HEWLETT-PACKARD

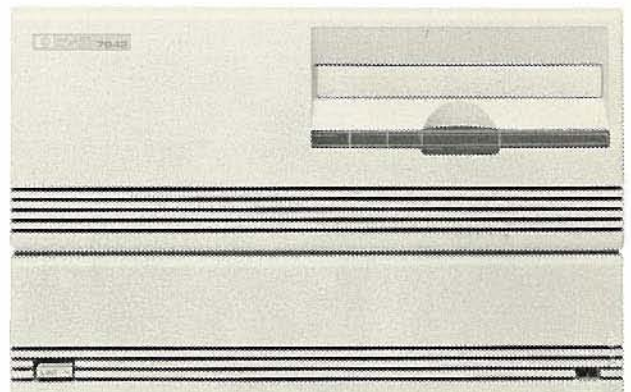## OWNER'S MANUAL

7942
and
7946
DISC/TAPE DRIVES

Owner's Manual

7942 and 7946
Disc/Tape Drives

Manual part no. 07942-90901

OPTIONS COVERED

In addition to the standard models, this manual covers
the following options: 015 and 550.

FOR U.S.A. ONLY

The Federal Communications Commission (in 47 CFR 15.805) has specified that the follow-
ing notice be brought to the attention of the users of this product.

FEDERAL COMMUNICATIONS COMMISSION
RADIO FREQUENCY INTERFERENCE
STATEMENT

Warning: This equipment generates and uses radio frequency energy and if not installed and used properly, that
is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television
reception. It has been type tested and found to comply with the limits for a Class B computing device in
accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reason-
able protection against such interference in a residential installation. However, there is no guarantee that inter-
ference will not occur in a particular installation. If this equipment does cause interference to radio or television
reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct
the interference by one or more of the following measures: reorient the receiving antenna; relocate the computer
with respect to the receiver; move the computer away from the receiver; plug the computer into a different
branch circuit. If necessary, the user should consult the dealer or authorized field service representative for
additional suggestions. The user 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 U.S. Government Printing Office, Washington, DC 20402. Stock No. 004-000-0035-4.

Printing History

New editions incorporate all update material since the previous edition. Updating Supplements, which are issued between editions, contain additional and revised information to be incorporated into the manual by the user. The date on the title page changes only when a new edition is published.

First Edition .... February 1985

Notice

The information contained in this document is subject to change without notice.

ii

Table of Contents

Table of Contents (continued)

Illustrations

Tables

Chapter 1
General Description

Introduction

The HP 7942 and HP 7946 Disc/Tape Drives are medium performance, random access, data storage devices designed for use with small and medium sized computer systems. The HP 7942 consists of a 24-megabyte disc drive and a tape drive combined in a single desktop cabinet to form an integrated disc/tape drive. The HP 7946 consists of a 55-megabyte disc drive and a tape drive combined in a similar manner. In this manual, unless otherwise specified, "drive" refers to both the HP 7942 and HP 7946.

The 24- and 55-megabyte disc drives employ two and four nonremovable 130-millimetre (5.12-inch) discs, respectively, for storage media. Each disc surface employs one movable head to service its data tracks. The bottom surface of the lowest disc in the stack contains continuous prerecorded servo data which is used to ensure the precise positioning of the read/write heads.

Head positioning is performed by a rotary actuator and closed-loop servo positioning system. Mechanical and contamination protection for the discs, heads, and the rotary actuator is provided by a sealed head-disc module. The head-disc module includes a self-contained air filtration system which supplies clean air and temperature equalization throughout the module.

The tape drive is a data storage device utilizing a removable 1/4-inch tape cartridge. Two tape lengths are available: 150 feet (16.7 megabyte) and 600 feet (67 megabyte). The tape drive acts as a back-up device for the disc drive. The data transfer rate for back-up is approximately two megabytes per minute. The actual data transfer rate is host dependent. Included in the tape drive is a read-after-write capability for data verification, as well as data recovery and automatic sparing. The tape drive is compatible with existing 1/4-inch tape drives contained in other HP disc/tape drives.

The drive also includes a Hewlett-Packard Interface Bus (HP-IB)* controller and a power supply.

The drive contains internal self-test diagnostics and a fault-finding system which exercise key functions of the drive. Self test is performed automatically at power on and can also be initiated by the host or by a switch on the rear panel of the drive. Go/no-go test results are indicated by green and red indicators on the front panel. If a failure occurs, information on the cause of the failure can be determined by viewing a 2-digit hexadecimal display on the rear panel.

The drive is packaged in a stand-alone desktop cabinet. Accessories available include a desk-height stand-alone cabinet designed to hold the drive and other desktop stack modules. A kit for rack mounting the unit in a standard EIA equipment rack is also available.

* HP-IB: Not just IEEE-488, but the hardware, documentation and support that delivers the shortest path to a computation system.

This manual provides all of the information needed to install and operate the drive. Details of the control functions provided by the computer are described in the installation documentation provided with the computer.

Accessories

- HP 92211A Cabinet. A desk-height stand-alone cabinet for the drive and other desktop stackable peripherals and systems.

- HP 19501A Rack Mounting Kit. Allows the drive to be mounted in a stand-alone, 19-inch EIA equipment rack.

- HP 88140SC Tape Cartridge, 150-foot (16.7-megabyte), formatted and certified. Box of 5.

- HP 88140LC Tape Cartridge, 600-foot (67-megabyte), formatted and certified. Box of 5.

- HP 92193H Magnetic Head Cleaning Kit. The kit contains two 2-oz bottles of tape head cleaner, 50 lint-free wipes, 10 foam swabs, and one easy-pour dispensing cap.

- 9300-0757 Foam Swabs. 50 per package.

- HP 92193X Tape Head Cleaner. Six 4-oz bottles.

Options

- Option 015. For non-U.S. shipments. Voltage Selector switch set for 230 Vac operation.

- Option 550. Deletion of the HP 10833A HP-IB Interface Cable Assembly.

Supporting Documentation

The following documentation may be ordered from a Hewlett-Packard Sales and Support Office:

- *HP 7942 and HP 7946 Disc/Tape Drives Service Manual,* part no. 07942-90903.

- *CS/80 Instruction Set Programming Manual,* part no. 5955-3442.

- *CS/80 External Exerciser Manual,* part no. 5955-3462.

Characteristics

Characteristics of the drive, including physical dimensions and power requirements, are listed in Table 1, Disc/Tape Drive Characteristics. Detailed specifications for the drive, including environmental requirements, are listed in the *Site Environmental Requirements for Disc/Tape Drives Manual,* part no. 5955-3456. This publication is supplied with the drive.

Table 1. Disc/Tape Drive Characteristics

Safety

Meets all applicable safety standards of IEC 380 and IEC 435.

UL recognized to UL 114 and UL 478.

CSA certified to CSA C22.2 No. 154.

Power Requirements

Specified source (selected by rear panel VOLTAGE SELECTOR switch)

Voltage (true RMS):   115V range; 100V, 115V, 120V, single phase
(inclusive tolerance range is 90V to 132V).

230V range; 220V, 240V, single phase
(inclusive tolerance range is 180V to 264V)

Frequency: 47.5 to 66 Hz

Typical current: 115V range; 1.50 A (true rms at 115V, 60 Hz)
230V range; 0.80 A (true rms at 230V, 50 Hz)

Typical power: 115V range; 173 V-A at 115V, 60 Hz
230V range; 184 V-A at 230V, 50 Hz

Size/Weight

Height: 208 mm (8.2 in.)

Width: 325 mm (12.8 in.)

Depth: 285 mm (11.2 in.)

Net weight: 15.8 kg (34.8 lb)

Shipping weight: 19.6 kg (43.3 lb)
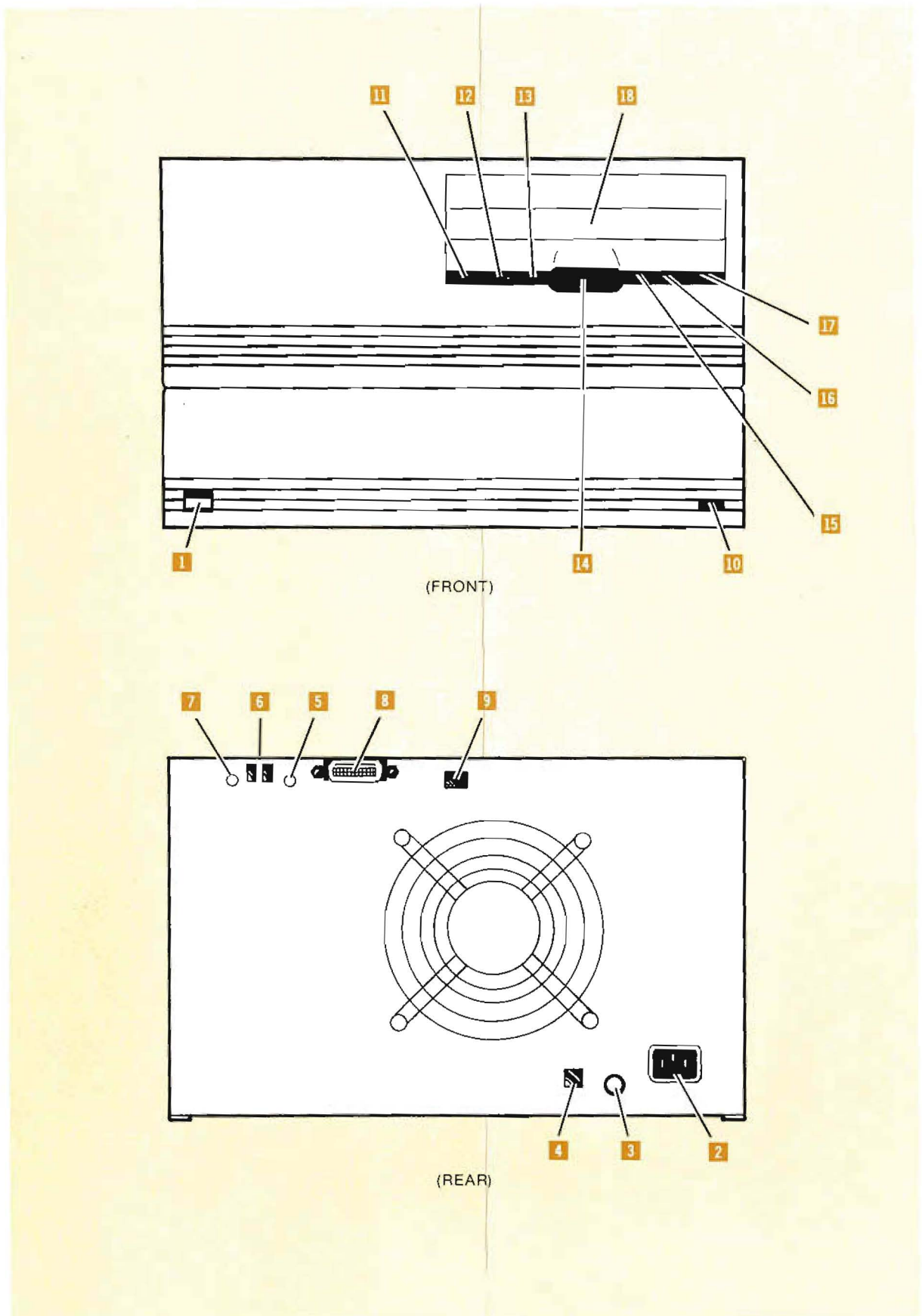
Figure 1. Controls and Connectors

Chapter 2
Installation

Introduction

This chapter provides instructions on how to place your drive in operation. These instructions include unpacking instructions, a check of equipment supplied, and how to connect the drive to a line voltage source and the Hewlett-Packard Interface Bus (HP-IB).

Note
Refer to Figure 1, Controls and Connectors, for the locations of the controls and connectors identified by numbers (for example: LINE ~ switch **1**), in the text.

Unpacking Your Disc Drive

CAUTION
THE DRIVE IS DELICATE AND SHOULD BE HAN-
DLED WITH CARE. ALSO, THE DRIVE IS HEAVIER
(15.8 KILOGRAMS/34.8 POUNDS) THAN ITS SIZE
WOULD INDICATE.

The drive is shipped in a reusable shipping container. (See Figure 2, Packaging Details.) When the shipment arrives, ensure that the container has been received as specified by the carrier's bill of lading. Inspect the shipping container immediately upon receipt for evidence of mishandling during transit. If the container is damaged or water stained, request that the carrier's agent be present when the container is unpacked.

Remove the drive from the shipping container and inspect the drive for any mechanical damage that may have occurred during shipment. If any damage is observed, you should immediately notify your dealer or Hewlett-Packard Sales and Support Office and file a claim with any carriers involved. A list of Hewlett-Packard Sales and Support Offices is provided at the back of this manual.

Note
An envelope containing the drive warranty label is attached to the outside of the shipping container. It is important that this label be removed from the envelope and placed on the rear panel of the drive. Refer to the Warranty Label paragraph at the end of this chapter for instructions.
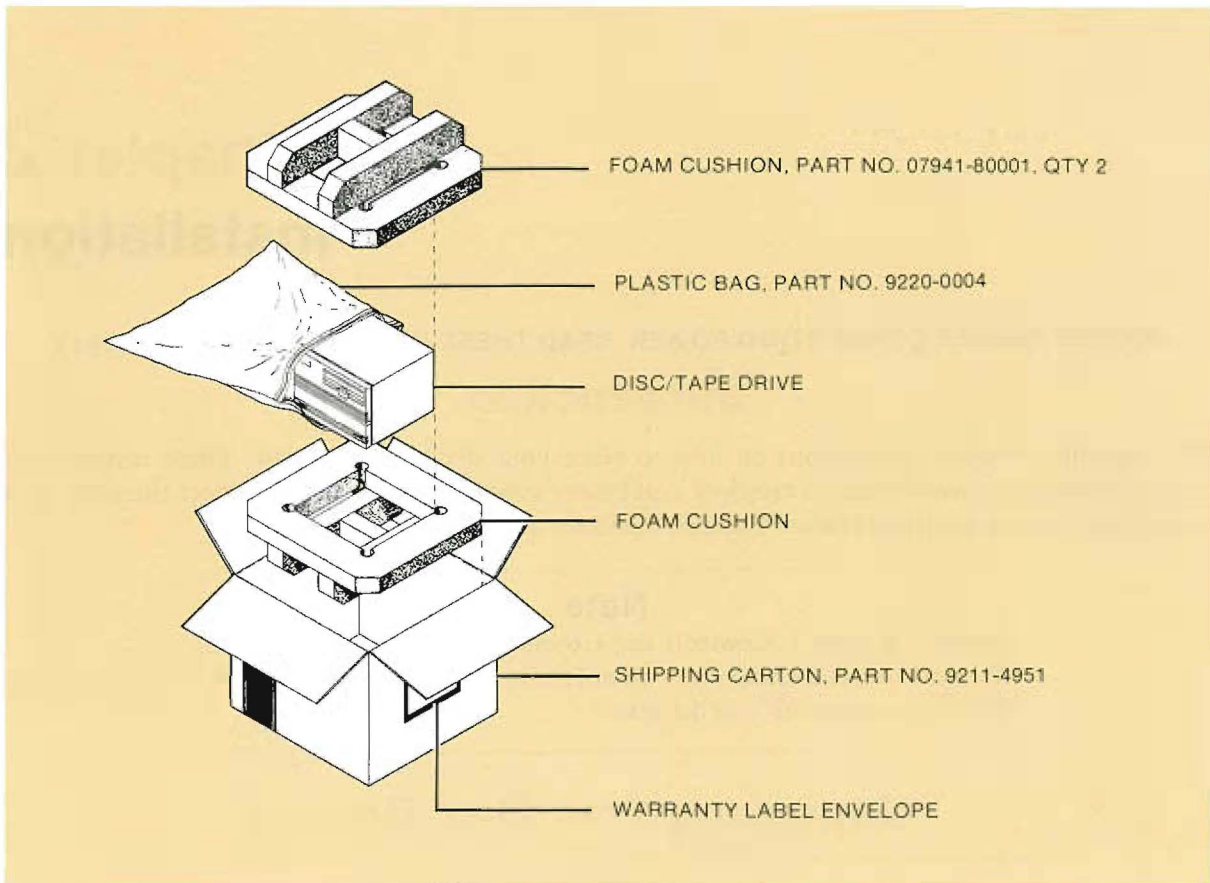
Figure 2. Packaging Details

Equipment Supplied

Check to ensure that all of the standard equipment supplied with the drive has been received. This equipment is listed below.

- Power Cable (part number depends on location).

- *Site Environmental Requirements for Disc/Tape Drives Manual,* part no. 5955-3456.

- *7942 and 7946 Disc/Tape Drive Owner's Manual,* part no. 07942-90901.

- HP 10833A HP-IB Interface Cable Assembly, part no. 8120-3445.

- Tape Cartridge, 67-megabyte, formatted and certified. Quantity: 1.

- Fuse, 5-ampere, 250-volt, nontime delay, part no. 2110-0010. Quantity: 2.

- Head Cleaner, part no. 8500-3440. 1-oz bottle.

- Foam Swabs. Package of 10.

- Warranty Label Envelope.

If any items are missing, contact your dealer or Hewlett-Packard Sales and Support Office.

Power Requirements

Refer to Table 1, Disc/Tape Drive Characteristics.

Configuring Power

The following instructions should be followed to ensure that your drive is properly adjusted to operate on the line voltage available in your area.

Setting the VOLTAGE SELECTOR Switch

CAUTION
MAKE SURE THAT THE POWER CORD IS DISCONNECTED FROM THE DRIVE ~ AC LINE CONNECTOR **2** BEFORE CHANGING THE VOLTAGE SELECTOR SWITCH **4** SETTING. FAILURE TO DISCONNECT THE POWER CORD COULD RESULT IN DAMAGE TO THE DRIVE.

Your drive should already be adjusted to operate on the line voltage available in your area. Check that the VOLTAGE SELECTOR switch **4** is set to this voltage level (115V or 230V). To change the switch setting, disconnect the power cord from the ~ AC LINE connector **2**. Then, place the tip of a small flat-blade screwdriver in the slot on the switch and slide the switch sideways to the proper setting.

Checking the FUSE Value

WARNING
MAKE SURE THAT THE POWER CORD IS DISCONNECTED FROM THE DRIVE BEFORE INSTALLING OR REPLACING THE FUSE **3**. FAILURE TO DISCONNECT THE POWER CORD COULD RESULT IN ELECTRICAL SHOCK OR DAMAGE TO THE DRIVE.

WARNING
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE AND RATING OF FUSE AS SPECIFIED.

The value of the FUSE **3** is the same for both settings of the VOLTAGE SELECTOR switch **4** . The correct rating for the fuse is 5-ampere, 250-volt, nontime delay. The HP part number for the fuse is 2110-0010.

To check the value of the FUSE **3** , first ensure that the power cord is disconnected from the ~ AC LINE connector **2** . Then, using a small flat-blade screwdriver, turn the fuseholder cap counterclockwise until the cap releases. Remove the fuse from the cap and check that the fuse is of the correct value. Replace the fuse in the cap — either end of the fuse can be installed in the cap. Next, install the fuse and fuseholder cap in the fuseholder by pressing the cap inward and then turning it clockwise until it locks in place.

Installing the Power Cord

CAUTION

- USE UL/CSA APPROVED POWER CORD, SVT TYPE, RATED FOR SUITABLE VOLTAGE AND CURRENT. (SEE FIGURE 3, POWER CORD SETS.)

