P/75 Installation Guide

98-40170.1 Ver A   March, 1986

PLEXUS

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FIGURES

SITE PREPARATION

This Chapter describes the user site space, power, and environmental requirements for the installation of a standard P/75 Computer system. The basic configuration of P/75 system is:

- 32-bit High-performance 68020 CPU board
- One to four Memory boards (1 Mb to 16 Mb)
- One to four I/O processor boards (16 to 80 users)
- One or two 142 Mb disk drive(s)
- Optional 60 Mb cartridge tape drive
- Optional Intelligent Mass Storage Processor (IMSP) board
- Optional Ethernet board
- Common Circuits Board with optional 300/1200 baud, autodialing modem.
- Power supply and cooling fans
- A castor-mounted cabinet

Figures 1-1 and 1-2 illustrate the front and rear portions of the system.

P/75

SYSTEM POWER
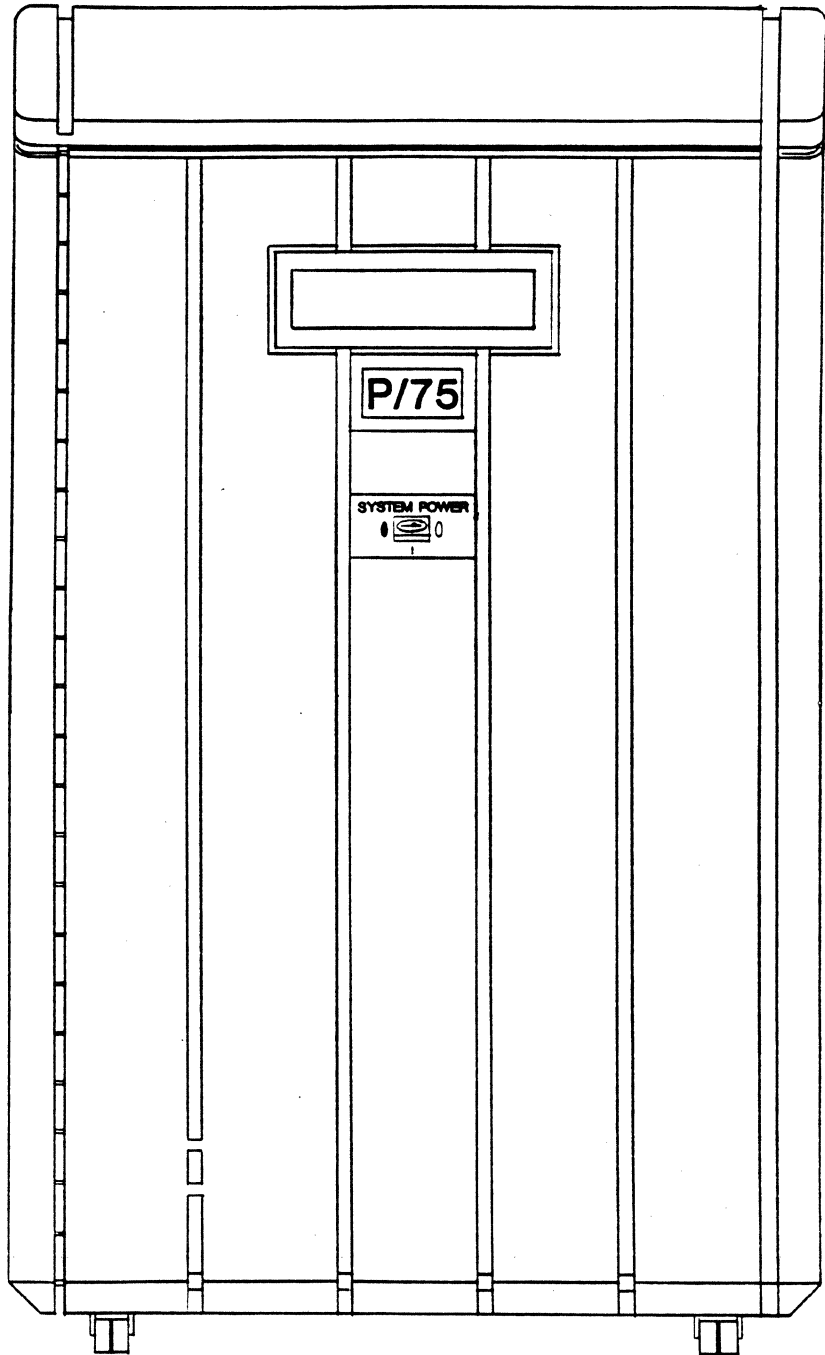
Figure 1-1. System Cabinet, Front View
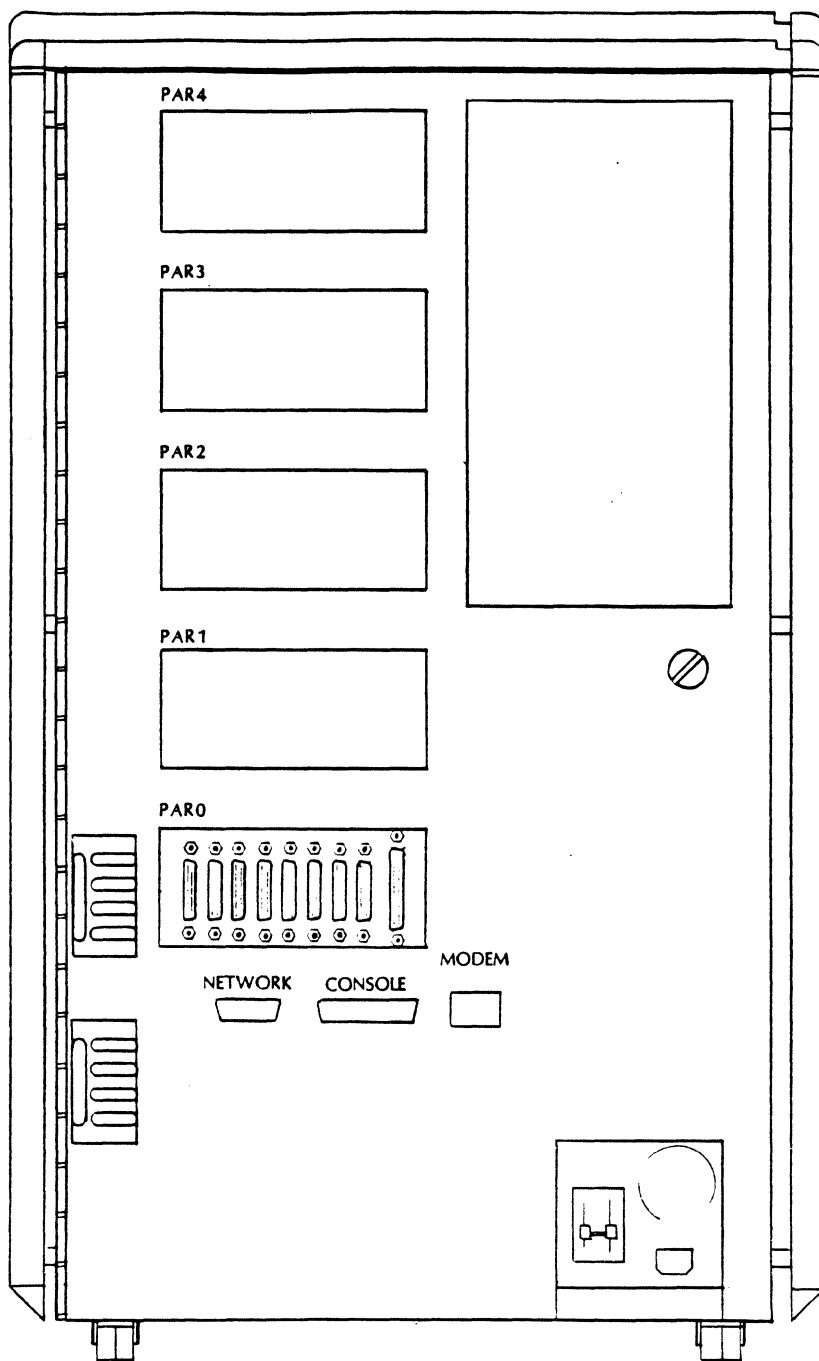
Figure 1-2. System Cabinet, Rear View

