

7015 POWERserver CPU Drawer

Service Guide



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Fifth Edition (September 1992)

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Communications Statements

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

Federal Communications Commission (FCC) Statement

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

VCCI Statement

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。

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

This equipment is Type 1 Data Processing Equipment and is intended for use in commercial and industrial area. When used in residential area, or areas of proximity, radio and TV reception may be subject to radio interference. VCCI-1.

Avis de conformité aux normes du ministère des Communications du Canada

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

Canadian Department of Communications Compliance Statement

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

Radio Protection for Germany

Instructions to User: Properly shielded and grounded cables and connectors must be used for connection to peripherals in order to meet German emission limits. Shielded, grounded cables with inline filters are included with certain peripherals and features. These cables should be used to ensure that the 7015 system will comply with the German limits.

In addition, when attaching peripherals to the parallel printer port, the cable P/N 1525612 with the inline filter should be used for compliance to the German requirements.

United Kingdom Telecommunications Safety Requirements

This apparatus is approved under approval number NS/G/1234/J/100003 for indirect connection to public telecommunication systems in the United Kingdom.

International Electrotechnical Commission (IEC) Statement

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

Korean Communications Statement

전자파장해에 관한 사용자 안내문

이 기기는 업무용으로 전자파장해 검정을 받은 기기이오니 판매자 또는 사용자는 이 점을 주의하시기 바라며, 만약 잘못 구입하였을 때에는 구입한 곳에서 비업무용으로 교환하시기 바랍니다. (RSF/CSI)

This device has been approved for business use with regard to electromagnetic wave interference. If you find this is not suitable for your use, you may exchange it for one designated for non-business purposes.

Safety Notices

Note: For a translation of danger and caution notices, see the *System Unit Safety Information*, form number SA23-2652.

Definitions of Safety Notices

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

Danger notices appear on the following pages:
2-1520-2
3-22.

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:
3-2
3-27.

A *warning* notice indicates an action that could cause damage to a program, device, system, or data.

Safety Notice for Servicing

For safety checks when servicing, refer to Chapter 3, "Removal and Replacement Procedures."

Note: Before connecting or removing any cables to or from the system, be sure to follow the steps in the system installation procedures specified in the installation and service guide for your system or device.

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 by as a Class I 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 3 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 3. 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 the OLC. This is a requirement for correct operation of the optical link. In addition, the OLC product is designed and certified for use in applications with point-to-point optical links only. Using this product in any other type of optical link configuration (for example, links containing optical splitters or star couplers) is considered as not using the product correctly and may require that the user certify the laser product again for conformance to the laser safety regulations.

About This Book

This book uses three-digit model numbers. You may have other documentation that uses four-digit model numbers. For example, the model 93H in this book may be referred to as a model 930H in other documentation. They are the same system units.

How to Use This Guide

This guide provides maintenance information that is specific to the 7015 CPU Drawer. 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 *Common Diagnostics and Service Guide*.

This guide is used by the service technician to repair system failures. This guide assumes that the service technician has had training on the 7015 system.

Related Publications

The *POWERstation and POWERserver Common Diagnostics and Service Guide*, form number SA23-2687, contains reference information about adapters, devices, checkout procedures for problem determination, system verification, using the diagnostics, and cabling for the system units. This manual also contains the removal and replacement procedures for the logic boards on the disk drives and cabling information that can be used to isolate problems with customer cabling.

The *7015 POWERserver Operator Guide*, form number SA23-2627, contains information about the controls and features of the system unit.

The *7015 POWERserver Installation and Service Guide*, form number SA23-2678, contains information about installing the system unit, servicing the power components within the rack, and switching the system unit on and off.

The *7015 POWERserver SCSI Drawers Service Guide*, form number SY33-0160, contains maintenance information about the SCSI drawers.

The *System Unit Safety Information* manual, form number SA23-2671, contains translations of danger and caution notices.

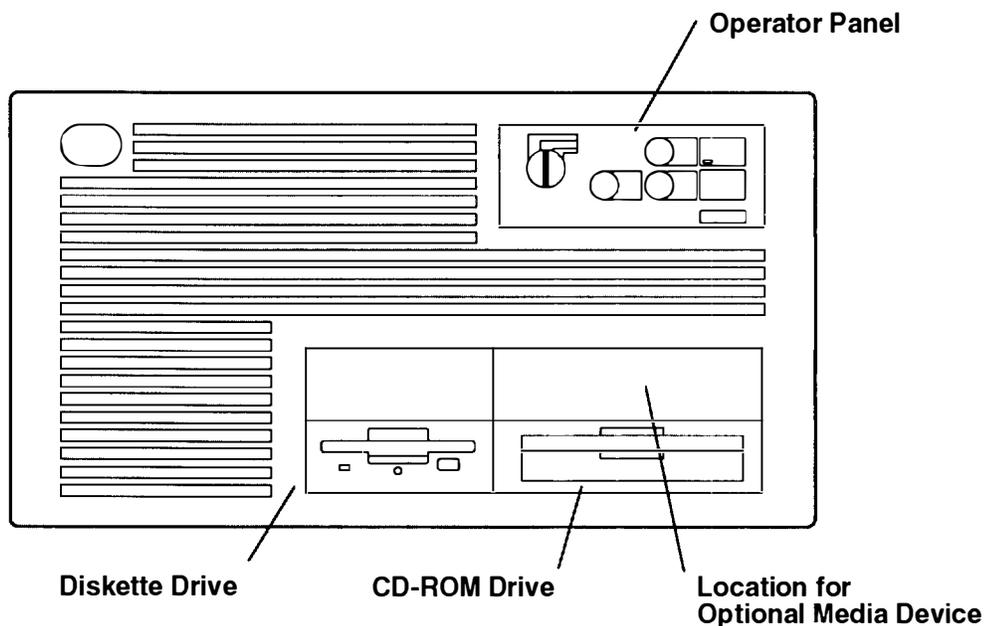
Chapter 1. Reference Information

This chapter contains information about part locations; connector locations; slot and connector locations on the CPU planar, the I/O planar, and the standard I/O planar; data and power flow; and CPU drawer specifications.

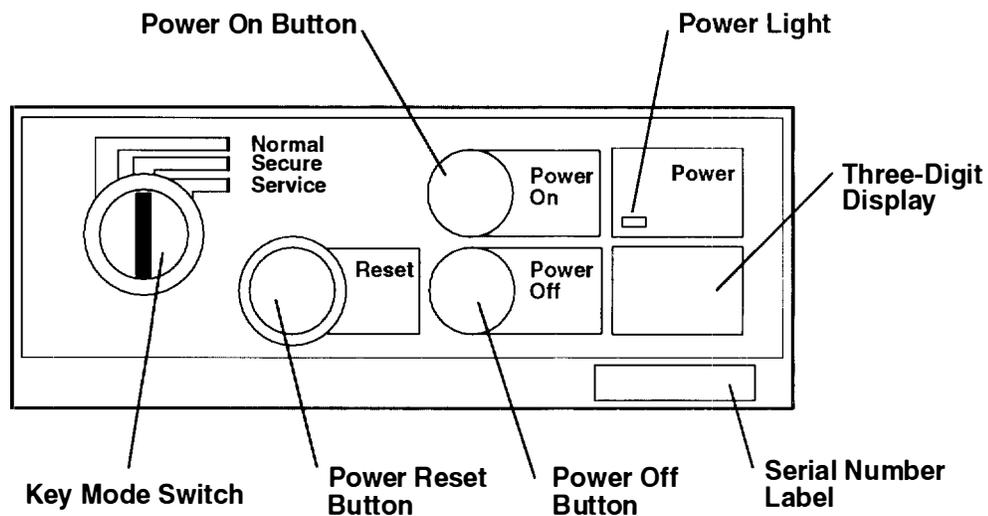
Locations

Note: Illustrations for alternate types of machine designs will be shown throughout this book whenever they apply.

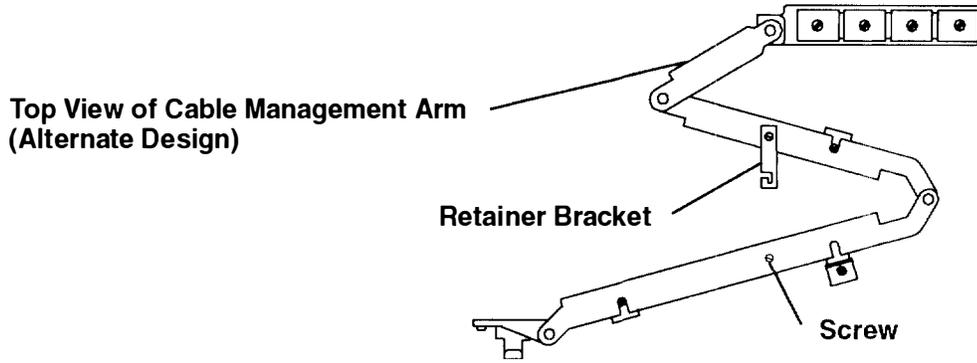
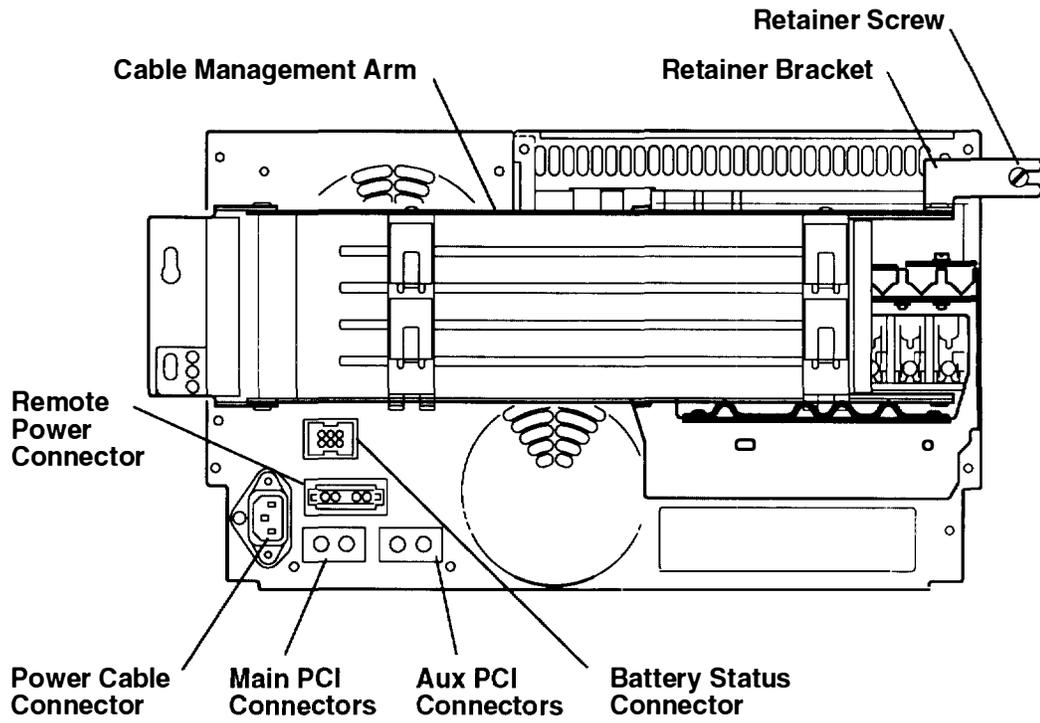
Front View



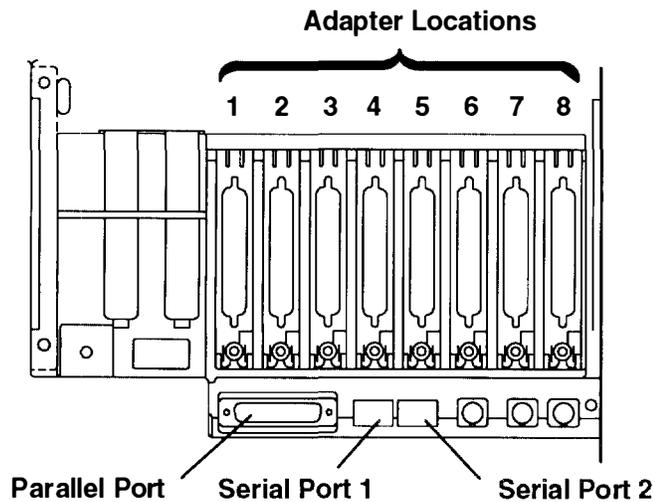
Operator Panel



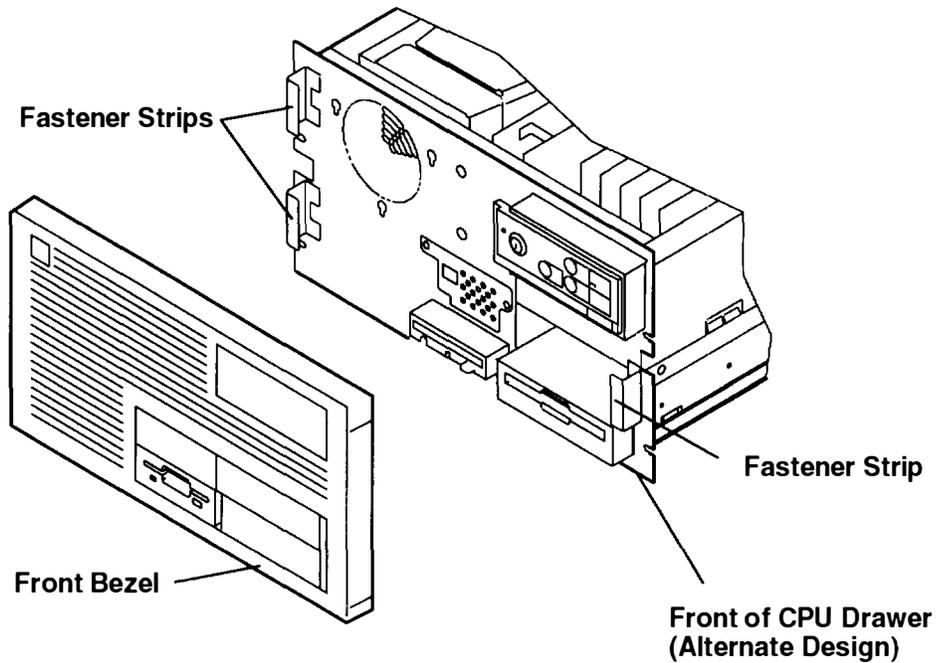
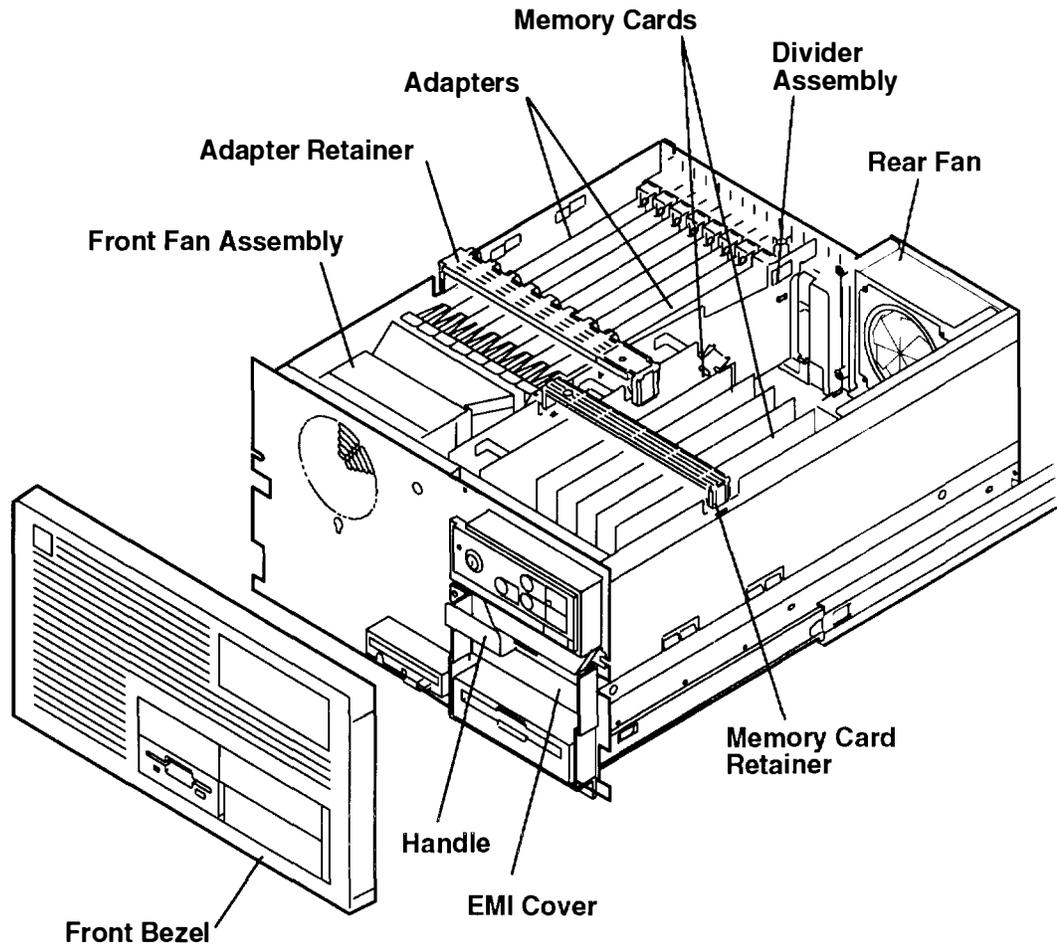
Rear View



Cable Connections

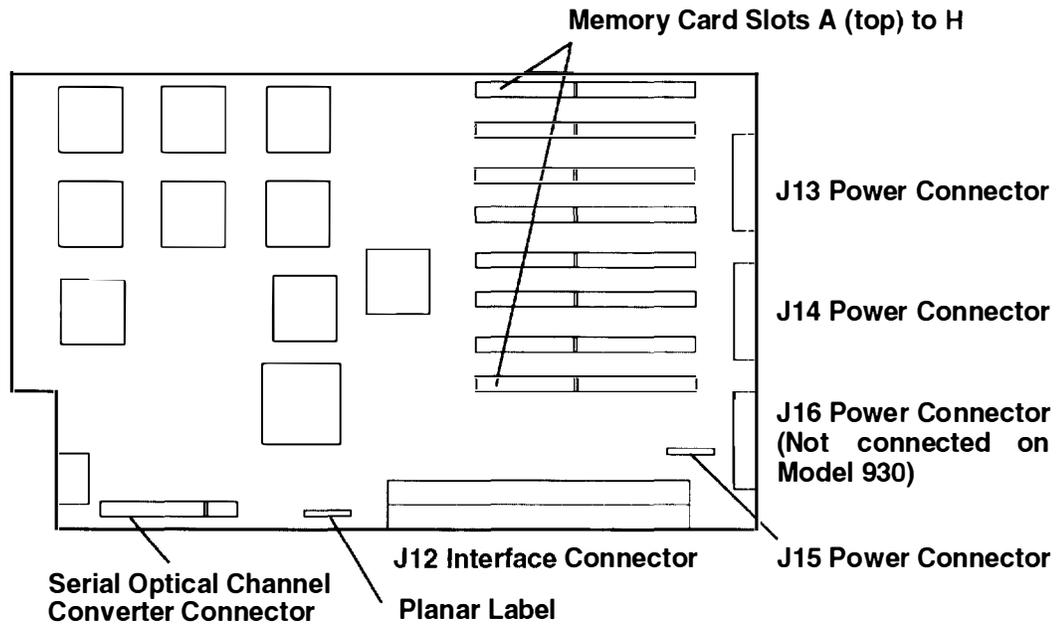


Drawer Contents

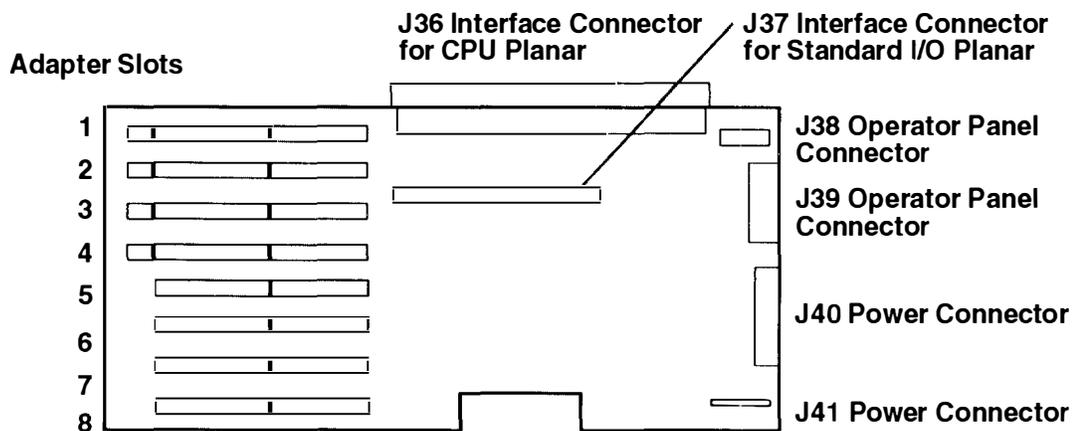


Connector Locations

CPU Planar Connectors



I/O Planar Connectors



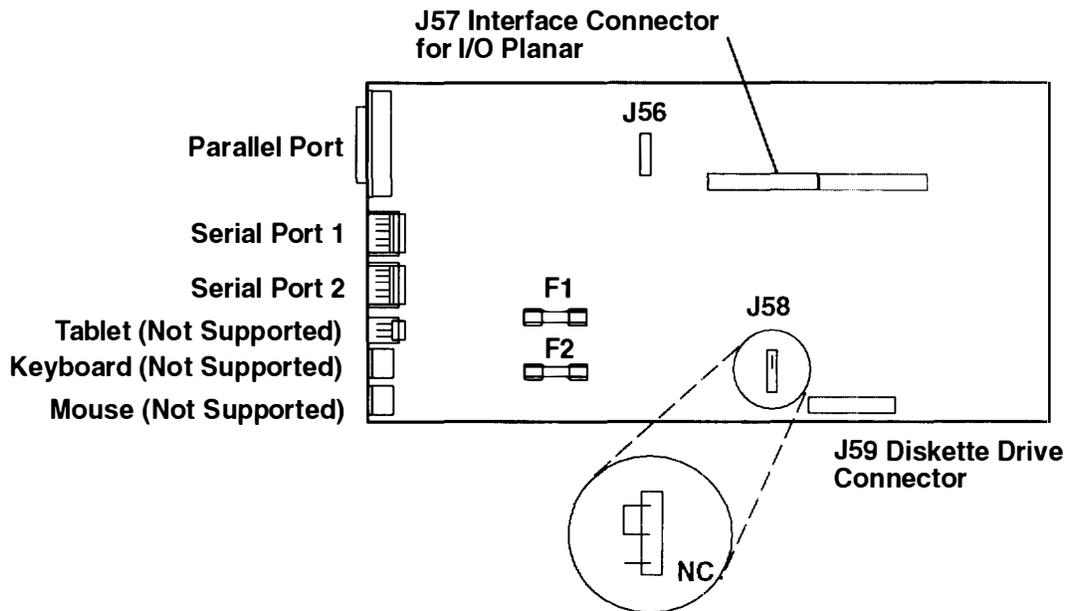
Standard I/O Planar Connectors

Fuses on the planar are as follows:

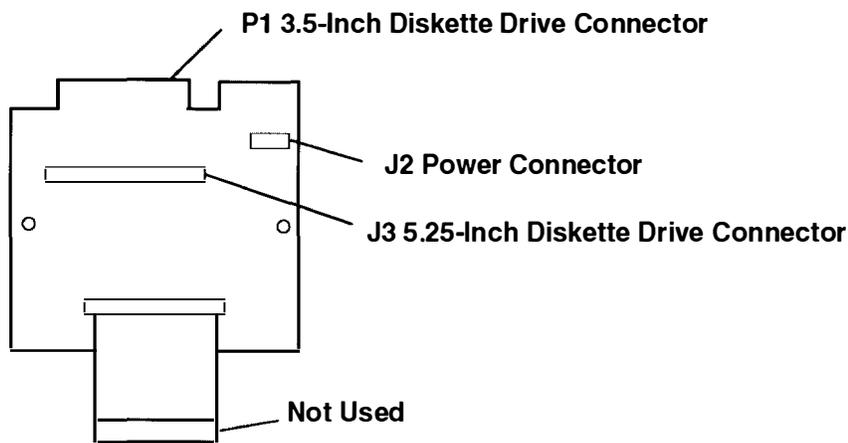
- The F1 fuse is for the tablet and mouse; however, the tablet and mouse ports are not supported.
- The F2 fuse is for the keyboard; however, the keyboard port is not supported.

