# HEWLETT-PACKARD

HP 7957A AND HP 7958A DISC DRIVES
OWNER'S MANUAL

## **CERTIFICATION**

Products, materials, parts, and services furnished on this order have been provided in accordance with all applicable Hewlett-Packard specifications. Actual inspection and test data pertaining to this order is on file and available for examination.

Hewlett-Packard's calibration measurements are traceable to the National Bureau of Standards to the extent allowed by the Bureau's calibration facilities.

The Hewlett-Packard Quality Program satisfies the requirements of MIL-Q-9858, MIL-I-45208, and MIL-C-45662.

# OWNER'S MANUAL 7957A AND 7958A DISC DRIVES

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#### **MODELS COVERED**

This manual covers the following models: HP 7957A and HP 7958A.

#### **OPTIONS COVERED**

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



HEWLETT-PACKARD P.O. Box 39, Boise, Idaho 83707-0039

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#### FOR U.S.A. ONLY

The Federal Communications Commission has specified that the following 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 reasonable protection against such interference in a residential installation. However, there is no guarantee that interference 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: re-orient 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. 004-000-00345-4.

# **Safety Considerations**

**GENERAL** - This product and related documentation must be reviewed for familiarization with safety markings and instructions before operation.

#### SAFETY SYMBOLS



Instruction manual symbol: the product will be marked with this symbol when it is necessary for the user to refer to the instruction manual in order to protect the product against damage.



Indicates hazardous voltages.



Indicates earth (ground) terminal.

#### WARNING

The WARNING sign denotes a hazard. It calls attention to a procedure or practice that, if not correctly performed or adhered to, could result in personal injury. Do not proceed beyond a WARNING sign until the indicated conditions are fully understood and met.

#### CAUTION

The CAUTION sign denotes a hazard. It calls attention to an operating procedure or practice that, if not correctly performed or adhered to, could result in damage to or destruction of part or all of the product. Do not proceed beyond a CAUTION sign until the indicated conditions are fully understood and met.

SAFETY EARTH GROUND - This is a safety class I product and is provided with a protective earthing terminal. An uninterruptible safety earth ground must be provided from the main power

source to the product input wiring terminals, power cord, or supplied power cord set. Whenever it is likely that the protection has been impaired, the product must be made inoperative and be secured against any unintended operation.

**BEFORE APPLYING POWER** - Verify that the product is configured to match the available main power source according to the input power configuration instructions provided in this manual.

If this product is to be operated with an autotransformer make sure that the common terminal is connected to the earth terminal of the main power source.

#### **SERVICING**

#### WARNING

Any servicing, adjustment, maintenance, or repair of this product must be performed only by service-trained personnel.

Adjustments described in this manual may be performed with power supplied to the product while protective covers are removed. Energy available at many points may, if contacted, result in personal injury.

Capacitors inside this product may still be charged after the product has been disconnected from the main power source.

To avoid a fire hazard, fuses with the proper current rating and of the specified type (normal blow, time delay, etc.) must be used for replacement. To install or remove a fuse, first disconnect the power cord from the device. Then, using a small flat-bladed screw driver, turn the fuseholder cap counterclockwise until the cap releases. Install either end of a properly rated fuse into the cap. Next, insert the fuse and fuseholder cap into the fuseholder by pressing the cap inward and then turning it clockwise until it locks in place.

# **Printing History**

New editions are complete revisions of the manual. Update packages, which are issued between editions, contain additional and replacement pages to be merged into the manual by the customer. The dates on the title page change only when a new edition or a new update is published. No information is incorporated into a reprinting unless it appears as a prior update; the edition does not change when an update is incorporated.

A software code may be printed before the date; this indicates the version level of the software product at the time the manual or update was issued. Many product updates and fixes do not require manual changes and, conversely, manual corrections may be done without accompanying product changes. Therefore, do not expect a one-to-one correspondence between product updates and manual updates.

Edition 1 .................NOVEMBER 1986

#### Herstellerbescheinigung

Hiermit wird bescheinigt, daß das Gerät/System HP 7957A/HP 7958A in Übereinstimmung mit den Bestimmungen von Postverfügung 1046/84 funkentstört ist.

Der Deutschen Bundespost wurde das Inverkehrbringen dieses Gerätes/Systems angezeigt und die Berechtigung zur Überprüfung der Serie auf Einhaltung der Bestimmungen eingeräumt.

#### **Manufacturer's Declaration**

This is to certify that the product(s) HP 7957A/HP 7958A is in accordance with the Radio Interference Requirements of Directive FTZ 1046/1984. The German Bundespost was notified that this equipment was put into circulation; the right to check the series for compliance with the requirements was granted.