1.1 Space Requirements

This section describes the overall dimensions of the System Cabinet, the minimum floor area required to install and service the system and the area required to unpack the system.

1.1.1 System Cabinet Dimensions and Weight

The outside measurements and the weight of the system are given in the following table:

Dimensions and Weight		
Height	34 in.	(86 cm)
Width	20 in.	(51 cm)
Depth	37 in.	(94 cm)
Weight	100 to 250 lb	(45 to 114 kg)

1.1.2 Floor Area Requirements

From the above dimensions, it can be seen that the basic footprint of the system is 30 inches wide and 37 inches deep. Additional floor area is required around the cabinet to permit access to the back, front, sides, and top of the cabinet for servicing the system. The required clearance is:

Service Clearance		
Front	60 in.	(152 cm)
Back	30 in.	(76 cm)
Sides	24 in.	(61 cm)

The minimum area required for the service and installation of the P/75 system would then have the following dimensions:

Minimum Required Area		
Height	60 in.	(152 cm)
Depth	121 in.	(307 cm)
Width	78 in.	(122 cm)

1.1.3 Area Needed for Unpacking

The footprint of the P/75 system shipping carton is slightly larger than the P/75 system cabinet in depth and width. The carton must be arranged with the carton at one end with a (minimum) 3 foot by 9 foot path in front of the carton. A path of this size is needed to permit an unloading ramp to be lowered from the front of the carton and to provide room to receive the full length of the P/75 cabinet when it is unloaded.

1.2 Power Requirements

This section describes the characteristics of the P/75 power requirements, the grounding of the unit, noise suppression, and types of power connectors.

1.2.1 Voltage Characteristics

Your Plexus computer is equipped with one of two power options. These are installed at the factory, and must be specified at time of purchase. The choices are:

    103.5 - 126.5 VAC @ 48 - 62 Hz (Plexus default)
    207 - 253 VAC @ 48 - 62 Hz

1.2.1.1 Input Current Characteristics

The input current specifications are:

Steady State	15A @ 115V
	7.5 @ 230V
Surge	40A avg.

☞ NOTE ☜

T{ Amperage figures are for the system only. All systems require a separate 15-amp circuit breaker with a 15-amp grounded outlet. T}

1.2.2 Grounding

The P/60 system is provided with a three-conductor power cord terminated in a three-conductor plug. The green safety ground wire is connected to the metal frame of the system cabinet. This safety ground protects personnel against malfunctions such as short circuits and also protects the equipment against natural events such as lightning strikes. For this protection to work, the power cord must be plugged into an outlet which has a ground connection. The outlet ground connection must be connected to the distribution panel where the system's circuit breaker is installed.

Grounding wires for the outlets to be used by the P/60 and its peripheral equipment must be connected to the same ground wire (separate from the neutral) at the distribution panel. A grounding wire should go from the distribution panel to earth ground. The earth ground could be the structural steel of the building, a ground rod or a building entrance earth ground connection.

All grounding wires should be insulated; conduit must not be used for grounding wires.

1.2.3 Lightning Arrestors

If specific protection against lightning is needed, consult Article 280 of the National Electrical Code. This article describes the installation of lightning arrestors on power and communication lines.

1.2.4 Noise Suppression

Electromagnetic interference (noise) to levels which can cause computer malfunctions can be placed onto power distribution circuits by office equipment, janitorial equipment, electric motors, etc. To eliminate or to reduce noise to an acceptable level, the computer and its peripherals must be provided with circuit breakers and grounding which are separate from those used by other electrical equipment. Grounding of the equipment and of the power distribution circuit must be as described in the section "Grounding".

1.2.5 Power Cords and Connectors

Many different types of power and power distribution systems are used throughout the world. Use one that is applicable to your local power system. The connector mounted on the rear panel of the P/75 is a standard 3-conductor connector.

1.3 Environmental Requirements

The following environment must be provided for proper operation of the system:

Temperature	41 - 104F (5 - 40C)
Humidity	20 - 80% noncondensing
Heat Dissipation	3413 Btu max (1000 watts)

1.3.1 Temperature and Humidity Ranges

The acceptable, recommended, and unacceptable temperature and humidity ranges for the operation of the P/75 system are shown in Figures 1-5 and 1-6, respectively.

