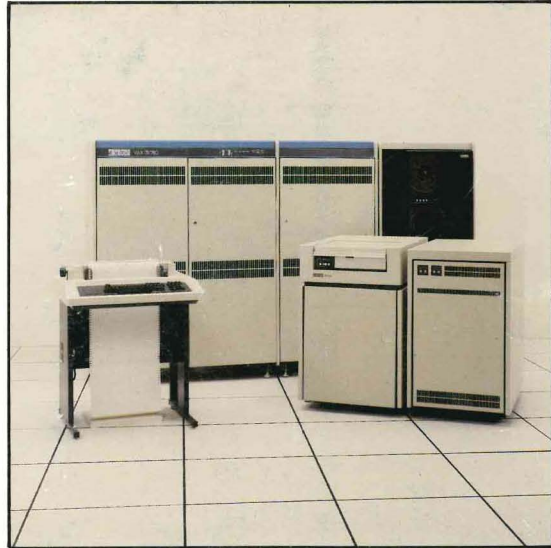


**VAX**



**SYSTEMS SITE PREPARATION GUIDE**

May 1981

**digital**

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## INTRODUCTION

This guide contains general information related to preparing the site for the installation of VAX computer systems and optional devices. It lists the site facility considerations and requirements that are necessary to insure the effective and reliable operation of the system. Detailed site preparation and installation information is contained in the following reference documents.

VAX-11/750 Installation and Acceptance Guide (DOC. NO. EK-SI750-IN)

VAX-11/780 Systems Installation Guide (DOC. NO. EK-SI780-IN)

DIGITAL Site Preparation Guide (DOC. NO. EK-CORP-SP)

In North America, these publications may be ordered from the following location.

Digital Equipment Corporation  
Accessories and Supplies Group  
460 Amherst Street  
Nashua, New Hampshire 03063

Contact your local sales office or call DIGITAL Accessories and Supplies Group, toll-free 800-258-1710 from 8:30 a.m. to 6:00 p.m. eastern standard time (U.S. customers only). New Hampshire, Alaska and Hawaii customers should dial (603) 884-6660.

For locations other than North America, contact the authorized Accessories and Supplies Group representative through your local DIGITAL Sales Office.

## VAX System Descriptions

The VAX-11/750 and VAX-11/780 are DIGITAL's high performance, multipurpose computer systems suitable for a variety of applications. The systems combine a 32-bit architecture, efficient memory management, and an extensive and versatile instruction set.

The systems operate with the VAX/VMS (Virtual Memory System) Operating System which is a general purpose, multiprogramming software environment. It allows simultaneous performance of real time, time sharing, and batch processing applications together with on-line program development.

Detailed information on the VAX Systems and Configurations is contained in the following documents.

\*VAX System and Option Summary (DOC. NO. EA-20529)

VAX Software Handbook (DOC. NO. EB-18057)

VAX Hardware Handbook (DOC. NO. EB-17281)

VAX Architecture Handbook (DOC. NO. EB-19580)

\* Available only from DIGITAL Sales Offices

These publications and other hardware and software publications are available from the Accessories and Supplies Group at the addresses previously listed or through the DIGITAL Sales Offices.

## VAX-11/750 Packaged Systems

The VAX-11/750 is currently available in three packaged system configurations as described in the VAX Systems and Options Summary. Each packaged system is available for use with 120 Vac, 60 Hz or 240 Vac, 50 Hz. Each packaged system contains the VAX/VMS Operating System, the VAX-11/750 central processor, a mass storage subsystem, an LA38 DECwriter IV console terminal, and associated cabinets. The letter "M" used in the package system descriptions is equal to 1024 Kbytes.

### System Code

SV-BXHHA-AA

SV-BXHHA-AD

### Power

120 Vac, 60 Hz

240 Vac, 50 Hz

This VAX-11/750 system contains 512 Kbytes of ECC MOS main memory, two RK07 disk drive units each capable of storing 28 Mbytes and an LA38 printer/console terminal. The units included with the system are as follows:

1-VAX-11/750 CPU Cabinet (includes an RK611 controller and RK07-C dual access kit)

2-RK07 Disk Drive Units

1-LA38 DECwriter IV Console Terminal with an LAX34-SL terminal stand.

**System Code**SV-BXTAA-AA  
SV-BXTAA-AD**Power**120 Vac, 60 Hz  
240 Vac, 50 Hz

This VAX-11/750 system contains 1.0 Mbyte of ECC MOS main memory, an RM03 disk drive unit capable of storing 67 Mbytes, a TS11, 9-track magnetic tape unit and an LA38 printer/console terminal. The following units are included with the system.

- 1-VAX-11/750 CPU Cabinet
- 1-RGM03 (includes the RM03 disk drive unit and an RH750 adapter)
- 1-TS11 Magnetic Tape Unit and M7982 controller
- 1-LA38 DECwriter IV Console Terminal with an LAX34-SL terminal stand.

**System Code**SV-BXWAA-AA  
SV-BXWAA-AD**Power**120 Vac, 60 Hz  
240 Vac, 50 Hz

This VAX-11/750 system is configured with 1.5 Mbytes of ECC MOS main memory, an RM80 disk drive unit capable of storing 124 Mbytes, a TS11, 9-track magnetic tape unit and an LA38 printer/console terminal. The following units are included with the system:

- 1-VAX-11/750 CPU Cabinet
- 1-RGM80 Disk Storage Unit (includes the RM80 disk drive unit and an RH750 adapter.)
- 1-TS11 Magnetic Tape Unit and M7982 controller
- 1-LA38 DECwriter IV Console Terminal with an LAX34-SL terminal stand

**VAX-11/780 Packaged Systems**

The VAX-11/780 is currently available in nine packaged system configurations as described in the VAX Systems and Options Summary. Each packaged system is available for use with 120 Vac, 60 Hz or 240 Vac, 50 Hz. Each packaged system contains the VAX/VMS Operating System, the VAX-11/780 central processor, a mass storage subsystem, an LA120 DECwriter III console terminal, and associated cabinets. The letter "M" used in the package system descriptions is equal to 1024 Kbytes.

**System Code**SV-AXCBB-CA  
SV-AXCBB-CD**Power**120 Vac, 60 Hz  
240 Vac, 50 Hz

This VAX-11/780 system provides 1.5 Mbytes of ECC MOS main memory, an RP06 disk drive unit with a storage capacity of 176 Mbytes, a TU77, 9-track magnetic tape unit, and an LA120 printer/console terminal. The units supplied with the system are as follows:

- 1-VAX-11/780 CPU Cabinet
- 1-UNIBUS Expansion Cabinet
- 1-LA120 DECwriter III, Console Terminal
- 1-REP06 Disk Drive Unit (includes the RP06 disk drive unit and an RH780 adapter)
- 1-TEU77 Magnetic Tape Unit (includes the TU77 magnetic tape unit and an RH780 adapter)

**System Code**SV-AXDBB-CA  
SV-AXDBB-CB**Power**120 Vac, 60 Hz  
240 Vac, 50 Hz

This VAX-11/780 system contains 1.5 Mbytes of ECC MOS main memory, an RM05 disk drive unit with a storage capacity of 256 Mbytes, a TU77, 9-track magnetic tape unit, and an LA120 printer/console terminal. The units included with the system are as follows:

- 1-VAX-11/780 CPU Cabinet
- 1-UNIBUS Expansion Cabinet
- 1-REM05 Disk Drive Unit (includes the RH780 adapter and RM05 utility cabinet)
- 1-TEU77 Magnetic Tape Unit (includes the TU77 magnetic tape unit and an RH780 adapter)
- 1-LA120 DECwriter III Console Terminal

<b>System Code</b>	<b>Power</b>
SV-AXDCA-CA	120 Vac, 60 Hz
SV-AXDCA-CD	220 Vac, 50 Hz

This VAX-11/780 system contains 2.0 Mbytes of ECC MOS main memory, an RM05 disk drive unit with a storage capacity of 256 Mbytes, a TU78, 9-track magnetic tape storage unit, and an LA120 printer/console terminal. The units included with the system are as follows:

- 1-VAX-11/780 CPU Cabinet
- 1-UNIBUS Expansion Cabinet
- 1-REM05 Disk Drive Unit (includes the RH780 adapter and RM05 utility cabinet)
- 1-TEU78 Magnetic Tape Unit (includes the TU78 magnetic tape unit and an RH780 adapter)
- 1-LA120 DECwriter III, Console Terminal

<b>System Code</b>	<b>Power</b>
SV-AXHHV-CA	120 Vac, 60 Hz
SV-AXHHV-CD	240 Vac, 50 Hz

This VAX-11/780 system includes 512 Kbytes of ECC MOS main memory, two RK07 disk drive units each capable of storing 28 Mbytes, and an LA120 printer/console terminal. The following units are supplied with this system.

- 1-VAX-11/780 CPU Cabinet
- 2-RK07 Disk Drive Units
- 1-LA120 DECwriter III Console Terminal

<b>System Code</b>	<b>Power</b>
SV-AXTBB-CA	120 Vac, 60 Hz
SV-AXTBB-CD	240 Vac, 50 Hz

This VAX-11/780 system contains one Mbyte of ECC MOS main memory, an RM03 disk drive unit capable of storing 67 Mbytes, a TU77 9-track magnetic tape unit and an LA120 printer/console terminal. The units included with the system are as follows:

- 1-VAX-11/780 CPU Cabinet
- 1-UNIBUS Expansion Cabinet
- 1-REM03 Disk Drive Unit (includes the RM03 disk drive unit and an RH780 adapter)
- 1-TEU77 Magnetic Tape Storage unit (includes the TU77 magnetic tape unit and RH780 adapter)
- 1-LA120 DECwriter III Console Terminal

<b>System Code</b>	<b>Power</b>
SV-AXTVB-CA	120 Vac, 60 Hz
SV-AXTVB-CD	240 Vac, 50 Hz

This VAX-11/780 system contains 512 Kbytes of ECC MOS main memory, an RM03 disk drive unit capable of storing 67 Mbytes, a TE16, 9-track magnetic tape unit and an LA120 printer/console terminal. The units included with the system are as follows:

- 1-VAX-11/780 CPU Cabinet
- 1-UNIBUS Expansion Cabinet
- 1-REM03 Disk Drive Unit (includes the RM03 disk drive unit and an RH780 adapter)
- 1-TEE16 Magnetic Tape Unit (includes the TU77 magnetic tape unit and an RH780 adapter)
- 1-LA120 DECwriter III Console Terminal

**System Code**  
SV-AXVCA-CA  
SV-AXVCA-CD

**Power**  
120 Vac, 60 Hz  
240 Vac, 50 Hz

This VAX-11/780 system provides two Mbytes of ECC MOS main memory, an RP07 disk drive unit capable of storing 516 Mbytes, a TU78, 9-track magnetic tape unit and an LA120 printer/console terminal. The following units are included with the system:

- 1-VAX-11/780 CPU Cabinet
- 1-UNIBUS Expansion Cabinet
- 1-REP07 Disk Drive Unit (includes the RP07 disk drive unit and an RH780 adapter)
- 1-TEU78 Magnetic Tape Unit (includes the TU78 magnetic tape unit and an RH780 adapter)
- 1-LA120 DECwriter III Console Terminal

**System Code**  
SV-AXVCB-CA  
SV-AXVCB-CD

**Power**  
120 Vac, 60 Hz  
240 Vac, 50 Hz

This VAX-11/780 System includes three Mbytes of ECC MOS main memory, an RP07 disk drive unit capable of storing 516 Mbytes, a TU78, 9-track, magnetic tape unit, and an LA120 printer/console terminal. The following units are included with the system:

- 1-VAX-11/780 CPU Cabinet
- 1-UNIBUS Expansion Cabinet
- 1-REP07 Disk Drive Unit (includes the RP07 disk drive unit and an RH780 adapter)
- 1-TEU78 Magnetic Tape Unit (includes the TU78 magnetic tape unit and an RH780 adapter)
- 1-LA120 DECwriter III Console Terminal

**System Code**  
S-AXWBA-CA  
SV-AXWBA-CD

**ac Power**  
120 Vac, 60 Hz  
240 Vac, 50 Hz

This VAX-11/780 system provides 1.0 Mbyte of ECC MOS main memory, an RM80 disk drive unit capable of storing 124 Mbytes, a TU77, 9-track magnetic tape unit and an LA120 printer/console terminal. The units included with the system are as follows:

- 1-VAX-11/780 CPU Cabinet
- 1-UNIBUS Expansion Cabinet
- 1-REM80 Disk Drive Unit (includes the RM80 disk drive unit and an RH780 adapter)
- 1-TEU77 Magnetic Tape Unit (includes a TU77 magnetic tape unit and an RH780 adapter)
- 1-LA120 DECwriter III Console Terminal

## HOW TO USE THIS GUIDE

This guide provides environmental information, power requirements and equipment dimension information. It serves as an aid in evaluating and preparing the computer site and in determining the following site parameters.

