



# HP 2276X TABLE OF CONTENTS

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## 1

## PRODUCT INFORMATION

### A. PRODUCT DESCRIPTION

The HP DeskJet printer, model HP 2276A, is a thermal inkjet printer designed for quick, quiet, and reliable high resolution printing on plain paper. The HP DeskJet printer supports HP PCL Level III programming language and comes with RS-232-C and Centronics parallel interfaces. The HP DeskJet printer can print true letter quality text of 300 x 600 dpi (dots per inch) at a speed of 120 cps (characters per second) at 10 cpi (characters per inch) and draft quality text of 300 x 300 dpi at 240 cps. Full page (8 x 10.6 inch) raster graphics are available at 75, 100, 150, or 300 ppi (pixels per inch) selectable through software. The consumable 50 nozzle thermal inkjet cartridge is easily replaced by the user.

### B. ACCESSORIES

**Table 1-1. HP DeskJet Printer Supplies and Accessories**

PART NUMBER	PART/ACCESSORY DESCRIPTION
51608A	HP DeskJet Print Cartridge (Black)
02227-60030	Fuse Module
	Manuals
02276-90004	HP DeskJet Owner's Manual
02276-90002	HP DeskJet Service Manual
	Plug-In Font Cartridges *
22706A	Courier
22706B	Prestige Elite
22706C	Letter Gothic
22706D	TmsRmn 8 & 10 Point
22706E	TmsRmn 12 Point
22706F	TmsRmn 14 Point
22706G	Helv 8 & 10 Point
22706H	Helv 12 Point
22706J	Helv 14 Point
22706M	Presentations
22706P	TmsRmn ASCII
22706Q	Helv ASCII

**Table 1-1. Supplies and Accessories (Cont)**

PART NUMBER	PART/ACCESSORY DESCRIPTION
	<b>Other Plug-In Cartridges</b>
22707B	128K RAM Module
22707C	Demo Cartridge
22707E	Cartridge for Emulating FX-80 Printer
	<b>Power Modules</b>
9100-4503	U.S.
9100-4505	Europe
9100-4507	Japan
9100-4509	U.K.
9100-4519	China
9100-4522	Australia
9100-4524	Switzerland
9100-4526	South Africa
9100-4528	Denmark
	<b>I/O Cables</b>
	<b>HP 239X Terminals</b>
13242D	Parallel (or HP 40242D)
13242G	Serial (or HP 40242G)
13242G	HP Touchscreen Serial
92221P	HP Portable & Portable Plus
	<b>HP Vectra</b>
24542D	Using 24540A Parallel Inter. Card
24542G	Using Port 1 on 24541A Inter. Card
24542G	Using 24540A Serial/Par. Interface
13242G	Using Port 2 on 24541A Inter. Card
	<b>IBM PC Family &amp; Compatibles</b>
13242H	Using IBM Async. Comm. Adaptor
24542D	Parallel Interface Printer Cable
24542G	Using IBM AT & Serial/Parallel Adaptor
	<b>Apple</b>
590-0042**	Apple II & IIe Parallel Interface Cable
17355M	Apple II, II+, or IIe & Super-Serial Card
92219N	Apple IIc (or Apple P/N 590-0191-A)

\* For more information on fonts and font cartridges, See the HP DeskJet Font Guide (P/N 5954-9947) or the Cartridge Catalog (P/N 02276-90001).

\*\* Apple part number

## C. PRODUCT SPECIFICATIONS

### Note

Physical, electrical, and environmental specifications can be found in chapter 2, Environmental/Installation/PM



### Product Capabilities

Text Print Modes	Draft Letter quality (LQ)
Standard Character Spacing (characters per inch, cpi)	5, 10, 16.67, or 20 cpi
Burst Print Speed (characters per second, cps)	240 cps (draft @ 10 cpi) 120 cps (LQ @ 10 cpi)
Carriage Return Rate (inches per second, ips)	24 ips
Linefeed Rate	90 msec @ 6 lines/in.
Programming Command Set	HP PCL Level III Epson emulation (optional cartridge)
Default Character Sets	See table 3-1
Internal Fonts	Courier 12 pt Medium and bold @ 10 cpi Medium and bold @ 16.67 cpi Courier 6 pt Medium and bold @ 20 cpi
Text Resolution (dots per inch, dpi)	300 x 600 dpi (LQ) 300 x 300 dpi (draft)
Graphics Resolution	See table 1-2
Typical Printer Usage	25 pages/day (average) 50 pages/day (maximum)
Mean Time Between Failures (MTBF)	20,000 hours
Mechanism Life	60,000 pages

**Table 1-2. Graphics Resolution (pixels per inch, ppi)**

Horizontal	Vertical	Dots Per Pixel
75 ppi	75 ppi	16
100 ppi	100 ppi	9
150 ppi	150 ppi	4
300 ppi	300 ppi	1

## Print Cartridge

Type	Thermal inkjet (consumable)
Cartridge Life *	
LQ Mode	525,000 characters
Draft Mode	1 million characters
# of Nozzles	50
Vertical Resolution	300 dpi
Dot Size.	0.0030 in. to 0.0050 in. diameter
*Print cartridge life using COUR 10 (12 point height). Actual cartridge life will differ depending on the use of the printer.	

## Paper Handling

### Note

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For more paper specifications, read "Paper Specifications" in appendix A of the service manual.

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Paper Paths	Cut sheet Envelope (single feed manual)
Page Size	Letter (8 1/2 in. x 11 in.) Legal (8 1/2 in. x 14 in.) A4 (210 mm x 297 mm) #10 envelope (4 1/8 in. x 9 1/2 in.)
Printable Area	See appendix A of the service manual.
In Tray Capacity	100 sheets (20 lb paper)
Output Tray Capacity	25 sheets
Paper Slew Rate (inches per second, ips)	2 ips
Paper Weight	16 to 24 lb (60 to 90 grams/sq. m)
Paper Skew	.006 in./in.

### Note

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The HP DeskJet 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.

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## Interface

Interfaces	RS-232-C Centronics parallel
Buffer Size	16 Kbyte
RS-232-C Specs	(See chapter 3 for switch settings.)
Baud Rate	1200, 2400, 9600, or 19.2K
Stop Bits	1
Word Length	7 or 8 bits
Parity	Odd, even, or none

## D. CONTROL PANEL LIGHTS AND BUTTONS

This section explains the functions of the HP DeskJet control panel. Control panel lights and buttons select and indicate font, print quality, and printer status.

### Note

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If all control panel lights flash simultaneously or in an alternating pattern, a printer failure occurred. See chapter 5 for possible causes for these control panel light indications.

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### BUSY Light

If the BUSY light is on, the printer is active and will not respond to the FF, FONT, and MODE buttons. If the BUSY and ON LINE lights are flashing, the printer detects a paper jam. (The printer detects a paper jam when it tries to eject a current sheet of paper from the printer and the paper sensor indicates the paper is still in the printer.)

### Forward Arrow Button

The forward arrow button moves the paper toward the output tray to position the print cartridge down the page. Pressing the forward and back arrow buttons simultaneously loads an envelope from the envelope guides on the output tray.

### Back Arrow Button

The back arrow button moves paper in, away from the output tray, to position the print cartridge closer to the top of the page. Pressing the forward and back arrow buttons simultaneously loads an envelope from the envelope guides on the output tray.

### PRIME Button

The PRIME button causes the printer to activate the print cartridge. To activate the print cartridge, the cartridge is positioned over the service station and the printer draws ink down into the print cartridge nozzles. Read "Priming Pump" and "Service Station" in chapter 5 of the service manual for more information on the priming process. Always activate a new print cartridge to assure the printer is ready to print on demand.

The PRIME button may also correct problems such as light characters, dots missing, etc. If the print cartridge appears to be running out of ink, press the PRIME button. For more printout troubleshooting information, read "Printout Missing Dots" in chapter 8.



Pressing the PRIME button while the printer is printing will reactivate the print cartridge as follows:

1. Ejects the current page to the output tray.
2. Positions the print cartridge on the service station sled.
3. Activates the print cartridge by drawing ink/air from the nozzles toward the absorber pad mounted under the printer mechanism on the base.
4. Loads a new sheet from the in tray and continues printing. The printer accepts more data during the reactivating process until the buffer is full. There are no indicator lights associated with the PRIME button.

### RESET Button

The RESET button clears the printer buffer, sets the printer back to the default configuration switch settings, and sets the printer on-line. The RESET button does not affect any fonts that have been downloaded.

If you desire to restart rather than resume the printing process:

1. Press the ON LINE button prior to pressing the RESET button to set the printer off-line.
2. Halt the host or software application from sending more data to the printer.
3. With the host not sending data to the printer, press the RESET button.
4. Begin the printing process again by sending the print commands from the host or software application.

Pressing the RESET button while the FONT or FF button is pressed invokes the printing self-test. There are no indicator lights associated with the RESET button.

### Form Feed (FF) Button

The FF button loads paper from the in tray to the top-of-form position if paper is not loaded in the printer (see note). If paper is loaded, the FF button ejects the sheet to the output tray.

Pressing the RESET button while the FONT or FF button is pressed invokes the printing self-test. There are no indicator lights associated with the FF button.

#### Note

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Paper is not considered "loaded" by just being placed in the in tray. The paper must be picked off of the in tray and in position for printing to be considered "loaded".

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## FONT Button and Lights

The FONT button allows the user to select fonts from the control panel, including fonts from installed font cartridges. The BUSY light must be off to select fonts from the FONT button. Font lights on the control panel and plug-in cartridges indicate the presently selected font. The control panel light next to the red bars (double pitch light) indicates the selected font will print at twice the normal pitch, doubling the number of characters per inch of print. The double pitch selection reduces the character height of proportional spaced fonts in half. Fixed pitch fonts (that is, 10 cpi, 12 cpi, etc.) remain the same height with the double pitch light on or off.

For example, if you select COUR 10 (Courier 12 point at 10 characters per inch), the printout will be 20 characters per inch if the double pitch light is lit. The characters remain 12 points tall since COUR 10 is a fixed pitch font.

Pressing the RESET button while the FONT or FF button is pressed invokes the printing self-test.

## MODE Button and Lights

The MODE button selects between letter quality and draft print. Advantages of using draft mode include faster print speed and longer print cartridge life (number of characters printed per cartridge). Letter quality mode is slower but produces true letter quality print. The BUSY light must be off for the MODE button to operate.

## ON LINE Button and Light

The ON LINE button toggles the printer between an off-line and on-line mode. The printer prints only when the printer is on-line (ON LINE light on). Data is received until the buffer is full, even with the printer off-line. If the ON LINE light is flashing, the printer detects a paper-out condition. (The printer tried to load paper or an envelope and the printer detects no paper at the paper sensor.) If the ON LINE and BUSY lights are flashing, the printer detects a paper jam. (The printer detects a paper jam when it tries to eject a current sheet of paper from the printer and the paper sensor indicates the paper is still in the printer.)

The ON LINE button is also used to recover from an out-of-paper condition (ON LINE light flashing). After paper is loaded, press the ON LINE button to resume printing.

## E. SUPPORT STRATEGY

HP DeskJet printers are installed by the user. Getting started instructions are found in the HP DeskJet Printer Owner's Manual, P/N 02276-90004.

The printer PCAs are serviced on an assembly level basis. The mechanism can be replaced as an entire assembly, to subassemblies, or to specific parts listed in chapter 8. Chapter 5 contains self-test information and chapter 4 contains other troubleshooting information to determine the cause of a problem.

HP product support agreements available include the following:

- Customer Return/Scheduled On-Site (FMMC).
- Next Day On-Site (PMMC).
- Priority On-Site (WMMC).
- Standard System (SMMC).



## F. TEST EQUIPMENT AND TOOLS

The following tools and equipment are recommended for proper HP DeskJet printer maintenance and repair:

- Posi-drive screwdriver.
- Jewelers screwdriver.
- Flat blade screwdriver.
- DMM.
- Fuse Module (P/N 02227-60030).
- Tissue.
- Swabs.

