



iSeries

iSeries Server 270, 800, 810, 820, 825, 830, 840, 870,  
890, SB2, and SB3 Hardware (Remove and Replace;  
Part Locations and Listings)

*Version 5 Release 2*

SY44-5917-02







@server

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**Note**

Before using the information and the product it supports, be sure to read the information in “Notices” on page 603.

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# Analyze hardware problems

*For use by authorized service providers.*

This information is intended to provide authorized IBM service providers with complete instructions for locating, diagnosing, and repairing problems on system Models 270, 800, 810, 820, 825, 830, 840, 870, 890, SB2, and SB3.

Before using this information and the product it supports, be sure to read the information in Safety and environmental notices.

## **What's new for V5R2**

Highlights the changes and improvements made to the Analyze hardware problems topic.

## **Print this topic**

Provides access to a hardcopy version of the Analyze hardware problems topic.

## **Start problem analysis**

This topic serves as the starting point for all service actions. You will be directed on where and how to begin diagnosing your problem. This topic also includes procedures for problems that occur without a system reference code (SRC), such as a system that will not power on.

## **System reference codes**

This topic uses a system reference code on the problem summary form to find a list of possible failing items or point to additional isolation procedures (if available). System reference codes (SRCs) can appear on the control panel, the Product Activity Log (PAL), the Main Storage Dump Manager display, or on various displays within DST or SST.

## **Problem isolation**

This topic will guide you through diagnosing the problem and determining which field replaceable unit (FRU) needs replacing, if any.

## **Remove and replace procedures**

The remove and replace procedures will help you to exchange field replaceable units (FRUs).

## **Part locations and listings**

This topic contains information on part locations and addresses, part assembly diagrams, and a FRU part listing with descriptions and part numbers.

## **Data recovery and general information**

This topic contains procedures for recovering from disk unit failures as well as general information about various system attributes and functions.

## **Forms**

This topic contains various forms to assist you in using the Analyze hardware problems information.

## **Terminology**

Find definitions to many concepts and terms used throughout this information.

## **Related information**

This topic contains links to manuals (in PDF format), Web sites, and Information Center topics that relate to the Analyze hardware topic.

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## Remove and replace procedures

*For use by authorized service providers.*

This is the starting point for all remove and replace procedures. Perform the following steps.

**Attention:** If removing the cover while powered on, errors may occur due to electromagnetic interference.

**Attention:** It is not always necessary to power off the system to exchange a field replaceable unit (FRU). You will be directed through a concurrent exchange, if possible, for disk or removable media storage units.

1. Find the location of the part you are replacing in Locations and addresses.
2. If you are removing an IOA, IOP, IXS card, disk unit, or removable media unit, you may be able to use the concurrent procedures and keep the system up and running.
3. Find the FRU you are removing in this section and follow the procedures.
4. When you have completed the remove procedure, install the FRU by reversing the remove procedure unless otherwise noted. After exchanging an item, see Verify the repair.

### **Models 270, 800, and 810**

#### **Model 820**

#### **Model 825**

#### **Models 830 and SB2**

#### **Models 840 and SB3**

#### **Models 870 and 890**

#### **FC 5074, FC 5079, FC 9074, FC 9079**

#### **FC 5075**

#### **FC 5078, FC 0578, FC 5088, FC 0588**

#### **FC 5094, FC 5294, FC 8094, FC 9094**

#### **FC 5095, FC 0595**

#### **HSL cables (concurrent)**

#### **Type 2689, 2748, 2757, 2763, 2778, 2782, 2890, 2892, 4758, 5703 cards**

#### **Tape cartridge - manual removal**

#### **Optical media - manual removal**

## **Models 270, 800, and 810 remove and replace procedures**

*For use by authorized service providers.*

### **Models 270, 800, and 810 - Air moving device - B01 and B02**

### **Models 270, 800, and 810 - Air moving device - B03**

**Models 270 and 810 - Cards (concurrent)**

**Models 270, 800, and 810 - Cards (dedicated)**

**Models 270, 800, and 810 - Control panel - NB1**

**Models 270, 800, and 810 - Covers**

**Models 270, 800, and 810 - Device board - DB1, DB2, and DB3**

**Models 270, 800, and 810 - Disk unit (concurrent)**

**Models 270, 800, and 810 - Disk unit (dedicated)**

**Models 270, 800, and 810 - Memory**

**Models 270, 800, and 810 - Power supply - P01**

**Models 270, 800, and 810 - Power supply - P02**

**Models 270 and 810 - Processor - M02**

**Models 270, 800, and 810 - Processor regulator - R01**

**Models 270, 800, and 810 - Removable media - D07 and D08**

**Models 270, 800, and 810 - System unit backplane - MB1**

**Models 270, 800, and 810 - Time of day battery (TOD)**

### **Models 270, 800, and 810 - Air moving device - B01 and B02**

*For use by authorized service providers.*

Use this procedure to remove or replace the air moving device (AMD) - B01 and B02 in Models 270, 800, and 810.

The Models 270, 800, and 810 may be housed in a FC 0551 frame. The upper and lower system units are placed on rails in the frame. If you are working on the upper or lower unit, follow these instructions and access the internal parts by opening the front cover and sliding the system unit out on its rails.

To remove or replace the air moving device - B01 and B02:

1. Power off the system. See Power on/off the system and logical partitions.
2. Disconnect the power cord. On Models 270, 800, and 810 with a system unit expansion attached, disconnect both the system line cord and the expansion unit line cord.
3. Remove the front cover. See Models 270, 800, and 810 - Covers.
4. Remove the AMDs by pulling out on the two top side fasteners and pivoting them toward you.
5. Unplug the cable.
6. Reverse this procedure to install the AMDs. When installing the AMDs, be sure the cardboard is placed between the two fans.

**This ends the procedure.**

### **Models 270, 800, and 810 - Air moving device - B03**

*For use by authorized service providers.*

Use this procedure to remove or replace the air moving device (AMD) - B03 in the Models 270, 800, and 810.

The Models 270, 800, and 810 may be housed in a FC 0551 frame. The upper and lower system units are placed on rails in the frame. If you are working on the upper or lower unit, follow these instructions and access the internal parts by opening the front cover and sliding the system unit out on its rails.

To remove or replace the air moving device (B03):

1. Power off the system. See Power on/off the system and logical partitions.
2. Remove the rear cover. See Models 270, 800, and 810 - Covers.
3. Remove the AMD by pulling out on the top side fastener and pivoting it towards you.
4. Unplug the cable.
5. Reverse this procedure to install the AMD.

**This ends the procedure.**

### **Models 270 and 810 - Cards (concurrent)**

*For use by authorized service providers.*

Use this procedure to remove or replace cards concurrently on the Model 270 and 810.

**Note:** You must use dedicated maintenance for the Model 800. See Models 270, 800, and 810 - Cards (dedicated).

#### **Concurrent/dedicated guidelines for Model 270 and 810**

In some cases you do not need to power down the system to change PCI cards. Use the following guidelines to determine if you should use dedicated or concurrent remove and replace procedures. If you use concurrent maintenance on a partitioned system, follow the procedures from the partition that owns the resource. If the resource is not owned, follow the procedure from the primary partition.

#### **For all Model 270 and 810 cards:**

- For the Model 270, the processor feature code must be 22A7, 22A8, 22AA, 22AB, 23F4, 23F5, 2423, 2424, or 2454 in order to perform concurrent maintenance.
- For Model 810, the processor features must be 7428 or 7430 in order to perform concurrent maintenance. For all other processor features, see Models 270, 800, and 810 - Cards (dedicated).
- Card positions C01 through C07 permit concurrent maintenance using HSM. You can power down the individual card slot.
- If the resource is the load source IOA or the load source IOP, or any other storage IOA/IOP with critical DASD attached for the system, primary, or secondary partition, follow the on-screen instructions when you use HSM to power down the IOP or IOA. Instructions to use functions 68 and 69 on the control panel will be included.
- If the resource is the console IOA or the console IOP for the system or primary partition, you cannot power down the domain.
- If the resource is the console IOA or the console IOP for a secondary partition, then power down the secondary partition and follow the procedure from the primary partition.
- All other card positions require dedicated maintenance. See Models 270, 800, and 810 - Cards (dedicated).

#### **CAUTION:**

**The circuit card contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the circuit card as instructed by local regulations. (RSFTC234)**



**Attention:** All cards are sensitive to electrostatic discharge. See *Work with electrostatic discharge-sensitive parts*.

**Attention:** If removing the cover while powered on, errors may occur due to electromagnetic interference.

The Model 270 or 810 may be housed in a FC 0551 frame. The upper and lower system units are placed on rails in the frame. If you are working on the upper or lower unit in a 0551 frame, follow these instructions and access the internal parts by opening the front cover and sliding the system unit out on its rails.

To remove cards concurrently:

1. From the Hardware Service Manager display, select **Packaging hardware resources**.
2. Select **Hardware contained in packaging** for the frame ID that you are working on.
3. Find the card position for the IOA or IOP that you are removing and select **Concurrent maintenance**.  
**Attention:** If multiple resources are shown with the same card position, one or more of these resources will show a status of *Missing* ("?" after the description). Only one resource will be listed as not missing. Select this resource for the concurrent maintenance operation.
4. A listing of the power domain is shown. Find the IOA or IOP that you are removing and select **Power off domain**. Everything within the IOA's or IOP's power domain will be powered off .
5. To see the status of the power domain, select **Display power status**.
6. Find the IOA or IOP that you are removing and select **Toggle LED blink off/on**.
7. Look at the power LED for the card that you are removing to ensure that it is powered off. The power LED is located to the left and directly above the card slot. If the LED is blinking multiple times per second (rapidly) or it is off, then the card is powered off.
8. Remove the left side cover. See Models 270, 800, and 810 - Covers.
9. Remove and label any cables connected to the card.
10. Turn the latches securing the card.
11. Gently pull the card off the system backplane.

To replace cards concurrently:

1. Install the card in to the system by reversing the card removal procedure above.
2. Select **Power on domain** for the IOA or IOP that you are installing.
3. Press **Enter**. The Work with Controlling Resources display will appear.  
**Note:** To the right of the description field you will see one or both of the following symbols displayed.

Symbol	Indication
*	Indicates the location to which the system will assign the resource.
>	Indicates the location to which the resource was last assigned.

4. Determine the location where you want to assign the resource and select **Assign to** for that location.  
**Note:** If you have exchanged a 2766 or 2787 Fibre Channel IOA, the IBM 2105 disk unit subsystem must be updated to use the World-Wide Port-Name of the new 2766 or 2787 IOA. This name can be found in the Port worldwide name field on the iSeries by displaying detail on the 2766 or 2787 IOA Logical Hardware Resource information in Hardware Service Manager in SST or DST.  
The 16-digit World-Wide Port-Name can also be determined by appending the digits "1000" to the beginning of the 12-digit IEEE Address found on the tailstock label of the Fibre Channel IOA. Use the *ESS Web Interface User's Guide* (SC26-7346) to update the World-Wide Port-Name in the host configuration on the IBM 2105 ESS. The *ESS Web Interface User's Guide* can also be found at the following URL: <http://ssddom02.storage.ibm.com/disk/ess/documentation.html>  
**This ends the procedure.**

## Models 270, 800, and 810 - Cards (dedicated)

*For use by authorized service providers.*

Use this procedure to remove or replace cards using dedicated maintenance on the Models 270, 800, and 810.

The Models 270, 800, and 810 may be housed in a FC 0551 frame. The upper and lower system units are placed on rails in the frame. If you are working on the upper or lower unit in a 0551 frame, follow these instructions and access the internal parts by opening the front cover and sliding the system unit out on its rails.

In some cases for the Models 270 and 810, you do not need to power down the system to change PCI cards. Use the guidelines in Models 270 and 810 - Cards (concurrent) to determine if you should use dedicated or concurrent remove and replace procedures.

### **CAUTION:**

**The circuit card contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the circuit card as instructed by local regulations. (RSFTC234)**

**Attention:** All cards are sensitive to electrostatic discharge. See Work with electrostatic discharge-sensitive parts.

To remove or replace cards (dedicated):

1. Power off the system. See Power on/off the system and logical partitions.
2. Remove the ac power cord on the frame you are working on. On Models 270, 800, and 810 with a system unit expansion attached, disconnect both the system line cord and the expansion unit line cord.
3. Remove the left side cover. See Models 270, 800, and 810 - Covers.
4. Are you removing a memory DIMM?
  - **Yes:** Press down on the latches that are located on each side of the memory DIMM to release it from the backplane.  
**This ends the procedure.**
  - **No:** Remove and label any cables connected to the card.
5. Either turn the latches securing the card or unscrew the bracket securing the card.
6. Gently pull the card off the system backplane.
7. Reverse this procedure to replace the card.

**Note:** If you have exchanged a 2766 or 2787 Fibre Channel IOA, the IBM 2105 disk unit subsystem must be updated to use the World-Wide Port-Name of the new 2766 or 2787 IOA. This name can be found in the Port worldwide name field on the iSeries by displaying detail on the 2766 or 2787 IOA Logical Hardware Resource information in Hardware Service Manager in SST or DST.

The 16-digit World-Wide Port-Name can also be determined by appending the digits "1000" to the beginning of the 12-digit IEEE Address found on the tailstock label of the Fibre Channel IOA. Use the *ESS Web Interface User's Guide* (SC26-7346) to update the World-Wide Port-Name in the host configuration on the IBM 2105 ESS. The *ESS Web Interface User's Guide* can also be found at the following URL: <http://ssddom02.storage.ibm.com/disk/ess/documentation.html>

**This ends the procedure.**

## Models 270, 800, and 810 - Control panel - NB1

*For use by authorized service providers.*

Use this procedure to remove or install the control panel - NB1 on Models 270, 800, and 810.

The Models 270, 800, and 810 may be housed in an FC 0551 frame. The upper and lower system units are placed on rails in the frame. If you are working on the upper or lower unit in a 0551 frame, follow these instructions and access the internal parts by opening the front cover and sliding the system unit out on its rails.

**Attention:** The control panel is sensitive to electrostatic discharge. See *Work with electrostatic discharge-sensitive parts*.

To remove or replace the control panel (NB1):

1. Power off the system. See *Power on/off the system and logical partitions*.
  2. Disconnect the ac power cord from the system unit. On a Model 270, 800, or 810 with a system unit expansion attached, disconnect both the system line cord and the expansion unit line cord.
  3. Open the front cover. See *Models 270, 800, and 810 - Covers*.
  4. Pull on the two side fasteners to release the control panel assembly.
  5. Slide the panel partially out of the frame.
  6. Remove the control panel cover.
  7. Are you here to exchange the processor capacity and interactive cards?
    - **Yes:** Perform the following:
      - a. Pull the processor capacity or interactive cards off the control panel card and put the new ones in their place. Note the position and orientation of each card. See *Control panel - Models 270, 800, and 810*.
      - b. Reinstall the control panel card by reversing the procedure to this point.
      - c. Go to *Verify the repair*.

**This ends the procedure.**
    - **No:** Disconnect the cables that are attached to the backside of the control panel.
  8. Remove the control panel from the frame.
  9. Remove the processor capacity and interactive cards. Note the position and orientation of each card.
  10. Install the processor capacity and interactive cards into the new panel and replace the cover.
  11. Remove the plastic tab on the front of the control panel that has the machine type and serial number. The tab should then be installed onto the new control panel.
  12. Reverse the above procedure to install the panel.
  13. After exchanging an item, go to *Verify the repair*.
- This ends the procedure.**

## **Models 270, 800, and 810 - Covers**

*For use by authorized service providers.*

Use this procedure to remove or replace covers on the Models 270, 800, and 810.

**Attention:** If removing the cover while powered on, errors may occur due to Electromagnetic Interference.

To remove the front cover: Pull the top of the cover away from the frame.

To remove the back cover: Lift the cover up to remove it.

To remove the right side cover:

1. Remove the thumbscrews that fasten the cover to the back of the system frame.
2. Push the cover toward the back of the system to remove it.

To remove the left side cover:

1. Remove the screws that fasten the cover to the back of the system frame.

2. Push the cover toward the back of the system to remove it.

To remove the top cover:

1. Remove all of the previous covers.
2. Remove the screws that fasten the cover to the system frame.
3. Slide the top cover back and lift up.

## **Models 270, 800, and 810 - Device board - DB1, DB2, and DB3**

*For use by authorized service providers.*

Use this procedure to remove or install a device board - DB1, DB2, and DB3 on the Models 270, 800, and 810.

The Models 270, 800, and 810 may be housed in a FC 0551 frame. The upper and lower system units are placed on rails in the frame. If you are working on the upper or lower unit, follow these instructions and access the internal parts by opening the front cover and sliding the system unit out on its rails.

To remove or replace a device board (DB1, DB2, and DB3):

1. Power off the system. See Power on/off the system and logical partitions.
2. Disconnect the power cord. On Models 270, 800, and 810 with a system unit expansion attached, disconnect both the system line cord and the expansion unit line cord.
3. Remove the front and appropriate side covers. See Models 270, 800, and 810 - Covers.
4. Remove all the disk units from the cage assembly. See Models 270, 800, and 810 - Disk unit (dedicated).
5. Remove the power and signal cable from the rear of the disk unit cage assembly.
6. Remove the screws holding the front of the disk unit cage assembly to the front of the system unit frame.
7. Remove the screws from the back inside of the cage assembly.
8. Pull the cage forward about one inch.
9. Remove the remaining cables from the rear of the cage assembly.
10. Remove the disk unit cage assembly by pulling it forward and out of the system unit frame.
11. Reverse this procedure to install the device board - DB1, DB2, and DB3.

**This ends the procedure.**

## **Models 270, 800, and 810 - Disk unit (concurrent)**

*For use by authorized service providers.*

Use this procedure to remove or replace a disk unit concurrently on the Models 270, 800, and 810.

The Models 270, 800, and 810 may be housed in a FC 0551 frame. The upper and lower system units are placed on rails in the frame. If you are working on the upper or lower unit, follow these instructions and access the internal parts by opening the front cover and sliding the system unit out on its rails.

**Attention:** If removing the cover while powered on, errors may occur due to electromagnetic interference.

**Attention:** The disk unit is sensitive to electrostatic discharge. See Work with electrostatic discharge-sensitive parts.

To remove or replace the disk unit (concurrent):

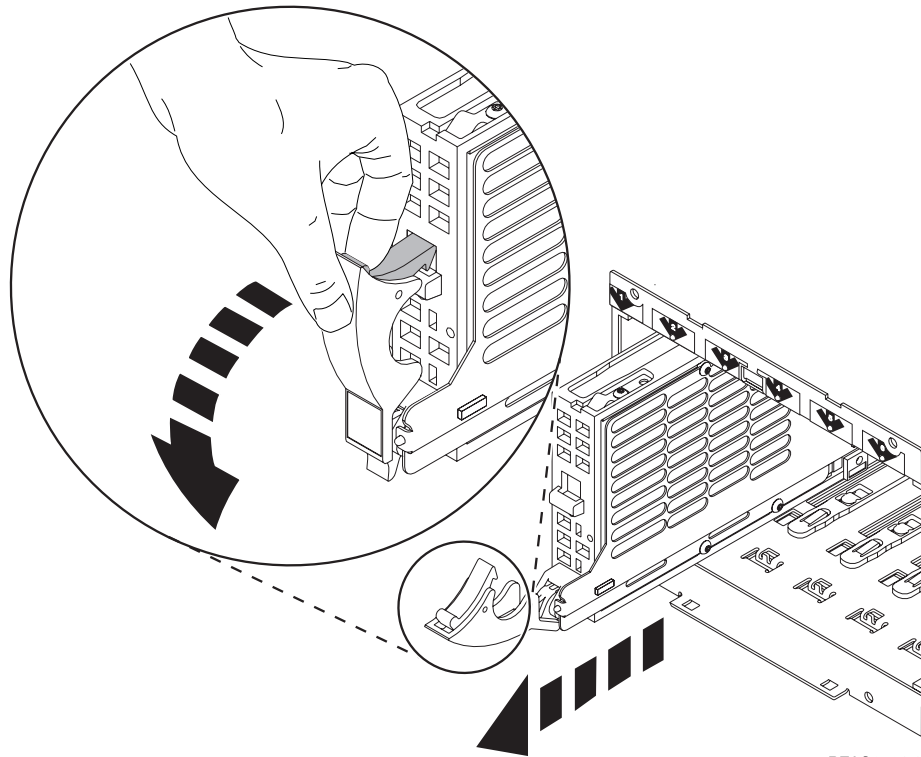
1. Determine if the system has logical partitions. Go to Determine if the system has logical partitions, before continuing with this procedure.
2. Were you directed here from "Recovery procedures" on page 539?

- **Yes:** After you have determined the location of the disk unit to replace, remove the covers. See Models 270, 800, and 810 - Covers. Then, continue with the next step.
  - **No:** Go to Recovery procedures.
3. Remove the EMC access plate that is over the disk unit that you are removing. For location information, see Locations - Model 270 or Locations - Models 800 and 810.
  4. Concurrent repair is available on a Models 270, 800, and 810 if a storage expansion unit is installed. If a storage expansion unit is not installed, concurrent maintenance may or may not be available. To determine if concurrent repair is available on Models without a storage expansion unit, perform the following:
    - a. Select **System Service Tools (SST)**. If you cannot get to SST, select DST.  
**Do not perform a system IPL to get to DST.**
    - b. Select **Start a service tool** —> **Hardware service manager** —> **Packaging hardware resources**.
    - c. On the display, select the **Hardware contained within package** option for the system unit.
    - d. Select the **Associated logical resource(s)** option for the Backplane that has a card position of **DB1**.
      - If the "No associated hardware resources were found" message appears at the bottom of the display, concurrent maintenance is **not** available.
      - If the Logical Resources Associated with a Packaging Resource display appears with at least one Device Services entry, concurrent maintenance **is** available.

Are you removing or installing a disk unit using concurrent maintenance?

- **Yes:** Continue with the next step.
  - **No:** Perform Models 270, 800, and 810 - Disk unit (dedicated).
5. To remove a disk unit using concurrent maintenance, perform the following:
    - a. Select **System Service Tools (SST)**. If you cannot get to SST, select DST.  
**Do not perform a system IPL to get to DST.**
    - b. Select **Start a Service Tool** —> **Hardware Service Manager** —> **Device Concurrent Maintenance** and enter the required information in the information fields.
    - c. Press **Enter** on the console. After the delay time, the light above the device location will begin flashing. You now have nine seconds to pinch the two surfaces of the latching mechanism together and rotate the handle of the disk unit towards you. Pull the disk unit partially out. The light above the device location will go off and remain off as soon as the device is no longer making contact with the backplane.  
**Attention:** If you remove the device when the light is **not** flashing, data may be lost, the disk unit may be damaged, or the backplane may be damaged.

**Figure 1. Removing a disk unit - concurrent**



RZAG6504-1

Wait another five seconds to allow time for the disk to stop spinning. Then, pull the disk unit out the remaining way.

6. Are you finished with the repair?
  - **No:** Continue with the next step.
  - **Yes:** Replace the covers that were removed during this procedure and return to the procedure that sent you here.  
**This ends the procedure.**
7. To install a disk unit using concurrent maintenance perform the following:
  - a. Select **System Service Tools (SST)**. If you cannot get to SST, select DST.  
**Do not perform a system IPL to get to DST.**
  - b. Select **Start a Service Tool** —> **Hardware Service Manager**.
  - c. Select **Device Concurrent Maintenance** and enter the required information in the information fields. **Do not press Enter at this time.**
  - d. Slide the unit half-way in.  
**Attention:** Ensure that the device does not contact the backplane at this time.
  - e. Press **Enter** on the console. After the delay time, the light above the device location will begin flashing . You now have nine seconds to insert the disk unit. Put the disk unit part way into the desired slot and rotate the handle of the disk unit towards you. Then push the disk unit completely into the slot and rotate the handle towards the disk unit to latch it into the slot. The light above the device location will go off and remain off for a few seconds when the device contacts the backplane. Then it should go on and remain on.  
**Attention:** If you install the device when the light is **not** flashing, data may be lost, the disk unit may be damaged, or the backplane may be damaged.
  - f. Replace the covers that were removed during this procedure and return to the procedure that sent you here.  
**This ends the procedure.**

## Models 270, 800, and 810 - Disk unit (dedicated)

*For use by authorized service providers.*

Use this procedure to remove or replace a disk unit using dedicated maintenance on the Models 270, 800, and 810.

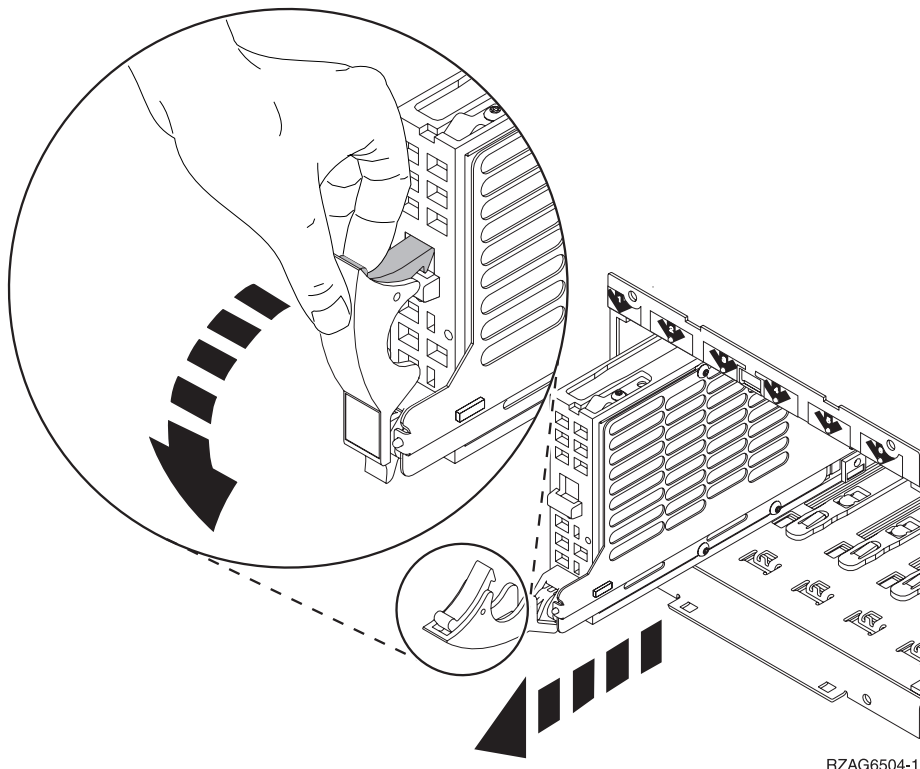
The Models 270, 800, and 810 may be housed in a FC 0551 frame. The upper and lower system units are placed on rails in the frame. If you are working on the upper or lower unit, follow these instructions and access the internal parts by opening the front cover and sliding the system unit out on its rails.

**Attention:** The disk unit is sensitive to electrostatic discharge. See *Work with electrostatic discharge-sensitive parts*.

To remove or replace the disk unit using dedicated maintenance:

1. Determine if the system has logical partitions. Go to *Determine if the system has logical partitions* before continuing with this procedure.
2. Were you directed here from *Recovery procedures*?
  - **Yes:** Continue with the next step.
  - **No:** Go to *Recovery procedures*.
3. To remove a disk unit using dedicated maintenance, perform the following:
  - a. Power off the system. See *Power on/off the system and logical partitions*.
  - b. Disconnect the power cord. On Models 270, 800, and 810 with a system unit expansion attached, disconnect both the system line cord and the expansion unit line cord.
  - c. To remove the disk unit, pinch the two surfaces of the latching mechanism together and pull the handle towards you to release the disk unit from the slot.
  - d. Remove the unit.

**Figure 1. Removing a disk unit - dedicated**



4. Are you finished with the repair?

- **No:** Continue with the next step.
- **Yes:** Replace the covers that were removed during this procedure and return to the procedure that sent you here.  
**This ends the procedure.**

- To Install a disk unit using dedicated maintenance, perform the following:
  - Power off the system. See Power on/off the system and logical partitions.
  - Disconnect the power cord. On Models 270, 800, and 810 with a system unit expansion attached, disconnect both the system line cord and the expansion unit line cord.
  - Put the disk unit part way into the desired slot and rotate the handle of the disk unit towards you.
  - Push the disk unit completely into the slot and rotate the handle towards the disk unit to latch it into the slot.
  - Replace the covers that were removed during this procedure and return to the procedure that sent you here.  
**This ends the procedure.**

## Models 270, 800, and 810 - Memory

*For use by authorized service providers.*

Choose the appropriate memory procedure:

- “Memory - A through H”
- “Memory on the riser”

**Memory - A through H:** Use this procedure to remove or install memory - A through H on the Models 270, 800, and 810.

The Models 270, 800, and 810 may be housed in a FC 0551 frame. The upper and lower system units are placed on rails in the frame. If you are working on the upper or lower unit, follow these instructions and access the internal parts by opening the front cover and sliding the system unit out on its rails.

To remove or replace memory - A through H:

- Power off the system. See Power on/off the system and logical partitions.
- Unplug the power cord from the back of the system. On Models 270, 800, and 810 with a system unit expansion attached, disconnect both the system line cord and the expansion unit line cord.
- Remove the left side cover. See Models 270, 800, and 810 - Covers.
- Remove the DIMM from the system backplane.
- Reverse this procedure to install Memory - A through H.  
**This ends the procedure.**

**Memory on the riser:** Use this procedure to remove or replace memory in the Models 270 and 810.

To remove or replace memory:

- Power off the system. See Power on/off the system and logical partitions.
- Unplug the power cord from the back of the system unit.
- Remove the left side cover. See Models 270, 800, and 810 - Covers.
- Remove the EMC shield by pulling out the two side latches.
- Remove the memory riser card by unlatching the two side latches.
- Remove the memory DIMMs from the processor or memory riser card by pressing down on the latches that are on each end of the DIMM.
- If you are replacing the memory riser card, then you must move the memory DIMMs to the new card.
- Install the new memory DIMMs by firmly pressing the DIMM on to the riser card until it is fully seated.  
**This ends the procedure.**



## **Models 270, 800, and 810 - Power supply - P01**

*For use by authorized service providers.*

Use this procedure to remove or replace the power supply - P01 on Models 270, 800, and 810.

The Models 270, 800, and 810 may be housed in an FC 0551 frame. The upper and lower system units are placed on rails in the frame. If you are working on the upper or lower unit, follow these instructions and access the internal parts by opening the front cover and sliding the system unit out on its rails.

To remove or replace the power supply - P01:

1. Power off the system. See Power on/off the system and logical partitions.
2. Unplug the power cord from the back of the system unit. On Models 270, 800, and 810 with a system unit expansion attached, disconnect both the system line cord and the expansion unit line cord.
3. Remove the left side and rear covers. See Models 270, 800, and 810 - Covers.
4. Remove all cables that run from the power supply to the system backplane.
5. Remove the screws holding the power supply to the rear of the system frame.
6. Remove the power supply by sliding it slightly forward so it will clear the back flange, and then pulling it out of the system.
7. Install the new part by reversing the procedure. Go to Verify the repair.  
**This ends the procedure.**

## **Models 270, 800, and 810 - Power supply - P02**

*For use by authorized service providers.*

Use this procedure to remove or replace the power supply - P02 on Models 270, 800, and 810.

The Models 270, 800, and 810 may be housed in an FC 0551 frame. The upper and lower system units are placed on rails in the frame. If you are working on the upper or lower unit, follow these instructions and access the internal parts by opening the front cover and sliding the system unit out on its rails.

To remove or replace the power supply - P02:

1. Power off the system. See Power on/off the system and logical partitions.
2. Unplug the power cord from the back of the system unit. On Models 270, 800, and 810 with a system unit expansion attached, disconnect both the system line cord and the expansion unit line cord.
3. Remove the right side and rear covers. See Models 270, 800, and 810 - Covers.
4. Remove the cables attached to the top board of the power supply box.
5. Remove the screws holding the power supply to the rear of the system frame.
6. Remove the power supply by lifting the top ring. The power supply box will lift out the side of the frame.
7. Install the new part by reversing the procedure. Go to Verify the repair.  
**This ends the procedure.**

## **Models 270 and 810 - Processor - M02**

*For use by authorized service providers.*

Use this procedure to remove or replace the processor - M02 in the Models 270 and 810.

**Note:** The processor regulator is part of the processor card assembly (M02).

To remove or replace the processor - M02:

1. Power off the system. See Power on/off the system and logical partitions.
2. Unplug the power cord from the back of the system unit.

3. Remove the left side cover. See Models 270, 800, and 810 - Covers.
4. Remove the EMC shield by pulling out on the two side latches.
5. Unlatch the processor card and pull it towards you to remove it from the system.
6. If the processor card has memory DIMMs on it you must move the memory DIMMs to the new card by performing the following:
  - a. Remove the memory DIMMs from the processor card by pressing down on the latches that are on opposite ends of the DIMM.
  - b. Install the memory DIMMs to the new processor card by firmly pressing the DIMM on to the processor card until it is fully seated.
7. Install the new part by reversing the procedure. Go to Verify the repair.  
**This ends the procedure.**

### **Models 270, 800, and 810 - Processor regulator - R01**

*For use by authorized service providers.*

Use this procedure to remove or replace the processor regulator - R01 in the Models 270, 800 and 810.

The Models 270, 800, and 810 may be housed in an FC 0551 frame. The upper and lower units are placed on rails in the frame. If you are working on the upper or lower unit, follow these instructions and access the internal parts by opening the front cover and sliding the system unit out on its rails.

To remove or replace the processor regulator - R01:

1. Power off the system. See Power on/off the system and logical partitions.
2. Unplug the power cord from the back of the system unit. On the Models 270, 800, and 810 with a system unit expansion attached, disconnect both the system line cord and the expansion unit line cord.
3. Remove the left side cover. See Models 270, 800, and 810 - Covers.
4. Press on the little locking tabs until processor regulator is ejected.
5. Gently pull the processor regulator the rest of the way off the system backplane.
6. Install the new part by reversing the procedure. Go to Verify the repair.  
**This ends the procedure.**

### **Models 270, 800, and 810 - Removable media - D07 and D08**

*For use by authorized service providers.*

Use this procedure to remove or replace removable media - D07 and D08 on Models 270, 800, and 810.

The Models 270, 800, and 810 may be housed in a FC 0551 frame. The upper and lower system units are placed on rails in the frame. If you are working on the upper or lower unit, follow these instructions and access the internal parts by opening the front cover and sliding the system unit out on its rails.

#### ***Laser safety information:* CAUTION:**

**This product may contain a CD-ROM which is a class 1 laser product. (RSFTC240)**

#### **CAUTION:**

**This product may contain a DVD which is a class 1 laser product. (RSFTC245)**

To remove or replace the removable media D07 and D08:

1. Power off the system. See Power on/off the system and logical partitions.
2. Unplug the power cord from the back of the system unit. On Models 270, 800, and 810 with a system unit expansion attached, disconnect both the system line cord and the expansion unit line cord.
3. Remove the front and left side covers. See Models 270, 800, and 810 - Covers.
4. Remove the cables that attach to the rear of the unit.

5. Pull the side fasteners to release the media tray from the system frame.
6. Remove the media unit and tray from the frame by sliding it forward.
7. Reverse these steps to install the new device.

**Notes:**

- If you need to remove a tape from the old tape unit, see Tape cartridge - Manual removal.
- If you need to remove a optical media, go to Optical media - Manual removal.
- If the replacement device is located in location D07, address jumpers are required. See Removable media address jumper positions.

**This ends the procedure.**

## **Models 270, 800, and 810 - System unit backplane - MB1**

*For use by authorized service providers.*

Use this procedure to remove or replace the system unit backplane in Models 270, 800, and 810.

If you are working on a Model 270, 800, or 810 that is housed in an FC 0551 frame, note that the upper and lower system units are placed on rails in the frame. Follow these instructions and access the internal parts by opening the front cover, and sliding the system unit out on its rails.

To remove or replace the system unit backplane - MB1:

1. Power off the system. See Power on/off the system and logical partitions.
2. Unplug the power cord from the back of the system unit. On Models 270, 800, and 810 with a system unit expansion attached, disconnect both the system line cord and the expansion unit line cord.
3. Remove the left side cover. See Models 270, 800, and 810 - Covers.
4. Remove the PCI cards. See Models 270, 800, and 810 - Cards (dedicated). Note the locations to aid in replacing them correctly.
5. Remove the lower and center cardboard. The center piece of cardboard is attached to the long PCI support with one retaining screw. The cardboard that separates the air moving devices does not need to be removed.
6. Remove all cables.
7. Remove the screws holding the backplane to the frame.
8. Remove the backplane assembly.
9. Install the new part by reversing the procedure.
10. Connect the power cord to the box and connect to AC.
11. Set the configuration ID:
  - a. Select function **07** on the system control panel, and press **Enter**. (07\*\* will be displayed).
  - b. Use the arrow keys to increment/decrement to sub-function **A9**. (07A9 will be displayed). Press **Enter**. (07A9 00 will be displayed).
  - c. Use the arrow keys to increment/decrement to the frame address of the box from which you just replaced the backplane—usually 01 for the system unit (07nn will be displayed, where nn is the frame address). Press **Enter**. (07nn 00 will be displayed).
  - d. Find the correct configuration ID from the following list:
    - **For Model 270:**
      - **91** :Model 270 with CCIN 2249, 224A, 25B9, 25BA and without FC 7104, (without removable processor)
      - **92**: Model 270 with processor CCIN 24A0, 24A2, 25BD and without FC 7104, (with removable processor)
      - **95**: Model 270 with CCIN 2249, 224A, 25B9, 25BA and with FC 7104, (without removable processor)

- **96:** Model 270 with processor CCIN 24A0, 24A2, 24A4, 25BD and with FC 7104, (with removable processor)
  - **For Models 800 and 810:**
    - **91:** Models 800 and 810 with CCIN 25B9, 25BA, 25F0 and without expansion unit (FC 7116), (without removable processor)
    - **92:** Model 810 with processor CCIN 25EB and without expansion unit (FC 7116), (with removable processor)
    - **95:** Models 800 and 810 with CCIN 25B9, 25BA, 25F0 and with expansion unit (FC 7116), (without removable processor)
    - **96:** Model 810 with processor CCIN 25EB and with expansion unit (FC 7116), (with removable processor)
  - e. Use the arrow keys to increment/decrement to the correct configuration ID (07xx will be displayed, where xx is the configuration ID). Press **Enter**.(07xx 00 will be displayed).
12. The control panel will display the series of bring-up SRCs and then display function 01.  
**This ends the procedure.**

## Models 270, 800, and 810 - Time of day (TOD) battery

*For use by authorized service providers.*

Use this procedure to remove or replace the Time of day (TOD) battery in the Models 270, 800, and 810.

The Models 270, 800, and 810 may be housed in a FC 0551 frame. The upper and lower system units are placed on rails in the frame. If you are working on the upper or lower unit, follow these instructions and access the internal parts by opening the front cover and sliding the system unit out on its rails.

### CAUTION:

**This product contains a lithium battery. To avoid possible explosion, do no burn, exchange, or charge the battery. Discard the battery as instructed by local regulations for lithium batteries. (RSFTC232)**

To remove or replace the time of day battery:

1. Power off the system and unplug ac power cable. See Power on/off the system and logical partitions. On Models 270, 800, and 810 with a system unit expansion attached, disconnect both the system line cord and the expansion unit line cord.
2. Remove the left side cover. See Models 270, 800, and 810 - Covers.
3. Remove the card directly above and below the TOD battery. See Models 270, 800, and 810 - Cards (dedicated).
4. Remove the TOD battery by sliding it toward the back of the system.
5. Reverse this procedure to install the new battery.
6. After installation is complete, IPL the system in Manual Mode.
7. Have the customer set the time and date.  
**This ends the procedure.**

## Model 820 remove and replace procedures

*For use by authorized service providers.*

**Model 820 - Air moving device - B01 through B04**

**Model 820 - Cards (concurrent)**

**Model 820 - Cards (dedicated)**

**Model 820 - Control panel - NB1**

**Model 820 - Covers**

**Model 820 - Device board - DB1 and DB2**

**Model 820 - Disk unit (concurrent)**

**Model 820 - Disk unit (dedicated)**

**Model 820 - Memory**

**Model 820 - Power supply - P01, P02, and P03**

**Model 820 - Processor - M03**

**Model 820 - Processor regulator - M03**

**Model 820 - Removable media - D13 and D14**

**Model 820 - System unit backplane (MB1) and power distribution board (PB1)**

**Model 820 - Time of day (TOD) battery**

## **Model 820 - Air moving device (AMD) - B01 through B04**

*For use by authorized service providers.*

Use this procedure to remove or replace the air moving device (AMD) - B01 through B04 in the Model 820. Follow either the concurrent (See page 17) or dedicated (See page 17) procedure below.

### **Concurrent procedure**

To remove or replace the air moving device - B01, B02, B03, and B04 concurrently:

The configuration of three power supplies and four AMDs **must be installed** to use this procedure. Use the dedicated procedure below with less than four AMDs.

**Note:** The replacement fan **must** be reconnected within 30 seconds of removal of failed unit or system failure/shutdown may result.

1. Remove the front cover. See Model 820 - Covers.
2. Remove the AMD by pulling out on the latch and pivoting it towards you.
3. Reverse this procedure to install the AMD.

**This ends the procedure.**

### **Dedicated procedure**

To remove or replace the air moving device - B01 and B03 using dedicated maintenance:

1. Power off the system. See Power on/off the system and logical partitions.
2. Remove the front cover. See Model 820 - Covers.
3. Remove the AMD by pulling out on the latch and pivoting it towards you.
4. Reverse this procedure to install the AMD.

**This ends the procedure.**

## Model 820 - Cards (concurrent)

For use by authorized service providers.

Use this procedure to remove or replace cards concurrently in the Model 820.

### Concurrent/dedicated guidelines for Model 820

In some cases, you do not need to power down the system to change PCI cards. Use the following guidelines to determine if you should use dedicated or concurrent remove and replace procedures. If you use concurrent maintenance on a partitioned system, follow the procedures from the partition that owns the resource. If the resource is not owned, follow the procedure from the primary partition.

#### For all Model 820 cards:

- Card positions C01 through C12 permit concurrent maintenance using HSM. You can power down the individual card slot.
- If the resource is the load source IOA or the load source IOP, or any other storage IOA/IOP with critical DASD attached for the system, primary, or secondary partition, follow the on-screen instructions when you use HSM to power down the IOP or IOA. Instructions to use functions 68 and 69 on the control panel will be included.
- If the resource is the console IOA or the console IOP for the system or primary partition, you cannot power down the domain.
- If the resource is the console IOA or the console IOP for a secondary partition, then power down the secondary partition and follow the procedure from the primary partition.

#### CAUTION:

**The circuit card contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the circuit card as instructed by local regulations. (RSFTC234)**

**Attention:** All cards are sensitive to electrostatic discharge (see Work with electrostatic discharge-sensitive parts).

**Attention:** If removing the cover while powered on, errors may occur due to electromagnetic interference.

To remove cards (concurrently):

1. From the Hardware Service Manager display, select **Packaging hardware resources**.
2. Select **Hardware contained in packaging** for the frame ID that you are working on.
3. Find the card position for the IOA or IOP that you are removing and select **Concurrent maintenance**.  
**Attention:** If multiple resources are shown with the same card position, one or more of these resources will show a status of *Missing* ("?" after the description). Only one resource will be listed as not missing. Select this resource for the concurrent maintenance operation.
4. A listing of the power domain is shown. Find the IOA or IOP that you are removing and select **Power off domain**. Everything within the IOA's or IOP's power domain will be powered off.
5. To see the status of the power domain, select **Display power status**.
6. Find the IOA or IOP that you are removing and select **Toggle LED blink off/on**.
7. Look at the power LED for the card that you are removing to ensure that it is powered off. The power LED is located to the left and directly above the card slot. If the LED is blinking multiple times per second (rapidly) or it is off, then the card is powered off.
8. Remove the left side cover. (See Model 820 - Covers.)
9. Remove and label any cables connected to the card.
10. Turn the latches securing the card.
11. Gently pull the card off the system backplane.  
**This ends the procedure.**

To replace cards (concurrently):

1. Install the card in to the system by reversing the card removal procedure above.
2. Select **Power on domain** for the IOA or IOP that you are installing.
3. Press **Enter**. The Work with Controlling Resources display will appear.

**Note:** To the right of the description field you will see one or both of the following symbols displayed.

Symbol	Indication
*	Indicates the location to which the system will assign the resource.
>	Indicates the location to which the resource was last assigned.

4. Determine the location where you want to assign the resource and select **Assign to** for that location.

**Note:** If you have exchanged a 2766 or 2787 Fibre Channel IOA, the IBM 2105 disk unit subsystem must be updated to use the World-Wide Port-Name of the new 2766 or 2787 IOA. This name can be found in the Port worldwide name field on the iSeries by displaying detail on the 2766 or 2787 IOA Logical Hardware Resource information in Hardware Service Manager in SST/DST.

The 16-digit World-Wide Port-Name can also be determined by appending the digits "1000" to the beginning of the 12-digit IEEE Address found on the tailstock label of the Fibre Channel IOA. Use the *ESS Web Interface User's Guide* (SC26-7346) to update the World-Wide Port-Name in the host configuration on the IBM 2105 ESS. The *ESS Web Interface User's Guide* can also be found at the following URL: <http://ssddom02.storage.ibm.com/disk/ess/documentation.html>

**This ends the procedure.**

## Model 820 - Cards (dedicated)

*For use by authorized service providers.*

Use this procedure to remove or replace cards (dedicated) in the Model 820.

In some cases, you do not need to power down the system to change PCI cards. Use the rules in Model 820 - Cards (concurrent) to determine if you should use dedicated or concurrent remove and replace procedures.

### CAUTION:

**The circuit card contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the circuit card as instructed by local regulations. (RSFTC234)**

**Attention:** All cards are sensitive to electrostatic discharge (see Work with electrostatic discharge-sensitive parts).

To remove or replace cards (dedicated):

1. Power off the system. See Power on/off the system and logical partitions.
2. Remove the ac power cord from the frame you are working on.
3. Remove the left side cover. See Model 820 - Covers.
4. Remove and label any cables connected to the card.
5. Turn the latches securing the card.
6. Gently pull the card off the system backplane.
7. Reverse this procedure to replace the cards.
8. After exchanging the failing item, go to Verify the repair.

**Note:** If you have exchanged a 2766 or 2787 Fibre Channel IOA, the IBM 2105 disk unit subsystem must be updated to use the World-Wide Port-Name of the new 2766 or 2787 IOA. This name can be found in the Port worldwide name field on the iSeries by displaying detail on the 2766 or 2787 IOA Logical Hardware Resource information in Hardware Service Manager in SST/DST.

The 16-digit World-Wide Port-Name can also be determined by appending the digits "1000" to the beginning of the 12-digit IEEE Address found on the tailstock label of the Fibre Channel IOA. Use the *ESS Web Interface User's Guide* (SC26-7346) to update the World-Wide Port-Name in the host configuration on the IBM 2105 ESS. The *ESS Web Interface User's Guide* can also be found at the following URL: <http://ssddom02.storage.ibm.com/disk/ess/documentation.html>

**This ends the procedure.**

## **Model 820 - Control panel - NB1**

*For use by authorized service providers.*

Use this procedure to remove or replace the control panel - NB1 on the Model 820.

**Attention:** The control panel is sensitive to electrostatic discharge (see "Work with electrostatic discharge-sensitive parts" on page 585).

To remove or replace the control panel (NB1):

1. Power off the system. See Power on/off the system and logical partitions.
2. Disconnect the ac power cord from the system unit.
3. Open the front cover. See Model 820 - Covers.
4. Pull on the two side fasteners to release the control panel assembly.
5. Slide the panel partially out of the frame.
6. Are you here to exchange the processor capacity or interactive cards?
  - **Yes:** Perform the following:
    - a. Pull the processor capacity or interactive cards off the control panel card and put the new ones in place. Note the position and orientation of each card. See Control panel - Model 820.
    - b. Reinstall the control panel card by reversing the procedure to this point.
    - c. Go to Verify the repair.  
**This ends the procedure.**
  - **No:** Disconnect the cables that are attached to backside of the control panel. Continue with the next step.
7. Remove the control panel from the frame.
8. Remove the control panel cover and remove the processor capacity and interactive cards. Note the position and orientation of each card. See Control panel - Model 820.
9. Install the processor capacity and interactive cards into the new panel and replace the cover.
10. Remove the plastic tab on the front of the control panel that has the machine type and serial number. The tab should then be installed onto the new control panel.
11. Reverse the above procedure to install the panel.  
**Note:** When a control panel with keystick is replaced, discard the new keys that come with the panel and reuse the original keys.
12. Do you have the original system unit keys?
  - **Yes:** Continue with the next step.
  - **No:** Perform the following:
    - a. Open the front cover. See Model 820 - Covers.
    - b. Pull on the two side fasteners to release the control panel.
    - c. Slide the panel partially out of the frame.
    - d. Apply ac power.
    - e. Insert keystick into panel. The panel should display SRC 0000 5553.
    - f. Locate the push button located on the back of the control panel, directly behind the keystick position.



- g. Depress the push button for 3-4 seconds.
13. After exchanging an item, go to Verify the repair.  
**This ends the procedure.**

## **Model 820 - Covers**

*For use by authorized service providers.*

Use this procedure to remove or replace covers on the Model 820.

**Attention:** If removing the cover while powered on, errors may occur due to Electromagnetic Interference.

To remove the left, right, or top cover:

1. Remove the screws that fasten the cover to the back of the system frame.
2. Push the cover toward the back of the system to remove it.

To remove the front cover: Pull the top of the cover away from the frame.

To remove the back cover: Lift the cover up to remove it.

## **Model 820 - Device board - DB1 and DB2**

*For use by authorized service providers.*

Use this procedure to remove or replace the device board - DB1 and DB2 in the Model 820.

To remove or replace a device board (DB1 and DB2):

1. Power off the system. (See “Power on/off the system and logical partitions” on page 561.)
2. Unplug the power cord from the back of the system unit.
3. Remove the front and right side covers. (See “Model 820 - Covers.”)
4. Remove the EMC shield in front of the disk units by pulling out on the side two latches.
5. Remove the disk units from the disk unit cage. Label the position of each disk unit.
6. Remove the screws holding the disk unit cage to the frame. The screws are located on the front and inside rear of the disk unit cage.
7. Unplug and remove the cables on the back of the device board.
8. Pull the disk unit cage out of the frame.
9. Remove the device board from the back of the disk unit cage.

**This ends the procedure.**

## **Model 820 - Disk unit (concurrent)**

*For use by authorized service providers.*

Use this procedure to remove or replace the disk unit (concurrently) in the Model 820.

**Attention:** If removing the cover while powered on, errors may occur due to electromagnetic interference.

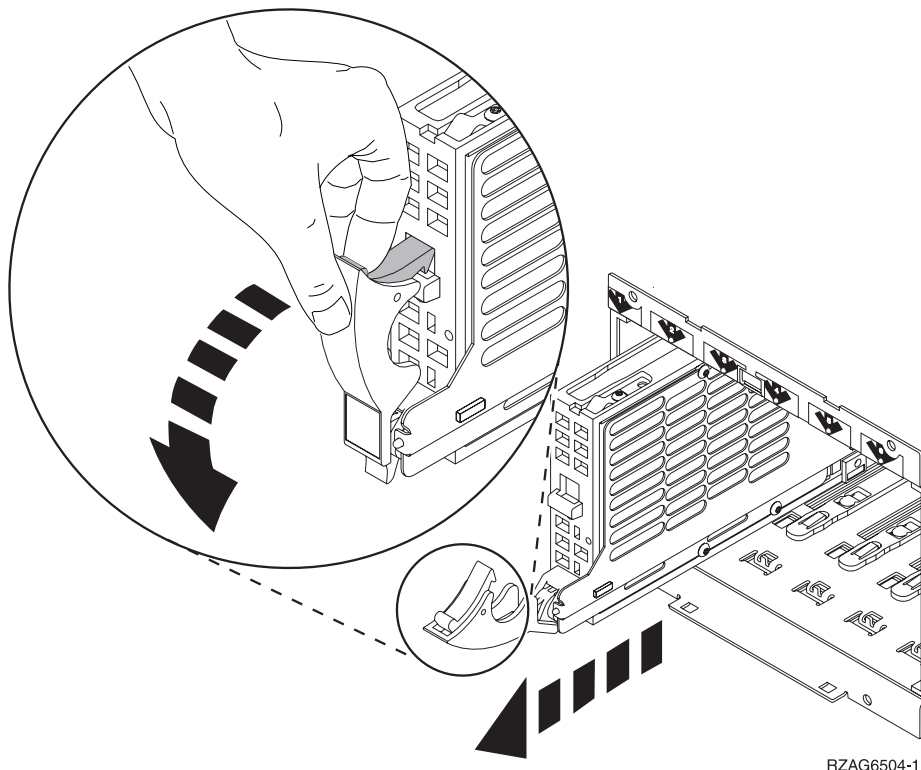
**Attention:** The disk unit is sensitive to electrostatic discharge (see “Work with electrostatic discharge-sensitive parts” on page 585).

To remove or replace the disk unit (concurrent):

1. Determine if the system has logical partitions. Go to “Determine if the system has logical partitions” on page 579 before continuing with this procedure.
2. Were you directed here from the Recovery procedures topic?
  - **No:** Go to “Recovery procedures” on page 539.

- **Yes:** After you have determined the location of the disk unit to replace, remove the front covers for access. (See “Model 820 - Covers” on page 21.) Continue with the next step.
3. Remove the EMC access plate that is over the location of the disk unit that you are removing. For location information, see “Locations and addresses” on page 224.
  4. To remove a disk unit using concurrent maintenance perform the following:
    - a. Select System Service Tools (SST). If you cannot get to SST, select DST.
      - Do not perform a system IPL to get to DST.**
    - b. Select **Start a Service Tool**—>**Hardware Service Manager**.
    - c. Select **Device Concurrent Maintenance** and enter the required information in the information fields.
    - d. Press **Enter** on the console. After the delay time, the light above the device location will begin flashing. You now have 9 seconds to pinch the two surfaces of the latching mechanism together and rotate the handle of the disk unit towards you. Pull the disk unit partially out of the tower. The light above the device location will go off and remain off as soon as the device is no longer making contact with the backplane.

**Attention:** If you remove the device when the light is **not** flashing, data may be lost, the disk unit may be damaged, or the backplane may be damaged.



- e. Wait another 5 seconds to allow time for the disk to stop spinning. Then pull the disk unit the remaining way out of the tower.
5. Are you finished with the repair?
    - **No:** Continue with the next step.
    - **Yes:** Replace the covers that were removed during this procedure and return to the procedure that sent you here.
      - This ends the procedure.**
  6. To install a disk unit using concurrent maintenance perform the following:
    - a. Select System Service Tools (SST). If you cannot get to SST, select DST.
      - Do not perform a system IPL to get to DST.**

- b. Select **Start a Service Tool**—>**Hardware Service Manager**—>**Device Concurrent Maintenance** and enter the required information in the information fields. **Do not press the Enter key at this time.**
- c. Slide the unit half-way into the tower.  
**Attention:** Ensure that the device does not contact the backplane at this time.
- d. Press **Enter** on the console. After the delay time, the light above the device location will begin flashing . You now have 9 seconds to insert the disk unit. Put the disk unit part way into the desired slot and rotate the handle of the disk unit towards you. Then push the disk unit completely into the slot and rotate the handle towards the disk unit to latch it into the slot. The light above the device location will go off and remain off for a few seconds when the device contacts the backplane. Then it should go on and remain on.  
**Attention:** If you install the device when the light is **not** flashing, data may be lost, the disk unit may be damaged, or the backplane may be damaged.
- e. Replace the covers that were removed during this procedure and return to the procedure that sent you here.  
**This ends the procedure.**

### **Model 820 - Disk unit (dedicated)**

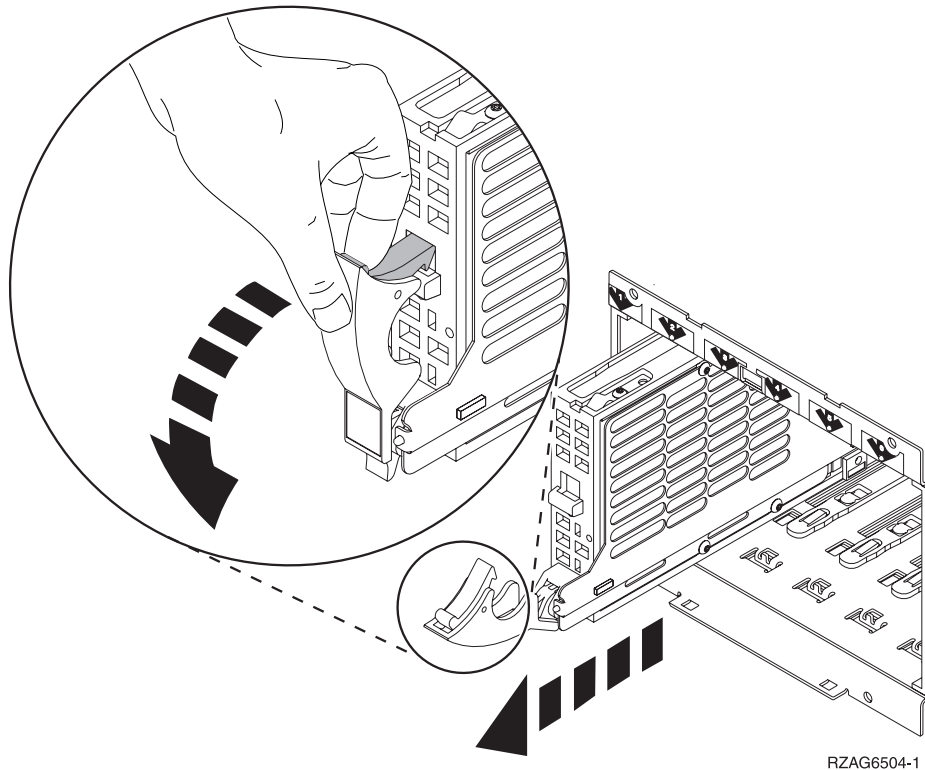
*For use by authorized service providers.*

Use this procedure to remove or replace the disk unit (dedicated) in the Model 820.

**Attention:** The disk unit is sensitive to electrostatic discharge (see “Work with electrostatic discharge-sensitive parts” on page 585).

To remove or replace the disk unit (dedicated):

1. Determine if the system has logical partitions. Go to “Determine if the system has logical partitions” on page 579 before continuing with this procedure.
2. Were you directed here from the Recovery procedures topic?
  - **No:** Go to “Recovery procedures” on page 539.
  - **Yes:** After you have determined the location of the disk unit to replace, remove the front covers for access. (See “Model 820 - Covers” on page 21.) Continue with the next step.
3. Remove the EMC access plate that is over the location of the disk unit that you are removing. For location information, see “Locations and addresses” on page 224.
4. To remove a disk unit using dedicated maintenance perform the following:
  - a. Power off the system. (See “Power on/off the system and logical partitions” on page 561.)
  - b. Disconnect the power cord.
  - c. To remove the disk unit, pinch the two surfaces of the latching mechanism together and pull the handle towards you to release the disk unit from the slot.
  - d. Remove the unit from the tower.



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5. Are you finished with the repair?
  - **No:** Continue with the next step.
  - **Yes:** Replace the covers that were removed during this procedure and return to the procedure that sent you here.  
**This ends the procedure.**
6. To install a disk unit using dedicated maintenance, perform the following:
  - a. Power off the system. (See “Power on/off the system and logical partitions” on page 561.)
  - b. Disconnect the power cord.
  - c. Put the disk unit part way into the desired slot and rotate the handle of the disk unit towards you.
  - d. Push the disk unit completely into the slot and rotate the handle towards the disk unit to latch it into the slot.
  - e. Replace the covers that were removed during this procedure and return to the procedure that sent you here.  
**This ends the procedure.**

## Model 820 - Memory

*For use by authorized service providers.*

Use this procedure to remove or replace memory in the Model 820.

To remove or replace memory:

1. Power off the system. See “Power on/off the system and logical partitions” on page 561.
2. Unplug the power cord from the back of the system unit.
3. Remove the left side cover. See Model 820 - Covers.
4. Remove the EMC shield by pulling out the two side latches.
5. Remove the memory riser card by unlatching the two side latches.

6. Remove the memory DIMMs from the processor or memory riser card by pressing down on the latches that are on each end of the DIMM.
7. If you are replacing the memory riser card, then you must move the memory DIMMs to the new card.
8. Install the new memory DIMMs by firmly pressing the DIMM on to the riser card until it is fully seated.  
**This ends the procedure.**

### **Model 820 - Power supply - P01, P02, and P03**

*For use by authorized service providers.*

Use this procedure to remove or replace the power supply - P01, P02, and P03 in the Model 820.

To remove or replace the power supply - P01, P02, and P03:

1. Power supply PN 24L1400 must have the protective cover on connector J4 removed before installation. Install the protective cover on the part that you are returning.
2. Remove the right side cover. (See "Model 820 - Covers" on page 21.)
3. Are there three power supplies installed in the system?
  - **Yes:** Continue with the next step.
  - **No:** Power down the system before continuing with this procedure. (See "Power on/off the system and logical partitions" on page 561.)
4. Pull the handle all the way down and towards you.
5. Remove the power supply by sliding it out of the system.
6. Install the new part by sliding the power supply all the way in and then lifting the handle to lock into place.  
**This ends the procedure.**

### **Model 820 - Processor - M03**

*For use by authorized service providers.*

Use this procedure to remove or replace the processor - M03 in the Model 820.

**Note:** The processor regulator is part of the processor card assembly (M03).

To remove or replace the processor - M03:

1. Power off the system. (See "Power on/off the system and logical partitions" on page 561.)
2. Unplug the power cord from the back of the system unit.
3. Remove the left side cover. (See "Model 820 - Covers" on page 21.)
4. Remove the EMC shield by pulling out on the two side latches.
5. Unlatch the processor card and pull it towards you to remove it from the system.
6. If the processor card has memory DIMMs on it you must move the memory DIMMs to the new card by performing the following:
  - a. Remove the memory DIMMs from the processor card by pressing down on the latches that are on opposite ends of the DIMM.
  - b. Install the memory DIMMs to the new processor card by firmly pressing the DIMM on to the processor card until it is fully seated.
7. Install the new part by reversing the procedure. Go to "Verify the repair" on page 558.  
**This ends the procedure.**

### **Model 820 - Processor regulator - M03**

*For use by authorized service providers.*

Use this procedure to remove or replace the processor regulator - M03 in the Model 820.

**Note:** The processor regulator is part of the processor card assembly (M03).

To remove or replace the processor regulator - M03:

1. Power off the system. (See “Power on/off the system and logical partitions” on page 561.)
2. Unplug the power cord from the back of the system unit.
3. Remove the left side cover. (See “Model 820 - Covers” on page 21.)
4. Remove the EMC shield by pulling out on the side two latches.
5. Unlatch the processor card and pull it towards you to remove it from the system.
6. Remove the processor regulator.
7. Install the new part by reversing the procedure. Go to “Verify the repair” on page 558.

**This ends the procedure.**

## **Model 820 - Removable media - D13 and D14**

*For use by authorized service providers.*

Use this procedure to remove or replace removable media - D13 and D14 on the Model 820.

**Laser safety information: CAUTION:**

**This product may contain a CD-ROM which is a class 1 laser product. (RSFTC240)**

**CAUTION:**

**This product may contain a DVD which is a class 1 laser product. (RSFTC245)**

To remove or replace the removable media (D13 and D14):

1. Power off the system. (See “Power on/off the system and logical partitions” on page 561.)
2. Pull the power plug in the rear of the system.
3. Remove the front cover. (See “Model 820 - Covers” on page 21.)
4. Partially remove the unit by pulling out on the two latches. The latches are located on each side of the unit.
5. Remove the cables that attach to the rear of the unit.

**Note:** If both devices are installed, then you may have to remove both units to gain access to the cables.

6. Remove the unit from the frame.
7. Install the new part by reversing the procedure. Go to “Verify the repair” on page 558.

**Notes:**

- If you need to remove a tape from the old tape unit, see “Tape cartridge - manual removal” on page 218.
- If you need to remove a optical media, go to “Optical media (CD-ROM, DVD-ROM, and DVD-RAM) - manual removal” on page 223.
- If the replacement device is in location D13, address jumpers are required. See Removable media address jumper positions.

**This ends the procedure.**

## **Model 820 - System unit backplane (MB1) and power distribution board (PB1)**

*For use by authorized service providers.*

Use this procedure to remove or replace the system unit backplane (MB1) and power distribution board (PB1) in the Model 820.

**Note:** The PB1 and MB1 are included in the TWRCARD.

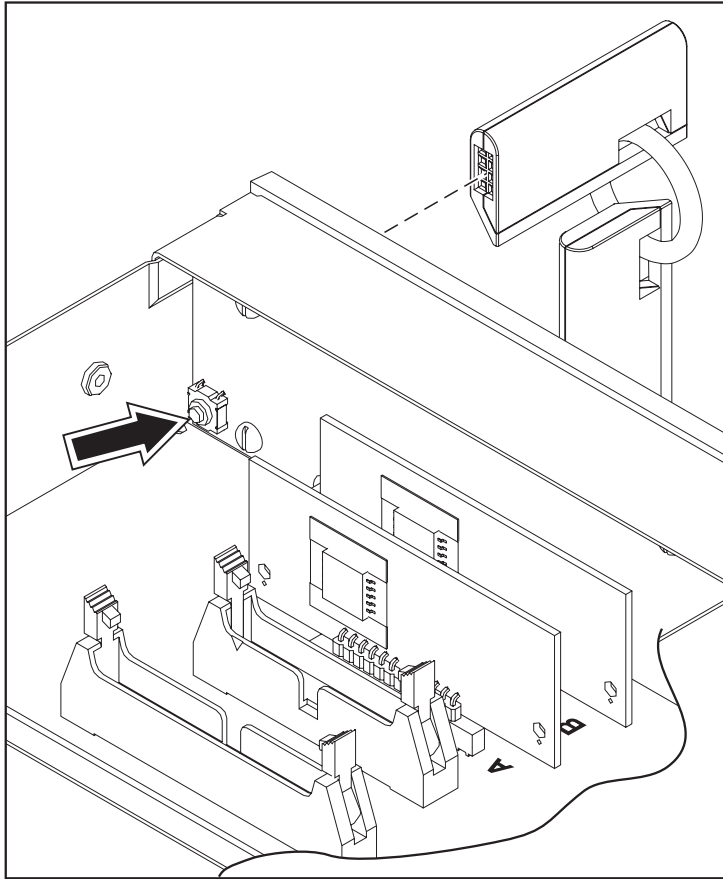
To remove or replace the system unit backplane (MB1) and power distribution board (PB1):

1. Power off the system. See Power on/off the system and logical partitions.
2. Unplug the power cord from the back of the system unit.
3. Remove the following:
  - a. The right side cover. See Model 820 - Covers.
  - b. The PCI cards, processor and memory riser cards, labeling each. See Model 820 - Cards (dedicated).
  - c. All the plastic card dividers.
  - d. The screws securing the processor and memory cage to the frame.
  - e. The power supplies. Unplug the AC cable and cables that connect to the disk unit cages, power, and control panel function cables.
  - f. The screws securing the upper card cage to the lower processor cage.
  - g. The lower processor cage by pulling it out of the frame.
  - h. The cable running from the system backplane to the rear of the frame.
  - i. The screws holding the SPCN connector plate to the rear of the frame. Pull out the plate.
  - j. The screws that mount the boards and stiffener to the frame.
4. Remove the system unit backplane, the power distribution board, and stiffener board. This is all one FRU.

**Note:** There is an insulator attached to the board. If the new assembly does not have an insulator, use the insulator from the assembly you just removed.
5. Reverse the procedure to replace the board. Then, continue with the next step.

**Note:** Be sure to close the cable catches on the power supply side of the power distribution backplane.
6. Perform the following:
  - a. Open the front cover. (See “Model 820 - Covers” on page 21.)
  - b. Pull on the two side fasteners to release the control panel.
  - c. Slide the panel partially out of the frame.
  - d. Insert the keystick into the panel.
  - e. Plug the power cord back into the system frame. Do not power on the system yet. The panel should display SRC 0000 5553.

**Figure 1. System unit control panel with keystick (NB1)**



RZAQ4506-0

- f. Locate the push button located on the back of the control panel, directly behind the keystick position, and depress it for 3-4 seconds.
7. Select function **7** on the system control panel. Press **Enter**. (07\*\* will be displayed)
8. Use the arrow keys to increment/decrement to sub-function **A9** (07A9 will be displayed). Press **Enter** (07A9 00 will be displayed).
9. Use the arrow keys to increment/decrement to the frame address, nn (nn is usually '01' for system units) (07nn will be displayed). Press **Enter** (07nn 00 will be displayed).
10. Use the arrow keys to increment/decrement to a configuration ID to '93'. (0793 will be displayed). Press **Enter** (0793 00 will be displayed).
11. After a few seconds, the display will go blank and then the bring-up SRCs will be displayed. When the panel returns to function 01, bring up is complete.
12. Power the system unit back on. See Power on/off the system and logical partitions.
13. Set the system time and date.  
**This ends the procedure.**

## Model 820 - Time of day (TOD) battery

*For use by authorized service providers.*

Use this procedure to remove or replace the time of day (TOD) battery in the Model 820.

### **CAUTION:**

**This product contains a lithium battery. To avoid possible explosion, do no burn, exchange, or charge the battery. Discard the battery as instructed by local regulations for lithium batteries. (RSFTC232)**



To remove or replace the time of day battery:

1. Power off the system and unplug ac power cable. See Power on/off the system and logical partitions.
2. Remove the left side cover. See Model 820 - Covers.
3. Remove the cover (EMC shield) by pulling out on the two latches. The latches are located on each side of the cover.
4. Remove the processor card. See Model 820 - Processor - M03.
5. Remove the memory card.
6. Replace the TOD battery by sliding the battery to the left and removing it from the system.
7. Reverse this procedure to install the new battery.
8. After installation is complete, IPL the system in Manual Mode.
9. Have the customer set the time and date.

**This ends the procedure.**

## **Model 825 remove and replace procedures**

*For use by authorized service providers.*

**Model 825 - Air moving device (AMD) - B01; B02 (concurrent)**

**Model 825 - Cards (concurrent)**

**Model 825 - Cards (dedicated)**

**Model 825 - Control panel - NB1**

**Model 825 - Covers**

**Model 825 - Device board - DB1**

**Model 825 - Device board - DB2, DB3, and DB4**

**Model 825 - Disk unit (concurrent)**

**Model 825 - Disk unit (dedicated)**

**Model 825 - HSL card - MB1 and MB2**

**Model 825 - Interlock switch**

**Model 825 - Memory - A through H**

**Model 825 - Power cable harness assembly**

**Model 825 - Power supply - P01 and P02**

**Model 825 - Removable media - D17 and D18**

**Model 825 - System unit backplane - CB1 and Power bus bar assembly**

**Model 825 - Time of day battery**

## **Model 825 - Air moving device (AMD) - B01; B02 (concurrent)**

*For use by authorized service providers.*

Use this procedure to remove or replace the air moving device (AMD) - B01; B02 (concurrently) on a Model 825.

Two AMDs (excluding the AMDs mounted on the power supplies), and two power supplies **must** be installed to perform this procedure.

**Attention:** The replacement fan must be reconnected within 30 seconds of removal of the failed unit, or system failure or shutdown may result.

To remove or replace the AMDs:

1. Remove the front cover, see Model 825 - Covers.
2. Perform the following:
  - To remove the **bottom** AMD.
    - a. Pull on the top knob to release the AMD.
    - b. Pull the AMD out.
  - To remove the **top** AMD.
    - a. Remove the plate that holds in the AMD (located on the top right corner).
    - b. Pull on the top knob to release the AMD.
    - c. Pull out the AMD.
3. Reverse this procedure to install the AMDs.  
**This ends the procedure.**

### **Model 825 - Cards (concurrent)**

*For use by authorized service providers.*

Use this procedure to remove or replace cards (concurrently) in the Model 825.

#### **Concurrent/dedicated guidelines for Model 825:**

In some cases you do not need to power down the system to change PCI cards. Use the following guidelines to determine if you should use dedicated or concurrent remove and replace procedures. If you use concurrent maintenance on a partitioned system, follow the procedures from the partition that owns the resource. If the resource is not owned, follow the procedure from the primary partition.

#### **For all Model 825 cards:**

- Card positions C01 through C07 and C10 through C12 permit concurrent maintenance using HSM. You can power down the individual card slot.
- If the resource is the load source IOA or the load source IOP, or any other storage IOA/IOP with critical DASD attached for the system, primary, or secondary partition, follow the on-screen instructions when you use HSM to power down the IOP or IOA. Instructions to use functions 68 and 69 on the control panel will be included.
- If the resource is the console IOA or the console IOP for the system or primary partition, you cannot power down the domain.
- If the resource is the console IOA or the console IOP for a secondary partition, then power down the secondary partition and follow the procedure from the primary partition.
- All other card positions require dedicated maintenance. See Model 825 - Cards (dedicated).

#### **CAUTION:**

**The circuit card contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the circuit card as instructed by local regulations. (RSFTC234)**

**Attention:** All cards are sensitive to electrostatic discharge. See *Work with electrostatic discharge-sensitive parts*.

**Attention:** If removing the cover while powered on, errors may occur due to electromagnetic interference.

To remove cards concurrently:

1. In some cases you do not need to power down the system to change PCI cards. Use the Concurrent/dedicated guidelines (See page 30) above to determine if you should use dedicated or concurrent remove and replace procedures.
2. Choose from the following options:
  - If you can perform this procedure concurrently, continue with the next step.
  - If you must perform this procedure dedicated, see *Model 825 - Cards (dedicated)*.
3. From the Hardware Service Manager (HSM) display, select **Packaging hardware resources** → **Hardware contained in packaging** (for the frame ID that you are working on).
4. Find the card position for the IOA or IOP that you are removing and select **Concurrent maintenance**.  
**Attention:** If multiple resources are shown with the same card position, one or more of these resources will show a status of *Missing* ("?" after the description). Only one resource will be listed as not missing. Select this resource for the concurrent maintenance operation.
5. A listing of the power domain is shown. Find the IOA or IOP that you are removing and select **Power off domain**. Everything within the IOA's or IOP's power domain will be powered off .
6. Find the IOA or IOP that you are removing and select **Toggle LED blink off/on**.
7. Look at the power LED for the card that you are removing to ensure that it is powered off. The power LED is located to the left and directly above the card slot. If the LED is blinking multiple times per second (rapidly) or it is off, then the card is powered off.
8. Remove the left side cover. See *Model 825 - Covers*.
9. Remove and label any cables connected to the card.
10. Turn the latches securing the card.
11. Gently pull the card off the system backplane.  
**This ends the procedure.**

To replace cards concurrently:

1. Install the card in to the system by reversing the card removal procedure above.
2. Select **Power on domain** for the IOA or IOP that you are installing, and press **Enter**. The *Work with Controlling Resources* display will appear.  
**Note:** To the right of the description field you will see one or both of the following symbols displayed.

Symbol	Indication
*	Indicates the location to which the system will assign the resource.
>	Indicates the location to which the resource was last assigned.

3. Determine the location where you want to assign the resource and select **Assign to** for that location.  
**Note:** If you have exchanged a 2766 or 2787 Fibre Channel IOA, the IBM 2105 disk unit subsystem must be updated to use the World-Wide Port-Name of the new 2766 or 2787 IOA. This name can be found in the Port worldwide name field on the iSeries by displaying detail on the 2766 or 2787 IOA Logical Hardware Resource information in Hardware Service Manager in SST/DST.  
The 16-digit World-Wide Port-Name can also be determined by appending the digits "1000" to the beginning of the 12-digit IEEE Address found on the tailstock label of the Fibre Channel IOA. Use the *ESS Web Interface User's Guide (SC26-7346)* to update the World-Wide Port-Name in the host configuration on the IBM 2105 ESS. The *ESS Web Interface User's Guide* can also be found at the following URL: <http://ssddom02.storage.ibm.com/disk/ess/documentation.html>

4. After replacing a part, go to Verify the repair.  
**This ends the procedure.**

## Model 825 - Cards (dedicated)

*For use by authorized service providers.*

Use this procedure to remove or replace cards using dedicated maintenance in the Model 825.

**Attention:** All cards are sensitive to electrostatic discharge. See Work with electrostatic discharge-sensitive parts.

### CAUTION:

**The circuit card contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the circuit card as instructed by local regulations. (RSFTC234)**

To remove or replace cards using dedicated maintenance:

1. In some cases you do not need to power down the system to change PCI cards. Use the guidelines in Model 825 - Cards (concurrent) to determine if you should use dedicated or concurrent remove and replace procedures.
2. Choose from the following options:
  - If you can perform this procedure concurrently, see Model 825 - Cards (concurrent).
  - If you must perform this procedure dedicated, perform the following:
    - a. Power off the system. See Power on/off the system and logical partitions.
    - b. Remove the ac power cord on the frame you are working on. On a Model 825 with a system unit expansion attached, disconnect both the system line cord and the expansion unit line cord.
3. Remove the left side cover. See Model 825 - Covers.
4. Are you removing a processor or memory DIMM?
  - **Yes:** Perform the following:
    - a. Loosen the thumb screw on the processor enclosure cover, and remove the cover.
    - b. Open the latches on the identified processor and remove the processor.
    - c. If you are replacing the processor, label the memory DIMM locations so that they can be reinstalled in the same position.
    - d. Press down on the latches that are located on each side of the memory DIMM to release it from the backplane.
    - e. If you are replacing the processor, reinstall the memory DIMMs into the new processor in the locations in which they were originally located and reverse this procedure.  
**This ends the procedure.**
  - **No:** Remove and label any cables connected to the card.
5. Either turn the latches securing the card or unscrew the bracket securing the card.
6. Gently pull the card off the system backplane.
7. To install the card, reverse this procedure.

**Note:** If you have exchanged a 2766 or 2787 Fibre Channel IOA, the IBM<sup>(R)</sup> 2105 disk unit subsystem must be updated to use the World-Wide Port-Name of the new 2766 or 2787 IOA. This name can be found in the Port worldwide name field on the iSeries<sup>(TM)</sup> by displaying detail on the 2766 or 2787 IOA Logical Hardware Resource information, in Hardware Service Manager in SST/DST.

The 16-digit World-Wide Port-Name can also be determined by appending the digits "1000" to the beginning of the 12-digit IEEE Address found on the tailstock label of the Fibre Channel IOA. Use the *ESS Web Interface User's Guide* (SC26-7346) to update the World-Wide Port-Name in the host configuration on the IBM<sup>(R)</sup> 2105 ESS. The *ESS Web Interface User's Guide* can also be found at the following URL: <http://ssddom02.storage.ibm.com/disk/ess/documentation.html>

8. After replacing a part, go to Verify the repair.  
**This ends the procedure.**

## Model 825 - Control panel - NB1

*For use by authorized service providers.*

Use this procedure to remove or replace the control panel - NB1 in a Model 825.

**Attention:** The control panel is sensitive to electrostatic discharge. See Work with electrostatic discharge-sensitive parts.

To remove or replace the control panel - NB1:

1. Power off the system See Power on/off the system and logical partitions.
2. Disconnect the ac power cord from the system unit, or on systems with dual line cords, disconnect both of the ac power cords.
3. Open the front cover. See Model 825 - Covers.
4. Pull on the two knobs to release the control panel assembly.
5. Slide the panel partially out of the frame.
6. Are you here to exchange the processor capacity card?
  - **No:** Continue with the next step.
  - **Yes:** Perform the following:
    - a. Pull the processor capacity card off the control panel card, and put the new one in place. Note the position and orientation of the card. See Control panel assembly - Models 820 and 825.
    - b. Reinstall the control panel card by reversing the procedure to this point.
    - c. Perform a manual IPL to DST. If the system stops at the System Password Required screen, DO NOT BYPASS. Contact your next level of support to obtain a System Password and enter it on this screen.

**Note:** DST/SST options to activate POD will not be visible if the system password has been bypassed.
    - d. If you are replacing a processor capacity card that was associated with processor-on-demand (POD) processor features, perform the following (otherwise go to step **6e** (See page 33)):
      - 1) Contact your second level of support to determine if a POD activation code is required to reset previously activated on-demand processors.
      - 2) If necessary, a new POD activation code will need to be generated and then entered at the server.
      - 3) After entering a POD activation code, 30 minutes should elapse before an IPL is performed to ensure the POD activation code has been saved.

**Attention:** The POD activation code or codes **must** be entered within 48 hours or an SRC A6XX 47XX will be posted in the panel requiring an IPL and, or LPAR configuration adjustments.
    - e. Go to Verify the repair.  
**This ends the procedure.**
7. Disconnect the cables that are attached to the backside of the control panel.
8. Remove the control panel from the frame.
9. Remove the control panel cover and the processor capacity card. Note the position and orientation of the card. See Control panel assembly - Models 820 and 825.
10. Install the processor capacity card into the new panel and replace the cover.
11. Reverse the above procedure to install the panel.

**Note:** When a control panel with keystick is replaced, discard the new keys that come with the panel and reuse the original keys.

12. If you are here to replace a processor capacity card that was associated with processor-on-demand (POD) processor features, perform the following:
  - a. Contact your second level of support to determine if a POD activation code is required to reset previously activated on-demand processors.
  - b. If necessary, a new POD activation code will need to be generated and then entered at the server.
  - c. After entering a POD activation code, 30 minutes should elapse before an IPL is performed to ensure the POD activation code has been saved.

**Note:** DST/SST options to activate POD will not be visible if the system password has been bypassed.
13. Do you have the original system unit keys?
  - **Yes:** Continue with the next step.
  - **No:** Perform the following:
    - a. Open the front cover. See Model 825 - Covers.
    - b. Pull on the two knobs to release the control panel.
    - c. Slide the panel partially out of the frame.
    - d. Apply ac power.
    - e. Insert the keystick into the panel. The panel should display SRC 0000 5553.
    - f. Depress the push button (located on the back of the control panel, directly behind the keystick position) for 3-4 seconds.
14. After exchanging an item, go to Verify the repair.

**This ends the procedure.**

## **Model 825 - Covers**

*For use by authorized service providers.*

Use this procedure to remove or replace the covers on the Model 825.

**Attention:** If removing the cover while powered on, errors may occur due to electromagnetic interference.

To remove the front cover: Pull the top of the cover away from the frame.

To remove the back cover: Lift the cover up to remove it.

To remove the side covers:

1. Remove the screws that fasten the cover to the back of the system frame.
2. Push the cover toward the back of the system to remove it.

To install the covers: Reverse the above procedures.

**This ends the procedure.**

## **Model 825 - Device board - DB1**

*For use by authorized service providers.*

Use this procedure to remove or replace the Device board - DB1 on the Model 825.

To remove or replace the device board (DB1):

1. Power off the system. See Power on/off the system and logical partitions.
2. Disconnect all power cords.
3. Remove the front and right side covers. See Model 825 - Covers.

4. Remove the optical and tape units from the cage assembly. See Model 825 - Removable media - D17 and D18.
5. Remove the screws holding the front of the cage assembly to the front of the system unit frame.
6. Remove the screws from the back inside of the cage assembly.
7. Remove the air flow shield from the left side.
8. Pull the device cage assembly partially out of the system. Label and disconnect all cables from the back side of the device backplane.
9. Remove the device cage assembly by pulling it forward and out of the system unit frame.
10. To install, reverse this procedure.  
**This ends the procedure.**

## **Model 825 - Device board - DB2, DB3, and DB4**

*For use by authorized service providers.*

Use this procedure to remove or replace the device board - DB2, DB3, or DB4 on the Model 825.

To remove or replace the device board - DB2, DB3, or DB4:

1. Power off the system. See Power on/off the system and logical partitions.
2. Disconnect all power cords.
3. Remove the front and left side covers. See Model 825 - Covers.
4. Remove the EMC shield.
5. Remove all the disk units from the cage assembly. See Model 825 - Disk unit (dedicated).
6. Remove the screws holding the front of the disk unit cage assembly to the front of the system unit frame.
7. Remove the screws from the back inside of the cage assembly.  
**Important:** The SCSI cable is located on the left side of the cage assembly.
8. Remove the air flow shield from the left side.
9. Pull the SCSI cable out of the disk unit cage you want to remove.
10. Remove the disk unit cage assembly by pulling it forward and out of the system unit frame.
11. To install, reverse this procedure.  
**This ends the procedure.**

## **Model 825 - Disk unit (concurrent)**

*For use by authorized service providers.*

Use this procedure to remove or replace the disk unit concurrently in the Model 825.

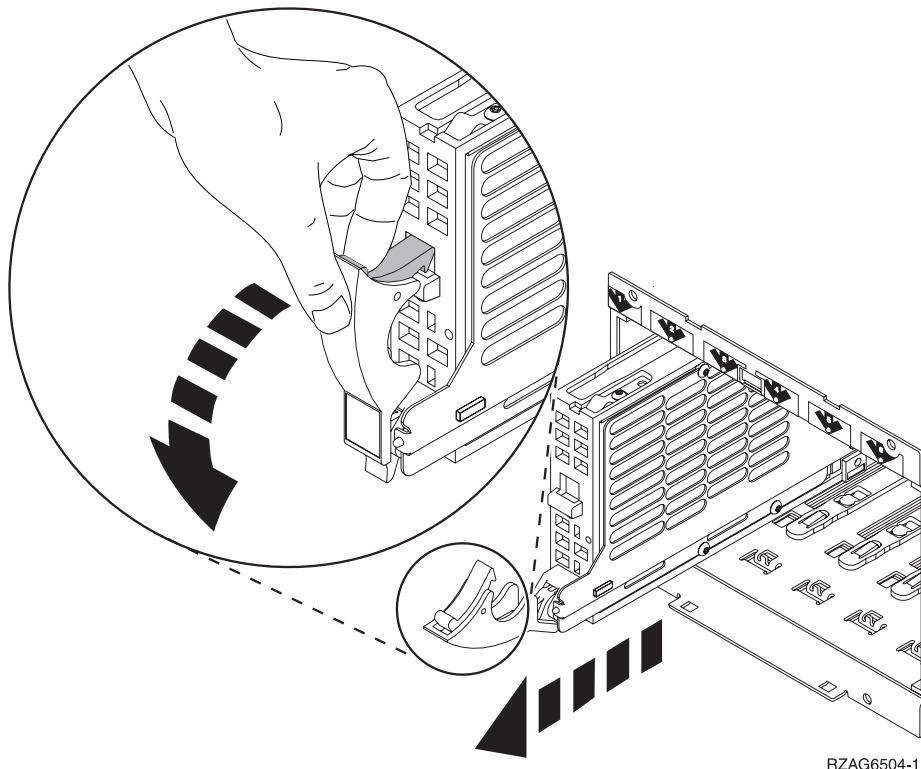
**Attention:** If removing the cover while powered on, errors may occur due to electromagnetic interference.

**Attention:** The disk unit is sensitive to electrostatic discharge. See Work with electrostatic discharge-sensitive parts.

To remove or replace the disk unit concurrently:

1. Determine if the system has logical partitions. Go to Determine if the system has logical partitions before continuing with this procedure.
2. Were you directed here from Recovery procedures?
  - **Yes:** After you have determined the location of the disk unit to replace, remove the covers. See Model 825 - Covers. Then, continue with the next step.
  - **No:** Go to Recovery procedures.
3. Remove the EMC access plate that is over the disk unit that you are removing. For location information, see Locations and addresses.

4. Are you removing or installing a disk unit using concurrent maintenance?
  - **Yes:** Continue with the next step.
  - **No:** Perform Model 825 - Disk unit (dedicated).
5. To remove a disk unit using concurrent maintenance, perform the following:
  - a. Select **System Service Tools** (SST). If you cannot get to SST, select DST.  
**Do not perform a system IPL to get to DST.**
  - b. Select **Start a Service Tool** —> **Hardware Service Manager**.
  - c. Select **Device Concurrent Maintenance** and enter the required information in the information fields.
  - d. Press **Enter** on the console. After the delay time, the light above the device location will begin flashing. You now have 9 seconds to pinch the two surfaces of the latching mechanism together and rotate the handle of the disk unit towards you. Pull the disk unit partially out. The light above the device location will go off and remain off as soon as the device is no longer making contact with the backplane.  
**Attention:** If you remove the device when the light is **not** flashing, data may be lost, the disk unit may be damaged, or the backplane may be damaged.



Wait another five seconds to allow time for the disk to stop spinning. Then pull the disk unit out the remaining way.

6. Are you finished with the repair?
  - **No:** Continue with the next step.
  - **Yes:** Replace the covers that were removed during this procedure and return to the procedure that sent you here.  
**This ends the procedure.**
7. To install a disk unit using concurrent maintenance perform the following:
  - a. Select **System Service Tools** (SST). If you cannot get to SST, select DST.  
**Do not perform a system IPL to get to DST.**
  - b. Select **Start a Service Tool** —> **Hardware Service Manager**.



- c. Select **Device Concurrent Maintenance** and enter the required information in the information fields. **Do not press Enter at this time.**
- d. Slide the unit half-way in.  
**Attention:** Ensure that the device does not contact the backplane at this time.
- e. Press **Enter** on the console. After the delay time, the light above the device location will begin flashing . You now have 9 seconds to insert the disk unit. Put the disk unit part way into the desired slot and rotate the handle of the disk unit towards you. Then push the disk unit completely into the slot and rotate the handle towards the disk unit to latch it into the slot. The light above the device location will go off and remain off for a few seconds when the device contacts the backplane. Then it should go on and remain on.  
**Attention:** If you install the device when the light is **not** flashing, data may be lost, the disk unit may be damaged, or the backplane may be damaged.
- f. Replace the covers that were removed during this procedure and return to the procedure that sent you here.  
**This ends the procedure.**

### **Model 825 - Disk unit (dedicated)**

*For use by authorized service providers.*

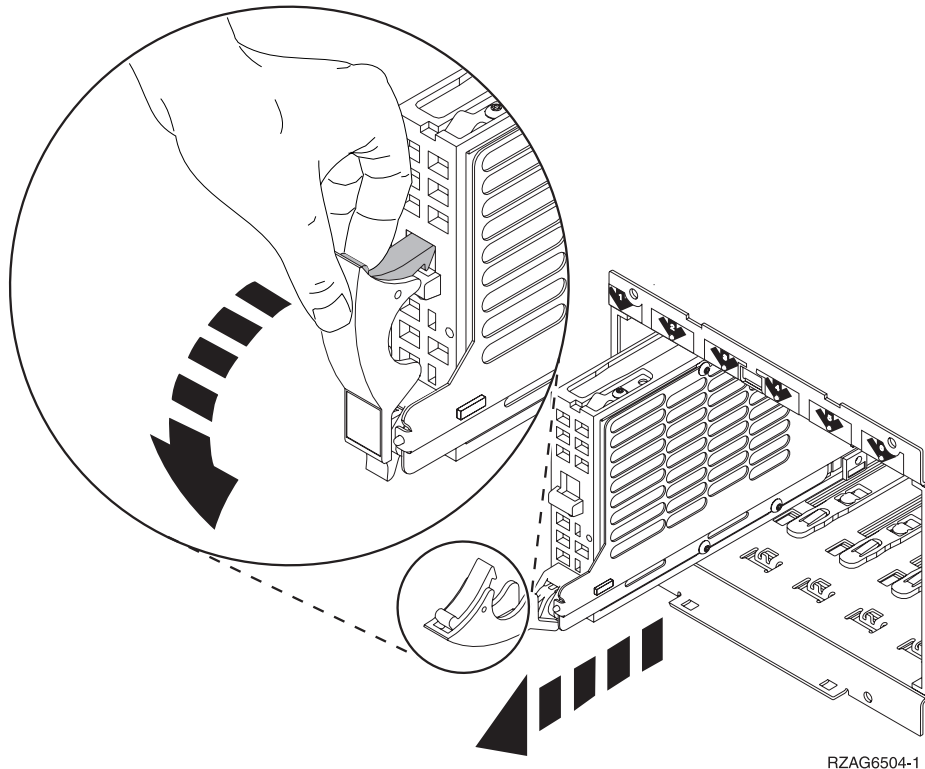
Use this procedure to remove or replace the disk unit using dedicated maintenance in the Model 825.

**Attention:** The disk unit is sensitive to electrostatic discharge. See Work with electrostatic discharge-sensitive parts.

To remove or replace disk units (dedicated):

1. Determine if the system has logical partitions. Go to Determine if the system has logical partitions before continuing with this procedure.
2. Were you directed here from Recovery procedures?
  - **Yes:** Continue with the next step.
  - **No:** Go to “Recovery procedures” on page 539.
3. To remove a disk unit using dedicated maintenance perform the following:
  - a. Power off the system. See Power on/off the system and logical partitions.
  - b. Disconnect the power cord.
  - c. To remove the disk unit, pinch the two surfaces of the latching mechanism together and pull the handle towards you to release the disk unit from the slot.
  - d. Remove the unit.

**Figure 1. Removing a disk unit (dedicated)**



4. Are you finished with the repair?
  - **No:** Continue with the next step.
  - **Yes:** Replace the covers that were removed during this procedure and return to the procedure that sent you here.  
**This ends the procedure.**
5. To Install a disk unit using dedicated maintenance perform the following:
  - a. Power off the system. See Power on/off the system and logical partitions.
  - b. Disconnect the power cord.
  - c. Put the disk unit part way into the desired slot and rotate the handle of the disk unit towards you.
  - d. Push the disk unit completely into the slot and rotate the handle towards the disk unit to latch it into the slot.
  - e. Replace the covers that were removed during this procedure and return to the procedure that sent you here.  
**This ends the procedure.**

### **Model 825 - HSL card - MB1 and MB2**

*For use by authorized service providers.*

Use this procedure to remove or replace the HSL card - MB1 or MB2 on the Model 825.

To remove or replace the HSL card MB1 or MB2:

1. Power off the system. See Power on/off the system and logical partitions.
2. Remove the left side cover. See Model 825 - Covers
3. Remove the CEC cover by unscrewing the retaining screw.
4. Remove the cards in positions M01 and M02. See Model 825 - Cards (dedicated) and Locations — Model 825.

5. Are you removing MB1?
  - **No:** Continue with step 6 (See page 39).
  - **Yes:** Perform the following:
    - a. Remove any cables from MB1, and note the locations.
    - b. Remove the small cover on the top rear of the frame by pulling the locking button out and sliding the cover to the rear and up. See Model 825 - Covers.
    - c. Release the latches that hold the card in place, and rotate it upwards.
    - d. Pull the card out of the frame.
    - e. Reverse this procedure to install the card.

**This ends the procedure.**
6. You are removing MB2. Remove the card in position C13. See Model 825 - Cards (dedicated).
7. Remove the six screws retaining MB2.
8. Remove MB2 from the frame.
9. Reverse this procedure to install the card.

**This ends the procedure.**

### **Model 825 - Interlock switch**

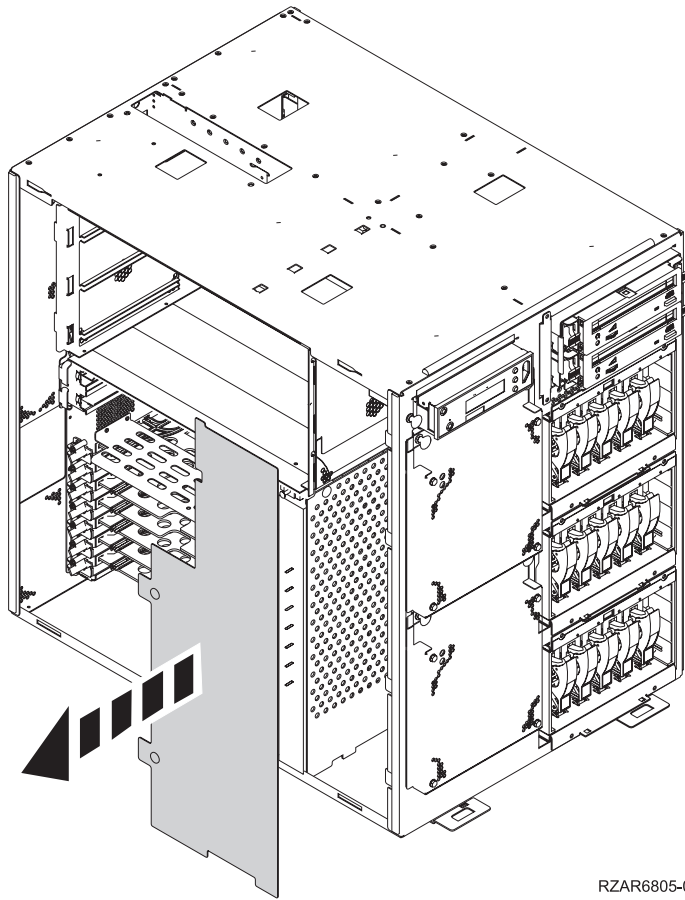
*For use by authorized service providers.*

Use this procedure to remove or replace the Interlock switch on a Model 825.

To remove or replace the Interlock switch:

1. Power off the system. See Power on/off the system and logical partitions.
2. Unplug both power cords from the back of the system unit.
3. Remove the left side, right side, and top cover. See Model 825 - Covers.
4. Remove the white plastic shield that is covering the SCSI and air moving devices (AMDs), located on the left side of the system.

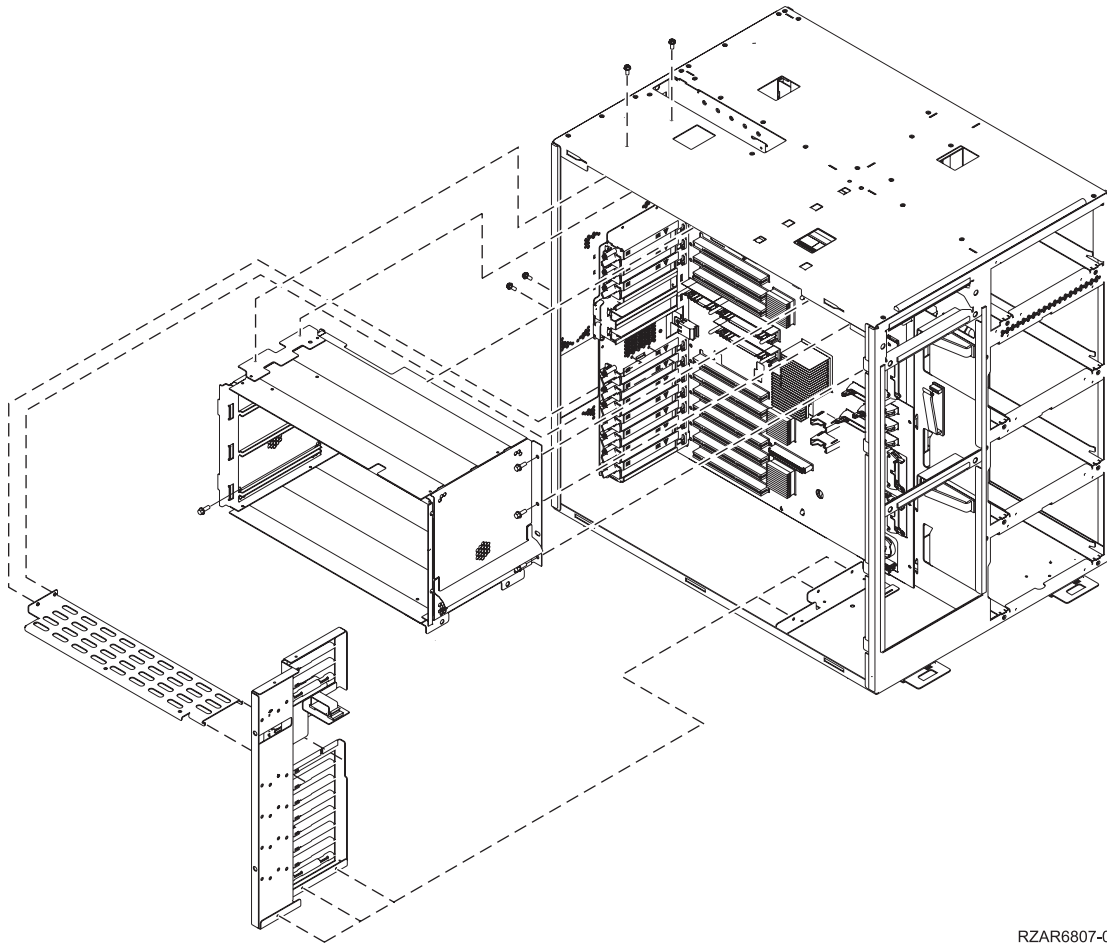
**Figure 1. The white shield covering the SCSI and air moving devices**



RZAR6805-0

5. Remove the processor card cage cover.
6. Remove the processor card or cards.
7. Remove the processor card cage.

**Figure 2. Processor card cage and PCI tailstock support bracket**



RZAR6807-0

8. Remove the screw that attaches the interlock switch to the top of the frame.
9. Disconnect the two wires attached to the switch.
10. Install the new part by reversing this procedure.  
**This ends the procedure.**

### **Model 825 - Memory - A through H**

*For use by authorized service providers.*

To remove or replace the memory - A through H in the Model 825, refer to the Model 825 - Cards (dedicated) procedure.

### **Model 825 - Power cable harness assembly**

*For use by authorized service providers.*

Use this procedure to remove and install the power cable harness assembly on the Model 825.

**Note:** Screw head sizes are 5.5mm and 7mm.

To remove or replace the power cable harness assembly:

1. Power off the system and remove the power cord. See Power on/off the system and logical partitions.
2. Remove the front, rear, and right side covers as viewed from the front. See Model 825 - Covers
3. Remove the power supplies.

4. Remove the disk units from the system. Identify each disk unit with a disk unit board location and slot location.
5. Remove the four short screws on the perimeter of the disk unit board/cage assembly and the two longer screws located inside the assembly.
6. Partially remove the disk unit board/cage assembly.
7. **Caution while performing this step:** The disk unit board/cage assembly power connector plugs directly into the power connector bracket assembly. Viewing the connector from the right side of the system; pull on the board/cage assembly just until the connector disengages. Do **NOT** attempt to remove the board/cage assembly from the system because the SCSI cable is attached on the left side of the board/cage assembly and it will be damaged.
8. Remove the removable media units from the system. Identify each removable media unit with slot location.
9. Remove the two short screws on the perimeter of the removable media unit board/cage assembly, and the two longer screws located inside the assembly.
10. Remove the removable media board/cage assembly from the system. The removable media board/cage assembly power and SCSI cables must be removed from the back side of the assembly. Viewing the assembly from the right side of the system; pull on the on the board/cage assembly just until you can unplug these cables; then remove the assembly from the system.
11. Remove the top air moving device (AMD) assembly.
12. Remove the AMD power cable plug from the power cable harness assembly connector.
13. Remove the power cable harness assembly AMD connector from the inner frame wall, by squeezing the tabs located on the connector.
14. Remove the four screws from the power cable retaining bracket, located on the right side of the system.
15. Remove the three screws from each of the power supply connectors. Slide the power supply connectors down to remove it from the system frame.
16. Remove the five power cable connectors from the backplane assembly; write down their locations.
17. Remove the Interlock switch assembly plug from the power cable harness assembly connector.
18. Remove the power cable harness assembly from the system.
19. Reverse these steps to install the replacement power cable harness.
20. Power on the system. It should IPL without an Interlock system reference code (SRC).  
**This ends the procedure.**

## Model 825 - Power supply P01 and P02

*For use by authorized service providers.*

Use this procedure to remove or replace the power supply P01 and P02 on a Model 825.

**Note:** Two powered on/rotating air moving devices (excluding the air moving devices (AMDs) mounted on the power supplies), and two power supplies **MUST** be installed to perform this procedure concurrently.

To remove or replace the power supply P01 or P02:

1. Are there two powered on/rotating AMDs and two power supplies installed in the system unit?
  - **Yes:** Continue with the next step.
  - **No:** Perform the following:
    - a. Power down the system unit. See Power on/off the system and logical partitions.
    - b. Remove the power cord from the rear of the system unit, and continue with the next step.
2. Remove the back side cover, see Model 825 - Covers.
3. Remove the power cord from the power supply to be replaced.
4. Pull out the power supply handle release button.

5. Lift the handle all the way up and towards you.
6. Remove the power supply by sliding it out of the system.
7. Install the power supply by reversing this procedure, ignoring step 1. After exchanging an item, go to Verify the repair.

**This ends the procedure.**

## **Model 825 - Removable media - D17 and D18**

*For use by authorized service providers.*

Use this procedure to remove or replace the removal media - D17 and D18 on the Model 825.

### **Laser safety information**

#### **CAUTION:**

**This product may contain a CD-ROM which is a class 1 laser product. (RSFTC240)**

#### **CAUTION:**

**This product may contain a DVD which is a class 1 laser product. (RSFTC245)**

To remove or replace removable media - D17 and D18:

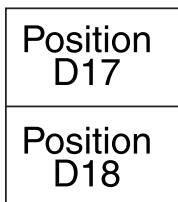
1. Remove media (if any) from the device.

**Attention:** Damage to DVD-RAM devices can result if the manual ejection function is used while device is powered on. For DVD-RAM devices, it is recommended that you remove the device prior to manually ejecting the media.

#### **Notes:**

- If you need to remove a tape from the old tape unit, go to Tape cartridge - manual removal.
  - If you need to remove optical media, go to Optical media - manual removal.
2. In some cases you do not need to power down the system to change a removable media unit.  
Are you removing a unit by using device concurrent maintenance?
    - **Yes:** Continue with the next step.
    - **No:** Perform the following:
      - a. Power off the system. See Power on/off the system and logical partitions.
      - b. Disconnect the power cord from the system.
      - c. Open the front cover. See Model 825 - Covers.
      - d. Pull the handles which are located on each side of the unit, and remove the unit from the system frame.  
**Note:** If the unit is DVD-RAM and manual removal of optical media is required, go to Optical media - manual removal.
      - e. Reverse these steps to install the new device.  
**This ends the procedure.**
  3. If you are removing a unit by device concurrent maintenance, ensure that the unit is not in use and is varied off.  
**Note:** If you are removing an optical storage unit, you must ensure that all of the removable media units in the system frame are not in use and are varied off.
  4. Use the figure to determine the location of the internal removable media unit. Record this location for later use.

### **Figure 1. Internal removable media locations**



RZAR6660-0

5. Perform the following:
  - a. Select **System Service Tools (SST)**. If you cannot get to SST, select DST.  
**Do not perform a system IPL to get to DST.**
  - b. Select **Start a Service Tool** → **Hardware Service Manager** → **Device Concurrent Maintenance** and enter the required information in the information fields. Do **not** press the Enter key at this time.
  - c. Read the remaining steps of this procedure and ensure that you understand the procedure before continuing.
  - d. Press the **Enter** key on the console. After the delay time, the light at the top right of the device will begin flashing. You now have nine seconds to pull out firmly on the handles and pull the unit partially out of the system frame.  
**Attention:** If you remove the device when the light is **not** flashing, data may be lost, the unit may be damaged, or the backplane may be damaged.  
**Note:** The light at the top right of the device will go off and remain off as soon as the device is no longer making contact with the backplane.
  - e. If after the delay time, the light at the top right of the device does not begin flashing, or, the Concurrent Maintenance Results screen displays 'The function cannot be run as requested', device concurrent maintenance is not possible. The unit must be removed using dedicated maintenance. Go to step 2 (See page 43).
  - f. Remove the unit from the system frame. If the unit is DVD-RAM and manual removal of optical media is required, go to Optical media - manual removal
6. To replace a new unit, perform the following:
  - a. Select **Device Concurrent Maintenance** and enter the required information in the fields. Do **not** press Enter at this time.
  - b. Read the remaining steps of this procedure and ensure that you understand the procedure before continuing.
  - c. Slide the unit partially into the system frame. Ensure that the device does **not** contact the backplane at this time.
  - d. Press the **Enter** key on the console. After the delay time, the light at the top right of the device will begin flashing. You now have nine seconds to push in firmly on the handles and push the unit completely into the frame.  
**Attention:** If you install the device when the light is **not** flashing, data may be lost, the unit may be damaged, or the backplane may be damaged.  
**Note:** The light at the top right of the device will go off and remain off for a few seconds when the device contacts the backplane. Then, it should go on and remain on.  
Did the light on the device go on and remain on?
    - **No:** Continue with the next step.
    - **Yes:** After exchanging an item, go to Verify the repair.  
**This ends the install procedure.**
7. Attempt the device concurrent maintenance procedure again without physically moving the unit.  
Did the light above the device go on and remain on?
  - **No:** Continue with the next step.



- **Yes:** After exchanging an item, go to Verify the repair.  
**This ends the install procedure.**
8. There is a power problem. One of the following is the problem:
- The new unit is defective.
  - The backplane was damaged during the device concurrent maintenance procedure.
  - There is a new problem with the power subsystem.  
**This ends the procedure.**

## **Model 825 - System unit backplane - CB1 and Power bus bar assembly**

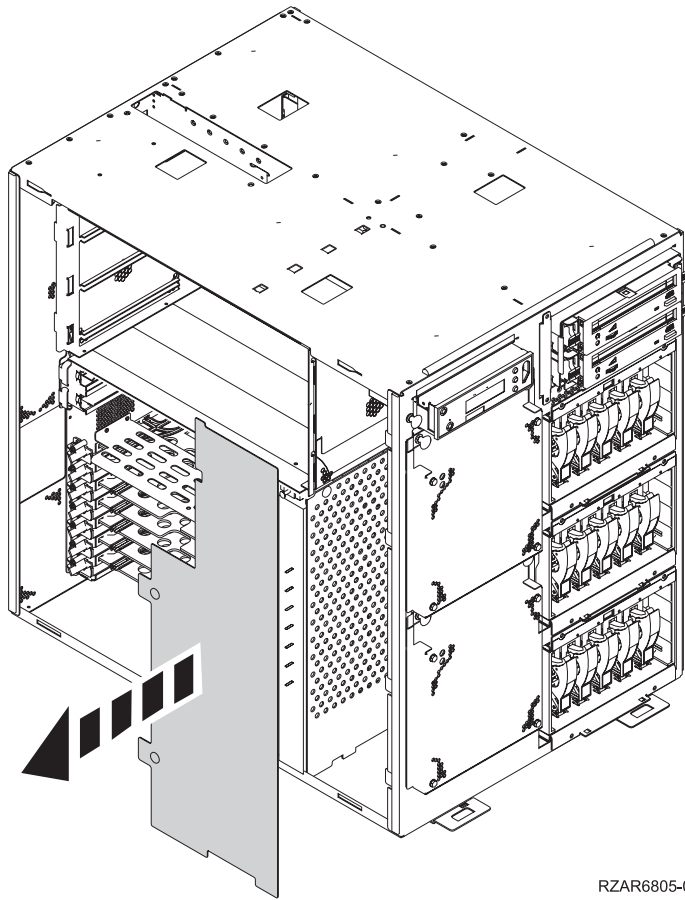
*For use by authorized service providers.*

Use this procedure to remove or replace the system unit backplane - CB1 or the Power bus bar assembly on a Model 825.

To remove or replace the system unit backplane (CB1) and the Power bus bar assembly (if necessary):

1. Power off the system. See Power on/off the system and logical partitions.
2. Unplug the power cord from the back of the system unit. On a Model 825 with dual line cords, disconnect both of the system line cords.
3. Remove the left side, right side, and top cover. See Model 825 - Covers.
4. Remove the PCI cards and processor cards (C13, M01, and M02), and the HSL card at MB1. See Locations - Model 825 for the correct remove and replace procedure links. Note the locations to aid in replacing them correctly.
5. Remove the white plastic shield that is covering the SCSI and air moving devices (AMDs), located on the left side of the system.

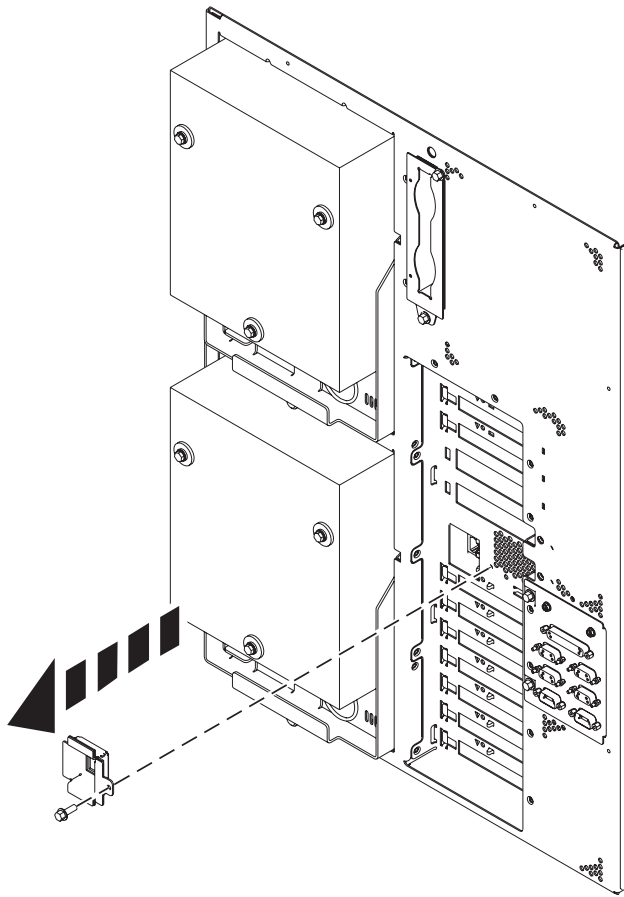
**Figure 1. The white shield covering the SCSI and air moving devices**



RZAR6805-0

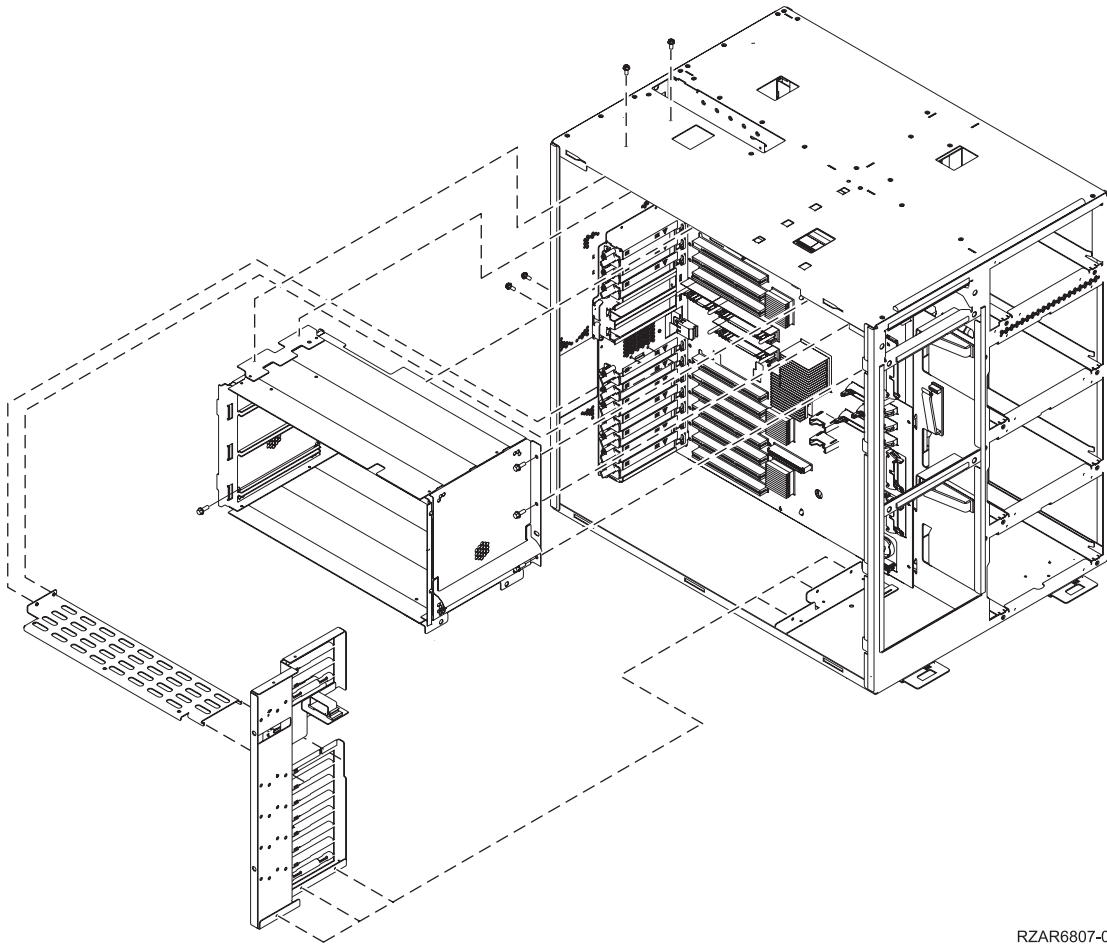
6. Unplug the cables that come from the power supply (located on the right side of the system), cables that connect to the disk unit cages, control panel function cables, and the cables running to the rear bulk head (located on the left side of the system).
7. Remove the plastic PCI card separators.
8. Remove the integrated Ethernet port bulkhead.

**Figure 2. Ethernet port bulkhead**



RZAR6806-0

9. Remove the processor card cage and PCI tailstock support bracket.  
**Figure 3. Processor card cage and PCI tailstock support bracket**



RZAR6807-0

10. Remove the screws that attach the backplane insulator to the backplane, and remove the insulator.
  11. Remove the three small Torx screws and two small slotted screws from the upper middle edge of the backplane assembly, that connect the backplane to the power bus bar assembly.
  12. Remove the backplane assembly.
  13. Choose from the following options:
    - If you do **not** need to remove or replace the power bus bar assembly, continue with the next step.
    - If you are here to remove or replace the power bus bar assembly:
      - a. Remove the two mounting screws near the power supply connectors in the right rear of the system. See Figure 3. in Final assembly — Model 825.
      - b. Replace the power bus bar assembly. Then, continue with the next step.
  14. Install the new part by reversing the procedure.
- Attention:** Because the new CB1 does not come with an MB2 card, you will need to transfer it from the original one. See Model 825 - HSL card - MB1 and MB2 for details.
15. Connect the power cord to the box and connect it to the AC.
  16. Set the configuration ID:
    - a. Select function **07** on the system control panel, and press **Enter**. (07\*\* will be displayed).
    - b. Use the arrow keys to increment/decrement to sub-function **A9**, and press **Enter** (07A9 00 will be displayed).

- c. Use the arrow keys to increment/decrement to the frame address of the box you just replaced the Backplane (usually 01 for the system unit). 07nn will be displayed, where nn is the frame address).
  - d. Press **Enter** (07nn 00 will be displayed).
  - e. Use the arrow keys to increment/decrement to the correct configuration ID (**A1** for the Model 825). (07A1 will be displayed).
  - f. Press **Enter** (07xx 00 will be displayed).
17. The control panel will display the series of bring up SRCs and then display function 01.
- Note:** If you just replaced backplane CB1, and have Operations Console (LAN), you need to wait at least 35 minutes for the server to find and use the new LAN adapter card. In this case, once the server is satisfied it will start using the new adapter, the console should start and the reference code will go away.
- This ends the procedure.**

## Model 825 - Time of day (TOD) battery

*For use by authorized service providers.*

Use this procedure to remove or replace the Time of day (TOD) battery on the Model 825.

### CAUTION:

**This product contains a lithium battery. To avoid possible explosion, do not burn, exchange, or charge the battery. Discard the battery as instructed by local regulations for lithium batteries. (RSFTC232)**

To remove or replace the time of day battery:

1. Power off the system and unplug the ac power cables (see Power on/off the system and logical partitions).
  2. Remove the left side cover, see Model 825 - Covers.
  3. Remove the right shield in the air moving device (AMD) bay by pulling out on the tabs.
  4. Replace the TOD battery by sliding the battery out of the holder, and removing it from the system.
  5. Reverse this procedure to install the new battery.
  6. After installation is complete, IPL the system in Manual Mode.
  7. The customer will need to set the time and date.
- This ends the procedure.**

## Models 830/SB2 remove and replace procedures

*For use by authorized service providers.*

**Models 830/SB2 with FC 9074 (with single line cord) - AC input/charger - A01**

**Models 830/SB2 with FC 9074 (with dual line cords) - AC module - A01, A02**

**Models 830/SB2 with FC 9074 - Air moving device - BP1 and BP2**

**Models 830/SB2 with FC 9074 - Battery - T01 through T04**

**Models 830/SB2 with FC 9074 - Cards (concurrent)**

**Models 830/SB2 with FC 9074 - Cards (dedicated)**

**Models 830/SB2 with FC 9074 - Covers**

**Models 830/SB2 - Device boards - DB1 and DB2**

**Models 830/SB2 - Device board - DB3**

**Models 830/SB2 - Disk unit**

**Models 830/SB2 with FC 9074 - System unit control panel - NB1**

**Models 830/SB2 with FC 9074 - Power distribution backplane - PB1**

**Models 830/SB2 with FC 9074 - Power supply - PP1 and PP2**

**Models 830/SB2 - Processor feature codes and CCINs**

**Models 830/SB2 with FC 9074 - Removable media - D41 and D42**

**Models 830/SB2 with FC 9074 - System unit backplane - MB1**

**Models 830/SB2 with FC 9074 - Time of day (TOD) battery**

**Models 830/SB2 with FC 9074 - Tower card - CB1**

### **Models 830/SB2 with FC 9074 (with single line cord) - AC input/charger (A01)**

*For use by authorized service providers.*

Use this procedure to remove or replace the AC input/charger (A01) in a Model 830/SB2 with FC 9074 (with single line cord).

To remove or replace the AC input/charger (A01):

1. Power off the system. See Power on/off the system and logical partitions.
2. Open the rear cover. See Models 830/SB2 with FC 9074 - Covers.
3. Refer to Models 830 and SB2 with FC 9074 - Final assembly, rear and perform the following steps.
  - a. Remove the power cords from the AC input/charger.
  - b. Remove the top and bottom screws that hold the AC input/charger to the frame.
  - c. Pull the AC input/charger out of the frame.
4. Install the AC input/charger by reversing this procedure. After exchanging an item, go to Verify the repair.

**This ends the procedure.**

### **Model 830 with FC 9074, Model 840 with FC 9079 or FC 8079 (with dual line cords) - AC module (A01, A02)**

*For use by authorized service providers.*

Use this procedure to remove or replace the AC module (A01, A02) on the Model 830 with FC 9074, or Model 840 with FC 9079 or FC 8079 (with dual line cords).

To remove or replace the AC module (A01, A02):

1. Do not power down the tower if it is powered on. This procedure can be done concurrently.
2. Open the rear cover. See Models 830/SB2 with FC 9074 - Covers or Models 840/SB3 - Covers, depending on the model that you are working on.
3. See Locations and addresses for the tower that you are working on.
4. Trace and disconnect the ac input line cord that connects to the AC module that needs replacing.

**Attention:** Do **not** disconnect the other system ac line cord when powered on.

5. Disconnect the power supply jumper cords from the AC module that you are working on.  
**Attention:** Do **not** disconnect the other system AC module power supply jumper cords.
6. Remove the top and bottom screws that hold the AC module to the frame.
7. Remove the AC module unit.
8. Install the AC module by reversing the removal procedure. After exchanging an item, go to Verify the repair.  
**This ends the procedure.**

## **Models 830/SB2 with FC 9074 - Air moving device - BP1 and BP2**

*For use by authorized service providers.*

Use this procedure to remove or replace the air moving device (AMD) -BP1 and BP2 in Models 830/SB2 with FC 9074.

To remove or replace the air moving device (BP1 and BP2):

1. Do not power off the system.
2. Remove the front cover. See Models 830/SB2 with FC 9074 - Covers.
3. Refer to Final assembly, front - Models 830 and SB2 with FC 9074 and perform the following steps.
4. Remove the upper EMC access plate.
5. Remove the AMD mounting screws (x2) from the upper left and upper right hand corners of the AMD that you are replacing.
6. Remove the AMD by pulling up on the pull rings and lifting the AMD out of the system.
7. Install the AMD by reversing the removal procedure. After exchanging an item, go to Verify the repair.  
**This ends the procedure.**

## **Models 830/SB2 with FC 9074 - Battery (T01 through T04)**

*For use by authorized service providers.*

Use this procedure to remove or replace the battery (T01 through T04) in the Model 830/SB2 with FC 9074.

**Attention:** Removing the battery power unit while the system is running on battery power will cause the system to fail and may damage the battery power unit and the card enclosure.

To remove or replace the battery (T01 through T04):

1. If the system is powered on, you do not have to power off the system to perform this procedure.
2. Remove the rear cover. See Models 830/SB2 with FC 9074 - Covers.
3. Refer to Figure 4. Models 830 and SB2 with FC 9074 - Final assembly, rear (continued) (See page 406) and perform the following steps:
  - a. Remove the EMC access plate that covers the battery packs.
  - b. Remove the mounting screw from the battery pack that you are replacing.
  - c. Remove the battery pack.

### **CAUTION:**

**The weight of this part or unit is between 18 and 32 kilograms (39.7 and 70.5 pounds). It takes two persons to safely lift this part or unit. (RSFTC204)**

### **CAUTION:**

**The battery is a lead-acid battery. To avoid possible explosion, do not burn. Exchange only with the IBM-approved part. Recycle or discard the battery as instructed by local regulations.**

**In the United States, IBM has a process for the collection of this battery. For information, call 1-800-426-4333. Have the IBM part number for the battery unit available when you call. (RSFTC225)**

4. Install the battery pack by reversing the removal procedure. After exchanging an item, go to Verify the repair.
5. After you install the new battery, use HSM to perform a battery test to ensure correct operation.  
**This ends the procedure.**

### **Models 830/SB2 with FC 9074 - Cards (concurrent)**

*For use by authorized service providers.*

Use this procedure to remove or replace cards concurrently in the Models 830/SB2 with FC 9074.

#### **Concurrent/dedicated guidelines for Model 830/SB2 with FC 9074**

In some cases you do not need to power down the system to change PCI cards. Use the following guidelines to determine if you should use dedicated or concurrent remove and replace procedures. If you use concurrent maintenance on a partitioned system, follow the procedures from the partition that owns the resource. If the resource is not owned, follow the procedure from the primary partition.

#### **For cards in the Models 830/SB2 CEC/system unit:**

No card positions in the (top) CEC/system unit permit concurrent maintenance. You must power down the system to exchange a card. See Models 830/SB2 with FC 9074 - Cards (dedicated).

#### **For Models 830/SB2 base I/O tower (FC 9074) IXS cards:**

The IXS cards require dedicated maintenance. See Models 830/SB2 with FC 9074 - Cards (dedicated)

#### **For Models 830/SB2 base I/O tower cards (FC 9074) - except IXS cards:**

- Card positions C01 through C07 and C09 through C15 permit concurrent maintenance using HSM. You can power down the individual card slot, but you can **not** power down the tower.
- If the resource is the load source IOA or the load source IOP, or any other storage IOA/IOP with critical DASD attached for the system, primary, or secondary partition, follow the on-screen instructions when you use HSM to power down the IOP or IOA. Instructions to use functions 68 and 69 on the control panel will be included.
- If the resource is the console IOA or the console IOP for the system or primary partition, you cannot power down the domain.
- If the resource is the console IOA or the console IOP for a secondary partition, then power down the secondary partition and follow the procedure from the primary partition.
- All other card positions require dedicated maintenance. See Models 830/SB2 with FC 9074 - Cards (dedicated).

#### **CAUTION:**

**The circuit card contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the circuit card as instructed by local regulations. (RSFTC234)**

**Attention:** If removing the cover while powered on, errors may occur due to electromagnetic interference.

**Attention:** All cards are sensitive to electrostatic discharge (see Work with electrostatic discharge-sensitive parts).

To remove or replace cards (concurrently):

1. From the Hardware Service Manager display, select **Packaging hardware resources**.



2. Select **Hardware contained in packaging** for the frame ID that you are working on.
3. Find the card position for the IOA or IOP that you are removing and select **Concurrent maintenance**.  
**Attention:** If multiple resources are shown with the same card position, one or more of these resources will show a status of *Missing* ("?" after the description). Only one resource will be listed as not missing. Select this resource for the concurrent maintenance operation.
4. A listing of the power domain is shown. Find the IOA or IOP that you are removing and select **Power off domain**. Everything within the IOA's or IOP's power domain will be powered off .
5. To see the status of the power domain, select **Display power status**.
6. Find the IOA or IOP that you are removing and select **Toggle LED blink off/on**.
7. Remove the cover to access the card that you are removing from the system. See Models 830/SB2 with FC 9074 - Covers.
8. Look at the power LED for the card that you are removing to ensure that it is powered off. The power LED is located above or in front of the card slot. If the LED is blinking multiple times per second (rapidly) or it is off, then the card is powered off.
9. From the rear of the tower perform the following:
  - a. Open the rear cover. See Models 830/SB2 with FC 9074 - Covers.
  - b. Remove the EMC access plate that is located directly above the card enclosure. Press the two latching mechanisms together and tilt the top of the cover away from the frame to remove it. See Models 830 and SB2 with FC 9074 - Final assembly, rear (See page 406).
  - c. Disconnect and label any cables from the card that you want to remove.
  - d. Turn the latch counter clockwise and lift up on the black latch to release the card.  
**Attention:** If you are removing a FC 2890, then you must use dedicated maintenance.
  - e. Remove the card by gently pulling it out.
  - f. Install the card in to the system by reversing the card removal procedure for the model system or tower that you are working on.
  - g. Select **Power on domain** for the IOA or IOP that you are installing.  
**Note:** To the right of the description field you will see one or both of the following symbols displayed.

Symbol	Indication
*	Indicates the location to which the system will assign the resource.
>	Indicates the location to which the resource was last assigned.

- h. Press **Enter**. The Work with Controlling Resources display will appear.
- i. Determine the location where you want to assign the resource and select **Assign to** for that location.
- j. After exchanging the failing item, go to Verify the repair.

**Note:** If you have exchanged a 2766 or 2787 Fibre Channel IOA, the IBM 2105 disk unit subsystem must be updated to use the World-Wide Port-Name of the new 2766 or 2787 IOA. This name can be found in the Port worldwide name field on the iSeries by displaying detail on the 2766 or 2787 IOA Logical Hardware Resource information in Hardware Service Manager in SST/DST.

The 16-digit World-Wide Port-Name can also be determined by appending the digits "1000" to the beginning of the 12-digit IEEE Address found on the tailstock label of the Fibre Channel IOA. Use the *ESS Web Interface User's Guide* (SC26-7346) to update the World-Wide Port-Name in the host configuration on the IBM 2105 ESS. The *ESS Web Interface User's Guide* can also be found at the following URL: <http://ssddom02.storage.ibm.com/disk/ess/documentation.html>

**This ends the procedure.**

## Models 830/SB2 with FC 9074 - Cards (dedicated)

*For use by authorized service providers.*

Use this procedure to remove or replace cards dedicated in the Models 830/SB2 with an FC 9074.

In some cases you do not need to power down the system to change PCI cards. Use the guidelines in Models 830/SB2 with FC 9074 - Cards (concurrent) to determine if you should use dedicated or concurrent remove and replace procedures.

**Attention:** The processor cards in this system can only be attached to the backplane once. If a processor card is removed, it must be replaced with a new processor card.

### CAUTION:

**The circuit card contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the circuit card as instructed by local regulations. (RSFTC234)**

**Attention:** All cards are sensitive to electrostatic discharge. See Work with electrostatic discharge-sensitive parts.