- Computer facility layout.
- Number, type and location of the ac plugs and receptacles.
- Total power consumption of the system and options.
- Heat dissipation of the system options for calculating air-conditioning requirements.

To use this guide effectively, perform the following procedures:

1. Determine the site services available including space allocations, power available, and environmental conditions.
2. Calculate the requirements of the proposed VAX system as defined in this guide.
3. Specify the additional site service, if required, to insure that the computer site conforms to the system requirements.

### Site Planning

Adequate site planning and preparation can simplify the installation process and produce efficient, reliable system operation. For effective site preparation, the design work should be performed by professionals and construction work by qualified electrical, mechanical and structural contractors.

DIGITAL Sales engineers and Field Service representatives are available for consultation regarding the objectives, course of action, and progress of the installation.

### Delivery Constraints

The route the equipment is to travel from the receiving area to the installation site should be evaluated to ensure problem-free delivery of equipment. Among the factors to be considered are the height and location of the loading doors, the size, capacity, and availability of elevators, the number and size of the aisles and doors. Passageway restrictions, such as bends, slopes and obstructions should also be evaluated. The door to the computer area should be a minimum of 91cm (3 ft.) wide and 213cm (7 ft.) high, and without saddles and sills, to facilitate movement of dollies.

## SYSTEM ENVIRONMENT

The VAX systems and peripheral devices should be operated in a contaminant-free environment that is controlled by an air-conditioning system and provides temperature-controlled, filtered air at the specified levels of humidity. An increase of air pressure in the computer room can prevent the infiltration of dust and other contaminants from adjacent areas if they exist. The environment for the VAX-11/780 systems should conform to DEC class A and class B for the VAX-11/750 systems.

### Temperature and Humidity

Temperature cycling and thermal gradients can induce changes in materials which will affect the performance of the system. High temperatures also increase the rate of deterioration of materials. An environment of high absolute humidity can cause dimensional changes in lineprinter papers and cards. Low humidity can produce static electricity, resulting in dust accumulation on magnetic tape and disk devices, which will adversely affect the system operation.

The VAX systems are designed to operate at extreme temperature and humidity ranges. The individual temperature and humidity specifications for the units are listed on Table 1 and represent the ranges at which the equipments were tested and do not represent the recommended operating temperature range. For maximum system reliability the following site specifications are recommended. The recommended system shut-down temperature is 30°C(85°F)

Operating temperature	21°C ± 3°C (70°F ± 5°F)
Temperature rate of change	3°C/h (5.5°F/h)
Relative Humidity	50% ± 10% (no condensation)
Humidity rate of change	6%/h

**Table 1 VAX Equipment, Temperature and Humidity Specification**

Device	TEMPERATURE		RELATIVE HUMIDITY	
	Operating	Storage	Operating	Storage
<b>VAX-11/750 CPU Cabinet</b>	10°C(50°F)to 40°C(104°F)	-40°C(-40°F)to 66°C(151°F)	10%–90%	0%–95%
<b>VAX-11/750 CPU Expansion Cabinet, H9642-DB(DC)</b>	15°C(59°F)to 32°C(90°F)	-40°C(-40°F)to 66°C(151°F)	20%–80%	0%–95%
<b>VAX-11/780 CPU Cabinet</b>	15°C(59°F)to 32°C(90°F)	-40°C(-40°F)to 66°C(151°F)	20%–80%	0%–95%
<b>VAX-11/780 CPU Expansion Cabinet, H9602-HA(HB)</b>	15°C(59°F)to 32°C(90°F)	-40°C(-40°F)to 66°C(151°F)	20%–80%	0%–95%
<b>VAX-11/780 UNIBUS Options Cabinet, H9602-DF(DH)*</b>	15°C(59°F)to 32°C(90°F)	-40°C(-40°F)to 66°C(151°F)	20%–80%	0%–95%
<b>MA780 Multiport Memory Cabinet</b>	15°C(59°F)to 32°C(90°F)	-40°C(-40°F)to 66°C(151°F)	20%–80%	0%–95%
<b>CR11 Card Reader Unit</b>	15°C(59°F)to 40°C(104°F)	-40°C(-40°F)to 66°C(151°F)	20%–80%	0%–95%
<b>CR11-B Card Reader Unit</b>	10°C(50°F)to 38°C(100°F)	-32°C(-25°F)to 57°C(135°F)	30%–90%	5%–95%
<b>LA11-P Line Printer Unit, (LA180)</b>	10°C(50°F)to 40°C(104°F)	-40°C(-40°F)to 66°C(151°F)	10%–90%	0%–95%
<b>LP11-C, -D Line Printer Unit</b>	10°C(50°F)to 40°C(104°F)	-40°C(-40°F)to 66°C(151°F)	10%–90%	5%–95%
<b>LP11-V, -W Line Printer Unit</b>	10°C(50°F)to 32°C(90°F)	-18°C(0°F)to 66°C(151°F)	30%–90%	5%–95%
<b>LP11-Y, -Z Line Printer Unit</b>	10°C(50°F)to 32°C(90°F)	-18°C(0°F)to 66°C(151°F)	30%–90%	5%–95%
<b>LA34 DECwriter IV, Printer Terminal</b>	10°C(50°F)to 40°C(104°F)	-40°C(-40°F)to 66°C(151°F)	10%–90%	0%–95%
<b>LA38 DECwriter IV, Printer Terminal</b>	10°C(50°F)to 40°C(104°F)	-40°C(-40°F)to 66°C(151°F)	10%–90%	0%–95%
<b>LA120 DECwriter III, Printer Terminal</b>	10°C(50°F)to 40°C(104°F)	-40°C(-40°F)to 66°C(151°F)	10%–90%	5%–95%
<b>LXY11, LXY21 Printer/Plotter Unit</b>	10°C(50°F)to 40°C(104°F)	-40°C(-40°F)to 66°C(151°F)	30%–90%	5%–95%



**Table 1 (Cont.) VAX Equipment, Temperature and Humidity Specification**

Device	TEMPERATURE		RELATIVE HUMIDITY	
	Operating	Storage	Operating	Storage
<b>RL02 Disk Drive Unit</b>	10(50°F)to 40°C(104°F)	-40°C(-40°F)to 60°C(140°F)	10%-90%	5%-95%
<b>RK07 Disk Drive Unit</b>	10°C(50°F)to 40°C(104°F)	-40°C(-40°F)to 66°C(151°F)	8%-80%	8%-80%
<b>RM03 Disk Drive Unit</b>	15°C(59°F)to 32°C(90°F)	-40°C(-40°F)to 70°C(158°F)	20%-80%	5%-95%
<b>RM05 Disk Drive Unit and Utility Cabinet</b>	15°C(59°F)to 32°C(90°F)	-40°C(-40°F)to 70°C(158°F)	20%-80%	5%-95%
<b>RM80 Disk Drive Unit</b>	10°C(50°F)to 40°C(104°F)	-40°C(-40°F)to 60°C(140°F)	10%-85%	10%-85%
<b>RP06 Disk Drive Unit</b>	15°C(59°F)to 32°C(90°F)	-40°C(40°F)to 66°C(151°F)	20%-80%	8%-85%
<b>RP07 Disk Drive Unit</b>	15°C(50°F)to 32°C(90°F)	-40°C(-40°F)to 43°C(110°F)	20%-80%	5%-90%
<b>TE16 Magnetic Tape Unit</b>	15°C(59°F)to 32°C(90°F)	-40°C(-40°F)to 66°C(151°F)	20%-80%	0%-95%
<b>TS11 Magnetic Tape Unit</b>	15°C(59°F)to 32°C(90°F)	-40°C(-40°F)to 66°C(151°F)	20%-80%	0%-95%
<b>TU45 Magnetic Tape Unit</b>	15°C(59°F)to 32°C(90°F)	-40°C(-40°F)to 66°C(151°F)	20%-80%	0%-95%
<b>TU77 Magnetic Tape Unit</b>	15°C(59°F)to 32°C(90°F)	-40°C(-40°F)to 66°C(151°F)	20%-80%	0%-95%
<b>TU78 Magnetic Tape Unit</b>	15°C(59°F)to 32°C(90°F)	-40°C(-40°F)to 66°C(151°F)	20%-80%	0%-95%
<b>VT100 Video Terminal</b>	10°C(50°F)to 40°C(104°F)	-40°C(-40°F)to 66°C(151°F)	10%-90%	0%-95%

\* Figures are the same for the UNIBUS Expansion Cabinet, when included with a package system.

### Lighting

When video displays using Cathode Ray Tubes (CRT's) are included with a system, a reduced lighting level at the site will prevent excessive reflection from the face of the CRT and enable the display to be more easily viewed. The light level may be controlled by dimmers or by the installation of translucent or opaque materials between the light source and the surrounding areas. In addition, the type of lighting fixture used and the fixture location should be considered when planning the location of the CRT devices. Exposing the computer area to direct sunlight should be avoided.

The following light intensities, measured at 76cm (30 in.) above the floor, are recommended.

CRT device areas — 430 lumens/m<sup>2</sup> (40 footcandles)  
 other computer areas — 650 lumens/m<sup>2</sup> (60 footcandles)

### **Accoustical Treatment**

Some peripheral devices such as line printers, character printers, disk drives, magnetic tape units, and card readers, generate noise when operating. Noise is also produced by the fans used to dissipate the heat generated by the power supplies and electronic components in a system.

Several methods are available for reducing the noise levels at the computer site. The devices generating the noise may be isolated or sound absorbing materials can be used.

Sound absorbent ceiling materials are available and anti-static carpets may be installed.

Walls may also be covered with fabric such as drapes or other suitable material which will reduce the reflected noise.

Also available are padded room dividers which may be installed between the noise source and other office areas.

### **Shock and Vibrations**

The VAX systems equipment is designed to withstand the normal shocks and vibrations that occur during shipment and during their normal operation in office area and computer rooms.

When the units are to be installed at locations which present excessive shock and vibrations, special cabinet mounting hardware may be required. Contact your local DIGITAL sales office representative for related information.

### **Static Electricity**

A VAX system and its related cabinets should be adequately grounded to prevent the effects of static electricity from interfering with the equipment operation. The static charges generated can also be reduced by ensuring that the relative humidity of the room is at the specified 50 percent (nominal value). When raised floors are used at the computer installation, the metal framing of the floor panels should be adequately grounded.

### **Electrical Interference**

Several types of electrical interference may be indigenous to the site location and may require special filtering to prevent equipment malfunctions.

The interference transmitted through the air, and electromagnetic interference (EMI) may be caused by TV and radio waves, radar transmissions, lightning discharges, ignition systems and power line transmissions. Interference may also be transmitted through the ac power lines. If interference is suspected to be a problem, shielding may be required, or filtering of the ac power to the site.

### **AC POWER REQUIREMENTS**

The VAX systems units, are designed to operate at the following ac voltages and line frequencies within the United States and Canada. For system installations in other countries, contact a local DIGITAL sales office.

- Voltage Tolerance:
  - 120/208V +6%-13% (104-128V), 60Hz
  - 220/380V +6%-13% (191-233V), 50Hz
  - 240/415V +6%-13% (208-254V), 50Hz
- Frequency Tolerance:
  - 60Hz $\pm$ 1.0Hz, 50Hz $\pm$ 1.0Hz\*

\* Certain devices may require a frequency tolerance of  $\pm$ 0.5Hz.

The ac power should be supplied on one or more separate circuits that are dedicated to the system and options.

The VAX system cabinets and peripheral devices have attached ac power cords and connectors. The type of receptacles which must be installed at the site is dependent upon the equipment supplied and the power available.

**VAX-11/750 Packaged System Power**

Table 2 lists the average power consumption (in watts) of the VAX-11/750 packaged systems. Table 3 lists the power required for the central processor options available with the VAX-11/750 system.

