HP 3000 Computer Systems

HP 3000 SERIES 37XE

CE Site Planning and Preparation Guide

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First Edition

LIST OF EFFECTIVE PAGES

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Effective Pages	Date
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PREFACE

This manual describes the preparation required for an HP 3000 Series 37XE computer system.

The description of the actual installation procedure is covered in the Series 37XE Installation Manual (P/N 30457-90009).

If you are unfamiliar with the peripherals, their associated manuals will be useful.

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INTRODUCTION

SECTION 1

1.0 HOW TO USE THIS MANUAL

This manual explains how to prepare for an HP 3000 Series 37XE computer system. The Series 37XE has been designed for the average office environment and no extensive preparation is required. However, the customer is responsible for providing a suitable space and environment for the complete system. Environmental requirements depend upon which peripherals are used with the system.

Section 2 provides a checklist of preparation tasks.

Section 3 covers space and environmental requirements.

Section 4 covers electrical requirements.

Section 5 covers supplies, media storage, record backup, telephone support, and receiving the system.

Appendix A provides the tools to create a scaled floor plan.

A list of Customer Engineer locations is provided at the end of this manual.

1.2 SYSTEM DESCRIPTION

The Series 37 is a low-end member of the HP 3000 product line that can be upgraded to the top of the product line. It is designed to be installed in a mini-rack cabinet.

The system supports one to 28 users and up to 2 Mb of main memory.

The heart of the system is the System Processor Unit (SPU). The standard SPU contains four boards:

1. Central Processor Unit (CPU - located in slot 5) - capable of processing 200,000 machine instructions per second (MIPS). The CPU also performs a comprehensive, built-in system self-test, verifies system problems, and performs routine testing on system hardware. The CPU is designed to be software compatible with all HP 3000 computers, enabling you to expand your system as your needs grow.

2. Peripheral Interface Controller (PIC - located in slot 4) - a high-speed interface that utilizes the HP Interface Bus (HP-IB). The PIC communicates with the tape drives, disc units, and system printers.

3. Memory (located in slot 2) - stores up to 512,000 bytes (512 kb) of information on a single board. This board can be replaced by a 2,048,000 byte (2048 kb) board.

4. Advanced Terminal Processor for the Series 37 (ATP37 - located in slot 1) - an RS-232-C serial interface. The ATP37 provides one port to communicate with a modem or other RS-232-C devices and six direct-connect ports to communicate with terminals, plotters, and printers.

Slot 3 is a slot provided for a second memory board that, along with the 512 kb board in slot 2, provides 1024 kb of storage (OR slot 2 can contain a 2048 kb board). With these options, the system can have 1024 kb or 2048 kb of memory.

The system extends to 10 slots with the I/O Extender. The extender is physically connected to the SPU and can be populated with additional I/O boards. Memory is NOT supported in the extender.

1.2 SUPPORTED DEVICES

The HP 3000 Series 37 computer system can include the following:

HP 32450A System Processor Unit (includes the I/O Extender)

HP 7914 Disc Drive (132 Mb)
HP 7933 Disc Drive (404 Mb)
HP 7935 Disc Drive (404 Mb)
HP 7945 Disc Drive (55 Mb)

HP 7974 Tape Unit (1600 bpi)
HP 7978 Tape Unit (6250 cpi)
HP 9144 Cartridge Tape Unit (67 Mb)

HP 2563 System Printer (300 lpm)
HP 2565/6 System Printer (600 lpm)
HP 2680 System Printer (45 ppm)
HP 2688 System Printer (12 ppm)

HP 2601/2 Remote Printer (40/25 cps)
HP 2686 Remote Printer (8 ppm)
HP 2687 Remote Printer (12 ppm)
HP 2932/3/4 Remote Printer (200/100/200 cps)

HP 7470 Plotter (2-pen)
HP 7475 Plotter (6-pen)

HP 2392 Terminal
HP 2623 Graphic Terminal
HP 2624 Data Entry Terminal
HP 2625 Terminal
HP 2628 Word Processing Terminal

HP 110 Personal Computer
HP 150 Personal Computer

Because the minimum system contains only one HP-IB Peripheral Interface Channel (PIC), only HP-IB peripherals that can share a PIC with other peripherals will be supported. All supported peripherals meet FCC and FTZ regulations.

SITE PLANNING AND PREPARATION CHECKLIST

SECTION 2

2.0 INTRODUCTION

The customer should designate a site coordinator who will interface with contractors, facilities personnel, consultants, and Hewlett-Packard representatives. It is the customer's responsibility to hire the contractors if any additional climate conditioning equipment or electrical work is needed. All work needs to be done according to HP's instructions and must meet local codes and regulations.

The Customer Engineer (CE) should interface with the coordinator in order to complete the following site planning and preparation checklists. The CE will make one or two visits to prepare for and install the system.

The items in the checklists are expanded upon in Sections 3,4, 5, and Appendix A.

2.1 SITE PLANNING

1. Designate a site coordinator/principal operator.
2. Select a location for the computer system.
3. Plan the physical arrangement of the computer system and the furniture.
4. Order consumable supplies.
5. Schedule training.