- CHECK THE INPUT AC VOLTAGE, THE VALUE OF THE FUSE **3** , AND THE SETTING OF THE VOLT-AGE SELECTOR SWITCH **4** BEFORE PROCEEDING WITH THE POWER CORD INSTALLATION. THE DRIVE IS SUPPLIED WITH AN APPROPRIATE POWER CORD. THE VARIOUS POWER CORDS AVAILABLE ARE SHOWN IN FIGURE 3, POWER CORD SETS.

- DO NOT ATTEMPT TO OPERATE THE DRIVE CON-FIGURED FOR 115 VAC ON 230 VAC, OR VICE VERSA. DAMAGE TO THE DRIVE MAY RESULT.

a. Set the LINE~ switch **1** to the 0 (out) position.

b. Plug the female end of the power cord into the ~ AC LINE connector **2** at the rear of the drive.

Interfacing the Drive to Your System

The drive is connected to the system host via an HP-IB cable attached to the HP-IB connector **8** on the rear panel of the drive. It is also necessary to set the ADDRESS switch **9** to the HP-IB device address selected for the drive. Details of these two operations are provided in the following paragraphs.

OPTION 903   120V STANDARD

MALE NEMA (MOLDED)

FEMALE CEE

BROWN OR BLACK (L)
GREEN/YELLOW (E)
LIGHT BLUE OR WHITE (N)
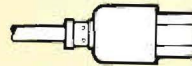
(L) BROWN OR BLACK
(E) GREEN/YELLOW
(N) LIGHT BLUE OR WHITE

(8120-1378 [GRAY, 2.3 m])

OPTION 905   240V

MALE CEE

FEMALE CEE

BROWN OR BLACK (L)
GREEN/YELLOW (E)
LIGHT BLUE OR WHITE (N)
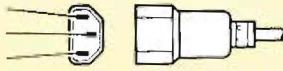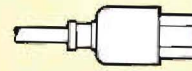
(L) BROWN OR BLACK
(E) GREEN/YELLOW
(N) LIGHT BLUE OR WHITE

8120-1860 (1.5m)
8120-1575 (0.7m)

OPTION 906   240V

MALE SEV

FEMALE CEE
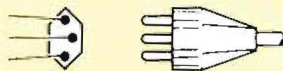
BLUE (N)
GREEN/YELLOW (E)
BROWN (L)
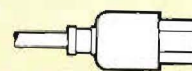
(L) BROWN
(E) GREEN/YELLOW
(N) LIGHT BLUE

8120-2104 (2.0m)

OPTION 902   240V

MALE SCHUKO

FEMALE CEE

LIGHT BLUE (N)
GREEN/YELLOW (E)
BROWN (L)
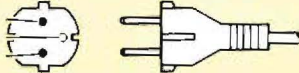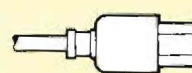
(L) BROWN
(E) GREEN/YELLOW
(N) BLUE

NOTE: THE LIGHT BLUE (N) AND BROWN (L) WIRES TO THE MALE SCHUKO
CONNECTOR MAY BE CONNECTED OPPOSITE TO THAT SHOWN.

8120-1689 (2.0m)

OPTION 901   240V

MALE ASC-112

FEMALE CEE

LIGHT BLUE OR BLACK (N)
GREEN/YELLOW (E)
LIGHT BROWN OR RED (L)
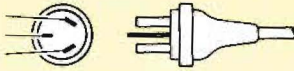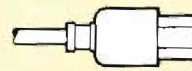
(L) LIGHT BROWN OR RED
(E) GREEN/YELLOW
(N) LIGHT BLUE OR BLACK

8120-1369 (2.0m)

OPTION 900   240V

MALE BS 1363

FEMALE CEE

LIGHT BLUE (N)
GREEN/YELLOW (E)
LIGHT BROWN (L)
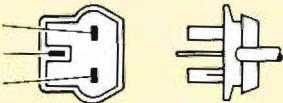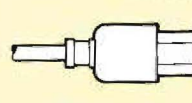
(L) LIGHT BROWN
(E) GREEN/YELLOW
(N) LIGHT BLUE

8120-1351 (2.3m)

OPTION 912   220V   MALE DANISH 90 DEG MDPP

FEMALE CEE

GREEN/YELLOW (N)
BLUE (E)
BROWN (L)
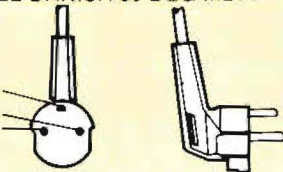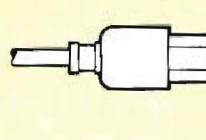
(L) BROWN
(E) GREEN/YELLOW
(N) BLUE

8120-2956 (2.0m)

E EARTH OR SAFETY GROUND
N NEUTRAL OR IDENTIFIED CONDUCTOR
L LINE OR ACTIVE CONDUCTOR

7908-11B

Figure 3. Power Cord Sets

Note

The drive must be connected to the system host by a shielded
HP 10833 Series HP-IB Cable Assembly, or its equivalent.

Connecting the HP-IB Cable

CAUTION

ENSURE THAT THE LINE~ SWITCHES ON ALL
UNITS OF YOUR SYSTEM ARE SET TO THE 0 (OUT)
POSITION BEFORE CONNECTING (OR DISCONNECT-
ING) HP-IB CABLES.

Figure 4. HP-IB Cable

A 1-metre (3.3-foot) HP-IB cable assembly is supplied with the drive. (See Figure 4, HP-IB
Cable.) Before using this cable to connect the drive to the system host, ensure that the proposed
cabling conforms to the following HP-IB cabling standards:

- Cabling is limited to 1 metre per HP-IB load. Typically, the central processing unit (CPU) is
  seven equivalent loads and the drive is one equivalent load. Refer to the host configuration
  guide for specific information regarding the CPU equivalent load.

- The CPU adheres to an HP standard which allows 7 metres of HP-IB cable between the CPU
  and the nearest device connected to it, and 1 metre of cable connected between each additional
  device.

- The maximum is eight devices (excluding the CPU) per HP-IB channel or a maximum of 15 metres or 15 equivalent loads.

- The maximum number of devices which can be connected to a single HP-IB channel is host dependent. This information is provided in the appropriate host configuration guide.

- There are no restrictions on how the devices can be connected together on the HP-IB channel. However, do not connect more than three cable connectors to the HP-IB connector on a device. Additional cable connectors could result in enough force being exerted on the HP-IB connector to damage it.

a. Set the LINE ~ switch **1** to the 0 (out) position.

b. Connect one end of the HP-IB cable to the HP-IB connector **8** on the rear panel of the drive. Tighten the two securing screws on the connector.

c. Connect the other end of the HP-IB cable to the HP-IB data bus on the CPU.

Setting the HP-IB Device Address

Each device in a Hewlett-Packard Interface Bus (HP-IB) system requires a unique device address. A small 4-segment ADDRESS switch **9** on the rear panel of the drive is provided for this purpose. The switch can be set to any one of eight addresses, ranging from decimal 0 through 7.

CAUTION
ENSURE THAT THE DRIVE LINE ~ SWITCH **1** IS SET TO THE 0 (OUT) POSITION BEFORE CHANGING THE ADDRESS SWITCH **9** SETTINGS. FAILURE TO OB-SERVE THIS PRECAUTION MAY RESULT IN LOSS OF DATA OR NO SYSTEM RESPONSE.

---

a. Set the LINE ~ switch **1** to the 0 (out) position.

b. Set the ADDRESS switch **9** on the rear panel to the desired HP-IB device address using the coding scheme marked on the panel. Disregard any markings on the switch itself. Use the tip of a ballpoint pen or similar object to operate the switches. Figure 5, ADDRESS Switch, shows the ADDRESS switch **9** settings for HP-IB addresses 0 through 7.

Note
During normal operation of the drive, the selected HP-IB address is shown on the rear panel Self Test display **6**.

ADDRESS	X	4	2	1
0	X	0	0	0
1	X	0	0	1
2	X	0	1	0
3	X	0	1	1
4	X	1	0	0
5	X	1	0	1
6	X	1	1	0
7	X	1	1	1

X = DON'T CARE
0 = DOWN
1 = UP
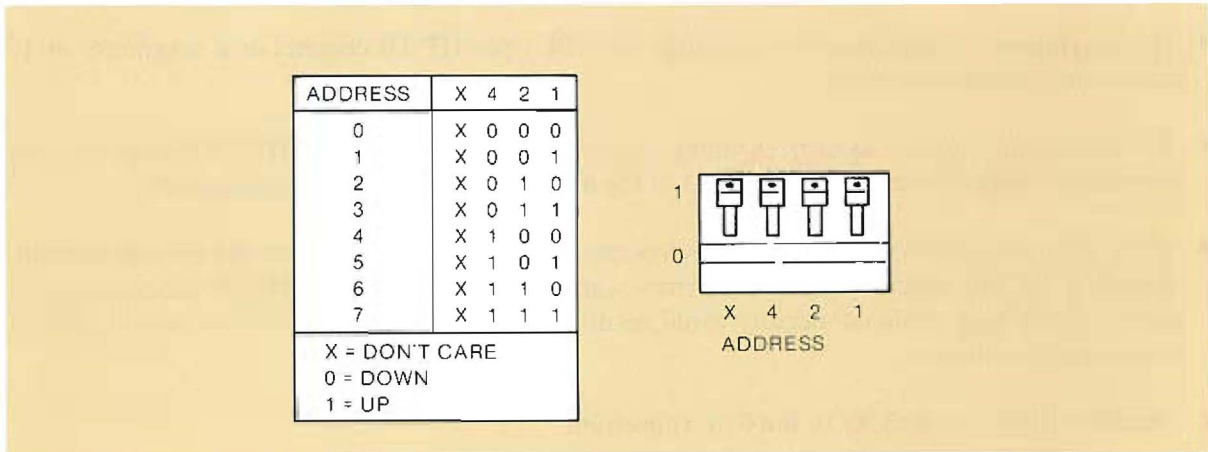
Figure 5. ADDRESS Switch

Cabling Check

After the drive has been connected to the operating system, visually inspect the installation. Ensure that all cabling is correctly connected and the desired HP-IB channel address has been selected. Before applying line voltage to the drive, read the description of the drive operating controls and line voltage connection instructions contained in the OPERATION chapter of this manual.

Warranty Label

Remove the warranty label from the sealed envelope on the side of the shipping container. (See Figure 2, Packaging Details.) Remove the paper backing from the label. Attach the label to the left-hand side of the rear panel in the space marked "Place warranty label here.".

<p style="text-align: right;">Chapter 3
Operation</p>

Introduction

This chapter contains operating instructions for the drive. Included are operating precautions, a description of the operating controls, self-test information, and line voltage application and removal procedures.

Warnings and Precautions

WARNING

OBSERVE ALL WARNINGS AND CAUTIONS IN THIS MANUAL AND AFFIXED TO THE EQUIPMENT.

CAUTION

- DO NOT TURN THE LINE~ SWITCH 🔳 ON OR OFF WHEN YOUR SYSTEM IS TRANSFERRING DATA ON THE HEWLETT-PACKARD INTERFACE BUS (HP-IB).

- DO NOT CYCLE THE LINE~ SWITCH 🔳 ON AND OFF UNNECESSARILY.

- DO NOT CONNECT OR DISCONNECT THE HP-IB CABLE(S) FROM THE DRIVE WHEN YOUR SYSTEM IS TRANSFERRING DATA ON THE HP-IB.

- DO NOT TOUCH THE TAPE OR ATTEMPT TO CLEAN THE TAPE OR TAPE GUIDES WITHIN THE TAPE CARTRIDGE.

- DO NOT ATTEMPT TO REMOVE THE TAPE CARTRIDGE FROM THE DRIVE BEFORE THE UNLOADING SEQUENCE HAS BEEN COMPLETED. IF YOU LOSE POWER WITH THE TAPE CARTRIDGE INSERTED IN THE DRIVE (BETWEEN OPERATIONS),

THE CARTRIDGE IS LOCKED IN THE DRIVE
UNTIL POWER IS RESTORED AND THE UNLOAD
SEQUENCE IS COMPLETED.

- DO NOT USE EXCESSIVE FORCE ON THE TAPE
CARTRIDGE EJECT PUSHBUTTON . THE PUSH-
BUTTON WILL NOT OPERATE WHEN THE BUSY
INDICATOR IS ILLUMINATED, THE UNLOAD
OPERATION IS IN PROGRESS, OR THE POWER IS
OFF.

- DO NOT CLEAN THE TAPE DRIVE CAPSTAN OR
HEAD WITH ANY TYPE OF CLEANING MATERIALS
OR TOOLS OTHER THAN THOSE SPECIFIED IN
THE MAINTENANCE AND SERVICE CHAPTER OF
THIS MANUAL.

- DO NOT LEAVE TAPE CARTRIDGES IN EXCES-
SIVELY WARM, DRY, OR HUMID LOCATIONS; IN
DIRECT SUNLIGHT; OR IN AREAS WHERE MAG-
NETIC FIELDS ARE PRESENT (FOR EXAMPLE,
ADJACENT TO TRANSFORMERS AND MOTORS).

- DO NOT USE TAPE CARTRIDGES AT TEMPERA-
TURES BELOW 10°C (50°F) OR ABOVE 40°C (104°F).

- DO NOT STORE THE TAPE CARTRIDGES AT TEM-
PERATURES BELOW –40°C (–40°F) OR ABOVE 60°C
(140°F).

- DO NOT DROP THE TAPE CARTRIDGES OR SUB-
JECT THEM TO ROUGH HANDLING.

- TO PREVENT OVERWRITING DATA STORED ON A
TAPE, SET THE WRITE PROTECT SWITCH ON THE
TAPE CARTRIDGE TO THE SAFE MARKING BE-
FORE INSTALLING THE CARTRIDGE IN THE
DRIVE. THIS PROTECTS THE CARTRIDGE FROM
ALL WRITE OPERATIONS. YOU CAN ONLY READ
FROM THE CARTRIDGE. INSTRUCTIONS ON HOW
TO SET THE WRITE PROTECT SWITCH ARE PRO-
VIDED IN THE TAPE CARTRIDGE PARAGRAPH IN
THIS CHAPTER.

- REMOVE THE TAPE CARTRIDGE FROM THE DRIVE WHEN THE CARTRIDGE IS NOT IN USE AND STORE IT IN ITS PROTECTIVE PLASTIC CASE. IF THE TAPE CARTRIDGE IS LEFT UNUSED IN THE DRIVE, IT MAY DEFORM THE CAPSTAN AND COLLECT EXCESSIVE AMOUNTS OF DUST AND DIRT.

- STORE TAPE CARTRIDGES IN A CLEAN ENVIRONMENT AT ALL TIMES. EXPOSURE TO SMOKE, DUST, AND OTHER CONTAMINANTS DEGRADES TAPE RELIABILITY.

Environmental Limits

To ensure proper operation, the drive must be operated within the environmental limits specified in the *Site Environmental Requirements for Disc/Tape Drives Manual*, part no. 5955-3456. This publication is supplied with the drive.

Connectors, Switches, and Indicators

Figure 1, Controls and Connectors, shows the location of the connectors, switches, and indicators on the front and rear panels of the drive. The functions of these components are described in the following paragraphs.

Note

The controls and connectors listed under the heading Disc/Tape Drive are common to both the disc drive and the tape drive. The remaining controls and connectors, listed under the headings Disc Drive and Tape Drive, are applicable to the disc drive and the tape drive, respectively.

Disc/Tape Drive

Line ~ Switch

The LINE~ switch **1** controls the application of line voltage to the drive.

~ AC LINE Connector

The ~ AC LINE connector **2** allows the drive to be connected to a line voltage source.

FUSE

The FUSE **3** protects the drive from a line voltage overload. The fuse is the same value (5A, 250-volt, nontime delay) for both 115 and 230 Vac operation.

VOLTAGE SELECTOR Switch

The VOLTAGE SELECTOR switch **4** is a 2-position slide switch which selects a line voltage of 115 or 230 Vac for the drive.

SELF TEST Switch

The SELF TEST switch **5** is a momentary contact pushbutton switch which initiates the drive internal self-test diagnostic routines. The switch is recessed behind the rear panel and can be activated by the tip of a ballpoint pen or similar object. The self-test routines initiated by the switch are the same as those initiated by a host-issued diagnostic command. Both of these routines are similar to the power on self-test routines.

Self Test Display

The Self Test display **6** consists of a 2-digit 7-segment hexadecimal display which reports the results of the internal self-test and diagnostic routines. The Self Test display **6** also shows the HP-IB address selected by the ADDRESS switch **9**.

Whenever self test is initiated, either by operation of the SELF TEST switch **5** or when line voltage is applied to the drive, the display will first show an 8.8. readout to test that all segments of the display are functioning. The display will then go blank until self test is completed. (See Figure 6, Rear Panel Self Test Display.)

When the SELF TEST switch **5** is pressed, release from the host is requested. If release is granted, the Self Test display **6** is blanked to indicate that the self test is ready to start. When the switch is released, self-test commands are issued to the drive. One of the first tests is one that causes the 8.8. display to appear. The display is then blanked until self test is completed. If release is not granted, an r.d. (release denied) display will appear. This message will continue to be displayed until the SELF TEST switch **5** is released, at which time the display will show the previous pass/fail result.

When self test has been completed on the units of the drive (controller, disc drive, tape drive, and power supply), the display will show a P.x. (pass) or an F.x. (fail) result. The numeral x. is the HP-IB address set by the ADDRESS switch **9**. If the self-test command is sent to a single unit (disc drive or tape drive), the pass result will only be displayed if the unit passes self test and the controller and the other unit have passed their most recent self tests.

SELF-TEST
DISPLAY

DISPLAY
RESULTS
SWITCH
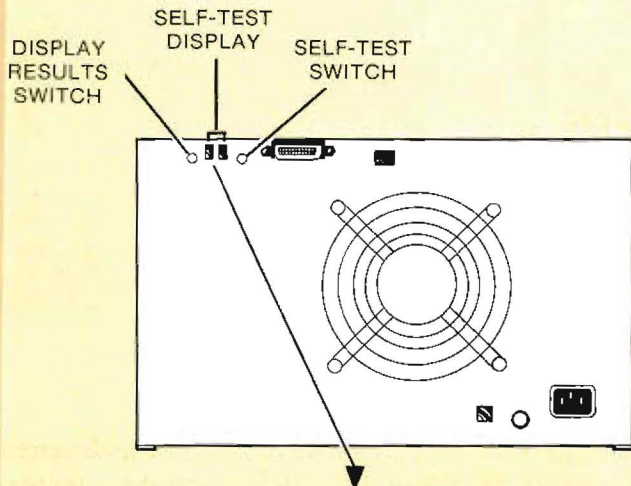
SELF-TEST
SWITCH

DISPLAY	MESSAGE	
8.8.	DISPLAY TEST	
P.*	SELF TEST PASS	GO/NO-GO TEST RESULT.
F.*	SELF TEST FAIL	* = HP-IB ADDRESS
r.d.	RELEASE DENIED	
U.2.	HOST DEPENDENT CONTROLLER	UNIT FAILED
U.0.	DISC DRIVE	
U.1.	TAPE DRIVE	

A.1.	DISC DRIVE ASSY	
A.2.	DEVICE DEPENDENT CONTROLLER	DISC DRIVE
A.4.	POWER SUPPLY	FRA FAILED.
A.5.	HOST DEPENDENT CONTROLLER	
A.6.	CONNECTORS	
0.0.	DISC DRIVE SELF-TEST SUBTEST FAILED.	
⋮	Refer to DISC/TAPE DRIVE	
6.8.	SERVICE MANUAL, part no.	
8.8.	07942-90903, for details.	