**Table 2 VAX-11/750 Packaged Systems, Power and Thermal Specifications**

System Code	ac Power Requirements (watts)	Thermal Dissipation (Btu/h)
SV-BXHHA-AA(AD)	3225	11000
SV-BXTAA-AA(AD)	3995	13625
SV-BXWAA-AA(AD)	3585	12225

**Table 3 VAX-11/750 CPU and Options, Power and Thermal Specifications**

CPU/Options	ac Power Requirements (watts)	Thermal Dissipation (Btu/h)
Fully-Configured CPU Cabinet*	1700	5814
Fully-Configured Expansion Cabinet * (H9642-DB, -DC)	1640	5602
MASSBUS Adapter (RH750)	77	263
1,536 Kbytes ECC MOS Memory (six-MS750-AA)	216	740
KU750 Writable Control Store	18	62
Memory Battery Backup H7112-A(B)	25	85

\* Cabinet includes maximum combinations of available options.

**VAX-11/780 Packaged Systems, Power**

Table 4 lists the average ac power (in watts) required by the VAX-11/780 packaged systems. These systems include the cabinets and terminals as listed in the VAX-11/780 Systems Descriptions contained in the INTRODUCTION of this guide.

**Table 4 VAX-11/780 Packaged Systems, Power and Thermal Specifications**

System Code	ac Power Requirements (watts)	Thermal Dissipation (Btu/h)
SV-AXCBB-CA(CD)	10,800	36,900
SV-AXDBB-CA(CD)	10,500	36,000
SV-AXDCA-CA(CD)	10,500	36,000
SV-AXHHV-CA(CD)	8,500	29,000
SV-AXTBB-CA(CD)	9,750	33,300
SV-AXTVB-CA(CD)	9,750	33,300
SV-AXVCA-CA(CD)	10,800	36,900
SV-AXVCB-CA(CD)	12,800	43,800
SV-AXWBA-CA(CD)	9,500	32,500

Table 5 lists the average ac power (in watts) required by the CPU, expansion and option cabinets, and by the individual options that can be installed into the cabinets.

**Table 5 CPU and Options, Power and Thermal Dissipations**

<b>CPU/Options</b>	<b>ac Power Requirements (watts)</b>	<b>Thermal Dissipation (Btu/h)</b>
Fully-configured CPU cabinet*	6,225	21,230
Fully-configured CPU Expansion Cabinet, (H9602-HA(HB))*	2,000	6,820
Fully-configured UNIBUS Options Cabinet (H9602-DF (DH)**)	3000	10,260
MASSBUS Adapter (RH780)	150	512
UNIBUS Adapter (DW780)	300	1024
512KB Memory, Control & Power Supply (MS780-CC(CD))	350	1,195
Fully-configured MA780-A Cabinet (two MA780 subsystems, 2 Mbytes memory and eight ports)	1800	6140
MA780-A Cabinet (one MA780 subsystems, 2 Mbytes memory and four ports)	1000	3410
Floating Point Accelerator(FP780-A)	300	1,025
User Writable Control Store (KU780-Y)	100	341
Memory Battery Back-up H7112-A (B)	25	85

\* Specifications include maximum option configuration in cabinet

\*\* Rating is the same for the UNIBUS Expansion Cabinet

**Peripheral Devices, ac Power**

Table 6 lists the average ac power (in watts) required by the peripheral devices associated with the VAX systems.

**Table 6 Peripheral Devices, Power and Thermal Specifications**

<b>Terminal/Devices</b>	<b>AC Power Requirements (watts)</b>	<b>Thermal Dissipation (Btu/h)</b>
CR11 Card Reader	510	1734
CR11-B Card Reader	450	1535
LA34 DECwriter IV	45	154
LA38 DECwriter IV	45	154
LA120 DECwriter III	440	1500
LP11-C, -D Line Printer	825	2833
LP11-V, -W Line Printer	525	1785
LP11-Y, -Z Line Printer	680	2312
LXY11, LXY21 Printer/Plotter	450	1539
RK07-EA(ED)Disk Drive	500	1700
RK07-PA(PD) Disk Drive	500	1700
RL02 Disk Drive	150	600
RM03 Disk Drive	1050	3583
RM05 Disk Drive	1460	4978
RM05 Utility Cabinet	252	859
RM80 Disk Drive	640	2185
RP06 Disk Drive	2100	7170
RP07 Disk Drive	2100	7000
TEE16 Magnetic Tape	1100	3751
TE16 Magnetic Tape	900	3069
TEU45 Magnetic Tape	1000	3400
TU45 Magnetic Tape	693	2366
TS11 Magnetic Tape	1200	4092
TEU77 Magnetic Tape	2300	7866
TU77 Magnetic Tape	2000	6820
TEU78 Magnetic Tape	2260	7730
TU78 Magnetic Tape	1960	6700
VT100 Video Terminal	300	1044

**ac Power Cord and Connectors**

Table 7 lists the ac power connectors and the cord lengths for the cabinets associated with the VAX systems and Table 8 lists the similar information for the peripheral devices. The connector ratings, configurations, and designations are shown on Figure 1.








RECEPTACLE		DESIGNATION		
AC RATING	CONFIGURATION	NEMA	HUBBLE	DIGITAL
125 V 15 A 1-PHASE	 A	5-15 R	5262	12-05351
125 V 30 A 1-PHASE	 B	L5-30 R	2610	12-11194
250 V 20 A 1-PHASE	 C	L6-20 R	2320	12-11191
120/208 V 20 A 3-PHASE Y	 D	L21-20 R	2510	12-11210
120/208 V 30 A 3-PHASE Y	 E	L21-30 R	2810	12-12315
250 V 15 A 1-PHASE	 F	6-15 R	5662	12-11204
240 V 20 A 3-PHASE	 G	NONE	NONE	12-11259

Figure 1 VAX Systems and Devices, ac Power Receptacles

**Table 7 VAX Systems, ac Power Connections**

Unit	*Connector Configuration		Cable Length(ft.)
	120 V	240 V	
VAX-11/750 CPU Cabinet	B	F	9.8 (3m)
VAX-11/750 Expansion Cabinet (H9642)	B	C	9.8 (3m)
VAX-11/780 CPU Cabinet	E	C	15 (4.6m)
VAX-11/780 CPU Expansion Cabinet (H9602-HA, -HB)	B	C	15 (4.6m)
VAX-11/780 UNIBUS Expansion Cabinet	B	C	15 (4.6m)
MA780 Multiport Memory Cabinet	E	C	15 (4.6m)

\* Refer to Figure 1 for the receptacle type and designations.



**Table 8 Peripheral Device, ac Power Connectors**

Unit	*Connector Configuration		Cable Length(ft.)
	120V	240V	
CR11, CR11-B Card Readers	A	F	9 (2.7m)
LA34, LA38, LA120 DECwriter Terminal	A	F	8 (2.4m)
LP11-C, -D, LP11-V, -W LP11-Y, -Z Line Printer	A	F	9 (2.7m)
LXY11, LXY21 Printer/Plotter	A	F	9 (2.7m)
RK07, RL02, RM03,	A	F	9 (2.7m)
RM02 Disk Drive	A	F	10 (3m)
RM03 Disk Drive	A	F	6 (1.8m)
RM05 Disk Drive	None	C	12 (3.7m)
RM05 Utility Cabinet	A	F	12 (3.7m)
RM80 Disk Drive Unit	A	F	15 (4.6m)
RP06 Disk Drive Unit	D	G	15 (4.6m)
RP07 Disk Drive Unit	D	G	15 (4.6m)
RK07-EA (ED) Disk Drive (H969 CAB)	A	F	9 (2.7m)
RK07-PA (PD) Disk Drive (H9642 CAB)	A	F	9 (2.7m)
TE16, TU45 Magnetic Tape Units	B	C	15 (4.6m)
TS11 Magnetic Tape Unit	B	F	15 (4.6m)
TU77 Magnetic Tape Unit	None	C	15 (4.6m)
TU78 Magnetic Tape Unit	None	C	15 (4.6m)
VT100	A	F	6.3(1.9m)

\* Refer 1 to Figure for the receptacle type and designation.

**THERMAL DISSIPATION**

The heat dissipated by the systems equipment must be considered to determine the cooling capacity of the air conditioning systems. Consult with qualified air conditioning personnel to determine the actual air conditioning requirements.

**VAX-11/750 Package Systems and Options, Heat Dissipations**

Table 2 lists the heat dissipated in Btu/h by the VAX-11/750 packaged systems and Table 3 lists the heat dissipated by the CPU and expansion cabinets and by the cabinet installable options.

**VAX-11/780 Package Systems and Options, Heat Dissipation**

The heat dissipated in Btu/h by the VAX-11/780 package systems is listed in Table 4 and Table 5 lists the heat dissipated by the CPU, expansion and option cabinets and by the cabinet installable options.

**Peripheral Devices, Heat Dissipation**

Table 6 lists the heat dissipation in Btu/h of the peripheral devices that are included or are available with the VAX systems.

## **SPACE REQUIREMENTS**

A scaled layout of the computer operating area can be prepared to determine the space requirements of the system units. Clearance must be allowed at the front and rear of the cabinets and devices for the operator and for servicing the equipment. The overall and clearance dimensions of the system cabinets and peripheral units are shown Figures 2 through 15.

### **VAX-11/750 Equipment Configuration Rules**

The following rules apply to the VAX-11/750 equipment installation.

1. The CPU cabinet is attached at the extreme left side of a group of physically attached cabinets as viewed from the front.
2. The TS11 Magnetic Tape Unit is attached to the extreme right side of a group of physically attached cabinets as viewed from the front.
3. With packaged systems that contain two or more RK07 disk drive units, the drive which contains the BA11-LE mounting box is the unit that is physically attached to the group of cabinets comprising the CPU enclosure. Any additional RK07 units are to be free standing.
4. When an expansion cabinet (H9642) is included with this system its position in a group of attached cabinets is determined by the type of options in the cabinet and their relation to other devices in the system.
5. When two cabinets are physically attached the total width of the two cabinets with end panels will decrease by 2.54cm (1.0 in.) due to the removal of the end panels from the adjoining side of the cabinets.

### **VAX-11/780 Equipment Configuration Rules**

The following configuration rules pertain to the VAX-11/780 equipment installations.

1. The TE16 Magnetic Tape Unit always mounts to the extreme right side of a group of physically attached cabinets as viewed from the front.
2. The TU77 and TU78 Magnetic Tape Units are free standing and are not physically attached to the group of cabinets comprising the CPU enclosure.
3. The CPU Expansion Cabinet (H9602-HA(HB)) is always positioned adjacent to the CPU Cabinet in a group of physically attached cabinets.
4. The CPU or UNIBUS Expansion cabinet is mounted at the right side of the CPU cabinet as viewed from the front.
5. When two cabinets are physically attached, the total width of the two cabinets with end panels will decrease by 2.54cm (1.0 in.) due to the removal of an end panels from the adjoining side of the cabinets.

### **Installation Considerations**

The following is a list of general considerations associated with the computer systems installations.

- Allow adequate space in front of and behind the systems equipment for the operator and service personnel.
- A minimum clearance of 76.2 cms (30 in) is required above the system equipments to allow for proper air flow.
- Provide adequate storage cabinets for computer supplies.
- The use of carpets in the computer area is not recommended because of the generation of static electricity. If carpets are used however the carpet should be of a good quality anti-static type.
- Organize the system equipment such that console terminals and I/O devices are not situated in areas of heavy personnel traffic.
- A direct dial telephone line is required at the site when the VAX system includes the Remote Diagnosis maintenance service.

