

7006

Graphics Workstation Service Guide

Second Edition (July 1995)

This edition notice applies to the 7006 Graphics Workstation.

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Communications Statements

The following statements apply to this product when *not* using the system Ethernet function (local area network). The system standard I/O Ethernet port is FCC Class A. 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 B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult an authorized dealer or service representative for help.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. Proper cables and connectors are available from authorized dealers. 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.

International Electrotechnical Commission (IEC) Statement

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

EC Council Directive

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

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

Avis de conformité aux normes du ministère des Communications du Canada

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

Canadian Department of Communications Compliance Statement

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

この装置は、第二種情報装置（住宅地域又はその隣接した地域において使用されるべき情報装置）で住宅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。

しかし、本装置をラジオ、テレビジョン受信機に近接してご使用になると、受信障害の原因となることがあります。

取扱説明書に従って正しい取り扱いをして下さい。

VCCI Statement

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

This equipment is in the Class 2 category (information equipment to be used in a residential area or an adjacent area thereto) 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 such residential area.

When used near a radio or TV receiver, it may become the cause of radio interference.

Read the instructions for correct handling. VCCI-2.

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 B.

The following statements apply to this product when using the system Ethernet function (local area network). The statement for other products intended for use with this product appears in their accompanying manuals.

Federal Communications Commission (FCC) Statement

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

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

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

United Kingdom Telecommunications Safety Requirements

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

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

EC Council Directive

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

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

International Electrotechnical Commission (IEC) Statement

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

Avis de conformité aux normes du ministère des Communications du Canada

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement 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.

電波障害自主規制 届出装置の記述

この装置は、第一種情報装置（商工業地域において使用されるべき情報装置）で商工業地域での電波障害防止を目的とした情報処理装置等電波障害自主規制協議会（VCCI）基準に適合しております。

従って、住宅地域またはその隣接した地域で使用すると、ラジオ、テレビジョン受信機等に受信障害を与えることがあります。

取扱説明書に従って正しい取り扱いをしてください。

VCCI Statement

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

This equipment is in the Class 1 category (information equipment to be used in commercial and/or industrial areas) and conforms to the standards set by the Voluntary Control Council For Interference by Data Processing Equipment and Electronic Office Machines aimed at preventing radio interference in commercial and/or industrial areas.

Consequently, when used in a residential area or in an adjacent area thereto, radio interference may be caused to radios and TV receivers, etc.

Read the instructions for correct handling. VCCI-1.

Radio Protection for Germany

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

Der Aussteller der Konformitätserklärung ist die IBM Germany.

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

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

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

Hinweis:

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

Safety Notices

Note: For a translation of the safety notices, refer to the *System Unit Safety Information*, order number SA23-2652.

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:

xi
2-1520-1
3-1
3-8

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:

xi
2-1520-1
3-1
3-14
3-33

Electrical Safety

Observe the following safety instructions any time you are connecting or disconnecting devices attached to the workstation.

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.

DANGER

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

CAUTION:

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

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.

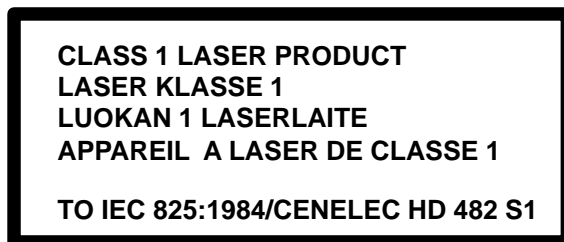


Figure 1. Class 1 System Information Label Required by the IEC 825 Standard

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 provides maintenance information that is specific to the 7006 system unit, adapters, and attached devices that do not have their own service information. It also contains Maintenance Analysis Procedures (MAPs) that are not common to other systems.

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

This book is used by the service technician to repair system failures. This book assumes that the service technician has had training on the 7006 system unit.

Related Information

The *POWERstation and POWERserver Common Diagnostics Information Manual*, form number SA23-2665, contains the maintenance information and procedures that are common to all systems. The information and procedures in this book apply to any system unit that uses the diagnostic programs.

Adapters, Devices, and Cable Information, form SA23-2764, contains reference information about adapters, devices, and cabling for the system units. This manual also contains the removal and replacement procedures for the logic boards on the disk drives. This manual provides the service representative pin-out lists and cabling information to use in isolating problems with customer cabling.

The *7006 Graphics Workstation Operator Guide* Order Number SA23-2718, provides information about the controls and features of the system unit.

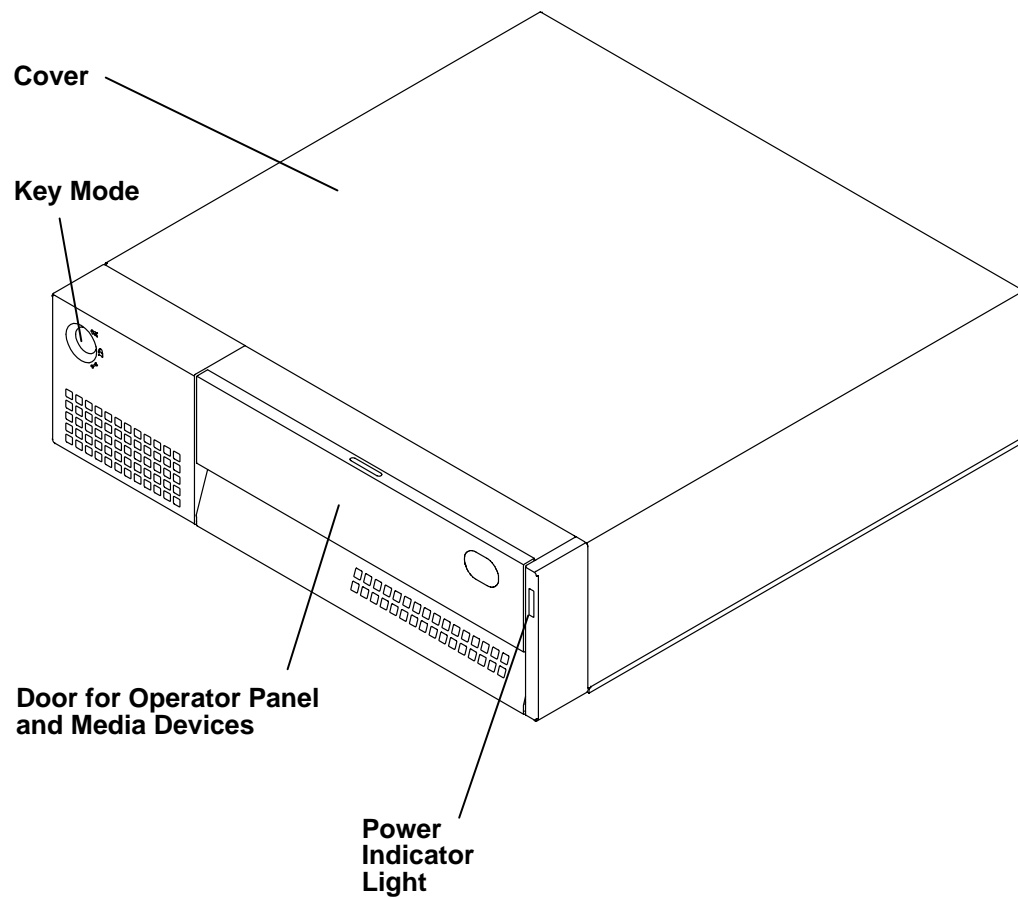
The *7006 Graphics Workstation Hardware Setup Procedure*, Order Number SA23-2720, is a pictorial guide designed to help you quickly set up your 7006 system unit.

Chapter 1. Reference Information

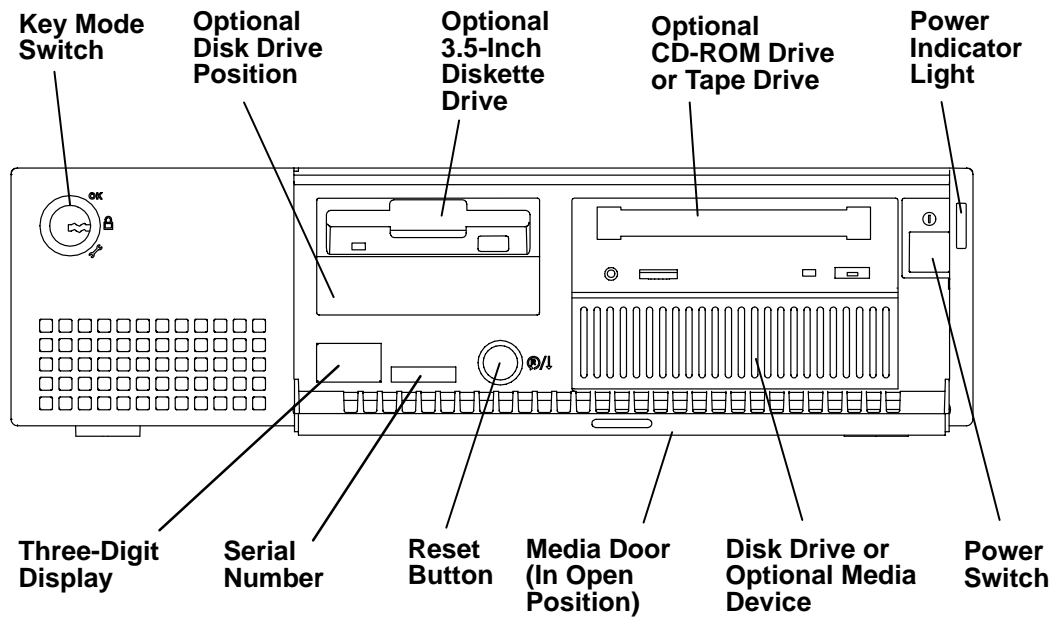
This chapter provides information about locations, features, parts, and devices in the system unit.

System Unit Locations

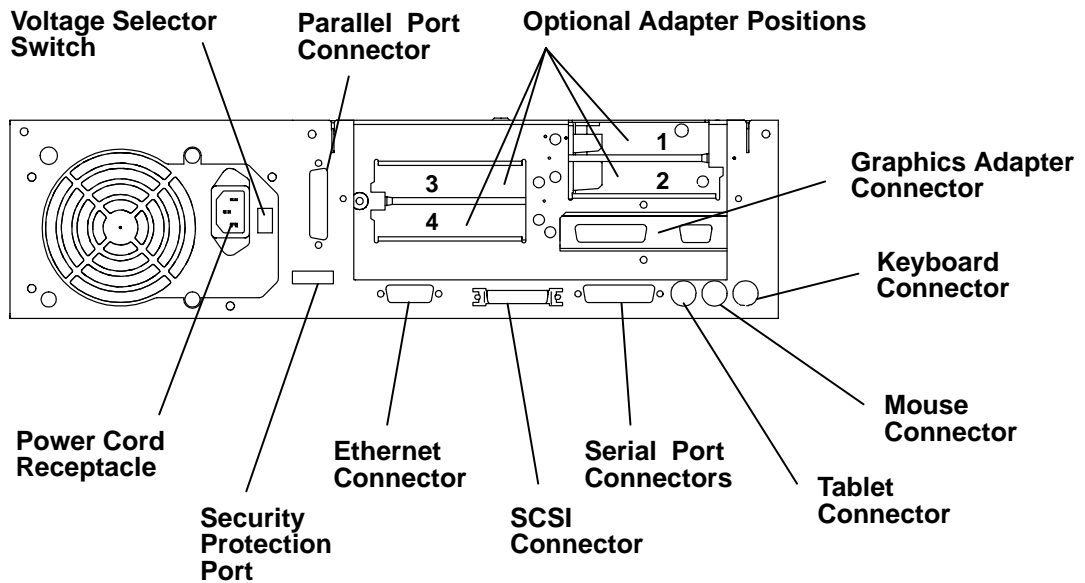
Front View with Cover



Front View with Media Door Open

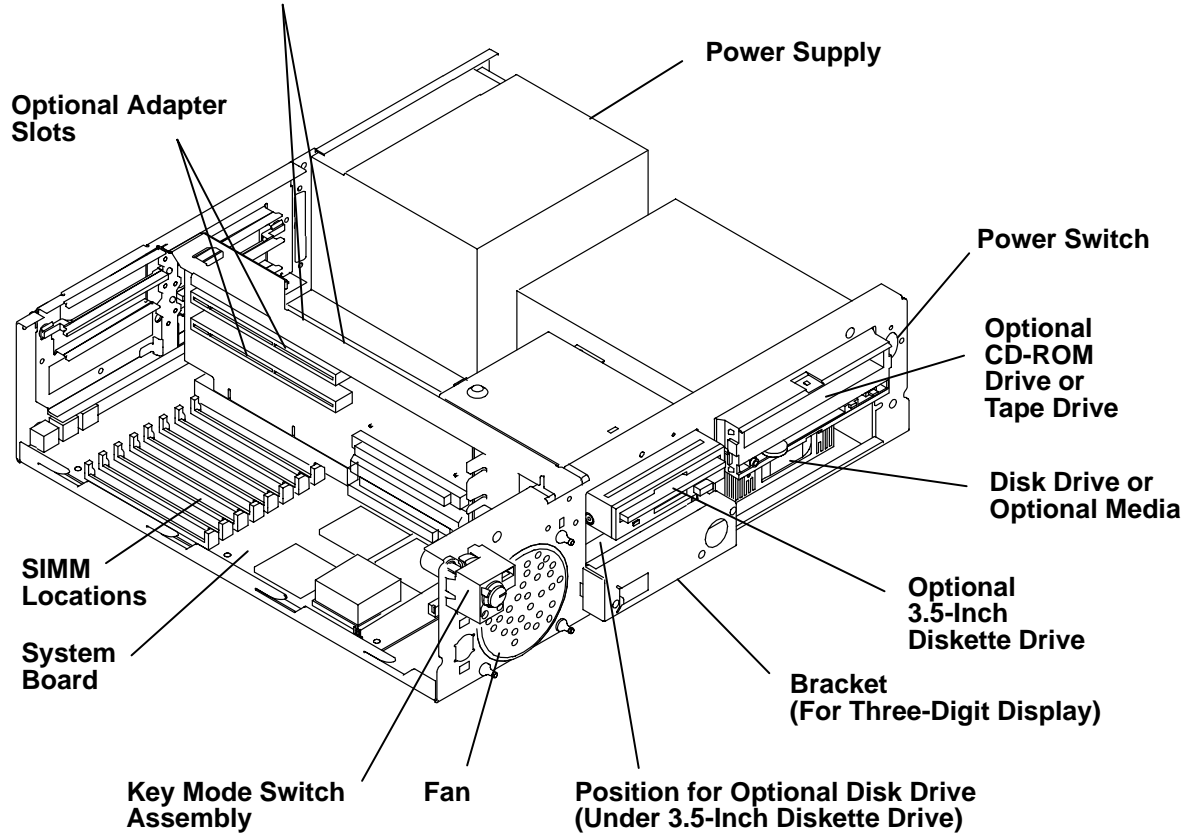


Rear View

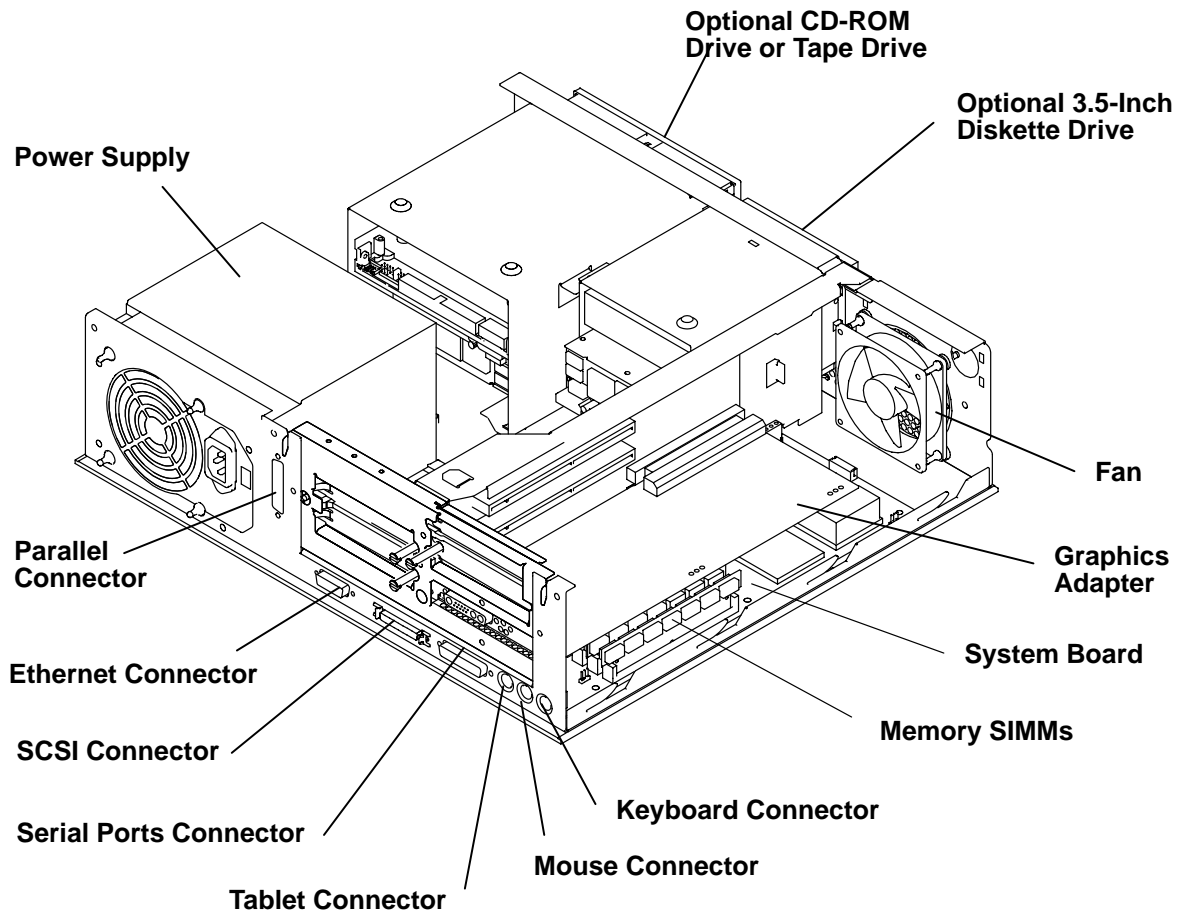


Front View without Covers

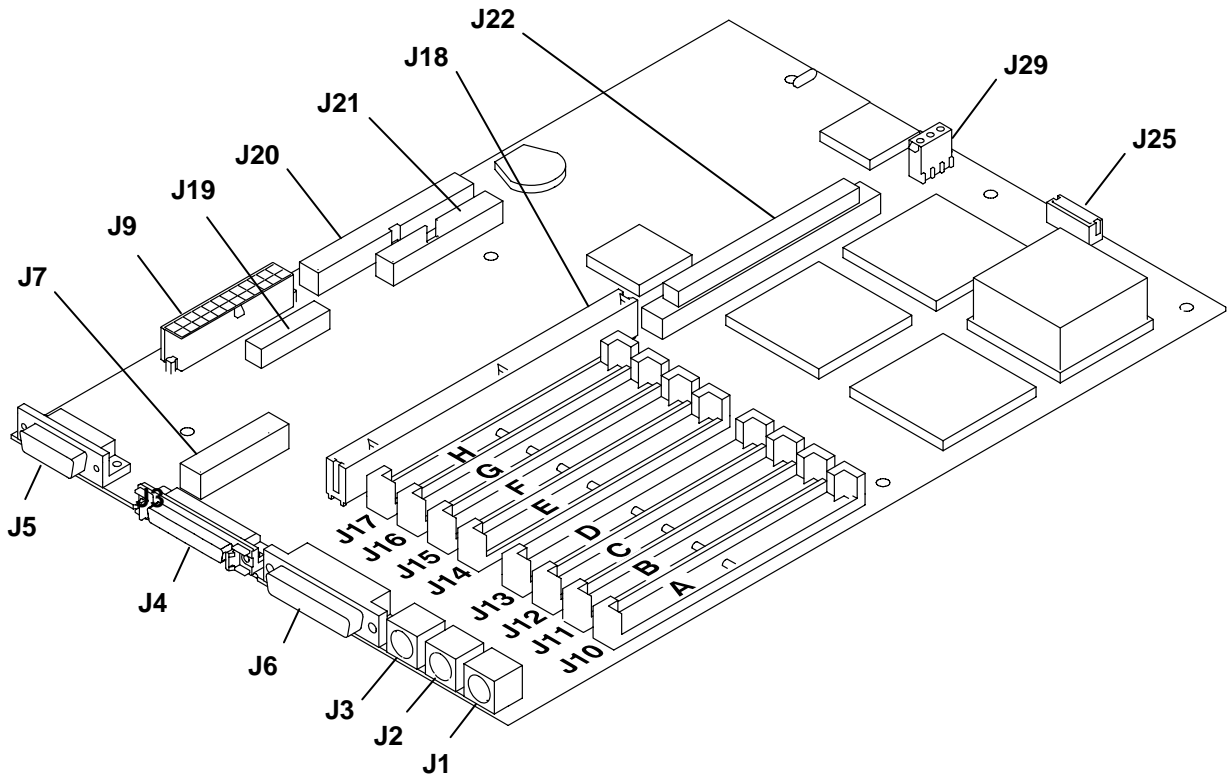
Optional Adapter Slots (Two Adapter Slots on Side of Riser Card Facing the Power Supply)



Rear View without Covers



System Board Locations

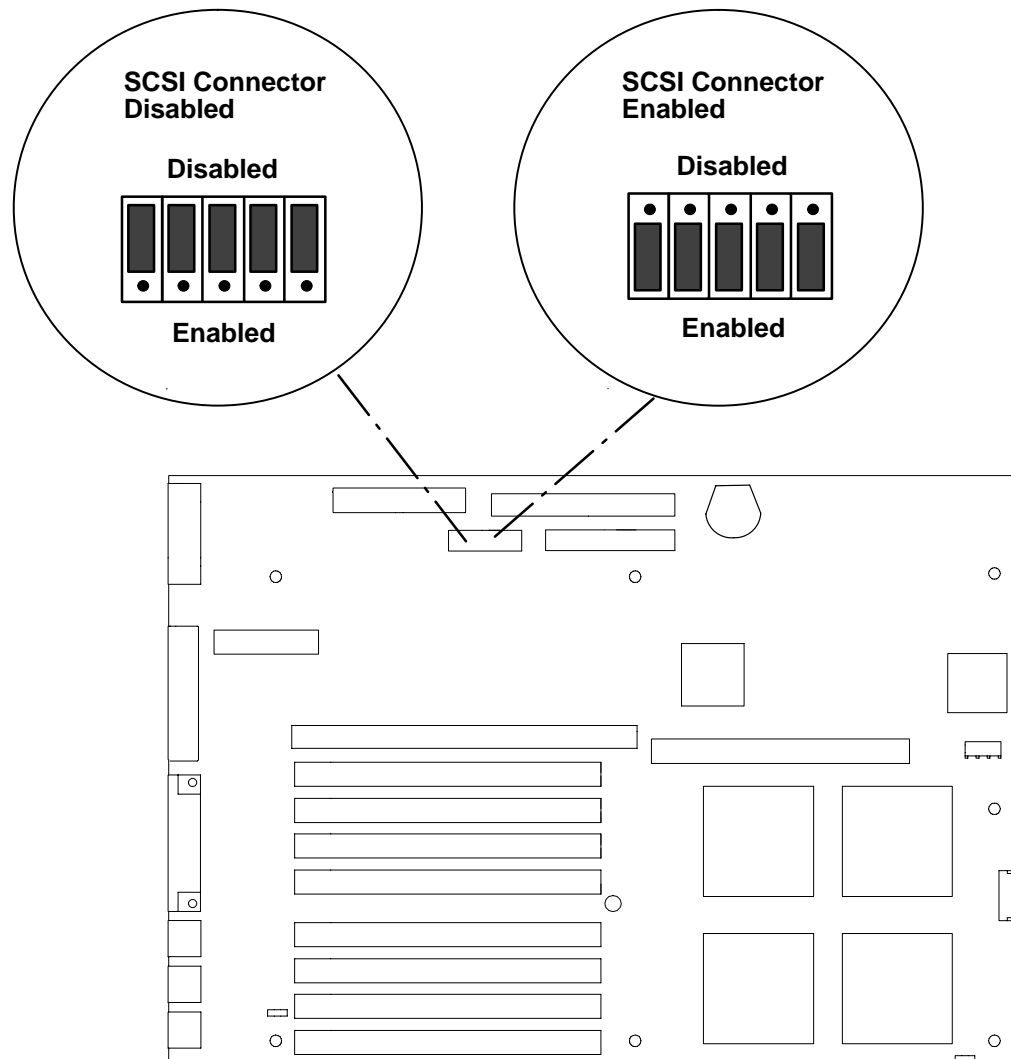


Connector	Function
J1	Keyboard connector
J2	Mouse connector
J3	Tablet connector
J4	External SCSI connector
J5	Ethernet connector
J6	Serial port connector
J7	Parallel port connector
J9	Power supply connector
J10 through J17 (A – H)	Memory (SIMMs) connectors
J18	Microchannel riser card connector
J19	Enable/Disable SCSI connector
J20	Internal SCSI connector
J21	Diskette drive connector
J22	Riser card connector
J25	LED connector
J29	Keylock connector

Disable/Enable the SCSI Connector

Optional security for SCSI is provided by five jumpers (JP1) on the system board. These jumpers (when set to the disabled position) prevent communication through the external SCSI connector. The default setting of the jumpers from the manufacturer is SCSI connector *enabled*.