Jumpers on the planar are as follows:

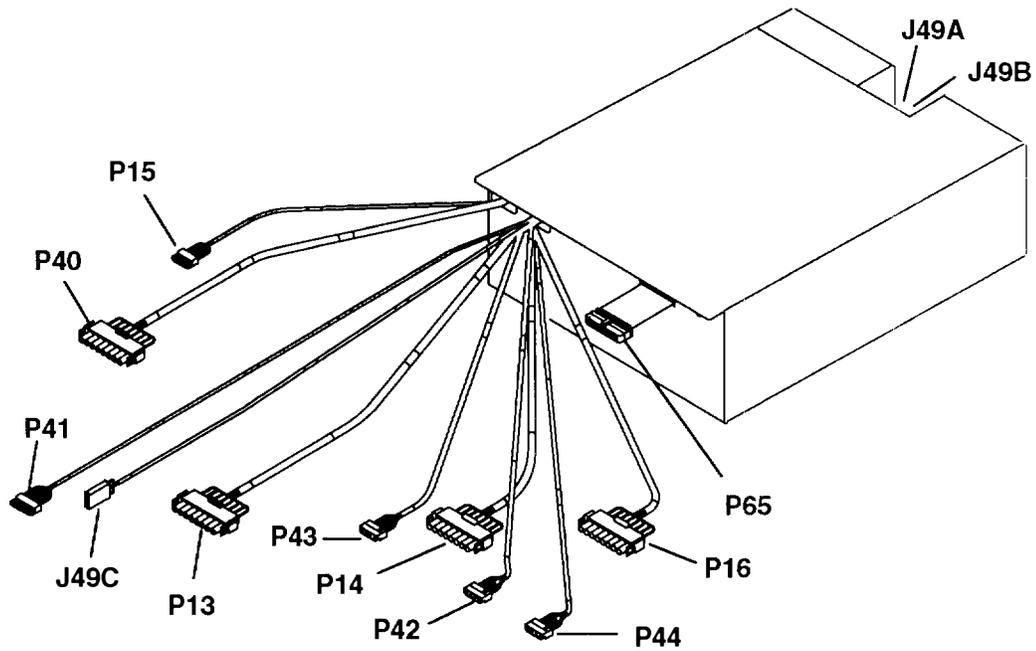
- No jumper is needed for connector J56.
- A jumper is needed from the center pin to the top pin of connector J58.



Redrive Card Connectors

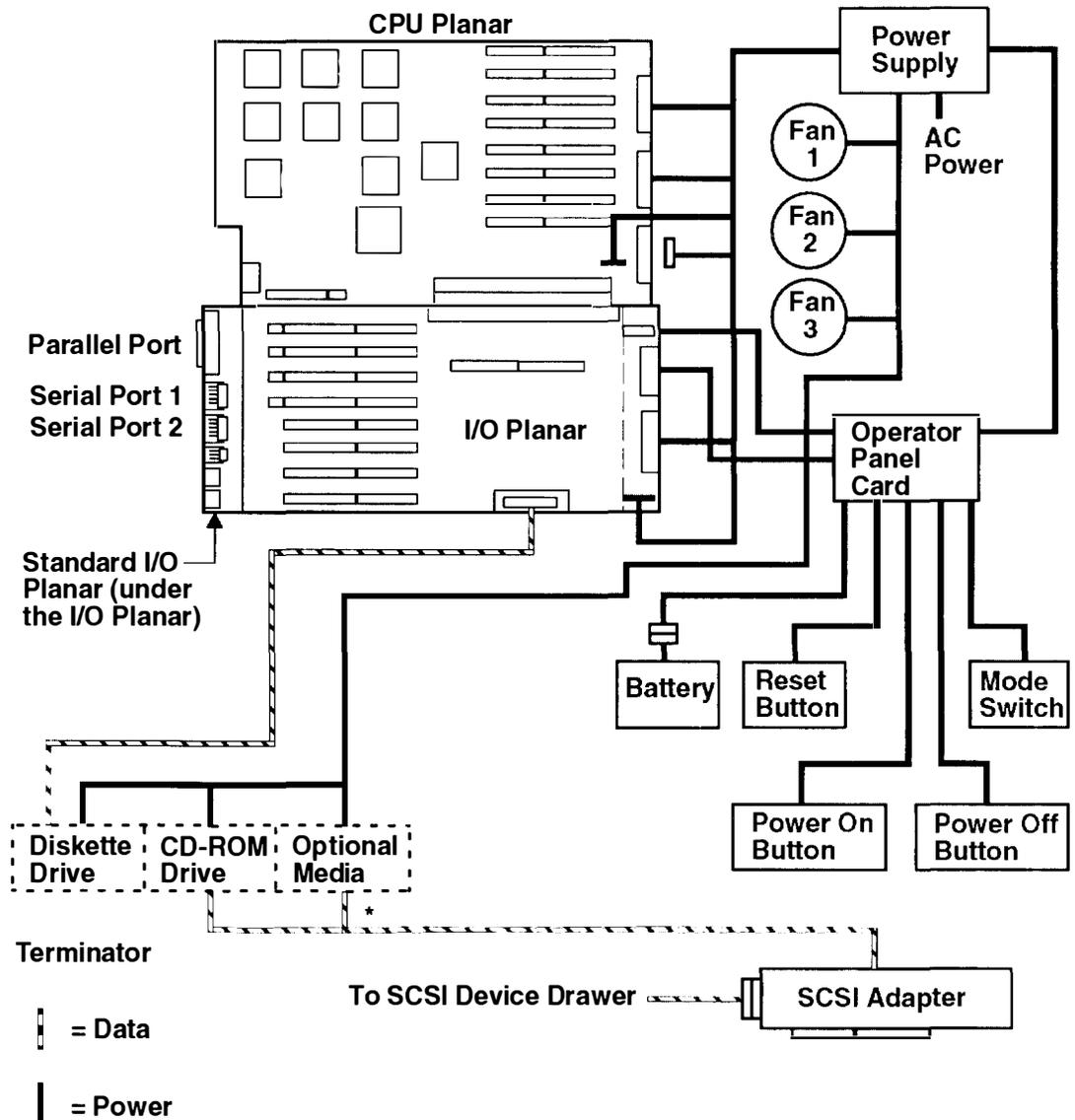


Power Supply Connectors



Connector	Function
P13	To CPU planar connector J13
P14	To CPU planar connector J14
P15	To CPU planar connector J15
P16	To CPU planar connector J16 (Not connected on Model 930)
P40	To I/O planar connector J40
P41	To I/O planar connector J41
P42	To CD-ROM
P43	To 3.5-inch diskette drive
P44	To optional media device
J49A	To power supply fan
J49B	To rear fan
J49C	To front fan
P65	To operator panel

Data and Power Flow



* The SCSI adapter supplies the data link to all optional media devices except the 5.25-inch diskette drive. The data link for the 5.25-inch diskette drive is supplied by the standard I/O planar.

Specifications

Dimensions

Height: 260 mm (10.25 inches)

Depth: 595 mm (23.5 inches)

Width: 445 mm (17.5 inches)

Frequency

50 to 60 Hz

Heat Output

200 W (680 BTU per hour) typical

Operating Environment

Class C: 10 to 40°C (50 to 104°F)

Wet bulb temperature: 23°C (73°F)

Operating Voltage

200 to 240 V ac

Power

0.4 kVA

Power Supply

460 W (peak)

Weight

23 to 28 kg (50 to 60 pounds)

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 might affect the safe operation of the equipment.

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

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

Do 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. Ensure that the rack stabilizer is installed and securely attached to the rack.
4. Do the "Service Position" procedure on page 3-2.
5. Check for alterations or attachments. If there are any, check for obvious safety hazards such as broken wires, sharp edges, or broken insulation.
6. Check the internal cables for damage.
7. Check for dirt, water, and any other contamination within the system unit.
8. Check the voltage label on the rear of the system unit to ensure that it matches the voltage at the outlet.
9. Check the external power cable for damage.
10. 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.
11. Do the "Operating Position" procedure on page 3-4.

Chapter 2. Maintenance Analysis Procedures (MAPs)

This chapter provides diagnostic information for detecting power problems in the 7015 CPU Drawer (in MAP 1520) and for detecting defective field replaceable units (in MAP 1540)

MAP 1520: CPU Drawer – Power MAP

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

Step 1

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

DANGER

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

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

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

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

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

Ensure that:

1. The Master CB1 circuit breaker, located on the power distribution unit, is set to the On position.
2. Voltage is available from the power distribution unit. To verify that voltage is available, measure for 20 V to 30 V ac between pins 1 and 2 of connector JD2 on the power distribution unit. Pin 1 is on the left. For the location of Pin 1, refer to the "Power Distribution Unit (Rear View)" in Chapter 1 in the *7015 Installation and Service Guide*.

Is voltage available from the power distribution unit?

- NO** Go to the power MAP for the power distribution unit in the *7015 Installation and Service Guide*.
- YES** Go to Step 2.

Step 2

(from Step 1)

Ensure that:

- The power cable to the drawer has continuity.
 - The power cable is plugged into the drawer and the power distribution unit (not the battery backup unit).
1. On the power distribution unit, press the power reset CB for that drawer.
 2. Ensure that the power select switch for that drawer is set to 1.
 3. Set the key mode switch to the Service position.
 4. Press the Power On button.

Did the Power light come on and stay on?

NO Go to Step 5.

YES If the problem is located, correct it. If the drawer was originally connected to a battery backup unit, go to Step 3.

Step 3

(from Step 2)

1. Press the Power Off button.
2. Set the Master CB1 to Off.
3. Set the Master CB2 to Off.
4. Plug the power cable into the battery backup unit.
5. Set the Master CB1 to On.
6. Set the Master CB2 to On.
7. Press the Power On button.

Did the Power light come on and stay on?

NO Go to Step 4.

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

Step 4

(from Step 3)

1. Press the Power Off button.
2. Set the Master CB1 to Off.
3. Set the Master CB2 to Off.
4. Plug the power cable into another battery backup unit outlet.
5. Set the Master CB1 to On.
6. Set the Master CB2 to On.
7. Press the Power On button.

Did the Power light come on and stay on?

NO Go to the “MAP 1520: Power Distribution Unit – Power MAP” of the *7015 Installation and Service Guide*.

YES Exchange the defective fuse by performing the following steps:

- a. Set the Master CB2 circuit breaker to Off.
- b. Set the Master CB1 circuit breaker to Off.
- c. Disconnect all power cables from the battery backup unit
- d. Move the fuse safety cover to the left.
- e. Push the fuse cap in while turning it counterclockwise.
- f. Exchange the fuse and go to “MAP 0410: Repair Checkout” in the *Common Diagnostics and Service Guide*.

Step 5

(from Step 2)

1. Press the Power Off button located on the CPU drawer.
2. Unplug the power cable from the CPU drawer.
3. Disconnect the power cable connectors from the diskette drive, the CD-ROM, and any other media devices installed.
4. Disconnect the four power cable connectors P13, P14, P15, and P16 (P16 might not be used) from the CPU planar. Refer to page 1-4 for the connector location.
5. Remove the front fan assembly.
6. Disconnect the two power cable connectors (P40 and P41) from the I/O planar. Refer to page 1-4 for the connector location.
7. Install the front fan assembly.
8. Plug the power cable into the CPU drawer.
9. Press the Power On button located on the CPU drawer.

Do the fans run continuously?

- | | |
|------------|---------------|
| NO | Go to Step 6. |
| YES | Go to Step 8. |

Step 6

(from Step 5)

Did any of the fans start rotating and then stop?

- | | |
|------------|--|
| NO | Disconnect the operator panel ribbon cable connector from the power supply; this should start the power supply and all the fans.

If the power supply starts working, exchange the operator panel, and then go to "MAP 0410: Repair Checkout" in the <i>Common Diagnostics and Service Guide</i> .

If the power supply does not start working, exchange the power supply, and then go to "MAP 0410: Repair Checkout" in the <i>Common Diagnostics and Service Guide</i> . |
| YES | Go to Step 7. |

Step 7

(from Step 6)

This problem can be caused by a defective fan or power supply. The power supply does not stay on if it fails to sense the rotation of the cooling fans.

1. Press the Power Off button.
2. Exchange a fan.
3. Press the Power On button.

Do all of the fans run continuously?

NO If you have not tested all the fans, including the power supply fan, repeat this step.

If you have tested all the fans, exchange the power supply, and then go to "MAP 0410: Repair Checkout" in the *Common Diagnostics and Service Guide*.

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

Step 8

(from Step 5)

1. Press the Power Off button.
2. Connect the four power cable connectors P13, P14, P15, and P16 (if used) to the CPU planar.
3. Press the Power On button.

Do all of the fans run continuously?

NO Go to Step 9.

YES Go to Step 10.

Step 9

(from Step 8)

1. Press the Power Off button.
2. Record the slot numbers of the memory cards.
3. Remove one memory card or optional device from the CPU planar.
4. Ensure that the power has been off for at least 15 seconds, and then press the Power On button.

Do all of the fans run continuously?

NO If all of the cards have not been removed, repeat this step.

If all of the cards have been removed, exchange the CPU planar, and then go to "MAP 0410: Repair Checkout" in the *Common Diagnostics and Service Guide*.

YES The last memory card or option that you removed is defective. Exchange the card or option, and then go to "MAP 0410: Repair Checkout" in the *Common Diagnostics and Service Guide*.

Step 10

(from Step 8)

1. Press the Power Off button.
2. Connect the two power connectors (P40 and P41) to the I/O planar.
3. Press the Power On button.

Is the Power light on?

NO Go to Step 11.

YES Go to Step 23.

Step 11

(from Step 10)

1. Press the Power Off button.
2. Record the slot numbers of the adapters on the I/O planar.
3. Remove one of the adapters from the I/O planar.
4. Ensure that the power has been off for at least 15 seconds, and then press the Power On button.

Is the Power light on?

NO If all of the adapters have not been removed, repeat Step 11.

 If all of the adapters have been removed, go to Step 12.

YES Go to Step 17.

Step 12

(from Step 11)

1. Press the Power Off button.
2. Disconnect the operator panel cable connector (P39) from the I/O planar.
3. Press the Power On button.

Do all of the fans run continuously?

NO Go to Step 13.

YES Exchange the operator panel, and then go to "MAP 0410: Repair Checkout" in the *Common Diagnostics and Service Guide*.

Step 13

(from Step 12)

1. Press the Power Off button.
2. Label, record, and then disconnect any external cables from the standard I/O planar.
3. Press the Power On button, and then wait 10 seconds.

Is the Power light on?

NO Go to Step 14.

YES Go to Step 15.

Step 14

(from Step 13)

1. Press the Power Off button.
2. Remove the standard I/O planar from the system unit.
3. Press the Power On button.

Is the Power light on?

- NO** Exchange the I/O planar, and then go to "MAP 0410: Repair Checkout" in the *Common Diagnostics and Service Guide*.
- YES** Exchange the standard I/O planar, and then go to "MAP 0410: Repair Checkout" in the *Common Diagnostics and Service Guide*.

Step 15

(from Step 13)

1. Connect one of the cables that you removed from the standard I/O planar.
2. Ensure that the power has been off for at least 15 seconds, and then press the Power On button.

Is the Power light on?

- NO** Go to Step 16.
- YES** Repeat this step until you find the defective cable or device. Exchange the cable or device, and then go to "MAP 0410: Repair Checkout" in the *Common Diagnostics and Service Guide*.

Step 16

(from Step 15)

1. Press the Power Off button.
2. Remove the device that is attached to the cable.
3. Press the Power On button.

Is the Power light on?

- NO** Exchange the cable, and then go to "MAP 0410: Repair Checkout" in the *Common Diagnostics and Service Guide*.
- YES** Exchange the device, and then go to "MAP 0410: Repair Checkout" in the *Common Diagnostics and Service Guide*.

Step 17

(from Step 11)

Look at the adapter you just removed.

Are, or were, there any cables attached to the adapter?

NO Go to Step 18.

YES Go to Step 20.

Step 18

(from Step 17)

Some adapters may contain additional FRUs.

Does the failing adapter have any additional FRUs?

NO Exchange the failing adapter, and then go to “MAP 0410: Repair Checkout” in the *Common Diagnostics and Service Guide*.

YES Go to Step 19.

Step 19

(from Step 18)

1. Remove the additional FRUs.
2. Press the Power Off button.
3. Reinstall the failing adapter.
4. Press the Power On button, and then wait 10 seconds.

Is the Power light on?

NO Exchange the adapter, and then go to “MAP 0410: Repair Checkout” in the *Common Diagnostics and Service Guide*.

YES One of the additional FRUs that you removed is failing.

If you removed only one FRU, exchange it.

If you removed more than one FRU, replace them, one at a time, until you identify the failing FRU. Exchange the failing FRU, and then go to “MAP 0410: Repair Checkout” in the *Common Diagnostics and Service Guide*.

Step 20

(from Step 17)

1. Press the Power Off button.
2. Disconnect any cables that are attached to the adapter, and then replace the adapter.
3. Press the Power On button.

Is the Power light on?

- NO** Exchange the adapter, and then go to “MAP 0410: Repair Checkout” in the *Common Diagnostics and Service Guide*.
- YES** Go to Step 21.

Step 21

(from Step 20)

1. Press the Power Off button.
2. Connect a cable to the adapter.
3. Press the Power On button, and then wait 10 seconds.

Is the Power light on?

- NO** Go to Step 22.
- YES** If all of the cables are not connected, then repeat this step.
- If all of the cables are connected, go to “MAP 0410: Repair Checkout” in the *Common Diagnostics and Service Guide*.

Step 22

(from Step 21)

1. Press the Power Off button.
2. Starting with the devices, disconnect a device or cable connector.
3. Press the Power On button.

Is the Power light on?

- NO** Repeat this step until all of the devices and cables have been disconnected.
- If you have disconnected all of the devices and cables, exchange the adapter, and then go to “MAP 0410: Repair Checkout” in the *Common Diagnostics and Service Guide*.
- YES** Exchange the device. If the device is not the failing FRU, exchange the cable; and then go to “MAP 0410: Repair Checkout” in the *Common Diagnostics and Service Guide*.

Step 23

(from Step 10)

1. Press the Power Off button.
2. Reconnect the power cables to the diskette drive, CD-ROM, or other media devices.
3. Press the Power On button.

Is the Power light on?

- | | |
|------------|--|
| NO | Exchange the last device that you connected, and then go to "MAP 0410: Repair Checkout" in the <i>Common Diagnostics and Service Guide</i> . |
| YES | Repeat this step until all of the power cables are connected to the devices, and then go to "MAP 0410: Repair Checkout" in the <i>Common Diagnostics and Service Guide</i> . |

MAP 1540: CPU Drawer – Minimum Configuration

Note: If a CD-ROM drive is used to perform diagnostics, the CD-ROM drive must be installed in the 7015 CPU Drawer.

This procedure is used to locate defective field replaceable units (FRUs) not found by normal diagnostics. For this procedure, diagnostics are run on a minimum system configuration. If the minimum system configuration does not work, the FRUs are exchanged one at a time until the failing FRU is identified. If the system does work, FRUs are added to the minimum configuration until the failing FRU is identified.

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

- CPU planar, I/O planar, standard I/O planar, and three-digit display panel.

If this configuration is working correctly, the number 213 is displayed in the three-digit display. Any other response indicates that one of the FRUs in this configuration is failing.

- CPU planar, I/O planar, standard I/O planar, three-digit display panel, and memory cards.

