7010 Xstation Model 160

Setup, Operator, and Service Guide

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Setup, Operator, and Service Guide

First Edition (February 1995)

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Xstation Manager is a trademark of International Business Machines Corporation.

Table of Contents

Communications Statements

The following statement applies to this product. The statement for other products intended for use with this product appears in their accompanying manuals.

Federal Communications Commission (FCC) Statement

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

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. Neither the provider nor the manufacturer are responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

United Kingdom Telecommunications Safety Requirements

This equipment is manufactured to the International Safety Standard EN60950 and as such is approved in the UK under the General Approval Number NS/G/1234/J/100003 for indirect connection to the public telecommunication network.

The network adapter interfaces housed within this equipment are approved separately, each one having its own independent approval number. These interface adapters, supplied by the manufacturer, do not use or contain excessive voltages. An excessive voltage is one which exceeds 70.7 V peak ac or 120 V dc. They interface with this equipment using Safe Extra Low Voltages only. In order to maintain the separate (independent) approval of the manufacturer's adapters, it is essential that other optional cards, not supplied by the manufacturer, do not use main voltages or any other excessive voltages. Seek advice from a competent engineer before installing other adapters not supplied by the manufacturer

EC Council Directive

This product is in conformity with the protection requirements of EC Council Directive 89/336/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility.

Neither the provider nor the manufacturer can accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of the product, including the fitting of option cards not supplied by the manufacturer.

International Electrotechnical Commission (IEC) Statement

This product has been designed and built to comply with IEC Standard 950.

Avis de conformité aux normes du ministère des Communications du Canada

Cet équipement ne dépasse pas les limites de Classe A d'émission de bruits radioélectriques pour les appareils numériques, telles que prescrites par le Réglement sur le brouillage radioélectrique établi par le ministère des Communications du Canada. L'exploitation faite en milieu résidentiel peut entraîner le brouillage des réceptions radio et télé, ce qui obligerait le propriétaire ou l'opérateur à prendre les dispositions nécessaires pour en éliminer les causes.

Canadian Department of Communications Compliance Statement

This equipment does not exceed Class A limits for radio noise emissions for digital apparatus, set out in Radio Interference Regulation of the Canadian Department of Communications. Operation in a residential area may cause unacceptable interference to radio and TV reception requiring the owner or operator to take whatever steps necessary to correct the interference.

電波障害自主規制　届出装置の記述

> この装置は，第一種情報装置（商工業地域において使用されるべき情報装置）で商工業地域での電波障害防止.を目的とした情報処理装置等電波障害自主規制協議会（VCCI）基準に適合しております。
>
> 従って，住宅地域またはその隣接した地域で使用すると，ラジオ，テレビジョン受信機等に受信障害を与えることがあります。
>
> 取扱説明書に従って正しい取り扱いをしてください。

VCCI Statement

The following is a summary of the VCCI Japanese statement in the box above.

> This equipment is in the Class 1 category (information equipment to be used in commercial and/or industrial areas) and conforms to the standards set by the Voluntary Control Council For Interference by Data Processing Equipment and Electronic Office Machines aimed at preventing radio interference in commercial and/or industrial areas.
>
> Consequently, when used in a residential area or in an adjacent area thereto, radio interference may be caused to radios and TV receivers, etc.
>
> Read the instructions for correct handling. VCCI-1.

Radio Protection for Germany

Dieses Gerät ist berechtigt in Übereinstimmung mit dem deutschen EMVG vom 9.Nov.92 das EG-Konformitätszeichen zu führen.

Der Aussteller der Konformitätserklärung ist die IBM Germany.

Dieses Gerät erfüllt die Bedingungen der EN 55022 Klasse A. Für diese Klasse von Geräten gilt folgende Bestimmung nach dem EMVG:

Geräte dürfen an Orten, für die sie nicht ausreichend entstört sind, nur mit besonderer Genehmigung des Bundesministers für Post und Telekommunikation oder des Bundesamtes für Post und Telekommunikation betrieben werden. Die Genehmigung wird erteilt, wenn keine elektromagnetischen Störungen zu erwarten sind.

(Auszug aus dem EMVG vom 9.Nov.92, Para.3, Abs.4)

Hinweis:

Dieses Genehmigungsverfahren ist von der Deutschen Bundespost noch nicht veröffentlicht worden.

Safety Notices

Note: For a translation of these notices, see the *System Unit Safety Information*, Form Number SA23-2652.

Definitions of Safety Notices

A *danger* notice indicates the presence of a hazard that has the potential of causing death or serious personal injury.

Danger notices appear on the following pages:
>
> 1-3
> 2-1
> 7-0020-1
> 8-1
> 8-5
> A-1.

A *caution* notice indicates the presence of a hazard that has the potential of causing moderate or minor personal injury.

Caution notices appear on the following pages:
>
> 1-3
> 2-1
> 7-0020-1
> 8-1
> A-1.

A *warning* notice indicates the presence of a hazard that has the potential of causing damage to a program, device, system, or data.

About This Book

How to Use This Book

Part 1 of this book is written for the 7010 Xstation Model 160 user. This part contains information and procedures required to install, operate, and test the Xstation 160.

Part 2 of this book is written for trained service personnel. This part contains maintenance analysis procedures (MAPs) and reference information for the 7010 Xstation Model 160.

Related Publications

The *AIX Version 4.1 Xstation Management Guide,* Form Number SC23-2713, provides installation, configuration, and maintenance information for Xstations using the Xstation Manager program.

Part 1. Setup and Operation

Chapter 1. Hardware Setup

This chapter contains the steps involved in setting up your hardware.

Step 1. Inventory

1. Unpack the 7010 Xstation Model 160, the display, keyboard, and any other devices. Be sure to check for smaller items such as cables, or memory cards.

Mouse

Books

Keyboard

Display (Optional)

7010 Xstation Model 160

Power Cord

2. Record and retain the following information from the backside of the front door.

Product Name	7010 Xstation
Model Number	Model 160
Serial Number	

Serial Number

Step 2. Install Optional Features

Check which of the following tasks you want to perform:

- Install Optional Diskette Drive

- Install Optional Dual Inline Memory Modules (DIMMs)

- Install Optional PCMCIA-Audio Card

- Install Optional FLASH Connector Card

- Install Optional FLASH Card

- Install PCI Option Card

- Configure System Jumpers

- Install Optional Serial Port Fan Out Cable

Did you check any of the items in the list?

No   Proceed to "Step 3. Connect the Cables" on page 1-3.

Yes   If you only checked Install Optional Serial Port Fan Out Cable, go to
                Chapter 2, "Install an Optional Serial Port Fan Out Cable" on page 2-27

                If you checked any other items in the list, go to the beginning of Chapter 2
                "Optional Features Installation."

Step 3. Connect the Cables

1. Read the following notices:

DANGER

An electrical outlet that is not correctly wired could place hazardous voltage on metal parts of the system or the devices that attach to the system. It is the responsibility of the customer to ensure that the outlet is correctly wired and grounded to prevent an electrical shock.

Before installing or removing signal cables, ensure that the power cables for the system unit and all attached devices are unplugged.

When adding or removing any additional devices to or from the system, ensure that the power cables for those devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.

Use one hand, when possible, to connect or disconnect signal cables to prevent a possible shock from touching two surfaces with different electrical potentials.

During an electrical storm, do not connect cables for display stations, printers, telephones, or station protectors for communications lines.

CAUTION:
This product is equipped with a 3-wire power cable and plug for the user's safety. Use this power cable in conjunction with a properly grounded electrical outlet to avoid electrical shock.

2. Turn off the Xstation, display, and all devices.

3. Plug the keyboard cable into the keyboard and the other end (flat side up) into the Xstation I/O panel as shown.

I/O Panel

Keyboard
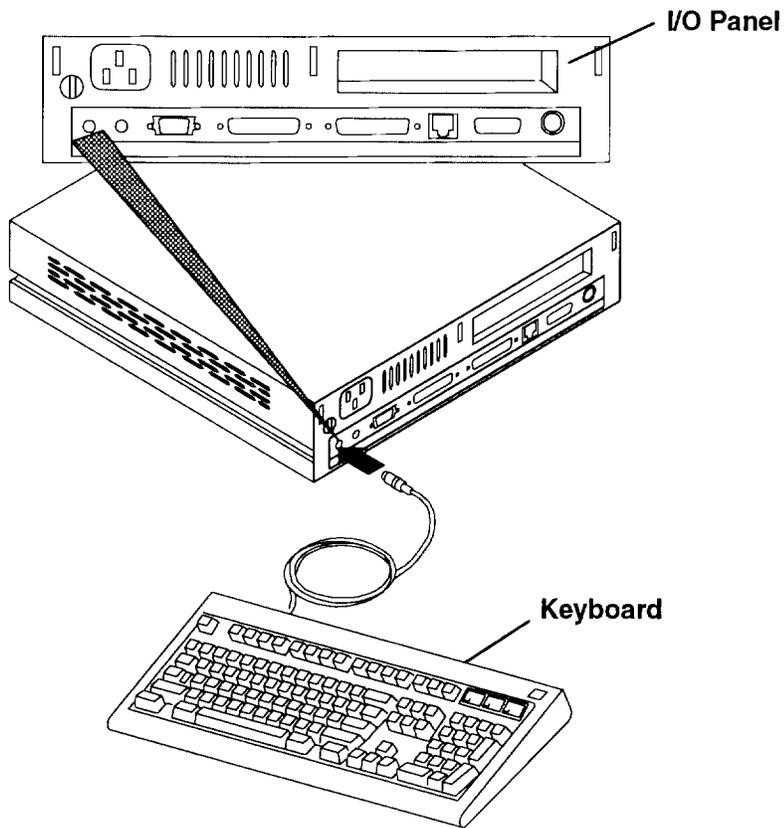
4. Plug the mouse cable (arrow up) into the Xstation I/O panel as shown.

I/O Panel

Mouse
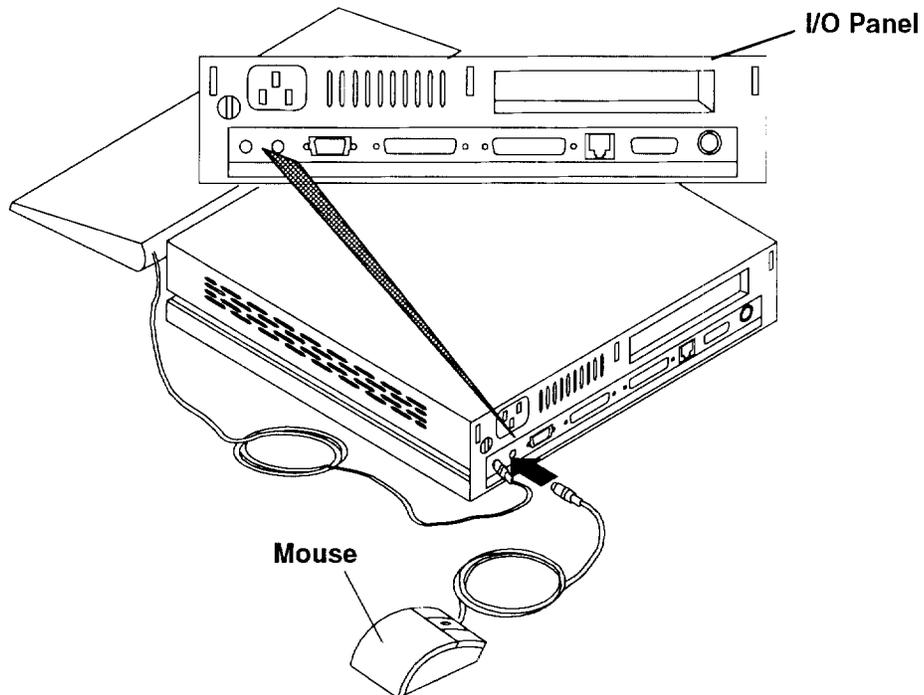
5. Connect the network cables:

a. If you are using a system board with an Ethernet thin network connection, you must use a BNC-style coaxial "T" connector as shown. To prevent signal weakening or loss, the stub length of the connector (the portion extending from the I/O panel to the cable) should be a maximum of 2.5 cm (1 inch) in length.
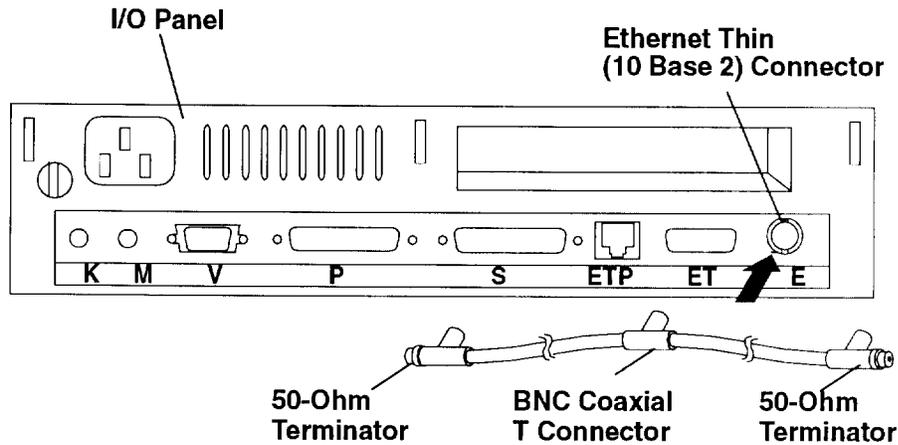
b. If you are using a system board with an Ethernet thick (D-Shell) connection, connect the cable as shown.
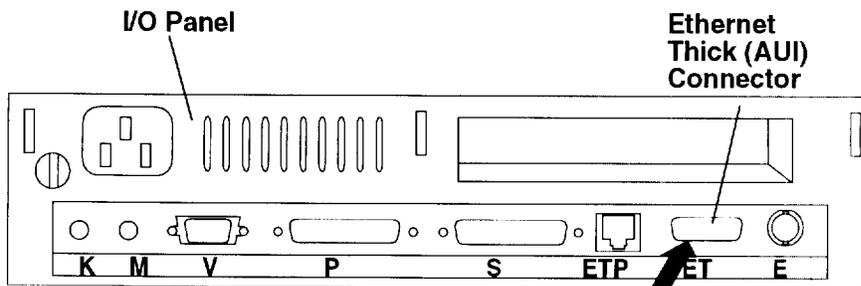
c. If you are using a system board with an Ethernet twisted-pair connection, connect the cable as shown.
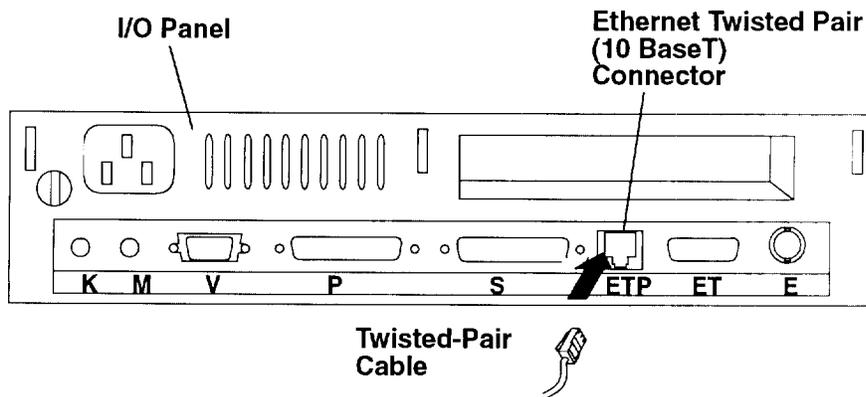
d. If you are using a system board with a Token-Ring connection, connect the cable as shown.

I/O Panel **Token-Ring Connector**
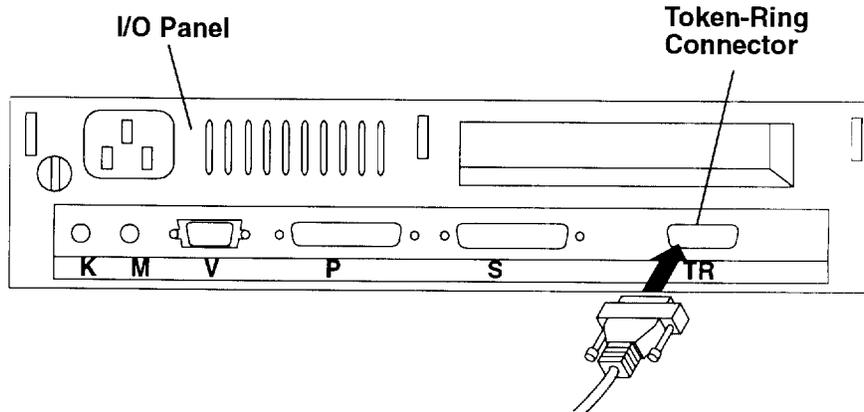
6. Connect any serial and parallel devices you will use with your Xstation.

a. Connect the serial device to the port labeled S. If you are using a serial port fan out cable, connect the serial devices to ports S1 and S2.

b. Connect the parallel device to the port labeled P.

I/O Panel **Parallel Connector** **Serial Connector**
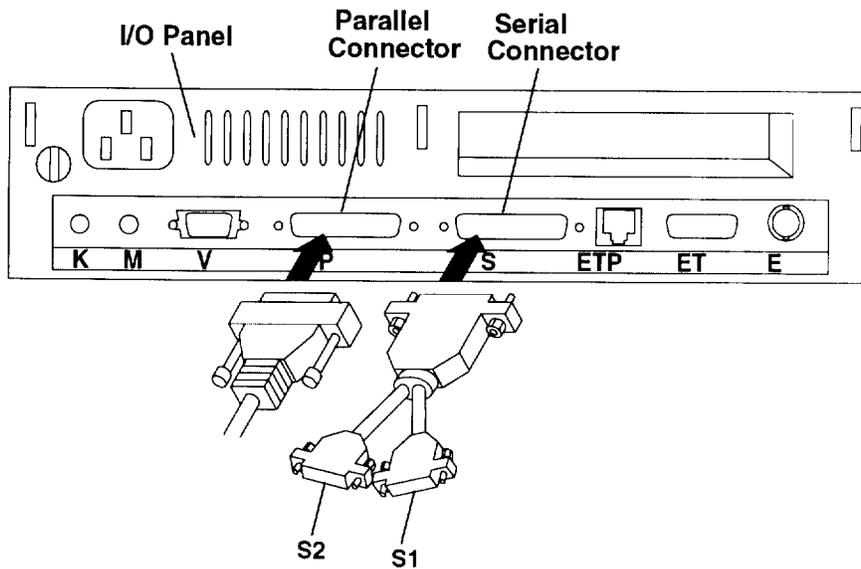
7. Place the display close to the Xstation system unit and plug the display cable into the Xstation I/O panel as shown. Some displays only need the RGB BNC-style connectors. If the display is rolling or is unreadable, disconnect the horizontal (white) and vertical (black) connectors.

15-pin D-Shell
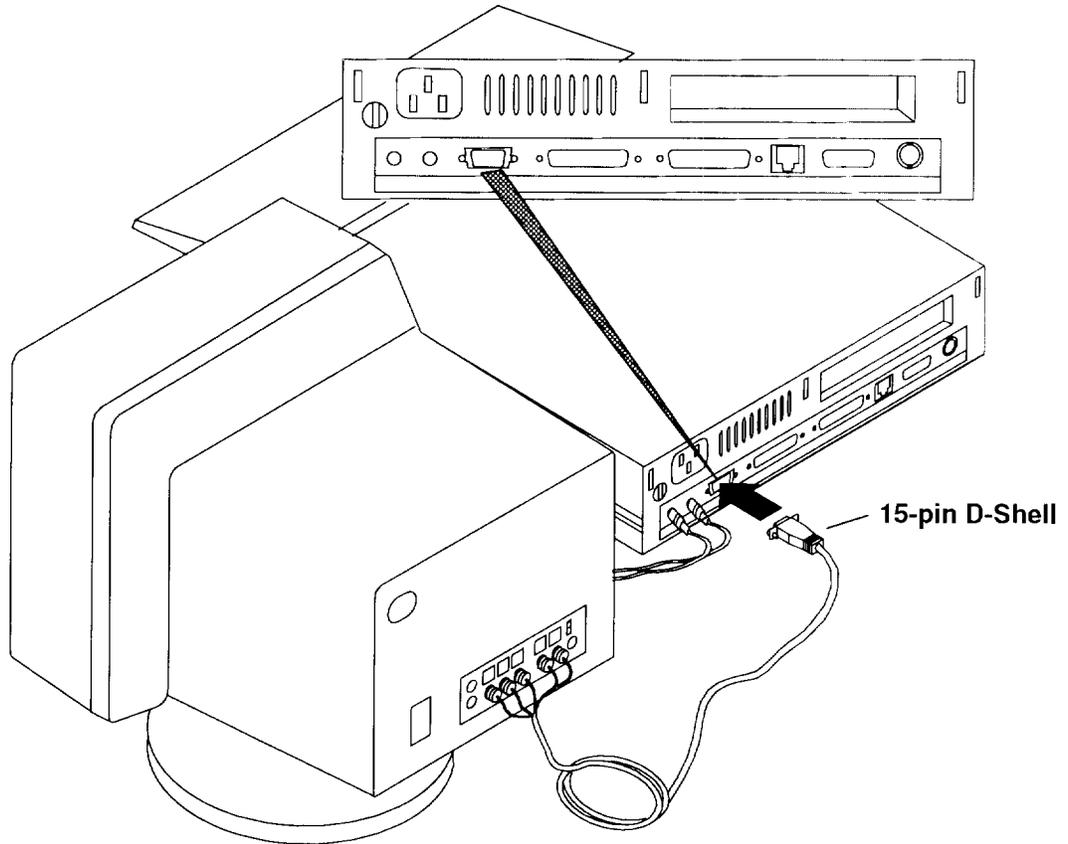
8. If you are using a 6091 or 6091i display with the Xstation, you must:

   a. Use an FCC-required signal cable such as Part Number 58F2901 or equivalent.

   b. Set the Sync Input Impedance Switch to Position 1.

   c. For the 6091-19 Display, set the Mode Switch to Position 2 for 60 Hz operation or to Position 3 for 67 Hz operation.

   d. For the 6091-16 Display, press the Mode Button "in" for 77 Hz operation or leave it "out" for 60 Hz operation.
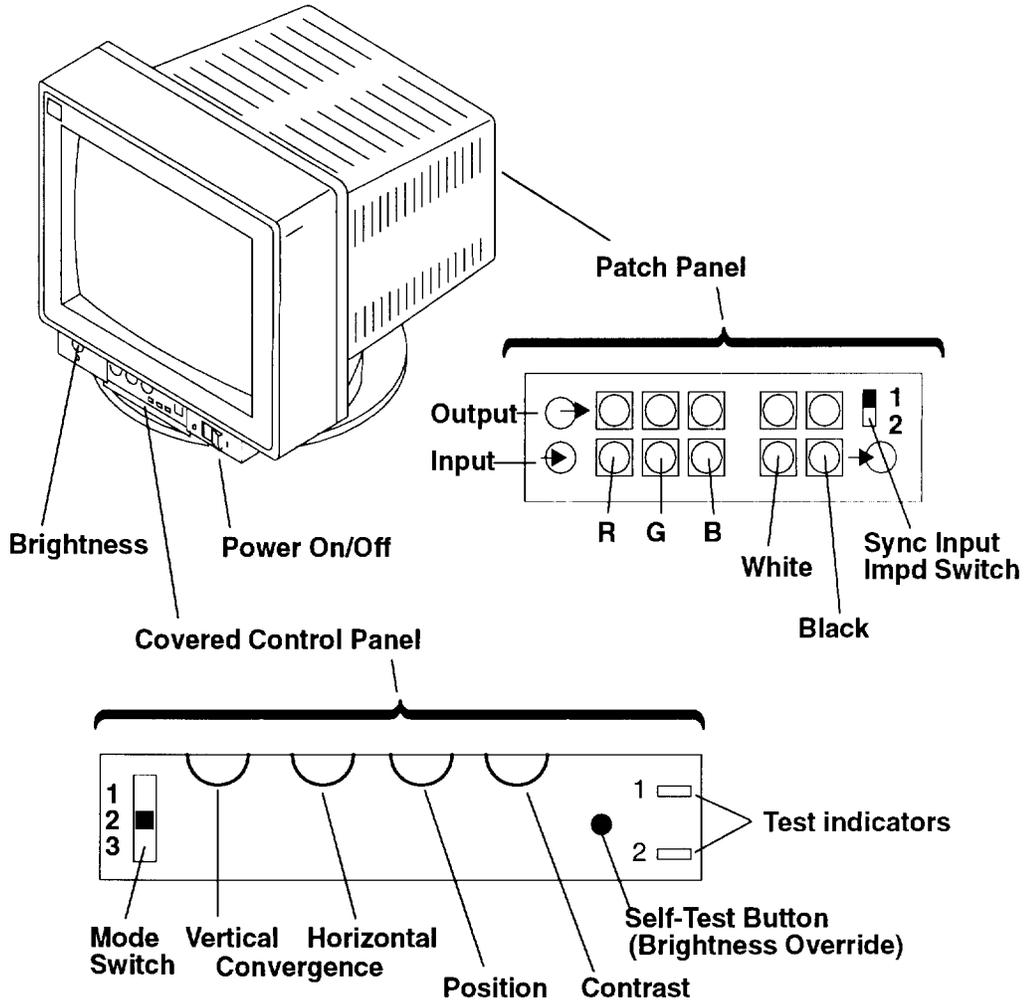
   e. Verify that the display jumpers inside the Xstation are properly set to provide the display frequency indicated by the mode switch on the display. See page 2-21 for a table of display jumper settings.

9. Connect the power cables to the Xstation, display, and any attached devices.
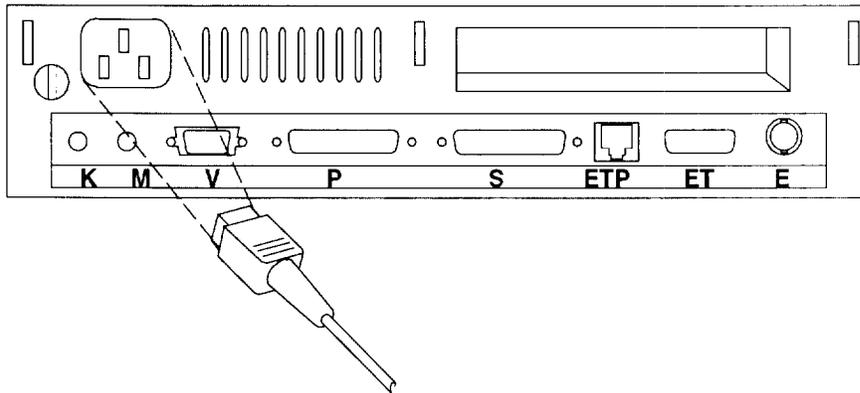
Note: Be sure to connect the power cord to an electrical outlet that is easily accessible. To completely remove power, you must disconnect the power cord from the outlet.

10. Plug the Xstation and display power cords into electrical power outlets.
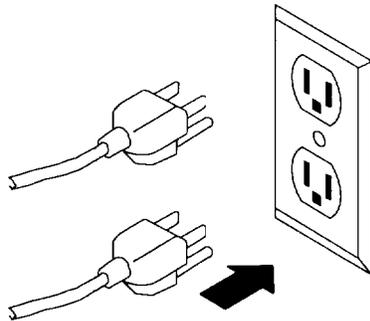
Step 4. Position the Xstation

The hardware portion of your Xstation is now installed. Now, you can position your Xstation and display for use.

1. Choose a place for your Xstation. Make sure that you allow sufficient space behind your Xstation for service, cable attachment, and cable removal.

Warning: Do not place the Xstation on top of any object or surface that will restrict airflow to the chassis. Doing so could prevent proper cooling of the Xstation and cause overheating of system components.

2. Choose a place for your Xstation display. The cover of your Xstation is designed to physically support displays that weigh up to 43Kg (95 pounds). To use a heavier display, such as a 6091-23 display, place the Xstation system unit to one side of the display.

Note: Carrying or moving heavy displays may require two persons.

3. A stand is available that allows the Xstation to operate in the vertical position. To use the vertical stand:

   a. Assemble the vertical stand if you have not already done so.
   b. Place the Xstation in the vertical stand as shown in this illustration. The Xstation must be in this position (power switch to the top) to allow for proper cooling.
   c. If the Xstation does not fit in the stand, use the screws on the bottom of the stand to adjust to the proper size.

Vertical Position

Horizontal Position
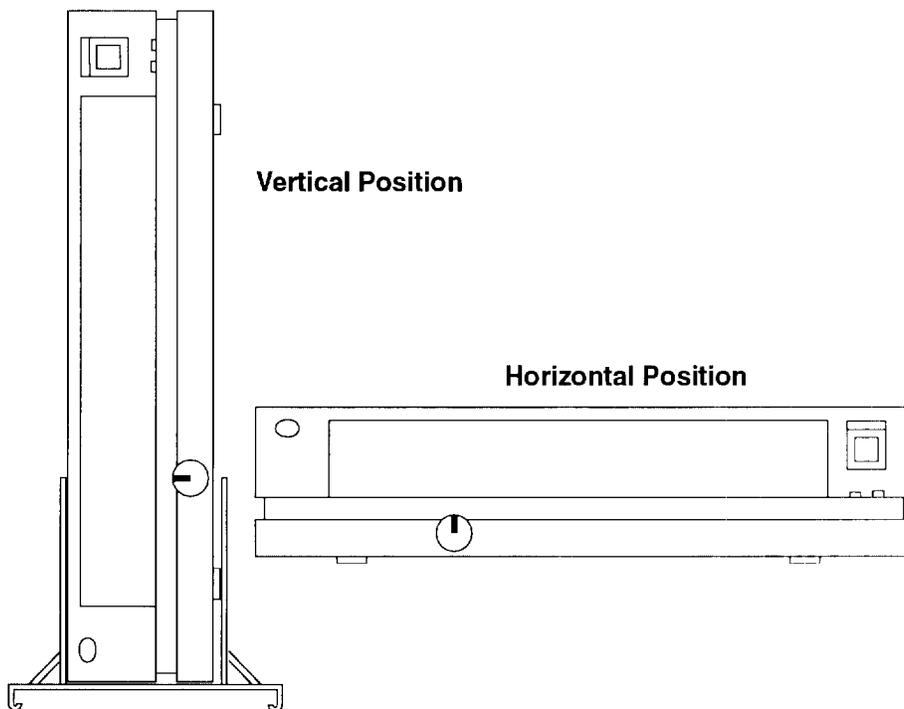
4. If you want to secure your Xstation using the security protection port, refer to Appendix B, "Securing the Xstation."

Your hardware is now completely installed and positioned for use. Proceed to Chapter 3, "Xstation Configuration and Startup" to start the Xstation and establish a network

connection.

Chapter 2. Optional Features Installation

DANGER

An electrical outlet that is not correctly wired could place hazardous voltage on metal parts of the system or the devices that attach to the system. It is the responsibility of the customer to ensure that the outlet is correctly wired and grounded to prevent an electrical shock.

Before installing or removing signal cables, ensure that the power cables for the system unit and all attached devices are unplugged.

When adding or removing any additional devices to or from the system, ensure that the power cables for those devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.

Use one hand, when possible, to connect or disconnect signal cables to prevent a possible shock from touching two surfaces with different electrical potentials.

During an electrical storm, do not connect cables for display stations, printers, telephones, or station protectors for communications lines.

CAUTION:
This product is equipped with a 3-wire power cable and plug for the user's safety. Use this power cable in conjunction with a properly grounded electrical outlet to avoid electrical shock.

Handling Static-Sensitive Devices

Warning: System boards, DIMMs, and FLASH cards are sensitive to static electricity discharge. These devices are wrapped in antistatic bags, as shown in this illustration, to prevent this damage.

Take the following precautions:

- If you have an antistatic wrist strap available, use it while handling the device.

- Do not remove the device from the antistatic bag until you are ready to install the device in the system unit.

- With the device still in its antistatic bag, touch the bag to a metal frame of the system

- Grasp cards and boards by the edges. Avoid touching the solder joints or pins.

- If you need to lay the device down while it is out of the antistatic bag, lay it on the antistatic bag. Before picking it up again, touch the antistatic bag and the metal frame of the system unit at the same time.

- Handle the devices carefully in order to prevent permanent damage.