1. Do the “Cover” removal procedure on page 3-3.
2. If adapters are located in slots three (3) and four (4), do the “Adapters” removal procedure on page 3-16 to remove the adapters.
3. Set the jumpers to the desired position.



4. If you have removed any adapters, do the replacement procedure in “Adapters” on page 3-16.
5. Do the replacement procedure in “Cover” on page 3-3.

Setting the Display Jumpers

The following tables describe how to set the jumpers on the POWER GXT150L and POWER GXT500/POWER GXT500D graphics adapters for use with the various displays.

POWER GXT150L/POWER GXT155L Graphics Adapters

Refer to the illustration on page 1-9 for the location of the display switches on the POWER GXT150L/POWER GXT155L graphics adapter.

Notes:

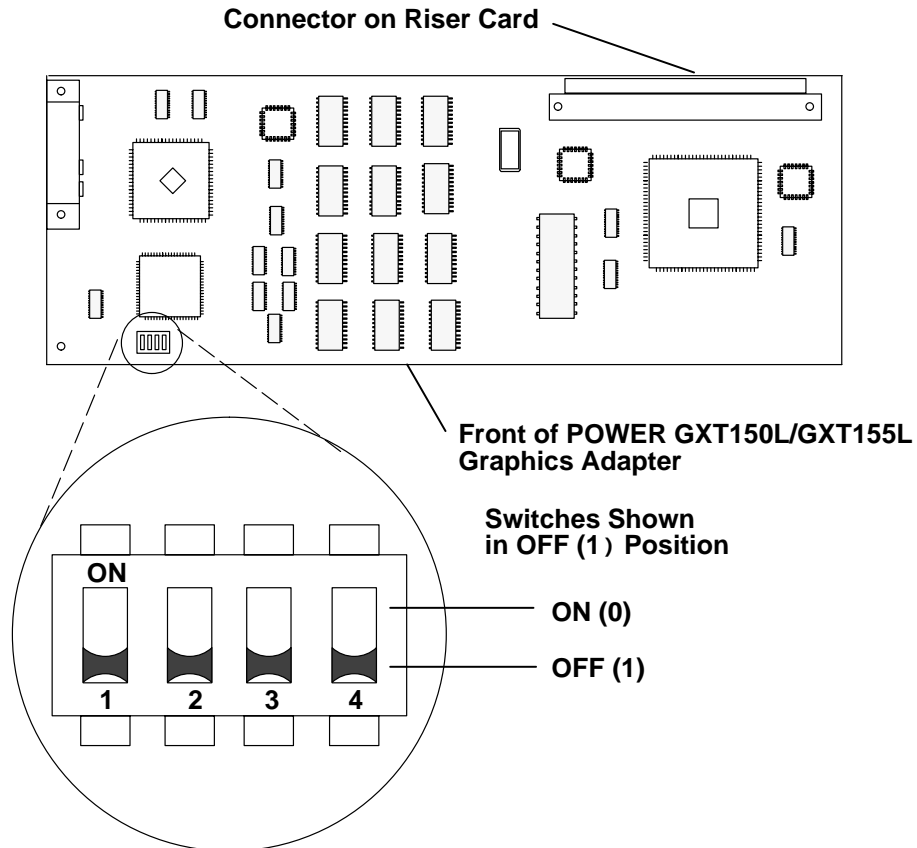
1. Some displays require an adapter cable part number 51G7826 or 52G3255 for use with the attached display cable. One end of the adapter cable connects to the graphics adapter and one end of the adapter cable connects to the attached display data cable.
2. In the following table, Display Switch position 1 is Off; Display Switch position 0 is On.

Display Type	Screen Resolution (Non-Interlaced)	Refresh Freq (Hz)	Monitor Display Mode Switch	Adapter Cable–	Adapter Display Switch 1 2 3 4
8508 Mono	1280 x 1024	67	–	Note 1	1 1 1 1
8517 Color	1024 x 768	70	–	Note 1	1 1 1 1
6314 Color 6319 Color	1024 x 768	60	–	Note 1	1 1 1 1
		70	–	Note 1	0 0 1 0
6317 Color 6324 Color 6325 Color 6327 Color 9524 Color 9525 Color P50 Color	1024 x 768	60	–	Note 1	1 1 1 1
		70	–	Note 1	0 0 1 0
		75.8	–	Note 1	1 0 1 1
	1280 x 1024	60		Note 1	1 0 1 0
9521 Color 9527 Color	1024 x 768	60	–	Note 1	1 1 1 1
		70	–	Note 1	0 0 1 0
		75.8	–	Note 1	1 0 1 1
	1280 x 1024	60		Note 1	1 0 1 0
		77		Note 1	1 1 0 1
P70 Color P200 Color	1024 x 768	60	–	96G2689	1 1 1 1
		70	–	96G2689	0 0 1 0
		75.8	–	96G2689	1 0 1 1
	1280 x 1024	60		96G2689	1 0 1 0
		77		96G2689	1 1 0 1
1091–051 Color POWERdisplay 16S	1280 x 1024	72		09G3589	1 1 1 1

Display Type	Screen Resolution (Non-Interlaced)	Refresh Freq (Hz)	Monitor Display Mode Switch	Adapter Cable–	Adapter Display Switch 1 2 3 4
5081–16 Color	1280 x 1024	60	–	09G3539	1 1 1 1
6091–16 Color POWERdisplay 16	1280 x 1024	60	out (1)	09G3539	1 1 1 1
		77	in (2)	09G3539	1 1 0 1
6091–19 Color	1280 x 1024	60	2	09G3539	1 1 1 1
		67	3	09G3539	1 1 1 0
6091–19i Color POWERdisplay 19	1280 x 1024	60	2	09G3539	1 1 1 1
		77	–	09G3539	1 1 0 1
6091–23 Color	1280 x 1024	60	–	09G3539	1 1 1 1
POWERdisplay 17 Color	1280 x 1024	60	–	09G3539	1 1 1 1
		77	–	09G3539	1 1 0 1
POWERdisplay 20 Color	1024 x 768	74	–	09G3539	0 1 1 0
		70	–	09G3539	0 0 1 0
		75.8	–	09G3539	0 0 0 1
7091–7SS	1024 x 768	70	–	88G4483	0 0 1 0
		75.8	–	88G4483	1 0 1 1
	1280 x 1024	60	–	88G4483	1 0 1 0
		77	–	88G4483	1 1 0 1
Other Displays	1280 x 1024	60	–	09G3539	0 1 1 1
	1280 x 1024	74	–	09G3539	0 1 1 0
	1024 x 768	60	–	09G3539	0 0 1 1
		60		Note 1	1 1 1 1
	1024 x 768	70	–	09G3539	0 0 1 0
		75.8	–	09G3539	0 0 0 1
	1152 x 900	76	–	51G8563	0 1 0 1
		66	–	51G8563	0 1 0 0

Note: If the display and adapter are ordered together, the switch settings will be pre-set at the factory for the maximum supported screen resolution and refresh frequency. Otherwise, the default setting of the switches from the manufacturer is 1111.

To set the switches, use a pen or paper clip to slide the switch toward or away from the numbers printed on the switch case. The switches are On (0) when slid away from the numbers and Off (1) when slid toward the numbers.



POWER GXT500/POWER GXT500D Graphics Adapters

Refer to the illustration on page 1-13 for the location of the display switches on the POWER GXT500/POWER GXT500D graphics adapters.

Notes:

1. Some displays require an adapter cable part number 51G7826 or 52G3255 for use with the attached display cable. One end of the adapter cable connects to the graphics adapter and one end of the adapter cable connects to the attached display data cable.
2. In the following table, Display Switch position 1 is Off; Display Switch position 0 is On.

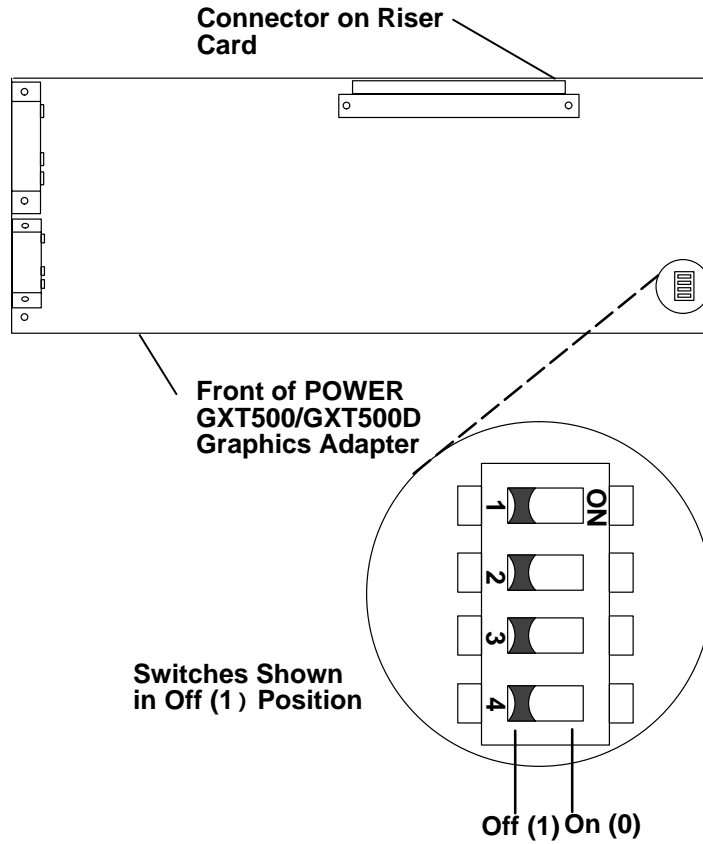
Display Type	Screen Resolution (Non-Interlaced)	Refresh Freq (Hz)	Monitor Display Mode Switch	Adapter Cable–	Adapter Display Switch 1 2 3 4
1091–051 Color POWERdisplay 16S	1280 x 1024	72		09G3589	1 1 1 1
5081–16 Color 5081 –19 with 1280x1024 RPQ	1280 x 1024	60	–	09G3539	1 1 1 1
6091–16 Color POWERdisplay 16	1280 x 1024	60	out (1)	09G3539	1 1 1 1
		77	in (2)	09G3539	1 1 0 1
		77	in (2)	09G3540	–
		77	in (2)	09G3541	–
		77	in (2)	09G3862	–
6091–19 Color	1280 x 1024	60	2	09G3539	1 1 1 1
		67	3	09G3539	1 1 1 0
6091–19i Color POWERdisplay 19	1280 x 1024	60	2	09G3539	1 1 1 1
		77	–	09G3539	1 1 0 1
		77	–	09G3540	–
		77	–	09G3541	–
		77	–	09G3862	–
6091–23 Color	1280 x 1024	60	–	09G3539	1 1 1 1
6314 Color 6319 Color	1024 x 768	60	–	Note 1	1 1 1 1
		70	–	Note 1	0 0 1 0
6317 Color 6324 Color 6325 Color 6327 Color 9524 Color 9525 Color	1024 x 768	60	–	Note 1	1 1 1 1
		70	–	Note 1	0 0 1 0
		75.8	–	Note 1	1 0 1 1
	1280 x 1024	60		Note 1	1 0 1 0

Display Type	Screen Resolution (Non-Interlaced)	Refresh Freq (Hz)	Monitor Display Mode Switch	Adapter Cable–	Adapter Display Switch 1 2 3 4
7091–7S1	1024 x 768	70	–	96G2689 or 11H4004	0 0 1 0
		75.8	–	96G2689 or 11H4004	1 0 1 1
	1280 x 1024	60	–	96G2689 or 11H4004	1 0 1 0
		77	–	96G2689 or 11H4004	1 1 0 1
8517 Color	1024 x 768	70	–	Note 1	1 1 1 1
9521 Color 9527 Color	1024 x 768	60	–	Note 1	1 1 1 1
		75.8	–	Note 1	1 0 1 1
	1280 x 1024	60	–	Note 1	1 0 1 0
		77	–	Note 1	1 1 0 1
		60	–	09G3539	1 1 1 1
		77	–	09G3539	1 1 0 1
		77	–	09G3540	–
		77	–	09G3541	–
77	–	09G3862	–		
POWERdisplay 17 POWERdisplay 20	1024 x 768	75.8	–	09G3539	0 0 0 1
	1280 x 1024	60	–	09G3539	1 1 1 1
		77	–	09G3539	1 1 0 1
		77	–	09G3540	–
		77	–	09G3541	–
		77	–	09G3862	–
P50 Color	1024 x 768	60 70 75.8	–	96G2693 and 52G3255 or 51G7826	1 1 1 1 0 0 1 0 1 0 1 1
	1280 x 1024	60	–	96G2693 and 52G3255 or 51G7826	1 0 1 0

Display Type	Screen Resolution (Non-Interlaced)	Refresh Freq (Hz)	Monitor Display Mode Switch	Adapter Cable–	Adapter Display Switch 1 2 3 4
P70 Color	1024 x 768	70	–	96G2689 or 11H4004	0 0 1 0
P200 Color		75.8	–	96G2689 or 11H4004	1 0 1 1
	1280 x 1024	60	–	96G2689 or 11H4004	1 0 1 0
		77	–	96G2689 or 11H4004	1 1 0 1
Other Displays	1024 x 768	60	–	Note 1	1 1 1 1
		60	–	09G3539	0 0 1 1
		70	–	09G3539	0 0 1 0
		75.8	–	09G3539	0 0 0 1
	1280 x 1024	60	–	09G3539	0 1 1 1
		74	–	09G3539	0 1 1 0

Note: If the display and adapter are ordered together, the switch settings will be pre-set at the factory for the maximum supported screen resolution and refresh frequency. Otherwise, the default setting of the switches from the manufacturer is 1111.

To set the switches, use a pen or paper clip to slide the switch toward or away from the numbers printed on the switch case. The switches are On (0) when slid away from the numbers and Off (1) when slid toward the numbers.



Specifications

The mechanical packaging, cooling, power supply, and environmental requirements for the tabletop workstation is shown in the following:

Dimensions (Horizontal Position)

Height – 116 mm (4.6 inches) including feet

Depth – 394 mm (15.5 inches)

Width – 447 mm (17.6 inches)

Dimensions (Vertical Position)

Height – 474 mm (18.5 inches) including stand

Depth – 423 mm (16.5 inches)

Width – 120 mm (4.7 inches); 217 mm (8.54 inches) at base of stand

Weight

18 kg (40 pounds)

Operating Environment – Class B

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

Humidity – 8% to 80 % noncondensing

Maximum Altitude – 2135 m (7000 feet)

Power Source Loading

– 0.17k VA typical

– 0.33k VA maximum

Power Supply

272 watts

Operating Voltage

100 to 125 V ac; 50 to 60 Hz

200 to 240 V ac; 50 to 60 Hz

Heat Output (Maximum)

375 BTU per hour – typical

745 BTU per hour – maximum

Acoustics

5.2 Bels operating

4.9 Bels idle

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 cords consist of:

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

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

“For 230 V operation in the 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 consist of the following:

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

“For units set at 230 V (outside 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 to find the power cables that are available.

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 with their own power cables have those cables attached.

If the inspection indicates an unacceptable safety condition, the condition must be corrected before anyone can service the machine.

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 the voltage label on the back of the system unit to ensure that it matches the voltage at the outlet.
10. Check the external power cable for damage.
11. With the external power cable connected to the system unit, check for 0.1 ohm or less resistance between the ground lug on the external power cable plug and the metal frame.
12. Perform the following checks on each device that has its own power cables:
 - a. Check for damage to the power cord.
 - b. Check 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.
13. Install the covers.

Chapter 2. Maintenance Analysis Procedures (MAPs)

This chapter provides diagnostic information for detecting power problems in the system unit (in MAP 1520) and for detecting defective field replaceable units (in MAP 1540).

Note: Make sure that the voltage selector switch located on the rear of the system unit on the power supply is set to the correct voltage before operating your system unit.

MAP 1520: Power Map

Note: This is not the Start of Call MAP. For the Start of Call MAP, refer to the *POWERstation and POWERserver Common Diagnostics Information Manual*.

Purpose of This MAP

The Power MAP assists the trained service person in analyzing power problems in the system unit.

DANGER

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

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

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

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

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

CAUTION:

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

Step 1.

Check that the external power cable to the system unit has continuity, is plugged into both the system unit and the outlet, the outlet has the correct voltage, and the voltage selector switch on the power supply is in the correct position.

Did you find a problem?

NO Go to Step 2.

YES Correct the problem and go to Step 15.

Step 2.

(from Step 1)

1. Set the power switch on the system unit to Off.
2. Remove the cover. (Refer to "Cover" on page 3-3 .)
3. Disconnect the power supply connector from the system board.
4. Set the power switch on the system unit to On.

Did the power indicator light come on and stay on, and is the fan running continuously?

- NO** Exchange the power supply and then go to Step 15.
YES Go to Step 3.

Step 3.

(from Step 2)

1. Set the power switch on the system unit to Off.
2. Connect the power supply connector to the system board.

Is a diskette drive installed?

- NO** Go to Step 5.
YES Go to Step 4.

Step 4.

(from Step 3)

1. Disconnect the diskette drive signal cable connector from the system board.
2. Set the power switch on the system unit to On.

Did the power indicator light come on and stay on?

- NO** Go to Step 5.
YES Exchange the diskette drive or the cable and then go to Step 15.

Step 5.

(from Steps 3 and 4)

Is a disk drive installed?

- NO** Go to Step 7.
YES Go to Step 6.

Step 6.

(from Step 5)

1. Set the power switch on the system unit to Off.
2. Disconnect the disk drive power cable connector.
3. Set the power switch on the system unit to On.

Did the power indicator light come on and stay on?

NO Go to Step 7.

YES Exchange in this order; and then go to Step 15.

1. Disk drive (all internal media devices)
2. Signal connector.

Repeat this step until all internal media devices are exchanged.

Step 7.

(from Steps 5 and 6)

1. Set the power switch on the system unit to Off.
2. Record the location of each adapter and memory card.
3. Remove one card.
4. Set the power switch on the system unit to On.

Did the power indicator light come on and stay on?

NO If all adapter and memory cards have not been removed, repeat this step. If all cards have been removed, go to Step 8.

YES Go to Step 9.

Step 8.

(from Step 7)

1. Set the power switch on the system unit to Off.
2. Unplug one cable from the back of the system unit, such as the keyboard, tablet, mouse, serial or parallel port.
3. Set the power switch on the system unit to On.

Did the power indicator light come on and stay on?

NO Repeat this step until all cables have been removed; and then go to Step 14.

YES Repair or exchange the cable or its device that was just removed; and then go to Step 15.

Step 9.

(from Step 7)

Look at the card that was removed.

Were any cables connected to the card?

NO Go to Step 10.

YES Go to Step 12.

Step 10.

(from Step 9)

Refer to the *POWERstation and POWERserver Common Diagnostics Information Manual* to see if the card has more than one field-replaceable unit (FRU).

Does the failing card have additional FRUs?

NO Exchange the failing card; and then go to Step 15.

YES Go to Step 11.

Step 11.

(from Step 10)

1. Set the power switch on the system unit to Off.
2. Remove all FRUs from the failing card.
3. Replace the failing card on the system board.
4. Set the power switch on the system unit to On; wait 10 seconds before answering the following question.

Is the power indicator light on?

NO Exchange the failing card; and then go to Step 15.

YES One of the additional FRUs that was removed is failing. If only one FRU was removed, exchange it. Otherwise, replace the removed FRUs, one at a time until you identify the failing FRU. Exchange the failing FRU and go to Step 15.

Step 12.

(from Step 9)

1. Set the power switch on the system unit to Off.
2. Replace the adapter without its cables.
3. Set the power switch on the system unit to On.

Did the power indicator light come on and stay on?

- NO** Exchange the adapter; and then go to Step 15.
- YES** Go to Step 13.

Step 13.

(from Step 12)

Either the cable or its device is defective.

1. Set the power switch on the system unit to Off.
2. Disconnect anything from the device end of the cable.
3. Connect the cable to the adapter.
4. Set the power switch on the system unit to On.

Did the power indicator light come on and stay on?

- NO** Exchange the cable; then go to Step 15.
- YES** Repair or exchange the defective device; and then go to Step 15.

Step 14.

(from Step 8)

1. Set the power switch on the system unit to Off.
2. Disconnect one of the following: operator panel, key mode switch, or any other cable (except power) attached to the system board.
3. Set the power switch on the system unit to On.

Did the power indicator light come on and stay on?

- NO** Repeat this step until the defective part is located or all connectors have been disconnected; exchange the system board and go to Step 15.
- YES** Repair or exchange the FRU that was removed and go to Step 15.

Step 15.

(from Steps 1, 2, 4, 6, 8, 10, 11, 12, 13, and 14)

This completes the repair. Go to "MAP 0410: Repair Checkout" in the *POWERstation and POWERserver Common Diagnostics Information Manual*.

MAP 1540: Minimum Machine Configuration

The Minimum Machine Configuration Map assists the trained service representative in analyzing configuration problems in the system unit.

Step 1.

(from Steps 3, 9, 12, 14, 17, 18, and 22)

1. Set the power switch on the system unit to Off.
2. Set the key mode switch to the Service position.
3. Record the slot numbers of the adapters and any cables attached to the adapter. Remove all of the adapters, and then remove the riser card that connects the adapters to the system board.
4. Remove any memory SIMMs and record their socket numbers.
5. Unplug the disk drive signal cable if present.
6. Disconnect the signal cable from the diskette drive if present.
7. Disconnect all external device cables.
8. Set the power switch on the system unit to On.
9. Wait for one of the following conditions:
 - The system stops for at least one minute with a constant number, character, or symbol in the three-digit display.
 - A flashing 888 is displayed in the three-digit display.

Is 213 displayed in the three-digit display?

- | | |
|------------|---------------|
| NO | Go to Step 2. |
| YES | Go to Step 4. |

Step 2.

(from Step 1)

Is 211 displayed in the three-digit display?

- | | |
|------------|---|
| NO | Go to Step 3. |
| YES | Exchange the system board and retry Step 1. If this does not fix the problem, continue to Step 3. |

Step 3.

(from Step 2)

One of the FRUs in the system is defective.

- Exchange in the following order the FRUs that have not been exchanged:
 1. System board
 2. Power supply.
- Test each FRU by turning the system power on. No failure has been detected when the system stops with 213 in the three-digit display. The last FRU exchanged is defective.

Were you able to identify the defective FRU?

- NO** Set the power switch on the system unit to Off.
If the symptom changed, go to Step 1.
If the symptom did not change, call your next level of support for assistance.
- YES** Go to Step 19.

Step 4.

(from Step 1)

No failure was detected. One of the FRUs you removed is probably defective.

1. Set the power switch on the system unit to Off.
2. Install a set of four matching SIMMs in positions A, B, C, and D.
Refer to page 3-20 for an illustration of the SIMM locations on the system board.
3. Set the power switch on the system unit to On.
4. Wait for one of the following conditions:
 - The system stops for at least one minute with a constant number, character, or symbol in the three-digit display.
 - A flashing 888 is displayed in the three-digit display.

Is 261 or 262 displayed in the three-digit display?

- NO** Go to Step 8.
- YES** Go to Step 5.

Step 5.

(from Steps 4 and 6)

Are all of the memory SIMMs that were removed previously installed back into the system unit?

- NO** Go to Step 6.
- YES** Go to Step 13.

Step 6.

(from Step 5)

No failure was detected. One of the FRUs you removed is probably defective.

1. Set the power switch on the system unit to Off.
2. Reinstall the next quad of SIMMs (set of four) in their original slots.
3. Set the power switch on the system unit to On.
4. Wait for one of the following conditions:
 - The system stops for at least one minute with a constant number, character, or symbol in the three-digit display.
 - A flashing 888 is displayed in the three-digit display.

Is 261 or 262 displayed in the three-digit display?

NO Go to Step 7.

YES Go to Step 5.

Step 7.

(from Step 6)

One of the FRUs in the system is defective.

Exchange in the following order the FRUs that have not been exchanged:

- Memory SIMMs.
 - System board.
1. Test each FRU by setting the power switch on the system unit to On. No failure has been detected when the system stops with 261 or 262 in the three-digit display. Any other condition means the FRU is defective.
 2. Go to Step 19.

Step 8.

(from Step 4)

One of the FRUs in the system unit is defective.