A.0.	Not discernible. An assembly failed and it tested as good.	
A.1.	DRIVE MECHANISM (includes CAPSTAN MOTOR and HEAD STEPPER MOTOR)	
A.2.	DEVICE DEPENDENT CONTROLLER	
A.3.	READ/WRITE ASSY	TAPE DRIVE
A.4.	DIRTY HEAD	FRA FAILED.
A.5.	CONTROLLER	
A.7.	SERVO ASSY	
A.8.	HEAD STEPPER MOTOR	
A.9.	CAPSTAN MOTOR (includes TACHOMETER)	
0.0.	TAPE DRIVE SELF-TEST SUBTEST FAILED.	
⋮	Refer to DISC/TAPE DRIVE	
8.8.	SERVICE MANUAL, part no. 07942-90903, for details.	

Figure 6. Rear Panel Self-Test Display

DISPLAY RESULTS Switch

The DISPLAY RESULTS switch **7** is a momentary contact pushbutton switch which causes self-test results to be displayed on the Self Test display **6**. When the switch is pressed, a request for release is generated. The switch must be pressed and held down until release is granted or denied. If release is granted the display will become blank until the switch is released. If release is denied, an **r.d.** (release denied) message will be displayed. When the switch is released, the previous pass/fail result is restored to the display.

Following release, pressing the switch a number of times will display a sequence of test failure information. The information displayed for a failure will be, in order, unit failed, field replaceable assembly (FRA) failed, and subtest failed. The failing unit is indicated by the display **U.x.** where numeral **x.** identifies the unit. The failing FRA is indicated by **A.x.** where numeral **x.** identifies the FRA. A subtest failed is indicated by a 2-digit hexadecimal number. It is possible for a failing unit to have multiple failing FRA's. These will be listed in descending order of most probable failure. If a unit has no failures to report, it will display only the unit number. Refer to Figure 6, Rear Panel Self-Test Display, for a listing of unit, FRA, and subtest failure numbers.

HP-IB Connector

The HP-IB connector **8** allows the drive to be connected to the host computer via an HP-IB cable assembly. Connection instructions are given in the INSTALLATION chapter.

ADDRESS Switch

The ADDRESS switch **9** is a 4-segment switch which programs the drive HP-IB device address. One segment of the switch is not used. Operating instructions are given in the INSTALLATION chapter.

Disc Drive

FAULT/ON LINE Indicator

The FAULT/ON LINE indicator **10** is a red/green display which signals the operating status of the disc drive. (See Figure 7, Front Panel Self-Test Display.) When line voltage is applied to the disc drive, the FAULT (red) and ON LINE (green) portions of the display will illuminate for one second to test that the display is functioning. Next, the green portion will flash during the time that the disc drive is executing its internal self-test routines. Self test takes between six and 12 seconds to complete. If the disc drive passes self test, the display will change to a solid green. If the disc drive fails self test, the display will change to a solid red with a flashing green indicating that the self-test routines are still accomplishing some "housekeeping" tasks. When these tasks are complete, the green indicator will extinguish, indicating that the disc drive is ready to accept host commands such as diagnostics. The green indicator will flash again when the disc drive attempts to respond to these commands. A solid red and green display indicates that the host dependent controller (unit 2) has failed self test.

After a successful self test, a solid green display indicates that the disc drive is idle and a flashing green indicates that the disc drive is active.

		MESSAGE
BUSY INDICATOR —	**GREEN** ON	EXECUTING TAPE DRIVE SELF TEST **OR** TAPE DRIVE ACTIVE
FAULT INDICATOR —	**RED** ON	TAPE DRIVE **OR** TAPE CARTRIDGE FAILED SELF TEST

FAULT/ON LINE INDICATOR —	**RED**	**GREEN**	
	ON	ON	INDICATOR TEST FOR 1 SECOND AFTER INITIAT- ING SELF TEST **OR** CON- TROLLER (U2) FAILED SELF TEST.
	OFF	FLASHING	EXECUTING DISC DRIVE SELF TEST **OR** DISC DRIVE ACTIVE.
	OFF	ON	DISC DRIVE PASSED SELF TEST **OR** DISC DRIVE ACTIVE.
	ON	FLASHING	DISC DRIVE FAILED SELF TEST. TEST ROU- TINES STILL ACTIVE.
	ON	OFF	DISC DRIVE FAILED SELF TEST; READY FOR DISGNOSTICS.

Figure 7. Front Panel Self-Test Display

Tape Drive

TO TAPE Pushbutton

The TO TAPE pushbutton **11** is a momentary contact switch which initiates a disc-to-tape back-up operation. Pressing the pushbutton once causes the BUSY indicator **15** to flash for 2.5 seconds. During this period, pressing the TO TAPE pushbutton **11** once more will initiate the back-up. Details of the back-up operation are provided in the Disc-To-Tape Back-Up paragraph in this chapter.

FROM TAPE Pushbutton

The FROM TAPE pushbutton **12** is a momentary contact switch which initiates a tape-to-disc restore operation. Pressing the pushbutton once will cause the BUSY indicator **15** to flash for 2.5 seconds. During this period, pressing the FROM TAPE pushbutton **12** once more will initiate the restore. Details of the restore operation are provided in the Tape-To-Disc Restore paragraph in this chapter.

UNLOAD Pushbutton

The UNLOAD pushbutton 13 is a momentary contact switch which initiates a tape cartridge unload operation. If the tape drive is active, the operation in progress (seek, read, write) is completed before the unload request is sent to the host computer. In conjunction with local operation, the host computer must also allow the unload request. The computer may deny the unload request, depending on the current operation in progress. A description of the unload operation is provided in the Tape Cartridge Unloading paragraph.

Eject Pushbutton

The Eject pushbutton 14 unloads the tape cartridge from the tape drive. The pushbutton remains locked until the completion of the unload operation. If there is a power failure or the drive is powered down, the tape cartridge will remain locked in the tape drive. To get the tape cartridge out, apply power, wait for the BUSY indicator 15 to extinguish, and then press the UNLOAD pushbutton 13. After a delay of approximately 1½ minutes, press the Eject pushbutton 14.

BUSY Indicator

The BUSY indicator 15 is illuminated when the tape drive is performing certain functions. These functions are: self test, tape cartridge loading, tape cartridge unloading, seek, read, and write. The Eject pushbutton is locked when the BUSY indicator 15 is illuminated. (The Eject pushbutton is not necessarily unlocked when the BUSY indicator 15 is extinguished.)

PROTECT Indicator

The PROTECT indicator 16 is illuminated when a write-protected tape cartridge is inserted into the tape drive or is residing in the tape drive. When the indicator is illuminated, you can only read data from the cartridge; you cannot write data to the cartridge. How to make a cartridge "write protected" is described in the Tape Cartridge paragraph. The PROTECT indicator 16 is extinguished when the tape cartridge is unloaded.

The PROTECT indicator 16 also acts as a recording medium indicator. If the PROTECT indicator 16 starts to flash after the BUSY indicator 15 is extinguished at the end of the unload operation, this is a warning that *the tape is approaching the end of its useful life.* The data on the tape cartridge needs to be copied and the cartridge discarded. In this instance, the PROTECT indicator 16 will flash until the tape cartridge is removed from the disc/tape drive. Refer to the Tape Cartridge Unloading paragraph for additional information.

FAULT Indicator

The FAULT indicator 17 is illuminated when a tape drive or tape cartridge self-test failure occurs.

Tape Cartridge Slot

The tape cartridge slot ▮18 allows a tape cartridge to be loaded into the tape drive transport mechanism.

Line Voltage Application

a. Set the LINE~ switch ▮1 to the 1 (in) position and observe the action of the FAULT/ ON LINE indicator ▮10. A normal sequence of events on the indicator will be a momentary red and green display (display test), followed by a flashing green (self test in progress), and finally a solid green (self test passed). If the sequence ends with a solid red and green display (controller failed self test) or a solid red display (self test failed), the malfunctioning circuitry may be identified as follows:

   (1) Observe the Self Test display ▮6 on the rear panel of the drive.

   (2) The display should show an **F.x.** (self test fail) message.

   (3) Using the tip of a ballpoint pen or a similar object, press the DISPLAY RESULTS switch ▮7 a number of times, noting each message until the display returns to the **F.x.** message.

   (4) Using the messages noted, consult Figure 6, Rear Panel Self-Test Display, to determine the failed unit, field replaceable assembly (FRA), and subtest. There may be multiple FRA failures.

Tape Cartridge

CAUTION
DO NOT DEGAUSS OR BULK ERASE THE TAPE CAR-
TRIDGE. THIS WILL ERASE FORMATTING INFOR-
MATION RECORDED ON THE TAPE AT THE FAC-
TORY. ONCE THIS PRERECORDED FORMATTING
INFORMATION IS ERASED, THE TAPE CARTRIDGE
CANNOT BE USED IN THE DRIVE.

The removable recording medium used in the tape drive is a 1/4-inch tape cartridge. (See Figure 8, Tape Cartridge.) Two versions of the tape cartridge are available:

- HP 88140SC Tape Cartridge, 150-foot (16.7-megabyte), formatted and certified. Box of 5.

- HP 88140LC Tape Cartridge, 600-foot (67-megabyte), formatted and certified. Box of 5.

A single formatted and certified 600-foot (67-megabyte) tape cartridge is supplied with your drive.
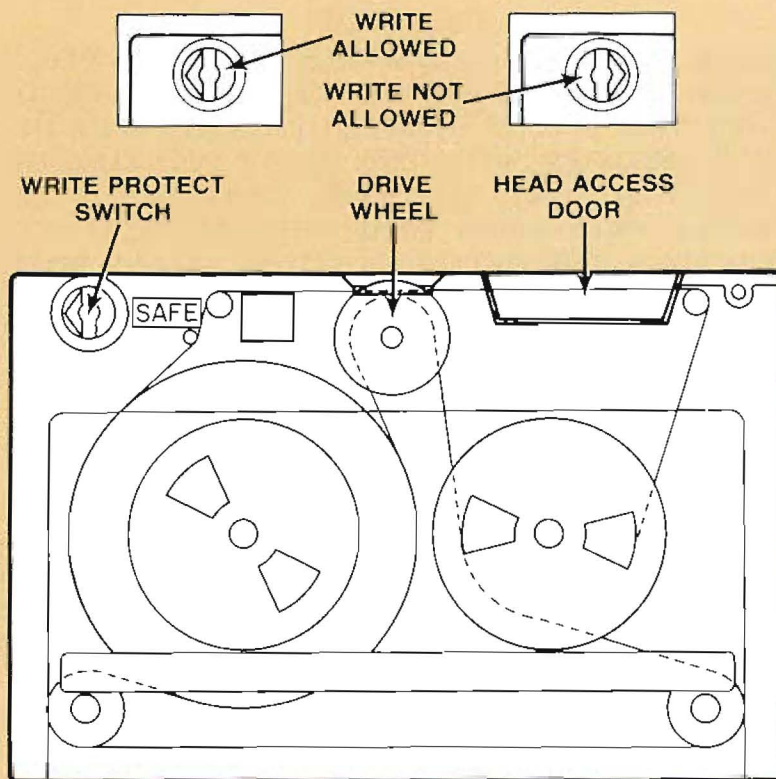
Figure 8. Tape Cartridge

Each tape cartridge is packaged in a hard plastic case, sealed with a clear plastic wrapping. You must remove both the wrapping and the plastic case before the cartridge can be used. Between uses, store the cartridge in the plastic case.

Formatting (a factory process) divides the tape into block sections. Each block contains beginning and ending markings magnetically recorded on the tape. Certifying is a process which ensures that all of the sections of the tape that are to be used are good sections.

Tape cartridges must be initialized by your computer before they can be used for the first time. You *must* initialize each tape. This is done using a command from your computer. Initializing prepares the cartridge for use by setting up preliminary information (volume name and file directory) on the tape. Once initialized, and after data is stored on the cartridge, another initialization will erase all the stored data (but not the prerecorded formatting information). Do not re-initialize the tape unless you want to remove all stored data from the tape.

CAUTION

WHEN CHANGING THE WRITE PROTECT SWITCH
TO OR FROM THE SAFE MARKING, BE SURE TO
TURN THE SWITCH UNTIL IT CATCHES (THE DE-
TENT ENGAGES) WITH THE ARROW POINTING DI-
RECTLY TOWARD THE SAFE MARKING OR DI-
RECTLY AWAY FROM IT. IF THE SWITCH IS NOT
PLACED IN THE DETENT POSITION, IT CAN LOCK
AROUND THE RECEIVING PORTION INSIDE THE
TAPE DRIVE AND JAM. IF THIS HAPPENS, THE TAPE
CARTRIDGE CANNOT BE REMOVED WITHOUT DIS-
ASSEMBLING THE DRIVE.

The tape cartridge has a Write Protect switch. (See Figure 8, Tape Cartridge.) Use a small screwdriver or the edge of a coin to turn the switch. When the arrow on the switch is pointing toward the SAFE marking, the cartridge is write protected. This means that only read operations are allowed. You cannot accidentally write over existing data with the Write Protect switch in the SAFE position. With a write-protected cartridge in the drive, the WRITE PROTECT indicator **16** on the front panel will be illuminated. Typical reasons for using write protect include safe-guarding important data and programs, and protecting your master back-up copy.

If you decide to perform write operations with a write-protected cartridge in the drive, press the UNLOAD pushbutton **13** to initiate the unload operation. You can now remove the cartridge, change the setting of the Write Protect switch, re-insert the cartridge, and initiate the load operation.

Tape Cartridge Loading

a. Remove the tape cartridge from its protective plastic case.

b. Set the tape cartridge Write Protect switch to the desired position.

c. Position the tape cartridge adjacent to the tape cartridge slot **18**. (See Figure 9, Tape Cartridge Loading.)

d. Insert the tape cartridge into the slot and push the cartridge in until a click is heard. This indicates that the cartridge is properly installed.

e. The tape drive will now begin a series of automatic routines which prepare the tape for operation. The BUSY indicator **15** is illuminated during this procedure.
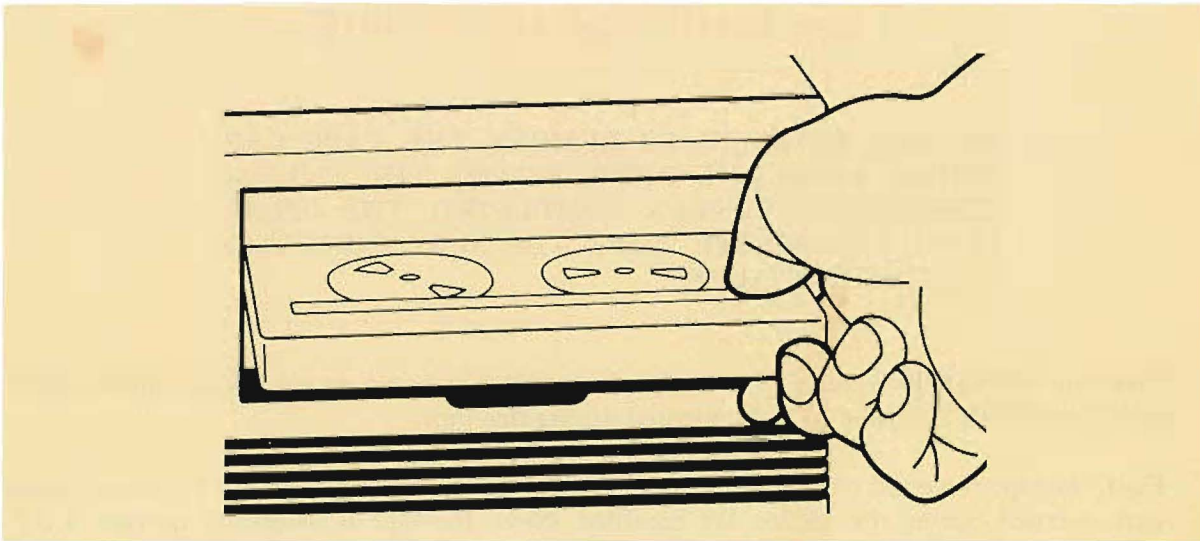
Figure 9. Tape Cartridge Loading

Note

If the FAULT indicator **17** is illuminated and the Eject push-button **14** unlocks, this indicates that the tape cartridge may be defective. If the tape cartridge is the most likely item that failed, the rear panel Self Test display **6** will show a **P.x.** (pass) result even though the FAULT indicator **17** is illuminated. Try another tape cartridge.

First, the read circuitry is tested. Next, the tape is wound to its end (End of Tape EOT). This action should require almost no time to complete because the tape should have been wound to EOT when it was last unloaded from the drive. The tape is now run in a reverse/forward pattern. This is used to calibrate tape speed (internal friction varies from cartridge to cartridge). The automatic gain control for the read electronics is set next. This allows the tape drive to read weak signals from older tapes. The tape is now wound to its beginning (Beginning of Tape BOT). Here, the BUSY indicator **15** is briefly extinguished. At this point the tape drive determines:

- Capacity of the tape (16.7 Mbyte or 67 Mbyte)

- Address information for any bad sections on the tape

- Address information for available spare blocks

Next, a write/read test is performed at a special location on the tape. After writing some data, the read-after-write function is performed. This read-after-write function is the error determination mechanism of the tape drive. Once this data is read, the BUSY indicator **15** is extinguished and the tape is ready for use. The entire operation takes approximately one minute for the 16.7-Mbyte tape and under two minutes for the 67-Mbyte tape.

Tape Cartridge Unloading

CAUTION

DO NOT ATTEMPT TO REMOVE THE TAPE CAR-
TRIDGE FROM THE DRIVE BEFORE THE UNLOAD
OPERATION HAS BEEN COMPLETED. THE OPERA-
TION IS COMPLETE WHEN THE BUSY INDICATOR
15 IS EXTINGUISHED.

---

a. Press the UNLOAD switch **13**. The tape drive will now begin an automatic unload opera-
tion. The BUSY indicator **15** is illuminated during this time.

   First, the tape is wound to its beginning (BOT) where information regarding the errors which
   were accrued during the session are recorded. Next, the tape is wound to its end (EOT)
   where the number of sessions and tape life information is updated. After the updating, the
   BUSY indicator **15** is extinguished. The Eject pushbutton **14** is now unlocked, allowing the
   tape cartridge to be removed from the drive.

b. If the PROTECT indicator **16** starts to flash after the BUSY indicator **15** is extinguished,
   this is a warning that the tape is approaching the end of its useful life.

   Tape life information is determined by a media monitor circuit incorporated in the tape drive.
   The circuit monitors two parameters:

   • Number of cartridge loads

   • Number of data blocks accessed

   Every time the tape cartridge is unloaded, the two numbers are updated in a designated area
   of EOT (only if the cartridge is not write protected). When a cartridge exceeds either of the
   following numbers, the monitor circuit causes the PROTECT indicator **16** to flash.

   • 2000 cartridge loads

   • 800 Mbytes accessed (600-foot cartridge) or 200 Mbytes accessed (150-foot cartridge)

c. Press the Eject pushbutton **14** and remove the tape cartridge from the tape cartridge slot **18**.

d. Check that the Write Protect switch on the tape cartridge is set to the desired position.

e. Place the tape cartridge in its protective plastic container, and store it in a suitable location.

Disc-To-Tape Back-Up

a. Load a tape cartridge into the drive as described in the Tape Cartridge Loading paragraph. Ensure that the tape cartridge has sufficient capacity (16.7 or 67 megabytes) to store the disc volume and that the arrow on the Write Protect switch is pointing away from the SAFE marking.

b. Ensure that the BUSY indicator **15** is extinguished.

c. Press the TO TAPE pushbutton **11** once. When the BUSY indicator **15** flashes, press the TO TAPE pushbutton **11** once more to begin the disc-to-tape back-up (data transfer) operation.