Antistatic Bag
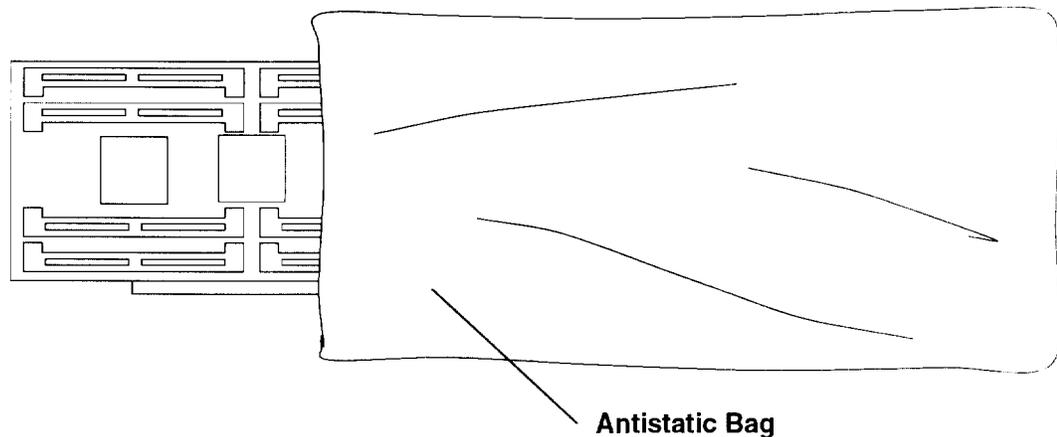
Remove the Cover

1. Set the Xstation system unit, display, and attached device power switches to Off (O).
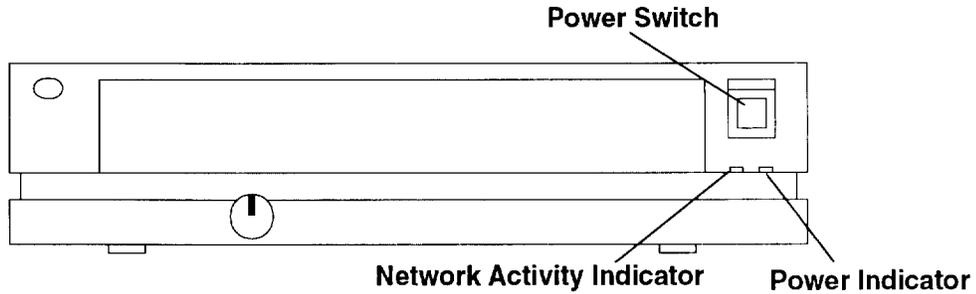
Power Switch

Network Activity Indicator   **Power Indicator**

2. If you have not already done so, unplug the system unit power cable, display power cable, and attached device power cables from electrical power outlets.

3. Unlock the cover
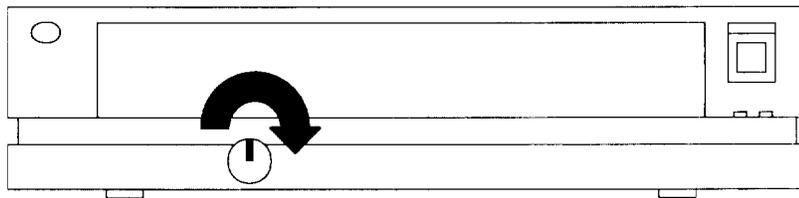
4. Open the cover door, then lift and hold the cover latch and slide the cover forward until the cover moves past the latch.
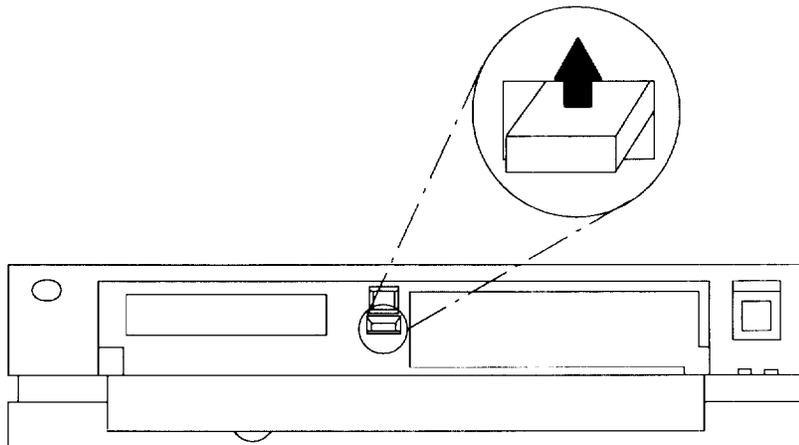
5. Slide the cover to the front, then lift it off the Xstation.
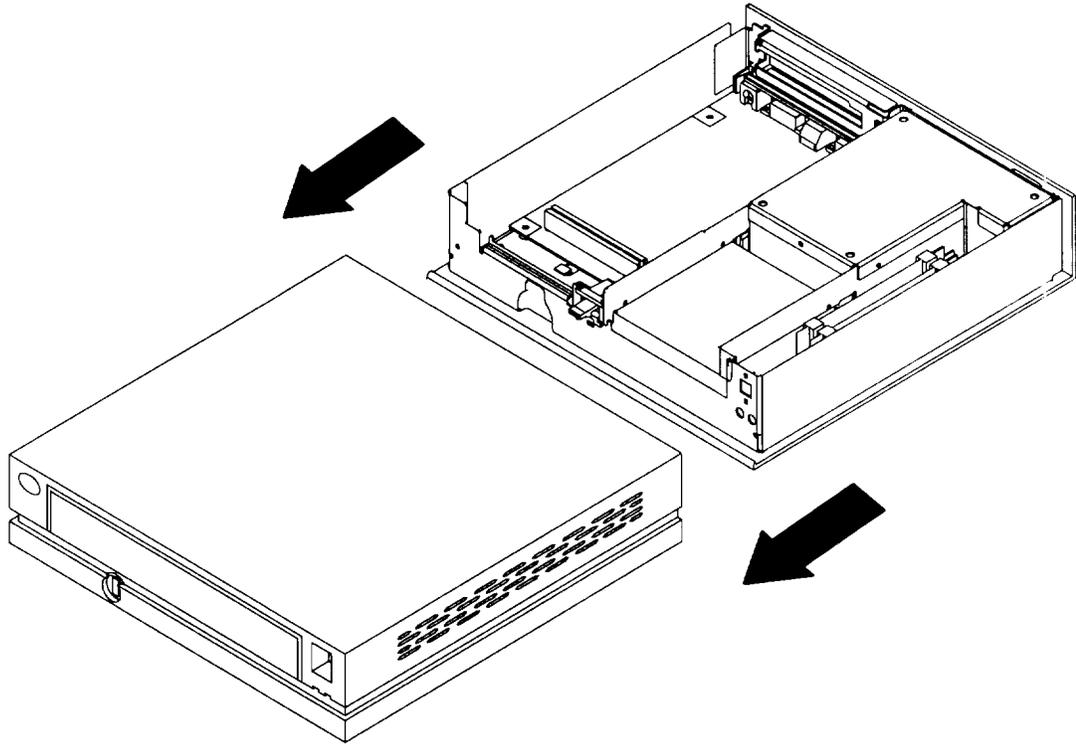
6. Proceed to the Options Checklist on page 2-5.

Options Checklist

Check which options you want to install, then go to the pages indicated for the options you have checked:

- Install Optional Diskette Drive   Page 2-6

- Install Optional DIMMs   Page 2-11

- Install Optional Business Audio Card   Page 2-13

- Install Optional FLASH Connector Card   Page 2-15

- Install Optional FLASH Card   Page 2-17

- Install Optional PCI Option Card   Page 2-18

- Configure System Jumpers   Page 2-21 through 2-24

- Install an Optional Serial Port Fan Out Cable   Page 2-27.

Install Optional Diskette Drive

1. Locate the screw on the back of the Xstation that holds the power supply tray in place and remove the screw.

I/O Panel

Screw
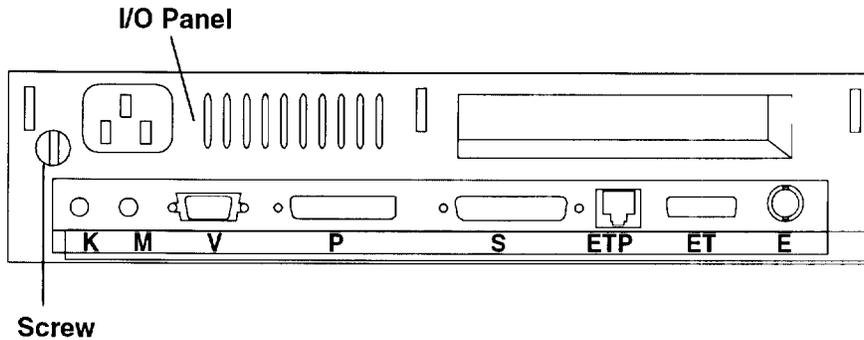
2. Unplug the power cord from the power supply.

3. Install the diskette drive cable.

   a. Touch the static–protective bag containing the drive to any unpainted metal surface on the Xstation, then remove the drive.

   b. Open the cable connector on the diskette drive with your fingernail or a small screwdriver, being careful not to damage any part.

Rear View of Diskette Drive
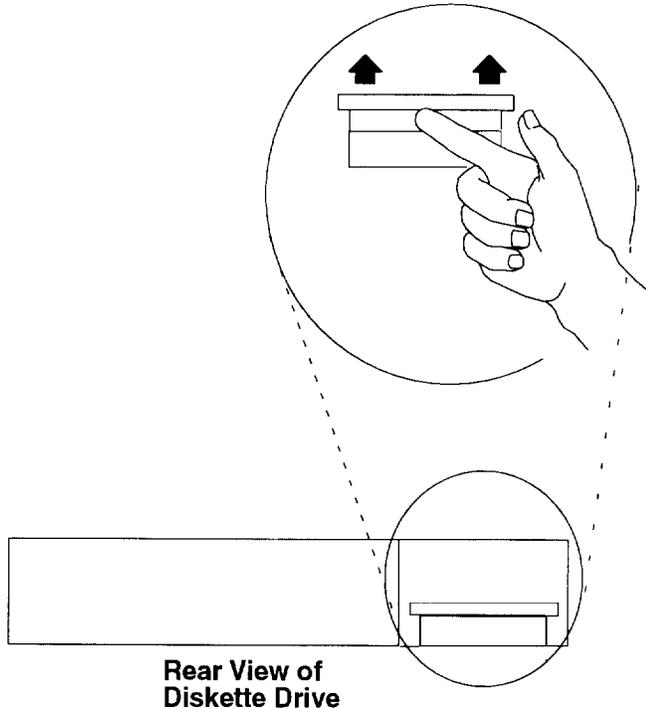
c. Insert the end of the diskette drive cable into the drive connector. The connector tabs on the cable must mate with the connector tabs on the diskette drive.
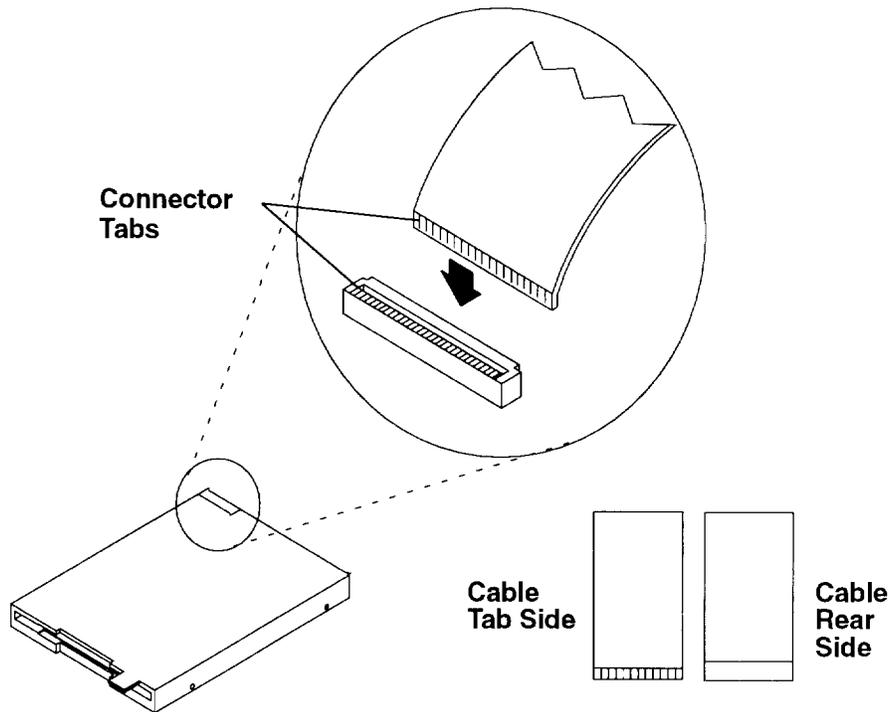
Connector Tabs

Cable Tab Side

Cable Rear Side

d. Press the connector edge firmly down to lock the cable in place. Ensure that both ends of the cable tab are locked.

Rear View of Diskette Drive
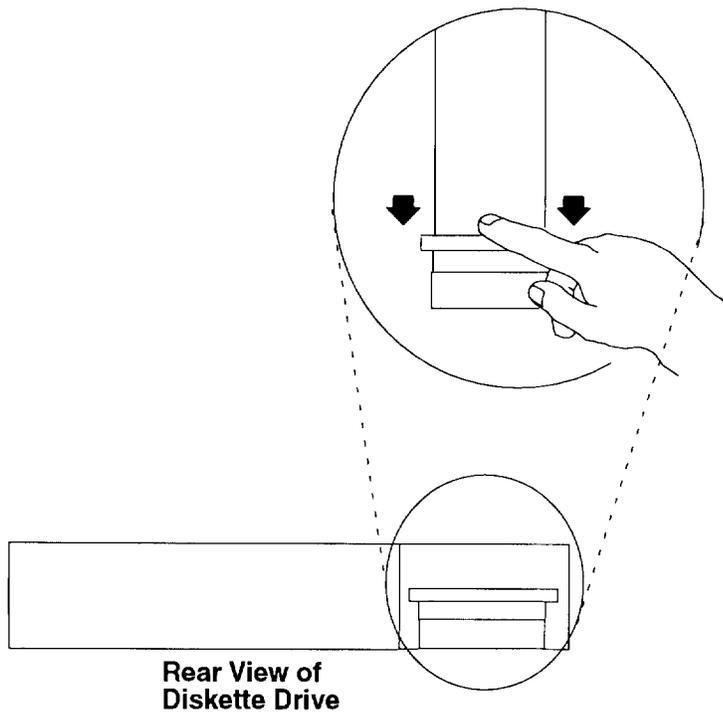
4. Lift the power supply tray from the chassis.
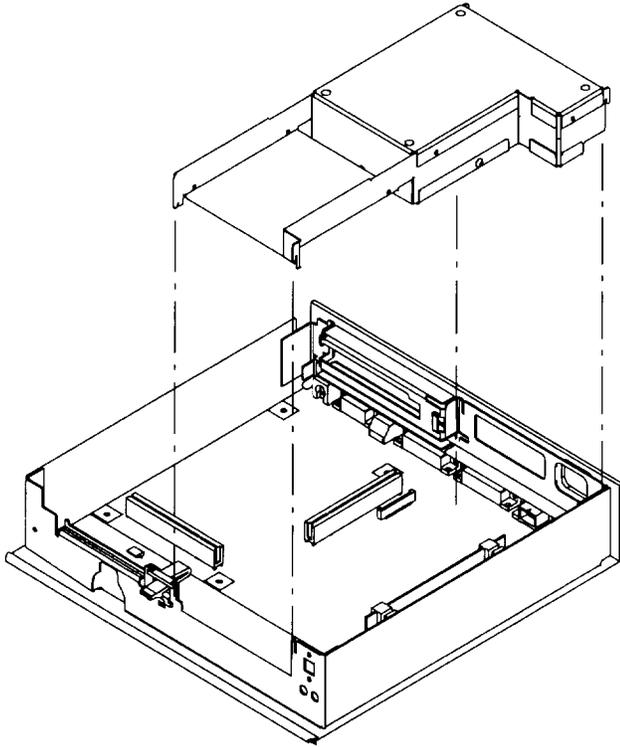
5. Place the drive into the power supply tray. The connector must be toward the rear.
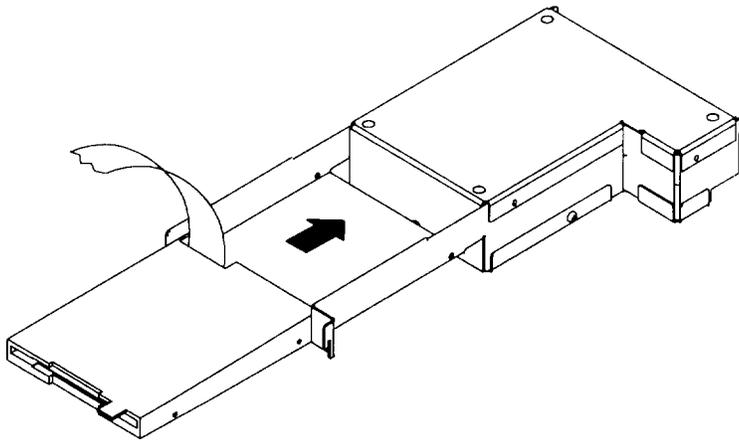
6. Install the four mounting screws into the diskette drive.
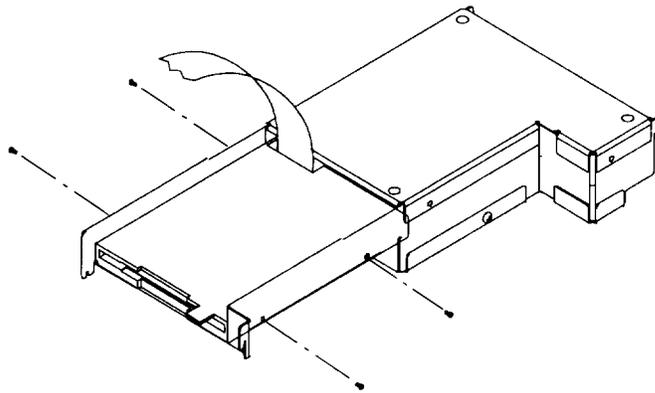
7. Open the diskette cable connector (J13) on the system board with your fingernail or a small screwdriver, being careful not to damage any part.

Front of Chassis   **System Board**
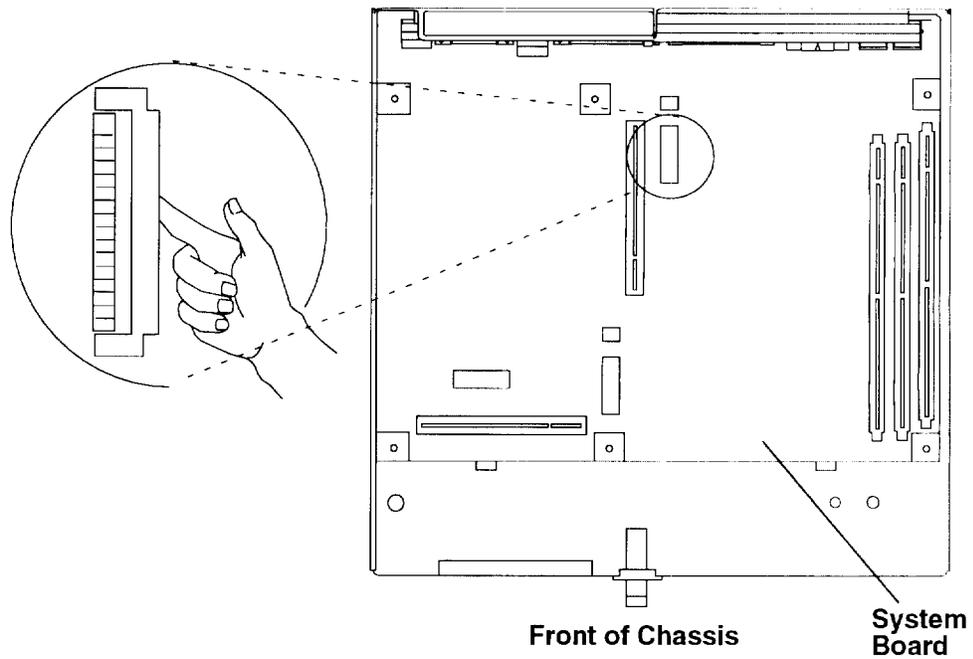
8. Insert the end of the diskette drive cable into the system board connector. The connector tabs on the cable must mate with the connector tabs on the system board connector.
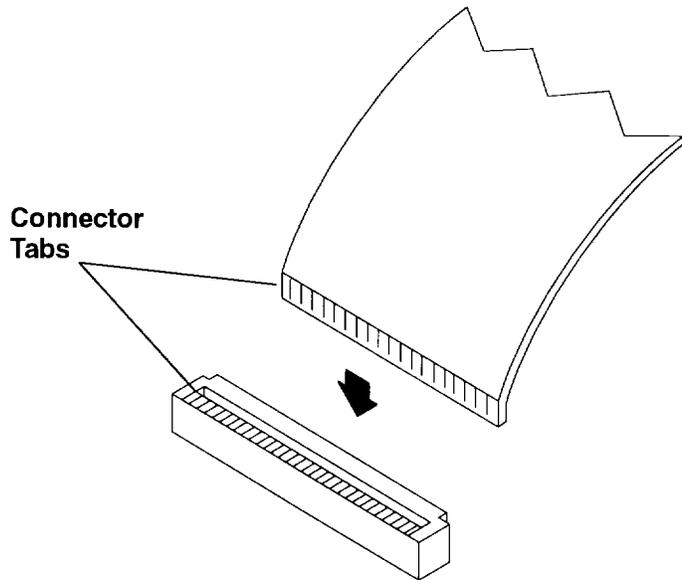
Connector Tabs

9. Press the connector edge firmly down to lock the cable in place. Ensure that both ends of the cable tab are locked.

Front of Chassis   **System Board**
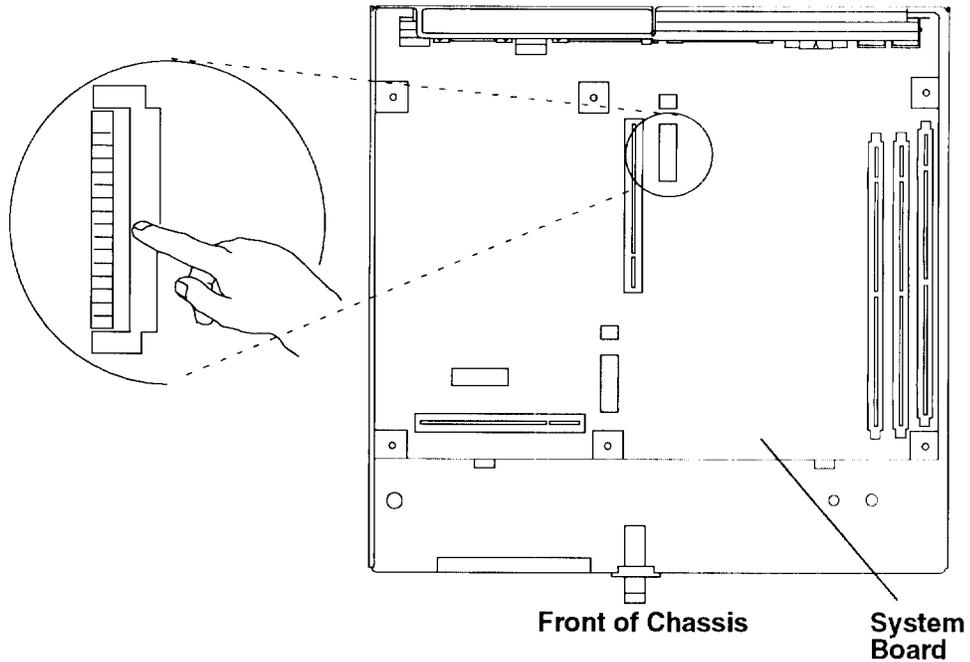
10. Place power supply tray in the chassis.

11. Replace the power supply tray screw.

12. Remove the blank cover plate in the Xstation cover and replace it with the new diskette bezel.

Do you have more options to install?

No   Go to "Replace the Cover" on page 2-25.

Yes   Return to the "Options Checklist" on page 2-5.

Install Optional DIMMs

Dual Inline Memory Modules (DIMMs) can be installed in your Xstation for extra font and data storage. Before beginning installation, verify that you have DIMMs compatible with the Xstation.

1. Turn the chassis so that the power switch faces you, then locate the DIMM sockets (J19, J21 and J22) in the front right-hand corner of the Xstation system board.

DIMM Socket 1 (J22)

DIMM Socket 2 (J21)

DIMM Socket 3 (J19)

Front of Chassis   **System Board**
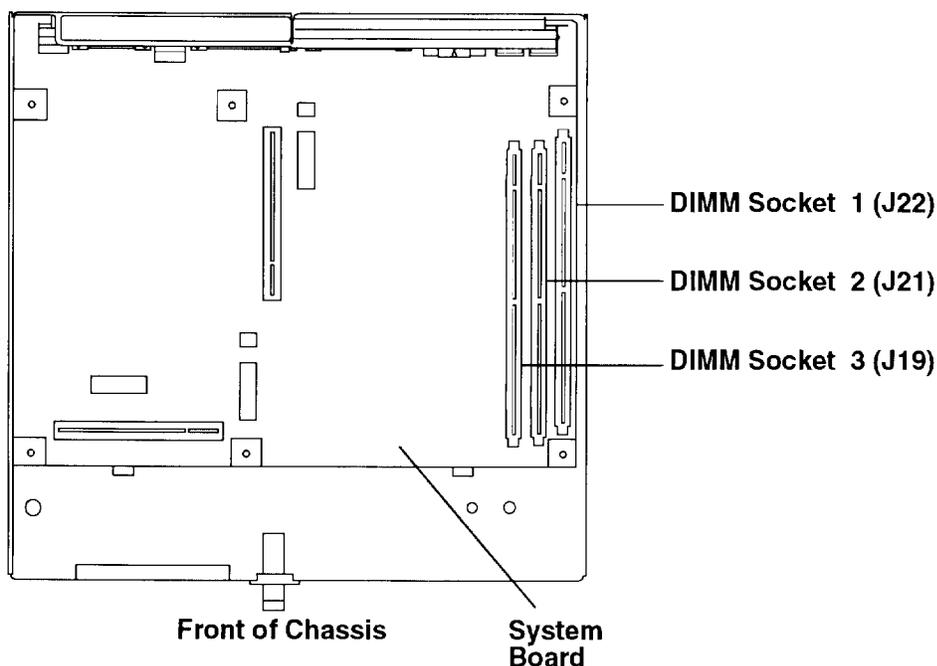
2. If it is necessary to remove any previously installed DIMMs, perform the following steps:

   a. With one hand, momentarily touch any metal surface of the system unit to minimize static electrical charges, and then touch a DIMM.

   b. Press both removal tabs outward to release the DIMM.

   c. Pull the DIMM straight up out of the socket.

Warning: Removing the DIMM diagonally may damage the DIMM socket.

Press Tabs Outward
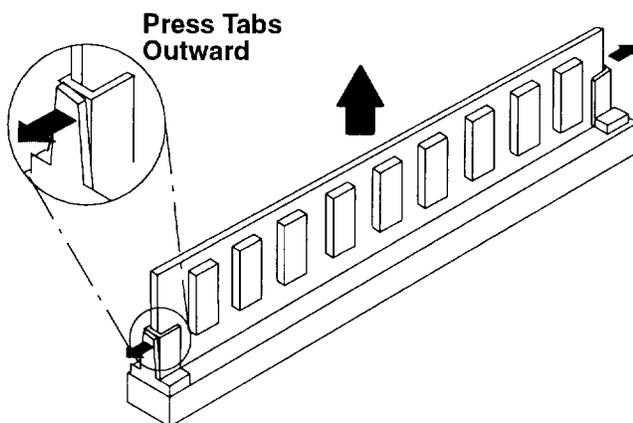
3. To install the DIMMs:

Note: If only one DIMM is installed, it should be placed in the socket 1 (J22).

   a. With one hand, momentarily touch any metal surface of the system unit to minimize static electrical charges, and then pick up a DIMM.

   b. The DIMMs are keyed so that they can only be inserted one way. Align the notches in the DIMM with the keys in the memory connectors.

Notch
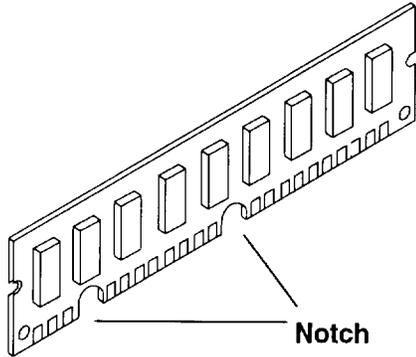
   c. Insert the DIMM straight down into the next unused socket.

Warning: Inserting the DIMM diagonally may damage the DIMM socket.

Tabs Move Inward
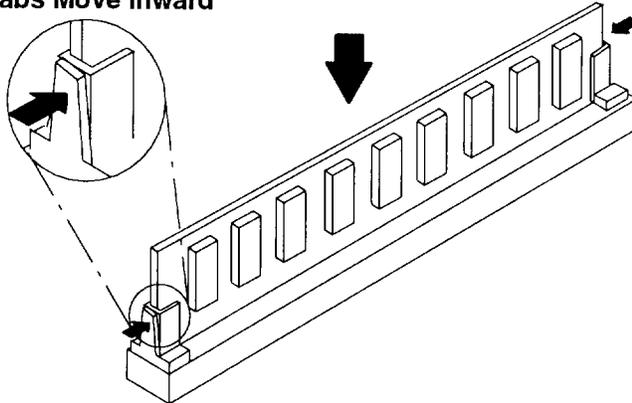
Do you have more options to install?

No   Go to "Replace the Cover" on page 2-25.

Yes   Return to the "Options Checklist" on page 2-5.

Install Optional Business Audio Card

1. If the riser card and the Business Audio card are not already assembled, assemble them.
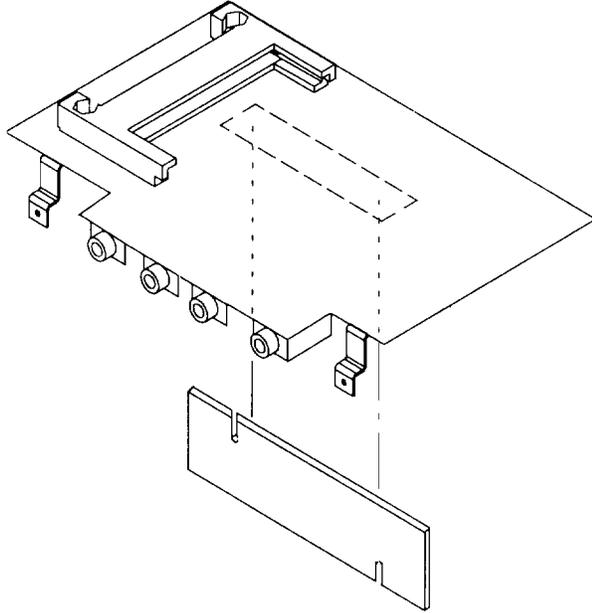
2. Insert the PCMCIA riser and Business Audio card into the PCMCIA connector (J4) on the system board
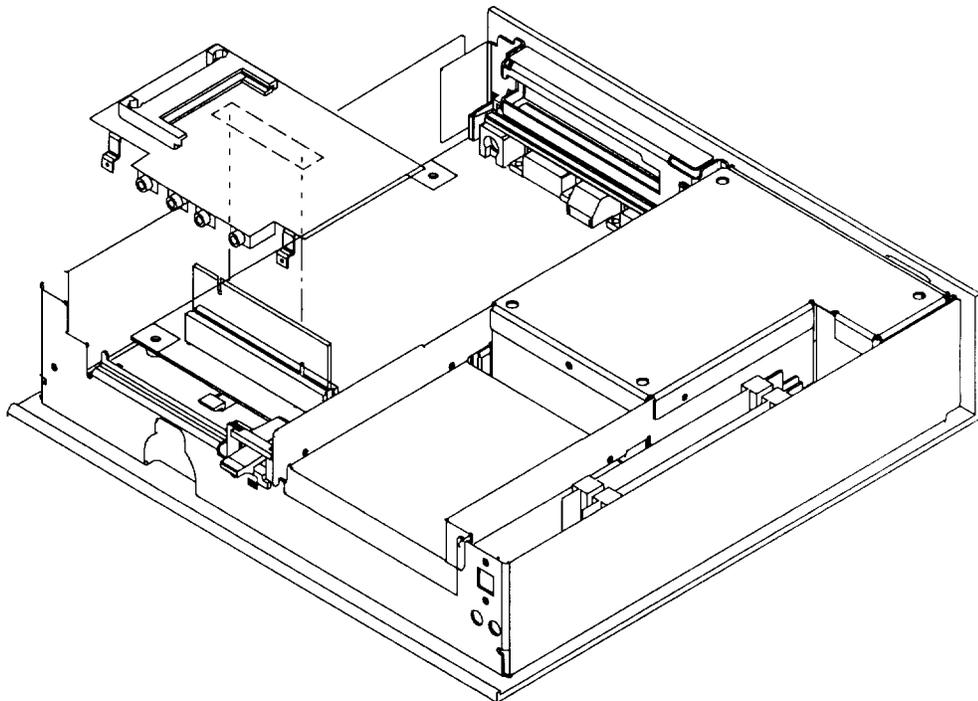
3. Install the two screws into the Business Audio card brackets.
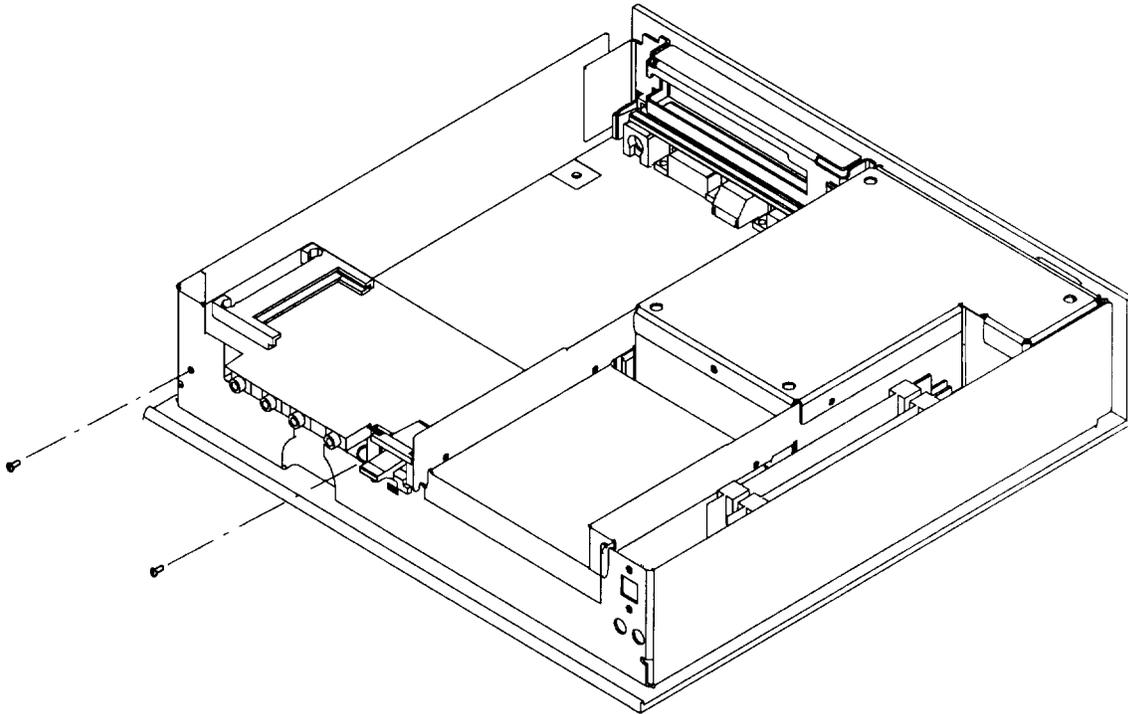
4. Remove the blank cover plate in the Xstation cover and replace it with the new Business Audio card cover plate.

