

# 7030 Models 300 Series

## **Service Guide**



7030 Models 300 Series

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## Second Edition (June 1995)

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# Communications Statements

The following statement applies to this product. The statement for other products intended for use with this product will appear 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 or 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 Règlement 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 per 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.



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# Safety Notices

**Note:** For a translation of these notices, see *System Unit Safety Information*, Order 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:

2-1520-1  
3-6  
3-14  
4-2

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:

2-1520-1  
3-14  
3-37  
4-2  
4-3



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## About This Book

This book uses three-digit model numbers. You may have other documentation that uses four-digit model numbers. For example, the model 32H in this book may be referred to as a model 320H in other documentation. They are the same system units.

This book provides maintenance information that is specific to the 7030 system unit, adapters, and attached devices that do not have their own service information. It also contains Maintenance Analysis Procedures (MAPs) that are not common to other systems.

MAPs that are common to all systems are contained in *POWERstation and POWERserver Common Diagnostics Information Manual*.

This book is used by the service technician for initial installation and to repair system failures. This book assumes that the service technician has had training on the 7030 system unit.

## Related Information

The *POWERstation and POWERserver Common Diagnostics Information Manual*, Order Number SA23-2665, Section I, contains the maintenance information and procedures that are common to all systems. The information and procedures in this book apply to any system unit that uses the Diagnostic Programs. Section II contains reference information about adapters, devices, and cabling for the system units. This manual also contains the removal and replacement procedures for the logic boards on the disk drives. This manual provides the service representative pin-out lists and cabling information to use in isolating problems with customer cabling.

*System Unit Safety Information*, Order Number SA23-2652, contains translated versions of the danger and caution notices.

The *7030 Models 300 Series Operator Guide*, Order Number SA23-2733 provides information about the controls and features of the system unit.

The *Diskless Workstation Management Guide*, Order Number SC23-2433, contains information about diskless workstations.

Each attached device has a *Setup and Operator Guide* and a *Service Guide* that provides the information needed for that device.



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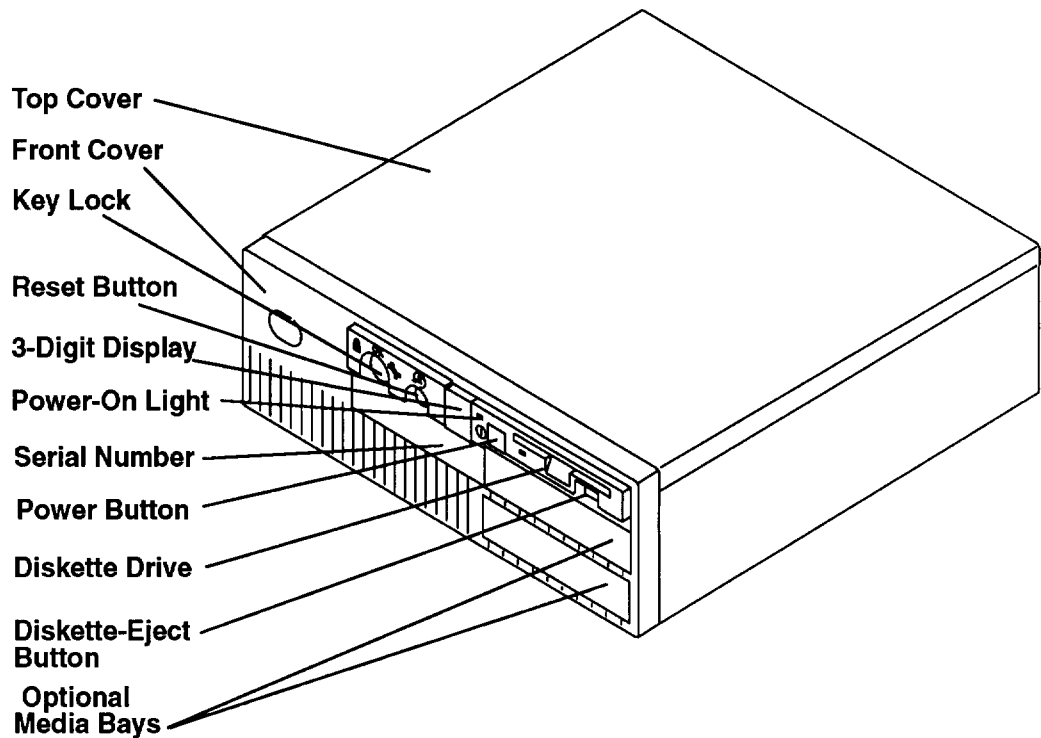
# Chapter 1. Reference Information

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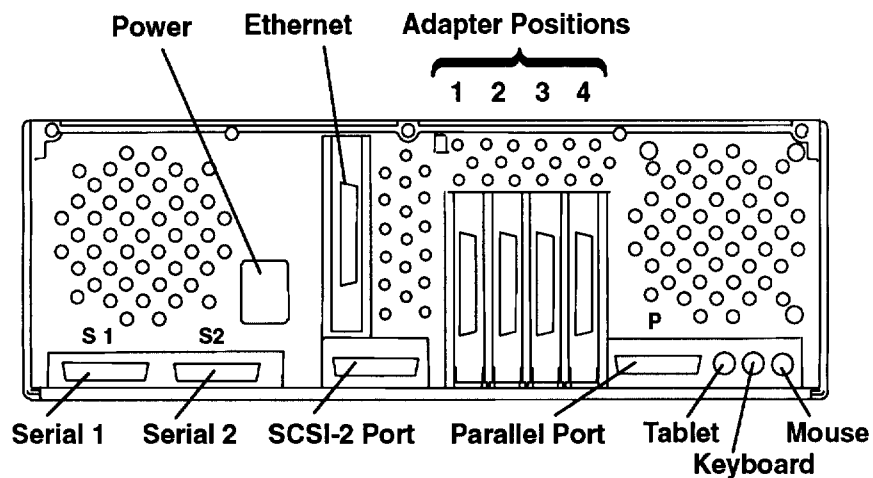
## System Unit Locations

Use the following views of the system unit to locate the disk drive positions, connectors, and system board slot positions.

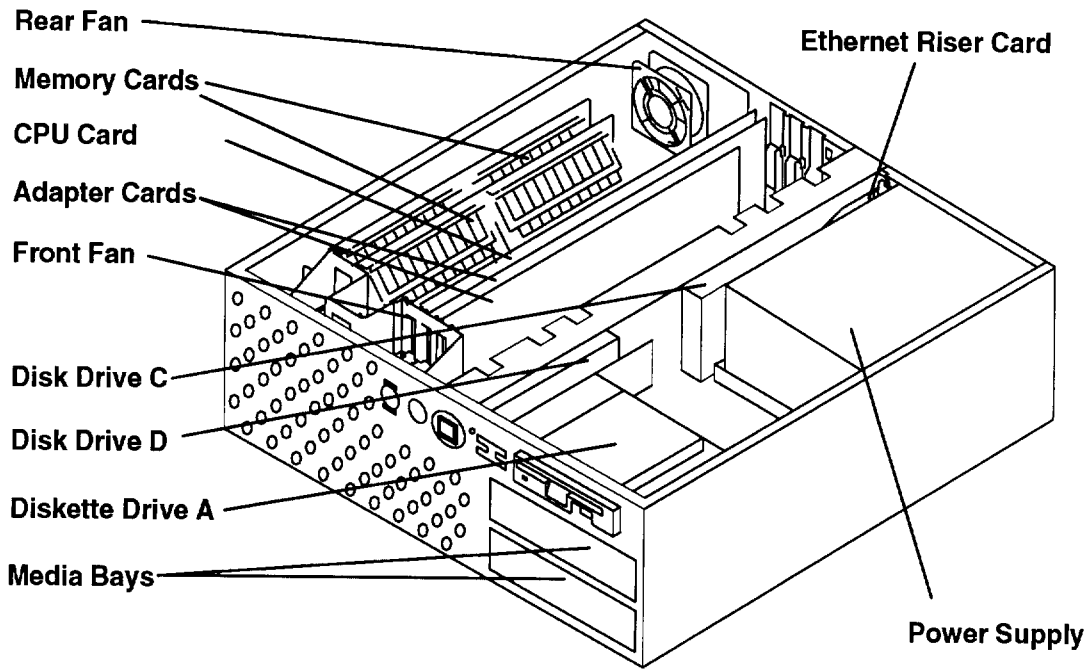
### Front View with Covers



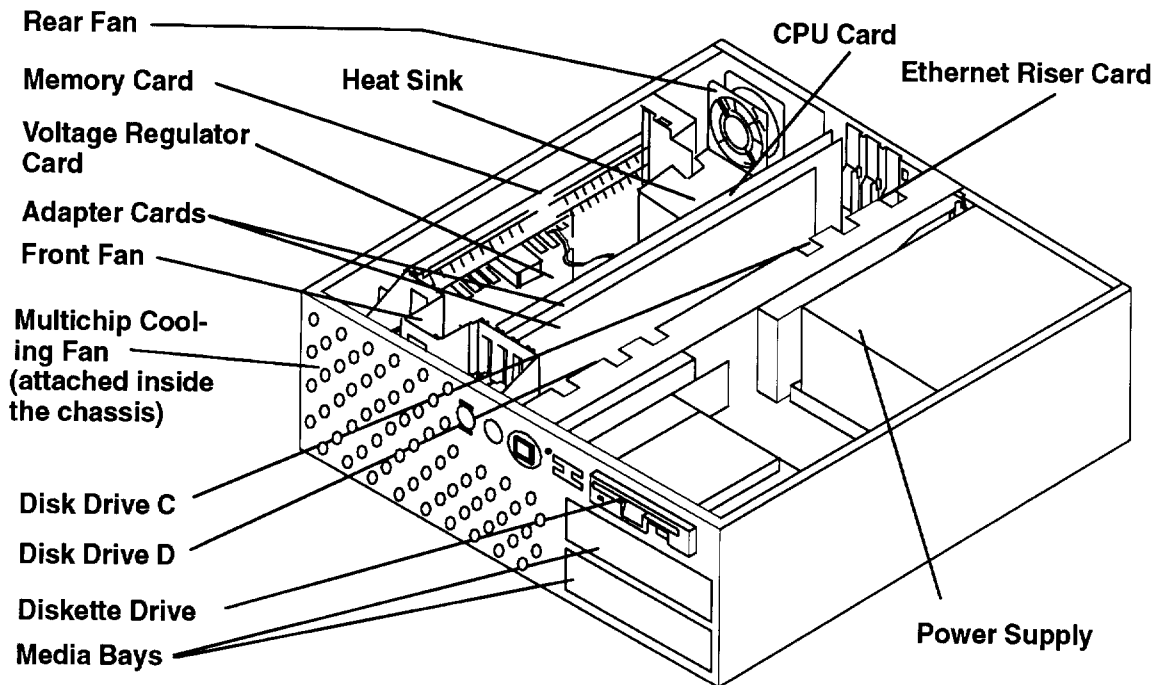
### Rear View



## Front View without Covers – Models 3AT and 3BT

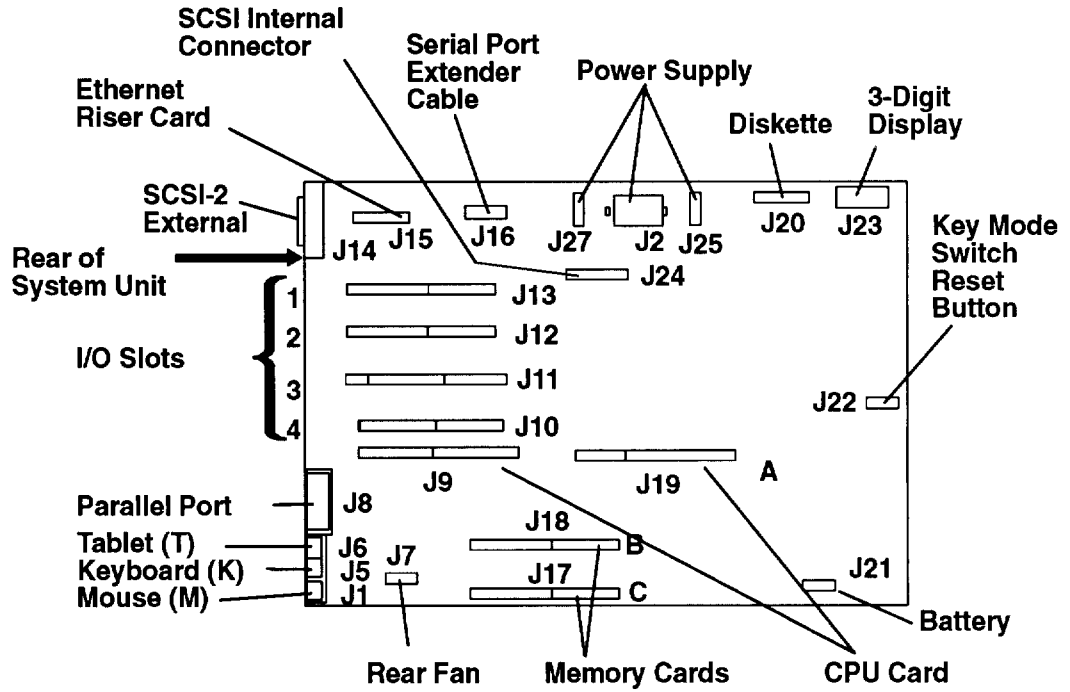


## Front View without Covers – Model 3CT

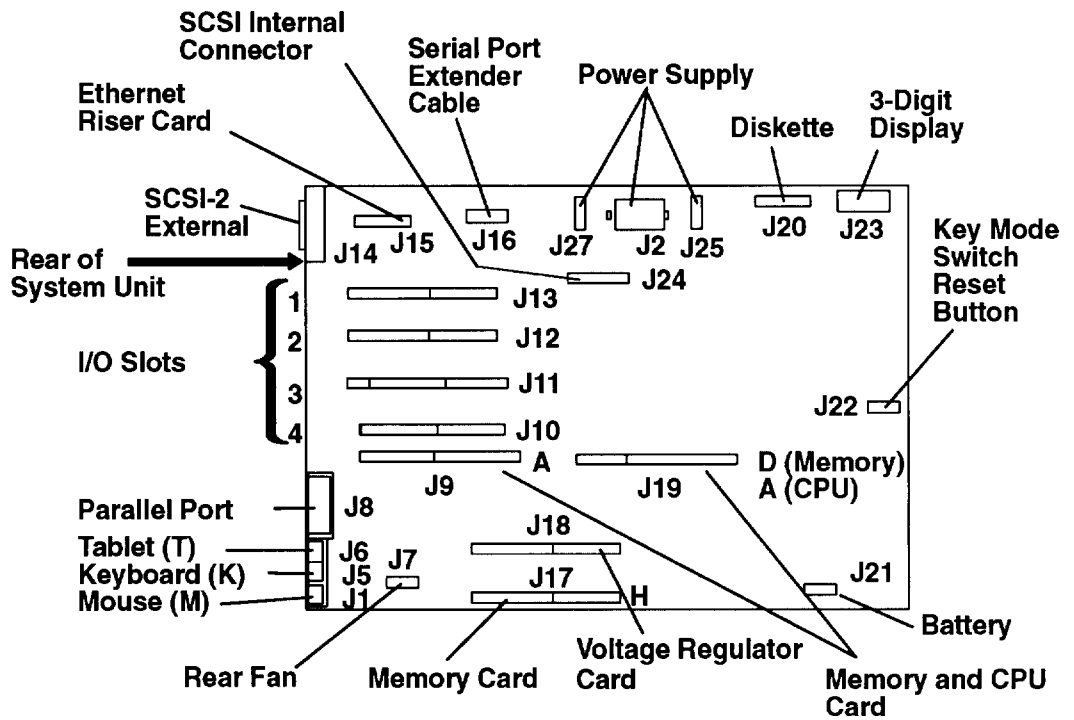




## System Planar Connector Locations – Models 3AT and 3BT

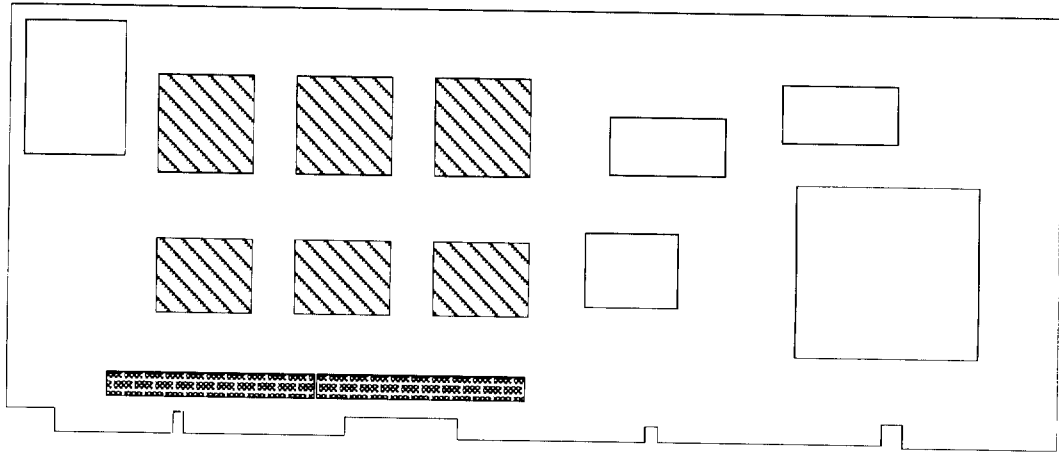


## System Planar Connector Locations – Model 3CT



# CPU Card Locations

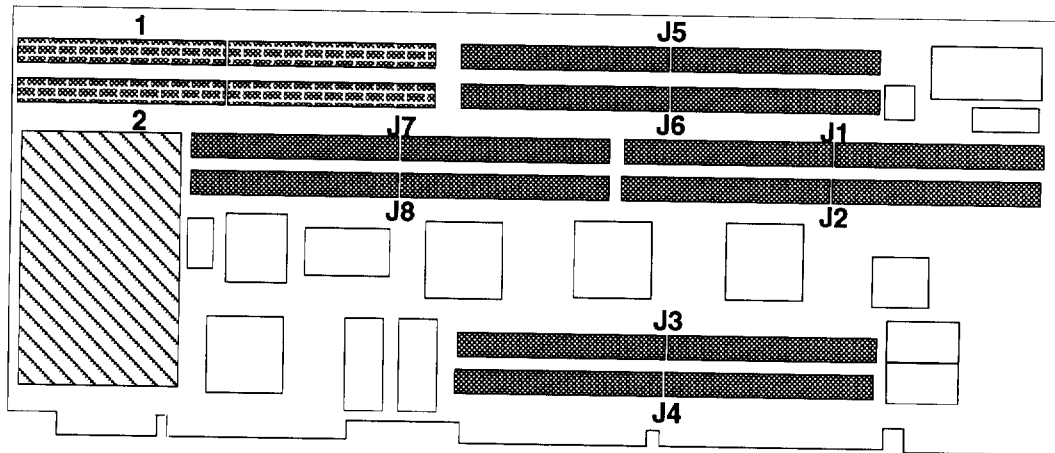
## Models 3AT and 3BT



 Heat Sinks

 Cache Memory

## Model 3CT



 Simm Connectors

 Cache Memory

 Multichip Heat Sink

**Note:** The numbers shown above correspond to actual SIMM locations.

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## Memory

The CPU card for the Model 3CT has a different module arrangement than previous CPU cards. Half of the memory is located on the CPU card, the other half is located on the memory card.

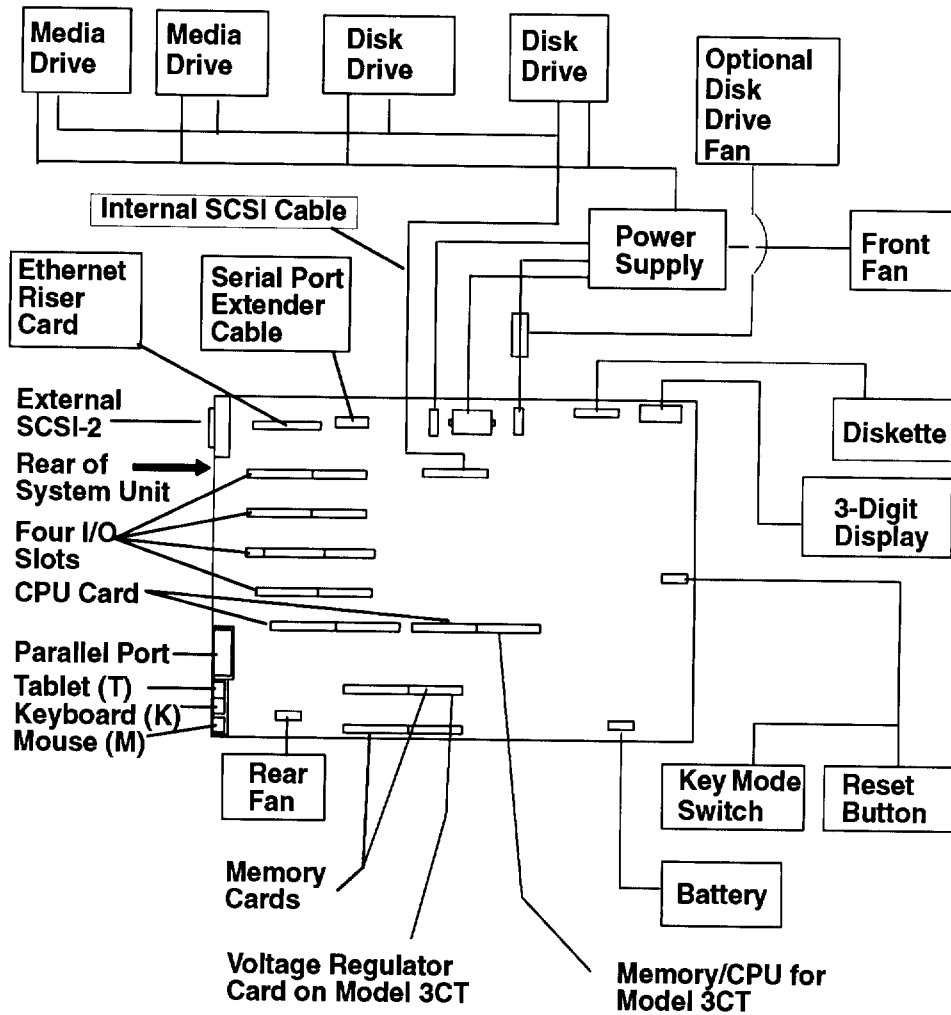
The memory must be installed in pairs. Both memory pairs must have the same amount of memory (MB). The following table pertains only to the Model 3CT.