Additional Information for Test and Measurement Equipment

If Test and Measurement Equipment is operated with unscreened cables and/or used for measurements on open setups, the user has to assure that under operating conditions the Radio Interference Limits are still met at the border of his premises.

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#### Introduction

The Hewlett-Packard 7957A and 7958A Disc Drives are random access, data storage devices designed for use with small and medium sized computer systems. The formatted storage capacities of the HP 7957A and 7958A are 81 megabytes and 130 megabytes respectively. In this manual, unless otherwise specified, "disc drive" refers to both the HP 7957A and the HP 7958A.

The disc drive employs three (HP 7957A) or five (HP 7958A) nonremovable 130-millimetre (5.12-inch) discs for storage media. Each disc surface employs one movable head to service its data tracks. The bottom surface of the lowest disc 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 voice-coil actuator and a closed-loop servo positioning system. Contamination protection for the heads, actuator, and media is achieved by enclosing these components in a sealed head-disc assembly having a built-in air filter.

Also included in the disc drive are a Hewlett-Packard Interface Bus (HP-IB)\* controller and a dc power supply.

The disc drive contains internal self-test diagnostics and a fault-finding system which exercise key functions of the disc drive. Self test is performed automatically at power on and can also be initiated by the host computer. Go/no-go test results are indicated by a green/red indicator on the front panel.

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

This manual provides the information needed to install and operate the disc drive. Details of the control functions provided by the host computer are described in the computer's documentation.

## **Accessories**

 HP 92211-Series Cabinets. A desk-height standalone cabinet series for the disc drive and other desktop stackable peripherals and systems.

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

• HP 19500B Rack Mount Kit. Allows the disc drive to be mounted in a standard 19-inch EIA equipment rack.

## **Options**

- Option 015. For non-US shipments. Voltage Selector switch set for 230 Vac operation.
- Option 550. Deletion of the HP 10833A 1-metre HP-IB Interface Cable Assembly.

#### **Characteristics**

Characteristics of the disc drive, including physical dimensions and power requirements, are listed in Table 1, Disc Drive Characteristics. Detailed specifications for the disc 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 disc drive.

## **Supporting Documentation**

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

- HP 7957A and HP 7958A Disc Drive Hardware Support Manual, part no. 07957-90903.
- CS/80 Instruction Set Programming Manual, part no. 5955-3442.
- CS/80 External Exerciser Manual, part no. 5955-3462.

Table 1-1. Disc Drive Characteristics

## Safety

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

UL Listed 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; 0.80A (true rms at 115V, 60 Hz)
230V range; 0.50A (true rms at 230V, 50 Hz)

Typical power: 115V range; 65 watts (115V, 60 Hz)
230V range; 65 watts (230V, 50 Hz)
```

## Size/Weight

Height: 132 mm (5.2 in.)

```
Width: 325 mm (12.8 in.)

Depth: 285 mm (11.2 in.)

Net weight: 9.9 kg (21.8 lb)

