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Hardware Installation Manual
for the Sun-3/60 Workstation

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CAUTION

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

WARNING

There is a Lithium Battery (BBCV2) located on the Sun-3/260 CPU board; Matsushita Electric Type No. BR2325. This battery is **not** a customer replaceable part. The battery will be marked as follows: "Warning - Replace battery with MATSUSHITA ELECTRIC or PANASONIC part No. BR2325 only. Use of another battery may present a risk of fire or explosion." The battery may explode if mistreated. Do not dispose of in fire, attempt to recharge, or disassemble the battery.

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Preface

This manual (P/N 800-1528-XX) provides information for customers who have purchased the Sun-3/260 Pedestal Workstation. With this manual and the additional documentation shipped with your unit, you should be able to get your Sun-3/260 set-up and running properly.

The manual covers unpacking, connection of the monitor, keyboard, mouse, and Ethernet. Information on connecting a modem, printer or terminal to the serial ports is included. Basic procedures for connecting the unit to an existing Ethernet or setting up a new one are offered. Simple troubleshooting tips are given in the course of the text.

At the end of the text we have included a "comments sheet" for the user. Suggestions and constructive criticism on omissions, errors, or accuracy in this manual are needed from you, the user. Your responses will help toward keeping our documentation accurate and up to date.

1

Unpacking and Setting up the Sun-3/260

Unpacking and Setting up the Sun-3/260

This chapter describes how to unpack and set up your Sun-3/260. The "basic" Sun-3/260 consists of an increased resolution (1600x1280 pixel) monochrome monitor, single-board CPU, a memory board, keyboard, and mouse.

Some optional components of the Sun-3/260 include additional memory expansion boards, color monitor or gray scale monitor (in place of the monochrome monitor), Sun-3 Color Video board, Ethernet transceiver and cabling, VME-to-VME Adapter board, Graphics Processor and Graphics Buffer boards, and ¼-inch tape drive, SMD disk(s), and ½-inch streaming tape.

1.1. Safety Precautions

CAUTION **To avoid electric shock and/or a fire hazard, DO NOT REMOVE COVERS. Refer all servicing to qualified service personnel.**

1.2. Unpacking Instructions for the Sun-3/260

The basic components of the Sun-3/260 are shipped in 3 separate cartons:

□ the largest contains the pedestal, stabilizing wings, and external cables;

□ the smallest or "base box" contains this and other manuals (as you have already discovered), and may hold the mouse kit and additional cables;

□ the remaining box contains the monitor and keyboard.

When you receive your shipment, inspect all shipping cartons *immediately* for evidence of damage. If any shipping carton is severely damaged, request that the carrier's agent be present when the carton is opened. If the carrier's agent is not present when a carton is opened and the contents are found to be damaged, keep all contents and packing materials for the agent's inspection.

1.3. Tools Needed

To unpack your Sun-3/260, you will need:

□ a knife, to cut the packing tape and open the box

□ a 4 inch-by-size #0 Phillips screwdriver

□ a 4 inch-by-3/16 inch blade screwdriver

□ a 4 inch-by-1/8 inch blade screwdriver.

1.4. Unpacking the Pedestal

NOTE

> □ *The 12-slot 3/260 has a shipping weight of about 100 pounds. This will vary, depending on the number of boards shipped with the product. Two people will be needed to unpack and set up the pedestal.*

The bottom of the shipping carton is the side touching the pallet. The front of the shipping carton is the side facing the front of the pedestal (the front of the pedestal has a dark grey bezel). Left and Right are referenced by looking at the shipping carton from the front.

1. When unpacking the pedestal, carefully preserve and save the shipping materials for future use.

2. Cut the fiber banding that secures the pedestal's shipping carton to the pallet.

3. Remove the pedestal shipping carton from the pallet (keeping the carton in an upright position).

4. Remove the carton's top cover.

5. Lift out both the triangular box containing the pedestal's stabilizing wings and the square box containing the pedestal's external cables.

6. Lift up and away on the left side of the pedestal's shipping carton.

7. Tilt the right side of the shipping carton away from the pedestal to a 45° angle. Lift the right side away from the carton.

8. Unfold the right side of the bottom of the shipping carton, and lay the unfolded side flat on the floor.

9. Unfold the back side of the bottom of the shipping carton, and lay the unfolded side flat on the floor.

10. Lift up on the rear of the pedestal to clear the wheels from the foam, and remove the rear foam block. Set the rear of the pedestal down.

11. Lift up on the front of the pedestal and remove the front foam block. Set the front of the pedestal down onto its wheels, and roll the pedestal to the desired location.

To repack the pedestal into its shipping carton, reverse the steps used to unpack it. *Remember to unfold the carton bottom's right and back sides before rolling the pedestal back into the carton.*

Pedestal Stabilization Wings

To eliminate any possibility of the pedestal accidentally tipping over (this is not likely, but it *could* happen), Sun has provided you with stabilization "wings" that you should now attach to the pedestal chassis. The wings were packed in the triangular box you removed from the pedestal shipping carton during unpacking.

You will need the following tool to attach the stabilization wings.

▫   One #2 Phillips Screwdriver

Attach the stabilization "wings" to the pedestal chassis using the following guidelines.

NOTE   *It is **not** recommended, nor is it necessary, to turn the pedestal upside down to attach the stabilization wings.*

1.   Get the triangular box containing the stabilization wings, and place it beside the pedestal. Inside the box, you should find the wings and four Phillips screws. The screws are used to attach the wings to the bottom of the pedestal.

2.   Referring to the following figure, and working from either the left or right side of the pedestal, slide one of the wings into its three retaining tabs on the bottom of the pedestal.

3.   As shown in the figure, align the holes in the wing with the threaded screw holes in the vertical tabs projecting from the pedestal's bottom.

4.   Using two of the 8-32 Phillips head screws (one for each end of the wing), secure the wing to the pedestal bottom.

5.   Repeat the previous three steps for the remaining wing on the opposite side of the pedestal.

Figure 1-1   *Attaching the Pedestal Stabilization Wings*
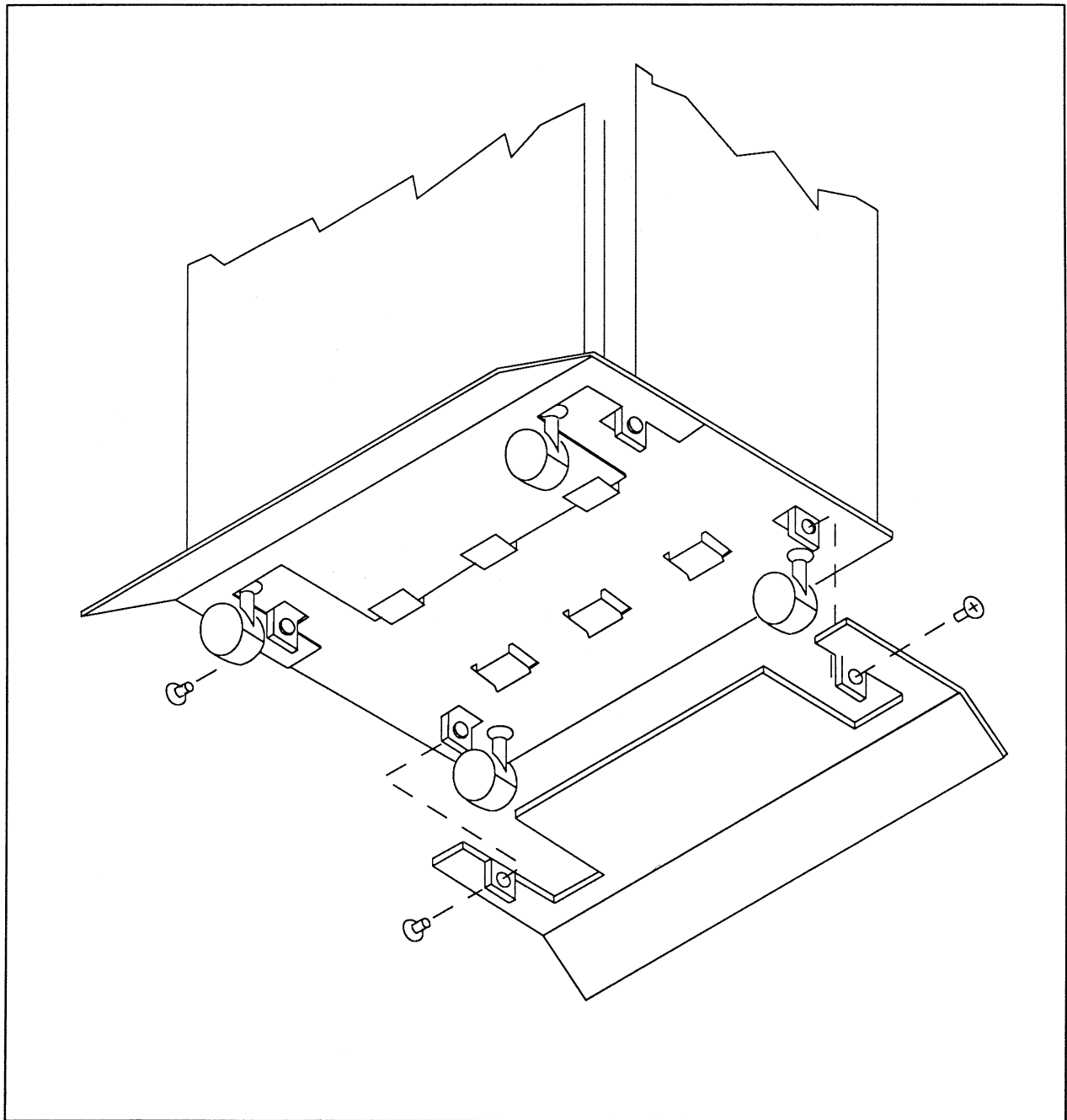
Save the shipping carton and packing material for future use in case the product must be reshipped; any products shipped back to Sun must be repacked in their original Sun shipping cartons.

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1.5. Unpacking the Keyboard and (Grayscale or Monochrome) Monitor

NOTE

- □ *The shipping weight of the keyboard and monitor is about 75 pounds, two people should be available during unpacking and moving of the unit to the work area.*

- □ *The keyboard is always shipped with the monitor. Unpacking instructions for monitors are given in the following pages.*

If you find your monitor package has banding as well as a tape seal on top, you probably have one of the newest SUN cartons. Upon cutting the banding and top tape seal and opening the flaps, you should see a ''tray'' that holds cables, monitor documentation, the keyboard box and mouse kit.

1. Remove the cables, documents, keyboard and mouse from the top ''tray''.

2. Remove the top ''tray'' completely.

3. Pull the top of the container off of the monitor.

4. Remove the right and left foam pads attached to the monitor.

5. Pull the protective bag down to the base of the unit to expose the monitor.

6. With one person standing on either side of the monitor, carefully lift the unit out and away from the remaining packaging materials and place it in the work area.

7. Remove the mouse (and its pad) and the keyboard from their containers.

   We recommend that you save the shipping carton and packing material for future use in case the product must be reshipped; any products shipped back to Sun must be repacked in their original Sun shipping cartons.

Unpacking the 19-inch Color Monitor

NOTE

- □ *The shipping weight of the keyboard and color monitor is about 100 pounds, two people should be available during unpacking and moving of the unit to the work area.*

- □ *The keyboard is always shipped with the color monitor.*

Use the following instructions in unpacking your Sun-3 color monitor:

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1. You may place a pad or a cushion down upon a flat surface in an open work-
    ing area (to protect the monitor from being scratched while you unpack it).
    Give yourself plenty of space to move around.

2. Place the carton right-side up. Cut the shipping tape with a knife, taking
    care not to damage the contents within. Open the four top flaps.

3. Remove the keyboard box.

4. Using care, roll the carton first on one side, then upside down, keeping the
    flaps open.

5. Lift the carton up and off of the color monitor.

6. Remove the side foam pieces and the protective plastic bag.

7. Remove the foam piece between the monitor and its base.

The monitor is now ready for placement in the work area.

We recommend that you save the shipping carton and packing material for future
use in case the product must be reshipped; any products shipped back to Sun
must be repacked in their original Sun shipping cartons.

1.6. Unpacking the "Base Box".

The final (and smallest) box know as a "base box" may contain Ethernet cable
(if ordered), software tapes, the mouse kit, (if you ordered a color monitor) and
various optional equipment. Take this equipment out as needed.

2

Basic Component Set-up

Basic Component Set-up

CAUTION   Follow these safety precautions:

□   Before plugging in the power cord of any component of your Sun system, be sure that the line power supply voltage and frequency are as required by the label on the back panel of your Sun-3/260 pedestal and monitor.

□   Use only three-prong (grounded) outlets.

□   Make certain that all servicing is performed by qualified personnel.