## G. PRINT CARTRIDGE TIPS

1. Do not use a print cartridge that has expired. If the date has expired, the print cartridge may cause print quality problems or missing dots. See "Print Cartridge Expiration Information" in chapter 4.
2. Keep the print cartridge in the sealed container until you are ready to install it in the printer. Then install promptly.
3. Do not turn the printer off with the print cartridge out of the "park" position (right end of the carriage path). When in the park position, the printer service station cap seals the print cartridge nozzles from exposure to air, avoiding the ink from drying in the print cartridge nozzles.
4. Do not leave a print cartridge removed from its container and out of the printer.
5. Do not allow the print cartridge contacts and nozzles to touch any surface or object, including your fingers. Skin oil and dust can cause print quality or missing dot problems.
6. Store print cartridges at room temperature.

# 2

## ENVIRONMENTAL/ INSTALLATION/PM

### A. PHYSICAL SPECIFICATIONS

<b>Product Dimensions</b>	
Width	440 mm (17.3 in.)
Height	202 mm (8.0 in.)
Depth	377 mm (14.8 in.)
<b>Product Weight</b>	
	6.5 kg (14.3 lb)
<b>Packaged Dimensions</b>	
Length	495 mm (19.5 in.)
Width	295 mm (11.63 in.)
Height	425 mm (16.75 in.)

### B. ELECTRICAL SPECIFICATIONS

#### Power Module

<b>Input Voltage</b>	100 or 120 or 220 or 240VAC (+/- 10%) (Voltage power module dependent)
<b>Frequency</b>	50 or 60 Hz (+/- 3 Hz)
<b>Output (open circuit)</b>	
Nominal	20 VAC, 50 or 60 Hz
Current	2 amps
Voltage Range	18 to 27 VAC

#### Printer with Power Module

<b>Transient Spike Immunity</b>	
Amplitude	1 000 V
Pulse Width	0.050 seconds
Rise Time	0.0012 seconds
<b>Surge Immunity</b>	
Amplitude	10% above nominal
Duration	0.500 seconds
<b>Dropout Carry-Thru Time @ Min. Line</b>	
	0.010 seconds
<b>Power Consumption</b>	
Non-printing	10 VA
Printing	18 VA

## C. ENVIRONMENTAL SPECIFICATIONS

Temperature	
Printer	
Operating	5 to 40 deg C
Non-operating	-40 to 70 deg C
Media	10 to 40 deg C
Relative Humidity	
Printer	
Operating	5% to 80% RH @ 30 deg C
Non-operating	95% RH @ 65 deg C
Media	10% to 70% RH @ 30 deg C
Altitude	
Printer	
Operating	0 to 4600 meters (15,000 ft)
Non-operating	0 to 15,300 meters (50,000 ft)
Print Cartridge	
Operating	0 to 4600 meters (15,000 ft)
Non-operating	0 to 7300 meters (50,000 ft)
Electro-Static Discharge (ESD)	
No soft failures	0 to 5000 V
2.5% or fewer soft failures	< 15,000 V
No hard failures	< 25,000 V
Mechanical Vibration	
Frequency Range	5 to 500 Hz
Operating Random	Approx 0.21 G rms
Non-operating	
Random	Approx. 2.09 G rms
Swept Sine	0.5 G (0 - Peak)
Heat Dissipation	22 Watts
Acoustic Measurement (@ 1 m bystander position)	
Sound Pressure	48dB(A)

## D. PRODUCT SAFETY & EMI STANDARDS

The HP DeskJet printer complies with the following product standards:

Safety	UL 478 CSA 22.2-154M/1983 IEC 380 IEC 435 TUV GS(VDE 0806)
EMI	VDE Level B FCC Class B per FCC Rules, Part 15, subpart J when used with a Class B computing device VCCI Class 2 SABS approved

## E. ITEMS INCLUDED

HP DeskJet printers are shipped with the following items:

- Power module, part number country dependent (see table 1-1 for part numbers).
- Print cartridge (Black), P/N 51608A.
- Output tray assy, P/N 02276-60068.
- Output cover, P/N 02276-40075.
- Owners manual, P/N 02276-90004.



## F. CLEANING

### Caution

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Do not use platen cleaners or alcohol to clean HP DeskJet printers.

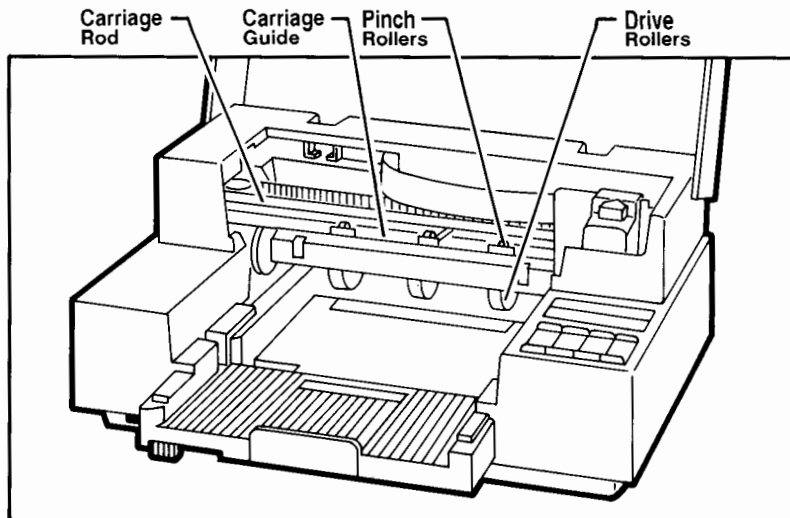
---

### Overall

The printer's interior and exterior should be examined for smudges, dust, etc. Clean the exterior with a soft cloth moistened with mild detergent and water. Examine the interior areas of the printer with the access cover open. Accumulations of paper or lint should be carefully removed by brushing the loose material onto a cloth, or by using a vacuum cleaner.

### Absorber Pad

Replace the absorber pad if it is soaked with ink. The absorber pad is located on the right rear corner of the base, below the mechanism. See removal procedure 6.D in chapter 6 of the service manual for removing the absorber pad.



**Figure 2-1. Cleaning the HP DeskJet Printer**

### **Drive Rollers and Pinch Rollers**

Clean the drive rollers by pressing the forward or back arrow button and wiping the rollers with a tissue moistened with water only. Clean the pinch rollers by pressing the forward or back arrow button and wiping the pinch rollers with a swab moistened with water only. Do not use platen cleaner on the pinch rollers.

### **Carriage Rod**

The carriage rod can be cleaned with a dry clean cloth. Do not lubricate the carriage rod. The oil would mix with the paper lint to form a paste, hindering the carriage movement. Lubricants may also react with the carriage material, possibly increasing wear.

### **Carriage Guide**

Ink built-up on the front edge of the carriage guide can hinder carriage movement. Remove ink from the carriage guide with a tissue moistened with water.

### **Service Station Spittoon**

Clean the service station spittoon with a cotton swab if the spittoon contains any significant amount of ink.

# 3

## CONFIGURATION

### A. HP DESKJET SWITCHES

The HP DeskJet printer contains two banks of 8 dip switches. These switches, updated whenever the BUSY light is off, define the default feature and interface configuration. Dip switch settings can be overridden by escape sequences or control panel selections. The new parameter is retained until a control panel button or escape sequence modifies the setting or power is cycled. The factory default setting is with all switches down.

The left bank of dip switches is identified as Bank A and the right bank of dip switches is Bank B. Switches on each bank are numbered 1 to 8, left to right respectively. Therefore, a switch is identified by a letter (A or B) followed by a number (1 to 8). For example, the second switch from the left on the left bank is A2.

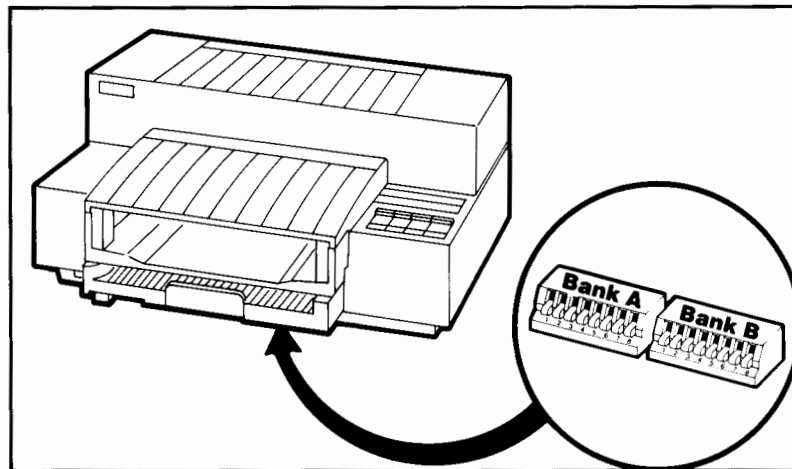


Figure 3-1. Dip Switch Identification

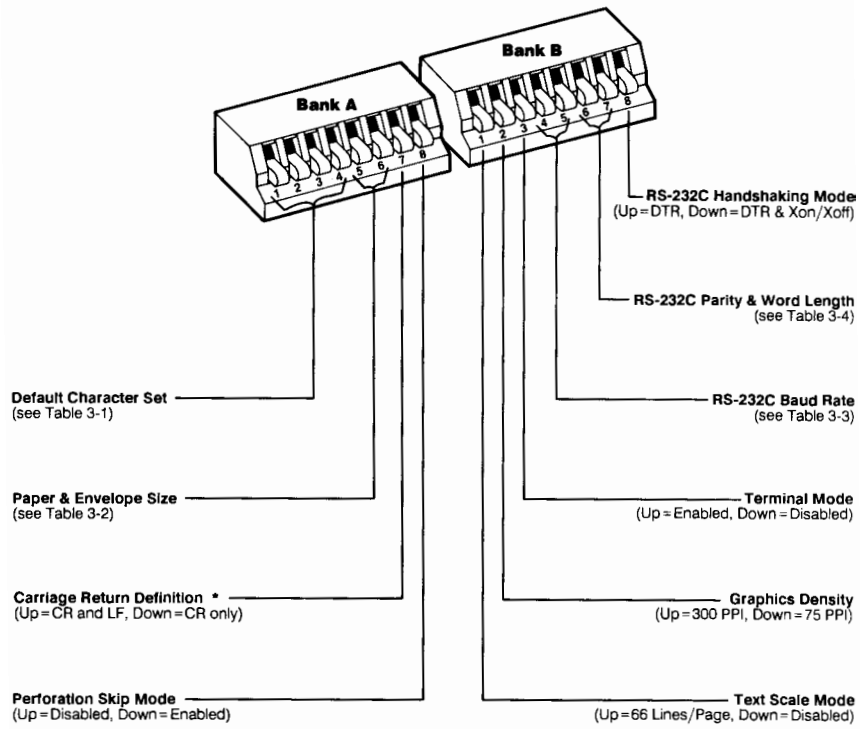
#### Note

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HP DeskJet switch settings for specific hosts are shown later in this chapter. See "Host Configurations".