Shipping weight: 12.9 kg (28.5 lb)
```

Installation

## NOTICE: BEFORE CONNECTING POWER, READ THESE INSTRUCTIONS CAREFULLY.

#### Introduction

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

NOTE

Refer to Figure 2-2, Controls and Connectors, for the location of the controls and connectors identified by numbers (for example: HP-IB connector ), in the text.

## **Unpacking Your Disc Drive**

#### CAUTION

The disc drive is delicate and should be handled with care. Also, the drive is heavier (10.9 kilograms/24.0 pounds) than its size would indicate.

The disc drive is shipped in a reusable shipping container. (See Figure 2-1, 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 unit from the shipping container and inspect the unit 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 carrier involved.

A list of Hewlett-Packard Sales and Support Offices is provided at the back of this manual.

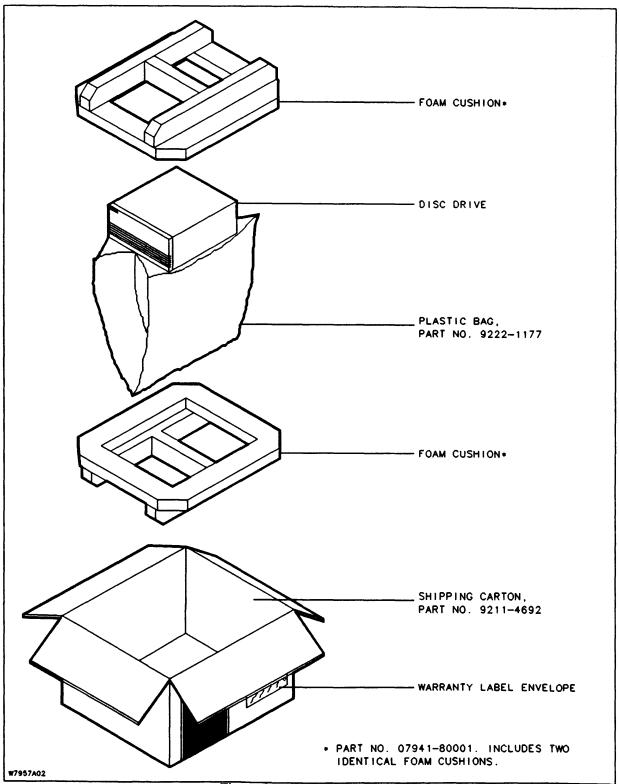


Figure 2 1. Packaging Details

## Handling

While the disc drive has been designed to withstand a certain shock level it is still a delicate device. Care should be taken when handling or transporting the product. The following precautions should be observed when handling or transporting the disc drive. Failure to observe these handling precautions could result in loss of data or damage to the product.

#### **Handling Precautions**

- Avoid sharp shocks to the disc drive.
- Always repackage the disc drive in approved packaging when transporting the product from one area to another.
- To ensure continual successful operation of this product in a carpeted office environment, Hewlett-Packard recommends the use of anti-static mats and/or carpets with this product. Refer to Hewlett-Packard Computer Users Catalog for a complete listing of static control and anti-static mats and carpets.

NOTE

A static charge of 39,000 volts can be generated on a carpeted floor. This exceeds the limits of this product and can cause unsuccessful operation.

## **Design Plus Cabinet Installation**

When installing the disc drive into one of Hewlett-Packard's Design Plus Cabinets (HP 92211 Series Cabinets) remember to remove the plastic feet from the front and rear of the disc drive to ensure a good ground contact to guard against electro-static problems. Refer to the installation documentation supplied with the cabinet for detailed installation instructions.

## **Equipment Supplied**

Check to ensure that all of the standard equipment supplied with the disc 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.
- 7957A and 7958A Disc Drive Owners Manual, part no. 07957-90901.
- HP 10833A 1-metre HP-IB Interface Cable assembly.

- Fuse, 3-ampere, 250-volt, medium blow, part no. 2110-0003. Quantity: 2.
- Warranty Label Envelope.

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

## **Power Requirements**

Refer to Table 1-1, Disc Drive Characteristics.

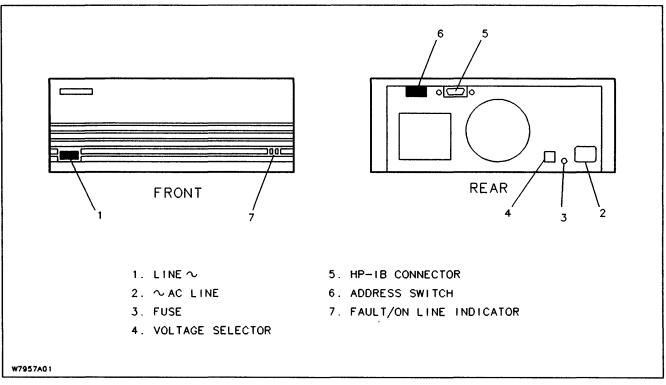


Figure 2-2. Controls and Connectors

## **Configuring Power**

The following instructions should be followed to ensure that your disc 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 disc drive ~AC LINE connector 2 before changing the VOLTAGE SELECTOR switch 3 setting. Failure to disconnect the power cord could result in damage to the unit.

Your disc drive should already be adjusted to operate on the line voltage available in your area. Check that the VOLTAGE SELECTOR switch 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.

#### **FUSE Value**

Since the value of the FUSE is is the same for both settings of the VOLTAGE SELECTOR switch there is no need to check the fuse value. The correct rating for the fuse is 3-ampere, 250-volt, medium blow. The HP part number for the fuse is 2110-0003.