If this configuration is working correctly, two or more numbers with values between 221 and 296 are displayed alternately in the three-digit display. Any other response indicates that one of the FRUs in this configuration is failing.

- CPU planar, I/O planar, standard I/O planar, three-digit display panel, memory cards, diskette drive or CD-ROM drive, and a terminal attached to serial port 1.

If this configuration is working correctly, the DIAGNOSTIC OPERATING INSTRUCTIONS frame is displayed when the diagnostics are loaded. Any other response indicates that one of the FRUs in this configuration is failing.

Step 1

1. Ensure that the diagnostics and the operating system are shutdown.
2. Turn the key mode switch to the Service position.
3. Press the Power Off button located on the CPU drawer.
4. Insert the first diagnostic diskette into the diskette drive, or insert the diagnostic CD-ROM disc into the CD-ROM drive.
5. Press the Power On button located on the CPU drawer.

6. Find the symptom in the following table that best describes the problem, and then perform the associated task.

Information in Three-Digit Display	Conditions	Task
Nothing	Diagnostic Operating Screen is displayed.	Go to Step 15.
c07	The diskette drive "In Use" light is on.	Insert the next diagnostic diskette. Wait for one of the other symptoms in this table to occur.
888 flashing		Go to Step 2.
Two or more numbers with values between 221 and 296 are displayed alternately.	The first diagnostic diskette is loaded.	Go to Step 7.
	The diagnostic CD-ROM disc is loaded.	Go to Step 9.
c31	Follow the instructions on the display to select your console display. Wait for one of the other symptoms in this table to occur.	
c05	The diskette drive "In Use" light is on.	The diagnostic diskette is probably bad. Insert the same diskette from a duplicate diagnostic set. If the duplicate diskette causes the same symptom, go to Step 7.
299 or less	Digits remain on (not flashing) for more than three minutes and the Power light is on.	Go to Step 2.
300 or greater	Digits remain on (not flashing) for more than three minutes, the Power light is on, and the first diagnostic diskette is loaded.	Go to Step 7.
	Digits remain on (not flashing) for more than three minutes, the Power light is on, and the diagnostic CD-ROM disc is loaded.	Go to Step 9.
Any symptom not previously listed.		Go to Step 2.

Step 2

(from Step 1)

Use the following steps when the system stops and a number with a value less than 300 or a flashing 888 is displayed in the three-digit display.

1. Press the Power Off button.
2. Record the slot numbers of the adapters located on the I/O planar, and then label and record the location of any cables attached to the adapters.
3. Remove all adapters from the I/O planar.
4. Disconnect the 3.5-inch diskette drive connector (P59) from the standard I/O planar.
5. Disconnect any cables connected to connectors S1, S2, and P on the rear of the CPU drawer.
6. Record the slot numbers of the memory cards, and then remove all the memory cards from the CPU planar.
7. Press the Power On button.
8. Wait for one of the following conditions to occur:
 - The system stops for at least three minutes with a constant number showing in the three-digit display.
 - A flashing 888 is displayed in the three-digit display.
 - The Power light does not come on and stay on.

Is 213 displayed in the three-digit display?

NO Go to Step 3.

YES Go to Step 4.

Step 3

(from Step 2)

One of the FRUs remaining in the CPU drawer is defective.

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

- a. I/O planar
- b. CPU planar
- c. Standard I/O planar
- d. Power supply.

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

1. Press the Power Off button.
2. Exchange one of the FRUs in the list.
3. Press the Power On button.

Were you able to identify the defective FRU?

- | | |
|------------|--|
| NO | Reinstall the original FRU.

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

If all the FRUs have been exchanged, call service support for assistance |
| YES | Go to "Map 0410: Repair Checkout" in the <i>Common Diagnostics and Service Guide</i> . |

Step 4

(from Step 2)

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

1. Press the Power Off button.
2. Install a pair of memory cards. refer to page 3-6 for information about installing memory cards.
3. Press the Power On button.
4. Wait for one of the following conditions to occur:
 - The system stops and two or more numbers with values between 221 and 296 are displayed alternately in the three-digit display.
 - The system stops for at least three minutes with a constant number showing in the three-digit display and the power light is on.
 - The system stops and a flashing 888 is displayed in the three-digit display.
 - The Power light does not come on, or the Power light comes on but does not stay on.

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

NO Go to Step 5.

YES Repeat this step until all of the memory cards are installed and tested. After all of the memory is installed and tested, press the Power Off button

To use the diagnostic diskettes,

1. Connect the 3.5-inch diskette drive connector (P59) to the standard I/O planar, and then go to Step 7, substep 5.

To use the diagnostic CD-ROM disc, do the following:

1. Install the SCSI adapter to which the internal SCSI cable was connected, and then connect the internal SCSI cable to the SCSI adapter.
2. The media drawer SCSI cable should remain disconnected from the SCSI adapter.
3. Disconnect all internal SCSI devices except the connection from the CD-ROM drive to the internal SCSI cable, and then go to Step 9, substep 8.

Step 5

(from Step 4)

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

1. Press the Power Off button. Using a pair of operational SIMMs for the type of memory card used, install the pair of SIMMs in locations 1 and 2 on the suspected memory card
2. Press the Power On button. If operational, the system will stop and two or more numbers with values between 221 and 296 are displayed alternately in the three-digit display.
3. If the system still fails, continue testing the SIMMs in pairs (locations 3 and 4, 5 and 6, 7 and 8) until the system does not fail, or all the SIMMs on the suspected memory card have been tested.

Were you able to isolate the failed pair of SIMMs?

- NO** Exchange the memory cards. If this does not correct the problem, go to Step 6.
- YES** Go to "Map 0410: Repair Checkout" in the *Common Diagnostics and Service Guide*.

Step 6

(from Step 5)

One of the FRUs in the CPU drawer is defective.

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

1. CPU planar
2. Power supply.

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

1. Press the Power Off button.
2. Exchange one of the FRUs in the list.
3. Press the Power On button.

Were you able to identify the defective FRU?

- NO** Reinstall the original FRU.
- Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.
- If the symptom did not change and all the FRUs have been exchanged, call your service support person for assistance.
- YES** Go to "Map 0410: Repair Checkout" in the *Common Diagnostics and Service Guide*.

Step 7

(from Step 1 and 4)

1. Press the Power Off button.
2. Record the slot numbers of the adapters located on the I/O planar, and then label and record the location of any cables attached to the adapters.
3. Remove all adapters from the I/O planar.
4. Disconnect any cables connected to connectors S1, S2, and P on the rear of the CPU drawer.
5. Insert the first diagnostic diskette into the 3.5-inch diskette drive.
6. Press the Power On button.
7. Wait for one of the following conditions to occur:
 - The In Use light on the 3.5-inch diskette drive is on and c07 is displayed in the three-digit display.
 - The system stops for at least three minutes, a constant number other than c31 is displayed in the three-digit display, and the Power light is on.
 - The system stops and two or more numbers with values between 221 and 296 are displayed alternately in the three-digit display.
 - The system stops and a flashing 888 is displayed in the three-digit display.
 - The Power light does not come on, or the Power light comes on but does not stay on.

Is the In Use light on the 3.5-inch diskette drive on and is c07 displayed in the three-digit display?

NO

One of the FRUs in the CPU drawer is defective.

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

1. Diskette drive
2. Redrive card (if present)
3. 3.5-inch diskette drive data signal cable
4. Standard I/O planar
5. I/O planar
6. CPU planar
7. Power supply.

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged. If all the FRUs have been exchanged and the problem still exist, call your service support person for assistance.

YES

Go to Step 8.

Step 8

(from Step 7)

1. Press the Power Off button.
2. Install the SCSI adapter to which the internal SCSI cable was connected.
3. Connect the internal SCSI cable to the SCSI adapter.
4. Disconnect all internal SCSI devices except the connection from the CD-ROM drive to the internal SCSI cable.
5. Ensure the media drawer SCSI cable remains disconnected from the SCSI adapter.
6. Insert the first diagnostic diskette into the diskette drive.
7. Press the Power On button.
8. Wait for one of the following conditions to occur:
 - The In Use light on the 3.5-inch diskette drive is on and c07 is displayed in the three-digit display.
 - The system stops for at least three minutes and a constant number other than c31 is displayed in the three-digit display and the Power light is on.
 - The system stops and two or more numbers with values between 221 and 296 are displayed alternately in the three-digit display.
 - The system stops and a flashing 888 is displayed in the three-digit display.
 - The Power light does not come on, or the Power light comes on but does not stay on

Is the In Use light on the 3.5-inch diskette drive on and is c07 displayed in the three-digit display?

NO

One of the FRUs in the CPU drawer is defective.

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

1. Internal SCSI cable
2. SCSI adapter
3. CD-ROM drive
4. I/O planar
5. CPU planar
6. Power supply.

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

If all the FRUs have been exchanged and the problem still exist, call your service support person for assistance.

YES

Go to Step 11.

Step 9

(from Steps 1 and 4)

1. Press the Power Off button.
2. Record the slot numbers of the adapters, located on the I/O planar, and then label and record the location of any cables connected to the adapters.
3. Remove all adapters from the I/O planar except the SCSI adapter to which the internal SCSI cable is connected.
4. Disconnect all SCSI devices except the connection from the CD-ROM drive to the internal SCSI cable.
5. Disconnect the signal cable for the media drawer from the SCSI connector on the rear of the CPU drawer.
6. Disconnect the 3.5-inch diskette drive connector (P59) from the standard I/O planar.
7. Disconnect any cables connected to connectors S1, S2, and P on the rear of the CPU drawer.
8. Insert the first diagnostic CD-ROM disc into the CD-ROM drive.
9. Press the Power On button.
10. Wait for one of the following conditions to occur:
 - The system stops and c31 is displayed in the three-digit display.
 - The system stops for at least three minutes, a constant number other than c31 is displayed in the three-digit display, and the Power light is on.
 - The system stops and two or more numbers with values between 221 and 296 are displayed alternately in the three-digit display.
 - The system stops and a flashing 888 is displayed in the three-digit display.
 - The Power light does not come on, or the Power light comes on but does not stay on.

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

NO

One of the FRUs in the CPU drawer is defective.

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

1. Internal SCSI cable
2. SCSI adapter
3. CD-ROM drive
4. I/O planar
5. CPU planar
6. Power supply.

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

If all the FRUs have been exchanged and the problem still exist, call your service support person for assistance.

YES

Go to Step 10.

Step 10

(from Step 9)

1. Press the Power Off button.
2. Connect the signal cable for the 3.5-inch diskette drive (P59) to the standard I/O planar.
3. Insert the diagnostic CD-ROM disc into the CD-ROM drive.
4. Press the Power On button.
5. Wait for one of the following conditions to occur:
 - The system stops and c31 is displayed in the three-digit display.
 - The system stops for at least three minutes and a constant number other than c31 is displayed in the three-digit display and the Power light is on.
 - The system stops and two or more numbers with values between 221 and 296 are displayed alternately in the three-digit display.
 - The system stops and a flashing 888 is displayed in the three-digit display.
 - The Power light does not come on, or the Power light comes on but does not stay on.

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

NO One of the FRUs in the CPU drawer is defective.

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

1. 3.5-inch diskette drive
2. Redrive card (if present)
3. 3.5-inch diskette drive data signal cable
4. Standard I/O planar
5. I/O planar
6. CPU planar
7. Power supply.

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged. If all the FRUs have been exchanged and the problem still exist, call your service support person for assistance.

YES Go to Step 11.

Step 11

(from Step 8 and 10)

1. Press the Power Off button.
2. Connect the signal and power connectors to the SCSI devices in the CPU drawer.
3. Insert the first diagnostic diskette into the diskette drive or the diagnostic CD-ROM disc into the CD-ROM drive.
4. Press the Power On button.
5. Wait for one of the following conditions to occur:
 - The system stops and two or more numbers with values between 221 and 296 are displayed alternately in the three-digit display.
 - The system stops for at least three minutes and a constant number other than c31 is displayed in the three-digit display and the Power light is on.
 - The system stops and a flashing 888 is displayed in the three-digit display.
 - The system stops and c07 is displayed in the three-digit display.
 - The system stops and c31 is displayed in the three-digit display.
 - The Power light does not come on, or the Power light comes on but does not stay on.

Did the system stop and is c07 or c31 displayed in the three-digit display?

NO

One of the FRUs in the CPU drawer is defective.

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

1. Optional SCSI devices in the CPU drawer
2. Internal SCSI cable
3. SCSI adapter
4. I/O planar
5. CPU planar
6. Power supply.

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

If all the FRUs have been exchanged and the problem still exist, call your service support person for assistance.

YES

Go to Step 12.

Step 12

(from Step 11)

1. Press the Power Off button.
2. Connect the cables that were connected into connectors S1, S2, and P on the rear of the CPU drawer.
3. Insert the first diagnostic diskette into the diskette drive, or insert the diagnostic CD-ROM disc into the CD-ROM drive.
4. Press the Power On button.
5. Wait for one of the following conditions to occur:
 - The `DIAGNOSTIC OPERATING INSTRUCTIONS` screen is displayed.
 - The system stops and `c31` is displayed in the three-digit display.
 - The In Use light on the 3.5-inch diskette drive is on and `c07` is displayed in the three-digit display. Insert the next diagnostic diskette. Continue this substep until all diskettes are loaded or `c31` is displayed in the three-digit display.
 - The system stops and two or more numbers with values between 221 and 296 are displayed alternately in the three-digit display.
 - A flashing `888` is displayed in the three-digit display.
 - The Power light does not come on and stay on.

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

- | | |
|------------|--|
| NO | Go to the Problem Determination procedures (test procedures) for the devices attached to the serial/parallel ports (S1, S2, P) and test those devices. If a problem is found, follow the procedures for correcting the problem on that device. |
| YES | Go to Step 13. |

Step 13

(from Step 12)

1. Press the Power Off button.
2. Connect the signal cable for the media drawer to the SCSI adapter.
3. Insert the first diagnostic diskette into the diskette drive, or insert the diagnostic CD-ROM disc into the CD-ROM drive.
4. Press the Power On button.
5. Wait for one of the following conditions to occur:
 - The **DIAGNOSTIC OPERATING INSTRUCTIONS** screen is displayed.
 - The system stops and **c31** is displayed in the three-digit display.
 - The **In Use** light on the 3.5-inch diskette drive is on and **c07** is displayed in the three-digit display. Insert the next diagnostic diskette. Continue this substep until all diskettes are loaded or **c31** is displayed in the three-digit display.
 - The system stops and two or more numbers with values between 221 and 296 are displayed alternately in the three-digit display.
 - The system stops and a flashing **888** is displayed in the three-digit display.
 - The Power light does not come on, or the Power light comes on but does not stay on.

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

NO

Exchange the SCSI adapter.

If this does not correct the problem, there is a failure within the SCSI drawer or one of the devices installed in the SCSI drawer has failed.

Go to Chapter 2 of the *7015 SCSI Drawers Installation and Service Guide*.

YES

Go to Step 14.

Step 14

(from Step 13)

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

1. Press the Power Off button.
2. Install a FRU (adapter).
3. Insert the first diagnostic diskette into the diskette drive, or insert the diagnostic CD-ROM disc into the CD-ROM drive.
4. Press the Power On button.
5. Wait for one of the following conditions to occur:
 - The `DIAGNOSTIC OPERATING INSTRUCTIONS` screen is displayed.
 - The system stops and `c31` is displayed in the three-digit display.
 - The In Use light on the 3.5-inch diskette drive is on and `c07` is displayed in the three-digit display. Insert the next diagnostic diskette. Continue this substep until all diskettes are loaded or `c31` is displayed in the three-digit display.
 - The system stops and two or more numbers with values between 221 and 296 are displayed alternately in the three-digit display.
 - A flashing `888` is displayed in the three-digit display.
 - The Power light does not come on and stay on.

Is the `DIAGNOSTIC OPERATING INSTRUCTIONS` frame displayed, or is `c31` displayed in the three-digit display?

- NO** The last FRU (adapter) you installed is defective. Exchange the defective FRU (adapter).
Repeat this step until the FRUs are installed.
- If all the FRUs are installed, in the following order exchange the FRUs that have not been exchanged:
1. I/O planar
 2. Standard I/O planar
 3. CPU planar
 4. Power supply.
- If all the FRUs have been exchanged and the problem still exist, call your service support person for assistance.
- YES** Repeat this step until all of the FRUs (adapters) are installed.
Go to "MAP 0410: Repair Checkout: in the *Common Diagnostics and Service Guide*.

Step 15

(from Step 1)

The system loaded successfully from the diskettes or CD-ROM disc after failing to load from the disk. Test the SCSI controller and all the attached SCSI devices.

Were you able to identify the failing FRU?

NO In the following order, exchange the FRUs that have not been exchanged:

1. I/O planar
2. Standard I/O planar
3. CPU planar
4. Power supply.

If all the FRUs have been exchanged, call your service support person for assistance.

YES Exchange the defective FRU.

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

Chapter 3. Removal and Replacement Procedures

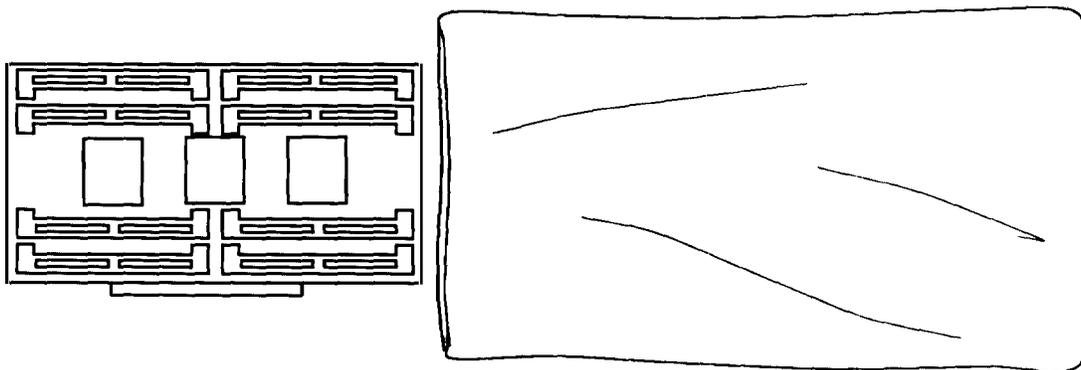
This chapter contains information about removing and replacing various field replaceable units and parts.

Handling Static-Sensitive Devices

Warning: Adapters, boards, diskette drives, and disk drives can be damaged by electrostatic discharge. These devices are wrapped in antistatic bags to prevent this damage.

Take the following precautions:

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



Antistatic Bag

Service Position

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

CAUTION:

When the drawer is extended, its weight can turn over a rack that is not steady. Before you pull the drawer out of the rack, ensure that a rack stabilizer is attached to the bottom front of the rack.

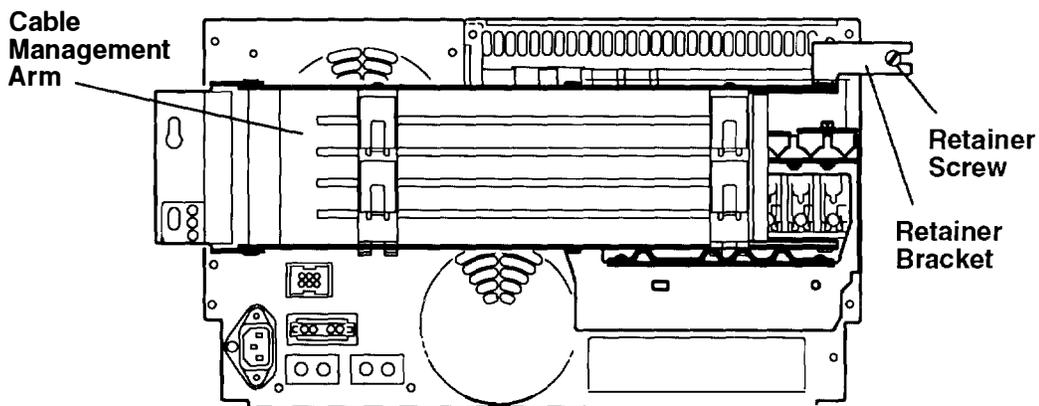
Do not pull out more than one drawer at a time. The rack can turn over if you pull out more than one drawer at a time.

The stabilizer must be firmly attached to the bottom front of the rack to prevent the rack from turning over when the drawers are pulled out of the rack. Do not pull out or install any drawer or feature if the stabilizer is not attached to the rack.

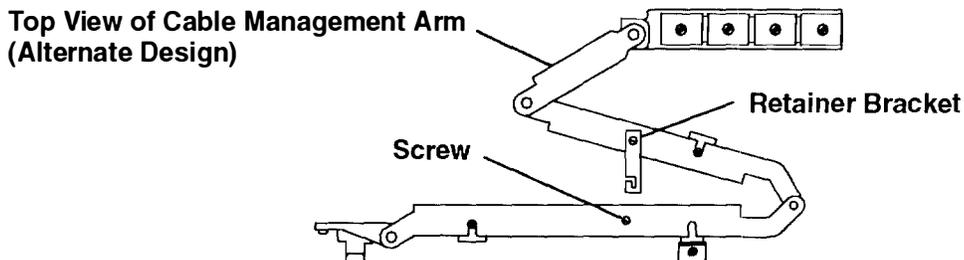
Note: There are two types of CPU drawers available for the rack. Some parts in the CPU drawer have an alternate design or mounting design.

1. Do the “Power-Off Procedure” in Chapter 3 of the *7015 Installation and Service Guide*.
2. An alternate design for the cable management arm may be installed in the CPU drawer

If a retainer bracket is attached to the rack, loosen the retainer screw so that the cable management arm moves freely when the drawer is extended.

