EK-PC380-OM-002

Professional™ 380

Owner's Manual

Digital Equipment Corporation

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1 OVERVIEW

This chapter describes the Professional 300 series base systems and the hardware and software that you can add to the systems.

There are three members of the Professional 300 series family of personal computers: the Professional 325, Professional 350, and Professional 380. The three main components of a Professional 300 series system are the system unit, monochrome or color monitor, and keyboard (Figure 1).

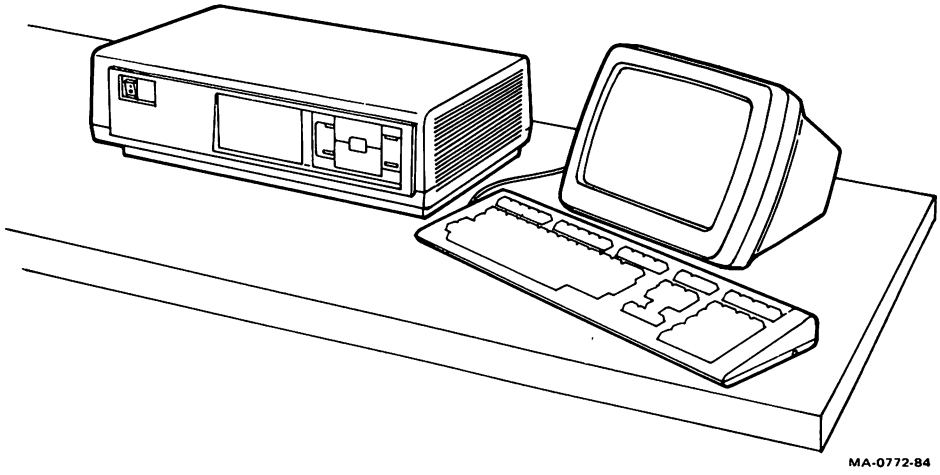


Figure 1 System Components

The Professional 380 uses the J-11 microprocessor, which is based on the PDP-11/70 minicomputer. The Professional 380 internal circuitry includes gate arrays for increased functionality on the system board. It has six slots for system options. This system is available in two configurations – with or without diskette drives. Three optional hard disk drives are also available for your Professional.

SYSTEM UNIT

The processor in the system unit is the J-11 microprocessor, which is part of Digital Equipment Corporation's PDP-11 family. The processor has a floating-point processor and a memory management unit.

The system comes with 512 kilobytes of main memory. The monochrome video controller has 128 kilobytes of video memory.

MONOCHROME MONITOR

The monitor that comes with your Professional 300 series personal computer can display text as well as graphics with a maximum resolution of 1024 by 240 pixels in noninterlaced 60 hertz mode. (A pixel is equal to a dot on the monitor screen.) This resolution allows the system to generate detailed graphics. The monitor also has a tilt leg for adjusting the viewing angle and an antiglare screen. A bottle of screen cleaner (PN 49-01607-01) is included with the monitor.

COLOR MONITOR

The color monitor has a 13-inch screen for displaying data and color graphics. It has a high-resolution 240-mm by 150-mm viewing area and RS170-compatible red-green-blue (RGB) input. Each pixel is 0.31 mm in size. Its raster scan design complements the extended bit map option (EBO) module for your Professional. The color monitor needs an EBO daughter card on the system module for color mapping.

KEYBOARD

The keyboard keys are arranged into four groups according to the way you use them (Figure 2).

You can insert two feet in the rear bottom corners to raise the keyboard to a comfortable angle.

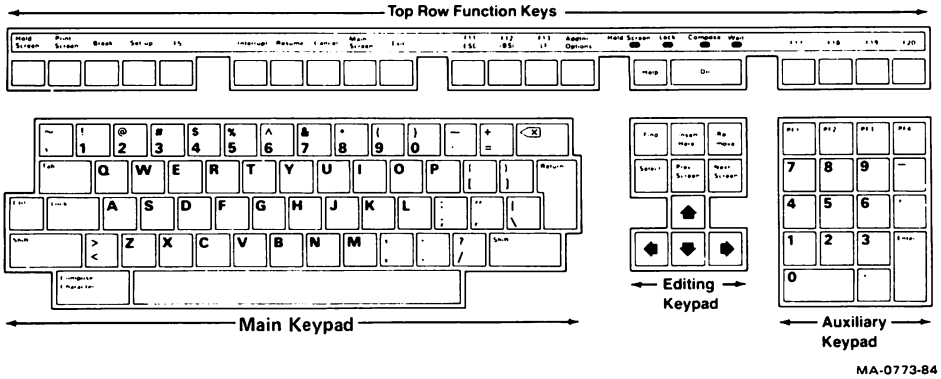


Figure 2 Keyboard

SYSTEM CONFIGURATIONS

The basic system unit configuration does not include a dual diskette drive. This system arrangement does not provide any software backup for disk-based storage media.

A second system unit configuration includes a dual diskette drive that allows you to work with two diskettes. Each diskette can store up to 400 kilobytes.

The system power supply provides all the power for the system unit, keyboard, monochrome monitor, and any additional equipment connected to the system.

DISKETTE DRIVE

This storage device gives you a way to load and save important programs and data on an inexpensive, flexible medium. The RX50 diskette drive can store 800 kilobytes of data on two diskettes drives, each supporting 400 kilobytes. This option requires an option slot in the card cage for the controller.

REAL-TIME CLOCK AND CALENDAR

Your Professional computer has a time and date clock that some application programs use. When you first install the computer, leave it on for 48 hours so the battery charges fully. If you plan to turn the computer off for 10 days or more, remember to charge the battery for 48 hours when you return. You may still have to reset the date and time.

DISKETTES

The Professional system comes with the following diskettes.

Maintenance application diskette
Maintenance application diskette #2
P/OS diskette

Use only Digital-certified diskettes in your Professional.

DOCUMENTATION

The following documents are shipped with the Professional 380 system.

Professional Installation Instructions
Professional 380 Owner's Manual

ADDITIONAL EQUIPMENT

The Professional 380 system has six slots available for options. The options are described below to help you determine what each option does and if the option requires a slot in the card cage.

Hard Disk Drives

Three hard disk drives are available: 5, 10, and 32 megabytes. These drives store programs and data for fast access. Each hard disk drive requires an option slot in the card cage for the controller.

Expansion Box

The expansion box doubles the memory and data storage ability of the Professional 380 by adding a second hard disk drive to the system. The additional drive is contained in a small box that connects to the Professional 380 by an external data cable. The expansion box requires an option slot in the card cage.

Extended Bit Map
The extended bit map adds two bit map planes to the basic system's graphics. This addition also gives you color mapping. The color map lets you display up to 8 colors at one time from a range of 4096 colors. If you are using a monochrome monitor, the extended bit map lets you display 8 shades of gray. The BCC03 color monitor cable comes with the extended bit map. This option does not require an option slot in the card cage, because it is installed on the system module.

Memory Daughter Module
A memory daughter module mounts onto the system module. This option adds 512 kilobytes to memory and increases the total amount of main memory to 1024 kilobytes. This module does not require an option slot in the card cage.

Backplane Memory Module
The backplane memory module gives the processor an additional 256 kilobytes of memory. This option requires an option slot in the card cage.

CP/M
The CP/M module lets you use application programs written for the CP/M-80 operating system. The module has its own Z80 processor and 64 kilobytes of memory. This option requires an option slot in the card cage.

PC-Bridge
The PC-Bridge option is available from Virtual Microsystems, Inc. PC-Bridge allows you to use MS-DOS and PC-DOS applications software on the Professional system. It emulates the IBM PC almost exactly except for some hardware changes. Digital will service this option. This option requires an option slot in the card cage.

Real-Time Interface Module
The real-time interface module lets you use your Professional to monitor and control laboratory processes and instruments. This module has two RS232-C or RS423 connectors, an IEEE-488 connector, and a 24-bit bidirectional parallel input/output connector. This option requires an option slot in the card cage.