Do you have more options to install?

No   Go to "Replace the Cover" on page 2-25.

Yes   Return to the "Options Checklist" on page 2-5.

Install Optional FLASH Connector Card

1. If the riser card and the FLASH connector card are not already assembled, assemble them.
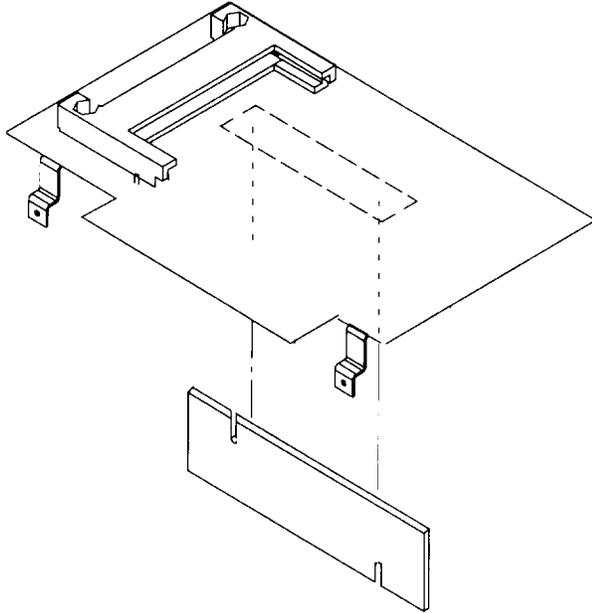
2. Insert the riser card and FLASH connector card into the PCMCIA connector (J4) on the system board
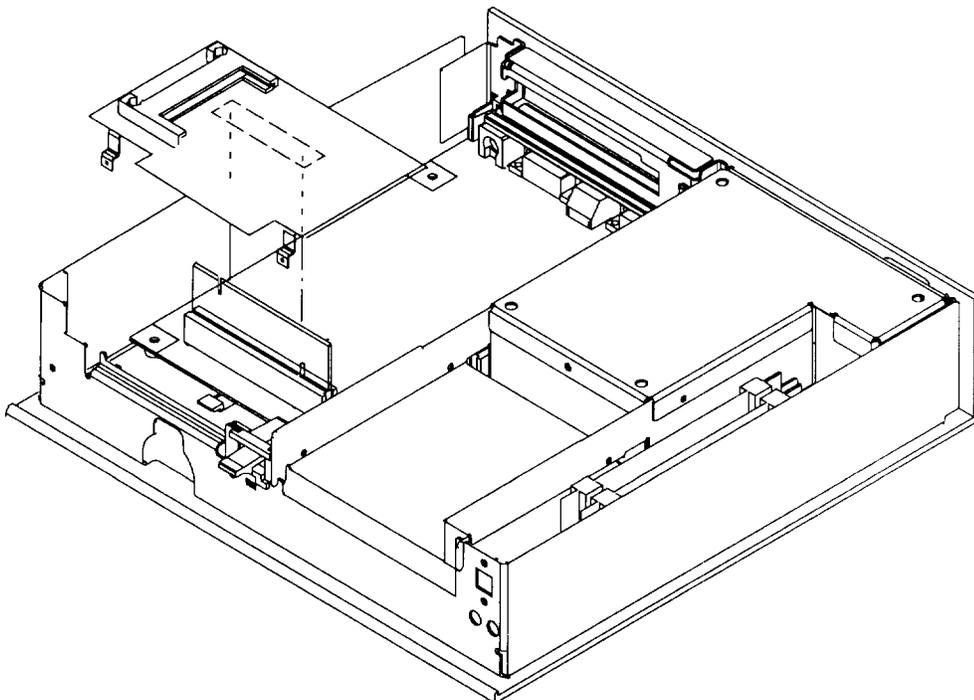
3. Install the two screws into the FLASH connector card brackets.
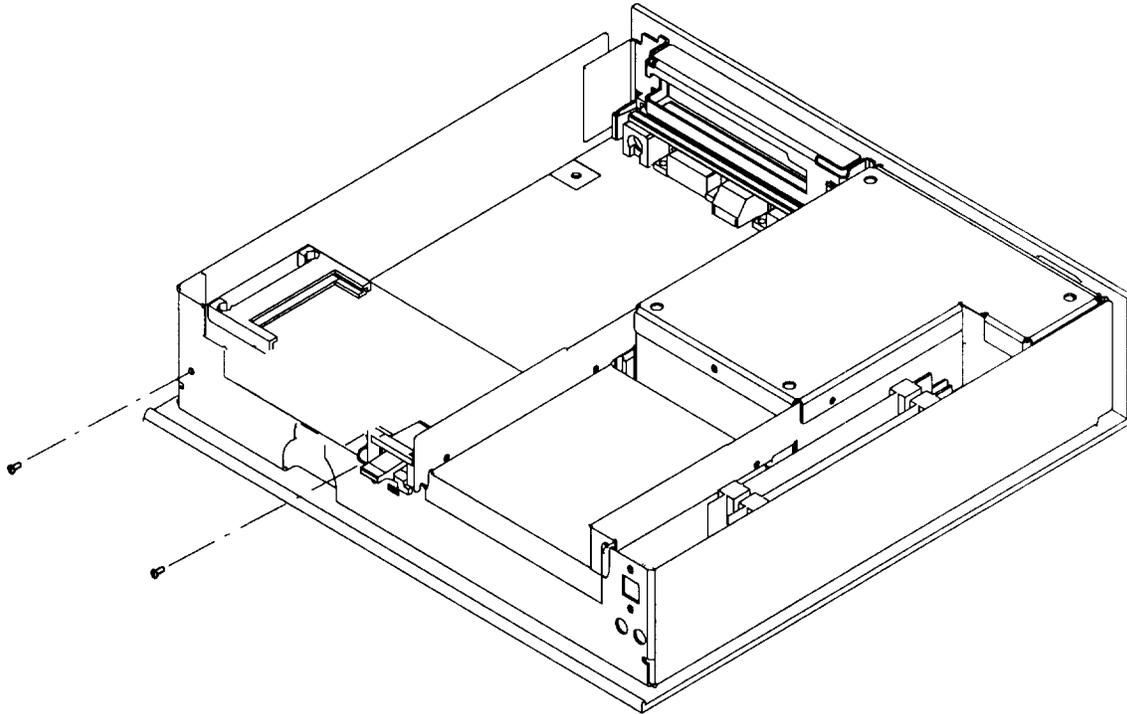
Do you have more options to install?

No   Go to "Replace the Cover" on page 2-25.

Yes   Return to the "Options Checklist" on page 2-5.

Install Optional FLASH Card

If you choose, you can install an optional FLASH card which can be used to hold additional fonts, data, and applications. The FLASH card is available in various capacities.

To install a FLASH card, follow the steps below:

1. One end of the FLASH card contains small sockets which fit over the pins of the FLASH card connector on the optional Business Audio or FLASH connector card. Look closely at the end of the FLASH card that contains the sockets: the left side has a groove down the middle of the long side; the right side has a groove down the top of the long side. These grooves allow the FLASH card to be inserted into the FLASH card connector only one way.
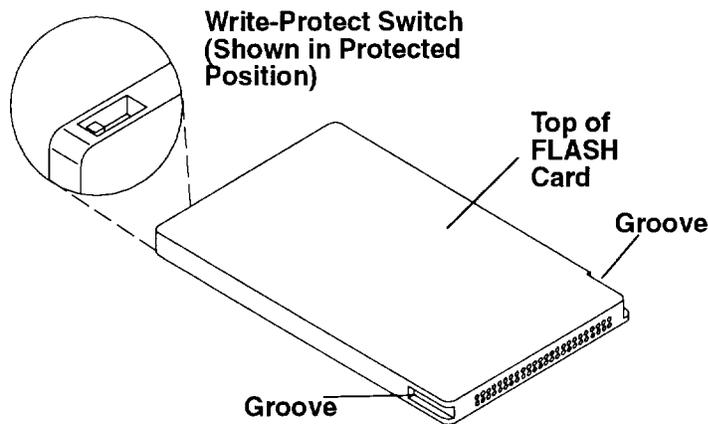
2. Turn the FLASH card so that the sockets face the pins in the FLASH card connector

3. Insert the FLASH card into the FLASH card connector on the PCMCIA card.

Do you have more options to install?

Install PCI Option Card

1. Remove the screw from the EMI bracket.
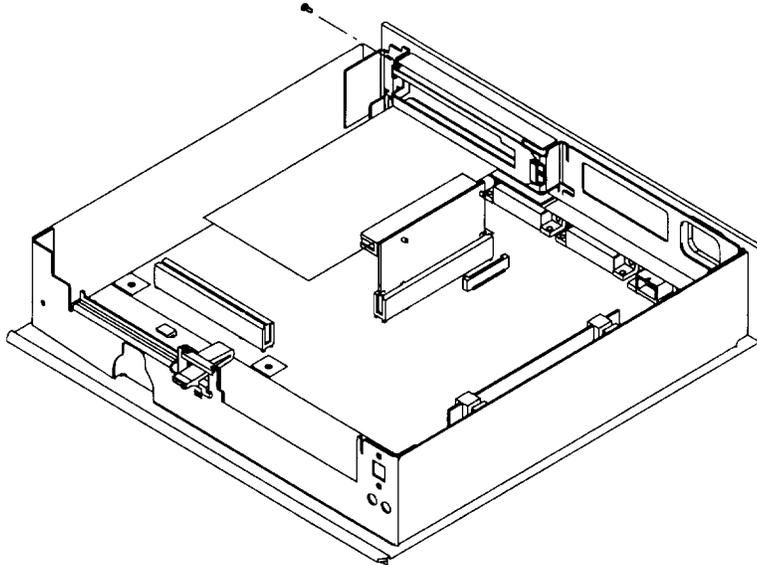
2. Remove the EMI bracket.

3. If the adapter and PCI riser card are not already assembled, assemble them. (You might find it easier to set the adapter and riser card inside the computer before assembling them).

   a. With the components on the adapter facing up, align the edge connectors on the adapter with the slot on the riser card.

   b. Press the adapter firmly into the riser card slot. (Make sure the metal tab on the rear of the adapter fits into the adapter slot hook. The riser card will not line up properly if the adapter is not fitted properly).
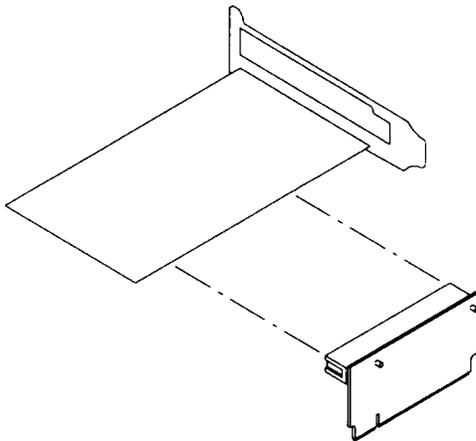
4. Install the adapter and riser card:

   a. Align the connector edge of the riser card with the PCI connector on the system board.

   b. Press the riser card firmly into the system board connector. Make sure the front of the adapter is flat on the front support.
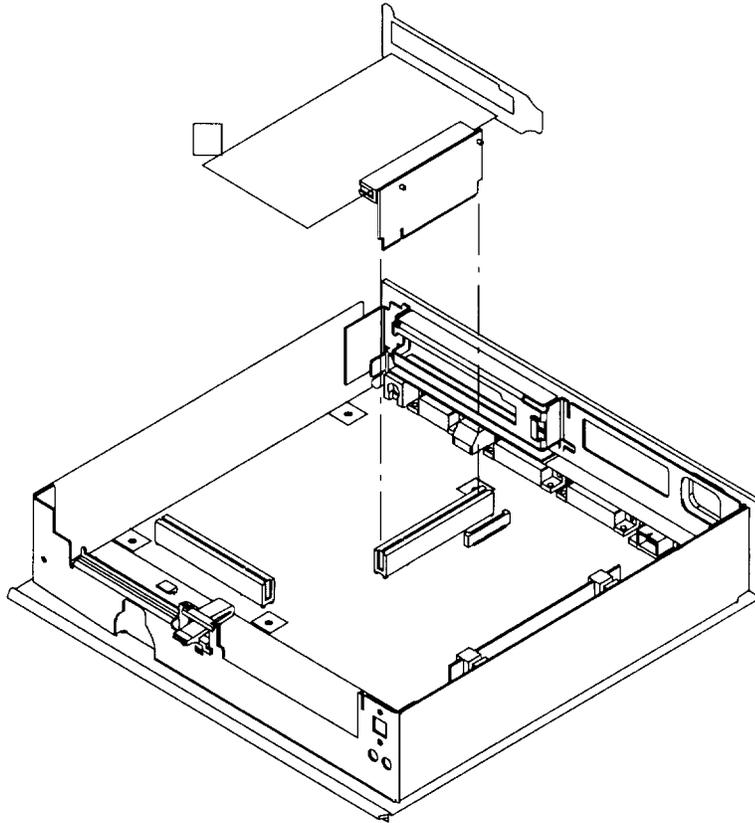
5. Insert and tighten the adapter screw.
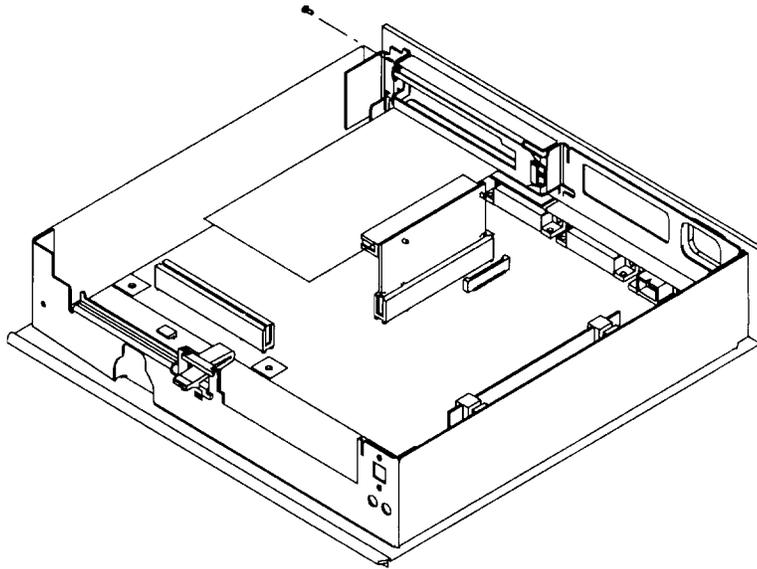
Do you have more options to install?

No   Go to "Replace the Cover" on page 2-25.

Yes   Return to the "Options Checklist" on page 2-5.

Configure System Jumpers

Display Jumpers

The display jumpers allow you to use several different types of displays with the Xstation. Looking at the front of the Xstation with the power switch facing you, the four jumpers (labeled 0, 1, 2, and 3 in the following figure) are those used for display configuration.

Display Jumpers

Front of Chassis

System Board
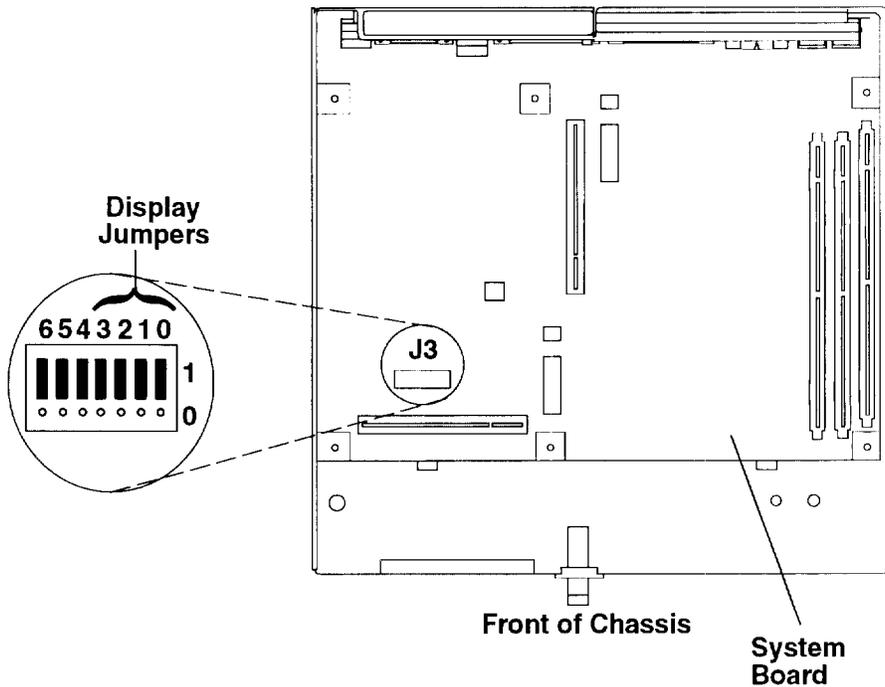
These four jumpers are factory-set to `1111`. To change the displays jumper setting, look up the proper setting in the table below, then record that setting here when you configure the system jumpers inside your Xstation.

Note: Powering up the Xstation without the display attached resets the Xstation display parameters. This may resolve some unreadable screen conditions.

The jumper setting was changed from the factory setting (`1111`) to ___ ___ ___ ___.

Display Type	Display Jumper 3 2 1 0	Screen Resolution	Frame Rate (Hz)	Mode Switch/ Button	Display Cable
8508 Mono	1 1 1 1	1280 x 1024 x 8	67	–	–
8517	1 1 1 1	1024 x 768 x 8	69.96	–	–
5081-016	1 1 1 1	1280 x 1024 x 8	60	–	58F2901
5081-019	1 1 1 1	1280 x 1024 x 8	60	–	58F2901
6091-016	1 1 1 1	1280 x 1024 x 8	60	out	58F2901
	1 1 0 1		77	in	
6091-019	1 1 1 1	1280 x 1024 x 8	60	2	58F2901
	1 1 1 0		67	3	

Display Type	Display Jumper 3 2 1 0	Screen Resolution	Frame Rate (Hz)	Mode Switch/ Button	Display Cable
6091-019i	1 1 1 1	1280 x 1024 x 8	60	–	58F2901
	1 1 0 1		77	–	
6091-023	1 1 1 1	1280 x 1024 x 8	60	–	58F2901
1091-051	1 1 1 1	1280 x 1024 x 8	72	–	09G3588
ValuePoint 6314, 6319	1 1 1 1	1024 x 768	60	–	–
	0 0 1 0		70	–	–
ValuePoint 6317, 6324, 6325, 9524, 6327, 9525	1 1 1 1	1024 x 768	60	–	–
	0 0 1 0		70	–	–
	1 0 1 1		75.8	–	–
	1 0 1 0	1280 x 1024	60	–	–
ValuePoint 9527, 9521	1 1 1 1	1024 x 768	60	–	–
	0 0 1 0		70	–	–
	1 0 1 0	1280 x 1024	60	–	–
	1 1 0 1		77	–	–
POWERdisplay 16	1 1 1 1	1280 x 1024 x 8	60	out	58F2901
	1 1 0 1		77	in	
POWERdisplay 16S	1 1 1 1	1280 x 1024 x 8	72		09G3588
POWERdisplay 17	1 1 1 1	1280 x 1024	60	–	58F2901
POWERdisplay 19	1 1 1 1	1280 x 1024 x 8	60	–	58F2901
	1 1 0 1		77	–	
POWERdisplay 20	1 1 1 1	1280 x 1024	60	–	58F2901

Note: After making changes to the display jumper settings, verify that the display's Mode Switch or Button is in the position indicated in the table above. The Mode Switch or Button is located below the display screen as shown on page 1-8.

Password-Reset Jumper

The Xstation configuration described in Chapter 3 can be protected by a password. To remove this protection (for example, if the password has been lost), move the system jumper labeled 6 in the following figure to the opposite setting. If the password-reset jumper is in the 0 position, move it to the 1 position; if the password-reset jumper is in the 1 position, move it to the 0 position.

Password Reset Jumper

6 5 4 3 2 1 0

J3

Front of Chassis
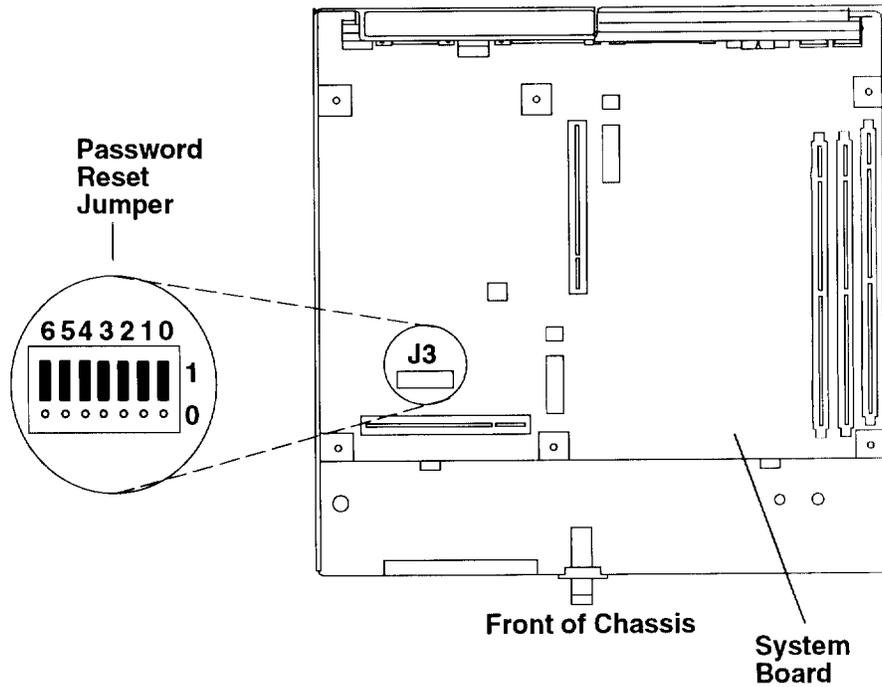
System Board

Alternate PCMCIA Boot Jumper

POST code is generally read from the base FLASH on the system board. There may be rare situations where you need to boot from the optional FLASH card. To do this, position the alternate PCMCIA boot jumper (J8) as shown. If the jumper is missing, the code is read from Base FLASH.

Boot from optional FLASH card

J8

Boot from Base FLASH (factory position)

System Board

Front of Chassis
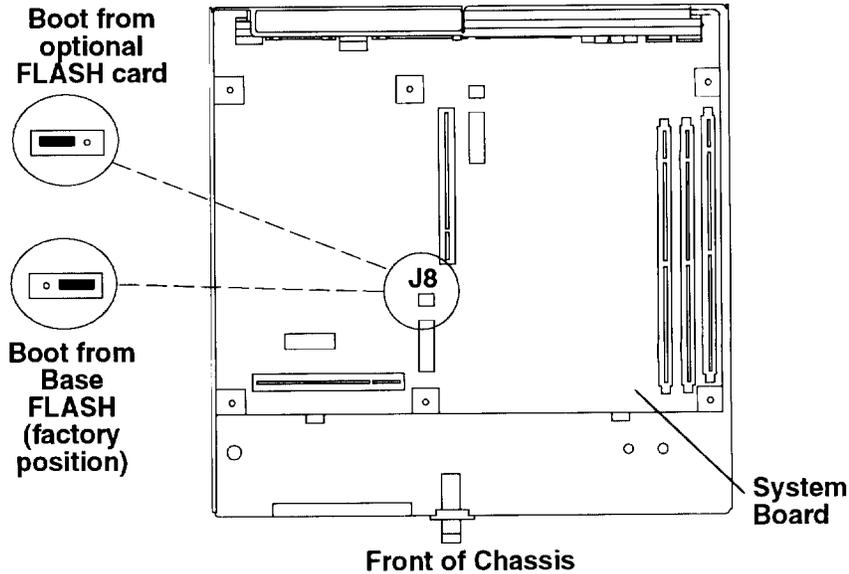
Speaker Jumpers

The speaker jumpers are used to select sound output. The factory position (1) selects sound to be output through the keyboard speaker. To select sound to be output through the internal beeper, jumper as shown.
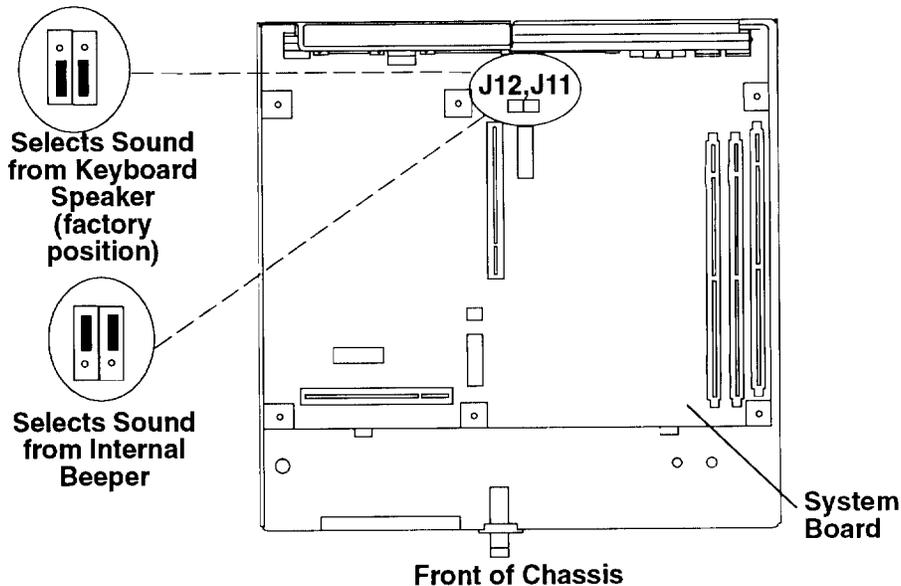
Selects Sound from Keyboard Speaker (factory position)

J12,J11

Selects Sound from Internal Beeper

System Board

Front of Chassis

Do you have more options to install?

No　　　　　Go to "Replace the Cover" on page 2-25.

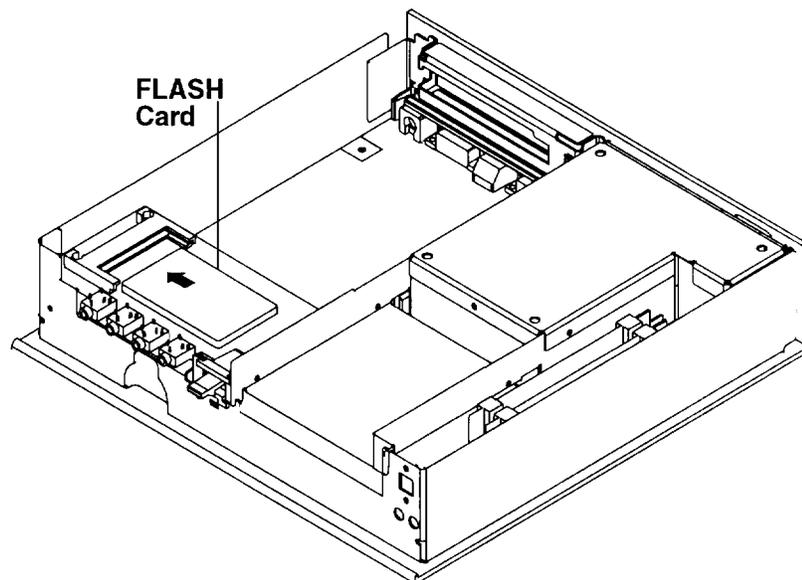**Yes**　　　　　Return to the "Options Checklist" on page 2-5.

Replace the Cover

1. Install the cover on the Xstation.

   a. Align the cover with the front of the Xstation.

   b. Slowly and carefully slide the cover in until the latch on the front of the Xstation locks into place.
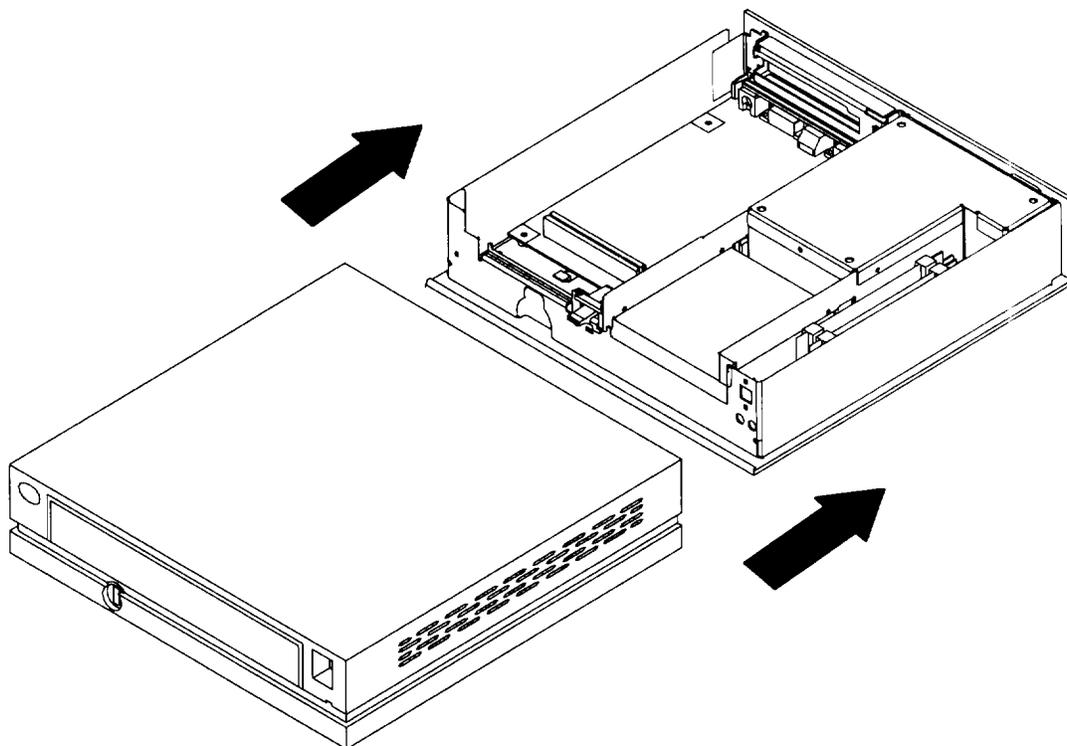
Note: If you cannot get the covers on completely, make sure that the drive tray and front of the adapter are properly lined up with cover openings.