---





\* CR = Carriage Return, LF = Line Feed

**Figure 3-2. HP DeskJet Switch Configuration**

**Note**

**There are no switches for configuring the parallel Centronics interface.**

**Table 3-1. Default Character Set Selection**

CHARACTER SET	SWITCH A1	SWITCH A2	SWITCH A3	SWITCH A4
PC-8	Down	Down	Down	Down
Roman8	Down	Down	Down	Up
PC-8 D/N	Down	Down	Up	Down
ISO United Kingdom (04)	Down	Down	Up	Up
ISO Germany (21)	Down	Up	Down	Down
ISO France (69)	Down	Up	Down	Up
ISO Italy (15)	Down	Up	Up	Down
ISO Norway (60) V.1	Down	Up	Up	Up
ISO Sweden (11) for names	Up	Down	Down	Down
ISO Spain (17)	Up	Down	Down	Up
ASCII (06)	Up	Down	Up	Down
ISO Portugal (16)	Up	Down	Up	Up
JIS ASCII (14)	Up	Up	Down	Down
ECMA 94 Latin 1	Up	Up	Down	Up
Legal	Up	Up	Up	Down
Default Set to Front Cartridge	Up	Up	Up	Up

**Table 3-2. Paper & Envelope Size**

PAPER & ENVELOPE SIZE	SWITCH A5	SWITCH A6
US Letter (8 1/2 in. x 11 in.)	Down	Down
A4 (210mm x 297mm)	Down	Up
US Legal (8 1/2 in. x 14 in.)	Up	Down
Envelope (4 1/8 in. x 9 1/2 in.)	Up	Up



**Table 3-3. RS-232-C Baud Rate**

BAUDRATE	SWITCH B4	SWITCH B5
9600 Baud	Down	Down
19.2K Baud	Down	Up
2400 Baud	Up	Down
1200 Baud	Up	Up

**Table 3-4. RS-232-C Parity & Word Length**

PARITY	WORD LENGTH	SWITCH B6	SWITCH B7
None	8 Data Bits	Down	Down
Odd	7 Data Bits	Down	Up
Even	7 Data Bits	Up	Down
None	8 Data Bits	Up	Up

## B. ACTIVE INTERFACE

The HP DeskJet printer has RS-232-C serial and Centronics parallel interfaces. Only one interface can be active (able to accept data) at a time. The first interface to receive data after power-on becomes the active interface. If one interface is active, data sent to the other interface is ignored. If data is sent to the inactive interface at least one second after the buffer is clear of data from the active interface, the inactive interface becomes the active interface.

## C. INTERFACE CONNECTOR PIN-OUTS

The interface cable, connecting the HP DeskJet printer to your computer, is dependent on the computer. The cable is not standard equipment and must be purchased separately. See table 1-1, HP DeskJet Printer Supplies and Accessories.

### RS-232-C Pin-Out

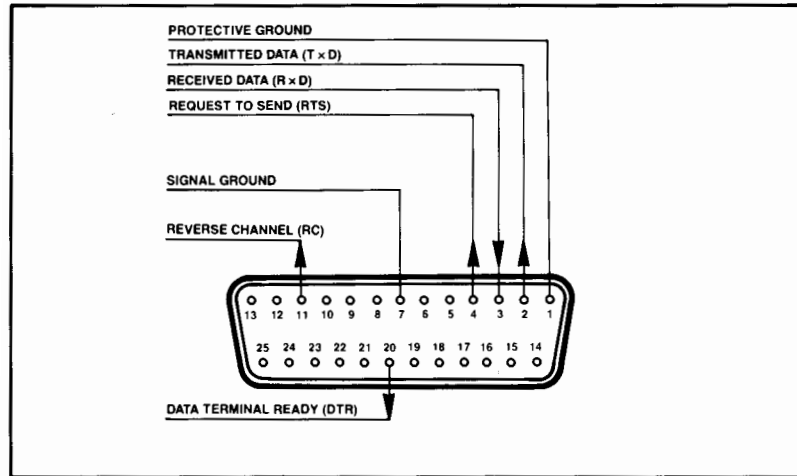


Figure 3-3. RS-232-C I/O Connector

### Centronics Parallel Pin-Out

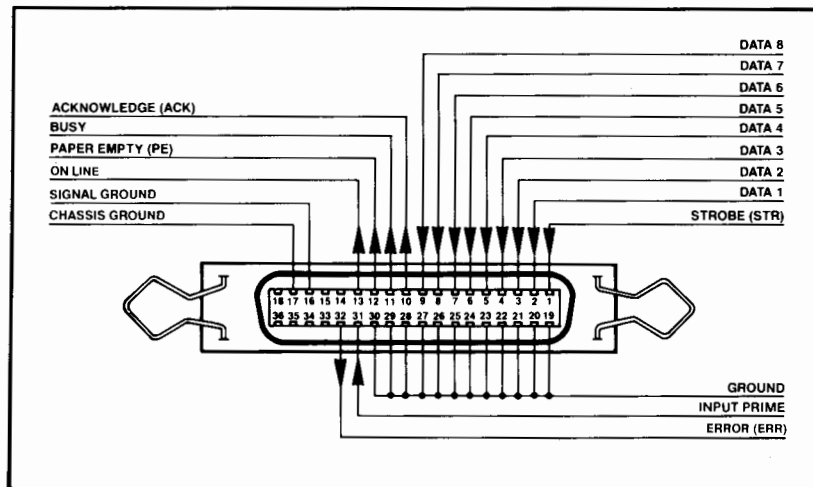


Figure 3-4. Centronics Interface Connector

## D. HOST CONFIGURATIONS

### HP Vectra PC To The HP DeskJet Printer

#### HOST SET UP:

Follow the instructions below for the type of interface you will be using with your DeskJet 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:

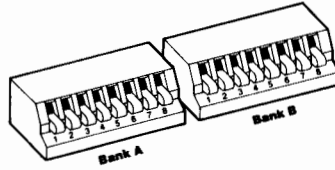
**\*1. MODE COM1:96,N,8,1,P** then press the **Enter** key.  
This command sets the serial communications at 9600 baud, no parity, 8 data bits, 1 stop bit and continuous retry on all timeouts.

**\*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 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 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 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 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).

**Terminal Config. Screen**

FULL DUPLEX HARDWIRED Port 2

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

- 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.

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

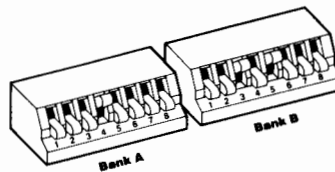
**TERMINAL CONFIGURATION** Required for HP Line Draw

To print using the HP Line Draw Character Set, a DeskJet 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:

- Press **confg** keys (f8), then **terminal confg** (f5).
- 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	<b>Yes</b>	ESC Xfer (N)	<b>Yes</b>	Alternate Set	<b>Line(B)</b>
--------------	------------	--------------	------------	---------------	----------------
- 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.
- Return to P.A.M. by holding down the **Shift** key and pressing the **Stop** key.

**PRINTER SETTINGS:**

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

**TO VERIFY:**

From P.A.M.

- Select **MSDOS COMMANDS**, then press **Start Applic** (f1).
- 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.
- Type **exit** and press **Return**. This will exit MS-DOS and return you to P.A.M.



## HP Portable To The HP DeskJet 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.

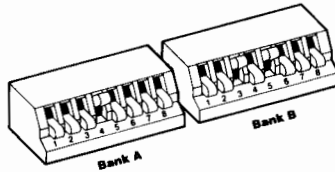
Serial port:	RS-232
Serial baud rate:	19200
Serial word length:	8
Serial stop bits:	1
Serial parity:	None
Serial XON/XOFF pacing:	On
Serial CTS line:	Ignore
Serial DSR line:	Ignore
Serial DCD line:	Ignore

#### 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:

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 Printer

### HOST SET UP:

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

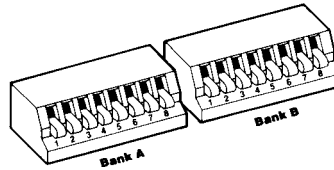
This command sets the serial interface to 9600 baud, no parity, 8 data bits, 1 stop bit, and continuous retry on all timeouts.

■ **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 Printer

### HOST SET UP:

The following instructions provide the necessary information to set up a DeskJet 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: HP 13242D or HP40242D

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

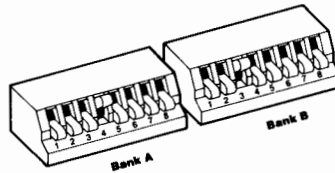
#### Serial Cable: HP 13242G or HP40242G

To configure the terminal's port 2 to work with your DeskJet 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**

To print using the HP Line Draw Character Set a DeskJet font cartridge is required. DeskJet 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.

## HP2393A and HP2397A To The HP DeskJet Printer

### HOST SET UP:

#### Serial Interface: Cable HP 13242G or HP40242G

#### Parallel Interface: Cable HP 13242D or HP40242D

To configure the terminal to work with your HP DeskJet printer, press the key labeled **confg keys** (f8), then the **ext dev confg** key (f4). When you press the **ext dev confg** 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
		SRRInvert	No	DM(CC)Xmit	No
				Protocol	HP

#### GRAPHICS PRINTOUT

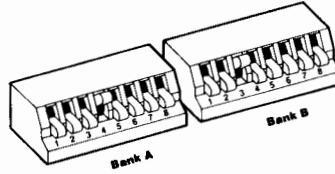
Contents	B&W	Invert B&W	Yes	Image Size	X1	Layout	Vert
----------	-----	------------	-----	------------	----	--------	------

#### 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:**

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 font cartridge is required. The DeskJet 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 printer.



## HP700/41 Terminal To The HP DeskJet Printer

### HOST SET UP:

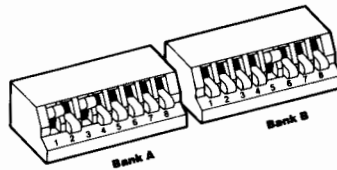
The following instructions provide the necessary information to set up a DeskJet printer and an HP700/41 Terminal using the standard RS-232 port.

#### Cable: HP40242G

To configure the terminal's port 2 to work with your DeskJet 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 19.2K	G DTR	H 8 Bits	I None	J Off

### PRINTER SETTINGS:



(These switch settings select the ASCII character set, serial datacom, 19.2K 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**.

**(Intentionally Blank)**



**(Intentionally Blank)**

# 4

## TROUBLESHOOTING

### A. TROUBLESHOOTING TOOLS

The following tools are recommended for troubleshooting HP DeskJet printers:

- Cotton swabs.
- Tissue.
- Fuse module, P/N 02227-60030.
- DMM.



### B. PRINT CARTRIDGE EXPIRATION INFORMATION

The HP DeskJet print cartridge life is specified as follows:

- One year sealed in the print cartridge container.
- 90 days in the printer.

Ink will evaporate through the nozzles, reducing the print cartridge life, if the print cartridge is left out of the sealed container and not capped by the printer service station.

#### Note

---

For tips on maintaining the print cartridge life, read "Print Cartridge Tips" in chapter 1.

---

The print cartridge life can be determined three ways:

1. The print cartridge box indicates a "Use Before" date consisting of four digits. The first and second digits identify the month. The third and fourth digits identify the year. For example "Use Before 1188" indicates to use the print cartridge before November, 1988.
2. The print cartridge container indicates a "Use Before" date.
3. A manufacturing code of eight characters (letters and numbers) is printed on the print cartridge above the contacts. This manufacturing code identifies when the print cartridge was produced. To determine when the print cartridge was manufactured, read the five numbers in the manufacturing code:
  - A. The first number (third character from the left) identifies the year. For example, a "7" indicates the print cartridge was manufactured in 1987.

- B. The second and third numbers (fourth and fifth characters from the left) identify the month. For example, an "11" indicates the print cartridge was produced in the month of November.
- C. The fourth and fifth numbers (six and seventh characters from the left) identify the day the print cartridge was manufactured.

From the manufacturing code, you can determine the expiration date:  
(Expiration Date = Manufacturing Date + One Year)

## C. PRINT QUALITY PROBLEMS

This section gives possible causes for print quality problems. If your printout is missing dots, read "Printout Missing Dots" in this chapter.

If your HP DeskJet printout contains faint print, fuzzy print, inconsistent characters, or fading print, check the following:

1. Has the date on the print cartridge expired? If so, replace the print cartridge.
2. Reactivate the print cartridge by pressing the PRIME button. If the print quality returns, no further troubleshooting is necessary.
3. The print quality may be caused by the paper.
  - A. Verify the paper IS NOT inkjet paper. Even though the HP DeskJet is an inkjet printer, it has been designed to work with most types of plain paper. Do not use inkjet paper with the printer.
  - B. Verify the paper meets the listed paper specifications.
  - C. Turn the in tray paper stack over and try printing on the other side of the paper. If the print quality returns, no further troubleshooting necessary.
  - D. Even though some paper may meet the listed paper specifications, the paper may not be compatible with the HP DeskJet printer. Try different paper.
4. The print cartridge may be running out of ink. A print cartridge running out of ink will initially exhibit blotchy printing in graphics. As the print cartridge continues to run out of ink, the blotchy printout will be seen in text. Replace the print cartridge and press the PRIME button.