<b>Memory on CPU Card</b>	<b>Memory in Slot H</b>
32MB CPU Memory SIMM (Base)	32MB Memory Card (Base)
64MB CPU Memory SIMM	64MB Memory Card
128MB CPU Memory SIMM	128MB Memory Card
256MB CPU Memory SIMM	256MB Memory Card

# Data and Power Flow

## Data and Power Flow: SCSI Attached Disk Drives

**Note:** If external devices or cables are not connected to the external SCSI-2 connector, the external SCSI-2 connector does not require a terminator.



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## Specifications

### Dimensions (Horizontal Position)

Height: 162 mm (6.4 inches) with foot

Depth: 478 mm (18.8 inches)

Width: 442 mm (17.4 inches)

### Dimensions (Vertical Position)

Height: 454 mm (17.9 inches) with foot

Depth: 478 mm (18.8 inches)

Width: 241 mm (9.5 inches) at the foot

### Weight (Maximum)

21.8 kg (48 pounds)

### Operating Environment – Class B

Temperature: 16° to 32° C (60° to 90° F)

Humidity: 8% to 80% noncondensing

Maximum Altitude: 2135 m (7000 feet)

### Power Source Loading

0.7 k VA maximum

### Power Supply

275 watts

### Operating Voltage

90 V ac to 137 V ac; 47 to 53 Hz

180 V ac to 265 V ac; 57 to 63 Hz

### Heat Output

1200 BTU per hour

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## Power Cables

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

Power cables used in the U.S.A. and Canada are listed by Underwriter's Laboratories (UL) and certified by the Canadian Standards Association (CSA). These power cords consist of:

- Electrical cables, Type SVT or SJT.
- Attachment plugs complying with National Electrical Manufacturers Association (NEMA) 5-15P. That is:

“For 115 V operation, use a UL-listed cable set consisting of a minimum 18 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 U.S.A. use a UL-listed cable set consisting of a minimum 18 AWG, Type SVT or SJT three-conductor cable a maximum of 15 feet in 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.

Power cables used in other countries consist of the following:

- Electrical cables, type HD21.
- Attachment plugs approved by the appropriate testing organization for the specific countries where they are used.

“For units set at 230 V (outside U.S.A.): use a cable set consisting of a minimum 18 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’.”

Refer to “Chapter 5. Parts Information” to find the power cables that are available.

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## Service Inspection Guide

Perform a service inspection on the system when:

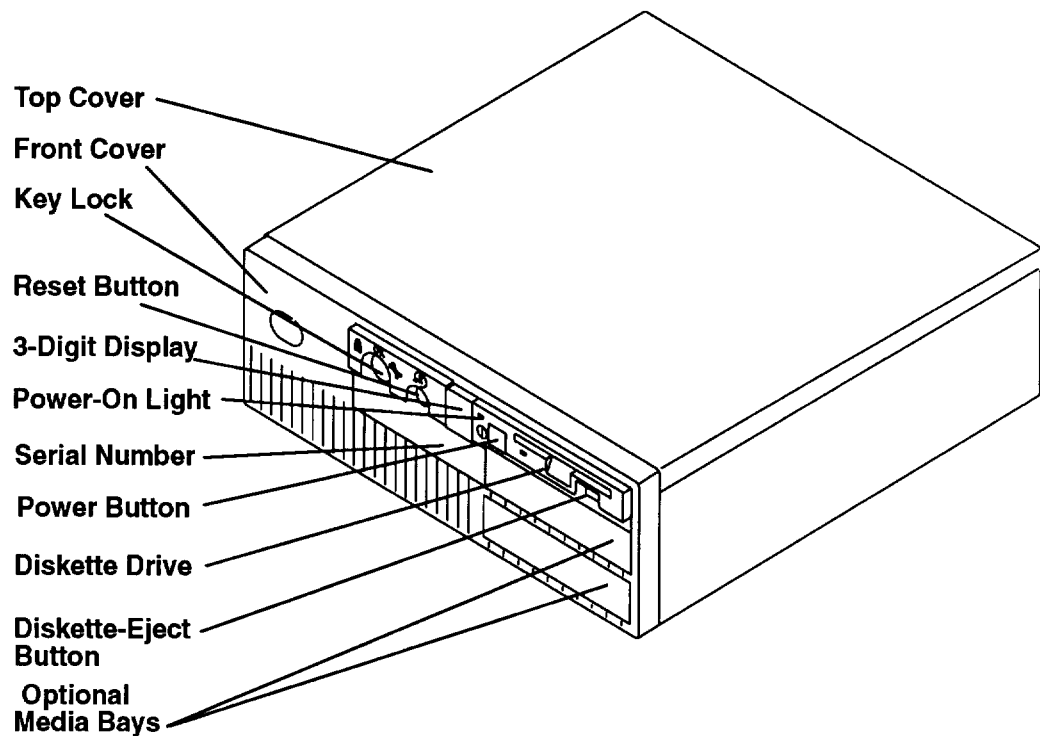
- The system is inspected for a maintenance agreement.
- Service is requested and service has not recently been performed.
- An alterations and attachments review is performed.
- Changes have been made to the equipment that may affect the safe operation of the equipment.
- External devices that have their own power cable are added.

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.

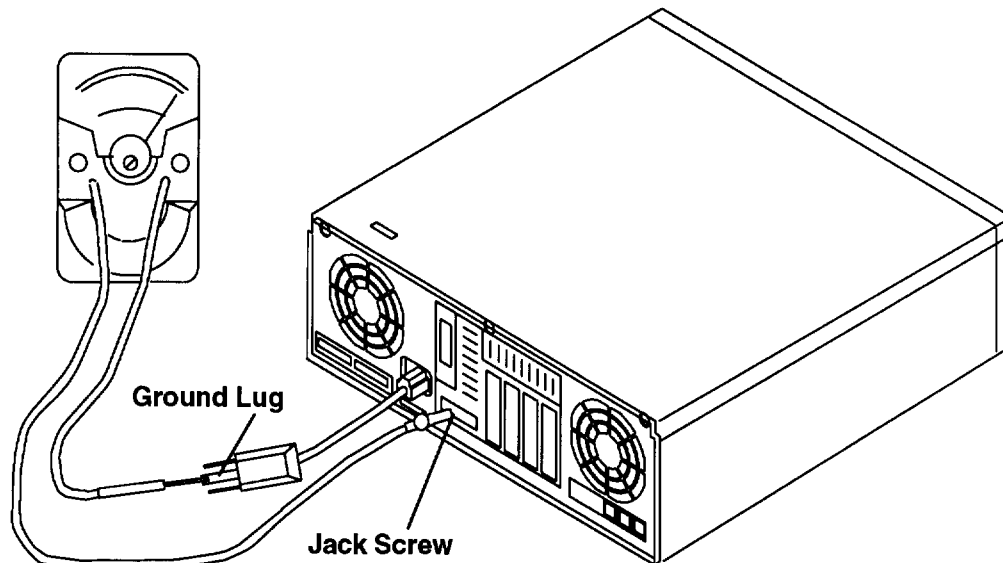
Do the following:

1. Check the covers (see the illustration) for sharp edges and for damage or alterations that expose the internal parts of the system unit.
2. Check the covers for proper fit to the system unit. They should be in place and secure with the screws tight.



3. If installed in the vertical position, ensure that the foot is securely attached and is stable.
4. Set the power switch of the system unit to Off.
5. Remove the covers.
6. Check for alterations or attachments. If there are any, check for obvious safety hazards such as broken wires, sharp edges, or broken insulation.
7. Check the internal cables for damage.
8. Check for dirt, water, and any other contamination within the system unit.
9. Check the voltage label on the back of the system unit to ensure that it matches the voltage at the outlet.
10. Check the external power cable for damage.
11. With the external power cable connected to the system unit, check for 0.1 ohm or less resistance in this illustration between the ground lug on the external power cable plug and a jack screw on the parallel connector.

The following illustration is a typical representation of the rear view of a system unit.



12. If the system unit passes the test in the previous step, install the covers.
13. Check each external device that has its own power cable:
  - a. For damage to the power cord.
  - b. For the correct grounded power cable.
  - c. With the external power cable connected to the device, check for 0.1 ohm or less resistance between the ground lug on the external power cable plug and the metal frame of the device.



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## Chapter 2. Maintenance Analysis Procedures (MAPS)

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### MAP 1520: 7030 Power MAP

**Note:** This is not a start of call MAP. Use this Power MAP only if you have been directed here from a MAP step in the *POWERstation and POWERserver Common Diagnostics Information Manual*.

This procedure is used to locate power problems in the 7030. If a problem is detected, this procedure helps you to isolate the problem to a failing field replaceable unit (FRU).

Observe the following safety notice during service procedures.

**Note:** For a translation of this notice, see *System Unit Safety Information*.

#### **DANGER**

**An electrical outlet that is not correctly wired could place hazardous voltage on metal parts of the system or the products 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 communication 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.**

---

## Step 1

Be sure that the external power cable to the system unit has continuity, is plugged into both the system unit and the power outlet, and that the power outlet has been wired correctly with the correct voltage

### Did you find a problem?

- NO**                    Go to Step 2.
- YES**                    Correct the problem. Go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics Information Manual*.

---

## Step 2

(from Step 1)

1. Set the power switch on the system unit to Off.
2. Follow the procedure in "Top Cover Removal" on page 3-2.

**Warning:** P2 and P25 must be connected and disconnected at the same time.

3. Disconnect the P2 and P25 power supply connectors from the system planar.
4. Disconnect the power connectors P3 and P4 from the disk drives or from the system planar.
5. Connect the power cable.
6. Set the power switch on the system unit to On. Wait 10 seconds before answering the following question.

### Did the power-on light come on and stay on, and are all the fans running continuously?

- NO**                    Go to Step 3.
- YES**                    Go to Step 5.

---

## Step 3

(from Step 2)

### Did the power-on light come on and go off?

- NO**                    Exchange the power supply. Refer to the "Power Supply" removal procedure on page 3-6. Go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics Information Manual*.
- YES**                    Go to Step 4.

---

## Step 4

(from Step 3)

This problem can be caused by one of the following FRUs:

- Front fan
- Rear fan

**Note:** It is likely that the voltage regulator has failed when power is supplied and the power light is on for one second or less. The same symptom will occur when the voltage regulator is not connected to the CPU card.

- Voltage regulator card (Model 3CT)
- System planar
- Power supply.

The power supply will not stay on if it does not sense the rotation of the cooling fans.

**Note:** The power supply does not sense the fans that cool the disk drives if the fans have only two wires and comes on independent of the operation of the front or rear fans. These fans will not cause the power supply to shutdown.

When the front or rear fans are not connected or are not operating, the power supply will usually power on for approximately three seconds before shutting down.

1. Set the power switch on the system unit to Off.
2. Test each fan by connecting a new fan. Refer to the "Rear Fan" removal procedure on page 3-29 and the "Front Fan" removal procedure on page 3-30.
3. Set the power switch on the system unit to On. Wait 10 seconds before answering the following question.

### Did the power-on light come on and stay on?

**NO** Repeat this step until the defective fan is identified or all the fans have been tested.

One of the remaining FRUs is defective.

To test each FRU, exchange the FRUs in the following order:

1. Voltage regulator card (Model 3CT)
2. System planar
3. Power supply

If the symptom did not change and all the FRUs have been exchanged go to Step 5.

**YES** Exchange the defective fan. Go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics Information Manual*.

---

## Step 5

(from Steps 2 and 4)

1. Set the power switch on the system unit to Off.

**Warning:** P2 and P25 must be connected and disconnected at the same time.

2. Connect the power supply connectors P2 and P25 to the system planar.
3. Set the power switch on the system unit to On. Wait 10 seconds before answering the following question.

**Did the power-on light come on and stay on?**

**NO**                      Go to Step 6.

**YES**                     Go to Step 9.

---

## Step 6

(from Step 5)

1. Set the power switch on the system unit to Off.
2. Disconnect the diskette drive cable P20 from the system planar.
3. Set the power switch on the system unit to On. Wait 10 seconds before answering the following question.

**Did the power-on light come on and stay on?**

**NO**                      Go to Step 7.

**YES**                     Exchange the diskette drive. Go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics Information Manual*.

---

## Step 7

(from Step 6)

1. Set the power switch on the system unit to Off.
2. Disconnect and remove the disk drive frame from the system planar.
3. Set the power switch on the system unit to On. Wait 10 seconds before answering the following question.

**Did the power-on light come on and stay on?**

**NO**                      Go to Step 11.

**YES**                     Go to Step 8.

---

## Step 8

(from Step 7)

1. Set the power switch on the system unit to Off.
2. Disconnect and remove the front disk drive from the frame.
3. Install the disk drive frame in the system planar.
4. Set the power switch on the system unit to On. Wait 10 seconds before answering the following question.

### Did the power-on light come on and stay on?

**NO**

One of the remaining FRUs is defective.

To test each FRU, exchange the FRUs in the following order:

1. Rear disk Drive
2. SCSI bus extender card
3. System planar

If the symptom did not change and all the FRUs have been exchanged go to Step 11.

**YES**

Exchange the front disk drive. Go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics Information Manual*.

---

## Step 9

(from Step 5)

1. Set the power switch on the system unit to Off.
2. Connect power connector P3 to the rear disk drive.
3. Set the power switch on the system unit to On. Wait 10 seconds before answering the following question.

### Did the power-on light come on and stay on?

- NO** Exchange the rear disk drive. Go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics Information Manual*.
- YES** Go to Step 10.

---

## Step 10

(from Step 9)

1. Set the power switch on the system unit to Off.
2. Connect power connector P4 to the front disk drive.
3. Set the power switch on the system unit to On. Wait 10 seconds before answering the following question.

### Did the power-on light come on and stay on?

- NO** Exchange the front disk drive. Go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics Information Manual*.
- YES** Go to Step 11.

---

## Step 11

(from Steps 7, 8, and 10)

1. Set the power switch on the system unit to Off.
2. Remove one memory card at a time from the system planar. Refer to the "Memory Card" removal procedure on page 3-23.
3. Be sure the power has been off at least 15 seconds.
4. Set the power switch on the system unit to On. Wait 10 seconds before answering the following question.

### Did the power-on light come on and stay on?

**NO** Repeat this step until the defective memory card is identified or all the memory cards have been removed.

If all the memory cards have been removed, go to Step 12.

**YES** The last memory card that you removed is defective. Exchange the memory card. Go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics Information Manual*.

---

## Step 12

(from Step 11)

1. Set the power switch on the system unit to Off.
2. Remove the CPU card from the system planar.
3. Set the power switch on the system unit to On. Wait 10 seconds before answering the following question.

### Did the power-on light come on and stay on?

**NO** Go to Step 13.

**YES** Exchange the CPU card. Go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics Information Manual*.

---

## Step 13

(from Step 12)

1. Set the power switch on the system unit to Off.
2. Record the slot numbers of the adapters, label and record the location of any cables attached to the adapters.
3. Remove one of the adapters from the I/O planar. Refer to the "Adapters, Ethernet Riser Card, External Diskette Riser Card" removal procedure on page 3-11.
4. Set the power switch on the system unit to On. Wait 10 seconds before answering the following question.

### Did the power-on light come on and stay on?

- NO** Repeat this step until the defective adapter is identified or all the adapters have been removed.
- If the symptom did not change and all the adapters have been removed go to Step 20.
- YES** Go to Step 14.

---

## Step 14

(from Step 13)

Look at the adapter that was removed.

### Were there any cables attached to the adapter before it was removed?

- NO** Go to Step 15.
- YES** Go to Step 17.

---

## Step 15

(from Step 14)

Some adapters may have FRUs on them.

### Does the failing adapter have any FRUs?

- NO** Exchange the failing adapter. Go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics Information Manual*.
- YES** Go to Step 16.



---

## Step 16

(from Step 15)

1. Set the power switch on the system unit to Off.
2. Remove the FRUs on the adapter.
3. Replace the failing adapter.
4. Set the power switch on the system unit to On. Wait 10 seconds before answering the following question.

### Did the power-on light come on and stay on?

- NO** Exchange the failing adapter. Go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics Information Manual*.
- YES** One of the FRUs you removed from the adapter is failing. If only one FRU was removed, exchange it. Otherwise, replace the FRUs, one at a time, until you identify the failing FRU. Go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics Information Manual*.

---

## Step 17

(from Step 14)

1. Set the power switch on the system unit to Off.
2. Replace the adapter without connecting any cables to it.
3. Set the power switch on the system unit to On. Wait 10 seconds before answering the following question.

### Did the power-on light come on and stay on?

- NO** Exchange the adapter. Go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics Information Manual*.
- YES** Go to Step 18.

---

## Step 18

(from Step 17)

1. Set the power switch on the system unit to Off.
2. Connect one of the cables that was removed to the adapter.
3. Set the power switch on the system unit to On. Wait 10 seconds before answering the following question.

### Did the power-on light come on and stay on?

- NO**                    If the cable is removable from the attached device, go to Step 19.
- If the cable cannot be removed from the attached device, exchange or repair the device. Go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics Information Manual*.
- YES**                    Repeat this step until the defective cable is identified or all the cables are connected. Go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics Information Manual*.

---

## Step 19

(from Step 18)

1. Set the power switch on the system unit to Off.
2. Disconnect the cable from the attached device.
3. Set the power switch on the system unit to On. Wait 10 seconds before answering the following question.

### Did the power-on light come on and stay on?

- NO**                    Exchange the cable. Go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics Information Manual*.
- YES**                    Exchange or repair the device. Go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics Information Manual*.

---

## Step 20

(from Step 13)

1. Set the power switch on the system unit to Off.
2. Disconnect the key mode/reset switch connector P22 from the system planar.
3. Set the power switch on the system unit to On. Wait 10 seconds before answering the following question.

**Did the power-on light come on and stay on?**

**NO**                    Go to Step 21.

**YES**                    Exchange the key mode/reset switch. Go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics Information Manual*.

---

## Step 21

(from Step 20)

1. Set the power switch on the system unit to Off.
2. Disconnect the three-digit display connector P23 from the system planar.
3. Set the power switch on the system unit to On. Wait 10 seconds before answering the following question.

**Did the power-on light come on and stay on?**

**NO**                    Go to Step 22.

**YES**                    Exchange the three-digit display. Go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics Information Manual*.

---

## Step 22

(from Step 21)

1. Set the power switch on the system unit to Off.
2. Record the locations of all external cables; then disconnect the cables that are plugged into connectors S1, S2, P, K, T, and M on the rear of the system unit.
3. Set the power switch on the system unit to On. Wait 10 seconds before answering the following question.

**Did the power-on light come on and stay on?**

**NO**                    Go to Step 23.

**YES**                    Go to Step 24.

---

## Step 23

(from Step 22)

1. Set the power switch on the system unit to Off.
2. Disconnect connector P16 from the system planar.
3. Set the power switch on the system unit to On. Wait 10 seconds before answering the following question.

### Did the power-on light come on and stay on?

- NO** Exchange the system planar. Go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics Information Manual*.
- YES** Exchange the serial port flex cable. Go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics Information Manual*.

---

## Step 24

(from Step 22)

1. Set the power switch on the system unit to Off.
2. Connect one of the cables that was removed.
3. Set the power switch on the system unit to On. Wait 10 seconds before answering the following question.

### Did the power-on light come on and stay on?

- NO** If the cable is removable from the attached device, go to Step 25.  
If the cable cannot be removed from the attached device, exchange or repair the device. Go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics Information Manual*.
- YES** Repeat this step until all the cables are connected. Go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics Information Manual*.

---

## Step 25

(from Step 24)

1. Set the power switch on the system unit to Off.
2. Disconnect the cable from the attached device.
3. Set the power switch on the system unit to On. Wait 10 seconds before answering the following question.

### Did the power-on light come on and stay on?

- NO** Exchange the cable. Go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics Information Manual*.
- YES** Exchange or repair the device. Go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics Information Manual*.



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## MAP 1540: 7030 Minimum Configuration MAP

**Note:** This is not a start of call MAP. You should use these MAPs only if you have been directed here from a MAP step in the *POWERstation and POWERserver Common Diagnostics and Service Guide*.

This MAP is used to locate defective FRUs not found by normal diagnostics. For this procedure, diagnostics are run on a minimum-configured system. If a failure is detected on the minimum-configured system, the remaining FRUs are exchanged one at a time until the failing FRU is identified. If a failure is not detected, FRUs are added back until the failure occurs. The failure is then isolated to the failing FRU.

The MAP steps on the following pages instruct you to reduce the system to one or more of the following configurations:

**Note:** Refer to “Reading Flashing 888 Numbers” in the *POWERstation and POWERserver Common Diagnostics Information Manual* for information about reading flashing 888 sequences.

On the Model 3CT, the memory SIMMs are located on the CPU card. Memory must be installed in pairs and the amount of memory installed on the CPU card must be equal to the amount of memory installed on the memory card.

- System planar, CPU card (Model 3CT without memory SIMMs), key mode/reset switch, voltage regulator card (Model 3CT), and the three-digit display panel.

If no failure is detected, a 213 or the flashing 888 sequence “888-103-12X-X43” (X can be any number) is displayed in the three-digit display. Any other response means one of the remaining FRUs is failing.

- System planar, CPU card, key mode/reset switch, the three-digit display panel, and memory cards.

If no failure is detected, two or more numbers between 221 and 296 alternate in the three-digit display or a solid 262 will be displayed (see page in the Supplement). Any other response means one of the remaining FRUs is failing.

- System planar, CPU card, key mode/reset switch, the three-digit display panel, memory cards, diskette drive, and a terminal attached to a serial port or a keyboard, display, and graphics adapter.

If no failure is detected, the Operating Instructions frame is displayed when the diagnostics are loaded and the system console is selected. Any other response means one of the remaining FRUs is failing.

## Step 1

(from Steps 3, 7, 8, 9, and 14)

1. Ensure that the diagnostics and the operating system are shut down.
2. Turn the key mode switch to the Service position.
3. Set the power switch on the system unit to Off.
4. Insert the first diagnostic diskette into the diskette drive.
5. Set the power switch on the system unit to On.
6. Find the symptom in the following table that best matches the symptom on your system, and then perform the associated task.