To remove or replace cards (dedicated):

1. Power off the system. See Power on/off the system and logical partitions.
2. Disconnect the ac power cord from the tower that you are working on.
3. Select one of the following tasks:
  - If you are removing a processor capacity card or an interactive card (NB-01, NB-02), go to Models 830/SB2 with FC 9074 - System unit control panel (NB1).
  - If you are removing cards in a Model 830/SB2 (FC 9074) base I/O tower, go to step **10** (See page 58).
  - Otherwise, you are removing a card in the Model 830/SB2 system unit (processor drawer). Continue with the next step.
4. You are removing a card in the Model 830/SB2 system unit (processor drawer) using dedicated maintenance. Refer to Final assembly, rear - Models 830 and SB2 with FC 9074, and perform the following steps:
  - a. Open the rear cover. See Models 830/SB2 with FC 9074 - Covers.
  - b. Remove the mounting screws from the EMC shield that is located directly above the lower card enclosure in the (FC 9074) base I/O tower portion of the Model 830/SB2 system. See Final assembly, rear - Models 830 and SB2 with FC 9074.
  - c. Remove the EMC shield from the frame.
  - d. Disconnect and label the cables that go from the lower card enclosure in the (FC 9074) base I/O tower to the upper processor drawer in the system unit.
  - e. Reach through the opening and loosen the thumbscrew that is holding the safety plate to the bottom of the processor drawer of the system unit.

**Note:** When reassembling the system, put the safety plate back covering the cables.
  - f. Disconnect and label the remaining external cables from the rear of the processor drawer.
  - g. Remove the screws that secure the processor drawer in the system unit to the frame. They are located near the bottom corners of the drawer. See Final assembly, rear - Models 830 and SB2 with FC 9074.
  - h. Pull the drawer partially out of the frame to gain access to the cards. Continue with the next step.
5. Select one of the following tasks:
  - If you are removing a processor regulator card in a Model 830/SB2 system unit (processor drawer), go to step **6** (See page 55).

- If you are removing a memory riser card (M02 or M05) or the DIMMs in a Model 830/SB2 system unit, go to step 7 (See page 55).
  - If you are removing the Network Interface Controller (NIC) card (M06) or the clock card (M06A) from the NIC Controller card on a Model 830/SB2 system unit, go to step 8 (See page 55).
  - Otherwise, you are removing a processor card assembly (M03 or M04) in a Model 830/SB2 system unit. Go to step 9 (See page 56).
6. You are removing a processor regulator card in a Model 830/SB2 system unit (processor drawer). Perform the following:
    - a. On the opposite ends of the card, press the two latch surfaces together to release each latch.
    - b. Pull on both latches at the same time to remove the card from the slot.
    - c. Rotate the latches upward.
    - d. Install the new card by reversing the removal procedure. After exchanging an item, go to “Verify the repair” on page 558.  
**This ends the procedure.**
  7. You are removing a memory riser card (M02 or M05) or the DIMMs in a Model 830/SB2 system unit. Perform the following:
    - a. On the opposite ends of the memory riser card, press the two latch surfaces together to release each latch.
    - b. Pull on both latches at the same time to remove the card from the slot.
    - c. Rotate the latches upward and remove the memory riser card.
    - d. If you are replacing the riser card, then you must move the memory DIMMs to the new card. See Figure 3. CCIN 2881 with pluggable DIMM (See page 267) in the Locations — Model 830 topic, for DIMM locations.
    - e. If you are adding or replacing memory DIMMS, refer to the Figure 3. CCIN 2881 with pluggable DIMM (See page 267) in the Locations — Model 830 topic, for DIMM locations.
    - f. Unlatch the DIMMs from the memory riser card by pressing down on the latches that are on opposite ends of the DIMM.
    - g. Firmly press the DIMMs on to the memory riser card until fully seated.
    - h. Complete the repair by reversing the removal procedures.
    - i. After exchanging an item, go to Verify the repair.  
**This ends the procedure.**
  8. You are removing the Network Interface Controller (NIC) card (M06) or the clock card (M06A) from the NIC controller card on a Model 830/SB2 system unit. Perform the following:
    - a. Remove the mounting screws from the EMC tunnel that is attached to the processor drawer.
    - b. Remove the EMC tunnel from the processor drawer.
    - c. On the opposite ends of the controller card, press the two latch surfaces together to release each latch.
    - d. Rotate the latches upward.
    - e. Pull up on both latches at the same time to remove the Network Interface Controller card.  
**Note:** If you replace the Network Interface Controller card, then you need to remove the clock card and install it on the new controller card.
    - f. Locate the small plastic cover on the side of the Network Interface Controller card. Press the two locking tabs together and remove the cover.
    - g. Hold the controller card with the opening facing up, then grasp the bar handle on the clock card and pull straight up to remove it.
    - h. Align the holes in the clock card with the guide pins on the controller card. Press down firmly on the bar handle until the clock card is fully seated.
    - i. Complete the repair by reversing the removal procedures.

j. After exchanging an item, go to Verify the repair.

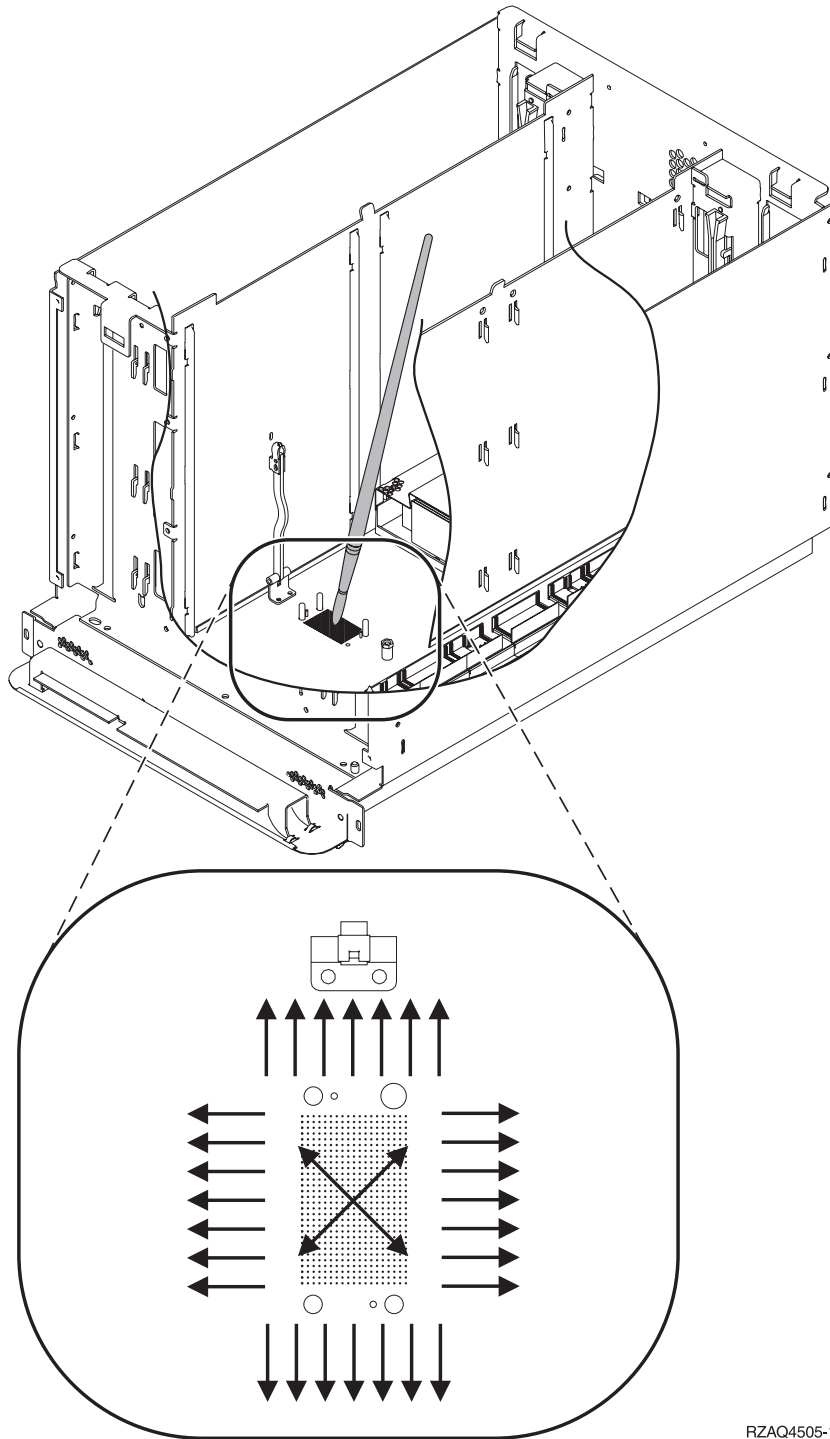
**This ends the procedure.**

9. You are removing a processor card assembly (M03 or M04) in a Model 830/SB2 system unit. Refer to Figure 2. in Final assembly, rear - Models 830 and SB2 with FC 9074 (See page 403), and perform the following steps:

**Attention:** It is important that the area inside the processor drawer is free of dust build up. The mating of the two surfaces is critical for the processor to function properly. Ensure that you have the *special* brush that was supplied with the new processor and use it **only** when instructed to do so.

- a. Inspect the inside of the processor drawer for dust particles. If dust is visible, then clean the area, especially in and around the processors (do **not** use the *special* brush at this time). It is important for this area to be clean and free of debris prior to continuing with the next step of this procedure.
- b. Remove the screws from the processor air cover.
- c. Remove the processor air cover from the drawer.
- d. Inspect the inside of the processor drawer for dust particles. If dust is visible, then clean the area, especially in and around the processors (do **not** use the *special* brush at this time). It is important for this area to be clean and free of debris prior to continuing with the next step of this procedure.
- e. Loosen and remove the 3/8" (9.5mm) hex head screw/spring assembly from the end of the latching arm and pull the arm up until it rests against the sheet metal.
- f. Grasp the center of the processor assembly and remove it by pulling straight up.
- g. Lay the new processor and the processor that you just removed on their backs so that the contact surface is facing up. Be very careful not to damage or contaminate these surfaces.
- h. Carefully remove the (black) array cover from the new processor by gently lifting one end and then the other until it easily slides up and off of the contact surface. With the array cover oriented so that the side containing the part number is facing down towards the processor that you just removed, gently slide the array cover over the contact surface until it snaps (before shipping it back to IBM<sup>(R)</sup>). Then, place the processor that you just removed out of the way.
- i. This step instructs you on how to use the *special* brush that was provided with the new processor. It is important that you follow these instructions very carefully:
  - 1) Remove the *special* brush from the packaging.
  - 2) Refer to the figure below:

**Figure 1. Model 830 system unit backplane (MB1)**



RZAQ4505-1

- 3) Starting with the brush in the center of the processor contact surface that is on the system backplane, use an outward brushing motion to clear the debris away from the area where the surfaces of the processor module assembly and the system backplane assembly meet. **Be careful not to brush over the contact surface again.** Then, continue brushing around and away from the perimeter of the contact surface area (out approximately 6mm or more on all 4 sides of it). **Do not brush the processor module or the contact surface on the bottom of the processor module.**

- j. While grasping the center of the new processor, orient the side of the assembly with the square notch towards the latching arm, which is on your left when facing the rear of the tower. Align the holes in the processor assembly with the guide pins on the board and press down until it is fully seated.
  - k. Pivot the latching arm down over the processor assembly. Install and start by hand, the 3/8" (9.5mm) hex head screw/spring assembly, then tighten (it is preferable that you use a nut driver and not a ratchet) until it stops turning.  
**Attention:** This is a compression fitting, so be careful not to over tighten the screw.
  - l. Complete the repair by reversing the removal procedures. After exchanging an item, go to Verify the repair.  
**This ends the procedure.**
10. You are removing a card in the Model 830/SB2 (FC 9074) base I/O tower. Perform the following steps:
- a. Open the rear cover. See Models 830/SB2 with FC 9074 - Covers.
  - b. Remove the EMC access plate that is located directly above the lower card enclosure in the (FC 9074) base I/O tower. Press the two latching mechanisms together and tilt the top of the cover away from the frame to remove it. Refer to Figure 4. in Final assembly, rear - Models 830 and SB2 with FC 9074 (See page 406).
  - c. Remove the mounting screws from the card enclosure.
  - d. Disconnect and label the cables that are attached to the back of the card enclosure.
  - e. Slide the card enclosure partially out of the frame.
  - f. Disconnect and label any cables from the card that you wish to remove.
  - g. Turn the latch counter clockwise and lift up on the black latch to release the card.  
**Note:** If you are removing a FC 2890, then remove the screws from the tail stock and slide the card cage forward about 6 inches, then the FC 2890 can be removed or inserted.
  - h. Remove the card by gently pulling it out.
  - i. Install the new card by reversing the procedure. After exchanging the failing item, then go to Verify the repair.  
**Note:** If you have exchanged a 2766 or 2787 Fibre Channel IOA, the IBM 2105 disk unit subsystem must be updated to use the World-Wide Port-Name of the new 2766 or 2787 IOA. This name can be found in the Port worldwide name field on the iSeries<sup>(TM)</sup> by displaying detail on the 2766 or 2787 IOA Logical Hardware Resource information in Hardware Service Manager in SST/DST.  
The 16-digit World-Wide Port-Name can also be determined by appending the digits "1000" to the beginning of the 12-digit IEEE Address found on the tailstock label of the Fibre Channel IOA. Use the *ESS Web Interface User's Guide* (SC26-7346) to update the World-Wide Port-Name in the host configuration on the IBM 2105 ESS. The *ESS Web Interface User's Guide* can also be found at the following URL: <http://ssddom02.storage.ibm.com/disk/ess/documentation.html>  
**This ends the procedure.**

## Models 830/SB2 with FC 9074 - Covers

*For use by authorized service providers.*

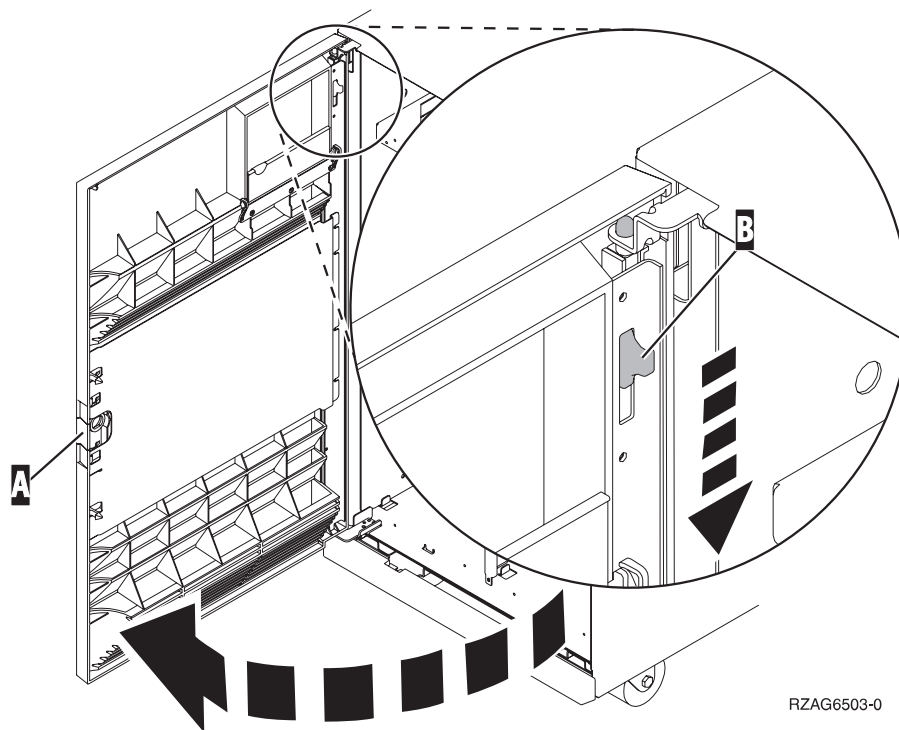
Use this procedure to remove or replace the covers on the Model 830/SB2 with FC 9074.

**Attention:** If removing the cover while powered on, errors may occur due to Electromagnetic Interference.

**Note:** The front and rear covers will swing open a little more than 90 degrees. This makes it possible to replace all FRUs, without having to remove the covers.

To open or remove the bottom front cover, refer to the figure below and perform the following steps:

**Figure 1. Front cover - removal**



1. Unlock the cover.
2. Release the cover latching mechanism by pushing in on the button **A** that is located midway along the right edge of the cover.
3. Grasp the top, right corner of the cover and pull it towards you to open it.
4. After opening the cover, press down on the lever **B** that is located inside along the top, left side of the cover.
5. Tilt the top of the cover away from the tower and lift the cover off.  
**This ends the procedure.**

To open or remove the rear cover, refer to Cover assembly - Models 830 and SB2 with FC 9074 and perform the following steps:

1. Grasp the top, right corner of the cover and pull it towards you to open it.
2. Tilt the top of the cover away from the tower and lift the cover off.  
**This ends the procedure.**

To remove the top front cover Cover assembly - Models 830 and SB2 with FC 9074 and perform the following steps:

1. Grasp both the sides of the top cover.
2. Lift the top of the cover up and away from the tower.  
**This ends the procedure.**

### **Model 830/SB2 - Device board (DB1 and DB2)**

*For use by authorized service providers.*

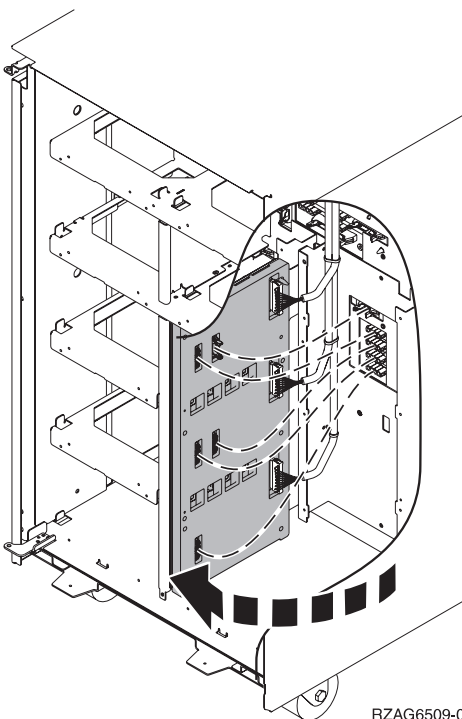
Use this procedure to remove or replace the device board (DB1 and DB2) in the Model 830/SB2.

To remove or replace the device board (DB1 and DB2):

1. Power off the system. (See "Power on/off the system and logical partitions" on page 561.)

2. Disconnect the power cord from the system unit.
3. Open the front cover. (See “Models 830/SB2 with FC 9074 - Covers” on page 58.)  
Refer to Final assembly, front - Models 830 and SB2 with FC 9074 (See page 400) and perform the following steps.
4. From the front of the system do the following:
  - a. Remove the EMC access plates from the disk unit enclosures that are located in front of the backplane that you are replacing. For location information, see “Locations — Models 830, SB2 System Unit with FC 9074 Base I/O Tower” on page 260. Press the surfaces of the two latching mechanisms together and tilt the top of the cover away from the frame to remove it.
  - b. Record the locations of the disk units and then remove them from the disk unit enclosures that you just uncovered.  
**Attention:** The disk units are sensitive to electrostatic discharge (see “Work with electrostatic discharge-sensitive parts” on page 585).
  - c. Remove the screws that hold the disk unit cage assembly in to the frame.
  - d. Remove the two retaining screws that are located inside of the disk unit cage assembly (the top right and bottom left corners).
  - e. Remove the disk unit cage assemblies.
  - f. Remove the screws that hold the DASD shelf to the frame.
  - g. Remove the DASD shelf from the frame.
5. Remove the retaining screw that is holding the DASD board assembly to the frame.
6. Pull the DASD board assembly out until it slides off the guide pins, then rotate the DASD board assembly 90 degrees to remove the cables that are located on the backside of it.

**Figure 1. Device board cabling**



7. Remove the cables from the rear of the DASD board assembly and note their locations.  
**Note:** Both ends of the ribbon cables are marked **LH** or **RH** indicating that one end of the cable is plugged in to either the left-hand (DB1) or right-hand (DB2) DASD board assembly. The other end of the cable is plugged in to either the left-most (LH) or right-most (RH) DASD controller card. The cables will crisscross in the center of the tower.



8. Remove the DASD board assembly.
9. Install the DASD board assembly by reversing the removal procedure. After exchanging an item, go to “Verify the repair” on page 558.  
**This ends the procedure.**

## **Models 830/SB2 - Device board (DB3)**

*For use by authorized service providers.*

Use this procedure to remove or replace the device board (DB3) in the Models 830/SB2.

To remove or replace the device board (DB3):

1. Power off the system. (See “Power on/off the system and logical partitions” on page 561.)
2. Disconnect the power cord from the system unit.
3. Open the rear cover. (See “Models 830/SB2 with FC 9074 - Covers” on page 58.)
4. Refer to Final assembly, front - Models 830 and SB2 with FC 9074 (See page 400) and perform the following steps.
5. From the rear of the unit do the following:
  - a. Remove the EMC access plate that is located directly above the PCI card enclosure. Press the surfaces of the two latching mechanisms together and tilt the top of the cover away from the frame to remove it.
  - b. Remove the cables from the disk unit controller cards (IOAs) that are located inside the PCI card enclosure and note their locations.  
**Note:** Both ends of the ribbon cables are marked **LH** or **RH** indicating that one end of the cable is plugged in to either the left-hand (DB1) or right-hand (DB2) DASD board assembly. The other end of the cable is plugged in to either the left-most (LH) or right-most (RH) DASD controller card. The cables will crisscross in the center of the tower.
  - c. Remove the screws that hold the PCI card enclosure in the frame.
  - d. Pull the PCI card enclosure partially out of the frame while lifting the cables clear of the enclosure.
  - e. Press the release mechanism that is located along the top right side of the enclosure and carefully slide the enclosure towards you. Make sure that the cables are clear of the enclosure.
  - f. Remove the PCI card enclosure from the frame.
  - g. Remove the screws from the EMC access plate that is located inside the frame and directly above the power distribution board.
  - h. Remove the EMC access plate.
  - i. Reach through the opening and remove the cables from the backside of the base DASD board assembly (DB3).
6. Open the front cover. (See “Models 840/SB3 - Covers” on page 80.)
7. From the front of the system do the following:
  - a. Note the removable media locations and then remove them by pulling out on the handles which are located on each side of the unit.
  - b. Remove the operator panel by pulling on the handles that are located on each side of the unit and sliding it partially out of the tower. Then, unplug the cable from the rear of the control panel. (See Final assembly, front - Models 830 and SB2 with FC 9074 (See page 396).)
  - c. Unplug the control panel cable from the base DASD board assembly (DB3).
  - d. Remove the two retaining screws that are located inside of the removable media enclosure (the top right and lower left corners).
  - e. Remove the removable media enclosure.
  - f. Remove the EMC access plates from the disk unit enclosures that are located in front of the backplane (DB3). For location information, see “Locations — Models 830, SB2 System Unit with FC

9074 Base I/O Tower” on page 260. Press the surfaces of the two latching mechanisms together and tilt the top of the cover away from the frame to remove it.

- g. Record the disk unit locations and then remove them from the disk unit enclosures that you just uncovered.

**Attention:** The disk units are sensitive to electrostatic discharge (see “Work with electrostatic discharge-sensitive parts” on page 585).

- h. Remove the screws that hold the disk unit enclosures to the frame.
  - i. Remove the retaining screws that are located inside the disk unit enclosure.
  - j. Remove the disk unit enclosures.
  - k. Remove the screws that hold the center support bracket and shelf for the disk unit and removable media enclosure to the frame.
  - l. Remove the support bracket and shelf.
  - m. Remove the base DASD board assembly (DB3).
8. Install the base DASD board assembly by reversing the removal procedure. After exchanging an item, go to “Verify the repair” on page 558.  
**This ends the procedure.**

## Disk unit, Models 830/SB2 and 840/SB3 (dedicated and concurrent)

*For use by authorized service providers.*

**Note:** Determine if the system has logical partitions. Go to Determine if the system has logical partitions before continuing with this procedure.

**Attention:** The disk unit is sensitive to electrostatic discharge (see Work with electrostatic discharge-sensitive parts).

1. Were you directed here from Recovery procedures?
  - **Yes:** Continue with the next step.
  - **No:** Go to Recovery procedures. Then, return here.
2. After you have determined the location of the disk unit to replace, remove the covers for access. See Models 830/SB2 with FC 9074 - Covers or Models 840/SB3 - Covers for the model that you are working on.
3. Remove the EMC access plate that is over the location of the disk unit that you are removing. (For location information, see Locations — Models 830, SB2 system unit with FC 9074 base I/O tower or “Locations — Models 840, SB3 system unit with processor tower and FC 9079 Base I/O Tower” on page 270 for the model that you are working on.) The associated tables will direct you to the remove and replace procedures.
4. Are you removing or replacing a disk unit using concurrent maintenance?
  - **No:** Perform Dedicated maintenance - Remove and replace (See page ) below.
  - **Yes:** Perform Concurrent maintenance - Remove and replace (See page ) below.

### Concurrent maintenance - Remove and replace

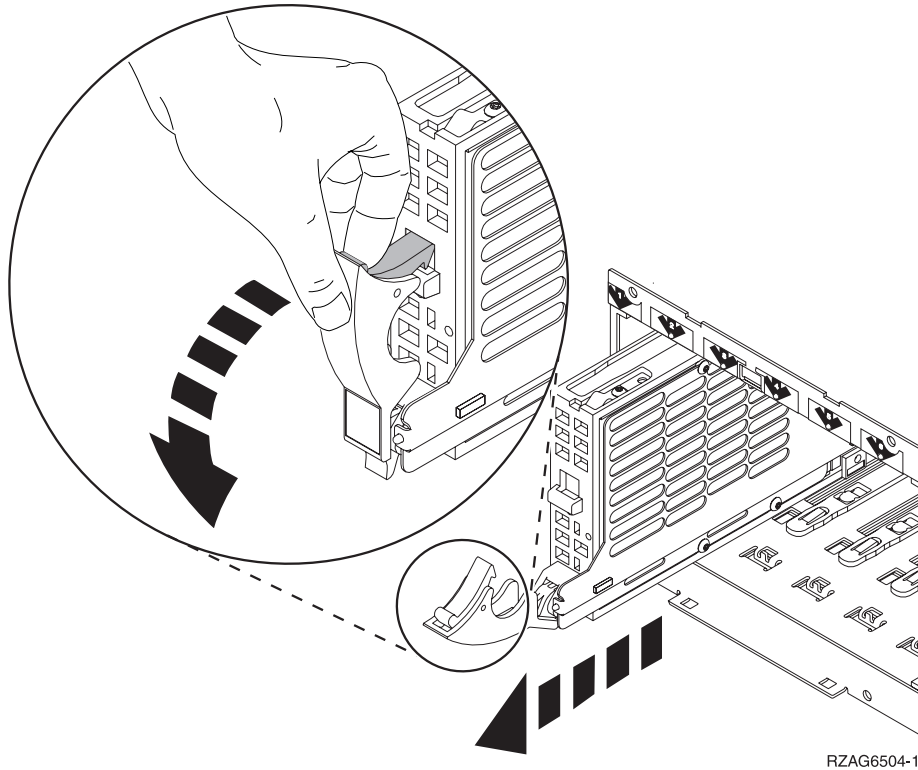
**Attention:** If removing the cover while powered on, errors may occur due to electromagnetic interference.

1. To remove a disk unit using concurrent maintenance perform the following:
  - a. Select System Service Tools (SST). If you cannot get to SST, select DST.  
**Do not perform a system IPL to get to DST.**
  - b. Select **Start a Service Tool** —> **Hardware Service Manager**.
  - c. Select **Device Concurrent Maintenance** and enter the required information in the information fields.

- d. Press **Enter** on the console. After the delay time, the light above the device location will begin flashing. You now have nine seconds to pinch the two surfaces of the latching mechanism together and rotate the handle of the disk unit towards you. Pull the disk unit out part way. The light above the device location will go off and remain off as soon as the device is no longer making contact with the backplane.

**Attention:** If you remove the device when the light is **not** flashing, data may be lost, the disk unit may be damaged, or the backplane may be damaged.

**Figure 1. Disk unit removal, Models 830/SB2 and 840/SB3 (concurrent)**



Wait another five seconds to allow time for the disk to stop spinning. Then pull the disk unit out the rest of the way.

2. Are you finished with the repair?
  - **No:** Continue with the next step.
  - **Yes:** Replace the covers that were removed during this procedure and return to the procedure that sent you here.  
**This ends the procedure.**
3. To install a disk unit using concurrent maintenance perform the following:
  - a. Select System Service Tools (SST). If you cannot get to SST, select DST.  
**Do not perform a system IPL to get to DST.**
  - b. Select **Start a Service Tool** —> **Hardware Service Manager**.
  - c. Select **Device Concurrent Maintenance** and enter the required information in the information fields. **Do not press the Enter key at this time.**
  - d. Slide the unit in half-way. **Ensure that the device does not contact the backplane at this time.**
  - e. Press **Enter** on the console. After the delay time, the light above the device location will begin flashing. You now have nine seconds to insert the disk unit. Put the disk unit part way into the desired slot and rotate the handle of the disk unit towards you. Then push the disk unit completely

into the slot and rotate the handle towards the disk unit to latch it into the slot. The light above the device location will go off and remain off for a few seconds when the device contacts the backplane. Then it should go on and remain on.

**Attention:** If you install the device when the light is **not** flashing, data may be lost, the disk unit may be damaged, or the backplane may be damaged.

- f. Replace the covers that were removed during this procedure and return to the procedure that sent you here.

**This ends the procedure.**

### **Dedicated maintenance - Remove and replace**

1. To remove a disk unit using dedicated maintenance perform the following:
  - a. Power off the system. See Power on/off the system and logical partitions.
  - b. Disconnect the power cord.
  - c. To remove the disk unit, pinch the two surfaces of the latching mechanism together and pull the handle towards you to release the disk unit from the slot.
  - d. Remove the unit. See Figure 1. Disk unit removal, Models 830/SB2 and 840/SB3 (concurrent) (See page 63) above.
2. Are you finished with the repair?
  - **No:** Continue with the next step.
  - **Yes:** Replace the covers that were removed during this procedure and return to the procedure that sent you here.

**This ends the procedure.**
3. To install a disk unit using dedicated maintenance perform the following:
  - a. Power off the system. See Power on/off the system and logical partitions.
  - b. Disconnect the power cord.
  - c. Put the disk unit part way into the desired slot and rotate the handle of the disk unit towards you.
  - d. Push the disk unit completely into the slot and rotate the handle towards the disk unit to latch it into the slot.
  - e. Replace the covers that were removed during this procedure and return to the procedure that sent you here.

**This ends the procedure.**

### **Models 830/SB2 with FC 9074 - System unit control panel (NB1)**

*For use by authorized service providers.*

Use this procedure to remove or replace the control panel - NB1 on Models 830/SB2 with FC 9074.

**Attention:** The control panel including the processor capacity card and interactive cards are sensitive to electrostatic discharge (see Work with electrostatic discharge-sensitive parts).

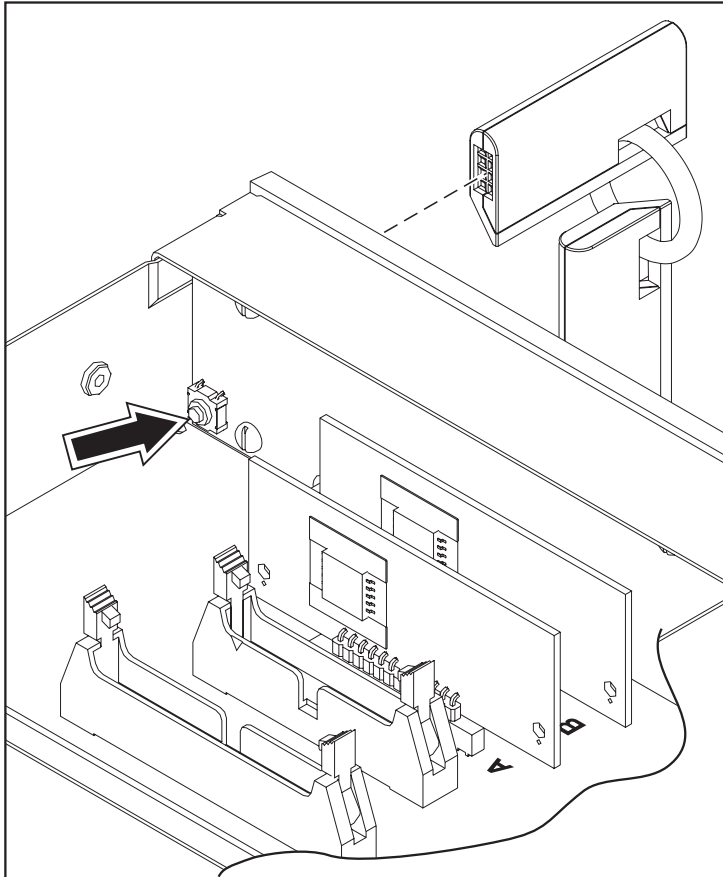
#### **CAUTION:**

**The circuit card contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the circuit card as instructed by local regulations. (RSFTC234)**

To remove or replace the control panel (NB1):

1. Power off the system. See Power on/off the system and logical partitions.
2. Disconnect the ac power cord from the system unit.
3. Open the front cover. See Models 830/SB2 with FC 9074 - Covers.
4. Pull on the two side fasteners to release the control panel assembly.
5. Slide the panel partially out of the frame.
6. Disconnect the cables that are attached to backside of the control panel.

7. Remove the control panel from the frame.
8. Loosen the two screws that retain the processor capacity card retention (back) cover and remove the cover.
9. If you are replacing the panel, then you **must** move the processor capacity card and interactive card to the new panel.  
**Important:** Mark the processor capacity card and interactive cards as to their positions and orientation, then remove the cards. See Control panel assembly - Models 830 and SB2 with FC 9074.
10. Install the processor capacity card and Interactive cards into the new panel and replace the retention cover.
11. Remove the plastic tab on the front of the control panel that has the machine type and serial number. The tab should then be installed onto the new control panel.
12. Reverse the above procedure to install the panel.  
**Note:** When a control panel with keystick is replaced, discard the new keysticks that come with the panel and reuse the original keysticks.
13. If you are here to replace the processor capacity card or interactive card, then replace **only** that card and not the panel.  
Are you replacing the processor capacity card?
  - **Yes:** Continue with the next step.
  - **No:** If you are replacing the interactive card, continue with step **18** (See page 66).
14. If you are here to replace a processor capacity card that was associated with processor-on-demand (POD) processor features, perform the following:
  - a. Contact your second level of support to determine if a POD activation code is required to reset previously activated on-demand processors.
  - b. If necessary, a new POD activation code will need to be generated and then entered at the server.
  - c. After entering a POD activation code, 30 minutes should elapse before an IPL is performed to ensure the POD activation code has been saved.**Note:** DST/SST options to activate POD will not be visible if the system password has been bypassed.
15. Does the system that you are working on have a keystick lock?
  - **Yes:** Continue with the next step.
  - **No:** Go to step **18** (See page 66).
16. Do you have the original system unit keys and are you reusing them?
  - **No:** Continue with the next step.
  - **Yes:** Go to step **18** (See page 66).
17. Perform the following:  
**Figure 1. System unit control panel with keystick (NB1)**



RZAQ4506-0

- a. Apply ac power.
  - b. Insert the new keystick into the panel. The control panel will display 0000 5553.
  - c. Locate the push button that is on the back side of the control panel. It is located directly behind the keystick.
  - d. Depress the push button for 3-4 seconds.
  - e. The control panel will return to a function 01 display.
18. After exchanging an item, go to Verify the repair.  
**This ends the procedure.**

### **Models 830/SB2 with FC 9074 - Power distribution backplane (PB1)**

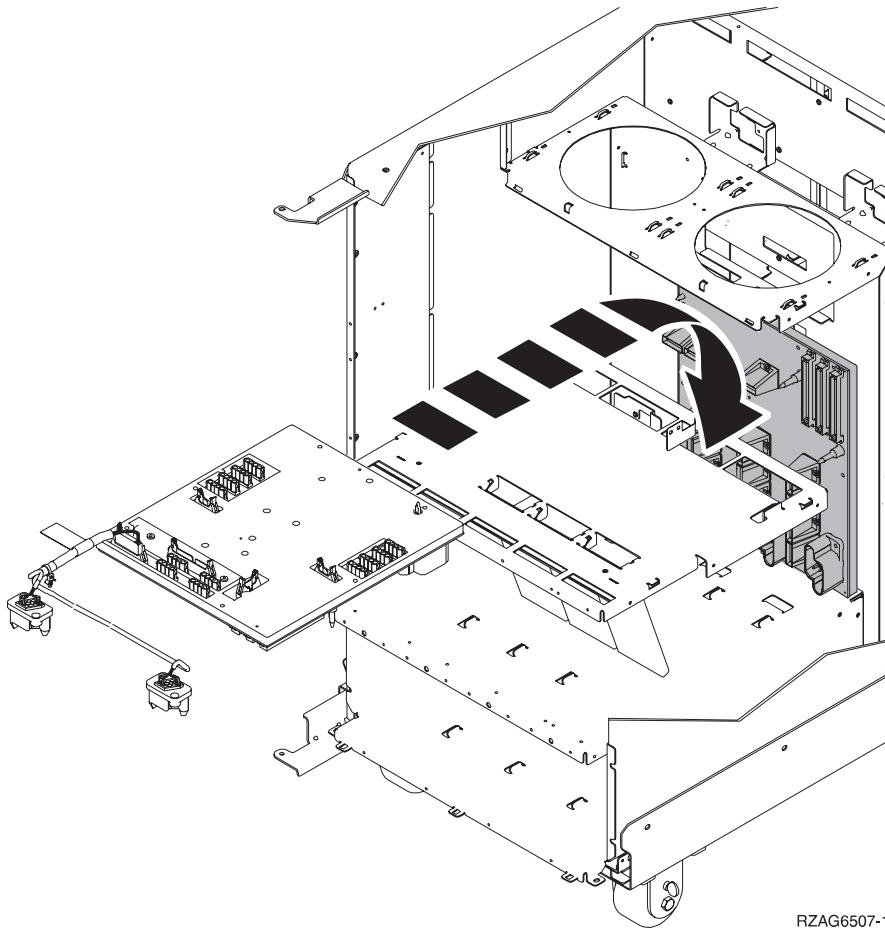
*For use by authorized service providers.*

Use this procedure to remove or replace the power distribution board - PB1 in an Models 830/SB2 with FC 9074.

To remove or replace the power distribution board - PB1:

1. You must remove both disk unit backplanes DB1 and DB2 before continuing with this procedure. Perform "Model 830/SB2 - Device board (DB1 and DB2)" on page 59 for each backplane. After you have removed both disk unit backplanes DB1 and DB2 return here and continue with the next step of this procedure.
2. Remove the rear cover. (See "Models 830/SB2 with FC 9074 - Covers" on page 58.)
3. Remove the PCI drawer. (See "Models 830/SB2 with FC 9074 - Tower card (CB1)" on page 72.)
4. Remove the AC Box. (See "Models 830/SB2 with FC 9074 (with single line cord) - AC input/charger (A01)" on page 50.)

5. Remove the three power supplies. (See “FC 5074, FC 5079, FC 9074, FC 9079 - Power supply - P00, P01, P02, and P03” on page 149.)
6. Remove the four batteries (see Models 830/SB2 with FC 9074 - Battery - T01 through T04).
7. Remove the screws from the power subframe assembly.
8. From the front of the tower, reach through the frame and remove the cables from the backside of the power distribution backplane and note their locations.
9. From the rear of the tower, remove the mounting screws that hold the power distribution backplane to the frame.
10. Pull the power distribution backplane slightly towards you and lift it up to remove it from the frame.



11. Install the power distribution backplane by reversing the removal procedure. After exchanging an item, go to “Verify the repair” on page 558.  
**This ends the procedure.**

### **Models 830/SB2 with FC 9074 - Power supply (PP1 and PP2)**

*For use by authorized service providers.*

Use this procedure to remove or replace the Power supply (PP1 and PP2) in the Models 830/SB2 with FC 9074.

To remove or replace the Power supply (PP1 and PP2):

1. **Do not power off the system.**  
**Note:** Remove and replace only one power supply at a time.
2. Open the rear cover. (See “Models 830/SB2 with FC 9074 - Covers” on page 58.)

3. Unplug the power supply cable.  
Refer to “Final assembly, rear - Models 830 and SB2 with FC 9074” on page 401 and continue with the following steps.
4. Remove the mounting screw from the power supply.
5. Rotate the handle from left to right to release the power supply from the frame.
6. Remove the power supply.
7. Install the new power supply by reversing the removal procedure.  
**Note:** Do not slam the new power supply when installing it into the system. Insert the power supply until it engages the frame, then rotate the handle from right to left.
8. After exchanging an item, go to “Verify the repair” on page 558.  
**This ends the procedure.**

## Model 830/SB2 - Processor feature codes and CCINs

*For use by authorized service providers.*

The processor cards in this system can only be attached to the backplane once. If a processor card is removed, it must be replaced with a new processor card.

Perform the following:

1. Use control panel function 20 to determine the processor feature code (if it has not already been determined).
2. Use the table below to determine the CCIN and location for the processor cards.
3. Use the CCIN in conjunction with the “Type, model, and part number list” on page 520 to obtain the part numbers for the processors that you will need to replace.
4. Refer to Models 830/SB2 with FC 9074 - System unit backplane (MB1) and Models 830/SB2 with FC 9074 - Cards - Dedicated for the appropriate remove and replace procedure.

**Table 1. Model 830/SB2 - Processor CCIN**

System model	Processor feature code	Processor CCIN	Processor location
830 (2-way)	23C1, 23C2, 23C3, 23C4, 23C5	245C	M03
830 (4-way)	23D1, 23D2, 23D3, 23D4, 23D5, 23D6	245D	M03
830 (8-way)	23D8, 23D9, 23DA, 23DB, 23DC, 23DD, 23DE	245D (You will need a quantity of two.)	M03, M04
SB2 (8-way)	2315	245D (You will need a quantity of two.)	M03, M04

## Models 830/SB2 with FC 9074 - Removable media (D41 and D42)

*For use by authorized service providers.*

Use this procedure to remove or replace removable media (D41 and D42) on Models 830/SB2 with FC 9074.

### **Laser safety information: CAUTION:**

**This product may contain a CD-ROM which is a class 1 laser product. (RSFTC240)**

### **CAUTION:**

**This product may contain a DVD which is a class 1 laser product. (RSFTC245)**

To remove removable media (D41 and D42):



1. Determine if the system has logical partitions. Go to Determine if the system has logical partitions before continuing with this procedure.
2. Remove media (if any) from the device. If the eject button on a tape device is failing, go to Tape cartridge - manual removal, then continue with the next step of this procedure. If the eject button on a CD-ROM is failing and will not open, go to Optical media - manual removal, and then continue with the next step of this procedure. If the eject button on a DVD-RAM is failing and will not open, do not attempt to manually remove the optical media at this point in time.
3. Are you removing a unit by using device concurrent maintenance?
  - **Yes:** Continue with the next step.
  - **No:** Perform the following:
    - a. Power off the expansion tower. See Power on/off the system and logical partitions.
    - b. Disconnect the power cord from the expansion tower.
    - c. Open the front cover. See Models 830/SB2 with FC 9074 - Covers.
    - d. Pull on the handles which are located on each side of the unit and remove the unit.
    - e. Install the new device by reversing the remove procedure. After exchanging an item, go to Verify the repair.

**Notes:**

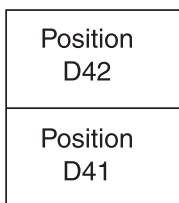
- If you need to remove a tape from the old tape unit, see Tape cartridge - manual removal.
- If you need to remove optical media from a DVD-RAM unit, go to Optical media - manual removal.

**This ends the procedure.**

4. Before exchanging a removable media unit, you must ensure that the unit is not in use and is varied off.
 

**Note:** If you are removing an optical storage unit you must ensure, that all of the removable media units in the expansion tower are not in use and are varied off.
5. Use the figure to determine the location of the internal removable media unit. Record this location for later use.

**Figure 1. Internal removable media locations**



RZAPA503-1

6. Perform the following:
  - a. Select System Service Tools (SST). If you cannot get to SST, select DST.
 

**Do not perform a system IPL to get to DST.**
  - b. Select **Start a Service Tool** —> **Hardware Service Manager**.
  - c. Select **Device Concurrent Maintenance** and enter the required information in the information fields. **Do not press the Enter key at this time.**
  - d. Read the remaining steps of this procedure and ensure that you understand the procedure before continuing.
  - e. Press **Enter** on the console. After the delay time, the light at the top right of the device will begin flashing. You now have 9 seconds to pull out firmly on the handles and pull the unit partially out of the tower. The light at the top right of the device will go off and remain off as soon as the device is no longer making contact with the backplane.

**Attention:** If you remove the device when the light is **not** flashing, data may be lost, the unit may be damaged, or the backplane may be damaged.

- f. Remove the unit from the tower.

**Notes:**

- If you need to remove a tape from the old tape unit, see Tape cartridge - manual removal.
- If you need to remove optical media from a DVD-RAM unit, go to Optical media - manual removal, and then continue with the next step of this procedure.

**This ends the procedure.**

To replace removable media (D41 and D42):

1. Select **Device Concurrent Maintenance** and enter the required information in the information fields.  
**Do not press the Enter key at this time.**
2. Read the remaining steps of this procedure and ensure that you understand the procedure before continuing.
3. Slide the unit partially into the tower. **Ensure that the device does not contact the backplane at this time.**
4. Press Enter on the console. After the delay time, the light at the top right of the device will begin flashing. You now have 9 seconds to push in firmly on the handles and push the unit completely into the frame. The light at the top right of the device will go off and remain off for a few seconds when the device contacts the backplane. Then it should go on and remain on.

**Attention:** If you install the device when the light is **not** flashing, data may be lost, the unit may be damaged, or the backplane may be damaged.

Did the light on the device go on and remain on?

- **No:** Continue with the next step.
- **Yes:** After exchanging an item, go to Verify the repair.

**This ends the replace procedure.**

5. Attempt the device concurrent maintenance procedure again without physically moving the unit.

Did the light above the device go on and remain on?

- **No:** Continue with the next step.
- **Yes:** After exchanging an item, go to Verify the repair.

**This ends the procedure.**

6. There is a power problem. One of the following conditions exists:

- The new unit is defective.
- The backplane was damaged during the device concurrent maintenance procedure.
- There is a new problem with the power subsystem.

**This ends the procedure.**

## **Models 830/SB2 with FC 9074 - System unit backplane (MB1)**

*For use by authorized service providers.*

Use this procedure to remove or replace the system unit backplane (MB1) on the Models 830 or SB2.

**Attention:** The processor cards in this system can only be attached to the backplane once. If a processor card is removed, it must be replaced with a new processor card. For additional information, refer to Model 830/SB2 - Processor feature codes and CCINs.

To remove or replace the system unit backplane (MB1):

1. Power off the system. See Power on/off the system and logical partitions.
2. Open the rear cover and unplug the ac power cord from the FC 9074 base I/O tower.
3. Refer to Models 830 and SB2 with FC 9074 - Final assembly, rear, and continue with the following steps.
4. Label and remove the cables from the rear of the processor/CEC cage assembly.

5. Remove the mounting screws from the EMC shield that is covering the processor/CEC cage assembly.
6. Remove the EMC shield.
7. Remove the mounting screws from the processor/CEC cage assembly.
8. Remove the EMC access plate that is located directly above the PCI cage (CB1).
9. Reach under the processor/CEC cage assembly and remove the internal (copper) HSL cable and the three ribbon cables from the system unit backplane.
10. Reach under the processor/CEC cage assembly and loosen the thumbscrew on the interlock plate.
11. Pivot the interlock plate downward.
12. Grasp the handle bar on the processor/CEC cage and pull the drawer out until it stops.
13. Remove the screws from the air baffle that is located in the center and remove it from the cage.
14. Label and remove the M01 - processor regulator card, M02 and M05 - memory riser cards, M03 and M04 - processors, and the M06 - Network interface controller (NIC) card from inside the processor/CEC cage. For location information, refer to Locations — Models 830, SB2 system unit with FC 9074 base I/O tower. The associated table will direct you to the remove and replace procedures.
15. Remove the mounting screws that are holding the processor/CEC cage assembly to the rails.
16. Lift the processor/CEC cage assembly from the rails.
17. Remove the mounting screws that hold the backplane to the sheet metal cage.
18. Disconnect the cable carrier from the sheet metal cage (snip the mounting dart).
19. Rotate the lever handles that hold the processors in place to the closed (downward) position and separate the sheet metal cage from the backplane by lifting it up and off of the board.
20. Install the new system unit backplane by reversing the remove procedure. After exchanging an item, go to Verify the repair.  
**This ends the procedure.**

## **Models 830/SB2 with FC 9074 - Time of day (TOD) battery**

*For use by authorized service providers.*

Use this procedure to remove or replace the time of day (TOD) battery in the Models 830/SB2 with FC 9074. The TOD battery is located in the FC 9074 base I/O tower.

### **CAUTION:**

**This product contains a lithium battery. To avoid possible explosion, do no burn, exchange, or charge the battery. Discard the battery as instructed by local regulations for lithium batteries. (RSFTC232)**

To remove or replace the time of day battery:

1. Power off the expansion tower. See Power on/off the system and logical partitions.
2. Remove the power cord from the base I/O tower.
3. Open the rear cover. See FC 5074, FC 5079, FC 5094, FC 5294, FC 9079, FC 9094 - Covers.
4. From the rear of the expansion tower do the following:
  - a. Remove the EMC access plate that is located directly above the PCI card enclosure. Press the surfaces of the two latching mechanisms together and tilt the top of the cover away from the frame to remove it.
  - b. Remove the cables from the top of the PCI cards and note their locations.  
**Attention:** All cards are sensitive to electrostatic discharge (see Work with electrostatic discharge-sensitive parts).
  - c. Remove the screws that hold the PCI card enclosure to the frame.

- d. Pull the PCI card enclosure partially out of the frame to the release mechanism stop on the right side, while lifting the cables clear of the enclosure.
  - e. The battery is located on the right hand side of the PCI enclosure. Remove the PCI cards preventing access to the battery from the enclosure and note their locations. See FC 5074, FC 5079, FC 5094, FC 5294 - Cards (dedicated).
5. Remove the TOD battery. Use a flat object (screwdriver) to pry the battery out.
  6. Reverse the steps to install the TOD battery.
  7. After installation is complete, IPL the system in Manual Mode.
  8. Have the customer set the time and date.  
**This ends the procedure.**

## **Models 830/SB2 with FC 9074 - Tower card (CB1)**

*For use by authorized service providers.*

Use this procedure in conjunction with the Expansion unit power procedure to remove or replace the tower card (CB1) in the Models 830 or SB2 with FC 9074.

To remove or replace the tower card (CB1):

1. Power off the system. See Power on/off the system and logical partitions.
2. Remove the power cord from the system unit.
3. Open the rear cover. See Models 830/SB2 with FC 9074 - Covers.
4. Refer to Models 830 and SB2 with FC 9074 - Final assembly, rear and perform the following steps from the rear of the system:
  - a. Remove the external cables from the rear of the PCI card enclosure and note their locations.
  - b. Remove the EMC access plate that is located directly above the PCI card enclosure. Press the surfaces of the two latching mechanisms together and tilt the top of the cover away from the frame to remove it.
  - c. Remove the cables from the top of the PCI cards and note their locations.  
**Attention:** All cards are sensitive to electrostatic discharge. See Work with electrostatic discharge-sensitive parts.
  - d. Remove the screws that hold the PCI card enclosure to the frame.
  - e. Pull the PCI card enclosure partially out of the frame while lifting the cables clear of the enclosure.
  - f. Press the release mechanism that is located along the top right side of the enclosure and carefully slide the enclosure towards you. Make sure that the cables are clear of the enclosure.
5. Remove the PCI cards from the enclosure and note their locations. See Locations — Models 830, SB2 system unit with FC 9074 base I/O tower.
6. Disconnect the top ribbon cables from the tower card assembly and note its location.
7. Install the tower card/PCI card assembly by reversing the removal procedure.
8. Perform the following:
  - a. Open the front cover. See Models 830/SB2 with FC 9074 - Covers.
  - b. Pull on the two side fasteners to release the control panel.
  - c. Slide the panel partially out of the frame.
  - d. Apply ac power.
  - e. Insert keystick into panel. The panel should display SRC 0000 5553.
  - f. Locate the push button located on the back side of the control panel, directly behind the keystick socket. Depress the push button for 3-4 seconds.
9. Set the configuration ID in the tower card:
  - a. If the ac power is not applied, then apply it now.

- Note:** The tower may power up automatically.
- b. Power down the expansion tower **without** removing the power cord using the Expansion unit power procedure. Then, return here and continue with step 10c.
  - c. Select function **07** on the system control panel. Press **Enter** (07\*\* will be displayed).
  - d. Use the arrow keys to increment/decrement to sub-function **A9** (07A9 will be displayed). Press **Enter** (07A9 00 will be displayed).
  - e. Use the arrow keys to increment/decrement to the frame address - usually '01' for CEC box (0701 will be displayed). Press **Enter** (0701 00 will be displayed).
  - f. Use the arrow keys to increment/decrement to a configuration ID of **83** (0783 will be displayed). Press **Enter** (0783 00 will be displayed).
  - g. The display will not show the series of bring-up SRCs on the panel. After going through function 07A9 from the panel exit back to function 01 manually, the tower ID is updated.
10. After exchanging an item, go to Verify the repair.  
**This ends the procedure.**

## Models 840/SB3 remove and replace procedures

*For use by authorized service providers.*

**Models 840/SB3 processor tower (with non-dual line cords) - AC box - A01**

**Models 840/SB3 processor tower (with dual line cords) - AC box (concurrent) - A01 and A03**

**Models 840/SB3 with FC 9079/8079 (with dual line cords) - AC module - A01 and A02**

**Models 840/SB3 processor tower (with dual line cords) - Adapter card (concurrent) - A02**

**Models 840/SB3 processor tower - Air moving device - B01, B02, B03, and B04**

**Models 840/SB3 system unit - Battery pack - T01**

**Models 840/SB3, FC 8079 (lower half), FC 9079 - Cards (concurrent)**

**Models 840/SB3, FC 8079 (lower half), FC 9079 - Cards (dedicated)**

**Models 840/SB3 system unit - Charger - G01**

**Models 840/SB3 - Covers**

**Models 840/SB3 processor tower, FC 8079 (lower half), FC 9079 - Control panels - NB1**

**Models 840/SB3 - Disk unit**

**Models 840/SB3 - External battery power unit**

**Models 840/SB3 system unit - Power subframe assembly - PB1**

**Models 840/SB3 processor tower - Power supply (PS) - P01 through P06**

**Models 840/SB3 (FC 9079) - Removable media - D41 and D42**

**Models 840/SB3 system unit - SPCN card - R21**

**Models 840/SB3 - System unit backplane (MB1) and regulator board (RB1)**

## Models 840/SB3 - Time of day (TOD) battery

### Models 840/SB3 processor tower (with non-dual line cords) - AC box (A01)

*For use by authorized service providers.*

Use this procedure to remove or replace the AC box (A01) in a Model 840/SB3 processor tower (with non-dual line cords).

To remove or replace the AC box (A01):

1. Power off the system. See Power on/off the system and logical partitions.
2. Disconnect the ac power cord.
3. Open the rear cover. See Models 840/SB3 - Covers.
4. Refer to Final assembly, rear - Models 840 and SB3 processor tower and perform the following steps.
  - a. Remove the screws that hold the AC box.
  - b. Remove the AC box.
5. Install the new AC box by reversing the removal procedure. After exchanging an item, go to Verify the repair.

**This ends the procedure.**

### Models 840/SB3 Processor Tower (with dual line cords) - AC box (A01, A03) - concurrent maintenance

*For use by authorized service providers.*

Use this procedure to remove or replace the AC box (A01, A03) on the Models 840/SB3 Processor Tower (with dual line cords)- using concurrent maintenance.

To remove or replace the AC box (A01, A03):

1. Swing open the lower rear cover. See Model 840/SB3 - Covers. Perform the following steps from the rear of the system.
2. Disconnect the ac power cord for the AC box that you are working on.
3. Remove the four screws holding the AC box that you are working on in place. Refer to Final assembly, rear - Models 840 and SB3 Processor Tower.
4. Remove the AC box.
5. Prior to installing the new AC box, verify that the LED on the concurrent maintenance adapter card is on.

Is the LED on?

- **Yes:** Install the new AC box by reversing this procedure.  
**This ends the procedure.**
- **No:** You must power down the system and replace the concurrent maintenance adapter card before installing the new AC box.
  - a. Power off the system. This is no longer a concurrent maintenance operation. See Power on/off the system and logical partitions.
  - b. Remove the two screws holding the concurrent maintenance adapter card in place.
  - c. Install the new concurrent maintenance adapter card and tighten the two screws.
  - d. Install the new AC box and tighten the four screws.
  - e. Power on the system.

**This ends the procedure.**

### Model 830 with FC 9074, Model 840 with FC 9079 or FC 8079 (with dual line cords) - AC module (A01, A02)

*For use by authorized service providers.*

Use this procedure to remove or replace the AC module (A01, A02) on the Model 830 with FC 9074, or Model 840 with FC 9079 or FC 8079 (with dual line cords).

To remove or replace the AC module (A01, A02):

1. Do not power down the tower if it is powered on. This procedure can be done concurrently.
2. Open the rear cover. See Models 830/SB2 with FC 9074 - Covers or Models 840/SB3 - Covers, depending on the model that you are working on.
3. See Locations and addresses for the tower that you are working on.
4. Trace and disconnect the ac input line cord that connects to the AC module that needs replacing.  
**Attention:** Do **not** disconnect the other system ac line cord when powered on.
5. Disconnect the power supply jumper cords from the AC module that you are working on.  
**Attention:** Do **not** disconnect the other system AC module power supply jumper cords.
6. Remove the top and bottom screws that hold the AC module to the frame.
7. Remove the AC module unit.
8. Install the AC module by reversing the removal procedure. After exchanging an item, go to Verify the repair.  
**This ends the procedure.**

### **Models 840/SB3 Processor Tower (with dual line cords) - concurrent maintenance adapter card (A02)**

*For use by authorized service providers.*

Use this procedure to remove or replace the concurrent maintenance adapter card (A02) on a Model 840/SB3 processor tower.

To remove or replace the concurrent maintenance adapter card (A02):

1. Power down the system. This is no longer a concurrent maintenance operation.
2. Remove the two screws holding the concurrent maintenance adapter card in place. Refer to Final assembly, rear - Models 840 and SB3 Processor Tower.
3. Install the new concurrent maintenance adapter card and tighten the two screws.
4. Power on the system.  
**This ends the procedure.**

### **Models 840/SB3 processor tower - Air moving device (B01, B02, B03, and B04)**

*For use by authorized service providers.*

Use this procedure to remove or replace the air moving device (AMD) - (B01, B02, B03, and B04) in the Models 840/SB3 processor tower.

To remove or replace Air moving device (B01, B02, B03, and B04):

1. Do not power off the system.
2. Open the front or rear cover depending on the location of the AMD that you are replacing. See Models 840/SB3 - Covers.
3. Refer to Final assembly, front - Models 840 and SB3 processor tower or Final assembly, rear - Models 840 and SB3 processor tower and perform the following steps.
4. Remove the EMC access plate.
5. Perform the following on the control panel:
  - a. Select function **7** on the system control panel. Press **Enter** (07\*\* will be displayed).
  - b. Use the arrow keys to increment/decrement to sub-function **A2** (07A2 will be displayed). Press **Enter** (07A2 00 will be displayed).

- c. Use the arrow keys to increment/decrement to the frame address of the processor tower, usually '02' (0702 will be displayed). Press **Enter** (0702 00 will be displayed).
  - d. Use the arrow keys to increment/decrement to select 07Fx where x is the AMD to be powered off (0=AMD B01, 1=AMD B02, 2=AMD B03, 3=AMD B04). Press **Enter** (07Fx 00 will be displayed). The green LED on the AMD will turn off.
6. Remove the AMD assembly.
  7. Install the AMD by reversing this procedure (some force is required to insert the AMD past the spring-loaded flap). The new AMD will automatically power on when it is installed.
  8. After exchanging an item, go to Verify the repair.  
**This ends the procedure.**

### **Model 840/SB3 System unit - Battery pack (T01)**

*For use by authorized service providers.*

Use this procedure to remove or replace the battery pack on a Model 840/SB3 System unit.

**Attention:** Removing the battery power unit while the system is running on battery power will cause the system to fail and may damage the battery power unit and the card enclosure.

To remove or replace the battery pack (T01):

1. If the system is powered on, **you do not have to power off the system** to perform this procedure.
2. Remove the rear cover. See Models 840/SB3 - Covers.
3. Remove the Battery Backup EMC access plate. See Final Assembly, Rear - Models 840 and SB3 Processor Tower.
4. Remove the battery.

**CAUTION:**

**The weight of this part or unit is between 18 and 32 kilograms (39.7 and 70.5 pounds). It takes two persons to safely lift this part or unit. (RSFTC204)**

**CAUTION:**

**The battery is a lead-acid battery. To avoid possible explosion, do not burn. Exchange only with the IBM-approved part. Recycle or discard the battery as instructed by local regulations.**

**In the United States, IBM has a process for the collection of this battery. For information, call 1-800-426-4333. Have the IBM part number for the battery unit available when you call. (RSFTC225)**

5. Install the new Battery Backup by reversing the procedure.
6. After you install the new battery, use HSM to perform a battery test to ensure correct operation.  
**This ends the procedure.**

### **Models 840/SB3, FC 8079-001 (lower half), FC 9079 cards (concurrent)**

*For use by authorized service providers.*

Use this procedure to remove or replace cards concurrently in the Models 840/SB3, FC 8079-001 (lower half), and FC 9079.

#### **Concurrent/dedicated guidelines for Model 840/SB3, FC 8079-001 (lower half), FC 9079**

In some cases, you do not need to power down the system to change PCI cards. Use the following guidelines to determine if you should use dedicated or concurrent remove and replace procedures. If you use concurrent maintenance on a partitioned system, follow the procedures from the partition that owns the resource. If the resource is not owned, follow the procedure from the primary partition.

#### **For cards in the Models 840/SB3 CEC:**



No card positions in the CEC permit concurrent maintenance. You must power down the system to exchange a card. See Models 840/SB3, FC 8079-001 (lower half), FC 9079 Cards (dedicated).

#### **For FC 9079 I/O tower IXS cards:**

The IXS cards require dedicated maintenance. See Models 840/SB3, FC 8079-001 (lower half), FC 9079 Cards (dedicated).

#### **For the FC 9079 I/O tower cards (except IXS cards), or FC 8079-001 I/O tower cards:**

- Card positions C01 through C07 and C09 through C15 permit concurrent maintenance using HSM. You can power down the individual card slot, but you **cannot** power down the tower.
- If the resource is the load source IOA or the load source IOP, or any other storage IOA/IOP with critical DASD attached for the system, primary, or secondary partition, follow the on-screen instructions when you use HSM to power down the IOP or IOA. Instructions to use functions 68 and 69 on the control panel will be included.
- If the resource is the console IOA or the console IOP for the system or primary partition, you cannot power down the domain.
- If the resource is the console IOA or the console IOP for a secondary partition, then power down the secondary partition and follow the procedure from the primary partition.
- All other card positions require dedicated maintenance. See Models 840/SB3, FC 8079-001 (lower half), FC 9079 Cards (dedicated).

#### **CAUTION:**

**The circuit card contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the circuit card as instructed by local regulations. (RSFTC234)**

**Attention:** All cards are sensitive to electrostatic discharge (see Work with electrostatic discharge-sensitive parts).

To remove or replace cards (concurrently):

1. From the Hardware Service Manager display, select **Packaging hardware resources**.
2. Select **Hardware contained in packaging** for the frame ID that you are working on.
3. Find the card position for the IOA or IOP that you are removing and select **Concurrent maintenance**.  
**Attention:** If multiple resources are shown with the same card position, one or more of these resources will show a status of *Missing* ("?" after the description). Only one resource will be listed as not missing. Select this resource for the concurrent maintenance operation.
4. A listing of the power domain is shown. Find the IOA or IOP that you are removing and select **Power off domain**. Everything within the IOA's or IOP's power domain will be powered off .
5. To see the status of the power domain, select **Display power status**.
6. Find the IOA or IOP that you are removing and select **Toggle LED blink off/on**.
7. Remove the cover to access the card that you are removing from the system. See Models 840/SB3 - Covers.
8. Look at the power LED for the card that you are removing to ensure that it is powered off. The power LED is located above or in front of the card slot. If the LED is blinking multiple times per second (rapidly) or it is off, then the card is powered off.
9. **You are removing a card in the lower half of the FC 8079-001 or the 9079 I/O tower using concurrent maintenance. From the rear of the tower perform the following:**
  - a. Open the rear cover. See Models 840/SB3 - Covers.
  - b. Remove the EMC access plate that is located directly above the card enclosure. Press the two latching mechanisms together and tilt the top of the cover away from the frame to remove it. See Final assembly, rear - Models 840 and SB3 processor tower.

- c. Remove the mounting screws from the card enclosure. See Final assembly, rear - Models 840 and SB3 processor tower.
- d. Slide the card enclosure partially out of the frame.
- e. Disconnect and label any cables from the card that you wish to remove.
- f. Turn the latch counter clockwise and lift up on the black latch to release the card.  
**Note:** If you are removing a FC 2890, then you must use dedicated maintenance.
- g. Remove the card by gently pulling it out.
- h. Install the card in to the system by reversing the card removal procedure for the model system or tower that you are working on.
- i. Select **Power on domain** for the IOA or IOP that you are installing.  
**Note:** To the right of the description field you will see one or both of the following symbols displayed.

Symbol	Indication
*	Indicates the location to which the system will assign the resource.
>	Indicates the location to which the resource was last assigned.

- j. Press Enter. The Work with Controlling Resources display will appear.
- k. Determine the location where you want to assign the resource and select **Assign to** for that location.
- l. After exchanging the failing item, go to Verify the repair.  
**Note:** If you have exchanged a 2766 or 2787 Fibre Channel IOA, the IBM 2105 disk unit subsystem must be updated to use the World-Wide Port-Name of the new 2766 or 2787 IOA. This name can be found in the Port worldwide name field on the iSeries by displaying detail on the 2766 or 2787 IOA Logical Hardware Resource information in Hardware Service Manager in SST or DST.  
The 16-digit World-Wide Port-Name can also be determined by appending the digits "1000" to the beginning of the 12-digit IEEE Address found on the tailstock label of the Fibre Channel IOA. Use the *ESS Web Interface User's Guide (SC26-7346)* to update the World-Wide Port-Name in the host configuration on the IBM 2105 ESS. The *ESS Web Interface User's Guide* can also be found at the following URL: <http://ssddom02.storage.ibm.com/disk/ess/documentation.html>  
**This ends the procedure.**

## **Models 840/SB3, FC 8079-001 (lower half), FC 9079 cards (dedicated)**

*For use by authorized service providers.*

Use this procedure to remove or replace cards (dedicated) in Models 840/SB3, FC 8079-001 (lower half), and FC 9079.

In some cases you do not need to power down the system to change PCI cards. Use the guidelines in Models 840/SB3, FC 8079-001 (lower half), FC 9079 cards (concurrent) to determine if you should use dedicated or concurrent remove and replace procedures.

### **CAUTION:**

**The circuit card contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the circuit card as instructed by local regulations. (RSFTC234)**

**Attention:** All cards are sensitive to electrostatic discharge (see Work with electrostatic discharge-sensitive parts).

To remove or replace cards (dedicated):

1. Power off the system. See Power on/off the system and logical partitions.
2. Disconnect the ac power cord from the tower that you are working on.

3. Choose one of the following:
  - If you are removing a processor capacity card or an interactive card from the processor tower display panel, then go to Model 840/SB3 processor tower, FC 8079-001 (lower half), and FC 9079 - Control panels (NB1).
  - If you are removing cards in a FC 9079 or the lower half of a FC 8079-001, then go to step 5 (See page 79).
  - Otherwise, you are removing a card in the processor (system) tower. Continue with the next step.
4. To remove a card in the processor (system) tower, perform the following:
  - a. Remove the front or rear cover to access the card you are replacing. See Models 840/SB3 - Covers.
  - b. Remove the EMC access plate for the card location that you are accessing. See Final assembly, front - Models 840 and SB3 processor tower or Final assembly, rear - Models 840 and SB3 processor tower.)
  - c. If there are cables connected to the card, mark their locations and disconnect them from the card.
  - d. On the opposite ends of the card, press the two latch surfaces together to release each latch.
  - e. Rotate the latches downward.
  - f. Pull on both latches at the same time to remove the card from the slot.
  - g. Install the new card by reversing the procedure.
  - h. After exchanging the failing item, go to Verify the repair.  
**This ends the procedure.**
5. To remove a card in the lower half of a FC 8079-001 or the FC 9079 I/O tower, perform the following from the rear of the tower:
  - a. Open the rear cover. See Models 840/SB3 - Covers.
  - b. Remove the EMC access plate that is located directly above the card enclosure. Press the two latching mechanisms together and tilt the top of the cover away from the frame to remove it. See Final assembly, rear - Models 840 and SB3 processor tower.
  - c. Remove the mounting screws from the card enclosure. See Final assembly, rear - Models 840 and SB3 processor tower.
  - d. Slide the card enclosure partially out of the frame.
  - e. Disconnect and label any cables from the card that you wish to remove.
  - f. Turn the latch counter clockwise and lift up on the black latch to release the card.
  - g. If you are removing a FC 2890, then remove the screws from the tail stock and slide the card cage forward about 6 inches, then the FC 2890 can be removed or inserted.
  - h. Remove the card by gently pulling it out.
  - i. Install the new card by reversing the the procedure.
  - j. After exchanging the failing item, go to Verify the repair.

**Note:** If you have exchanged a 2766 or 2787 Fibre Channel IOA, the IBM 2105 disk unit subsystem must be updated to use the World-Wide Port-Name of the new 2766 or 2787 IOA. This name can be found in the Port worldwide name field on the iSeries by displaying detail on the 2766 or 2787 IOA Logical Hardware Resource information in Hardware Service Manager in SST/DST.

The 16-digit World-Wide Port-Name can also be determined by appending the digits "1000" to the beginning of the 12-digit IEEE Address found on the tailstock label of the Fibre Channel IOA. Use the *ESS Web Interface User's Guide* (SC26-7346) to update the World-Wide Port-Name in the host configuration on the IBM 2105 ESS. The *ESS Web Interface User's Guide* can also be found at the following URL: <http://ssddom02.storage.ibm.com/disk/ess/documentation.html>

**This ends the procedure.**

## **Models 840/SB3 system unit - Charger (G01)**

*For use by authorized service providers.*

Use this procedure to remove or replace the charger (G01) in a Model 840/SB3 system unit.

To remove or replace the charger (G01):

1. **Do not power off the system.**
2. Remove the rear cover. (See “Models 840/SB3 - Covers.”)
3. Refer to “Final assembly, rear - Models 840 and SB3 Processor Tower” on page 414 when performing the following steps.
4. Remove the battery backup EMC access plate.
5. Remove the battery charger.
6. Replace the new battery charger by reversing the removal procedure. After exchanging an item, go to “Verify the repair” on page 558.

**This ends the procedure.**

## **Models 840/SB3 - Covers**

*For use by authorized service providers.*

Use this procedure to remove or replace the covers on the Models 840 and SB3.

If you are removing the covers from a FC 9079, see FC 5074, FC 5079, FC 5094, FC 5294, FC 9079, FC 9094 - Covers.

**Attention:** If removing the cover while powered on, errors may occur due to Electromagnetic Interference.

To remove the front and rear covers:

1. Lift up on the cover.
2. Pull the cover out and off.

To remove the top cover:

1. Remove the cover mounting screws.
2. Slide the cover to the front or rear.
3. Lift the cover up and off.

To remove the side covers:

1. Remove the front, rear, and top covers.
2. Remove the screws from the front and rear of the side cover.
3. Lift up on the cover.
4. Pull the cover out and off.

**This ends the procedure.**

## **Model 840/SB3 processor tower, FC 8079 (lower half), and FC 9079 - Control panel (NB1)**

*For use by authorized service providers.*

Use this procedure to remove or replace the control panel (NB1) in a Model 840/SB3 processor tower, FC 8079 (lower half), and an FC 9079.

**Attention:** The control panel including the processor capacity card and interactive cards are sensitive to electrostatic discharge (see Work with electrostatic discharge-sensitive parts).

**CAUTION:**

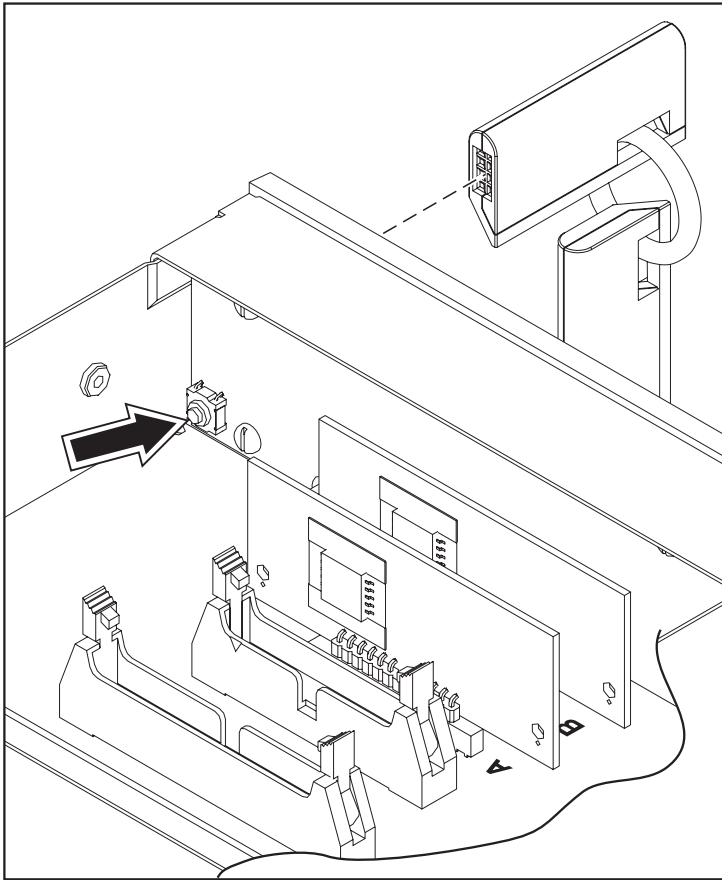
**The circuit card contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the circuit card as instructed by local regulations. (RSFTC234)**

To remove or replace the control panel (NB1):

1. Power off the system. See Power on/off the system and logical partitions.
2. Disconnect the ac power cord from the tower that you are working on.
3. Are you working on a FC 9079 Base I/O Tower or the lower half of a FC 8079 tower?
  - **Yes:** Go to step 9 (See page 81).
  - **No:** Perform the following:
    - a. On the processor tower, unfasten the two thumbscrews that keep the panel from hinging forward and swing the panel forward.
    - b. Loosen the two screws that retain the processor capacity card retention (back) cover and remove the cover.Continue with the next step.
4. Mark the positions and orientation of the processor capacity card and interactive cards, and then remove the cards. See Control panel, processor tower - Models 840 and SB3.
5. Choose one of the following:
  - If you are replacing the control panel, then you must move the processor capacity card and interactive card to the new panel. Continue with the next step.
  - If you are here to replace the processor capacity card or interactive card, then replace only that card and not the panel. After replacing the card, put the control panel back into the frame by reversing the steps that you used to remove the card. Then, go to step 7 (See page 81).
6. Perform the following to finish removing the panel:
  - a. Remove the cables from the panel.
  - b. Remove the four screws on the front bezel and remove the bezel from the hinge bracket.
  - c. Remove the five screws that are retaining the panel card and remove the panel card.
  - d. Reverse the above procedure to install the new panel. After exchanging an item, go to Verify the repair.  
**This ends the procedure.**
7. If you are here to replace a processor capacity card that was associated with processor-on-demand (POD) processor features, perform the following:
  - a. Contact your second level of support to determine if a POD activation code is required to reset previously activated on-demand processors.
  - b. If necessary, a new POD activation code will need to be generated and then entered at the server.
  - c. After entering a POD activation code, 30 minutes should elapse before an IPL is performed to ensure the POD activation code has been saved.  
**Note:** DST/SST options to activate POD will not be visible if the system password has been bypassed.
8. After exchanging an item, go to Verify the repair.  
**This ends the procedure.**
9. Open the front cover. See FC 5074, FC 5079, FC 5094, FC 5294, FC 9079, FC 9094 - Covers.
10. Perform the following to remove the control panel:
  - a. Pull on the two side fasteners to release the control panel assembly.
  - b. Slide the panel partially out of the frame.
  - c. Disconnect the cables that are attached to backside of the control panel.
  - d. Remove the control panel from the frame.

11. Reverse the above procedure to install the panel.
12. When a control panel with keystick is replaced, discard the new keysticks that come with the panel and reuse the original keysticks.  
Does the system that you are working on have a keystick lock?
  - **Yes:** Continue with the next step.
  - **No:** Go to step 15 (See page 82).
13. Do you have the original system unit keys and are you reusing them?
  - **No:** Continue with the next step.
  - **Yes:** Go to step 15 (See page 82).
14. Perform the following:

**Figure 1. System unit control panel with keystick (NB1)**



RZAQ4506-0

- a. Apply ac power.
  - b. Insert the new keystick into the control panel. The control panel will display 0000 5553.
  - c. Locate the push button that is on the back side of the control panel. It is located directly behind the front side of the keystick position.
  - d. Depress the push button for 3-4 seconds.
  - e. The control panel will return to a function 01 display.
15. After exchanging an item, go to Verify the repair.  
**This ends the procedure.**

### **Disk unit, Models 830/SB2 and 840/SB3 (dedicated and concurrent)**

*For use by authorized service providers.*

**Note:** Determine if the system has logical partitions. Go to Determine if the system has logical partitions before continuing with this procedure.

**Attention:** The disk unit is sensitive to electrostatic discharge (see Work with electrostatic discharge-sensitive parts).

1. Were you directed here from Recovery procedures?
  - **Yes:** Continue with the next step.
  - **No:** Go to Recovery procedures. Then, return here.
2. After you have determined the location of the disk unit to replace, remove the covers for access. See Models 830/SB2 with FC 9074 - Covers or Models 840/SB3 - Covers for the model that you are working on.
3. Remove the EMC access plate that is over the location of the disk unit that you are removing. (For location information, see Locations — Models 830, SB2 system unit with FC 9074 base I/O tower or “Locations — Models 840, SB3 system unit with processor tower and FC 9079 Base I/O Tower” on page 270 for the model that you are working on.) The associated tables will direct you to the remove and replace procedures.
4. Are you removing or replacing a disk unit using concurrent maintenance?
  - **No:** Perform Dedicated maintenance - Remove and replace (See page ) below.
  - **Yes:** Perform Concurrent maintenance - Remove and replace (See page ) below.

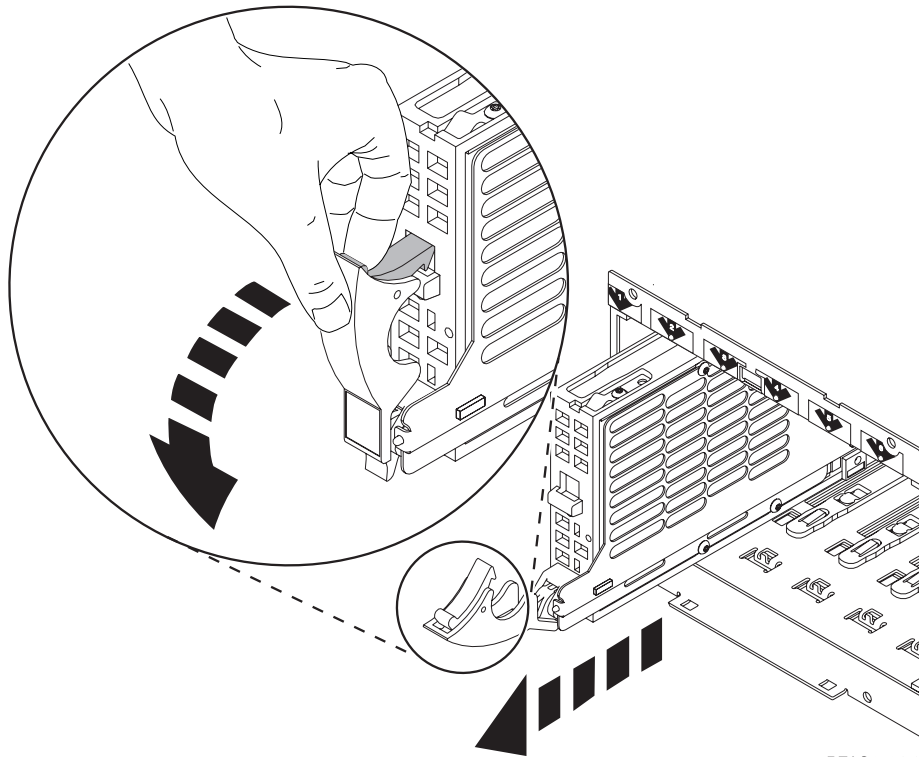
#### **Concurrent maintenance - Remove and replace**

**Attention:** If removing the cover while powered on, errors may occur due to electromagnetic interference.

1. To remove a disk unit using concurrent maintenance perform the following:
  - a. Select System Service Tools (SST). If you cannot get to SST, select DST.  
**Do not perform a system IPL to get to DST.**
  - b. Select **Start a Service Tool** —> **Hardware Service Manager**.
  - c. Select **Device Concurrent Maintenance** and enter the required information in the information fields.
  - d. Press **Enter** on the console. After the delay time, the light above the device location will begin flashing. You now have nine seconds to pinch the two surfaces of the latching mechanism together and rotate the handle of the disk unit towards you. Pull the disk unit out part way. The light above the device location will go off and remain off as soon as the device is no longer making contact with the backplane.

**Attention:** If you remove the device when the light is **not** flashing, data may be lost, the disk unit may be damaged, or the backplane may be damaged.

#### **Figure 1. Disk unit removal, Models 830/SB2 and 840/SB3 (concurrent)**



RZAG6504-1

Wait another five seconds to allow time for the disk to stop spinning. Then pull the disk unit out the rest of the way.

2. Are you finished with the repair?
  - **No:** Continue with the next step.
  - **Yes:** Replace the covers that were removed during this procedure and return to the procedure that sent you here.  
**This ends the procedure.**
3. To install a disk unit using concurrent maintenance perform the following:
  - a. Select System Service Tools (SST). If you cannot get to SST, select DST.  
**Do not perform a system IPL to get to DST.**
  - b. Select **Start a Service Tool** —> **Hardware Service Manager**.
  - c. Select **Device Concurrent Maintenance** and enter the required information in the information fields. **Do not press the Enter key at this time.**
  - d. Slide the unit in half-way. **Ensure that the device does not contact the backplane at this time.**
  - e. Press **Enter** on the console. After the delay time, the light above the device location will begin flashing. You now have nine seconds to insert the disk unit. Put the disk unit part way into the desired slot and rotate the handle of the disk unit towards you. Then push the disk unit completely into the slot and rotate the handle towards the disk unit to latch it into the slot. The light above the device location will go off and remain off for a few seconds when the device contacts the backplane. Then it should go on and remain on.  
**Attention:** If you install the device when the light is **not** flashing, data may be lost, the disk unit may be damaged, or the backplane may be damaged.
  - f. Replace the covers that were removed during this procedure and return to the procedure that sent you here.  
**This ends the procedure.**

## Dedicated maintenance - Remove and replace



1. To remove a disk unit using dedicated maintenance perform the following:
  - a. Power off the system. See Power on/off the system and logical partitions.
  - b. Disconnect the power cord.
  - c. To remove the disk unit, pinch the two surfaces of the latching mechanism together and pull the handle towards you to release the disk unit from the slot.
  - d. Remove the unit. See Figure 1. Disk unit removal, Models 830/SB2 and 840/SB3 (concurrent) (See page 63) above.
2. Are you finished with the repair?
  - **No:** Continue with the next step.
  - **Yes:** Replace the covers that were removed during this procedure and return to the procedure that sent you here.  
**This ends the procedure.**
3. To install a disk unit using dedicated maintenance perform the following:
  - a. Power off the system. See Power on/off the system and logical partitions.
  - b. Disconnect the power cord.
  - c. Put the disk unit part way into the desired slot and rotate the handle of the disk unit towards you.
  - d. Push the disk unit completely into the slot and rotate the handle towards the disk unit to latch it into the slot.
  - e. Replace the covers that were removed during this procedure and return to the procedure that sent you here.  
**This ends the procedure.**

## Models 840 or SB3 external battery power unit

*For use by authorized service providers.*

Use this procedure to remove the external battery power unit from the Models 840 or SB3.

1. Look to see if the panel backlight is on to verify that ac power is applied.
2. If the system is either powered off or running on battery power, you must apply ac power to the AC module before continuing with this procedure.
3. Remove the rear cover (see Models 840/SB3 - Covers - Rear), and then perform the next step from the \*\*\* REAR \*\*\* of the system.

**Attention:** Removing the external battery power unit charger or cable while the system is running on battery power causes the system to fail and may damage the external battery power unit and the card enclosure. If the console will accept system commands, the system is not running on battery power.

4. To remove the battery, unplug the cable from the battery charger connector J3.

**This ends the procedure.**

### **CAUTION:**

**The weight of this part or unit is more than 55 kilograms (121.2 pounds). It takes specially trained persons with a lifting device to safely lift this part or unit.(RSFTC206)**

### **CAUTION:**

**The battery is a lead-acid battery. To avoid possible explosion, do not burn. Exchange only with the IBM-approved part. Recycle or discard the battery as instructed by local regulations.**

**In the United States, IBM has a process for the collection of this battery. For information, call 1-800-426-4333. You will need to have the IBM part number for the battery unit available when you call.(RSFTC225)**

## Models 840/SB3 system unit - Power subframe assembly (PB1)

*For use by authorized service providers.*

Use this procedure to remove or replace the power subframe assembly (PB1) in the Models 840/SB3.

To remove or replace the power subframe assembly (PB1):

1. Print out a rack configuration sheet so that you know where all devices and cards are located in the system rack.
2. Power the off system. See Power on/off the system and logical partitions.
3. Disconnect the ac power cord.
4. Remove the front and rear system covers. See Models 840/SB3 - Covers.
5. Refer to Final assembly, front - Models 840 and SB3 processor tower and perform the following steps:
  - a. Remove the bulk power EMC access plate covering the AMDs and bulk power supplies.
  - b. Remove the screws from the bulk power supplies and AMD assemblies.
  - c. Slide out the bulk power supplies and AMD assemblies far enough so that they are disconnected from their power connectors.
6. Refer to Final assembly, rear - Models 840 and SB3 processor tower and then perform the following steps from the **rear** of the system:
  - a. Remove the battery backup EMC access plate.
  - b. Remove the battery.

**CAUTION:**

**The weight of this part or unit is between 18 and 32 kilograms (39.7 and 70.5 pounds). It takes two persons to safely lift this part or unit. (RSFTC204)**

- c. Remove the battery charger.
  - d. Remove the AC box.
  - e. Remove the rear AMD EMC access plate.
  - f. Remove the rear AMDs.
  - g. Remove the CEC regulator EMC access plate that covers the power regulators.
  - h. Mark the regulators and their locations so that you can reinstall them in the proper locations.
  - i. Remove the power regulators and SPCN card.
  - j. Carefully remove the top row of screws that are inside the CEC cage. Do not allow the screws to be dropped down inside the system.
  - k. Remove the bottom row of screws that are inside the CEC cage.
  - l. Remove the screws from the top cage retaining bracket and remove the bracket.
  - m. Remove the screws from the left cage retaining bracket and remove the bracket.
  - n. Remove the screws from the right side and bottom of the CEC cage that mount the cage into the rack. Slide the CEC cage out of the frame.
  - o. Disconnect the power cables that are connected to the lower right and lower left corners of the backplane.
  - p. Remove the screws from the top and bottom of the power subframe assembly.
  - q. Remove the power subframe assembly.
7. Install the new power subframe assembly by reversing the removal procedure. After exchanging an item, go to Verify the repair.

**This ends the procedure.**

## **Models 840/SB3 processor tower - Power supply (PS) (P01 through P06)**

*For use by authorized service providers.*

Use this procedure to remove or replace the power supply (P01 through P06) in the Models 840/SB3 processor tower.

## DANGER

**Up to 240 V ac is present at the power module connectors when the main power cord is connected to a power source. (RSFTD010)**

To remove or replace the power supply (P01 through P06):

1. **Do not power off the system.**

**Attention:** Remove and replace only one power supply at a time.

2. Remove the front cover. See Models 840/SB3 - Covers.

Refer to Final assembly, front - Models 840 and SB3 processor tower and continue with the following steps.

3. Remove the EMC access plate.

4. On the control panel:

a. Select function 7 on the system control panel. Press Enter (07\*\* will be displayed).

b. Use the arrow keys to increment/decrement to sub-function A3 (07A3 will be displayed). Press Enter (07A3 00 will be displayed).

c. Use the arrow keys to increment/decrement to the frame address of the processor tower, usually '02' (0702 will be displayed). Press Enter (0702 00 will be displayed).

d. Use the arrow keys to increment/decrement to select 07Bx where x is the power supply (PS) to be powered off (0=P01, 1=P02, 2=P03, 3=P04, 4=P05, 5=P06). Press Enter (07Bx 00 will be displayed). The green LED on the power supply will turn off.

5. Remove the power supply.

6. Install the new DC power supply by reversing the procedure. The new power supply will automatically power on when it is installed.

**Note:** To return the panel to normal display, scroll to 07\*\* and press Enter.

7. After exchanging an item, go to Verify the repair.

**This ends the procedure.**

## FC 5074, FC 5079, FC 9079 - Removable media - D41 and D42

*For use by authorized service providers.*

Use this procedure to remove or replace removable media - D41 and D42 in an FC 5074, FC 5079, or FC 9079.

### Laser safety information

**CAUTION:**

**This product may contain a CD-ROM which is a class 1 laser product. (RSFTC240)**

**CAUTION:**

**This product may contain a DVD which is a class 1 laser product. (RSFTC245)**

To remove the removable media - D41 and D42:

1. Determine if the system has logical partitions. Go to Determine if the system has logical partitions before continuing with this procedure.

2. Remove media (if any) from the device. If the eject button on a tape device is failing, go to Tape cartridge - Manual removal, then continue with the next step of this procedure. If the eject button on a DVD-RAM device is failing and will not open, do not attempt manual removal of optical media at this time. For optical devices other than DVD-RAM, go to Optical media - Manual removal, and then continue with the next step of this procedure.

3. Are you removing a unit by using device concurrent maintenance?

- **Yes:** Continue with the next step.
- **No:** Perform the following:
  - a. Power off the tower or expansion tower. see Power on/off the system and logical partitions.
  - b. Disconnect the power cord from the tower or expansion tower.
  - c. Open the front cover. See FC 5074, FC 5079, FC 5094, FC 5294, FC 9079, FC 9094 - Covers.
  - d. Pull on the handles, which are located on each side of the unit, and remove the unit.
  - e. Install the new device by reversing the remove procedure. After exchanging an item, go to Verify the repair.

**Notes:**

- 1) If you need to remove a tape from the old tape unit, see Tape cartridge - Manual removal.
- 2) If you need to remove optical media from and optical device, go to Optical media - Manual removal.

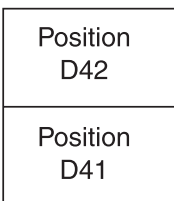
**This ends the procedure.**

4. Before exchanging a removable media unit, you must ensure that the unit is not in use and is varied off.

**Note:** If you are removing an optical storage unit, you must ensure that all of the removable media units in the tower or expansion tower are not in use and are varied off.

5. Use the figure to determine the location of the internal removable media unit. Record this location for later use.

**Figure 1. Internal removable media locations**



RZAPA503-1

6. Perform the following:
  - a. Select **System Service Tools (SST)**. If you cannot get to SST, select DST.  
**Do not perform a system IPL to get to DST.**
  - b. Select **Start a Service Tool** —> **Hardware Service Manager** —> **Device Concurrent Maintenance** and enter the required information in the information fields. **Do not press the Enter key at this time.**
  - c. Read the remaining steps of this procedure and ensure that you understand the procedure before continuing.
  - d. Press the **Enter** key on the console. After the delay time, the light at the top right of the device will begin flashing. You now have 9 seconds to pull out firmly on the handles and pull the unit partially out of the tower.  
**Attention:** If you remove the device when the light is **not** flashing, data may be lost, the unit may be damaged, or the backplane may be damaged.  
**Note:** The light at the top right of the device will go off and remain off as soon as the device is no longer making contact with the backplane.
  - e. Remove the unit from the tower.
    - If you need to remove a tape from the old tape unit, see Tape cartridge - Manual removal.
    - If you need to remove optical media from an optical device, go to Optical media - Manual removal.

To replace the removable media - D41 and D42:

1. Perform the following to install a new unit.
  - a. Select **Device Concurrent Maintenance** and enter the required information in the information fields. **Do not press the Enter key at this time.**
  - b. Read the remaining steps of this procedure and ensure that you understand the procedure before continuing.
  - c. Slide the unit partially into the tower. **Ensure that the device does not contact the backplane at this time.**
  - d. Press the **Enter** key on the console. After the delay time, the light at the top right of the device will begin flashing. You now have 9 seconds to push in firmly on the handles and push the unit completely into the frame.

**Attention:** If you install the device when the light is **not** flashing, data may be lost, the unit may be damaged, or the backplane may be damaged.

**Note:** The light at the top right of the device will go off and remain off for a few seconds when the device contacts the backplane. Then it should go on and remain on.

Did the light on the device go on and remain on?
    - **No:** Continue with the next step.
    - **Yes:** After exchanging an item, go to Verify the repair.

**This ends the install procedure.**
2. Attempt the device concurrent maintenance procedure again without physically moving the unit.

Did the light above the device go on and remain on?

  - **No:** Continue with the next step.
  - **Yes:** After exchanging an item, go to Verify the repair.

**This ends the install procedure.**
3. There is a power problem. One of the following is the problem:
  - The new unit is defective.
  - The backplane was damaged during the device concurrent maintenance procedure.
  - There is a new problem with the power subsystem.

**This ends the procedure.**

## Models 840/SB3 system unit - SPCN card (R21)

*For use by authorized service providers.*

Use this procedure to remove or replace the SPCN card (R21) in the Models 840 or SB3 system unit.

**Attention:** All cards are sensitive to electrostatic discharge (see “Work with electrostatic discharge-sensitive parts” on page 585).

### **CAUTION:**

**The circuit card contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the circuit card as instructed by local regulations. (RSFTC234)**

To remove or replace the SPCN card (R21):

1. Power the off system. (See “Power on/off the system and logical partitions” on page 561.)
2. Disconnect the power cord.
3. Remove the rear cover. (See “Models 840/SB3 - Covers” on page 80.)

For Model 840/SB3, refer to “Final assembly, rear - Models 840 and SB3 Processor Tower” on page 414 and then perform the following steps from the **rear** of the system.
4. Mark the locations of the cables attached to the SPCN card so that you can reinstall the cables to the proper locations.
5. On opposite ends of the card, press the two latch surfaces together to release each latch.

6. Rotate the latches out.
7. Pull on both latches at the same time to remove the card from the slot.
8. Install the new SPCN card by reversing the removal procedure. After exchanging an item, go to “Verify the repair” on page 558.

**This ends the procedure.**

## **Models 840/SB3 - System unit backplane (MB1) and regulator board (RB1)**

*For use by authorized service providers.*

Use this procedure to remove or replace the system unit backplane (MB1) and regulator board (RB1) in the Models 840 or SB3.

### **CAUTION:**

**The weight of this part or unit is between 18 and 32 kilograms (39.7 and 70.5 pounds). It takes two persons to safely lift this part or unit. (RSFTC204)**

To remove or replace the system unit backplane (MB1) and regulator board (RB1):

1. Print out a rack configuration sheet so that you know where all devices and cards are located in the system rack.
2. Power off the system. (See “Power on/off the system and logical partitions” on page 561.)
3. Disconnect the power cord.
4. Remove the front and rear system covers. (See “Models 840/SB3 - Covers” on page 80.)
5. Refer to “Final assembly, front - Models 840 and SB3 Processor Tower” on page 411 and perform the following steps from the **front** of the system:
  - a. Loosen the two thumbscrews on the control panel and swing out the control panel.
  - b. Disconnect the cables from the control panel assembly.
  - c. Remove the control panel assembly from the frame.
  - d. Remove the upper and lower front cage EMC access plates.
  - e. Remove the I/O tower panel cable from the right EMC bracket.
  - f. Remove the EMC brackets (first the top bracket, then the left and right) from around the front cage.
  - g. Mark the processor, memory, regulator, and filler cards and their locations in the front cage so you can return the cards to their proper location during reassembly. Then remove the processor, memory, regulator, and filler cards from the front cage.
6. Refer to “Final assembly, rear - Models 840 and SB3 Processor Tower” on page 414 perform the following steps from the **rear** of the system:
  - a. Remove the upper and lower EMC access plates from the rear cage assembly.
  - b. Remove the EMC brackets (first the top bracket and then the left) from around the rear cage.
  - c. Remove the screws that attach the right side and bottom of the rear cage assembly to the frame.
  - d. Mark the SPCN card, regulators, memory, and filler cards and their locations in the top and bottom of the rear cage so that you can return the cards to their proper locations during reassembly. Then remove the SPCN card, regulators, memory, and filler cards from the top and bottom of the rear cage.
  - e. Remove the mounting screws from the lower part of the rear cage.
  - f. Remove the two cable EMC access plates from the rear cage.
  - g. Remove the air baffle in the lower center of the rear cage.
  - h. Unplug the cables attached to the upper left and upper right corners of the front cage/backplane assembly.
  - i. Remove the hex head screws that mount the rear cage to the front cage/backplane assembly.
  - j. Remove the rear cage assembly from the back of the system.

**CAUTION:**

**The weight of this part or unit is between 18 and 32 kilograms (39.7 and 70.5 pounds). It takes two persons to safely lift this part or unit. (RSFTC204)**

- k. Unplug the cables attached to the lower left and right corners of the front cage/backplane assembly.
7. Refer to “Final assembly, front - Models 840 and SB3 Processor Tower” on page 411 and perform the following steps from the **front** of the system:
  - a. Remove the lower mounting screws from the front cage/backplane assembly.

**Attention:** The front cage/backplane assembly is heavier on the rear than it is on the front. The front cage/backplane assembly may tip to the rear if it is not properly handled.
  - b. Use two people to remove front cage/backplane assembly from the front of the system.

**CAUTION:**  
**The weight of this part or unit is between 18 and 32 kilograms (39.7 and 70.5 pounds). It takes two persons to safely lift this part or unit. (RSFTC204)**
  - c. Place the front cage/backplane assembly on the floor in the upright position.
  - d. Disconnect the control panel cable from backplane.
  - e. There are hex head screws inside the front cage/backplane assembly that mount the backplane to the cage. From inside the front cage, remove all but one of the hex head screws.
  - f. To prevent the backplane from falling, hold the backplane to the cage and then remove the last screw.
  - g. Lay the front cage face down on the floor so the back plane is on top.
  - h. Remove the backplane from front cage.
  - i. Close all of the connector latches on the new Backplane. The latches need to be closed so they do not interfere with the rear cage when it is installed.
8. To complete the replacement, reverse the previous steps beginning with step **7b** (See page 91).
9. After exchanging an item, go to “Verify the repair” on page 558.

**This ends the procedure.**

## **Models 840/SB3 (FC 9079) - Time of day (TOD) battery**

*For use by authorized service providers.*

Use this procedure to remove or replace the time of day (TOD) battery in the Models 840/SB3. The TOD battery is located in the FC 9079 Base I/O Tower.

**CAUTION:**

**This product contains a lithium battery. To avoid possible explosion, do no burn, exchange, or charge the battery. Discard the battery as instructed by local regulations for lithium batteries. (RSFTC232)**

To remove or replace the time of day battery:

1. Power off the expansion tower. See Power on/off the system and logical partitions.
2. Remove the power cord from the base I/O tower.
3. Open the rear cover. See FC 5074, FC 5079, FC 5094, FC 5294, FC 9079, FC 9094 - Covers.
4. From the rear of the expansion tower perform the following:
  - a. Remove the EMC access plate that is located directly above the PCI card enclosure. Press the surfaces of the two latching mechanisms together and tilt the top of the cover away from the frame to remove it.
  - b. Disconnect the cables from the top of the PCI cards and note their locations.

**Attention:** All cards are sensitive to electrostatic discharge (see Work with electrostatic discharge-sensitive parts).

- c. Pull the PCI card enclosure partially out of the frame to the release mechanism stop on the right side, while lifting the cables clear of the enclosure.
  - d. Remove the PCI cards on the right side of the enclosure preventing access to the battery from the enclosure and note their locations. See FC 5074, FC 5079, FC 5094, or FC 5294 - Cards (dedicated).
5. Remove the TOD battery. Use a flat object (screwdriver) to pry the battery out.
  6. Reverse the steps to install the TOD battery.
  7. After installation is complete, IPL the system in Manual Mode.
  8. Have the customer set the time and date.  
**This ends the procedure.**

## **Models 870 and 890 remove and replace procedures**

*For use by authorized service providers.*

**Models 870 and 890 (FC 9094 with single line cord) - AC module - A01 and A02**

**Models 870 and 890 (FC 9094 with dual line cord) - AC module - A01 and A02**

**Models 870 and 890 (FC 9094) - Air moving device - B01 and B02**

**Models 870 and 890 - Bulk power controller (BPC)**

**Models 870 and 890 - Bulk power distribution (BPD)**

**Models 870 and 890 - Bulk power enclosure (BPE)**

**Models 870 and 890 - Bulk power f-airmover (BPF)**

**Models 870 and 890 - Bulk power regulator (BPR)**

**Models 870 and 890 - Capacitor books and blanks**

**Models 870 and 890 (FC 9094) - Cards (concurrent)**

**Models 870 and 890 (FC 9094) - Cards (dedicated)**

**Models 870 and 890 (FC 9094) - Control panel - NB1**

**Models 870 and 890 - Covers**

**Models 870 and 890 - DC converter assembly (DCA)**

**Models 870 and 890 (FC 9094) - Device board - DB1 and DB2**

**Models 870 and 890 (FC 9094) - Device board - DB3**

**Models 870 and 890 (FC 9094) - Disk unit (concurrent)**

**Models 870 and 890 (FC 9094) - Disk unit (dedicated)**

**Models 870 and 890 - L3 modules**

**Models 870 and 890 - MCM module (processor) and pass-through modules**



**Models 870 and 890 - MDA (air mover) controller**

**Models 870 and 890 - Memory books and memory blanks**

**Models 870 and 890 - Motor scroll assembly (MSA) air filters**

**Models 870 and 890 - MSA (air mover) enclosure**

**Models 870 and 890 - Network interface controller (NIC) card**

**Models 870 and 890 (FC 9094) - Power distribution backplane - PB1**

**Models 870 and 890 (FC 9094) - Power supply - P00, P01, P02, and P03**

**Models 870 and 890 - Processor MSA (air mover) assembly**

**Models 870 and 890 (FC 9094) - Removable media - D41 and D42**

**Models 870 and 890 - Supporting information**

**Models 870 and 890 - System clock card**

**Models 870 and 890 - System unit backplane**

**Models 870 and 890 (FC 9094) - Time of day battery**

**Models 870 and 890 (FC 9094) - Tower card - CB1**

**Models 870 and 890 - Unit Emergency Power Off (UEPO) card assembly**

**Models 870 and 890 - VPD card**

## **Models 870 and 890 - Bulk power controller (BPC)**

*For use by authorized service providers.*

Use this procedure to remove or replace the bulk power controller (BPC) on the Models 870 and 890. The BPC is located immediately above the top bulk power regulator (BPR). See Locations — Models 870 and 890.

To remove the bulk power controller (BPC):

1. Do not power down the system if it is powered on; this procedure can be performed concurrently.
2. Locate the BPC to be replaced by decoding the SRC (see System reference codes), or see Locations — Models 870 and 890.
3. Open the cover to access the field replaceable unit (FRU). See Models 870 and 890 - Covers.
4. Note the state of the located BPC's LEDs. Then, press the (green) **Start Service** button on the UEPO panel, and only proceed if the good LED is off, or the repair has been scheduled (system outage - EPO off).
5. Manually turn off (to the right) the on-lock/off-unlock switch on all of the BPRs attached to the side of the bulk power assembly (BPA) being repaired (ENBL LED'S off).
6. Verify that all cables are labeled for plug location, and then unplug them from the BPC.
7. Loosen the left and right thumb screws using the torque tool (PN 6422789), and slide the unit out of the slot.

**Note:** The BPC weighs approximately seven pounds.

To replace the bulk power controller (BPC):

1. Ensure that all of the BPR's on-lock/off-unlock switches are in the off position on this BPA before proceeding.
2. Slowly slide the unit into the slot and seat it carefully against the backplane, avoiding damage to the connectors.
3. Tighten the left and right thumb screws with the torque tool (PN 6422789).
4. Ensure that the Unit Emergency Power Off (UEPO) bypass switch, on the BPC front panel, is in the 'normal' position.
5. Plug all cables into the BPC according to cable labeling.
6. Turn on (left) all of the BPR's on-lock/off-unlock switches.
7. To indicate completion of these steps, press the (white) **Service Complete** button on the UEPO panel. The BPA will automatically configure while it is energized.

**This ends the procedure.**

## Models 870 and 890 - Bulk power distribution (BPD)

*For use by authorized service providers.*

Use this procedure to remove or replace the bulk power distribution (BPD) on the Models 870 and 890. There are two BPD positions located immediately above the bulk power controller (BPC). The upper most position is featurable, and if it is not used an appropriate air flow baffle must be inserted. See "Locations — Models 870 and 890 with an FC 9094 Base I/O Tower" on page 284.

To remove the bulk power distribution (BPD):

1. Do not power down the system if it is powered on; this procedure can be done concurrently.
2. Locate the BPD to be replaced by decoding the SRC (see System reference codes), or see Locations — Models 870 and 890.
3. Open the cover to access the field replaceable unit (FRU). See "Models 870 and 890 - Covers" on page 97.
4. Note the state of the BPD's LED. Then, press the (green) **Start Service** button on the UEPO panel, and only proceed if the LED is off or the repair has been scheduled (System outage - EPO off).
5. Locate the bulk power regulator (BPR) on the affected bulk power assembly (BPA). Manually turn off (to the right) the BPR's on-lock/off-unlock switch on these BPRs.
6. Verify that all cables are labeled for plug location, and then unplug the cables from the BPD.
7. Loosen the left and right thumb screws using the torque tool (PN 6422789), and slide the unit out of the slot. This is the same way to remove the bulk power baffles (BPBs).

**Note:** The BPD weighs approximately 5 pounds.

To replace the bulk power distribution (BPD):

1. **Important:** Ensure that all BPR's on-lock/off-unlock switches are in the 'off' position on this BPA before proceeding.
2. Slowly slide the unit into the slot and seat it carefully against the backplane to avoid damaging connectors.
3. Tighten the left and right thumb screws with the torque tool (PN 6422789).
4. Plug all the cables to the BPD, ensuring correspondence of plug locations and cable labeling.
5. Manually set all BPR's on-lock/off-unlock switches to the 'on' position (to the left) contained in the associated BPA.
6. To indicate completion of these steps, press the (white) **Service Complete** button on the UEPO panel.  
**This ends the procedure.**

## Models 870 and 890 - Bulk power enclosure (BPE)

*For use by authorized service providers.*

Use this procedure to remove or replace the bulk power enclosure (BPE) on the Models 870 and 890.

To remove the bulk power enclosure (BPE):

1. Locate the BPE to be replaced by decoding the SRC. See the System reference code list, or Locations — Models 870 and 890.
2. Perform the following:
  - a. Open the cover. See Models 870 and 890 - Covers.
  - b. Note the state of the ALL FRUs LEDs in the BPE.
  - c. Press the (green) **Start Service** button.
  - d. Only proceed if the ALL the BPR (Bulk Power Regulator) LEDs are off, or the repair has been scheduled (System outage - EPO off).
3. Manually turn off (to the right) the BPR's on-lock/off-unlock switch on all bulk power regulator's (BPRs) attached to the bulk power assembly (BPA) side being repaired.
4. Verify that all cables are labeled for plug location, and then unplug all cables from the BPA field replaceable units (FRUs). Including, the bulk power controller (BPC), the bulk power distribution (BPD), and the BPR cables followed by the ac line cord.
5. Remove all pluggable FRUs from the BPE, including the BPR, BPC, BPD's, and bulk power f-airmover (BPF).
6. Remove the four mounting screws. Be careful to retain the screws.  
**Attention:** Do not remove the left two bottom screws, as these fasten the cage rail to the frame.
7. Slide the board/enclosure FRU (the BPE) out of the frame.  
**Note:** The BPE weighs less than 40 pounds.

To replace the bulk power enclosure (BPE):

1. Slide the board/enclosure FRU (the BPE) into the frame until the BPE side flanges make contact with the mounting rails using the right side guide pins.
2. Fasten with the four mounting screws.
3. Reinstall the pluggable FRUs into the BPE, including the BPR, BPC, BPD's, and BPF. Be sure to check the board connector of each FRU for any visible signs of damage (for example, broken sockets) before replugging them into the backplane. Replace any FRU found to be damaged.  
**Attention:** Ensure that all the BPR's on-lock/off-unlock switches are in the 'off' position on this BPA before proceeding.
4. Replug all cables into the BPA FRUs, including the BPR, BPC, and BPD's followed by the ac line cord.  
**Attention:** Ensure that the UEPO Bypass switch on the BPC is in the normal 'left' position.
5. Manually set all BPR's on-lock/off-unlock switches to the 'on' position (to the left) contained in the associated BPA.
6. To indicate completion of these steps, press the (white) **Service Complete** button on the UEPO panel.  
**This ends the procedure.**

## Models 870 and 890 - Bulk Power F-airmover (BPF)

*For use by authorized service providers.*

Use this procedure to remove or replace the Bulk Power F-airmover (BPF) on the Models 870 and 890. The BPF is located immediately to the right of the Bulk Power Controller (BPC), and mounted vertically in the bulk power assembly (BPA). See Locations — Models 870 and 890.

To remove the Bulk Power F-airmover (BPF):

1. Do not power down the system if it is powered on; this procedure can be done concurrently.
  2. Open the cover so that you can access the field replaceable unit (FRU). See Models 870 and 890 - Covers.
  3. Locate the BPF to be replaced by decoding the SRC (see System reference codes), or see Locations — Models 870 and 890.
  4. Note the state of the BPC's LED on the same BPA side as the BPF. Then, press the (green) **Start Service** button on the UEPO panel, and only proceed if the BPC Good LED is flashing, or the repair has been scheduled (System outage - EPO off).
  5. Verify that the BPF cable is labeled for plug location, and then unplug the cable from the BPC.
  6. Loosen the upper and the lower thumb screws using the torque tool (PN 6422789).
  7. Move the bulk power regulator (BPR) release levers if necessary, and slide the unit out of the slot. An automatic door will seal the BPA to avoid excessive cooling loss.
  8. If you are replacing the BPF-A, remove and save the cover because you will need it for the replacement part. The BPF-B does not have a cover.
- Note:** The BPF-airmover weighs approximately eight pounds.

To replace the Bulk Power F-airmover (BPF):

1. With the thumb screws to the left, slowly slide the unit into the slot and seat carefully against the front of the bulk power enclosure (BPE), moving the BPR release levers if necessary.
2. Tighten the upper and the lower thumb screws with the torque tool (PN 6422789).
3. Replace the cover from the original bulk power f-airmover.
4. Return the BPR release levers to the 'down' position, and plug the cable to the BPC, ensuring plug location.
5. To indicate completion of these steps, press the (white) **Service Complete** button on the UEPO panel. **This ends the procedure.**

## Models 870 and 890 - Bulk power regulator (BPR)

*For use by authorized service providers.*

Use this procedure to remove or replace the bulk power regulator (BPR) on the Models 870 and 890. The BPR is located in the bottom positions of the bulk power Enclosure (BPE), and to the left of the bulk power f-airmover (BPF). See Locations — Models 870 and 890.

To remove the bulk power regulator (BPR):

1. Do not power down the system if it is powered on; this procedure can be performed concurrently.
  2. Locate the BPR to be replaced by decoding the SRC (see System reference codes), or see Locations — Models 870 and 890.
  3. Open the cover so that you can access the field replaceable unit (FRU). See Models 870 and 890 - Covers.
  4. Note the state of the BPR's LED. Then, press the (green) **Start Service** button on the EPO panel, and only proceed if the LED is off or the repair has been scheduled (System outage - EPO off).
  5. Manually turn off (to the right) the BPR's on-lock/off-unlock switch on the associated BPR unit.
  6. Loosen the left and the right thumb screws, using the torque tool (PN 6422789).
  7. Push up on the BPR release levers and slide the unit out of the slot.
- Note:** The BPR weighs approximately 27.5 pounds.

To replace the bulk power regulator (BPR):

1. Make sure that the BPR release levers are in the 'up' position. Slide the unit into the slot until it is one inch from the BPE.
2. Then, using both hands on the front of the FRU, firmly seat the BPR against the backplane.

3. Perform the following:
  - a. Tighten the left thumb screw four turns with the torque tool (PN 6422789). Then, tighten the right thumb screw four turns.
  - b. Torque the left thumb screw to completion, followed by the right thumb screw.
  - c. Return to the left thumb screw and assure it is torqued.
  - d. Make sure that the BPR release levers are in the 'down' position.
4. Set the BPR's on-lock/off-unlock switch to the 'on' position (to the 'left' side) on the associated BPR.
5. To indicate completion of these steps, press the (white) **Service Complete** button on the EPO panel.  
**This ends the procedure.**

## Models 870 and 890 - Capacitor books and blanks

*For use by authorized service providers.*

Use this procedure to remove or replace capacitor books and blanks on the Models 870 and 890.

The following safety notice applies to power related field replaceable units.

### 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. (RSFTD217)**

To remove capacitor books and blanks:

1. Power off the system. See "Power on/off the system and logical partitions" on page 561.
2. If you have not already done so, open the rear door of the rack unit.
3. Locate the capacitor book or blank to be removed.
4. Loosen the upper and lower fasteners, using the torque tool (P/N 6422789), alternating between the fasteners until the unit can slide out of the slot.
5. Grasp both sides of the capacitor book or blank, and pull it out of the drawer.

To replace Capacitor books and blanks:

1. Carefully slide the capacitor book into the slot as far as possible (the back edge of the top of the capacitor book is about .25 inch from the cage bracket).  
**Note:** Do not force the capacitor book against the backplane, as this may damage the connector.
2. Hold the upper part of the capacitor book against the backplane and use the torque tool to start the upper fastener about two turns into the cage bracket.
3. Do the same with the lower fastener.
4. Alternate tightening the upper and lower fasteners until both are fully torqued in.
5. Check torque on both fasteners.
6. If any cables were removed during the removal procedure, plug all cables into their correct locations.
7. Power on the system. See "Power on/off the system and logical partitions" on page 561.  
**This ends the procedure.**

## Models 870 and 890 - Covers

*For use by authorized service providers.*

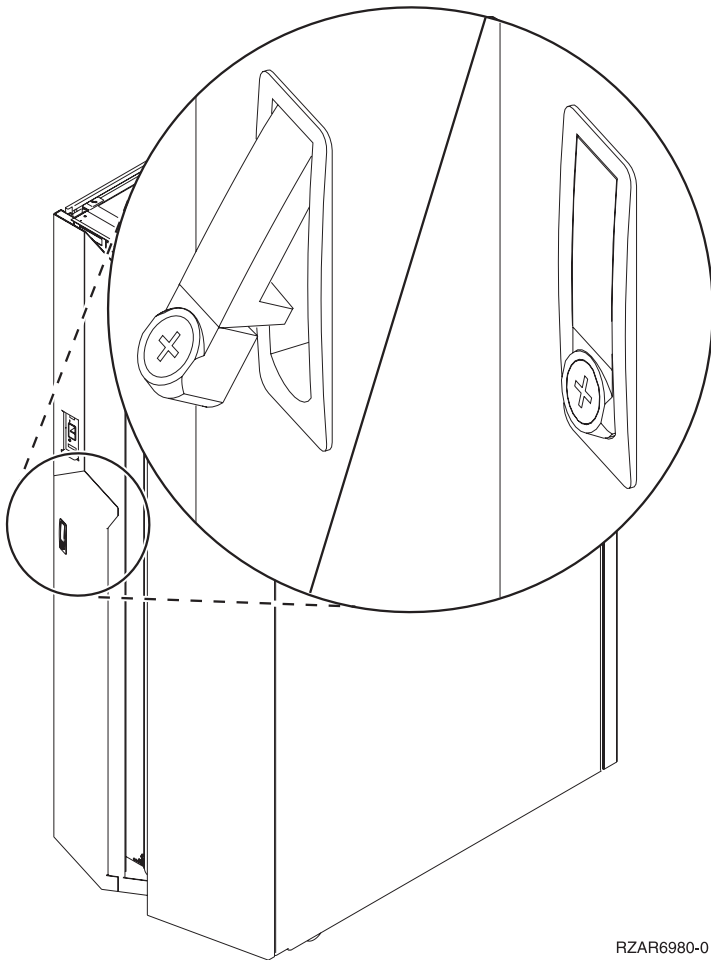
Use this procedure to remove or replace the covers on the Models 870 and 890.

**Attention:** If removing the cover while powered on, errors may occur due to electromagnetic interference.

To remove or replace the front and rear covers:

1. Unlock the latch on the cover.

**Figure 1. Models 870 and 890 cover latch**



2. Depress the button on the bottom of the latch mechanism to open the cover.
3. Lift the cover to remove it, if necessary.
4. Reverse the above procedure to install the covers.

**This ends the procedure.**

### **Models 870 and 890 - DC converter assembly (DCA)**

*For use by authorized service providers.*

Use this procedure to remove or replace the DC converter assembly (DCA) on the Models 870 and 890.

The following safety notice applies to power related field replaceable units (FRUs).

#### **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. (RSFTD217)**

To remove the DC converter assembly (DCA):

1. Do not power down the system if it is powered on; this procedure can be done concurrently.

2. Open the rear cover to access the field replaceable unit (FRU). See “Models 870 and 890 - Covers” on page 97.
3. Locate the DCA to be replaced by decoding the SRC (see the System reference codes topic).
4. Note the state of the DCA’s LEDs. Then, press the (green) **Start Service** button and only proceed if both of the DCA’s LEDs are off, or the repair has been scheduled (System outage - EPO off).
5. Verify labeling and location, then unplug the cables from the DCA.
6. Loosen the upper and lower thumb screws using the torque tool (PN 6422789), alternating between thumb screws (two upper, and two lower) until the unit can be slid out of the slot.
7. Grasp both sides of the DCA and pull it out of the drawer.

To replace the DC converter assembly (DCA):

1. Carefully slide the DCA into the slot as far as it will go. The back edge of the top of the DCA should be approximately 0.25” from the cage bracket.  
**Attention:** In no instances should the unit be slammed or pushed vigorously against the backplane, as this may damage the connector.
2. Hold the 'upper part' of the DCA against the backplane, and using the torque tool (PN 6422789), start the 'upper' thumb screw into the matching hole in the cage bracket (approximately two turns).
3. Start the lower thumb screw (two turns).
4. Alternate tightening the upper and then the lower thumb screws until both are fully torqued in.
5. Check the torque on both thumb screws.
6. Plug all the cables into the DCA, ensuring correspondence of plug locations and cable labeling.
7. To indicate completion of these steps, press the (white) **Service Complete** button.  
**This ends the procedure.**

## Models 870 and 890 - L3 modules

*For use by authorized service providers.*

Use this procedure to remove or replace L3 modules on the Models 870 and 890.

### Handling static-sensitive modules

**Attention:** L3 modules are sensitive to static electricity discharge. These devices are shipped in antistatic containers to prevent damage caused by electrostatic discharge.

Take the following precautions:

- Use an antistatic wrist strap while handling the device.
- Do not remove the device from the antistatic container until you are ready to install the device in the system unit.
- With the device still in its antistatic container, touch it to a metal frame of the system.
- Grasp modules by the heatsink. Avoid touching the interposer buttons.
- If you need to lay the device down while it is out of the antistatic container:
  - Lay the L3s with the LGA connector down in the antistatic tray.
  - Before picking it up again, touch the antistatic container and the metal frame of the system unit at the same time.
- Handle the devices carefully in order to prevent permanent damage.

**Attention:** Before you remove or replace any L3 module, STOP, read, and understand this entire procedure. Also, check to ensure that the MCM/L3 Label Map is installed. Refer to Install the MCM/L3/passthrough tri-fold plug map.

**Attention:** The L3 modules in this system can be attached to the backplane a maximum of three times. **If an L3 module is removed for a fourth time, it must be replaced with a new L3 module.** Check the MCM/L3 Label Map to determine how many times the module has been removed before. New L3 cache modules are shipped with a new MCM/L3 plug count adhesive replacement label. When you install a new L3 cache module, place the new label in the correct position on the MCM/L3/passthrough tri-fold plug map.

To remove L3 modules:

**Attention:** If more than one module is to be replaced or reseated, begin with the topmost module, replace it and then go to the next highest position module, until the lowermost module has been replaced or reseated.

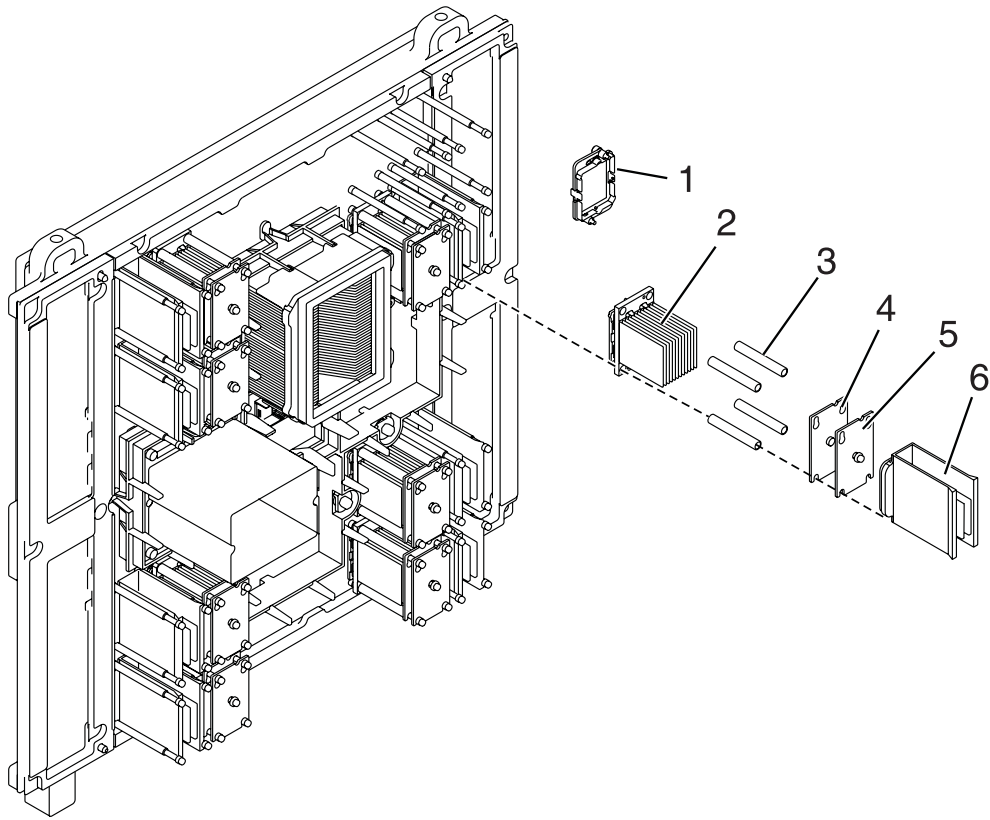
1. Power off the system and unplug the power cord. See Power on/off the system and logical partitions.
2. Remove the MSA (air mover) enclosure. See Models 870 and 890 - MSA (air mover) enclosure.
3. Perform a general cleaning operation using a sash brush (part number 450732), (not the one included with the FRU kit) and vacuum cleaner to remove any accumulated dust and debris that has settled in the processor subsystem. Hold the vacuum hose near the brush to remove any debris the brush generates.
4. Arrange the four 4-position trays on the ESD mat in a pattern that corresponds to the positions of the L3 modules on the system.

**Attention:** Each L3 module must be returned to the location from which it was removed.

5. Note the location of the module being removed. Check the MCM/L3 Label Map sheet on the system to confirm the number of times the target module has been unplugged. If three times, order a new module. If this is the first removal/reseat for the module, record the serial number of the module and the date of the action.
6. Use a 5mm socket wrench to loosen the screw in the center of the L3 module spring plate.

**Figure 1. An L3 cache module**



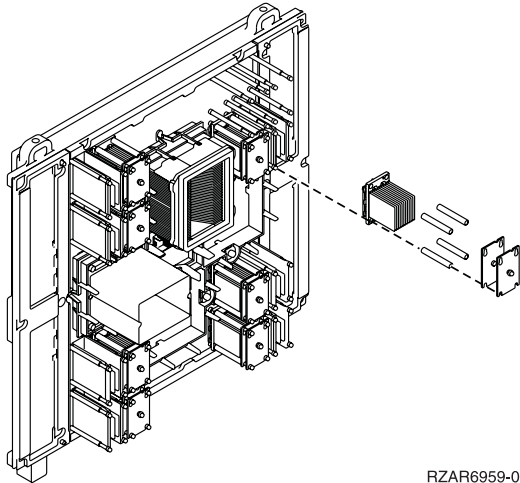


- |   |                              |   |   |
|---|------------------------------|---|---|
| 1 | Protective Cover             | 4 | Rear Spring Plate                                   |
| 2 | L3 Cache Module and Heatsink | 5 | Front Spring Plate with Set Screw                   |
| 3 | Load Posts                   | 6 | L3 Filler (Used if no L3 cache module is installed) |

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7. Slide both plates up and pull them away from the L3 module.
8. Pull the sleeves off the posts.
9. Use a disposable lint-free cloth to clean the sleeves.
10. Pull the L3 module straight back off the posts and place it with the LGA connector down in the four position tray from the tool kit.

**Figure 2. L3 module removal**



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11. Record on the log sheet on the system the date that this L3 has been removed.

To return L3 modules:

The following procedure provides handling instructions for L3 modules to be packaged and returned to the plant of manufacture.

1. If you are replacing an L3 module, use the packaging from the new module to return the old module. If the packaging is not available, or does not include all the parts described below, order the following part for L3 module protective packaging: One L3 protective package (PN 7335692) which includes:
  - One carton
  - One top foam cushion
  - One bottom foam cushion with four cavities
  - One ESD bag
  - One desiccant
2. Place the bottom foam cushion, wrapped with ESD bag, inside the corrugated carton. Leaving the ESD bag open, place the L3 module with the cover into the bottom cushion, heat sink down. This will fit snugly into the cavity of the foam.
3. Add the desiccant and seal the ESD bag with tape. (The desiccant is optional for returned parts).
4. Place the top foam cushion over the assembly inside the carton.
5. Seal the carton and ship.

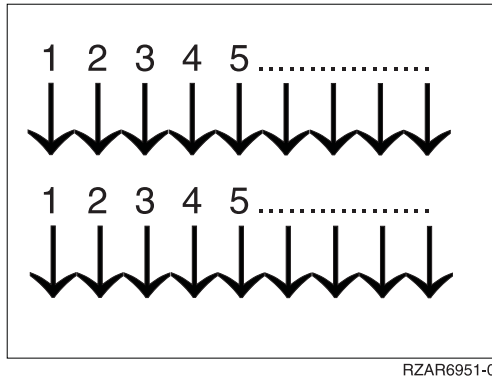
To install L3 modules:

1. Go to the Testing L3 cache modules for a short circuit (See page 128) page and install the L3 module short-circuit test tool. Use the test tool during the L3 cache module replacement procedure to ensure that the L3 cache modules are installed without a short circuit. If you install an L3 cache module and encounter a short circuit, the L3 cache you installed must be replaced.
2. If installing a new L3 module, perform a general cleaning operation, using a sash brush, part number 450732 (not the one included with the FRU kit) and vacuum cleaner to remove any accumulated dust and debris that has settled in the processor subsystem. Hold the vacuum hose near the brush to remove any debris the brush generates, then remove the L3 filler from the site where the new L3 is to be located.
3. Follow the procedure described in the Attention note below to clean the LGA site using the brush supplied with the new module.

**Note:** Before you remove the brush from its protective bag, loosen the bristles by pressing them on the ESD mat until they are 90 degrees from the handle.

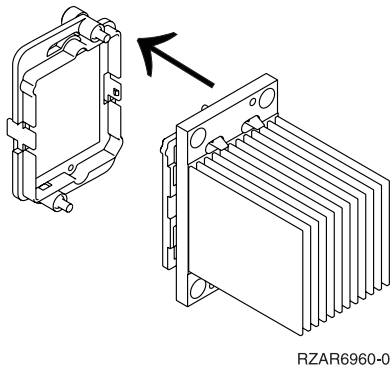
**Attention:** Each time an L3 module is installed on the system board, the LGA site where the module connects with the system board must be cleaned. With the brush supplied with the replacement kit, use only downward strokes, starting in the upper left corner. Move left to right, top to bottom, using overlapping strokes. The brush must be discarded after cleaning four L3 sites.

**Figure 3. Cleaning procedure for the LGA site**



4. Remove the protective cover from the new L3 module. See Model 890 - L3 modules - remove the protective cover.

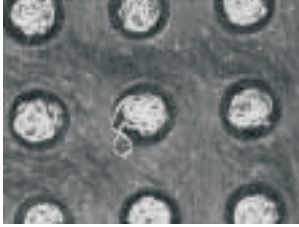
**Figure 4. Installing the L3 module**



5. Each time an L3 module is installed on the system board, the associated interposer must be inspected, using the magnifying glass provided in the system toolkit. The interposer is not acceptable and the module must be returned if the following conditions occur.

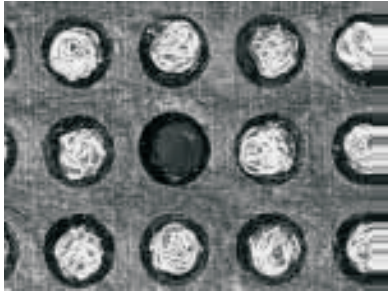
- **Figures 5. Shorts:** If the button, a loop of the button wire, or an individual button wire lead extends more than three times the width of the wire outside of a connector hole chamfer.