#### WARNING

Make sure that the power cord is disconnected from the disc drive before installing or replacing the FUSE 3. Failure to disconnect the power cord could result in electrical shock or damage to the unit.

## WARNING

For continued protection against fire hazard, replace only with the same type and rating of fuse as specified.

## **Warranty Label**

Remove the warranty label from the sealed envelope on the side of the shipping container. (See Figure 2-1, 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".

## **Installing The Power Cord**

#### CAUTION

- Use UL/CSA approved power cord, SVT type, rated for suitable voltage and current. (Refer to Appendix D in the *Site Environmental Requirements Manual*, part no. 5955-3456.)
- Check the input ac voltage, the value of the fuse , and the setting of the VOLTAGE SELECTOR switch before proceeding with the power cord installation. The disc drive is supplied with an appropriate power cord. The various power cords available are shown in Appendix D of the Site Environmental Requirements Manual, part no. 5955-3456.
- Do not attempt to operate the disc drive configured for 115 Vac on 230 Vac, or vice versa. Damage to the disc 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 disc drive.

## **Connecting The Disc Drive To Your System**

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

NOTE

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

#### Checking 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 disconnecting) HP-IB cables.

A 1-metre (3.3-foot) HP-IB cable assembly is supplied with the disc drive. Before using this cable to connect the disc drive to the system host, ensure that the proposed cabling conforms with the following HP-IB cabling standards (see figure 2-3):

- Cabling is limited to 1 metre per HP-IB load. Typically, the central processing unit (CPU) is 7 equivalent loads and the disc drive is 1 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 on the rear panel of the disc 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 thumbwheel ADDRESS switch on the rear panel of the disc

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 disc drive LINE~ switch 1 is set to the 0 (out) position before changing the ADDRESS switch 5 settings. Failure to observe 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 on the rear panel to the desired HP-IB device address.

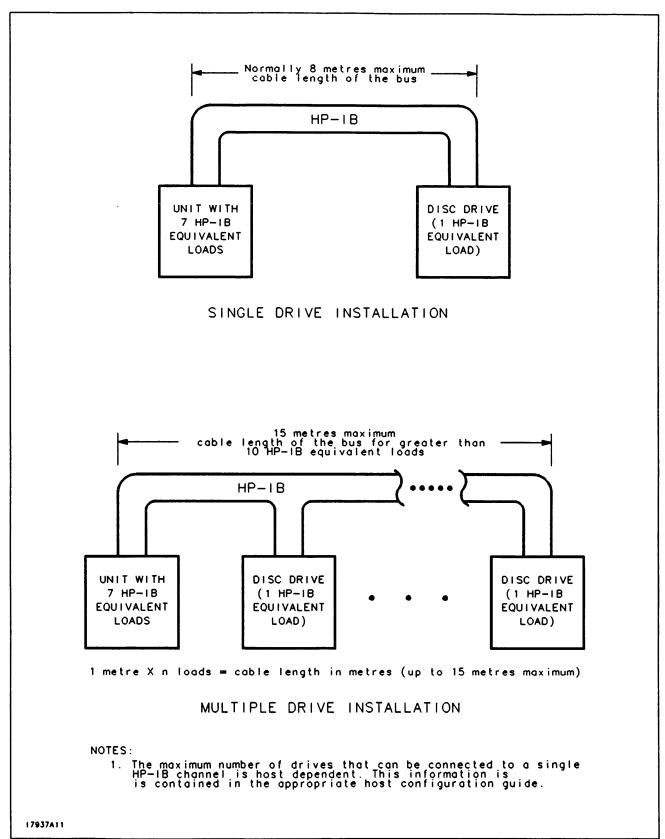


Figure 2-3. Maximum HP-IB Cable Length

Operation 3

#### Introduction

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

## **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 1 on and off unnecessarily.
- Do not connect or disconnect the HP-IB cable(s) from the disc drive when your system is transferring data on the HP-IB.

## **Environmental Limits**

To ensure proper operation, the disc 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 disc drive.

## **Controls And Connectors**

Figure 3-1, Controls and Connectors, shows the location of the switches, indicators, and connectors on the front and rear panels of the disc drive. The functions of these components are described in the following paragraphs.

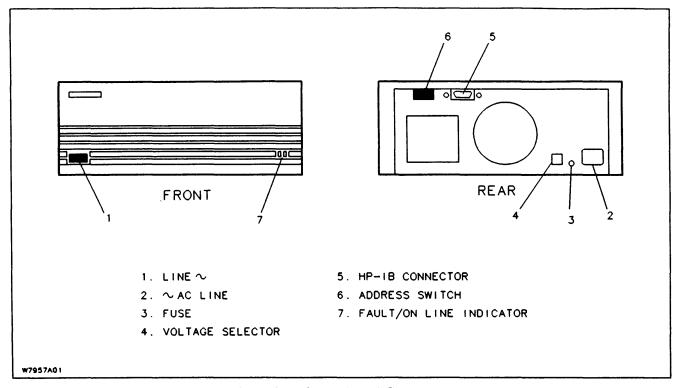


Figure 3-1. Controls and Connectors

#### LINE~ Switch

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

#### ~AC LINE Connector

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

#### **FUSE**

The FUSE protects the disc drive from a line voltage overload. The fuse value (3-ampere, 250-volt, medium blow) is the same for 115 and 230 Vac operation.