Information in three-digit display	Other conditions	Do this:
Nothing	Diagnostic Operating Screen is displayed	Go to Step 14.
c07	The diskette drive "In-Use" light is on	Insert the next diagnostic diskette. Wait for one of the other symptoms in this table to occur.
888 flashing		Go to Step 2.
Two or more numbers between 221 and 296 are displayed alternately.	First diagnostic diskette is loaded	Go to Step 7.
c31	Instructions to select the system console displayed on the screen.	Follow the instructions on the screen. Wait for one of the other symptoms in this table to occur.
c05	The diskette drive "In-Use" light is on	The diagnostic diskette is probably bad. Insert the same diskette from a duplicate diagnostic set. If the duplicate diskette causes the same symptom, Go to Step 7.
299 or less	Digits on solid for more than 3 minutes, and the power light is on.	Go to Step 2.
300 or greater	Digits on solid for more than 3 minutes, and the power light is on.	Go to Step 7.
570	Digits on solid for more than 3 minutes, and the power light is on.	Down level SCSI-2 code. Run diagnostics with removable media.
Any symptom not listed above.		Go to Step 2.



---

## Step 2

(from Steps 1 and 16)

1. Set the power switch on the system unit to Off.
2. Record the slot numbers of the Micro Channel adapters, label and record the location of any cables attached to the adapters. Remove all the adapters from the system planar.
3. Record the slot numbers of the memory cards and then remove all the memory cards from the system planar. If the system is a Model 3CT, remove all memory SIMMs from the CPU card.
4. Remove the L2 cache SIMM, if installed, from the CPU card.
5. Disconnect and remove the disk drive frame and disk drives.
6. Disconnect the diskette drive connector P20 from the system planar.

Remove the serial port extender cable connector P16 and the Ethernet riser card from the system planar. Disconnect any external SCSI devices or the terminator from the external SCSI connector.

7. Disconnect any cables that are plugged into connectors S1, S2, P, K, T, and M on the rear of the system unit.
8. Set the power switch on the system unit to On.
9. Wait for one of the following conditions to occur:
  - The system stops for at least three minutes and a constant number, character, or symbol is displayed in the three-digit display and the power light is on.
  - The system stops and a flashing 888 is displayed in the three-digit display.
  - The power light does not come on, or the power light comes on but does not stay on.

**Is a 213 or the flashing 888 sequence 888-103-12X-X43 (X can be any number) displayed in the three-digit display?**

- |            |               |
|------------|---------------|
| <b>NO</b>  | Go to Step 3. |
| <b>YES</b> | Go to Step 4. |

---

## Step 3

(from Step 2)

One of the FRUs remaining in the system unit is defective.

To test each FRU, exchange the FRUs in the following order:

1. CPU card
2. L2 cache SIMM if removed from CPU card.
3. System planar
4. Key mode/reset switch assembly
5. Three-digit display
6. Power supply.

The system is working correctly if it stops and the number 213 or the flashing 888 sequence 888-103-12X-X43 (X can be any number) is displayed in the three-digit display. If this occurs, the last FRU you exchanged is defective.

1. Set the power switch on the system unit to Off.
2. Install one memory card. If the system is a Model 3CT, install the removed memory SIMMs on the CPU card. Verify that all SIMMs installed on the CPU card are the same size.
3. Set the power switch on the system unit to On.

**Is a 213 or the flashing 888 sequence 888-103-12X-X43 (X can be any number) displayed in the three-digit display?**

**NO** Reinstall the original FRU.

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call your service support person for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems. If you do not find a problem, return to Step 1 in this MAP and follow the instructions for the new symptom.

**YES** Go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics and Service Guide*.

---

## Step 4

(from Step 2)

No failure was detected with this configuration.

1. Set the power switch on the system unit to Off.
2. Install one memory card.

Disconnect the signal and power connectors from all the disk drives and plug the disk drive frame into the system planar. Install the SCSI terminator on the external SCSI connector if it was previously removed.

1. Set the power switch on the system unit to On.
2. Wait for one of the following conditions to occur:
  - The system stops and two or more numbers with values between 221 and 296 are displayed alternately in the three-digit display.
  - The system stops for at least three minutes and a constant number, character, or symbol is displayed in the three-digit display and the power light is on.
  - The system stops and a flashing 888 is displayed in the three-digit display.
  - The power light does not come on, or the power light comes on but does not stay on.

**Did the system stop and are two or more numbers between the values of 221 and 296 displayed alternately in the three-digit display or, is the number 262 displayed in the three-digit display?**

**NO**                      Go to Step 5.

**YES**                      Repeat this step until the defective memory card is identified or all the memory cards are installed and tested.

After all memory is installed and tested, set the power switch on the system unit to Off.

Connect the signal cable for the 3.5-inch diskette drive P20 to the system planar. Go to Step 7, substep 6.

---

## Step 5

(from Step 4)

The failure may be caused by a defective SIMM on the last memory card installed. To isolate the failing SIMM in a pair of SIMMs, do the following:

1. Set the power switch on the system unit to Off. Using a pair of operational SIMMs for the type of memory card used, install the pair of SIMMs in locations 1 and 2 on one of the suspected memory cards.
2. Set the power switch on the system unit to On. If operational, the system will stop and two or more numbers with values between 221 and 296 are displayed alternately in the three-digit display, or a solid 262 will be displayed.
  - The system stops with a value of 243 for up to six minutes and then changes to a value of 262.
3. If the system still fails, continue testing the SIMMs in pairs (locations 3 and 4, 5 and 6, 7 and 8) until the system does not fail, or all the SIMMs on the suspected memory cards have been tested.

### Were you able to isolate the failed pair of SIMMs?

**NO** Exchange the memory card. If this does not correct the problem, go to Step 6.

**YES** Go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics and Service Guide*.

---

## Step 6

(from Step 5)

One of the FRUs remaining in the system unit is defective.

To test each FRU, exchange the FRUs in the following order:

1. System planar
2. CPU card (if a Model 3CT, memory SIMMs must be installed)
3. Voltage regulator card (Model 3CT)
4. Power supply.

The system is working correctly if it stops and two or more numbers between 221 and 296 are displayed in the three-digit display or a solid 262 is displayed. If this occurs, the last FRU you exchanged is defective.

The system stops with a value of 243 for up to six minutes and then changes to a value of 262.

1. Set the power switch on the system unit to Off.
2. Exchange one of the FRUs in the list.
3. Set the power switch on the system unit to On.

**Did the system stop and are two or more numbers between the values of 221 and 296 displayed alternately in the three-digit display or is the number 262 displayed in the three-digit display?**

**NO** Reinstall the original FRU.

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call your service support person for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems. If you do not find a problem, return to Step 1 in this MAP and follow the instructions for the new symptom.

**YES** Go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics and Service Guide*.

---

## Step 7

(from Steps 1 and 4)

1. Set the power switch on the system unit to Off.
2. Record the slot numbers of the Micro Channel adapters, label and record the location of any cables attached to the adapters. Remove all the adapters from the I/O planar.
3. Disconnect and remove the disk drive frame and disk drives.
4. Remove the serialport extender cable connector P16 and the Ethernet riser card from the system planar.
5. Disconnect any cables that are plugged into connectors S1, S2, P, K, T, and M on the rear of the system unit.
6. Insert the first diagnostic diskette into the diskette drive.
7. Set the power switch on the system unit to On.
8. Wait for one of the following conditions to occur:
  - The 3.5-inch diskette drive in-use light is on and c05 or c07 is displayed in the three-digit display.
  - The system stops for at least three minutes and a constant number, character, or symbol is displayed in the three-digit display and the power light is on.
  - The system stops and two or more numbers with values between 221 and 296 are displayed alternately in the three-digit display.
  - The system stops and a flashing 888 is displayed in the three-digit display
  - The power light does not come on, or the power light comes on but does not stay on.

**Is the 3.5-inch diskette drive in-use light on and c07 displayed in the three-digit display.**

**NO**

One of the FRUs remaining in the system unit is defective.

In the following order, exchange the FRUs that have not been exchanged:

1. Diskette drive
2. Diskette drive signal cable
3. Key mode/reset switch assembly
4. System planar
5. CPU card
6. Voltage regulator card (Model 3CT)
7. Power supply.

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call your service support person for assistance.

If the symptom has changed check for loose cards, cables, and obvious problems. If you do not find a problem, return to Step 1 in this MAP and follow the instructions for the new symptom.

**YES**

Go to Step 8.

---

## Step 8

(from Step 7)

1. Set the power switch on the system unit to Off.
2. Install and connect the disk drive frame and disk drives.
3. Disconnect the signal and power connectors from all the disk drives.
4. Insert the first diagnostic diskette into the diskette drive.
5. Set the power switch on the system unit to On.
6. Wait for one of the following conditions to occur:
  - The 3.5-inch diskette drive in-use light is on and c05 or c07 is displayed in the three-digit display.
  - The system stops for at least three minutes and a constant number, character, or symbol is displayed in the three-digit display and the power light is on.
  - The system stops and two or more numbers with values between 221 and 296 are displayed alternately in the three-digit display.
  - The system stops and a flashing 888 is displayed in the three-digit display.
  - The power light does not come on, or the power light comes on but does not stay on.

**Is the 3.5-inch diskette drive in-use light on and c07 displayed in the three-digit display.**

**NO**

One of the FRUs remaining in the system unit is defective.

In the following order, exchange the FRUs that have not been exchanged:

1. SCSI bus extender card

**Note:** Refer to *POWERstation and POWERserver Common Diagnostics and Service Guide*, Chapter One; SCSI-1 Adapter Fuse Blowing and PTC Tripping.

2. SCSI cable
3. SCSI terminator
4. System planar
5. Power supply.

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call your service support person for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems. If you do not find a problem, return to Step 1 in this MAP and follow the instructions for the new symptom.

**YES**

Go to Step 9.

---

## Step 9

(from Step 8)

1. Set the power switch on the system unit to Off.
2. Connect the signal and power connectors for the disk drives one at a time. Start with the connectors for the drive that contains the bootable operating system software.
3. Remove any diskette from the diskette drive.
4. Set the power switch on the system unit to On.
5. Wait for one of the following conditions to occur:
  - The three-digit display is blank.
  - The system stops and c31 is displayed in the three-digit display.
  - The system stops for at least three minutes and a constant number, character, or symbol is displayed in the three-digit display and the power light is on.
  - The system stops and two or more numbers with values between 221 and 296 are displayed alternately in the three-digit display.
  - The system stops and a flashing 888 is displayed in the three-digit display.
  - The power light does not come on, or the power light comes on but does not stay on.

### Is c31 displayed in the three-digit display or is the three-digit display blank?

**NO**

The last SCSI device that you connected is defective.

Exchange the defective device.

Repeat this step until the signal and power connectors for all the disk drives have been connected.

If the symptom did not change and all the disk drives have been exchanged, in the following order exchange the FRUs that have not been exchanged:

1. SCSI bus extender card

**Note:** Refer to *POWERstation and POWERserver Common Diagnostics and Service Guide*, Chapter One; Integrated SCSI Fuse Blowing .

2. SCSI cable
3. System planar
4. Voltage regulator card (Model 3CT)
5. Power supply.

If the symptom did not change and all the FRUs have been exchanged, call your service support person for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems. If you do not find a problem, return to Step 1 in this MAP and follow the instructions for the new symptom.

**YES**

Repeat this step until the signal and power connectors for all the disk drives have been connected.

Go to Step 10.



---

## Step 10

(from Step 9)

1. Set the power switch on the system unit to Off.
2. Connect the serial port extender cable P16 to the system planar.
3. Insert the first diagnostic diskette into the diskette drive.
4. Set the power switch on the system unit to On.
5. Wait for one of the following conditions to occur:
  - The 3.5-inch diskette drive in-use light is on and c05 or c07 is displayed in the three-digit display.
  - The system stops and c31 is displayed in the three-digit display.
  - The system stops for at least three minutes and a constant number, character, or symbol other than c31 is displayed in the three-digit display and the power light is on.
  - The system stops and two or more numbers with values between 221 and 296 are displayed alternately in the three-digit display.
  - The system stops and a flashing 888 is displayed in the three-digit display.
  - The power light does not come on, or the power light comes on but does not stay on.

**Is c07 or c31 displayed in the three-digit display or is the three-digit display blank?**

- NO** Exchange the serial port extender cable. Go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics and Service Guide*.
- YES** Go to Step 11.

---

## Step 11

(from Steps 9 and 10)

1. Set the power switch on the system unit to Off.
2. Connect the cables that were plugged into connectors S1, S2, P, K, T, and M on the rear of the system unit.
3. Insert the first diagnostic diskette into the diskette drive.
4. Set the power switch on the system unit to On.
5. Wait for one of the following conditions to occur:
  - The DIAGNOSTIC OPERATING INSTRUCTIONS screen is displayed.
  - The system stops and c31 is displayed in the three-digit display.
  - The 3.5-inch diskette drive in-use light is on and c07 is displayed in the three-digit display. Insert the next diagnostic diskette. Continue this substep until all diskettes are loaded, c31 is displayed in the three-digit display, or the DIAGNOSTICS OPERATING INSTRUCTIONS screen is displayed.
  - The system stops for at least three minutes and a constant number, character, or symbol other than c31 is displayed in the three-digit display and the power light is on.
  - The system stops and two or more numbers with values between 221 and 296 are displayed alternately in the three-digit display.
  - The system stops and a flashing 888 is displayed in the three-digit display.
  - The power light does not come on, or the power light comes on but does not stay on.

**Is the DIAGNOSTIC OPERATING INSTRUCTIONS screen displayed or is c31 displayed in the three-digit display?**

- NO**                      Go to the Problem Determination procedures (test procedures) for the devices attached to the SIO ports and test those devices. If a problem is found, follow the procedures for correcting the problem on that device.
- YES**                      Go to Step 12.

---

## Step 12

(from Step 11)

The system is working correctly with this configuration. One of the FRUs (adapters) that you removed is probably defective.

1. Set the power switch on the system unit to Off.
2. Install a FRU (adapter) and connect any cables and devices that were attached to it.
3. Insert the first diagnostic diskette into the diskette drive.
4. Set the power switch on the system unit to On.
5. Wait for one of the following conditions to occur:
  - The DIAGNOSTIC OPERATING INSTRUCTIONS screen is displayed.
  - The system stops and c31 is displayed in the three-digit display.
  - The 3.5-inch diskette drive in-use light is on and c07 is displayed in the three-digit display. Insert the next diagnostic diskette. Continue this substep until all diskettes are loaded or c31 is displayed in the three-digit display.
  - The system stops for at least three minutes and a constant number, character, or symbol other than c31 is displayed in the three-digit display and the power light is on.
  - The system stops and two or more numbers with values between 221 and 296 are displayed alternately in the three-digit display.
  - The system stops and a flashing 888 is displayed in the three-digit display.
  - The power light does not come on, or the power light comes on but does not stay on.

**Is the DIAGNOSTIC OPERATING INSTRUCTIONS screen displayed or is c31 displayed in the three-digit display?**

**NO**            Go to Step 13.

**YES**            Repeat this step until all of the FRUs (adapters) are installed.

Go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics and Service Guide*.

---

## Step 13

(from Step 12)

1. Set the power switch on the system unit to Off.
2. Starting with the devices, disconnect a device or cable connector from the last adapter installed.
3. Insert the first diagnostic diskette into the diskette drive.
4. Set the power switch on the system unit to On.
5. Wait for one of the following conditions to occur:
  - The DIAGNOSTIC OPERATING INSTRUCTIONS screen is displayed.
  - The system stops and c31 is displayed in the three-digit display.
  - The 3.5-inch diskette drive in-use light is on and c07 is displayed in the three-digit display. Insert the next diagnostic diskette. Continue this substep until all diskettes are loaded or c31 is displayed in the three-digit display.
  - The system stops for at least three minutes and a constant number, character, or symbol other than c31 is displayed in the three-digit display and the power light is on.
  - The system stops and two or more numbers with values between 221 and 296 are displayed alternately in the three-digit display.
  - The system stops and a flashing 888 is displayed in the three-digit display.
  - The power light does not come on, or the power light comes on but does not stay on.

**Is the DIAGNOSTIC OPERATING INSTRUCTIONS screen displayed or is c31 displayed in the three-digit display?**

**NO**

Repeat this step until the defective device or cable is identified or all the devices and cables have been disconnected.

One of the FRUs remaining in the system unit is defective.

To test each FRU, exchange the FRUs in the following order:

1. Adapter (last one installed)
2. System planar
3. CPU card
4. Voltage regulator card (Model 3CT)
5. Power supply.

If the symptom did not change and all the FRUs have been exchanged, call your service support person for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems. If you do not find a problem, return to Step 1 in this MAP and follow the instructions for the new symptom.

**YES**

The last device or cable you disconnected is defective.

Exchange the defective device or cable.

Go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics and Service Guide*.

---

## Step 14

(from Step 1)

1. Set the power switch on the system unit to Off.
2. Record the slot numbers of the adapters, label and record the location of any cables attached to the adapters. Remove all the adapters from the system planar except the display adapter (if installed and the attached display will be the system console).
3. Disconnect any cables that are plugged into connectors S1, S2, P, K, T, and M on the rear of the system unit.

**Note:** If a terminal attached to S1 or S2 will be the system console, do not disconnect it. If a display attached to a display adapter will be the system console, do not disconnect the keyboard.

4. Insert the first diagnostic diskette into the diskette drive.
5. Set the power switch on the system unit to On.
6. Wait for one of the following conditions to occur:
  - The DIAGNOSTIC OPERATING INSTRUCTIONS screen is displayed
  - The system stops and c31 is displayed in the three-digit display. Follow the instructions on the display to select your console display.
  - The 3.5-inch diskette drive in-use light is on and c07 is displayed in the three-digit display. Insert the next diagnostic diskette. Continue this substep until all diskettes are loaded, c31 is displayed in the three-digit display, or the DIAGNOSTICS OPERATING INSTRUCTIONS screen is displayed.
  - The system stops for at least 3 minutes and a constant number, character, or symbol other than c31 is displayed in the three-digit display and the power light is on.
  - The system stops and two or more numbers with values between 221 and 296 are displayed alternately in the three-digit display.
  - The system stops and a flashing 888 is displayed in the three-digit display.
  - The power light does not come on, or the power light comes on but does not stay on.

### Is the DIAGNOSTIC OPERATING INSTRUCTIONS screen displayed?

- |            |   |
|------------|---|
| <b>NO</b>  | The symptom has changed. Check for loose cards, cables, and obvious problems. If you do not find a problem, return to Step 1 in this MAP and follow the instructions for the new symptom. |
| <b>YES</b> | Go to Step 15.  |

---

## Step 15

(from Step 14)

1. Press the Enter key.
2. If the terminal type has not been defined, you must use the Initialize Terminal option on the FUNCTION SELECTION menu to initialize the AIX operating system environment before you can continue with the diagnostics. This is a separate and different operation than selecting the console display.
3. Select Advanced Diagnostics Routines.
4. When the DIAGNOSTIC MODE SELECTION menu displays, select System Verification.
5. Select System Checkout.

### Did you get an SRN?

- NO** One of the adapters or devices you removed is causing the problem. Install the adapters and devices one at a time to determine the failing adapter or device. Test the system after each adapter or device is installed.
- YES** Go to Step 16.

---

## Step 16

(from Step 15)

Look at the FRU part numbers associated with the SRN.

### Have you exchanged all the FRUs that correspond to the failing function codes?

- NO** Exchange the FRU with the highest failure percentage that has not been changed.
- Repeat this step until all the FRUs associated with the SRN have been replaced or System Checkout runs with no trouble found. Run System Checkout after each FRU is exchanged.
- Go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics and Service Guide*.
- YES** Go to Step 2.

---

## Chapter 3. Removal and Replacement Procedures

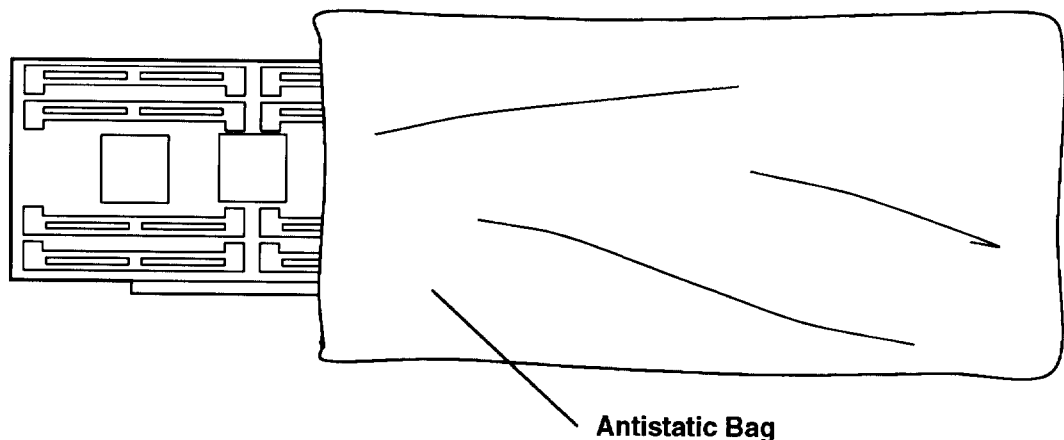
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### Handling Static-Sensitive Devices

**Warning:** Adapters, planars, diskette drives, and disk drives 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:

- Do not remove the device from the antistatic bag until you are ready to install the device in the system unit.
- If you have an antistatic wrist strap available, use it while handling the device.
- With the device still in its antistatic bag, touch it 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 you pick it up again, touch the antistatic bag and the metal frame of the system at the same time.
- Handle the devices carefully in order to prevent permanent damage.