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- **Figure 6. Missing buttons.**

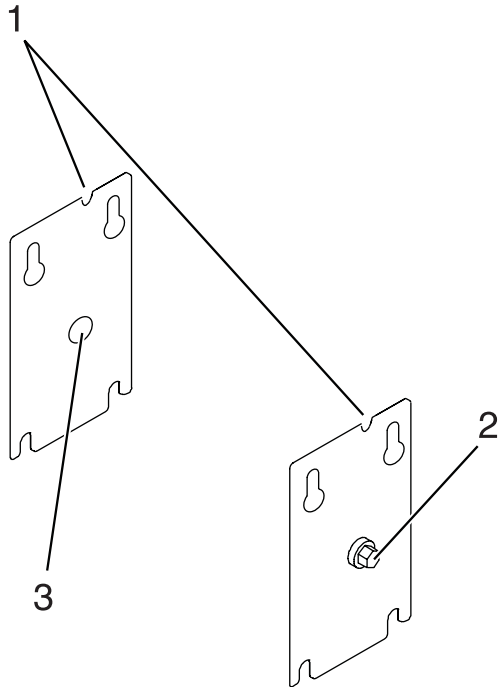


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6. Align the flat corner on the L3 module to match the outline on the system board.
7. Carefully slide the L3 module straight onto the posts until it meets the system board.
8. If you are installing a new L3 module, replace the sleeves that you removed earlier with the new sleeves provided with the L3 module kit. If you are reseating an existing module, use a lint free cloth to wipe any dust off the sleeves that you removed earlier.

**Attention:** Be sure to align the notches at the top right of each spring plate. Replace the spring plates that you removed earlier with the new spring plates provided with the L3 module kit.

**Figure 7. L3 cache module alignment**



- 1 Notch on upper right corner
- 2 5mm set screw
- 3 Reinforced center

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9. Use a 5mm socket wrench to tighten the set screw in the center of the L3 module spring plate until it is seated. Check the L3 module short-circuit test tool to ensure that short circuit was not created when the L3 cache module was installed. If this is the last L3 cache module you are installing, remove the L3 module short-circuit test tool and meter.
10. If it is on, power off the system and unplug the power cord. See Power on/off the system and logical partitions.
11. Remove the primary network interface controller (NIC) card. See Models 870 and 890 - Network interface controller (NIC) card, and replace the VPD card that came with the L3 module.
12. Replace the primary Network interface controller (NIC) card.
13. Replace the MSA (air mover) enclosure. See Models 870 and 890 - MSA (air mover) enclosure.
14. Plug in the power cord and power on the system. See Power on/off the system and logical partitions.  
**This ends the procedure.**

## Models 870 and 890 - MCM module (processor) and pass-through modules

*For use by authorized service providers.*

Use this procedure to remove or replace the MCM module (processor) and pass-through modules on the Models 870 and 890.

### Handling static-sensitive modules

**Attention:** MCM modules are sensitive to static electricity discharge. These devices are shipped in antistatic containers to prevent damage caused by electrostatic discharge.

Take the following precautions:

- Use an antistatic wrist strap while handling the device.

- Do not remove the device from the antistatic container until you are ready to install the device in the system unit.
- With the device still in its antistatic container, touch it to a metal frame of the system.
- Grasp modules by the heatsink. Avoid touching the interposer buttons.
- If you need to lay the device down while it is out of the antistatic container:
  - Lay the MCMs with the posts down on an antistatic mat.
  - Before picking it up again, touch the antistatic container and the metal frame of the system unit at the same time.
- Handle the devices carefully in order to prevent permanent damage.

**Attention:** Before you remove or replace any MCM module, STOP, read, and understand this entire procedure. Also, check to ensure that the MCM/L3 Label Map is installed. Refer to Install the MCM/L3/passthrough tri-fold plug map.

**Attention:** The MCM modules in this system can be attached to the backplane a maximum of three times. Check the MCM/L3 Label Map to determine how many times the module has been removed before. **If an MCM module is removed for a fourth time, it must be replaced with a new MCM module.**

**Note:** The MCM module, site label, and its associated VPD card are a single FRU, and must be replaced as a set. See Models 870 and 890 - VPD card.

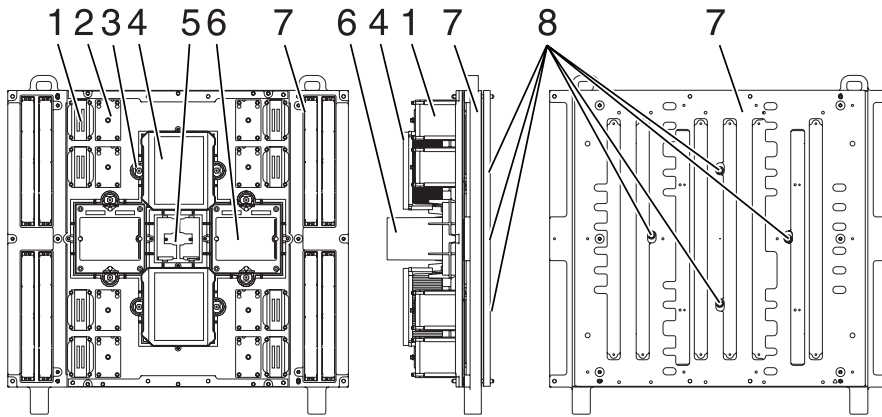
**Attention:** If the base configuration of the system has only one MCM, the pass-through modules are replaced with a filler cover that attaches utilizing only the cam locks.

To remove MCM and pass-through modules:

**Attention:** If more than one module is to be replaced or reseated, begin with the topmost module, replace it and then go to the next highest position module, until the lowermost module has been replaced or reseated.

1. Power off the system, and unplug the power cord. See Power on/off the system and logical partitions.
2. Remove the MSA (air mover) enclosure. See Models 870 and 890 - MSA (air mover) enclosure.
3. Perform a general cleaning operation using a sash brush (part number 450732) (not the one included with the FRU kit) and vacuum cleaner to remove any accumulated dust and debris that has settled in the processor subsystem. Hold the vacuum hose near the brush to remove any debris the brush generates.
4. Note the location of the module being removed. Check the MCM/L3 Label Map sheet on the system to confirm the number of times the target module has been unplugged. If three times, order a new module. If this is the first removal/reseat for the module, record the serial number of the module and the date of the action.
5. Ensure that the locking cams at the front of the MCM module are engaged with the module.
6. Remove and label DCA books and blanks m32 through m36, and both capacitor books. See Models 870 and 890 - DC converter assembly (DCA) and Models 870 and 890 - Capacitor books and blanks.
7. Ensure that the actuation bolt behind the MCM module is in the down position.

**Figure 1. MCM module (processor) and passthru modules**

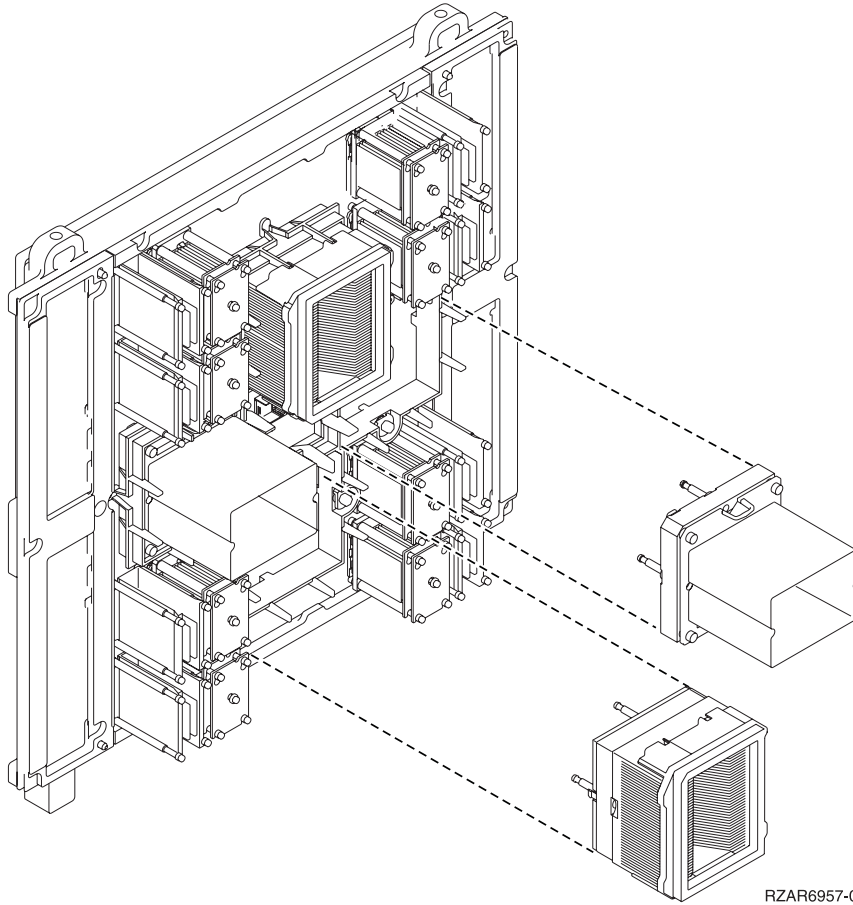


- |   |                              |   |                             |
|---|------------------------------|---|-----------------------------|
| 1 | L3 Filler                    | 5 | System Clock                |
| 2 | L3 Module Assembly           | 6 | MCM Filler or Passthru Card |
| 3 | MCM Locking Cam              | 7 | System Board                |
| 4 | MCM Heatsink/Module Assembly | 8 | Actuation Bolt              |

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8. Use an 8mm socket to loosen the actuation bolt in center of the MCM module. (A 5mm socket must be used if removing the protective LGA cover). If installing a new MCM, remove the actuation bolt.
9. If installing a new MCM, insert the new actuation bolt supplied with the new MCM module.
10. Move the actuation bolt to the up position and hand tighten to hold the assembly in the up position.
11. At the front, hold the MCM module with one hand while using the 8mm socket to unlatch the locking cams.
12. With both hands, grasp the modules across the narrow span of the heatsink cap and pull the MCM module from the system board and place it posts down on the ESD mat.

**Figure 2. MCM module (processor) and passthru modules being removed**



13. Record on the log sheet on the system the date that this MCM has been removed.

To install MCM and pass-through modules:

**Note:** This procedure is to be performed only by trained service personnel.

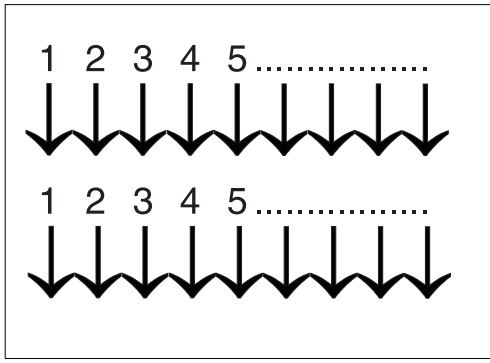
1. Power off the system, and unplug the power cord.
2. If installing a new MCM module, insert the new actuation bolt supplied with the new MCM module, and move it and the spring assembly to the up position. Hand tighten to hold the assembly in the up position and perform a general cleaning operation, using a sash brush, part number 450732 (not the one included with the FRU kit) and vacuum cleaner to remove any accumulated dust and debris that has settled in the processor subsystem. Hold the vacuum hose near the brush to remove any debris the brush generates.
3. Follow the procedure described in the Attention note below to clean the LGA site using the brush supplied with the new module.

**Note:** Before you remove the brush from its protective bag, loosen the bristles by pressing them on the ESD mat until they are 90 degrees from the handle.

**Attention:** Each time an MCM module is installed on the system board, the LGA site where the module connects with the system board **must** be cleaned. With the brush supplied with the replacement kit, use only downward strokes, starting in the topmost location. Using firm pressure, brush left to right using overlapping strokes. The brush must be discarded after cleaning only one MCM site.

**Figure 3. Cleaning procedure for the LGA site**

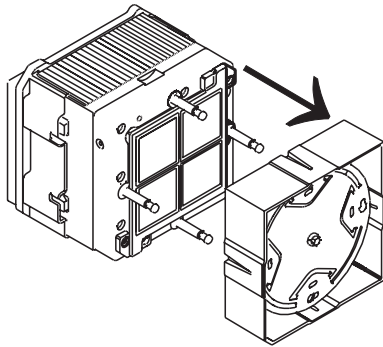




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4. Remove the cover from the new MCM module. See Models 870 and 890 - MCM and pass-through modules - remove protective covers.

**Figure 4. MCM module alignment**

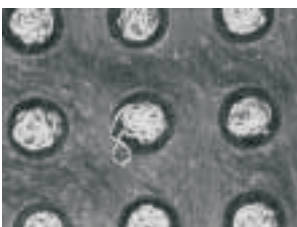


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5. Each time an MCM module (or pass-through) is installed on the system board, the associated interposer must be inspected. Inspect the MCM interposer, using the magnifying glass provided in the system toolkit. The interposer is not acceptable and the module must be returned if the following conditions occur:
  - **Figure 5. Shorts:** If the button, a loop of the button wire, or an individual button wire lead extends more than three times the width of the wire outside of a connector hole chamfer (top side) or counter bore pin indent (bottom side).

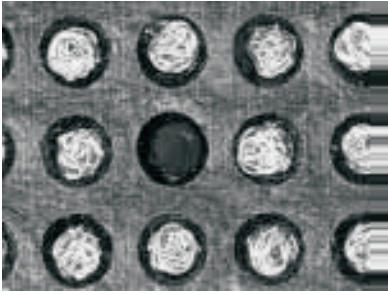


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- **Figure 6. Missing buttons.**

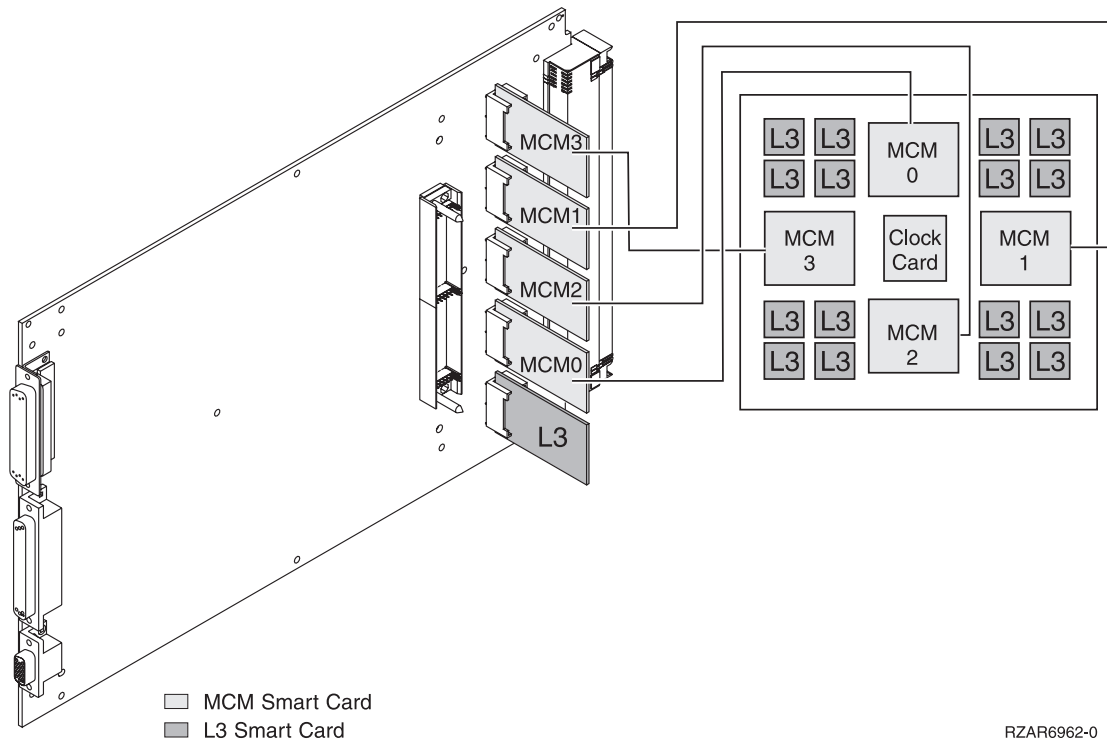


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6. Verify all four posts on MCM module are snug prior to installing on the backplane. A loosened guide post can be tightened with a ratchet or wrench until it is snug. Use caution not to damage the interposer.
7. Perform the following, paying close attention:
  - a. Grasp the module across the narrow span of the heatsink cap.
  - b. Align the corner chamfer (flat corner) on the MCM module or the passthrough to match the outline on the system board.
  - c. Verify that the guide pins protrude above the connectors.
  - d. Carefully push the MCM module into the socket and maintain pressure while closing both locking cams.
8. Loosen the actuation bolt at the rear of the MCM module.
9. Push the actuation bolt in and slide the spring plate assembly to the down position.
10. Use the torque wrench (supplied with the system tool kit) to tighten the actuation bolt. When the wrench clicks, followed by about 15 degrees of free motion, the bolt is seated.
 

**Attention:** Do not over-torque the bolt!
11. Go to Testing MCMs for a short circuit (See page 126) and install the MCM short circuit test tool. Use the tool during the MCM replacement procedure to ensure that the MCMs are installed without a short circuit. If you install an MCM and encounter a short circuit, the MCM you installed must be replaced.
12. Remove the primary Network interface controller (NIC) card. See Models 870 and 890 - Network interface controller (NIC) card, and replace the VPD card that came with the MCM module.

**Figure 7. L3 and MCM cards**



13. If you are replacing a processor capacity card that was associated with processor-on-demand (POD) processor features, perform the following:
  - a. Contact your second level of support to determine if a POD activation code is required to reset previously activated on-demand processors.
  - b. If necessary, a new POD activation code will need to be generated and then entered at the server.
  - c. After entering a POD activation code, 30 minutes should elapse before an IPL is performed to ensure the POD activation code has been saved.

**Note:** DST/SST options to activate POD will not be visible if the system password has been bypassed.

14. Replace the primary Network interface controller (NIC) card. See Models 870 and 890 - Network interface controller (NIC) card.
15. Replace the DCA books and blanks that you removed earlier. See Models 870 and 890 - DC converter assembly (DCA).
16. Replace the MSA (air mover) enclosure. See Models 870 and 890 - MSA (air mover) enclosure.
17. Plug in the power cord, and power on the system. See Power on/off the system and logical partitions.

**This ends the procedure.**

## Models 870 and 890 - MDA (air mover) controller

*For use by authorized service providers.*

Use this procedure to remove or replace the motor drive assembly (MDA) controller on the Models 870 and 890. The MDAs are mounted on the face of each motor scroll assembly (MSA), and are separately removable without removing the MSA.

To remove the MDA controller:

1. Do not power down the system if it is powered on; this procedure can be done concurrently.
2. Open the cover to access the field replaceable unit (FRU). See Models 870 and 890 - Covers.

3. Find the location of the MDA to be replaced in Locations - Models 870 and 890.
4. Note the state of the MDA's LED. Then, press the (green) **Start Service** button on the UEPO panel.
5. Proceed only if the MDA LED is off, or the repair has been scheduled (System outage - EPO off).
6. Loosen the thumb screws on the MDA, and unplug the MDA from the face of the MSA.

**Note:** The MDA weighs approximately 0.45 Kg (one pound).

To replace the MDA:

1. Plug the MDA onto the face of the MSA, aligning the two metal lips on the face of the MSA with the slots in the MDA. Push gently to seat the blind mate connector.
2. Tighten the thumb screws on the MDA.
3. Plug all cables to the MDA, ensuring correspondence of plug locations and cable labeling.
4. To indicate completion of these steps, press the (white) **Service Complete** button on the UEPO panel.  
**This ends the procedure.**

### **Models 870 and 890 - Memory books and memory blanks**

*For use by authorized service providers.*

Use this procedure to remove or replace the memory books and memory blanks on the Models 870 and 890.

To remove or replace memory books and memory blanks:

1. Power off the system. See Power on/off the system and logical partitions.
2. Open the front cover. See Models 870 and 890 - Covers.
3. Unscrew the thumb screws on the top and bottom of the lock bar, in front of the memory book to be removed.
4. Grasp the release latches located at the top and bottom of the memory book between your thumb and index finger, press the tabs together. Pivot the tabs and pull the book straight back.
5. Reverse this procedure to install the memory books and memory blanks.  
**This ends the procedure.**

### **Models 870 and 890 - Motor scroll assembly (MSA) air filters**

*For use by authorized service providers.*

Use this procedure to remove or replace the Motor scroll assembly (MSA) air filters on the Models 870 and 890.

The cage air filters are located in two slots on the front of the CEC cage, beside the air moving devices (AMDs), one above the other. See Figure 1. in Locations — Models 870 and 890 for details.

**Attention:** The filters (P/N 11P3781) must be inspected every six months and replaced as necessary to maintain proper air flow. Filters must be replaced if dirty - **do not** clean filters. It is not necessary to remove power to the system or blower assemblies to replace the air filters.

To remove or replace the MSA air filters:

1. Do not power down the system if it is powered on. This procedure can be performed concurrently.
2. Open the cover to access the FRU. See Models 870 and 890 - Covers.
3. Grasp the finger tabs on the filter being serviced, and pull it straight out. The top filter is for MSA X4 (location H4), the bottom filter is for MSA X3 (location H3).
4. To replace the air filters, slide the air filter into the slot. The filter is keyed to ensure correct orientation.  
**This ends the procedure.**

## Models 870 and 890 - MSA (air mover) enclosure

*For use by authorized service providers.*

Use this procedure to remove or replace the motor scrolling assembly (MSA) enclosure on the Models 870 and 890.

To remove or replace the MSA enclosure:

1. Power off the system. See Power on/off the system and logical partitions.
2. Remove the top two MSAs. See Models 870 and 890 - Processor MSA (air mover) assembly.
3. Loosen the four thumb screws that attach the enclosure to the system unit backplane.
4. Pull the MSA enclosure out of the system unit backplane.
5. Replace the MSA enclosure by reversing this procedure.

**This ends the procedure.**

## Models 870 and 890 - Network interface controller (NIC) card

*For use by authorized service providers.*

Use this procedure to remove or replace a Network interface controller (NIC) card on the Models 870 and 890.

To remove a Network interface controller (NIC) card:

1. Power off the system. See Power on/off the system and logical partitions.
2. At the back of the system, remove the safety bars from the NIC card.
3. Record the connector locations of all cables attached to the NIC card for easy replacement. Disconnect all of the cables to the NIC card.
4. Grasp the release latches located at the top and bottom of the NIC card between your thumb and index finger, press the tabs together. Pivot the tabs and pull the card straight back.
5. If the primary NIC card is being replaced, remove all VPD cards from the old primary NIC card and install them into the new primary NIC card. See Models 870 and 890 - VPD card.

**Inspect the Network interface controller (NIC) card:** You must examine the connector for any connector damage on the removed card using the 3X magnification glass (PN 11P4747) included in the system toolkit. If you identify a defect on the card, do not install the replacement card without contacting your next level support for instructions.

A damaged connector on a defective card may indicate a damaged board. If the NIC card connector is damaged, then the adjacent memory book may need to be removed to inspect the board for damage. If the NIC card connector is damaged, then inspect the NIC board for damage.

If the removed NIC card is not damaged, carefully remove the new NIC card from the packaging. Be sure to protect the connector and the handles when you remove the NIC card from the cardboard box or ESD bag. Do not handle the NIC card by its connector or either of its handles. Remove the protective cover from the connector and install it on the defective NIC card.

### Notes:

- Do **not** stack cards on top of each other. ESD bags do not provide sufficient stacking protections.
- Do **not** rest a NIC card on its connector or on its handles at any time.

Once the NIC card is out of the ESD bag, examine the card VHDM connector using the 3X magnification glass (PN 11P4747) included in the system toolkit. **If any connector shows signs of damage, do not use it.**

To replace a Network interface controller (NIC) card:

1. Inspect the new NIC card for damage. See “Inspect the Network interface controller (NIC) card” on page 113 above.
2. Unlatch the handles on the replacement card.
3. Take care not to hit the connector against the cage, which can cause damage to the NIC card connectors.
4. Slide the card in until it reaches the alignment pins.
5. Using even pressure, actuate both handles simultaneously until the card is fully seated.
6. Reconnect all cables to their original locations.
7. At the back of the system, replace the safety bars on the NIC card.
8. Repeat this procedure for all replacement NIC cards.

**This ends the procedure.**

## **Models 870 and 890 - Processor MSA (air mover) assembly**

*For use by authorized service providers.*

Use this procedure to remove or replace the Processor motor scrolling assembly (MSA) on the Models 870 and 890.

To remove the Processor MSA:

1. Do not power down the system if it is powered on; this procedure can be performed concurrently.
2. Open the cover to access the field replaceable unit (FRU). See Models 870 and 890 - Covers.
3. Find the location of the MSA to be replaced in Locations - Models 870 and 890.
4. Note the state of the motor drive assembly's (MDA's) LEDs. Then, press the (green) **Start Service** button on the UEPO panel.
5. Proceed only if the MDA LED is off, or the repair has been scheduled (System outage - EPO off).
6. Verify that all the cables are labeled for plug location, and then unplug the cables from the MDA on the MSA to be removed.
7. If the FRU call listed both the MSA and MDA for removal, it is synonymous with removing the air moving device (AMD). In that case, ignore this step and continue with the next step. Otherwise, remove the MDA from the face of the MSA. See Models 870 and 890 - MDA (air mover) controller.
8. Loosen the upper and lower thumb screws on the MSA, and slide the MSA from the enclosure opening. The upper and lower spring loaded internal doors will close automatically when the MSA is removed, preventing loss of air flow while the MSA is out of the enclosure.

**Note:** The MSA contains a 10.5 inch diameter blower, and weighs approximately 5 Kg (eleven pounds).

To replace the Processor MSA:

1. Position the MSA in front of the opening through the spring loaded doors in the air moving enclosure.
  2. Slide the MSA into the enclosure opening, and tighten the upper and lower thumb screws.
  3. Replace the MDA onto the face of the MSA. See Models 870 and 890 - MDA (air mover) controller.
  4. To indicate completion of these steps, press the (white) **Service Complete** button on the UEPO panel.
- This ends the procedure.**

## **Models 870 and 890 - Supporting information**

*For use by authorized service providers.*

Use these pages to assist you when performing remove and replace procedures on the Models 870 and 890.

### **Models 870 and 890 - Install the MCM/L3/passthrough tri-fold plug map**

**Models 870 and 890 - L3 modules - remove the protective cover**

**Models 870 and 890 - MCM and pass-through modules - remove the protective cover**

**Models 870 and 890 - Remove and replace tools**

**Models 870 and 890 - Shorts test qualified service meters and fail criteria**

**Models 870 and 890 - Testing MCMs and L3 modules for a short circuit**

***Models 870 and 890 - Install the MCM/L3/passthrough tri-fold plug map:*** For use by authorized service providers.

Use this procedure to install the MCM/L3/passthrough tri-fold plug map.

If the MCM/L3/passthrough tri-fold plug map is not installed in the system, install it before continuing with any repair action for MCM or L3 cache modules. The tri-fold plug map is included in the system tool kit. Remove it from the tool kit and place it in the system rack by following the procedure below.

1. With the front cover open, locate the right frame extender (located on the opposite side of the UEPO switch). The 50 mm (about 2 inches) wide label should be installed vertically, along the extender, approximately in line with the EIA frame positions 22-28.
2. The tri-fold label has two velcro strips attached to the back. Remove the adhesive backing from the velcro and stick it on the frame extender as described above. A small piece of velcro is used to help keep it folded while attached to the frame. Refer to the following information on the placement of this map.

***Models 870 and 890 - L3 modules - remove the protective cover:*** For use by authorized service providers.

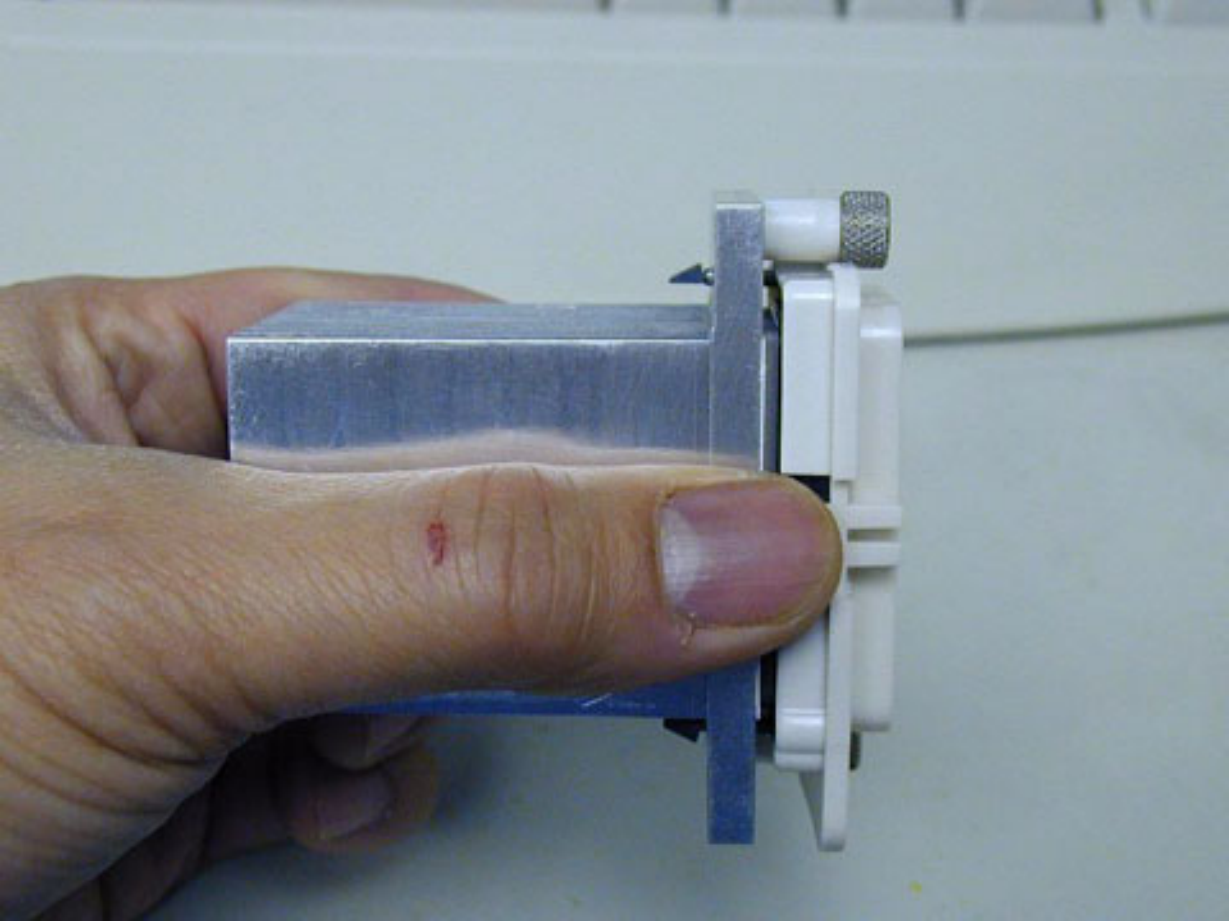
Use this procedure to remove the L3 cover on the Models 870 and 890.

To remove the L3 cover:

**Attention:** Follow these procedures for proper cover removal.

1. Hold the module with one hand by placing your thumb on one side and fingers on the opposite.

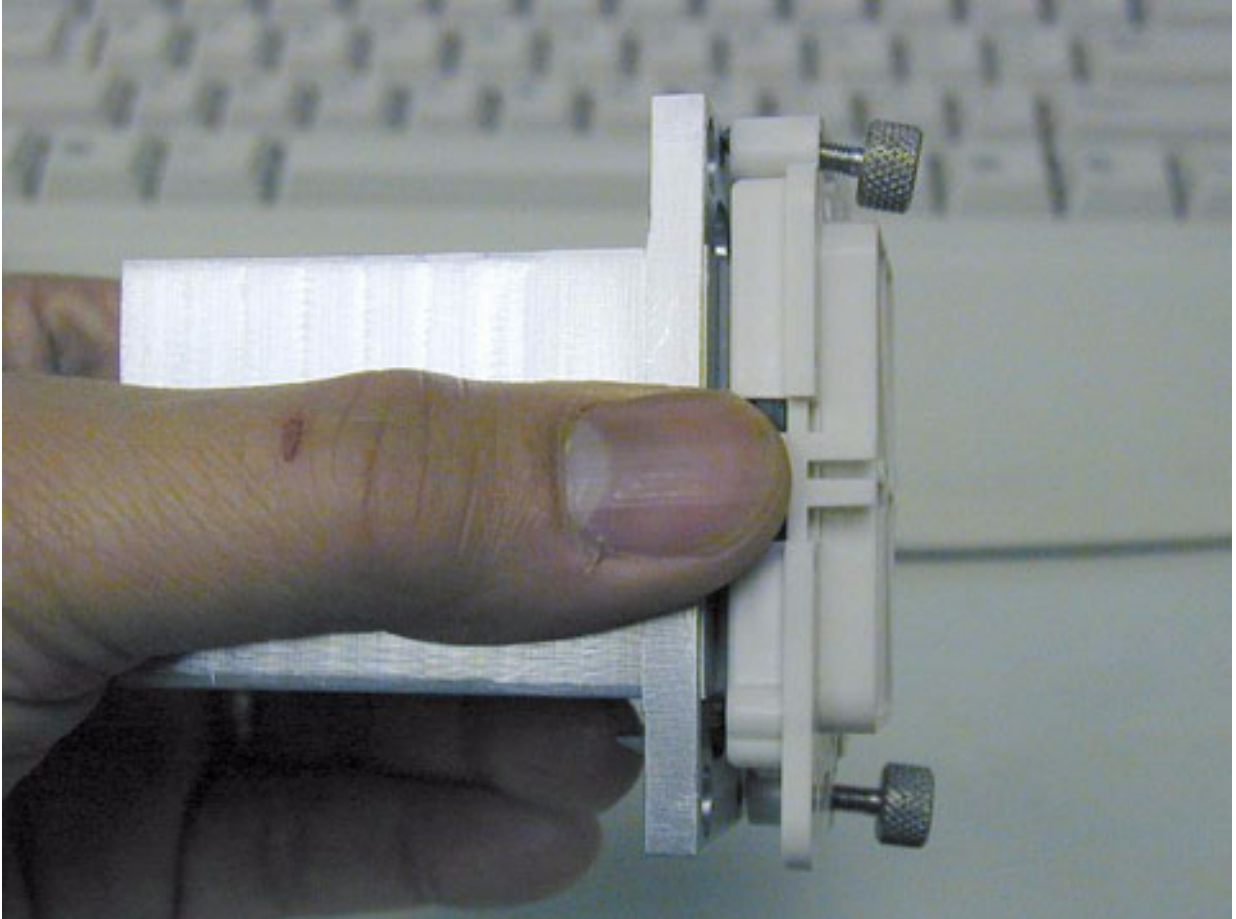
**Figure 1. Holding the L3 module for removal**



2. Manually loosen the two thumb screws, ensuring that both screws are completely loose from the module base before proceeding.

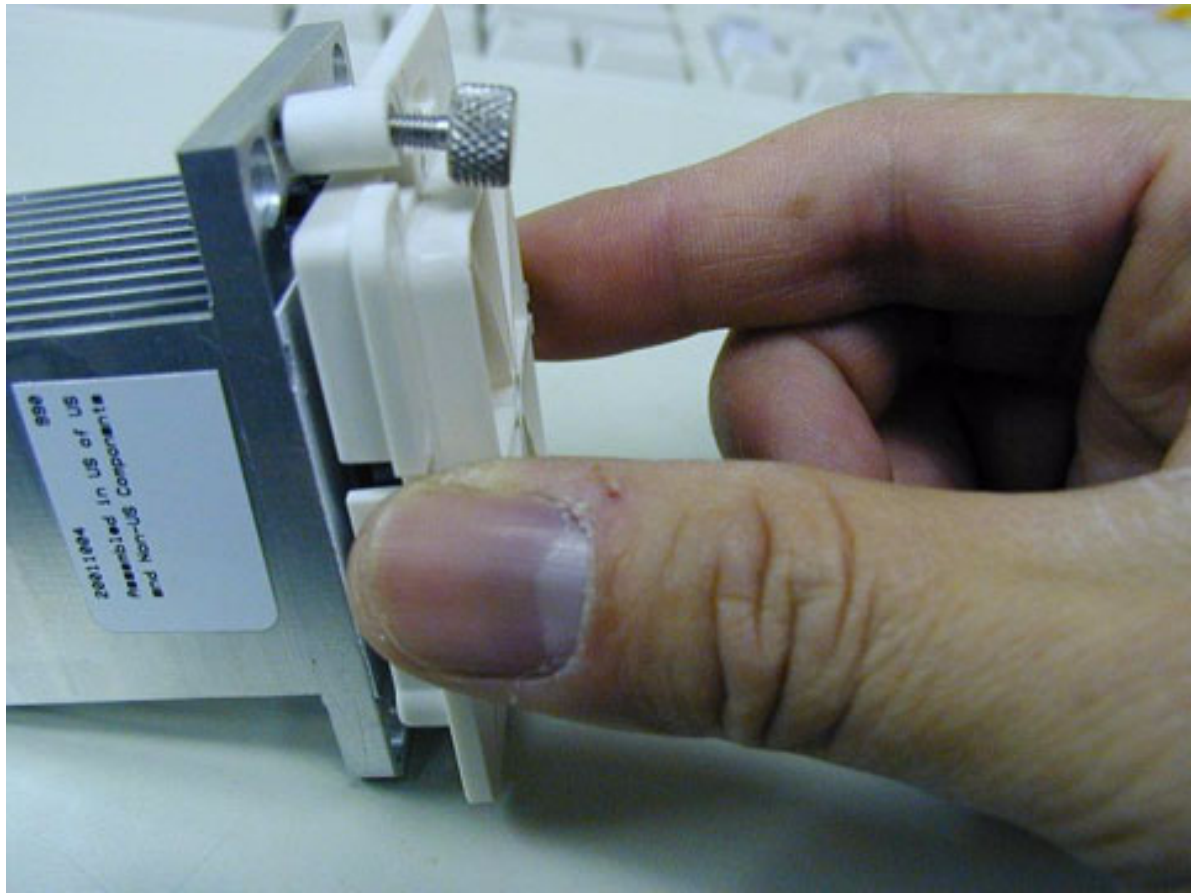
**Figure 2. Loosen the thumb screws**





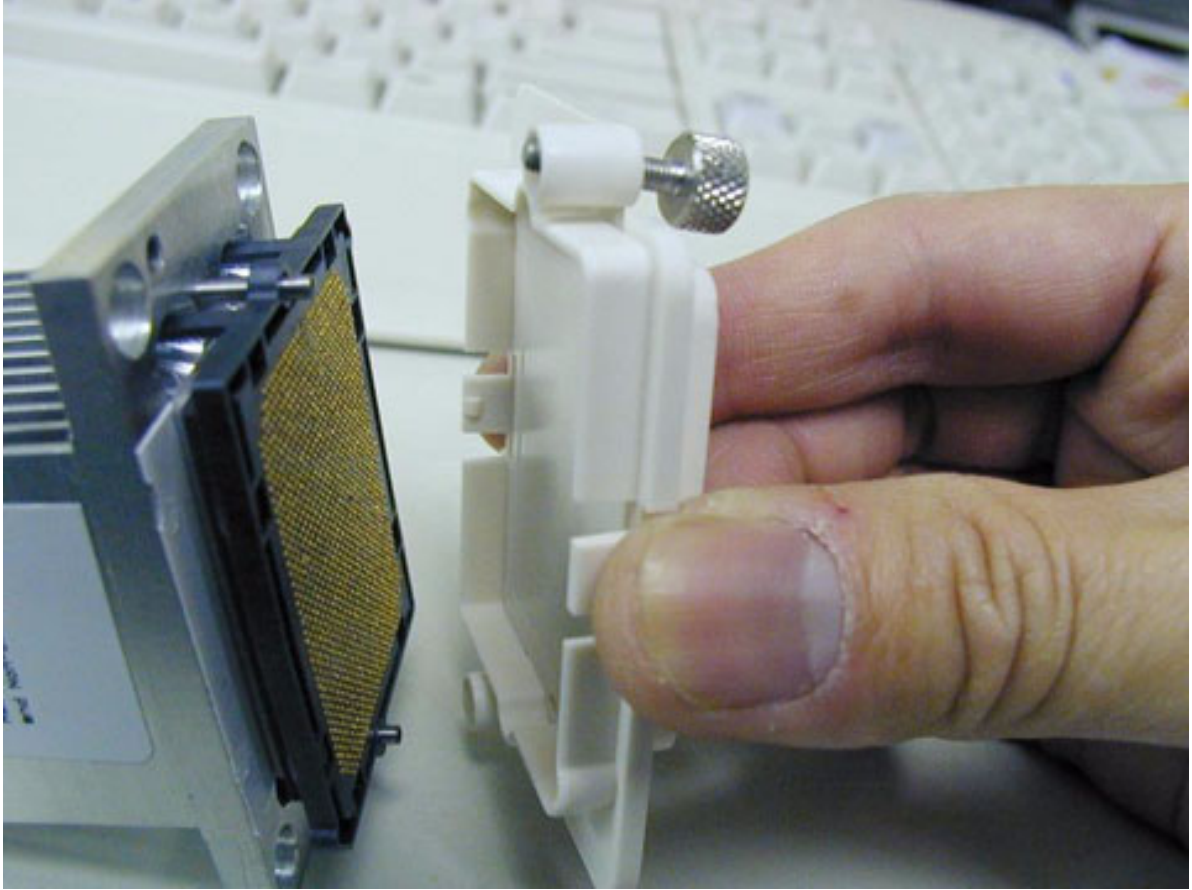
3. At this point, the cover can be removed from the module to expose the interposer.
4. To remove the cover from the bottom half of the interposer, perform the following:
  - a. Place the module on the ESD mat.
  - b. Place your thumb over one of the release latches and your forefinger over the opposite latch.  
**Note:** To ensure proper grip, your thumb and finger should be directly over the latches and the cover, not just at the ends of the latches.

**Figure 3. Place thumb and forefinger on the release latches**



c. Squeeze the latches, and at the same time, pull the cover from the interposer.

**Figure 4. Pulling the cover from the interposer**



**This ends the procedure.**

**Models 870 and 890 - MCM and pass-through module - remove protective covers:** For use by authorized service providers.

Use this procedure to remove the MCM and pass-through module covers on the Models 870 and 890.

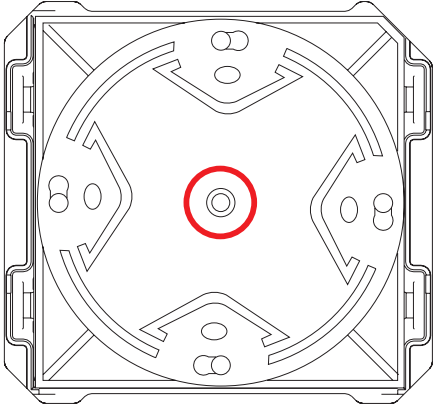
To remove the MCM or pass-through module protective cover:

**Important** Failure to follow these procedures can cause interposer damage.

1. Place the module on an ESD mat with protective cover facing up.
2. Manually loosen the actuation screw located in the middle of the spring place using a 5 mm hex head driver.

**Note:** When removing the protective cover on an MCM module, the four guide posts should **never** be loosened. The 5mm hex screw in the center of the retaining plates is the only screw that should be loosened to remove the cover.

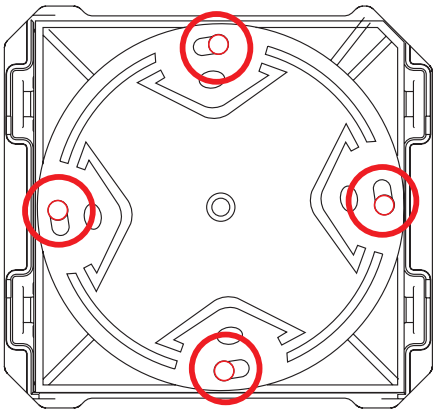
**Figure 1. The actuation screw in the middle**



RZAR6620-0

3. Loosen until all load is removed and the spring plate is free to rotate.
4. Rotate the spring plate counter-clockwise to align the four large keyhole openings with the posts present on the module.

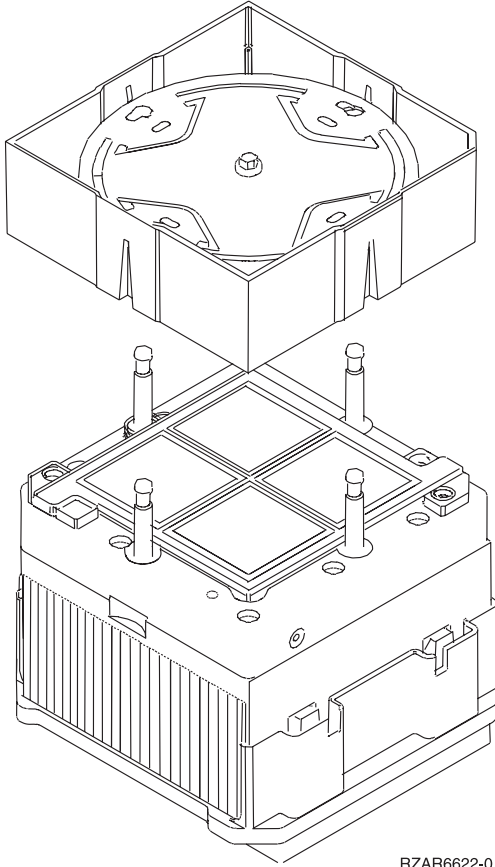
**Figure 2. Rotating the spring plate on the module**



RZAR6621-0

5. Carefully remove the cover from the module to expose the LGA interposer. Be careful to keep the cover level and do not tilt or twist during the removal.

**Figure 3. Removing the cover to expose the interpose.**



RZAR6622-0

6. Place the cover side-down on the ESD mat.  
**Important:** Do not place the LGA cover face down on the ESD mat, because this may introduce contamination to the LGA cover surface.
7. At this point, the cover can be removed from the module to expose the interposer.
8. Verify that all four guide posts are tight. A loosened guide post can be tightened with a ratchet or wrench until it is snug. Use caution not to damage the interposer.  
**This ends the procedure.**

**Models 870 and 890 - Remove and replace tools:** For use by authorized service providers.

Use the table below to obtain part numbers for tools needed to perform remove and replace procedures on the Models 870 and 890.

Part number	Units per assembly	Description
46H9635	1	Tool box
11P4486	1	Torque tool MCM
04N6923	1	Sash brush
11P4747	1	Magnifying glass
11P4654	1	L3 cache trays
11P4789	1	I/O backplane insertion tool
6422789	1	DCA removal tool
31L8313	1	Leveling tool (for rack)
47H0182	1	Torx, T10

Part number	Units per assembly	Description
11P4861	1	Blank cassette
11P3990	1	Door key
44P0182	1	DASD service tool
11P4914	1	MCM/L3/Pass-through plug location map (tri-fold chart): should be installed in the primary rack.
11P4055	N/A	Plug count adhesive replacement label
44P209	1	Test card assembly MCM/L3 short-to-GND
00P7023 36P2435 36P2436 36P2437	N/A N/A	Vacuum cleaner (110 Vac) Vacuum cleaner (220 Vac) Omega Filter 0.3 Micron Cord Omega UK Plug
07H6824	12	Bracket, insert
07H6823	2	Bracket, 11 x 6 insert
11P1262	4	Bracket, assembly with foam
07H6827	4	Blank filler plate - 3
07H2826	3	Blank filler plate - 1
54G2882	16	Screws
31L7174	1	Velcro (roll)
08J5557	1	Wheel chocks
44P0144		Tailgate assembly
09P2481		Rack lift tool
11P4369		Lift place assembly tool

**Models 870 and 890 - Shorts test qualified service meters and fail criteria:** For use by authorized service providers.

Use the table below to help you choose a meter to use when performing the MCM or L3 shorts test.

**Table 1. Shorts test qualified service meters and fail criteria**

Manufacturer	Model	Range (ohm)	Accuracy at 1.0 ohm or less	Fail criteria (ohm)
Fluke	8060A	200	+/-0.04	+0.40
Fluke	8060A/AA	200	+/-0.04	+0.40
Fluke	8062A	200	+/-0.04	+0.40
Fluke	187	500	+/-0.10	+0.40
Fluke	189	500	+/-0.10	+0.40
Fluke	83 (original models)	400	+/-0.10	+0.40
Fluke	85 (original models)	400	+/-0.10	+0.40
Fluke	87 (original models)	400	+/-0.10	+0.40
Fluke	87-4	500	+/-0.10	+0.40
Fluke	89-4	500	+/-0.10	+0.40

Manufacturer	Model	Range (ohm)	Accuracy at 1.0 ohm or less	Fail criteria (ohm)
Fluke	10	400	+/-0.20	+0.50
Fluke	11	400	+/-0.20	+0.50
Fluke	110	600	+/-0.20	+0.50
Fluke	111	600	+/-0.20	+0.50
Fluke	112	600	+/-0.20	+0.50
Fluke	12	400	+/-0.20	+0.50
Fluke	12B	400	+/-0.20	+0.50
Fluke	16	400	+/-0.20	+0.50
Fluke	175	600	+/-0.20	+0.50
Fluke	177	600	+/-0.20	+0.50
Fluke	179	600	+/-0.20	+0.50
Fluke	18	400	+/-0.20	+0.50
Fluke	21-2	320	+/-0.20	+0.50
Fluke	21-3	320	+/-0.20	+0.50
Fluke	23-2	320	+/-0.20	+0.50
Fluke	26-3	400	+/-0.20	+0.50
Fluke	29-2	400	+/-0.20	+0.50
Fluke	70-2	320	+/-0.20	+0.50
Fluke	70-3	320	+/-0.20	+0.50
Fluke	73	320	+/-0.20	+0.50
Fluke	73-2	320	+/-0.20	+0.50
Fluke	73-3	320	+/-0.20	+0.50
Fluke	75	320	+/-0.20	+0.50
Fluke	75-2	320	+/-0.20	+0.50
Fluke	75-3	320	+/-0.20	+0.50
Fluke	76	400	+/-0.20	+0.50
Fluke	77	320	+/-0.20	+0.50
Fluke	77-2	320	+/-0.20	+0.50
Fluke	79-2	400	+/-0.20	+0.50
Fluke	79-3	400	+/-0.20	+0.50
Fluke	83 (with CAT III front panel marking)	400	+/-0.20	+0.50
Fluke	83-3	400	+/-0.20	+0.50
Fluke	85 (with CAT III front panel marking)	400	+/-0.20	+0.50
Fluke	85-3	400	+/-0.20	+0.50
Fluke	87 (with CAT III front panel marking)	400	+/-0.20	+0.50
Fluke	87-3	200	+/-0.20	+0.50

**Testing MCM and L3 modules for a short circuit:** For use by authorized service providers.

*Determining the test method:* There are two shorts test procedures you can use depending on the test hardware you have.

**“Test method 1:** Testing MCM and passthru modules for a short circuit using a new capacitor book and automated shorts tester” - Use a new capacitor book and the LGA shorts tester

For this method, use the new capacitor book (part 44P2471), or any follow-on with the necessary LGA test support features, and the new LGA shorts tester (LGA-ST) (part 44P4107).

**“Test method 2:** Testing MCM and passthru modules for a short circuit using a multimeter and capacitor book” on page 126 - Use a multimeter and capacitor book

There are two methods covered here:

- Use a multimeter and a **new** capacitor book  
For this method, use a hand held multimeter and capacitor book (44P2471), or any follow-on capacitor books with the necessary LGA test support features.

Or:

- Use a multimeter, the **original** capacitor book, and the MCM/L3 module short-circuit test tool.  
This is the least accurate method and should only be used when no other options are available. For this method, use a hand held multimeter, the original capacitor book (part 11P1540), and the MCM/L3 module short-circuit test tool (part 44P0209).

**Test method 1:** *Testing MCM and passthru modules for a short circuit using a new capacitor book and automated shorts tester:* There are three procedures that are covered in this topic:

- Testing for proper operation of LGA-ST and LGA-ST battery (See page 124)
- Testing MCM and passthru modules for a short circuit (See page 125)
- Testing L3 cache modules for a short circuit (See page 125)

**Test method 1: Testing for proper operation of LGA-ST and LGA-ST Battery**

1. Plug the LGA-ST test head into the 9 pin female D-Shell located on the LGA-ST control box.
2. Perform the procedure defined in the table below to ensure that the LGA-ST battery is good, and that the LGA-ST is functioning properly to detect shorts.

**Table 1. LGA-ST battery and LGA-ST status**

Rocker switch position	MCM green LED	MCM amber LED	L3 green LED	L3 amber LED	Battery low amber LED	Note
Forward MCM/L3 PWR/GND	OFF	ON	OFF	ON	OFF	1. If Battery Low LED is ON, or if no LEDs are lit, replace the battery before proceeding. 2. If the MCM and L3 LEDs are not as defined here, then the LGA-ST is defective. Replace it before proceeding.
Backward L3 PWR/PWR	OFF	OFF	OFF	ON	OFF	1. If Battery Low LED is ON, or if no LEDs are lit, replace the battery before proceeding. 2. If the MCM and L3 LEDs are not as defined here, then the LGA-ST is defective. Replace it before proceeding.

3. Disengage all DCAs from the backplane.
4. Plug the LGA-ST test box into the capacitor book 9 pin D-shell.
5. Test the LGA-ST for the ability to detect passing conditions using the following table.



**Table 2. Check LGA-ST for the ability to detect passing conditions**

Rocker switch position	MCM green LED	MCM amber LED	L3 green LED	L3 amber LED	Battery low amber LED	Note
Forward MCM/L3 PWR/GND	ON	OFF	ON	OFF	OFF	<ol style="list-style-type: none"> <li>1. If Battery Low LED is ON, or if no LEDs are lit, replace the battery before proceeding.</li> <li>2. If the MCM and L3 LEDs are not as defined here, disengage the capacitor book from the system. If the LED state is not as shown after disengaging the capacitor book, the LGA-ST is defective. Replace it before proceeding.</li> </ol>
Backward L3 PWR/PWR	OFF	OFF	ON	OFF	OFF	<ol style="list-style-type: none"> <li>1. If Battery Low LED is ON, or if no LEDs are lit, replace the battery before proceeding.</li> <li>2. If the MCM and L3 LEDs are not as defined here, disengage the capacitor book from the system. If the LED state is not as shown after disengaging the capacitor book, the LGA-ST is defective. Replace it before proceeding.</li> </ol>

**This ends this procedure.**

**Test method 1: Testing MCM and passthru modules for a short circuit**

1. After ensuring that the LGA-ST is functioning properly in the procedure above, install the capacitor book in the system, connecting the LGA-ST test box onto the capacitor book 9 pin D-shell connector.
2. Power down the system. See Power on/off the system and logical partitions.
3. Ensure the UEPO is off.
4. Disengage all DCAs from the backplane.
5. Install an MCM/passthru module.
6. Press the Rocker switch forward to the **MCM/L3 PWR/GND** position. This checks the MCM passthru for power to ground shorts. It also checks the L3s for power to ground shorts with the switch in this position.

Note the following:

- **The green MCM LED must be lit for a pass condition.** If the amber MCM LED is lit, there is a short across the MCM/passthru. Perform the following:
  - a. Inspect the interposer for shorts.
  - b. Replace the MCM/passthru in the system, and repeat this step.
  - c. If the short remains, replace the MCM/passthru.
- **The green L3 LED must be lit for a pass condition.** If the amber L3 LED is lit, there may be a short between one of the two L3 voltages and GND which is a fail state, or the combination of memory books, I/O books, and L3 in parallel are creating a low resistance. Before powering on, perform Test method 1: Testing L3 cache modules for a short circuit (See page 125) to ensure that no shorts are present on the L3 modules.

7. Repeat steps 5 (See page 125) and 6 (See page 125) until all required MCMs/passthru are installed.  
**This ends this procedure.**

**Test method 1: Testing L3 cache modules for a short circuit**

1. After ensuring that the LGA-ST is functioning properly, install the Capacitor book in the system by connecting LGA-ST test head onto the Capacitor book 9 pin D-Shell connector.
2. Power down the system. See Power on/off the system and logical partitions.
3. Ensure the UEPO is off.
4. Disengage all DCAs from the backplane.

5. Install an L3 module.
6. Press the Rocker switch forward to the **MCM/L3 Pwr/GND** position. This checks the L3s for power to ground shorts. It also checks the MCM for power to ground shorts. Note the following:
  - **The green L3 LED must be lit for a pass condition.** If the amber L3 is lit, there may be a short between one of the two L3 voltages and GND, which is a fail state, or the combination of memory books, I/O books, and L3 in parallel are creating a low resistance. Perform the following:
    - a. Disengage memory books followed by I/O books one at a time.
    - b. Repeat this test after each is removed until either the L3 test passes, or all memory and I/O are disengaged and the L3 test remains in a fail state.
    - c. If after disengaging all memory and I/Os, the L3 LED remains lit, remove the L3 and inspect the interposer for shorts.
    - d. Reinstall the L3 once and repeat the test. If the fail persists, replace the L3.
  - **The green MCM LED must be lit for a pass condition.** If the amber MCM Led is lit, there is a short across the MCM voltage and GND. Perform the MCM/passthru test and correct the short condition before powering on.
7. Press the Rocker switch backward to the **L3 PWR/PWR** position. Both the green and amber MCM LED will be off. Power is removed from these circuits when the switch is in this position. Note the following:
 

**The green L3 LED must be lit for a pass condition.** If the amber L3 LED is lit, there is a short between the two L3 power domains.

Perform the following:

  - a. Remove the L3 and inspect the interposer for shorts.
  - b. Reinstall the L3 once and repeat the test. If the fail persists, replace the L3.
8. Repeat steps **5** (See page 126), **6** (See page 126), and **7** (See page 126) until all required L3s are installed.
 

**This ends the procedure.**

**Test method 2:** *Testing MCM and passthru modules for a short circuit using a multimeter and capacitor book:* There are two procedures that are covered in this topic:

- Testing MCM and passthru modules for a short circuit (See page 126)
- Testing L3 cache modules for a short circuit (See page 128)

### **Test method 2: Testing MCM and passthru modules for a short circuit**

Perform this test to ensure that a short circuit was not created when installing an MCM or passthru module. You can use one of the following two options during the MCM replacement:

- Install and use a multimeter and **new** capacitor book (part 44P2471)
- Install and use a multimeter, the **original** capacitor book, and MCM/L3 module short-circuit test tool (part 44P0209)

**Note:** This procedure should only be performed by trained personnel. Ensure the UEPO switch is in the Off position before performing this procedure.

### **MCM installation shorts test, procedure 1**

1. Power down the system. See Power on/off the system and logical partitions.
2. Ensure the UEPO is off.
3. Disengage all DCAs from the planar.
4. Choose from the following options:
  - If you are using the **new** capacitor book option: Install the Capacitor book in CAP base location (M33), with no meter attached.

- If you are using the short-circuit test option: Install the test card in DCA location 6 (M38), with no meter attached.
5. Wait one minute to allow any charge to dissipate.
  6. Select the meter to be used for this test. Meters recorded in the Qualified Meters table are to be used, see Shorts test qualified service meters and fail criteria in this topic. Use the most accurate meter available.
  7. Record the meter model used and the fail criteria for the model. The fail criteria is in the right column of the qualified meters table. See Shorts test qualified service meters and fail criteria.
  8. Calibrate the meter by performing the following:
 

**Note:** Do not install the meter in the card at this time.

    - a. Set the meter to the range defined in the table.
    - b. Power the meter off and on.
    - c. Short the meter leads together.
    - d. Record the meter reading. Call this resistance "Meter Lead Resistance" (MLR).
  9. Are MCMs in the system?
    - **Yes:** Continue with the next step.
    - **No:** Install the first MCM module (M21, M16, M11, M14), working top to bottom, cleaning each LGA site (a load is required before the meter is connected). Then, continue with the next step.
  10. Choose from the following options:
    - If you are using the **new** capacitor book option, perform the following:
      - Connect the meter "V" to the Capacitor book "TP-2" (MCM).
      - Connect the meter "COM" to the Capacitor book "TP-5" (RTN). Then, continue with MCM installation shorts test, procedure 2 (See page 127).
    - If you are using the short-circuit test option, perform the following:
      - Connect the meter "V" to the test card "1.6V (yellow jack).
      - Connect the meter "COM" to the test card "COMMON RET" (black jack). Then, continue with MCM installation shorts test, procedure 2 (See page 127).

### **MCM installation shorts test, procedure 2**

1. Choose from the following options:
  - If you are using the **new** capacitor book option: Record the reading while the meter leads are attached to the Capacitor book. Call this resistance "MCM total resistance" (MCMTR).
  - If you are using the short-circuit option: Record the reading while the meter leads are attached to the test card. Call this resistance "MCM total resistance" (MCMTR).
2. Enter recorded fail criteria\*, MLR, MCMTR in the following equation: **MCMTR - MLR > Fail criteria.**
3. Is the left side of the equation greater than the right side?
  - **Yes:** Continue with the next step.
  - **No:** Go to step 5 (See page 127)
4. Is the left side of the equation greater than 1 Ohm?
  - **No:** Do not power on the system. Contact your next level of support.  
**This ends the procedure.**
  - **Yes:** Are all the MCMs installed?
    - **Yes:** Go to MCM installation shorts test, procedure 3 (See page 128).
    - **No:** Install another MCM/passthru (M21, M16, M11, M14), and go to step 1 (See page 127).
5. Remove the MCM/passthru module.
6. Is this the first time it has been removed?
  - **Yes:** Continue with the next step.

- **No:** Reject the MCM/passthru module. Install another MCM/passthru (M21, M16, M11, M14), and go to step 1 (See page 127).
7. Inspect the interposer for shorts.
  8. Are there any shorts visible?
    - **Yes:** Reject the MCM/passthru module and install another one (M21, M16, M11, M14), and go to step 1 (See page 127).
    - **No:** Reinstall the MCM/passthru, and go to step 1 (See page 127).

### MCM installation shorts test, procedure 3

Are there any L3 cache modules to install?

- **Yes:** Remove the meter, and then follow the Testing L3 cache modules for a short circuit (See page 128) procedure.
- **No:** Remove the meter and test card, and return to the procedure that sent you here.  
**This ends the procedure.**

### Test method 2: Testing L3 cache modules for a short circuit

Perform this test to ensure that a short circuit was not created when installing an L3 cache module. You can use one of the following options during the L3-cache module replacement.

- Use the **new** capacitor book (part 44P2471) and a multimeter
- Use the MCM/L3 module short-circuit test tool (part 44P0209)

### Testing L3 cache modules for a short circuit, procedure 1

**Note:** This procedure should only be performed by trained personnel. Ensure the UEPO switch is in the Off position before performing this procedure.

1. Power down the system. See Power on/off the system and logical partitions.
2. Ensure the UEPO is off.
3. Disengage all DCAs from the CEC backplane.
4. Choose from the following options:
  - If you are using the **new** capacitor book option: Install the Capacitor book in DCA location 6 (M38), with no meter attached.
  - If you are using the short-circuit test tool option: Install the test card in DCA location 6 (M38), with no meter attached.
5. Wait one minute to allow any charge to dissipate.
6. Select the meter to be used for this test (only meters recorded in the Models 870 and 890 - Shorts test qualified service meters and fail criteria table can be used). Use the most accurate meter available.
7. Record the meter that will be used.
8. Record the fail criteria for the meter being used.
9. Calibrate the meter by performing the following:
 

**Note:** Do not install the meter in the card at this time.

  - a. Set the meter to the range defined in the table.
  - b. Power the meter off and on.
  - c. Short the meter leads together.
  - d. Record the meter reading. Call this resistance "Meter Lead Resistance" (MLR).
10. Are there L3 cache modules installed in the system?
  - **Yes:** Continue with L3 cache testing, procedure 2 (See page 129).

- **No:** Install the first L3 Cache Module (M03, M04, M09, M10) (M12, M13, M05, M06) (M22, M23, M28, M29) (M26, M27, M19, M20), working
- top to bottom. Then, continue with L3 cache testing, procedure 2 (See page 129).

### L3 cache shorts test, procedure 2

1. Choose from the following options:
  - If you are using the **new** capacitor book option: Connect the meter "V" to Capacitor book TP-3 (L3-L) and Meter "COM" to Capacitor book TP-5 (RTN).
  - If you are using the short-circuit test tool option: Connect the meter "V" to test card 1.9V L3 LGA (blue jack). Meter COM to test card, either "COMMON RET (black jack).
2. Record resistance, call this resistance "1.9v L3 total resistance" 1.9v L3TR.
3. Enter recorded fail criteria \*, MLR, 1.9 vL3TR in the equation:  $1.9vL3TR - MLR > \text{Fail criteria}$ .
4. Is the left side of the equation greater than the right side?
  - **No:** Continue with the next step.
  - **Yes:** Is the left side of the equation greater than 1 Ohm?
    - **Yes:** Go to L3 cache testing, procedure 3 (See page 129).
    - **No:** Contact your next level of support.  
**This ends the procedure.**
5. Has this L3 been remove and reinstalled?
  - **No:** Remove the L3 cache module, and inspect the interposer for shorts. Continue with the next step.
  - **Yes:** Go to step 7 (See page 129).
6. Are shorts visible?
  - **No:** Reinstall the L3 cache module and go to step 2.
  - **Yes:** Reject the L3 cache module, install another L3 cache module (M03, M04, M09, M10) (M12, M13, M05, M06) (M22, M23, M28, M29) (M26, M27, M19, M20). Then, go to step 2 (See page 129).
7. Are all the memory and network interface controller (NIC) cards disengaged?
  - **Yes:** Reject the L3 cache module, install another L3 cache module (M03, M04, M09, M10) (M12, M13, M05, M06) (M22, M23, M28, M29) (M26, M27, M19, M20). Then, go to step 2 (See page 129).
  - **No:** Are all the memory disengaged?
    - **Yes:** Disengage one network interface controller (NIC) card (primary NIC card first, secondary NIC cards second), then go to step 2 (See page 129).
    - **No:** Disengage a memory book (memory are removed one at a time. Then, go to step 2 (See page 129).

### L3 cache shorts test, procedure 3

1. Choose from the following options:
  - If you are using the **new** capacitor book option: Connect the meter "V" to Capacitor book TP-4 (L3-D) and Meter "COM" to Capacitor book TP-5 (RTN).
  - If you are using the short-circuit test tool option: Connect meter V to test card 1.5v L3 LGA (white jack), and meter COM to test card either COMMON RET (black jack).
2. Record resistance, calling it 1.5v L3 total resistance (1.5vL3TR).
3. Enter recorded fail criteria \*, MLR, 1.5vL3TR in the equation:  $1.5vL3TR - MLR > \text{Fail criteria}$ .
4. Is the left side of the equation greater than the right side?
  - **No:** Continue with step 7 (See page 130).
  - **Yes:** Is the left side of the equation greater than 1 Ohm?
    - **Yes:** Go to L3 cache testing, procedure 4 (See page 130).
    - **No:** Continue with the next step.

5. Are all the memory and NIC cards disengaged?
  - **No:** Continue with the next step.
  - **Yes:** Do **not** power on the system. Contact your next level of support.  
**This ends the procedure.**
6. Are all the memory disengaged?
  - **No:** Disengage a memory book (memory is removed one at a time). Then, go to step 2 (See page 129).
  - **Yes:** Disengage one NIC card (primary NIC card first, secondary NIC cards second). Then, go to step 2 (See page 129).
7. Has this L3 been remove and reinstalled?
  - **No:** Remove the L3 cache module, and inspect the interposer for shorts. Continue with the next step.
  - **Yes:** Go to step 9 (See page 130).
8. Are shorts visible?
  - **No:** Reinstall the L3 cache module and go to L3 cache shorts test, procedure 2 (See page 129).
  - **Yes:** Reject the L3 cache module, install another L3 cache module. Then, go to L3 cache shorts test, procedure 2 (See page 129).
9. Are all the memory and NIC cards disengaged?
  - **Yes:** Reject the L3 cache module, install another L3 cache module. Then, go to L3 cache shorts test, procedure 2 (See page 129).
  - **No:** Are all the memory disengaged?
    - **Yes:** Disengage one NIC card (primary NIC card first, secondary NIC cards second), then go to step 2 (See page 129).
    - **No:** Disengage a memory book (memory are removed one at a time. Then, go to step 2 (See page 129).

#### **L3 cache shorts test, procedure 4**

1. Choose from the following options:
  - If you are using the **new** capacitor card option: Connect the meter "V" to Capacitor book TP-3 (L3-L) and Meter COM to Capacitor book TP-4 (L3-D).
  - If you are using the short-circuit test tool option: Connect the meter "V" to test card "1.9v L3 LGA" (blue jack), and meter "COM" to test card either "1.5V" (white jack).
2. Record the resistance reading on your meter while the leads are attached to the shorts test card. Call this resistance "1.9 to 1.5 L3 Total Resistance" (1.9/1.5L3TR).
3. Enter recorded 1.9/1.5L3TR, MLR, 1.9vL3TR, 1.5vL3TR in the equation:  $1.9/1.5L3TR - MLR > (1.9vL3TR - MLR + 1.5vL3TR - MLR - 0.4)$ .  
**Note:** The same equation in a different form:  $1.9/1.53T3 > (1.9vL3TR + 1.5vL3TR - MLR - 0.4)$ .
4. Is the left side of the equation greater than the right side?
  - **No:** Continue with the next step.
  - **Yes:** Are all the L3 cache modules installed?
    - **Yes:** Go to L3 cache testing, procedure 5 (See page 131).
    - **No:** Install another L3 cache module, and go to L3 cache testing, procedure 2 (See page 129).
5. Has this L3 been removed and reinstalled?
  - **No:** Continue with the next step.
  - **Yes:** Reject the L3 cache module, and install another L3 cache module. Then, go to L3 cache testing, procedure 2 (See page 129).
6. Remove the L3 cache module, and inspect the interposer for shorts.
7. Are shorts visible?

- **No:** Reinstall the L3 cache module and go to L3 cache testing, procedure 2 (See page 129).
- **Yes:** Reject the L3 cache module, and install another L3 cache module. Then, go to L3 cache testing, procedure 2 (See page 129).

### L3 cache shorts test, procedure 5

Do MCM modules need to be installed?

- **Yes:** Follow MCM installation shorts test, procedure 2 (See page 127).
- **No:** Remove the meter and test card, and return to the procedure that sent you here.  
**This ends the procedure.**

### Models 870 and 890 - System clock card

*For use by authorized service providers.*

Use this procedure to remove or replace the System clock card on the Models 870 and 890.

To remove the system clock card:

1. Power off the system. See “Power on/off the system and logical partitions” on page 561.
2. Remove the MSA (air mover) enclosure. See Models 870 and 890 - MSA (air mover) enclosure.
3. Squeeze the tabs on the clock card and pull it straight out.
4. Perform a general cleaning operation using a sash brush (part number 450732) and vacuum cleaner to remove any accumulated dust and debris that has settled in the processor subsystem. Hold the vacuum hose near the brush to remove any debris the brush generates.

To replace the system clock card:

**Note:** Be sure to align the guide feature on the card with the guide feature on the system board.

1. Squeeze the tabs on the clock card and push it straight in.
2. Replace the MSA (air mover) enclosure. See Models 870 and 890 - MSA (air mover) enclosure.
3. Power on the system. See “Power on/off the system and logical partitions” on page 561.  
**This ends the procedure.**

### Models 870 and 890 - System unit backplane (MB1)

*For use by authorized service providers.*

Use this procedure to remove or replace the system unit backplane - MB1 on the Models 870 and 890.

#### CAUTION:

**This unit weighs more than 55 kg (121.2 pounds). Material handling systems such as levers, slings, or lifts are required to safely move it. When this is not possible, specially trained persons or services (such as riggers or movers) must be used.**

To remove the system unit backplane - MB1:

**Attention:** All components must be replaced to the location from which they were removed! Before replacing the system unit backplane, check with your support center to ensure you have been directed to replace the backplane by a valid error code.

**Attention:** This procedure requires the following:

- A safe area reserved to store parts that are removed from the system during this procedure.
- The use of a lift tool, PN 09P2481 (see the Rack Lift Tool Operation and Maintenance



book, and lift place assembly tool, PN 11P4369.

- All components must be removed from the system unit backplane to reduce its weight to a minimum.
  - DCA books and DCA blanks
  - Capacitor books
  - Network interface controller (NIC) card
  - Memory books and memory blanks
  - Processor MSA (air mover) assembly
  - MCM modules (processor) and pass-through modules (remove the MCMs only if the chassis is to be replaced)
  - L3 modules (remove the L3 modules only if the chassis is to be replaced)
  - System clock card
- The lift tool wheels must be chocked to prevent it from moving during the operation. The frame must not be on its casters, the leveling pads must be engaged to prevent the frame from moving during the operation.
  1. Unpack the lift tool and follow assembly instructions included with the tool. Also, refer to the Rack Lift Tool Operation and Maintenance



book. Inspect the tool for damage (do not perform the remove procedure with a damaged lift tool). Read all safety instructions before performing this operation. Replace the blue lift plate with the orange lift plate. (PN 11P4369). Orient two round holes in lift plate to the side of the lift tool that will be closest to the frame.

2. Power off the system. See Power on/off the system and logical partitions.
3. Open the rack doors and remove them from the rack.
4. Verify that all cables are labeled. If not, then label all cables and components along with their location at the front and rear of the system.
5. Unplug all power cables from the line power source.

**Attention:** Because this procedure is performed with power removed from the system, references to using the white or green service buttons on the UEPO switch do not apply during the remainder of this procedure.
6. Unplug any cables attached to the Network interface controller (NIC) card and DCAs.
7. At the back of the system, remove the safety bars from the Network interface controller (NIC) card, using an allen wrench on the captive screws.
8. Remove the Network interface controller (NIC) card or cards. See Models 870 and 890 - Network interface controller (NIC) card.
9. Remove the DCAs and capacitor books (and blanks if applicable). See “Models 870 and 890 - DC converter assembly (DCA)” on page 98, and Models 870 and 890 - Capacitor books and blanks.
10. At the front of the system, remove the safety bars from the memory books and blanks.
11. Remove the memory books (and blanks if applicable). See Models 870 and 890 - Memory books and memory blanks.
12. Remove all the MSA assemblies. See Models 870 and 890 - Processor MSA (air mover) assembly.
13. Remove the MSA enclosure. See Models 870 and 890 - MSA (air mover) enclosure.
14. Remove the MCM modules. See Models 870 and 890 - MCM module (processor) and pass-through modules.
15. Remove the L3 modules. See Models 870 and 890 - L3 modules.
16. Remove the clock card. See Models 870 and 890 - System clock card.
17. Remove two frame extender mounting bolts from EIA position 17 (10mm bolt).



18. Remove the UEPO switch. See Models 870 and 890 - Unit emergency power off (UEPO) card assembly.
19. Remove the screws attaching the chassis to the vertical EIA rails at the front and rear, using an 8mm extension socket.  
**Note:** Rear screws also remove mounting brackets.
20. At the back of the system, remove the rear hold down brackets.
21. Position the lift tool at the front of the rack. Alight the lift tool such that the system unit backplane will not be blocked (at the lip of the orange lift plate) from removal. Install wheel chocks on the lift tool casters. Engage the lift tool brake.
22. Raise plate to height such that the lift plate is just below the base of the system unit backplane. Release pins on the lift plate and fully extend the center portion of the plate toward the system unit backplane and lock it in place. Release pins on the extender arms and position them on both left and right side, arms must fit around the frame extenders and lock in place (do not adjust the lift tool once these arms are locked in place).
23. One person should gently push the system unit backplane toward the tool from the rear of the system (do not bend vertical system unit backplane support bars). Two people should gently pull and guide the system unit backplane onto the lift plate. The system unit backplane must be removed far enough to clear the front face of the frame. Retract extender arms and center portion of lift plate.
24. Use tie down strap to hold the system unit backplane to the lift plate.
25. Lower system unit backplane to the bottom position of the lift tool.
26. Remove the wheel chocks and release the break. Flip the crank handle 180 degrees. Carefully move the lift tool with the system unit backplane to the staging area. The brake and wheel chocks must be in place when transferring the system unit backplane chassis to or from the packaging material.

To replace the system unit backplane - MB1:

**Attention:** Look for small amounts of debris on the connecting surfaces between the backplane and the processor module. Mating the two surfaces is critical for the processor to function properly.

1. Position the lift tool such that the new system unit backplane chassis can be moved onto the lift plate.
2. Install the wheel chocks and engage the brake.
3. Move the new system unit backplane onto the tool with the rear side flush with the lift plate. Strap the system unit backplane to the lift plate using the down strap.
4. Position the lift tool as close as possible to the front of the rack.
5. Raise the lift tool until it is even with the rails.
6. Remove the tie down strap. One person should gently pull the system unit backplane into the frame from the rear of the system (do not bend vertical system unit backplane support bars). Two people should gently push and guide the system unit backplane into the frame. Adjust the height of the lift plate, as needed.
7. After the system unit backplane is installed in the frame, lower the lift plate and remove it from the lift tool, repackage the lift tool.
8. Reinstall all components removed during the removal process by reversing steps 21 through the beginning of the removal procedure.

**This ends the procedure.**

## **Models 870 and 890 - Unit Emergency Power Off (UEPO) card assembly**

*For use by authorized service providers.*

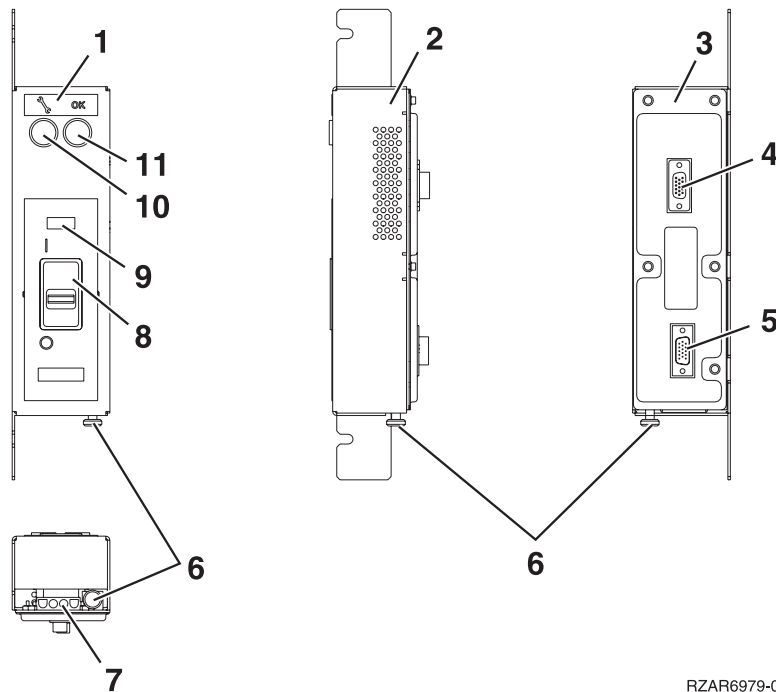
Use this procedure to remove or replace the Unit Emergency Power Off (UEPO) card assembly on the Models 870 and 890.

To remove the Unit Emergency Power Off (UEPO) card assembly:

1. Locate the faulty UEPO switch on the system.

2. Press the (green) **Start Service** button (number 10 in figure 1) on the UEPO assembly.
3. Switch the UEPO bypass switches on both BPCs to the **Bypass** position (to the right).

**Figure 1. UEPO card assembly**



RZAR6979-0

4. Ensure that the red switch (number 8 in figure 1) on the front of the EPO panel is in the **ON** position.
5. Loosen, but do not remove, the two 8mm M5 mounting screws. Slide the assembly forward and away from the frame.
6. Verify that all cables (numbers 4, 5, and 7 in figure 1) are labeled for plug location and then unplug the cables from the UEPO card assembly.

To replace the Unit Emergency Power Off (UEPO) card assembly:

1. Plug all cables (numbers 4 and 5 in figure 1) to the UEPO card assembly, ensuring that the plug location and the cable label agree.
2. Place the assembly over the two 8mm M5 screws, then, slide it back and tighten the screws.
3. Install the external cable, if required, to connector J2 (number 7 in figure 1).
  - If the external EPO connection is installed, the internal toggle switch (number 6 in figure 1) is mechanically forced into the ROOM EPO ACTV position (to the right).
  - If there is no external EPO cable, manually set the internal toggle switch (number 6 in figure 1) to the ROOM EPO BYPASS position (by pulling the knob to the left).
4. Ensure that the red UEPO switch (number 8 in figure 1) on the front of the UEPO panel is on (up position).
5. Switch the UEPO BYPASS switches on both BPC's back to **NORMAL** mode.
6. Press the (white) **Service Complete** button (number 11 in figure 1) on the UEPO switch to indicate completion of this procedure.

**This ends the procedure.**

## Models 870 and 890 - VPD card

*For use by authorized service providers.*

Use this procedure to remove or replace a VPD card on the Models 870 and 890.

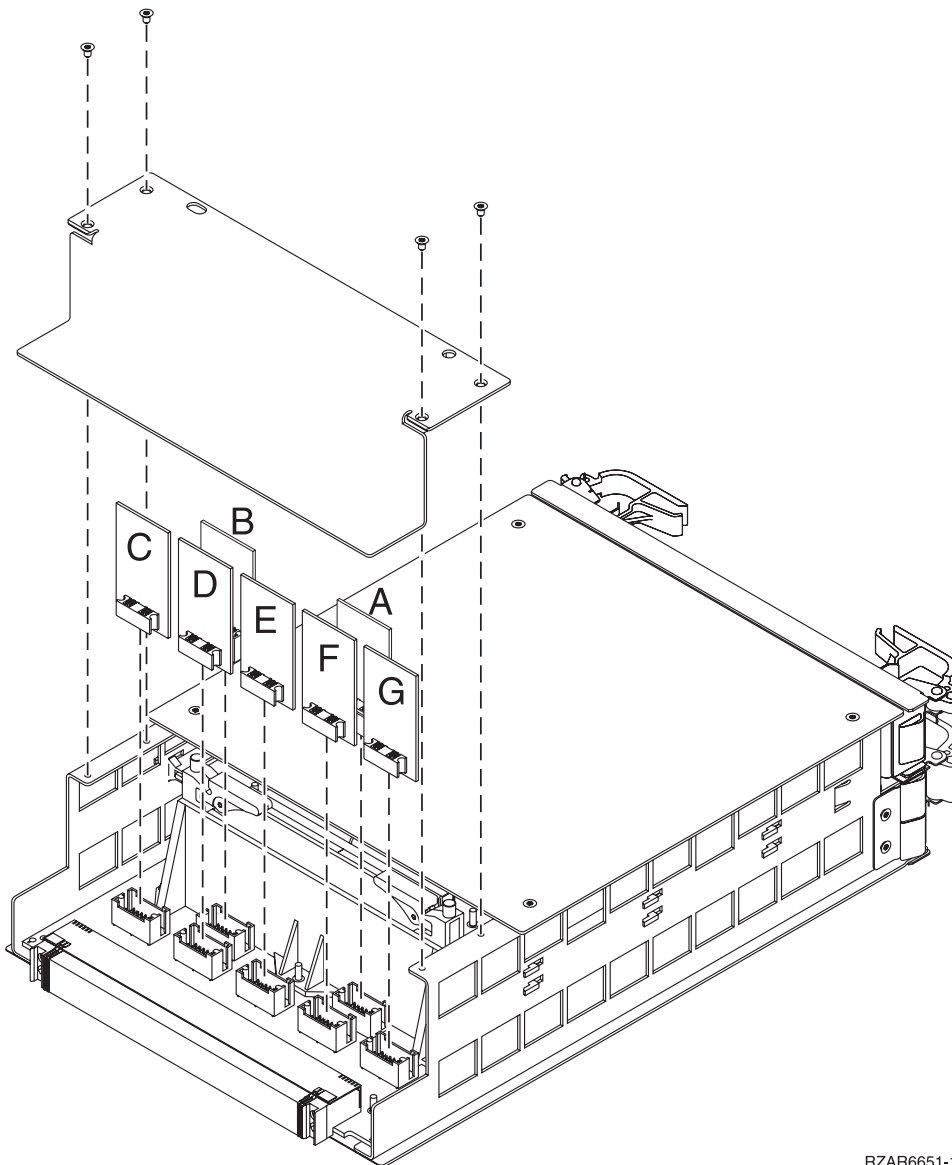
**Note:** The MCM module and its associated VPD card are a single field replaceable unit (FRU), and must be replaced as a set. There is only one VPD card for all of the L3 modules. Replacing any L3 module requires replacing the associated VPD card.

To remove or replace the VPD card:

**Note:** The VPD cards are located in the primary network interface controller (NIC) card.

1. Remove the primary NIC card. See the Models 870 and 890 - Network interface controller (NIC) card remove and replace procedure.
2. Use a T10 torx screw to remove the short cover near the connectors.

**Figure 1. VPD card**



RZAR6651-1

The letters in Figure 1. above correlate to the following cards:

- A = Processor capacity card
- B = Interactive card
- C = L3 VPD
- D = 8-way VPD

- E = 16-way VPD
  - F = 24-way VPD
  - G = 32-way VPD
3. Locate the card that must be replaced.
  4. Remove the card, and if it is a VPD card, the associated MCM or L3 modules.
  5. Replace the card in reverse order (and if it is a VPD card, the new MCM or L3 modules).
  6. Perform a manual IPL to DST. If the system stops at the System Password Required screen, DO NOT BYPASS. Contact your next level of support to obtain a System Password and enter it on this screen.  
**Note:** DST/SST options to activate POD will not be visible if the system password has been bypassed.
  7. If you are replacing a processor capacity card that was associated with processor-on-demand (POD) processor features, perform the following:
    - a. Contact your second level of support to determine if a POD activation code is required to reset previously activated on-demand processors.
    - b. If necessary, a new POD activation code will need to be generated and then entered at the server.
    - c. After entering a POD activation code, 30 minutes should elapse before an IPL is performed to ensure the POD activation code has been saved.  
**Attention:** The POD activation code or codes **must** be entered within 48 hours or an SRC A6XX 47XX will be posted in the panel requiring an IPL and, or LPAR configuration adjustments.
  8. Return to the procedure that sent you here.  
**This ends the procedure.**

## **FC 5074, FC 5079, FC 8079, FC 9074, FC 9079 remove and replace procedures**

*For use by authorized service providers.*

**FC 5074, FC 5079, FC 9079 (with single line cord) - AC charger - A01**

**FC 5074, FC 5079, FC 9079 (with dual line cord) - AC module - A01 and A02**

**FC 5074, FC 5079, FC 9074, FC 9079 - Air moving device - B01 and B02**

**FC 5074, FC 5079, FC 9079 - Batteries - T01, T02, T03, and T04**

**FC 5074, FC 5079, FC 5094, FC 5294 - Cards (concurrent)**

**FC 5074, FC 5079, FC 5094, FC 5294 - Cards (dedicated)**

**FC 5074, FC 5079, FC 5094, FC 5294, FC 9079, FC 9094 - Covers**

**FC 5074, FC 5079, FC 9079 - Device board - DB1 and DB2**

**FC 5074, FC 5079, FC 9079 - Device board - DB3**

**FC 5074, FC 5079 - Disk unit (concurrent)**

**FC 5074, FC 5079 - Disk unit (dedicated)**

**FC 5074, FC 5079 - Display panel - NB1**

**FC 5074, FC 5079, FC 9079 - Power distribution board - PB1**

**FC 5074, FC 5079, FC 9074, FC 9079 - Power supply - P01, P02, and P03**

## **FC 5074, FC 5079, FC 9079 - Removable media - D41 and D42**

## **FC 5074, FC 5079, FC 9079 - Tower card - CB1**

## **FC 5074, FC 5079, FC 9079 (single line cord) - AC charger - A01**

*For use by authorized service providers.*

Use this procedure to remove or replace the AC charger - A01 in the FC 5074, FC 5079, or FC 9079 (with single line cord).

To remove or replace the AC charger - A01:

1. Power off the expansion tower. See the Expansion unit power procedure.
2. Disconnect the incoming ac power cord from the expansion tower.
3. Open the rear cover. See FC 5074, FC 5079, FC 5094, FC 5294, FC 9079, FC 9094 - Covers.
4. Disconnect all the power cords from the battery charger.
5. Remove the screws that are holding the charger to the frame.
6. Remove the battery charging unit.
7. Install the battery charger by reversing the removal procedure. After exchanging an item, go to Verify the repair.

**This ends the procedure.**

## **FC 5074, FC 5079, FC 9079 (with dual line cord) - AC module - A01 and A02**

*For use by authorized service providers.*

Use this procedure to remove or replace the AC module - A01 and A02 in an FC 5074, FC 5079, and FC 9079 (with dual line cord).

To remove or replace the AC module - A01 and A02:

1. Do not power down the tower if it is powered on, this procedure can be done concurrently.
2. Open the rear cover. See FC 5074, FC 5079, FC 5094, FC 5294, FC 9079, FC 9094 - Covers.
3. Refer to Locations - FC 5074 for location and address information.
4. Trace the ac input line cord that connects to the AC module that needs replacing and disconnect that ac line cord.

**Attention:** Do not disconnect the other system ac line cord when powered on.

5. Disconnect the power supply jumper cords from the AC module that you are working on.

**Attention:** Do not disconnect the other system AC module power supply jumper cords.

6. Remove the top and bottom screws that hold the AC module to the frame.
7. Remove the AC module unit.
8. Install the AC module by reversing the removal procedure. After exchanging an item, go to Verify the repair.

**This ends the procedure.**

## **FC 5074, FC 5079, FC 9074, FC 9079 - Air moving device - B01 and B02**

*For use by authorized service providers.*

Use this procedure to remove or replace the air moving device (AMD) - B01 and B02 in an FC 5074/5079, FC 9074, or FC 9079.

To remove or replace the air moving device (B01 and B02):

1. Do not power down the tower if it is powered on. This procedure can be done concurrently.
2. Open the rear cover. See FC 5074, FC 5079, FC 5094, FC 5294, FC 9079, FC 9094 - Covers.

3. Remove the EMC access plate located directly above the PCI card enclosure. Press the surfaces of the two latches together and tilt the top of the cover away from the frame to remove it.
4. Remove the screw from the AMD door assembly for the AMD that you are replacing.
5. Remove the AMD assembly by sliding it out of the enclosure, while holding the AMD access plate open.
6. Install the AMD by reversing the removal procedure.  
**Note:** The new AMD will automatically power on when it is installed.
7. After exchanging an item, go to “Verify the repair” on page 558.  
**This ends the procedure.**

## **FC 5074, FC 5079, FC 9079 - Batteries - T01, T02, T03, and T04**

*For use by authorized service providers.*

Use this procedure to remove or replace the batteries - T01, T02, T03, and T04, on the FC 5074, FC 5079, or FC 9079.

**Attention:** Do not power down the expansion unit if it is powered on (indicated by the green panel light). This procedure can be done concurrently.

To remove or replace batteries (T01, T02, T03, and T04):

1. Open the rear cover. See FC 5074, FC 5079, FC 5094, FC 5294, FC 9079, FC 9094 - Covers.
2. **Attention:** Removing the battery power unit while the system is running on battery power will cause the system to fail and may damage the battery power unit and the PCI card enclosure. (If the console will accept commands, the system is not running on battery power.) Remove the battery power unit by performing the following:

**CAUTION:**

**Be careful when removing or installing this part or unit. This part or unit is heavy, but has a weight smaller than 18 kilograms (39.7 pounds). (RSFTC201)**

3. Remove the screws from the EMC access plate that is covering the batteries.
4. Remove the EMC access plate from the battery enclosure.
5. Remove the top and bottom screws from the battery unit.
6. Remove the battery power unit by pulling on the ring with two hands.

**CAUTION:**

**The battery is a lead-acid battery. To avoid possible explosion, do not burn. Exchange only with the IBM-approved part. Recycle or discard the battery as instructed by local regulations.**

**In the United States, IBM has a process for the collection of this battery. For information, call 1-800-426-4333. Have the IBM part number for the battery unit available when you call. (RSFTC225)**

7. Install the battery power unit by reversing the removal procedure. After exchanging an item, go to Verify the repair.  
**This ends the procedure.**

## **FC 5074, FC 5079, FC 5094, FC 5294 - Cards (concurrent)**

*For use by authorized service providers.*

Use this procedure to remove or replace cards concurrently in the FC 5074, FC 5079, FC 5094, FC 5294.

### **Concurrent/dedicated guidelines for FC 5074, FC 5079, FC 5094, FC 5294**

In some cases you do not need to power down the system to change PCI cards. Use the following guidelines to determine if you should use dedicated or concurrent remove and replace procedures. If you

use concurrent maintenance on a partitioned system, follow the procedures from the partition that owns the resource. If the resource is not owned, follow the procedure from the primary partition.

#### **For FC 5074, FC 5079, FC 5094, or FC 5294 IXS cards:**

The IXS cards require dedicated maintenance. Do NOT power down the individual card slot. You can power down the FC 5074 tower, or the top or bottom half of an FC 5079 or FC 5294 tower. See FC 5074, FC 5079, FC 5094, FC 5294 - Cards (dedicated)

#### **For FC 5074, FC 5079, FC 5094, or FC 5294 cards - except IXS cards:**

- Card positions that permit card level concurrent maintenance using HSM:
  - **For FC 5074 or FC 5079:** Card positions C01 through C07 and C09 through C15 permit card level concurrent maintenance using HSM. You can power down the individual card slot.
  - **For FC 5094 or FC 5294:** Card positions C01 through C09, and C11 through C15 permit card level concurrent maintenance using HSM. You can power down the individual card slot.
- If the resource is the load source IOA or the load source IOP, or any other storage IOA/IOP with critical DASD attached for the system, primary, or secondary partition, follow the on-screen instructions when you use HSM to power down the IOP or IOA. Instructions to use functions 68 and 69 on the control panel will be included.
- If the resource is the console IOA or the console IOP for the system or primary partition, you cannot power down the domain.
- If the resource is the console IOA or the console IOP for a secondary partition, then power down the secondary partition and follow the procedure from the primary partition.

#### **CAUTION:**

**The circuit card contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the circuit card as instructed by local regulations. (RSFTC234)**

**Attention:** All cards are sensitive to electrostatic discharge (see Work with electrostatic discharge-sensitive parts).

To remove cards concurrently:

1. On the command line, enter the Start System Service Tools command:

```
STRSST
```

If you cannot get to SST, select DST (see Accessing Dedicated Service Tools (DST) in the *iSeries Service Functions*



book).

**Attention: Do not perform a system IPL to get to DST.**

2. Select **Start a Service Tool** —> **Hardware Service Manager** —> **Packaging hardware resources**.
3. Select **Hardware contained within package** for the Frame ID that contains the IOA or IOP that you are removing.
4. Find the card position for the IOA or IOP that you are removing and select **Concurrent maintenance**.
5. A listing of the power domain is shown. Select the **Power off domain** function key. Everything within the IOA's or IOP's power domain will be powered off .
6. To see the status of the power domain, select the **Display power states** function key.
7. Find the IOA or IOP that you are removing and select **Toggle LED blink off/on**.
8. Remove the cover to access the card that you are removing from the system. See FC 5074, FC 5079, FC 5094, FC 5294, FC 9079, FC 9094 - Covers.

9. Remove the EMC access plate that is located directly above the card enclosure. Press the two latching mechanisms together and tilt the top of the cover away from the frame to remove it.
10. Look at the power LED for the card that you are removing to ensure that it is powered off. The power LED is located to the left of and directly above the card slot. If the LED is blinking multiple times per second (rapidly) or it is off, then the card is powered off.
11. Disconnect and label any cables from the card that you wish to remove.
12. Turn the latch counter clockwise and lift upward on the black latch to release the card.
13. Gently pull the card off the backplane.  
**This ends the procedure.**

To replace cards concurrently:

1. Install the card in to the system by reversing the card removal procedure above.
2. Select the **Power on domain** function key for the IOA or IOP that you are installing.  
**Note:** To the right of the description field you will see one or both of the following symbols displayed.

Symbol	Indication
*	Indicates the location to which the system will assign the resource.
>	Indicates the location to which the resource was last assigned.

3. Press **Enter**. The Work with Controlling Resource display will appear.
4. Determine the location where you want to assign the resource and select **Assign to** for that location.
5. Wait for the Hardware Resource Concurrent Maintenance display to appear with the message indicating that the power on is complete.
6. After exchanging an item, go to Verify the repair.

**Note:** If you have exchanged a 2766 or 2787 Fibre Channel IOA, the IBM 2105 disk unit subsystem must be updated to use the World-Wide Port-Name of the new 2766 or 2787 IOA. This name can be found in the Port worldwide name field on the iSeries server by displaying detail on the 2766 or 2787 IOA Logical Hardware Resource information in Hardware Service Manager in SST/DST.

The 16-digit World-Wide Port-Name can also be determined by appending the digits "1000" to the beginning of the 12-digit IEEE Address found on the tailstock label of the Fibre Channel IOA. Use the *ESS Web Interface User's Guide* (SC26-7346) to update the World-Wide Port-Name in the host configuration on the IBM 2105 ESS. The *ESS Web Interface User's Guide* can also be found at the following URL: <http://ssddom02.storage.ibm.com/disk/ess/documentation.html>

**This ends the procedure.**

## **FC 5074, FC 5079, FC 5094, FC 5294 - Cards (dedicated)**

*For use by authorized service providers.*

Use this procedure to remove or replace cards using dedicated maintenance in an FC 5074, FC 5079, FC 5094, or FC 5294.

In some cases, you do not need to power down the system to change PCI cards. Use the guidelines in FC 5074, FC 5079, FC 5094, FC 5294 - Cards (concurrent) to determine if you should use dedicated or concurrent remove and replace procedures.

### **CAUTION:**

**The circuit card contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the circuit card as instructed by local regulations. (RSFTC234)**

**Attention:** All cards are sensitive to electrostatic discharge (see "Work with electrostatic discharge-sensitive parts" on page 585).

To remove or replace the cards (dedicated):



1. Power off the expansion unit. See the Expansion unit power procedure.
2. Remove the ac power cord from the frame that you are working on.
3. Remove the cover to access the card that you are removing from the system. See FC 5074, FC 5079, FC 5094, FC 5294, FC 9079, or FC 9094 - Covers.
4. Remove the EMC access plate that is located directly above the card enclosure. Press the two latching mechanisms together and tilt the top of the cover away from the frame to remove it.
5. Disconnect and label any cables from the card that you wish to remove.
6. If you are removing an IXS card, then go to Type 2890 or 2892 - Integrated xSeries Server (IXS).
7. Turn the latch counter clockwise and lift upward on the black latch to release the card.
8. Gently pull the card off the backplane.
9. Reverse this procedure to replace the card. After exchanging a failing item, go to Verify the repair.

**Note:** If you have exchanged a 2766 or 2787 Fibre Channel IOA, the IBM 2105 disk unit subsystem must be updated to use the World-Wide Port-Name of the new 2766 or 2787 IOA. This name can be found in the Port worldwide name field on the iSeries by displaying detail on the 2766 or 2787 IOA Logical Hardware Resource information in Hardware Service Manager in SST or DST.

The 16-digit World-Wide Port-Name can also be determined by appending the digits "1000" to the beginning of the 12-digit IEEE Address found on the tailstock label of the Fibre Channel IOA. Use the *ESS Web Interface User's Guide* (SC26-7346) to update the World-Wide Port-Name in the host configuration on the IBM 2105 ESS. The *ESS Web Interface User's Guide* can also be found at the following URL: <http://ssddom02.storage.ibm.com/disk/ess/documentation.html>

**This ends the procedure.**

## **FC 5074, FC 5079, FC 5094, FC 5294, FC 9079, FC 9094 - Covers**

*For use by authorized service providers.*

Use this procedure to remove or replace covers on the FC 5074, FC 5079, FC 5094, FC 5294, FC 9079, FC 9094.

**Note:** The front and rear covers will swing open a little more than 90 degrees. This makes it possible to replace all FRUs, without having to remove the covers.

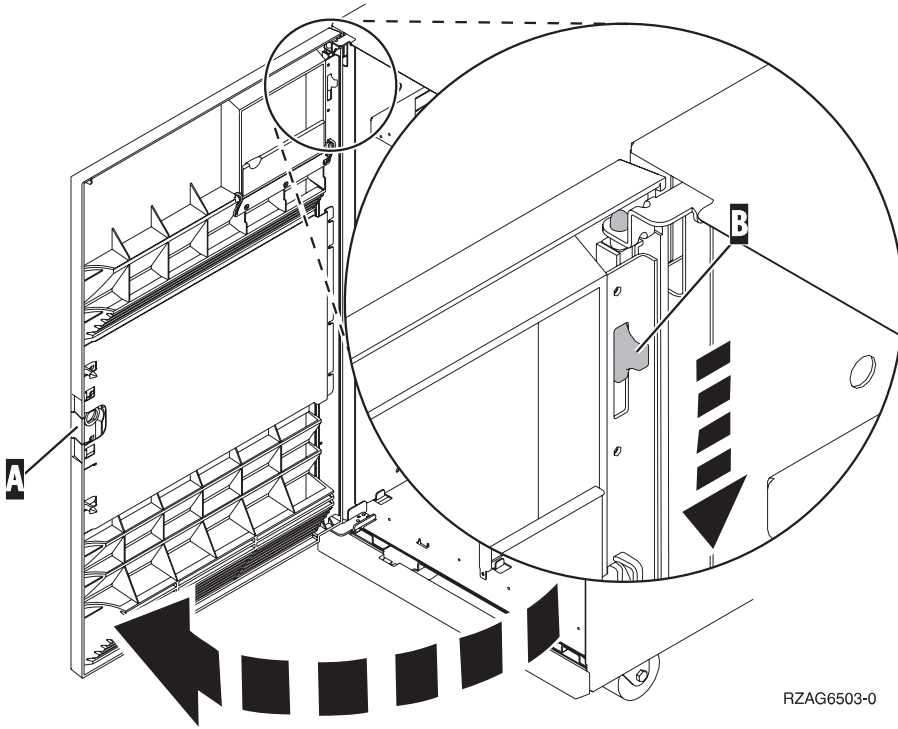
- To open or remove the front cover, refer to Figure 1. Front cover - removal (See page ) below.
- To open or remove the rear cover, refer to Figure 2. Rear cover - removal (See page ) below.

Perform the following steps to open or remove each cover.

1. Unlock the cover (front only).
2. Open the cover by grasping its right side and pulling it towards you.
3. After opening the cover, press down on lever **B**, which is located inside along the top, left side of the cover.
4. Tilt the top of the cover away from the tower, and lift the cover off.

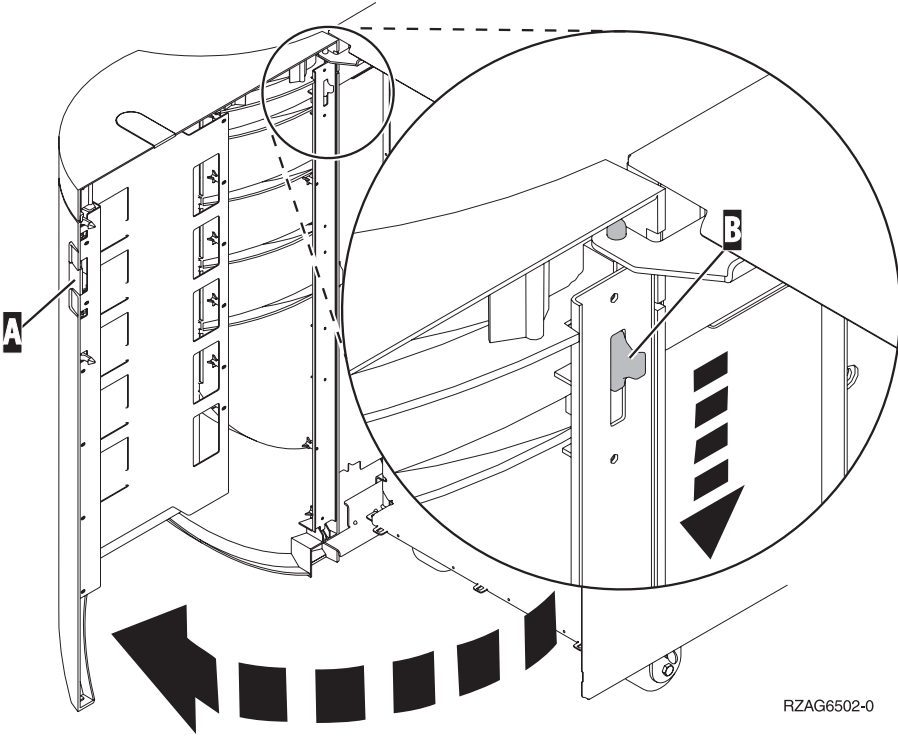
**This ends the procedure.**

**Figure 1. Front cover - removal**



RZAG6503-0

**Figure 2. Rear cover - removal**



RZAG6502-0

**FC 5074, FC 5079, FC 9079 - Device board - DB1 and DB2**

*For use by authorized service providers.*

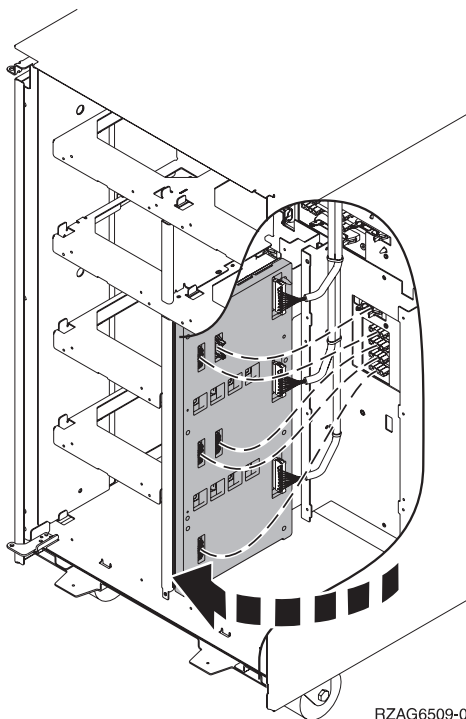
Use this procedure to remove or replace the device board - DB1 and DB2 in an FC 5074, FC 5079, or FC 9079.

To remove or replace the device board (DB1 and DB2):

1. Power off the expansion tower (see Power on/off the system and logical partitions).
2. Disconnect the power cord from the expansion tower.
3. Open the front cover. See FC 5074, FC 5079, FC 5094, FC 5294, FC 9079, FC 9094 - Covers.
4. From the front of the expansion tower, do the following:
  - a. Remove the EMC access plates from the disk unit enclosures that are located in front of the backplane that you are replacing. (For location information, see Locations — FC 5074 Expansion I/O Tower.) Press the surfaces of the two latching mechanisms together and tilt the top of the cover away from the frame to remove it.
  - b. Record the locations of the disk units and then remove them from the disk unit enclosures that you just uncovered.  
**Attention:** The disk units are sensitive to electrostatic discharge (see Work with electrostatic discharge-sensitive parts).
  - c. Remove the screws that hold the disk unit cage assembly to the frame.
  - d. Remove the two retaining screws that are located inside of the disk unit cage assembly (the top right and bottom left corners).
  - e. Remove the disk unit cage assemblies.
  - f. Remove the screws that hold the DASD shelf to the frame.
  - g. Remove the DASD shelf from the frame.
5. Remove the retaining screw that is holding the DASD board assembly to the frame.
6. Pull the DASD board assembly out until it slides off the guide pins, then rotate the DASD board assembly 90 degrees. Note the locations of the cables that are located on the backside of the board assembly, and then remove them.

**Note:** Both ends of the ribbon cables are marked **LH** or **RH**, indicating that one end of the cable is plugged in to either the left-hand (DB1) or right-hand (DB2) DASD board assembly. The other end of the cable is plugged in to either the left-most (LH) or right-most (RH) DASD controller card. The cables will crisscross in the center of the tower.

**Figure 1. Device board cabling**



7. Remove the DASD board assembly.
8. Install the DASD board assembly by reversing the removal procedure. After exchanging an item, go to Verify the repair.  
**This ends the procedure.**

## **FC 5074, FC 5079, FC 9079 - Device board - DB3**

*For use by authorized service providers.*

Use this procedure to remove or replace the device board - DB3 in an FC 5074, 5079, or 9079.

To remove or replace the device board (DB3):

1. Power off the expansion tower (see Power on/off the system and logical partitions).
2. Disconnect the power cord from the expansion tower.
3. Open the rear cover. See FC 5074, FC 5079, FC 5094, FC 5294, FC 9079, FC 9094 - Covers.
4. From the rear of the expansion tower do the following:
  - a. Remove the EMC access plate that is located directly above the tower card enclosure. Press the surfaces of the two latching mechanisms together and tilt the top of the cover away from the frame to remove it.
  - b. Remove the cables from the disk unit controller cards (IOAs) that are located inside the PCI card enclosure and note their locations.  
**Note:** Both ends of the ribbon cables are marked **LH** or **RH**, indicating that one end of the cable is plugged in to either the left-hand (DB1) or right-hand (DB2) DASD board assembly. The other end of the cable is plugged in to either the left-most (LH) or right-most (RH) DASD controller card. The cables will crisscross in the center of the tower.
  - c. Remove the screws that hold the tower card enclosure to the frame.
  - d. Pull the tower card enclosure partially out of the frame while lifting the cables clear of the enclosure.
  - e. Press the release mechanism that is located along the top right side of the enclosure and carefully slide the enclosure towards you. Make sure that the cables are clear of the enclosure.
  - f. Remove the tower card enclosure from the frame.
  - g. Remove the screws from the EMC access plate that is located inside the frame and directly above the power distribution board.
  - h. Remove the EMC access plate.
  - i. Reach through the opening and remove the cables from the backside of the base DASD board assembly (DB3).
5. Open the front cover. See FC 5074, FC 5079, FC 5094, FC 5294, FC 9079, FC 9094 - Covers.
6. From the front of the expansion tower do the following:
  - a. Note the removable media locations and then remove them by pulling out on the handles that are located on each side of the unit.
  - b. Remove the control panel by pulling on the handles that are located on each side of the unit and sliding it partially out of the tower. Then, unplug the cable from the rear of the control panel. (See FC 5074, FC 5079 - Control panel - NB1.)
  - c. Unplug the control panel cable from the base DASD board assembly (DB3).
  - d. Remove the two retaining screws that are located inside of the removable media enclosure (the top right and lower left corners).
  - e. Remove the removable media enclosure.
  - f. Remove the EMC access plates from the disk unit enclosures that are located in front of the backplane (DB3). For location information, see Locations - FC 5074 Expansion I/O Tower. Press the surfaces of the two latching mechanisms together and tilt the top of the cover away from the frame to remove it.

- g. Record the disk unit locations and then remove them from the disk unit enclosures that you just uncovered.
 

**Attention:** The disk units are sensitive to electrostatic discharge (see Work with electrostatic discharge-sensitive parts).
  - h. Remove the screws that hold the disk unit enclosures to the frame.
  - i. Remove the retaining screws that are located inside the disk unit enclosure.
  - j. Remove the disk unit enclosures.
  - k. Remove the screws that hold the center support bracket and shelf for the disk unit and removable media enclosure to the frame.
  - l. Remove the support bracket and shelf.
  - m. Remove the base DASD board assembly (DB3).
7. Install the base DASD board assembly by reversing the removal procedure. After exchanging an item, go to Verify the repair.
- This ends the procedure.**

### **FC 5074, FC 5079 - Disk unit (concurrent)**

*For use by authorized service providers.*

Use this procedure to remove or replace the disk unit (concurrently) in an FC 5074 or FC 5079.

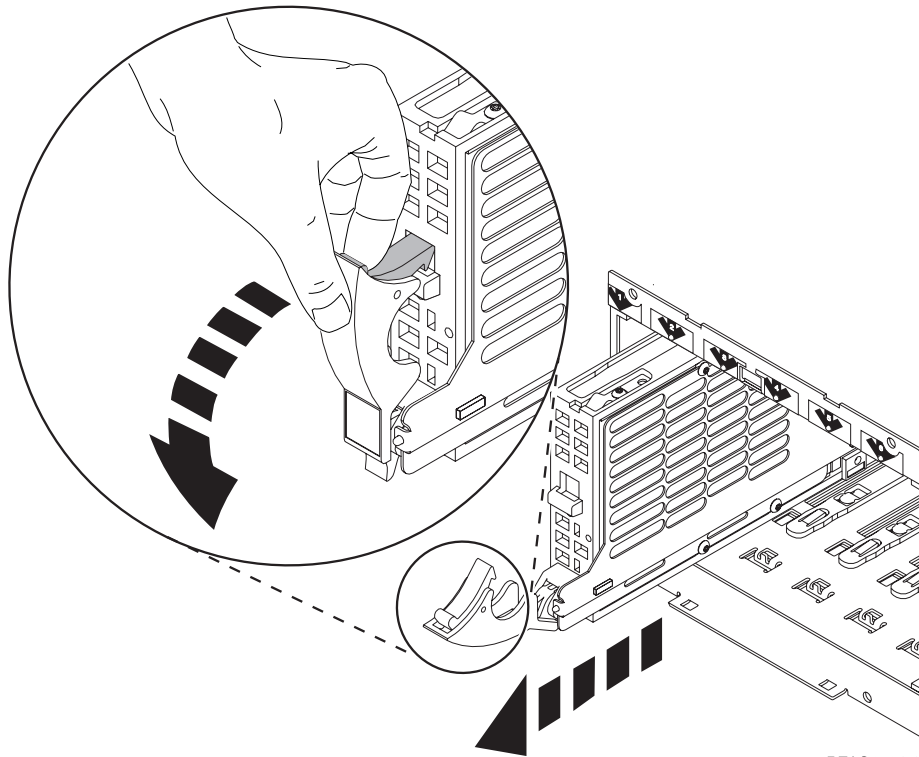
**Attention:** The disk unit is sensitive to electrostatic discharge (see Work with electrostatic discharge-sensitive parts).

To remove or replace the disk unit (concurrent):

1. Determine if the system has logical partitions. Go to Determine if the system has logical partitions before continuing with this procedure.
2. Were you directed here from the Recovery procedures topic?
  - **No:** Go to “Recovery procedures” on page 539.
  - **Yes:** After you have determined the location of the disk unit to replace, remove the front covers for access. See FC 5074, FC 5079, FC 5094, FC 5294, FC 9079, FC 9094 - Covers.
3. Remove the EMC access plate that is over the location of the disk unit that you are removing.
4. Remove the disk unit by performing the following:
  - a. Select System Service Tools (SST). If you cannot get to SST, select DST.
 

**Do not perform a system IPL to get to DST.**
  - b. Select **Start a Service Tool** —> **Hardware Service Manager**.
  - c. Select **Device Concurrent Maintenance** and enter the required information in the information fields.
  - d. Press Enter on the console. After the delay time, the light above the device location will begin flashing. You now have 9 seconds to pinch the two surfaces of the latching mechanism together and rotate the handle of the disk unit towards you. Pull the disk unit partially out of the tower. The light above the device location will go off and remain off as soon as the device is no longer making contact with the backplane.
 

**Attention:** If you remove the device when the light is not flashing, data may be lost, the disk unit may be damaged, or the backplane may be damaged.



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Wait another 5 seconds to allow time for the disk to stop spinning. Then pull the disk unit the remaining way out of the tower.

5. Are you finished with the repair?
  - **No:** Continue with the next step.
  - **Yes:** Replace the covers that were removed during this procedure and return to the procedure that sent you here.

**This ends the procedure.**
6. Install the disk unit by performing the following:
  - a. Select System Service Tools (SST). If you cannot get to SST, select DST.  
**Do not perform a system IPL to get to DST.**
  - b. Select **Start a Service Tool**—>**Hardware Service Manager**.
  - c. Select **Device Concurrent Maintenance** and enter the required information in the information fields.  
**Attention:** Do not press Enter at this time.
  - d. Slide the unit half-way into the tower. Ensure that the device does not make contact with the backplane at this time.
  - e. Press Enter on the console. After the delay time, the light above the device location will begin flashing . You now have 9 seconds to insert the disk unit. Put the disk unit part way into the desired slot and rotate the handle of the disk unit towards you. Then push the disk unit completely into the slot and rotate the handle towards the disk unit to latch it into the slot. The light above the device location will go off and remain off for a few seconds when the device contacts the backplane. Then it should go on and remain on.  
**Attention:** If you install the device when the light is not flashing, data may be lost, the disk unit may be damaged, or the backplane may be damaged.
  - f. Replace the covers that were removed during this procedure and return to the procedure that sent you here.  
**This ends the procedure.**

## FC 5074, FC 5079 - Disk unit (dedicated)

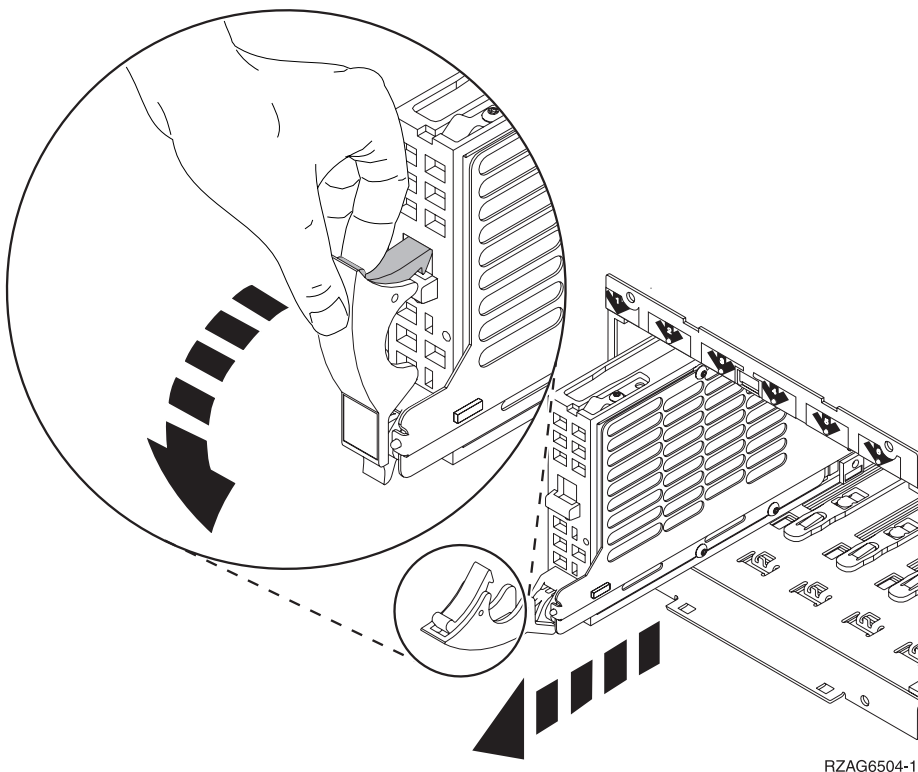
*For use by authorized service providers.*

Use this procedure to remove or replace the disk unit (dedicated) in an FC 5074 or FC 5079.

**Attention:** The disk unit is sensitive to electrostatic discharge (see Work with electrostatic discharge-sensitive parts).

To remove or replace the disk unit (dedicated):

1. Determine if the system has logical partitions. Go to Determine if the system has logical partitions before continuing with this procedure.
2. Were you directed here from the Recovery procedures topic?
  - **No:** Go to Recovery procedures.
  - **Yes:** After you have determined the location of the disk unit to replace, remove the front covers for access. See FC 5074, FC 5079, FC 5094, FC 5294, FC 9079, FC 9094 - Covers.
3. Remove the EMC access plate that is over the location of the disk unit that you are removing. For location information, see Locations — FC 5074 I/O tower.
4. Remove the disk unit by performing the following:
  - a. Power off the system (see Power on/off the system and logical partitions).
  - b. Disconnect the power cord.
  - c. Pinch the two surfaces of the latching mechanism together and pull the handle towards you to release the disk unit from the slot.
  - d. Remove the unit from the tower.



5. Are you finished with the repair?
  - **No:** Continue with the next step.

- **Yes:** Replace the covers that were removed during this procedure and return to the procedure that sent you here.

**This ends the procedure.**

6. Install the disk unit by performing the following:
  - a. Power off the system (see Power on/off the system and logical partitions).
  - b. Disconnect the power cord.
  - c. Put the disk unit part way into the desired slot and rotate the handle of the disk unit towards you.
  - d. Push the disk unit completely into the slot and rotate the handle towards the disk unit to latch it into the slot.
  - e. Replace the covers that were removed during this procedure and return to the procedure that sent you here.

**This ends the procedure.**

## **FC 5074, FC 5079 - Display panel - NB1**

*For use by authorized service providers.*

Use this procedure to remove or replace the display panel - NB1 in an FC 5074 or FC 5079.

**Attention:** The display panel is sensitive to electrostatic discharge (see Work with electrostatic discharge-sensitive parts).

To remove or replace the display panel - NB1:

1. Power off the expansion tower. See the Expansion unit power procedure.
2. Disconnect the ac power cord from the expansion tower.
3. Open the front cover. See FC 5074, FC 5079, FC 5094, FC 5294, FC 9079, FC 9094 - Covers.
4. Pull on the two side fasteners to release the display panel assembly.
5. Slide the panel partially out of the frame.
6. Disconnect the cables that are attached to the backside of the display panel.
7. Remove the display panel from the frame.
8. Reverse the above procedure to install the new panel.
9. After exchanging an item, go to Verify the repair.

**This ends the procedure.**

## **FC 5074, FC 5079, FC 9079 - Power distribution board - PB1**

*For use by authorized service providers.*

Use this procedure to remove or replace the power distribution board - PB1 in an FC 5074, FC 5079, or FC 9079.

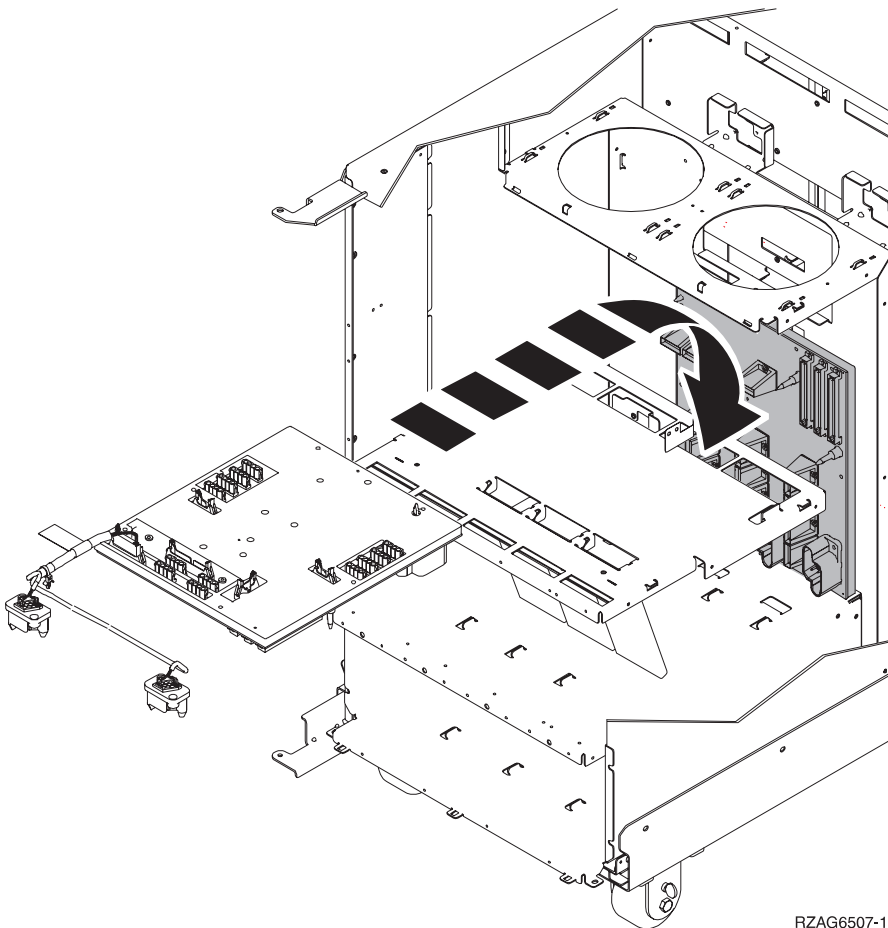
To remove or replace the power distribution board - PB1:

1. You must remove both disk unit backplanes (DB1 and DB2). Perform FC 5074, FC 5079, FC 9079 - Device board - DB1 and DB2 for each backplane. Continue with the next step.
2. From the rear of the expansion tower, do the following:
  - a. Open the rear cover. See FC 5074, FC 5079, FC 5094, FC 5294, FC 9079, FC 9094 - Covers.
  - b. Remove the EMC access plate that is located directly above the PCI card enclosure. Press the surfaces of the two latching mechanisms together and tilt the top of the cover away from the frame to remove it.
  - c. Remove the cables from the disk unit controller cards that are located inside the PCI card enclosure.

**Attention:** All cards are sensitive to electrostatic discharge (see Work with electrostatic discharge-sensitive parts).



- d. Remove the screws that hold the PCI card enclosure to the frame.
  - e. Pull the PCI card enclosure partially out of the frame while lifting the cables clear of the enclosure.
  - f. Press the release mechanism that is located along the top right side of the enclosure and carefully slide the enclosure towards you. Make sure that the cables are clear of the enclosure.
  - g. Remove the battery charger. See FC 5074, FC 5079, FC 9079 (with single line cord) - AC charger - A01.
  - h. Remove the power supplies. See FC 9074, FC 9079, FC 5074/5079 - Power supply - P01, P02, and P03.
  - i. Remove the blank filler plate(s).
  - j. Remove the four batteries (see FC 5074, FC 5079, FC 9079 - Batteries - T01, T02, T03, and T04).
3. Remove the screws from the power subframe assembly.
  4. From the front of the tower, reach through the frame and remove the cables from the backside of the power distribution backplane and note their locations.
  5. From the rear of the tower, remove the mounting screws that hold the power distribution backplane to the frame.
  6. Pull the power distribution backplane slightly towards you and lift it up to remove it from the frame.



7. Install the power distribution backplane by reversing the removal procedure. After exchanging an item, go to "Verify the repair" on page 558.  
**This ends the procedure.**

### **FC 5074, FC 5079, FC 9074, FC 9079 - Power supply - P00, P01, P02, and P03**

*For use by authorized service providers.*

Use this procedure to remove or replace the power supply - P00, P01, P02, and P03 in the FC 5074, FC 5079, FC 9074, FC 9079.

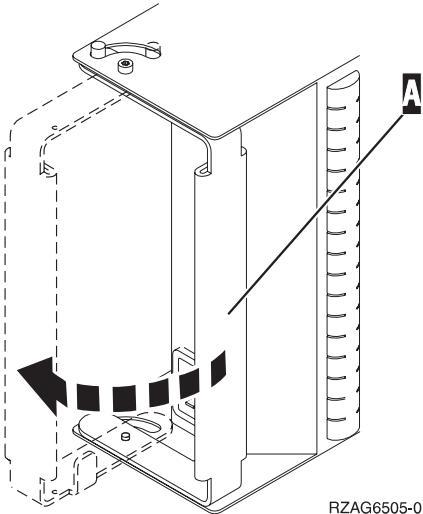
To remove or replace the Power supply - P00, P01, P02, and P03:

1. Is the system powered on?
  - **Yes:** Do **not** power off the system. Continue with the next step.
  - **No:** Continue with the next step.
2. Open the rear cover.
3. Disconnect the power jumper cord from the unit that you are replacing.
4. Remove the bottom screw (if installed).
5. Rotate the handle from right to left to release the power supply from the frame.

**DANGER**

**Up to 240 V ac is present at the power module connectors when the main power cord is connected to a power source. (RSFTD010)**

6. Remove the power supply from the frame.



7. Install the power supply by reversing the removal procedure. After exchanging an item, go to Verify the repair.

**Note:** Do not slam the power supply in when installing it into the system. Insert it until the power supply engages the frame, then rotate the handle from left to right.

**This ends the procedure.**

## **FC 5074, FC 5079, FC 9079 - Removable media - D41 and D42**

*For use by authorized service providers.*

Use this procedure to remove or replace removable media - D41 and D42 in an FC 5074, FC 5079, or FC 9079.

### **Laser safety information**

**CAUTION:**

**This product may contain a CD-ROM which is a class 1 laser product. (RSFTC240)**

**CAUTION:**

**This product may contain a DVD which is a class 1 laser product. (RSFTC245)**

To remove the removable media - D41 and D42:

1. Determine if the system has logical partitions. Go to Determine if the system has logical partitions before continuing with this procedure.
2. Remove media (if any) from the device. If the eject button on a tape device is failing, go to Tape cartridge - Manual removal, then continue with the next step of this procedure. If the eject button on a DVD-RAM device is failing and will not open, do not attempt manual removal of optical media at this time. For optical devices other than DVD-RAM, go to Optical media - Manual removal, and then continue with the next step of this procedure.
3. Are you removing a unit by using device concurrent maintenance?
  - **Yes:** Continue with the next step.
  - **No:** Perform the following:
    - a. Power off the tower or expansion tower. see Power on/off the system and logical partitions.
    - b. Disconnect the power cord from the tower or expansion tower.
    - c. Open the front cover. See FC 5074, FC 5079, FC 5094, FC 5294, FC 9079, FC 9094 - Covers.
    - d. Pull on the handles, which are located on each side of the unit, and remove the unit.
    - e. Install the new device by reversing the remove procedure. After exchanging an item, go to Verify the repair.

**Notes:**

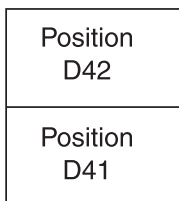
- 1) If you need to remove a tape from the old tape unit, see Tape cartridge - Manual removal.
- 2) If you need to remove optical media from and optical device, go to Optical media - Manual removal.

**This ends the procedure.**

4. Before exchanging a removable media unit, you must ensure that the unit is not in use and is varied off.

**Note:** If you are removing an optical storage unit, you must ensure that all of the removable media units in the tower or expansion tower are not in use and are varied off.
5. Use the figure to determine the location of the internal removable media unit. Record this location for later use.

**Figure 1. Internal removable media locations**



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6. Perform the following:
  - a. Select **System Service Tools (SST)**. If you cannot get to SST, select DST.

**Do not perform a system IPL to get to DST.**
  - b. Select **Start a Service Tool** —> **Hardware Service Manager** —> **Device Concurrent Maintenance** and enter the required information in the information fields. **Do not press the Enter key at this time.**
  - c. Read the remaining steps of this procedure and ensure that you understand the procedure before continuing.
  - d. Press the **Enter** key on the console. After the delay time, the light at the top right of the device will begin flashing. You now have 9 seconds to pull out firmly on the handles and pull the unit partially out of the tower.

**Attention:** If you remove the device when the light is **not** flashing, data may be lost, the unit may be damaged, or the backplane may be damaged.

**Note:** The light at the top right of the device will go off and remain off as soon as the device is no longer making contact with the backplane.

- e. Remove the unit from the tower.
  - If you need to remove a tape from the old tape unit, see Tape cartridge - Manual removal.
  - If you need to remove optical media from an optical device, go to Optical media - Manual removal.

To replace the removable media - D41 and D42:

1. Perform the following to install a new unit.
  - a. Select **Device Concurrent Maintenance** and enter the required information in the information fields. **Do not press the Enter key at this time.**
  - b. Read the remaining steps of this procedure and ensure that you understand the procedure before continuing.
  - c. Slide the unit partially into the tower. **Ensure that the device does not contact the backplane at this time.**
  - d. Press the **Enter** key on the console. After the delay time, the light at the top right of the device will begin flashing. You now have 9 seconds to push in firmly on the handles and push the unit completely into the frame.