If the system is moved from one environment to another, it is recommended that the equipment not be powered up until it has had time to acclimatize to the new environment. The user should wait one hour for each 10 degree C of temperature change before powering up the system.

Excessively high humidity levels can cause improper operation of disk units and of paper-handling peripherals (printers). Excessively low humidity levels can increase problems of static electricity.

1.3.2 Electrostatic Discharges

It is possible for personnel to accumulate large amounts of static electricity. The discharge of static electricity can damage equipment, cause errors in system operation and can damage the contents of software media such as floppy disks and magnetic tape. To prevent damage from static electricity, ground mats connected to earth ground must be used around the computer. These mats will dissipate any accumulated static charge.

☞ WARNING ☜

Do not handle computer component or printed circuit boards unless you are properly grounded. Even the small electrostatic discharges which you cannot feel can damage components.
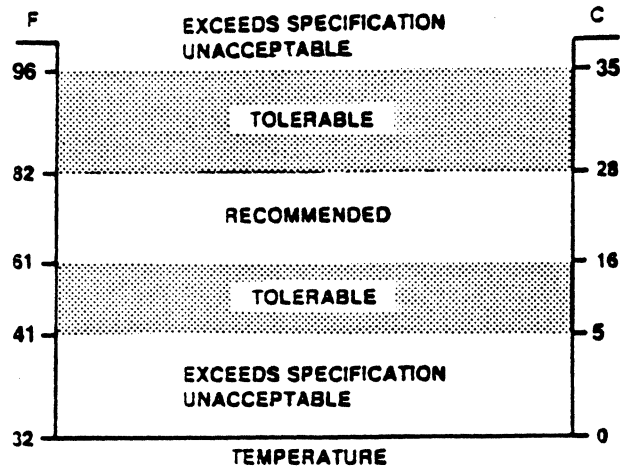

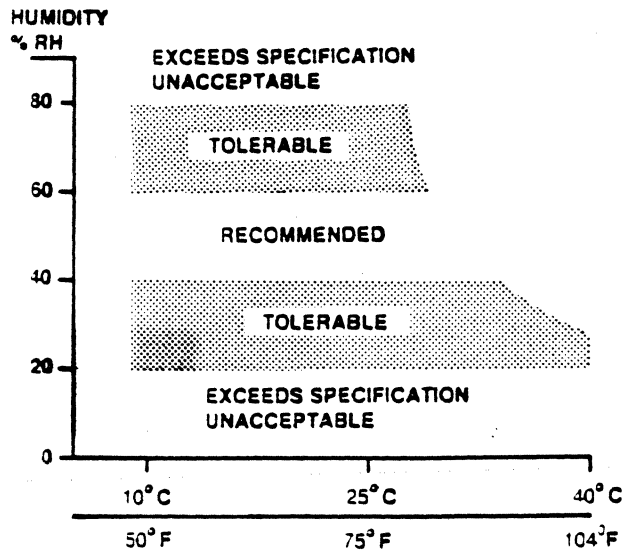**Figure 1-5.** Temperature Range

Figure 1-6. Humidity Range

1.3.3 Cooling Requirements

The P/75 computer system is equipped with cooling fans to circulate environmental air throughout the cabinet. As stated previously, the heat dissipation of the system is 1000 watts.

The following can be helpful in calculating the ability of an area to maintain proper operating temperatures. Consider the installation site to be a room 10 foot by 10 foot in size. The room is air conditioned to 24 degrees C (76 F) and is windowless. The following formula can be used to calculate the rise in temperature the installation of a P/75 would cause.

Heat output in watts X 0.0112 = Degrees rise in Celsius or

Heat output in watts X 0.02 = Degrees rise in Fahrenheit

Add the calculated rise to the ambient room temperature to determine the room temperature when a P/75 is operating. For large open areas, the constants in the formula (0.0112 and 0.02) approach zero.

For example, the effect of running a P/75 in the type room described above would be calculated as follows:

1000 watts X 0.0112 = 11.2C + 24C = 35.2C (95.4F)

From this calculation it can be seen that additional cooling is not required. It is a good idea, however, to provide some additional cooling, if possible.

If the system is operated continuously, the user must determine if the air conditioning is turned off or down during weekends or during off-work hours. If the operation of the air conditioning is varied, measurements must be taken during the down or off periods to ensure that the temperature range of the system is not exceeded. In order to prevent damage to the system when its operating range is exceeded, additional air conditioning must be provided or the system must be shut down during these down periods.

1.4 Cabling

This section describes the techniques which can be used to to connect (cable) external equipment to a P/75 computer system.

1.4.1 Cable Lengths

The RS-232C standard recommends that cables no longer than 50 feet be used. Plexus, however, has found that cables up to 200 feet in length can be used if a low-capacitance, shielded type cable is used. Longer runs may be possible but there is a greater probability of noise occurring on the line.

1.4.2 Extending Cable Length

Two types of add-on equipment are available for used in extending cable runs: current loop adapters and short-haul modems.

The use of a current loop adapter at the terminal end of a cable can extend cable length to 1000 feet. Most terminals have a current loop interface available on unused pins of the RS-232C connector.

If your terminals lack the current loop capability, or if the run required is longer than 1000 feet, short-haul modems must be used. Two modems are required; one at the terminal end and one at the computer end of the cable. The use of modems can implement runs of up to several miles; the capability of the modems used will be the limiting factor.

1.4.3 General Considerations

To comply with FCC regulations on noise radiation, an overall shield for the cable is required. If a shielded cable is used, the shield should be connected via a metallic connector hood to the I/O panel connector jackscrews for maximum shielding effect. For terminal use, the shield should not be connected to any other pins on the RS-232C connector.

It is recommended that cables not be run through areas which are electrically noisy, such as areas containing large electric motors, welding apparatus, X-ray machines etc. Wiring outside of buildings should be buried in conduit not strung above ground since lightning strikes would damage the computer's ICP board(s). Such damage is not covered by the Plexus warranty. Where lightning is a persistent problem, it is recommended that fiber optic lines and modem be used.

1.4.4 Cable Termination

Equipment that is connected to the system must remain connected even when the equipment is not in use. If a cable must be connected from a peripheral, the cable must also be disconnected at the system's I/O panel. Any cable connected to the system which is disconnected from the intended peripheral will pick up noise which will cause system malfunctions. Cables which are not properly terminated at the peripheral end will also pick up noise which can severly affect the operation of the system.