2. Lock the cover on your Xstation.
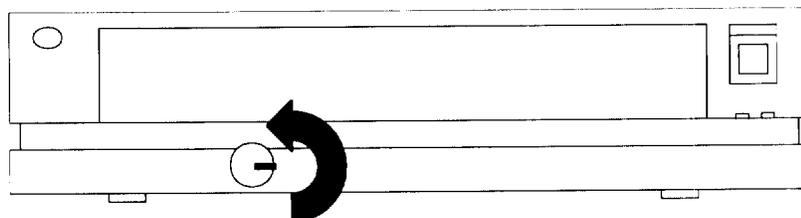
3. Reconnect the cables to the back of the Xstation, then plug the power cords into properly grounded electrical outlets.
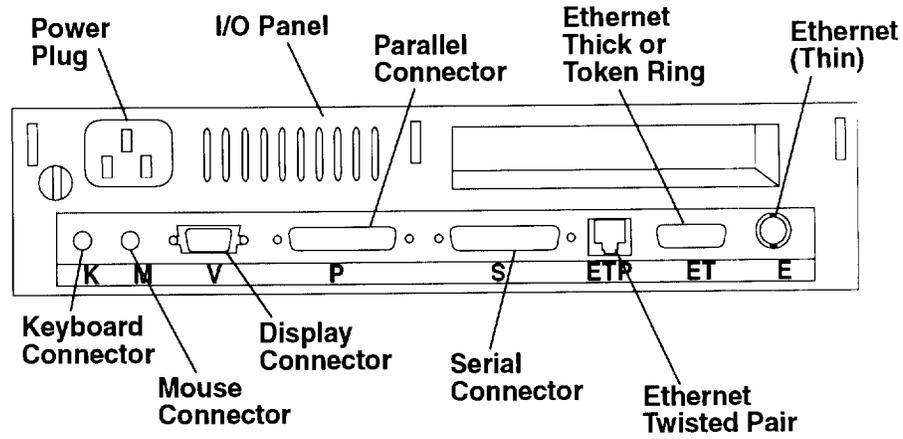
Do you want to attach an optional serial port fan out cable?

No   Return to "Step 3. Connect the Cables" on page 1-3.

Yes   Continue to "Install an Optional Serial Port Fan Out Cable" on page 2-27.

Install an Optional Serial Port Fan Out Cable

The optional serial port fan out cable provides an additional serial port for your Xstation. To install a fan out cable, first remove any device already attached to the Xstation serial port.

1. Attach the serial port fan out cable to the 25 pin D-shell connector (S).
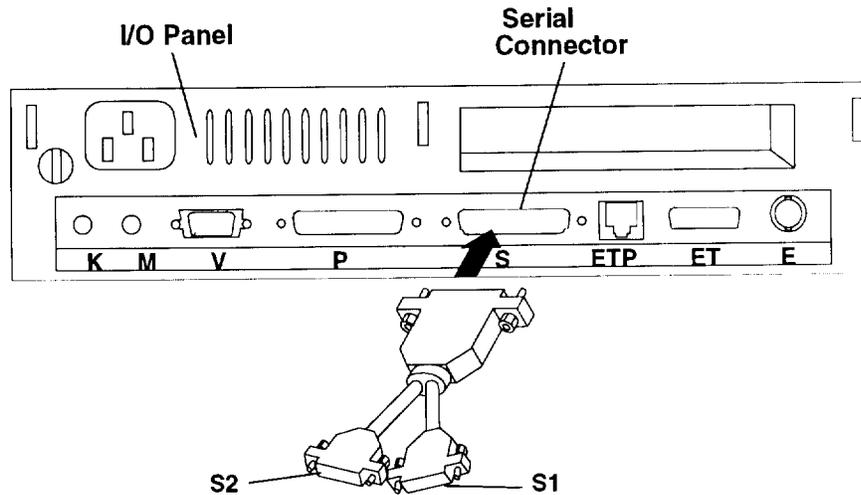
Note: Some fan out cables may be marked S0 and S1.

2. Plug any device that had been connected to the Xstation serial port into the serial port fan out cable connector marked "S1."

3. If desired, connect a second device to the connector marked "S2."

Did you come to Chapter 2 from Chapter 1?

No   The hardware installation is complete; proceed to Chapter 3.

Yes   Return to "Step 3. Connect the Cables" on page 1-3 to complete the hardware setup of your Xstation.

Chapter 3. Xstation Configuration and Startup

You are now ready to establish a network connection, the following steps will help you accomplish this task. The two local menus which you have available to use are **Basic Configuration** and **Advanced Configuration**. For most environments, you will be able to set all the parameters needed at the **Basic Configuration** menu. At the **Advanced Configuration** menu, you can set the same basic parameters, as well as other advanced parameters. The **Advanced Configuration** menu can be used in a more complex environment where you would have several backup servers for each server function.

Step 1. Start the Xstation

Set the display and Xstation power switches to On (1).

When your Xstation is powered on, a Power-On Self-Test (POST) and built-in diagnostics begin automatically.

```
                              7010 Xstation Model 160
                              (c) Copyright Notice
                              Version:XXX


Adapters
  Keyboard
  Mouse
Type of Network - XXXXXXXXXXXX

Configuration Information
  ...
  ...
  ...


Press Ctrl, Alt, then Backspace for Main Menu
```
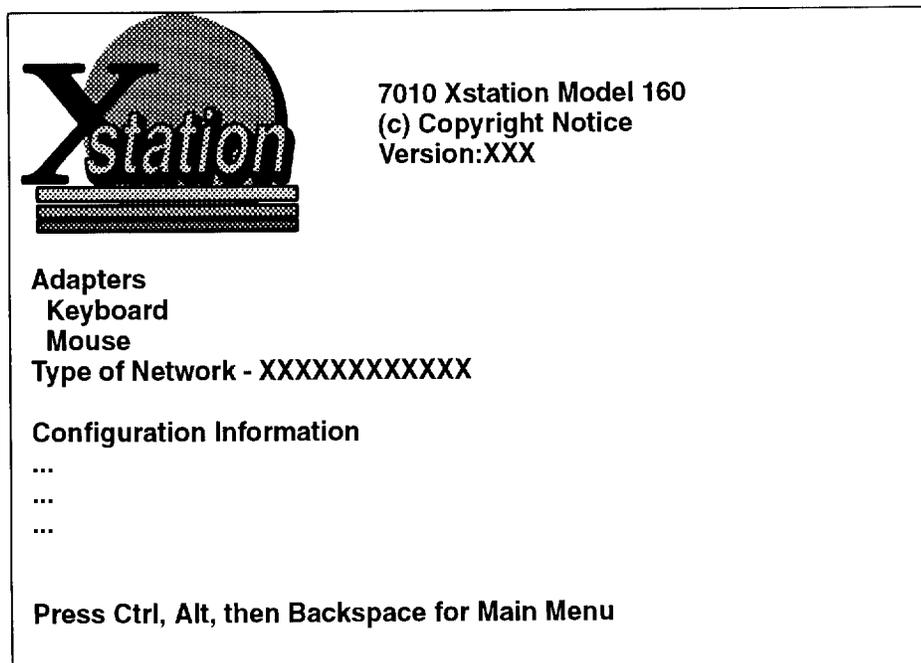
If the Xstation fails to complete the POST or LAN communications test, go to Chapter 5, "Problem Determination Procedures."

Pressing the Esc key while the POST and LAN screen is displayed or hold down the Ctrl and Alt keys and then press Backspace during an X-Windows session will display the Xstation **Main Menu**. These graphical menus allow you to change the configuration of your Xstation and run programs to diagnose your Xstation and attached devices.

Step 2. Record the Xstation's Hardware Address

Record the hardware
address from the initial
boot screen and give it
to your system adminis-
trator.

```
7010 Xstation Model 160
(c) Copyright Notice
Version: XXX                    XXXXXXXXXXXX

Adapters
  Keyboard
  Mouse
Type of Network - XXXXXXXXXXXX
```
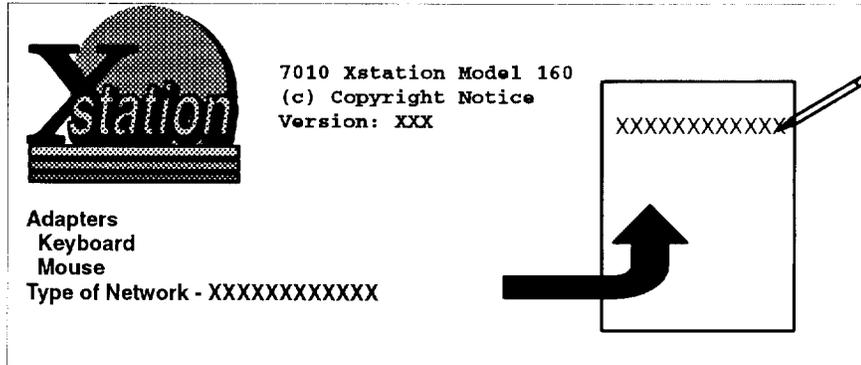
Step 3. Are You the System Administrator for This Xstation?

If you are the system administrator for this Xstation, proceed to Step 4. If not, stop here and
wait for your system administrator to complete the Xstation setup.

Step 4. Choose the Network Configuration

Four scenarios are provided below for examples. Check the box beside the type of network configuration you will use, then go to the indicated procedure.
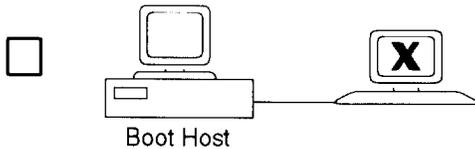
Boot Host

▶ **Go to AIX boot host, no gateway, x_st_mgrd login on page 3-4.**
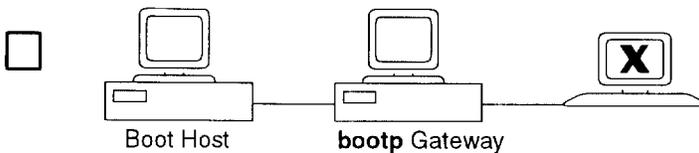
Boot Host   **bootp** Gateway

▶ **Go to AIX boot host, gateway that passes bootp requests, x_st_mgrd login on page 3-6.**
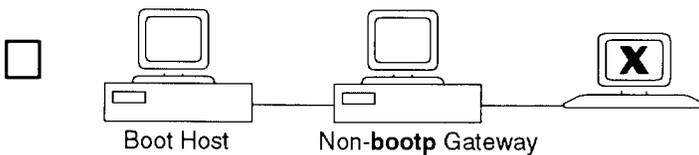
Boot Host   Non-**bootp** Gateway

▶ **Go to AIX boot host, gateway that does not pass bootp requests, x_st_mgrd login on page 3-9.**

Non-AIX   Non-**bootp**   File Servers
Boot Host   Gateway
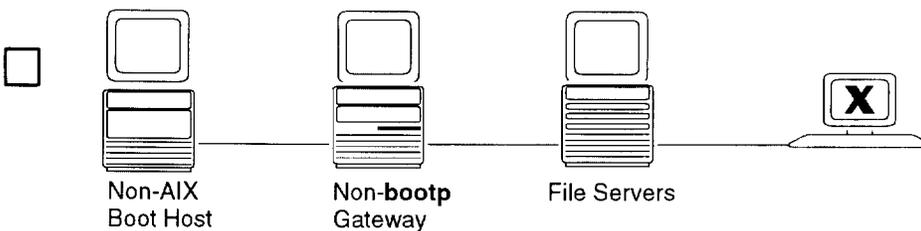
▶ **Go to Non-AIX boot host, no bootp, a gateway, XDM login, network font server on page 3-12.**

Step 5. Configuration Procedures

AIX boot host, no gateway, x_st_mgrd login.

Boot Host

 On the Host:

- Install the Xstation's Manager Software.
- Add the Xstation's **ipaddress** and **name** to **/etc/hosts**.
- Use the **smit x_config** command to:

Define an Xstation Network Type

Type or select values in entry fields.
Press Enter AFTER making all desired changes

	[Entry Fields]
* Xstation Network TYPE Name	[x_st_mgr.network1]
* NETWORK Type	[ethernet]
* SERVER PORT Number	[9000] ◄━━━ **x_st_mgrd** port number is listed in **/etc/services**. 9000 is the SMIT default.
* HOME Directory	[/etc/x_st_mgr]
* BOOTFILE	[X160serv]
DOMAIN Name Server	[]
GATEWAY	[]
Subnet MASK	[]

Add an Xstation

Add an Xstation 160

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

	[Entry Fields]
* Xstation NAME	[xstation1]
* Xstation Network TYPE	[x_st_mgr.network1]
* Hardware ADDRESS	[XXXXXXXXXXXX] ◄━━

- Complete the Verification Checklist in Step 6.

XXXXXXXXXXXX

Hardware Address written down in Step 2.

AIX boot host, no gateway, x_st_mgrd login (continued).
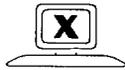
[X] **On the Xstation:**

- Make sure the Xstation is at factory defaults:

  Go to Local Configuration **Main Menu** (at initial boot screen, press
  CTRL- ALT- Backspace).
  Select **Restore Defaults**, then select **Save Changes**.

(logo) | Copyright Statement and Version |

Main Menu

Xstation Session:
☐ X-Windows
☐ Local Clients

Configuration:
Language-Selection: |English (U.S.)|
☐ Basic Configuration
☐ Advanced Configuration
☐ Hardware Configuration

Utilities:
☐ Startup Messages
☐ Statistics and Logs
☐ Test the Terminal

| Exit | | Save Changes | | Restore Defaults | | Reboot | | Copyrights | | Help |

Basic Configuration

Network Parameters:
Hardware Address (Token Ring): XXXXXXXXXXXX
BOOTP Method: | Broadcast |
Terminal (Name or IP Address): ▓▓▓▓▓▓▓▓▓▓▓▓
Gateway (Name or IP Address): ▓▓▓▓▓▓▓▓▓▓▓▓
Subnet Mask: ▓▓▓▓▓▓▓▓▓▓

Primary Server:
Configuration Server: ▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓
Login Server: | XSTMD :9000 |
File Server: | TFTP :usr/lib/X11 |
Font Server: | FILE :usr/lib/X11/ fonts |

_____ Esc _____
| Main Menu | | Help |

Reboot the Xstation.

AIX boot host, gateway that passes bootp requests, x_st_mgrd login.

Boot Host   **bootp** Gateway

On the Host:

- Install the Xstation's Manager Software.
- Add the Xstation's **ipaddress** and **name** to **/etc/hosts**.
- Use the **smit x_config** command to:

Define an Xstation Network Type

Type or select values in entry fields.
Press Enter AFTER making all desired changes

                                    [Entry Fields]

```
* Xstation Network TYPE Name    [x_st_mgr.network1]
* NETWORK Type                  [ethernet]              x_st_mgrd port number
* SERVER PORT Number            [9000] ◄───►            is listed in /etc/services.
* HOME Directory                [/etc/x_st_mgr]         9000 is the SMIT
* BOOTFILE                      [X160serv]              default.
  DOMAIN Name Server            []
  GATEWAY                       [gateway1]
  Subnet MASK                   [255.255.255.0]
```

Add an Xstation

Add an Xstation 160

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

                                    [Entry Fields]

```
* Xstation NAME                 [xstation1]
* Xstation Network TYPE [x_st_mgr.network1]
* Hardware ADDRESS    [XXXXXXXXXXXX] ◄───
```

- Complete the Verification Checklist in Step 6.

> XXXXXXXXXXXX
> Hardware Address
> written down in
> Step 2.

AIX boot host, gateway that passes bootp requests, x_st_mgrd login (continued).

On the Xstation:

● Make sure the Xstation is at factory defaults:

Go to Local Configuration **Main Menu** (at initial boot screen, press
CTRL- ALT- Backspace).

Select **Restore Defaults**, then select **Save Changes**.

● Select **Basic Configuration** to modify defaults:

Network Parameters
Change **BOOTP Method** to Direct.
Add terminal Internet address.
Add gateway Internet address.
Add subnet mask.

Primary Servers
Add configuration server Internet address.

```
                        Basic Configuration

 Network Parameters:
     Hardware Address (Token Ring):  XXXXXXXXXXXX
 ➡ BOOTP Method: [Direct        ]
 ➡ Terminal (Name or IP Address): [ XXX.XXX.XXX.XXX ]
 ➡ Gateway (Name or IP Address): [ XXX.XXX.XXX.XXX ]
 ➡ Subnet Mask: [ XXX.XXX.XXX.XXX ]
 Primary Server:
 ➡ Configuration Server: [(XXX.XXX.XXX.XXX):/etc/x_st_mgr/xs160/cfg]
     Login Server: [ XSTMD  :9000                    ]
     File Server: [ TFTP :/usr/lib/X11 ]
     Font Server: [ FILE :usr/lib/X11/fonts            ]



 _____ Esc _____
 [ Main Menu    ]   [Help]
```

Note: ➡ indicates modifications needed.

AIX boot host, gateway that passes bootp requests, x_st_mgrd login (continued).

```
┌─────────────────────────────────────────────────────────────┐
│                     Configuration Server                     │
│                                               ┌─────────┐    │
│                                               │  Exit   │    │
│           Name:      ┌──────────────────┐     ├─────────┤    │
│                      │                  │     │ Verify  │    │
│    ➡  or IP Address: │ XXX.XXX.XXX.XXX  │     ├─────────┤    │
│                      └──────────────────┘     │  Table  │    │
│           Path:      ┌──────────────────┐     ├─────────┤    │
│                      │/etc/x_st_mgr/xs160/cfg│ │ Change  │    │
│                      └──────────────────┘     ├─────────┤    │
│                                               │ Delete  │    │
│                                               └─────────┘    │
│                                                              │
│                                                              │
│                                                              │
│                                                              │
│                                                              │
│                                                              │
│                                                              │
│                                                              │
└─────────────────────────────────────────────────────────────┘
```

Save these changes and reboot the Xstation.

AIX boot host, gateway that does not pass bootp requests, x_st_mgrd login.

Boot Host   Non-**bootp** Gateway

On the Host:

- Install the Xstation's Manager Software.
- Add the Xstation's **ipaddress** and **name** to **/etc/hosts**.
- Use the **smit x_config** command to

Define an Xstation Network Type

Type or select values in entry fields.
Press Enter AFTER making all desired changes

	[Entry Fields]
* Xstation Network TYPE Name	[x_st_mgr.network1]
* NETWORK Type	[ethernet]
* SERVER PORT Number	[9000]
* HOME Directory	[/etc/x_st_mgr]
* BOOTFILE	[X160serv]
DOMAIN Name Server	[]
GATEWAY	[gateway1]
Subnet MASK	[255.255.255.0]

x_st_mgrd port number is listed in **/etc/services**. 9000 is the SMIT default.

Add an Xstation

Add an Xstation 160

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

	[Entry Fields]
* Xstation NAME	[xstation1]
* Xstation Network TYPE	[x_st_mgr.network1]
* Hardware ADDRESS	[XXXXXXXXXXXX]

XXXXXXXXXXXX
Hardware Address written down in Step 2.

- Complete the Verification Checklist in Step 6.

AIX boot host, gateway that does not pass bootp requests, x_st_mgrd login (continued).

On the Xstation:

- Make sure the Xstation is at factory defaults:

  Go to Local Configuration **Main Menu** (at initial boot screen, press CTRL- ALT– Backspace).

  Select **Restore Defaults**, then select **Save Changes**.

- Select **Basic Configuration** to modify defaults:

  Network Parameters

  Change **BOOTP Method** to Disable.
  Add terminal Internet address.
  Add gateway Internet address.
  Add subnet mask.

  Primary Servers

  Add configuration server Internet address.

```
                          Basic Configuration

    Network Parameters:
        Hardware Address (Token Ring):  XXXXXXXXXXXX
  ➡   BOOTP Method:│Disable      │
  ➡   Terminal (Name or IP Address): │ XXX.XXX.XXX.XXX │
  ➡   Gateway (Name or IP Address):│XXX.XXX.XXX.XXX │
  ➡   Subnet Mask: │XXX.XXX.XXX.XXX │
    Primary Server:
  ➡   Configuration Server: │(XXX.XXX.XXX.XXX):/etc/x_st_mgr/xs160/cfg│
        Login Server:│ XSTMD  :9000              │
        File Server: │TFTP :/usr/lib/X11 │
        Font Server:│ FILE :usr/lib/X11/fonts         │




        ____ Esc _____
        │ Main Menu  │   │Help│
```

Note: ➡   indicates modifications needed.

AIX boot host, gateway that does not pass bootp requests, x_st_mgrd login (continued).

```
┌────────────────────────────────────────────────────────────────────┐
│                      Configuration Server                          │
│                                                    ┌─────────┐      │
│                                                    │ Exit    │      │
│         Name:          ┌──────────────────┐        ├─────────┤      │
│                        │                  │        │ Verify  │      │
│   ➡  or IP Address:    │ XXX.XXX.XXX.XXX  │        ├─────────┤      │
│                        └──────────────────┘        │ Table   │      │
│         Path:          ┌──────────────────┐        ├─────────┤      │
│                        │ /etc/x_st_ mgr/xs160/cfg │ Change  │      │
│                        └──────────────────┘        ├─────────┤      │
│                                                    │ Delete  │      │
│                                                    └─────────┘      │
│                                                                    │
│                                                                    │
│                                                                    │
│                                                                    │
│                                                                    │
└────────────────────────────────────────────────────────────────────┘
```

Save these changes and reboot the Xstation.

Non-AIX boot host, no bootp requests, a gateway, XDM login, network font server. This configuration also works for an AIX host.

Non-AIX   Non-**bootp**   File Servers
Boot Host   Gateway
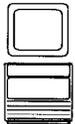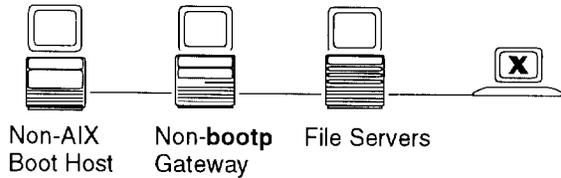
On the Host:

- Add the Xstation's **ipaddress** and **name** to **/etc/hosts**.
- Create **ipaddress** file if remote configuration is desired.
  (See the sample **ipaddress** file in Step 7.)
- Setup XDM
- Complete the Verification Checklist in Step 6.
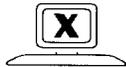
On the Xstation:

- Make sure the Xstation is at factory defaults:

  Go to Local Configuration **Main Menu** (at initial boot screen, press
  CTRL- ALT- Backspace).
  Select **Restore Defaults**, then select **Save Changes**.

- Select **Basic Configuration** to modify defaults:

  Network Parameters

  Change **BOOTP Method** to Disable.
  Add terminal Internet address.
  Add gateway Internet address.
  Add subnet mask.

  Primary Servers

  Add configuration server (Boot Host) Internet address.
  Modify Login Server to use XDM_ DIRECT and add server address
  Change Font Servers to the following:
  Add first entry to be Network Font Server; add Internet address
  and port (usually 7500).

```
                          Basic Configuration
     Network Parameters:
          Hardware Address (Token Ring):  XXXXXXXXXXXX
     ➡  BOOTP Method:│Disable        │
     ➡  Terminal (Name or IP Address): │ XXX.XXX.XXX.XXX │
     ➡  Gateway (Name or IP Address):│ XXX.XXX.XXX.XXX │
     ➡  Subnet Mask: │XXX.XXX.XXX.XXX │
     Primary Server:
     ➡  Configuration Server: │(XXX.XXX.XXX.XXX):/etc/x_st_mgr/xs160/cfg│
     ➡  Login Server:│ XSTMD  :9000                │
          File Server: │TFTP :/usr/lib/X11    │
     ➡  Font Server:│ TCP (XXX.XXX.XXX.XXX) :7500        │
```

Non-AIX boot host, no bootp requests, a gateway, XDM login, network font server (continued). This configuration also works for an AIX host.

Configuration Server

Name:	
➡ or IP Address:	XXX.XXX.XXX.XXX
Path:	/etc/x_st_ mgr/xs160/cfg

Exit
Verify
Table
Change
Delete

Login Server

➡ Login Type:	XDM_DIRECT
Name:	
➡ or IP Address:	XXX.XXX.XXX.XXX
Port:	

Exit
Verify
Table
Change
Delete

Font Servers

➡ Font Server:	TCP (Network Font Server)
Name:	
➡ or IP Address:	XXX.XXX.XXX.XXX
Port:	7500
Path:	

Exit
Verify
Table
Change
Add Before
Add After
Delete

Font Servers: (Select the item you wish to manage.)

TCP (XXX.XXX.XXX.XXX):7500
File :/usr/lib/X11/fonts
File :/usr/lib/X11/fonts/misc
File :/usr/lib/X11/fonts/100dpi
File :/usr/lib/X11/fonts/75dpi

Note: ➡ indicates modifications needed.

Save these changes and reboot the Xstation.

Step 6. Verification Check List

On an AIX Host:

☐ The appropriate network is up. Enter:
```
netstat -iv
```

☐ **x_st_mgrd** is running. Enter:
```
ps -ae | grep x_st_mgrd
```

☐ **inetd** is running. Enter:
```
ps -ae | grep inetd
```

☐ **tftpd, bootpd** lines not commented out in **/etc/inetd.conf**

☐ **nfsd** is running. Enter:
```
ps -ae | grep nfsd
```

☐ **/etc/x_st_mgr** and **/usr/lib/X11** are in **/etc/exports**. Enter:
```
smit nfs
Select Change/Show Attributes of an Exported
Directory, then press the F4 key to list
directories.
```

☐ If **/etc/tftpaccess.ctl** is present (secure tftp), then **/etc/x_st_mgr** and **/usr/lib/X11** are set to "allow."

☐ All manual changes made to **/etc/bootptab** file are correct.

☐ The default fonts are in place:
   /usr/lib/X11/fonts
   /usr/lib/X11/fonts/misc
   /usr/lib/X11/fonts/75dpi
   /usr/lib/X11/fonts/100dpi

☐ All manual changes made to **ipaddress** file are correct.

On a Non-AIX Host:

☐ The appropriate network is up.

☐ **tftpd** is running, and the font paths and **/etc/x_st_mgr** are accessible if in secure **tftp** mode.

☐ **nfsd** is running, and **/etc/x_st_mgr** and **/usr/lib/X11** are in **/etc/exports**

☐ **xdm** is running on appropriate host.

☐ The fonts you want are in place. The default fonts are:
   /usr/lib/X11/fonts
   /usr/lib/X11/fonts/misc
   /usr/lib/X11/fonts/75dpi
   /usr/lib/X11/fonts/100dpi

☐ All **fonts.aliases** have the following first line:
   FILE_NAMES_ALIASES

☐ All manual changes made to **ipaddress** file are correct.

Step 7. Sample ipaddress File

```
#This file can serve as a template for remote configuration of an IBM Xstation.
#If you have an AIX level greater than 4.1 and use SMIT to configure your
#Xstation, an ipaddress file is created for you to use. If you are on an AIX host and
#choose not to use SMIT or on a non-AIX host that does not have SMIT, place a copy of
#this sample in a file called /etc/x_st_mgr/xs160/cfg/a.b.c.d (where a.b.c.d is the IP
#address of the terminal). For example, if the Xstation's address is 9.35.144.173, this
#file would be named #/etc/x_st_mgr/xs160/cfg/9.35.144.173. Make the appropriate
#changes by uncommenting the proper lines and filling in the values designated by ????.
#For complete set of parameters see template in /etc/x_st_mgr/xs160/cfg.

#   COLOR DATA BASE
#rgb_database = /usr/lib/X11/rgb.txt

#   FILE_SERVER IP ADDRESS
#file_server_1_ip_address = ???.???.???.???
#file_server_2_ip_address = ???.???.???.???

#   FILE_SERVER TRANSFER MECHANISM
#file_server_1_access_method = xst
#file_server_1_access_method = nfs
#file_server_1_access_method = tftp
#file_server_1_access_method = none
#file_server_2_access_method = xst
#file_server_2_access_method = nfs
#file_server_2_access_method = tftp
#file_server_2_access_method = none

#   FILE SERVERS DEFAULT PATH
#file_server_1_pwd = /usr/lib/X11/
#file_server_2_pwd = /usr/lib/X11/

#   NAME SERVERS
#name_server_1_protocol = domain
#name_server_1_ip_address = ???.???.???.???
#name_server_2_protocol = domain
#name_server_2_ip_address = ???.???.???.???

#   DEFAULT FONT PATH USING FILE SERVER
#font_path = fonts/misc,fonts/75dpi,fonts/100dpi,fonts/ibm850
#font_path = fonts,fonts/misc,fonts/75dpi,fonts/100dpi,fonts/ibm850
#font_path = fonts,fonts/misc,fonts/JP,fonts/75dpi,fonts/100dpi,fonts/
oldx10,fonts/oldx11,fonts/bmug, fonts/info-mac,fonts/Speedo,fonts/i18n,fonts/
Type1,fonts/ibm850

#   DEFAULT FONT PATH WITHOUT USING FILE SERVER
#font_path = tftp/???.???.???.???:/usr/lib/X11/fonts/misc, tftp/???.???.???.???:
/usr/lib/X11/fonts/75dpi,tftp/???.???.???.???:/usr/lib/X11/fonts/100dpi,tftp/???.???.???.
???:/usr/lib/X11/fonts/ibm850

#font_path = nfs/???.???.???.???:/usr/lib/X11/fonts,nfs/???.???.???.???:
/usr/lib/X11/fonts/misc,nfs/???.???.???.???:/usr/lib/
X11/fonts/75dpi,nfs/???.???.???.???:/usr/lib/
X11/fonts/100dpi,nfs/???.???.???.???:/usr/lib/X11/fonts/ibm850
```

Sample ipaddress File (Continued)

```
#   HOST ACCESS CONTROL
#x_server_host_access_control = on
#x_server_host_access_hosts = "???.???.???.???,???.???.???.???, ..."
#x_server_host_access_control = off

#   INITIAL SYSTEM STATE X

#initial_subsystem = x

#   INITIAL SYSTEM STATE TELNET

#initial_subsystem = telnet
#telnet_host = ???.???.???.???

#   INITIAL SYSTEM STATE TERMINAL

#initial_subsystem = terminal

#   INITIAL SYSTEM STATE MENU

#initial_subsystem = menu

#   XDM LOGIN

#xdm_query = broadcast

#xdm_query = direct
#xdm_server = ???.???.???.???

#xdm_query = indirect
#xdm_server = ???.???.???.???

#   XSERVER CONFIGURATION BACKING
#     STORE AND SAVE UNDER

#x_server_backing_store = by_request
#x_server_backing_store = when_mapped
#x_server_backing_store = never

#x_server_save_unders = on
#x_server_save_unders = off

#   XSERVER CONFIGURATION SCREEN SAVER

#x_server_screen_saver = off
#x_server_screen_saver = on
#x_server_screen_time = ??
#x_server_screen_display = blank
#x_server_screen_display = logo
#x_server_screen_exposure = on
```

Step 8. Configuring from the Advanced Configuration Menu

Once you have the Xstation booting, you may want to configure other server functions or some backup servers. Additional parameters can be set using this **Advanced Configuration Menu**.

```
                        Advanced Configuration

    Protected Configuration:
    ☐ Set Password
        ➡☐ Local Server Table
        ➡☐ X Parameters
        ➡☐ Network Parameters
          ☐ File Servers
          ☐ Font Servers
        ➡☐ Name Servers

        ➡ Login Server: [ XSTMD  :9000        ]

        ➡ Update Server:[Enable              ]

    Non-Protected Configuration:
        ➡☐ Serial Ports/Devices
        ➡☐ Keyboard and Mouse




    _____ Esc _____
      [  Main Menu  ]   [Help]
```

It is advisable to use the **Local Server Table** option to create a list which will then be available when you begin to configure additional servers.

```
                        Local Server Table

    Name:           [ Host1              ]        [ Exit      ]
    or IP Address:  [(XXX.XXX.XXX.XXX)]           [ Verify    ]
                                                  [ Change    ]
                                                  [ Add Before]
                                                  [ Add After ]
                                                  [ Delete    ]

    ┌─────────────────────────────────────────────────────┐
    │ Local Server Table: (Select the item you wish to manage.) │
    │   ◈       Host1 (XXX.XXX.XXX.XXX)                    │
    │                                                      │
    │   ◇       Host2 (XXX.XXX.XXX.XXX)                    │
    │                                                      │
    │   ◇       Host3 (XXX.XXX.XXX.XXX)                    │
    └─────────────────────────────────────────────────────┘
```

Step 9. Updating the Xstation with a new POST and Xserver

Obtaining installp Updates for the Xstation

On the Host:

AIX PTF installp Images

Internet

aix.boulder.ibm.com   AIX Host
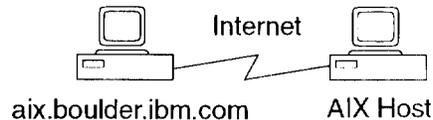
Download and Install Client Program fixdist

1. Create a directory for the client code by entering:
   ```
   mkdir /tmp/fixdist
   cd /tmp/fixdist
   ```

2. Connect to the FixDist server by entering:
   ```
   ftp aix.boulder.ibm.com
   ```

3. At the login prompt, enter:
   ```
   anonymous
   ```

4. At the password prompt, enter your full email address.

5. When the ftp prompt appears, enter:
   ```
   bin
   cd fixdist_client_code
   get fd.tar.z
   quit
   ```

Install the fixdist Client Program (Must Have root Authority)

1. Change to the **/tmp/fixdist** directory by entering:
   ```
   cd /tmp/fixdist
   ```

2. Uncompress the downloaded **fd.tar.Z** file by entering:
   ```
   zcat fd.tar.Z | tar -xpvf-
   ```
   Files restored include:

/usr/lpp/fixdist/fixdist	FixDist Client
/usr/lpp/fixdist/FixDist_ps	PostScript User's Guide
/usr/lpp/fixdist/FixDist_ascii	ASCII User's Guide
/usr/lpp/fixdist/README.fixdist	Latest FixDist Information

3. Use the **fixdist** program to download **installp** images of Xstation Manager program **x_st_mgr.obj**. See **/usr/lpp/fixdist/FixDist_ascii** for complete instructions.