Do you have another quad of SIMMS?

NO Go to Step 9.

YES Go to Step 10.

Step 9.

(from Step 8)

Exchange in the following order the FRUs that have not been exchanged:

1. Memory SIMMs
2. System board
3. Power supply.

Test each FRU by setting the power switch on the system unit to On. No failure has been detected when the system stops with 261 or 262 in the three-digit display. The last FRU exchanged is defective.

Were you able to identify the defective FRU?

- NO** Set the power switch on the system unit to Off.
 If the symptom changed, go to Step 1.
 If the symptom did not change, call your next level of support for assistance.
- YES** Go to Step 19.

Step 10.

(from Step 8)

1. Set the power switch on the system unit to Off.
2. Remove the quad of SIMMs in positions A, B, C, and D.
 Refer to page 1-5 for an illustration of the SIMM locations on the system board.
3. Install a different quad of SIMMs in positions A, B, C, and D.
4. Set the power switch on the system unit to On.
5. Wait for one of the following conditions:
 - The system stops for at least one minute with a constant number, character, or symbol in the three-digit display.
 - A flashing 888 is displayed in the three-digit display.

Is 261 or 262 displayed in the three-digit display?

- NO** Go to Step 12.
- YES** Go to Step 11.

Step 11.

(from Step 10)

One of the SIMMs you just removed is defective.

1. Test each FRU by setting the power switch on the system unit to On. No failure has been detected when the system stops with 261 or 262 in the three-digit display. Any other condition means the memory SIMM is defective.
2. Exchange the defective SIMM.
3. Go to Step 19.

Step 12.

(from Step 10)

Exchange in the following order the FRUs that have not been exchanged:

1. System board
2. Power supply.

Test each FRU by setting the power switch on the system unit to On. No failure has been detected when the system stops with 261 or 262 in the three-digit display. The last FRU exchanged is defective.

Were you able to identify the defective FRU?

- | | |
|------------|--|
| NO | Set the power switch on the system unit to Off.
If the symptom changed, go to Step 1.
If the symptom did not change, call your next level of support for assistance. |
| YES | Go to Step 19. |

Step 13.

(from Steps 5 and 6)

No failures have been detected. One of the FRUs you removed is probably defective.

1. Set the power switch on the system unit to Off.
2. Connect either:
 - A terminal (to serial port 1)
 - A keyboard and display.
3. Set the power switch on the system unit to On.
4. Wait for one of the following conditions:
 - The system stops for at least one minute with a constant number, character, or symbol in the three-digit display.
 - A flashing 888 is displayed in the three-digit display.
 - The system stops for at least one minute with a number in the three-digit display.

Is 260, 261 or 262 displayed in the three-digit display?

NO Go to Step 14.

YES Go to Step 15.

Step 14.

(from Step 13)

Exchange in the following order the FRUs that have not been exchanged :

1. Display/adapter
2. Keyboard
3. System board
4. Riser card.

Test each FRU by setting the power switch on the system unit to On. No failure has been detected when the system stops with either 260, 261, or 262 in the three-digit display. The last FRU exchanged is defective.

Were you able to identify the defective FRU?

NO Set the power switch on the system unit to Off.

 If the symptom changed, go to Step 1.

 If the symptom did not change, call your next level of support for assistance.

YES Go to Step 19.

Step 15.

(from Step 13)

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

If you are using a terminal attached to serial port 1, press any key.

Did the Main Menu display?

NO Go to Step 16.

YES Go to Step 20.

Step 16.

(from Step 15)

Was an SRN reported?

NO Go to Step 17.

YES Go to Step 18.

Step 17.

(from Step 16)

Exchange in the following order the FRUs that have not been exchanged:

1. Display, adapter, or terminal
2. System board and riser card
3. Riser card.

Test each FRU by rerunning the diagnostics.

Were you able to identify the defective FRU?

NO Set the power switch on the system unit to Off.

If the symptom changed, go to Step 1.

If the symptom did not change, call your next level of support for assistance.

YES Go to Step 18.

Step 18.

(from Steps 16, 17, and 20)

Exchange the FRUs indicated by the SRN.

Test each FRU by rerunning the diagnostics.

Were you able to identify the defective FRU?

NO Go to Step 22.

YES Go to Step 19.

Step 19.

(from Steps 3, 7, 9, 11, 12, 14, 18, 21, and 22)

Replace all remaining FRUs one at a time starting with your initial program load (IPL) device.

Run diagnostics after all the FRUs are replaced.

When all FRUs have been tested and replaced if necessary:

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

Step 20.

(from Step 15)

Run the diagnostics.

Was an SRN reported?

NO Go to Step 21.

YES Go to Step 18.

Step 21.

(from Step 20)

Replace all remaining FRUs one at a time.

Run diagnostics each time a FRU is added.

Were you able to identify the defective FRU?

NO Go to Step 22.

YES Exchange the defective FRU.

Go to Step 19.

Step 22.

(from Steps 18 and 21)

Exchange the FRUs that have not been exchanged in the following order:

1. IPL device
2. System board and riser card
3. Riser card.

Test each FRU by rerunning the diagnostics.

Were you able to identify the defective FRU?

- NO** Set the power switch on the system unit to Off.
 If the symptom changed, go to Step 1.
 If the symptom did not change, call your next level of support for assistance.
- YES** Exchange the defective FRU.
 Go to Step 19.

MAP 1560: Diagnostics

The Diagnostics MAP assists the trained service representative in using the system unit's built-in diagnostic programs. This MAP should be used when the system diagnostics cannot be loaded because of a hardware problem. Entry into this MAP should be from "MAP 0020" in the *POWERstation and POWERserver Common Diagnostics Information Manual*.

Step 1.

1. Set the power switch on the system unit to Off.
2. Wait 10 seconds.
3. Set the key mode switch to the Secure position.
4. Turn on system power.
5. Wait until one of the following occurs:
 - The same number is displayed in the LEDs for more than one minute.
 - The number 888 flashes in the LEDs.
 - The system stops with nothing in the LEDs.
 - The system stops with a menu displayed.

Is 200 displayed in the three-digit display?

NO Go to Step 2.

YES Go to Step 3.

Step 2.

(from Step 1)

Is the Configuration and Diagnostics Main Menu displayed?

NO Go to "MAP 0020: Problem Determination Procedure," Step 1, in the *POWERstation and POWERserver Common Diagnostics Information Manual*.

YES Perform the following:

1. Record SRN 111-102.
2. Go to Step 9.

Step 3.

(from Step 1)

1. Set the key mode switch to the Service position, and then press the system reset button within five seconds.
2. Wait until one of the following occurs:
 - The same number is displayed in the LEDs for more than one minute.
 - The number 888 flashes in the LEDs.
 - The system stops with nothing in the LEDs.
 - The system stops with a menu displayed.

Is the Configuration and Diagnostics Main Menu displayed?

- | | |
|------------|--|
| NO | Go to "MAP 0020: Problem Determination Procedure," Step 1 in the <i>POWERstation and POWERserver Common Diagnostics Information Manual</i> . |
| YES | Go to Step 4. |

Step 4.

(from Step 3)

Select option 5, *Perform Diagnostics*, and then wait for the system to indicate the SCSI configuration.

Is the Diagnostics Screen displayed?

- | | |
|------------|--|
| NO | Perform the following: <ol style="list-style-type: none">1. Record SRN 111-921.2. Go to Step 9. |
| YES | Go to Step 5. |

Step 5.

(from Step 4)

Select option 2, Perform Built-In ADVANCED Diagnostics.

Is the Test Selection Menu displayed?

- | | |
|------------|--|
| NO | Perform the following:
1. Record SRN 111-921.
2. Go to Step 9. |
| YES | Go to Step 6. |

Step 6.

(from Step 5)

1. Select option 1, Run All Built-In ADVANCED Diagnostics Tests.
2. When the Test Mode screen appears, select option 1, Run One Time.
3. Follow the displayed instructions for each test.

Did you arrive at the Test Completed, No Trouble Found menu?

- | | |
|------------|----------------|
| NO | Go to Step 7. |
| YES | Go to Step 10. |

Step 7.

(from Step 6)

Did you arrive at the Test Completed, Problem Detected menu?

- | | |
|------------|---------------|
| NO | Go to Step 8. |
| YES | Go to Step 9. |

Step 8.

(from Step 7)

Did the system stop with a steady number displayed in the LEDs?

- | | |
|------------|---|
| NO | Go to MAP 1540, Step 1. |
| YES | Perform the following:
1. Record SRN 101-xxx, where xxx is the number displayed in the LEDs.
2. Go to Step 9. |

Step 9.

(from Steps 2, 4, 5, 7, and 8)

1. Find the SRN in the “Service Request Number List” in Chapter 2 of the *POWERstation and POWERserver Common Diagnostics Information Manual*.
2. Proceed to the MAP listed in the Description and Action column.

Step 10.

(from Step 6)

All built-in diagnostics have run without error. If you are trying to IPL over a communications network, problems could be caused by configuration errors, network errors, or host problems. Local problem determination procedures should be used before returning to operating system diagnostics.

Go to “MAP 0020: Problem Determination Procedure,” Step 1 in the *POWERstation and POWERserver Common Diagnostics Information Manual*.

Chapter 3. Removal and Replacement Procedures

Before performing any of the removal or replacement procedures in this chapter, read the following notice.

Note: For a translation of the safety notices, refer to the *System Unit Safety Information*, order number SA23-2652.

DANGER

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

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

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

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

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

CAUTION:

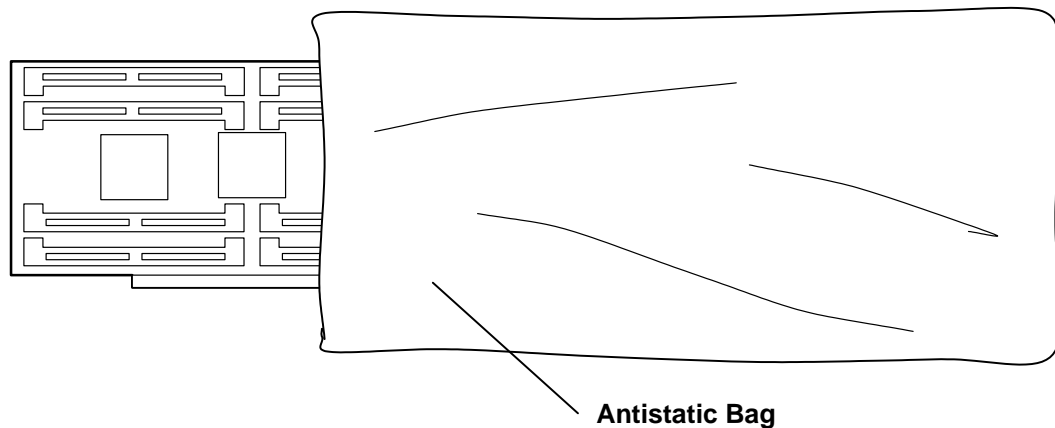
This product is equipped with a 3-wire power cable and plug for the user's safety. Use this power cable in conjunction with a properly grounded electrical outlet to avoid electrical shock.

Handling Static-Sensitive Devices

Warning: Adapters, planars, diskette drives, and disk drives are sensitive to static electricity discharge. These devices are wrapped in antistatic bags, as shown in this illustration, to prevent this damage.

Take the following precautions:

- If you have an antistatic wrist strap available, use it while handling the device.
- Do not remove the device from the antistatic bag until you are ready to install the device in the system unit.
- With the device still in its antistatic bag, touch 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.

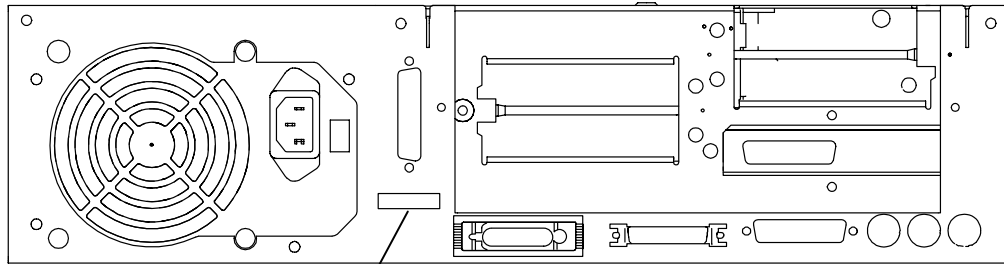


Cover

Removal

1. Ask the customer to unlock and remove the security protection devices, if any are attached to the security protection port.

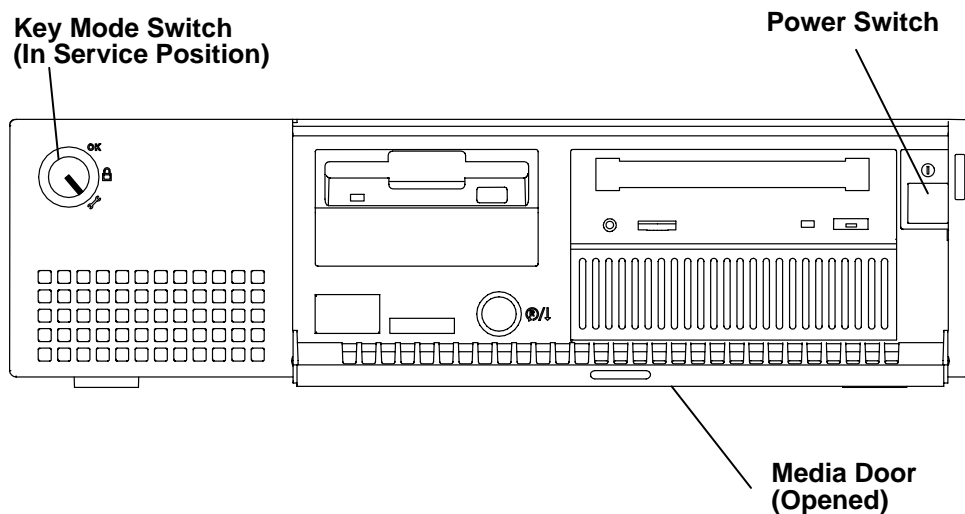
Rear View of System Unit



Security Protection Port

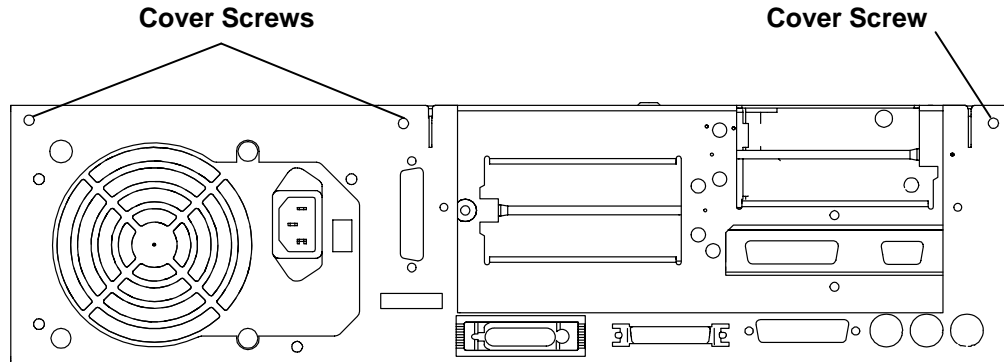
2. Set the power switches of the attached devices to Off.
3. Open the media door by rotating the top of the door downward.
4. Set the power switch of the system unit to Off.
5. Set the key mode switch to the Service position.
6. Remove the key from the key mode switch.
7. Close the media door by rotating the top of the door upward until the door snaps into the closed position.

Front View of System Unit with Media Door Open



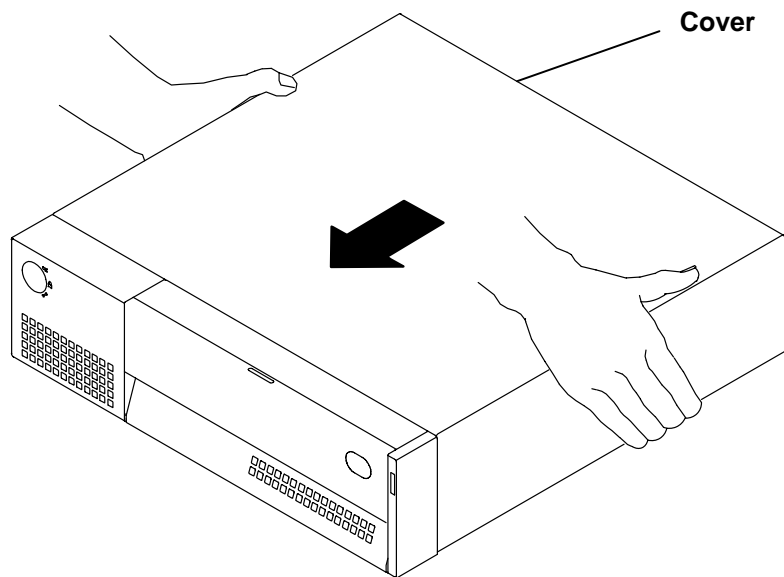
8. Unplug the system unit power cord, display power cord, and attached device power cords from the customer's electrical outlets.
9. Remove the three cover screws from the rear panel.

Rear View of System Unit

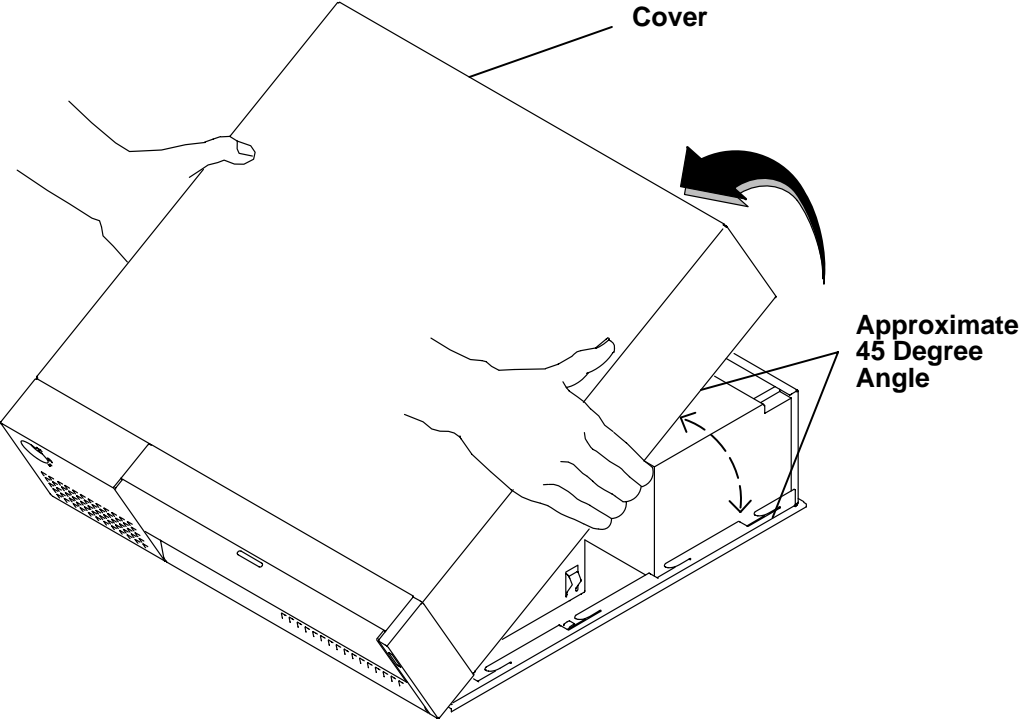


10. Face the front of the system unit.
11. Grasp both sides of the cover, and then slide the cover toward the front of the system unit until the cover stops (approximately .5 inch (12 mm)).

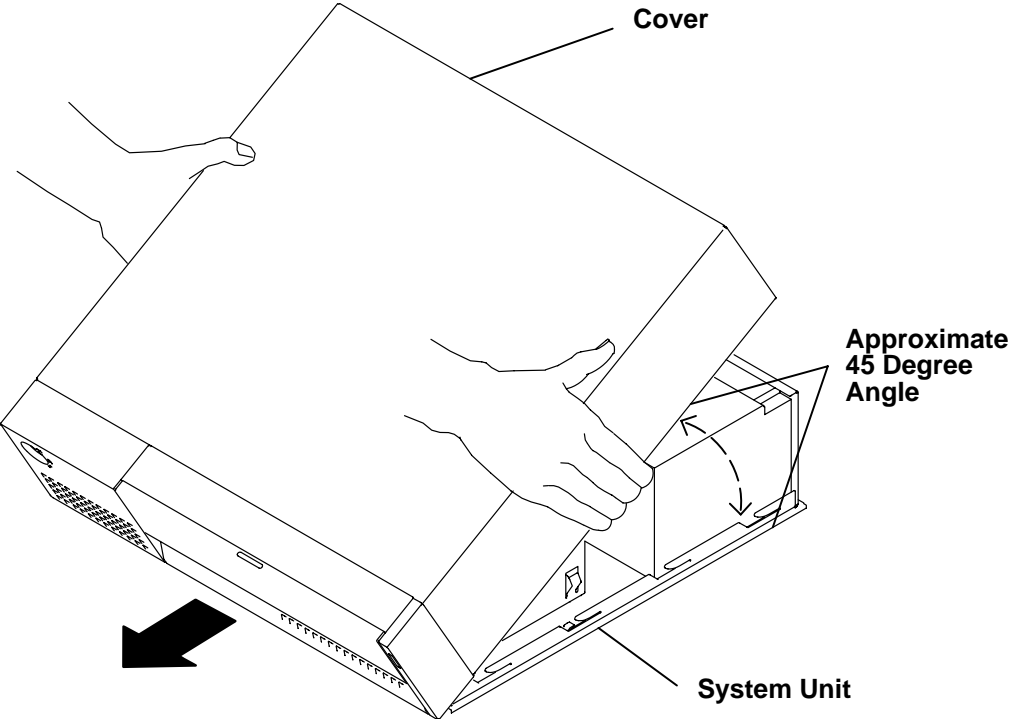
Front View of System Unit with Media Door Closed



12. Grasp both sides of the cover, and then rotate the rear of the cover upward until the cover is tilted at an approximate 45 degree angle.

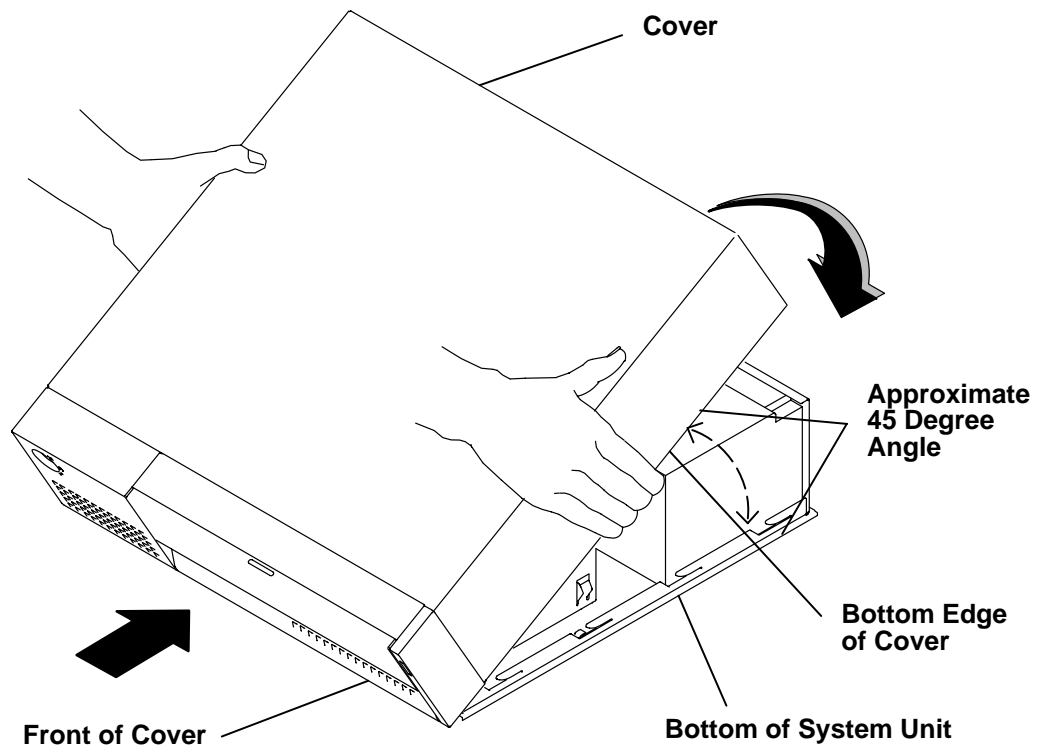


13. While keeping the cover tilted at an approximately 45 degree angle, slide the cover forward until the cover clears the front of the system unit, and then remove the cover.