□   Finally, DO NOT plug in the power cord until explicitly instructed to do so!

2.1. Connecting the Keyboard, Mouse, Ethernet, and Video

CAUTION   Before attempting any of the following connections, make certain that:

□   The OFF/ON switch on the front of the pedestal is OFF (side with the "0" is pushed in), and

□   The AC power cord is unplugged from the rear of the pedestal.

The Sun-3/260 comes with its boards already installed in the pedestal. Should you want to add more boards after your initial purchase, a document covering the hardware configuration or options will be included with your order. The CPU board, to which the keyboard, mouse, Monochrome Monitor, and Ethernet will be connected, is in slot one, the slot to the furthest left when facing the rear of the machine. The color connectors, to which RGB color and grayscale video will be connected, are located on the rear edge of the Sun-3 Color board. The color board is easily identified by the row of four round BNC connectors located on the rear edge.

The keyboard, mouse, Ethernet, serial I/O, and video connectors are arranged on the rear edge of the CPU board as shown below. The CPU board will be in slot 1; you can identify it by its vertical row of D connectors, and the small bank of 8 diagnostic LEDs among these connectors.

Figure 2-1   *Sun-3/260 Connectors on the rear edge of the CPU Board*
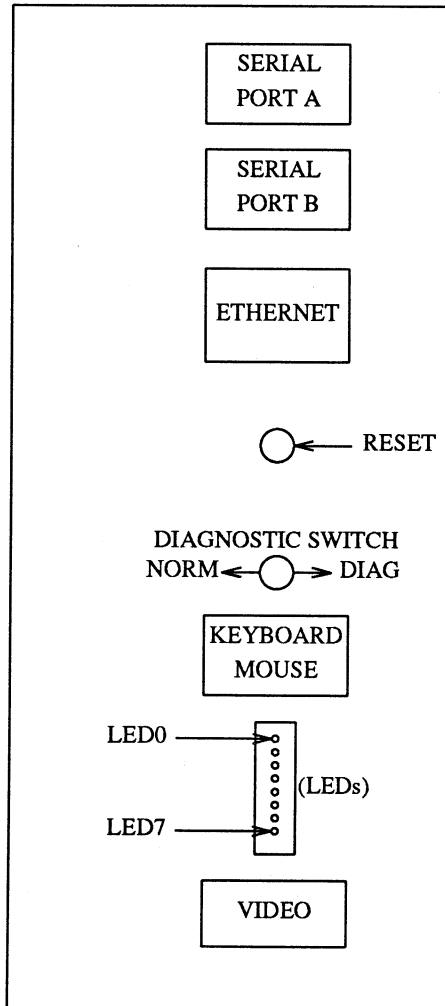
This section describes how cables will be connected from the rear edge of the CPU board to each of the following items:

□   keyboard,

□   mouse,

□   Ethernet, and

□   monochrome monitor.

This section also describes the:

▫   DIAGNOSTICS switch, and

▫   RESET switch.

The two remaining connectors, marked SERIAL PORT A and SERIAL PORT B are serial I/O ports to which can be connected peripherals such as modems, printers, and other terminals.

After removing the manuals and cables from the smallest carton, attach the keyboard, mouse, and Ethernet to the pedestal's CPU board in the following ways:

CAUTION   **Never plug-in or unplug your Keyboard/Mouse while the system is powered up. Make sure the pedestal is switched 'OFF' (switch side with the '0' is pushed in). The pedestal should also be unplugged for extra safety.**

Keyboard and Mouse Connections

1.   The keyboard cable is permanently connected to the keyboard; the other end plugs into the DB-15 (15-pin D connector) at the rear edge of the CPU board. Find your keyboard cable and plug it in now to the KEYBOARD connector on the rear edge, then tighten the screwlocks.

2.   Find the mouse and its cable. The mouse is a little rectangular box with three long buttons which is permanently attached to its connecting cable.

▫   The mouse plugs directly into the keyboard itself; there is a phone type connector for the mouse in the top middle area of the keyboard. Find the mouse and its cable and plug this cable into the phone connector on the keyboard now.

▫   Take out the mouse pad, a hard shiny metallic plate about 9 inches by 11 inches. The mouse sits on the shiny side of the pad which has the grid of lines, and the pad must be oriented so that its length is **horizontal** in relation to the mouse (see the figure that follows; "Orienting the Mouse on its Pad"). After setting your system up and logging into SunWindows™, moving the mouse across the face of the pad will cause the arrow to move across the display.

Figure 2-2   *Orienting the Mouse on its Pad*
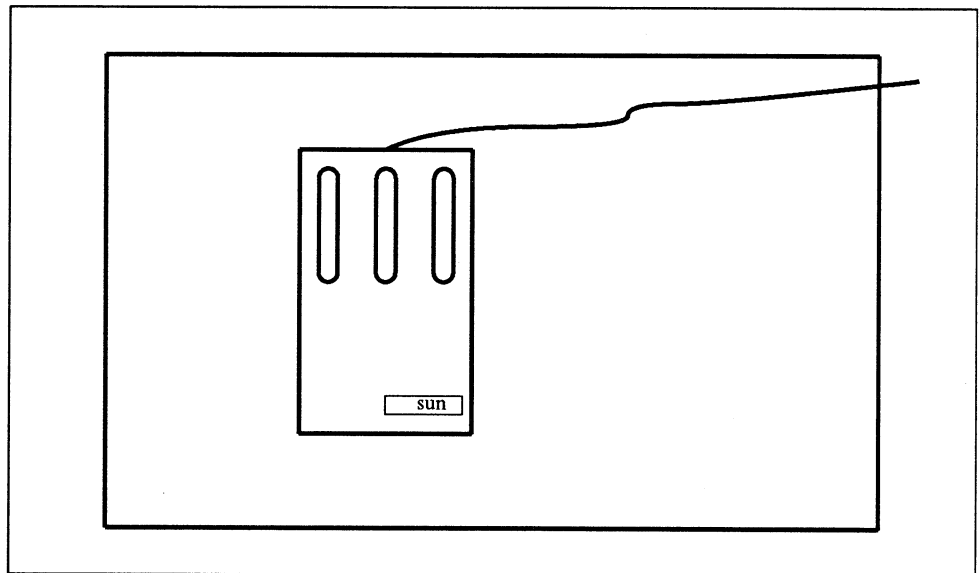
**Ethernet Cable Connection
and Jumper Setting**

Find the Ethernet transceiver cable.† It is a thick cable with 15-pin D connectors at both ends.

NOTE   *Before going on, make certain that the 8-pin level selection jumper on the CPU board is properly configured. The board is set at the factory to run a Level 2 Ethernet transceiver, and a jumper will be in place at position 1—2 and position 7—8 when your machine arrives. All transceivers sold by Sun Microsystems will operate properly with a Level 2 Ethernet setting. If you purchased your transceivers from Sun no level adjustment is necessary. If you are using a Level 1 Ethernet transceiver, you will need to add a jumper across the pin 5—6 position and leave the other jumpers in place. Perform the following procedures only if you need to place a jumper across the pin 5—6 position and run a Level 1 Ethernet transceiver. If the 8-pin level selection jumper is incorrectly configured, your transceiver may not work properly. Examples of transceiver types are listed below, and the following figures show the board placement, extraction lever and jumper location.*

Examples of Level 1 transceivers are the TCL 2010E, 3COM 3C100, and the Interlan NT10.

Examples of a Level 2 transceiver are the TCL 2010I, 3COM 3C101, 3C102, BICC 1110.

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†This section is optional, and is only for those who need to connect their Sun-3/260 to an Ethernet.

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Note that multiplexer boxes such as Digital Equipment Corporation's DELNI require a transceiver.

NOTE   *While these transceivers are compatible with Sun equipment, it should be understood that Sun does not guarantee the performance of any component not purchased from Sun.*

To access the 8-pin level selection jumper and place a jumper at location 5—6, you will need to partially remove the CPU board using the following instructions:

CAUTION   **This board contains components that are sensitive to damage from electrostatic discharge, which can occur when you walk across a carpet and then touch the board. Before handling the board, make sure that you have placed your hand on a conductive surface that is grounded to a common earth ground, (such as the metal screws on an AC receptacle cover) to discharge any static electricity present in your body.**

1.   Make sure that the workstation is **not** connected to a power source.

2.   Turn the pedestal so that you are facing the rear of the unit.

3.   Remove the two hex-head type screws that attach the board to the computer pedestal. There is one at the top and one at the bottom. You will need a 3/32nds (2.5 x 45 mil) hex (allen) wrench to do this.

4.   Simultaneously push the two extraction levers, located at each end of the board, away from the center of the machine. You will push the top lever up, and the bottom one down. This will pop the board out about ½ inch (13 mm). You will notice that the rear edge of the board has serrated metal strips called "springfingers" on each side. Please see the caution at the beginning of Chapter 3 for more information regarding their use.

Figure 2-3   *CPU Board and Extraction Lever Location*

Extraction Lever
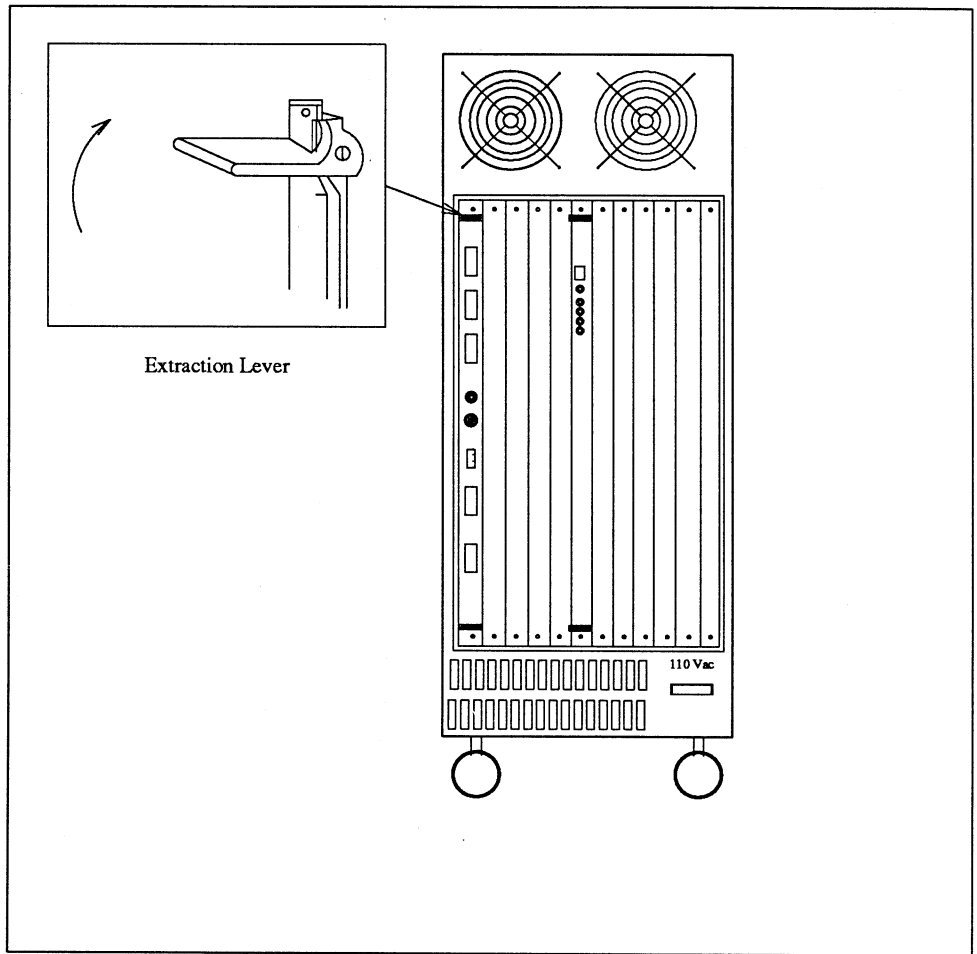
5. Now gently slide the board out until you can see the 8-pin level select
    jumper that is located approximately 1 inch (2.5 cm) behind the Ethernet
    connector, near the center of the board's rear edge. Reference the following
    figure.