Telephone Management System
The telephone management system (TMS) allows both voice and data communication with automatic answer and automatic dial features over standard telephone lines. This system has a built-in 300/1200 baud modem (modulator-demodulator) for data communication. Programs that use TMS special circuits may store voice messages in your Professional's memory. You can play back these voice messages over a telephone line or the optional voice unit. You can also use the built-in speaker and microphone in the voice unit for hands-free telephone operation. This option requires an option slot in the card cage.

DECNA
The DECNA module is the Ethernet communication controller for the Professional 300 series computer. By using PRO/DECnet software to connect to other computers and workstations, DECNA allows your computer to become a distributed workstation. DECNA comes with a 5-meter (16-foot) transceiver cable to connect to your network. This option requires an option slot in the card cage.

DELNI
The DELNI unit lets you group up to eight Professionals with DECNA together with other workstations. You can also use other systems like VAX in local area networks (LANs). This device also lets the LAN connect to a wider-based Ethernet network. The DELNI has a transfer rate of 10 megabytes per second. This option does not require an option slot in the card cage.

Mini-Exchange
The Mini-Exchange system is a microprocessor-controlled communication device that uses commands from your computer, or appropriate communication software, to connect up to 8 devices within a (60-meter) 200-foot radius. These devices can include personal computers, printers, or a modem. The Mini-Exchange does not require an option slot in the card cage.

Quad Serial Line Unit
The quad serial line unit (SLU) communication option provides four serial asynchronous full-duplex communication lines for the Professional 380 systems. You can configure the serial line unit to provide 4-line partial modem control or 2-line full modem control and 2-line no modem control. The quad SLU consists of an optional module that installs on the CTI Bus, an external connector box that has four 25-pin communication ports and two input connectors, and an interface cable. This option requires an option slot in the card cage.

Floorstand

You can mount the Professional 380 system unit vertically in a floorstand. This allows you to place the system unit next to your desk.

Word Processing Keyboard

An optional word processing (WPS) keyboard is available for your Professional. This keyboard (PN LK210-BZ) has special lettering on the main keypad and auxiliary keypad. When you use this keyboard, you can work with WPS documents and still have normal keyboard functions.

Printers

You can use the LA50, LA100-PC, and LQP02 printers with the Professional series systems. The LA50 and LA100-PC are dot matrix printers. The LQP02 is a letter quality printer. A BCC05 cable is supplied with your Professional for connecting a printer. These printers do not require an option slot in the card cage.

OPERATING SYSTEMS

Digital offers the following seven operating system for your Professional 380 computer.

- CP/M – The CP/M module lets you use application programs written for the CP/M-80 operating system. The module has its own Z80 processor and 64 kilobytes of memory. This option requires an option slot in the card cage.

- MS-DOS – This plug-in option is based on Microsoft Corporation's disk-based operating system. The MS-DOS software requires that you install the PC-Bridge option. The PC-Bridge option requires an option slot in the card cage.

- PC-DOS – This plug-in option runs under PC-Bridge. It is based on IBM's disk-based operating system. PC-Bridge emulates the IBM PC almost exactly except for some hardware changes. The PC-DOS software requires that you install the PC-Bridge option. This option requires an option slot in the card cage.

- P/OS – Based on the RSX-11M-PLUS operating system, P/OS supports multitasking and DECnet in a single-user system. Its menu system makes it easy to use.

- RS/1 – This real-time operating system overlay is used for fast mathematical processes often found in scientific and engineering environments. Its utilities support data management with high resolution graphics.

- RT-11 – This single-user, multitasking, real-time operating system was designed for use on the PDP-11 series computers. The operating system is fast, efficient, small in block area size, and useful in business, commercial, and scientific environments.

- USCD p-System – The p-System provides a portable environment for developing and executing application software. This system offers you a wide choice of already written programs.

- VENIX – This version of the UNIX operating system gives you the tools for application development. It has special programs for graphic displays within a multiuser, multitasking environment.

ADDITIONAL DOCUMENTS

User's Guide for Hard Disk System	AA-N603B-TH
User's Guide for Diskette System	AA-U708B-TH
For Beginners: Hard Disk System	AA-N604B-TH
For Beginners: Diskette System	AA-U707B-TH
Reference Card: Hard Disk System	AV-P389C-TH
Reference Card: Diskette System	AV-U709B-TH
PRO/BASIC Language Manual	AA-N601B-TH
PRO/BASIC Reference Card	AV-U706A-TH
PRO/DCL User's Guide	AA-Z252B-TH
PRO/Application Starter Kit	AA-Z041B-TH
PRO/DECnet User's Guide	AA-V446A-TH
Application Starter Kit User's Guide	AA-AG84A-TH
PRO/Datatrieve Handbook	AA-V440A-TH
PRO/RT-11 System User's Guide	AA-5279C-TC
PRO/Communications Manual	AA-N602B-TH
Professional Host Communications Installation Procedures	AA-P412C-TK
Terminal Subsystem Manual	AA-N623B-TK
PRO/DECnet User Guide	AA-V445A-TH
Introduction to Local Area Networks	EB-22714-18
Ethernet Installation Guide	EK-ETHER-IN
CP/M-80 User Guide (Diskette System)	AA-AH32A-TH
Professional 300 Series Technical Manual, Volume I, Kernel System	EK-PC300-V1
Professional 300 Series Technical Manual, Volume II, System Options	EK-PC300-V2

2 SETTING UP THE SYSTEM

This chapter tells you how to select a good environment for your Professional system.

LOCATION

Figure 3 shows the dimensions of the Professional 300 series system.

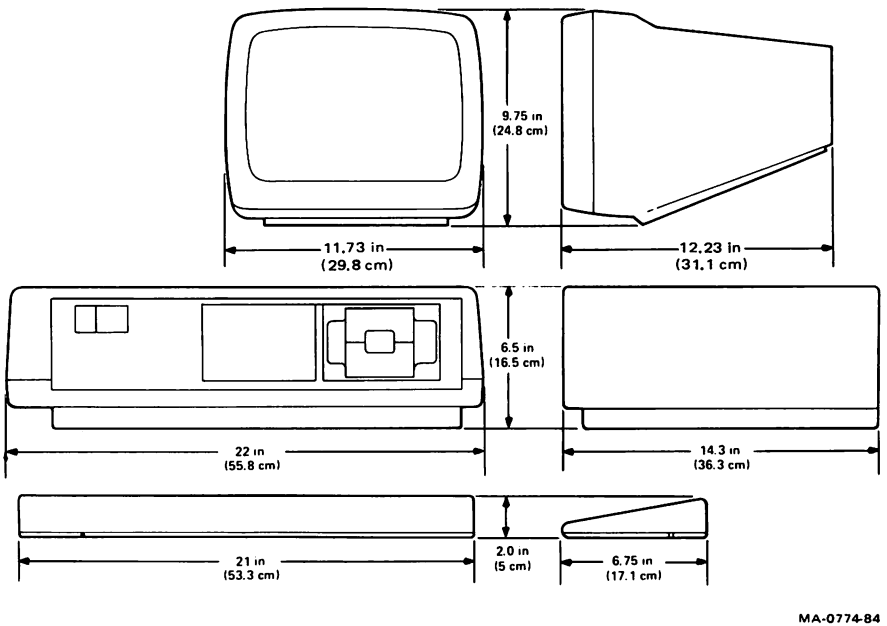


Figure 3 System Dimensions (Monochrome Monitor)

When setting up your Professional, be sure to:

- Allow 6 inches of space on all sides of the system unit and video monitor for airflow.
- Keep the ventilation slots clear.
- Allow room to place your printer or other options near the system. (The cables between the system and an option are usually 6 feet long.)
- Place all cables away from traffic areas.