The data transfer will start from logical block 0 on the disc and tape, and proceed until the disc volume has been completely transferred. When the last block is written on the tape, a file mark is written on the next block (assuming that a tape cartridge of sufficient capacity is being used). No multiple tape cartridge operations are supported.

When the data transfer has been successfully completed, the tape cartridge is automatically unloaded from the tape drive. Simultaneously, the disc drive FAULT/ON LINE indicator **10** will change from a flashing green to a solid green and the tape drive BUSY indicator **15** will be extinguished.

Note

If a disc drive uncorrectable data error occurs during the data transfer, a best guess is sent. A disc drive fault will halt the data transfer. Both conditions (data error/disc drive fault) will cause the disc drive FAULT/ON LINE indicator **10** to turn red. The tape cartridge is not unloaded.

If a tape drive fault occurs, the data transfer will be halted and the tape drive FAULT indicator **17** will be illuminated. Again, the tape cartridge is not unloaded.

Press the UNLOAD pushbutton **13** to clear the fault and unload the tape cartridge.

---

d. Press the Eject pushbutton **14** and remove the tape cartridge from the tape cartridge slot **18**.

e. Set the arrow on the tape cartridge Write Protect switch to the SAFE marking.

Tape-To-Disc Restore

a. Load the back-up tape cartridge into the drive as described in the Tape Cartridge Loading paragraph.

b. Ensure that the BUSY indicator **15** is extinguished.

c. Press the FROM TAPE pushbutton **12** and when the BUSY indicator **15** begins flashing, press the FROM TAPE pushbutton **12** once more to begin the tape-to-disc restore (data transfer) operation. The data transfer will start from logical block 0 on the tape and proceed until the tape volume has been completely transferred.

    When the data transfer has been successfully completed, the tape cartridge is automatically unloaded from the tape drive. Simultaneously, the disc drive FAULT/ON LINE indicator **15** will change from a flashing green to a solid green and the tape drive BUSY indicator **15** will be extinguished.

Note

If a tape drive uncorrectable data error occurs during the data transfer, a best guess is sent. A tape drive fault will halt the data transfer. Both conditions (data error/tape drive fault) will cause the tape drive FAULT indicator **17** to be illuminated. The tape cartridge is not unloaded.

If a disc drive fault occurs, the data transfer will be halted and the disc drive FAULT/ON LINE indicator **10** will be a solid red. Again, the tape cartridge is not unloaded.

Press the UNLOAD pushbutton **13** to clear the fault and unload the tape cartridge.

---

d. Press the Eject pushbutton **14** and remove the tape cartridge from the tape cartridge slot **18**.

Line Voltage Removal

a. Unload the tape cartridge (if installed) from the drive following the instructions given in the Tape Cartridge Unloading paragraph.

b. Set the LINE~ switch **1** to the 0 (out) position.

Chapter 4
Maintenance and Service

Serial Number

Each drive carries an individual serial number recorded on the rear panel. It is a good idea to keep a record of this serial number. Should your drive be stolen or lost, the serial number is often necessary for tracing and recovery, as well as any insurance claims. Hewlett-Packard does not maintain cross-reference records of customer names and drive serial numbers.

Shipping

When the drive requires repackaging for shipment, use the original container and packaging material supplied with the drive. Pack the drive as shown in Figure 1, Packaging Details. Seal the container securely with strapping tape. If the original container is not available, consult your local dealer or Hewlett-Packard Sales and Support Office for information on how to obtain replacement packaging material.

Before shipment, the container should have an attached tag identifying the owner and the service or repair needed. Include the equipment model number and full serial number. The shipping weight of the drive is 19.6 kilograms (43.3 pounds). Also, we recommend that all shipments be insured.

Disc Drive Maintenance

No regularly scheduled preventive maintenance is required for the disc drive.

Tape Drive Maintenance

The tape drive needs a minimum of maintenance to keep it in proper working order. However, the tape head requires regular cleaning. The tape head must be cleaned each week and after using a new tape cartridge for the first time. Also, head cleaning is recommended after every three to five back-up operations requiring the use of the 600-foot tape cartridge. It is important that the tape head be cleaned any time data errors are encountered. Tape head cleaning instructions are given in the Cleaning the Tape Head and Capstan paragraph.

Cleaning Supplies

A supply of cleaning material should be kept on hand at all times. The following products are recommended for use with the drive.

- HP 92193X Tape Head Cleaner. Six 4-oz bottles.

- 9300-0767 Foam Swabs. 50 per package.

- HP 92193H Magnetic Head Cleaning Kit. Included in the kit are two 4-oz bottles of tape head cleaner, 50 lint-free wipes, 10 foam swabs, and one easy-pour dispensing cap.

Hewlett-Packard supports *only* the use of *liquid* Freon TF (trichlorotrifluorethane) as a tape path cleaning solution. Liquid Freon TF cuts oil and grease, evaporates quickly, leaves no residue, and will not damage the tape transport. If the user employs a source other than Hewlett-Packard for this product, make sure that the fluid is a high-quality solution of 80 percent Freon TF and 20 percent isopropyl alcohol. Avoid solutions of Freon TF mixed with other solvents.

Wiping Materials

DO NOT USE FACIAL TISSUES OR COTTON-TIPPED SWABS. ALTHOUGH SEEMINGLY EFFECTIVE, THEY CAN INTRODUCE HIGHLY ABRASIVE LINT INTO THE TAPE PATH.

Use only the foam swabs listed in the Cleaning Supplies paragraph. The wiping materials must be discarded after use. Even if they appear to be clean, they contain contamination.

Cleaning the Tape Head and Capstan

- DO NOT TOUCH THE TAPE OR ATTEMPT TO CLEAN THE TAPE OR TAPE GUIDES IN THE TAPE CARTRIDGE.

- USE ONLY THE CLEANING MATERIALS LISTED IN THE CLEANING SUPPLIES PARAGRAPH. USE OF UNAUTHORIZED MATERIALS COULD RESULT IN LOSS OF DATA.

The tape head and capstan can be reached for easy cleaning. To do this, the drive must be powered on. Then, reach in through the tape cartridge slot with a cleaning swab and depress the Cartridge-In switch. (See Figure 10, Tape Head and Capstan Cleaning.) The Cartridge-In switch is the lower of the two switches located at the left rear of the tape cartridge cavity. Press the switch for approximately 1 second and then release it. This will cause the tape head to rise. It will be necessary to press the Cartridge-In switch twice to raise the head up far enough to fully clean it. Pressing the switch for longer than 3 seconds will cause the tape drive to think that a cartridge has been loaded and a load sequence will begin. If this happens, cycle the power off and on again and repeat the head raising procedure.

After power is removed, clean the tape head and capstan as follows:

a. Set the LINE~ switch **1** to the 0 (out) position and disconnect the power cord from the ~AC LINE connector **2**.

CAUTION
FREON TF DISSOLVES WAX. IF A WAXED PAPER CUP IS USED, THE WAX WILL BE TRANSFERRED TO THE TAPE PATH, RESULTING IN THE POSSIBLE LOSS OF DATA.

b. Pour a small amount of tape head cleaner into a small *unwaxed* paper cup.
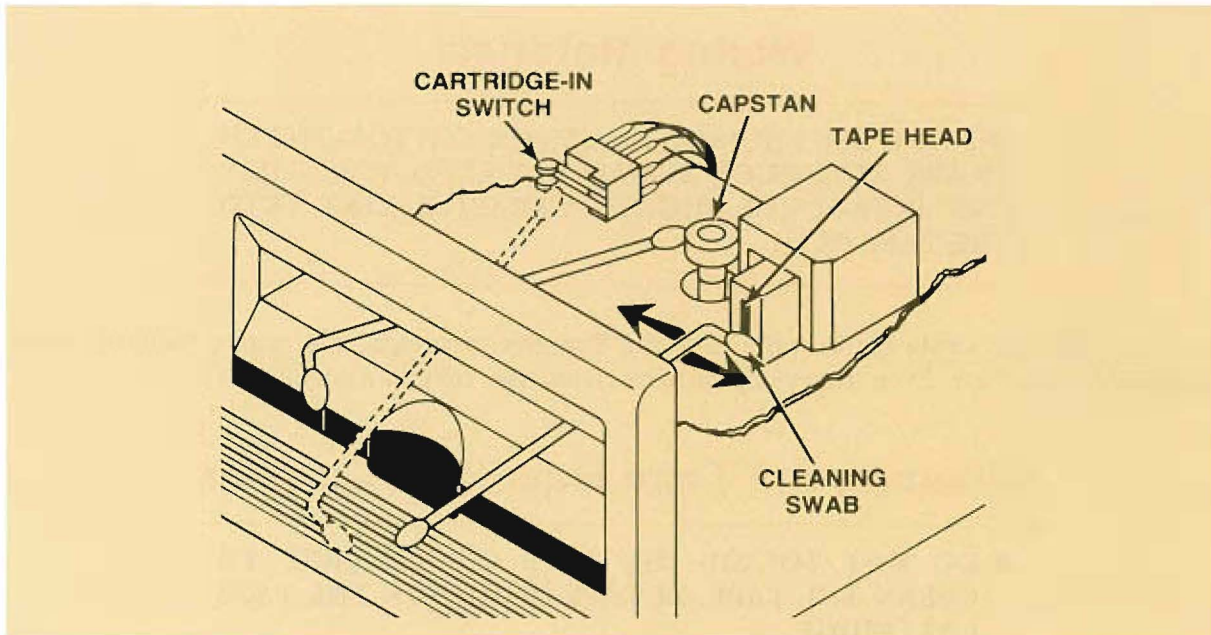
Figure 10. Tape Head and Capstan Cleaning

c. Moisten the cleaning swabs with the tape head cleaner in the paper cup, as required.

d. While applying pressure in the direction of the tape path, clean the tape head and capstan as shown in figure 10. Be sure to clean the tape head with a side-to-side motion of the cleaning swab.

Cleaning the Case

CAUTION

- CHEMICAL SPRAY-ON CLEANERS USED FOR AP-PLIANCES AND OTHER HOUSEHOLD AND INDUS-TRIAL APPLICATIONS MAY DAMAGE THE FINISH ON THE CASE. THESE, OR OTHER CHEMICAL CLEANERS, SHOULD NOT BE USED.

- DO NOT CLEAN THE CASE WITH DETERGENTS THAT CONTAIN AMMONIA, BENZENES, CHLOR-IDES, OR ABRASIVES.

The drive front panel is made of a colored plastic and is not painted. The cover and rear panel are painted with a durable, long-lasting, nontoxic paint. This will preserve the appearance of your drive for many years. When you want to clean the case, follow the instructions given below. If the finish on the painted portions of the case should become damaged, consult your local Hewlett-Packard Sales and Support Office or dealer for touchup paints that are available.

a. Set the LINE~ switch **1** to the 0 (out) position and disconnect the power cord from the ~AC LINE connector **2**.

b. Disconnect the HP-IB cable from the HP-IB connector **8**.

c. Dampen a clean, lint-free cloth in a solution of water and mild soap and wipe the soiled areas of the case. Ensure that no cleaning solution gets inside the case.

d. Wipe the cleaned areas with a clean, lint-free cloth moistened in clean water. Dry the case with a clean cloth. Remove any pen and ink marks with a nonabrasive eraser.

Warranty

The drive is covered by a standard Hewlett-Packard warranty. However, this warranty is voided if the sealed head-disc assembly is opened or otherwise tampered with.

Appendix A

Installation
on RTE-A Systems

Overview

This appendix describes how to prepare an RTE-A operating system which will support the use of the HP 7942 and HP 7946 Disc/Tape Drives on Model A600, A700, and A900 computer systems running standard RTE-A operating systems.

The purpose of this appendix is to complement the installation and generation of the HP 7942 and HP 7946 on A-Series computers prior to the next system document update cycle, and the A.85 software release cycle from Data Systems Division.

Support

The HP 7942 and HP 7946 are supported as a "system disc" or "add-on disc" on RTE-A systems. Operating systems can be installed by doing a pushbutton restore (tape-to-disc copy), or by using the RTE-A utility INSTL, and copying system files to the disc.

The HP 7942 and HP 7946 require the RTE-A CS/80 disc driver DD.33, revision 2326 or later.

Up to four (4) HP 7942/HP 7946's are supported on a single 12009A HP-IB interface card. The HP 7942 and HP 7946 can be "daisy chained" to any other CS/80 disc drive provided the total number of CS/80 disc drives do not exceed the four disc drives per interface requirement.

Preparing for the Disc Layout

To optimize the disc storage capacity of the HP 7942 and HP 7946 Disc/Tape Drives on RTE-A, the user should define the driver parameters which specify LU sizes and starting block location (DP3, DP4, DP5, DP6, DP7). There are no default generation records contained in the current RTE-A operating system for the HP 7942 and HP 7946.

The HP 7942 and HP 7946 have 92,928 and 216,831 disc blocks of usable formatted capacity, respectively.

Note
One disc block equals 256 bytes or 128 words.

To do the generation, the user should have available the following RTE-A manuals:

- *RTE-A System Generation and Installation Manual,* part no. 92077-90034 .... (required)
- *RTE-A User's Manual,* part no. 92077-90002 .... (if needed)
- *RTE-A Utilities Manual,* part no. 92077-90004 .... (if needed)
- *RTE-A Driver Reference Manual,* part no. 92077-90011 .... (if needed)

A procedure to configure an HP 7942 or HP 7946 is described below. Each step in the procedure is accompanied by an example showing how the generation is done.

Considerations

The simplest way to configure the disc drive is to use the default disc configuration for the HP 7911 and HP 7912 Disc Drives and then modify the last LU to fully utilize the capacity of the disc drive. The following example illustrates this approach.

There are several benefits to using this approach:

(1) Most LU's will be the same size as other CS/80 disc default LU sizes.

(2) These LU sizes will be the same size as the default disc configuration which will be included for the generation records for the HP 7942 and HP 7946 in the A.85 software release. Therefore, the system generation will not be affected when the software update is provided by Data Systems Division.

If you desire to configure your disc drives in a way other than that shown in the example, refer to pages C-8 through C-13 in the *RTE-A System Generation and Installation Manual* on configuring a CS/80 disc subsystem.

Disc Layout

Most of the disc and CTD layout to be used will be the same as the RTE-A default sizes for the HP 7911 and HP 7912 Disc Drives. LU 22 is reconfigured to utilize the disc capacity for the HP 7942 example. LU 29 is reconfigured to utilize the capacity of the HP 7946. (Refer to the *RTE-A System Generation and Installation Manual,* Appendix C and E, for more information.)

HP 7942 Disc Drive Layout Example

A sample disc layout for the HP 7942 is shown below. The example uses the RTE-A default disc configuration for the HP 7911. However, LU 22 has been made smaller since the HP 7942 is smaller in capacity than the HP 7911. (Refer to the *RTE-A System Generation and Installation Manual,* page C-12.)

		LU 16	17	18	19	20	22	Range
DP1	HP-IB addr.	0	0	0	0	0	0	0-7
DP2	UNIT / VOL.	0	0	0	0	0	0	0
DP3	Starting	0	0	0	0	0	0	0
DP4	Block	0	0	0	0	0	0	0-1
DP5	Number	0	19200	29472	43872	54144	64750	0-65536
DP6	# Tracks	400	214	300	214	215	587	1-1936
DP7	Sect/Track	48	48	48	48	48	48	48
DP8	Reserved	0	0	0	0	0	0	0

HP 7946 Disc Drive Layout Example

A sample disc layout for an HP 7946 is shown below. Note that the first seven LU numbers (LU's 16–23) are the same as the RTE-A default disc configuration for an HP 7912. (Refer to the *RTE-A System Generation and Installation Manual,* page C-12, for more information.)

	LU 16	17	18	19	20	22	23	29	Range
DP1	0	0	0	0	0	0	0	0	0-7
DP2	0	0	0	0	0	0	0	0	0
DP3	0	0	0	0	0	0	0	0	0
DP4	0	0	0	0	0	0	1	1	0-3
DP5	0	19200	29472	43872	54144	64750	44286	64640	0-64750
DP6	400	214	300	214	215	939	424	1805	1-4517
DP7	48	48	48	48	48	48	48	48	48
DP8	0	0	0	0	0	0	0	0	0

Disc Cache Layout Example for the HP 7942 and HP 7946

The disc cache is an area reserved on the disc for improving the 1/4-inch tape drive performance when copying files between the disc and tape. For more information on the disc cache refer to page C-8 in the *RTE-A System Generation and Installation Manual* and page 2-80 in the *RTE-A Driver Reference Manual.* The example shown below is applicable for the HP 7942 and HP 7946.

		LU 24
DP1	HP-IB addr.	0
DP2	UNIT / VOL.	400B
DP3	Cache Bit, Disc U/V	100000B
DP4	Starting Block	0
DP5	Number	64464
DP6	Addr. of Disc	0
DP7	Cache Block	0
DP8	Reserved	0

EDIT the Answer File

Now that the disc configuration has been determined, the answer file must be modified to include the HP 7942 or HP 7946. EDIT your answer file to include the following requirements.

Driver Partition Section

Modify the driver partition to include the interface driver (%ID.37::cartridge number) and the CS/80 disc device driver (%DD.33::cartridge number). If these drivers are already genned into your system, skip this step, and proceed to the TABLE GENERATION.

```
Example:
*
RE,%ID.37::17
RE,%DD.33::17
END
*
```

Table Generation

a. Add an IFT command for the HP-IB interface where the HP 7942 or HP 7946 will be placed.

Note

This command *will not* be required if the HP 7942 or HP 7946 is going to be placed on an existing CS/80 disc channel. (Refer to the *RTE-A System Generation and Installation Manual,* page 6-8, for more information.)

```
Example:
*
IFT,%ID.37::17,SC:27B
*
```

Add a DVT command for the device table *immediately* after the IFT command.

Note

This command *will not* be required if the HP 7942 or HP 7946 is being added to an existing CS/80 disc channel. (Refer to page 6-12 in the *RTE-A System Generation and Installation Manual* for more information on this command.)

```
Example:
*
DVT,,,LU:9,TO:2000,DT:77B,TX:0,DX:1,DP:1:36B,PR:0
*
```

b. Add a comment before the section of driver parameters for the HP 7942 or HP 7946 noting that it is an HP 7942/HP 7946 disc drive.

Example:
```
*
* HP 7946 Disc Drive (LU's 16-20,22,23,24,29) with integrated cartridge tape drive
* specifying model number as HP 7912
* HP-IB address of disc is 0
*
```

c. Add the HP 7942 or HP 7946 parameters that have been determined in the DISC LAYOUT paragraph.

If you do not want to specify a disc model number, you can specify the device type as 33B (i.e., DT:33B). (Refer to the DVT command description on page 6-12 of the *RTE-A System Generation and Installation Manual*.)

Example: "Table Generation" section for an HP 7946 disc drive
```
*
DVT,%DD.33::17,M7912__LF:0,LU:16,DP:1:0
DVT,%DD.33::17,M7912__LF:1,LU:17,DP:1:0
DVT,%DD.33::17,M7912__LF:2,LU:18,DP:1:0
DVT,%DD.33:17,M7912__LF:3,LU:19,DP:1:0
DVT,%DD.33::17,M7912__LF:4,LU:20,DP:1:0
DVT,%DD.33::17,M7912__LF:5,LU:22,DP:1:0
DVT,%DD.33::17,M7912__LF:6,LU:23,DP:1:0
DVT,%DD.33::17,M7912__LF:7,LU:29,DP:1:0:0,DP:3:0:1:64640:1805,DP:7:48:0
*
```

The Node List

Modify the node list to include the LU numbers which are contained on the HP 7942/HP 7946.

Example:
```
*
* NINE 7946 DISC LU'S including cartridge tape drive
node,16,17,18,19,20,22,23,24,29
*
```

Generation

Run RTAGN to do the system generation. (Refer to the *RTE-A System Generation and Installation Manual*, page 2-1.) Provided the correct parameters are specified in the answer file, the generation should complete with 0 errors.

