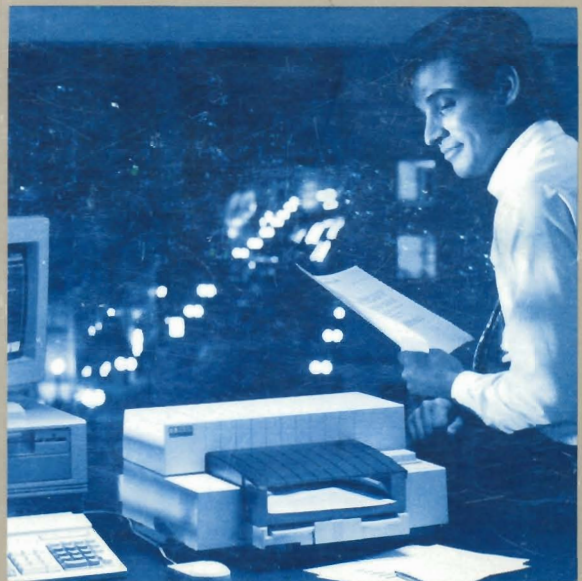


HEWLETT-PACKARD

Professional Printer DeskJet PLUS

Owner's Manual



Telephone Support Availability

The following telephone numbers are provided to help you obtain additional information on HP products and services.

■ **For supplies and accessories:**

HP Direct Marketing Division 800-538-8787

■ **For information on HP products and nearest HP dealer:**

HP Customer Information Center 800-752-0900
(Presales only)

■ **For repair information:**

DeskJet PLUS Customer Support 208-323-2551

If you need help with printer operation or setup (configuration), call:

■ **DeskJet PLUS Customer Support** 208-323-2551
(7 am-4 pm [MST])

Before calling DeskJet PLUS Customer Support, make sure that you have:

- 1.** Read the suggestions located in Chapter 6, HELP!
- 2.** Checked with your software vendor.
- 3.** Followed the instructions on page 1-14, Chapter 1, to get a self test printout from your printer, if possible. A self test printout may help your Customer Support Representative answer your question.

For obvious hardware problems contact your local Hewlett-Packard Sales and Support Office, listed in the back of this manual.

HP Computer Museum
www.hpmuseum.net

For research and education purposes only.



Limited Warranty

One-Year Limited Hardware Warranty

Except when used as part of an HP system, Hewlett-Packard warrants your printing peripheral hardware product against defects in materials and workmanship for a period of one year from receipt by the end user (proof of purchase required). If HP receives notice of such defects during the warranty period, HP will either, at its option, repair or replace products which prove to be defective.

Should HP be unable to repair or replace the product within a reasonable amount of time, customer's alternative exclusive remedy shall be a refund of the purchase price upon return of the product.

If this product was purchased as part of an HP system in a coordinated shipment or as a system add-on, it is warranted against defects in material and workmanship during the same period as the HP system.

Exclusions

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

Obtaining Warranty Service

To obtain warranty service, products must be returned to a service facility designated by HP. HP may repair on-site at the option of the customer. Customer is responsible for travel charges when on-site repair is requested.

Warranty service for products purchased as part of a system will be subject to service in accordance with the system support services.

Customer shall prepay shipping charges for products returned to HP for warranty service and HP shall pay for return of the products to customer. However, customer shall pay all shipping charges, duties, and taxes for products returned to HP from another country.

Warranty Limitations

HP makes no other warranty, either expressed or implied, with respect to this product. HP specifically disclaims the implied warranties of merchantability and fitness for a particular purpose. Some states or provinces do not allow limitations on the duration of an implied warranty, so the above limitation or exclusion may not apply to you. However, any implied warranty of merchantability or fitness is limited to the 1-year duration of this written warranty.

This warranty gives you specific legal rights, and you may also have other rights which may vary from state to state, or province to province.

Exclusive Remedies

The remedies provided herein are customer's sole and exclusive remedies. In no event shall HP be liable for any direct, indirect, special, incidental, or consequential damages, whether based on contract, tort, or any other legal theory. Some states or provinces do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

Obtaining Service During or After Warranty

During the Warranty Period

If your hardware should fail during the warranty period, follow the HELP! procedures in the owner's manual, then take the failed piece of equipment to an Authorized HP Personal Computer Dealer Repair Center—or send the equipment to one of the HP Field Repair Centers listed in the directory sent with your product. (HP may repair on-site at your option, in which case you are responsible for travel charges.)

After the Warranty Period

If your hardware should fail after the warranty period, follow the HELP! procedures in the owner's manual, then contact an Authorized HP Personal Computer Dealer Repair Center or call your HP Sales and Service Office for details of the services available.

If you are uncertain about which unit to return, call your Authorized HP Personal Computer Dealer or a Field Repair Center for assistance.

Determining If Your Printer Needs Service

Your printer is designed to give you years of reliable service. If you are having a problem with your printer, however, see the HELP! Chapter of the owner's manual, for help in determining if your printer needs service.

Returning Your Printer for Service

If your printer requires servicing, contact the Hewlett-Packard Dealer or HP Sales and Support Office where you purchased the printer for complete service information.

If you need to ship your printer, be sure it is packed in a protective carton. We recommend that you save the original shipping container for this purpose. If needed, packaging materials and carton may be obtained from Hewlett-Packard. In-transit damage is not covered by the warranty. We suggest that you always insure shipments.

You can help assure effective servicing of your printer by following these guidelines:

- 1.** Follow the instructions in this manual to make certain the malfunction is in your printer and not the result of an interface error or a malfunction in your computer or software. If possible, identify the defective area or function.
- 2.** If you determine that repair is required, please include the following items when you return your printer for service:
 - a. A description of the exact configuration at the time of the malfunction, including the interface cable, computer and peripherals, and software (program) in use.
 - b. A brief description of symptoms for service personnel.
 - c. Hardcopy produced on the printer that might help illustrate the problem area.
 - d. The serial number of the printer.
 - e. If purchased through an HP dealer, a copy of the sales slip or other proof of purchase to establish the warranty coverage period.
- 3.** Include your name, address, and a phone number where you may be reached during the day.
- 4.** Do not include any operating accessories with the printer, unless the problem relates to an accessory. Do include the print cartridge and power supply.

DeskJet PLUS Professional Printer Owner's Manual



**Manual Part No.
02277-90001**

Notice

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Printing History

Edition 1

October 1988

Developed by Hewlett-Packard Company
18110 S.E. 34th Street, Camas, WA 98607

Regulatory Notices

Potential for Radio/ Television Interference (USA only)

The DeskJet PLUS printer generates and uses radio frequency energy and may cause interference to radio and television reception. Your printer complies with the specifications in Subpart J of Part 15 of the Federal Communications Commission rules for a Class B computing device. These specifications provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If the printer does cause interference to radio or television reception, which can be determined by turning the printer off and on, you can try to eliminate the interference problem by doing one or more of the following.

- Reorient the receiving antenna.
- Reorient the position of the printer with respect to the receiver.
- Move the printer away from the receiver.
- Plug the printer into a different outlet so that the printer and the receiver are on different branch circuits.

If necessary, consult an authorized HP dealer or an experienced radio/television technician for additional suggestions. You may find the following booklet, prepared by the Federal Communications Commission, helpful: *How to Identify and Resolve Radio/TV Interference Problems*. This booklet is available from the US Government Printing Office, Washington D.C. 20402, Stock No. 004-000-00345-4.

To comply with FCC rules Part 15J Class B computing device use only shielded interface cables.

Funkentstörung Deutschland

Dieses Gerät wurde in einer typischen Systemkonfiguration geprüft und entspricht den Bestimmungen der Allgemeinen Genehmigung FTZ 1046/84. Als Nachweis ist das Gerät mit dem VDE-Funkschutzzeichen mit Index 0871-B/P für Peripheriegeräte gekennzeichnet.

Wird das Gerät innerhalb einer Anlage betrieben,

- So muß bei Inanspruchnahme der Allgemeinen Genehmigung FTZ 1046/84 die gesamte Anlage der oben genannten Genehmigung entsprechen.
- Die mit einer FTZ-Serienprüfnummer gekennzeichnet ist, und für die eine Betriebsgenehmigung vorliegt oder beantragt wird, so sind in der Regel keine weiteren Schritte notwendig.

電波障害について

この装置は、第二種情報装置(住宅地域又はその隣接した地域において使用されるべき情報装置)で住宅地域での電波障害防止を目的とした情報処理装置等電波障害自主規制協議会(VCCI)基準に適合しております。

しかし、本装置をラジオ、テレビジョン受信機に近接してご使用になると、受信障害の原因になることがあります。

取扱説明書に従って正しい取り扱いをして下さい。

Power Module Statement

The power module cannot be repaired; if it is defective it should be discarded or returned to the supplier.

Sweden

Får endast anslutas till jordat nätuttag.

Observera!

Skadas sladden till detta strömförsörjningsdon skall donet kasseras. Sladden går ej att byta ut.

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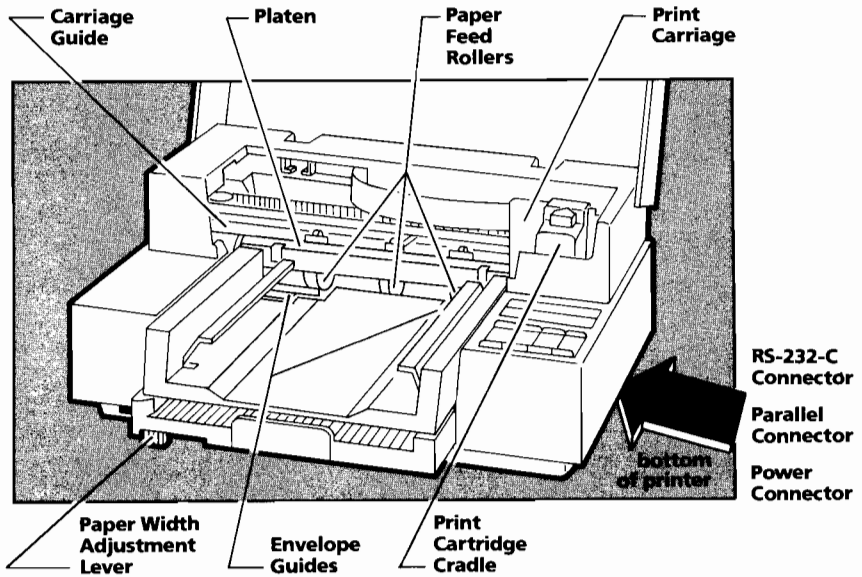
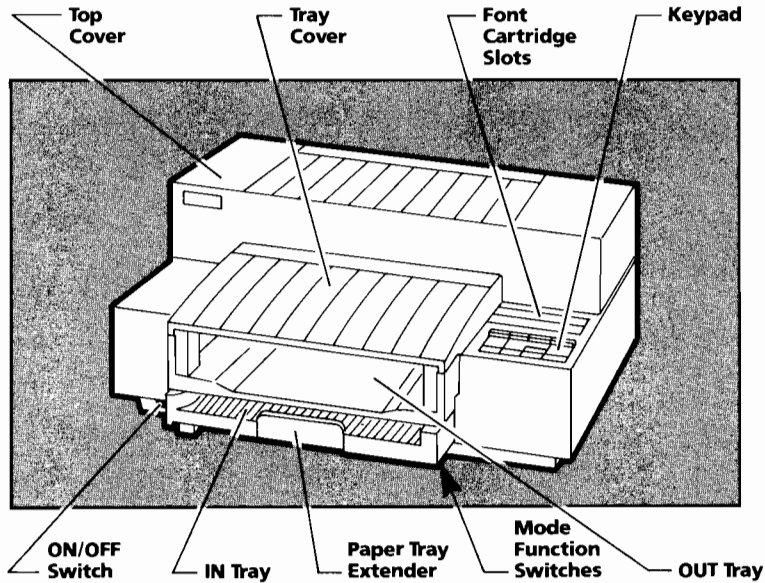
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Meet Your Printer



1-800-555-1500 \$250 amin
800-999-1148 \$25.00
1-800-333-1917
Free

Getting Started

1

WELCOME!

This section of your Owner's Manual contains the information you'll need to get started using your new printer. We encourage you to read it from start to finish.

Take a few minutes to go over the illustrations and the parts of the printer identified on the facing page. Doing so may help you when following the instructions outlined in this chapter.

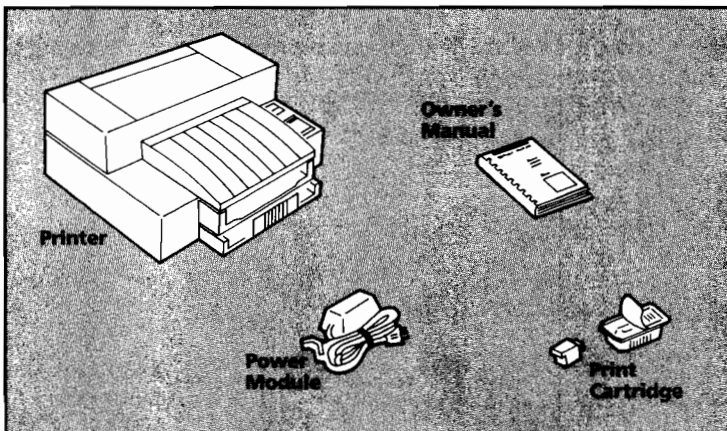
Unpacking and Setting Up Your Printer

Unpack your printer and set it on a flat, stable surface.

- Remove and dispose of the cardboard packing band wrapped around the tray cover and the IN and OUT trays by sliding the band toward you.
- Open the top cover and remove the tape securing the print cartridge cradle.
- Save the carton and packing materials in case you need to ship your printer. If the printer is received damaged, immediately contact your local HP Sales and Service office, or the dealer from whom you purchased your printer.

Check that the following items were shipped along with your printer:

- Owner's Manual (which you are reading)
- Warranty Information (included in the front of this manual)
- Print Cartridge
- Power Module



Check the part number on the bottom of your power module against the list located in the Appendix on page 8-21 to be sure that you have the correct power module for your area.

If any of these items are missing immediately contact your local HP Sales and Support Office, or the dealer from whom you purchased your unit.



Note

The interface cable used to connect your printer to your PC or terminal is not provided with your printer, it must be ordered separately. See *Setting Up Your PC or Terminal* in Chapter 2 for information on interface cables used with many popular PC's. If your system is not represented there, contact your nearest HP dealer. Be sure to use only shielded interface cables.

Getting Ready to Print

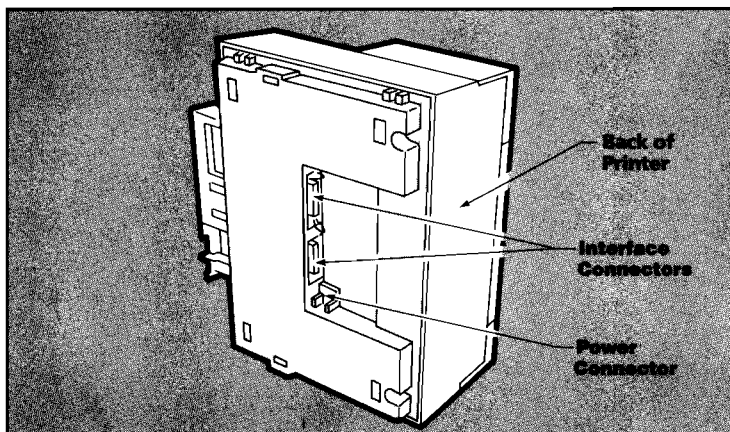
ON/OFF Switch

The ON/OFF switch is located on the printer's base, lower left front corner. To turn the printer ON, press the right end of the switch. When the printer is turned ON all keypad lights will briefly flash, then the ON LINE and COUR 10/20 lights will stay ON, and the print carriage will "home". Make sure the printer is turned OFF before connecting the power module or interface connectors, and before installing font cartridges.

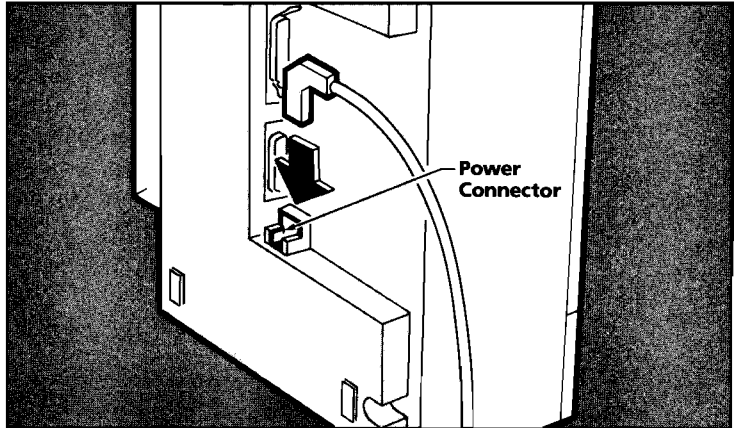
Connecting the Power Module

The power connector is located on the bottom of the printer. To connect the power module to the printer:

1. Be sure the printer is turned OFF.
2. Remove the tray cover if it wasn't already, and set it aside.
3. With the printer facing you, carefully tilt the printer on its left side and rotate it so that its underside faces you. See below.



4. Plug the power module into the power connector on the bottom of the printer, and route the power cord toward the rear of the printer. See below.



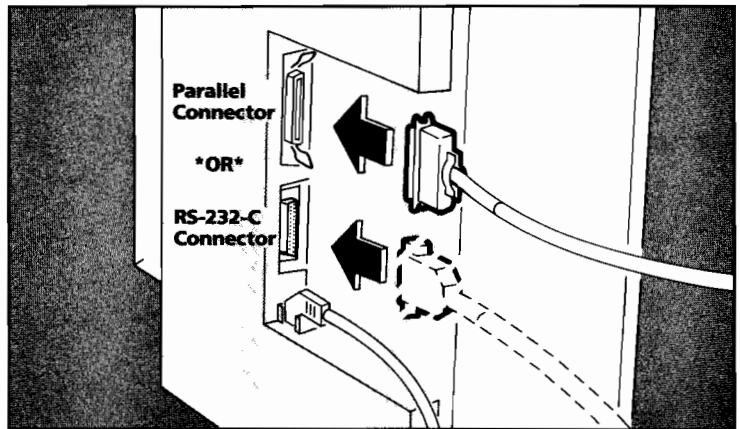
5. Plug the other end of the power module into a grounded 3-prong electrical outlet.
6. To avoid a problem to your PC or disc drive caused by magnetic influences emitted by the power module, place the power module on the floor, or at least 1" (2.54 cm) away from your PC, disc drive, or terminal. Use only the power module provided with your printer.

Connecting the Interface Cable

All DeskJet PLUS printers have both RS-232-C and Parallel interface connectors as standard equipment. The interface connectors are located on the bottom of the printer next to the power connector. Do not connect more than one interface cable to the printer. Use only HP approved shielded interface cables.

To connect the interface cable:

1. Remove the tray cover if it wasn't already.
2. With the printer facing you, carefully tilt the printer on its left side and rotate it so that its underside faces you.
3. Connect one end of the interface cable to the connector (also called a port). If you are using the RS-232-C (serial) interface, connect the cable to the connector labeled RS-232-C. If you are using the Parallel interface, connect the cable to the connector labeled Parallel. See below.



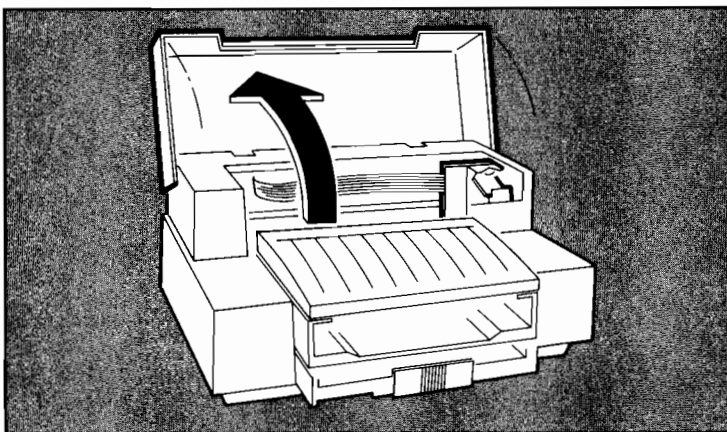
4. Secure the interface cable to the connector; If you are using the RS-232-C interface, tighten the screws with a small bit screwdriver; if you are using a parallel interface, snap the clips on the sides of the printer's connector over the cable connector.

Installing the Print Cartridge

5. Route the cable toward the rear of the printer.
6. Connect the other end of the interface cable to your PC or terminal. Make sure that you have connected the correct interface cable to the correct connector.
7. Tip the printer back down, making sure that the printer is not sitting on top of the cable or the power cord.
8. Replace the tray cover on the OUT tray.
9. Check Chapter 2 for information on setting up your printer to work with your PC or terminal.

Additional information on using the print cartridge is located in Chapter 6, HELP!

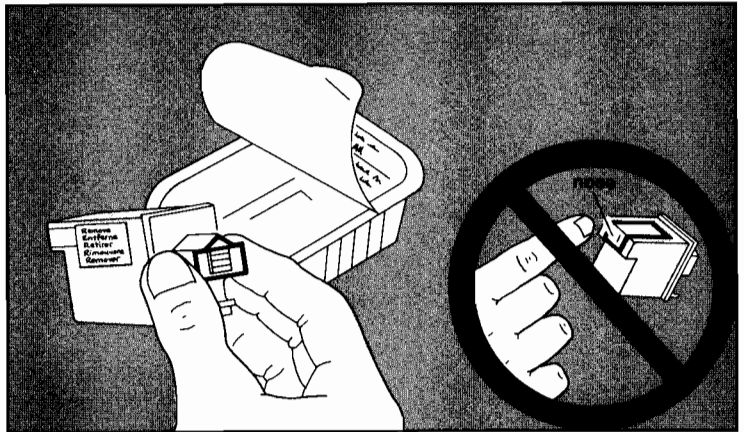
1. Open the printer's top cover. See below.



Caution

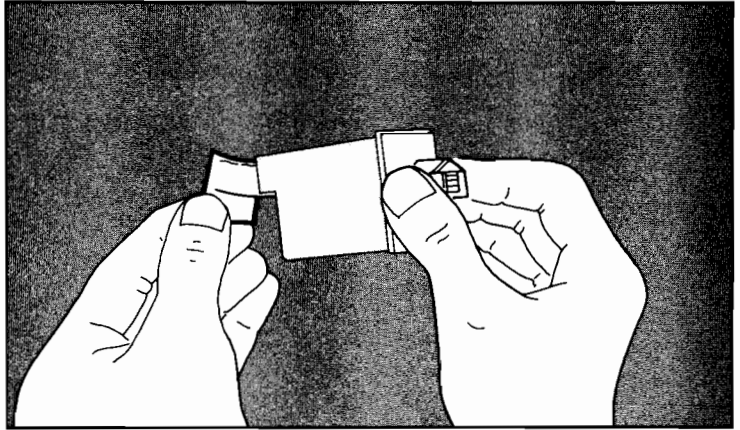
The ink in the print cartridge may be harmful to children if swallowed. Keep new or used cartridges out of the reach of children and immediately discard used cartridges.

2. Open the print cartridge container. Grasp the print cartridge by the green arrow and remove it from its container. Take care not to touch the copper "ribbon" located on the lower front and bottom (nose) of the print cartridge or set the cartridge down so that the copper "ribbon" comes in contact with any surface. See below.

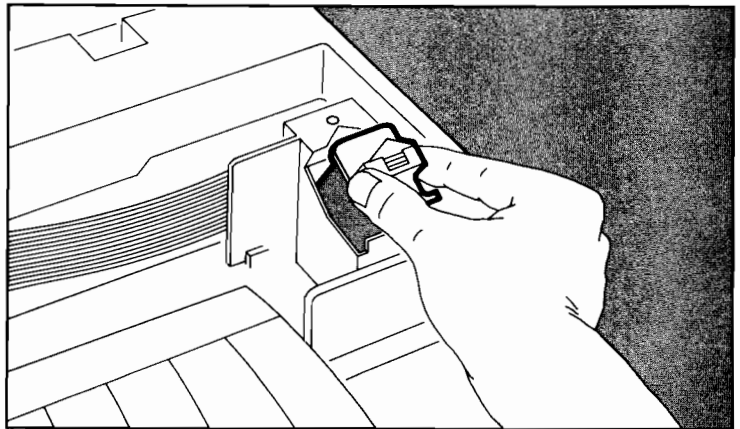


1

3. Gently remove the tape from the nose of the print cartridge as shown below.

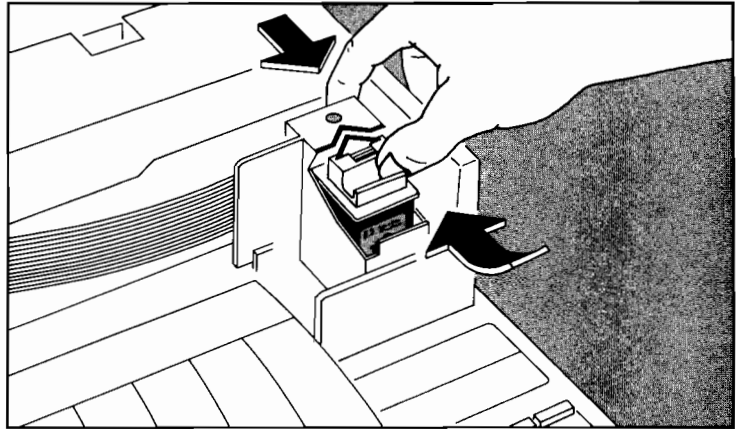


4. Hold the print cartridge by the green arrow located on the cartridge top, and set the cartridge in the cradle with the green arrow on the cartridge top pointing to the green dot on the top of the cradle. See below.





5. Place your thumb on the cartridge top and your forefinger on the cradle and squeeze your thumb and forefinger together, snapping the cartridge into place. See below.



6. Close the printer's top cover and turn ON the printer.
7. Press the PRIME key once to activate the new print cartridge.

First a Word About Paper

One of the most important things you can do to assure the best possible performance of your DeskJet PLUS printer is to select the correct paper (or envelopes).

The DeskJet PLUS printer has been designed to work well with most types of paper, although some variables in paper composition may significantly affect print quality and paper handling. Most paper manufactured for high-quality photocopying yields good results for general applications. For other applications, such as company letterhead, most cotton bond papers yield excellent results. Paper should be tested fully before it is purchased in order to ensure desirable performance.

Copier Paper

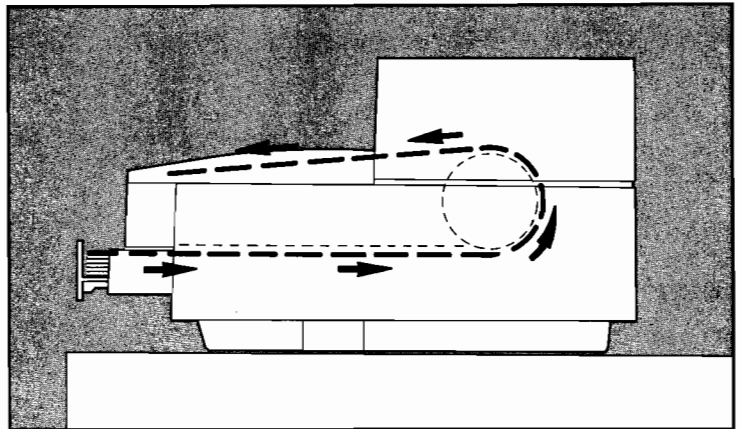
Most people aren't aware that copier paper has a "right" side and a "wrong" side. For best print quality the "right" side of copier paper should be printed upon. This "right" side isn't visible to the naked eye, so before taking copier paper from a ream to use in your DeskJet PLUS printer, check the label on the end of the ream. The "right" side will be indicated by an arrow or other symbol or wording. Remove, undisturbed from the ream, the number of sheets of copier paper you wish to use in your printer, and load them "right" side **down** into your printer's IN tray. You'll be pleased with the print quality you receive.



Note

Do not use ink-jet paper in your DeskJet PLUS printer.

Loading Paper— Paper Path

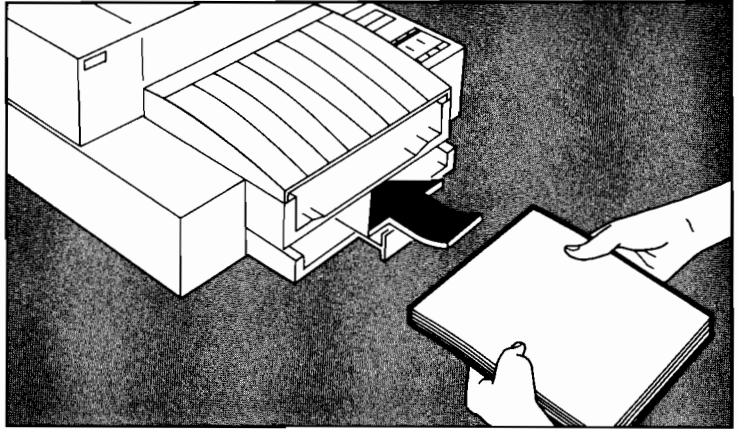


Loading Single Sheet Paper

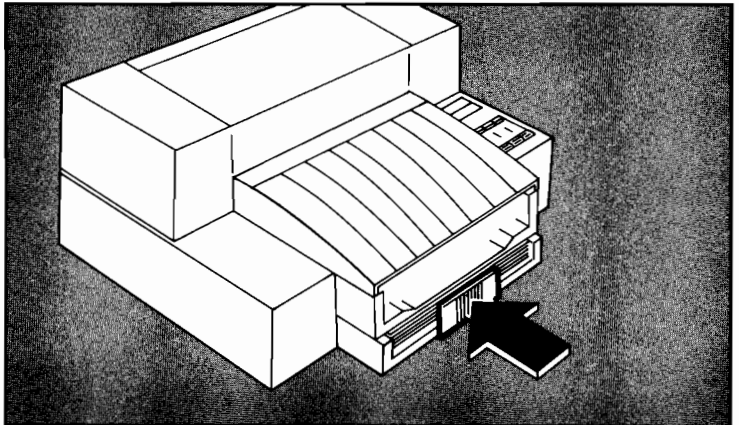
(See the discussion on
Copier Paper above)

1. If you are using 8½" letter or legal size paper, slide the paper width adjustment lever, located below the left corner of the IN tray, to the left. If you are using A4 (European) paper, slide the paper width adjustment lever to the right.

- 2.** Pull out the paper tray extender located on the center front edge of the IN tray. Insert a stack of paper about 1/2" thick (approximately 100 sheets of paper) squarely into the IN tray, right side flush against the right side of the tray. See below.



- 3.** Slide the paper tray extender in toward the paper to hold the paper against the printer. See below.



You are ready to do the self test, page 1-14.

Loading Letterhead Paper

For large printing jobs requiring letterhead paper, follow the paper loading instructions below, inserting a ½" stack of letterhead paper into the printer's IN tray. For smaller jobs, set the number of sheets you want on top of the paper currently in the IN tray.

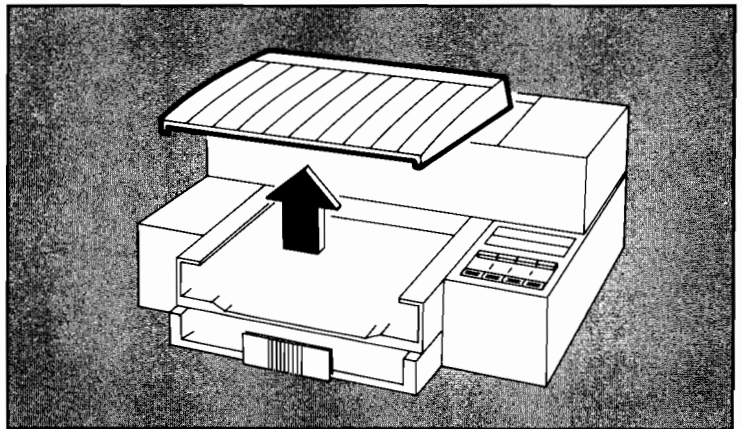
To load letterhead paper:

1. Pull out the paper tray extender located on the center front of the IN tray.
2. Insert letterhead paper, head first into the tray with the letterhead facing down. Make sure the right side of the paper is flush against the right side of the tray.
3. Slide the paper tray extender in toward the paper to hold the paper against the printer.

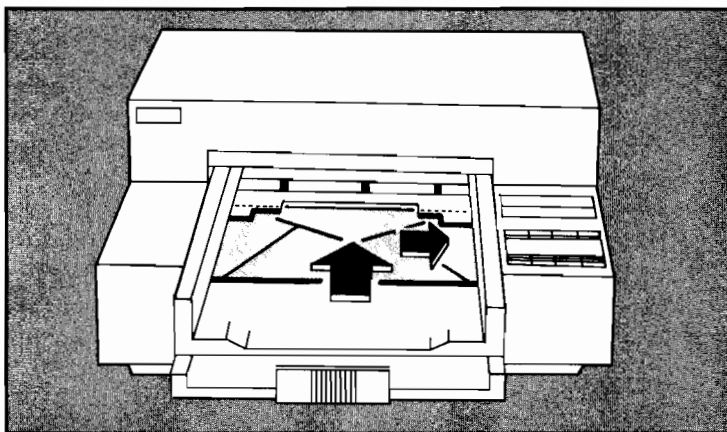
Loading Envelopes

Use only #10 (USA) or DL (European) size envelopes in your DeskJet PLUS printer.

1. Consult your software user's manual for information on using envelopes with your software package.
2. Remove the tray cover from the OUT tray and set it aside. See below.



3. Remove any paper from the OUT tray.
4. Insert an envelope head first, flap facing up, into the envelope guides on the OUT tray. With the right side of the envelope flush against the right side of the tray, push the envelope under the paper feed rollers until it stops. See below.



1

5. Press the UP and DOWN arrow keys simultaneously to load the envelope into the printer.

The envelope is ready to be printed upon.



Note

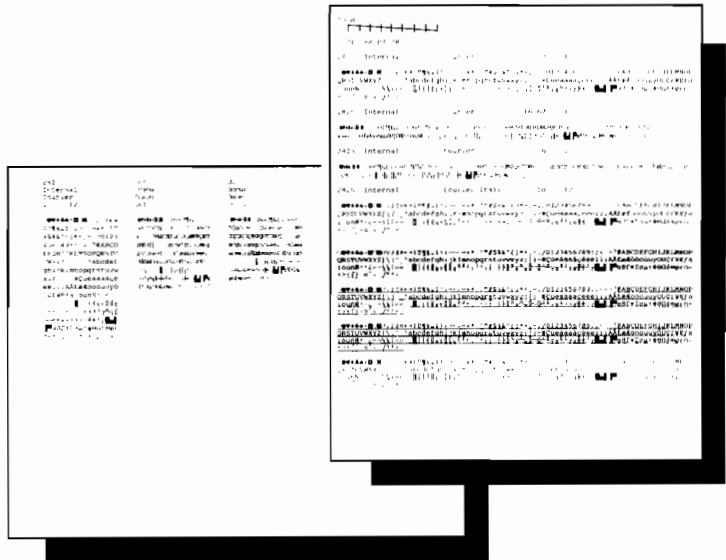
To remove an envelope that has been loaded but not printed upon, press the FF key and the envelope will be ejected.

Printing!

Self Test

1. Begin with the printer turned OFF.
2. Press and hold the FONT key while turning ON the printer. Wait several seconds, then release the FONT key.
3. Paper will load and a two page self test will print. A portrait oriented self test pattern will print on the first page and a landscape oriented self test pattern will print on the second page.

If your printed self test doesn't resemble in any way the example shown below, or nothing prints at all, see Chapter 6, Help! Note that the self test pattern will vary depending on whether or not a font cartridge is installed.

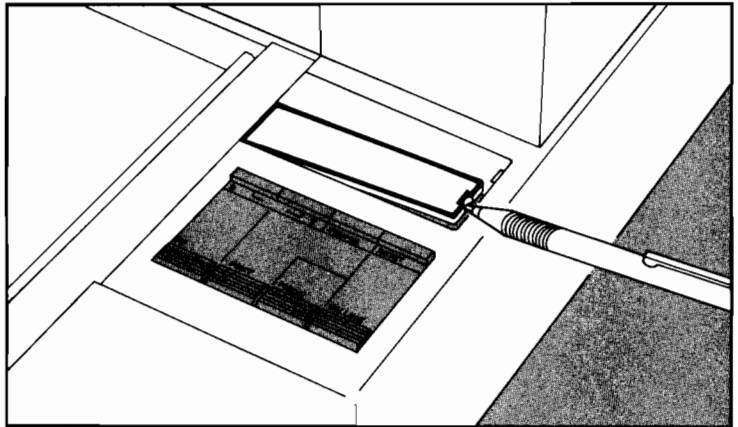


Installing Optional Font Cartridges

In addition to the Courier fonts that are resident in your printer, a wide variety of fonts are available on optional DeskJet PLUS font cartridges that install easily into your printer.

A summary of the fonts available on font cartridges is located in Chapter 7 and in the DeskJet PLUS Printer Font Guide that came with your printer.

1. Begin with your printer turned OFF
2. Remove the tray cover from the OUT tray, and set it aside.
3. Remove the cover from the font cartridge slot by using the tip of a pen or similar object to pry the cover loose. See below. Make sure that the cover doesn't flip into the printer cavity. Set the cover aside. To prevent small objects from falling into the printer, replace the slot covers when not using font cartridges.