LIGHTING

The Professional video monitors have a nonglare screen that reduces the amount of light reflected back to the operator. Place the system unit and video monitor out of any direct sun to minimize heat and glare.

POWER

Your Professional system and its options need only normal commercial power. The following list summarizes the system power requirements.

Requirements

Input voltage	100 to 120 Vac (standard 115) 220 to 240 Vac (standard 220)
Line frequency	50 to 60 Hz
Power dissipation	320 W

You should try to use a separate power source for your Professional. If other devices must use the same circuit, make sure they are not copiers, typewriters, or other devices that can cause the voltage to fluctuate.

Power Cords

Power cords for other voltages are available for your Professional system. See your salesperson for advice on the correct power cord for your system.

TEMPERATURE

Your Professional system is designed to operate within the following temperature and humidity ranges.

Temperature	10° to 40°C (50° to 104°F)
Humidity	20% to 80% relative humidity, with a maximum wet bulb of 25°C and a minimum dew point of 2°C.

When you set up your Professional system, keep it away from direct sunlight, heat registers, and air conditioning vents.

STORAGE

You need storage space for supplies and diskettes. Keep your diskettes in dustproof containers away from magnetic fields that might damage the information stored on them. For security, store backup media away from your work area.

CABLES AND CONNECTORS

To attach a printer to your Professional, use a BCC05 cable from the PR1 connector on the rear panel of the system unit (Figure 4). This cable is supplied with your Professional.

To attach a color monitor to your Professional, use a BCC03 cable (supplied with the extended bit map option module) from the VIDEO1 connector on the rear panel (Figure 4).

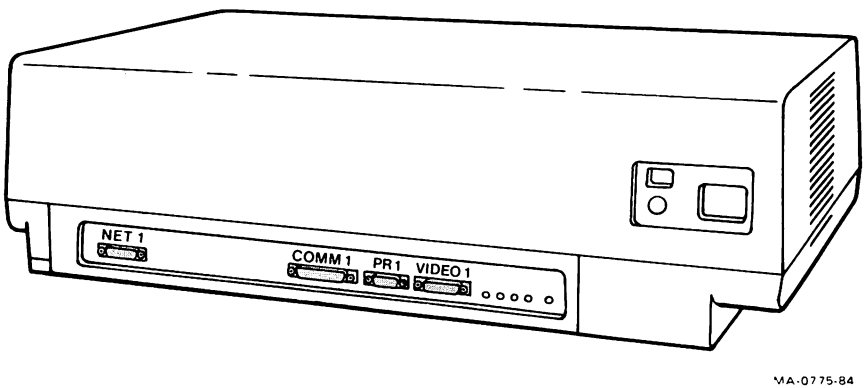


Figure 4 System Connectors (Rear Panel of System Unit)

3 CONTROLS AND INDICATORS

Each of the three main components of the Professional system has several controls and indicators that help you operate the system. This chapter describes the following controls and indicators for each system component.

- System unit controls and indicators
- Video monitor controls
- Keyboard controls, indicators, and sounds

SYSTEM UNIT CONTROLS

The system unit has the following three controls.

- Power switch
- Voltage selection switch
- Circuit breaker

Power Switch

The power switch is on the front of the system unit (Figure 5). This switch controls the power for the entire system. To turn on the system, push the side of the switch marked 1. To turn off the system, push the side of the switch marked 0.

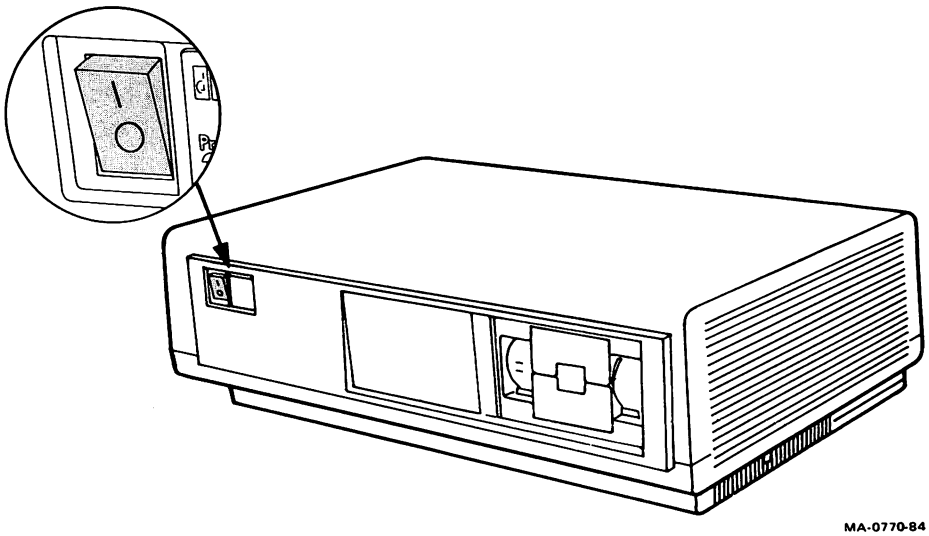


Figure 5 Power Switch

Voltage Selection Switch

The voltage selection switch is on the rear of the system unit (Figure 6). This switch matches the system voltage to the voltage available at the wall outlet.

NOTE: This switch is preset at the factory. Make sure the switch is set for the correct line voltage.

The voltage selection switch is a slide switch. When the number 115 shows, the system is set for 115 volts ac. This is the voltage available at wall outlets in most of the United States and Canada.

When the number 220 shows, the system is set for 220 volts ac. This is the voltage available in most of Europe and countries outside the United States and Canada.

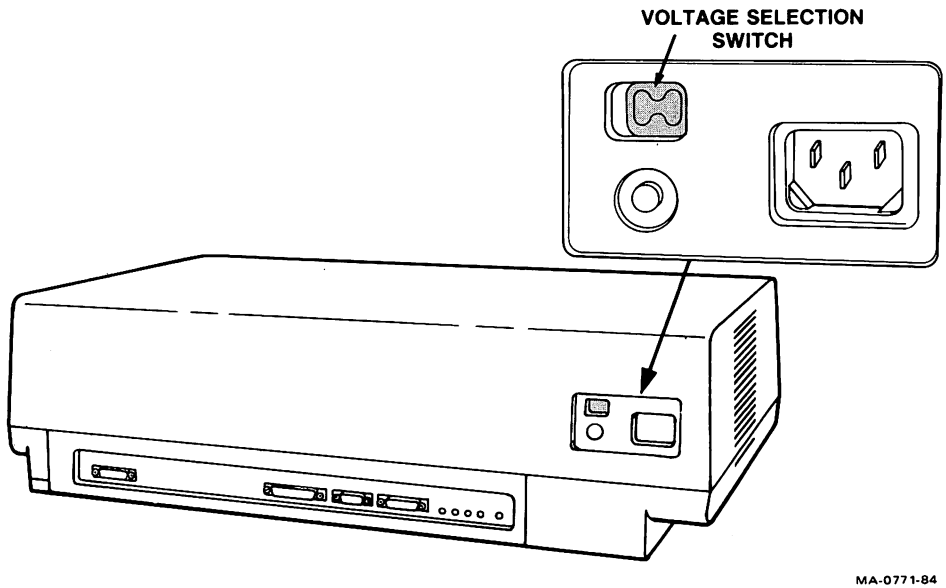


Figure 6 Voltage Selection Switch

Circuit Breaker

The circuit breaker is on the rear of the system unit (Figure 7). The circuit breaker acts like a fuse to protect the system from electrical damage.

If an electrical fault or short circuit occurs, the circuit breaker trips. To reset the circuit breaker, turn off the power, push in the circuit breaker button, then turn on the power.

CAUTION: If the circuit breaker trips after you reset it, unplug the system from the wall outlet and contact a service technician. Do not operate the system.

SYSTEM UNIT INDICATORS

The system unit has indicators on the front and back. The diskette drive indicators are on the front of the system unit next to the diskette drive doors (Figure 8). These indicators turn on whenever the drives are reading or writing data.