Figure 2-4   *Location of the 8-pin Level Select Jumper Connection*
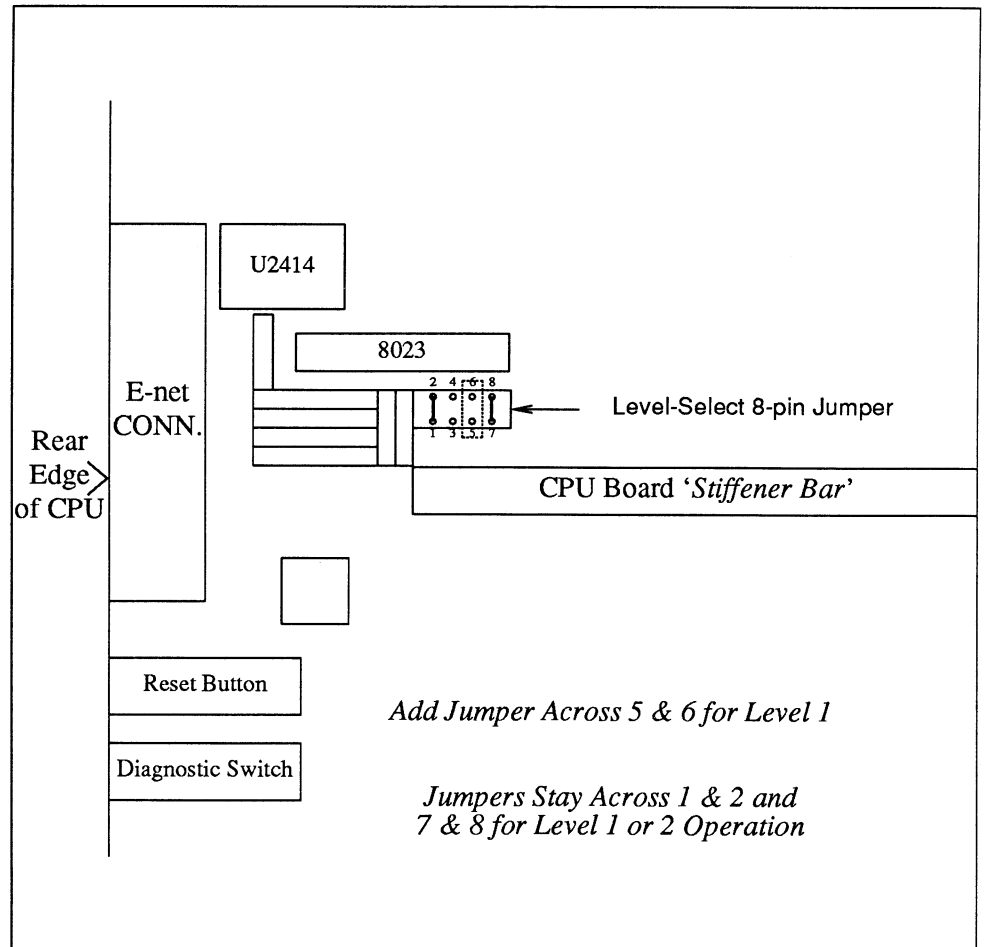
6. As previously mentioned, the board is factory configured for a Level 2, transformer type transceiver, which means there is a jumper at location 1—2 and position 7—8. If you have a Level 1, capacitive coupled type transceiver, add a jumper across position 5—6, but do not remove either of the other jumpers.

7. Replace the board by pushing it back into the slot. Make sure the board is seated securely, and the retaining screws are tightened.

Examples of Level 1 and Level 2 transceivers are at the beginning of this section.

Connecting the Ethernet Transceiver Cable

1. Find the Ethernet transceiver cable. It is a thick cable with 15-pin D connectors at both ends, also called a "drop" cable. The male end of the Ethernet cable has a pair of metal studs that fit into the slide lock assembly attached to the CPU board's "ETHERNET" jack. Plug this male end into the "ETHERNET" jack. Push the slide lock over the studs to fasten the D connector securely in place.

2. The female end of the cable has the slide lock assembly attached to *it*; plug this end into the Ethernet transceiver and lock it securely also.

NOTE   *After completing the above connections, you may refer to "Connecting the Sun-3/260 to the Ethernet," later in this chapter, for further instructions regarding Ethernet installation.*

2.2. Connecting a Video Monitor to the Sun-3/260

Your 3/260 comes equipped to use either an increased resolution (1600x1280 pixel) monochrome monitor, or (optional) color, or grayscale monitor.

Connecting the Black and White Monitor to the Sun-3/260

CAUTION   **Before beginning the following connections, make certain that the AC power switches of the pedestal AND the monitor are OFF. The OFF position of the AC power switch is with the side marked "0" pushed in.**

If you have a 3/260HM (1600x1280 pixel display) workstation, you have a monochrome (black and white) monitor. You will connect the monochrome monitor to the video connector on the CPU board.

Find the monochrome monitor's video cable. The monitor's video cable has a 9-pin D connector at each end.

1. Plug the male D connector of the video cable into the "VIDEO" jack on the rear of the pedestal, and tighten the screws.

2. Plug the female D connector of the video cable into the "VIDEO" input of the monitor and tighten the screws on it.

Find the monitor power cable; it is a standard three-prong (or "mains," if European) cable.

1. Plug the female end into the power receptacle on the rear of the monitor.

2. Plug the male end into the AC source (wall receptacle).

3. Turn the monitor's power switch to the ON position.

The monitor will slowly come on. You should also notice a crackling sound of static — if the screen does not come on within fifteen seconds after powering-up the pedestal, try rotating the brightness control on the rear of the CRT.

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Connecting a Color Monitor

If you have a Sun-3/260C, then your machine comes with a color monitor and a Sun Color Video board. Four RGB-Sync cables (bundled together as one) attach the video connectors on the Sun-3 Color Video board to the color monitor.

Find the RGB video cable. The video cable is a jacketed bundle of four 15-foot lengths of coaxial cable with color-coded male BNC connectors at each end. Refer to the figure titled "Color and Sync Connections," for the following color video connections.

1.   Plug the "red" cable into the female BNC connector marked "RED" on the rear edge of the Sun-3 Color Video board; connect the other end of this cable into the similar connector marked "RED" on the rear of the color monitor.

2.   Plug the "green" cable into the female BNC connector marked "GREEN" on the rear edge of the Sun-3 Color Video board; connect the other end of this cable into the similar connector marked "GREEN" on the rear of the color monitor.

3.   Plug the "blue" cable into the female BNC connector marked "BLUE" on the rear edge of the Sun-3 Color Video board; connect the other end of this cable into the similar connector marked "BLUE" on the rear of the color monitor.

4.   Plug the remaining cable into the female BNC connector marked "sync" (composite sync signals) on the rear edge of the Sun-3 Color Video board; connect the other end of this cable into the similar connector marked "SYNC" on the rear of the color monitor. Keep in mind that the previous instructions are completed the same way, regardless of whether your color terminal has its connectors lined up in a horizontal or vertical order.

5.   Finally, if your color monitor has impedance switches on the back of the monitor (marked "75Ω/High") make sure they are set to the "75Ω" position.

Find the monitor power cable; it is a standard three-prong ("mains," if European) cable. Make certain the monitor is OFF (side of the switch with "0" is pressed in).

1.   Plug the female end into the power receptacle on the rear of the monitor.

2.   Plug the male end into the AC source (wall receptacle).

3.   Turn the monitor's power switch to the ON position.

The monitor will slowly come on. You should also notice a crackling sound of static — if the screen does not come on within fifteen seconds after powering-up the pedestal, try rotating the brightness control that is located at the rear of the monitor.

Figure 2-5   *Color and Sync Connection Example*
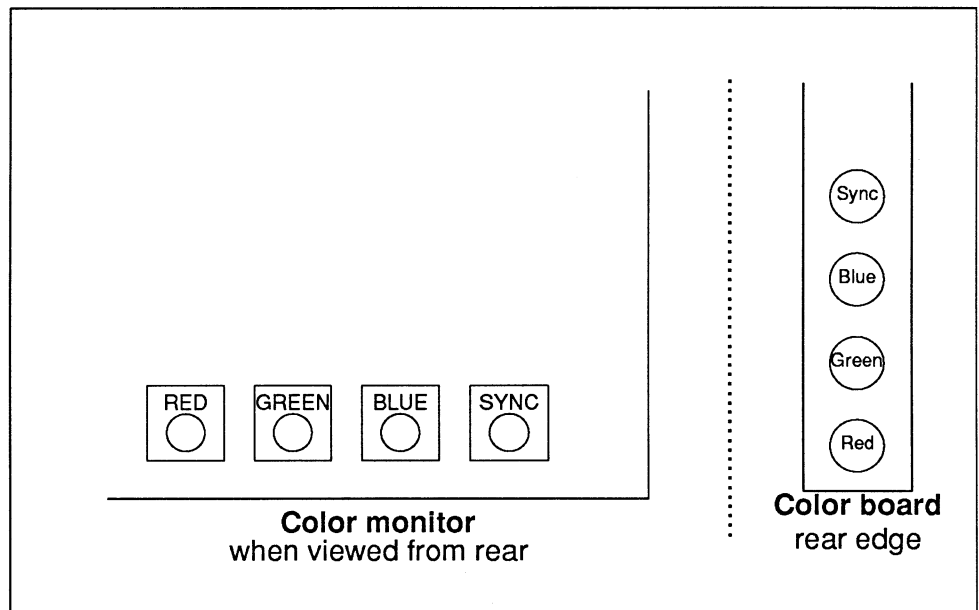
2.3. Connecting Grayscale Monitors to the Sun-3/260

If you have a Sun-3/260G, then your machine comes with a grayscale monitor and a grayscale video cable. The Sun-3 Color Video board is also used with the grayscale video cable, and you will need to read the following connection instructions.

Sun currently supplies grayscale monitors with two separate types of video connections on the rear of the monitor. Both are simple to hook up, and both are described and illustrated in the following text. The grayscale cable connection for either type of monitor is made from the rear edge of the Sun-3 color board to the back of the grayscale monitor, (reference the following two figures). The grayscale video cable fits one of the following descriptions:

□   The first type has two BNC connectors on one end and a single video connector on the other end

□   The other type of grayscale cable has two BNC connectors at each end

CAUTION   **Before beginning the following connections, make certain that the AC power switches of the pedestal AND the monitor are OFF. The OFF position of the AC power switch is with the side marked "0" pushed in.**

Attach the first type of grayscale video cable by doing the following:

1.   Plug the BNC connector of the cable, labeled "SYNC" to the female BNC connector marked "SYNC" on the rear edge of the Sun-3 Color Video board.

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2.   Connect the P1 BNC connector, labelled "VIDEO", onto the RED BNC connector on the rear edge of the Sun-3 Color Video board.

3.   Insert the other end of the video cable into the connector on the back of the monitor and secure the two attached screws.

Figure 2-6   *Color Output and Grayscale Connection Example*

Grayscale monitor
when viewed from rear

Color board
rear edge
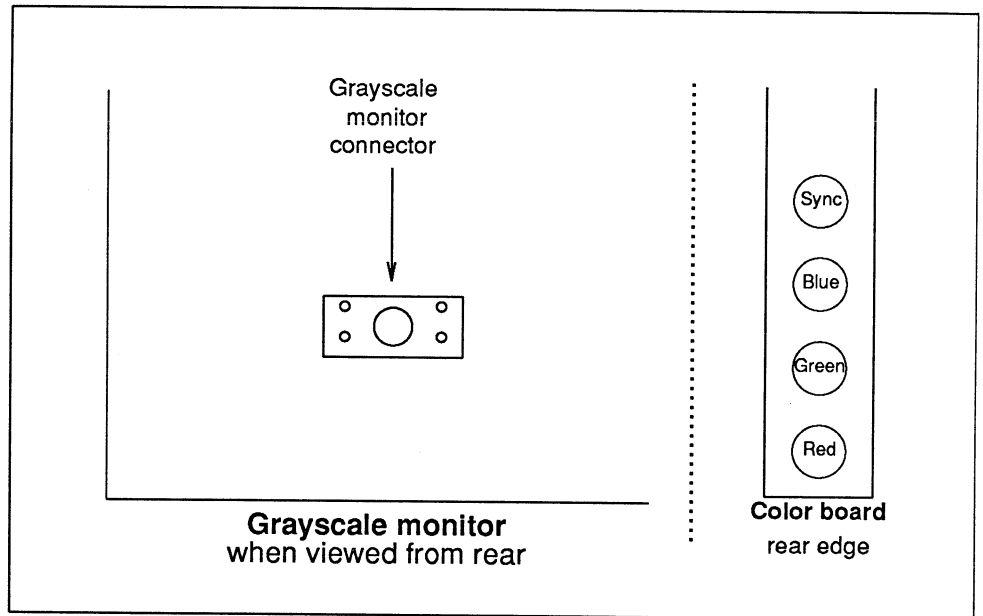
Attach the second type of grayscale video cable by doing the following:

1.   Plug one of the BNC connectors labeled "SYNC" to the BNC connector marked "SYNC" on the rear edge of the Sun-3 color board.

2.   Attach the BNC connector, labelled "VIDEO", onto the RED BNC connector on the rear edge of the CPU board.

3.   Plug the "SYNC" BNC connector at the opposite end of the cable to the "SYNC" BNC connector on the back of the grayscale monitor.

