RS/6000 7013 500 Series

Installation and Service Guide

First Edition (November 1996)

This edition notice applies to the *7013 500 Series Installation and Service Guide*. This edition obsoletes all previous editions.

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Documentation owner: Gary Hiemke

Table of Contents

Communications Statements

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

Federal Communications Commission (FCC) Statement

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

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

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

United Kingdom Telecommunications Safety Requirements

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

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

Avis de conformité aux normes du ministère des Communications du Canada

Cet appareil numérique de la classe A respecte toutes les exigences du Réglement sur le matériel brouilleur du Canada.

Canadian Department of Communications Compliance Statement

This Class A digital apparatus meets the requirements of the Canadian Interference-Causing Equipment Regulations.

International Electrotechnical Commission (IEC) Statement

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

European Union (EU) Statement

This product is in conformity with the protection requirements of EU 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.

This product has been tested and found to comply with the limits for Class A Information Technology Equipment according to CISPR 22 / European Standard EN 55022. The limits for Class A equipment were derived for commercial and industrial environments to provide reasonable protection against interference with licensed communication equipment.

Attention: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

電波障害自主規制　届出装置の記述

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

VCCI Statement

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

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

Radio Protection for Germany

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

Der Aussteller der Konformitätserklärung ist die IBM Germany.

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

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

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

Hinweis:

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

Safety Notices

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

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
3-4
3-43
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
3-4
3-49
3-54
4-2
4-3.

Laser Safety Information

> **Note:** The Optical Link Card (OLC) referred to in this information is part of the Serial Optic Channel Converter assembly.

This system contains a laser product called the Optical Link Card (OLC). In the U.S., the OLC is certified as a Class 1 laser product that conforms to the requirements contained in the Department of Health and Human Services (DHHS) regulation 21 CFR Subchapter J. Internationally, the OLC is certified as a Class 1 laser product that conforms to the requirements contained in the International Electrotechnical Commission (IEC) standard 825 (1984), the Verband Deutscher Elektrotechniker (VDE) standard 0837 (1986), and the CENELEC (European Committee for Electrotechnical Standardization) Harmonization Document HD 482 S1 (1988). The German testing institute VDE assigned a certificate of conformity to DIN IEC 825/VDE 0837/02.86 and CENELEC HD 482 S1/03.88; the certificate registration number is 3642.

In addition, Statens Provningsanstalt (Swedish National Testing Institute) tested and approved the OLC for use in Sweden as a Class 1 laser product and assigned the approval number SP LA 89:184. The CDRH certification label and the VDE certificate of conformity mark are located on the plastic retainer of the OLC product. Figure 1 shows the system Class 1 information label required by IEC 825.

Class 1 laser products are not considered to be hazardous. The OLC internally contains a gallium aluminum arsenide (GaAlAs) semiconductor laser diode emitting in the wavelength range of 770 to 800 nanometers. This laser diode is a Class 3B laser that is rated at 5.0 milliwatts. The design of the OLC is such that access to laser radiation above a Class 1 level during operation, user maintenance, or service conditions is prevented.

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CLASS 1 LASER PRODUCT
LASER KLASSE 1
LUOKAN 1 LASERLAITE
APPAREIL  A LASER DE CLASSE 1

TO IEC 825:1984/CENELEC HD 482 S1
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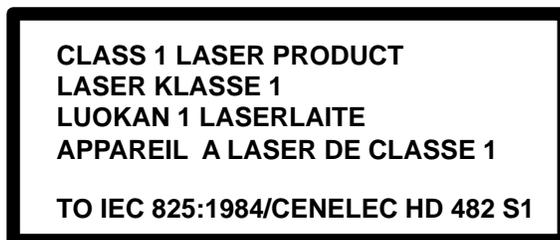
Figure 1.   Class 1 System Information Label Required by the IEC 825 Standard

The Optical Link Card (OLC) must only be connected to another OLC or a compatible laser product. Any compatible laser product must contain the open fiber link detection and laser control safety system used in OLC. This is a requirement for correct operation of the optical link. In addition, the OLC product is designed and certified for use in applications with point-to-point optical links only. Using this product in any other type of optical link configuration (for example, links containing optical splitters or star couplers) is considered as not using the product correctly and may require that the user certify the laser product again for conformance to the laser safety regulations.

About This Book

This book uses three-digit model numbers. You may, however, have other documentation that uses four-digit numbers. For example, the model 53H in this book may be referred to as a model 530H in other documentation. Both of these model numbers refer to the same system unit.

ISO 9000

ISO 9000 registered quality systems were used in the development and manufacturing of this product.

How to Use This Book

This book is used by the service technician to repair system failures. This book assumes that the service technician is trained on the 7013 system unit.

This book 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 For Micro Channel Bus Systems*.

Related Publications

The *POWERstation and POWERserver Common Diagnostics Information For Micro Channel Bus Systems*, order number SA23-2765, contains the maintenance information and procedures that are common to all systems. The information and procedures in this section apply to any system unit that uses the Diagnostic Programs.

Adapters, Devices, and Cable Information order number SA23–2764, contains reference information about adapters, devices, and cabling for the system units. This book also contains the removal and replacement procedures for the logic boards on the disk drives and 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 *7013 500 Series Operator Guide*, order number SA23-2621, provides information about the controls and features of the system unit.

The *AIX Version 3.2 Diskless Workstation Management Guide*, order number SC23-2433, contains information about diskless workstations.

The *AIX Version 4.1 Installation Guide*, order number SC23-2550, contains information about diskless workstations.

The *AIX Version 4.2 Installation Guide*, order number SC23-1924, contains information about diskless workstations.

Chapter 1. System Unit Description

System Unit Locations

Use the following views of the system unit to locate devices, options, controls, cable connectors, cards, planars, and other features.

Media Positions and Operator Panel

Back Cover

Position A (Optional)

Position B (Optional)

Position C (Optional) (CD-ROM Standard on Some Models)

Position D (3.5-Inch Diskette Drive)

Power Switch

Three-Digit Display

Key Mode Switch

Reset Button

Left Side Cover
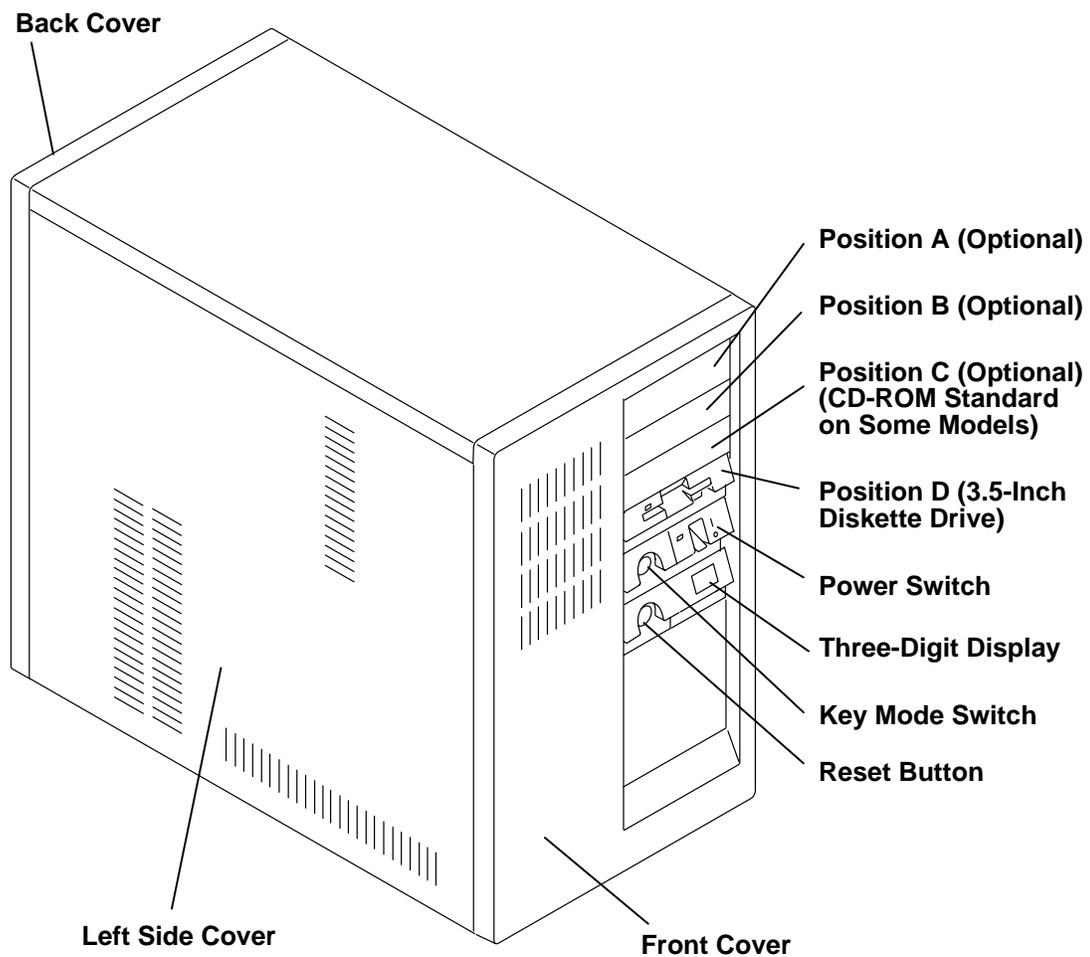
Front Cover

Inside View without Covers or Front Panel

All Except Models 55L and 595
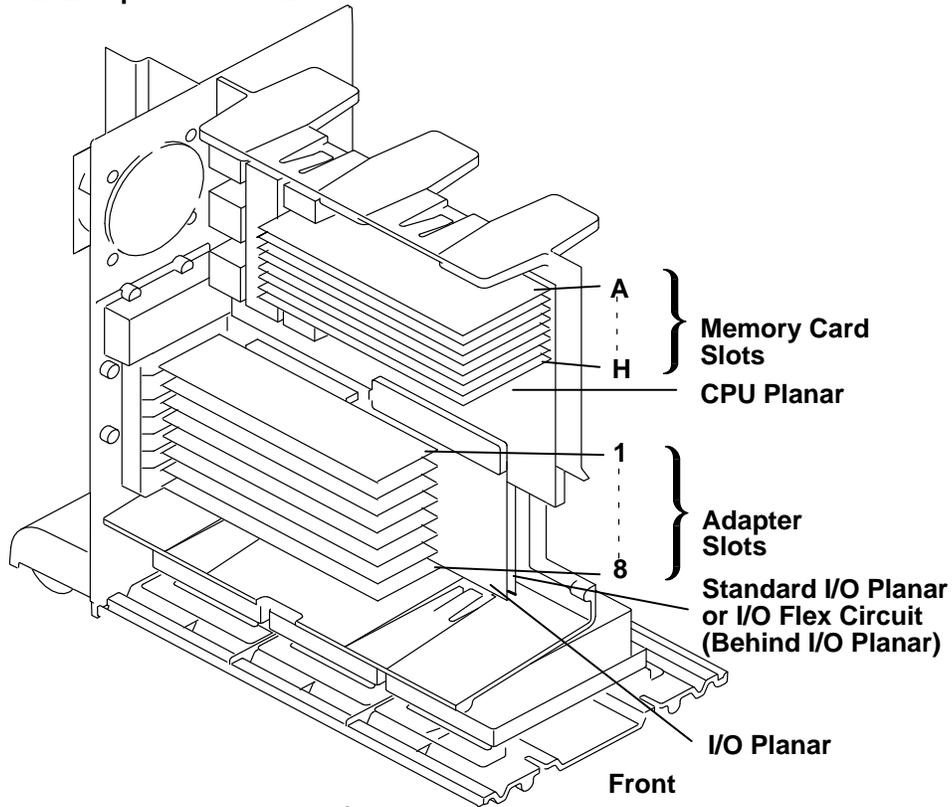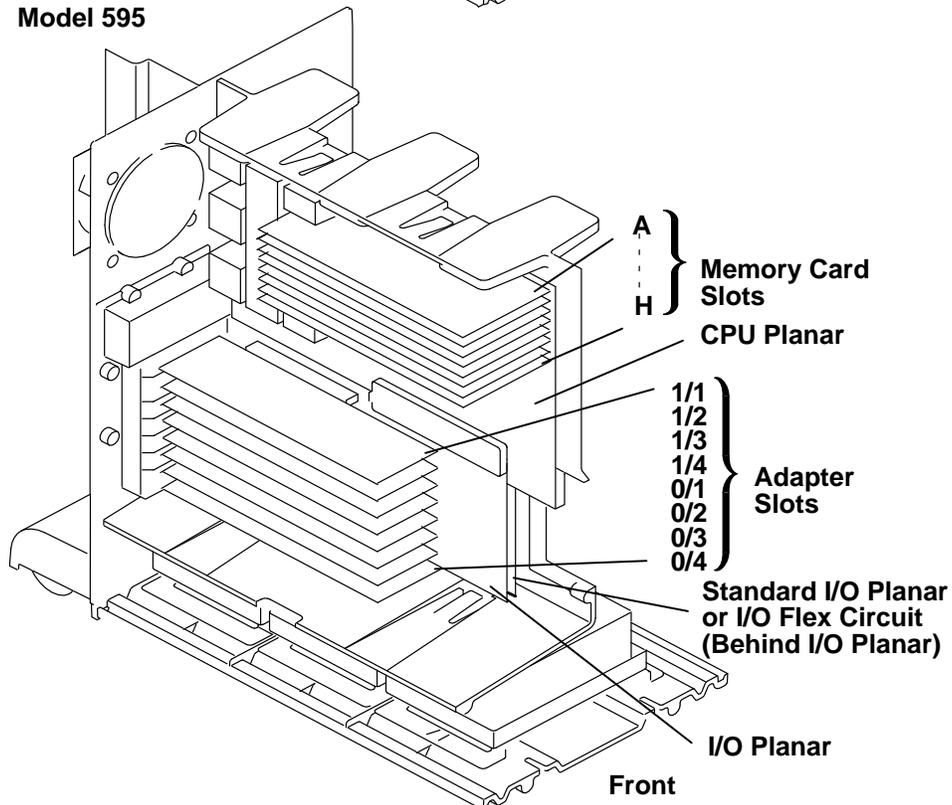
A
H
Memory Card Slots
CPU Planar
1
Adapter Slots
8
Standard I/O Planar or I/O Flex Circuit (Behind I/O Planar)
I/O Planar
Front

Model 595

A
H
Memory Card Slots
CPU Planar
1/1
1/2
1/3
1/4
0/1
0/2
0/3
0/4
Adapter Slots
Standard I/O Planar or I/O Flex Circuit (Behind I/O Planar)
I/O Planar
Front

The CPU planar for Models 520 and 570 has a different module arrangement from the other CPU planars. Models 520 and 570 memory cards are configured singularly in the CPU planar, and the memory size of the cards can vary.

Model 55L has a CPU card which is installed in a slot on the system planar. The memory cards for Model 55L also are configured in slots on the system planar, but are not required to be in pairs.

The memory cards for most other models are configured in pairs. Both of the paired cards must have the same amount of memory (MB), and be the same memory type (Sx). In models 58H, 590, 591, the first and second pairs (first quad) must be of the same capacity, and the third and fourth pairs (second quad) must be of the same capacity. The capacity of the first quad and the second quad can be the same, but it is not required. The paired memory cards are configured as follows:

- First pair in slots D and H

- Second pair in slots B and F (must match first pair)

- Third pair in slots C and G (if present in models 58H, 590, 591, and 595 it must also be configured with the fourth pair)

- Fourth pair in slots A and E (must match third pair)

Model 595 supports both S4.6 and S5 memory in any combination.

For information about the CPU planars, see the *POWERstation and POWERserver Common Diagnostics Information For Micro Channel Bus Systems*.

Attached Device Connectors

Model 595

External SCSI Device

SCSI Terminator

System Unit Power Cable Slot

Tablet (T)
Mouse (M)
Keyboard (K)

Serial Port 1 (S1)
Serial Port 2 (S2)
Parallel Port (P)

1/1
1/2
1/3
1/4
0/1
0/2
0/3
0/4

Adapter Slots

Back Panel (Cover Removed)

Models 570, 580, 58H, 590, 59H, 591

External SCSI
Device

SCSI Terminator

System Unit Power
Cable Slot

Tablet (T)

Mouse (M)

Keyboard (K)

Serial Port 1 (S1)

Serial Port 2 (S2)

Parallel Port (P)

Serial Optical Channel
Converter (Optional,
But Not on Models
590, 59H, 591)

1

8

Adapter
Slots

Back Panel
(Cover Removed)

Early Models

5.25-Inch External
Diskette Drive
(Optional)

Parallel Printer
Port Connector

Serial Port
Connectors
S1 and S2

Tablet (T)

Keyboard (K)

Mouse (M)

Serial Optical
Channel Converter
(Optional)

1

8

Adapter
Slots

Back Panel
(Cover Removed)

Model 55L

External SCSI
Device

SCSI Terminator

System Unit
Power
Cable Slot

Parallel Port (P)

Tablet (T)
Keyboard (K)
Mouse (M)

Serial Port 2 (S2)
Serial Port 1 (S1)
Ethernet (ET)

1

4

Adapter
Slots

Back Panel
(Cover Removed)

Front View without Covers

Full-Height Device (Optional)

3.5-Inch Diskette Drive

Fan Connector (Early Models)

Fan Connector (Models 570, 580, 58H, 590,59H, 595)

Half-Height Device (Optional)

Power Supply

Battery (Except Model 55L)

Fan

Front

Disk Drive Position E

Disk Drive Position F

Disk Drive Position G

Front Panel

**Full-Height
Option Device**

**Half-Height
Option Device
(CD-ROM Standard
on Model 55L)**

Operator Panel

3.5-Inch Diskette Drive Bezel

Operator Panel Bezel

CPU Planar (All Except Models 55L, 59H, 591, 595)
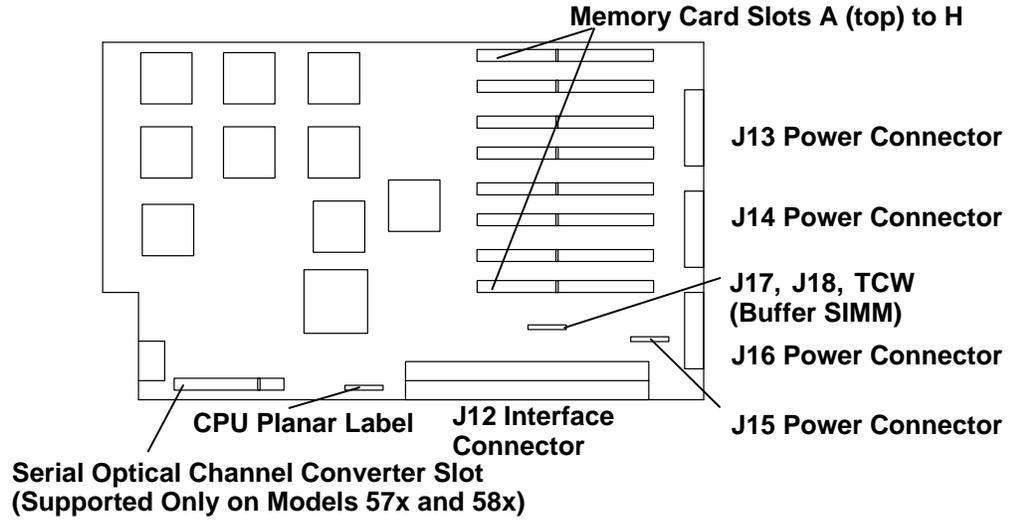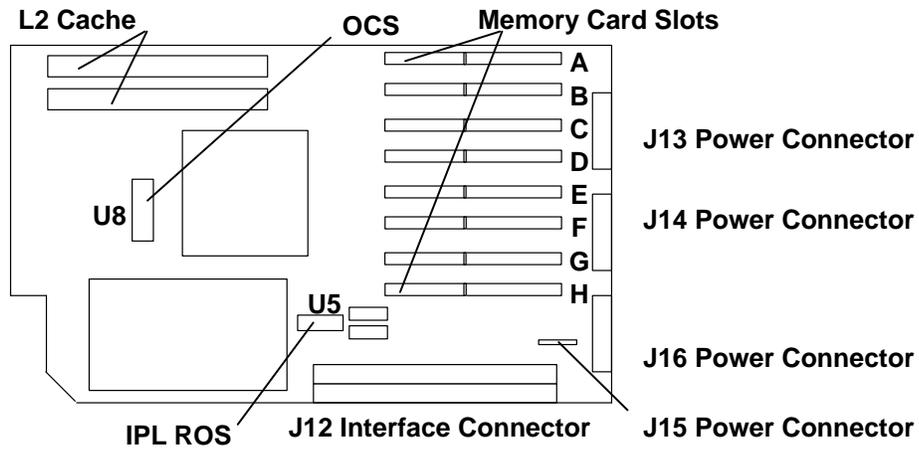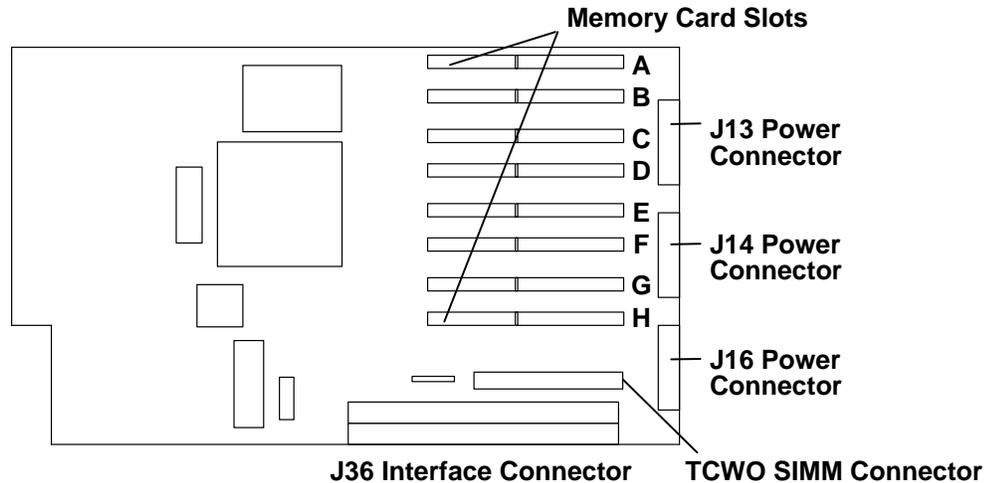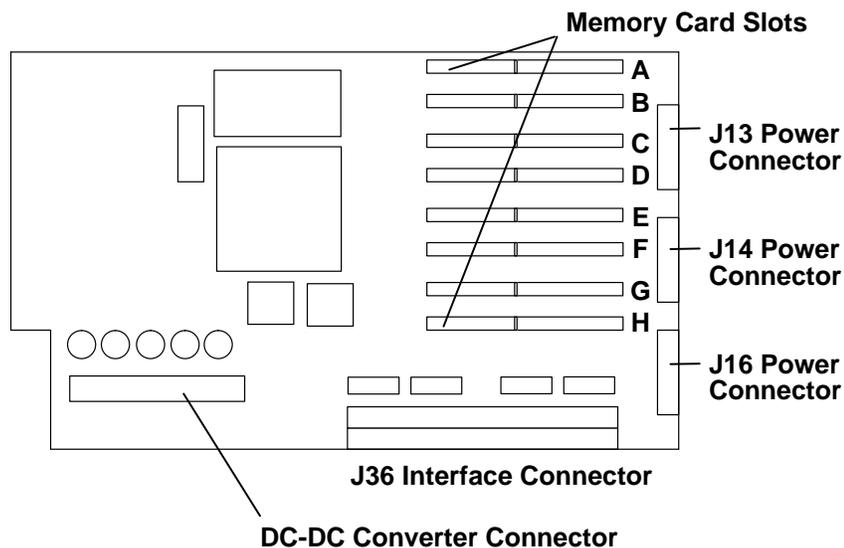
Memory Card Slots A (top) to H

J13 Power Connector

J14 Power Connector

J17, J18, TCW (Buffer SIMM)

J16 Power Connector

CPU Planar Label

J12 Interface Connector

J15 Power Connector

Serial Optical Channel Converter Slot (Supported Only on Models 57x and 58x)

CPU Planar (Model 59H)

L2 Cache

OCS

Memory Card Slots

A
B
C
D
E
F
G
H

J13 Power Connector

J14 Power Connector

U8

U5

J16 Power Connector

IPL ROS

J12 Interface Connector

J15 Power Connector

CPU Planar (Model 591)

Memory Card Slots

A
B
C
D
E
F
G
H

J13 Power Connector

J14 Power Connector

J16 Power Connector

J36 Interface Connector

TCWO SIMM Connector

CPU Planar (Model 595)

Memory Card Slots

A
B
C — **J13 Power Connector**
D
E
F — **J14 Power Connector**
G
H
— **J16 Power Connector**

J36 Interface Connector

DC-DC Converter Connector

The CPU planar for Models 520 and 570 has a different module arrangement from the other CPU planars. Models 520 and 570 memory cards are configured singularly in the CPU planar, and the memory size of the cards can vary.

Model 55L has a CPU card which is installed in a slot on the system planar. The memory cards for Model 55L are configured in slots on the system planar, but are not required to be in pairs.

The memory cards for most other models are configured in pairs. Both of the paired cards must have the same amount of memory (MB), and be the same memory type (Sx). In models 58H, 590, 591, the first and second pairs (first quad) must be of the same capacity, and the third and fourth pairs (second quad) must be of the same capacity. The cpaacity of the first quad and the second quad can be the same, but it is not required. The paired memory cards are configured as follows:

- First pair in slots D and H

- Second pair in slots B and F (must match first pair)

- Third pair in slots C and G (if present in models 58H, 590, 591, and 595 it must also be configured with the fourth pair)

- Fourth pair in slots A and E (must match third pair)

Model 595 supports both S4.6 and S5 memory in any combination.

For information about the CPU planars, see the *POWERstation and POWERserver Common Diagnostics Information For Micro Channel Bus Systems*.
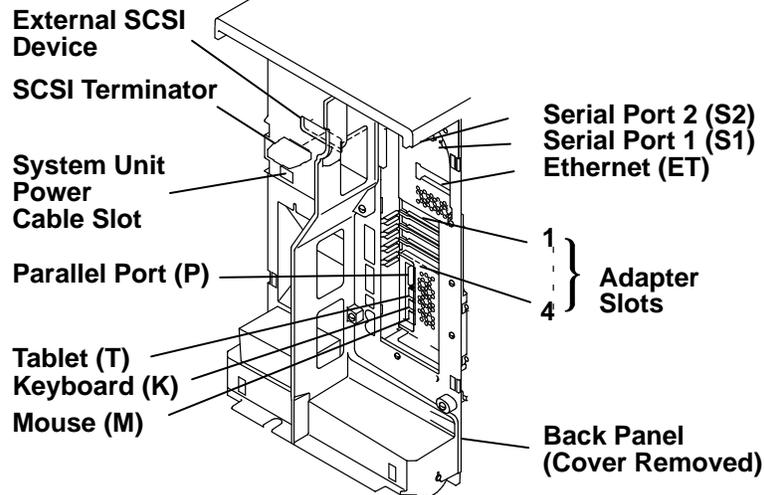
Serial Optical Channel Converter (Supported on Models 57x and 58x)

The Serial Optical Channel Converter provides two independent optical links for communication. A single fiber-optic cable connects to each port, and each cable consists of two fibers (transmit and receive). The cables can connect to another system or directly to an external high-bandwidth communications device. The system unit can have only one Serial Optical Channel Converter.
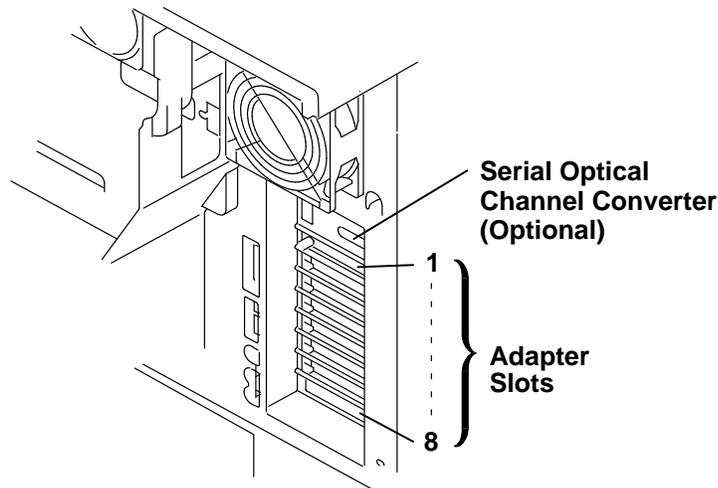
I/O Planar (All Except Model 55L and 595)

I/O Planar (Model 595)

J36 Interface Connector

Bus 1
- **1/1**
- **1/2**
- **1/3**
- **1/4**

Micro Channel Adapter Slots
- **1/4**
- **0/1**

Bus 0
- **0/2**
- **0/3**
- **0/4**

J3 16 bit Integrated SCSI Connector (Model 595 DASD)

J39 Operator Panel Connector

J40 Power Connector

J41 Power Connector

J37 Interface Connector

J59 Diskette Connector

J38 8 bit Integrated SCSI Connector (for media)

1/4
Ø
0/1

This Symbol On The I/O Slot Label Indicates That Multi-Card Adapters Cannot Span The Two Buses

Standard I/O Planar
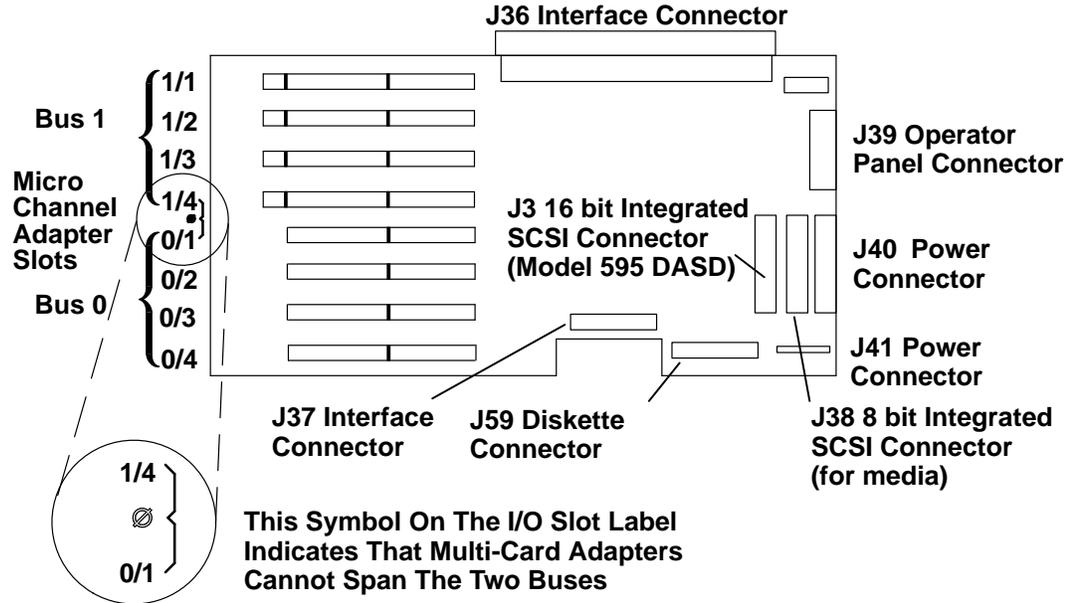
The standard I/O planar is located behind the I/O planar in early models.

Fuses on the planar are as follows:

- The F1 fuse is for the tablet and mouse.
- The F2 fuse is for the keyboard.

Jumpers on the planar are as follows:

- Jumper J56 from center to KEY (speaker in the keyboard).
- Jumper J58 (not present on some planars) from center to NC (3.5-inch diskette drive).

J56
KEY

J57 Interface Connector

Parallel Port

Serial Port 1
Serial Port 2
Tablet
Keyboard
Mouse

F1
F2

J58
NC

J59 Diskette Signal Connector
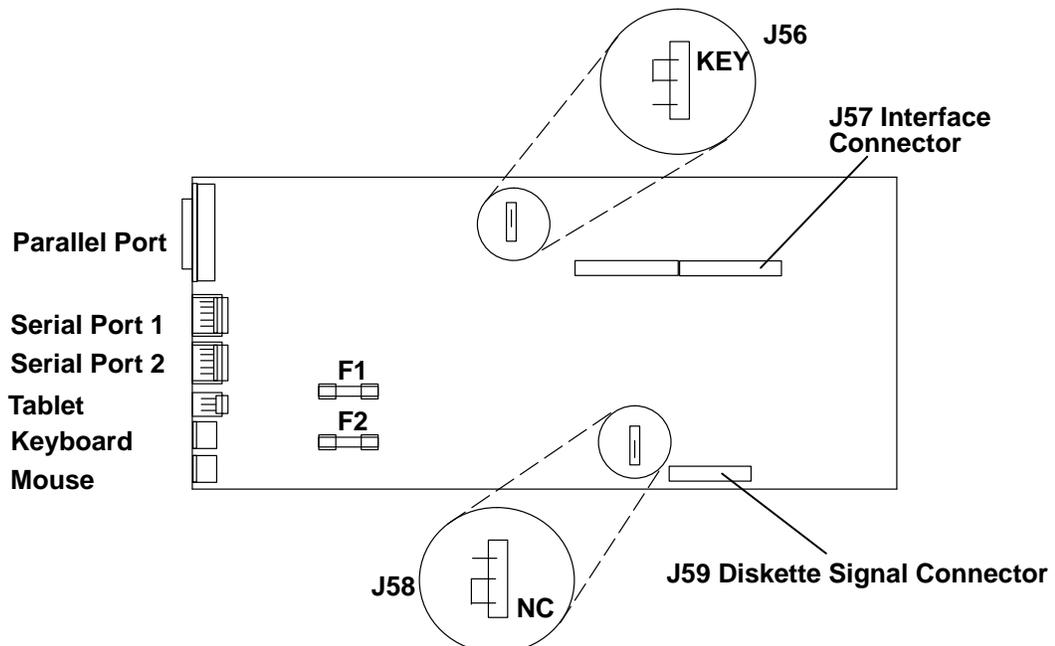
System Planar (Model 55L Only)

System Planar Connector Locations – Model 55L
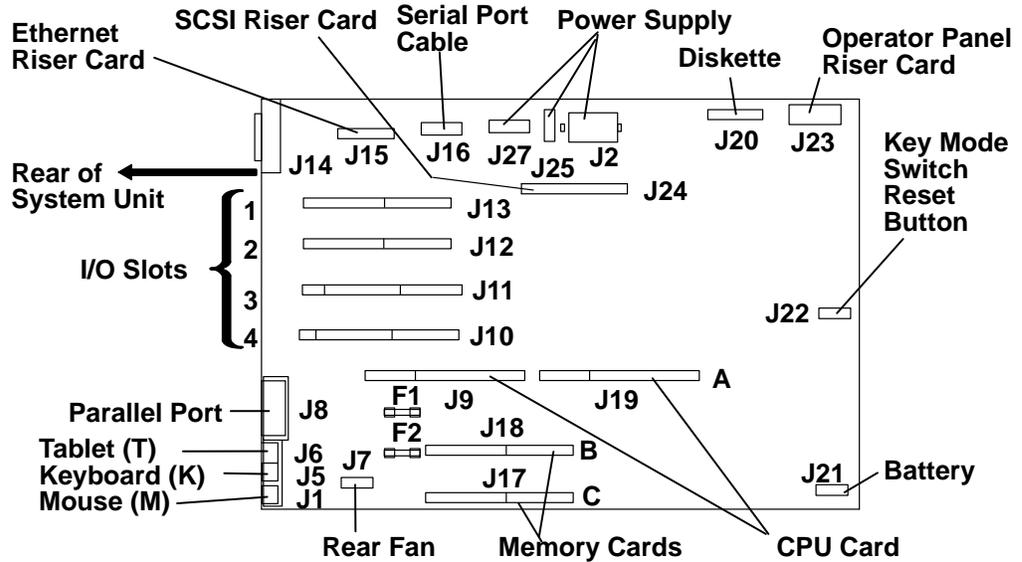
Standard I/O Flex Circuit

The standard I/O flex circuit is located behind the I/O planar on Models 570, 580, 58H, 590, 59H, 591, and 595.

There are no fuses in the standard I/O flex circuit. The circuit contains automatic current limiting protection.