You should now have a bootable operating system which will allow you to use the HP 7942/HP 7946 to its full capacity. (Refer to the *RTE-A System Generation and Installation Manual*, page 8-1, for installing a disc-based system).

Connect the HP-IB cable to the disc/tape drive.

Set the HP-IB address on the disc/tape drive which is specified in Driver Parameter one (DP1). (Refer to the paragraph titled SETTING THE HP-IB DEVICE ADDRESS in Chapter 2 of this manual for information on setting the address.)

Power on the drive. The disc drive and tape drive will go through a self-test process.

Booting the New System

Boot the new operating system which includes the HP 7942 or HP 7946.

The HP 7942 or HP 7946 Disc/Tape Drive should now be ready for use.

Mount CI and/or Initialize and mount FMGR cartridges. (Refer to the *RTE-A User's Manual*, page 6-27.)

If the operating system is to be installed on the HP 7942 or HP 7946, refer to the *RTE-A System Generation and Installation Manual* to install an operating system on the disc drive.

Back-up

Back-up for files and data which are stored on the HP 7942 and HP 7946 can be accomplished by the use of many RTE-A Utilities or by doing a pushbutton save, and to many types of media.

The Media

Files can be backed up to the integrated 1/4-inch tape drive (16.7 Mbyte or 67 Mbyte tape capacity). If desired, files can also be backed up on another disc drive (integrated or stand-alone), an 800 or 1600 BPI tape drive, or even floppy disc (integrated floppies in Micro-1000's or stand-alone).

The medium chosen depends on the devices which are available to the user, and the amount of data which needs to be copied. Floppy discs should be used only where small amounts of data need to be backed up.

RTE-A Back-Up Utilities

File back-up can be accomplished with the HP 7942 and HP 7946 using RTE-A utilities such as:

a. TF (tape filer)

b. FC (file copy)

An image backup can be accomplished by using utilities such as:

a.   ASAVE and ARSTR

Refer to page 2-1 of the *RTE-A Utilities Manual* to determine which utility is best suited for your application and back-up strategy.

Rack Mounting

To rack mount the HP 7942 or HP 7946 in a 19-inch equipment rack, a 19501A Rack Mounting Kit is required. The kit can be purchased through your HP sales representative. Installation instructions are supplied with the kit.

Consult your local HP Customer Engineer for assistance.

Additional Help

If you require further assistance on installing an HP 7942 or HP 7946 Disc/Tape Drive on your RTE-A system, please contact your local Hewlett-Packard Customer Engineer.

Appendix B

Installation
on HP 9000 Systems

Overview

The HP 7942 and HP 7946 Disc/Tape Drives are CS/80 disc products with an integrated cartridge tape drive. They should be configured on HP 9000 systems according to the instructions provided with each operating system for using CS/80 disc drives.

The following HP 9000 systems support the HP 7942 and HP 7946, both as system discs and as add-on discs:

- Series 200
    BASIC 3.0
    Pascal 3.0
        Modify CONFIG:CTABLE,TEXT disc template to include:
            CS80id := 7942; nvols := 23; mp.tpm := 3*968;
                mp.bpt := 32*256   {7942}
            CS80id := 7946; nvols := 30; mp.tpm := 7*968;
                mp.bpt := 32*256   {7946}
    HPUX 2.1
        When installing HPUX 2.1 on the 7942 or 7946, /etc/s4sinstall will prompt you for the number of blocks on your disc. The following chart assumes a swap size of 2,000 blocks and should be used for your reply:

CS/80 DISC	SIZE	BLOCKS
HP 7942	23.8 Mb	21232
HP 7946	55.5 Mb	52208

- Series 500 — requires loader Rev. B to boot system from HP 7942 or HP 7946
    BASIC 2.0
    HPUX 4.0

Additional Help

If you require further assistance on how to configure an HP 7942 or HP 7946 Disc/Tape Drive on your particular system, contact your local Hewlett-Packard Customer Engineer.

Product Line Sales/Support Key

Key Product Line
A Analytical
CM Components
C Computer Systems Sales only
CH Computer Systems Hardware Sales and Services
CS Computer Systems Software Sales and Services
E Electronic Instruments & Measurement Systems
M Medical Products
P Personal Computation Products
* Sales only for specific product line
** Support only for specific product line

IMPORTANT:These symbols designate general product line capability.They do not insure sales or support availability for all products within a line, at all locations.Contact your local sales office for information regarding locations where HP support is available for specific products.

HP distributors are printed in italics.

HEADQUARTERS OFFICES

If there is no sales office listed for your area, contact one of these headquarters offices.

AFRICA AND MIDDLE EAST
Hewlett-Packard S.A.
Mediterranean and Middle East
Operations
Atrina Centre
32 Kifissias Ave.
Paradissos-Amarousion, **ATHENS**
Greece
Tel: 682 88 11
Telex: 21-6588 HPAT GR
Cable: HEWPACKSA Athens

NORTH/CENTRAL AFRICA
Hewlett-Packard S.A.
7, Rue du Bois-du-Lan
CH-1217 **MEYRIN** 2, Switzerland
Tel: (022) 83 12 12
Telex: 27835 hpse
Cable: HEWPACKSA Geneve

ASIA
Hewlett-Packard Asia Ltd.
47/F, 26 Harbour Rd.,
Wanchai, **HONG KONG**
G.P.O. Box 863, Hong Kong
Tel: 5-8330833
Telex: 76793 HPA HX
Cable: HPASIAL TD

CANADA
Hewlett-Packard (Canada) Ltd.
6877 Goreway Drive
MISSISSAUGA, Ontario L4V 1M8
Tel: (416) 678-9430
Telex: 610-492-4246

EASTERN EUROPE
Hewlett-Packard Ges.m.b.h.
Lieblgasse 1
P.O.Box 72
A-1222 **VIENNA**, Austria
Tel: (222) 2365110
Telex: 1 3 4425 HEPA A

NORTHERN EUROPE
Hewlett-Packard S.A.
Uilenstede 475
P.O.Box 999
NL-1180 AZ **AMSTELVEEN**
The Netherlands
Tel: 20 437771

SOUTH EAST EUROPE
Hewlett-Packard S.A.
World Trade Center
110 Avenue Louis Carol
1215 Cointrin, **GENEVA**, Switzerland
Tel: (022) 98 96 51
Telex: 27225 hpse.

EASTERN USA
Hewlett-Packard Co.
4 Choke Cherry Road
ROCKVILLE, MD 20850
Tel: (301) 258-2000

MIDWESTERN USA
Hewlett-Packard Co.
5201 Tollview Drive
ROLLING MEADOWS, IL 60008
Tel: (312) 255-9800

SOUTHERN USA
Hewlett-Packard Co.
2000 South Park Place
P.O. Box 105005
ATLANTA, GA 30348
Tel: (404) 955-1500

WESTERN USA
Hewlett-Packard Co.
3939 Lankershim Blvd.
P.O. Box 3919
LOS ANGELES, CA 91604
Tel: (213) 506-3700

OTHER INTERNATIONAL AREAS
Hewlett-Packard Co.
Intercontinental Headquarters
3495 Deer Creek Road
PALO ALTO, CA 94304
Tel: (415) 857-1501
Telex: 034-8300
Cable: HEWPACK

ANGOLA
Telectra
Empresa TAEcnica de Equipamentos
R. Barbosa Rodrigues, 41-I DT.
Caixa Postal 6487
LUANDA
Tel: 35515,35516
E,P

ARGENTINA
Hewlett-Packard Argentina S.A.
Avenida Santa Fe 2035
Martinez 1640 **BUENOS AIRES**
Tel: 798-5735, 792-1293
Cable: HEWPACKARG
A,E,CH,CS,P

AUSTRALIA

Adelaide, South Australia Office
Hewlett-Packard Australia Ltd.
153 Greenhill Road
PARKSIDE, S.A. 5063
Tel: 272-5911
Telex: 82536
Cable: HEWPARD Adelaide
A*,CH,CM,CS,E,M,P

Brisbane, Queensland Office
Hewlett-Packard Australia Ltd.
10 Payne Road
THE GAP, Queensland 4061
Tel: 30-4133
Telex: 42133
Cable: HEWPARD Brisbane
A,CH,CS,CM,E,M,P

Canberra, Australia Capital Territory Office
Hewlett-Packard Australia Ltd.
121 Wollongong Street
FYSHWICK, A.C.T. 2609
Tel: 80 4244
Telex: 62650
Cable: HEWPARD Canberra
C,CH,CM,CS,E,P

Melbourne, Victoria Office
Hewlett-Packard Australia Ltd.
31-41 Joseph Street
BLACKBURN, Victoria 3130
Tel: 895-2895
Telex: 31-024
Cable: HEWPARD Melbourne
A,CH,CM,CS,E,M,P

Perth, Western Australia Office
Hewlett-Packard Australia Ltd.
261 Stirling Highway
CLAREMONT, W.A. 6010
Tel: 383-2188
Telex: 93859
Cable: HEWPARD Perth
A,CH,CM,CS,E,M,P

Sydney, New South Wales Office
Hewlett-Packard Australia Ltd.
17-23 Talavera Road
P.O. Box 308
NORTH RYDE, N.S.W. 2113
Tel: 888-4444
Telex: 21561
Cable: HEWPARD Sydney
A,CH,CM,CS,E,M,P

AUSTRIA
Hewlett-Packard Ges.m.b.h.
Grottenhofstrasse 94
A-8052 **GRAZ**
Tel: (0316) 291 5 66
Telex: 32375
CH,E

Hewlett-Packard Ges.m.b.h.
Lieblgasse 1
P.O. Box 72
A-1222 **VIENNA**
Tel: (0222) 23 65 11-0
Telex: 134425 HEPA A
A,CH,CM,CS,E,M,P

BAHRAIN
Green Salon
P.O. Box 557
Manama
BAHRAIN
Tel: 255503-255950
Telex: 84419
P

Wael Pharmacy
P.O. Box 648
BAHRAIN
Tel: 256123
Telex: 8550 WAEL BN
E,M

BELGIUM
Hewlett-Packard Belgium S.A./N.V.
Blvd de la Woluwe, 100
Woluwedal
B-1200 **BRUSSELS**
Tel: (02) 762-32-00
Telex: 23-494 paloben bru
A,CH,CM,CS,E,M,P

BERMUDA
Applied Computer Technologies
Atlantic House Building
Par-La-Ville Road
Hamilton 5
Tel: 295-1616
P

BRAZIL
Hewlett-Packard do Brasil
I.e.C. Ltda.
Alameda Rio Negro, 750
Alphaville
06400 **BARUERI SP**
Tel: (011) 421.1311
Telex: (011) 33872 HPBR-BR
Cable: HEWPACK Sao Paulo
A,CH,CM,CS,E,M,P

BRAZIL (Cont'd)
Hewlett-Packard do Brasil
l.e.C. Ltda.
Avenida Epitacio Pessoa, 4664
22471 RIO DE JANEIRO-RJ
Tel: (02I) 286.0237
Telex: 021-21905 HPBR-BR
Cable: HEWPACK Rio de Janeiro
A,CH,CM,E,M,P*

Convex/Van Den
Rua Jose Bonifacio
458 Todos Os Santos
CEP 20771
RIO DE JANEIRO, RJ
Tel: 249-7121, 591-4946
Telex: 33487

ANAMED I.C.E.I. Ltda.
Rua Bage, 103
04012 SAO PAULO
Tel: (011) 570-5726
Telex: 021-21905 HPBR-BR
M

CANADA
Alberta
Hewlett-Packard (Canada) Ltd.
3030 3rd Avenue N.E.
CALGARY, Alberta T2A 6T7
Tel: (403) 235-3100
A,CH,CM,E*,M,P*

Hewlett-Packard (Canada) Ltd.
11120-178th Street
EDMONTON, Alberta T5S 1P2
Tel: (403) 486-6666
A,CH,CM,CS,E,M,P

British Columbia
Hewlett-Packard (Canada) Ltd.
10691 Shellbridge Way
RICHMOND,
British Columbia V6X 2W7
Tel: (604) 270-2277
Telex: 610-922-5059
A,CH,CM,CS,E*,M,P*

Hewlett-Packard (Canada) Ltd.
121 - 3350 Douglas Street
VICTORIA, British Columbia V8Z 3L1
Tel: (604) 381-6616
CH,CS

Manitoba
Hewlett-Packard (Canada) Ltd.
1825 Inkster Blvd.
WINNIPEG, Manitoba R3H 0Y1
Tel: (204) 786-6701
A,CH,CM,E,M,P*

New Brunswick
Hewlett-Packard (Canada) Ltd.
37 Shediac Road
MONCTON, New Brunswick E1A 2R6
Tel: (506) 855-2841
CH,CS

Nova Scotia
Hewlett-Packard (Canada) Ltd.
Suite 111
900 Windmill Road
DARTMOUTH, Nova Scotia B2Y 3Z6
Tel: (902) 469-7820
CH,CM,CS,E*,M,P*

Ontario
Hewlett-Packard (Canada) Ltd.
3325 N. Service Rd., Unit 6
BURLINGTON, Ontario P3A 2A3
Tel: (416) 335-8644
CS,M*

Hewlett-Packard (Canada) Ltd.
496 Days Road
KINGSTON, Ontario K7M 5R4
Tel: (613) 384-2088
CH,CS

Hewlett-Packard (Canada) Ltd.
552 Newbold Street
LONDON, Ontario N6E 2S5
Tel: (519) 686-9181
A,CH,CM,E*,M,P*

Hewlett-Packard (Canada) Ltd.
6877 Goreway Drive
MISSISSAUGA, Ontario L4V 1M8
Tel: (416) 678-9430
A,CH,CM,CS,E,M,P

Hewlett-Packard (Canada) Ltd.
2670 Queensview Dr.
OTTAWA, Ontario K2B 8K1
Tel: (613) 820-6483
A,CH,CM,CS,E*,MS,P*

Hewlett-Packard (Canada) Ltd.
1855 Lasalle Boulevard
SUDBURY, Ontario, P3A 2A3
Tel: (705) 560-5450
CH

Hewlett-Packard (Canada) Ltd.
220 Yorkland Blvd. Unit #11
WILLOWDALE, Ontario M2J 1R5
Tel: (416) 499-9333
CH

Quebec
Hewlett-Packard (Canada) Ltd.
17500 South Service Road
Trans-Canada Highway
KIRKLAND, Quebec H9J 2M5
Tel: (514) 697-4232
A,CH,CM,CS,E,M,P*

Hewlett-Packard (Canada) Ltd.
1150 Rue Claire Fontaine
QUEBEC CITY, Quebec G1R 5G4
Tel: (418) 648-0726
CH,CS

Hewlett-Packard (Canada) Ltd.
#7-130 Robin Crescent
SASKATOON, Saskatchewan S7L 6M7
Tel: (306) 242-3702
CH,CS

CHILE
ASC Ltda.
Austria 2041
SANTIAGO
Tel: 223-5946, 223-6148
Telex: 340192 ASC CK
P,C

Jorge Calcagni y Cia. Ltda.
Av. Italia 634 Santiago
Casilla 16475
SANTIAGO 9
Tel: 222-0222
Telex: 440283 JCYCL CZ
CM,E,M

Metrolab S.A.
Monjitas 454 of. 206
SANTIAGO
Tel: 395752, 398296
Telex: 340866 METLAB CK
A

Olympia (Chile) Ltda.
Av. Rodrigo de Araya 1045
Casilla 256-V
SANTIAGO 21
Tel: 225-5044
Telex: 340892 OLYMP
Cable: Olympiachile Santiagochile
CH,CS,P

CHINA, People's Republic of
China Hewlett-Packard Co., Ltd.
6th Floor, Sun Hung Kai Centre
30 Harbour Road
HONG KONG
Tel: 5-8323211
Telex: 36678 HEWPA HX
A,C,CH,CS,E,M,P

China Hewlett-Packard Rep. Office
P.O. Box 418
1A Lane 2, Luchang St.
Beiwei Rd., Xuanwu District
BEIJING
Tel: 33-1947, 33-7426
Telex: 22601 CTSHP CN
Cable: 1920
A,CH,CM,CS,E,P

COLOMBIA
InstrumentaciAOn
H. A. Langebaek & Kier S.A.
Carrera 4A No. 52A-26
Apartado Aereo 6287
BOGOTA 1, D.E.
Tel: 212-1466
Telex: 44400 INST CO
Cable: AARIS Bogota
CM,E,M

Nefromedicas Ltda.
Calle 123 No. 9B-31
Apartado Aereo 100-958
BOGOTA D.E., 10
Tel: 213-5267, 213-1615
Telex: 43415 HEGAS CO
A

Procesa, S.A.
CRA 7 No. 24-89 Piso 25
Torre Colpatria
Apartado Aereo No. 49667
BOGOTA D.E.
Tel: 2344925, 2344958, 2344742
Telex: 43127 COVER CO
C,P

Compumundo
Avenida 15 # 107-80
BOGOTA D.E.
Tel: 214-4458
Telex: 45466 MARICO
P

COSTA RICA
Cientifica Costarricense S.A.
Avenida 2, Calle 5
San Pedro de Montes de Oca
Apartado 10159
SAN JOSÉ
Tel: 24-38-20, 24-08-19
Telex: 2367 GALGUR CR
CM,E,M

CYPRUS
Telerexa Ltd.
P.O. Box 4809
14C Stassinos Avenue
NICOSIA
Tel: 62698
Telex: 2894 LEVIDO CY
E,M,P

DENMARK
Hewlett-Packard A/S
Datavej 52
DK-3460 BIRKEROD
Tel: (02) 81-66-40
Telex: 37409 hpas dk
A,CH,CM,CS,E,M,P

Hewlett-Packard A/S
Rolighedsvej 32
DK-8240 RISSKOV, Aarhus
Tel: (06) 17-60-00
Telex: 37409 hpas dk
CH,E

DOMINICAN REPUBLIC
Microprog S.A.
Juan Tomás Mejia y Cotes No. 60
Arroyo Hondo
SANTO DOMINGO
Tel: 565-6268
Telex: 4510 ARENTA DR (RCA)
P

ECUADOR
CYEDE Cia. Ltda.
Avenida Eloy Alfaro 1749
y Belgica
Casilla 6423 CCI
QUITO
Tel: 450-975, 243-052
Telex: 2548 CYEDE ED
CM,E,P

Hospitalar S.A.
Robles 625
Casilla 3590
QUITO
Tel: 545-250, 545-122
Telex: 2485 HOSPTL ED
Cable: HOSPITALAR-Quito
M

QUITO
Tel: 2-238-951
Telex: 2298 ECUAME ED

EGYPT
Egyptian International
Office for Foreign Trade
P.O. Box 2558
42 El-Zahraa Street
Dokki, CAIRO,
Tel: 712230
Telex: 93337 EGPOR UN
Cable: EGYPOR
P,A

EGYPT (Cont'd)
INFORMATIC FOR SYSTEMS
22 Talaat Harb Street
CAIRO,
Tel: 759006
Telex: 93697 SAFLM UN
CS

International Engineering Associates
24 Hussein Hegazi Street
Kasr-el-Aini
CAIRO,
Tel: 23829, 21641
Telex: 93830 IEA UN
Cable: INTEGASSO
E

S.S.C. Medical
40 Gezerat El Arab Street
Mohandessin
CAIRO,
Tel: 803844, 805998, 810263
Telex: 20503 SSC UN
M*

EL SALVADOR
IPESA de El Salvador S.A.
29 Avenida Norte 1216
SAN SALVADOR
Tel: 26-6858, 26-6868
Telex: 20539 IPESASAL
A,CH,CM,CS,E,P