4.   Attach the remaining BNC to the "VIDEO" BNC connector on the back of the monitor.

Figure 2-7   *Color Output and Grayscale Connection Example*
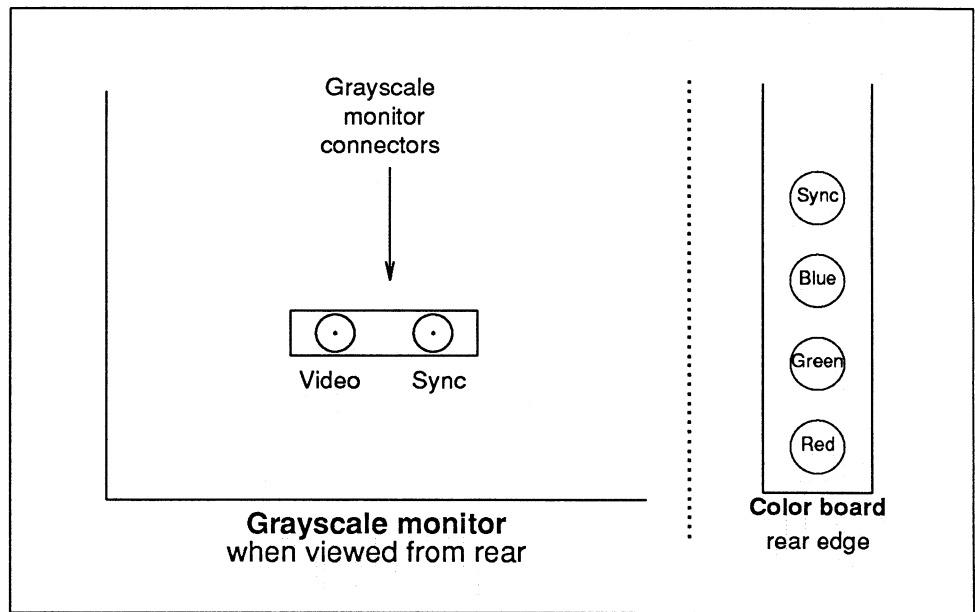
NOTE   *If you accidently reverse the BNC connections, the grayscale monitor will not work properly. If the video display malfunctions after you have powered up the 3/110, recheck the grayscale video connectors.*
Find the monitor power cable; it is a standard three-prong cable. Make certain the monitor is OFF (side of the switch with "0" is pressed in).

1.   Plug the female end into the power receptacle on the rear of the monitor.

2.   Plug the male end into the AC source (wall receptacle).

3.   Turn the monitor's power switch to the ON position.

The monitor will slowly come on. You should also notice a crackling sound of static — if the screen does not come on within fifteen seconds after powering-up the pedestal, try rotating the brightness control on the rear of the CRT.

Diagnostic and User Reset Switches

There are two switches on the back of the CPU board, labelled DIAG/NORM and RESET. Before you power-up your 3/260, read the following explanation to avoid confusion regarding their functions and uses.

□   If you do *not* want to enable "extended" diagnostics when you power up, turn the DIAG/NORM switch to NORM. Ordinarily you place the DIAG/NORM switch in the NORM position when booting or running the system.

□   If you *do* want to enable "extended" diagnostics at the end of the standard power-on diagnostics, turn this switch to the DIAG position.

▫   Do *not* leave the diagnostic switch in the center (null) position.

NOTE   *If you place the DIAG/NORM switch in the DIAG position, power-on diagnostic messages are sent to serial port A — so you must have a terminal connected to port A in order to see them. If the switch is placed in the DIAG position, the monitor will pause for about ten seconds between the power-on diagnostics and the normal boot cycle. During this pause, if a key is depressed on either the workstation keyboard or a terminal attached to serial port A, you will call up the extended diagnostics menu. If no key is depressed by the end of the ten second pause, normal boot cycle will automatically start and you will bypass the extended diagnostics.*

▫   If you press the RESET button on the back of the CPU after powering-up the machine, you will force a User Reset of the system. This causes a "Watchdog Reset" that will perform the action defined in Address 0x17 of the EEPROM. A value of 0x12 at that address will cause a Power-on-Reset; any other value will cause the system to drop into the Boot PROM "monitor" program. The monitor program is indicated by a (>) prompt on the screen.

During this time, the memory board/s will continue to preserve their contents by refreshing themselves. Pressing the RESET on the CPU will not reset the memory board/s, and the green LEDs on the back of the memory board/s should continue to indicate activity. To exit from the monitor program, you may reboot the system. For more detailed information, please see *Installing UNIX on the Sun Workstation*, part number 800-1521-XX.

Reboot the system by typing "b" (for "boot") and press the return key.

> **>b <return>**

The system will now begin to automatically reboot.

2.4. Powering Up the Sun-3/260

CAUTION   **Before going on, make certain that the AC power switch to the monitor is ON (the side with the "1" is pushed in) and the AC power switch to the pedestal is OFF (the side with the "0" is pushed in).**

So far you have made certain that

1.   the monitor and pedestal have a voltage and fuse rating set correctly for available AC power,

2.   the monitor is plugged into AC power at a convenient wall outlet,

3.   the DIAG/NORM switch is in the NORM position, and

4.   the power switch of the monitor is turned ON.

Find the pedestal's AC power cord. The AC power cord has a three-slot female plug at one end and a three-pronged wall (or "mains," if European) plug at the

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other end. Plug the female end into the AC input on the bottom rear of the pedestal.

Again make certain that the AC power switch on the pedestal is OFF (side of the switch with the "0" is pushed in), then plug the other end of the AC power cord into the AC wall receptacle.

Next, turn the power switch on the front of the Sun-3/260 pedestal ON (side with the "1" is pushed in). You should see (or hear) several things happen:

□   the fans inside the pedestal will come on, and

□   the monitor screen will light up, also

□   the eight diagnostic LEDs on the CPU board will begin blinking on and off; and, the two green LEDs on the back of the memory board/s should light up. The upper green LED will continue to flicker as long as the CPU continues to access the memory board/s. (see below, "Power-On Self Test Procedures" and the table following, "Diagnostic LEDs").

The blinking LEDs on the back of the CPU board indicate that the Sun-3/260 is going through a self-test; when this self-test is successfully completed, a message similar to the following will come onto your screen:†

```
        Self Test Passed

        Sun Workstation, Model Sun-3/200 Series, Sun-3 Keyboard
        ROM Rev --,__MB Memory installed, Serial # - - - -
        Ethernet address --:--:--:--:--:--
        Testing __ Megabytes of Memory... Completed
```

For further information describing how to bring up UNIX,‡ log on, and choose your password, please see *Installing UNIX on the Sun Workstation*, part number 800-1521-XX.

CAUTION   **To avoid damage to internal circuitry, do not disconnect the keyboard while the workstation is powered-up.**

2.5. Power-On Self Test Procedures

The central processor board (CPU) of the Sun-3/260 has a programmable read-only memory (PROM) chip which contains a program generally known as the "monitor." The monitor program controls the operation of the system before the UNIX kernel takes control and was briefly discussed when we talked about using the RESET button.

When system power is first turned on, the monitor program runs a self-test procedure, a running commentary of which is carried by the eight LEDs on the rear

---

†Parts of this message are conditional: the "Sun-3/---" may not be displayed, and the dashed areas will vary, based on the system you ordered and its options.
‡UNIX is a trademark of AT&T Bell Laboratories.

edge of the CPU board. The length of this test will vary, depending on the number of memory boards installed in the system, but will always finish in less than 2 minutes. Results of this self-test are contained in the following table; a solid circle means the light is on; a hollow circle means the light is off. Also, left to right in the table is equivalent to reading the LEDs from top to bottom when the CPU board is in its slot.

If at some point in the above sequence, the LEDs freeze (keep the same pattern for more than 2 minutes), or the sequence restarts from the beginning, there is a critical hardware problem with the workstation. The appropriate thing to do in this case is to contact Sun Microsystems Field Service or your local Field Service organization. Copy down the pattern of lights (as well as you can, if it is repeating over and over); they contain important diagnostic information for Field Service.

Table 2-1   *Diagnostic LEDs*

LEDs ●= ON, o = OFF 0 ... 7								What the System is Doing When These LEDs Are Cycling	What Might Be Bad If This Indication Stays On And LED 6/7 Lights
●	●	●	●	●	●	●	●	A reset sets LEDs to this state	CPU or PROMs bad or +5VDC is low
●	○	○	○	○	○	○	○	Test 0x01 checking PROM checksum	Boot PROM
○	●	○	○	○	○	○	○	Test 0x02 checking DVMA Register	CPU Board
●	●	○	○	○	○	○	○	Test 0x03 checking the Context Register	CPU Board (MMU)
○	○	●	○	○	○	○	○	Test 0x04 Segment Map RAM wr/rd test	CPU Board (MMU)
●	○	●	○	○	○	○	○	Test 0x05 checking Segment Map RAM	CPU Board (MMU)
○	●	●	○	○	○	○	○	Test 0x06 checking Page Map RAM	CPU Board (MMU)
●	●	●	○	○	○	○	○	Test 0x07 performs memory path data test	CPU or Memory Board
○	○	○	●	○	○	○	○	Test 0x08 is nonexistent memory bus error test	CPU or Memory Board
●	○	○	●	○	○	○	○	Test 0x09 checks interrupt capabilities	CPU Board
○	●	○	●	○	○	○	○	Test 0x0A performs TOD clock interrupt test	CPU Board
●	●	○	●	○	○	○	○	Test 0x0B checking MMU protection and status	CPU Board (MMU)
○	○	●	●	○	○	○	○	Test 0x0C performs ECC error test	CPU or Memory Board
●	○	●	●	○	○	○	○	Test 0x0D checks cache data wr/rd capabilities	CPU Board
○	●	●	●	○	○	○	○	Test 0x0E performs cache data 3 pattern test	CPU Board
●	●	●	●	○	○	○	○	Test 0x0F performs cache tag wr/rd test	CPU Board
○	○	○	○	●	○	○	○	Test 0x10 performs cache tag 3 pattern test	CPU Board
●	○	○	○	●	○	○	○	Test 0x11 performs memory tests	CPU or Memory Board
○	●	○	○	●	●	●	●	Initializing MMU	CPU Board
○	○	○	○	○	○	○	●	Self-Tests have found an error	CPU or Memory Board
○	○	○	○	○	○	●	○	An Exception Class error was found	CPU or Memory Board
○	○	○	○	○	●	○	○	Self-Test done, UNIX in boot-state or monitor quiescent (LED is blinking)	CPU or Memory Board
●⇒	○⇒	○⇒	○⇒	○⇒	○⇒	○⇒	○	"Walking Ones" pattern	UNIX running okay

Bit 0
o
o
o > Test#
o
o
o
o ──➤Heartbeat
Bit o ──➤Exception
7 o ──➤ Error

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Figure 2-8   *What the Diagnostic LEDs Mean*
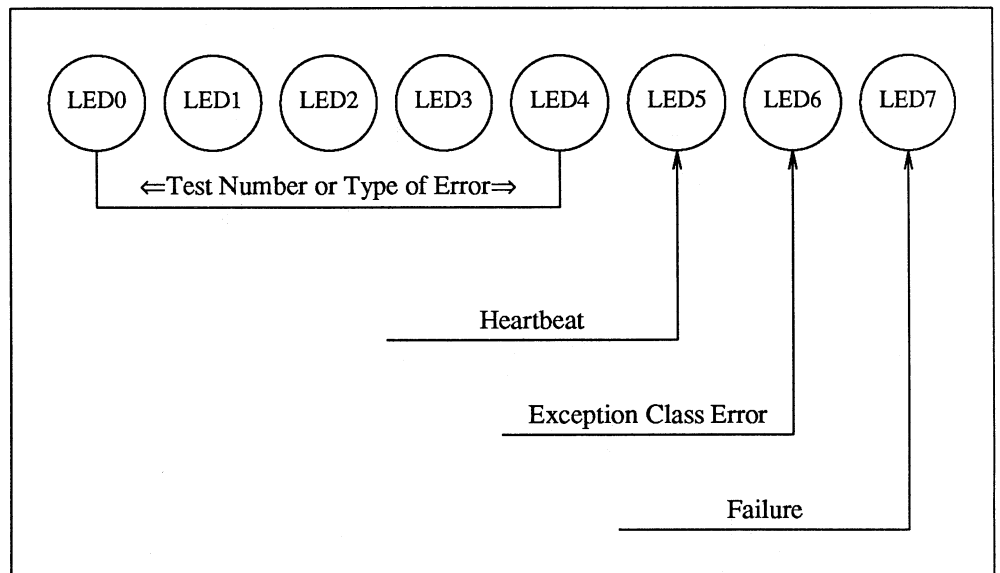
1. If the LED in bit position 7 lights up during self-test, it indicates a failure. The exact test that failed is indicated by LEDs 0 through 4, which can be decoded by the "Diagnostic LEDs" table shown previously.