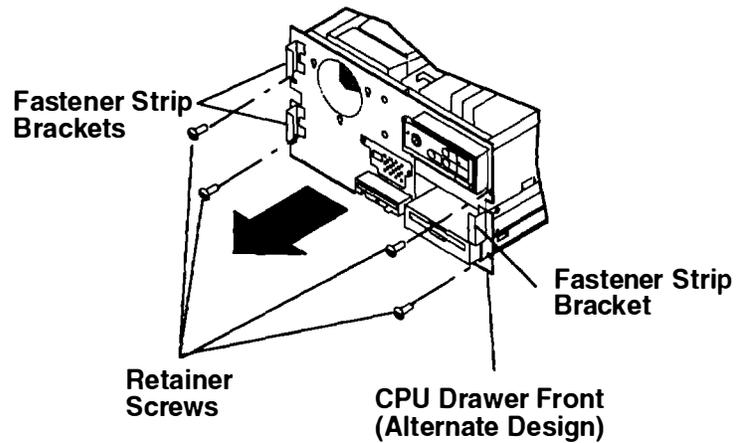
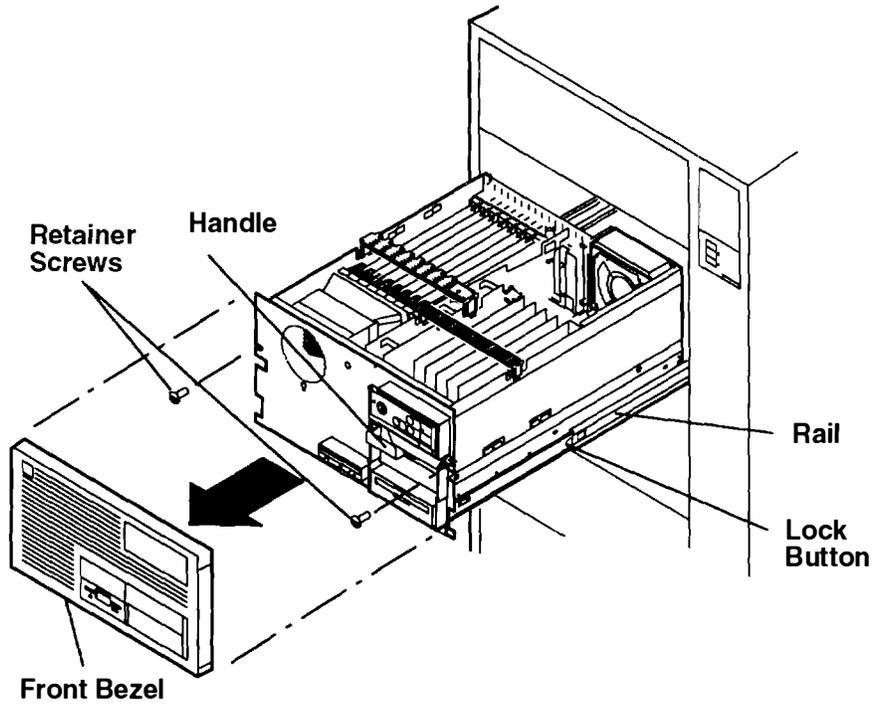


If a retainer bracket is attached to the top of the cable management arm, loosen the screw closest to you and then disengage the bracket from the screw.



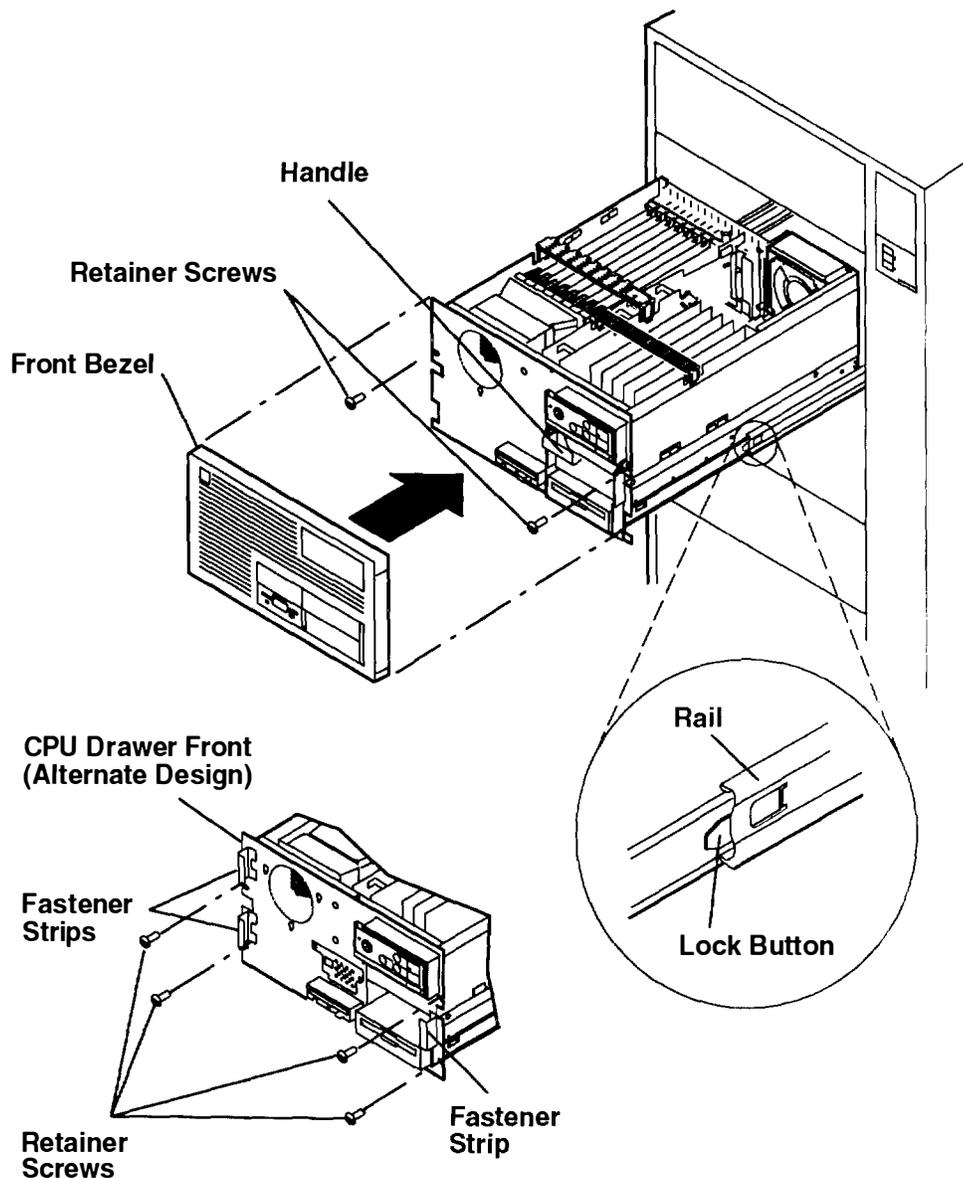
3. Grasp the front bezel on each side and pull it away from the drawer

4. There are two types of CPU drawers available for the rack. Remove either two retainer screws or four retainer screws from the front of the drawer.
5. Grasp the handle and pull the drawer out until the lock buttons on the rails lock. If your machine does not have a handle, grasp a fastener strip bracket on each side of the drawer and pull the drawer out until the lock buttons on the rail lock.



Operating Position

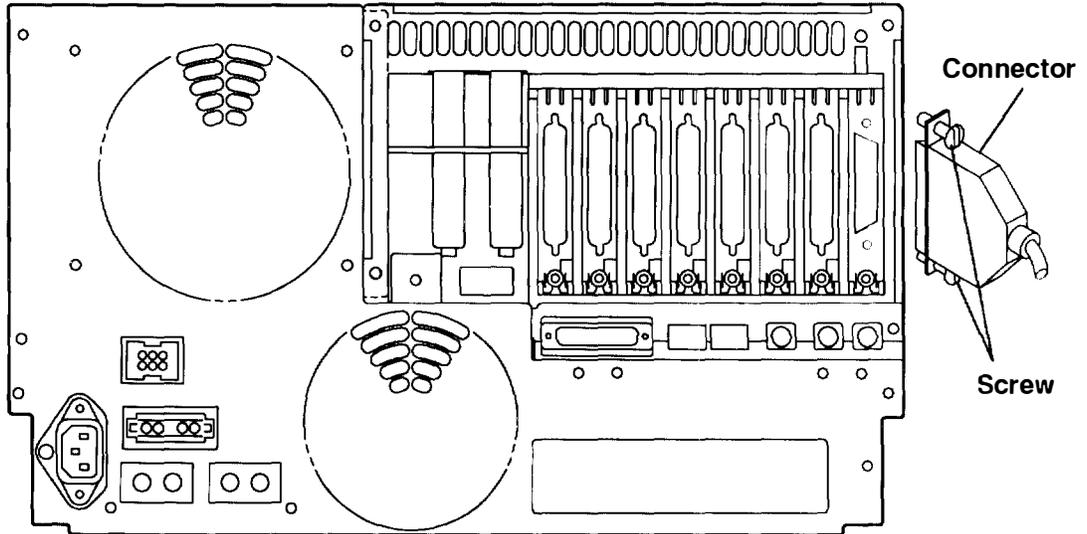
1. Press the lock buttons on the rails, and push the drawer into the system unit.
2. Install the retainer screws on the front of the drawer. One type of CPU drawer front has two retainer screws, and an alternate type has four retainer screws.
3. Push the front bezel onto the front of the drawer. One type of front bezel attaches to the CPU drawer with two spring clips, and an alternate type attaches to the CPU drawer front with three fastener strips.
4. Do the "Power-On Procedure" in Chapter 3 of the *7015 Installation and Service Guide*.



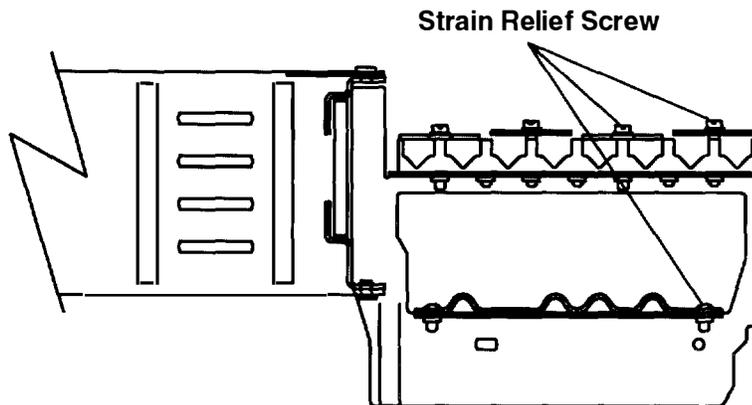
Adapter Cable

Removal

1. Do the "Power-Off Procedure" in Chapter 3 of the *7015 Installation and Service Guide*.
2. Loosen the screws on the cable connector in the rear of the CPU drawer.



3. Loosen the screw on the strain relief, and then disconnect the device signal cable from the adapter.



Replacement

Replace in the reverse order, and then do the "Power-On Procedure" in Chapter 3 of the *7015 Installation and Service Guide*.

Adapter or Memory Card

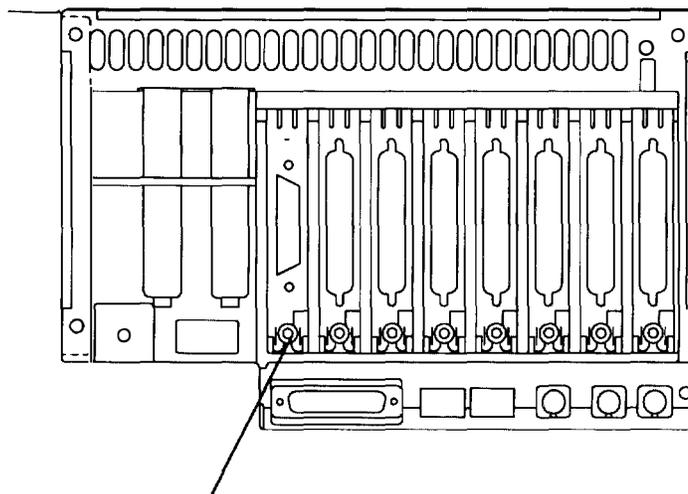
Note: Refer to "Handling Static-Sensitive Devices" on page 3-1 before removing or installing adapters.

Removal

If you are removing a memory card only, go to Step 3 of this procedure; otherwise, begin with step 1.

1. If a cable is attached to the adapter you are removing, do the "Adapter Cable" procedure on page 3-5.
2. Loosen the thumbscrew that holds the adapter in place.

Note: If you are doing this procedure as part of the "I/O and CPU Planar Assembly" removal procedure, loosen all of the thumbscrews.



Thumbscrew

3. Do the "Service Position" procedure on page 3-2.
4. Remove the retainer screw from the adapter or memory card retainer.
5. Press one of the tabs on the retainer with a flat-blade screwdriver, and then lift the retainer out of the retainer brackets.
6. Disconnect any internal cables attached to the adapter.
7. Record the position of the adapter or memory card, and then remove it from the drawer.
8. If you are removing a single in-line memory module (SIMM) from the memory card, refer to the "Memory SIMM" procedure on page 3-11.

Serial Optical Channel Converter

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

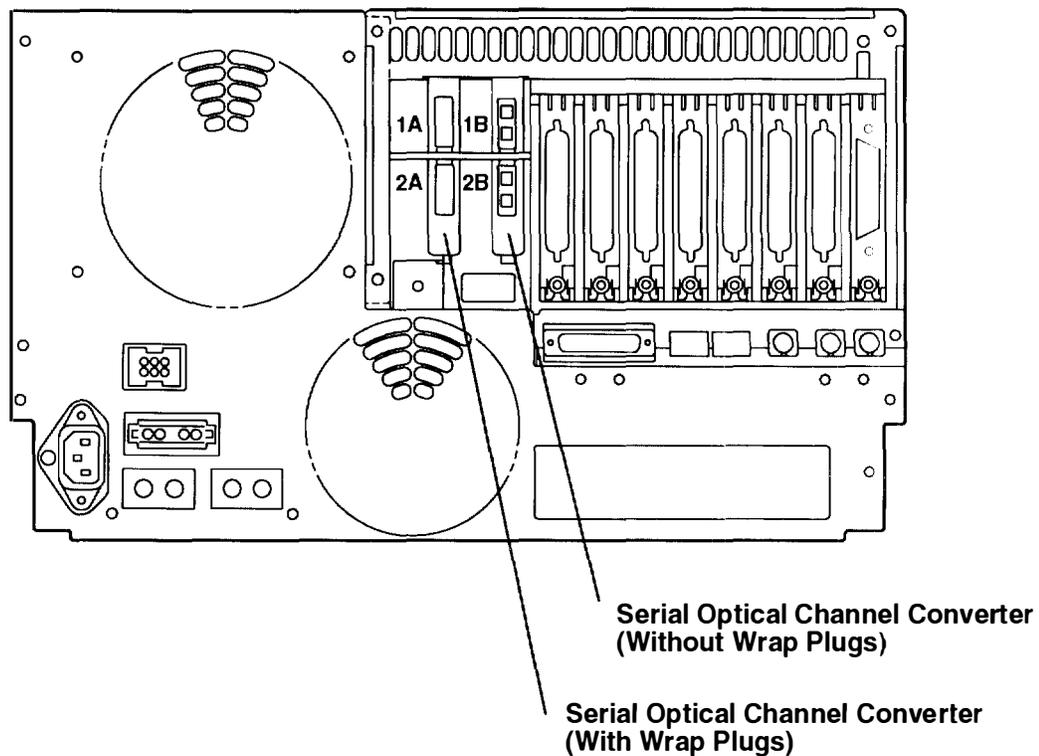
1. Do the "Power-Off Procedure" in Chapter 3 of the *7015 Installation and Service Guide*.

Note: If only one serial optical channel converter is installed, it will be installed in position 1B/2B.

2. Record the location of the fiber optic cable and then disconnect it from the serial optical channel converter.
3. If any wrap plugs are present on the serial optical channel converters, record the locations and remove the wrap plugs before removing the serial optical channel converters.

To remove a wrap plug, grasp it and then pull it out of the slot.

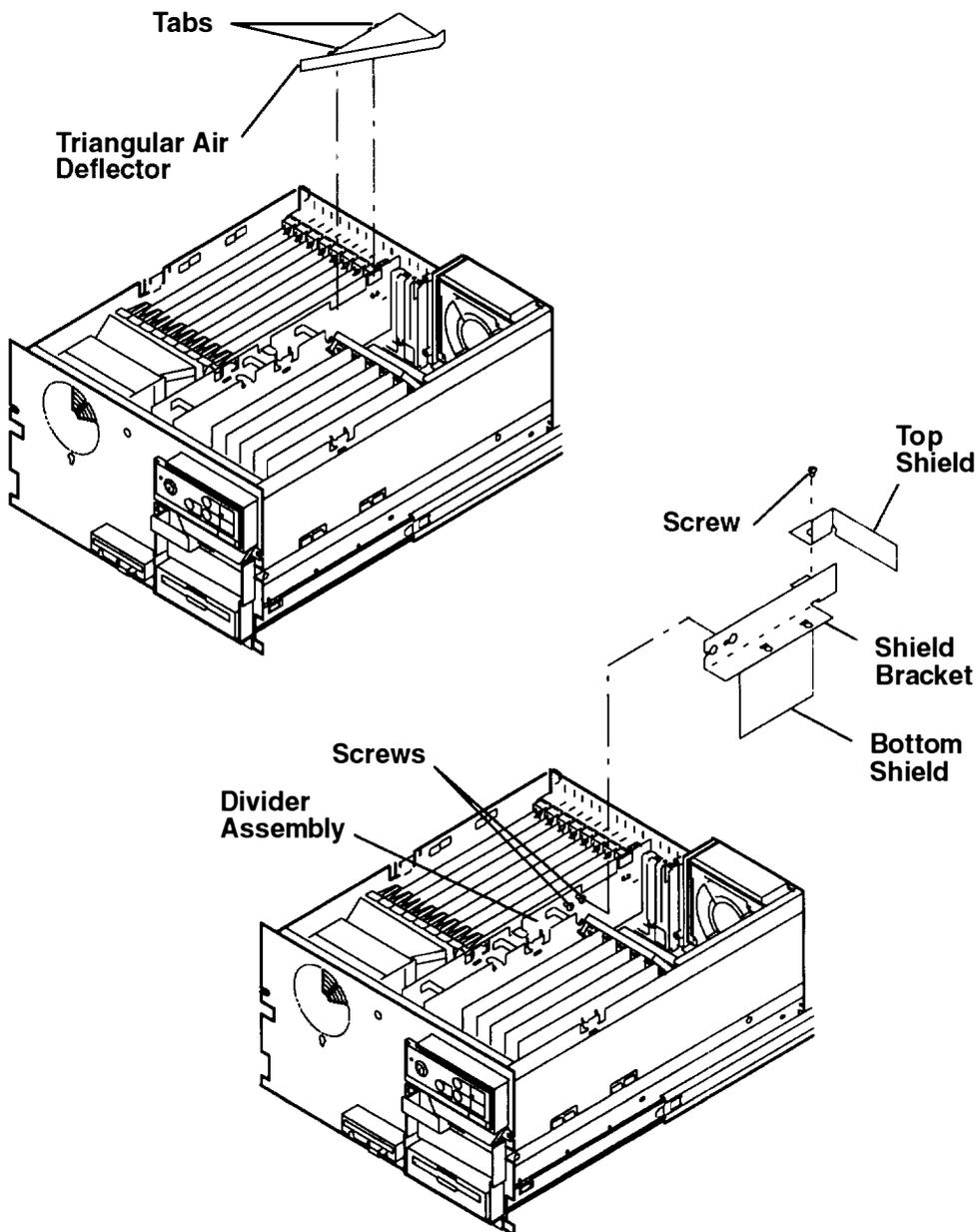
Rear of CPU Drawer



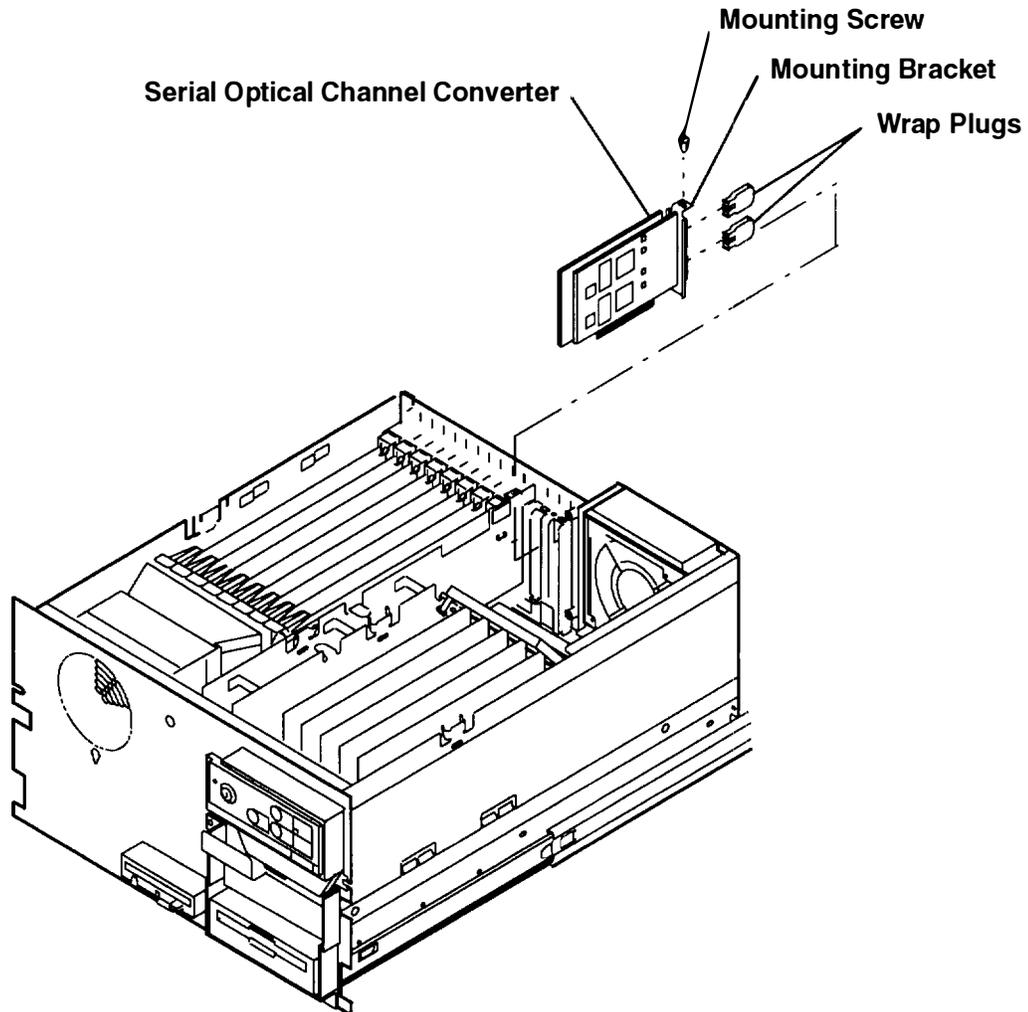
4. Do the "Service Position" procedure on page 3-2.
5. If a triangular air deflector is present on your machine, remove it by pressing both tabs on the air deflector with a flat-blade screwdriver; otherwise go to Step 6.