**Attention:** If you install the device when the light is **not** flashing, data may be lost, the unit may be damaged, or the backplane may be damaged.

**Note:** The light at the top right of the device will go off and remain off for a few seconds when the device contacts the backplane. Then it should go on and remain on.

Did the light on the device go on and remain on?

- **No:** Continue with the next step.
- **Yes:** After exchanging an item, go to Verify the repair.

**This ends the install procedure.**

2. Attempt the device concurrent maintenance procedure again without physically moving the unit.

Did the light above the device go on and remain on?

- **No:** Continue with the next step.
- **Yes:** After exchanging an item, go to Verify the repair.

**This ends the install procedure.**

3. There is a power problem. One of the following is the problem:

- The new unit is defective.
- The backplane was damaged during the device concurrent maintenance procedure.
- There is a new problem with the power subsystem.

**This ends the procedure.**

## **FC 5074, FC 5079, FC 9079 - Tower card - CB1**

*For use by authorized service providers.*

Use this procedure in conjunction with the Expansion unit power procedure to remove or replace the tower card - CB1 in an FC 5074, FC 5079, or FC 9079.

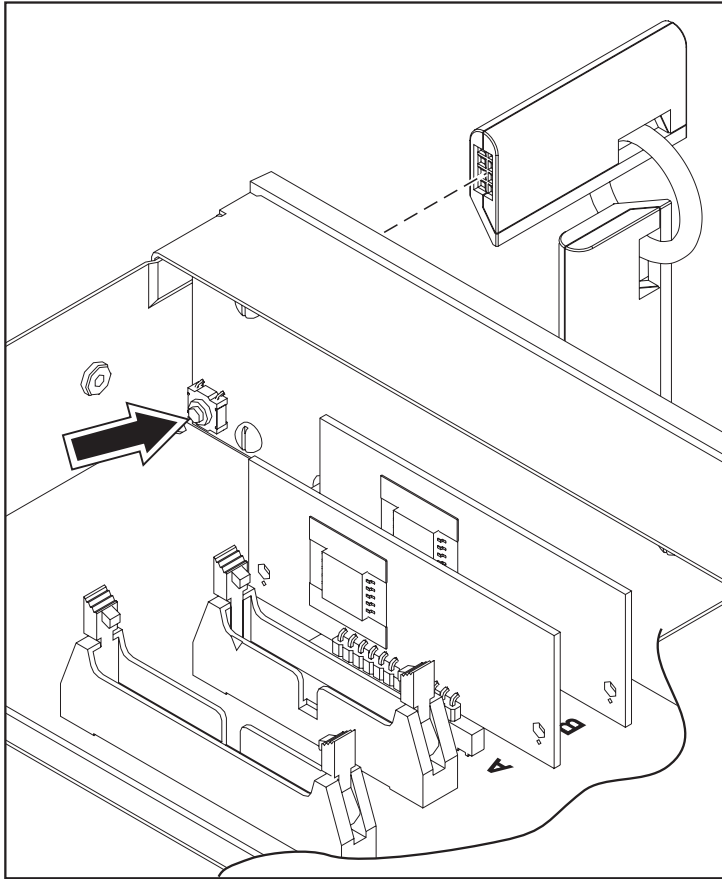
To remove or replace the tower card (CB1):

1. Power off the expansion tower using the Expansion unit power procedure.

**Note:** The Primary I/O Unit Tower Card cannot be replaced concurrently.
2. Open the rear cover. See FC 5074, FC 5079, FC 5094, FC 5294, FC 9079, FC 9094 - Covers.
3. Disconnect the plugs to each power supply.
4. From the rear of the expansion tower do the following:

- a. Remove the external cables from the rear of the PCI card enclosure and note their locations.
  - b. Remove the EMC access plate that is located directly above the PCI card enclosure. Press the surfaces of the two latching mechanisms together and tilt the top of the cover away from the frame to remove it.
  - c. Remove the cables from the top of the PCI cards and note their locations.  
**Attention:** All cards are sensitive to electrostatic discharge. See Work with electrostatic discharge-sensitive parts.
  - d. Remove the screws that hold the PCI card enclosure to the frame.
  - e. Pull the PCI card enclosure partially out of the frame while lifting the cables clear of the enclosure.
  - f. Press the release mechanism that is located along the top right side of the enclosure and carefully slide the enclosure towards you. Make sure that the cables are clear of the enclosure.
5. Remove the PCI cards from the enclosure and note their locations. See FC 5074, FC 5079, FC 5094, or FC 5294 - Cards (dedicated).
  6. Install the new PCI card enclosure by reversing the above procedure.
  7. Are you working on a FC 9079?
    - **No:** Continue with the next step.
    - **Yes:** Perform the following:
      - a. Open the front cover. See FC 5074, FC 5079, FC 5094, FC 5294, FC 9079, FC 9094 - Covers.
      - b. Pull on the two side fasteners to release the control panel.
      - c. Slide the panel partially out of the frame.
      - d. Insert the keystick into the panel.
      - e. Apply ac power. The panel should display SRC 0000 5553.  
**Note:** The tower may power up automatically.
      - f. Locate the push button located on the back of the control panel, directly behind the keystick position. Depress the push button for 3-4 seconds. The control panel will display the bring-up SRCs and then function 01.

**Figure 1. System unit control panel with keystick (NB1)**



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- g. Continue with step 9 (See page 154) to set the configuration ID.
8. Perform steps 23 (See page 569) and 24 (See page 570) in the Expansion unit power procedure. Then, return here and continue with the next step.
9. Set the configuration ID in the tower card:
  - a. If the ac power is not applied, then apply it now.
 

**Note:** The tower may power up automatically.
  - b. Power down the expansion tower **without** removing the power cord using the Expansion unit power procedure. Then, return here and continue with step 9c.
  - c. Select function **07** on the system panel. Press **Enter**. (07\*\* will be displayed)
  - d. Use the arrow keys to increment/decrement to sub-function **A9** (07A9 will be displayed). Press **Enter** (07A9 00 will be displayed).
  - e. Use the arrow keys to increment/decrement to the frame address, nn (nn is usually 02, 03, and so forth for expansion towers) (07nn will be displayed). Press **Enter** (07nn 00 will be displayed).
 

**Note:** The display on the addressed frame should now be blinking on and off.
  - f. Use the arrow keys to increment/decrement to a configuration ID.
    - The configuration ID is **81** for FC 5074 and FC 5079.
    - The configuration ID is **82** for FC 9079.
 (078x will be displayed). Press **Enter** (078x 00 will be displayed).
  - g. After a few seconds, the display on the addressed FC 5074, FC 5079 frame will stop blinking and return to displaying the frame address. On a FC 9079, the display will show 07xx 00, indicating success. Use the arrow keys to increment/decrement until 07\*\* is shown. Press **Enter** to return the panel to 07.

- h. Power the expansion unit back on. See the Expansion unit power procedure.
10. After exchanging an item, go to Verify the repair.  
**This ends the procedure.**

## **FC 5075 Remove and replace procedures**

*For use by authorized service providers.*

**FC 5075 - Air moving device - B01, B02**

**FC 5075 - Cards (concurrent)**

**FC 5075 - Cards (dedicated)**

**FC 5075 - Covers**

**FC 5075 - Device board - DB1**

**FC 5075 - Disk Unit (concurrent)**

**FC 5075 - Disk unit (dedicated)**

**FC 5075 - Display panel - NB1**

**FC 5075 - Power distribution board - PB1**

**FC 5075 - Power supply - P01 and P02**

**FC 5075 - SPCN card - SB1**

**FC 5075 - Tower card - CB1**

### **FC 5075 - Air moving device - B01 and B02**

*For use by authorized service providers.*

Use this procedure to remove or replace the air moving device (AMD) - B01 and B02 in an FC 5075.

To remove or replace the air moving device (B01 and B02):

1. Are there two AMDs installed in the tower?
  - **Yes:** Continue with the next step.
  - **No:** Perform the following:
    - a. Power down the expansion tower, see Power on/off the system and logical partitions.
    - b. Remove the power cord from the rear of the tower.
    - c. Continue with the next step.
2. Remove the front cover. See FC 5075 - Covers.
3. Pull the black knob on the front of the AMD casing.
4. Pull open and remove the AMD. The power connection will undock automatically.
5. Install the AMD by reversing the removal procedure. After exchanging an item, go to “Verify the repair” on page 558.  
**This ends the procedure.**

## FC 5075 - Cards (concurrent)

*For use by authorized service providers.*

Use this procedure to remove or replace cards (concurrently) in the FC 5075.

### Concurrent/dedicated guidelines for an FC 5075

In some cases you do not need to power down the system to change PCI cards. Use the following guidelines to determine if you should use dedicated or concurrent remove and replace procedures. If you use concurrent maintenance on a partitioned system, follow the procedures from the partition that owns the resource. If the resource is not owned, follow the procedure from the primary partition.

- Card positions C01 through C08 permit concurrent maintenance using HSM. You can power down the individual card slot.
- If the resource is the load source IOA or the load source IOP, or any other storage IOA/IOP with critical DASD attached for the system, primary, or secondary partition, follow the on-screen instructions when you use HSM to power down the IOP or IOA. Instructions to use functions 68 and 69 on the control panel will be included.
- If the resource is the console IOA or the console IOP for the system or primary partition, you cannot power down the domain.
- If the resource is the console IOA or the console IOP for a secondary partition, then power down the secondary partition and follow the procedure from the primary partition.
- See FC 5075 - Cards (dedicated) if you choose to perform dedicated card removal.

### CAUTION:

**The circuit card contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the circuit card as instructed by local regulations. (RSFTC234)**

**Attention:** All cards are sensitive to electrostatic discharge (see Work with electrostatic discharge-sensitive parts).

To remove cards (concurrently):

1. From the Hardware Service Manager display, select **Packaging hardware resources** —> **Hardware contained in packaging**.
2. Find the card position for the IOA or IOP that you are removing and select **Concurrent maintenance**.
3. A listing of the power domain is shown. Find the IOA or IOP that you are removing and select **Power off domain**. Everything within the IOA's or IOP's power domain will be powered off.
4. To see the status of the power domain, select **Display power status**.
5. Find the IOA or IOP that you are removing and select **Toggle LED blink off/on**.
6. Remove the cover to access the card that you are removing from the system. See FC 5075 - Covers.
7. Look at the power LED for the card that you are removing to ensure that it is powered off. The power LED is located to the left of and directly above the card slot. If the LED is blinking multiple times per second (rapidly) or it is off, then the card is powered off.
8. Remove the right side cover. See FC 5075 - Covers.
9. Remove and label any cables connected to the card.
10. Turn the latches securing the card.
11. Gently pull the card off the system backplane.  
**This ends the procedure.**

To replace cards (concurrently):

1. Install the card in to the system by reversing the card removal procedure above.
2. Select the *Power on domain* option for the IOA or IOP that you are installing.



**Note:** To the right of the description field you will see one or both of the following symbols displayed.

Symbol	Indication
*	Indicates the location to which the system will assign the resource.
>	Indicates the location to which the resource was last assigned.

3. Press **Enter**. The Work with Controlling Resources display will appear.
4. Determine the location where you want to assign the resource and select **Assign to** for that location.
5. Wait for the Hardware Resource Concurrent Maintenance display to appear with the message indicating power on complete.
6. After exchanging the failing item, go to Verify the repair.

**Note:** If you have exchanged a 2766 or 2787 Fibre Channel IOA, the IBM 2105 disk unit subsystem must be updated to use the World-Wide Port-Name of the new 2766 or 2787 IOA. This name can be found in the Port worldwide name field on the iSeries by displaying detail on the 2766 or 2787 IOA Logical Hardware Resource information in Hardware Service Manager in SST/DST.

The 16-digit World-Wide Port-Name can also be determined by appending the digits "1000" to the beginning of the 12-digit IEEE Address found on the tailstock label of the Fibre Channel IOA. Use the *ESS Web Interface User's Guide* (SC26-7346) to update the World-Wide Port-Name in the host configuration on the IBM 2105 ESS. The *ESS Web Interface User's Guide* can also be found at the following URL: <http://ssddom02.storage.ibm.com/disk/ess/documentation.html>

**This ends the procedure.**

## FC 5075 - Cards (dedicated)

*For use by authorized service providers.*

Use this procedure to remove or replace the cards (dedicated) in the FC 5075.

In some cases, you do not need to power down the system to change PCI cards. Use the guidelines in FC 5075 - Cards (concurrent) to determine if you should use dedicated or concurrent remove and replace procedures.

### CAUTION:

**The circuit card contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the circuit card as instructed by local regulations. (RSFTC234)**

**Attention:** All cards are sensitive to electrostatic discharge (see Work with electrostatic discharge-sensitive parts).

To remove or replace cards (dedicated):

1. Power off the expansion tower. See the Expansion unit power procedure.
2. Remove the ac power cord from the frame you are working on.
3. Remove the right side cover. See FC 5075 - Covers.
4. Remove and label any cables connected to the card.
5. Turn the latches to secure the card.
6. Gently pull the card off the system backplane.
7. Reverse this procedure to install the card. After exchanging a failing item, go to Verify the repair.

**Note:** If you have exchanged a 2766 or 2787 Fibre Channel IOA, the IBM 2105 disk unit subsystem must be updated to use the World-Wide Port-Name of the new 2766 or 2787 IOA. This name can be found in the Port worldwide name field on the iSeries by displaying detail on the 2766 or 2787 IOA Logical Hardware Resource information in Hardware Service Manager in SST/DST.

The 16-digit World-Wide Port-Name can also be determined by appending the digits "1000" to the beginning of the 12-digit IEEE Address found on the tailstock label of the Fibre Channel IOA. Use the *ESS Web Interface User's Guide* (SC26-7346) to update the World-Wide Port-Name in the host

configuration on the IBM 2105 ESS. The *ESS Web Interface User's Guide* can also be found at the following URL: <http://ssddom02.storage.ibm.com/disk/ess/documentation.html>

**This ends the procedure.**

## **FC 5075 - Covers**

*For use by authorized service providers.*

Use this procedure to remove or replace the covers on an FC 5075.

To remove or replace the covers:

- To remove the front cover, pull the top of the cover away from the frame.
- To remove the right side cover, unscrew the two thumbscrews at the rear of the tower and slide the cover to the rear of the tower.
- To remove the rear cover, lift the cover to detach.

**This ends the procedure.**

## **FC 5075 - Device board - DB1**

*For use by authorized service providers.*

Use this procedure to remove or replace the device board - DB1 in an FC 5075.

To remove or replace a device board (DB1):

1. Power off the expansion unit. See the Expansion unit power procedure.
2. Unplug the power cord from the back of the expansion unit.
3. Remove the front and right side covers. See FC 5075 - Covers.
4. Remove the EMC shield in front of the disk units by pulling out on the two side latches.
5. Remove the disk units from the disk unit cage. Label the position of each disk unit.
6. Remove the screws holding the disk unit cage to the frame. The screws are located on the front and inside rear of the disk unit cage.
7. Unplug and remove the cables plugged into the back of the device board.
8. Pull the disk unit cage out of the frame.
9. Remove the device board from the back of the disk unit cage.
10. Install the device board by reversing the removal procedure.

**This ends the procedure.**

## **FC 5075 - Disk unit (concurrent)**

*For use by authorized service providers.*

Use this procedure to remove or replace the disk unit (concurrently) in an FC 5075.

**Attention:** If removing the cover while the system is powered on, errors may occur due to electromagnetic interference.

**Attention:** The disk unit is sensitive to electrostatic discharge. See Work with electrostatic discharge-sensitive parts.

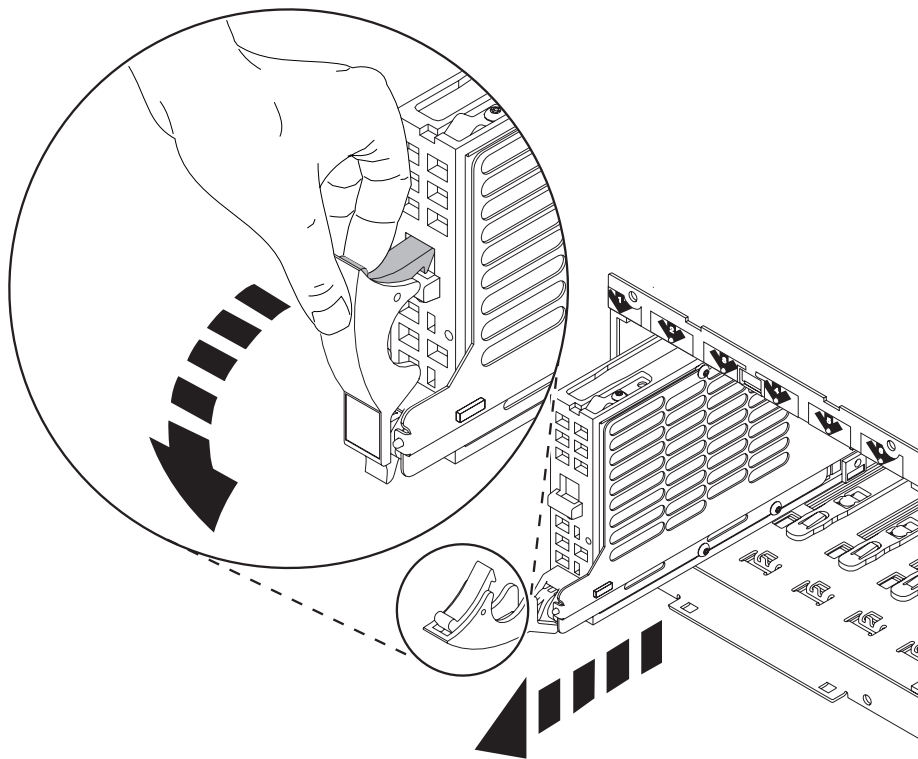
To remove or replace the disk unit (concurrent):

1. Determine if the system has logical partitions. Go to "Determine if the system has logical partitions" on page 579, before continuing with this procedure.
2. Were you directed here from the Recovery procedures topic?
  - **Yes:** Continue with the next step.
  - **No:** Go to Recovery procedures.

3. After you have determined the location of the disk unit to replace, remove the front covers for access. See FC 5075 - Covers.
4. Remove the EMC access plate that is over the location of the disk unit that you are removing. For location information, see “Locations — FC 5075 Expansion I/O Tower” on page 299.
5. To remove a disk unit using concurrent maintenance perform the following:
  - a. Select System Service Tools (SST). If you cannot get to SST, select DST.
 

**Do not perform a system IPL to get to DST.**
  - b. Select **Start a Service Tool**—>**Hardware Service Manager**.
  - c. Select **Device Concurrent Maintenance** and enter the required information in the information fields.
  - d. Press Enter on the console. After the delay time, the light above the device location will begin flashing. You now have 9 seconds to pinch the two surfaces of the latching mechanism together and rotate the handle of the disk unit towards you. Pull the disk unit partially out of the tower. The light above the device location will go off and remain off as soon as the device is no longer making contact with the backplane.

**Attention:** If you remove the device when the light is not flashing, data may be lost, the disk unit may be damaged, or the backplane may be damaged.



Wait another 5 seconds to allow time for the disk to stop spinning. Then pull the disk unit the remaining way out of the tower.

6. Are you finished with the repair?
  - **No:** Continue with the next step.
  - **Yes:** Replace the covers that were removed during this procedure and return to the procedure that sent you here.

**This ends the procedure.**
7. To install a disk unit using concurrent maintenance perform the following:
  - a. Select System Service Tools (SST). If you cannot get to SST, select DST.
 

**Do not perform a system IPL to get to DST.**

- b. Select **Start a Service Tool**—>**Hardware Service Manager**.
- c. Select **Device Concurrent Maintenance** and enter the required information in the information fields.

**Attention:** Do not press Enter at this time.

- d. Slide the unit half-way into the tower. Ensure that the device does not make contact with the backplane at this time.
- e. Press Enter on the console. After the delay time, the light above the device location will begin flashing . You now have 9 seconds to insert the disk unit. Put the disk unit part way into the desired slot and rotate the handle of the disk unit towards you. Then push the disk unit completely into the slot and rotate the handle towards the disk unit to latch it into the slot. The light above the device location will go off and remain off for a few seconds when the device contacts the backplane. Then it should go on and remain on.

**Attention:** If you install the device when the light is not flashing, data may be lost, the disk unit may be damaged, or the backplane may be damaged.

- f. Replace the covers that were removed during this procedure and return to the procedure that sent you here.

**This ends the procedure.**

### **FC 5075 - Disk unit (dedicated)**

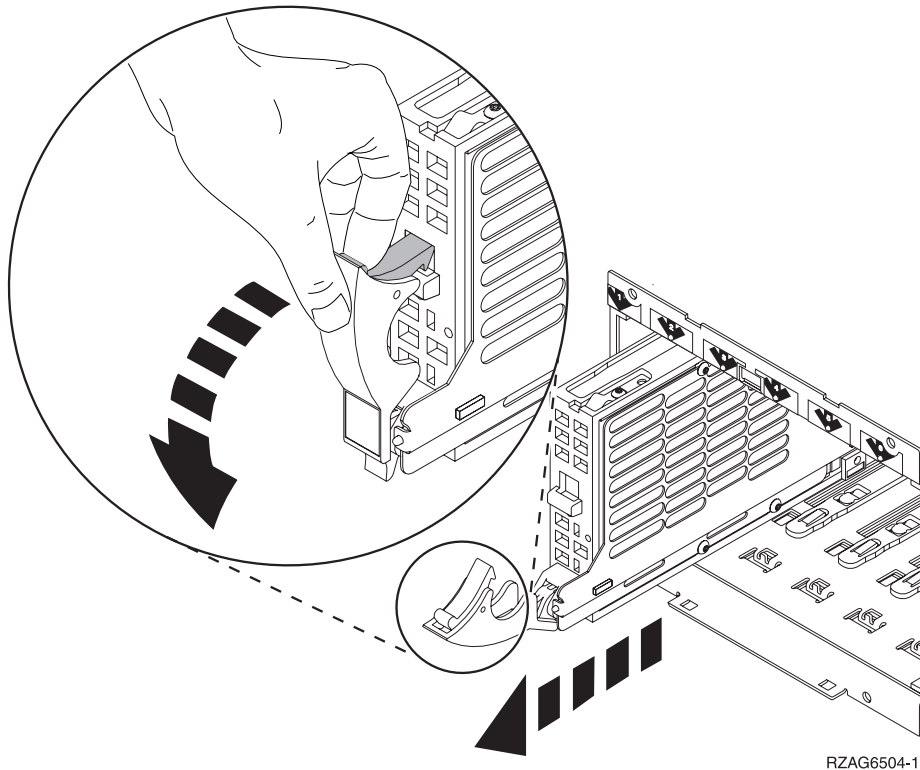
*For use by authorized service providers.*

Use this procedure to remove or replace the disk unit (dedicated) in an FC 5075.

**Attention:** The disk unit is sensitive to electrostatic discharge. See Work with electrostatic discharge-sensitive parts.

To remove or replace a disk unit (dedicated):

1. Determine if the system has logical partitions. Go to Determine if the system has logical partitions, before continuing with this procedure.
2. Were you directed here from the Recovery procedures topic?
  - **Yes:** Continue with the next step.
  - **No:** Go to Recovery procedures.
3. After you have determined the location of the disk unit to replace, remove the front covers for access. See FC 5075 - Covers.
4. Remove the EMC access plate that is over the location of the disk unit that you are removing. For location information, see Locations — FC 5075 I/O tower.
5. To remove a disk unit using dedicated maintenance perform the following:
  - a. Power off the expansion tower. See Expansion unit power procedure.
  - b. Disconnect the power cord.
  - c. Remove the disk unit by pinching the two surfaces of the latching mechanism together and pulling the handle towards you to release the disk unit from the slot.
  - d. Remove the unit from the tower.



6. Are you finished with the repair?
  - **No:** Continue with the next step.
  - **Yes:** Replace the covers that were removed during this procedure and return to the procedure that sent you here.  
**This ends the procedure.**
7. To Install a disk unit using dedicated maintenance perform the following:
  - a. Power off the expansion tower. See Expansion unit power procedure.
  - b. Disconnect the power cord.
  - c. Put the disk unit part-way into the desired slot and rotate the handle of the disk unit towards you.
  - d. Push the disk unit completely into the slot and rotate the handle towards the disk unit to latch it into the slot.
  - e. Replace the covers that were removed during this procedure and return to the procedure that sent you here.  
**This ends the procedure.**

## **FC 5075 - Display panel - NB1**

*For use by authorized service providers.*

Use this procedure to remove or replace the display panel - NB1 on an FC 5075.

To remove or replace the display panel - NB1:

1. Open the front cover.
2. Power off the expansion unit. See Expansion unit power procedure.
3. Remove the front cover. See FC 5075 - Covers.
4. Remove the ac power cord on the frame you are working on.
5. Pull the locks on each side of the display panel.
6. Slide the display panel out approximately half way and remove the cables from the rear of the panel.

7. Remove the display panel.
8. Install the display panel by reversing this procedure. After exchanging an item, go to Verify the repair.  
**This ends the procedure.**

### **FC 5075 - Power distribution board - PB1**

*For use by authorized service providers.*

Use this procedure to remove or replace the power distribution board - PB1 in an FC 5075.

To remove or replace the power distribution board - PB1:

1. Power off the expansion unit. See the Expansion unit power procedure.
2. Remove the rear and side covers. See FC 5075 - Covers.
3. Remove the power supplies. See FC 5075 - Power supply - P01 and P02.
4. Disconnect the power cable that goes to the backplane SB1.
5. Remove the screws securing the power cage to the base of the frame.
6. Remove the screws securing the power cage to the power distribution backplane.
7. Remove the SPCN cable from the channel in the power cage.
8. Remove the power cage by lifting it out of the frame.
9. Remove the screws securing the power distribution backplane to the frame.
10. Remove the power distribution backplane by lifting it out of the frame.
11. Install the power distribution backplane by reversing the procedure.  
**This ends the procedure.**

### **FC 5075 - Power supply - P01 and P02**

*For use by authorized service providers.*

Use this procedure to remove or replace the power supply - P01 and P02 in an FC 5075.

To remove or replace the power supply - P01 and P02:

1. Are there two power supplies installed in the expansion unit?
  - **Yes:** Continue with the next step.
  - **No:**
    - a. Power down the expansion unit. See Power on/off the system and logical partitions.
    - b. Remove the power cord from the rear of the unit.
2. Remove the right side cover. See FC 5075 - Covers.
3. On the power supply you are exchanging, pull the docking handle down. If two power supplies are being used, do not remove both at the same time.
4. Pull the power supply from the frame.
5. Install the power supply by reversing the procedure. After exchanging an item, go to Verify the repair.  
**This ends the procedure.**

### **FC 5075 - SPCN card - SB1**

*For use by authorized service providers.*

Use this procedure in conjunction with the Expansion unit power procedure to remove or replace the SPCN card - SB1 in an FC 5075.

To remove or replace the SPCN card (SB1):

1. Power off the expansion unit. See the Expansion unit power procedure.
2. Unplug the power cord from the back of the expansion unit.

3. Remove the front and right side covers. See FC 5075 - Covers.
4. Disconnect the control panel cable and the cable that connects the backplane to the backplane CB1.
5. Disconnect the SPCN and power cables.
6. Remove the screws connecting the backplane to the frame.
7. Remove the backplane by pulling it out of the frame.
8. Replace the SPCN card by reversing the previous steps, then continue with the next step to set the configuration ID.
9. Perform steps **23** (See page 569) and **24** (See page 570) in the Expansion unit power procedure. Then, return here and continue with the next step.
10. Set the configuration ID in the tower card:
  - a. If the ac power is not applied, then apply it now.  
**Note:** The tower may power up automatically.
  - b. Power down the expansion unit **without** removing the power cord using the Expansion unit power procedure. Then, return here and continue with step 10c.
  - c. Select function **07** on the system panel and press **Enter** (07\*\* will be displayed).
  - d. Use the arrow keys to increment/decrement to sub-function **A9** (07A9 will be displayed). Press **Enter** (07A9 00 will be displayed).
  - e. Use the arrow keys to increment/decrement to the frame address - usually '02, 03, etc.' for a FC 5075 (07nn will be displayed, where nn is the frame address). Press **Enter** (07nn 00 will be displayed).  
**Note:** The display on the addressed frame should now be blinking on and off.
  - f. Use the arrow keys to increment/decrement to a configuration ID to '**90**' (0790 will be displayed). Press **Enter** (0790 00 will be displayed). After a few seconds, the display on the addressed FC 5075 frame will stop blinking and return to displaying the frame address.
  - g. Use the arrow keys to increment/decrement to the display **07\*\*** and press **Enter** (07 will be displayed).
  - h. Use the arrow keys to increment/decrement to display **01** and press **Enter**.
  - i. Power the expansion unit back on. See the Expansion unit power procedure.
11. After exchanging an item, go to Verify the repair.  
**This ends the procedure.**

### **FC 5075 - Tower card - CB1**

*For use by authorized service providers.*

Use this procedure to remove or replace the tower card - CB1 in an FC 5075.

To remove or replace the tower card (CB1):

1. Power off the expansion tower. See the Expansion unit power procedure.
2. Remove the ac power cord from the frame that you are working on.
3. Remove the side cover. See FC 5075 - Covers.
4. Remove the PCI cards. See FC 5075 - Cards (dedicated).
5. Remove the airflow baffles. The vertical baffle is secured with one screw.
6. Remove the card support bracket.
7. Disconnect the HSL cable from the backplane.
8. Remove the cable connecting the top and bottom backplanes.
9. Remove the screws holding the backplane to the frame. Notice the aligning pins near the top of the board and the power connections near the bottom of the board when reinstalling the board.
10. Reverse this procedure to install the tower card.
11. Set the configuration ID in the tower card:

- a. If the ac power is not applied, then apply it now.  
**Note:** The tower may power up automatically.
  - b. Power down the expansion tower **without** removing the power cord using the Expansion unit power procedure. Then, return here and continue with the next step.
  - c. Select function **07** on the system panel. Press **Enter**. (07\*\* will be displayed).
  - d. Use the arrow keys to increment/decrement to sub-function **A9** (07A9 will be displayed). Press **Enter** (07A9 00 will be displayed).
  - e. Use the arrow keys to increment/decrement to the frame address, nn (nn is usually 02, 03, and so forth for expansion towers) (07nn will be displayed). Press **Enter** (07nn 00 will be displayed).  
**Note:** The display on the addressed frame should now be blinking on and off.
  - f. Use the arrow keys to increment/decrement to the configuration ID of **90**. (0790 will be displayed). Press **Enter** (0790 00 will be displayed).
  - g. After a few seconds, the display on the addressed FC 5075 frame will stop blinking and return to displaying the frame address. Use the arrow keys to increment/decrement until 07\*\* is shown. Press **Enter** to return the panel to 07.
  - h. Power the expansion unit back on. See the Expansion unit power procedure.
12. After exchanging an item, go to Verify the repair.  
**This ends the procedure.**

## **FC 5078, FC 0578, FC 5088, FC 0588 remove and replace procedures**

*For use by authorized service providers.*

**FC 5078, FC 0578, FC 5088, FC 0588 - Air moving device - B01 and B02**

**FC 5078, FC 0578, FC 5088, FC 0588 - Air moving device controller card - BB1**

**FC 5078, FC 0578, FC 5088, FC 0588 - Cards (concurrent)**

**FC 5078, FC 0578, FC 5088, FC 0588 - Cards (dedicated)**

**FC 5078, FC 0578, FC 5088, FC 0588 - Covers**

**FC 5078, FC 0578, FC 5088, FC 0588 - Display panel - NB1**

**FC 5078, FC 0578, FC 5088, FC 0588 - Power distribution backplane - PB1**

**FC 5078, FC 0578, FC 5088, FC 0588 - Power supplies - P01 and P02**

**FC 5078, FC 0578, FC 5088, FC 0588 - Tower card - CB1**

### **FC 5078, FC 0578 - Air moving device (AMD) - B01 and B02**

*For use by authorized service providers.*

Use this procedure to remove or replace the air moving device (AMD) - B01 and B02 in an FC 5078, FC 0578, FC 5088, and FC 0588.

To remove or replace air moving device (B01 and B02):

1. Do not power off the expansion unit if it is powered on.
2. Remove the front cover. See FC 5078, FC 0578, FC 5088, FC 0588 - Covers.
3. Remove the upper EMC access plate.
4. Remove the ac line cord from the power supply attached to the AMD being replaced.



5. Remove the power supply that has the defective AMD attached by pulling down on the docking handle, and sliding the power supply with the two AMDs attached out of the expansion unit.
6. Remove the AMD from the power supply by pulling out on the latch knob and sliding the AMD to the left towards the latch.
7. Install the AMD by reversing the removal procedure.  
**Attention:** Do not slam the new power supply when installing it into the system. Insert the power supply until it engages the frame, then lift the docking handle to lock the power supply into place.
8. After exchanging an item, go to Verify the repair.  
**This ends the procedure.**

## **FC 5078, FC 0578, FC 5088, FC 0588 - Air moving device controller card - BB1**

*For use by authorized service providers.*

Use this procedure to remove or replace the air moving device (AMD) controller card in an FC 5078, FC 0578, FC 5088 and FC 0588.

To remove or replace the air moving device controller card - BB1:

1. Power down the PCI expansion unit. See the Expansion unit power procedure. frame.
2. Disconnect the two ac power cords from the AC box.
3. Remove the rear cover. See FC 5078, FC 0578, FC 5088, FC 0588 - Covers or.
4. Remove the EMC access plate over the card enclosure by loosening the thumb screws and pulling it towards you.
5. Unclip and remove the cable by pressing down on the cable retainers to eject it.
6. Remove the AMD controller card (BB1) by pulling out on the latch knob and sliding the card back toward you.
7. Install the AMD controller card by reversing the removal procedure. After exchanging an item, go to Verify the repair.  
**This ends the procedure.**

## **FC 5078, FC 0578, FC 5088, FC 0588 - Cards (concurrent)**

*For use by authorized service providers.*

Use this procedure to remove or replace cards concurrently in an FC 5078, FC 0578, FC 5088, or FC 0588.

### **Concurrent/dedicated guidelines for FC 5078, FC 0578, FC 5088, or FC 0588**

In some cases, you do not need to power down the system to change PCI cards. If you choose to power down the FC 5078, FC 0578, FC 5088, FC 0588 frame, see FC 5078, FC 0578, FC 5088, FC 0588 - Cards (dedicated). If you use concurrent maintenance on a partitioned system, follow the procedures from the partition that owns the resource. If the resource is not owned, follow the procedure from the primary partition.

### **For FC 5078, FC 0578, FC 5088, FC 0588 IXS cards:**

The IXS cards require dedicated maintenance. See FC 5078, FC 0578, FC 5088, FC 0588 - Cards (dedicated).

### **For FC 5078, FC 0578, FC 5088, or FC 0588 cards - except IXS cards:**

- Card positions that permit card level concurrent maintenance using HSM:
  - **For FC 5078 or FC 0578:** Card positions C01 through C07 and C09 through C15 permit card level concurrent maintenance using HSM. You can power down the individual card slot.

- **For FC 5088 or FC 0588:** Card positions C01 through C09 and C11 through C15 permit card level concurrent maintenance using HSM. You can power down the individual card slot.
- If the resource is the load source IOA or the load source IOP, or any other storage IOA/IOP with critical DASD attached for the system, primary, or secondary partition, follow the on-screen instructions when you use HSM to power down the IOP or IOA. Instructions to use functions 68 and 69 on the control panel will be included.
- If the resource is the console IOA or the console IOP for the system or primary partition, you cannot power down the domain.
- If the resource is the console IOA or the console IOP for a secondary partition, then power down the secondary partition and follow the procedure from the primary partition.

**CAUTION:**

**The circuit card contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the circuit card as instructed by local regulations. (RSFTC234)**

**Attention:** If removing the cover while powered on, errors may occur due to electromagnetic interference.

**Attention:** All cards are sensitive to electrostatic discharge. See Work with electrostatic discharge-sensitive parts.

To remove or replace cards (concurrently):

1. From the Hardware Service Manager display, select **Packaging hardware resources** —> **Hardware contained in packaging** for the frame ID that you are working on.
2. Find the card position for the IOA or IOP that you are removing and select **Concurrent maintenance**.  
**Attention:** If multiple resources are shown with the same card position, one or more of these resources will show a status of *Missing* ("?" after the description). Only one resource will be listed as not missing. Select this resource for the concurrent maintenance operation.
3. A listing of the power domain is shown. Find the IOA or IOP that you are removing and select **Power off domain**. Everything within the IOA's or IOP's power domain will be powered off .
4. To see the status of the power domain, select **Display power status**.
5. Find the IOA or IOP that you are removing and select **Toggle LED blink off/on**.
6. Remove the cover to access the card that you are removing from the system. See FC 5078, FC 0578, FC 5088, FC 0588 - Covers.
7. Look at the power LED for the card that you are removing to ensure that it is powered off. The power LED is located above or in front of the card slot. If the LED is blinking multiple times per second (rapidly) or it is off, then the card is powered off.
8. Remove the rear cover. See FC 5078, FC 0578, FC 5088, FC 0588 - Covers.
9. Remove the EMC access plate, that is located directly above the card enclosure, by removing the three thumbscrews and pulling the access plate towards you.
10. Disconnect and label any cables from the card that you wish to remove.
11. Turn the latch counter-clockwise and lift up on the black latch to release the card.
12. Remove the card by gently pulling it out.
13. Install the card in to the system by reversing the card removal procedure.
14. Select **Power on domain** for the IOA or IOP that you are installing.

**Note:** To the right of the description field you will see one or both of the following symbols displayed.

<b>Symbol</b>	<b>Indication</b>
*	Indicates the location to which the system will assign the resource.
>	Indicates the location to which the resource was last assigned.

15. Press **Enter**. The Work with Controlling Resources display will appear.

16. Determine the location where you want to assign the resource and select **Assign to** for that location.
17. Wait for the Hardware Resource Concurrent Maintenance display to appear with the message indicating power on complete.
18. After exchanging the failing item, go to Verify the repair.

**Note:** If you have exchanged a 2766 or 2787 Fibre Channel IOA, the IBM 2105 disk unit subsystem must be updated to use the World-Wide Port-Name of the new 2766 or 2787 IOA. This name can be found in the Port worldwide name field on the iSeries by displaying detail on the 2766 or 2787 IOA Logical Hardware Resource information in Hardware Service Manager in SST or DST.

The 16-digit World-Wide Port-Name can also be determined by appending the digits "1000" to the beginning of the 12-digit IEEE Address found on the tailstock label of the Fibre Channel IOA. Use the *ESS Web Interface User's Guide (SC26-7346)* to update the World-Wide Port-Name in the host configuration on the IBM 2105 ESS. The *ESS Web Interface User's Guide* can also be found at the following URL: <http://ssddom02.storage.ibm.com/disk/ess/documentation.html>

**This ends the procedure.**

### **FC 5078, FC 0578, FC 5088, FC 0588 - Cards (dedicated)**

*For use by authorized service providers.*

Use this procedure to remove or replace cards (dedicated) in the FC 5078, FC 0578, FC 5088, or FC 0588.

In some cases, you do not need to power down the system to change PCI cards in an FC 5078, FC 0578, FC 5088, FC 0588. Use the guidelines in FC 5078, FC 0578, FC 5088, FC 0588 - Cards (concurrent) to determine if you should use dedicated or concurrent remove and replace procedures.

#### **CAUTION:**

**The circuit card contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the circuit card as instructed by local regulations. (RSFTC234)**

**Attention:** All cards are sensitive to electrostatic discharge. See Work with electrostatic discharge-sensitive parts.

To remove or replace cards (dedicated):

1. Power off the PCI expansion unit. See Expansion unit power procedure.
2. Disconnect the two ac power cords from the AC box.
3. Remove the rear cover. See FC 5078, FC 0578, FC 5088, FC 0588 - Covers.
4. Remove the EMC access plate over the card enclosure by loosening the thumb screws and pulling it towards you.
5. Remove the retaining screws from the card enclosure.
6. Disconnect and label the cables that are attached to the back of the card enclosure.
7. Slide the card enclosure partially out of the frame.
8. Disconnect and label any cables from the card that you wish to remove.
9. Turn the latch counter-clockwise and lift up on the black latch to release the card.  
**Note:** If you are removing an FC 2890 or 2892 IXS, then there are two latches that you will have to turn and release.
10. Remove the card by gently pulling it out.
11. Install the new card by reversing the procedure. After exchanging the failing item, go to Verify the repair.

**Note:** If you have exchanged a 2766 or 2787 Fibre Channel IOA, the IBM 2105 disk unit subsystem must be updated to use the World-Wide Port-Name of the new 2766 or 2787 IOA. This name can be found in the Port worldwide name field on the iSeries by displaying detail on the 2766 or 2787 IOA Logical Hardware Resource information in Hardware Service Manager in SST/DST.

The 16-digit World-Wide Port-Name can also be determined by appending the digits "1000" to the beginning of the 12-digit IEEE Address found on the tailstock label of the Fibre Channel IOA. Use the *ESS Web Interface User's Guide* (SC26-7346) to update the World-Wide Port-Name in the host configuration on the IBM 2105 ESS. The *ESS Web Interface User's Guide* can also be found at the following URL: <http://ssddom02.storage.ibm.com/disk/ess/documentation.html>

**This ends the procedure.**

## **FC 5078, FC 0578, FC 5088, FC 0588 - Covers**

*For use by authorized service providers.*

Use this procedure to remove or replace the covers on an FC 5078, FC 0578, FC 5088, and FC 0588.

**Attention:** If removing the cover while powered on, errors may occur due to Electromagnetic Interference.

To remove or replace the covers:

- To remove the front cover, grasp the edges of the front cover and pull it towards you.
- To open or remove the rear cover when the FC 5078 or FC 5088 is mounted either on top of a FC 5074 or in a 0551 rack, perform the following steps:
  1. Grasp the right side of the cover and pull it towards you to open it.
  2. After opening the cover, press down on the lever that is located inside along the top, left side of the cover.
  3. Tilt the top of the cover away from the tower and lift the cover off.

**Note:** Refer to "Figure 2. Rear cover - removal" in FC 5074, FC 5079, FC 5094, FC 5294, FC 9079, FC 9094 - Covers for details.

**This ends the procedure.**

## **FC 5078, FC 0578, FC 5088, FC 0588 - Display panel - NB1**

*For use by authorized service providers.*

Use this procedure to remove or replace the display panel - NB1 in an FC 5078, FC 0578, FC 5088, and FC 0588.

### **CAUTION:**

**The circuit card contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the circuit card as instructed by local regulations. (RSFTC234)**

**Attention:** The display panel is sensitive to electrostatic discharge. See Work with electrostatic discharge-sensitive parts.

To remove or replace the display panel (NB1):

1. Power down the expansion unit. Pull the power plugs that run from the expansion unit to the AC box of the unit below. See Power on/off the system and logical partitions.
2. Open the front cover. See FC 5078, FC 0578, FC 5088, FC 0588 - Covers.
3. Pull on the two side fasteners to release the display panel assembly.
4. Slide the panel partially out of the unit.
5. Disconnect the cables that are attached to backside of the display panel.
6. Remove the display panel from the unit.
7. Install the display panel by reversing this procedure.
8. After exchanging an item, go to Verify the repair.

**This ends the procedure.**

## **FC 5078, FC 0578, FC 5088, FC 0588 - Power distribution backplane - PB1**

*For use by authorized service providers.*

Use this procedure to remove or replace the power distribution board - PB1 in an FC 5078, FC 0578, FC 5088, or FC 0588.

To remove or replace the power distribution board - PB1:

1. Remove the top, front, and rear covers. See FC 5078, FC 0578, FC 5088, FC 0588 - Covers.
2. Power down the expansion unit. Pull the power plugs that run from the unit to the ac box of the unit below. See Power on/off the system and logical partitions.
3. Remove the center top plate.
4. Remove the two power supplies. See FC 5078, FC 0578, FC 5088, FC 0588 - Power supplies - P01 and P02.
5. From the top of the unit, remove and label the cables that connect to the power distribution board.
6. Remove the screws that secure the power distribution board to the expansion unit.
7. Pull the power distribution board out through the top of the expansion unit.
8. Install the power distribution backplane by reversing this procedure.
9. After exchanging an item, go to Verify the repair.  
**This ends the procedure.**

### **FC 5078, FC 0578 - Power supplies - P01 and P02**

*For use by authorized service providers.*

Use this procedure to remove or replace the power supplies - P01 and P02 in an FC 5078, FC 0578, FC 5088, and FC 0588.

**Attention: Do not power off the system.**

**Note:** Remove and replace only one power supply at a time.

To remove or replace the power supplies - P01 and P02:

1. Do not power off the system if it is powered on.
2. Open the front cover. See FC 5078, FC 0578, FC 5088, FC 0588 - Covers.
3. Remove the ac line cord from the power supply being replaced.
4. Pull down on the docking handle located in the front of the power supply, to release the power supply from the expansion unit.
5. Remove the power supply.
6. Remove the AMD from the power supply by pulling out on the latch knob and sliding the AMD to the left towards the latch.
7. Install the new power supply by reversing this procedure.  
**Note:** Do not slam the new power supply when installing it into the system. Insert the power supply until it engages the frame, then lift the docking handle to lock the power supply into place.
8. After exchanging an item, go to Verify the repair.  
**This ends the procedure.**

### **FC 5078, FC 0578, FC 5088, FC 0588 - Tower card - CB1**

*For use by authorized service providers.*

Use this procedure in conjunction with the Expansion unit power procedure to remove or replace the tower card - CB1 in an FC 5078, FC 0578, FC 5088, and FC 0588.

To remove or replace the tower card - CB1:

1. Power off the expansion tower. See the Expansion unit power procedure.
2. Open the rear cover. See FC 5078, FC 0578 - Covers.

3. Remove the ac power cord from the expansion unit.
4. From the rear of the expansion tower, remove the external cables from the rear of the PCI card enclosure and note their locations.
5. Remove the air flow baffle that is located directly above the PCI card enclosure. Loosen the three fasteners and slide the air flow baffle out the backside.
6. Remove the cables from the front of the PCI card assembly and note their locations.  
**Attention:** All cards are sensitive to electrostatic discharge. See Work with electrostatic discharge-sensitive parts.
7. Remove the screws that hold the PCI card enclosure to the frame.
8. Pull the PCI card enclosure out of the frame while lifting the cables clear of the enclosure.
9. Remove the PCI cards from the enclosure and note their locations. See FC 5078, FC 0578 - Cards (dedicated).
10. Remove the Network interface controller (NIC) card from the enclosure and note its location.
11. Install the new PCI card enclosure by reversing the above procedure.
12. Perform steps **23** (See page 569) and **24** (See page 570) in the Expansion unit power procedure. Then, return here and continue with the next step.
13. Set the configuration ID in the tower card:
  - a. If the ac power is not applied, then apply it now.  
**Note:** The tower may power up automatically.
  - b. Power down the expansion tower **without** removing the power cord using the Expansion unit power procedure. Then, return here and continue with step 13c.
  - c. Select function **07** on the system panel and press **Enter**. (07\*\* will be displayed.)
  - d. Use the arrow keys to increment/decrement to sub-function **A9** (07A9 will be displayed). Press **Enter** (07A9 00 will be displayed).
  - e. Use the arrow keys to increment/decrement to the frame address, nn (nn is usually 02, 03, etc. for expansion towers) (07nn will be displayed). Press **Enter** (07nn 00 will be displayed).  
**Note:** The display on the addressed frame should now be blinking on and off.
  - f. Use the arrow keys to increment/decrement to a configuration ID. The configuration ID is:
    - **84** for FC 5078, FC 0578.
    - **89** for FC 5088, FC 0588.
 (078x will be displayed). Press **Enter** (078x 00 will be displayed).
  - g. After a few seconds, the display on the addressed frame will stop blinking and return to displaying the frame address. Use the arrow keys to increment/decrement until 07\*\* is shown. Press **Enter** to return the panel to 07. The tower ID is updated.
14. Power the expansion unit back on. See the Expansion unit power procedure.
15. After exchanging an item, go to Verify the repair.  
**This ends the procedure.**

## **FC 5094, FC 5294, FC 8094, FC 9094 remove and replace procedures**

*For use by authorized service providers.*

**FC 5094, FC 9094 (with single line cord) - AC module - A01 and A02**

**FC 5094, FC 9094 (with dual line cord) - AC module - A01 and A02**

**FC 5094, FC 9094 - Air moving device - B01 and B02**

**FC 5094, FC 5294 - Cards (concurrent)**

**FC 5094, FC 5294 - Cards (dedicated)**

**FC 8094-001 (lower half), FC 9094 - Cards (concurrent)**

**FC 8094-001 (lower half), FC 9094 - Cards (dedicated)**

**FC 9094 - Control panel - NB1**

**FC 5074, FC 5079, FC 5094, FC 5294, FC 9079, FC 9094 - Covers**

**FC 5094, FC 9094 - Device board - DB1 and DB2**

**FC 5094, FC 9094 - Device board - DB3**

**FC 5094, FC 9094 - Disk unit (concurrent)**

**FC 5094, FC 9094 - Disk unit (dedicated)**

**FC 5094 - Display panel - NB1**

**FC 5094, FC 9094 - Power distribution backplane - PB1**

**FC 5094, FC 9094 - Power supply - P00, P01, P02, and P03**

**FC 5094, FC 9094 - Removable media - D41 and D42**

**FC 9094 - Time of day (TOD) battery**

**FC 5094, FC 9094 - Tower card - CB1**

## **FC 5094, FC 9094 (with single line cord) - AC module - A01 and A02**

*For use by authorized service providers.*

Use this procedure to remove or replace the AC module - A01 and A02 in an FC 5094, FC 9094 (with single line cord).

To remove or replace the AC module - A01, A02:

1. Is the system or expansion unit with the failing AC module powered on?
  - **Yes:** Continue with the next step.
  - **No:** Go to step 3 (See page 171).
2. Is the failing AC module location (2) A02? See Locations and addresses for system or expansion unit you are working on.
  - **No:** The failing AC module is location (1) A01. Power off the system and continue with the next step.
  - **Yes:** Do not power down the system or expansion unit if it is powered on; this procedure can be performed concurrently. Continue with the next step.
3. Open the rear cover. See FC 5074, FC 5079, FC 5094, FC 5294, FC 9079, FC 9094 - Covers.
4. Trace and disconnect the ac input line cord that connects to the AC module that needs replacing. See Locations and addresses for the expansion unit you are working on.

**Attention:** Do not disconnect the other non-failing unit ac line cord when powered on.
5. Disconnect the power supply jumper cords from the AC module that you are working on.

**Attention:** Do not disconnect the other system AC module power supply jumper cords.
6. Remove the top and bottom screws that hold the AC module to the expansion unit.
7. Remove the AC module unit.

8. Install the AC module by reversing this procedure.  
**Note:** Do not install power supplies P00 and P01 AC jumper cables on the same AC input module.
9. After exchanging an item, go to Verify the repair.  
**This ends the procedure.**

### **FC 5094, FC 9094 (with dual line cord) - AC module - A01 and A02**

*For use by authorized service providers.*

Use this procedure to remove or replace the AC module - A01 and A02 in an FC 5094, FC 9094 (with dual line cord).

To remove or replace the AC module - A01, A02:

1. Do not power down the expansion unit if it is powered on; this procedure can be performed concurrently.
2. Open the rear cover. See FC 5074, FC 5079, FC 5094, FC 5294, FC 9079, FC 9094 - Covers.
3. Trace and disconnect the ac input line cord that connects to the AC module that needs replacing. See the Locations and addresses for the expansion unit you are working on.  
**Attention:** Do not disconnect the other system ac line cord when powered on.
4. Disconnect the power supply jumper cords from the AC module that you are working on.  
**Attention:** Do not disconnect the other expansion unit AC module power supply jumper cords.
5. Remove the left and right screws that hold the AC module to the expansion unit.
6. Remove the AC module unit.
7. Install the AC module by reversing this procedure.  
**Note:** Do not install power supplies P00 and P01 AC jumper cables on the same AC input module.
8. After exchanging an item, go to Verify the repair.  
**This ends the procedure.**

### **FC 5094, FC 9094 - Air moving device - B01 and B02**

*For use by authorized service providers.*

Use this procedure to remove or replace the air moving device (AMD) - B01 and B02 in an FC 5094, or FC 9094.

To remove or replace the AMD - B01 and B02:

1. Do not power down the expansion unit if it is powered on; this procedure can be performed concurrently.
2. Open the rear cover. See FC 5074, FC 5079, FC 5094, FC 5294, FC 9079, FC 9094 - Covers.
3. Remove the EMC access plate located directly above the PCI card enclosure. Press the surfaces of the two latches together and tilt the top of the cover away from the rack to remove it.
4. Remove the screw from the AMD door assembly for the AMD that you are replacing.
5. Remove the AMD assembly by sliding it out of the enclosure while holding the AMD access plate open.
6. Install the AMD by reversing this procedure. The new AMD will automatically power on when it is installed.
7. After exchanging an item, go to Verify the repair.  
**This ends the procedure.**

### **FC 8094-001 (lower half), FC 9094 - Cards (concurrent)**

*For use by authorized service providers.*

Use this procedure to remove or replace cards concurrently in an FC 8094-001 (lower half) or FC 9094.



## Concurrent/dedicated guidelines for FC 8094-001 (lower half) and FC 9094

In some cases you do not need to power down the system in order to change PCI cards. Use the following guidelines to determine if you should use dedicated or concurrent remove and replace procedures. If you use concurrent maintenance on a partitioned system, follow the procedures from the partition that owns the resource. If the resource is not owned, follow the procedure from the primary partition.

### FC 8094-001 (lower half), FC 9094 containing IXS cards:

The IXS cards require dedicated maintenance. Do NOT power down the individual card slot. You can power down the FC 9094 tower, or the lower half of an FC 8094-001 tower. See FC 8094-001 (lower half), FC 9094 - Cards (dedicated).

### For FC 8094-001 (lower half), FC 9094 cards:

- Card positions C01 through C09, and C11 through C15 permit card level concurrent maintenance using HSM. You can power down the individual card slot.
- If the resource is the load source IOA or the load source IOP, or any other storage IOA/IOP with critical DASD attached for the system, primary, or secondary partition, follow the on-screen instructions when you use HSM to power down the IOP or IOA. Instructions to use functions 68 and 69 on the control panel will be included.
- If the resource is the console IOA or the console IOP for the system or primary partition, you cannot power down the domain.
- If the resource is the console IOA or the console IOP for a secondary partition, then power down the secondary partition and follow the procedure from the primary partition.

### CAUTION:

**The circuit card contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the circuit card as instructed by local regulations. (RSFTC234)**

**Attention:** If removing the cover while powered on, errors may occur due to Electromagnetic Interference.

**Attention:** All cards are sensitive to electrostatic discharge (see Work with electrostatic discharge-sensitive parts).

To remove cards concurrently:

1. On the command line, enter the Start System Service Tools command:

```
STRSST
```

If you cannot get to SST, select DST (see Dedicated Service Tools (DST) in the *iSeries Service Functions*



).

**Attention:** Do not perform a system IPL to get to DST.

2. Select **Start a Service Tool** —> **Hardware Service Manager** —> **Packaging hardware resources**.
3. Select **Hardware contained within package** for the Frame ID that contains the IOA or IOP that you are removing.
4. Find the card position for the IOA or IOP that you are removing and select **Concurrent maintenance**.

**Attention:** If multiple resources are shown with the same card position, one or more of these resources will show a status of Missing ("?" after the description). Only one resource will be listed as not missing. Select this resource for the concurrent maintenance operation.

5. A listing of the power domain is shown. Select the **Power off domain** function key. Everything within the IOA's or IOP's power domain will be powered off .
6. To see the status of the power domain, select the **Display power states** function key.
7. Find the IOA or IOP that you are removing and select **Toggle LED blink off/on**.
8. Open the rear cover to access the card that you are removing from the system. See FC 5074, FC 5079, FC 5094, FC 5294, FC 9079, FC 9094 - Covers.
9. Remove the EMC access plate that is located directly above the card enclosure. Remove the screw from the top of the access plate (cover) and tilt the top of the cover away from the frame to remove it.
10. Look at the power LED for the card that you are removing to ensure that it is powered off. The power LED is located to the left of and directly above the card slot. If the LED is blinking multiple times per second (rapidly) or it is off, then the card is powered off.
11. Disconnect and label any cables from the card that you wish to remove.
12. Turn the latch counter clockwise and lift upward on the other latch to release the card.
13. Gently pull the card off the backplane.  
**This ends the procedure.**

To replace cards concurrently:

1. Install the card in to the system by reversing the card removal procedure above.
2. Select the **Power on domain** function key for the IOA or IOP that you are installing.  
**Note:** To the right of the description field you will see one or both of the following symbols displayed.

<b>Symbol</b>	<b>Indication</b>
*	Indicates the location to which the system will assign the resource.
>	Indicates the location to which the resource was last assigned.

3. Press **Enter**. The Work with Controlling Resource display will appear.
4. Determine the location where you want to assign the resource and select **Assign to** for that location.
5. Wait for the Hardware Resource Concurrent Maintenance display to appear with the message indicating that the power on is complete.
6. After exchanging an item, go to "Verify the repair" on page 558.

**Note:** If you have exchanged a 2766 or 2787 Fibre Channel IOA, the IBM 2105 disk unit subsystem must be updated to use the World-Wide Port-Name of the new 2766 or 2787 IOA. This name can be found in the Port worldwide name field on the iSeries server by displaying detail on the 2766 or 2787 IOA Logical Hardware Resource information in Hardware Service Manager in SST/DST.

The 16-digit World-Wide Port-Name can also be determined by appending the digits "1000" to the beginning of the 12-digit IEEE Address found on the tailstock label of the Fibre Channel IOA. Use the *ESS Web Interface User's Guide* (SC26-7346) to update the World-Wide Port-Name in the host configuration on the IBM 2105 ESS. The *ESS Web Interface User's Guide* can also be found at the following URL: <http://ssddom02.storage.ibm.com/disk/ess/documentation.html>

**This ends the procedure.**

## **FC 8094-001 (lower half), FC 9094 - Cards (dedicated)**

*For use by authorized service providers.*

Use this procedure to remove or replace cards using dedicated maintenance in an FC 8094-001 (lower half), FC 9094.

In some cases, you do not need to power down the system to change PCI cards. Use the guidelines in FC 8094-001 (lower half), FC 9094 - Cards (concurrent) to determine if you should use dedicated or concurrent remove and replace procedures.

**CAUTION:**

**The circuit card contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the circuit card as instructed by local regulations. (RSFTC234)**

**Attention:** All cards are sensitive to electrostatic discharge (see Work with electrostatic discharge-sensitive parts).

To remove or replace cards (dedicated):

1. If you are working on an expansion tower, power off the tower using the Expansion unit power procedure. If you are working on the base I/O tower for the Model 870 or 890, power off the system (see Power on/off the system and logical partitions).
2. Remove the ac power cord from the frame that you are working on.
3. Remove the cover to access the card that you are removing from the system. See FC 5074, FC 5079, FC 5094, FC 5294, FC 9079, FC 9094 - Covers.
4. Remove the EMC access plate that is located directly above the card enclosure. Press the two latching mechanisms together and tilt the top of the cover away from the frame to remove it.
5. Disconnect and label any cables from the card that you want to remove.
6. If you are removing an IXS card, then go to Type 2890 or 2892 - Integrated xSeries Server (IXS) for iSeries.
7. Turn the latch counter clockwise and lift upward on the black latch to release the card.
8. Gently pull the card off the backplane.
9. Reverse this procedure to install cards. After exchanging a failing item, go to Verifying the repair.

**Note:** If you have exchanged a 2766 or 2787 Fibre Channel IOA, the IBM 2105 disk unit subsystem must be updated to use the World-Wide Port-Name of the new 2766 or 2787 IOA. This name can be found in the Port worldwide name field on the iSeries server by displaying detail on the 2766 or 2787 IOA Logical Hardware Resource information in Hardware Service Manager in SST/DST.

The 16-digit World-Wide Port-Name can also be determined by appending the digits "1000" to the beginning of the 12-digit IEEE Address found on the tailstock label of the Fibre Channel IOA. Use the *ESS Web Interface User's Guide* (SC26-7346) to update the World-Wide Port-Name in the host configuration on the IBM 2105 ESS. The *ESS Web Interface User's Guide* can also be found at the following URL: <http://ssddom02.storage.ibm.com/disk/ess/documentation.html>

**This ends the procedure.**

**FC 9094 Base I/O Tower- Control panel - NB1**

*For use by authorized service providers.*

Use this procedure to remove or replace the control panel - NB1 in an FC 9094 Base I/O Tower.

**Attention:** The control panel including the processor capacity card and interactive cards are sensitive to electrostatic discharge (see Work with electrostatic discharge-sensitive parts).

**CAUTION:**

**The circuit card contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the circuit card as instructed by local regulations. (RSFTC234)**

To remove or replace the control panel (NB1):

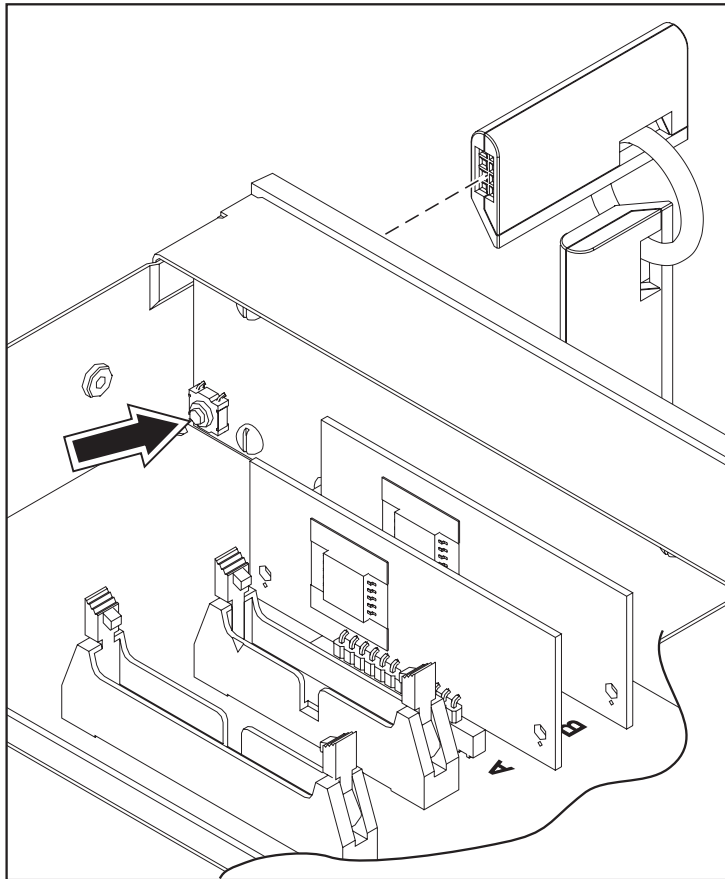
1. Power off the system. See Power on/off the system and logical partitions.
2. Disconnect the ac power cord from the tower that you are working on. Note that dual line cord units have two power cords.
3. Open the front cover. See FC 5074, FC 5079, FC 5094, FC 5294, FC 9079, FC 9094 - Covers.
4. Perform the following to remove the control panel:
  - a. Pull on the two side fasteners to release the control panel assembly.

- b. Slide the panel partially out of the frame.
- c. Disconnect the cables that are attached to backside of the control panel.
- d. Remove the control panel from the frame.
5. Reverse the above procedure to install the panel.
6. When a control panel with keystick is replaced, discard the new keysticks that came with the panel and reuse the original keysticks.

Does the system that you are working on have a keystick lock?

- **Yes:** Continue with the next step.
  - **No:** After exchanging an item, go to Verify the repair.
7. Do you have the original system unit keys and are you reusing them?
    - **No:** Continue with the next step.
    - **Yes:**After exchanging an item, go to Verify the repair.
  8. Perform the following:

**Figure 1. System unit control panel with keystick (NB1)**



RZAQ4506-0

- a. Apply ac power.
- b. Insert the new keystick into the control panel. The control panel will display 0000 5553.
- c. Locate the push button that is on the back side of the control panel. It is located directly behind the front side of the keystick position.
- d. Depress the push button for 3-4 seconds.
- e. The control panel will return to a function 01 display.
9. After exchanging an item, go to Verify the repair.  
**This ends the procedure.**

## FC 5074, FC 5079, FC 5094, FC 5294, FC 9079, FC 9094 - Covers

For use by authorized service providers.

Use this procedure to remove or replace covers on the FC 5074, FC 5079, FC 5094, FC 5294, FC 9079, FC 9094.

**Note:** The front and rear covers will swing open a little more than 90 degrees. This makes it possible to replace all FRUs, without having to remove the covers.

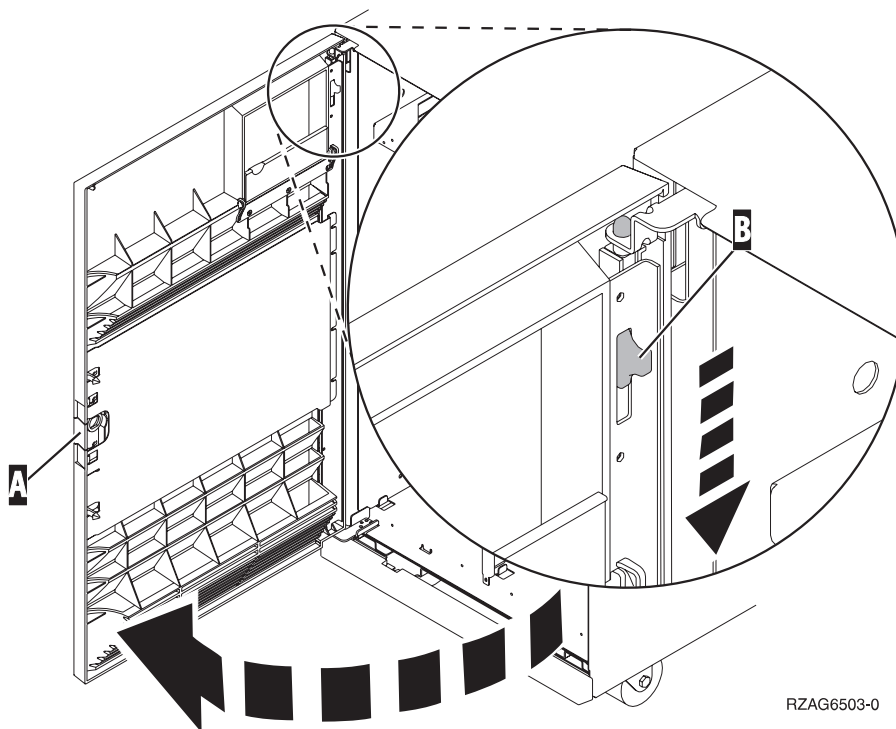
- To open or remove the front cover, refer to Figure 1. Front cover - removal (See page ) below.
- To open or remove the rear cover, refer to Figure 2. Rear cover - removal (See page ) below.

Perform the following steps to open or remove each cover.

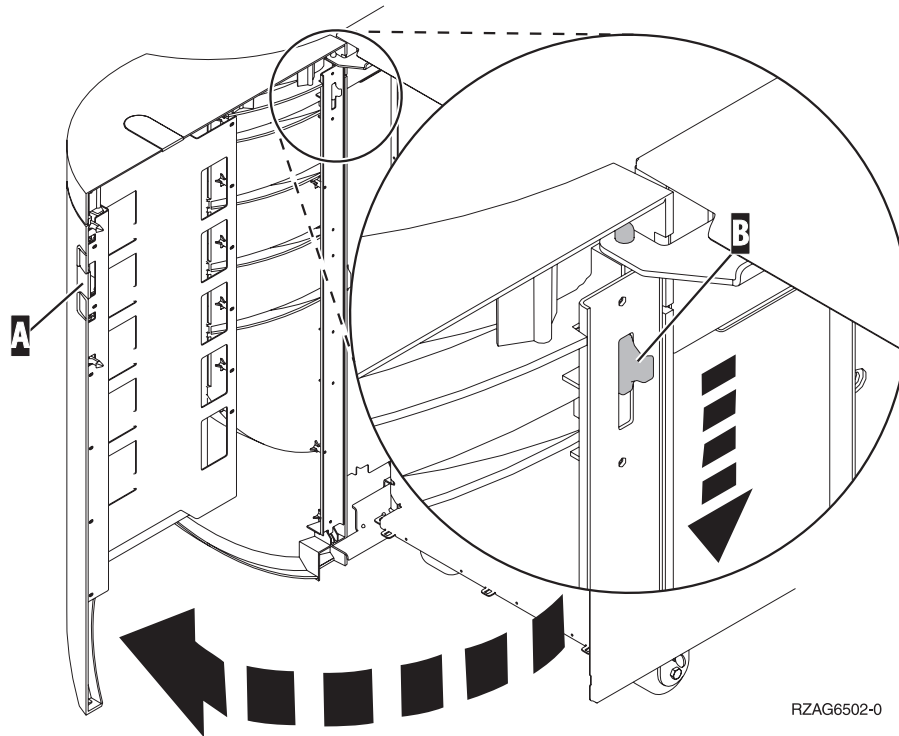
1. Unlock the cover (front only).
2. Open the cover by grasping its right side and pulling it towards you.
3. After opening the cover, press down on lever **B**, which is located inside along the top, left side of the cover.
4. Tilt the top of the cover away from the tower, and lift the cover off.

**This ends the procedure.**

**Figure 1. Front cover - removal**



**Figure 2. Rear cover - removal**



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## FC 5094, FC 9094 - Device board - DB1 and DB2

*For use by authorized service providers.*

Use this procedure to remove or replace the device board - DB1 and DB2 in an FC 5094 or FC 9094.

To remove or replace the device board - DB1 and DB2:

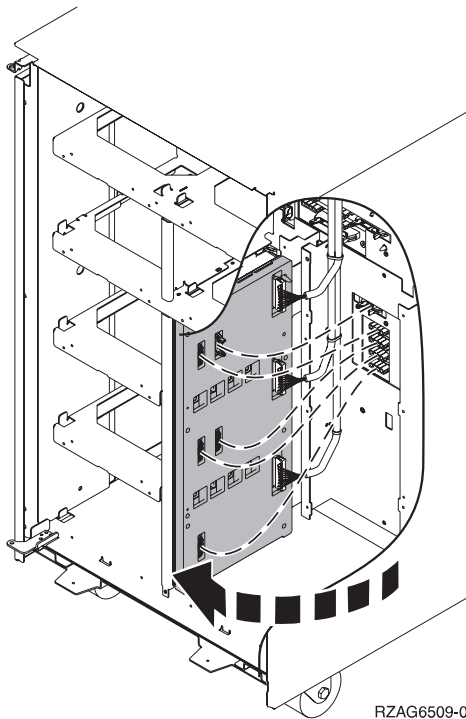
1. Power off the expansion tower. See Power on/off the system and logical partitions.
2. Disconnect the power cord from the expansion tower.
3. Open the front cover. See FC 5074, FC 5079, FC 5094, FC 5294, FC 9079, FC 9094 - Covers.
4. From the front of the expansion tower, perform the following:
  - a. Remove the EMC access plates from the disk unit enclosures that are located in front of the backplane that you are replacing. (For location information, see Locations and addresses.) Press the surfaces of the two latching mechanisms together and tilt the top of the cover away from the frame to remove it.
  - b. Record the locations of the disk units and then remove them from the disk unit enclosures that you just uncovered.
 

**Attention:** The disk units are sensitive to electrostatic discharge (see Work with electrostatic discharge-sensitive parts).
  - c. Remove the screws that hold the disk unit cage assembly to the frame.
  - d. Remove the two retaining screws that are located inside of the disk unit cage assembly (the top right and bottom left corners).
  - e. Remove the disk unit cage assemblies.
  - f. Remove the screws that hold the DASD shelf to the frame.
  - g. Remove the DASD shelf from the frame.
5. Remove the retaining screw that is holding the DASD board assembly to the frame.

- Pull the DASD board assembly out until it slides off the guide pins, then rotate the DASD board assembly 90 degrees. Note the locations of the cables that are located on the backside of the board assembly, and then remove them.

**Note:** Both ends of the ribbon cables are marked **LH** or **RH**, indicating that one end of the cable is plugged in to either the left-hand (DB1) or right-hand (DB2) DASD board assembly. The other end of the cable is plugged in to either the left-most (LH) or right-most (RH) DASD controller card. The cables will crisscross in the center of the tower.

**Figure 1. Device board cabling**



- Remove the DASD board assembly.
- Install the DASD board assembly by reversing the remove procedure. After exchanging an item, go to Verify the repair.

**This ends the procedure.**

### **FC 5094, FC 9094 - Device board - DB3**

*For use by authorized service providers.*

Use this procedure to remove or replace the device board - DB3 in an FC 5094 or FC 9094.

To remove or replace the device board - DB3:

- Power off the expansion tower (see Power on/off the system and logical partitions).
- Disconnect the power cord from the expansion tower.
- Open the rear cover. See FC 5074, FC 5079, FC 5094, FC 5294, FC 9079, FC 9094 - Covers.
- From the rear of the expansion tower do the following:
  - Remove the EMC access plate that is located directly above the tower card enclosure. Press the surfaces of the two latching mechanisms together and tilt the top of the cover away from the frame to remove it.
  - Remove the cables from the disk unit controller cards (IOAs) that are located inside the PCI card enclosure and note their locations.

**Note:** Both ends of the ribbon cables are marked **LH** or **RH**, indicating that one end of the cable is plugged in to either the left-hand (DB1) or right-hand (DB2) DASD board assembly. The other end of the cable is plugged in to either the left-most (LH) or right-most (RH) DASD controller card. The cables will crisscross in the center of the tower.

- c. Remove the screws that hold the tower card enclosure to the frame.
  - d. Pull the tower card enclosure partially out of the frame while lifting the cables clear of the enclosure.
  - e. Press the release mechanism that is located along the top right side of the enclosure and carefully slide the enclosure towards you. Make sure that the cables are clear of the enclosure.
  - f. Remove the tower card enclosure from the frame.
  - g. Remove the screws from the EMC access plate that is located inside the frame and directly above the power distribution board.
  - h. Remove the EMC access plate.
  - i. Reach through the opening and remove the cables from the backside of the base DASD board assembly (DB3).
5. Open the front cover. See FC 5074, FC 5079, FC 5094, FC 9079, FC 9094 - Covers.
6. From the front of the expansion tower do the following:
- a. Note the removable media locations and then remove them by pulling out on the handles that are located on each side of the unit.
  - b. Remove the control panel by pulling on the handles that are located on each side of the unit and sliding it partially out of the tower. Then, unplug the cable from the rear of the control panel. (See FC 5074, FC 5079 - Control panel - NB1.)
  - c. Unplug the control panel cable from the base DASD board assembly (DB3).
  - d. Remove the two retaining screws that are located inside of the removable media enclosure (the top right and lower left corners).
  - e. Remove the removable media enclosure.
  - f. Remove the EMC access plates from the disk unit enclosures that are located in front of the backplane (DB3). For location information, see Locations and addresses. Press the surfaces of the two latching mechanisms together and tilt the top of the cover away from the frame to remove it.
  - g. Record the disk unit locations and then remove them from the disk unit enclosures that you just uncovered.
- Attention:** The disk units are sensitive to electrostatic discharge (see "Work with electrostatic discharge-sensitive parts" on page 585).
- h. Remove the screws that hold the disk unit enclosures to the frame.
  - i. Remove the retaining screws that are located inside the disk unit enclosure.
  - j. Remove the disk unit enclosures.
  - k. Remove the screws that hold the center support bracket and shelf for the disk unit and removable media enclosure to the frame.
  - l. Remove the support bracket and shelf.
  - m. Remove the base DASD board assembly (DB3).
7. Install the base DASD board assembly by reversing the removal procedure. After exchanging an item, go to Verify the repair.

**This ends the procedure.**

### **FC 5094, FC 9094 - Disk unit (concurrent)**

*For use by authorized service providers.*

Use this procedure to remove or replace a disk unit using concurrent maintenance in an FC 5094, or FC 9094.

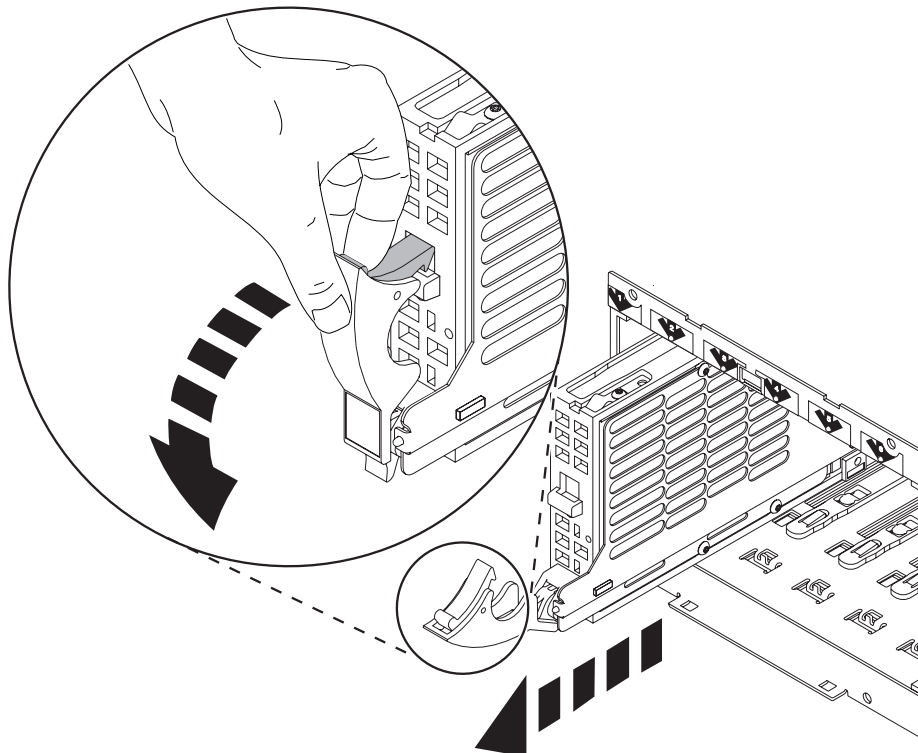


**Attention:** If removing the cover while powered on, errors may occur due to electromagnetic interference.

**Attention:** The disk unit is sensitive to electrostatic discharge (see Work with electrostatic discharge-sensitive parts).

To remove or replace the disk unit using concurrent maintenance:

1. Determine if the system has logical partitions. Go to Determine if the system has logical partitions, before continuing with this procedure.
2. Were you directed here from Recovery procedures?
  - **No:** Go to “Recovery procedures” on page 539.
  - **Yes:** After you have determined the location of the disk unit to replace, remove the front covers for access. See FC 5074, FC 5079, FC 5094, FC 5294, FC 9079, FC 9094 - Covers. Then, continue with the next step.
3. Remove the EMC access plate that is over the location of the disk unit that you are removing.
4. To remove a disk unit using concurrent maintenance, perform the following:
  - a. Select System Service Tools (SST). If you cannot get to SST, select DST.  
**Do not perform a system IPL to get to DST.**
  - b. Select **Start a Service Tool** —> **Hardware Service Manager**.
  - c. Select **Device Concurrent Maintenance** and enter the required information in the information fields.
  - d. Press **Enter** on the console. After the delay time, the light above the device location will begin flashing. You now have nine seconds to pinch the two surfaces of the latching mechanism together and rotate the handle of the disk unit towards you. Pull the disk unit partially out of the tower. The light above the device location will go off and remain off as soon as the device is no longer making contact with the backplane.



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Wait another five seconds to allow time for the disk to stop spinning. Then pull the disk unit the remaining way out of the tower.

5. Are you finished with the repair?
  - **No:** Continue with the next step.
  - **Yes:** Replace the covers that were removed during this procedure and return to the procedure that sent you here.  
**This ends the procedure.**
6. Install the disk unit by performing the following:
  - a. Select System Service Tools (SST). If you cannot get to SST, select DST.  
**Do not perform a system IPL to get to DST.**
  - b. Select **Start a Service Tool** —> **Hardware Service Manager**.
  - c. Select **Device Concurrent Maintenance** and enter the required information in the information fields.  
**Attention:** Do not press Enter at this time.
  - d. Slide the unit half-way into the tower. Ensure that the device does not make contact with the backplane at this time.
  - e. Press **Enter** on the console.
    - After the delay time, the light above the device location will begin flashing. You now have nine seconds to insert the disk unit.
    - Put the disk unit part way into the desired slot and rotate the handle of the disk unit towards you.
    - Then, push the disk unit completely into the slot and rotate the handle towards the disk unit to latch it into the slot. The light above the device location will go off and remain off for a few seconds when the device contacts the backplane. Then it should go on and remain on.  
**Attention:** If you install the device when the light is not flashing, data may be lost, the disk unit may be damaged, or the backplane may be damaged.
  - f. Replace the covers that were removed during this procedure and return to the procedure that sent you here.  
**This ends the procedure.**

## **FC 5094, FC 9094 - Disk unit (dedicated)**

*For use by authorized service providers.*

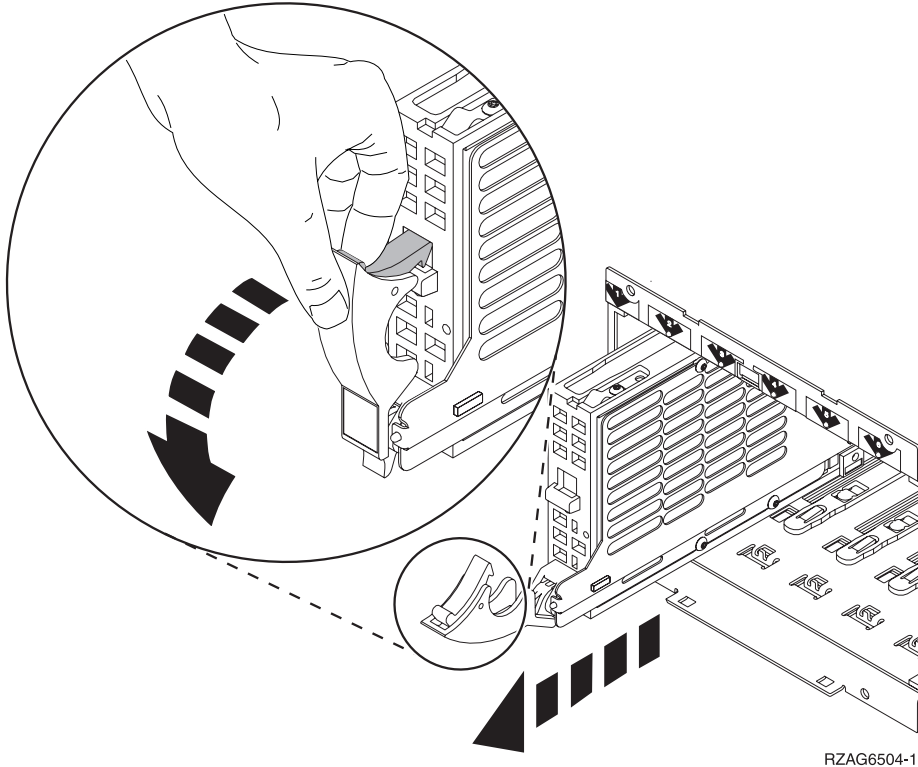
Use this procedure to remove or replace a disk unit using dedicated maintenance in an FC 5094 or an FC 9094.

**Attention:** The disk unit is sensitive to electrostatic discharge (see Work with electrostatic discharge-sensitive parts).

To remove or replace the disk unit (dedicated):

1. Determine if the system has logical partitions. Go to Determine if the system has logical partitions before continuing with this procedure.
2. Were you directed here from Recovery procedures?
  - **No:** Go to Recovery procedures.
  - **Yes:** After you have determined the location of the disk unit to replace, remove the front covers for access. See FC 5074, FC 5079, FC 5094, FC 5294, FC 9079, FC 9094 - Covers.
3. Remove the EMC access plate that is over the location of the disk unit that you are removing. For location information, see Locations — FC 5094 I/O tower, or Locations - Models 870 and 890 with an FC 9094 Base I/O Tower.
4. Remove the disk unit by performing the following:

- a. Power off the system (see Power on/off the system and logical partitions).
- b. Disconnect the power cord.
- c. Pinch the two surfaces of the latching mechanism together and pull the handle towards you to release the disk unit from the slot.
- d. Remove the unit from the tower.



5. Are you finished with the repair?
  - **No:** Continue with the next step.
  - **Yes:** Replace the covers that were removed during this procedure and return to the procedure that sent you here.  
**This ends the procedure.**
6. Install the disk unit by performing the following:
  - a. Power off the system (see Power on/off the system and logical partitions).
  - b. Disconnect the power cord.
  - c. Put the disk unit part way into the desired slot and rotate the handle of the disk unit towards you.
  - d. Push the disk unit completely into the slot and rotate the handle towards the disk unit to latch it into the slot.
  - e. Replace the covers that were removed during this procedure and return to the procedure that sent you here.  
**This ends the procedure.**

### **FC 5094 - Display panel - NB1**

*For use by authorized service providers.*

Use this procedure to remove or replace the display panel - NB1 in an FC 5094.

**Attention:** The display panel is sensitive to electrostatic discharge. See Work with electrostatic discharge-sensitive parts.

To remove or replace the display panel - NB1:

1. Power off the expansion tower. See Expansion unit power procedure.
2. Disconnect the ac power cord from the expansion tower. Note that dual line cord units have two power cords.
3. Open the front cover. See FC 5074, FC 5079, FC 5094, FC 5294, FC 9079, FC 9094 - Covers.
4. Pull on the two side fasteners to release the display panel assembly.
5. Slide the panel partially out of the frame.
6. Disconnect the cables that are attached to the backside of the display panel.
7. Remove the display panel from the frame.
8. Reverse the above procedure to install the new panel.
9. After exchanging an item, go to Verify the repair.  
**This ends the procedure.**

### **FC 5094, FC 9094 - Power distribution backplane - PB1**

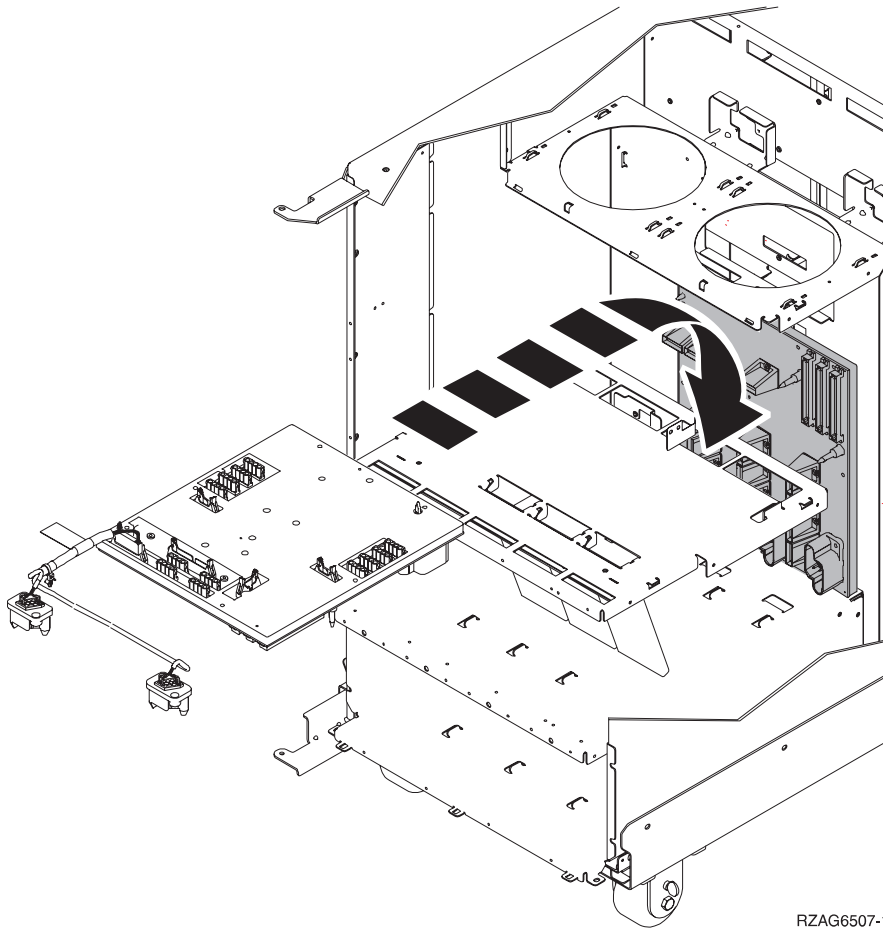
*For use by authorized service providers.*

Use this procedure to remove or replace the power distribution backplane - PB1 in an FC 5094 or FC 9094.

To remove or replace the power distribution backplane:

1. You must remove both disk unit backplanes DB1 and DB2 before continuing with this procedure. Perform FC 5094, FC 9094 - Device boards - DB1 and DB2 for each backplane. After you have removed both disk unit backplanes, return here and continue with the next step of this procedure.
2. Remove the rear cover. See FC 5074, FC 5079, FC 5094, FC 5294, FC 9079, FC 9094 - Covers.
3. Remove the PCI drawer. See FC 5094, FC 9094 - Tower card - CB1.
4. Remove the AC module. See FC 5094, FC 9094 (with single line cord) - AC module - A01 or FC 5094, FC 9094 (with dual line cord) - AC module - A01 and A02.
5. Remove all power supplies in the unit being worked on. See FC 5094, FC 9094 - Power supply - P00, P01, P02, and P03.
6. Remove the screws from the power subframe assembly.
7. From the front of the unit, reach through and remove the cables from the backside of the power distribution backplane and note their locations.
8. From the rear of the unit, remove the mounting screws that hold the power distribution backplane to the unit.

9. Pull the power distribution backplane slightly towards you and lift it up to remove it from the unit.



10. Install the power distribution backplane by reversing this procedure.  
**Note:** Do not install power supplies P00 and P01 AC jumper cables on the same AC input module.
11. After exchanging an item, go to Verify the repair.  
**This ends the procedure.**

### **FC 5094, FC 9094 - Power supply - P00, P01, P02, P03**

*For use by authorized service providers.*

Use this procedure to remove or replace the Power supply - P00, P01, P02, P03 in an FC 5094 or FC 9094.

To remove or replace the power supply - P00, P01, P02, P03:

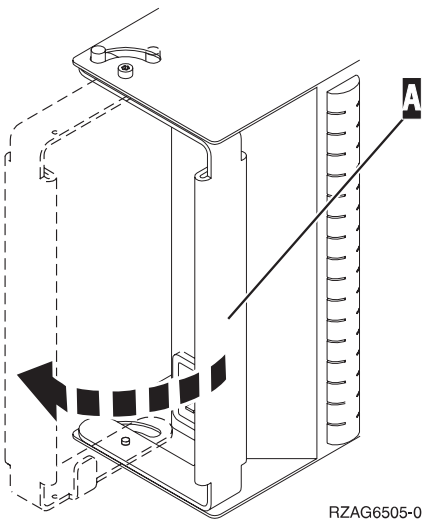
1. Do not power off the expansion unit if it is powered on; this procedure can be performed concurrently.
2. Open the rear cover. See FC 5074, FC 5079, FC 5094, FC 5294, FC 9079, FC 9094 - Covers.
3. Disconnect the ac power jumper cord from the unit you are replacing.
4. Remove the bottom screw (if installed).
5. Rotate the handle from right to left to release the power supply.

#### **DANGER**

**Up to 240 V ac is present at the power module connectors when the main power cord is connected to a power source. (RSFTD010)**

6. Remove the power supply.

**Figure 1. Removing the power supply - P00, P01, P02, P03**



7. Install the power supply by reversing this procedure.

**Attention:** Do not slam the power supply in when installing it. Insert it until the power supply engages the unit, then rotate the handle from left to right.

**Note:** Do not install power supplies P00 and P01 AC jumper cables on the same AC input module.

8. After exchanging an item, go to Verify the repair.  
**This ends the procedure.**

## **FC 5094, FC 9094 - Removable media - D41 and D42**

*For use by authorized service providers.*

Use this procedure to remove or replace the removable media D41 and D42 on an FC 5094 or FC 9094.

### **Laser safety information**

#### **CAUTION:**

**This product may contain a CD-ROM which is a class 1 laser product. (RSFTC240)**

#### **CAUTION:**

**This product may contain a DVD which is a class 1 laser product. (RSFTC245)**

To remove the removable media D41 and D42:

1. Determine if the system has logical partitions. Go to Determine if the system has logical partitions before continuing with this procedure.
2. Remove media (if any) from the device. If the eject button on a tape device is failing, go to Tape cartridge - manual removal, then continue with the next step of this procedure. If the eject button on a DVD-RAM device is failing and will not open, do not attempt manual removal of optical media at this time. For optical devices other than DVD-RAM, go to Optical media - manual removal, and then continue with the next step of this procedure.
3. Are you removing a unit by using device concurrent maintenance?
  - **Yes:** Continue with the next step.
  - **No:** Perform the following:
    - a. Power off the tower or expansion tower. see Power on/off the system and logical partitions.
    - b. Disconnect the power cord from the tower or expansion tower.
    - c. Open the front cover. See FC 5074, FC 5079, FC 5094, FC 5294, FC 9079, FC 9094 - Covers.

- d. Pull on the handles which are located on each side of the unit, and remove the unit. If the unit is DVD-RAM, and manual removal of optical media is required, go to Optical media (CD-ROM, DVD-ROM, and DVD-RAM) - manual removal.
- e. Install the new device by reversing the removal procedure. After exchanging an item, go to Verify the repair.

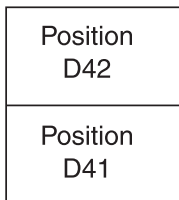
**This ends the procedure.**

4. Before exchanging a removable media unit, you must ensure that the unit is not in use and is varied off.

**Note:** If you are removing an optical storage unit, you must ensure that all of the removable media units in the tower or expansion tower are not in use and are varied off.

5. Use the figure to determine the location of the internal removable media unit. Record this location for later use.

**Figure 1. Internal removable media locations**



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6. Perform the following:
  - a. Select **System Service Tools (SST)**. If you cannot get to SST, select DST.  
**Do not perform a system IPL to get to DST.**
  - b. Select **Start a Service Tool** → **Hardware Service Manager** → **Device Concurrent Maintenance** and enter the required information in the information fields. **Do not press the Enter key at this time.**
  - c. Read the remaining steps of this procedure and ensure that you understand the procedure before continuing.
  - d. Press the **Enter** key on the console. After the delay time, the light at the top right of the device will begin flashing. You now have 9 seconds to pull out firmly on the handles and pull the unit partially out of the tower.  
**Attention:** If you remove the device when the light is **not** flashing, data may be lost, the unit may be damaged, or the backplane may be damaged.  
**Note:** The light at the top right of the device will go off and remain off as soon as the device is no longer making contact with the backplane.
  - e. Remove the unit from the tower. If the unit is DVD-RAM, and manual removal of optical media is required, go to Optical media (CD-ROM, DVD-ROM, and DVD-RAM) - manual removal.  
**This ends the procedure.**

To replace the removable media D41 and D42:

1. Perform the following to install a new unit.
  - a. Select **Device Concurrent Maintenance** and enter the required information in the information fields. **Do not press the Enter key at this time.**
  - b. Read the remaining steps of this procedure and ensure that you understand the procedure before continuing.
  - c. Slide the unit partially into the tower. **Ensure that the device does not contact the backplane at this time.**
  - d. Press the **Enter** key on the console. After the delay time, the light at the top right of the device will begin flashing. You now have 9 seconds to push in firmly on the handles and push the unit completely into the frame.

**Attention:** If you install the device when the light is **not** flashing, data may be lost, the unit may be damaged, or the backplane may be damaged.

**Note:** The light at the top right of the device will go off and remain off for a few seconds when the device contacts the backplane. Then it should go on and remain on.

Did the light on the device go on and remain on?

- **No:** Continue with the next step.
- **Yes:** After exchanging an item, go to Verify the repair.

**This ends the procedure.**

2. Attempt the device concurrent maintenance procedure again without physically moving the unit.

Did the light above the device go on and remain on?

- **No:** Continue with the next step.
- **Yes:** After exchanging an item, go to Verify the repair.

**This ends the replace procedure.**

3. There is a power problem. One of the following is the problem:

- The new unit is defective.
- The backplane was damaged during the device concurrent maintenance procedure.
- There is a new problem with the power subsystem.

**This ends the procedure.**

## **FC 9094 - Time of day (TOD) battery**

*For use by authorized service providers.*

Use this procedure to remove or replace the time of day battery in an FC 9094.

### **CAUTION:**

**This product contains a lithium battery. To avoid possible explosion, do not burn, exchange, or charge the battery. Discard the battery as instructed by local regulations for lithium batteries. (RSFTC232)**

To remove or replace the time of day battery:

1. Power off the FC 9094 expansion unit. See Power on/off the system and logical partitions.
2. Remove the power cord from the FC 9094 expansion unit. Note that dual line cord units have two power cords.
3. Open the rear cover. See FC 5074, FC 5079, FC 5094, FC 5294, FC 9079, FC 9094 - Covers.
4. From the rear of the FC 9094 expansion unit perform the following:
  - a. Remove the EMC access plate that is located directly above the PCI card enclosure. Press the surfaces of the two latching mechanisms together and tilt the top of the cover away from the frame to remove it.
  - b. Disconnect the cables from the top of the PCI cards and note their location.

**Attention:** All cards are sensitive to electrostatic discharge. See Work with electrostatic discharge-sensitive parts.
  - c. While lifting the cables clear, pull the PCI card enclosure partially out to the release-mechanism stop on the right side.
  - d. Remove the PCI cards on the right side of the enclosure that prevent access to the battery. See FC 8094-001 (lower half), FC 9094 - Cards (dedicated). Note their locations.
5. Remove the TOD battery by using a flat object (such as a screwdriver) to pry it out.
6. Install the new TOD battery by reversing this procedure.
7. After installation is complete, IPL the system in manual mode.
8. Have the customer set the time and date.

**This ends the procedure.**



## FC 5094, FC 9094 - Tower card - CB1

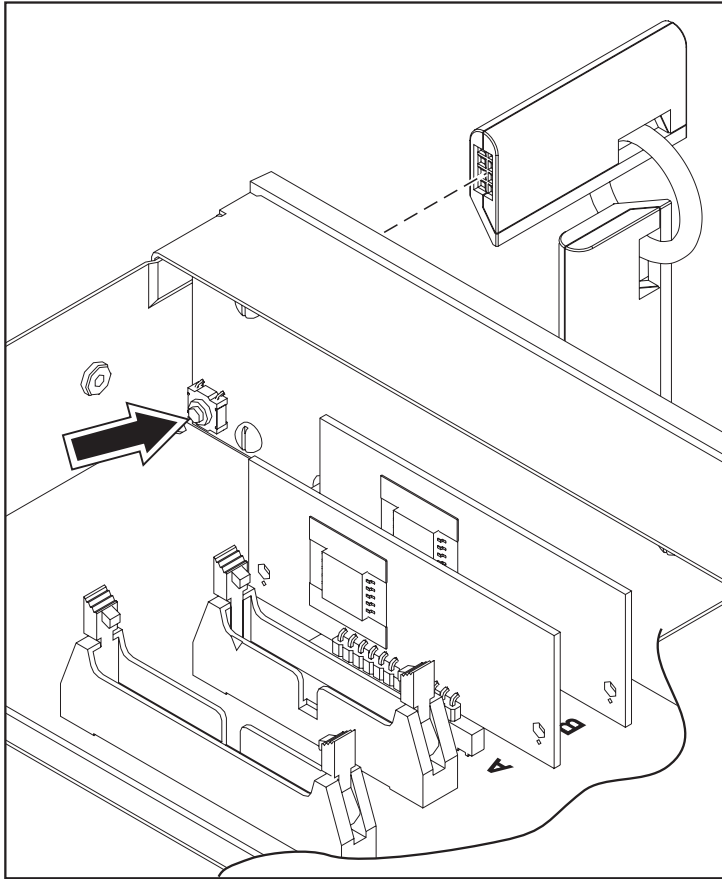
*For use by authorized service providers.*

Use this procedure in conjunction with the Expansion unit power procedure to remove or replace the tower card - CB1 in an FC 5094 or FC 9094.

To remove or replace the tower card - CB1:

1. Power off the expansion tower using the Expansion unit power procedure.  
**Note:** The Primary I/O Unit Tower Card cannot be replaced concurrently.
2. Open the rear cover. See FC 5074, FC 5079, FC 5094, FC 5294, FC 9079, FC 9094 - Covers.
3. Disconnect the plugs to each power supply.
4. From the rear of the expansion tower do the following:
  - a. Remove the external cables from the rear of the PCI card enclosure and note their locations.
  - b. Remove the EMC access plate that is located directly above the PCI card enclosure. Press the surfaces of the two latching mechanisms together and tilt the top of the cover away from the frame to remove it.
  - c. Remove the cables from the top of the PCI cards and note their locations.  
**Attention:** All cards are sensitive to electrostatic discharge. See Work with electrostatic discharge-sensitive parts.
  - d. Remove the screws that hold the PCI card enclosure to the frame.
  - e. Pull the PCI card enclosure partially out of the frame while lifting the cables clear of the enclosure.
  - f. Press the release mechanism that is located along the top right side of the enclosure and carefully slide the enclosure towards you. Make sure that the cables are clear of the enclosure.
5. Remove the PCI cards from the enclosure and note their locations. See FC 8094-001 (lower half), FC 9094 - Cards (dedicated) or FC 5074, FC 5079, FC 5094, FC 5294 - Cards (dedicated).
6. Install the new PCI card enclosure by reversing the above procedure.
7. Are you working on a FC 9094?
  - **No:** Continue with the next step.
  - **Yes:** Perform the following:
    - a. Open the front cover. See FC 5074, FC 5079, FC 5094, FC 5294, FC 9079, FC 9094 - Covers.
    - b. Pull on the two side fasteners to release the control panel.
    - c. Slide the panel partially out of the frame.
    - d. Insert the keystick into the panel.
    - e. Apply ac power. The panel should display SRC 0000 5553.  
**Note:** The tower may power up automatically.
    - f. Locate the push button located on the back of the control panel, directly behind the keystick position. Depress the push button for 3-4 seconds. The control panel will display the bring-up SRCs and then function 01.

**Figure 1. System unit control panel with keystick (NB1)**



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- g. Continue with step 9 (See page 190) to set the configuration ID.
8. Perform steps 23 (See page 569) and 24 (See page 570) in the Expansion unit power procedure. Then, return here and continue with the next step.
9. Set the configuration ID in the tower card:
  - a. If the ac power is not applied, then apply it now.
 

**Note:** The tower may power up automatically.
  - b. Power down the expansion tower **without** removing the power cord using the Expansion unit power procedure. Then, return here and continue with the next step.
  - c. Select function 07 on the system panel. Press **Enter**. (07\*\* will be displayed)
  - d. Use the arrow keys to increment/decrement to sub-function **A9** (07A9 will be displayed). Press **Enter** (07A9 00 will be displayed).
  - e. Use the arrow keys to increment/decrement to the frame address, nn (nn is usually 02, 03, and so forth for expansion towers) (07nn will be displayed). Press **Enter** (07nn 00 will be displayed).
 

**Note:** The display on the addressed frame should now be blinking on and off.
  - f. Use the arrow keys to increment/decrement to a configuration ID.
    - The configuration ID is **8A** for FC 5094.
    - The configuration ID is **99** for FC 9094.

(078x will be displayed). Press **Enter** (078x 00 will be displayed).
  - g. After a few seconds, the display on the addressed FC 5094, FC 9094 frame will stop blinking and return to displaying the frame address. On a FC 9094, the display will show 07xx 00, indicating success. Use the arrow keys to increment/decrement until 07\*\* is shown. Press **Enter** to return the panel to 07.

- h. Power the expansion unit back on. See the Expansion unit power procedure.
10. After exchanging an item, go to Verify the repair.  
**This ends the procedure.**

## **FC 5095, FC 0595 remove and replace procedures**

*For use by authorized service providers.*

**FC 5095, FC 0595 - Air moving device - B01, B02, B03, and B04**

**FC 5095, FC 0595 - Cards (concurrent)**

**FC 5095, FC 0595 - Cards (dedicated)**

**FC 5095, FC 0595 - Covers**

**FC 5095, FC 0595 - Device board - DB1 and DB2**

**FC 5095, FC 0595 - Disk unit (concurrent)**

**FC 5095, FC 0595 - Disk unit (dedicated)**

**FC 5095, FC 0595 - Display panel - NB1**

**FC 5095, FC 0595 - Power distribution backplane - PB1**

**FC 5095, FC 0595 - Power supply - P01 and P02**

**FC 5095, FC 0595 - Tower card - CB1**

### **FC 5095, FC 0595 - Air moving device - B01, B02, B03, and B04**

*For use by authorized service providers.*

Use this procedure to remove or replace the air moving device (AMD) - B01, B02, B03, and B04 in an FC 5095, FC 0595.

Four running Air Moving Devices (AMDs) and two power supplies **must** be installed and powered on to perform this procedure.

To remove or replace the AMDs:

1. Are there four running AMDs and two power supplies (powered on) installed in the expansion unit?
  - **Yes:** Continue with the next step.
  - **No:** Perform the following:
    - a. Power down the expansion unit. See Power on/off the system and logical partitions.
    - b. Remove the power cord from the rear of the expansion unit, and continue with the next step.
2. Remove the right or top side cover, depending on expansion unit orientation. See FC 5095, FC 0595 - Covers.
3. Pull the fastener on the front of the AMD casing.
4. Pull open and remove the AMD. The power connection will undock automatically.
5. Install the AMD by reversing this procedure. After exchanging an item, go to Verify the repair.  
**This ends the procedure.**

## FC 5095, FC 0595 - Cards (concurrent)

*For use by authorized service providers.*

Use this procedure to remove or replace cards concurrently in an FC 5095 or FC 0595.

### Concurrent/dedicated guidelines for an FC 5095 or FC 0595

In some cases you do not need to power down the system to change PCI cards. Use the following guidelines to determine if you should use dedicated or concurrent remove and replace procedures. If you use concurrent maintenance on a partitioned system, follow the procedures from the partition that owns the resource. If the resource is not owned, follow the procedure from the primary partition.

- Card positions C01-C04 and C06-C08 permit concurrent maintenance using HSM. You can power down the individual card slot.
- HSL card position C05 does not permit slot level concurrent maintenance. Use tower level concurrent maintenance.
- If the resource is the load source IOA or the load source IOP, or any other storage IOA/IOP with critical DASD attached for the system, primary, or secondary partition, follow the on-screen instructions when you use HSM to power down the IOP or IOA. Instructions to use functions 68 and 69 on the control panel will be included.
- If the resource is the console IOA or the console IOP for the system or primary partition, you cannot power down the domain.
- If the resource is the console IOA or the console IOP for a secondary partition, then power down the secondary partition and follow the procedure from the primary partition.
- See FC 5095, FC 0595 - Cards (dedicated) if you choose to perform dedicated card removal.

### CAUTION:

**The circuit card contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the circuit card as instructed by local regulations. (RSFTC234)**

**Attention:** All cards are sensitive to electrostatic discharge (see Work with electrostatic discharge-sensitive parts).

To remove cards concurrently:

1. From the Hardware Service Manager display, select **Packaging hardware resources** —> **Hardware contained in packaging**.
2. Find the card position for the IOA or IOP that you are removing and select **Concurrent maintenance**. A listing of the power domain is shown.
3. Find the IOA or IOP that you are removing and select **Power off domain**. Everything within the IOA's or IOP's power domain will be powered off. The Display Power Status display appears.
4. Find the IOA or IOP that you are removing and select **Toggle LED blink off/on**.
5. Remove the cover to access the card that you are removing from the system. See FC 5095 - Covers.
6. Look at the power LED for the card that you are removing to ensure that it is powered off. The power LED is located to the left of and directly above the card slot. If the LED is blinking multiple times per second (rapidly) or it is off, then the card is powered off.
7. Remove the right side cover. See FC 5095, FC 0595 - Covers.
8. Remove and label any cables connected to the card.
9. Turn the latches securing the card.
10. Gently pull the card off the system backplane.  
**This ends the procedure.**

To replace cards concurrently:

1. Install the card in to the system by reversing the card removal procedure above.

2. Select **Power on domain** for the IOA or IOP that you are installing.

**Note:** To the right of the description field you will see one or both of the following symbols displayed:

Symbol	Indication
*	Indicates the location to which the system will assign the resource.
>	Indicates the location to which the resource was last assigned.

3. Press **Enter**. The Work with Controlling Resources display will appear.
4. Determine the location where you want to assign the resource and select **Assign to** for that location.
5. Wait for the Hardware Resource Concurrent Maintenance display to appear with the message indicating power on complete.
6. After exchanging the failing item, go to Verify the repair.

**Note:** If you have exchanged a 2766 or 2787 Fibre Channel IOA, the IBM 2105 disk unit subsystem must be updated to use the World-Wide Port-Name of the new 2766 or 2787 IOA. This name can be found in the Port worldwide name field on the iSeries server by displaying detail on the 2766 or 2787 IOA Logical Hardware Resource information in Hardware Service Manager in SST/DST.

The 16-digit World-Wide Port-Name can also be determined by appending the digits "1000" to the beginning of the 12-digit IEEE Address found on the tailstock label of the Fibre Channel IOA. Use the *ESS Web Interface User's Guide* (SC26-7346) to update the World-Wide Port-Name in the host configuration on the IBM 2105 ESS. The *ESS Web Interface User's Guide* can also be found at the following URL: <http://ssddom02.storage.ibm.com/disk/ess/documentation.html>

**This ends the procedure.**

## FC 5095, FC 0595 - Cards (dedicated)

*For use by authorized service providers.*

Use this procedure to remove or replace cards using dedicated maintenance in an FC 5095, FC 0595.

In some cases, you do not need to power down the system to change PCI cards in an FC 5095, FC 0595. Use the guidelines in FC 5095, FC 0595 - Cards (concurrent) to determine if you should use dedicated or concurrent remove and replace procedures.

### CAUTION:

**The circuit card contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the circuit card as instructed by local regulations. (RSFTC234)**

**Attention:** All cards are sensitive to electrostatic discharge (see Work with electrostatic discharge-sensitive parts).

To remove or replace cards (dedicated):

1. Power off the expansion tower. See the Expansion unit power procedure.
2. Remove the ac power cord from the frame you are working on.
3. Remove the right side cover. See FC 5095, FC 0595 - Covers.
4. Remove the ESD shield.
5. Remove and label any cables connected to the card.
6. Turn the latches that secure the card.
7. Gently pull the card off the system backplane.
8. Reverse this procedure to install a card.

**Note:** If you have exchanged a 2766 or 2787 Fibre Channel IOA, the IBM 2105 disk unit subsystem must be updated to use the World-Wide Port-Name of the new 2766 or 2787 IOA. This name can be found in the Port worldwide name field on the iSeries by displaying detail on the 2766 or 2787 IOA Logical Hardware Resource information in Hardware Service Manager in SST/DST.

The 16-digit World-Wide Port-Name can also be determined by appending the digits "1000" to the beginning of the 12-digit IEEE Address found on the tailstock label of the Fibre Channel IOA. Use the *ESS Web Interface User's Guide* (SC26-7346) to update the World-Wide Port-Name in the host configuration on the IBM 2105 ESS. The *ESS Web Interface User's Guide* can also be found at the following URL: <http://ssddom02.storage.ibm.com/disk/ess/documentation.html>

**This ends the procedure.**

## **FC 5095, FC 0595 - Covers**

*For use by authorized service providers.*

Use this procedure to remove or replace the covers on an FC 5095 or FC 0595.

To remove the front cover: Pull the top of the cover away from the frame.

To remove the right side cover: Lift up on the latch and slide the cover to the rear of the tower.

To remove the rear cover: Lift the cover to detach.

## **FC 5095, FC 0595 - Device board - DB1 and DB2**

*For use by authorized service providers.*

Use this procedure to remove or replace the device board - DB1 and DB2 on an FC 5095, FC 0595.

To remove or replace the device board - DB1 and DB2:

1. Power off the expansion unit. See the Expansion unit power procedure.
2. Unplug the power cord from the back of the expansion unit.
3. Remove the front and right side covers. See FC 5095, FC 0595 - Covers.
4. Remove the EMC shield in front of the disk units by pulling out on the two side latches.
5. Remove the disk units from the disk unit cage. Label the position of each disk unit.
6. Remove the screws holding the disk unit cage to the frame. The screws are located on the front and inside rear of the disk unit cage.
7. Unplug and remove the cables plugged into the back of the device board.
8. Pull the disk unit cage out of the frame.
9. Remove the device board from the back of the disk unit cage.
10. Install the device board by reversing the removal procedure.

**This ends the procedure.**

## **FC 5095, FC 0595 - Disk unit (concurrent)**

*For use by authorized service providers.*

Use this procedure to remove or replace a disk unit (concurrently) in an FC 5095, FC 0595.

**Attention:** If removing the cover while the system is powered on, errors may occur due to electromagnetic interference.

**Attention:** The disk unit is sensitive to electrostatic discharge. See Work with electrostatic discharge-sensitive parts.

To remove or replace a disk unit concurrently:

1. Determine if the system has logical partitions. Go to Determine if the system has logical partitions, before continuing with this procedure.
2. Were you directed here from Recovery procedures?
  - **Yes:** Continue with the next step.

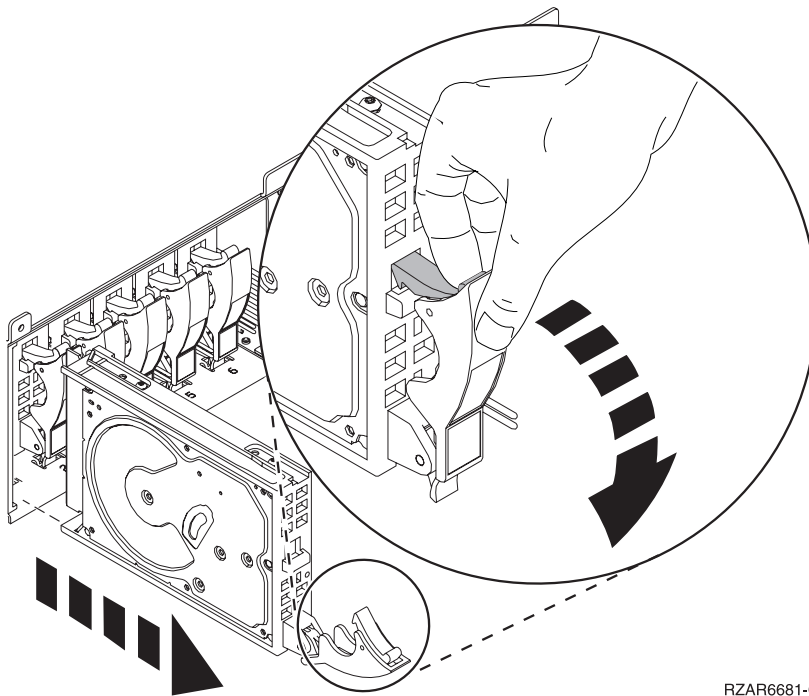
- **No:** Go to Recovery procedures.
3. After you have determined the location of the disk unit to replace, remove the front covers for access. (See FC 5095, FC 0595 - Covers.)
  4. Remove the EMC access plate that is over the location of the disk unit that you are removing. For location information, see Locations — FC 5095, FC 0595 I/O tower.
  5. To remove a disk unit using concurrent maintenance, perform the following:
    - a. Select System Service Tools (SST). If you cannot get to SST, select DST.

**Do not perform a system IPL to get to DST.**

    - b. Select **Start a Service Tool**—>**Hardware Service Manager**.
    - c. Select **Device Concurrent Maintenance** and enter the required information in the information fields.
    - d. Press **Enter** on the console. After the delay time, the light between the two DASD enclosures will begin flashing (see Figure 2 (See page 196) below). You now have nine seconds to pinch the two surfaces of the latching mechanism together and rotate the handle of the disk unit towards you. Pull the disk unit partially out of the tower. The light between the two DASD enclosures will go off and remain off as soon as the device is no longer making contact with the backplane.

**Attention:** If you remove the device when the light is not flashing, data may be lost, the disk unit may be damaged, or the backplane may be damaged.

**Figure 1. Removing FC 5095, FC 0595 - Disk unit (concurrent)**



RZAR6681-0

Wait another five seconds to allow time for the disk to stop spinning. Then pull the disk unit the remaining way out of the tower.

6. Are you finished with the repair?
  - **No:** Continue with the next step.
  - **Yes:** Replace the covers that were removed during this procedure and return to the procedure that sent you here.

**This ends the procedure.**
7. To install a disk unit using concurrent maintenance, perform the following:
  - a. Select System Service Tools (SST). If you cannot get to SST, select DST.

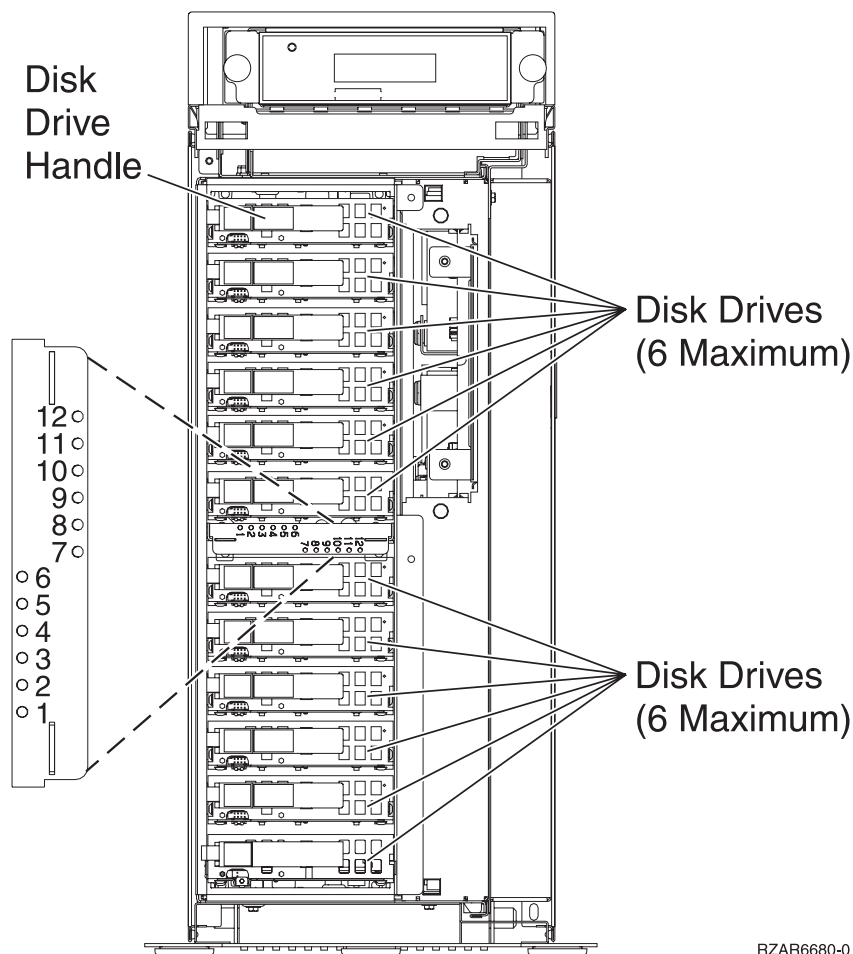
**Do not perform a system IPL to get to DST.**

- b. Select **Start a Service Tool**—>**Hardware Service Manager**.
- c. Select **Device Concurrent Maintenance** and enter the required information in the information fields.

**Attention:** Do not press Enter at this time.

- d. Slide the unit half-way into the tower. Ensure that the device does not make contact with the backplane at this time.
- e. Press **Enter** on the console. After the delay time, the light between the two DASD enclosures will begin flashing. You now have nine seconds to insert the disk unit. Put the disk unit part way into the desired slot and rotate the handle of the disk unit towards you. Then push the disk unit completely into the slot and rotate the handle towards the disk unit to latch it into the slot. The light between the two DASD enclosures will go off and remain off for a few seconds when the device contacts the backplane. Then it should go on and remain on.

**Figure 2. FC 5095, FC 0595 - Disk unit**



RZAR6680-0

**Attention:** If you install the device when the light is not flashing, data may be lost, the disk unit may be damaged, or the backplane may be damaged.

- f. Replace the covers that were removed during this procedure and return to the procedure that sent you here.

**This ends the procedure.**

### **FC 5095, FC 0595 - Disk unit (dedicated)**

*For use by authorized service providers.*

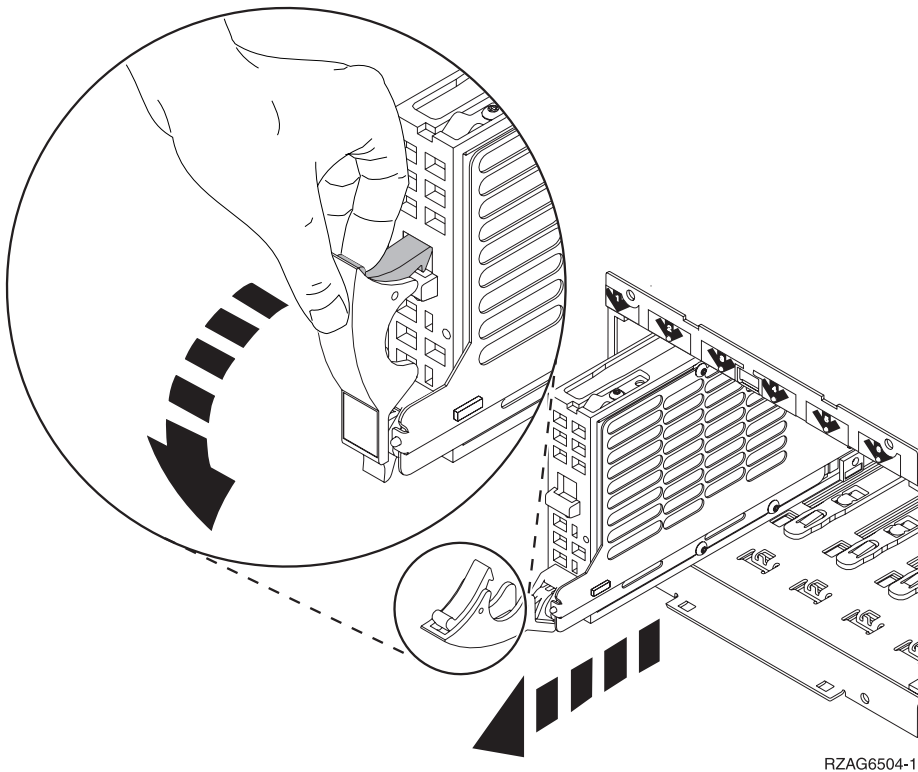


Use this procedure to remove or replace a disk unit using dedicated maintenance in an FC 5095, FC 0595.

**Attention:** The disk unit is sensitive to electrostatic discharge. See Work with electrostatic discharge-sensitive parts.

To remove or replace a disk unit:

1. Determine if the system has logical partitions. Go to Determine if the system has logical partitions before continuing with this procedure.
2. Were you directed here from Recovery procedures?
  - **Yes:** Continue with the next step.
  - **No:** Go to Recovery procedures.
3. After you have determined the location of the disk unit to replace, remove the front covers for access. See FC 5095, FC 0595 - Covers.
4. Remove the EMC access plate that is over the location of the disk unit that you are removing. For location information, see Locations — FC 5095, FC 0595 I/O tower.
5. To remove a disk unit using dedicated maintenance perform the following:
  - a. Power off the expansion tower. See Expansion unit power procedure.
  - b. Disconnect the power cord.
  - c. Remove the disk unit by pinching the two surfaces of the latching mechanism together and pulling the handle towards you to release the disk unit from the slot.
  - d. Remove the unit from the tower.



6. Are you finished with the repair?
  - **No:** Continue with the next step.
  - **Yes:** Replace the covers that were removed during this procedure and return to the procedure that sent you here.  
**This ends the procedure.**

7. To Install a disk unit using dedicated maintenance perform the following:
  - a. Power off the expansion unit. See Expansion unit power procedure.
  - b. Disconnect the power cord.
  - c. Put the disk unit part-way into the desired slot and rotate the handle of the disk unit towards you.
  - d. Push the disk unit completely into the slot and rotate the handle towards the disk unit to latch it into the slot.
  - e. Replace the covers that were removed during this procedure and return to the procedure that sent you here.

**This ends the procedure.**

## **FC 5095, FC 0595 - Display panel - NB1**

*For use by authorized service providers.*

Use this procedure to remove or install the display panel - NB1 on an FC 5095, FC 0595.

To remove or replace the display panel - NB1:

1. Open the front cover.
2. Power off the expansion unit. Expansion unit power procedure.
3. Remove the front cover. See FC 5095, FC 0595 - Covers.
4. Remove the ac power cord on the expansion unit you are working on.
5. Pull the locks on each side of the display panel.
6. Slide the display panel out approximately half way and remove the cables from the rear of the panel.
7. Remove the display panel.
8. Install the display panel by reversing this procedure. After exchanging an item, go to Verify the repair.

**This ends the procedure.**

## **FC 5095, FC 0595 - Power distribution backplane - PB1**

*For use by authorized service providers.*

Use this procedure to remove or replace the power distribution backplane - PB1 in an FC 5095, FC 0595.

To remove or replace the power distribution backplane - PB1:

1. Power off the expansion unit. See the Expansion unit power procedure.
2. Remove the rear and side covers. See FC 5095, FC 0595 - Covers.
3. Remove the power supplies. See FC 5095, FC 0595 - Power supply - P01 and P02.
4. Disconnect the power cable that goes to the backplane SB1.
5. Remove the screws that secure the power cage to the base of the expansion unit.
6. Remove the screws that secure the power cage to the power distribution backplane.
7. Remove the SPCN cable from the channel in the power cage.
8. Remove the power cage by lifting it out of the expansion unit.
9. Remove the screws that secure the power distribution backplane to the expansion unit.
10. Remove the power distribution backplane by lifting it out of the expansion unit.
11. Install the power distribution backplane by reversing this procedure. After exchanging an item, go to Verify the repair.

**This ends the procedure.**

## **FC 5095, FC 0595 - Power supply - P01 and P02**

*For use by authorized service providers.*

Use this procedure to remove or replace the power supply P01 and P02 on an FC 5095, FC 0595.

To remove or replace the power supply P01 and P02:

1. Are there two power supplies and four running AMDs installed in the expansion unit?
  - **Yes:** Continue with the next step.
  - **No:** Perform the following:
    - a. Power down the expansion unit. See Power on/off the system and logical partitions.
    - b. Remove the power cord from the rear of the expansion unit, and continue with the next step.
2. Remove the power cord from the power supply you are going to remove.
3. Remove the right or top side cover, depending on expansion unit orientation. See FC 5095, FC 0595 - Covers.
4. Pull the latch handles sideways on the power supply you are removing. If two power supplies are being used, do not remove both at the same time.
5. Pull the power supply from the expansion unit.
6. Install the power supply by reversing this procedure. After exchanging an item, go to Verify the repair.  
**This ends the procedure.**

### **FC 5095, FC 0595 - Tower card - CB1**

*For use by authorized service providers.*

Use this procedure in conjunction with the Expansion unit power procedure to remove or replace the tower card - CB1 in an FC 5095 or FC 0595.

To remove or replace the tower card - CB1:

1. Power off the expansion tower. See the Expansion unit power procedure.
2. Remove the ac power cord from the expansion unit that you are working on.
3. Remove the side cover. See FC 5095, FC 0595 - Covers.
4. Remove the PCI card access cover.
5. Remove the PCI cards and the card dividers. See FC 5095, FC 0595 - Cards (dedicated).
6. Remove the power supplies.
7. Remove the PCI card support brackets (headstock), and the power supply bracket. See Figure 2 in Final assembly — FC 5095 Expansion I/O Tower.
8. Disconnect the HSL cable from the backplane. And then, remove the power supplies from the backplane.
9. Remove the five screws (three from the side and two from the back) that hold the backplane to the expansion unit. Notice the aligning pins near the top of the board, and the power connections near the bottom of the board, for when you reinstall the board.
10. Install the backplane by reversing the above procedure.
11. Perform steps **23** (See page 569) and **24** (See page 570) in the Expansion unit power procedure. Then, return here and continue with the next step.
12. Set the configuration ID in the SPCN component:
  - a. If the ac power is not applied, then apply it now.  
**Note:** The tower may power up automatically.
  - b. Power off the expansion unit **without** removing the power cord using the Expansion unit power procedure. Then, return here and continue with step 12c.
  - c. Select function **07** on the system panel and press **Enter** (07\*\* will be displayed).
  - d. Use the arrow keys to increment/decrement to sub-function **A9** (07A9 will be displayed). Press **Enter** (07A9 00 will be displayed).
  - e. Use the arrow keys to increment/decrement to the expansion unit address, usually 02, 03, and so on for an FC 5095, FC 0595 (07nn will be displayed, where nn is the expansion unit address). Press **Enter** (07nn 00 will be displayed).

**Note:** The display on the addressed unit should now be blinking on and off.

- f. Use the arrow keys to increment/decrement to a configuration ID of **8B** (078B will be displayed). Press **Enter** (078B 00 will be displayed). After a few seconds, the display on the addressed FC 5095, FC 0595 unit will stop blinking and return to displaying the expansion unit address.
  - g. Use the arrow keys to increment/decrement to the display 07\*\*, and press **Enter** (07 will be displayed).
  - h. Use the arrow keys to increment/decrement to display 01 and press **Enter**.
  - i. Power the expansion unit back on. See Expansion unit power procedure.
13. After exchanging an item, go to Verify the repair.  
**This ends the procedure.**

## HSL cables - concurrent

*For use by authorized service providers.*

Use this procedure to replace the HSL cables concurrently. You will need to perform the following steps for both ends of the cable that you are replacing.

**Warning:** If an HSL cable is pulled accidentally, it may result in the HSL connection being lost to frames that were in a loop. If this occurs, follow the Power down, power on instructions (See page 200) below to power down the frames, reconnect the HSL cable, and power the frames back on.

**Note:** You do not need to power off the system or expansion unit. If you are replacing a cable between a system unit and an expansion unit, connect the expansion unit end of the cable first.

1. Disconnect the cable at the frame ID, card position, and port that you are working on.
2. Is the connection an optical link?
  - **No:** Wait at least 30 seconds.
  - **Yes:** Clean the HSL cable connectors on the new cables and the HSL cable port using the tools and procedures listed in symbolic FRU OPT\_CLN. Continue with the next step.
3. Connect the new cable to the port.

**Attention:** You must fully connect the cable and tighten the connector's screws within 30 seconds of when the cable makes contact with the port. If you do not, the link will fail and you must disconnect and reconnect it again. If the connector screws are not tightened errors will occur on the link and it will fail.

**This ends the procedure.**

## Power down, power on instructions

Follow these steps if you accidentally pulled an HSL cable, and lost HSL connections to frames that were in a loop.

1. From the Hardware Service Manager screen, select **Packaging hardware resources**.
2. Select the frame that has just accidentally lost its HSL connection and select **Concurrent Maintenance**. Then, press **Enter**.
3. Select **Power off domain** to power off the tower.
4. After reconnecting the frame into the HSL loop, select **Power on domain**.