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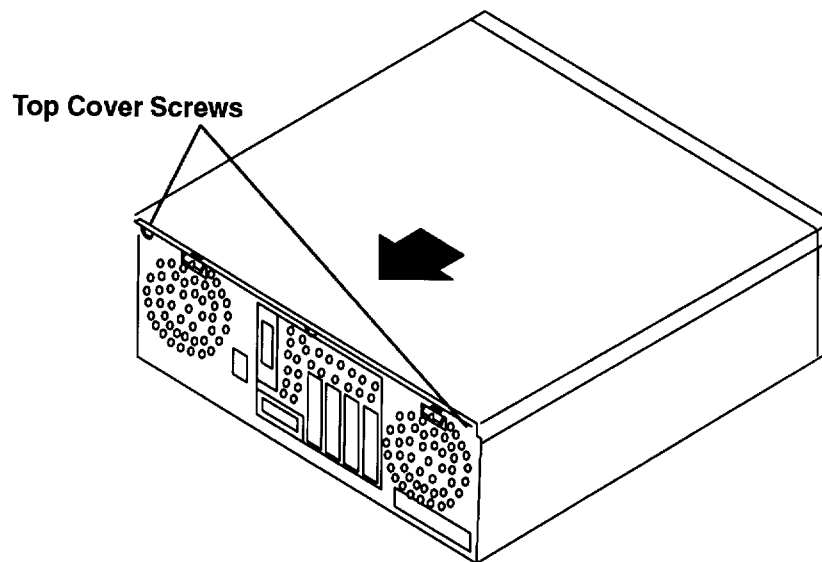
## Top Cover

**Note:** If the machine is normally operated in the vertical position, it may be helpful to remove the base and proceed with the machine in the horizontal position.

### Removal

6. Set the power switches of the attached devices to Off.
7. Set the power switch of the system unit to Off.
8. Disconnect the power cable.
9. Set the key mode switch to the Service position. This unlocks the top cover for removal.
10. Loosen the top cover screws.
11. If your system unit has handles, use the handles to slide the top cover to the rear and lift it off. Slide the cover to the rear and lift it straight up to remove.

**Warning:** Do not operate the system unit with the covers removed. Operating with covers on ensures adequate cooling of the components.



### Replacement

1. Place the top cover on the base with the front tab in the slot.
2. Slide the cover to the front. Ensure that the front lip seats; the rear hooks are seated under the rear lip.
3. Tighten the top cover screws.
4. Set the key mode switch back to its normal position.
5. Connect the power cable.
6. Set the power switches of the attached devices to On.
7. Set the power switch of the system unit to On.

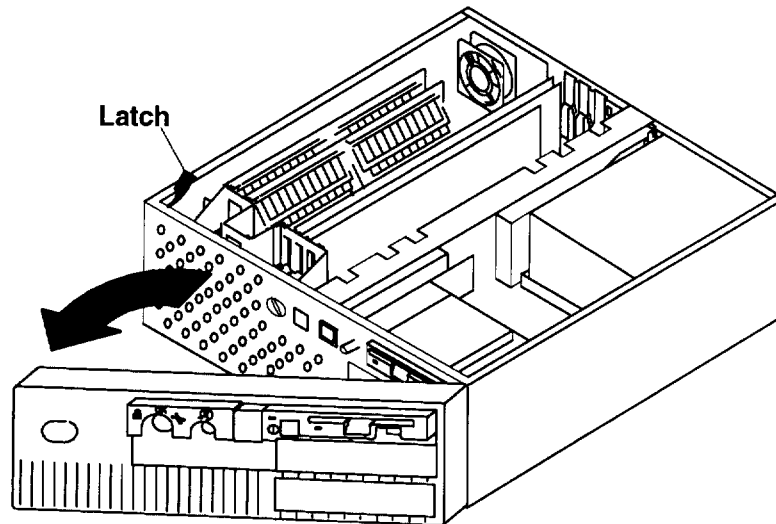


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## Front Cover

### Removal

1. Set the power switches of the attached devices to Off.
2. Set the power switch of the system unit to Off.
3. Disconnect the power cable.
4. Set the key mode switch to the Service position.
5. Remove the key from the key mode switch.
6. Remove media from the diskette drive.
7. Do the "Top Cover" removal procedure on page 3-2.
8. Lift the latch to unhook the cover.
9. Pivot the left side of the front cover outward and remove.



### Replacement

1. Insert the tabs at the right side of the front cover.
2. Pivot the left side of the front cover into place.
3. Snap the cover into position.
4. Do the "Top Cover" replacement procedure on page 3-2.
5. Connect the power cable.
6. Replace the key in the key mode switch and turn it to the Normal position.
7. Set the power switches of the attached devices to On.
8. Set the power switches of the system unit to On.

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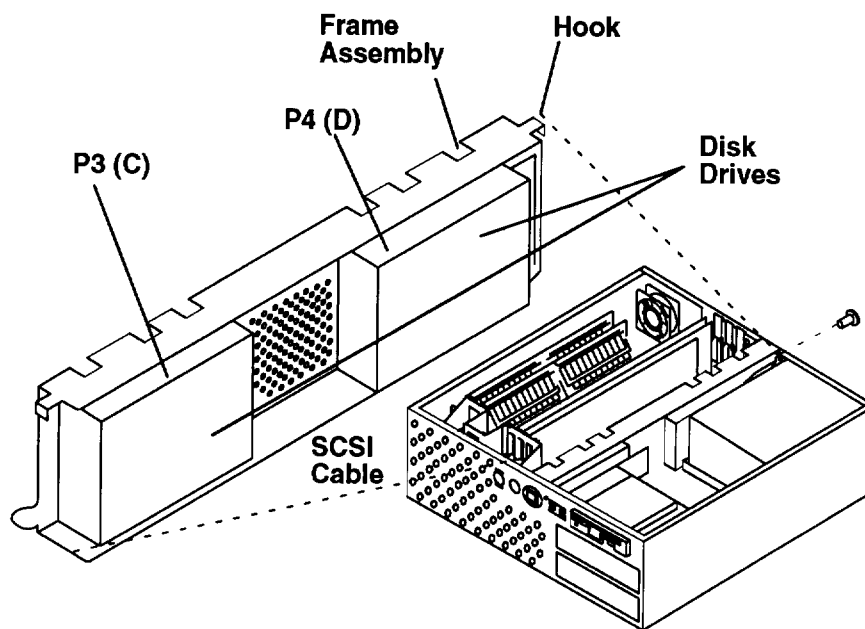
## Disk Drive

References to the small computer systems interface (SCSI) input/output controller is abbreviated as SCSI I/O controller in this publication.

**Note:** Refer to "Handling Static-Sensitive Devices" on page 3-1.

## Removal

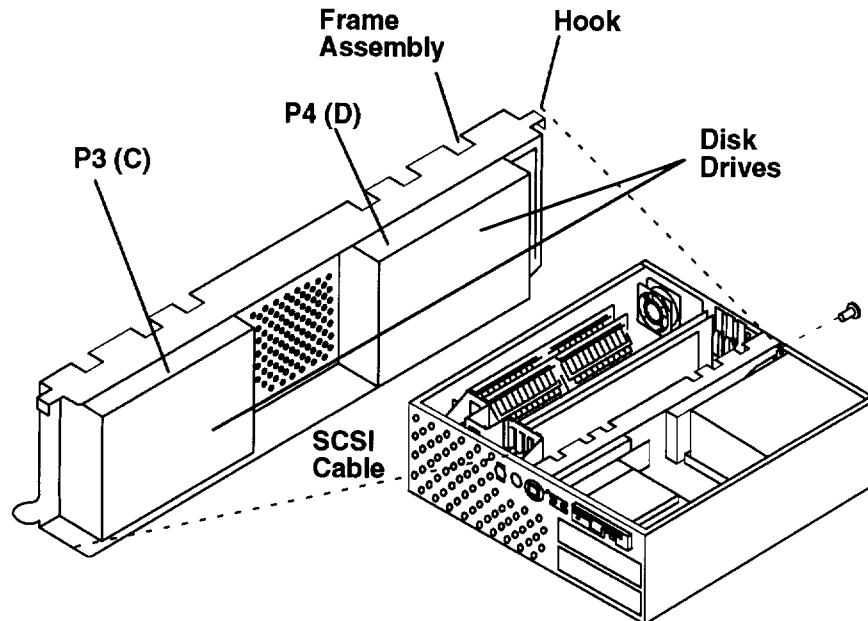
9. Set the power switches of the attached devices to Off.
10. Set the power switch of the system unit to Off.
11. Disconnect the power cable.
12. Do the "Top Cover" removal procedure on page 3-2.
13. Remove the shipping screw at the rear of the system unit. (The screw retains the disk drive frame assembly during shipping, and can be discarded after system installation.)
14. Remove the frame assembly.
15. Disconnect the power supply connectors from the drives.
16. Disconnect the internal SCSI cable from the drives using the pull loops.
17. Remove the disk drive from the frame (four screws in each drive).



# Replacement

**Warning:** If you move the disk drive from a colder or warmer environment than the room where it will be used, allow the disk drive to gradually reach the temperature of the room. By allowing the disk drive time to acclimate, data loss or permanent damage to the disk drive can be avoided. The proper time is at least one hour for each 10°C (18°F) of difference between the storage environment and the operating environment.

1. Set the address settings of the new disk drive the same as the settings of the old drive. For more information, refer to Chapter 9 of *POWERstation and POWERserver Common Diagnostics Information Manual*.
2. Install the disk drive in the frame.
3. Connect the SCSI cable to the drives. Ensure that the keys on the connectors match.
4. Plug in the power supply connector to the drives.
5. Install the front of the frame assembly first. The lower front alignment tab must locate in its slot.
6. Then pivot the rear of the frame assembly into place. There are hooks and alignment tabs in the front and rear.
7. Do the "Top Cover" replacement procedure on page 3-2.
8. Connect the power cable.
9. Set the power switches of the attached devices to On.
10. Set the power switch of the system unit to On.



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## Power Supply

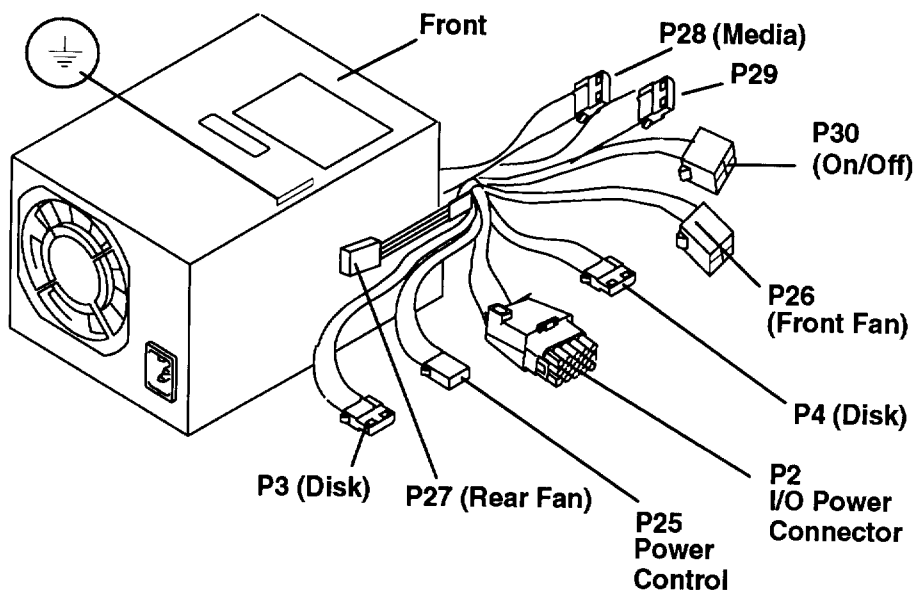
For a translation of the following notice, see *System Unit Safety Information*, order number SA23-2652.

### DANGER

**Do not attempt to open the covers of the power supply. The power supply is not serviceable and is to be replaced as a unit.**

## Removal

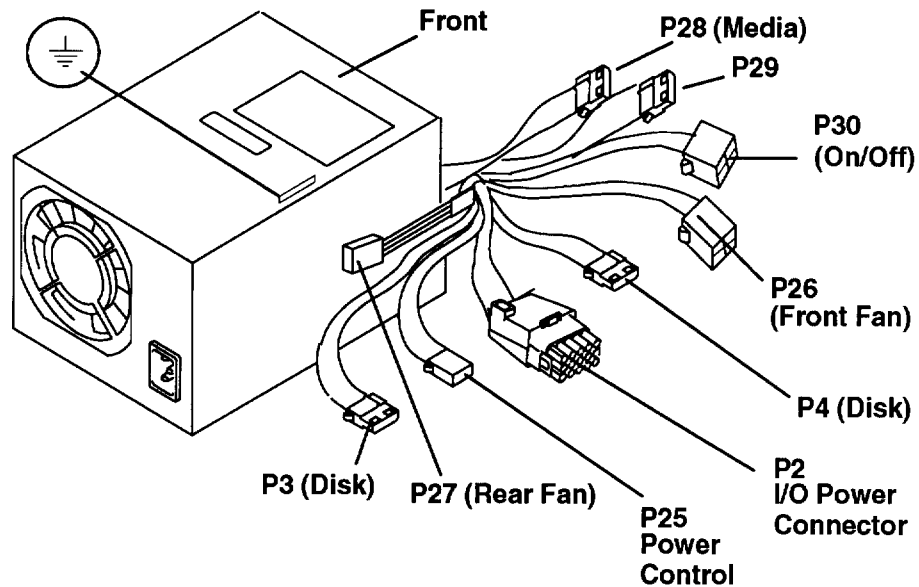
11. Set the power switches of the attached devices to Off.
12. Set the power switch of the system unit to Off.
13. Unplug the power cord from the electrical outlet first, and then disconnect from the power supply.
14. Do the "Top Cover" removal procedure on page 3-2.
15. Disconnect all power supply cables.
16. Loosen the power supply mounting screw at the front of the power supply unit.
17. Lift the front of the power supply slightly, and then slide it forward approximately 5mm and then lift it out.



## Replacement

1. Be sure that the aligning tabs on the base are not bent.
2. Place the power supply approximately 5 mm (one-quarter inch) in front of its installed position. The mounting screw should align with the keyway hole in the power supply.
3. Push it to the rear to engage the tabs on the base with the slots on the power supply.
4. Tighten the power supply mounting screw.
5. Connect the cables.

- Note:** Ensure that the P25 connector is properly connected to protect the memory cards.
6. Do the "Top Cover" replacement procedure on page 3-2.
  7. Connect the power cable into the power supply first, then plug it into the electrical outlet.
  8. Set the power switches of the attached devices to On.
  9. Set the power switch of the system unit to On.

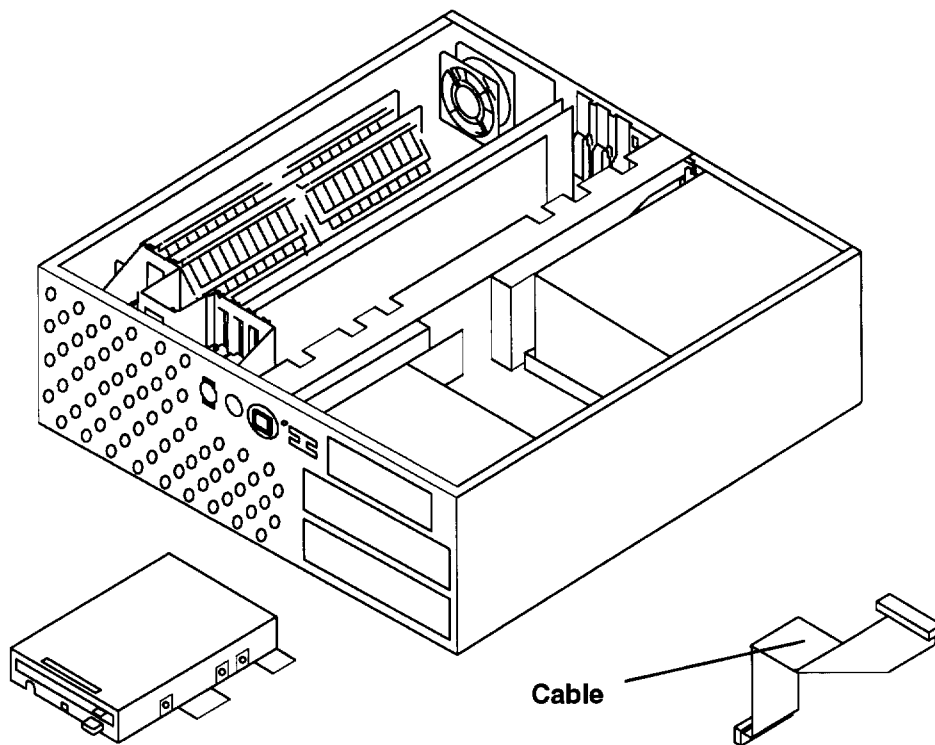


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## Diskette Drive

### Removal

1. Set the power switches of the attached devices to Off.
2. Set the power switches of the system unit to Off.
3. Do the Top Cover removal procedure on page 3-2.
4. Remove the screw on the left side of the diskette drive plate. If there is also an optional DASD fan installed, lay it on top of the power supply.
5. Slide the diskette drive assembly back and lift up.
6. Remove the four screws that hold the diskette drive to the metal plate.



### Replacement

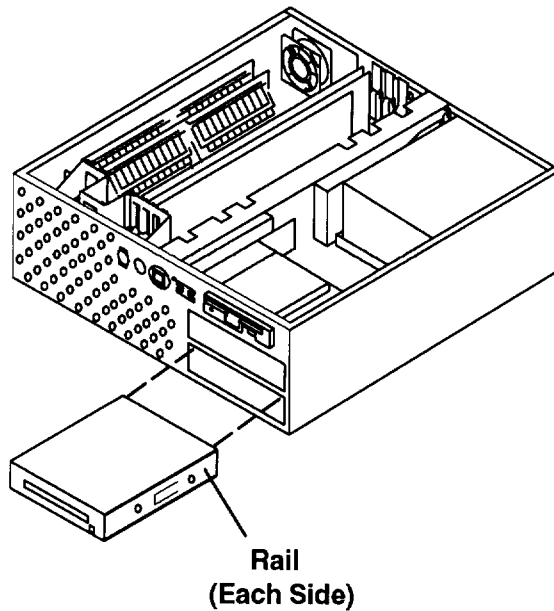
1. Mount the diskette drive on the metal plate and screw into place.
2. Place the diskette drive in position and replace the screw on the left side of the diskette drive.
3. Connect the cable to the diskette drive.
4. Do the Front Cover replacement procedure on page 3-3.
5. Do the Top Cover replacement procedure on page 3-2.
6. Set the power switches of the attached devices to On.
7. Set the power switches of the system unit to On.

---

# Media Drive Removal

## Removal

1. Remove any media from the drive.
2. Set the power switches of the attached devices to Off.
3. Set the power switch of the system unit to Off.
4. Do the "Top Cover" removal procedure on page 3-2.
5. Do the "Front Cover" removal procedure on page 3-3.
6. Disconnect the power cable and SCSI connectors from the media devices.
7. Push the latch on the left inside of the metal cover housing to release the media drive from the housing.
8. Slide the drive assembly out the front.
9. Record the address.
10. Remove the four rail screws to detach the drive assembly from the rails. Retain the screws.



## Replacement

1. Using the four rail screws, attach the drive assembly to the rails.
2. Set the address, matching the drive being replaced. For new installations, assign a SCSI address of 5 or 6.
3. Push the drive into the media bay to the installed position.
4. Plug the cable connectors into the drive.

**Warning:** Some 4 mm tape drives can be misplugged. Visually align the drive connector pins with the cable connector holes.

5. Do the "Front Cover" replacement procedure on page 3-3.
6. Do the "Top Cover" replacement procedure on page 3-2.
7. Set the power switches of the attached devices to On.
8. Set the power switch of the system unit to On.



---

## Adapters, and Ethernet Riser Cards

### Removal

**Note:** Refer to “Handling Static-Sensitive Devices” on page 3-1 before removing or installing adapters in this system.

Facing the back of the system unit, there are four vertical adapter slots, and each slot is covered with a bracket. Also, there is a special slot for an optional external diskette riser card or Ethernet riser card. Each bracket is held in place by a knurled knob.

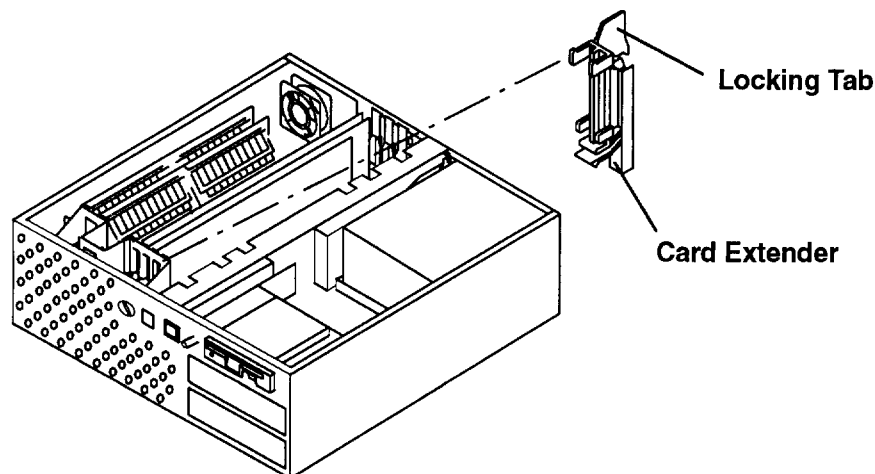
1. Set the power switches of the attached devices to Off.
2. Set the power switch of the system unit to Off and unplug the external power cable.
3. Do the Top Cover removal procedure on page 3-2.
4. Note the location of the adapter.
5. Disconnect any attached device and internal cables from the adapter.
6. Loosen the knurled knob that holds the adapter card bracket.
7. If the adapter has a card extender that holds the front end of the adapter, release the extender by pressing the locking tab to the side.
8. Grasp the adapter by the pull tabs and pull it out of the slot.

### Replacement

**Note:** If you are replacing the Ethernet riser card, ensure that the jumpers on the new card are set the same as on the old card. Refer to “Setting the Ethernet Riser Card Jumpers” on page 3-12.

Replace in the reverse order. When replacing the adapter, ensure that the plate of the adapter bracket is under the knurled knob and is in contact with the card guide (for a grounding path) at the top of the adapter bracket.

**Note:** To avoid having the Ethernet riser card short out against the cover, rock the card toward the front of the machine.