1.4.5 Cable Wiring

The number of wires or pins used in building a cable depends on the application of the port being used. If the port is intended for a standard terminal, use the connections listed in Table 1-1.

Table 1-1. Computer to Terminal Interconnections

Signal	P/75	Terminal
RxD	2	2
TxD	3	3
Gnd	7	7

RECEIVING AND UNPACKING

The procedures to be performed on receipt of equipment are as follows:

1. Inspect exterior of shipping carton before unpacking.

2. Unpack shipping carton.

3. Check items received against enclosed packing slip.

4. Inspect each item of unpacked equipment.

Detailed procedures for each of the above operations are given in this section.

☞ NOTE ☜

Perform carefully the procedures for the above operations. They can protect you from liability for damage incurred during shipment and from damaging the equipment during unpacking.

2.1 INSPECTING THE SHIPPING CARTON

Your Plexus computer is packaged to withstand the rigors of shipping. However, unusually rough handling can seriously damage it. Proper inspection of the shipping carton before opening it can protect you from expensive repairs caused by rough treatment.

Three indications of rough handling during shipment are:

1. Physical damage to the carton - The condition of the shipping container provides clues as to how it was handled. Rips, scratches, dents and other marks are evidence of mishandling.

2. Tipping - The package is equipped with tip indicators which provide evidence of excessive tipping.

3. Shock - The package is also equipped with shock indicators which register any shocks hard enough to damage the equipment.

Both the tip indicators and the shock indicators are well marked and include instructions.

If any evidence of mishandling is discovered, notify the carrier and Plexus Computers immediately and DO NOT UNPACK THE CARTON.

2.2 PACKAGING THE P/75 COMPUTER

The manner in which the P/75 computer is packaged is shown in Figure 2-1. As shown, the unit is rolled up a ramp onto a wooden, shock-mounted skid. The wooden ramp is unhooked from the skid and is set aside. The fiberboard flaps containing pads which are mounted on the skid are folded up around the bottom of the unit. A fiberboard outer carton is placed over the mounted P/75; this carton holds the bottom pads in place. A top cover containing side, top and end pads is mounted inside of the outer carton. The wooden ramp is mounted, ramps down, inside the carton. The flaps at the top of the outer carton are folded to hold the ramp in place. The skid and mounted carton are then banded together to form a single integral package.
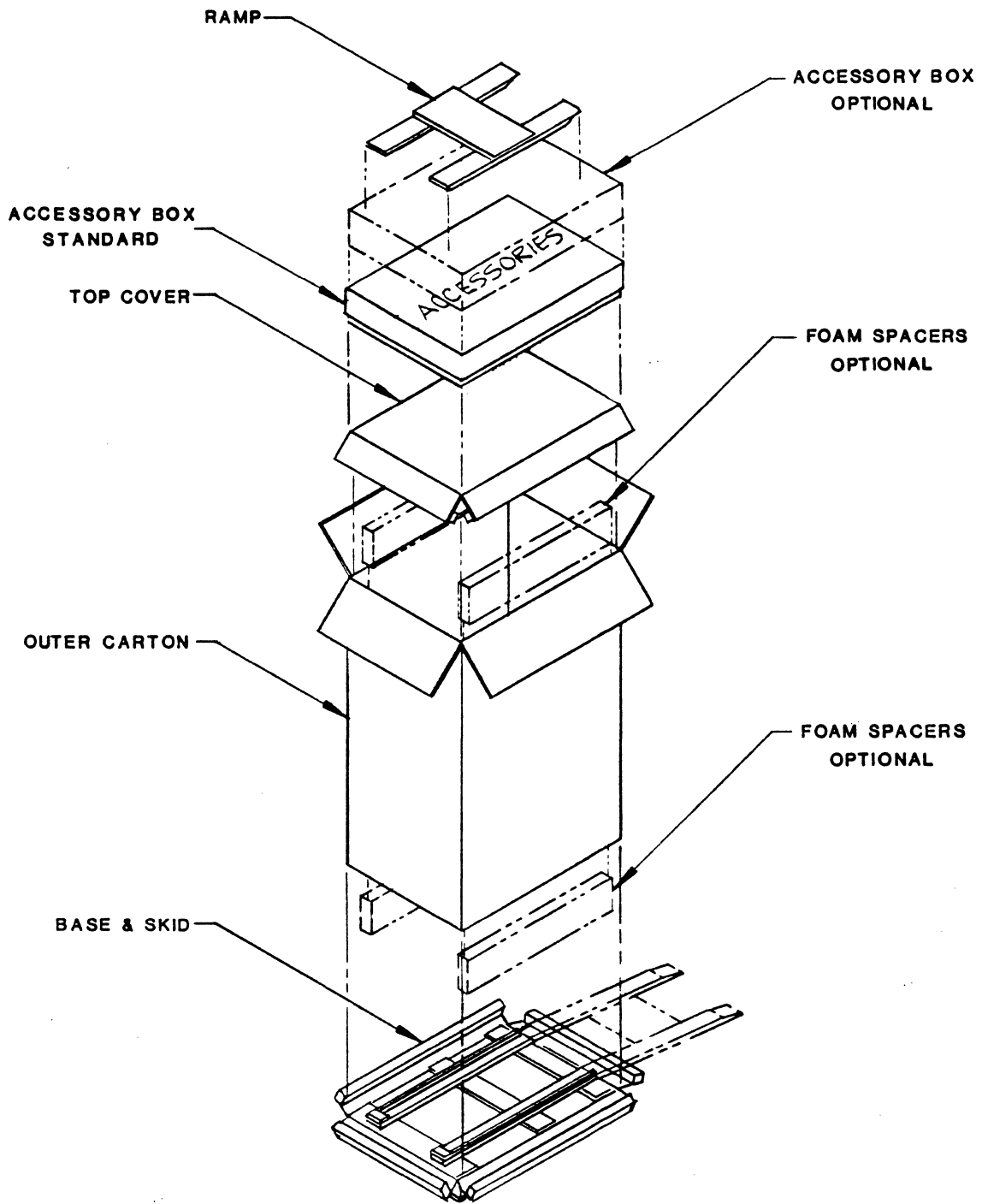
RAMP