Note

Be sure to turn OFF the printer before installing or changing font cartridges.

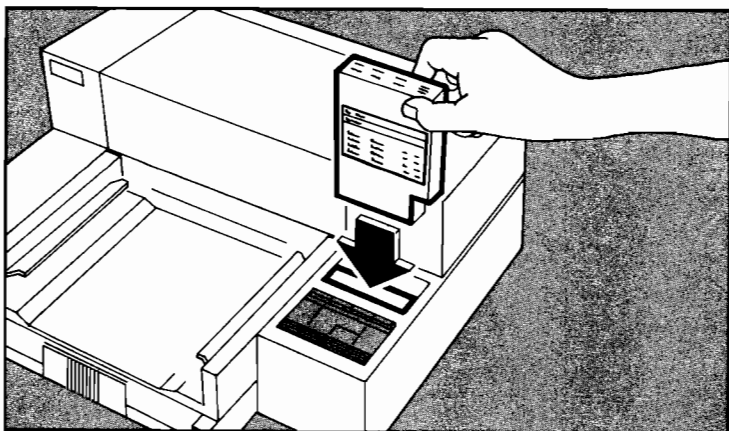


Caution

DO NOT TOUCH THE CONNECTOR ON THE BOTTOM OF THE CARTRIDGE OR THE CONNECTOR IN THE PRINTER. DOING SO MAY DAMAGE BOTH UNITS.

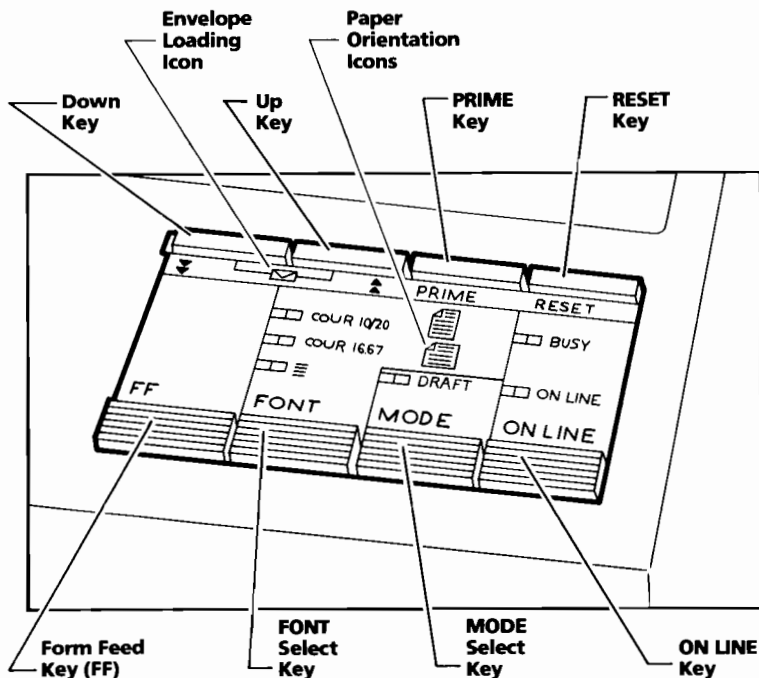
1

4. Hold the font cartridge with the label facing you and the connectors facing down, and insert the cartridge into the cartridge slot. See below.



5. Push down on the top of the font cartridge until it snaps into place.
6. Turn ON the printer. All of the font cartridge lights will flash ON briefly, then the ON LINE and COUR 10/20 lights on the keypad will come ON.
7. Press the FONT key until the light on the cartridge that corresponds to the font you wish to use comes ON. Fonts selected through your software application may override keypad selection. Consult your software user's manual, and Chapter 3, Setting Up . . . Software, for more information.
8. Replace the tray cover over the OUT tray. The font cartridge is ready for use.

Keypad



Note

Selections made through the keypad will be lost when the printer is turned OFF. Some software packages may override selections made through the **FONT** and **MODE** keys. Consult your software user's manual for information.

ON LINE Key and Light

The ON LINE key has several uses.

- A. To stop printing.** Press the ON LINE key once and the ON LINE light will turn off, and the printer will finish printing the line it is on and stop. Press the key again to resume printing. The printer will begin printing where it left off.

B. To resume printing after loading paper. When the printer runs out of paper an "error condition" is detected: the printer will stop printing and the **ON LINE** light will blink. To clear this, load paper in the IN tray then press the **ON LINE** key. Paper will load and the printer will resume printing.

The **ON LINE** and **BUSY** lights will flash when a paper jam occurs.

PRIME Key

The **PRIME** key is used to activate a newly installed print cartridge. It is also used to re-activate the print cartridge if print becomes faint. Only re-activate a print cartridge at the beginning of a print job, or your current print position will be lost.

FONT Key and Lights

The **FONT** key has several uses.

A. To select fonts resident in the printer. Courier 10 pitch, Courier 16.67 pitch, and Courier 20 pitch fonts are available through the keypad. When the printer is turned ON it will be in the Courier 10 pitch font as indicated by the light ON next to **COUR 10/20**. Press the **FONT** key once and the printer will be in the Courier 16.67 pitch font as indicated by the light ON next to **COUR 16.67**. Press the **FONT** key again and the printer will be in the Courier 20 pitch font, as indicated by the lights next to **COUR 10/20** and the burgundy rectangle being ON.

B. To select page orientation. The **FONT** key is used to select portrait page orientation or landscape page orientation through the keypad. When the printer is turned ON it will be in portrait orientation. To select landscape orientation, press the **FONT** key until the light next to the landscape icon turns ON.

Continue to press the **FONT** key to select between the three resident fonts, Courier 10, 16.67, and 20, in landscape orientation. The light next to the landscape icon will remain ON and the light corresponding to the selected font will be ON, also.

Additional fonts for landscape page orientation are available through optional font cartridges.

C. To select fonts available on optional font cartridges. The **FONT** key is also used to select additional fonts available through optional DeskJet PLUS font cartridges that install easily in your printer. (See Chapter 7, Fonts, for examples of fonts available on optional cartridges.)

When a font cartridge is installed in the printer, press the **FONT** key until the light on the font cartridge corresponding to the font you wish to use turns on. See page 1-15, Installing Optional Font Cartridges.



Note

Some software packages may override selections made through the **FONT** and **MODE** keys. Consult your software user's manual for information.

MODE Key and Draft Light

The **MODE** key is used to select between the two print modes offered through the keypad: Letter Quality or Draft Quality. When the printer is turned ON the printer will be in Letter Quality mode. When the key is pressed once the printer will be in Draft Quality mode as indicated by the light on next to **DRAFT**. Press the key again to put the printer back into Letter Quality mode.

Letter Quality mode = 120 characters per second
Draft Quality mode = 240 characters per second

When to Use Letter Quality mode or Draft Quality mode:

Letter Quality mode prints at half the speed of the Draft Quality mode and uses more ink than Draft Quality mode. It is typically used for printing jobs that require a polished, business-like appearance.

Draft Quality mode prints faster and uses less ink than Letter Quality mode. Draft Quality mode is recommended for quick, everyday-printing jobs.

FF (Form Feed) Key

The **FF** key is used to load paper into the printer or to eject paper from the printer. It is also used to eject an envelope that has been loaded. If your printing job is complete, but the last page of the job hasn't ejected, press the **FF** key.

UP Key

The **UP** key is used to advance the paper in fine increments. The **UP** key is also used to load envelopes when it and the **DOWN** key are pressed simultaneously.

DOWN Key

The **DOWN** key is used to retract paper in fine increments. The **DOWN** key is also used to load envelopes when it and the **UP** key are pressed simultaneously.

RESET Key

The **RESET** key is used to reset the printer to its default switch settings. Data waiting to print is lost when the **RESET** key is pressed.

BUSY Light

The **BUSY** light indicates when the printer is receiving data to print: When the **BUSY** light is **ON**, the printer is receiving data; when the **BUSY** light is **OFF**, the printer is not receiving data. The **FF**, **FONT**, and **MODE** keys are inactive when the **BUSY** light is **ON**. If the printer detects a paper jam, the **BUSY** and **ON LINE** lights will flash.

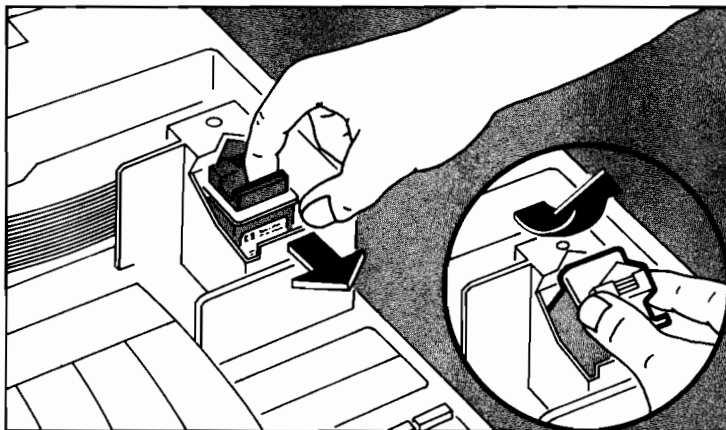
Reloading Paper

When your printer runs out of paper the **ON LINE** light will blink and the printer will go "off-line". Data waiting to print is not lost when the printer goes off-line; data waiting to print is lost when the printer is turned **OFF**, or the **RESET** key is pressed.

1. Load paper as discussed beginning on page 1-10.
2. Press the **ON LINE** key. The **ON LINE** light will stop blinking and the printer will advance the paper and resume printing.

Replacing the Print Cartridge

Open the printer's top cover as described earlier in this chapter, and remove the print cartridge as shown below. See pages 1-6 to 1-9 for instructions on installing the print cartridge.



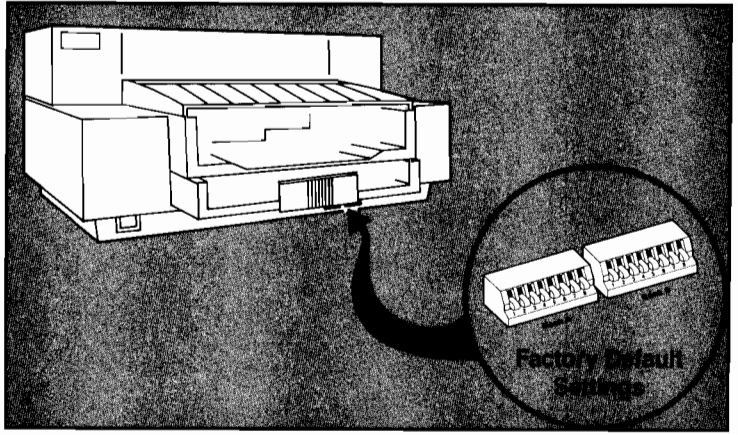
1

Setting Up Your Computer and Printer

2

This chapter contains hardware application notes that will help you set up your DeskJet PLUS printer with your computer or terminal. Mode function switch settings and cabling requirements are provided for each host covered.





Setting Up Your PC or Terminal

The following application notes describe how to set up your personal computer or terminal with a DeskJet PLUS printer.

These notes describe the correct set up when the DeskJet PLUS printer is the "primary" and only printer on your system. Most of the personal computers discussed allow connection to more than one printer at a time. If you are using more than one printer, use the following notes for the data communications and printer set up, and refer to your PC or terminal documentation to determine the correct PC set up.

If you are using a system that is not covered by these notes, follow the set up instructions provided in your system documentation for your computer or terminal, then refer to Chapter 5, Data Communications, in this manual for information on data communications and configurations.

Set up information is provided for the following computers and terminals.

- HP Vectra PC
- HP Touchscreen/Touchscreen II/150
- HP Portable
- HP Portable Vectra CS
- HP2392A and HP2394A, HP700/92 and HP 700/94 Terminals
- HP2393A and HP2397A
- HP700/41 Terminal
- HP3000, 3X, 4X, 5X, 6X, 7X, Micro 3000/XE/GX/LX
- HP9000 Series 300 HP-UX
- IBM PC Family and Compatibles
- IBM PS/2 Family
- IBM Convertible
- Apple IIc
- Apple IIe, Apple II+
- Apple IIgs

HP Vectra PC To The HP DeskJet PLUS Printer

HOST SET UP:

Follow the instructions below for the type of interface you will be using with your DeskJet PLUS printer.

Parallel Interface:

When using the HP24540A Serial/Parallel interface card—
Cable: HP24542D.

From the DOS prompt (A > or C >) enter the following command:

* > **MODE LPT1:,,P** then press the **Enter** key.

This command sets the parallel interface to continuous retry on all timeouts.

Serial Interface:

If using the HP24540A—Serial/Parallel interface card—
Cable: HP24542G.

If using the HP24541A Dual Serial interface card—
Cable: For port 1 (9 pin connector) use HP24542G cable.
For port 2 (25 pin connector) use HP13242G cable or HP17255M.

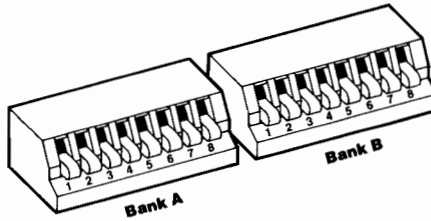
From the DOS prompt (A > or C >) enter the following commands:

- *1. MODE COM1:96,N,8,1,P** then press the **Enter** key.
This command sets the serial communications at 9600 baud, no parity, 8 data bits, 1 stop bit and continuous retry on all timeouts.
- *2. MODE LPT1:=COM1** then press the **Enter** key.
This command directs the primary communication to serial port 1.

If your printer is connected to the second serial port, change COM1 to COM2 in the two DOS commands above.

*To eliminate the need to type the MODE commands every time your PC is turned on, create an AUTOEXEC.BAT batch file to AUTOMATICALLY EXECUTE them. Refer to your DOS manual for more information on the MODE command and how to create BATch files.

PRINTER SETTINGS:



TO VERIFY:

To verify that your printer is connected properly, type something on your screen and copy it to your printer by doing the following:

1. Make sure that both the printer and PC are ON.
2. Make sure that the correct MODE command(s) have been executed.
3. Hold down the **Shift** key and press the **PrtSc** key.

All text on the screen will print.

HP Touchscreen/Touchscreen II/ HP 150 To The HP DeskJet PLUS Printer

HOST SET UP:

Cable: HP 13242G or 17255M

There are four major steps required to set up the HP Touchscreen/HP150 for use with the DeskJet PLUS printer. These steps are the MS-DOS Device Configuration, the Device Control Configuration, the Port 2 Configuration, and the Terminal Configuration.

MS-DOS CONFIGURATION

From P.A.M.

1. Select **DEVICE CONFIG** then **Start Applic (f1)**. The menu below will appear.
2. Set the values on your PC to match those shown below. This will establish the DeskJet PLUS printer as the PRN device for the PC.

MS-DOS Device	Main		Active Values		
System Devices					
	Interface	Model	Print Wheel	Interface	Address
PRN:	Port2	SPECIAL		PLT:	
LST:				COM1:	
AUX:				COM2:	

Only the fields associated with the set up of the DeskJet PLUS printer have values displayed. Refer to your HP Touchscreen/150 Personal Computer Manual for information on changing the values in the fields.

3. Once the changes, if any, have been made, save the information by pressing the **Save Config** key (f4). Press **Exit Config** (f8) to return to P.A.M.

DEVICE CONTROL CONFIGURATION

From P.A.M.

1. Press the **Terminal** key (f6). The HP Touchscreen/150 enters the Terminal Mode. Press the **User System** key which displays the Main Terminal Keys. Next, press **device control** (f1) followed by "to" devices (f3).

2. Select the appropriate “to” device by pressing **Serial Device** (f2). The selected field will display an asterisk (*). Ensure that the only field that displays an asterisk (*) is the SERIAL DEVICE, all others must be off.
3. Press the **User System** key.

PORT 2 CONFIGURATION

Start from the Main Terminal keys.

1. Press **config keys** (f8), then **port2 config** (f4). The menu below will be displayed.
2. Set the values on your display to match those shown below.

Terminal Config. Screen

FULL DUPLEX HARDWIRED Port 2

BaudRate	19.2K	Parity	None	DataBits	8	EnqAck	No	Clock	INT
Asterisk	Off	Check Parity	No	Stop Bits	1				
TR(CD)	Hi			SR(CH)	Lo				
RecvPace	None			SRRXmit	No	RR(CF)Recv	No		
XmitPace	Xon/Xoff			SRRInvert	No	CS(CB)Xmit	No	DM(CC)Xmit	No

3. Once the changes have been made, save the Port 2 Configuration by pressing **Save Config** (f1). This will automatically return the HP Touchscreen/150 to the Main Terminal keys.

GLOBAL CONFIGURATION

Start from the Main Terminal keys.

1. Press **config keys** (f8), then **global config** (f1). Make sure that the Remote/Serial Dev field displays PORT1/PORT2.
2. Once the changes have been made, save the global configuration by pressing **SAVE CONFIG** (f1).

TERMINAL CONFIGURATION Required for HP Line Draw

To print using the HP Line Draw Character Set, a DeskJet PLUS font cartridge is required. Font Cartridges with HP Part Numbers 22706A, B, C & M all contain line draw characters. With any of these cartridges installed, the following terminal configuration will allow these “special” characters to be printed.

Start from the Main Terminal keys:

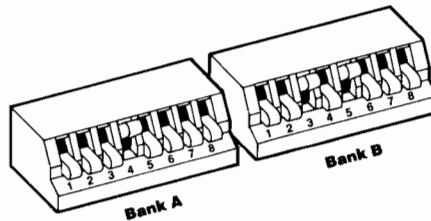
1. Press **config keys** (f8), then **terminal config** (f5).

2. Set the values on your screen to match those shown below. These values must be set to properly print HP Line Draw Characters. (All of the other fields displayed perform other functions.)

ASCII 8 Bits **Yes**
ESC Xfer (N) **Yes**
Alternate Set **Line(B)**

3. Once these changes have been made, save the Terminal Configuration by pressing **Save Config** (f1). This will automatically return the HP Touchscreen/150 to the Main Terminal keys.
4. Return to P.A.M. by holding down the **Shift** key and pressing the **Stop** key.

PRINTER SETTINGS:



2

These switch settings select the Roman8 character set, Terminal Mode enabled, and 19.2K Baud.

TO VERIFY:

From P.A.M.

1. Select **MSDOS COMMANDS**, then press **Start Applic** (f1).
2. Once the **A>** system prompt appears, type **dir> prn**, then press the **Return** key. This command will begin printing the directory of disc drive A.
3. Type **exit** and press **Return**. This will exit MS-DOS and return you to P.A.M.

HP Portable To The HP DeskJet PLUS Printer

HOST SET UP:

Cable: HP92221P

Datacom Set Up:

From P.A.M., press the **Datacom Config** key and ensure that the following fields in the Datacom Configuration menu reflect the values shown below. Press **Exit Config** after the changes have been made.

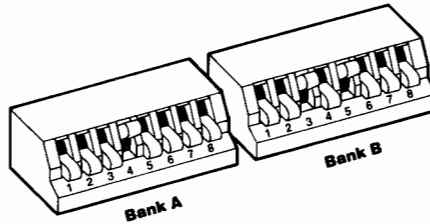
Serial port:	RS-232
Serial baud rate:	19200
Serial word length:	8
Serial stop bits:	1
Serial parity:	None
Serial XON/XOFF pacing:	On
Serial CTS line:	Ignore
Serial DSR line:	Ignore
Serial DCD line:	Ignore

System Set Up:

From P.A.M., press the **System Config** key and ensure that the following fields in the System Configuration Menu reflect the values shown below. Press **Exit Config** after the changes have been made.

Printer:	HP Graphics/Alpha
Printer Interface:	Serial
Print Pitch:	No config
Print line spacing:	No config
Printer Skip perf:	No config

PRINTER SETTINGS:



(Make sure the printer is set to 19.2K baud [switch B5 up].)

TO VERIFY:

2

From P.A.M.:

1. Select **DOS Commands** using the **TAB** key, then press **Start applic (f1)**.
2. Once the **A>** system prompt appears, type **dir>prn**, then press the **Enter** key. This will cause the directory of internal disc A to print.
3. Type **exit**, then press the **Enter** key to return to the P.A.M. screen.

HP Portable Vectra CS To The HP DeskJet PLUS Printer

HOST SET UP:

Follow the instructions below for the type of interface you will be using with your DeskJet PLUS printer.

Parallel Interface:

Use Cable: HP24542D.

From the DOS prompt enter the following commands:

MODE LPT1:,,P then press the **Enter** key.

This command sets the parallel interface to continuous retry on all timeouts.

Serial Interface:

When using HP D1004A Dual Serial Interface Card:

CABLE: For port 1 (9 pin connector) use HP24542G cable.

For port 2 (25 pin connector) use HP13242G cable.

From the DOS prompt enter the following commands:

■ **MODE COM1:96,N,8,1,P** then press the **Enter** key.

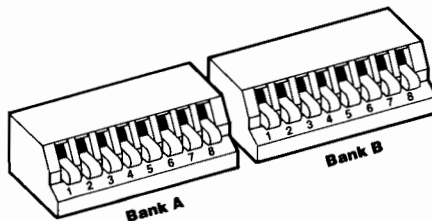
This command sets the serial interface to 9600 baud, no parity, 8 data bits, 1 stop bit, and continuous retry on all timeouts.

■ **MODE LPT1: = COM1** then press the **Enter** key.

This command directs the primary printer communication to the first serial port.

Refer to your DOS manual for more information on the MODE command.

PRINTER SETTINGS:



TO VERIFY:

To verify that your printer is connected properly, type something on your screen and copy it to your printer by doing the following:

1. Make sure that the printer and PC are ON.
2. If you are using the serial interface, make sure that the above MODE commands have been executed.
3. Hold down the **Shift** key and press the **PrtSc** key.

All text on the screen will print.

HP2392A, HP2394A, HP700/92 and HP700/94 Terminals To The HP DeskJet PLUS Printer

HOST SET UP:

The following instructions provide the necessary information to set up a DeskJet PLUS printer and either an HP2392A or HP2394A terminal equipped with a parallel or RS-232-C accessory datacom module, or an HP700/92 or HP 700/94 Terminal using the standard RS-232-C port.

Parallel Cable: HP40242D

No change to the terminal's external device configuration is required when using the parallel interface.

Serial Cable: HP40242G

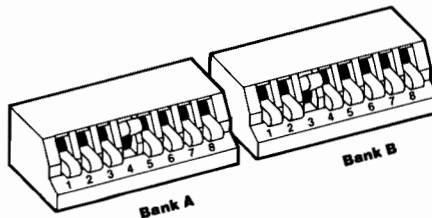
To configure the terminal's port 2 to work with your DeskJet PLUS printer, press the **User System** key. Next, press the **config** keys (f8) and the **ext dev config** key (f4). The External Device Configuration Menu will be displayed. Ensure that your settings reflect those shown below. Be sure to exit this display by pressing **Save Config** (f1).

EXTERNAL DEVICE CONFIGURATION

BaudRate	9600 *	Parity/DataBits	None/8	PrinterNulls	000
PrinterType	ROMAN8	SRRXmit	No	SRRInvert	No
XmitPace	Xon/Xoff	CS(CB)Xmit	No		

*Performance can be improved when using the HP700/92 or HP700/94 by setting the baud rate to 19200 in the external device configuration menu above and setting switch B5 on the printer in the UP position.

PRINTER SETTINGS:



These switch settings select the Roman8 character set, Terminal Mode enabled, and 9600 Baud.

TO VERIFY:

To verify that your printer is connected properly, type something on your screen and copy it to your printer by doing the following:

1. Press the **User System** key, then press **Device Control** (f1). Press **to Ext Dev** (f2) until the asterisk (*) appears.
2. Press the **modes** key (f4).
3. Press **REMOTE MODE** key (f4) until the asterisk (*) disappears from the **REMOTE MODE** label on the screen. This selects Local Mode.
4. Type **This is a test!** and press the **Enter** key.
5. Hold down the **Shift** key and press the **Print Enter** key. **This is a test!** will print.
6. Press **REMOTE MODE** (f4) until an asterisk (*) appears. This will return the terminal to the Remote Mode.

HP Line Draw

2

To print using the HP Line Draw Character Set a DeskJet PLUS font cartridge is required. DeskJet PLUS Font Cartridges HP Part #22706A, B, C and M all contain the necessary line draw characters. With any of these cartridges installed, the terminal configuration will allow these "special" characters to be printed using DeskJet PLUS.

HP2393A and HP2397A To The HP DeskJet PLUS Printer

HOST SET UP:

Serial Interface: Cable HP40242G

Parallel Interface: Cable HP40242D

To configure the terminal to work with your HP DeskJet PLUS printer, press the key labeled **config** keys (f8), then the **ext dev config** key (f4). When you press the **ext dev config** key, one of the following menus will be displayed: If your terminal has a serial interface, the External Parallel Device Configuration Menu will be displayed. Ensure that the values you choose reflect those shown below for the interface your terminal uses. When the changes have been made, save the new configuration by pressing **SAVE CONFIG** (f1).

EXTERNAL SERIAL DEVICE CONFIGURATION

BaudRate	9600	Parity/DataBits	None/8	PrinterNulls	0		
XmitPace	Xon/Xoff	SRRXmit	No	CS(CB)Xmit	No	DM(CC)Xmit	No
		SRRInvert	No	Protocol	HP		

GRAPHICS PRINTOUT

Contents	B&W	Invert B&W	Yes	Image Size	X1	Layout	Vert
----------	----------------	------------	------------	------------	-----------	--------	-------------

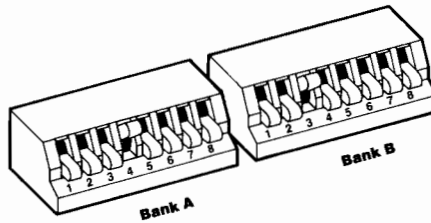
EXTERNAL PARALLEL DEVICE CONFIGURATION Port 2

Protocol **HP**

GRAPHICS PRINTOUT

Contents	B&W	Invert B&W	Yes	Image Size	X1	Layout	Vert
----------	----------------	------------	------------	------------	-----------	--------	-------------

PRINTER SETTINGS:



TO VERIFY:

2

To verify that your printer is connected properly, type something on your screen and copy it to your printer by doing the following:

1. Press the **User System** key.
2. Press the **modes** key (f4).
3. Press **REMOTE MODE** key (f4) until the asterisk (*) disappears from the **REMOTE MODE** label on the screen. This selects Local Mode.
4. Type **This is a test!** and press the **Enter** key.
5. Hold down the **Shift** key and press the **Print Enter** key. **This is a test!** will print.
6. Press **REMOTE MODE** (f4) until the asterisk (*) reappears in the **REMOTE MODE** label. Press the **User System** key to return the terminal to normal operation.

HP Line Draw

To print using the HP Line Draw Character Set, a DeskJet PLUS font cartridge is required. The DeskJet PLUS Font Cartridges B, C, and M, HP P/N 22706A, all contain the necessary line draw characters. With any of these cartridges installed, the terminal configuration will allow these "special" characters to be printed using the DeskJet PLUS printer.

HP700/41 Terminal To The HP DeskJet PLUS Printer

HOST SET UP:

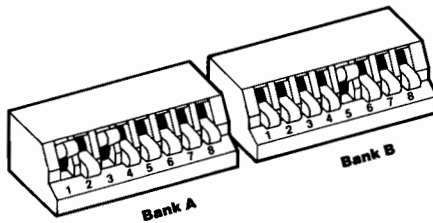
The following instructions provide the necessary information to set up a DeskJet PLUS printer and an HP700/41 Terminal using the standard RS-232 port.

Cable: HP40242G

To configure the terminal's port 2 to work with your DeskJet PLUS printer, hold down the **Shift** key and press the **SETUP** key. Then display the **MAIN** and **PRINTER PORT** Menu by pressing the **DATA COMM SETUP** (f2). Ensure that the Printer Port settings reflect those shown below. Be sure to save these settings before exiting by pressing **SAVE FOR POWER ON** (f1).

PRINTER PORT				
Baud Rate	Handshake	Data Length	Parity	Print Mode
F 9600	G DTR	H 8 Bits	I None	J Off

PRINTER SETTINGS:



(These switch settings select the ASCII character set, serial datacom, 9600 Baud, 8 bits, 1 stop bit, no parity.)

TO VERIFY:

To verify that your printer is connected properly, type something on your screen and copy it to your printer by doing the following:

1. Press the **SETUP** key while holding down the **Shift** key.
2. Press the **TERMINAL SETUP** key (f1).
3. Move the cursor to the **ON LINE** field labeled E and set this field to **OFF** to select local mode.
4. Press the **SETUP** key to exit set up mode.
5. Type **This is a test!** and press the **Enter** key.
6. Hold down the **Shift** key and press the **PRINT PG / COPY PR** key. **This is a test!** will print.
7. Repeat steps 1 and 2 above, and then return the **ON LINE** field to **ON**.

HP3000 3X, 4X, 5X, 6X, 7X, Micro 3000, Micro 3000/XE/GX/LX To The DeskJet PLUS Printer

HOST SET UP:

Serial Interface:

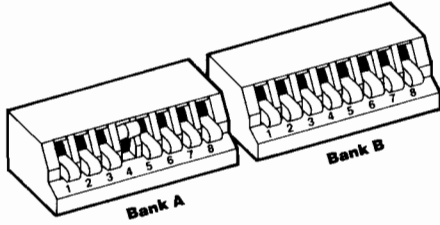
Cables: HP13242Y, HP92219G, or HP13242N for the 25-pin ATP Ports,
HP13242X for 3-pin ATP Ports

MPE Configuration:

Logical Device #?	(Provided by System Manager)
Device Name?	HPPCLATP (for ATP/ATP37)
DRT #?	(Provided by System Manager)
UNIT #?	(Provided by System Manager)
Software Channel #?	0
Type?	32
Sub Type?	14
Term Type?	TTPCL26.PUB.SYS
Speed?	960 or 1920 (Chars/sec)
Record Width?	66
Output Device?	0
Accept Jobs/Sessions?	N
Accept Data?	N
Interactive?	N
Duplicative?	N
Initially Spooled?	Y* or N
Auto Reply?	N
Driver Name?	HIOASLP0 (for ATP/ATP37)
Device Class?	(optional)

*Within usage limits of service contract. Service contracts specify the maximum usage. Contact your sales representative for current limits.

PRINTER SETTINGS: _____



HP9000 Series 300 HP-UX To The DeskJet PLUS Printer

HOST SET UP:

The DeskJet printer is compatible with all Series 300 RS-232-C interfaces.

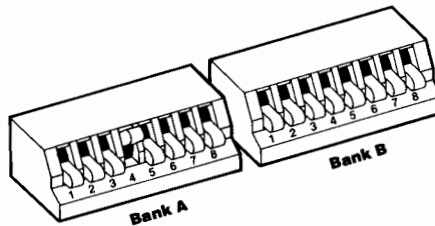
Serial Cables:

Connection Type	Host Interface	Interface Option	Peripheral Cable
DTE(25F)	98644A	< none >	40242G (3m)
DTE(25M)	98626/28A	001	17255D (1.3m)
DCE(25F)	98626/28A	002	40242M (3m)

Interfacing:

Drivers required	tty
Block-mode major number	NA
Character-mode major number	1
Spooler model file	deskjet
DGL/Starbase handler	None

PRINTER SETTINGS:



TO VERIFY:

To verify the correct set-up:

1. Execute "`ls | lp -dprintername`". This will result in the current directory being printed.

IBM PC Family and Compatibles To The DeskJet PLUS Printer

HOST SET UP:

Follow the instructions below for the type of interface you will be using with your DeskJet PLUS printer.

Parallel Interface:

Use Cable: HP24542D.

From the DOS prompt enter the following command:

MODE LPT1:,,P then press the **Enter** key.

This command sets the parallel interface to continuous retry on all timeouts.

Serial Interface:

If using the IBM Asynchronous Communications Adapter—

Cable: HP13242H, or HP17255D (both are 25 pin connectors).

If using the IBM PC AT Serial/Parallel Adapter—

Cable: HP24542G (9 pin connector).

From the DOS prompt enter the following commands:

1*. MODE COM1:96,N,8,1,P then press the **Enter** key.

This command sets the serial interface to 9600 baud, no parity, 8 data bits, 1 stop bit, and continuous retry on all timeouts.

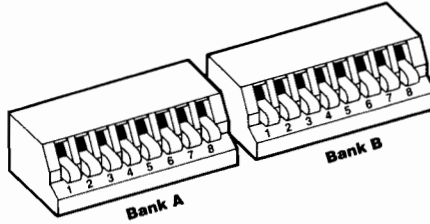
2*. MODE LPT1:=COM1 then press the **Enter** key.

This command directs the primary printer communication to the first serial port.

*To eliminate the need to type the MODE commands every time your PC is turned on, create an AUTOEXEC.BAT batch file to AUTOMATICALLY EXECUTE them. Refer to your DOS manual for more information on the MODE command and how to create BATch files.

If your printer is connected to the second serial port, change COM1 to COM2 in the two DOS commands above.

PRINTER SETTINGS:



TO VERIFY:

To verify that your printer is connected properly, type something on your screen and copy it to your printer by doing the following:

1. Make sure that the printer and PC are ON.
2. Make sure that the correct MODE command(s) have been executed.
3. Hold down the **Shift** key and press the **PrtSc** key.

All text on the screen will print.

IBM PS/2 Family To The HP DeskJet PLUS Printer

HOST SET UP:

Follow the instructions below for the type of interface you will be using with your DeskJet PLUS printer.

Parallel Interface:

Use Cable: HP24542D.

From the DOS prompt enter the following command:

MODE LPT1:,,P then press the **Enter** key. This command sets the parallel interface to continuous retry on all timeouts.

Serial Interface:

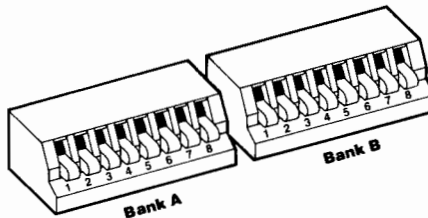
Use Cable: HP13242H, or HP17255D.

From the DOS prompt enter the following commands:

- 1. MODE COM1:96,N,8,1,P** then press the **Enter** key. This command sets the serial interface to 9600 baud, no parity, 8 data bits, 1 stop bit, and continuous retry on all timeouts.
- 2. MODE LPT1:=COM1** then press the **Enter** key. This command directs the primary printer communication to the first serial port.

Refer to your DOS manual for more information on the MODE command.

PRINTER SETTINGS:



TO VERIFY:

To verify that your printer is connected properly, type something on your screen and copy it to your printer by doing the following:

- 1.** Make sure that the printer and PC are ON.
- 2.** Make sure that the correct MODE command(s) have been executed.
- 3.** Hold down the **Shift** key and press the **PrtSc** key.

All text on the screen will print.

IBM Convertible PC To The HP DeskJet PLUS Printer

HOST SET UP:

Follow the instructions below for the type of interface you will be using with your DeskJet PLUS printer.

Parallel Interface:

Use Cable: HP24542D.

From the DOS prompt (A> or B>) enter the following command:

***MODE LPT1:,,P** then press the **Enter** key.

This command sets the parallel interface to continuous retry on all timeouts.

Serial Interface:

Use Cable: HP13242H, or HP17255D.

From the DOS prompt enter the following commands:

1* . MODE COM1:96,N,8,1,P then press the **Enter** key.

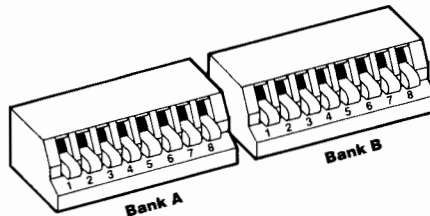
This command sets the serial interface to 9600 baud, no parity, 8 data bits, 1 stop bit, and continuous retry on all timeouts.

2* . MODE LPT1:=COM1 then press the **Enter** key.

This command directs the primary printer communication to the first serial port.

*To eliminate the need to type the MODE commands every time your PC is turned on, create an AUTOEXEC.BAT batch file to AUTOMATICALLY EXECUTE them. Refer to your DOS manual for more information on the MODE command and how to create BATCH files.

PRINTER SETTINGS:



TO VERIFY:

To verify that your printer is connected properly, type something on your screen and copy it to your printer by doing the following:

- 1.** Make sure that the printer and PC are ON.
- 2.** Make sure that the correct MODE command(s) have been executed.
- 3.** Hold down the **Shift** key and press the **PrtSc** key.

All text on the screen will print.

Apple IIc To The HP DeskJet PLUS Printer

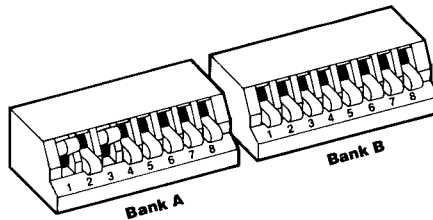
HOST SET UP:

Most application programs for the Apple IIc use EPSON printer drivers. To use your HP DeskJet PLUS printer with an Apple IIc requires a Hewlett-Packard "EPSON FX-80 Printer Emulation Cartridge", HP P/N 22707E. This cartridge is installed in one of the two cartridge slots on the printer.

Cable: HP92219N Serial Printer Cable, or Apple IIc ImageWriter Cable, Apple P/N A2C4515 (590-0191).