CAUTION: Do not open a diskette drive door when its indicator is on; you may lose some or all of your data. This is even more important if the drive was writing on the diskette when you opened the door.

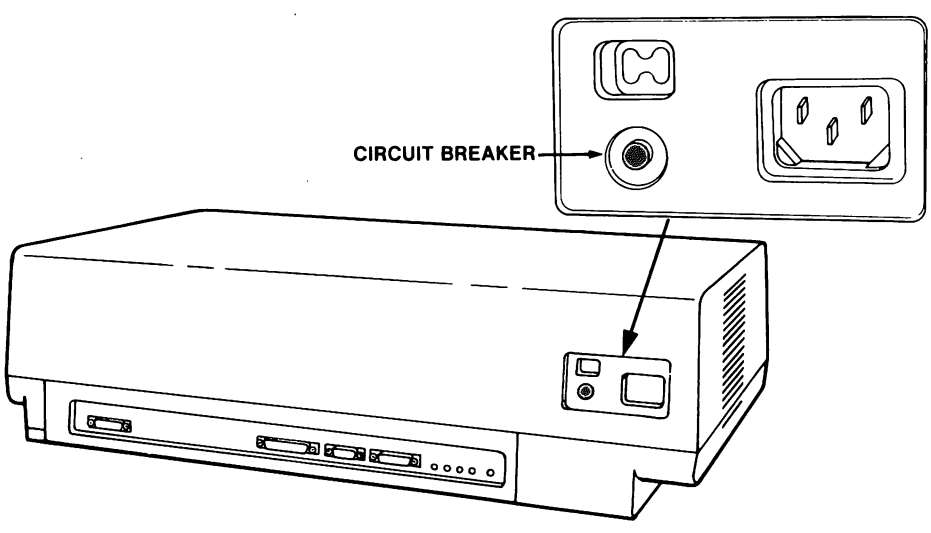


Figure 7 Circuit Breaker

On the rear of the system unit, to the right of the connectors, is a set of indicators. Four of the indicators are red and one indicator is green (Figure 9).

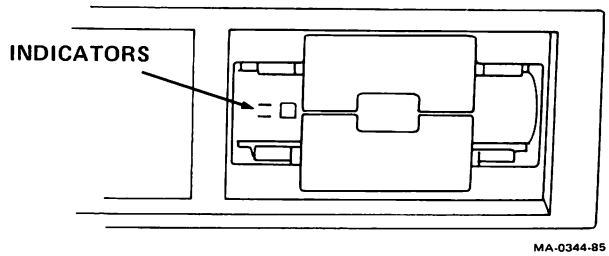


Figure 8 Disk Drive Indicators

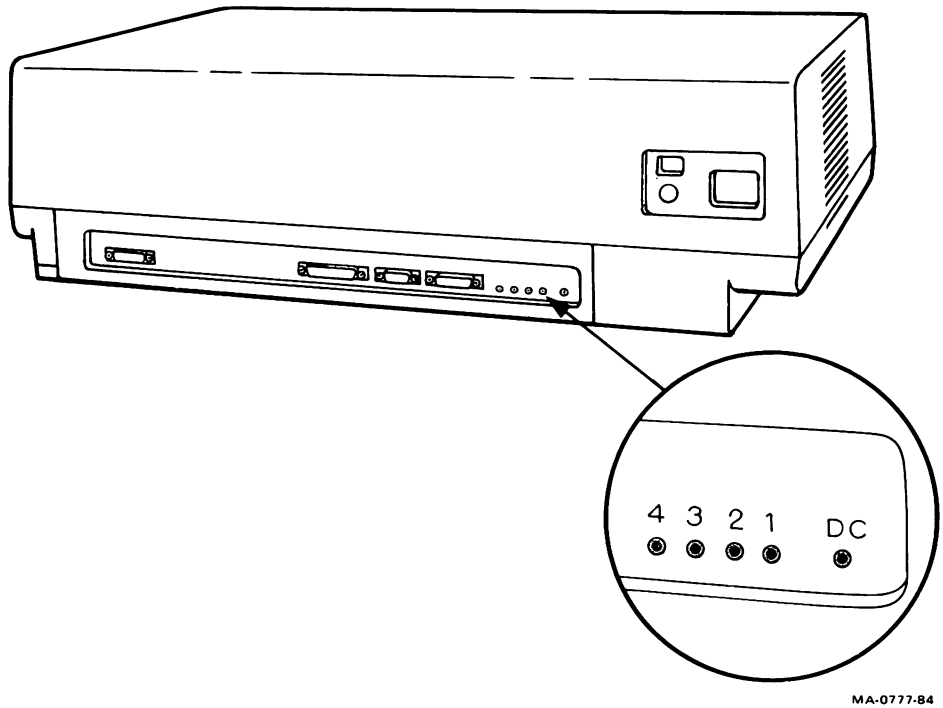


Figure 9 System Unit Indicators

Indicators 1, 2, 3, and 4 (Red)
Indicators 1, 2, 3, and 4 monitor the system's internal self-test that runs whenever you turn on the system power. (This test is described in Chapter 4.) When you push the power switch on, these indicators all turn on and then off. At the end of the test, all four of the red indicators should be off.

If any of the indicators remain on, the power-up self-test has found a problem. Chapter 4 describes the steps you should follow in this case.

DC Indicator (Green)
The dc indicator monitors the power inside the Professional system. if this indicator does not turn on when you push the power switch on, the Professional system will not run. Chapter 4 describes the steps you should follow in this case.

VIDEO MONITOR CONTROLS
The video monitor has the following three controls.

Brightness control
Contrast control
Tilt button

If you have a color monitor, refer to its owner's manual for information about the controls and how to set them.

Brightness
The brightness control is on the rear of the video monitor (Figure 10). You can increase the brightness by turning the control clockwise.

Contrast
The contrast control is on the rear of the video monitor, next to the brightness control (Figure 10). When you adjust the contrast control to its lowest setting, the characters on the screen blend into the background. You can increase the contrast by turning the control clockwise.

Use the brightness and contrast controls together to get the best possible screen presentation.

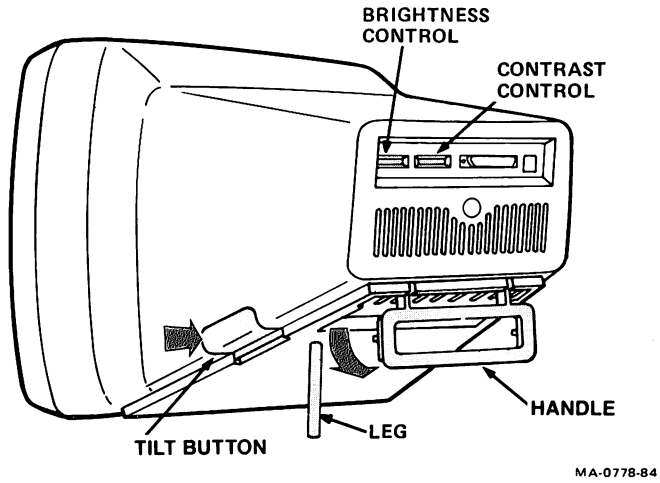


Figure 10 Monochrome Monitor (Rear View)

Tilt Button

The tilt button (Figure 10) lets you adjust the angle of the video monitor.

NOTE: The top margin of the video monitor appears to be larger than the bottom margin. This feature provides a comfortable viewing angle.

To use the tilt button, perform the following steps.

1. With the monitor screen toward you, place your hands on each side of the monitor.

2. Use your right hand to push in the tilt button. A leg will extend from the bottom of the monitor. Lift the back of the monitor until the angle is correct for you.

3. Release the button.

CARRY HANDLE

The monitor has a folding handle on the bottom that you can use to carry the monitor (Figure 10). The handle latches in place when you use the monitor.