FINLAND
Hewlett-Packard Oy
Piispankalliontie 17
02200 **ESPOO**
Tel: 00358-0-88721
Telex: 121563 HEWPA SF
CH,CM,SS,P

Hewlett-Packard Oy
(Olarinluoma 7)
PL 24
02101 **ESPOO** 10
Tel: (90) 4521022
A,E,M

Hewlett-Packard Oy
Aatoksenkatv 10-C
SF-40720-72 **JYVASKYLA**
Tel: (941) 216318
CH

Hewlett-Packard Oy
Kainvuntie 1-C
SF-90140-14 **OULU**
Tel: (981) 338785
CH

FRANCE
Hewlett-Packard France
Z.I. Mercure B
Rue Berthelot
F-13763 Les Milles Cedex
AIX-EN-PROVENCE
Tel: (42) 59-41-02
Telex: 410770F
A,CH,E,M,P*

Hewlett-Packard France
64, rue Marchand Saillant
F-61000 **ALENCON**
Tel: (33) 29 04 42

Hewlett-Packard France
Boite Postale 503
F-25026 **BESANCON**
28 rue de la Republique
F-25000 **BESANCON**
Tel: (81) 83-16-22
Telex: 361157
CH,M

Hewlett-Packard France
13, Place Napoleon III
F-29000 **BREST**
Tel: (98) 03-38-35

Hewlett-Packard France
Chemin des Mouilles
Boite Postale 162
F-69130 **ECULLY** Cedex (Lyon)
Tel: (78) 833-81-25
Telex: 310617F
A,CH,CS,E,M

Hewlett-Packard France
Parc d'Activite du Bois Briard
Ave. du Lac
F-91040 **EVRY** Cedex
Tel: 6 077-8383
Telex: 692315F
E

Hewlett-Packard France
5, Avenue Raymond Chanas
F-38320 **EYBENS** (Grenoble)
Tel: (76) 62-67-98
Telex: 980124 HP GRENOB EYBE
CH

Hewlett-Packard France
Centre d'Affaire Paris-Nord
Bâtiment Ampère 5 étage
Rue de la Commune de Paris
Boite Postale 300
F-93153 **LE BLANC MESNIL**
Tel: (1) 865-44-52
Telex: 211032F
CH,CS,E,M

Hewlett-Packard France
Parc d'Activités Cadera
Quartier Jean Mermoz
Avenue du Président JF Kennedy
F-33700 **MERIGNAC** (Bordeaux)
Tel: (56) 34-00-84
Telex: 550105F
CH,E,M

Hewlett-Packard France
Immueble "Les 3 B"
Nouveau Chemin de la Garde
ZAC de Bois Briand
F-44085 **NANTES** Cedex
Tel: (40) 50-32-22
Telex: 711085F
CH**

Hewlett-Packard France
125, rue du Faubourg Bannier
F-45000 **ORLEANS**
Tel: (38) 68 01 63

Hewlett-Packard France
Zone Industrielle de Courtaboeuf
Avenue des Tropiques
F-91947 Les Ulis Cedex **ORSAY**
Tel: (6) 907-78-25
Telex: 600048F
A,CH,CM,CS,E,M,P

Hewlett-Packard France
Paris Porte-Maillot
15, Avenue de L'Amiral Bruix
F-75782 PARIS CEDEX 16
Tel: (1) 502-12-20
Telex: 613663F
CH,M,P

Hewlett-Packard France
124, Boulevard Tourasse
F-64000 **PAU**
Tel: (59) 80 38 02

Hewlett-Packard France
2 AllAEe de la Bourgonnette
F-35100 **RENNES**
Tel: (99) 51-42-44
Telex: 740912F
CH,CM,E,M,P*

Hewlett-Packard France
98 Avenue de Bretagne
F-76100 **ROUEN**
Tel: (35) 63-57-66
Telex: 770035F
CH**,CS

Hewlett-Packard France
4 Rue Thomas Mann
Boite Postale 56
F-67033 **STRASBOURG** Cedex
Tel: (88) 28-56-46
Telex: 890141F
CH,E,M,P*

Hewlett-Packard France
Le PAEripole
20, Chemin du Pigeonnier de la CAEpiGEere
F-31083 **TOULOUSE** Cedex
Tel: (61) 40-11-12
Telex: 531639F
A,CH,CS,E,P*

Hewlett-Packard France
9, rue Baudin
F-26000 **VALENCE**
Tel: (75) 42 76 16

Hewlett-Packard France
Carolor
ZAC de Bois Briand
F-57640 **VIGY** (Metz)
Tel: (8) 771 20 22
CH

Hewlett-Packard France
Immeuble PEricentre
F-59658 **VILLENEUVE D'ASCQ** Cedex
Tel: (20) 91-41-25
Telex: 160124F
CH,E,M,P*

GERMAN FEDERAL REPUBLIC
Hewlett-Packard GmbH
Geschäftsstelle
Keithstrasse 2-4
D-1000 **BERLIN** 30
Tel: (030) 24-90-86
Telex: 018 3405 hpbln d
A,CH,E,M,P

Hewlett-Packard GmbH
Geschäftsstelle
Herrenberger Strasse 130
D-7030 **BÖBLINGEN**
Tel: (7031) 14-0
Telex: 07265739
A,CH,CM,CS,E,M,P

Hewlett-Packard GmbH
Geschäftsstelle
Emanuel-Leutze-Strasse 1
D-4000 **DUSSELDORF**
Tel: (0211) 5971-1
Telex: 085/86 533 hpdd d
A,CH,CS,E,M,P

Hewlett-Packard GmbH
Geschäftsstelle
Schleefstr. 28a
D-4600 **DORTMUND**-Aplerbeck
Tel: (0231) 45001

Hewlett-Packard GmbH
Vertriebszentrale Frankfurt
Berner Strasse 117
Postfach 560 140
D-6000 **FRANKFURT** 56
Tel: (0611) 50-04-1
Telex: 04 13249 hpffm d
A,CH,CM,CS,E,M,P

Hewlett-Packard GmbH
Geschäftsstelle
Aussenstelle Bad Homburg
Louisenstrasse 115
D-6380 **BAD HOMBURG**
Tel: (06172) 109-0

Hewlett-Packard GmbH
Geschäftsstelle
Kapstadtring 5
D-2000 **HAMBURG** 60
Tel: (040) 63804-1
Telex: 021 63 032 hphh d
A,CH,CS,E,M,P

Hewlett-Packard GmbH
Geschäftsstelle
Heidering 37-39
D-3000 **HANNOVER** 61
Tel: (0511) 5706-0
Telex: 092 3259
A,CH,CM,E,M,P

Hewlett-Packard GmbH
Geschäftsstelle
Rosslauer Weg 2-4
D-6800 **MANNHEIM**
Tel: (0621) 70050
Telex: 0462105
A,C,E

Hewlett-Packard GmbH
Geschäftsstelle
Messerschmittstrasse 7
D-7910 **NEU ULM**
Tel: 0731-70241
Telex: 0712816 HP ULM-D
A,C,E*

Hewlett-Packard GmbH
Geschäftsstelle
Ehhericherstr. 13
D-8500 **NÜRNBERG** 10
Tel: (0911) 5205-0
Telex: 0623 860
CH,CM,E,M,P

Hewlett-Packard GmbH
Geschäftsstelle
Eschenstrasse 5
D-8028 **TAUFKIRCHEN**
Tel: (089) 6117-1
Telex: 0524985
A,CH,CM,E,M,P

GREAT BRITAIN
See United Kingdom

GREECE

Hewlett-Packard A.E.
178, Kifissias Avenue
6th Floor
Halandri-**ATHENS**
Greece
Tel: 6471673, 6471543, 6472971
A,CH,CM**,CS**,E,M,P

Kostas Karaynnis S.A.
8 Omirou Street
ATHENS 133
Tel: 32 30 303, 32 37 371
Telex: 215962 RKAR GR
A,CH,CM,CS,E,M,P

PLAISIO S.A.
Eliopoulos Brohers Ltd.
11854
ATHENS
Tel: 34-51-911
Telex: 216286
P

GUATEMALA

IPESA
Avenida Reforma 3-48, Zona 9
GUATEMALA CITY
Tel: 316627, 314786
Telex: 4192 TELTRO GU
A,CH,CM,CS,E,M,P

HONG KONG

Hewlett-Packard Hong Kong, Ltd.
G.P.O. Box 795
5th Floor, Sun Hung Kai Centre
30 Harbour Road
HONG KONG
Tel: 5-8323211
Telex: 66678 HEWPA HX
Cable: HEWPACK HONG KONG
E,CH,CS,P

CET Ltd.
10th Floor, Hua Asia
Bldg. Gloucester
64-66 Gloulester Road
HONG KONG
Tel: (5) 200922
Telex: 85148 CET HX
CM

Schmidt & Co. (Hong Kong) Ltd.
18th Floor, Great Eagle Centre
23 Harbour Road, Wanchai
HONG KONG
Tel: 5-8330222
Telex: 74766 SCHMC HX
A,M

ICELAND

Elding Trading Company Inc.
Hafnarnvoli-Tryggvagotu
P.O. Box 895
IS-REYKJAVIK
Tel: 1-58-20, 1-63-03
M

INDIA

Computer products are sold through Blue Star Ltd.All computer repairs and maintenance service is done through Computer Maintenance Corp.

Blue Star Ltd.
Sabri Complex II Floor
24 Residency Rd.
BANGALORE 560 025
Tel: 55660
Telex: 0845-430
Cable: BLUESTAR
A,CH*,CM,CS*,E

Blue Star Ltd.
Band Box House
Prabhadevi
BOMBAY 400 025
Tel: 422-3101
Telex: 011-3751
Cable: BLUESTAR
A,M

Blue Star Ltd.
Sahas
414/2 Vir Savarkar Marg
Prabhadevi
BOMBAY 400 025
Tel: 422-6155
Telex: 011-71193
Cable: FROSTBLUE
A,CH*,CM,CS*,E,M

Blue Star Ltd.
Kalyan, 19 Vishwas Colony
Alkapuri, **BORODA**, 390 005
Tel: 65235
Cable: BLUE STAR
A

Blue Star Ltd.
7 Hare Street
CALCUTTA 700 001
Tel: 12-01-31
Telex: 021-7655
Cable: BLUESTAR
A,M

Blue Star Ltd.
133 Kodambakkam High Road
MADRAS 600 034
Tel: 82057
Telex: 041-379
Cable: BLUESTAR
A,M

Blue Star Ltd.
Bhandari House, 7th/8th Floors
91 Nehru Place
NEW DELHI 110 024
Tel: 682547
Telex: 031-2463
Cable: BLUESTAR
A,CH*,CM,CS*,E,M

Blue Star Ltd.
15/16:C Wellesley Rd.
PUNE 411 011
Tel: 22775
Cable: BLUE STAR
A

Blue Star Ltd.
2-2-47/1108 Bolarum Rd.
SECUNDERABAD 500 003
Tel: 72057
Telex: 0155-459
Cable: BLUEFROST
A,E

Blue Star Ltd.
T.C. 7/603 Poornima
Maruthankuzhi
TRIVANDRUM 695 013
Tel: 65799
Telex: 0884-259
Cable: BLUESTAR
E

Computer Maintenance Corporation Ltd.
115, Sarojini Devi Road
SECUNDERABAD 500 003
Tel: 310-184, 345-774
Telex: 031-2960
CH**

INDONESIA

BERCA Indonesia P.T.
P.O.Box 496/Jkt.
Jl. Abdul Muis 62
JAKARTA
Tel: 21-373009
Telex: 46748 BERSAL IA
Cable: BERSAL JAKARTA
P

BERCA Indonesia P.T.
P.O.Box 2497/Jkt
Antara Bldg., 17th Floor
Jl. Medan Merdeka Selatan 17
JAKARTA-PUSAT
Tel: 21-344-181
Telex: BERSAL IA
A,CS,E,M

BERCA Indonesia P.T.
P.O. Box 174/SBY.
Jl. Kutei No. 11
SURABAYA
Tel: 68172
Telex: 31146 BERSAL SB
Cable: BERSAL-SURABAYA
A*,E,M,P

IRAQ

Hewlett-Packard Trading S.A.
Service Operation
Al Mansoor City 9B/3/7
BAGHDAD
Tel: 551-49-73
Telex: 212-455 HEPAIRAQ IK
CH,CS

IRELAND

Hewlett-Packard Ireland Ltd.
82/83 Lower Leeson Street
DUBLIN 2
Tel: 0001 608800
Telex: 30439
A,CH,CM,CS,E,M,P

Cardiac Services Ltd.
Kilmore Road
Artane
DUBLIN 5
Tel: (01) 351820
Telex: 30439
M

ISRAEL

Eldan Electronic Instrument Ltd.
P.O.Box 1270
JERUSALEM 91000
16, Ohaliav St.
JERUSALEM 94467
Tel: 533 221, 553 242
Telex: 25231 AB/PAKRD IL
A,M

Computation and Measurement
Systems (CMS) Ltd.
11 Masad Street
67060
TEL-AVIV
Tel: 388 388
Telex: 33569 Motil IL
CH,CM,CS,E,P

ITALY

Hewlett-Packard Italiana S.p.A
Traversa 99C
Via Giulio Petroni, 19
I-70124 **BARI**
Tel: (080) 41-07-44
M,CH

Hewlett-Packard Italiana S.p.A.
Via Martin Luther King, 38/III
I-40132 **BOLOGNA**
Tel: (051) 402394
Telex: 511630
CH,CS,E,M

Hewlett-Packard Italiana S.p.A.
Via Principe Nicola 43G/C
I-95126 **CATANIA**
Tel: (095) 37-10-87
Telex: 970291
CH

Hewlett-Packard Italiana S.p.A.
Via G. Di Vittorio 9
I-20063 **CERNUSCO SUL NAVIGLIO**
(Milano)
Tel: (02) 923691
Telex: 334632
A,CH,CM,CS,E,M,P

Hewlett-Packard Italiana S.p.A.
Via C. Colombo 49
I-20090 **TREZZANO SUL NAVIGLIO**
(Milano)
Tel: (02) 4459041
Telex: 322116
CH,CS

Hewlett-Packard Italiana S.p.A.
Via Nuova San Rocco a
Capodimonte, 62/A
I-80131 **NAPOLI**
Tel: (081) 7413544
Telex: 710698
A**,CH,CS,E,M

Hewlett-Packard Italiana S.p.A.
Viale G. Modugno 33
I-16156 **GENOVA PEGLI**
Tel: (010) 68-37-07
Telex: 215238
E,C

Hewlett-Packard Italiana S.p.A.
Via Pelizzo 15
I-35128 **PADOVA**
Tel: (049) 664888
Telex: 430315
A,CH,CS,E,M

Hewlett-Packard Italiana S.p.A.
Viale C. Pavese 340
I-00144 **ROMA EUR**
Tel: (06) 54831
Telex: 610514
A,CH,CS,E,M,P*

ITALY (Cont'd)

Hewlett-Packard Italiana S.p.A.
Via di Casellina 57/C
I-50018 **SCANDICCI-FIRENZE**
Tel: (055) 753863
CH,E,M

Hewlett-Packard Italiana S.p.A.
Corso Svizzera, 185
I-10144 **TORINO**
Tel: (011) 74 4044
Telex: 221079
A*,CS,CH,E

JAPAN

Yokogawa-Hewlett-Packard Ltd.
152-1, Onna
ATSUGI, Kanagawa, 243
Tel: (0462) 28-0451
CM,C*,E

Yokogawa-Hewlett-Packard Ltd.
Meiji-Seimei Bldg. 6F
3-1 Hon Chiba-Cho
CHIBA, 280
Tel: 472 25 7701
E,CH,CS

Yokogawa-Hewlett-Packard Ltd.
Yasuda-Seimei Hiroshima Bldg.
6-11, Hon-dori, Naka-ku
HIROSHIMA, 730
Tel: 82-241-0611

Yokogawa-Hewlett-Packard Ltd.
Towa Building
2-3, Kaigan-dori, 2 Chome Chuo-ku
KOBE, 650
Tel: (078) 392-4791
C,E

Yokogawa-Hewlett-Packard Ltd.
Kumagaya Asahi 82 Bldg
3-4 Tsukuba
KUMAGAYA, Saitama 360
Tel: (0485) 24-6563
CH,CM,E

Yokogawa-Hewlett-Packard Ltd.
Asahi Shinbun Daiichi Seimei Bldg.
4-7, Hanabata-cho
KUMAMOTO, 860
Tel: (0963) 54-7311
CH,E

Yokogawa-Hewlett-Packard Ltd.
Shin-Kyoto Center Bldg.
614, Higashi-Shiokoji-cho
Karasuma-Nishiiru
Shiokoji-dori, Shimogyo-ku
KYOTO, 600
Tel: 075-343-0921
CH,E

Yokogawa-Hewlett-Packard Ltd.
Mito Mitsui Bldg
4-73, Sanno-maru, 1 Chome
MITO, Ibaraki 310
Tel: (0292) 25-7470
CH,CM,E

Yokogawa-Hewlett-Packard Ltd.
Meiji-Seimei Kokubun Bldg. 7-8
Kokubun, 1 Chome, Sendai
MIYAGI, 980
Tel: (0222) 25-1011
Telex:
C,E

Yokogawa-Hewlett-Packard Ltd.
Sumitomo Seimei 14-9 Bldg.
Meieki-Minami, 2 Chome
Nakamura-ku
NAGOYA, 450
Tel: (052) 571-5171
CH,CM,CS,E,M

Yokogawa-Hewlett-Packard Ltd.
Chuo Bldg.,
4-20 Nishinakajima, 5 Chome
Yodogawa-ku
OSAKA, 532
Tel: (06) 304-6021
Telex: YHPOSA 523-3624
A,CH,CM,CS,E,M,P*

Yokogawa-Hewlett-Packard Ltd.
27-15, Yabe, 1 Chome
SAGAMIHARA Kanagawa, 229
Tel: 0427 59-1311

Yokogawa-Hewlett-Packard Ltd.
Daiichi Seimei Bldg.
7-1, Nishi Shinjuku, 2 Chome
Shinjuku-ku,**TOKYO** 160
Tel: 03-348-4611
CH,E

Yokogawa-Hewlett-Packard Ltd.
29-21 Takaido-Higashi, 3 Chome
Suginami-ku **TOKYO** 168
Tel: (03) 331-6111
Telex: 232-2024 YHPTOK
A,CH,CM,CS,E,M,P*

Yokogawa-Hewlett-Packard Ltd.
Daiichi Asano Building
2-8, Odori, 5 Chome
UTSUNOMIYA, Tochigi 320
Tel: (0286) 25-7155
CH,CS,E

Yokogawa-Hewlett-Packard Ltd.
Yasuda Seimei Nishiguchi Bldg.
30-4 Tsuruya-cho, 3 Chome
YOKOHAMA 221
Tel: (045) 312-1252
CH,CM,E

JORDAN

Scientific and Medical Supplies Co.
P.O. Box 1387
AMMAN
Tel: 24907, 39907
Telex: 21456 SABCO JO
CH,E,M,P

KENYA

ADCOM Ltd., Inc., Kenya
P.O.Box 30070
NAIROBI
Tel: 331955
Telex: 22639
E,M

KOREA

Samsung Hewlett-Packard Co. Ltd.
12 Fl. Kinam Bldg.
San 75-31, Yeoksam-Dong
Kangnam-Ku
Yeongdong P.O. Box 72
SEOUL
Tel: 555-7555, 555-5447
Telex: K27364 SAMSAN
A,CH,CM,CS,E,M,P

