Service Center.

Reading the Indicator Panel

The AP 9215 printer is designed to diagnose some of the problems that may occur during operation. To alert you to the problem, an indicator will light and an error message will appear on the display panel. Table 5-1 lists these messages, their meanings, and corrective measures you can take to resolve the problem.

Notes:

- 1 Only error indicators and messages are given in Table 5-1. Indicator lights connected with maintenance procedures are explained in Section 4.
- 2 Actions marked with an asterisk (*) are described in detail in the *AP 9215 Printer Programming Reference Manual*.

Table 5-1 Error Messages

Indicator	Message	Description	Action
	MIS FEED UPPER	Paper is not being fed from the upper paper tray.	See "Clearing Paper Jams" later in this section.
	MIS FEED LOWER	Paper is not being fed from the lower paper tray.	See "Clearing Paper Jams" later in this section.
	JAM AT TRANSFER	Paper jam in the paper transport system.	See "Clearing Paper Jams" later in this section.
	JAM AT EXIT	Paper jam in the exit system.	See "Clearing Paper Jams" later in this section.
	BAD DOWNLOAD	Error in downloaded font or image data.	Check the download command, correct the error, and resend the data.*
	CANCEL LIMITLESS	Both paper trays have run out of paper while in Endless Feed mode. OR Different size paper trays are being used and Endless Feed mode has been requested.	Add paper to the paper trays or insert two paper trays of the same size into the printer. Then reset the printer, reenter Endless Feed mode, and resend the data.
	C.F.ROM ERROR	Error in the memory of an inserted font cartridge.	Check for proper cartridge insertion. Change cartridges.
	C.MIS-OPERATED	The font cartridge containing the specified font has been pulled out while the printer is on-line.	Set the power switch to OFF (0), reinsert the font cartridge, set the power switch to ON (1), and resend the data.
	CHECK PAPER TRAY	Cover of the selected paper tray is open.	Close the cover.

Indicator	Message	Description	Action
L	CLOSE SIDE COVER	Left side cover is open.	Close the left side cover.
L	CLOSE TOP COVER	Exit cover is open.	Close the exit cover.
L	COM. DATA ERROR	Data communication error.	Verify that the baud rate, data format, and parity check settings for the printer and host system match and restart data communication.
L	DIFFERENT SIZE	A different paper size has been set for the data already processed within the controller.	Verify that the paper size and the paper tray size match.
L	F.ERROR ENGINE	Engine drive system error.	Contact a Burroughs field engineer.
L	F.ERROR FPU	Front panel unit error.	Contact a Burroughs field engineer.
L	F.ERROR F.ROM	Font file memory error.	Contact a Burroughs field engineer.
L	F.ERROR FUSER	Fusing system error.	Contact a Burroughs field engineer.
L	F.ERROR MOTOR	Main motor or main motor drive error.	Contact a Burroughs field engineer.
L	F.ERROR OPC	OPC belt system error.	Contact a Burroughs field engineer.
L	F.ERROR OPTICAL	Optical system error.	Contact a Burroughs field engineer.

Indicator	Message	Description	Action
↳	F.ERROR P.ROM	Controller memory error.	Contact a Burroughs field engineer.
↳	F.ERROR RAM	Read/write memory error.	Contact a Burroughs field engineer.
↳	F.ERROR TIMER	Timer/interrupt CPU check error.	Contact a Burroughs field engineer.
↳	FONT FILE ERROR	Font file error.	Contact a Burroughs field engineer.
↳	INPUT OVERFLOWED	The input buffer overflowed. OR Communication protocols between the host system and the printer do not match.	Verify that communications protocols between the host system and the printer match and restart data communication. If any data was lost, resend data.
↳	JAMMED PAGE LOST	Data for a jammed page cannot be wholly recovered.	Clear the paper jam and resend the lost data.
↳	LINE OVERFLOW	Data to be printed in one character line exceeds the line buffer memory capacity.	Reduce the number of characters per line and resend the data.
↳	LINE TOO COMPLEX	Too many characters on one scanning line; CPU cannot process the data. OR Communication protocols between the host system and the printer do not match.	Reduce the number of characters per line and resend the data. Verify that communication protocols between the host system and the printer match.

Indicator	Message	Description	Action
	NO REQ. FONT	Designated font name does not exist. OR Selected font number is not defined.	Check font name or number and resend data.
	NO REQ. TRAY	Selected paper tray is not installed.	Install the required paper tray. Check the paper tray to be sure it is seated all the way into the printer.
	PAGE OVERFLOWED	Data to be printed on one page exceeds the page memory capacity.	Reduce the number of characters per page and resend data.
	RAM ERROR	Read/write memory error.	Contact a Burroughs field engineer.
	RAM OVERFLOWED	Not enough memory to rotate or download font. OR Not enough memory for image data.	Delete unnecessary font data on memory, open memory, and resend the command.*
	SET DEVELOPER	Development drawer not closed all the way.	Close development drawer.
	SET PAPER STACK	Paper stacker is not set to legal size when legal size paper is selected.	Slide the paper stacker to the legal size position.
	SET TONER BOTTLE	Toner collection bottle is full or not properly set.	Check position of toner collection bottle. If bottle is full, replace (see Section 4).
	TOO MANY FONT	The total number of fonts loaded in the printer exceeds the allowable maximum.	Delete some of the downloaded or rotated fonts and restart the printer.*

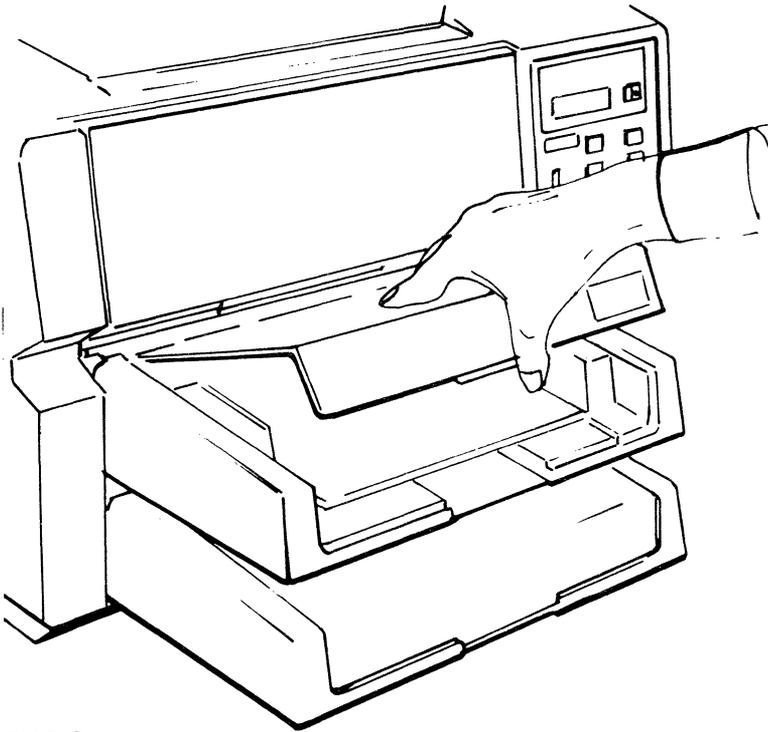
Clearing Paper Jams

Note: When clearing a paper jam, do not turn off the printer. If you turn off the printer, any data stored in the printer's memory that has not yet printed will be lost.

Clearing Misfed Paper from the Upper Paper Tray

- 1 Lift open the upper paper tray cover.

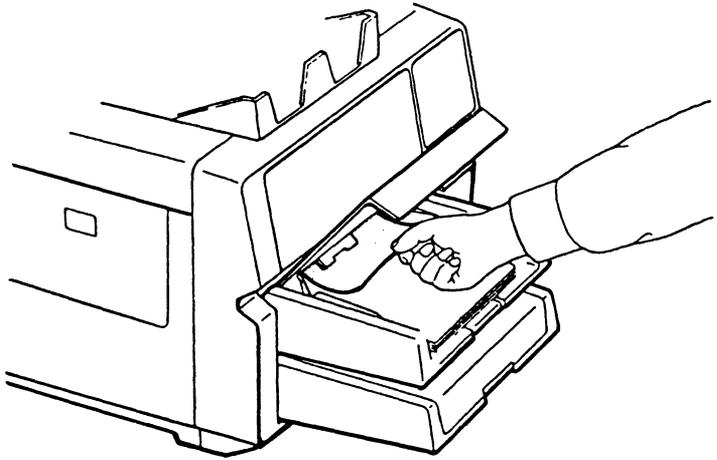
Figure 5-1 Opening the Upper Paper Tray Cover



PL1803

- 2 Remove any misfed paper by pulling the paper toward you. Take care not to tear the paper.