PRINTER SETTINGS:

2



(These switch settings select the ASCII Character Set, 9600 Baud, 1 stop bit, 8 data bits, and no parity.)

TO VERIFY:

The following BASIC program will verify proper connection between the computer and printer. This program will run properly only if DOS is loaded. Type:

```
10 REM CONNECTION VERIFICATION
20 PRINT CHR$(4);"PR#1"
30 FOR I=0 TO 10
40 FOR J=33+I TO 111+I
50 PRINT CHR$(J);
60 NEXT J
70 PRINT
80 NEXT I
90 PRINT
100 PRINT CHR$(4);"PR#0"
110 END
```

Type **RUN** and press **Enter**. The following will print:

```
!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN OPQRSTUVWXYZ[\]^_`abcdefghijklmnop
"# $%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN OPQRSTUVWXYZ[\]^_`abcdefghijklmnop
#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN OPQRSTUVWXYZ[\]^_`abcdefghijklmnopq
r
$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN OPQRSTUVWXYZ[\]^_`abcdefghijklmnopqr
s
%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN OPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrs
t
&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN OPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrst
u
'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN OPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstu
v
()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN OPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuv
w
*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN OPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvw
x
+,-./0123456789:;<=>?@ABCDEFGHIJKLMN OPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxy
```

2

Apple IIe/II+ To The HP DeskJet PLUS Printer

HOST SET UP:

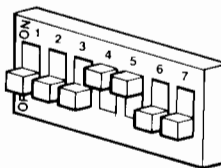
Most application programs for the Apple IIe and II+ use EPSON printer drivers. To use your HP DeskJet PLUS printer with an Apple IIe or II+ requires a Hewlett-Packard "EPSON FX-80 Printer Emulation Cartridge", HP P/N 22707E. This cartridge is installed in one of the two cartridge slots on the printer.

Apple II Parallel Interface:

**Cable: Apple parallel printer interface cable,
Apple P/N 590-0042, or equivalent.**

2

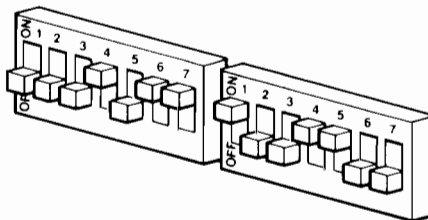
Set the configuration switches on the Parallel Interface Card to the illustration below, and install the board into slot 1 as instructed in the Parallel Interface Card Installation and Operating Manual.



Apple Super Serial Interface:

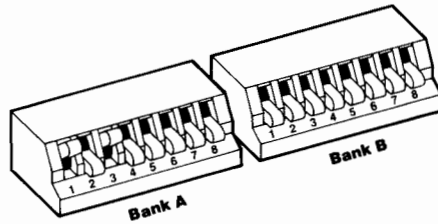
**Cable: HP 17355M Serial Printer Cable or Apple Printer Interface
Cable, Apple P/N A2C0352 (590-0037).**

Set the configuration switches on the Super Serial Card to match the following illustration and install the card in slot 1 as instructed in the Super Serial Card Installation and Operating Manual.



(These switch settings select 9600 Baud, 1 stop bit, 7 data bits, and no parity.)

PRINTER SETTINGS:



(These switch settings select the ASCII Character Set, 9600 Baud, 1 stop bit, 8 data bits, and no parity.)

TO VERIFY:

The following BASIC program will verify proper connection between the computer and printer. This program will run properly only if DOS is loaded. Type:

```
10 REM CONNECTION VERIFICATION
20 PRINT CHR$ (4);"PR#1"
30 FOR I=0 TO 10
40 FOR J=33+I TO 111+I
50 PRINT CHR$ (J);
60 NEXT J
70 PRINT
80 NEXT I
90 PRINT
100 PRINT CHR$ (4);"PR#0"
110 END
```

Type **RUN** and press **ENTER**. The following will print:

```
!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN0PQRSTUVWXYZ[\]^_`abcdefghijklmnop
"$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN0PQRSTUVWXYZ[\]^_`abcdefghijklmnop
#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN0PQRSTUVWXYZ[\]^_`abcdefghijklmnopq
r$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN0PQRSTUVWXYZ[\]^_`abcdefghijklmnopqr
s%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN0PQRSTUVWXYZ[\]^_`abcdefghijklmnopqrs
t'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN0PQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstu
v()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN0PQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuv
w()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN0PQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvw
x*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN0PQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxy
+,-./0123456789:;<=>?@ABCDEFGHIJKLMN0PQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxy
```



Apple IIgs To The HP DeskJet PLUS Printer

HOST SET UP:

Most application programs for the Apple IIgs use EPSON printer drivers. To use your HP DeskJet PLUS printer with an Apple IIgs requires an HP22707F EPSON FX-80 Printer Emulation Cartridge. This cartridge is installed in one of the two cartridge slots on the printer.

Cable:

Single Cable Solution:

Apple IIe Modem-8 Cable, Apple P/N A2C0311 (590-0331)

Dual Cable Solution:

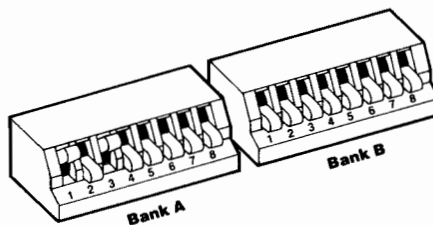
Apple ImageWriter Cable, Apple P/N M0150 (590-0169), and
Apple Peripheral Adapter Cable, Apple P/N M0189 (590-0341).

or

Hewlett-Packard equivalent cable, HP P/N 92219M, and
Apple Peripheral Adapter Cable, Apple P/N M0189 (590-0341).

The Apple IIgs will also accept interface cards made for the Apple IIe. These interface cards are installed in internal slots just as they are in the Apple IIe. Refer to the Apple IIe application note for information on how to configure these interface cards. Once installed, the slots are configured using the Apple IIgs Control Panel Program. Refer to your Apple IIgs Owner's Guide.

PRINTER SETTINGS:



(These switch settings select the ASCII Character Set, 9600 Baud, 1 stop bit, 8 data bits, and no parity.)

TO VERIFY:

The following BASIC program will verify proper connection between the computer and printer. This program will run properly only if DOS is loaded. Type:

```
10 REM CONNECTION VERIFICATION
20 PRINT CHR$(4);"PR#1"
30 FOR I=0 TO 10
40 FOR J=33+I TO 111+I
50 PRINT CHR$(J);
60 NEXT J
70 PRINT
80 NEXT I
90 PRINT
100 PRINT CHR$(4);"PR#0"
110 END
```

Type **RUN** and press **Enter**. The following will print:

```
!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNPQRSTUVWXYZ[\]^_`abcdefghijklmnop
"$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNPQRSTUVWXYZ[\]^_`abcdefghijklmnop
#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNPQRSTUVWXYZ[\]^_`abcdefghijklmnop
$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNPQRSTUVWXYZ[\]^_`abcdefghijklmnop
%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNPQRSTUVWXYZ[\]^_`abcdefghijklmnop
&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNPQRSTUVWXYZ[\]^_`abcdefghijklmnopqr
'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstu
()**+,-./0123456789:;<=>?@ABCDEFGHIJKLMNPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstu
)**+,-./0123456789:;<=>?@ABCDEFGHIJKLMNPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuv
**+,-./0123456789:;<=>?@ABCDEFGHIJKLMNPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvw
**+,-./0123456789:;<=>?@ABCDEFGHIJKLMNPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwx
**+,-./0123456789:;<=>?@ABCDEFGHIJKLMNPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxy
```

2

Setting Up Your Software and Printer **3**

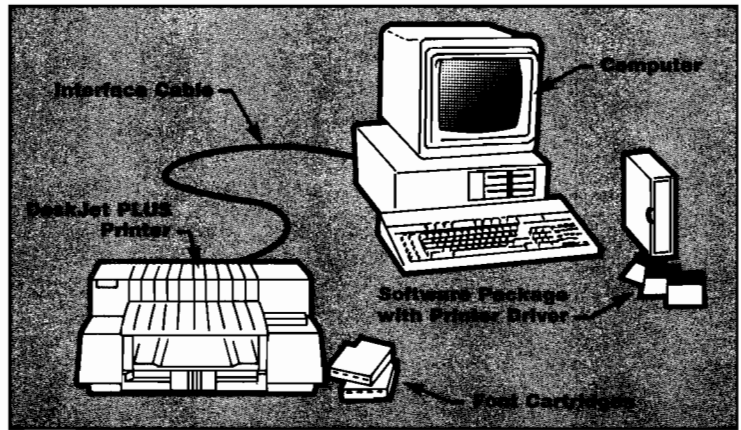
This chapter contains information to get you started using your software package and your DeskJet PLUS printer. The chapter discusses:

- Getting your printer to work with your software
- Selecting a printer driver (Software Support Quick Reference Matrix)
- Setting up your software with your printer (Software package specific setup instructions)
- Printing and software Q & A

For additional information on printing with your software package refer to your software manual. If your software package allows you to use escape sequences, refer to Chapter 4, Programming, of this manual for information on using printer escape sequences.

Getting Your Printer to Work with Your Software

This section will discuss how your DeskJet PLUS printer, font cartridges, computer, and software package work together in producing your document. To produce a document you will need the items shown below.



All of these items, except for the optional font cartridges, are necessary for printing. The most important item for your software package and printer is the printer driver.

3

Using Printer Drivers

The printer driver works together with the software package to transfer information from the computer to the DeskJet PLUS printer. Just as the cable is the link from the computer to the printer, the printer driver is the link from the software package to the printer.

What are printer drivers?

Printer drivers are a part of your software package. They control the printer by carrying information from your software package to the printer to create a document. The printer driver carries two types of information: the words, numbers, or symbols you wish to print and the instructions on how to print them (i.e. format instructions including paragraphs, margins, and enhancements such as bold or italics).



Do Printer Drivers Have Limitations?

Printer drivers have two limitations. They can carry only the information that they are given by the software package and they can carry only the information for which they were designed to carry. Because of these limitations, you may be unable to use a certain feature that your software package or printer has if your printer driver doesn't support it with your printer.

For example, your DeskJet PLUS printer can print bold or underlines. If the software package you are using doesn't support bold or underlines, you are limited by the software package. If your printer driver doesn't support bold or underlines, you are limited by the printer driver.

In general, to be able to use all the features of the DeskJet PLUS printer, both the software package and the printer driver must support them. The features you will be able to use are the ones that all three components, software, printer driver, and printer, have in common.

Selecting a Printer Driver

The goal in selecting a printer driver from your software package is to find the driver which allows you to use the majority of your printer features. This section discusses how to select the best printer driver.

Most software packages allow you to select from many different printer drivers. Consult your software manual for more information on your particular software package.

To select a printer driver for your DeskJet PLUS printer, go to the printer driver selection portion of your package and select the DeskJet PLUS printer driver. Some software packages will offer a DeskJet PLUS printer driver for particular font cartridge(s). If you have more than one DeskJet PLUS printer driver listed in your package, select the one which corresponds to the font cartridge(s) you wish to use.

If You Can't Find a DeskJet PLUS Driver . . .

If you can't find a DeskJet PLUS printer driver, don't panic. Call your software company for information on the availability of a DeskJet PLUS printer driver. The DeskJet PLUS printer is a new product. Although most software packages support the DeskJet PLUS printer, they may not have included a DeskJet PLUS printer driver on early versions of their software. At publication time (October 1988) of this manual DeskJet PLUS printer drivers for use with DeskJet PLUS font cartridges HP22706R, T, U, V and soft fonts HP22708C and D were unavailable.

Since software packages are continually being revised, your software company can provide you with the latest information on printer drivers for your DeskJet PLUS printer.

Use Another Driver

While you wait for a DeskJet PLUS printer driver to come from your software company you can still use the DeskJet PLUS printer by selecting another printer driver, although you may not get the best results in print quality and use of printer features. The following list summarizes alternative printer drivers in preferential order.

- **HP DeskJet** for use with DeskJet font cartridges or soft fonts. Refer to DeskJet Printer Driver Limitations on the next page for driver limitations information. You will need a DeskJet PLUS printer driver specifically to use DeskJet PLUS fonts and soft fonts.
- **HP LaserJet** for limited feature support. Some DeskJet PLUS printer features are not supported on LaserJet drivers.
- **Epson FX-80** for use with the HP22707F Epson Emulation Cartridge. The emulation cartridge will make your DeskJet PLUS printer act like an Epson FX-80 printer. **NOTE:** You will be limited to the features of an Epson FX-80 printer.

DeskJet Printer Driver Limitations

The following information summarizes the limitations of using a DeskJet printer driver with a DeskJet PLUS printer.

Font Cartridges

The DeskJet driver does *not* support DeskJet PLUS font cartridges HP22706R, T, U, and V. The DeskJet driver does not support fonts that are larger than 14 point or contain the PC-850 character set.

Soft Fonts

The DeskJet driver does not support DeskJet PLUS soft fonts HP22708C and D. These fonts include 18, 24, and 30 point fonts. To use fonts that are larger than 14 point, you must use a DeskJet PLUS driver.

Depending on software package limitations, the DeskJet driver may only allow you to access 256K of RAM from optional RAM cartridges. The DeskJet printer can use a total of 256K RAM while the DeskJet PLUS printer can use a total of 512K RAM.

DeskJet PLUS Printer Features

The DeskJet PLUS printer has certain features that make it unique from the DeskJet printer. When a DeskJet driver is used, the driver will not offer the Courier Italics font and landscape orientation as software menu options. However, you may be able to access Courier Italics and landscape orientation through the keypad or through escape sequences if your software package allows you to do so.

You can also access Courier Italics or landscape orientation if your software package allows the selection of the HP22706A DeskJet Courier Italics font cartridge or the HP22707K landscape cartridge in the software menu. Select the option and use it without installing the cartridges.

If your software package allows you to access landscape orientation through the keypad, by sending escape sequences, or offers the HP22707K software menu selection, make sure that you change the page orientation back to portrait before attempting to print graphics, or graphics data will be lost.

Best results will be achieved when using a DeskJet PLUS driver with a DeskJet PLUS printer.

The Importance of Using a DeskJet PLUS Driver

The DeskJet driver can be used as an interim solution but a DeskJet PLUS driver must be used to achieve the best results in print quality and optimum use of printer features. Four new font cartridges have been developed specifically for the DeskJet PLUS printer, the 22706R, T, U, V cartridges. Several new soft font products, including a 256K RAM cartridge have also been developed for use with the DeskJet PLUS printer. These new products can only be used to their full potential when a DeskJet PLUS driver is selected.

DeskJet/ DeskJet PLUS Differences

The major differences in the DeskJet and DeskJet PLUS printers are discussed below.

Built-in Landscape Orientation

The DeskJet PLUS printer has built-in landscape orientation which is selectable through the printer's keypad. (Software packages may override selections made through the keypad.) The DeskJet printer requires the installation of a landscape cartridge to print in landscape orientation.

Built-in Courier Italics

The DeskJet PLUS printer has built-in Courier Italics. The DeskJet printer requires the installation of a font cartridge to access Courier Italics.

Taller Fonts

The DeskJet PLUS printer can print fonts up to 30 point with DeskJet PLUS font cartridges HP22706U and V, and soft fonts HP22708C and D. The DeskJet printer cannot print fonts larger than 14 point.

Better Print Quality

The DeskJet PLUS printer produces better quality proportionally spaced Helv and TmsRmn fonts than does the DeskJet printer. DeskJet PLUS font cartridges HP22706R and T and soft font HP22708C were designed for the DeskJet PLUS printer. The DeskJet printer cannot use DeskJet PLUS font cartridges.

Faster Throughput

The DeskJet PLUS printer can print text up to 2 times faster and 300 dpi printing in graphics up to 5 times faster than the DeskJet printer. Speed depends on the software package.

Increased RAM Capability

The DeskJet PLUS and DeskJet printers can use installed RAM cartridges for downloading soft fonts. The DeskJet PLUS printer can access up to 512K of RAM with the installation of two 256K RAM cartridges or a combination of 256K RAM and 128K RAM cartridges. The DeskJet printer can only access a total of 256K RAM.

To use all of these DeskJet PLUS printer features and obtain better printing results you must use a DeskJet PLUS printer driver.

Quick Reference Matrix

The information on the Software Support Quick Reference Matrix lists the software packages that offer DeskJet PLUS printer support through DeskJet printer drivers on HP Vectra, IBM PC, IBM PC XT/AT, and IBM compatibles (USA only). The matrix also shows the DeskJet font cartridges that are supported by each package. Font cartridge support will vary with each software package but in all cases the packages allow for use of the DeskJet PLUS printer's internal Courier font. Additional support is provided through the use of HP LaserJet drivers and the optional HP22707F Epson FX-80 Emulation Cartridge. For the most current information on software support, contact your software company.

The matrix lists the following font cartridges for use with the DeskJet PLUS printer:

HP22706A	Courier (Italic)	HP22706M	Presentations
HP22706B	Prestige Elite	HP22706P	TmsRmn ASCII
HP22706C	Letter Gothic	HP22706Q	Helv ASCII
HP22706D	TmsRmn 8 & 10 point	HP22706R	TmsRmn Collection
HP22706E	TmsRmn 12 point	HP22706T	Helv Collection
HP22706F	TmsRmn 14 point	HP22706U	TmsRmn Headlines
HP22706G	Helv 8 & 10 point	HP22706V	Helv Headlines
HP22706H	Helv 12 point	HP22708A*	TmsRmn Helv Soft Font
HP22706J	Helv 14 point	HP22708C*	TmsRmn/Helv Soft Font
HP22706L	Landscape Fonts	HP22708D*	Univrs Condensed Soft Font

Refer to Chapter 7, Fonts, for examples of these fonts and for additional information on font cartridges.

*Soft fonts require additional 128K or 256K RAM depending on application.

Word Processing (cont.)

Application	Version	Font Cartridges Supported																Notes					
		A	B	C	D	E	F	G	H	J	L	M	P	Q	R	T	U		V	8A	8C	8D	
MultiMate Advantage II™ MultiMate International Corp. 1-203-247-3445	1.0	•	•	•	•	•	•	•	•	•		•	•	•						•			
Officewriter Office Solutions 1-608-274-5047	5.0	•	•	•	•	•	•	•	•			•	•	•							•		
Professional Write Software Publishing Corp. 1-415-962-0191	2.0	•	•	•	•	•	•	•	•			•											
Q&A Write Symantec 1-408-252-5700	1.0	•	•	•	•	•	•	•	•			•	•	•								•	
SamnaWord IV Samna Corporation 1-800-831-9679	1.1, 2.0	•	•	•	•	•	•	•	•			•	•	•								•	
Sprint Borland 1-408-438-8400																							
Volkswriter 3 Lifetree Software Inc. 1-408-373-4904	1.0	•	•	•	•	•	•	•	•			•	•	•								•	
Volkswriter Deluxe Plus Lifetree Software Inc. 1-408-373-4904	1.0																						
WordPerfect™ WordPerfect Corp. 1-800-321-5906	4.1, 4.2, 5.0	•	•	•	•	•	•	•	•	•		•	•	•								•	
WordPerfect Executive WordPerfect Corp. 1-800-321-5906																							
WordStar Professional™ Micropro International Corp. 1-800-669-1200	5.0	•	•	•							•		•	•									
WordStar 2000 Micropro International Corp. 1-800-669-1200	2.0	•	•	•	•	•			•	•			•	•									
	3.0	•	•	•	•	•	•	•	•	•			•	•	•							•	
XyWrite III Plus XyQuest 1-617-275-4439	1.0																						

Publishing Tools/Forms

Application	Version	Font Cartridges Supported																Notes					
		A	B	C	D	E	F	G	H	J	L	M	P	Q	R	T	U		V	8A	8C	8D	
Fantasia Larc Computing 1-415-941-9310			•	•	•	•	•	•	•	•		•	•	•									
First Publisher Software Publishing Corp. 1-415-962-0191	2.0																						
GEM DeskTop Publisher Digital Research, Inc. 1-408-646-6017	1.1																						
PageMaker® Aldus Corporation 1-206-628-2320	1.0	•	•	•	•	•	•	•	•	•		•	•	•						•			5.
NewsMaster II Kyocera Unison Inc. 1-415-848-6670	1.0																						
Byline Ashton-Tate® 1-213-329-8000	1.0																						

NOTES: 5. Runs under Microsoft® Windows.

3

Special Notes

- 8A represents the DeskJet soft font cartridge, HP22708A.
- 8C and 8D represent DeskJet PLUS soft font cartridges, HP22708C and HP22708D.
- Several applications such as Excel and Micrographics Draw run under the Microsoft® Windows environment. Check your software package for additional information.
- DATA MANAGEMENT category contains the following types of software applications programs: spreadsheets, integrated and project management.

Setting Up Your Software with Your Printer

This section contains software application notes for setting up specific software packages and for selecting fonts. While it is beyond the scope of this manual to provide detailed information on all software packages, you will find the application notes cover a variety of software packages. Setup information is provided for the following software packages (U.S.A. only):

- DisplayWrite 2, 3, 4
- Lotus 1-2-3 release 2.0, 2.01
- Microsoft Windows versions 1.0, 2.0
- Microsoft Word 3.0
- Microsoft Word 4.0
- MultiMate Advantage II version 1.0
- Professional Write version 2.0
- WordPerfect versions 4.1, 4.2
- WordPerfect version 5.0
- WordStar 2000 PLUS version 3.0
- WordStar Professional version 4.0
- WordStar Professional version 5.0

If your software package is not listed above, check the Software Support Quick Reference Matrix on the preceding pages. If your package is listed there it supports the DeskJet PLUS printer with a DeskJet driver. If you don't find your software package in the matrix, contact your software company for support information.



NOTE

If you are using PageMaker®, Excel or a software package that runs under the Microsoft Windows environment, refer to the software application note for Microsoft Windows for setup and font selection information.

On the HP Vectra, and the IBM PC Family and Compatibles

Two options are offered for DisplayWrite support of the DeskJet PLUS printer through the DeskJet PLUS Customer Support Service. The two options are DeskWrite, a DisplayWrite utility which provides basic feature support of DisplayWrite 2, 3, and 4, and a DeskJet Printer Function Table (PFT) which addresses the most commonly used functions of DisplayWrite 4 only.

To receive DeskWrite or the DeskJet PFT, mail a formatted blank 5¼" disc and a self addressed stamped envelope to DeskJet Customer Support, Mail Stop 516, 11311 Chinden Blvd., Boise, ID 83714, along with a request for the DisplayWrite Support option you wish to use. If you wish to receive both options, mail two discs. Installation and use instructions will accompany your returned disc(s).

Both support options have limitations. Information on PFT limitations were unavailable at the publication time of this manual. However, a summary of DeskWrite limitations is listed below. Contact DeskJet Customer Support at (208) 323-2551 for further information.

DeskWrite Utility Limitations

- 1.** DeskWrite supports 8½" × 11" Letter size paper in Portrait mode only. 8½" × 14" Legal size paper and Landscape mode are not supported.
- 2.** DeskJet fonts on the M, P, and Q cartridges are supported only with the ASCII (06) character set. All other fonts are supported only with the PC-8 character set. The Legal character set is not supported.
- 3.** Only Letter quality printing is supported; draft quality is not supported.

- 4.** The appearance of fully justified, proportionally spaced text may be unacceptable. Some font sizes (pitches) produce better looking output than others.
- 5.** DeskWrite typestyles do not match the DisplayWrite typestyle matrix. This means that, in general, existing documents must be modified before printing will be acceptable. In some cases, it will not be possible to modify an existing document.
- 6.** Support of soft fonts is limited.
- 7.** Support of Landscape printing is not available.

On the HP Vectra, and the IBM PC Family and Compatibles

Getting Ready to Print

Contact Lotus Development Corporation for information on receiving an updated driver to support your DeskJet PLUS printer.

To receive a printer driver for Lotus 1-2-3 release 2.0, 2.01, mail a formatted blank 5¼" disc and a self addressed stamped envelope to DeskJet Customer Support, Mail Stop 516, 11311 Chinden Blvd., Boise, ID 83714, along with your request.

Running INSTALL and Selecting Text and Graphics Printers

When using Lotus 1-2-3 release 2.0, 2.01, to print documents, you must have a copy of the correct printer driver file on your INSTALL/LIBRARY program disc. A printer driver file is used by Lotus 1-2-3 to take advantage of the printer's features.

To install your printer:

1. Start the Lotus program.
2. Select **INSTALL** and press **[Return]**.
3. At the main menu, select **Advanced Options**.
4. Select **Add New Drivers to Library** and press **[Return]** twice.
5. Select **Modify Current Driver Set**, then select **Text Printer**. For text printer: select **HP** and then select **2276A DeskJet**.
6. To install a graphics printer, select **Graph Printer**: select **HP**, and then select **DeskJet**.

7. Select **Return to Menu** and select **Save Changes**, then press **[Return]** three times to exit **INSTALL**.

Setting Up Lotus 1-2-3 Default Settings

After you run the **INSTALL** program, you must select your printer default settings. 1-2-3's printer default connection is the first parallel printer port (LPT1). To confirm this setting or to change it follow these steps:

1. Start the Lotus program and select **1-2-3**.
2. If you are using a parallel printer interface, Enter **/WGDPI1** (**Worksheet, Global, Default, Printer, Interface, 1 = Parallel**).

If you are using a serial interface, enter **/WGDPI2** (**Worksheet, Global, Default, Printer, Interface, 2 Serial 1, 9600 Baud**).

3. After you select the default printer connection, make the following other printer default settings. For example, enter **W** for Wait and enter **No**.

Auto-line feed	No
Left margin	0
Right margin	80
Top margin	0
Bottom margin	0
Page length	No
Wait	No
Setup	Leave setup blank
Name	HP2276A DeskJet.

4. Enter **QUQ** (**Quit, Update, Quit**).

To setup PrintGraph:

1. Start the Lotus program.
2. Use your cursor keys to highlight **PrintGraph** and press **[Return]**.
3. If you are using the parallel interface: Enter **SHI1** (**Select, Hardware, Interface, Parallel 1**).

If you are using the serial interface: Enter **SHI2** (**Select, Hardware, Interface, 2 Serial 1, 9600 Baud**).

4. Enter **P** (Printer) and use the cursor keys to highlight **HPDeskJet Hi density** (for 300 dpi) **HP DeskJet Low density** (for 150 dpi), then press the [Space Bar] and press [Return].
5. After the printer is selected, you can select or change the paper size default, then Enter **Q** (Quit) and **S** (Save).

Refer to your Lotus 1-2-3 manual for additional information on the installation and setup of printers.

Selecting Fonts with Lotus 1-2-3

This section discusses the selection and use of fonts to print your document with the DeskJet PLUS printer and Lotus 1-2-3 release 2.0, 2.01. Proportionally spaced fonts are not supported. Refer to your Lotus 1-2-3 manual for additional information on printing.

Fonts are selected through setup strings entered into Lotus 1-2-3 or through the FONT key of the printer's keypad. Lotus 1-2-3 supports fonts in the HP22706A, B, C, M and HP22707L cartridges as well as the DeskJet PLUS internal fonts. Margin settings may have to be changed to correspond to the pitch you are using.

To use a setup string, you must enter the escape sequences that correspond to the font you wish to use. Refer to Chapter 4, Programming or Chapter 8, Appendix, for escape sequence information.

To send a setup string:

Enter **/WGDPS** (Worksheet, Global, Default, Printer, Setup) and enter the setup string.

To print a font from one of the supported font cartridges, you must have the font cartridge installed in your printer.

Helpful Tips

Additional Printer Features: The table on the next page is a quick reference for printer features that may be accessed by sending the corresponding setup string. Refer to the Escape Sequence/Control Code summary in Chapter 8, Appendix, for additional features.

Printer Feature	Setup String
Compressed Print	\027(s16.67H
Expanded Print	\027(s5H
10 Pitch	\027(s10H
12 Pitch	\027(s12H
8 lines per inch	\027&l8D
6 lines per inch	\027&l6D
Bold print On	\027(s3B
Bold print Off	\027(s0B
Printer Reset	\027E
Landscape Print	\027&1O

Landscape Printing: To print your spreadsheet in landscape orientation, specify the **Page** command. The last page of your spreadsheet will not print until the **Page** command is sent to the printer.

To specify the Page command:

Type: **/PPR** (**P**rint, **P**rinter, **R**ange), set your range, press **[Return]**, then type **AGPQ** (**A**lign, **G**o, **P**age, **Q**uit).

When you print a document in landscape, make sure to change the printing orientation back to portrait before attempting to print graphics, or graphics data will be lost.

Quick Reference Printer Feature Support

Is underlining supported? **Yes***

Is double underlining supported? **Yes***

Is bold printing supported? **Yes***

Is superscript/subscript printing supported? **No**

Is graphics supported? **Yes**

Are proportionally spaced fonts supported? **No**

Can an escape sequence be embedded? **Yes**

What font cartridges are supported? **HP22706A, B, C, M and HP22707L**

What soft fonts are supported? **None**

*Enhancing one word in your spreadsheet will enhance the entire row.

Using Microsoft® Windows versions 1.0, 2.0

On the HP Vectra, and the IBM PC Family and Compatibles

Getting Ready to Print

At publication time of this manual (October 1988), information on DeskJet PLUS printer drivers for use with DeskJet PLUS font cartridges HP22706R, T, U, V and soft fonts HP22708C and D were unavailable for Microsoft Windows versions 1.0, 2.0.

Contact Microsoft for information on receiving an updated driver to support your DeskJet PLUS font cartridges and soft fonts.

If your software package lists a DeskJet driver, select that driver to support your DeskJet PLUS printer for an interim solution, and follow the procedures outlined in this application note.

Setting Up Microsoft Windows

When using Microsoft Windows to print documents, you must have a copy of the correct printer driver on your program disc. Printer driver files allow Microsoft Windows to use the printer's features.

To install your printer:

1. Start your Microsoft Windows program.
2. Select the CONTROL Program (CONTROL.EXE) located in the Windows subdirectory and select **INSTALLATION**.
3. At the installation menu, select **ADD NEW PRINTER**.
4. Enter the drive and directory where your printer drivers are located. For example, if the printer driver is on the disc, inserted in drive A, enter **A:\WINDOWS**. Or if your printer driver file is in the Windows directory on drive C, enter **C:\WINDOWS**.
5. Press the **[Enter]** key or select **OK**.
6. Select **HP DESKJET**, then press **[Enter]** or select **ADD**.

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7. Select the desired option for copying the driver to the Windows directory.

To select the printer port:

8. Select the **SETUP** menu.
9. Select **CONNECTIONS**.
10. Select **HP DESKJET**.
11. Select the printer port to which your printer is connected. If you are using the parallel port, select **LPT1**, then press **[Enter]** or select **OK**.

If you are using the serial port, select **COM1** or **COM2**, then select the settings listed below:

Baud Rate:	9600
Word Length:	8
Parity:	None
Stop Bits:	1
Handshake:	Hardware



Press **[Enter]** or select **OK**.

Selecting a Default Printer and Using Fonts

Once you have selected the printer port, you must select the DeskJet printer as your default printer before you can specify fonts and graphics density.

If you have more than one printer installed, MS Windows allows you to choose one of the printers to be the current (default) printer. The current printer is used by applications designed to run with MS Windows.

To select the default printer:

1. Make sure that a copy of the DeskJet driver is on your program disc and a printer port has been selected, then select the **SETUP** menu.
2. Select **PRINTER**, then select **HP DESKJET**, and press **[Enter]** or select **OK**.

To select fonts from the HP font cartridges, install the font cartridge(s) in your printer and use the mouse or computer keyboard to select the cartridge(s) and graphics density you wish to use, then press **[Enter]** or select **OK**.

To select two font cartridges with your keyboard:

1. Use your cursor keys to highlight one of the desired font cartridges.
2. Hold down the **[CTRL]** key and use the cursor keys to move to the second font cartridge you wish to use, then release the **[CTRL]** key.
3. Press the **[Space Bar]**. Both cartridge selections should be highlighted.
4. Press **[Enter]**.

To select two font cartridges with your mouse:

1. Select one of the desired font cartridges.
2. Hold down the **[Shift]** key and move the mouse to the second font cartridge you wish to use, then select/click on the second cartridge.
3. Release the **[Shift]** key and both font cartridge selections should be highlighted.
4. Select **OK**.

Helpful Tips

Text and Graphics: MS Windows will support mixed text and graphics.

MS Paint: Do not use the bottom $\frac{1}{4}$ " of the page when using MS Paint. Doing so will cause the image to be printed onto two pages.

Landscape Printing: Landscape printing is used only for graphics printing.

Quick Reference Printer Features

Is underlining supported? **Yes**

Is double underlining supported? **Yes**

Is bold printing supported? **Yes**

Is superscript/subscript printing supported? **Yes**

Is graphics supported? **Yes**

Are proportional fonts supported? **Yes**

Can an escape sequence be embedded? **No**

What font cartridges are supported? **HP22706A, B, C, D, E, F, G, H, J, M, P, Q**

What soft fonts are supported? **None**

Using Microsoft® Word version 3.0

On the HP Vectra, and the IBM PC Family and Compatibles

Getting Ready to Print

At publication time of this manual (October 1988) information on DeskJet PLUS printer drivers for use with DeskJet PLUS font cartridges HP22706R, T, U, V and soft fonts HP22708C and D were unavailable for Microsoft Word 3.0.

Contact Microsoft for information on receiving an updated driver to support your DeskJet PLUS font cartridges and soft fonts.

If your software package lists a DeskJet printer driver, select that driver to support your DeskJet PLUS printer for an interim solution, and follow the procedures outlined in this application note.

Setting Up Microsoft Word

When using Microsoft Word 3.0 to print documents, you must have a copy of the correct printer driver file (.PRD) on your program disc. A .PRD file is a printer description file that MS Word uses to take advantage of the printer's features.

Each printer .PRD file corresponds to a particular printer. For the HP DeskJet printer, MS Word has several DeskJet .PRD files, each of which corresponds to specific DeskJet font cartridges. Refer to the DeskJet .PRD Files Table on the next page for DeskJet .PRD options available for MS Word 3.0.

DeskJet .PRD Files Table		
.PRD File Name	Cartridges	Fonts
HPDESK.PRD	22706A	Courier Italics
HPDJ-AB.PRD	22706A 22706B	Courier Italics Prestige Elite
HPDJ-AC.PRD	22706A 22706C	Courier Italics Letter Gothic
HPDJ-AM.PRD	22706A 22706M	Courier Italics Presentations
HPDJ-D.PRD	22706D	TmsRmn (8/10 pt.)
HPDJ-DEPRD	22706D 22706F	TmsRmn (8/10 pt.) TmsRmn (14 pt.)
HPDJ-DJ.PRD	22706D 22706J	TmsRmn (8/10 pt.) Helv (14 pt.)
HPDJ-E.PRD	22706E	TmsRmn (12 pt.)
HPDJ-G.PRD	22706G	Helv (8/10 pt.)
HPDJ-GJ.PRD	22706G 22706J	Helv (8/10 pt.) Helv (14 pt.)
HPDJ-H.PRD	22706H	Helv (12 pt.)
HPDJ-PQ.PRD	22706P 22706Q	TmsRmn (8/10/12/14 pt.) Helv (8/10/12/14 pt.)

To install your printer:

- 1.** Start the Microsoft Word version 3.0 program.
- 2.** Press the [ESC] key, **P** for Print, then **O** for Options.
- 3.** Press the arrow keys to display a list of printer driver files.
- 4.** Select the .PRD file that corresponds to the font you wish to use. See the DeskJet .PRD Files Table for available options.

Each HPDESK.PRD file supports the built-in Courier fonts of the DeskJet printer in addition to the other fonts listed. If you are not using font cartridges, select the "HPDESK.PRD" file.

5. Use the cursor keys to highlight the .PRD file selection.
6. Press the [Return] key.

Refer to your MS Word manual for additional information on the installation and setup of printers.

Selecting Fonts with Microsoft Word

This section outlines steps for selecting fonts with your printer and MS Word. If you use fonts from DeskJet font cartridges, make sure that the font cartridge(s) are installed before printing.

To select font options from your document:

1. Highlight the text you want to change.
2. Press the [ESC] key, **F** for Format, then **C** for Character. Formatting options will appear on your screen.
3. Use the [Tab] key to move to **Font Name**. Press the arrow keys to display a list of font options and enter the font name you wish to use.
4. Use the [Tab] key to move to **Font Size**. Press the arrow keys to display a list of MS Word font size options and enter the font size you wish to use, and press [Return].

Helpful Tips

Combining .PRD Files: Microsoft Word version 3.0 provides a program to mix and match fonts from several .PRD files. This allows you to make a custom printer driver for the specific font cartridges you have. Refer to the Printer Information booklet that came with your Microsoft Word package.

Selecting Print Quality: Microsoft Word allows you to select draft or letter quality printing through the printer's keypad when the BUSY light is OFF.

Text Length: Listed on the next page is the maximum text length you can obtain with 6 lines per inch line spacing as your default setting. NOTE: The DeskJet PLUS printer has a 3 line unprintable region on the bottom of the page.

Paper Size	Maximum Text Length	Notes
8½" × 11"	66 lines	Printer function switch B1 must be UP. Bottom margin 0 and page length 11".
8½" × 14"	84 lines	Printer function switch A5 must be UP. Bottom margin 0 and page length 14".