Note: If a triangular air deflector is not present on your machine and you are removing only the serial optical channel converter in the 1A/2A position, go to Step 6.

6. If a triangular air deflector is not present on your machine, do the following:
 - a. Remove the screw holding the top shield, and then remove the shield.
 - b. Loosen the two screws holding the shield bracket to the divider assembly, and then slide the bracket towards the front of the CPU drawer until the bracket disengages
 - c. Remove the shield bracket and the bottom shield.



7. Remove the mounting screw from the bracket on the serial optical channel converter.
8. Grasp the top edge of the serial optical channel converter near the mounting bracket and then pull the the serial optical channel converter out of the slot.



Replacement

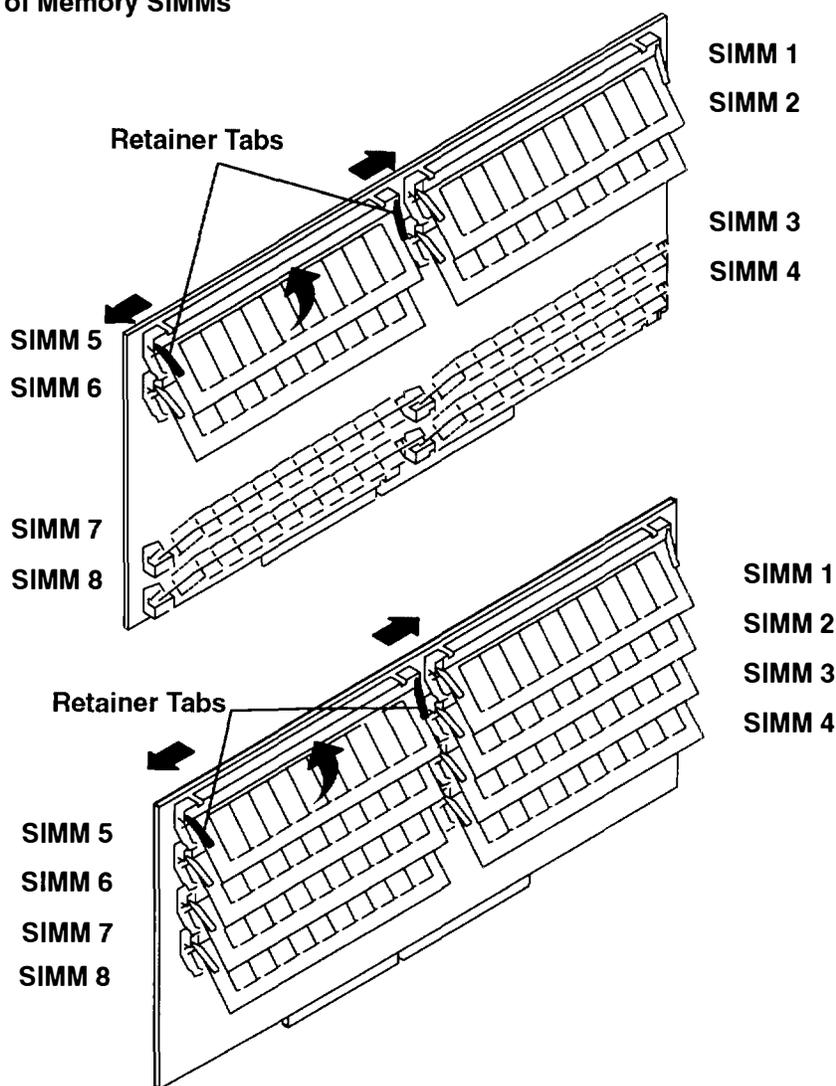
Replace in the reverse order, and then do the "Power-On Procedure" in Chapter 3 of the *7015 Installation and Service Guide*.

Memory SIMM

Removal

1. Do the "Adapter or Memory Card" removal procedure on page 3-6.
2. Release the retainer tabs by pulling them away from the ends of the SIMM.
3. Rotate the SIMM away from the center of the card and pull it away from the socket.

Two Types of Mounting Designs of Memory SIMMs



Replacement

1. Place the SIMM in the keyed socket on the memory card; then press the SIMM into the socket, and then toward the center of the memory card until the retainers snap into place.
2. Replace the memory card. Refer to the "Adapter or Memory Card" procedure on page 3-6.

For information about memory type, SIMM size, and SIMM part numbers, refer to the *Common Diagnostics and Service Guide*.

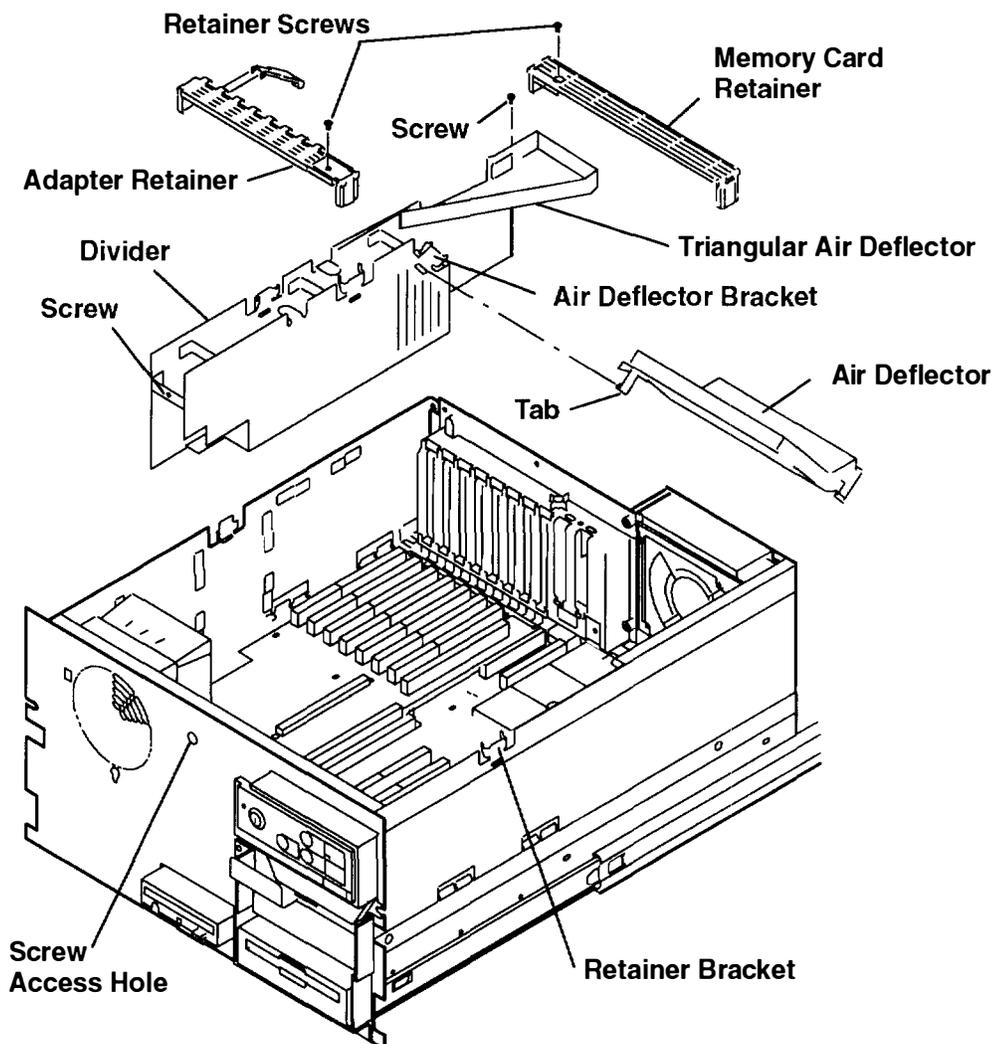
Divider Assembly

Removal

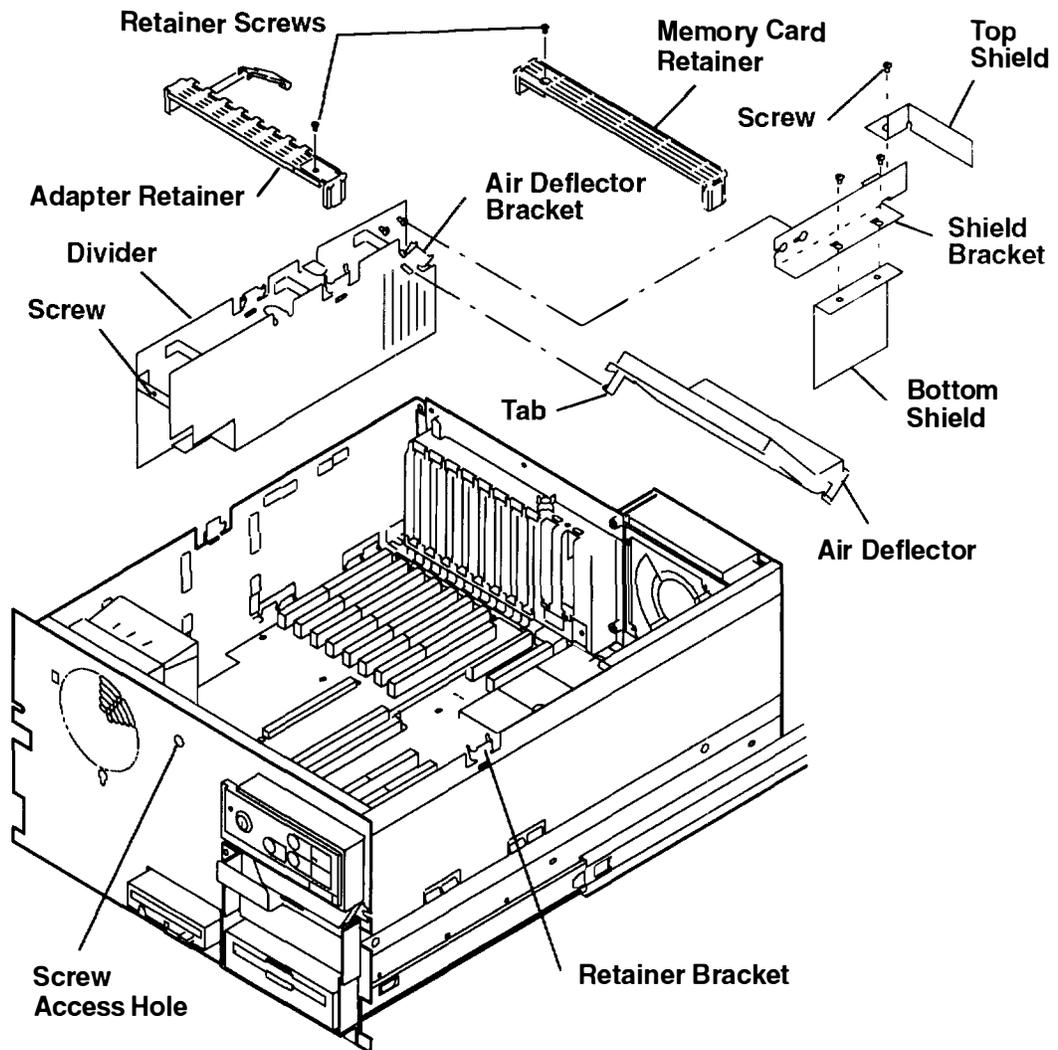
1. Do the "Service Position" procedure on page 3-2.
2. Remove the retainer screw from each retainer.
3. Remove the retainers, one at a time, by pressing one of the tabs on the retainer with a flat-blade screwdriver, and then lifting the retainer out of the retainer brackets.
4. Press the tab on the air deflector with a flat-blade screwdriver, and then remove the air deflector.

Note: Two types of divider assemblies are used in the CPU drawer. If your machine has a triangular air deflector attached to the divider assembly, go to Step 5; otherwise, go to Step 6.

5. If the divider assembly has a triangular air deflector, do the following:
 - a. Remove the screw from the top of the divider assembly.
 - b. Loosen the screw at the front of the divider assembly through the access hole in the drawer, and then remove the divider assembly.



6. If the divider assembly does not have a triangular air deflector, do the following:
 - a. Remove the screw attaching the shield bracket and the top shield to the CPU drawer.
 - b. Loosen the screw at the front of the divider assembly through the access hole in the drawer, and then remove the divider assembly.



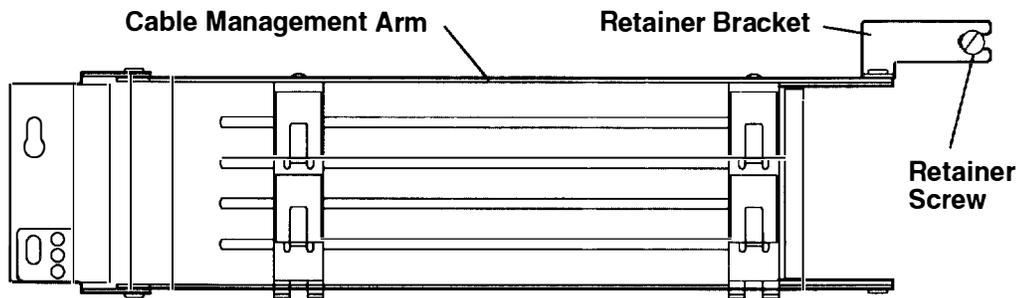
Replacement

Replace in the reverse order, and then do the "Operating Position" procedure on page 3-4.

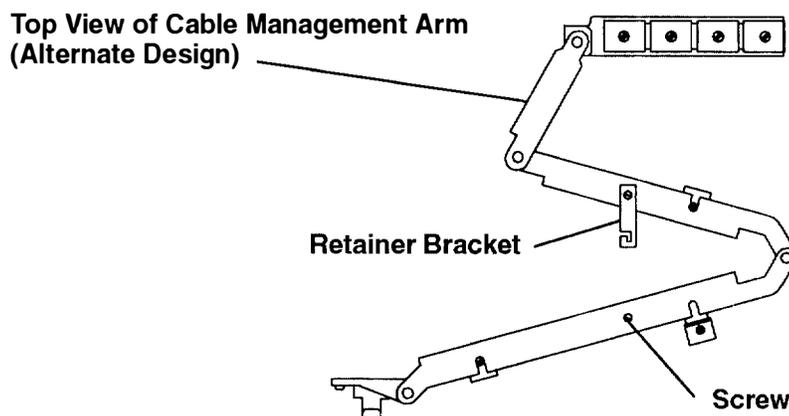
Standard I/O Planar

Removal

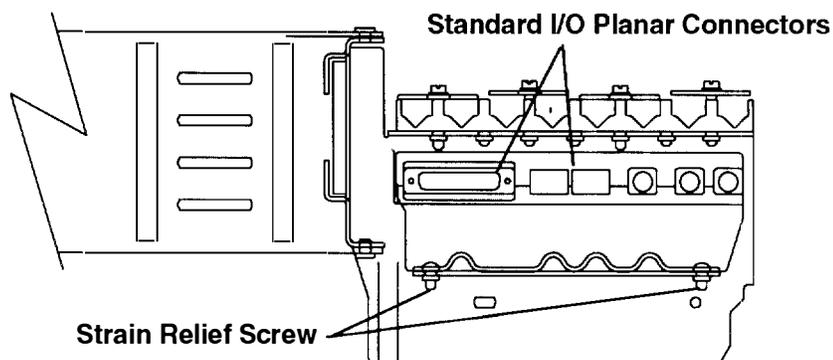
1. Do the "Power-Off Procedure" in Chapter 3 of the *7015 Installation and Service Guide*.
2. If a retainer bracket is attached to the rack, loosen the retainer screw so that the cable management arm is free to move when the drawer is extended.



3. If a retainer bracket is attached to the top of the cable management arm, loosen the screw closest to you and then disengage the bracket from the screw.



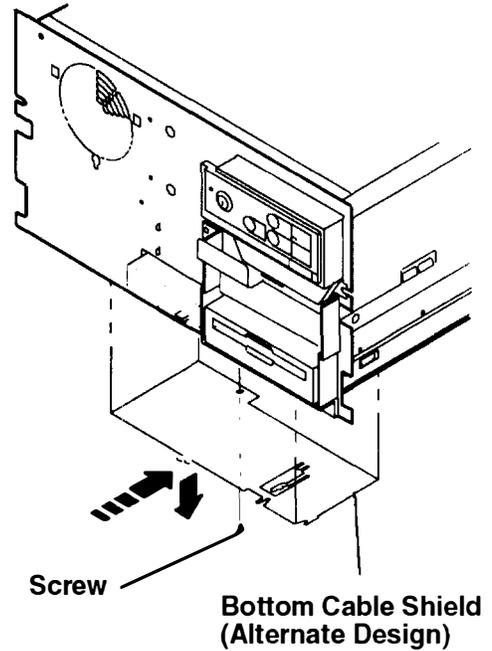
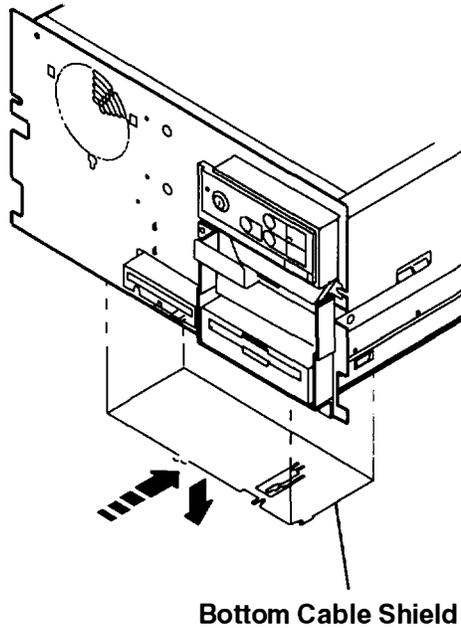
4. Loosen the screw on the strain relief, and then disconnect any external cables from the rear of the standard I/O planar.



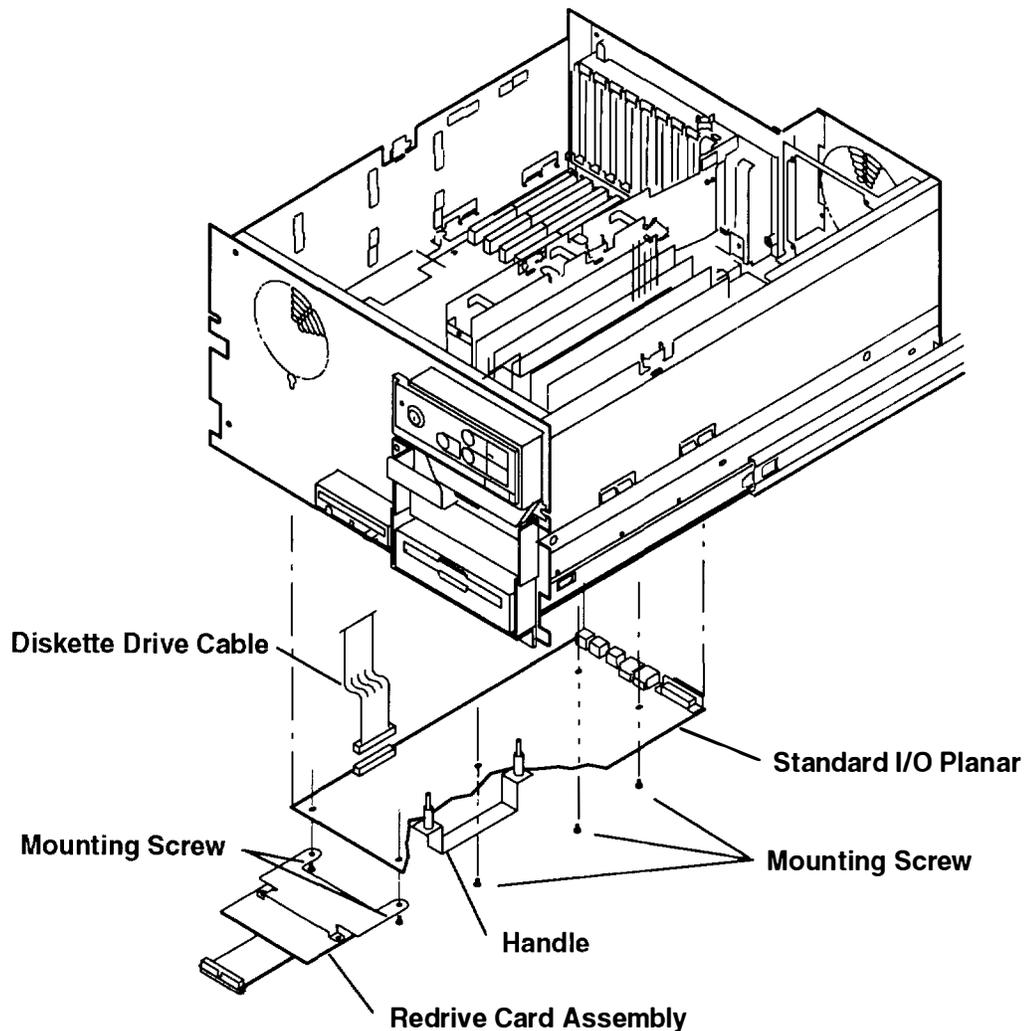
5. Do the "Service Position" procedure on page 3-2.
6. Two types of bottom cable shields are used in the CPU drawer.

If the bottom cable shield is not mounted with a screw, remove the cable shield from the bottom of the CPU drawer.