Cable Routing

Signal Cable Connectors, Model 55L Only (Left Side)

Signal Cable Connectors, All Except Model 55L (Left Side)

SCSI Terminators (T)
(Later Models) (Early Models)

A ⎫
B ⎬ **Front Panel SCSI Devices**
C1 ⎭

C2 (Not Used) ⎫
⎬ **Front Panel Diskette (From Standard I/O)**
D ⎭

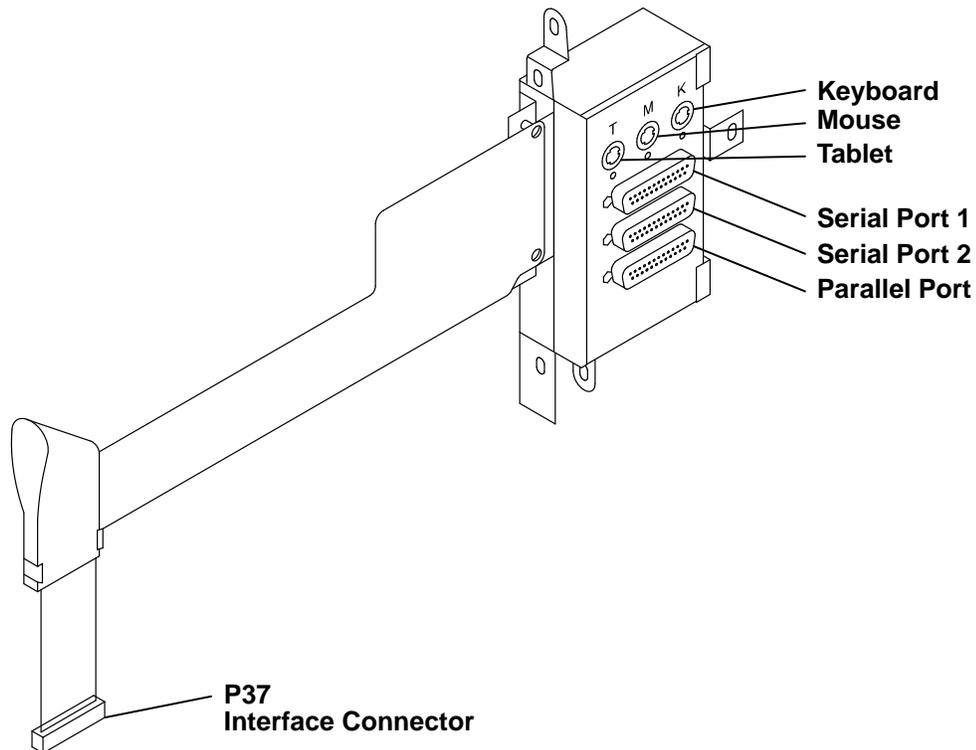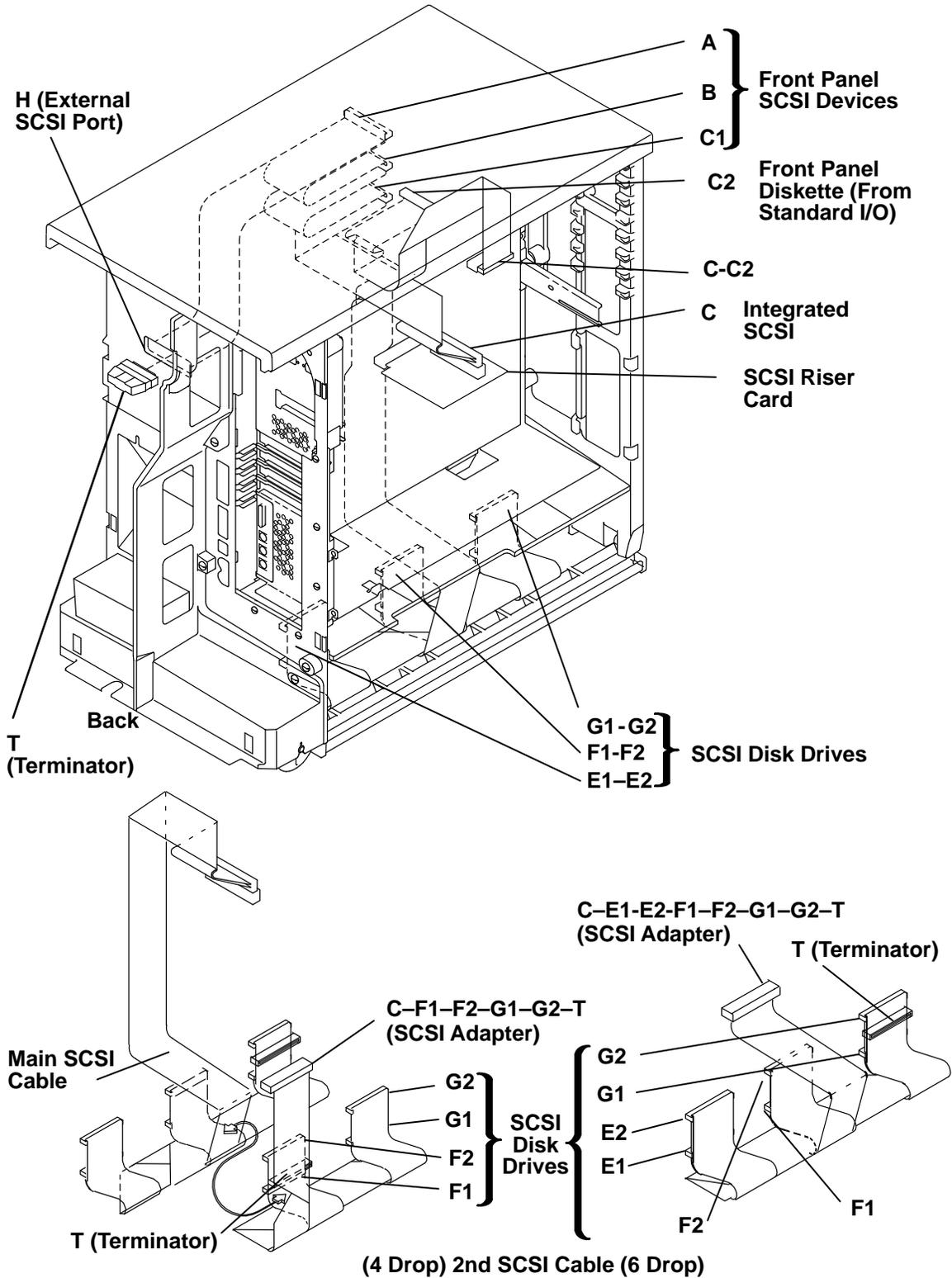**C–E1–E2–F1–F2–G1–G2–C1–B–A–T (Integrated SCSI, Model 570)**

C-C2-D (I/O Planar, Early Models or Standard I/O Flex, Models 580, 58H, 590, 59H, 591, 595)

C–E1–E2–F1–F2–G1–G2–C1–B–A–T (SCSI Adapter, Early Models)

G1-G2 ⎫
F1-F2 ⎬ **SCSI Disk Drives**
E1–E2 ⎭

Back

Integrated SCSI (Model 570)

C–E1-E2-F1–F2–G1–G2–T (SCSI Adapter) (Models 580, 58H, 590, 59H, 591, 595)

SCSI Adapter (Early Models)

C–F1–F2–G1–G2–T (SCSI Adapter)

Main SCSI Cable

G2 ⎫
G1 ⎬ **SCSI Disk Drives**
F2 ⎬
F1 ⎭

F2
F1
E2
E1

T (Terminator)

G2 G1

T (Terminator)

(4 Drop) 2nd SCSI Cable (6 Drop)

Note: If an optional second SCSI adapter is installed, the cable lies on top of the main SCSI cable in the bottom of the system unit. The second SCSI cable connects to disk drive locations F1, F2, G1, and G2 (and connectors F1, F2, G1, and G2 are not used on the main SCSI cable).

Signal Cable (Right Side)

**Cable to 5.25-Inch
External Diskette Drive
(Optional, Early Models)**

**Connects to J3
on Redrive Card
(Early Models)**

3.5-Inch Diskette Drive

**Redrive Card (Early Models)
(Front Panel Connector D)**

**T (Terminator)
(Early Models)**

A

B

C1

**C2
(Not
Used)**

D

**Front Panel
Connectors**

Front
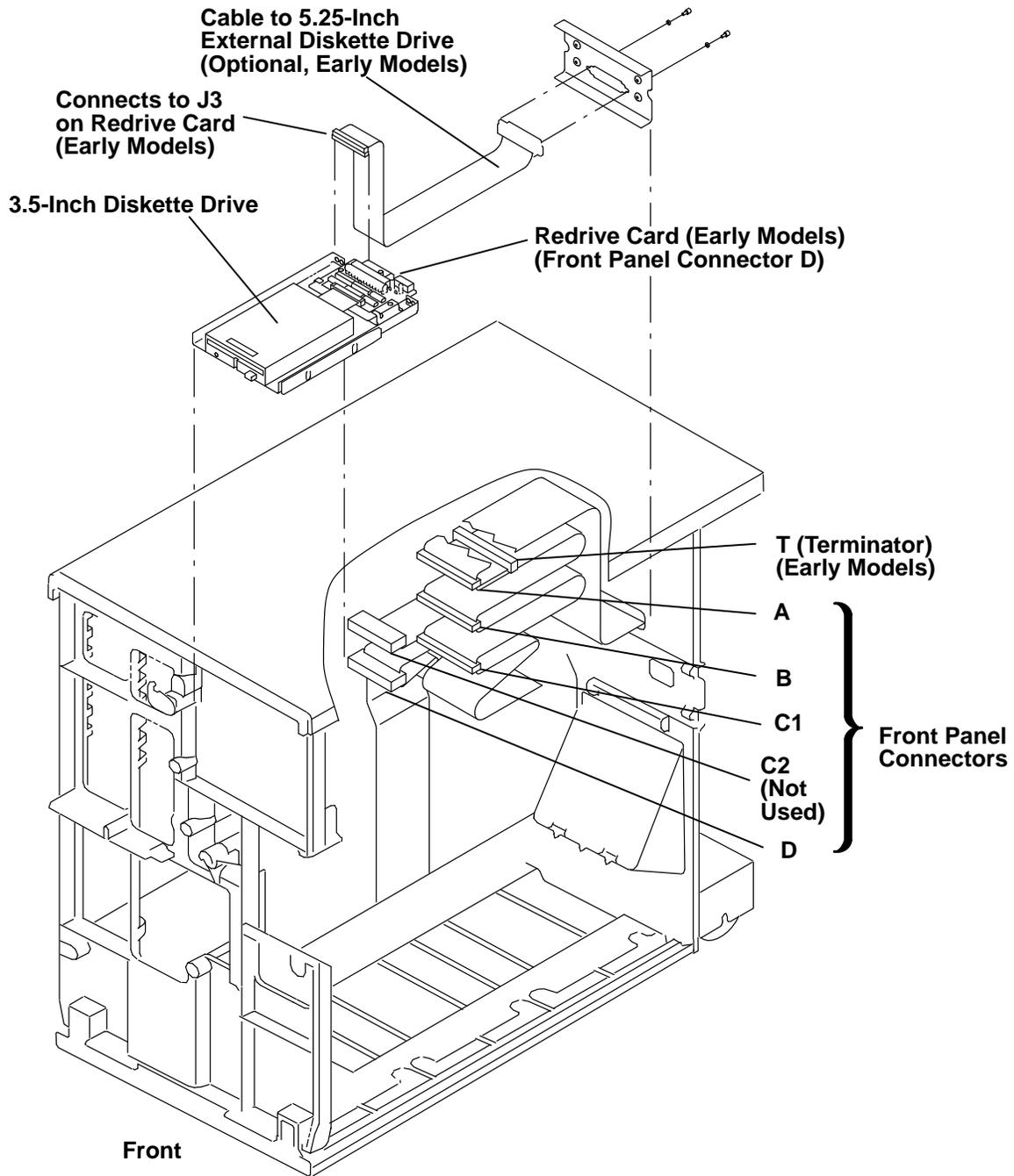
Power Supply Connectors

Early Models
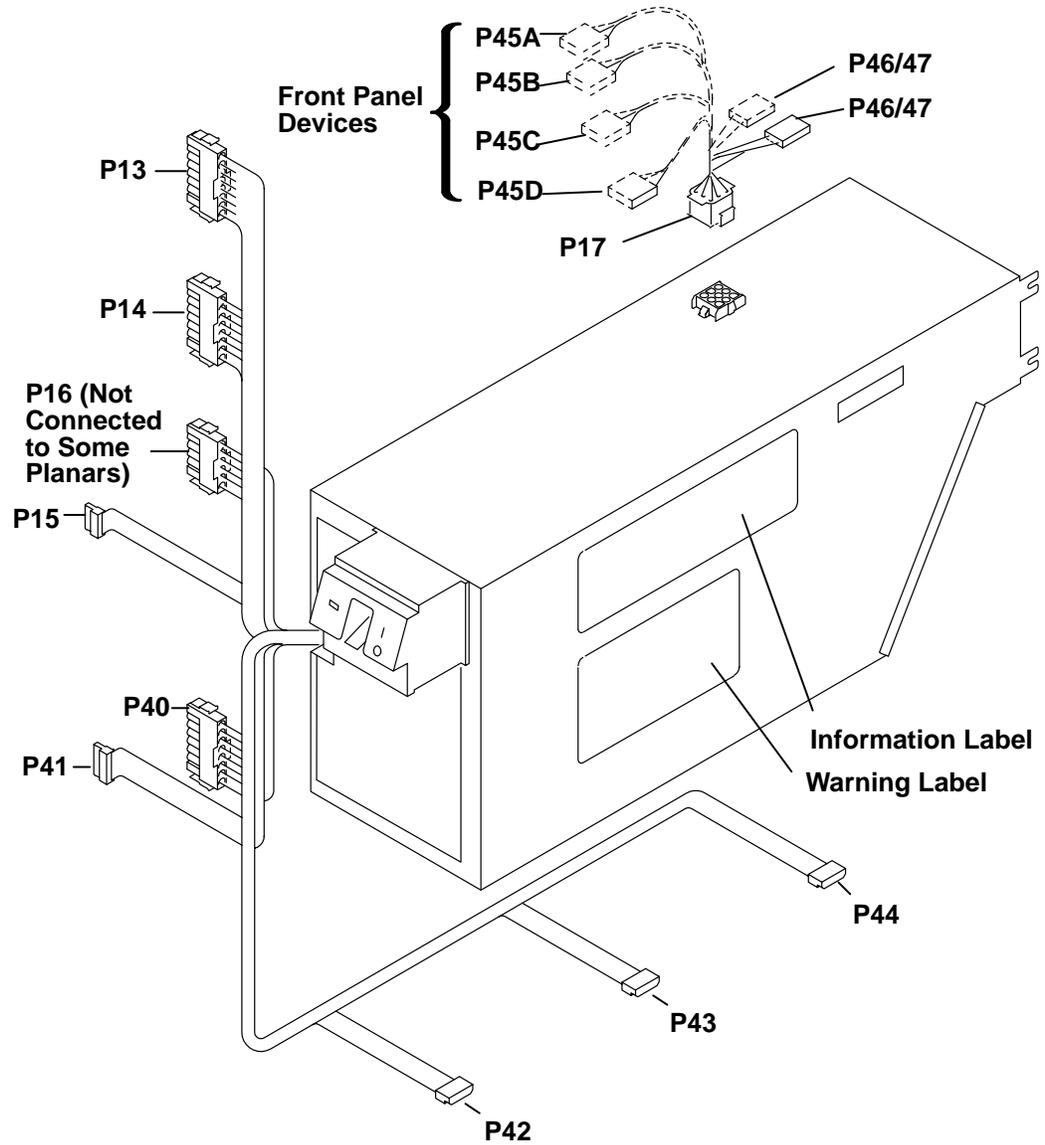
Later Models
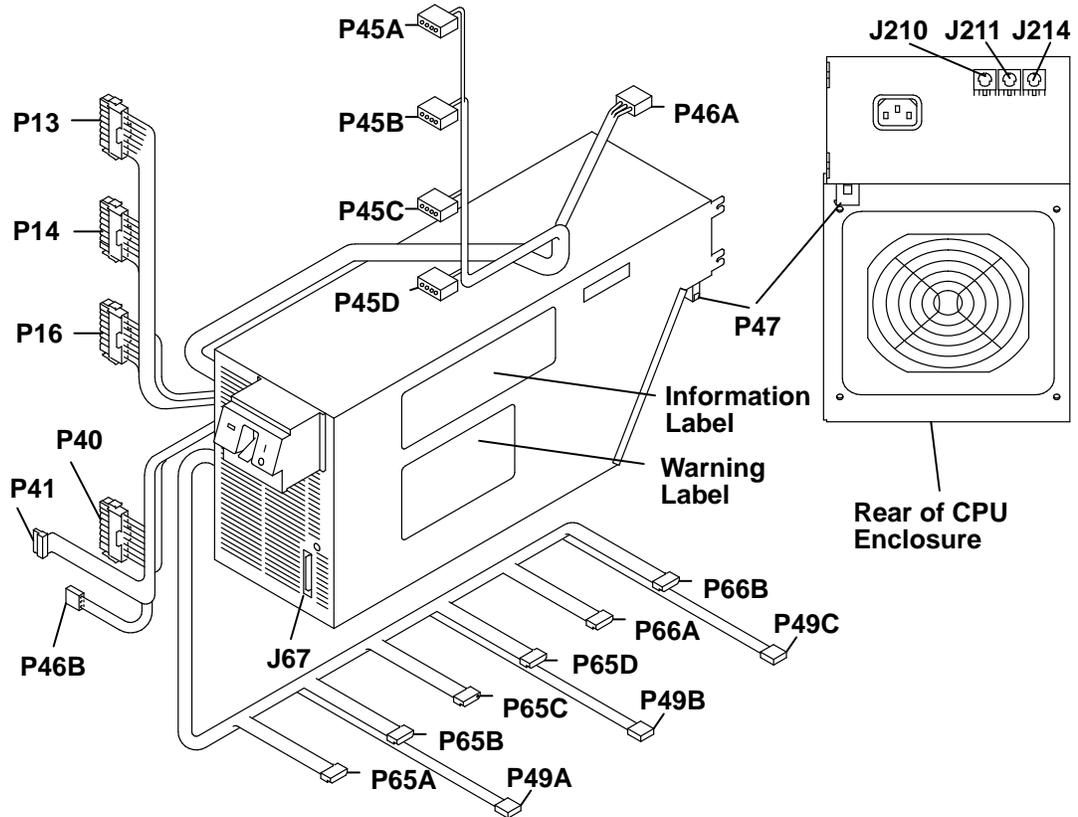
Notes:

1. Connectors P65A, P65C, and P66A are used only when 3.5-inch fixed disks are installed in these locations. If these fixed disks are not installed, the terminators attached to the power cable must be connected.

2. If fan connectors P46A, P46B, P49A, P49B, and P49C are not plugged into a fan, they must be connected to the fan sense jumper that is attached to the connector cable. The power supply will not operate with an open connection on any of these connectors.

Model 55L

P45A   P27

P45B

P46

P45C

P25

P45D

P2

P17

Information Label

Warning Label

P26

P44

P43

P42

Power Cable Connectors

3.5-Inch Disk Drive Cages

J42

J43

J44

P13

P14

P16 (Not Connected to Some Planars)

P15

P39 Operator Panel

P40

P41

5.25-Inch Disk Drives

P42

P43

P44

Back

Early System Units

3.5-Inch Disk Drive Cages

P43c

P43b

P43a

Later System Units (Models 570, 580, 58H, 590, 59H, 591, 595)
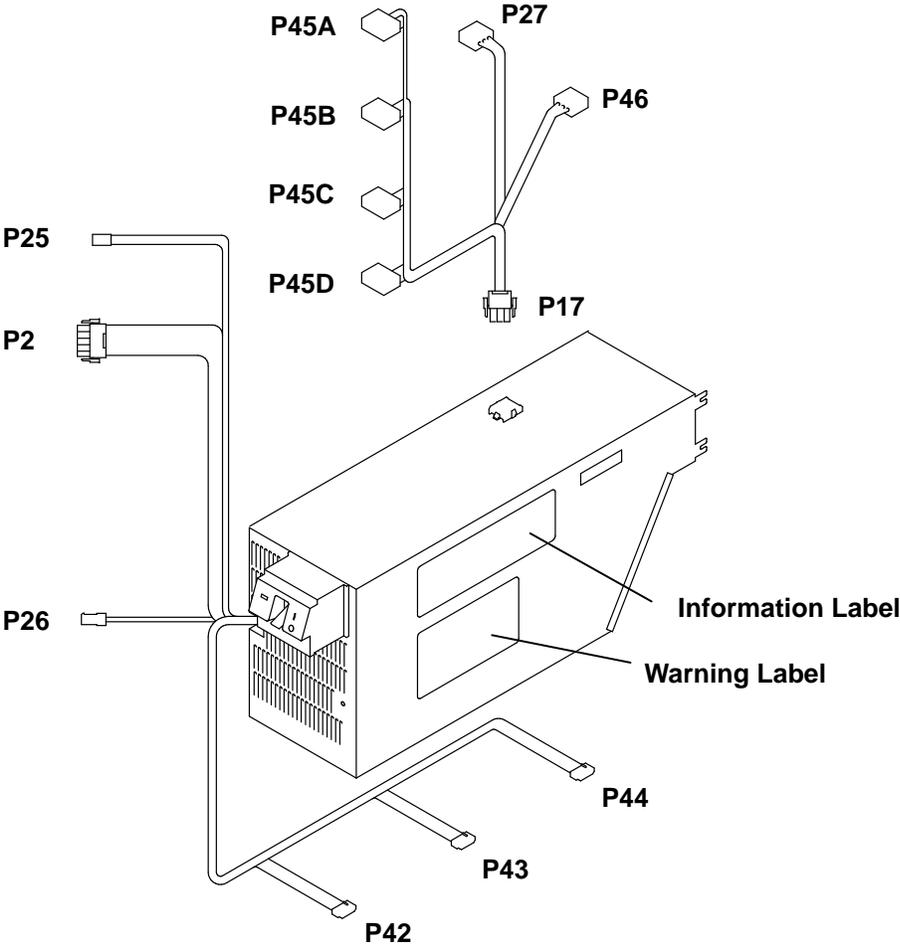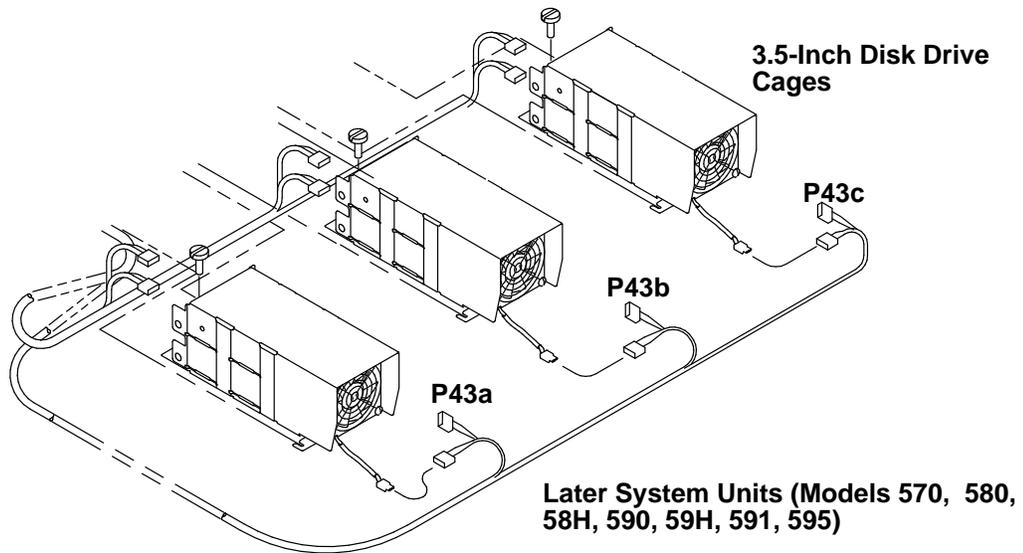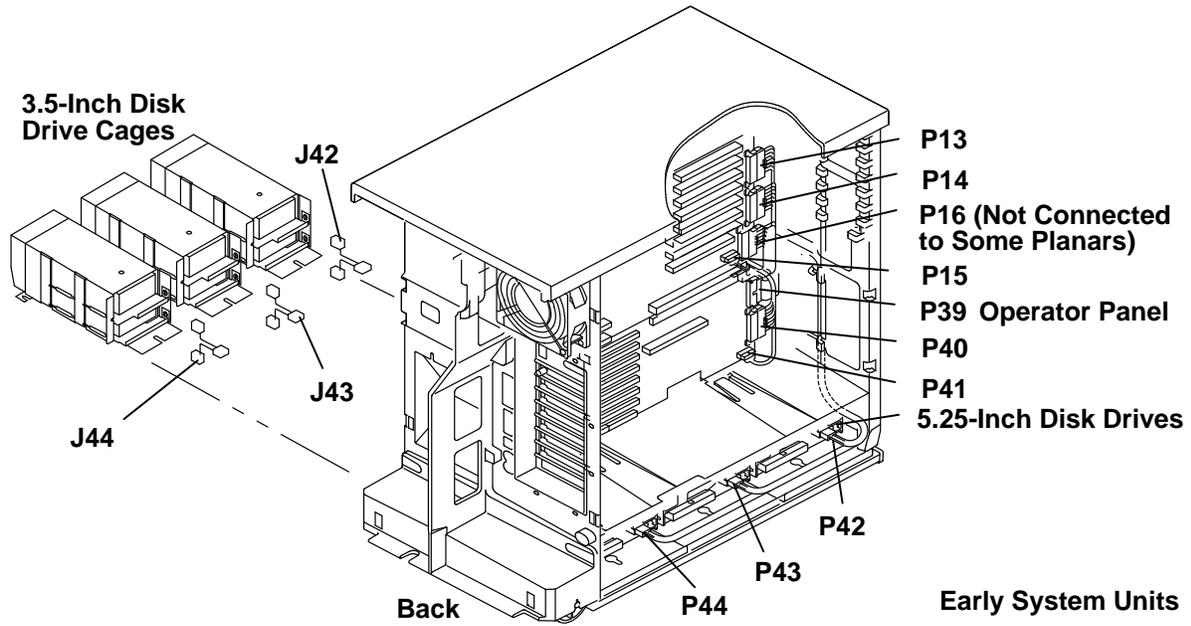
Data and Power Flow

Early Models
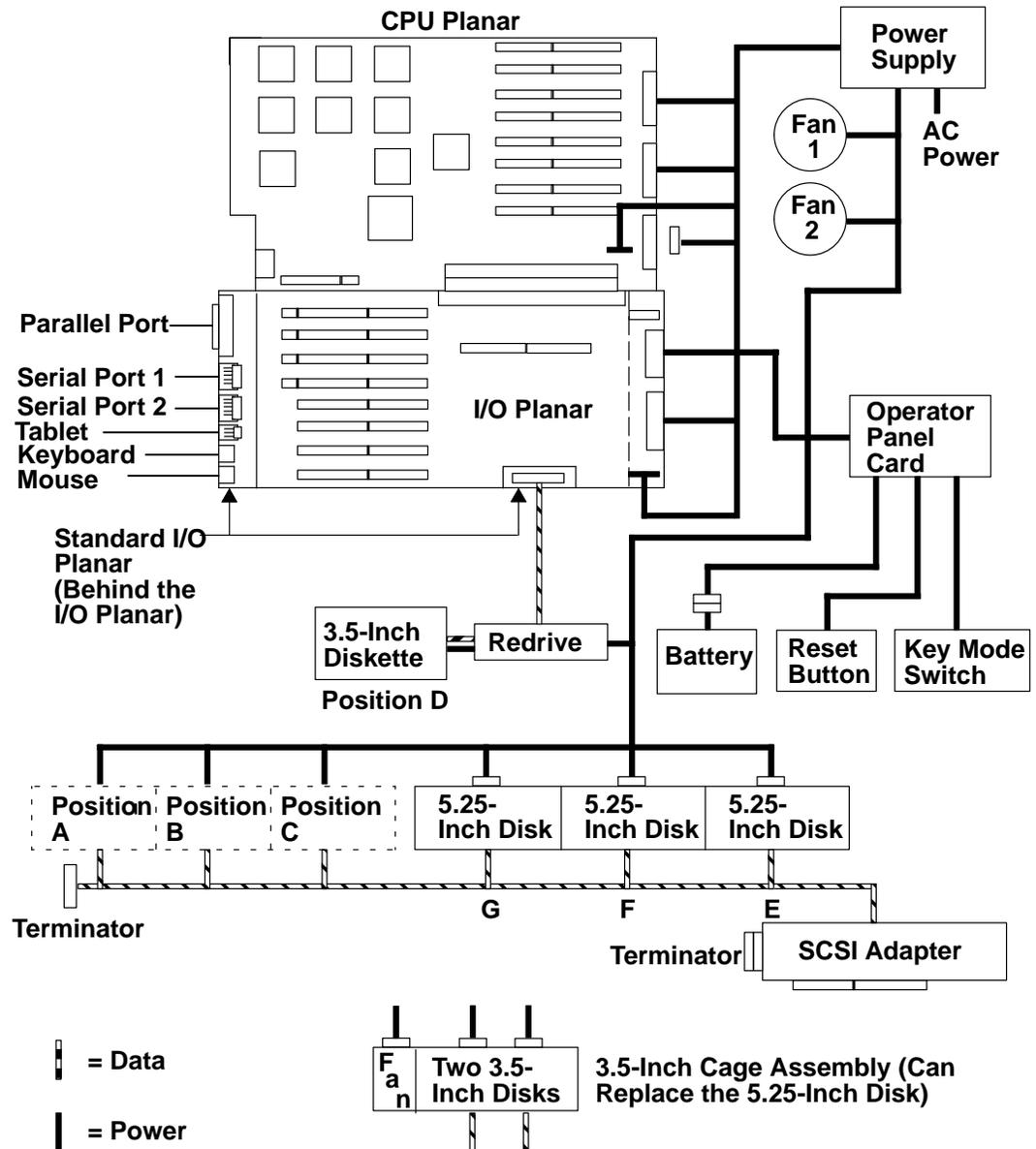
Later Models (Except Models 55L and 595)
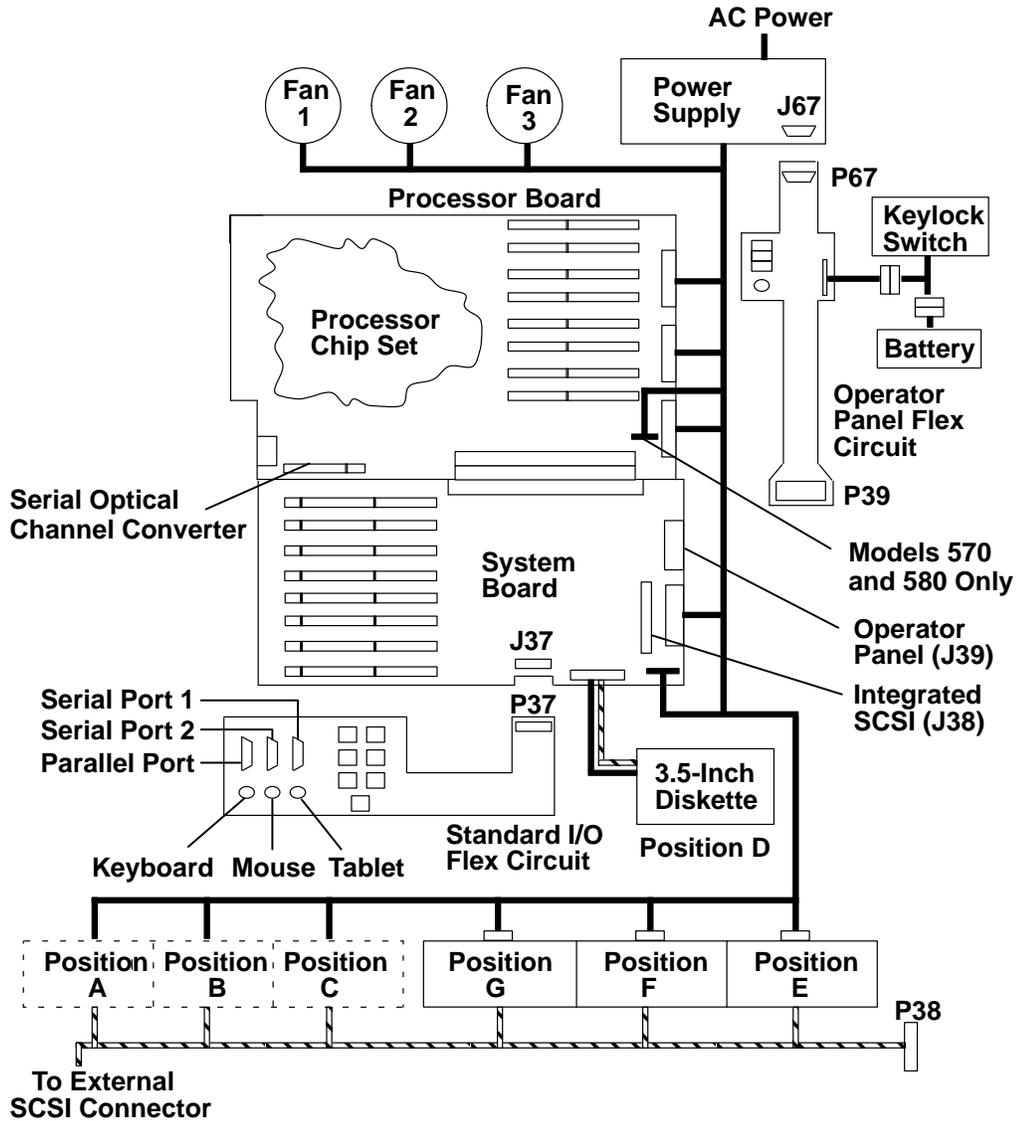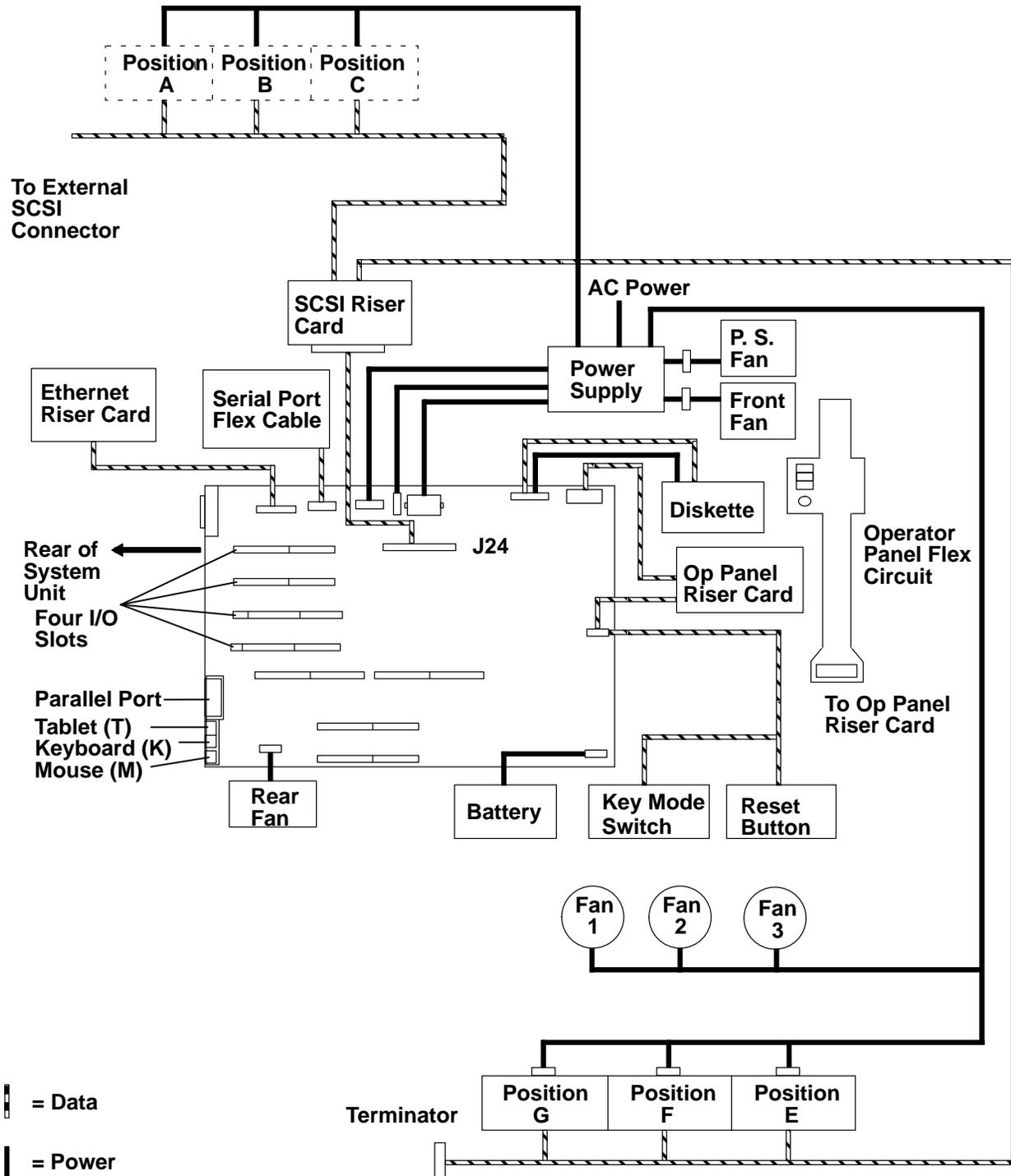
Model 595

Model 55L

Specifications

Dimensions

Height: 610 mm (24 inches)

Depth: 675 mm (26.6 inches)

Width: 360 mm (14.2 inches)

Operating Environment

Class B: 16.0 to 32.2°C (60.8 to 90°F)

Wet Bulb Temperature: 23°C (73°F)

Relative Humidity

8 to 80 percent, non-condensing

8 to 80 percent, non-condensing, power on, no tape media (Model 595)

20 to 80 percent, non-condensing, power on, with tape media (Model 595)

Power Consumption

0.5kVA (Models 59H, 591, 595)

0.4kVA

0.3kVA (Model 55L)

Power Supply

650 W (early system units)

475 W (Model 55L)

550 W Average, 700 W Peak (Models 570, 580, 58H,590)

550 W Average, 750 W Peak (Models 59H, 591, 595)

Operating Voltage

100 to 125 V ac, 50 to 60 Hz

200 to 240 V ac, 50 to 60 Hz

Heat Output

475 W (1620 BTU per hour) (Models 59H, 591, 595)

400 W (1365 BTU per hour)

300 W (1025 BTU per hour) (Model 55L)

Weight

36.7 to 53.1 kg (81 to 117 pounds)

Noise

38dB idle, 39dB operating

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

- Electrical cables, type SVT or SJT

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

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

  "For 230 V operation in the United States use a UL listed cable set consisting of a minimum 18 AWG, Type SVT or SJT three-conductor cable a maximum of 15 feet 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 have the following characteristics:

- 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 of U.S.): 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 available power cables.

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 attached.

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

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

Perform the following checks:

1. Check the covers 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.
3. Gently rock the system unit from side to side to determine if it is steady.
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 for dirt in fans.
10. Check the voltage label on the back of the system unit to ensure that it matches the voltage at the outlet.
11. Check the external power cable for damage.
12. With the external power cable connected to the system unit, check for 0.1 ohm or less resistance between the ground lug on the external power cable plug and the metal frame.
13. Install the covers.
14. 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.
15. Check error log for recent activity.

Chapter 2. Maintenance Analysis Procedures (MAPs)

MAP 1520: 7013 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 For Micro Channel Bus Systems*.

This procedure is used to locate power problems in the 7013. 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 these notices, 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 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.

Three-Digit Display – Power Supply Failure Status

In some models, the system power supply analyzes power supply failures that occur within the system. If the Power switch is set On (|) and the system detects a power supply failure, the system turns the Power light off and displays a code in the three-digit display. The power failure status is represented by a digit or a symbol shown in the three-digit display.