Figure 5-2 Clearing Misfed Paper from the Upper Paper Tray



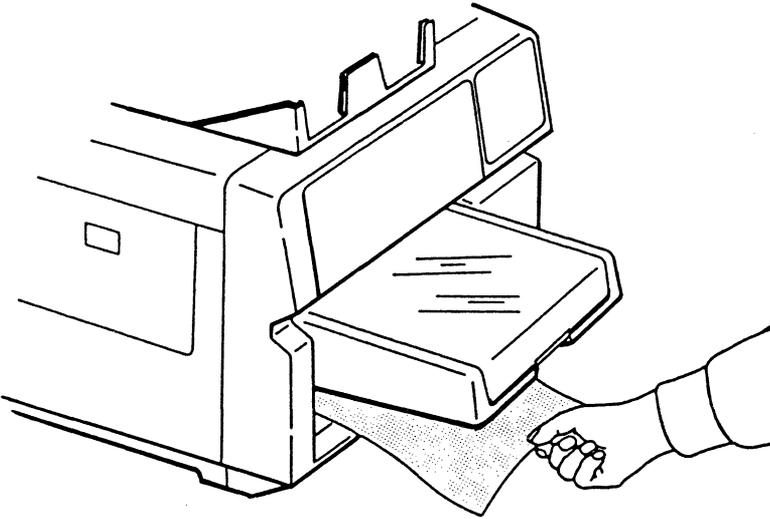
PL1773

- 3** Close the upper paper tray cover.

Clearing Misfed Paper from the Lower Paper Tray

- 1** Remove the lower paper tray.
- 2** Remove any misfed paper by pulling it toward you. Take care not to tear the paper.

Figure 5-3 Clearing Misfed Paper from the Lower Paper Tray



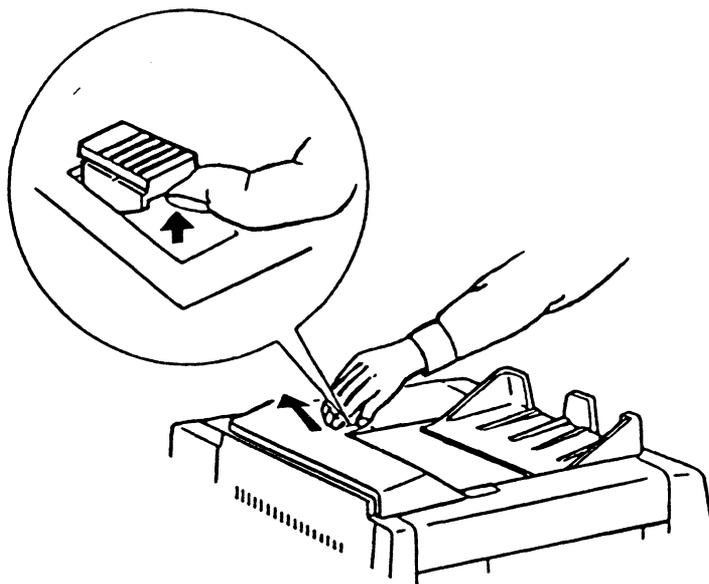
PL1774

- 3 Reinsert the lower paper tray.

Clearing Misfed Paper from the Transfer Section

Caution: Pull out the development drawer as far as it can go before attempting to remove misfed paper from the transfer section. This will prevent the misfed paper from dragging across the OPC belt and possibly damaging it.

- 1 Lift the release lever and open the paper exit cover.

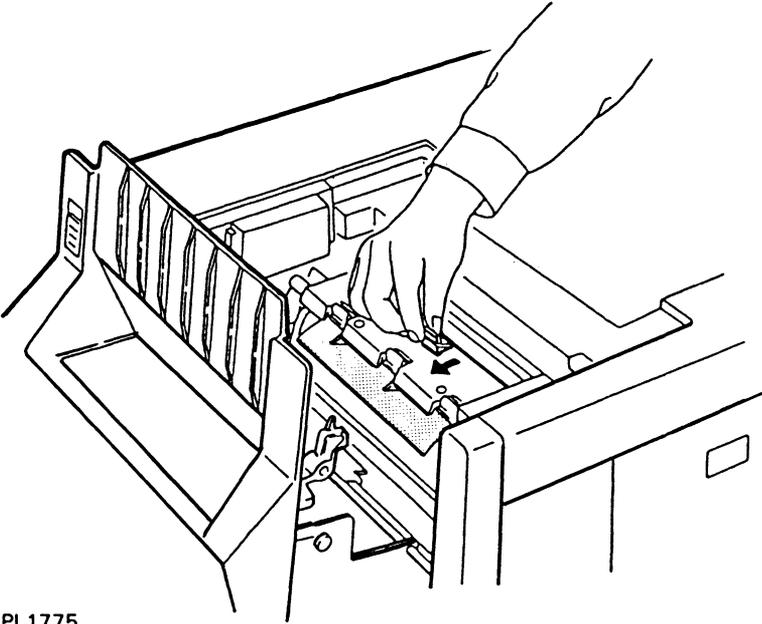
Figure 5-4 Unlocking the Exit Cover

PL1810

Warning: The fusing unit is extremely hot. Take care to touch only the green colored areas. Do not touch the unit itself.

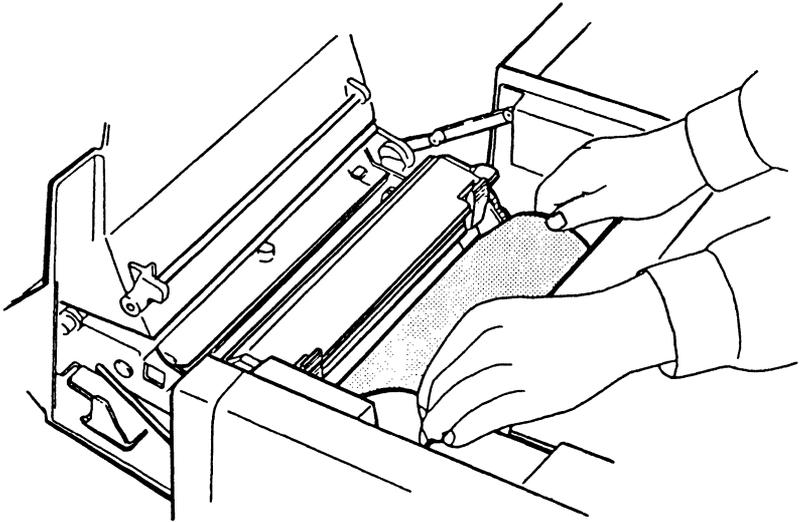
- 2 Push back the fusing unit lock lever and tilt the fusing unit toward the exit cover.

Figure 5-5 Unlocking the Fusing Unit



PL1775

- 3** Remove any misfed paper, taking care not to leave any paper scraps.

Figure 5-6 Removing Misfed Paper from the Transfer Section

PL1776

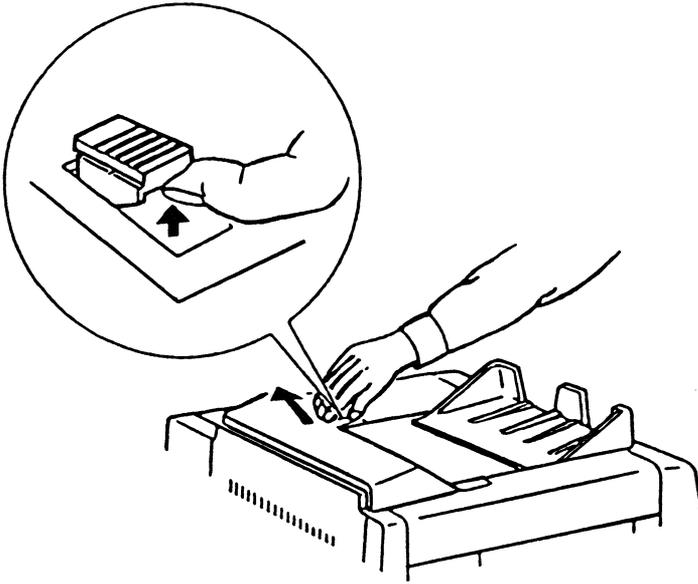
- 4 Lock the fusing unit by pulling forward on the locking lever until the unit clicks into place.
- 5 Close the exit cover by pushing it forward until it clicks into place.

Clearing Misfed Paper from the Exit Section

Caution: Pull out the development drawer as far as it can go before attempting to remove misfed paper from the exit section. This will prevent the misfed paper from dragging across the OPC belt and possibly damaging it.

- 1 Lift the release lever and open the paper exit cover.

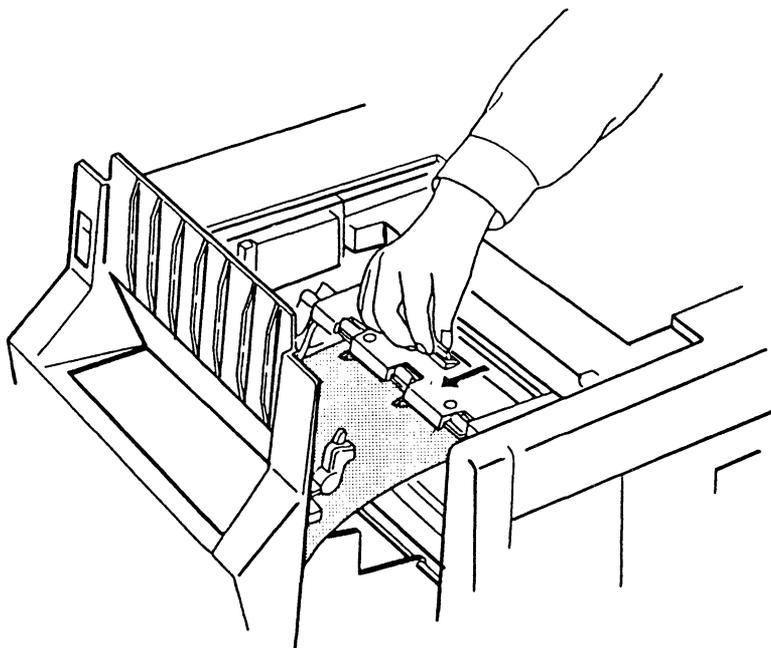
Figure 5-7 Unlocking the Exit Cover



PL1810

Warning: The fusing unit is extremely hot. Take care to touch only the green colored areas. Do not touch the unit itself.