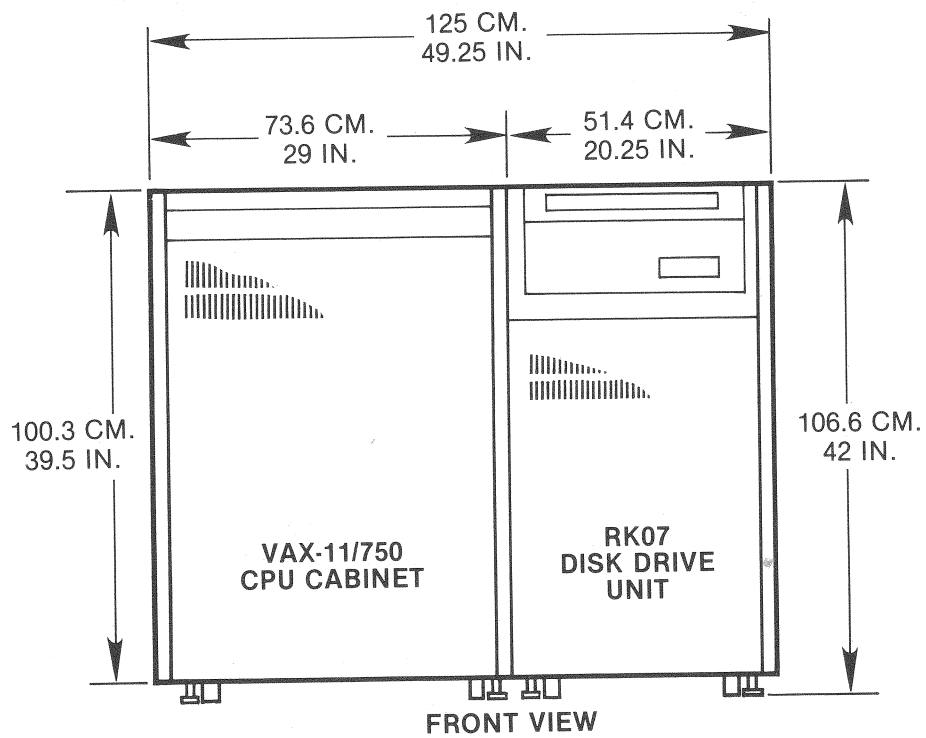
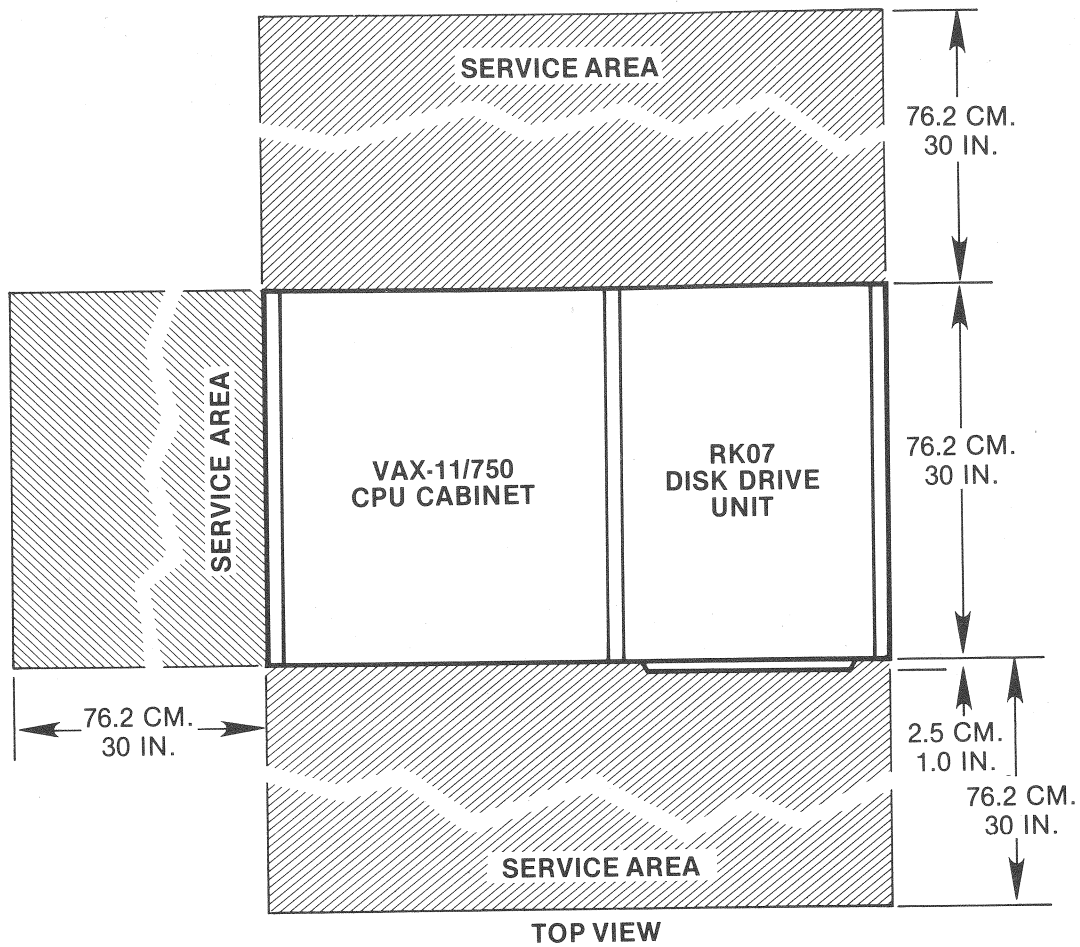
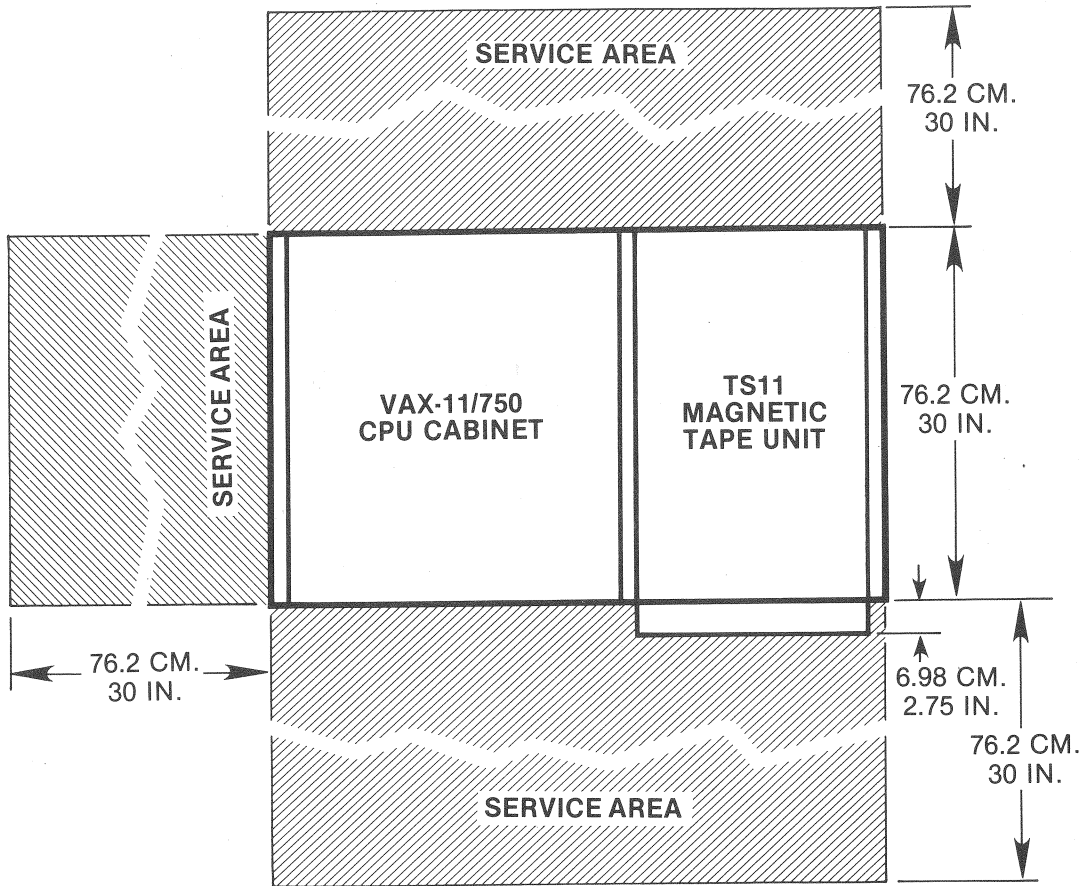
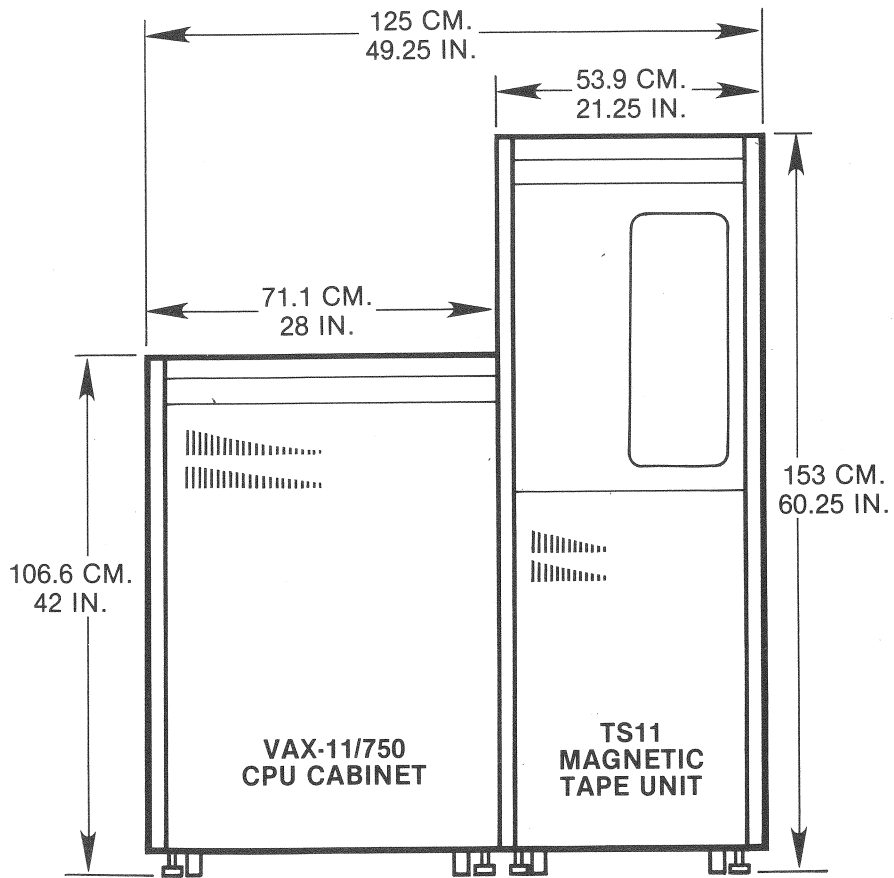