Printing Envelopes: MS Word only supports printing on #10 envelopes. The following is a list of margin and page length settings for #10 envelopes.

Top Margin 2
 Left Margin 4.5
 Right Margin 0
 Page Length 4

NOTE: Use the HPDESK.PRD driver file and the Courier 12 point font option for envelope printing.

Quick Reference Printer Feature Support

Is underlining supported? **Yes**

Is double underlining supported? **No**

Is bold printing supported? **Yes**

Is graphics supported? **No**

Are proportionally spaced fonts supported? **Yes**

Can an escape sequence be embedded? **No**

What font cartridges are supported? **HP22706A, B, C, D, E, F, G, H, I, J, M, P, Q, HP22707L**

What soft fonts are supported? **HP22708A**

Using Microsoft® Word version 4.0

On the HP Vectra, and the IBM PC Family and Compatibles

Getting Ready to Print

At publication time of this manual (October 1988) information on DeskJet PLUS printer drivers for use with DeskJet PLUS font cartridges HP22706R, T, U, V and soft fonts HP22708C and D were unavailable for Microsoft Word 4.0.

Contact Microsoft for information on receiving an updated driver to support your DeskJet PLUS font cartridges and soft fonts.

If your software package lists a DeskJet printer driver, select that driver to support your DeskJet PLUS printer for an interim solution, and follow the procedures outlined in this application note.

Setting Up Microsoft Word

When using Microsoft Word 4.0 to print documents, you must have a copy of the correct printer driver file (.PRD) on your program disc. A .PRD file is a printer description file that MS Word uses to take advantage of the printer's features.

Each printer .PRD file corresponds to a particular printer. For the HP DeskJet printer, MS Word has several DeskJet .PRD files, each of which corresponds to specific DeskJet font cartridges. Refer to the DeskJet .PRD Files Table on the next page for DeskJet .PRD options available for MS Word 4.0.

DeskJet .PRD Files Table		
.PRD File Name	Cartridges	Fonts
HPDESK.PRD	22706A	Courier Italics
HPDESK1.PRD	22706A 22706B 22706C	Courier Italics Prestige Elite Letter Gothic
HPDESK2.PRD	22706D 22706E 22706F	TmsRmn (8/10 pt.) TmsRmn (12 pt.) TmsRmn (14 pt.)
HPDESK3.PRD	22706G 22706H 22706J	Helv (8/10 pt.) Helv (12 pt.) Helv (14 pt.)
HPDESK4.PRD	22706M 22706P 22706Q	Presentations TmsRmn (8/10/12/14 pt.) Helv (8/10/12/14 pt.)

To install your printer:

- 1.** Start the Microsoft Word version 4.0 program.
- 2.** Press the [ESC] key, **P** for Print, then **O** for Options.
- 3.** Press the [F1] key to display a list of .PRD files.
- 4.** Select the .PRD file that corresponds to the font you wish to use. See the DeskJet .PRD Files Table for available options.

Each HPDESK.PRD file supports the built-in Courier fonts of the DeskJet printer in addition to the other fonts listed. If you are not using font cartridges, select the driver called "HPDESK.PRD".

- 5.** Press the [Tab] key to enter your .PRD file selection and display the SETUP menu.
- 6.** Press the [F1] key to obtain communications port listings or type in the port you are using.
- 7.** Press the [Return] key.

Refer to your MS Word manual for additional information on the installation and setup of printers.

Selecting Fonts with Microsoft Word

This section outlines steps for selecting fonts with your printer and MS Word. If you use fonts from DeskJet font cartridges, make sure that the font cartridge(s) are installed before printing.

To select font options from your document:

1. Highlight the text you want to change.
2. Press the [ESC] key, F for Format, then C for Character. Formatting options will appear on your screen.
3. Use the [Tab] key to move to **Font Name**. Press the [F1] key to display a list of font options and enter the font name you wish to use.
4. Use the [Tab] key to move to **Font Size**. Press the [F1] key to display a list of MS Word font size options and enter the font size you wish to use, and press [Return].

Shown below is a table listing MS Word 4.0 font sizes and the corresponding DeskJet pitch and point sizes. These are the only pitch and point sizes supported by MS Word.

Driver	Cartridge	Typeface	Character Sets	MS Word Font Size	DeskJet Point Pitch
HPDESK.PRD	Internal, 22706A	Courier	PC-8, Legal	6	6 20
				6.5	12 20
				7*	6 16.6
				8*	12 16.6
				12	12 10
				16	12 5
HPDESK1.PRD	Internal, 22706A	Courier	PC-8, Legal	6	6 20
				6.5	12 20
				7*	6 16.6
				8*	12 16.6
				12	12 10
				16	12 5

* = Not available in HP22706A cartridge.

Driver	Cartridge	Typeface	Character Sets	MS Word Font Size	DeskJet Point Pitch	
HPDESK1.PRD (continued)	22706A		HP Line Draw	10	12	12
				12	12	10
	22706B	Prestige Elite	PC-8, Legal, Math 7, Math8, or PiFont	5	5	24
				5.5	10	24
				7	7	16.6
				10	10	12
				14	7	8.33
15	10	6				
22706B			HP Line Draw	10	12	12
22706C	Letter Gothic	PC-8, Legal	5	6	24	
			5.5	12	24	
			7	9.5	16.6	
			10	12	12	
			14	9.5	8.33	
15	12	6				
22706C			HP Line Draw	10	12	12
HPDESK2.PRD	22706D	TmsRmn	PC-8	4	4	PS**
				5	5	PS
				8	8	PS
				10	10	PS
	22706D	TmsRmn	Legal	8	8	PS
				10	10	PS
	22706E	TmsRmn	PC-8	6	6	PS
12				12	PS	
22706E	TmsRmn	Legal	12	12	PS	
22706F	TmsRmn	PC-8	7	7	PS	
			14	14	PS	
22706F	TmsRmn	Legal	14	14	PS	
Internal, 22706A	Courier	PC-8, Legal	6	6	20	
			6.5	12	20	
			7*	6	16.6	
			8*	12	16.6	
			12	12	10	
16	12	5				

* = Not available in HP22706A cartridge.

**PS=Proportional Space

Driver	Cartridge	Typeface	Character Sets	MS Word Font Size	DeskJet Point Pitch	
HPDESK3.PRD	22706G	Helv	PC-8	4	4	PS**
				5	5	PS
				8	8	PS
				10	10	PS
	22706G	Helv	Legal	8	8	PS
				10	10	PS
	22706H	Helv	Legal	12	12	PS
	22706J	Helv	PC-8	7	7	PS
	22706J	Helv	Legal	14	14	PS
	Internal, 22706A	Courier	PC-8, Legal	6	6	20
6.5				12	20	
7*				6	16.6	
8*				12	16.6	
12				12	10	
16				12	5	
HPDESK4.PRD	22706M	Presentations	ASCII	7	7	20
				7.5	14	20
				8	8	16.2
				8.5	16	16.2
				9	9	13
				9.5	18	13
				14	14	10
				16	16	8.1
				18	18	6.5
				24	14	5
	20	16	4.05			
	36	18	3.25			
	22706M	Letter Gothic	ASCII	6	7	20
				6.5	14	20
				12	14	10
16				14	5	
22706M		HP Line Draw	10	12	12	

* = Not available in HP22706A cartridge.

**PS = Proportional Space

Driver	Cartridge	Typeface	Character Sets	MS Word Font Size	DeskJet Point Pitch	
HPDESK4.PRD (cont.)	22706P	TmsRmn	ASCII	4	8	PS**
				5	5	PS
				6	6	PS
				10	10	PS
				12	12	PS
				14	14	PS
	22706Q	Helv	ASCII	4	4	PS
				5	5	PS
				6	6	PS
				7	7	PS
				8	8	PS
				10	10	PS
				12	12	PS
	Internal, 22706A	Courier	PC-8, Legal	6	6	20
				6.5	12	20
				7*	6	16.6
				8*	12	16.6
				12	12	10
				16	12	5
22706A		HP Line Draw	12	12	10	

* = Not available in HP22706A cartridge.

**PS = Proportional Space

Helpful Tips

Combining .PRD Files: Microsoft Word version 4.0 provides a program to mix and match fonts from several .PRD files. This allows you to make a custom printer driver for the specific font cartridges you have. Refer to the Printer Information booklet that came with your Microsoft Word package.

Selecting Print Quality: Microsoft Word allows you to select draft or letter quality printing through the printer's keypad when the BUSY light is OFF.

Text Length: Listed on the next page is the maximum text length you can set with 6 lines per inch as your default setting. NOTE: The DeskJet PLUS printer has a 3 line unprintable region on the bottom of the page.

Paper Size	Maximum Text Length	Notes
8½" × 11"	66 lines	Printer function switch B1 must be UP. Bottom margin 0 and page length 11".
8½" × 14"	84 lines	Printer function switch A5 must be UP. Bottom margin 0 and page length 14".

Printing Envelopes: MS Word only supports printing on #10 envelopes. The following is a list of margin and page length settings for #10 envelopes.

Top Margin 2
Left Margin 4.5
Right Margin 0
Page Length 4

NOTE: Use the HPDESK.PRD driver file and the Courier 12 point font option for envelope printing.

Quick Reference Printer Feature Support

Is underlining supported? **Yes**

Is double underlining supported? **No**

Is bold printing supported? **Yes**

Is graphics supported? **No**

Are proportionally spaced fonts supported? **Yes**

Can an escape sequence be embedded? **No**

What font cartridges are supported? **HP22706A, B, C, D, E, F, G, H, J, M, P, Q, HP22707L**

What soft fonts are supported? **HP22708A**

Using MultiMate™ Advantage II version 1.0

On the HP Vectra, and the IBM PC Family and Compatibles

Getting Ready to Print

At publication time of this manual (October 1988), information on DeskJet PLUS printer drivers for use with DeskJet PLUS font cartridges HP22706R, T, U, V and soft fonts HP22708C and D was unavailable for MultiMate Advantage II version 1.0.

Contact Ashton-Tate for information on receiving an updated driver to support your DeskJet PLUS font cartridges and soft fonts.

If your package lists a DeskJet printer driver, select that driver to support your DeskJet PLUS printer for an interim solution, and follow the procedures outlined in this application note.

Setting Up MultiMate Advantage II

When using MultiMate Advantage II to print documents, you must have a copy of the correct Printer Action Table (PAT) on your program disc. PAT files allow MultiMate Advantage II to use the printer's features.

To install your printer:

1. Start your MultiMate Advantage II program.
2. Select 4 (Additional Print Functions).
3. At the **Additional Print Functions** menu, select 2 (Edit Printer Defaults).

4. Enter the recommended printer defaults listed below.

Enhanced [N]\Draft[Y]	N
PAT File	DeskJet
Use:(P)arallel/(S)erial/(F)ile/(L)ist	P
Left Margin	008
Top Margin	000
Double Space the Document	N
Default Pitch	4
Proportional Spacing	N
Lines per Inch	6
Paper Length	060
Default Font	A

These settings act as defaults only. You have the opportunity to override any of these settings before printing a document.

For additional information on the installation and setup of printers, refer to your MultiMate Advantage II manual.

Selecting Fonts with MultiMate Advantage II

This section outlines steps for selecting fonts with MultiMate Advantage II. Refer to your MultiMate Advantage II manual for additional information on printing.

1. Choose the font and font cartridge you wish to use from the table below and choose the PAT file that corresponds with that font.

DESKJET.PAT	22706A	Courier/Courier Italics
DESKJETB.PAT	22706B	Prestige Elite
DESKJETC.PAT	22706C	Letter Gothic
DESKJETM.PAT	22706M	Presentations
DJETTMS.PAT	22706D	TmsRmn (8/10 pt.)
	22706E	TmsRmn (12 pt.)
	22706F	TmsRmn (14 pt.)
	22706P	TmsRmn (8/10/12/14 pt.)
	22706G	Helv (10 pt.)
	22706H	Helv (12 pt.)
	22706J	Helv (14 pt.)
	22706Q	Helv (10/12/14 pt.)
DJETHLY.PAT	22706G	Helv (8/10 pt.)
	22706H	Helv (12 pt.)
	22706J	Helv (14 pt.)
	22706Q	Helv (8/10/12/14 pt.)
	22706D	TmsRmn (10 pt.)
	22706E	TmsRmn (12 pt.)
	22706F	TmsRmn (14 pt.)
	22706P	TmsRmn (10/12/14 pt.)

2. After you have selected the appropriate PAT, you need to plan which typestyles will be used in your document. Make sure the PAT you selected supports all of the typestyles you plan to use. Press **[Alt] C** and **[Shift] ?** to display the font options supported by the PAT file you have chosen. Shown below is an example of typestyle options that will be displayed when the DESKJET PAT file is selected.

Fonts For: DESKJET		
A COURIER 10CPI/12PT REG.	G COURIER 10CPI/ 6 PT ITAL	M COURIER 16CPI/ 6PT REG.
B COURIER 10CPI/12PT BOLD	H COURIER 5CPI/12PT REG.	N COURIER 20CPI/12PT REG.
C COURIER 10CPI/12PT ITAL.	I COURIER 5CPI/12PT ITAL.	O COURIER 20CPI/12PT ITAL.
D COURIER 10CPI/12PT ITALB	J COURIER 5CPI/ 6PT REG.	P COURIER 20CPI/ 6PT REG.
E COURIER 10CPI/ 6PT REG.	K COURIER 5CPI/ 6PT ITAL.	Q COURIER 20CPI/ 6PT ITAL.
F COURIER 10CPI/ 6PT BOLD	L COURIER 16CPI/12PT REG.	

3. As you create your document you can change fonts, specify margins, format lines, etc.

Once you have selected a PAT for the font cartridge you wish to use, you can choose specific font options from that PAT by following the steps below.

1. Press **[Alt] C [Shift] ?** for a list of font options.
2. Identify the font option that you wish to use and the MultiMate font letter that corresponds with the font, then press the **[Return]** key to get back to your document.
3. Position the cursor to the point in your document at which you want the font to begin.
4. Press the **[Insert]** key.
5. Hold down the **[Alt]** key and press **C**, then enter the MultiMate font letter.

Helpful Tips

Top Margin: MultiMate adds the number of top margin lines you specify to the paginated text length. If you specify a top margin other than zero, repaginate your document to accommodate the additional lines.

Proportional Spacing: If you use proportionally spaced fonts, right justification is not supported. Enter the following settings in the printer defaults of the MultiMate Advantage II program.

Proportional Spacing Y(es)
Justification N(o)

Quick Reference Printer Features

Is underlining supported? **Yes**

Is double underlining supported? **Yes**

Is bold printing supported? **Yes**

Is superscript/subscript printing supported? **Yes**

Is graphics supported? **No**

Are proportionally spaced fonts supported? **Yes**

Can an escape sequence be embedded? **Yes**

What font cartridges are supported? **HP22706A, B, C, D, E, F, G, H, J, Q, P**

What soft fonts are supported? **HP22708A**

Using Professional Write version 2.0

On the HP Vectra, and the IBM PC Family and Compatibles

Getting Ready to Print

At publication time of this manual (October 1988), information on DeskJet PLUS printer drivers for use with DeskJet PLUS font cartridges HP22706R, T, U, V and soft fonts HP22708C and D was unavailable for Professional Write 2.0.

Contact Software Publishing Corporation for information on receiving an updated driver to support your DeskJet PLUS font cartridges and soft fonts.

If your software package lists a DeskJet printer driver, select that driver to support your DeskJet PLUS printer for an interim solution, and follow the procedures outlined in this application note.

Setting Up Professional Write

When using Professional Write to print documents, you must have a copy of the correct printer driver file on your program disc. A printer driver file is used by Professional Write to take advantage of the printer's features.

To install your printer:

1. Start your Professional Write program.
2. From the main menu, select 2 (Setup).
3. From the Setup Menu, select 1 (Select Printer 1)
4. Press the page down key to get the second page of printers.
5. Highlight **HP DeskJet** and press [Tab] to select printer port. If you are using the parallel port, select it and press [Return].

Selecting Fonts with Professional Write

6. If you are using the serial port, select it and press **[Return]**. A serial port menu will appear on your screen. NOTE: If the menu doesn't appear, press the **[ESC]** key to get the serial port menu. Make the following serial port selections:

None for Parity

8 for Number of Data Bits

1 for Number of Stop Bits

Yes for Xon/Xoff

6 for Baud Rate and press **[Return]**.

7. Select **1** (Select Cartridge), then select **N** (No), and press **[Return]**.
8. Select **2**, (Regular Font), and your font options will appear on your screen. Use the arrow keys to select the font you will be using and press **[Return]**.

For additional information on the installation and setup of printers, refer to your Professional Write manual.

This section outlines steps for selecting fonts with Professional Write. Refer to your Professional Write manual for additional information on printing.

To select fonts:

1. From the main menu, select **2** (setup), then select **1** (Select printer 1) and press **[Return]**.
2. Select **1** (Select Cartridge).
3. Choose the font cartridge you wish to use and press **[Return]**.
4. Select **2** (Select Regular Font).
5. Choose the font you wish to use and press **[Return]**.
6. Press **[ESC]** three times to return to the main menu.

NOTE: If you are selecting fonts through font cartridges, make sure the correct font cartridge is installed in the printer.

To change fonts while in the document:

1. Press **[CTRL] T** to mark the text.
2. Use the arrow keys to highlight the text that you want to change.
3. Press the **[F10]** key (text block operations menu).
4. Choose **4** (Change Font or Size).
5. Use the arrow keys to choose the font you wish to use and then press **[Return]**.

Helpful Tips

Fonts: Professional Write support for the HP22706A, M, P, Q, and 22707L DeskJet font cartridges was not available at the publication time of this manual. Contact Professional Write for additional support information on DeskJet and DeskJet PLUS font cartridges.

Landscape Printing: To print your document in landscape orientation, select **2** (setup) from the main menu and select **printer control**. Enter: 27 38 108 49 111 at **before page** to get landscape printing in the default Courier 10 pitch. To get landscape printing in Courier 16.67 pitch, enter: 27 38 108 49 111 27 40 115 49 54 46 54 54 72.

Page Length: In Professional Write, page length must be set to 60 lines.

Quick Reference Printer Feature Support

Is underlining supported? **Yes**

Is double underlining supported? **No**

Is bold printing supported? **Yes**

Is superscript/subscript printing supported? **Yes**

Is graphics supported? **No**

Are proportionally spaced fonts supported? **Yes**

Can an escape sequence be embedded? **Yes**

What font cartridges are supported? **HP22706A, B, C, D, E, F, G, H, J**

What soft fonts are supported? **None**

Using WordPerfect versions 4.1, 4.2

On the HP Vectra, and the IBM PC Family and Compatibles

Getting Ready to Print

At publication time of this manual (October 1988), information on DeskJet PLUS printer drivers for use with DeskJet PLUS font cartridges HP22706R, T, U, V and soft fonts HP22708C and D was unavailable for WordPerfect versions 4.1, 4.2.

Contact WordPerfect for information on receiving an updated driver to support your DeskJet PLUS font cartridges and soft fonts.

If your software package lists a DeskJet printer driver, select that driver to support your DeskJet PLUS printer for an interim solution, and follow the procedures outlined in this application note.

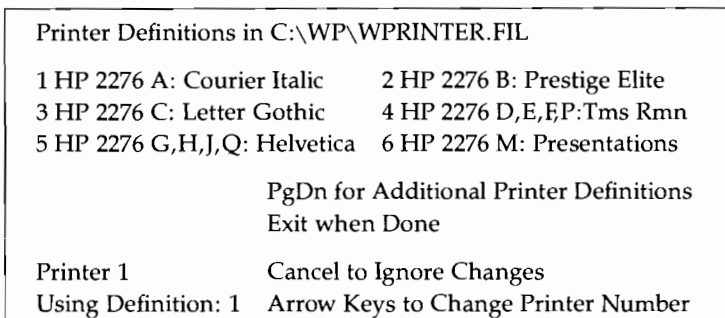
Setting Up WordPerfect

When using WordPerfect versions 4.1, 4.2 to print documents, you must have a copy of the correct printer driver file on your program disc. A printer driver file is used by WordPerfect versions 4.1, 4.2 to take advantage of the printer's features.

To install your printer:

1. Start your WordPerfect program.
2. Hold down the **[Shift]** key and press **[F7]**.
3. Choose 4 (Printer Control).

4. Choose **3** (Select Printers) and a list of printer definition options will appear on your screen as shown below.



5. Select the printer definition you wish to use.

Further installation is not required unless you are using WordPerfect's default parallel port. Refer to your WordPerfect manual for additional information on the selection and setup of printers.

Selecting Fonts with WordPerfect

This section outlines steps for selecting fonts with WordPerfect 4.1, 4.2. Refer to your WordPerfect manual for additional information on printing.

Before you can select fonts, you must know if WordPerfect supports that font. If the font is supported, you must identify the number that WordPerfect has assigned to the font and the font's pitch. This information is included on WordPerfect's **PRHELPEXE** program.

To select fonts while in your document:

1. Position the cursor to the point in your document at which you want the font to begin printing. If you are changing fonts within a paragraph, skip step 2.
2. If the font pitch is different from the current font you are using, hold down the **[Shift]** key and press **[F8]**, then select **3** (Margins) to set right and left margins based on the font pitch you are using.
3. Hold down the **[CTRL]** key and press **[F8]**.
4. Choose **1** (Pitch/Font).

5. Enter the pitch. If you are selecting a proportionally spaced font, enter an asterisk (*).
6. Enter the font number and press [Return] to exit the Print Format menu.

NOTE: If you are selecting fonts through font cartridges, make sure the correct font cartridge is installed in the printer.

Helpful Tips

Landscape Printing: To print in landscape orientation, the landscape command must be sent as the first command to the printer. Therefore, hold down the [CTRL] key and press [F8] first. Then in **Insert Printer Command**, enter the escape sequence for landscape printing <27>&110. To specify page length for landscape printing on 8½" × 11" paper: **Form Length 66** and **Number of Text Lines 39**. For legal size paper: **Form Length 84** and **Number of Text Lines 39** (Note: You must also set printer function switch A5 UP. Then set left and right margins based on the font pitch you are using.)

Margins: Left and right margins in WordPerfect 4.2 are pitch sensitive. You must set your margins every time you change pitch settings. Use WordPerfect's PRHELPEXE for additional pitch/font information.

If you are using proportionally spaced fonts, make sure you have entered an asterisk (*) after specifying the font pitch. Centering, tabs, margins, and right justification will not print properly if an asterisk is not entered.

Quick Reference Printer Feature Support

Is underlining supported? **Yes**

Is double underlining supported? **Yes**

Is bold printing supported? **Yes**

Is superscript/subscript printing supported? **Yes**

Is graphics supported? **Yes**

Are proportionally spaced fonts supported? **Yes**

Can an escape sequence be embedded? **Yes**

What font cartridges are supported? **HP22706A, B, C, D, E, F, G, H, J, M, P, Q**

What soft fonts are supported? **None**

Using WordPerfect version 5.0

On the HP Vectra, and the IBM PC Family and Compatibles

Getting Ready to Print

At publication time of this manual (October 1988), information on DeskJet PLUS printer drivers for use with DeskJet PLUS font cartridges HP22706R, T, U, V and soft fonts HP22708C and D was unavailable for WordPerfect version 5.0.

Contact WordPerfect for information on receiving an updated driver to support your DeskJet PLUS font cartridges and soft fonts.

If your software package lists a DeskJet printer driver, select that driver to support your DeskJet PLUS printer for an interim solution, and follow the procedures outlined in this application note.

Setting Up WordPerfect

When using WordPerfect version 5.0 to print documents, you must have a copy of the correct printer driver file on your program disc. A printer driver file is used by WordPerfect version 5.0 to take advantage of the printer's features.

To install your printer:

1. Start the WordPerfect program.
2. Hold down the **[Shift]** key and press **[F7]**.
3. Choose **S** (Select Printer).
4. Choose **2** (Additional Printers)
5. Use the arrow keys to highlight **HP DeskJet**.
6. Choose **1** (Select) and press **[Return]**.
7. Press **[F7]** to exit the current menu.

Refer to your WordPerfect manual for additional information on the selection and setup of printers.

Selecting Fonts with WordPerfect

This section outlines steps to select fonts with WordPerfect version 5.0. Refer to your WordPerfect manual for additional information on printing.

To install fonts:

1. Start your WordPerfect program.
2. Hold down the **[Shift]** key and press **[F7]**.
3. Choose **S** (Select), HP DeskJet should appear on your screen.
4. Choose **3** (Edit).
5. Choose **5** (Cartridges and Fonts).
6. Choose **1** (Select Fonts).
7. Choose the font cartridge you wish to use from the list that appears on your screen by moving the cursor to your font choice and enter an asterisk (*) next to it. If you do not change the quantity, a maximum of 2 cartridges may be selected. Shown below are the font cartridge options that will appear on your screen.

Select Printer: Cartridges and Fonts

Total Quantity: 2
Available Quantity: 2

Font Cartridge	Quantity Used
22076E TmsRmn	1
22076H Helv	1
22076J Helv	1
22706A Courier	1
22706B Prestige Elite	1
22706C Letter Gothic	1
22706D TmsRmn	1
22706F TmsRmn	1
22706G Helv	1
22706M Presentations	1
22706P TmsRmn	1
22706Q Helv	1
22707K Courier Landscape	1
22707L Letter Gothic Landscape	1



8. Press [F7] twice to exit.

To select fonts while in your WordPerfect document:

1. Position the cursor to the point in the document at which you want a new font to begin printing.
2. Hold down the [CTRL] key and press [F8].
3. Choose 4 (Base Font).
4. Use the arrow keys to highlight the font you wish to use and press [Return].

Margin changes are not required when making font changes in WordPerfect 5.0.

NOTE: If you are selecting fonts through font cartridges, make sure the correct font cartridge is installed in the printer.

Helpful Tips

OU Printing: If the characters OU print randomly throughout your documents, contact WordPerfect for a solution to this problem.

Envelope Printing: Refer to your WordPerfect manual for envelope setup information. The following margin settings are suggested for printing on a 9.5" x 4" envelope.

Left Margin	4.5"
Right Margin	0"
Top Margin	2.5"
Bottom Margin	0"

When your margins are set to zero, WordPerfect will default to a setting of .03". Margins are adjustable. Refer to Chapter 1, Getting Started, of this manual for envelope loading instructions.

Legal Paper Printing: To print on legal paper with perforation skip mode enabled (printer's function switch A8 DOWN), the minimum top margin is 0.5". This setting allows a maximum of 79 lines per page with a 0.3" bottom margin. To print on legal paper with perforation skip mode disabled (printer's function switch A8 UP), printing will begin at the top of the page. The minimum top margin will be at 0.6" and the bottom margin at 0.3".

Beeps: Your computer will beep after you send the print command if your WordPerfect program detects an inconsistency in your printer settings. To find information about your problem, hold down the **[Shift]** key and press **[F7]**, then select **4** (Control Printer).

Quick Reference Printer Feature Support

Is underlining supported? **Yes**

Is double underlining supported? **Yes**

Is bold printing supported? **Yes**

Is superscript/subscript printing supported? **Yes**

Is graphics supported? **Yes**

Can an escape sequence be embedded? **Yes**

Are proportionally spaced fonts supported? **Yes**

What font cartridges are supported? **HP22706A, B, C, D, E, F, G, H, J, M, P, Q, 22707L**

What soft fonts are supported? **None**

Using WordStar® 2000 Plus version 3.0

On the HP Vectra, and the IBM PC Family and Compatibles

Getting Ready to Print

At publication time of this manual (October 1988) information on DeskJet PLUS printer drivers for use with DeskJet PLUS font cartridges HP22706R, T, U, V and soft fonts HP22708C and D were unavailable for WordStar 200 Plus version 3.0.

Contact MicroPro International for information on receiving an updated driver to support your DeskJet PLUS font cartridges and soft fonts.

If your software package lists a DeskJet driver (HP 2276A), select that driver for basic wordprocessing with supported DeskJet internal fonts. You must have a printer driver named HP DeskJet on your program disc to use optional font cartridges. Contact MicroPro for information.

Setting Up WordStar 2000

When using WordStar 2000 Plus version 3.0 to print documents, you must have a copy of the correct printer driver file on your program disc. A printer driver file is used by WordStar 2000 Plus to take advantage of the printer's features.

To install your printer:

1. At the prompt, type **WS2** and press **[Return]** to start the WordStar 2000 program.
2. At the opening menu, press **A** (Additional Features).
3. Use the arrow keys to highlight **Customize** and press **[Return]**.
4. At the main installation menu, highlight **HP DeskJet** and press **[Return]**. NOTE: If HP DeskJet is not listed, contact MicroPro International and request the updated HP DeskJet printer driver. For an interim solution, use the **HP2276A** printer driver for use with supported DeskJet internal fonts.

Selecting Fonts with WordStar 2000

5. Type **DeskJet to Name** your printer and press **[Return]**.
6. Type **N** (no font changes) and press **[Return]** (to end Install a Printer session).
7. Press **S** (Save), choose **Q** (Quit and Save Changes) and press **[Return]**.

For additional information on the installation and setup of printers, refer to your WordStar 2000 Plus manual.

This section outlines steps for selecting fonts with WordStar 2000 Plus. To use font cartridges, you must have a printer driver named HP DeskJet and the appropriate font cartridge installed in the printer. Refer to your WordStar 2000 Plus manual for additional information on printing.

To select fonts:

1. At the opening menu, select **E** (Edit/Create).
2. **Name** your document and press **[Return]**.
3. Choose your **format** and press **[Return]**. For information on choosing formats, refer to Formats in the index of your WordStar 2000 Plus reference manual. The default format is **Normal.frm**.
4. Position the cursor to the point in your document at which you want a new font to begin printing. Press **[CTRL] P** (Print Enhancements) **F** (Fonts). A Font Selection Menu will appear on your screen. Available font selections with the DeskJet printer driver are listed below.

Courier 12/10 PC

Courier 12/20 PC

Courier 12/5 PC

Helv 10 US

Helv 12 US

Pel 10/12 PC (Prestige Elite)

Tms Rmn 10 US

Tms Rmn 12 US

5. Move your cursor to the font you wish to use and press **[Return]**.



NOTE

The "Font Menu" contains 8 fonts. If the font you wish to use doesn't appear on the screen, you must "**customize**" your font selection. Refer to your WordStar 2000 Plus manual or contact DeskJet Customer Support at (208) 323-2551 for additional information.

Helpful Tips

Using Soft Fonts: Soft fonts can be used with your WordStar 2000 program and DeskJet PLUS printer. To use soft fonts you must have a RAM cartridge installed and the desired font(s) downloaded. Refer to the booklet that came with your soft font for information on downloading, then to use a soft font, follow the instructions for "Selecting Fonts" and select fonts as if they were a cartridge font.

Landscape Printing: To make landscape printing easier, create a Landscape Print Extra. Refer to your WordStar 2000 Plus manual for information on creating Print Extras. The command to enter for landscape is `^[&110`.

Legal Paper: To use legal paper, make sure that printer function switch A5 is UP.

Envelope Loading: To load envelopes, choose `envelope.lst`. Other HP envelope loading choices are designed for the HP LaserJet printer only.

Quick Reference Printer Feature Support

Is underlining supported? **Yes**

Is double underlining supported? **No**

Is bold printing supported? **Yes**

Is superscript/subscript printing supported? **Yes**

Can an escape sequence be embedded? **Yes**

Is graphics supported? **Not with a DeskJet driver. However, graphics is supported with a LaserJet printer driver.**

Are proportionately spaced fonts supported? **Yes**

What font cartridges are supported? **HP22706A, B, C, D, E, F, G, H, J, M, P, Q**

What soft fonts are supported? **HP22707A**

Using WordStar Professional version 4.0

On the HP Vectra, and the IBM PC Family and Compatibles

DeskJet and DeskJet PLUS printer drivers are not available for WordStar Professional version 4.0. Contact MicroPro International for information on DeskJet PLUS support for the next version of WordStar Professional.

For an interim solution and basic word processing support only, follow the procedures outlined in this application note which uses HP LaserJet printer files to help your DeskJet PLUS printer work with WordStar Professional version 4.0. Refer to the Printer Feature Table on the next page for information on specific features supported with the LaserJet driver.

Setting Up WordStar Professional

For first time installation of WordStar Professional 4.0, follow these steps:

1. Start the WordStar Professional installation program, **WINSTALL**. (Refer to the Starting section of your WordStar Professional Manual.)
2. At the Main installation menu, select **B Printer . . . choose your printer**.
3. The Printer Selection Menu #1 is displayed.

3

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4. Select **2 Printer Menu #2, Epson–IBM.**
5. Select **H HP LaserJet** for the printer desired.
6. Press **X Done with this menu.**
7. Press **X Done with installation.**
8. Press **Y** when asked, **“Are you through making changes?”**

To use the HP LaserJet printer files with the DeskJet PLUS printer after WordStar Professional has been installed, run **WSCHANGE** program and follow these steps:

1. From the Main Installation Menu, select **B Printer.**
2. Select **A Printer choices.**
3. Select **A Printer selection.**
4. Select **2 Printer Menu #2, Epson–IBM.**
5. Select the letter corresponding to the HP LaserJet and font you wish to use (i.e., **H HP LaserJet**).
6. Press **X (Done with this menu)** twice to return to the Printer Installation Menu.
7. Next, select **F Printer interface.**
8. Select **B Printer busy handshaking.**

WordStar® Professional 4.0 Printer Feature Table

DeskJet Cartridge	LaserJet Printer Cartridge	Font/ Typeface	Printer Features											Notes	
			Point Size/ Pitch	Italics	Bold	Underline	Double Underline	Superscript	Strikethrough	Proportional Spacing	Multiple Columns	Double Carriage	Overprint		
None	HP LaserJet	Courier	12/10	•	•	•	•	•	•	•	•	•	•	•	
A	HP LaserJet	Courier	12/10	•	•	•	•	•	•	•	•	•	•	•	
A	HP LaserJet	Line Printer	12/10	•	•	•	•	•	•	•	•	•	•	•	
B	HP LaserJet	Prestige Elite	10/12	•	•	•	•	•	•	•	•	•	•	•	
C	HP LaserJet	Letter Gothic	12/12	•	•	•	•	•	•	•	•	•	•	•	

Using WordStar Professional version 5.0

On the HP Vectra, and the IBM PC Family and Compatibles

Getting Ready to Print

At publication time of this manual (October 1988), information on DeskJet PLUS printer drivers for use with DeskJet PLUS font cartridges HP22706R, T, U, V and soft fonts HP22708C and D were unavailable for WordStar Professional 5.0.

Contact MicroPro International for information on receiving an updated driver to support your DeskJet PLUS font cartridges and soft fonts.

If your software package lists a DeskJet printer driver, select that driver to support your DeskJet PLUS printer for an interim solution. If you have software related problems after you receive the updated driver, contact MicroPro International Corp. or if you have printer related problems Hewlett-Packard DeskJet Customer Support.

Printing and Software Q & A

Getting your Printer to Print

This section answers some of the most commonly asked printing and software questions. We assume you have an understanding of your software package and that you have followed the instructions in this manual for setting up your DeskJet PLUS printer but are having problems with printing.

QUESTION: How do I get my printer to print from my software package?

ANSWER: Most software packages have a “print” command. Check your software manual for printing information. To print from most software packages, you will follow steps similar to these:

1. Select a printer driver from your software package. You may have already done this while setting up your software, see the install and/or setup instructions in your software manual.
2. Select the part of your document you wish to print.
3. Use the “print” command to send your document to the printer.

If you are not getting the results you desire, check to see if you are using the best printer driver for your printer, software package, and font cartridges. Refer to the question below on software support or to the Getting Your Printer to Work with Your Software section of this chapter for additional information.

Getting Software Support

QUESTION: How do I know if my software package supports the DeskJet PLUS printer?

ANSWER: Check your software manual or printer setup area for a list of supported printers. If a DeskJet PLUS printer driver is listed, select it and follow the instructions in your software manual for setting up.

Using the Printer's Keypad

If a DeskJet PLUS printer driver is not listed, contact your software company for information on the availability of a DeskJet PLUS driver. While you are waiting for a DeskJet PLUS driver from your software company, use one of the alternative printer drivers listed below in preferential order:

HP DeskJet for use with DeskJet font cartridges and soft fonts.

HP LaserJet for limited feature support.

Epson FX-80 for use with the HP22707F Epson Emulation Cartridge. (You will be limited to features available through the Epson FX-80.)

Software packages are being revised continually. For the most current support information, contact your software company.

QUESTION: Is there a software printer driver for PageMaker or Excel?

ANSWER: PageMaker and Excel run under the MS Windows environment. Select the DeskJet or DeskJet PLUS printer driver for the MS Windows package to use with PageMaker, Excel and all other applications which run under the MS Windows environment. PageMaker (ver. 3.0) includes a DeskJet printer driver for MS Windows.

QUESTION: Why can't I print selections that I've made through the printer's keypad with the FONT or MODE key?

ANSWER: Some software packages may override selections made through the keypad. Consult your software manual for information on whether your software package allows you to make selections through the printer's keypad.

Using Fonts

QUESTION: Can I use DeskJet font cartridges in the DeskJet PLUS printer?

ANSWER: All DeskJet font cartridges except the HP22707K Landscape Upgrade Cartridge and the HP22707E Epson Emulation cartridge can be used with the DeskJet PLUS printer.