## Type 2689, 2748, 2757, 2763, 2778, 2780, 2782, 2890, 2892, 4758, 5703, 5708 Cards

*For use by authorized service providers.*

### Type 2689 - Integrated xSeries<sup>(TM)</sup> adapter (IXA)

**Type 2748, 2757, 2763, 2778, 2780, 2782, 5703, 5708 - Cache battery pack**

**Separating the removable cache card from the base card on type 2780 cards**

**Type 2748, 2757, 2763, 2778, 2780, 2782, 5703 - Cache directory card**

**Type 2890 or 2892 - Integrated xSeries server (IXS)**

**Type 4758 - Battery replacement**

**Type 4758 - Cryptographic coprocessor disablement**

## **Type 2689 - Integrated xSeries Adapter (IXA)**

*For use by authorized service providers.*

**Attention:** Refer to the xSeries server service documentation **prior** to removing any covers or cards from the xSeries server.

The Integrated xSeries Adapter (IXA) is an external card located in an xSeries server. The card is connected to the system with both a signal cable and SPCN cable. Using SPCN to power off the tower will power off the entire server (but does not remove power supplied by the xSeries server power source).

For additional detail on the following procedure, refer to Figure 1. Integrated xSeries Adapter (IXA) card (See page 201) below. See the documentation that came with the xSeries server for detailed instructions.

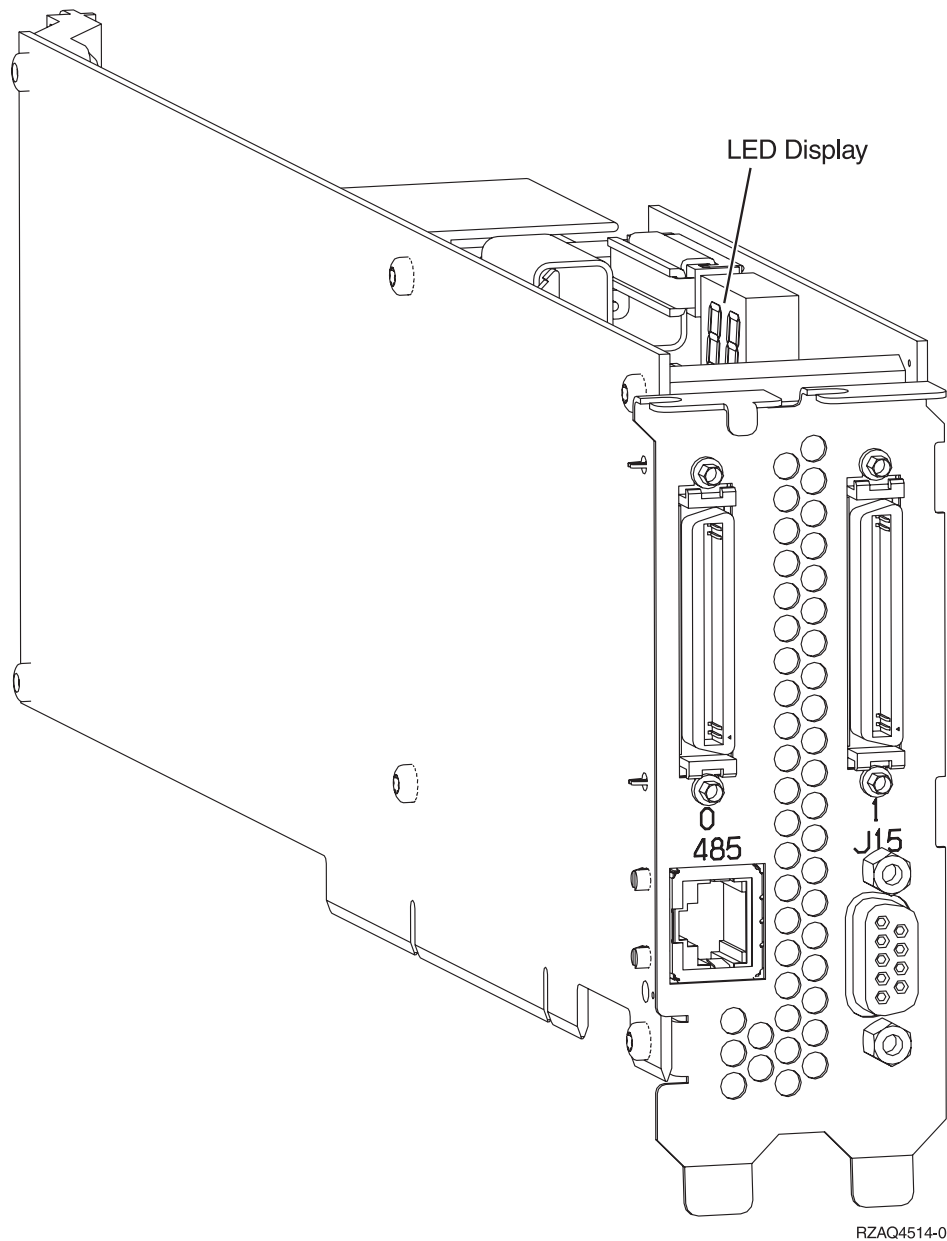
Perform the following to exchange the failing component:

1. Check the Service Action Log (SAL) for the frame number with the failing component.
2. Using the xSeries server documentation, remove the top cover.
3. Check the LED Display in the top, left side of the Integrated xSeries Adapter (IXA) card. Is the number on the LED the frame number with the failing item?
  - **Yes:** Continue with the next step.
  - **No:** Put the top cover back on the server unit and take the cover off another xSeries server. Continue to check the number on the LED Display until one matches the frame number you are looking for.
4. From the system unit, power down the frame with the failing item. (See “Expansion unit power procedure” on page 564.)

**Attention:** You must power down the xSeries server and disconnect the ac power cord from its power source to avoid damaging the card. See the service documentation that came with the xSeries server that you are working on.
5. Disconnect the cables that are attached to the rear of the Integrated xSeries Adapter (IXA) card in the xSeries server.
6. Open the latches on the card slot and lift the card out of the xSeries server.
7. Replace the card by reversing the above procedure. After exchanging an item, go to “Verify the repair” on page 558.

**This ends the procedure.**

**Figure 1. Integrated xSeries Adapter (IXA) card**



### **Type 2748, 2757, 2763, 2778, 2780, 2782, 5703, 5708 - Cache battery pack**

*For use by authorized service providers.*

Use this procedure to remove or replace the cache battery pack in Type 2748, 2757, 2763, 2778, 2780, 2782, 5703, 5708.

**Important:** Removing the Cache Battery with the System/Partition in a powered off state may result in the loss of customer data. If the system has been powered down PRIOR to the battery service action, you MUST IPL to DST and continue this procedure BEFORE replacing the battery.

The following safety notice pertains to the 2748 cache battery pack.

#### **CAUTION:**

**The battery is a nickel-cadmium battery. To avoid possible explosion, do not burn. Exchange only with the IBM<sup>(R)</sup>-approved part. Recycle or discard the battery as instructed by local regulations.**

**In the United States, IBM has a process for the collection of this battery. For information, call 1-800-426-4333. Have the IBM part number for the battery unit available when you call. (RSFTC226)**

The following safety notice pertains to the 2763, 2778, 2782, and 5703 cache battery packs.

**CAUTION:**

**The battery is a nickel metal hydride battery. To avoid possible explosion, do not burn. Exchange only with the IBM-approved part. Recycle or discard the battery as instructed by local regulations.**

**In the United States, IBM has a process for the collection of this battery. For information, call 1-800-426-4333. Have the IBM part number for the battery unit available when you call. (RSFTC244)**

The following safety notice pertains to the 2757, 2780, and 5708 cache battery pack.

**CAUTION:**

**The battery is a lithium ion battery. To avoid possible explosion, do not burn. Exchange only with the IBM-approved part. Recycle or discard the battery as instructed by local regulations.**

In the United States, IBM has a process for the collection of this battery. For information, call 1-800-426-4333. Have the IBM part number for the battery unit available when you call. (RSFTC246)

**Attention:** All cards are sensitive to electrostatic discharge. See Work with electrostatic discharge-sensitive parts.

**Note:** When replacing the cache battery pack, the battery must be disconnected for at least 15 seconds before connecting the new battery. This is the minimum amount of time needed for the card to recognize that the battery has been replaced.

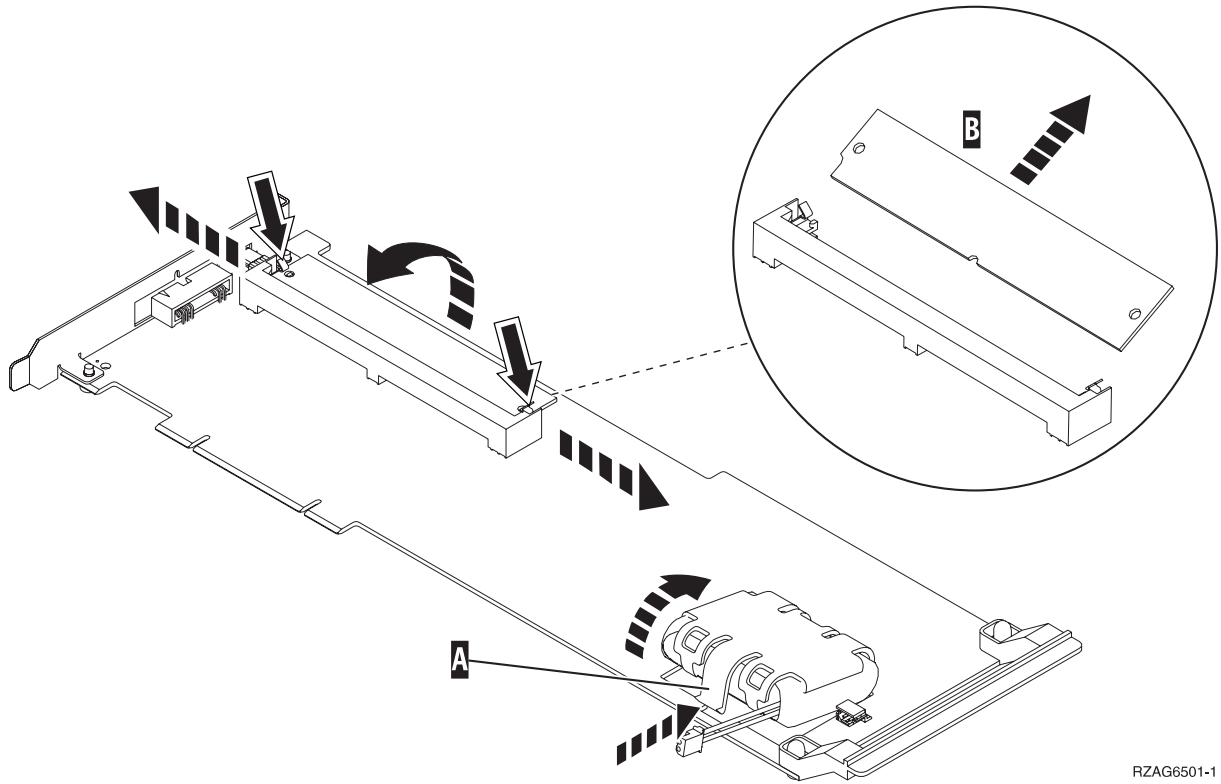
To remove or replace the cache battery pack:

1. Is the cache battery pack on a type 2780 or 5708 card?
  - **No:** Continue with the next step.
  - **Yes:** Go to step **18** (See page 206).
2. Were you sent to this procedure from URC 8008?
  - **No:** Continue with the next step.
  - **Yes:** Go to step **7** (See page 204).
3. To prevent possible data loss, you must force the cache battery pack into an error state before replacing it. This will ensure all cache data is written to disk before battery replacement. To force the cache battery pack into an error state, perform the following:
  - a. Select **System Service Tools (SST)**. If you cannot get to SST, select DST. But do not perform an IPL to get to DST.
  - b. Select **Start a Service Tool** → **Display/Alter/Dump** → **Display/Alter storage** → **Licensed Internal Code (LIC) data**.
  - c. Select **Advanced analysis**. You may have to page or scroll down to find this option.
  - d. Select the BATTERYINFO command.
  - e. On the Specify Advanced Analysis Options screen, type -LIST in the Options field and press Enter.
4. Find the resource name of the card you are working with.
5. Return to the Specify Advanced Analysis Options screen and type -CONFR -IOA xxxx, where xxxx is the card resource name, and press enter.
6. Return to the Specify Advanced Analysis Options screen and type -LIST in the Options field and press Enter. The **Battery pack can be safely replaced** field should indicate YES. If it does not indicate YES, then discontinue this procedure and contact your next level of support.

- Note:** If the BATTERYINFO command is not available, the customer should Apply V5R2 PTF MF29353 or it's supersede, or V5R1 PTF MF28981 or it's supersede, and then restart this procedure.
7. Remove the card using the concurrent card remove and replace procedure for the model or FC that you are working on. See the Remove and replace procedures.  
**Note:** If the concurrent card remove and replace procedure fails, then power the system down normally prior to replacing the cache battery pack. See Power on/off the system and logical partitions.
  8. Choose from the following options:
    - For type 2748, 2763, 2778, 2782, 5703, continue with the next step.
    - For type 2757, go to step **14** (See page 204).
  9. Locate the casing **A** that holds the battery pack. See either Figure 1. Cache battery pack and cache directory card for type 2748, 2763, and 2778 (See page 205) below, or Figure 3. Cache battery pack and cache directory card for type 2782, 5703 (See page 205) below.
  10. Squeeze the casing **A** to remove battery unit from the card.
  11. Remove the plug that connects the battery unit and the card.  
**Note:** The plug fits in the board only one way so it cannot be inserted incorrectly during the replacement phase.
  12. Remove the battery unit from the battery casing. Save the battery casing. The replacement battery pack will not come equipped with a casing.  
**Note:** Ensure that the cache battery pack is disconnected for at least 15 seconds before connecting the new battery. This is the minimum amount of time needed for the card to recognize that the battery has been replaced.
  13. Install the new cache battery pack by reversing this procedure.  
**This ends the procedure.**
  14. For type 2757, locate the battery pack A. See Figure 2. Cache battery pack and cache directory card for type 2757 (See page 205).
  15. Remove the plug that connects the battery unit and the card by pushing down on the latching mechanism and pulling the plug out of the connector.  
**Note:** The plug fits in the connector only one way so it cannot be inserted incorrectly during the replacement phase.
  16. There are two pegs holding the battery pack in place. For each of these pegs, squeeze the peg and push it so that it comes out on the other side of the card. Then remove the cache battery pack.  
**Note:** Ensure that the cache battery pack is disconnected for at least 15 seconds before connecting the new battery. This is the minimum amount of time needed for the card to recognize that the battery has been replaced.
  17. Install the new cache battery pack by reversing the procedure.  
**This ends the procedure.**

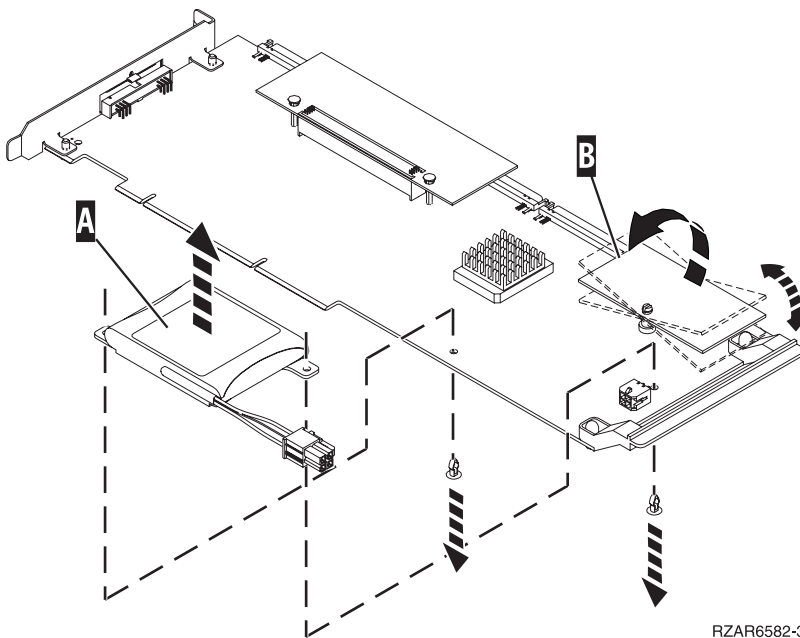


Figure 1. Cache battery pack and cache directory card for type 2748, 2763, and 2778



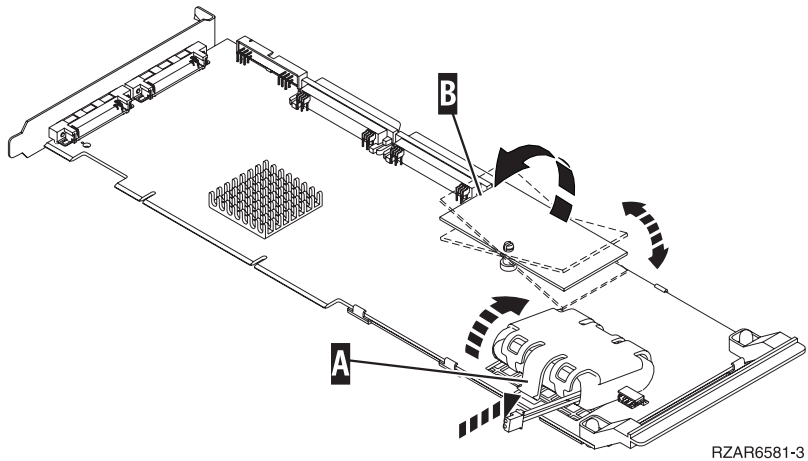
RZAG6501-1

Figure 2. Cache battery pack and cache directory card for type 2757



RZAR6582-3

Figure 3. Cache battery pack and cache directory card for type 2782 and 5703

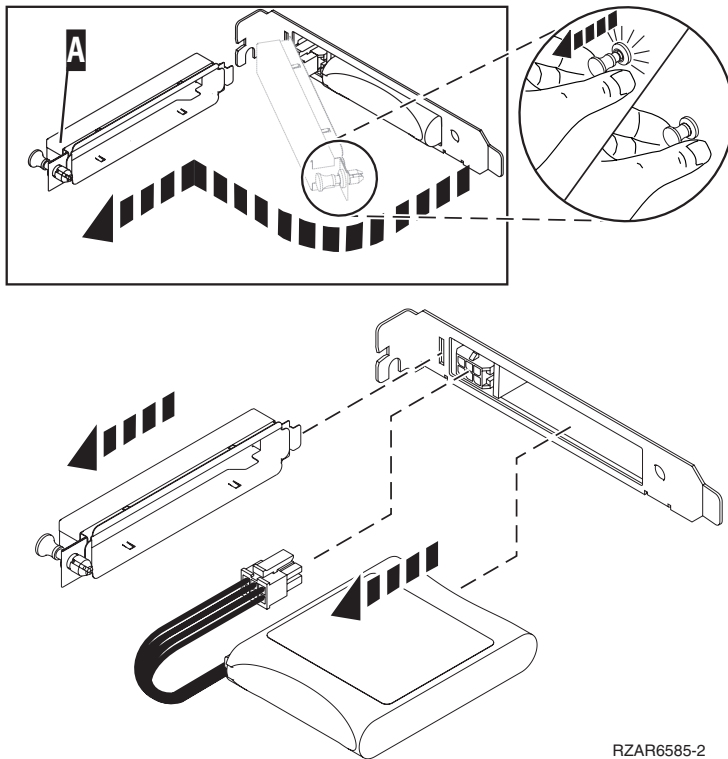


18. The cache battery pack can be removed from the 2780 or 5708 card without removing the card from the system. Perform the following to ensure all cache data is written to disk before battery replacement:
  - a. Select **System Service Tools (SST)**. If you cannot get to SST, select DST. But do not perform an IPL to get to DST.
  - b. Select **Start a Service Tool** → **Display/Alter/Dump** → **Display/Alter storage** → **Licensed Internal Code (LIC) data**.
  - c. Select **Advanced analysis**. You may have to page or scroll down to find this option.
  - d. Select the BATTERYINFO command.
  - e. On the Specify Advanced Analysis Options screen, type -LIST in the Options field and press Enter.
19. Find the resource name of the card you are working with.
 

**Note:** The "Concurrently Maintainable Battery Pack" field should indicate "yes." If it does not indicate "yes," then discontinue this procedure and contact your next level of support.
20. Return to the Specify Advanced Analysis Options screen and type -CONFR -IOA xxxx, where xxxx is the card resource name.
21. Return to the Specify Advanced Analysis Options screen and type -LIST in the Options field and press Enter.
 

**Note:** The "Battery pack can be safely replaced" field should indicate "yes." If it does not indicate "yes," then discontinue this procedure and contact your next level of support.
22. Use the following illustration to locate the metal cover (**A**) that holds the battery pack. Pull out on the push-rivet to release the metal cover.

**Figure 4. Cache battery pack and cache directory card for type 2780 and 5708.**



23. Remove the plug that connects the battery unit and the card. It is necessary to squeeze the retaining latch while gently pulling on the plug.
24. Gently pull out the cache battery pack.
25. Install the new cache battery pack by reversing steps **22** (See page 206) through **25** (See page 207). Then continue with the next step.
26. Return to the Specify Advanced Analysis Options screen and type `-START -IOA xxxx`, where `xxxx` is the card resource name that you are working with. Ensure that you get the message "Cache started on IOA." **This ends the procedure.**

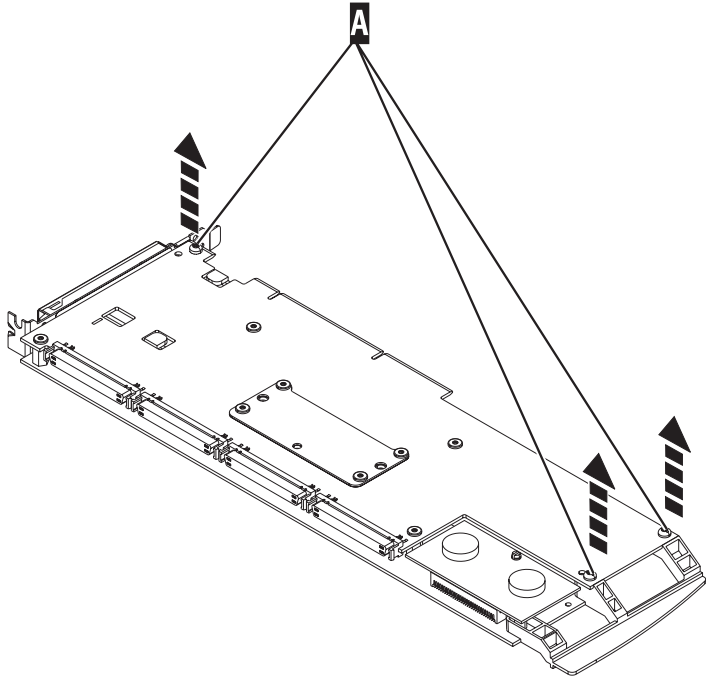
### **Separating the removable cache card from the base card on type 2780 cards**

Attention: All cards are sensitive to electrostatic discharge. See Working with electrostatic discharge-sensitive parts.

Attention: Do not disconnect the cache battery during this procedure or all cache data will be lost.

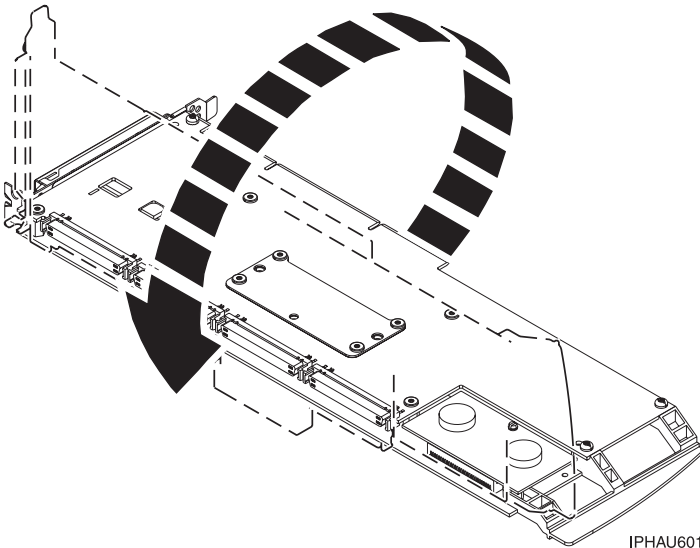
To separate the removable cache card from the base card, do the following:

1. Label both sides of the card before separating.
2. Place the adapter on an ESD protective service and orientate it as shown in step 3 (See page 3). Note the position of the card handle.
3. Remove three screws **A** from the base card as shown. Note the thread differences of the screws for correct replacement in the following steps.



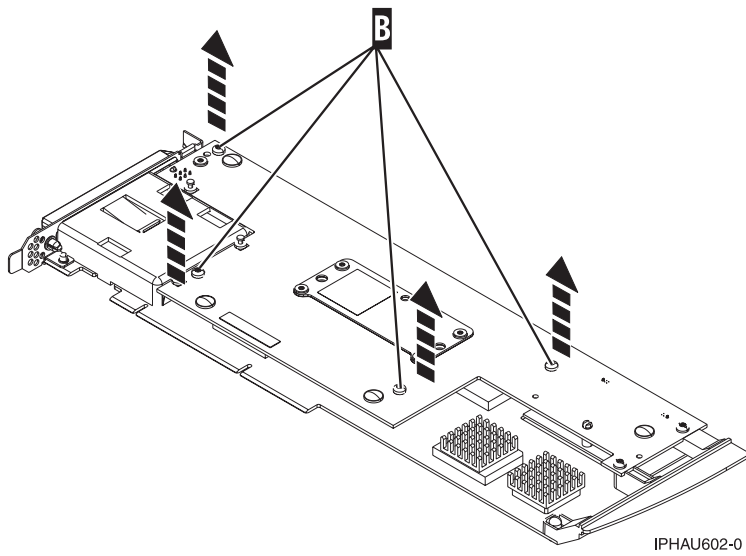
IPHAU600-1

4. Turn the card over.



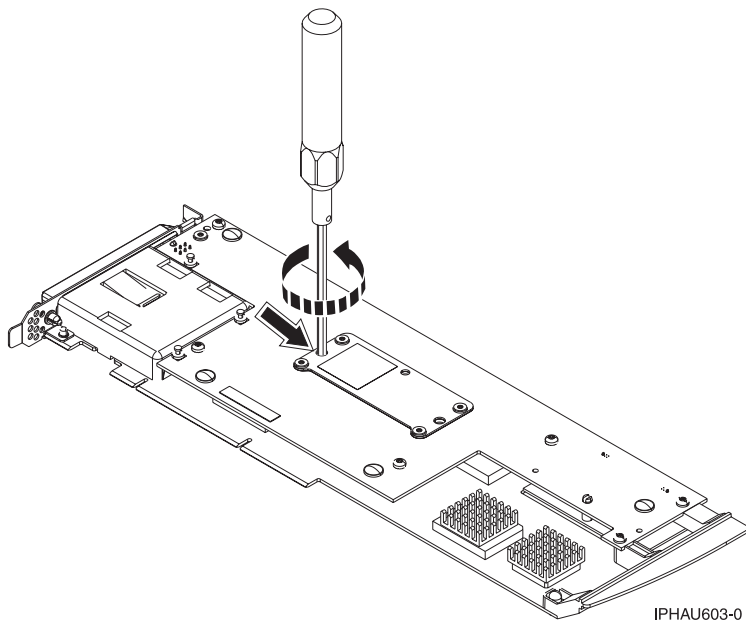
IPHAU601-1

5. Remove four screws **B** from the removable cache card as shown.



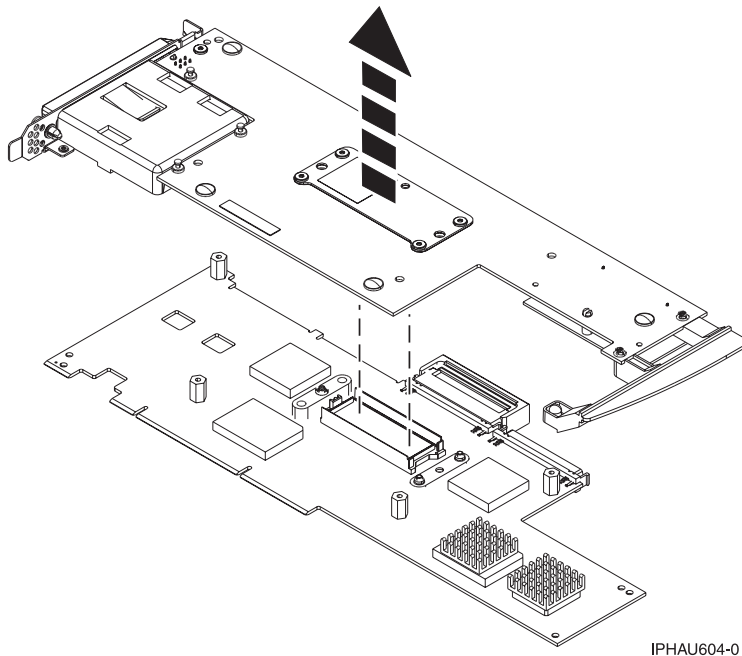
IPHAU602-0

6. Turn the jack screw counterclockwise to begin separating the cards. Continue turning the jack screw until you feel the cards separate.



IPHAU603-0

7. Separate the base card from the removable cache card.  
Important:  
Turn the jack screw back down fully clockwise.

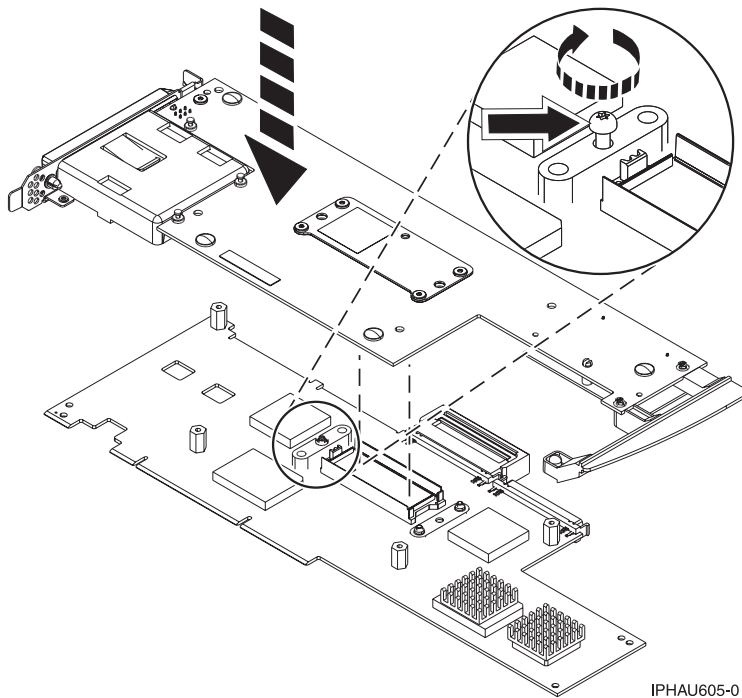


IPHAU604-0

8. Place the adapter on an ESD protective service and orientate it as shown in step 3 (See page 207). Note the position of the card handle.

To attach the removable cache card to the base card, do the following:

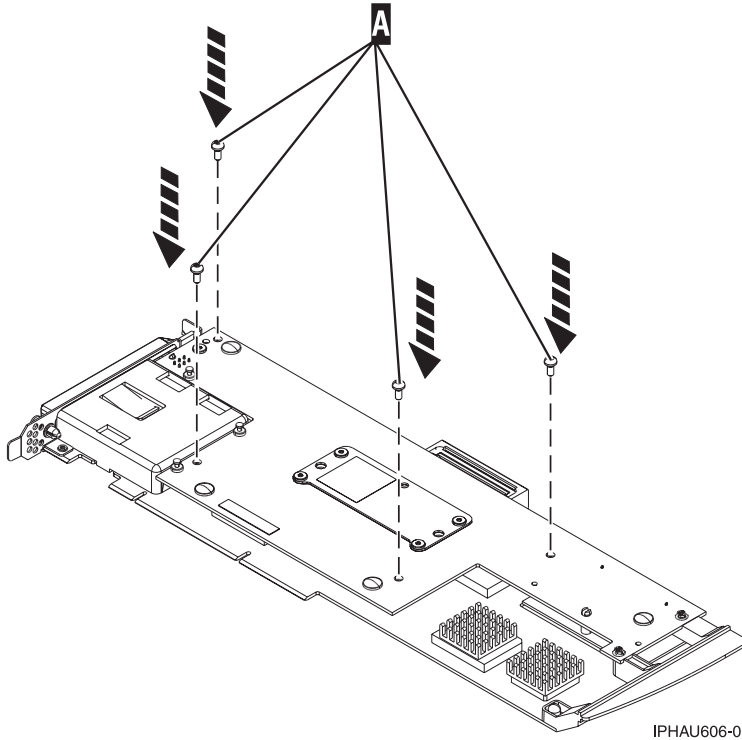
1. Make sure the jack screw is turned clockwise until it is seated. If the jack screw is not fully seated, the cards will not connect together properly and damage may occur.



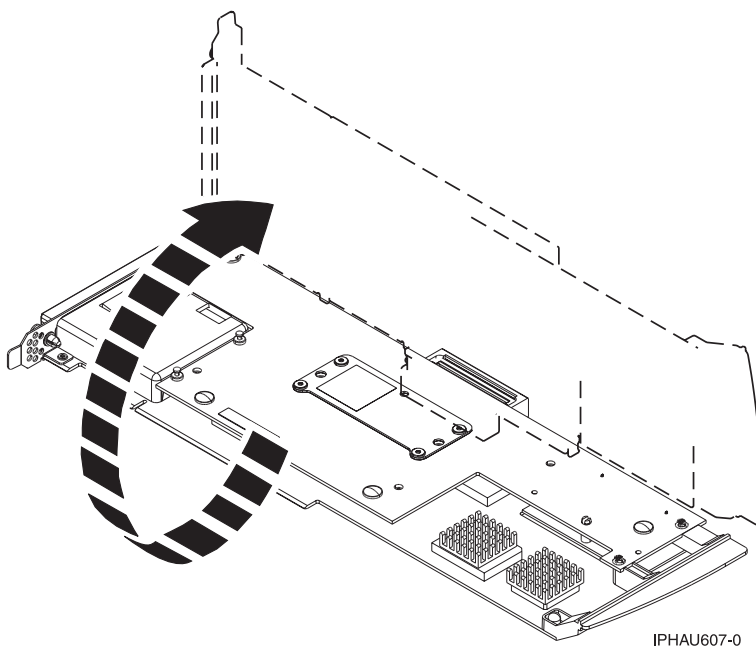
IPHAU605-0

2. Attach the base card to the removable cache card by doing the following:

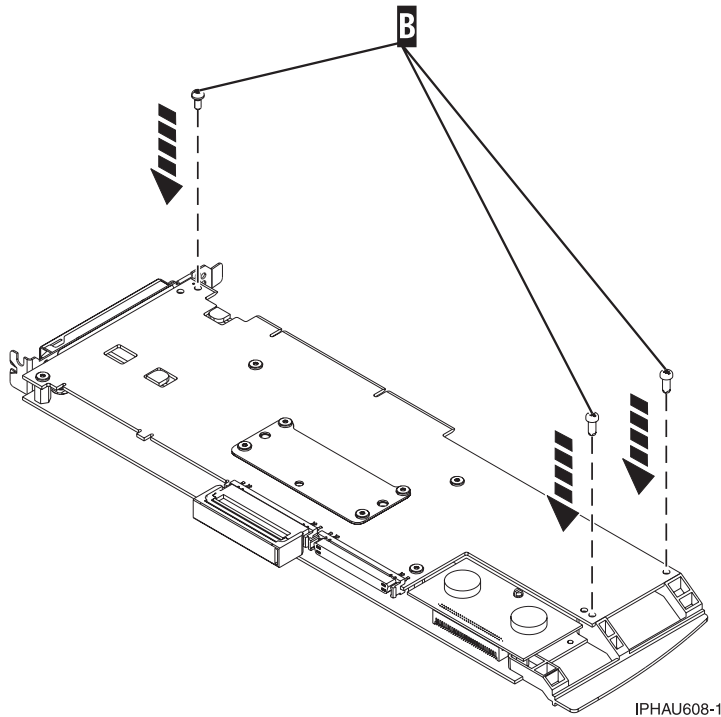
- a. Line up the card connector (view the jack screw through the hole to help align).
  - b. Press on the stiffener plate to fully seat the connector.
3. Attach four screws **A** to the removable cache card as shown.



4. Turn the card over.



5. Attach the three screws **B** to the base card as shown. Note the thread differences in the screws as pointed out in step 3 (See page 207) of the separation procedure.



### Type 2748, 2757, 2763, 2778, 2780, 2782, 5703 - Cache directory card

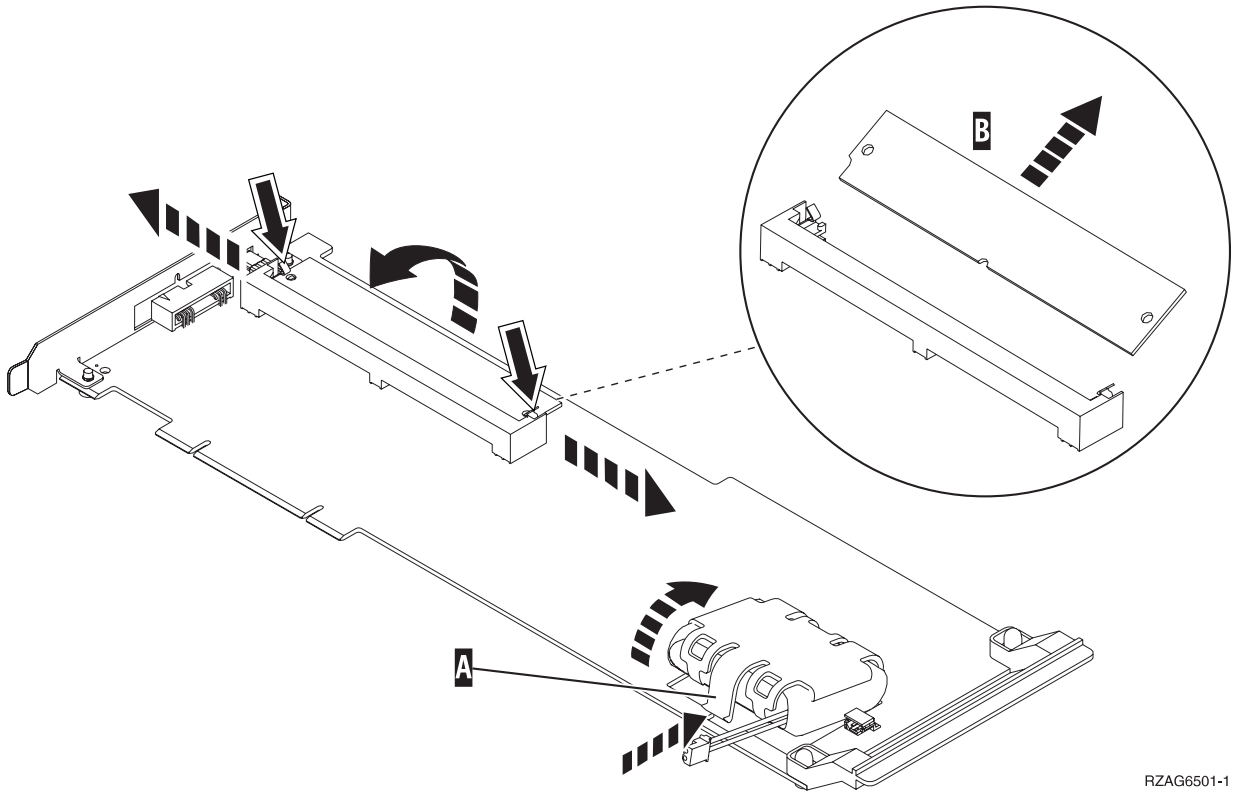
*For use by authorized service providers.*

**Attention:** All cards are sensitive to electrostatic discharge. See “Work with electrostatic discharge-sensitive parts” on page 585.

1. Remove the card using the concurrent card remove and replace procedure for the model or FC that you are working on. See the Remove and replace procedures.
2. Choose one of the following:
  - For types 2748, 2763, and 2778, continue with the next step.
  - For types 2757, 2780, 2782, 5703, go to step 6 (See page 213).
3. Locate the cache directory card (**B**) in Figure 1. It is a small rectangular card mounted on the I/O card. Spread the tabs on each side of the cache directory card and raise the back of the cache directory card **B** up away from the I/O card. The cache directory card will pivot up about 20 degrees.



Figure 1. Cache battery pack and cache directory card for type 2748, 2763, and 2778

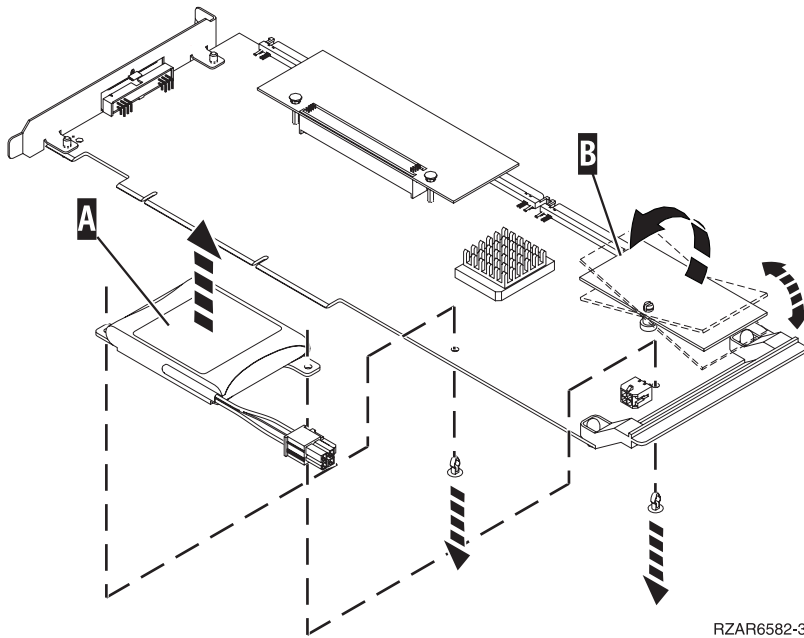


RZAG6501-1

4. Pull cache directory card out.
5. Install the replacement cache directory card by wiggling it into place at a 20-degree angle before pushing it down and locking the tabs. Be sure that the holes on each side of the cache directory card are filled by the pegs on the cache card to ensure proper seating.  
**This ends the procedure.**
6. Locate the cache directory card (B) in the appropriate illustration for the type of card you are working with. It is a small rectangular card mounted on the I/O card.

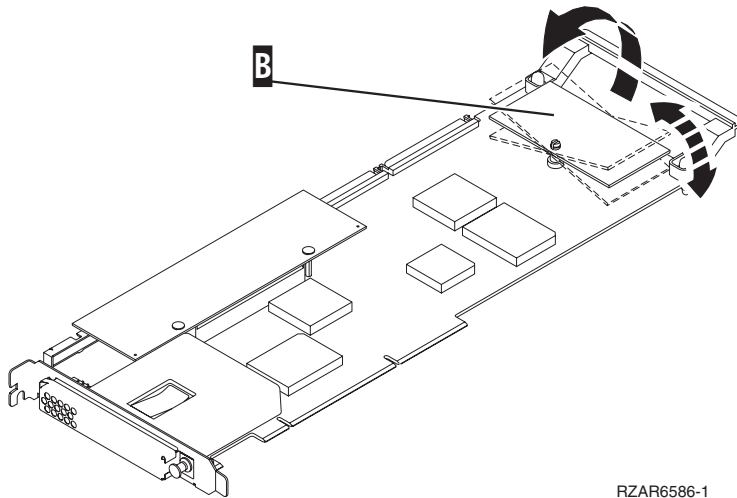
**Note:** For the type 2757 card, do not remove the larger card with two mounting pegs.

Figure 2. Cache battery pack and cache directory card for type 2757



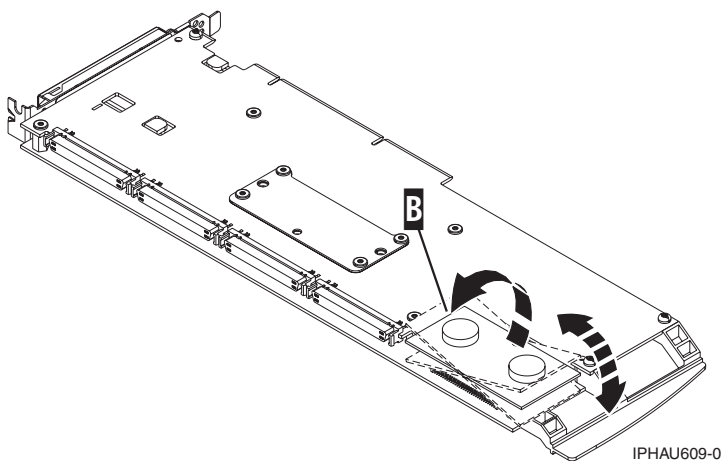
RZAR6582-3

Figure 3. Cache battery pack and cache directory card for type 2780 (style A)



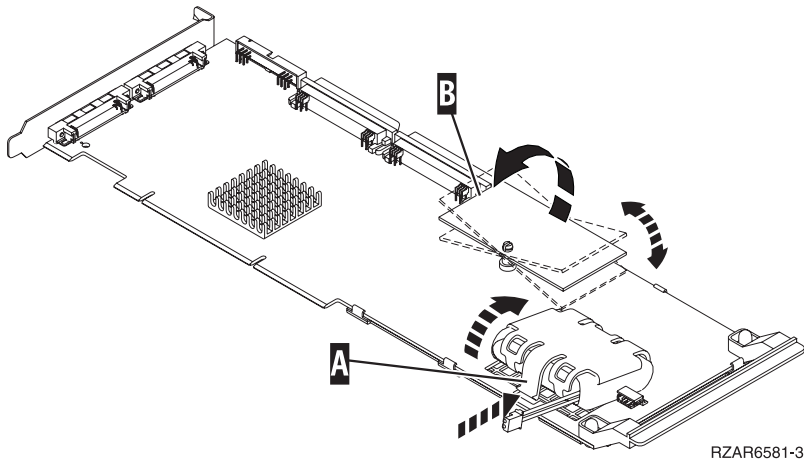
RZAR6586-1

Figure 4. Cache battery pack and cache directory card for type 2780 (style B)



IPHAU609-0

Figure 5. Cache battery pack and cache directory card for type 2782, 5703



7. Unseat the connector on the cache directory card by wiggling the two corners furthest from the mounting peg using a rocking motion. Then, pivot the cache directory card back over the mounting peg to disengage the cache directory card from the mounting peg.
8. Install the replacement card by seating it on the connector and mounting peg.

### Type 2890 or 2892 - Integrated xSeries™ Server (IXS) for iSeries™

*For use by authorized service providers.*

**Attention:** All cards are sensitive to electrostatic discharge. See Work with electrostatic discharge-sensitive parts.

1. Remove the 2890 or 2892 (IXS) card from the system using concurrent or dedicated maintenance depending on the instructions given in the locations table for the system you are working on. If you are removing the 2890 or 2892 (IXS) card from an expansion I/O unit, you may use tower level concurrent maintenance or concurrent maintenance, depending on the instructions given in the locations table for the unit you are working on. See the Locations page for the unit you are working on, or the Remove and replace procedures.
2. To remove the IXS card:
  - a. Remove the external cables from the rear of the PCI card enclosure and note their locations, if needed.
  - b. If required in order to gain access to the PCI card enclosure, remove the EMC access plate.
  - c. Remove any cables connected to the top of any I/O cards in the PCI card enclosure.
  - d. Make sure that there are no cables obstructing the enclosure that would affect removal or installation.
3. Press the release mechanism that is located at the front of the IXS card you are removing. Then, remove the 2890 or 2892 Integrated xSeries™ Server (IXS) card from the system or expansion I/O unit.
4. If the failing item was the Integrated xSeries™ Server (IXS) card, remove all the memory modules/DIMMS and install them on the new Integrated xSeries™ Server (IXS) card. Install the card by reversing the removal procedure.

If the failing item was a memory module/DIMM, install a new memory module/DIMM on the Integrated xSeries™ Server (IXS) card and install the card by reversing the removal procedure.

**Notes:**

- a. To remove a memory module/DIMM, open the clips and remove the module. For location information, see the following figures in the Locations - I/O adapters topic:
  - “Locations - 2890 Integrated xSeries Server (IXS)” on page 321
  - “Locations - 2892 Integrated xSeries Server (IXS)” on page 322

**For the 2890:**

- b. At least one memory module is required in positions DIMM 0, DIMM 1, DIMM 2 or DIMM 3.
- c. An IXS adapter card IOP (see Type, model, and part number list for part number) is required in the IOP DIMM position. This IXS memory module is NOT interchangeable with the memory module(s) in positions DIMM 0, DIMM 1, DIMM 2, or DIMM 3.

**For the 2892:**

- d. Memory modules are required in pairs in either positions DIMM 0 and DIMM 1, or DIMM 2 and DIMM 3. The only other configuration would be memory modules in DIMM 0, DIMM 1, DIMM 2, and DIMM3.

**This ends the procedure.**

## **Type 4758 - Battery replacement procedure**

*For use by authorized service providers.*

Use this procedure to remove or replace the PCI Cryptographic coprocessor cards batteries in Type 4758-023.

**Note:** Two battery replacement kits (see Type, model, and part number list ) are required to replace the batteries in the 4758-023 card, since the card contains two batteries, and each battery replacement kit contains two new batteries. (Individual models of the 4758 PCI Cryptographic Coprocessor family of cards contain either two or four batteries. For cards that contain four batteries, two battery replacement kits must be ordered.)

**CAUTION:**

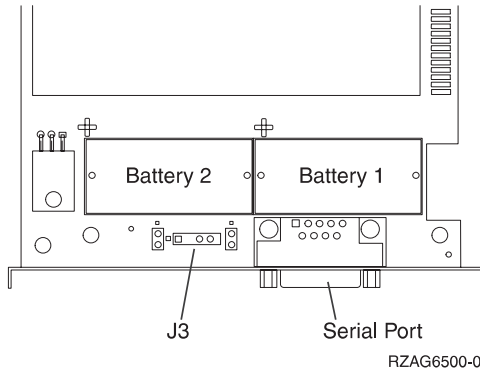
**The battery is a lithium battery. To avoid possible explosion, do not burn or charge the battery. Exchange only with the IBM<sup>(R)</sup>-approved part. Discard the battery as instructed by local regulations. (RSFTC227)**

**Attention:** Any loss of battery power erases data stored in the card's protected memory and renders the card useless.

To remove or replace the PCI Cryptographic coprocessor card's batteries in Type 4758-023:

1. Choose from the following:
  - For Models 830, 840, SB2, and SB3, remove the 4758 PCI Cryptographic Coprocessor card from the system. See the following card remove and replace procedures:
    - Models 830/SB2 with FC 9074 - Cards (concurrent)
    - Models 840/SB3, FC 8079 (lower half), FC 9079 Cards (concurrent)
    - FC 5074, FC 5079, FC 5094, FC 5294 - Cards (concurrent)
    - FC 5075 - Cards (concurrent).
  - For Models 270 and 820, remove the 4758 PCI Cryptographic Coprocessor card from the system. See the following card remove and replace procedures:
    - Model 270 - Cards (concurrent)
    - Model 820 - Cards (concurrent)
    - FC 5074, FC 5079, FC 5094, FC 5294 - Cards (concurrent)
    - FC 5075 - Cards - Concurrent
2. Find the location of the 4 lithium batteries. They are located in adjacent holders, with the Battery 2 holder above the J3 connector. Refer to the illustration below.

**Figure 1. Battery Locations on the 4758 PCI Cryptographic Coprocessor**



**Note:** The 4758-023 card contains four batteries, even though only two batteries are shown in the figure above. Battery 3 is directly above Battery 1, and Battery 4 is directly above Battery 2.

3. Open both of the battery replacement kits. Insert one of the new batteries into the battery tray provided with the kit. The battery '+' must be oriented in the battery tray with the same polarity matching the '+' on the tray.
  4. Connect the battery tray's cable to the J3 connector on the 4758 card. This maintains battery power to the card while the new batteries are installed.
  5. Remove and discard the two battery warning labels which cover both sets of batteries.
  6. Replace the battery in the Battery 1, 2, and 3 positions with a new battery. The battery '+' must be oriented in the holder with the same polarity matching the '+' on the holder.
  7. Replace the battery in the Battery 4 position with the battery in the battery tray. The battery '+' must be oriented in the holder with the same polarity matching the '+' on the holder.
  8. Remove the battery tray from the J3 connector and discard it.
  9. Place one of the new Battery Warning labels (PN 04K9421) over the two new batteries in Battery positions 1 and 2. Place the other new Battery Warning label over the two new batteries in Battery positions 3 and 4.
  10. Reinstall the card.
- This ends the procedure.**

## Type 4758 - Cryptographic coprocessor disablement

*For use by authorized service providers.*

**Attention:** For security reasons, use the following procedure when replacing the cryptographic coprocessor.

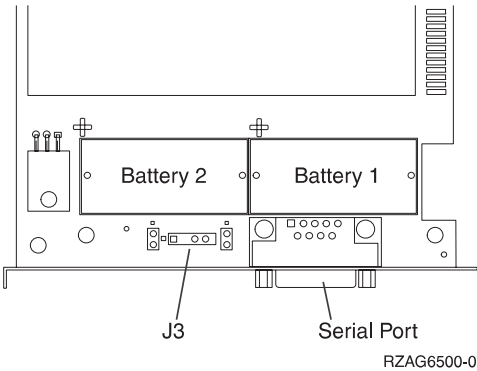
Use this procedure to properly disable the Type 4758 PCI Cryptographic Coprocessor card. During disablement, the contents of the coprocessor's protected memory will be set to zeroes. The cryptographic master key and other data stored in the protected memory will be lost.

### CAUTION:

**The battery is a lithium battery. To avoid possible explosion, do not burn or charge the battery. Exchange only with the IBM<sup>(R)</sup>-approved part. Discard the battery as instructed by local regulations. (RSFTC227)**

1. Remove the Cryptographic Coprocessor card using the Cards (concurrent) remove and replace procedure for the system unit or tower in which the card is located. See the Remove and replace procedures, choose the correct model, and then the Cards (concurrent) procedure.
2. Find the location of the four lithium batteries. They are located in adjacent holders, with the Battery 2 above the J3 connector. Refer to the illustration below.

**Figure 1. Battery Locations on the 4758 PCI Cryptographic Coprocessor**



**Note:** The 4758-023 card contains four batteries, even though only two batteries are shown in the figure above. Battery 3 is directly above Battery 1, and Battery 4 is directly above Battery 2.

**Attention:** The loss of battery power erases data stored in the card's protected memory and renders the card useless.

3. Remove the battery from each battery holder in sequential order, starting with Battery 1 and finishing with Battery 4.
4. The PCI Cryptographic Coprocessor card has been disabled. You can now install the new card.  
**This ends the procedure.**

## Tape cartridge - manual removal

*For use by authorized service providers.*

**Type 4685 - Tape cartridge**

**Type 6335 - 1/4 inch tape cartridge**

**Type 6383, 6384, 6385, 6386, 6387 - Tape cartridges**

### Type 4685 - Tape cartridge

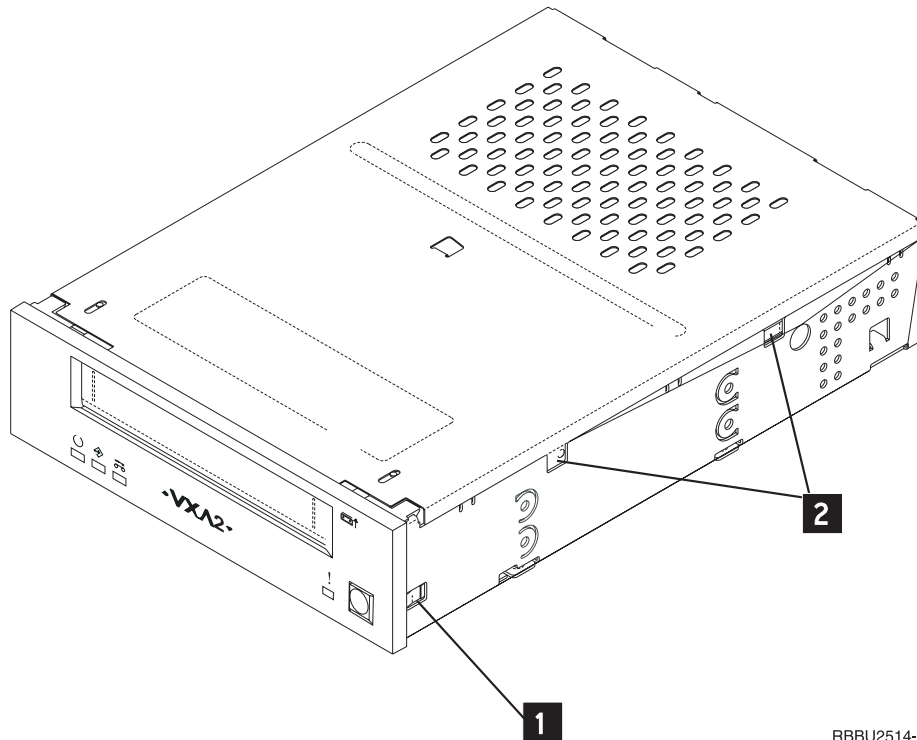
*For use by authorized service providers.*

Use this procedure to remove a tape cartridge manually from a 4685 tape unit. This procedure may be required if a defective tape cartridge or tape unit has caused the cartridge ejection function to fail, or if the data on the tape cartridge is either critical or sensitive and the customer can not afford its loss.

**Attention:** This procedure is very delicate and may damage or destroy the tape cartridge. Use this procedure only when you are not able to unload the cartridge by pressing and holding the unload button.

1. Remove the 4685 tape drive tray from the frame. See the Removable media procedure for the Model you are working on in the Remove and replace procedures.
2. Remove the 4685 tape drive from the tray.
3. Remove the front bezel (the bezel snaps on) by doing the following:
  - a. Use a small screwdriver to press the bezel tabs (see 1 in Figure 1 (See page 218)) on each side of the drive.
  - b. Rotate the bottom of the bezel toward the front to release the bezel attachments on the top of the drive.
  - c. Lift the bezel off the top locating tabs.
  - d. Remove the bezel from the unit.

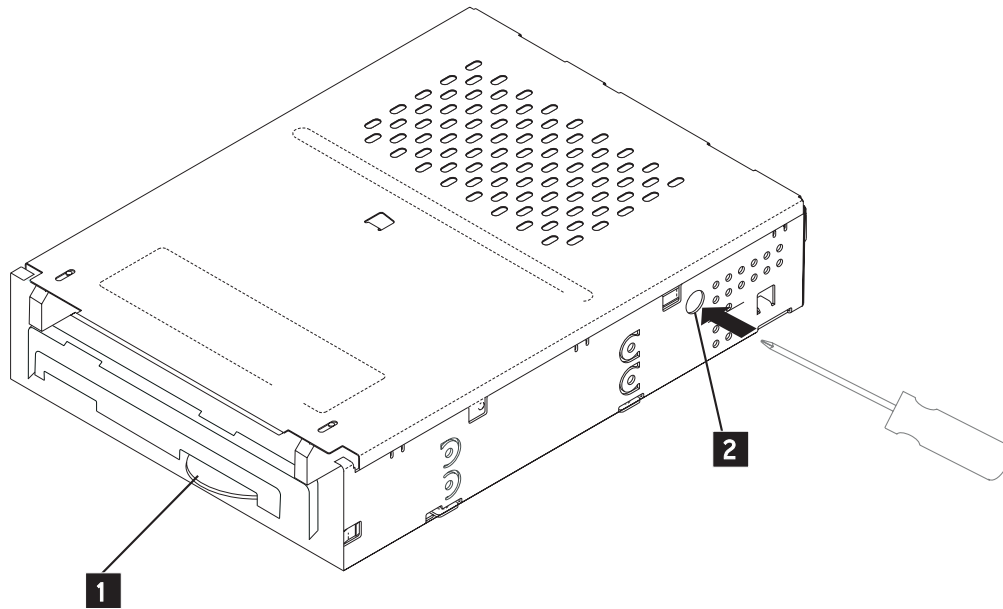
**Figure 1. Remove the bezel and top cover from the drive.**



RBBU2514-0

4. Remove the top lid of the drive mechanism by doing the following:
  - a. Use a small screwdriver to press the top tabs (see **2** in Figure 1 (See page 218)) on each side of the drive.
  - b. Slide the cover approximately 5mm to the rear, and then lift the cover off.
5. Locate the large thumb wheel below the right side of the data cartridge.
6. Gently rotate the thumb wheel (see **1** in Figure 2 (See page 219)) counterclockwise to remove slack from the tape by winding the media onto the take-up reel.
7. Insert a Phillips head screwdriver in the Load Motor Access hole (see **2** in Figure 2 (See page 219)). Rotate the load motor clockwise to unwind the tape path. Unwind the mechanism until tape slack appears.
8. Once tape slack appears, gently rotate the thumb wheel again to remove the slack from the tape by winding the media onto the take-up reel.
9. Repeat steps **7** (See page 219) and **8** (See page 219) until all of the tape media is wound onto the cartridge take-up wheel.
10. When the tape is completely rewound into the cartridge, turn the load motor clockwise until the tape cartridge is lifted out of the drive mechanism and ejected.
11. Remove the tape cartridge, install the bezel, and attach the top cover.

**Figure 2. Turn the load motor to release the cartridge.**



RBBU2511-0

12. Reassemble the drive in reverse order.  
**This ends the procedure.**

### **6383, 6384, 6385, 6386, 6387 - Tape cartridge**

*For use by authorized service providers.*

Use this procedure to manually remove a tape cartridge from a 6383, 6384, 6385, 6386, or 6387 tape unit. You may need this procedure if a power failure or tape unit failure prevent the tape cartridge from ejecting.

**Attention:** This procedure is very delicate and may damage or destroy the tape cartridge. Use this procedure only when you have tried the other options for removing the tape cartridge.

Determine the position the tape unit is in:

1. Open the tape unit door and check the location of the bridge.
2. Choose from the following options:
  - If the bridge is engaged to the cartridge, go to the Locked position (See page 220) procedure below.
  - If the bridge is moved away from the cartridge, go to the Standby position (See page 220) procedure below.

#### **Locked position**

1. Power off the tape unit.
2. Open the tape unit door.
3. Locate the metal axle **(B)** inside the tape unit. Look towards the lower right corner.
4. Insert a pointed object (like a pen or screwdriver) into the tape unit and push the axle inward.
5. Push the bridge **(C)** to the right. The tape unit is now in standby position. Continue with the Standby position (See page 220) procedure below.

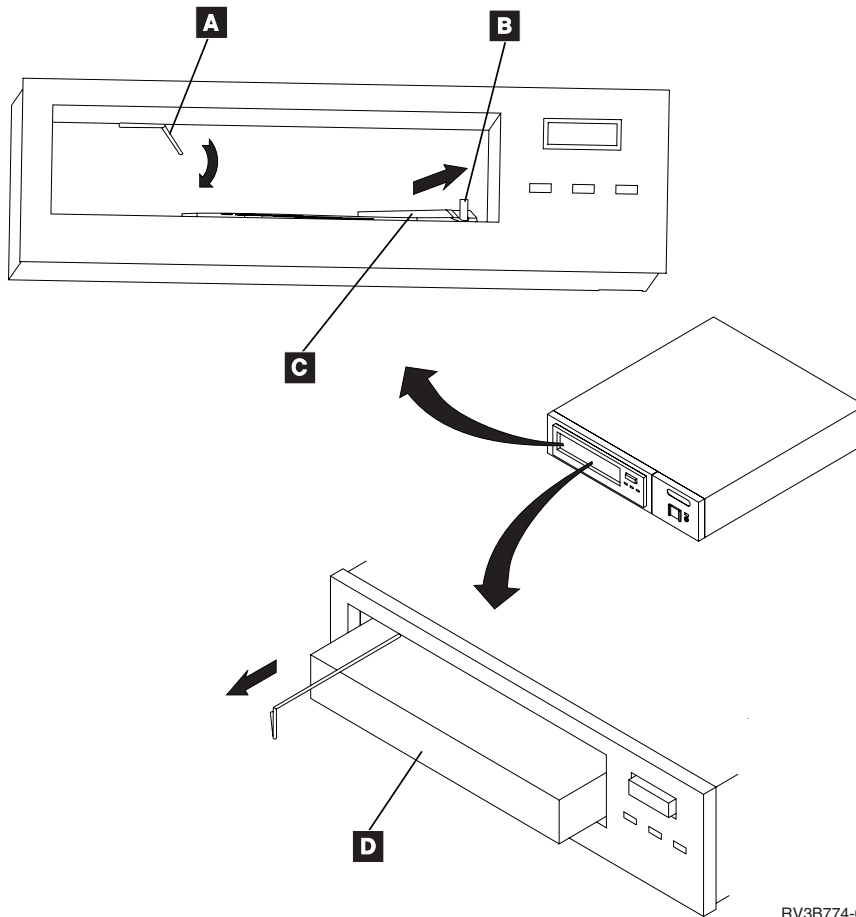
#### **Standby position**

1. Power off the tape unit.
2. Open the tape unit door.
3. Locate the hook shaped metal rod **(A)** inside the tape unit in the upper left corner.
4. Insert a pointed object (like a pen or screwdriver) into the tape unit and push the metal rod downward.



5. Pull the metal rod forward until the cartridge ejects. The cartridge (**D**) is pushed out of the tape unit door and can be removed.

**Figure 1. Tape cartridge manual removal**



RV3B774-0

**This ends the procedure.**

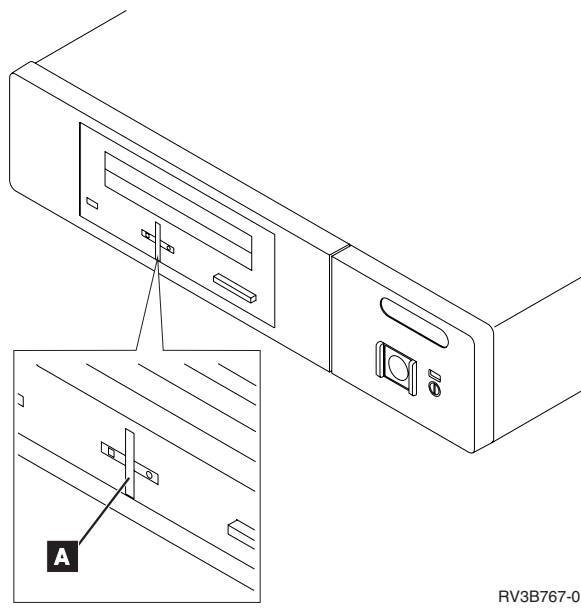
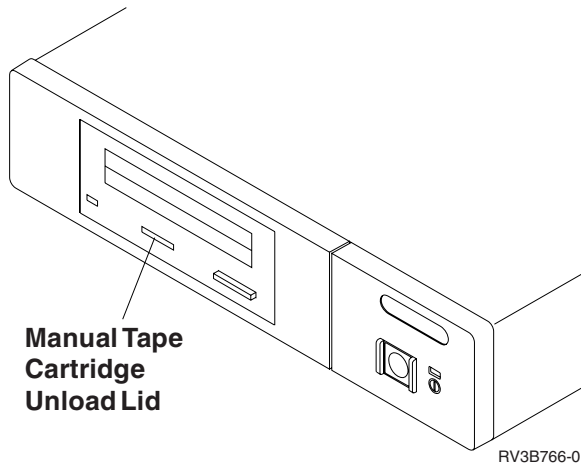
### **Type 6335 - 1/4 inch Tape cartridge**

*For use by authorized service providers.*

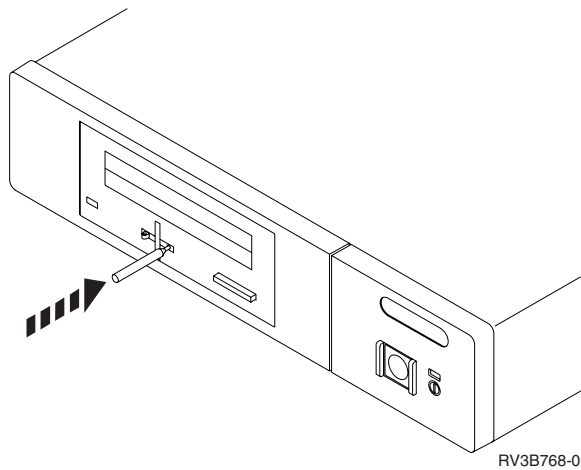
Use this procedure to remove a tape cartridge manually from an internal 1/4 inch tape unit. This procedure may be required if a defective tape cartridge or tape unit has caused the cartridge ejection function to fail, or if the data on the tape cartridge is either critical or sensitive and the customer can not afford its loss.

**Attention:** This procedure is very delicate and may damage or destroy the tape cartridge. Use this procedure only when you have attempted the other options for removing the tape cartridge.

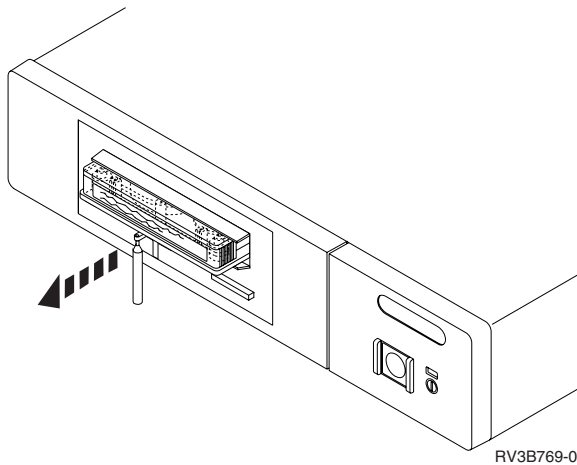
1. Power off the tape unit.
2. Carefully lift and turn the manual tape cartridge unload lid (**A**).



3. Insert a solid metal rod (like a bristol wrench) into the manual tape cartridge unload hole and push in until it stops and the arm appears.



4. Pull the arm out until it stops. Insert the solid metal rod into the hole of the arm and pull out until the tape cartridge comes out.



5. Remove the tape cartridge.
6. Push the arm back in until it stops, turn the manual tape cartridge lid back to the starting position and push it back in place.  
**This ends the procedure.**

## Optical media (CD-ROM, DVD-ROM, and DVD-RAM) - manual removal

*For use by authorized service providers.*

Use this procedure to manually remove Optical media (CD-ROM, DVD-ROM, or DVD-RAM) from the disc tray.

**Note:** If the device power is lost due to a power failure or other reason while the disc tray is closed in the device and it is necessary to open the disc tray, the eject pin (see specifications below) can be inserted into the emergency eject hole on the front bezel, causing the disc tray to open, allowing you to remove the media.

### Emergency disc ejection function

1. Damage to a DVD-RAM device can result if the manual ejection function is used while the device is powered on. It is therefore recommended that the device be removed prior to manually ejecting the media.
2. Insert the eject pin that is approximately 1.5mm in diameter and at least 60mm (DVD-RAM) or 35mm (CD-ROM) in length into the manual eject hole and push firmly. The front edge of the tray will push open approximately 1/4 of an inch. Several pushes may be necessary to open the disc tray far enough to remove the media.  
**Note:** If an eject pin is not easily obtainable, then you might try using a long paper clip.
3. Grasp the tray and slowly pull it out far enough to remove the media.  
**This ends the procedure.**

---

## Part locations and listings

*For use by authorized service providers.*

**Locations and addresses**

**Part assemblies**

**Power and signal cables**

## Type, model, and part number list

### Locations and addresses

For use by authorized service providers.

1. Find the model, feature code, or part you are working on in the table below.
2. Then, choose from the following options:
  - Use the Locations column to find FRU layout, components available for callout (including the FRU that contains the component), location and CCIN information, and links to remove and replace procedures.
  - Use the Addresses column to find address information, which you can then use to find the location.
  - If you are not sure which column and row to use, refer to “How to use locations and addresses” below.

Model	Locations	Addresses
Model 270	Locations	Addresses
Models 800 and 810	Locations	Addresses
Model 820	Locations	Addresses
Model 825	Locations	Addresses
Models 830/SB2 System Unit with FC 9074 Base I/O Tower	Locations	Addresses
Models 840/SB3 System Unit with Processor Tower and FC 9079 Base I/O Tower	Locations	Addresses
Models 870 and 890 with an FC 9094 Base I/O Tower	Locations	Addresses
FC 5074 Expansion I/O Tower	Locations	Addresses
FC 5075 Expansion I/O Tower	Locations	Addresses
FC 5078, FC 0578 Expansion I/O Unit	Locations	Addresses
FC 5079 Expansion I/O Tower	Locations	Addresses
FC 5088, FC 0588 Expansion I/O Unit	Locations	Addresses
FC 5094 Expansion I/O Tower	Locations	Addresses
FC 5095, FC 0595 Expansion I/O Tower	Locations	Addresses
FC 5294 Expansion I/O Tower	Locations	Addresses
FC 8079 Expansion I/O Tower	Locations	Addresses
FC 8093 Expansion I/O Tower	Locations	Addresses
FC 8094 Expansion I/O Tower	Locations	Addresses
Integrated xSeries Adapter Card (IXA)	Locations	Not applicable
External xSeries Server, iSeries Adapter - machine type 1519	Not applicable	Addresses
Power Distribution Unit (PDU)	Locations	Not applicable
I/O adapters	Locations	Not applicable

### How to use locations and addresses

Use this procedure to determine which column and row to use in Locations and addresses to pinpoint hardware problems.

1. Is the Frame ID 1, or is the direct select address 0001xxxx, or is the SRC B4xx or B1xx?
  - **Yes:** Continue with the next step.
  - **No:** Go to step 3 (See page 225).

2. The hardware is located in the system unit. Find the model number. When in manual mode, the system displays the model number in function 20 in pxxx cccc format, where xxx is the model number.
  - If you have location information (card or device position), use the Locations column above to find the correct figure for the model you are working on.
  - If you only have address information (Direct Select Address and Unit Address), use the Addresses column above to find the figure which will show you the locations.  
**This ends the procedure.**
3. Do you know the frame ID?
  - **Yes:** Continue with the next step.
  - **No:** Use the following steps in Hardware Service Manager in SST/DST to locate which tower the failing item is in, using the bus number given in the direct select address.
    - a. Go to SST. If SST is not available, go to DST.  
**Note:** In some cases it may be necessary to IPL to get to DST.
    - b. Select **Start a service tool** → **Hardware service manager** → **Logical hardware resources** → **System bus resources**.
    - c. Change the **System bus or buses to work with** field to the decimal equivalent of the Hex bus address (this is the first four characters of the Direct Select Address).
    - d. Press **Enter**.
    - e. Select the **Associated packaging resources** (option 8) for any IOP that is displayed.
    - f. The Frame ID is indicated in the "Frame ID" column.

**Figure 1. Example Display Only**

```

+-----+
| Logical Hardware Resources on System Bus |
+-----+
| System bus(es) to work with . . . . . 6   *ALL, 1- 7 |
| Subset by . . . . . *ALL *ALL, *STG, *WS, *CMN |
| |
| Type options, press Enter. |
| 2=Change detail  4=Remove  5=Display detail  6=I/O Debug |
| 8=Associated packaging resource(s)  9=Resources associated with IOP |
| |
| Resource |
| Opt  Description          Type-Model  Status      Name |
| ---  - - - - -          - - - - -  - - - - -  - - - - - |
| 8     Storage IOP         6512-001  Operational  SI04 |
| -     Storage IOP         6512-001  Operational  SI05 |
| |
| F3=Exit      F5=Refresh    F6=Print    F9=Failed resources |
| F10=Non-reporting resources  F11=Display serial/part numbers  F12=Cancel |
+-----+

```

Continue with the next step.

4. Is the Frame ID 1?
  - **Yes:** Go to step 2 (See page 225).
  - **No:** The Frame ID is the hexadecimal representation of the decimal number displayed on the panel of the unit or rack.  
**Note:** If the tower unit is an Integrated xSeries Server for iSeries, the Frame ID will be displayed on the 2689 adapter card located inside the tower unit (to find the card follow the SPCN or HSL cables that connect to the card). You will need to remove the cover on the Integrated xSeries Server to view the Frame ID.

**Attention:** Refer to the Integrated xSeries Server service documentation **prior** to removing any covers or cards from the Integrated xSeries Server.

Find the unit or rack that displays this number. Then, find the unit or rack figure that matches this hardware.

- For Migrated Tower figures, see *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site



- For rack figures, see SY44-4934-00, FC 504x Problem Analysis and Repair and Parts information.
- All other tower figures:
  - If you have location information (card or device position), use the Location column above for the hardware you are working on. Each figure has a table that indicates how to get part number information, and links to the Remove and replace or recovery procedure to perform.
  - If you only have address information (Direct Select Address and Unit Address), use the Addresses column above for the hardware you are working on. Use the figure to find the location. Then, follow the link at the top of the Addresses page to go to the Locations page.

**This ends the procedure.**

**Figure 2. Example display only**

```

+-----+
|Packaging Resources Associated with a Logical Resource
|
|Logical resource      Type-Model  Resource Name
|Storage IOP          6512-001   SI04
|
|Type options, press Enter.
|
|2=Change detail      4=Remove          5=Display detail
|8=Associated logical resource(s)  9=Hardware contained within package
|
|Opt Description      Type-Model  Frame ID  Resource Name
|_ Storage IOP        6512-001   4         C18
|
|
|F3=Exit      F5=Refresh      F6=Print
|F10=Non-reporting hardware  F11=Unresolved locations  F12=Cancel
+-----+

```

## Locations — Model 270

*For use by authorized service providers.*

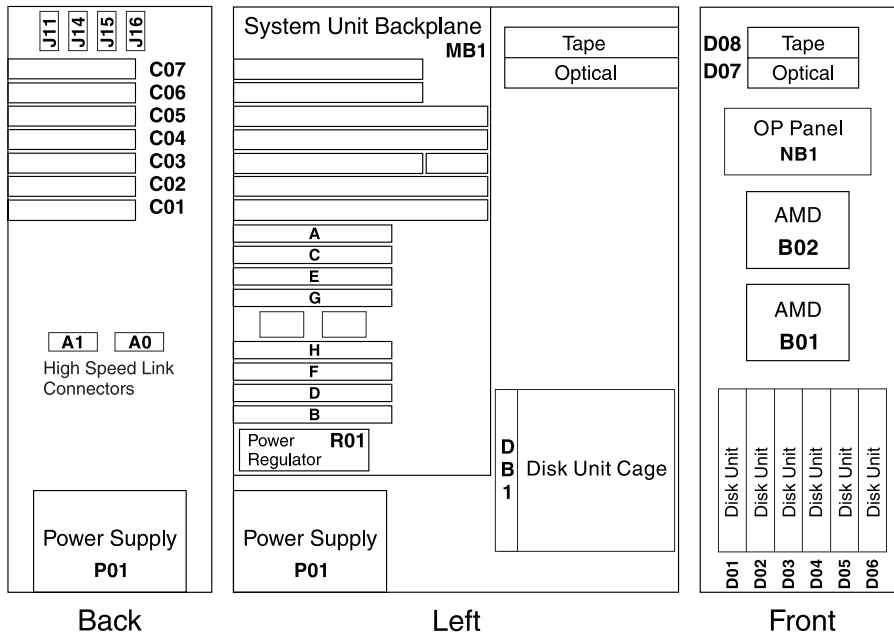
This page includes a table with links to diagrams and tables for Model 270 by feature codes. If you need address information, refer to Addresses — Model 270.

**Table 1. Model 270 diagrams and tables by processor feature code**

Find the processor feature code you are working with, and then select the adjacent table or figure for details.

Processor feature code	Locations diagram	FRU positions and failing components	Network Interface Controller (NIC) is in this FRU	Processor is in this FRU	HSL loop number and port information
22A2, 22A4, 22A5, 2301, 2302, 2422	See Figure 1. Model 270 system unit, processor features 22A2, 22A4, 22A5, 2301, 2302, 2422 (Processor embedded on backplane) (See page 227)	See Table 3. FRU locations and failing components for Model 270 (Processor features 22A2, 22A4, 22A5, 2301, 2302, 2422) (See page 228)	Embedded in the system unit backplane in position MB1	Embedded in the system unit backplane in position MB1	Loop number 256 has external HSL ports labeled "A0" and "A1"
22A7, 22A8, 22AA, 22AB, 23F4, 23F5, 2423, 2424, 2454	See Figure 2. Model 270 system unit, processor features 22A7, 22A8, 22AA, 22AB, 23F4, 23F5, 2423, 2424, 2454 (See page 232)	See Table 5. FRU locations and failing components for Model 270 (Processor features 22A7, 22A8, 22AA, 22AB, 23F4, 23F5, 2423, 2424, 2454) (See page 233)	Embedded in the processor card in position M02	Embedded in the processor card in position M02	Loop number 256 has external HSL ports labeled "A0" and "A1"
23E7, 23F0, 23F1, 2452	See Figure 3. Model 270 system unit, processor features 23E7, 23F0, 23F1, 2452 (Processor embedded on backplane) (See page 235)	See Table 7. FRU locations and failing components for Model 270 (Processor features 23E7, 23F0, 23F1, 2452) (See page 236)	Embedded in the system unit backplane in position MB1	Embedded in the system unit backplane in position MB1	Loop number 256 is an internal loop embedded in the system unit backplane. The loop goes from the NIC, to the embedded HSL I/O bridge, and back to the NIC with no external HSL ports. Loop number 257 has external HSL ports labeled "A0" and "A1"

**Figure 1. Model 270 system unit, processor features 22A2, 22A4, 22A5, 2301, 2302, 2422 (Processor embedded on backplane)**



RZAQ2501-9

**Notes:**

1. The model 270 system unit contains one system PCI bus with one multi-adapter bridge. The bus number is 0001.
2. There is an embedded CFIO in the system unit backplane in position MB1.
3. Memory DIMMS are placed in pairs when more than one DIMM is present. Use the order A-B, C-D, E-F, then G-H.
4. The following table provides information necessary to identify the IOP to which IOAs are assigned.
  - The left column indicates the domain in which IOA assignment is allowed.
  - The right column is used to determine the IOP to which an IOA is assigned.
  - The first position in the list must be an IOP. The remaining positions may be IOPs or IOAs. IOAs are assigned to the first IOP located to their left in the list. Although IOAs can be manually reassigned using SST/DST, the IOA assignments return to the default order after each IPL.

**Table 2. IOA assignment rules for MB1, C01-C07**

Multi-adapter bridge domain / PCI bridge set	IOA assignment rules
MB1, C01 - C07	MB1, C07, C01, C06, C05, C04, C03, C02

**Table 3. FRU locations and failing components for Model 270 (Processor features 22A2, 22A4, 22A5, 2301, 2302, 2422)**

Position	FRU name	Possible failing component	Type, CCIN, or part number (use the Type, model, and part number list to determine the part number when the type or CCIN are given.)	Remove and replace/recovery procedure
C01	PCI card	IOA	See the Type, model, and part number list.	Go to Models 270, 800, and 810 - Cards (dedicated).



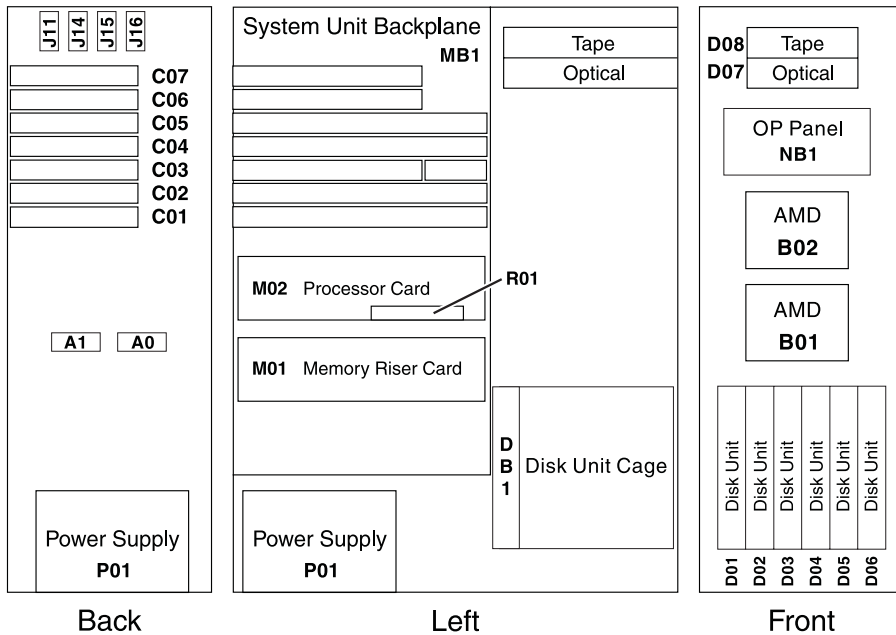
Position	FRU name	Possible failing component	Type, CCIN, or part number (use the Type, model, and part number list to determine the part number when the type or CCIN are given.)	Remove and replace/recovery procedure
C02	PCI card	<ol style="list-style-type: none"> <li>IOP</li> <li>IOA</li> </ol>	<ol style="list-style-type: none"> <li>CCIN is 2842 (See page 527), 2843 (See page 527), or 2844 (See page 527)</li> <li>See the Type, model, and part number list.</li> </ol>	Go to Models 270, 800, and 810 - Cards (dedicated).
C03 (Short if 2890 IXS in C04)	PCI card	<ol style="list-style-type: none"> <li>IOP</li> <li>IOA</li> </ol>	<ol style="list-style-type: none"> <li>CCIN is 2842 (See page 527), 2843 (See page 527), or 2844 (See page 527)</li> <li>See the Type, model, and part number list.</li> </ol>	Go to Models 270, 800, and 810 - Cards (dedicated).
C04	PCI card	<ol style="list-style-type: none"> <li>Integrated xSeries™ Server (IXS)</li> <li>IOP</li> <li>IOA</li> </ol>	<ol style="list-style-type: none"> <li>CCIN is 2890 (See page 527) or 2892 (See page 527)</li> <li>CCIN is 2842 (See page 527), 2843 (See page 527), or 2844 (See page 527)</li> <li>See the Type, model, and part number list.</li> </ol>	Go to Models 270, 800, and 810 - Cards (dedicated).
C05	PCI card	<ol style="list-style-type: none"> <li>IOP</li> <li>IOA</li> </ol>	<ol style="list-style-type: none"> <li>CCIN is 2842 (See page 527), 2843 (See page 527), or 2844 (See page 527)</li> <li>See the Type, model, and part number list.</li> </ol>	Go to Models 270, 800, and 810 - Cards (dedicated).
C06	PCI card	<ol style="list-style-type: none"> <li>IOP</li> <li>IOA</li> </ol>	<ol style="list-style-type: none"> <li>CCIN is 2842 (See page 527), 2843 (See page 527), or 2844 (See page 527)</li> <li>See the Type, model, and part number list.</li> </ol>	Go to Models 270, 800, and 810 - Cards (dedicated).
C07	PCI card	IOA	See the Type, model, and part number list.	Go to Models 270, 800, and 810 - Cards (dedicated).

Position	FRU name	Possible failing component	Type, CCIN, or part number (use the Type, model, and part number list to determine the part number when the type or CCIN are given.)	Remove and replace/recovery procedure
MB1	System unit backplane	<ul style="list-style-type: none"> <li>• Card enclosure or backplane</li> <li>• Clock card</li> <li>• SPCN card</li> <li>• HSL I/O bridge</li> <li>• Processor regulator</li> <li>• Memory riser card</li> <li>• System unit backplane</li> <li>• HSL ring connection</li> <li>• HSL controller</li> <li>• Processor</li> <li>• Service processor</li> <li>• IOP</li> <li>• Multi-adapter bridge (all)</li> </ul>	<p>2249 (See page 521)</p> <p><b>Note:</b> Embedded IOP (type 284D) is exchanged with the system unit backplane.</p> <p><b>OR</b></p> <p>224A (See page 521)</p> <p><b>Note:</b> Embedded IOP (type 286F) is exchanged with the system unit backplane.</p>	Go to Models 270, 800, and 810 - System unit backplane - MB1.
D01 to D06	Disk unit	Disk unit	See the Type, model, and part number list.	Go to Recovery procedures.
D07	Optical device	Optical device	See the Type, model, and part number list.	Go to Models 270, 800, and 810 - Removable media - D07 and D08.
D08	Tape unit	Tape unit	See the Type, model, and part number list.	Go to Models 270, 800, and 810 - Removable media - D07 and D08.
P01	Power supply	Power supply	See Final assembly — Models 270, 800, and 810.	Go to Models 270, 800, and 810 - Power supply - P01
B01, B02	AMD	Air moving device (AMD)	See Final assembly — Models 270, 800, and 810.	Go to Models 270, 800, and 810 - Air moving device - B01 and B02.
NB1	Control panel	Control panel	247D (See page 523)	Go to Models 270, 800, and 810 - Control panel - NB1.
R01	Processor power regulator	Processor power regulator	04N4276	Go to Models 270, 800, and 810 - Processor regulator - R01
DB1, DB2, DB3	Device board	Device board	See the Type, model, and part number list.	Go to Models 270, 800, and 810 - Device board - DB1, DB2, and DB3

<b>Position</b>	<b>FRU name</b>	<b>Possible failing component</b>	<b>Type, CCIN, or part number (use the Type, model, and part number list to determine the part number when the type or CCIN are given.)</b>	<b>Remove and replace/recovery procedure</b>
A	Memory card	Memory card	3022 (See page 528), 3024 (See page 528), 3025 (See page 528), 3026 (See page 528), 3027 (See page 528), 3029 (See page 528)	Go to Models 270, 800, and 810 - Memory - A through H.
B	Memory card	Memory card	3022 (See page 528), 3024 (See page 528), 3025 (See page 528), 3026 (See page 528), 3027 (See page 528), 3029 (See page 528)	Go to Models 270, 800, and 810 - Memory - A through H
C	Memory card	Memory card	3022 (See page 528), 3024 (See page 528), 3025 (See page 528), 3026 (See page 528), 3027 (See page 528), 3029 (See page 528)	Go to Models 270, 800, and 810 - Memory - A through H
D	Memory card	Memory card	3022 (See page 528), 3024 (See page 528), 3025 (See page 528), 3026 (See page 528), 3027 (See page 528), 3029 (See page 528)	Go to Models 270, 800, and 810 - Memory - A through H
E	Memory card	Memory card	3022 (See page 528), 3024 (See page 528), 3025 (See page 528), 3026 (See page 528), 3027 (See page 528), 3029 (See page 528)	Go to Models 270, 800, and 810 - Memory - A through H
F	Memory card	Memory card	3022 (See page 528), 3024 (See page 528), 3025 (See page 528), 3026 (See page 528), 3027 (See page 528), 3029 (See page 528)	Go to Models 270, 800, and 810 - Memory - A through H
G	Memory card	Memory card	3022 (See page 528), 3024 (See page 528), 3025 (See page 528), 3026 (See page 528), 3027 (See page 528), 3029 (See page 528)	Go to Models 270, 800, and 810 - Memory - A through H
H	Memory card	Memory card	3022 (See page 528), 3024 (See page 528), 3025 (See page 528), 3026 (See page 528), 3027 (See page 528), 3029 (See page 528)	Go to Models 270, 800, and 810 - Memory - A through H

Position	FRU name	Possible failing component	Type, CCIN, or part number (use the Type, model, and part number list to determine the part number when the type or CCIN are given.)	Remove and replace/recovery procedure
Time of day (TOD) battery on MB1	TOD	TOD	16G8095	Go to Models 270, 800, and 810 - Time of day (TOD) battery
HSL cables on the HSL ports	HSL cable	HSL connection	See the Type, model, and part number list.	Go to HSL cables - Concurrent.

**Figure 2. Model 270 system unit, processor features 22A7, 22A8, 22AA, 22AB, 23F4, 23F5, 2423, 2424, 2454**



RZAQ2502-7

**Notes:**

1. The model 270 system unit contains one system PCI bus with one multi-adapter bridge. The bus number is 0001.
2. There is an embedded CFIO in the System Unit Backplane in position MB1.
3. The following table provides information necessary to identify the IOP to which IOAs are assigned. The left column indicates the domain in which IOA assignment is allowed. The right column is used to determine the IOP to which an IOA is assigned. The first position in the list must be an IOP. The remaining positions may be IOPs or IOAs. IOAs are assigned to the first IOP located to their left in the list. Although IOAs can be manually reassigned using SST/DST, the IOA assignments return to the default order after each IPL.

**Table 4. IOA assignment rules for MB1, C01-C07**

Multi-adapter bridge domain / PCI bridge set	IOA assignment rules
MB1, C01 - C07	MB1, C07, C01, C06, C05, C04, C03, C02

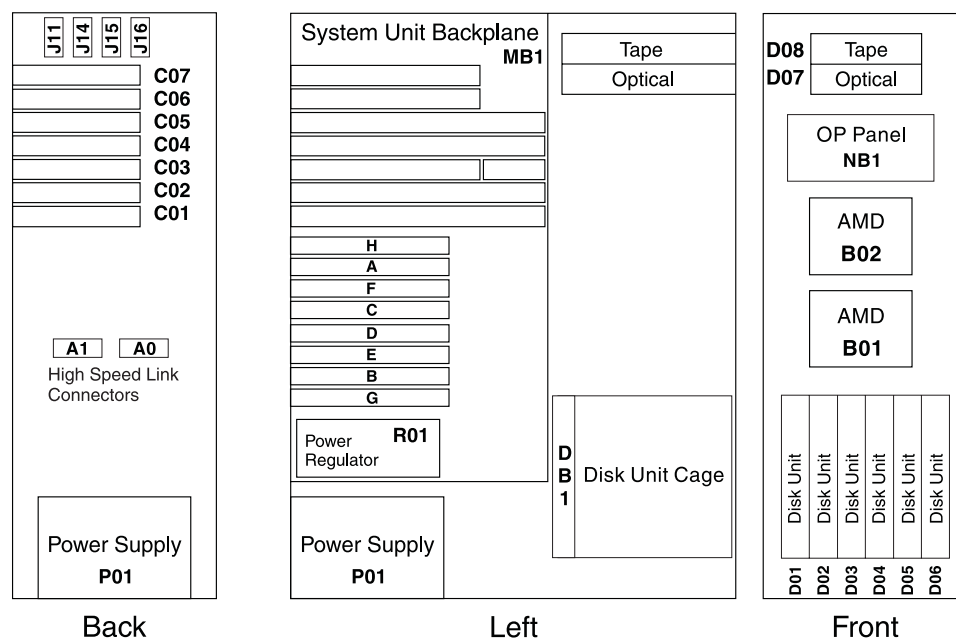
**Table 5. FRU locations and failing components for Model 270 (Processor features 22A7, 22A8, 22AA, 22AB, 23F4, 23F5, 2423, 2424, 2454)**

Position	FRU name	Possible failing component	Type, CCIN, or part number (use the Type, model, and part number list to determine the part number when the type or CCIN are given.)	Remove and replace/recovery procedure
C01	PCI card	IOA	See the Type, model, and part number list.	Go to Models 270, 800, and 810 - Cards - Concurrent.
C02	PCI card	1. IOP 2. IOA	1. CCIN is 2842 (See page 527), 2843 (See page 527), or 2844 (See page 527) 2. See the Type, model, and part number list.	Go to Models 270, 800, and 810 - Cards - Concurrent.
C03 (Short if 2890 IXS in C04)	PCI card	1. IOP 2. IOA	1. CCIN is 2842 (See page 527), 2843 (See page 527), or 2844 (See page 527) 2. See the Type, model, and part number list.	Go to Models 270, 800, and 810 - Cards - Concurrent.
C04	PCI card	1. Integrated xSeries Server (IXS) 2. IOP 3. IOA	1. CCIN is 2890 (See page 527) or 2892 (See page 527) 2. CCIN is 2842 (See page 527), 2843 (See page 527), or 2844 (See page 527) 3. See the Type, model, and part number list.	Go to Models 270, 800, and 810 - Cards - Concurrent.
C05	PCI card	1. IOP 2. IOA	1. CCIN is 2842 (See page 527), 2843 (See page 527), or 2844 (See page 527) 2. See the Type, model, and part number list	Go to Models 270, 800, and 810 - Cards - Concurrent.
C06	PCI card	1. IOP 2. IOA	1. CCIN is 2842 (See page 527), 2843 (See page 527), or 2844 (See page 527) 2. See the Type, model, and part number list.	Go to Models 270, 800, and 810 - Cards - Concurrent.
C07	PCI card	IOA	See the Type, model, and part number list.	Go to Models 270, 800, and 810 - Cards - Concurrent.

Position	FRU name	Possible failing component	Type, CCIN, or part number (use the Type, model, and part number list to determine the part number when the type or CCIN are given.)	Remove and replace/recovery procedure
MB1	System unit backplane	<ol style="list-style-type: none"> <li>1. Service processor</li> <li>2. IOP</li> <li>3. Card enclosure or backplane</li> <li>4. Clock card</li> <li>5. SPCN card</li> <li>6. HSL I/O bridge</li> <li>7. System unit backplane</li> <li>8. HSL ring connection</li> <li>9. Multi-adapter bridge (all)</li> </ol>	282F (See page 526)  <b>Note:</b> Embedded IOP (type 284E) is exchanged with the system unit backplane, 282F.	Go to Models 270, 800, and 810 - System unit backplane - MB1
D01 to D06	Disk unit	Disk unit	See the Type, model, and part number list.	Go to Recovery procedures.
D07	Optical device	Optical device	See the Type, model, and part number list.	Go to Models 270, 800, and 810 - Removable media - D07 and D08.
D08	Tape unit	Tape unit	See the Type, model, and part number list.	Go to Models 270, 800, and 810 - Removable media - D07 and D08.
P01	Power supply	Power supply	See Final assembly — Models 270, 800, and 810.	Go to Models 270, 800, and 810 - Power supply - P01
B01, B02	AMD	Air moving device (AMD)	See Final assembly — Models 270, 800, and 810 System Unit Expansion.	Go to Models 270, 800, and 810 - AMD - B01 and B02
NB1	Control panel	Control panel	247D (See page 523)	Go to Models 270, 800, and 810 - Control panel - NB1
DB1, DB2, DB3	Device board	Device board	See the Type, model, and part number list.	Go to Models 270, 800, and 810 - Device board - DB1, DB2, and DB3
M01	Memory Riser Card	Memory Riser Card	2884 (See page 527)	Go to Models 270, 800, and 810 - Cards (dedicated)
M01 daughter cards	Memory DIMM	See Figure 1. 2884 Memory card (See page 364) in the Memory locations and placement rules topic.	3022 (See page 528), 3024 (See page 528), 3025 (See page 528), 3026 (See page 528), 3027 (See page 528), 3029 (See page 528)	Go to Models 270, 800, and 810 - Cards (dedicated)
M02	Processor card	<ol style="list-style-type: none"> <li>1. Processor</li> <li>2. Network Interface Controller (NIC)</li> </ol>	24A0 (See page 523) (1-way)  24A2 (See page 523) (2-way)  25BD (See page 523) (2-way)	Go to Models 270, 800, and 810 - Cards (dedicated)

Position	FRU name	Possible failing component	Type, CCIN, or part number (use the Type, model, and part number list to determine the part number when the type or CCIN are given.)	Remove and replace/recovery procedure
R01	Processor regulator card	Processor regulator	<ul style="list-style-type: none"> <li>All except type 24A2 and 25BD, use part number 04N4276</li> <li>24A2 (See page 523) (2-way)</li> <li>25BD (See page 523) (2-way)</li> </ul>	Go to Models 270, 800, and 810 - Processor regulator - R01
M02 daughter card	Memory DIMM	See Figure 2. Processor card with DIMM memory (See page 364) in the Memory locations and placement rules topic.	3022 (See page 528), 3024 (See page 528), 3025 (See page 528), 3026 (See page 528), 3027 (See page 528), 3029 (See page 528)	Go to Models 270, 800, and 810 - Cards (dedicated)
Time of day (TOD) battery on MB1	TOD	TOD	16G8095	Go to Models 270, 800, and 810 - Time of day (TOD) battery
HSL cables on the HSL ports	HSL cable	HSL connection	See the Type, model, and part number list.	Go to HSL cables - Concurrent.

**Figure 3. Model 270 system unit, processor features 23E7, 23F0, 23F1, 2452 (Processor embedded on backplane)**



RZAQ2527-2

**Notes:**

1. The model 270 system unit contains one system PCI bus with one multi-adapter bridge. The bus number is 0001.
2. There is an embedded CFIOP in the system unit backplane in position MB1.
3. Memory DIMMS are placed in pairs when more than one DIMM is present. Use the order A-B, C-D, E-F, then G-H.
4. The following table provides information necessary to identify the IOP to which IOAs are assigned. The left column indicates the domain in which IOA assignment is allowed. The right column is used to determine the IOP to which an IOA is assigned. The first position in the list must be an IOP. The remaining positions may be IOPs or IOAs. IOAs are assigned to the first IOP located to their left in the list. Although IOAs can be manually reassigned using SST/DST, the IOA assignments return to the default order after each IPL.

**Table 6. IOA assignment rules for MB1, C01-C07**

Multi-adapter bridge domain / PCI bridge set	IOA assignment rules
MB1, C01 - C07	MB1, C07, C01, C06, C05, C04, C03, C02

**Table 7. FRU locations and failing components for Model 270 (Processor features 23E7, 23F0, 23F1, 2452)**

Position	FRU name	Possible failing component	Type, CCIN, or part number (use the Type, model, and part number list to determine the part number when the type or CCIN are given.)	Remove and replace/recovery procedure
C01	PCI card	IOA	See the Type, model, and part number list.	Go to Models 270, 800, and 810 - Cards (dedicated).
C02	PCI card	<ol style="list-style-type: none"> <li>1. IOP</li> <li>2. IOA</li> </ol>	<ol style="list-style-type: none"> <li>1. CCIN is 2842 (See page 527), 2843 (See page 527), or 2844 (See page 527)</li> <li>2. See the Type, model, and part number list.</li> </ol>	Go to Models 270, 800, and 810 - Cards (dedicated).
C03 (Short if IXS in C04)	PCI card	<ol style="list-style-type: none"> <li>1. IOP</li> <li>2. IOA</li> </ol>	<ol style="list-style-type: none"> <li>1. CCIN is 2842 (See page 527), 2843 (See page 527), or 2844 (See page 527)</li> <li>2. See the Type, model, and part number list.</li> </ol>	Go to Models 270, 800, and 810 - Cards (dedicated).

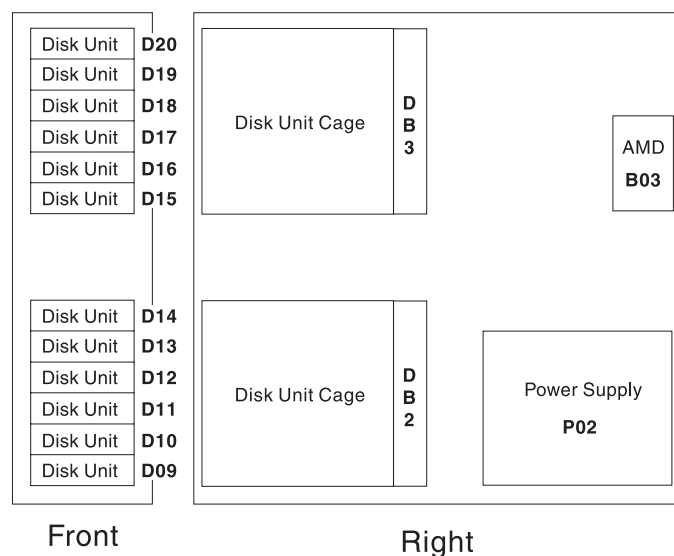


<b>Position</b>	<b>FRU name</b>	<b>Possible failing component</b>	<b>Type, CCIN, or part number (use the Type, model, and part number list to determine the part number when the type or CCIN are given.)</b>	<b>Remove and replace/recovery procedure</b>
C04	PCI card	<ol style="list-style-type: none"> <li>1. Integrated xSeries Server (IXS)</li> <li>2. IOP</li> <li>3. IOA</li> </ol>	<ol style="list-style-type: none"> <li>1. CCIN is 2890 (See page 527) or 2892 (See page 527)</li> <li>2. CCIN is 2842 (See page 527), 2843 (See page 527), or 2844 (See page 527)</li> <li>3. See the Type, model, and part number list.</li> </ol>	Go to Models 270, 800, and 810 - Cards (dedicated).
C05	PCI card	<ol style="list-style-type: none"> <li>1. IOP</li> <li>2. IOA</li> </ol>	<ol style="list-style-type: none"> <li>1. CCIN is 2842 (See page 527), 2843 (See page 527), or 2844 (See page 527)</li> <li>2. See the Type, model, and part number list.</li> </ol>	Go to Models 270, 800, and 810 - Cards (dedicated).
C06	PCI card	<ol style="list-style-type: none"> <li>1. IOP</li> <li>2. IOA</li> </ol>	<ol style="list-style-type: none"> <li>1. CCIN is 2842 (See page 527), 2843 (See page 527), or 2844 (See page 527)</li> <li>2. See the Type, model, and part number list.</li> </ol>	Go to Models 270, 800, and 810 - Cards (dedicated).
C07	PCI card	IOA	See the Type, model, and part number list.	Go to Models 270, 800, and 810 - Cards (dedicated).

Position	FRU name	Possible failing component	Type, CCIN, or part number (use the Type, model, and part number list to determine the part number when the type or CCIN are given.)	Remove and replace/recovery procedure
MB1	System unit backplane	<ul style="list-style-type: none"> <li>• Card enclosure or backplane</li> <li>• Clock card</li> <li>• SPCN card</li> <li>• HSL I/O bridge</li> <li>• Processor regulator</li> <li>• Memory riser card</li> <li>• System unit backplane</li> <li>• HSL ring connection</li> <li>• HSL controller</li> <li>• Processor</li> <li>• Service processor</li> <li>• IOP</li> <li>• Multi-adapter bridge (all)</li> </ul>	<p>25B9 (See page 523)</p> <p><b>Note:</b> Embedded IOP (type 286C) is exchanged with the system unit backplane.</p> <p><b>OR</b></p> <p>25BA (See page 523)</p> <p><b>Note:</b> Embedded IOP (type 286D) is exchanged with the system unit backplane.</p>	Go to Models 270, 800, and 810 - System unit backplane - MB1.
D01 to D06	Disk unit	Disk unit	See the Type, model, and part number list.	Go to Recovery procedures.
D07	Optical device	Optical device	See the Type, model, and part number list.	Go to Models 270, 800, and 810 - Removable media - D07 and D08.
D08	Tape unit	Tape unit	See the Type, model, and part number list.	Go to Models 270, 800, and 810 - Removable media - D07 and D08.
P01	Power supply	Power supply	See Final assembly — Models 270, 800, and 810.	Go to Models 270, 800, and 810 - Power supply - P01
B01, B02	AMD	AMD	See Final assembly — Models 270, 800, and 810 System Unit Expansion.	Go to Models 270, 800, and 810 - AMD - B01 and B02.
NB1	Control panel	Control panel	247D (See page 523)	Go to Models 270, 800, and 810 - Control panel - NB1.
R01	Processor regulator card	Processor regulator	04N4276	Go to Models 270, 800, and 810 - Processor regulator - R01

Position	FRU name	Possible failing component	Type, CCIN, or part number (use the Type, model, and part number list to determine the part number when the type or CCIN are given.)	Remove and replace/recovery procedure
DB1, DB2, DB3	Device board	Device board	See the Type, model, and part number list.	Go to Models 270, 800, and 810 - Device board - DB1, DB2, and DB3
A through H	Memory card	Memory card	3032 (See page 528), 3033 (See page 528), 3034 (See page 528)	Go to Models 270, 800, and 810 - Memory - A through H.
Time of day (TOD) battery on MB1	TOD	TOD	16G8095	Go to Models 270, 800, and 810 - Time of day (TOD) battery
HSL cables on the HSL ports	HSL cable	HSL connection	See the Type, model, and part number list.	Go to HSL cables - Concurrent.

**Figure 4. Model 270 FC 7104 system unit expansion**



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**Table 8. FRU locations and failing components for the Model 270 system unit expansion**

Position	FRU name	Possible failing component	Type, CCIN, or part number (use the Type, model, and part number list to determine the part number when the type or CCIN are given.)	Remove and replace/recovery procedure
D09 to D20	Disk unit	Disk unit	See the Type, model, and part number list.	Go to Recovery procedures.

Position	FRU name	Possible failing component	Type, CCIN, or part number (use the Type, model, and part number list to determine the part number when the type or CCIN are given.)	Remove and replace/recovery procedure
DB2 and DB3	Device board	Disk unit backplane	See the Type, model, and part number list.	Go to Models 270, 800, and 810 - Device board - DB1, DB2, and DB3.
P02	Power supply	Power supply	See Final assembly — Models 270, 800, and 810 System Unit Expansion.	Go to Models 270, 800, and 810 - Power supply - P02.
B03	AMD	AMD	04N5698	Go to Models 270, 800, and 810 - Air moving device - B03.

## Locations — Models 800 and 810

*For use by authorized service providers.*

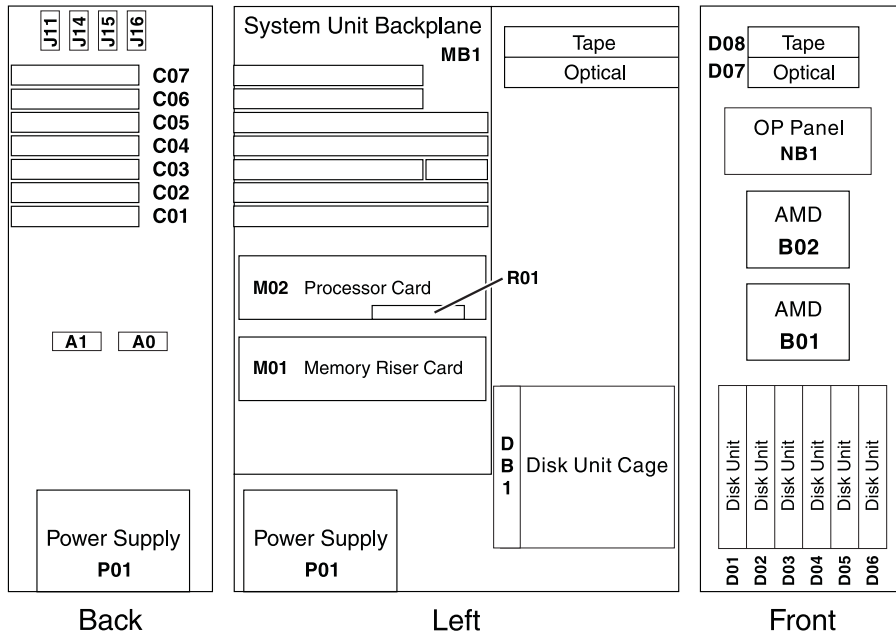
This page includes a table with links to diagrams and tables for Models 800 and 810 by feature codes. If you need address information, refer to Addresses — Models 800 and 810.

**Table 1. Models 800 and 810 diagrams and tables by processor feature code**

Processor feature code	Locations diagram	FRU positions and failing components	Network interface controller (NIC) is in this FRU	Processor is in this FRU	HSL loop number and port information
7428, 7430	See Figure 1. Model 810 system unit, processor features 7428, 7430 (See page 241) below	See Table 3. FRU locations and failing components for Model 810 (processor features 7428, 7430) (See page 241), below	Embedded in the processor card in position M02	Embedded in the processor card in position M02	Loop number 256 has external HSL ports labeled "A0" and "A1"
Processor feature codes (except processor features 7428, 7430)	See Figure 2. Models 800 and 810 system unit, except processor features 7428, 7430 (See page 244), below	See Table 5. FRU locations and failing components for Models 800 and 810 (except processor features 7428, 7430) (See page 245), below	Embedded in the system unit backplane in position MB1	Embedded in the system unit backplane in position MB1	<p>Loop number 256 is an internal loop embedded in the system unit backplane. The loop goes from the NIC, to the embedded HSL I/O bridge, and back to the NIC with no external HSL ports.</p> <p>Loop number 257 has external HSL ports labeled "A0" and "A1"</p>

**Model 810 system unit processor features 7428, 7430:** The following diagram shows FRU layout in the Model 810 (with processor features 7428, 7430) and the associated system unit expansion. Use it in conjunction with the tables below. If you need address information, refer to Addresses — Models 800 and 810.

**Figure 1. Model 810 system unit with processor features 7428, 7430**



RZAQ2502-7

**Notes:**

1. The model 810 system unit contains one system PCI bus with one multi-adapter bridge. The bus number is 0001.
2. There is an embedded CFIO in the system unit backplane in position MB1.
3. The following table provides information necessary to identify the IOP to which IOAs are assigned.
  - The left column indicates the domain in which IOA assignment is allowed.
  - The right column is used to determine the IOP to which an IOA is assigned.
  - The first position in the list must be an IOP. The remaining positions may be IOPs or IOAs. IOAs are assigned to the first IOP located to their left in the list. Although IOAs can be manually reassigned using SST/DST, the IOA assignments return to the default order after each IPL.
  - J11 (remote power on); J14 (UPS); J15 (SPCN 0); J16 (SPCN 1).

**Table 2. IOA assignment rules for MB1, C01-C07**

Multi-adapter bridge domain / PCI bridge set	IOA assignment rules
MB1, C01 - C07	MB1, C07, C01, C06, C05, C04, C03, C02

**Table 3. FRU locations and failing components for Model 810 (Processor features 7428, 7430)**

<b>Position</b>	<b>FRU name</b>	<b>Possible failing component</b>	<b>Type, CCIN, or part number (use the Type, model, and part number list to determine the part number when the type or CCIN are given.)</b>	<b>Remove and replace/recovery procedure</b>
C01	PCI card	IOA	See the Type, model, and part number list.	Go to Models 270, 800, and 810 - Cards - Concurrent.
C02	PCI card	1. IOP 2. IOA	1. CCIN is 2842 (See page 527), 2843 (See page 527), or 2844 (See page 527) 2. See the Type, model, and part number list.	Go to Models 270, 800, and 810 - Cards - Concurrent.
C03 (Short if 2890 IXS in C04)	PCI card	1. IOP 2. IOA	1. CCIN is 2842 (See page 527), 2843 (See page 527), or 2844 (See page 527) 2. See the Type, model, and part number list.	Go to Models 270, 800, and 810 - Cards - Concurrent.
C04	PCI card	1. Integrated xSeries <sup>(TM)</sup> Server (IXS) 2. IOP 3. IOA	1. CCIN is 2890 (See page 527) or 2892 (See page 527) 2. CCIN is 2842 (See page 527), 2843 (See page 527), or 2844 (See page 527) 3. See the Type, model, and part number list.	Go to Models 270, 800, and 810 - Cards - Concurrent.
C05	PCI card	1. IOP 2. IOA	1. CCIN is 2842 (See page 527), 2843 (See page 527), or 2844 (See page 527) 2. See the Type, model, and part number list	Go to Models 270, 800, and 810 - Cards - Concurrent.
C06	PCI card	1. IOP 2. IOA	1. CCIN is 2842 (See page 527), 2843 (See page 527), or 2844 (See page 527) 2. See the Type, model, and part number list.	Go to Models 270, 800, and 810 - Cards - Concurrent.

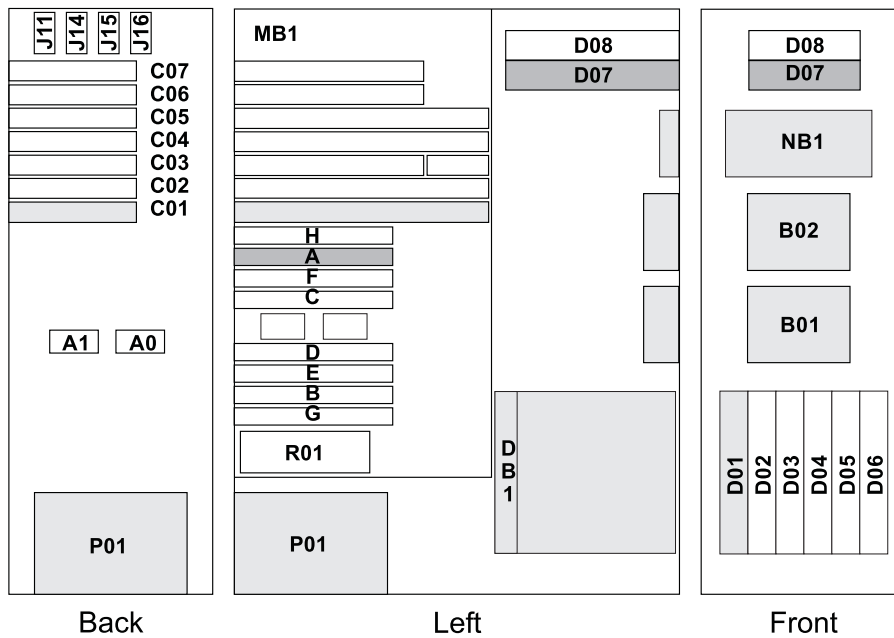
Position	FRU name	Possible failing component	Type, CCIN, or part number (use the Type, model, and part number list to determine the part number when the type or CCIN are given.)	Remove and replace/recovery procedure
C07	PCI card	IOA	See the Type, model, and part number list.	Go to Models 270, 800, and 810 - Cards - Concurrent.
MB1	System unit backplane	<ol style="list-style-type: none"> <li>1. Service processor</li> <li>2. IOP</li> <li>3. Card enclosure or backplane</li> <li>4. Clock card</li> <li>5. SPCN card</li> <li>6. HSL I/O bridge</li> <li>7. System unit backplane</li> <li>8. HSL ring connection</li> <li>9. Multi-adapter bridge (all)</li> </ol>	282F (See page 526)  <b>Note:</b> Embedded IOP (type 284E) is exchanged with the system unit backplane, 282F.	Go to Models 270, 800, and 810 - System unit backplane - MB1
D01 to D06	Disk unit	Disk unit	See the Type, model, and part number list.	Go to Recovery procedures.
D07	Optical device	Optical device	See the Type, model, and part number list.	Go to Models 270, 800, and 810 - Removable media - D07 and D08.
D08	Tape unit	Tape unit	See the Type, model, and part number list.	Go to Models 270, 800, and 810 - Removable media - D07 and D08.
P01	Power supply	Power supply	24L1402	Go to Models 270, 800, and 810 - Power supply - P01
B01, B02	AMD	Air moving device (AMD)	See Final assembly — Models 270, 800, and 810.	Go to Models 270, 800, and 810 - Air moving device - B01 and B02
NB1	Control panel	Control panel	247D (See page 523)	Go to Models 270, 800, and 810 - Control panel - NB1
DB1	Device board	Device board	28CD (See page 528)	Go to Models 270, 800, and 810 - Device board - DB1, DB2, and DB3
M01	Memory Riser Card	Memory Riser Card	2884 (See page 527)	Go to Models 270, 800, and 810 - Cards (dedicated)

Position	FRU name	Possible failing component	Type, CCIN, or part number (use the Type, model, and part number list to determine the part number when the type or CCIN are given.)	Remove and replace/recovery procedure
M01 daughter cards	Memory DIMM	See Figure 1. 2884 Memory card (See page 364) in the Memory locations and placement rules page.	3022 (See page 528), 3024 (See page 528), 3025 (See page 528), 3026 (See page 528), 3027 (See page 528), 3029 (See page 528)	Go to Models 270, 800, and 810 - Cards (dedicated)
M02	Processor card	1. Processor 2. Network Interface Controller (NIC)	• 25EB (See page 524) (2-way)	Go to Models 270, 800, and 810 - Processor M02
R01	Processor regulator card	Processor regulator	• 25EB (See page 524) (2-way)	Go to Models 270, 800, and 810 - Processor M02
M02 daughter card	Memory DIMM	See Figure 2. Processor card with DIMM memory (See page 364) in the Memory locations and placement rules topic.	3022 (See page 528), 3024 (See page 528), 3025 (See page 528), 3026 (See page 528), 3027 (See page 528), 3029 (See page 528)	Go to Models 270, 800, and 810 - Cards (dedicated)
Time of day (TOD) battery on MB1	TOD	TOD	16G8095	Go to Models 270, 800, and 810 - Time of day (TOD) battery
HSL cables on the HSL ports	HSL cable	HSL connection	See the Type, model, and part number list.	Go to HSL cables - Concurrent.

**Models 800 and 810 system unit (except processor features 7428, 7430):** The following diagram shows FRU layout in the Models 800 and 810 (except processor features 7428, 7430) and the associated system unit expansion. Use it in conjunction with the tables below. If you need address information, refer to Addresses — Models 800 and 810.

**Figure 2. Locations — Models 800 and 810 (except processor features 7428, 7430)**





Base Feature  
 Required Feature

RZAR6700-3

The following table provides information necessary to identify the IOP to which IOAs are assigned.

- The left column indicates the domain in which IOA assignment is allowed.
- The right column is used to determine the IOP to which an IOA is assigned.
- The first position in the list must be an IOP. The remaining positions may be IOPs or IOAs. IOAs are assigned to the first IOP located to their left in the list. Although IOAs can be manually reassigned using SST/DST, the IOA assignments return to the default order after each IPL.

**Table 4. Identify the IOP to which IOAs are assigned**

Multi-adapter bridge domain / PCI bridge set	IOA assignment rules
MB1, C01 - C07	MB1, C07, C01, C06, C05, C04, C03, C02

The following table gives the components available for callout on the Models 800 and 810 (except processor features 7428, 7430). It matches those components with the field replaceable unit (FRU) containing the component. There is also location and CCIN information, and if available, links to remove and replace procedures and additional comments.

**Table 5. Models 800 and 810 FRU locations (except processor features 7428, 7430)**

Possible failing component	FRU name	Position	Type or CCIN number (see the Type, model, and part number list)	Remove and replace procedure	Additional comments
<ul style="list-style-type: none"> <li>• Card enclosure or backplane</li> <li>• Clock card</li> <li>• SPCN card</li> <li>• HSL I/O bridge</li> <li>• Processor regulator</li> <li>• Memory riser card</li> <li>• System unit backplane</li> <li>• HSL ring connection</li> <li>• HSL controller</li> <li>• Processor</li> <li>• Service processor</li> <li>• IOP</li> <li>• Multi-adapter bridge (all)</li> </ul>	System unit backplane	MB1	<p><b>25B9 (See page 523) (Note:</b> Embedded IOP (type 286C) is exchanged with the system unit backplane.)</p> <p><b>25BA (See page 523) (Note:</b> Embedded IOP (type 286D) is exchanged with the system unit backplane.)</p> <p><b>25F0 (See page 524) (Note:</b> Embedded IOP (type 286E) is exchanged with the system unit backplane.)</p>	Go to Models 270, 800, and 810 - System unit backplane - MB1	
Memory card	Memory card	A through H on the system backplane	3092 (See page 529), 3093 (See page 529), 3094 (See page 529), 3096 (See page 529)	Go to Models 270, 800, and 810 - Memory - A through H	
IOP	PCI cards	C03 - C06	2842 (See page 527), 2843 (See page 527), or 2844 (See page 527)	Go to Models 270, 800, and 810 - Cards (dedicated)	
IOA	PCI cards	C01 through C07	See the Type, model, and part number list	Go to Models 270, 800, and 810 - Cards (dedicated)	If 2890 IXS in C04, only a short card can be in C03.
Integrated xSeries Server	PCI card	C04	2890 (See page 527) or 2892 (See page 527)	Go to Models 270, 800, and 810 - Cards (dedicated)	IF IXS in C04, only a short card can be in C03.
Disk unit	Disk unit	D01 through D06	See the Type, model, and part number list	Go to Models 270, 800, and 810 - Disk unit (dedicated)	
Optical device	Optical device	D07	See the Type, model, and part number list	Go to Models 270, 800, and 810 - Removable media - D07 and D08	

Possible failing component	FRU name	Position	Type or CCIN number (see the Type, model, and part number list)	Remove and replace procedure	Additional comments
Tape unit	Tape unit	D08	See the Type, model, and part number list	Go to Models 270, 800, and 810 - Removable media - D07 and D08	
Air moving device (AMD)	AMD	B01, B02	See Final assembly — Models 270, 800, and 810	Go to Models 270, 800, and 810 - Air moving device (AMD) B01; B02	
Power supply	Power supply	P01	See Final assembly - Models 270, 800, and 810	Go to Models 270, 800, and 810 - Power supply - P01	
Control panel	Control panel	NB1	247D (See page 523)	Go to Models 270, 800, and 810 - Control panel - NB1	
Processor regulator	Processor regulator	R01	04N4276	Go to Models 270, 800, and 810 - Processor regulator - R01	
Device board	Device board	DB1	283E (See page 526) (non-concurrent), 28CD (See page 528) (concurrent)	Go to Models 270, 800, and 810 - Device board	
Time of day battery	Time of day battery	MB1		Go to Models 270, 800, and 810 - Time of day battery	
HSL cables	HSL cables	Attached to active HSL ports		Go to HSL cables - concurrent	

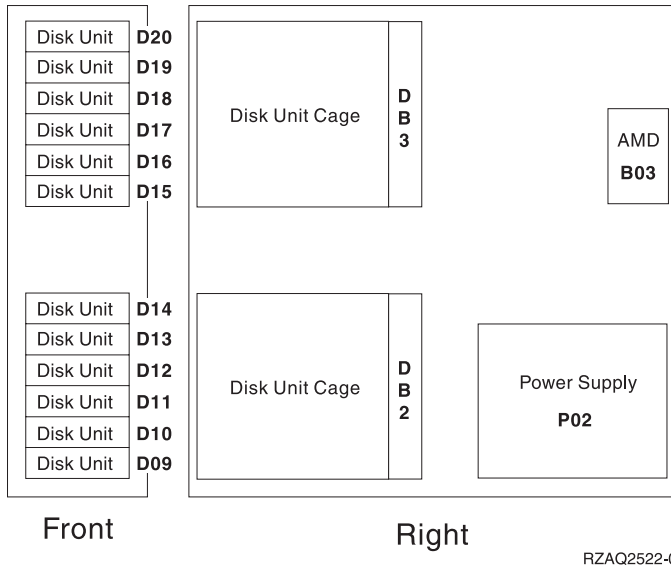
### Memory configuration

A single main storage DIMM feature is allowed on all Models 800 and 810 (except processor features 7428 and 7430).

When the total number of main storage DIMMs is increased greater than one, the single existing DIMM must be paired up (with a DIMM of the same capacity) and any additional DIMMs must be added in pairs of the same capacity. Memory pairs are to be in the following order: A/B, C/D, E/F, G/H.

There are 8 memory DIMM slots available in the base system for main storage DIMMs which plug directly onto the backplane.

### Figure 3. Models 800 and 810 System Unit Expansion



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**Table 6. Models 800 and 810 System Unit Expansion**

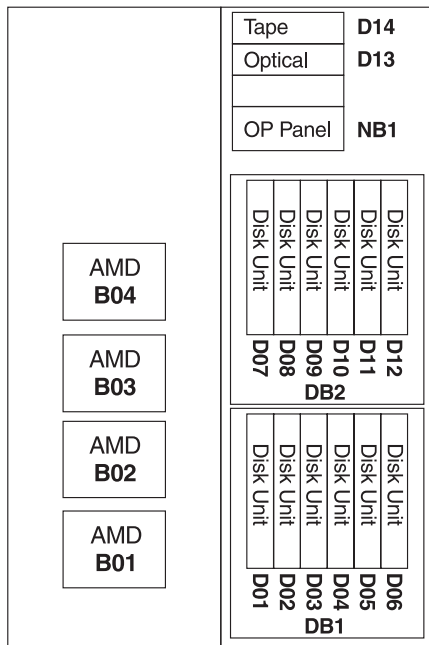
Possible failing component	FRU name	Position	Type or CCIN number	Remove and replace procedure	Additional comments
Disk unit backplane	Device board	DB2 and DB3	See the Type, model, and part number list	Go to Models 270, 800, and 810 - Device board - DB1, DB2, and DB3	
Disk unit	Disk unit	D09 through D20	See the Type, model, and part number list	Go to Recovery procedures	
Air moving device (AMD)	AMD	B03	04N5698	Go to Models 270, 800, and 810 - Air moving device (AMD) - B03	
Power supply	Power supply	P02	See Final assembly - Models 270, 800, and 810 System Unit Expansion	Go to Models 270, 800, and 810 - Power supply - P02	

## Locations — Model 820

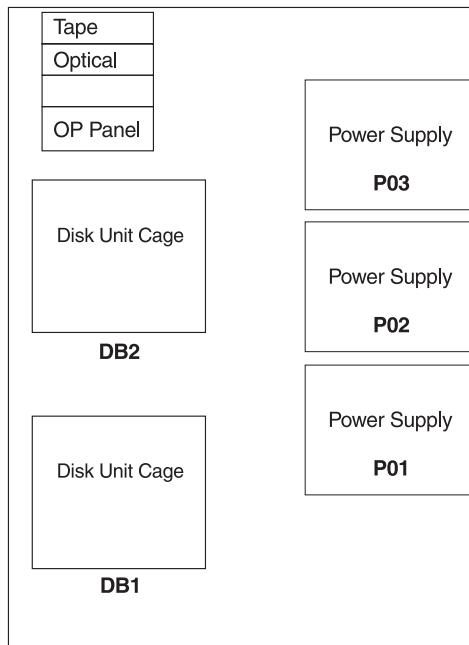
*For use by authorized service providers.*

The following diagram shows FRU layout in the Model 820 system unit. Use it with the tables below. If you need address information, refer to Addresses — Model 820.

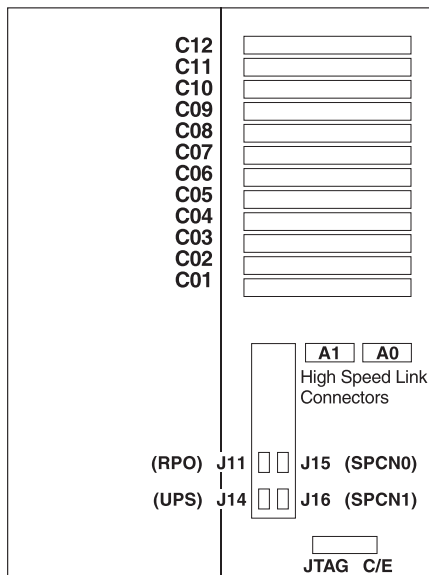
**Figure 1. Locations - Model 820**



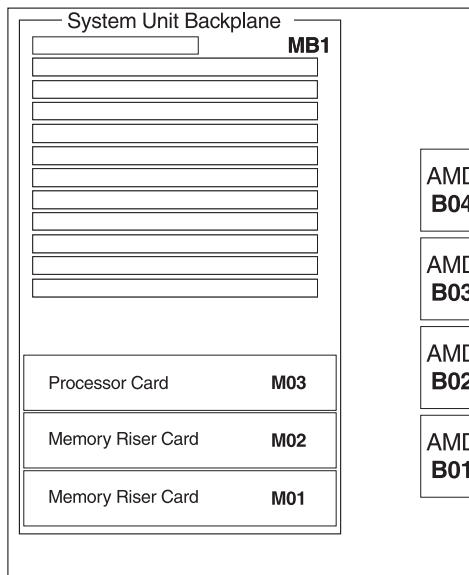
Front



Right



Back



Left

RZAQ2503-6

**Notes:**

1. The Model 820 system unit contains two system PCI busses. Each PCI bus has one multi-adapter bridge.
2. In the Model 820 card position table the first of the two busses in the system unit is bus 0001 and the second bus in the system unit is designated as "yyyy".
3. The bus connected to card positions C01 - C06 is bus number 0001. The other bus in the system unit is not required to have a contiguous bus number.
4. There is an embedded CFIOP in the system unit backplane in position MB1. This CFIOP is in the C01 - C06 multi-adapter bridge domain.
5. C12 is required to be a CFIOP.