Update the Xstation

Proceed to "On the Xstation" on the following page.

Obtaining Xserver and POST Updates for the Xstation

Non-PTF tar Images

Internet

aix.boulder.ibm.com — AIX Host — **or** — Non-AIX Host
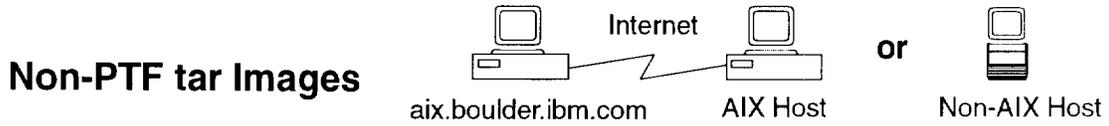
Download the Update Code

1. Create a directory for the update code by entering:
   ```
   mkdir /etc/x_st_mgr
   cd /etc/x_st_mgr
   ```

2. Connect to the FixDlst server by entering:
   ```
   ftp aix.boulder.ibm.com
   ```

3. At the login prompt, enter:
   ```
   anonymous
   ```

4. At the password prompt, enter your full email address.

5. Change to the non-PTF directory by entering:
   ```
   cd /fiximages
   ```

6. Determine the Xstation level you need by entering:
   ```
   ls Xstation*
   ```

7. Download the level of **tar** file and **how** file that you need.

Update the Xstation

To update your Xstation, follow the instructions in the **Xstation<levelnumber>.how** file.
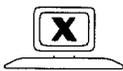
On the Xstation:

- If the update files are on the Configuration Server (Boot Host) and if the Xstation is at factory defaults, then no modifications are necessary on the local menus. The defaults are set to update if a new level of code is available. (Automatic update of FLASH set to Enable)

- If the update files are on another host, then go to **Advanced Configuration** and select **Update Server**. Use the Edit window to configure the Update Server.

- Save changes and reboot.

Chapter 4. Keyboard and Mouse Operation

Using the Keyboard

There are several keyboards available with the Xstation. Keyboards can be engraved with the alphabets of different countries, and the functions of each key depend on the software used.

Note: Your keyboard configuration may vary from the following illustration.

Function Keys

Typewriter Keys   **Control Keys**   **Numeric Keypad**
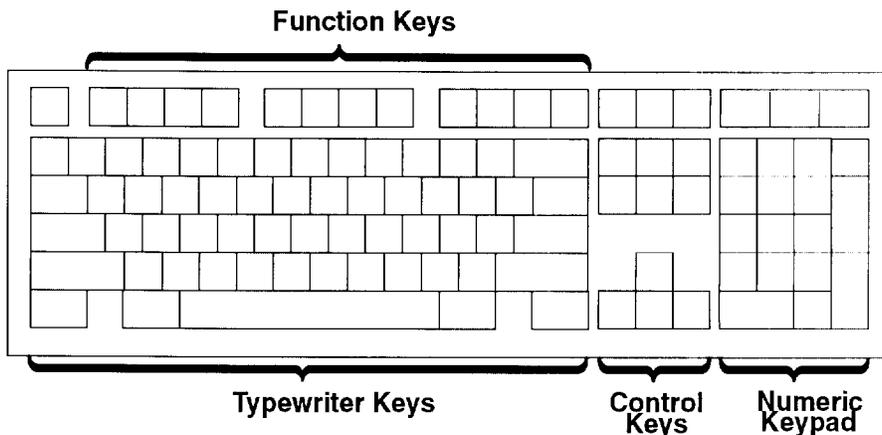
The keyboard is divided into four sections:

- The function keys are multipurpose keys whose functions are controlled by the operating system.

- The typewriter keys are similar to a standard typewriter. Their function is controlled by the software.

- The control keys move the cursor on the screen and perform programmed control functions. The movement and functions depend upon the application used.

- The numeric keypad is arranged like a calculator to help when typing numbers. These keys are active when Num Lock is activated.

To tilt the keyboard for typing comfort, pull out on the keyboard legs. The legs will snap out into position.

To decrease the tilt of the keyboard, rotate the keyboard legs until they snap into the bottom of the keyboard case.

Keyboard Leg

Underside of Keyboard
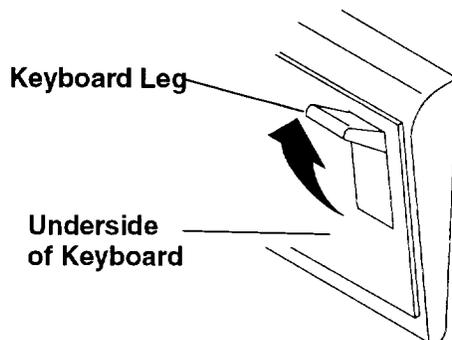
Using the Mouse

The three-button mouse shown is a hand-operated locator device available for use with the Xstation; consult your application publication for exact use of the mouse.
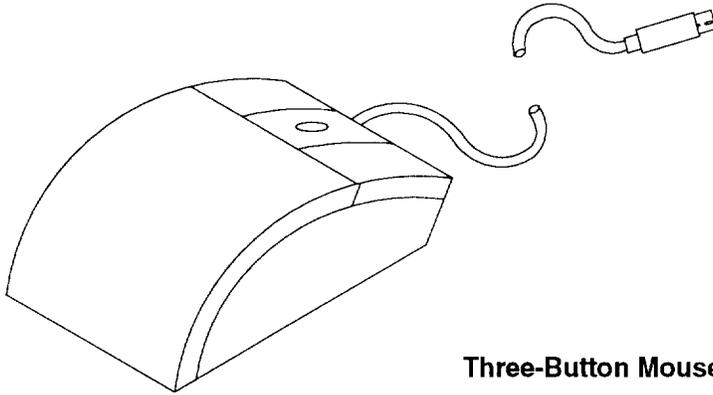
Three-Button Mouse

You can use the mouse to perform such functions as positioning a cursor, selecting items from a menu, or moving around in your document more easily and quickly than with the keyboard. You can also use the mouse for graphics applications if the software is so equipped.

When you move the mouse around on a flat surface as shown in this illustration, the pointer moves on the display screen; the movement positions the pointer.
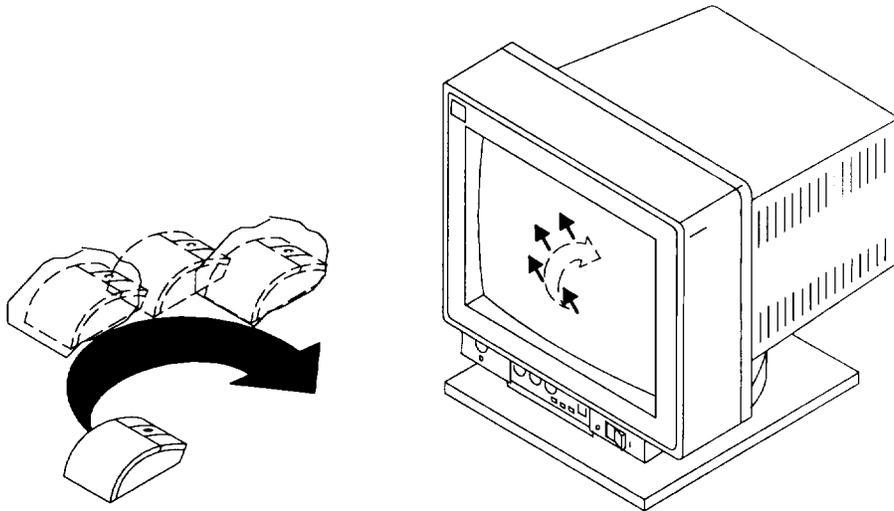
With the mouse buttons, you can perform functions such as selecting and deselecting options, extending your selection, or choosing a command. The function of your mouse depends on the software you are using.

The mouse cable plugs into a mouse connector on the back of the Xstation.

Handling the Mouse Correctly

For best operation, handle the mouse correctly. Incorrect handling can damage the mouse.

Do not:

- Operate the mouse on cloth, unfinished wood, newspaper, or carpet.
- Drop or hit the mouse.
- Pull the cable. You can cause damage to the cable and the connector.
- Carry the mouse by holding onto the cable.
- Expose the mouse to extreme temperatures or direct sunlight.
- Place the mouse in liquid spills.

Care of the Mouse

The operating surface for the mouse should be smooth, clean, and flat. For example, you can operate the mouse on the following surfaces:

- Finished wood
- Glass
- Enamel
- Plastic (including laminates)
- Paper (except newspaper)
- Metal.

Rough surfaces collect contaminants that can be transferred to the interior of the mouse by the ball. The surface you use should be free from spills, dirt, dust, lint, wax, eraser dust, and other debris. Rough surfaces can also cause the pads located on the bottom of the mouse to prematurely wear. A deeply pitted surface can cause erratic operation of the mouse.

- Inspect the work surface for spills or other contaminants.
- Clean the work surface.
- If you are using a paper pad, inspect it for wear and replace it if necessary.

Cleaning the Mouse

These steps and illustration describe how to clean the mouse:

1. Remove the retaining ring by turning the retaining ring counterclockwise, in the direction of the arrow.

Open Arrows

Ball

Retaining Ring

Cavity

Open Slots
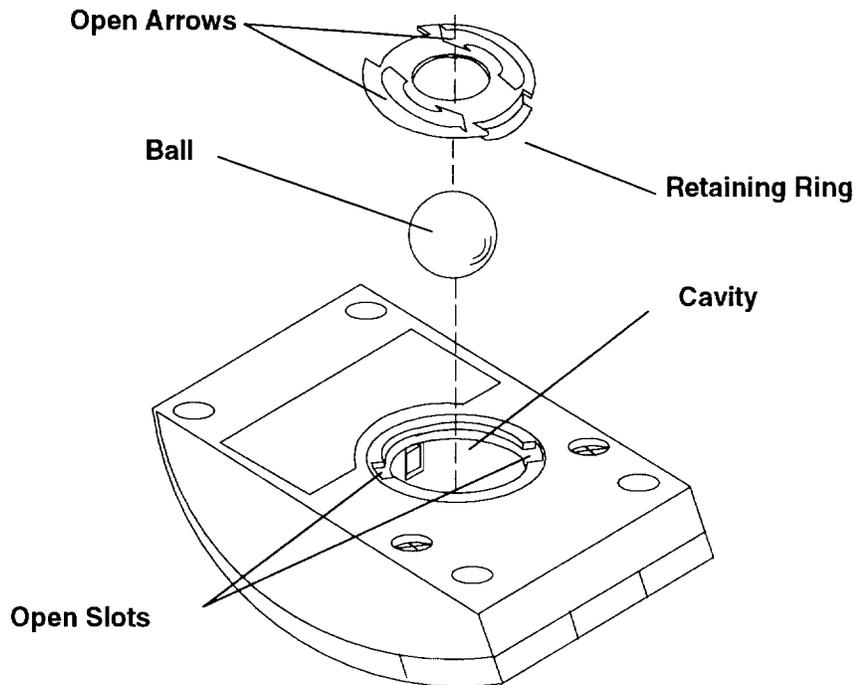
2. Remove the ball.

3. Inspect the ball for contaminants. Wipe it clean with a dry, lint-free cloth.

4. If the ball is dirty, wash it in warm, soapy water. Rinse and wipe the ball with a lint-free cloth until dry.

5. Inspect the ball cavity in the mouse for foreign materials. If there are any foreign materials, remove them.

6. Replace the ball.

7. Replace the retaining ring on the mouse and align it with the open slots in the ball cavity.

8. Turn the retaining ring clockwise until the open slots are covered and you hear the ring snap into place.

Chapter 5. Problem Determination Procedures

The problem determination procedures (PDPs) assist the user in isolating solid failure problems such as no power or a displayed error code.

If you are logged on to the host system, record all of the information that identifies the problem, log off the system (hold down the Ctrl and Alt keys and then press Backspace) and turn the Xstation power off when the Reboot message appears.

Find the symptom in the following table that best describes the problem and take the indicated action. If the problem persists, record all of the information that identifies the problem and go to the appropriate "Recommended Action" (RA) on page 5-6.

Symptom	Action	RA
Power Problem • The power-on light does not come on, or comes on but does not stay on. • The fan is not running. • The display remains blank with no audible beep. • The keyboard LEDs do not flash.	Check that the Xstation power cable is plugged into the Xstation and to an outlet that has proper power.	1
Memory One long and one short beep indicates no DIMM was detected.	Proceed to "Error Analysis" on page 5-2.	1
Error Code Displayed The Xstation stops with one or more error codes displayed on the POST and LAN Screen and two short beeps may sound.	Proceed to "Error Analysis" on page 5-2.	–
Display Problem • The Xstation beeps once or twice, and the display remains blank, unreadable, rolling, out of focus, and so forth. • One long and two short beeps sound, indicating that the monitor type was not recognized and defaulted to the 6091 type. • The characters on the screen are the wrong size. • The colors displayed are not normal.	Check the following: 1. The display jumpers and display mode switch settings are as shown on page 2-21. 2. The display power cable is plugged into the display and to an outlet that has proper power. 3. The display signal cable is not damaged and properly attached as shown on page 1-7. 4. The display power switch was in the On position and the display controls are adjusted.	1

Symptom	Action	RA
Other Hardware Problems • No beep sounds • Any other combination of beeps other than the normal one short beep. • Four minutes have elapsed and the LAN Communications have stopped. • Any other hardware problem.	Check all the cables to assure they are securely attached and not damaged. For more problem diagnoses, go to the Xstation **Main Menu**. If successful, click on **Statistics and Logs**, then view the area of concern.	1
Software Problems • Stops with any LAN communicated text, "Cannot load configuration file," or "Server Halted," for example. • The POST and LAN screen appeared, but the login screen fails. • An intermittent problem occurs on one application or command only.	If the POST and LAN Screen appears and no error code is shown, you can assume that the hardware is functional. Assure that you have sufficient memory for your application. For more problem diagnoses, press the Esc key to display the Xstation **Main Menu**. If successful, click on **Statistics and Logs**, then view the area of concern.	2

Error Analysis

If the fan is not running, refer to "Recommended Action" number 1 on page 5-6. If a problem is detected during the Power-On Self-Test (POST), the normal audio beep may not be heard and the following screen will appear:

```
       7010 Xstation Model 160
       (c) Copyright Notice
       Version:XXX


Adapters
 Keyboard
 Mouse
Type of Network - XXXXXXXXXXXX

Configuration Information
...
...
...


Press Ctrl, Alt, then Backspace for Main Menu
```
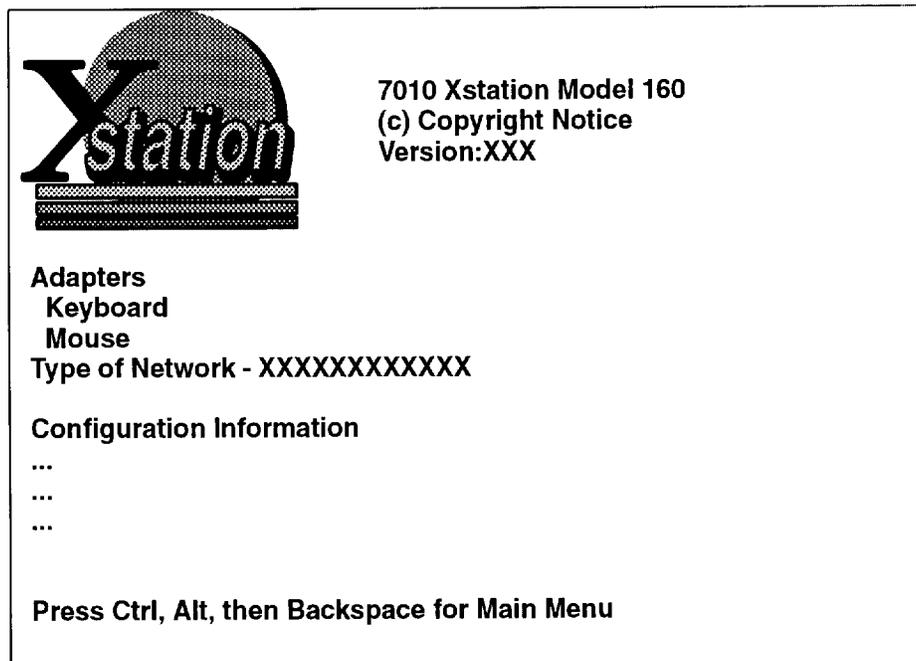
If more than one error code is displayed, refer to the nonconfiguration error codes in the order displayed.

If a configuration error code numbered 160 through 179 occurs, then the configuration of the Xstation will be automatically updated during the next POST.

If you have not recently changed your Xstation configuration, find the error code in the following table and take the indicated action. If the problem persists, record all of the information that identifies the problem and refer to "Recommended Action" number 1 on page 5-6.

All POST error codes are kept in a log and can be viewed by doing the following:

1. While the POST and LAN screen is displayed, press the Esc key to view the Xstation Main Menu.

2. Click on the **Statistics and Logs** button, then click on the **Power On Self Test (POST)** button to view the POST logs.

3. Click on the **Main Menu** button, then click on the **Startup Messages** button to view the startup messages.

Configuration Error Codes

Error Code	Configuration Change	Action	RA
161, 169	Display	Check for damaged or unplugged display cables.	1
162	Non-volatile RAM (NVRAM) checksum	Turn Xstation off, then turn back on to recalculate checksum.	1
163, 167	File System	Reboot the Xstation.	1
164	DIMMs	Remove and reinstall DIMMs.	1
168	Optional FLASH card	Remove and reinstall FLASH memory card.	1
170	Mouse	Replug the mouse cable.	1
171	Keyboard	Replug the keyboard cable.	1
172	Serial Port	Replug the attached device.	1
173	Optional Diskette	Replug the attached device.	1
174	Optional Audio card	Replug the attached card.	1

Nonconfiguration Error Codes

Find the nonconfiguration error code in the following table and take the indicated action. If the problem persists, record all of the information that identifies the problem and refer to the "Recommended Action" (RA) on page 5-6.

Error Code	Possible Areas of Failure	RA
None	All appears normal.	–
10x, 11x	Detected system board error.	1
2xx	System board memory error.	1
302, 304	Keyboard stuck key or the same as 3xx.	1
3xx	Keyboard, keyboard cable, or system board error.	1
4xx	Parallel port error.	1
5xx	System Board FLASH memory error, FLASH file system.	1
6xx	Diskette drive (optional)	
8xx	Optional FLASH card error, FLASH file system.	1
910	DIMM configuration. If only one DIMM is installed, it should be placed in J22.	1
9x1	DIMM error socket 1 (J22).	1
9x2	DIMM error socket 2 (J21).	1
9x3	DIMM error socket 3 (J19).	
11x1, 80x1	Serial port S1 error.	1
11x2, 80x2	Serial port S2 error.	1
24xx	System Board (DAC), display cable, or display error.	1
54xx	Audio sound	
66xx, 88xx	See LAN error analysis on page 5-4.	–
86xx	Mouse or system board error.	1
Any other code	Undetermined error.	1

Note: The "x" stands for numbers 0 through 9. A number 0 in the last position indicates no error exists; numbers 1 through 9 indicate an error is present.

LAN Error Analysis

LAN extended error codes and error counts are used for detailed analysis of communications problems. A log of LAN error codes can be displayed by entering the **Main Menu,** clicking on the **Statistics And Logs** button, then clicking on the button next to the log or statistics list you want displayed.

Network Error Codes

Ensure that the LAN communication cables are not damaged and are properly connected. Record the problem identified and refer to the "Recommended Action" (RA) on page 5-6.

Code	Explanation	RA
66xx	Refers to the Token-Ring network.	
88xx	Refers to the Ethernet network.	
Where "xx" is one of the numbers below:		
01	Internal error.	1
02	External wrap error, assure that the external wrap connector is properly installed.	1
03	Normal for Ethernet "Thick" networks in which SQE is disabled; otherwise treat this error the same as an --02.	–
10	After three retries, TFTP error packet still received from host.	2
20	Invalid network setup.	2
21	The bootfile (file specified in the returned Ethernet BOOTP record) is not the correct format.	2
22	Error detected in the bootfile size.	2
23	Error detected in determining the internal header of the Ethernet bootfile.	2
24	TFTP error (after 5 attempts).	2
25	Undefined Ethernet communication error (after 5 attempts).	2

Other LAN Error Codes (6602 07XX)

Extended Token-Ring error codes appear next to the communications error code.

These codes indicate an open failure, suspect the Token-Ring adapter configuration, cabling, network, or software problems. Record the problem identified in the table and refer to the "Recommended Action" (RA) on page 5-6.

Code	Explanation for Error Code 6602 07XX	RA
6602 0711	Token-Ring lobe media, function error. This may be caused by the Token-Ring device cable being disconnected from the Token-Ring adapter.	1
6602 0727	Token-Ring physical insertion, ring beaconing.	1
6602 072D	No Token-Ring monitor detected (wrap connector installed). This may be caused by the multiple access unit (MAU) connector on the Token-Ring device cable being unplugged from the Token-Ring network.	1

Note: For error codes not listed above, use the first recommended action which follows:

Recommended Action

1 The symptoms indicate a hardware problem with your Xstation. If the symptoms indicate an external device and you have another device of the same type, try using the other device.

   If the problem persists, follow your local procedure for requesting hardware service. Report the error code displayed or other symptoms. If a display problem exists, report the display type.

2 The symptoms point to a problem outside your Xstation. Possible problem areas include communications, host error, Xstation network setup, configuration error, or software. Consult the "Problem Solving" section of the *AIX Version 4.1 Xstation Management Guide* and contact your local network or system administrator to resolve your problem.

Part 2. Service

Note: The information in this part is intended only for trained service personnel.

Chapter 6. Reference Information

Xstation Locations

Use the following views of the Xstation to locate switches, connectors, and system board components.

Front View with Cover

Power Switch

Network Activity Indicator   **Power Indicator**

Side View with Cover

Rear View with Cover

Power Plug

Parallel Connector

Ethernet Thick or Token Ring

Ethernet (Thin)

Keyboard Connector

Display Connector

Mouse Connector

Serial Connector

Ethernet Twisted Pair

K M V P S ETP ET E

System Board

J5
Ethernet
Twisted Pair

J2
Thick Ethernet
or Token-Ring

J1
Thin
Ethernet

J7
Serial

J15
Parallel

J17
Display

J18
Mouse

J20
Keyboard

J12, J11
Speaker
Jumpers

J10
PCI
Connector

J13
Diskette
Connector

J3
Display
Jumpers

J22 Socket 1
J21 Socket 2
J19 Socket3
DIMM
Connectors

J4
PCMCIA–
Audio
Connector

J6
Power
Switch and
LED Connector

J9
Power Supply
Connector

J8
Alternate Boot

Front

Maintenance Package

Xstation Model 160 built-in diagnostics can be supplemented by a Maintenance Package, Part Number 43G2859, which includes:

- This *7010 Xstation Model 160 Setup, Operator, and Service Guide*

- A serial port wrap plug, Part Number 6298964

- A parallel port wrap plug, Part Number 71F0690

- An Ethernet thick wrap plug, Part Number 71F1167

- An Ethernet thin wrap plug, Part Number 71F1168.

- A system jumper, Part Number 1675209.

Tools

Tools required are:

- Medium, flat-blade screwdriver

- A 3/16 inch thin-wall nut driver

- Wrap plugs (included with the Maintenance Package)

- An analog multimeter or equivalent.

Specifications

Dimensions
- Height 68 mm (2.75 in.)

- Width 305 mm (12 in.)

- Depth 306 mm (12 in.)

Weight
4.5 Kg (10 lbs)

Note: Configuration dependent.

Operating Environment
Operating Temperature 16° to 32°C (60° to 90° F)

Non-Operating Temperature 10° to 43°C (50° to 110° F)

Relative humidity (noncondensing)
Operating   8 to 80%
Non-operating   8 to 80%

Noise Emissions Values

L_{WAd}

	Operating (bels)	5.0
	Idle (bels)	4.8

L_{pAm}

	Operating (dBA)	37
	Idle (dBA)	37

$< L_{pA} > m$

	Operating (dBA)	41
	Idle (dBA)	41

Impulsive Noise   No

Prominent Discreet Tones   No

Power Source
0.065 k VA (maximum)

Source Voltage and Frequency
100 to 120 V ac; 50 to 60 Hz

200 to 240 V ac; 50 to 60 Hz

Thermal Output
143 BTU/hr (maximum)

Power Consumption
42 Watts

Service Inspection Guide

The intent of this inspection guide is to assist you in identifying potentially unsafe conditions while servicing the Xstation. Each machine, as it was designed and built, had required safety items installed to protect users and service personnel from injury. This guide addresses only those items. However, good judgement should be used to identify potential safety hazards due to the attachment of features or options not covered here.

If any unsafe conditions are present, the severity of the apparent hazard must be determined as well as whether you can continue without first correcting the problem.

Consider the following conditions and the safety hazards they present:

- Electrical hazards, especially primary power. Primary voltage on the frame can cause serious or fatal electrical shock.

- Explosive hazards such as a damaged CRT face or bulging capacitors can cause serious injury.

- Mechanical hazards such as loose or missing hardware can cause serious injury.

Service Inspection Checklist

Perform a service inspection on the system when:

- The system is inspected for a maintenance agreement.

- Service is requested and service has not recently been performed.

- An alterations and attachments review is performed.

- Changes have been made to the equipment that may affect the safe operation of the equipment.

If the inspection indicates an unacceptable safety condition, the condition must be corrected before servicing the machine.

Note: The correction of any unsafe condition is the responsibility of the owner of the system.

This guide consists of a series of steps presented in a checklist. Begin the checks with the power off and the power cord removed from the power receptacle.

Do the following:

1. Check the covers for sharp edges and for damage or alterations that expose the internal parts of the Xstation.

2. Check the covers for proper fit to the Xstation. They should be in place and secure.

3. If installed in a vertical stand, remove the Xstation from the stand and place in a horizontal position.

4. Remove the covers.

5. Check for any non-supplier alterations. Use good judgment as to the safety of non-supplier alterations.

6. Check inside the unit for obvious unsafe conditions such as metal filings, contamination, water or other liquids, or signs of fire or smoke damage.

7. Check the internal cables for damage.

8. Check the voltage label on the bottom of the Xstation to ensure that it matches the voltage at the outlet.

9. Check that the power supply cover fasteners (screws or rivets) have not been removed or tampered with.

10.