### Note

---

Read "Print Cartridge Tips" in chapter 1 for suggestions on maintaining HP DeskJet print cartridges.

---

## D. PRINTOUT MISSING DOTS

This section explains how to determine the cause for missing dots on a printout from an HP DeskJet printer.

### Note

---

If you are familiar with the procedure listed in this section, you may use the print cartridge troubleshooting tree found in chapter 9 as a quick reference.

---

If the printout is missing one or more rows of dots, the print cartridge probably has one of the following problems:

1. The print cartridge expired. (See "Print Cartridge Expiration Information" in this chapter.)
2. The print cartridge is not making good contact with the printer carriage.
  - A. The cartridge is not pressed securely against the carriage contacts.
  - B. Dirty contacts on the print cartridge or printer carriage.
3. The print cartridge requires reactivation.
4. The print cartridge ran out (or is running out) of ink.
5. The print cartridge is faulty.
6. The printer is faulty.

To determine the cause for missing dots:

1. Has the date on the print cartridge expired? If so, replace the print cartridge.
2. Turn the printer on and press the PRIME button.
3. Invoke the printing self-test by pressing and releasing the RESET button while the FF or FONT button is pressed.
  - A. If the printing self-test printout is no longer missing dots, no further troubleshooting is necessary.
  - B. If the printing self-test printout is still missing one or more rows of dots, the self-test printout will aid in determining the fault.

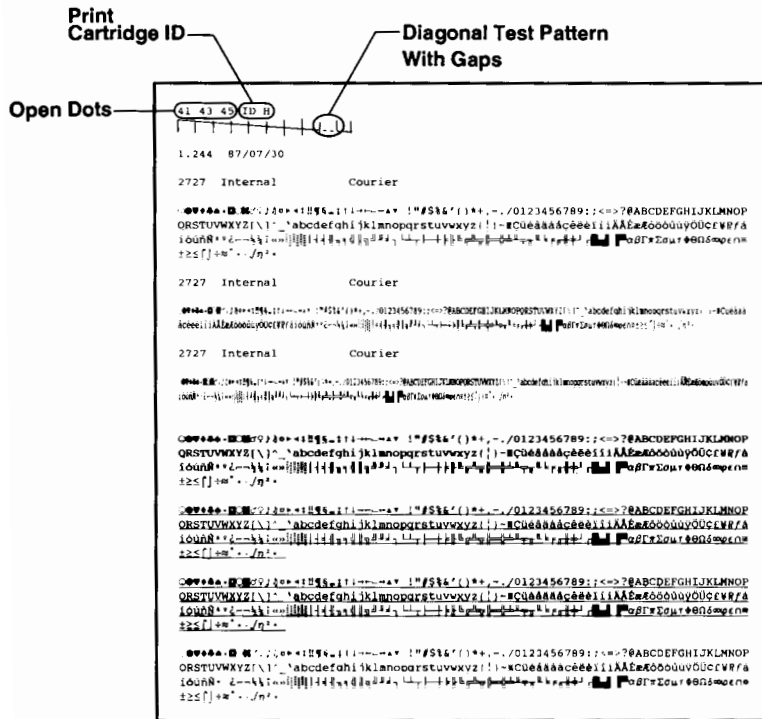
The printing self-test will identify "open" dots (if any) just before the print cartridge ID (see figure 4-1). Immediately after the cartridge ID, the printer prints a diagonal test pattern using all fifty dots. If a dot is missing, a space will exist on the diagonal test pattern where the dot should have been printed. Vertical lines along the diagonal test pattern help identify the missing dot.

If dots are missing on the diagonal test pattern and the corresponding number is NOT printed before the print cartridge ID, the print cartridge is faulty or running out of ink.

4. Remove the print cartridge and firmly tap the side of the print cartridge on a table edge. Reinstall the print cartridge but DO NOT press the PRIME button. Invoke the printing self-test.

#### 4-4 Troubleshooting 2276X

- A. If the printout is no longer missing dots, the print cartridge had bubbles in the nozzles. Bubbles can occur from a faulty printer service station. Replace the service station.
- B. If the printout is still missing dots, replace the print cartridge and press the PRIME button again.



**Figure 4-1. Self-Test Print Cartridge Diagnostic**

If dots are missing on the diagonal test pattern AND the corresponding number is printed prior to the print cartridge ID, an open circuit exists for that particular dot. An open circuit can be caused by any of the following:

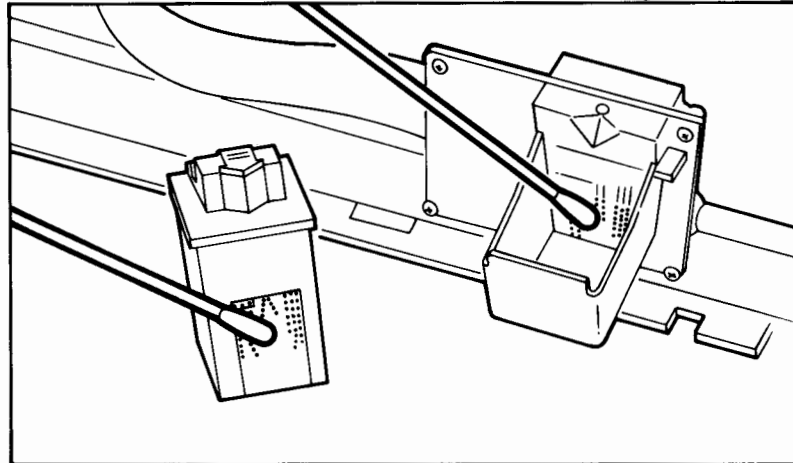
- The print cartridge is not fully seated against the carriage.
- Dirty print cartridge or carriage contacts.
- A resistor in the print cartridge is open.
- Flex head cable or PCA open circuit.

Use the following procedure to troubleshoot missing dots with an open circuit identified in the printing self-test:

### Note

For instructions on replacing the carriage assembly, head driver PCA, or logic PCA, read chapter 6 of the service manual.

1. Remove the print cartridge from the printer. Clean the print cartridge contacts and printer carriage contacts using a swab moistened with water. **DO NOT CLEAN THE PRINT CARTRIDGE NOZZLES.**



**Figure 4-2. Cleaning the Contacts**

2. Reinstall the print cartridge, making sure the cartridge is fully seated.
3. Disconnect and reseat the flex head cable in the head driver PCA connectors.
4. Invoke the printing self-test.
  - A. If the printing self-test printout is no longer missing dots, the print cartridge or flex head cable was not making good contact. No further troubleshooting is necessary.
  - B. If the printing self-test is still missing dots, continue on to step 5.
5. Replace the print cartridge.
6. Press the PRIME button.

7. Invoke the printing self-test.
  - A. If the self-test printout is no longer missing dots, the print cartridge was faulty. No further troubleshooting is necessary.
  - B. If the self-test printout is still missing one or more rows of dots, one of the following printer parts or assemblies is probably at fault:
    - Carriage assembly.
    - Head driver PCA.
    - Logic PCA.
    - Logic cable.

Repair the printer and verify proper printing by invoking the printing self-test.

## E. FUSE MODULE

The HP DeskJet uses a power module to supply power to the printer. THESE POWER MODULES CONTAIN NON-REPLACEABLE FUSES. Therefore, we recommend connecting the fuse module, P/N 02227-60030, between the power module and the printer before troubleshooting the HP DeskJet printer.

The fuse module serves two purposes:

1. Protects the power module non-replaceable fuses from inadvertent danger while troubleshooting the printer.
2. Indicates whether the voltage out of the power module is ok.

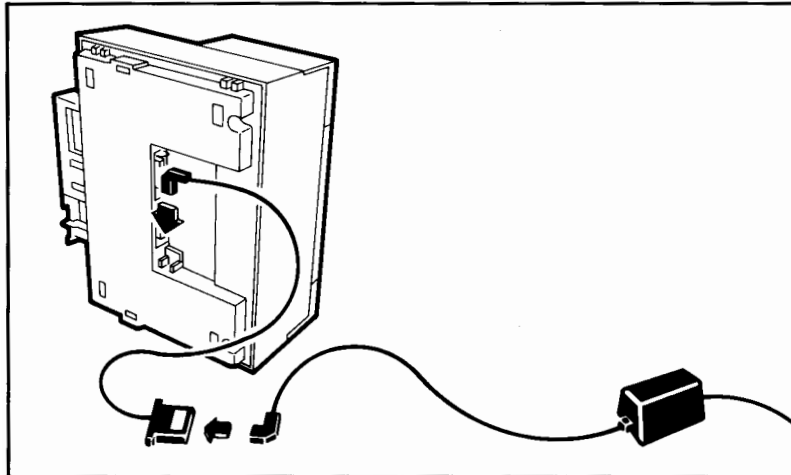


Figure 4-3. Connecting the Fuse Module Accessory

LEDs on the fuse module are lit when the power module is plugged into a powered receptacle, the power module and its non-replaceable fuses are good, and fuse module replaceable fuses are good. If the HP DeskJet printer causes one of the fuses in the fuse module to blow, the corresponding LED will go out.

## F. OVERALL TROUBLESHOOTING

This section provides specific information for the overall troubleshooting of HP DeskJet printers. Use the overall troubleshooting tree (figure 9-2) in conjunction with the following information to troubleshoot HP DeskJet printers.

### Power Supply PCA Output

Table 4-1 lists the power supply PCA output voltages. These voltages are measured at the power supply output connector with the power supply PCA connected to the logic PCA.

**Table 4-1. Power Supply PCA Output**

Power Supply Output Connector	Nominal Voltage	Min.	Max.	Nominal Current
Pin 1	Gnd (22 V)	----	----	
Pin 2	+22 V	20.0 V	24.0 V	0.350 A
Pin 3	Gnd (19.8 V)	----	----	
Pin 4	+19.8 V	19.4 V	20.2 V	0.245 A
Pin 5	Gnd (Logic)	----	----	
Pin 6	-12 V	-12.5 V	-10.0 V	0.020 A
Pin 7	+12 V	10.0 V	12.5 V	0.040 A
Pin 8	+5 V	4.95 V	5.25 V	1.0 A
Pin 9	25 V*			

\* Unregulated



### Power Module Output

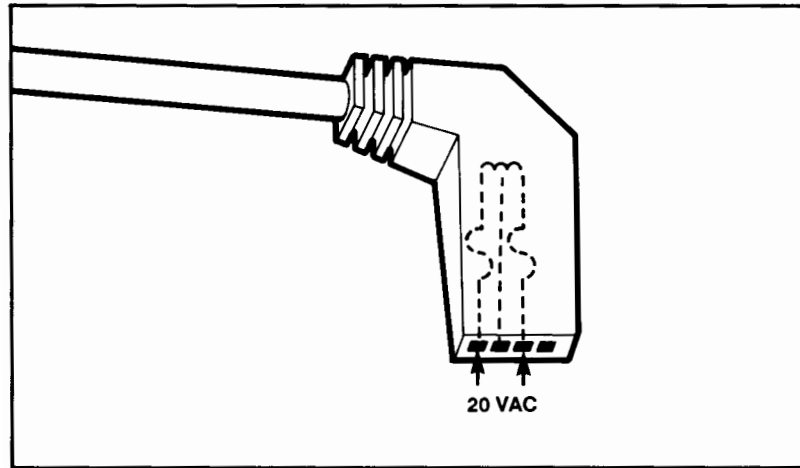


Figure 4-4. Power Module Connector

### Checking the Paper Motor

Disconnect the paper motor from the logic PCA. Measure the paper motor resistance at the paper motor connector as shown in figure 4-5.