KUWAIT

Al-Khaldiya Trading & Contracting
P.O. Box 830
SAFAT
Tel: 424910, 411726
Telex: 22481 AREEG KT
Cable: VISCOUNT
E,M,A

Photo & Cine Equipment
P.O. Box 270
SAFAT
Tel: 2445111
Telex: 22247 MATIN KT
Cable: MATIN KUWAIT
P

W.J. Towell Computer Services
P.O. Box 75
SAFAT
Tel: 2462640/1
Telex: 30336 TOWELL KT
C

LEBANON

Computer Information Systems
P.O. Box 11-6274
BEIRUT
Tel: 89 40 73
Telex: 42309
C,E,M,P

LUXEMBOURG

Hewlett-Packard Belgium S.A./N.V.
Blvd de la Woluwe, 100
Woluwedal
B-1200 **BRUSSELS**
Tel: (02) 762-32-00
Telex: 23-494 paloben bru
A,CH,CM,CS,E,M,P

MALAYSIA

Hewlett-Packard Sales (Malaysia)
Sdn. Bhd.
1st Floor, Bangunan British
American
Jalan Semantan, Damansara Heights
KUALA LUMPUR 23-03
Tel: 943022
Telex: MA31011
A,CH,E,M,P*

Protel Engineering
P.O.Box 1917
Lot 6624, Section 64
23/4 Pending Road
Kuching, **SARAWAK**
Tel: 36299
Telex: MA 70904 PROMAL
Cable: PROTELENG
A,E,M

MALTA

Philip Toledo Ltd.
Notabile Rd.
MRIEHEL
Tel: 447 47, 455 66
Telex: Media MW 649
E,P,M

MEXICO

Hewlett-Packard Mexicana, S.A.
de C.V.
Av. Periferico Sur No. 6501
Tepepan, Xochimilco
16020 **MEXICO D.F.**
Tel: 6-76-46-00
Telex: 17-74-507 HEWPACK MEX
A,CH,CS,E,M,P

Hewlett-Packard Mexicana, S.A.
de C.V.
Czda. del Valle
409 Ote. 1 °Piso
Colonia del Valle
Municipio de Garza Garcia
66220 **MONTERREY**, Nuevo LeAOn
Tel: 78 42 41
Telex: 038 410
CH

Equipos Cientificos de Occidente, S.A.
Av. Lazaro Cardenas 3540
GUADALAJARA
Tel: 21-66-91
Telex: 0684186 ECOME
A

Infograficas y Sistemas del Noreste, S.A.
Rio Orinoco #171 Oriente
Despacho 2001
Colonia Del Valle
MONTERREY
Tel: 782499, 781259A
A

MOROCCO

Dolbeau
81 rue Karatchi
CASABLANCA
Tel: 3041-82, 3068-38
Telex: 23051, 22822
E

Gerep
2 rue d'Agadir
Boite Postale 156
CASABLANCA
Tel: 272093, 272095
Telex: 23 739
P

Sema-Maroc
Rue Lapebie
CASABLANCA
Tel: 26.09.80
CH,CS,P

NETHERLANDS

Hewlett-Packard Nederland B.V.
Van Heuven Goedhartlaan 121
NL 1181KK **AMSTELVEEN**
P.O. Box 667
NL1180 AR **AMSTELVEEN**
Tel: (020) 47-20-21
Telex: 13 216 HEPA NL
A,CH,CM,CS,E,M,P

Hewlett-Packard Nederland B.V.
Bongerd 2
NL 2906VK **CAPELLE A/D IJSSEL**
P.O. Box 41
NL 2900AA **CAPELLE A/D IJSSEL**
Tel: (10) 51-64-44
Telex: 21261 HEPAC NL
A,CH,CS,E

Hewlett-Packard Nederland B.V.
Pastoor Petersstraat 134-136
NL 5612 LV **EINDHOVEN**
P.O. Box 2342
NL 5600 CH **EINDHOVEN**
Tel: (040) 326911
Telex: 51484 hepae nl
A,CH**,E,M

NEW ZEALAND
Hewlett-Packard (N.Z.) Ltd.
5 Owens Road
P.O. Box 26-189
Epsom, **AUCKLAND**
Tel: 687-159
Cable: HEWPAK Auckland
CH,CS,CM,E,P*

Hewlett-Packard (N.Z.) Ltd.
4-12 Cruickshank Street
Kilbirnie, **WELLINGTON 3**
P.O. Box 9443
Courtenay Place, **WELLINGTON 3**
Tel: 877-199
Cable: HEWPACK Wellington
CH,CS,CM,E,P

Northrop Instruments & Systems Ltd.
369 Khyber Pass Road
P.O. Box 8602
AUCKLAND
Tel: 794-091
Telex: 60605
A,M

Northrop Instruments & Systems Ltd.
110 Mandeville St.
P.O. Box 8388
CHRISTCHURCH
Tel: 488-873
Telex: 4203
A,M

Northrop Instruments & Systems Ltd.
Sturdee House
85-87 Ghuznee Street
P.O. Box 2406
WELLINGTON
Tel: 850-091
Telex: NZ 3380
A,M

NORTHERN IRELAND
See United Kingdom
NORWAY
Hewlett-Packard Norge A/S
Folke Bernadottes vei 50
P.O. Box 3558
N-5033 **FYLLINGSDALEN** (Bergen)
Tel: 0047/5/16 55 40
Telex: 16621 hpnas n
CH,CS,E,M

Hewlett-Packard Norge A/S
UCOsterndalen 16-18
P.O. Box 34
N-1345 **OCUSTERÅS**
Tel: 0047/2/17 11 80
Telex: 16621 hpnas n
A,CH,CM,CS,E,M,P

OMAN
Khimjil Ramdas
P.O. Box 19
MUSCAT
Tel: 722225, 745601
Telex: 3289 BROKER MB MUSCAT
P

Suhail & Saud Bahwan
P.O.Box 169
MUSCAT
Tel: 734 201-3
Telex: 3274 BAHWAN MB
E

Imtac LLC
P.O. Box 8676
MUTRAH
Tel: 601695
Telex: 5741 Tawoos On
A,C,M

PAKISTAN
Mushko & Company Ltd.
House No. 16, Street No. 16
Sector F-6/3
ISLAMABAD
Tel: 824545
Cable: FEMUS Islamabad
A,E,M,P*

Mushko & Company Ltd.
Oosman Chambers
Abdullah Haroon Road
KARACHI 0302
Tel: 524131, 524132
Telex: 2894 MUSKO PK
Cable: COOPERATOR Karachi
A,E,M,P*

PANAMA
ElectrOnico Balboa, S.A.
Calle Samuel Lewis, Ed. Alfa
Apartado 4929
PANAMA 5
Tel: 63-6613, 63-6748
Telex: 3483 ELECTRON PG
A,CM,E,M,P

PERU
Cia Electro Médica S.A.
Los Flamencos 145, San Isidro
Casilla 1030
LIMA 1
Tel: 41-4325, 41-3703
Telex: Pub. Booth 25306
CM,E,M,P

SAMS
Rio De La Plata 305
SAN ISIDRO
Tel: 419928
Telex: 394 20450 PELIBERTAD
P

PHILIPPINES
The Online Advanced Systems
Corporation
Rico House, Amorsolo Cor. Herrera
Street
Legaspi Village, Makati
P.O. Box 1510
Metro **MANILA**
Tel: 815-38-11 (up to 16)
Telex: 63274 Online PN
A,CH,CS,E,M

Electronic Specialists and
Proponents Inc.
690-B Epifanio de los Santos
Avenue
Cubao, **QUEZON CITY**
P.O. Box 2649 Manila
Tel: 98-96-81, 98-96-82, 98-96-83
Telex: 40018, 42000 ITT GLOBE MAC-KAY BOOTH
P

PORTUGAL
Mundinter
Intercambio Mundial de ComAErcio
S.A.R.L.
P.O. Box 2761
Av. Antonio Augusto de Aguiar 138
P-LISBON
Tel: (19) 53-21-31, 53-21-37
Telex: 16691 munter p
M

Soquimica
Av. da Liberdade, 220-2
1298 **LISBOA** Codex
Tel: 56 21 81/2/3
Telex: 13316 SABASA
P

Telectra-Empresa Técnica de
Equipmentos Eléctricos S.A.R.L.
Rua Rodrigo da Fonseca 103
P.O. Box 2531
P-LISBON 1
Tel: (19) 68-60-72
Telex: 12598
CM,E

Rarcentro Ltda
R. Costa Cabral 575
4200 **PORTO**
Tel: 499174/495173
Telex: 26054
CH,CS

PUERTO RICO
Hewlett-Packard Puerto Rico
101 MuANoz Rivera Av
Esu. Calle Ochoa
HATO REY, Puerto Rico 00918
Tel: (809) 754-7800
A,CH,CS,CM,M,E,P

QATAR
Computer Arabia
P.O. Box 2750
DOHA
Tel: 883555
Telex: 4806 CHPARB
P

Nasser Trading & Contracting
P.O.Box 1563
DOHA
Tel: 422170
Telex: 4439 NASSER DH
M

SAUDI ARABIA
Modern Electronic Establishment
Hewlett-Packard Division
P.O. Box 281
Thuobah
AL-KHOBAR
Tel: 895-1760, 895-1764
Telex: 671 106 HPMEEK SJ
Cable: ELECTA AL-KHOBAR
CH,CS,E,M

Modern Electronic Establishment
Hewlett-Packard Division
P.O. Box 1228
Redec Plaza, 6th Floor
JEDDAH
Tel: 644 38 48
Telex: 4027 12 FARNAS SJ
Cable: ELECTA JEDDAH
A,CH,CS,CM,E,M,P

Modern Electronic Establishment
Hewlett-Packard Division
P.O.Box 22015
RIYADH
Tel: 491-97 15, 491-63 87
Telex: 202049 MEERYD SJ
CH,CS,E,M

Abdul Ghani El Ajou
P.O. Box 78
RIYADH
Tel: 40 41 717
Telex: 200 932 EL AJOU
P

SCOTLAND
See United Kingdom
SINGAPORE
Hewlett-Packard Singapore (Sales)
Pte. Ltd.
#08-00 Inchcape House
450-2 Alexandra Road
P.O. Box 58 Alexandra Rd. Post
Office
SINGAPORE, 9115
Tel: 631788
Telex: HPSGSO RS 34209
Cable: HEWPACK, Singapore
A,CH,CS,E,MS,P

Dynamar International Ltd.
Unit 05-11Block 6
Kolam Ayer Industrial Estate
SINGAPORE 1334
Tel: 747-6188
Telex: RS 26283
CM

SOUTH AFRICA
Hewlett-Packard So Africa (Pty.) Ltd.
P.O. Box 120
Howard Place **CAPE PROVINCE** 7450
Pine Park Center, Forest Drive, Pine-lands
CAPE PROVINCE 7405
Tel: 53-7954
Telex: 57-20006
A,CH,CM,E,M,P

Hewlett-Packard So Africa (Pty.) Ltd.
P.O. Box 37099
Overport Drive 92
DURBAN 4067
Tel: 28-4178
Telex: 6-22954
CH,CM

Hewlett-Packard So Africa (Pty.) Ltd.
6 Linton Arcade
511 Cape Road
Linton Grange
PORT ELIZABETH 6001
Tel: 041-301201
CH

Hewlett-Packard So Africa (Pty.) Ltd.
Fountain Center
Kalkden Str.
Monument Park
Ext 2
PRETORIA 0105
Tel: 45-5723
Telex: 32163
CH,E

SOUTH AFRICA (Cont'd)

Hewlett-Packard So Africa (Pty.) Ltd.
Private Bag Wendywood
SANDTON 2144
Tel: 802-5111, 802-5125
Telex: 4-20877
Cable: HEWPACK Johannesburg
A,CH,CM,CS,E,M,P

SPAIN

Hewlett-Packard Española S.A.
Calle Entenza, 321
E-BARCELONA 29
Tel: 322.24.51, 321.73.54
Telex: 52603 hpbee
A,CH,CS,E,M,P

Hewlett-Packard Española S.A.
Calle San Vicente S/No
Edificio Albia II 7B
E-BILBAO 1
Tel: 423.83.06
A,CH,E,M

Hewlett-Packard Española S.A.
Crta. de la Coruña, Km. 16, 400
Las Rozas
E-MADRID
Tel: (1) 637.00.11
Telex: 23515 HPE
CH,CS,M

Hewlett-Packard Española S.A.
Avda. S. Francisco Javier, S/no
Planta 10. Edificio Sevilla 2,
E-SEVILLA 5
Tel: 64.44.54
Telex: 72933
A,CS,M,P

Hewlett-Packard Española S.A.
C/Isabel La Catolica, 8
E-46004 VALENCIA
Tel: 0034/6/351 59 44
CH,P

SWEDEN

Hewlett-Packard Sverige AB
Sunnanvagen 14K
S-22226 LUND
Tel: (046) 13-69-79
Telex: (854) 17886 (via Spånga office)
CH

Hewlett-Packard Sverige AB
Östra Tuligatan 3
S-21128 MALMÖ
Tel: (040) 70270
Telex: (854) 17886 (via Spånga office)
CH

Hewlett-Packard Sverige AB
Vâstra Vintergatan 9
S-70344 ÖREBRO
Tel: (19) 10-48-80
Telex: (854) 17886 (via Spånga office)
CH

Hewlett-Packard Sverige AB
Skalholtsgatan 9, Kista
Box 19
S-16393 SPÅNGA
Tel: (08) 750-2000
Telex: (854) 17886
Telefax: (08) 7527781
A,CH,CM,CS,E,M,P

Hewlett-Packard Sverige AB
Frötallisgatan 30
S-42132 VÄSTRA-FRÖLUNDA
Tel: (031) 49-09-50
Telex: (854) 17886 (via Spånga office)
CH,E,P

SWITZERLAND

Hewlett-Packard (Schweiz) AG
Clarastrasse 12
CH-4058 BASEL
Tel: (61) 33-59-20
A

Hewlett-Packard (Schweiz) AG
7, rue du Bois-du-Lan
Case Postale 365
CH-1217 MEYRIN 2
Tel: (0041) 22-83-11-11
Telex:27333 HPAG CH
CH,CM,CS

Hewlett-Packard (Schweiz) AG
Allmend 2
CH-8967 WIDEN
Tel: (0041) 57 31 21 11
Telex: 53933 hpag ch
Cable: HPAG CH
A,CH,CM,CS,E,M,P

SYRIA

General Electronic Inc.
Nuri Basha Ahnaf Ebn Kays Street
P.O. Box 5781
DAMASCUS
Tel: 33-24-87
Telex: 411215
Cable: ELECTROBOR DAMASCUS
E

Middle East Electronics
P.O.Box 2308
Abu Rumnaneh
DAMASCUS
Tel: 33 45 92
Telex: 411304
M

TAIWAN

Hewlett-Packard Taiwan
Kaohsiung Office
11/F 456, Chung Hsiao 1st Road
KAOHSIUNG
Tel: (07) 2412318
CH,CS,E

Hewlett-Packard Taiwan
8th Floor Hewlett-Packard Building
337 Fu Hsing North Road
TAIPEI
Tel: (02) 712-0404
Telex: 24439 HEWPACK
Cable:HEWPACK Taipei
A,CH,CM,CS,E,M,P

Ing Lih Trading Co.
3rd Floor, 7 Jen-Ai Road, Sec. 2
TAIPEI 100
Tel: (02) 3948191
Cable: INGLIH TAIPEI
A

THAILAND

Unimesa
30 Patpong Ave., Suriwong
BANGKOK 5
Tel: 235-5727
Telex: 84439 Simonco TH
Cable: UNIMESA Bangkok
A,CH,CS,E,M

Bangkok Business Equipment Ltd.
5/5-6 Dejo Road
BANGKOK
Tel: 234-8670, 234-8671
Telex: 87669-BEQUIPT TH
Cable: BUSIQUIPT Bangkok
P

TOGO

Societe Africaine De
Promotion
B.P. 12271
LOME
Tel: 21-62-88
Telex: 5304
P

TRINIDAD & TOBAGO

Caribbean Telecoms Ltd.
Corner McAllister Street &
Eastern Main Road, Laventille
P.O. Box 732
PORT-OF-SPAIN
Tel: 624-4213
Telex: 22561 CARTEL WG
Cable: CARTEL, PORT OF SPAIN
CM,E,M,P

Computer and Controls Ltd.
P.O. Box 51
66 Independence Square
PORT-OF-SPAIN
Tel: 623-4472
Telex: 3000 POSTLX WG
P

TUNISIA

Tunisie Electronique
31 Avenue de la Liberte
TUNIS
Tel: 280-144
CH,CS,E,P

Corema
1 ter. Av. de Carthage
TUNIS
Tel: 253-821
Telex: 12319 CABAM TN
M

TURKEY

E.M.A
Mediha Eldem Sokak No. 41/6
Yenisehir
ANKARA
Tel: 319175
Telex: 42321 KTX TR
Cable: EMATRADE ANKARA
M

Kurt & Kurt A.S.
Mithatpasa Caddesi No. 75
Kat 4 Kizilay
ANKARA
Tel: 318875/6/7/8
Telex: 42490 MESR TR
A

Saniva Bilgisayar Sistemleri A.S.
Buyukdere Caddesi 103/6
Gayrettepe
ISTANBUL
Tel: 1673180
Telex: 26345 SANI TR
C,P

Teknim Company Ltd.
Iran Caddesi No. 7
Kavaklidere
ANKARA
Tel: 275800
Telex: 42155 TKNM TR
E,CM

UNITED ARAB EMIRATES

Emitac Ltd.
P.O. Box 1641
SHARJAH,
Tel: 591181
Telex: 68136 EMITAC EM
Cable: EMITAC SHARJAH
E,C,M,P,A

Emitac Ltd.
P.O. Box 2711
ABU DHABI,
Tel: 820419-20
Cable: EMITACH ABUDHABI

Emitac Ltd.
P.O. Box 8391
DUBAI,
Tel: 377951

Emitac Ltd.
P.O. Box 473
RAS AL KHAIMAH,
Tel: 28133, 21270

UNITED KINGDOM

GREAT BRITAIN

Hewlett-Packard Ltd.
Trafalgar House
Navigation Road
ALTRINCHAM
Cheshire WA14 1NU
Tel: 061 928 6422
Telex: 668068
A,CH,CS,E,M,M,P

Hewlett-Packard Ltd.
Miller House
The Ring, BRACKNELL
Berks RG12 1XN
Tel: 44344 424898
Telex: 848733
E

Hewlett-Packard Ltd.
Elstree House, Elstree Way
BOREHAMWOOD, Herts WD6 1SG
Tel: 01 207 5000
Telex: 8952716
E,CH,CS,P

Hewlett-Packard Ltd.
Oakfield House, Oakfield Grove
Clifton BRISTOL, Avon BS8 2BN
Tel: 0272 736806
Telex: 444302
CH,CS,E,P

GREAT BRITAIN (Cont'd)

Hewlett-Packard Ltd.
Bridewell House
Bridewell Place
LONDON EC4V 6BS
Tel: 01 583 6565
Telex: 298163
CH,CS,P

Hewlett-Packard Ltd.
Fourier House
257-263 High Street
LONDON COLNEY
Herts. AL2 1HA, St. Albans
Tel: 0727 24400
Telex: 1-8952716
CH,CS

Hewlett-Packard Ltd.
Pontefract Road
NORMANTON, West Yorkshire WF6 1RN
Tel: 0924 895566
Telex: 557355
CH,CS,P

Hewlett-Packard Ltd.
The Quadrangle
106-118 Station Road
REDHILL, Surrey RH1 1PS
Tel: 0737 68655
Telex: 947234
CH,CS,E,P