2.2 SITE PREPARATION

1. Check the average temperature and humidity. Climate conditioning equipment should be installed if necessary.
2. Verify that electrical wiring is connected to ground, that the wall outlets are properly grounded, and that there is adequate current to supply power to ALL electrical equipment.
3. Provide access to a telephone close to the computer console. Provide an additional telephone if you plan to have a modem.
4. Set up a storage area.
5. Receive the system.

2.3 SITE VERIFICATION

During the installation visit, the CE will verify that the site has been prepared according to the directions in this manual.

SPACE AND ENVIRONMENT PLANNING

SECTION 3

3.0 INTRODUCTION

The key to a successful installation and long-term reliability of the computer system is effective site planning and preparation.

New sites require a review of the entire building with regard to:

- local building codes
- local electrical codes
- local safety codes
- space limitations/system accessibility
- environmental requirements
- electrical requirements

Existing sites that are to be expanded must be reviewed for:

- available space
- environmental requirements
- electrical requirements

3.1 SITE AND EQUIPMENT LOCATION

Locate the computer system in an area that will meet both present and future needs. Select a location that enables the addition of more equipment as needs expand. The location must also provide enough space to operate, ventilate, and service the equipment. Remember that the length of the cables may restrict both future moves and moving the system for servicing. Plan to keep cables away from traffic paths.

The cabinet that houses the SPU, the extender, the HP 7945 disc drive, and the HP 9144 tape unit is designed to sit on the floor. It is 720 mm (33 inches) high, 375 mm (15 inches) wide, and 711 mm (32 1/2 inches) deep. Do NOT plan to set anything on top of the cabinet. Maintain a minimum of 152mm (6 inches) of open space in front of and behind the cabinet for ventilation during operation. To service the system, provide at least 795mm (36 inches) of open space in front of and behind the cabinet or ensure that the cables are long enough to move the cabinet to an open space when servicing.

The SPU and the I/O Extender are physically the same. They are each 156 mm (6.14 inches) high, 325 mm (12.8 inches) wide, and 400 mm (15.75 inches) deep. They are each designed to be installed in the mini-rack cabinet.

Place terminals on a hard surface, NOT on a typewriter pad, so that air can circulate below the terminals.

It is a good idea to place a telephone close to the system console in order to expedite service calls.

A scaled grid and scaled outlines of the various devices are provided in Appendix A to help you create a floor plan.

3.2 ENVIRONMENTAL CONSIDERATIONS

Consider the effects of temperature, humidity, altitude, and air quality. The environmental specifications for the minimum Series 37 system are:

Storage Temperature	-	-55 degrees C to +75 degrees C
Operating Temperature	-	10 degrees C to + 40 degrees C
Rate of Temperature Change	-	10 degrees per hour
Operating Humidity at 40 degrees C	-	20 - 80 % RH (non-condensing)
Non-Operating Humidity at 65 degrees C	-	10 - 90 % RH
Acoustic Noise	-	<50 dBA
Operating Altitude	-	15,000 feet
Non-Operating Altitude	-	50,000 feet