6. Multi-adapter bridge domains are labeled "PCI Bridge Set" inside the tower.
7. The following table provides information necessary to identify the IOP to which IOAs are assigned.
  - The left column indicates the domain in which IOA assignment is allowed.
  - The right column is used to determine the IOP to which an IOA is assigned.
  - The first position in the list must be an IOP. The remaining positions may be IOPs or IOAs. IOAs are assigned to the first IOP located to their left in the list. Although IOAs can be manually reassigned using SST/DST, the IOA assignments return to the default order after each IPL.

**Table 1. IOA assignment rules**

Multi-adapter bridge domain / PCI bridge set	IOA assignment rules
MB1, C01 - C06	MB1, C06, C05, C04, C03, C02, C01
C07 - C12	C12, C11, C10, C09, C08, C07

**Table 2. FRU locations and failing components for Model 820**

Position	FRU name	Possible failing component	Type, CCIN, or part number (use the Type, model, and part number list to determine the part number when the type or CCIN are given.)	Remove and replace/recovery procedure
C01	PCI card	<ol style="list-style-type: none"> <li>1. IOP</li> <li>2. IOA</li> </ol>	See the Type, model, and part number list	Go to Model 820 - Cards - Concurrent.
C02	PCI card (Short if 2890 IXS in C04)	<ol style="list-style-type: none"> <li>1. IOP</li> <li>2. IOA</li> </ol>	See the Type, model, and part number list	Go to Model 820 - Cards - Concurrent.
C03	PCI card (if no IXS in C04)	<ol style="list-style-type: none"> <li>1. IOP</li> <li>2. IOA</li> </ol>	See the Type, model, and part number list	Go to Model 820 - Cards - Concurrent.
C04	PCI card	<ol style="list-style-type: none"> <li>1. Integrated xSeries<sup>™</sup> Server (IXS)</li> <li>2. IOP</li> <li>3. IOA</li> </ol>	<ol style="list-style-type: none"> <li>1. CCIN is 2890 (See page 527) or 2892 (See page 527)</li> <li>2. CCIN is 2842 (See page 527), 2843 (See page 527), or 2844 (See page 527)</li> <li>3. See the Type, model, and part number list</li> </ol>	Go to Model 820 - Cards - Concurrent.
C05	PCI card	IOA	See the Type, model, and part number list	Go to Model 820 - Cards - Concurrent.
C06	PCI card	<ol style="list-style-type: none"> <li>1. IOP</li> <li>2. IOA</li> </ol>	<ol style="list-style-type: none"> <li>1. CCIN is 2842 (See page 527), 2843 (See page 527), or 2844 (See page 527)</li> <li>2. See the Type, model, and part number list</li> </ol>	Go to Model 820 - Cards - Concurrent.

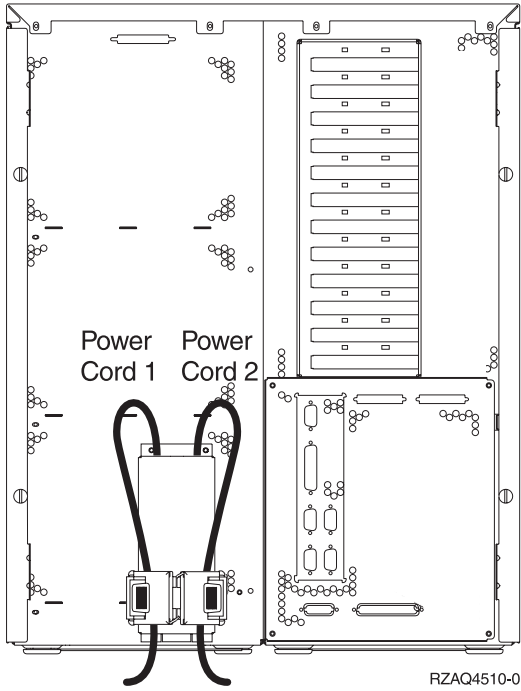
<b>Position</b>	<b>FRU name</b>	<b>Possible failing component</b>	<b>Type, CCIN, or part number (use the Type, model, and part number list to determine the part number when the type or CCIN are given.)</b>	<b>Remove and replace/recovery procedure</b>
C07	PCI card	<ol style="list-style-type: none"> <li>1. IOP</li> <li>2. IOA</li> </ol>	<ol style="list-style-type: none"> <li>1. CCIN is 2842 (See page 527), 2843 (See page 527), or 2844 (See page 527)</li> <li>2. See the Type, model, and part number list</li> </ol>	Go to Model 820 - Cards - Concurrent.
C08	PCI card (Short if IXS in C10)	<ol style="list-style-type: none"> <li>1. IOP</li> <li>2. IOA</li> </ol>	<ol style="list-style-type: none"> <li>1. CCIN is 2842 (See page 527), 2843 (See page 527), or 2844 (See page 527)</li> <li>2. See the Type, model, and part number list</li> </ol>	Go to Model 820 - Cards - Concurrent.
C09	PCI card (if no IXS in C10)	<ol style="list-style-type: none"> <li>1. IOP</li> <li>2. IOA</li> </ol>	<ol style="list-style-type: none"> <li>1. CCIN is 2842 (See page 527), 2843 (See page 527), or 2844 (See page 527)</li> <li>2. See the Type, model, and part number list</li> </ol>	Go to Model 820 - Cards - Concurrent.
C10	PCI card	<ol style="list-style-type: none"> <li>1. Integrated xSeries Server (IXS)</li> <li>2. IOP</li> <li>3. IOA</li> </ol>	<ol style="list-style-type: none"> <li>1. CCIN is 2890 or 2892</li> <li>2. CCIN is 2842 (See page 527), 2843 (See page 527), or 2844 (See page 527)</li> <li>3. See the Type, model, and part number list</li> </ol>	Go to Model 820 - Cards - Concurrent.
C11	PCI card	<ol style="list-style-type: none"> <li>1. IOP</li> <li>2. IOA</li> </ol>	<ol style="list-style-type: none"> <li>1. CCIN is 2842 (See page 527), 2843 (See page 527), or 2844 (See page 527)</li> <li>2. See the Type, model, and part number list</li> </ol>	Go to Model 820 - Cards - Concurrent.
C12	PCI card	IOP	CCIN is 2842 (See page 527), 2843 (See page 527), or 2844 (See page 527)	Go to Model 820 - Cards - Concurrent.

Position	FRU name	Possible failing component	Type, CCIN, or part number (use the Type, model, and part number list to determine the part number when the type or CCIN are given.)	Remove and replace/recovery procedure
MB1	System unit backplane	<ol style="list-style-type: none"> <li>1. Service processor</li> <li>2. IOP</li> <li>3. Card enclosure or backplane</li> <li>4. Clock card</li> <li>5. SPCN card</li> <li>6. SI I/O adapter</li> <li>7. System unit backplane</li> <li>8. SI ring connection</li> <li>9. Multi-adapter bridge (all)</li> </ol>	282D (See page 526)  <b>Note:</b> Embedded IOP (type 284C) is exchanged with the 282D system unit backplane part.	Go to Model 820 - System unit backplane - MB1 and power distribution board - PB1 (PB1 and MB1 are included in the TWRCARD)
D01 to D12	Disk unit	Disk unit	See the Type, model, and part number list.	Go to Recovery procedures.
D13	Optical device	Optical device	See the Type, model, and part number list.	Go to Model 820 - Removable media - D13 and D14.
D14	Tape unit	Tape unit	See the Type, model, and part number list.	Go to Model 820 - Removable media - D13 and D14.
DB1	Device board	Device board	See the Type, model, and part number list.	Go to Model 820 - Device board - DB1 and DB2.
DB2	Device board	Device board	See the Type, model, and part number list.	Go to Model 820 - Device board - DB1 and DB2.
P01, P02, P03	Power supply	Power supply	See Final assembly — Model 820	Go to Model 820 - Power supply - P01, P02, and P03.
PB1	Power distribution board	Power distribution board	See MB1 (See page 252)	Go to Model 820 - System unit backplane - MB1 and power distribution board - PB1 (PB1 and MB1 are included in the TWRCARD).
B01 to B04	Air moving device (AMD)	AMD	See Final assembly - Model 820.	Go to Model 820 - AMD - B01 through B04.
NB1	Control panel	Control panel	247F (See page 523)	Go to Model 820 - Control panel - NB1.
M01	Memory Riser Card	Memory Riser Card	2884 (See page 527) or memory riser filler card 263D (See page 524)	Go to Model 820 - Memory.
M01 daughter cards	Memory DIMM	See Figure 1. 2884 memory card (See page 364) in the Memory locations and placement rules topic.	3002 (See page 528), 3004, 3005, 3006, 3007, 3009 (See page 528)	Go to Model 820 - Memory.



Position	FRU name	Possible failing component	Type, CCIN, or part number (use the Type, model, and part number list to determine the part number when the type or CCIN are given.)	Remove and replace/recovery procedure
M02	Memory riser card	Memory riser card	2884 (See page 527) or memory riser filler card 263D (See page 524)	Go to Model 820 - Memory.
M02 daughter cards	Memory DIMM	See Figure 1. 2884 memory card (See page 364) in the Memory locations and placement rules topic.	3002 (See page 528), 3004, 3005, 3006, 3007, 3009 (See page 528)	Go to Model 820 - Memory.
M03	Processor card and regulator	Processor <ul style="list-style-type: none"> <li>Network Interface Controller</li> </ul>	<ul style="list-style-type: none"> <li>244A (See page 522) (1-way)</li> <li>24A0 (See page 523) (1-way)</li> <li>25BC (See page 523) (1-way)</li> <li>244D (See page 522) (2-way)</li> <li>25BD (See page 523) (2-way)</li> <li>244E (See page 522) (4-way)</li> <li>25BE (See page 523) (4-way)</li> </ul>	Go to Model 820 - Processor - M03.
M03 daughter card	Processor regulator	Processor regulator	<ul style="list-style-type: none"> <li>04N4276</li> </ul>	Go to Model 820 - Processor regulator - M03.
M03 daughter cards	Memory DIMM	See Figure 2. Processor card with DIMM memory (See page 364) in the Memory locations and placement rules page.	3002 (See page 528), 3004, 3005, 3006, 3007, 3009 (See page 528)	Go to Model 820 - Memory.
Time of day	TOD	TOD	16G8095	Go to Model 820 - Time of day (TOD) battery.
HSL cables on the HSL ports	HSL cable	HSL connection	See the Type, model, and part number list.	Go to HSL cables - concurrent.

**Figure 2. Dual line cord drawing for Model 820 system**

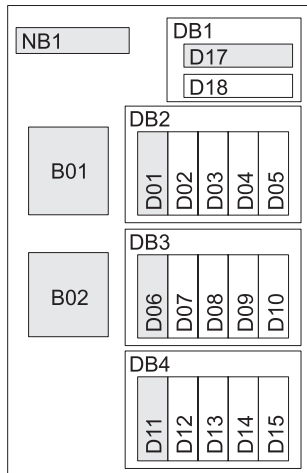


## Locations — Model 825

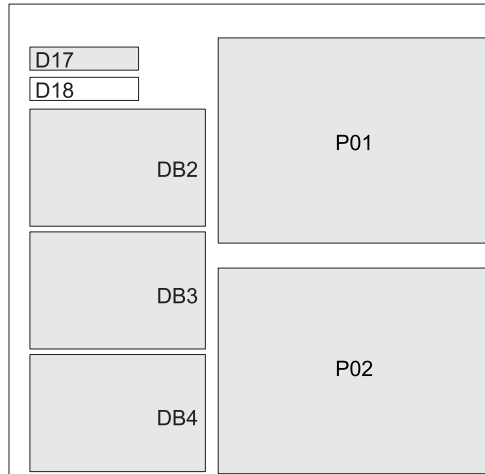
*For use by authorized service providers.*

The following diagram shows FRU layout in the Model 825. Use it with the table below. If you need address information, refer to Addresses — Model 825.

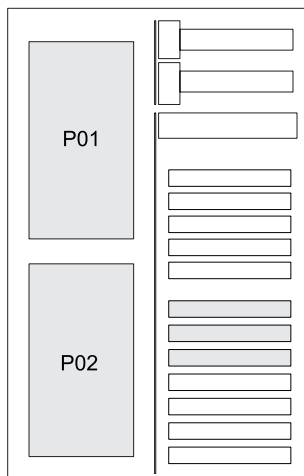
**Figure 1. Model 825 with 6-way processor**



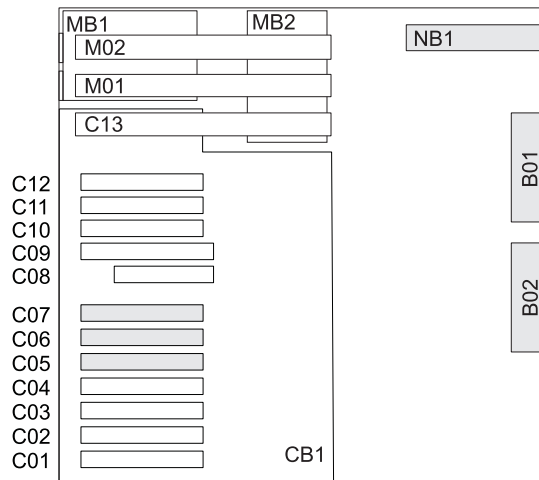
Front



Right



Back



Left

RZAR6800-2

**Note:** J11 (remote power on); J14 (UPS); J15 (SPCN 0); J16 (SPCN 1).

The following table provides information necessary to identify the IOP to which IOAs are assigned.

- The left column indicates the domain in which IOA assignment is allowed.
- The right column is used to determine the IOP to which an IOA is assigned.
- The first position in the list must be an IOP. The remaining positions may be IOPs or IOAs. IOAs are assigned to the first IOP located to their left in the list. Although IOAs can be manually reassigned using SST/DST, the IOA assignments return to the default order after each IPL.

**Table 1. Identify the IOP to which IOAs are assigned**

Multi-adapter bridge domain / PCI bridge set	IOA assignment rules
C01 - C04	C04, C03, C02, C01
C05 - C07 (Load source bus)	C07, CB1, C06, C05
C10 - C12	C12, C11, C10

The following table gives the components available for callout on the Model 825. It matches those components with the FRU containing the component. There is also location and CCIN information, and if available, links to remove and replace procedures and additional comments.

**Table 2. Model 825 FRU locations**

Possible failing component	FRU name	Position	Type or CCIN number (see the Type, model, and part number list)	Remove and replace procedure	Additional comments
<ul style="list-style-type: none"> <li>• Card enclosure or backplane</li> <li>• HSL loop 258 ports C0-C1</li> <li>• SICNTRL - network interface controller (NIC) for loop 258</li> </ul>	System backplane extender	1. MB1 2. MB2	1. 28B3 (See page 528) 2. 289D (See page 527)	Go to Model 825 - HSL card - MB1, MB2	Used on 6-way systems
Network interface controller (NIC) ports, and HSL cables	HSL cable and connections, loop 258	MB1 ports C0-C1	See the Type, model, and part number list	Go to HSL cables - concurrent	
<ul style="list-style-type: none"> <li>• System processor</li> <li>• Memory riser</li> </ul>	Processor / memory card	M01, M02	25DC (See page 524)	Go to Model 825 - Cards (dedicated)	
<ul style="list-style-type: none"> <li>• Card enclosure or backplane</li> <li>• Clock</li> <li>• SPCN</li> <li>• SICNTRL HSL I/O bridge</li> <li>• HSL ring connection</li> <li>• SICNTRL - network interface controller, loops 256 and 257</li> <li>• LSCNTRL - load source path network interface controller (NIC) loop 256</li> <li>• SVCPROC - Service processor</li> <li>• MA-BRDG - multi-adapter bridge</li> <li>• LS_BRDG - Load source multi-adapter</li> <li>• Processor regulator</li> <li>• Embedded Ethernet IOA 287F</li> </ul>	System unit backplane	CB1	25CA (See page 524)	Go to Model 825 - System unit backplane - CB1	

Possible failing component	FRU name	Position	Type or CCIN number (see the Type, model, and part number list)	Remove and replace procedure	Additional comments
IOA	PCI cards	C01	See the Type, model, and part number list	Go to Model 825 - Cards (concurrent)	
<ul style="list-style-type: none"> <li>• IOA</li> <li>• IOP</li> </ul>	PCI card	C02	See the Type, model, and part number list	Go to Model 825 - Cards (concurrent)	
<ul style="list-style-type: none"> <li>• IOA</li> <li>• IOP</li> </ul>	PCI card	C03	See the Type, model, and part number list	Go to Model 825 - Cards (concurrent)	
<ul style="list-style-type: none"> <li>• Integrated xSeries™ Server</li> <li>• IOP</li> </ul>	PCI card	C04	2890 (See page 527) or 2892 (See page 527)	Go to Model 825 - Cards (concurrent)	If IXS in C04, C03 is empty. If IXS is 2890, only a short card can be used in C02.
IOA (LS_IOA-Load source path IOA)	PCI card	C05	See the Type, model, and part number list	Go to Model 825 - Cards (concurrent)	
IOA	PCI card	C06	See the Type, model, and part number list	Go to Model 825 - Cards (concurrent)	
IOP (LS_IOP-Load source path IOP)	PCI card	C07	See the Type, model, and part number list	Go to Model 825 - Cards (concurrent)	
HSL Interposer, loop 257 <ul style="list-style-type: none"> <li>• BUSCBL1 - optical interposer</li> <li>• BUSCBL2 - copper interposer</li> <li>• BUSCBL3 - copper interposer</li> </ul>	HSL interposer card, loop 257	C08	See the Type, model, and part number list	Go to Model 825 - Cards (dedicated)	

Possible failing component	FRU name	Position	Type or CCIN number (see the Type, model, and part number list)	Remove and replace procedure	Additional comments
HSL cables, loop 257 (either optical or HSL-2) <ul style="list-style-type: none"> <li>• BUSCBL1 - optical HSL cable</li> <li>• BUSCBL2 - copper HSL-2 or HSL hybrid cable</li> <li>• BUSCBL3 - copper HSL-2 or HSL hybrid cable</li> <li>• BUSCBLx</li> </ul>	HSL cable and connections loop 257	C08, ports B0-B1	See the Type, model, and part number list	Go to HSL cables - concurrent	
HSL Interposer, loop 256 <ul style="list-style-type: none"> <li>• BUSCBL1 - optical interposer</li> <li>• BUSCBL2 - copper interposer</li> <li>• BUSCBL3 - copper interposer</li> </ul>	HSL interposer card, loop 256	C09	See the Type, model, and part number list	Go to Model 825 - Cards (dedicated)	
HSL cables, loop 256 (either optical or HSL-2) <ul style="list-style-type: none"> <li>• BUSCBL1 - optical HSL cable</li> <li>• BUSCBL2 - copper HSL-2 or HSL hybrid cable</li> <li>• BUSCBL3 - copper HSL-2 or HSL hybrid cable</li> <li>• BUSCBLx</li> </ul>	HSL cable and connections, loop 256	C09, ports A0-A1	See the Type, model, and part number list	Go to HSL cables - concurrent	
IOA	PCI card	C10	See the Type, model, and part number list	Go to Model 825 - Cards (concurrent)	
<ul style="list-style-type: none"> <li>• IOA</li> <li>• IOP</li> </ul>	PCI card	C10	See the Type, model, and part number list	Go to Model 825 - Cards (concurrent)	
IOP	PCI card	C12	See the Type, model, and part number list	Go to Model 825 - Cards (concurrent)	
<ul style="list-style-type: none"> <li>• System processor</li> <li>• memory riser</li> </ul>	Processor / memory card	C13	25DC (See page 524)	Go to Model 825 - Cards (dedicated)	

Possible failing component	FRU name	Position	Type or CCIN number (see the Type, model, and part number list)	Remove and replace procedure	Additional comments
<ul style="list-style-type: none"> <li>System memory</li> <li>Memory card</li> </ul>	Memory card	A through H on each processor/memory card	3042 (See page 529), 3043 (See page 529), 3045, 3044 (See page 529), 3046 (See page 529)	Go to Model 825 - Memory - A through H	
Disk unit	Disk unit	D01 through D15	See the Type, model, and part number list	Go to Model 825 - Disk unit (concurrent)	
Tape unit	Tape unit	D17	See the Type, model, and part number list	Go to Model 825 - Removable media - D17 and D18	
Optical device	Optical device	D18	See the Type, model, and part number list	Go to Model 825 - Removable media - D17 and D18	
Air moving device (AMD)	AMD	B01, B02	See Final assembly - Model 825	Go to Model 825 - Air moving device (AMD) - B01; B02 (concurrent)	
Power supply	Power supply	P01, P02	See Final assembly - Model 825	Go to Model 825 - Power supply - P01 and P02	
Control panel	Control panel	NB1	250A (See page 523)	Go to Model 825 - Control panel - NB1	
Device board	Device board	DB1	See the Type, model, and part number list.	Go to Model 825 - Device board - DB1	
Device board	Device board	DB2, DB3, and DB4	See the Type, model, and part number list.	Go to Model 825 - Device board - DB2, DB3, and DB4	
Time of day battery	Time of day battery	CB1 - opposite from C02 card slot	See the Type, model, and part number list.	Go to Model 825 - Time of day battery	

## Memory configuration

For the Model 825, the Main Storage DIMMs are installed directly onto the processor cards. Each processor card has eight (8) DIMM slots. The eight slots are arranged in two sets of four (4). The DIMMs must be installed in sets of 4 (quads). Each set of 4 DIMMs must be the same memory capacity and technology. Each system order must have at least one set of 4 main storage DIMMs (quad) installed.

For the 6-way processor features, 3 processor cards are installed in the system. There is a total of 24 DIMM slots in which 4, 8, 12, 16, 20 or 24 memory DIMMs may be installed.

When replacing a processor card, move any memory DIMMs from the old card to the corresponding slot on the new card.

The sequence for plugging DIMMs is to fill a set of four on the first processor card in C13, then fill a set of four on the second processor card in M01 (if used), then fill a set of four in the third processor card in M02 (if used). After that fill the second set of four on each processor card.

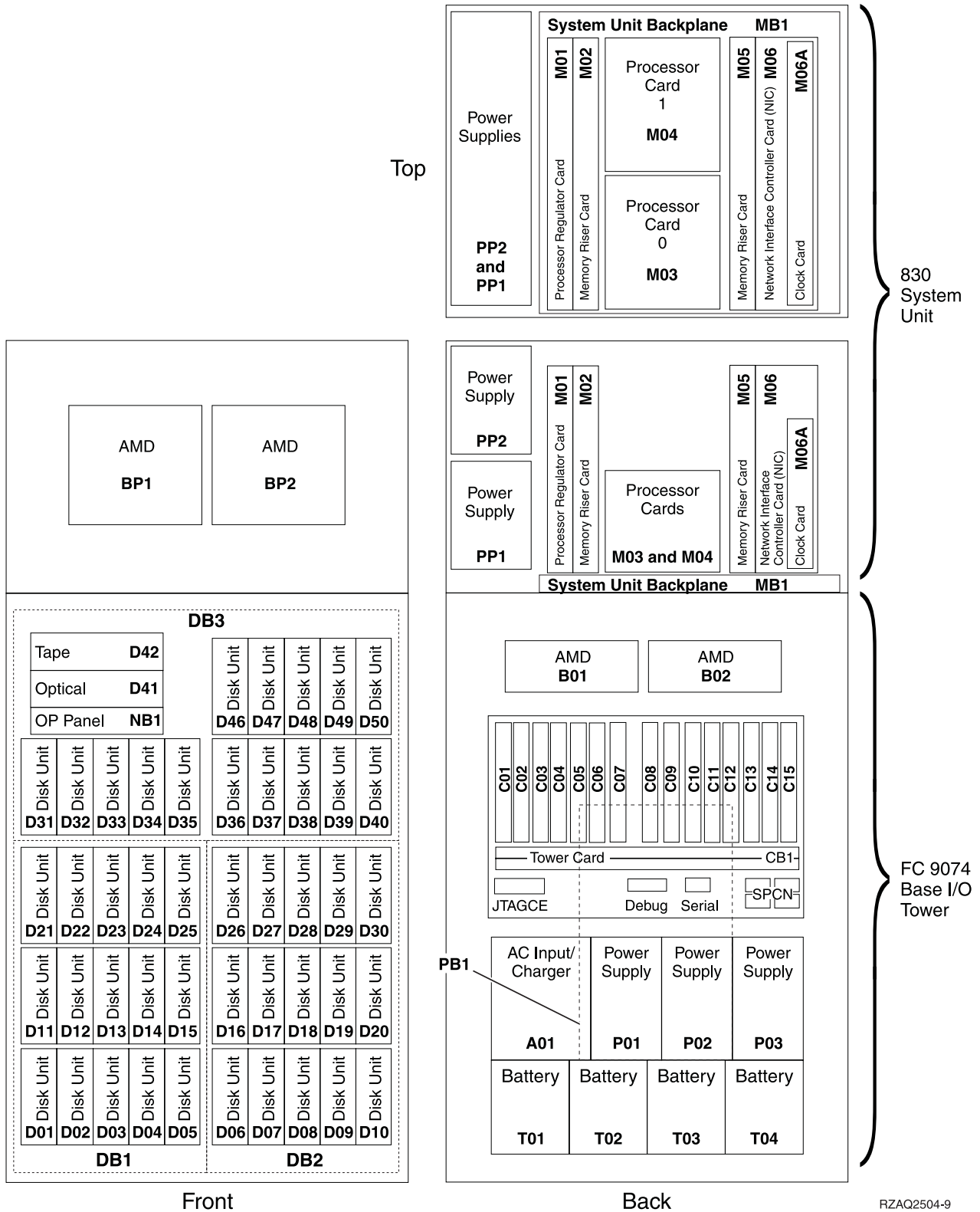
### **Locations — Models 830, SB2 System Unit with FC 9074 Base I/O Tower**

*For use by authorized service providers.*

The following diagram shows field replaceable unit (FRU) layout in the Models 830, SB2 System Unit with FC 9074 Base I/O Tower. Use it with the tables and additional diagrams below. If you need address information, refer to Addresses — Models 830, SB2 System Unit with FC 9074 Base I/O Tower.

#### **Figure 1. Models 830, SB2 System Unit with FC 9074 Base I/O Tower (single line cord)**





**Notes:**

1. The FC 9074 Base I/O Tower contains two system PCI busses.
2. In the FRU locations and failing components table, the first of the two busses in the FC 9074 tower is "0001" and the second bus in the tower is designated as "yyyy".

3. In FC 9074 tower, the bus connected to card positions C01 - C04 is bus number 0001. The other bus in FC 9074 tower is not required to be in order.
4. Card position C01 is required to be an I/O processor.
5. Card positions C05 and C11 are required to be either I/O processors or Integrated xSeries<sup>(TM)</sup> Servers (IXS).
6. Multi-adapter bridge domains are labeled **PCI Bridge Set** inside the tower.
7. The following table provides information necessary to identify the IOP to which IOAs are assigned.
  - The left column indicates the domain in which IOA assignment is allowed.
  - The right column is used to determine the IOP to which an IOA is assigned.
  - The first position in the list must be an IOP. The remaining positions may be IOPs or IOAs. IOAs are assigned to the first IOP located to their left in the list. Although IOAs can be manually reassigned using SST/DST, the IOA assignments return to the default order after each IPL.

**Table 1. IOA assignment rules**

Multi-adapter bridge domain / PCI bridge set	IOA assignment rules
C01 - C04	C01, C02, C03, C04
C05 - C07, C09, C10	C05, C06, C07, C09, C10
C11 - C15	C11, C12, C13, C14, C15

**Table 2. FRU locations and failing components for Models 830, SB2 System Unit with FC 9074 base I/O tower**

Position	FRU name	Possible failing component	Type, CCIN, or part number (use the Type, model, and part number list to determine the part number when the type or CCIN are given.)	Remove and replace or recovery procedure
MB1	System unit backplane	System unit backplane	281A (See page 526)	Go to Models 830/SB2 with FC 9074 - System Unit backplane (MB1).
M01	Processor regulator	Processor regulator	27AA (See page 526) or 27AB (See page 526)	Go to Models 830/SB2 with FC 9074 - Cards (dedicated).
M02	Memory riser card (base)	Memory riser card	2881 (See page 527)	Go to Models 830/SB2 with FC 9074 - Cards (dedicated).
M02 (Daughter cards)	Memory DIMM	See Figure 3. CCIN 2881 with pluggable DIMM (See page 267) below.	300F (See page 528), 3002 (See page 528), 3004 (See page 528), 3005 (See page 528), 3006 (See page 528), or 3007 (See page 528)	Go to Models 830/SB2 with FC 9074 - Cards (dedicated).
M03	Processor card	Processor	245C (See page 522) or 245D (See page 522)	Go to Models 830/SB2 with FC 9074 - Cards (dedicated).
M04	Processor card	Processor	245C (See page 522) or 245D (See page 522)	Go to Models 830/SB2 with FC 9074 - Cards (dedicated).
M05	Memory riser card (feature)	Memory riser card	2881 (See page 527)	Go to Models 830/SB2 with FC 9074 - Cards (dedicated).

<b>Position</b>	<b>FRU name</b>	<b>Possible failing component</b>	<b>Type, CCIN, or part number (use the Type, model, and part number list to determine the part number when the type or CCIN are given.)</b>	<b>Remove and replace or recovery procedure</b>
M05 (daughter cards)	Memory DIMM	See Figure 3. CCIN 2881 with pluggable DIMM (See page 267) below.	300F (See page 528), 3002 (See page 528), 3004 (See page 528), 3005 (See page 528), or 3006 (See page 528)	Go to Models 830/SB2 with FC 9074 - Cards (dedicated).
M06	Network Interface Controller (NIC) Card	Network Interface Controller (NIC)	2732 (See page 524), 2754 (See page 525), or 2758 (See page 525).	Go to Models 830/SB2 with FC 9074 - Cards (dedicated).
M06 ports	Network Interface Controller (NIC) Ports	See Figure 4. Network Interface Controller (NIC) port locations (See page 268) below.	N/A	N/A
M06A	Clock card	Clock card	25AB (See page 523) for systems with processor feature codes 23C1, 23C2, 23C3, 23C4, and 23C5	Go to Models 830/SB2 with FC 9074 - Cards (dedicated).
M06A	Clock card	Clock card	25AD (See page 523) for systems with processor feature codes 23D1, 23D2, 23D3, 23D4, 23D5, 23D6, 23D8, 23D9, 23DA, 23DB, 23DC, 23DD, 23DE, 26A8, 26A9, 26AA, 26AB, 26AC, 26AD, and 26AE	Go to Models 830/SB2 with FC 9074 - Cards (dedicated).
M06-C08	HSL ribbon cable	HSL connection (SIGC73), See "Model 830 and SB2 with FC 9074" on page 492 in the Power and signal cables page.	See the "Model 830 and SB2 with FC 9074" on page 492 in the Power and signal cables page.	N/A
PP1 and PP2	Power supply	Power supply	515B (See page 530)	Go to Models 830/SB2 with FC 9074 - Power supply (PP1 and PP2).
BP1 and BP2	Air moving device (AMD)	AMD	04N3345	Go to Models 830/SB2 with FC 9074 - Air moving device - BP1 and BP2
C01	PCI card	IOP	2842 (See page 527), 2843 (See page 527), or 2844 (See page 527)	Go to Models 830/SB2 with FC 9074 - Cards (dedicated).
C02	PCI card	The failing component is either an: 1. IOP 2. IOA	1. 2842 (See page 527), 2843 (See page 527), or 2844 (See page 527) 2. See the Type, model, and part number list.	Go to Models 830/SB2 with FC 9074 - Cards (dedicated).

Position	FRU name	Possible failing component	Type, CCIN, or part number (use the Type, model, and part number list to determine the part number when the type or CCIN are given.)	Remove and replace or recovery procedure
C03	PCI card	The failing component is either an: 1. IOP 2. IOA	1. 2842 (See page 527), 2843 (See page 527), or 2844 (See page 527) 2. See the Type, model, and part number list.	Go to Models 830/SB2 with FC 9074 - Cards (dedicated).
C04	PCI card	The failing component is either an: 1. IOP 2. IOA	1. 2842 (See page 527), 2843 (See page 527), or 2844 (See page 527) 2. See the Type, model, and part number list.	Go to Models 830/SB2 with FC 9074 - Cards (dedicated).
C05	PCI card	The failing component is either an: 1. IOP 2. Integrated xSeries Server (IXS)	1. 2842 (See page 527), 2843 (See page 527), or 2844 (See page 527) 2. 2890 (See page 527) or 2892 (See page 527) <b>Note:</b> When the IXS card is installed in this position, concurrent maintenance at the card position is not recommended.	If IXS, go to Models 830/SB2 with FC 9074 - Cards (dedicated). Otherwise, go to Models 830/SB2 with FC 9074 - Cards (concurrent).
C06	PCI card (if no IXS in C05)	The failing component is either an: 1. IOP 2. IOA	1. 2842 (See page 527), 2843 (See page 527), or 2844 (See page 527) 2. See the Type, model, and part number list.	Go to Models 830/SB2 with FC 9074 - Cards (concurrent).
C07	PCI card (Short if 2890 IXS in C05)	IOA	See the Type, model, and part number list.	Go to Models 830/SB2 with FC 9074 - Cards (concurrent).
C08	HSL I/O bridge card	1. High-speed link I/O bridge 2. PCI host bridge	• 2681 (See page 524) • See the Type, model, and part number list.	Go to Models 830/SB2 with FC 9074 - Cards (dedicated).
C08 ports	HSL ports	See Figure 6. Models 830, SB2 with FC 9074 - HSL and SPCN locations (See page 269) below.	N/A	N/A
C09	PCI card	The failing component is either an: 1. IOP 2. IOA	1. 2842 (See page 527), 2843 (See page 527), or 2844 (See page 527) 2. See the Type, model, and part number list.	Go to Models 830/SB2 with FC 9074 - Cards (concurrent).

Position	FRU name	Possible failing component	Type, CCIN, or part number (use the Type, model, and part number list to determine the part number when the type or CCIN are given.)	Remove and replace or recovery procedure
C10	PCI card	The failing component is either an: 1. IOP 2. IOA	1. 2842 (See page 527), 2843 (See page 527), or 2844 (See page 527) 2. See the Type, model, and part number list.	Go to Models 830/SB2 with FC 9074 - Cards (concurrent).
C11	PCI card	The failing component is either an: 1. IOP 2. Integrated xSeries Server (IXS)	1. 2842 (See page 527), 2843 (See page 527), or 2844 (See page 527) 2. 2890 (See page 527) or 2892 (See page 527) <b>Note:</b> When the IXS card is installed in this position, concurrent maintenance at the card position is not recommended.	If IXS, go to Models 830/SB2 with FC 9074 - Cards (dedicated). Otherwise, go to Models 830/SB2 with FC 9074 - Cards (concurrent).
C12	PCI card (if no IXS in C11)	The failing component is either an: 1. IOP 2. IOA	1. 2842 (See page 527), 2843 (See page 527), or 2844 (See page 527) 2. See the Type, model, and part number list.	Go to Models 830/SB2 with FC 9074 - Cards (concurrent).
C13	PCI card (Short if 2890 IXS in C11)	IOA	See the Type, model, and part number list.	Go to Models 830/SB2 with FC 9074 - Cards (concurrent).
C14	PCI card	The failing component is either an: 1. IOP 2. IOA	1. 2842 (See page 527), 2843 (See page 527), or 2844 (See page 527) 2. See the Type, model, and part number list.	Go to Models 830/SB2 with FC 9074 - Cards (concurrent).
C15	PCI card	The failing component is either an: 1. IOP 2. IOA	1. 2842 (See page 527), 2843 (See page 527), or 2844 (See page 527) 2. See the Type, model, and part number list.	Go to Models 830/SB2 with FC 9074 - Cards (concurrent).
CB1	Tower card	<ul style="list-style-type: none"> <li>• SPCN card</li> <li>• Tower card</li> <li>• Service processor</li> <li>• Multi-adapter bridge (all)</li> </ul>	28AA (See page 527)	Go to Models 830/SB2 with FC 9074 - Tower card (CB1).
B01 and B02	AMD	AMD	04N3345	Go to FC 5074/5079, FC 9074, FC 9079 - AMD - B01 and B02.
A01	AC input / charger	AC module / charger	97H7316 - Single line cord	Go to Models 830/SB2 with FC 9074 (with single line cord) - AC input/charger (A01).

<b>Position</b>	<b>FRU name</b>	<b>Possible failing component</b>	<b>Type, CCIN, or part number (use the Type, model, and part number list to determine the part number when the type or CCIN are given.)</b>	<b>Remove and replace or recovery procedure</b>
A02	AC module	AC module	21P6347 - Dual line cord	Go to Model 830 FC 9074, Model 840 FC 9079/8079 (with dual line cords) - AC module (A01, A02).
P01 - P03	Power supply	Power supply	90H6629 - Single line cord	Go to FC 9074, FC 9079, FC 5074/5079 - Power supply - P01, P02, and P03.
P01 - P02	Power supply	Power supply	53P1038 - Dual Line Cord	Go to FC 9074, FC 9079, FC 5074/5079 - Power supply - P01, P02, and P03.
PB1	Power board	Power board	24L0891	Go to Models 830/SB2 with FC 9074 - Power distribution backplane (PB1).
T01 - T04	Battery	Battery	97H7318 (This PN includes all four batteries.)	Go to Models 830/SB2 with FC 9074 - Battery (T01 through T04).
DB1	Device board	Device board	283D (See page 526) or 28CC (See page 528)	Go to Models 830/SB2 - Device boards (DB1 and DB2).
DB2	Device board	Device board	283D (See page 526) or 28CC (See page 528)	Go to Models 830/SB2 - Device boards (DB1 and DB2).
DB3	Device board	Device board	283C (See page 526) or 28CB (See page 528)	Go to Models 830/SB2 - Device board (DB3).
NB1	Control panel	Control panel	24L0945	Go to Models 830/SB2 with FC 9074 - System unit control panel (NB1).
D01 - D40	Disk unit	Disk unit	See the Type, model, and part number list.	Go to Recovery procedures.
D41	Optical	Optical	See the Type, model, and part number list.	Go to Models 830/SB2 with FC 9074 - Removable media (D41 & D42).
D42	Tape	Tape	See the Type, model, and part number list.	Go to Models 830/SB2 with FC 9074 - Removable media (D41 & D42).
D46 - D50	Disk unit	Disk unit	See the Type, model, and part number list.	Go to Recovery procedures.
HSL cables on the HSL ports	HSL cable	HSL connection	See the Type, model, and part number list.	Go to HSL cables - Concurrent.

**Figure 2. Dual line cord drawing for System Models 830, SB2**

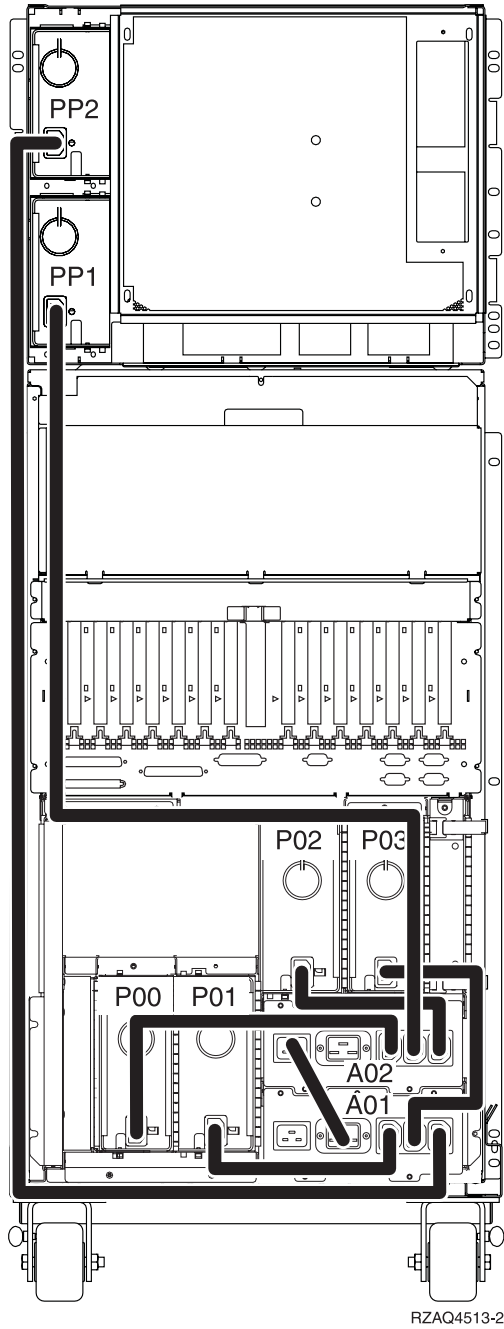
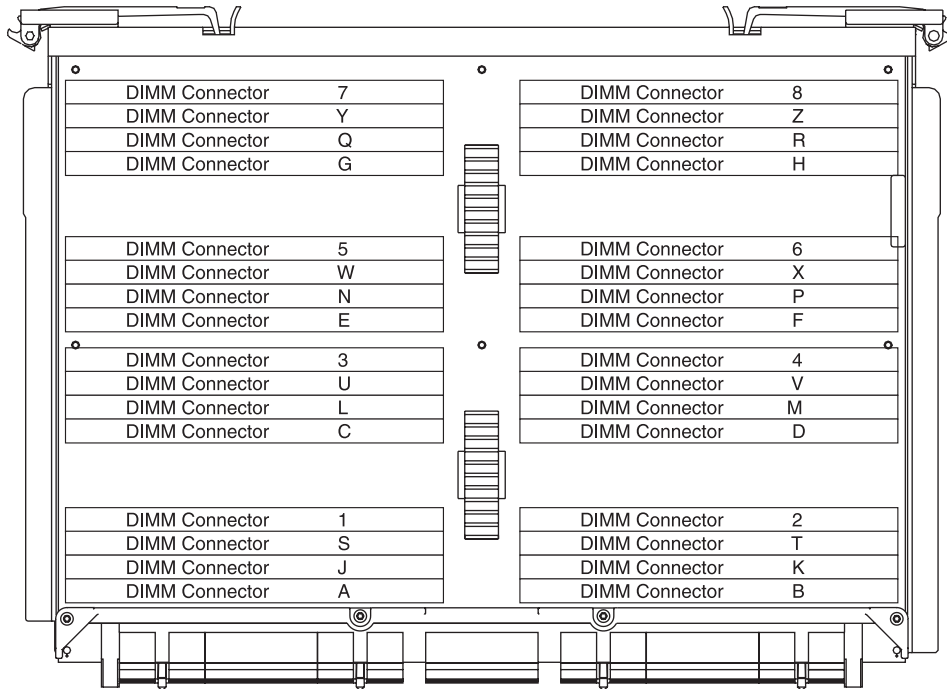


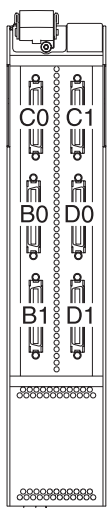
Figure 3. CCIN 2881 with pluggable DIMM



RZAQ2704-0

- DIMMs must be installed in groups of eight (octals).
- DIMMs are installed in the following order:
  - A-B-C-D-E-F-G-H
  - J-K-L-M-N-P-Q-R
  - S-T-U-V-W-X-Y-Z
  - 1-2-3-4-5-6-7-8

**Figure 4. Network Interface Controller (NIC) port locations**

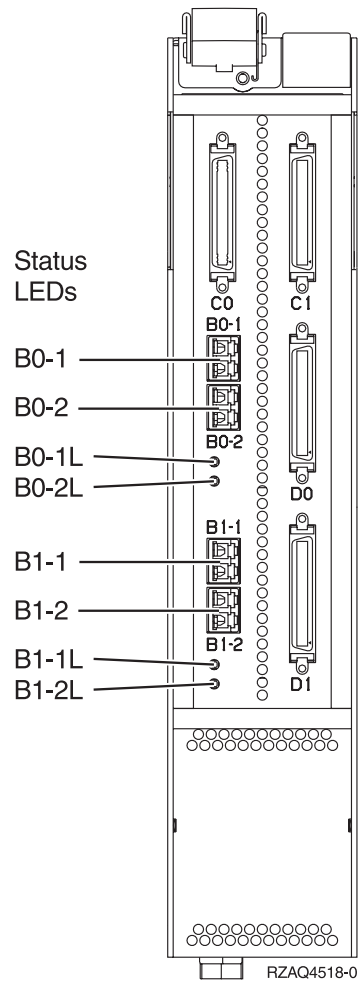


RZAQ4502-0

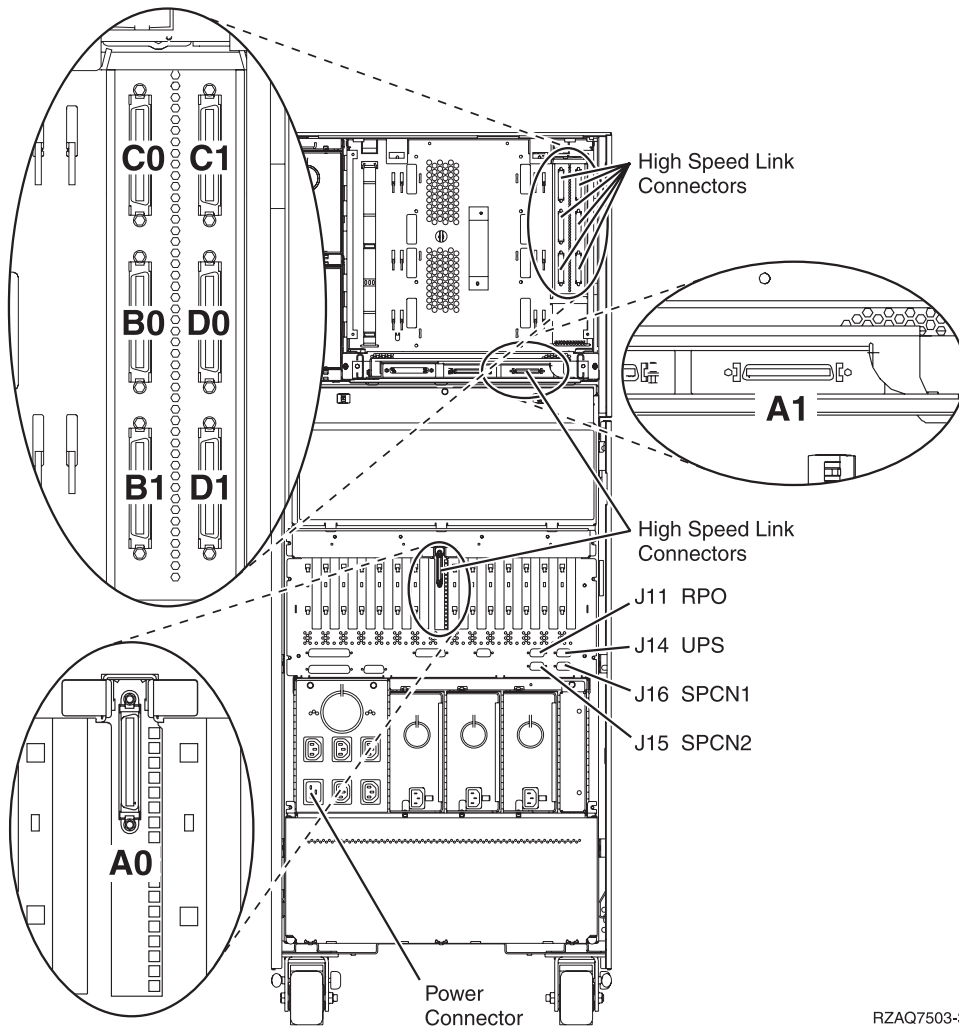
**Note:** The physical port connectors may vary by CCIN.

**Figure 5. Network Interface Controller (NIC) HSL port and LED locations**





**Figure 6. Models 830, SB2 with FC 9074 - HSL and SPCN locations**



RZAQ7503-3

## Locations — Models 840, SB3 system unit with processor tower and FC 9079 Base I/O Tower

*For use by authorized service providers.*

The following diagrams show FRU layout in the Models 840, SB3 system unit with processor tower and FC 9079 base I/O tower. Use it with the tables and additional diagrams below. If you need address information, refer to Addresses — Models 840, SB3 system unit with processor tower and FC 9079 base I/O tower.

**Figure 1a. Model 840, SB3 processor tower (single line cord)**

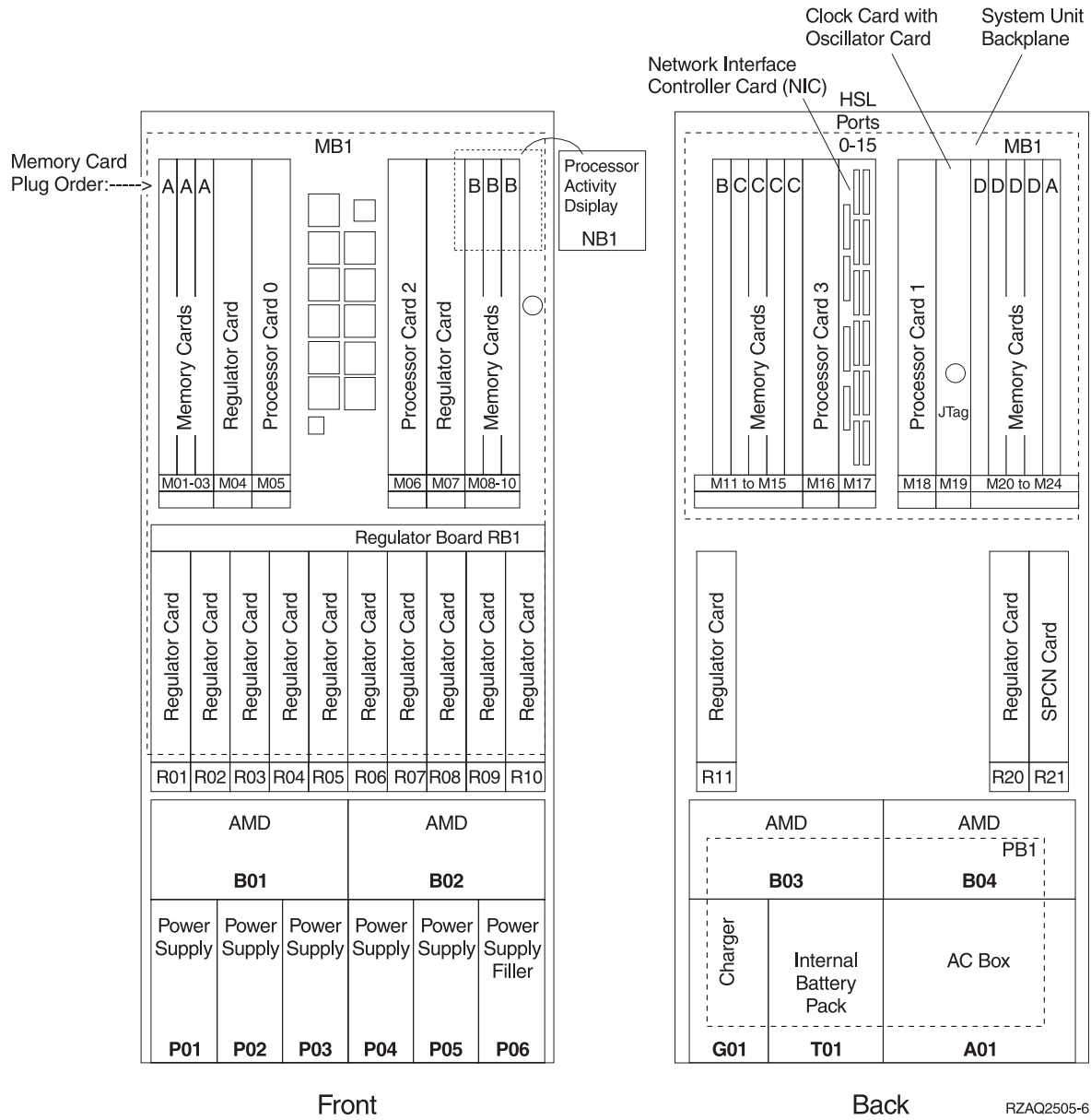
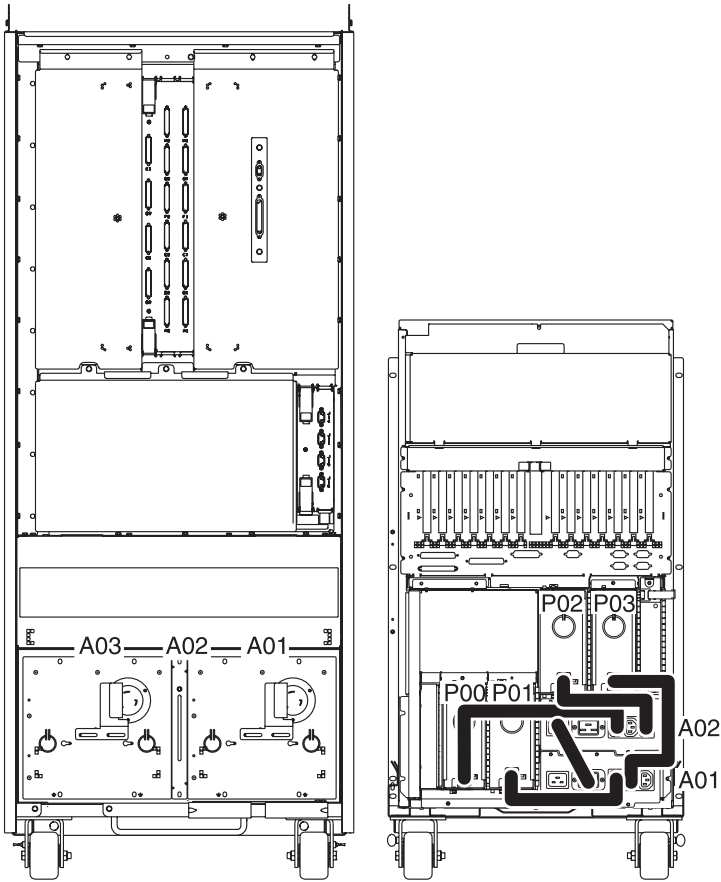


Figure 1b. Model 840, SB3 processor tower (dual line cord)



RZAQ4512-4

**gif"> 840, SB3 system unit processor tower**

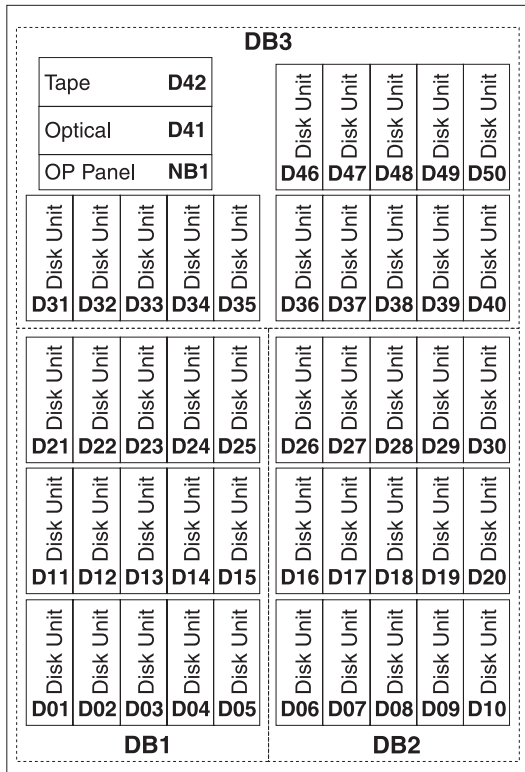
Position	FRU name	Possible failing component	Type, CCIN, or part number (use the Type, model, and part number list to determine the part number when the type or CCIN are given.)	Remove and replace procedure
NB1	Control panel card	Control panel card	23L3469	Go to Model 840/SB3 processor tower, FC 8079 (lower half), and FC 9079 - Control panels (NB1).
M01 - M03	Memory card	Memory card	3195 (See page 529), 3196 (See page 529), 3197 (See page 529), 3198 (See page 529), 319A (See page 529), 31A1 (See page 529), 3612 (See page 529), 3613 (See page 529), or 3614 (See page 529)	Go to Models 840/SB3, FC 8079 (lower half), FC 9079 Cards — Dedicated.
M04	Processor regulator	Processor regulator (for M05, M16)	2714 (See page 524)	Go to Models 840/SB3, FC 8079 (lower half), FC 9079 Cards — Dedicated.

<b>Position</b>	<b>FRU name</b>	<b>Possible failing component</b>	<b>Type, CCIN, or part number (use the Type, model, and part number list to determine the part number when the type or CCIN are given.)</b>	<b>Remove and replace procedure</b>
M05	Processor card 0	Processor card	245F (See page 522) or 246F (See page 523)	Go to Models 840/SB3, FC 8079 (lower half), FC 9079 Cards — Dedicated.
M06	Processor card 2  - OR -  Processor terminator / Passthru card	Processor card  - OR -  Processor terminator / Passthru card	245E (See page 522)  - OR -  246C (See page 523)	Go to Models 840/SB3, FC 8079 (lower half), FC 9079 Cards — Dedicated.
M07	Processor regulator	Processor regulator (for M06, M18)	2714 (See page 524)	Go to Models 840/SB3, FC 8079 (lower half), FC 9079 Cards — Dedicated.
M08 - M10	Memory card	Memory card	3195 (See page 529), 3196 (See page 529), 3197 (See page 529), 3198 (See page 529), 319A (See page 529), 31A1 (See page 529), 3612 (See page 529), 3613 (See page 529), or 3614 (See page 529)	Go to Models 840/SB3, FC 8079 (lower half), FC 9079 Cards — Dedicated.
R01, R02, R04-R11, R20	Regulator card	Regulator card	21H7763	Go to Models 840/SB3, FC 8079 (lower half), FC 9079 Cards (concurrent).
R03	Regulator card	Regulator card	23L3603	Go to Models 840/SB3, FC 8079 (lower half), FC 9079 Cards (concurrent).
RB1	Regulator board	Regulator board	04N3934	Go to Models 840/SB3 - System unit backplane (MB1) and regulator board (RB1).
B01 - B04	AMD	AMD	21H6959	Go to Models 840/SB3 processor tower - AMD (B01, B02, B03, and B04).
P01 - P06	Power supply	Power supply	21H7719	Go to Models 840/SB3 processor tower - Power supply (PS) (P01 through P06).
MB1	System unit backplane	System unit backplane	282B (See page 526)	Go to Models 840/SB3 - System unit backplane (MB1) and regulator board (RB1).

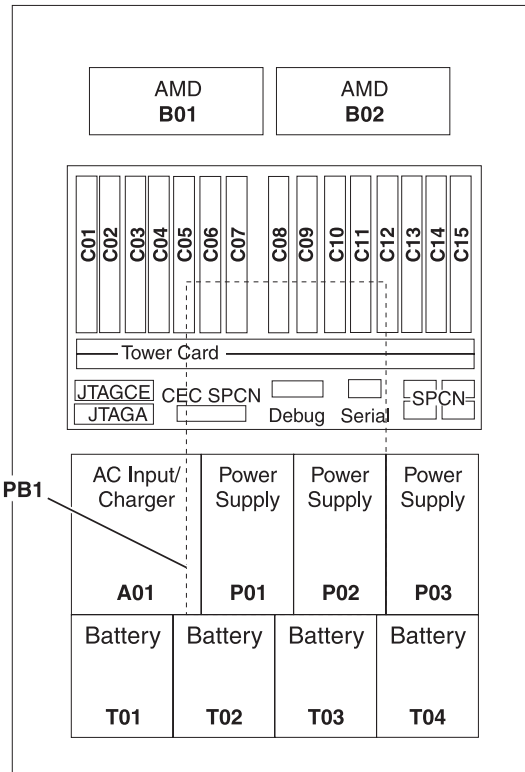
Position	FRU name	Possible failing component	Type, CCIN, or part number (use the Type, model, and part number list to determine the part number when the type or CCIN are given.)	Remove and replace procedure
M11 - M15	Memory card	Memory card	3195 (See page 529), 3196 (See page 529), 3197 (See page 529), 3198 (See page 529), 319A (See page 529), 31A1 (See page 529), 3612 (See page 529), 3613 (See page 529), or 3614 (See page 529)	Go to Models 840/SB3, FC 8079 (lower half), FC 9079 Cards — Dedicated.
M16	Processor card 3  - OR -  Processor terminator / Passthru card	Processor card  - OR -  Processor terminator / Passthru card	245E (See page 522) or 246E (See page 523)  - OR -  246C (See page 523)	Go to Models 840/SB3, FC 8079 (lower half), FC 9079 Cards — Dedicated.
M17	Network Interface Controller (NIC)	Network Interface Controller (NIC)	2737 (See page 524), 2755 (See page 525), 2759 (See page 525)	Go to Models 840/SB3, FC 8079 (lower half), FC 9079 Cards — Dedicated.
M17 ports	HSL controller ports	See Figure 5. Network Interface Controller (NIC) port locations (See page 281) below.	N/A	N/A
M18	Processor card 1  - OR -  Processor terminator / Passthru card	Processor card  - OR -  Processor terminator / Passthru card	245E (See page 522) or 246E (See page 523)  - OR -  246C (See page 523)	Go to Models 840/SB3, FC 8079 (lower half), FC 9079 Cards — Dedicated.
M19  M19-Daughter card	Clock card  Oscillator card	Clock card  Oscillator card:	25AA (See page 523)  25AC (See page 523) <b>OR</b> 25AF (See page 523)	Go to Models 840/SB3, FC 8079 (lower half), FC 9079 Cards — Dedicated.
M20 - M24	Memory card	Memory card	3195 (See page 529), 3196 (See page 529), 3197 (See page 529), 3198 (See page 529), 319A (See page 529), 31A1 (See page 529), 3612 (See page 529), 3613 (See page 529), or 3614 (See page 529)	Go to Models 840/SB3, FC 8079 (lower half), FC 9079 Cards — Dedicated.
R11	Regulator card	Regulator card	21H7763	Go to Models 840/SB3, FC 8079 (lower half), FC 9079 Cards — Dedicated.

<b>Position</b>	<b>FRU name</b>	<b>Possible failing component</b>	<b>Type, CCIN, or part number (use the Type, model, and part number list to determine the part number when the type or CCIN are given.)</b>	<b>Remove and replace procedure</b>
R20	Regulator card	Regulator card	21H7763	Go to Models 840/SB3, FC 8079 (lower half), FC 9079 Cards — Dedicated.
R21	SPCN card	SPCN card	<ul style="list-style-type: none"> <li>• 04N4552 - Single line cord</li> <li>• 21P6806 - Dual line cord</li> </ul>	Go to Models 840/SB3 system unit - SPCN card (R21).
G01	Battery charger	Battery charger	23L3640	Go to Models 840/SB3 system unit - Charger (G01).
T01	Battery pack	Battery pack	21H7080	Go to Models 840/SB3 System unit - Battery pack (T01).
A01	AC box	AC box (For systems with single line cord)	<ul style="list-style-type: none"> <li>• 21H7000 - USA</li> <li>• 21H7261 - 1 Phase World Trade</li> <li>• 21H7264 - 2 Phase World Trade</li> </ul>	Go to Models 840/SB3 processor tower (with non-dual line cords) - AC box (A01).
	AC module	AC module (For systems with dual line cords)	<ul style="list-style-type: none"> <li>• 21H7000 - USA</li> <li>• 21H7261 - 1 Phase World Trade</li> <li>• 21H7264 - 2 Phase World Trade</li> </ul>	Go to Models 840/SB3 processor tower (with dual line cords) - AC box concurrent maintenance procedure (A01, A03).
A02	Concurrent maintenance adapter	Concurrent maintenance adapter (For systems with dual line cords)	04N6092	Go to Models 840/SB3 processor tower (with dual line cords) - Concurrent maintenance adapter card (A02).
A03	AC module	AC module (For systems with dual line cords)	<ul style="list-style-type: none"> <li>• 21H7000 - 1 Phase USA</li> <li>• 21H7261 - 1 Phase World Trade</li> </ul>	Go to Models 840/SB3 processor tower (with dual line cords) - AC box concurrent maintenance procedure (A01, A03).
HSL cables on the HSL ports	HSL cable	HSL connection	See the Type, model, and part number list.	Go to HSL cables - Concurrent.

**Figure 2a. Locations for FC 9079 base I/O tower (on Models 840, SB3 system unit - single line cord)**



Front

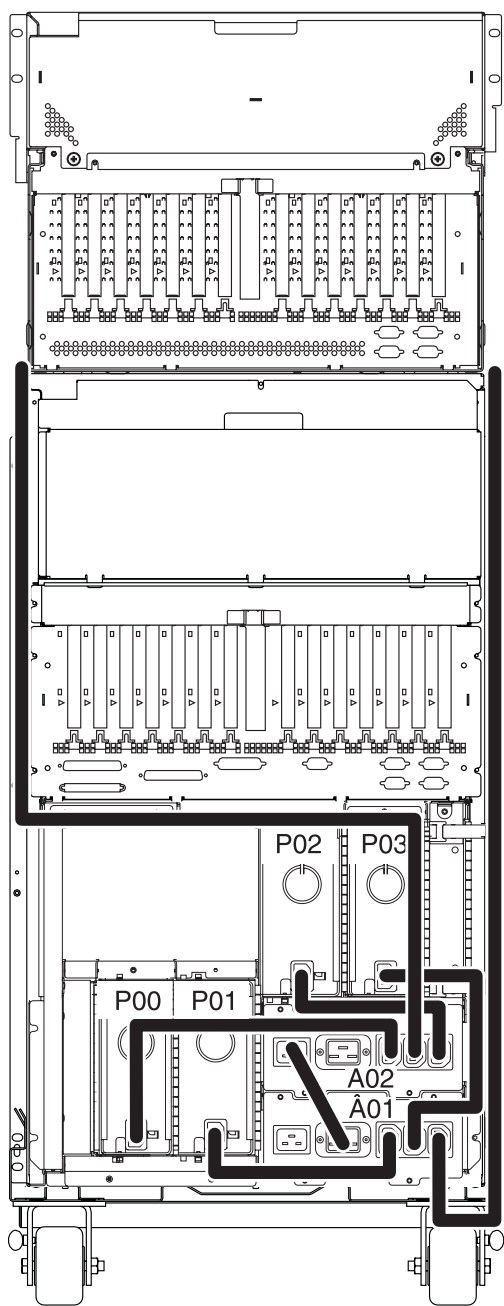


Back

RZAQ2518-1

ns for FC 9079 base I/O tower (on Models 840, SB3 system unit - single line cord)"  
 src="rzaq2518.gif"> Figure 2b. Locations for FC 9079 I/O tower with FC 5078 on top (on Models 840,  
 SB3 system unit - dual line cord)





RZAQ4511-2

**Notes:**

1. The FC 9079 base I/O tower contains two system PCI buses.
2. In the FC 9079 base I/O tower FRU locations and failing components table, the first of the two busses in the tower is "0001" and the second bus in the tower is designated as "yyyy".
3. In FC 9079 Base I/O Towers, the bus connected to card positions C01 - C04 is bus number 0001. The other bus in FC 9079 Base I/O Towers is not required to be in order.
4. Card position C01 is required to be an I/O processor.
5. Card positions C05 and C11 are required to be either I/O processors or Integrated xSeries<sup>(TM)</sup> Servers (IXS).
6. J11 is an RPO connection, J14 is a uninterruptable power supply connector, J15 is an SPCN 1 connector, and J16 is an SPCN 2 connector.

7. Multi-adapter bridge domains are labeled **PCI Bridge Set** inside the tower.
8. The following table provides information necessary to identify the IOP to which IOAs are assigned.
  - The left column indicates the domain in which IOA assignment is allowed.
  - The right column is used to determine the IOP to which an IOA is assigned.
  - The first position in the list must be an IOP. The remaining positions may be IOPs or IOAs. IOAs are assigned to the first IOP located to their left in the list. Although IOAs can be manually reassigned using SST/DST, the IOA assignments return to the default order after each IPL.

**Table 2. Identify the IOP to which IOAs are assigned**

Multi-adapter bridge domain / PCI bridge set	IOA assignment rules
C01 - C04	C01, C02, C03, C04
C05 - C10	C05, C06, C07, C08, C09, C10
C11 - C15	C11, C12, C13, C14, C15

**Table 3. FRU locations and failing components for FC 9079 base I/O tower table**

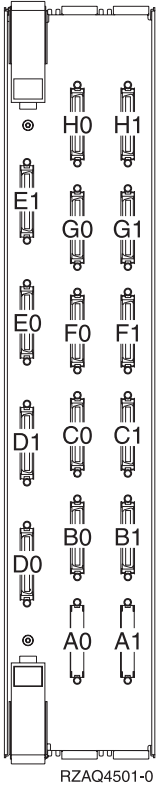
Position	FRU name	Possible failing component	Type, CCIN, or part number (use the Type, model, and part number list to determine the part number when the type or CCIN are given.)	Remove and replace/recovery procedure
D01 - D40	Disk unit	Disk unit	See Type, model, and part number list.	Go to Recovery procedures.
D41	Optical	Optical	See Type, model, and part number list.	Go to FC 5074, FC 5079, FC 9079 - Removable media - D41 and D42.
D42	Tape	Tape	See Type, model, and part number list.	Go to FC 5074, FC 5079, FC 9079 - Removable media - D41 and D42.
D46 - D50	Disk unit	Disk unit	See Type, model, and part number list.	Go to Recovery procedures.
NB1	Control panel	Control panel	24L0945	Go to FC 5074, FC 5079 - Control panel - NB1.
DB3	Device board	Device board	283C (See page 526) or 28CB (See page 528)	Go to FC 5074, FC 5079, FC 9079 - Device board - DB3.
DB2	Device board	Device board	283D (See page 526) or 28CC (See page 528)	Go to FC 5074, FC 5079, FC 9079 - Device board - DB1 and DB2.
DB1	Device board	Device board	283D (See page 526) or 28CC (See page 528)	Go to FC 5074, FC 5079, FC 9079 - Device board - DB1 and DB2.
B01 and B02	AMD	AMD	04N3345	Go to FC 5074/5079, FC 9074, FC 9079 - AMD - B01 and B02.
C01	PCI card	IOP	2842 (See page 527), 2843 (See page 527), or 2844 (See page 527)	Go to Models 840/SB3, FC 8079 (lower half), FC 9079 Cards — Dedicated.

Position	FRU name	Possible failing component	Type, CCIN, or part number (use the Type, model, and part number list to determine the part number when the type or CCIN are given.)	Remove and replace/recovery procedure
C02	PCI card	The failing component is either an: 1. IOP 2. IOA	1. 2842 (See page 527), 2843 (See page 527), or 2844 (See page 527) 2. See Type, model, and part number list.	Go to Models 840/SB3, FC 8079 (lower half), FC 9079 Cards — Dedicated.
C03	PCI card	The failing component is either an: 1. IOP 2. IOA	1. 2842 (See page 527), 2843 (See page 527), or 2844 (See page 527) 2. See Type, model, and part number list.	Go to Models 840/SB3, FC 8079 (lower half), FC 9079 Cards — Dedicated.
C04	PCI card	The failing component is either an: 1. IOP 2. IOA	1. 2842 (See page 527), 2843 (See page 527), or 2844 (See page 527) 2. See Type, model, and part number list.	Go to Models 840/SB3, FC 8079 (lower half), FC 9079 Cards — Dedicated.
C05	PCI card	The failing component is either an: 1. IOP 2. Integrated xSeries Server (IXS)	1. 2842 (See page 527), 2843 (See page 527), or 2844 (See page 527) 2. 2890 (See page 527) or 2892 (See page 527) <b>Note:</b> When the IXS card is installed in this position concurrent maintenance at the card position is not recommended.	If IXS, then go to Models 840/SB3, FC 8079 (lower half), FC 9079 Cards — Dedicated. Otherwise, go to Models 840/SB3, FC 8079 (lower half), FC 9079 Cards (concurrent).
C06	PCI card (if no IXS in C05)	The failing component is either an: 1. IOP 2. IOA	1. 2842 (See page 527), 2843 (See page 527), or 2844 (See page 527) 2. See Type, model, and part number list.	Go to Models 840/SB3, FC 8079 (lower half), FC 9079 Cards (concurrent).
C07	PCI card (Short if 2890 IXS in C05)	IOA	See Type, model, and part number list.	Go to Models 840/SB3, FC 8079 (lower half), FC 9079 Cards (concurrent).
C08	HSL I/O bridge card	<ul style="list-style-type: none"> <li>High-speed link I/O bridge</li> <li>PCI host bridge</li> </ul>	<ul style="list-style-type: none"> <li>2691 (See page 524)</li> <li>See Type, model, and part number list.</li> </ul>	Go to Models 840/SB3, FC 8079 (lower half), FC 9079 Cards — Dedicated.

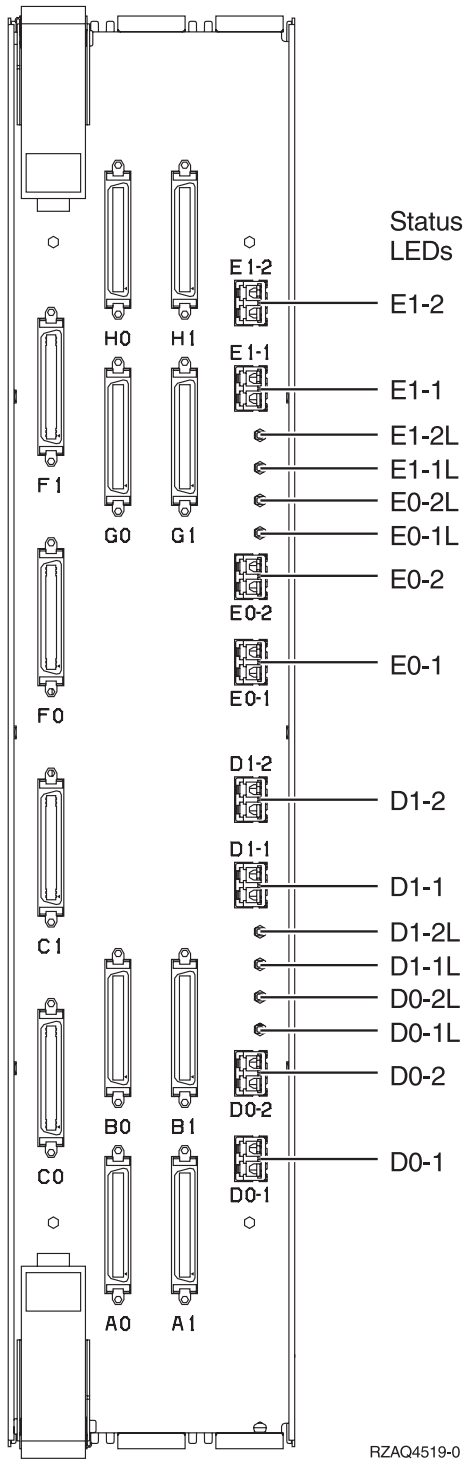
Position	FRU name	Possible failing component	Type, CCIN, or part number (use the Type, model, and part number list to determine the part number when the type or CCIN are given.)	Remove and replace/recovery procedure
C08 ports	HSL ports	See Figure 7. FC 9079 base I/O tower - HSL and SPCN locations (See page ) below.	N/A	N/A
C09	PCI card	The failing component is either an: 1. IOP 2. IOA	1. 2842 (See page 527), 2843 (See page 527), or 2844 (See page 527) 2. See Type, model, and part number list.	Go to Models 840/SB3, FC 8079 (lower half), FC 9079 Cards (concurrent).
C10	PCI card	The failing component is either an: 1. IOP 2. IOA	1. 2842 (See page 527), 2843 (See page 527), or 2844 (See page 527) 2. See Type, model, and part number list.	Go to Models 840/SB3, FC 8079 (lower half), FC 9079 Cards (concurrent).
C11	PCI card	The failing component is either an: 1. IOP 2. Integrated xSeries Server (IXS)	1. 2842 (See page 527), 2843 (See page 527), or 2844 (See page 527) 2. 2890 (See page 527) or 2892 (See page 527) <b>Note:</b> When the IXS card is installed in this position, concurrent maintenance at the card position is not recommended.	If IXS, then go to Models 840/SB3, FC 8079 (lower half), FC 9079 Cards — Dedicated. Otherwise, go to Models 840/SB3, FC 8079 (lower half), FC 9079 Cards (concurrent).
C12	PCI card (if no IXS in C11)	The failing component is either an: 1. IOP 2. IOA	1. 2842 (See page 527), 2843 (See page 527), or 2844 (See page 527) 2. See Type, model, and part number list.	Go to Models 840/SB3, FC 8079 (lower half), FC 9079 Cards (concurrent).
C13	PCI card (Short if 2890 IXS in C11)	IOA	See Type, model, and part number list.	Go to Models 840/SB3, FC 8079 (lower half), FC 9079 Cards (concurrent).
C14	PCI card	The failing component is either an: 1. IOP 2. IOA	1. 2842 (See page 527), 2843 (See page 527), or 2844 (See page 527) 2. See Type, model, and part number list.	Go to Models 840/SB3, FC 8079 (lower half), FC 9079 Cards (concurrent).

Position	FRU name	Possible failing component	Type, CCIN, or part number (use the Type, model, and part number list to determine the part number when the type or CCIN are given.)	Remove and replace/recovery procedure
C15	PCI card	The failing component is either an: 1. IOP 2. IOA	1. 2842 (See page 527), 2843 (See page 527), or 2844 (See page 527) 2. See Type, model, and part number list.	Go to Models 840/SB3, FC 8079 (lower half), FC 9079 Cards (concurrent).
CB1	Tower card	<ul style="list-style-type: none"> <li>• SPCN card</li> <li>• Tower card</li> <li>• Service processor</li> <li>• Multi-adapter bridge (all)</li> </ul>	28AA (See page 527)	Go to FC 5074, FC 5079, FC 9079 - Tower card - CB1.
A01	AC input / charger	AC module / charger	97H7316 - Single line cord	Go to FC 5074, FC 5079, FC 9079 (with single line cord) - AC charger - A01.
A02	AC module	AC module	21P6347 - Dual line cord	Go to Model 830 FC 9074, Model 840 FC 9079/8079 (with dual line cords) - AC module (A01, A02).
P01 - P03	Power supply	Power supply	90H6629 - Single line cord	Go to FC 9074, FC 9079, FC 5074/5079 - Power supply - P01, P02, and P03.
P01 - P02	Power supply	Power supply	53P1038 - Dual line cord	Go to FC 9074, FC 9079, FC 5074/5079 - Power supply - P01, P02, and P03.
PB1	Power board	Power board	24L0891	Go to FC 5074, FC 5079, FC 9079 - Power distribution board - PB1.
T01 - T04	Battery	Battery	97H7318 (This PN includes all four batteries.)	Go to FC 5074, FC 5079, FC 9079 - Batteries - T01, T02, T03, and T04.
HSL cables on the HSL ports	HSL cable	HSL connection	See Type, model, and part number list.	Go to HSL cables - Concurrent.

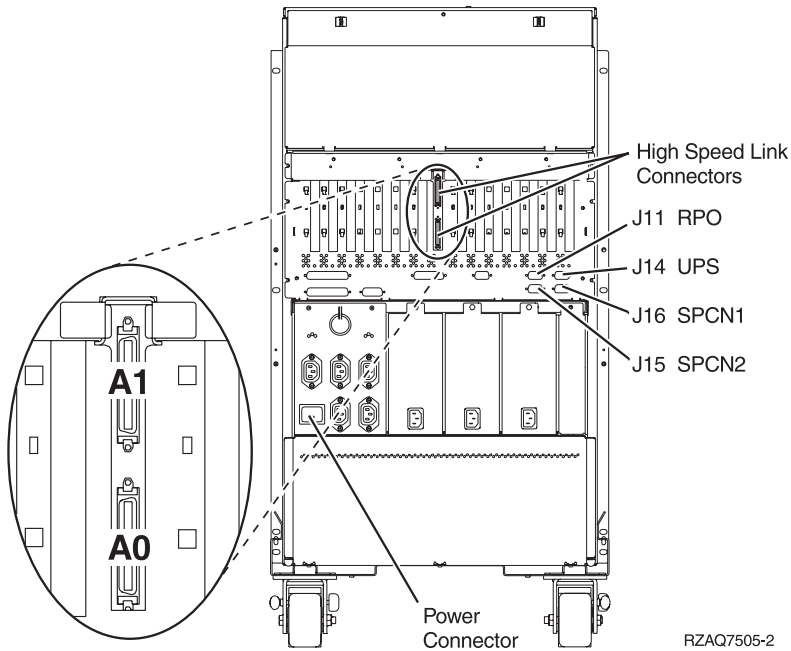
**Figure 3. Network Interface Controller (NIC) port locations**



01.gif" > port and LED locations



s" src="rzaq4519.gif"> locations



base I/O tower - HSL and SPCN locations" src="rzaq7505.gif"> Figure 6. Rack mounted expansion unit feature codes

**Feature Code #5079**

FC5074
FC5074

**Feature Code #0550**

10 EIA
Model 830

**Feature Code #0551**

6 EIA
Model 270 with FC7104
Model 270 with FC7104

**Feature Code #8079**

FC5074
FC9079

**Rack Feature Code #0551**

21 EIA
Model 270 with FC7104

**Rack Feature Code #0551**

36 EIA
36 EIA

**Rack Feature Code #0551**

18 EIA
FC9079

**Rack Feature Code #0551**

18 EIA
FC5074

**Rack Feature Code #0551**

FC0578

RZAQ4516-0

**Locations — Models 870 and 890 with an FC 9094 Base I/O Tower**

*For use by authorized service providers.*

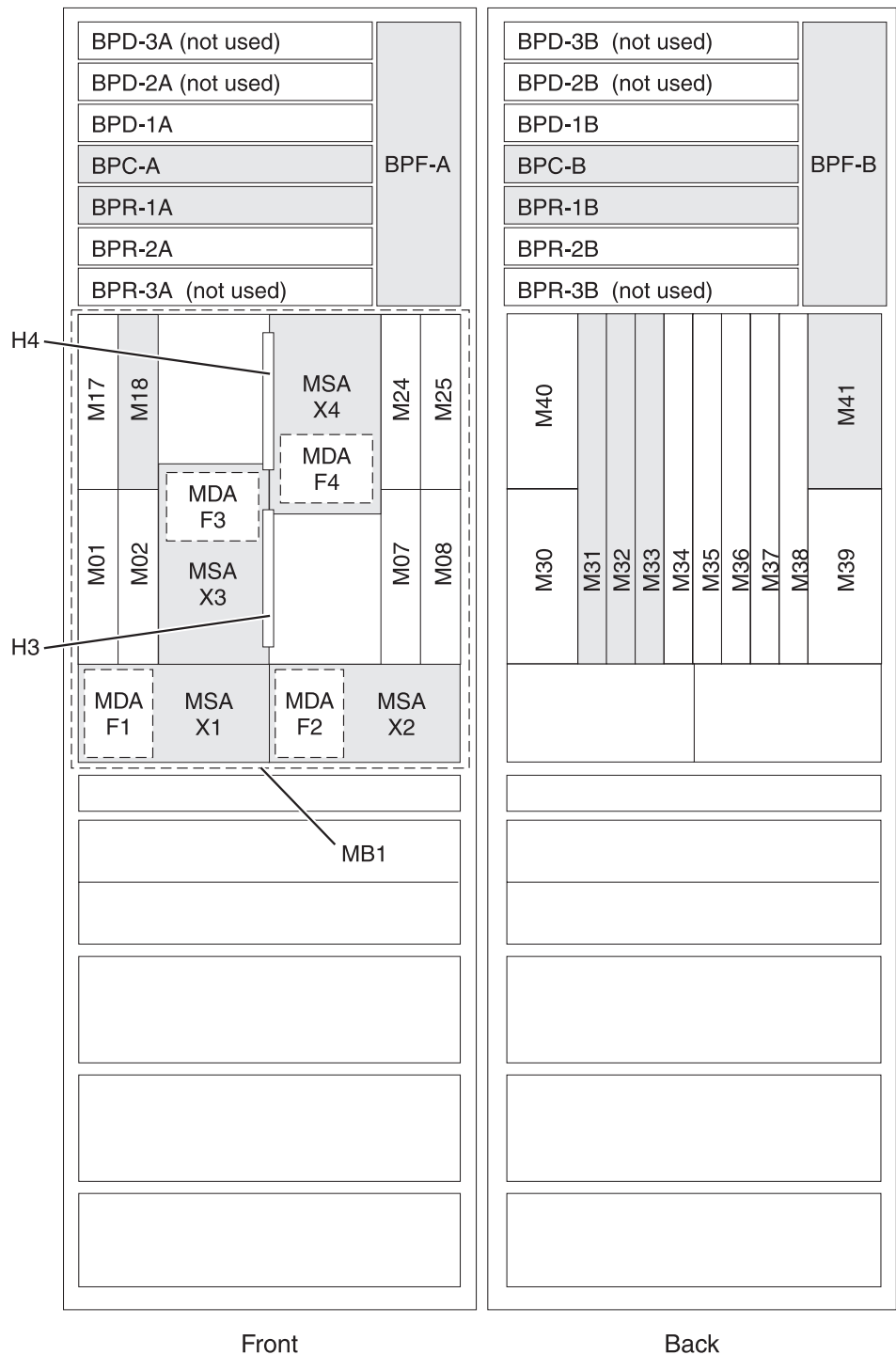
This topic includes location information for the following:



- “Locations — Models 870 and 890”
- “Locations — FC 9094 Base I/O Tower” on page 291

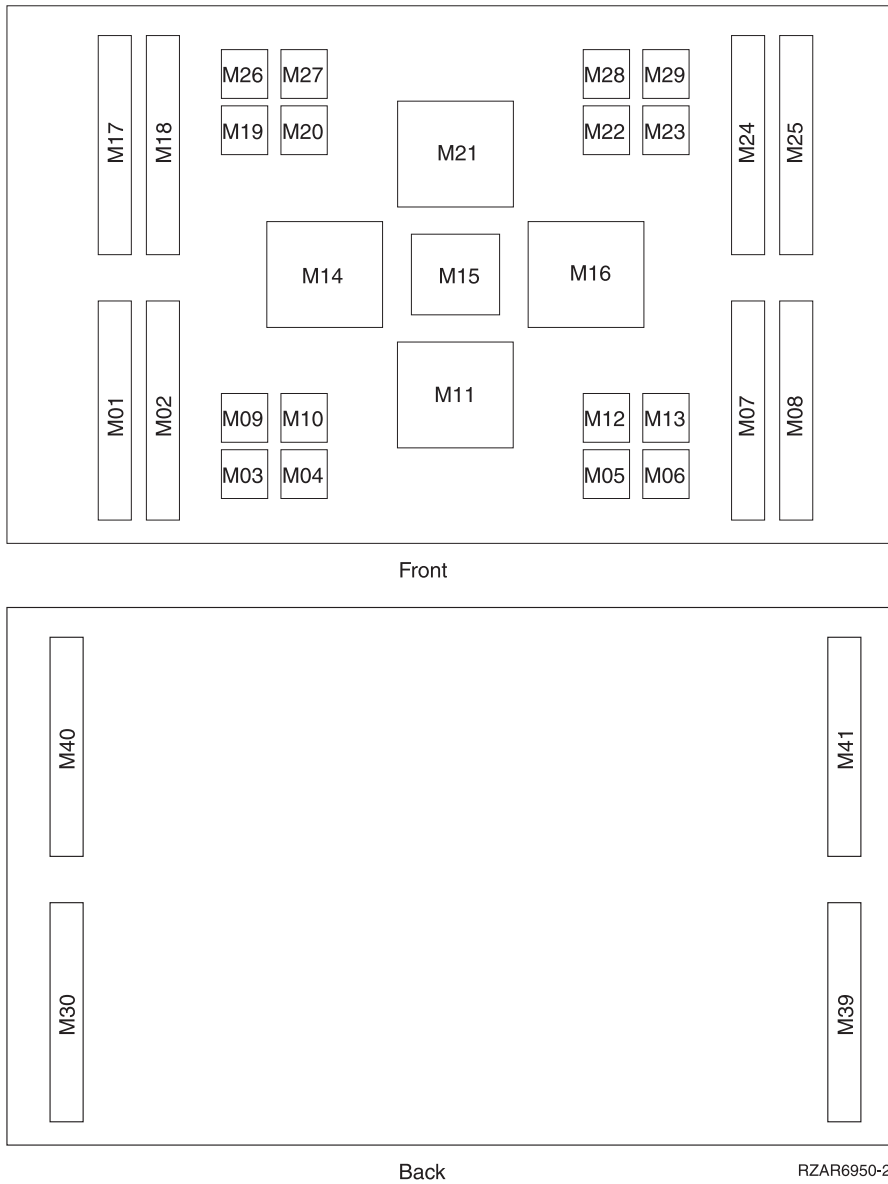
**Locations — Models 870 and 890:** The following diagram shows FRU layout in the Models 870 and 890. Use it with the tables below. If you need address information, refer to Addresses — Models 870 and 890 with an FC 9094 Base I/O Tower.

**Figure 1. Locations for Models 870 and 890 - System Tower**

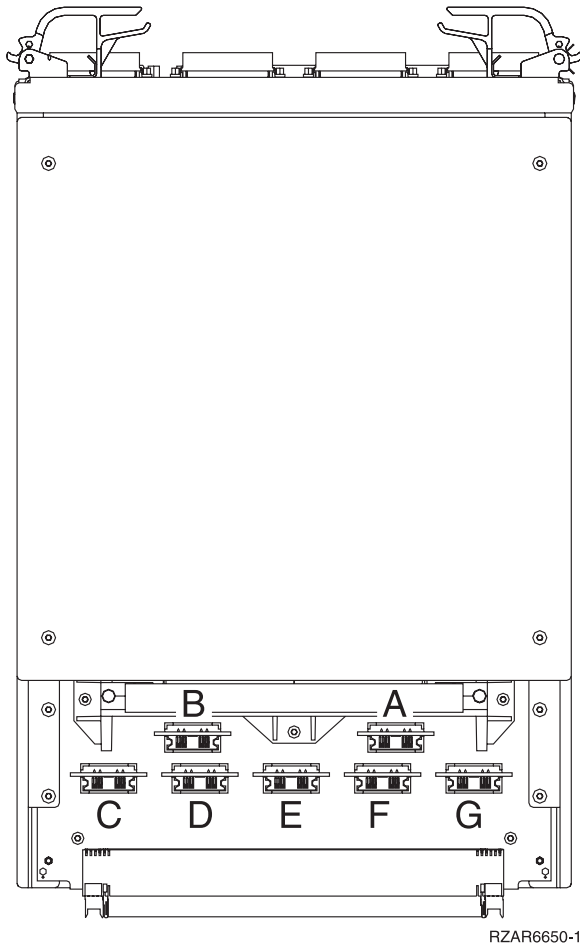


RZAR6900-9

**Figure 2. Locations for Models 870 and 890 - System unit backplane**



**Figure 3. VPD card placement on the Network Interface Controller (NIC) card (location M41)**

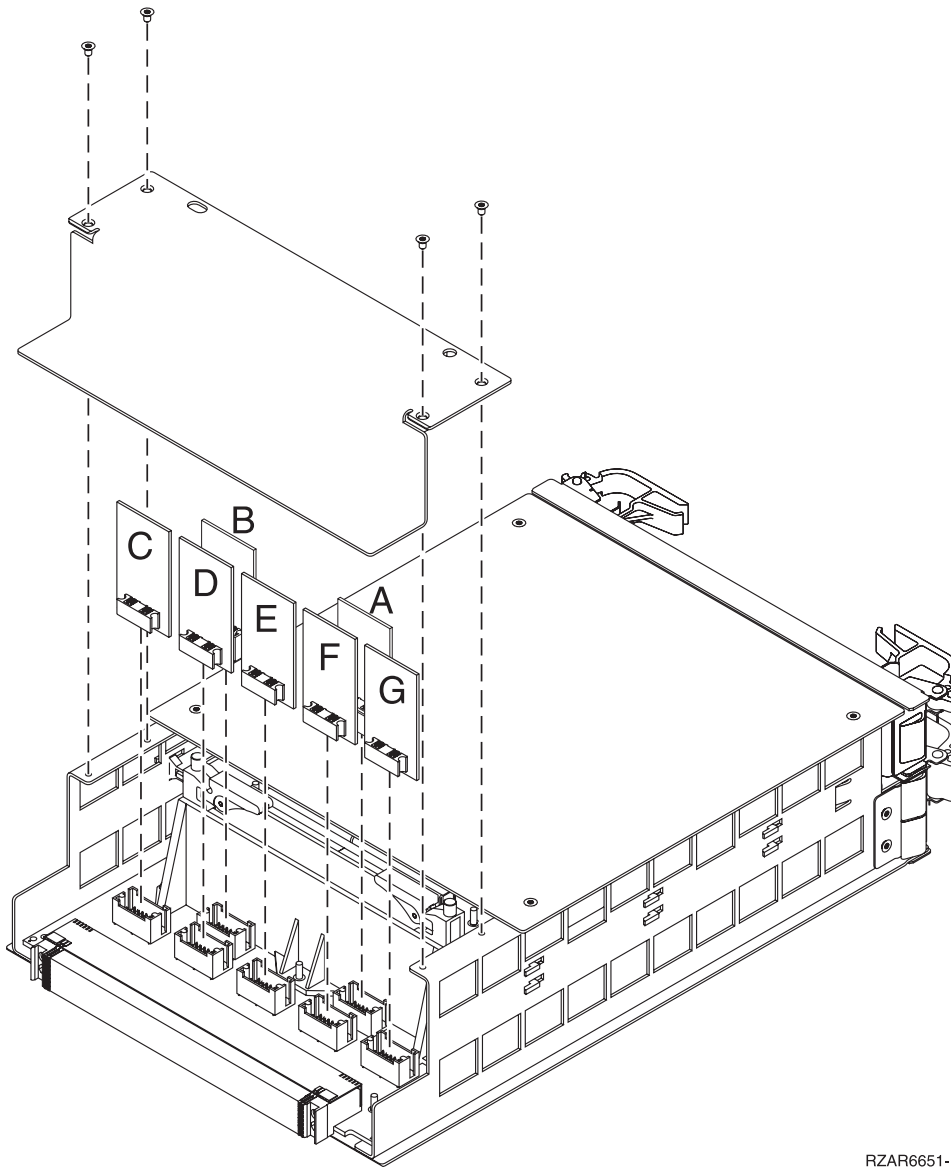


The letters in Figure 3 give the VPD card placement for the system. The letters correlate to the following cards:

- A = Processor capacity card
- B = Interactive card
- C = L3 VPD card
- D = VPD for MCM 0 in location M21
- E = VPD for MCM 2 in location M11
- F = VPD for MCM 1 in location M16
- G = VPD for MCM 3 in location M14

**Note:** MCMs and their associated VPD card in location M41 have the same serial number and must always be kept together. That is, you cannot swap MCM VPD cards between slots or between systems.

**Figure 4. VPD card placement on the Network Interface Controller (NIC) card (Location M41)**



RZAR6651-1

The following table gives the components available for callout on the Models 870 and 890. It matches those components with the FRU containing the component. The other columns give location information, CCIN information, a link to a remove and replace procedure, and additional information.

**Table 1. FRU locations and failing components for Models 870 and 890 processor tower**

Possible failing component	FRU name	Position	Type or CCIN number (see the Type, model, and part number list)	Remove and replace procedure	Additional comments
<ul style="list-style-type: none"> <li>• Card enclosure or backplane</li> <li>• System unit backplane</li> </ul>	System unit backplane	MB1	25C0 (See page 524)	Go to Models 870 and 890 - System unit backplane MB1.	

Possible failing component	FRU name	Position	Type or CCIN number (see the Type, model, and part number list)	Remove and replace procedure	Additional comments
System processor	System processor	M11, M14, M16, M21	25D3 (See page 524)	Go to Models 870 and 890 - MCM module (processor) and pass-through modules	
Memory card	Memory card	M01, M02, M07, M08, M17, M18, M24, M25	3015 (See page 528), 3016 (See page 528), 3017 (See page 528), 3018 (See page 528), 3020 (See page 528), 3021 (See page 528), 3035 (See page 529), or 3036 (See page 529).	Go to Models 870 and 890 - Memory books and memory blanks	
Interactive card	Interactive card	M41-B	1576 (See page 521), 1577, 1578 (See page 521), 1579 (See page 521), 1581 (See page 521), 1583 (See page 521), 1585 (See page 521), 1587 (See page 521), 1588 (See page 521), or 1591 (See page 521)	Go to Models 870 and 890 - VPD card.	
Capacity card	Capacity card	M41-A	0197 (See page 520), 0198 (See page 520), 2487 (See page 523), or 2488 (See page 523)	Go to Models 870 and 890 - VPD card.	
MCM VPD card	MCM VPD card	M41-D, M41-E, M41-F, M41-G	See the Type, model, and part number list	Go to Models 870 and 890 - VPD card.	
L3 VPD card	L3 VPD card	M41-C	25F1 (See page 524)	Go to Models 870 and 890 - VPD card.	
L3 cache card	L3 cache card	M03, M04, M05, M06, M09, M10, M12, M13, M19, M20, M22, M23, M26, M27, M28, M29	25F1 (See page 524)	Go to Models 870 and 890 - L3 modules.	
Network interface controller (NIC)	Network interface controller (NIC) card	M30, M39, M40	2776 (See page 525), or 2788 (See page 526)	See Models 870 and 890 - Network interface controller (NIC) card	

Possible failing component	FRU name	Position	Type or CCIN number (see the Type, model, and part number list)	Remove and replace procedure	Additional comments
Network interface controller (NIC) (Primary NIC card)	Network interface controller (NIC) card	M41	2738 (See page 524), or 2789 (See page 526)	See Models 870 and 890 - Network interface controller (NIC) card	
Network Interface Controller (NIC) ports and HSL cables	HSL cables	C0 - C1 and D0 - D1 on the NIC card in M41. A0 - A1 through D0 - D1 on each NIC card in M30, M39, and M40.	See the Plan for cables topic in Information Center. This information is also available in the <i>Plan for hardware and software</i> book.	Go to HSL cables - concurrent	
Clock card	Clock card	M15	25C1 (See page 524)	Go to Models 870 and 890 - System clock card	
Air moving device (BPF)	Bulk power fan (BPF)	BFA-A, BFA-B	See symbolic FRU BFPWR	Go to Models 870 and 890 - Bulk power f-airmover	
Motor scrolling assembly	Motor scrolling assembly	MSA X1-X4	See symbolic FRU MSAPWR	Go to Models 870 and 890 - Processor MSA (air mover) assembly	
Motor drive assembly	Motor drive assembly	MDA F1-F4	See symbolic FRU MDAPWR	Go to Models 870 and 890 - MDA (air mover) assembly	
Bulk power controller (BPC)	Bulk power controller (BPC)	BPC-A, B	See symbolic FRU BPCPWR	Go to Models 870 and 890 - Bulk power controller (BPC)	
Bulk power distribution (BPD)	Bulk power distribution (BPD)	BPD 1A, 1B, 2A, 2B	See symbolic FRU BPD PWR	Go to Models 870 and 890 - Bulk power distribution (BPD)	
DC Converter Assembly (DCA)	DC Converter Assembly (DCA)	M31, M32, M34, M35, M36	See symbolic FRU DCAPWR	Go to Models 870 and 890 - DC converter assembly (DCA)	
Capacitor card	Capacitor card	M33, M37	See symbolic FRU CAPPWR	Go to Models 870 and 890 - Capacitor books and blanks	
Bulk power regulator (BPR)	Bulk power regulator (BPR)	1A, 1B, 2A, 2B, 3A, 3B	See symbolic FRU BPRPWR	Go to Models 870 and 890 - Bulk power regulator (BPR)	

Possible failing component	FRU name	Position	Type or CCIN number (see the Type, model, and part number list)	Remove and replace procedure	Additional comments
Bulk power enclosure (BPE)	Bulk power enclosure (BPE)	Top frame enclosure	See Bulk power enclosure assembly - Models 870 and 890	Go to Models 870 and 890 - Bulk power enclosure (BPE)	
Motor scroll assembly (MSA) air filter	MSA air filter	H3, H4	Part number 11P3781	Go to Models 870 and 890 - Motor scroll assembly (MSA) air filters	

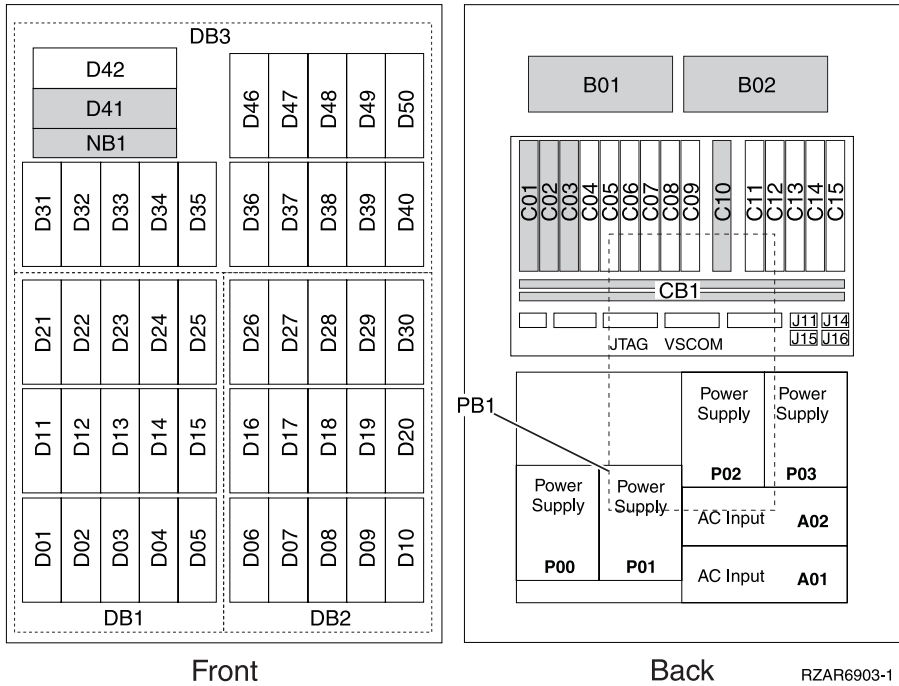
### Memory configurations

Main storage cards (8GB, 16GB, 32GB) may be plugged into the following slots, with the following rules:

- Slot M18 is the base memory location. M18 must be used first. If slot M24 is used, the memory installed must be the same size as the memory in M18.
- If a second MCM processor is installed, memory may be added to slots M07 and M02. If both slots are used, the memory size in M02 and M07 must match. The memory size in M02 and M07 do not need to match any other memory sizes.
- If a third MCM processor is installed, memory may be added to slots M08 and M25. If both slots are used, the memory size in M25 and M08 must match. The memory size in M25 and M08 does not need to match any other memory sizes.
- If a fourth MCM processor is installed, memory may be added to slots M17 and M01. If both slots are used, the memory size in M01 and M17 must match. The memory size in M01 and M17 does not need to match any other memory sizes.

**Locations — FC 9094 Base I/O Tower:** The following diagram shows field replaceable unit (FRU) layout in the FC 9094 Base I/O Tower. Use it with the tables below. If you need address information, refer to Addresses — Models 870 and 890 with an FC 9094 Base I/O Tower.

**Figure 5. FC 9094 Base I/O Tower**



RZAR6903-1

**Notes:**

1. The FC 9094 I/O Tower contains three system PCI busses.
2. In FC 9094 I/O Tower, the bus numbers assigned to the busses are not required to be in any order.
3. Card position C01 is required to be an I/O processor.
4. Card positions C05 and C11 are required to be either I/O processors or Integrated xSeries<sup>(TM)</sup> Servers (IXS).
5. J11 is an RPO connection, J14 is an uninterruptable power supply connector, J15 is an SPCN 1 connector, and J16 is an SPCN 2 connector.
6. Multi-adapter bridge domains are labeled **PCI Bridge Set** inside the tower.
- 7.

The following table provides information necessary to identify the IOP to which IOAs are assigned.

- The left column indicates the domain in which IOA assignment is allowed.
- The right column is used to determine the IOP to which an IOA is assigned.
- The first position in the list must be an IOP. The remaining positions may be IOPs or IOAs. IOAs are assigned to the first IOP located to their left in the list. Although IOAs can be manually reassigned using SST/DST, the IOA assignments return to the default order after each IPL.

**Table 2. IOA assignment rules**

Multi-adapter bridge domain / PCI bridge set	IOA assignment rules
C01 - C04	C01, C02, C03, C04
C05 - C09	C05, C06, C07, C08, C09
C11 - C15	C11, C12, C13, C14, C15

**Table 3. FRU locations and failing components for FC 9094 Base I/O Tower**

The following table gives the components available for callout on the FC 9094 Base I/O Tower. It matches those components with the FRU containing the the component. The other columns give location information, CCIN information, a link to a remove and replace procedure, and additional comments.



**Notes:**

- Do not install power supplies P00 and P01 AC jumper cables on the same AC input module.
- Service the FC 9094 bottom unit as an FC 9094 Base I/O Tower.

Possible failing component	FRU name	Position	Type or CCIN number (see the Type, model, and part number list)	Remove and replace procedure	Additional comments
<ul style="list-style-type: none"> <li>• High speed link I/O adapter</li> <li>• PCI host bridge adapter</li> </ul>	HSL I/O bridge card	C10	2886 (See page 527), 2887 (See page 527)	Go to FC 8094-001 (lower half), FC 9094 - Cards (dedicated)	
Air moving device	Air moving device	B01, B02	See symbolic FRU AIRMOVR	Go to FC 5094, FC 9094 - Air moving device - B01 and B02	
Power supply	Power supply	P00, P01, P02, P03	See Final assembly - FC 9094 Base I/O Tower	Go to FC 5094, FC 9094 - Power supply - P00, P01, P02, and P03	
AC power distribution assembly	AC module	A01, A02	See Final assembly - FC 9094 Base I/O Tower	See either: <ul style="list-style-type: none"> <li>• Models 870 and 890 (FC 9094 with single line cord) - AC module - A01 and A02</li> <li>• Models 870 and 890 (FC 9094 with dual line cord) - AC module - A01 and A02</li> </ul>	
HSL cables	HSL cables	Attached to HSL ports 0 and 1 on HSL I/O bridge card in C10	See the Plan for cables topic in Information Center. This information is also available in the <i>Plan for hardware and software</i> book.	Go to HSL cables - concurrent	
IOP	PCI cards	C01 through C03, C05 through C08, C11 through C14	2842 (See page 527), 2843 (See page 527), or 2844 (See page 527)	Go to FC 8094-001 (lower half), FC 9094 - Cards (concurrent)	
IOA	PCI cards	C02 through C04, C06 through C09, C12 through C15	See the Type, model, and part number list	Go to FC 8094-001 (lower half), FC 9094 - Cards (concurrent)	

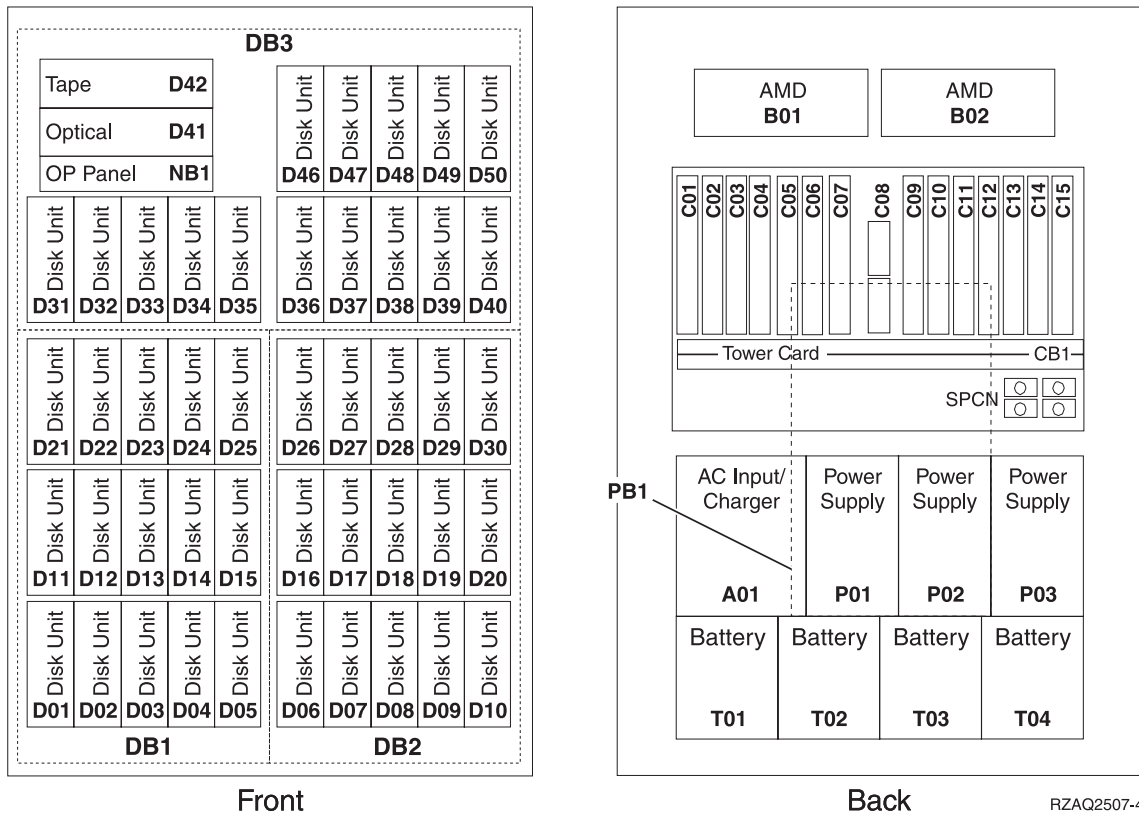
Possible failing component	FRU name	Position	Type or CCIN number (see the Type, model, and part number list)	Remove and replace procedure	Additional comments
Integrated xSeries Server	PCI card	C05, C11	2890 (See page 527) or 2892 (See page 527)	Go to FC 8094-001 (lower half), FC 9094 - Cards (dedicated)	If IXS is in C05, C06 is empty.If the IXS is 2890, only a short cad can be used in C07.  If the IXS is in C11, C12 must be empty.  If the IXS is an FC 2890, only a short card can be used in C13.
Disk unit	Disk unit	D01 through D40, D46 through D50	See the Type, model, and part number list	Go to Recovery procedures	
Optical device	Optical device	D41	See the Type, model, and part number list	Go to FC 5094, FC 9094 - Removable media - D41 and D42	
Tape unit	Tape unit	D42	See the Type, model, and part number list	Go to FC 5094, FC 9094 - Removable media - D41 and D42	
Control panel	Control panel	NB1	247A (See page 523)	Go to Models 870 and 890 (FC 9094) - Control panel - NB1	
Device board	Device board	DB1, DB2	283D (See page 526) or 28CC (See page 528)	Go to FC 5094, FC 9094 - Device board - DB1, DB2	
Device board	Device board	DB3	283C (See page 526) or 28CB (See page 528)	Go to FC 5094, FC 9094 - Device board - DB3	
<ul style="list-style-type: none"> <li>• SPCN card</li> <li>• Service processor</li> <li>• Tower card</li> <li>• Multi-adapter bridge (All)</li> </ul>	Tower card	CB1	28B6 (See page 528)	Go to FC 5094, FC 9094 - Tower card - CB1	
Time of day battery	Time of day battery	On tower card CB1	See the Type, model, and part number list.	Go to FC 9094 - Time of day (TOD) battery	

## Locations — FC 5074 Expansion I/O Tower

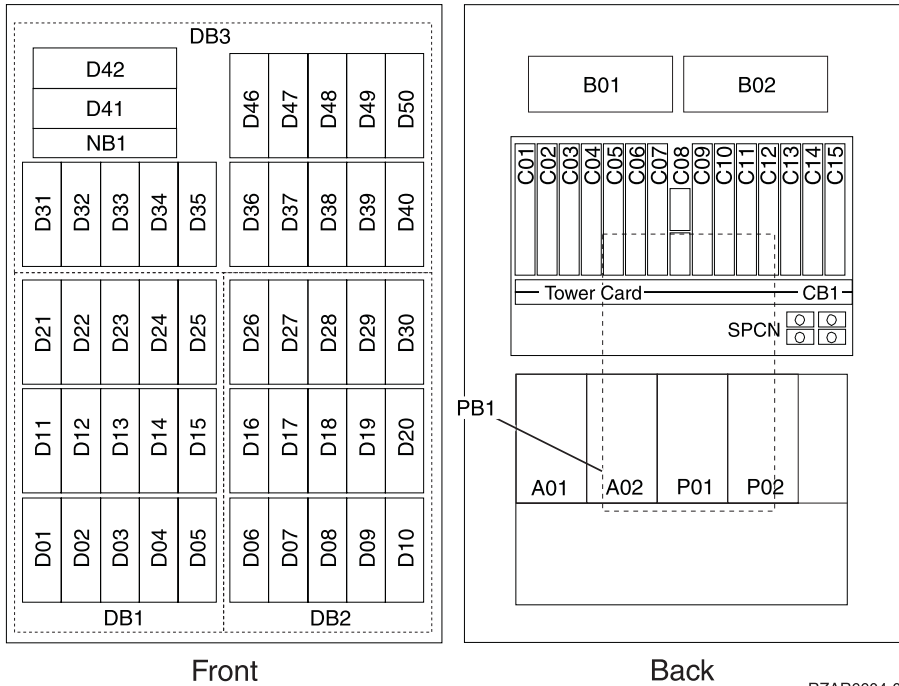
*For use by authorized service providers.*

The following diagram shows FRU layout in the FC 5074 Expansion I/O Tower. Use it with the tables below. If you need address information, refer to Addresses — FC 5074 Expansion I/O Tower.

**Figure 1. Locations for FC 5074 Expansion I/O Tower (single line cord)**



**Figure 2. Locations for FC 5074 Expansion I/O Tower (dual line cord)**



**Note:** To view the dual line cord, 2 power supply, see Figure 6. Final assembly (continued) — FC 5074 (2 power supply dual line cord) (See page 462) in Final assembly - FC 5074, FC 5094.

The following table gives the components available for callout on the FC 5074 Expansion I/O Tower. It matches those components with the FRU containing the component. The other columns give location information, CCIN information, a link to a remove and replace procedure, and additional information.

**Table 1. FRU locations and failing components for FC 5074 Expansion I/O Towers**

Possible failing component	FRU name	Position	Type or CCIN number (see the Type, model, and part number list)	Remove and replace procedure	Additional comments
<ul style="list-style-type: none"> <li>• SPCN</li> <li>• Card enclosure or backplane</li> <li>• Multi-adapter bridge (all)</li> </ul>	Tower card	CB1	28AB (See page 528)	Go to FC 5074, FC 5079, FC 9079 - Tower card - CB1	
IOP	PCI card	C01 through C06, C09 through C12, C14, C15	2842 (See page 527), 2843 (See page 527), or 2844 (See page 527)	Go to FC 5074, FC 5079, FC 5094, FC 5294 - Cards (concurrent).	
IOA	PCI card	C02 through C04, C06, C07, C09, C10, C12 through C15	See the Type, model, and part number list	Go to FC 5074, FC 5079, FC 5094, FC 5294 - Cards (concurrent).	

Possible failing component	FRU name	Position	Type or CCIN number (see the Type, model, and part number list)	Remove and replace procedure	Additional comments
Integrated xSeries <sup>(TM)</sup> Server (IXS)	PCI card	C05, C11	2890 (See page 527)	Go to FC 5074, FC 5079, FC 5094, FC 5294 - Cards (dedicated).	If IXS in C05, C06 is empty - if 2890 IXS, only a short card can be in C07.  If IXS in C11, C12 is empty - if 2890 IXS, only a short card can be in C13
<ul style="list-style-type: none"> <li>High-speed link I/O adapter</li> <li>PCI host bridge adapter</li> </ul>	HSL I/O bridge card	C08	2691 (See page 524), 2739 (See page 524)	Go to FC 5074, FC 5079, FC 5094, FC 5294 - Cards (dedicated).	
AMD	AMD	B01, B02	See Final assembly — FC 5074, FC 5094	Go to FC 5074/5079, FC 9074, FC 9079 - AMD - B01 and B02.	
Power board	Power board	PB1	See Final assembly - FC 5074, FC 5094	Go to FC 5074, FC 5079, FC 9079 - Power distribution board - PB1	
AC module / charger	AC input / charger	A01	See Final assembly - FC 5074, FC 5094	Go to FC 5074, FC 5079, FC 9079 (with single line cord) - AC charger - A01.	
AC module	AC module	A01	See Final assembly - FC 5074, FC 5094	Go to FC 5074, FC 5079, FC 9079 (with dual line cord) - AC charger - A01.	
AC module	AC module	A02	See Final assembly - FC 5074, FC 5094	Go to FC 5074, FC 5079, FC 9079 (with dual line cord) - AC charger - A01.	
Power supply	Power supply	P01, P02, P03	See Final assembly - FC 5074, FC 5094	Go to FC 9074, FC 9079, FC 5074/5079 - Power supply - P01, P02, and P03.	
Battery	Battery	T01 through T04	See the Type, model, and part number list	Go to FC 5074, FC 5079, FC 9079 - Batteries - T01, T02, T03, and T04.	

Possible failing component	FRU name	Position	Type or CCIN number (see the Type, model, and part number list)	Remove and replace procedure	Additional comments
Device board	Device board	DB1 or DB2	283D (See page 526) or 28CC (See page 528)	Go to FC 5074, FC 5079, FC 9079 - Device board - DB1 and DB2.	
Device board	Device board	DB3	283C (See page 526) or 28CB (See page 528)	Go to FC 5074, FC 5079, FC 9079 - Device board - DB3.	
Display panel	Display panel	NB1	247B (See page 523)	Go to FC 5074, FC 5079 - Display panel - NB1.	
Disk unit	Disk unit	D01 - D40, D46 through D50	See Type, model, and part number list.	Go to Recovery procedures.	
Optical	Optical	D41	See Type, model, and part number list.	Go to FC 5074, FC 5079, FC 9079 - Removable media - D41 and D42.	
Tape	Tape	D42	See Type, model, and part number list.	Go to FC 5074, FC 5079, FC 9079 - Removable media - D41 and D42.	
HSL connection	HSL cable	HSL cables on the HSL ports	See Type, model, and part number list.	Go to HSL cables - Concurrent.	

**Notes:**

1. The FC 5074 Expansion I/O Tower contains two system PCI busses.
2. In the FC 5074 Expansion I/O Tower FRU locations and failing components table, the first of the two busses in the Tower is designated as "xxxx" and the second bus in the Tower is designated as "yyyy".
3. In FC 5074 Expansion I/O Tower, the two bus numbers assigned to the busses are not required to be in any order.
4. Card position C01 is required to be an I/O processor.
5. Card positions C05 and C11 are required to be either I/O processors or Integrated xSeries Servers (IXS).
6. J11 is an RPO connection, J14 is a uninterruptable power supply connector, J15 is an SPCN 1 connector, and J16 is an SPCN 2 connector.
7. Multi-adapter bridge domains are labeled **PCI Bridge Set** inside the Tower.
8. The following table provides information necessary to identify the IOP to which IOAs are assigned.
  - The left column indicates the domain in which IOA assignment is allowed.
  - The right column is used to determine the IOP to which an IOA is assigned.
  - The first position in the list must be an IOP. The remaining positions may be IOPs or IOAs. IOAs are assigned to the first IOP located to their left in the list. Although IOAs can be manually reassigned using SST/DST, the IOA assignments return to the default order after each IPL.

**Table 2. IOA assignment rules**

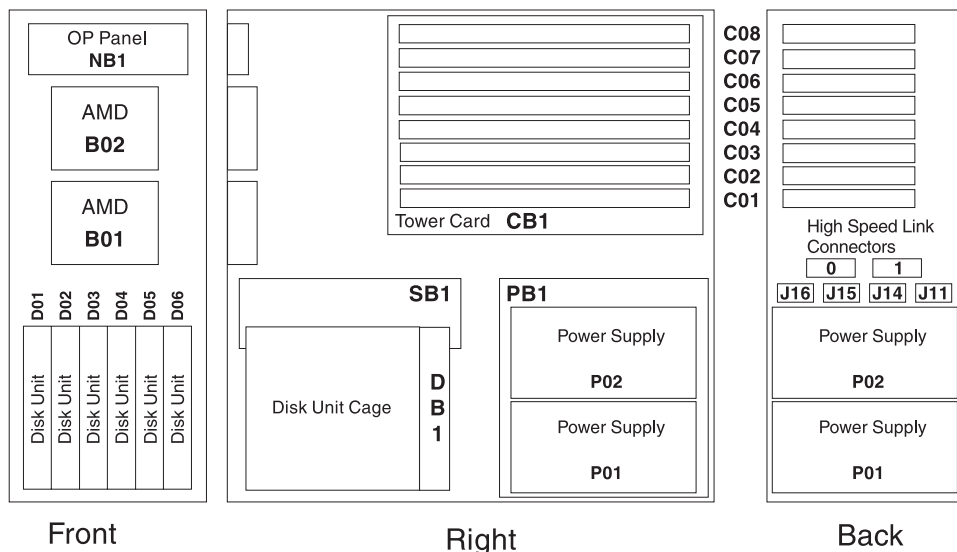
Multi-adapter bridge domain / PCI bridge set	IOA assignment rules
C01 - C04	C01, C02, C03, C04
C05 - C10 (Not including C08)	C05, C06, C07, C09, C10
C11 - C15	C11, C12, C13, C14, C15

## Locations — FC 5075 Expansion I/O Tower

For use by authorized service providers.

The following diagram shows FRU layout in the FC 5075 expansion Expansion I/O Tower. Use it with the tables below. If you need address information, refer to Addresses — FC 5075 Expansion I/O Tower.

**Figure 1. Locations for the FC 5075 Expansion I/O Tower**



RZAQ2500-4

The following table gives the components available for callout on the FC 5075 Expansion I/O Tower. It matches those components with the FRU containing the component. The other columns give location information, CCIN information, a link to a remove and replace procedure, and additional information.

**Table 1. FRU locations and failing components for FC 5075 Expansion I/O Towers**

Possible failing component	FRU name	Position	Type or CCIN number (see the Type, model, and part number list)	Remove and replace procedure	Additional comments
IOA	PCI card	C01 through C04, C06, C07, C08	See the Type, model, and part number list.	Go to FC 5075 - Cards (concurrent).	

Possible failing component	FRU name	Position	Type or CCIN number (see the Type, model, and part number list)	Remove and replace procedure	Additional comments
IOP	PCI card	C02 through C07	2842 (See page 527), 2843 (See page 527), or 2844 (See page 527)	Go to FC 5075 - Cards (concurrent).	
Integrated xSeries <sup>(TM)</sup> Server (IXS)	PCI card	C02, C05	2890 (See page 527) or 2892 (See page 527)	Go to FC 5075 - Cards (concurrent).	If IXS in C02, C03 is empty - if 2890 IXS, only a short card can be in C04.  If IXS in C05, C06 is empty - if 2890 IXS, only a short card can be in C07.
<ul style="list-style-type: none"> <li>• IOP (embedded)</li> <li>• Card enclosure or backplane</li> <li>• Tower card</li> <li>• SPCN</li> <li>• HSL I/O bridge</li> <li>• Multi-adapter bridge (all)</li> </ul>	Tower card	CB1	283B (See page 526)  <b>Note:</b> Embedded IOP (type 284B) is exchanged with the 283B tower card part.	Go to FC 5075 - Tower card - CB1.	
Disk unit	Disk unit	D01 to D06	See the Type, model, and part number list.	Go to Recovery procedures.	
Power supply	Power supply	P01 - P02	See Final assembly — FC 5075.	Go to FC 5075 - Power supply - P01 and P02.	
Air moving device	AMD	B01 - B02	See Final assembly — FC 5075.	Go to FC 5075 - AMD - B01, B02.	
Display panel	Display panel	NB1	247E (See page 523)	Go to FC 5075 - Display panel - NB1.	
Power board	Power board	PB1	See the Type, model, and part number list.	Go to FC 5075 - Power distribution board - PB1.	
Device board	Device board	DB1	283F (See page 527) or 28CD (See page 528)	Go to FC 5075 - Device board - DB1.	
SPCN card	SPCN card	SB1	See the Type, model, and part number list.	Go to FC 5075 - SPCN card - SB1.	
HSL connection	HSL cable	HSL cables on the HSL ports	See the Type, model, and part number list.	Go to HSL cables - Concurrent.	



**Notes:**

1. The FC 5075 Expansion I/O Tower contains two system PCI busses.
2. In the FC 5075 Expansion I/O Tower FRU locations and failing components table, the first of the two busses in the tower is designated as "xxxx" and the second bus in the tower is designated as "yyyy".
3. In FC 5075 towers, the two bus numbers assigned to the busses are not required to be in any order.
4. There is an embedded CFIOP in the tower card in position CB1. This IOP is in the C01 - C04 multi-adapter bridge domain.
5. Card position C05 is required to be an I/O processor when any cards installed in the C05 - C08 multi-adapter bridge domain.
6. J11 is an RPO connection, J14 is a uninterruptable power supply connector, J15 is an SPCN 1 connector, and J16 is an SPCN 2 connector.
7. Multi-adapter bridge domains are labeled **PCI Bridge Set** inside the tower.
8. The following table provides information necessary to identify the IOP to which IOAs are assigned.
  - The left column indicates the domain in which IOA assignment is allowed.
  - The right column is used to determine the IOP to which an IOA is assigned.
  - The first position in the list must be an IOP. The remaining positions may be IOPs or IOAs. IOAs are assigned to the first IOP located to their left in the list. Although IOAs can be manually reassigned using SST/DST, the IOA assignments return to the default order after each IPL.

**Table 2. IOA assignment rules**

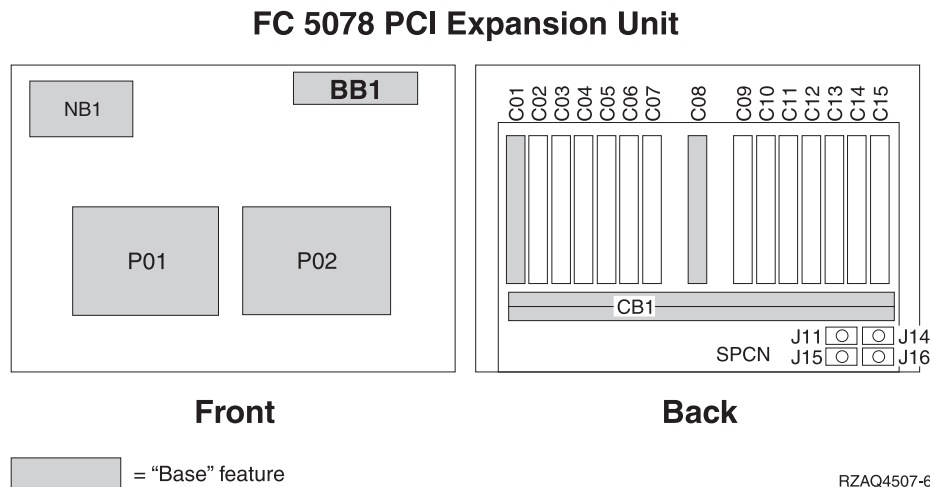
Multi-adapter bridge domain / PCI bridge set	IOA assignment rules
CB1, C01 - C04	CB1, C01, C02, C03, C04
C05 - C08	C05, C06, C07, C08

**Locations — FC 5078, 0578 Expansion I/O Unit**

*For use by authorized service providers.*

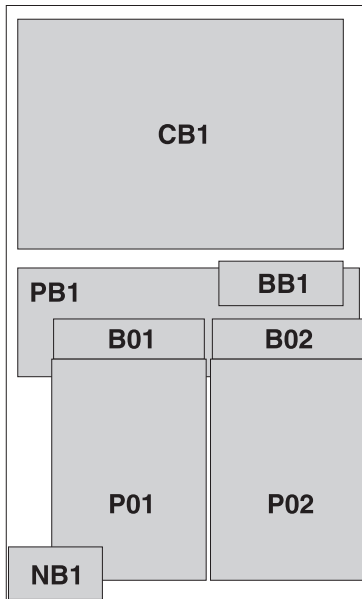
The following diagram shows FRU layout in the FC 5078, 0578 Expansion I/O Unit. Use it with the tables below. If you need address information, refer to Addresses — FC 5078, 0578 Expansion I/O Unit.

**Figure 1. Locations for FC 5078, 0578 Expansion I/O Unit**



**Figure 2. Locations for FC 5078, 0578 Expansion I/O Unit**

## Back



## Front

 = "Base" feature RZAQ4508-3

The following table gives the components available for callout on the FC 5078, 0578 Expansion I/O Unit. It matches those components with the FRU containing the component. The other columns give location information, CCIN information, a link to a remove and replace procedure, and additional comments.

**Table 1. FRU locations and failing components for FC 5078, 0578 Expansion I/O Unit**

Possible failing component	FRU name	Position	Type or CCIN number (see the Type, model, and part number list)	Remove and replace procedure	Additional comments
IOA	PCI card	C01 through C04, C06, C07, C09, C10, C12 through C15	See the Type, model, and part number list.	Go to FC 5078, FC 0578 - Cards - Concurrent.	
IOP	PCI card	C02 through C06, C09 through C12, C14	2842 (See page 527), 2843 (See page 527), or 2844 (See page 527)	Go to FC 5078, FC 0578 - Cards - Concurrent.	
Integrated xSeries <sup>(TM)</sup> Server (IXS)	PCI card	C05, C11	2890 (See page 527), 2892 (See page 527)	Go to FC 5078/0578 - Cards - Dedicated.	If IXS in C05, C06 is empty - if 2890 IXS, only a short card can be in C07.  If IXS in C11, C12 is empty - if 2890 IXS, only a short card can be in C13.

Possible failing component	FRU name	Position	Type or CCIN number (see the Type, model, and part number list)	Remove and replace procedure	Additional comments
<ul style="list-style-type: none"> <li>High-speed link I/O adapter</li> <li>PCI host bridge adapter</li> </ul>	HSL I/O bridge card	C08	2691 (See page 524), 2739 (See page 524)	Go to FC 5078/0578 - Cards - Dedicated.	
<ol style="list-style-type: none"> <li>SPCN</li> <li>Card enclosure or backplane</li> <li>Multi-adapter bridge (all)</li> </ol>	Tower card	CB1	28AE (See page 528)	Go to FC 5078, FC 0578 - Tower card - CB1.	
Power supply	Power supply	P01-P02	See Final assembly — FC 5078, FC 0578, FC 5088, or FC 0588.	Go to FC 5078, FC 0578 - Power supplies - P01 and P02	
AMD	AMD	B01-B02	See Final assembly — FC 5078, FC 0578, FC 5088, or FC 0588.	Go to FC 5078, FC 0578 - AMDs - B01 and B02	
AMD controller	AMD control card	BB1	See Final assembly — FC 5078, FC 0578, FC 5088, or FC 0588.	Go to FC 5078, FC 0578 - AMD controller card - BB1.	
Control panel	Control panel	NB1	See Final assembly — FC 5078, FC 0578, FC 5088, or FC 0588.	Go to FC 5078, FC 0578 - Display panel - NB1	
Power board	Power board	PB1	See Final assembly — FC 5078, FC 0578, FC 5088, or FC 0588.	Go to FC 5078, FC 0578 - Power distribution backplane - PB1	
HSL connection	HSL cable	HSL cables on the HSL ports	See the Type, model, and part number list.	Go to HSL cables - Concurrent.	