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┌─────────────────────────────────────────────────┐
│  ┌───────────────────────────────────────────┐  │
│  │   ⚠       DANGER                          │  │
│  │                                           │  │
│  └───────────────────────────────────────────┘  │
│                                                 │
│  HAZARDOUS VOLTAGE INSIDE.  DO NOT OPEN.        │
│  GEFAHRLICH SPANNUNG. ABDECKUNG NICHT OFFNEN.   │
│  TENSION DANGEREUSE A L'INTERIEUR.  NE PAS OUVRIR. │
│  VOLTAJE PELIGROSO EN EL INTERIOR. NO ABRA.     │
│  TENSIONE PERICOLOSA ALL'INTERNO. NON APRIRE.   │
│  FARLIG ELEKTRISK SPENDING INDENI. LUK IKKE OP. │
│  HIERBINNEN GEVAARLIJK VOLTAGE. NIET OPENMAKEN. │
│  SISAPUOLELLA VAARALLINEN JANNITE. ALA AVAA.    │
│  FARLIG SPENNING. MA IKKE APNES.                │
│  NAO ABRA. VOLTAGEM PERIGOSA NO INTERIOR.       │
│  FARLIG SPANNING INNUTL OPPNAS EJ.              │
│                                                 │
└─────────────────────────────────────────────────┘
```

11. If applicable, check that the proper power supply fuse is installed.

   Note: The fuse may be located on the system board rather in the power supply. In addition, the fuse may be factory-replaceable only.

12. Check the external power cable for damage.

13. With the external power cable connected to the system unit, check for 0.1 ohm or less resistance between the ground lug on the external power cable plug and one of the jack screws on the parallel connector.

14. If the Xstation passes the test in the previous step, install the covers.

Chapter 7. MAPs

Start of Call

Start all problem isolation with the MAP 0010: Start of Call. Then carefully follow the steps to isolate the failure to a Field Replaceable Unit (FRU).

The Xstation uses built-in tests, together with available wrap plugs.

Refer to the *AIX Version 4.1 Xstation Management Guide*, Form Number SC23-2713, for additional information on software problems.

MAP 0010: Start MAPs

The Start MAP guides the trained service person in isolating all Xstation hardware problems.

MAP 0020: Power

The Power MAP assists the trained service person in isolating the FRU. All external devices are removed and the Xstation configuration is set to minimum. The remaining hardware is tested and exchanged until the FRU is isolated.

MAP 0030: Displays

The Display MAP guides the trained service person in solving display-associated problems.

MAP 0040: Diagnostics

The Xstation's Power-On Self-Test (POST) provides the first layer of diagnosis of specific problems. Further diagnostics (described in this MAP) should be consulted for additional isolation of problems.

MAP 0010: Start Maps

Purpose of This MAP

The Start MAP guides the trained service person in isolating all Xstation hardware problems.

Step 1. Power Off

Check that the Xstation is turned on.

Is the machine logged on to the host system?

NO   Do the following:

1. Turn off the Xstation power.

2. Go to Step 2.

YES   Do the following:

1. Log off the host system (hold down the Ctrl and Alt keys, then press the Backspace key). If necessary, get customer's help.

2. When the Reboot message is displayed, follow the instructions until identifying that it is OK to turn off the Xstation power.

3. Go to Step 2.

Step 2. Analysis

(From Step 1)

1. Discuss and record the failure symptom with the customer.

2. Check all external cables and connectors.

3. Remove the cover as instructed in "Cover Assembly" on page 8-3 and visually inspect the Xstation components. Record and verify the jumper settings and hardware options installed in order to verify POST and software-detected configuration.

4. Check the power outlet for proper power and grounds.

Is there an obvious problem such as broken, loose, or overheated components?

NO   Go to Step 3.

YES   Do the following:

1. Correct the problem and assure that the fan runs when power is turned on.

2. If the problem persists, turn the Xstation power off and go to Step 3.

Step 3. Assess Situation

(From Step 2)

1. Turn on the Xstation power.

2. Listen carefully for any audio signals during the Power-On Self-Test (POST); one short audio beep is normal. Verify that the fan is running.

3. Starting at the top of the following table, find the symptom that best describes the problem and take the action indicated. Running diagnostics may help to isolate the FRU; go to "MAP 0040: Diagnostics." If the problem persists, go to "MAP 0020: Power" to chronologically isolate the FRU.

4. All menu selections indicated in the following table are made from the Xstation's **Main Menu**. To display the **Main Menu**, press Esc while the POST and LAN screen is displayed, or hold down the Ctrl and Alt keys and then press backspace while in an X-Windows session.

Symptom	Action
Main Power –Power-on light does not come on, or comes on but does not stay on.	Go to "MAP 0020: Power." Probable failure: (1) power cord, (2) power supply.
Fan –The fan is not running. This can cause heat build-up, resulting in intermittent problems.	Replace fan and assure new fan rotates freely.
Power –The power light is on, the display remains blank, and no beep is heard, or the keyboard LEDs fail to flash on and off.	Go to "MAP 0020: Power." Probable failure: (1) system board, (2) jumpers, (3) power supply. see also "Keyboard" below.
Memory –One long and one short beep indicates no DIMM was detected.	Reseat DIMMs, if failure persists Go to "MAP 0020: Power." Probable failure: (1) DIMM, (2) system board.
Error Code –The Xstation stops with one or more error codes visible on the screen. –Two short beeps indicate that a POST error was detected.	Go to Step 4 (Error Code Analysis). The POST error log can be viewed in the **Statistics and Logs** menu selected from the **Main Menu** screen. If the screen is unreadable, go to "MAP 0020: Power."
Display –The display remains blank, unreadable, rolling, out of focus, and the Xstation may sound one or two short beeps. –The characters on the screen are the wrong size. –Missing or additional lines, colors, bars, etc. –The colors/shades displayed are not normal. –One long and two short beeps indicate a probable unsupported display configuration.	Adjust the controls on the display (contrast, brightness). If two short beeps sounded, go to "MAP 0020: Power." If problem remains, go to "MAP 0030: Display." Probable failure: (1) display, (2) cable, (3) jumpers (4) system board, (5) DIMMs.
Continue with table on the following page.	

Symptom	Action
Keyboard –No beep is heard and normal LAN Communication is established. The system board failed to produce the sound in the keyboard. –Repeating characters displayed on the screen indicate a stuck key on the keyboard. –Keyboard LEDs fail to flash on and off. –Keyboard LEDs flash on and off repeatedly.	Probable failure: (1) keyboard, (2) keyboard cable, (3) system board. Ensure that the keyboard cable is connected to the K connector. Check for dirt, dust, or other matter in and around the keyboard. Check for stuck keys. If problem persists, go to "MAP 0020: Power."
Other Sounds –Any other combination of beeps or a continuous sound is heard. –No sound is heard.	Go to "MAP 0020: Power." Probable failure: (1) speaker jumper, (2) keyboard, (3) system board, (4) fan, (5) power supply.
LAN Text –The Xstation stops with the LAN text message "Cannot load X server code" or "Server Halted."	Suspect insufficient memory (DIMMs or FLASH) or network communication. Go to "MAP 0020: Power." Probable failure: (1) DIMMs, (2) FLASH card, (3) system board. If problem persists, go to Step 7 (Communication Network).
LAN –Stops with any other LAN text message. –An error code is displayed on the POST and LAN Screen or the POST and LAN Screen is displayed longer than ten minutes.	Select **Statistics and Logs** and view the appropriate network statistics and error logs. Go to Step 6 (LAN Communication). If failure persists, go to "MAP 0020: Power."
I/O Device –Normal power on; could not duplicate customer symptom, or there seems to be a serial/parallel I/O problem.	Go to "MAP 0040: Diagnostics." Select **Xstation Configuration** and verify the Xstation configuration. Select **Test the Terminal** and **Run All Tests**. If the problem is associated with an external device and the diagnostic for the external port does not detect a failure, have the external device serviced.

Step 4. Error Code Analysis

(From Step 3)

Under certain circumstances, more than one error code may be displayed; each will be displayed on a separate line.

Before analyzing error codes, verify that the all devices are plugged into the correct ports.

Error codes 160 through 179 are configuration problems and may be caused by other, undetected errors. Work nonconfiguration error codes first and in the order displayed.

Is the only error code displayed 160 through 179?

NO   Do the following:

        1. Work the first error code displayed using the following table.

        2. Go to "MAP 0040: Diagnostics" and use diagnostics to verify the fix.

        3. If the problem persists, go to "MAP 0020: Power" to chronologically isolate the FRU.

YES   Go to Step 5.

Error Number	Action
10x, 11x, 2xx, 305	Suspect system board; go to "MAP 0020: Power."
302, 304	Run keyboard diagnostics and check for a stuck key. If the problem persists, replace in order: (1) keyboard, (2) keyboard cable, (3) system board.
3xx	Verify that the keyboard cable is connected to the K port. Replace in order: (1) keyboard, (2) keyboard cable, (3) system board.
4xx	Run parallel port tests. If no failure is found, replace the attached device; if problem persists go to "MAP 0020: Power."
501	System board FLASH. Suspect system board; go to "MAP 0020: Power."
5xx	System board FLASH files. Suspect system board; go to Step 10.
6xx	Diskette drive
801	Suspect Optional FLASH card; go to "MAP 0020: Power."
8xx	Suspect Optional FLASH files; go to Step 10.
9xx	Memory problem; go to Step 8.
11xx, 80xx	Serial port problem; go to Step 9.
24xx	Display problem; suspect system board (DAC) or display cable. Go to "MAP 0020: Power."
54xx	Audio card
66xx, 88xx	LAN problem; go to Step 6.
86xx	Ensure that the mouse cable is connected to the M port. Refer to pages 4-2 through 4-4 to ensure proper use of the mouse. Replace mouse; if problem persists, go to "MAP 0020: Power."
Any other code	Undetermined error; go to "MAP 0020: Power."

Note: The "x" stands for numbers 0 through 9. A number 0 in the last position indicates no error exists; numbers 1 through 9 indicate an error is present.

Step 5. Configuration Match

(From Step 4)

The physical configuration detected does not match the configuration stored in nonvolatile RAM (NVRAM).

View the **POST logs** to determine if the Xstation configuration has been recently changed. To view the **POST logs**, press the Esc key while the POST and LAN screen is displayed, or hold down the Ctrl and Alt keys and then press backspace while in an X-Windows session. When the **Main Menu** appears, click on the **Statistics and Logs** button, then click on the **Power On Self Test (POST)** button to display the POST log.

Check with the customer to determine the expected configuration and verify that the hardware matches the expected configuration. Verify also that the Xstation detects the expected configuration by displaying the **Main Menu** and clicking on **Base Configuration**.

1. If the expected configuration, the hardware, and the detected configuration do not match, perform the following:

    a. Refer to the table on page 7-0010-6 and take the indicated "Action," then go to "MAP 0040: Diagnostics" and test the changed area. If another error is found, work non-configuration codes first by going back to Step 1 on page 7-0010-1.

    b. If the indicated "Action" fails to identify another cause, exchange the probable failure FRUs identified in the table on page 7-0010-6.

    c. If the problem persists, Go to "MAP 0020: Power" to isolate the FRU.

2. If the Xstation configuration has been recently changed, turn off and turn on the Xstation. If the configuration error code persists, do the following:

    a. Exchange the probable failure FRUs identified in the table on page 7-0010-6.

    b. If the problem persists, go to "MAP 0020: Power" to chronologically isolate the FRU.

    c. If the error code no longer appears, the error is normal and no action is needed.

To select the appropriate diagnostic tests, click on **Test The Terminal** from the Xstation's Main Menu. Click on the desired test selection, then proceed with the action listed in the following table.

Error Code	Configuration Change	Action
161, 169	Display	Check for damaged or unplugged display cables. Select the **Display** option. Go to "MAP 0030: Displays." Probable failure: (1) display, (2) display cable, (3) system board.
162	Non-volatile RAM checksum	Turn off, then turn on Xstation to recalculate the checksum. The user may be required to reconfigure the Xstation. Go to "MAP 0020: Power." Probable failure: system board.
163, 167	Xstation File system (NVRAM, FLASH)	Probable failure: system board. The user may be required to reconfigure the Xstation; go to Step 10.
164	Memory	Select the **System Board** option. Go to "MAP 0020: Power." Probable failure: (1) DIMMs, (2) system board.
168	Optional FLASH Card	Reinsert card and reboot. Go to "MAP 0020: Power." Probable failure: (1) FLASH card, (2) system board.
170	Mouse	Select **Mouse** option. Go to "MAP 0020: Power." Probable failure: (1) mouse, (2) system board.
171	Keyboard	Select **Keyboard** option. Go to "MAP 0020: Power." Probable failure: (1) keyboard, (2) keyboard cable, (3) system board.
172	Serial Ports (S1, S2)	Select **Serial Ports/Devices** option. Go to "MAP 0020: Power." Probable failure: (1) attached device, (2) device cable. (3) system board.
173	Diskette drive	Select **Diskette Drive** option. Go to "MAP 0020: Power." Probable failure: (1) diskette, (2) diskette drive, (3) device cable.
174	Audio card	Select **Audio** option. Go to "MAP 0020: Power." Probable failure: (1) audio card, (2) system board, (3) power supply.

Note: Refer to Chapter 8, "Removal and Replacement Procedures," for parts removal and replacement instructions.

Step 6. LAN Communication

(From Steps 3 and 4)

The Xstation suspects a LAN communication problem.

1. Ensure that the communication cables are properly connected and not damaged.

2. If making a Token-Ring connection, verify that the data-rate selection matches the network's data rate.

3. Take the action listed in following tables.

4. Refer to the *AIX Version 4.1 Xstation Management Guide* to ensure proper configuration of the hardware address; terminal, host, and gateway internet addresses; and subnet mask both at the Xstation and at the host.

LAN Error Codes

Code	Action/Explanation
6601 (Token-Ring)	Exchange in order and retry the failing procedure: (1) Token-Ring system board, (2) Token-Ring device cable. If problem persists, go to "MAP 0020: Power" to chronologically isolate the FRU.
6602 (Token-Ring)	The Multiple Access Unit (MAU) plug on the Token-Ring device cable is used as the external wrap connector. Disconnect the MAU plug from the Token-Ring network and leave the Token-Ring device cable attached to the Token-Ring connector. Go to "MAP 0040: Diagnostics"; verify the Token-Ring data rate and run the Token-Ring diagnostics. If the problem persists, a hardware failure is suspected. Treat the error the same as 6601. If no error is detected in POST or LAN communications tests, suspect configuration, cabling, network, or software problems. Record the explanation shown in the Token-Ring extended error codes and go to Step 7.
The LAN Error Codes table continues on the next page.	

Code	Action/Explanation
8801 (Ethernet)	Suspect the Ethernet system board. Go to "MAP 0020: Power" to chronologically isolate the FRU.
8802 (Ethernet)	Go to "MAP 0040: Diagnostics." Test the Ethernet LAN communications using an external wrap plug; if the same problem persists, treat it the same as 8801. If a different error is received, go back to Step 4. If the error only occurs when it is attached to the network, go to Step 7.
8803 (Ethernet)	If the attachment is to an Ethernet thick network in which SQE is disabled, the error is normal and do nothing; otherwise, treat it the same as 8802.

Other LAN Error Codes

Code	Action/Explanation for LAN Communication Code
66xx	Refers to the Token-Ring network.
88xx	Refers to the Ethernet network.
Where "xx" is one of the numbers below.	
10	After three retries, TFTP error packet is still received from the host.
20	Invalid network setup.
21	The boot file (file specified in the returned BOOTP record) is not the correct format.
22	Error detected in the bootfile size.
23	Error detected in determining the internal header of the bootfile.
24	TFTP error occurred after five attempts.
25	Undefined communication error after five attempts.

Token-Ring Extended Error Codes

Code	Explanation for Token-Ring Error Code
6602 06FF	Open time out.
6602 0601	Invalid command code.
6602 0603	Adapter open; should be closed.
6602 0605	Required parameter(s) not provided.
6602 0630	Inadequate receive buffers for LAN to open.
6602 0632	Invalid NODE_ADDRESS.
6602 0633	Invalid adapter receive buffer length defined.
6602 0634	Invalid adapter transmit buffer length defined.

Code	Explanation for Token-Ring Error Code
6602 0711	Lobe media, function failure. This failure is normal when the Token-Ring device cable is disconnected from the Token-Ring connector.
6602 0726	Physical insertion, ring failure.
6602 0727	Physical insertion, ring beaconing.
6602 072A	Physical insertion, ring timeout.
6602 072D	No monitor detected (wrap connector installed). This is normal with the Token-Ring device cable attached to the Xstation, but disconnected from the Token-Ring network. The Multiple Access Unit (MAU) plug on the Token-Ring device cable is the wrap connector.
6602 072E	Monitor contention failed for RPL.
6602 0732	Address verification, signal loss.
6602 0735	Address verification, timeout.
6602 0736	Address verification, ring failure.
6602 0737	Address verification, ring beaconing.
6602 0738	Address verification, duplicate node address.
6602 073A	Address verification, remove received.
6602 0742	Ping poll, signal loss.
6602 0745	Ping poll, timeout.
6602 0746	Ping poll, ring failure.
6602 0747	Ping poll, ring beaconing.
6602 074A	Ping poll, remove received.
6602 0755	Request parameters, timeout.
6602 0756	Request parameters, ring failure.
6602 0757	Request parameters, ring beaconing.
6602 0759	Request parameters, parameters request.
6602 0755	Request parameters, remove received.

Step 7. Communication Network

(From Steps 3, 4 and 6)

Contact communications network support personnel to determine if the network is operational.

Is the network operational?

NO   Wait until the network is operational, and then retry these procedures starting at "Start of Call."

YES   Go to "MAP 0040: Diagnostics" and do the following:

1. Select **Statistics and Logs** from the **Main Menu**.

2. View the logs from the **Statistics and Logs** menu.

3. Select the appropriate network error logs. Communicate the collected symptoms, error counts, and messages to the network support personnel. (Refer to the *AIX Version 4.1 Xstation Management Guide*.)

Step 8. Memory Isolation

(From Step 4)

The Xstation has a memory problem; use the following procedure to isolate the failure. Refer to the system board location diagram on page 6-2.

Configuration errors (error codes 160 to 179) can occur during this procedure when the configuration is altered.

Error Code	Possible Areas of Failure	Action – proceed in order
910	DIMM socket 1 (J22)	3
9x1	DIMM socket 1 (J22)	1, 2, 4
9x2	DIMM socket 2 (J21)	1, 2, 4
9x3	DIMM socket 3 (J19)	1, 2, 4
Action		
1. Verify that the DIMMs are compatible with your Xstation and seated properly.		
2. Change the identified DIMM. If the error no longer occurs, replace the original DIMM.		
3. If only one DIMM is used, it should be inserted in socket 1 (J22).		
4. Go to "MAP 0020: Power, Step 4. Voltage Analysis" on page 7-0020-4.		

Note: The "x" stands for numbers 0 through 9.

Step 9. Serial Port Analysis

(From Step 4)

Serial port tests without the wrap plug are run in POST and can be run from the Test the Terminal menu.

Note: The serial port fan out cable is required for Serial Port 2 (S2) operation and for testing S2 with the wrap plug from the Test the Terminal menu.

Remove all external devices from the serial ports. Go to "MAP 0040: Diagnostics" and test the serial ports S1 and S2 *with* wrap plugs. If an error is detected, follow the associated action as listed in the following table. If no error is detected, suspect the external I/O device.

Test each external I/O device, if a test is available. If an error is detected, move the external device to another port (if possible) and retry the failing procedure. If the failure follows the external device, have the device repaired.

If the external device works on another serial port, treat the failure as an error number 11xx, where the last "x" indicates the serial port: 1 = S1 (Serial Port 1) and 2 = S2 (Serial Port 2). Follow the action listed in the following table.

Error Code	Action
11x1, 80x1 (S1)	Remove the serial port fan out cable, if installed, and retry the failing procedure. If the failure persists, suspect the system board and go to "MAP 0020: Power" to chronologically isolate the FRU. If the failure follows the serial port fan out cable, replace the cable.
11x2, 80x2 (S2)	If this error occurs during POST or in a **Test the Terminal** test without the wrap plug, suspect the system board and go to "MAP 0020: Power" to chronologically isolate the FRU. The serial port fan out cable is required in order to use serial port 2. If this error occurs only with the wrap plug installed, check continuity in the serial port fan out cable using the following table. If the failure persists, suspect the system board and go to "MAP 0020: Power" to chronologically isolate the FRU.

Note: The "x" stands for numbers 0 through 9.
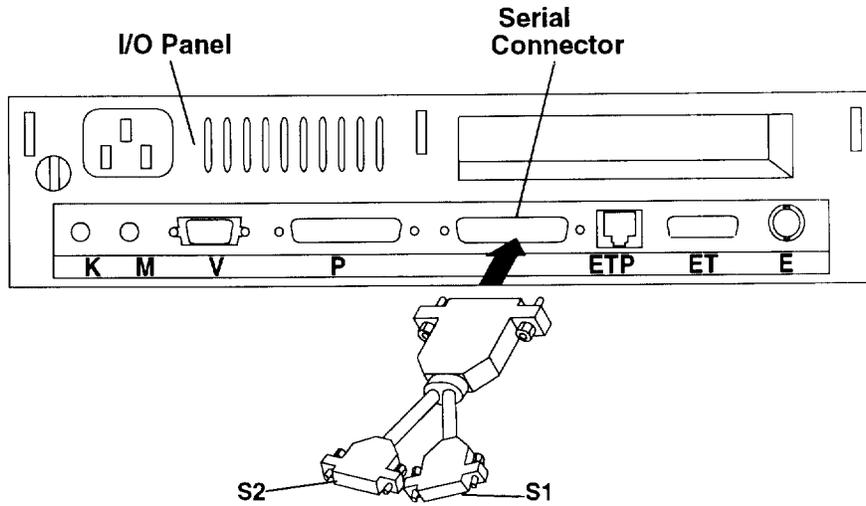
Serial Port 1		Serial Port 2	
I/O Panel S	Fan Out Cable S1	I/O Panel S	Fan Out Cable S2
2	2	14	2
3	3	16	3
4	4	19	4
5	5	13	5
6	6	15	6
7	7	7	7
8	8	12	8
11	11	24	11
20	20	24	20
22	22	17	22

Step 10. FLASH File System

(From Steps 4 and 5)

If you are able to bring up the Xstation's **Main Menu**, click on **Advanced Configuration**, then click on **Network Parameters** and set the Xstation for automatic update of FLASH on the next reboot. Return to the **Main Menu** and click on **Save Changes**. Reboot the Xstation. If the problem persists, go to "MAP 0020: Power."

A password may be required to change the Xstation's configuration. If so, have the system administrator enter the password or unlock the Xstation in order to reset the password jumpers. (Refer to "Password Reset Jumper" on page 2-23.)

If you are unable to display the Xstation's Main Menu, while the POST and LAN screen is displayed press the Ctrl and Pause (Break) keys. This activates the English-only nongraphical version of the Main Menu. Select **Network Parameters**, then select automatic update of FLASH. Select **On next Reboot**, then **Save Changes**. If the network is not functioning, have the system administrator refer to the *AIX Version 4.1 Xstation Management Guide* to correct the problem. If the problem persists, go to "MAP 0020: Power."

MAP 0020: Power

Purpose of this MAP

"MAP 0020: Power" assists the trained service person in isolating the failing FRU. All external devices are removed and the Xstation is set to its minimum configuration. Additional configuration errors (error codes 160 to 179) may occur during this process. The remaining hardware is tested and exchanged until the FRU is isolated.

DANGER

An electrical outlet that is not correctly wired could place hazardous voltage on metal parts of the system or the devices that attach to the system. It is the responsibility of the customer to ensure that the outlet is correctly wired and grounded to prevent an electrical shock.

Before installing or removing signal cables, ensure that the power cables for the system unit and all attached devices are unplugged.

When adding or removing any additional devices to or from the system, ensure that the power cables for those devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.

Use one hand, when possible, to connect or disconnect signal cables to prevent a possible shock from touching two surfaces with different electrical potentials.

During an electrical storm, do not connect cables for display stations, printers, telephones, or station protectors for communications lines.

CAUTION:
This product is equipped with a 3-wire power cable and plug for the user's safety. Use this power cable in conjunction with a properly grounded electrical outlet to avoid electrical shock.

Step 1. Power Cord

If the power-on indicator is lit, go to Step 2. If the power-on indicator is not lit, do the following:

1. Turn off the Xstation and display power.

2. Check the electrical outlet for correct voltage.

3. Check the Xstation power cord continuity.

Did you find a problem?

NO   Go to Step 2.

YES   Correct the problem and retry the failing procedure.

Step 2. External Devices

(From Step 1)

1. Turn the Xstation and display power off.

2. Disconnect and label all cables from the serial ports (S1 and S2), the parallel port, and Ethernet or Token-Ring ports.

3. Disconnect network:

   - If using an Ethernet system board, connect the Ethernet wrap plug in place of the removed Ethernet cable.

   - If using a Token-Ring system board, disconnect the Multiple Access Unit (MAU) plug from the Token-Ring network. Leave the Token-Ring device cable attached to the Token-Ring connector. The MAU plug provides the wrap connection for the Token-Ring when it is disconnected from the network (expect a 6602 072D LAN error code). The wrap connector is required for successful testing.

4. Disconnect the mouse (expect a 170 error code).

5. Disconnect the keyboard (expect a 301 error code).

6. Turn on the Xstation and display. The Xstation will automatically be reconfigured during POST.

7. Retry the failing procedure.

Note: Either a keyboard or a mouse is needed to use the Xstation graphical menus.

Does the same problem occur?

NO   One of the removed devices is associated with the problem. To identify the failing port or external device, run external wrap tests on all external ports, if possible: serial (S1 and S2), parallel, and Token-Ring or Ethernet. If another error is found, go back to "Start of Call." If no error is found, reconnect each of the devices until the failure returns. If possible, move that device to another port. If the failure follows the device, exchange that device and associated cabling or have it serviced, and retry the failing procedure. If the failure is associated with the serial fan out cable, test the continuity of the cable. See the diagram on page 7-0010-13.

                If the failure persists, go to Step 3. If the problem is corrected, go to Step 5.

YES   Go to Step 3.

Step 3. Internal Devices

(From Step 2)

Error codes, as shown in Step 5, may occur during this procedure. Record the physical configuration and setup of the Xstation. The **Power On Self Test (POST)** option in the **Statistics and Logs** menu can be selected to identify the last configuration changes.

1. Turn off the Xstation power and remove the chassis.

2. Remove the optional diskette drive and attached cable if installed.

3. Remove the Business Audio card if installed.

4. Remove the optional FLASH card, if installed.

5. Remove the optional PCI adapter, if installed.

6. Remove DIMMs in sockets J21 and J19 as referenced on page 6-2.

Note: One DIMM is required to bring up the Xstation, and it can be placed in any socket.

7. Turn on the Xstation power and retry the failing procedure.

Does the same problem occur?

NO   One of the removed internal FRUs appears to be associated with the problem. Reinstall or exchange each FRU removed and retry the failing procedure until the FRU is isolated or all possibilities are exhausted; if the FRU is isolated, replace that FRU.

                If this action fails to solve the problem, go to Step 4. If the problem is corrected, go to Step 5.

YES   Go to Step 4.

Step 4. Voltage Analysis

(From Step 3)

1. Turn on the Xstation power.

2. Check pin 1 (+POWERGOOD) for a positive logic level between +2.4 volts and + 5 volts. Check the power supply connector (pins 2 through 14) for the DC voltages (+ or – 10%) shown in the following table.

Front of Chassis
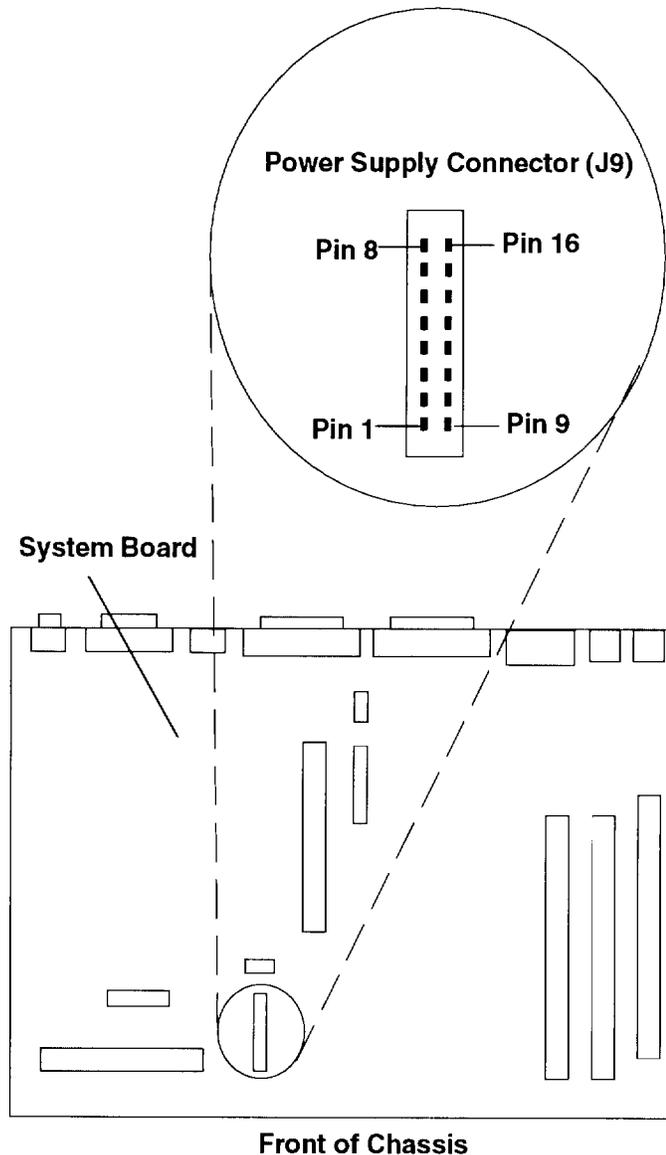
Pin Number	Signal
1	–9V (See note)
2	–9V RET (See note)
3	GND
4	+5V
5	GND
6	+5V
7	GND
8	+5V
9	POWERSW
10	+ POWERGOOD
11	+12V
12	–12V
13	GND
14	+5V
15	GND
16	+3V

Note: All voltages must be measured with respect to Power Supply Ground (Pin 3, 5, 7, 13, or 15), except for – 9V (pin 1) which must be measured with respect to 9V return (pin 2).

Are the voltages present and within tolerance?

NO Replace the power supply, verify the voltages, if voltages are still bad go to Yes, otherwise go to Step 5.

YES Exchange in order and retry the failing procedure:

a. For displays with detachable cables, check the continuity of the signal cable as shown in "Step 4. Display Raster Test" on page 7-0030-2 of "MAP 0030: Displays." If the cable is good, have the display serviced. For other displays, replace the display.

b. The system board.

c. The keyboard.

When the problem is isolated, replace the isolated FRU, and go to Step 5. The problem should be resolved since all FRUs should have been exchanged. However, if the problem persists, go to "Start of Call" on page 7-0000-1 and reassess the problem.

Step 5. Reassemble Xstation and Return to Customer

(From Steps 2, 3, and 4)

When the problem is corrected, reconnect all of the remaining FRUs removed and all cables (including the fan). Each reinstalled option may display a configuration-change error code as listed in the following table. It is normal to have configuration error codes. Turn power on and recheck the codes. To verify the Xstation configuration and setup, go to "MAP 0040: Diagnostics," select **Statistics and Logs** from the **Main Menu**, then select **Power On Self Test (POST)**. Run all tests to assure that all problems have been corrected.

Error Code	Description of Configuration Change
161, 169	Display
162	NVRAM checksum. Turn off the Xstation, then turn on to recalculate the checksum.
163, 167	Xstation file system (NVRAM, FLASH). Refer to "MAP 0010 Start MAPs," Step 10 on page 7-0010-13.
164	DIMMs
168	Optional FLASH Card
170	Mouse
171	Keyboard
172	Serial Port Device
173	Optional Diskette Drive
174	Optional Business Audio Card
	Optional Audio Card
6602 072D	Token-Ring device cable is plugged into the Token-Ring connector, but disconnected from the Token-Ring LAN network.
6602 0711	Token-Ring device cable is unplugged from the connector.
8802	Ethernet cable is disconnected and the wrap plugs are not installed.

MAP 0030: Displays

Purpose of this MAP

This MAP guides the trained service personnel in isolating and resolving display problems.

Step 1. Power Indicator

1. Turn the display power off.

2. Ensure that the display power cord is plugged in to a power outlet.

3. Turn on the display and adjust the display controls (contrast, brightness). Refer to Step 7 of "Connect the Cables" on page 1-7.

4. Observe the display power indicator.

Is the display power indicator lit?

NO   Go to Step 2.

YES   Go to Step 4.

Step 2. Power Check

(From Step 1)

1. Turn off the display power.

2. Unplug the display power cord from the power outlet.

3. Check the power outlet with a meter for correct voltage.

Was the voltage correct?

NO   Have the customer correct the power problem.

YES   Go to Step 3.

Step 3. Power Cable Check

(From Step 2)

Check the display power cable with a meter for continuity.

Was cable continuity good?

NO   Replace the cable.

YES   Have the display serviced.

Step 4. Display Raster Test

(From Step 1)

The Xstation has a display problem; use the following procedure to isolate the failure. If your display is not an 8508, 8517, 5081, 6091, or 6091i, consult the documentation for your display.

1. Turn off the display and Xstation power.

2. Unplug the display signal cable from the Xstation.

3. Turn the contrast control to its maximum position.

4. Turn the brightness control to its middle position.

5. Turn on the display and Xstation.

> **Note:** Powering up the Xstation without the display attached resets the Xstation display parameters. This may resolve some unreadable screen conditions.

6. If the display has a self-test button behind the service control cover below the screen, press and hold the button.

The screen should be white or light gray; a black bar should be on the top, the bottom, or both for displays 8508, 8517, 5081, 6091, or 6091i.

Is the display not listed above, or if listed, is the screen image correct?

NO　　　　For display 8508, check the cable for continuity (see the table on page 7-0030-3). If the cable checks good, replace the display. If the cable is defective, replace the cable and retry the failing procedure.

　　　　　　For displays with a detachable cable, check the cable for continuity (see the table on page 7-0030-3). If the cable checks good, have the display serviced. If the cable is defective, replace the cable and retry the failing procedure.

YES　　　For display 8508, 8517, 5081, 1091, 6091, and 6091i, check the display signal cable for continuity (see the table); if the cable checks good and no signal is shorted to ground, reconnect the display and go to step 5; if the cable is defective, replace the cable and retry the failing procedure.

　　　　　　For all other displays, go to Step 5.

For displays 1091-051 and POWERdisplay 16S, use display cable 09G3588:

Display Cable 09G3588	
Pin	**Signal**
1	Video Red
2	Video Green
3	Video Blue
13	Horizontal Sync (white)
14	Vertical Sync (black)
4, 9, 11,12	Reserved
5–8,10	Ground
14, 15	Connected

P1

P2

Shield

6   1   5   10

11   15

Display Cable Connector
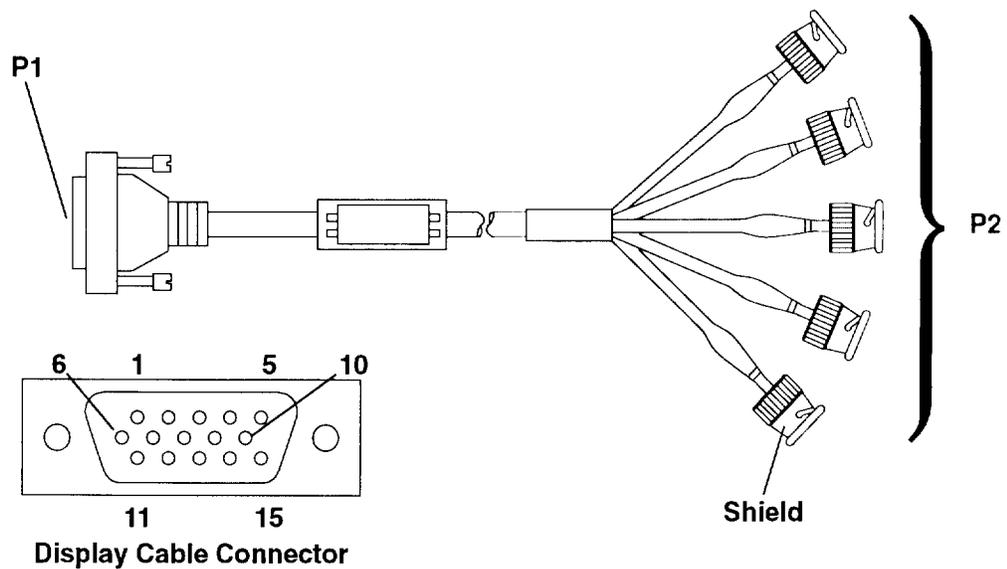
For displays 5081-01x, 6091-0xx, and POWERdisplays 16 and 19, use display cable 58F2901:

Display Cable 58F2901	
Pin	**Signal**
1	Video Red
2	Video Green
3	Video Blue
13	Horizontal Sync (white)
14	Vertical Sync (black)
4, 9	Reserved
5–8,10–12,15	Ground

Step 5. Display Configuration

(From Step 4)

To ensure the display is properly configured, do the following:

1. Ensure the display jumpers (J3) are set to the positions indicated in the table below, unless otherwise instructed. Also refer to the table below to verify the display screen resolution, frame rate, cable, and mode switch setting. If a problem is found, correct the problem and retry the failing procedure.

Display Jumpers

6 5 4 3 2 1 0

J3

Front of Chassis

System Board

Display Type	Display Jumper 3 2 1 0	Screen Resolution	Frame Rate (Hz)	Mode Switch/ Button	Display Cable
8508 Mono	1 1 1 1	1280 x 1024 x 8	67	–	–
8517	1 1 1 1	1024 x 768 x 8	69.96	–	–
5081-016	1 1 1 1	1280 x 1024 x 8	60	–	58F2901
5081-019	1 1 1 1	1280 x 1024 x 8	60	–	58F2901
6091-016	1 1 1 1	1280 x 1024 x 8	60	out	58F2901
	1 1 0 1		77	in	
6091-019	1 1 1 1	1280 x 1024 x 8	60	2	58F2901
	1 1 1 0		67	3	
6091-019i	1 1 1 1	1280 x 1024 x 8	60	–	58F2901
	1 1 0 1		77	–	
6091-023	1 1 1 1	1280 x 1024 x 8	60	–	58F2901
1091-051	1 1 1 1	1280 x 1024 x 8	72	–	09G3588

Display Type	Display Jumper 3 2 1 0	Screen Resolution	Frame Rate (Hz)	Mode Switch/ Button	Display Cable
ValuePoint 6314, 6319	1 1 1 1	1024 x 768	60	–	–
	0 0 1 0		70	–	–
ValuePoint 6317, 6324, 6325, 9524, 6327, 9525	1 1 1 1	1024 x 768	60	–	–
	0 0 1 0		70	–	–
	1 0 1 1		75.8	–	–
	1 0 1 0	1280 x 1024	60	–	–
ValuePoint 9527, 9521	1 1 1 1	1024 x 768	60	–	–
	0 0 1 0		70	–	–
	1 0 1 0	1280 x 1024	60	–	–
	1 1 0 1		77	–	–
POWERdisplay 16	1 1 1 1	1280 x 1024 x 8	60	out	58F2901
	1 1 0 1		77	in	
POWERdisplay 16S	1 1 1 1	1280 x 1024 x 8	72		09G3588
POWERdisplay 17	1 1 1 1	1280 x 1024	60	–	58F2901
POWERdisplay 19	1 1 1 1	1280 x 1024 x 8	60	–	58F2901
	1 1 0 1		77	–	
POWERdisplay 20	1 1 1 1	1280 x 1024	60	–	58F2901

Notes:

1. Powering up the Xstation without the display attached resets the Xstation display parameters. This may resolve some unreadable screen conditions.

2. After making changes to the display jumper settings, verify that the display's Mode Switch or Button is in the position indicated in the table above. The Mode Switch or Button is located below the display screen as shown on page 1-8.

2. If the display is legible, go to "MAP 0040: Diagnostics" and select **Base Configuration** from the **Main Menu**. If a problem is found, correct the problem by adjusting the display jumpers or replacing the display cable. Retry the failing procedure.

3. If the display is legible, go to "MAP 0040: Diagnostics" and select **Test the Terminal**, **Run Tests One Time**, and the **Display** options. Run all tests and search for the problem. If a different problem is detected, go to "Start of Call" on page 7-0000-1 and correct that problem first.

4. If the problem persists for displays 5081, 6091, and 6091i, refer to the respective service manual and have the display serviced. For other displays, replace the display.

5. If the above action fails to solve the problem, reinstall the old display and go to "MAP 0020: Power" to chronologically isolate the FRU.

MAP 0040: Diagnostics

Purpose of this MAP

The Xstation's Power-On Self-Test (POST) provides the first layer of diagnosis for investigating the nature of a specific problem. Further diagnostics should be consulted for additional isolation of the problem.