The HP22707K Landscape Upgrade Cartridge cannot be used because landscape printing is a built-in feature of the DeskJet PLUS printer for Courier 10, 16.67, 20 and Courier 10 Bold fonts. However, the HP22707L, Landscape Fonts cartridge can be used with the DeskJet PLUS printer.

The HP22707E Epson Emulation Cartridge cannot be used in the DeskJet PLUS printer. You can use the HP22707F Epson Emulation cartridge with the DeskJet PLUS printer.

DeskJet font cartridges can be used with the DeskJet PLUS printer, we recommend the use of the 22706R and T DeskJet PLUS cartridges for TmsRmn and Helv fonts. DeskJet PLUS fonts have improved proportional spacing.

QUESTION: How do I change fonts in my document?

ANSWER: Not all software packages allow font changes in a document. However, some software packages allow you to change fonts through the printer's keypad with the FONT key while other software packages allow you to enter escape sequences. Check your software manual to determine the method you can use.

To change fonts in your document:

- 1.** Select a printer driver that corresponds with the font you wish to use. Ensure that these fonts are available options in your printer and that the correct font cartridges are installed. If you are using soft fonts, make sure that they have been downloaded.
- 2.** Make your font selections in the document and print the document according to the process outlined in your software manual.

QUESTION: How do I select multiple fonts or enhanced (i.e. bold, italics) text in my document?

ANSWER: Many software packages support the use of multiple fonts or enhanced text. Check your software manual for information on whether your software package supports this feature. To select multiple fonts or enhanced text:

1. Check to see if your software package has a printer driver that combines the fonts or enhancements you wish to use. If a printer driver is available, select it.
2. Make your font selections and print your document according to the process outlined in your software package.

If you are trying to print more than one font per page and are not getting the results you desire, check your software manual or contact your software company to determine if printing multiple fonts is a supported feature of your software package.

If your software package doesn't offer a printer driver that combines the fonts you wish to use, check your software manual for information on whether your software package allows you to enter escape sequences. If this feature is available, follow the instructions in your software manual and enter the appropriate DeskJet PLUS escape sequences that correspond to the fonts you wish to use. Refer to Chapter 4, Programming, of this manual for information on DeskJet PLUS escape sequences.

Printing a Landscape Page

QUESTION: How do I get landscape printing? Does my DeskJet HP22707K landscape upgrade cartridge work with the DeskJet PLUS printer?

ANSWER: Landscape printing is a built-in feature of the DeskJet PLUS printer. Landscape printing can be selected through the printer's keypad or by using an escape sequence or by selecting that option in your software package. The method you use to select landscape printing is determined by your software package. Landscape printing is not a supported feature in some software packages. Refer to your software manual for information on support and accessing landscape printing.

Refer to the keypad discussion in Chapter 1, Getting Started, for information on selecting landscape with the FONT key. To select landscape printing with an escape sequence, refer to Chapter 4, Programming.

QUESTION: When I send the print command to print my document in landscape, the BUSY light on the printer's keypad blinks and nothing prints. What is happening?

ANSWER: The BUSY light will blink if your landscape document uses fewer than the available lines on a page and the software package doesn't send a form feed character. To correct this problem, press the FF key on the printer's keypad and your landscape document will begin printing.

Formatting Your Page

QUESTION: Are there restrictions for setting margins with the DeskJet PLUS printer?

ANSWER: There are $\frac{1}{4}$ " unprintable areas on the left and right sides of the page and a $\frac{1}{2}$ " default top and bottom margin. However, the top $\frac{1}{2}$ " can be used by disabling perforation skip. See Chapter 4, Programming, for information.

QUESTION: My top margin is increasing on each successive page. What is happening?

ANSWER: The DeskJet PLUS printer has a default page length of 60 lines. Many software packages have a default page length of 66 lines. This inconsistency causes the "creeping text" effect and can cause occasional blank pages to be ejected between printed pages. To prevent this problem you have three options.

1. Change the default page length setting in your software package to 60 lines per page.

2. Enable text scale mode on the DeskJet PLUS printer and leave the default page length in the software package at 66 lines. When text scale mode is enabled, the printer will print 66 lines instead of 60 lines. Text scale mode is enabled by changing the printer's switch settings or by sending an escape sequence in the software program.

To enable text scale mode through the printer's function switches, set switch B1 UP and disable perforation skip by setting switch A8 UP. To enable text scale mode with an escape sequence refer to Text Scale Mode in Chapter 4, Programming.

Enabling text scale mode and disabling perforation skip may interfere with other software applications which work well with the DeskJet PLUS default of 60 lines.

3. Enter an escape sequence to change the Vertical Motion Index (VMI) in your software program. The VMI defines the printer's line spacing. Enter `E_C &17.27C` to print 66 lines in a printable page area of 60 lines.

QUESTION: When I print my document, an occasional blank page is ejected from the printer. What is causing the blank pages to eject?

ANSWER: Blank pages might be caused by a page length inconsistency between the software package and the printer default. See the previous question for additional information. Also, check your document for reset or eject page commands inserted, page size changes or unwanted space.

Printing Envelopes

QUESTION: How do I print envelopes with the DeskJet PLUS printer?

ANSWER: Envelope printing is not supported in all software packages. If your software package supports envelope printing, refer to your software manual for specific information on printing envelopes.

Introduction to Control Codes and Escape Sequences



Note

Spaces have been imbedded in the control codes and escape sequences found in this chapter for ease of reading only. Do not imbed spaces when sending these commands.

This chapter explains how to use the many features of the DeskJet PLUS printer. It is written for people who have programming experience and want to write their own programs, and users whose software requires them to input escape sequences.

The features of your printer are controlled by control codes and escape sequences. Control codes are data that, when sent to your printer, do not cause anything to be printed (with the exception of the delete character), they cause an action (such as line feeds and carriage returns). CTRL is used in this manual to specify a control code.

One control code is ESCAPE. ESCAPE is always followed by one or more characters which together form escape sequences used to control specific printer features, such as print pitch and underlining. The ESCAPE control code is represented in this manual by E_C .

Printer features are controlled by function switches located on the front base of the printer, by escape sequences and control codes, and through the keypad. The default condition of the feature is set through the function switches, but escape sequences and keypad selections override the switches. When the printer is turned OFF and ON or the RESET key is pressed, the feature returns to the setting selected by the switch. When $E_C E$, Printer Reset, is sent, the printer reverts to the most current settings selected through the keypad. If no features had been selected through the keypad since the printer was last turned ON, $E_C E$ will reset the printer to its default state. Note, print mode and font selections made through the keypad are not affected by the Printer Reset escape sequence.

To generate printouts using these print features you must become familiar with the method used by your computer or software to send escape sequences and control codes to your printer. Several of the methods used are:

- Typing escape sequences and control codes directly from the keyboard.
- Specifying each control code, including E_C , by its decimal value.

Some software packages require that you specify each control code by its decimal value, usually preceded by a special character such as "\". For example, $E_C(s16.67H$ would be specified in Lotus 1-2-3 as `\027(s16.67H`. In BASIC, control codes are represented by `CHR$()`. For example, CTRL N is represented by `CHR$(14)`. The E_C control code is represented by `CHR$(27)`.

- Specifying each character of the escape sequence by its decimal value.

Some software packages require that you specify E_C and the characters following it by their decimal value. For example, $E_C(s16.67H$ would be specified as `27 40 115 49 54 46 54 55 72`.

If you are using a software package such as a word processor or spreadsheet, refer to your software documentation to see how control codes and escape sequences must be sent.

In this manual, control codes always begin with the letters CTRL. CTRL is generated by pressing the CONTROL key on your terminal's or PC's keyboard. This key may be labeled on your keyboard as CTRL, CNTL, or CTL. An example of a control code is CTRL N. To generate a control code, hold down the CTRL key while typing the next character.

Control Codes

The control codes and escape sequences described in this section, except where noted, conform to the Hewlett-Packard Printer Command Language.

The DeskJet PLUS printer implements the HP PCL Level III printer language, plus some extensions. The PCL printer language is a standard developed by Hewlett-Packard to ensure compatibility between current and future PCL printers. If your software restricts itself to PCL Level III commands, be assured that it will also work with future HP PCL Level III printers.

All control codes and escape sequences in this manual that are extensions to the HP PCL Level III printer language are designated as such.

The control codes recognized by the DeskJet PLUS printer are described in the table on the next page. The "Symbol" column lists the standard abbreviation for each control code. The "Value" columns list the decimal and hexadecimal values that correspond to each control code. The "Keystroke" column lists the letter to be used in combination with your PC's CTRL key to generate the control code.

The "current print position" mentioned in some of the code descriptions is the position at which the printer will print the next character.

DeskJet PLUS Printer Control Codes					
Code Name	Symbol	Description	Value (dec)	Value (hex)	Key-stroke
Backspace	B _S	Causes the printer to move the current print position one character position to the left.	08	08	CTRL H
Horizontal Tab	H _T	Causes the printer to move to the next predefined tab position. (Tabs are located every eighth character position, beginning at left margin.)	09	09	CTRL I
Line Feed	L _F	Causes the printer to advance the paper one line at the current line spacing.	10	0A	CTRL J
Form Feed	F _F	Causes the printer to advance the paper to the next top-of-form. Top-of-form is the first line of printing on the next page.	12	0C	CTRL L
Carriage Return	C _R	Causes the printer to move the current print position to the left margin. Does not cause a paper advance.	13	0D	CTRL M
Shift Out	S _O	Causes the printer to select the currently-designated secondary font for use. (Refer to the "Font Selection" discussion later in this section for information on primary and secondary fonts.)	14	0E	CTRL N
Shift In	S _I	Causes the printer to select the currently-designated primary font for use. (Refer to the "Font Selection" discussion later in this section for information on primary and secondary fonts.)	15	0F	CTRL O
Device Control 1	D ₁	Used for RS-232-C protocols only. Used as Xon character for the RS-232-C Xon/Xoff handshake. Also used as the trigger for the Status Request. (The Status Request is discussed in this section. See the Data Communications chapter for more information on handshakes.)	17	11	CTRL Q
Device Control 3	D ₃	Used for RS-232-C protocols only. Used as Xoff character for the RS-232-C Xon/Xoff handshake. (See the Data Communications chapter for more information on handshakes.)	19	13	CTRL S
Escape	E _C	Indicates to the printer that the characters immediately following are part of an escape sequence command.	27	1B	CTRL [
Space		Causes the printer to move the current print position one character position to the right.	32	20	

Using Printer Features



Note

Spaces have been imbedded in the control codes and escape sequences found in this chapter for ease of reading only. Do not imbed spaces in the control codes and escape sequences that you send. (For example, you will see $E_C (s 10 H$, but would send $E_C(s10H$.)

Before You Begin...

Before you begin programming, there are a few things you should be aware of.

- The printer uses a priority system to sort through its print features to select the appropriate font from the fonts available. This means that you may change something that appears high on the printer's priority list, and as a consequence, find that some of the other print features have changed in a way you'd not expected. The printer's priorities, are discussed under Print Feature Priorities, page 4-9.
- With a few exceptions, the print features discussed in this section will remain in effect until they are specifically turned off. For example, if you turn on (enable) superscripting the printer will continue to print superscripted characters until you send the command to stop (disable) superscripting.
- Finally, many of the escape sequences in the first part of this section are structured in such a way that they apply specifically to the primary font (designated by the left parenthesis in an escape sequence, such as $E_C (s \# H$). The primary font is the set of characters normally in use by the printer. The secondary font (designated by a right parenthesis in an escape sequence) can use all the print features discussed for the primary font. Refer to the discussion entitled, "Font Selection" for details.

Font Selection

First, some definitions:

Character Sets are collections of the symbols and characters that constitute all the elements of a language or discipline (mathematics, for example), including punctuation and numbers.

There are two kinds of character sets, 128-character sets and 256-character sets. Character sets containing 128 characters are often referred to as "7-bit" character sets because only seven bits of the character byte are used to designate the character. Character sets containing 256 characters are referred to as "8-bit" character sets because the 8th bit of the character byte must be used in order to access all 256 character codes.

Typefaces are the shapes that characters come in. The typeface supported by the standard DeskJet PLUS printer is Courier.

Type Styles are the angles of italicization that characters can have. The standard printer supports two type styles: upright and italics.

Fonts are collections of characters that are all the same character set, typeface, quality, pitch, height, type style, stroke weight, and vertical placement (sub- or superscripts). The table on the following page illustrates all the elements that make up a font.

Using Fonts

Three types of fonts can be used: The printer's internal fonts are always available; and fonts from the optional font cartridges, and soft font discs can also be selected.

Internal Fonts are the fonts resident in the printer when it is shipped. The table on the following page lists the font characteristics for the printer's internal fonts. These characteristics are discussed under Print Feature Priorities.

Internal Fonts (Standard Printer)

Page Orientation	Portrait	Portrait	Landscape
Character Set*	PC-8	PC-8	PC-8
Placement	Normal, Sub/ Superscript	Normal, Sub/ Superscript	Normal, Sub/ Superscript
Spacing	Fixed	Fixed	Fixed
Pitch (cpi)	5, 10, 16.67, 20	5, 10, 20	10, 20, 16.67
Point Size	6, 12	6, 12	6, 12, 24
Type Style	Upright	Italic	Upright
Stroke Weight	Medium, Bold	Medium, Bold	Medium, Bold
Typeface	Courier	Courier	Courier
Quality	LQ Draft	LQ Draft	LQ Draft

*Additional character sets are offered in the standard printer. See pages 4-13 to 4-15.

Font Cartridges contain additional fonts. Many optional font cartridges are available. Refer to Chapter 7, *Fonts*, for examples of the fonts contained on these cartridges, and the escape sequences used to select them. Font selection may be controlled by your software package. Consult your software user's manual for information. Ordering information is located in the Appendix.

See *Getting Started*, Chapter 1, for font cartridge loading information.

Soft Fonts are fonts which can be transferred from discs in your computer to the printer's memory. The process of transferring soft fonts from discs to the printer's memory is called downloading. Before you can download fonts to your printer additional memory is required. This requirement is satisfied with the installation of the optional 128 K RAM cartridge or 256K RAM cartridge. Ordering information is located in the Appendix.

Soft fonts are used in the same way as internal fonts or cartridge fonts. While soft fonts require more steps and take a bit more time to use, they allow you to custom mix and match fonts to your needs. If you will be using many different fonts frequently, soft fonts are more cost effective than cartridge fonts. A simple software utility program that downloads the soft fonts into your printer, and instruction booklet, are included with each set of DeskJet PLUS printer soft fonts. Ordering information is located in the Appendix.

Print Feature Priorities

Your printer follows a specific decision-making procedure to sort through the various print feature settings, and uses a priority system to make selection decisions. If you will be using escape sequences to control print features, being aware of the printer's feature priorities will enable you to consistently predict your print results.

The printer prioritizes features in the following order:

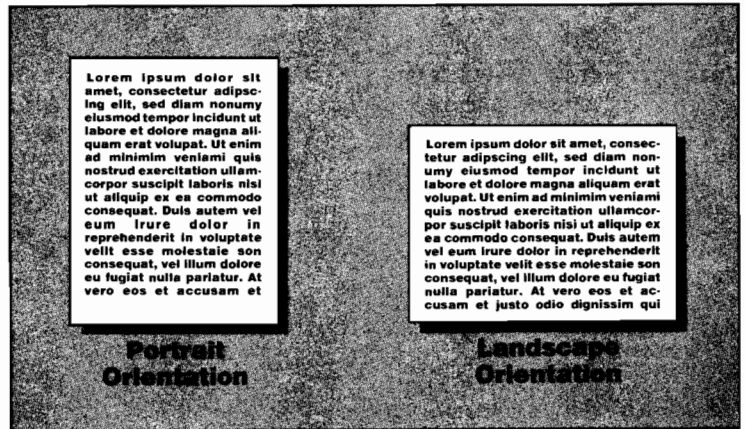
- 1.** Page Orientation (Portrait or Landscape)
- 2.** Character Set
- 3.** Placement (Sub- or Superscripts)
- 4.** Proportional Spacing vs. Fixed Pitch
- 5.** Print Pitch
- 6.** Character Height (Point Size)
- 7.** Type Style (Upright or Italics)
- 8.** Stroke Weight (Medium or Bold)
- 9.** Typeface (Courier)
- 10.** Print Quality (Draft or Letter Quality)

The printer uses this prioritization scheme to select the appropriate font from the fonts available. When the definition of one of the items in this list is changed, the printer "sorts" through its available fonts performing a process of elimination that begins with the first item on the priority list and continues until it narrows its choices down to just one font.

Page Orientation

Page Orientation refers to the way print appears on the page. The DeskJet PLUS printer will print in portrait orientation with the text printed across the width of the page, or in landscape orientation with the text printed across the length of the page.

The following illustrations show the difference between portrait and landscape orientation.



Portrait orientation is the printer's power-up default page orientation. Landscape orientation is selected through the keypad or by sending an escape sequence.

`E_C&l10` – Enable Landscape Orientation

`E_C&l00` – Enable Portrait Orientation

A page that has been printed on will be ejected when the command to change to a different page orientation is received. (This is not a PCL Level III feature.)

Landscape Orientation

The internal fonts available in landscape orientation are Courier 10, Courier 10 Bold, 16.67, and 20 pitch. Additional fonts are only available on the optional 22706L landscape fonts cartridge.



The default paper size in landscape orientation is U.S. letter. When using legal size paper make sure that function switch A5 is UP and A6 is DOWN. Paper size is discussed further on page 4-22.

If a page of data uses fewer than the available lines on the page and is not terminated with a form feed character, a sheet of paper will be loaded in the printer and the **BUSY** light on the printer's keypad will blink. No text will be printed until a full page of characters or a form feed character is received, or the **FF** key is pressed.

Margins

Due to the unprintable region on the bottom of a portrait oriented page, each page of the landscape oriented text will have an automatic $\frac{1}{2}$ inch left margin. While there is no way to decrease or eliminate this $\frac{1}{2}$ inch left margin, it can be increased by sending an escape sequence.

The maximum value of the right margin is $\frac{1}{6}$ inch in from the right paper edge. Hence, there will be $10\frac{1}{3}$ inches of printable region on letter size, $13\frac{1}{3}$ inches on legal, and 286 mm on A4 size paper.

Due to the unprintable $\frac{1}{4}$ inch region on both the left and right edges of portrait oriented US letter size paper (3.18 mm on A4 paper) there can be at most 8 inches of landscape oriented lines per page. With perforation skip disabled, at 8 lpi this provides 64 lines of text; at 6 lpi, 48 lines of text. (See table on the next page.) When perforation skip is enabled, an additional $\frac{1}{4}$ inch top and bottom margin is provided by default, thereby reducing the printable area to $7\frac{1}{2}$ inches. When perforation skip is enabled, the top and bottom margins can be changed by sending escape sequences.

Paper Size	Lines Per Page @		Characters Per Line @		
	6 ipi	8 ipi	10 cpi	16.67 cpi	20 cpi
Letter	45 (48)*	60 (64)*	103	172	206
A4	45 (48)*	60 (63)*	110	183	220
Legal	45 (48)*	60 (64)*	133	222	266

* = Perforation skip OFF

ipi = Lines per inch (vertical).

cpi = Characters per inch (horizontal).

In landscape orientation the Text Scale Mode function switch, B1, has no effect.

Limitations

Underlining and Graphics

In landscape orientation, all control codes and escape sequences behave just as in portrait orientation with two important exceptions. **Underlining:** Automatic underlining (E_C&d#D) is not supported. Your software package may, however, allow you to underline using another means. Consult your software user's manual for information on underlining. **Graphics:** In landscape orientation any graphics data sent will be ignored. After printing in landscape orientation be sure to reset the printer to return it to portrait orientation *before* sending graphics data.

Bidirectional Printing

When in landscape orientation the printer will print unidirectionally (left to right) to deliver best print quality. For faster printing, the printer can be placed in bidirectional mode by sending E_C&k1W *after* placing the printer in landscape orientation.

Designating Character Sets

The definitions of the first 128 characters in the 8-bit character sets are standardized to the American Standard Code for Information Interchange (ASCII). The first 33 codes (decimal 0 through 32) are defined as control codes. The next 95 codes (decimal 33 through 127) are the letters, numbers, symbols, and punctuation marks used to print the English language.

The remaining 128 characters of the 8-bit character sets contain the special characters and punctuation marks that are used to print languages other than English.

The standard DeskJet PLUS printer supports five 8-bit character sets: Roman8, PC-8, PC-8 Denmark/Norway, PC-850, and ECMA-94 Latin 1. (Other character sets are available on optional font cartridges.)

Seven-bit character sets conform to standard definitions set forth by the International Standards Organization (ISO). The first 33 codes (decimal 0 through 32) in each of these sets contain the control codes. The control code definitions in these ISO sets are identical to those in the 8-bit sets. The remainder of each 7-bit character set (decimal codes 33 through 127) contains the letters, numbers, punctuation marks, and special symbols required for a specific language, or symbol set.

The standard DeskJet PLUS printer supports 14 7-bit character sets: ISO UK, ISO Germany, ISO France, ISO Italy, ISO Norway v. 1, ISO Norway v. 2, ISO Sweden: Names, ISO Sweden, ISO Spain, ASCII, JIS ASCII, ISO Portugal, ISO IRV, and Legal. (Additional character sets are available in optional font cartridges.)

Character set charts are located in the Appendix.

The primary font is the font normally in use. The secondary font may be turned on by sending the printer a Shift Out (S_O) control code. Characters generated following the Shift Out will be from the secondary font. Sending a Shift In (S_I) control code will return you to the primary font.

For every escape sequence that begins with E_C ((designating a primary font), there is a corresponding escape sequence that begins with E_C) (designating secondary font) offering a full set of complementary functions that apply to the secondary font.

The default primary character set is selected through switch settings. The default secondary character set is always the same as the default primary character set. To change from the defaults, or to specifically designate the character set you want as the active primary set and which you want as the active secondary set, send the following escape sequences:

E_C (# ID – Designate Primary Character Set

E_C) # ID – Designate Secondary Character Set

In this example, the “#” and “ID” designate the character set.

The following table contains all of the character sets supported by your printer and the escape sequences that select them. Character sets listed in bold are resident in the standard DeskJet PLUS printer. All others are available on optional font cartridges.

Character Set	Escape Sequence	
Roman8	E _C (8 U	E _C) 8 U
PC-8	E _C (10 U	E _C) 10 U
PC-8 Denmark/Norway	E _C (11 U	E _C) 11 U
PC-850	E _C (12 U	E _C) 12 U
ECMA-94 Latin 1	E _C (0 N	E _C) 0 N
ISO United Kingdom (04)	E _C (1 E	E _C) 1 E
ISO Germany (21)	E _C (1 G	E _C) 1 G
ISO France (69)	E _C (1 F	E _C) 1 F
ISO Italy (15)	E _C (0 I	E _C) 0 I
ISO Norway v. 1 (60)	E _C (0 D	E _C) 0 D
ISO Norway v. 2 (61)	E _C (1 D	E _C) 1 D
ISO Sweden: Names (11)	E _C (0 S	E _C) 0 S
ISO Sweden (10)	E _C (3 S	E _C) 3 S
ISO Spain (17)	E _C (2 S	E _C) 2 S
ASCII (06)	E _C (0 U	E _C) 0 U
ISO IRV (02)	E _C (2 U	E _C) 2 U
ISO Portugal (16)	E _C (4 S	E _C) 4 S
JIS ASCII (14)	E _C (0 K	E _C) 0 K
Legal	E _C (1 U	E _C) 1 U
Line Draw	E _C (0 L	E _C) 0 L
Math7	E _C (0 M	E _C) 0 M
Math8a	E _C (0 Q	E _C) 0 Q
Math8b	E _C (1 Q	E _C) 1 Q
Math8	E _C (8 M	E _C) 8 M
Pi Font	E _C (15 U	E _C) 15 U
Pi Fonta	E _C (2 Q	E _C) 2 Q

Left parenthesis indicates primary character set. Right parenthesis indicates secondary character set.

Charts showing the characters available in these sets are located in the Appendix.

Sub- or Superscripts

Sub- and superscripts are text printed higher (superscript) or lower (subscript) than normal printing. To print sub- or superscripts, first send the escape sequence to enable sub/superscripting, then send the text to be sub/superscripted, then instruct the printer to return to normal printing. (This is not a PCL Level III feature.)

$E_C (s -1 U$ —Begin subscripts

$E_C (s 0 U$ —Resume normal printing

$E_C (s 1 U$ —Begin superscripts

Example: Sending the printer this:

Chocolate is full of $C E_C (s-1U6E_C (s0UHE_C (s-1U12E_C (s0UOE_C (s-1U6E_C (s0U$.

Results in this: Chocolate is full of $C_6H_{12}O_6$.

These examples are printed in the 12-point font. To print sub/superscripts in the 6-point font, you must select the 6-point font first by changing the height to 6 by sending $E_C (s 6 V$. After sending the sub/superscript characters return to normal height printing. (12 and 6-point character heights are discussed on page 4-18, this chapter.)

Sending the printer this:

Hot chocolate is full of $HE_C (s-1UE_C (s6V2E_C (s0UE_C (s12VO$.

Results in this: Hot chocolate is full of H_2O .

Proportional Spacing

(Optional Font Cartridge Required)

Proportional Spacing is a feature that makes your printed text resemble set type. In print pitches where the printer prints a certain number of characters per inch (fixed-pitch), each character is allotted the same space, whether the character is a narrow letter like "i" or a wide letter like "w". In Proportional Spacing, the characters are allotted a space proportional to their width requirements. The following example shows the difference between proportional-space and fixed-pitch printing:

This line is proportionally spaced.
This line is printed in fixed pitch.

E_C (s 1 P—Select Proportional Spacing

E_C (s 0 P—Return to Fixed Pitch Printing

Print Pitches (Characters Per Horizontal Inch)

The standard printer supports the following print pitches: 5, 10, 16.67 and 20 characters per inch (cpi). Any positive number can be specified as the print pitch. If you select a print pitch that the printer does not support it will substitute the next larger pitch, i.e., next larger number of characters per inch, resulting in narrower or smaller individual characters. (Other print pitches are available on optional font cartridges.)

This is 5 cpi printing.
This is 10 characters per inch printing.
This is 16.67 characters per inch printing.
This is 20 characters per inch printing.

E_C (s # H—Select print pitch

= The pitch you wish to print in. For example, to print in 10 pitch you would send E_C (s 10 H

Character Height

Character height refers to the height of a printed uppercase character. The character height is defined in points, one point is $\frac{1}{72}$ nd of an inch.

Your printer supports two character heights without an optional font cartridge installed: 12-point characters, and 6-point characters. Any positive number can be specified as the character height. If you ask for a height that the printer does not support, it will substitute the next closest height.

$E_C (s \# V$ —Select character height

= The height you wish your printed characters to be. For example, for 12 point characters, you would send $E_C (s 12 V$. Remember, the character height is defined in units of $\frac{1}{72}$ nd of an inch.

Example: To select a height of 12 points, send $E_C(s12V$
The resulting print:

These are 12 point characters.

To select a height of 6 points, send: $E_C(s6V$
The resulting print:

These are 6 point characters.

Type Style **Italics**

Italics printing provides another way to make certain words or portions of text stand out from the surrounding text. Italics in landscape orientation is supported by using the 22706L landscape fonts cartridge.

Full sentences can be printed in this style.

Or you can italicize a *single* word or phrase.

$E_C (s 1 S$ —Enable Italic Type Style

$E_C (s 0 S$ —Enable Upright Type Style

Stroke Weight

Bold Printing

Bold printing darkens text.

This is an example of **bold print**.

E_C (s 3 B – Enable Bold Print

E_C (s 0 B – Disable Bold Print

Typeface

One typeface is available in the standard DeskJet PLUS printer: Courier.

E_C (s 3 T – Select Courier typeface

Additional typefaces are available on optional font cartridges:

3 = Courier

4 = Helv

5 = TmsRmn

6 = Letter Gothic

8 = Prestige

11 = Presentations

85 = Univers Condensed (soft font only)

Examples of the typefaces available on font cartridges are located in Chapter 7, Fonts. Ordering information is located in the Appendix.

Print Quality

Your printer offers two print qualities, draft quality at 240 characters per second, and letter quality at 120 characters per second. Letter quality is the power-up default. Draft quality offers you the advantage of fast output and uses less ink than letter quality; letter quality offers you clean, professional-looking print. The print sample on the next page demonstrates the difference between the two print densities. (You may find it more convenient to select print quality through the keypad rather than through a software package.)

This is letter quality (120 characters per second).
This is draft quality (240 characters per second).

E_C (s 1 Q – Select draft quality printing

E_C (s 2 Q – Select letter quality printing

Print Enhancements

Underlining draws a continuous underline below a portion of text. Your printer supports four types of underlining: single fixed, double fixed, single floating, and double floating. Single and double floating underlines are positioned based on the character font. Fixed underlines are always in the same location independent of the font being used. Once automatic underlining is enabled all succeeding characters will be underlined until E_C & d @ is sent. The print sample below shows how underlining looks.

These are single fixed underlines for several fonts.

These are double fixed underlines for several fonts.

These are single floating underlines for several fonts.

These are double floating underlines for several fonts.

E _C & d 0 D –	Select Single Fixed Underline (Default)
E _C & d 1 D –	Select Single Fixed Underline
E _C & d 2 D –	Select Double Fixed Underline
E _C & d 3 D –	Select Single Floating Underline
E _C & d 4 D –	Select Double Floating Underline
E _C & d @ –	Disable Underline



Note

Automatic underlining, E_C&d#D, is not supported in landscape orientation.

Combining Escape Sequences

You can save time by combining escape sequences that have the same two characters following the Escape character. To combine escape sequences, begin the sequence with E_C and the two shared characters, then append the remaining characters from each command.

These escape sequences

$E_C (s 3 B$

$E_C (s 3 T$

$E_C (s 1 Q$

can be combined into

$E_C (s 3 b 3 t 1 Q$

Notice that " $E_C (s$ " is the portion of the escape sequence that all three sequences share. Also note that in the combined sequence, "b" and "t" are now lowercase, while "Q", because it is the last character in the sequence (the terminator), remains in uppercase.

Remember, only escape sequences which share the same two characters immediately following " E_C " can be combined.

Positioning Print on a Page

The features in this group are arranged in the order in which they must be defined for your printer. Each definition in this group of features depends on the definition of the features that came before it. Thus, line spacing must be defined before you specify page length; and the top margin must be set before the text length is specified.

Line Spacing

Line spacing is the vertical distance between printed lines on the page, measured in number of printed vertical lines per inch (lpi).

$E_C \& \ell \# D$ —Set Lines Per Inch

= The number of lines per inch. The default line spacing is 6 lpi. To set line spacing to 8 lpi, send E_C & $l 8 D$.

Paper Size

Paper size is the physical size of the paper being used. Default paper size is set through function switches A5 and A6. An escape sequence is sent to change from the default paper size. (This is not a PCL Level III feature.)

Function Switch		Power On		Value (#)
A5	A6	Paper Size	Size Name	
Dn	Dn	8½" × 11"	U.S. Letter	2
Up	Dn	8½" × 14"	U.S. Legal	3
Up	Up	9½" × 4¼"	Envelopes	81
Dn	Up	210 × 297 mm	A4	26
Default				0

E_C & $l \# A$ – Select Paper Size

= The number representing the paper size to which you wish to change. For example, to change to 8½" × 14" paper send E_C & $l 3 A$. A value of 0 (zero) returns the paper size to that selected through mode function switches.

Page Length

Page Length is the actual length of the "page" you wish to print on a sheet of paper. Page Length is expressed in lines of print, defined according to the current line spacing. Therefore, if you will be changing the line spacing from 6 lines per inch, you should do so before defining the Page Length. If page length is not defined through an escape sequence, it will default to the number of lines that will fit on the paper size defined through function switches A5 and A6.

E_C & $l \# P$ – Define Page Length

= The page length in number of lines. For example, if you are using 11 inch paper and are printing at 6 lpi, your page will consist of 66 lines. The escape sequence you would send is E_C & $l 66 P$.

Make sure that the page length you specify correctly reflects the length of paper you are using.

Perforation Skip Mode

Perforation skip mode controls the top and bottom margin. If perforation skip mode is OFF, no top or bottom margin is established. If perforation skip mode is ON, the next printable position skips to the top margin on the next page when the bottom margin is entered. Whenever perforation skip mode is changed, the top margin and text length are set to their default values.

$E_C \& \ell 1 L$ – Enable Perforation Skip Mode

$E_C \& \ell 0 L$ – Disable Perforation Skip Mode

The perforation region is defined as the area outside the text area but within the page. If perforation skip mode is ON and a line feed or half line feed causes the current print position to enter the perforation region, the next line of print will begin on the next page. The default perforation skip mode is set through function switch A8: UP = disabled, DOWN = enabled.

Margins

Left and right margins are counted from the extreme left edge of the paper beginning with column 0.

$E_C \& a \# L$ – Set left margin

$E_C \& a \# M$ – Set right margin

$\#$ = The number of the print column where you want printing to begin (left margin) or end (right margin). Columns are specified in terms of the current print pitch (characters per inch). So, if you are printing in 12 cpi and want a one-inch left margin, printing will begin at column 12: $E_C \& a 12 L$

Note that when the printer is using US Letter or US Legal the leftmost printable position is column 0, or $\frac{1}{4}$ " in from (to the right of) the left edge of the paper. When using #10 envelopes, the leftmost printable position is $\frac{3}{4}$ " in from the left edge of the envelope. The leftmost printable position on A4 paper is $\frac{1}{8}$ " in from the left edge of the paper.

E_C 9—Clear left and right margins

When the printer receives this escape sequence, it clears both margin settings to their defaults. The escape sequence has no effect on the top margin setting or the text length definition.

The default left and right margins are 0 and 79 respectively (positioned at columns equivalent to 10 characters per inch).

Top Margin: Top margin is the area between the top of the paper and the beginning of the printed text. The first printable line below the top margin is defined as top-of-form. The top margin has a default definition of $\frac{1}{2}$ " (three lines at 6 lpi) with perforation skip ON. Top margin is ignored when perforation skip is OFF. Perforation skip ON will default the top margin to $\frac{1}{2}$ ". If you want to change that definition, you must do so before you set the text length because redefining the top margin resets the text length to its default definition. (This is not a PCL Level III feature.)

E_C & ℓ # E —Set top margin

= The number of lines in the top margin. The number of lines is interpreted according to the current line spacing definition. You can specify any number of lines for the top margin, from zero lines to the number of lines in the Page Length.

For example, if you are printing at 6 lines per inch, and want a one-inch top margin, send E_C & ℓ 6 E

Bottom Margin is set via the Text Length definition, discussed on the next page.

Text Length

The text length is defined as the page length minus the top and bottom margins. Because it is only possible to specify page length, top margin, and text length, setting the text length specifies the size of the bottom margin. If you will be changing the definitions of the page length or top margin, you must do so before you can define the Text Length. Text Length is meaningful only when perforation skip mode is enabled.

`EC & ℓ # F` – Define Text Length

= The text length in number of lines at currently defined line spacing.

Suppose that you want to set a 1 inch bottom margin and have the following settings:

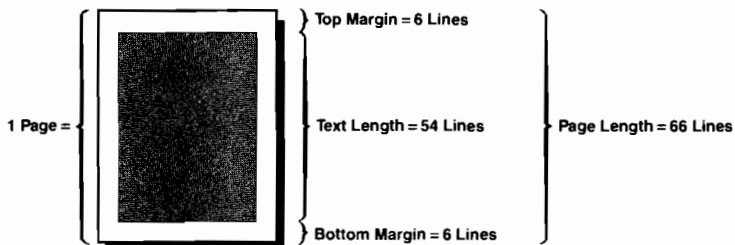
Line spacing: 6 lpi.
Page length: 66 lines (11 inches).
Top margin: 6 lines (1 inch).
Perforation skip: On.

In order to set a 1 inch (6 line) bottom margin, set the text length to:

Text length = 66 lines – 6 lines – 6 lines = 54 lines.

The escape sequence you would send is: `EC&ℓ54F`

The following figure illustrates the above example.



Any number can be specified, but the command will be ignored if the specified number of lines exceeds the available area (page length minus top margin). (A text length of 0 will default to one inch less than the current page length.)

Paper Control and Print Position

Paper Feed Control

When the printer receives the command to eject the current sheet, it will eject the sheet currently in position to print. When the printer receives the command to accept envelopes, it will eject the sheet currently in position to print, and load an envelope from the envelope path. When the printer receives a command to load from the tray, it will eject the sheet currently in position to print, then load a sheet from the tray. Once a new paper path is selected by sending an escape sequence, the printer will continue to use that path until it is changed.

The default paper path is from the paper tray.

If the printer receives a Form Feed control code when a cut sheet is in position to print, the printer will eject the current sheet, but will not feed the next sheet into the printing position until the printer receives data to print. This keeps the paper from being curled by a long wait in the paper advancing mechanism.

Changing the paper path via escape sequence will not modify the page length. If you have paper of different lengths in the different paths, you should first select the appropriate path, then set the length.

$E_C \& \ell 0 H$ – Eject Current Page

$E_C \& \ell 1 H$ – Feed from Tray

$E_C \& \ell 3 H$ – Feed Envelopes

(This is not a PCL Level III feature.)

Motion Index Definitions

Motion Index definitions determine the increments of movement by which character spacing and line spacing are defined. The Vertical Motion Index (VMI) defines line spacing, and the Horizontal Motion Index (HMI) defines character spacing.