**Notes:**

- The FC 5078 is installed on top of a tower. The FC 0578 is mounted in a rack. The FC 5078, 0578 is assigned a unique frame ID by the operating system.
- The following table provides information necessary to identify the IOP to which IOAs are assigned.
  - The left column indicates the bridge set in which IOA assignment is allowed.

- The right column is used to determine the IOP to which an IOA is assigned.
- The first position in the list must be an IOP. The remaining positions may be IOPs or IOAs. IOAs are assigned to the first IOP located to their left in the list. Although IOAs can be manually reassigned using SST/DST, the IOA assignments return to the default order after each IPL.

**Table 2. IOA assignment rules**

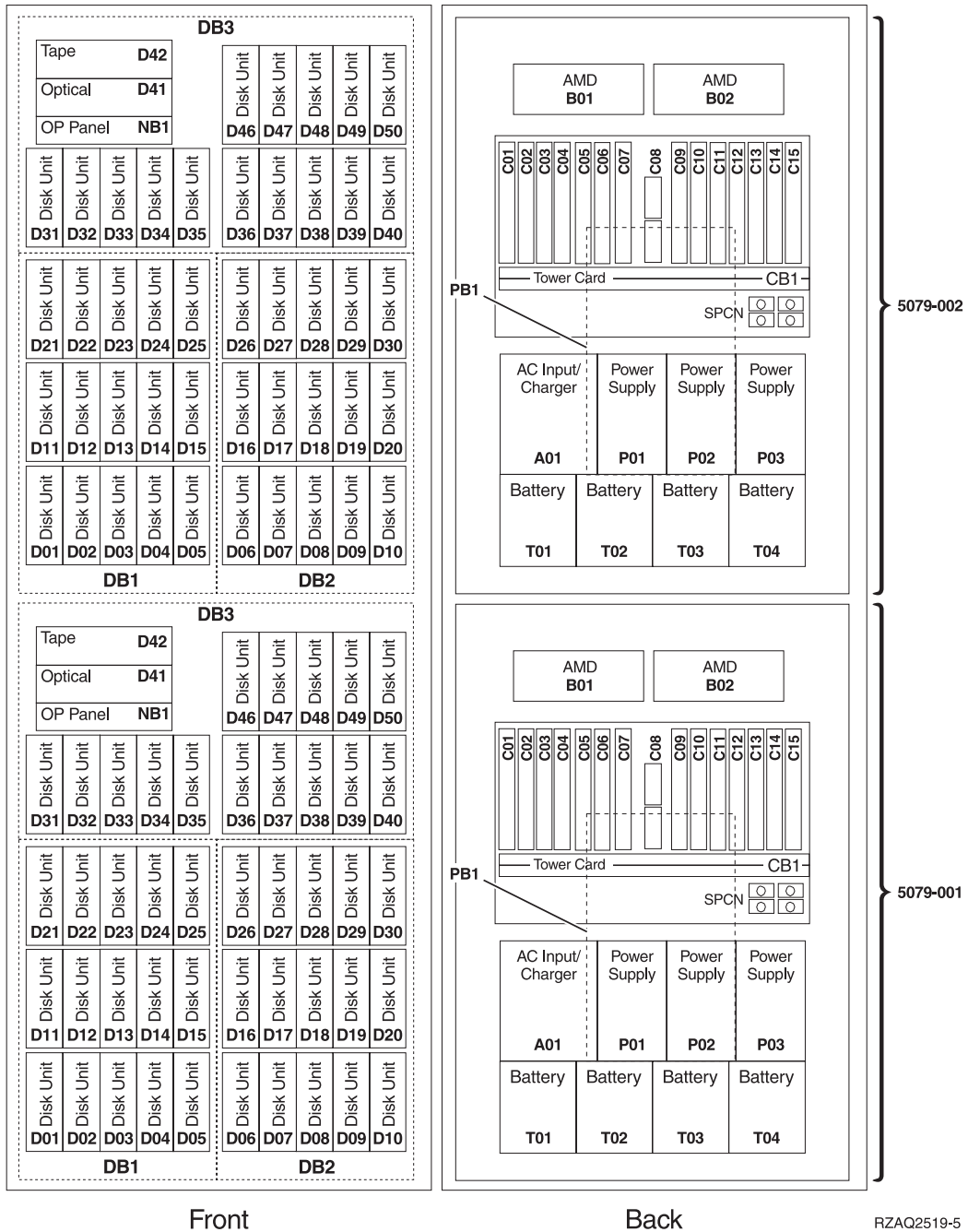
Multi-adapter bridge domain / PCI bridge set	IOA assignment rules
C01 - C04	C01, C02, C03, C04
C05 - C10 (Not including C08)	C05, C06, C07, C09, C10
C11 - C15	C11, C12, C13, C14, C15

## Locations - FC 5079 Expansion I/O Tower

*For use by authorized service providers.*

The following diagram shows field replaceable unit (FRU) layout in the FC 5079 Expansion I/O Tower. Use it with the information that follows. If you need address information, refer to Addresses — FC 5079 Expansion I/O Tower.

**Figure 1. Locations for FC 5079 Expansion I/O Tower**



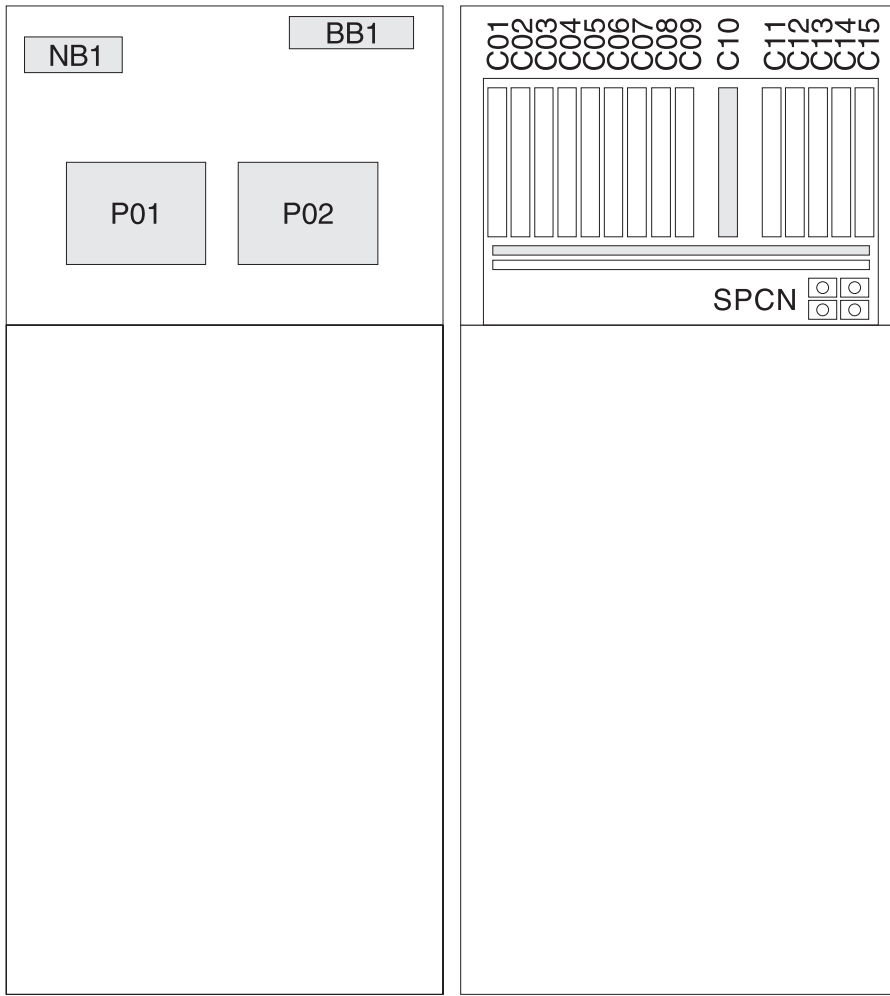
**Note:** Service the FC 5079 as two independent FC 5074 towers in the same 1.8 meter rack. See Locations - FC 5074 Expansion I/O Tower.

### Locations — FC 5088, FC 0588 Expansion I/O Unit

For use by authorized service providers.

The following diagram shows field replaceable unit (FRU) layout in the FC 5088, FC 0588 Expansion I/O Unit. Use it with the tables below. If you need address information, refer to Addresses — FC 5088, FC 0588 Expansion I/O unit.

**Figure 1. FC 5088, FC 0588 Expansion I/O Unit**



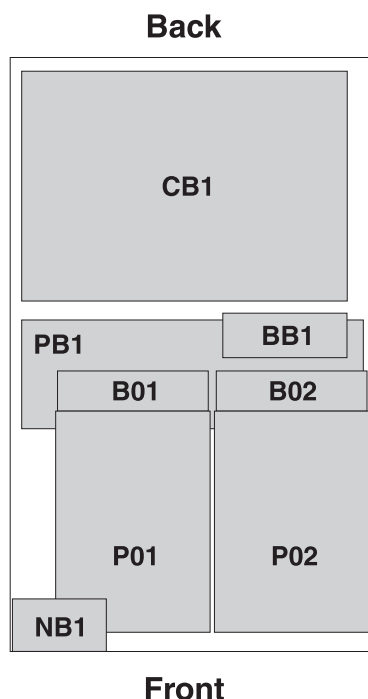
Front

Back

■ = "Base" feature

RZAR6600-3

**Figure 2. FC 5088, FC 0588 Expansion I/O Unit, top view**



■ = "Base" feature      RZAQ4508-3

The following table gives the components available for callout on the FC 5088, FC 0588 Expansion I/O Unit. It matches those components with the FRU containing the the component. The other columns give location information, CCIN information, a link to a remove and replace procedure, and additional comments.

**Table 1. FRU locations and failing components for FC 5088, FC 0588 Expansion I/O Unit**

Possible failing component	FRU name	Position	Type or CCIN number (see the Type, model, and part number list)	Remove and replace procedure	Additional comments
<ul style="list-style-type: none"> <li>• SPCN</li> <li>• Card enclosure or backplane</li> <li>• Multi-adapter bridge (all)</li> </ul>	Tower card	CB1	28B8 (See page 528)	See FC 5078, FC 0578, FC 5088, FC 0588 - Tower card - CB1	
IOP	PCI card	C01 through C03, C05 through C08, C11 through C14	2842 (See page 527), 2843 (See page 527), or 2844 (See page 527)	See FC 5078, FC 0578, FC 5088, or FC 0588 - Cards (concurrent)	
IOA	PCI card	C02 through C04, C06 through C09, C12 through C15	See the Type, model, and part number list	See FC 5078, FC 0578, FC 5088, or FC 0588 - Cards (concurrent)	

Possible failing component	FRU name	Position	Type or CCIN number (see the Type, model, and part number list)	Remove and replace procedure	Additional comments
Integrated xSeries <sup>(TM)</sup> Server (IXS)	PCI card	C01, C05, or C11	2890 (See page 527) or 2892 (See page 527)	See FC 5078, FC 0578, FC 5088, or FC 0588 - Cards (dedicated)	If IXS in C01, C02 is empty - if 2890 IXS, only a short card can be in C03.  If IXS in C05, C06 is empty - if 2890 IXS, only a short card can be in C07.  If IXS in C11, C12 is empty - if 2890 IXS, only a short card can be in C13.
<ul style="list-style-type: none"> <li>High-speed link I/O adapter</li> <li>PCI host bridge adapter</li> </ul>	HSL I/O bridge card	C10	2786 (See page 526), 2887 (See page 527)	See FC 5078, FC 0578, FC 5088, or FC 0588 - Cards (concurrent)	
Power supply	Power supply	P01, P02	See Final assembly — FC 5078, FC 5088	See FC 5078, FC 0578, FC 5088, FC 0588 Power supplies - P01 and P02	
Air moving device (AMD)	AMD	B01, B02	See Final assembly — FC 5078, FC 5088	See FC 5078, FC 0578, FC 5088, FC 0588 - Air moving device (AMD) - B01 and B02	
AMD controller card	AMD controller card	BB1	See Final assembly — FC 5078, FC 5088	See FC 5078, FC 0578, FC 5088, FC 0588 - Air moving device controller card - BB1	
Display panel	Display panel	NB1	See the Type, model, and part number list	See FC 5078, FC 0578, FC 5088, FC 0588 Display panel - NB1	
HSL connection	HSL cable	HSL cables on the HSL ports	See the Type, model, and part number list	See HSL cables - concurrent	

**Notes:**

1. The FC 5088, FC 0588 Expansion I/O Unit contains three system PCI busses.
2. In FC 5088 or FC 0588 Expansion I/O Unit, the bus numbers assigned to the busses are not required to be in any order.
3. Card positions C01, C05 and C11 are required to be either I/O processors or Integrated xSeries Servers (IXS).
4. J11 is an RPO connection, J14 is a uninterruptable power supply connector, J15 is an SPCN 1 connector, and J16 is an SPCN 2 connector.
5. Multi-adapter bridge domains are labeled **PCI Bridge Set** inside the tower.
6. The following table provides information necessary to identify the IOP to which IOAs are assigned.
  - The left column indicates the domain in which IOA assignment is allowed.



- The right column is used to determine the IOP to which an IOA is assigned.
- The first position in the list must be an IOP. The remaining positions may be IOPs or IOAs. IOAs are assigned to the first IOP located to their left in the list. Although IOAs can be manually reassigned using SST/DST, the IOA assignments return to the default order after each IPL.

**Table 2. Identify the IOP to which IOAs are assigned**

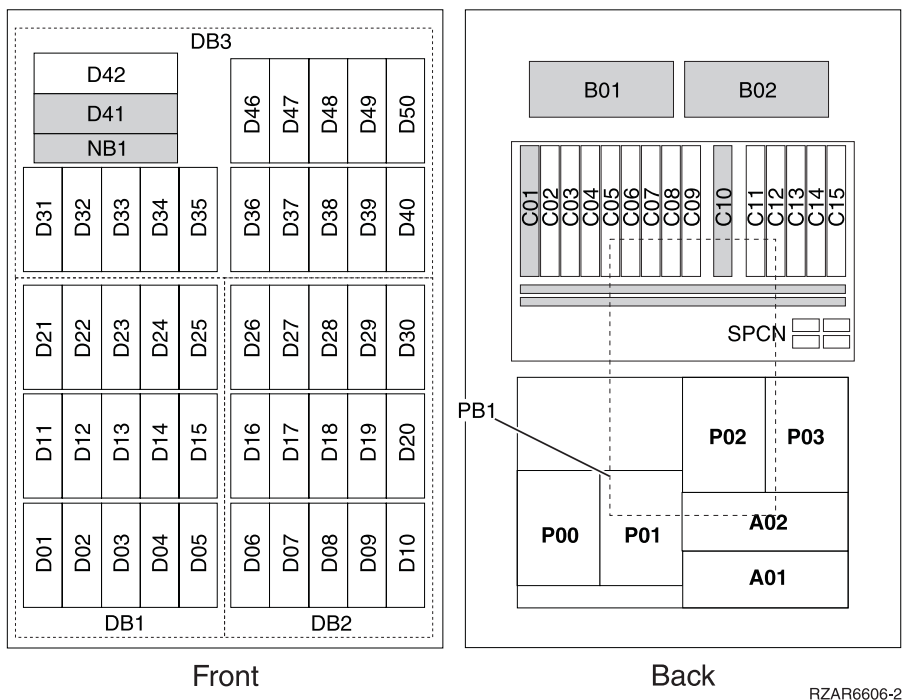
Multi-adapter bridge domain / PCI bridge set	IOA assignment rules
C01 - C04	C01, C02, C03, C04
C05 - C09	C05, C06, C07, C08, C09
C11 - C15	C11, C12, C13, C14, C15

## Locations — FC 5094 Expansion I/O Tower

*For use by authorized service providers.*

The following diagram shows FRU layout in the FC 5094 Expansion I/O Tower. Use it with the tables below. If you need address information, refer to Addresses — FC 5094 Expansion I/O Tower.

**Figure 1. FC 5094 Expansion I/O Tower**



**Note:** Do not install power supplies P00 and P01 AC jumper cables on the same AC module.

The following table gives the components available for callout on the FC 5094, FC 5294, and FC 8094 expansion I/O units. It matches those components with the FRU containing the the component. The other columns give location information, CCIN information, a link to a remove and replace procedure, and additional comments.

**Table 1. FRU locations and failing components for FC 5094 Expansion I/O Tower**

Possible failing component	FRU name	Position	Type or CCIN number (see the Type, model, and part number list)	Remove and replace procedure	Additional comments
<ul style="list-style-type: none"> <li>• SPCN</li> <li>• Card enclosure or backplane</li> <li>• Multi-adapter bridge (all)</li> </ul>	Tower card	CB1	28B7 (See page 528)	Go to FC 5094, FC 9094 - Tower card - CB1	
IOP	PCI card	C01 through C03, C05 through C08, C11 through C14	2842 (See page 527), 2843 (See page 527), or 2844 (See page 527)	Go to FC 5074, FC 5079, FC 5094, FC 5294 - Cards (concurrent)	
IOA	PCI card	C02 through C04, C06 through C09, C12 through C15	See the Type, model, and part number list	Go to FC 5074, FC 5079, FC 5094, FC 5294 - Cards (concurrent)	
Integrated xSeries <sup>(TM)</sup> Server (IXS)	PCI card	C01, C05, or C11	2890 (See page 527) or 2892 (See page 527)	Go to FC 5074, FC 5079, FC 5094, FC 5294 - Cards (dedicated)	<p>If IXS in C01, C02 is empty - if 2890 IXS, only a short card can be in C03.</p> <p>If IXS in C05, C06 is empty - if 2890 IXS, only a short card can be in C07.</p> <p>If IXS in C11, C12 is empty - if 2890 IXS, only a short card can be in C13.</p>
<ul style="list-style-type: none"> <li>• High-speed link I/O adapter</li> <li>• PCI host bridge adapter</li> </ul>	HSL I/O bridge card	C10	2886 (See page 527) for optical or 2887 (See page 527) for HSL-2 copper	Go to FC 5074, FC 5079, FC 5094, FC 5294 - Cards (dedicated)	
Air moving device (AMD)	AMD	B01, B02	See Final assembly — FC 5074, FC 5094	Go to FC 5094, FC 9094 - Air moving device - B01 and B02	
Power board	Power board	PB1	See Final assembly — FC 5074, FC 5094	Go to FC 5094, FC 9094 - Power distribution backplane - PB1.	

Possible failing component	FRU name	Position	Type or CCIN number (see the Type, model, and part number list)	Remove and replace procedure	Additional comments
AC module	AC module	A01, A02	53P5263	<ul style="list-style-type: none"> <li>Go to FC 5094, FC 9094 (with single line cord) - AC module - A01 and A02</li> <li>or</li> <li>Go to FC 5094, FC 9094 (with dual line cord) - AC module - A01 and A02</li> </ul>	
Power supply (single line cord)	Power supply	P01, P02, P03	See Final assembly — FC 5074, FC 5094	Go to FC 5094, FC 9094 - Power supply - P00, P01, P02, P03	
Power supply (dual line cord)	Power supply	P00, P01, P02, P03	See Final assembly — FC 5074, FC 5094	Go to FC 5094, FC 9094 - Power supply - P00, P01, P02, P03	
Device board	Device board	DB1 or DB2	283D (See page 526) or 28CC (See page 528)	Go to FC 5094, FC 9094 - Device board - DB1, and DB2	
Device board	Device board	DB3	283C (See page 526) or 28CB (See page 528)	Go to FC 5094, FC 9094 - Device board - DB3	
Display panel	Display panel	NB1	See the Type, model, and part number list	Go to FC 5094 - Display panel - NB1	
Disk unit	Disk unit	D01 through D40, D46 through D50	See the Type, model, and part number list	Go to Recovery procedures	
Optical	Optical	D41	See the Type, model, and part number list	Go to FC 5094, FC 9094 - Removable media - D41 and D42	
Tape	Tape	D42	See the Type, model, and part number list	Go to FC 5094, FC 9094 - Removable media - D41 and D42	
HSL connection	HSL cable	HSL cables on the HSL ports	See the Type, model, and part number list	Go to HSL cables - concurrent	

**Notes:**

1. These I/O units each contain three system busses.
2. In these I/O units, the bus numbers assigned to the busses are not required to be in any order.
3. Card positions C01, C05, and C11 are required to be either I/O processors or Integrated xSeries Servers (IXS).
4. J11 is an RPO connection, J14 is a uninterruptable power supply connector, J15 is an SPCN 1 connector, and J16 is an SPCN 2 connector.
5. Multi-adapter bridge domains are labeled **PCI Bridge Set** inside the tower.

6. The following table provides information necessary to identify the IOP to which IOAs are assigned.
- The left column indicates the domain in which IOA assignment is allowed.
  - The right column is used to determine the IOP to which an IOA is assigned.
  - The first position in the list must be an IOP. The remaining positions may be IOPs or IOAs. IOAs are assigned to the first IOP located to their left in the list. Although IOAs can be manually reassigned using SST/DST, the IOA assignments return to the default order after each IPL.

**Table 2. Identify the IOP to which IOAs are assigned**

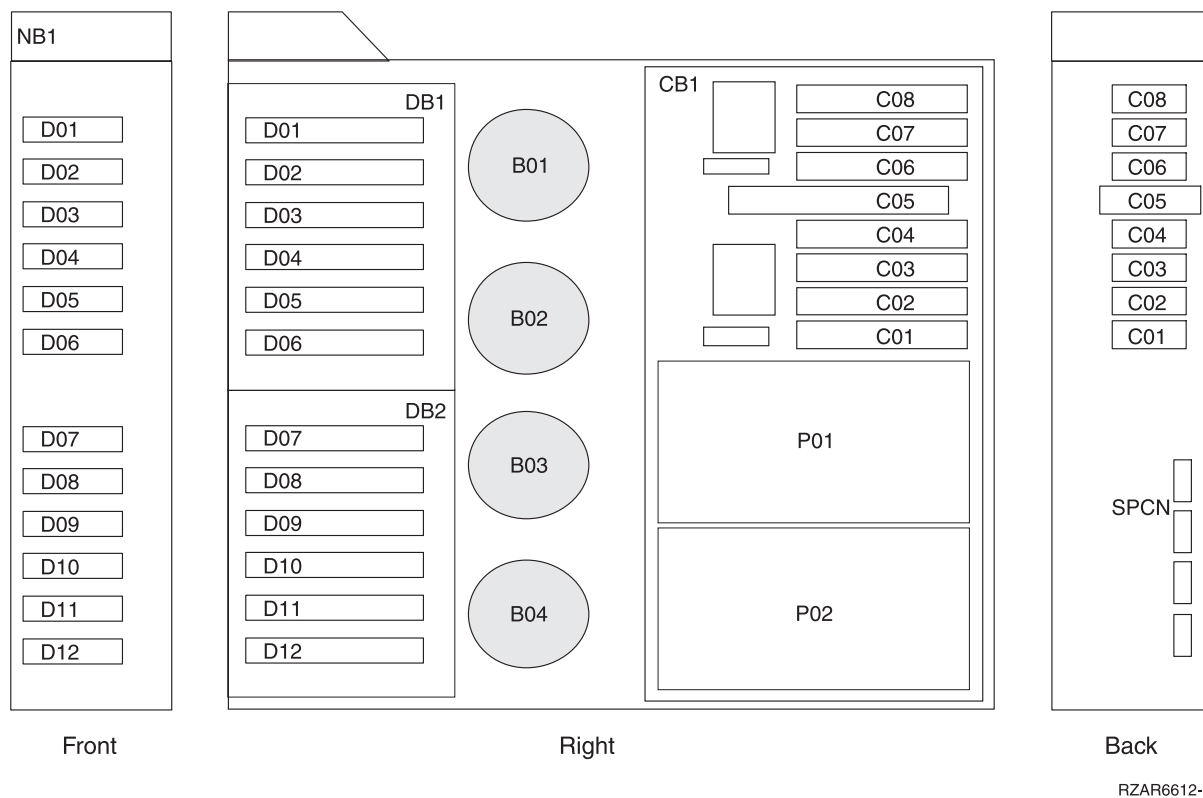
Multi-adapter bridge domain / PCI bridge set	IOA assignment rules
C01 - C04	C01, C02, C03, C04
C05 - C09	C05, C06, C07, C08, C09
C11 - C15	C11, C12, C13, C14, C15

## Locations — FC 5095, FC 0595 Expansion I/O Tower

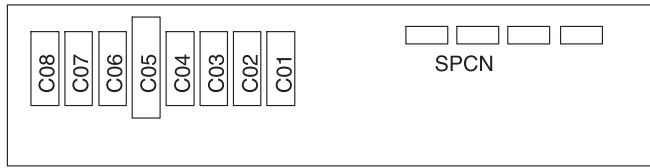
*For use by authorized service providers.*

The following diagrams show field replaceable unit (FRU) layout in the FC 5095, FC 0595 Expansion I/O Tower. Use them with the tables below. If you need address information, refer to Addresses — FC 5095, FC 0595 Expansion I/O Tower.

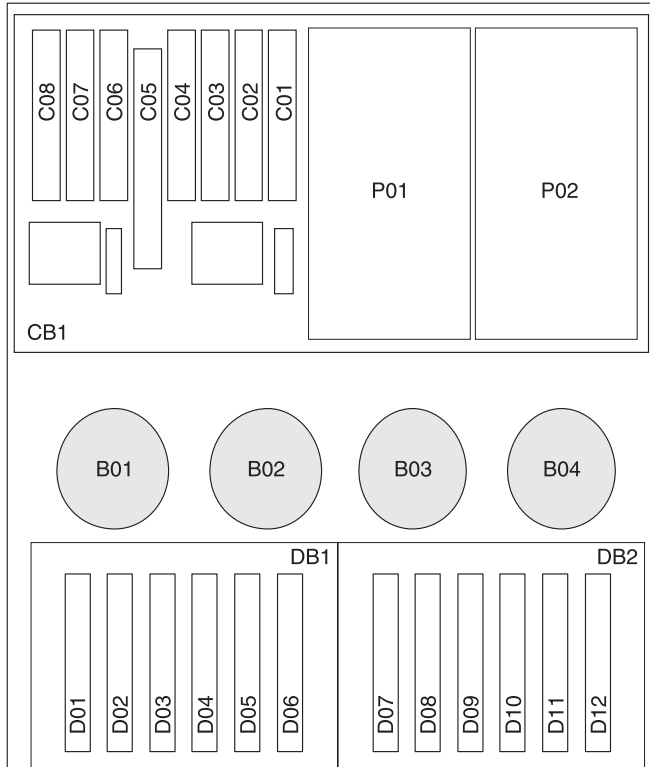
**Figure 1. FC 5095 Expansion I/O Tower**



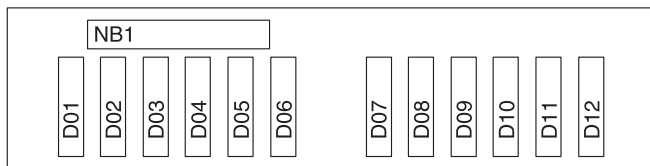
**Figure 2. FC 0595 Expansion I/O Tower**



Back



Top



Front

RZAR6601-2

The following table gives the components available for callout on the FC 5095, FC 0595 Expansion I/O Tower. It matches those components with the FRU containing the the component. The other columns give location information, CCIN information, a link to a remove and replace procedure, and additional comments.

**Table 1. FRU locations and failing components for FC 5095, FC 0595 Expansion I/O Tower**

Possible failing component	FRU name	Position	Type or CCIN number (see the Type, model, and part number list)	Remove and replace procedure	Additional comments
<ul style="list-style-type: none"> <li>• SPCN</li> <li>• Card enclosure or backplane</li> <li>• Multi-adapter bridge (all)</li> </ul>	Tower card	CB1	28BE (See page 528)	Go to FC 5095, FC 0595 - Tower card - CB1	
IOP	PCI card	C01 through C03  C06 and/or C07	2842 (See page 527), 2843 (See page 527) 2844 (See page 527)	Go to FC 5095, FC 0595 - Cards (concurrent)	
IOA	PCI card	C02 through C04, C07 and/or C08	See the Type, model, and part number list	Go to FC 5095, FC 0595 - Cards (concurrent)	
Integrated xSeries <sup>(TM)</sup> Server (IXS)	PCI card	C01	2890 (See page 527) or 2892 (See page 527)	Go to FC 5095, FC 0595 - Cards (concurrent)	If IXS in C01, C02 is empty - if 2890 IXS, only a short card can be in C03.
<ul style="list-style-type: none"> <li>• High-speed link I/O adapter</li> <li>• PCI host bridge adapter</li> </ul>	HSL I/O bridge card	C05	2886 (See page 527) or 2887 (See page 527)	Go to FC 5095, FC 0595 - Cards (concurrent)	
Air moving device (AMD)	AMD	B01, B02, B03, B04	See Final assembly - FC 5095 Expansion I/O Tower	Go to FC 5095, FC 0595 - Air moving device - B01, B02, B03, and B04	
Disk unit	Disk unit	D01 through D12	See the Type, model, and part number list	Go to Recovery procedures.	
Power supply	Power supply	P01, P02	See Final assembly — FC 5095 Expansion I/O Tower	Go to FC 5095, FC 0595 - Power supply - P01 and P02	
Device board	Device board	DB1, DB2	28B9 (See page 528)	Go to FC 5095, FC 0595 - Device board - DB1 and DB2	
Display panel	Display panel	NB1	250C (See page 523)	Go to FC 5095, FC 0595 - Display panel - NB1	
HSL connection	HSL cable	HSL cables on the HSL ports	See the Type, model, and part number list	Go to HSL cables (concurrent)	

**Notes:**

1. The FC 5095, FC 0595 Expansion I/O Tower contains two system PCI busses.

2. In the FC 5095, FC 0595 Expansion I/O Tower FRU locations and failing components table, the first of the two busses in the tower is designated as "xxxx" and the second bus in the tower is designated as "yyyy".
3. In FC 5095, FC 0595 Expansion I/O Tower, the two bus numbers assigned to the busses are not required to be in any order.
4. Card positions C01 and C06 are required to be either I/O processors or Integrated xSeries Servers (IXS).
5. J11 is an RPO connection, J14 is a uninterruptable power supply connector, J15 is an SPCN 1 connector, and J16 is an SPCN 2 connector.
6. Multi-adapter bridge domains are labeled **PCI Bridge Set** inside the tower.
7. The following table provides information necessary to identify the IOP to which IOAs are assigned.
  - The left column indicates the domain in which IOA assignment is allowed.
  - The right column is used to determine the IOP to which an IOA is assigned.
  - The first position in the list must be an IOP. The remaining positions may be IOPs or IOAs. IOAs are assigned to the first IOP located to their left in the list. Although IOAs can be manually reassigned using SST/DST, the IOA assignments return to the default order after each IPL.

**Table 2. Identify the IOP to which IOAs are assigned**

Multi-adapter bridge domain / PCI bridge set	IOA assignment rules
C01 - C04	C01, C02, C03, C04
C06 - C08	C06, C07, C08

## Locations — FC 5294 Expansion I/O Tower

*For use by authorized service providers.*

For location information for **FC 5294-001 (bottom)** and **FC 5294-002 (top)**: Refer to Locations — FC 5094 Base I/O Tower.

## Locations — FC 8079 Expansion I/O Tower

*For use by authorized service providers.*

The following diagrams show FRU layout in the FC 8079 Expansion I/O Tower.

**Figure 1. Locations for FC 8079 Expansion I/O Tower (single line cord)**

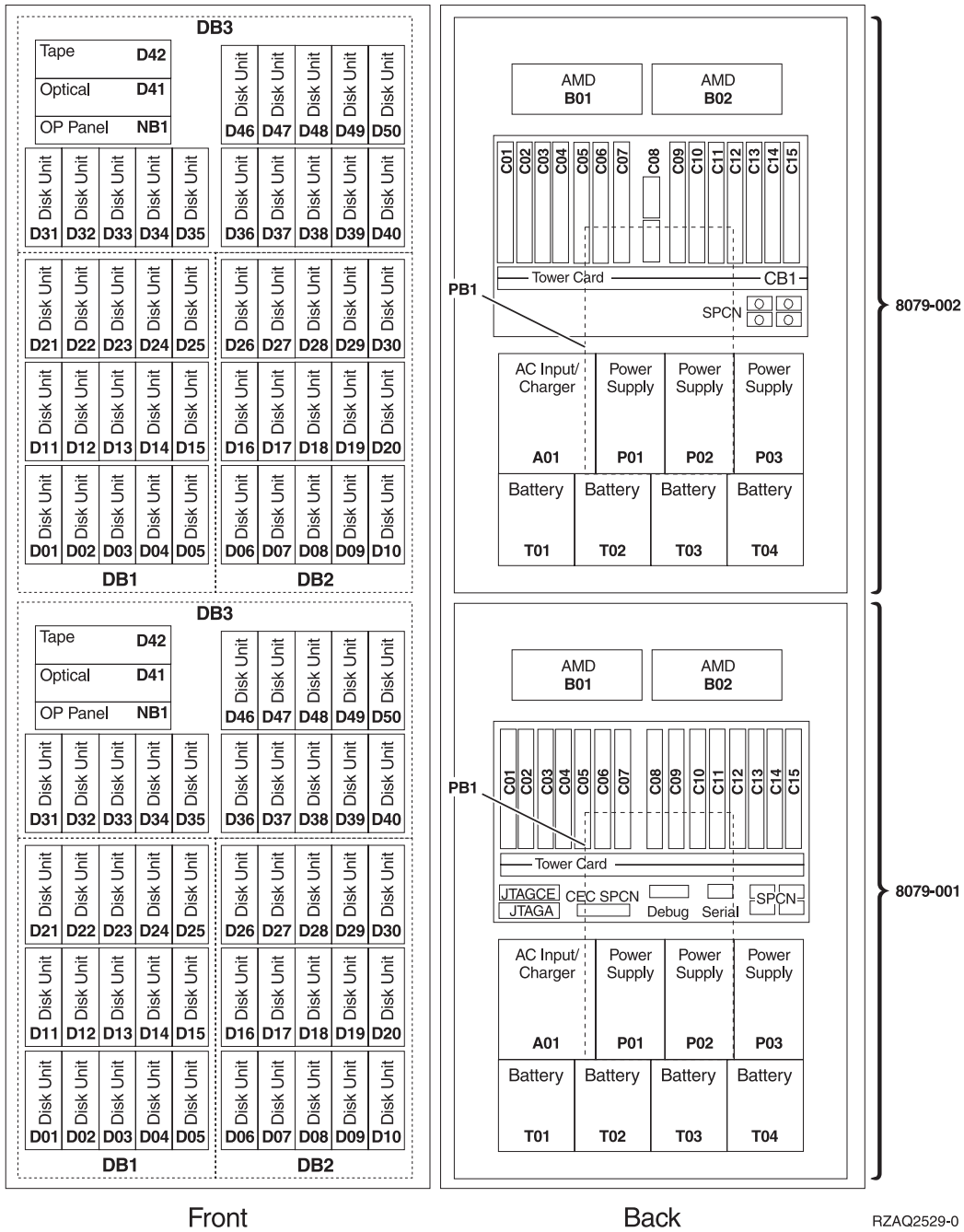
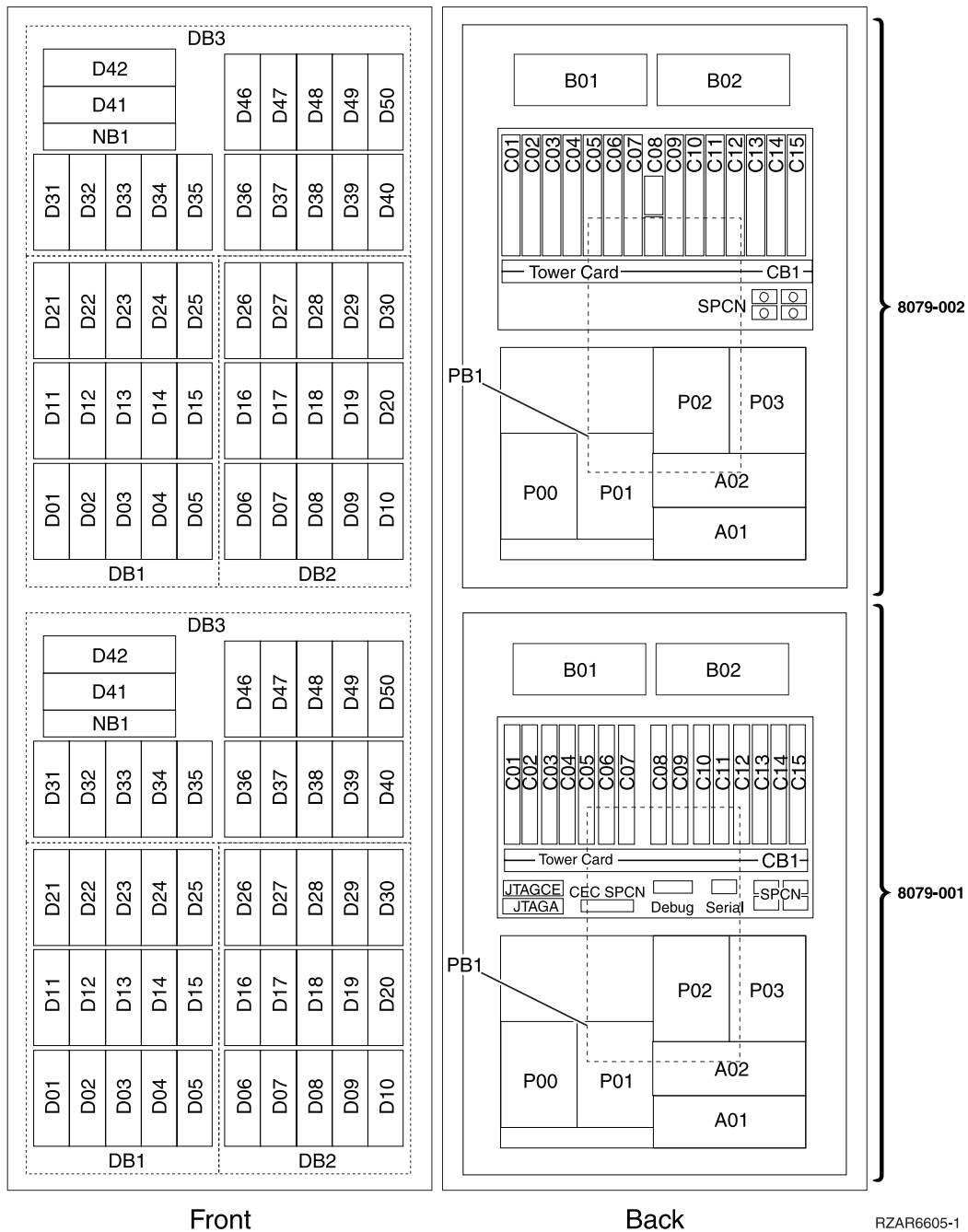


Figure 2. Locations for FC 8079 Expansion I/O Tower (dual line cord)





**Notes:**

- Service the FC 8079-001 in the bottom of the rack as a FC 9079, see Figure 2. Locations for FC 9079 Base I/O Tower (on Models 840, SB3 System Unit) (See page 275), in the Locations — Models 840, SB3 System Unit with Processor Tower and FC 9079 Base I/O Tower topic.
- Service the FC 8079-002 in the top of the rack as a FC 5074, see Locations — FC 5074 I/O Tower.

**Locations — FC 8093 Expansion I/O Tower**

*For use by authorized service providers.*

Refer to the following for location information:

- For **FC 8093-001** (bottom): Follow the FC 9094 link in Locations — Models 870 and 890 with an FC 9094 Base I/O Tower.

- For **FC 8093-002** (top): Refer to Locations — FC 5074 Expansion I/O Tower.

### **Locations — FC 8094 Expansion I/O Tower**

*For use by authorized service providers.*

Refer to the following for location information:

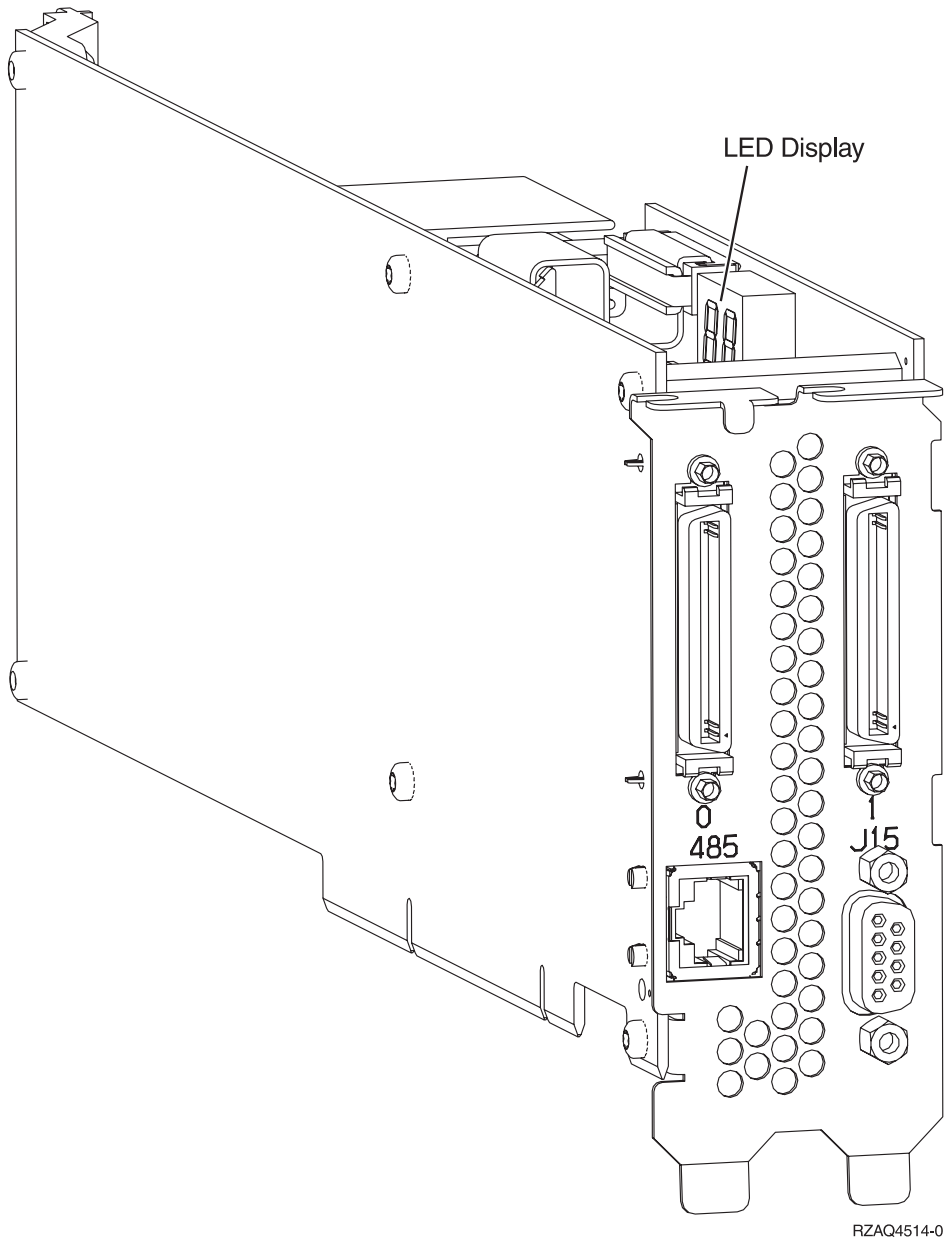
- For **FC 8094-001** (bottom): Follow the FC 9094 link in Locations — Models 870 and 890 with an FC 9094 Base I/O Tower.
- For **FC 8094-002** (top): Refer to Locations — FC 5094 Expansion I/O Tower.

### **Locations — Integrated xSeries<sup>(TM)</sup> Adapter Card (IXA)**

*For use by authorized service providers.*

The following diagram shows FRU layout in the Integrated xSeries Adapter Card (IXA). Use it with the table below.

#### **Figure 1. Locations for xSeries Adapter Card**



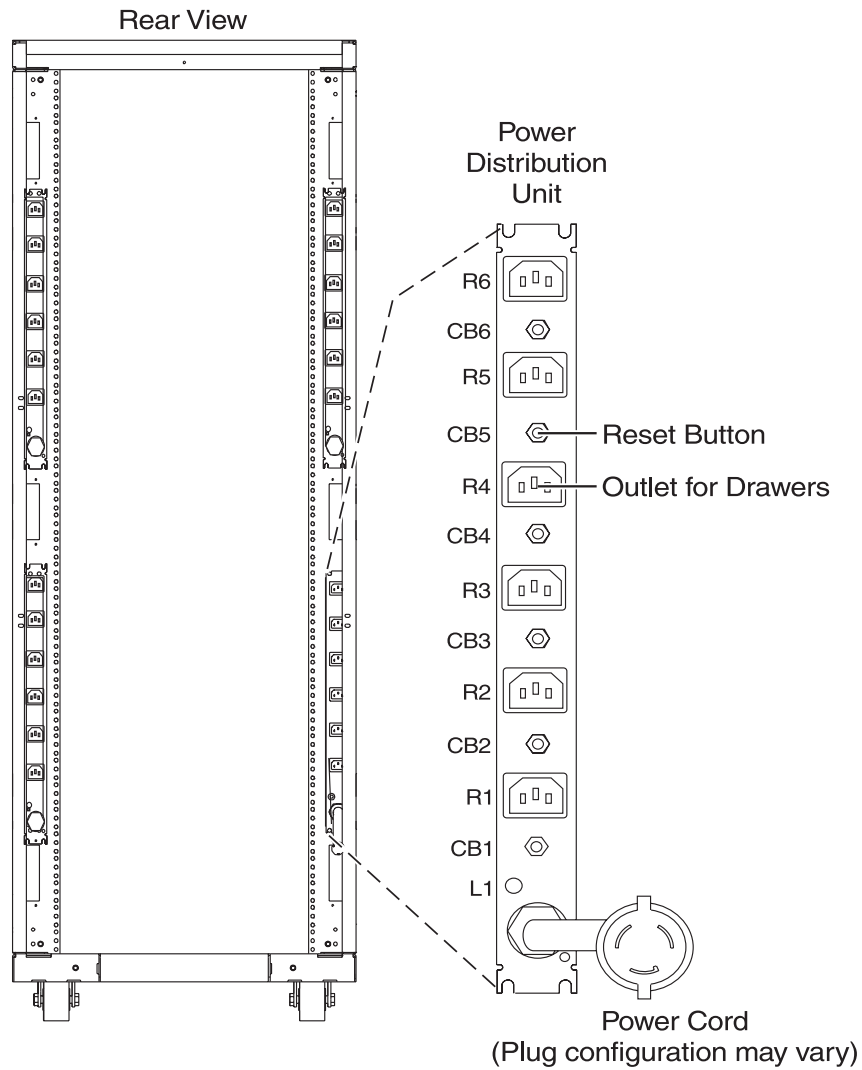
**Table 1. FRU locations and Failing Components for Integrated xSeries Adapter Card (IXA) — Machine Type 1519**

Position	FRU name	Possible failing component	Type, CCIN, or Part number	Remove and replace procedure
<p>Position depends on xSeries Server machine type and model.</p> <p>To locate, follow the HSL cable connections or the SPCN cable connections to the Integrated xSeries Adapter card.</p>	Integrated xSeries Adapter	<p>The failing component is either:</p> <ul style="list-style-type: none"> <li>• HSL I/O Bridge</li> <li>• Multi - adapter Bridge</li> <li>• SPCN</li> <li>• Embed - ded IOP</li> <li>• Card Backplane</li> </ul>	<p>CCIN = 2689 listed under machine type 1519.</p> <p><b>Note:</b> Machine type 1519 is not an iSeries<sup>(TM)</sup> machine type or an xSeries machine type. Machine type 1519 was created to list feature 2689 separately from iSeries and xSeries machine types.</p> <p>See the Type, model, and part number list for the part number.</p>	<p>Go to Type 2689 - Integrated xSeries Adapter (IXA).</p> <p><b>Note:</b> Verify the frame ID by examining the frame ID displayed on the card's LED which is visible when the panel covering the card is removed.</p> <p><b>Note:</b> In an OS/400<sup>(R)</sup> Opticonnect environment it is possible to have multiple xSeries Servers with the same frame ID displayed but the power controlling system is different than the system you are servicing. Verify the SPCN cable is connected to the system you are servicing.</p>
HSL cables on the HSL ports	HSL cable	HSL connection	See the Type, model, and part number list.	Go to HSL cables - concurrent.

## Locations — Power Distribution Unit (PDU)

*For use by authorized service providers.*

**Figure 1. Locations for the Power Distribution Unit (PDU)**



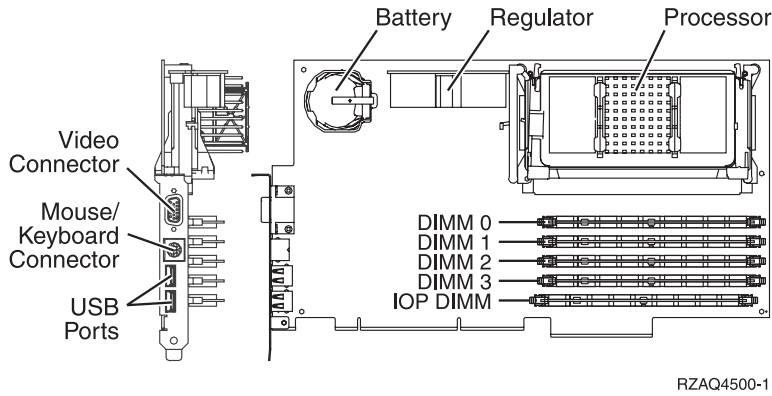
RZAQ4509-1

### Locations - I/O adapters

*For use by authorized service providers.*

**Locations - 2890 Integrated xSeries Server (IXS):** Use Figure 1. below to find locations for the 2890 Integrated xSeries Server (IXS).

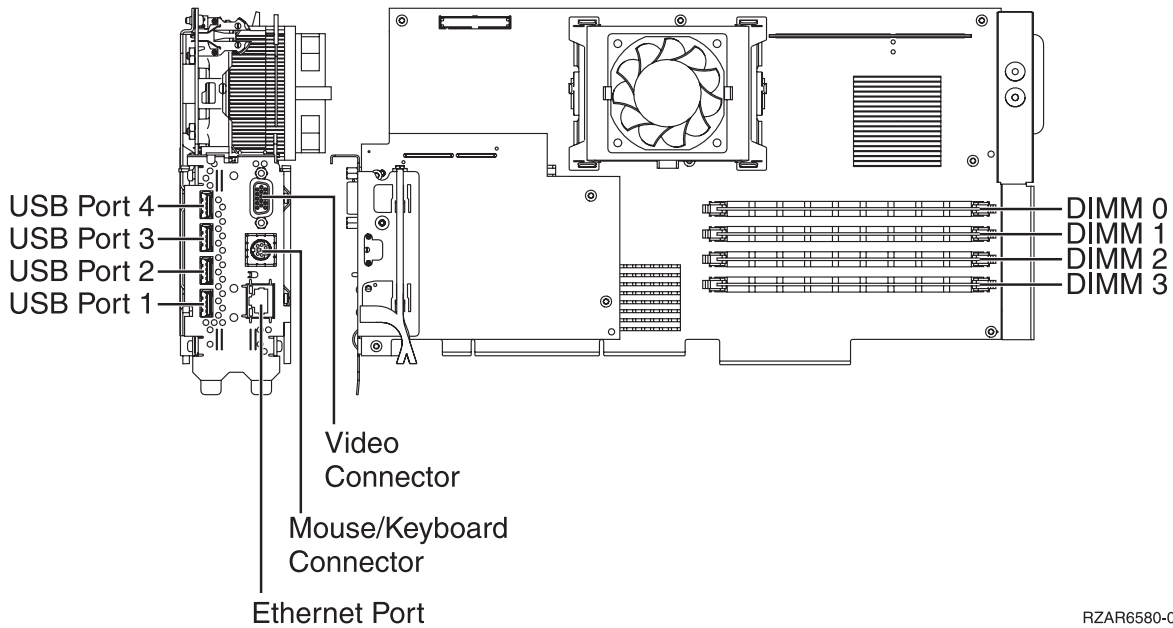
**Figure 1. Locations - 2890 Integrated xSeries Server (IXS)**



RZAQ4500-1

**Locations - 2892 Integrated xSeries Server (IXS):** Use Figure 2. below to find locations for the 2892 Integrated xSeries Server (IXS).

**Figure 2. Locations - 2892 Integrated xSeries Server (IXS)**



RZAR6580-0

### Addresses — Model 270

*For use by authorized service providers.*

Use the address to find the location. Then, go to Locations — Model 270 for additional information.

**Table 1. IOP, IOA, and device address information for Model 270**

Position (listed in IOA assignment order)	Possible failing component	DSA (BBBBcbbb)	Unit address
		<b>Note:</b> IOA and device DSA's will not follow the rules below if the IOA is manually reassigned after IPL.	
MB1	Embedded IOP	0001-10-00	FFFFFFF

Position (listed in IOA assignment order)	Possible failing component	DSA (BBBBcbb)	Unit address
MB1	Service processor	0001-70-00	FFFFFFFF
C07	Communication/workstation IOA	0001-10-00	E1FFFFFF
C01	Storage IOA	0001-10-00	2FFFFFFF
C06	IOP	0001-13-00	FFFFFFFF
C06	Storage IOA	0001-10-00	3FFFFFFF
C06	Communication/workstation IOA	0001-10-00	E3FFFFFF
C05	IOP	0001-14-00	FFFFFFFF
C05	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C06, MB1.	4FFFFFFF
C05	Communication/workstation IOA	The IOA has the same DSA as the first IOP found in the following list: C06, MB1.	E4FFFFFF
C04 (IXS capable position)	IOP	0001-15-00	FFFFFFFF
C04 (IXS capable position)	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C05, C06, MB1.	5FFFFFFF
C04 (IXS capable position)	Communication/workstation IOA	The IOA has the same DSA as the first IOP found in the following list: C05, C06, MB1.	E5FFFFFF
C03	IOP	0001-16-00	FFFFFFFF
C03	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C04, C05, C06, MB1.	6FFFFFFF
C03	Communication/workstation IOA	The IOA has the same DSA as the first IOP found in the following list: C04, C05, C06, MB1.	E6FFFFFF
C03	IXS attached IOA	The IOA has the same DSA as the first IOP found in the following list: C04, C05, C06, MB1.	E506FFFF
C02	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C03, C04, C05, C06, MB1.	7FFFFFFF
C02	Communication/workstation IOA	The IOA has the same DSA as the first IOP found in the following list: C03, C04, C05, C06, MB1.	E7FFFFFF
C02	IXS attached IOA	The IOA has the same DSA as the first IOP found in the following list: C03, C04, C05, C06, MB1.	E507FFFF

Position (listed in IOA assignment order)	Possible failing component	DSA (BBBBcbb)	Unit address
D01	Disk unit	0001-10-00	200100FF
D02	Disk unit	0001-10-00	200200FF
D03	Disk unit	0001-10-00	200300FF
D04	Disk unit	0001-10-00	200400FF
D05	Disk unit	0001-10-00	200E00FF
D06	Disk unit	0001-10-00	200F00FF
D07	Optical	0001-10-00	200600FF
D08	Tape	0001-10-00	200700FF

**Table 2. IOP, IOA, and device address information for Model 270 System Unit Expansion**

Position	Possible failing component	DSA (BBBBcbb)	Unit address
D09, D15	Disk unit	The disk unit has the same DSA as the IOP controlling the Storage IOA.	xy0100FF (where x is the same as the first character of the xFFFFFF IOA Unit Address and y is I/O bus 0, 1 or 2. Storage IOA I/O buses begin with 0 and are numbered from the tailstock toward the middle of the card. Find the storage IOA with the same DSA and xFFFFFF address, then trace the I/O bus cable to determine if the position is D09 or D15.)
D10, D16	Disk unit	The disk unit has the same DSA as the IOP controlling the Storage IOA.	xy0200FF (where x is the same as the first character of the xFFFFFF IOA Unit Address and y is I/O bus 0, 1 or 2. Storage IOA I/O buses begin with 0 and are numbered from the tailstock toward the middle of the card. Find the storage IOA with the same DSA and xFFFFFF address, then trace the I/O bus cable to determine if the position is D10 or D16.)
D11, D17	Disk unit	The disk unit has the same DSA as the IOP controlling the Storage IOA.	xy0300FF (where x is the same as the first character of the xFFFFFF IOA Unit Address and y is I/O bus 0, 1 or 2. Storage IOA I/O buses begin with 0 and are numbered from the tailstock toward the middle of the card. Find the storage IOA with the same DSA and xFFFFFF address, then trace the I/O bus cable to determine if the position is D11 or D17.)
D12, D18	Disk unit	The disk unit has the same DSA as the IOP controlling the Storage IOA.	xy0400FF (where x is the same as the first character of the xFFFFFF IOA Unit Address and y is I/O bus 0, 1 or 2. Storage IOA I/O buses begin with 0 and are numbered from the tailstock toward the middle of the card. Find the storage IOA with the same DSA and xFFFFFF address, then trace the I/O bus cable to determine if the position is D12 or D18.)
D13, D19	Disk unit	The disk unit has the same DSA as the IOP controlling the Storage IOA.	xy0E00FF (where x is the same as the first character of the xFFFFFF IOA Unit Address and y is I/O bus 0, 1 or 2. Storage IOA I/O buses begin with 0 and are numbered from the tailstock toward the middle of the card. Find the storage IOA with the same DSA and xFFFFFF address, then trace the I/O bus cable to determine if the position is D13 or D19.)
D14, D20	Disk unit	The disk unit has the same DSA as the IOP controlling the Storage IOA.	xy0F00FF (where x is the same as the first character of the xFFFFFF IOA Unit Address and y is I/O bus 0, 1 or 2. Storage IOA I/O buses begin with 0 and are numbered from the tailstock toward the middle of the card. Find the storage IOA with the same DSA and xFFFFFF address, then trace the I/O bus cable to determine if the position is D14 or D20.)



## Addresses — Models 800 and 810

For use by authorized service providers.

Use the address to find the location. Then, go to Locations — Models 800 and 810 for additional information.

**Table 1. IOP, IOA, and device address information for Models 800 and 810**

Position (listed in IOA assignment order)	Possible failing component	DSA (BBBBcbbb)	Unit address
		<b>Note:</b> IOA and device DSA's will not follow the rules below if the IOA is manually reassigned after IPL.	
MB1	Embedded IOP	0001-10-00	FFFFFFFF
MB1	Service Processor	0001-70-00	FFFFFFFF
C07	Comm/Wkst IOA	0001-10-00	E1FFFFFF
C01	Storage IOA	0001-10-00	2FFFFFFF
C06	IOP	0001-13-00	FFFFFFFF
C06	Storage IOA	0001-10-00	3FFFFFFF
C06	Comm/Wkst IOA	0001-10-00	E3FFFFFF
C05	IOP	0001-14-00	FFFFFFFF
C05	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C06, MB1.	4FFFFFFF
C05	Comm/Wkst IOA	The IOA has the same DSA as the first IOP found in the following list: C06, MB1.	E4FFFFFF
C04 (IXS capable position)	IOP	0001-15-00	FFFFFFFF
C04 (IXS capable position)	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C05, C06, MB1.	5FFFFFFF
C04 (IXS capable position)	Comm/Wkst IOA	The IOA has the same DSA as the first IOP found in the following list: C05, C06, MB1.	E5FFFFFF
C03	IOP	0001-16-00	FFFFFFFF
C03	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C04, C05, C06, MB1.	6FFFFFFF
C03	Comm/Wkst IOA	The IOA has the same DSA as the first IOP found in the following list: C04, C05, C06, MB1.	E6FFFFFF
C03	IXS attached IOA	The IOA has the same DSA as the first IOP found in the following list: C04, C05, C06, MB1.	E506FFFF
C02	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C03, C04, C05, C06, MB1.	7FFFFFFF
C02	Comm/Wkst IOA	The IOA has the same DSA as the first IOP found in the following list: C03, C04, C05, C06, MB1.	E7FFFFFF

Position (listed in IOA assignment order)	Possible failing component	DSA (BBBBcbb)	Unit address
C02	IXS attached IOA	The IOA has the same DSA as the first IOP found in the following list: C03, C04, C05, C06, MB1.	E507FFFF
D01	Disk unit	0001-10-00	200100FF
D02	Disk unit	0001-10-00	200200FF
D03	Disk unit	0001-10-00	200300FF
D04	Disk unit	0001-10-00	200400FF
D05	Disk unit	0001-10-00	200E00FF
D06	Disk unit	0001-10-00	200F00FF
D07	Optical	0001-10-00	200600FF
D08	Tape	0001-10-00	200700FF

**Table 2. IOP, IOA, and device address information for Models 800 and 810 System Unit Expansion**

Position	Possible failing component	DSA (BBBBcbb)	Unit address
D09, D15	Disk unit	The disk unit has the same DSA as the IOP controlling the Storage IOA.	xy0100FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address and y is I/O bus 0, 1 or 2. Storage IOA I/O buses begin with 0 and are numbered from the tailstock toward the middle of the card. Find the storage IOA with the same DSA and xFFFFFFF address, then trace the I/O bus cable to determine if the position is D09 or D15.)
D10, D16	Disk unit	The disk unit has the same DSA as the IOP controlling the Storage IOA.	xy0200FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address and y is I/O bus 0, 1 or 2. Storage IOA I/O buses begin with 0 and are numbered from the tailstock toward the middle of the card. Find the storage IOA with the same DSA and xFFFFFFF address, then trace the I/O bus cable to determine if the position is D10 or D16.)
D11, D17	Disk unit	The disk unit has the same DSA as the IOP controlling the Storage IOA.	xy0300FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address and y is I/O bus 0, 1 or 2. Storage IOA I/O buses begin with 0 and are numbered from the tailstock toward the middle of the card. Find the storage IOA with the same DSA and xFFFFFFF address, then trace the I/O bus cable to determine if the position is D11 or D17.)
D12, D18	Disk unit	The disk unit has the same DSA as the IOP controlling the Storage IOA.	xy0400FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address and y is I/O bus 0, 1 or 2. Storage IOA I/O buses begin with 0 and are numbered from the tailstock toward the middle of the card. Find the storage IOA with the same DSA and xFFFFFFF address, then trace the I/O bus cable to determine if the position is D12 or D18.)
D13, D19	Disk unit	The disk unit has the same DSA as the IOP controlling the Storage IOA.	xy0E00FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address and y is I/O bus 0, 1 or 2. Storage IOA I/O buses begin with 0 and are numbered from the tailstock toward the middle of the card. Find the storage IOA with the same DSA and xFFFFFFF address, then trace the I/O bus cable to determine if the position is D13 or D19.)

Position	Possible failing component	DSA (BBBBcbb)	Unit address
D14, D20	Disk unit	The disk unit has the same DSA as the IOP controlling the Storage IOA.	xy0F00FF (where x is the same as the first character of the xFFFFFF IOA Unit Address and y is I/O bus 0, 1 or 2. Storage IOA I/O buses begin with 0 and are numbered from the tailstock toward the middle of the card. Find the storage IOA with the same DSA and xFFFFFF address, then trace the I/O bus cable to determine if the position is D14 or D20.)

## Addresses — Model 820

*For use by authorized service providers.*

Use the address to find the location. Then go to “Locations — Model 820” on page 248 to find additional information.

**Table 1. IOP, IOA, and device address information for Model 820**

Position (listed in IOA assignment order)	Possible Failing Component	DSA (BBBBcbb)	Unit Address
		<b>Note:</b> IOA and device DSA's will not follow the rules below if the IOA is manually reassigned after IPL.	
MB1	Embedded IOP	0001-10-00	FFFFFFFF
MB1	Service Processor	0001-70-00	FFFFFFFF
C06	Communication, workstation IOA	0001-10-00	E1FFFFFF
C05	Storage IOA	0001-10-00	2FFFFFFF
C04 (IXS capable position)	IOP	0001-13-00	FFFFFFFF
C04 (IXS capable position)	Storage IOA	0001-10-00	3FFFFFFF
C04 (IXS capable position)	Communication, workstation IOA	0001-10-00	E3FFFFFF
C03 (empty if IXS in C04)	IOP	0001-14-00	FFFFFFFF
C03 (empty if IXS in C04)	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C04, MB1.	4FFFFFFF
C03 (empty if IXS in C04)	Communication, workstation IOA	The IOA has the same DSA as the first IOP found in the following list: C04, MB1.	E4FFFFFF
C02	IOP	0001-16-00	FFFFFFFF
C02	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C03, C04, MB1.	6FFFFFFF
C02	Communication, workstation IOA	The IOA has the same DSA as the first IOP found in the following list: C03, C04, MB1.	E6FFFFFF

<b>Position (listed in IOA assignment order)</b>	<b>Possible Failing Component</b>	<b>DSA (BBBBCcbb)</b>	<b>Unit Address</b>
C02	IXS attached IOA	The IOA has the same DSA as the first IOP found in the following list: C03, C04, MB1.	E306FFFF
C01	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C02, C03, C04, MB1.	7FFFFFFF
C01	Communication, workstation IOA	The IOA has the same DSA as the first IOP found in the following list: C02, C03, C04, MB1.	E7FFFFFFF
C01	IXS attached IOA	The IOA has the same DSA as the first IOP found in the following list: C02, C03, C04, MB1.	E307FFFF
C12	IOP	yyyy-10-00	FFFFFFFF
C11	Storage IOA	yyyy-10-00	1FFFFFFFF
C11	Communication, workstation IOA	yyyy-10-00	E1FFFFFFFF
C10 (IXS capable position)	IOP	yyyy-12-00	FFFFFFFF
C10 (IXS capable position)	Storage IOA	yyyy-10-00	2FFFFFFFF
C10 (IXS capable position)	Communication, workstation IOA	yyyy-10-00	E2FFFFFFFF
C09 (empty if IXS in C10)	IOP	yyyy-14-00	FFFFFFFF
C09 (empty if IXS in C10)	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C10, C12.	4FFFFFFFF
C09 (empty if IXS in C10)	Communication, workstation IOA	The IOA has the same DSA as the first IOP found in the following list: C10, C12.	E4FFFFFFFF
C08	IOP	yyyy-15-00	FFFFFFFF
C08	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C09, C10, C12.	5FFFFFFFF
C08	Communication, workstation IOA	The IOA has the same DSA as the first IOP found in the following list: C09, C10, C12.	E5FFFFFFFF
C08	IXS attached IOA	The IOA has the same DSA as the first IOP found in the following list: C09, C10, C12.	E205FFFF
C07	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C08, C09, C10, C12.	6FFFFFFFF

Position (listed in IOA assignment order)	Possible Failing Component	DSA (BBBBcbb)	Unit Address
C07	Communication, workstation IOA	The IOA has the same DSA as the first IOP found in the following list: C08, C09, C10, C12.	E6FFFFFF
C07	IXS attached IOA	The IOA has the same DSA as the first IOP found in the following list: C08, C09, C10, C12.	E206FFFF
D01	Disk unit	0001-10-00	200100FF
D02	Disk unit	0001-10-00	200200FF
D03	Disk unit	0001-10-00	200300FF
D04	Disk unit	0001-10-00	200400FF
D05	Disk unit	0001-10-00	200E00FF
D06	Disk unit	0001-10-00	200F00FF
D07	Disk unit	The disk unit has the same DSA as the IOP controlling the Storage IOA.	xy0100FF (where xy is not 20)
D08	Disk unit	The disk unit has the same DSA as the IOP controlling the Storage IOA.	xy0200FF (where xy is not 20)
D09	Disk unit	The disk unit has the same DSA as the IOP controlling the Storage IOA.	xy0300FF (where xy is not 20)
D10	Disk unit	The disk unit has the same DSA as the IOP controlling the Storage IOA.	xy0400FF (where xy is not 20)
D11	Disk unit	The disk unit has the same DSA as the IOP controlling the Storage IOA.	xy0E00FF (where xy is not 20)
D12	Disk unit	The disk unit has the same DSA as the IOP controlling the Storage IOA.	xy0F00FF (where xy is not 20)
D13	Optical	0001-10-00	200600FF
D14	Tape	0001-10-00	200700FF

## Addresses — Model 825

*For use by authorized service providers.*

Use the address to find the location. Then, go to Locations — Model 825 to find additional information.

**Table 1. IOP, IOA, and device address information for Model 825**

Position (listed in IOA assignment order)	Possible failing component	DSA (BBBBcbb)	Unit address
		<b>Note:</b> IOA and device DSA's will not follow the rules below if the IOA is manually reassigned after IPL.	
C07	Load source IOP	0001-20-00	FFFFFFFF

<b>Position (listed in IOA assignment order)</b>	<b>Possible failing component</b>	<b>DSA (BBBBcbb)</b>	<b>Unit address</b>
CB1	Service processor	0001-70-00	FFFFFFFF
CB1	Embedded ethernet IOA	0001-20-00	E2FFFFFF
C06	Communication/workstation IOA	0001-20-00	4FFFFFFF
C05	Storage IOA	0001-20-00	6FFFFFFF
C12	IOP	0002-20-00	FFFFFFFF
C11	Storage IOA	0002-20-00	2FFFFFFF
C11	Communication/workstation IOA	0002-20-00	E2FFFFFF
C10	Storage IOA	0002-20-00	6FFFFFFF
C10	Communication/workstation IOA	0002-20-00	E6FFFFFF
C04 (IXS capable position)	IOP	0003-20-00	FFFFFFFF
C03 (empty if IXS in C04)	Storage IOA	0003-20-00	2FFFFFFF
C03 (empty if IXS in C04)	Communication/workstation IOA	0003-20-00	E2FFFFFF
C02	IOP	0003-24-00	FFFFFFFF
C02	Storage IOA	0003-20-00	4FFFFFFF
C02	Communication/workstation IOA	0003-20-00	E4FFFFFF
C02	IXS attached IOA	0003-20-00	E004FFFF
C01	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C02, C04	6FFFFFFF
C01	Communication/workstation IOA	The IOA has the same DSA as the first IOP found in the following list: C02, C04	E6FFFFFF
C01	IXS attached IOA	The IOA has the same DSA as the first IOP found in the following list: C02, C04	E006FFFF
D01	Disk unit	0001-20-00	600100FF
D02	Disk unit	0001-20-00	600200FF
D03	Disk unit	0001-20-00	600300FF
D04	Disk unit	0001-20-00	600400FF
D05	Disk unit	0001-20-00	600E00FF

<b>Position (listed in IOA assignment order)</b>	<b>Possible failing component</b>	<b>DSA (BBBBcbb)</b>	<b>Unit address</b>
D06, D11	Disk unit	The disk unit has the same DSA as the IOP controlling the storage IOA.	xy0100FF (where x is the same as the first character of the xFFFFFF IOA Unit Address and y is I/O bus 0, 1, 2, or 3. Storage IOA I/O buses begin with 0 and are numbered from the tailstock toward the middle of the card. Find the storage IOA with the same DSA and xFFFFFF address, then trace the I/O bus cable to determine if the position is D06 or D11.)
D07, D12	Disk unit	The disk unit has the same DSA as the IOP controlling the storage IOA.	xy0200FF (where x is the same as the first character of the xFFFFFF IOA Unit Address and y is I/O bus 0, 1, 2, or 3. Storage IOA I/O buses begin with 0 and are numbered from the tailstock toward the middle of the card. Find the storage IOA with the same DSA and xFFFFFF address, then trace the I/O bus cable to determine if the position is D07 or D12.)
D08, D13	Disk unit	The disk unit has the same DSA as the IOP controlling the storage IOA.	xy0300FF (where x is the same as the first character of the xFFFFFF IOA Unit Address and y is I/O bus 0, 1, 2, or 3. Storage IOA I/O buses begin with 0 and are numbered from the tailstock toward the middle of the card. Find the storage IOA with the same DSA and xFFFFFF address, then trace the I/O bus cable to determine if the position is D08 or D13.)
D09, D14	Disk unit	The disk unit has the same DSA as the IOP controlling the storage IOA.	xy0400FF (where x is the same as the first character of the xFFFFFF IOA Unit Address and y is I/O bus 0, 1, 2, or 3. Storage IOA I/O buses begin with 0 and are numbered from the tailstock toward the middle of the card. Find the storage IOA with the same DSA and xFFFFFF address, then trace the I/O bus cable to determine if the position is D09 or D14.)
D10, D15	Disk unit	The disk unit has the same DSA as the IOP controlling the storage IOA.	xy0E00FF (where x is the same as the first character of the xFFFFFF IOA Unit Address and y is I/O bus 0, 1, 2, or 3. Storage IOA I/O buses begin with 0 and are numbered from the tailstock toward the middle of the card. Find the storage IOA with the same DSA and xFFFFFF address, then trace the I/O bus cable to determine if the position is D10 or D15.)
D17	Tape	0001-20-00	610600FF

Position (listed in IOA assignment order)	Possible failing component	DSA (BBBBCcbb)	Unit address
D18	Optical	0001-20-00	610700FF

## Addresses — Models 830, SB2 System Unit with FC 9074 Base I/O Tower

For use by authorized service providers.

Use the address to find the location. Then go to “Locations — Models 830, SB2 System Unit with FC 9074 Base I/O Tower” on page 260, to find additional information.

**Table 1. IOP, IOA, and device address information for Models 830, SB2 System Unit with FC 9074 Base I/O Tower**

Position	Possible failing component	DSA (BBBBCcbb)	Unit address
		<b>Note:</b> IOA and device DSA's will not follow the rules below if the IOA is manually reassigned after IPL.	
CB1	Service Processor	0001-70-00	FFFFFFFF
C01	IOP	0001-10-00	FFFFFFFF
C02	Communication, workstation IOA	0001-10-00	E2FFFFFF
C03	Storage IOA	0001-10-00	4FFFFFFF
C04	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C03, C01.	6FFFFFFF
C04	Communication, workstation IOA	The IOA has the same DSA as the first IOP found in the following list: C03, C01.	E6FFFFFF
C05 (IXS capable position)	IOP	yyyy-10-00	FFFFFFFF
C06 (empty if IXS in C05)	Storage IOA	yyyy-10-00	2FFFFFFF
C06 (empty if IXS in C05)	Communication, workstation IOA	yyyy-10-00	E2FFFFFF
C07	IOP	yyyy-13-00	FFFFFFFF
C07	Storage IOA	yyyy-10-00	3FFFFFFF
C07	Communication, workstation IOA	yyyy-10-00	E3FFFFFF
C07	IXS attached IOA	yyyy-10-00	E003FFFF
C09	IOP	yyyy-14-00	FFFFFFFF
C09	Storage IOA	yyyy-10-00	4FFFFFFF
C09	Communication, workstation IOA	yyyy-10-00	E4FFFFFF
C09	IXS attached IOA	yyyy-10-00	E004FFFF
C10	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C09, C07, C05.	6FFFFFFF



Position	Possible failing component	DSA (BBBBcbb)	Unit address
C10	Communication, workstation IOA	IOP found in the following list: C09, C07, C05.	E6FFFFFF
C10	IXS attached IOA	IOP found in the following list: C09, C07, C05.	E006FFFF
C11 (IXS capable position)	IOP	yyyy-20-00	FFFFFFFF
C12 (empty if IXS in C11)	Storage IOA	yyyy-20-00	2FFFFFFFF
C12 (empty if IXS in C11)	Communication, workstation IOA	yyyy-20-00	E2FFFFFFFF
C13	IOP	yyyy-23-00	FFFFFFFF
C13	Storage IOA	yyyy-20-00	3FFFFFFFF
C13	Communication, workstation IOA	yyyy-20-00	E3FFFFFFFF
C13	IXS attached IOA	yyyy-20-00	E003FFFF
C14	IOP	yyyy-24-00	FFFFFFFF
C14	Storage IOA	yyyy-20-00	4FFFFFFFF
C14	Communication, workstation IOA	yyyy-20-00	E4FFFFFFFF
C14	IXS attached IOA	yyyy-20-00	E004FFFF
C15	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C14, C13, C11.	6FFFFFFFF
C15	Communication, workstation IOA	The IOA has the same DSA as the first IOP found in the following list: C14, C13, C11.	E6FFFFFFFF
C15	IXS attached IOA	The IOA has the same DSA as the first IOP found in the following list: C14, C13, C11.	E006FFFF
D01	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x00300FF (where x is the same as the first character of the xFFFFFFFF IOA Unit Address)
D02	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x00400FF (where x is the same as the first character of the xFFFFFFFF IOA Unit Address)
D03	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x00500FF (where x is the same as the first character of the xFFFFFFFF IOA Unit Address)
D04	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x00600FF (where x is the same as the first character of the xFFFFFFFF IOA Unit Address)

Position	Possible failing component	DSA (BBBBcbb)	Unit address
D05	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x00700FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D06	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x00300FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D07	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x00400FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D08	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x00500FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D09	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x00600FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D10	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x00700FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D11	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x10300FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D12	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x10400FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D13	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x10500FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D14	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x10600FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D15	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x10700FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D16	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x10300FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D17	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x10400FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)

Position	Possible failing component	DSA (BBBBcbb)	Unit address
D18	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x10500FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D19	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x10600FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D20	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x10700FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D21	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x20300FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D22	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x20400FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D23	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x20500FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D24	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x20600FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D25	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x20700FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D26	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x20300FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D27	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x20400FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D28	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x20500FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D29	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x20600FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D30	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x20700FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)

Position	Possible failing component	DSA (BBBBcbb)	Unit address
D31	Disk unit	0001-10-00	400100FF
D32	Disk unit	0001-10-00	400200FF
D33	Disk unit	0001-10-00	400300FF
D34	Disk unit	0001-10-00	400400FF
D35	Disk unit	0001-10-00	400500FF
D36	Disk unit	0001-10-00	410300FF
D37	Disk unit	0001-10-00	410400FF
D38	Disk unit	0001-10-00	410500FF
D39	Disk unit	0001-10-00	410600FF
D40	Disk unit	0001-10-00	410700FF
D41	Optical	0001-10-00	400600FF
D42	Tape	0001-10-00	400700FF
D46	Disk unit	0001-10-00	420300FF
D47	Disk unit	0001-10-00	420400FF
D48	Disk unit	0001-10-00	420500FF
D49	Disk unit	0001-10-00	420600FF
D50	Disk unit	0001-10-00	420700FF

### Addresses — Models 840, SB3 Processor Tower and FC 9079 Base I/O Tower

For use by authorized service providers.

Use the address to find the location. Then go to Locations — Models 840, SB3 System Unit with Processor Tower and FC 9079 Base I/O Tower, to find additional information.

**Table 1. IOP, IOA, and device address information for FC 9079 Base I/O Tower (on Models 840, SB3)**

Position	Possible failing component	DSA (BBBBcbb)	Unit address
		<b>Note:</b> IOA and device DSA's will not follow the rules below if the IOA is manually reassigned after IPL.	
CB1	Service Processor	0001-70-00	FFFFFFFF
C01	IOP	0001-10-00	FFFFFFFF
C02	Communication, workstation IOA	0001-10-00	E2FFFFFFFF
C03	Storage IOA	0001-10-00	4FFFFFFFF
C04	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C03, C01.	6FFFFFFFF
C04	Communication, workstation IOA		E6FFFFFFFF
C05 (IXS capable position)	IOP	yyyy-10-00	FFFFFFFF
C06 (empty if IXS in C05)	Storage IOA	yyyy-10-00	2FFFFFFFF

Position	Possible failing component	DSA (BBBBcbb)	Unit address
C06 (empty if IXS in C05)	Communication, workstation IOA	yyyy-10-00	E2FFFFFF
C07	IOP	yyyy-13-00	FFFFFFFF
C07	Storage IOA	yyyy-10-00	3FFFFFFF
C07	Communication, workstation IOA	yyyy-10-00	E3FFFFFF
C07	IXS attached IOA	yyyy-10-00	E003FFFF
C09	IOP	yyyy-14-00	FFFFFFFF
C09	Storage IOA	yyyy-10-00	4FFFFFFF
C09	Communication, workstation IOA	yyyy-10-00	E4FFFFFF
C09	IXS attached IOA	yyyy-10-00	E004FFFF
C10	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C09, C07, C05.	6FFFFFFF
C10	Communication, workstation IOA	The IOA has the same DSA as the first IOP found in the following list: C09, C07, C05.	E6FFFFFF
C10	IXS attached IOA	The IOA has the same DSA as the first IOP found in the following list: C09, C07, C05.	E006FFFF
C11 (IXS capable position)	IOP	yyyy-20-00	FFFFFFFF
C12 (empty if IXS in C11)	Storage IOA	yyyy-20-00	2FFFFFFF
C12 (empty if IXS in C11)	Communication, workstation IOA	yyyy-20-00	E2FFFFFF
C13	IOP	yyyy-23-00	FFFFFFFF
C13	Storage IOA	yyyy-20-00	3FFFFFFF
C13	Communication, workstation IOA	yyyy-20-00	E3FFFFFF
C13	IXS attached IOA	yyyy-20-00	E003FFFF
C14	IOP	yyyy-24-00	FFFFFFFF
C14	Storage IOA	yyyy-20-00	4FFFFFFF
C14	Communication, workstation IOA	yyyy-20-00	E4FFFFFF
C14	IXS attached IOA	yyyy-20-00	E004FFFF
C15	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C14, C13, C11.	6FFFFFFF
C15	Communication, workstation IOA	The IOA has the same DSA as the first IOP found in the following list: C14, C13, C11.	E6FFFFFF

Position	Possible failing component	DSA (BBBBcbb)	Unit address
C15	IXS attached IOA	The IOA has the same DSA as the first IOP found in the following list: C14, C13, C11.	E006FFFF
D01	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x00300FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D02	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x00400FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D03	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x00500FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D04	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x00600FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D05	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x00700FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D06	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x00300FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D07	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x00400FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D08	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x00500FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D09	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x00600FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D10	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x00700FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D11	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x10300FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D12	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x10400FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)

Position	Possible failing component	DSA (BBBBccbb)	Unit address
D13	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x10500FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D14	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x10600FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D15	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x10700FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D16	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x10300FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D17	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x10400FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D18	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x10500FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D19	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x10600FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D20	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x10700FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D21	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x20300FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D22	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x20400FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D23	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x20500FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D24	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x20600FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D25	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x20700FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)

Position	Possible failing component	DSA (BBBBcbb)	Unit address
D26	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x20300FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D27	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x20400FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D28	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x20500FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D29	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x20600FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D30	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x20700FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D31	Disk unit	0001-10-00	400100FF
D32	Disk unit	0001-10-00	400200FF
D33	Disk unit	0001-10-00	400300FF
D34	Disk unit	0001-10-00	400400FF
D35	Disk unit	0001-10-00	400500FF
D36	Disk unit	0001-10-00	410300FF
D37	Disk unit	0001-10-00	410400FF
D38	Disk unit	0001-10-00	410500FF
D39	Disk unit	0001-10-00	410600FF
D40	Disk unit	0001-10-00	410700FF
D41	Optical	0001-10-00	400600FF
D42	Tape	0001-10-00	400700FF
D46	Disk unit	0001-10-00	420300FF
D47	Disk unit	0001-10-00	420400FF
D48	Disk unit	0001-10-00	420500FF
D49	Disk unit	0001-10-00	420600FF
D50	Disk unit	0001-10-00	420700FF

## Addresses — Models 870 and 890 with an FC 9094 Base I/O Tower

*For use by authorized service providers.*

Use the address to find the location. Then go to Locations - Models 870 and 890 with an FC 9094 Base I/O Tower to find additional information.

**Table 1. IOP, IOA, and device address information for FC 9094 Base I/O Tower (on Models 870 and 890)**



Position	Possible failing item	DSA (BBBBcbb)	Unit address
		<b>Note:</b> IOA and device DSA's will not follow the rules below if the IOA is manually reassigned after IPL.	
CB1	Service processor	0001-70-00	FFFFFFFF
C01	IOP	0001-20-00	FFFFFFFF
C02	Communication, workstation IOA	0001-20-00	E2FFFFFF
C03	Storage IOA	0001-20-00	4FFFFFFF
C04	Storage IOA	0001-20-00	6FFFFFFF
C04	Communication, workstation IOA	0001-20-00	E6FFFFFF
C05 (IXS capable position)	IOP	0002-20-00	FFFFFFFF
C06 (empty if IXS in C05)	Storage IOA	0002-20-00	2FFFFFFF
C06 (empty if IXS in C05)	Communication, workstation IOA	0002-20-00	E2FFFFFF
C07	IOP	0002-23-00	FFFFFFFF
C07	Storage IOA	0002-20-00	3FFFFFFF
C07	Communication, workstation IOA	0002-20-00	E3FFFFFF
C07	IXS attached IOA	0002-20-00	E003FFFF
C08	IOP	0002-24-00	FFFFFFFF
C08	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C07, C05.	4FFFFFFF
C08	Communication, workstation IOA	The IOA has the same DSA as the first IOP found in the following list: C07, C05.	E4FFFFFF
C08	IXS attached IOA	The IOA has the same DSA as the first IOP found in the following list: C07, C05.	E004FFFF
C09	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C08, C07, C05.	6FFFFFFF
C09	Communication, workstation IOA	The IOA has the same DSA as the first IOP found in the following list: C08, C07, C05.	E6FFFFFF
C09	IXS attached IOA	The IOA has the same DSA as the first IOP found in the following list: C08, C07, C05.	E006FFFF
C11 (IXS capable position)	IOP	0003-20-00	FFFFFFFF
C12 (empty if IXS in C11)	Storage IOA	0003-20-00	2FFFFFFF
C12 (empty if IXS in C11)	Communication, workstation IOA	0003-20-00	E2FFFFFF

Position	Possible failing item	DSA (BBBBcbb)	Unit address
C13	IOP	0003-23-00	FFFFFFF
C13	Storage IOA	0003-20-00	3FFFFFF
C13	Communication, workstation IOA	0003-20-00	E3FFFFFF
C13	IXS attached IOA	0003-20-00	E003FFFF
C14	IOP	0003-24-00	FFFFFFF
C14	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C13, C11.	4FFFFFF
C14	Communication, workstation IOA	The IOA has the same DSA as the first IOP found in the following list: C13, C11.	E4FFFFFF
C14	IXS attached IOA	The IOA has the same DSA as the first IOP found in the following list: C13, C11.	E004FFFF
C15	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C14, C13, C11.	6FFFFFF
C15	Communication, workstation IOA	The IOA has the same DSA as the first IOP found in the following list: C14, C13, C11.	E6FFFFFF
C15	IXS attached IOA	The IOA has the same DSA as the first IOP found in the following list: C14, C13, C11.	E006FFFF
D01	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x00300FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D02	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x00400FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D03	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x00500FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D04	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x00600FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D05	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x00700FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D06	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x00300FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)

Position	Possible failing item	DSA (BBBBcbb)	Unit address
D07	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x00400FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D08	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x00500FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D09	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x00600FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D10	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x00700FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D11	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x10300FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D12	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x10400FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D13	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x10500FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D14	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x10600FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D15	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x10700FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D16	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x10300FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D17	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x10400FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D18	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x10500FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D19	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x10600FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)

Position	Possible failing item	DSA (BBBBcbb)	Unit address
D20	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x10700FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D21	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x20300FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D22	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x20400FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D23	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x20500FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D24	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x20600FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D25	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x20700FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D26	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x20300FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D27	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x20400FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D28	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x20500FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D29	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x20600FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D30	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x20700FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D31	Disk unit	0001-20-00	400100FF
D32	Disk unit	0001-20-00	400200FF
D33	Disk unit	0001-20-00	400300FF
D34	Disk unit	0001-20-00	400400FF
D35	Disk unit	0001-20-00	400500FF
D36	Disk unit	0001-20-00	410300FF
D37	Disk unit	0001-20-00	410400FF

Position	Possible failing item	DSA (BBBBcbb)	Unit address
D38	Disk unit	0001-20-00	410500FF
D39	Disk unit	0001-20-00	410600FF
D40	Disk unit	0001-20-00	410700FF
D41	Optical	0001-20-00	400600FF
D42	Tape	0001-20-00	400700FF
D46	Disk unit	0001-20-00	420300FF
D47	Disk unit	0001-20-00	420400FF
D48	Disk unit	0001-20-00	420500FF
D49	Disk unit	0001-20-00	420600FF
D50	Disk unit	0001-20-00	420700FF

## Addresses — FC 5074 Expansion I/O Tower

*For use by authorized service providers.*

Use the address to find the location. Then go to “Locations — FC 5074 Expansion I/O Tower” on page 294 to find additional information.

**Table 1. IOP, IOA, and device address information for FC 5074 Expansion I/O Tower**

Position	Possible failing item	DSA (BBBBcbb)	Unit address
		<b>Note:</b> IOA and device DSA's will not follow the rules below if the IOA is manually reassigned after IPL.	
C01	IOP	xxxx-10-00	FFFFFFFF
C02	Storage IOA	xxxx-10-00	2FFFFFFFF
C02	Comm/Wkst IOA	xxxx-10-00	E2FFFFFFFF
C03	IOP	xxxx-14-00	FFFFFFFF
C03	Storage IOA	xxxx-10-00	4FFFFFFFF
C03	Comm/Wkst IOA	xxxx-10-00	E4FFFFFFFF
C04	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C03, C01.	6FFFFFFFF
C04	Comm/Wkst IOA	The IOA has the same DSA as the first IOP found in the following list: C03, C01.	E6FFFFFFFF
C05 (IXS capable position)	IOP	yyyy-10-00	FFFFFFFF
C06 (empty if IXS in C05)	Storage IOA	yyyy-10-00	2FFFFFFFF
C06 (empty if IXS in C05)	Comm/Wkst IOA	yyyy-10-00	E2FFFFFFFF
C07	IOP	yyyy-13-00	FFFFFFFF
C07	Storage IOA	yyyy-10-00	3FFFFFFFF
C07	Comm/Wkst IOA	yyyy-10-00	E3FFFFFFFF

<b>Position</b>	<b>Possible failing item</b>	<b>DSA (BBBBcbb)</b>	<b>Unit address</b>
C07	IXS attached IOA	yyyy-10-00	E003FFFF
C09	IOP	yyyy-14-00	FFFFFFFF
C09	Storage IOA	yyyy-10-00	4FFFFFFFF
C09	Comm/Wkst IOA	yyyy-10-00	E4FFFFFFFF
C09	IXS attached IOA	yyyy-10-00	E004FFFF
C10	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C09, C07, C05.	6FFFFFFFF
C10	Comm/Wkst IOA	The IOA has the same DSA as the first IOP found in the following list: C09, C07, C05.	E6FFFFFFFF
C10	IXS attached IOA	The IOA has the same DSA as the first IOP found in the following list: C09, C07, C05.	E006FFFF
C11 (IXS capable position)	IOP	yyyy-20-00	FFFFFFFF
C12 (empty if IXS in C11)	Storage IOA	yyyy-20-00	2FFFFFFFF
C12 (empty if IXS in C11)	Comm/Wkst IOA	yyyy-20-00	E2FFFFFFFF
C13	IOP	yyyy-23-00	FFFFFFFF
C13	Storage IOA	yyyy-20-00	3FFFFFFFF
C13	Comm/Wkst IOA	yyyy-20-00	E3FFFFFFFF
C13	IXS attached IOA	yyyy-20-00	E003FFFF
C14	IOP	yyyy-24-00	FFFFFFFF
C14	Storage IOA	yyyy-20-00	4FFFFFFFF
C14	Comm/Wkst IOA	yyyy-20-00	E4FFFFFFFF
C14	IXS attached IOA	yyyy-20-00	E004FFFF
C15	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C14, C13, C11.	6FFFFFFFF
C15	Comm/Wkst IOA	The IOA has the same DSA as the first IOP found in the following list: C14, C13, C11.	E6FFFFFFFF
C15	IXS attached IOA	The IOA has the same DSA as the first IOP found in the following list: C14, C13, C11.	E006FFFF
D01	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x00300FF (where x is the same as the first character of the xFFFFFFFF IOA Unit Address)

<b>Position</b>	<b>Possible failing item</b>	<b>DSA (BBBBcbb)</b>	<b>Unit address</b>
D02	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x00400FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D03	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x00500FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D04	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x00600FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D05	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x00700FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D06	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x00300FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D07	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x00400FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D08	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x00500FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D09	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x00600FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D10	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x00700FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D11	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x10300FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D12	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x10400FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D13	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x10500FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D14	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x10600FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D15	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x10700FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D16	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x10300FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D17	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x10400FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D18	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x10500FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)

<b>Position</b>	<b>Possible failing item</b>	<b>DSA (BBBBCCbb)</b>	<b>Unit address</b>
D19	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x10600FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D20	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x10700FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D21	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x20300FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D22	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x20400FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D23	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x20500FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D24	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x20600FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D25	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x20700FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D26	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x20300FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D27	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x20400FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D28	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x20500FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D29	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x20600FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D30	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x20700FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D31	Disk unit	The disk unit has the same DSA as the IOA attached to the internal flat ribbon cable.	x00100FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D32	Disk unit	The disk unit has the same DSA as the IOA attached to the internal flat ribbon cable.	x00200FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D33	Disk unit	The disk unit has the same DSA as the IOA attached to the internal flat ribbon cable.	x00300FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D34	Disk unit	The disk unit has the same DSA as the IOA attached to the internal flat ribbon cable.	x00400FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D35	Disk unit	The disk unit has the same DSA as the IOA attached to the internal flat ribbon cable.	x00500FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)



Position	Possible failing item	DSA (BBBBcbb)	Unit address
D36	Disk unit	The disk unit has the same DSA as the IOA attached to the internal flat ribbon cable.	x10300FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D37	Disk unit	The disk unit has the same DSA as the IOA attached to the internal flat ribbon cable.	x10400FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D38	Disk unit	The disk unit has the same DSA as the IOA attached to the internal flat ribbon cable.	x10500FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D39	Disk unit	The disk unit has the same DSA as the IOA attached to the internal flat ribbon cable.	x10600FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D40	Disk unit	The disk unit has the same DSA as the IOA attached to the internal flat ribbon cable.	x10700FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D41	Disk unit	The disk unit has the same DSA as the IOA attached to the internal flat ribbon cable.	x00600FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D42	Disk unit	The disk unit has the same DSA as the IOA attached to the internal flat ribbon cable.	x00700FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D46	Disk unit	The disk unit has the same DSA as the IOA attached to the internal flat ribbon cable.	x20300FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D47	Disk unit	The disk unit has the same DSA as the IOA attached to the internal flat ribbon cable.	x20400FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D48	Disk unit	The disk unit has the same DSA as the IOA attached to the internal flat ribbon cable.	x20500FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D49	Disk unit	The disk unit has the same DSA as the IOA attached to the internal flat ribbon cable.	x20600FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D50	Disk unit	The disk unit has the same DSA as the IOA attached to the internal flat ribbon cable.	x20700FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)

## Addresses — FC 5075 Expansion I/O Tower

*For use by authorized service providers.*

Use the address to find the location. Then go to “Locations — FC 5075 Expansion I/O Tower” on page 299 to find additional information.

**Table 1. IOP, IOA, and device address information for FC 5075**

Position	Possible Failing Item	DSA (BBBBcbb)	Unit Address
		<b>Note:</b> IOA and device DSA's will not follow the rules below if the IOA is manually reassigned after IPL.	

Position	Possible Failing Item	DSA (BBBBcbb)	Unit Address
CB1	Embedded IOP	xxxx-10-00	FFFFFFFF
C01	Storage IOA	xxxx-10-00	1FFFFFFFF
C01	Communication, workstation IOA	xxxx-10-00	E1FFFFFFFF
C02 (IXS capable position)	IOP	xxxx-12-00	FFFFFFFF
C02 (IXS capable position)	Storage IOA	xxxx-10-00	2FFFFFFFF
C02 (IXS capable position)	Communication, workstation IOA	xxxx-10-00	E2FFFFFFFF
C03 (empty if IXS in C02)	IOP	xxxx-14-00	FFFFFFFF
C03 (empty if IXS in C02)	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C02, CB1.	4FFFFFFFF
C03 (empty if IXS in C02)	Communication, workstation IOA	The IOA has the same DSA as the first IOP found in the following list: C02, CB1.	E4FFFFFFFF
C04	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C03, C02, CB1.	6FFFFFFFF
C04	Communication, workstation IOA	The IOA has the same DSA as the first IOP found in the following list: C03, C02, CB1.	E6FFFFFFFF
C04	IXS attached IOA	The IOA has the same DSA as the first IOP found in the following list: C03, C02, CB1.	E206FFFF
C05 (IXS capable position)	IOP	yyyy-10-00	FFFFFFFF
C06 (empty if IXS in C05)	Storage IOA	yyyy-10-00	2FFFFFFFF
C06 (empty if IXS in C05)	Communication, workstation IOA	yyyy-10-00	E2FFFFFFFF
C07	IOP	yyyy-14-00	FFFFFFFF
C07	Storage IOA	yyyy-10-00	4FFFFFFFF
C07	Communication, workstation IOA	yyyy-10-00	E4FFFFFFFF
C07	IXS attached IOA	yyyy-10-00	E004FFFF
C08	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C07, C05.	6FFFFFFFF
C08	Communication, workstation IOA	The IOA has the same DSA as the first IOP found in the following list: C07, C05.	E6FFFFFFFF
C08	IXS attached IOA	The IOA has the same DSA as the first IOP found in the following list: C07, C05.	E006FFFF
D01	Disk unit	xxxx-10-00	1z0100FF (where z is 0, 1 or 2)

Position	Possible Failing Item	DSA (BBBBcbb)	Unit Address
D02	Disk unit	xxxx-10-00	1z0200FF (where z is 0, 1 or 2)
D03	Disk unit	xxxx-10-00	1z0300FF (where z is 0, 1 or 2)
D04	Disk unit	xxxx-10-00	1z0400FF (where z is 0, 1 or 2)
D05	Disk unit	xxxx-10-00	1z0E00FF (where z is 0, 1 or 2)
D06	Disk unit	xxxx-10-00	1z0F00FF (where z is 0, 1 or 2)

## Addresses — FC 5078, FC 0578 Expansion I/O Unit

*For use by authorized service providers.*

Use the address to find the location. Then go to “Locations — FC 5078, 0578 Expansion I/O Unit” on page 301 to find additional information.

**Table 1. IOP, IOA, and device address information for FC 5078, FC 0578 Expansion I/O Unit**

Position	Possible Failing Item	DSA (BBBBcbb)	Unit Address
		<b>Note:</b> IOA and device DSA's will not follow the rules below if the IOA is manually reassigned after IPL.	
C01	IOP	xxxx-10-00	FFFFFFFF
C02	Storage IOA	xxxx-10-00	2FFFFFFFF
C02	Communication, workstation IOA	xxxx-10-00	E2FFFFFFFF
C03	IOP	xxxx-14-00	FFFFFFFF
C03	Storage IOA	xxxx-10-00	4FFFFFFFF
C03	Communication, workstation IOA	xxxx-10-00	E4FFFFFFFF
C04	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C03, C01.	6FFFFFFFF
C04	Communication, workstation IOA	The IOA has the same DSA as the first IOP found in the following list: C03, C01.	E6FFFFFFFF
C05 (IXS capable position)	IOP	yyyy-10-00	FFFFFFFF
C06 (empty if IXS in C05)	Storage IOA	yyyy-10-00	2FFFFFFFF
C06 (empty if IXS in C05)	Communication, workstation IOA	yyyy-10-00	E2FFFFFFFF
C07	IOP	yyyy-13-00	FFFFFFFF
C07	Storage IOA	yyyy-10-00	3FFFFFFFF
C07	Communication, workstation IOA	yyyy-10-00	E3FFFFFFFF
C07	IXS attached IOA	yyyy-10-00	E003FFFF

Position	Possible Failing Item	DSA (BBBBcbb)	Unit Address
C09	IOP	yyyy-14-00	FFFFFFF
C09	Storage IOA	yyyy-10-00	4FFFFFF
C09	Communication, workstation IOA	yyyy-10-00	E4FFFFFF
C09	IXS attached IOA	yyyy-10-00	E004FFFF
C10	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C09, C07, C05.	6FFFFFF
C10	Communication, workstation IOA	The IOA has the same DSA as the first IOP found in the following list: C09, C07, C05.	E6FFFFFF
C10	IXS attached IOA	The IOA has the same DSA as the first IOP found in the following list: C09, C07, C05.	E006FFFF
C11 (IXS capable position)	IOP	yyyy-20-00	FFFFFFF
C12 (empty if IXS in C11)	Storage IOA	yyyy-20-00	2FFFFFF
C12 (empty if IXS in C11)	Communication, workstation IOA	yyyy-20-00	E2FFFFFF
C13	IOP	yyyy-23-00	FFFFFFF
C13	Storage IOA	yyyy-20-00	3FFFFFF
C13	Communication, workstation IOA	yyyy-20-00	E3FFFFFF
C13	IXS attached IOA	yyyy-20-00	E003FFFF
C14	IOP	yyyy-24-00	FFFFFFF
C14	Storage IOA	yyyy-20-00	4FFFFFF
C14	Communication, workstation IOA	yyyy-20-00	E4FFFFFF
C14	IXS attached IOA	yyyy-20-00	E004FFFF
C15	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C14, C13, C11.	6FFFFFF
C15	Communication, workstation IOA	The IOA has the same DSA as the first IOP found in the following list: C14, C13, C11.	E6FFFFFF
C15	IXS attached IOA	The IOA has the same DSA as the first IOP found in the following list: C14, C13, C11.	E006FFFF

## Addresses — FC 5079 Expansion I/O Tower

*For use by authorized service providers.*

Service the FC 5079 as two independent FC 5074 towers in the same 1.8 meter rack. See “Addresses — FC 5074 Expansion I/O Tower” on page 345.

## Addresses — FC 5088, FC 0588 Expansion I/O Unit

For use by authorized service providers.

Use the address to find the location. Then go to “Locations — FC 5088, FC 0588 Expansion I/O Unit” on page 305 to find additional information.

**Table 1. IOP, IOA, and device address information for FC 5088, FC 0588 Expansion I/O Unit**

Position	Possible failing item	DSA (BBBBcbbb)	Unit address
		<b>Note:</b> IOA and device DSA's will not follow the rules below if the IOA is manually reassigned after IPL.	
C01 (IXS capable position)	IOP	xxxx-20-00	FFFFFFFF
C02 (empty if IXS in C01)	Storage IOA	xxxx-20-00	2FFFFFFFF
C02 (empty if IXS in C01)	Comm/Wkst IOA	xxxx-20-00	E2FFFFFFFF
C03	IOP	xxxx-24-00	FFFFFFFF
C03	Storage IOA	xxxx-20-00	4FFFFFFFF
C03	Comm/Wkst IOA	xxxx-20-00	E4FFFFFFFF
C03	IXS attached IOA	xxxx-20-00	E004FFFF
C04	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C03, C01.	6FFFFFFFF
C04	Comm/Wkst IOA	The IOA has the same DSA as the first IOP found in the following list: C03, C01.	E6FFFFFFFF
C04	IXS attached IOA	The IOA has the same DSA as the first IOP found in the following list: C03, C01.	E006FFFF
C05 (IXS capable position)	IOP	yyyy-20-00	FFFFFFFF
C06 (empty if IXS in C05)	Storage IOA	yyyy-20-00	2FFFFFFFF
C06 (empty if IXS in C05)	Comm/Wkst IOA	yyyy-20-00	E2FFFFFFFF
C07	IOP	yyyy-23-00	FFFFFFFF
C07	Storage IOA	yyyy-20-00	3FFFFFFFF
C07	Comm/Wkst IOA	yyyy-20-00	E3FFFFFFFF
C07	IXS attached IOA	yyyy-20-00	E003FFFF
C08	IOP	yyyy-24-00	FFFFFFFF
C08	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C07, C05.	4FFFFFFFF
C08	Comm/Wkst IOA	The IOA has the same DSA as the first IOP found in the following list: C07, C05.	E4FFFFFFFF
C08	IXS attached IOA	The IOA has the same DSA as the first IOP found in the following list: C07, C05.	E004FFFF

Position	Possible failing item	DSA (BBBBcbb)	Unit address
C09	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C08, C07, C05.	6FFFFFFF
C09	Comm/Wkst IOA	The IOA has the same DSA as the first IOP found in the following list: C08, C07, C05.	E6FFFFFF
C09	IXS attached IOA	The IOA has the same DSA as the first IOP found in the following list: C08, C07, C05.	E006FFFF
C11 (IXS capable position)	IOP	zzzz-20-00	FFFFFFFF
C12 (empty if IXS in C11)	Storage IOA	zzzz-20-00	2FFFFFFF
C12 (empty if IXS in C11)	Comm/Wkst IOA	zzzz-20-00	E2FFFFFF
C13	IOP	zzzz-23-00	FFFFFFFF
C13	Storage IOA	zzzz-20-00	3FFFFFFF
C13	Comm/Wkst IOA	zzzz-20-00	E3FFFFFF
C13	IXS attached IOA	zzzz-20-00	E003FFFF
C14	IOP	zzzz-24-00	FFFFFFFF
C14	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C13, C11.	4FFFFFFF
C14	Comm/Wkst IOA	The IOA has the same DSA as the first IOP found in the following list: C13, C11.	E4FFFFFF
C14	IXS attached IOA	The IOA has the same DSA as the first IOP found in the following list: C13, C11.	E004FFFF
C15	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C14, C13, C11.	6FFFFFFF
C15	Comm/Wkst IOA	The IOA has the same DSA as the first IOP found in the following list: C14, C13, C11.	E6FFFFFF
C15	IXS attached IOA	The IOA has the same DSA as the first IOP found in the following list: C14, C13, C11.	E006FFFF

## Addresses — FC 5094 Expansion I/O Tower

For use by authorized service providers.

Use the address to find the location. Then go to “Locations — FC 5094 Expansion I/O Tower” on page 309 to find additional information.

**Table 1. IOP, IOA, and device address information for FC 5094 Expansion I/O Tower**

Position	Possible failing item	DSA (BBBBcbb)	Unit address
		<b>Note:</b> IOA and device DSA's will not follow the rules below if the IOA is manually reassigned after IPL.	
C01 (IXS capable position)	IOP	xxxx-20-00	FFFFFFFF
C02 (empty if IXS in C01)	Storage IOA	xxxx-20-00	2FFFFFFF

Position	Possible failing item	DSA (BBBBcbb)	Unit address
C02 (empty if IXS in C01)	Comm/Wkst IOA	xxxx-20-00	E2FFFFFF
C03	IOP	xxxx-24-00	FFFFFFFF
C03	Storage IOA	xxxx-20-00	4FFFFFFF
C03	Comm/Wkst IOA	xxxx-20-00	E4FFFFFF
C03	IXS attached IOA	xxxx-20-00	E004FFFF
C04	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C03, C01.	6FFFFFFF
C04	Comm/Wkst IOA	The IOA has the same DSA as the first IOP found in the following list: C03, C01.	E6FFFFFF
C04	IXS attached IOA	The IOA has the same DSA as the first IOP found in the following list: C03, C01.	E006FFFF
C05 (IXS capable position)	IOP	yyyy-20-00	FFFFFFFF
C06 (empty if IXS in C05)	Storage IOA	yyyy-20-00	2FFFFFFF
C06 (empty if IXS in C05)	Comm/Wkst IOA	yyyy-20-00	E2FFFFFF
C07	IOP	yyyy-23-00	FFFFFFFF
C07	Storage IOA	yyyy-20-00	3FFFFFFF
C07	Comm/Wkst IOA	yyyy-20-00	E3FFFFFF
C07	IXS attached IOA	yyyy-20-00	E003FFFF
C08	IOP	yyyy-24-00	FFFFFFFF
C08	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C07, C05.	4FFFFFFF
C08	Comm/Wkst IOA	The IOA has the same DSA as the first IOP found in the following list: C07, C05.	E4FFFFFF
C08	IXS attached IOA	The IOA has the same DSA as the first IOP found in the following list: C07, C05.	E004FFFF
C09	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C08, C07, C05.	6FFFFFFF
C09	Comm/Wkst IOA	The IOA has the same DSA as the first IOP found in the following list: C08, C07, C05.	E6FFFFFF
C09	IXS attached IOA	The IOA has the same DSA as the first IOP found in the following list: C08, C07, C05.	E006FFFF
C11 (IXS capable position)	IOP	zzzz-20-00	FFFFFFFF
C12 (empty if IXS in C11)	Storage IOA	zzzz-20-00	2FFFFFFF
C12 (empty if IXS in C11)	Comm/Wkst IOA	zzzz-20-00	E2FFFFFF
C13	IOP	zzzz-23-00	FFFFFFFF
C13	Storage IOA	zzzz-20-00	3FFFFFFF
C13	Comm/Wkst IOA	zzzz-20-00	E3FFFFFF
C13	IXS attached IOA	zzzz-20-00	E003FFFF
C14	IOP	zzzz-24-00	FFFFFFFF

Position	Possible failing item	DSA (BBBBcbb)	Unit address
C14	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C13, C11.	4FFFFFFF
C14	Comm/Wkst IOA	The IOA has the same DSA as the first IOP found in the following list: C13, C11.	E4FFFFFF
C14	IXS attached IOA	The IOA has the same DSA as the first IOP found in the following list: C13, C11.	E004FFFF
C15	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C14, C13, C11.	6FFFFFFF
C15	Comm/Wkst IOA	The IOA has the same DSA as the first IOP found in the following list: C14, C13, C11.	E6FFFFFF
C15	IXS attached IOA	The IOA has the same DSA as the first IOP found in the following list: C14, C13, C11.	E006FFFF
D01	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x00300FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D02	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x00400FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D03	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x00500FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D04	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x00600FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D05	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x00700FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D06	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x00300FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D07	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x00300FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D08	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x00500FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)



<b>Position</b>	<b>Possible failing item</b>	<b>DSA (BBBBcbb)</b>	<b>Unit address</b>
D09	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x00600FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D10	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x00700FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D11	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x10300FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D12	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x10400FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D13	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x10500FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D14	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x10600FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D15	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x10700FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D16	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x10300FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D17	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x10400FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D18	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x10500FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)

<b>Position</b>	<b>Possible failing item</b>	<b>DSA (BBBBcbb)</b>	<b>Unit address</b>
D19	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x10600FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D20	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x10700FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D21	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x20300FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D22	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x20400FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D23	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x20500FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D24	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x20600FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D25	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x20700FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D26	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x20300FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D27	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x20400FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D28	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x20500FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)

<b>Position</b>	<b>Possible failing item</b>	<b>DSA (BBBBcbb)</b>	<b>Unit address</b>
D29	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x20600FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D30	Disk unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x20700FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D31	Disk unit	The disk unit has the same DSA as the IOA attached to the internal flat ribbon cable.	x00100FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D32	Disk unit	The disk unit has the same DSA as the IOA attached to the internal flat ribbon cable.	x00200FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D33	Disk unit	The disk unit has the same DSA as the IOA attached to the internal flat ribbon cable.	x00300FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D34	Disk unit	The disk unit has the same DSA as the IOA attached to the internal flat ribbon cable.	x00400FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D35	Disk unit	The disk unit has the same DSA as the IOA attached to the internal flat ribbon cable.	x00500FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D36	Disk unit	The disk unit has the same DSA as the IOA attached to the internal flat ribbon cable.	x10300FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D37	Disk unit	The disk unit has the same DSA as the IOA attached to the internal flat ribbon cable.	x10400FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D38	Disk unit	The disk unit has the same DSA as the IOA attached to the internal flat ribbon cable.	x10500FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)

Position	Possible failing item	DSA (BBBBcbb)	Unit address
D39	Disk unit	The disk unit has the same DSA as the IOA attached to the internal flat ribbon cable.	x10600FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D40	Disk unit	The disk unit has the same DSA as the IOA attached to the internal flat ribbon cable.	x10700FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D41	Optical	The disk unit has the same DSA as the IOA attached to the internal flat ribbon cable.	x00600FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D42	Tape	The disk unit has the same DSA as the IOA attached to the internal flat ribbon cable.	x00700FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D46	Disk unit	The disk unit has the same DSA as the IOA attached to the internal flat ribbon cable.	x20300FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D47	Disk unit	The disk unit has the same DSA as the IOA attached to the internal flat ribbon cable.	x20400FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D48	Disk unit	The disk unit has the same DSA as the IOA attached to the internal flat ribbon cable.	x20500FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D49	Disk unit	The disk unit has the same DSA as the IOA attached to the internal flat ribbon cable.	x20600FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)
D50	Disk unit	The disk unit has the same DSA as the IOA attached to the internal flat ribbon cable.	x20700FF (where x is the same as the first character of the xFFFFFF IOA Unit Address)

## Addresses — FC 5095, FC 0595 Expansion I/O Tower

*For use by authorized service providers.*

Use the address to find the location. Then go to Locations — FC 5095, FC 0595 Expansion I/O Tower to find additional information.

**Table 1. IOP, IOA, and device address information for FC 5095, FC 0595 Expansion I/O Tower**

Position	Possible failing item	DSA (BBBBcbb)	Unit address
		<b>Note:</b> IOA and device DSAs will not follow the rules below if the IOA is manually reassigned after IPL.	
C01 (IXS capable position)	IOP	xxxx-20-00	FFFFFFF
C02 (empty if IXS in C01)	Storage IOA	xxxx-20-00	2FFFFFF
C02 (empty if IXS in C01)	Communication, workstation IOA	xxxx-20-00	E2FFFFFF
C03	IOP	xxxx-24-00	FFFFFFF
C03	Storage IOA	xxxx-20-00	4FFFFFF
C03	Communication, workstation IOA	xxxx-20-00	E4FFFFFF
C03	IXS attached IOA	xxxx-20-00	E004FFFF
C04	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C03, C01.	6FFFFFF
C04	Communication, workstation IOA	The IOA has the same DSA as the first IOP found in the following list: C03, C01.	E6FFFFFF
C04	IXS attached IOA	The IOA has the same DSA as the first IOP found in the following list: C03, C01.	E006FFFF
C06	IOP	yyyy-20-00	FFFFFFF
C07	Storage IOA	yyyy-20-00	2FFFFFF
C07	Communication, workstation IOA	yyyy-20-00	E2FFFFFF
C08	Storage IOA	yyyy-20-00	6FFFFFF
C08	Communication, workstation IOA	yyyy-20-00	E6FFFFFF
C08	IXS attached IOA	yyyy-20-00	E006FFFF
D01, D07	Disk unit	The disk unit has the same DSA as the IOP controlling the storage IOA.	xy0100FF (where x is the same as the first character of the xFFFFFF IOA Unit Address and y is I/O bus 0, 1, 2, or 3. Storage IOA buses begin with 0 and are numbered from the tailstock toward the middle of the card. Find the storage IOA with the same DSA and xFFFFFF address, then trace the I/O bus cable to determine if the position is D01 or D07.)

Position	Possible failing item	DSA (BBBBcbb)	Unit address
D02, D08	Disk unit		xy0200FF (where x is the same as the first character of the xFFFFFF IOA Unit Address and y is I/O bus 0, 1, 2, or 3. Storage IOA buses begin with 0 and are numbered from the tailstock toward the middle of the card. Find the storage IOA with the same DSA and xFFFFFF address, then trace the I/O bus cable to determine if the position is D02 or D08.)
D03, D09	Disk unit		xy0300FF (where x is the same as the first character of the xFFFFFF IOA Unit Address and y is I/O bus 0, 1, 2, or 3. Storage IOA buses begin with 0 and are numbered from the tailstock toward the middle of the card. Find the storage IOA with the same DSA and xFFFFFF address, then trace the I/O bus cable to determine if the position is D03 or D09.)
D04, D10	Disk unit		xy0400FF (where x is the same as the first character of the xFFFFFF IOA Unit Address and y is I/O bus 0, 1, 2, or 3. Storage IOA buses begin with 0 and are numbered from the tailstock toward the middle of the card. Find the storage IOA with the same DSA and xFFFFFF address, then trace the I/O bus cable to determine if the position is D04 or D10.)
D05, D11	Disk unit		xy0E00FF (where x is the same as the first character of the xFFFFFF IOA Unit Address and y is I/O bus 0, 1, 2, or 3. Storage IOA buses begin with 0 and are numbered from the tailstock toward the middle of the card. Find the storage IOA with the same DSA and xFFFFFF address, then trace the I/O bus cable to determine if the position is D05 or D11.)

Position	Possible failing item	DSA (BBBBcbb)	Unit address
D06, D12	Disk unit		xy0F00FF (where x is the same as the first character of the xFFFFFF IOA Unit Address and y is I/O bus 0, 1, 2, or 3. Storage IOA buses begin with 0 and are numbered from the tailstock toward the middle of the card. Find the storage IOA with the same DSA and xFFFFFF address, then trace the I/O bus cable to determine if the position is D06 or D12.)

### Addresses — FC 5294 Expansion I/O Tower

*For use by authorized service providers.*

For address information for **FC 5294-001 (bottom)** and **FC 5294-002 (top)**: Refer to Addresses — FC 5094 Base I/O Tower.

### Locations - FC 8079 Expansion I/O Tower

*For use by authorized service providers.*

- Service the FC 8079-001 in the bottom of the rack as an FC 9079. See Addresses — Models 840, SB3 Processor Tower and FC 9079 Base I/O Tower.
- Service the FC 8079-002 in the top of the rack as an FC 5074. See Addresses — FC 5074 Expansion I/O Tower.

### Addresses — FC 8093 Expansion I/O Tower

*For use by authorized service providers.*

Refer to the following for address information:

- For **FC 8093-001 (bottom)**: Follow the FC 9094 link in Addresses — Models 870 and 890 with an FC 9094 Base I/O Tower.
- For **FC 8093-002 (top)**: Refer to Addresses — FC 5074 Expansion I/O Tower.

### Addresses — FC 8094 Expansion I/O Tower

*For use by authorized service providers.*

Refer to the following for address information:

- For **FC 8094-001 (bottom)**: Follow the FC 9094 link in Addresses — Models 870 and 890 with an FC 9094 Base I/O Tower.
- For **FC 8094-002 (top)**: Refer to Addresses — FC 5094 Expansion I/O Tower.

### Addresses — for External xSeries Server, iSeries Adapter — Machine Type 1519

*For use by authorized service providers.*

**Table 1. IOP and IOA address information for External xSeries Server, iSeries Adapter — Machine Type 1519**

Position	Possible failing component	DSA	Unit address
SE1	2689 Integrated xSeries Adapter (IOP)	xxxx-10-00	FFFFFFF
SE1	2689 Integrated xSeries Adapter (IOA)	xxxx-10-00	E0FFFFFF

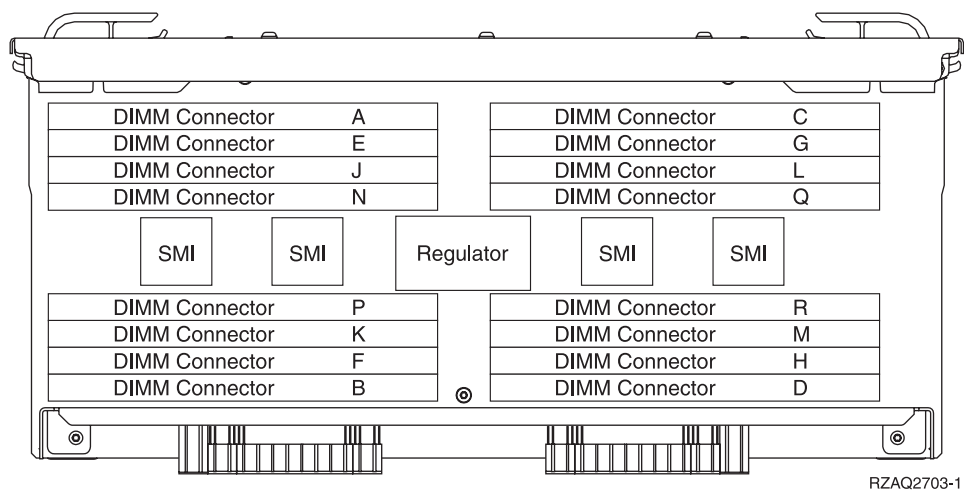
## Memory locations and placement rules

For use by authorized service providers.

### 2884 Memory card

1. Memory DIMMs are placed in sets of two.
2. Memory pairs are placed in the following order:
  - A-B
  - C-D
  - E-F
  - G-H

Figure 1. 2884 Memory card

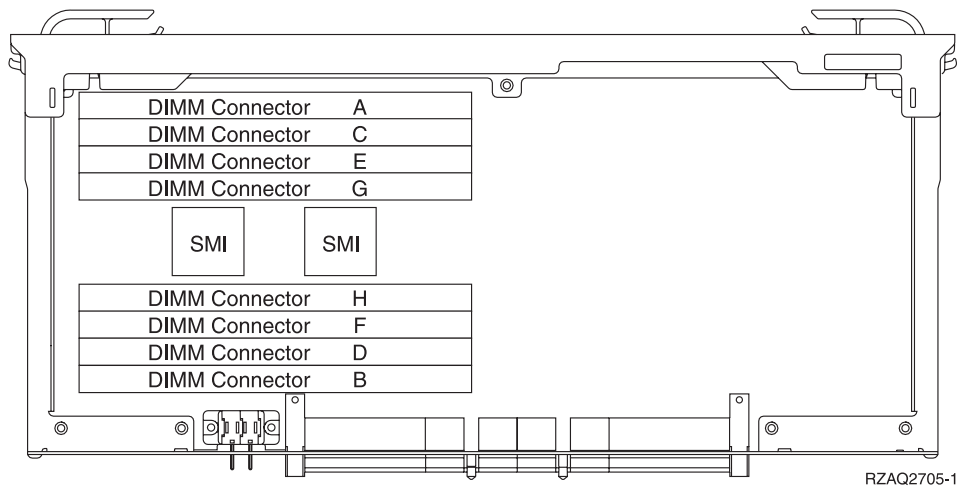


1. If only two memory DIMMs are placed, they must be in positions A and B.
2. Memory DIMMs are placed in sets of four only.
3. Additional quads are placed in the following order:
  - A-B-C-D.
  - E-F-G-H
  - J-K-L-M
  - N-P-Q-R

### CCIN 24A0, CCIN 244A Processor card with DIMM memory

Figure 2. Processor card with DIMM memory





1. When memory card 2884 is used with DIMM memory, no DIMMs are allowed on the processor card.
2. Memory DIMMs are placed in sets of two only.
3. The base set is A-B.
4. Additional pairs are placed in the following order:
  - C-D
  - E-F
  - G-H

## Part assemblies

*For use by authorized service providers.*

Select the model or feature code you are working on for links to assembly drawings, part numbers, units, and descriptions. Refer to “How to use this parts listing” below if necessary.

**Models 270, 800, and 810**

**Model 820**

**Model 825**

**Models 830/SB2 (FC 9074)**

**Models 840/SB3 (FC 9079)**

**Models 870 and 890 (FC 9094 Base I/O Tower)**

**FC 0550, FC 0551, FC 0578, FC 5079, FC 5294, FC 8079, FC 8093, and FC 8094**

**FC 5074, FC 5075, FC 5078, FC 5088, FC 5094**

**FC 5095, FC 0595**

## How to use this parts listing

\* **SIMILAR ASSEMBLIES:** If two assemblies contain a majority of identical parts, they are broken down on the same list. Common parts are shown by one index number. Parts peculiar to one or the other of the assemblies are listed separately and identified by description.

\* **AR:** (As Required) in the **Units** column indicates that the quantity is not the same for all machines.

\* NP: (Non-Procurable) in the **Units** column indicates that the part is non-procurable and that the individual parts or the next higher assembly should be ordered.

\* NR: (Not Recommended) in the **Units** column indicates that the part is procurable but not recommended for field replacement and that the next higher assembly should be ordered.

\* R: (Restricted) in the **Units** column indicates that the part has a restricted availability.