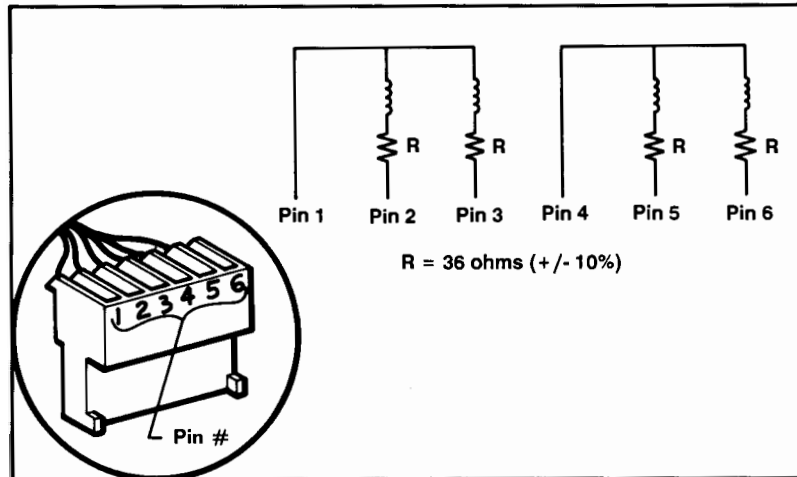


Figure 4-5. Paper Motor Resistance

## G. TROUBLESHOOTING HINTS

### ON LINE Light Flashing

The ON LINE light flashing indicates the printer was unable to load paper from the in tray or envelope slot. (The printer detects a paper out condition.)

#### Paper did not load from the in tray

1. Is the in tray empty?
2. Check for paper obstructions.
3. Check paper specifications.
4. Is the stack of in tray paper pushed into the printer as far as it will go?
5. Does the pressure plate raise the in tray stack to the drive rollers? Observe the mechanism for proper paper operation. (The carriage assembly interposer should position under the center transmission trigger lever to raise the pressure plate.)

#### Paper loaded but the ON LINE light flashes

1. Check the OOPS flag.
2. Replace the head driver PCA.
3. Check the logic cable.
4. Replace the logic PCA.

### BUSY and ON LINE Lights Flashing

The BUSY and ON LINE lights flashing indicates the printer detects a paper jam. In other words, the printer attempted to eject the current sheet to the output tray but the printer detects paper at the OOPS flag.

#### Paper did not eject

1. Is the paper installed in the in tray correctly?
2. More than 100 sheets in the in tray?
3. More than 25 sheets in the output tray?
4. Paper longer than 17 inches?
5. Check the paper specifications.
6. Check for paper obstructions.
7. Do the drive rollers turn? If not, check the paper motor and logic PCA.

#### Paper ejected but the BUSY and ON LINE lights remain flashing

1. Check the OOPS flag.
2. Replace the head driver PCA.
3. Replace the logic PCA.
4. Check logic cable.

### All Control Panel Lights Flashing Simultaneously

All control panel lights flashing simultaneously (in unison) after power-on indicates a catastrophic error occurred. Cycle the power to the printer. If the catastrophic error occurs again:

1. Replace the logic PCA.
2. Replace the printer firmware.



All Control Panel Lights Flashing in an Alternating Pattern

All control panel lights flashing in an alternating pattern indicates a carriage stall.

1. Check for obstructions blocking the carriage path.
2. Clean the carriage guide.
3. Check the carriage belt for slipping. (Tensioner installed?)
4. Verify the carriage belt is connected to the carriage assembly.
5. Carriage binding?
6. Replace the carriage motor or carriage motor cable.

No Control Panel Lights at Power-On

1. Verify the power module is connected to the printer and the wall receptacle.
2. Verify you have the correct power module for the country.
3. Check the power module output for correct voltage.
4. Check the power switch.
5. Check the power supply PCA output. If out of tolerance, replace the power supply PCA.
6. Check the power supply PCA cable.
7. Check the control panel connector.
8. Replace the logic PCA.
9. Replace the control panel.

Control Panel Lights On but No Print.

Carriage moves but no print

1. Is there tape over the print cartridge nozzle?
2. Read "Printout Missing Dots" in this chapter.

No carriage movement after initial power-on

1. Verify the printer is on-line.
2. Verify you have the correct interface cable.
3. Is the interface cable properly connected?
4. Check the host configuration.
5. Check the printer configuration.

Carriage Stall

A carriage stall will cause the control panel lights to flash in an alternating pattern. Read "All Control Panel Lights Flashing in an Alternating Pattern" for possible causes.

Paper Path Problems

The BUSY and ON LINE lights indicate paper path problems. Read "ON LINE Light Flashing" and "BUSY and ON LINE Light Flashing" for possible causes.

Dots Missing

If dots are missing on a printout, read "Printout Missing Dots" in this chapter.

**Paper Skew**

1. Is the paper skew within the paper skew specification listed in chapter 1?
2. Is the paper loaded squarely in the in tray?
3. Does the paper meet paper specifications?
4. Verify the in tray does not contain more than 100 sheets of paper
5. Verify the output tray does not contain more than 25 sheets of paper.
6. Try a different paper.
7. Clean the carriage guide, pivoting platen, drive rollers, and pinch rollers. (See chapter 2.)
8. Look for paper obstructions that may be causing the paper to skew.
9. Look for damaged printer parts along the paper path (bent carriage guide, bent pivoting platen, etc.)



# 5

## DIAGNOSTICS/ SELF TEST

### A. POWER-ON SELF-TEST

The HP DeskJet printer automatically performs a power-on self-test when the printer is turned on. The power-on self-test verifies the printer is operational. The power-on self-test does not check any ROM or RAM in the optional plug-in cartridges.

If the power-on self-test passes, the printer will power-up to its default configuration, determined by the configuration switches. If the power-on self-test fails, the control panel lights will indicate an error. (See table 5-1.)

**Table 5-1. Control Panel light indication**

DESCRIPTION	CAUSE
All lights are flashing simultaneously	A catastrophic error occurred. Cycle power. If the error reoccurs, replace the firmware or logic PCA.
All lights are flashing in an alternating pattern.	The printer detects a carriage stall.
ON LINE and BUSY light flashing.	The printer detects a paper jam.
ON LINE light flashing.	The printer detects a paper-out condition.

If all lights are flashing simultaneously or in an alternating pattern, the printer must be turned off to exit from the error state. If the printer is out-of-paper, press the FF button or ON LINE button to load paper once paper is placed in the in tray. To remove a paper jam, use the forward and back arrow buttons.



## B. PRINTING SELF-TEST

The printing self-test is used to check the HP DeskJet printer output and available character sets. The printing self-test, invoked by holding down the FONT or FF button while pressing the RESET button, pressing the FONT or FF button while turning the printer on, or sending an Esc z performs the following:

- Lists print head dot open circuits (if any).
- Identifies the type of installed print cartridge.
- Prints a diagonal line to identify any missing dots.
- Prints the firmware date code.
- Prints available internal and optional cartridge character sets.

A fully functional printer should NOT list any print head dots open and there should NOT be gaps along the diagonal line. See figure 5-1. If the printout lists one or more open dots or the diagonal line has gaps as shown in figure 4-1, read "Printout Missing Dots" in chapter 4. A continuous printing self-test is invoked by turning the printer on with the FF, FONT, and MODE buttons pressed simultaneously.

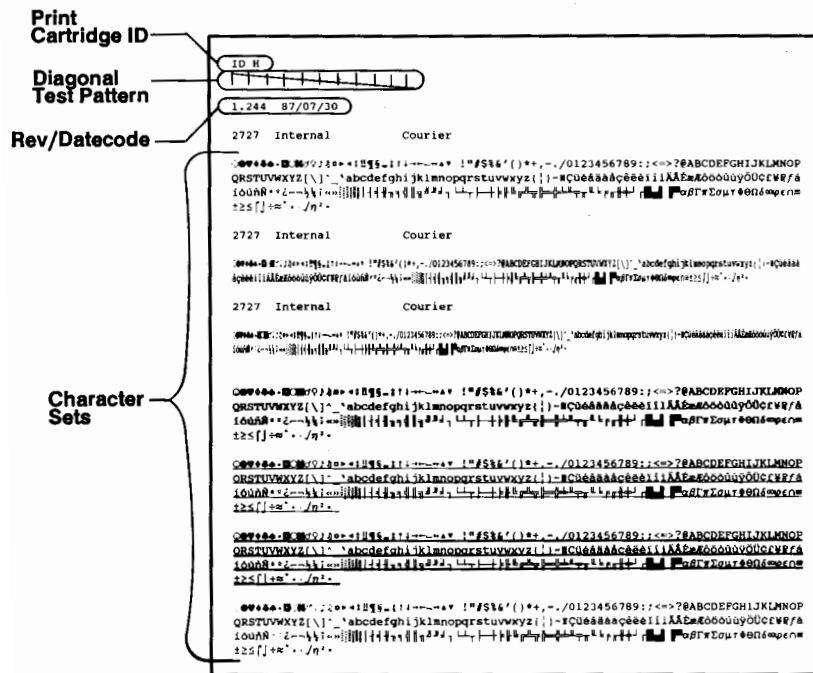


Figure 5-1. Printing Self-Test Example

# 6



## ADJUSTMENTS

**There are no field service adjustments on the HP DeskJet printer.**





# 7

## PERIPHERALS

**DOES NOT APPLY.**



# 8

## REPLACEMENT PARTS

This chapter lists the following replaceable parts and assemblies for the HP DeskJet printer:

- Table 8-1. HP DeskJet Printer Overall Parts List
- Table 8-2. HP DeskJet Printer Mechanism Parts List

### Note

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For printer supplies and accessories, see table 1-1, HP DeskJet Printer Accessories.

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### A. ORDERING INFORMATION

To order replaceable parts, assemblies, or accessories, contact your local Hewlett-Packard Sales and Service office. Include the following information:

1. Complete printer model and serial number.
2. Hewlett-Packard part number.
3. Complete part description as provided in the replacement parts lists.