If the bottom cable shield is mounted with a screw, remove the screw from the cable shield, and then remove the shield from the bottom of the CPU drawer.



7. Remove the five mounting screws from the standard I/O planar.
- Note:** The redrive card assembly is attached to the standard I/O planar by the two front mounting screws.
8. Use the handle on the bottom of the standard I/O planar to carefully disconnect the standard I/O planar from the I/O planar.
 9. Disconnect the diskette drive cable from the standard I/O planar.
 10. If you are exchanging the standard I/O planar, transfer the handle from the planar you removed to the new one.
 11. If a 5.25-inch diskette drive is installed, remove the redrive card. Refer to the "Redrive Card Assembly" removal procedure on page 3-33 to remove the assembly.



Replacement

Note: Ensure that the J37 interface connector is properly seated. The alignment pins on the standard I/O planar handle must protrude through the holes in the I/O planar.

Set the jumper on connector J58 of the standard I/O planar. Refer to the illustration on page 1-5 for information about setting the jumper.

Replace in the reverse order, and then do the "Operating Position" procedure on page 3-4.

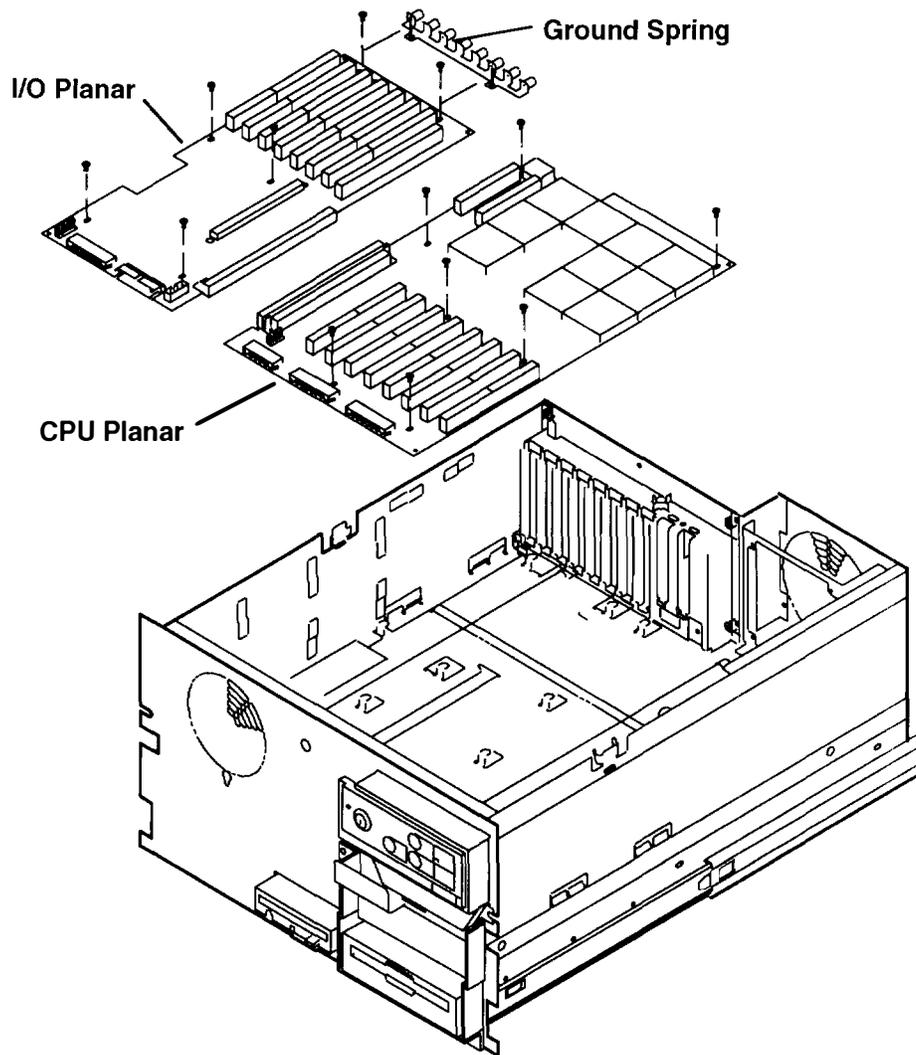
I/O and CPU Planar Assembly

Removal

1. Do the "Adapter or Memory Card" removal procedure on page 3-6 to remove all of the adapters and cards.
2. Do the "Standard I/O Planar" removal procedure on page 3-14.
3. Do the "Divider Assembly" removal procedure on page 3-12.
4. Do the "Front Fan and Housing Assembly" removal procedure on page 3-19.

5. Record the connector locations, and then disconnect the cables from the I/O and CPU planars.
6. Remove the six mounting screws from the I/O planar.
7. Remove the ground spring.
8. Remove the seven mounting screws from the CPU planar.
9. Remove the I/O and CPU planars as a unit, and then carefully disconnect the planars.

Note: If you exchange the CPU planar, notify the customer that the unique identification number of the system unit has changed. The customer must update the authorization for programs using the identification number.



Replacement

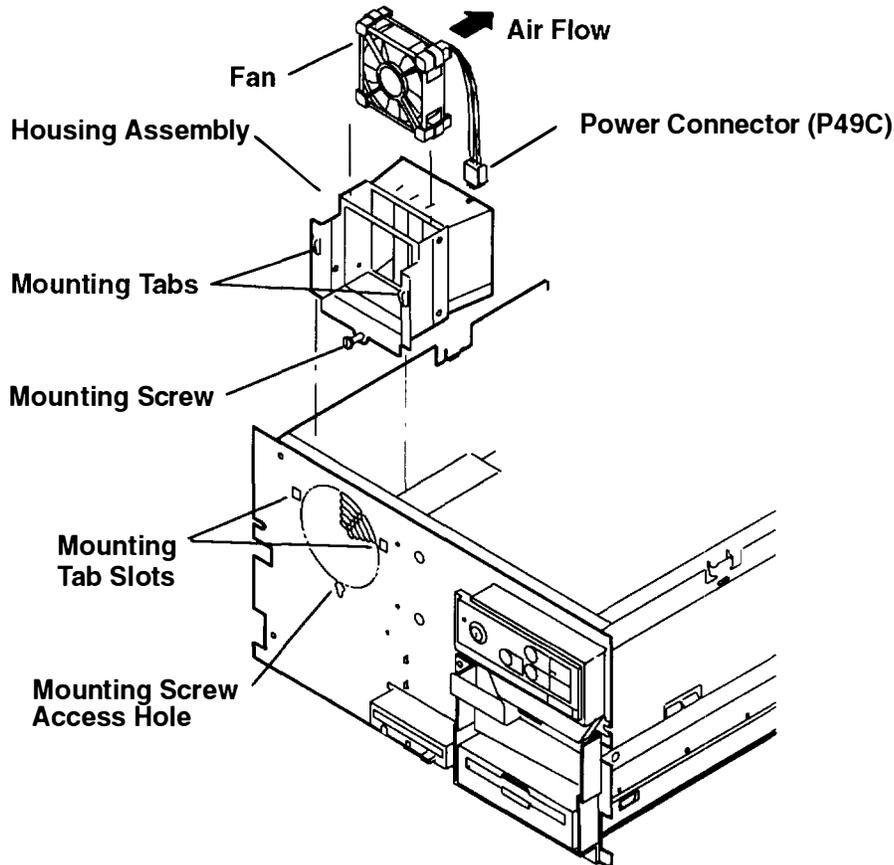
Replace in the reverse order, and then do the "Operating Position" procedure on page 3-4.

Front Fan and Housing Assembly

Note: Two types of front fan and housing assemblies are used to mount the front fan in the CPU drawer. If the front fan and housing assembly has mounting tabs, perform the removal and replacement procedure on this page. If the front fan and housing assembly has three mounting screws, perform the removal and replacement procedure on the next page.

Removal

1. Do the “Service Position” procedure on page 3-2.
2. Disconnect the in-line power connector (P49C). If you are removing the fan only, lift the fan out of the housing assembly.
3. Loosen the mounting screw through the access hole in the drawer.
4. Remove the housing assembly. Ensure that the mounting tabs on the housing assembly disengage from the mounting slots in the drawer.



Replacement

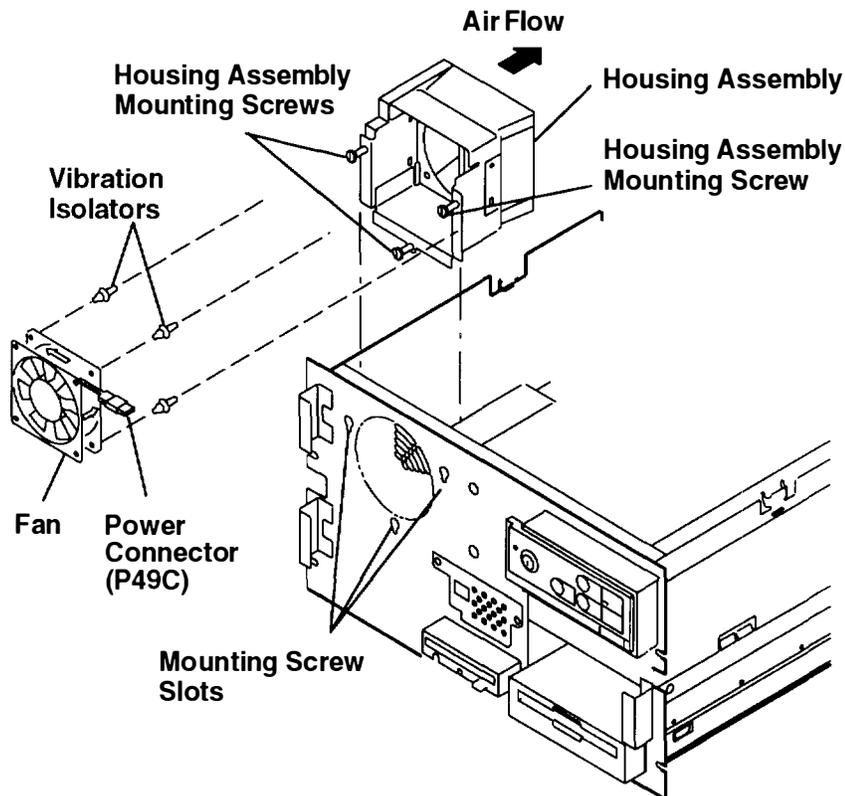
Replace in the reverse order, and then do the “Operating Position” procedure on page 3-4.

Front Fan and Housing Assembly (Alternate Type)

Note: Two types of front fan and housing assemblies are used to mount the front fan in the CPU drawer. If the front fan and housing assembly has three mounting screws, perform the removal and replacement procedure on this page. If the front fan and housing assembly has mounting tabs, perform the removal and replacement procedure on the previous page.

Removal

1. Do the “Service Position” procedure on page 3-2.
2. Loosen the three housing assembly mounting screws and then lift the housing assembly until the screws disengage from the mounting screw slots.
3. Lift the housing assembly out of the drawer until you have access to the fan power connector (P49C), and then disconnect the fan power connector to remove the housing assembly.
4. Pull the fan out of the housing assembly until the vibration isolators disengage from the fan or the housing assembly, and then remove the fan.



Replacement

Replace in the reverse order, and then do the “Operating Position” procedure on page 3-4.

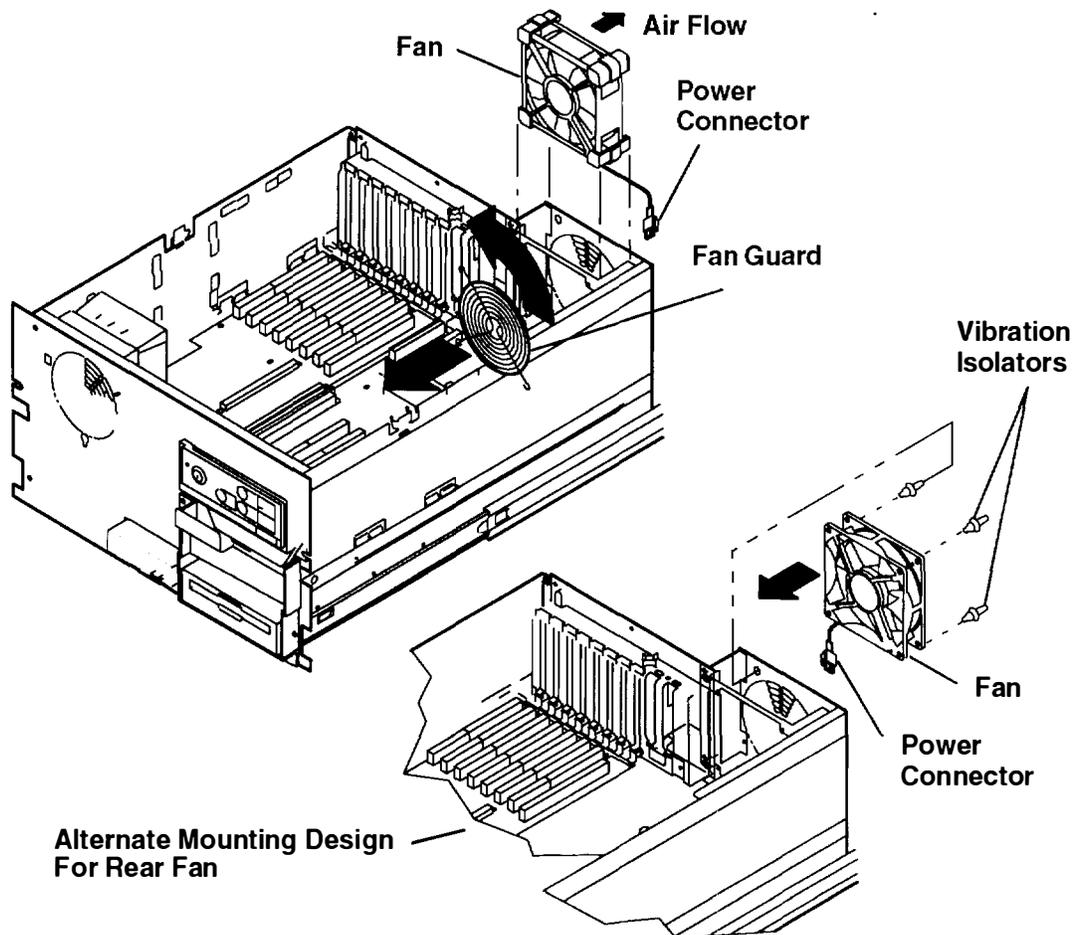
Rear Fan

Removal

1. Remove the front cover and any devices in locations C and D from the SCSI device drawer (located above the CPU drawer). Refer to the appropriate removal procedures in the *7015 SCSI Drawers Service Guide*.
2. Do the "Service Position" procedure on page 3-2.
3. Rotate the fan guard until it clears the mounting brackets, and then remove the guard
4. Two types of mounting designs are used to mount the rear fan in the CPU drawer.

If the rear fan is not mounted with vibration isolators, lift the fan until you have access to the power connector on the power supply, press the locking tab on the rear of the connector, and then disconnect the power connector from the power supply.

If the rear fan is mounted with vibration isolators, pull the fan straight out until the vibration isolators disengage from the fan or the CPU drawer, and then disconnect the power connector from the power supply.



Replacement

Replace in the reverse order, and then do the "Operating Position" procedure on page 3-4.

Power Supply

Removal

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

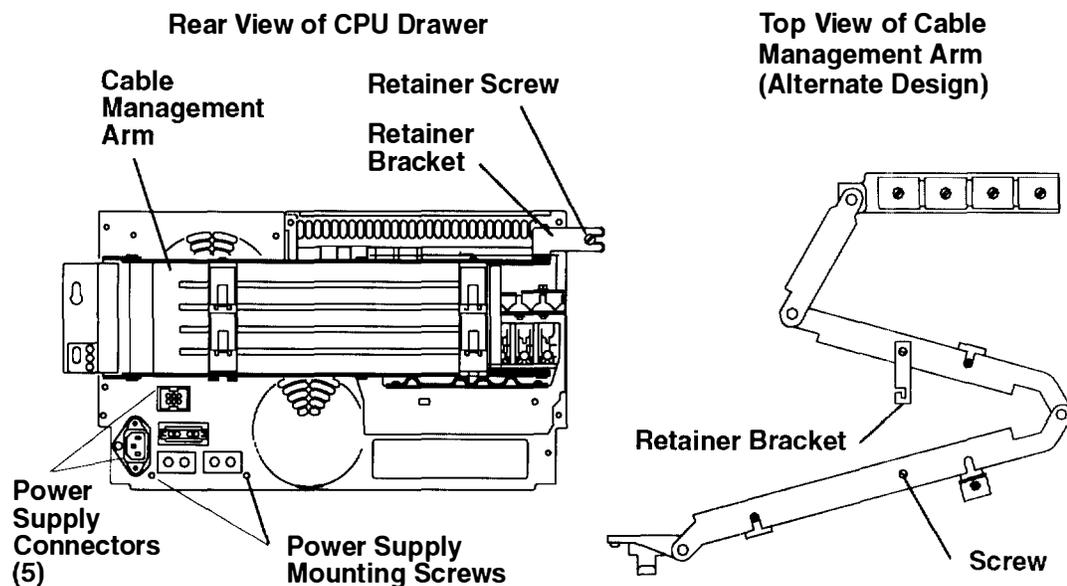
DANGER

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

1. Do the "Power-Off Procedure" in Chapter 3 of the *7015 Installation and Service Guide*.
2. If a retainer bracket is attached to the rack, loosen the retainer screw so that the cable management arm moves freely when the drawer is extended.

If a retainer bracket is attached to the top of the cable management arm, loosen the screw closest to you, and then disengage the bracket from the screw.

3. Label and then unplug any cables attached to the rear power supply connectors.
4. Remove the two power supply mounting screws from the rear of the power supply

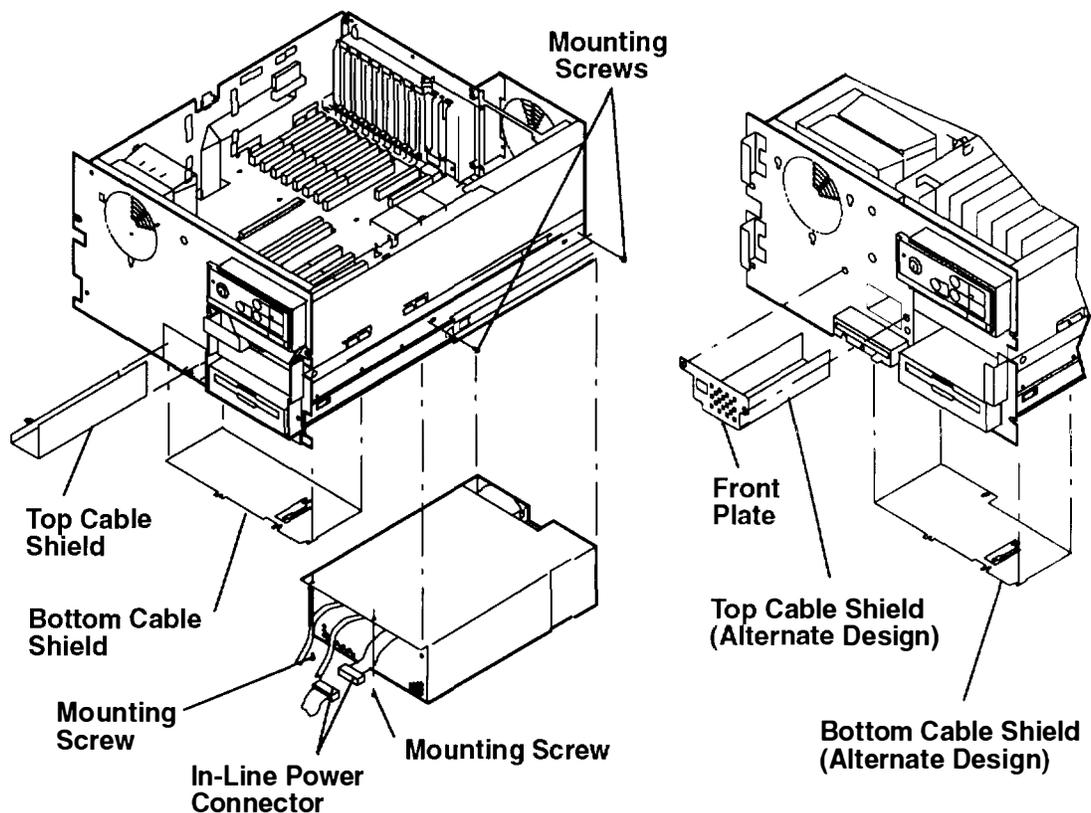


5. Do the "Service Position" procedure on page 3-2.
6. Do the "Rear Fan" removal procedure on page 3-21.
7. Do the "Front Fan and Housing Assembly" removal procedure on page 3-19.
8. Do the "3.5-Inch Diskette Drive" removal procedure on page 3-29.

9. Remove the screw from the bottom cable shield, and then remove the shield.
10. Disconnect the power connectors from the I/O and CPU planars, CD-ROM drive, and any optional devices. Refer to the device removal procedures and the illustrations on page 1-4 for information about disconnecting the power cables.
11. Disconnect the in-line power connector to the operator panel.
12. Two types of top cable shields are used in the CPU drawer.

If the top cable shield does not have a face plate, remove the mounting screw from the top cable shield through the access hole in the diskette drive slot, and then remove the cable shield.

If the top cable shield has a front plate, remove the two mounting screws from the top cable shield, and then remove the cable shield.
13. While supporting the power supply, remove the four remaining mounting screws.
14. Slide the power supply forward so that the connectors on the rear of the supply clear the frame, and then carefully guide the power supply cables out of the unit as you remove the power supply.
15. Do the "Power Supply Fan" removal procedure on page 3-24.