Figure 2 VAX-11/750 CPU Cabinet and Attached RK07 Disk Drive Dimensions



TOP VIEW



FRONT VIEW

Figure 3 VAX-11/750 CPU Cabinet and Attached TS11 Magnetic Tape Unit Dimensions

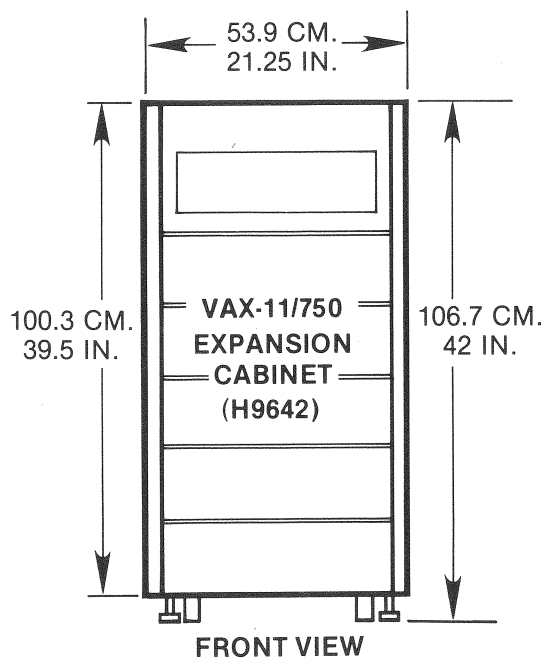
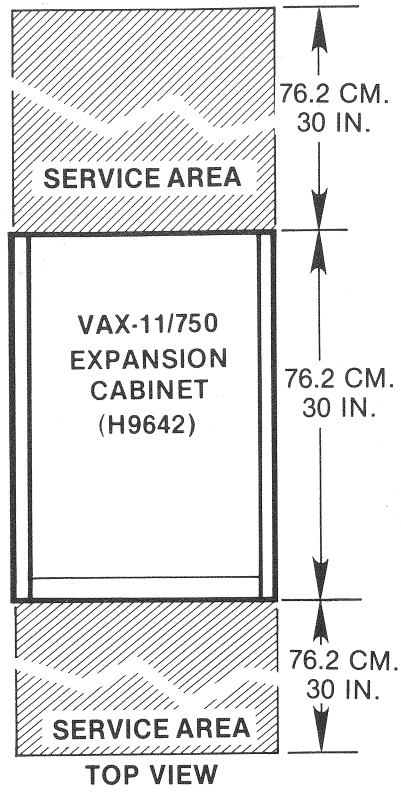
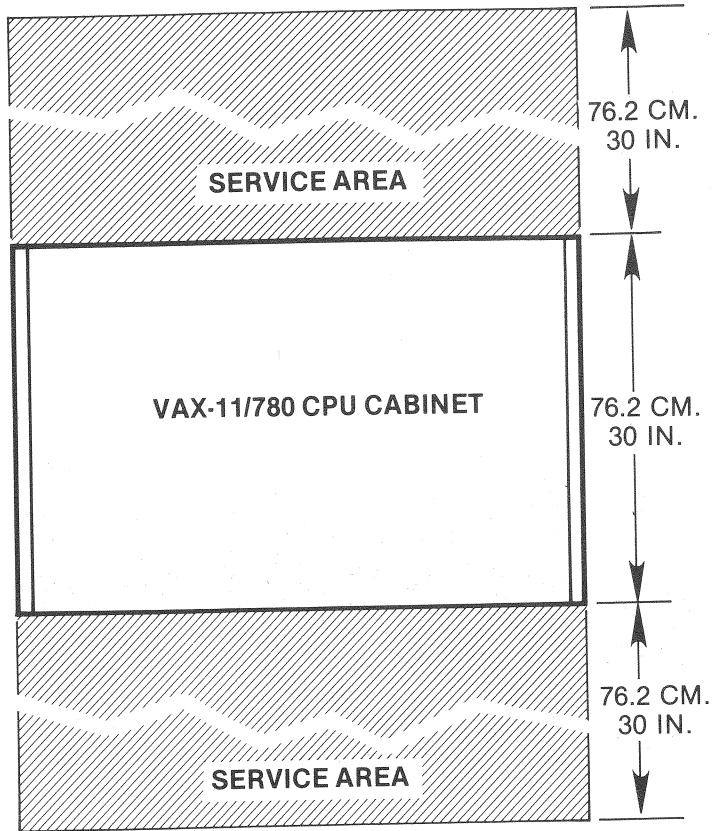
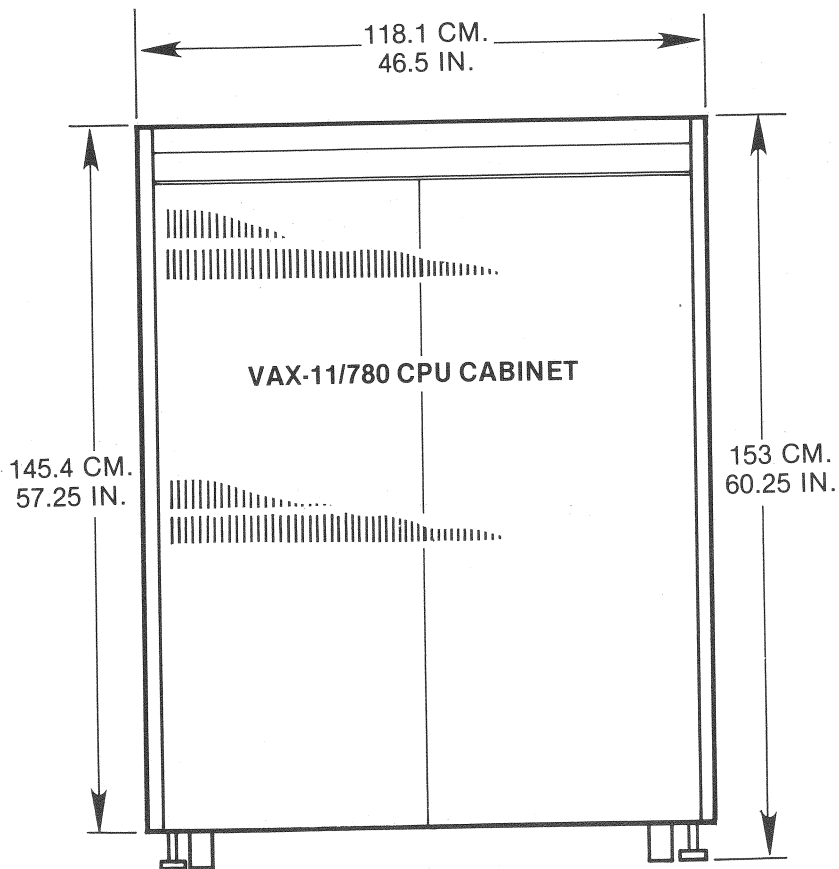


Figure 4 VAX-11/750 Expansion Cabinet Dimensions



TOP VIEW



FRONT VIEW

Figure 5 VAX-11/780 CPU Cabinet Dimensions



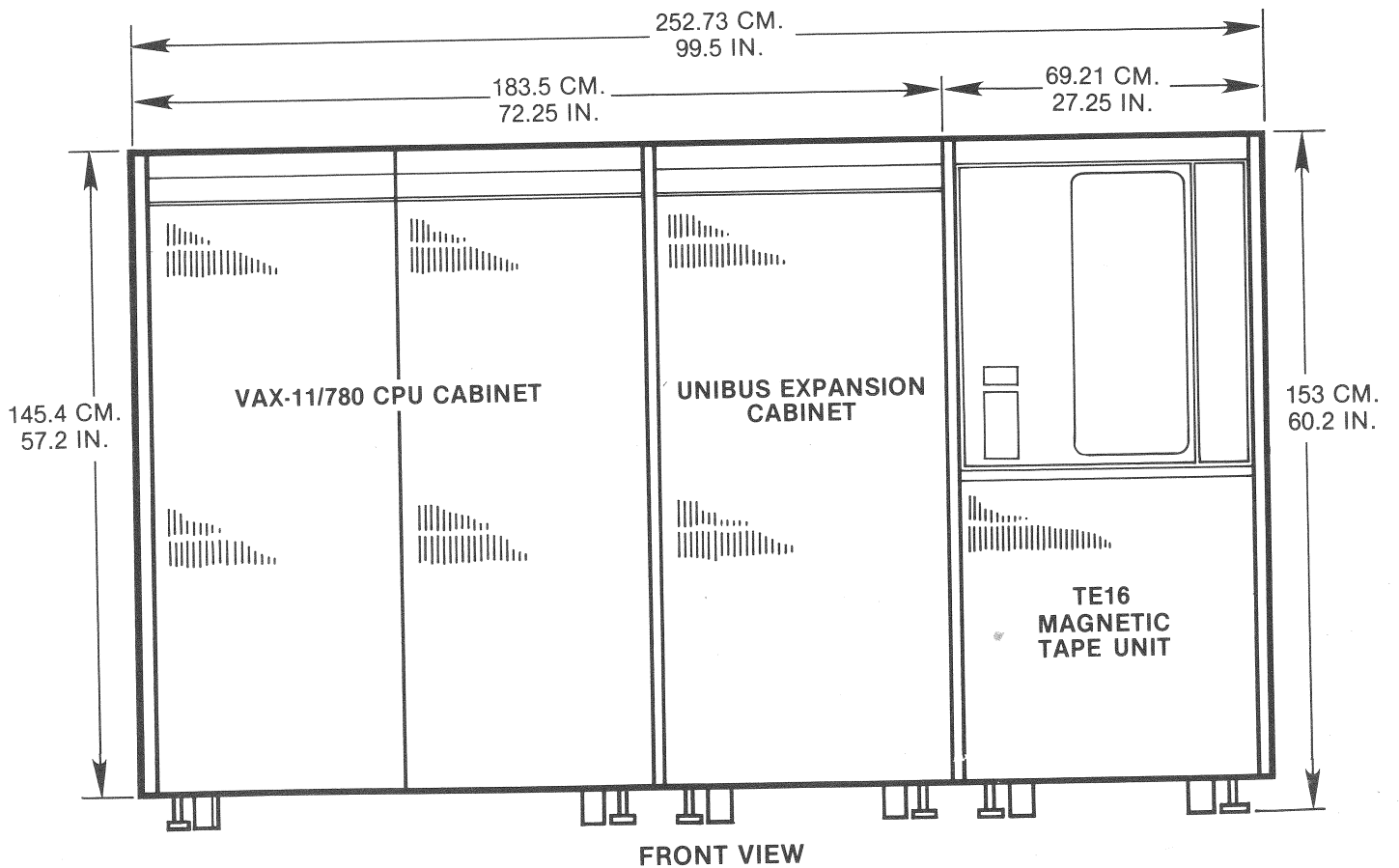
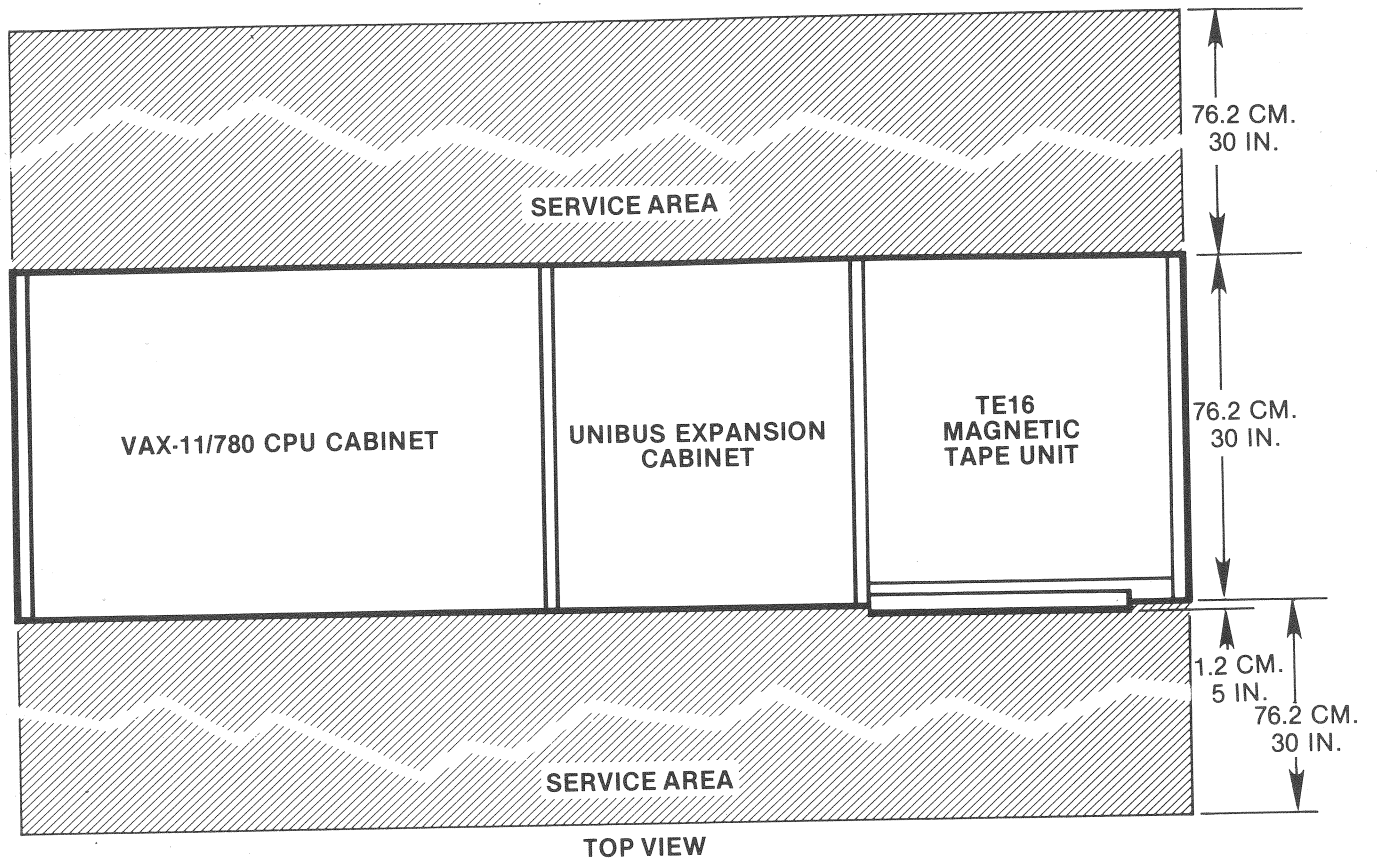