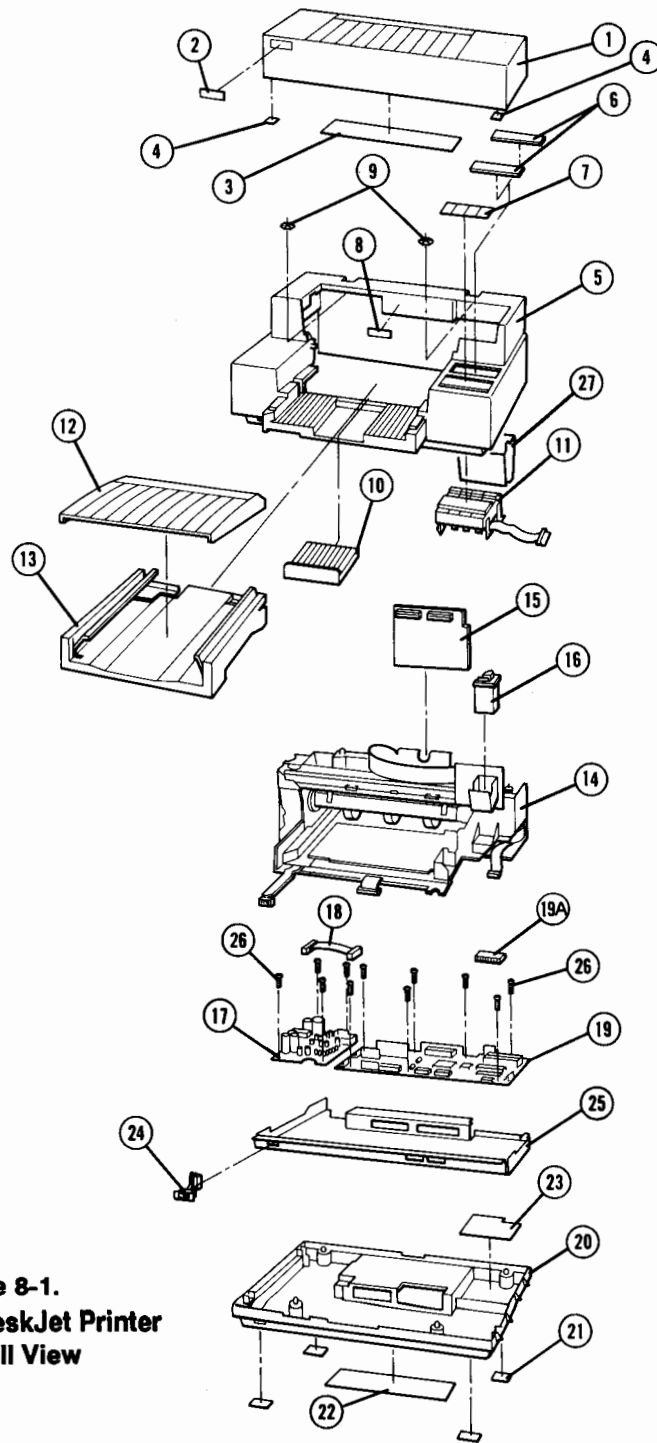


**B. OVERALL PARTS LIST****Table 8-1. Overall Parts List**

FIGURE REF	PART DESCRIPTION	PART NUMBER	QTY
8-1-1	Access Door Assy, which includes:	02276-60076	1
8-1-2	Nameplate	02276-80052	1
8-1-3	Label-Instruction	Order Door Assy	1
8-1-4	Bumper-Cover	02276-40071	2
8-1-5	Top Cover Assy, which includes:	02276-60063	1
8-1-6	Butch Plate	02276-40047	2
8-1-7	Control Panel Overlay	Order Cover Assy	1
8-1-8	Label-Caution (Europe)	02227-80033	1
8-1-9	Isolator-Vibration	02276-40079	2
8-1-10	Paper Catch	02276-40077	1
8-1-11	Control Panel Assy	02276-60080	1
8-1-12	Output Cover	02276-40075	1
8-1-13	Output Tray Assy	02276-60068	1
8-1-14	Mechanism (Complete) (See Table 8-2)	02276-60004	1
8-1-15	Head Driver PCA	02276-60003	1
8-1-16	Print Cartridge	51608A	1
8-1-17	Power Supply PCA	02276-60087	1
8-1-18	Cable Assy-PS	02276-80054	1
8-1-19	Logic PCA **		
	New	02276-60010	1
	Exchange	02276-69010	1
8-1-19A	IC-Firmware **	1818-4286	1
	Base Assy, which includes:	02276-60079	1
8-1-20	Base	02276-40003	1
8-1-21	Bumper-Foot	02225-00010	4
8-1-22	Label-Serial	02276-80057	1
8-1-23	Absorber	02276-20013	1
8-1-24	Power Switch Assy	02276-60021	1
8-1-25	Ground Plane-Logic	02276-00001	1
8-1-26	Screw-Machine	0515-0842	13

\* Not Shown

\*\* Firmware IC not included with the Logic PCA.



**Figure 8-1.**  
**HP DeskJet Printer**  
**Overall View**

**C. MECHANISM PARTS LIST****Table 8-2. HP DeskJet Mechanism Parts List**

FIGURE REF	PART DESCRIPTION	PART NUMBER	QTY
8-2-1	Service Mechanism, which includes:	02276-60004	1
8-2-2	Clip-ESD	02276-00015	1
8-2-3	Isolator-Vibration	02276-40079	4
8-2-4	Cable Assy-Logic	02276-80053	1
8-2-5	Carriage Rod	02276-20004	1
8-2-6	Carriage Guide Assy	02276-60074	1
8-2-6	Carriage Guide Assy, which includes:	02276-60074	1
8-2-7	Spring-Pinch 1	02276-00007	3
8-2-8	Roller-Pinch	02276-60057	3
8-2-9	OOPS Flag	02276-40016	1
8-2-10	Carriage Assy, which includes:	02276-60058	1
8-2-11	Spring-Interposer	02276-20020	1
8-2-12	Interposer End Effect	02276-40085	1
8-2-13	Head Cable-Flex	02276-80055	1
8-2-14	Locator Dot	02276-80069	1
8-2-15	Service Station Assy, which includes:	02276-60059	1
ns *	Absorber	02276-20013	1
	Mech Carriage Assy which includes:	02276-60061	1
8-2-16	Spring-Compression	1460-1940	1
8-2-17	Tensioner-Pen	07440-40055	1
8-2-18	Bearing Assy	5061-7627	1
8-2-19	Belt	02276-40011	1
8-2-20	Motor-Paper Assy	02276-60055	1
8-2-21	Motor-Carriage Assy, which includes:	02276-60077	1
8-2-22	Cable-Carriage Motor	02276-80059	1
8-2-23	Ground Strap	02276-80071	1
8-2-24	Screw- 4-20 x .500	0624-0281	5

\* Not Shown

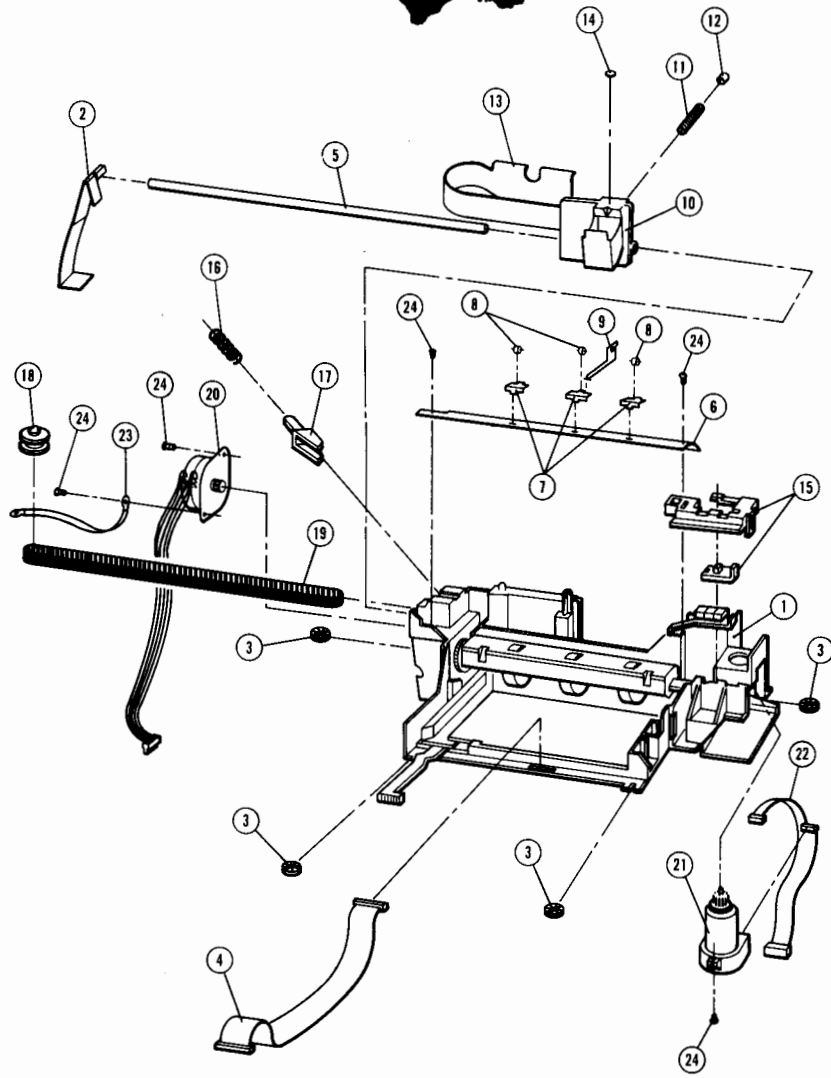


Figure 8-2. HP DeskJet Printer Mechanism





# 9

## DIAGRAMS

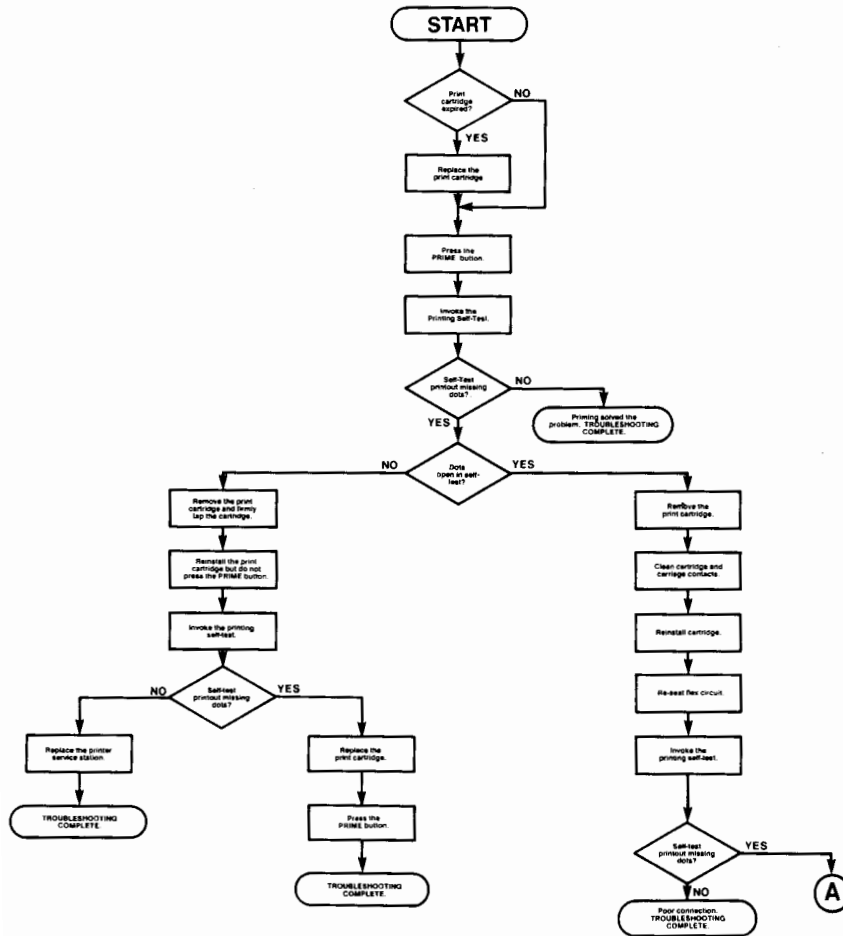


Figure 9-1. Print Cartridge Troubleshooting Tree

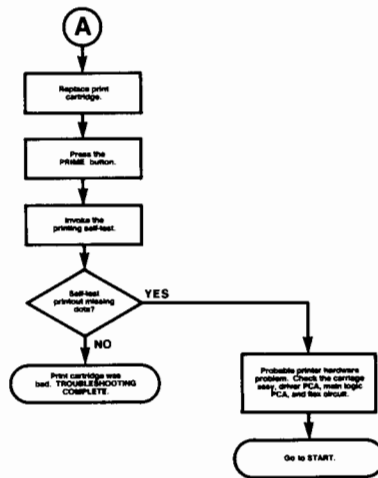


Figure 9-1. Print Cartridge Troubleshooting Tree (Cont.)