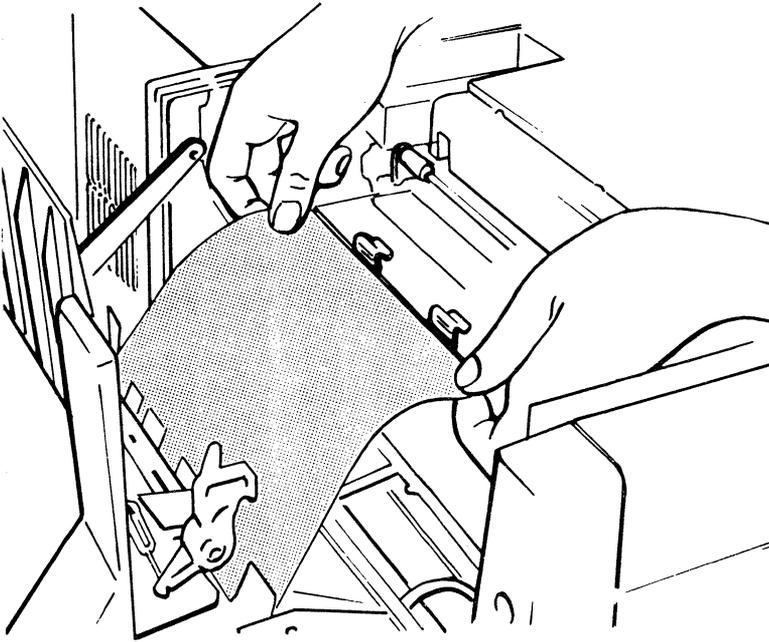
- 2 Push back the fusing unit lock lever to release pressure on the fusing roller. Do **not** tilt the fusing unit toward the exit cover.

Figure 5-8 Unlocking the Fusing Unit

PL1439

- 3** Remove any misfed paper, taking care not to leave any paper scraps.

Figure 5-9 Removing Misfed Paper from the Exit Section



PL1804

- 4 Lock the fusing unit by pulling forward on the locking lever until the unit clicks into place.
- 5 Close the exit cover by pushing it forward until it clicks into place.

Correcting Printing Problems

Table 5-2 shows problems you may occasionally encounter with the printed output from your printer and possible solutions to these problems. After taking the suggested actions, if the problem persists, contact a Burroughs field engineer or your Burroughs Service Center.

Table 5-2 Printing Troubleshooting Chart

Sample	Problem	Corrective Action
	Printed paper comes out blank.	Replace the charge corona unit.
	Printing is blurred or too light.	Check toner level. Check the installation of the shield lens. Replace the charge corona unit. Replace the transfer corona unit. Replace the OPC cartridge. Replace the shield lens.
	Black spots (stray toner) are on the printed pages.	CLEAN THE FUSING UNIT ROLLER Clean the quenching lamp. Clean the exit rollers. Replace the cleaning pad. Replace the OPC cartridge.
	Streaks appear from the leading edge of the printed paper.	Clean the separation pawls. Replace the OPC cartridge.
	"Ghosts" of characters printed on previous sheets appear in the same location on subsequent sheets.	Clean the quenching lamp. Replace the OPC cartridge.
	The print is skewed on the page.	Check paper alignment in the paper tray. Make sure the paper and paper tray are the same size. Replace the feed rollers.
	Black line(s) appear at the same location on every page.	Replace the shield lens. Replace the OPC cartridge.

Correcting Other Problems

You may encounter problems with your printer other than those mentioned above. Many of these problems can be easily solved. Consult Table 5-3 for a list of possible problems and suggested solutions. After taking the suggested actions, if the problem persists, contact a Burroughs field engineer or your Burroughs Service Center.

Table 5-3 General Troubleshooting Chart

Problem	Corrective Action
Power indicator is off and printer does not operate.	Make sure the power cord is plugged into a live electrical outlet. Make sure the power switch is in the ON (I) position. Replace the fuse (see "Replacing the Fuse" later in this section).
Power and Ready indicators are on, but printer does not operate.	Make sure the interface (I/F) cable is installed properly. Make sure the printer's DIP switch settings match the host system configuration.
The printer stops printing, but the Data In Buffer indicator is lit and the message DATA PRESENT is in the display panel.	Press the On/Off Line button to put the printer in off-line mode. Then press the Form Feed button on the indicator panel. The printer will print the data left in the buffer and eject the paper.
Paper misfeeds frequently with two or more sheets fed at the same time.	Make sure you are using undamaged paper suitable for the printer. (See Appendix A for paper specifications.) Clean the separation rollers. Replace the separation rollers.
You have entered two or more commands at the indicator panel, but the printer recognizes only one of them.	After each command, return to on-line mode before entering the next command.
Printer operation interferes with radio or television reception.	See "Correcting Radio or Television Interference" later in this section.

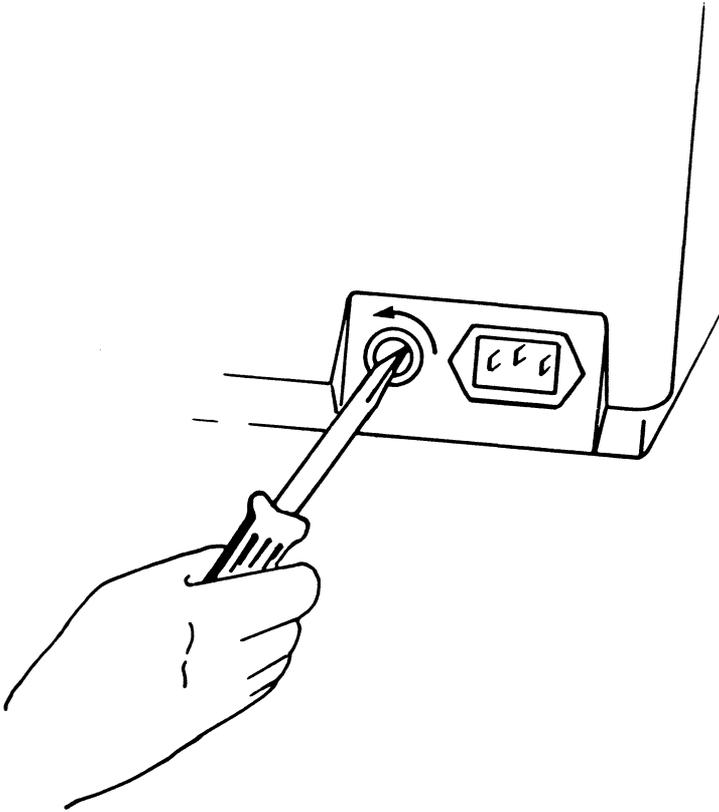
Replacing the Fuse

If the printer is plugged into a live electrical circuit and the power switch is set to ON (I) but none of the indicator panel lights are on and the printer is not operating, the problem may be a burned out power fuse. Instructions for replacing the power fuse are given below.

Warning: Disconnect the power cord before performing this procedure.

- 1 To remove the fuse holder, turn it with a small screwdriver counterclockwise approximately 30° and pull the fuse holder out of the printer.