Hewlett-Packard Ltd.
Avon House
435 Stratford Road
Shirley, **SOLIHULL**, West Midlands
B90 4BL
Tel: 021 745 8800
Telex: 339105
CH,CS,E,P

Hewlett-Packard Ltd.
West End House
41 High Street, West End
SOUTHAMPTON
Hampshire S03 3DQ
Tel: 04218 6767
Telex: 477138
CH,CS,P

Hewlett-Packard Ltd.
King Street Lane
Winnersh, **WOKINGHAM**
Berkshire RG11 5AR
Tel: 0734 784774
Telex: 847178
A,CH,CS,E,M,P

Hewlett-Packard Ltd.
Nine Mile Ride
Easthampstead, **WOKINGHAM**
Berkshire, 3RG11 3LL
Tel: 0344 773100
Telex: 848805
CH,CS,E,P

IRELAND

NORTHERN IRELAND

Hewlett-Packard Ltd.
Cardiac Services Building
95A Finaghy Road South
BELFAST BT10 OBY
Tel: 0232 625-566
Telex: 747626
CH,CS

SCOTLAND

Hewlett-Packard Ltd.
SOUTH QUEENSFERRY
West Lothian, EH30 9TG
Tel: 031 331 1188
Telex: 72682
CH,CM,CS,E,M,P

UNITED STATES

Alabama

Hewlett-Packard Co.
700 Century Park South, Suite 128
BIRMINGHAM, AL 35226
Tel: (205) 822-6802
C,CH,CS,P*

Hewlett-Packard Co.
420 Wynn Drive
P.O. Box 7700
HUNTSVILLE, AL 35807
Tel: (205) 830-2000
C,CH,CM,CS,E,M*

Alaska

Hewlett-Packard Co.
3601 C St., Suite 1234
ANCHORAGE, AK 99503
Tel: (907) 563-8855
CH,CS,E

Arizona

Hewlett-Packard Co.
8080 Pointe Parkway West
PHOENIX, AZ 85044
Tel: (602) 273-8000
A,CH,CM,CS,E,M

Hewlett-Packard Co.
2424 East Aragon Road
TUCSON, AZ 85706
Tel: (602) 573-7400
CH,E,M**

California

Hewlett-Packard Co.
99 South Hill Dr.
BRISBANE, CA 94005
Tel: (415) 330-2500
CH,CS

Hewlett-Packard Co.
P.O. Box 7830 (93747)
5060 E. Clinton Avenue, Suite 102
FRESNO, CA 93727
Tel: (209) 252-9652
CH,CS,M

Hewlett-Packard Co.
1421 S. Manhattan Av.
FULLERTON, CA 92631
Tel: (714) 999-6700
CH,CM,CS,E,M

Hewlett-Packard Co.
320 S. Kellogg, Suite B
GOLETA, CA 93117
Tel: (805) 967-3405
CH

Hewlett-Packard Co.
5400 W. Rosecrans Blvd.
LAWNDALE, CA 90260
P.O. Box 92105
LOS ANGELES, CA 90009
Tel: (213) 643-7500
Telex: 910-325-6608
CH,CM,CS,M

Hewlett-Packard Co.
3155 Porter Drive
PALO ALTO, CA 94304
Tel: (415) 857-8000
CH,CS,E

Hewlett-Packard Co.
4244 So. Market Court, Suite A
P.O. Box 15976
SACRAMENTO, CA 95813
Tel: (916) 929-7222
A*,CH,CS,E,M

Hewlett-Packard Co.
9606 Aero Drive
P.O. Box 23333
SAN DIEGO, CA 92123
Tel: (619) 279-3200
CH,CM,CS,E,M

Hewlett-Packard Co.
2305 Camino Ramon 'C'
SAN RAMON, CA 94583
Tel: (415) 838-5900
CH,CS

Hewlett-Packard Co.
3005 Scott Boulevard
SANTA CLARA, CA 95050
Tel: (408) 988-7000
Telex: 910-338-0586
A,CH,CM,CS,E,M

Hewlett-Packard Co.
5703 Corsa Avenue
WESTLAKE VILLAGE, CA 91362
Tel: (213) 706-6800
E*,CH*,CS*

Colorado

Hewlett-Packard Co.
24 Inverness Place, East
ENGLEWOOD, CO 80112
Tel: (303) 649-5000
A,CH,CM,CS,E,M

Connecticut

Eff. Dec. 1, 1984
Hewlett-Packard Co.
500 Sylvan Av.
BRIDGEPORT, CT 06606
Tel: (203) 371-6454
CH,CS,E

Hewlett-Packard Co.
47 Barnes Industrial Road South
P.O. Box 5007
WALLINGFORD, CT 06492
Tel: (203) 265-7801
A,CH,CM,CS,E,M

Florida

Hewlett-Packard Co.
2901 N.W. 62nd Street
P.O. Box 24210
FORT LAUDERDALE, FL 33307
Tel: (305) 973-2600
CH,CS,E,M,P*

Hewlett-Packard Co.
4080 Woodcock Drive, Suite 132
JACKSONVILLE, FL 32207
Tel: (904) 398-0663
C*,CH*,M**

Hewlett-Packard Co.
6177 Lake Ellenor Drive
P.O. Box 13910
ORLANDO, FL 32859
Tel: (305) 859-2900
A,C,CH,CM,CS,E,P*

Hewlett-Packard Co.
4700 Bayoue Blvd.
Building 5
PENSACOLA, FL 32505
Tel: (904) 476-8422
A,C,CH,CM,CS,M

Hewlett-Packard Co.
5550 Idlewild, #150
P.O. Box 15200
TAMPA, FL 33684
Tel: (813) 884-3282
A*,C,CH,CS,E*,M*,P*

Georgia

Hewlett-Packard Co.
2000 South Park Place
P.O. Box 105005
ATLANTA, GA 30348
Tel: (404) 955-1500
Telex: 810-766-4890
A,C,CH,CM,CS,E,M,P*

Hawaii

Hewlett-Packard Co.
Kawaiahao Plaza, Suite 190
567 South King Street
HONOLULU, HI 96813
Tel: (808) 526-1555
A,CH,E,M

Illinois

Hewlett-Packard Co.
304 Eldorado Road
P.O. Box 1607
BLOOMINGTON, IL 61701
Tel: (309) 662-9411
CH,M**

Hewlett-Packard Co.
525 W. Monroe, #1300
CHICAGO, IL 60606
Tel: (312) 930-0010
CH,CS

Hewlett-Packard Co.
1200 Diehl
NAPERVILLE, IL 60566
Tel: (312) 357-8800
CH*,CS

Hewlett-Packard Co.
5201 Tollview Drive
ROLLING MEADOWS, IL 60008
Tel: (312) 255-9800
Telex: 910-687-1066
A,CH,CM,CS,E,M

Indiana

Hewlett-Packard Co.
11911 N. Meridian St.
CARMEL, IN 46032
Tel: (317) 844-4100
A,CH,CM,CS,E,M

Iowa

Hewlett-Packard Co.
4070 22nd Av. SW
CEDAR RAPIDS, IA 52404
Tel: (319) 390-4250
CH,CS,E,M

UNITED STATES (Cont'd)

Hewlett-Packard Co.
4201 Corporate Dr.
WEST DES MOINES, IA 50265
Tel: (515) 224-1435
A**,CH,M**

Kentucky

Hewlett-Packard Co.
10300 Linn Station Road, #100
LOUISVILLE, KY 40223
Tel: (502) 426-0100
A,CH,CS,M

Louisiana

Hewlett-Packard Co.
160 James Drive East
ST. ROSE, LA 70087
P.O. Box 1449
KENNER, LA 70063
Tel: (504) 467-4100
A,C,CH,E,M,P*

Maryland

Hewlett-Packard Co.
3701 Koppers Street
BALTIMORE, MD 21227
Tel: (301) 644-5800
Telex: 710-862-1943
A,CH,CM,CS,E,M

Hewlett-Packard Co.
2 Choke Cherry Road
ROCKVILLE, MD 20850
Tel: (301) 948-6370
A,CH,CM,CS,E,M

Massachusetts

Hewlett-Packard Co.
1775 Minuteman Road
ANDOVER, MA 01810
Tel: (617) 682-1500
A,C,CH,CS,CM,E,M,P*

Hewlett-Packard Co.
32 Hartwell Avenue
LEXINGTON, MA 02173
Tel: (617) 861-8960
CH,CS,E

Michigan

Hewlett-Packard Co.
4326 Cascade Road S.E.
GRAND RAPIDS, MI 49506
Tel: (616) 957-1970
CH,CS,M

Hewlett-Packard Co.
39550 Orchard Hill Place Drive
NOVI, MI 48050
Tel: (313) 349-9200
A,CH,CS,E,M

Hewlett-Packard Co.
1771 W. Big Beaver Road
TROY, MI 48084
Tel: (313) 643-6474
CH,CS

Minnesota

Hewlett-Packard Co.
2025 W. Larpenteur Ave.
ST. PAUL, MN 55113
Tel: (612) 644-1100
A,CH,CM,CS,E,M

Missouri

Hewlett-Packard Co.
1001 E. 101st Terrace
KANSAS CITY, MO 64131
Tel: (816) 941-0411
A,CH,CM,CS,E,M

Hewlett-Packard Co.
13001 Hollenberg Drive
BRIDGETON, MO 63044
Tel: (314) 344-5100
A,CH,CS,E,M

Nebraska

Hewlett-Packard
10824 Old Mill Rd., Suite 3
OMAHA, NE 68154
Tel: (402) 334-1813
CM,M

New Jersey

Hewlett-Packard Co.
120 W. Century Road
PARAMUS, NJ 07652
Tel: (201) 265-5000
A,CH,CM,CS,E,M

Hewlett-Packard Co.
20 New England Av. West
PISCATAWAY, NJ 08854
Tel: (201) 981-1199
A,CH,CM,CS,E

New Mexico

Hewlett-Packard Co.
11300 Lomas Blvd.,N.E.
P.O. Box 11634
ALBUQUERQUE, NM 87112
Tel: (505) 292-1330
CH,CS,E,M

New York

Hewlett-Packard Co.
5 Computer Drive South
ALBANY, NY 12205
Tel: (518) 458-1550
A,CH,E,M

Hewlett-Packard Co.
9600 Main Street
P.O. Box AC
CLARENCE, NY 14031
Tel: (716) 759-8621
CH,CS,E

Hewlett-Packard Co.
200 Cross Keys Office Park
FAIRPORT, NY 14450
Tel: (716) 223-9950
A,CH,CM,CS,E,M

Hewlett-Packard Co.
7641 Henry Clay Blvd.
LIVERPOOL, NY 13088
Tel: (315) 451-1820
A,CH,CM,CS,E,M

Hewlett-Packard Co.
No. 1 Pennsylvania Plaza
55th Floor
34th Street & 8th Avenue
MANHATTAN NY 10119
Tel: (212) 971-0800
CH,CS,M*

Hewlett-Packard Co.
15 Myers Corner Rd.
WAPPINGER FALLS, NY 12590
CM,E

Hewlett-Packard Co.
250 Westchester Avenue
WHITE PLAINS, NY 10604
Tel: (914) 684-6100
CM,CH,CS,E

Hewlett-Packard Co.
3 Crossways Park West
WOODBURY, NY 11797
Tel: (516) 921-0300
A,CH,CM,CS,E,M

North Carolina

Hewlett-Packard Co.
305 Gregson Dr.
CARY, NC 27511
Tel: (919) 467-6600
C,CH,CM,CS,E,M,P*

Hewlett-Packard Co.
9600-H Southern Pine Blvd.
CHARLOTTE, NC 28210
Tel: (704) 527-8780
CH*,CS*

Hewlett-Packard Co.
5605 Roanne Way
P.O. Box 26500
GREENSBORO, NC 27420
Tel: (919) 852-1800
A,C,CH,CM,CS,E,M,P*

Ohio

Hewlett-Packard Co.
9920 Carver Road
CINCINNATI, OH 45242
Tel: (513) 891-9870
CH,CS,M

Hewlett-Packard Co.
16500 Sprague Road
CLEVELAND, OH 44130
Tel: (216) 243-7300
A,CH,CM,CS,E,M

Hewlett-Packard Co.
980 Springboro Pike
MIAMISBURG, OH 45343
Tel: (513) 859-8202
A,CH,CM,E*,M

Hewlett-Packard Co.
675 Brooksedge Blvd.
WESTERVILLE, OH 43081
Tel: (614) 436-1041
CH,CM,CS,E*

Oklahoma

Hewlett-Packard Co.
304 N. Meridian, Suite A
P.O. Box 75609
OKLAHOMA CITY, OK 73147
Tel: (405) 946-9499
C,CH,CS,E*,M

Hewlett-Packard Co.
3840 S. 103rd E. Ave., #100
P.O. Box 35747
TULSA, OK 74153
Tel: (918) 665-3300
A**,C,CH,CS,M*,E,P*

Oregon

Hewlett-Packard Co.
9255 S. W. Pioneer Court
P.O. Box 328
WILSONVILLE, OR 97070
Tel: (503) 682-8000
A,CH,CS,E*,M

Pennsylvania

Hewlett-Packard Co.
50 Dorchester Rd.
P.O. Box 6080
HARRISBURG, PA 17111
Tel: (717) 657-5900
C

Hewlett-Packard Co.
111 Zeta Drive
PITTSBURGH, PA 15238
Tel: (412) 782-0400
A,CH,CS,E,M

Hewlett-Packard Co.
2750 Monroe Boulevard
P.O. Box 713
VALLEY FORGE, PA 19482
Tel: (215) 666-9000
A,CH,CM,CS,E,M

South Carolina

Hewlett-Packard Co.
Brookside Park, Suite 122
1 Harbison Way
P.O. Box 21708
COLUMBIA, SC 29221
Tel: (803) 732-0400
A,C,CH,CS,M

Hewlett-Packard Co.
100 Executive Cntr. Dr.
Koger Executive Center
Chesterfield Bldg., Suite 124
GREENVILLE, SC 29615
Tel: (803) 297-4120
C

Tennessee

Hewlett-Packard Co.
One Energy Centr. #200
Pellissippi Pkwy.
P.O. Box 22490
KNOXVILLE, TN 37933
Tel: (615) 966-4747
A,C,CH,CS,M

Hewlett-Packard Co.
3070 Directors Row
MEMPHIS, TN 38131
Tel: (901) 346-8370
A,C,M

Hewlett-Packard Co.
220 Great Circle Road, Suite 116
NASHVILLE, TN 37228
Tel: (615) 255-1271
C,M,P*

Texas

Hewlett-Packard Co.
11002-B Metric Boulevard
AUSTIN, TX 78758
Tel: (512) 835-6771
C,CM,E,P*

Hewlett-Packard Co.
5700 Cromo Dr
P.O. Box 12903
EL PASO, TX 79913
Tel: (915) 833-4400
CH,E*,M**

UNITED STATES (Cont'd)

Hewlett-Packard Co.
3952 Sand Shell St
FORT WORTH, TX 76137
Tel: (817) 232-9500
A,C,CH,E,M

Hewlett-Packard Co.
10535 Harwin Drive
P.O. Box 42816
HOUSTON, TX 77042
Tel: (713) 776-6400
A,C,CH,CS,E,M,P*

Hewlett-Packard Co.
511 W. John W. Carpenter Fwy.
Royal Tech. Center #100
IRVINE, TX 75062
Tel: (214) 556-1950
C,CH,CS,E

Hewlett-Packard Co.
930 E. Campbell Rd.
P.O. Box 83/1270
RICHARDSON, TX 75083-1270
Tel: (214) 231-6101
A,CH,CM,CS,E,M,P*

Hewlett-Packard Co.
1020 Central Parkway South
P.O. Box 32993
SAN ANTONIO, TX 78232
Tel: (512) 494-9336
A,C,CH,CS,E,M,P*

Utah

Hewlett-Packard Co.
3530 W. 2100 South
P.O. Box 26626
SALT LAKE CITY, UT 84126
Tel: (801) 974-1700
A,CH,CS,E,M

Virginia

Hewlett-Packard Co.
4305 Cox Road
GLEN ALLEN, VA 23060
P.O. Box 9669
RICHMOND, VA 23228
Tel: (804) 747-7750
A,C,CH,CS,E,M,P*

Washington

Hewlett-Packard Co.
15815 S.E. 37th Street
BELLEVUE, WA 98006
Tel: (206) 643-4000
A,CH,CM,CS,E,M

Hewlett-Packard Co.
708 North Argonne Road
P.O. Box 3808
SPOKANE, WA 99220-3808
Tel: (509) 922-7000
CH,CS

West Virginia

Hewlett-Packard Co.
4604 MacCorkle Ave.
CHARLESTON, WV 25304
Tel: (304) 925-0492
A,M

Wisconsin

Hewlett-Packard Co.
275 N. Corporate Dr.
BROOKFIELD, WI 53005
Tel: (414) 784-8800
A,CH,CS,E*,M

URUGUAY

Pablo Ferrando S.A.C. e I.
Avenida Italia 2877
Casilla de Correo 370
MONTEVIDEO
Tel: 80-2586
Telex: Public Booth 901
A,CM,E,M

Mini Computadores, Ltda.
Avda. del Libertador Brig
Gral Lavalleja 2071
Local 007
MONTEVIDEO
Tel: 29-55-22
Telex: 901 P BOOTH UY
P

Olympia de Uruguay S.A.
Maquines de Oficina
Avda. del Libertador 1997
Casilla de Correos 6644
MONTEVIDEO
Tel: 91-1809, 98.-3807
Telex: 6342 OROU UY
P

VENEZUELA

Hewlett-Packard de Venezuela C.A.
3RA Transversal Los Ruices Norte
Edificio Segre 1, 2 & 3
Apartado 50933
CARACAS 1071
Tel: 239-4133
Telex: 251046 HEWPACK
A,CH,CS,E,M,P

Hewlett-Packard de Venezuela C.A.
Residencias Tia Betty Local 1
Avenida 3 y con calfe 75
MARACAIBO, Estado Zulia
Apartado 2646
Tel: (061) 75801-75805-75806-80304
Telex: 62464 HPMAR
C,E*

Hewlett-Packard de Venezuela C.A.
Urb. Lomas de Este
Torre Trebol — Piso 11
VALENCIA, Estado Carabobo
Apartado 3347
Tel: (041) 222992/223024
CH,CS,P

Albis Venezolana S.R.L.
Av. Las Marias, Ota. Alix,
El Pedregal
Apartado 81025
CARACAS *1080A*
Tel: 747984, 742146
Telex: 24009 ALBIS VC
A

Tecnologica Medica del Caribe, C.A.
Multicentro Empresarial del Este
Ave. Libertador
Edif. Libertador
Nucleo "C" - Oficina 51-52
CARACAS
Tel: 339867/333780
M

CIZUCA
Cientifica Zulia C.A.
Calle 70, Los Olivos
No. 66-86
Apartado 1843
MARACAIBO
Tel: 54-64-37, 54-63-85, 54-64-94
Telex: 62144
A

YUGOSLAVIA

Do Hermes
General Zdanova 4
*Telex: YU-11000 **BEOGRAD***
A,CH,E,P

Hermes
Titova 50
*Telex: YU-61000 **LJUBLJANA***
CH,CS,E,M,P

Elektrotehna
Titova 51
*Telex: YU-61000 **LJUBLJANA***
CM

ZAMBIA

R.J. Tilbury (Zambia) Ltd.
P.O. Box 32792
LUSAKA
Tel: 215590
Telex: 40128
E

ZIMBABWE

Field Technical Sales
45 Kelvin Road, North
P.B. 3458
SALISBURY
Tel: 705 231
Telex: 4-122 RH
E,P

August 1984
HP distributors are printed in italics.

HEWLETT
PACKARD