Figure 6 VAX-11/780 CPU Cabinet and Attached UNIBUS Expansion, and TE16 Magnetic Tape Unit Dimensions

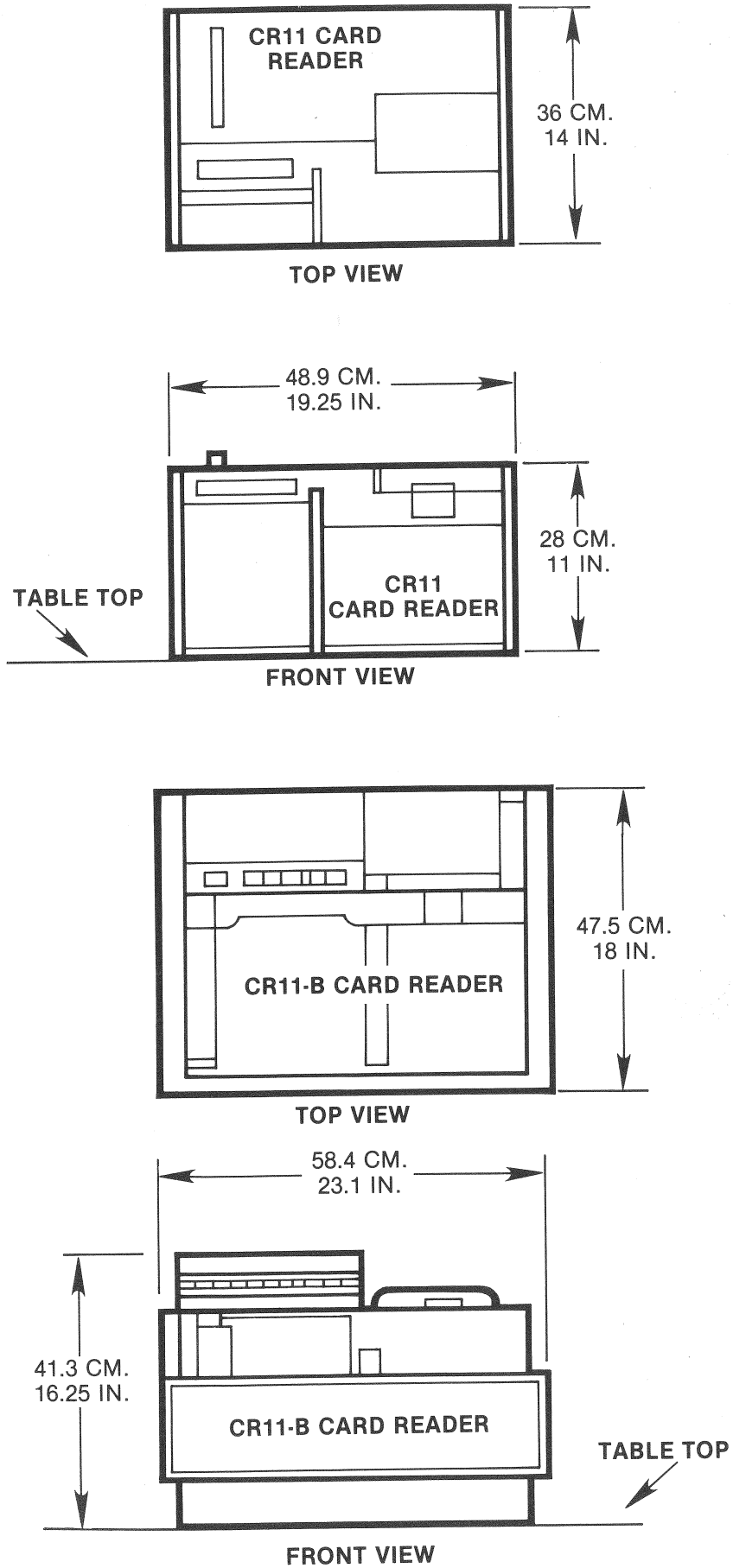


Figure 7 CR11 and CR11-B Card Reader Unit Dimensions

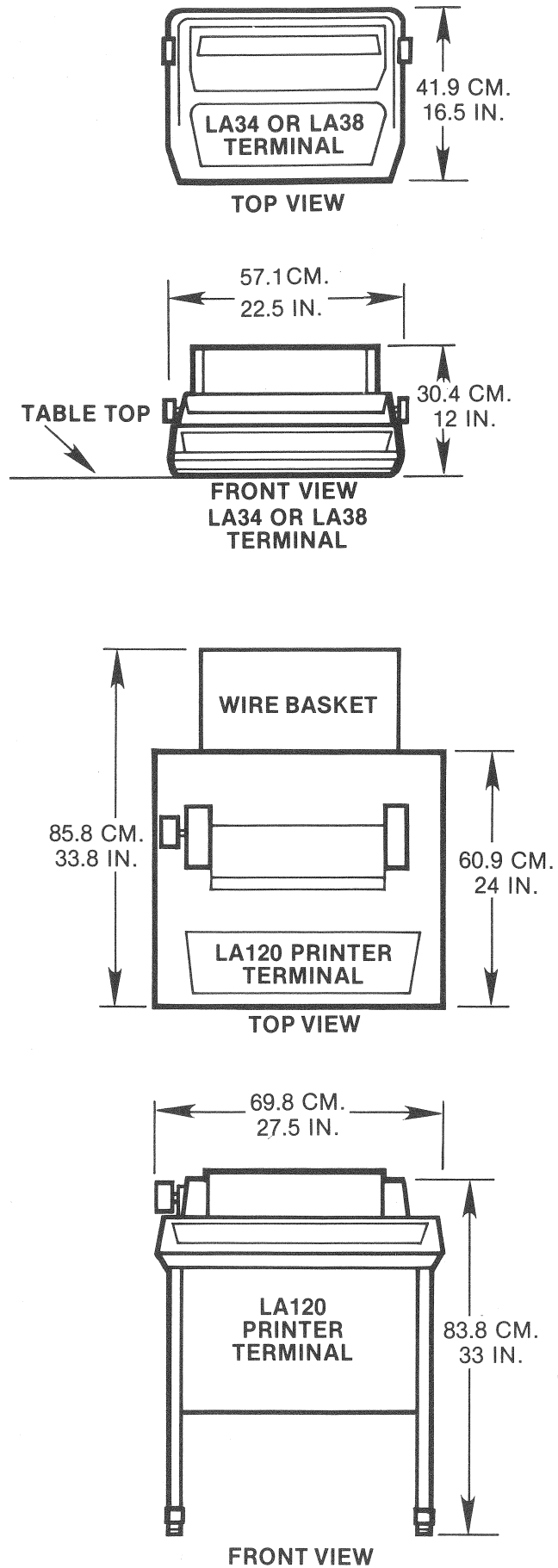


Figure 8 LA34, LA38, and LA120 Printer Terminal Dimensions

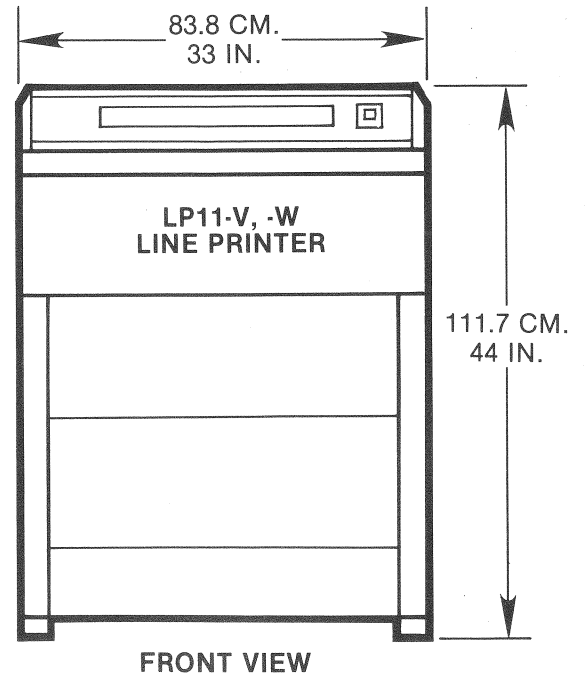
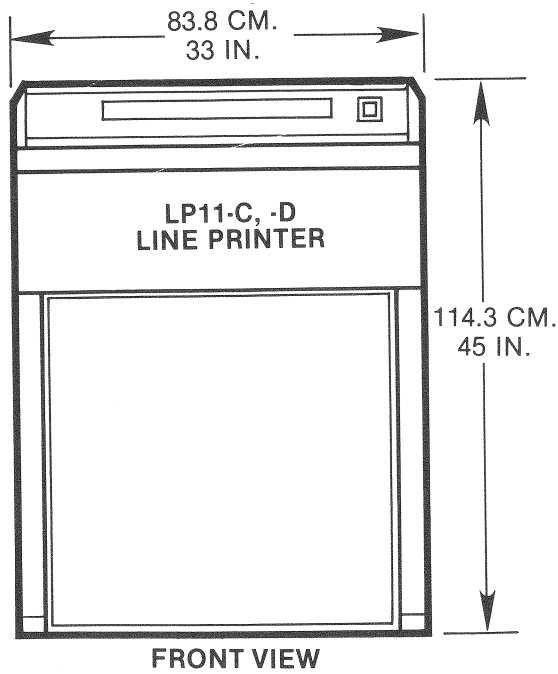
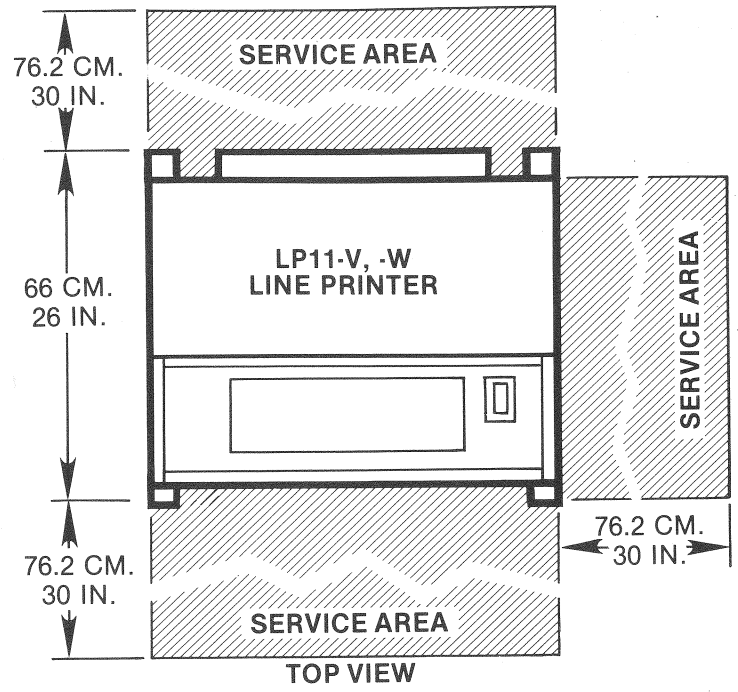
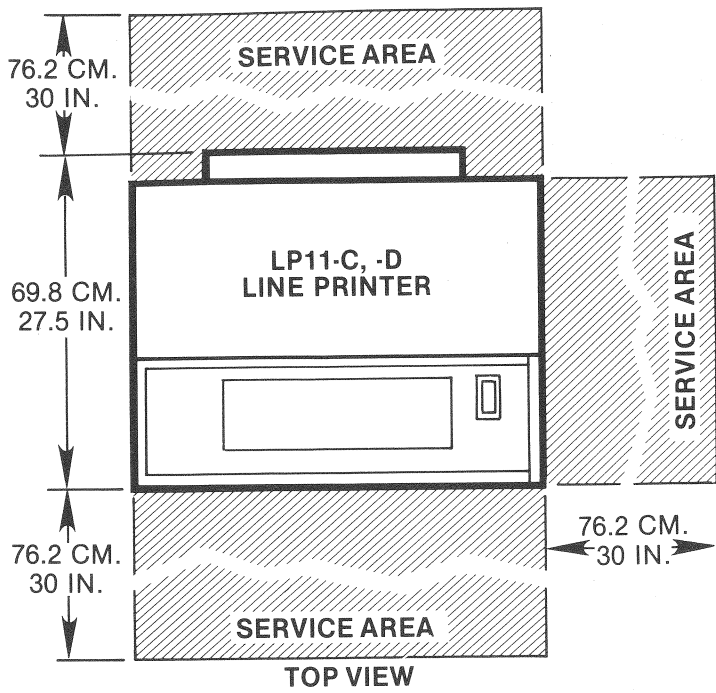