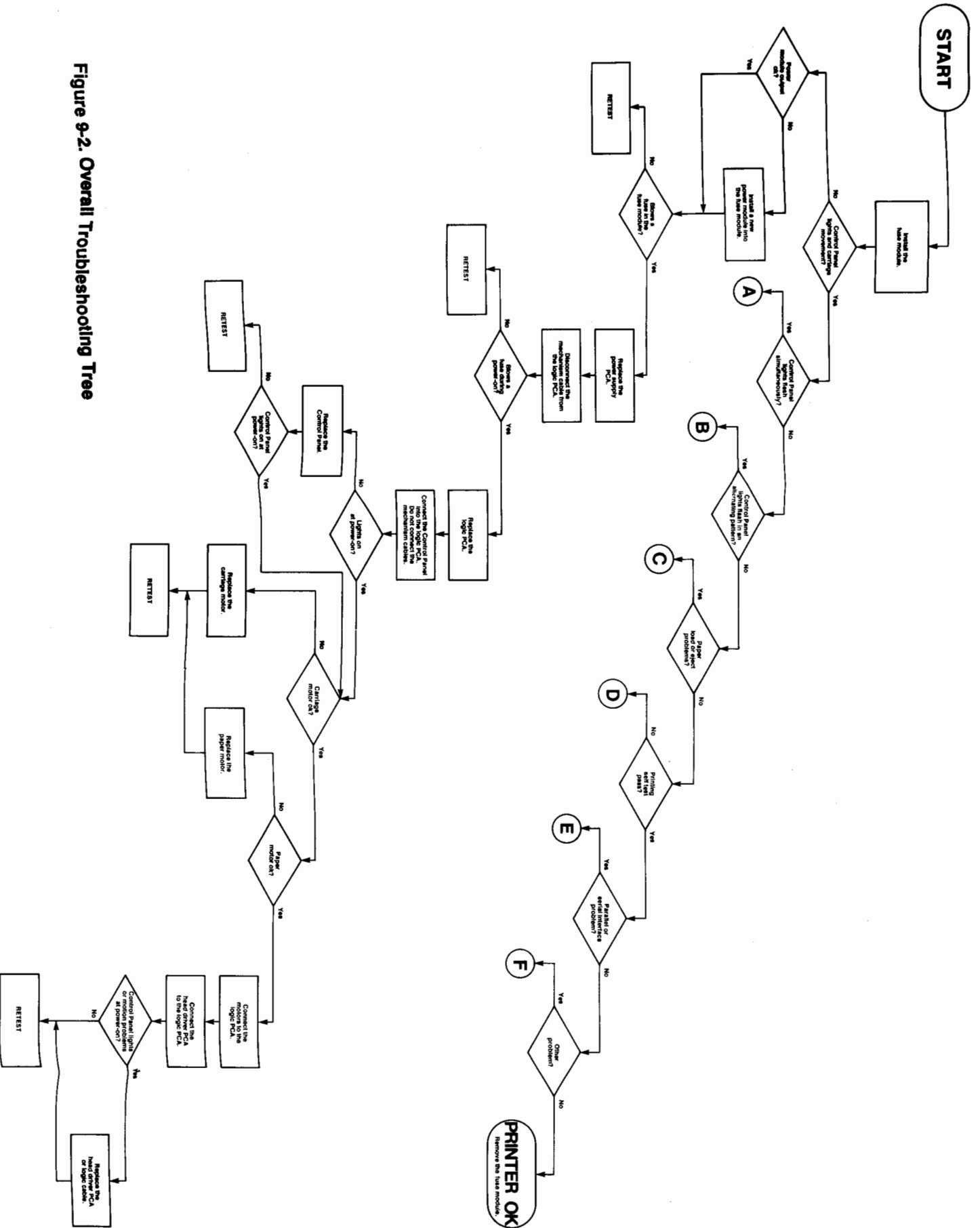


Figure 9-2. Overall Troubleshooting Tree

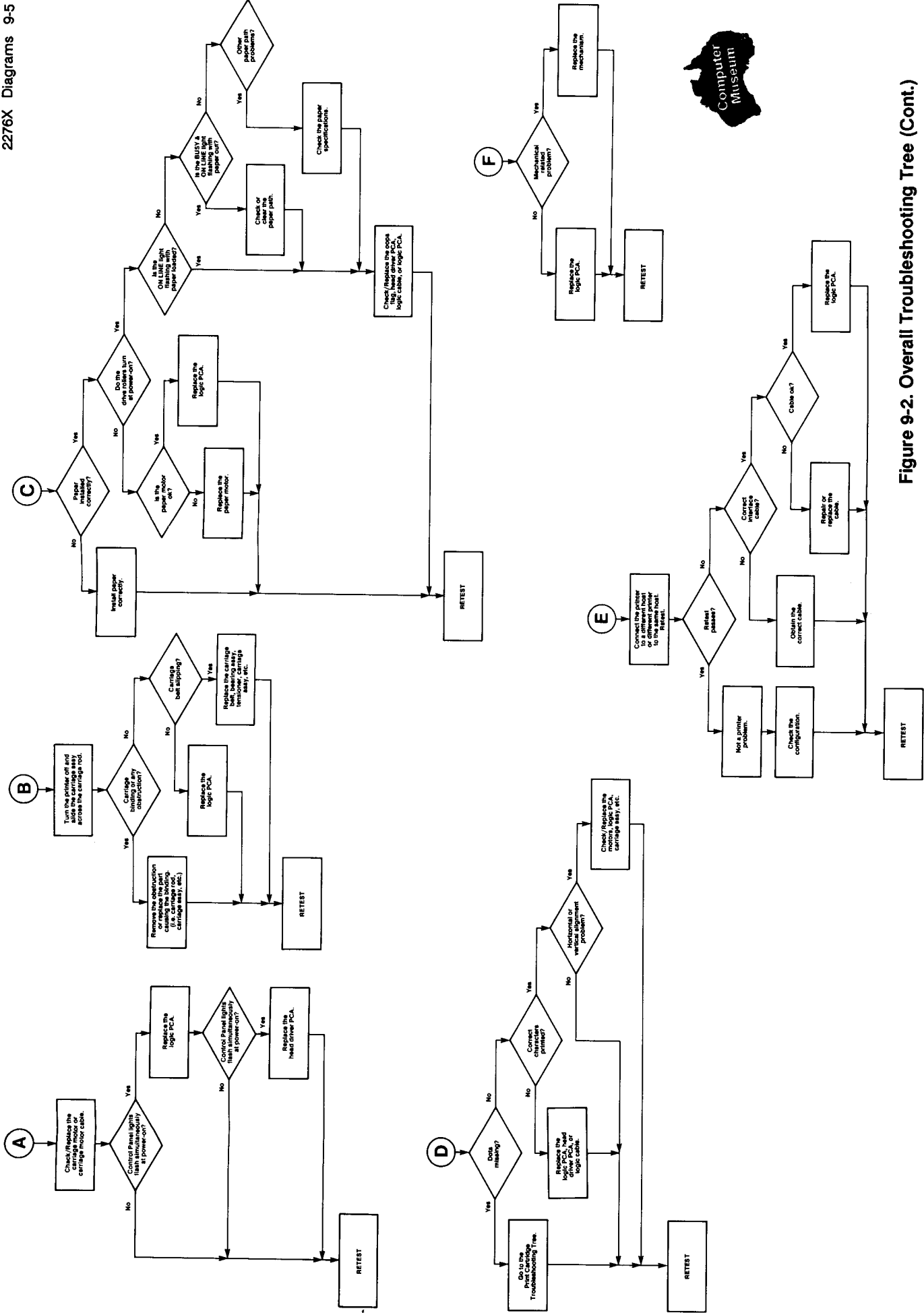


Figure 9-2. Overall Troubleshooting Tree (Cont.)



# 10

## REFERENCE

### A. HP DESKJET ESCAPE SEQUENCES & CONTROL CODES

**Table 10-1. Escape Sequences & Control Codes**

Print Features	Escape Sequence	Decimal Equiv.	Hex. Equiv.
<b>FONT SELECTION</b>			
HP Roman8	E <sub>C</sub> (8U)	027 040 056 085	1B 28 38 55
ASCII	E <sub>C</sub> (0U)	027 040 048 085	1B 28 30 55
ECMA-94 Latin 1	E <sub>C</sub> (0N)	027 040 048 078	1B 28 30 4E
PC-8	E <sub>C</sub> (10U)	027 040 049 048 085	1B 28 31 30 55
PC-8 Denmark/Norway	E <sub>C</sub> (11U)	027 040 049 049 085	1B 28 31 31 55
ISO Sweden: Names	E <sub>C</sub> (0S)	027 040 048 083	1B 28 30 53
ISO Sweden	E <sub>C</sub> (3S)	027 040 051 083	1B 28 33 53
ISO Norway v.1	E <sub>C</sub> (0D)	027 040 048 068	1B 28 30 44
ISO Norway v.2	E <sub>C</sub> (1D)	027 040 049 068	1B 28 31 44
ISO UK	E <sub>C</sub> (1E)	027 040 049 069	1B 28 31 45
ISO France	E <sub>C</sub> (1F)	027 040 049 070	1B 28 31 46
ISO Germany	E <sub>C</sub> (1G)	027 040 049 071	1B 28 31 47
ISO Italy	E <sub>C</sub> (0I)	027 040 048 073	1B 28 30 49
ISO Spain	E <sub>C</sub> (2S)	027 040 050 083	1B 28 32 53
ISO Portugal	E <sub>C</sub> (4S)	027 040 052 083	1B 28 34 53
ISO IRV	E <sub>C</sub> (2U)	027 040 051 085	1B 28 32 55
JIS ASCII	E <sub>C</sub> (0K)	027 040 048 075	1B 28 30 4B
Legal	E <sub>C</sub> (1U)	027 040 049 085	1B 28 31 55
Line Draw*	E <sub>C</sub> (0L)	027 040 048 076	1B 28 30 4C
Math7*	E <sub>C</sub> (0M)	027 040 048 077	1B 28 30 4D
Math8*	E <sub>C</sub> (8M)	027 040 056 077	1B 28 38 4D
Math8a*	E <sub>C</sub> (0Q)	027 040 048 081	1B 28 30 51
Math8b*	E <sub>C</sub> (1Q)	027 040 049 081	1B 28 31 51
PIFont*	E <sub>C</sub> (15U)	027 040 049 053 085	1B 28 31 35 55
PIFonta*	E <sub>C</sub> (2Q)	027 040 050 081	1B 28 32 51
<b>SPACING</b>			
Proportional*	E <sub>C</sub> (s1P)	027 040 115 049 080	1B 28 73 31 50
Fixed	E <sub>C</sub> (s0P)	027 040 115 048 080	1B 28 73 30 50
<b>QUALITY</b>			
Letter	E <sub>C</sub> (s2Q)	027 040 115 050 081	1B 28 73 32 51
Draft	E <sub>C</sub> (s1Q)	027 040 115 049 081	1B 28 73 31 51
<b>PLACEMENT</b>			
Super	E <sub>C</sub> (s+1U)	027 040 115 043 049 085	1B 28 73 2B 31 55
Normal	E <sub>C</sub> (s0U)	027 040 115 048 085	1B 28 73 30 55
Sub	E <sub>C</sub> (s-1U)	027 040 115 045 049 085	1B 28 73 2D 31 55
<b>PITCH</b>			
# of Characters	E <sub>C</sub> (s#H)	027 040 115 #...# 072	1B 28 73 #...# 48

\* Optional font cartridges required.

Table 10-1. Escape Sequences &amp; Control Codes (Cont.)

Print Features (Cont.)	Escape Sequence	Decimal Equiv.	Hex. Equiv.
<b>POINT SIZE</b> # of 1/72 inch	E <sub>C</sub> (s#V	027 040 115 #...# 086	1B 28 73 #...# 56
<b>STYLE</b> Upright	E <sub>C</sub> (s0S	027 040 115 048 083	1B 28 73 30 53
Italic*	E <sub>C</sub> (s1S	027 040 115 049 083	1B 28 73 31 53
<b>STROKE WEIGHT</b> Normal	E <sub>C</sub> (s0B	027 040 115 048 066	1B 28 73 30 42
Bold	E <sub>C</sub> (s3B	027 040 115 051 066	1B 28 73 33 42
Extra Bold*	E <sub>C</sub> (s7B	027 040 115 055 066	1B 28 73 37 42
<b>TYPEFACE</b> Line Printer*	E <sub>C</sub> (s0T	027 040 115 048 084	1B 28 73 30 54
Pica*	E <sub>C</sub> (s1T	027 040 115 049 084	1B 28 73 31 54
Elite*	E <sub>C</sub> (s2T	027 040 115 050 084	1B 28 73 32 54
Courier	E <sub>C</sub> (s3T	027 040 115 051 084	1B 28 73 33 54
Helv.*	E <sub>C</sub> (s4T	027 040 115 052 084	1B 28 73 34 54
Tms Rmn*	E <sub>C</sub> (s5T	027 040 115 053 084	1B 28 73 35 54
Gothic*	E <sub>C</sub> (s6T	027 040 115 054 084	1B 28 73 36 54
Script*	E <sub>C</sub> (s7T	027 040 115 055 084	1B 28 73 37 54
Prestige*	E <sub>C</sub> (s8T	027 040 115 056 084	1B 28 73 38 54
Presentations*	E <sub>C</sub> (s11T	027 040 115 049 049 084	1B 28 73 31 31 54
<b>PAGE LENGTH</b> # of Lines	E <sub>C</sub> &l#P	027 038 108 #...# 080	1B 26 6C #...# 50
<b>TOP MARGIN</b> # of Lines	E <sub>C</sub> &l#E	027 038 108 #...# 069	1B 26 6C #...# 45
<b>TEXT LENGTH</b> # of Lines	E <sub>C</sub> &l#F	027 038 108 #...# 070	1B 26 6C #...# 46
<b>MARGINS</b> Clear	E <sub>C</sub> 9	027 057	1B 39
Left	E <sub>C</sub> &a#L	027 038 097 #...# 076	1B 26 61 #...# 4C
Right	E <sub>C</sub> &a#M	027 038 097 #...# 077	1B 26 61 #...# 4D
<b>VERTICAL LINE SPACING</b> Motion Index # 1/48 inch	E <sub>C</sub> &l#C	027 038 108 #...# 067	1B 26 6C #...# 43
Lines per Inch # of Lines	E <sub>C</sub> &l#D	027 038 108 #...# 068	1B 26 6C #...# 44
<b>HALF-LINE FEED</b>	E <sub>C</sub> =	027 061	1B 3D

\* Optional font cartridges required.