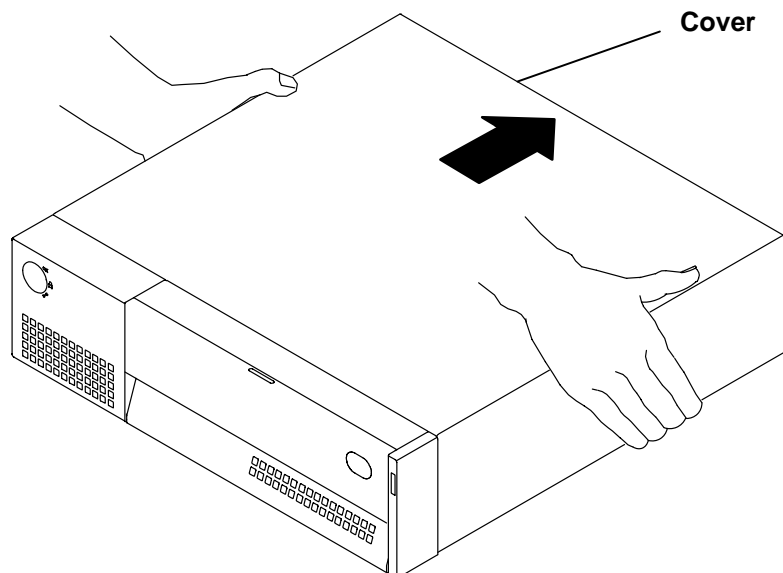


Replacement

1. Grasp both sides of the cover, and then position the cover at an approximate 45 degree angle.
2. While keeping the cover tilted at an approximate 45 degree angle, place the front of the cover at the front of the system unit.
3. Rotate the rear of the cover downward toward the rear of the system unit until the bottom edge of the cover is located on the bottom of the system unit.

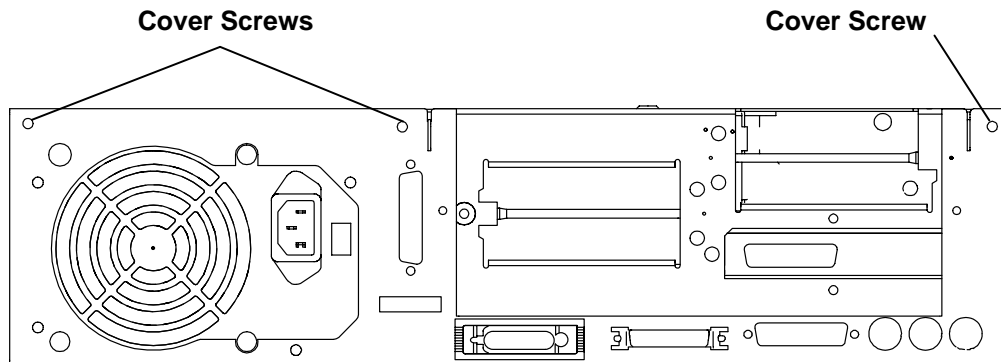


4. Slide the cover toward the rear of the system unit until the cover stops and the cover screw holes are against the chassis screw holes.



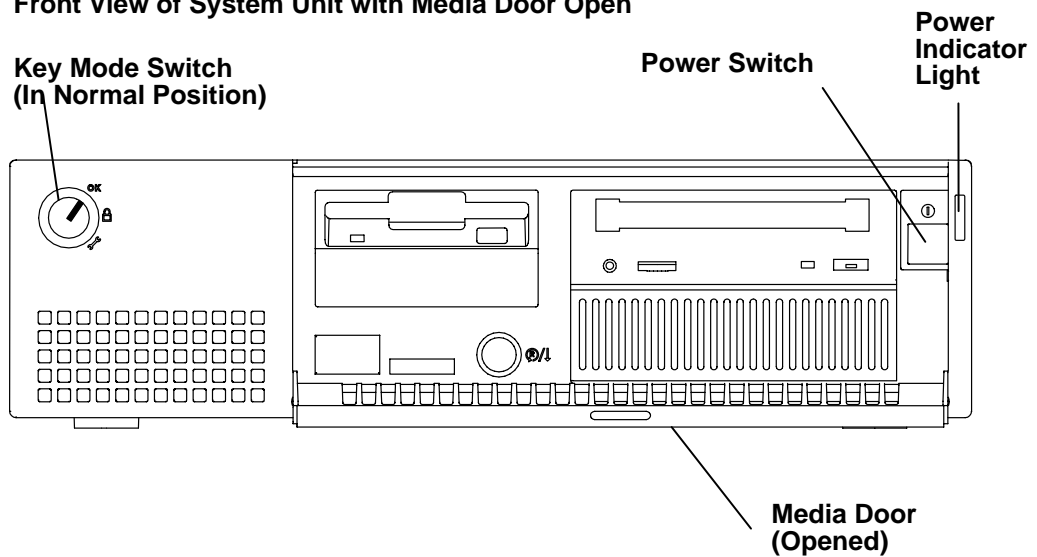
5. Install the three cover screws.

Rear View of System Unit



6. Plug the system unit power cord, display power cord, and attached device power cords into the customer's electrical outlets.
7. Insert the key into the key mode switch, and then set the key mode switch to the Normal position.
8. Open the media door by rotating the top of the media door downward.
9. Set the power switch of the system unit to On.
10. Close the media door by rotating the top of the door upward until the door snaps into place.
11. Set the power switches of the attached devices to On.

Front View of System Unit with Media Door Open



Power Supply

Note: For a translation of the safety notices, refer to the *System Unit Safety Information*, order number SA23-2652.

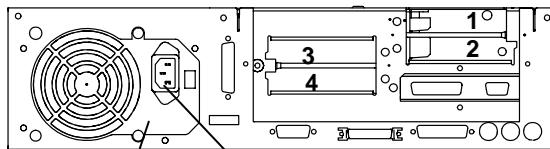
DANGER

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. Do the “Cover Assembly” removal procedure on page 3-3.
2. Unplug the power cord from the power supply.

Rear of System Unit

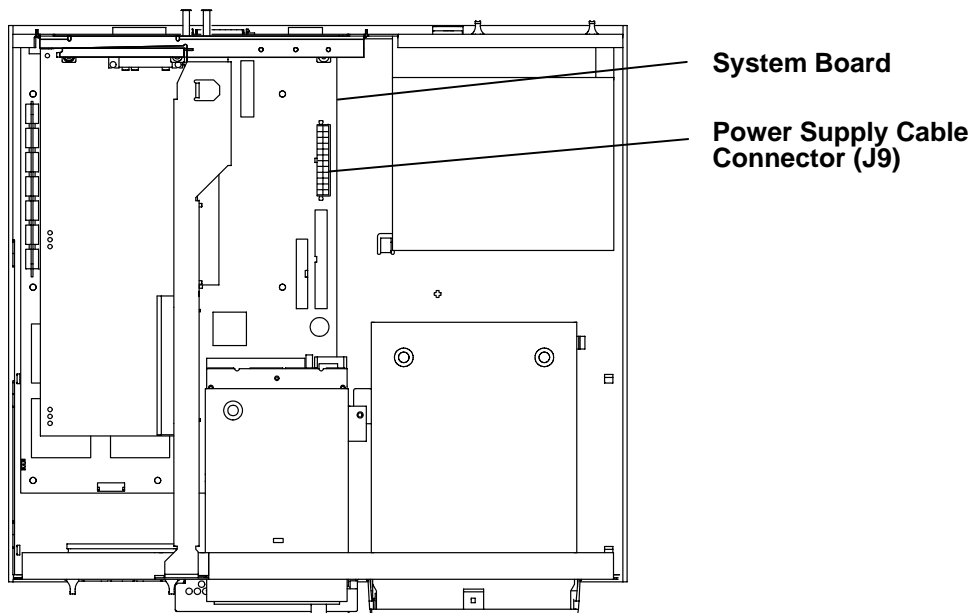


Power Supply

Power Cord Connector

3. If any adapters are installed above the power supply cable connector, perform the “Adapters” removal procedure on page 3-16 to remove the adapters.
4. Disconnect the power supply cable connector (J9) from the system board.

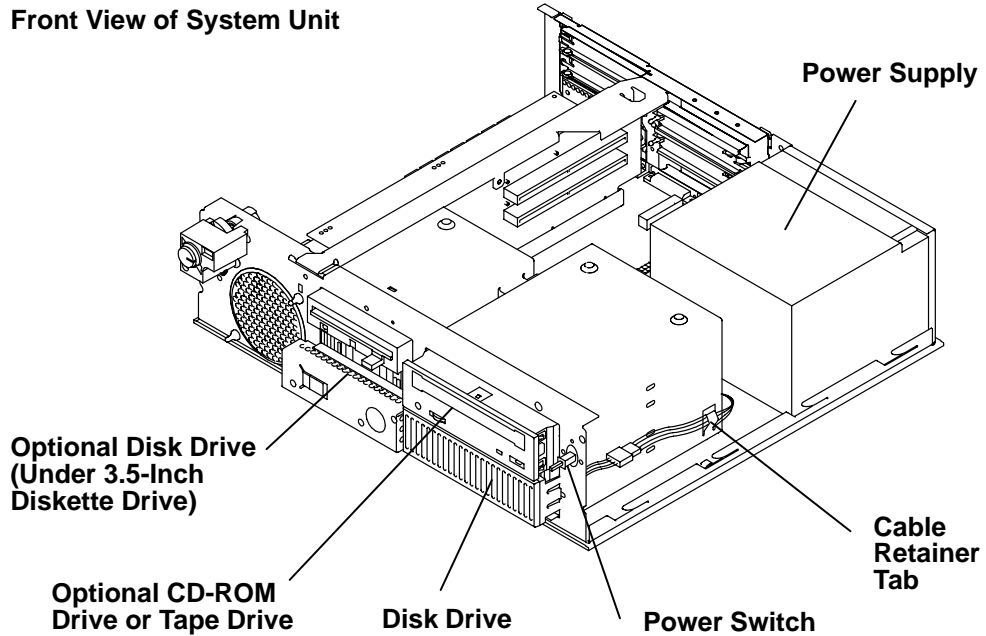
Top View of System Unit



Front of System Unit

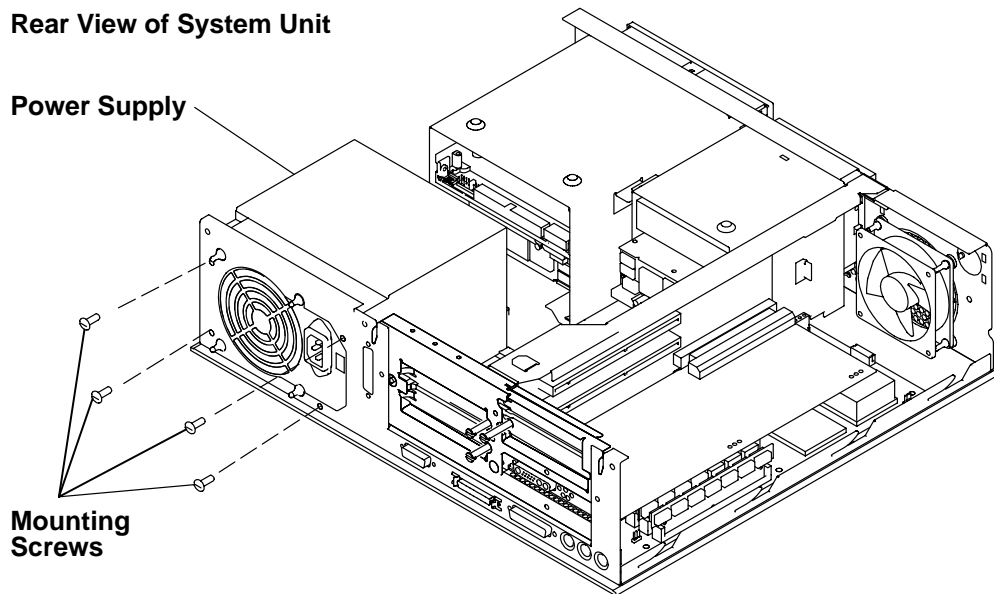
5. Remove the power switch assembly cables from the cable retainer tab located on the side of the large carrier.
6. Disconnect the power supply cables from the power switch, disk drive, optional disk drive, and any optionally installed SCSI media devices.

Front View of System Unit



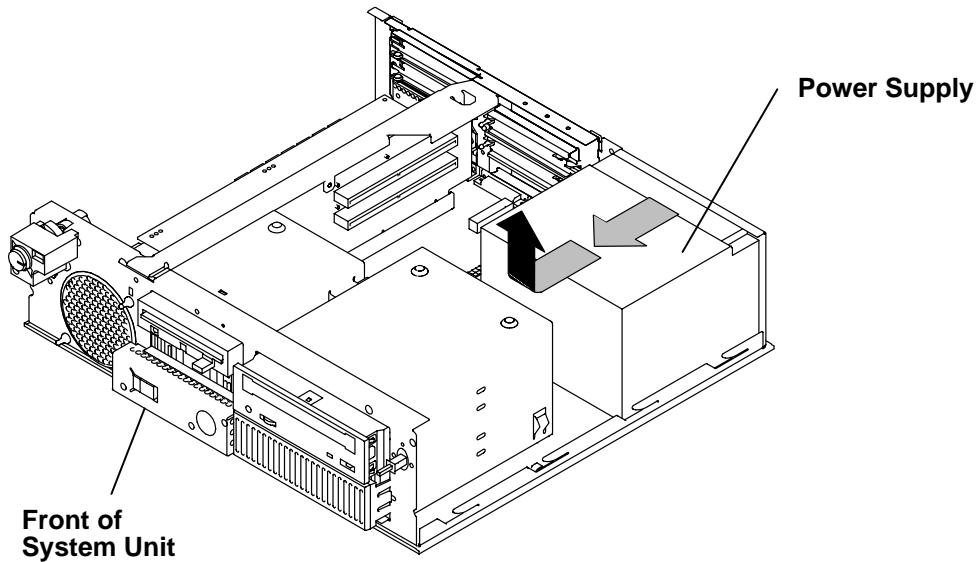
7. Remove the four mounting screws from the rear of power supply.

Rear View of System Unit



Warning: When removing the power supply, do not move the power supply on or against any power cables or signal cables. Placing the power supply on or against these cables can damage the cables.

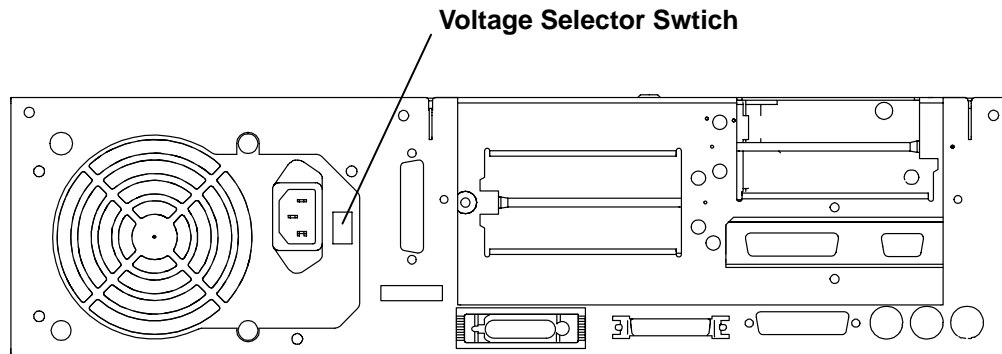
8. Slide the power supply to the front of the system unit, and then lift the power supply out of the system unit.



Replacement

Warning: Before powering on, make sure that the voltage setting on the voltage selector switch is correct.

Rear View of System Unit



Note: Reconnect all cables before replacing the power supply.
Replace the removed parts in the reverse order.

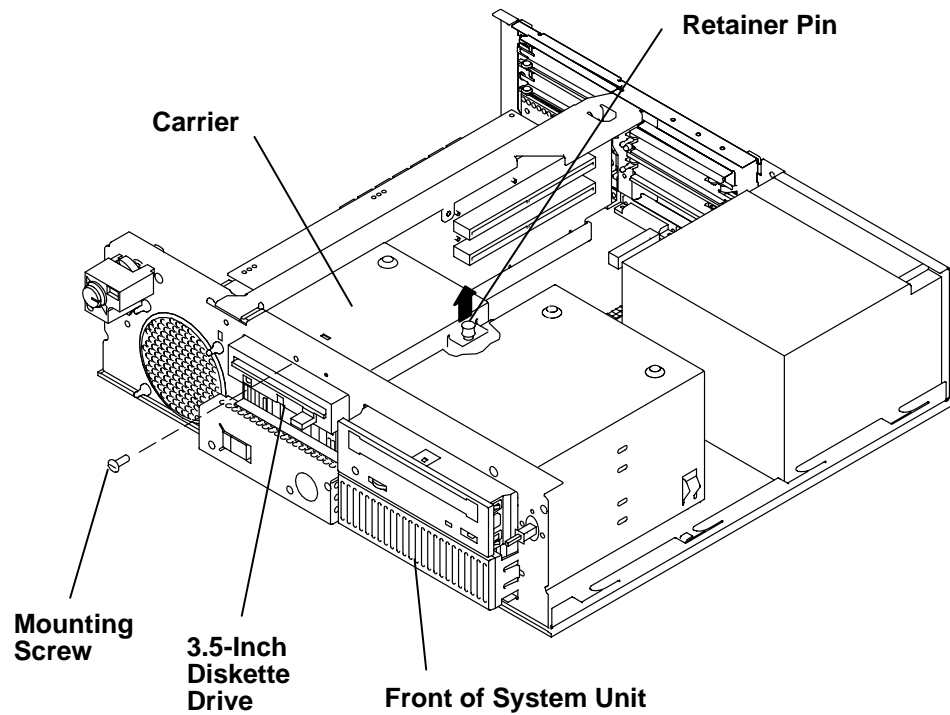
3.5-Inch Diskette Drive or Optional Disk Drive

Removal

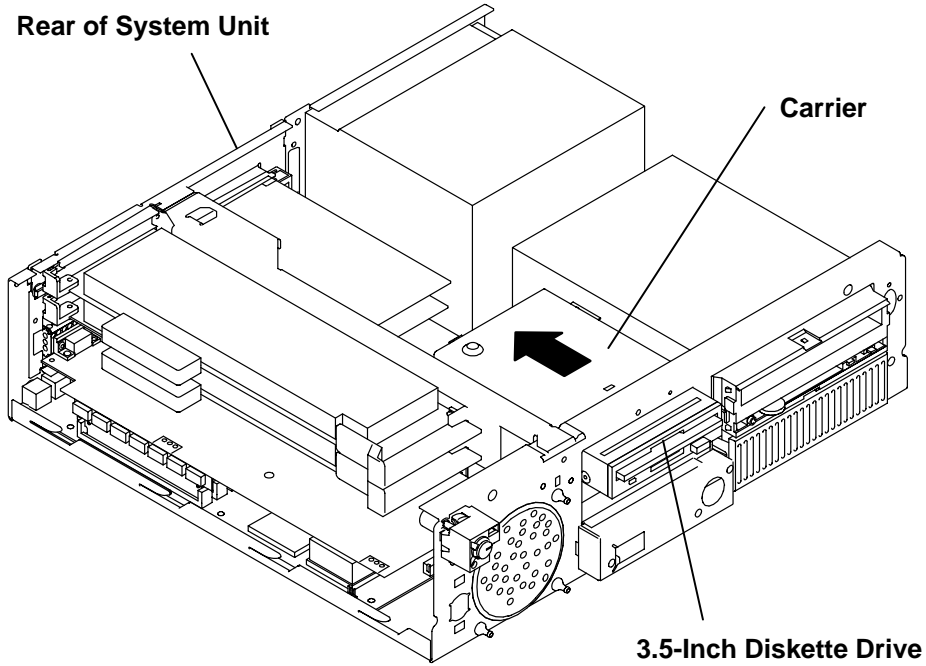
1. Do the "Cover Assembly" removal procedure on page 3-3.
2. Disconnect all signal cables and power cables from the rear of the media devices installed in the carrier.
3. Remove the mounting screw.

Warning: To prevent the carrier and devices from falling on the system board, place your hand under the carrier while lifting the retainer pin.

4. From the rear of the carrier, place a hand under the carrier for support, and then lift the retainer pin.

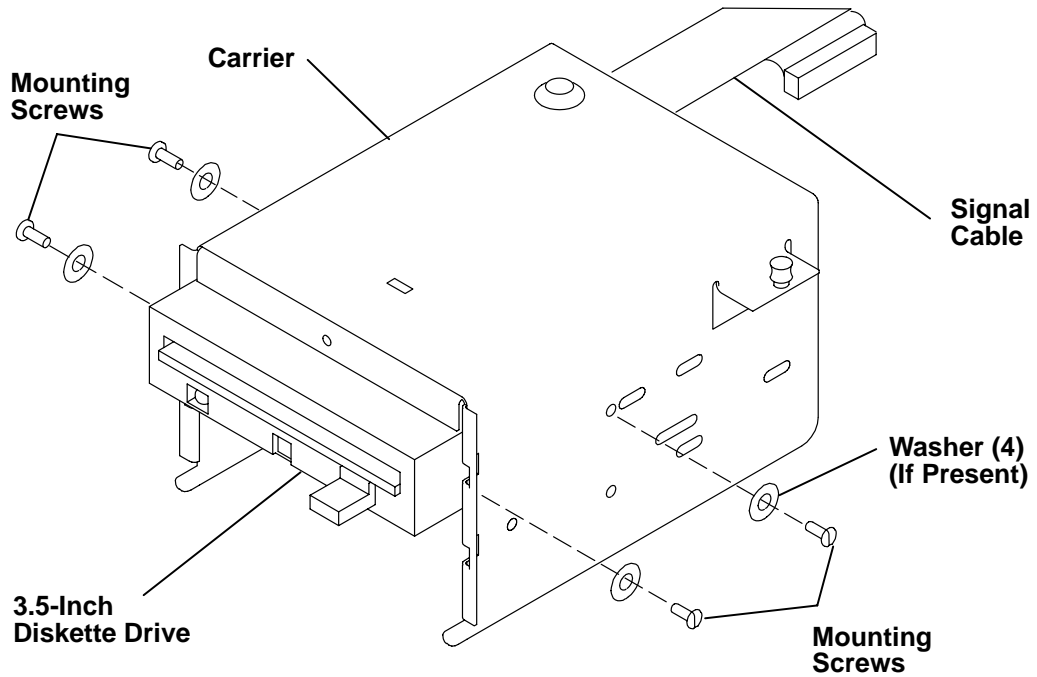


- Slide the carrier toward the rear of the system unit until the front of the 3.5-inch diskette drive clears the front of the system unit, and then lift the carrier out the system unit.

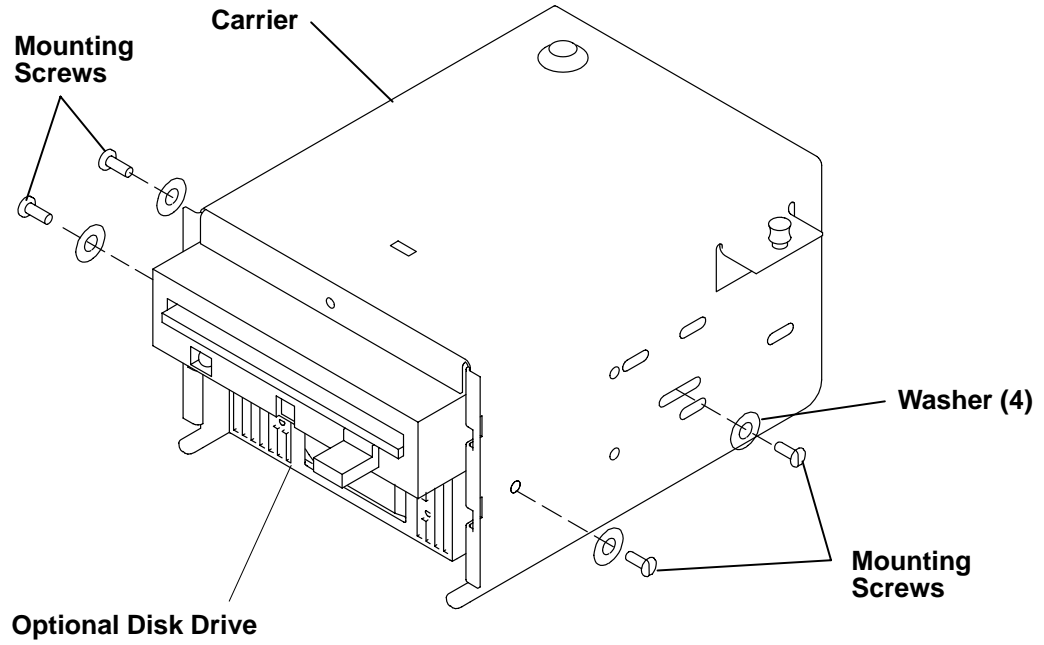


Note: If you are removing the 3.5-inch diskette drive, perform step 6. If you are removing the optional disk drive, perform step 7.

- Remove the two mounting screws and two washers (if present) from each side of the carrier, and then remove the 3.5-inch diskette drive.