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## Setting the Ethernet Riser Card Jumpers

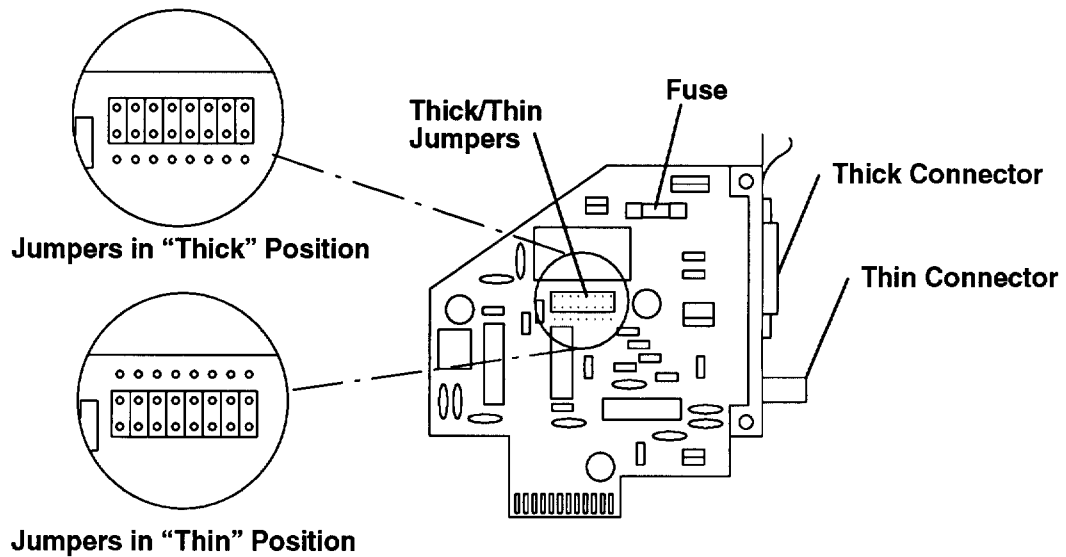
### Thick/Thin Ethernet Riser

**Note:** Follow the correct shutdown and power down procedure, and remove the Ethernet riser card from the system unit.

The thick/thin Ethernet riser card comes shipped configured for the thin (BNC) Ethernet interface. The configuration is set by two removable jumper blocks that fit over two of the three rows of pins that are located on the riser card. Follow these steps to change the configuration:

1. Pull each of the two jumper blocks off of the configuration jumper block.
2. Replace the two jumper blocks on the upper two rows of pins to configure for the thick connector, or on the lower two rows for the thin connector.

#### Thick/Thin Ethernet Card Jumper Positions



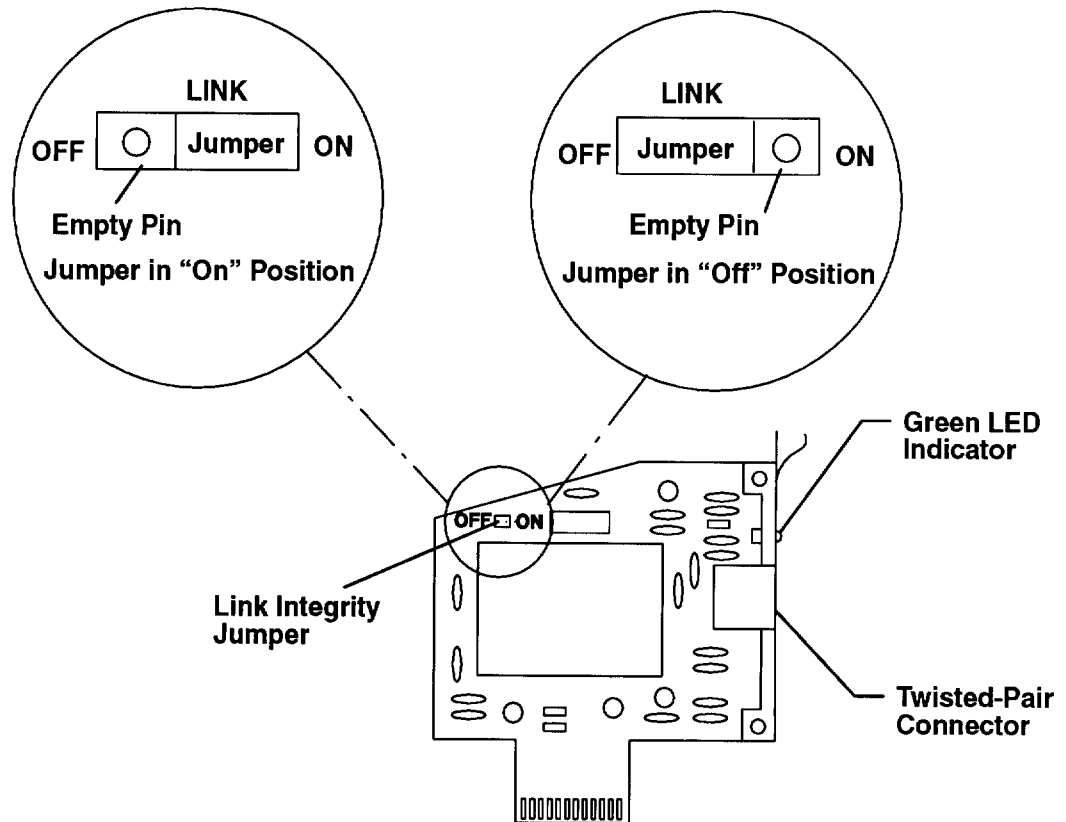
## Twisted-Pair Ethernet Riser

**Note:** Follow correct shutdown and power procedure and remove the Ethernet riser from the system unit.

The twisted-pair Ethernet riser comes with a single jumper panel marked LINK with the words ON and OFF on either side. This jumper is used to make the twisted-pair Ethernet riser compatible with IEEE 802.3 10 base T Ethernet networks. The twisted-pair riser is shipped with the jumper set to the ON position.

If the network is not 10 base T, move the LINK jumper to the OFF position.

### Twisted Pair Ethernet Card Jumper Position



The single green LED on the twisted-pair riser lights when the riser is properly connected to a 10 base T network and the power to the system unit is on. If the green LED does not come on, there could be several possible problems. The twisted-pair cable is defective or not connected, the network is not a 10 base T network, or the Ethernet riser card is not properly installed in the system unit.

---

## Attached Devices

For a translation of the following notices, see *System Unit Safety Information*, Order 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.**

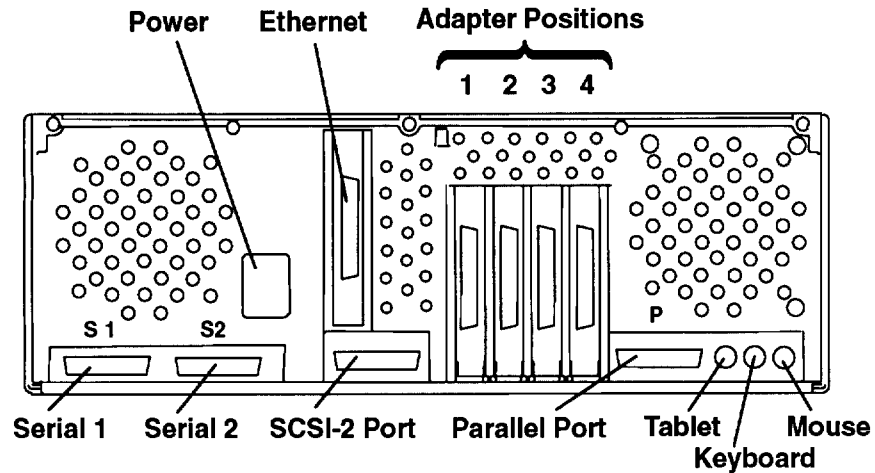
**During an electrical storm, do not connect cables for display stations, printers, telephones, or station protectors for communications lines.**

### **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.**

## Removal

1. Set the power switches of all attached devices to Off.
2. Set the power switch of the system unit to Off and unplug the external cable.
3. Unplug the external power cables to the attached devices.
4. Disconnect the device signal cable from the adapter.
5. If the device has one or more toroids, refer to "Toroids" on page 3-36.



## Replacement

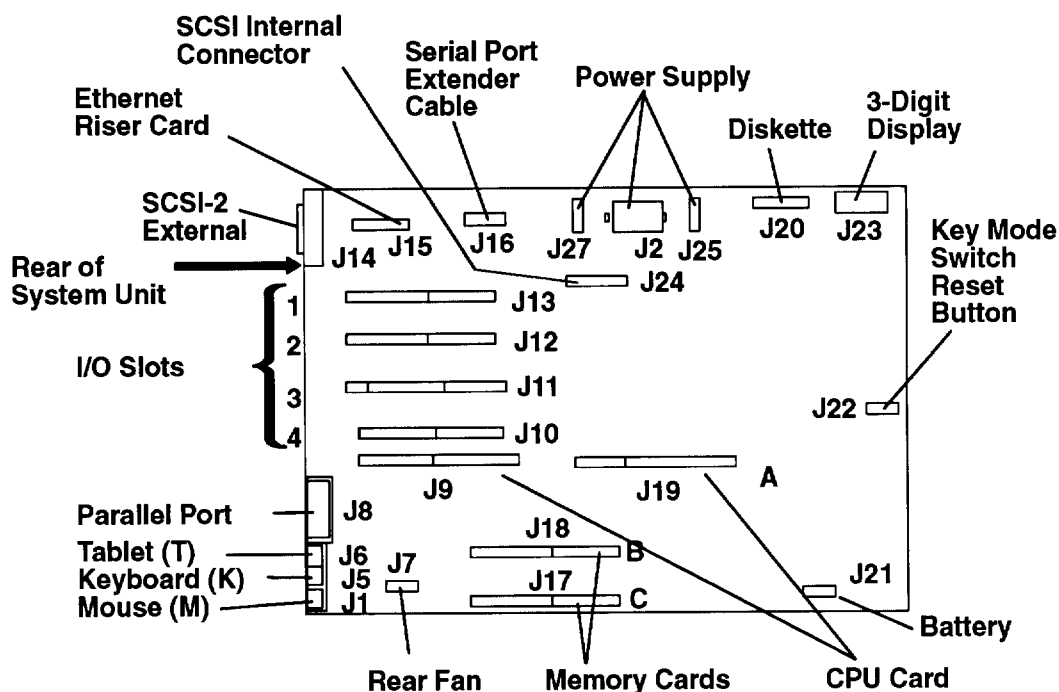
Replace in the reverse order.

## CPU Card (Models 3AT and 3BT)

**Note:** Refer to "Handling Static-Sensitive Devices" on page 3-1 before removing or installing the CPU card in this system.

### Removal

1. Set the power switches of the attached devices to Off.
2. Set the power switch of the system unit to Off.
3. Do the Top Cover removal procedure on page 3-2.
4. Make a note of its position and remove the CPU card.



### Replacement

**Reminder to Service Representative:** After you exchange the CPU card, notify the customer that the unique identification number of the system unit has changed. The customer needs to update the authorization number for any program that uses the identification number for access.

1. Align the CPU card with the front and rear card guides and the connector, and then press the CPU card down into the connector.
2. Do the Top Cover replacement procedure on page 3-2.
3. Set the power switches of the attached devices to On.
4. Set the power switch of the system unit to On.

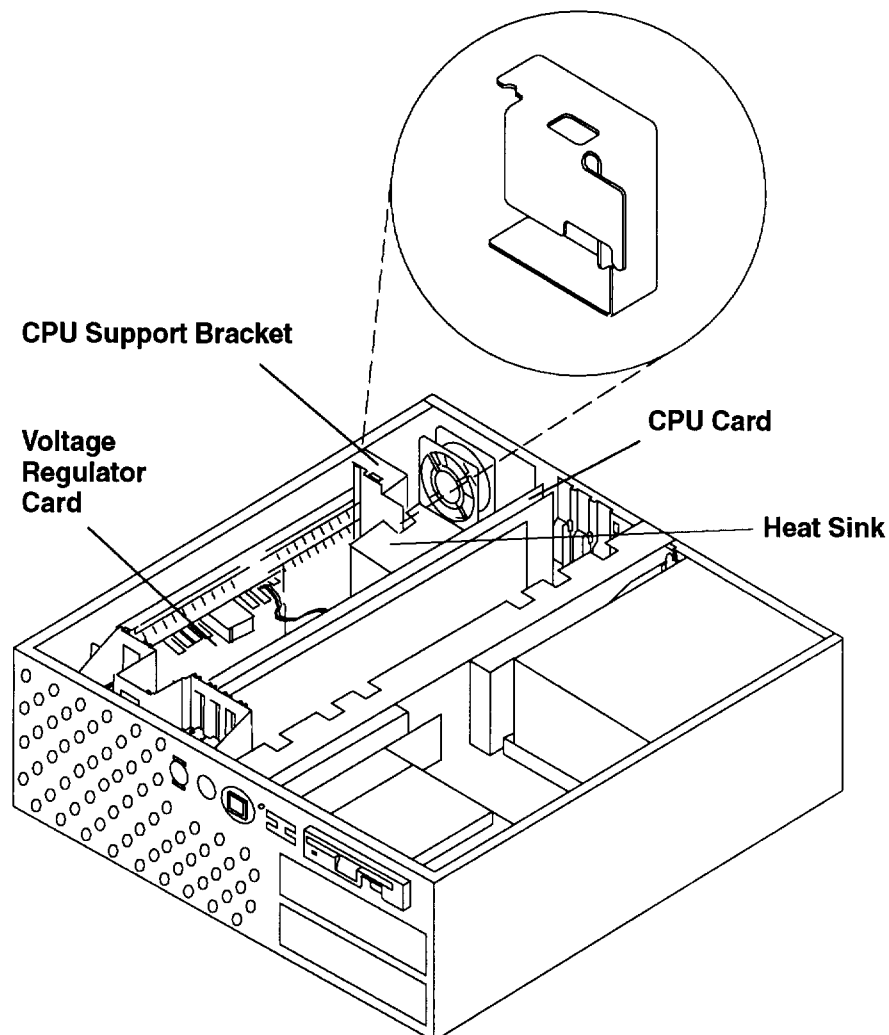
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## CPU Card (Model 3CT)

**Note:** Refer to "Handling Static-Sensitive Devices" on page 3-1 before removing or installing the CPU card in this system.

### Removal

1. Set the power switches of the attached devices to Off.
2. Set the power switch of the system unit to Off.
3. Set the key mode switch to the Service position.
4. Remove the top cover by loosening the two thumbscrews located on the back of the system unit. Slide the cover to the rear of the system unit, and then lift it straight up.
5. Remove the CPU support bracket.
6. Pull up on the CPU card and the voltage regulator card at the same time until you can unplug the voltage regulator card from the CPU card. Once you have unplugged the voltage regulator card from the CPU card, push the voltage regulator card back into place.



## Replacement

**Reminder to Service Representative:** After you exchange the CPU card, notify the customer that the unique identification number of the system unit has changed. The customer needs to update the authorization number for any program that uses the identification number for access.

1. Plug the voltage regulator card into the CPU card.
2. Align the CPU card with the front and rear card guides and the connector, and then press the CPU card down into the connector.
3. Replace the CPU support bracket.
4. Replace the top cover.
5. Set the power switches of the attached devices to On.
6. Set the power switch of the system unit to On.



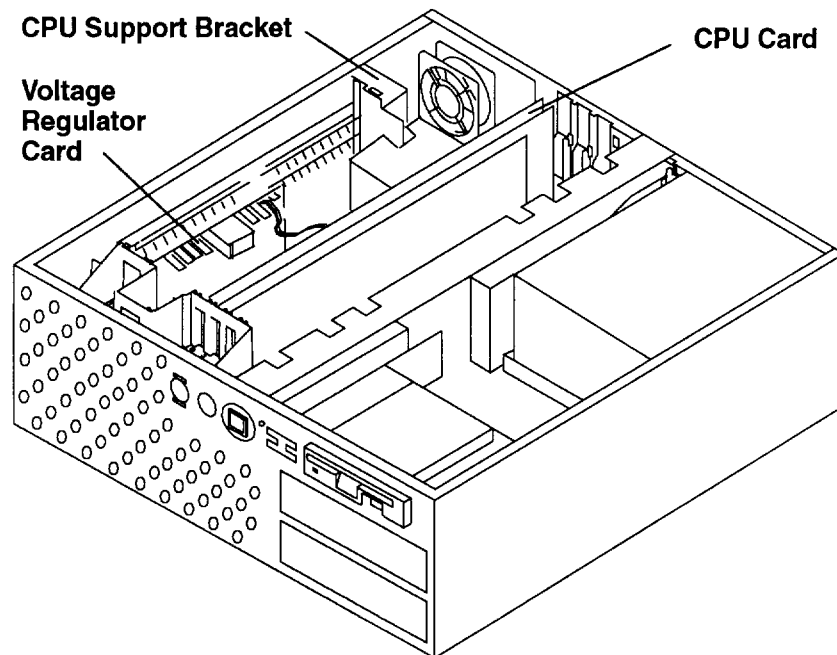
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## Voltage Regulator Card – Model 3CT

**Note:** Refer to “Handling Static-Sensitive Devices” on page 3-1 before removing or installing the CPU card in this system.

### Removal

1. Set the power switches of the attached devices to Off.
2. Set the power switch of the system unit to Off.
3. Set the key mode switch to the Service position.
4. Remove the top cover by loosening the two thumbscrews located on the back of the system unit. Slide the cover to the rear of the system unit and lift it straight up.
5. Remove the CPU support bracket.
6. Pull up on the CPU card and the voltage regulator card at the same time.
7. Unplug the voltage regulator card from the CPU card.
8. Remove the voltage regulator card from its slot.



### Replacement

1. Plug the voltage regulator card into the CPU card.
2. Align the voltage regulator card and the CPU card with the card guides and the card connectors, and then press the voltage regulator card and the CPU card down into the connectors.
3. Replace the CPU support bracket.
4. Replace the top cover.
5. Set the power switch of the system unit to On.
6. Set the power switches of the attached devices to On.

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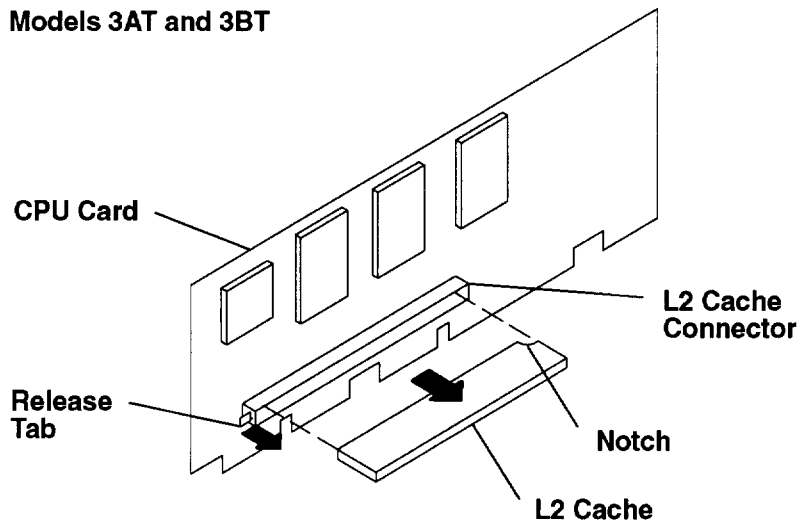
## L2 Cache

**Note:** Refer to “Handling Static-Sensitive Devices”/“Handling Static-Sensitive Devices” on page 3-1 before removing or installing the CPU card in this system.

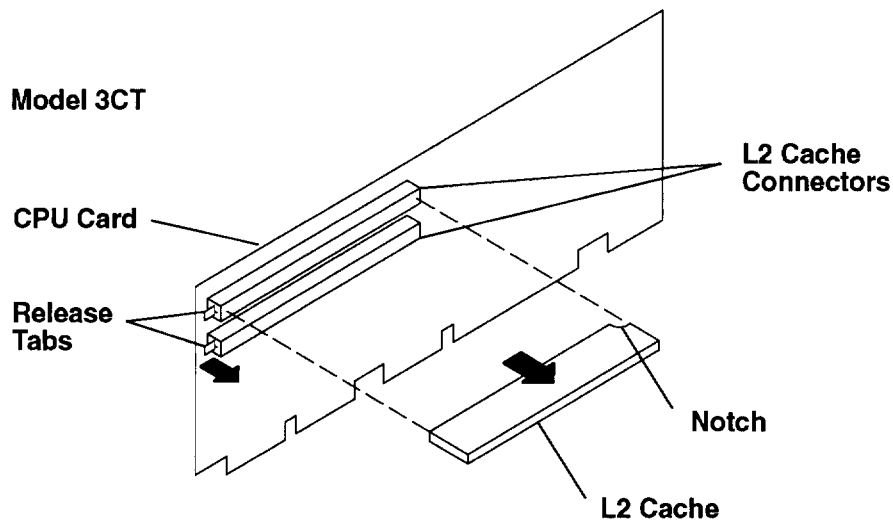
### Removal

1. Do the “CPU Card (Models 3AT and 3BT)” removal procedure on page 3-16, or do the “CPU Card (Model 3CT)” removal procedure on page 3-17.
2. Pull the release tab on the L2 cache connector away from the CPU card.
3. Pull the L2 cache out of the connector on the CPU card, and then remove the L2 cache.

#### Models 3AT and 3BT



#### Model 3CT



### Replacement

Replace in the reverse order.