2. If the LED in bit position 6 lights up during the self-test, it indicates the failure is an exception class failure — bus error trap, address error trap, unexpected interrupt, etc.

3. LED 5 is the heartbeat LED. It will start blinking after the conclusion of self-test and before the execution of UNIX to indicate that the CPU is actually executing code and not hung somewhere.

4. LEDs 0-4 indicate the exact test being undertaken during self-test. If LED 7 is not lit, then the tests are proceeding without error; if LED 7 lights up, then LEDs 0-4 will freeze, indicating which test failed. Refer to the previous table, if necessary.

If all 8 LEDs are lighting up in sequence from 0 to 7 then back to 0 again, it means that you have exited self-test and UNIX is running successfully.

The Memory Board LEDs

Once you have exited self-test and UNIX is running successfully, only the green LEDs should be lighted if the memory board is operating properly.

The table that follows will give you an idea of what each of the five LEDs on the back of the memory board are for. In general, the green LEDs are lighted and all others are off during normal operation. If one or more yellow or red LEDs light, an abnormal condition exists. Or, if the green, refresh LED (the LED located at the bottom) is off, the refresh circuitry is failing, and the board needs immediate attention.

Each LED is labeled on the edge of the memory board to indicate its function, as shown in the following table. The LEDs are arranged on the board in the order shown below; red is on top and green on the bottom when the board is installed vertically in the card cage.

Table 2-2   *Memory Board LED Interpretation*

Label	*Color*	*Meaning If ON*	*Meaning If OFF*
UE	Red	Uncorrectable Error	Normal Condition
CE	Yellow	Correctable Error	Normal Condition
DIS	Yellow	CPU Access Disabled	CPU Access Enabled
CPU	Green	CPU Accesses (flickering)	No CPU Access Occurring
REF	Green	Refresh is working properly	Refresh Failure. Board needs attention.

If the memory board is displaying some or all of the previously documented LED error indications, it will be necessary to contact Sun Microsystems Field Service or your local Field Service organization.

2.6. EEPROM Options

As previously mentioned, the Sun-3/260 computer has an electrically erasable, programmable read-only memory (EEPROM) chip that can be accessed through the boot PROM monitor program in order to change system configuration parameters.

If you want to program your machine to do any of the following:

□   change the primary terminal or console device,

□   specify a normal boot device,

□   change the banner that appears on power-up,

□   turn the keyboard "click" on or off,

□   change the number of memory boards tested during a power on sequence

□   or specify a diagnostic boot device and path.

You will need to use the *Installing UNIX*† manual, part number 800-1521-XX. (shipped with this workstation) to perform these procedures.

2.7. Asynchronous Serial Ports

You may attach modems, printers, plotters, or other serial devices which use the RS-232-C or RS-423 interface, to the serial port connectors labeled SERIAL PORT A and SERIAL PORT B on the CPU board's rear edge.

Each Sun-3/260 serial port provides a 25-pin connector (DB-25) compatible with RS-232-C equipment. All signals in our connector are semantically the same as

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† UNIX is a registered trademark of AT&T.

their RS-232-C counterparts. However the Sun-3/260 uses improved electrical circuits which, while working with RS-232-C devices, are also compatible with the newer RS-423 standard.

The serial ports on the Sun-3/260 were designed for connecting to peripherals such as printers and plotters, and can drive these output lines at speeds up to 19.2 kilobaud; input lines may be driven to 9600 baud. When the system has been booted with the DIAG/NORM switch set in the NORM position, the default serial port baud rate is 9600. For more information please see *Installing UNIX on the Sun Workstation*, part number 800-1521-XX. Reference the appendix on *The PROM Monitor and the EEPROM*.

All ports provide DTR, RTS, and clock signals, and receive DSR, CTS, and DCD signals. All ports are wired as Data Terminal Equipment (DTE) ports (which means Transmit Data from the workstation is on pin 2 and Receive Data from the peripheral is on pin 3), and thus allow direct connection of Data Communications Equipment (DCE) such as modems. Computers, terminals, printers, and other DTE devices can also be connected directly to the serial ports by using the null modem cable available from Sun, part number 530-1056-XX. For further information refer to *System Interface Manual for the Sun Workstation*, part number 800-1303-XX, section ZS(4S), which discusses the Zilog serial interface.

Signals carried on the SERIAL PORT A and SERIAL PORT B connectors are listed in the appendix.

NOTE   *The following sections — which describe connecting modems, terminals, and printers to the serial ports — are guidelines only, and specific devices may require more detailed information such as that contained in the System Interface manual.*

Connecting a Modem to the Sun-3/260

The serial ports are wired as DTEs, and most modems are wired as DCEs. The cable connecting your modem to the Sun-3/260 should be "straight through" — the signals on pins 2, 3, 4, 5, 6, 7, 8, and 20 at the output of the cable should be the same as those signals on corresponding pins of the serial port. Do *not* use a null modem cable to connect the serial port to your modem. It does not matter which serial port you connect to; both are identical.

Refer to the manual which comes with your modem to see which signals you will need for proper operation of your modem. Refer also to *System Administration for the Sun Workstation*, part number 800-1323-XX, and *Installing UNIX on the Sun Workstation*, part number 800-1521-XX, which detail connecting to a modem.
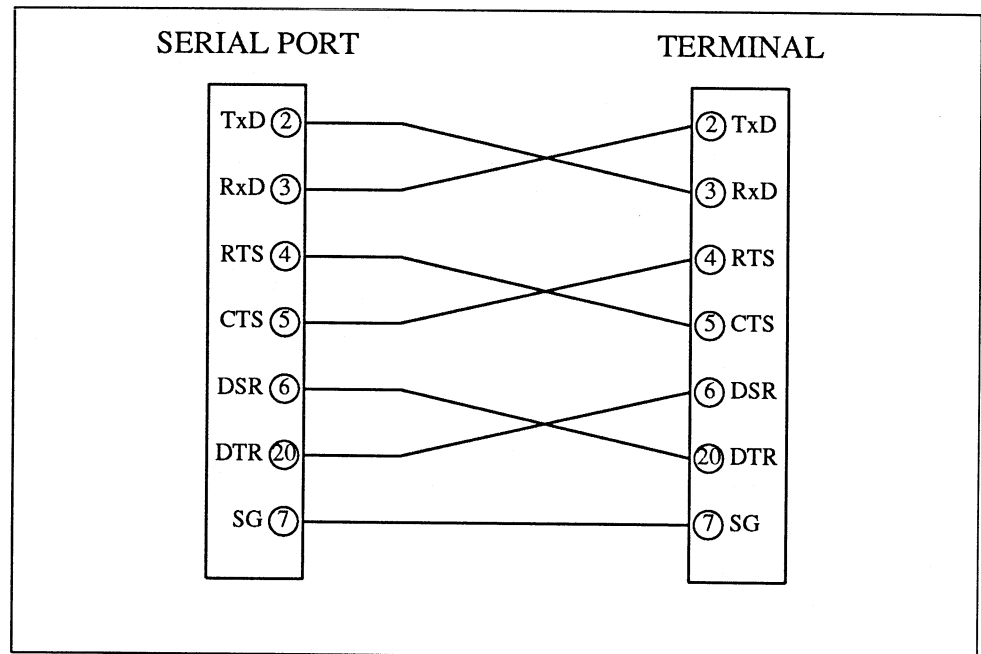
Connecting a Terminal to the Sun-3/260

The serial ports are wired as DTEs. Most terminals are wired as DTEs too. To connect a terminal to a serial port you must first make certain that the terminal you are using accepts the RS-232-C or RS-423 protocol. If it does, you may then connect the terminal to either serial port with a null modem cable, Sun part number 530-1056-XX. In the null modem cable, pins

2 and 3 are crossed

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4 and 5 are crossed

6 and 20 are crossed

and pin 7 is wired straight through.

"Pins 2 and 3 crossed" means that the signal entering the cable on pin 2 emerges on pin 3, and vice versa (see the figure below). The connector on the left is the Serial I/O Port on the CPU board; the connector on the right is the terminal (DTE).

Figure 2-9   *Null Modem Cable Pin Arrangement*

Refer to the manual that comes with your terminal to make certain that the signals needed to operate the terminal are provided at the correct pins of the serial port. Refer also to *System Administration for the Sun Workstation*, part number 800-1323-XX, and *Installing UNIX on the Sun Workstation*, part number 800-1521-XX, which detail connecting to a terminal.

Connecting a Printer to the Sun-3/260

The serial ports are wired as DTEs. Most printers are wired as DTEs too. To connect a printer to a serial port you must first make certain that the printer you are using has a DB-25 connector and uses the RS-232-C standard. Most serial printers do. However it should be noted that you **cannot** connect a parallel interface printer to a Sun-3/260 unless you also use a serial-to-parallel converter. After determining that you have a serial interface printer (or a parallel interface printer with a serial-to-parallel converter), connect the printer to either serial port with a null modem cable, Sun part number 530-1056. In the null modem cable, pins

2 and 3 are crossed

4 and 5 are crossed

6 and 20 are crossed

and pin 7 is wired straight through.

"Pins 2 and 3 crossed" means that the signal entering the cable on pin 2 emerges on pin 3, and vice versa (see the figure above).

Refer to the manual that comes with your printer to make certain that the signals needed to operate the printer are provided at the correct pins of the serial port. Refer also to *System Administration for the Sun Workstation*, part number 800-1323-XX, and *Installing UNIX on the Sun Workstation*, part number 800-1521-XX, which detail connecting to a printer.

2.8. Connecting the Sun-3/260 to the Ethernet

Setting up an Ethernet with all Sun-supplied components is fairly straightfor-ward:

NOTE   *If you have not already done so, refer to the subsection on "Ethernet Cable Con-nection and Jumper Setting" for information on properly setting the jumper that determines the Ethernet transceiver operating level. An incorrect jumper setting may cause Ethernet malfunction.*

1. Screw the 50 ohm coaxial cable into one of the transceiver N connectors (an N connector is a round, screw-on connector). If you are using a coaxial active (known as a "vampire") tap connector, attach it to the coax cable using the included instructions.

2. The coaxial cable may continue out the opposite end of the N or "vampire" connector or it may have a 50 ohm terminator attached. The cable may be terminated by attaching the 50 ohm terminator

    □   to the transceiver's vacant N connector, or to

    □   the end of the coaxial cable, using a barrel connector. (A barrel connec-tor is a double N connector.)

CAUTION   **Handle the coaxial cable with some care, as it is fragile; don't install it in an area where it may be run over or stepped on.**

3. For each workstation, plug the female end of the workstation's transceiver cable into the 15-pin D connector on the transceiver, and the male end of the workstation's transceiver cable into the "ETHERNET" connector on the CPU board's rear edge.

4. Finally, as previously mentioned, the 8-pin level select jumper on the CPU board must have been set for either a Level 1 or Level 2 Ethernet tran-sceiver.