Figure 9 LP11-C,-D, LP11-V,-W Line Printer Units Dimensions

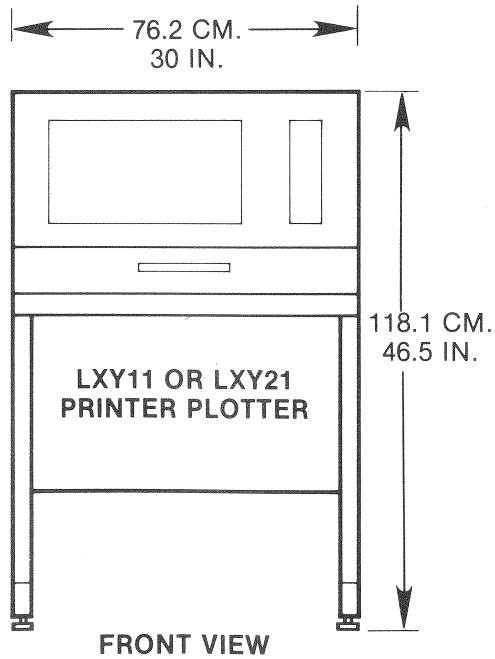
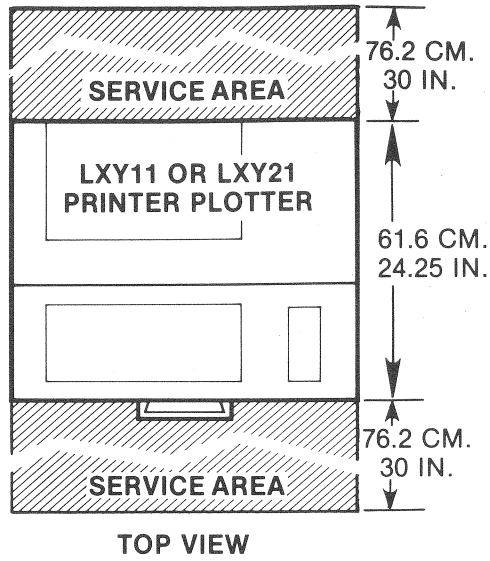


Figure 10 LXY11, and LXY21 Printer/Plotter Unit Dimensions

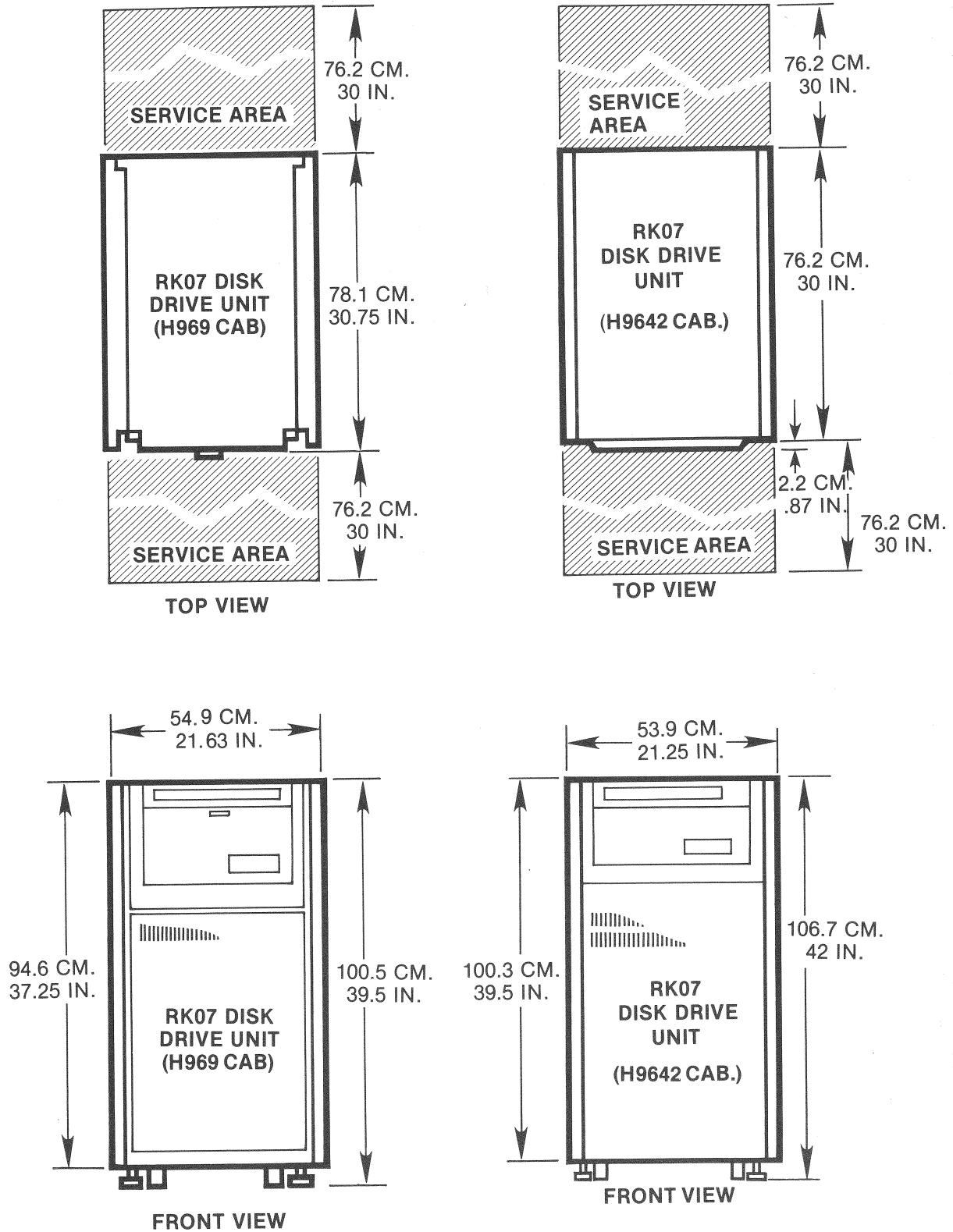


Figure 11 RK07 Disk Drive Unit Dimensions



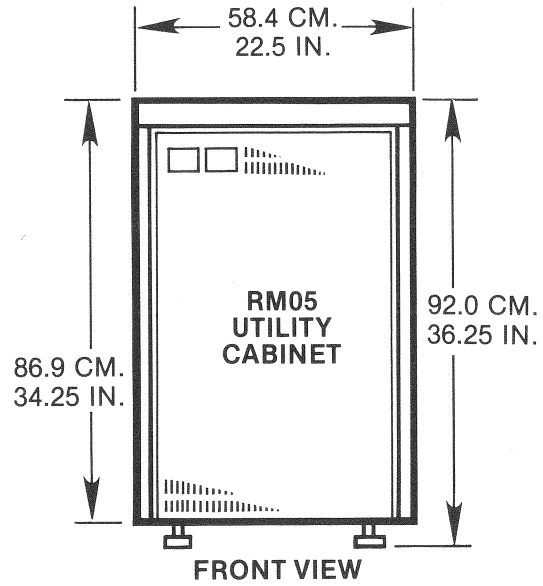
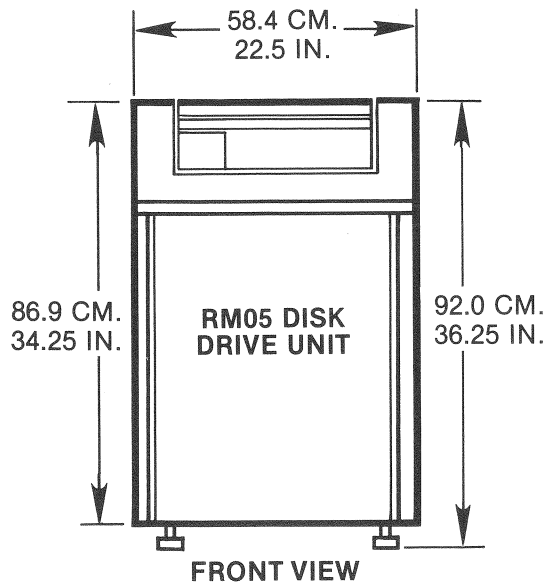
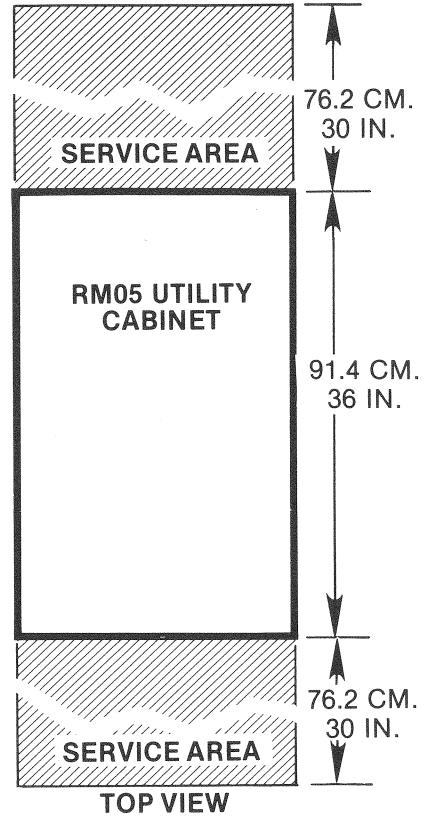
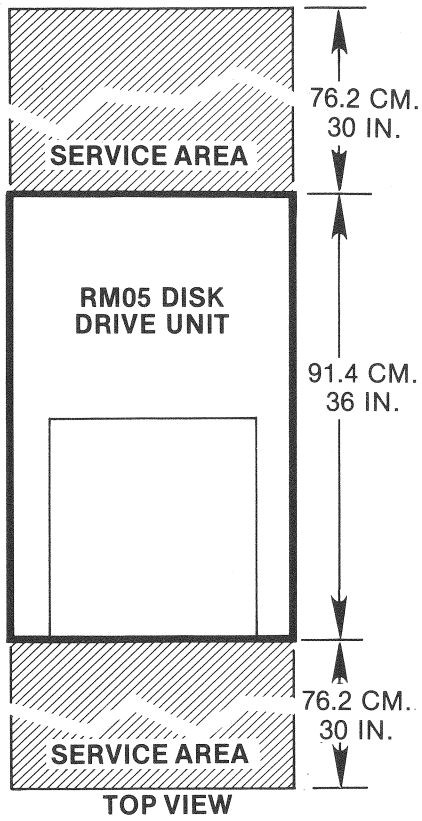