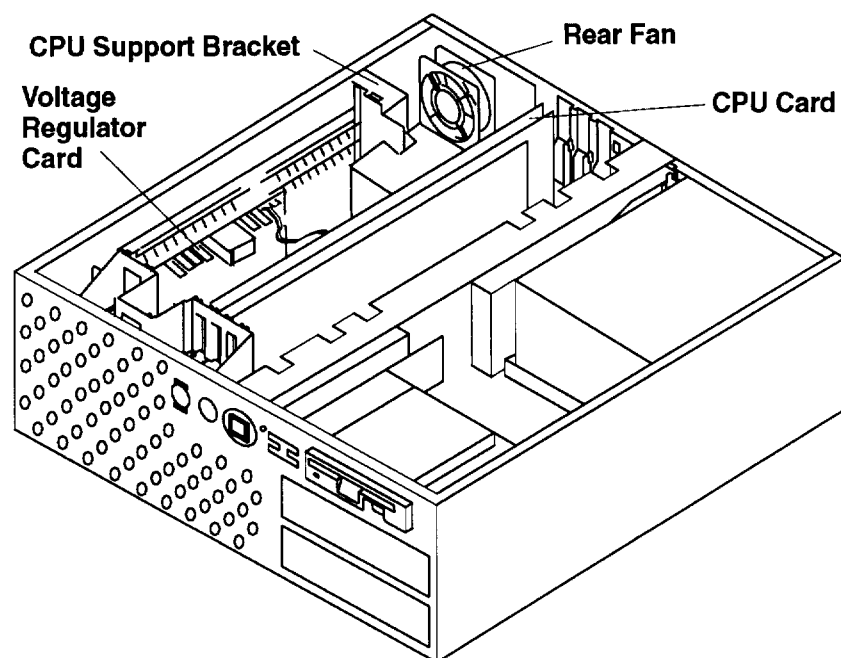
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## Fan and Air Duct (Model 3CT)

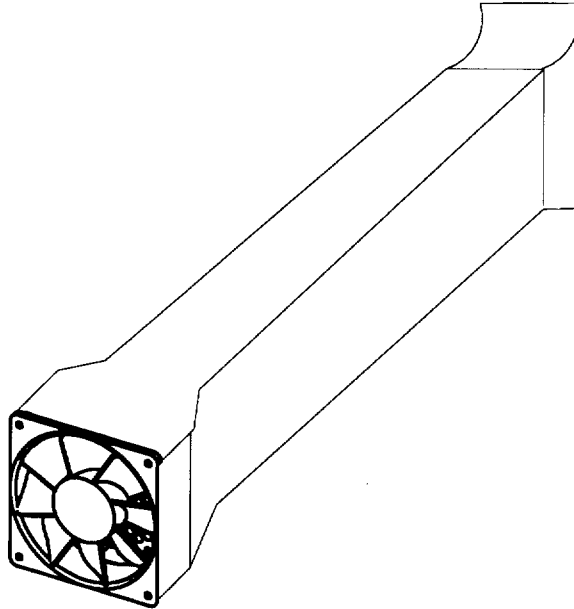
### Removal

1. Set the power switches of the attached devices to Off.
2. Set the power switch of the system unit to Off.
3. Remove the top cover by loosening the two thumbscrews located on the back of the system unit. Slide the cover to the rear of the system unit and lift it straight up.
4. Remove the CPU support bracket.
5. Pull up on the CPU card and the voltage regulator card at the same time until you can unplug the voltage regulator card from the CPU card.
6. Remove the voltage regulator card from its slot.
7. Remove the CPU card from its slot.
8. To remove the fan and the air duct as a single unit, push the fan shock mounts through the holes of the system unit frame and disconnect the fan cable from the existing front fan connector located at the right side of the hard file mounting frame.

To remove just the air duct, gently pull the air duct toward the rear of the system unit until it is loosened from the fan and then lift out.



9. Remove the fan from the air duct by pulling the fan gently away from the air duct.



## Replacement

1. If the fan was removed, install the fan back into position in the air duct. Place the fan into position on the system unit frame and pull the shock mounts through the holes in the system unit frame and reconnect the fan cable to the front fan connector located on the right side of the hard file mounting frame.
2. Plug the voltage regulator card into the CPU card and align both cards in their slots and connectors, and press down firmly.
3. Install the CPU support bracket.
4. Replace the top cover.
5. Set the power switch of the system unit to On.
6. Set the power switches of the attached devices to On.

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## Memory Card

**Note:** Refer to "Handling Static-Sensitive Devices" on page 3-1 before removing or installing memory cards in this system.

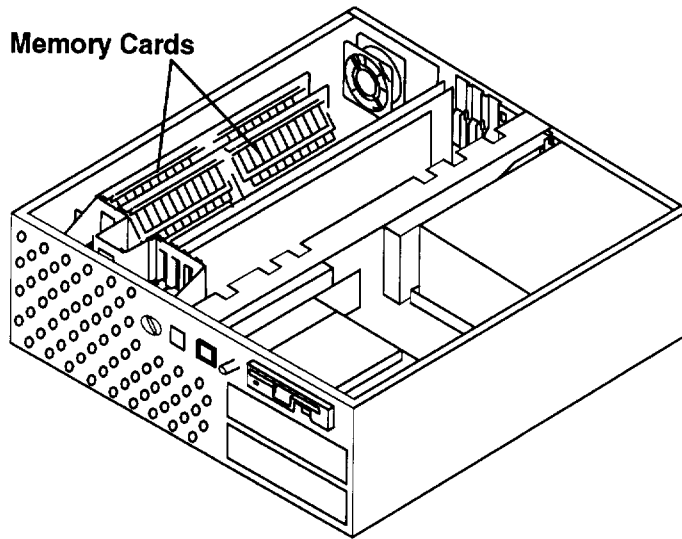
### Removal

1. Set the power switches of the attached devices to Off.
2. Set the power switch of the system unit to Off.
3. Do the Top Cover removal procedure on page 3-2.
4. Remove the CPU card.

**Warning:** The latches on the SIMM connectors break easily. Handle them carefully.

5. Remove the memory card by lifting on the bottom edge of the card.
6. To remove the SIMMs from the memory card, refer to "Memory SIMMs" on page 3-24.

**Note:** The Model 3CT contains only one memory card.



### Replacement

1. Align the memory card with the front and rear card guides and the connector, and press the card down into the connector.
2. Replace the CPU card.
3. Do the Top Cover replacement procedure on page 3-2.
4. Set the power switches of the attached devices to On.
5. Set the power switch of the system unit to On.

# Memory SIMMs

## Removal

1. If you are removing the SIMMs on the memory card, do the "Memory Card" removal procedure on page 3-23. If you are removing the SIMMs on the CPU card (Model 3CT), do the "CPU Card (Model 3CT)" removal procedure on page 3-17.

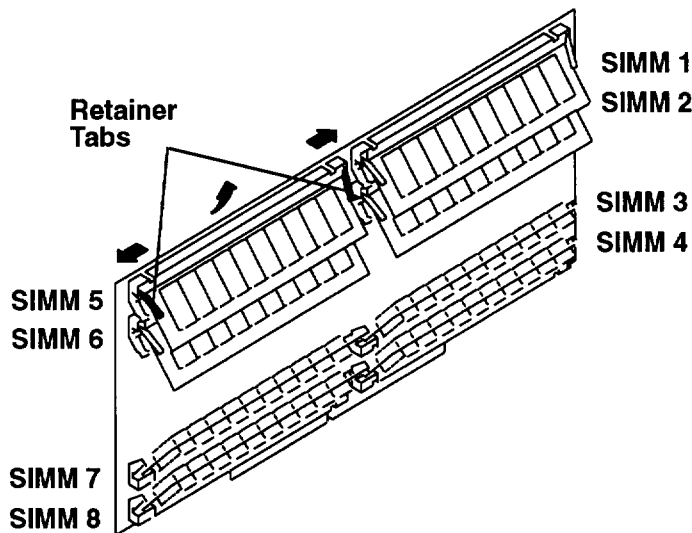
**Warning:** The latches on the SIMM connectors break easily. Handle them carefully.

2. Release the retainer tabs by pulling them away from the ends of the SIMM.
3. Rotate the SIMM away from the center of the card and pull it away from the socket.

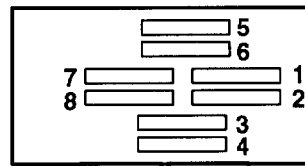
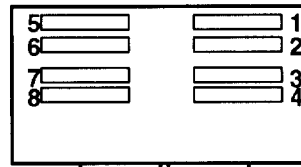
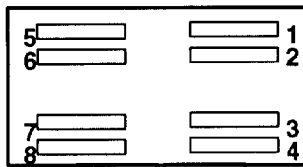
## Replacement

1. Place the SIMM in the keyed socket on the memory card; then press the SIMM into the socket and then toward the center of the memory card until the retainers snap into place.
2. If you are replacing the SIMMs on the memory card, do the "Memory Card" replacement procedure on page 3-23. If you are replacing the SIMMs on the CPU card (Model 3CT), do the "CPU Card (Model 3CT)" removal procedure on page 3-17.

**Note:** SIMM locations are shown below.



Memory board SIMM positions vary and are numbered as follows:



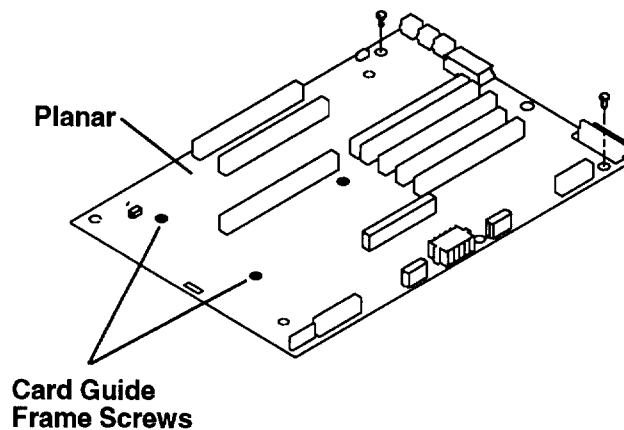
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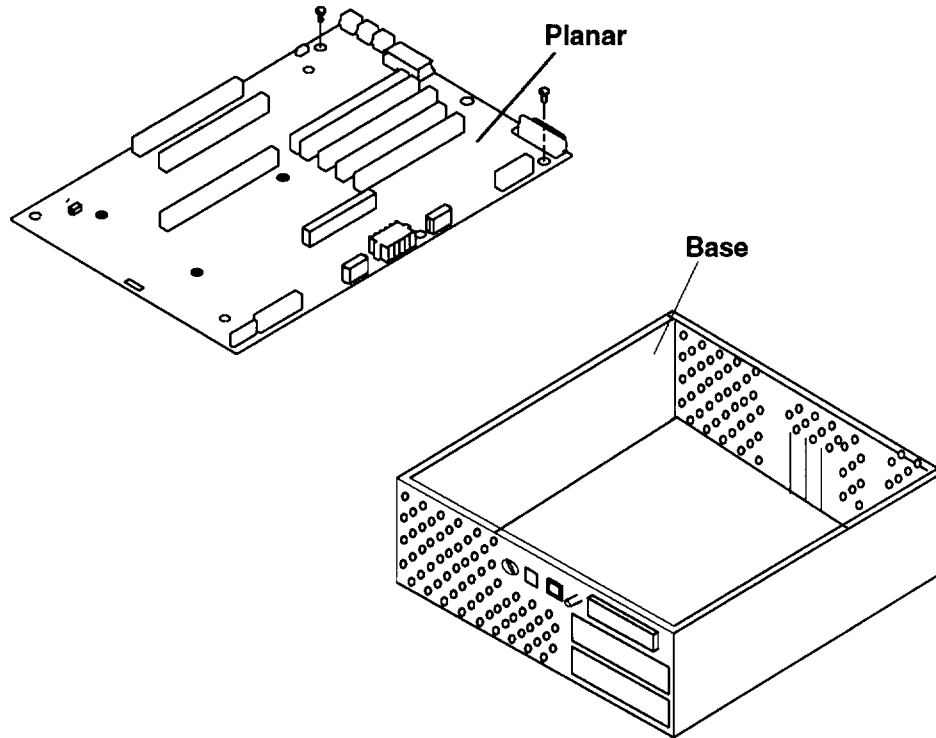
## Planar

**Note:** Refer to "Handling Static-Sensitive Devices" on page 3-1 before removing or installing the planar in this system.

## Removal

1. Set the power switches of the attached devices to Off.
2. Set the power switch of the system unit to Off.
3. Disconnect the power cable.
4. Perform the Top Cover removal procedure on page 3-2.
5. Lift up the disk drive frame assembly and lay it on the power supply.
6. Record the external adapter cable positions and remove all cables.
7. Record the card positions and remove all cards and I/O slot brackets.
8. Record the other I/O cable positions and remove the other I/O cables (such as the keyboard and mouse).
9. Remove the rear fan assembly.
10. Perform the Card Guide Frame removal procedure on page 3-27, but leave the front fan in the card guide frame. Note that the longest screw goes through the option card down stop.
11. Record the positions of the remaining planar mounting screws and remove them.
12. Remove the stand-off screws from the parallel port and the SCSI port connectors at the rear of the system unit.
13. Remove the planar from the base.





## Replacement

1. Be sure to tell the customer that time and date need to be reset after planar replacement.
2. Install 8 of the 10 planar screws, leaving out the two screws for the card guide frame until you install the card guide frame. (Do not confuse the two holes in the planar that line up with the foot mounting screws with planar mounting screws.)
3. Do the Rear Fan replacement procedure on page 3-29.
4. Do the Card Guide Frame replacement procedure on page 3-27.
5. Do the Power Supply replacement procedure on page 3-6, but do not plug in the power cable.
6. Replace all cards and I/O slot brackets in their previous positions.
7. Replace all adapter card cables.
8. Replace the other I/O cables (such as the keyboard and mouse).
9. Put the disk drive frame assembly back into place.
10. Do the Top Cover replacement procedure on page 3-2.
11. Plug in the power cable.
12. Set the power switches of the attached devices to On.
13. With the key mode switch in the Service position, set the power switch to On.

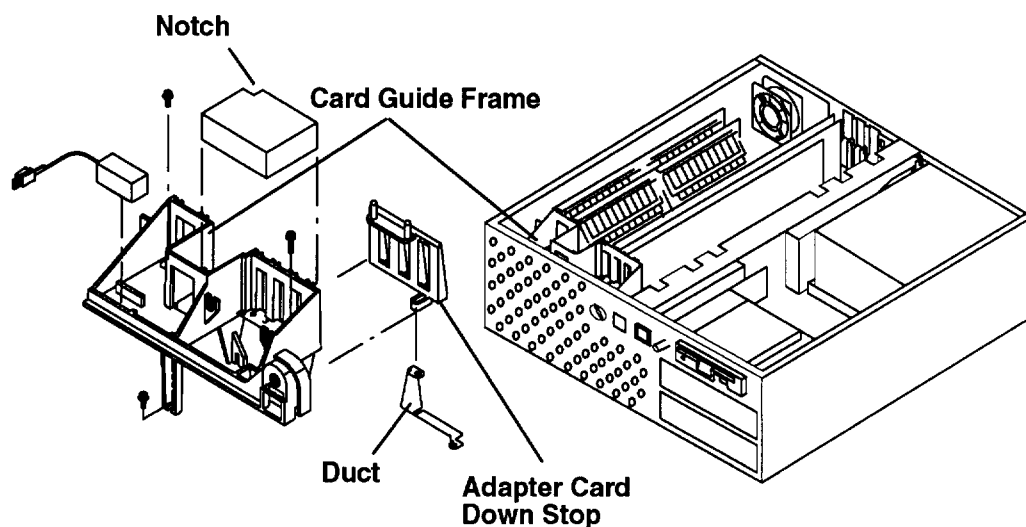


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## Card Guide Frame

### Removal

1. Set the power switches of the attached devices to Off.
2. Set the power switches of the system unit to Off.
3. Unplug the power cord from the electrical outlet.
4. Do the Top Cover removal procedure on page 3-2.
5. Record the location of the notch in the foam and remove the foam from the top of the fan.
6. Push the battery through the hole in the card guide frame.
7. Disconnect the cable for the front fan.
8. Pull up on the three-digit display connector handle to disconnect the cable for the three-digit display.
9. Remove the three mounting screws and the card guide frame.
10. Separate the air duct and the adapter card down stop from the card guide frame.
11. Push the back of the three-digit display, while twisting and pulling the display from the front to remove it.
12. Do the "Front Fan" removal procedure on page 3-30.



## Replacement

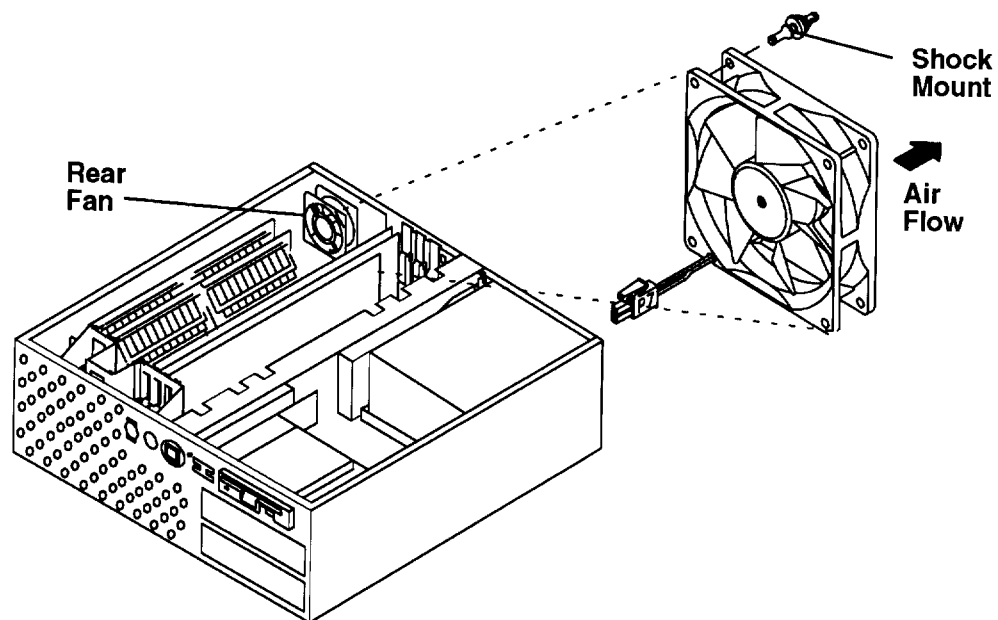
1. Do the "Front Fan" replacement procedure on page 3-30.
2. Do the Three-digit replacement procedure on page 3-35
3. Install the air duct and the adapter card down stop on the card guide frame.
4. Connect the cables.
5. Align the cards with the correct slots in the card guide frame and install the card guide frame with the three mounting screws.
6. Connect all cables.
7. Install the foam on the top of the fan.
8. Do the Battery replacement procedure on page 3-37.
9. Do the Top Cover replacement procedure on page 3-2.
10. Plug the power cord into the electrical outlet.
11. Set the power switches of the attached devices to On.
12. Set the power switches of the system unit to On.

---

## Rear Fan

### Removal

1. Set the power switches of the attached devices to Off.
2. Set the power switch of the system unit to Off.
3. Do the top cover removal procedure on page 3-2.
4. Remove the CPU card (see page 3-16) and the memory cards (see page 3-23).
5. Disconnect the connector for the rear fan (P7).
6. Pull the shock mounts out of their mounting holes.



### Replacement

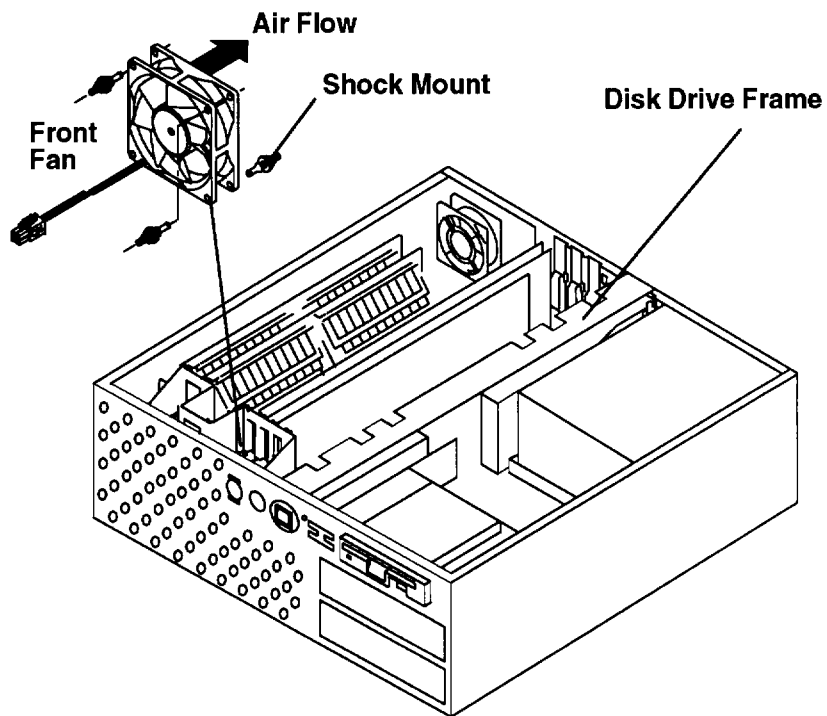
1. Install the shock mounts in the fan.
2. Place the fan in position to allow the shock mounts to protrude through their mounting holes in the base.
3. Pull the shock mounts from the rear into their installed position.
4. Connect the cable for the rear fan (P7).
5. Replace the memory cards (see page 3-23) and the CPU card (see page 3-16).
6. Do the top cover replacement procedure on "Top Cover" page 3-2.
7. Set the power switches of the attached devices to On.
8. Set the power switch of the system unit to On.

---

## Front Fan

### Removal

1. Set the power switches of the attached devices to Off.
2. Set the power switch of the system unit to Off.
3. Do the top cover removal procedure on "Top Cover" page 3-2.
4. Do the front cover removal procedure on page 3-3.
5. Disconnect the front fan cable from the power supply (P26).
6. Remove the foam from the top of the fan.
7. Do not unplug the battery cable. Lift the battery and place it on the planar.
8. Unplug the three-digit display.
9. Remove the three screws and the card guide frame assembly.
10. Pull the shock mounts just enough to clear their mounting slots and lift the fan out.



## Replacement

1. With the air flow arrow pointing toward the rear of the machine and the wires to the bottom, place the fan into its mounted position. Pull the shock mounts just enough to clear their mounting slots and move them into their mounted positions.
2. Carefully align the cards with the guide slots and install the card guide frame and three screws.
3. Install the battery.
4. Install the foam on the top of the fan.
5. Route the fan cable forward of the disk drive frame mounting support and connect the fan cable to the power supply connector (P26).
6. Do the front cover replacement procedure on page 3-3.
7. Do the top cover replacement procedure on page 3-2.
8. Set the power switches of the attached devices to On.
9. Set the power switch of the system unit to On.