Except for blanks occurring in all three positions at the same time, each position of the three-digit display has either a digit, a symbol, or a zero (0); a zero (0) does not represent a power failure.

The following table shows the valid power failure codes for each power failure status.

Valid Power Failure Codes			
Position 1	Position 2	Position 3	Power Failure Status
Blank	Blank	Blank	There are no failures, or failures cannot be detected.
8			The fan connected to connector P49B has failed.
4			The fan connected to connector P49C has failed.
u			This is a combination of power failure codes 8 and 4 in Position 1.
	8		The power supply fan connected to P47 has failed.
	4		The fan connected to connector P46A or connector P46, or the fans connected to both, have failed.
	2		The fan connected to connector P49A has failed.
	6		This is a combination of power failure codes 4 and 2 in Position 2.
	c		This is a combination of power failure codes 8 and 2 in Position 2.
	u		This is a combination of power failure codes 8 and 4 in Position 2.
	Inverted F		This is a combination of power failure codes 8, 4, and 2 in Position 2.
		8	The temperature in the power supply is excessive.
		4	A power failure has occurred inside the power supply.
		2	A power failure has occurred outside the power supply.
		1	A loss of primary power has occurred.

Step 1

Note: If multiple failures are indicated in the three-digit display and one of the failures is indicated by the right-position digit or symbol, first perform the task that corrects the failure indicated by the right-position digit or symbol, and then perform the other tasks.

Compare the code in the three-digit display to the table of valid power failure codes on page 2-1520-2, and then answer the following question.

Is a valid power failure code displayed in the three-digit display?

NO   Go to Step 2.

YES   Perform the task for the indicated power failure status as shown in the following table:

Power Failure Status	Task
Fan failure	Exchange the fan and go to MAP 0410 in the *POWERstation and POWERserver Common Diagnostics Information For Micro Channel Bus Systems*.
Excess temperature	Correct one or more of the following problems: • Restricted air flow • Missing or incorrectly mounted baffles • Ineffective fans • Excess ambient temperature
Loss of primary power	Go to Step 2.
Power failure outside the power supply	Go to Step 3.
Power failure inside the power supply	Go to Step 3.
Power failure could not be identified	Go to Step 2.

Step 2

(from Step 1)

Note: 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 3.

YES   Correct the problem. Go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics Information For Micro Channel Bus Systems*.

Step 3

(from Steps 1 and 2)

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

2. Follow the removal procedure under "Cover" on page 3-2.

3. Disconnect the power cable connectors from the devices in the top of the system unit, but not from the fans.

4. Disconnect the power cable connectors from the disk drives in the bottom of the system unit, but not from the fans.

5. Disconnect the power cable connectors from the CPU planar or system planar. P16 is not connected on some planars.

   - For Models 520, 52H, 530, 53H, 540, 550, and 560, disconnect P13, P14, P15, and P16.

   - For Models 570, 580, 58H, 590, 59H, 591, and 595 disconnect P13, P14, and P16.

   - For Model 55L, disconnect P2 and P25.

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

6. For Models 520, 52H, 530, 53H, 540, 550, 560, 570, 580, 58H, 590, 59H, 591, and 595, disconnect the power cable connectors P40 and P41 from the I/O planar (if present).

7. Set the power switch on the system unit to On.

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

NO   Go to Step 4.

YES   Go to Step 6.

Step 4

(from Step 3)

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

NO   Exchange the power supply. Refer to the "Power Supply Removal" procedure on page 3-43. Go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics Information For Micro Channel Bus Systems*.

YES   Go to Step 5.

Step 5

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

- Cooling fan

- System planar (Model 55L only)

- 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 they have only two wires, and comes on without the fan running

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

2. For Models 520, 52H, 530, 53H, 540, 550, and 560, test each fan by connecting a new fan. Refer to the "Removal" procedure under "Rear Fan" on page 3-29, "Front Fan" on page 3-32, "Logic Fan" on page 3-41.

   For Models 570, 580, 58H, 590, 59H, 591, and 595, test each fan by unplugging the fan from the power connector and plugging the attached terminator into the power supply connector.

3. Set the power switch on the system unit to On.

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:

- System planar (model 55L only)

- 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   Exchange the defective fan. Go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics Information For Micro Channel Bus Systems*.

Step 6
(from Step 3)

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

2. Connect the power connectors to the CPU planar or system planar. P16 is not connected on some planars.

   For Models 520, 52H, 530, 53H, 540, 550, and 560, connect P13, P14, P15, and P16.

   For Models 570, 580, 58H, 590, 59H, 591, and 595, connect P13, P14, and P16.

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

   For Model 55L, connect P2 and P25.

3. Set the power switch on the system unit to On; then wait 10 seconds before answering the following question.

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

NO   Go to Step 7.

YES   For all models except 55L, go to Step 10.

                For Model 55L only, go to Step 11.

Step 7
(from Step 6)

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

2. Remove one memory card at a time from the CPU planar or system planar. Refer to the removal procedure under "Memory Card" on page 3-13.

3. Be sure the power has been off at least 15 seconds; then set the power switch on the system unit to On.

4. Wait 10 seconds; then answer 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:

                For Models 520, 52H, 530, 53H, 540, 550, and 560, exchange the CPU planar. Go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics Information For Micro Channel Bus Systems*.

                For Models 55L, 570, 580, 58H, 590, 59H, 591, go to Step 8.

                For Model 595, go to Step 9.

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 For Micro Channel Bus Systems*.

Note: When you are replacing memory cards, ensure that the type of memory you are using is correct. Refer to the system unit cross-reference table in the *POWERstation and POWERserver Common Diagnostics Information For Micro Channel Bus Systems*.

Step 8

(from Step 7)

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

2. For Model 570, remove the buffer SIMM from J17 on the CPU planar.

   For Model 580, remove the buffer SIMM from J18 on the CPU planar.

   For Models 58H, 590, and 591, remove the buffer SIMM from connector TCW on the CPU planar.

   For Model 55L, remove the CPU card from the system planar.

3. Be sure the power has been off at least 15 seconds; then set the power switch on the system unit to On.

4. Wait 10 seconds; then answer the following question.

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

NO   For Models 570 and 580, 58H, 590, 591, exchange the CPU planar. Go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics Information For Micro Channel Bus Systems*.

            For Model 55L, go to Step 13.

YES   For Models 570, 580, 58H, 590, 591, exchange the buffer SIMM. Go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics Information For Micro Channel Bus Systems*.

            For Model 55L, exchange the CPU card. Go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics Information For Micro Channel Bus Systems*.

Step 9

(from Step 7)

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

2. For Model 595, remove the DC-DC converter from the CPU planar.

3. Be sure the power has been off at least 15 seconds; then set the power switch on the system unit to On.

4. Wait 10 seconds; then answer the following question.

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

NO   Exchange the CPU planar. Go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics Information For Micro Channel Bus Systems*.

YES   Exchange the DC-DC converter. Go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics Information For Micro Channel Bus Systems*.

Step 10

(from Step 6)

1. Set the power switch on the system unit to Off.
2. Connect the two power connectors P40 and P41 to the I/O planar.
3. Set the power switch on the system unit to On.

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

NO   Go to Step 13.

YES   Go to Step 11.

Step 11

(from Steps 6 and 10)

1. Set the power switch on the system unit to Off.
2. Connect the power cable to one of the disk drives in the bottom of the system unit.
3. Set the power switch on the system unit to On.

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

NO   Exchange the disk drive. Go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics Information For Micro Channel Bus Systems*.

YES   Repeat this step until all the disk drives are connected. Go to Step 12.

Step 12

(from Step 11)

1. Set the power switch on the system unit to Off.
2. Connect the power cable to a device in the top of the system unit.
3. Set the power switch on the system unit to On.

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

NO   Exchange the device. Go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics Information For Micro Channel Bus Systems*.

YES   Repeat this step until all the devices are connected. Go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics Information For Micro Channel Bus Systems*.

Step 13

(from Steps 8 and 10)

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 "Removal" procedure under "Adapters" on page 3-8.

4. Set the power switch on the system unit to On.

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

NO   Repeat this step until all the adapters are removed. Go to step 14.

YES   Go to Step 19.

Step 14

(from Step 13)

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

2. For all models except 55L, disconnect the operator panel connector P39 from the I/O planar.

   For Model 55L, disconnect the operator panel connectors P22 and P23 from the system planar.

3. Set the power switch on the system unit to On.

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

NO   Go to Step 15.

YES   Exchange the operator panel. Refer to the "Removal" procedure under "Operator Panel" on page 3-45. Go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics Information For Micro Channel Bus Systems*.

Step 15

(from Step 14)

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; then wait 10 seconds before answering the following question.

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

NO   Go to Step 16.

YES   Go to Step 17.

Step 16

(from Step 15)

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

2. For Models 520, 52H, 530, 53H, 540, 550, and 560, follow the procedure for removal of the standard I/O planar on page 3-19. Do not separate the CPU planar from the I/O planar.

   Replace the CPU planar, I/O planar, and bulkhead.

   Connect the power connectors P13, P14, P15, and P16 to the CPU planar. P15 is not connected on some planars.

   Connect the two power connectors P40 and P41 to the I/O planar.

   For Models 570, 580, 58H, 590, 59H, 591, and 595, disconnect connector P37 from the I/O planar.

   For Model 55L, disconnect connector P16 from the system planar.

3. Set the power switch on the system unit to On.

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

NO   For all models except 55L, exchange the I/O planar. Go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics Information For Micro Channel Bus Systems*.

   For Model 55L, exchange the system planar. Go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics Information For Micro Channel Bus Systems*.

YES   For Models 520, 52H, 530, 53H, 540, 550, and 560, exchange the native I/O card. Go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics Information For Micro Channel Bus Systems*.

   For Models 570, 580, 58H, 590, 59H, 591, and 595, exchange the standard I/O flex circuit. Go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics Information For Micro Channel Bus Systems*.

   For Model 55L, exchange the serial port flex cable. Go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics Information For Micro Channel Bus Systems*.

Step 17

(from Step 15)

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

2. Connect one of the cables that was removed.

3. Be sure that the power was off for at least 15 seconds; then set the power switch on the system unit to On.

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

NO   Go to Step 18.

YES   Repeat this step until all the cables are connected. Go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics Information For Micro Channel Bus Systems*.

Step 18

(from Step 17)

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

2. Disconnect the cable from the device if there is a removable cable on the device.

3. Set the power switch on the system unit to On.

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 For Micro Channel Bus Systems*.

YES   Exchange or repair the device. Go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics Information For Micro Channel Bus Systems*.

Step 19

(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 20.

YES   Go to Step 22.

Step 20

(from Step 19)

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 For Micro Channel Bus Systems*.

YES   Go to Step 21.

Step 21

(from Step 20)

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; then 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 For Micro Channel Bus Systems*.

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; then exchange it and go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics Information For Micro Channel Bus Systems*.

Step 22

(from Step 19)

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.

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 For Micro Channel Bus Systems*.

YES   Go to Step 23.

Step 23

(from Step 22)

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

2. Connect one cable to the adapter.

3. Set the power switch on the system unit to On; then wait 10 seconds before answering the following question.

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

NO   Go to Step 24.

YES   Repeat this step until all the cables are connected. Go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics Information For Micro Channel Bus Systems*.

Step 24

(from Step 23)

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

2. Disconnect one of the device cables from the system unit.

3. Set the power switch on the system unit to On.

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

NO   Repeat this step until all the device cables are disconnected; then exchange the adapter. Go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics Information For Micro Channel Bus Systems*.

YES   Exchange or repair the device or cable. Go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics Information For Micro Channel Bus Systems*.

MAP 1540: 7013 System Unit – Minimum Configuration

Note: This is not a start of call MAP. You should use this MAP only if you have been directed here from a MAP step in the *POWERstation and POWERserver Common Diagnostics Information For Micro Channel Bus Systems*.

Purpose of this MAP

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:

*   Models 520, 52H, 530, 53H, 540, 550, and 560

    –   CPU planar, I/O planar, standard I/O planar, and the three-digit display panel (and one memory card in Model 530 only).

    –   If no failure is detected, 213 is displayed in the three-digit display. Any other response means one of the remaining FRUs is failing.

    –   CPU planar, I/O planar, standard I/O planar, 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. Any other response means one of the remaining FRUs is failing.

    –   CPU planar, I/O planar, standard I/O planar, the three-digit display panel, memory cards, diskette drive or CD-ROM drive, and a terminal attached to a serial port or a keyboard, display, and graphics adapter.

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

*   Models 570, 580, 58H, 590, 59H, 591, and 595

    –   CPU planar, I/O planar, and the three-digit display panel (except models 590, 591, and 595).

        If no failure is detected, 213 is displayed in the three-digit display. Any other response means one of the remaining FRUs is failing.

    –   CPU planar, I/O planar, 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. Any other response means one of the remaining FRUs is failing.

    –   CPU planar, I/O planar, the three-digit display panel, memory cards, standard I/O flex circuit, diskette drive or CD-ROM drive, and a terminal attached to a serial port or a keyboard, display, graphics adapter. In addition, for model 595 only, the DC-DC converter.

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

- Model 55L

  - System planar, CPU card, and the three-digit display panel.

    If no failure is detected, `213` is displayed in the three-digit display. Any other response means one of the remaining FRUs is failing.

  - System planar, CPU card, 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. Any other response means one of the remaining FRUs is failing.

  - System planar, CPU card, and the three-digit display panel, memory cards, diskette drive or CD-ROM drive, and a terminal attached to a serial port or a keyboard, display, and graphics adapter.

    If no failure is detected, the Diagnostics Operating Instructions menu 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

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 system unit power switch to Off.

4. Insert the first diagnostic diskette into the diskette drive or the diagnostic CD-ROM disc into the CD-ROM drive.

5. Set the system unit power switch 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 3-digit display	Other conditions	Do this:
Nothing	Diagnostic Operating Screen is displayed.	Go to Step 17.
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.
	Diagnostic CD-ROM disc is loaded.	Go to Step 10.
c31	Instructions to select the system console are 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 are on solid for more than 3 minutes and the Power light is on.	Go to Step 2.
300 or greater	Digits are on solid for more than 3 minutes, the Power light is on, and the first diagnostic diskette is loaded.	Go to Step 7.
	Digits are on solid for more than 3 minutes, the Power light is on, and the diagnostic CD is loaded.	Go to Step 10.
Any symptom not listed above.		Go to Step 2.

Step 2

(from Step 1 and 19)

1. Set the system unit power switch 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 I/O planar or system planar.

3. For Models 520, 52H, 530, 53H, 540, 550, and 560, disconnect the diskette drive connector (P59) from the standard I/O planar.

   For Models 570, 580, 58H, 590, 59H, 591, and 595, disconnect the 8 bit SCSI cable (P38), the 3.5-inch diskette drive data-signal cable (P59), and the SIO data-signal cable (P37) from the I/O planar.

   For Model 595, disconnect the 16 bit SCSI cable (P3).

   For Model 55L, remove the SCSI bus extender card from connector J24 on the system planar. Disconnect the 3.5-inch diskette drive data-signal cable (P20) and the serial port extender cable (P16) from the system planar.

4. Disconnect any cables that are plugged into connectors S1, S2, P, K, T, and M on the rear of the system unit.

5. Record the slot numbers of the memory cards, and then remove all the memory cards from the CPU planar or system planar, except for:

   - Model 530: Leave one memory card in the system.

   - Models,58H, 590, 591, and 595: Leave two memory cards in the system.

6. If L2 cache memory modules are installed on the CPU planar, record the locations and then remove them.

7. Set the system unit power switch to On.

8. Wait for one of the following conditions to occur:

   - The system stops for at least three minutes, 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 `260, 261,` **or** `262` **displayed in the three-digit display?**

NO   Go to Step 3.

YES   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. Operator panel.

2. I/O planar (All models except 55L)

3. System planar (Model 55L)

4. Memory card, then memory modules (Models 530, 590, 591, and 595)

5. Standard I/O planar (Models 520, 52H, 530, 53H, 540, 550, and 560)

6. Buffer SIMM in connector J17 (Model 570)

7. Buffer SIMM in connector J18 (Model 580)

8. Buffer SIMM in connector TCW (Models 58H, 590, and 591)

9. DC-DC converter (Model 595 only)

10. CPU planar (All models except 55L)

11. CPU card (Model 55L)

12. Power supply

The system is working correctly if it stops and the number `213` or `260` is displayed in the three-digit display. If this occurs, the last FRU you exchanged is defective.

1. Set the system unit power switch to Off.

2. Exchange one of the FRUs in the list.

3. Set the system unit power switch to On.

Is `213` or `260` 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 Information For Micro Channel Bus Systems*.

Step 4

No failure was detected with this configuration. If you removed L2 cache memory modules from the system, reinstall them one at a time after the lase pair of memory cards is installed.

1. Set the system unit power switch to Off.

2. Install a pair of memory cards. (If this is a Model 520, 52H or 55L system unit, install one memory card.) Refer to page 3-13 for correct location of memory-card pairs.

3. Set the system unit power switch to On.

4. 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, 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 all memory cards and L2 cache memory modules (if removed) are installed and tested.

After all memory and L2 cache memory modules are installed and tested, set the system unit power switch to Off. Do one of the following actions.

To run diagnostics from diskette:

- For Models 520, 52H, 530, 53H, 540, 550, and 560, connect the signal cable for the 3.5-inch diskette drive (P59) to the standard I/O planar.

- For Models 570, 580, 58H, 590, 59H, 591, and 595, connect the signal cable for the 3.5-inch diskette drive (P59) to the I/O planar.

- For Model 55L, connect the signal cable for the 3.5-inch diskette drive (P20) to the system planar.

   Go to Step 7, substep 5.

To run diagnostics from CD-ROM disc:

- For Models 520, 52H, 530, 53H, 540, 550, and 560, install the SCSI adapter in the I/O planar and reconnect the cables to the SCSI adapter.

- For Models 570, 580, 58H, 590, 59H, and 591, connect the SCSI cable (P38) to the I/O planar.

- For Model 595, connect the 8-bit SCSI cable (P38), and the 16-bit SCSI cable (P3), to the I/O planar.

- For Model 55L, install the SCSI bus extender card in connector J24 on the system planar.

   Go to Step 10, substep 5.

Step 5

(from Step 4)

The failure may be caused by a defective memory module on either of the last two memory cards installed (for Models 520, 52H or 55L, the last memory card installed). To isolate the failing memory module in a pair of memory modules, do the following:

1. Set the system unit power switch to Off. Using a pair of operational memory modules for the type of memory card used, install the pair of memory modules in locations 1 and 2 on one of the suspected memory cards.

2. Set the system unit power switch 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.

3. If the system still fails, continue testing the memory modules in pairs (locations 3 and 4, 5 and 6, 7 and 8) until the system does not fail, or all the memory modules on the suspected memory cards have been tested.

Were you able to isolate the failed pair of memory modules?

NO   Exchange the memory cards. 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 Information For Micro Channel Bus Systems*.

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. Buffer SIMM in connector J17 (Model 570)
2. Buffer SIMM in connector J18 (Model 580)
3. Buffer SIMM in connector TCW (Models 58H, 590, and 591)
4. DC-DC converter (Model 595 only)
5. CPU planar (All models except 55L)
6. First L2 cache memory module (if installed)
7. Second L2 cache memory module (if installed)
8. System planar (Model 55L)
9. CPU card (Model 55L)
10. 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 the number `260` is displayed in the three-digit display. If this occurs, the last FRU you exchanged is defective.

1. Set the system unit power switch to Off.
2. Exchange one of the FRUs in the list.
3. Set the system unit power switch 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 `260` 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 Information For Micro Channel Bus Systems*.

Step 7

(from Steps 1 and 4)

1. Set the system unit power switch 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 I/O planar.
3. For Models 570, 580, 58H, 590, 59H, 591, and 595, disconnect the SCSI cable (P38) and the SIO data-signal cable (P37) from the I/O planar.

   For Model 595, disconnect the 16 bit SCSI cable (P3).

   For Model 55L, remove the SCSI bus extender card from connector J24 on the system planar. Disconnect the serial port extender cable (P16) from the system planar.
4. Disconnect any cables that are plugged into connectors S1, S2, P, K, T, and M on the rear of the system unit.
5. Insert the first diagnostic diskette into the diskette drive.
6. Set the system unit power switch to On.
7. 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, 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. Redrive card (if present)
3. Diskette drive signal cable
4. Standard I/O planar (Models 520, 52H, 530, 53H, 540, 550, and 560)
5. I/O planar (All models except 55L)
6. System planar (Model 55L)
7. Buffer SIMM in connector J17 (Model 570)
8. Buffer SIMM in connector J18 (Model 580)
9. Buffer SIMM in connector TCW. (Models 58H, 590, and 591)
10. DC-DC converter (Model 595 only)
11. CPU planar (All models except 55L)
12. CPU card (Model 55L)
13. 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 system unit power switch to Off.

2. For Models 520, 52H, 530, 53H, 540, 550, and 560, install the SCSI adapter in the I/O planar and reconnect the cables to the SCSI adapter.

    For Models 570, 580, 58H, 590, 59H, 591, and 595, connect the SCSI cable (P38) to the I/O planar.

    For Model 55L, install the SCSI bus extender card in connector J24 on the system planar.

3. Disconnect the signal and power connectors from all the SCSI devices.

4. Insert the first diagnostic diskette into the diskette drive.

5. Set the system unit power switch 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, 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 adapter (Models 520, 52H, 530, 53H, 540, 550, and 560)
            2. SCSI cable
            3. SCSI bus extender card (Model 55L)
            4. I/O planar (All Models except 55L)
            5. System planar (Model 55L)
            6. DC-DC converter (Model 595 only)
            7. CPU planar (All Models except 55L)
            8. CPU card (Model 55L)
            9. 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 12 (All Models except 595).

            Go to Step 9 (Model 595 Only).

Step 9

(from Step 8)

1. Set the system unit power switch to Off.

2. For Model 595, connect the 16 bit SCSI cable (P3).

3. Disconnect the signal and power connectors from all the 16 bit SCSI devices.

4. Insert the first diagnostic diskette into the diskette drive.

5. Set the system unit power switch 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, 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 adapter (Models 520, 52H, 530, 53H, 540, 550, and 560)
2. I/O planar (All Models except 55L)
3. System planar (Model 55L)
4. SCSI cable
5. SCSI bus extender card (Model 55L)
6. DC-DC converter (Model 595 only)
7. CPU planar (All Models except 55L)
8. CPU card (Model 55L)
9. 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 12.

Step 10

(from Steps 1 and 4)

1. Set the system unit power switch to Off.

2. Record the slot numbers of the adapters. Label and record the location of any cables attached to the adapters.

    For Models 520, 52H, 530, 53H, 540, 550, and 560, remove all the adapters from the I/O planar except the SCSI adapter that the CD-ROM drive is attached to.

    For Models 570, 580, 58H, 590, 59H, 591, and 595, remove all the adapters from the I/O planar.

    For Model 55L, remove all the adapters from the system planar.

3. For Models 520, 52H, 530, 53H, 540, 550, and 560, disconnect the diskette drive connector (P59) from the standard I/O planar.

    For Models 570, 580, 58H, 590, 59H, 591, and 595, disconnect the 3.5-inch diskette drive data-signal cable (P59) and the SIO data-signal cable (P37) from the I/O planar.

    For Model 55L, disconnect the 3.5-inch diskette drive data-signal cable (P20) and the serial port extender cable (P16) from the system planar.

4. Disconnect any cables that are plugged into connectors S1, S2, P, K, T, and M on the rear of the system unit.

5. Disconnect the signal and power connectors from all the SCSI devices except the CD-ROM drive.

6. Insert the diagnostic CD-ROM into the CD-ROM drive.

7. Set the system unit power switch to On.

8. Wait for one of the following conditions to occur:

    *   The system stops, and `c31` is displayed in the three-digit display.

    *   The system stops for at least three minutes, 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.

Did the system stop and is `c31` 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 adapter (Models 520, 52H, 530, 53H, 540, 550, and 560)

              2. I/O planar (Models 570, 580, 58H, 590, 59H, 591, and 595)

              3. System planar (Model 55L)

              4. CD-ROM drive

              5. SCSI cable

              6. SCSI bus extender card (Model 55L)

7. I/O planar (Models 520, 52H, 530, 53H, 540, 550, and 560)

8. Buffer SIMM in connector J17 (Model 570)

9. Buffer SIMM in connector J18 (Model 580)

10. Buffer SIMM in connector TCW (Models 58H, 590, and 591)

11. DC-DC converter (Model 595 only)

12. CPU planar (All models except 55L)

13. CPU card (Model 55L)

14. 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 11.

Step 11

(from Step 10)

1. Set the system unit power switch to Off.

2. For Models 520, 52H, 530, 53H, 540, 550, and 560, connect the signal cable for the 3.5-inch diskette drive (P59) to the standard I/O planar.

   For Models 570, 580, 58H, 590, 59H, 591, and 595, connect the signal cable for the 3.5-inch diskette drive (P59) to the I/O planar.

   For Model 55L, connect the 3.5-inch diskette drive data-signal cable (P20) to the system planar.

3. Insert the diagnostic CD-ROM into the CD-ROM drive.

4. Set the system unit power switch to On.

5. Wait for one of the following conditions to occur:

   - The system stops, and `c31` is displayed in the three-digit display.

   - The system stops for at least three minutes, 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.

Did the system stop and is `c31` **displayed in the three-digit display?**

NO   One of the following FRUs in the system unit is defective.

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

   1. Diskette drive

   2. Redrive card (if present)

   3. Diskette drive signal cable

   4. Standard I/O planar (Models 520, 52H, 530, 53H, 540, 550, and 560)

   5. I/O planar (All models except 55L)

   6. System planar (Model 55L)

   7. DC-DC converter (Model 595 only)

   8. CPU planar

   9. CPU card (Model 55L)

   10. 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 12.

Step 12

(from Steps 8, 9, and 11)

1. Set the system unit power switch to Off.

2. For Models 520, 52H, 530, 53H, 540, 550, and 560, connect the signal and power connectors to one of the SCSI devices that was attached to the same SCSI adapter the CD-ROM drive is attached to.

   For Models 55L, 570, 580, 58H, 590, 59H, 591, and 595,, connect the signal and power connectors to one of the SCSI devices that was attached to the integrated SCSI controller.

3. Insert the first diagnostic diskette into the diskette drive or the diagnostic CD-ROM into the CD-ROM drive.

4. Set the system unit power switch 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, 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?

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 SCSI devices attached to the integrated SCSI controller or SCSI adapter have been connected.

If all the SCSI devices have been connected, in the following order exchange the FRUs that have not been exchanged:

1. SCSI cable
2. SCSI adapter (Models 520, 52H, 530, 53H, 540, 550, and 560)
3. I/O planar (All models except 55L)
4. System planar (Model 55L)
5. DC-DC converter (Model 595 only)
6. CPU planar (All models except 55L)
7. CPU card (Model 55L)
8. 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 SCSI devices attached to the integrated SCSI controller or SCSI adapter have been connected.
	For Models 520, 52H, 530, 53H, 540, 550, and 560, go to Step 14.
	For Models 55L, 570, 580, 58H, 590, 59H, 591, and 595, go to Step 13.

Step 13

(from Step 12)

1. Set the system unit power switch to Off.

2. For Models 570, 580, 58H, 590, 59H, 591, and 595, connect the SIO data-signal cable (P37) to the I/O planar.

   For Model 55L, connect the serial port extender cable (P16) to the system planar.

3. Insert the first diagnostic diskette into the diskette drive or the diagnostic CD-ROM into the CD-ROM drive.

4. Set the system unit power switch 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, 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?

NO	Exchange the SIO data-signal cable or serial port extender cable.
	Go to "Map 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics Information For Micro Channel Bus Systems*.
YES	Go to Step 14.

Step 14

(from Steps 12 and 13)

1. Set the system unit power switch 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 or the diagnostic CD-ROM into the CD-ROM drive.

4. Set the system unit power switch 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, 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 15.

Step 15

(from Step 14)

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

1. Set the system unit power switch 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 or the diagnostic CD-ROM disc into the CD-ROM drive.

4. Set the system unit power switch 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, 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 16.

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 Information For Micro Channel Bus Systems*.

Step 16

1. Set the system unit power switch 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 or the diagnostic CD-ROM disc into the CD-ROM drive.

4. Set the system unit power switch 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, 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. I/O planar (All models except 55L)
3. System planar (Model 55L)
4. Standard I/O planar (Models 520, 52H, 530, 53H, 540, 550, and 560)
5. DC-DC converter (Model 595 only)
6. CPU planar (All models except 55L)
7. CPU card (Model 55L)
8. 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 Information For Micro Channel Bus Systems*.

Step 17

(from Step 1)

1. Set the system unit power switch 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 I/O planar except the display adapter (if installed and the attached display will be the system console) and the SCSI adapter (Models 520, 52H, 530, 53H, 540, 550, and 560 if diagnostics are being loaded from the diagnostic CD-ROM disc).

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 or the diagnostic CD-ROM into the CD-ROM drive.

5. Set the system unit power switch 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 three minutes, 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?

    NO   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 18.

Step 18

(from Step 17)

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 19.

Step 19

(from Step 18)

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 Information For Micro Channel Bus Systems*.

YES   Go to Step 2.

Chapter 3. Removal and Replacement Procedures

Handling Static-Sensitive Devices

Attention: Adapters, boards, diskette drives, and fixed-disk devices are sensitive to electrostatic discharge. These devices are wrapped in antistatic bags to prevent this damage.

Take the following precautions:

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

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

- With the device still in its antistatic bag, touch 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 picking it up again, touch the antistatic bag and the metal frame of the system unit at the same time.

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

Antistatic Bag
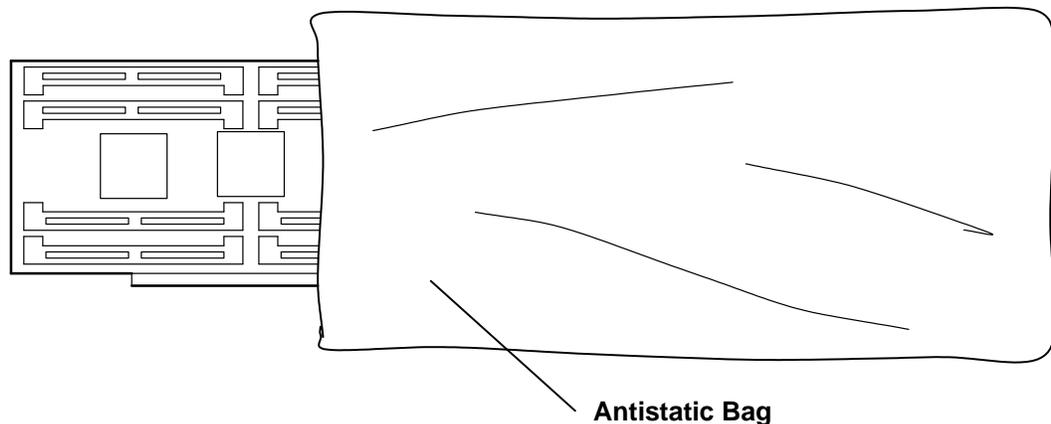
Acclimation

Before using a drive or cartridge, always let these items adjust (acclimate) to the operating environment by placing the drive or cartridge in the operating environment for as long as it was away from this environment, or for 24 hours.

Acclimation is necessary for any drive or cartridge that is exposed to a different environment or temperature change of 11°C (20°F).

Cover

Removal

1. Set the power switches on the attached devices to Off.

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

3. Use either of your two identical keys to unlock the back cover (the front cover is unlocked at the same time).

4. For Models 55L, 570, 580, 58H, 590, 59H, 591, and 595, unscrew the lock shaft inside the back cover before removing the front cover.

5. The back and front covers must be removed before you remove the side covers. The top cover of the system unit is not removable, and it should not be used to move the unit.

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

Back Cover Keylock
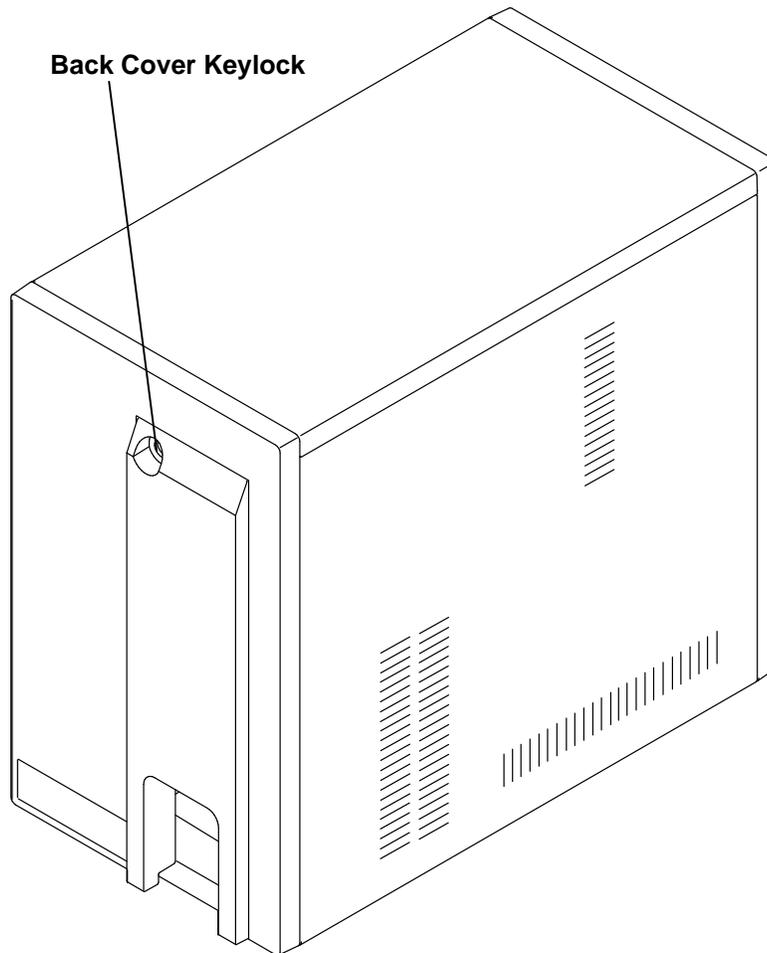
6. Pull the back cover out at the top and rotate it down, and then lift the cover up and out of the bottom of the system. Remove the front cover in the same manner.

7. The side covers can then be removed in the same manner.

Replacement

Replace in the reverse order.

Left Side

Back

Front

Right Side
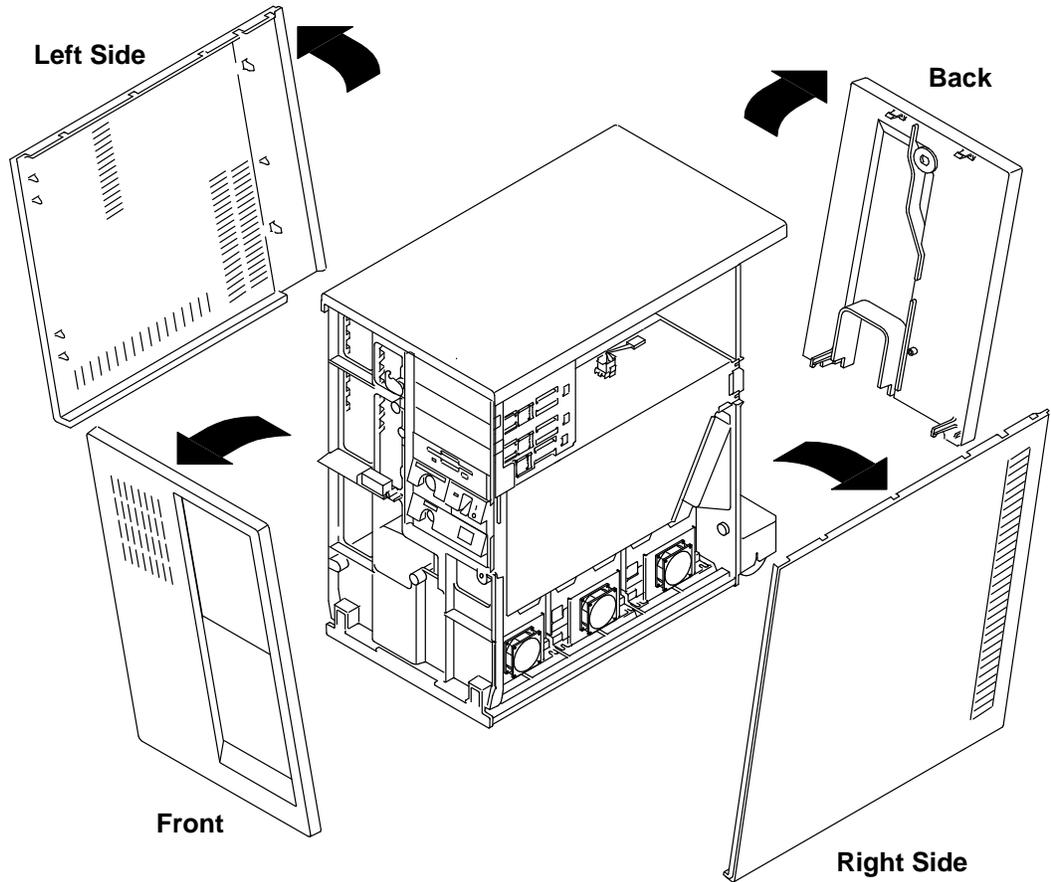
Attached Devices

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 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.

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

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.

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. Follow the procedure for cover removal on page 3-2.

5. Disconnect the device signal cable from the adapter.

6. If it is necessary to remove or replace toroids on the signal cable, refer to the toroids removal procedure on page 3-36.

Replacement

Replace in the reverse order.