7. Remove the two mounting screws and two washers (if present) from each side of the carrier, and then remove the optional disk drive.



Replacement

Replace the removed parts in the reverse order.

CD-ROM Drive, Tape Drive, or Disk Drive

Removal

Note: For a translation of the safety notices, refer to the *System Unit Safety Information*, order number SA23-2652.

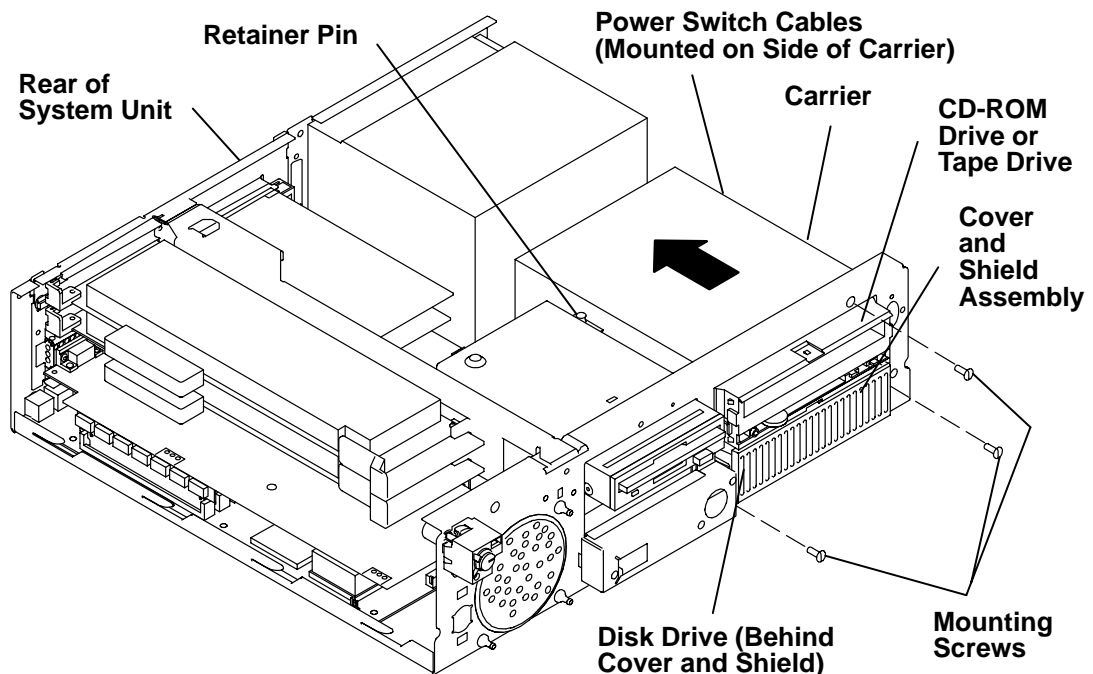
CAUTION:

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

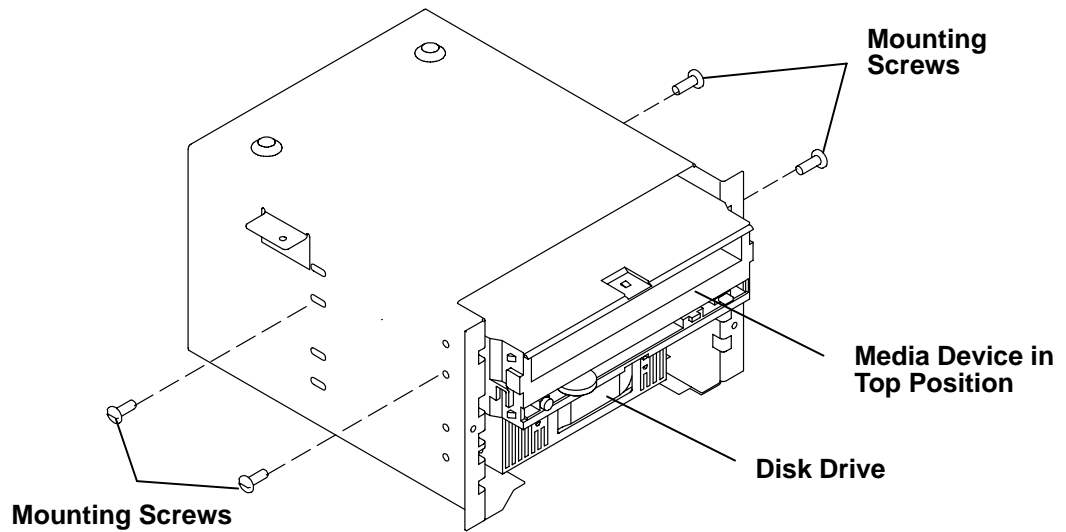
Note: If you are removing the CD-ROM drive or tape drive in the top position of the carrier, perform steps 1 through 8, and then perform step 10.

If you are removing the disk drive in the bottom position, perform steps 1 through 7, and then perform steps 9 and 10.

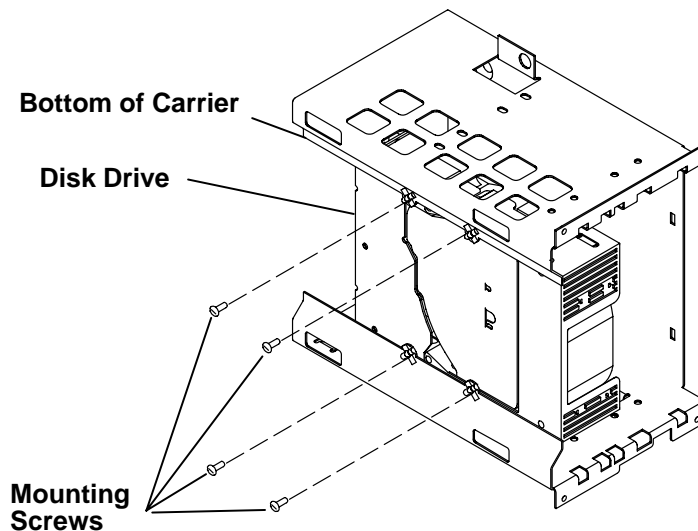
1. Do the "Cover" removal procedure on page 3-3.
2. Remove the power switch cables from the retainer tab located on the side of the carrier.
3. Remove the three mounting screws from the front of the system unit.
4. Remove the cover and shield by squeezing the sides of the cover, and then pulling the cover toward you.
5. Lift the retainer pin until it disengages.
6. Record the signal and power cable locations, and then disconnect the signal cables and the power cables from the rear of the all of the devices in the carrier.
7. While lifting the retainer pin, slide the carrier toward the rear of the system unit until the front of the disk drive or tape drive clears the front of the system unit, and then lift the carrier out of the system unit.



8. Remove the two mounting screws on each side of the carrier, and then slide the media device in the top position out of the carrier.



9. Remove the four disk drive mounting screws and four washers (if present) from the bottom of the carrier, and then remove the disk drive.
10. Record the jumper settings for the disk drives installed.



Replacement

Set the jumpers on the new media devices to match those on the removed media devices. For information on how to set the jumpers, see Chapter 2 of *Adapters, Devices, and Cable Information*.

Replace in the reverse order.

Adapters

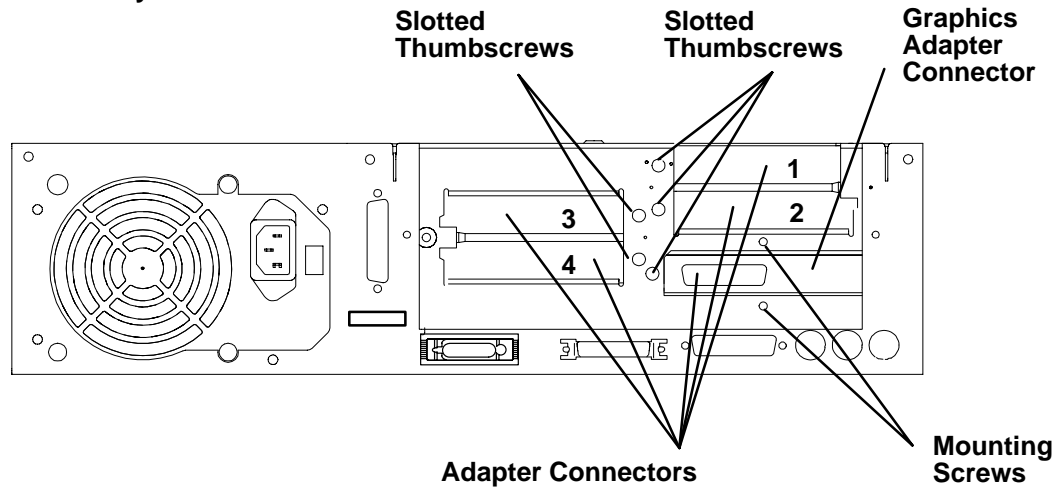
Removal

Note: Refer to "Handling Static-Sensitive Devices" on page 3-2 before removing or installing adapters.

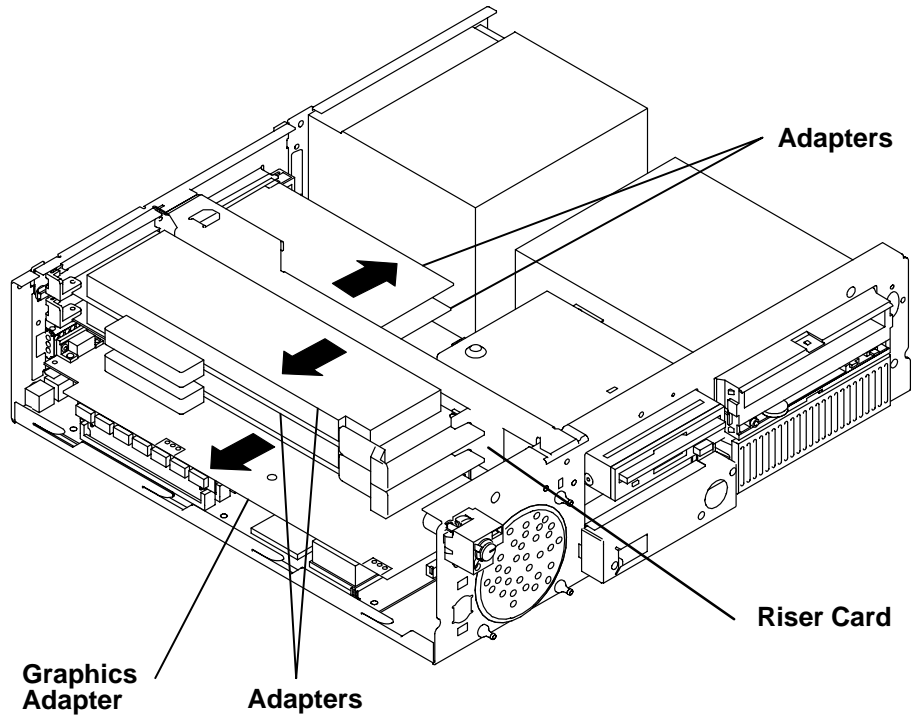
Note: If you are removing the graphics adapter, remove all adapters located in adapter positions 1 and 2. Removing the adapters located in adapter positions 1 and 2 will allow easier replacement of the graphics adapter.

1. Do the "Cover" removal procedure on page 3-3.
2. Record the location of the adapter cable, and then disconnect the adapter cable from the adapter connector.
3. If you are removing the graphics adapter, remove the two mounting screws.
4. Loosen the slotted thumbscrew attaching the adapter to the rear of the system unit.

Rear of System Unit



5. Pull the adapter out of the slot on the riser card, and then remove the adapter out of the system unit.

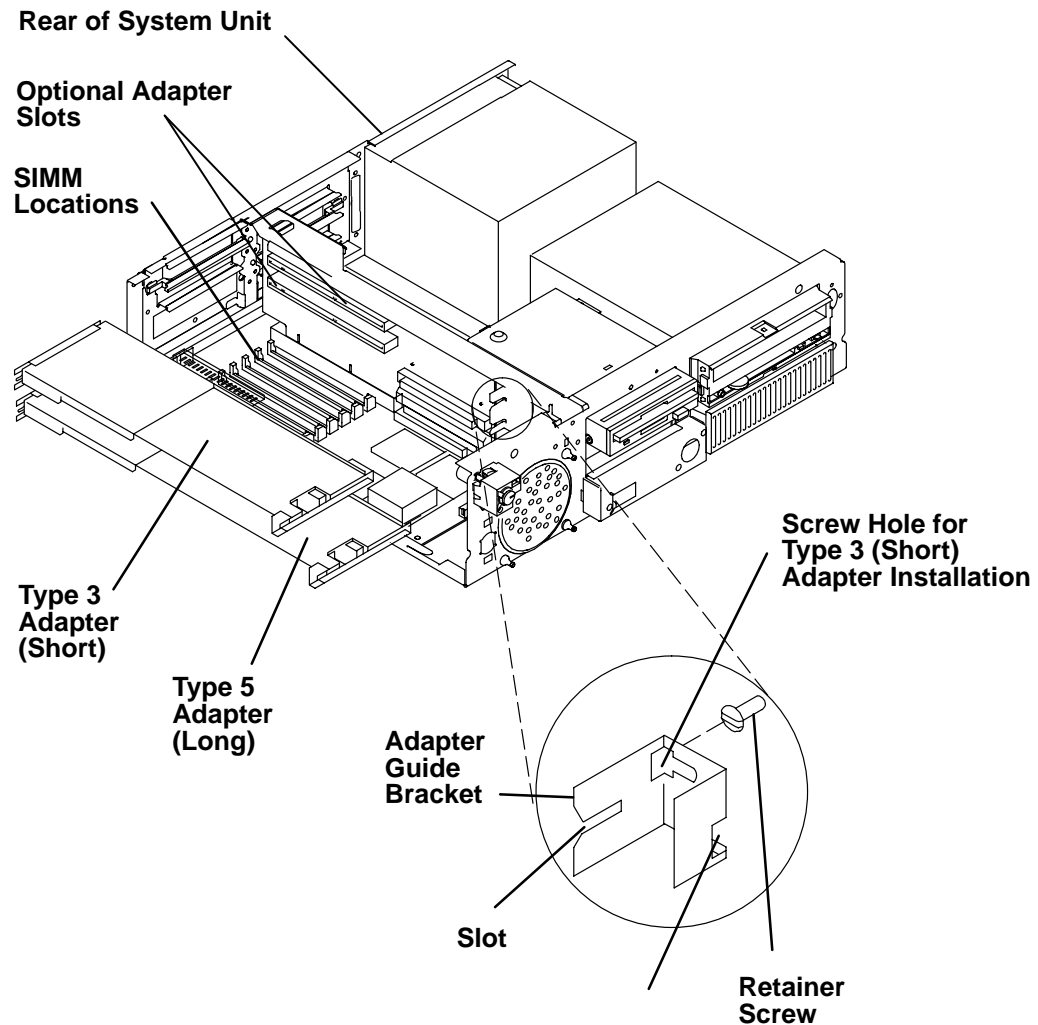


Replacement

1. Depending on the adapter size (Type 5 (long) or Type 3 (short)) you are installing in adapter positions 1 and 2 above the memory SIMMs, you may need to reverse the position of the adapter guide bracket. Reverse the position of the adapter guide bracket by doing the following:
 - a. Loosen the retainer screw, and then slide the adapter guide bracket until the hole in the bracket is aligned with the retainer screw.
 - b. Remove the adapter guide bracket by pulling it away from the riser card bracket.

Note: If you are installing a Type 3 adapter (short), the slot on the adapter guide bracket must be positioned toward the rear of the system unit. If you are installing a Type 5 adapter (long), the slot on the adapter guide bracket must be positioned toward the front of the system unit. Use the correct hole in the bracket for the type of adapter you are installing.

- c. Reverse the position of the adapter guide bracket, place the hole of the bracket onto the retainer screw, and then slide the bracket toward the rear of the system unit.
- d. Tighten the retainer screw.



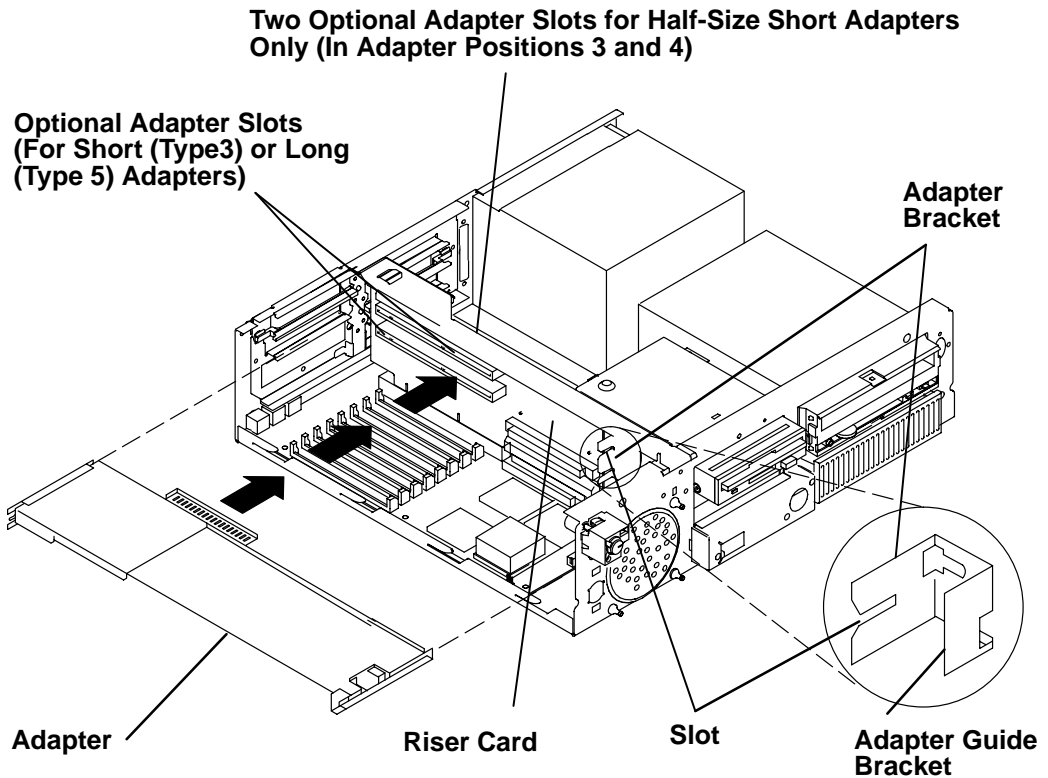
Notes:

Before touching the adapter, with one hand touch any metal surface of the chassis to minimize static electricity charges.

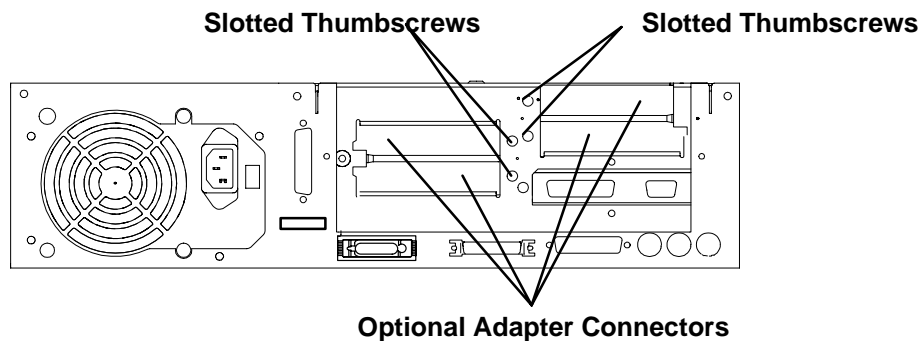
Only half-size short adapters can be installed in adapter positions 3 and 4.

Before placing the adapter in the slot on the riser card, make sure the slotted thumbscrew is unscrewed several turns.

2. Place the adapter into the correct adapter slot on the riser card, and then push the adapter into the slot until the adapter is fully seated. The adapter is fully seated when the edge of the adapter touches the end of the slot on the adapter guide bracket.



3. Tighten the slotted thumbscrew on the rear of the system unit.
4. If you installed a graphics adapter, install the two mounting screws.



5. Connect the adapter cable to the adapter connector located on the rear of the system unit.

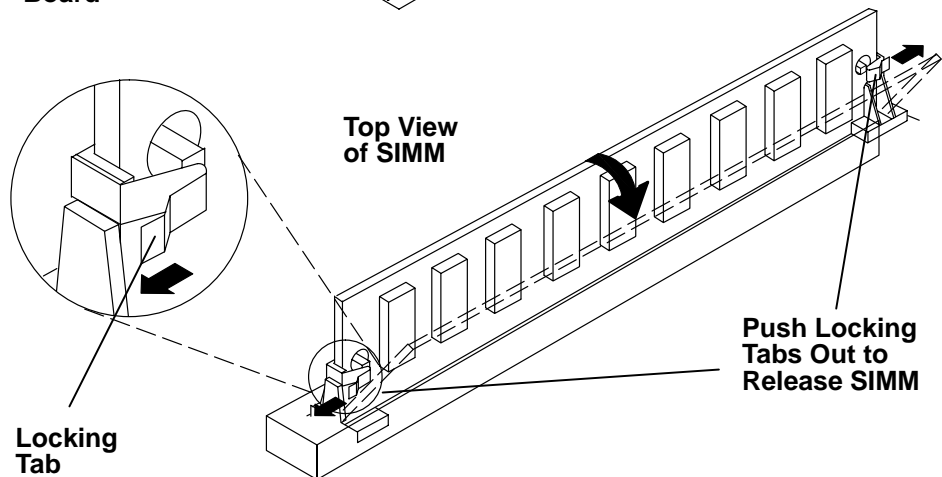
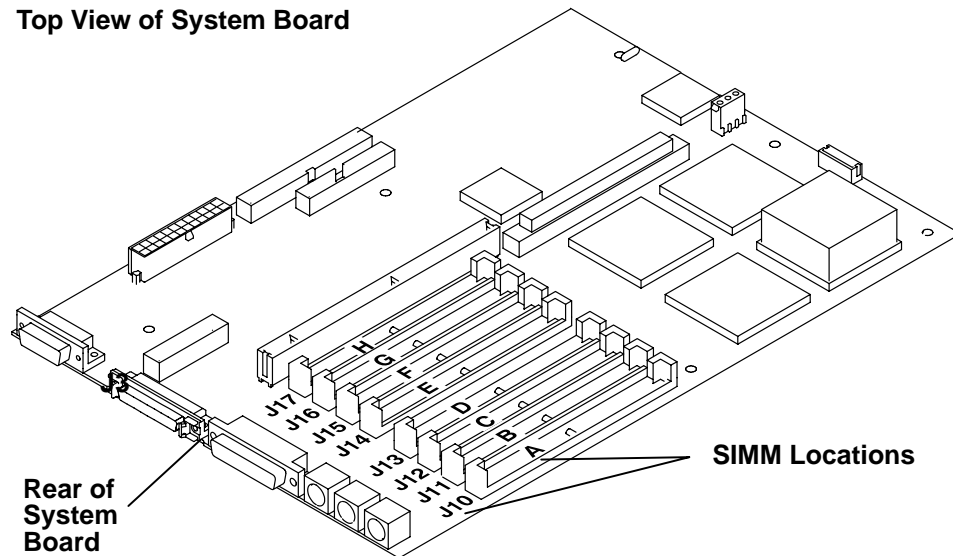
Memory SIMM

Removal

Note: Refer to “Handling Static-Sensitive Devices” on page 3-2 before removing or installing adapters.

1. Do the “Cover” removal procedure on page 3-3.
2. If an adapter is installed above the memory SIMM, do the “Adapter” removal procedure on page 3-16 to remove the adapter.
3. With one hand, momentarily touch any metal surface of the chassis to minimize static electrical charges.
4. Locate the single inline memory module (SIMM) on the system board, and then press both locking tabs outward to release the SIMM.
5. Pull the SIMM out of the slot.