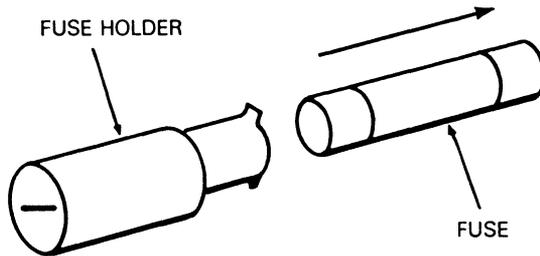
Figure 5-10 Removing the Fuse Holder



PL1837

- 2 Pull straight out on the fuse to remove it from the fuse holder.**

Figure 5-11 Removing the Fuse from the Holder

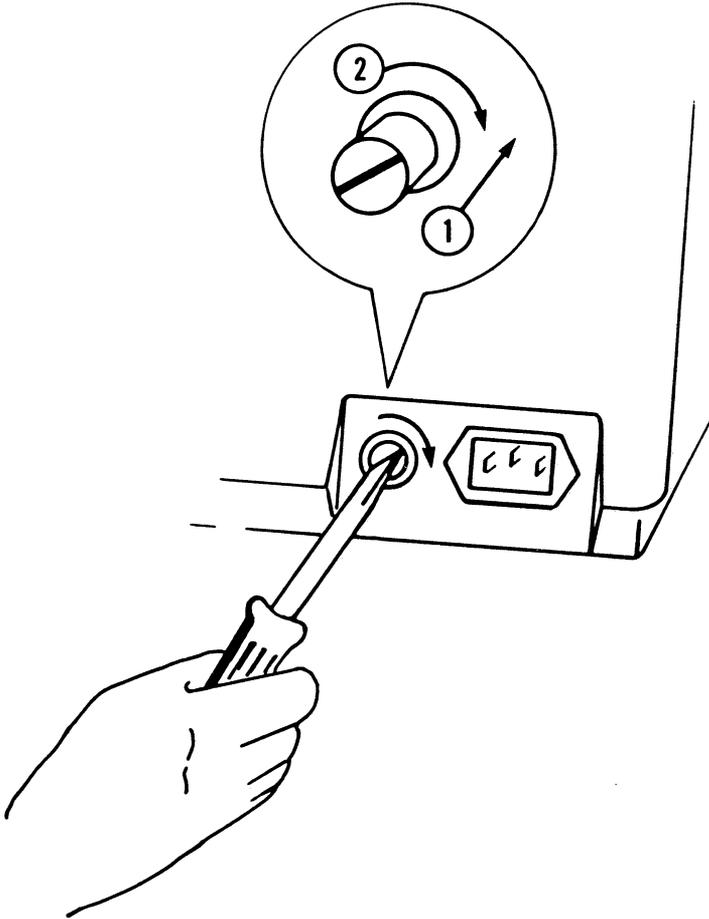


PL1836

Warning: For continued protection against fire hazard, replace your printer's fuse only with a fuse of the type and rating appropriate for your printer.

- 3 Push a new fuse into the fuse holder until the fuse sticks. If you have a 120V printer, use a standard 250V 10A "normal-blow" fuse. If you have a 220V or 240V printer, use a standard 250V 5A time lag fuse.
- 4 Set the fuse holder in the printer opening and turn the holder clockwise until it goes into the printer as far as possible.

Figure 5-12 Reinserting the Fuse Holder



PL1838

- 5 With a small screwdriver, turn the fuse holder clockwise approximately 30° while pressing in on the holder.

Correcting Radio or Television Interference

AP 9215 printer operation may cause interference to radio or television reception in some installations. To correct an interference problem, take one or more of the following actions:

- Use only shielded Burroughs computer cables that have been approved for your system.
- Reorient the receiving antenna of the device experiencing the interference.
- Move the printer in relation to the receiver.
- Plug the printer and the radio or television into different power outlets so the devices are on different branch circuits.

Printer Specifications

Printer Dimensions

- Height: 16.6 inches (421 mm)
- Width: 21.3 inches (540 mm)
- Depth:
 - 25.2 inches (641 mm) with A4 and letter paper trays
 - 28.2 inches (718 mm) with legal size paper tray
- Weight: 88 pounds (40 kg)

Development Process

The development process in the AP 9215 printer is dry electrophotography.

Print Speed

Note: To achieve these print speeds, a data transfer rate from the host of 19200 baud must be maintained. Printing complex text or graphics may result in reduced print speeds.

Print speed for a single sheet of A4 or letter size paper is a maximum of 12 seconds.

Print speed during continuous printing of text is a maximum of 15 sheets per minute for A4 and letter paper, and 7.5 sheets per minute for legal size paper.

Printer warm-up time is approximately 90 seconds.

Electrical Environment

Power Requirements

- 100/120 V model: 90 to 132 V
- 220/240 V model: 191 to 256 V

Power Consumption

- 100/120 V model: 800 W
- 220/240 V model: 750 W

Operating Environment

The AP 9215 should be operated in a normal office with the following conditions:

- Temperature: 50° to 90°F (10° to 32°C)
- Humidity: 20 to 80 percent RH
- Illumination: less than 2,000 Lux
- Altitude: 8,250 feet (2,500 m) or lower
- Horizontal Level: The surface supporting the printer should not be tilted more than 5 mm from a horizontal position.

Paper

The AP 9215 printer uses plain, cut sheet paper. Usable paper sizes are A4 (8.27 inches x 11.69 inches), letter (8 1/2 inches x 11 inches), and legal (8 1/2 inches x 14 inches). Usable paper weights are 16 to 24 pound (60 to 90 g/m²). The AP 9215 printer can also use transparencies and sheets of gummed labels designed for photocopiers and printers using a heat fusing process.

The materials used in this printer must be able to withstand fusing temperatures up to 400°F (204°C), fusing pressures up to 140 pounds per square inch (9.8 kg/cm²), a pressure dwell time of approximately 50 milliseconds, and exposure to silicon oil from the pressure roller's cleaning pad. If your material is able to be used in a photocopier using a high-pressure, high-temperature fusing process, the material should be suitable for use in this printer.

Caution: The following paper types should not be used as they may cause problems in the printer:

- Paper with staples, paper clips, or other metal attached.
- Paper with an exposed pasted surface.
- Torn paper.
- Folded, wavy, or peeled paper.
- Clipped or windowed paper.
- Embossed, relief, or rough-textured paper.
- Forms preprinted with ink that cannot withstand high temperatures, high pressures, or exposure to silicon oil.

Paper Tray Capacity

The capacity of each paper tray is 250 sheets (20 pound paper) for a total of 500 sheets.

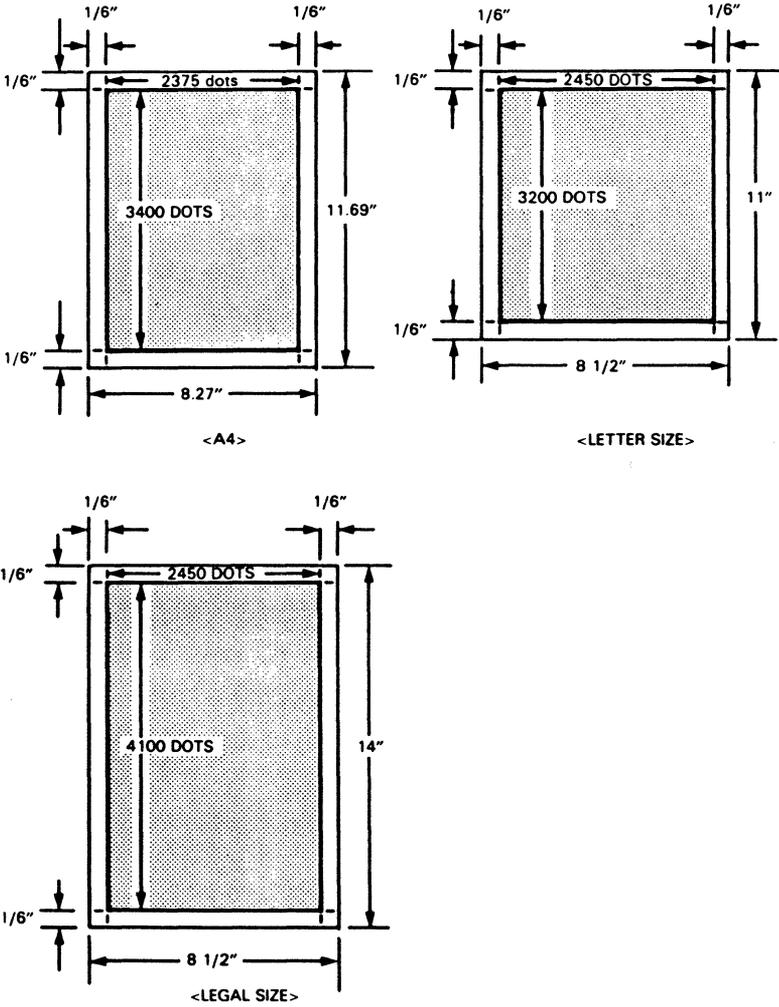
Paper Stacker Capacity

Paper ejects from the printer face down to provide positive page collation in the stacker. Capacity is 500 sheets (20 pound paper).

Page Dimensions

The AP 9215 printer leaves a 1/6 inch margin on all four sides of the paper. Printing can not take place within this margin. Figure A-1 shows the maximum effective printing areas for A4, letter, and legal size paper.

Figure A-1 Maximum Effective Printing Areas



Default Parameter Values

Table B-1 shows the AP 9215 printer's default parameter values after turning the printer on or pressing the Shift and On/Off Line buttons simultaneously. Some of these parameters must be set using software commands. For a detailed explanation of the software commands that can be used with the AP 9215, consult the *AP 9215 Printer Programming Reference Manual*.