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Figure 2-10   *Linking Up to a Level "2" Type Ethernet*

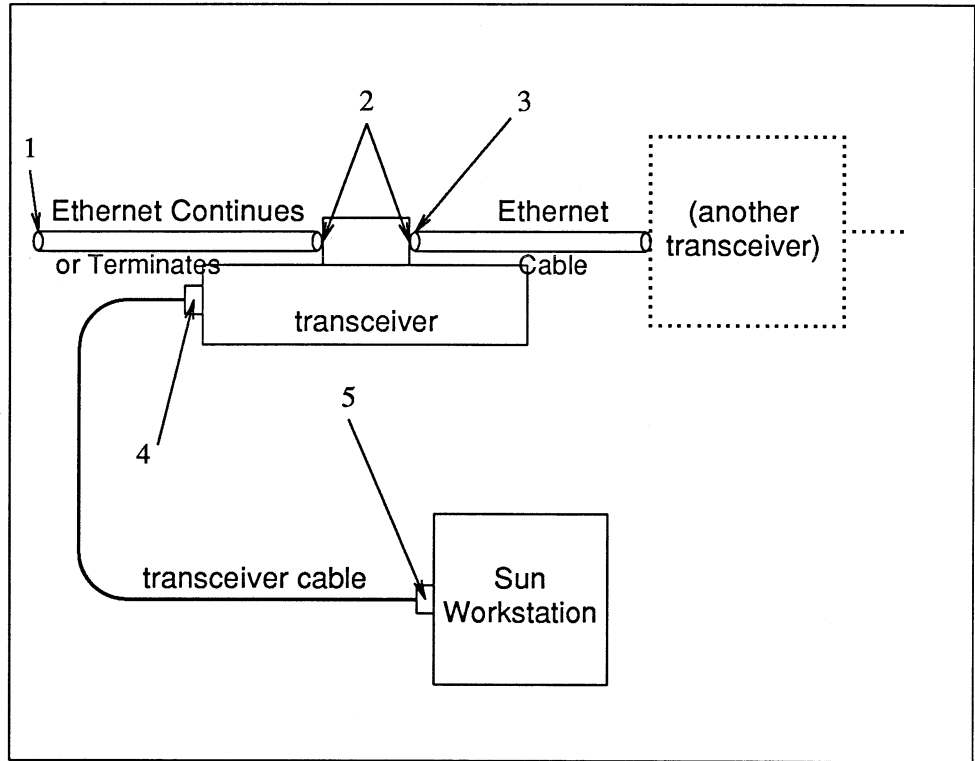| *Key*	*Description*
1	Continuing Cable or Terminator
2	Female N connector to transceiver or "vampire" tap cable channel
3	Male N connector to transceiver or "vampire" tap cable channel entrance
4	Ethernet transceiver D connector
5	Sun Workstation to Ethernet D connector

Figure 2-11   *Linking Up to a Level "1" Type Ethernet*

Key	*Description*
1	Terminator
2	Female N connector to transceiver
3	Male N connector to transceiver
4	Ethernet transceiver D connector
5	Sun Workstation to Ethernet D connector
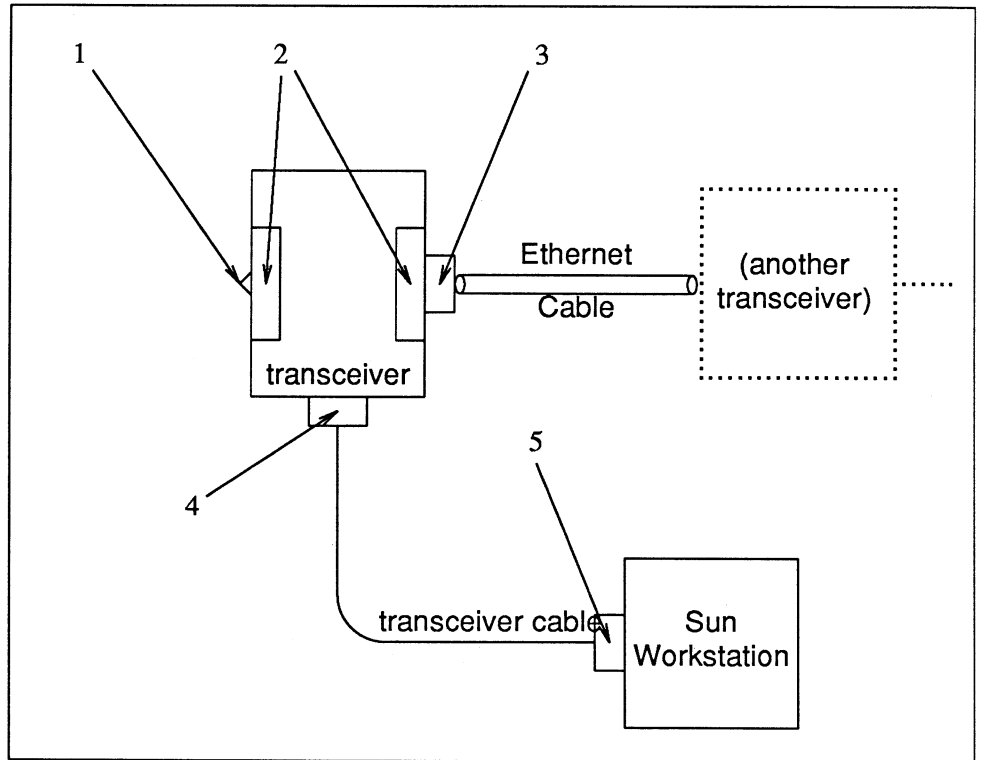
Please note that there are certain cabling limitations which must be observed for proper Ethernet implementation:

Table 2-3   *Ethernet Cabling Limitations*

MAXIMUM contiguous length of coaxial cable segments	500.0 meters
Distance between transceivers*	2.5 meter multiples*
MAXIMUM length of transceiver cable	50.0 meters

*Transceivers must be placed at 2.5 meter **intervals** along the coaxial cable, or some multiple of 2.5 meters, (as long as it's less than 50 meters). That is, you could connect transceivers 2.5 meters apart, but not 2.0 meters; you could connect transceivers 12.5 meters apart (5 times 2.5 meters), but not 12.0 meters apart, (see the figure that follows).

Figure 2-12   *Ethernet Cabling Lengths*

5 meters + 15 meters + 3.4 meter extension = 23.4 meter MINIMUM

| Transceiver | *5 meters* | Transceiver | *15 meters* | Transceiver | *3.4 meters* |

Terminator

Sun Workstation

Sun Workstation

Sun Workstation
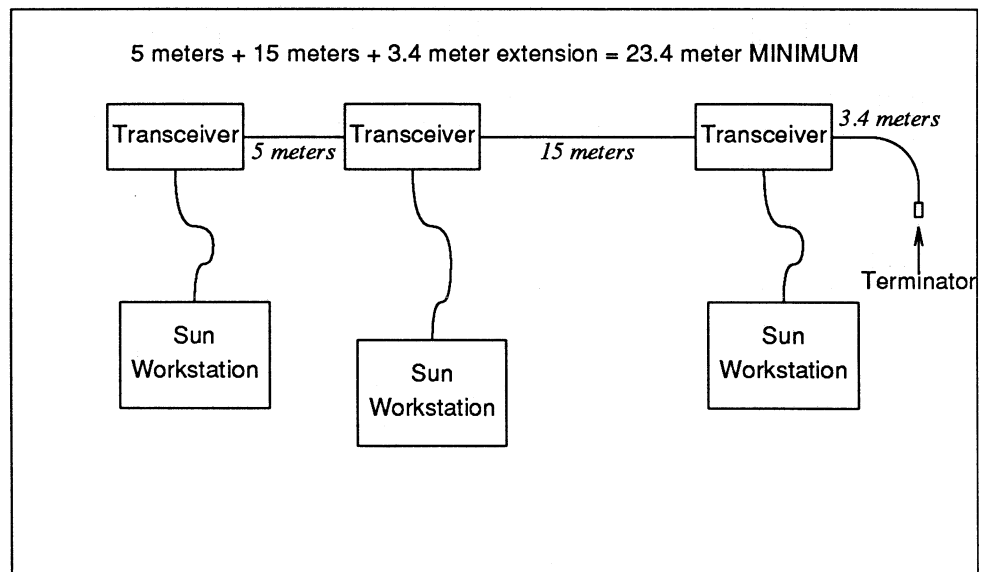
If you buy Ethernet cable in bulk, the cable must be marked every 2.5 meters. Make certain you attach each transceiver on a mark, and also make certain to cut the cable ends on marks.

Transceivers are connected to the Ethernet by female N connector (on the transceiver) to male N connector (on the Ethernet cable).

2.9. Degaussing the Color Monitor

During shipment, metal portions of the color monitor chassis can build up magnetic fields which interfere with the correct operation of the monitor. (A symptom of this interference is lack of color purity. Whenever this lack of purity cannot be corrected by changing the position of the system, you should try degaussing.)

These magnetic fields can be neutralized by using both the external degaussing coil and the internal degaussing circuitry. The internal degaussing circuitry is inside the color monitor; the external degaussing coil is a separate part. The area around the coil itself is what does the demagnetizing; the area in the center of the coil does not do anything. Both internal and external degaussing is done with the monitor turned ON.

Internal Degaussing

The color monitor is equipped with an internal degaussing coil to remedy color purity problems. To accomplish internal degaussing, turn the monitor power ON, allow it to warm up for 20 minutes, then press the DEGAUSSING button. Hold the button in until the image ceases to shimmer, which should take no longer than 30 seconds.

Allow a cooling period of at least eight minutes following internal degaussing and prior to initiating a maximum strength magnetic field external degaussing cycle.

External Degaussing

This process is intended to supplement use of the internal degaussing coil. Use as needed to achieve maximum video image purity.

CAUTION

The degaussing coil demagnetizes EVERYTHING. Make certain that ALL TEST EQUIPMENT, MAGNETIC PERIPHERALS (tapes, disk drives), AND MEDIA are at least five feet from the degaussing coil before plugging it in, or else you will erase your media!

1. Plug in the monitor and allow it to warm up for 20 minutes.

2. Remove the degaussing coil from its container.

3. Before plugging it in, make doubly certain that:

    □ All magnetic peripherals, media and test equipment are AT LEAST FIVE FEET away from the coil, and that
    □ the coil is AT LEAST SIX FEET from the monitor.

NOTE

Remember, it is the coil itself that does the demagnetizing; the area in the center of the coil does nothing. All available sides, the top, rear and the front of the monitor need to be degaussed.

4. Hold the coil perpendicular to the monitor, at least six feet away, and plug the coil in.

5. Press the coil switch and turn the coil parallel to the monitor screen, bringing the coil to within three inches of the screen.

NOTE

The coil may become too warm to hold after about two minutes of degaussing.

6. With the coil parallel to and about three inches from the surface of the screen, slowly move the coil in six inch circular motions over the screen.

CAUTION

**DO NOT RELEASE THE SWITCH OR PULL THE PLUG!**

7. Move to the sides of the monitor. Move the coil in short circular motions over each surface — sides, top and rear; Finally, degauss the monitor screen again. The whole process may take as little as 30 seconds.

8. When you have degaussed the monitor, keep the the switch pressed ON and the coil parallel to the screen. Slowly move the coil away from the monitor, moving it in 12 inch circular motions, until you are six feet away.

9. Turn the coil perpendicular to the screen and release the switch or pull the plug.

10. If the color purity problems persist, repeat the external degaussing procedures.
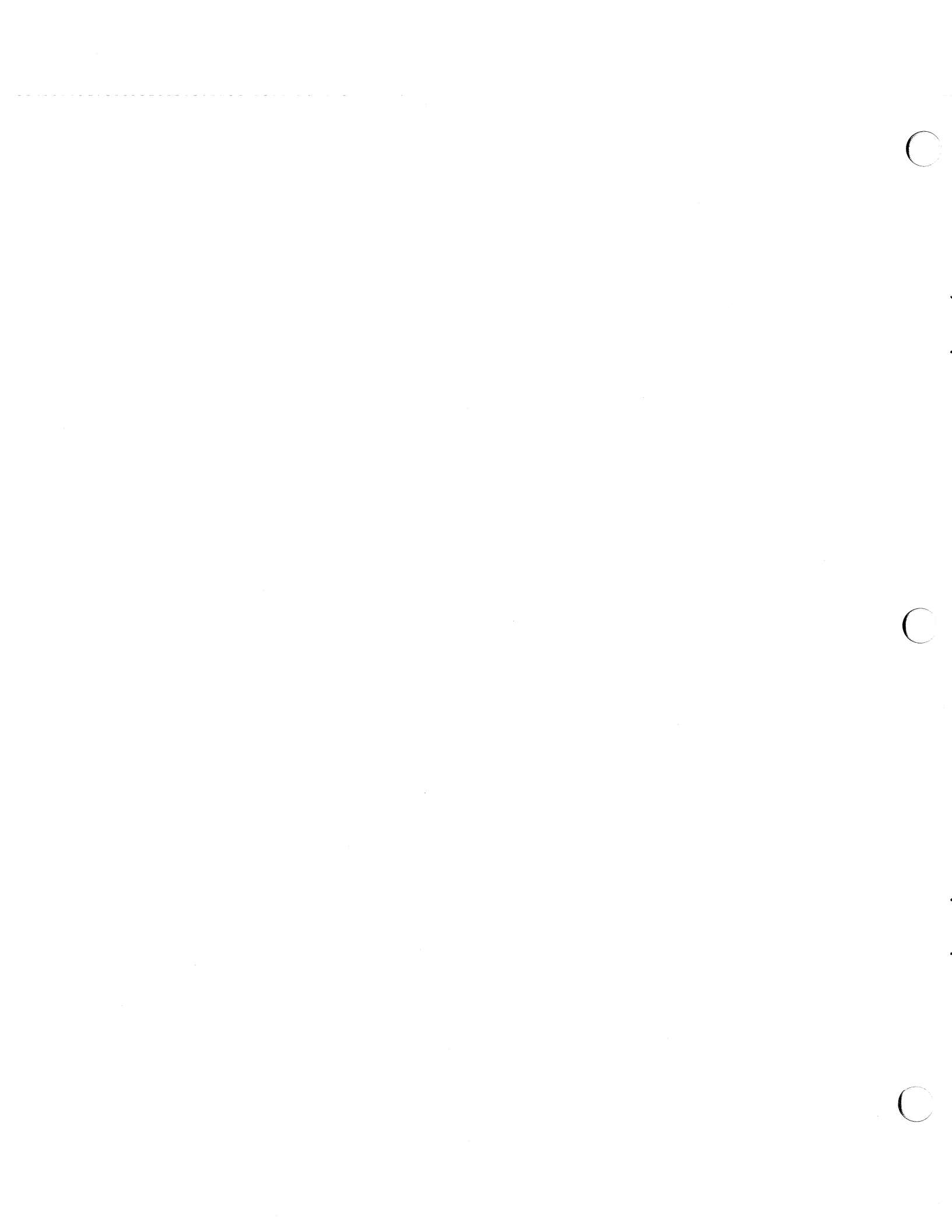
If neither the external nor the internal degaussing corrects the color distortion, notify your Sun service representative.