NOTE

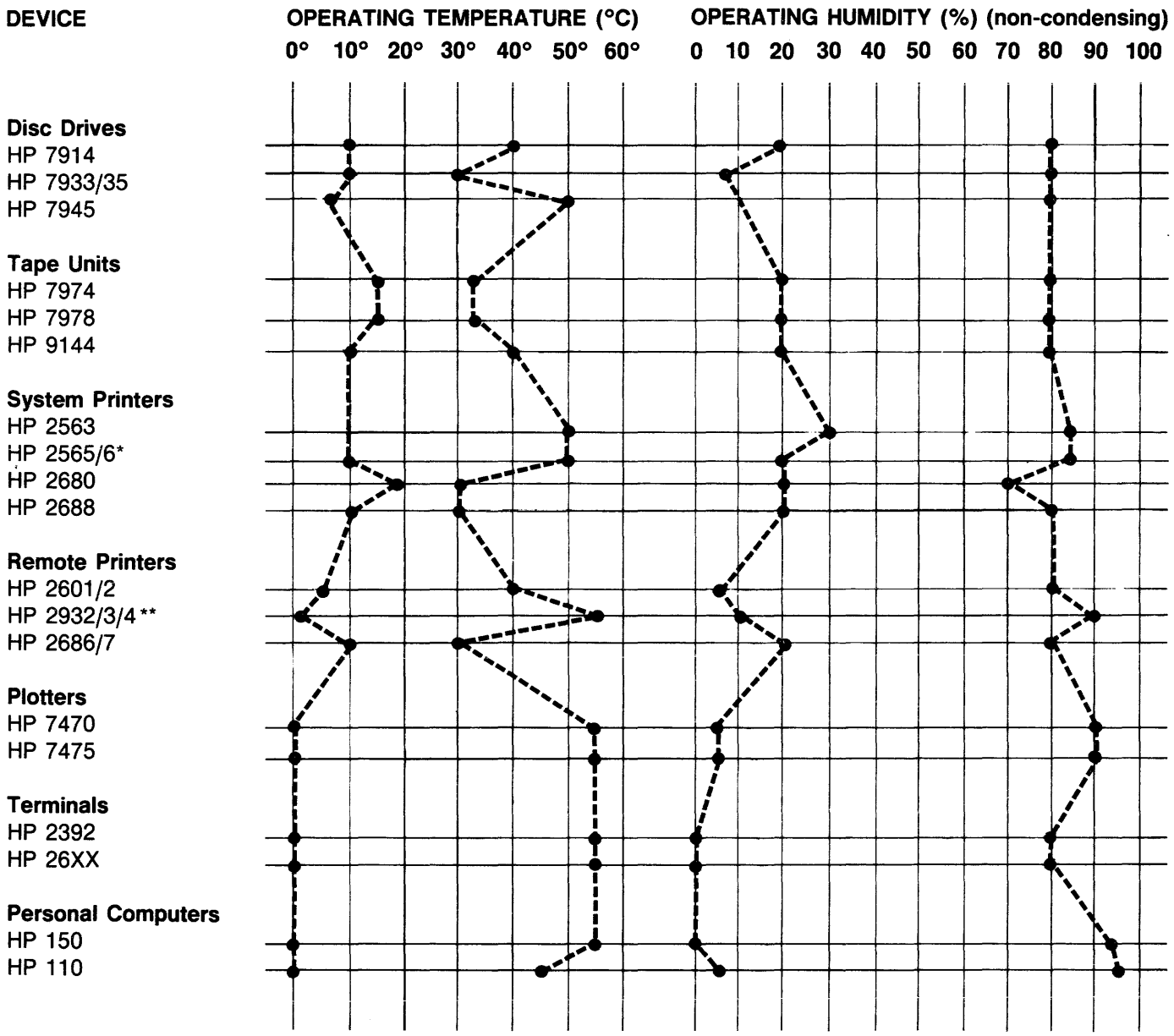
There are different environmental requirements for each peripheral device (see Figure 3-1). Check these requirements whenever planning to add a device because the overall specifications will change.

Temperature and Humidity

High operating temperatures increase the failure rate of electronic circuitry. High humidity can cause malfunctions in the various devices, or improper feeding of printer or plotter paper. Low humidity aggravates problems with static electricity. Figure 3-1 provides the correct temperature and humidity range for operating each device supported on the Series 37XE.

The devices are air-cooled, with internal fans bringing cool air into the device, circulating the air, and exhausting warm air from the device into the room. Remember to place each device away from walls to allow heated air to exhaust.

The temperature and humidity of the computer site may vary on weekends from the normal workday conditions. In extreme environments, auxiliary air conditioning or heating may be required to prevent damage to the equipment.



*Humidity range is for paper of 18 lbs. or more. For lighter paper, the humidity range is 30%–50%.
**Humidity range is for the top paper exit. The rear paper exit requires a humidity range of 10% to 70%.

Figure 3-1. Environmental Requirements

Electrostatic Discharge (ESD)

While the Series 37 has no carpet restrictions, some peripheral devices may -- such as disc and tape drives. If there is an abnormally high level of static electricity (25 kV or more - at this level, people will probably be "sparking" on contact), use a humidifier or place a grounded floor mat in front of the system.

Contaminants

Fundamental safety precautions should be taken to minimize potential sources of damage. Do not install the system where there is a fire hazard from liquids, flammable gasses, corrosives, or excessive dust.

Foreign particles may scratch the coating on the disc drive head, causing premature disc wear and/or data errors. The most common contaminants are dust, smoke, ashes, eraser crumbs, salty air, and food. Solvent vapors, such as those from liquid spirit duplicating equipment, wet process copiers, and volatile liquids, can soften disc coatings over a period of time.

ELECTRICAL REQUIREMENTS

SECTION 4

4.0 INTRODUCTION

Reliable computer system operation depends upon an adequate source of AC power that is stable and free from interference. The electrical specifications for the HP 3000 Series 37XE are described in this section.

4.1 POWER SPECIFICATIONS

Have an electrician check the site and make necessary adjustments if you need:

- line voltages measured
- circuit breakers and wire sizes checked
- neutral-ground and ground-ground voltages measured

Line Voltage

The Series 37 requires a single phase power system with nominal voltage of:

100 - 120 VAC +/-10% (90 - 132 VAC) or
200 - 240 VAC +/-10% (180 - 264 VAC).

Power voltages outside the specified operating range can cause intermittent system errors or shutdown. Low voltage is the most common power problem, and is usually caused by inadequate wiring.

An appropriate size power line conditioner is recommended to suppress severe electrical noise and prevent line voltage variations. The conditioner must be electrically isolated from the building ground system.

Line Frequency

The required line frequency is 48 Hz to 63 Hz. Line frequency usually depends on the local electric company. Incorrect line frequency can cause intermittent system errors or display jitter.

Current

Table 4-1 provides the information that you need to calculate the total amount of current drawn by your system.