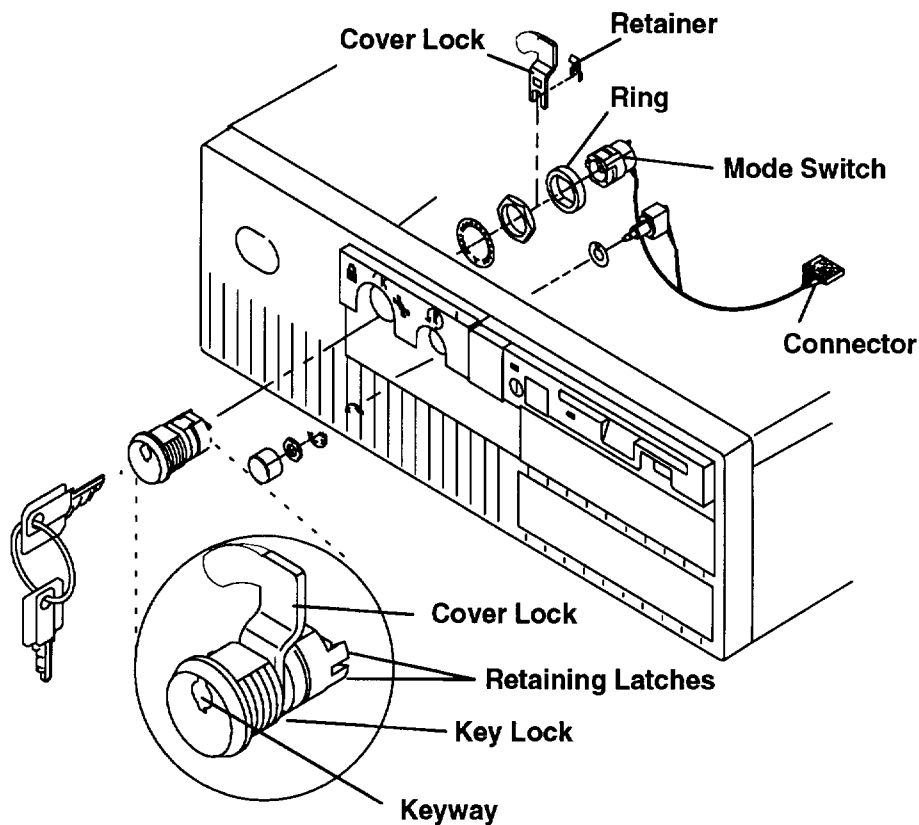
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## Key Lock

### Removal

1. Set the power switches of the attached devices to Off.
2. Set the power switch of the system unit to Off.
3. Do the top cover removal procedure on page 3-2.
4. Do the front cover removal procedure on page 3-3.
5. Set the key mode switch to the Normal position.
6. Push the ring toward the front of the machine until it uncovers the retaining latches of the key mode switch.
7. Pull the key mode switch off.
8. Note the position of the retainer and pull the cover lock (cam) straight up. (It may be necessary to use pliers.)
9. Remove the nut, lock washer, and the key lock.

**Note:** Ensure that the key in the new key mode switch has been turned fully counterclockwise and that the retainer is back in its original position.



### Replacement

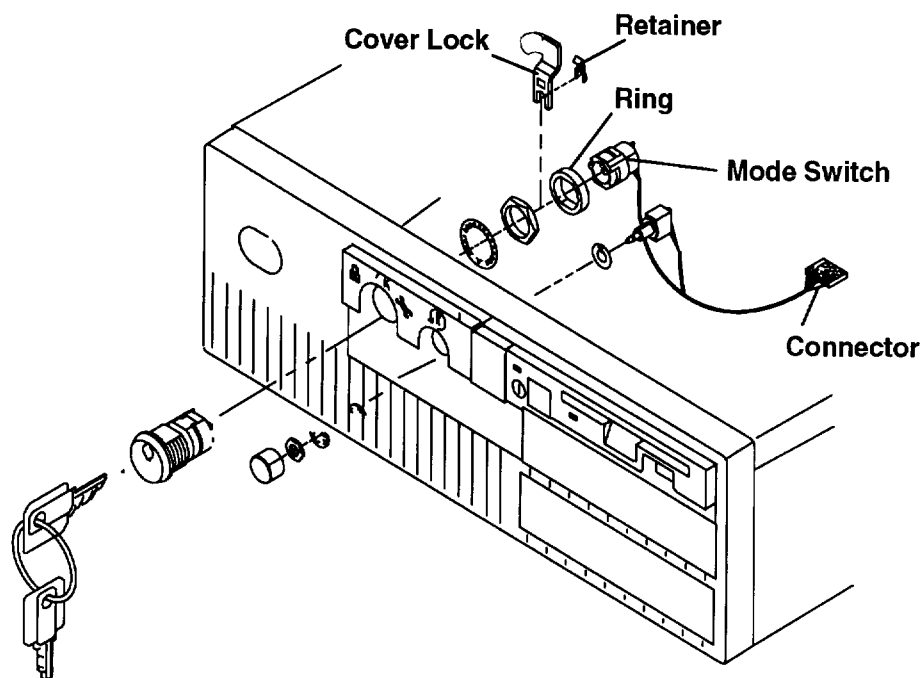
Replace in reverse order.

---

## Reset Switch

### Removal

1. Set the power switches of the attached devices to Off.
2. Set the power switch of the system unit to Off.
3. Do the top cover removal procedure on page 3-2.
4. Do the front cover removal procedure on page 3-3.
5. Pull the locking ring forward and then pull the key mode switch off.
6. Remove the pushbutton.
7. With a nut driver, remove the nut and the pushbutton switch assembly.



### Replacement

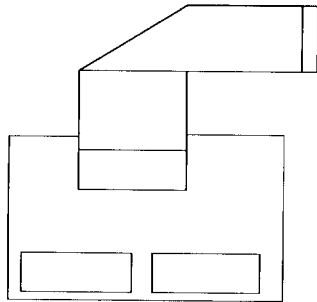
Replace in reverse order.

---

## Serial Port

### Removal

8. Set the power switches of the attached devices to Off.
9. Set the power switch of the system unit to Off.
10. Disconnect the power cable.
11. Do the "Top Cover" removal procedure on page 3-2.
12. Do the "Power Supply" removal procedure on page 3-6.
13. Disconnect the ribbon cable from the planar at J16.
14. Remove the four standoff screws at the rear of the system unit and lift out the hard card.



### Replacement

1. Position the hard card into place and install it using the four standoff screws.
2. Connect the ribbon cable to the planar at J16.
3. Do the "Power Supply" replacement procedure on page 3-6.
4. Do the "Top Cover" replacement procedure on page 3-2.
5. Connect the power cable.
6. Set the power switches of the attached devices to On.
7. Set the power switch of the system unit to On.



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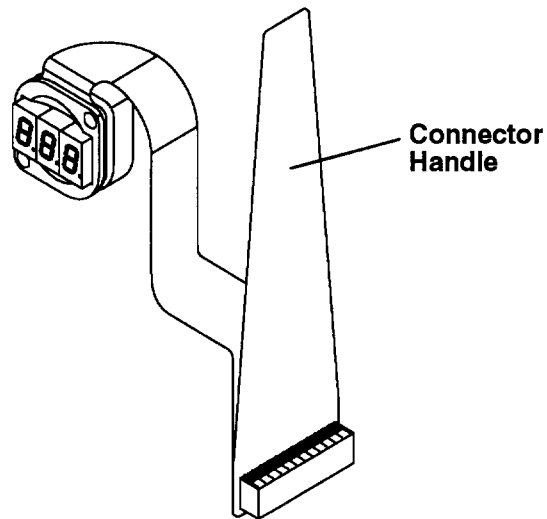
## Three-Digit Display

### Removal

8. Set the power switches of the attached devices to Off.
9. Set the power switch of the system unit to Off and unplug the external power cable.
10. Do the top cover removal procedure on page 3-2.
11. Do the "Card Guide Frame" removal procedure on page 3-27.
12. To remove the three-digit display from the card guide, push the back of the display while twisting and pulling the display from the front.

### Replacement

1. While aligning the flex-circuit cable in its plastic guide shield, twist and push the three-digit display into the card guide frame.
2. Do the card guide frame replacement procedure on page 3-27.
3. Do the top cover replacement procedure on page 3-2.
4. Set the power switches of the attached devices to On.
5. Set the power switch of the system unit to On and plug in the external power cable.



---

## Toroids

When an 8508 display is connected to a Grayscale Graphics Display Adapter (Type 1 – 2), two toroids must be placed at the system end of the signal cable. The toroids must be placed 25 mm to 50 mm (1 to 2 inches) from the connector. Each toroid comes in a plastic bag with a cable tie; use two toroids per cable. Use the cable ties to secure the toroids to the cable, as shown in the illustration.

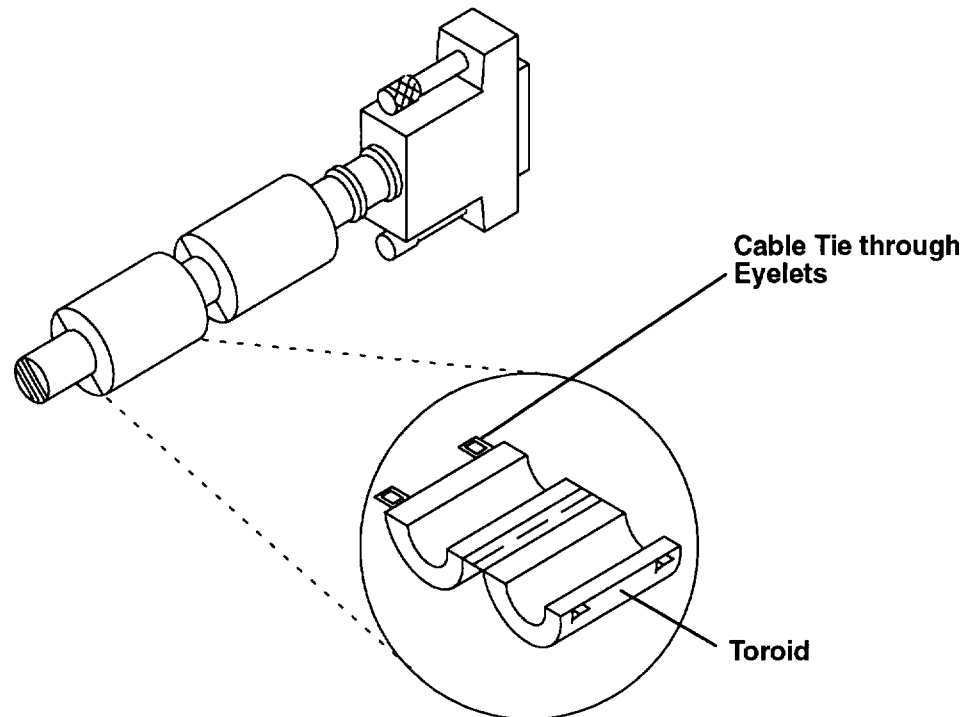
## Removal

1. Set the power switches on all attached devices to Off.
2. Set the power switch on the system unit to Off and unplug the external power cable.
3. Unplug the external power cables to the attached devices.
4. Disconnect the device signal cable from the adapter.
5. Remove the toroid from the connector.

## Replacement

1. Clamp the toroid around the cable 25 mm to 50 mm (1 to 2 inches) from the system unit end of the connector.
2. Place the cable tie through the two eyelets on the toroid and around the cable. The cable tie should be tight enough to keep the toroid from moving on the cable.

Replace the remainder in the reverse order of the removal procedures.



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# Battery

## Removal

For a translation of the following notices, see *System Unit Safety Information*, Order Number SA23-2652.

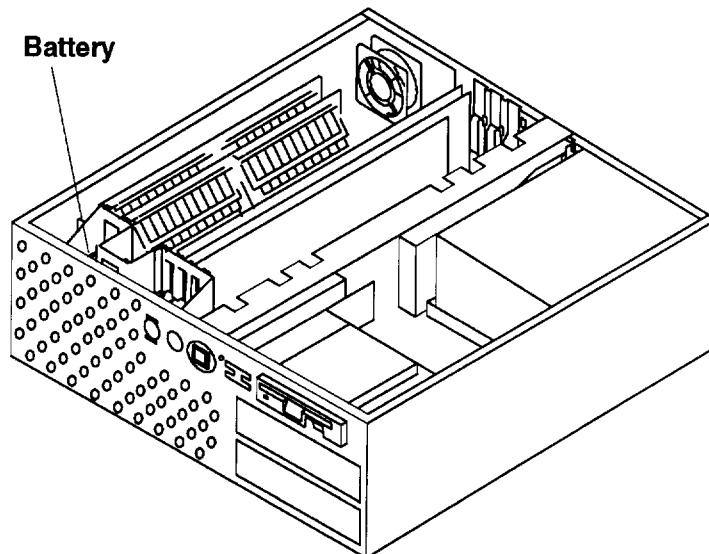
**CAUTION:**

**A lithium battery can cause fire, explosion, or a severe burn. Do not recharge, disassemble, heat above 100°C (212°F), solder directly to the cell, incinerate, or expose cell contents to water. Keep away from children. Replace only with the part number specified for your system. Use of another battery may present a risk of fire or explosion.**

**The battery connector is polarized; do not attempt to reverse the polarity.**

**Dispose of the battery according to local regulations.**

1. Set the power switches of the attached devices to Off.
2. Set the power switch of the system unit to Off.
3. Do the top cover removal procedure on page 3-2.
4. Do the front cover removal procedure on page 3-3.
5. Disconnect the battery connector from the planar and remove the battery from the card guide frame.



## Replacement

**Note:** Be sure to tell the customer that time and date may need to be reset after battery replacement.

Replace in the reverse order.



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# Chapter 4. System Installation

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## Step 1. Inventory

<b>Documentation</b>	
<input type="checkbox"/>	The <i>About Your Machine</i> document (In the plastic bag on the outside of the box)
<input type="checkbox"/>	<i>Operator Publications</i> –7030 Models 3xx Operator Guide –AIX Version 4.1 Getting Started –AIX Version 4.1 System User's Guide: Operating System and Devices.
<input type="checkbox"/>	<i>Service Publications</i> –POWERstation and POWERserver Common Diagnostics Information Manual –7030 Models 3xx Service Guide (this book).
<b>Miscellaneous Hardware and Diskettes</b>	
<input type="checkbox"/>	Diagnostic removable media
<input type="checkbox"/>	Cable labeling kit
<input type="checkbox"/>	System unit keys
<input type="checkbox"/>	Keyboard
<input type="checkbox"/>	Microcode diskettes (quantity shipped may vary)
<input type="checkbox"/>	Wrap plugs and container (quantity shipped may vary)
<input type="checkbox"/>	System unit power cable
<b>Optional Items (Check off if present)</b>	
<input type="checkbox"/>	Mouse

---

## Step 2. Observe this Safety Notice during Installation

**Note:** For a translation of the following notices, see *System Unit Safety Information*, Order 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.**

### **DANGER**

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

---

## Step 3. Checking Customer Outlets

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

**CAUTION:**

**Do not touch the receptacle or the receptacle faceplate with anything other than your test probes before you have met the requirement in step 8.**

1. Have the customer locate and turn off the branch circuit CB (circuit breaker). (Attach tag S229-0237, which reads "Do Not Operate.")

**Note:** All measurements are made with the receptacle faceplate in its normal installed position.

2. Some receptacles are enclosed in metal housings. On receptacles of this type, perform the following steps:
  - a. Check for less than 1 volt from the receptacle case to any grounded metal structure in the building, such as a raised floor metal structure, water pipe, building steel, or similar structure.
  - b. Check for less than 1 volt from receptacle ground pin to a grounded point in the building.

**Note:** If the receptacle case or faceplate is painted, be sure the probe tip penetrates the paint and makes good electrical contact with the metal.

- c. Check the resistance from ground pin of the receptacle to the receptacle case. Check resistance from ground pin to building ground. The reading should be less than 1.0 ohm, which indicates the presence of a continuous grounding conductor.
3. If any of the three checks made in step 2 are not correct, ask the customer to remove the power from the branch circuit and make the wiring corrections; then check the receptacle again.

**Note:** Do not use the digital multimeter to measure grounding resistance.

4. Check for infinite resistance between the ground pin of the receptacle and each of the phase pins. This is a check for a wiring short to ground or a wiring reversal.
5. Check for infinite resistance between phase pins. This is a check for a wiring short.

**CAUTION:**

**If the reading is other than infinity, do not proceed. Have the customer make necessary wiring corrections before continuing. Do not turn on the branch circuit CB until all the above steps are satisfactorily completed.**

6. Have the customer turn on the branch circuit CB. Measure for appropriate voltages between phases. If no voltage is present on the receptacle case or grounded pin, the receptacle is safe to touch.
7. With an appropriate meter, verify that the voltage at the outlet is correct.
8. Verify that the grounding impedance is correct by using the ECOS 1020, 1023, B7106, C7106, or an appropriately approved ground impedance tester.

**Note:** Do not use the 120-volt convenience outlets inside a machine to power the tester.

---

## Step 4. Setting Up the System Unit

1. Be sure the power cable on the system unit is unplugged and the power switch is set to the Off position.
2. Remove the packing material from all of the media devices installed in the front panel.
3. Remove the top cover.
4. Look at the memory cards, adapters, and internally installed drives to be sure they are not loose and are in their proper positions.
5. Ensure that the cards are completely seated in the connectors by pushing down on each card.
6. Fill out the "SCSI Device Address Record" in Appendix A of this book.
7. Ensure that the SCSI terminator is installed.
8. Install the top cover.

For instructions on the foot position, refer to "Changing the System Unit Base" in Chapter 7 of the *7030 Models 3xx Operator Guide*

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## Step 5. Set Up Each Device Being Attached

**Note:** During the setup of each device, connect only the device end of the signal cable. Do *not* connect the device signal cables to the system unit now.

Do the setup instructions provided in the documentation with each device being attached to this system unit; then return to step 6 of these instructions.

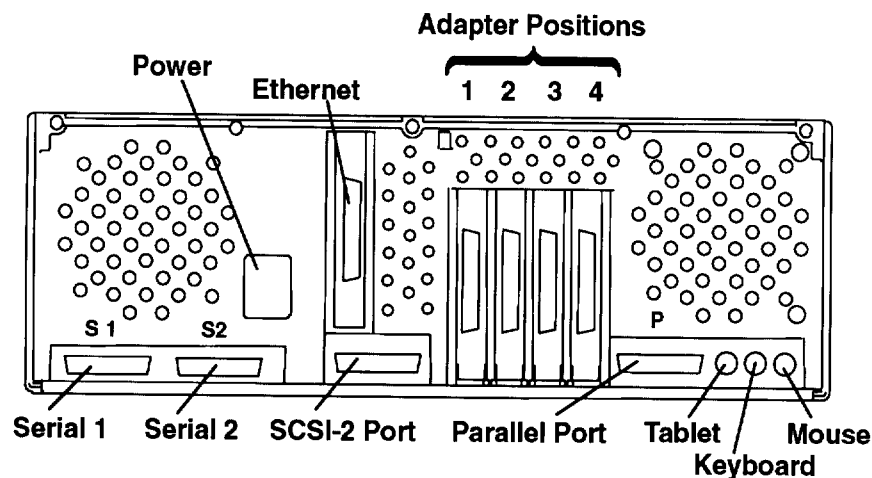


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## Step 6. Connecting Devices to Standard I/O Ports

Using the customer planning information, Chapter 3 of *7030 Models 3xx Operator Guide*, or other information supplied by the customer, connect the cables to the standard I/O ports. Start at the left connector and move to the right to make cabling easier.

As needed, use the cable labels included in the ship group to label the cables. For additional information about labeling the cables, see Chapter 10 of *POWERstation and POWERserver Common Diagnostics Information Manual*.



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## Step 7. Connecting Devices to the Adapters

Refer to the "About Your Machine" document to determine which adapters are installed.

1. Using the customer planning information, Chapter 3 of *7030 Models 3xx Operator Guide* or other information supplied by the customer, connect the cables to the adapter connectors. Start at the left connector and move to the right to make cabling easier.
2. Record the SCSI addresses of the devices attached to the SCSI I/O controllers in Appendix A of this book. If needed, use the customer planning information, Chapter 3 of *7030 Models 3xx Operator Guide* Appendix A of this book, or other information supplied by the customer to determine the SCSI addresses.
3. As needed, use the cable labels included in the ship group to label the cables. For additional information about labeling the cables, see Chapter 10 of *POWERstation and POWERserver Common Diagnostics Information Manual*.

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## Step 8. Arranging the System Unit and Devices

**Note:** If you are attaching a 4869 external 5.25-inch diskette drive, do not place it closer than 155 mm (6 inches) to any display.

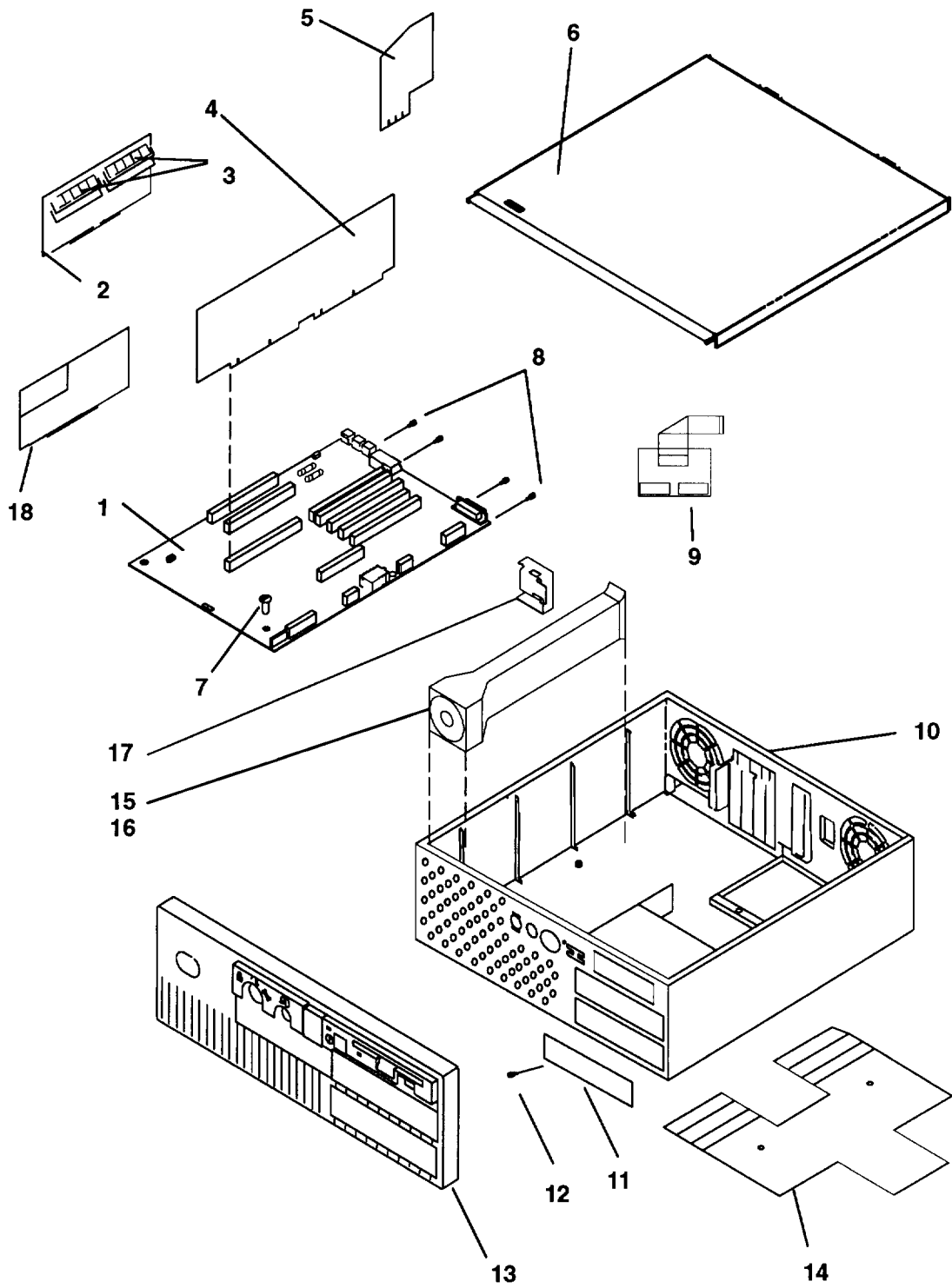
If you are attaching a -48V dc power supply, refer to the instructions included in the -48V dc power cord package.