The VMI is expressed in increments of $1/48''$. The default VMI (the VMI defined in the printer before it is shipped) is 8, which yields Line Feeds of $8/48''$, or 6 lines per inch. To change the VMI, you must know how to express the size of the Line Feeds you want as $n/48''$, and use that value for "#" in the escape sequence. You may use any positive number in the range from 0 to 126, inclusive.

$E_C \& \ell \# C$ – Set Vertical Motion Index

= The number representing the value of the VMI you want.

The Horizontal Motion Index (HMI) defines how far the current print position moves for each character. The HMI is expressed in increments of $\frac{1}{120}$ ". To change the HMI, you must figure out how to express the width of the character spacing you want as $n/120$ ", and use that value for "#" in the escape sequence. You may use any positive number in the range from 0 to 126, inclusive.

`EC & k # H`—Define Horizontal Motion Index

= The number representing the value of the HMI you want.

HMI does not affect any proportional spaced characters except the space character.

Print Position

The features discussed in the following paragraphs control print position. Escape sequences in this group move the current print position either vertically or horizontally, by row or column, by decipoint, and by dot.

Vertical Positioning

The Vertical positioning commands move the current print position up or down, as needed, to position the print as you have specified. Vertical position can be specified by row number, by decipoint, or by dot position.

Positioning By Row. When positioning the print on the page by moving the current print position up or down, you are limited to one physical page of movement. Note that when positioning by row back **up** the page from current print position, printing may not end up where you wanted it, due to restrictions in backing up the paper.

In addition, when moving the position to a specified row, you can specify any row in the range from 0 to the end of the page.

The “default” print position is determined as follows: When a new page is loaded or a new paper path is selected, the current print position is initially set to the left margin (horizontal) and the top margin (vertical). See the description of those features for a list of defaults.

$E_C \& a \# R$ —Move Current Print Position to Specified Row

$E_C \& a + \# R$ —Move # Rows Down from Current Position

$E_C \& a - \# R$ —Move # Rows Up from Current Position

= The number of the row to which the current print position is to be moved. Rows are counted from the first line below the top margin which is row 0, to the bottom of the physical sheet of paper. Rows are counted according to the current line spacing definition.

For example: To move the current print position two and a half inches down from the top margin when printing at 6 lines per inch, position the print head at line 15 by sending $E_C \& a 15 R$ ($6 \times 2.5 = 15$.)

Positioning By Decipoint. Positioning by decipoint puts the baseline of the next character in line with the decipoint position you specified. A decipoint is $\frac{1}{720}$ ". Decipoints are counted vertically from 0 (the top margin) downward. Any positive number from 0 (the top margin) to the decipoint that corresponds to the end of the page can be specified.

$E_C \& a \# V$ —Move Current Print Position to Decipoint

$E_C \& a + \# V$ —Move # Decipoints Down from Current Position

$E_C \& a - \# V$ —Move # Decipoints Up from Current Position

= The number of the decipoint to which you want the current print position moved.

To position the print head two and a half inches down from the top margin, convert that distance into decipoints. You will get 1800 decipoints: E_C & a 1800 V

Positioning by Dot.

A dot-position is equal to $\frac{1}{300}$ "', regardless of the graphics resolution you have defined for the printer. (See the Graphics discussion for more information on graphics resolution.) Any dot position from the top margin to the bottom of the page can be specified. Dot positions are numbered beginning with 0, which is the top margin. (This is not a PCL Level III feature.)

For example: To position the print head at the dot position two and a half inches down from the top margin, convert inches into dot positions. You will find that two and a half inches is equivalent to 750 dots: $E_C * p 750 Y$

$E_C * p \# Y$ —Move Print Position to Specified Dot

$E_C * p +\# Y$ —Move Down # Dots from Current Print Position

$E_C * p -\# Y$ —Move Up # Dots from Current Print Position

= The number of the dot to which you want the current print position moved. The baseline of the characters is positioned with their baseline dot at the dot position you have specified (unless you are printing graphics, in which case the first raster row will be printed at that dot position).

Horizontal Positioning

Horizontal positioning commands move the print position to the right or left, as needed, to position it as you have specified. You can specify horizontal position by column number, by decipoint, or by dot position.

On $8\frac{1}{2}'' \times 11''$, $8\frac{1}{2}'' \times 14''$, and #10 envelopes the leftmost print position is located $\frac{1}{4}''$ to the right of the left edge of the paper ($\frac{1}{8}''$ on A4 paper).



Positioning By Column. Horizontal positioning is accomplished relative to the leftmost printable position. Columns are numbered left to right, starting with column 0 at the leftmost printable position. Columns are counted in terms of the currently-active print pitch. Horizontal positioning is not limited by margin definitions.

E_C & a # C—Move Current Print Position to Specified Column

E_C & a + # C—Move # Columns to the Right of Current Print Position

E_C & a - # C—Move # Columns to the Left of Current Print Position

= The number of the column to which you want the current print position to move. For example, if the currently active print pitch is 10 cpi, and you wish your first column to begin 5 inches in from the left edge of the maximum print region ($\frac{1}{4}$ " in from the left edge of the paper), you would send E_C & a 50 C

Positioning By Decipoint. A Decipoint is $\frac{1}{720}$ ". Decipoints are counted horizontally from the leftmost printable position toward the right. You can specify any number from 0 (the leftmost print position) to the decipoint that corresponds to the maximum print region.

E_C & a # H—Move Current Print Position to Decipoint

E_C & a + # H—Move # Decipoints to the Right of Current Print Position

E_C & a - # H—Move # Decipoints to the Left of Current Print Position

= The number of the decipoint at which you want the print head positioned.

For example: To change the print position to five inches in from the left edge of the print region, convert the distance into decipoints. You will find that five inches is equivalent to 3600 decipoints. The escape sequence you will send is E_C & a 3600 H

Positioning By Dot.

A dot-position is equal to $\frac{1}{300}$ "', regardless of the graphics resolution you have defined for the printer. (See the Graphics discussion for more information on graphics resolution.) The dot positions are numbered beginning with 0, which is the leftmost print position. (This is not a PCL Level III feature.)

$E_C * p \# X$ —Move Current Print Position to Specified Dot

$E_C * p + \# X$ —Move Print # Dots to the Right of Current Print Position

$E_C * p - \# X$ —Move Print # Dots to the Left of Current Print Position

= The dot at which you want the print head positioned.

For example: To move the current print position to a dot position five inches to the right of the left edge of the paper, convert inches into dot-positions. You will find that five inches is equivalent to 1500 dots. The escape sequence you will send is $E_C * p 1500 X$

Half Line Feed

The following escape sequence will instruct the printer to perform a Half Line Feed (half of current line spacing).

$E_C = -$ —Perform Half Line Feed

Printing Graphics

Your printer uses a form of graphics called “dot-image” graphics in which pictures are made up of patterns of tiny dots called Pixels (for Picture Element dots). In this system, the paper can be thought of as consisting of a grid of dot positions. Graphics data specifies which of the dot positions should be printed and which should be left blank.



Note

Graphics data sent to the printer while in landscape orientation will be ignored. Be sure to reset the printer to portrait orientation *before* sending graphics data.

Graphics data is sent to the printer one byte (8 bits) at a time. Each bit specifies whether a dot position is blank or printed. If a bit is zero, the corresponding dot position is left blank. If a bit is one, a dot is printed at the corresponding position. In HP printers, graphics data bytes are sent to the printer in groups, each group containing the graphics data for one raster (horizontal) dot row. The first (most significant) bit of a graphics data byte specifies the leftmost dot; the last (least significant) bit specifies the rightmost dot.

Graphics Commands

To send raster graphics data to the printer, the following commands are used. The commands should be sent to the printer in the following order:

- **End raster graphics**
- **Set raster graphics resolution**
- **Set raster graphics width**
- **Set raster graphics mode**
- **Start raster graphics**
- **Transfer raster graphics row(s) with or without offsets**
- **End raster graphics**

The start, transfer and end graphics commands must be sent with every block of graphics data you send to the printer. The raster graphics resolution command needs only be sent when you wish to change the resolution. The raster graphics mode can be changed a raster row at a time. There are also graphics offsets that can be applied to each raster row.

Raster Graphics Resolution

The DeskJet PLUS printer has the capability of printing graphics at variable resolutions: 300, 150, 100 and 75 dots per inch (DPI). The following escape sequence sets the resolution at which the following graphics data will be printed:

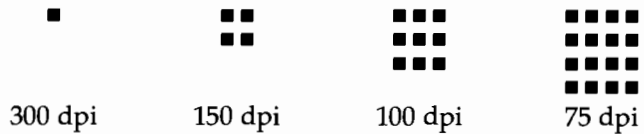
$E_C * t \# R$ – Set Raster Resolution

$\#$ = The resolution (300, 150, 100 or 75) in dots per inch. For example, to set the resolution to 300 dots per inch, send $E_C * t 300 R$

The default resolution is 75 or 300 dots per inch (dependent on the position of mode function switch B2) . This command should be sent before the start graphics command. Once the start graphics command is received by the printer, the $E_C * t \# R$ command is ignored until the end graphics command is received. The graphics resolution is not defaulted when the $E_C * rB$ (end graphics) command is received.

Changing the resolution also changes the size of the printed raster image. At 300 dots per inch, each "1" sent to the printer represents one dot; at lower resolutions, however, each "1" represents a number of dots. Data is transferred to the printer as either a "1" (dot) or "0" (no dot). For example, using 100 dots per inch resolution, each "1" sent to the printer causes 9 dots to be printed. This is because the printer always prints a 300×300 dots per square inch image. In order to print at 100 dots per inch resolution the printer forms a "pixel" from 9 dots. Therefore, your image printed using 100 dots per inch resolution will be 9 times larger in area, (three times larger in each direction) than the same image printed using 300 dots per inch. Likewise, the same image will be four times larger (in area) using 150 dots per inch resolution, and 16 times larger (in area) using 75 dots per inch.

The following figure represents the dots generated for "one" value in the various resolutions that the printer supports:



(This is not a PCL Level III feature.)

Raster Width

The following escape sequence can be sent to the printer to set the width of the raster image:

$E_C * r \# S$ – Set Raster Width

= The number of dots horizontally that the printer will allow for a given graphics image. The DeskJet PLUS printer will default the raster width to the full page width when the printer is reset, turned ON or $E_C * r B$ is sent. This requires the printer to allocate memory such that an entire page width can be printed at 300 dpi. Setting the raster width to the actual width of the image allows the printer to intelligently use its internal memory, thus increasing the throughput of the printer when printing graphics images. After the image has been sent, the raster width will be set to its maximum value when the end graphics command $E_C * r B$ is sent. (This is not a PCL Level III feature.)

Start Raster Graphics

The following escape sequence notifies the printer that raster graphics will follow and also specifies the starting position:

$E_C * r 0 A$ – Start Raster Graphics at leftmost position.

$E_C * r 1 A$ – Start Raster Graphics at current position.
(This is not a PCL Level III feature.)

A value field of one specifies that the starting position is the current print position; the left graphics margin is set to the current horizontal position. Before you send this command, you may move the current print position using the cursor-positioning escape sequences. Then, when you start printing, the upper left corner of the graphics image will be printed where you positioned the cursor.

Once the start raster graphics command is received by the printer, the graphics resolution and left graphics margin are fixed (until the end raster graphics command is received).

Transfer Raster Graphics

The following escape sequence prepares the printer to receive a specific number of bytes of data and transfers the graphics data to the printer:

$E_C * b \# W \langle \text{raster data} \rangle$ – Transfer Graphics Data

Note that the brackets in the above escape sequence are used for clarity. Do not include the brackets when sending the escape sequence to the printer.

$\#$ = The number of bytes of binary data to be sent to the printer. These bytes are interpreted as one line of raster graphics data (one dot row). The data should immediately follow the W , the terminating character of the escape sequence. Note: a transfer raster graphics sequence must be sent to the printer for each line (dot row) of graphics data.

The bits of raster graphics data (1's and 0's) sent to the printer each describe a single dot to be printed on the page. The most significant bit (bit 7) of the first byte of data corresponds to the first dot within that line. A one indicates that the dot is to be printed, and a zero indicates that the dot should not be printed.

After this escape sequence is executed, the current active cursor position is at the beginning of the next raster line at the left graphics margin. Each dot of the raster data is expanded according to the specified resolution. Graphics is independent of the text margins and perforation skip mode—it ignores these boundaries. Graphics is only limited by the printable area, raster width and the page length.

Raster Graphics Modes

There are three methods (data formats) for sending graphics data to the printer. The following escape sequences select one of the three modes:

$E_C * b 0 M$ —Select Full Graphics Mode

$E_C * b 1 M$ —Select Compacted Graphics Mode 1

$E_C * b 2 M$ —Select Compacted Graphics Mode 2

(This is not a PCL Level III feature.)

Full graphics mode is the default mode of the printer. In this mode the $E_C * b \# W$ command transfers the data, and every bit sent is a one-for-one mapping to the dots that will be printed on the page. For example, if the command $E_C * b 0 m 1 W U$ is sent to the printer and the density is set to 300 dpi the following will happen. The 1 is the length of the data to follow the **W** in the escape sequence. The **U** is an eight bit value $(55)_{16}$ representing alternating 1's and 0's $(01010101)_2$. The following image would be placed on the page.

Dot Image	○●○○●○●○●
Position (bit)	7 6 5 4 3 2 1 0
Value	0 1 0 1 0 1 0 1



Note

Throughout this section on graphics, the following convention will be used: a “○” will represent a dot that is not printed (0), and a “●” will represent a dot that is printed (1).

It is recommended that applications not set the raster quality. This feature is accessible from the front keypanel and should be left for the user to set.

End Raster Graphics

The following escape sequence informs the printer that all raster graphics data has been transferred to the printer:

$E_C * r B$ —End Raster Graphics

After this sequence is sent to the printer, you can send text to merge with your graphics. NOTE: Remember that at the end of a raster image, the raster width, the left graphics margin, and the raster compaction mode will be reset to their default values to prevent causing difficulties with other software applications.



Note

The graphics quality is not defaulted when the $E_C * r B$ (end graphics) command is received.

Sample Graphics Program

The program on the next page prints raster graphics in the shape of an arrow. The illustration of 1's and 0's shows how each dot is placed to form the arrow. A 1 causes the printer to print a dot, and a 0 causes a space.

In BASIC, data must be sent to the printer in decimal numbers (in the form $CHR\$(decimal\ number)$). Therefore, each group of eight 1's or 0's (each byte) must be converted to a decimal number. The following illustration shows binary (1's and 0's) representation of an arrow and illustrates how the first line of binary data is converted to decimal so that BASIC can interpret the data. NOTE that this example was tested using MicroSoft BASIC, version A2.0 on the IBM PC. Other versions or releases may not support some of the BASIC commands (such as $WIDTH "LPT1:,255)$.

To print this arrow:



```
10 REM *** BASIC program to print an arrow in PCL graphics ***
20 REM
30 REM
40 WIDTH "lpt1:",255 :REM Disable auto CR-LF
50 OPEN"lpt1:" AS #1 :REM Open printer as a file
60 REM
70 PRINT #1,CHR$(27);"*t75R"; :REM Set resolution to 75 dpi
80 REM
90 PRINT #1,CHR$(27);"*rA"; :REM Start raster graphics
100 REM
110 REM Begin loop to read data and print graphics
120 FOR J = 1 TO 32
130 READ A,B,C,D :REM each raster row has four bytes
140 PRINT #1,CHR$(27);"*b4W";CHR$(A);CHR$(B);CHR$(C);CHR$(D);
150 NEXT J
160 REM
170 REM
180 PRINT #1,CHR$(27);"*rB"; :REM end raster graphics
190 REM
200 CLOSE
210 REM
220 REM This is the data for the arrow
230 DATA 0,0,128,0
240 DATA 0,0,192,0
250 DATA 0,0,224,0
260 DATA 0,0,240,0
270 DATA 0,0,248,0
280 DATA 0,0,252,0
290 DATA 0,0,254,0
300 DATA 0,0,255,0
310 DATA 0,0,255,128
320 DATA 255,255,255,192
330 DATA 255,255,255,224
340 DATA 255,255,255,240
350 DATA 255,255,255,248
360 DATA 255,255,255,252
370 DATA 255,255,255,254
380 DATA 255,255,255,255
390 DATA 255,255,255,255
400 DATA 255,255,255,254
410 DATA 255,255,255,252
420 DATA 255,255,255,248
430 DATA 255,255,255,240
440 DATA 255,255,255,224
450 DATA 255,255,255,192
460 DATA 0,0,255,128
470 DATA 0,0,255,0
480 DATA 0,0,254,0
490 DATA 0,0,252,0
500 DATA 0,0,248,0
510 DATA 0,0,240,0
520 DATA 0,0,224,0
530 DATA 0,0,192,0
540 DATA 0,0,128,0
```

To print this arrow:



To print this arrow, replace line 70 in the above program with this line of code:

```
70 PRINT #1,CHR$(27);"*t100R"; :REM Set resolution to 100 dpi
```

To print this arrow:



To print this arrow, replace line 70 in the above program with this line of code:

```
70 PRINT #1,CHR$(27);"*t150R";      :REM Set resolution to 150 dpi
```

To print this arrow:



To print this arrow, replace line 70 in the above program with this line of code:

```
70 PRINT #1,CHR$(27);"*t300R";      :REM Set resolution to 300 dpi
```

Miscellaneous Printer Controls

The control sequences included in this group are: End-of-Line Wraparound, Line Terminator Selection, Print Enhancement Control, Shift-In/Shift-Out Control, Print Mode Selection, Text Scale Mode, Display Function Mode, Transparent Print Mode, Printer Reset, Self-Test, and Printer Status.

End-of-Line Wraparound

If the printer is sent a line of text that exceeds its right margin, or if the current active position has been moved outside the right margin and the text exceeds the right paper edge, the way the printer responds is dependent on whether or not the end-of-line wraparound feature is enabled. If end-of-line wraparound is disabled, the printer will truncate the text when it reaches the right margin (or paper edge). If end-of-line wraparound is enabled, any text that extends beyond the defined right margin or the physical line length will wrap around to the next line. The text “wrapping” takes place within the current margin settings. (This is not a PCL Level III feature.)

$E_C \& s 0 C$ —Enable End-of-Line Wraparound

$E_C \& s 1 C$ —Disable End-of-Line Wraparound

The default setting is End-of-Line Wraparound disabled.

Line Terminator Selection

Each line of text has a precise ending which the printer understands to be the end of line. Many software packages (or operating systems) append a carriage return to the end of each line of text, while others terminate lines with a line feed. Still others terminate lines with both characters. When text is sent to the printer it needs to be told what to do with the line feeds or carriage returns that it receives. (This is not a PCL Level III feature.)

$E_C \& k \# G$ —Select Line Terminator

$\#$ = The definition of the line terminator. Replace the “ $\#$ ” with one of the values defined on the next page.

- 0 – CR causes CR; LF causes LF; FF causes FF
- 1 – CR causes CR-LF; LF causes LF; FF causes FF
- 2 – CR causes CR; LF causes CR-LF; FF causes CR-FF
- 3 – CR causes CR-LF; LF causes CR-LF; FF causes CR-FF

Print Enhancement Control (Underlining Only)

The Print Enhancement Control determines whether underlining is to work on a mode basis, or a line-by-line basis. Mode basis means that once enabled it will remain in effect until it is specifically turned off. Line-by-line basis means that it automatically turns off when the end of a print line is reached. (This is not a PCL Level III feature.)

E_C & k 0 E – Line-by-Line Enhancement Control

E_C & k 1 E – Mode Enhancement Control (Default)

Shift-In/Shift-Out Control

The Shift-In/Shift-Out Control determines whether the shift-in and shift-out control codes (decimal values 15 and 14, respectively) will work on a mode basis or a line-by-line basis. On a mode basis, the most-recently-received control code will remain in effect until its complementary control code is received. On a line-by-line basis, the effect of the shift-out control code will be automatically cancelled at the end of a print line. (This is not a PCL level III feature.)

E_C & k 0 F – Line-by-Line Basis, SI/SO

E_C & k 1 F – Mode Basis (Default), SI/SO

Print Mode Selection

Print Mode selection is not a PCL level III feature.

E_C & k 0 W – Enable left-to-right unidirectional printing

E_C & k 1 W – Enable bidirectional printing (default)

E_C & k 2 W – Enable right-to-left unidirectional printing.

Text Scale Mode

The DeskJet PLUS printer cannot print on the bottom ½ inch of a sheet of paper. This results in an effective paper length that is ½ inch shorter than its actual length. For example, on an 11 inch page, the effective page length is 10½ inches. To illustrate:

Page length: 11 inches (66 lines*)
Line spacing: 6 lpi*
Perforation skip: OFF
Unprintable region: ½ inch (3 lines*)

Page length = 11 inches (66 lines) – ½ inch (3 lines) = 10½ inches (63 lines) of effective paper length.

There are two ways to resolve this problem:

1. Set the page length in the software application to a value equal to, or less than, the effective paper length. In the above example, 63 lines.
2. Enable Text Scale Mode which allows 66 lines to print on the effective paper length. Thus, on an 11 inch page with an effective paper length of 10½ inches, 66 lines would print. Text Scale Mode is enabled by setting mode function switch B1 UP, or by sending the following escape sequence:

E_C & k 6 W – Enable Text Scale Mode

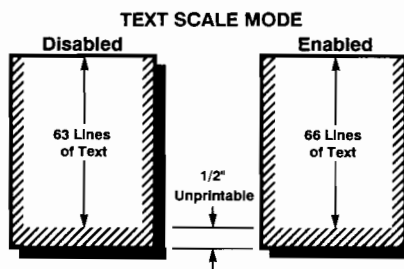
E_C & k 5 W – Disable Text Scale Mode

Text Scale Mode is illustrated on the next page.

* = At 8 lpi:

Page length: 11 inches (88 lines)
Line spacing: 8 lpi
Unprintable region: ½ inch (4 lines)

Page length = 11 inches (88 lines) – ½ inch (4 lines) = 10½ inches (84 lines) of effective paper length.



Note, text scale mode is ignored when perforation skip is enabled (default setting).

Text Scale Mode should be used only when printing portrait oriented text. Text Scale Mode is ignored when printing in landscape orientation. (This is not a PCL Level III feature.)

Display Functions Mode

In display functions mode, the printer prints control codes instead of acting on them. When display functions mode is enabled the printer will execute only a carriage return (CR), and disable display functions ($E_C Z$). When in display functions mode, the printer will print a carriage return code and execute it as a carriage return and line feed, and will print and execute the command to disable display functions mode. All other control codes and printer commands are printed, but not executed.

$E_C Y$ – Enable Display Functions Mode

$E_C Z$ – Disable Display Functions Mode

4

Transparent Print Mode

The transparent print mode serves a function very similar to that of display functions mode: control codes and escape sequences are printed instead of executed. The difference between transparent print mode and display functions is that in transparent print mode, NONE of the control codes or escape sequences are executed.

$E_C \& p \# X \langle \text{Data} \rangle$ – Print Data in Transparent Mode

$\#$ = The number of $\langle \text{Data} \rangle$ bytes you want to print in Transparent Mode. Any number from 0 to 32,767 inclusive may be specified.

The “<Data>” is the actual text that you want printed transparently. Note that the brackets “<” have been included for purposes of clarity only. You should not include the brackets with your data.

Printer Reset

Printer reset sets all features to their default settings and moves the current position to the next top-of-form and the left margin. The reset does not clear the print buffer. After a reset, printer features will return to the definitions specified by switch settings, and/or the most recent definitions made through the keypad.

E_C E – Printer Reset

Self-Test

The printer’s self-test verifies the proper operation of its processor and ROM. Before and after printing the self-test, the printer will execute a form feed.

E_C z – Perform Self-Test

After a self-test, the printer features will return to the definitions specified by switch settings, and/or the most recent definitions made through the keypad. If the self-test fails, the printer will go off line and flash all keypad indicators. See the HELP! section of this manual for more information.

Printer Status

The printer will respond to two different requests for status information: model number and I/O Status. (This is not a PCL Level III feature).

The model number request is a means for the host system to accurately identify the printer by model number. The model number request is not recognized by printers using the Parallel interface.

E_C * r K – Request for Model Number

When the printer receives the I/O status escape sequence it will respond by sending the following to the host:

2277A XXXX C_R L_F

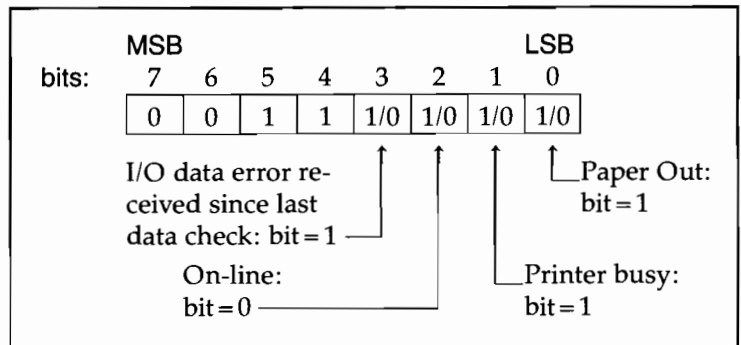
(XXXX represents datecode, "C_R" and "L_F" represent a Carriage Return and Line Feed.)

Note that because the request is placed in the printer's input buffer, the host will not get a response from the printer until the printer has emptied its buffer of everything preceding the request. Therefore, an indeterminate length of time may pass between the receipt of the escape sequence and the return of the printer's response.

The I/O Status request is effective over RS-232-C only and must include the D_C1 (Device Control 1) control code as a trigger. The I/O Status request causes the printer to return a status byte followed by a carriage return and line feed. The escape sequence requesting I/O Status is:

E_C ? D_C1 – Request for I/O Status (RS-232-C only)

The status byte which the printer returns in response to this request is detailed in the diagram below.



The DeskJet PLUS printer is equipped with two standard data communications interfaces, Centronics parallel and serial (RS-232-C). They are provided as a means of connecting the printer to its host computer or terminal. This section describes the pin assignments, protocol, and signal specifications for both interfaces.



Note

For information on which cable to use with your system, refer to the Setting Up Hardware . . . chapter of this manual. Cables can be ordered from Hewlett-Packard by calling toll-free: 1-800-538-8787.

Parallel Interface

The DeskJet PLUS printer uses a standard parallel interface. This interface is the most widely used interface on personal computers because, unlike the serial RS-232 interface, it usually does not require setup commands or special configurations on either the PC or printer.

The printer's parallel interface connector is a standard 36-pin Amphenol type with two metal-wire retaining clips.

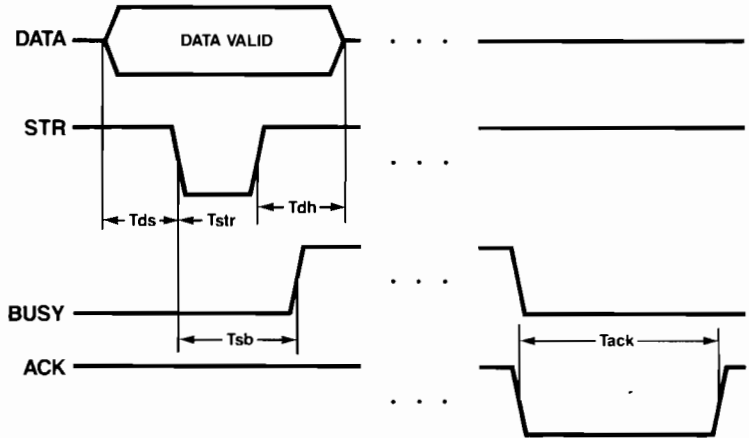
Pin Assignments

Pin No.	Signal	Direction	Description
1	Strobe	In	A LOW pulse of width greater than 1 μ s causes the printer to read one byte of data.
2	DATA 0	In	Data bit 0
3	DATA 1	In	Data bit 1
4	DATA 2	In	Data bit 2
5	DATA 3	In	Data bit 3
6	DATA 4	In	Data bit 4
7	DATA 5	In	Data bit 5
8	DATA 6	In	Data bit 6
9	DATA 7	In	Data bit 7
10	Acknlg	Out	The printer sends a low pulse to indicate that it has accepted a byte of data and is ready for more data.
11	Busy	Out	The printer sends a HIGH logic level to indicate to the host that it cannot receive data due to data entry, a full buffer, or error status.
12	Paper Error	Out	The printer sends a HIGH logic level to indicate to the host that it is out of paper.
13	ON LINE	Out	The printer sends a HIGH logic level to indicate to the host that it is in an ON LINE condition.
14, 15			Not used
16	Sig Gnd		
17	Chassis Gnd		
18	HI	Out	The printer outputs a HIGH logic level (+5V through a 2.2K ohm resistor) on this pin while it is turned ON.
19 to 30	Sig Gnd		
31	Reset/ Input Prime	In	A LOW pulse of width greater than 10 μ s (sent by host) resets the printer and clears the print buffer. Note: The printer may not work when this line is held low (e.g., PC is turned OFF).
32	Error	Out	The printer sends a LOW logic level to the host to indicate that it is in an error state: self test failed or carriage position lost.
33-36		Not Used	

Printer Timing Diagram

The timing diagram below illustrates the data and hand-shake lines during transfer of one data byte to the computer. DATA 1 through DATA 8 and the Strobe line are driven by the computer; the Acknlg line is driven by the printer.

Interval	Description	Minimum Value	Typical Value
T_{ds}	Delay from DATA written to data $\overline{\text{Strobe}}$	$0.5 \mu\text{s}$	$3.75 \mu\text{s}$
T_{str}	Data $\overline{\text{Strobe}}$ width.	$1 \mu\text{s}$	
T_{ack}	$\overline{\text{Acknlg}}$ pulse width.		
T_{dh}	Duration of valid data after $\overline{\text{Strobe}}$.	$0.5 \mu\text{s}$	
T_{sb}	Delay from falling edge of $\overline{\text{Strobe}}$ to rising edge of Busy	$0.5 \mu\text{s (max)}$	

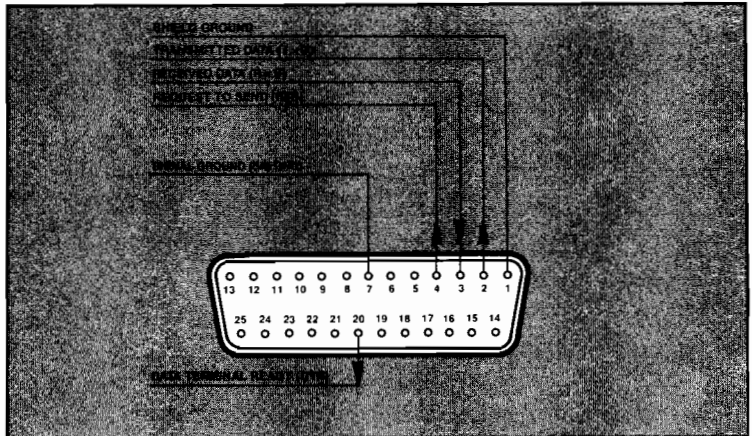


Serial Interface

The DeskJet PLUS printer uses a standard RS-232-C serial interface which is compatible with most computers and terminals. Although the Centronics parallel printer port is the easiest and most popular one for personal computers, the serial port is probably the most universal. It is widely used on everything from mainframe computers to display terminals and PC's.

The main problem most people encounter when setting up their system and peripheral(s) is making sure all components can "talk" to each other without errors. In order to avoid confusion, the user should understand serial interfacing concepts.

The DeskJet PLUS printer uses a standard DB-25 female type serial connector.



Signal Descriptions

Pin 1, Shield Ground: This conductor serves as an electrical ground line for connecting the cable shield.

Pin 2, Transmitted Data (TxD): Bit serial data transmitted to the computer system or terminal from the printer.

Pin 3, Received Data (RxD): Bit serial data transmitted to the printer from the computer.

Pin 4, Request to Send (RTS): An output from the printer that is always high when the printer is ON.

Pin 7, Signal Ground: The established reference ground potential for all data communication.

Pin 20, Data Terminal Ready (DTR): Output from the printer to enable and disable transmission of data to the printer (handshaking). Data transmission is enabled when high and is disabled when low.

Baud Rate, Bits & Parity

In order for the host and printer to communicate with each other, they must be configured to send and receive at the same clock rate or Baud Rate. This means that mode function switches B4 and B5 on the DeskJet PLUS printer must be set to match whatever rate the host computer is set up for. In addition to baud rate, the host and printer must be sending and receiving the same number of Data Bits (pieces of information) per character. The number of data bits used depends whether or not you want to perform data error checking, also called Parity. Most PC systems use 8-bits and no parity checking. This is because graphics data requires 8 data bits of information, otherwise part of the image will be missing (extended characters above decimal 127 are not possible either). If your system checks parity, set switches B6 and B7 accordingly. The DeskJet PLUS printer always utilizes a Start Bit and Stop Bit to signal the beginning and end of each frame of character information. Therefore, each frame has a total of ten data bits.



Handshaking Protocol

The DeskJet PLUS printer uses two methods of sending serial data. The methods differ in how the "stream" of data (from the computer) is stopped and then started again as the printer is busy printing. This is called Handshaking. The DeskJet PLUS printer supports XON/XOFF (Transmission ON/Transmission OFF; also known as software handshakes) and DTR (Data Terminal Ready, or hardware handshaking). Handshaking, or an exchange of signals between host and printer, is necessary to prevent the printer's memory "buffer" from overflowing and losing data. The method of handshaking you use will depend on which type your computer system or terminal uses. Most terminals utilize XON/XOFF whereas many PCs use DTR (IBM PCs, for example). Handshaking is controlled by mode function switch B8. When B8 is DOWN, both XON/XOFF and DTR are enabled. When B8 is UP only DTR is enabled.

XON/XOFF Software Handshaking

A system utilizing XON/XOFF software handshaking uses only three wires of the cable, pins 2, 3, and 7. Software handshaking is performed by the printer when its buffer is nearly ready to overflow. When it has room for only 100 more characters, the printer will send the host an XOFF (ASCII DC3) character to signal it to stop data transmission. The printer will continue printing after sending the XOFF character, thus making more room in its buffer. When the buffer has room for 150 more characters, the printer sends the host an XON (ASCII DC1) character to resume data transmission.

DTR Hardware Handshaking

Unlike the XON/XOFF software handshake, DTR (hardware handshaking) in the DeskJet PLUS printer uses a dedicated wire (pin 20) for signalling the host to stop and start data transmission. The printer accepts data from the host until it has room for only 100 more characters. It will then turn off its hardware signal to the host device, indicating it to stop data transmission. When the printer's buffer has room for 150 more characters it will turn on the hardware signal, enabling the host to resume data transmission.

HELP!

The information in this chapter is provided to help you solve problems that do not require the help of a trained service person. If your printer is not operating properly, follow the suggestions described in this chapter, then **if you still need help** with your printer operation or set up (configuration), call **DeskJet PLUS Customer Support at 208-323-2551**.

The telephone numbers listed below are those you can call for information on HP products, supplies and accessories, and the location of the nearest HP repair center.

- **For information on HP products and nearest HP dealer:**
HP Customer Information Center 800-752-0900
(Presales only)
- **For supplies and accessories:**
HP Direct Marketing Division 800-538-8787
(e.g., print cartridge HP51608A)
- **For repair information:**
DeskJet PLUS Customer Support 208-323-2551

No Power, Keypad Lights Aren't ON:

CHECK . . .

1. That the printer is turned ON.
2. That the printer is connected completely to the computer, and to the electrical power outlet.

**Power ON, Keypad
Lights Are ON,
Printer Doesn't
Print:**

CHECK . . .

1. That the printer is ON LINE (the ON LINE light will be ON).
2. That the interface cable is connected to the correct interface connector (port).
3. That the interface cable is connected completely to the printer and to the computer.
4. That the printer is set up correctly for your computer. See Chapter 2, *Setting Up Your Computer*.
5. That the print cartridge is installed properly, with the green arrow on the cartridge top pointing to the green dot on the top of the cradle, and that the cartridge is clicked into place.
6. That the tape has been removed from the "nose" of the print cartridge. See *Installing the Print Cartridge* on pages 1-6 to 1-9.
7. That the print cartridge contains ink. See *Fading Print* on page 6-6.
8. That there is paper in the IN tray, and that it is loaded properly. See pages 1-10, 1-11 in *Getting Started*.

**All Lights on the
Keypad Are
Blinking:
*simultaneously***

CHECK . . .

1. The font cartridge(s) installed in your printer. The 22707K and the 22707E font cartridges will not work with your printer.
2. With qualified HP service personnel if the lights continue to blink after you have tried to clear the error condition by turning the printer OFF for several seconds, then ON again.

alternately CHECK . . .

1. For a print carriage stall. If it is stalled, turn the printer OFF for several seconds, then ON again.
2. That the packaging tape on the print cartridge cradle has been removed.
3. Non-Printing Self Tests, on page 6-10.
4. Print carriage movement. Turn the printer OFF and try to manually move the print carriage to the left and back again. If it won't move, contact local Hewlett-Packard service personnel.

BUSY and ON LINE Lights Are Blinking:**CHECK . . .**

1. For a paper jam in the printer. See Clearing Paper Jams on page 6-7.

ON LINE Light Is Blinking:**CHECK . . .**

1. For properly loaded paper. See pages 1-10, 1-11 in Getting Started.

ON LINE Light Is Blinking, But Printer Isn't Out of Paper:**CHECK . . .**

1. For properly loaded paper. See pages 1-10, 1-11 in Getting Started.
2. The weight of the paper you are using. 16 to 24 pound stock is recommended.