Model 595

External SCSI Device

SCSI Terminator

System Unit Power Cable Slot

Tablet (T)

Mouse (M)

Keyboard (K)

Serial Port 1 (S1)

Serial Port 2 (S2)

Parallel Port (P)

1/1
1/2
1/3
1/4
0/1
0/2
0/3
0/4

Adapter Slots

Back Panel (Cover Removed)

Models 570, 580, 58H, 590, 59H, 591

External SCSI Device

SCSI Terminator

System Unit Power Cable Slot

Tablet (T)

Mouse (M)

Keyboard (K)

Serial Port 1 (S1)

Serial Port 2 (S2)

Parallel Port (P)

Serial Optical Channel Converter (Optional, but not on Models 58H, 590, 59H, or 591)

1

8

Adapter Slots

Back Panel (Cover Removed)

Model 55L

External SCSI
Device

SCSI Terminator

Serial Port 2 (S2)
Serial Port 1 (S1)

System Unit
Power
Cable Slot

Ethernet (ET)

1

Adapter
Slots

Parallel Port (P)

4

Tablet (T)

Keyboard (K)

Mouse (M)

Back Panel
(Cover Removed)

Early Models

5.25-Inch External
Diskette Drive
(Optional)
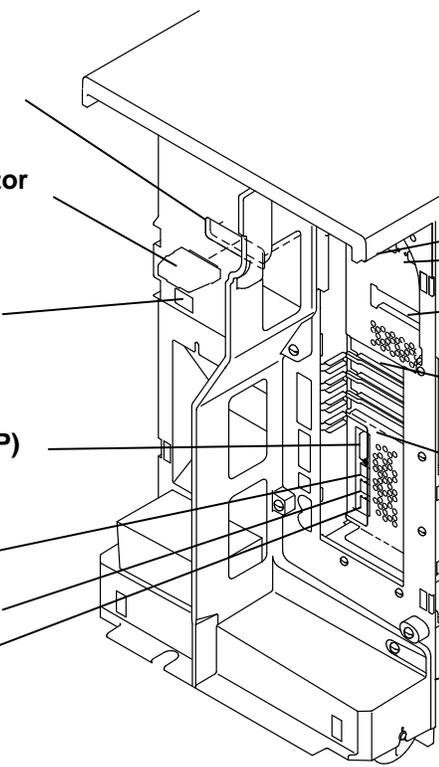
Parallel Printer
Port Connector

Serial Optical
Channel Converter
(Optional)

Serial Port
Connectors
S1 and S2

Tablet
Connector (T)

1

Keyboard
Connector (K)

Adapter
Slots

Mouse
Connector (M)

8

Back Panel
(Cover Removed)

Serial Optical Channel Converter (Not Available on Models 55L, 58H, 590, 59H, 591, and 595)

Note: This is a laser device. For laser safety information, refer to page xii.

Removal

The Serial Optical Channel Converter is pressed into its slot on the CPU planar. The fiber optic cable is connected to the converter from the back of the system unit.
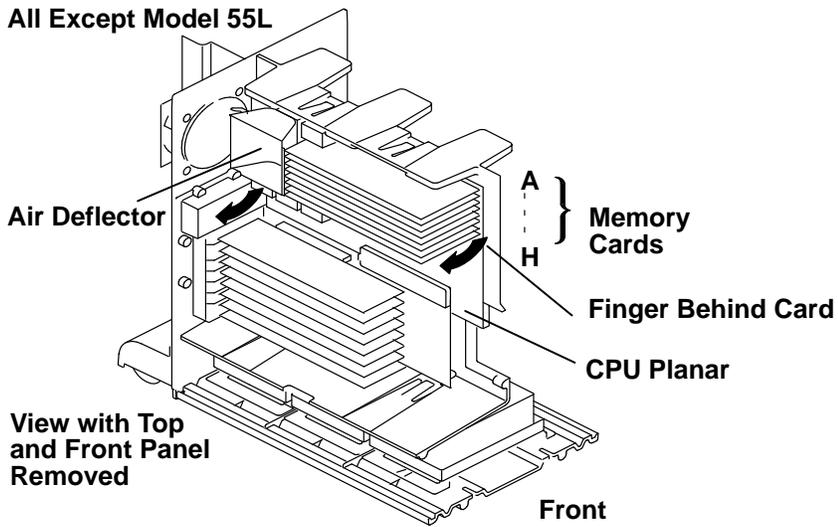
Note: Refer to "Handling Static-Sensitive Devices" on page 3-1 before removing or installing adapters in this system.

Facing the back of the system unit, the Serial Optical Channel Converter is above the eight adapter slots.

1. Set the power switches on the attached devices to Off.

2. Set the power switch on the system unit to Off, and unplug the external power cable.

3. Follow the procedure for cover removal on page 3-2.

4. If the optical cable is damaged, wrap it with tape before handling it. Exchange the cable.

5. Remove the optical port wrap plugs, if they are installed.

6. Disconnect the fiber optic cable connector from the converter.

7. Remove the screw that secures the Serial Optical Channel Converter.

8. Grasp the Serial Optical Channel Converter by the edge, and pull it out of the slot.

Replacement

Replace in the reverse order.

Serial Optical
Channel Converter
(Optional)

1

Adapter Slots

8

Back Panel
(Cover
Removed)
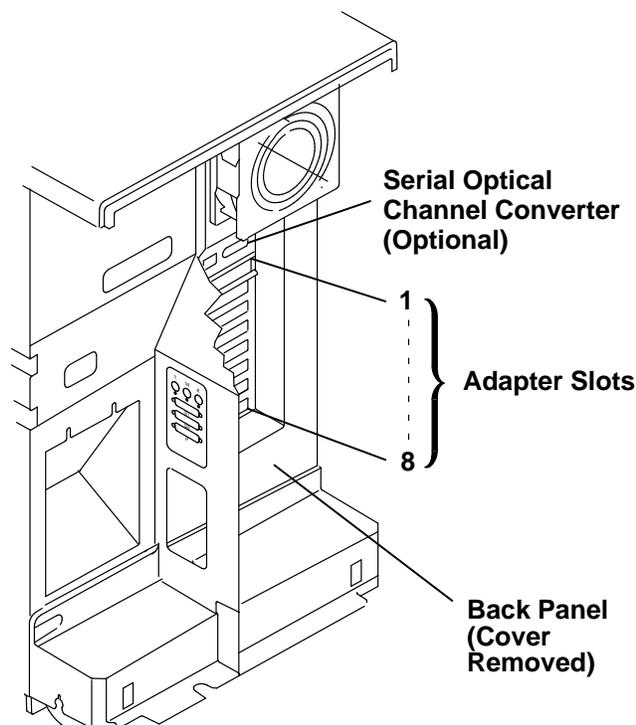
Adapters

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 eight horizontal adapter slots; each slot is covered with a bracket. Each bracket is held in place by a knurled knob.

1. Set the power switches on the attached devices to Off.

2. Set the power switch on the system unit to Off, and unplug the external power cable.

3. Follow the procedure for cover removal on page 3-2.

4. Record the location and type of the adapter.

5. Disconnect any internal or external connector from the adapter. If you are removing more that one adapter at a time, record which connector attaches to which adapter.

6. Loosen the knurled knob that holds the adapter bracket.

7. If the adapter has a card latch that holds the right end of the adapter, release it by pressing down on the locking tab as you move the latch away from the adapter.

8. Grasp the adapter by the bracket and right guide or edge, and pull it out of the slot.

Check the adapter, and record the settings of any jumpers or switches that are present.

All Except Model 55L

Card Support

Adapter Card

Back

Knurled Knob

Card Latch

Locking Tab
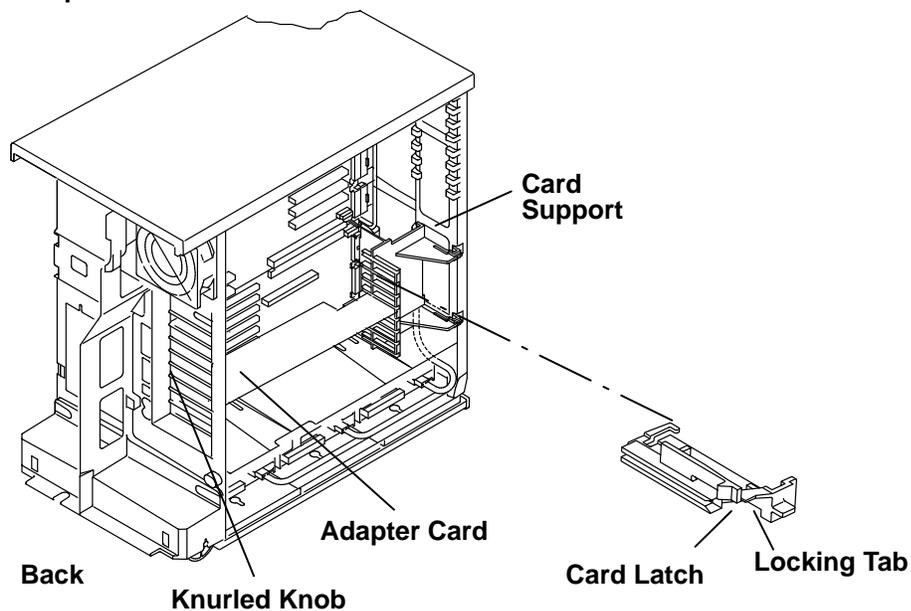
Replacement

Set the jumpers or switches on the replacement adapter to match the settings you recorded from the adapter you removed.

Replace the adapter carefully, in the reverse order. When replacing the adapter, be sure that the adapter bracket is behind the knurled knob and that it is in contact with the card guide at the top of the adapter bracket. This ensures that the adapter has a good ground path.

Note: The restrictions listed below must be adhered to when configuring Model 595:

- The following adapters must be installed only in slots 0/1 through 0/4:

    - Gt3i Graphics Subsystem (Type1-9)
    - Gt4xi 24-bit Graphics Subsystem (Type1-5)
    - Gt4i 24-bit Graphics Subsystem (Type1-5)
    - GXT150M Graphics Subsystem (Type1-D)
    - Gt4e Graphics Subsystem (Type1-8)
    - Gxt1000 Graphics Accelerator Attachment Adapter for Attachment of the 7250 (Type 1-A)
    - Ultimedia Audio Adapter (Type 7-6)
    - Ultimedia Video I/O Adapter (Type 7-5)
    - Digital Trunk Adapter (Type 6-5)
    - Digital Trunk Dual Adapter (Type 6-6)

Attention: Do not plug multi-card adapters across the two I/O buses on Model 595

Adapters and Ethernet Riser Card (Model 55L)

Removal

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

Facing the back of the system unit, there are four horizontal adapter slots, and each slot is covered with a bracket. 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 procedure for cover removal on page 3-2.
4. Note the locations, and disconnect any attached device and internal and external cables from the adapters.
5. Note the locations of the adapters.
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 3-11.

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. Tighten the knurled knob.

Model 55L

SCSI Riser Card

Card Guide Frame

Adapter Card

Back

Ethernet Riser Card

Locking Tab

Knurled Knob

Card Extender
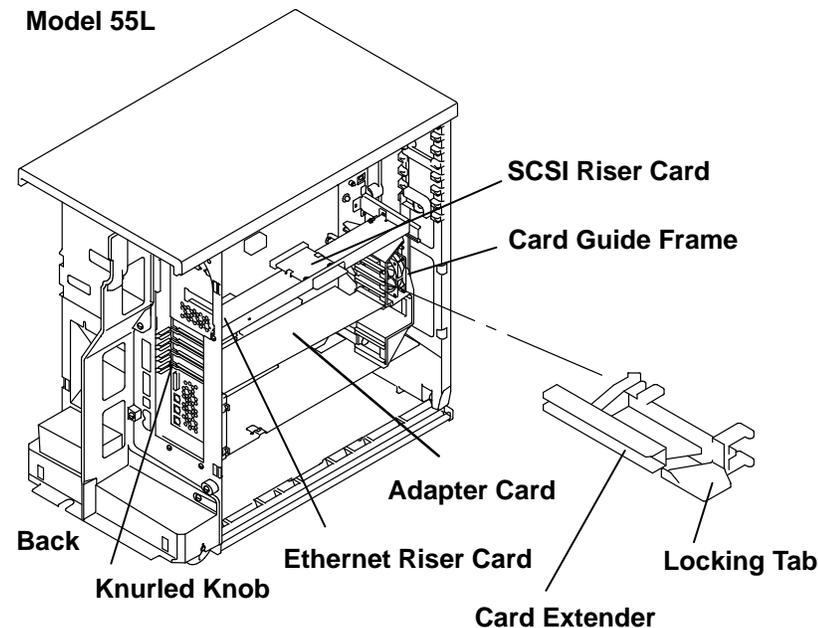
Setting the Ethernet Riser Card Jumpers

Thick/Thin Ethernet Riser

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

The thick/thin Ethernet riser comes from the manufacturer 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 the configuration pins.

2. Place 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

Jumpers in "Thick" Position

Jumpers in "Thin" Position
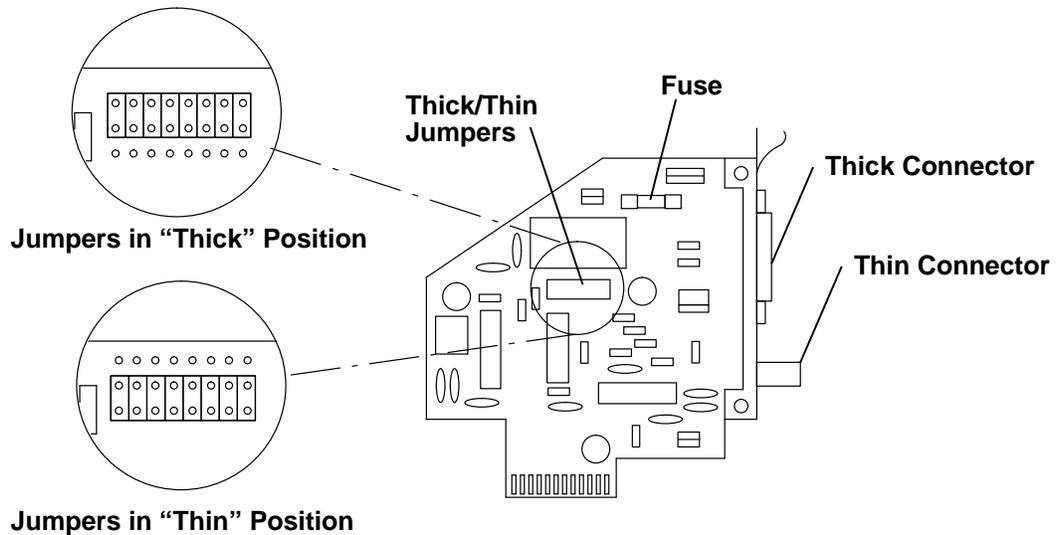
Twisted Pair Ethernet Riser

Note: Follow the correct shutdown and power procedures, and remove the Ethernet riser card 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
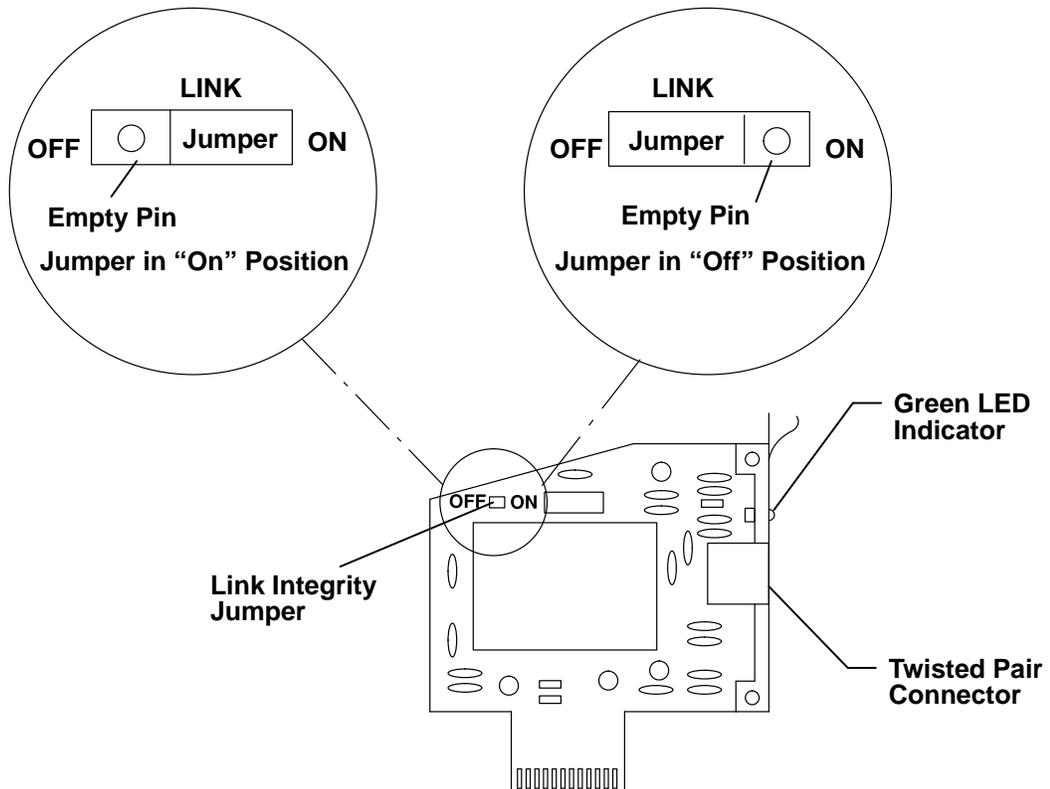
The single green LED on the twisted pair riser lights when the riser is properly connected to a 10 base T network and the power to the system unit is on. If the green LED does not come on there could be several possible problems:

- The twisted pair cable is defective or not connected.

- The network is not a 10 base T network.

- The Ethernet riser card is not properly installed in the system unit.

Memory Card

The memory cards are pressed into their slots on the CPU planar. The memory card components face down.

The CPU planar for Models 520 and 570 has a different module arrangement from the other CPU planars. Models 520 and 570 memory cards are configured singularly in the CPU planar, and the memory size of the cards can vary.

Model 55L has only one or two memory cards, which are configured in slots on the system planar.

The memory cards for most other models are configured in pairs. Both of the paired cards must have the same amount of memory (MB), and be the same memory type (Sx). In models 58H, 590, 591, the first and second pairs (first quad) must be of the same capacity, and the third and fourth pairs (second quad) must be of the same capacity. The cpaacity of the first quad and the second quad can be the same, but it is not required. The paired memory cards are configured as follows:

- First pair in slots D and H
- Second pair in slots B and F (must match first pair)
- Third pair in slots C and G (models 58H, 590, 591, and 595 must be configured with a fourth pair)
- Fourth pair in slots A and E (must match third pair)

Model 595 supports both S4.6 and S5 memory in any combination.

For information about the speed of the CPU planar and the type designation, see the *POWERstation and POWERserver Common Diagnostics Information For Micro Channel Bus Systems*.

Removal

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

1. Set the power switches on the attached devices to Off.

2. Set the power switch on the system unit to Off, and unplug the external power cable.

3. Follow the procedure for cover removal on page 3-2.

4. Swing the card support out of the way (for all models except Model 55L).

5. If the system has a memory card retainer, loosen the three screws, and slide the retainer down so that the memory card can be removed.

Model 55L

System Planar
SCSI Riser Card

Card Guide Frame

Adapter Card
CPU Card

Memory
Cards

Back

Ethernet
Riser Card

Knurled Knob

Locking Tab
Card Extender

All Except Model 55L

Air Deflector

A

Memory
Cards

H

Finger Behind Card

CPU Planar

View with Top
and Front Panel
Removed

Front

All Except Model 55L

Screws
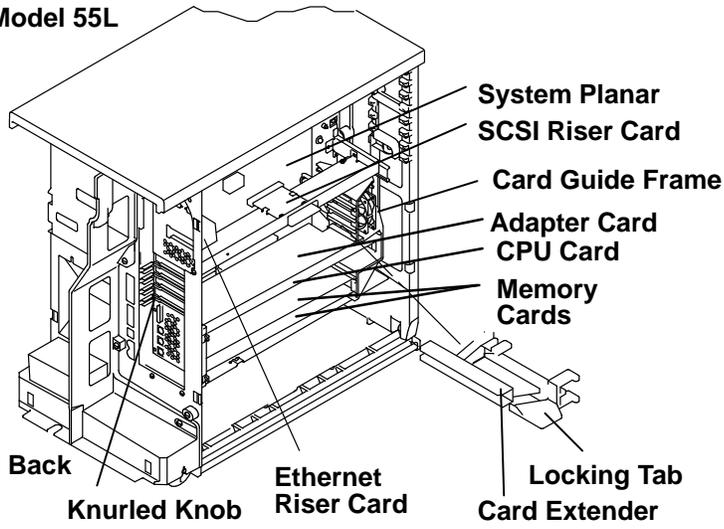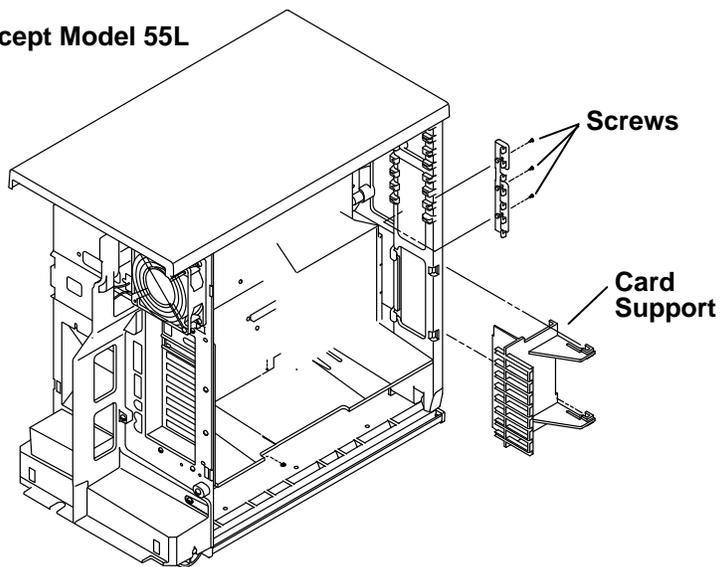
Card
Support

6. If there is a shield over the memory cards, raise the bottom of the shield; it must be held out of the way. Record the card location.

Attention: The latches on the memory module connectors break easily. Handle them carefully.

7. Do not grasp the memory modules on the card. With your finger behind the right side of the card, carefully pull the card out (except on Model 55L).

8. On Model 55L, remove the memory card by carefully grasping the card and pulling it straight out.

9. Refer to page 3-16 for the memory module removal procedure.

Replacement

Replace in the reverse order.

Memory Modules

Removal

1. Remove the memory card. Refer to the "Memory Card" removal procedure on page 3-13.

2. Release the retainer tabs by pulling them away from the ends of the memory module.

3. Rotate the memory module away from the center of the card and pull it away from the socket.

Replacement

1. Place the memory module in the keyed socket on the memory card; then press the memory module into the socket and then toward the center of the memory card until the retainers snap into place.

2. Replace the memory card. Refer to the "Memory Card" replacement procedure on page 3-15.

   Note: memory module locations are shown below.
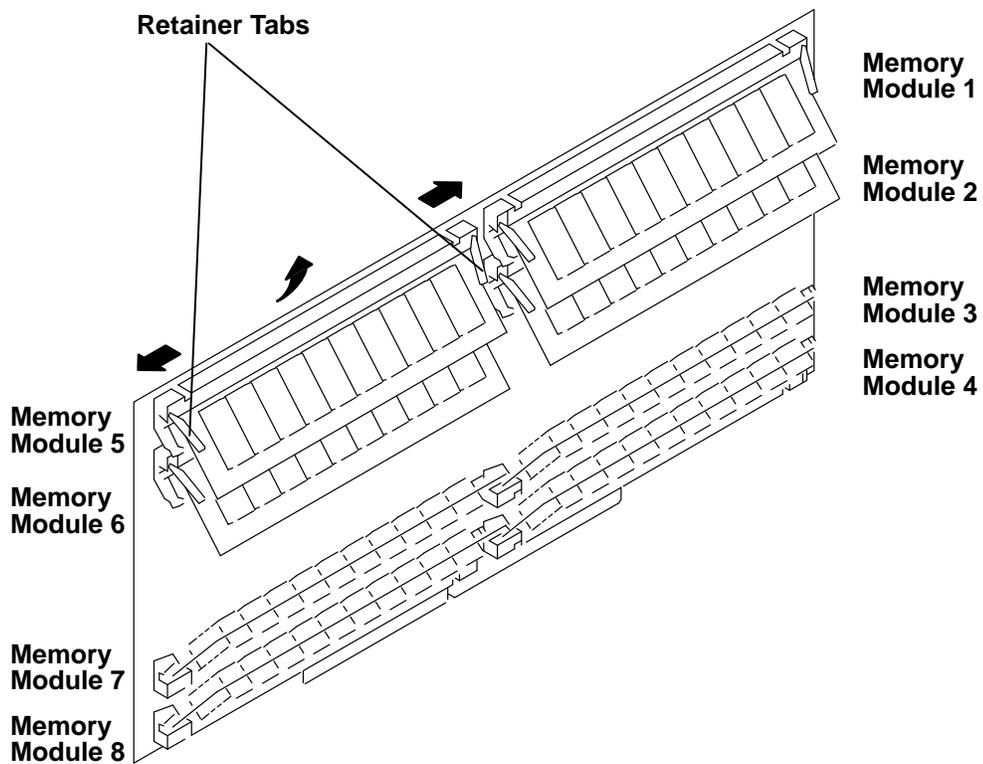
Memory board memory module positions vary and are numbered as follows:
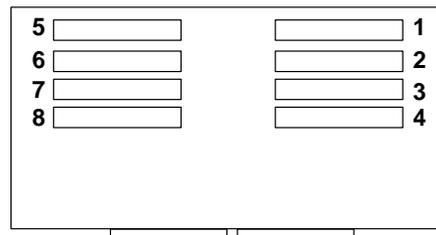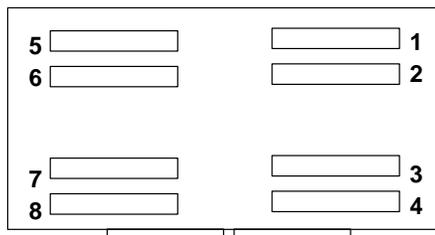
L2 Cache Memory Module (Model 59H Only)

Note: This feature is only on Model 59H. Two .5MB L2 cache memory modules must be installed for this feature to work.

Removal

1. Refer to the removal procedure for "Cover" on page 3-2.

2. Swing the air baffle out and away from the L2 cache area.

CPU Planar for Model 59H

L2 Cache Memory Modules
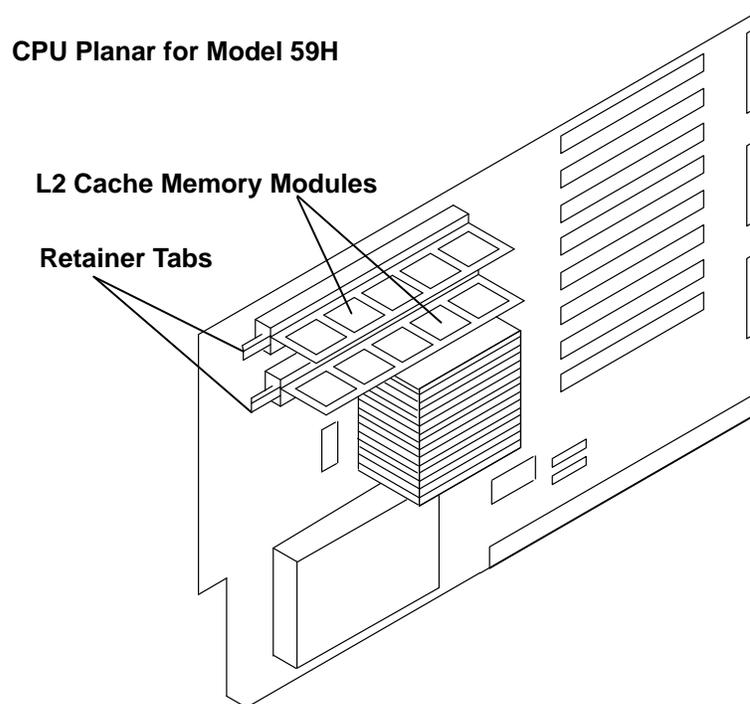
Retainer Tabs

3. Lift the retainer tabs and pull the L2 Cache memory module straight out.

L2 Cache Memory Modules

Notches

Retainer Tabs
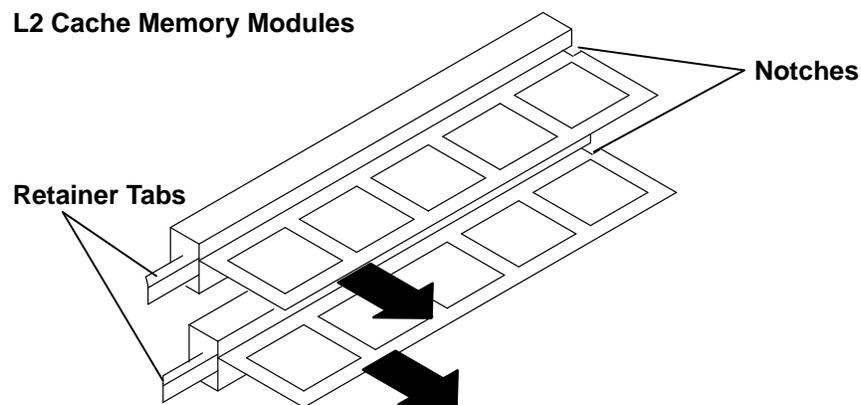
Replacement

Replace in the reverse order. Be sure to place the notch into the connector first and then press the other end in until it clicks.

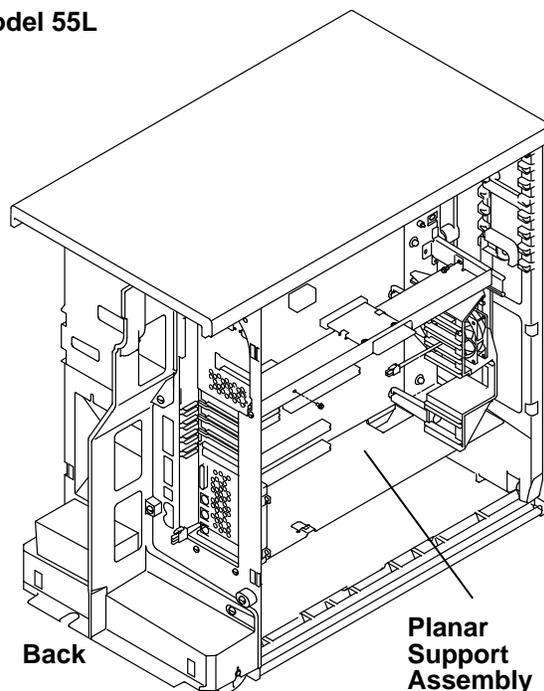# DC-DC Converter (Model 595 Only)

Removal

> **Note:** Refer to "Handling Static-Sensitive Devices" on page 3-1 before removing or installing the DC-DC converter.

1. Set the power switches on the attached devices to Off.
2. Set the power switch on the system unit to Off, and unplug the external power cable.
3. Refer to the removal procedure for "Cover" on page 3-2.
4. Swing the air baffle out and away from the CPU planar.
5. Remove the screw connecting the DC-DC card to bracket.

CPU Planar for Model 595

DC-DC Converter Card
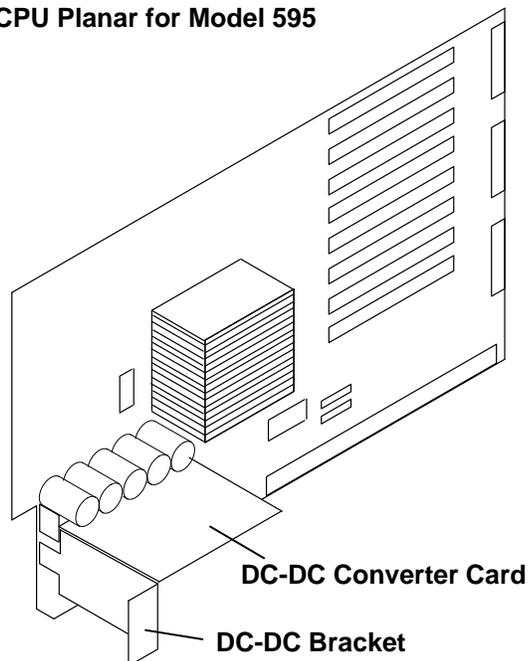
DC-DC Bracket

6. Carefully pull the DC-DC converter out of its connector and store in an anti-static bag.

Replacement

Replace in the reverse order, ensuring that the tabs on the bracket and card are properly seated.

> **Note:** If the bracket and card are separated, perform the following steps to ensure that the assembly is properly seated:

1. Attach the bracket to the bulkhead.
2. Seat the card.
3. Attach the screw that connects the card to the bracket.

Bulkhead and Planar (CPU and I/O Circuits)

Notes:

1. Each CPU planar contains an identification number that is used to control access to that system unit. This number is unique to each CPU planar. If you exchange the CPU planar, notify the customer that the identification number has changed. The customer needs to update the authorization for any program that uses this number to access the system.

2. Because the battery is disconnected from the VRAM during this procedure, the time, date, and the system bootlist must be reset at the completion of this procedure.

Removal (All Except Model 55L)

To remove any planar, the bulkhead must be removed from the system unit. In early system units, all three planars must be removed as a unit with the bulkhead. After Model 570, the CPU and I/O planars must be removed with the bulkhead before the standard I/O flex circuit can be removed from the system unit. After doing steps 1 through 12, the CPU planar, standard I/O circuit, or bulkhead can be removed individually. Always complete steps 1 through 12 first.

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

1. Set the power switches on the attached devices to Off.

2. Set the power switch on the system unit to Off, and unplug the external power cable.

3. Remove all the memory cards. Refer to the "Memory Card" removal procedure on page 3-13.

4. Remove the DC-DC converter card (Model 595 only). Refer to the "DC-DC Converter Card" removal procedure on page 3-18.

5. Remove all the adapters. Refer to the "Adapters" removal procedure on page 3-8 and the "Serial Optical Channel Converter" on page 3-7.

6. Remove the card support or air deflector by pressing on the release arms and sliding it out.
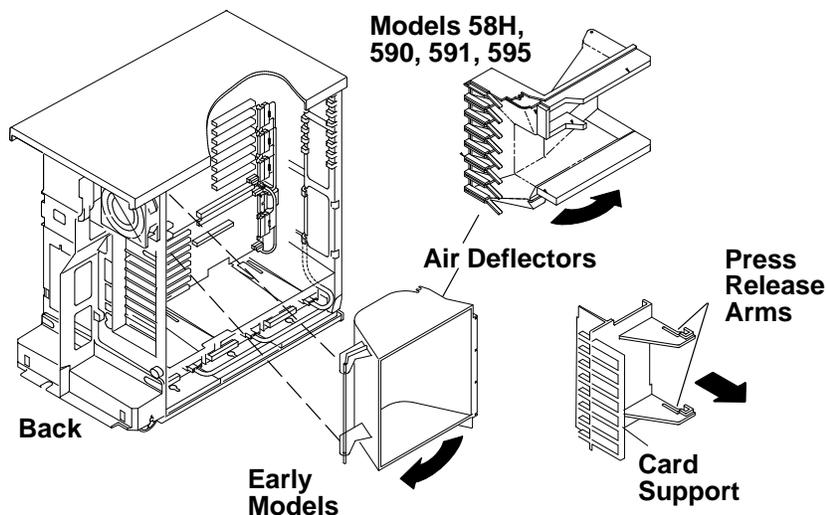
7. Disconnect all the external cables attached to the standard I/O planar.

Note: For early system units, refer to the illustration on page 3-21. For Models 570, 580, 58H, 590, 59H, 591, and 595, refer to the illustration on page 3-22.

8. Disconnect the P13, P14, P15, P16 (if connected), P39, P40, P41, and P59 cable connectors.

9. For Models 570, 580, 58H, 590, 59H, 591, and 595, disconnect the P37 flex circuit connector and the P38 cable connector.

10. For Model 595, disconnect the P3 connector.

11. Remove the large screw just off each side of the CPU planar.

12. Remove the mounting screws from around the bulkhead. For early system units, remove the wedge behind the bulkhead.

13. Detach the memory card shield, if installed, from the top cover by pulling it straight down.

14. Press the two latches that hold the bottom of the planar assembly, and pull it out from the bottom.

• To remove the CPU planar, remove the planar mounting screws and disconnect the interface connector from the I/O circuit. The memory card shield is anchored by four of these screws. Omit this step if only the standard I/O circuit is being removed.

Memory Card Shield (Present on Some Models)

Note: Some earlier models have a different style shield
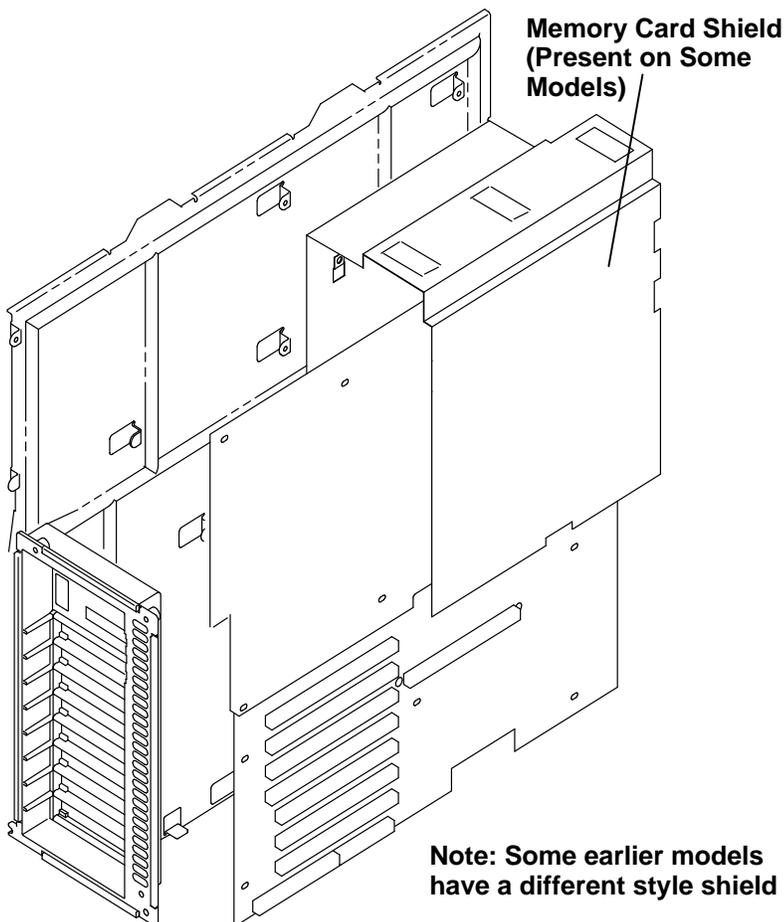
- To remove the standard I/O planar from the bulkhead in early system units, remove the five smaller screws, and push the guide studs in the I/O planar. Note how far the studs protrude, about 3 mm (1/8 inches) beyond the top of the interface connector. Note the spring clip shown on the following page. For fuse and jumper information, refer to "Standard I/O Planar Locations" on page 1-10.