Table 10-1. Escape Sequences &amp; Control Codes (Cont.)

Print Features (Cont.)	Escape Sequence	Decimal Equiv.	Hex. Equiv.
<b>CURSOR POSITIONING</b>			
Move to Row #	E <sub>C</sub> &a#R	027 038 097 #...# 082	1B 26 61 #...# 52
Move to Col. #	E <sub>C</sub> &a#C	027 038 097 #...# 067	1B 26 61 #...# 43
Horizontal # decipoint	E <sub>C</sub> &a#H	027 038 097 #...# 072	1B 26 61 #...# 48
Vertical # decipoint	E <sub>C</sub> &a#V	027 038 097 #...# 086	1B 26 61 #...# 56
Horizontal # dots	E <sub>C</sub> *p#X	027 042 112 #...# 088	1B 2A 70 #...# 58
Vertical # dots	E <sub>C</sub> *p#Y	027 042 112 #...# 089	1B 2A 70 #...# 59
Motion Index # 1/120 Inch	E <sub>C</sub> &k#H	027 038 107 #...# 072	1B 26 6B #...# 48
<b>GRAPHICS</b>			
<b>Resolution</b>			
75 Pixels/inch	E <sub>C</sub> *t75R	027 042 116 055 053 082	1B 2A 74 37 35 52
100 Pixels/inch	E <sub>C</sub> *t100R	027 042 116 049 048 048 082	1B 2A 74 31 30 30 52
150 Pixels/inch	E <sub>C</sub> *t150R	027 042 116 049 053 048 082	1B 2A 74 31 35 30 52
300 Pixels/inch	E <sub>C</sub> *t300R	027 042 116 051 048 048 082	1B 2A 74 33 30 30 52
<b>Width</b>			
# pixels	E <sub>C</sub> *r#S	027 042 114 #...# 083	1B 2A 72 #...# 53
<b>X Offset</b>			
# dots	E <sub>C</sub> *b#X	027 042 098 #...# 088	1B 2A 62 #...# 58
<b>Y Offset</b>			
# dots	E <sub>C</sub> *b#Y	027 042 098 #...# 089	1B 2A 62 #...# 59
<b>Compaction</b>			
Compaction OFF	E <sub>C</sub> *b0M	027 042 098 048 077	1B 2A 62 30 4D
Mode 1	E <sub>C</sub> *b1M	027 042 098 049 077	1B 2A 62 31 4D
Mode 2	E <sub>C</sub> *b2M	027 042 098 050 077	1B 2A 62 32 4D
<b>Misc. Graphics Commands</b>			
Set to default (high)	E <sub>C</sub> *r0Q	027 042 114 048 081	1B 2A 72 30 51
Quality Set to draft	E <sub>C</sub> *r1Q	027 042 114 049 081	1B 2A 72 31 51
Quality Set to high	E <sub>C</sub> *r2Q	027 042 114 050 081	1B 2A 72 32 51
<b>Transfer Graphics</b>			
# bytes	E <sub>C</sub> *b#Wdata	027 042 098 #...# 087 data	1B 2A 62 #...# 57 data
<b>Start Graphics</b>			
At Left most print pos.	E <sub>C</sub> *r0A	027 042 114 048 065	1B 2A 72 30 41
Current Cursor pos.	E <sub>C</sub> *r1A	027 042 114 049 065	1B 2A 72 31 41
<b>End Graphics</b>			
	E <sub>C</sub> *rB	027 042 114 066	1B 2A 72 42
<b>MISC. PRINTER CONTROL</b>			
Reset	E <sub>C</sub> E	027 069	1B 45
Self Test	E <sub>C</sub> z	027 122	1B 7A
Return Model Number	E <sub>C</sub> *rK	027 042 114 075	1B 2A 72 4B

Table 10-1. Escape Sequences &amp; Control Codes (Cont.)

Print Features (Cont.)	Escape Sequence	Decimal Equiv.	Hex. Equiv.
<b>UNDERLINE</b>			
Single fixed	E <sub>C</sub> &d1D	027 038 100 049 068	1B 26 64 31 44
Double fixed	E <sub>C</sub> &d2D	027 038 100 050 068	1B 26 64 32 44
Single float	E <sub>C</sub> &d3D	027 038 100 051 068	1B 26 64 33 44
Double float	E <sub>C</sub> &d4D	027 038 100 052 068	1B 26 64 34 44
Off	E <sub>C</sub> &d@	027 038 100 064	1B 26 64 40
<b>DISPLAY FUNCTIONS</b>			
Display ON	E <sub>C</sub> Y	027 089	1B 59
Display OFF	E <sub>C</sub> Z	027 090	1B 5A
<b>TRANSPARENT PRINT DATA</b>			
# bytes	E <sub>C</sub> &p#X	027 038 112 #...# 088	1B 26 70 #...# 58
<b>PERFORATION SKIP</b>			
Perforation Skip ON	E <sub>C</sub> &l1L	027 038 108 049 076	1B 26 6C 31 4C
Perforation Skip OFF	E <sub>C</sub> &l0L	027 038 108 048 076	1B 26 6C 30 4C
<b>END-OF-LINE WRAP</b>			
End-of-Line Wrap ON	E <sub>C</sub> &s0C	027 038 115 048 067	1B 26 73 30 43
End-of-Line Wrap OFF	E <sub>C</sub> &s1C	027 038 115 049 067	1B 26 73 31 43
<b>LINE TERMINATION</b>			
CR → CR	E <sub>C</sub> &k0G	027 038 107 048 071	1B 26 6B 30 47
LF → LF			
FF → FF			
CR → CR + LF	E <sub>C</sub> &k1G	027 038 107 049 071	1B 26 6B 31 47
LF → LF			
FF → FF			
CR → CR	E <sub>C</sub> &k2G	027 038 107 050 071	1B 26 6B 32 47
LF → CR + LF			
FF → CR + FF			
CR → CR + LF	E <sub>C</sub> &k3G	027 038 107 051 071	1B 26 6B 33 47
LF → CR + LF			
FF → CR + FF			
<b>ENHANCEMENT CONTROL</b>			
Line-by-Line ON	E <sub>C</sub> &k0E	027 038 107 048 069	1B 26 6B 30 45
Line-by-Line OFF	E <sub>C</sub> &k1E	027 038 107 049 069	1B 26 6B 31 45
<b>SI/SO CONTROL</b>			
Line-by-Line ON	E <sub>C</sub> &k0F	027 038 107 048 070	1B 26 6B 30 46
Line-by-Line OFF	E <sub>C</sub> &k1F	027 038 107 049 070	1B 26 6B 31 46
<b>PRINT MODE</b>			
Left to Right	E <sub>C</sub> &k0W	027 038 107 048 087	1B 26 6B 30 57
Bidirectional	E <sub>C</sub> &k1W	027 038 107 049 087	1B 26 6B 31 57
Right to Left	E <sub>C</sub> &k2W	027 038 107 050 087	1B 26 6B 32 57

Table 10-1. Escape Sequences &amp; Control Codes (Cont.)

Print Features (Cont.)	Escape Sequence	Decimal Equiv.	Hex. Equiv.
<b>TEXT SCALE</b>			
Text Scale OFF	E <sub>C</sub> &k5W	027 038 107 053 087	1B 26 6B 35 57
Text Scale ON	E <sub>C</sub> &k6W	027 038 107 054 087	1B 26 6B 36 57
<b>PAPER SIZE</b>			
Default Size	E <sub>C</sub> &r0A	027 038 108 048 065	1B 26 6C 30 41
US-Letter	E <sub>C</sub> &r2A	027 038 108 050 065	1B 26 6C 32 41
US-Legal	E <sub>C</sub> &r3A	027 038 108 051 065	1B 26 6C 33 41
ISO A4	E <sub>C</sub> &r26A	027 038 108 050 054 065	1B 26 6C 32 36 41
#10 Envelope	E <sub>C</sub> &r81A	027 038 108 056 049 065	1B 26 6C 38 31 41
<b>PAPER INPUT CONTROL</b>			
Eject Page	E <sub>C</sub> &r0H	027 038 108 048 072	1B 26 6C 30 48
Feed from Tray	E <sub>C</sub> &r1H	027 038 108 049 072	1B 26 6C 31 48
Envelope Feed	E <sub>C</sub> &r3H	027 038 108 051 072	1B 26 6C 33 48
<b>DOWNLOAD FONT MANAGEMENT</b>			
Font ID #	E <sub>C</sub> *c#D	027 042 099 #...# 068	1B 2A 63 #...# 44
ASCII Code #	E <sub>C</sub> *c#E	027 042 099 #...# 069	1B 2A 63 #...# 45
Delete All	E <sub>C</sub> *c0F	027 042 099 048 070	1B 2A 63 30 46
Delete Temp	E <sub>C</sub> *c1F	027 042 099 049 070	1B 2A 63 31 46
Delete Last	E <sub>C</sub> *c2F	027 042 099 050 070	1B 2A 63 32 46
Make Temp	E <sub>C</sub> *c4F	027 042 099 052 070	1B 2A 63 34 46
Make Perm	E <sub>C</sub> *c5F	027 042 099 053 070	1B 2A 63 35 46
Create Font # bytes	E <sub>C</sub> )s#Wdata	027 041 115 #...# 087 data	1B 29 73 #...# 57 data
Download Chr. # bytes	E <sub>C</sub> (s#Wdata	027 040 115 #...# 087 data	1B 28 73 #...# 57 data
Select Primary ID#	E <sub>C</sub> (#X	027 040 #...# 088	1B 28 #...# 58
Select Secondary ID#	E <sub>C</sub> )#X	027 041 #...# 088	1B 29 #...# 58
<b>PRIMARY FONT DESIGNATORS</b>			
Primary Default	E <sub>C</sub> (#@	027 040 #...# 064	1B 28 #...# 40
Default Chr. Set	E <sub>C</sub> (0@	027 040 048 088	1B 28 30 58
Current Primary Chr. Set	E <sub>C</sub> (2@	027 040 050 088	1B 28 32 58
Default Font	E <sub>C</sub> (3@	027 040 051 088	1B 28 33 58
<b>SECONDARY FONT DESIGNATORS</b>			
Secondary Default	E <sub>C</sub> )#@	027 041 #...# 064	1B 29 #...# 40
Default Chr. Set	E <sub>C</sub> )0@	027 041 048 088	1B 29 30 58
Default Primary Chr. Set	E <sub>C</sub> )1@	027 041 049 088	1B 29 31 58
Current Primary Chr. Set	E <sub>C</sub> )2@	027 041 050 088	1B 29 32 58
Default Secondary Font	E <sub>C</sub> )3@	027 041 051 088	1B 29 33 58





# 11

**SERVICE NOTES/  
IOSMs**