Paper Jams:**CHECK . . .**

1. That paper is loaded squarely in the IN tray, right side flush against the right side of the tray.
2. That the IN tray does not contain more than a 1/2" stack of paper (about 100 sheets).
3. Clearing Paper Jams instructions on page 6-7.

BUSY Light Is Blinking (Printer Is In Landscape Orientation):**CHECK . . .**

1. That you pressed the FF key to tell the printer to begin printing.

Printing/Paper Is Skewed or Slanted:**CHECK . . .**

1. That paper is loaded squarely in the IN tray, right side flush against the right side of the tray.
2. That the IN tray does not contain more than a 1/2" stack of paper (about 100 sheets).

Multiple Sheets Are Loading into the Printer:**CHECK . . .**

1. That there is no more than a 1/2" stack of paper (about 100 sheets) in the IN tray.
2. That paper isn't sticking together.

Paper Doesn't Load:**CHECK . . .**

1. That paper is loaded in the IN tray.
2. That the paper tray extender is holding the paper against the printer.
3. That there is no more than a 1/2" stack of paper (about 100 sheets) in the IN tray.
4. That paper is loaded squarely in the IN tray, right side flush against the right side of the tray.

Paper Doesn't Eject After Printing:**CHECK . . .**

1. The BUSY light. If it is OFF or blinking, press the FF key.

Envelope Doesn't Load:**CHECK . . .**

1. That the envelope is inserted under the envelope guides on the OUT tray. See page 1-13 for the location of the envelope guides.
2. That the envelope is loaded properly, head first, flap facing up, with the right side of the envelope flush against the right side of the tray.
3. That the leading edge of the envelope is positioned under the paper feed rollers.
4. That both the UP and DOWN keys were pressed simultaneously to load the envelope.
5. That you are following the instructions for loading envelopes as described in your software users manual.

**Poor Print Quality:
Fuzzy Print****CHECK . . .**

1. The print quality after pressing the PRIME key to reactivate the print cartridge. Reevaluate the print quality. If quality hasn't improved, try step 2.
2. That you are using the correct paper (or envelope) for the best possible print quality.

**Incomplete Letters
Are Printing:
(Dots or Lines Are
Missing)****CHECK . . .**

1. The print quality after pressing the PRIME key to reactivate the print cartridge. Reevaluate the print quality. If print hasn't improved, try step 2.
2. That the print cartridge is installed properly. Remove the print cartridge from the cradle and re-install it. See pages 1-6 to 1-9 in Getting Started.

**Inconsistent
Darkness Within
Letters:****CHECK . . .**

1. The print quality after pressing the PRIME key to reactivate the print cartridge.

Fading Print: CHECK . . .

1. The print cartridge to be sure it contains ink. When the print cartridge is out of ink, the print will gradually fade and will not improve when you try to re-activate it by pressing the PRIME key. Remove the empty cartridge and discard it. Install a new print cartridge as instructed in Getting Started, pages 1-6 to 1-9.

Faint Print: CHECK . . .

1. That you are using the correct paper (or envelope) for the best possible print quality. See paper discussion on pages 1-9, 1-10 in Getting Started.
2. The Improving Print Quality section on page 6-9.

Selected Font from Font Cartridge Won't Print: CHECK . . .

1. That the font cartridge was snapped into place.
2. That you used the FONT key to select the desired font.
3. That the light on the font cartridge corresponds to the font you wish to use.
4. That the software package you are using doesn't override selections made through the keypad. If it does, consult your software user's manual for font selection information.

Printer Won't Print Self Test: CHECK . . .

1. That you correctly followed the self test instructions located on page 1-14 in Getting Started.
2. For a paper jam in the printer. See Clearing Paper Jams, next page.
3. With qualified HP Service Personnel.

Self Test Doesn't Resemble Example Shown:

CHECK . . .

1. With qualified HP service personnel. Remember that self test patterns will vary from the example shown on page 1-14, depending on the font cartridge installed.

Clearing Paper Jams:

If a paper jam occurs, follow these steps to clear it. **All data waiting to print will be lost if you turn the printer OFF or press the RESET key to clear a paper jam.**

1. Remove the tray cover and the OUT tray and open the top cover.
2. Press the UP or DOWN key to advance or retract the paper out of the printer.

The paper jam should clear. If it doesn't, press the UP or DOWN key with one hand while pulling the paper out with your other hand. If the paper tears, pull out the pieces while alternately pressing the UP or DOWN keys.

3. Press the RESET key to clear the error condition.

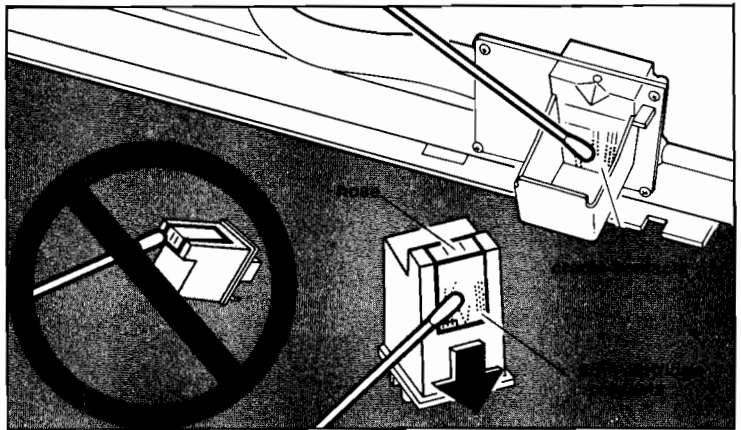
Using the Print Cartridge

Print Cartridge Installation Tips

The print cartridge is designed for use with everyday office papers. See the paper discussion on pages 1-9 and 1-10, and specifications on page 8-23. Do not use ink-jet paper.

Carefully follow the instructions for installing the print cartridge located on pages 1-6 to 1-10 in Chapter 1. The print cartridge will provide excellent print quality after installation, but in rare occasions you may notice that incomplete letters are printed (dots or lines missing). If this occurs, try the following steps:

1. Reactivate the print cartridge by pressing the PRIME key. Reevaluate the print quality. If print hasn't improved, try step 2.
2. Remove the print cartridge from the cradle and re-install it. Reevaluate the print quality. If print hasn't improved, try step 3.
3. Remove the print cartridge from the cradle. Gently clean the contacts on the print cartridge and the contacts on the printer cradle with a swab moistened only with water, as shown below. DO NOT clean the "nose" of the print cartridge. Re-install the print cartridge and reevaluate the print quality.



Maintaining Print Quality:

Keep the print cartridge in the cradle at all times. Removing the cartridge will expose it to air, causing the ink to evaporate, and degrading the print quality.

Keep the print cartridge in its “home” position when the printer isn’t being used. Leaving it out of position will cause the ink to evaporate quickly.

Improving Print Quality:

If print becomes faint or fuzzy, try these steps to improve print quality.

- 1.** Re-activate the print cartridge by pressing the PRIME key. Reevaluate the print quality. If it hasn’t improved try step 2.
- 2.** Turn the paper over in the IN tray and reevaluate the print quality. See pages 1-9, 1-10 for discussion about paper. Reevaluate the print quality. If it hasn’t improved, try step 3.
- 3.** Try a different paper. See the paper discussion on pages 1-9, 1-10.

Storing Print Cartridges:

The following instructions will help you when storing unused print cartridges.

- Keep the print cartridge in its sealed container until you are ready to use it.
- Store the print cartridge container at room temperature.
- Check the expiration date on the cartridge box and use before that date.
- Install the print cartridge in the cradle immediately after opening the sealed container.

A Word About the Ink

The ink in the print cartridge may be harmful if swallowed by children. Keep new or used cartridges out of the reach of children, and immediately discard used cartridges.

Ink may stain hands or clothing.

Non-Printing Self Tests

Your printer does a non-printing self test each time it is turned ON. If the printer fails this test, all of the lights on the keypad will blink alternately, indicating that a RAM/ROM failure has occurred.

This circumstance requires servicing by qualified HP service personnel.

Maintenance

Although your DeskJet PLUS printer doesn't require periodic maintenance, we suggest that you perform the following maintenance to keep your printer in good operating condition.

Exterior

Clean smudges, dust, etc., with a soft cloth moistened with water. Blow out accumulated paper dust from print carriage area.

Platen

Clean accumulated ink off the metal platen, carriage guide, and paper feed rollers with a soft cloth moistened with water. **Use only water; do not use cleaning fluids.**

Notes



Font/Cartridge Directory

Pages 7-4 to 7-6 contain an alphabetical listing of all available fonts for the HP DeskJet PLUS printer. The DeskJet PLUS printer cartridge(s) in which the font is contained, is listed in the column to the right of the example of each font. Because some fonts are offered on more than one font cartridge, they may be listed several times. For example, Helv Ital 10/PS is found on the HP22706G, HP22706Q, and HP22706T cartridges. It is also available as a downloadable font by using one of the **Soft Font** products and optional RAM cartridge(s).

Important Notes

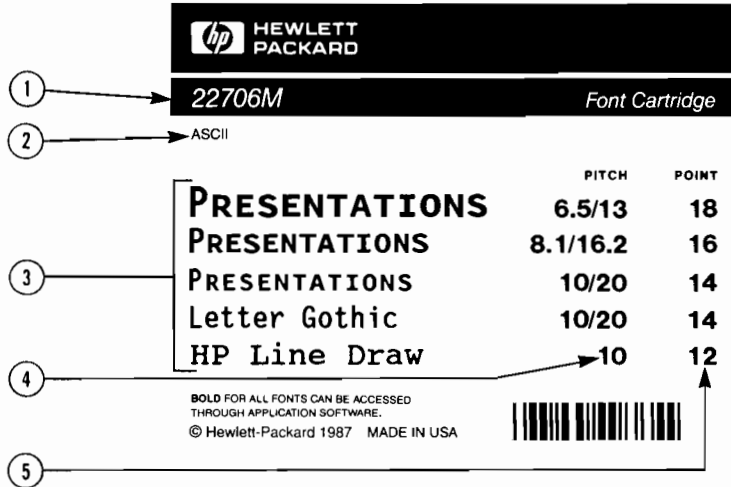
1. Cartridges M, P and Q contain ONLY the ASCII character set. All other cartridges (and Soft Fonts) contain additional character sets (i.e., ISO7, ECMA-94 Latin 1, Legal, etc.). Only the HP22706B cartridge contains Math and Pi Font character sets.
2. Use of Soft Fonts requires an optional RAM Cartridge(s) and Soft Font product. See page 8-21 for ordering information.
3. Each font is available in draft and letter quality.
4. The HP22707F Epson Emulation Cartridge provides several additional fonts. The instruction booklet that accompanies the Epson Emulation Cartridge contains valuable font information.
5. Do not install DeskJet PLUS font cartridges 22706R and U in the printer when DeskJet cartridges 22706D, E, F, G, H, J, P and Q are installed or vice versa.



NOTE

Up to two 256K RAM cartridges, two 128K RAM cartridges, or a 128/256K RAM combination may be used in your printer at one time for downloading soft fonts.

Reading Your Font Cartridge Label



1 PART NUMBER

Order cartridge by this number from your local dealer or Hewlett-Packard's Direct Marketing Division. Ordering information is located in the Appendix on page 8-21.

2 CHARACTER SETS

Identifies sets of characters associated with this cartridge. See Chapter 4, Programming, for a discussion of character sets.

3 PRINT SAMPLE

Sample of fonts found on this cartridge, shown in actual size.

4. PITCH

Indicates the number of characters printed per horizontal inch. For example, a setting of 12 will print 12 characters per inch. Pitch is not specified with proportional fonts since spacing is based on the width of each character. Proportional spaced fonts are identified by a **PS** in the PITCH field.



FIXED PITCH

(SAME SPACING FOR ALL CHARACTERS)



PROPORTIONAL PITCH

(SPACING VARIES WITH EACH CHARACTER)

5. POINT SIZE

Identifies the height of the characters in each font. There are approximately 72 points per inch.

Alphabetical Font Listings

Typeface	Pitch/Pt Size	Cartridge
Courier	5/6	Internal
Courier	10/6	Internal
Courier	16.67/6	Internal
Courier /BOLD	20/6	Internal,L
COURIER/BOLD	10/24	L
Courier	5/12	Internal
Courier/BOLD	10/12	Internal,L
Courier	16.67/12	Internal
Courier/BOLD	20/12	Internal,L
Courier Italic/Bold	5/12	Internal,A
Courier Italic/Courier Bold Italic	10/12	Internal,A
Courier Italic/Courier Bold Italic	20/12	Internal,A
Courier Italic/Courier Bold Italic	20/6	Internal,A
Helv	PS/30	V,Soft
Helv	PS/15	V,Soft
Helv/Helv Bold	PS/14	J,Q,T,Soft
Helv/Helv Bold	PS/12	H,Q,T,Soft
Helv/Helv Bold	PS/10	G,Q,T,Soft
Helv/Helv Bold	PS/8	G,Q,T,Soft
Helv/Helv Bold	PS/7	J,Q,T,Soft
Helv/Helv Bold	PS/6	H,Q,T,Soft
Helv/Helv Bold	PS/5	G,Q,T,Soft
Helv/Helv Bold	PS/4	G,Q,T,Soft
Helv Italic/Helv Bold Italic	PS/14	J,Q,Soft
Helv Italic/Helv Bold Italic	PS/12	H,Q,T,Soft
Helv Italic/Helv Bold Italic	PS/10	G,Q,T,Soft
Helv Italic/Helv Bold Italic	PS/8	G,Q,Soft
Helv Italic/Helv Bold Italic	PS/7	J,Q,Soft
Helv Italic/Helv Bold Italic	PS/6	H,Q,T,Soft
Helv Italic/Helv Bold Italic	PS/5	G,Q,T,Soft
Helv Italic/Helv Bold Italic	PS/4	G,Q,Soft
LETTER GOTHIC/BOLD/ITALIC/BOLD	12/24	L
LETTER GOTHIC/BOLD	16.67/19	L

Alphabetical Font Listings

Typeface	Pitch/Pt Size	Cartridge
Letter Gothic/Bold	5/14	M
Letter Gothic/Letter Gothic Bold	10/14	M
Letter Gothic/Bold	6/12	C
Letter Gothic/Bold	8.33/9.5	C
Letter Gothic/Letter Gothic Bold	20/14	M
Letter Gothic/Letter Gothic Bold	20/7	M
Letter Gothic/Bold	12/12	C,L
Letter Gothic/Bold	16.67/9.5	C,L
Letter Gothic/Bold	24/12	C,L
Letter Gothic/Bold	24/6	C,L
Letter Gothic/Bold	33.34/9.5	C
Letter Gothic/Bold	33.34/4.75	C
<i>Letter Gothic Ital/Bold</i>	6/12	C
<i>Letter Gothic Italic/Bold Italic</i>	12/12	C,L
<i>Letter Gothic Italic/Bold Italic</i>	24/12	C,L
<i>Letter Gothic Italic/Bold Italic</i>	24/6	C,L
Line Draw: □ | ☺ † Bold: □ | ☺ †	5/12	A,M
Line Draw: □ | ☺ † Bold: □ | ☺ †	6/12	A,B,C
Line Draw: □ | ☺ † Bold: □ | ☺ †	10/12	A,M
Line Draw: □ | ☺ † Bold: □ | ☺ †	12/12	A,B,C
Line Draw: □ | ☺ † Bold: □ | ☺ †	20/6	M
Line Draw: □ | ☺ † Bold: □ | ☺ †	24/6	A,B,C
Math Prestige: √"°∞÷ Bold: √"°∞÷	*12/10	B
Math Prestige: √"°∞÷ Bold: √"°∞÷	24/5	B
PI Prestige: ∇R@◇§ Bold: ∇R@◇§	*12/10	B
PI Prestige: ∇R@◇§ Bold: ∇R@◇§	24/5	B
PRESENTATIONS	3.25/18	M
PRESENTATIONS	4.05/16	M
PRESENTATIONS	5/14	M
PRESENTATIONS - BOLD	6.5/18	M
PRESENTATIONS - BOLD	8.1/16	M
PRESENTATIONS - BOLD	10/14	M
PRESENTATIONS	13/18	M
PRESENTATIONS	13/9	M
PRESENTATIONS	16.2/16	M
PRESENTATIONS	16.2/8	M
PRESENTATIONS	20/14	M
PRESENTATIONS	20/7	M

*Also available in 6 and 24 pitch.

Font

Alphabetical Font Listings

Typeface	Pitch/Pt Size	Cartridge
Prestige/Prestige Bold	6/10	B
Prestige/Prestige Bold	8.33/7	B
Prestige/Prestige Bold	12/10	B
Prestige/Prestige Bold	16.67/7	B
Prestige/Prestige Bold	24/10	B
Prestige/Prestige Bold	24/5	B
Prestige Italic/Bold Italic	*12/10	B
Prestige Italic/Bold Italic	24/5	B
TmsRmn	PS/30	U,Soft
TmsRmn	PS/15	U,Soft
TmsRmn/TmsRmn Bold	PS/14	F,P,R,Soft
TmsRmn/TmsRmn Bold	PS/12	E,P,R,Soft
TmsRmn/TmsRmn Bold	PS/10	D,P,R,Soft
TmsRmn/TmsRmn Bold	PS/8	D,P,R,Soft
TmsRmn/TmsRmn Bold	PS/7	F,P,R,Soft
TmsRmn/TmsRmn Bold	PS/6	E,P,R,Soft
TmsRmn/TmsRmn Bold	PS/5	D,P,R,Soft
TmsRmn/TmsRmn Bold	PS/4	D,P,R,Soft
TmsRmn Italic/TmsRmn Bold Italic	PS/14	F,P,Soft
TmsRmn Italic/TmsRmn Bold Italic	PS/12	E,P,R,Soft
TmsRmn Italic/TmsRmn Bold Italic	PS/10	D,P,R,Soft
TmsRmn Italic/TmsRmn Bold Italic	PS/8	D,P,Soft
TmsRmn Italic/TmsRmn Bold Italic	PS/7	F,P,Soft
TmsRmn Italic/TmsRmn Bold Italic	PS/6	E,P,R,Soft
TmsRmn Italic/TmsRmn Bold Italic	PS/5	D,P,R,Soft
TmsRmn Italic/TmsRmn Bold Italic	PS/4	D,P,Soft
Univers Condensed/Bold	5/30	Soft
Univers Condensed/Bold	PS/24	Soft
Univers Condensed/Bold	PS/18	Soft
Univers Condensed/Bold	PS/15	Soft
Univers Condensed/ Bold	PS/14	Soft
Univers Condensed/ Bold	PS/12	Soft
Univers Condensed/ Bold	PS/10	Soft
Univers Condensed/ Bold	PS/9	Soft
Univers Condensed/ Bold	PS/8	Soft
Univers Condensed/ Bold	PS/7	Soft
Univers Condensed/ Bold	PS/6	Soft
Univers Condensed/ Bold	PS/5	Soft

*Also available in 6 and 24 pitch.

Font/Escape Sequence Examples

With the use of optional font cartridges your DeskJet PLUS printer can print several thousand different fonts including draft and letter quality. Many software packages allow you to access fonts through escape sequences. Examples of the escape sequences sent to enable four popular fonts are included on the next page.

Due to space constraints we are not able to include all of the escape sequences and font examples for all fonts supported by the DeskJet PLUS printer and its optional font cartridges. The examples provided show the default character set, PC-8, being used.

The attributes of each escape sequence example are provided for you. When selecting a font the entire escape sequence must be sent. However, if you wish to change from one font to another, a shortcut method can be used.

Example: If you've selected a font on the HP22706A cartridge, the attributes of which are: portrait orientation, primary font, "normal" sub-superscript, "normal" spacing, 10 pitch, 12 point, italic type style, "normal" stroke weight, Courier typeface, and letter quality, you would have sent `EC(10UEC(s0u0p10h12v1s0b3t2Q`. To change to the HP22706T font cartridge where all attributes are the same as those on the HP22706A font cartridge **except** proportional spacing (PS), 10 point, and the Helv typeface, you can send an abbreviated escape sequence wherein only those attributes that differ from the font already selected need be resent. That escape sequence would be `EC(s1p10v4T`.

Currently selected font:

```
EC&l0OEC(10UEC(s0u0p10h12v1s0b3t2Q
```

You wish to change to:

```
EC&l0OEC(10UEC(s0u1p10v1s0b4t2Q
```

You need only send:

```
EC(s 1p10v 4T
```

The primary/secondary font attribute, in the above case—`EC(s` must **always** be sent and the last letter **must** be capitalized.

When changing character sets the character set attribute **must** also be sent.

When sending an escape sequence to select a font, the following attributes must be included. If you are unfamiliar with sending escape sequences read Chapter 4, Programming, for an overview of this process. See the preceding page for examples on sending escape sequences to change from one font to another.

Examples of escape sequences sent to select various fonts follow.

To Select:

Courier (10 pitch, 12 point)

Send: Ec&100

Prestige Ital
(6 pitch, 10 point)

Send: Ec&100

TmsRmn (PS, 6 point)

Send: Ec&100

PRESENT
(3.25 pitch, 18 point)

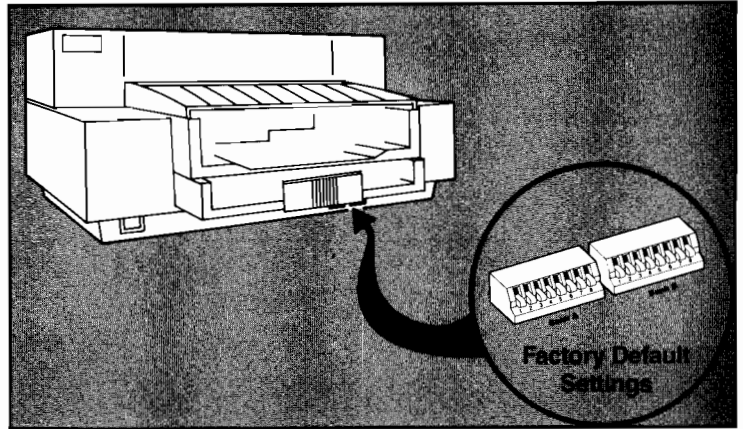
Send: Ec&100

	ORIENTATION (pg. 4-10)	CHARACTER SET (pg. 4-15)	SUB-/SUPERSCRIPT (pg. 4-16) 0=Norm, 1=Super -1=Sub	PITCH (pg. 4-17) (Characters per inch)	TYPESTYLE (pg. 4-18) 0=Upright, 1=Italics	TYPEFACE (pg. 4-19)
Courier (10 pitch, 12 point)	Ex	10U	0u	10h	0s	3t
<i>Prestige Ital</i> (6 pitch, 10 point)	Ex	10U	0u	6h	1s	8t
TmsRmn (PS, 6 point)	Ex	10U	0u	1p	0s	5t
PRESENT (3.25 pitch, 18 point)	Ex	10U	0u	3.25h	0s	11t

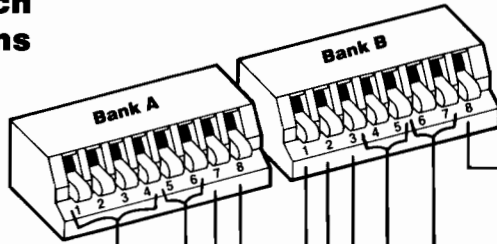
Appendix

Summary of Switch Settings

The DeskJet PLUS printer has two banks of mode function switches located on the printer's front base, under the paper tray. These switches define a number of printer settings, ranging from page length to data communications settings. The illustration below shows the function switches in their default positions.



Function Switch Definitions



Default Character Set
(See page 8-3)

Paper/Envelope Size
(See page 8-3)

Carriage Return Definition
(Up = CR and LF, Down = CR only)

Perforation Skip
(Up = Disable, Down = Enable)

RS-232-C Handshaking
(Up = DTR, Down = DTR & Xon/Xoff)

RS-232-C Parity & Word Length
(See page 8-4)

RS-232-C Baud Rate
(See page 8-4)

Terminal Mode
(Up = Enable, Down = Disable)
(See page 8-15)

Graphics Density
(Up = 300 DPI, Down = 75 DPI)

Text Scale Mode
(Up = 66 Lines/Page, Down = 63 Lines/Page)

See page 4-49 for a discussion of Text Scale Mode.

Appendix

Default Character Set Selection

Character Set	Switch Setting			
	A1	A2	A3	A4
PC-8	down	down	down	down
HP Roman8	down	down	down	up
PC-8 Denmark/Norway	down	down	up	down
United Kingdom (ISO 04)	down	down	up	up
Germany (ISO 21)	down	up	down	down
France (ISO 69)	down	up	down	up
Italy (ISO 15)	down	up	up	down
Norway (ISO 60) V. 1	down	up	up	up
Sweden (ISO 11): Names	up	down	down	down
Spain (ISO 17)	up	down	down	up
ASCII	up	down	up	down
Portugal (ISO 16)	up	down	up	up
PC-850	up	up	down	down
ECMA-94 Latin 1	up	up	down	up
Legal	up	up	up	down
Default Set in Front Cartridge	up	up	up	up

Paper/Envelope Size

Paper/Envelope Size	Switch A5	Switch A6
US Letter (8½" × 11")	down	down
A4 (210 × 297mm)	down	up
US Legal (8½" × 14")	up	down
Envelope (#10 USA, DL Europe)	up	up

RS-232-C Baud Rate Selection

Baud Rate	Switch B4	Switch B5
9600 Baud	down	down
19200 Baud	down	up
2400 Baud	up	down
1200 Baud	up	up

RS-232-C Parity & Word Length

Parity	Word Length	Switch B6	Switch B7
No Parity	8 Data Bits	down	down
Odd Parity	7 Data Bits	down	up
Even Parity	7 Data Bits	up	down
No Parity	8 Data Bits	up	up

Character Set Selection

HP Roman8 Character Set Chart

DEC	32	48	64	80	96	112	160	176	192	208	224	240
0		0	@	P	`	p		—	â	À	Á	þ
1	!	1	A	Q	a	q	À	Ý	ê	î	Ã	Þ
2	"	2	B	R	b	r	Â	ý	ô	Ø	ã	•
3	#	3	C	S	c	s	È	°	û	Æ	Ð	µ
4	\$	4	D	T	d	t	Ê	Ç	á	à	ð	¶
5	%	5	E	U	e	u	È	ç	é	í	Í	¾
6	&	6	F	V	f	v	Î	Ñ	ó	ø	Ì	—
7	'	7	G	W	g	w	Ï	ñ	ú	æ	Ó	¼
8	(	8	H	X	h	x	,	í	à	Ä	Ò	½
9	)	9	I	Y	i	y	,	ì	è	ì	Õ	á
10	*	:	J	Z	j	z	^	œ	ò	Ö	ö	º
11	+	;	K	[	k	{	~	£	ù	Û	Š	«
12	,	<	L	\	l	|	~	¥	ä	É	š	■
13	-	=	M	]	m	}	~	Û	š	ë	Û	»
14	.	>	N	^	n	~	Û	š	ö	ï	ÿ	±
15	/	?	O	_	o	¸	£	ç	ü	Ô	ÿ	

International Character Set Chart (ISO)

Decimal code

ISO Reg. #	Swedish											
	ASCII	Names	Swedish	Spanish	French	German	UK	Portuguese	Norwegian1	Norwegian2	Italian	
35	#	#	#	£	£	#	£	#	#	§	#	£
36	\$	α	α	\$	\$	\$	\$	\$	\$	\$	α	\$
64	@	É	@	§	à	§	@	§	@	@	@	§
91	[	À	À	í	°	À	[	À	Æ	Æ	[°
92	\	Ö	Ö	Ñ	ç	Ö	\	Ç	Ø	Ø	\	ç
93	]	À	À	¿	§	Û	]	Ö	À	À	]	é
94	^	Û	^	^	^	^	^	^	^	^	^	^
96	`	é	`	`	µ	`	`	`	`	`	`	ù
123	{	ä	ä	°	é	ä	{	ä	æ	æ	{	à
124	|	ö	ö	ñ	ù	ö	|	ç	ø	ø	|	ò
125	}	á	á	ç	è	ü	}	ö	á	á	}	è
126	~	ü	~	~	~	ß	~	°	~	~	~	ì

Appendix

PC-8 Character Set Chart

DEC	00	16	32	48	64	80	96	112	128	144	160	176	192	208	224	240
0		▶		0	@	P	˘	p	Ç	É	á	☼	⊥	⌘	α	≡
1	☺	◀	!	1	A	Q	a	q	ü	æ	í	☼	⊥	⌘	β	±
2	☹	↑	"	2	B	R	b	r	é	Æ	ó	☼	⊥	⌘	Γ	≡
3	♥	!!	#	3	C	S	c	s	â	ô	ú	⊥	⊥	⌘	π	≡
4	♦	¶	\$	4	D	T	d	t	ä	ö	ñ	⊥	-	⌘	Σ	⌈
5	♣	§	%	5	E	U	e	u	à	ò	Ñ	⊥	+	⌘	σ	⌋
6	♠	-	&	6	F	V	f	v	â	û	ã	⊥	⌘	⌘	μ	+
7	•	±	˘	7	G	W	g	w	ç	ù	õ	⊥	⌘	⌘	τ	≈
8	■	↑	(	8	H	X	h	x	ê	ÿ	ÿ	⊥	⌘	⌘	Φ	°
9	○	↓	)	9	I	Y	i	y	ë	Ö		⊥	⌘	⌘	Θ	•
10	◼	→	*	:	J	Z	j	z	è	Ü		⊥	⌘	⌘	Ω	·
11	♁	←	+	;	K	[	k	{	ï	€	½	⊥	⌘	■	δ	√
12	♀	⊥	,	<	L	\	l	|	î	£	¼	⊥	⌘	■	∞	∞
13	♫	↔	-	=	M	]	m	}	ì	¥	¾	⊥	⌘	■	φ	²
14	♬	▲	.	>	N	^	n	~	ï	Å	Pls	⊥	⌘	■	ε	■
15	⚙	▼	/	?	O	_	o	˘	ÿ	Å	f	⊥	⌘	■	∩	

Appendix

PC-8 Denmark/ Norway Character Set Chart

DEC	00	16	32	48	64	80	96	112	128	144	160	176	192	208	224	240
0		▶		0	@	P	˘	p	Ç	É	á	☼	⊥	⌘	α	≡
1	☺	◀	!	1	A	Q	a	q	ü	æ	í	☼	⊥	⌘	β	±
2	☹	↑	"	2	B	R	b	r	é	Æ	ó	☼	⊥	⌘	Γ	≡
3	♥	!!	#	3	C	S	c	s	â	ô	ú	⊥	⊥	⌘	π	≡
4	♦	¶	\$	4	D	T	d	t	ä	ö	ñ	⊥	-	⌘	Σ	⌈
5	♣	§	%	5	E	U	e	u	à	ò	Ñ	⊥	+	⌘	σ	⌋
6	♠	-	&	6	F	V	f	v	â	û	õ	⊥	⌘	⌘	μ	+
7	•	±	˘	7	G	W	g	w	ç	ù	Õ	⊥	⌘	⌘	τ	≈
8	■	↑	(	8	H	X	h	x	ê	ÿ	ÿ	⊥	⌘	⌘	Φ	°
9	○	↓	)	9	I	Y	i	y	ë	Ö	ã	⊥	⌘	⌘	Θ	•
10	◼	→	*	:	J	Z	j	z	è	Ü	Ã	⊥	⌘	⌘	Ω	·
11	♁	←	+	;	K	[	k	{	ï	ø	ℓ	⊥	⌘	■	δ	√
12	♀	⊥	,	<	L	\	l	|	î	£	ñ	⊥	⌘	■	∞	∞
13	♫	↔	-	=	M	]	m	}	ì	Ø	ℓ	⊥	⌘	■	φ	²
14	♬	▲	.	>	N	^	n	~	ï	Å	l	⊥	⌘	■	ε	■
15	⚙	▼	/	?	O	_	o	˘	ÿ	Å	l	⊥	⌘	■	∩	

PC-850 Character Set Chart

DEC	00	16	32	48	64	80	96	112	128	144	160	176	192	208	224	240
0		▶		0	@	P	`	p	Ç	É	á	☼	Ł	đ	Ó	-
1	☺	◀	!	1	A	Q	a	q	ü	æ	í	☼	Ł	Đ	ß	±
2	☹	†	"	2	B	R	b	r	é	Æ	ó	☼	Ł	Ê	Ô	==
3	♥	!!	#	3	C	S	c	s	â	ô	ú	|	Ł	È	Ò	¾
4	♦	¶	\$	4	D	T	d	t	ä	ö	ñ	|	Ł	È	ö	¶
5	♣	§	%	5	E	U	e	u	à	ò	Ñ	À	+	ı	Õ	§
6	♠	-	&	6	F	V	f	v	á	ú	ª	Â	ã	Í	μ	÷
7	•	‡	'	7	G	W	g	w	ç	ù	º	Ã	Ä	Î	þ	,
8	■	↑	(	8	H	X	h	x	ê	ÿ	¿	©	Ł	İ	þ	°
9	○	↓	)	9	I	Y	i	y	ë	ÿ	®	Ł	Ł	ı	Û	°
10	◼	→	*	:	J	Z	j	z	è	Ü	¬	||	Ł	ı	Û	.
11	♂	←	+	;	K	[	k	{	ı	ø	½	¶	Ł	ı	Û	1
12	♀	↳	,	<	L	\	l	|	ı	£	¼	¶	Ł	ı	Û	3
13	♪	↔	-	=	M	]	m	}	ı	Ø	ı	¢	=	ı	Û	2
14	♫	▲	.	>	N	^	n	~	ı	Å	x	¥	#	ı	Û	'
15	✳	▼	/	?	O	_	o	~	ı	Å	f	»	ı	ı	Û	'

ECMA-94 Latin 1 Character Set Chart

DEC	32	48	64	80	96	112	128	144	160	176	192	208	224	240
0		0	@	P	`	p				°	À	Đ	à	đ
1	!	1	A	Q	a	q			ı	±	Á	Ñ	á	ñ
2	"	2	B	R	b	r			ı	²	Â	Ń	â	ò
3	#	3	C	S	c	s			ı	³	Ã	Ō	ã	ó
4	\$	4	D	T	d	t			ı	´	Ä	Ô	ä	ô
5	%	5	E	U	e	u			ı	µ	Å	Õ	å	õ
6	&	6	F	V	f	v			ı	¶	Æ	Ö	æ	ö
7	'	7	G	W	g	w			ı	•	Ç	×	ç	÷
8	(	8	H	X	h	x			ı	·	È	Ø	è	ø
9	)	9	I	Y	i	y			ı	¸	É	Ù	é	ù
10	*	:	J	Z	j	z			ı	º	Ê	Ú	ê	ú
11	+	;	K	[	k	{			ı	»	Ë	Û	ë	û
12	,	<	L	\	l	|			ı	¼	Ï	Ü	ï	ü
13	-	=	M	]	m	}			ı	½	Í	Ý	í	ý
14	.	>	N	^	n	~			ı	¾	Î	Þ	î	þ
15	/	?	O	_	o	~			ı	ı	Ï	ß	ï	ÿ

Appendix

Line Draw Character Set (Seven Bit)

(Available only on optional
font cartridge.)

DEC	32	48	64	80	96	112
0		†	‡	‡	‡	‡
1	‡	‡	‡	‡	‡	‡
2	‡	‡	‡	‡	‡	‡
3	‡	‡	‡	‡	‡	‡
4	‡	‡	‡	‡	‡	‡
5	‡	‡	‡	‡	‡	‡
6	‡	‡	‡	‡	‡	‡
7	‡	‡	‡	‡	‡	‡
8	‡	‡	‡	‡	‡	‡
9	‡	‡	‡	‡	‡	‡
10	‡	‡	‡	‡	‡	‡
11	‡	‡	‡	‡	‡	‡
12	‡	‡	‡	‡	‡	‡
13	‡	‡	‡	‡	‡	‡
14	‡	‡	‡	‡	‡	‡
15	‡	‡	‡	‡	‡	‡

Legal Character Set Chart

DEC	32	48	64	80	96	112
0		0	@	P	°	p
1	!	1	A	Q	a	q
2	"	2	B	R	b	r
3	#	3	C	S	c	s
4	\$	4	D	T	d	t
5	%	5	E	U	e	u
6	&	6	F	V	f	v
7	'	7	G	W	g	w
8	(	8	H	X	h	x
9	)	9	I	Y	i	y
10	*	:	J	Z	j	z
11	+	;	K	|	k	§
12	,	=	L	®	l	¶
13	-	=	M	|	m	†
14	.	ç	N	©	n	™
15	/	?	O	—	o	⌘

Math7 Character Set Chart

(Available only on optional font cartridge.)

DEC	32	48	64	80	96	112
0		0	¶	π	¶	π
1	√	1	α	γ	α	γ
2	|	2	β	θ	β	θ
3	§	3	ψ	σ	ψ	σ
4	∇	4	φ	τ	φ	τ
5	±	5	ε	ξ	ε	ξ
6	∞	6	∂	Δ	∂	Δ
7	∫	7	λ	δ	λ	δ
8	÷	8	η	χ	η	χ
9	≈	9	ι	υ	ι	υ
10	Π	Ω	Θ	ζ	Θ	ζ
11	Γ	Λ	κ	↑	κ	↑
12	Ψ	∞	ω	→	ω	→
13	≡	J	μ	T	μ	T
14	Φ	†	ν	←	ν	←
15	Ξ	Σ	ρ	↓	ρ	⌘

Math8 Character Set Chart

(Available only on optional font cartridge.)