Top View of System Board



Replacement

1. With one hand, touch any metal surface of the chassis to minimize static electrical charges, and then pick up a SIMM.

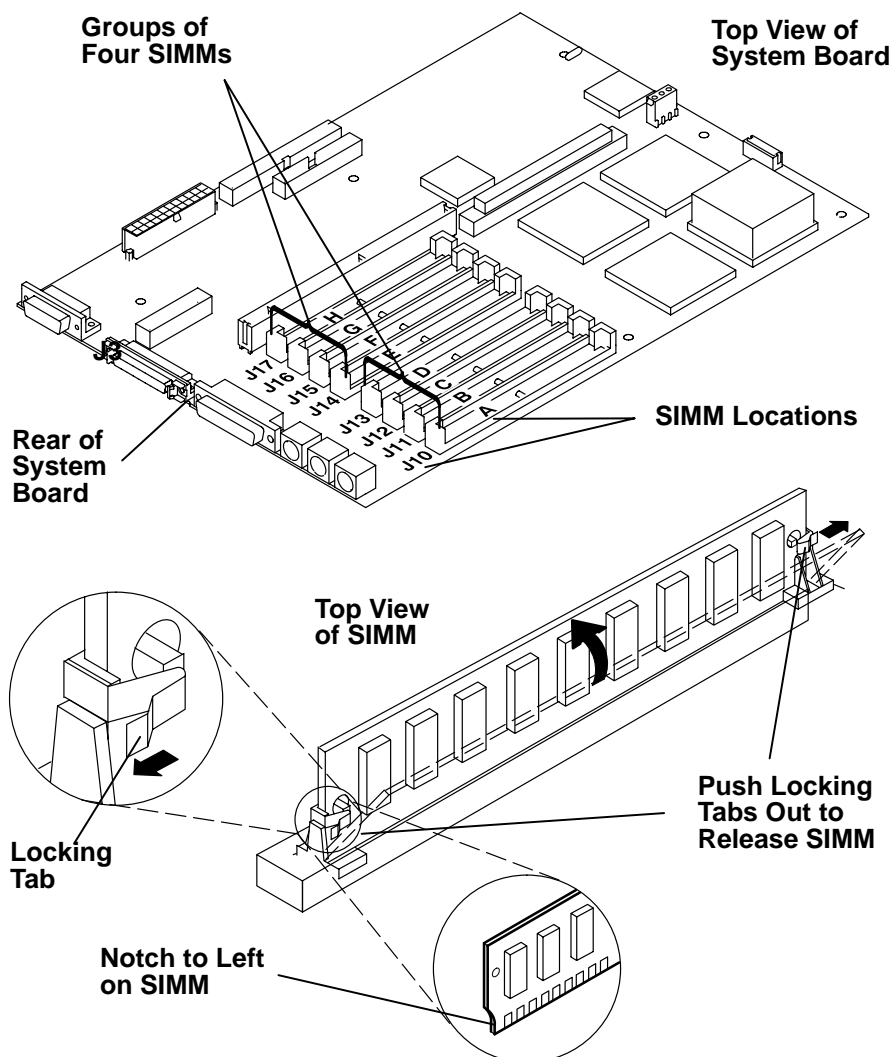
Notes:

Memory SIMMs must be installed in groups of fours, J10 through J13 (A through D) and J14 through J17 (E through H).

Make sure all SIMMs in a group of four are the same memory size.

When installing the groups of four SIMMs, install the SIMMs in descending order beginning with slot J13 (D) and ending with slot J10 (A) or beginning with slot J17 (H) and ending with slot J14 (E).

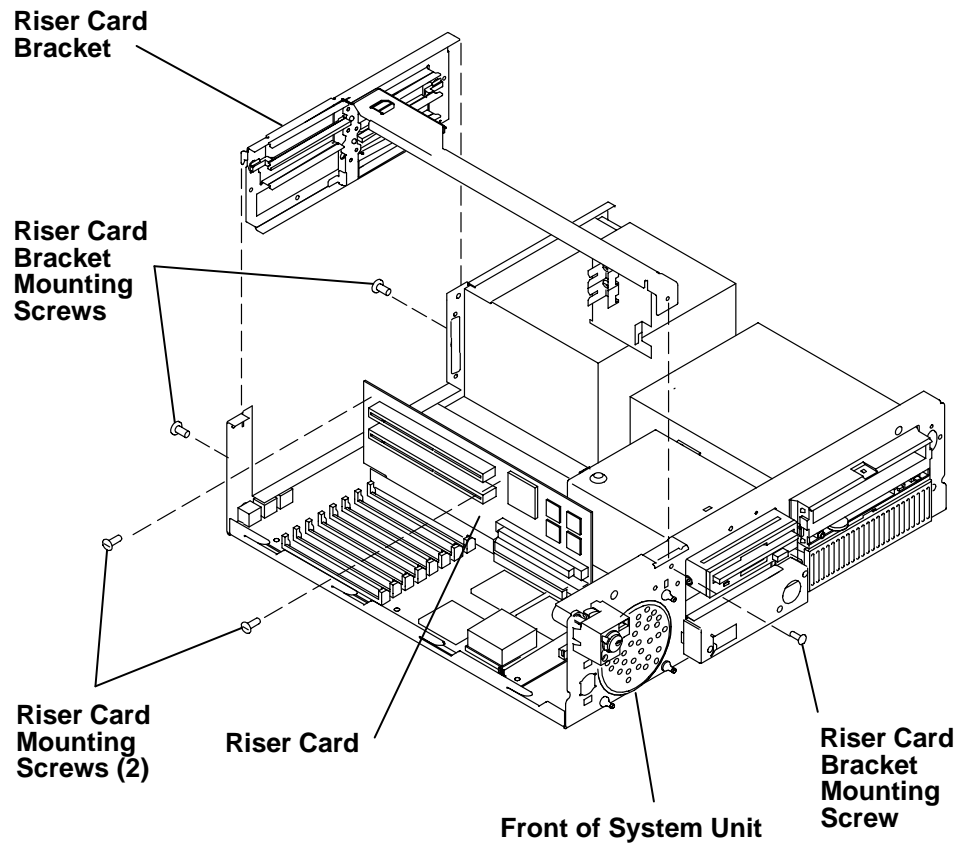
2. Locate the SIMM slot location on the system board.
3. Turn the SIMM so that the notch is to the left as shown below.
4. Insert the bottom of the SIMM in the slot, and then rotate the top of the SIMM upward into a vertical position until the locking tabs snap into place.
5. Replace the removed parts in the reverse order.



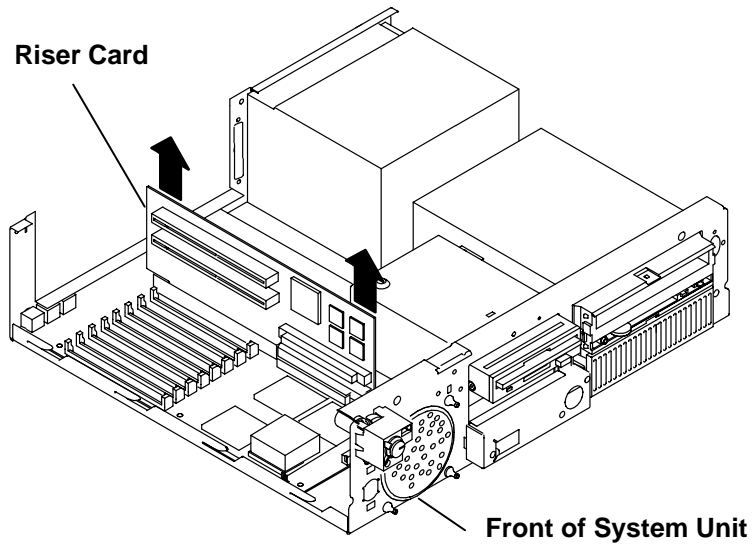
Riser Card

Removal

1. Do the "Cover" removal procedure on page 3-3.
2. Do the "Adapter" removal procedure on page 3-16 to remove all of the adapters installed on the riser card.
3. With one hand, momentarily touch any metal surface of the chassis to minimize static electrical charges.
4. Remove the two mounting screws attaching the riser card to the riser card bracket.
5. Remove the three mounting screws attaching the riser card bracket to the system unit.
6. Grasp both ends of the riser card bracket, and then lift it out of the system unit.

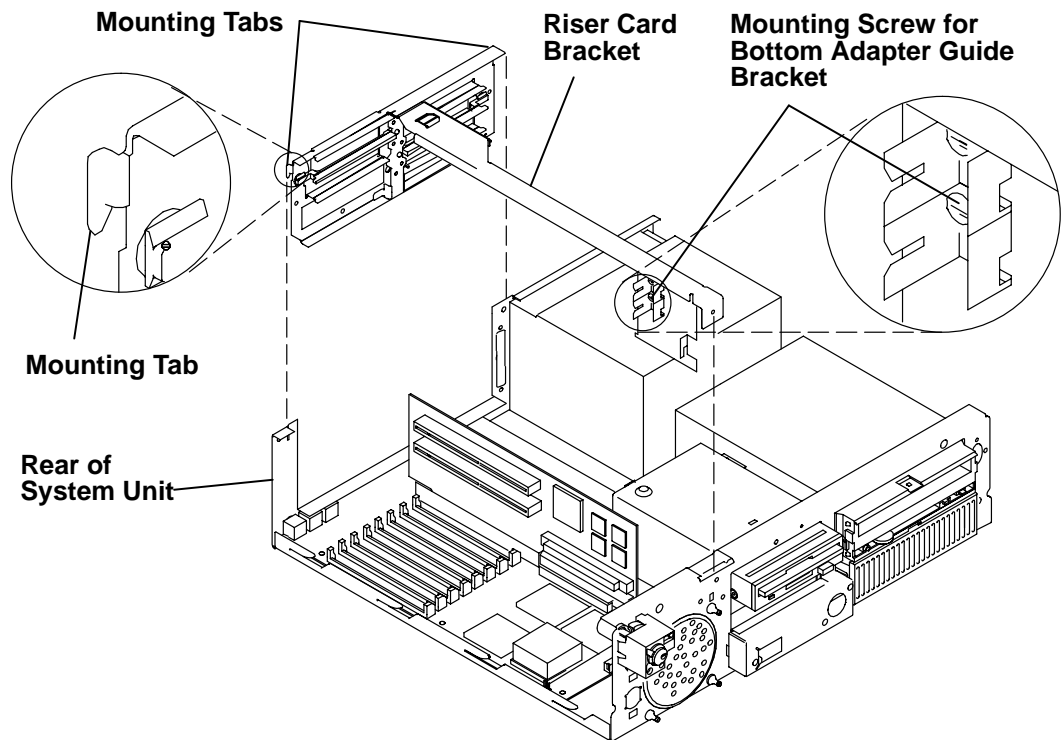


7. To remove the riser card from the system board, carefully pull upward on one end of the riser card, and then pull upward on the other end of the riser card; repeat this until the riser card is removed from both slots on the system board.



Replacement

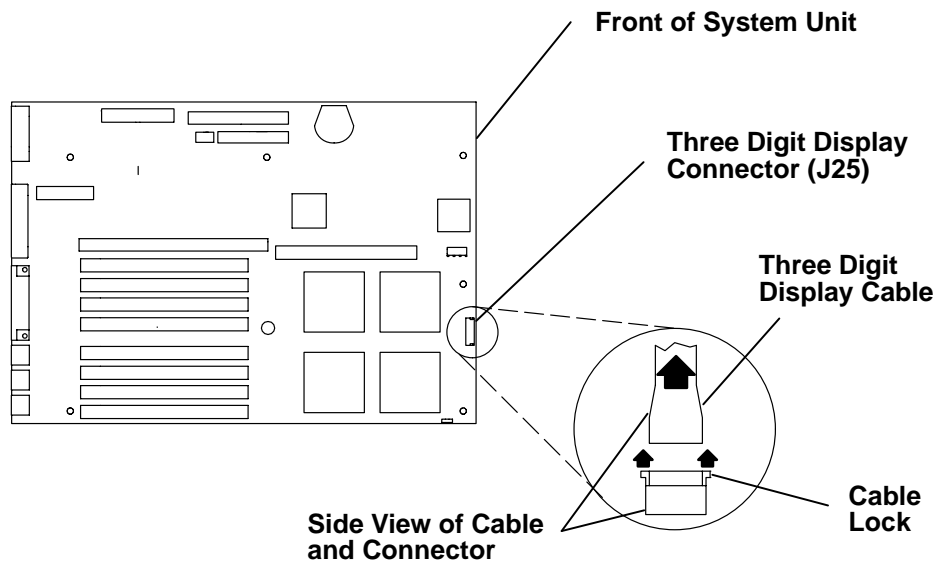
Replace the removed parts in the reverse order.



System Board

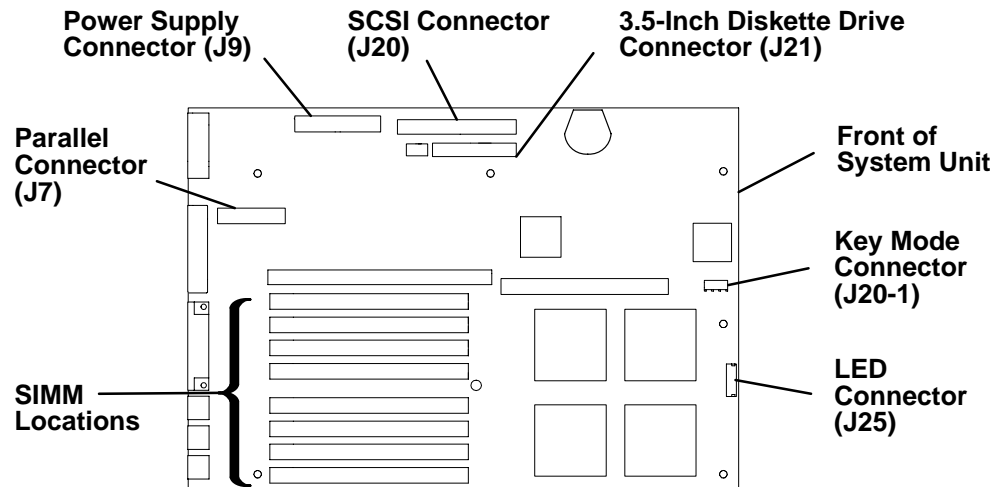
Removal

1. Do the "Riser card" removal procedure on page 3-22.
2. Remove the carrier containing the 3.5-inch diskette drive. Refer to the "3.5-Inch Diskette Drive or Optional Disk Drive" removal procedure on page 3-11 for information about removing the carrier.
3. With a small screwdriver or your fingers, open the plastic cable lock on connector J25 by pulling both ends of the cable lock upward, and then remove the LED cable from the cable lock.



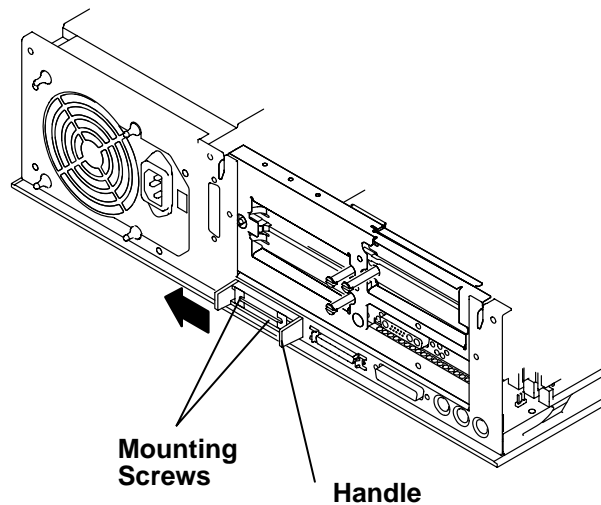
4. Disconnect all of the cables from the system board connectors.
5. Do the "Memory (SIMM)" removal procedure on page 3-20 to remove all of the SIMMs from the system board.

Top View of System Board



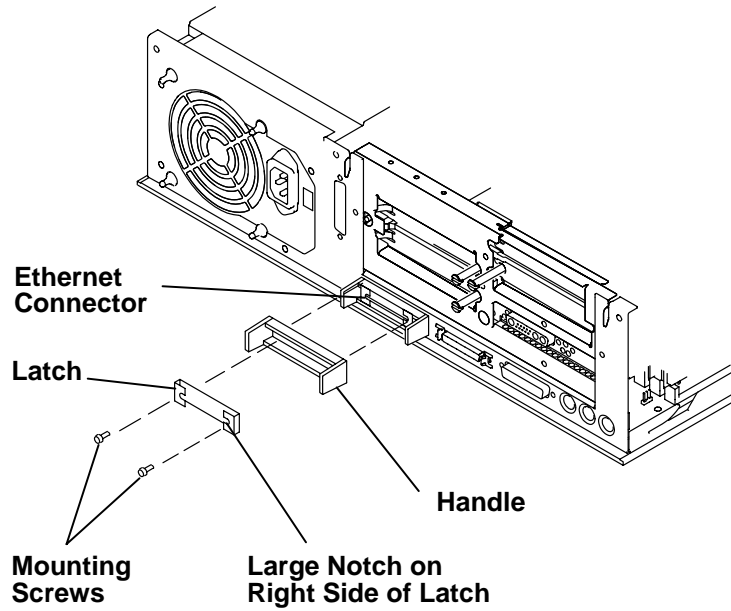
6. Facing the rear of the system unit, slide the Ethernet handle to the left to access the two mounting screws.

Rear View of System Unit



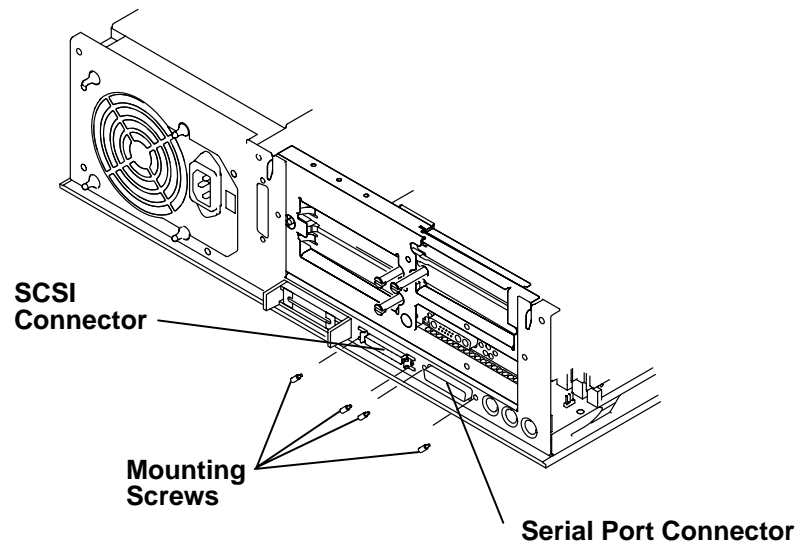
7. Remove the two mounting screws attaching the latch and handle to the Ethernet connector, and then remove the latch and handle from the Ethernet connector (ET).

Rear View of System Unit



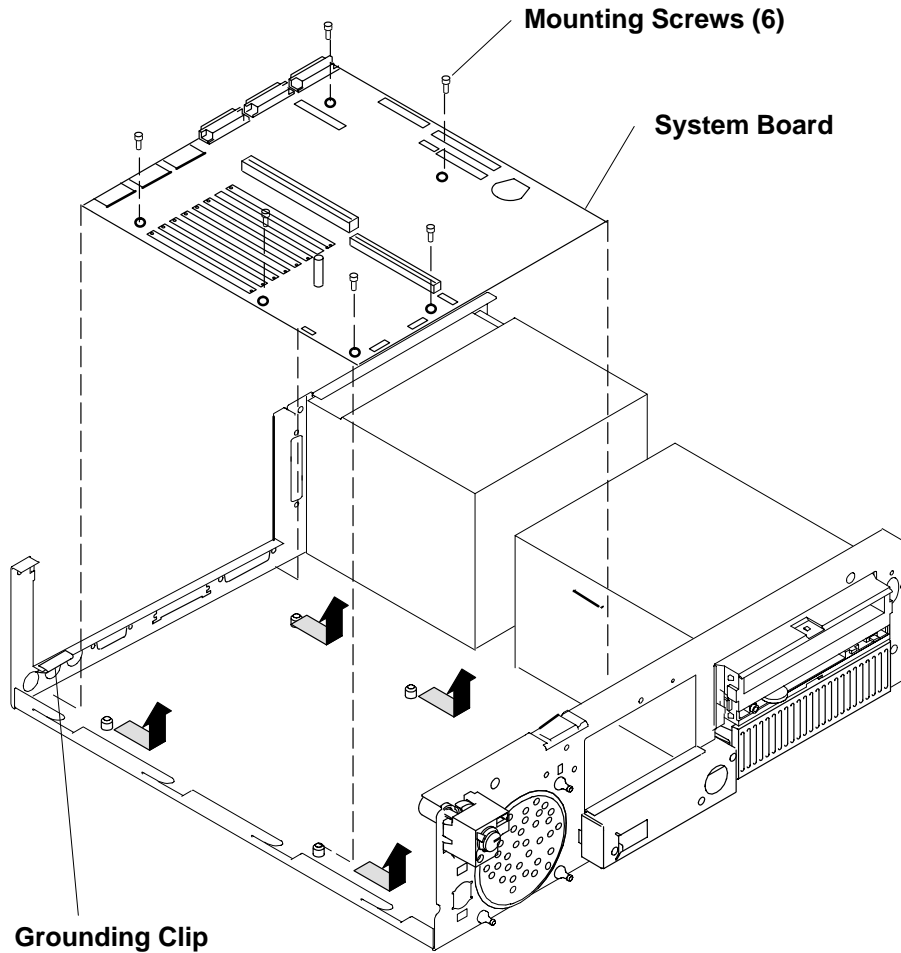
8. Remove the two mounting screws from the SCSI connector and the serial port connector of the rear cover.

Rear View of System Unit



9. Remove the grounding clip located above the keyboard, mouse, and tablet connectors.
10. Remove six screws from the system board.
11. Slightly lift the front of the system board, and then move the system board toward the front of the system unit to allow the system board connectors to clear the rear of the chassis.
12. Lift the system board away from the system unit.

Front View Of System Unit



Replacement

Set the SCSI jumpers. Refer to “Disable/Enable the SCSI Connector” on page 1-6.

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

Reminder to Service Representative: After you exchange the system board, 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.

Note: Ensure that the large notch on the Ethernet latch is positioned on the right when replacing the Ethernet latch and handle assembly. Refer to the illustration on page 3-26 of this procedure for more information.

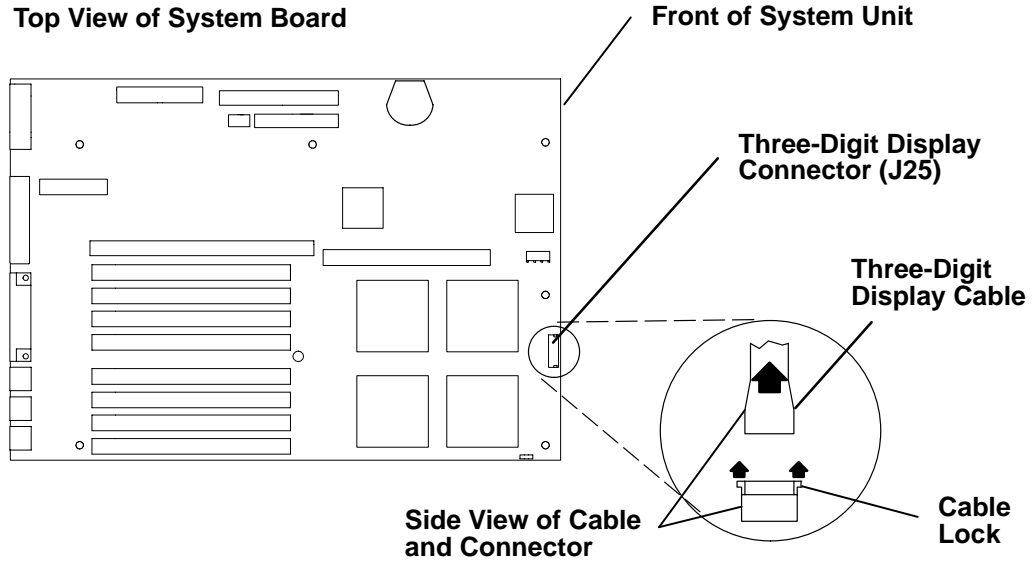
Ensure that the grounding clip is replaced in the location above the keyboard, mouse, and tablet connectors on the system board.

Replace in the reverse order.

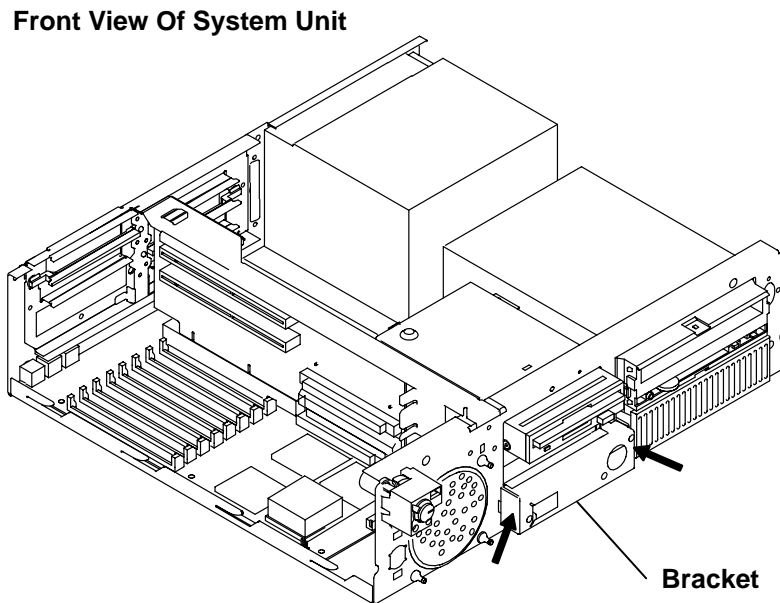
Three-Digit Display Assembly

Removal

1. Do the "Cover" removal procedure on page 3-3.
2. With a small screwdriver or your fingers, open the plastic cable lock on connector J25 by pulling both ends of the cable lock upward, and then remove the LED cable from the cable lock.