ACCESSORY BOX
OPTIONAL

ACCESSORY BOX
STANDARD

TOP COVER

FOAM SPACERS
OPTIONAL

ACCESSORIES

OUTER CARTON

FOAM SPACERS
OPTIONAL

BASE & SKID

Figure 2-1. Packaging the P/75

2.3 UNPACKING PROCEDURE

To unpack the P/75 system, perform the following steps:

1. Cut and discard the binding strips.

2. Unfold the top flaps of the outer carton and remove the wooden ramp stored at the top of the carton.

3. Remove the fiberboard top which contains the top, side and end buffers.

4. Remove the accessory box.

5. Remove the outer carton. Normally the carton is lifted from the unit. If the ceiling is not high enough to permit lifting the carton off the unit, the carton must be cut. Cut one end of the carton from top to bottom and unwrap the carton from around the unit. When cutting, use a short-bladed knife and take care not to damage the enclosed unit.

6. Fold the flaps mounted on the skid down out of the way.

7. Hook the wooden ramp to the two studs supplied at the front of the skid.

8. Using help, roll the unit down the ramp and off the skid.

2.3.1 Inspecting Exterior of the System

After unpacking the unit, check it for scratches, rust, soiling, and loose or missing parts.

2.3.2 Inspecting Interior of the System

Report any problems to Plexus Computers and the carrier immediately.

2.3.3 P/75 Access Doors

The front system door is secured with a latch. A latch release pin is located at the lower right edge of the door. Pressing upward on the latch-pin will release the door latch. Securing the door is accomplished by closing the door until the latch engages.

The rear access door is secured with a knurled knob with a screw driver slot.

This section describes how to prepare your Plexus P/75 computer for use after it has been unpacked and has successfully completed the inspection procedures.

The procedures given in this section are limited to the installation of the main system cabinet.

Everything within reason has been done at the factory to prepare the system for immediate use. When the unit is located where it is to be used, the following operations must be performed:

- Unlock the disk actuator(s) in the system

- Attach the system console

- Connect to a proper source of AC power

- Turn the keyswitch to the ON position

☞ NOTE ☜

Multi-cabinet systems must be completely assembled and installed prior to applying power.

☞ WARNING ☜

To avoid injury to personnel and damage to the system, ensure that the power cord is not plugged into a power source, until instructed to do so.

3.1 MOVING THE SYSTEM INTO THE WORK AREA

A P/75 can be placed in any stable, vibration-free work area. The area occupied by the system (its footprint) is 20 inches wide, and 37 inches deep. Sufficient space must be provided around the unit to permit the removal of its covers and to permit cables to be connected to its rear panel.

3.2 UNLOCKING THE FIXED DISK DRIVES

The fixed disk(s) in the system are always locked *during shipment* and must be locked again if you should ever move your system.

☞ NOTE ☜

If any of the disk locks are found in the UNLOCKED position during this procedure, inform Plexus immediately. If the unit was shipped with a disk lock unlocked, damage to the disk many have occurred.

Use the following procedure to unlock the actuators on each drive:

1. To open the front access door of the system, press upward on the locking pin located on the bottom-right edge of the door.

2. To *unlock* the disk drive actuator locking arm, move the locking arm to the FREE position as shown in Figure 3-1.

3. Unlock all disk drives in the system (two maximum).

4. Close the system cabinet front access door, pushing until the latch clicks shut.

3.2.1 INSTALLING THE CABLE ORGANIZERS

Included in the accessory box are the cable organizers that mount on the rear access door of the main system cabinet. Refer to Figure 1-2 for the location of the cable organizers.
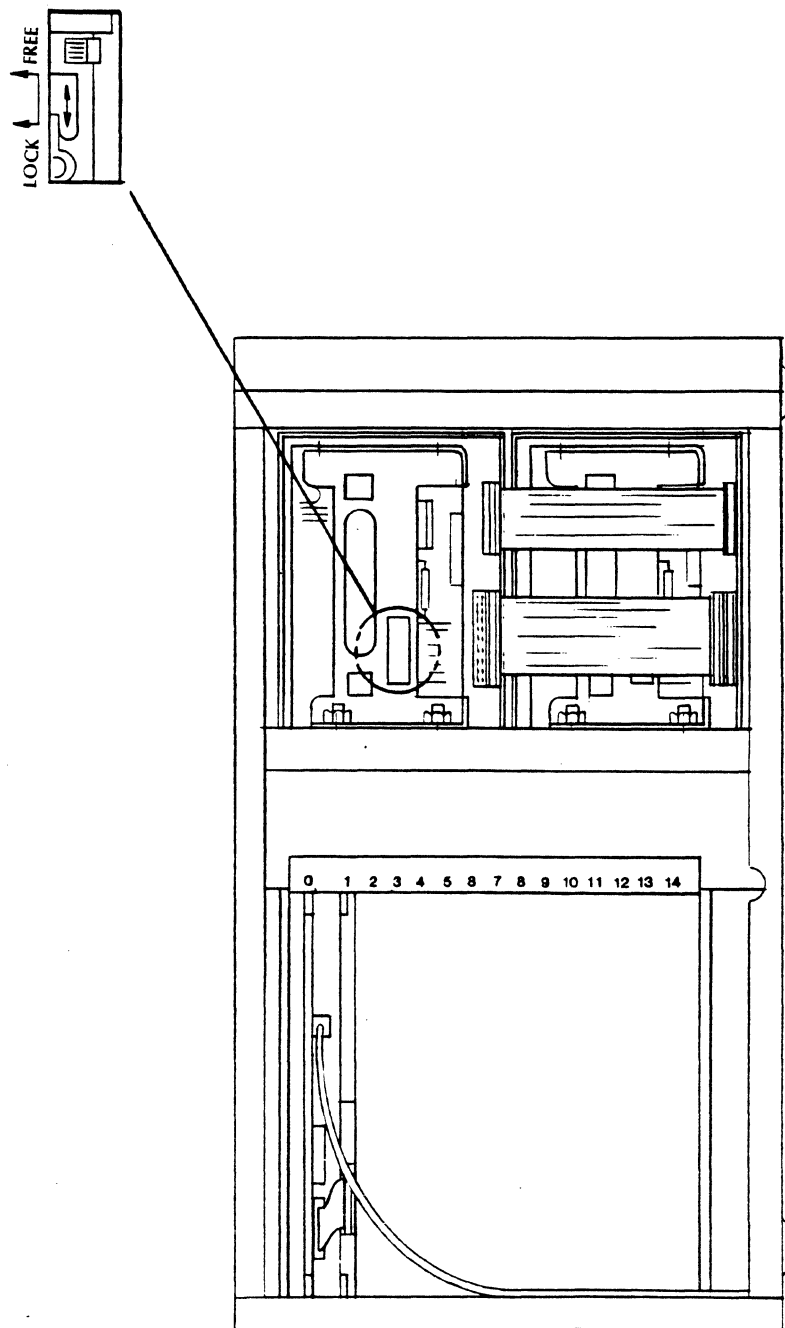
Figure 3-1. 142 Mb Fixed Disk Actuator Unlocking