```
┌──────────────────────────────────────────────────────────────┐
│                                                              │
│   [Xstation logo]        7010 Xstation Model 160             │
│                          (c) Copyright Notice                │
│                          Version:XXX                         │
│                                                              │
│                                                              │
│   Adapters                                                   │
│    Keyboard                                                  │
│    Mouse                                                     │
│   Type of Network - XXXXXXXXXXXX                             │
│                                                              │
│   Configuration Information                                  │
│   ...                                                        │
│   ...                                                        │
│   ...                                                        │
│                                                              │
│                                                              │
│   Press Ctrl, Alt, then Backspace for Main Menu             │
│                                                              │
└──────────────────────────────────────────────────────────────┘
```
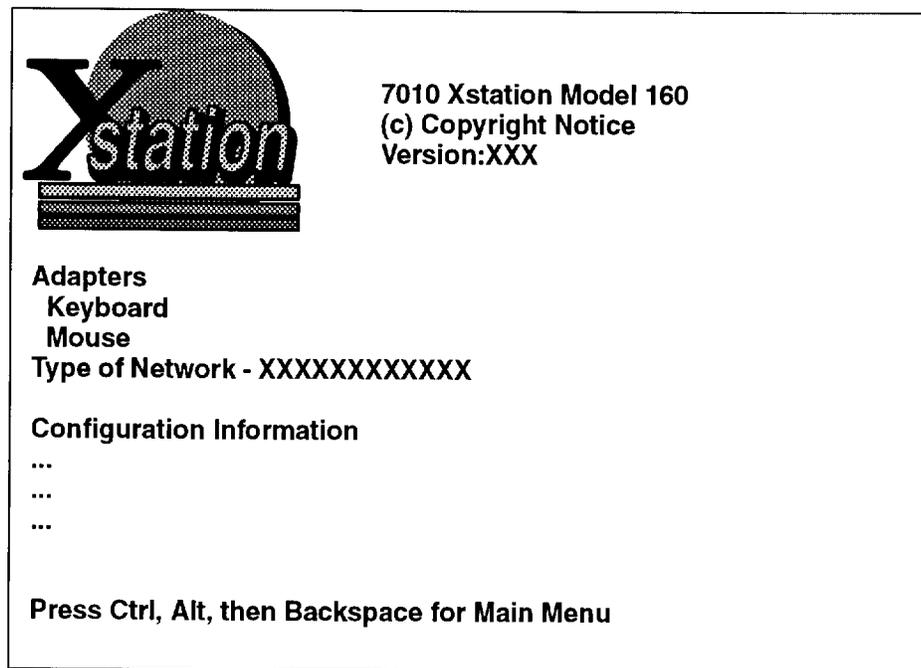
Pressing the F5 key while the POST and LAN screen is displayed will display the service message buffer (in English only). The cursor up, cursor down, page up, and page down keys are active while viewing the service message buffer.

To return to the POST and LAN screen from the service message buffer, press the Esc key.

A POST log is maintained in nonvolatile RAM (NVRAM) and can be viewed through the Xstation's **Main Menu**. To display the **Main Menu**:

- Press the Esc key while the POST and LAN screen is displayed.

- Or, hold down the Ctrl and Alt keys and then press Backspace while in an X-Windows session.

When the **Main Menu** appears, click on the **Statistics and Logs** button, then click on the **Power On Self Test (POST)** button to display the POST log.

The Xstation's menu system was designed to be similar to SMIT.

The **Test the Terminal** selections are an extension of the Power-On Self-Test (POST). These tests should be consulted if the Power-On Self-Test (POST) produces the "not OK" icon.

For additional service information, press the **F1** key whenever an error message is displayed.

Step 1. Enter Diagnostics

1. If you are logged on to the host system, record all of the information that identifies the problem. Log off the system, (hold down the Ctrl and Alt keys, and then press the Backspace key), wait for the Reboot message, then turn the Xstation power off.

2. Turn on the Xstation power.

   a. Verify that the power supply LED is lit.

   b. Verify that all LEDs on the keyboard flash on, then off during power-up.

   c. Verify that the POST checkpoints, the startup message, and LAN display on the screen.

   d. Record any displayed error code, then press the Esc key to display the Xstation's Main Menu.

Did a graphical menu (such as the Main Menu or Test the Terminal) appear?

NO   Go to "MAP 0020: Power" on page 7-0020-1 to chronologically isolate the problem.

YES   Go to Step 2.

Step 2. Select

(From Step 1)

The Xstation's **Main Menu** provides a comprehensive set of selections to assist the trained service person in isolating problems.

```
┌─────────────────────────────────────────────────────────────────────┐
│   ╭──────╮    ┌───────────────────────────────────────────┐          │
│  ╱  logo  ╲   │     Copyright Statement and Version        │          │
│   ╲──────╱    └───────────────────────────────────────────┘          │
│                              Main Menu                                │
│   Xstation Session:                                                   │
│      ☐ X-Windows                                                      │
│      ☐ Local Clients                                                  │
│                                                                       │
│   Configuration:                                                      │
│      Language-Selection:┌─────────────────┐                          │
│                         │ English (U.S.)   │                          │
│      ☐ Basic Configuration                                            │
│      ☐ Advanced Configuration                                         │
│      ☐ Hardware Configuration                                         │
│                                                                       │
│   Utilities:                                                          │
│      ☐ Startup Messages                                               │
│      ☐ Statistics and Logs                                           │
│      ☐ Test the Terminal                                             │
│                                                                       │
│   ┌────┐ ┌──────────────┐ ┌────────────────┐ ┌──────┐ ┌──────────┐ ┌──────┐ │
│   │Exit│ │ Save Changes │ │ Restore Defaults│ │Reboot│ │Copyrights│ │ Help │ │
│   └────┘ └──────────────┘ └────────────────┘ └──────┘ └──────────┘ └──────┘ │
└─────────────────────────────────────────────────────────────────────┘
```

Hardware Configuration

This selection allows you to view and change some of the Xstation's base hardware configuration, such as amount of installed memory, display information, and the Xstation hardware address.

Utilities

This section of the **Main Menu** controls diagnostic information and tests.

Startup Messages

The startup messages displayed by this selection allow you to view (in English only) the initial program load (IPL) progress in order to verify configuration of the Xstation and communication with the host.

Statistics and Logs

This section displays (in English only) the LAN, error, and POST logs.

Test the Terminal

This section provides interactive tests for analyzing the Xstation hardware and attached devices.

Step 3. Test the Terminal

(From Step 2)

The **Test the Terminal** option from the **Main Menu** offers the following choices:

```
                        Test the Terminal Menu


    Test Selection:
                ◈ Run Tests One Time◇ Run Tests Continuously
        ☐   Run All Tests
            ☐  Memory
            ☐  Keyboard
            ☐  Mouse
            ☐  Display
            ☐  Parallel Port
            ☐  Serial Ports/Devices
            ☐  LAN Communication
            ☐  Diskette Drive (optional)
            ☐  Business Audio (optional)


        ☐   Power-On Self-Test (POST)




        _____ Esc _____
        | Main Menu |                    | Help |
```

1. If you want the tests that you choose to run continuously, click on the button labeled **Run Tests Continuously**. Otherwise, the tests will run once when you choose them.

2. Select the desired tests.

3. Insert the wrap plugs as prompted.

4. If the test stops with an error message, go to "Step 4. Error Code Analysis" on page 7-0010-4. (Pressing the F1 key provides additional service information).

5. Intermittent problems, including memory, should be tested first by selecting **Run Tests Continuously**.

6. To quit looping after selecting **Run Tests Continuously**, press the Esc key when the loop count message is displayed or turn the Xstation power off.

7. If an attached device failure is suspected:

   a. If possible, move the device to another port and retry the failing procedure. Assure that the port being used passes its own diagnostics.

   b. If the failure follows the attached device, refer to the respective service manual.

8. If the problem persists, and if a software problem is not suspected, go to "Map 0020: Power" to chronologically isolate the FRU.

9. If a software problem is suspected, contact the system administrator. If all previous actions do not resolve the problem, contact technical assistance.

Step 4. Display

(From Step 3)

Selecting the **Display** option from the **Test the Terminal** menu produces the Display menu.

```
                                    Display Menu


        ☐ Run All Tests
            ☐ Character Test
            ☐ Graphics Test
            ☐ Monitor Test

