Table B-1 Default Parameter Values

Parameter Description	Default Values		
	Letter	A4	Legal
Printing Area (Width)	8-1/6"	7-11/12"	8-1/6"
Printing Area (Height)	10-2/3"	11-1/3"	13-2/3"
Line Spacing (Serial)	6 lines per inch (lpi)	6 lpi	6 lpi
Line Spacing (Parallel)	Set by DIP switch	Set by DIP switch	Set by DIP switch
Character Spacing (Serial)	10 characters per inch (cpi)	10 cpi	10 cpi
Character Spacing (Parallel)	Set by DIP switch	Set by DIP switch	Set by DIP switch
Page Orientation (Serial)	Portrait	Portrait	Portrait
Page Orientation (Parallel)	Set by DIP switch	Set by DIP switch	Set by DIP switch
Page Length (Serial)	63 lines per page	66 lines per page	81 lines per page

Parameter Description	Default Values		
	Paper Size		
	Letter	A4	Legal
Page Length (Parallel, Portrait, 3 lpi)	32 lines per page	33 lines per page	41 lines per page
Page Length (Parallel, Portrait, 6 lpi)	63 lines per page	66 lines per page	81 lines per page
Page Length (Parallel, Landscape, 3 lpi)	24 lines per page	24 lines per page	24 lines per page
Page Length (Parallel, Landscape, 6 lpi)	48 lines per page	47 lines per page	48 lines per page
Left Margin	Left edge of maximum printing area	Left edge of maximum printing area	Left edge of maximum printing area
Right Margin	Right edge of maximum printing area	Right edge of maximum printing area	Right edge of maximum printing area
Top Margin	Top edge of maximum printing area	Top edge of maximum printing area	Top edge of maximum printing area
Bottom Margin	Bottom edge of maximum printing area	Bottom edge of maximum printing area	Bottom edge of maximum printing area
Font Assignments	Resident and font cartridge fonts, if any	Resident and font cartridge fonts, if any	Resident and font cartridge fonts, if any
Selected Font	Courier 10	Courier 10	Courier 10
Paper Handling - Feed	Upper paper tray	Upper paper tray	Upper paper tray
Paper Handling - Eject	Left side	Left side	Left side
Endless Feed Mode	Disabled	Disabled	Disabled
Duplex (Serial)	Set by DIP switches	Set by DIP switches	Set by DIP switches

Parameter Description	Default Values		
	Paper Size		
	Letter	A4	Legal
Auto Line Feed upon receipt of Carriage Return (Serial and Parallel)	Set by DIP switches	Set by DIP switches	Set by DIP switches
Data Bits (Serial)	Set by DIP switches	Set by DIP switches	Set by DIP switches
Stop Bits (Serial)	Set by DIP switches	Set by DIP switches	Set by DIP switches
Data Bits (Parallel)	8 data bits	8 data bits	8 data bits
Communication Protocol (Serial)	Set by DIP switches	Set by DIP switches	Set by DIP switches
ACK Signal Relative to Busy (Parallel)	Set by DIP switches	Set by DIP switches	Set by DIP switches
Parity (Serial)	Set by DIP switches	Set by DIP switches	Set by DIP switches
Baud Rate (Serial)	Set by DIP switches	Set by DIP switches	Set by DIP switches
Data Communication Rate (Parallel)	Set by host computer	Set by host computer	Set by host computer
Spacing Units	Daisy Wheel (1/120" horizontal, 1/48" vertical)	Daisy Wheel (1/120" horizontal, 1/48" vertical)	Daisy Wheel (1/120" horizontal, 1/48" vertical)
Horizontal Tab Settings	Cleared	Cleared	Cleared
Vertical Tab Settings	Cleared	Cleared	Cleared
Word Processing Modes	All disabled	All disabled	All disabled
Number of Copies	One	One	One
Reverse Print Mode	Disabled	Disabled	Disabled
Backward Print Mode	Disabled	Disabled	Disabled
Graphics Mode	Disabled	Disabled	Disabled

Supplies

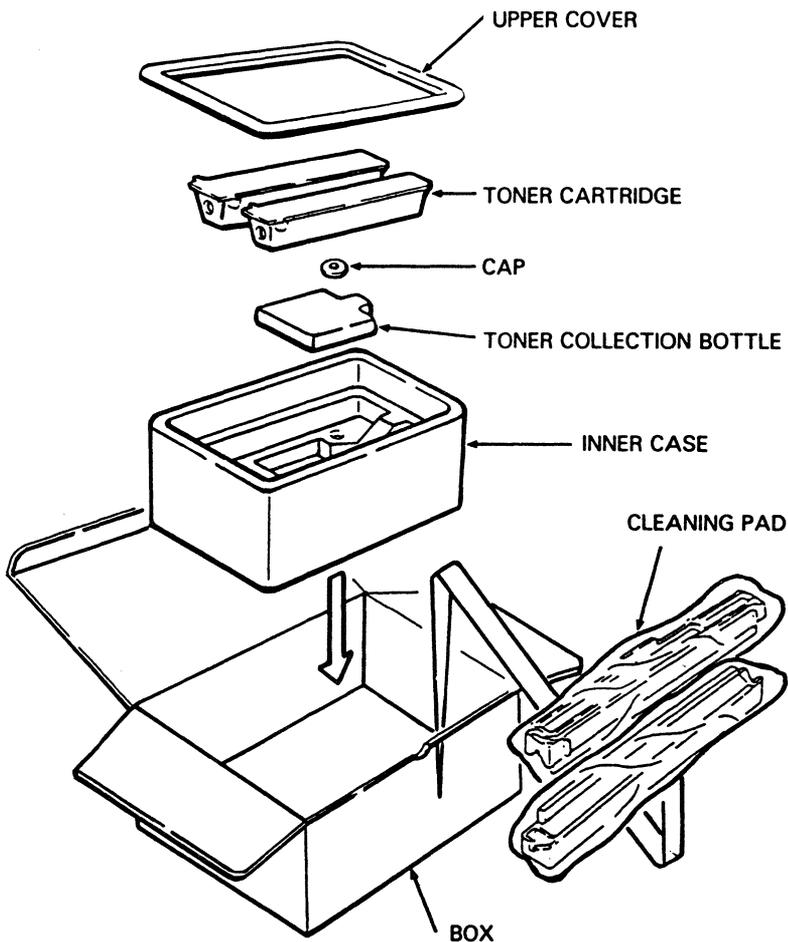
These and other supplies can be ordered by contacting your Burroughs sales representative.

KIT A (Reorder Number 81-6000-855)

Toner Cartridge	2*
Toner Collection Bottle	1
Toner Collection Bottle Cap	1
Cleaning Pad	2
* 150 g/cartridge	

Kit A contains supplies sufficient for changing the toner cartridge and cleaning pad twice and the toner collection bottle once. You will need to order a Kit A approximately every 6,000 pages.

Figure C-1 Packing Arrangement of Kit A



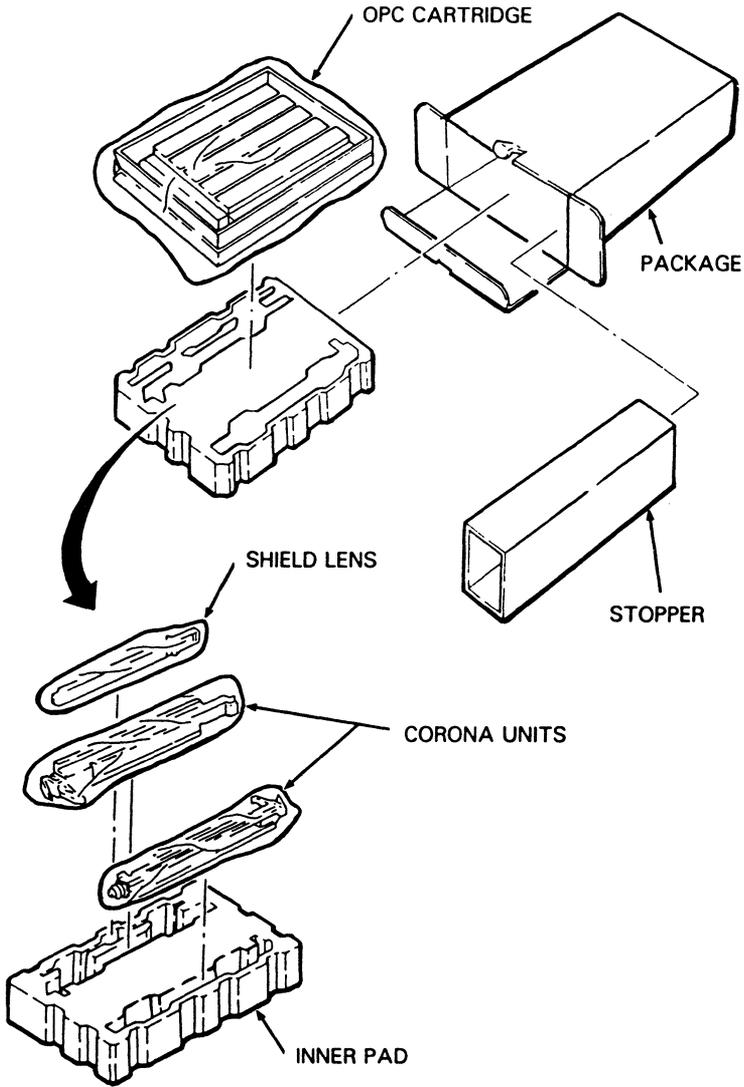
PL1757

KIT D (Reorder Number 81-6003-859)

OPC Cartridge	1*
Shield Lens	1
Corona Unit	1

Kit D contains supplies sufficient for replacing the OPC cartridge, shield lens, and charge and transfer corona units once. You will need to order a Kit D approximately every 10,000 to 15,000 pages.