- To remove the standard I/O flex circuit from Models 570, 580, 58H, 590, 59H, 591, and 595, system units, remove the three mounting screws from the connector housing. Remove the foam block from the standard I/O flex circuit. Remove the housing from the system unit, sliding the flex circuit out through the opening. The standard I/O flex circuit does not require fuse servicing.

- To remove the I/O planar in early system units, remove the CPU and standard I/O circuit first; then remove the mounting screws. In Models 570, 580, 58H, 590, 59H, 591, and 595, remove only the CPU planar; then remove the six screws. Be sure all the previous steps are completed first.

- To remove the bulkhead, remove two bulkhead screws and two ground strip screws.

Early System Units

Models 570, 580, 58H, 590, 59H, 591, 595

Interface
Connector

CPU Planar

DC-DC Convertor
(Model595 Only)

Screw

Standard I/O
Housing

Screws

Standard I/O Flex
(Behind I/O Planar)

Back

Bulkhead

Latch

I/O
Planar

Foam Block
(Behind I/O Planar)

Latch

P37

P59

P3 (Model
595 Only)

P13

P14

Screw
(Behind)

P16

P15

P39

P40

P38

P41
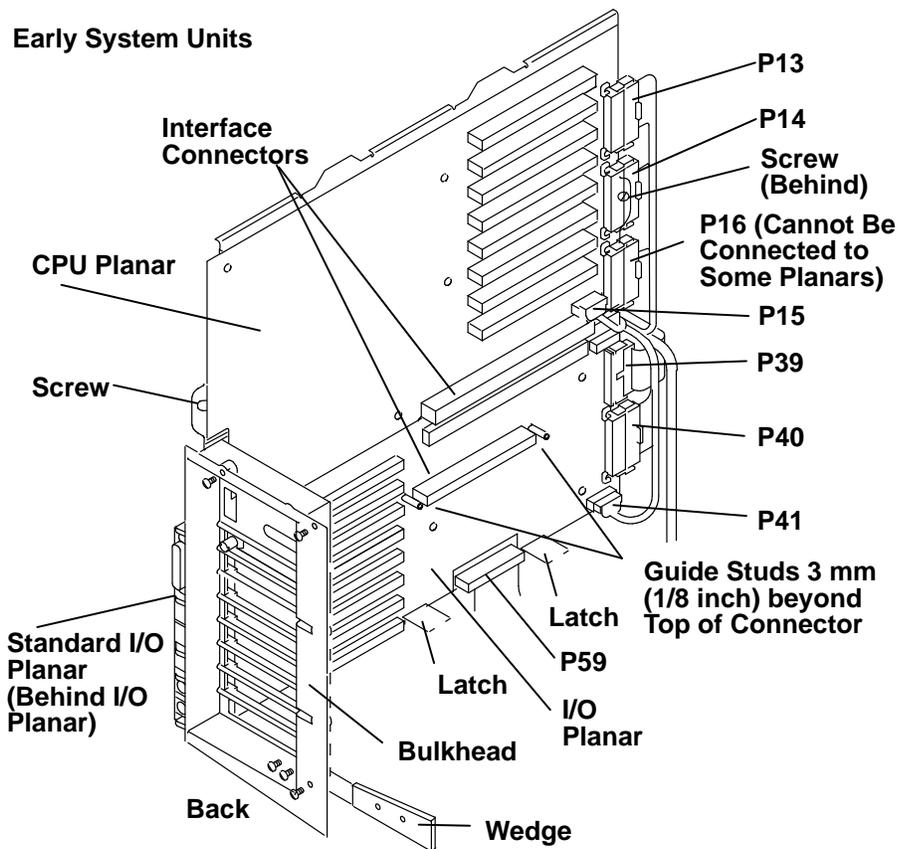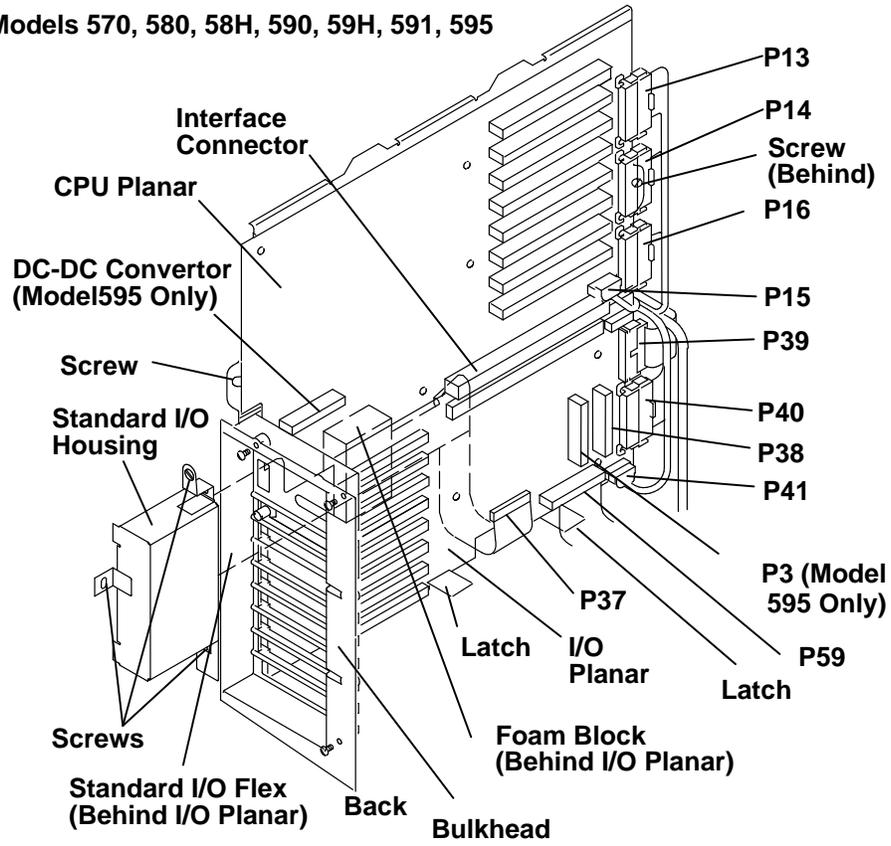
Replacement (All Except Model 55L)

Replace in the reverse order and carefully note the following:

1. For early system units, set the jumpers on J56 and J58 of the standard I/O planar. Refer to the illustration on page 1-10 for information on jumper settings.

2. When replacing the connectors, be sure to correctly align the key with its socket.

3. When replacing the CPU planar, be sure to place the memory card shield between the logic frame and the CPU planar (if applicable).

4. When either the I/O planar or the bulkhead is replaced, be sure that the left corners of the I/O planar are against the notches inside the bulkhead.

5. When replacing the bulkhead, be sure that the three alignment tabs on the logic frame are seated in the slots in the bulkhead. Tighten the screws referred to in step 12 of the removal procedure, and then tighten the screws referred to in step 11.

6. For early system units, when replacing the standard I/O planar, be sure that the spring clip enters the slot in the logic frame. With the I/O planar lying on a flat surface, firmly seat the interface connector by pressing on the back of the standard I/O planar. The guide studs in the I/O planar should protrude about 3 mm (1/8 inch) beyond the top of the interface connector on the I/O planar. See the illustration on the previous page.

7. For Models 570, 580, 58H, 590, 59H, 591, and 595, when replacing the standard I/O flex circuit, slide the circuit into the rear opening of the logic frame; then secure the connector housing, and replace the foam block.

8. When replacing the memory card shield (if applicable), be sure it is secured to the top cover by its Velcro hook-and-loop fastener.

Models 570, 580, 58H, 590, 59H, 591, 595

Logic Frame

CPU
Planar

Standard
I/O Flex

Bulkhead

Corners

I/O
Planar

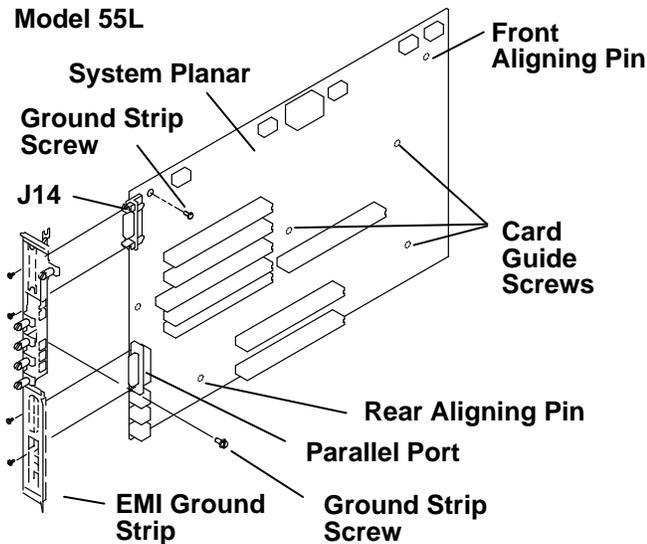Ground
Strip
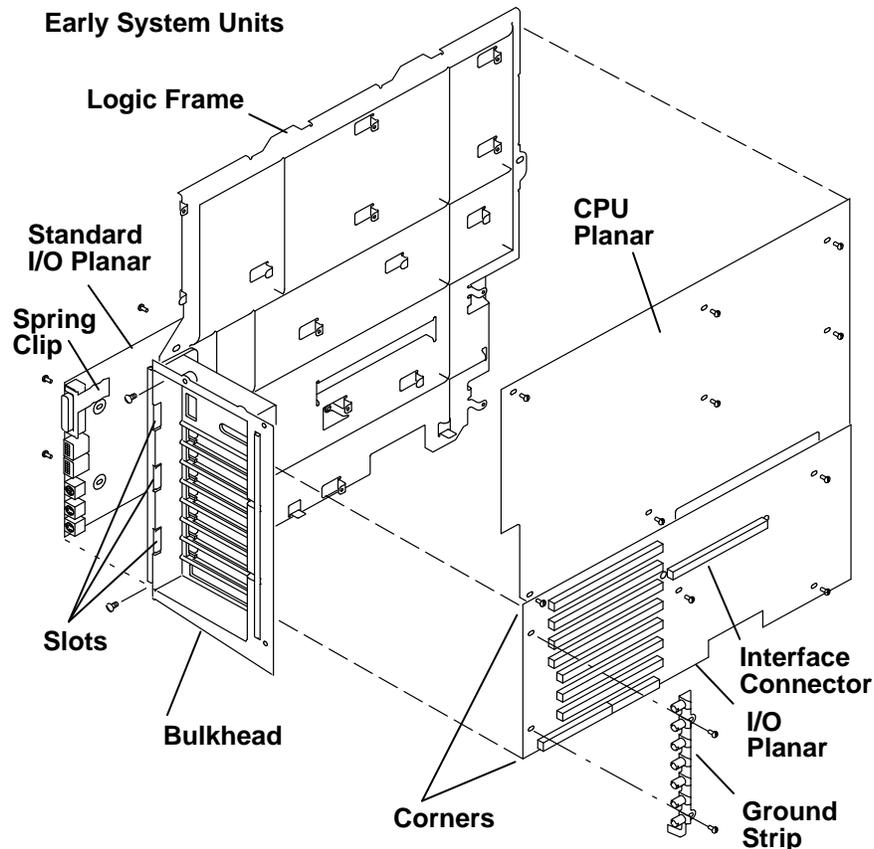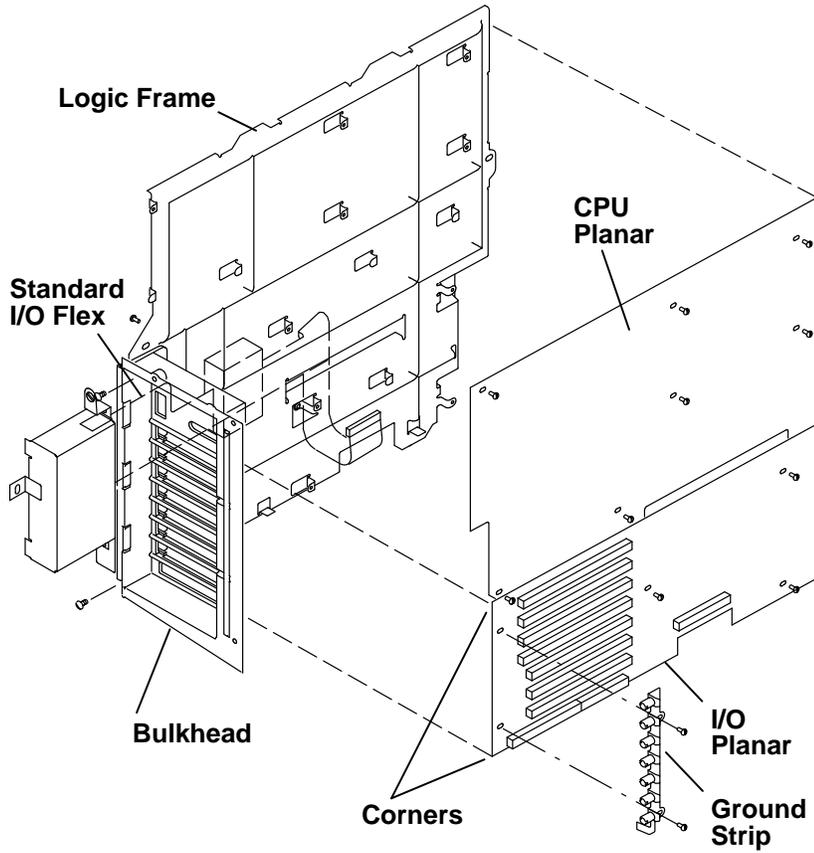
Planar Support Assembly (Model 55L Only)

Removal

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

1. Set the power switch on the system unit to Off, and unplug the external power cable.

2. Do the procedure for cover removal on page 3-2.

3. Do the removal procedure for "Attached Devices" on page 3-5.

4. Disconnect all the power cables (J2, J25 and J27) from the I/O planar.

5. Disconnect the control panel flex cable from the operator panel riser card.

6. Disconnect the front fan cable from the power supply.

7. Disconnect the cable (J20) attached to the 3.5 inch diskette assembly.

8. Disconnect the cable (J24) attached to the SCSI riser card.

9. Do the removal procedures for the memory cards (page 3-13), adapter cards and Ethernet riser card (page 3-10), and CPU card (page 3-27) from the I/O planar.

10. Remove the single screw that holds the support assembly to the front of the system unit.

11. Remove the seven screws that hold the support assembly to the rear cap assembly at the back of the system unit.

12. Lift the assembly upwards, and pull out from the bottom, taking care not to damage the EMC gasket.

Replacement

Replace in the reverse order.

Model 55L

Back

Planar Support Assembly

Model 55L

Planar Support Assembly

EMC Gasket (On Outer Back Edge of Assembly)
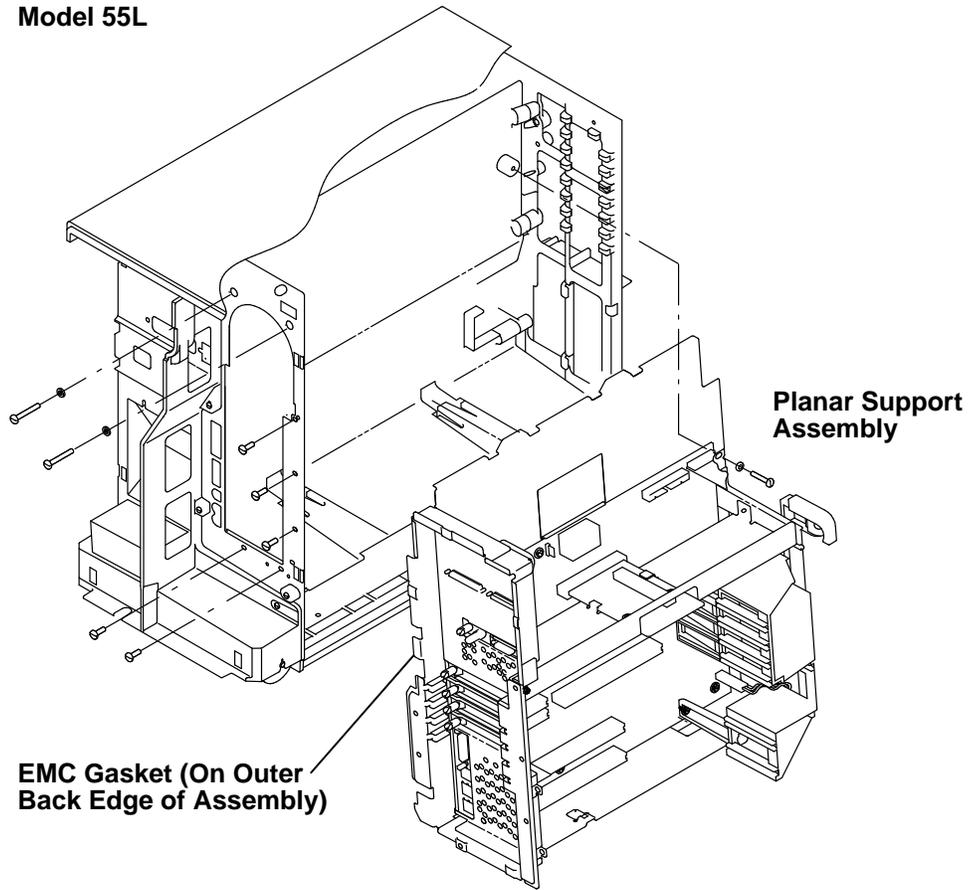
Model 55L

Planar Support Assembly
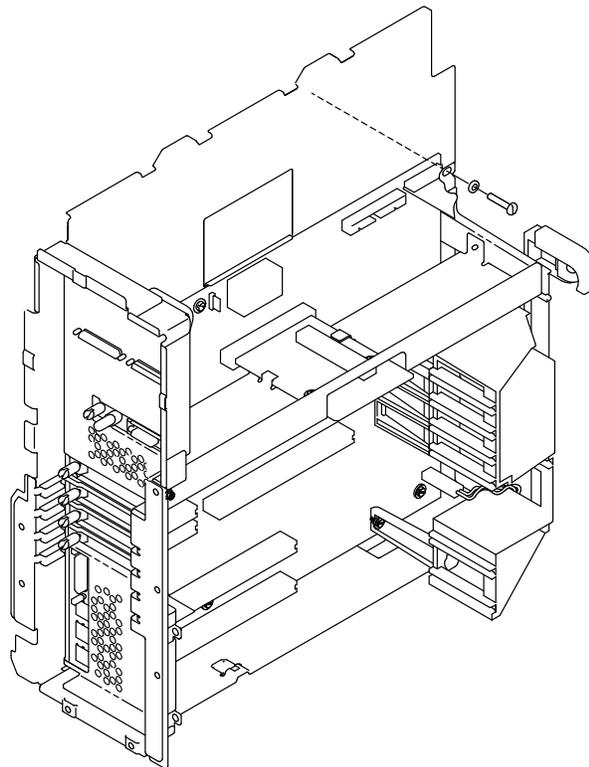
CPU Card (Model 55L Only)

> **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 removal procedure for "Cover" on page 3-2.

4. Make a note of its position, and pull the CPU card straight out of its connector.

Model 55L CPU Card Location on the System Planar
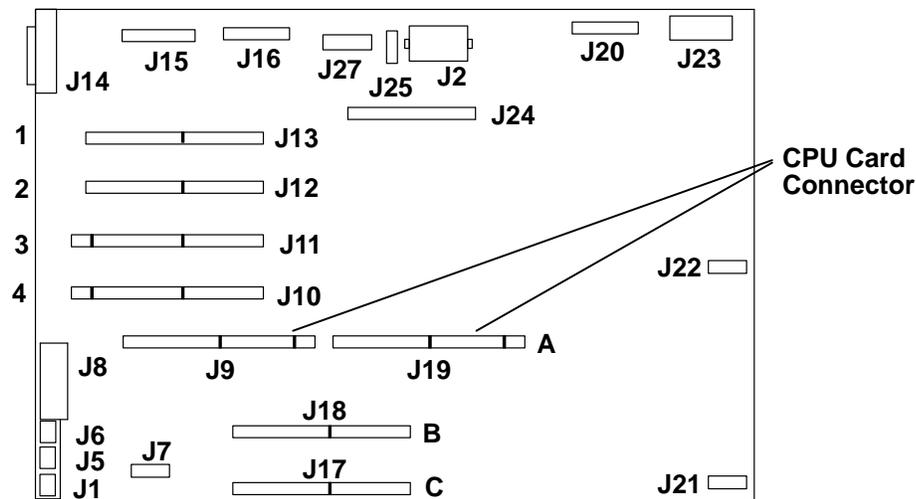
Replacement

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. Follow the removal steps in reverse order.

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.

Model 55L

System Planar

SCSI Riser Card

Card Guide Frame

Adapter Card

CPU Card

Memory Cards

Locking Tab

Card Extender

Ethernet Riser Card

Back

Knurled Knob
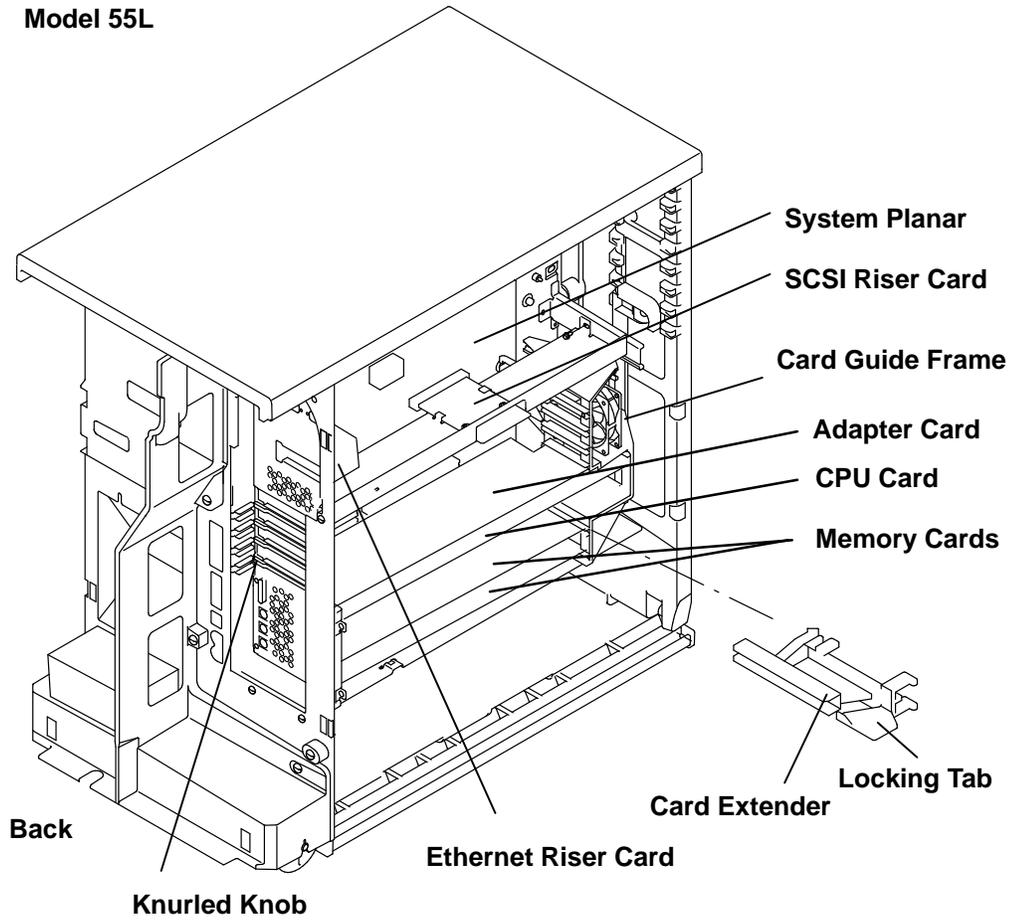
Rear Fan (Model 55L Only)

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 removal procedure for "Cover" on page 3-2.

4. Do the removal procedure for the CPU card on page 3-27.

5. Disconnect the cable for the rear fan (P7).

6. Pull the fan out.

7. Pull the shock mounts out of their mounting holes.

Model 55L

Air Flow
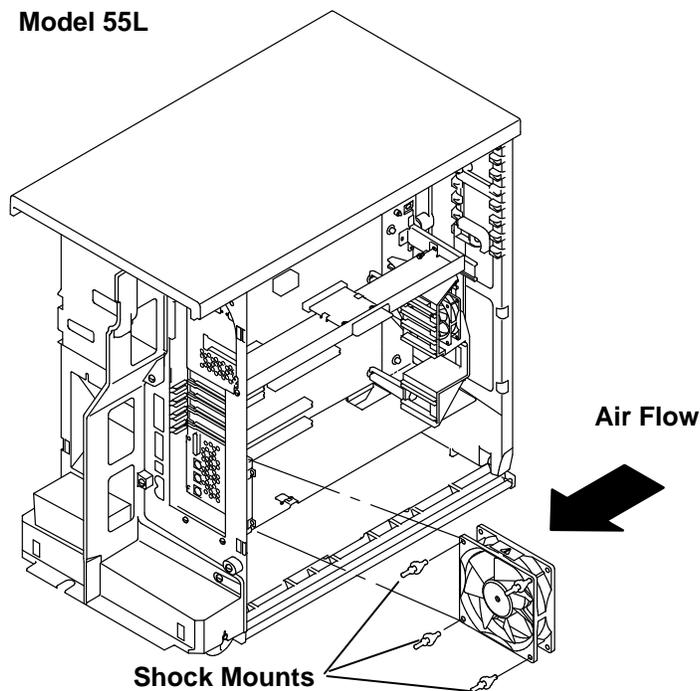
Shock Mounts

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. With a pliers, pull the shock mounts into their installed position from the rear.

4. Connect the cable for the rear fan (P7).

5. Do the replacement procedure for the CPU card on page 3-27.

6. Do the replacement procedure for "Cover" on page 3-3.

7. Set the power switches of the attached devices to On.

8. Set the power switch of the system unit to On.

# SCSI Support Bracket and SCSI Riser Card (Model 55L Only)

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

Removal

1. Set the power switch on the system unit to Off, and unplug the external power cable.

2. Do the removal procedure for "Cover" on page 3-2.

3. Disconnect the cables attached to the SCSI riser card.

4. Remove the screws that hold the frame assembly to the front and back of the planar support structure.

5. Pull the center frame assembly with the SCSI riser card out of the planar support structure.

6. Remove the screws that hold the SCSI riser card to the bracket, and slide the SCSI riser card out of the SCSI support bracket.

Replacement

Replace in the reverse order.
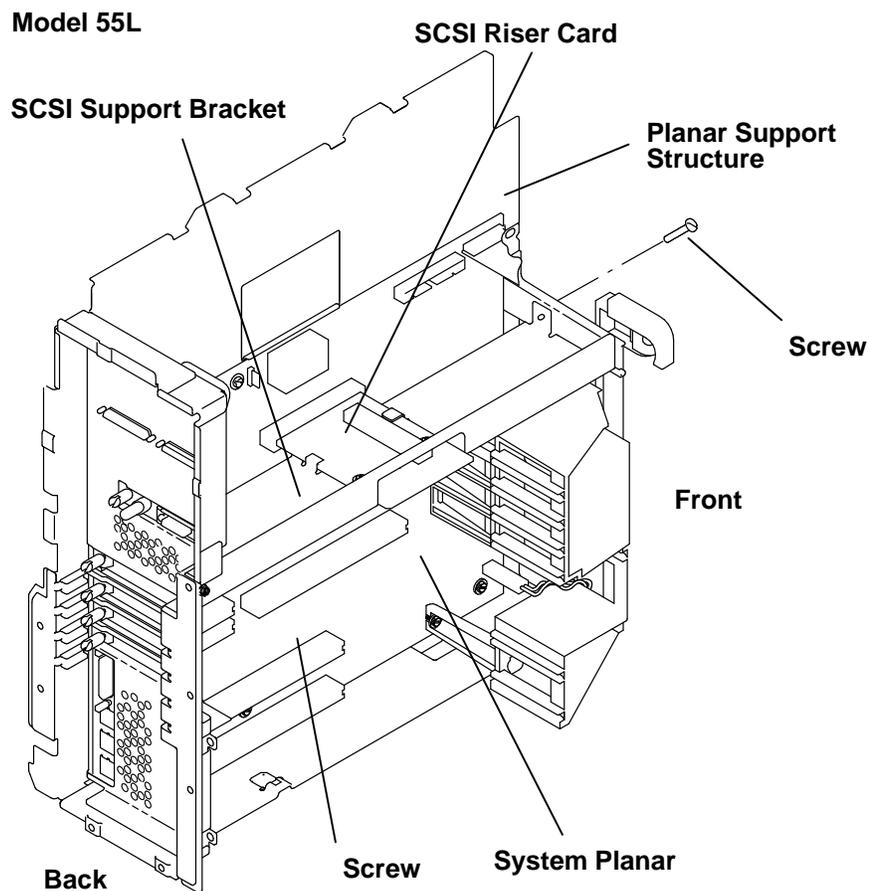
Card Guide Frame (Model 55L Only)

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 removal procedure for "Cover" on page 3-2.

4. Do the removal procedure for "Battery" on page 3-54.

5. Make a note of the location of the notch in the foam and remove the foam from the top of the fan.

6. Do the removal procedure for "Front Fan" on page 3-32.

7. Remove the three mounting screws and the card guide frame.

Model 55L

Card Guide Frame

Back

Battery
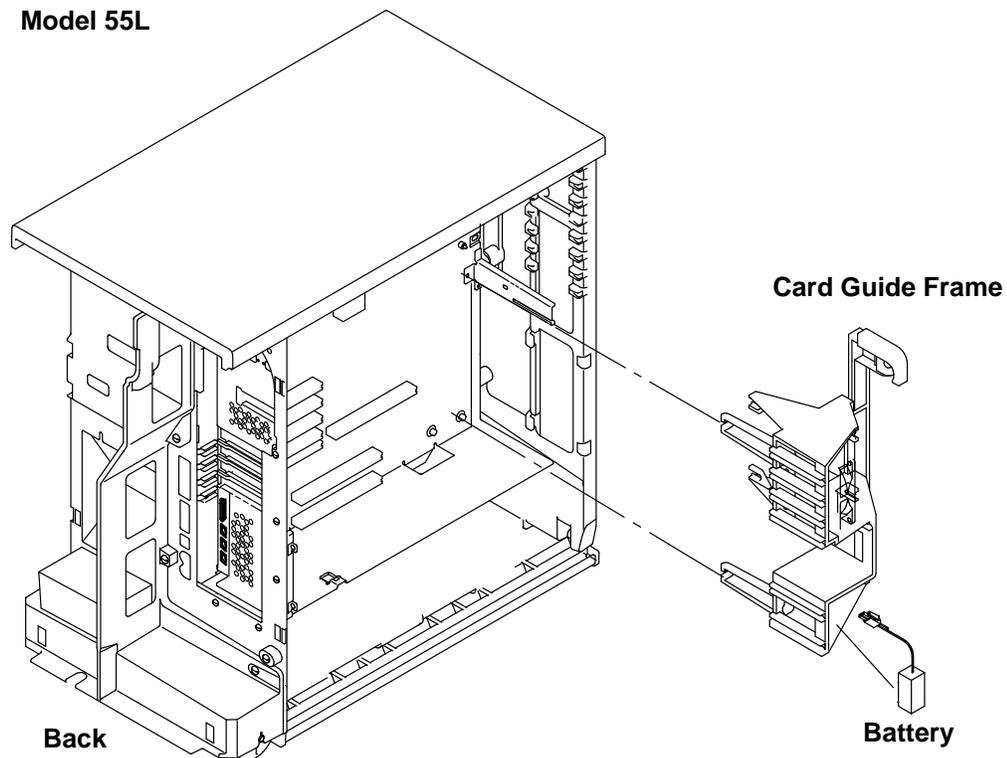
Replacement

1. Align the cards with the correct slots in the card guide frame, and install the card guide frame with the three (1 long, 2 short) mounting screws.

2. Do the replacement procedure for "Front Fan" on page 3-32.

3. Install the foam on the top of the fan.

4. Do the replacement procedure for "Battery" on page 3-54.

5. Do the replacement procedure for "Cover" on page 3-3.

6. Set the power switches of the system unit to On.

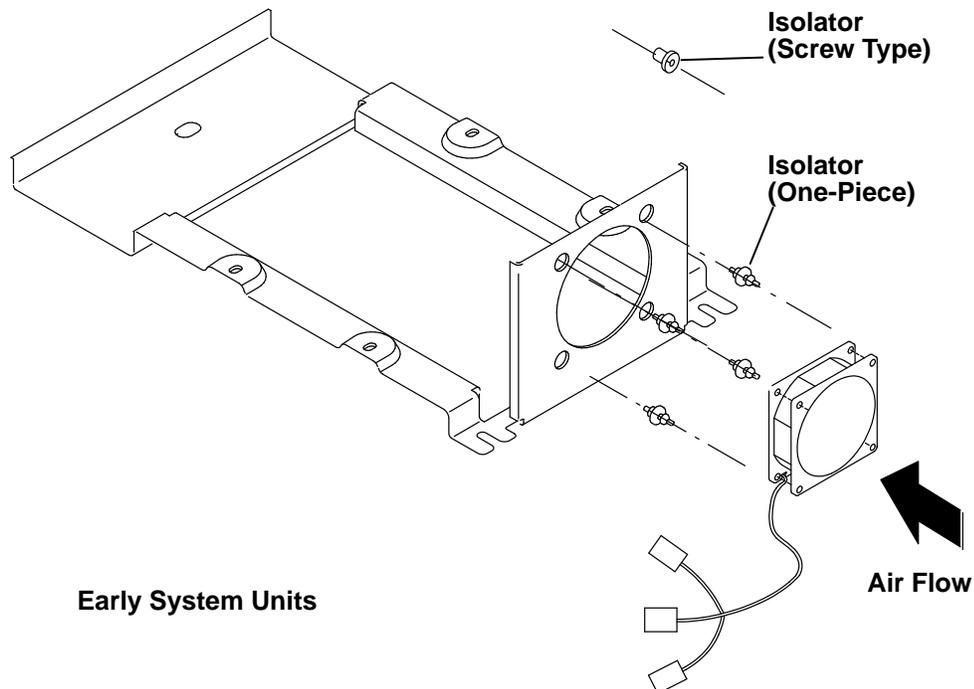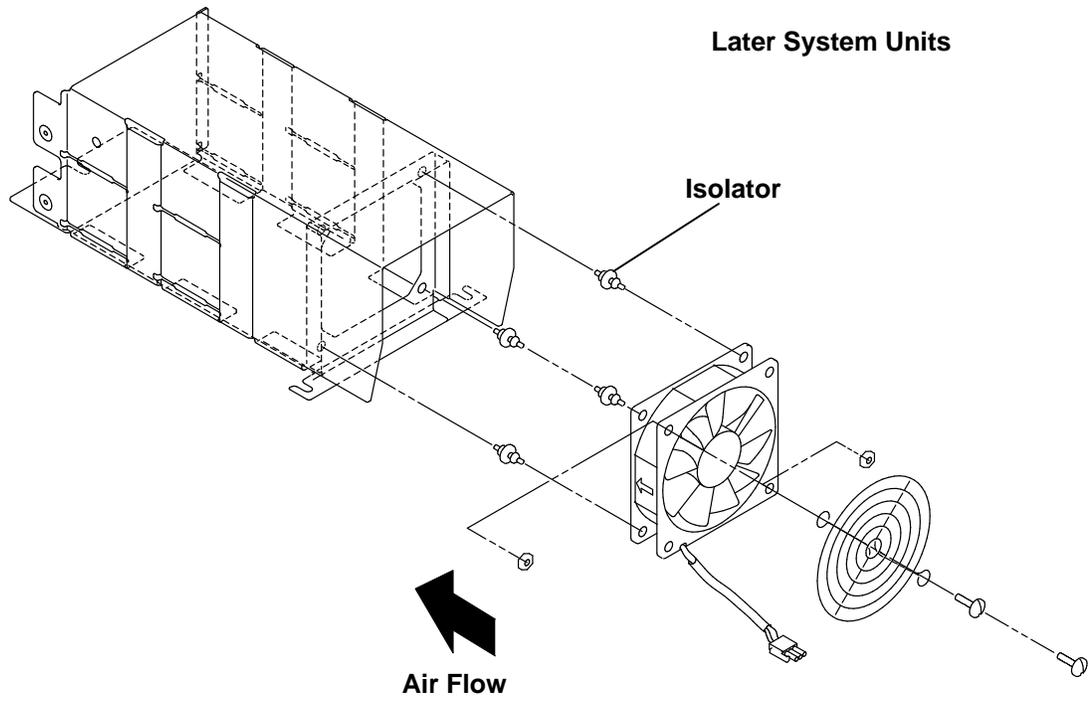7. Set the power switches of the attached devices to On.

Front Fan (Model 55L Only)

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 removal procedure for "Cover" on page 3-2.