#### **VOLTAGE SELECTOR Switch**

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

#### **HP-IB Connector**

The HP-IB connector **a** allows the disc 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 is a thumb wheel switch which programs the drive's HP-IB device address. Operating instructions are given in the Installation chapter.

#### **FAULT/ON LINE Indicator**

The FAULT/ON Line Indicator  $\overline{\mathbf{Z}}$  is a red/green display which signals the operating status of the disc drive (see Figure 3-2). When line voltage is applied to the disc drives, the FAULT (red) and ON LINE (green) portions of the display will illuminate for five (5) seconds to verify that the disc drive controller has passed self test and that the disc drive mechanism has spun up properly. If both the red and green indicators remain on for greater than five seconds after power is applied it is an error state indicating either a failure in the controller or mechanism.

Next the red is extinguished and the green indicator is flashing for 10 seconds during the mechanism self test. If the disc drive mechanism passes self test the green indicator changes from flashing to illuminate indicating the disc drive is in a ready state.

If the disc drive mechanism fails self test the green indicator is extinguished and the red indicator illuminates indicating the failure. The disc drive can be accessed at this point by the Host CPU to run diagnostics.

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

## **Line Voltage Application**

- a. Set the LINE~ switch 1 to the 1 (in) position and observe the action of the FAULT/ON-LINE indicator 2. A normal sequence of events on the indicator will be a red and green display (display test), on for 5 seconds indicating controller self test and that the disc drive has spun up properly. Next the green indicator flashes (for approximately 10 seconds) during the mechanism self-test, followed by a solid indicator (self test complete, disc drive is in a ready state).
- b. If the sequence ends with a solid red display (mechanism self test failed), or the display remains a solid red and green (controller failed self test or mechanism did not spin up), the malfunctioning circuitry may be identified by consulting Figure 3-2.

## Line Voltage Removal

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

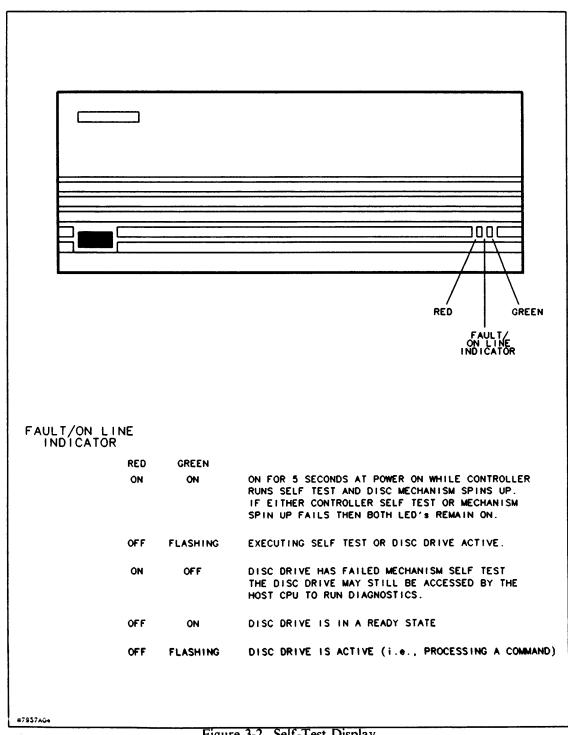


Figure 3-2. Self-Test Display

#### **HEADQUARTERS OFFICES**

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

**AFRICA** 

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Cable: HEWPACK

## **Serial Number**

Each disc 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 disc 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 disc drive serial numbers.

## Shipping

When the disc drive requires to be repacked for shipment, use the original container and packaging material supplied with the disc drive. Pack the disc drive as shown in Figure 2-1, Packaging Details. Seal the container securely with adhesive 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 disc drive is 12.9 kilograms (28.5 pounds) Also, we recommend that all shipments be insured.

## **Disc Drive Maintenance**

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

## Warranty

The disc 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.

	·		

# **READER COMMENT SHEET**

#### **Peripherals Group**

#### HP 7957A and HP 7958A Disc Drives Owners Manual

#### 07957-90901 NOVEMBER 1986

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Is this manual techn	ically accurate?	Yes	No
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