KEYBOARD CONTROLS

The keyboard is shown in Figure 2. The main keypad is arranged exactly like a standard typewriter. The auxiliary, or numeric, keypad is arranged like a calculator. The editing keypad groups the editing keys for easy use.

A row of 20 keys is along the top of the keyboard. Two of these keys (**Help** and **Do**) are marked, while the other keys are blank. These blank keys are called special function keys. The function of each special function key is determined by the program running in the system.

Legend Strip Storage

The legend strip that comes with your Professional shows the function of each special function key. A hinged plastic window is above the special function keys. The window opens to allow you to place the legend strip behind it. You can also store other legend strips in this compartment.

You can easily make your own legend strip. The user guide that comes with the system software describes what each special function key does.

KEYBOARD INDICATORS

The keyboard has four indicators, located just above the **Help** and **Do** keys (Figure 11). The indicators help you monitor what is happening with the keyboard and system. They have the following meanings.

Lock	The keyboard is locked in uppercase.
Hold Screen	The screen display is temporarily stopped.
Compose	The computer will combine the next two keys pressed and create a special character.
Wait	The system is performing a function, and you cannot enter data or commands at the keyboard.

The user guide for your monitor contains more information about these indicators.

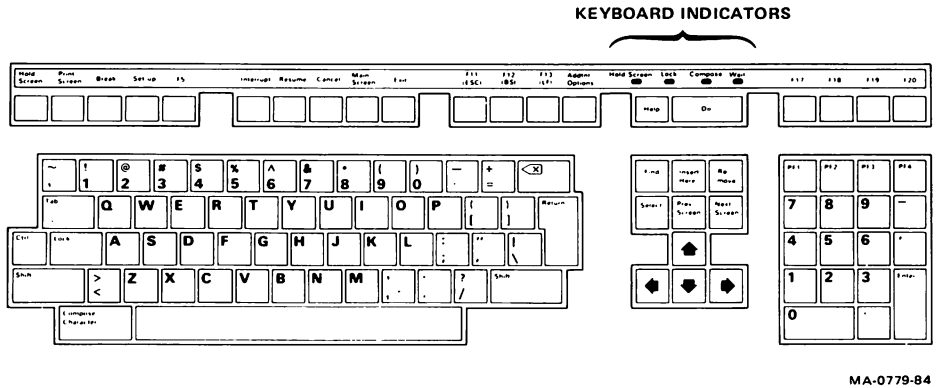


Figure 11 Keyboard Indicators

KEYBOARD SOUNDS

The keyboard generates a click whenever you press a key and a tone whenever the system wants to get your attention. When the tone sounds, look at the screen to find out what to do.

4 WHAT TO DO IF YOU HAVE PROBLEMS

Every Professional system contains a hardware self-test that checks all of the major system functions. If a problem is found, the self-test identifies what the problem is. The first section of this chapter describes the self-test.

The second section of this chapter describes how to use the test diskettes that come with your Professional system. This section also gives you the test results and explains what they mean.

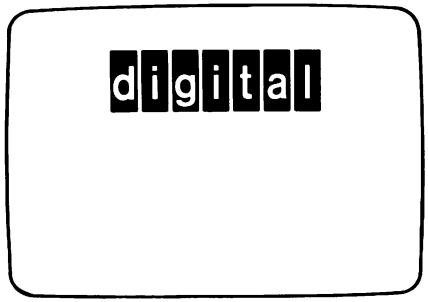
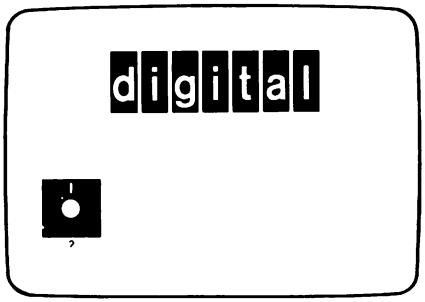
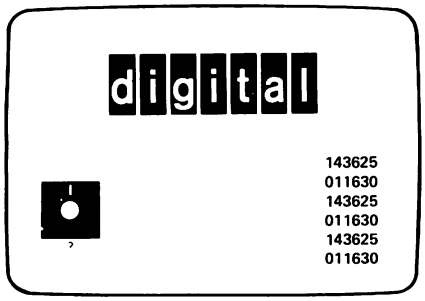
The third section of this chapter contains a troubleshooting chart that lists common problems that may occur and the steps you should take to correct them.

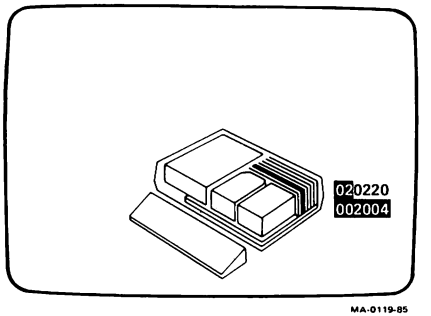
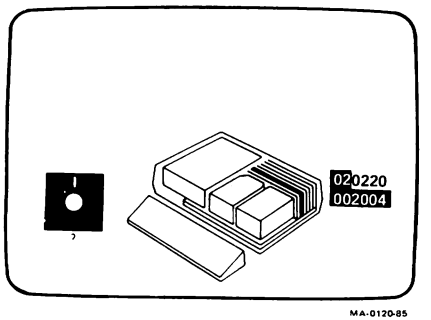
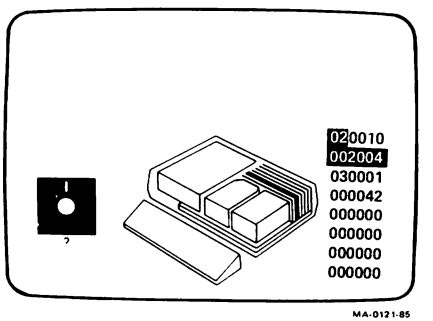
POWER-UP SELF-TEST

An internal self-test runs every time you turn on the Professional system power. The power-up self-test is automatic. You do not have to type in any commands or select any programs.

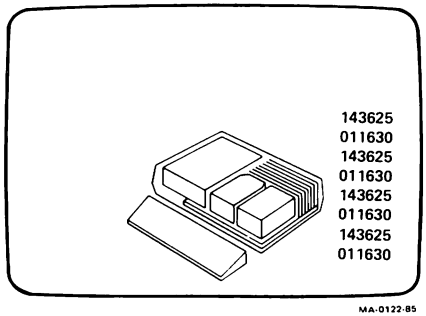
Graphic Displays

The results of the power-up self-test appear on the screen as one of the following graphic displays.

Graphic Display	Meaning/Corrective Action
 MA-0116-85	The system is functioning correctly.
 MA-0117-85	The system is functioning correctly, but there is no software diskette in the diskette drives or the hard disk is not operating correctly. The diskette should disappear as soon as you put a self-starting software diskette in the drive.
 MA-0118-85	The system hardware is functioning correctly, but the system failed to boot the operating system software. The diskette picture and the 6-line error code should disappear as soon as you put a self-starting software diskette in the drive.

Graphic Display	Meaning/Corrective Action
	The power-up self-test found a hardware problem, but the problem does not affect the entire system. You may have limited use of your system. (Refer to Table 2 in the Correcting Simple Problems section for instructions.)
	The power-up self-test found a problem and the system cannot find an operating system to boot. The diskette picture should disappear as soon as you put a self-starting software diskette in the drive. Then you may have limited use of the system. (Refer to Table 2 in the Correcting Simple Problems section for instructions.)
	The power-up self-test found a hardware problem, and the system has failed to boot the operating system software. The diskette picture and the bottom six lines of error code should disappear as soon as you put a self-starting software diskette in the drive. Then you may have limited use of the system. (Refer to Table 2 in the Correcting Simple Problems section for instructions.)