_____ Esc _____
  Test the Terminal Menu          Help
```

If the test stops with an error, go to "Step 4. Error Code Analysis" on page 7-0010-4.

Test Screens

Character Test, selected from the preceding Display Menu, produces the character set used by the built in font.

Graphics Test, selected from the preceding Display menu produces a sequence of test screens that can vary according to your display type. Each of these screens displays aspects of the Xstation's graphics capabilities and asks for user verification as to their accuracy. Two examples appear on page 7-0040-6.

Monitor Test produces a sequence of test screens which are used by service personnel to evaluate the display according to the service instructions provided with the display.

Graphics Test

Red
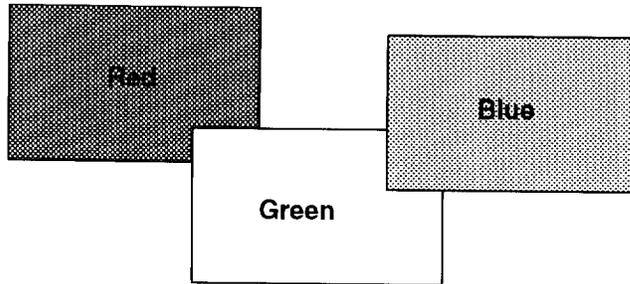
Blue

Green

Are the colors correctly displayed?

F5 = Yes   **F6** = No

---

16 COLOR GRAPHICS

Colors Here
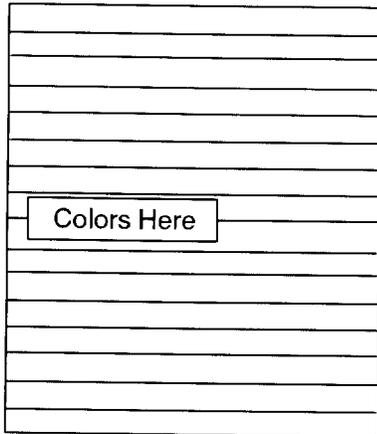
Black
Blue
Green
Cyan
Red
Magenta
Brown
White
Dark gray
Light blue
Light green
Light cyan
Light red
Light magenta
Yellow
Intensified white

Are the colors correctly displayed?

F5 = Yes   **F6** = No

Chapter 8. Removal and Replacement Procedures

Introduction

The 7010 Xstation Model 160 is designed for ease of maintenance. Some of its features are:

- The entire chassis, including the power supply, slides out from within the cover; nc fastener removal is required for this important procedure unless security protection devices have been installed by the customer.

- The power supply is entirely self-contained.

Electrical Safety

Observe the following safety instruction any time you are connecting or disconnecting devices attached to the system unit.

Note: For a translation of these notices see the *System Unit Safety Information*, Form Number SA23-2652.

DANGER

An electrical outlet that is not correctly wired could place hazardous voltage on metal parts of the system or the devices that attach to the system. It is the responsibility of the customer to ensure that the outlet is correctly wired and grounded to prevent an electrical shock.

Before installing or removing signal cables, ensure that the power cables for the system unit and all attached devices are unplugged.

When adding or removing any additional devices to or from the system, ensure that the power cables for those devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.

Use one hand, when possible, to connect or disconnect signal cables to prevent a possible shock from touching two surfaces with different electrical potentials.

During an electrical storm, do not connect cables for display stations, printers, telephones, or station protectors for communications lines.

CAUTION:
This product is equipped with a 3-wire power cable and plug for the user's safety. Use this power cable in conjunction with a properly grounded electrical outlet to avoid electrical shock.

Handling Static-Sensitive Devices

Warning: Adapters, system boards, DIMMs, and FLASH cards are sensitive to static electricity discharge. These devices are wrapped in antistatic bags to prevent this damage.

Take the following precautions:

- If you have an antistatic wrist strap available, use it while handling the device.
- Do not remove the device from the antistatic bag until you are ready to install the device in the system unit.
- With the device still in its antistatic bag, touch the bag to a metal frame of the system.
- Grasp cards and boards by the edges. Hold drives by the frame. Avoid touching the solder joints or pins.
- If you need to lay the device down while it is out of the antistatic bag, lay it on the antistatic bag. Before picking it up again, touch the antistatic bag and the metal frame of the system unit at the same time.
- Handle the devices carefully in order to prevent permanent damage.

Antistatic Bag
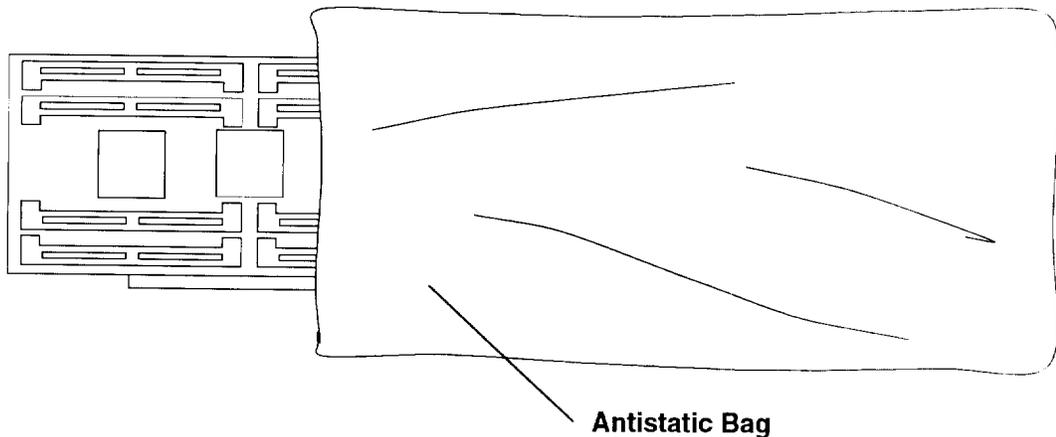
Cover Assembly

To remove the cover assembly:

1. Set the Xstation system unit, display, and attached device power switches to Off (O).
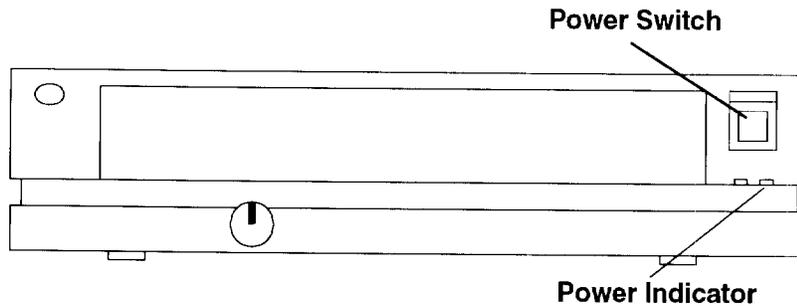
Power Switch

Power Indicator

2. If you have not already done so, unplug the system unit power cable, display power cable, and attached device power cables from electrical power outlets.

3. Unlock the cover
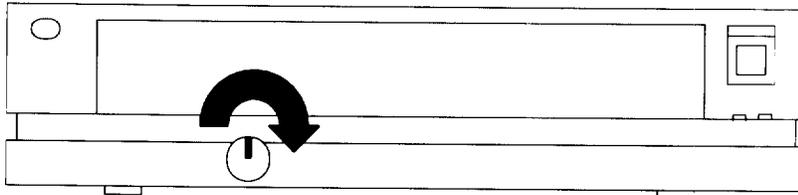
4. Open the cover door, then lift and hold the cover latch and slide the cover forward until the cover moves past the latch.
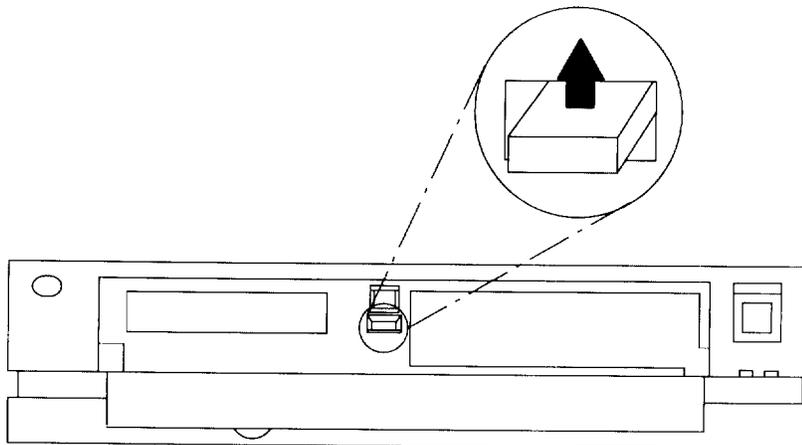
5. Slide the cover to the front, then lift it off the Xstation.
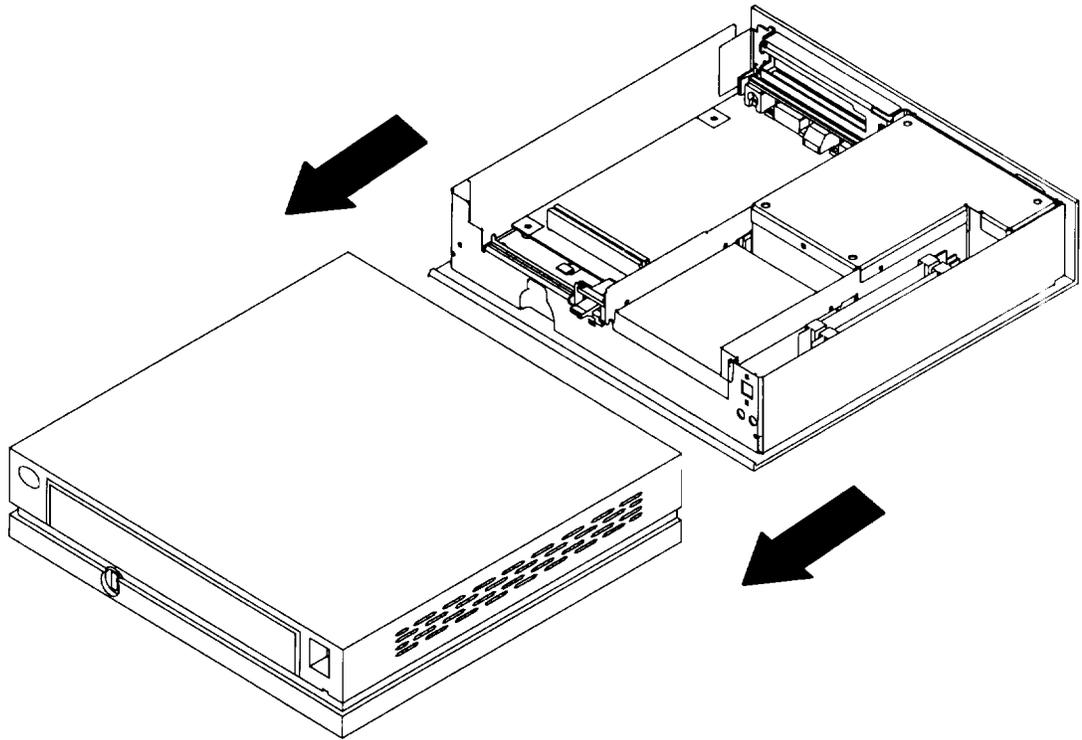
To replace the cover assembly, perform removal steps in reverse order.

Power Supply

To remove the power supply:

1. Do the removal procedure in "Cover Assembly" on page 8-3.

2. Unplug the power cord from the power supply.

3. Locate the screw on the back of the Xstation that holds the power supply tray in place and remove the screw.

I/O Panel

Screw
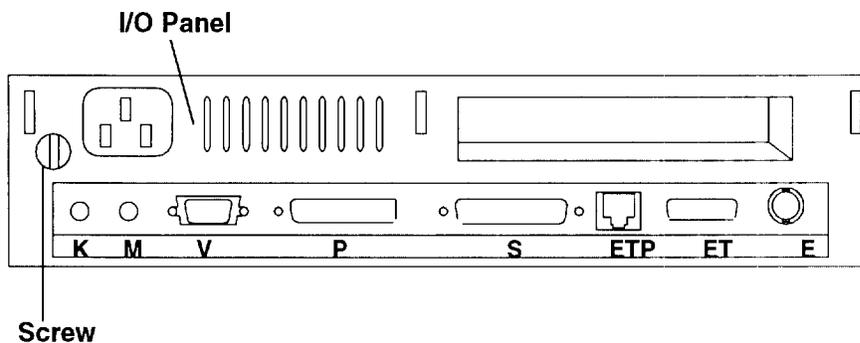
4. Disconnect the power supply cable connector (J9) from the system board.

5. If a diskette drive is installed in the power supply tray, do the removal procedure in "Diskette Drive" on page 8-7.

6. Lift the power supply tray from the chassis.
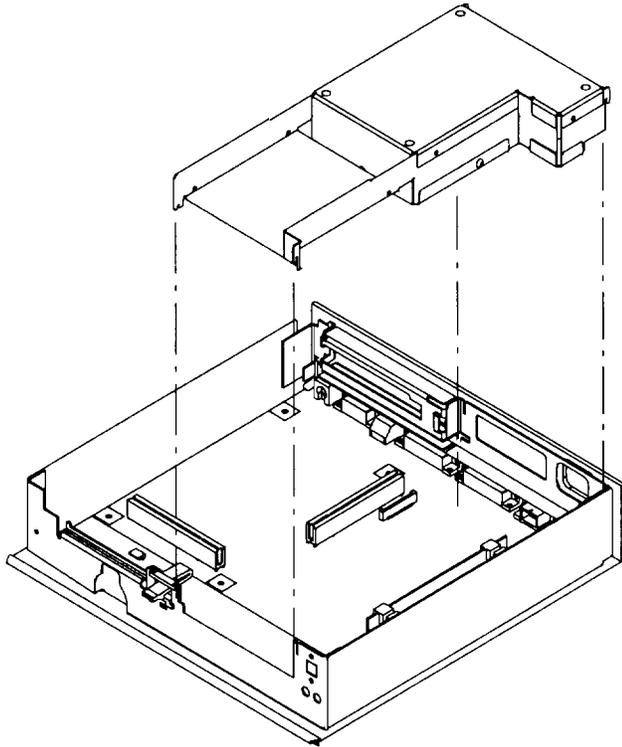
To replace the power supply, perform the removal steps in reverse order.

Diskette Drive

To remove the diskette drive:

1. Do the removal procedure in "Cover Assembly" on page 8-3.

2. Locate the screw on the back of the Xstation that holds the power supply tray in place and remove the screw.

I/O Panel
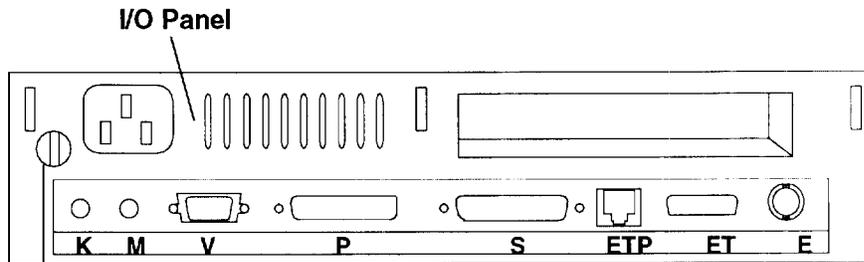
Screw

3. Open the diskette drive cable connector and remove the cable.

**Rear View of
Diskette Drive**
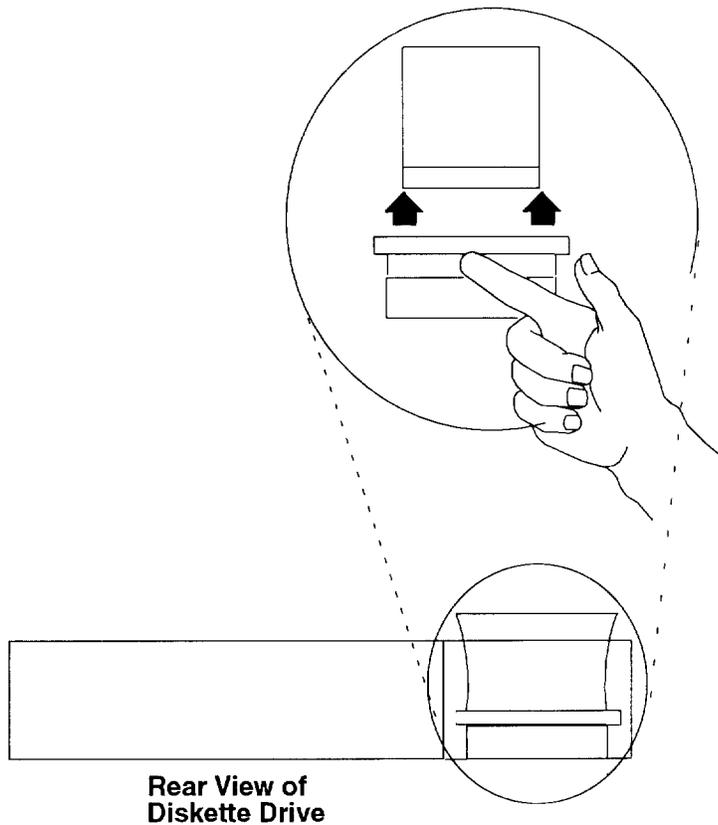
4. With the front of the power supply tray elevated slightly, remove the four mounting screws.
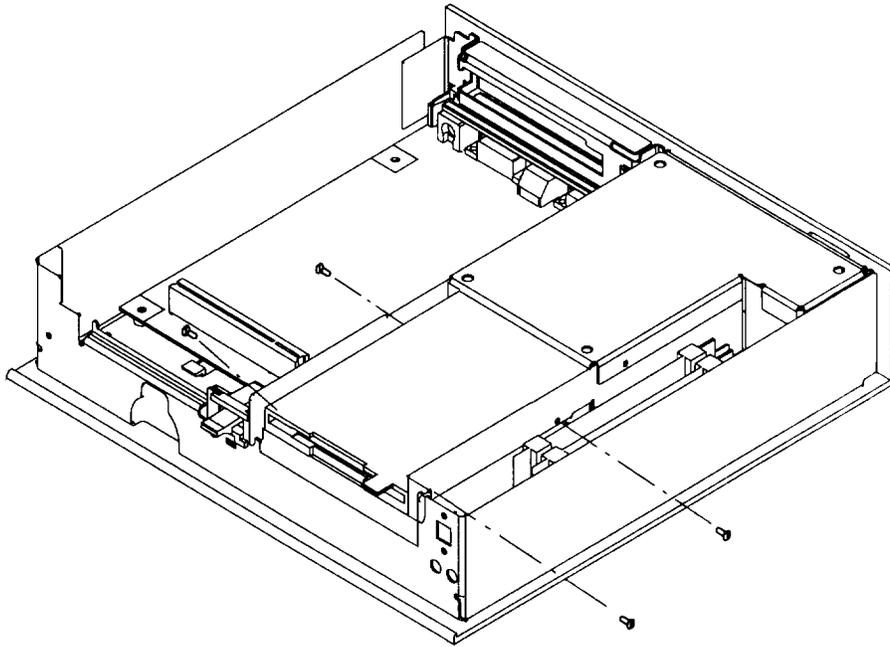
5. Remove the diskette drive from the power supply tray.
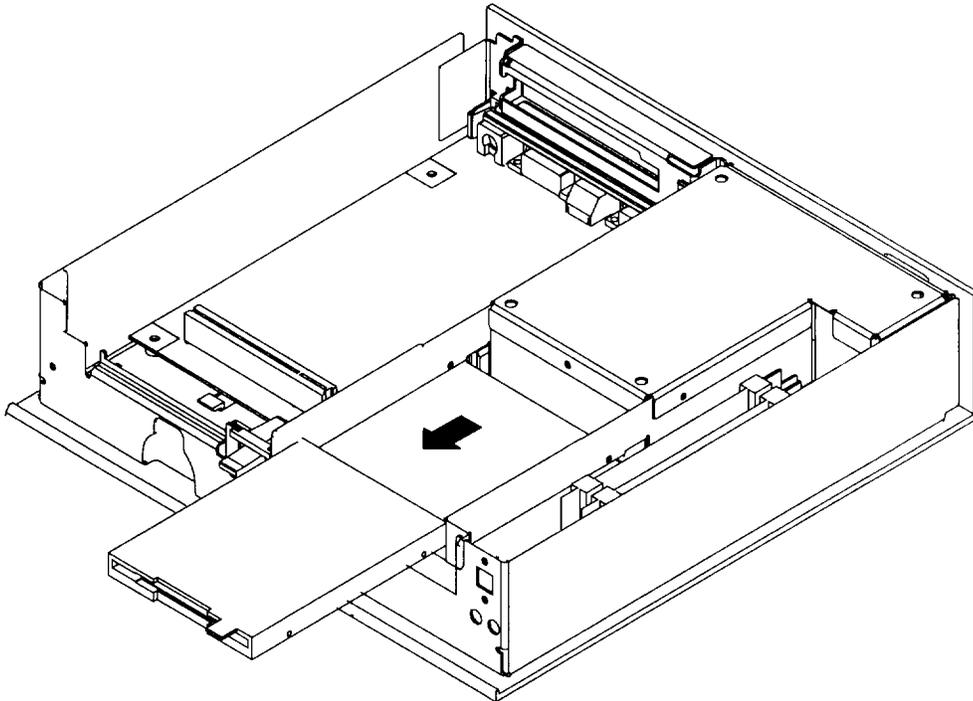
To replace the diskette drive, perform the removal steps in reverse order.

System Board

Notes:

1. Installing a new system board results in new network hardware addresses. The network administrator should be informed of the new addresses which will be furnished on the POST and LAN Screen shown on page 7-0040-1.

2. In addition, each system board has a unique identification number that is used for access by some programs. If the system board is changed, notify the customer that program authorization may need to be updated.

3. To maintain security, the system administrator must enter a new password.

To remove the system board:

1. Do the removal procedure in "Cover Assembly" on page 8-3.

2. Unplug the power cable and all signal cables from the I/O panel.

3. If a PCI adapter is installed, do the removal procedure in "PCI Adapter" on page 8-16.

4. If a Business Audio Card is installed, do the removal procedure in "Business Audio Card" on page 8-11.

5. If a FLASH Connector Card is installed, do the removal procedure in "FLASH Connector Card" on page 8-13.

6. Do the removal procedure in "Power Supply" on page 8-5.

7. Remove the power switch cable from connector J6 on the system board.

8. Remove the six system board mounting screws.
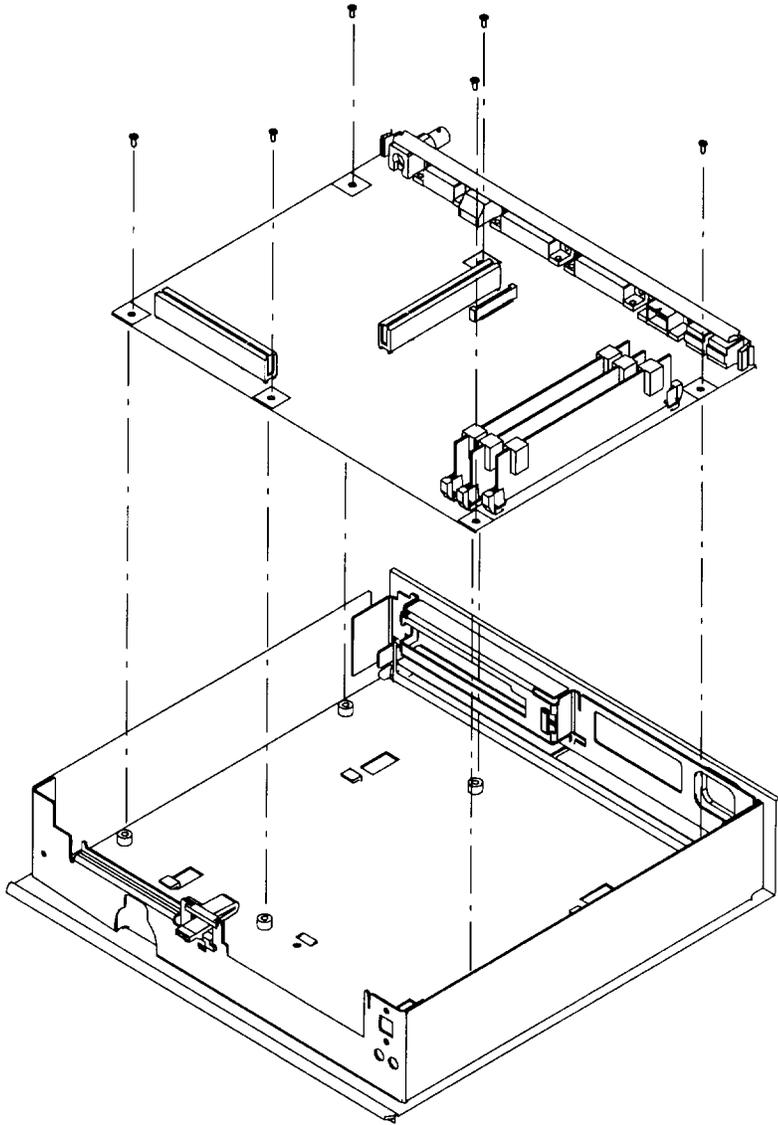
9. Lift the system board assembly up and out of the chassis.

To replace the system board, perform removal steps in reverse order.

Install all removed parts onto the new system board, and configure jumpers J3, J8, J11 and J12 to match those on the removed system board.

Business Audio Card

To remove the Business Audio card:

1. Do the removal procedure in "Cover Assembly" on page 8-3.

2. Remove the two screws from the Business Audio card brackets.
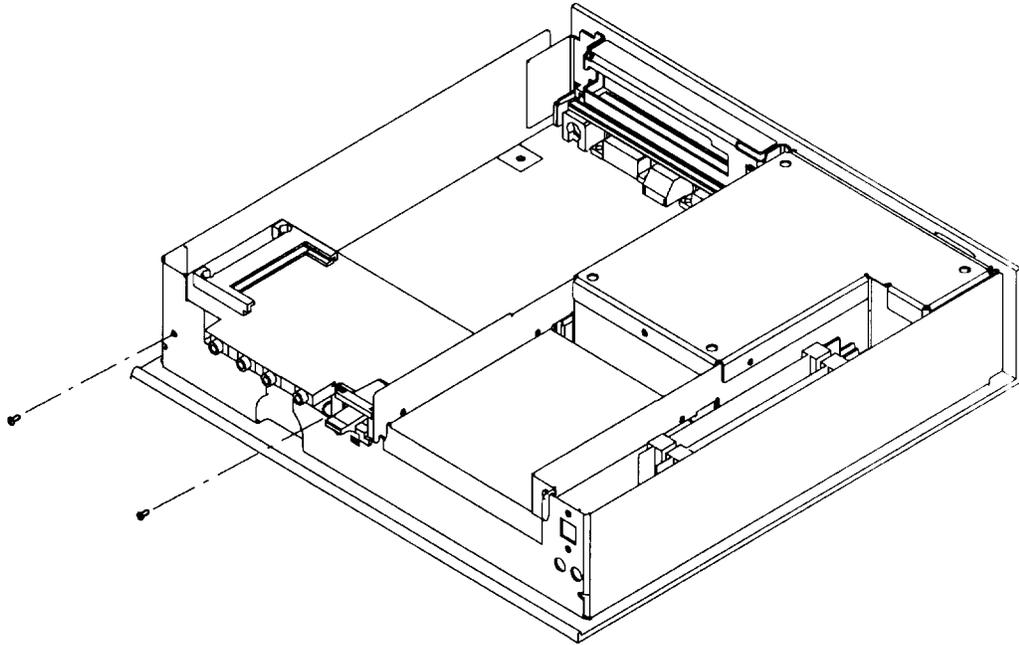
3. Remove the PCMCIA riser and Business Audio card from the PCMCIA connector (J4) on the system board
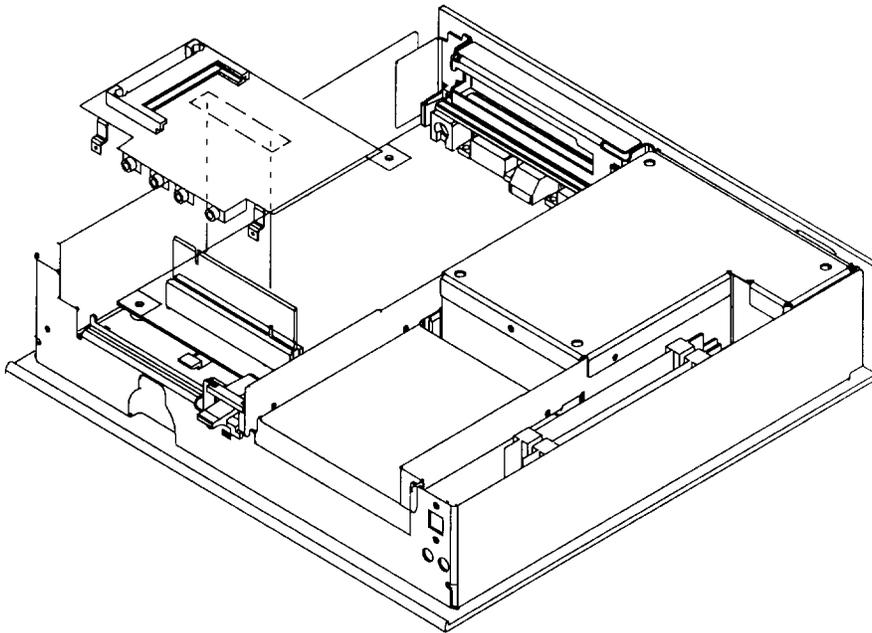
4. Separate the Business Audio card from the riser card.
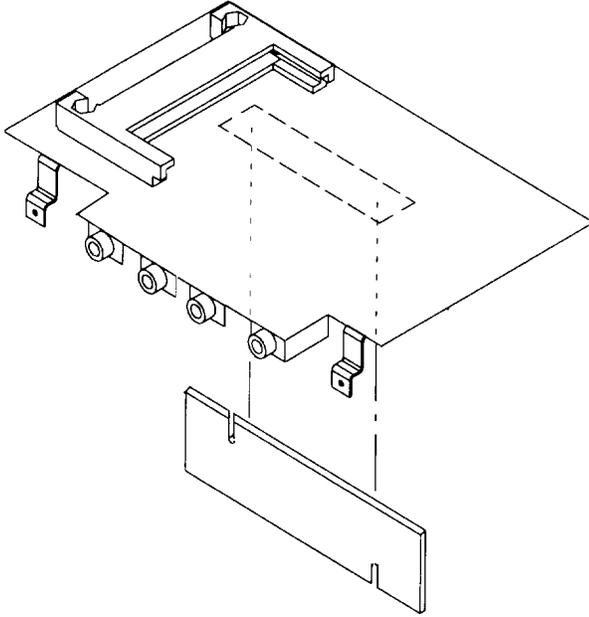
To replace the Business Audio card, perform removal steps in reverse order.

FLASH Connector Card

To remove the FLASH Connector card:

1. Do the removal procedure in "Cover Assembly" on page 8-3.

2. Remove the two screws from the FLASH connector card brackets.
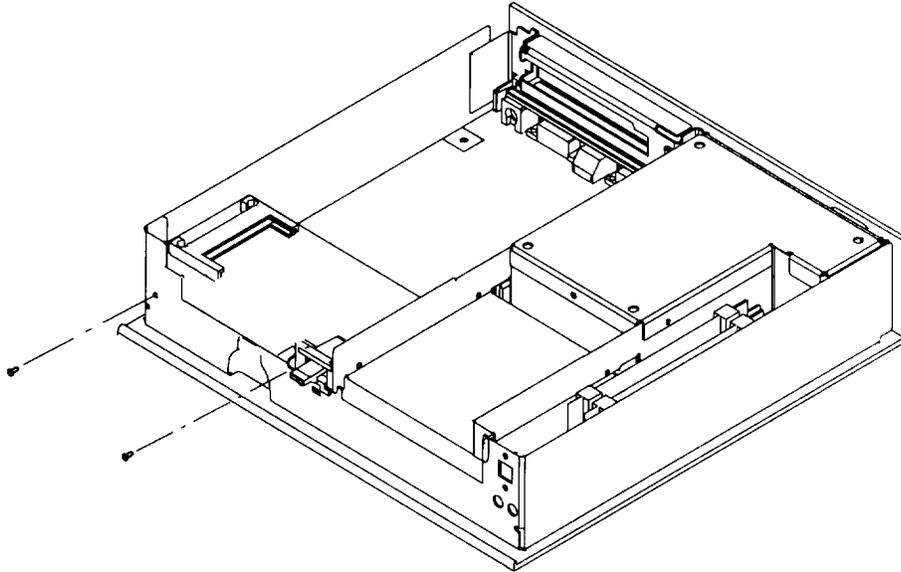
3. Remove the riser card and FLASH connector card from the PCMCIA connector (J4) on the system board
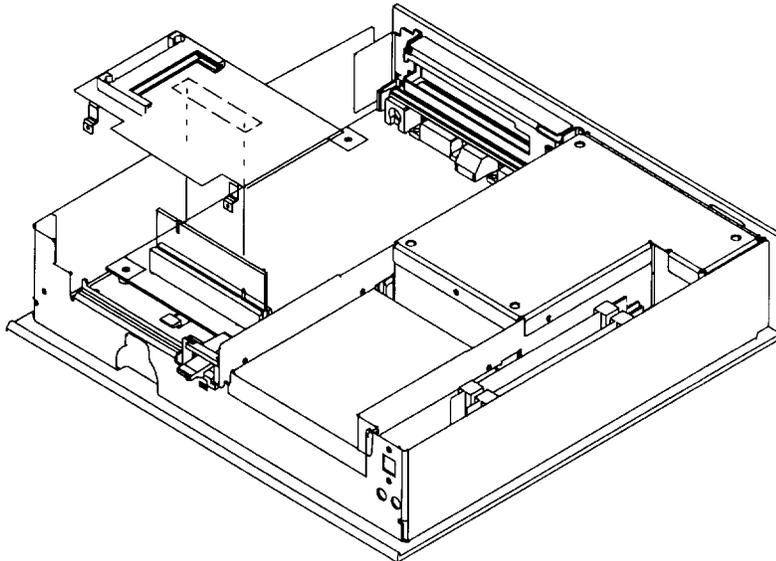
4. Separate the FLASH connector card from the riser card.
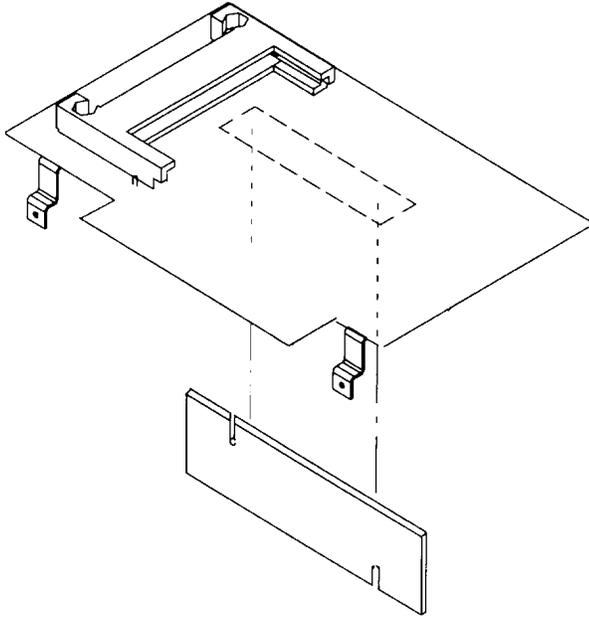
To replace the FLASH connector card, perform removal steps in reverse order.

Power Switch Assembly

To remove the power switch assembly:

1. Do the removal procedure in "Cover Assembly" on page 8-3.

2. Disconnect the power switch cable connector (J6) from the system board.

3. Remove the two screws from the power switch assembly.
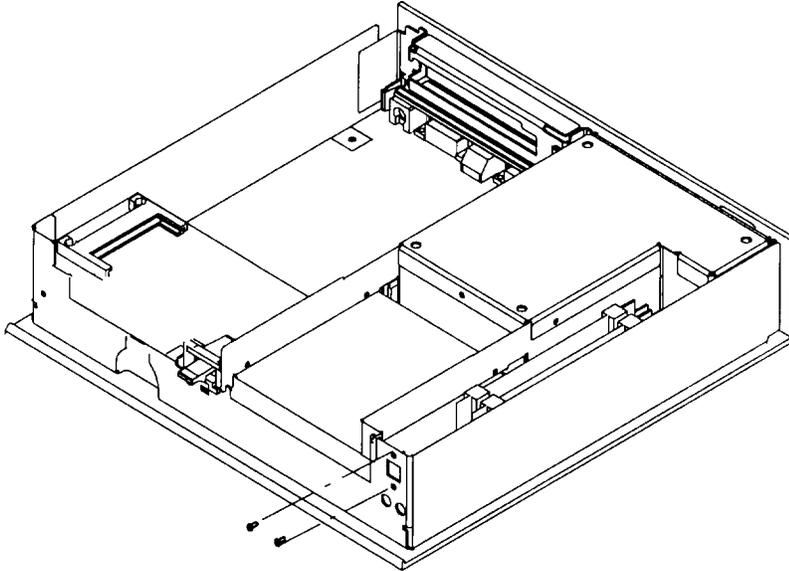
4. Remove the power switch assembly.

To replace the power switch assembly, perform removal steps in reverse order.

PCI Adapter

To remove the PCI adapter card:

1. Do the removal procedure in "Cover Assembly" on page 8-3.

2. Remove the screw from the PCI adapter bracket.
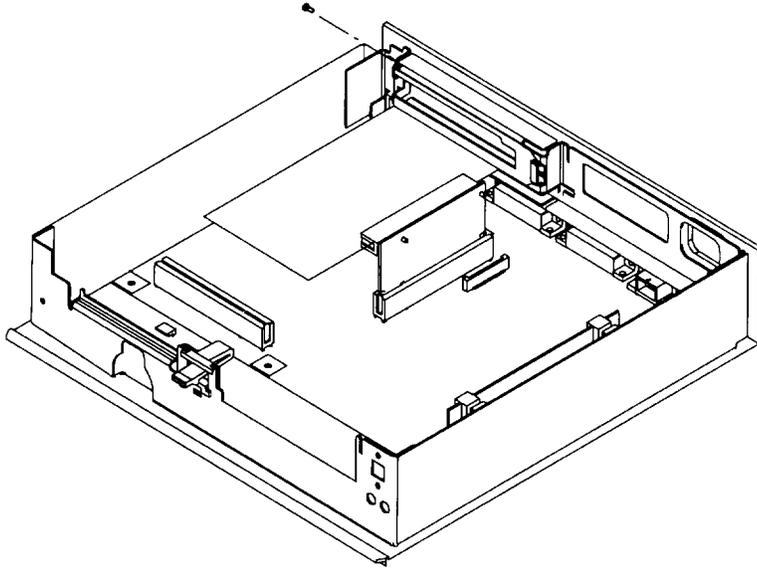
3. Remove the PCI riser and PCI adapter from the PCI connector (J10) on the system board.
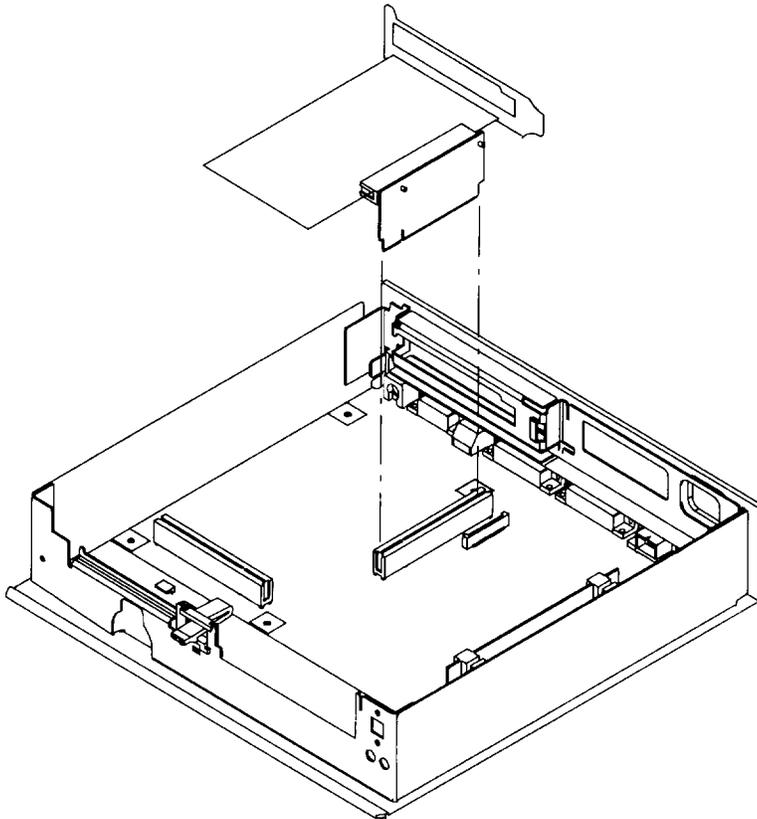
4. Separate the PCI adapter from the riser card.
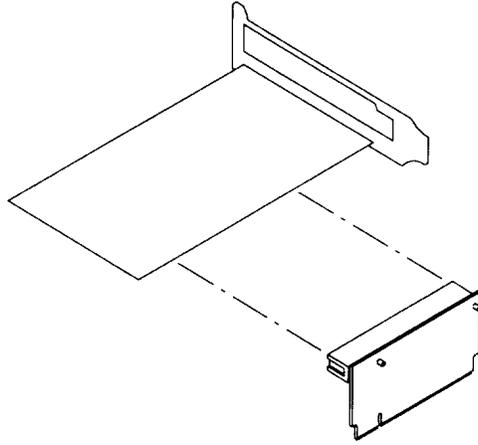
To replace the PCI adapter, perform removal steps in reverse order.

Chapter 9. Parts Information
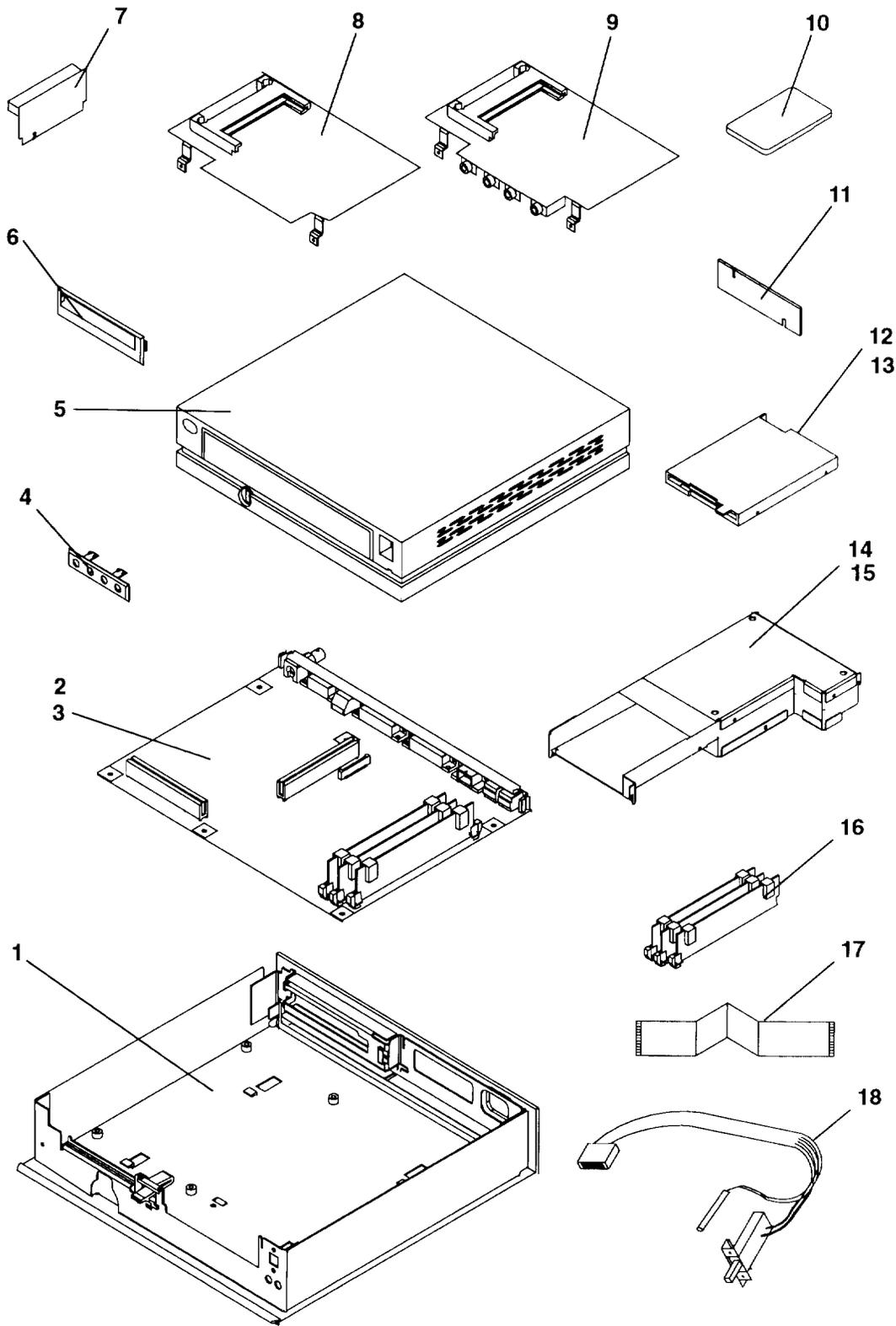
Index Number	FRU Number	Units Per Asm	Description
1	65G4498	1	Cover Assembly, Top and Bottom
2	65G4462	1	System Board Assembly, Ethernet
2	65G4622	1	System Board Assembly, Token Ring
2	65G4634	1	System Board Assembly, Ethernet (4MB VRAM)
2	65G4635	1	System Board Assembly, Token Ring (4MB VRAM)
3	92F1294	7	Screw, System Board, and PCI Adapter Mount
4	65G4522	1	Bezel, Audio
4	65G4532	1	Bezel, Diskette
5	65G4495	1	Top Cover Assembly (includes door and lock)
6	39G6569	1	Bezel, Blank (Diskette Slot)
6	39G6549	1	Bezel, Blank (Audio Slot)
7	65G4548	1	Riser, PCI Adapter
8	65G4540	1	FLASH Connector Card
9	65G4488	1	Business Audio Card
10	43G2855	1	Optional FLASH Card, 2M bits
10	43G2856	1	Optional FLASH Card, 4M bits
10	65G4632	1	Optional FLASH Card, 10M bits
10	65G4633	1	Optional FLASH Card, 20M bits
11	65G4536	1	Riser, Audio and FLASH Connector
12	06H3858	1	Diskette Drive
13	95G9827	4	Screw, Diskette Mount
14	65G4631	1	Power Supply
15	92F1294	1	Screw, Power Supply Mount
16	65G4615	1	8M-bit Dual Inline Memory Module (DIMM)
16	65G4617	2	32M-bit Dual Inline Memory Module (DIMM)
17	65G4531	1	Cable, Diskette
18	65G4528	1	Power Switch Assembly
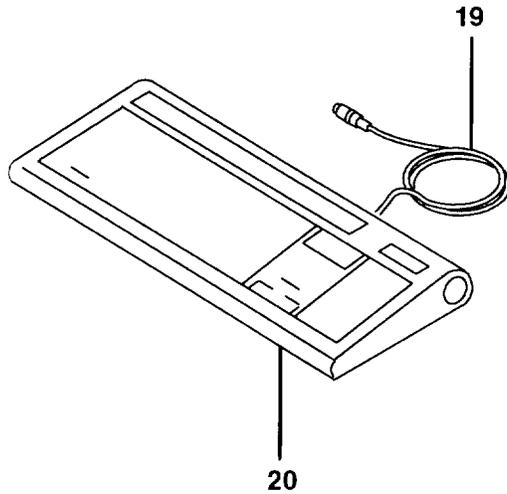
Index Number	FRU Number	Units Per Asm	Description
19	1394609	1	Keyboard Cable
20	1394540	1	Keyboard, United States English
	1394541	1	Keyboard, Canadian French
	1394542	1	Keyboard, German
	1394543	1	Keyboard, Belgian-French/Dutch
	1394544	1	Keyboard, Danish
	1394545	1	Keyboard, Finnish/Swedish
	1394546	1	Keyboard, French
	1395968	1	Keyboard, Icelandic
	1394547	1	Keyboard, Italian
	1394548	1	Keyboard, Norwegian
	1394549	1	Keyboard, Portuguese
	1394550	1	Keyboard, Spanish
	1394551	1	Keyboard, Swiss German/French
	1395984	1	Keyboard, United Kingdom, CSA
	1395985	1	Keyboard, United Kingdom English
	43G2778	1	Keyboard, Netherlands
	1396077	1	Keyboard, Turkish
	30F9388	1	Keyboard, Japan
	10G8753	1	Keyboard, Taiwan-Chinese
	10G8752	1	Keyboard, Korean

21
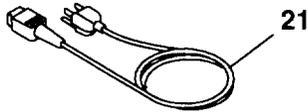
Index Number	FRU Number	Units Per Asm	Description
21	62X0663	1	Power Cable, U.S.
	13F9960	1	Power Cable, Canada, South Korea, Costa Rica, Uruguay
	65X1361	1	Japan
	13F9979	1	Power Cable, Germany, Sweden, Austria, Norway, Belgium, Finland, France, Portugal, Spain
	13F9997	1	Power Cable, Denmark
	14F0015	1	Power Cable, South Africa, Pakistan, Sri Lanka
	14F0033	1	Power Cable, U.K., Hong Kong, Brunei
	14F0051	1	Power Cable, Switzerland
	14F0069	1	Power Cable, Italy, Chile
	14F0087	1	Power Cable, Israel
	13F9940	1	Power Cable, Australia, New Zealand, Argentina
	1838574	1	Power Cable, Thailand
	13F9968	1	Power Cable, Chicago Shielded

To avoid electrical shock, IBM provides a power cable with a grounded attachment plug. Use only properly grounded outlets.

IBM power cables used in the United States and Canada are listed by Underwriter's Laboratories (UL) and certified by the Canadian Standards Association (CSA). These power cords have the following characteristics:

- Electrical cables, Type SVT or SJT

- Attachment plugs complying with National Electrical Manufacturers Association (NEMA) 5-15P, which states:

    "For 115 V operation, use a UL listed cable set consisting of a minimum 18 American Wire Gauge (AWG), Type SVT or SJT three-conductor cord a maximum of 15 feet in length and a parallel blade, grounding type attachment plug rated at 15 A, 125 V."

    "For 230 V operation in the United States use a UL listed cable set consisting of a minimum 18 AWG, Type SVT or SJT three-conductor cable a maximum of 15 feet n length, and a tandem blade, grounding type attachment plug rated at 15 A, 250 V."

- Appliance couplers complying with International Electrotechnical Commission (IEC) Standard 320, Sheet C13.

- Electrical cables, Type HD21

- Attachment plugs approved by the appropriate testing organization for the specific countries where they are used. NEMA 5-15P states:

    "For units set at 230 V (outside of U.S.): use a cable set consisting of a minimum 13 AWG cable and grounding type attachment plug rated 15 A, 250 V. The cable set should

have the appropriate safety approvals for the country in which the equipment will be installed and should be marked HAR."
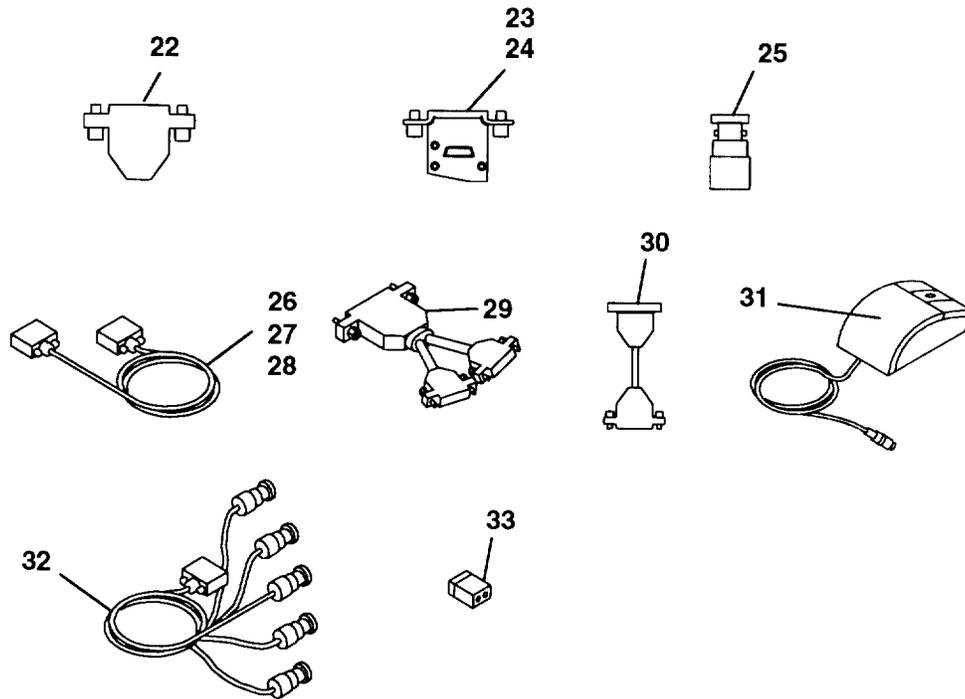
Index Number	FRU Number	Units Per Asm	Description
22	71F1167	1	Wrap Plug, Ethernet Thick (15-pin D Shell)
23	6298964	1	Wrap Plug, Serial
24	71F0690	1	Wrap Plug, Parallel
25	71F1168	1	Wrap Plug, Ethernet Thin (BNC "T-stub" W/25 Ohm Terminators)
26	1525612	1	Printer Cable, Parallel
27	8509386	1	Printer Cable, Serial
28	6339098	1	Token-Ring Device Cable
29	31F4590	1	Serial Port Fan Out Cable
30	70F9814	1	Converter, Ethernet Connector (connects slide-latch connector on LAN cable to the thick Ethernet connector on the I/O panel)
31	11F8895	1	Mouse, 3-button
32	09G3588	1	Cable, Display Attachment 1091, POWERdisplay 16S
	58F2901	1	Cable, Display Attachment 5081, 6091, POWERdisplays 16, 19
33	92F1420	10	Jumper

Appendix A. Moving the Xstation

Warning: Damage resulting from improper handling may void your equipment warranty. Contact your local representative to purchase packing materials or assistance to prepare your system for moving.

Do not place the Xstation on top of any object or surface which will restrict airflow to the chassis. Doing so could prevent proper cooling of the Xstation and cause overheating of system components.

Note: Carrying or moving heavy displays may require two persons.

The following danger and caution notices should be observed if you decide to move your unit. For a translation of these notices see the *System Unit Safety Information*, Form Number SA23-2652.

DANGER
> **An electrical outlet that is not correctly wired could place hazardous voltage on metal parts of the system or the devices that attach to the system. It is the responsibility of the customer to ensure that the outlet is correctly wired and grounded to prevent an electrical shock.**
>
> **Before installing or removing signal cables, ensure that the power cables for the system unit and all attached devices are unplugged.**
>
> **When adding or removing any additional devices to or from the system, ensure that the power cables for those devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.**
>
> **Use one hand, when possible, to connect or disconnect signal cables to prevent a possible shock from touching two surfaces with different electrical potentials.**
>
> **During an electrical storm, do not connect cables for display stations, printers, telephones, or station protectors for communications lines.**

CAUTION:
This product is equipped with a three-wire power cable and plug for the user's safety. Use this power cable in conjunction with a properly grounded electrical outlet to avoid electrical shock.

DANGER
> **To prevent shock hazard, disconnect the power cable from the electrical outlet before relocating the system.**

1. If you are logged on to a host system, log off the attached network (hold down the Ctrl and Alt keys and then press the Backspace key). Wait for the reboot message to appear.

2. Turn off the Xstation system unit, display, and all attached separately powered devices.

3. Unplug the Xstation system unit, display, and all attached separately powered devices from power outlets.

4. Be sure to label all of the cables as you disconnect them.

5. Check all of the electrical power outlets in the location to which you are moving for correct wiring, voltage, and grounding before attaching the Xstation, display, or separately powered devices.

6. Connect all signal cables to the display and system unit before plugging any power cables into electrical outlets.

7. Refer to "Step 4. Position the Xstation" on page 1-10 for Xstation positioning considerations.

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