Table 4-1. TYPICAL CURRENT DRAWN BY EACH DEVICE

Device Model Number	(Circle) Amperage Drawn at: 100V 120V 220V 240V	(Multiply by) Number of Machines	(Equals) Total Amperage Drawn
HP 110	battery-powered		
HP 150	1.1 1.0 0.6 0.5		
HP 2392	0.5 0.4 0.2 0.2		
HP 2563	2.3 1.9 1.0 0.9		
HP 2565/6	5.5 4.6 2.5 2.3		
HP 2601/2	1.0 0.9 0.5 0.5		
HP 2623	1.2 1.0 0.6 0.5		
HP 2624/5/8	1.0 0.8 0.5 0.4		
HP 2680	40.0 33.3 18.1 16.6		
HP 2686/7	8.5 7.0 3.8 3.5		
HP 2688	10.4 8.6 4.7 4.3		
HP 2932/3/4	3.0 2.5 1.4 1.3		
HP 7470	0.3 0.2 0.1 0.1		
HP 7475	0.4 0.3 0.2 0.1		
HP 7914	7.0 5.8 3.2 2.9		
HP 7933/5	13.0 10.8 5.9 5.4		
HP 7945	1.4 1.2 0.7 0.7		
HP 7974	5.2 4.3 2.6 2.3		
HP 7978	8.5 7.1 3.8 3.5		
HP 9144	0.8 0.7 0.4 0.3		
HP 32450	2.2 2.0 1.7 1.1		
HP 30458	2.2 2.0 1.7 1.1		
		TOTAL:	TOTAL:

Circuit Breakers

Available current cannot exceed 80% of the circuit breaker rating (for example, 12 amperes of a 15-ampere circuit breaker). Separate circuit breakers ensure sufficient power to avoid data errors and to isolate the system from any faulty equipment. Typical 120 V circuit breakers are rated at 15 or 20 amperes. The ampere load in each circuit should allow a margin for startup and surge currents caused by the system. The best solution is one (or more) circuits dedicated to the system.

Where multiple circuits are needed to provide the required total amperage protection, consult local electrical codes to determine the appropriate circuit breaker sizes and load distribution.

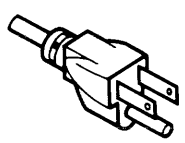
Ground

Safety ground is REQUIRED as protection for operating personnel and equipment. Every wall outlet used by the system must have a safety ground.

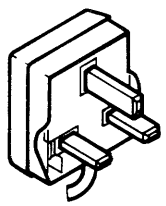
The green-wire ground is connected to the metal frame of each system device to protect against equipment malfunction, and to provide resistance to a catastrophic event such as a lightning strike. Be sure that the green-wire ground is connected from the wall outlet to the distribution sub-panel where the circuit breaker is installed.

Isolated ground is also REQUIRED. It reduces noise levels by forming a separate, insulated path from the computer to its power supply.

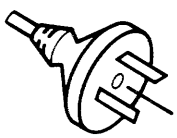
Figure 4-1 illustrates the three-conductor grounded power cords that are offered with the HP 3000.



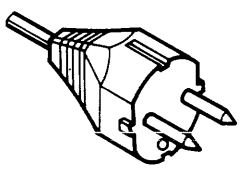
U.S.A., Canada, Japan, Mexico, Philippines, Taiwan
Option 903 (standard)
HP Part Number: 8120-2371
Length: 2.29m (7.5 ft)
Rating: 125V, 13a, single phase
NEMA5-15P



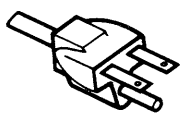
Great Britain, Cyprus, Nigeria, Rhodesia, Singapore
Option 900
HP Part Number: 8120-1351
Length: 2.29m (7.5 ft)
Rating: 250V, 10a, single phase
BS 1363A



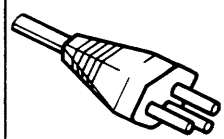
Australia, New Zealand
Option 901
HP Part Number: 8120-1369
Length: 2m (6.5 ft)
Rating: 250V, 6a, single phase
AS C112



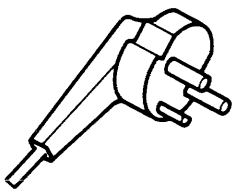
Belgium, Italy, France, Spain, Greece, Austria, Finland, Germany, Netherlands, Norway, Sweden, Saudi Arabia, United Arab Republic
Option 902
HP Part Number: 8120-1689
Length: 2m (6.5 ft)
Rating: 250V, 6a, single phase
CEE7-VII



U.S.A., Canada, Japan, Mexico, Philippines, Taiwan
Option 904
HP Part Number: 8120-0698
Length: 2.29m (7.5 ft)
Rating: 250V, 6a, single phase
NEMA6-15P



Switzerland
Option 906
HP Part Number: 8120-2104
Length: 2m (6.5 ft)
Rating: 250V, 6a, single phase
SEV 1011



Denmark
Option 912
HP Part Number: 8120-2956
Length: 2m (6.5 ft)
Rating: 250V, 6a, single phase
DHCR 107

Figure 4-1 Power Cords (U.S. and International)

Power Line Transients

The computer system will perform correctly under the following pulse conditions:

	TYPICAL	WORST CASE
Volts	1000 V (peak)	1000 V (peak)
Width	10 us	100 us
Rise	1.5 us	100 ns
Fall	1.5 us	100 ns

Heavy electrical loads from nearby machinery or equipment, like elevators, electric welders, or copiers, can cause intermittent system errors even if that equipment is on a different circuit breaker. For those conditions, provide a separate, completely independent circuit with isolated ground and a circuit breaker coming directly from the main building power source. In cases of severe electrical noise, it may be necessary to install an isolation or power line conditioning transformer.