Replacement

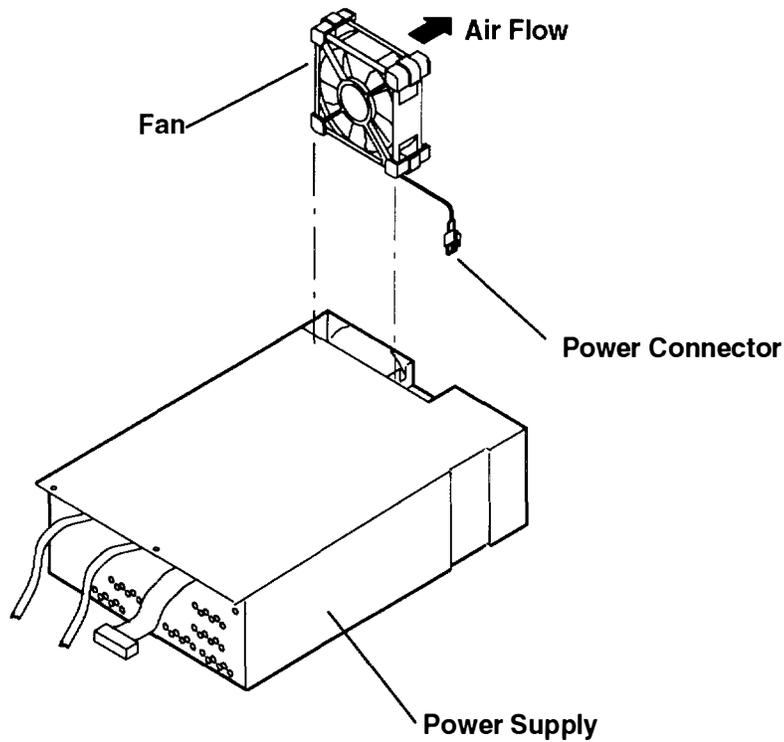
Note: Before installing the replacement power supply in the CPU drawer, ensure that the power supply fan is installed.

Replace in the reverse order, and then do the "Power-On Procedure" in Chapter 3 of the *7015 Installation and Service Guide*.

Power Supply Fan

Removal

1. Do the "Power Supply" removal procedure on page 3-22.
2. Disconnect the power connector from the power supply, and then remove the fan.



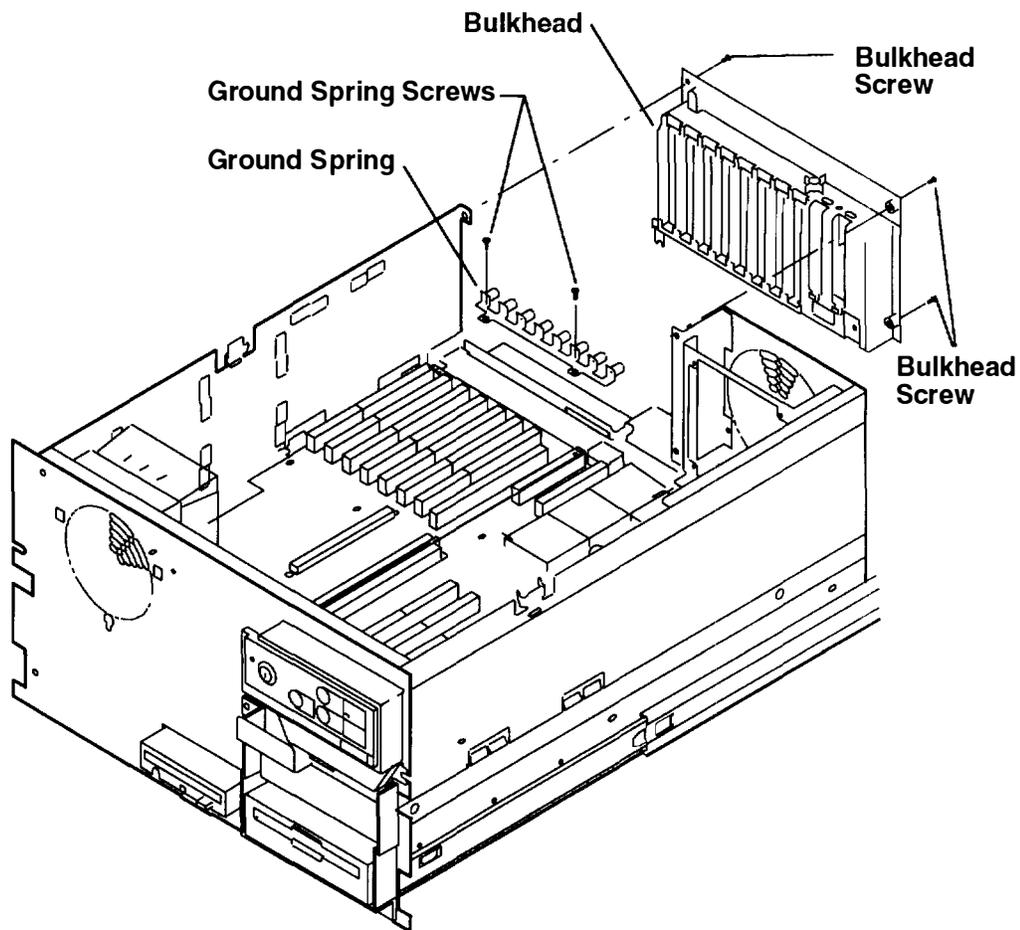
Replacement

Replace in the reverse order, and then do the "Operating Position" procedure on page 3-4

Bulkhead Assembly

Removal

1. Remove all the adapters from the I/O planar. Refer to the “Adapter or Memory Card” removal procedure on page 3-6.
2. Do the “Divider Assembly” removal procedure on page 3-12.
3. Remove the four screws from the rear of the bulkhead.
4. Remove the two screws from the ground spring.
5. Remove the ground spring and bulkhead assembly.



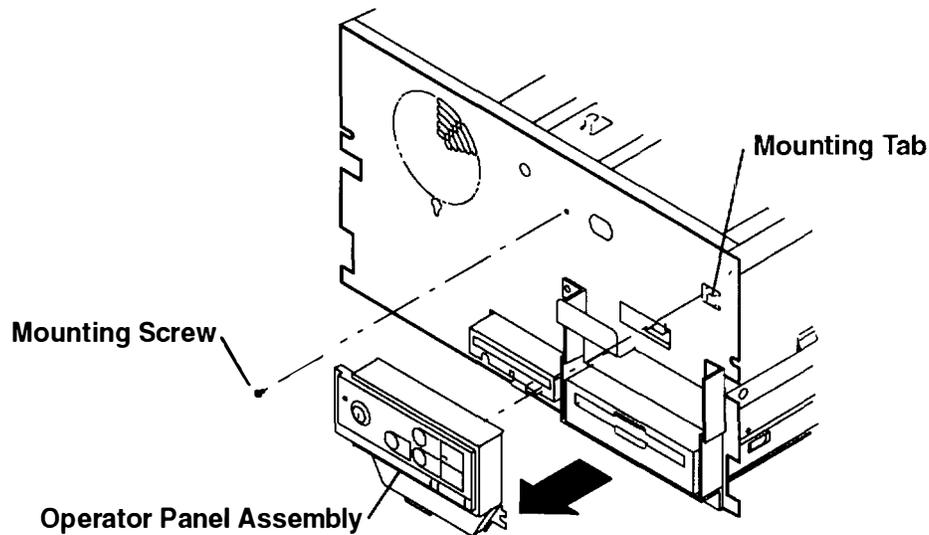
Replacement

Replace in the reverse order, and then do the “Operating Position” procedure on page 3-4.

Operator Panel Assembly

Removal

1. Do the "Front Fan and Housing Assembly" removal procedure on page 3-19.
2. Disconnect connectors P38 and P39 from the I/O planar. Refer to "I/O Planar Connectors" on page 1-6 for the connector location.
3. Remove the operator panel mounting screw.
4. Slide the operator panel assembly to the left until it disengages from the mounting tab, and then disconnect the power connector from the operator panel.
5. Carefully guide the operator panel cables out of the drawer as you remove the operator panel assembly.



Replacement

Replace in the reverse order, and then do the "Operating Position" procedure on page 3-4.

Battery

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

CAUTION:

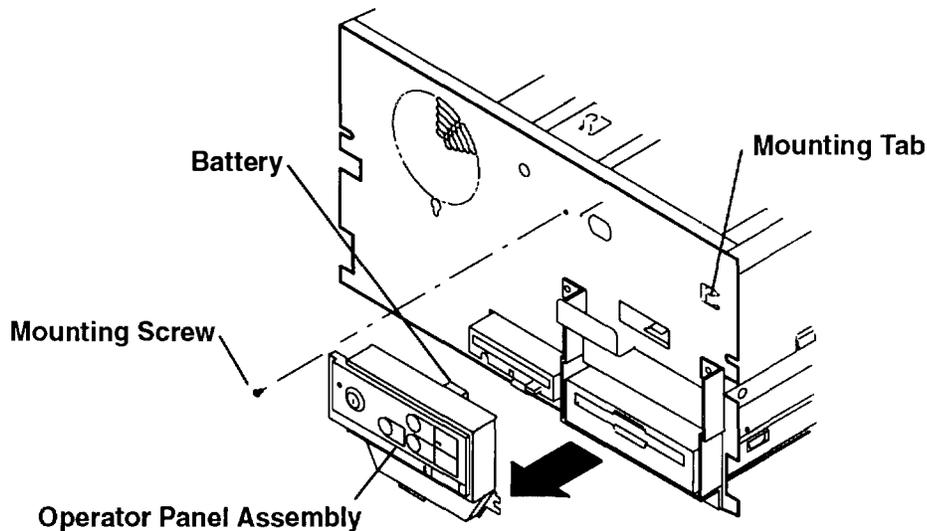
A lithium battery can cause fire, explosion, or a severe burn. Do not recharge, disassemble, heat above 100°C (212°F), solder directly to the cell, incinerate, or expose cell contents to water. Keep away from children. Replace only with the part number specified for your system. Use of another battery 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 “Power-Off Procedure” in Chapter 3 of the *7015 Installation and Service Guide*.
2. Remove the front bezel from the CPU drawer. Refer to the “Service Position” procedure on page 3-2 for information about removing the bezel.
3. Remove the operator panel mounting screw.
4. Slide the operator panel assembly to the left until it disengages from the mounting tab.
5. Disconnect the in-line power connector from the battery, and then remove the battery.



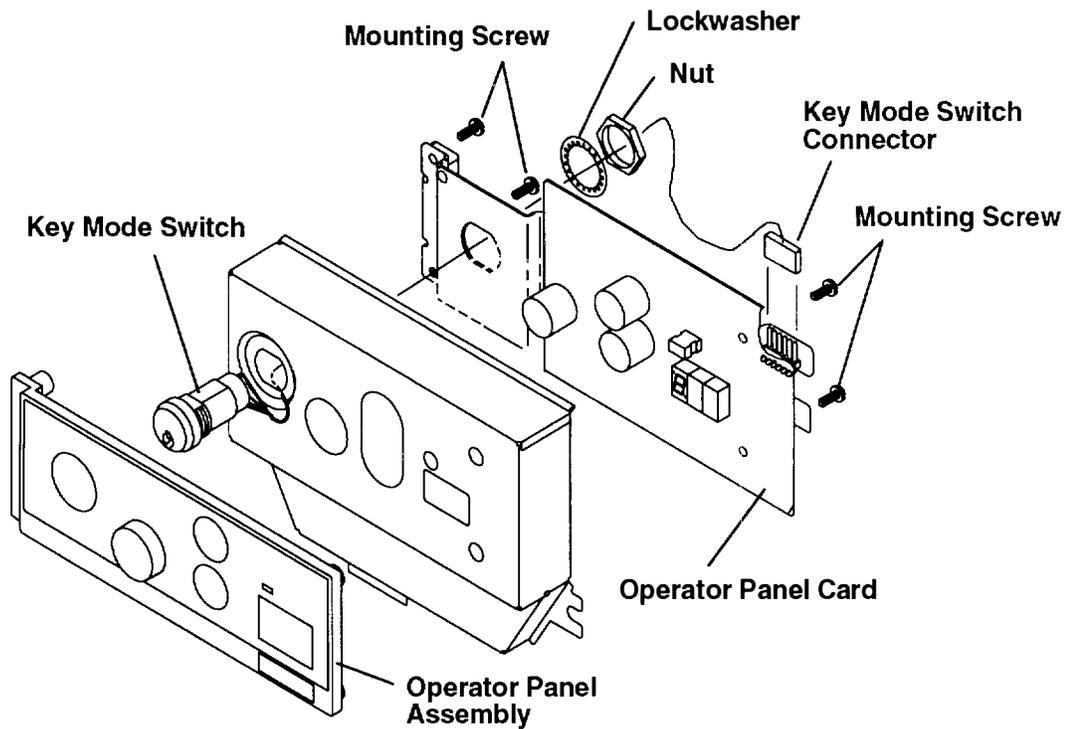
Replacement

Replace in the reverse order, and then do the “Power-On Procedure” in Chapter 3 of the *7015 Installation and Service Guide*.

Key Mode Switch

Removal

1. Do the “Operator Panel Assembly” removal procedure on page 3-26.
2. Remove the four mounting screws.
3. Remove the nut and lockwasher from the key mode switch.
4. Lift the operator panel card, disconnect the key mode switch connector from the card, and then remove the switch.



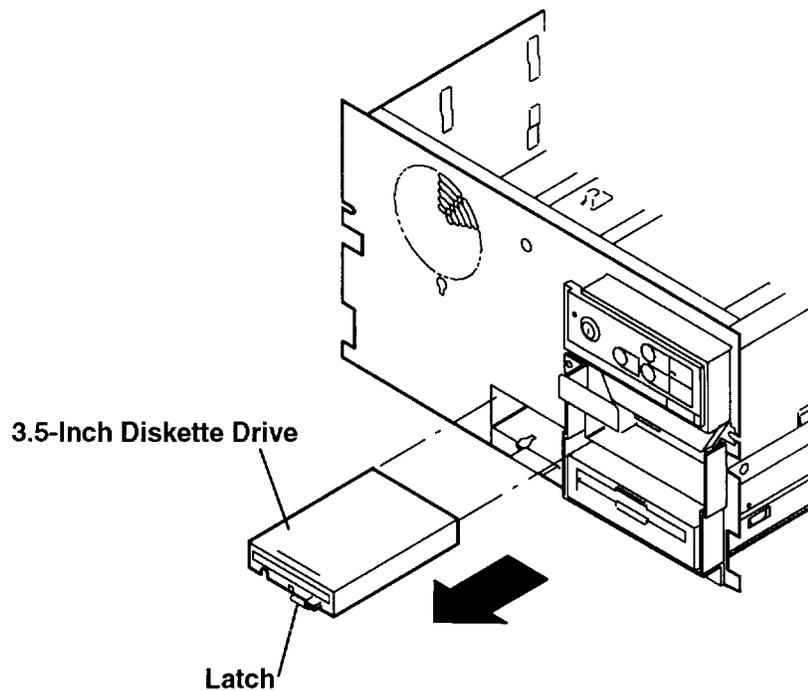
Replacement

Replace in the reverse order, and then do the “Power-On Procedure” in Chapter 3 of the *7015 Installation and Service Guide*.

3.5-Inch Diskette Drive

Removal

1. Do the “Power-Off Procedure” in Chapter 3 of the *7015 Installation and Service Guide*.
2. Remove the front bezel from the CPU drawer. Refer to the “Service Position” procedure on page 3-2 for information about removing the bezel.
3. Disengage the drive latch by pushing it up.
4. Slide the drive out of the drawer until you have access to the connector, and then disconnect the cable from the drive.



Replacement

Replace in the reverse order, and then do the “Power-On Procedure” in Chapter 3 of the *7015 Installation and Service Guide*.

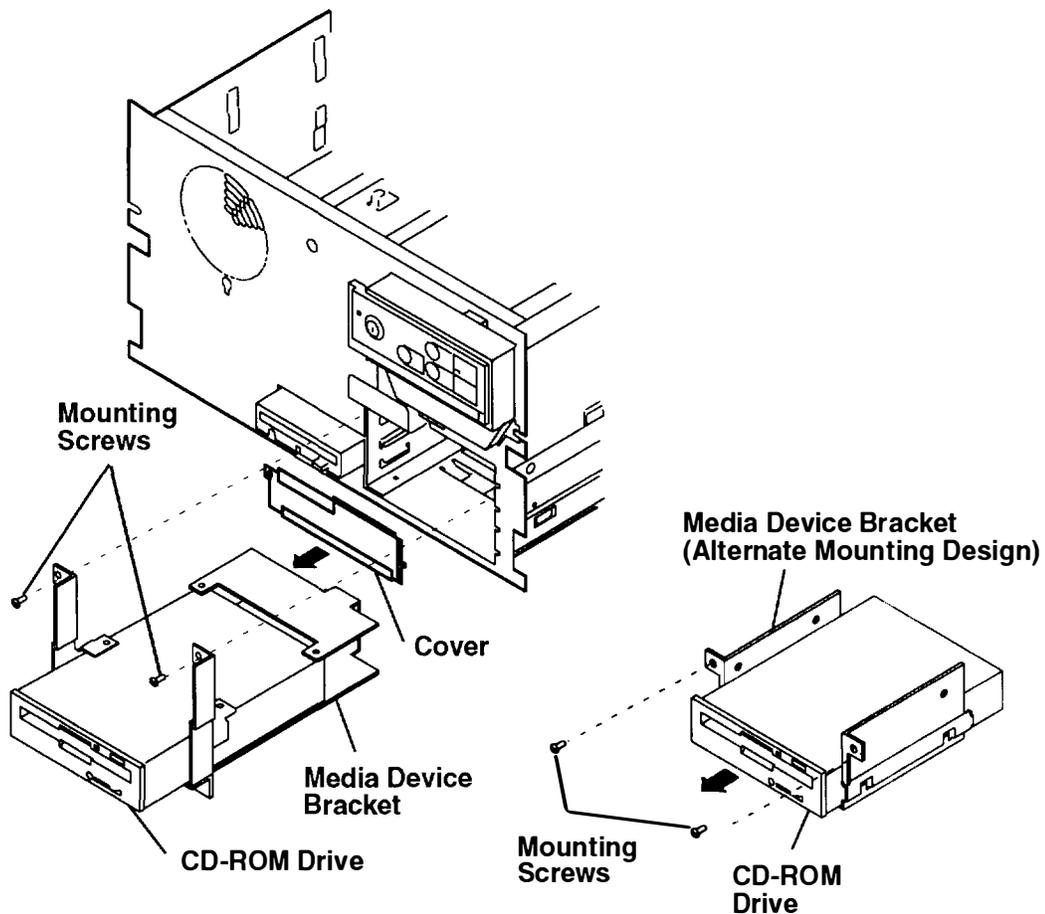
Media Device Bracket

Removal

1. Do the "Power-Off Procedure" in Chapter 3 of the *7015 Installation and Service Guide*.
2. Remove the front bezel from the CPU drawer. Refer to the "Service Position" procedure on page 3-2 for information about removing the bezel.
3. Two types of media device brackets are used to mount the media devices in the CPU drawer. The mounting screws of both types of media device brackets are located above the media device.

Remove the two mounting screws from the media device bracket.

4. Slide the media device bracket out of the drawer until you have access to the cover, and then remove the cover.
5. Continue sliding the media device bracket out of the drawer until you have access to the connectors on the devices, and then disconnect the cables from these connectors.



Replacement

Replace in the reverse order, and then do the "Power-On Procedure" in Chapter 3 of the *7015 Installation and Service Guide*.

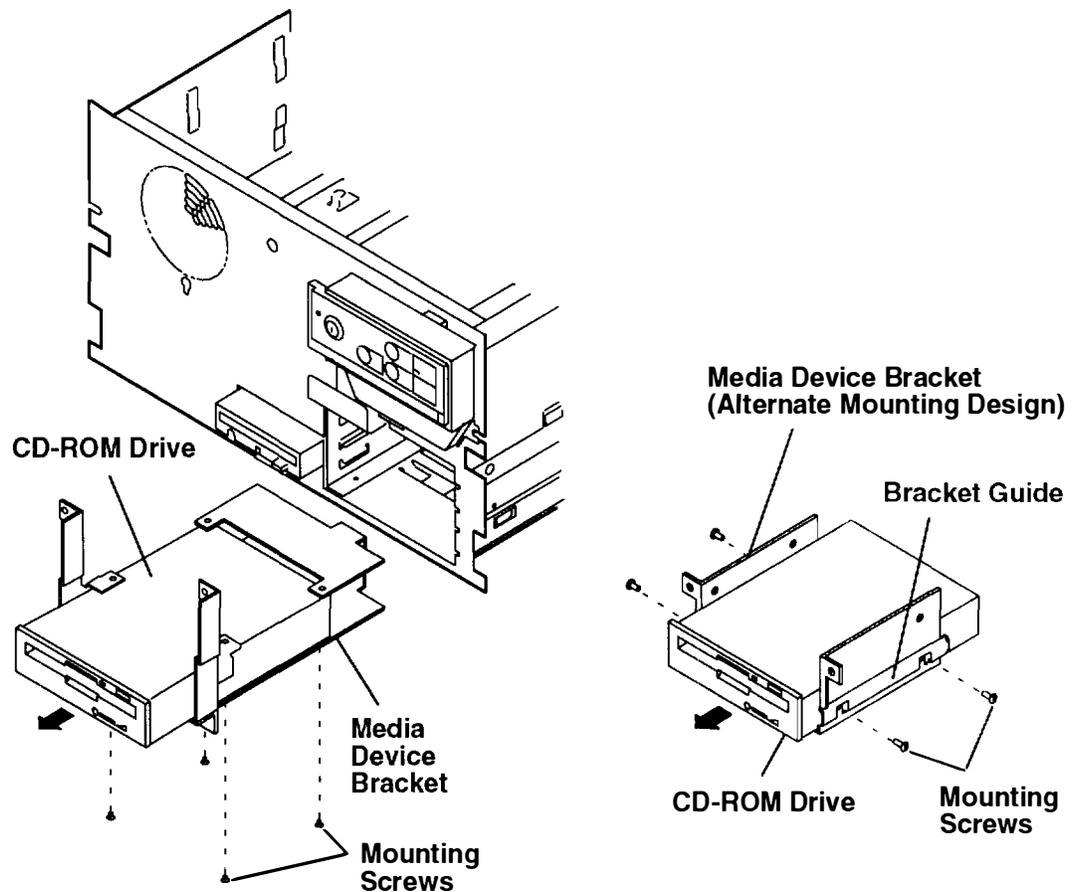
CD-ROM Drive

Removal

1. Do the “Media Device Bracket” removal procedure on page 3-30.
2. Two types of media device brackets are used for mounting the CD-ROM drive.