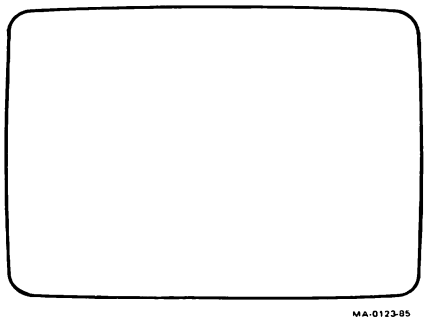
Graphic Display



Meaning/Corrective Action

The system hardware is functioning correctly, but an error was found in the system software.

Restart the system by turning the system power off and then on. If the problem continues, try a different diskette. The diskette that you have may be worn out.



A blank screen does not always indicate a problem with the system. Check and adjust the video monitor controls. Also check the cable connection between the video monitor and the system unit.

If the problem continues, you may have a system problem. (Refer to Table 2 in the Correcting Simple Problems section for instructions.)

Indicator Codes

In addition to providing graphic displays, the power-up self-test also turns the four red indicators on the rear of the system unit on and off. Each combination of on and off indicators forms a different code that shows any problem the self-test found. Table 1 helps you interpret the indicator codes.

NOTE: Make sure the green indicator is on. If the fan is running and the green indicator is on, continue reading the indicator codes. If the green indicator is off, refer to Table 2 in the Correcting Simple Problems section for instructions.

Table 1 Indicator Codes

Indicator				Meaning/Corrective Action
4	3	2	1	
○	○	○	○	The system is working.
●	○	●	●	The video monitor is not present. Make sure that the video monitor cable is not damaged. Check the cable connections at both the video monitor and system unit ends. (The straight connector connects to the system unit.)
●	○	○	●	The keyboard has failed. Make sure that the keyboard cable is not damaged. Check the cable connections at both the keyboard and video monitor ends. Check the video cable connections at both the video monitor and system unit ends.
●	○	●	○	The power-up self-test found a problem. The system is functioning correctly, but the system cannot find an operating system to boot. Since the system did not load the program, check the program diskette. Is the diskette the correct one? Is the diskette inserted correctly in the drive? (Refer to Table 2 for instructions.)

Table 1 Indicator Codes (Cont)

Indicator 4	3	2	1	Meaning/Corrective Action
●	●	○	●	The EBO daughter board has failed. Restart the system by turning the power switch off and then on. If the error remains, call a service technician.
●	●	●	○	The memory daughter card has failed. Restart the system by turning the power switch off and then on. If the error remains, call a service technician.
○	○	○	●	The module located in slot 1 of the system unit has failed. (Refer to Table 2 for instructions.)
○	○	●	○	The module located in slot 2 of the system unit has failed. (Refer to Table 2 for instructions.)
○	○	●	●	The module located in slot 3 of the system unit has failed. (Refer to Table 2 for instructions.)
○	●	○	○	The module located in slot 4 of the system unit has failed. (Refer to Table 2 for instructions.)
○	●	○	●	The module located in slot 5 of the system unit has failed. (Refer to Table 2 for instructions.)
○	●	●	○	The module located in slot 6 of the system unit has failed. (Refer to Table 2 for instructions.)
●	●	●	●	The system has failed. Check any connections to a printer, modem, or other device. Restart the system by turning the power switch off and then on. If the error remains, check the connected devices or call your service technician.
●	●	○	○	
○	●	●	●	
●	○	○	○	

○ = off
● = on

MAINTENANCE APPLICATION TESTS

This section describes how to use the maintenance application tests on your Professional. The maintenance application diskettes shipped with your Professional system contain the following eight tests and programs.

System unit test
Keyboard keys test
Printer test
Configuration display program
Bar pattern program
Update maintenance services program
Bigdisk block check
Minidisk block check

To use the maintenance application tests, perform the following steps.

1. Put the P/OS diskette in drive 1 and close the diskette drive door.
2. Turn the system power off and then on.
3. Follow the instructions that appear on the monitor:
   - Remove the P/OS diskette.
   - Place the maintenance application diskette in drive 1 and close the diskette drive door.
   - Insert the maintenance application diskette #2 in drive 2 and close the diskette drive door.
   - Press **Resume** on the keyboard.
4. Select the test you want to run.

For more information about the maintenance services and about each test, press the **Help** key on your keyboard after you select Maintenance Services from the Main Menu or after you select a test.

System Unit Test
The system unit test is a general test that checks the following system components.

- The electronic circuits that read and write data from the diskette drives
- The electronic circuits that read and write data on the hard disk drive
- The system printer connector circuits (this test does not send data to the printer)
- The electronic circuits that make up the floating-point processor
- The system's communication connector (COMM1) circuits (this test does not send data to or receive data from the communication device)
- Most optional equipment that is connected inside the system unit

To use the system unit test, perform the following steps.

1. Select the system unit test.
2. Press the **Do** key.
3. Wait about 2.5 minutes while the system runs the test.
4. Press the **Exit** key to return to the Main Menu.

While the test is running, the following message is displayed on the monitor screen.

```
SYSTEM UNIT UNDER TEST
```

A number appears below the message. As the test runs, the number counts down to 0. The word "working" flashes in the upper left corner.

System Unit Test Results – If the system unit test detects an error, the test places a system unit test summary on the screen. Press the **Help** key for more information.

Keyboard Keys Test
In this test, you check each key on the keyboard to make sure all the keys are working correctly.

To use the keyboard keys test, perform the following steps.

1. Select the keyboard keys test.

2. Press the **Do** key.

3. Wait about five seconds for the keyboard diagram to appear on the screen.

4. Press each key on the keyboard at least twice. The first time you press a key, the corresponding key on the keyboard diagram should be highlighted. The second time you press the key, the key will no longer be highlighted.

5. Press the **Exit** key five times to end the program.

Keyboard Keys Test Results – If a key fails to produce the results described in step 4 above, contact your service technician.

Printer Test

The printer test sends data to the printer connected to the system. Use this test if you have trouble sending data to the printer. Before using the test, you should make sure the power is turned on, the printer cable is securely connected at both ends and not damaged, and the controls are set correctly. You can find information about the printer controls in the manual that comes with your printer. Remember that some of the controls may be inside the printer. The Professional user's guides contain instructions on how to set the Professional system to work with the printer.

To use the printer test, perform the following steps.

1. Select the printer test.

2. Press the **Do** key.

3. Wait about 15 seconds for the test to print a pattern on both the printer and the screen. The pattern is less than a page long.

Printer Test Results – The pattern on the screen and the pattern on the printer should be the same. If the printer did not print the same pattern, or did not print at all, check the cables and printer switch settings. If the printer still does not print the same pattern or does not print, contact your service technician.

Configuration Display Program

The configuration display program tells you all of the components that are connected to the system. Use the configuration display program to determine the system ID number and what modules are connected to the system.

To use the configuration display program, perform the following steps.

1. Select the configuration display program.
2. Press the **Do** key.
3. Wait about five seconds for information to appear on the screen.

The following display is a typical example of what you will see when you run this program.

```
Identification number:      000000155069

System module:

Keyboard interface              Processor
Communications interface        Memory Management

Printer interface               Floating point adapter

Clock

512 kilobytes of memory

Option slot: 1                  Hard disk 10 megabyte
Option slot: 2                  Diskette controller
Option slot: 3                  EMPTY
Option slot: 4                  EMPTY
Option slot: 5                  EMPTY
Option slot: 6                  EMPTY

Keyboard:                       LK201
```

The "identification number" is the system identification number programmed into the system.

Below "system module" all the standard and extra equipment connected to the module is listed. In this case, the Professional has the standard printer, communication and keyboard interfaces, processor, memory management, and clock. The floating-point processor and 512 kilobytes of memory are also connected.

The name of the options in the option slots are displayed. If a number appears next to the option slot, it is the identification code (printed on the handle) of the option. You must use the update maintenance services program from the Maintenance Services Menu to include the name of the option.