Shunt-Trip

The power panel should have a shunt-trip wired to an emergency off switch and a thermostat to deactivate all system power in an emergency or if room temperature exceeds safe operating conditions (see Figure 3-1). Any dedicated air conditioning should interlock to the shunt-trip to shut off air flow in case of fire. A shunt-trip is not an HP requirement but is required in the United States by National Code, Article 645-3.

Lightning

In some geographical areas, it is advisable to install lightning protection for personnel and the computer. The National Electrical Code, Article 280, describes the installation of lightning arrestors on power and communication lines in the United States.

Radiated Interference

Radiated interference causes a variety of computer problems, most commonly disc read/write errors. Common sources of radiation are nearby:

- airport communications and radar
- two-way radio transmitters
- television transmitters
- radio transmitters
- microwave transmitters
- X ray equipment

Hand-held transceivers produce the same effect as radio stations when used near computer equipment and should be prohibited from the areas in which computer equipment is operated.

4.2 REGULATORY APPROVALS

The HP 3000 Series 37XE computer system has the following regulatory approvals:

Safety -- UL 114, Office Machines
UL 478, Data Processing Equipment
CSA C22.2 No. 154, Data Processing Equipment

RFI -- FCC Level A Compliant
West German FTZ License No. C041/84

Data Communications -- Germany, United Kingdom, Australia, France, Belgium

5.5 RECEIVING THE SYSTEM

As each shipment arrives, check the carrier's packing slip to verify the items ordered are the same as those received.

Contact the carrier's representative if any cartons the system arrives in appear to be damaged. If there are damaged cartons, the carrier's representative should witness the unpacking process. If the system has been damaged, the customer should contact the Sales Representative immediately.

Leave the packages containing disc packs, manuals, system tapes, cables, and installation hardware intact for the CE. Place the system devices in the room where they are to be installed.

FLOOR PLAN

APPENDIX
A

INTRODUCTION

This appendix provides the tools to create a floor plan for the computer room. The weights of each peripheral device are provided in Table A-1. The customer is responsible for moving the devices into the computer room.

Table A-1. DEVICE WEIGHTS

Device Model Number	Weight
HP 110	2.5 kg (5.5 lbs.)
HP 150	12.29 kg (27.0 lbs.)
HP 2392	13.0 kg (28.7 lbs.)
HP 2563	95.0 kg (210.0 lbs.)
HP 2565/5	181.8 kg (404.0 lbs.)
HP 2601	29.0 kg (64.0 lbs.)
HP 2602	23.0 kg (50.0 lbs.)
HP 2623	21.0 kg (46.4 lbs.)
HP 2624/5/8	22.3 kg (49.0 lbs.)
HP 2680	404.0 kg (890.0 lbs.)
HP 2686	32.0 kg (71.0 lbs.)
HP 2687	62.7 kg (138.0 lbs.)
HP 2688	52.7 kg (116.0 lbs.)
HP 2932/3/4	20.4 kg (45.0 lbs.)
HP 7470	6.0 kg (13.5 lbs.)
HP 7475	7.0 kg (16.0 lbs.)
HP 7914	67.2 kg (148.0 lbs.)