1. Connect the system unit power cable to the system unit (do not plug it into the outlet at this time).
2. Arrange the cables at the back of the system unit.
3. Using the customer's planning information, arrange the system unit and devices.
4. Go to Chapter 5 of *7030 Models 300 Series Operator Guide* to check out the system.

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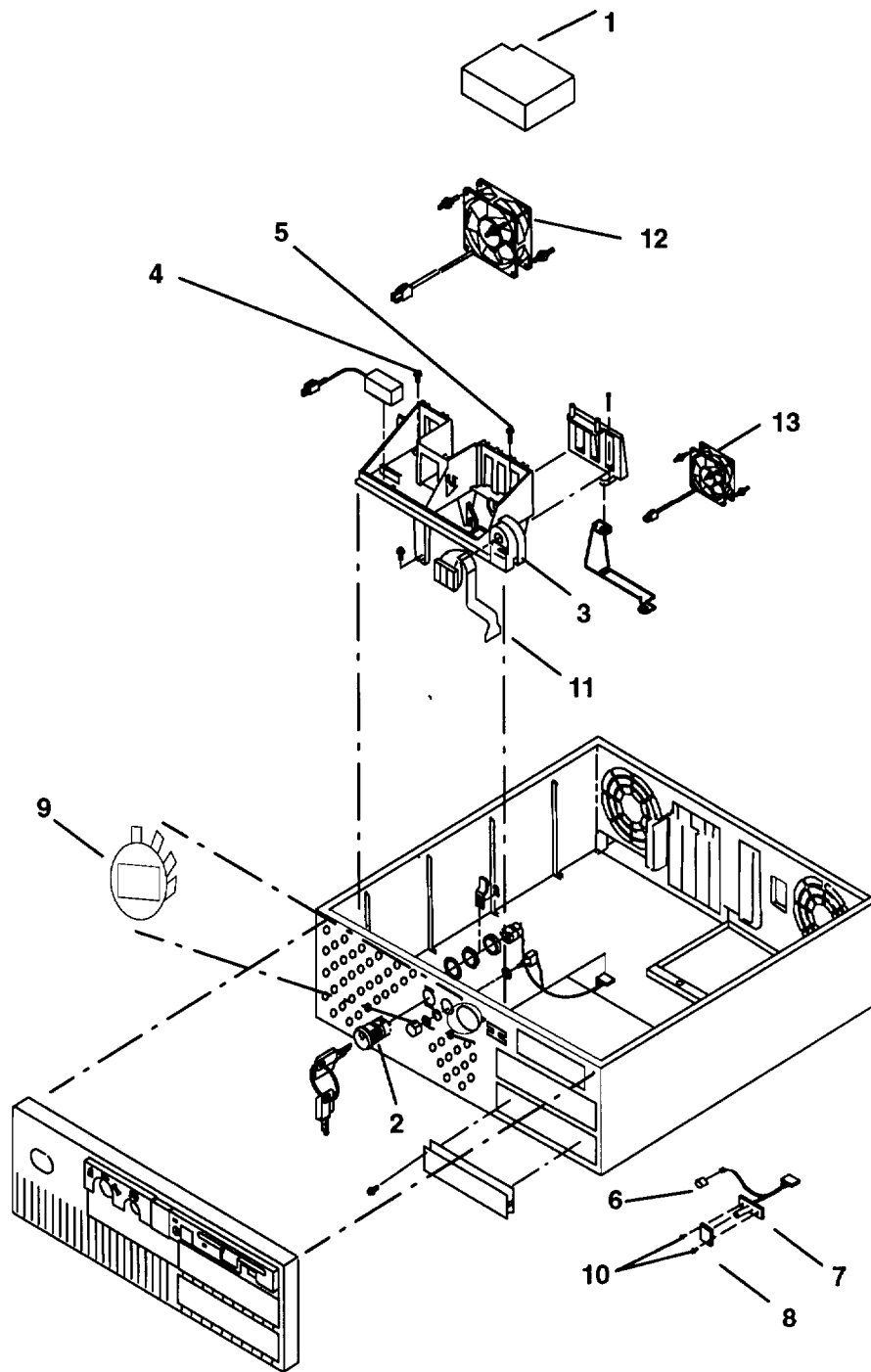
# Chapter 5. Parts Information

## Covers and Electronics



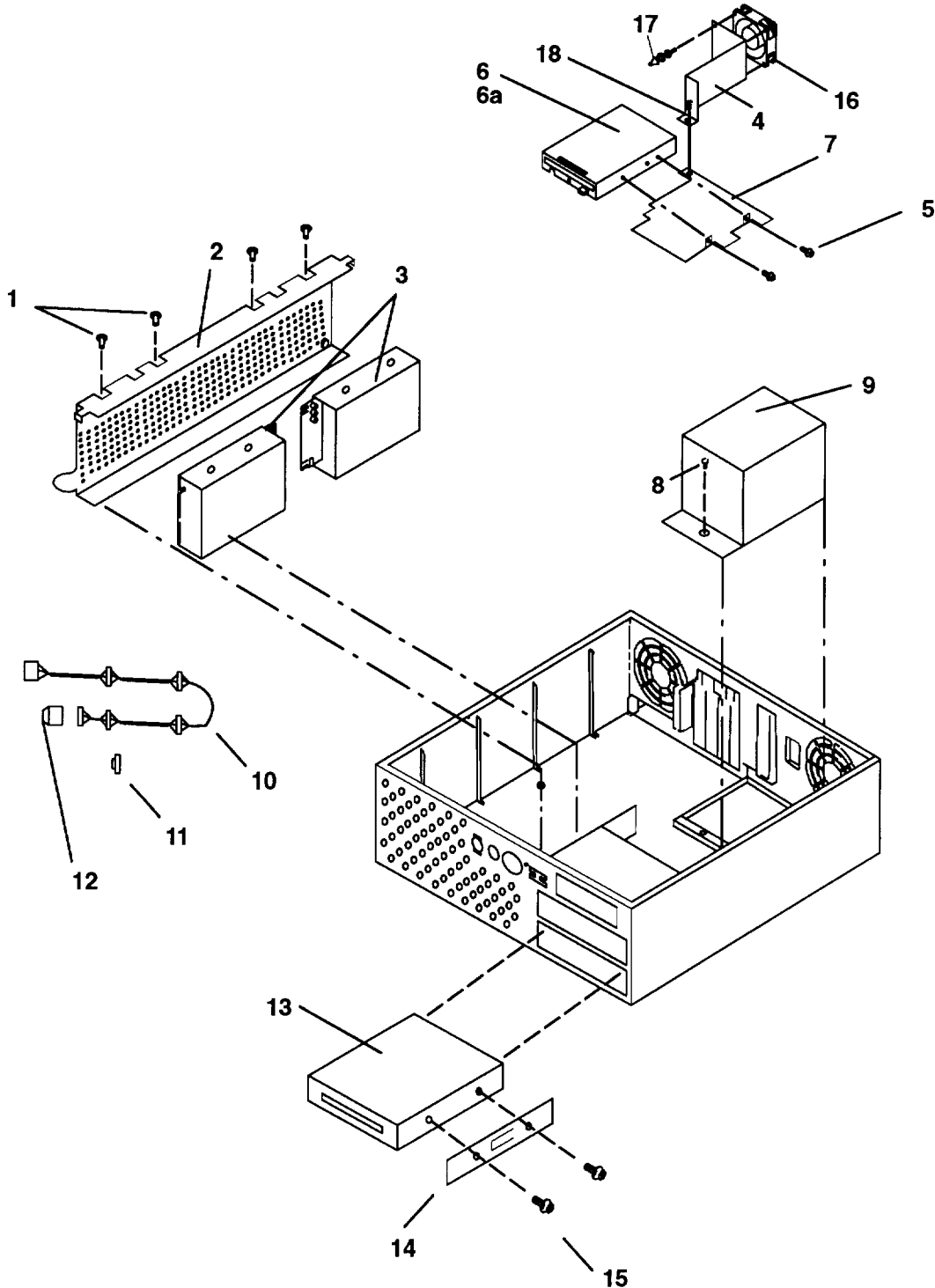
Index Number	Part Number	Units per Asm	Description
1	52G4325	1	Planar
2	See note	1	Memory card (without SIMMs)
3	See note	1	SIMMs
4	See note	1	CPU card
5	43G0382	1	Riser card, Ethernet thick/thin
5	00G1295	1	Fuse, 1 amp (on Ethernet thick/thin)
5	00G1276	1	Riser card, Ethernet twisted-pair
6	52G4904	1	Cover, top assembly
7	00G1268	8	Screw, I/O planar (M4x7)
8	62X0388	8	Screw, standoff
9	88G3623	1	Serial port
10	88G4035	1	Base
11	88G3782	0-2	Blank media bezel
12	00G1268	0-2	Screw, blank media bezel
13	51G9519	1	Front bezel
14	52G4852	1	Foot assembly (with thumb screws)
15	11H3973	1	Duct (Model 3CT), CPU cooling
16	11H3974	1	Fan (Model 3CT)
17	11H3972	1	Bracket (Model 3CT), CPU card support
18	See Note	1	Voltage regulator card (Model 3CT)
<p><b>Note:</b> See Chapter 3 in the <i>POWERstation and POWERserver Common Diagnostics Information Manual</i>.</p>			

# Front Card Guide



Index Number	Part Number	Units per Asm	Description
1	88G3979	1	Foam, fan
2	88G3961	1	Key mode and IPL switch assembly – locking; includes cable and key lock
2	00G1924	1	Key mode and IPL switch assembly – nonlocking; includes cable and key lock
3	88G3805	1	Frame, card guide
4	00G1269	2	Screw, card guide frame (M4x10)
5	00G1270	1	Screw, card guide frame (M4x17)
6	52G3964	1	Holder, LED power switch
7	52G4891	1	Power switch assembly
8	88G3991	1	Power button
9	88G3976	1	LED shield
10	1621170	2	Screw, power switch (M3x6)
11	00G2230	1	Display, 3-digit (yellow)
12	11H3975	1	Fan, rear (Model 3CT)
13	11H3574	1	Fan, front (Model 3CT)

# Drives and Power



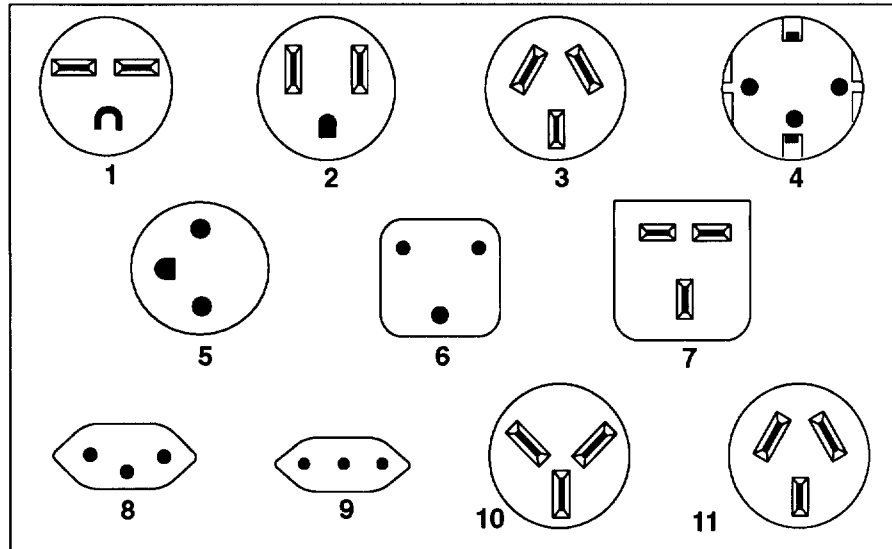


Index Number	Part Number	Units	Description
1	1147429	4-8	Screw, disk drive (6-32 hex head)
2	52G4906	1	Frame, disk drive
3	See note	1	Drive assembly, disk
4	88G3570	0-1	Bracket, fan
5	1621170	4	Screw, diskette drive (M3x6)
6	See note	1	Drive assembly, 3.5-inch diskette
6a	88G4766	1	Power cable, diskette drive
7	88G3804	1	Plate, 3.5-inch diskette drive assembly
8	00G1270	1	Screw, power supply assembly (M4x17)
9	52G4764	1	Power supply assembly, (275 watts)
10	52G4850	1	Internal SCSI cable
11	92F0324	1-4	Interposer/converter (68 pin to 50 pin)
12	88G3977	1	Terminator, 16 bit
13	See note	0-2	Drive assembly, media
14	88G3807	0-4	Rails, media
15	1621285	0-8	Screws, media rails (M3x6 flat head)
16	88G3806	0-1	Fan, 60 mm, DASD (optional)
17	81F7977	0-4	Shock mount, fan
18	00G1268	1	Screw, diskette plate (M4x7)

Note: See Chapter 9 in the *POWERstation and POWERserver Common Diagnostics Information Manual*.

## Power Cables

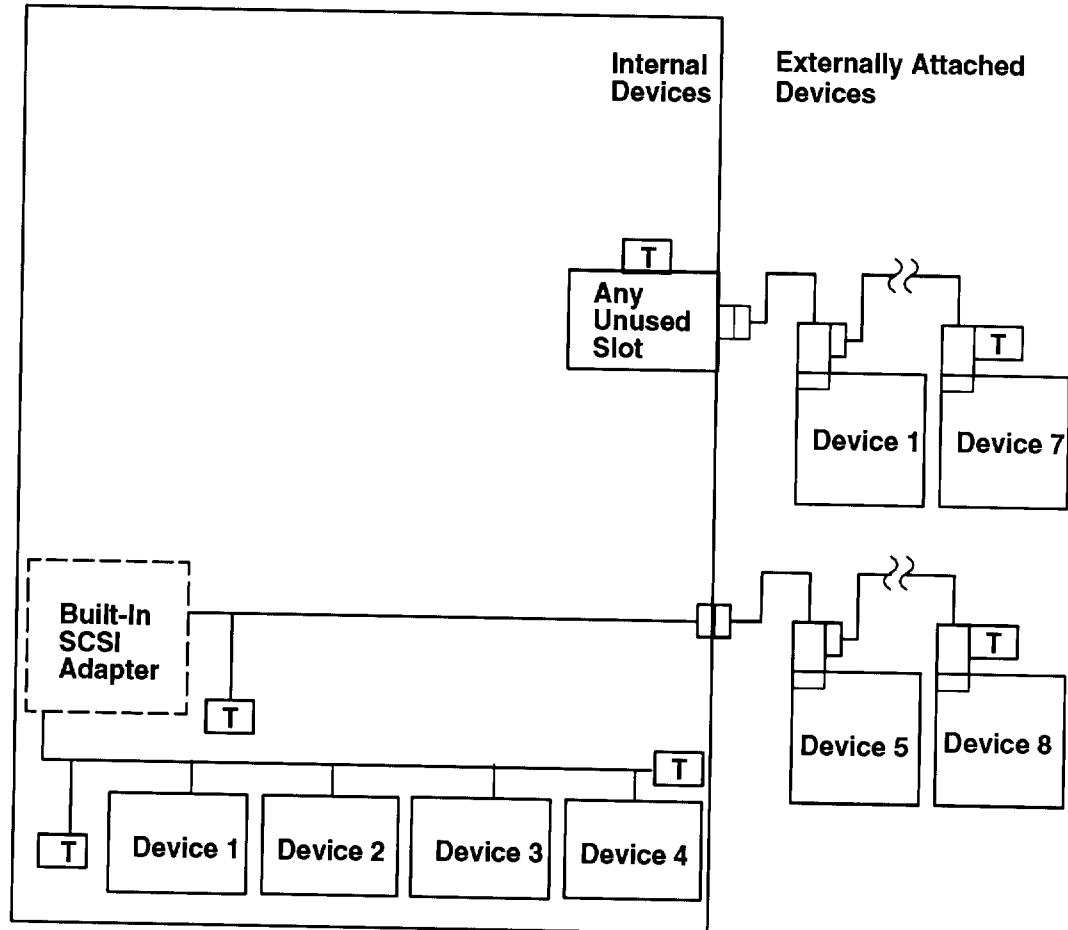
**Note:** If you should need a different power cable, use this figure and the following table to assist you when ordering.



Index	Part Number	Country
1	1838574	Bahamas, Barbados, Bolivia, Brazil, Canada, Costa Rica, Dominican Republic, El Salvador, Ecuador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Japan, Netherlands Antilles, Panama, Peru, Philippines, Taiwan, Thailand, Trinidad, Tobago, U.S.A. (except Chicago), Venezuela
2	6952300	Bahamas, Barbados, Bermuda, Bolivia, Brazil, Canada, Cayman Islands, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Japan, Korea (South), Mexico, Netherlands Antilles, Nicaragua, Panama, Peru, Philippines, Puerto Rico, Saudi Arabia, Suriname, Trinidad, Taiwan, U.S.A. (except Chicago), Venezuela
2	62X1045	Chicago, U.S.A.
3	6952311	Argentina, Australia, New Zealand
4	13F9979	Abu Dhabi, Austria, Belgium, Bulgaria, Botswana, Egypt, Finland, France, Germany, Greece, Iceland, Indonesia, Korea (South), Lebanon, Luxembourg, Macau, Netherlands, Norway, Portugal, Saudi Arabia, Spain, Sudan, Sweden, Turkey, Yugoslavia
5	13F9997	Denmark
6	14F0015	Bangladesh, Burma, Pakistan, South Africa, Sri Lanka
7	14F0033	Bahrain, Bermuda, Brunei, Channel Islands, Cyprus, Ghana, Hong Kong, India, Iraq, Ireland, Jordan, Kenya, Kuwait, Malawi, Malaysia, Nigeria, Oman, People's Republic of China, Qatar, Sierra Leone, Singapore, Tanzania, Uganda, United Arab Emirates (Dubai), United Kingdom, Zambia
8	14F0051	Liechtenstein, Switzerland
9	14F0069	Chile, Ethiopia, Italy
10	14F0087	Israel
11	6952291	Paraguay, Colombia, Uruguay

# Appendix A. SCSI Device Address Record

## Internally Installed SCSI Device Record



**Note:** Refer to *POWERstation and POWERserver Common Diagnostics Information Manual* for addressing scheme.

- 1.. Internal SCSI devices:
  - Support all four devices as: all 8-bit, all 16-bit, or any combination of 8- or 16-bit.
  - To attach the 8-bit devices, a 16-bit to 8-bit convertor is required.
- 2.. External SCSI devices attached to the built-in SCSI adapter:
  - Support up to four external devices.
  - Support either all 8-bit or all 16-bit, but no combinations.
- 3.. T = Terminator

## Attached SCSI Device Record

Refer to the illustration and record the adapter slot number, the device type, and the SCSI address for each externally attached SCSI device.

**SCSI I/O Controller**  
Slot \_\_\_\_\_

**Note: Fill out a separate sheet for each SCSI I/O controller that has externally attached devices.**

Device \_\_\_\_\_  
Address \_\_\_\_\_

Device \_\_\_\_\_  
Address \_\_\_\_\_

Device \_\_\_\_\_  
Address \_\_\_\_\_

Device \_\_\_\_\_  
Address \_\_\_\_\_

Device \_\_\_\_\_  
Address \_\_\_\_\_

Device \_\_\_\_\_  
Address \_\_\_\_\_

Device \_\_\_\_\_  
Address \_\_\_\_\_

Device \_\_\_\_\_  
Address \_\_\_\_\_

# Attached SCSI Device Record

Record the adapter slot number, the device type, and the SCSI address for each externally attached SCSI device.

**SCSI I/O Controller**  
Slot \_\_\_\_\_

**Note: Fill out a separate sheet for each SCSI I/O controller that has externally attached devices.**

Device \_\_\_\_\_  
Address \_\_\_\_\_

Device \_\_\_\_\_  
Address \_\_\_\_\_

Device \_\_\_\_\_  
Address \_\_\_\_\_

Device \_\_\_\_\_  
Address \_\_\_\_\_

Device \_\_\_\_\_  
Address \_\_\_\_\_

Device \_\_\_\_\_  
Address \_\_\_\_\_

Device \_\_\_\_\_  
Address \_\_\_\_\_

## Attached SCSI Device Record

Record the adapter slot number, the device type, and the SCSI address for each externally attached SCSI device.

**SCSI I/O Controller**  
Slot \_\_\_\_\_

**Note: Fill out a separate sheet for each SCSI I/O controller that has externally attached devices.**

Device \_\_\_\_\_  
Address \_\_\_\_\_

Device \_\_\_\_\_  
Address \_\_\_\_\_

Device \_\_\_\_\_  
Address \_\_\_\_\_

Device \_\_\_\_\_  
Address \_\_\_\_\_

Device \_\_\_\_\_  
Address \_\_\_\_\_

Device \_\_\_\_\_  
Address \_\_\_\_\_

Device \_\_\_\_\_  
Address \_\_\_\_\_

---

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