Figure C-2 Packing Arrangement of Kit D



PL1758

PAPER

Weight: 16 to 24 pound (60 to 90 g/m²)

Figure D-1 Resident Fonts

COURIER 10 Font No. 1

!"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN...
`abcdefghijklmnopqrstuvwxyz{|}~¡¢£¤°µ½¾¿'-'°™^`ÆÐªÛØºñæðíîðß~

COURIER 12 Font No. 2

!"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN...
`abcdefghijklmnopqrstuvwxyz{|}~¡¢£¤°µ½¾¿'-'°™^`ÆÐªÛØºñæðíîðß~

PRESTIGE ELITE Font No. 3

!"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN...
`abcdefghijklmnopqrstuvwxyz{|}~¡¢£¤°µ½¾¿'-'°™^`ÆÐªÛØºñæðíîðß~

BOLD ITALIC PS Font No. 4

!"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN...
`abcdefghijklmnopqrstuvwxyz{|}~¡¢£¤°µ½¾¿'-'°™^`ÆÐªÛØºñæðíîðß~

BOLDFACE PS Font No. 5

!"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN...
`abcdefghijklmnopqrstuvwxyz{|}~¡¢£¤°µ½¾¿'-'°™^`ÆÐªÛØºñæðíîðß~

LETTER GOTHIC 12 Font No. 6

!"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN...
`abcdefghijklmnopqrstuvwxyz{|}~¡¢£¤°µ½¾¿'-'°™^`ÆÐªÛØºñæðíîðß~

LETTER GOTHIC 15 Font No. 7

!"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN...
`abcdefghijklmnopqrstuvwxyz{|}~¡¢£¤°µ½¾¿'-'°™^`ÆÐªÛØºñæðíîðß~

ORATOR 90% FONT No. 8

!"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN...
`ABCDEFGHIJKLMN...ÆÐªÛØºñæðíîðß~

Using Font Cartridges

Font cartridges allow you to increase the number of typefaces available to your printer. Signatures, company logos, and 3 of 9 bar codes can also be loaded into your printer using font cartridges.

This section includes instructions for:

- Inserting font cartridges into and removing them from your printer.
- Caring for font cartridges.
- Reading the font cartridge label.
- Printing signatures and logos.
- Printing 3 of 9 bar codes.

For information about selecting typefaces using the AP 9215 indicator panel and using multiple fonts in a single document, refer to Section 3 of this guide. For information about selecting fonts using software codes, consult the *AP 9215 Printer Programming Reference Manual* or the manual for your application software.

For more information about typeface availability and ordering font cartridges, consult the *FC 9200 Font Cartridge Reference Manual* or contact your Burroughs sales representative.

Inserting and Removing a Font Cartridge

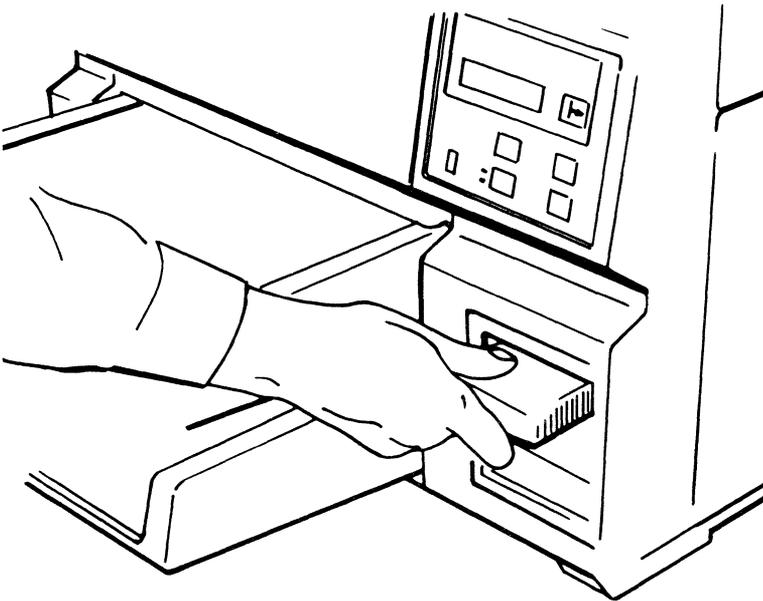
Caution: Make sure the power to your printer is completely off before inserting or removing a font cartridge. Inserting or removing a font cartridge while the power is on may damage the cartridge.

- 1 Set the power switch on the left side of the printer to the OFF (O) position. Wait until the indicator panel lights are completely off.
- 2 Remove the font cartridge from its bag. This bag is designed to prevent the cartridge from building up a static electric charge. Save this bag for storing your cartridge when it is not in use.

- 3 Hold the font cartridge so the metal connectors are toward the printer and the label is facing up. Insert the cartridge into one of the font cartridge receivers. Gently but firmly push the cartridge in as far as it will go. The end of the font cartridge will protrude from the receiver.

Caution: To prevent damage to the connectors, avoid using too much force when inserting the cartridge.

Figure E-1 Inserting the Font Cartridge



PL1805

- 4 If desired, insert another font cartridge into the other receiver, following the instructions in Steps 2 and 3.
- 5 With the font cartridge(s) in place, set the power switch to the ON (I) position.
- 6 After the printer has warmed up, print a test summary sheet as described in Section 3. The summary sheet will list the names and position numbers of the eight resident typefaces and the fonts on the font cartridge(s).

- 7 To remove a font cartridge, set the power switch to the OFF (O) position. Wait until the indicator panel lights are completely off.
- 8 Pull the font cartridge straight back and out of the receiver.
- 9 Return the font cartridge to its bag for storage.

Notes:

- 1 The typefaces and other fonts on a font cartridge are available for use only while the font cartridge is inserted in a receiver.
- 2 To minimize wear and prolong the life of the connectors, leave frequently-used cartridges plugged into the printer, when possible.

Caring for Font Cartridges

Caution: Static electricity can seriously damage the font cartridge. Do not allow the metal on the cartridge to come into contact with a table, desktop, or other surface to which static electricity could be discharged.

To avoid static electric build-up, store your font cartridges in the specially designed bags in which they were shipped. Remove a cartridge from its bag only when you are ready to insert it into the printer.

When the font cartridge is out of its bag, it can pick up static electricity very easily, especially in an environment with low humidity. Even carrying the cartridge from one place to another can cause it to pick up a static charge. Before setting a font cartridge on a table or other surface, hold the cartridge in one hand, touching the metal plate, and touch the table with your other hand. This action will release any static charge from the cartridge. Then set the cartridge on the table.

The plastic case of the font cartridge can be wiped clean with a damp cloth. Avoid dripping water onto the font cartridge pins.

Reading the Font Cartridge Label

The label on your font cartridge lists the typefaces and other images that are stored on that cartridge. This provides useful information for using these typefaces and images. Each item in the list contains the following information:

- The place of the font on the cartridge (1 for first, 2 for second, and so on).
- The name of the typeface or image.
- The point size of the typeface.
- WS or STD. WS (workstation) identifies character sets to use with the B 20 computer series. STD (standard) identifies character sets to use with all other Burroughs computers.
- The character set number.

Logos and signatures are identified by the name of the logo or signature and the word LOGO or SIG.

At the bottom of the font cartridge label is a four-digit date code indicating when the cartridge was created. For example, December 1986 would be indicated by the code 1286.

Printing Signatures and Logos

To print a signature, logo, or other image, first select the image as you would any other font. To do this using the indicator panel, consult Section 3 of this guide. For information about using software codes to select fonts, consult the *AP 9215 Printer Programming Reference Manual* or the manual for your application software.

Once you have selected your signature, logo, or image, you must instruct the printer to print it. You do this by typing in a series of keystrokes, each of which corresponds to a 1/10 inch wide "slice" of your image. The keystrokes assigned to these slices, from left to right, are hex codes 21 through 55. On a keyboard commonly used in the United States, these codes are equivalent to the following characters:

! " # \$ % & ' () * + , - . / 0 1 2 3 4 5 6 7 8 9 ; < = > ? @
 ABCDEFGHIJKLMNOPQRSTU

You only need to type as many of these characters as required for the width of your image. For example, if you want to print a signature 2 inches wide, you would type the first 20 characters. For a logo 3 1/2 inches wide, you would type the first 35 characters. Only if your image is the maximum width of 5 1/4 inches would you need to type all 53 characters.

You can use the printer's Form Overlay commands to store and recall the character string required for an image. For more information, consult the *AP 9215 Printer Programming Reference Manual*. Some application programs will allow you to assign a character string to a single keystroke. For more information, consult the manual for your applications software.

Printing 3 of 9 Bar Codes

The 3 of 9 bar code is a variable-length, alphanumeric bar code. Its data character set contains 43 characters: 0 to 9, A to Z, -, ., /, +, %, and space. A common character (*) is used exclusively as a stop and start character. Each character is composed of nine elements: five bars and four spaces. Three of the nine elements are wide and six are narrow.

To print a 3 of 9 bar code, first select the 3 of 9 bar code as you would any other font. To do this using the indicator panel, consult Section 3 of this guide. For information about using software codes to select fonts, consult the *AP 9215 Printer Programming Reference Manual* or the manual for your application software.

After selecting the 3 of 9 bar code, type the letters and/or symbols that you want encoded. When you print your document, those letters and symbols will appear in their corresponding bar code patterns.

The 3 of 9 bar codes are printed at a height of 1/6 inch. To print taller bar codes, repeat the bar code on successive lines. For example, to print a half-inch high bar code, repeat the bar code on three successive lines with the printer set to print at 6 lines per inch.