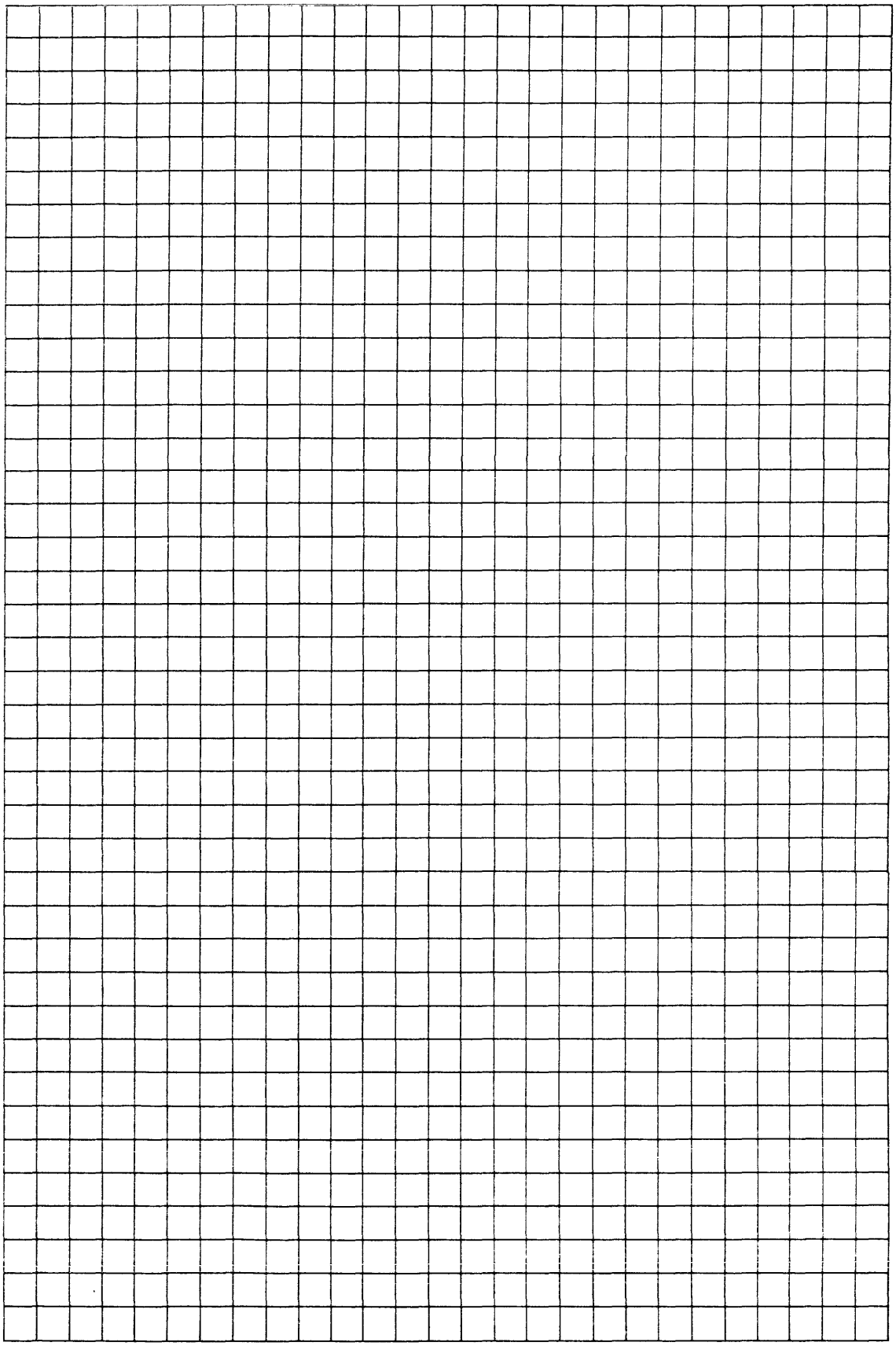
Table A-1. DEVICE WEIGHTS

Device Model Number	Weight
HP 7933/5	154.0 kg (340.0 lbs.)
HP 7945	10.0 kg (22.0 lbs.)
HP 7974	180.0 kg (400.0 lbs.)
HP 7978	188.6 kg (419.0 lbs.)
HP 9144	10.0 kg (22.0 lbs.)

INSTRUCTIONS

Figure A-1 is a grid drawn to a scale of 1/4 inch equals 1 foot (6.35 mm = 304.8 mm). Use this grid to draw in the doors, electrical outlets, and office furniture in your computer room.

Figure A-2 provides scaled outlines of each of the peripheral devices supported on the HP 3000 Series 37XE. Place these outlines on the floor plan that you have created in order to determine the best room arrangement. Since each peripheral has to be cabled to the devices in the mini-rack cabinet, use the floor plan to determine the cable lengths. The peripheral power cords plug directly into the wall outlets.



(¼ in. = 1 ft.) (6.35 mm = 304.8 mm)