"Keyboard" shows the type of keyboard connected to the system.

Configuration Display Program Results – The configuration display highlights the system components that did not pass the power-up self-test. If you see any highlights on the display, run the system unit test to make sure that there is a problem. If a problem exists, contact your service technician.

Bar Pattern Program

The bar pattern program displays a bar pattern on your screen. Use this program to adjust the video monitor controls. The program works with both monochrome and color monitors.

NOTE: The extended bit map must be connected before you can run the bar pattern program.

The bar pattern is made up of eight bars. Each bar is a different color or shade of gray. The bars appear as follows (from left to right on the screen).

(dark)							(light)
Black	Blue	Red	Magenta	Green	Cyan	Yellow	White

To use the bar pattern program, perform the following steps.

1. Select the bar pattern program.
2. Press the **Do** key.
3. Press the **Resume** key to return to the Maintenance Service Menu.

Update Maintenance Services Program
Most Professional series options come with a diskette that contains test programs. The update maintenance services program installs the option test program into the system unit test. In this way the new option is tested each time you run the system unit test, and the configuration display program recognizes the new component.

To use the update maintenance services program, perform the following steps.

1. Select the update maintenance services program.

2. Press the **Do** key.

3. Follow the instructions that appear on the screen.

After you have updated the maintenance services program, select the system unit test to test the new option. The configuration display program shows you the name of the options in their slots.

Bigdisk Block Check
If it is installed, this 3- to 5-minute test reads each block on the hard disk and determines if any data blocks are damaged. If there are damaged blocks, an error message appears telling you that you must reinstall P/OS after backing up any files you need to save. Reinstalling P/OS erases all the information on the hard disk. Press the **Help** key for more information. (This test only works if P/OS is installed on your hard disk.)

Minidisk Block Check
The minidisk block check reads each block of a diskette and determines if any data blocks are damaged. If there are damaged blocks, an error message appears telling you to reinitialize the diskette. Reinitializing a diskette erases all the information on the diskette. (This test only works with P/OS-initialized diskettes.)

To use the minidisk block check, perform the following steps.

1. Select the minidisk block check.

2. Press the **Do** key.

3. Follow the instructions that appear on the screen. These instructions will guide you through the procedure for checking questionable diskettes.

CORRECTING SIMPLE PROBLEMS

This section tells you how to correct simple problems without calling for service.

The information is organized by symptoms in Table 2. Use Table 2 as follows.

1. Determine what the system is or is not doing.
2. Find that symptom in the first column of Table 2.
3. Check the conditions listed in the second column.
4. Perform the corrective action given in the third column.

WARNING: Do not operate your Professional with the system unit cover removed.

Table 2 Correcting Simple Problems

Symptom	Conditions	Corrective Action
Nothing happens when you turn on the power switch.	The power cord is not connected to the system or wall outlet.	Reconnect the power cord to the system and the wall outlet.
	The circuit breaker has tripped.	Reset the circuit breaker by turning the power off, pushing in the circuit breaker (see Figure 7), and turning the power on.
	There is no power at the wall outlet.	Check the power by plugging a light into the outlet. Call an electrician if there is no power.

Table 2 Correcting Simple Problems (Cont)

Symptom	Conditions	Corrective Action
Nothing happens when you turn on the power switch, but the fan is running.	The green indicator on the back of the system unit is off.	Check the power cable on the back of the system module. If the problem remains, contact a service technician.
	The green indicator on the back of the system unit is on, and the four red indicators are off.	Check the monitor cable connections and adjust the monitor controls.
	The green indicator on the back of the system unit is on and the four red indicators are not all off (refer to Table 1).	Contact a service technician.
	The numbers 00 are the first two numbers of the top line next to the picture. The system module is highlighted. The system module is not working correctly.	Check all cables and connectors on the system module. If the problem remains, contact a service technician.
A picture of the system appears on the screen.	The numbers 01 are the first two numbers of the top line next to picture. The module installed in slot 1 of the system is not working correctly.	Check all cables and connectors on the module. With the power off, reposition the module in the indicated slot. Turn on the power again. If the problem remains, contact a service technician.

Table 2 Correcting Simple Problems (Cont)

Symptom	Conditions	Corrective Action
A picture of the system appears on the screen.	The numbers 02 are the first two numbers of the top line next to the picture. The module installed in slot 2 of the system is not working correctly.	Check all cables and connectors on the module. With the power off, reposition the module in the indicated slot. Turn on the power again. If the problem remains, contact a service technician.
	The numbers 03 are the first two numbers of the top line next to the picture. The module installed in slot 3 of the system is not working correctly.	Check all cables and connectors on the module. With the power off, reposition the module in the indicated slot. Turn on the power again. If the problem remains, contact a service technician.
	The numbers 04 are the first two numbers of the top line next to the picture. The module installed in slot 4 of the system is not working correctly.	Check all cables and connectors on the module. With the power off, reposition the module in the indicated slot. Turn on the power again. If the problem remains, contact a service technician.
	The numbers 05 are the first two numbers of the top line next to the picture. The module installed in slot 5 of the system is not working correctly.	Check all cables and connectors on the module. With the power off, reposition the module in the indicated slot. Turn on the power again. If the problem remains, contact a service technician.

Table 2 Correcting Simple Problems (Cont)

Symptom	Conditions	Corrective Action
A picture of the system appears on the screen.	The numbers 06 are the first two numbers of the top line next to the picture. The module installed in slot 6 of the system is not working correctly.	Check all cables and connectors on the module. With the power off, reposition the module in the indicated slot. Turn on the power again. If the problem remains, contact a service technician.
	The numbers 11 are the first two numbers of the top line next to the picture. The keyboard is highlighted. The keyboard is not working correctly.	Check all cables and connectors on the keyboard and monitor to the system box. If the problem remains, contact a service technician.
	There are no numbers next to the picture because the system cannot read the system program into memory.	Run the system unit test on the maintenance application diskettes. Try a different copy of the program diskette.
	A picture of a diskette is on the screen next to the picture.	Put the correct diskette into the drive.
A picture of a diskette is on the screen under the word Digital.		Put the correct diskette into the drive (self-starting diskette). If the problem persists, contact a service technician.

Table 2 Correcting Simple Problems (Cont)

Symptom	Conditions	Corrective Action
The keyboard does not work or some of the keyboard keys do not work.		Check the cables between the keyboard and video monitor. Run the keyboard keys test on the maintenance application diskettes. If the test fails, contact a service technician.
The printer does not print.	The cable between the printer and the system unit is not connected.	Reconnect the cable.
	The printer controls are not set correctly.	Reset the controls. Run any printer diagnostic programs. Refer to the printer manual for more information. Run the printer test on the maintenance application diskettes. If the test fails, contact a service technician.

Table 2 Correcting Simple Problems (Cont)

Symptom	Conditions	Corrective Action
The communication line is not working.	The cable between the system unit and the communication device is not connected.	Reconnect the cable.
	The communication feature settings are not the same as the settings at the other device.	Reset the settings. Run the system unit test on the maintenance application diskettes. If the test fails, contact a service technician.
The system has trouble reading diskettes.	The diskette is not the correct one to use with the system.	Use a Digital-certified diskette.
	The diskette is worn out.	Try a new diskette. Run the system test on the maintenance application diskettes. If the test fails, contact a service technician.
A picture of the system appears with a diskette.		Insert a system self-starting software diskette into the drive. If the boot fails, contact a service technician.
A picture of a diskette, a system with a highlighted area, and 8 error lines appear.	An option board is incorrectly seated in the card cage. You cannot boot the operating system.	Run the system test on the maintenance application diskettes. If the test fails, contact a service technician.

HOW TO GET YOUR SYSTEM REPAIRED 5

This chapter describes the steps you should take before you call one of the telephone numbers listed on the following page. It also describes the repair and support services available through service agreements.