4. Do the removal procedure for "Adapters" on page 3-8.

5. Disconnect the front fan cable from the power supply (P26).

6. Remove the foam from the top of the fan.

7. Remove the three screws and the card guide frame assembly.

8. Pull the shock mounts just enough to clear their mounting slots, and lift the fan out.

Model 55L

Card Guide Frame

Shock Mounts

Shock Mounts

Fan

Plug

Air Flow

Back
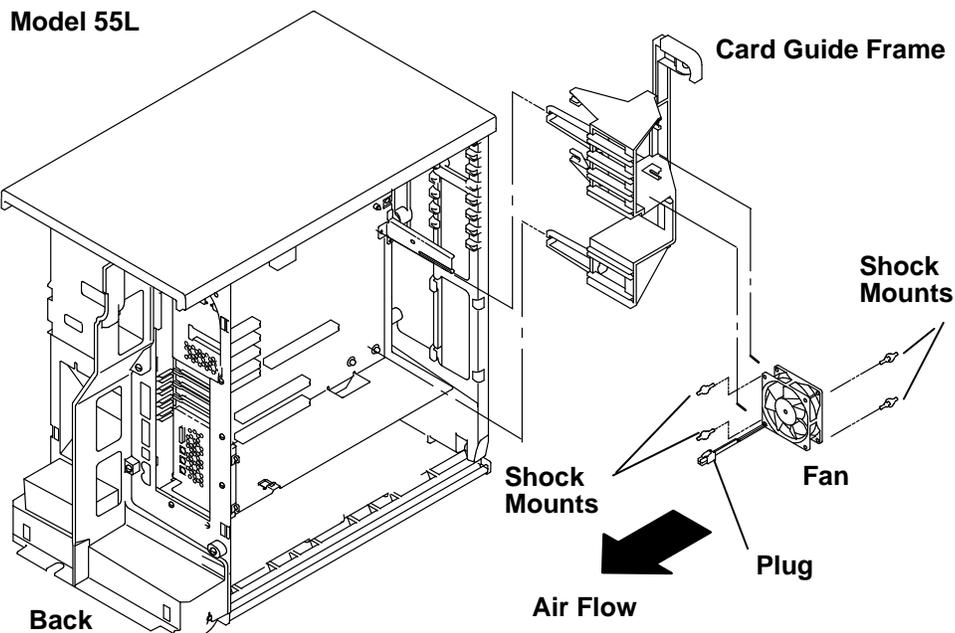
Replacement

1. With the air flow arrow pointing toward the rear of the machine and the wires to the center of the system unit, 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. Install the card guide frame and three screws.

3. Install the foam on the top of the fan.

4. Reconnect the fan cable to the power supply connector (P26).

5. Do the replacement procedure for "Adapters" on page 3-8.

6. Do the replacement procedure for "Cover" on page 3-3.

7. Set the power switches of the attached devices to On.

8. Set the power switch of the system unit to On.

System Planar (Model 55L Only)

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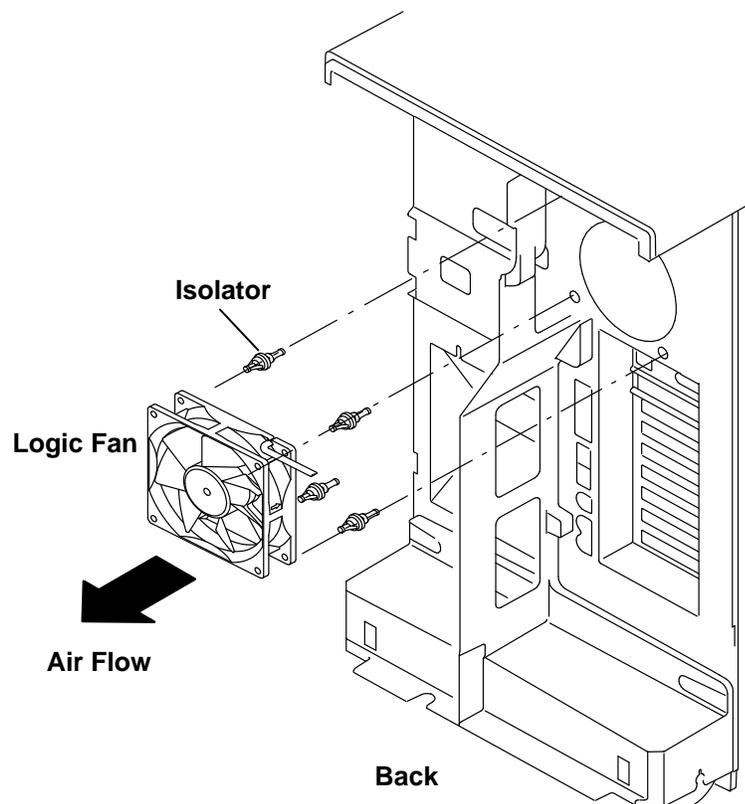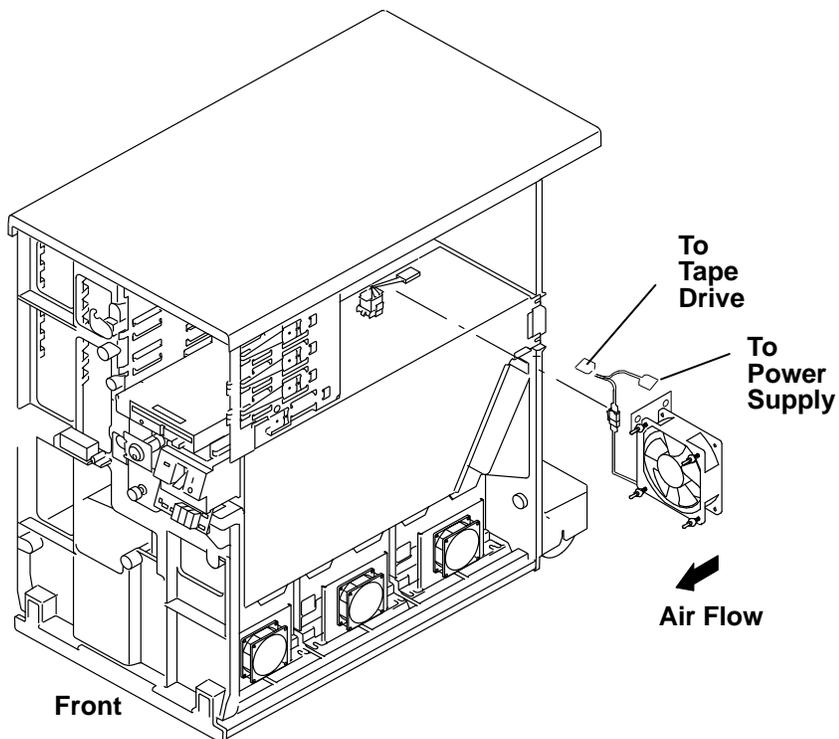
Removal

1. Set the power switches of the attached devices to Off.

2. Set the power switch of the system unit to Off.

3. Do the removal procedure for "Cover" on page 3-2.

4. Remove the external power cable.

5. Make a note of their positions, and remove the other I/O cables (such as the keyboard and mouse).

6. Do the removal procedure for "SCSI Support Bracket and SCSI Riser Card" on page 3-30.

7. Do the removal procedure for "Adapters and Ethernet Riser Card" on page 3-10.

8. Do the removal procedure for "Card Guide Frame" on page 3-31, but leave the front fan in the card guide frame. Note that the longest screw goes through the option card down stop.

9. Do the removal procedure for "Rear Fan" on page 3-29.

10. Make a note of their positions, and remove the remaining system planar mounting screws.

11. Remove the system planar from the base.

12. Remove the stand-off screws from the parallel port.

13. Remove the two screws from the unused connector, J14.

14. Carefully pry the EMI ground strip off the system planar (the strip may have sharp edges).

Model 55L

System Planar

Front Aligning Pin

Ground Strip Screw

J14

Card Guide Screws

Rear Aligning Pin

Parallel Port

EMI Ground Strip
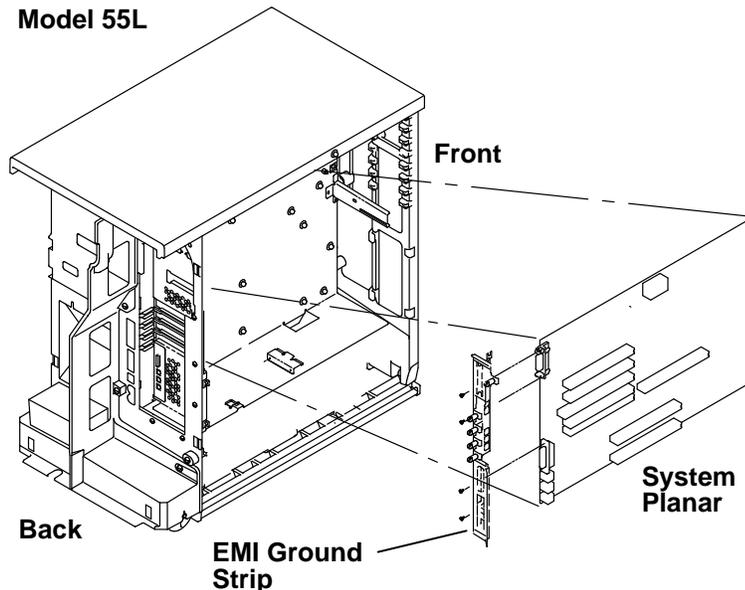
Ground Strip Screw

Replacement

Note: Be sure to tell the customer that the time and date need to be reset after system planar replacement.

1. As you install the EMI ground strip, ensure that the system planar aligning tab (under the mouse connector) is under the system planar.

2. Replace the two screws from the unused connector, J14.

3. Install the stand-off screws on the parallel port.

4. Insert the system planar, and align it with the two aligning pins (rear pin first).

5. Install seven of the 10 system planar screws, leaving out the two screws for the card guide frame until you install the card guide frame. Also, leave out the ground strap screw until you install the power supply. (Do not confuse the two holes in the system planar that line up with the foot mounting screws with system planar mounting screws.)

6. Do the replacement procedure for "Rear Fan" on page 3-29.

7. Do the replacement procedure for "Card Guide Frame" on page 3-31. Note that the longest screw goes through the option card down stop.

8. Ensure that the ground strap from the power supply to the system planar is installed.

9. Replace all cards and I/O slot brackets in their previous positions.

10. Replace all adapter card cables.

11. Do the replacement procedure for "Planar Support Assembly" on page 3-25.

12. Replace the other I/O cables (such as the keyboard and mouse).

13. Do the replacement procedure for "SCSI Support Bracket and SCSI Riser Card" on page 3-30.

14. Do the replacement procedure for "Adapters and Ethernet Riser Card" on page 3-10.

15. Replace the external power cable.

16. Do the replacement procedure for "Cover" on page 3-3.

17. Set the power switches of the attached devices to On.

18. With the key mode switch in the Service position, set the power switch to On.

Serial Ports Flex Circuit (Model 55L Only)
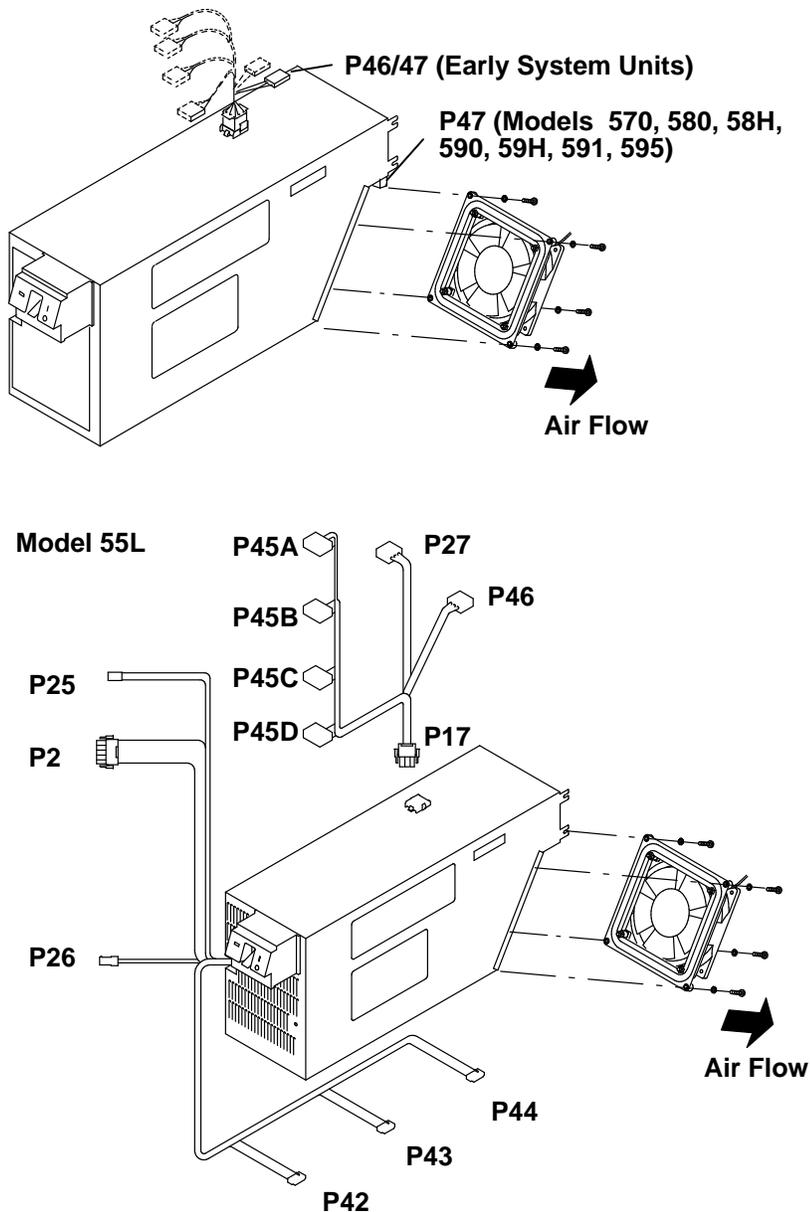
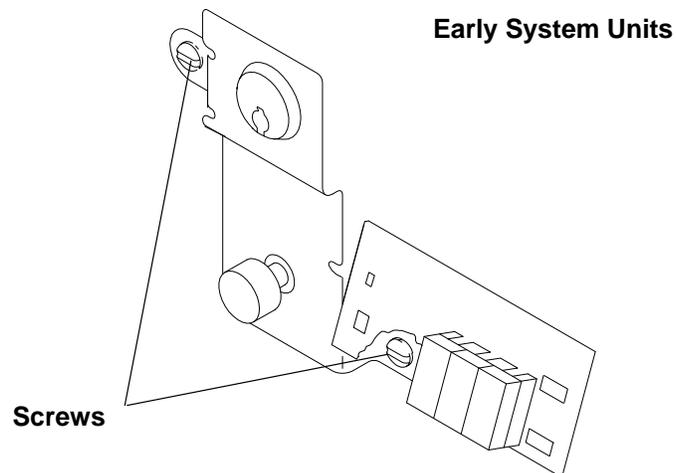## Removal

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 removal procedure for "Cover" on page 3-2.

4. Remove the power cable.

5. Disconnect the adapter cables from the serial ports.

6. Disconnect the flex cable from the planar at J16.

7. Remove the four jackscrews holding the flex cable to the system unit.

Model 55L   **Jackscrews**

Flex Cable
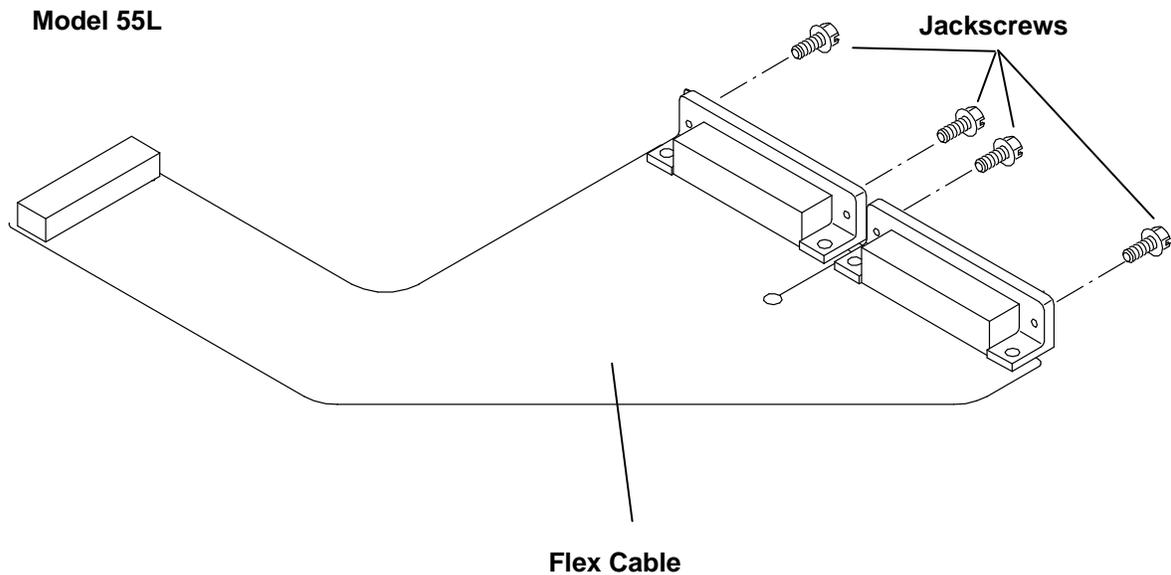
Replacement

Replace in reverse order.

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 to 50 mm (1 to 2 inches) from the connector. Each toroid comes in a plastic bag with a cable tie; use these cable ties to secure the two toroids to the cable.

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. Follow the procedure for cover removal on page 3-2.

5. Disconnect the device signal cable from the adapter.

6. Remove the cable tie from around the toroid.

7. Separate the toroid and remove it from the cable.

Replacement

Clamp the toroids around the cable 25 to 50 mm (1 to 2 inches) inches from the system end of the connector. Run the cable tie through the eyelet on the toroid and around the cable. The cable tie should be tight enough to keep the toroid from moving on the cable.
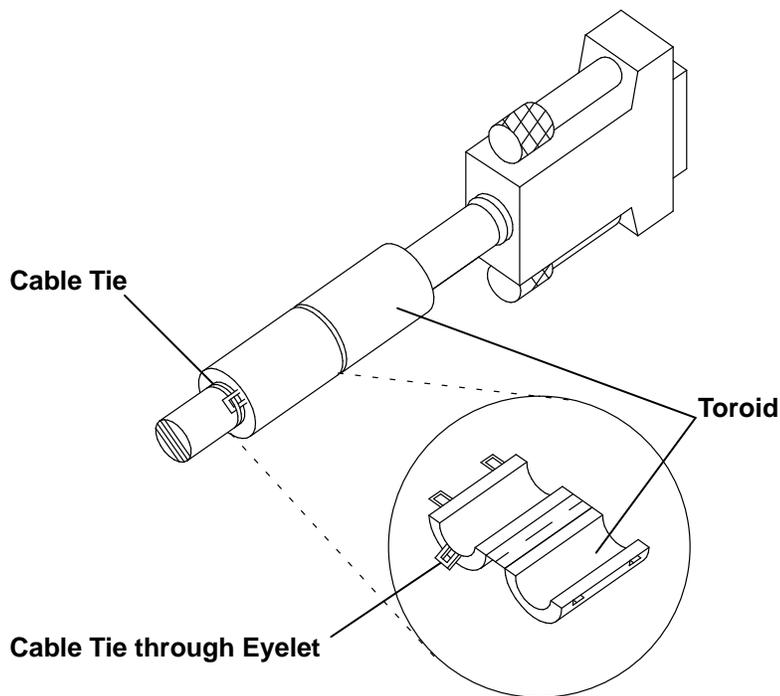
Disk Drive

Removal

Note: Refer to "Handling Static-Sensitive Devices" on page 3-1 before removing or installing drives in this system.
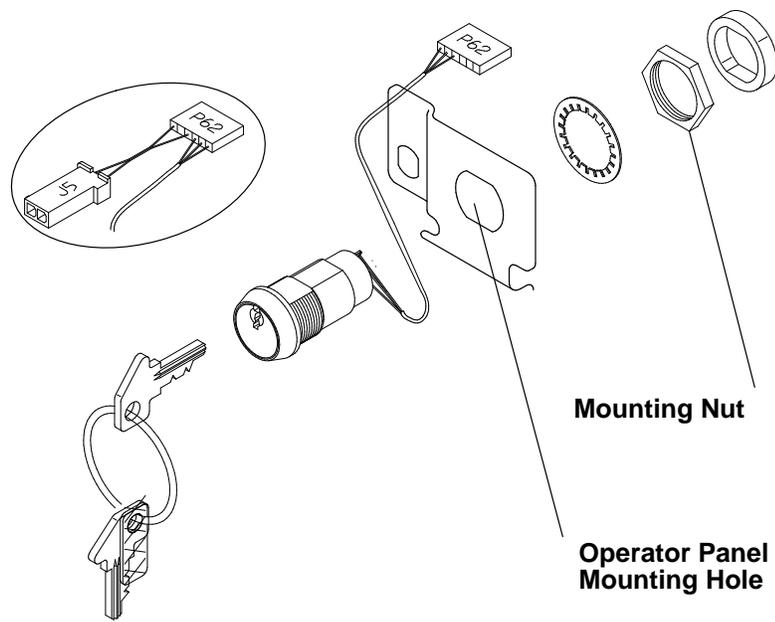
1. Set the power switches on the attached devices to Off.

2. Set the power switch on the system unit to Off, and unplug the external power cable.

3. Do the removal procedure for "Cover" on page 3-2.

4. Disconnect the drive power connectors.

5. Disconnect the cables from the drive. For 3.5-inch drives, see the following page.

6. Loosen (remove if necessary) the screw that anchors the bottom plate to the frame.

7. Pull the drive cage assembly, and lift it out of the system.

Note: Remove old style drive cages from the left side of the system unit. Remove new style drive cages from the right side of the system unit.
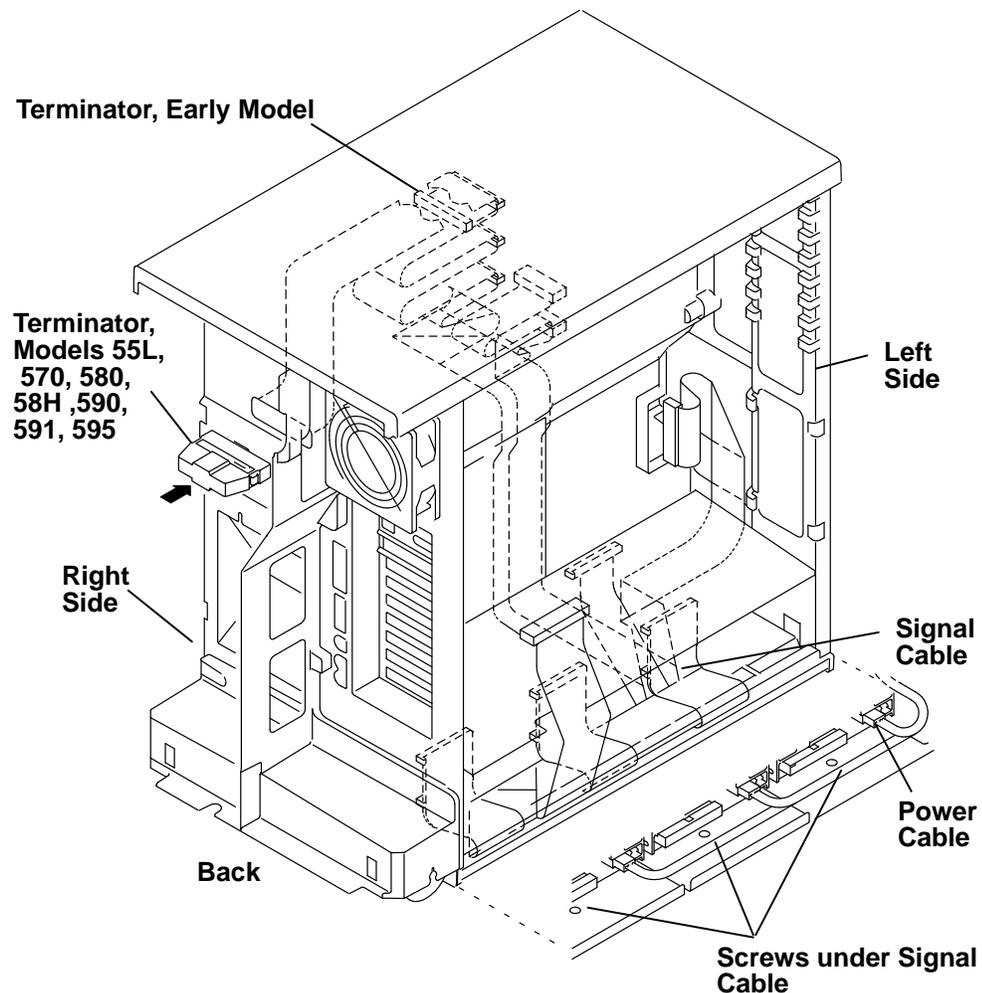
8. Remove the screws that hold the drive to the bottom plate.

9. If you are removing a 3.5-inch drive go to step 10; otherwise, go to step 12.

10. Remove the drive and the plate it is mounted to.

11. Remove the drive from the mounting plate.

12. Refer to the *POWERstation and POWERserver Common Diagnostics Information For Micro Channel Bus Systems* manual for electronic card replacement and address information.

13. Allow enough time for the replacement drive to return to normal temperature, if necessary. Refer to "Acclimation" on page 3-1 for more information.

Replacement

Replace in the reverse order. Be sure that the bottom plate engages the locating posts at the rear when replacing the assembly. Check that the P59 standard I/O connector is still seated properly. Route the fan cable under the drive.

5.25-Inch Disk Drive

3.5-Inch Disk Drives

J42,J43,J44

Bottom Plate

Bottom Plate

Old Styles

3.5-Inch Disk Drives

5.25-Inch Disk Drive

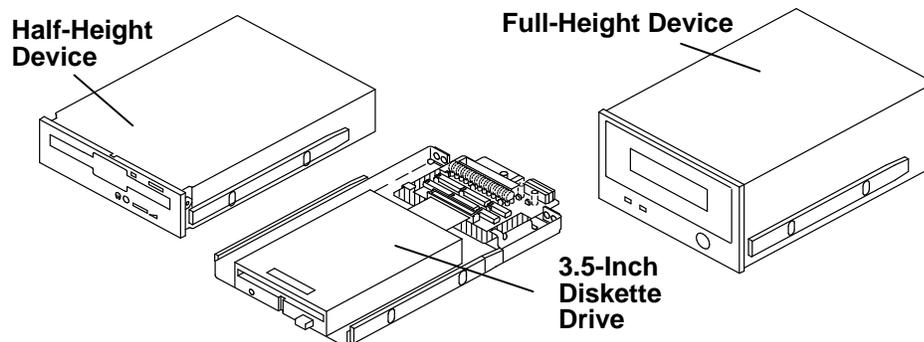**New Styles**
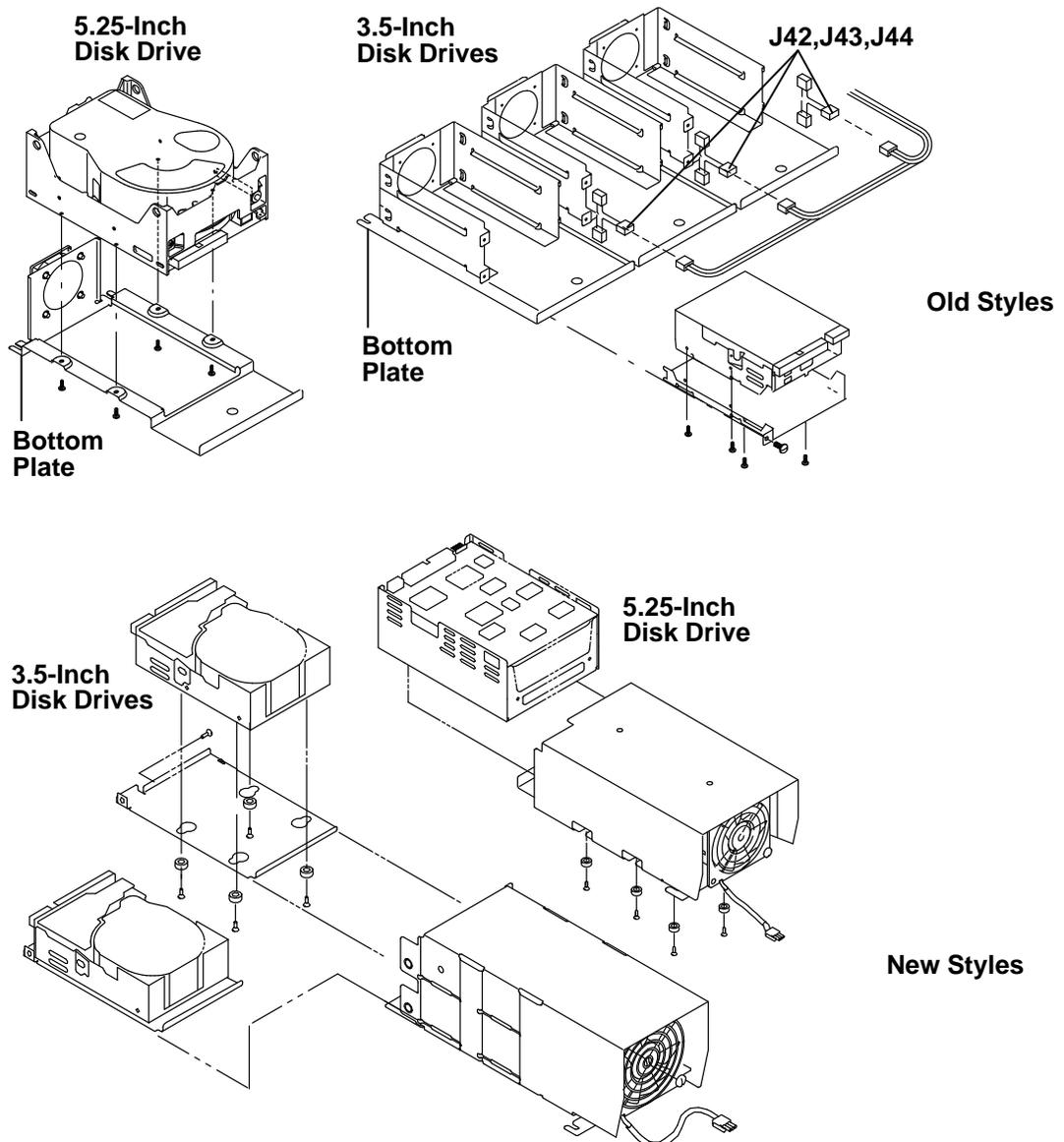
Disk Drive Fan

Removal

1. Set the power switches on the attached devices to Off.

2. Set the power switch on the system unit to Off, and unplug the external power cable.

3. Do the removal procedure for "Disk Drive" on page 3-37, but do not remove the drive from the bracket.

4. Note the location of the fan leads under the disk drive.

5. Remove the isolators that mount the fan to the frame. (Some fans have isolators that attach with screws.)

Note: Some fans have isolators that mount with screws. Replace these isolators and screws with the same isolator and screw arrangement; the one-piece isolator will not work with these fans. The screw and isolator arrangement will work with fans designed for the one-piece isolator; however, they should not be used together because the fan mounting for the one-piece isolator can collapse when the screw is tightened.

Replacement

Replace in the reverse order. Tighten the screws two or three full turns after the isolator is snug. Be sure that the fan leads are routed under the disk drive.

Isolator (Screw Type)

Isolator (One-Piece)

Air Flow

Early System Units

Isolator

Air Flow

Note: A 3.5-inch drive cage is shown. The 5.25-inch drive cage is similar.

Logic Fan (All Except Model 55L)

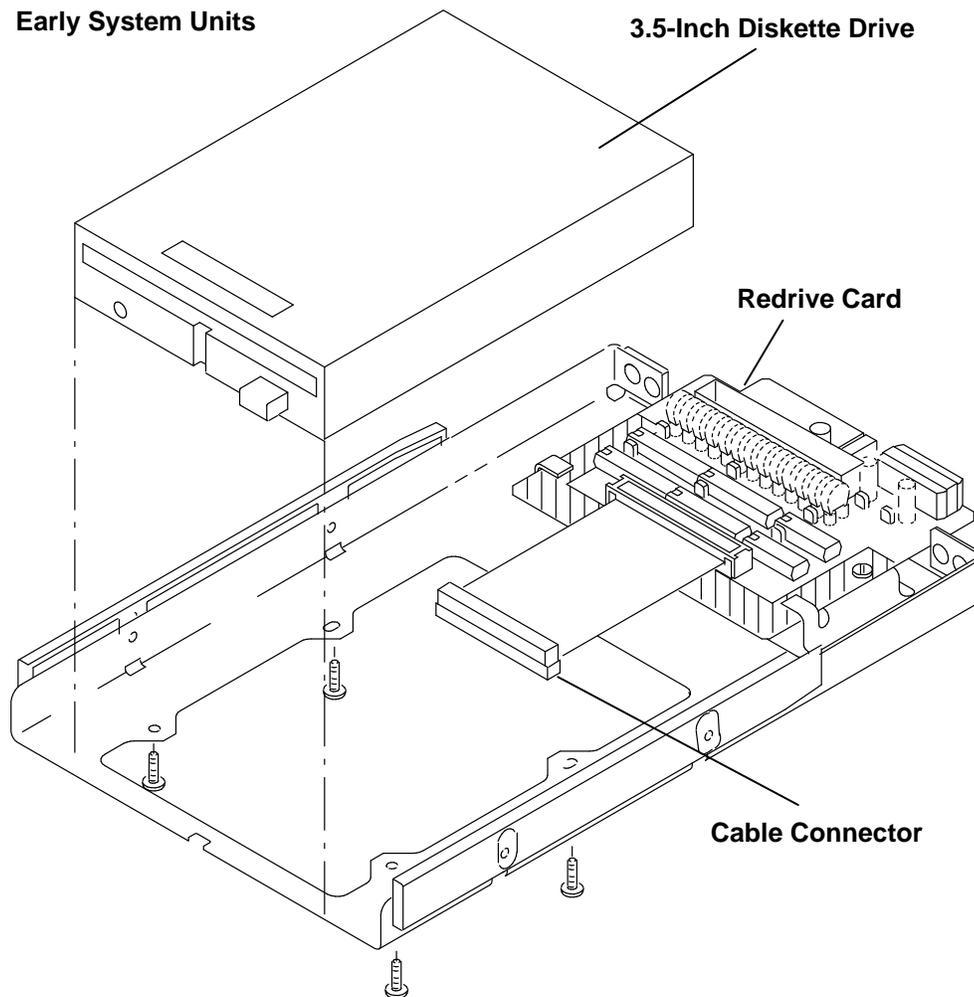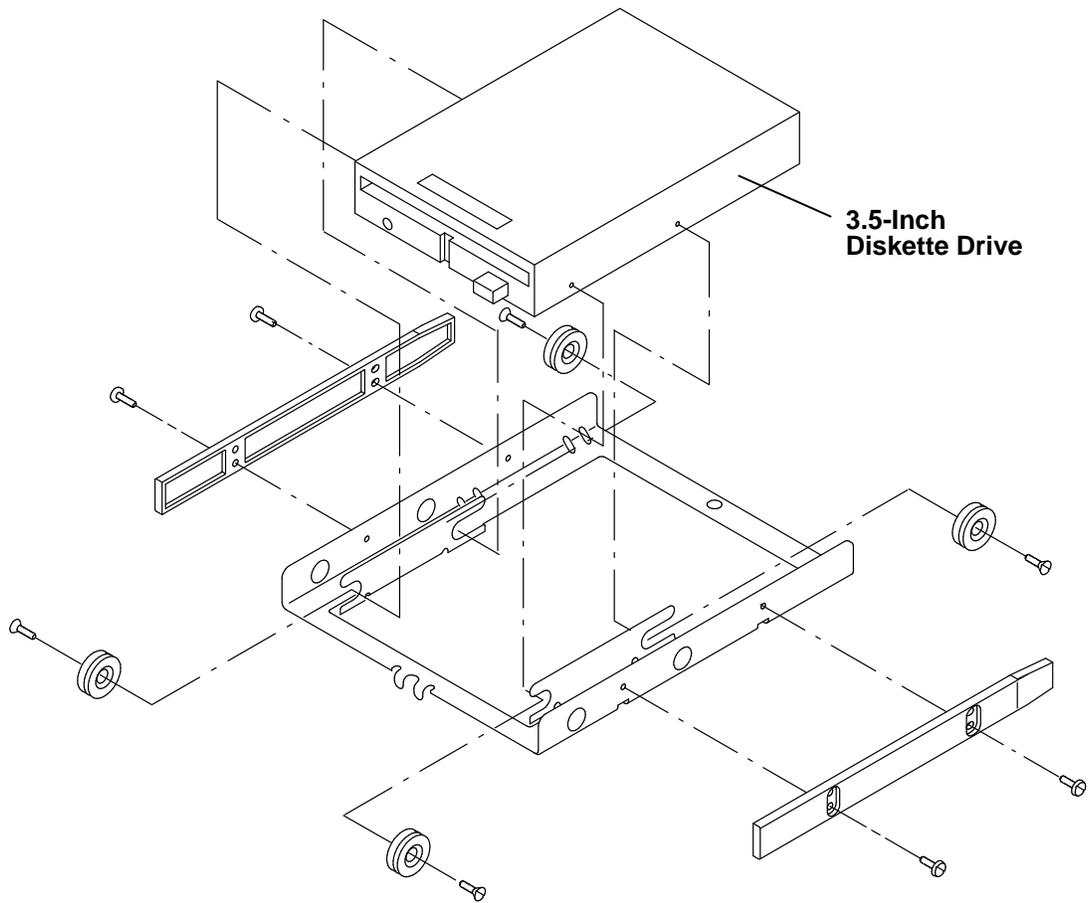## Removal

1. Set the power switches on the attached devices to Off.

2. Set the power switch on the system unit to Off, and unplug the external power cable.

3. Do the removal procedure for "Cover" on page 3-2.

4. Disconnect the fan power connector.

5. Remove the two screws and nuts that mount the finger guard to the fan housing.

6. Remove the isolators that mount the fan to the frame. (Some fans have isolators that attach with screws.)

7. If necessary, remove the external diskette drive plate to remove the fan cable.

Note: Some fans have isolators that mount with screws. Replace these isolators and screws with the same isolator and screw arrangement. The one-piece isolator does not work with these fans. The screw and isolator arrangement works with fans designed for the one-piece isolator; however, they should not be used together because the fan mounting for the one-piece isolator can collapse when the screw is tightened.