Figure A-1. FLOOR PLANNING GRID

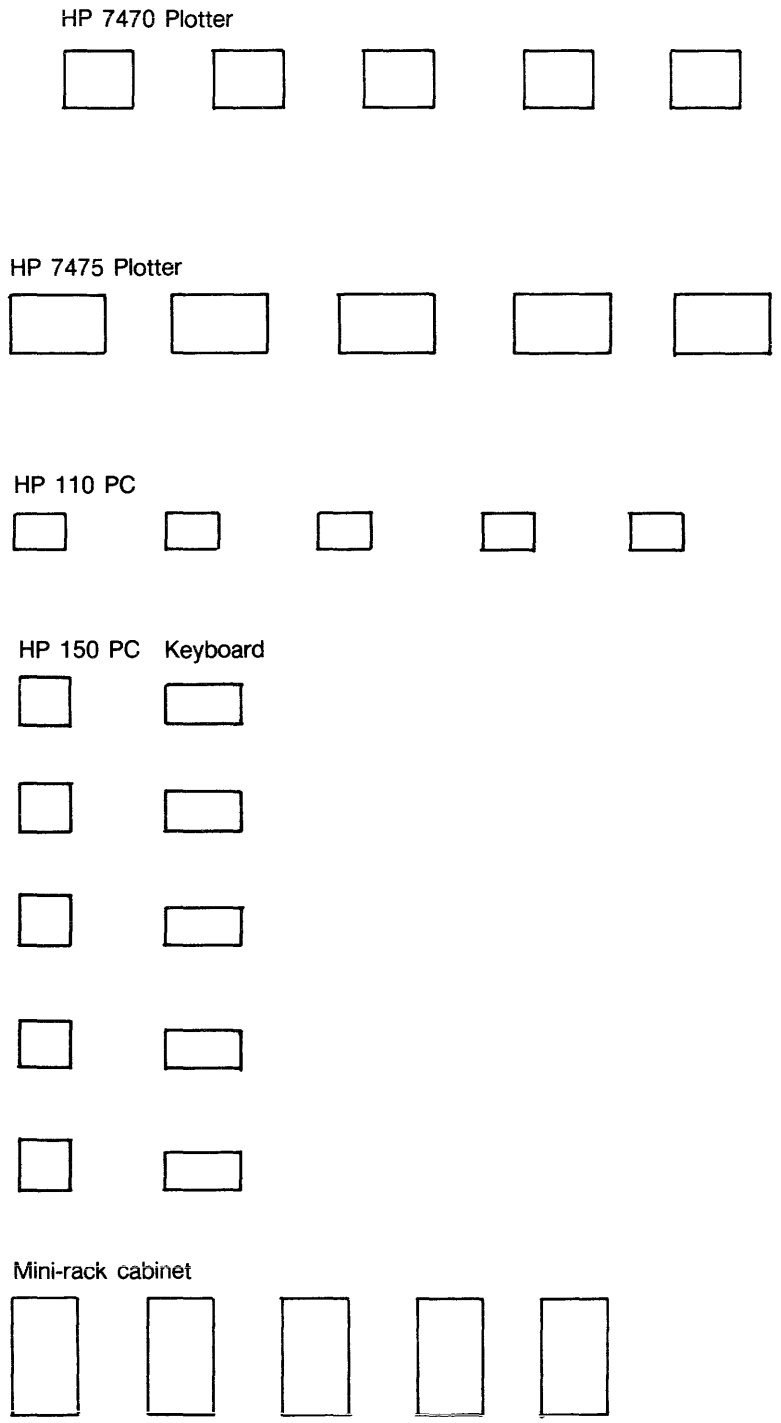
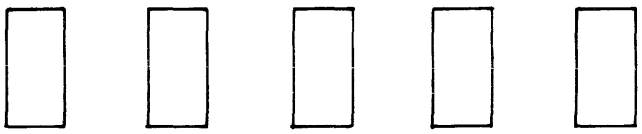
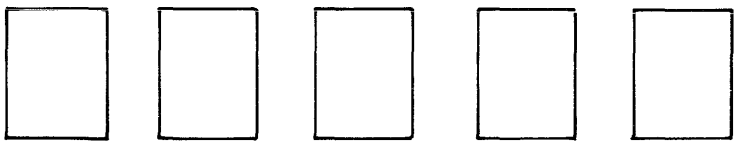


Figure A-2. SCALED PERIPHERAL OUTLINES

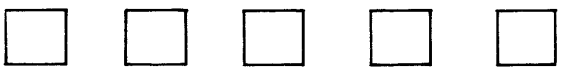
HP 7914 Disc Drive



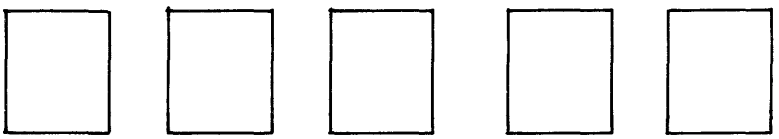
HP 7933/5 Disc Drive



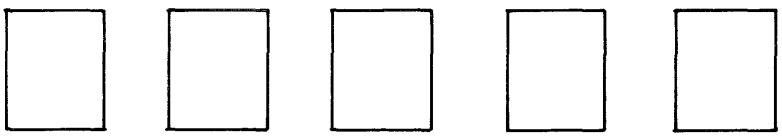
HP 7945 Disc Drive*



HP 7974 Tape Unit



HP 7978 Tape Unit



HP 9144 Tape Unit*

*Designed to fit in the mini-rack cabinet with the SPU and I/O Extender.