If the media device bracket on your machine does not have a bracket guide on each side, remove the four mounting screws from the bottom of the CD-ROM drive, and then remove the drive from the media device bracket.

If the media device bracket on your machine does have a bracket guide on each side, remove the two mounting screws from each side of the CD-ROM drive, and then remove the drive from the media device bracket.



Replacement

Replace in the reverse order.

Note: Refer to Chapter 9 of the *Common Diagnostics and Service Guide* for information about setting the SCSI address or terminator resistor.

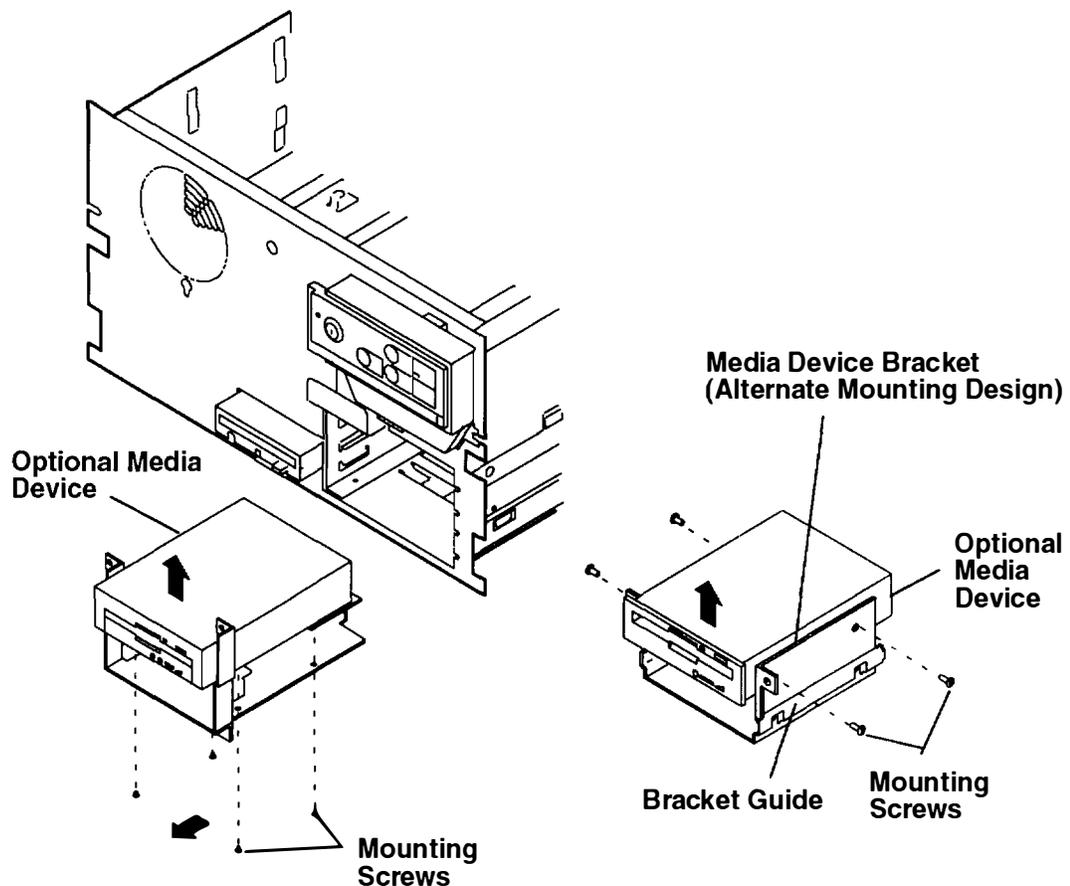
Optional Media Device

Removal

1. Do the "CD-ROM Drive" removal procedure on page 3-31.
2. Two types of media device brackets are used for mounting the optional media device.

If the media device bracket on your machine does not have a bracket guide on each side, remove the four mounting screws from the bottom of the optional media device, and then remove the device from the media device bracket.

If the media device bracket on your machine does have a bracket guide on each side, remove the two mounting screws from each side of the optional media device, and then remove the device from the media device bracket.



Replacement

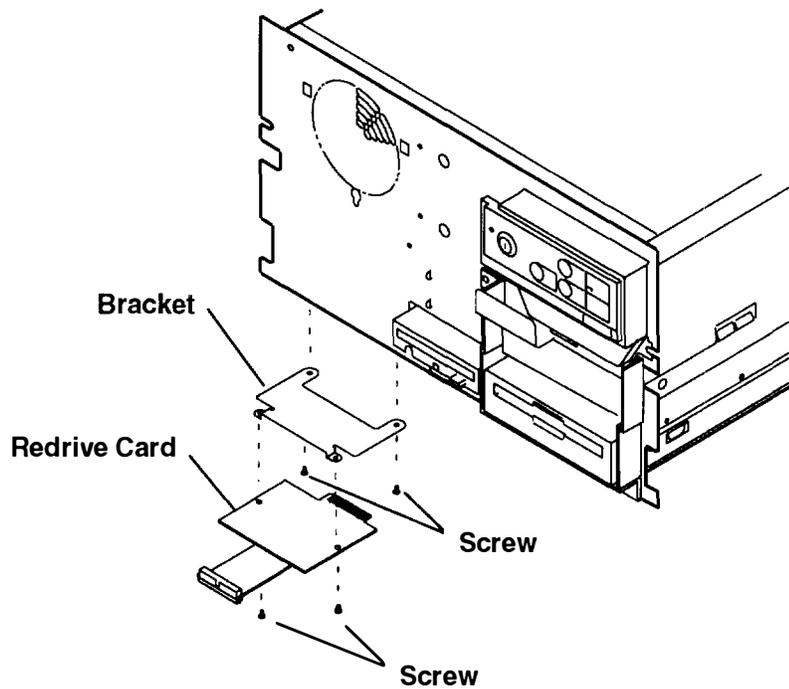
Replace in the reverse order.

Note: Refer to Chapter 9 of the *Common Diagnostics and Service Guide Information* manual for information about setting the SCSI address or terminator resistor.

Redrive Card Assembly

Removal

1. Do the “Service Position” procedure on page 3-2.
2. Remove the two screws that attach the redrive card assembly to the standard I/O planar.
3. Record the connector positions, and then disconnect the cables from connectors P1, J2, and J3 on the redrive card.
4. If you are exchanging the redrive card, remove the two screws that attach the redrive card to the bracket.



Replacement

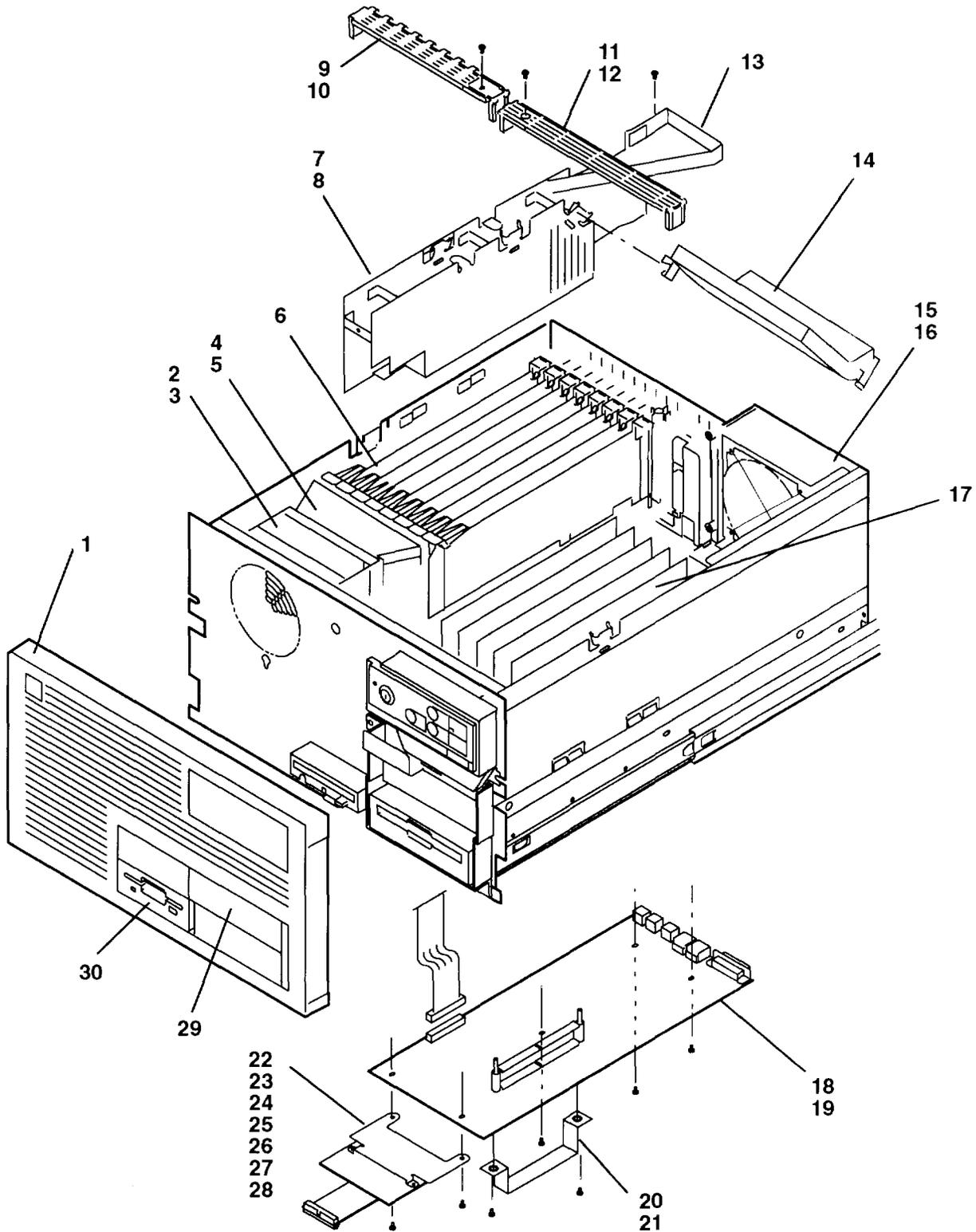
Replace in the reverse order, and then do the “Operating Position” procedure on page 3-4.

Chapter 4. Parts Information

This chapter contains three details showing all parts and the respective part numbers for the 7015 CPU Drawer.

Detail 1. Original Design Parts

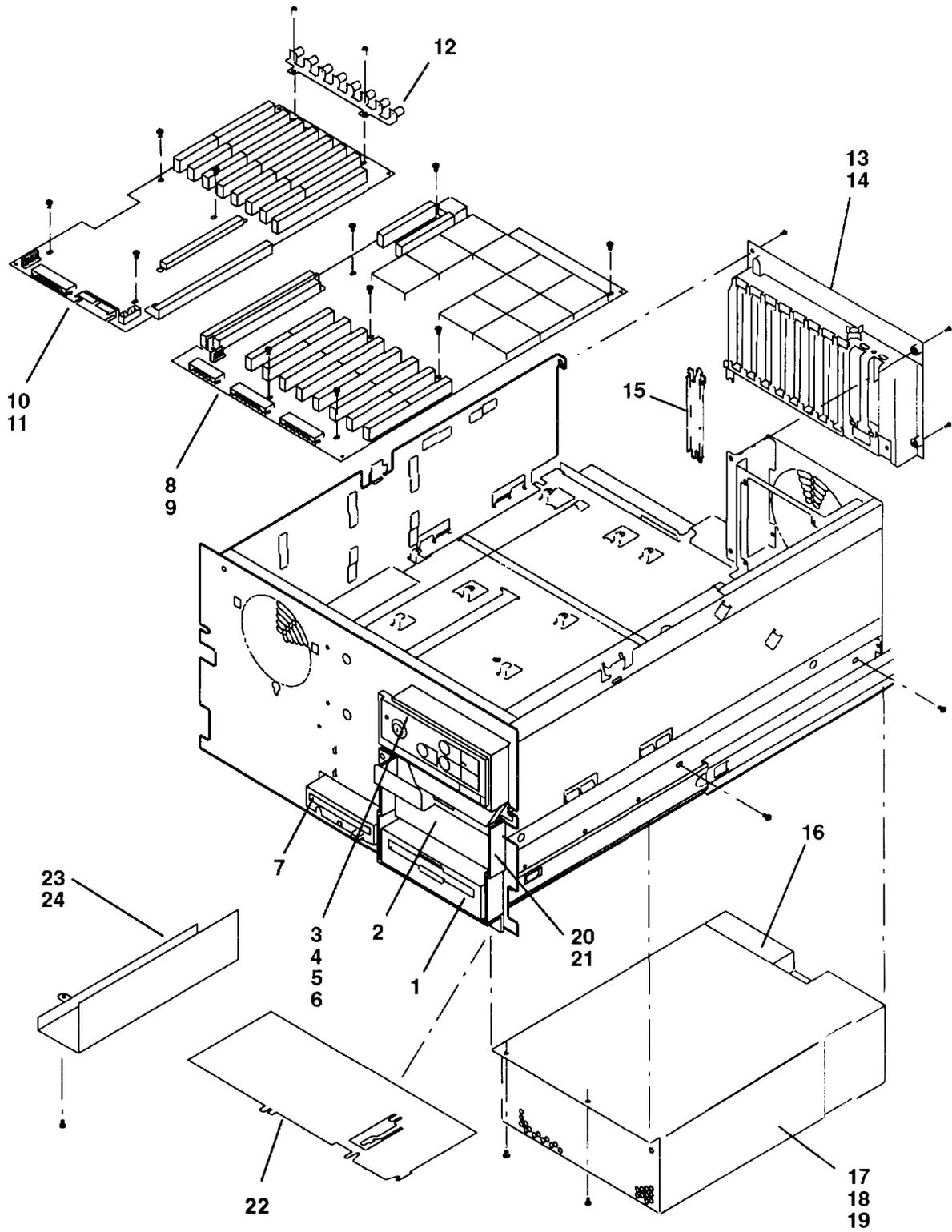
For alternate design parts, see Detail 3 on page 4-6.



Index Number	Part Number	Units Per Asm	Description
1	40F9864	1	Front bezel
2	40F9871	1	Front fan
3	59F2971	4	Isolator
4	40F9851	1	Front fan housing
5	1621197	1	Screw, M4 x 6
6	See note	1	I/O adapters
7	11F8843	1	Divider assembly
8	1621197	1	Screw, M4 x 6
9	41F0663	1	I/O adapter retainer
10	1621192	1	Screw, M4 x 12
11	40F9881	1	Memory card retainer
12	1621192	1	Screw, M4 x 12
13	40F9887	1	Divider deflector
14	11F8844	1	Air deflector
15	59F4461	1	Rear fan
16	6168801	1	Fan guard
17	See note	1	Memory cards
18	53F3345	1	Standard I/O planar
19	1621170	5	Screw, M3 x 6
20	59F4562	1	Handle
21	1695442	2	Screw, M3 x 8
22	53F4172	1	Redrive card
23	59F4393	1	Bracket
24	1621170	2	Screw, M3 x 6
25	81F8233	1	Redrive cable
26	71F0700	1	Cable to 3.5-inch diskette drive
27	71F0701	1	Cable to 5 1/4-inch diskette drive
28	59F4394	1	Jumper cable (power)
29	40F9865	1	Optional media device bezel insert
30	42F6745	1	3.5-inch diskette drive bezel assembly
<p>Note: See Chapter 4 in the <i>Common Diagnostics and Service Guide</i> for part numbers.</p>			

Detail 2. Original Design Parts

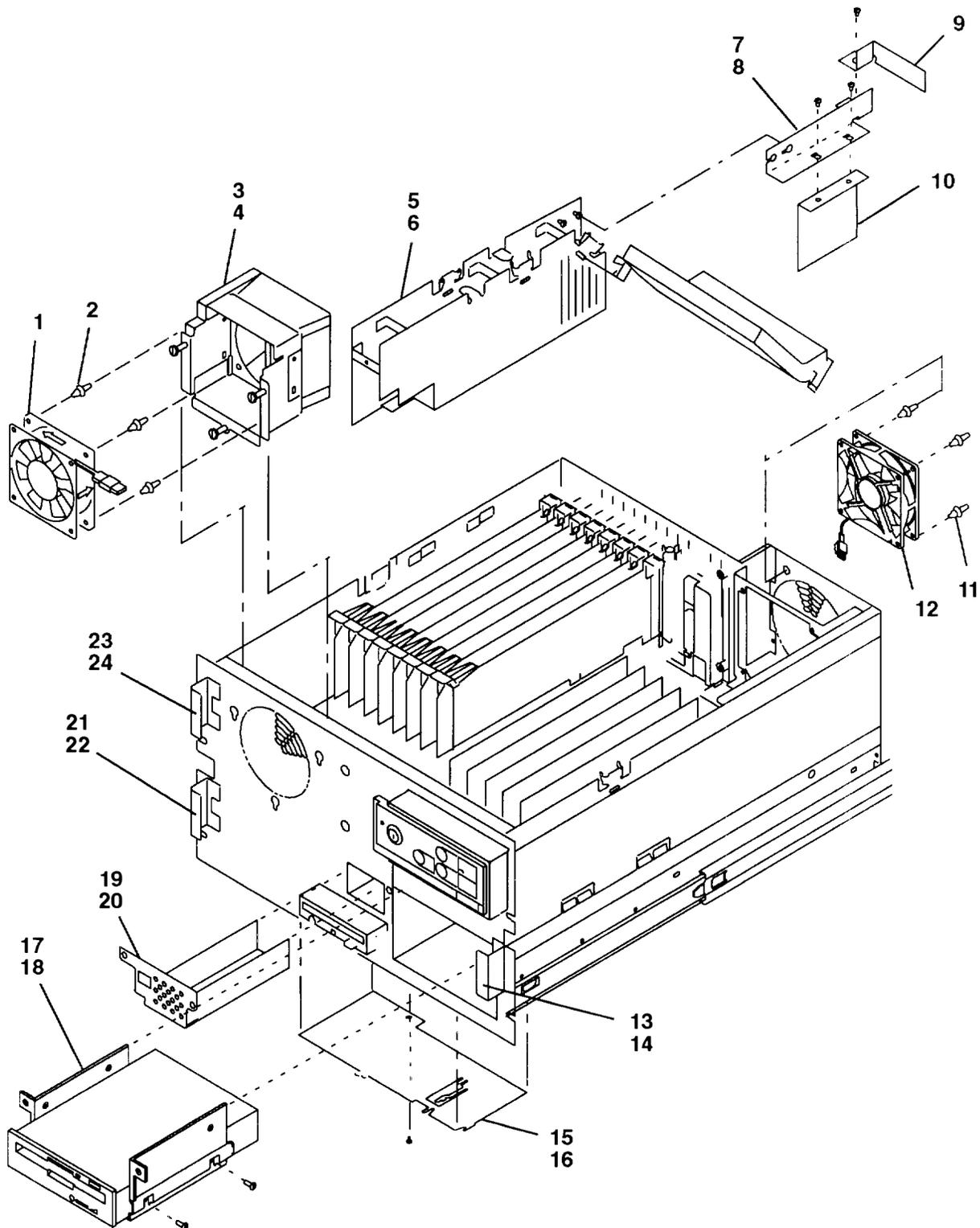
For alternate design parts, see Detail 3 on page 4-6.



Index Number	Part Number	Units Per Asm	Description
1	See note	1	CD-ROM drive
2	42F6826	1	Cover (covers empty optional media slot)
3	71F0207	1	Operator panel assembly
3	81F8610	1	Operator panel assembly (keyless)
4	1621197	1	Screw, M4 x 6
5	23F0168	1	Battery
6	40F9875	1	Key mode switch
7	See note	1	3.5-inch diskette drive
8	53F3350	1	CPU planar, model 930
8	00G1106	1	CPU planar, model 950
9	1621170	7	Screw, M3 x 6
10	53F3346	1	I/O planar
11	1621170	6	Screw, M3 x 6
12	22F9503	1	Ground spring
13	59F3881	1	Bulkhead assembly
14	1621192	4	Screw, M4 x 12
15	6279235	8	Bracket, I/O slots
16	40F9871	1	Power supply fan
17	71F0067	1	Power supply
18	1621190	6	Screw, M4 x 8
19	1622275	6	Washer
20	70F9955	1	Media device bracket
21	1621197	2	Screw, M4 x 6
22	53F3650	1	Bottom cable shield
23	41F0661	1	Top cable shield
24	1621197	1	Screw, M4 x 6
<p>Note: See Chapter 4 in the <i>Common Diagnostics and Service Guide</i> for part numbers.</p>			

Detail 3. Alternate Design Parts

For original design parts, see Detail 1 on page 4-2 and Detail 2 on page 4-4.



Index Number	Part Number	Units Per Asm	Description
1	40F9871	1	Front fan
2	81F7977	4	Vibration isolator
3	81F7975	1	Front fan housing
4	1621197	3	Screw, M4 x 6
5	81F8969	1	Divider assembly
6	1621197	1	Screw, M4 x 6
7	81F8972	1	Shield bracket
8	1621170	5	Screw, M3 x 6
9	81F8973	1	Top shield
10	81F8975	1	Bottom shield
11	81F7977	4	Vibration isolator
12	42F9872	1	Rear fan
13	81F7983	1	Fastener strip
14	81F7961	1	Fastener strip (attached to right side of front bezel)
15	81F7979	1	Bottom cable shield
16	1621197	1	Screw, M4 x 6
17	81F7980	1	Media device bracket
18	1621197	2	Screw, M4 x 6
19	81F7976	1	Top cable shield
20	1621197	2	Screw, M4 x 6
21	81F7982	1	Fastener strip
22	81F7960	1	Fastener strip (attached to left side of front bezel)
23	81F7982	1	Fastener strip
24	81F7960	1	Fastener strip (attached to left side of front bezel)

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