	(A Version)					(B Version)									
	32	48	64	80	96	112	128	144	160	176	192	208	224	240	
0		0	∴	∏	∴	π				−	⊕	Å	⌈	⌋	
1	√	1	A	P	α	ρ				↑	∇	⊙	⇐	⌊	⌋
2	"	2	B	Σ	β	σ				→	∃	⊗	⊖	⌈	⌋
3	°	3	Γ	T	γ	τ				↓	⊤	⊖		{	}
4	∞	4	Δ	T	δ	ν				←	⊥	⊙		⌊	⌋
5	÷	5	E	Φ	ε	φ				↑	U	∧	∫	↑	|
6	∝	6	Z	X	ζ	χ				⇒	∩	∨	∫	⊙	|
7	'	7	H	Ψ	η	ψ				∥	ε	∇	∠	J	√
8	(	8	Θ	Ω	θ	ω				⇐	∃	¬	∅	∇	¬
9	)	9	I	∇	ι	ϑ				↑	∉	°	∞	∥	>
10	×	e	K	∂	κ	φ				↔	⊂	·	⊂	∠	⊥
11	+	ε	Λ	ς	λ	ω				⊕	⊂	·	∩	/	\
12	,	<	M	≤	μ	≈				⊕	∅	•	⊕		
13	-	=	N	≠	ν	≡				↔	∅	○	∫		≠
14	.	>	Ξ	≥	ξ	≠				↔	⊆	+	ℝ		±
15	/	≈	O	—	o	⊗				·	⊇	‡	3		

ASCII-Decimal-Hex Table

The Roman8 symbol set is an 8-bit symbol set. In addition to the symbols of the standard ASCII symbol set, it also contains international characters and symbols.

ASCII-Decimal-Hex Table

CHAR.	DEC.	HEX.
CTL@	N ₀	0 00
CTLA	S _H	1 01
CTLB	S _X	2 02
CTLC	E _X	3 03
CTLD	E _T	4 04
CTLE	E _D	5 05
CTLF	A _K	6 06
CTLG	Q	7 07
CTLH	B _S	8 08
CTLI	H _T	9 09
CTLJ	V _F	10 0A
CTLK	V _T	11 0B
CTLL	F _F	12 0C
CTLM	C _R	13 0D
CTLN	S _O	14 0E
CTLO	S _I	15 0F
CTLP	D _L	16 10
CTLQ	D ₁	17 11
CTLR	D ₂	18 12
CTLS	D ₃	19 13
CTLT	D ₄	20 14
CTLU	N _K	21 15
CTLV	S _V	22 16
CTLW	E _B	23 17
CTLX	C _N	24 18
CTLY	F _M	25 19
CTLZ	S _B	26 1A
CTL[	E _C	27 1B
CTL\	F _S	28 1C
CTL]	G _S	29 1D
CTL^	R _S	30 1E
CTL_	U _S	31 1F

CHAR.	DEC.	HEX.
	32	20
!	33	21
"	34	22
#	35	23
\$	36	24
%	37	25
&	38	26
'	39	27
(	40	28
)	41	29
*	42	2A
+	43	2B
,	44	2C
-	45	2D
.	46	2E
/	47	2F
0	48	30
1	49	31
2	50	32
3	51	33
4	52	34
5	53	35
6	54	36
7	55	37
8	56	38
9	57	39
:	58	3A
;	59	3B
<	60	3C
=	61	3D
>	62	3E
?	63	3F

CHAR.	DEC.	HEX.
@	64	40
A	65	41
B	66	42
C	67	43
D	68	44
E	69	45
F	70	46
G	71	47
H	72	48
I	73	49
J	74	4A
K	75	4B
L	76	4C
M	77	4D
N	78	4E
O	79	4F
P	80	50
Q	81	51
R	82	52
S	83	53
T	84	54
U	85	55
V	86	56
W	87	57
X	88	58
Y	89	59
Z	90	5A
[	91	5B
\	92	5C
]	93	5D
^	94	5E
_	95	5F

CHAR.	DEC.	HEX.
`	96	60
a	97	61
b	98	62
c	99	63
d	100	64
e	101	65
f	102	66
g	103	67
h	104	68
i	105	69
j	106	6A
k	107	6B
l	108	6C
m	109	6D
n	110	6E
o	111	6F
p	112	70
q	113	71
r	114	72
s	115	73
t	116	74
u	117	75
v	118	76
w	119	77
x	120	78
y	121	79
z	122	7A
{	123	7B
|	124	7C
}	125	7D
~	126	7E
⌘	127	7F



ASCII-Decimal-Hex (continued)

CHAR.	DEC.	HEX.
8 ₀	128	80
8 ₁	129	81
8 ₂	130	82
8 ₃	131	83
8 ₄	132	84
8 ₅	133	85
8 ₆	134	86
8 ₇	135	87
8 ₈	136	88
8 ₉	137	89
8 _A	138	8A
8 _B	139	8B
8 _C	140	8C
8 _D	141	8D
8 _E	142	8E
8 _F	143	8F
9 ₀	144	90
9 ₁	145	91
9 ₂	146	92
9 ₃	147	93
9 ₄	148	94
9 ₅	149	95
9 ₆	150	96
9 ₇	151	97
9 ₈	152	98
9 ₉	153	99
9 _A	154	9A
9 _B	155	9B
9 _C	156	9C
9 _D	157	9D
9 _E	158	9E
9 _F	159	9F

CHAR.	DEC.	HEX.
	160	A0
À	161	A1
Á	162	A2
Â	163	A3
Ã	164	A4
Ä	165	A5
Å	166	A6
Ā	167	A7
Ą	168	A8
Ȧ	169	A9
Ả	170	AA
Ȧ	171	AB
Ȧ	172	AC
Ȧ	173	AD
Ȧ	174	AE
€	175	AF
—	176	B0
Ÿ	177	B1
ŷ	178	B2
°	179	B3
Ç	180	B4
ç	181	B5
Ñ	182	B6
ñ	183	B7
ı	184	B8
ı	185	B9
İ	186	BA
£	187	BB
¥	188	BC
§	189	BD
f	190	BE
ç	191	BF

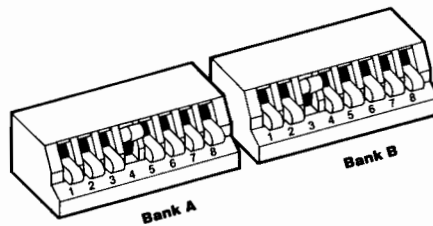
CHAR.	DEC.	HEX.
ä	192	C0
ë	193	C1
ö	194	C2
ü	195	C3
ä	196	C4
é	197	C5
ó	198	C6
ù	199	C7
à	200	C8
á	201	C9
ò	202	CA
ú	203	CB
a	204	CC
ë	205	CD
ó	206	CE
ù	207	CF
À	208	D0
ı	209	D1
Ø	210	D2
Æ	211	D3
á	212	D4
ı	213	D5
ø	214	D6
æ	215	D7
À	216	D8
ı	217	D9
Ö	218	DA
U	219	DB
É	220	DC
ı	221	DD
ß	222	DE
Ö	223	DF

CHAR.	DEC.	HEX.
À	224	E0
Á	225	E1
â	226	E2
ð	227	E3
đ	228	E4
ı	229	E5
ı	230	E6
Ó	231	E7
Ô	232	E8
Õ	233	E9
ö	234	EA
Š	235	EB
š	236	EC
Û	237	ED
Ÿ	238	EE
ÿ	239	EF
ƒ	240	F0
ƒ	241	F1
•	242	F2
µ	243	F3
¶	244	F4
¾	245	F5
—	246	F6
¼	247	F7
½	248	F8
¾	249	F9
∅	250	FA
«	251	FB
■	252	FC
»	253	FD
±	254	FE
DEL	255	FF

HP Terminal Mode— Line Draw

The Line Draw characters displayed on your HP terminal can be printed on DeskJet PLUS printers by using your terminal's normal print controls.

Follow the hardware configuration for your terminal as described in Chapter 2. Make sure that the function switches located on the front base of your printer are set as shown below.



Using Escape Sequences

The escape sequences found on the following pages are used when selecting specific printer features. The software package you are using determines the form in which ASCII equivalent escape sequences are sent to your computer or terminal. For example, in LOTUS 1-2-3 the E_C symbol is represented by a `\027`. In WordPerfect, the `<27>` sequence represents the E_C symbol.

Escape Sequence/ Control Code Summary

Print Features	Escape Sequence	Decimal Equiv.	Hex. Equiv.
PAGE ORIENTATION			
Landscape	E _C &l1O	027 038 108 049 079	1B 26 6C 31 4F
Portrait	E _C &l0O	027 038 108 048 079	1B 26 6C 30 4F
CHARACTER SETS			
HP Roman8	E _C (8U	027 040 056 085	1B 28 38 55
ASCII	E _C (0U	027 040 048 085	1B 28 30 55
ECMA-94 Latin 1	E _C (0N	027 040 048 078	1B 28 30 4E
PC-8	E _C (10U	027 040 049 048 085	1B 28 31 30 55
PC-850	E _C (12U	027 040 049 050 085	1B 28 31 32 55
PC-8 Denmark/Norway	E _C (11U	027 040 049 049 085	1B 28 31 31 55
ISO Sweden: Names	E _C (0S	027 040 048 083	1B 28 30 53
ISO Sweden	E _C (3S	027 040 051 083	1B 28 33 53
ISO Norway v.1	E _C (0D	027 040 048 068	1B 28 30 44
ISO Norway v.2	E _C (1D	027 040 049 068	1B 28 31 44
ISO UK	E _C (1E	027 040 049 069	1B 28 31 45
ISO France	E _C (1F	027 040 049 070	1B 28 31 46
ISO Germany	E _C (1G	027 040 049 071	1B 28 31 47
ISO Italy	E _C (0I	027 040 048 073	1B 28 30 49
ISO Spain	E _C (2S	027 040 050 083	1B 28 32 53
ISO Portugal	E _C (4S	027 040 052 083	1B 28 34 53
ISO IRV	E _C (2U	027 040 051 085	1B 28 32 55
JIS ASCII	E _C (0K	027 040 048 075	1B 28 30 4B
Legal	E _C (1U	027 040 049 085	1B 28 31 55
Line Draw*	E _C (0L	027 040 048 076	1B 28 30 4C
Math7*	E _C (0M	027 040 048 077	1B 28 30 4D
Math8*	E _C (8M	027 040 056 077	1B 28 38 4D
Math8a*	E _C (0Q	027 040 048 081	1B 28 30 51
Math8b*	E _C (1Q	027 040 049 081	1B 28 31 51
PIFont*	E _C (15U	027 040 049 053 085	1B 28 31 35 55
PIFonta*	E _C (2Q	027 040 050 081	1B 28 32 51
PLACEMENT			
Super	E _C (s+1U	027 040 115 043 049 085	1B 28 73 2B 31 55
Normal	E _C (s0U	027 040 115 048 085	1B 28 73 30 55
Sub	E _C (s-1U	027 040 115 045 049 085	1B 28 73 2D 31 55
SPACING			
Proportional*	E _C (s1P	027 040 115 049 080	1B 28 73 31 50
Fixed	E _C (s0P	027 040 115 048 080	1B 28 73 30 50

* Optional font cartridges required.

Print Features (Cont.)	Escape Sequence	Decimal Equiv.	Hex. Equiv.
PRINT PITCH # of Characters	E _C (s#H)	027 040 115 #...# 072	1B 28 73 #...# 48
CHARACTER HEIGHT # of 1/72 inch	E _C (s#V)	027 040 115 #...# 086	1B 28 73 #...# 56
TYPE STYLE Upright	E _C (s0S)	027 040 115 048 083	1B 28 73 30 53
Italic	E _C (s1S)	027 040 115 049 083	1B 28 73 31 53
STROKE WEIGHT Normal	E _C (s0B)	027 040 115 048 066	1B 28 73 30 42
Bold	E _C (s3B)	027 040 115 051 066	1B 28 73 33 42
Extra Bold*	E _C (s7B)	027 040 115 055 066	1B 28 73 37 42
TYPEFACE Line Printer*	E _C (s0T)	027 040 115 048 084	1B 28 73 30 54
Pica*	E _C (s1T)	027 040 115 049 084	1B 28 73 31 54
Elite*	E _C (s2T)	027 040 115 050 084	1B 28 73 32 54
Courier	E _C (s3T)	027 040 115 051 084	1B 28 73 33 54
Helv.*	E _C (s4T)	027 040 115 052 084	1B 28 73 34 54
Tms Rmn*	E _C (s5T)	027 040 115 053 084	1B 28 73 35 54
Gothic*	E _C (s6T)	027 040 115 054 084	1B 28 73 36 54
Script*	E _C (s7T)	027 040 115 055 084	1B 28 73 37 54
Prestige*	E _C (s8T)	027 040 115 056 084	1B 28 73 38 54
Presentations*	E _C (s11T)	027 040 115 049 049 084	1B 28 73 31 31 54
Univers Condensed*	E _C (s85T)	027 040 115 056 053 084	1B 28 73 38 35 54
PRINT QUALITY Letter	E _C (s2Q)	027 040 115 050 081	1B 28 73 32 51
Draft	E _C (s1Q)	027 040 115 049 081	1B 28 73 31 51
LINE SPACING** Lines per Inch # of Lines	E _C &l#D	027 038 108 #...# 068	1B 26 6C #...# 44
PAPER SIZE** Default Size	E _C &l0A	027 038 108 048 065	1B 26 6C 30 41
US-Letter	E _C &l2A	027 038 108 050 065	1B 26 6C 32 41
US-Legal	E _C &l3A	027 038 108 051 065	1B 26 6C 33 41
ISO A4	E _C &l26A	027 038 108 050 054 065	1B 26 6C 32 36 41
#10 Envelope	E _C &l81A	027 038 108 056 049 065	1B 26 6C 38 31 41
PAGE LENGTH** # of Lines	E _C &l#P	027 038 108 #...# 080	1B 26 6C #...# 50
PERFORATION SKIP** Perforation Skip ON	E _C &l1L	027 038 108 049 076	1B 26 6C 31 4C
Perforation Skip OFF	E _C &l0L	027 038 108 048 076	1B 26 6C 30 4C

* Optional font cartridges required.

**These escape sequences are listed in the order in which they must be sent.

Print Features (Cont.)	Escape Sequence	Decimal Equiv.	Hex. Equiv.
MARGINS**			
Clear	E _C 9	027 057	1B 39
Left	E _C &a#L	027 038 097 #...# 076	1B 26 61 #...# 4C
Right	E _C &a#M	027 038 097 #...# 077	1B 26 61 #...# 4D
TOP MARGIN**			
# of Lines	E _C &l#E	027 038 108 #...# 069	1B 26 6C #...# 45
TEXT LENGTH**			
# of Lines	E _C &l#F	027 038 108 #...# 070	1B 26 6C #...# 46
VERTICAL LINE SPACING			
Motion Index # 1/48 inch	E _C &l#C	027 038 108 #...# 067	1B 26 6C #...# 43
HALF-LINE FEED	E _C =	027 061	1B 3D
CURSOR POSITIONING			
Move to Row #	E _C &a#R	027 038 097 #...# 082	1B 26 61 #...# 52
Move to Col. #	E _C &a#C	027 038 097 #...# 067	1B 26 61 #...# 43
Horizontal # decipoint	E _C &a#H	027 038 097 #...# 072	1B 26 61 #...# 48
Vertical # decipoint	E _C &a#V	027 038 097 #...# 086	1B 26 61 #...# 56
Horizontal # dots	E _C *p#X	027 042 112 #...# 088	1B 2A 70 #...# 58
Vertical # dots	E _C *p#Y	027 042 112 #...# 089	1B 2A 70 #...# 59
Motion Index # 1/120 Inch	E _C &k#H	027 038 107 #...# 072	1B 26 6B #...# 48
GRAPHICS			
Resolution			
75 Pixels/inch	E _C *t75R	027 042 116 055 053 082	1B 2A 74 37 35 52
100 Pixels/inch	E _C *t100R	027 042 116 049 048 048 082	1B 2A 74 31 30 30 52
150 Pixels/inch	E _C *t150R	027 042 116 049 053 048 082	1B 2A 74 31 35 30 52
300 Pixels/inch	E _C *t300R	027 042 116 051 048 048 082	1B 2A 74 33 30 30 52
Width			
# pixels	E _C *r#S	027 042 114 #...# 083	1B 2A 72 #...# 53
X Offset			
# dots	E _C *b#X	027 042 098 #...# 088	1B 2A 62 #...# 58
Y Offset			
# dots	E _C *b#Y	027 042 098 #...# 089	1B 2A 62 #...# 59
Compaction			
Compaction OFF	E _C *b0M	027 042 098 048 077	1B 2A 62 30 4D
Mode 1	E _C *b1M	027 042 098 049 077	1B 2A 62 31 4D
Mode 2	E _C *b2M	027 042 098 050 077	1B 2A 62 32 4D
Misc. Graphics Commands			
Set to default (high)	E _C *r0Q	027 042 114 048 081	1B 2A 72 30 51
Quality Set to draft	E _C *r1Q	027 042 114 049 081	1B 2A 72 31 51
Quality Set to high	E _C *r2Q	027 042 114 050 081	1B 2A 72 32 51

**These escape sequences are listed in the order in which they must be sent.

Print Features (Cont.)	Escape Sequence	Decimal Equiv.	Hex. Equiv.
Transfer Graphics # bytes	E _C *b#Wdata	027 042 098 #...# 087 data	1B 2A 62 #...# 57 data
Start Graphics At Left most print pos.	E _C *r0A	027 042 114 048 065	1B 2A 72 30 41
Current Cursor pos.	E _C *r1A	027 042 114 049 065	1B 2A 72 31 41
End Graphics	E _C *rB	027 042 114 066	1B 2A 72 42
MISC. PRINTER CONTROL			
Reset	E _C E	027 069	1B 45
Self Test	E _C z	027 122	1B 7A
Return Model Number	E _C *rK	027 042 114 075	1B 2A 72 4B
UNDERLINE			
Single fixed	E _C &d1D	027 038 100 049 068	1B 26 64 31 44
Double fixed	E _C &d2D	027 038 100 050 068	1B 26 64 32 44
Single float	E _C &d3D	027 038 100 051 068	1B 26 64 33 44
Double float	E _C &d4D	027 038 100 052 068	1B 26 64 34 44
Off	E _C &d@	027 038 100 064	1B 26 64 40
DISPLAY FUNCTIONS			
Display ON	E _C Y	027 089	1B 59
Display OFF	E _C Z	027 090	1B 5A
TRANSPARENT PRINT DATA			
# bytes	E _C &p#X	027 038 112 #...# 088	1B 26 70 #...# 58
END-OF-LINE WRAP			
End-of-Line Wrap ON	E _C &s0C	027 038 115 048 067	1B 26 73 30 43
End-of-Line Wrap OFF	E _C &s1C	027 038 115 049 067	1B 26 73 31 43
LINE TERMINATION			
CR→CR	E _C &k0G	027 038 107 048 071	1B 26 6B 30 47
LF→LF			
FF→FF			
CR→CR+LF	E _C &k1G	027 038 107 049 071	1B 26 6B 31 47
LF→LF			
FF→FF			
CR→CR	E _C &k2G	027 038 107 050 071	1B 26 6B 32 47
LF→CR+LF			
FF→CR+FF			
CR→CR+LF	E _C &k3G	027 038 107 051 071	1B 26 6B 33 47
LF→CR+LF			
FF→CR+FF			
ENHANCEMENT CONTROL			
Line-by-Line ON	E _C &k0E	027 038 107 048 069	1B 26 6B 30 45
Line-by-Line OFF	E _C &k1E	027 038 107 049 069	1B 26 6B 31 45

Print Features (Cont.)	Escape Sequence	Decimal Equiv.	Hex. Equiv.
SI/SO CONTROL			
Line-by-Line ON	E _C &k0F	027 038 107 048 070	1B 26 6B 30 46
Line-by-Line OFF	E _C &k1F	027 038 107 049 070	1B 26 6B 31 46
PRINT MODE			
Left to Right	E _C &k0W	027 038 107 048 087	1B 26 6B 30 57
Bidirectional	E _C &k1W	027 038 107 049 087	1B 26 6B 31 57
Right to Left	E _C &k2W	027 038 107 050 087	1B 26 6B 32 57
TEXT SCALE			
Text Scale OFF	E _C &k5W	027 038 107 053 087	1B 26 6B 35 57
Text Scale ON	E _C &k6W	027 038 107 054 087	1B 26 6B 36 57
PAPER INPUT CONTROL			
Eject Page	E _C &l0H	027 038 108 048 072	1B 26 6C 30 48
Feed from Tray	E _C &l1H	027 038 108 049 072	1B 26 6C 31 48
Envelope Feed	E _C &l3H	027 038 108 051 072	1B 26 6C 33 48
DOWNLOAD FONT MANAGEMENT			
Font ID #	E _C *c#D	027 042 099 #...# 068	1B 2A 63 #...# 44
ASCII Code #	E _C *c#E	027 042 099 #...# 069	1B 2A 63 #...# 45
Delete All	E _C *c0F	027 042 099 048 070	1B 2A 63 30 46
Delete Temp	E _C *c1F	027 042 099 049 070	1B 2A 63 31 46
Delete Last	E _C *c2F	027 042 099 050 070	1B 2A 63 32 46
Make Temp	E _C *c4F	027 042 099 052 070	1B 2A 63 34 46
Make Perm	E _C *c5F	027 042 099 053 070	1B 2A 63 35 46
Create Font # bytes	E _C)s#Wdata	027 041 115 #...# 087 data	1B 29 73 #...# 57 data
Download Chr. # bytes	E _C (s#Wdata	027 040 115 #...# 087 data	1B 28 73 #...# 57 data
Select Primary ID#	E _C)#X	027 040 #...# 088	1B 28 #...# 58
Select Secondary ID#	E _C)#X	027 041 #...# 088	1B 29 #...# 58
PRIMARY FONT DESIGNATORS			
Primary Default	E _C (#@	027 040 #...# 064	1B 28 #...# 40
Default Chr. Set	E _C (0@	027 040 048 064	1B 28 30 40
Current Primary Chr. Set	E _C (2@	027 040 050 064	1B 28 32 40
Default Font	E _C (3@	027 040 051 064	1B 28 33 40
SECONDARY FONT DESIGNATORS			
Secondary Default	E _C)#@	027 041 #...# 064	1B 29 #...# 40
Default Chr. Set	E _C)0@	027 041 048 064	1B 29 30 40
Default Primary Chr. Set	E _C)1@	027 041 049 064	1B 29 31 40
Current Primary Chr. Set	E _C)2@	027 041 050 064	1B 29 32 40
Default Secondary Font	E _C)3@	027 041 051 064	1B 29 33 40

Ordering Information

Standard unit includes:

1 DeskJet PLUS printer, 1 print cartridge, 1 external power supply, 1 acrylic paper tray cover, 1 font guide, and owner's manual. Interface cables must be ordered separately.

To order printer supplies or accessories:

Call your authorized HP dealer or call your local HP sales office listed in the telephone directory. For information regarding the dealer near you, call toll-free 1-800-752-0900. In Canada, 1-800-387-3867.

If your dealer is out of stock, call HP DIRECT for fast-ship service: Within the U.S. 1-800-538-8787; Canada (Toronto) 416-671-8383; (Ontario/Quebec) 1-800-387-3417; (Other Provinces) 1-800-387-3154;

Write or call: **Europe/Africa/Middle East:** (31) 20/547 999, Hewlett-Packard S.A., Central Mailing Department, P.O. Box 529, 1180 Amstelveen, The Netherlands; **Australia/New Zealand:** (03) 895-2895, China Resources Bldg., 26 Harbour Road, Wanchai, Hong Kong; **Latin America:** (905) 596-79-33, Latin American Region Headquarters, Monte Pelyoux Nbr. 111, Lomas de Chapultepec, 11000 Mexico, D.F. Mexico; **Japan:** (03) 331-6111, Yokogawa-Hewlett-Packard Ltd. 29-21, Takaido-Higashi 3-chome, Suginami-ku, Tokyo 168; **Elsewhere in the world:** Hewlett-Packard Company, Intercontinental Headquarters, 3495 Deer Creek Road, Palo Alto, CA 94304, U.S.A.

Supplies	Reorder Number	Supplies	Reorder Number
Print Cartridge—black ink	HP51608A	Soft Fonts cont.	
Fonts		*TmsRmn/Helv Soft Font	HP22708C
See Chapter 7 for the fonts contained in each font cartridge.		*Univers Condensed	HP22708D
Cartridges		Other Cartridges	
Courier	HP22706A	128Kbyte RAM Cartridge	HP22707A
Prestige Elite	HP22706B	*256Kbyte RAM Cartridge	HP22707B
Letter Gothic	HP22706C	Epson FX-80 Printer Emulation Cartridge	HP22707F
TmsRmn 8&10 point	HP22706D	Power Module	
TmsRmn 12 point	HP22706E	USA, Canada, 120V/50/60H	17122B
TmsRmn 14 point	HP22706F	Euro, 220V/50H	17222B
Helv 8&10 point	HP22706G	Japan, 100V/50H	17322B
Helv 12 point	HP22706H	U.K., 240V/50H	17422B
Helv 14 point	HP22706J	Switzerland, 220V/50H	17522B
Landscape Fonts	HP22707L	South Africa, 220V/50H	17622B
Presentations	HP22706M	Australia, 240V/50H	17722B
TmsRmn ASCII	HP22706P	Denmark, 220V/50H	17822B
Helv ASCII	HP22706Q	China, 220V/50H	17922B
*TmsRmn Collection	HP22706R	DeskJet PLUS printer dust cover	HP92250R
*Helv Collection	HP22706T	Manuals	
*TmsRmn Collection	HP22706U	DeskJet PLUS Owner's Manual	HP02277-90001
*Helv Headlines	HP22706V	DeskJet PLUS Foreign Language Manual	HP02277-90005
Soft Fonts		DeskJet Series Service Manual	HP02277-90010
TmsRmn/Helv Soft Font (Requires at least one HP22707A RAM cartridge)	HP22708A		

*For use in DeskJet PLUS printers only; specific driver necessary. A discussion of the differences between DeskJet and DeskJet PLUS fonts is located in Chapter 3.

Interface and Cable Requirements

HP SYSTEM SERIES MODEL	PRINTER I/O	HOST INTERFACE	HP CABLE #	
Vectra PC Family	Parallel	HP24540A Serial/Parallel Interface Card	24542D	
	Serial	HP24540A Serial/Parallel Interface Card	24542G	
Touchscreen PC	Serial	HP24541A Dual Serial Interface Card	24542G (using 9 pin connector)	
		Built-in	13242G or 17255M (using 25 pin connector)	
Portable PC	Serial	Built-in	13242G or 17255M	
Portable PC III	Parallel	Built-in	92221P	
	Serial	Built-in	24542D	
HP 3000 Series (3X, 4X, 5X, 6X, 7X, Micro 3000, Micro 3000 (XE, GM, LX)	Serial	HPD1004A Dual Serial Interface Card	24542G (using 9 pin connector) or 13242G (using 25 pin connector)	
		ADCC and ATP (25 Pin)	13242Y	
			92219G	
		ATP (3 Pin)	13242N	
HP Terminals 700/41, 700/92, 700/94 (2392A, 2393A, 2394A, 2397A)	Serial	Built-in	13242X	
	Serial	Built-in	40242G	
	Parallel	Opt 093 or HP40210P*	40242D	
	Serial	Opt 092 or HP40210R*	40242G	
NON-HP SYSTEM SERIES MODEL	PRINTER I/O	HOST INTERFACE	HP CABLE #	NON-HP CABLE #
Apple II, II+, IIe	Parallel	Apple II Parallel Interface Card or Grappler+	Not Available	Apple #590-0042
	Serial	Apple Super-serial Card	17355M	Apple #590-0037
Apple IIc	Serial	Built-in	92219N	Apple #590-0191
	Serial	Built-in	Single Cable Soln Dual Cable Soln:	Apple #590-0331 Apple #590-0169 and Apple #590-0341, or HP92219M and Apple #590-0341
IBM PC, PC / XT	Parallel	IBM Parallel Printer Adaptor	24542D	IBM Parallel Printer Cable
	Serial	IBM Asyn. Com. Adaptor	17255D or 13242H	Not available
IBM AT	Parallel	IBM Serial/Parallel Adaptor	24542D	IBM Parallel Printer Cable
	Serial	IBM Serial/Parallel Adaptor	24542G	
IBM PS/2	Parallel		24542D	
	Serial		17255D or 13242H	
IBM Convertible PC	Parallel		24542D	
	Serial		17255D or 13242H	

Specifications

Print Method	Plain paper drop-on-demand thermal inkjet printing
Print Speed	Letter Quality mode: 120 cps at 10 cpi Draft Quality mode: 240 cps at 10 cpi
Character Cell Structure	Letter Quality mode: 30 (h)×50 (v) Draft Quality mode: 15 (h)×50 (v)
Character Sets	Roman8, PC-8, PC-850, PC-8 (D/N), ISO 7-bit languages (Germany, France, Italy, Norway, Portugal, Sweden, Spain, U.K.), JISASCII, ASCII, ECMA-94 Latin 1, Legal, Line Draw, Math, PI.
Graphics	Full-page 75, 100, 150, 300 dpi
Standard Print Characteristics	Portrait Orientation – Pitch: 5, 10, 16.67, or 20, dependent on printer mode and font selection Point Size: 6, 12 Style: Upright, Italic Stroke Weight: Normal or Bold Typeface: Courier Landscape Orientation – Pitch: 10, 16.67, 20, dependent on printer mode and font selection Point Size: 6, 12, 24 Style: Upright Stroke Weight: Normal or Bold Typeface: Courier
Paper Size	U.S. letter (8½"×11"), U.S. legal (8½"×14"), European A4 (210×297 mm), #10 envelope (4½"×9½" inches), Paper weight: 60-90 g/m ² (16 to 24 pound)
Command Language and Emulation	HP Printer Command Language PCL Level 3, optional HP22707F Epson FX-80 Printer Emulation Cartridge
Paper Handling	Built-in sheet feeder (up to 100 sheets) Manual envelope feed
Keypad	ON LINE, PRIME, FF (Form Feed), UP and DOWN Arrow keys (Envelope Feed), FONT, MODE, RESET
Dual I/O Interface	Centronics parallel and RS-232-C serial

Power Requirements	Power modules 100 volts AC (+10%, -10%) 47.5-63Hz 120 volts AC (+10%, -10%) 47.5-63Hz 220 volts AC (+10%, -10%) 47.5-63Hz 240 volts AC (+10%, -10%) 47.5-63Hz Power consumption at 120 VAC, 60 Hz 8 watts maximum non-printing 25 watts maximum printing
Environmental	Maximum operating temperature: 5°C (41°F) to 40°C (104°F) Recommended operating temperature for best print quality: 15°C (59°F) to 35°C (95°F) Storage temperature: -40°C (-40°F) to 60°C (140°F) Humidity: 10-80% RH non-condensing Acoustics per ISO 7779 standard: Sound pressure level-L _{pa} : 46 dB(A) @ front bystander position, 44 dB(A) @ four bystander positions.
Dimensions	440mm (17.3") W×202mm (8") H×377mm (14.8") D
Weight	6.5 kg (14.3 lb)
Buffer Size	16 K bytes
Estimated Usage	50 pages per day average use
Reliability	60,000 page life. MTBF 20,000 hours. 2000 hours power-on and 12,000 printed pages per year. 50 pages per day average use.
Product Certifications	Safety Certifications – Power Module: UL, CSA, TUV or VDE, BSI, SEMKO, NEMKO, FEL, LCIE, SECV. Safety Certifications – Printer with Power Module: UL, CSA, TUV. Others not required. EMI Certifications – Printer with Power Module: FCC Class B when used with a Class B computing device (USA), VDE/FTZ level B (Germany), VCCI (Japan), SABS (South Africa).

Glossary

- ASCII** (American Standard Code for Information Interchange.) An 8-bit code that uses 7 bits to represent character data such as letters, punctuation, symbols, and control characters. The eighth bit can be used for parity.
- Baud Rate** Baud rate is the data transfer rate between the computer and the printer. The computer and the printer must be configured at the same baud rate. This rate can be set from between 300 and 19,200 baud depending on the type of computer used. The baud rate is set only if the serial interface is used.
- Buffer** A part of the computer's or printer's memory where data for input or output is held until it can be processed.
- Byte** A unit of information consisting of eight bits.
- Character Set** A character set is a unique sub-grouping of all the available characters in a font. Each character set is defined with a specific set of applications in mind. Character sets are also called symbol sets.
- Configuration** The way in which computer equipment is interconnected and set up to operate as a system. Hardware configuration can be changed by changing switch settings. Software configuration can be changed by entering new data or setup strings.

- Control Code** An instruction that tells the printer to perform a specific function.
- CPI** Characters per inch, or pitch. Describes the number of characters that will print within one horizontal inch.
- Downloading** Downloading refers to the process of transferring fonts stored on floppy discs from the computer to the printer's memory. These transferred fonts can be stored in the printer until it is turned off.
- Escape Character** The escape character E_C is a special character used to identify a printer command. This character is usually not a printable character. Instead it is used as a command code for the printer.
- Escape Sequence** Escape sequences are printer commands sent to change printing variables such as page orientation, margins, and font selection.
- Factory Default** Factory defaults refer to the settings that are programmed into the printer at the factory. These settings are in use unless you override them through the keypad or by sending escape sequences. Default settings are determined by mode function switch settings.
- Font** Fonts are collections of characters with a consistent size and style. Fonts can refer to the printer's internal fonts, or fonts stored in optional font cartridges and on soft font discs.
- Font Cartridge** Font cartridges contain additional fonts. Cartridges are installed in the printer so that a variety of fonts can be selected for printing.
- Font Characteristics** Font characteristics determine what a printed font looks like. These characteristics include orientation, character height, style, stroke weight, and typeface.

Hardware	Hardware refers to the host device such as a PC or terminal.
Interface Connector	The DeskJet PLUS printer comes with two interface connectors, serial and parallel, located on the bottom of the printer. The cable that attaches your computer and printer is connected here.
Internal Fonts	Internal fonts are the fonts resident in the printer when shipped. The printer's internal fonts are also called resident fonts.
Landscape Orientation	Landscape orientation refers to printing across the length of the page (as opposed to portrait orientation—printing across the width of the page). The term landscape is derived from pictures of landscape, which are usually horizontal in format.
OFF LINE	When the printer is OFF LINE, it will not accept data from the computer. The printer is taken OFF LINE by pressing the ON LINE key. When the ON LINE indicator is off, the printer is OFF LINE.
ON LINE	When the printer is ON LINE, it will accept data from the computer. The printer is ON LINE when the ON LINE key is pressed and the ON LINE indicator is lit.
Page Orientation	Orientation refers to the direction of print on the page. Printing across the width of a page is called portrait orientation printing. The word portrait comes from portraits of people, which are usually vertical in format. Printing across the length of a page is called landscape orientation printing. The term landscape is derived from pictures of the landscape, which are usually horizontal in format.
Paper Jam	When paper gets stuck somewhere along the paper path, this is referred to as paper jam.

Parity For RS-232-C, an error-checking method for information transfer between a computer and a peripheral device. Parity can be used to check the accuracy of a binary data byte (character).

Pitch Pitch refers to the number of characters printed in a horizontal inch.

Point Size Character height is defined in points, one point is $\frac{1}{72}$ nd of an inch. For instance, this text is printed using a 10-point font.

Portrait Orientation Portrait orientation refers to printing across the width of the page (letter-style). This is the opposite of landscape orientation, which is printing from across the length of the page. The term portrait is derived from portraits of people, which are usually vertical in format.

Prime To prepare the print cartridge for use by clearing any air bubbles that prevent ink flow through the nozzle.

Print Density Print density refers to the relative darkness of print on the page. Very dense print appears to be totally black. Less dense print looks lighter, and solid filled areas may not be totally black.

Printer Commands Printer commands are also called escape sequences.

Resolution A measure of image sharpness expressed as number of dots per inch (dpi).

Soft Font Soft fonts are fonts stored on floppy discs. These fonts can be transferred to the printer's memory and used the same way as cartridge or resident fonts.

Software Software refers to any word processing, programming or special application package that is installed in your computer system. Wordstar, Lotus 1-2-3, and BASIC are examples of software packages.

Spacing All fonts are designed with either fixed or proportional spacing. Using fixed spacing, all character cells are the same width. Using proportional spacing, character cell width depends on the character size.

Stroke Weight Stroke weight refers to a bold, medium, or light print density, or darkness.

Style Style, or character style, refers to either upright or italic print.

Top of Form The line of the page where printing can begin; the first line after the top margin.

Troubleshooting Troubleshooting refers to the process of pin-pointing the cause of a printer problem. The method used in this manual is to step through a list of symptoms and suggested remedies until the solution is found.

Typeface Typeface refers to the printed design of characters. For instance, Courier, Helv, and Letter Gothic typefaces all print characters of a different design.

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X

Xon/Xoff Handshaking (Serial)	5-6
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W

What Are Printer Drivers?	3-2
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