Installing the AP 9215 Printer with B 20 and ET Series Systems

For your printer to operate properly with your B 20 or ET Series computer system, the printer parameters set by the DIP switches located at the rear of the printer must match the system's configuration file parameters. In this appendix you will learn to:

- Determine the printer's current DIP switch settings.
- Configure the printer for B 20 Series systems in parallel mode.
- Configure the printer for B 20 Series systems in serial mode.
- Configure the printer for ET Series systems in serial mode.

The explanations that follow describe only **typical** configurations of the AP 9215 printer. Other configurations of the systems software are possible and may even be desirable for your applications. Consult your computer operations manual, your systems software manual, and your applications software manual for more information.

Determining the Current DIP Switch Settings

To determine the printer's current DIP switch settings, print a test summary sheet. To do this, turn on the printer and wait for it to warm up. Then press the On/Off Line button to place the printer in off-line mode and press the Test button on the indicator panel. The printer will produce a printout that includes a graphic display of the current settings of the DIP switches. For more information about the test summary sheet, refer to "Producing a Test Summary Sheet" in Section 3 of this guide.

For a detailed description of the functions of each DIP switch, see Section 2, "Setting Up Your Printer."

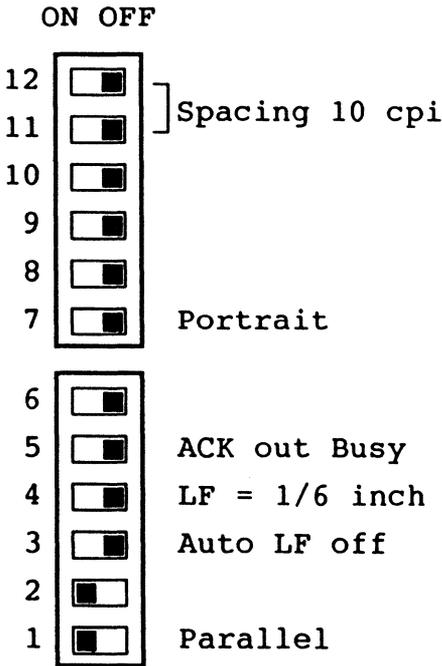
Configuring the Printer for B 20 Series Systems

With B 20 Series systems, your printer can operate in either parallel or serial mode. The modes are mutually exclusive.

Parallel Mode

- 1 Set the printer power switch to the OFF (O) position.
- 2 Connect the parallel port of the printer to the parallel port of the host computer, using a cable appropriate to the host. For information about appropriate cables, consult your Burroughs sales representative.
- 3 Set the DIP switches as shown in Figure F-1.

Figure F-1 Parallel Mode DIP Switch Settings



- 4 Set the power switch to the ON (I) position to read the new switch settings into the printer's memory.

5 Access the B 20 Series Printer Configuration Files as follows:

- a** In the Executive mode, type the following on the Command line:

CREATE CONFIGURATION FILE

- b** Press the RETURN key. The following form will appear:

Create Configuration File

Configuration file name _____

Device type (comm, parallel lpt, or serial ptr) _____

- c** Enter the Configuration File Name as follows:

- 1** If using the spooler, type the following and press the RETURN key:

[SYS]<SYS>SPLCONFIG.SYS

- 2** If printing directly without using the spooler, type the following and press the RETURN key:

[SYS]<SYS>LPTCONFIG.SYS

Note: SPLCONFIG.SYS and LPTCONFIG.SYS are the default configuration file names. You can create and substitute your own unique file names to fit your configuration.

- d** On the Device Type line, type the following and press the GO key:

PARALLEL

- e** The printer parameter list will appear. Enter (or verify) the system printer configuration file parameters listed in Table F-1. This is a typical configuration and will match the DIP switch settings shown in Figure F-1.

Table F-1 B 20/25 System Parallel Printer Configuration File Parameters

New line mapping mode (binary, CR, or CR/LF; default = CR/LF)	CR/LF
Tab expansion size (default = 8)	8
Number of characters per line (default = 132)	132
Transmission time out (number of seconds; default = wait forever)	60
Addition ACK delay (units of 100 microseconds; default = 0)	0
Translation file (default = none)	(Leave Blank)

- f Press the GO key when finished to save the Configuration File and return to the Executive.
- g If you are using spooled printing, press the computer's RESET button to reboot the system. This is necessary for the system to read the Configuration File parameters into memory.

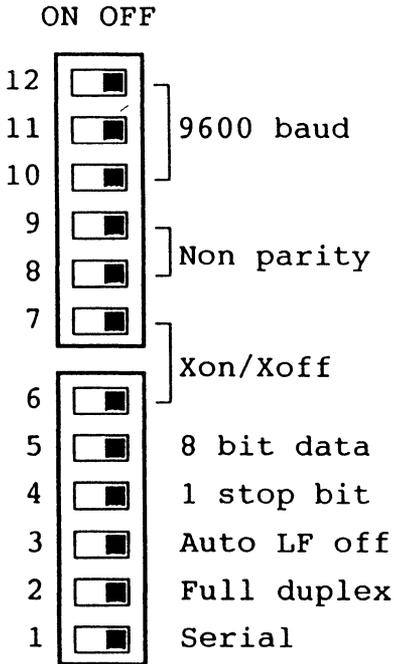
Note: Rebooting the system is not required for direct printing.

- 6 If you are using SWP version 1.3.3 or earlier or PWP version 2.3.3 or earlier, specify *Diablo 630* in the SYS.PRINTER file as the printer type for the AP 9215 printer. If you are using other versions of PWP or SWP, consult your software manual for the appropriate printer designation.

Serial Mode

- 1 Set the printer power switch to the OFF (O) position.
- 2 Connect the serial port of the printer to the serial port of the host computer, using a cable appropriate to the host. For information about appropriate cables, consult your Burroughs sales representative.
- 3 Set the DIP switches as shown in Figure F-2.

Figure F-2 Serial Mode DIP Switch Settings (B 20 Series)



- 4 Set the power switch to the ON (I) position to read the new switch settings into the printer's memory.
- 5 Access the B 20 Series Printer Configuration Files as follows:
 - a In the Executive mode, type the following on the Command line:

CREATE CONFIGURATION FILE

- b Press the RETURN key. The following form will appear:

Create Configuration File

Configuration file name _____

Device type (comm, parallel lpt, or serial ptr) _____

- c Enter the Configuration File Name as follows:
- 1 If using the spooler, type the following and press the RETURN key:

[SYS]<SYS>SPLBCONFIG.SYS

- 2 If printing directly without using the spooler, type the following and press the RETURN key:

[SYS]<SYS>PTRBCONFIG.SYS

Note: SPLBCONFIG.SYS and PTRBCONFIG.SYS are the default configuration file names. You can create and substitute your own unique file names to fit your configuration.

- d On the Device Type line, type the following and press the GO key:

SERIAL

- e The printer parameter list will appear. Enter (or verify) the system printer configuration file parameters listed in Table F-2. This is a typical configuration and will match the DIP switch settings shown in Figure F-2.

Table F-2 B 20/25 System Serial Printer Configuration File Parameters

Data bits (5,6,7, or 8; default = 7)	8
Parity (none, even, odd, 0, or 1; default = 0)	None
Baud rate (up to 19200; default = 9600)	9600
Stop bits (1 or 2; default = 1)	1
Transmit time out (number of seconds; default = wait forever)	90
New line mapping mode (binary, CR, or CR/LF; default = CR/LF)	CR/LF
Line control (none, XON/XOFF, CTS, or both; default = XON/XOFF)	XON/XOFF
Tab expansion size (default = 8)	8
Number of characters per line (default = 132)	132
Translation file (default = none)	(Leave Blank)

Note: Setting the Data Bits field to "8" and Parity to "None" enables the printer to print both text and graphics. Accepting the default setting of "7" and setting the Parity to "Even" allows the printer to print text, but not graphics.

- f Press the GO key when finished to save the Configuration File and return to the Executive.
- g If you are using spooled printing, press the computer's RESET button to reboot the system. This is necessary for the system to read the Configuration File parameters into memory.

Note: Rebooting the system is not required for direct printing.

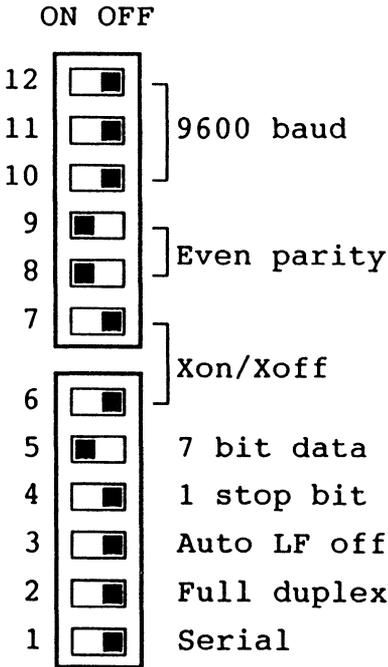
- 6 If you are using SWP version 1.3.3 or earlier or PWP version 2.3.3 or earlier, specify *Diablo 630* in the SYS.PRINTER file as the printer type for the AP 9215 printer. If you are using other versions of PWP or SWP, consult your software manual for the appropriate printer designation.