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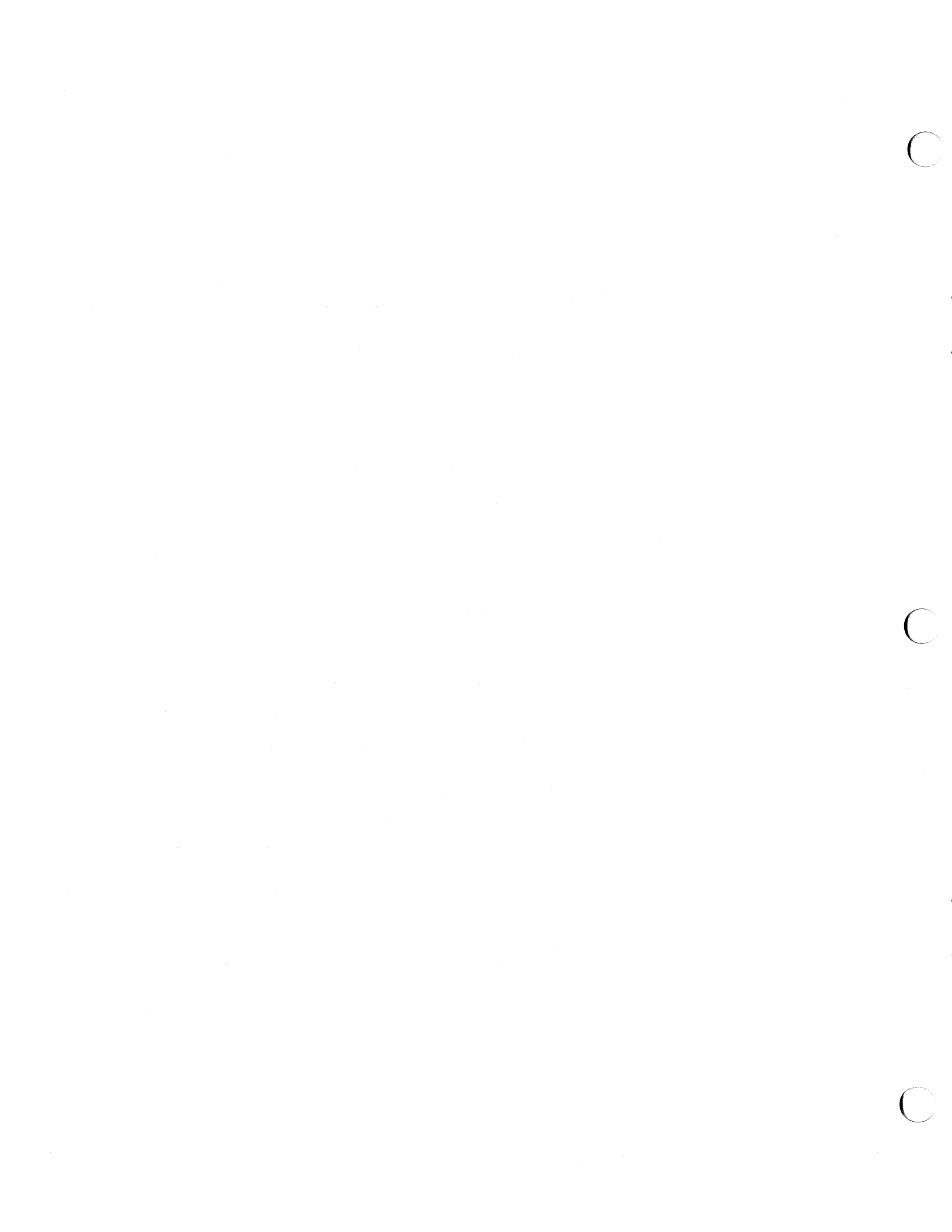
Hardware Configuration and Options
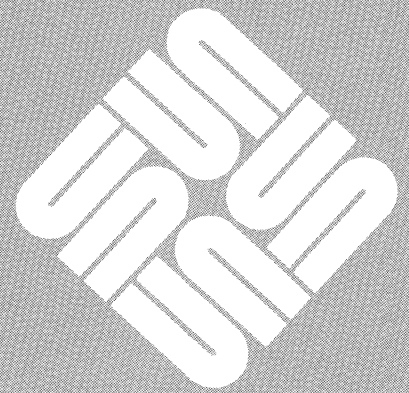
Hardware Configuration and Options

CAUTION   Springfingers are metal strips that are installed between the edge of the PC
board and the outer panel to reduce RFI emissions. Serrated metal "fingers"
protrude from either side of the strip.

If a board WITH springfingers is installed next to a board WITHOUT
spring fingers, the insulator shield on the outside of the fingers MUST be
present to prevent possible shorting of component leads to the spring fingers.

No insulator shield
on outer side
of Springfingers

Board   Board   Board
WITH   WITH   WITHOUT
Springfingers Springfingers Springfingers
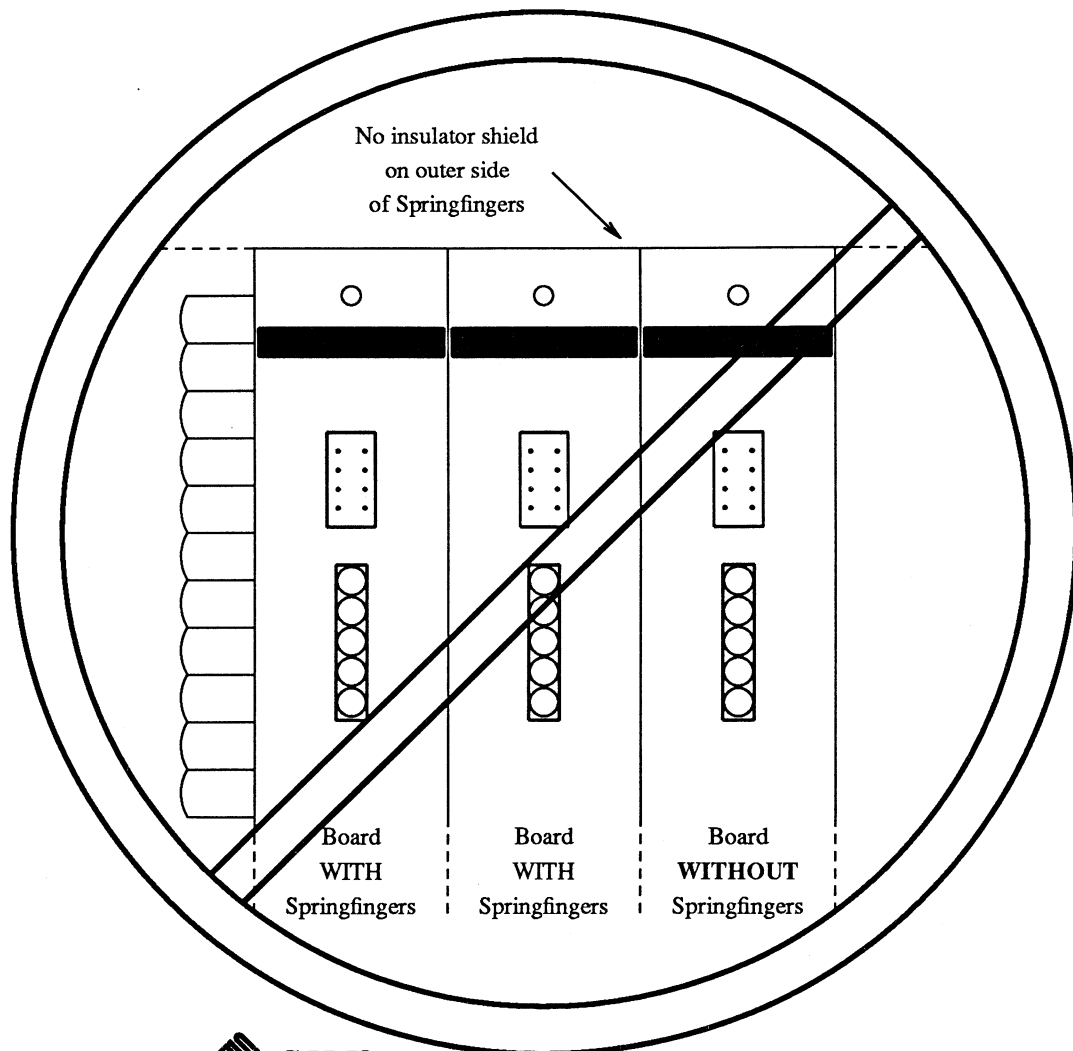
Installation of a board WITHOUT springfingers may affect RFI emissions and may therefore affect FCC compliance. Sun will no longer be responsible for FCC compliance if non-springfingered boards are added to a system originally shipped WITH springfingers and FCC approval.

In the case of a logic enclosure containing boards WITH and WITHOUT springfingers use the following guidelines:

□ Before removing a board WITHOUT springfingers, remove the board to the left if it is equipped WITH springfingers and an outer insulator shield.

□ Always install a board WITHOUT springfingers first, and then replace the board WITH springfingers and insulator shield in the slot on the left.

If a board with springfingers is installed next to a board or filler panel also equipped with springfingers, the outside insulator shields should be removed.

Ensure that the insulator strip between the inner side of the springfingers and the PC board is intact at all times.

When removing and replacing boards with spring fingers, check the condition of the insulator strip/shield(s) and replace if damaged.

Call 800 USA-4SUN with any questions, or for information on how to obtain additional insulator strips or shields.

Some of the devices on Sun boards are very sensitive to electro-static discharge, that can be built up in the human body and discharge when you touch the board. Before handling any board, make sure that you have placed your hand on a conductive surface that is grounded to a common earth ground, (such as the metal screws on an AC receptacle cover) to discharge any static electricity present in your body.

This chapter describes the basic Sun-3/260, along with some of the options available. If you order optional boards or mass storage subsystems (disk and tape drives) after the initial delivery of your 3/260 system, a separate document will be shipped with the additional hardware. This document will be either a Configuration Procedure, part number 813-2XXX-XX, or a Sun Hardware Options manual, 813-1XXX-XX. The document number will be different for each type of board or mass storage subsystem you order.

3.1. Basic Sun-3/260

The basic Sun-3/260 has

□ An improved resolution monochrome monitor (Sun-3/260HM only), providing finer screen detail than previous offerings, or:

□ A choice of color or grayscale monitor, (Sun-3/260C and 260G). Each has a 19-inch, 66.6 Hz non-interlaced display with antiglare coating. Note that

you will need a Sun-3 Color Video board to operate the color or grayscale monitors

□   Keyboard and mouse

□   Pedestal — which will hold up to twelve Eurocard-format (triple-high VME) printed circuit boards, including the CPU and memory board

□   CPU with on-board cache memory

□   Memory Board with 8 Megabytes of ECC memory

3.2. Standard Configuration

Sun-3/260 CPU Board

The CPU (Central Processing Unit) board is installed in the first slot of the Sun-3/260. The CPU board contains the 68020 CPU chip, I/O, and monochrome video connections, and Ethernet controller. Three 96-pin connectors attach the CPU board to the backplane inside the Sun-3/260 pedestal, and five multi-pin I/O connectors, two switches, and a bank of eight small LEDs are at the opposite (rear edge) end of the board.

In sequence, (top to bottom) as the I/O connectors are aligned on the board, they are:

Table 3-1   *I/O Connectors on the CPU Card*

Connector Name
Serial Port A Serial Port B Ethernet Keyboard/Mouse Monochrome Video

Pinouts of all the connectors are listed in the following chapter.

3.3. Options for the Sun-3/260†

The CPU board is half of a two-board set that comes standard with the 3/260. The second board is an 8 Mbyte memory board. Additional memory is provided by memory board/s: the Sun-3/260 can accommodate a maximum of three additional memory boards for a system total of 32 Mbytes of extra on-board memory.

Each Expansion card contains up to 288 ECC (Error Checking and Correction) memory chips:

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†For more extensive information on Sun-3 options, please contact Sun Microsystems Sales or Service.