Figure A-2. SCALED PERIPHERAL OUTLINES

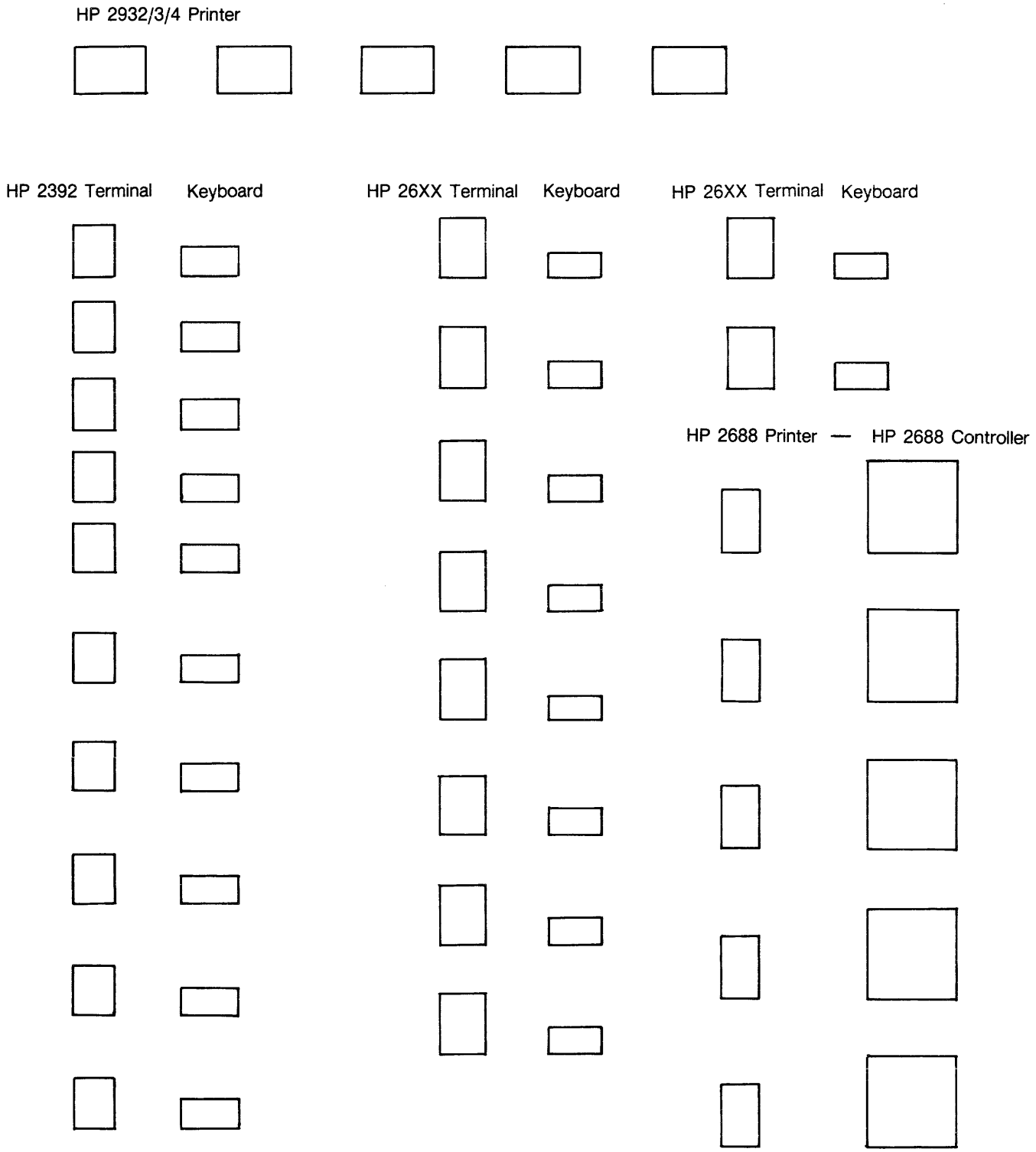
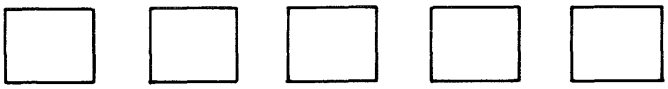
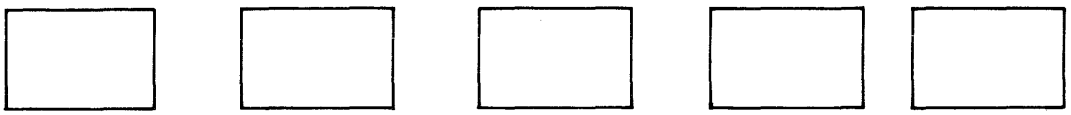


Figure A-2. SCALED PERIPHERAL OUTLINES

HP 2563 Printer

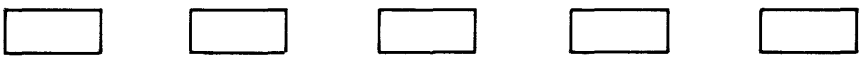


HP 2565/6 Printer

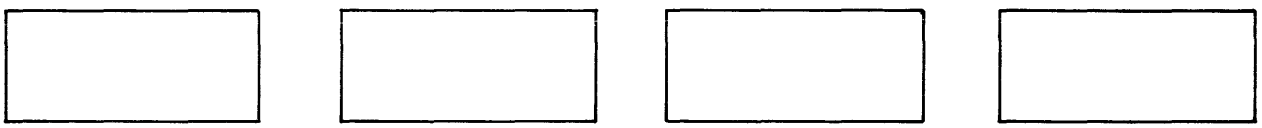


HP 2601 Printer

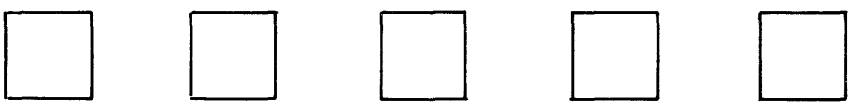
HP 2602 Printer



HP 2680 Printer



HP 2686 Printer



HP 2687 Printer

Figure A-2. SCALED PERIPHERAL OUTLINES

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