3.2.2 System Cables

Cables for connection to the P/75 can be obtained from Plexus. The standard configuration is to use pins 2,3 and 7 connected to like pins at the opposite end. A system I/O panel is located at the top rear of the cabinet (see Figure 3-2). This panel contains all of the I/O connectors for the serial and parallel ports provided by the system. The panel holds up to 80 serial connectors, 5 parallel connectors, the system CONSOLE connector and an Ethernet connector.

The number of connectors provided on an I/O panel depends on the number of I/O processor boards contained by the system. Each I/O board provides either 8 or 16 serial ports and one parallel port.

Cables for all serial and parallel peripherals, the system console, and the network must be connected to the system I/O panel.

Figure 3-2. Rear Panel I/O Connectors

3.3 CONNECTING THE SYSTEM CONSOLE

Connect the system console as follows:

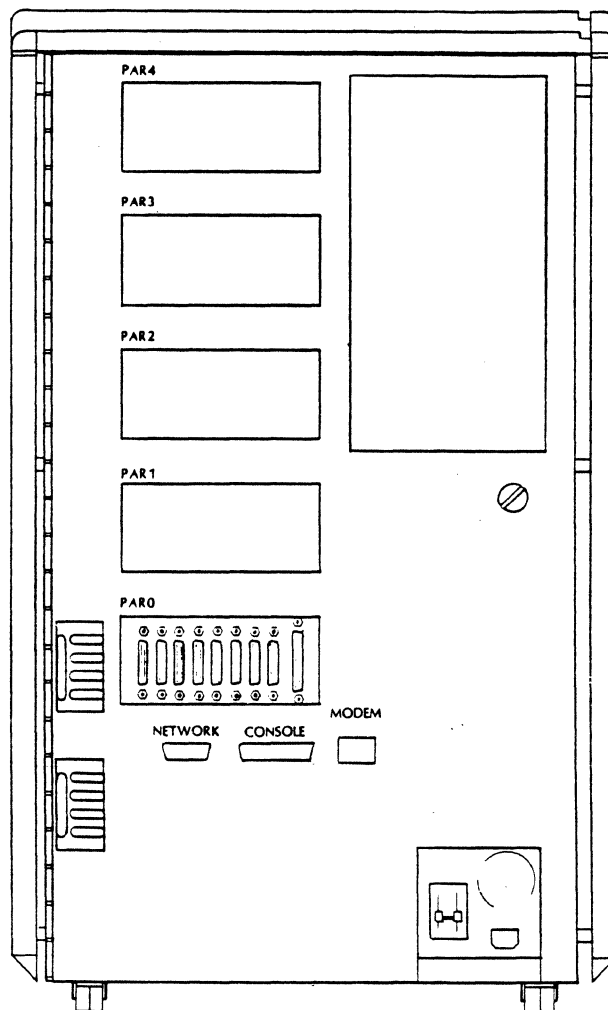1.   Connect the console cable to the connector labeled **CONSOLE** on the system rear panel.

2.   Set the console terminal parameters to the following values:

   -   Baud rate = 9600 baud (unless the system default baud rate has been changed)

   -   Bits per character = 8

   -   Protocol = X ON and X OFF

   -   Parity = Disabled

   -   Mode = Character (not block) and full duplex

   -   Stop bits = 1

   Install and connect any other system expansion cabinets.

3.4 CONNECTING THE P/75 TO AC POWER

Located on the bottom-right corner of the system cabinet are the AC Line connector and cabinet power/circuit breaker switch.   The AC power connector is a standard, 3-pin AC power receptacle.   Use an AC power cable that is rated at greater than 15 Amperes at 115 volts a-c.   Plexus supplies power cables for U.S. users.   For users who need power cables with non-U.S. outlets, locate a local source.

● Set or be certain that the rear panel circuit breaker switch is OFF (handle down).

● Connect both ends of the AC power cable.

☞ NOTE ☜
The P/75 System Cabinet, alone, requires up to 15 Amperes of current using a 115-volt a-c power source.   A single, line should be dedicated to the system.

The system is now ready for use.   Chapter 4 describes the power on procedures for the P/75, Sys5.   It is also a good idea to locate and read the *P/75 User's Manual*.   In particular, read Chapter 2, *Startup and Shutdown*.

This chapter describes how to start your Plexus computer. It assumes that the computer is installed correctly, the system console is attached, and all parts are functioning correctly.

4.1 CONTROLS, SWITCHES AND INDICATORS

The controls, switches and indicators requiring the most familiarity are identified in Figures 4-1 through 4-3. The following list describes them.

POWER OFF/ON/RESET - keyswitch.

OFF - maximum anti-clockwise position.
ON - center position
RESET - maximum clockwise position

Power On Indicator - Located in the lower, left portion
of the front access door. Lights when power is applied
through the keyswitch.