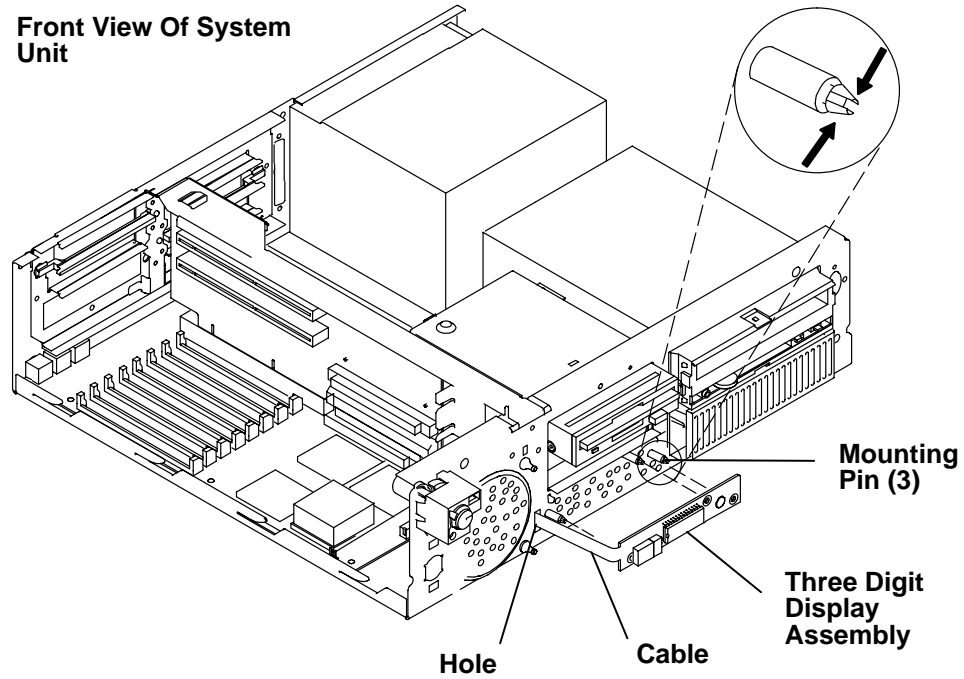


3. Remove the bracket mounted in front of the three-digit display by pressing both ends of the bracket toward the center of the bracket, and then gently move the bracket from the three-digit display assembly.



4. While squeezing the ends of the mounting pin with pliers, pull the three-digit display assembly away from the mounting pin; repeat this step for the other two mounting pins.
5. Pull the cable through the hole in the chassis, and then remove the three-digit display assembly.

Front View Of System Unit



Replacement

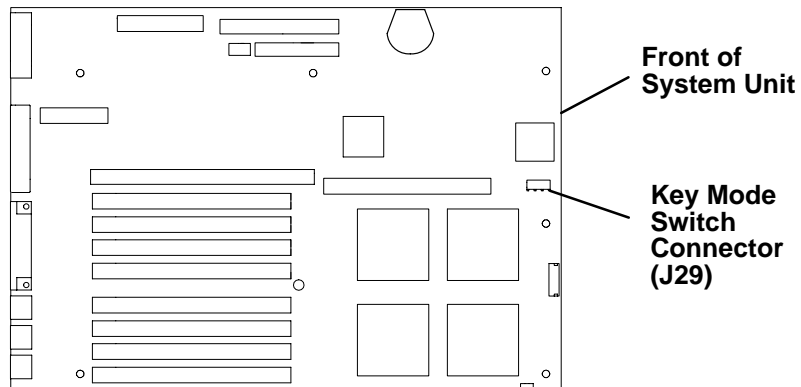
Replace in the reverse order.

Key Mode Switch Assembly

Removal

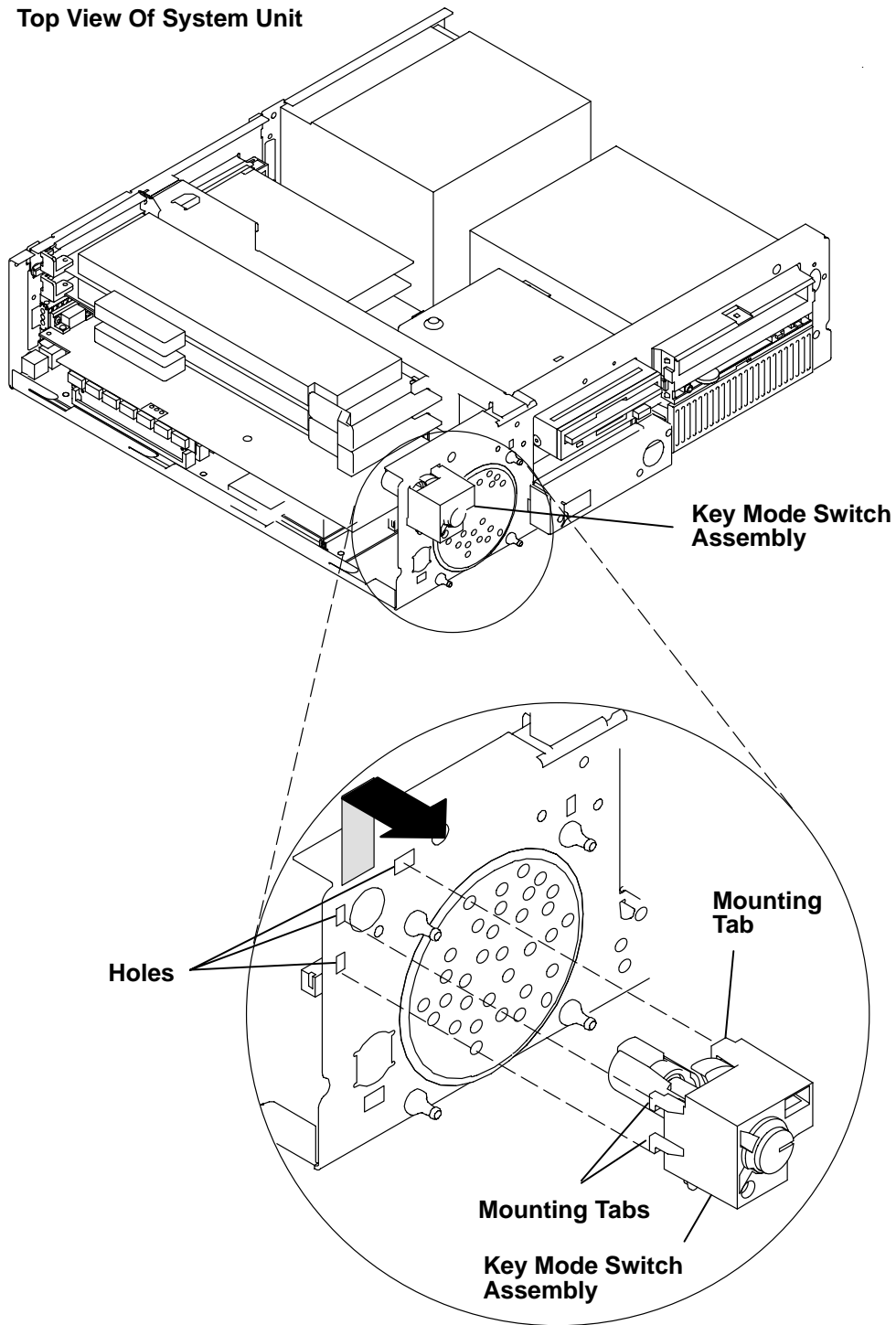
1. Do the "Cover" removal procedure on page 3-3.
2. Disconnect the key mode switch cable from the key mode switch connector (J29) on the system board.

Top View Of System Board



3. Lift the key mode switch assembly until the ends of the mounting tabs are aligned with the holes in the chassis, and then pull the key mode switch assembly toward you until the assembly and the cable are out of the system unit.

Top View Of System Unit



Replacement

Replace in the reverse order.

Battery

Note: For a translation of the safety notices, refer to the *System Unit Safety Information*, order number SA23-2652.

CAUTION:

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

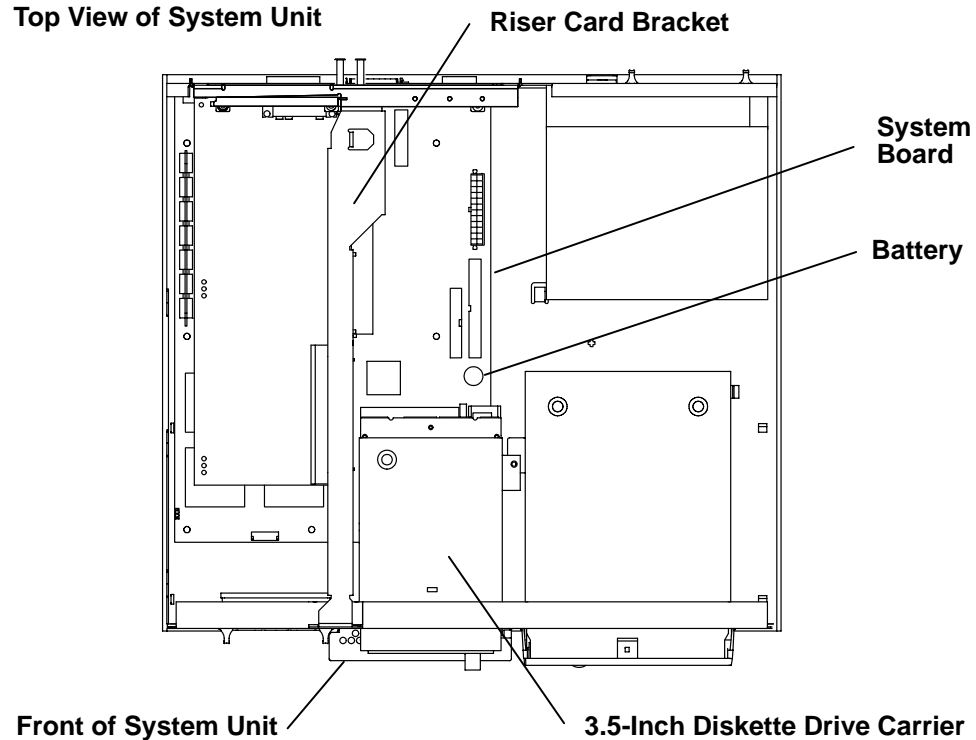
The battery connector is polarized; do not attempt to reverse the polarity.

Dispose of the battery according to local regulations.

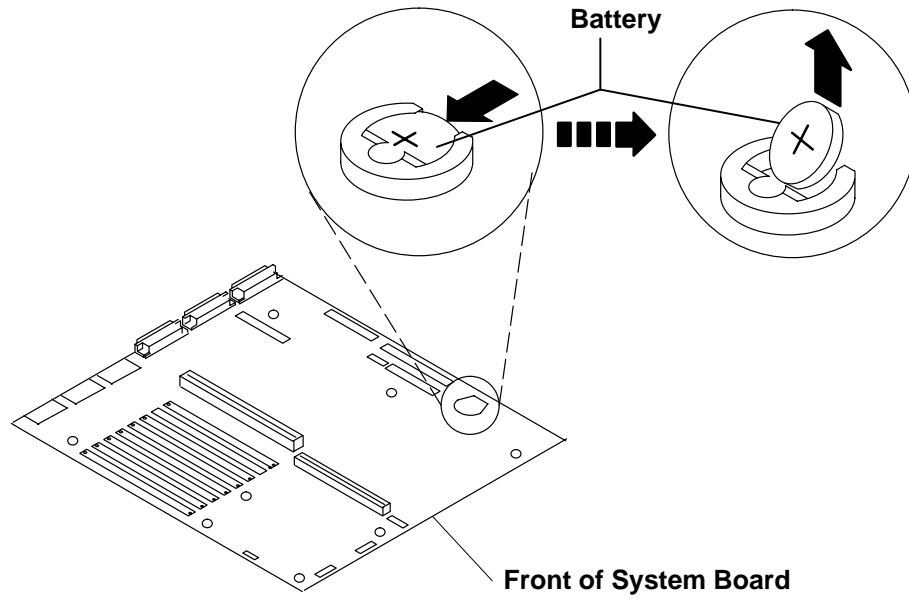
Removal

1. Do the "Cover" removal procedure on page 3-3.
2. Locate the battery (on the system board) located behind the 3.5-inch diskette drive carrier.

Top View of System Unit



3. Push the edge of the battery toward the center of the system board until the edge clears the sides of the battery container, and then lift the edge of the battery upward; then, remove the battery.



Replacement

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

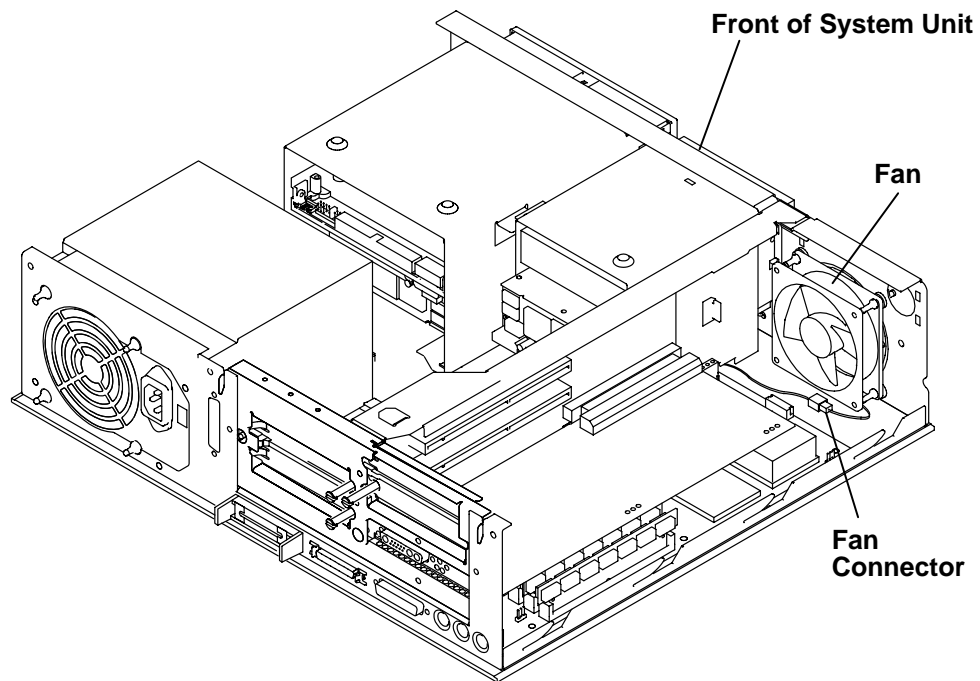
Ensure that the battery polarity is correct; place the battery in the holder with the positive side facing up.

Replace in the reverse order.

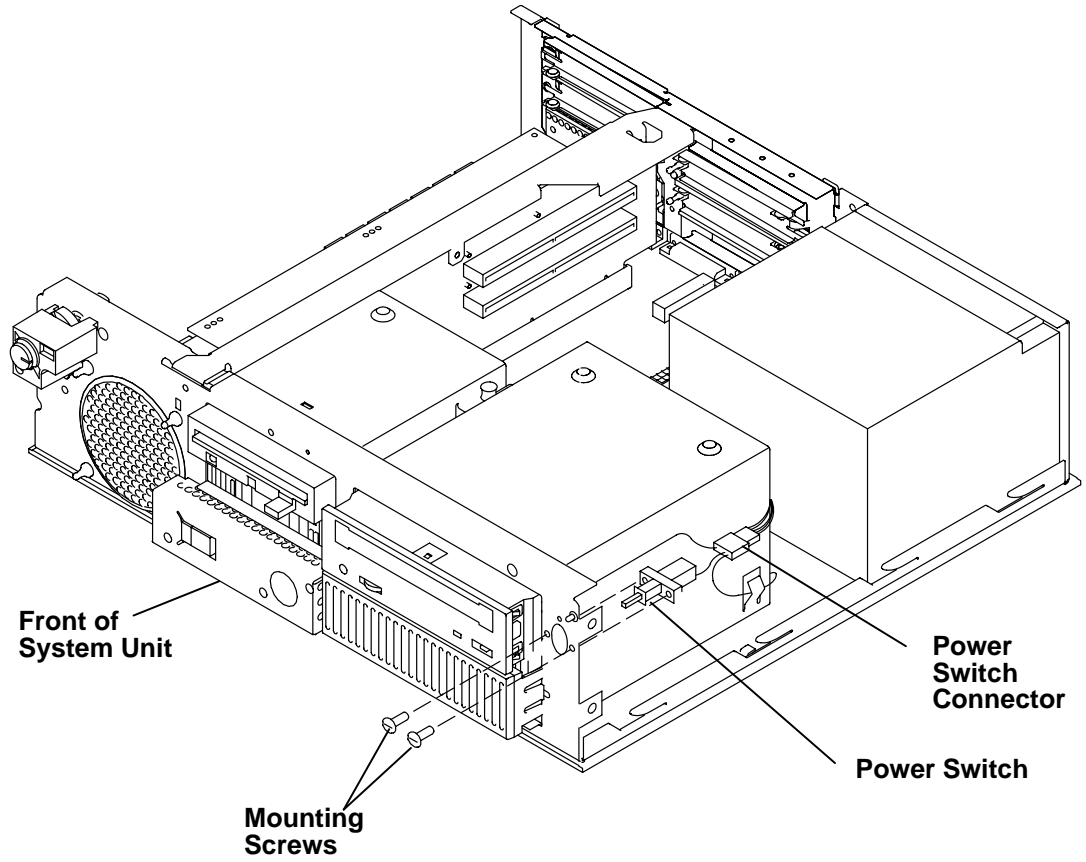
Power Switch Assembly

Removal

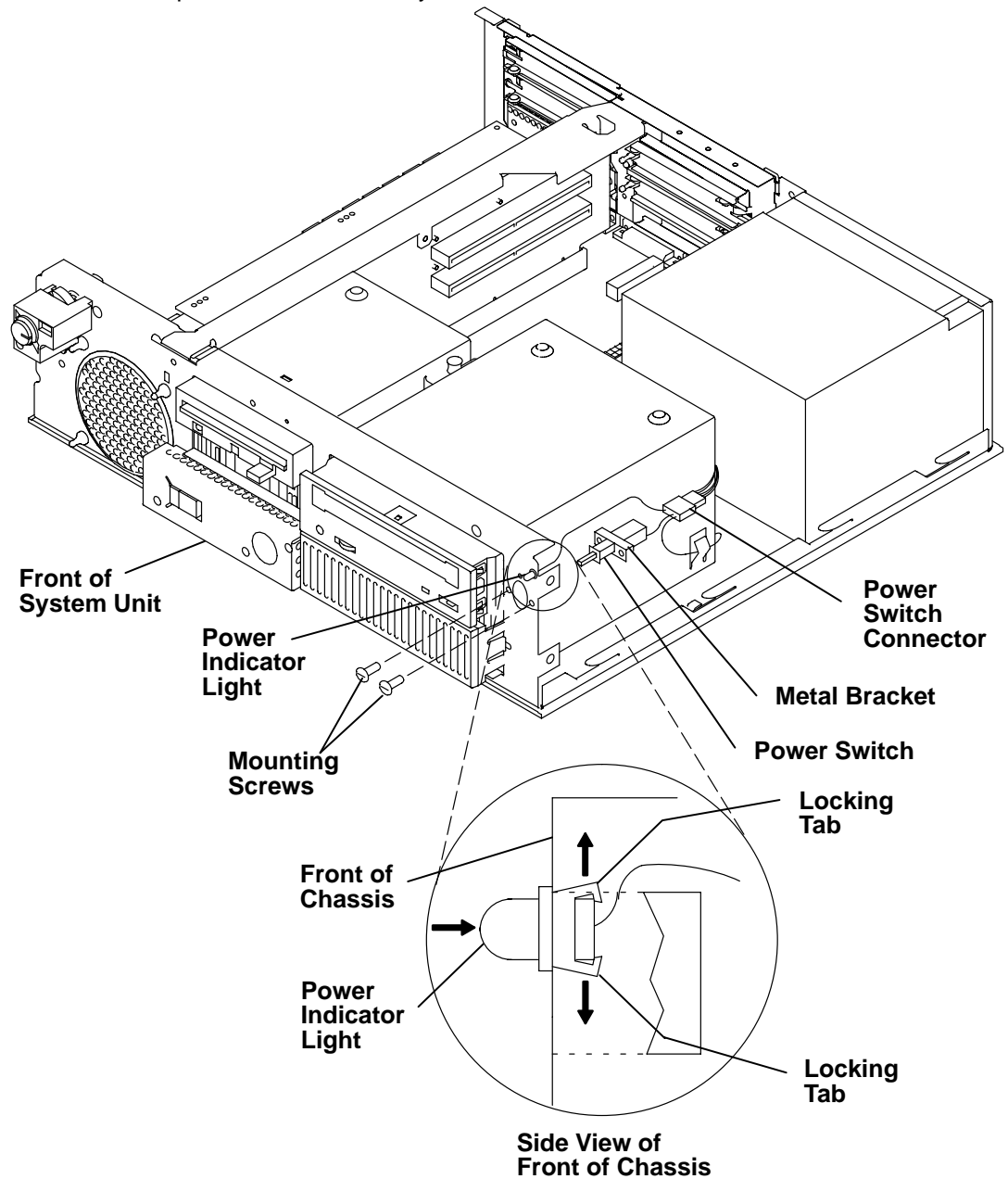
1. Do the "Cover" removal procedure on page 3-3.
2. Remove the carrier containing the 3.5-inch diskette drive. Refer to the "3.5-Inch Diskette Drive or Optional Disk Drive" removal procedure on page 3-11 for information about removing the drive.
3. Disconnect the fan connector.



4. Disconnect the power switch connector.
5. Remove the two mounting screws attaching the power switch to the chassis.



6. With a screwdriver, pull one or both of the locking tabs (located on the inside of the chassis) away from the power indicator light.
7. While pulling the locking tab away from the power indicator light, push the power indicator light through the front of the chassis until the power indicator light is clear of the locking tabs.
8. Remove the power switch assembly.



Replacement

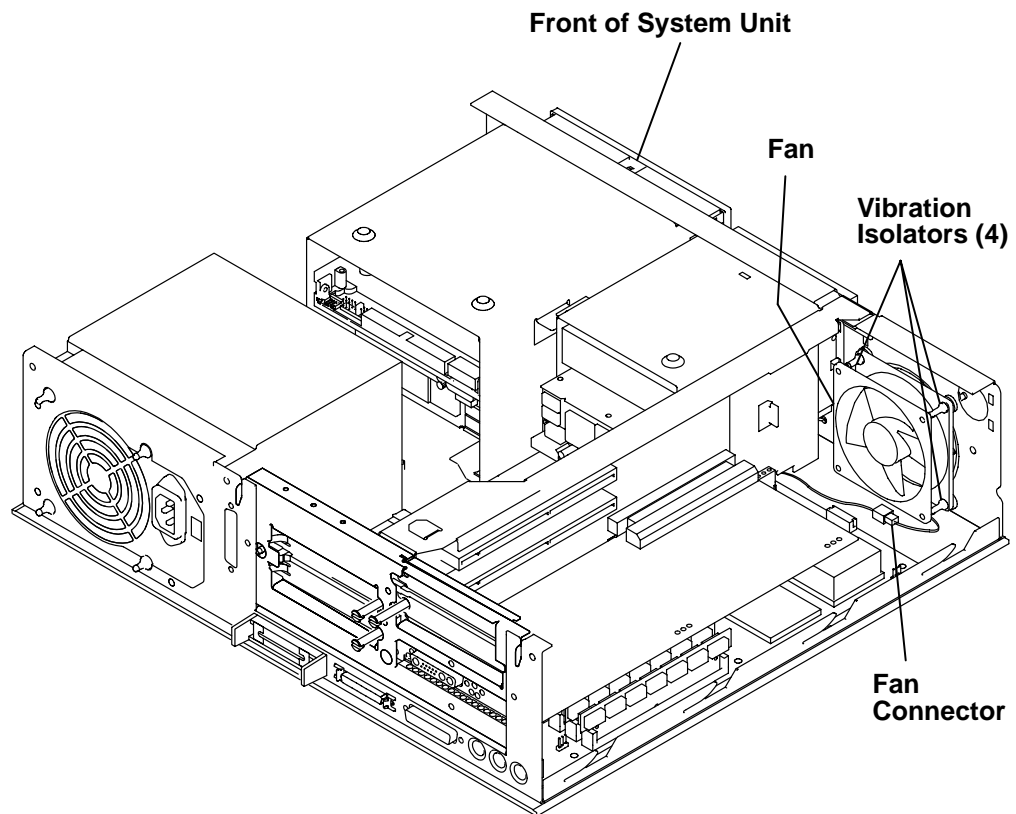
Note: Ensure that the power switch is in the correct mounting position before replacing the switch. The power switch is in the correct mounting position when the flat metal bracket of the power switch is facing upward.