Configuring the Printer for ET Series Systems

With the ET Series systems, your printer operates in the serial mode. In the WORDSTAR™ word processing program, this printer uses the Diablo 630 configuration. Wherever there is the option in the menus, specify *Diablo 630* as the printer.

- 1 Set the printer power switch to the OFF (O) position.
- 2 Connect the serial port of the printer to the serial port of the ET, using a cable appropriate to the system. For information about appropriate cables, consult your Burroughs sales representative.
- 3 Set the DIP switches as shown in Figure F-3.

Figure F-3 Serial Mode DIP Switch Settings (ET Series)



- 4 Set the power switch to the ON (I) position to read the new switch settings into the printer's memory.
- 5 Boot the system with the MS-DOS system disk in Drive A.
- 6 Install the printer as follows:
 - a For 200 KB systems:
 - 1 Insert the Configuration disk into Drive B and switch to Drive B.
 - 2 At the A> prompt, type the following and press the RETURN key:
B:

- 3 When the B> prompt appears, type the following and press the RETURN key:

```
PRNINSTL <SPACE> (Port Number) <SPACE>  
AP 1302
```

Notes:

- 1 For Port Number, enter either "1" for RS-232-1 or "2" for RS-232-2. Do not enter the parentheses.
 - 2 The AP 9215 is called the AP 1302 for data communication purposes.
- b For 800 KB systems, at the A> prompt, type the following and press the RETURN key:

```
PRNINSTL <SPACE> (Port Number) <SPACE>  
AP 1302
```

Notes:

- 1 For Port Number, enter either "1" for RS-232-1 or 3 "2" for RS-232-2. Do not enter the parentheses.
 - 2 The AP 9215 is called the AP 1302 for data communication purposes.
- 7 To load the configuration file, type the following at the prompt and press the RETURN key:

```
CONFIG
```

Note: For 800 KB systems, load the configuration file into Drive A. For 200 KB systems, load the file into Drive B.

- 8** The screen will display the BIOS Configurator menu. To verify the serial interface configuration file parameters:
 - a** Enter *1* or *2* from the numeric keypad. This is the number of the port your printer is connected to and should match the port number you entered in Step 6 above.
 - b** The screen will display the parameter values. Verify that these values match the printer parameters as determined by the DIP switch settings. Consult your ET series software manuals for further information about these values and the options available to you.
 - c** Make changes in the settings, if necessary.
- 9** When finished, choose the “Save as System” option by pressing the F1 key, typing *Y*, and pressing the RETURN key.

Function Control Commands

These commands are used by your computer to control the functions of your printer. For more information about these codes, consult the *AP 9215 Programming Reference Manual*.

Table G-1 AP 9215 Commands

Font Commands	Sequence
Assign Font	ESC DC2 A m1, m2 @ <i>font-name</i> ESC SP
Select Font	ESC DC2 S m SP
Load/Delete Font	<ol style="list-style-type: none"> To delete a specific font: ESC [m1, m2 @ <i>font-name</i> ESC] To delete all fonts: ESC [@ ESC] To define a font: ESC [m1, m2 @ <i>font-name</i> ESC [<i>header</i> ESC SP <i>spoke-table-data</i> ESC SP ESC — m11, m12, m13, m14, m15, m15, m17 @ <i>glyphdata-1</i> ESC — m21, m22, m23, m24, m25, m26, m27 @ <i>glyphdata-2</i> . . . ESC — mk1, mk2, mk3, mk4, mk5, mk6, mk7 @ <i>glyphdata-k</i> ESC]
Page Format Commands	Sequence
Set Page Length	ESC FF n
Set Page Orientation	ESC DC2 D m SP
Set Left Margin	<ol style="list-style-type: none"> ESC 9 Sets the left margin at the current AP position. ESC DC4 9 n Sets the left margin at (n-1) HMI from the left page edge. ESC DC2 9 m SP Sets the left margin at m x 1/120" from the left page edge.

Page Format Commands	Sequence
Set Right Margin	<ol style="list-style-type: none"> 1. ESC O Sets the right margin at the current horizontal AP position. 2. ESC DC4 O n Sets the right margin at (n-1) HMI from the left page edge. 3. ESC DC2 O m SP Sets the right margin at $m \times 1/120''$ from the left page edge.
Set Top Margin	<ol style="list-style-type: none"> 1. ESC T Sets the top margin at the current AP position. 2. ESC DC4 T n Sets the top margin at (n-1) VMI from the top of page. 3. ESC DC2 T m SP Sets the top margin at $m \times 1/48''$ from the top of page.
Set Bottom Margin	<ol style="list-style-type: none"> 1. ESC L Sets the bottom margin at the current AP position. 2. ESC DC4 L n Sets the bottom margin at (n-1) VMI from the top of page. 3. ESC DC2 L m SP Sets the bottom margin at $m \times 1/48''$ from the top of page.
Clear Margins	ESC C
Set Horizontal Tab Stops	<ol style="list-style-type: none"> 1. ESC 1 Sets a tab stop at the AP. 2. ESC DC4 HT k n1 n2 ... nk Sets tab stops at points which are (n-1) HMI from the left page edge. 3. ESC DC2 HT m1,m2,...,mk SP Sets tab stops at points which are $m \times 1/120''$ from the left page edge.
Set Vertical Tab Stops	<ol style="list-style-type: none"> 1. ESC 1 Sets a tab stop at the AP. 2. ESC DC4 HT k n1 n2 ... nk Sets tab stops at points which are (n-1) VMI from the top of page. 3. ESC DC2 HT m1,m2,...,mk SP Sets tab stops at points which are $m \times 1/48''$ from the top of page.
Clear Tabs	<ol style="list-style-type: none"> 1. ESC 8 Clears the horizontal tab stop at the AP. 2. ESC 2 Clears all horizontal and vertical tab stops.

Word Processing Commands	Sequence
Enter Proportional Print Mode	ESC 8
Set Proportional Print Offset	ESC DC1 n
Exit Proportional Print Mode	ESC Q
Start Automatic Underlining	ESC E
End Automatic Underlining	ESC R
Enter Boldface Mode	ESC O
Enter Shadow Print Mode	ESC W
Exit Boldface/Shadow Mode	ESC &
Enter Enlarged Printing Mode	DC2 E m SP
Enter Automatic Justification Mode	ESC M
Enter Automatic Centering Mode	ESC -
Set Number of Copies (Multiple Print)	ESC 7
Print Special Characters	1. ESC Y Prints character assigned to <20>. 2. ESC Z Prints character assigned to <7F>.
Turn Off Word Processing Functions	ESC X
Print Control Codes	ESC DC2 K M SP

Movement Commands	Sequence
Set HMI	ESC US n
Reset HMI	ESC S
Move AP Horizontally (Absolute Positioning)	1. ESC HT n 2. ESC DC4 H n Moves AP to (n-1) HMI from left page edge. 3. ESC DC2 H m SP Moves AP to m x 120" from left page edge.
Move AP Horizontally (Relative Positioning)	1. ESC DC4 SP +/- n Moves AP right (+) or left (-) by (n-1) x HMI. 2. ESC DC2 SP +/- m SP Moves AP right (+) or left (-) by m x 1/120".
Backspace 1/120-Inch	ESC BS
Set VMI	ESC RS n
Move AP Vertically (Absolute Positioning)	1. ESC VT n Moves API to (n-1) VMI from the top limit (top of page). 2. ESC DC4 V n limit. Moves API to (n-1) VMI from the top limit (top of page). 3. ESC DC2 V m SP Moves AP to m x 1/48" from the top limit (top of page).
Half-Line Feed	ESC U
Negative Line Feed	ESC LF
Negative Half-Line Feed	ESC D
Define CR, LF, and FF Movements	ESC DC2 M n SP
Enable Auto Carriage Return	ESC ?
Disable Auto Carriage Return	ESC !
Enter Reverse Print Mode	ESC <
Enter Backward Print Mode	ESC 6
Exit Backward Print Mode	ESC 5
Select Spacing Unit	ESC DC2 Q m SP

**Forms Overlay
Commands**

Register Form	ESC DC2 O m SP <i>contents</i> ESC DC2 O SP
Delete Form	ESC DC2 O m SP ESC DC2 O SP
Select Form	ESC DC2 U m SP

**Bit Image Graphics
Commands**

Transfer Graphic Data	ESC DC2 G m1,m2,m3,m4,m5,m6,m7@ <i>graphic-data</i>
Draw Ruled Line	ESC DC2 R m1,m2,m3,m4 SP
Draw Box	ESC DC2 B m1,m2,m3,m4,m5 SP

**Remote Diagnostic
Commands**

Initialize Printer (Hard Reset)	ESC SUB I
Remote Reset (Soft Reset)	ESC CR P
Remote Error Reset	ESC SUB R
Request Status Byte 1	ESC SUB 1
Request Status Byte 3	ESC SUB 3
Request Printer Status	ESC SUB # 1 SP
Request Paper Size Status	ESC SUB # 2 SP
Request Paper Path Status	ESC SUB # 3 SP
Request User Memory Status	ESC SUB # 4 SP
Request Font Status	ESC SUB # 5 SP
Request Character Status	ESC SUB # 6 SP

**Miscellaneous
Commands**

Select Paper Feed	ESC EM m
Select Paper Exit	ESC DC2 W m SP
Endless Feed Mode	ESC DC2 Z m SP

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