Main Circuit Breaker - controls power to the entire
cabinet. This switch is located on the rear panel, at
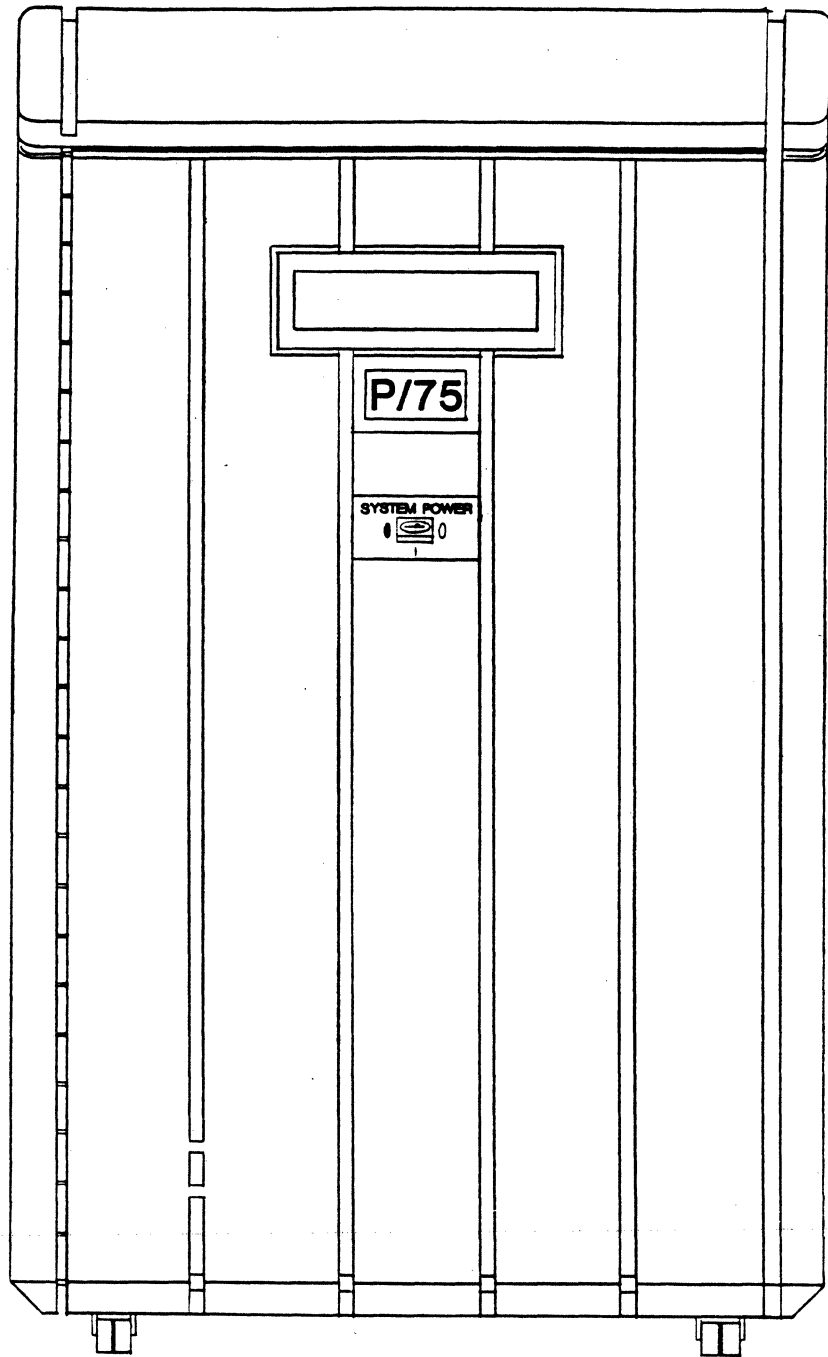the lower right. The UP position is ON.

Figure 4-1. System Controls

4.2 Normal Startup

When you turn the keyswitch to the vertical position to turn it ON or clockwise to Reset, the system automatically begins its startup routine. It completes its selftest, then waits for the command to boot the operating system. When the operating system is booted (loaded from the hard disk), the system comes up to single-user mode (state s). The system can be used in state 1 or brought to multi-user mode (state 2).

A step-by-step procedure is provided later in this section.

☞ NOTE ☜

If the machine has been in storage for awhile, it may not power up when the keyswitch is turned on. In this case, use the *jumpstart* switch. This switch is located on the CCB in Slot 0.

4.3 PROM Selftest and Diagnostics

The system selftest program activates immediately after the system is powered on or reset. As it completes its tests, the message PLEXUS SELFTEST REVX.X COMPLETE appears on the console. Partial completion of this message indicates selftest failure. Typically, the words PLEXUS SELFTEST REVX.X appear quickly and the word COMPLETE takes longer.

The bootstrap PROM monitors system performance during the bootstrap procedure. If the system cannot complete the bootstrap procedure, it returns an error message either directly before or after the message : /unix.

4.4 Startup, Login, and Shutdown Procedures

The visual display and necessary action to start the system are shown on the following page. User responses are shown in bold:

PROMPT/ACTION	**COMMENTS**
PLEXUS SELFTEST REVx.x COMPLETE	Indicates system has passed selftest.
System Configuration {configuiration} x.xMb Expected Configuration {configuration} x.xMb	Compares present config against last bootup.
PLEXUS PRIMARY BOOT Revx. : \<return\>	Screen displays boot prompt. Press \<return\> key to continue. or start standalone programs.
:/unix UNIX/Sys5rx.x:unix.yy real mem = xxxxxx bytes avail mem = xxxxxx bytes INIT: SINGLE USER MODE	Screen displays program to be booted. followed about 10 seconds later by a report as shown here. yy = the number of users. When the superuser prompt (#) is displayed, the system is in state 1.
# init 2 errdaemon started cron started	Enter this line after the superuser prompt to change to state 2 and send logins to terminals.
INIT: New run level 2	
Is the date \<date\> correct? (y or n)	If date is OK, enter y. If not, enter n. Then enter mmddhhmm[yy] where mm is month, hh is hour. dd is day, the second mm is minutes, and yy is optionally the year.
Do you want to check the file system? (y or n)	Answer y. Plexus Computers recommends that you ensure file system integrity before using the system in init 2.
Console login:	Prompt to console. You can log in now.

*The program **fsck** is described in the *Sys5 UNIX Administrator's Reference Manual* and in the *Sys5 UNIX Administration Guide* in the chapter, "File System Checking".

If the startup sequence fails, see the *P/75 User's Manual* chapter, "Crisis Recovery" for corrective action.

☞ CAUTION ☜
To avoid system failure, read the *P/75 User's Manual* chapter, "Standalone Programs," before booting any program other than the default.