Figure 12 RM05 Disk Drive Unit and Utility Cabinet Dimensions

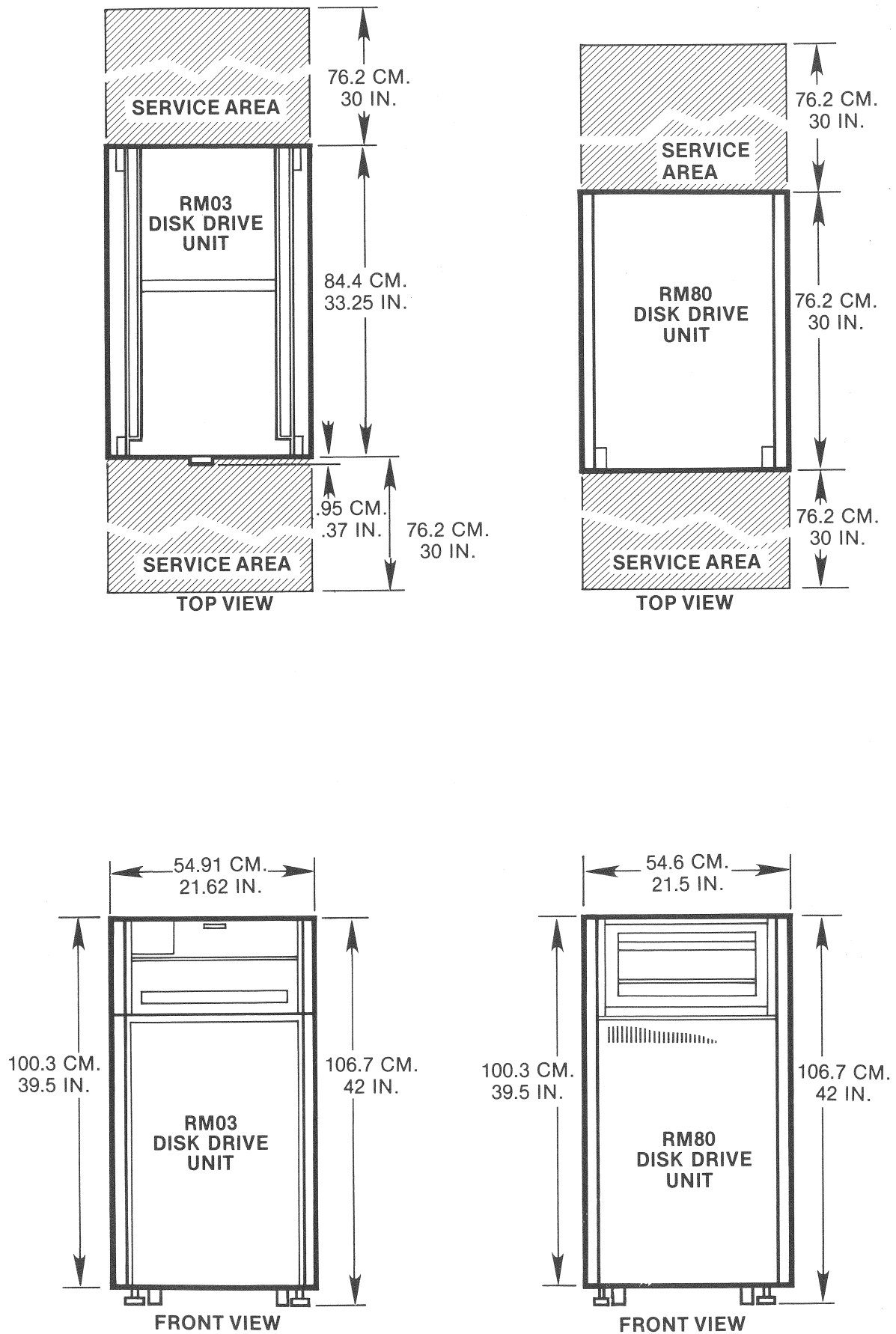


Figure 13 RM03 and RM80 Disk Drive Unit Dimensions

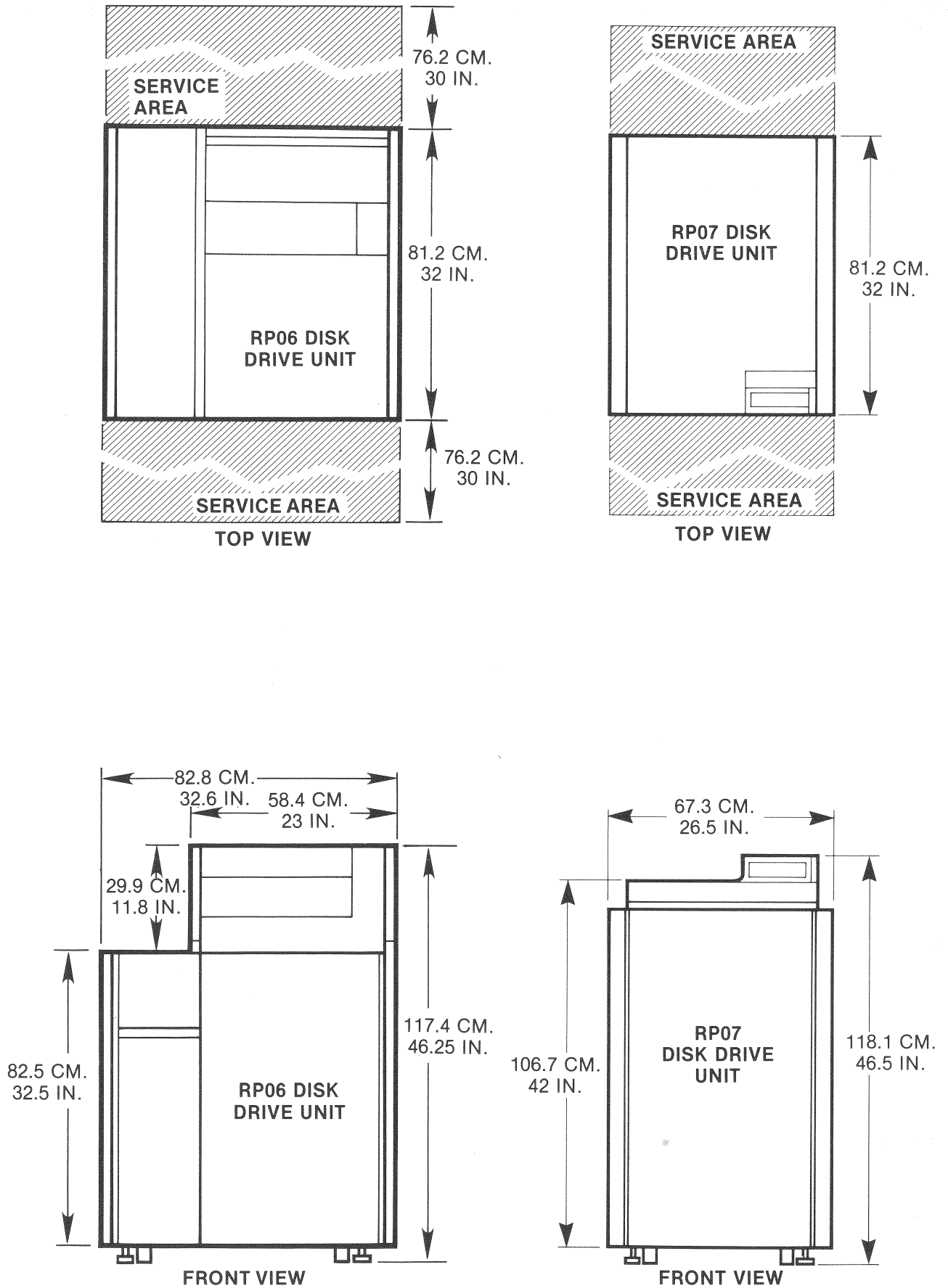


Figure 14 RP06 and RP07 Disk Drive Unit Dimensions

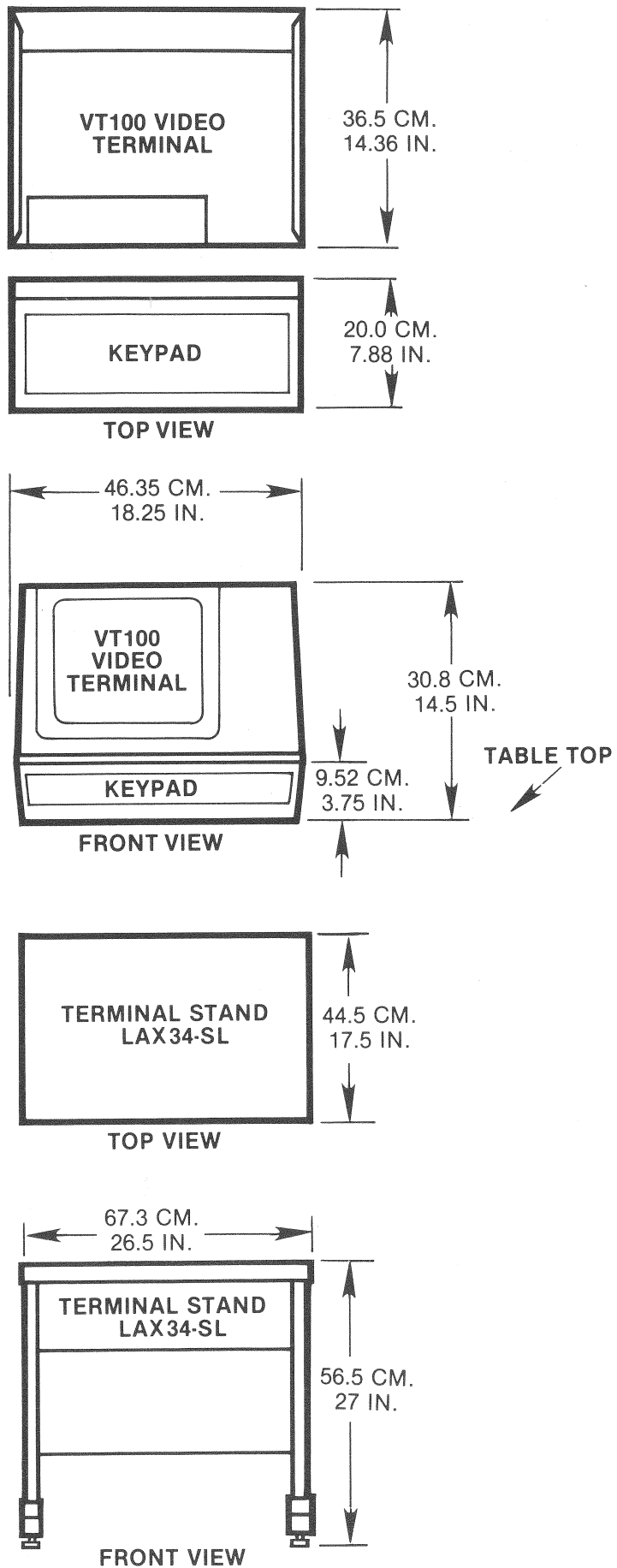


Figure 15 VT100 Video Terminal and LAX34-SL Terminal Stand Dimensions

**Floor Loading**

The VAX systems may be installed directly on the floor of a building or on a raised floor specially constructed to support the system. The advantages of the raised floor are that the equipment weight is more evenly distributed over the entire floor surface and that the ac power and signal cables can be routed beneath the floor surface.

Most office building and industrial plant floors are rated at 488 kg/m<sup>2</sup> (100 lb/ft<sup>2</sup>), which is adequate to sustain the weight of the computer equipment. If operating and access clearances are maintained for each unit the actual floor loading should be below the rated maximums.

A raised floor must be capable of supporting a load of 976 kb/m<sup>2</sup> (200 lb/ft<sup>2</sup>, with a concentrated load of 70 kg/cm<sup>2</sup> (1000 lb/in<sup>2</sup>).

**Table 9 VAX-11/750 CPU and Option Cabinet Weight**

Unit	*Unpackaged Weight	
	lbs.	kgs
VAX-11/750 CPU Cabinet	390	177
VAX-11/750 CPU Expansion Cabinet	340	155

\* Cabinets include maximum options installed.

**Table 10 VAX-11/780 CPU and Option Cabinet Weights**

Unit	*Unpackaged Weight	
	lbs.	kgs
VAX-11/780 CPU Cabinet	960	498
VAX-11/780 CPU Expansion Cabinet	700	318
VAX-11/780 UNIBUS Expansion Cabinet	650	295
VAX-11/780 UNIBUS Options Cabinet	650	295
VAX-11/780 Multiport Memory Cabinet	700	318

\* Cabinet includes maximum options installed.

**Table 11 Peripheral Devices, Unit Weights**

<b>Devices</b>	<b>Unpackaged Weight</b>	
	<b>lbs</b>	<b>kgs</b>
CR11 Card Reader	60	27
CR11-B Card Reader	75	33
LA38 DECwriter IV	22	10
LA38 DECwriter IV	22	10
LA34, LA38 Terminal Stand	29	13
LA120 DECwriter III	102	46
LP11-C, -D Line Printer	435	198
LP11-V, -W Line Printer	330	150
LP11-Y, -Z Line Printer	370	168
LXY11, LXY21 Printer/ Plotter	200	90
RK07-EA (ED) (H969 CAB.) Disk Drive	326	148
RK07-PA (PD) (H9642 CAB.) Disk Drive	339	154
RL02 Disk Drive	75	37
RM03 Disk Drive	430	195
RM05 Disk Drive	556	252
RM05 Utility Cabinet	190	86
RM80 Disk Drive	370	168
RP06 Disk Drive	600	273
RP07 Disk Drive	375	170
TEE16 Magnetic Tape	500	227
TE16 Magnetic Tape	430	195
TS11-BA Magnetic Tape Unit	382	174
TS11-CA Magnetic Tape Unit	382	174
TEU45 Magnetic Tape	500	227
TU45 Magnetic Tape	430	195
TEU77 Magnetic Tape	630	286
TU77 Magnetic Tape	560	286
TEU78 Magnetic Tape	630	286
TU78 Magnetic Tape	560	254
VT100 Video Display	35	16



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