HOW TO GET SERVICE

Digital Equipment Corporation has a service group in your area to help you get your system running with a minimum of trouble.

Before You Phone

- Step through Chapter 4 in this book. You can often solve a problem yourself.
- Write down your Professional system's serial number. The serial number is on the rear of the system unit, next to the power cord.
- Summarize the problem. Note what you were doing when the system failed. Also note if any indicators are turned on or off, or if you heard any new sounds just before or after the system failed.

When You Phone

- Be near the system.
- Have all your materials available. The service person may ask you to try to recreate the problem. To do this, use the same diskettes that you were using when the problem occurred.

Call Digital at one of the following telephone numbers.

Australia (local Sydney area)	(02) 412-5555
Australia (toll free)	(008) 226-377
Austria	(222) 67 76 10
Belgium	(02) 24 26 790
Canada	(800) 267-5251
Denmark	(4) 30 10 05
Finland	(0) 423511 or (90) 42 33 32
France	(6) 077 83 33
Holland	(1820) 31100
Ireland	(1) 308433
Italy	(02) 61 75 381 or 382
Japan	(03) 989-7200
Norway	(2) 25 64 22
Portugal	(1) 725402
Spain	(1) 73 38 061
Sweden	(8) 9888350
Switzerland	(01) 8105011
United Kingdom	(256) 59 200
United States	(800) DEC-8000
West Germany	(089) 95 91 95

REPACKING THE SYSTEM

If you have to return the system to Digital for service, you must repack the diskette drive with the shipping card that was in the drive when you received the system. To do this, perform the following steps.

1. Open the diskette drive doors.

2. Turn the system power on for five seconds. Then turn the power off.

3. Insert the shipping card into one of the diskette drives. Do not force the card in. If the card does not go in all the way, repeat steps 1 and 2.

4. Close the diskette drive doors.

5. Disconnect the system and repack it.

If your system has a hard disk, remove it for separate shipping in its original shipping container.

DIGITAL SERVICES

Digital provides a wide range of maintenance and customer services for the Professional system.

Digital On-Site Service

Trained service specialists perform fast, low-cost maintenance at your site. Digital provides on-site service under a service agreement or on a per call basis.

Carry-In Service

There are 160 Digital Servicenters worldwide that offer fast and dependable service. Digital provides carry-in service under a service agreement or on a per call basis. Call the appropriate service information number from the list above for the location of a Servicenter near you.

DECmailer

If you know how to troubleshoot, but need help for component repair, DECmailer provides a low-cost solution. DECmailer is a repair service for modules and subassemblies that provides 5-day turnaround at a Customer Return Center.

Spare Parts

Digital's Customer Spares organization provides support in the following areas.

- Spare inventory planning
- Maintenance test equipment
- Documentation
- Emergency spare parts

For more information on any Digital services, call the appropriate service information number from the list above.

PROFESSIONAL 380 SYSTEM SPECIFICATIONS A

SYSTEM UNIT

Functional

Processor	Digital J-11 microprocessor with floating-point processor and memory management unit
Diagnostics	Built-in power-up self-test
Main memory	512 Kbytes
Video memory	128 Kbytes
Standard video output	RS170-compatible, monochrome, bitmap graphics
Standard communication port	RS232-C/RS423 asynchronous/byte synchronous, up to 9600 baud with modem control
Standard printer port	Serial, RS232-C/RS423
Removable storage	RX50 dual-diskette drive (two 400-Kbyte, 5.25-inch diskettes), formatted, dual density
System expansion	6 option slots, user installable

Power

Power supply type	Transistor, switch-type ac to dc converter
AC input	Factory preset
115 V nominal	Single-phase, 3-wire, 100 to 120 V rms, 50 to 60 Hz line frequency
220 V nominal	Single-phase, 3-wire, 220 to 240 V rms, 50 to 60 Hz line frequency
Line current (maximum)	6 A at 115 Vac 4 A at 220 Vac
Power dissipation	320 W (maximum)
Circuit protection	Circuit breaker, externally accessible

Environmental

Temperature	10° to 40°C (50° to 104°F)
Humidity	20% to 80% relative humidity with maximum wet bulb of 25°C and minimum dew point of 2°C

Physical

Height	16.5 cm (6.5 in)
Length	55.8 cm (22 in)
Width	34.3 cm (14.3 in)
Maximum weight	15.9 kg (35 lb)

KEYBOARD

Functional

Electronics	8-bit microprocessor, 4 Kbytes of ROM, 256 bytes of RAM, 4 indicators, speaker
Cord	1.9 m (6 ft), coiled, 4-pin telephone-type modular connectors; plugs into video monitor
Keypad	Sculptured key array in four groups
Home row key height	3 cm (1.2 in) above desktop
Keys	105 keys with matte-textured finish
Size	1.27 cm (0.5 in) square
Spacing	1.9 cm (0.75 in) center-to-center (single-width)
Wobble	less than 0.5 cm (0.020 in)
Numeric keypad	18 keys
Function keys	20 keys; controlled by firmware and software
Diagnostics	Power-up self-test, generates identification code after test is passed

Physical

Height	5 cm (2.0 in) at highest point
Length	53.3 cm (21 in)
Width	17.1 cm (6.75 in)
Weight	2 kg (4.5 lb)

MONOCHROME MONITOR

Display

Characters	7 × 10 dot matrix includes 2-dot descenders
Format	24 lines, 80 or 132 characters
Physical	
Height	24.8 cm (9.75 in)
Width	29.8 cm (11.73 in)
Depth	31.1 cm (12.23 in)
Weight	6.5 kg (14.5 lb)
Cord	1.9 m (6 ft)
Adjustable tilt	+5° to 25°
Video format	Monochrome composite

COLOR MONITOR

Display

Characters	7 × 10 dot matrix includes 2-dot descenders
Format	24 lines, 80 or 132 characters
Physical	
Height	29.2 cm (11.5 in)
Width	34.9 cm (13.75 in)
Depth	31.1 cm (12.25 in)
Weight	6.4 kg (14 lb)
Cord	6 ft (1.9 m)
Adjustable tilt	+5° to 25°
Video format	Monochrome composite

RX50 DISKETTE SUBSYSTEM

Performance

Capacity/drive	819 Kbytes
Diskettes per drive	2
Number recorded surfaces	2
Bytes per track	5120
Bytes per sector	512
Sectors per track	10
Transfer rate	250 Kbytes/s
Average access time	290 ms

Functional

Rotational speed	300 r/min
Density	96 tracks/in

Physical

Height	8.4 cm (3.3 in)
Width	14.7 cm (5.8 in)
Depth	21.6 cm (8.5 in)
Weight	1.7 kg (3.8 lb)

HARD (WINCHESTER) DISK SUBSYSTEM

Performance	RD50 (5 Mbytes)	RD51 (10 Mbytes)	RD52 (32 Mbytes)
Formatted capacity			
Per drive	5 Mbytes	10 Mbytes	32 Mbytes
Per surface	1.25 Mbytes	2.5 Mbytes	4.12 Mbytes
Per track	8192 bytes	8192 bytes	8192 bytes
Per sector	512 bytes	512 bytes	512 bytes
Sectors per track	16	16	16
Transfer rate	5 Mbits/s	5 Mbits/s	5 Mbits/s
Average access time	170 ms	85 ms	37.5 ms
Functional			
Rotational speed	3600 r/min	3600 r/min	3600 r/min
density	255 tracks/in	345 tracks/in	695 tracks/in
Physical			
Height	8.25 cm (3.25 in)	8.25 cm (3.25 in)	8.25 cm (3.25 in)
Width	14.6 cm (5.75 in	14.6 cm (5.75 in)	14.6 cm (5.75 in)
Depth	20.4 cm (8 in)	20.4 cm (8 in)	20.4 cm (8 in)
Weight	2.3 kg (5 lb)	2.3 kg (5 lb)	3.18 kg (7 lb)