Replacement

Replace in the reverse order. Tighten the four fan-mounting screws so that the ends of the screws are flush with the ends of the isolators.
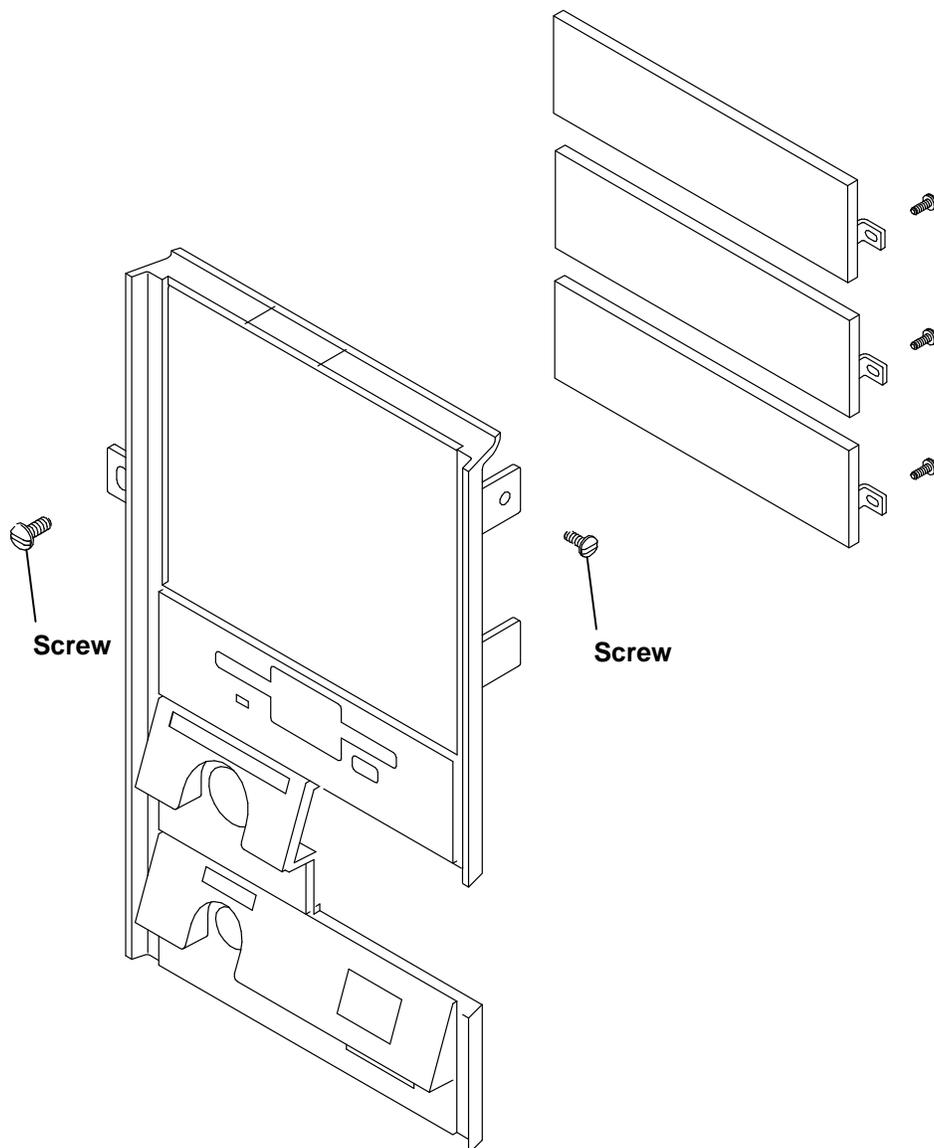
Tape Drive Fan

Removal

1. Set the power switches on the attached devices to Off.

2. Set the power switch on the system unit to Off, and unplug the external power cable.

3. Do the removal procedure for "Cover" on page 3-2.

4. Disconnect the fan power connector.

5. Remove the three fan mounting screws.

Replacement

Replace in the reverse order. Tighten the three fan mounting screws.

Power Supply

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

DANGER
> **Do not attempt to open the covers of the power supply. Power supplies are not serviceable and are to be replaced as a unit.**

Removal

1. Set the power switches on the attached devices to Off.

2. Set the power switch on the system unit to Off, and unplug the external power cable.

3. Do the removal procedure for "Cover" on page 3-2.

4. Disconnect the power supply cable connectors (including the fan connectors). Refer to "Power Supply Connectors" on page 1-15.

5. Do the removal procedure for "Operator Panel" on page 3-45.

6. Remove the two small screws at the side of the power supply

7. Remove the one large screw in the front of the power supply.

8. Slide the power supply out of the side of the system unit.

9. Carefully guide the power cables out of the unit as you remove the power supply.

Replacement

Replace in the reverse order. Remove the fan from the old power supply, and install it on the new power supply. Refer to the removal procedure for "Power Supply Fan" on page 3-44.
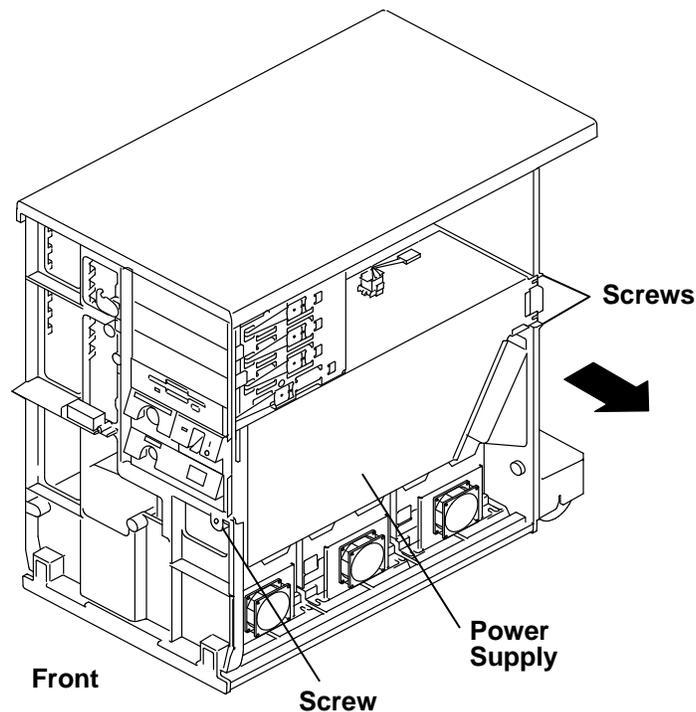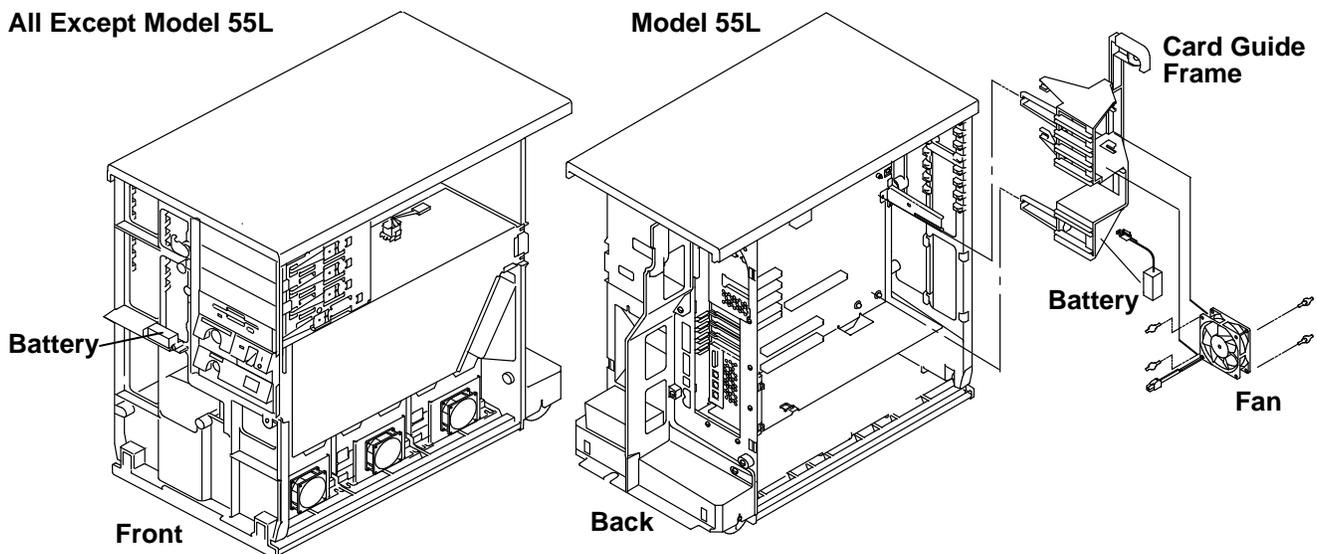
Power Supply Fan

Removal

1. Set the power switches on the attached devices to Off.

2. Set the power switch on the system unit to Off, and unplug the external power cable.

3. Do the removal procedure for "Power Supply" on page 3-43.

4. Disconnect the P46/47 fan connector that goes to the power supply.

5. Remove the four mounting screws at the back of the power supply.

Replacement

Replace in the reverse order.

P46/47 (Early System Units)

P47 (Models 570, 580, 58H, 590, 59H, 591, 595)

Air Flow

Model 55L

P45A   **P27**

P45B   **P46**

P25

P45C

P45D   **P17**

P2

P26

Air Flow

P44

P43

P42

3-44 Installation and Service Guide

Operator Panel

Removal

1. Set the power switches on the attached devices to Off.

2. Set the power switch on the system unit to Off, and unplug the external power cable.

3. Do the removal procedure for "Cover" on page 3-2.

4. For Model 55L, disconnect the flex-circuit cable connector of the 3-digit display from the front of the operator panel riser card.

5. Do the removal procedure for "Bezel" on page 3-52.

6. For Models 55L, 570, 580, 58H, 590, 59H, 591, and 595, loosen the screw that fastens the operator panel to the power supply.

7. Remove the screws that fasten the operator panel to the frame.

8. Note the routing of the cables.

9. Disconnect the P39 operator panel connector from the I/O planar (all except model 55L).

10. For Model 55L, disconnect the flex-circuit cable connector from the operator panel riser card.

11. Disconnect the P62 keylock cable connector from the operator panel.

12. For early system units, disconnect the J5 battery cable connector from the battery.

13. For Models 570, 580, 58H, 590, 59H, 591, and 595, disconnect the P67 power supply connector from the power supply.

Replacement

Replace in the reverse order.

Note: For Models 55L, 570, 580, 58H, 590, 59H, 591, and 595, replace the bezel temporarily to align the reset button before tightening the screw that fastens the operator panel to the power supply.

Early System Units

Screws

Models 570, 580, 58H, 590, 59H, 591, 595

P39

**Frame
Screws**

J62

**Power
Supply
Screw**

P67

Model 55L

**Flex-Circuit Cable
Connector**

**Flex-Circuit
Cable**

**Card Guide
Frame**
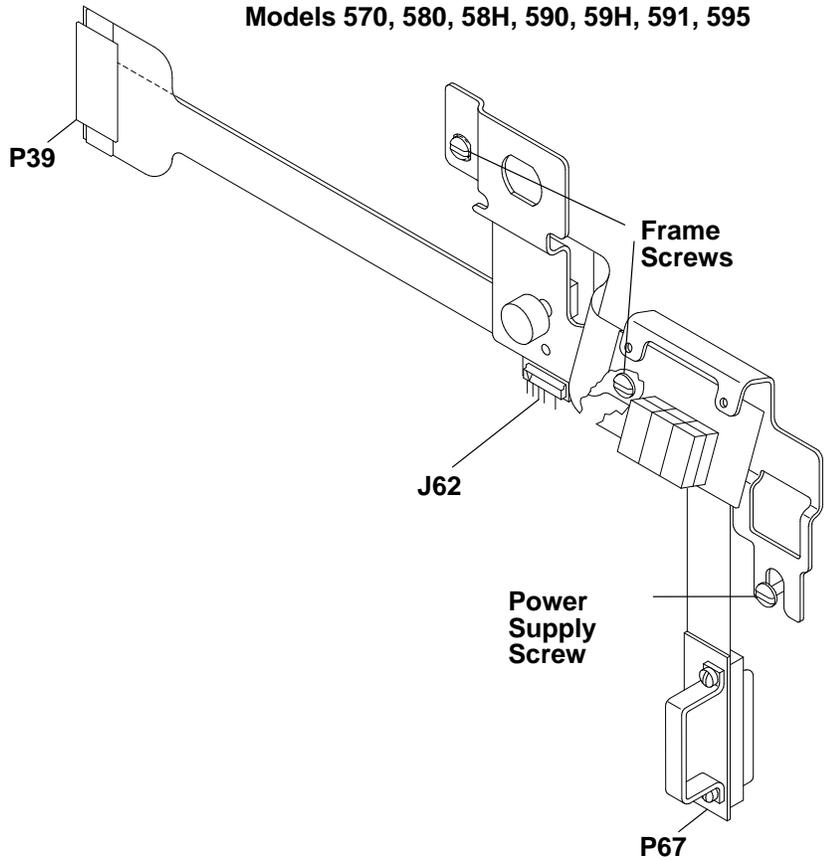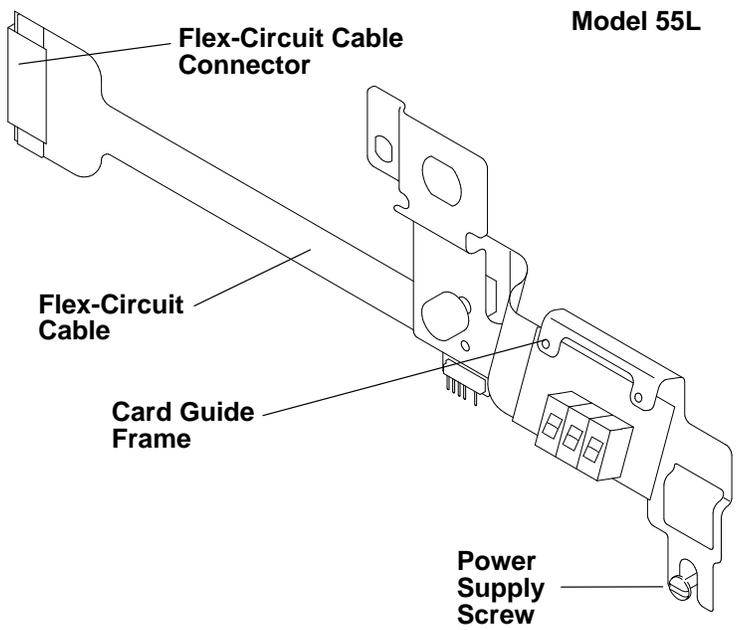
**Power
Supply
Screw**

Front Cover Keylock

Removal

1. Set the power switches on the attached devices to Off.

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

3. Do the removal procedure for "Operator Panel" on page 3-45.

4. Disconnect any cables from where they connect to the system.

5. Remove the mounting nut on the front keylock.

6. Carefully pull the keylock assembly and cables through the mounting hole in the operator panel.

Mounting Nut

Operator Panel Mounting Hole

Replacement

Replace in the reverse order.

Back Cover Keylock

Removal

1. Set the power switches on the attached devices to Off.

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

3. Do the removal procedure for "Cover" on page 3-2.

4. Remove the small nut on the back keylock.

5. Remove the mounting nut on the back keylock.

Replacement

Replace in the reverse order.

Mounting Nut

Small Nut

Inside View
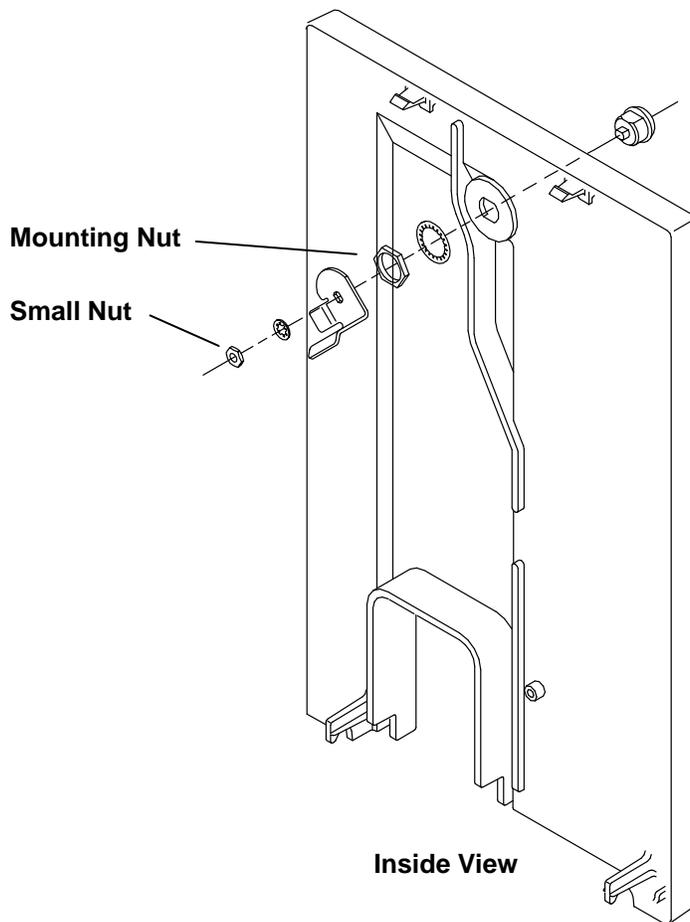
Front Panel Device

Notes:

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

2. This caution only applies to the CD-ROM drive.

CAUTION:
A Class 3 laser is contained in the device. Do not attempt to operate the device while it is disassembled. Do not attempt to open the covers of the device, as it is not serviceable and is to be replaced as a unit.

3. Refer to "Handling Static-Sensitive Devices" on page 3-1 before removing or installing devices in this system.

4. The following restrictions must be adhered to when configuring Model 595:

   – 5/10GB 8mm tape drive: one per system must be in media bay A
   – 4/8GB 4 mm tape drive: up to 2 per system must be in media bays A and/or B
   – If a 5/10GB 8mm tape drive is installed, only one 4/8GB 4 mm tape drive is allowed, and the 5/10GB 8mm tape drive must be in media bay A
   – FC9608 8x CD–ROM: Must be installed in media bay C
   – FC2618 8x CD–ROM: May be installed in media bays A or B

Removal

1. Set the power switches on the attached devices to Off.
2. Set the power switch on the system unit to Off, and unplug the external power cable.
3. Do the removal procedure for the "Bezel" on page 3-52.
4. Record the connector numbers, and then disconnect the power connector, signal connector, and ground wire, if present.
5. Move the latch wire to clear the device; then slide the drive out toward the front.
6. As needed, remove the rails and bezel from the old device and mount them on the new device.

Replacement

Set the address and jumpers to be like those of the device you removed. Replace in the reverse order. Be sure the new drive is acclimated. Refer to "Acclimation" on page 3-1.

As needed, install new isolators if the removed drive had some installed.

Note: Refer to *Adapters, Devices, and Cable Information* for address, jumper, and cartridge removal information.

Half-Height Device

Full-Height Device

3.5-Inch Diskette Drive

3.5-Inch Diskette Drive

Removal

1. Set the power switches on the attached devices to Off.

2. Set the power switch on the system unit to Off, and unplug the external power cable.

3. Do the removal procedure for "Front Panel Device" on page 3-49.

4. Remove the mounting screws.

5. Disconnect the cable from the redrive card to the diskette drive.

Replacement

Replace in the reverse order. Be sure that the cable connector is aligned properly with the diskette drive connector pins when replacing the cable. The front panel signal connector D plugs into the redrive card.

Early System Units   **3.5-Inch Diskette Drive**

Redrive Card

Cable Connector

Models 55L, 570, 580, 58H, 590, 59H, 591, 595

3.5-Inch
Diskette Drive

Bezel

Removal

1. Set the power switches on the attached devices to Off.

2. Set the power switch on the system unit to Off, and unplug the external power cable.

3. Do the removal procedure for "Cover" on page 3-2.

4. Remove the two screws that fasten the bezel to the frame.

Replacement

Replace in the reverse order.

Screw

Screw

Diskette Redrive Card (Early Models Only)

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

Removal

1. Set the power switches on the attached devices to Off.

2. Set the power switch on the system unit to Off, and unplug the external power cable.

3. Do the removal procedure for "Front Panel Device" on page 3-49.

4. Remove the two screws that hold the redrive card, and disconnect the cable.

Replacement

Replace in the reverse order. Be sure that the cable connector is aligned properly with the diskette drive connector pins when replacing the cable. The front panel signal connector D plugs into the redrive card.
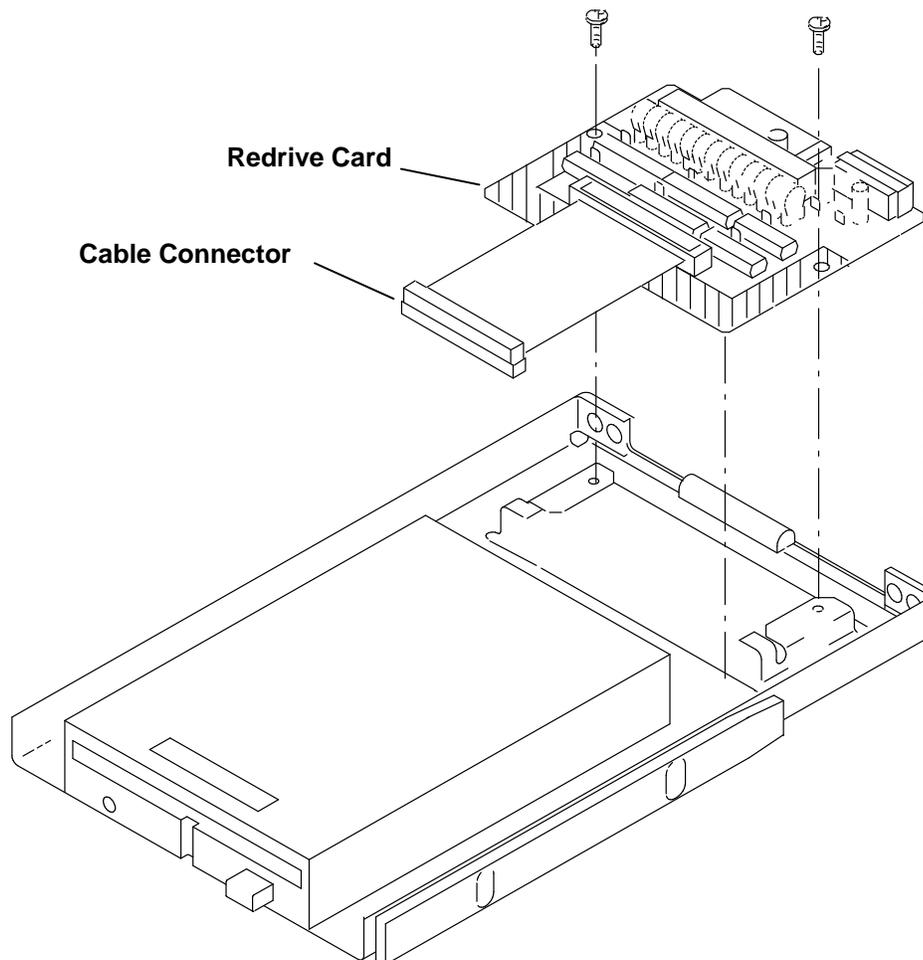
Battery

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

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.

Removal

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

Replacement

Replace in the reverse order.

Note: When you have finished, remind the customer that the system time and date must be set.

Small Computer Systems Interface (SCSI) and Diskette Cables

The internal SCSI and diskette cable assembly is removed and installed as one unit.

Removal

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

1. Set the power switches on the attached devices to Off.

2. Set the power switch on the system unit to Off, and unplug the external power cable.

3. Follow the procedure for power supply removal on page 3-43, but do not disconnect the power supply cables. Slide the power supply out about three inches. If necessary, disconnect the P17 power supply connector and the P46/47 power supply fan connector.

4. Support the power supply while you unplug and remove the signal cables. Refer to "Cable Routing" on page 1-12. If an optional second SCSI cable is installed, you may need to disconnect it. Follow the procedure for disk drive removal on page 3-37 if you need to remove a drive in order to remove the signal cables.

5. When you remove the cable connectors, pull on the strain relief sleeve, not the cables.

Replacement

Replace in the reverse order. Route the signal cable under the center support frame and over the disk drives in the base of the system unit, not through the opening in the center support frame. Route the vertical portion of the signal cable within the guide of the center support frame in order to prevent interference with the power supply.

All Except Model 55L   **Model 55L**

T (Terminator, Early Models)

Signal Cables

Back

T (Terminator, Models 570, 580, 58H, 590, 59H, 591, 595)

T (Terminator)

Back
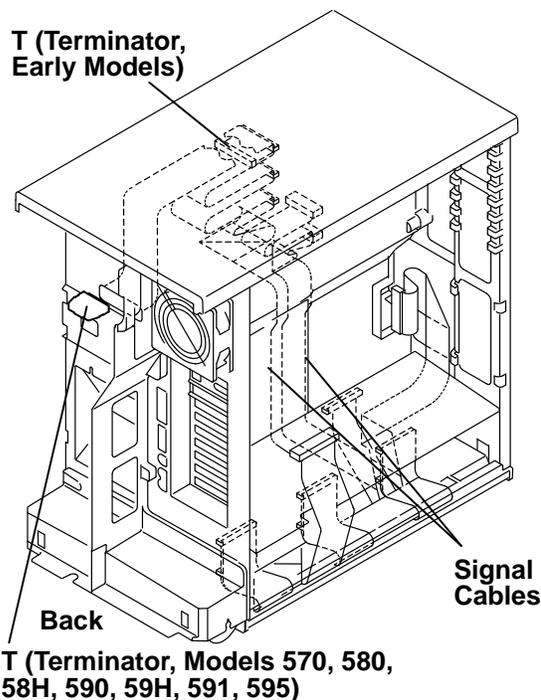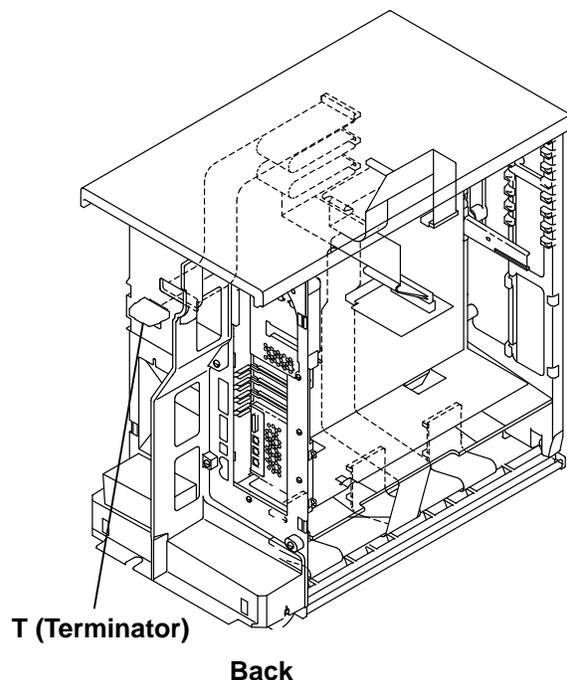
Chapter 4. System Installation

Step 1. Inventory

Documentation

☐ The *About Your Machine* listing
(In the plastic bag on the outside of the box)

☐ *Operator Publications*
–*7013 500 Series Operator Guide*
–AIX Operating System publications.

☐ Service Publications
–*POWERstation and POWERserver Common Diagnostics Information For Micro Channel Bus Systems*
–*7013 500 Series Installation and Service Guide (this book).*

Miscellaneous Hardware and Diskettes

☐ Diagnostic diskettes and diskette holders

☐ Diagnostic CD-ROM disc

☐ Topology diskettes (may not be present)

☐ Cable labeling kit

☐ Two 12-inch, 10-pin to 25-pin converter cables (may not be present)

☐ System unit keys

☐ Keyboard

☐ Microcode diskettes

☐ Wrap plugs and container

☐ System unit power cable

Optional Items (Check off if present)

☐ Mouse

Step 2. Observe This Safety Notice During Installation

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 on 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.

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

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

Step 3. Checking Customer Outlets

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

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 the ground pin of the receptacle to the receptacle case. Check the resistance from the ground pin to the 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.

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

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

Attention: Damage can result if the system unit is placed closer than three inches to a wall or desk.

__   Be sure the power cord on the system unit is unplugged and the power switch is in the Off position.

__   Remove the packing material from all of the media devices installed in the front panel.

__   Remove the back cover and side covers.

Attention: Model 55L is shipped with four foam retainers inside the left cover. Two of these retainers must be removed before you turn on the system power.

Model 55L

Leave Foam Installed

Leave Foam Installed

Remove Foam
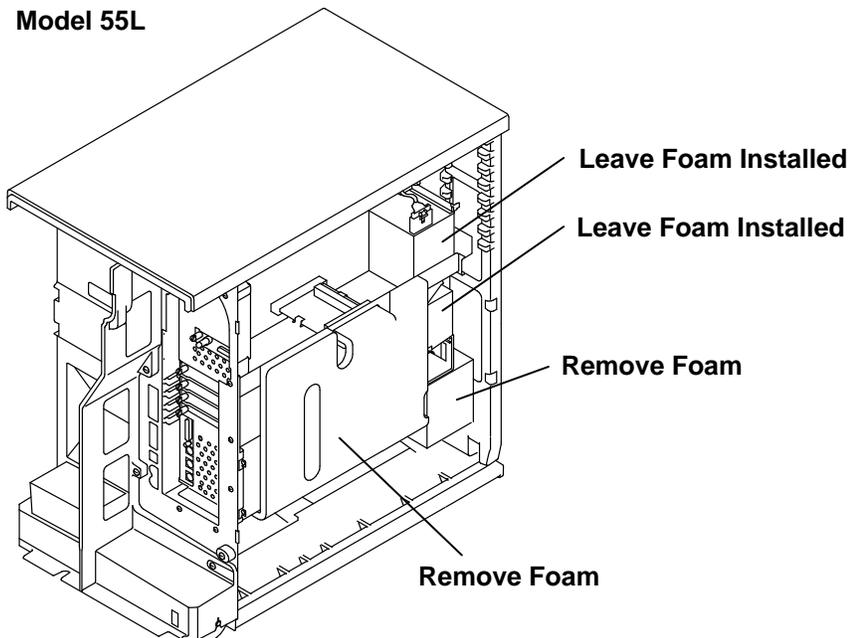
Remove Foam

__   On Model 55L, remove the large foam block retaining the adapter, CPU, and memory cards and the small foam block to the bottom front of the unit. *Do not remove the two smaller foam blocks toward the top front of the unit.*

__   Look at the memory cards, adapters, and internally installed drives to be sure they are not loose and are in their proper positions.

__   Fill out the SCSI Device Address Record in Appendix A.

__   Install the side cover.

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.

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

Step 6. Connecting Devices to Standard I/O Ports

Note: There are two 12-inch converter cables used to connect 25-pin D-shell connectors to serial ports S1 and S2.

— Using the customer planning information for cabling in the *Adapters, Devices, and Cable Information*, order number SA23–2764, or other information supplied by the customer, connect the cables to the standard I/O ports. Start at the bottom connector and move up 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 the *Adapters, Devices, and Cable Information*, order number SA23–2764.

Early Models
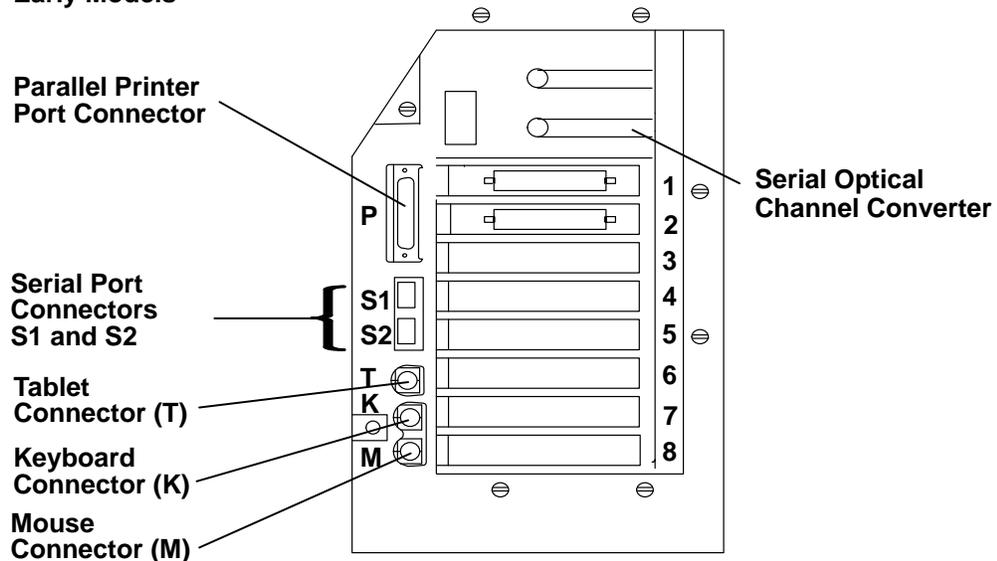
Models 570, 580, 58H, 590, 59H, 591,

Serial Optical Channel Converter (Supported Only on Models 57x and 58x)

Mouse Connector (M)

Keyboard Connector (K)

Tablet Connector (T)

Serial Port Connectors S1 and S2

Parallel Printer Port Connector

Side View

T M K

S1
S2
P

0

1
2
3
4
5
6
7
8

Model 595

Mouse Connector (M)

Keyboard Connector (K)

Tablet Connector (T)

Serial Port Connectors S1 and S2

Parallel Printer Port Connector

Side View

T M K

S1
S2
P

0

1/1
1/2
1/3
1/4
0/1
0/2
0/3
0/4

Model 55L

Serial Port Connectors S2 and S1

Ethernet Connector

Parallel Printer Port Connector

Tablet Connector (T)

Keyboard Connector (K)

Mouse Connector (M)

S2 S1

1
2
3
4

T
K
M

Step 7. Connecting Devices to the Adapters

— Using the customer planning information for cabling in the *Adapters, Devices, and Cable Information*, order number SA23–2764, or other information supplied by the customer, connect the cables to the adapter connectors. Start at the bottom connector and move up to make cabling easier.

— Record the SCSI addresses of the devices attached to the SCSI I/O controllers in Appendix A. If needed, use the customer planning information for cabling, the *POWERstation and POWERserver Common Diagnostics Information For Micro Channel Bus Systems*, Appendix A of this book, or other information supplied by the customer to determine the SCSI addresses.

— As needed, use the cable labels included in the ship group to label the cables. For additional information about labeling the cables, see the *Adapters, Devices, and Cable Information*, order number SA23–2764.

All Except Models 55L and 595   **Model 55L**
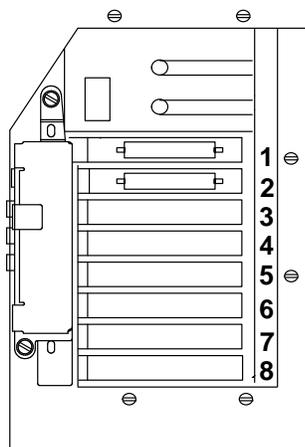
Adapter Slots (See the *About Your Machine* listing to determine what adapters are installed)
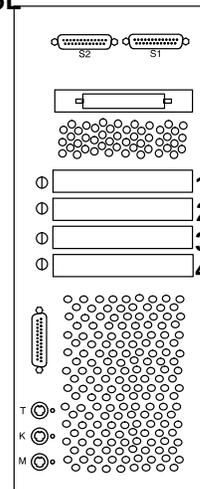
Model 595
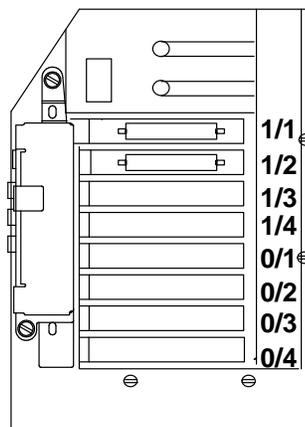
Adapter Slots (See the *About Your Machine* listing to determine what adapters are installed. Also, see the Note on page 3-9 for specific slot restrictions.)

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.

___   Connect the system unit power cable to the system unit. (Do not plug it into the outlet at this time.)

___   Arrange the cables at the back of the system unit.

___   Install the back cover and lock it into position.

___   Using the customer's planning information, arrange the system unit and devices.

Go to the installation checkout chapter in the *POWERstation and POWERserver Common Diagnostics Information For Micro Channel Bus Systems* to check out the system.