Replace in the reverse order.

Fan

Removal

1. Do the "Cover" removal procedure on page 3-3.
2. Disconnect the fan connector.
3. Remove the four vibration isolators by pulling the fan away from the front of the chassis until each of the vibration isolators disengage either from the fan or from the chassis, and then remove the fan.

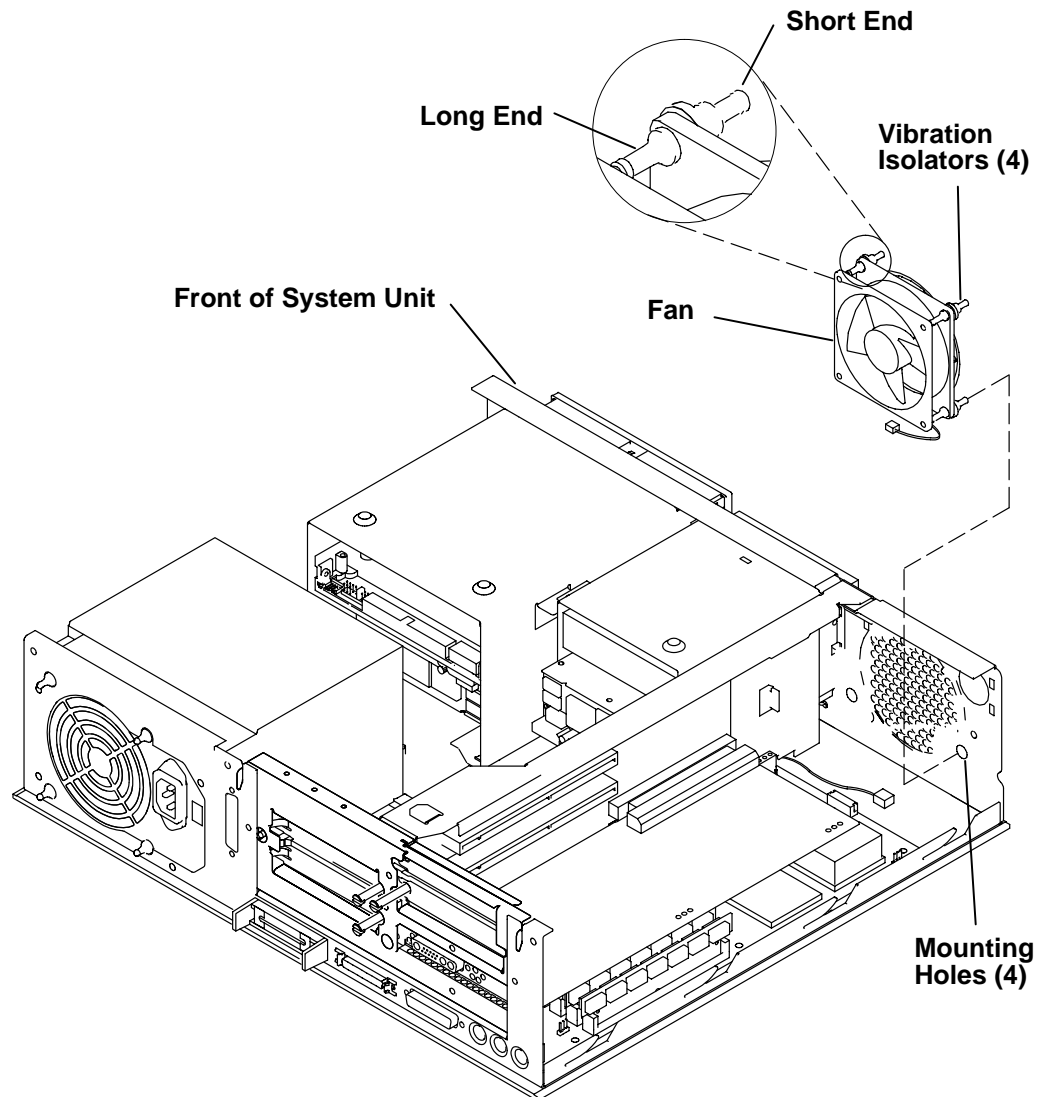


Replacement

To replace the vibration isolators when replacing a fan, do the following:

1. Check the direction of the air flow marked on the fan, and then place the long end of the vibration isolator through the mounting hole of the fan.
2. Pull the long end of the vibration isolator through the mounting hole until the center ring of the vibration isolator is against the fan.
3. Repeat the two previous steps until all four vibration isolators are mounted on the fan.
4. After all four vibration isolators are mounted on the fan, place the short end of each vibration isolator through the mounting holes of the chassis.
5. Pull the short end of each vibration isolator through the mounting holes of the chassis until the center ring of the vibration isolator is against the chassis.

Replace in the reverse order.



Chapter 4. Diagnostics

Diagnostics

Note: The screens may be different than the screens shown below depending on your machine configuration.

The built-in diagnostics complement the basic troubleshooting techniques featured in “Chapter 2. Maintenance Analysis Procedures (MAPS).”

1. Set the system unit power switch to the Off position if it is not already off.
2. Set the key mode switch to the Secure position.
3. Turn on all attached devices, such as terminals, tape drives, monitors, and external disk drives.
4. Open the operator panel door.
5. Set the system unit power switch to the On position.
6. Wait for 200 to appear in the three-digit display, then continue with step 7.
7. Set the key mode switch to the Service position, and then press the yellow Reset button.
8. After a minute, the Main Menu should appear.

**Main Menu
Configuration and Diagnostics**

1. **Select BOOT (Startup) Device**
2. **Select Language for these Menus**
3. **Send Test Transmission (PING)**
4. **Show Hardware Configuration**
5. **Perform Built-In Diagnostics**
6. **Exit Main Menu and Start System (BOOT)**

**Type the number for your selection, then press “ENTER”
(Use the “Backspace” key to correct errors)**

9. Select the `Perform Built-In Diagnostics` option (5) from the `Main Menu`. The `Diagnostics` screen should be displayed.

Diagnostics

1. **Perform Built-In Basic Diagnostics**
Use this selection for system check-out and problem determination. Service equipment (such as wrap plugs) is not needed

2. **Perform Built-In Advanced Diagnostics**
This selection is normally used by Service personnel. Service equipment (such as wrap plugs) is needed.

NOTE: In addition to your Built-In Diagnostics, diagnostic programs may be provided along with your operating system. Refer to your operating system's diagnostic documentation for instructions on how to use these diagnostic programs.

99. Return to Main Menu

Type the number for your selection, then press "ENTER"
(Use the "Backspace" key to correct errors)

10. Select the Perform Built-In Advanced Diagnostics (option 2) from the Diagnostics menu. The Perform Built-In Advanced Diagnostics Test Selection Menu should be displayed.

Perform Built-In Advanced Diagnostics Test Selection Menu

NOTE: An * in front of the selection indicates that the test has been run.

1. Run ALL built-in ADVANCED diagnostic tests

LOCATION	TEST DESCRIPTION
2.	Memory
3. 00-00-S1	Serial port
4. 00-00-0P	Parallel port
5. 00-00-0M	Mouse port
6. 00-00-0T	Tablet port
7. 00-00-0K	Keyboard port

Page 1 of 3

88. Next Page of Test Selection Menu
99. Return to Main Menu

Type the number for your selection, then press "ENTER"
(Use the "Backspace" key to correct errors)

**Perform Built-In Advanced Diagnostics
Test Selection Menu**

NOTE: An * in front of the selection indicates that the test has been run.

LOCATION	TEST DESCRIPTION
8. 00-00-0D	Diskette port
9. 00-00-0S	SCSI port
10. 00-00-0E	Integrated Ethernet Standard Adapter
11. 00-00-0K	Keyboard-101 keys
12. 00-00-05-00	540 MB SCSI Disk Drive
13. 00-00-0D	3.5 Inch 2.8 MB Diskette Drive
14. 00-0J	POWER GXT150L

Page 2 of 3

- 88. Next Page of Test Selection Menu
- 77. Previous Test Selection Menu
- 99. Return to Main Menu

Type the number for your selection, then press "ENTER"
(Use the "Backspace" key to correct errors)

**Perform Built-In Advanced Diagnostics
Test Selection Menu**

NOTE: An * in front of the selection indicates that the test has been run.

LOCATION	TEST DESCRIPTION
15. 00-01	Token-Ring High-Performance Network Adapter

Page 3 of 3

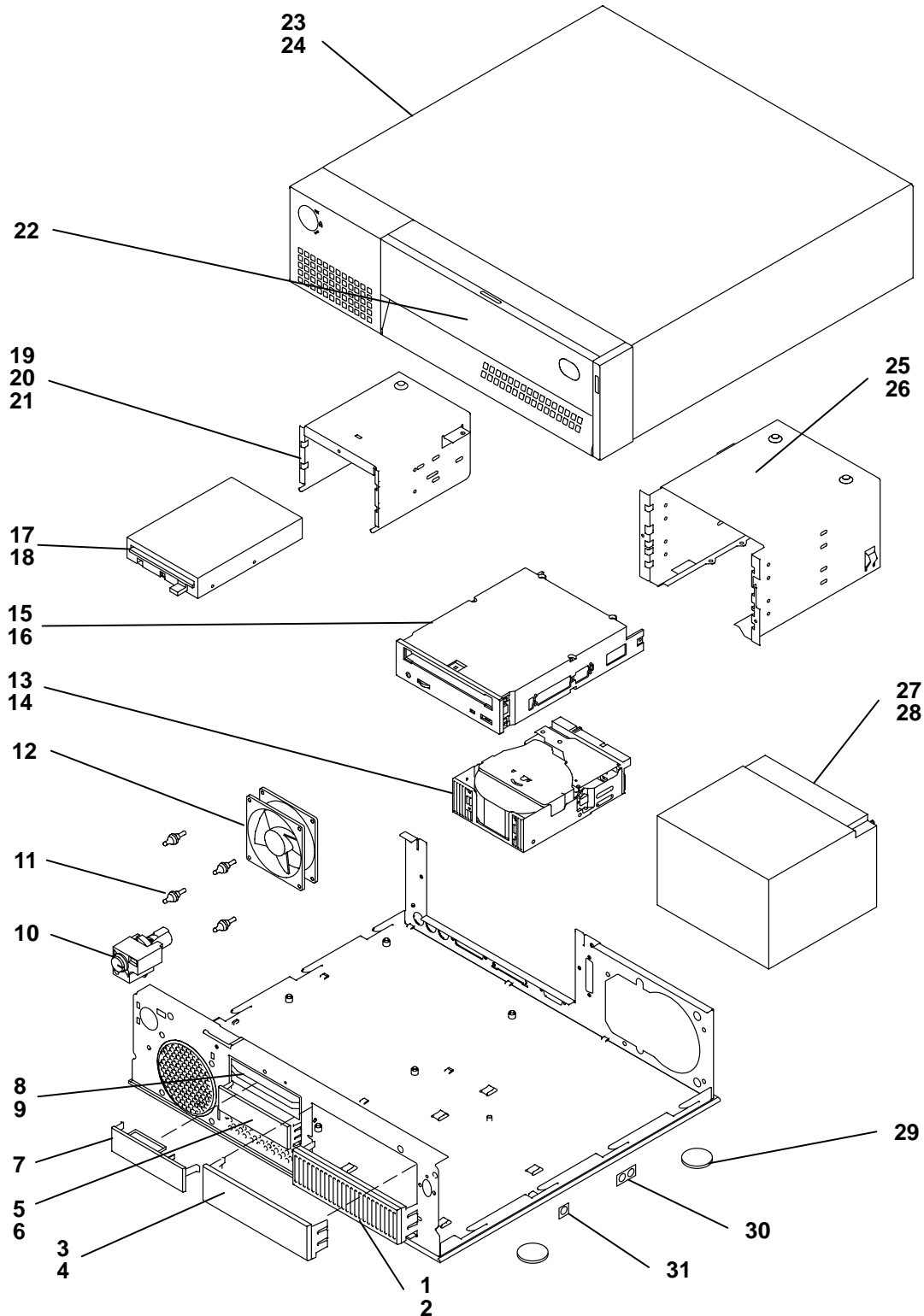
- 77. Previous Test Selection Menu
- 99. Return to Main Menu

Type the number for your selection, then press "ENTER"
(Use the "Backspace" key to correct errors)

11. Select the Advanced diagnostic test that you want to run.

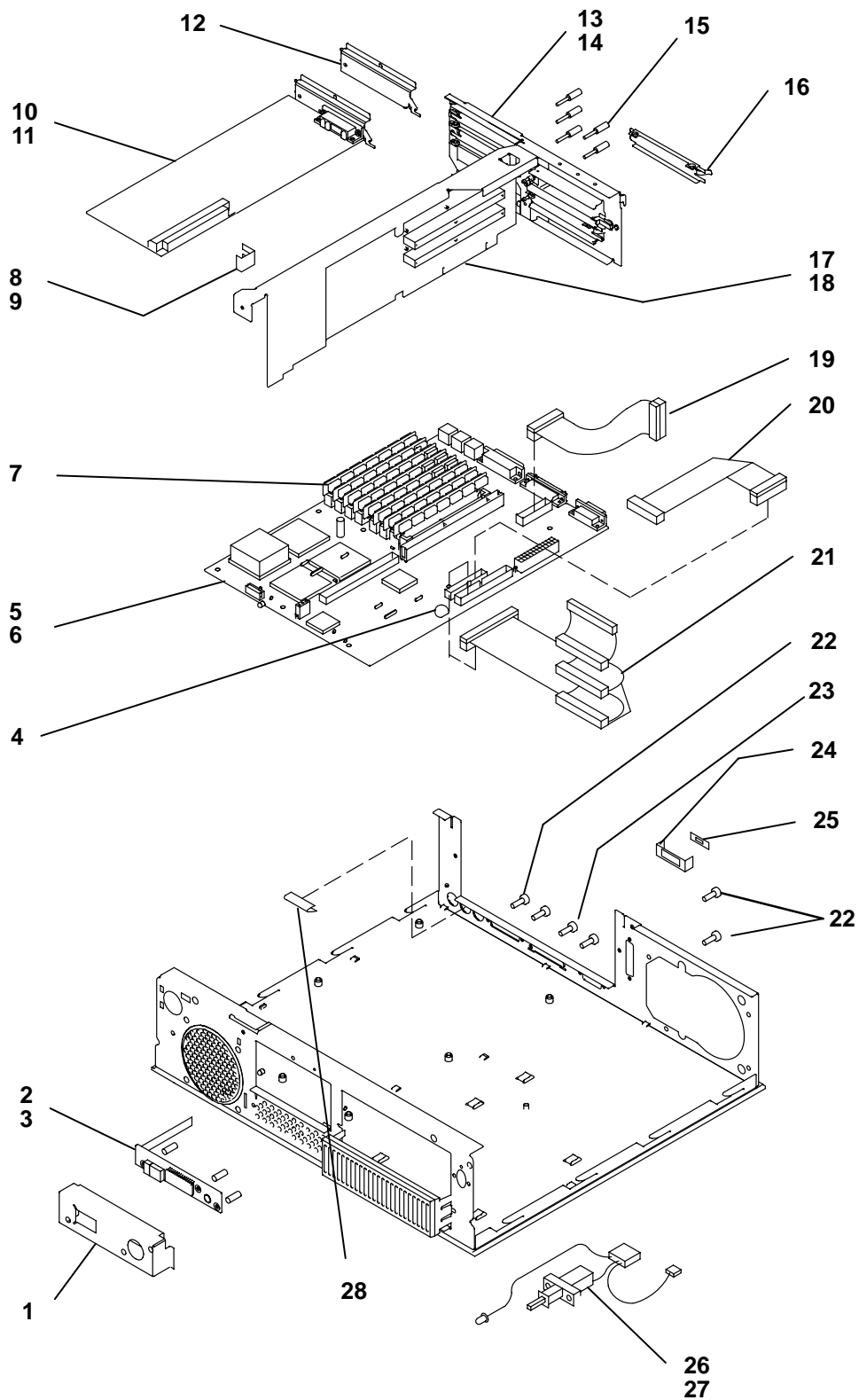
Chapter 5. Parts Information

Detail 1. Cover, Chassis, Carriers, Media Device, and Power Supply



Index Number	Part Number	Units Per Assy	Description
1	88G2728	1	Cover (for empty media position)
2	88G2729	1	Shield (for empty media position)
3	88G2921	1	Cover (for empty media position)
4	88G2729	1	Shield (for empty media position)
5	88G2726	1	Cover (for disk drive position)
6	88G2727	1	Shield (for disk drive position)
7	81F9143	1	Cover (for empty media position)
8	88G2727	1	Shield (for empty media position)
9	88G2585		Shield retainer bracket
10	88G2671	1	Keylock
	11H2614	1	Keyless lock
11	81F7977	4	Vibration isolators
12	88G2601	1	Fan
13	See Note	1	Disk drive
14	1147429	4	Screw, 632 x 4.83 (metric)
15	See Note	1	CD-ROM drive
16	33G3907	4	Screw, M3 x 5
17	See Note	1	3.5-inch diskette drive
18	33G3907	4	Screw, M3.5 x 6
19	88G2587	1	Carrier (for diskette drive and optional disk drive)
20	8185165	1	Screw, M3.5 x 5
21	41G4040	1	Retainer pin
22	88G2594	1	Media door
23	88G2589	1	Cover assembly
24	8185165	3	Screw, M3.5 x 5
25	8185285	1	Carrier (for media devices and disk drive)
26	8185165	3	Screw, M3.5 x 5
27	65G8077	1	Power supply
28	8185165	4	Screw, M3.5 x 5
29	88G2609	4	Pads (chassis)
30	8185132		Grounding clip (double dome)
31	88G2892		Grounding clip (single dome)
<p>Note: See Chapter 4 in the <i>POWERstation and POWERserver Common Diagnostics Information Manual</i> for part numbers.</p>			

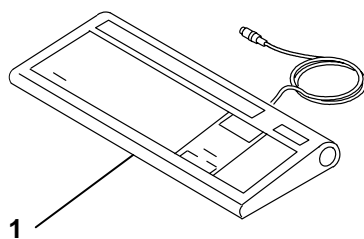
Detail 2. System Board, Riser Card, and Three-Digit Display



Index Number	Part Number	Units Per Assy	Description
1	88G2581	1	Shield
2	31F4287	1	Three-digit display assembly
3	88G2899	3	Mounting pin
4	33F8354	1	Battery
5	12H1281	1	System board (Models 41T/41W)
	39H8152	1	System board (Models 42T/42W)
6	8185165	6	Screw, M3.5 x 5
7	See Note	8	Memory SIMM
8	88G2571	2	Adapter guide bracket
9	8185165	2	Screw, M3.5 x 5
10	88G2479	1	POWER GXT150L graphics adapter
	88G2547	1	POWER GXT155L graphics adapter
	11H5872	1	POWER GXT500 graphics adapter
	11H5873	1	POWER GXT500D graphics adapter
11	8185165	2	Screw, M3.5 x 5
12	88G2602	1	Graphics adapter cover (for empty position)
13	88G2707	1	Riser card bracket
14	8185165	3	Screw, M3.5 x 5
15	81F9133	5	Thumbscrew,
16	6279235	3	Adapter cover (for empty adapter position)
17	88G2539	1	Riser card (without L2 cache)
17	88G2731	1	Riser card (with L2 cache)
18	8185165	2	Screw, M3.5 x 5
19	65G3853	1	Cable, parallel port
20	88G2579	1	Cable, diskette drive
21	88G2577	1	Cable, SCSI
22	62X0388	4	Screw, Serial and Parallel
23	0015887	2	Screw, SCSI
24	00G2095	1	Ethernet connector handle
25	81F9178	1	Ethernet connector bracket
26	88G2604	1	Power switch
27	33G3907	2	Screw, M3 x .5P
28	88G2572	1	Grounding clip

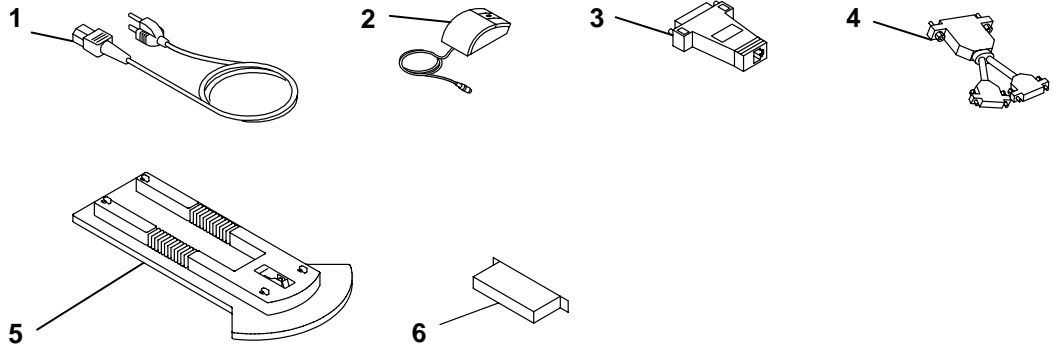
Note: See Chapter 4 in the *POWERstation and POWERserver Common Diagnostics Information Manual* for part numbers.

Detail 3. Keyboard



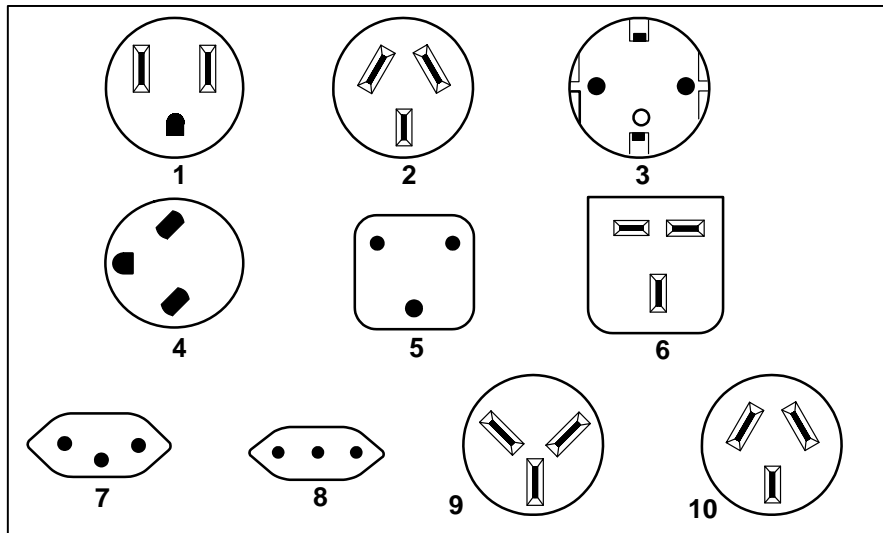
Index Number	Part Number	Units Per Asm	Description
1	51G8572	1	Keyboard, United States English
	8184692	1	Keyboard, soft touch
	1394541	1	Keyboard, French Canadian
	1394542	1	Keyboard, German
	1394544	1	Keyboard, Danish
	1394543	1	Keyboard, Begian-French/Dutch
	1394545	1	Keyboard, Finnish/Swedish
	1394546	1	Keyboard, French
	1394547	1	Keyboard, Italian
	1394548	1	Keyboard, Norwegian
	1394549	1	Keyboard, Portuguese
	1394550	1	Keyboard, Spanish
	1394551	1	Keyboard, Swiss German/French
	1395968	1	Keyboard, Icelandic
	1395984	1	Keyboard, CSA166
	1395985	1	Keyboard, United Kingdom English
	1396077	1	Keyboard, Turkish
	1396078	1	Keyboard, Greek
	1396079	1	Keyboard, Arabic
	1396080	1	Keyboard, Hebrew
	30F9388	1	Keyboard, Kanji
	02G7353	1	Keyboard, Taiwan-Chinese
	02G7352	1	Keyboard, Korean
	0432778	1	Keyboard, Dutch
	043G2775	1	Keyboard, Turkish (ID 440)

Detail 4. Various Hardware



Index Number	Part Number	Units Per Asm	Description
1		1	Power Cable (See Power Cables and Plugs)
2	11F8895	1	Mouse, 3-button
3	51G8479	1	Twisted-pair cable adapter
4	31F4590	1	Serial dual port cable (optional)
5	88G2732	1	Vertical stand
6	51G7737	1	Terminator

Detail 5. Power Cables and Plugs



Part Number	Country	Index
62X0663	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., Venezuela	1
13F9940	Argentina, Australia, New Zealand,	2
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	3
13F9997	Denmark	4
14F0015	Bangladesh, Burma, Pakistan, South Africa, Sri Lanka	5
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	6
14F0051	Liechtenstein, Switzerland	7
14F0069	Chile, Ethiopia, Italy	8
14F0087	Israel	9
13F9939	Paraguay, Colombia, Uruguay	10

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