4.4.1 Logging In

Plexus systems are shipped with a few active accounts, one of which is **root**. You must create the other user accounts in due time. At this point, however, if you would like to check the login procedure on this system, enter:

Console login: **root**

in response to the login prompt. The system will respond by returning some basic messages regarding the revision level of the operating system software, followed by the root or superuser prompt, **#**.

At this point the root account has no password. You can add one now or wait until you encounter the procedure in the chapter, *Setting Up Your Installation* where it is described in detail.

4.4.2 Logging Out

In the root shell or the standard (**/bin/sh**) shell, log out by entering:

<CTL> d

4.4.3 Shutting Down the System

After you have logged in as root (presumably from the system console), you may want to shut the system down (from init state 2) before proceeding further. To do so,

1. Be sure you are logged in as root on the system console.

2. Enter:

   /etc/shutdown X

   where X is the number of seconds of grace period (default = 60 sec).

☞ NOTE ☜

If you are logged in as root or superuser and you issue **/etc/shutdown** from a terminal other than the system console, that terminal will become the system console once UNIX has been booted into a single- or multi-user state. Port tty0, however, retains control for PROM level functions and is required to initialize boot-up. Details are contained in the next section of this chapter.

---

3. The program **/etc/shutdown** sends a series of messages to all active terminals, warning that the system will shut down in X seconds (the length of the grace period mentioned above).

4. The program takes several minutes to execute.   ιg which time the user is prompted for yes/no responses when necessary. When it askʜ

> Busy out (push down) the appropriate
> phone lines for this system.
>
> Do you want to continue ? (enter y or n)

Hang up any modems and enter:

> **y**

5. The system displays some messages, which may take a few minutes. It displays a list of processes (**ps -eaf**), then asks:

> Will a file save be done at this time (enter y or n).

The appropriate line in the list of processes should read:

> INIT 1

Respond by entering:

> **n**

☞ NOTE ☜

If **y** is entered, **/etc/shutdown** displays the message:

fsck will now be executed on files in checklist

The complete **fsck** functions are completely displayed as described in the *Sys5 UNIX Administrator's Reference Manual* and the *Sys5 UNIX Administrator's Guide* in the chapter, *File System Checking.*

---

6. The system displays the message:

> Halt the system when ready.

7. The system is now in state 1. It may be used in single-user mode, or shut down by issuing two **sync** commands and turning the SYSTEM POWER keyswitch to its Off or Reset position.

☞ CAUTION ☜

If the system is used after the shutdown program is finished, enter:

sync ; sync

before activating Reset or removing power.

4.4.4 Changing the System Console

Any of the P/75 tty ports can be configured to function as the system console for UNIX only. tty0 must still be used to initiate boot-up from the PROM level because the PROMs are hardwired to that port. For converting the system console to another port however, follow this procedure.

1. Log in as root or become superuser on a tty ranging from 1 to 7.

2. Issue ONE of the following commands:

   init s

   OR

   /etc/shutdown

3. The system returns some messages after which it enters single-user state. When the system has entered single-user, the system displays the superuser prompt on the terminal from which you issued the **shutdown** or **init s** command.

From that point on (until you reset the console to another tty), that terminal is the system console for all UNIX states. Certain functions are retained on tty0, however:

- The boot PROMs are hardwired to tty0, so SELFTEST messages and the boot PROM prompt (:) are still written to tty0.

- You must run standalone programs from the PROM level, so all loading and executing of standalones must be from tty0.

- The inital boot-up sequence (pressing <return> in response to the the PROM prompt to receive the `:/unix` prompt) must also be done from tty0. After that, the system sends the `real memory` and `available memory` messages to tty0.

- After the memory messages, the single-user prompt (#) is sent to the new system console and all console functions are read and written from that device until the console is changed again.

4.5 Using the Tape Drive

The tape drive available uses self-contained cartridges which greatly simplify operation as compared to other types of tapes. There are no controls, switches, or indicators associated with the tape drive except the lever for insertion and ejection. All control functions are handled by software commands. The cartridge itself, however, features a write-protect switch.

4.5.1 Media Requirements

Owing to the high capacity and critical alignment of the cartridge drive used in the P/75 use only Archive Corporation's pre-tested cartridges labeled QUALIFIED TAPE. Other brands or grades of cartridges will not work reliably or at all.

4.5.2 Basic Operation

The tape cartridge has a switch labeled SAFE. If you turn the tab so the arrow points to SAFE, the tape can be read but not written to. Plexus recommends you set all software release tapes to SAFE to prevent losing your ultimate backup copies of system and application software.

Other than the SAFE switch, basic operation of the cartridge drive consists of inserting the cartridge into the tape slot provided on the front panel of the computer. Insert the cartridge such that the label is facing to the left and the SAFE switch and center pinch roller are facing away from you, toward the rear of the tape slot. Then push the sliding lever fully toward the tape slot to engage the pinch roller and heads.

4.5.3 Features

The cartridge drives Plexus uses are 60 Mb tape drives. Tapes that are used to provide 60 Mb of storage are special, long tapes. Shorter lengths can provide up to 45 Mb of storage.

4.5.4 Retensioning

The tape drive manufacturer recommends that you retension the cartridge tapes before first use, before any read or write operation involving two or more megabytes of tape, and after two weeks of inactive storage. To retension the tape, enter from any terminal:

/usr/plx/tape -f /dev/rpt/0m retension

After the tape has been retensioned, the system returns the message:

DONE

This retensioning rule applies to all tape utilities.

4.5.5 Specifying Density and Length

When using the **dump** utility with the cartridge tape drive, if you have a file system larger than the 60Mb tape capacity, implement **dump**'s multiple volume feature by specifying the tape length and density according to the syntax of **dump** as described in the *Sys5 UNIX Administrator's Reference Manual*. Although the tape cartridge contains 1800 feet of tape, the actual footage figure is much longer because the data path on the tape is one contiguous stream wrapped back and forth nine times. Therefore, the length constant is **4000**. The accompanying density is **100**. To specify the length and density to achieve multi-volume dumps, follow this syntax:

dump fsd /dev/rmt/0m[n] 4000 100 /dev/rdsk/0sX

where 0mn represents the option of not automatically rewinding the tape at the end of the operation.

PLEXUS COMPUTERS

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