Chapter 5. Parts Information

Power Cables and Plugs
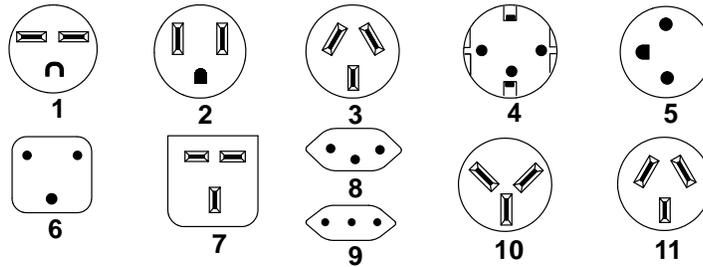
Index	Part Number	Country
1	1838574	Bahamas, Barbados, Bolivia, Brazil, Canada, Costa Rica, Dominican Republic, El Salvador, Ecuador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Japan, Netherlands Antilles, Panama, Peru, Philippines, Taiwan, Thailand, Trinidad, Tobago, U.S.A. (except Chicago), Venezuela
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	6952301	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

Covers
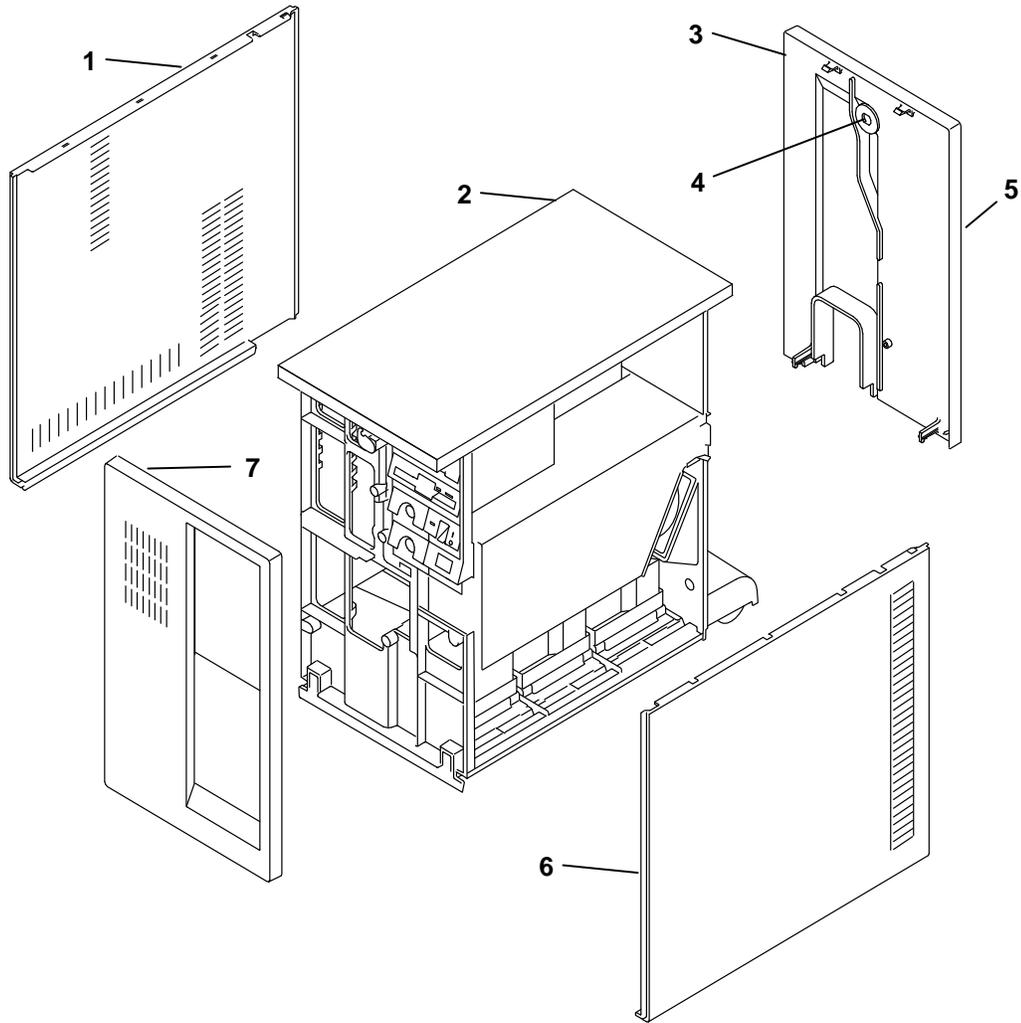
Index Num	Part Num	Units Per Asm	Description
1	53F3103	1	Left side cover (Early Models)
1	00G3472	1	Left side cover (Models 53H and 560)
1	51G9702	1	Left side cover (Later Models)
2	53F3375	1	Top cover (Early Models)
2	00G1332	1	Top cover (Model 550)
2	00G3471	1	Top cover (Models 53H and 560)
2	51G9701	1	Top cover (Later Models)
3	53F3374	1	Back cover (Early Models)
3	71F0885	1	Back cover (Model 550)
3	00G3523	1	Back cover (Models 53H, 560)
3	00G3524	1	Back cover (Later Models)
4	31F4215	1	Keylock (Early Models) (nut and lock washer included)
4	51G9876	1	Keylock (Later Models) (nut and lock washer included)
4	51G9877	1	Keylock (Models 570, 580) (nut and lock washer included)
5	70F9921	1	Logo, rear
6	53F3104	1	Right side cover (Early Models)
6	00G3473	1	Right side cover (Models 53H, 560)
6	51G9703	1	Right side cover (Later Models)
7	53F3373	1	Front cover (Early Models)
7	00G3521	1	Front cover (Models 53H, 560)
7	00G3522	1	Front cover (Models 53H, 560)
7	51G9700	1	Front cover (Later Models)

Front
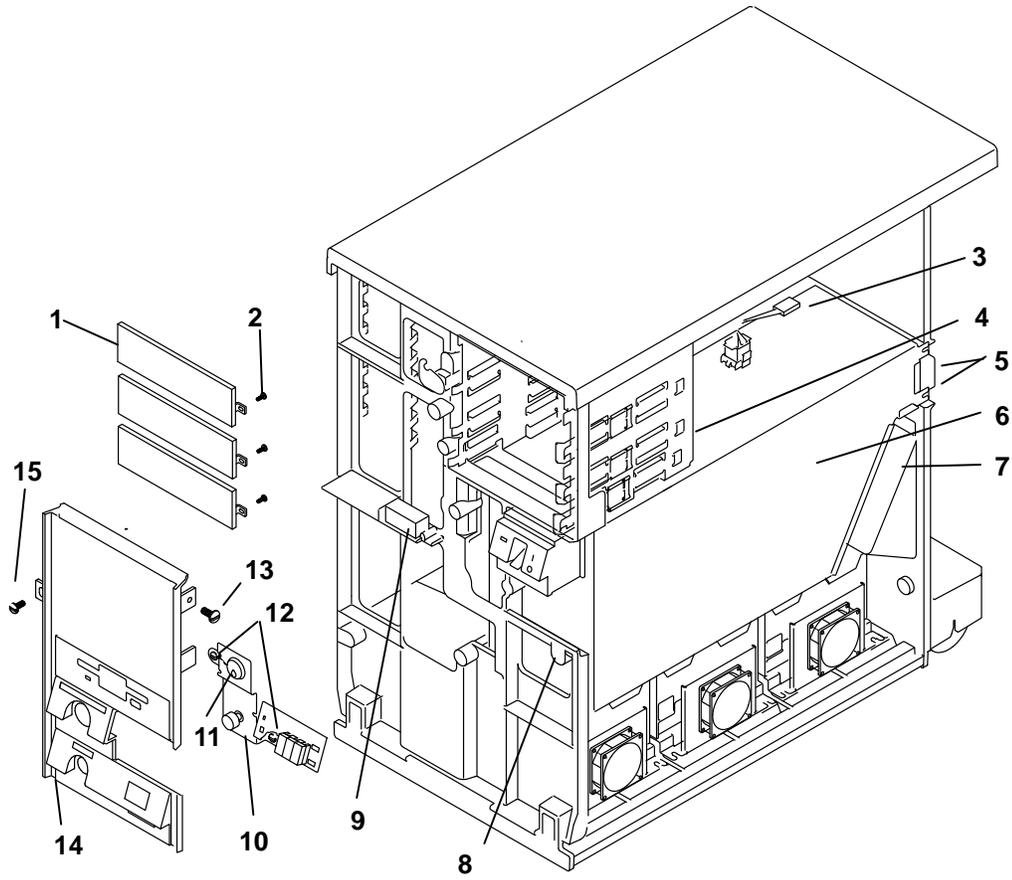
Index Number	Part Number	Units Per Asm	Description
1	41F0636	3	Blank bezel
2	1621844	6	Screw
3	53F3319	1	Cable assembly, DC distribution (Early Models)
3	52G7549	1	Cable assembly, DC distribution (Model 55L)
4	42F6510	1	Cage assembly
4	1621211	4	Screw, cage assembly
5	1621171	2	Screw, power supply
5	1622302	2	Washer, power supply
6	00G2520	1	Power supply (Early Models)
6	52G7533	1	Power supply (Models 55L, 550)
6	65G7579	1	Power supply (Models 570, 580)
6	8184794	1	Power supply (Models 58H, 590, 59H, 591, 595)
7	22F9685	1	Fan assembly, power supply (Early Models)
7	42F7434	1	Fan assembly, power supply (Later Models)
7	1621193	4	Screw, fan
7	1622346	4	Washer, fan
7	1622403	4	Nut, fan
7	2597855	4	Isolator
8	1621217	1	Screw, power supply
9	23F0168	1	Battery
10	00G2126	1	Operator panel and switch assembly (Early Models)
10	94F3592	1	Operator panel and switch assembly (Later Models)
10	94F3617	1	Pilot Flex (Model 55L)
10	53F3323	1	Reset Button (Model 55L)
10	00G3297	1	Bracket (Model 55L)
10	1621170	1	Screw (Model 55L)
10	1622306	1	Washer (Model 55L)
11	31F4215	1	Keylock – with nut and lock washer (Early Models)
11	51G9876	1	Keylock – with nut and lock washer (Later Models)
11	51G9877	1	Keylock – (Models 570, 580)
	71F1162	1	EMI Spring (Not shown–part of keylock when used)
12	1621192	2	Screw, operator panel, and switch assembly
12	65G1918	2	Shoulder screw (Later Models)
12	1622346	2	Washer, operator panel, and switch assembly
13	1621198	1	Screw, bezel
14	00G2123	1	Bezel (Early Models)
14	00G3283	1	Bezel (Later Models)
15	1621211	1	Screw, bezel

Back

Terminator (Early Models)

1

1a

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3

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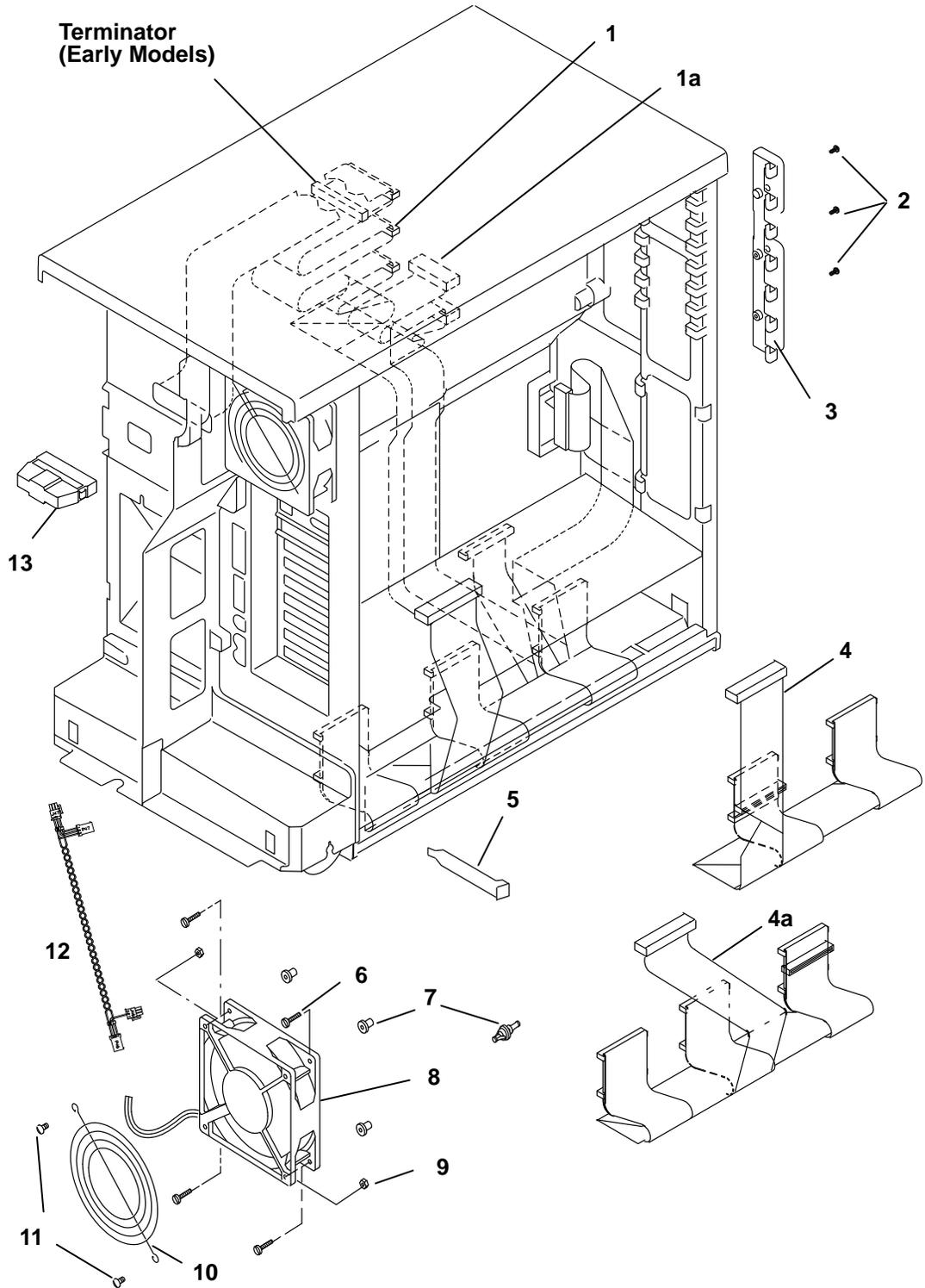
Index Number	Part Number	Units Per Asm	Description
1	00G0976	1	Cable assembly, SCSI and diskette (Early Models)
1	65G7537	1	Cable assembly, SCSI and diskette (Models 570, 580)
1	65G7539	1	Cable assembly, SCSI (Model 55L)
1	65G7538	1	Cable assembly, SCSI (Later Models Except Model 595)
1	39H9274	1	Cable assembly, SCSI (Model 595)
1a	52G7449	1	Cable assembly, Diskette (Model 55L)
2	1621173	3	Screw, M3 x 12
3	91F1066	1	Memory card retainer
4	00G0977	1	Cable assembly, second SCSI, 4-drop
4	52G7450	1	Cable assembly, second SCSI, 4-drop (Model 55L)
4a	52G7451	1	Cable assembly, second SCSI, 6-drop (8-bit)
4a	52G4430	1	Cable assembly, second SCSI, 6-drop (16-bit)
4a		1	Cable assembly, second SCSI, 6-drop (16-bit) (Model 595)
5	6279235	0–8	Bracket, I/O slots
6	1621174	4	Screw, M3 x 16
7	60X5703	4	Isolator (requires screws)
7	81F7977	4	Isolator (does not require screws)
8	22F9685	1	Fan
9	1622403	2	Nut
10	2546641	1	Fan guard
11	1621192	2	Screw, M4 x 12
12	39H8835	1	Fan speed control cable (Models 591, 595)
13	00G2223	1	SCSI Terminator (Later Models)
	00G1032	1	Logic frame – not shown (Early Models)
	00G3252	1	Logic frame – not shown (Models 570, 580)
	61X7052	1	Jumper, disk drive – not shown
	59F4088	2	Optic cover – not shown
	71F0902	1	Bumper – not shown
	91F1065	1	Ground spring, printer port – not shown (Early Models)

Planars

Index Number	Part Number	Units Per Asm	Description
1	00G2683	1	Memory card shield (Early Models)
2	11F8865	1	Shield, bulkhead (Early Models only)
3	See note 1	1	CPU planar
4	1621211	2	Screw
5	78X8993	18	Screw
6	See note 1	1	I/O planar
7	See note 2	AR	Memory Module (Part of main memory card assembly)
8	See note 2	AR	Memory card
9	22F9501	1	Card support (Early Models)
9	43G0538	1	Card support (Later Models)
10	22F9503	1	Ground strip
11	22F9724	1	Air deflector (Early Models)
11a	8184623	1	Air deflector (Model 59H Only)
11b	8184569	1	Air deflector (Models 58H, 590, and 591 Only)
11c	73H4288	1	Air deflector (Model 595 Only)
12	59F4089	AR	Card latch
12a	40F9969	AR	Card latch (Model 55L)
13	23F0092	1	Shaft
14	1126828	2	Clip
15	59F3005	1	Wedge (Early Models)
16	1622305	5	Washer
17	1621192	5	Screw
18	00G2619	1	Bulkhead (Early Models)
18	51G9869	1	Bulkhead (Later Models)
18a	59F2977	1	Cable support (Later Models)
19	72X8488	2	Fuse, (part of standard I/O planar assembly) (Early Models)
20	53F3345	1	Standard I/O planar (Early Models)
20a	8184811	1	Standard I/O flex circuit (Later Models)
21	59F4585	1	Toroid kit
22	See note 3	AR	Adapter
23	See note 1	2	L2 cache, .5MB SIMM (must be installed in pairs)
24	73H2588	2	I/O slots label (Model 595 only)
25	39H9272	1	DC-DC Converter Bracket
26	40H7442	1	DC-DC Converter

Notes: AR (as required)

1. For information about L2 cache, planars and cards, see codes Dxx, 210, 215, and 221 in "Failing Function Codes" in *POWERstation and POWERserver Common Diagnostics Information For Micro Channel Bus Systems*.

2. For information about memory cards and modules, see Appendix G in *POWERstation and POWERserver Common Diagnostics Information For Micro Channel Bus Systems*.

3. For information about adapters, see *Adapters, Devices, and Cable Information*.

Model 55L Specific Parts

Index Number	Part Number	Units per Asm	Description
1	52G7351	1	SCSI Riser Card
2	94F3617	1	Operator Panel Flex Cable
3	65G7525	1	OP Panel Riser Card
4	52G7452	1	Cable, Keylock/Reset
5	52G7438	1	Card Support, SCSI Riser
6	See Note 1	1	System Planar
7	40F9968	1	Card Down Stop
8	32G1528	1	Front Fan, High Speed
9	81F9039	1	Card Guide Frame
10	23F0168	1	Battery
11	See Note 1	1	CPU Card
12	See Note 2	1-16	Memory SIMMs
13	See Note 2	1-2	Memory Card (Without SIMMs)
14	40F9957	1	Guide, memory card
15	81F7977	8	Isolator, Fan
16	40F9979	1	Rear Fan
17	88G3604	1	Ground strip with gasket
18	62X0388	6	Jack screw
19	43G0382	1	Ethernet Card, Thick/Thin
19	00G1276	1	Ethernet Card, Twisted Pair
20	8184807	1	Planar Support Structure
21	32G0176	1	Flex Circuit, Serial Ports
Notes:			1. For information about planars and cards, see codes 210, 215, and 221 in "Failing Function Codes" in *POWERstation and POWERserver Common Diagnostics Information For Micro Channel Bus Systems*. 2. For information about memory cards and SIMMs, see Appendix G in *POWERstation and POWERserver Common Diagnostics Information For Micro Channel Bus Systems*.

Drives

Diskette, and Old Style Disk

Index Num	Part Num	Units Per Asm	Description
1	31F4335	1	Bracket (Early Models)
1	51G9680	1	Bracket (Later Models)
2	See note	1	3.5-inch diskette drive
3	53F3417	1	Diskette redrive card (Early Models)
4	1621170	6	Screw
5	40F9781	1	Cable, internal for 5.25-inch external diskette (Early Models)
6	1621211	2	Screw
7	40F9786	1	Bracket, adapter for 5.25-inch external diskette (Early Models)
7	00G3279		Bracket, external SCSI (Later Models)
8	See note	AR	Disk drive, full height
9	00G1128	1	Fan (Early Models)
9	00G3277	1	Fan (Later Models)
9	32G0219	1	Fan guard, 90mm (Later Models)
9	0438570	4	Screw (Early Models only)
9	00G1129	4	Isolator (Early Models only)
9	81F7977	4	Isolator (Later Models)
10		1	Bracket and fan assembly (Order components)
10	00G3276	1	File bracket
10	00G3277	1	90mm cooling fan
10	32G0219	1	Fan guard
10	81F7977	4	Shockmount
12	1621192	2	Screw
12	1622403	2	Nut
13	See note	AR	Disk drive, half height
14	1621191	5	Screw
15	00G3254	1	Bracket
15A	81F9099	1	Plate (Early Models)
Note: For information on devices, see "FRU Cross-References" in *POWERstation and POWERserver Common Diagnostics Information For Micro Channel Bus Systems*.			

New Style Disk
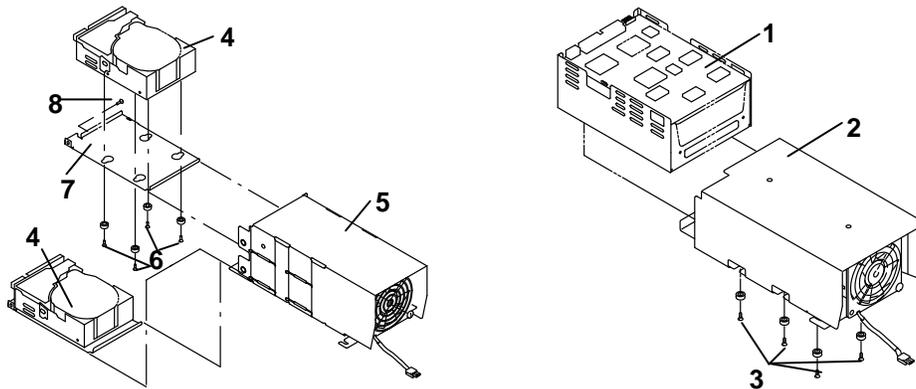
Index Number	Part Number	Units Per Asm	Description
1	See note	AR	Disk drive, full height
2	00G3276	1	File cage, full height
2	00G3277	1	Fan
2	81F7977	4	Isolator, fan
2	32G0219	1	Guard, fan
2	1621192	2	Screw, fan guard
2	1622403	2	Nut, fan guard
3	00G3272	4	Isolator, file
3	0316807	4	Screw, file
4	See note	AR	Disk drive, half height
5	00G3254	1	File cage, half height
5	00G3277	1	Fan
5	81F7977	4	Isolator, fan
5	32G0219	1	Guard, fan
5	1621192	2	Screw, fan guard
5	1622403	2	Nut, fan guard
6	00G3272	4	Isolator, file (8-bit except 540MB)
6	1621309	4	Screw, file (8-bit except 540MB)
6	11H2496	4	Isolator, file (16-bit)
6	0038443	4	Screw, file (16-bit)
7	00G3273	1	Plate, half height drive (8-bit except 540MB)
7	11H2495	1	Plate, half height drive (16-bit)
8	1673983	1	Screw, plate

Note: For information on devices, see "FRU Cross-References" in *POWERstation and POWERserver Common Diagnostics Information For Micro Channel Bus Systems*.

CD-ROM Drives
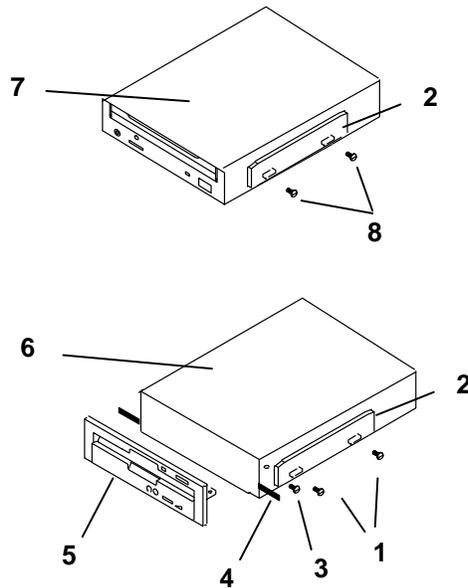
Index Num	Part Number	Units Per Asm	Description
1	1621170	4	Screw
2	42F7344	2	Rail (Early Models only)
2	00G3296	2	Rail (Later Models)
3	42F7304	2	Screw
4	70F9849	2	Spring, ground (Early Models only)
4	31G9985	2	Spring, ground (Later Models)
5	70F9689	1	Bezel, type A (Early Models)
6	See note	1	CD-ROM, bezel not attached
7	See note	1	CD-ROM, type B with bezel attached
8	1621187	4	Screws
	91F0759	1	3.5-inch diskette spacer kit – not shown (Early Models)
	AR (as required)		
Note: For information on devices, see "FRU Cross-References" in *POWERstation and POWERserver Common Diagnostics Information For Micro Channel Bus Systems*.			

Tape Drives and Fan

Air Flow
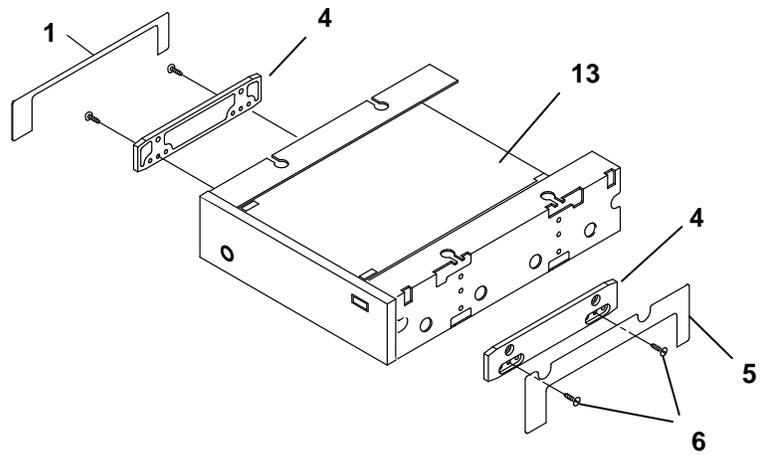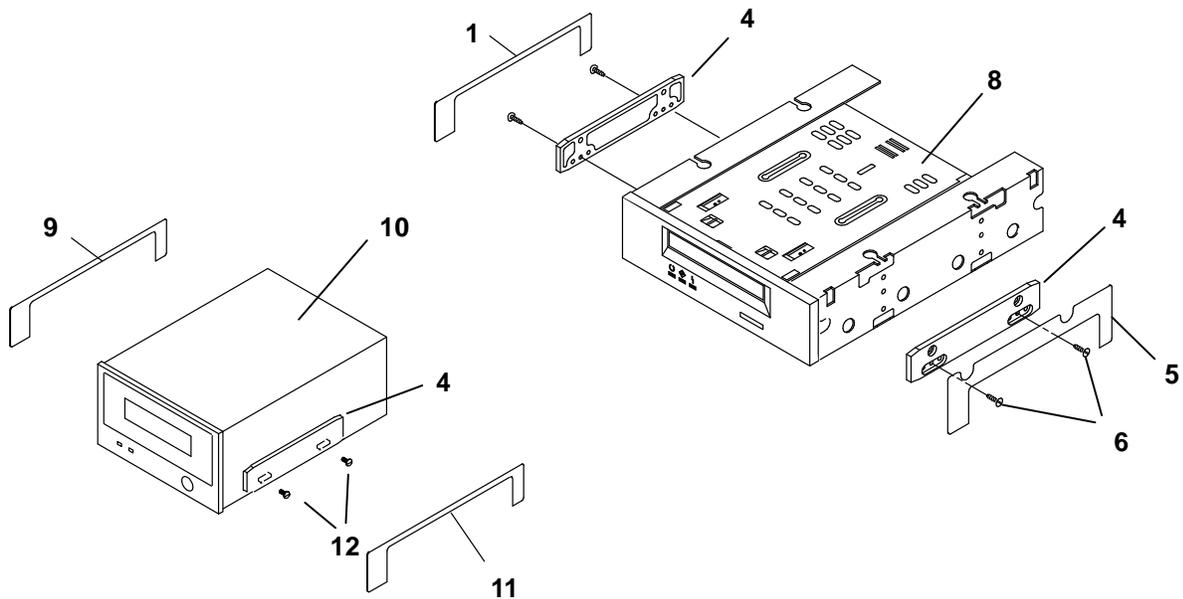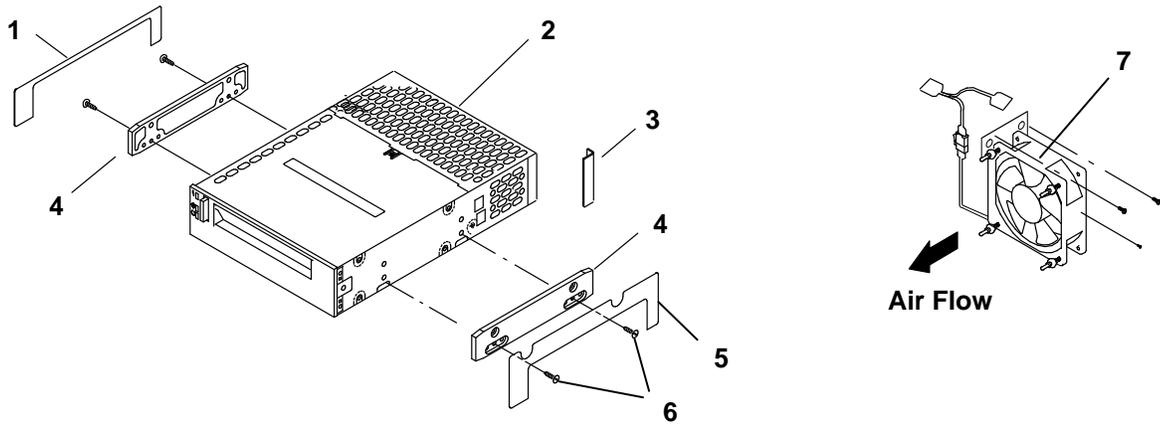
Index Number	Part Number	Units Per Asm	Description
1	43G0804	1	Isolator (Later Models)
2	See note	1	5.0GB 8-mm tape drive
3	51G9698	1	Isolator (Later Models)
4	00G3296	2	Rail (Later Models)
4	42F7344	2	Rail (Early Models only)
5	43G0803	1	Isolator (Later Models)
6	1621187	4	Screw
7			Fan assembly (Order components)
7	00G3277	1	90 mm cooling fan
7	1621192	2	Screw
7	1622403	2	Nut
7	32G0218	1	Cable assembly
7	32G0219	1	Fan guard
7	51G9943	1	Fan mount bracket
7	81F7977	4	Shockmount
7	1621211	3	Screw
8	See note	1	4.0GB 4-mm tape drive
9	00G3295	2	Isolator, left
10	See note	1	2.3GB 8-mm tape drive
11	00G3294	1	Isolator, right
12	1621170	4	Screw
13	See note	1	1.2GB 1/4-inch tape drive
	Note: For information on devices, see "FRU Cross-References" in *POWERstation and POWERserver Common Diagnostics Information For Micro Channel Bus Systems*.		

Appendix A. SCSI Device Address Record

Internally Installed SCSI Device Record (Early Models Only)

1. Use the "About Your Machine" printout to determine which devices are installed in the system unit.
2. On the following diagram, circle the device addresses for the internally installed SCSI devices in the system unit. Record the address in the "Other Address" space if a device in the optional media positions A, B, or C is different from the address shown.
3. Go to "Attached SCSI Device Record" on page A-4.
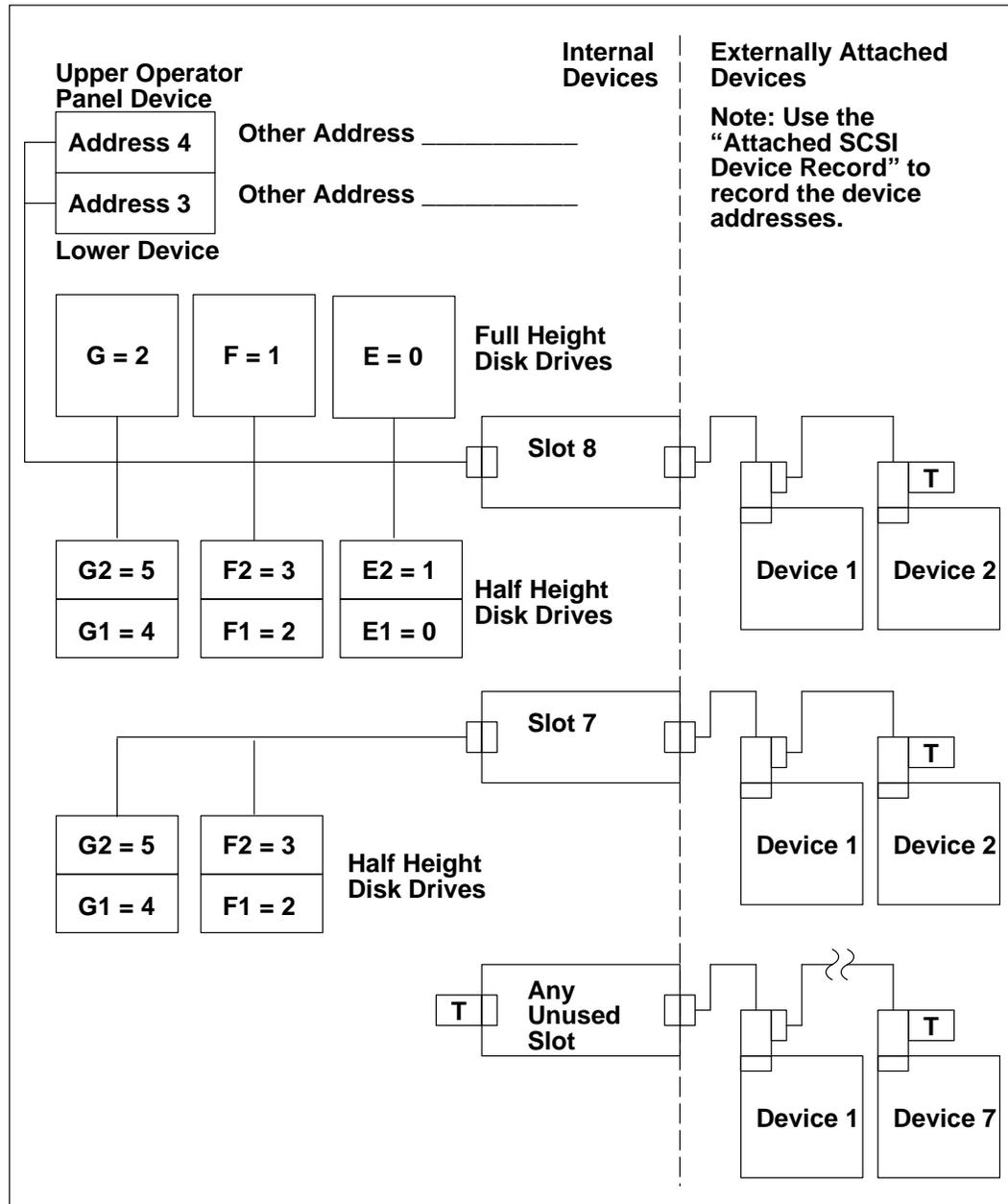
Internally Installed SCSI Device Record (Model 55L)

1. Use the "About Your Machine" printout to determine which devices are installed in the system unit.
2. On the following diagram, circle the device addresses for the internally installed SCSI devices in the system unit. Record the address in the "Other Address" space if a device in the optional media positions A, B, or C is different from the address shown.
3. Go to "Attached SCSI Device Record" on page A-4.
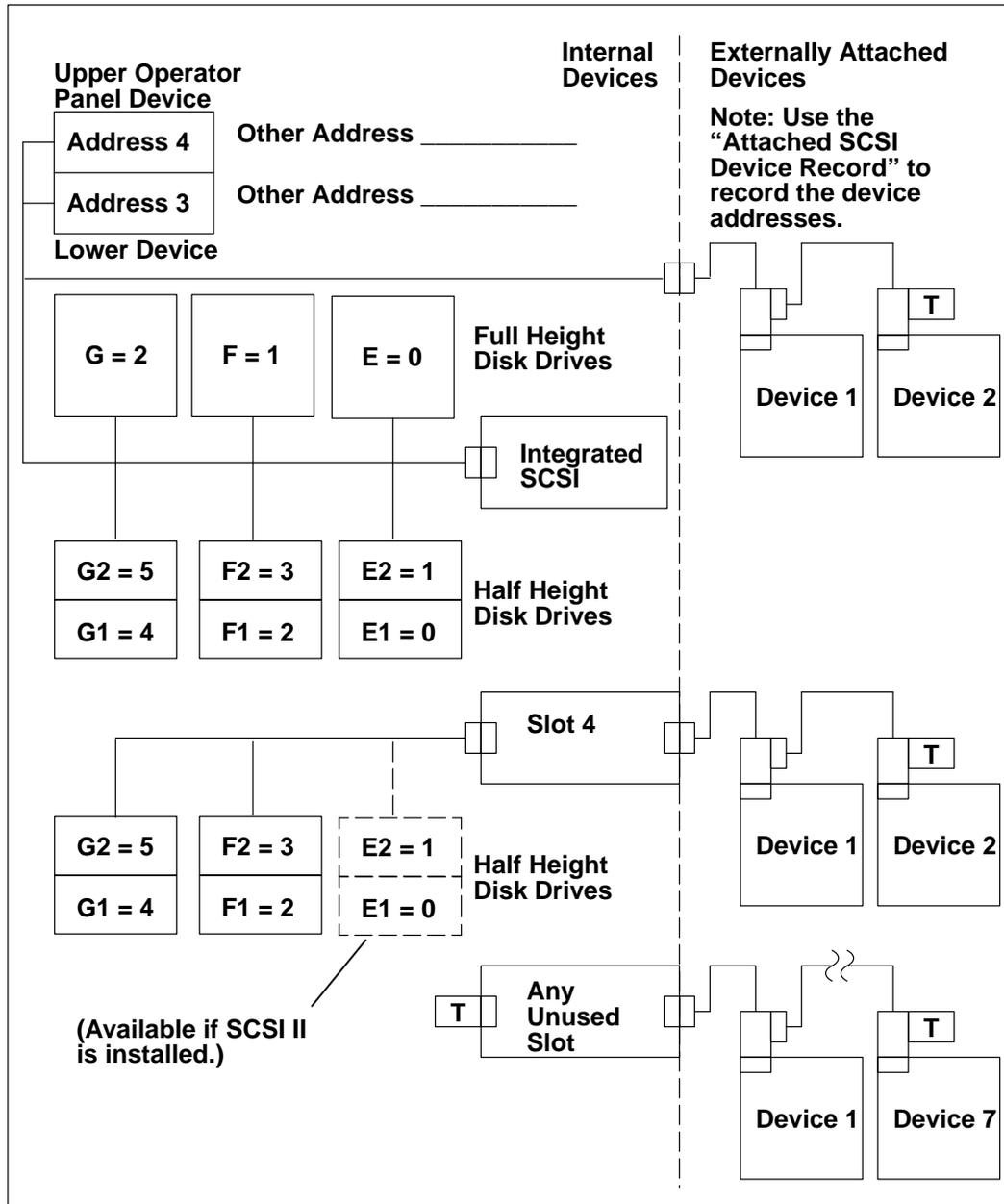
Internally Installed SCSI Device Record (Models 570, 580, 58H, 590, 59H, 591, 595)

1. Use the "About Your Machine" printout to determine which devices are installed in the system unit.
2. On the following diagram, circle the device addresses for the internally installed SCSI devices in the system unit. Record the address in the "Other Address" space if a device in the optional media positions A, B, or C is different from the address shown.
3. Go to "Attached SCSI Device Record" on page A-4.

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 _____

T

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 _____

T

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 _____

T

Device _____

Address _____

Index

Numbers

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