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Table 3-2   *System Memory — Basic and Optional Configurations*

Option Number	Memory on Card
Sun-3/260 -	8 Mbytes (part of board set)
Sun-3/260 - 108	8 Mbytes (on Expansion board)
Sun-3/260 - 108	8 Mbytes (on Expansion board)
Sun-3/260 - 108	8 Mbytes (on Expansion board)

Some other available options to the Sun-3/260 include:

□   Option 605: 280 Mbyte disk subsystem

□   Option 606: 560 Mbyte disk subsystem

□   Option 650: ¼ inch cartridge tape subsystem — backup option for disk subsystems

The Memory Expansion board that is part of the 3/260 board set resides in slot six of the pedestal. As previously mentioned, up to three Expansion boards can be added to expand the CPU board's memory. Add extra boards using the information in *Cardcage Slot Assignments and Backplane Configuration Procedures,* Part No. 813-2004-XX.

We have discussed only a few of the large number of options available for the 3/260. The following page lists some often ordered optional boards, but for a complete list, please contact your Sun sales representative.

ALM Interface Board

An Asynchronous Line Multiplexer (ALM) board can provide multiple terminal access to the 3/260. Other serial interface devices can be driven by the 3/260 workstation equipped with an ALM.

Graphics Processor and Graphics Buffer Boards

The Graphics Processor and optional Graphics Buffer board(s) can be used in the Sun-3/260 to increase color and grayscale graphics performance.

VME(2)-to-VME(3) Adapter Board

A VME-to-VME Adapter board is available to interface standard double-width single-height VME cards with the Sun-3/260 Eurocard-format (triple height) backplane.

Floating Point Accelerator Board

Also available is an optional Floating Point Accelerator (FPA) board, which increases floating-point performance by four times over the baseline MC68020/MC68881 performance.

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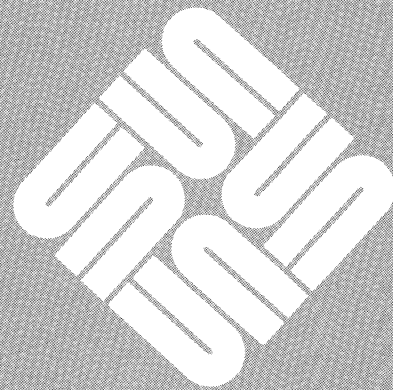
VME-to-Multibus* Adapter Board

The VME-to-Multibus Adapter Board makes it possible to use Multibus and non-standard VMEbus boards mechanically and electrically in Sun-3 VMEbus systems.

*Multibus is a trademark of the Intel Corporation.

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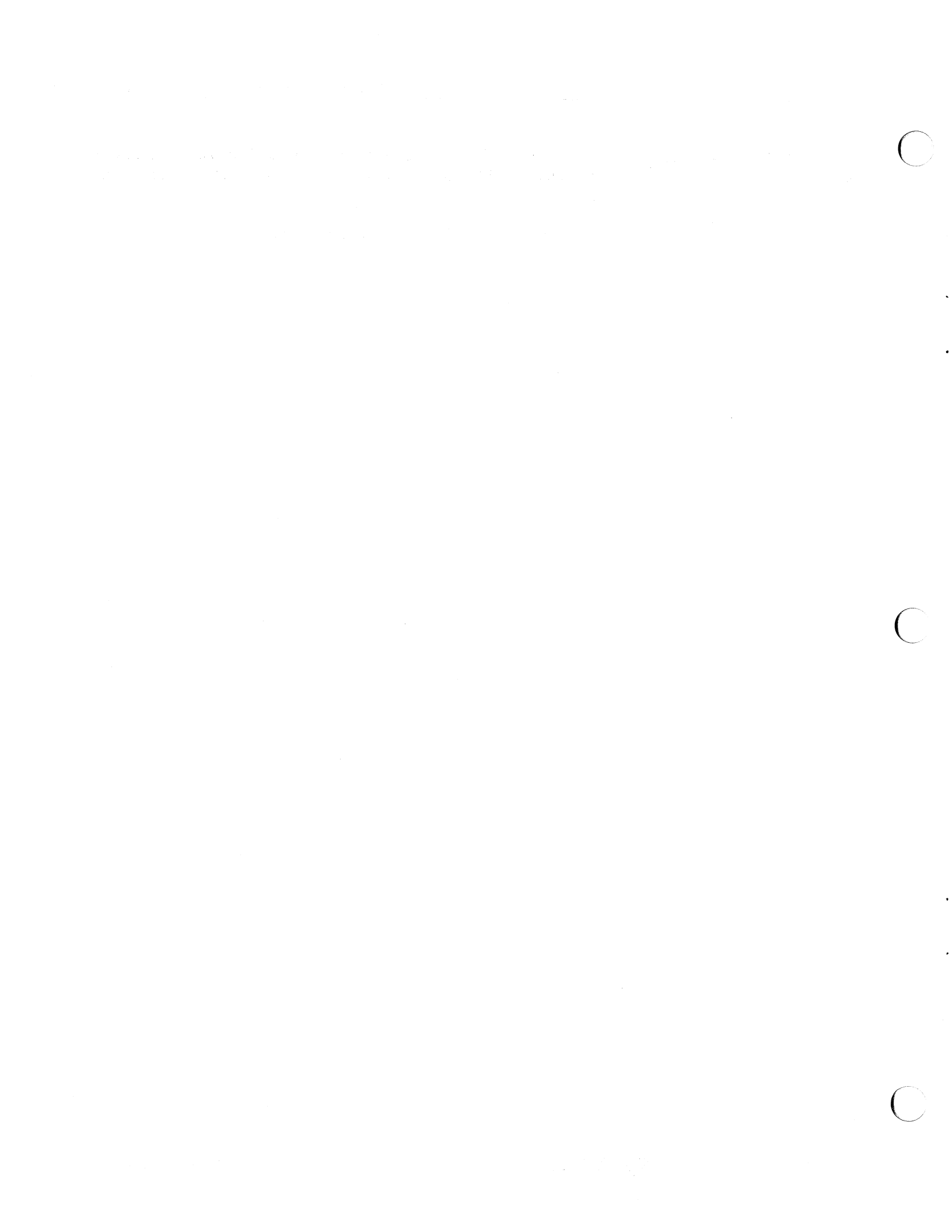
CPU Board Connector Pinouts and Serial Port Signals

CPU Board Connector Pinouts and Serial Port Signals

This chapter provides the pin designations for the connectors on the edge of the CPU board, found at the rear of the pedestal. The pinouts of these connectors are given on the pages that follow:

□ Keyboard/Mouse Connector

□ Serial Port(s)

□ Ethernet Connector

□ Video Connector

Pins that are not connected to anything are not listed.

4.1. Pinout of Connectors at Rear of Workstation

The following tables represent pin locations on DB-9, DB-15 and DB-25 connectors.

Table 4-1   *Pinout of Keyboard/Mouse DB-15 Connector*

Pin	Signal	Pin	Signal
1	RXD0 (keyboard)	8	GND
2	GND	9	GND
3	TXD0 (keyboard)	10	VCC
4	GND	11	VCC
5	RXD1 (mouse)	12	VCC
6	GND	14	VCC
7	TXD1 (mouse)	15	VCC

Table 4-2   *Pinout of Serial Ports A and B*

Pin	Signal	Pin	Signal
2	TXD	8	DCD
3	RXD	15	DB
4	RTS	17	DD
5	CTS	20	DTR
6	DSR	24	DA
7	GND	25	VERR

Read further for more information about serial port signals.

Table 4-3   *Pinout of Ethernet Connector*

Pin	Signal	Pin	Signal
2	E.COL+	9	E.COL-
3	E.TXD+	10	E.TXD-
5	E.RXD+	12	E.RXD-
6	GND	13	+12V

Table 4-4   *Pinout of Video Connector*

Pin	Signal	Pin	Signal
1	VIDEO+	6	VIDEO-
3	HSYNC	7	GND
4	VSYNC	8	GND
		9	GND

4.2. Description of Serial Port Signals

This subsection briefly describes the serial port signals. The "data communications equipment" mentioned below might be a printer, a plotter, a modem, or any other device which uses an RS-232-C or and RS-423 interface. A signal called "output" flows from the Sun-3/260 towards the peripheral device. An "input" signal flows from the peripheral into the Sun-3/260.

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Figure 4-1   *A Typical DTE/DCE Configuration*
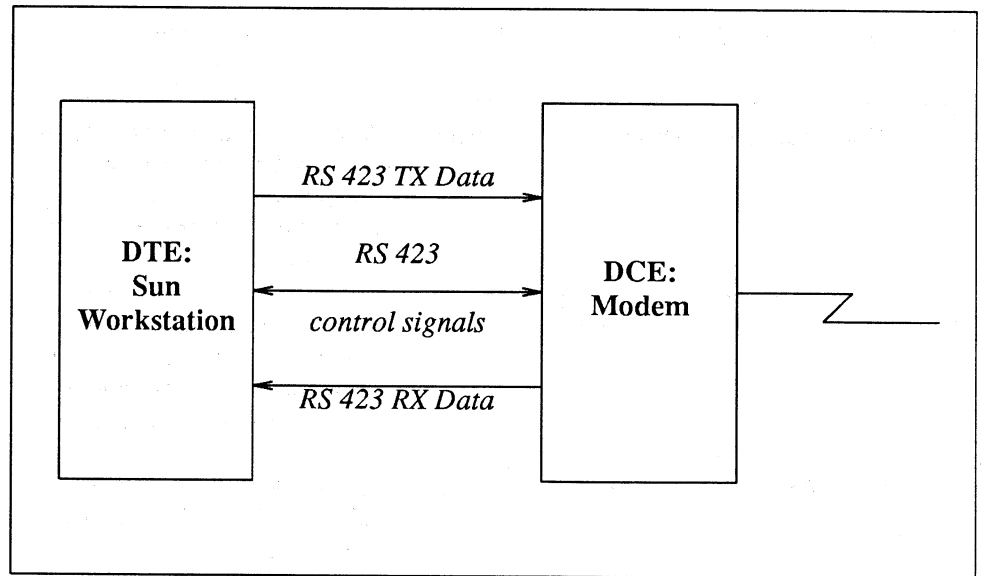
Table 4-5   *Description of Serial Port Signals*

Pin	Signal	Signal Name	Direction (Input or Output)	Description
2	TXD	Transmit Data	output	The actual data transmitted to the data communications equipment.
3	RXD	Receive Data	input	The actual data received from the data communications equipment.
4	RTS	Request to Send	output	Signal sent to the data communications equipment, asking if it is ready to start accepting data.
5	CTS	Clear to Send	input	Signal from the data communications equipment saying it is ready to accept data.
6	DSR	Data Set Ready	input	Signal from the data communications equipment indicates the status of the local data set — that is, a peripheral connected to the Sun-3.
7	GND	Signal Ground	none	Signal Gound provides a reference level for the signal voltages.

Table 4-5   *Description of Serial Port Signals— Continued*

Pin	Signal	Signal Name	Direction (Input or Output)	Description
8	DCD	Data Carrier Detect	input	The data communications equipment has detected "carrier," for example, a modem senses tones sent to it by another modem over phone lines.
15	DB	Transmit Clock from DCE	input	Transmit clock from the modem. This signal is usually not used for asynchronous devices (most terminals, printers, modems, etc.).
17	DD	Receive Clock from DCE	input	Receive clock from the modem. This signal is usually not used for asynchronous devices (most terminals, printers, modems, etc.).
20	DTR	Data Terminal Ready	output	Indicates that the Sun-3 is powered on and willing to communicate as the "local data terminal" with the data communication equipment (for example, the modem).
24	DA	Transmit Clock from DTE	output	Provides transmit clock from the Sun-3. This signal is usually not used for asynchronous devices (most terminals, printers, modems, etc.).
25	VERR	reference -5V level	none	This signal is used by some modems to sense connection to the workstation.

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Revision History

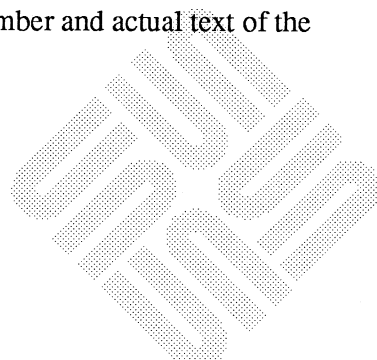| Revision	Date	Comments
-01	16 June 1986	α Review of this Installation Manual
50-02	15 July 1986	β Review of this Installation Manual
A-05	10 October 1986	Release of this Installation Manual

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Sun Microsystems, Inc.,

Attn. Technical Publications Mgr.

2550 Garcia Avenue,

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California 94043

Corporate Headquarters
Sun Microsystems, Inc.
2550 Garcia Avenue
Mountain View, CA 94043
415 960-1300
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