\* INDENTURE: The indenture is marked by a series of dots preceding the parts description. The indenture indicates the relationship of a part to the next higher assembly. For example:

**Indenture**

Relationship of Parts

**(No dot)**

MAIN ASSEMBLY

**(One dot)**

\* Detail parts of a main assembly

**(One dot)**

\* Sub assembly of the main assembly

**(Two dot)**

\* \* Detail part of a one-dot sub assembly

**(Two dot)**

\* \* Sub assembly of a one-dot sub assembly

**(Three dot)**

\* \* \* Detail part of a two-dot sub assembly

Assembly index	Part number	Units	Description
3-	2512667 2513714	1 1	Cover assembly, rear, red cover assembly, rear, white for next higher assembly, see assembly 1-2
-1	5373637	1	* Seal, top
-2	5356429	2	* Clip, retaining
-3	1847630	1	* Finger stock assembly
-4	1847602	NR	* * Channel, finger stock
-5	5373639	AR	* Seal, bottom
-6	5356429	2	* Clip, retaining
-7		NP	* Cover, rear, without paint
-8	0416629	R	* Screw, panel

**Part assemblies - Models 270, 800, and 810**

*For use by authorized service providers.*

**Cover assembly**

**Final assembly**

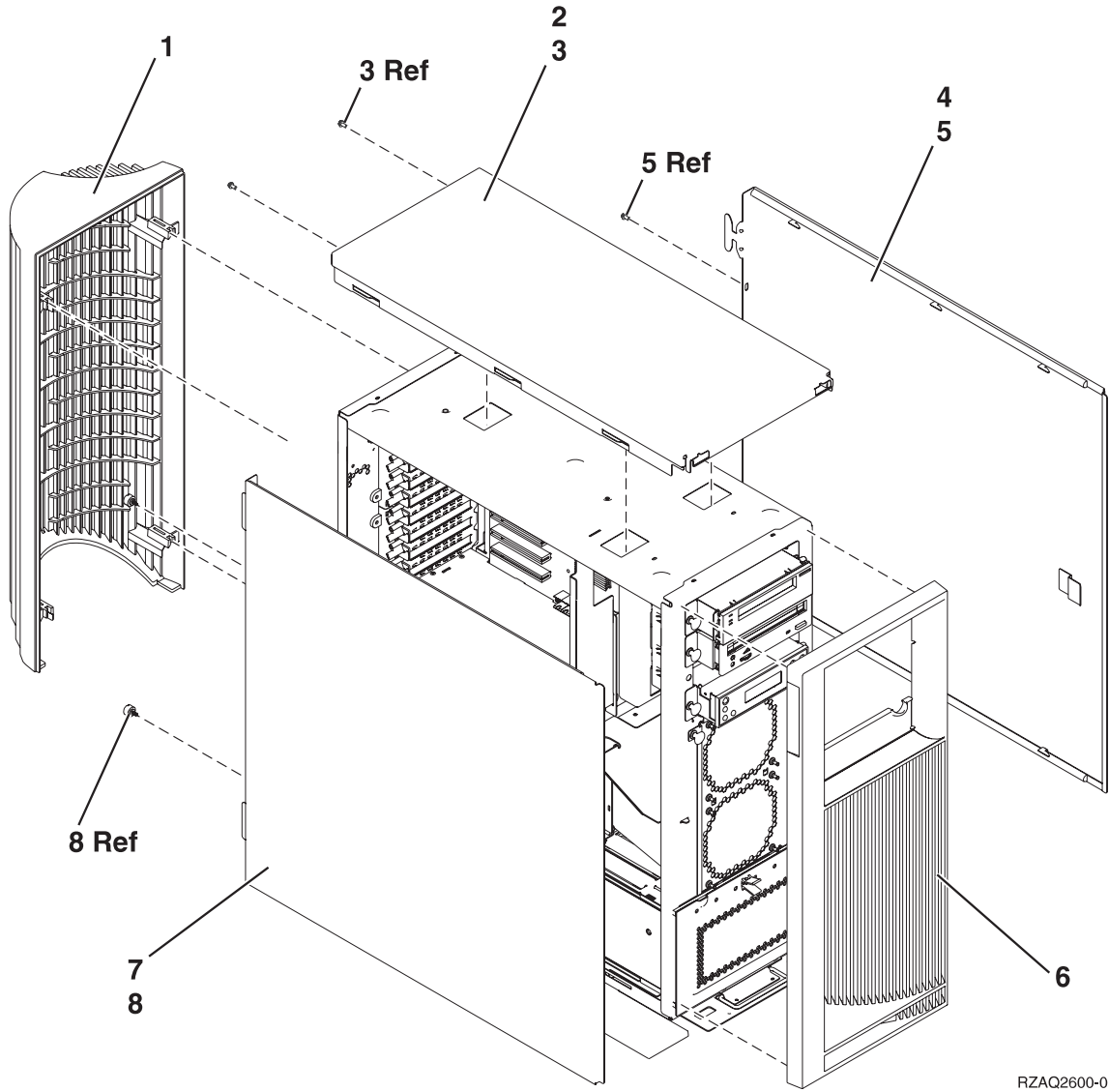
**Control panel**

**Cover assembly - Models 270, 800, and 810 System Unit Expansion**

## Final assembly - Models 270, 800, and 810 System Unit Expansion

**Cover assembly - Models 270, 800, and 810:** For use by authorized service providers.

**Figure 1. Cover assembly - Models 270, 800, and 810**



RZAQ2600-0

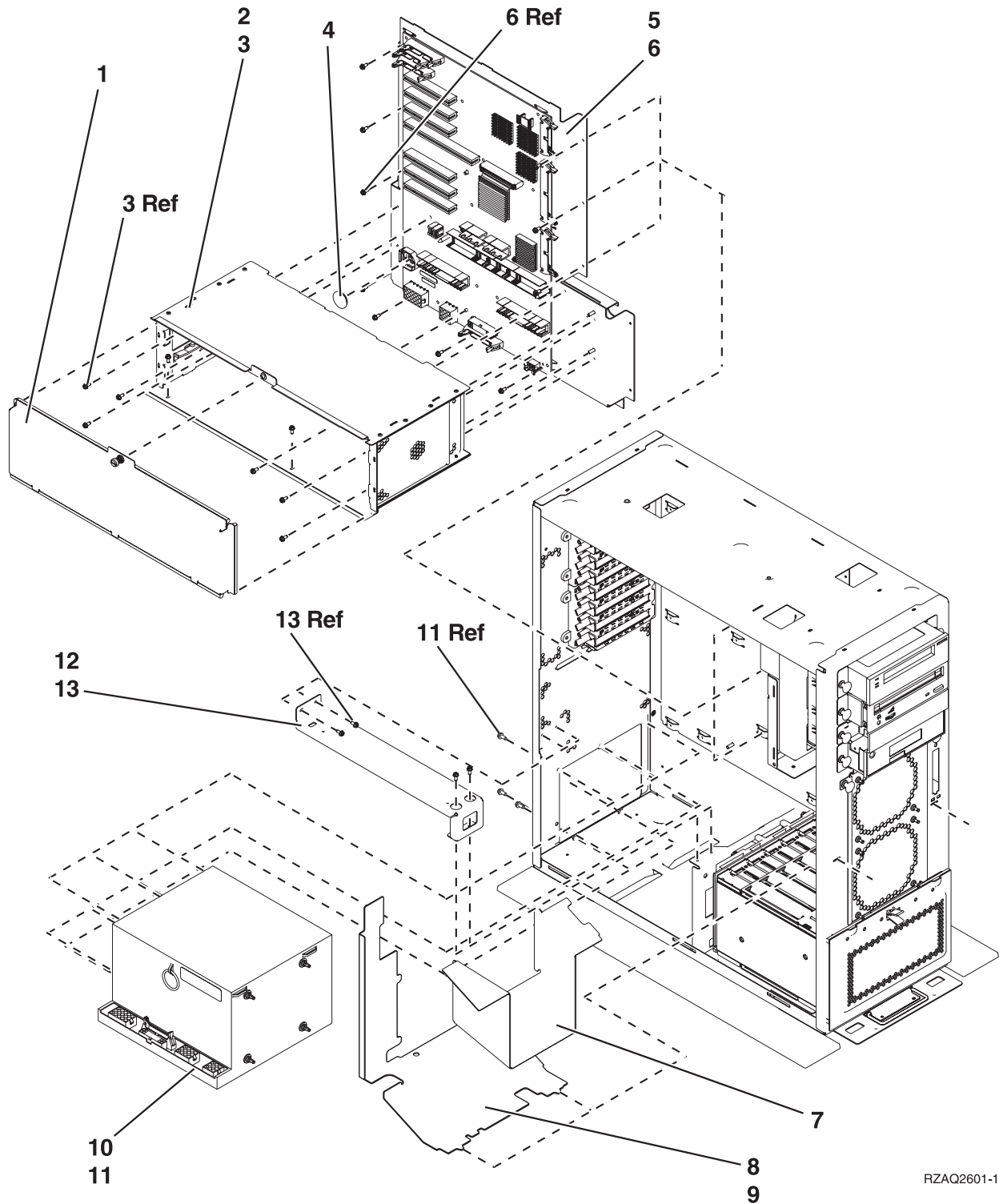
**Table 1. Cover assembly - Models 270, 800, and 810**

Index	Part number	Units	Description
1	24L1652	1	Cover, rear (Model 270 only)
2	24L1630	1	Cover, top
3	75G2878	2	Screw, M3.5 x 8mm
4	24L1632	1	Cover, side
5	75G2878	2	Screw, M3.5 x 8mm

Index	Part number	Units	Description
6	21P5145	1	Cover, front (single wide iSeries <sup>(TM)</sup> server) Model 270
6	21P4614	1	Cover, front (single wide Domino <sup>(TM)</sup> iSeries) Model 270
6	53P0897	1	Cover, front (single wide iSeries server) Models 800 and 810
7	24L1632	1	Cover, side
8	24L1946	2	Thumbscrew

***Final assembly - Models 270, 800, and 810:*** For use by authorized service providers.

**Figure 1. Final assembly - Models 270, 800, and 810**



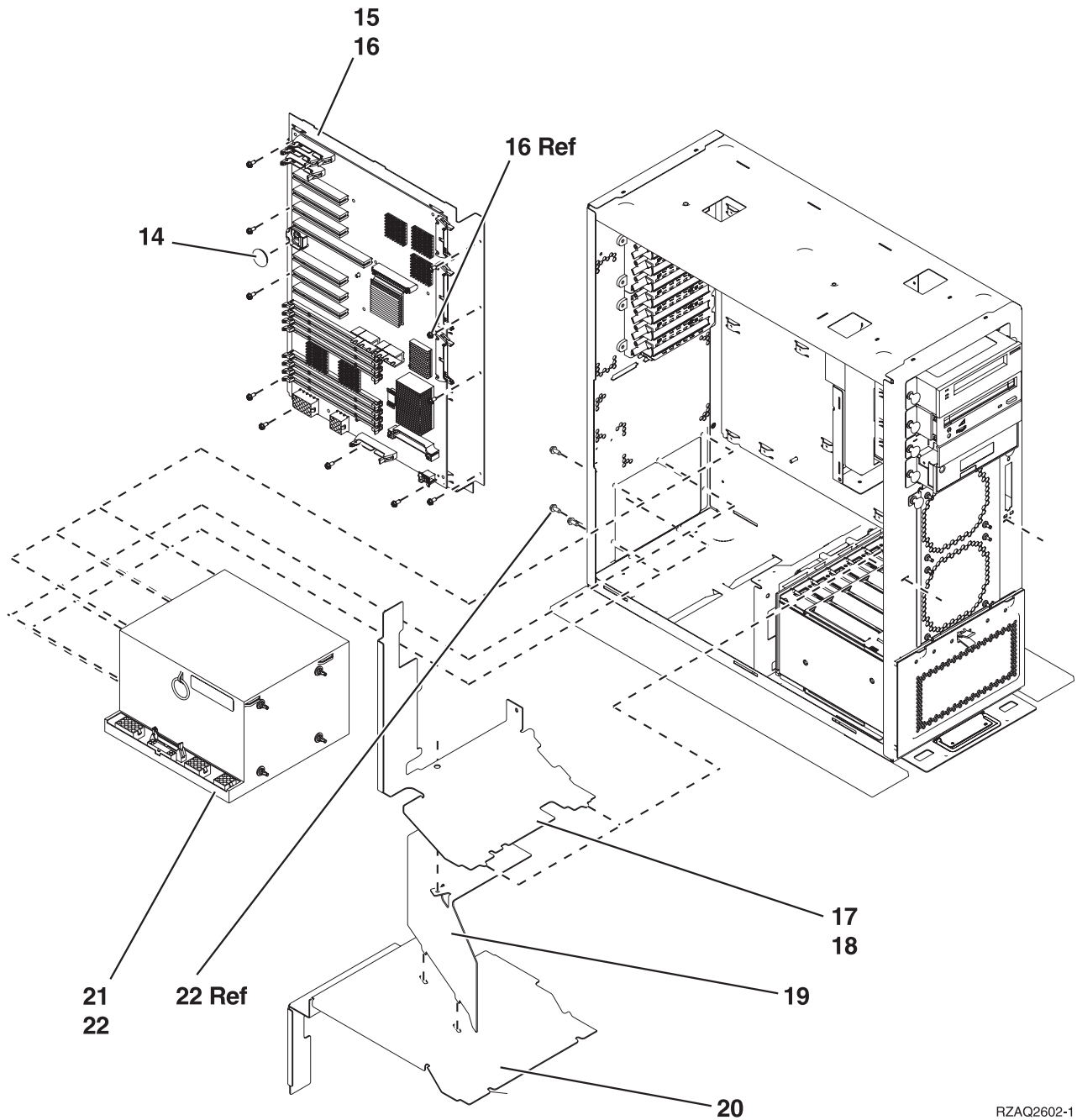
RZAQ2601-1

**Table 1. Final assembly - Models 270, 800, and 810**

Index	Part numbers	Units	Description
1	24L1609	1	Cover, processor / memory / CEC
2	24L1551	1	Processor / memory / CEC assembly
3	75G2878	8	Screw, M3.5 x 8mm

Index	Part numbers	Units	Description
4	16G8095	1	Time of day battery
5	NONUM	1	Backplane assembly
6	75G2878	19	Screw, M3.5 x 8mm
7	NONUM	1	Baffle
8	24L1747	1	Plenum air flow
9	75G2878	1	Screw, M3.5 x 8mm
10	24L1402	1	Power supply (P01)
11	75G2878	7	Screw, M3.5 x 8mm
12	NONUM	1	Bracket, CEC support
13	75G2878	4	Screw, M3.5 x 8mm

**Figure 2. Final assembly - Models 270, 800, and 810, continued**



RZAQ2602-1

**Table 2. Final assembly - Models 270, 800, and 810, (continued)**

Index	Part Number	Units	Description
14	16G8095	1	Time of day battery
15	NONUM	1	Backplane assembly
16	75G2878	19	Screw, M3.5 x 8mm
17	24L1747	1	Plenum air flow
18	75G2878	1	Screw, M3.5 x 8mm
19	NONUM	1	Plenum air flow
20	NONUM	1	Plenum air flow

Index	Part Number	Units	Description
21	24L1402	1	Power supply
22	75G2878	7	Screw, M3.5 x 8mm

Figure 3. Final assembly - Models 270, 800, and 810, continued

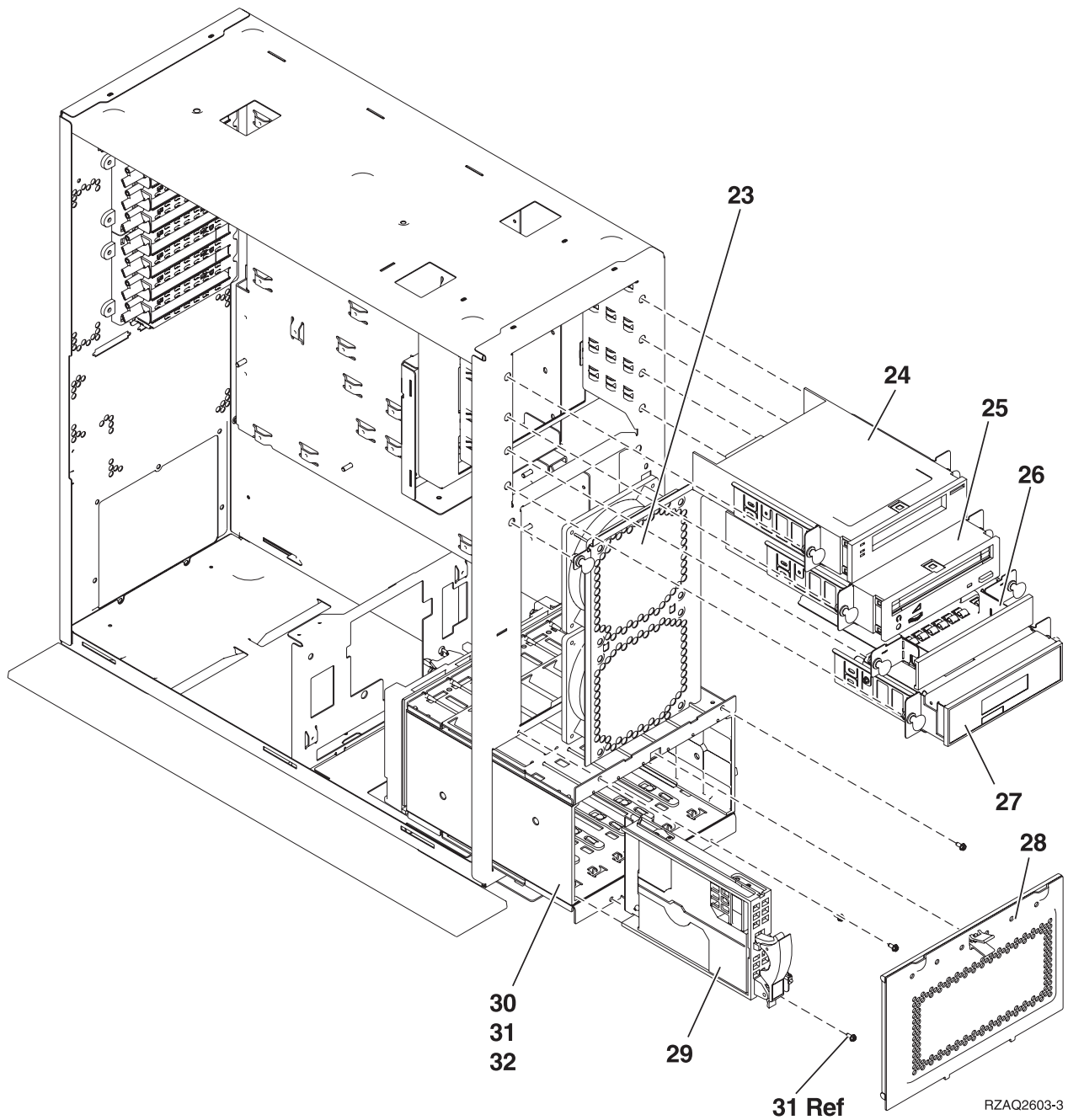


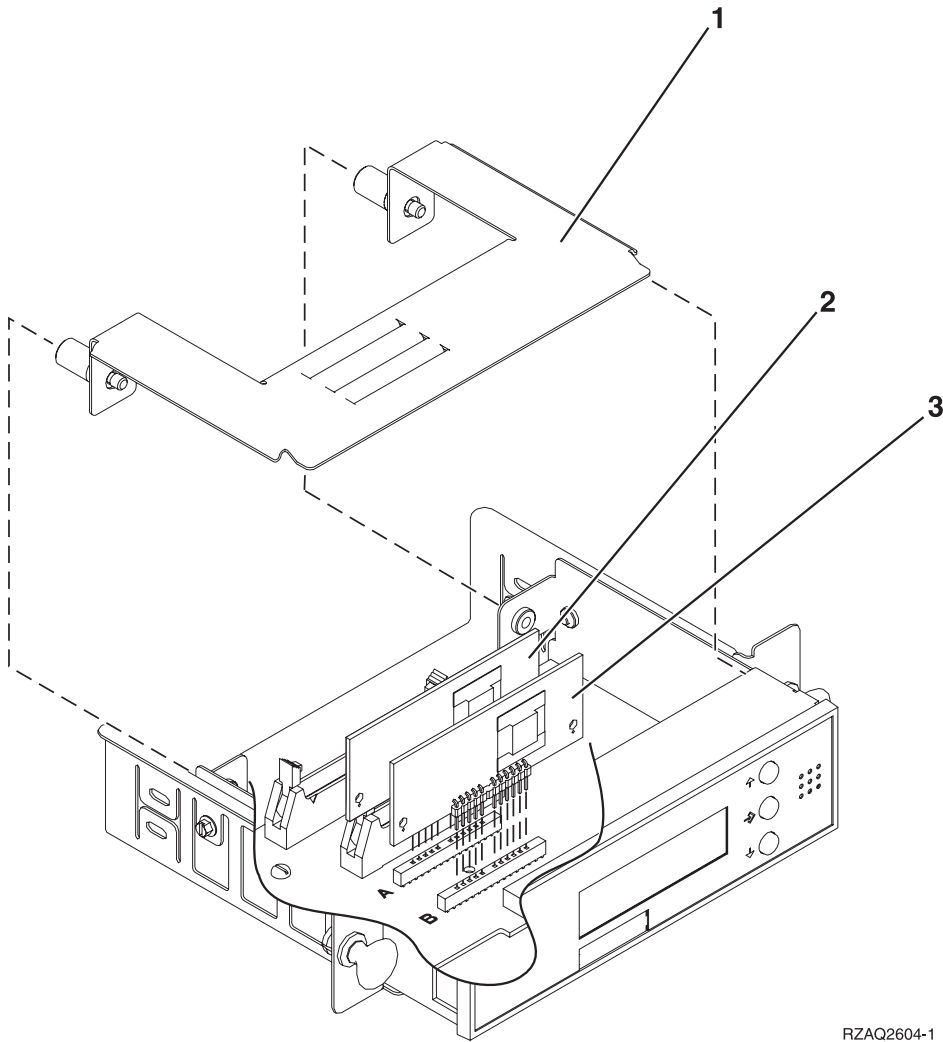
Table 3. Final assembly - Models 270, 800, and 810, (continued)



Index	Part number	Units	Description
23	24L1740	1	Air moving device assembly dual 120mm ( <b>Note:</b> one part assembly replaces AMD B01 and B02)
24	NONUM	1	Tape / tray assembly (see the Type, model, and part number list).
25	NONUM	1	Optical / tray assembly (see the Type, model, and part number list).
26	97H9137	1	Filler assembly
27	24L1591	1	Control panel assembly. See Control panel - Models 270, 800, and 810.
28	24L1827	1	Shield, disk unit (EMC)
29	NONUM	AR	Disk unit assembly. See the Type, model, and part number list.
30	NONUM	1	Cage assembly, disk unit (concurrent maintenance). See types 28CD (See page 528) and 283F (See page 527) in the Type, model, and part number list. Cage assembly, disk unit (non-concurrent maintenance). See type 283E (See page 526) in the Type, model, and part number list.
31	75G2878	4	Screw, M3.5 x 8mm
32	04N3392	2	Screw, M3.5 x 8mm

**Control panel assembly - Models 270, 800, and 810:** For use by authorized service providers.

**Figure 1. Control panel - Models 270, 800, and 810**



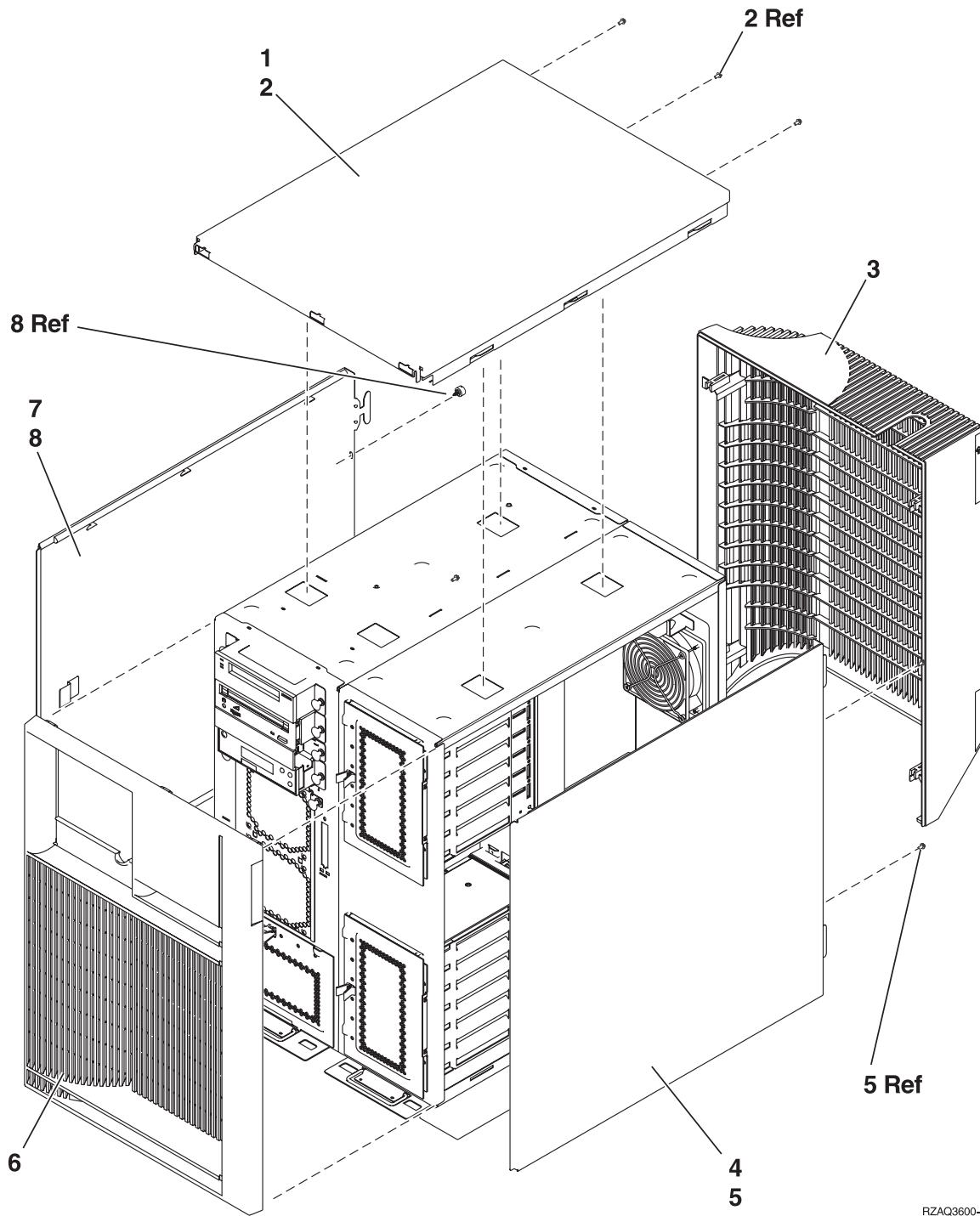
RZAQ2604-1

**Table 1. Control panel assembly - Models 270, 800, and 810**

Index	Part number	Units	Description
1	NONUM	1	EMC plate
2	NONUM	1	Processor capacity card. See the Type, model, and part number list.
3	NONUM	1	Interactive card. See the Type, model, and part number list.

**Cover assembly - Models 270, 800, and 810 System Unit Expansion:** For use by authorized service providers.

**Figure 1. Cover assembly - Models 270, 800, and 810 System Unit Expansion**



RZAQ3600-0

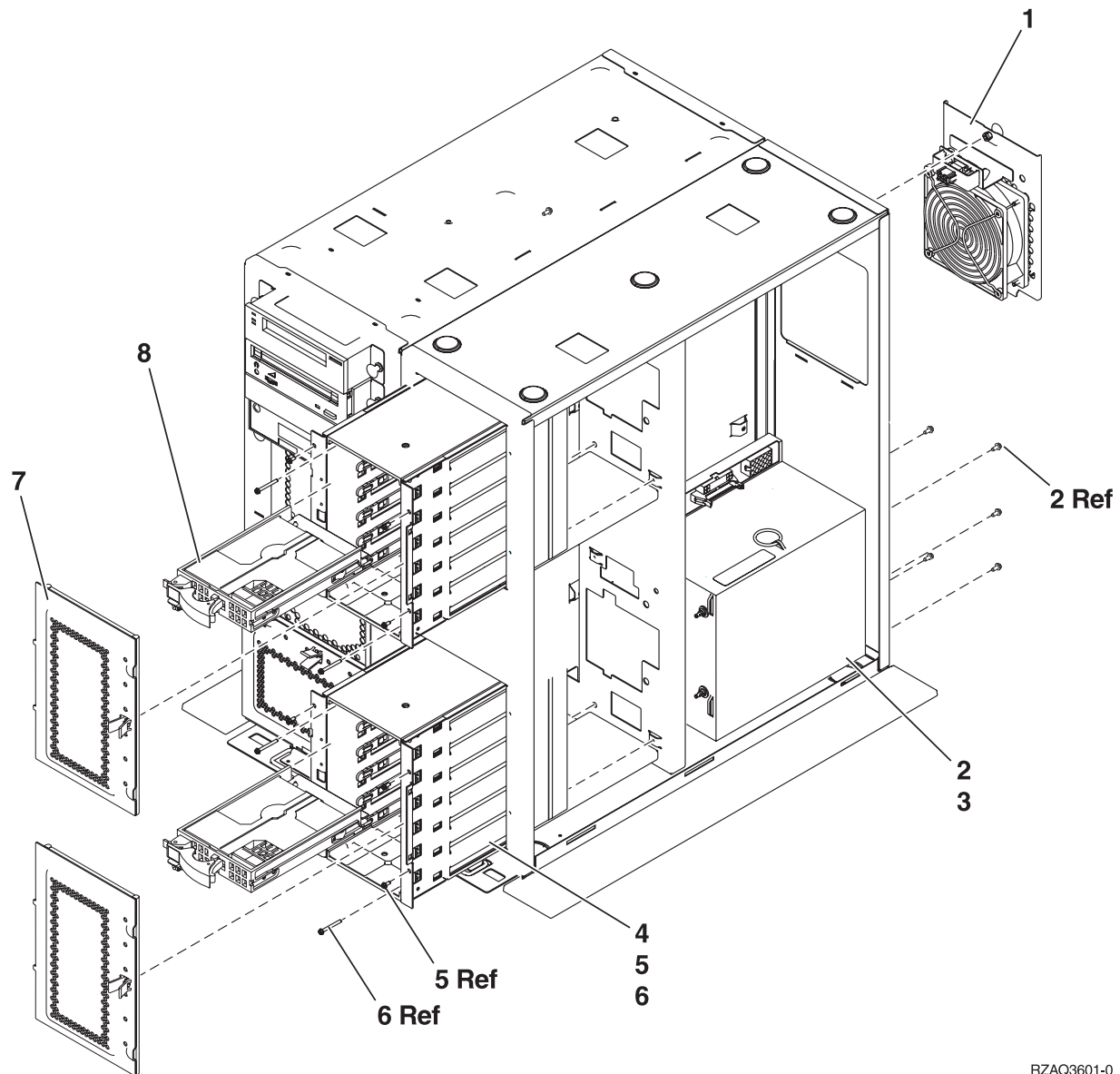
**Table 1. Cover assembly - Models 270, 800, and 810 System Unit Expansion**

Index	Part number	Units	Description
1	04N5701	1	Cover, top
2	75G2878	2	Screw, M3.5 x 8mm
3	04N5712	1	Cover, rear (Model 270 only)
4	24L1632	1	Cover, side

Index	Part number	Units	Description
5	75G2878	2	Screw, M3.5 x 8mm
6	21P5146	1	Cover, front (double wide iSeries <sup>(TM)</sup> server) Model 270
6	21P4626	1	Cover, front (double wide Domino <sup>(TM)</sup> iSeries server) Model 270
6	53P0893	1	Cover, front (double wide iSeries server) Models 800 and 810
6	53P0897	1	Cover, front (single wide iSeries server) Models 800 and 810
7	24L1632	1	Cover, side
8	24L1946	2	Thumbscrew

***Final assembly - Models 270, 800, and 810 System Unit Expansion:*** For use by authorized service providers.

**Figure 1. Final assembly - Models 270, 800, and 810 System Unit Expansion**



RZAQ3601-0

**Table 1. Final assembly - Models 270, 800, and 810 System Unit Expansion**

Index	Part number	Units	Description
1	04N5698	1	Air moving device (AMD) assembly
2	24L1402	1	Power supply - P02
3	75G2878	7	Screw, M3.5 x 8mm
4	NONUM	2	Cage assembly, disk unit
5	75G2878	4	Screw, M3.5 x 8mm
6	04N3392	2	Screw, M3.5 x 8mm
7	24L1827	1	Shield, disk unit (EMC)
8	NONUM	AR	Disk unit assembly. See the Type, model, and part number list.

## **Part assemblies - Model 820**

*For use by authorized service providers.*

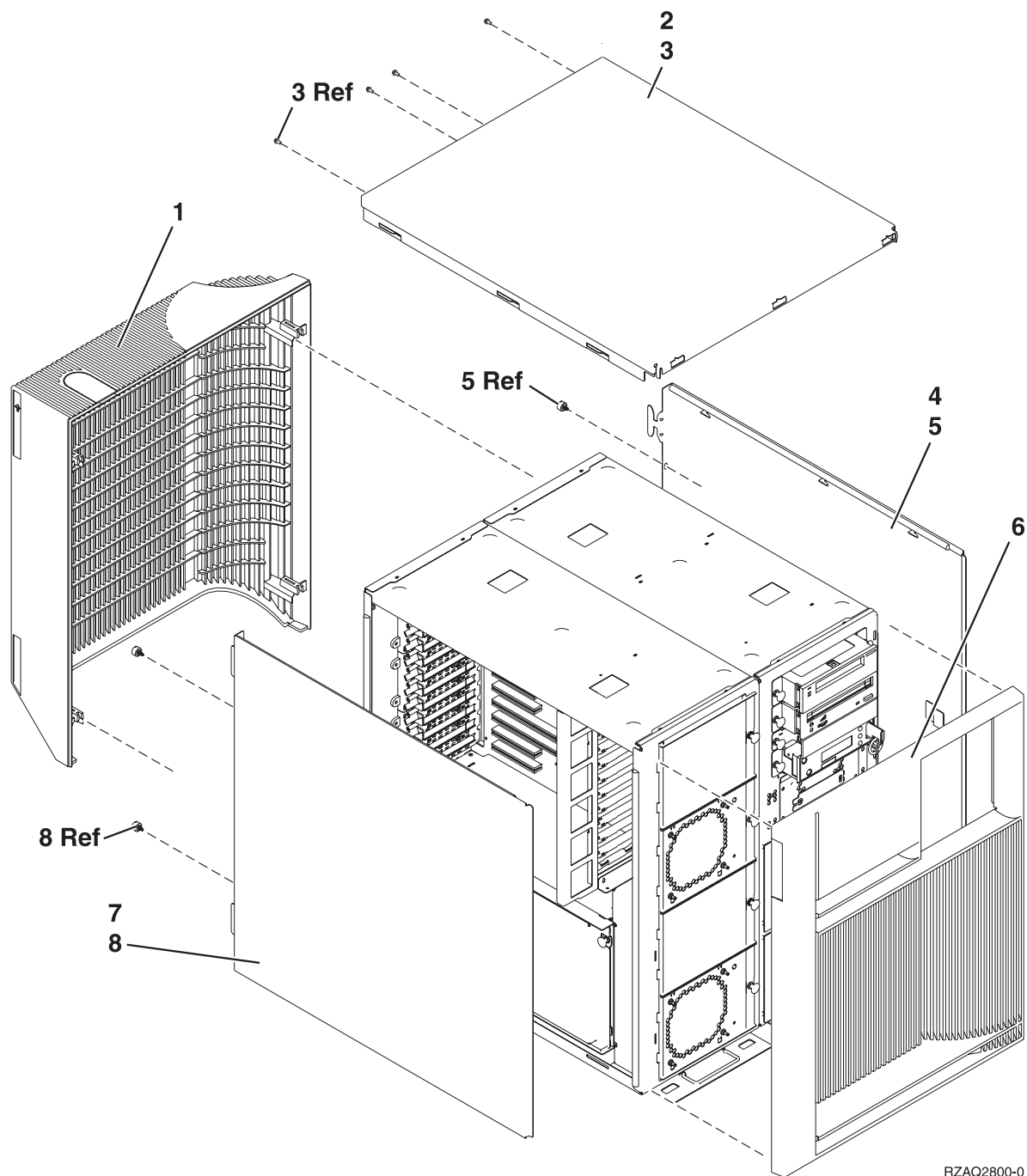
**Cover assembly**

**Final assembly**

**Control panel assembly**

*Cover assembly - Model 820: For use by authorized service providers.*

**Figure 1. Cover assembly - Model 820**



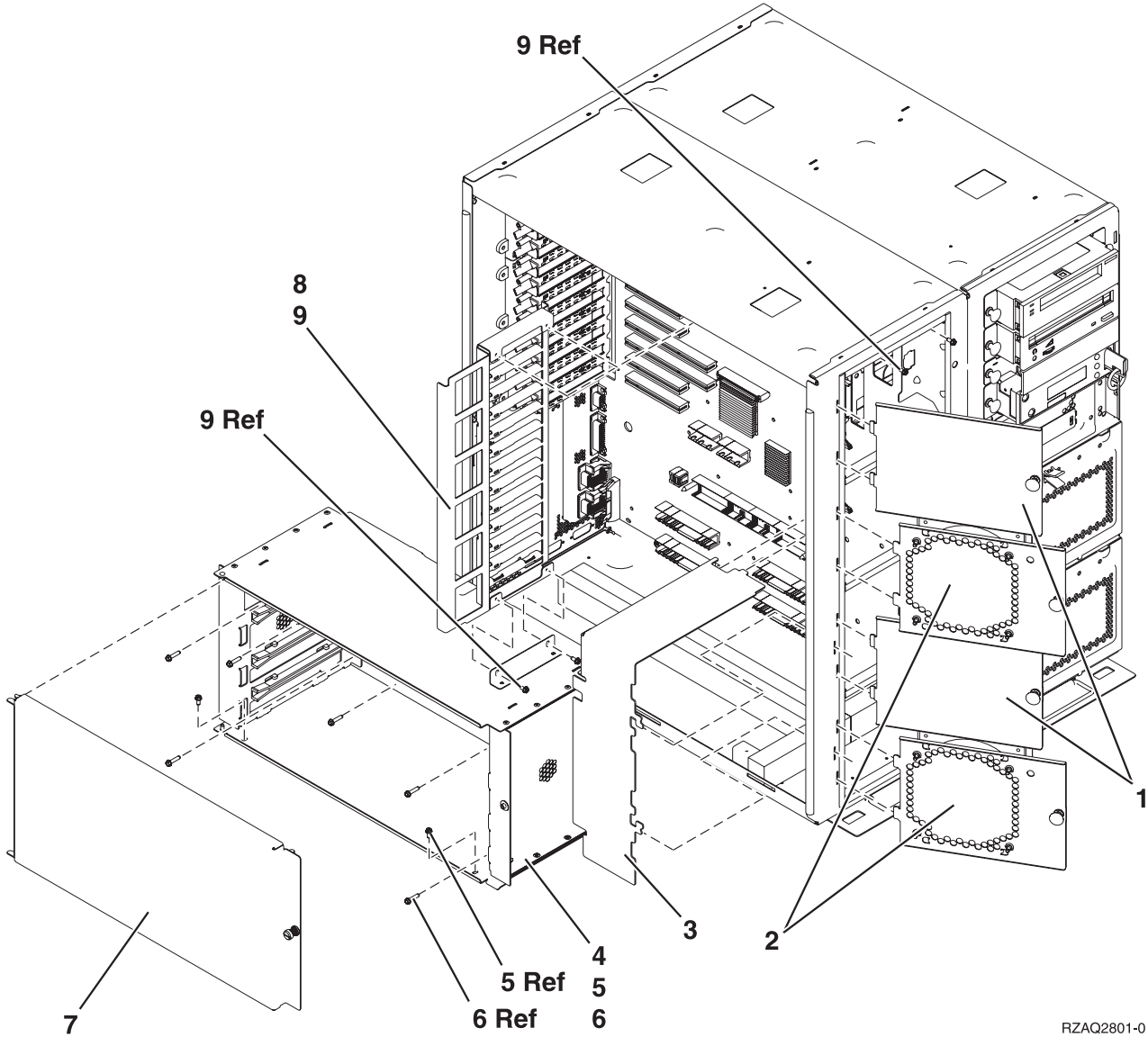
RZAQ2800-0

**Table 1. Cover assembly - Model 820**

Index	Part number	Units	Description
1	24L1664	1	Cover assembly, rear
2	24L1631	1	Cover, top
3	75G2878	4	Screw, M3.5 x 8mm
4	24L1632	2	Cover, side
5	24L1946	4	Thumbscrew
6	21P5144	1	Cover assembly, front (iSeries)

Index	Part number	Units	Description
6	21P4612	1	Cover assembly, front (Domino iSeries)

**Final assembly - Model 820:** For use by authorized service providers.



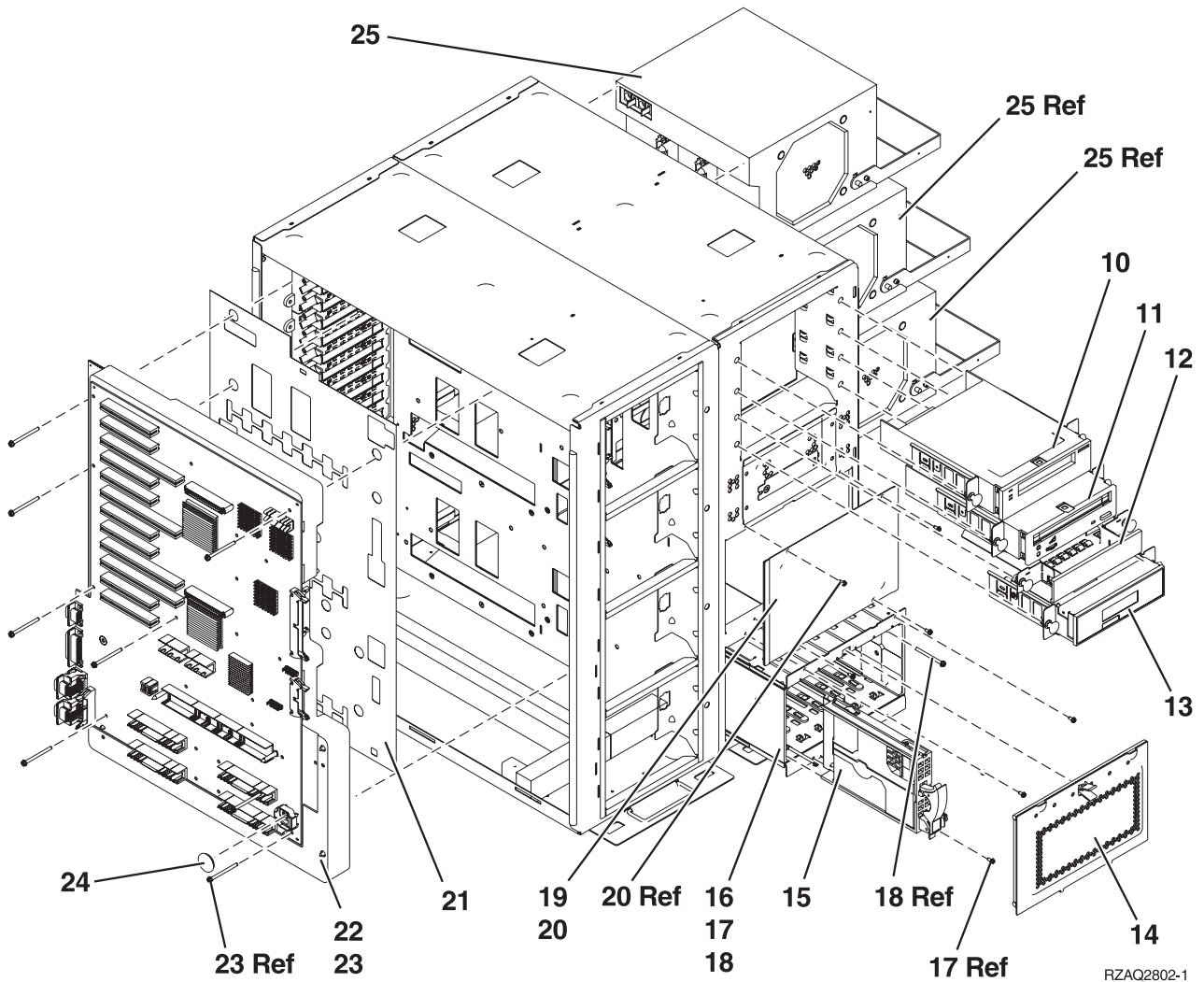
RZAQ2801-0

**Table 1. Final assembly - Model 820**

Index	Part number	Units	Description
1	NONUM	AR	Filler plate, air moving device (AMD)
2	24L1730	AR	Air moving device (AMD) assembly
3	24L1737	1	Plenum air flow
4	24L1546	1	CEC assembly, processor / memory
5	75G2878	2	Screw, M3.5 x 8mm
6	1622678	6	Screw



Index	Part number	Units	Description
7	24L1605	1	Cover, processor / memory CEC
8	24L1649	1	Bracket, PCI guide
9	75G2878	2	Screw, M3.5 x 8mm



RZAQ2802-1

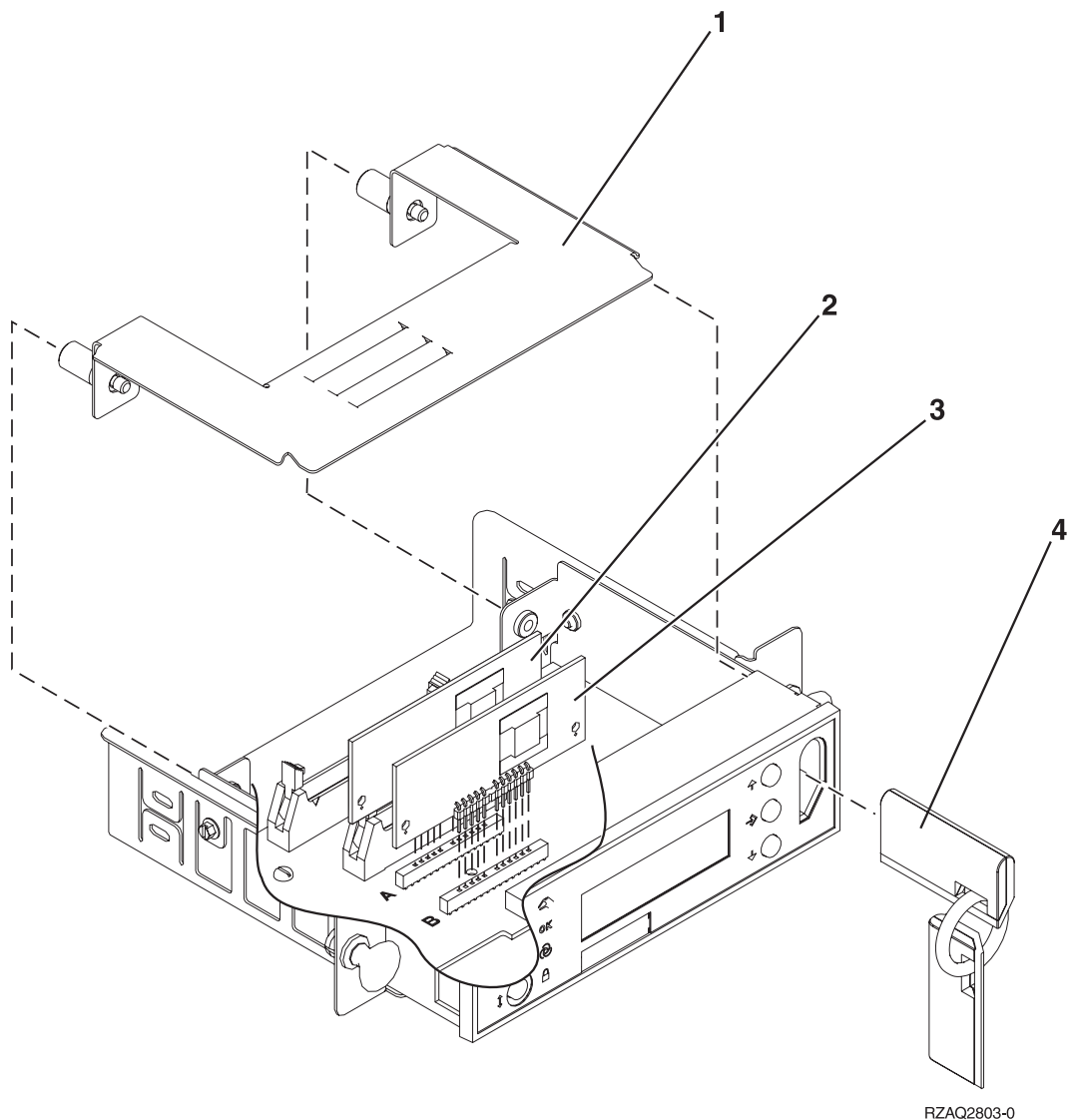
Table 2. Final assembly - Model 820 (continued)

Index	Part number	Units	Description
10	NONUM	1	Tape / tray assembly
11	NONUM	1	Optical / tray assembly
12	97H9137	1	Filler / tray assembly
13	24L1750	1	Control panel / tray assembly. See .
14	24L1827	AR	EMC shield assembly, disk unit cage

Index	Part number	Units	Description
15	NONUM	AR	Disk unit assembly. See "Type, model, and part number list" on page 520.
16	04N2472	AR	Disk unit cage assembly
17	75G2878	4	Screw, M3.5 x 8mm
18	04N3392	2	Screw
19	NONUM	AR	Filler, disk unit
20	75G2878	4	Screw, M3.5 x 8mm
21	24L1831	1	Insulator
22	NONUM	1	Active backplane assembly
23	24L1829	8	Screw
24	16G8095	1	Time of day battery
25	21P6417	AR	Power supply assembly (P01, P02, P03)
	21P6427	1	External power connector for dual line cord
	21P6691	1	Dual line cord warning label
26	24L1723	AR	Filler, power supply

*Control panel assembly - Models 820 and 825: For use by authorized service providers.*

**Figure 1. Control panel assembly - Models 820 and 825**



**Table 1. Control panel assembly - Models 820 and 825**

Index	Part number	Units	Description
1	NONUM	1	EMC plate
2	NONUM	1	Processor capacity card. See the Type, model, and part number list.
3	NONUM	1	Interactive card (Model 820 only). See the Type, model, and part number list.
4	NONUM	1	Key assembly

**Part assemblies - Model 825:** For use by authorized service providers.

### Control panel assembly

## Cover assembly

## Final assembly

Control panel assembly - Models 820 and 825: For use by authorized service providers.

Figure 1. Control panel assembly - Models 820 and 825

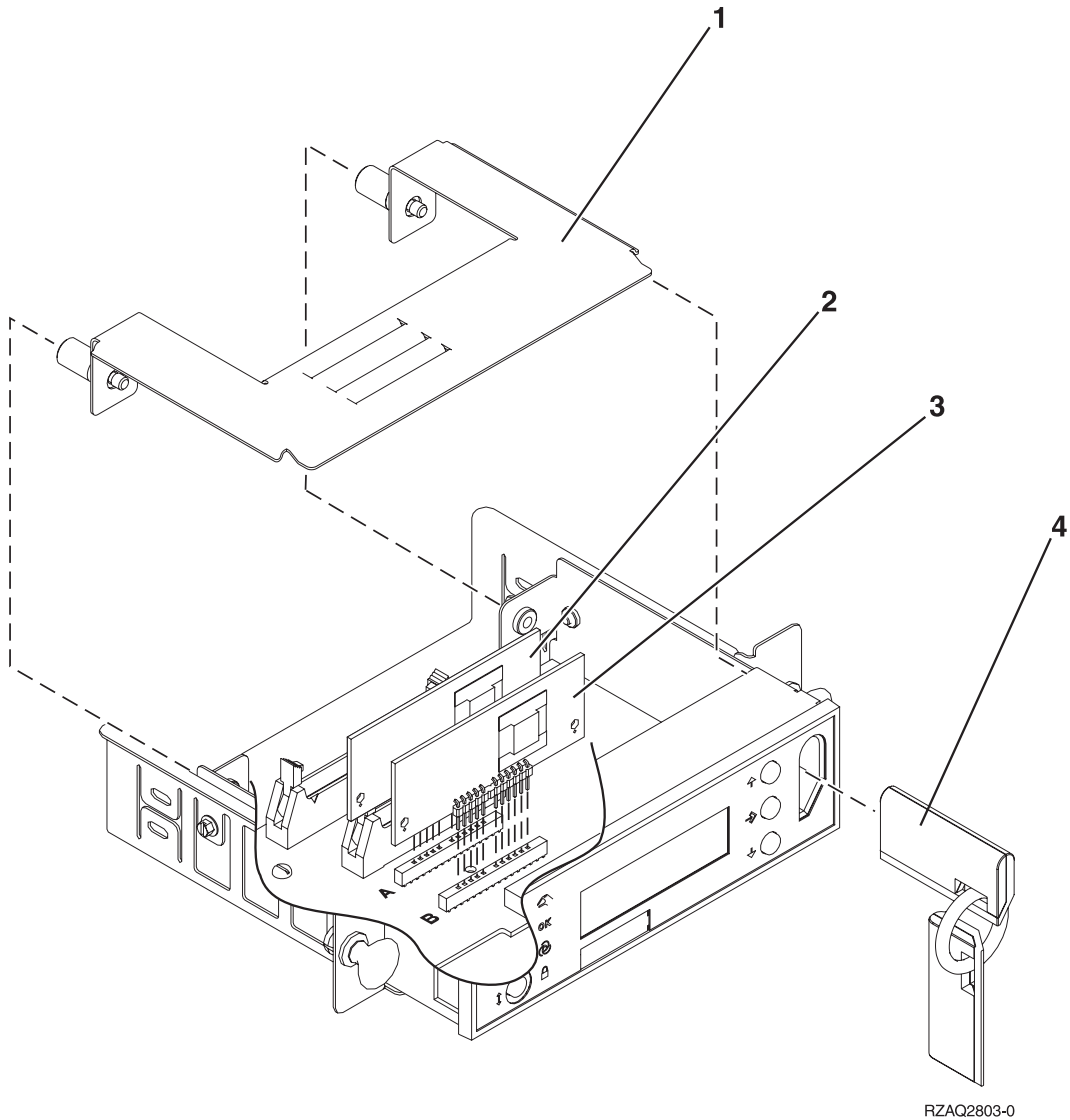


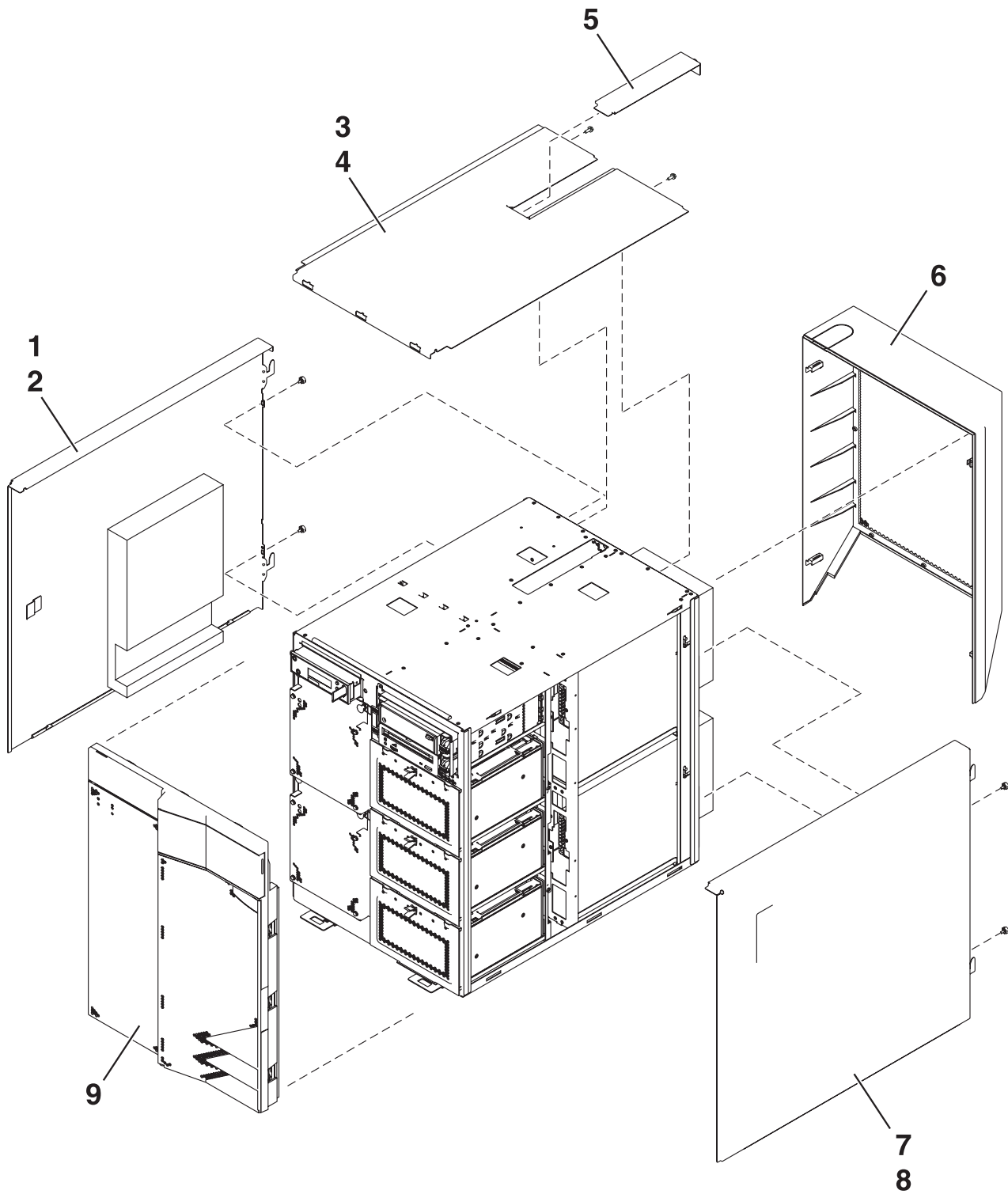
Table 1. Control panel assembly - Models 820 and 825

Index	Part number	Units	Description
1	NONUM	1	EMC plate
2	NONUM	1	Processor capacity card. See the Type, model, and part number list.

<b>Index</b>	<b>Part number</b>	<b>Units</b>	<b>Description</b>
3	NONUM	1	Interactive card (Model 820 only). See the Type, model, and part number list.
4	NONUM	1	Key assembly

*Cover assembly - Model 825: For use by authorized service providers.*

**Figure 1. Cover assembly - Model 825**



RZAR6899-0

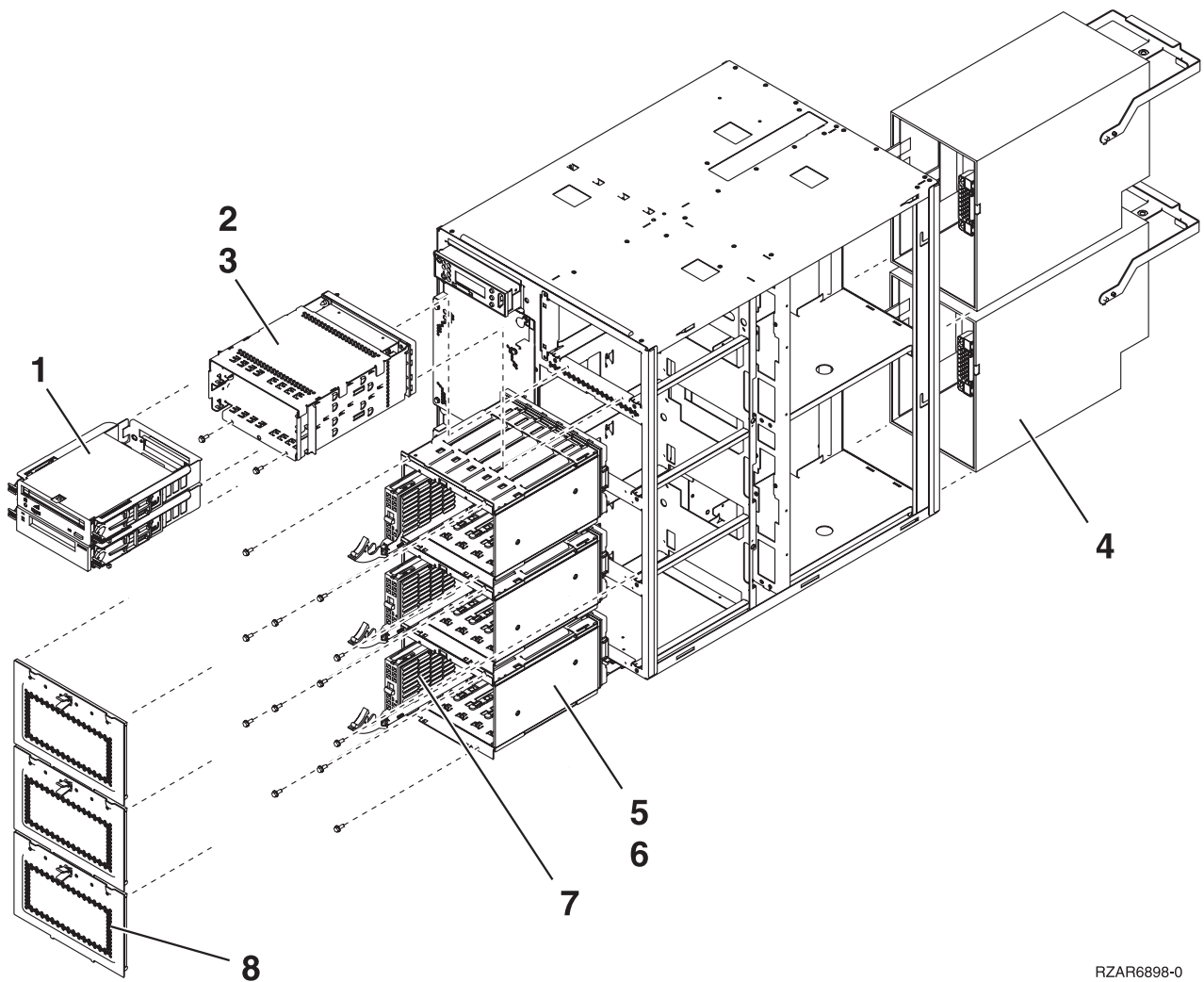
**Table 1. Cover assembly - Model 825**

Index	Part number	Units	Description
1	21P7344	1	Cover, left side

Index	Part number	Units	Description
2	28L0657	2	Screw, M3.5 x 8mm
3	21P7341	1	Cover, top
4	75G2878	2	Screw, M3.5 x 8mm
5	21P7342	1	Slide-out cover (MB1)
6	21P7360	1	Cover, rear
7	21P7343	1	Cover, right side
8	75G2878	2	Thumbscrew
9	21P7350	1	Cover front (double-wide iSeries)

*Final assembly - Model 825: For use by authorized service providers.*

**Figure 1. Final assembly - Model 825**



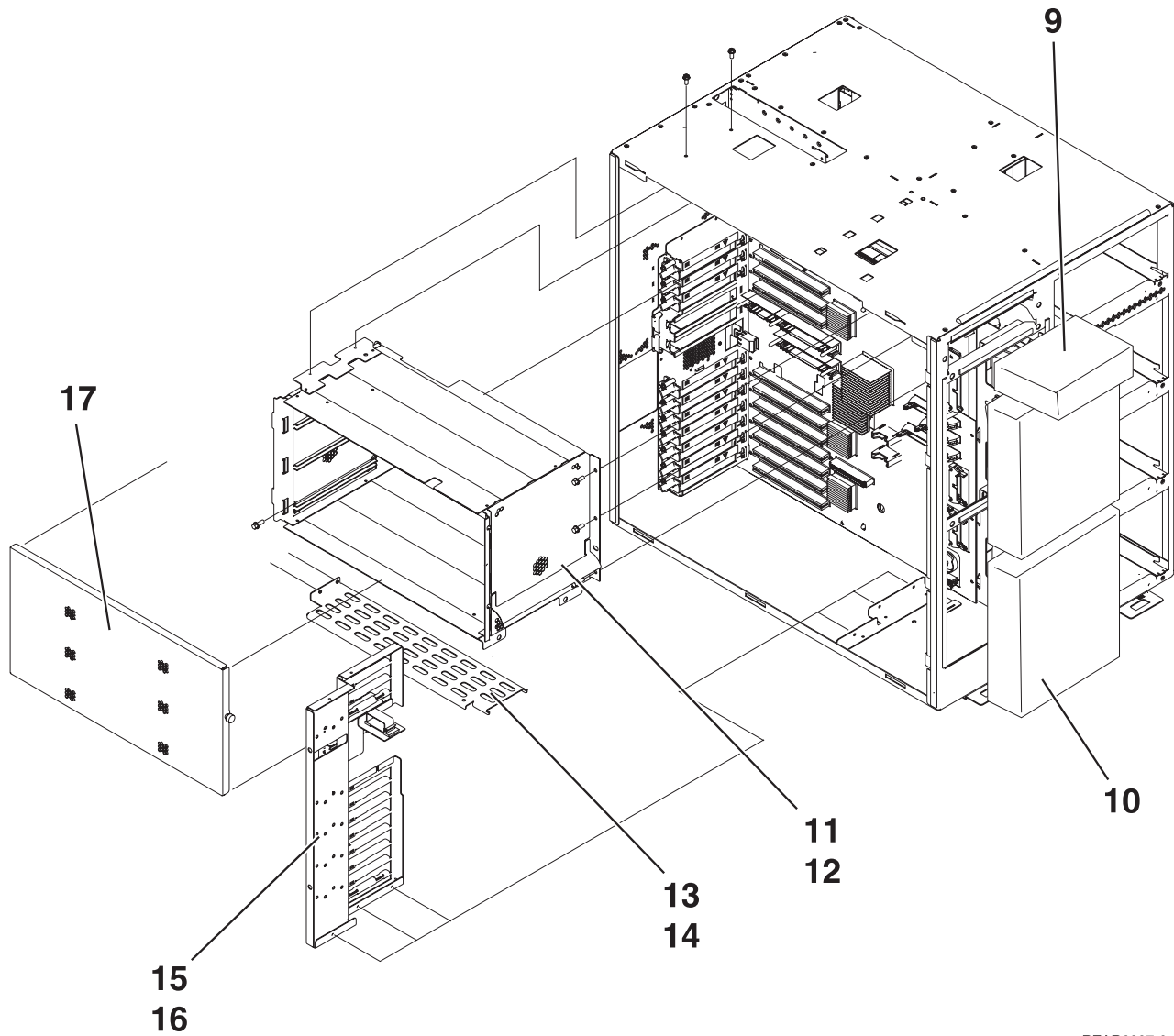
RZAR6898-0

**Table 1. Final assembly - Model 825**

Index	Part number	Units	Description
1	NONUM	AR	Removable media assembly (see the Type, model, and part number list)
2	21P7315	1	Media cage assembly
3	75G2878	2	Screw
4	53P2858	AR	Power supply
4	21P7331	AR	Filler, power supply
5	53P1387	AR	Disk unit cage assembly
6	75G2878	4	Screw, mounting
6	04N3392	2	Screw, rear mounting
7	21P5393	AR	Disk unit
8	24L1827	AR	EMC shield, disk unit
8	24L1729	AR	Filler blank, disk unit
8	75G2878	4	Screw

**Figure 2. Final assembly - Model 825, continued**



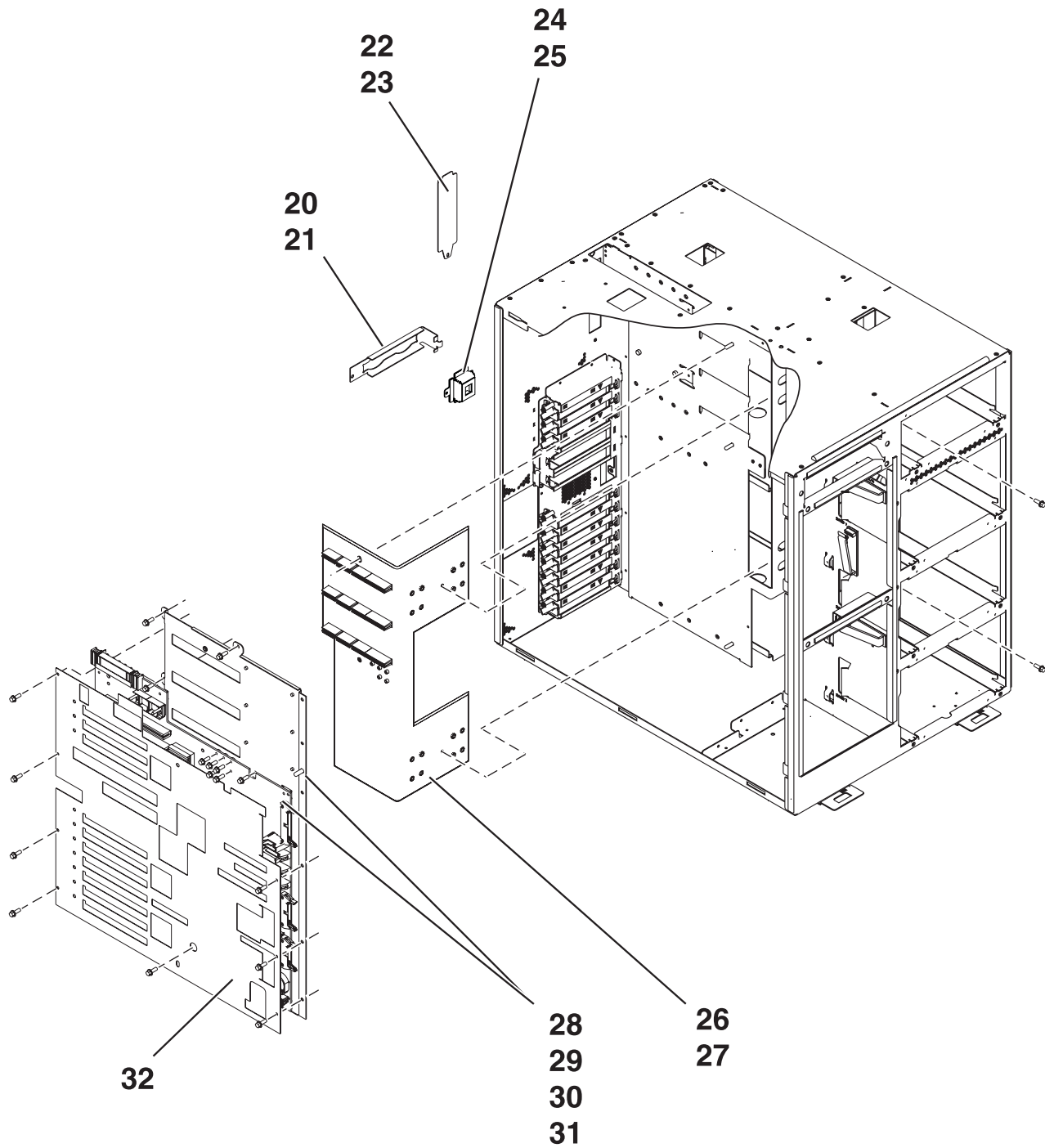


RZAR6897-0

**Table 2. Final assembly - Model 825, continued**

Index	Part number	Units	Description
9	21P7333	1	Control panel assembly
10	21P7375	AR	Air moving device (AMD) assembly
10	21P7330	AR	Filler, AMD assembly
11	21P7300	1	Processor enclosure assembly
12	75G2878	6	Screw
13	21P7327	1	Bracket, cable support
14	75G2878	2	Screw
15	21P7345	1	Bracket, PCI front
16	75G2878	5	Screw, mounting
17	21P7307	1	Processor enclosure cover

Figure 3. Final assembly - Model 825, continued



RZAR6896-0

Table 3. Final assembly - Model 825, continued

Index	Part number	Units	Description
20	21P7324	2	Bracket, RIO-G
21	75G2878	2	Screw
22	21P7323	AR	Bracket, RIO-G containment

Index	Part number	Units	Description
22	21P7324	AR	Filler, RIO-G containment
23	75G2878	2	Screw
24	21P7332	1	Bracket, Ethernet
25	75G2878	6	Screw
26	21P7112	1	Bracket (busbar)
27	75G2878	2	Screw
28	NONUM	1	Backplane assembly (see the Type, model, and part number list)
28	21P7312	1	Stiffener
29	86G7603	3	Screw, voltage
30	11H3846	2	Screw, ground
31	75G2878	11	Screw, backplane mounting
32	21P7298	1	Insulator

**Part assemblies - Models 830/SB2:** For use by authorized service providers.

**Control panel assembly (with FC 9074)**

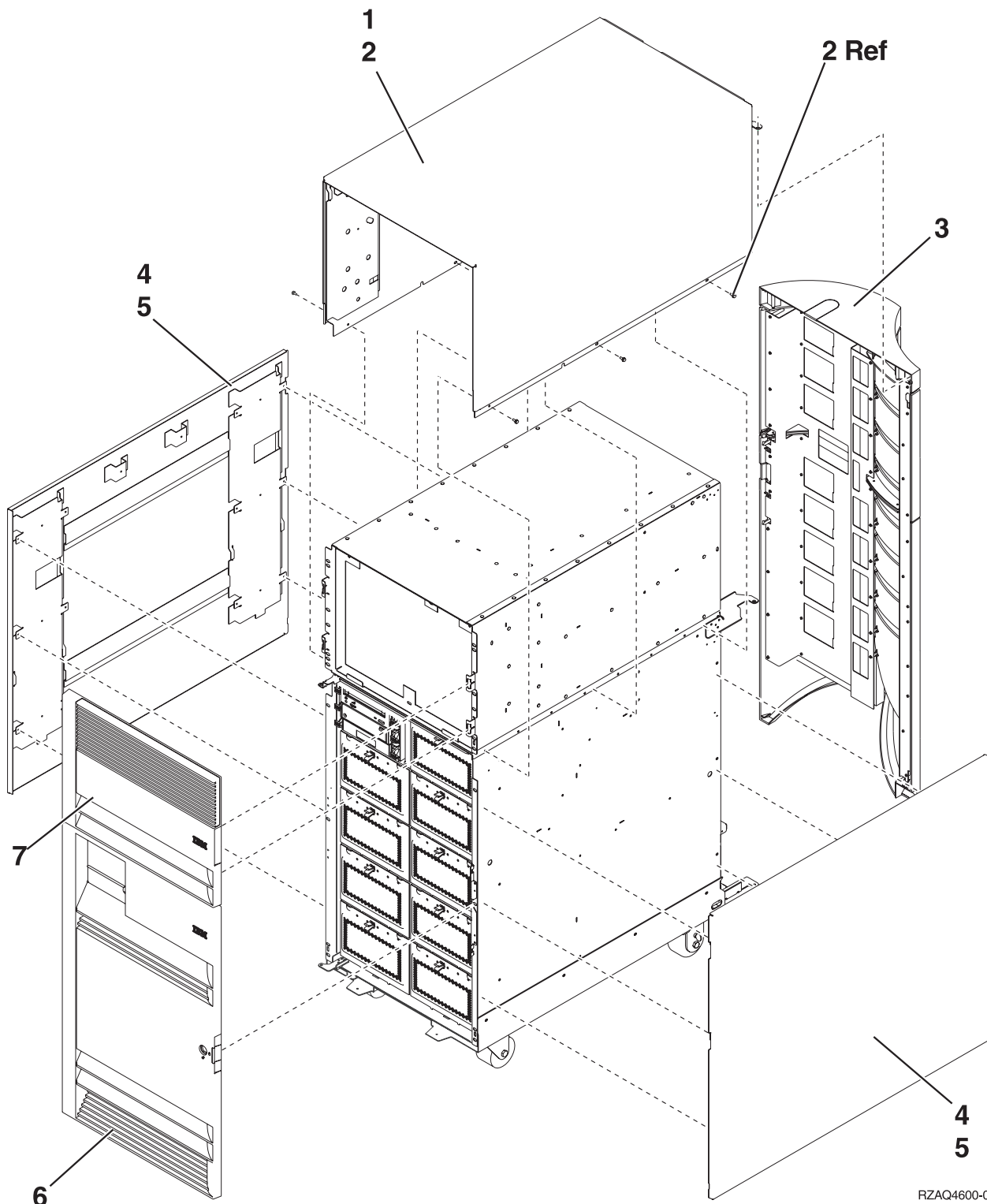
**Cover assembly (with FC 9074)**

**Final assembly (front) (with FC 9074)**

**Final assembly (rear) (with FC 9074)**

*Cover assembly - Models 830 and SB2 with FC 9074: For use by authorized service providers.*

**Figure 1. Cover assembly - Models 830 and SB2 with FC 9074**



RZAQ4600-0

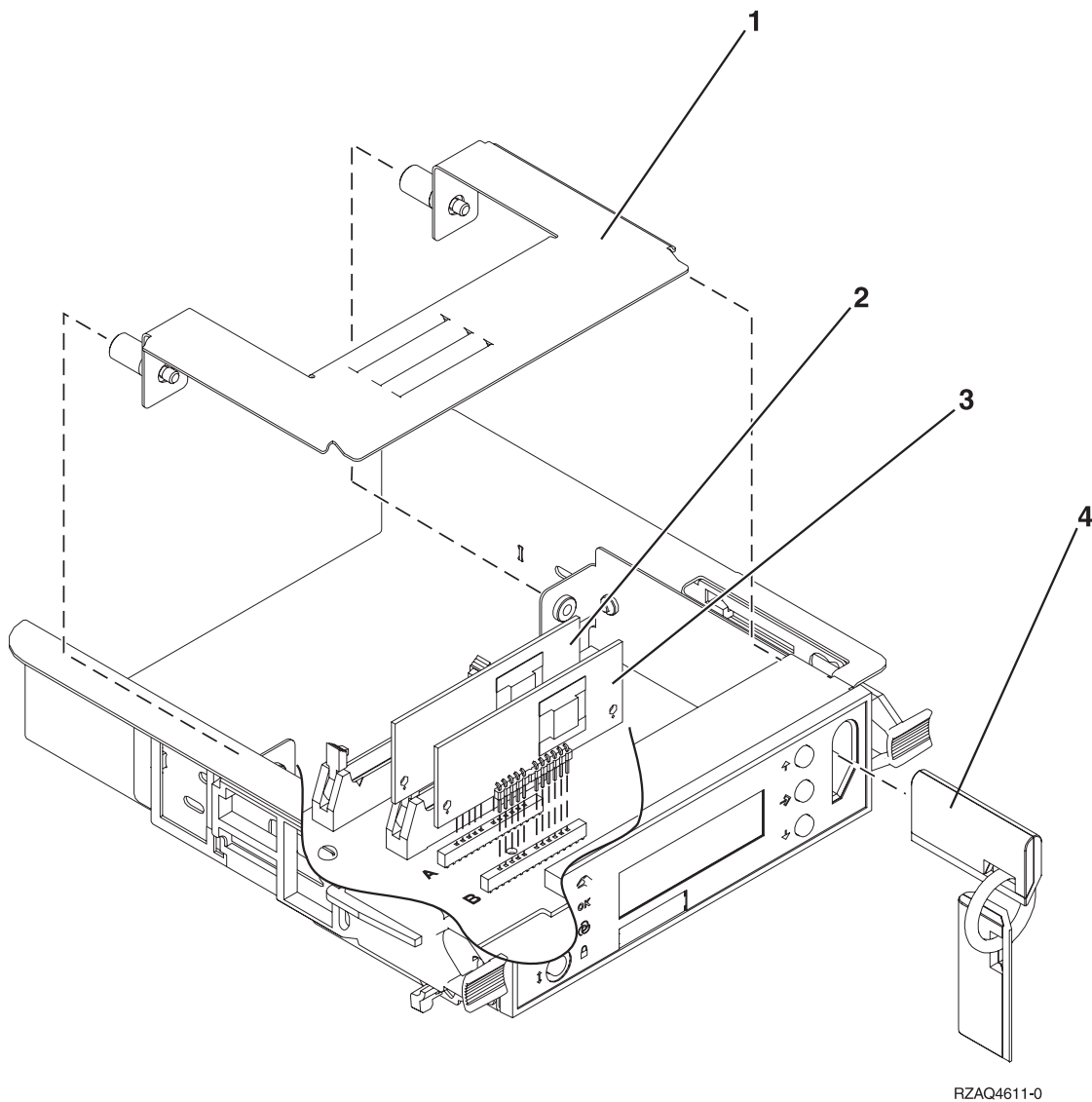
**Table 1. Cover assembly - Models 830 and SB2 with FC 9074**

Index	Part number	Units	Description
1	21P4986	1	Cover, top
2	1621811	6	Screw, M4 (10mm)

Index	Part number	Units	Description
3	44L0247 24L1071	1	Cover assembly, rear Hinge pin, top
4	24L0824	1	Cover, side
5	1621811	6	Screw, M4 (10mm)
6	24L1069 24L1071	1	Cover assembly, lower front Hinge pin, top
7	44L0243	1	Cover, upper front

*Control panel assembly - Models 830 and SB2 with FC 9074: For use by authorized service providers.*

**Figure 1. Control panel assembly - Models 830 and SB2 with FC 9074**

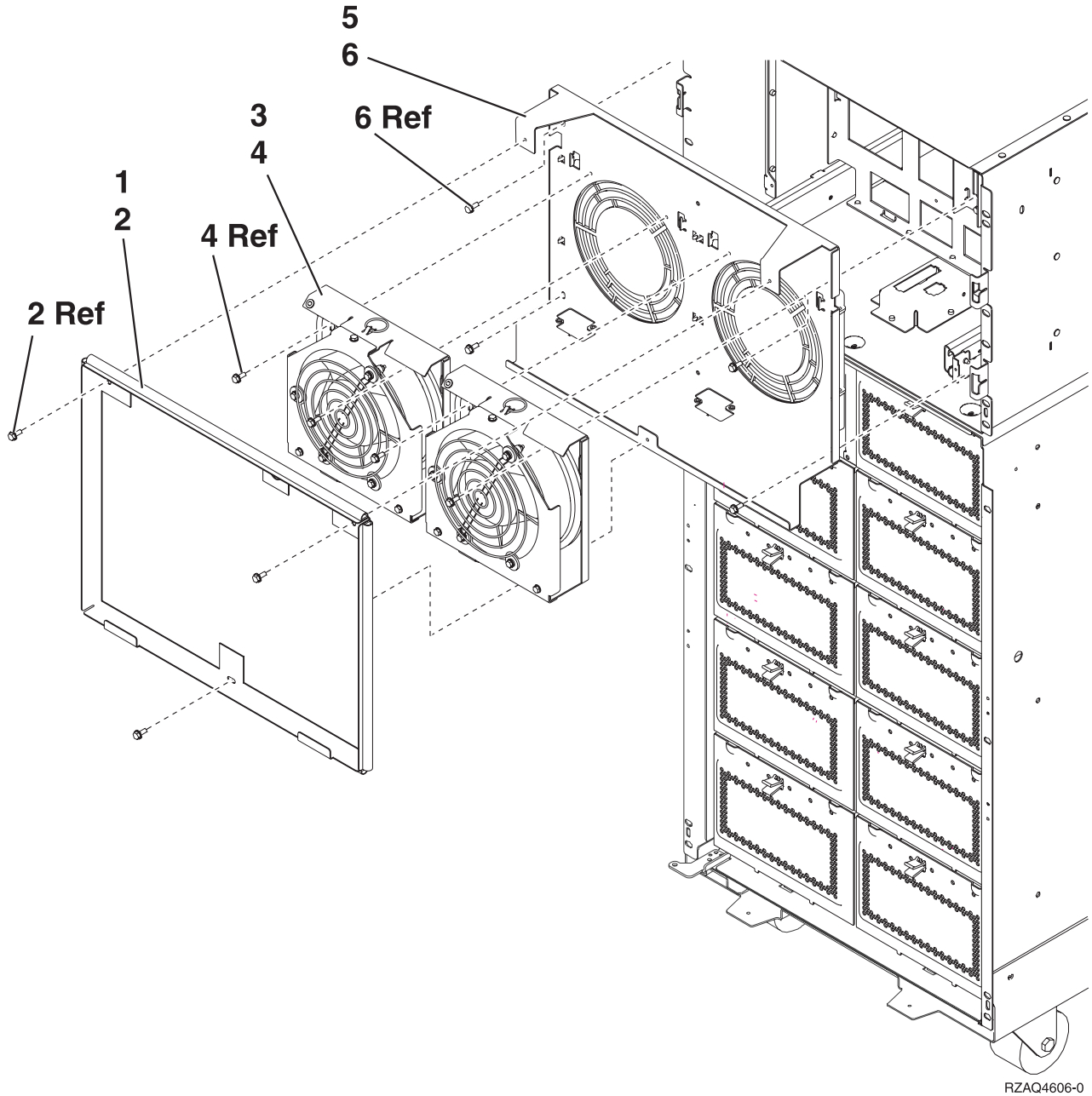


**Table 1. Control panel assembly - Models 830 and SB2 with FC 9074**

Index	Part number	Units	Description
1	NONUM	1	Control panel cover
2	AR	1	Processor capacity card (FC 9074 Only) (slot A). See the Type, model, and part number list.
3	AR	1	Interactive Card (FC 9074 Only) (slot B). See the Type, model, and part number list.
4	NONUM	1	Key assembly

*Final assembly, front - Models 830 and SB2 with FC 9074: For use by authorized service providers.*

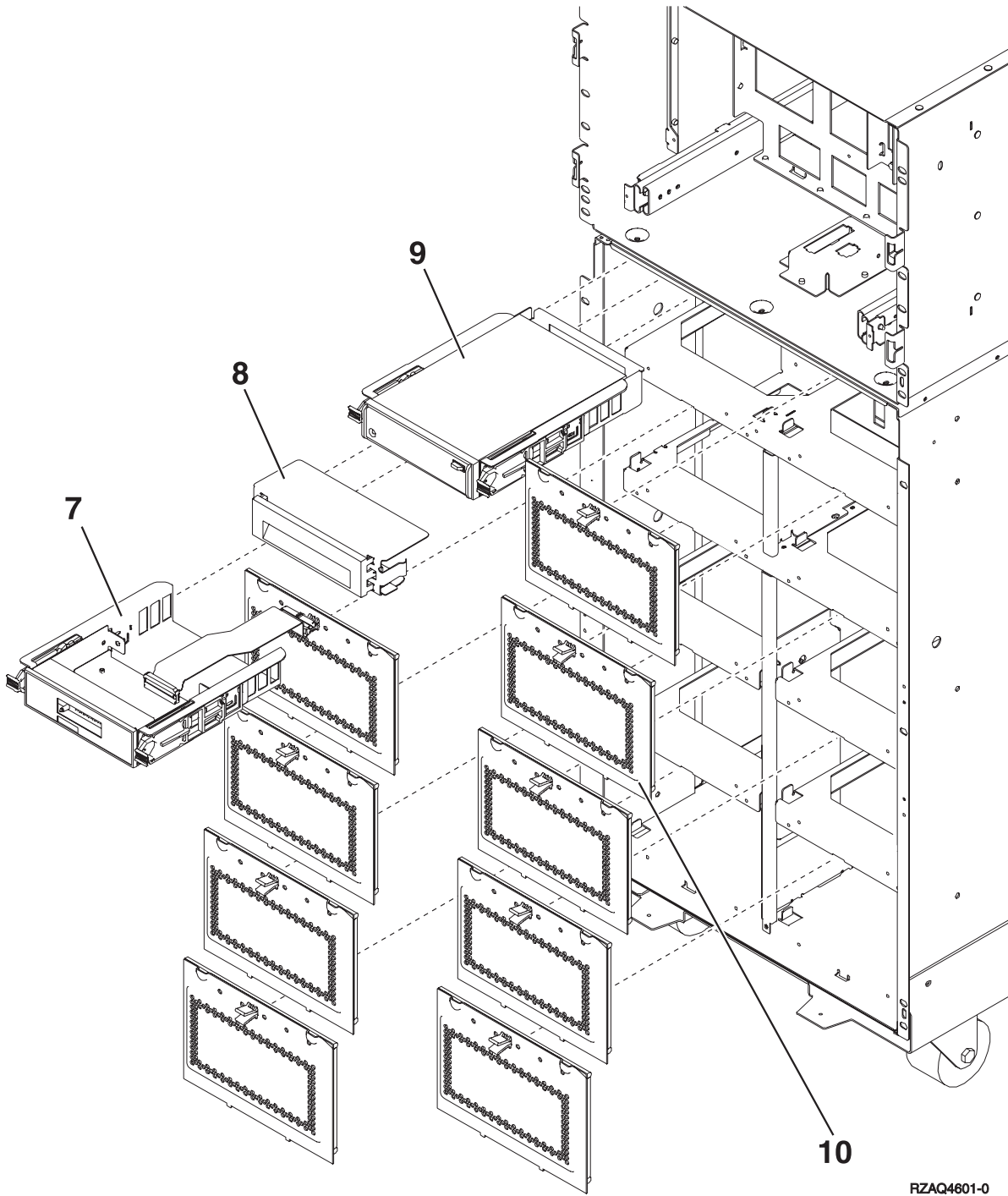
**Figure 1. Final assembly, front - Models 830 and SB2 with FC 9074**



**Table 1. Final Assembly, Front - Models 830 and SB2 with FC 9074**

Index	Part number	Units	Description
1	24L0775	1	Shield, EMC
2	44H8681	3	Screw
3	04N3345	2	Air moving device (AMD) assembly (BP1 and BP2)
4	44H8681	4	Screw
5	04N2793	1	Air moving device (AMD) mounting assembly
6	1621811	4	Screw, M4 (10mm)

**Figure 2. Final Assembly, Front - Models 830 and SB2 with FC 9074 (continued)**



RZAQ4601-0

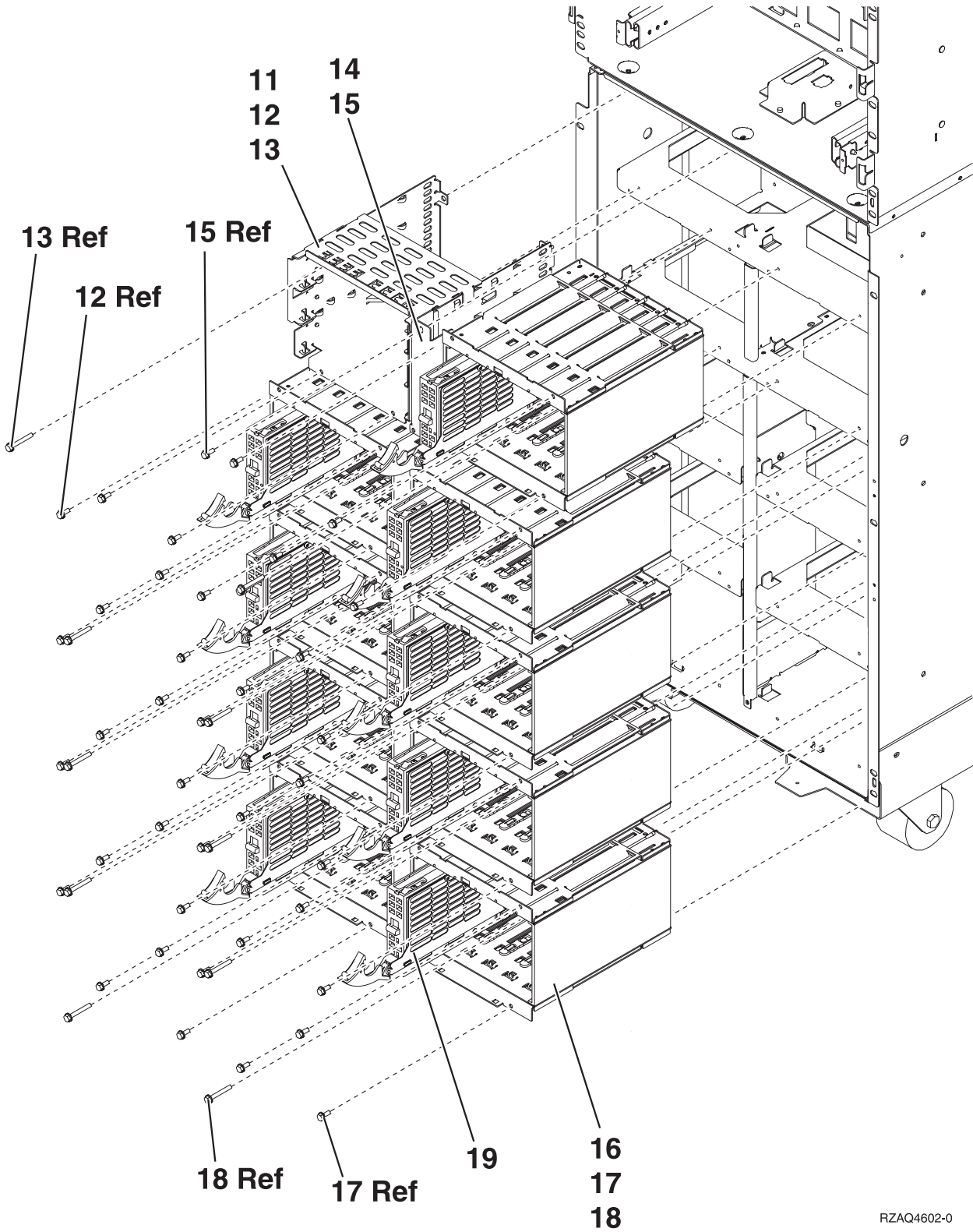
**Table 2. Final Assembly, Front - Models 830 and SB2 with FC 9074 (continued)**

Index	Part number	Units	Description
7	24L0945	1	Control panel. See Control Panel assembly - Models 830 and SB2 with FC 9074.
8	44H8406	AR	Filler (Removable media)



Index	Part number	Units	Description
8		AR	Optical storage unit (D41). See the Type, model, and part number list.
9		AR	Removable media (D42). See the Type, Model, and Part Number list.
10	24L0821	AR	DASD EMC access plate

**Figure 3. Final Assembly, Front - Models 830 and SB2 with FC 9074 (continued)**

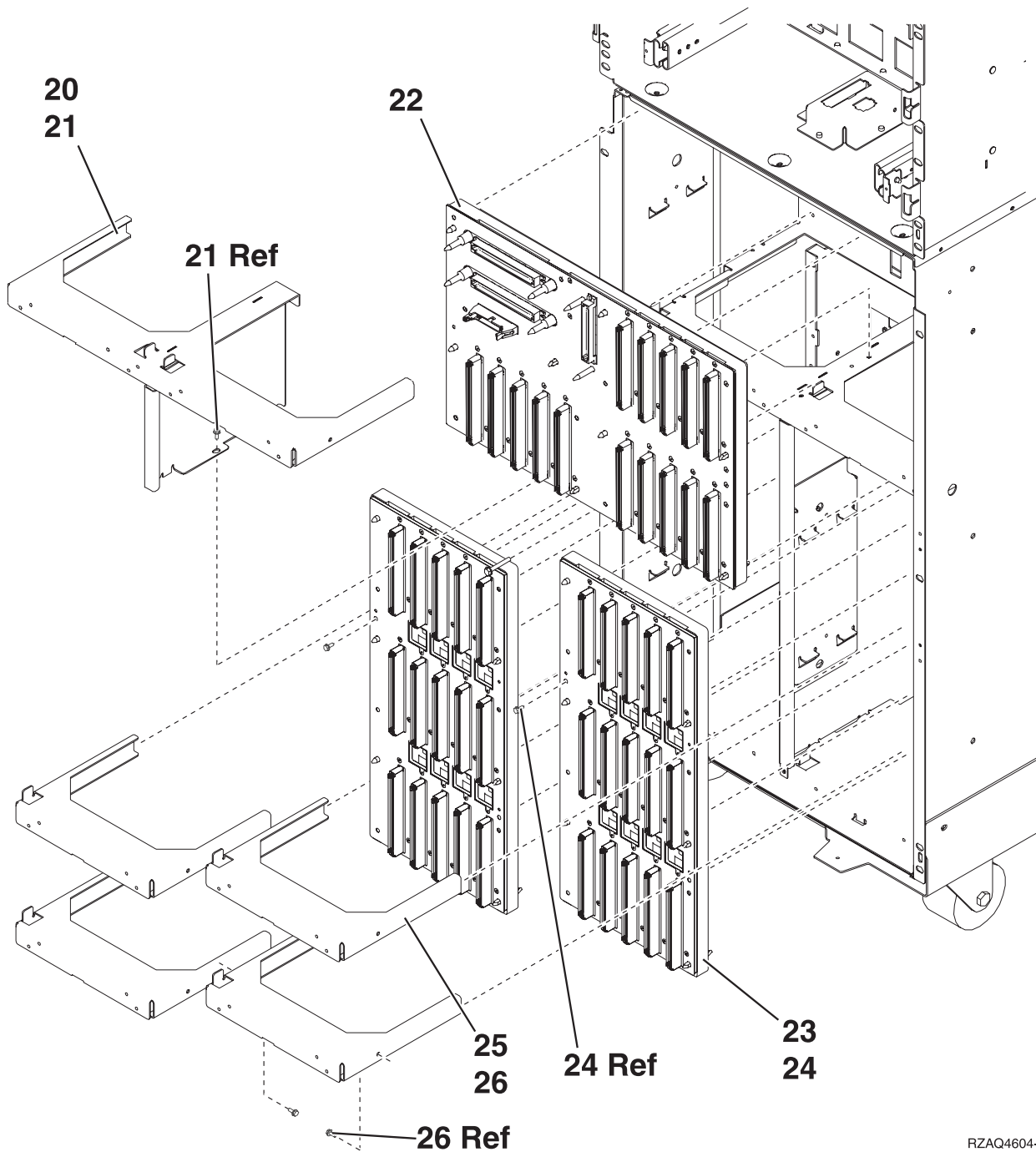


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Table 3. Final Assembly, Front - Models 830 and SB2 with FC 9074 (continued)

Index	Part number	Units	Description
11	NONUM	1	Removable media cage assembly
12	1621811	2	Screw, M4 (10mm)
13	1621817	2	Screw
14	24L1067	1	Keystick EMC plate
15	1621811	2	Screw, M4 (10mm)
16	NONUM	AR	5 Disk unit cage assembly (slots D01 through D50)
17	1621811	12	Screw, M4 (10mm)
18	1621817	6	Screw
19		AR	Disk unit assembly. See the Type, model, and part number list.

**Figure 4. Final Assembly, Front - Models 830 and SB2 with FC 9074 (continued)**



RZAQ4604-0

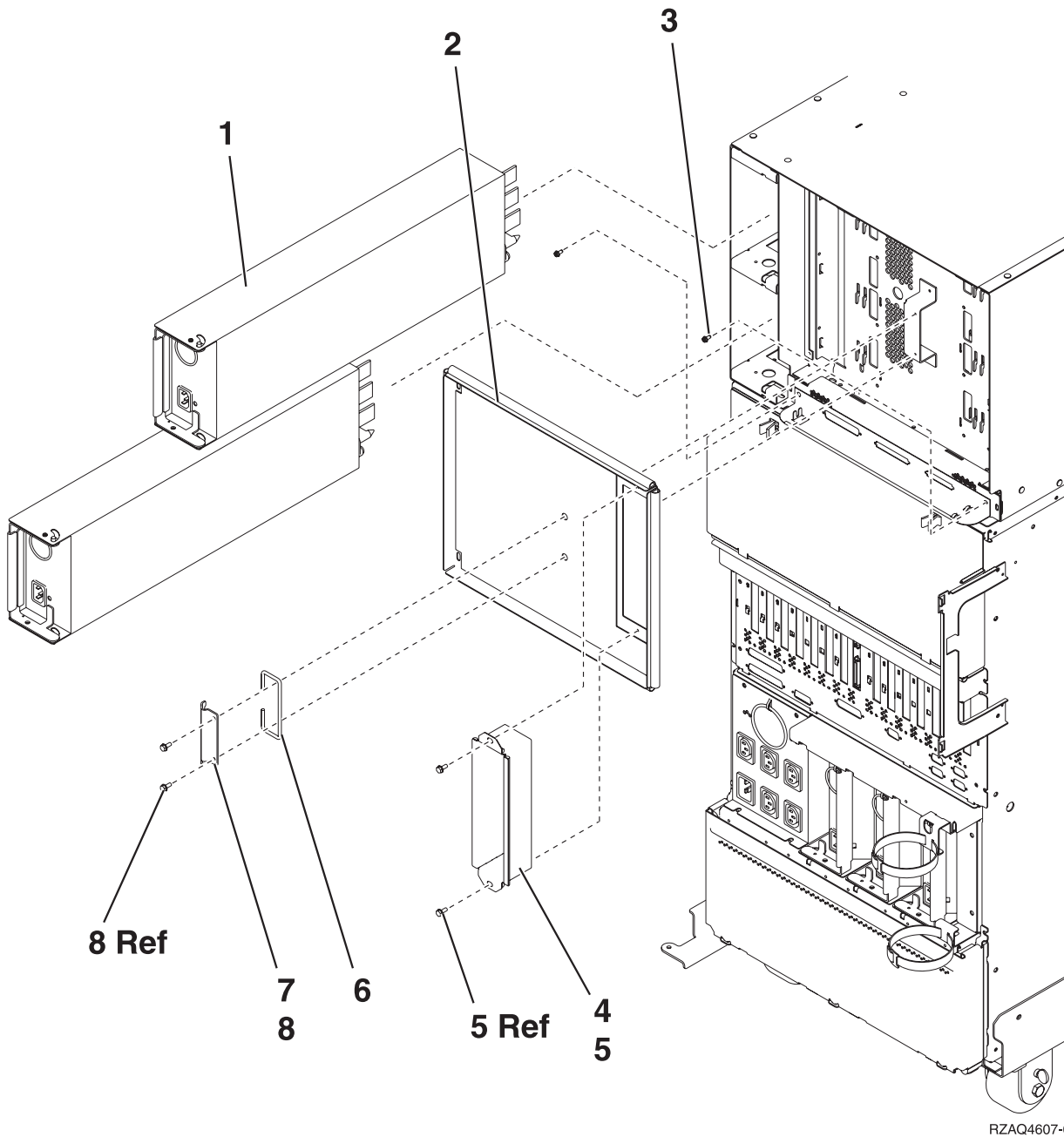
**Table 4. Final Assembly, Front - Models 830 and SB2 with FC 9074 (continued)**

Index	Part number	Units	Description
20	NONUM	1	Shelf, base DASD
21	1621811	3	Screw, M4 (10mm)
22	24L0892	1	Base DASD board stiffener assembly (DB3)
23	24L1029	AR	DASD board stiffener assembly (DB1 and DB2)
24	1621838	1	Screw
25	NONUM	AR	Shelf, DASD

Index	Part number	Units	Description
26	1621811	2	Screw, M4 (10mm)

*Final assembly, rear - Models 830 and SB2 with FC 9074: For use by authorized service providers.*

**Figure 1. Final assembly, rear - Models 830 and SB2 with FC 9074**



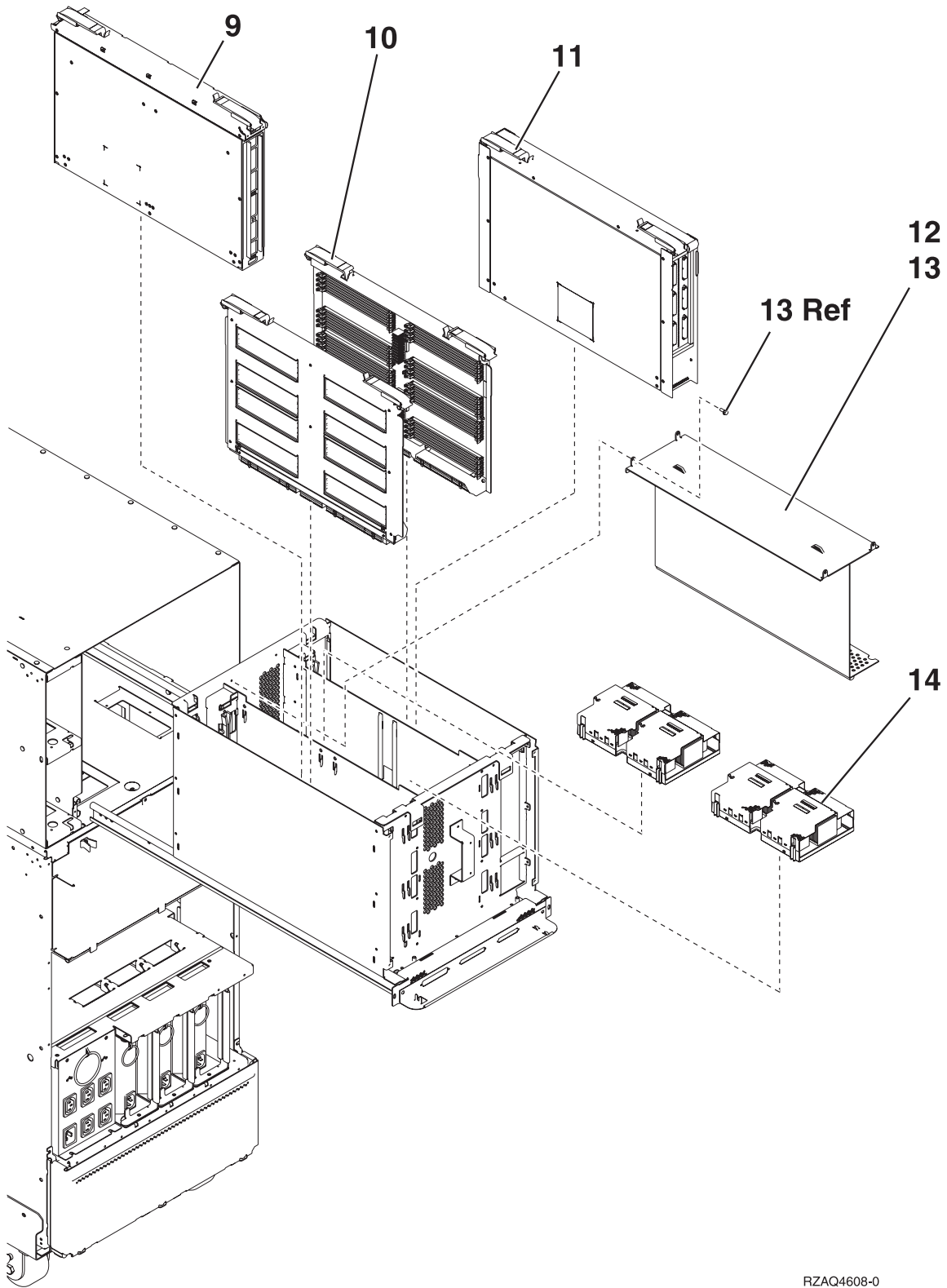
RZAQ4607-0

**Table 1. Final assembly, rear - Models 830 and SB2 with FC 9074**

Index	Part number	Units	Description
1	24L0728	2	Power supply (PP1 and PP2)

Index	Part number	Units	Description
2	24L0774	1	Shield, EMC
3	1621807	2	Screw, cage mounting
4	24L0776	1	Tunnel, EMC
5	1621811	2	Screw, M4 (10mm)
6	90H9196	1	Handle
7	24L2643	1	Bracket, handle
8	1621811	2	Screw, M4 (10mm)

**Figure 2. Final assembly, rear - Models 830 and SB2 with FC 9074 (continued)**



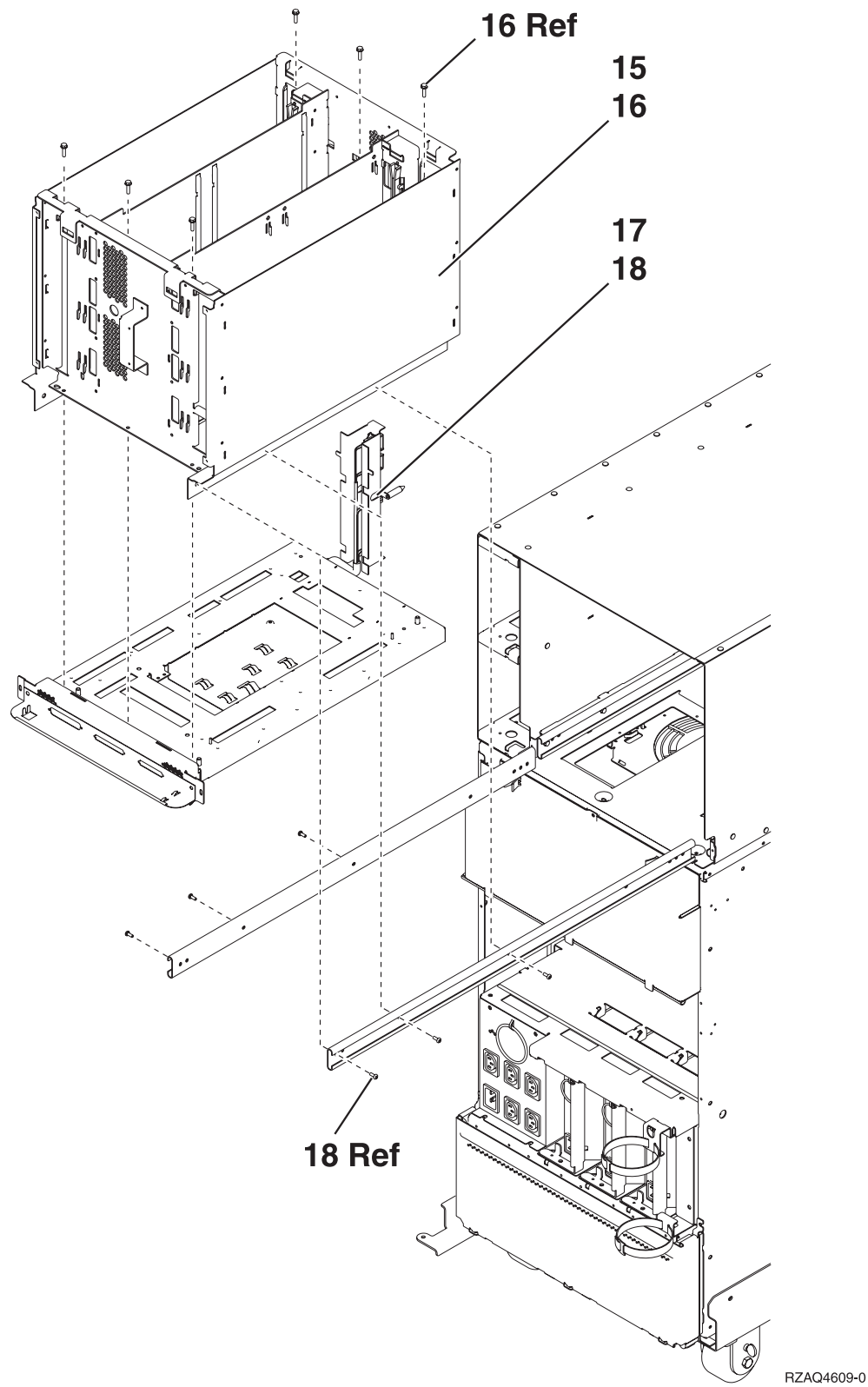
RZAQ4608-0

**Table 2. Final assembly, rear - Models 830 and SB2 with FC 9074 (continued)**

Index	Part number	Units	Description
9	NONUM		Processor Regulator assembly (M01)
10	NONUM		Memory riser card assembly (M02 and M05)
11	NONUM		Network interface controller card (M06) and Clock card assembly (M06A)
12	24L0971	1	Cover, processor air
13	1621811	4	Screw, M4 (10mm)
14	NONUM	AR	Processor assembly (M03 and M04). Before returning the processor to IBM <sup>(R)</sup> , snap the array cover (PN 24L0710) onto the processor to protect it during shipping.
—	53P5669		Screw/post kit

**Figure 3. Final assembly, rear - Models 830 and SB2 with FC 9074 (continued)**



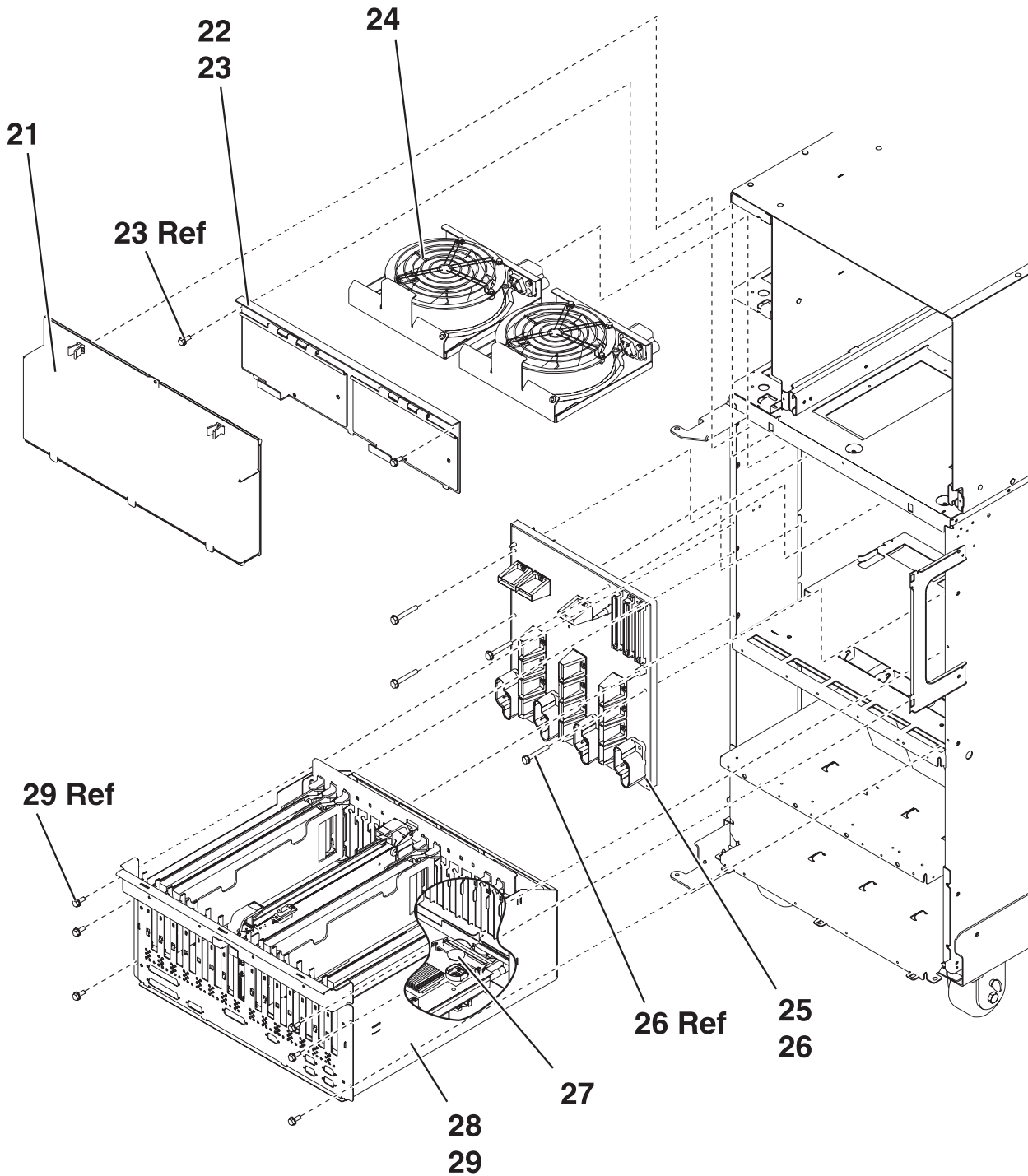


**Table 3. Final assembly, rear - Models 830 and SB2 with FC 9074 (continued)**

Index	Part number	Units	Description
15	24L0972	1	CEC cage assembly

Index	Part number	Units	Description
16	1621811	6	Screw, M4 (10mm)
17	NONUM	1	System unit backplane / stiffener assembly (MB1)
18	24L0906	6	Screw

Figure 4. Final assembly, rear - Models 830 and SB2 with FC 9074 (continued)

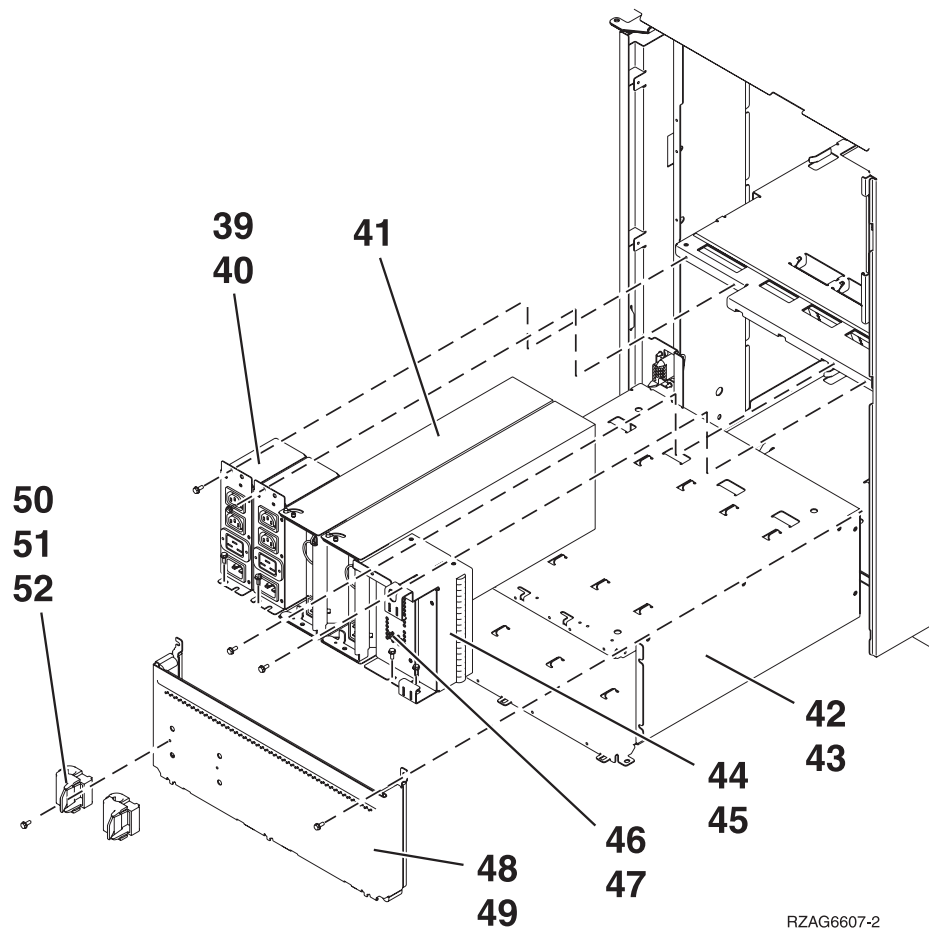


RZAQ4603-2

**Table 4. Final assembly, rear - Models 830 and SB2 with FC 9074 (continued)**

Index	Part number	Units	Description
21	24L0823	1	EMC access plate
22	NONUM	1	Air moving device (AMD) door assembly
23	1621811	2	Screw, M4 (10mm)
24	44L0023	2	Air moving device (AMD) (B01, B02)
25	24L0891	1	Power board/stiffener assembly (PB1)
26	1621816	6	Screw
27	16G8095	1	Time of day (TOD) battery
28	24L0926	1	PCI card cage assembly
29	1621811	6	Screw, M4 (10mm)

**Figure 5. Final assembly, rear - Models 830 and SB2 with FC 9074 (continued), (2 power supply dual line cord)**



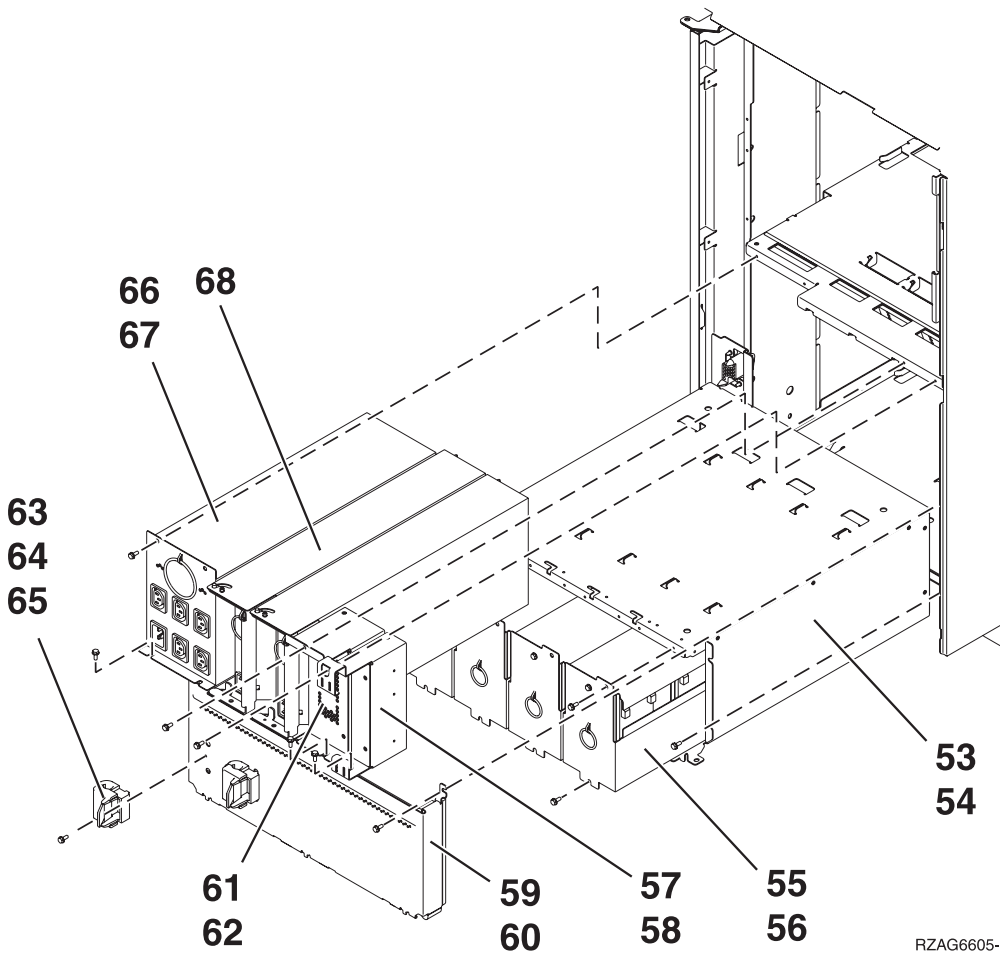
RZAG6607-2

**Table 5. Final assembly, rear - Models 830 and SB2 with FC 9074 (continued), (2 power supply dual line cord)**

39	21P6347	2	AC module
40	1621811	4	Screw, M4 (10mm)

41	90H6629	2	Power supply — 765 watts (P01, P02)
42	53P4651	1	Power sub frame assembly
43	1621811	12	Screw, M4 (10mm)
44	24L0940	AR	Filler, Spacer
45	1621811	2	Screw, M4 (10mm)
46	24L0939	AR	Filler, Power Supply
47	1621811	2	Screw, M4 (10mm)
48	NONUM	1	EMC access plate
49	1621811	2	Screw, M4 (10mm)
50	44H8641	2	Cable Clamp, Top
51	44H8640	2	Cable Clamp, Base
52	1621811	2	Screw, M4 (10mm)

**Figure 6. Final assembly, rear - Models 830 and SB2 with FC 9074 (continued), (single line cord)**



RZAG6605-3

**Table 6. Final assembly, rear - Models 830 and SB2 with FC 9074 (continued), (single line cord)**

Index	Part number	Units	Description
53	53P4651	1	Power sub frame assembly
54	1621811	12	Screw, M4 (10mm)
55	97H7318	1	Battery pack - This part number includes four batteries. Refer to the BATTERY symbolic FRU for additional information.
56	1621811	12	Screw, M4 (10mm)
57	24L0940	AR	Filler, Spacer
58	1621811	2	Screw, M4 (10mm)
59	NONUM	1	EMC access plate
60	1621811	2	Screw, M4 (10mm)
61	24L0939	AR	Filler, power supply
62	1621811	2	Screw, M4 (10mm)
63	44H8641	2	Cable Clamp, Top
64	44H8640	2	Cable Clamp, Base
65	1621811	2	Screw, M4 (10mm)
66	97H7316	1	Battery charger
67	1621811	4	Screw, M4 (10mm)
68	90H6629	3	Power supply — 765 watts (P01, P02, P03)

**Part assemblies - Models 840/SB3:** For use by authorized service providers.

**Cover assembly (processor tower)**

**Final assembly (front) (processor tower)**

**Final assembly (rear) (processor tower)**

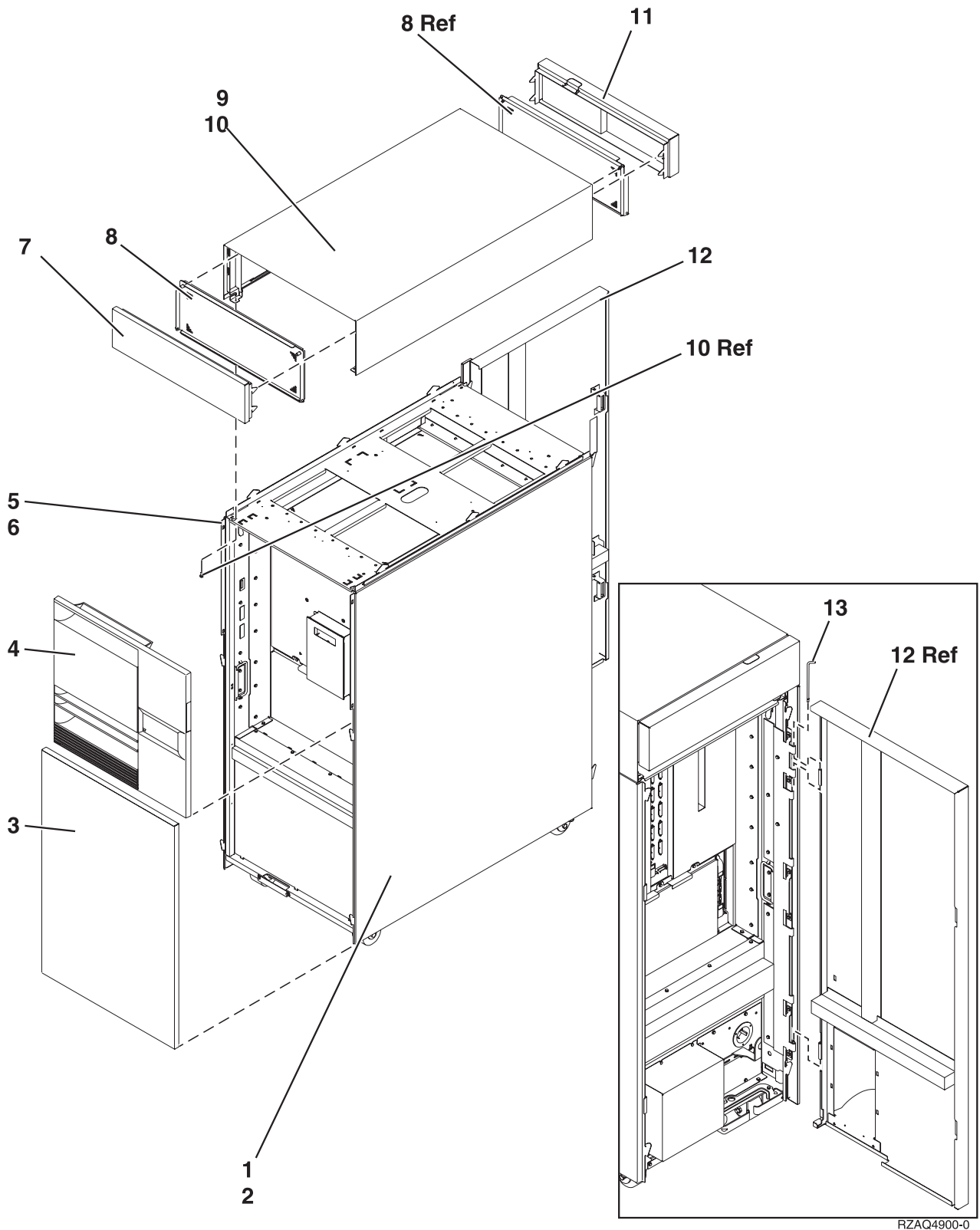
**Control panel (processor tower)**

**Cover assembly (with FC 9079)**

**Final assembly (with FC 9079)**

*Cover assembly - Models 840 and SB3 processor tower: For use by authorized service providers.*

**Figure 1. Cover assembly - Models 840 and SB3 processor tower**



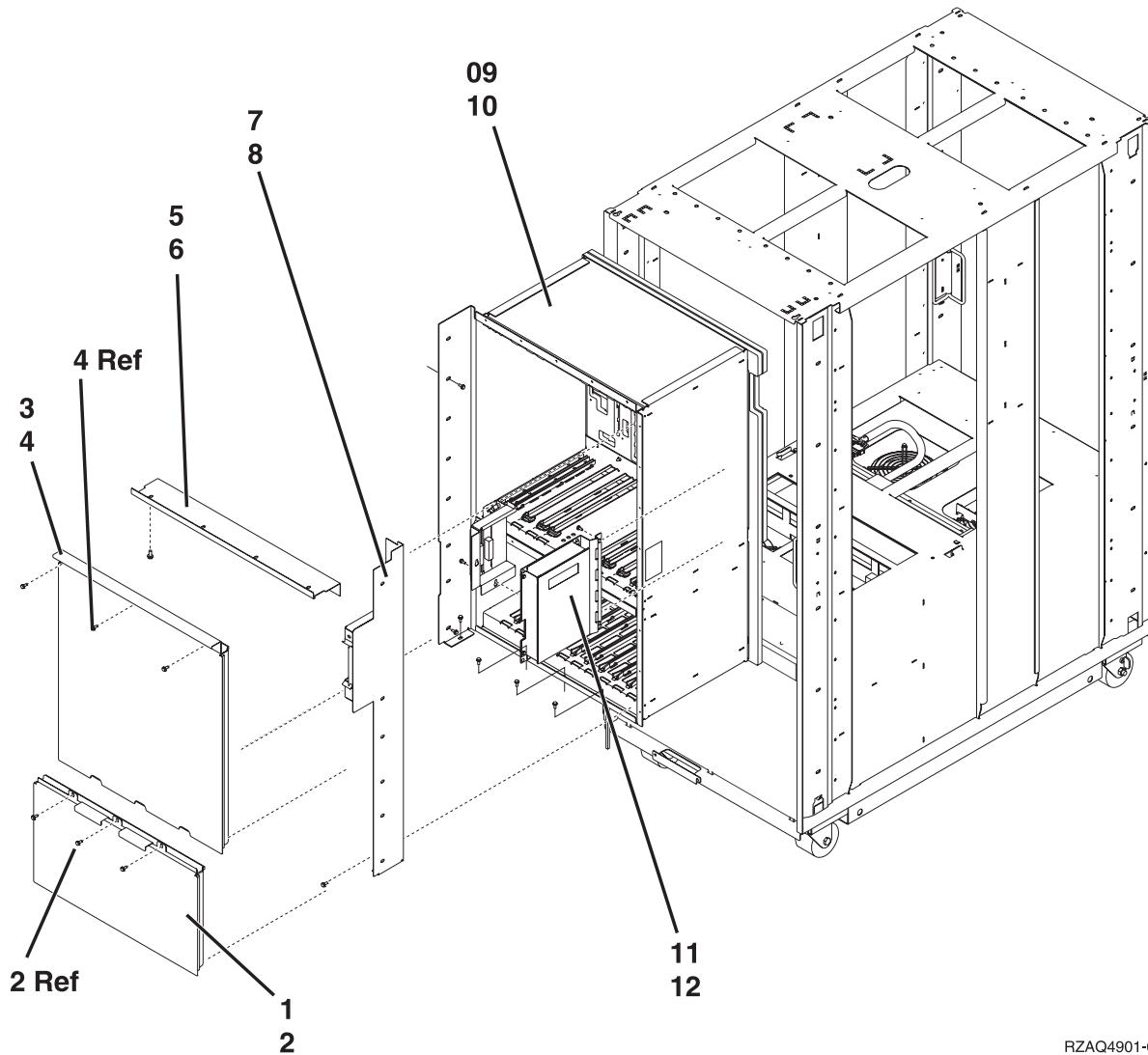
RZAQ4900-0

**Table 1. Cover assembly - Models 840 and SB3 processor tower**

Index	Part number	Units	Description
1	21H7512	1	Cover, right side
2	1621811	8	Screw, 4M (10mm)
3	21H7209	1	Cover assembly, lower front
4	23L3636	1	Cover, middle front
5	21H7213	1	Cover, left side
6	1621811	8	Screw, 4M (10mm)
7	21H7208	1	Cover, upper front
8	21H7523	2	EMC access plate
9	21H7211	1	Cover, top
10	1621811	4	Screw, M4 (10mm)
11	23L3653	1	Cover, upper rear
12	23L3654	1	Cover, upper rear
13	23L3652	1	Upper hinge pin

*Final assembly, front - Models 840 and SB3 Processor Tower: For use by authorized service providers.*

**Figure 1. Final assembly, front - Models 840 and SB3 Processor Tower**



RZAQ4901-0

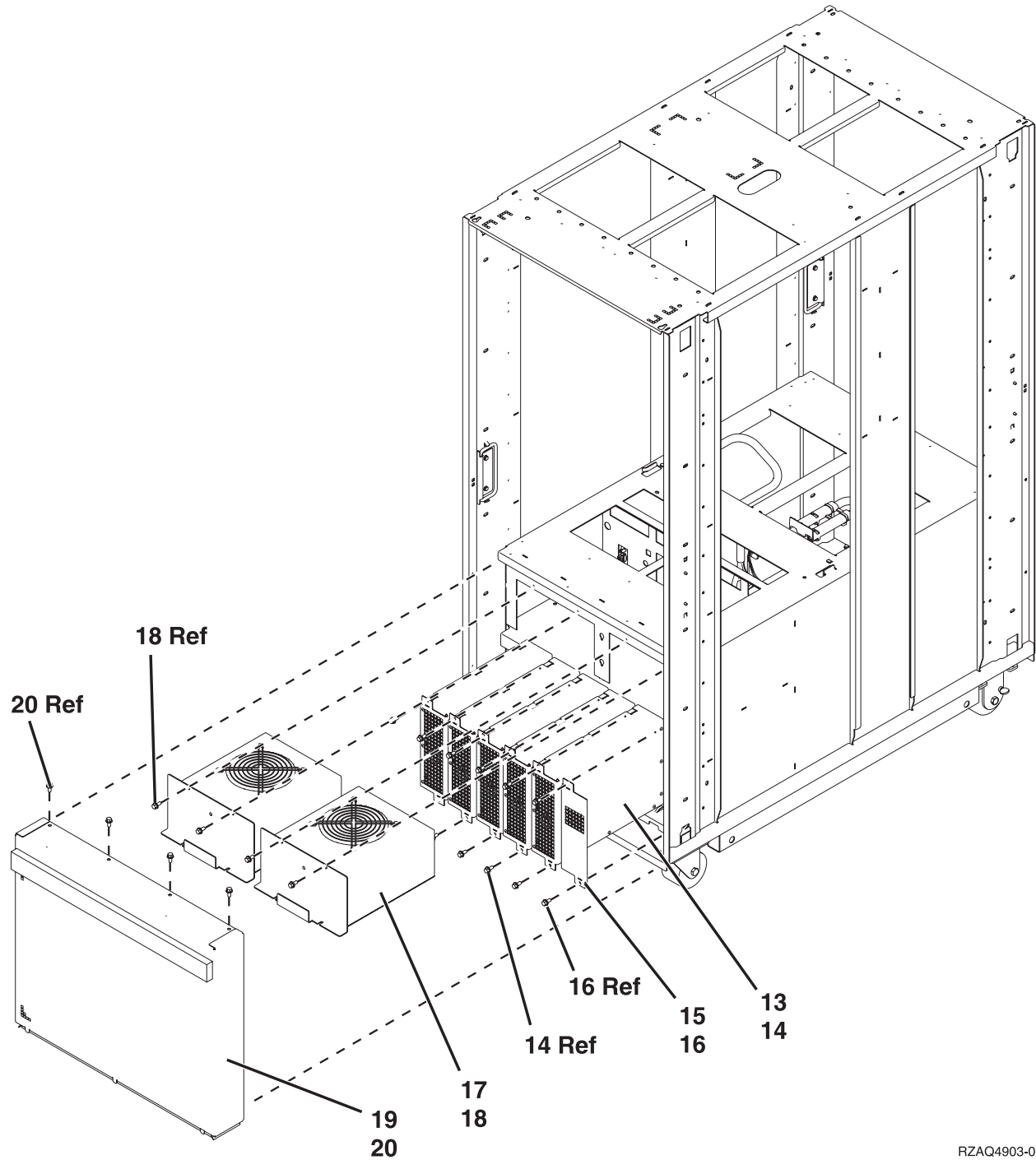
**Table 1. Final assembly, front - Models 840 and SB3 Processor Tower**

Index	Part number	Units	Description
1	23L3367	1	EMC access plate, front cage
2	1621811	3	Screw, M4 (10mm)
3	23L3365	1	EMC access plate, front cage
4	1621811	3	Screw, M4 (10mm)
5	23L3428	1	EMC bracket, top
6	1621811	6	Screw, M4 (10mm)
7	23L3433	1	EMC bracket, right
8	1621811	15	Screw, M4 (10mm)
9	NONUM	1	Front cage/backplane Asm. See Final assembly, rear - Models 840 and SB3 Processor Tower (See page 418).
10	1621811	12	Screw, M4 (10mm)
11	23L3466	1	Control panel assembly, processor tower. See "Control panel assembly, processor tower - Models 840 and SB3" on page 419.



Index	Part number	Units	Description
12	1621811	2	Screw, M4 (10mm)

Figure 2. Final assembly, front - Models 840 and SB3 Processor Tower



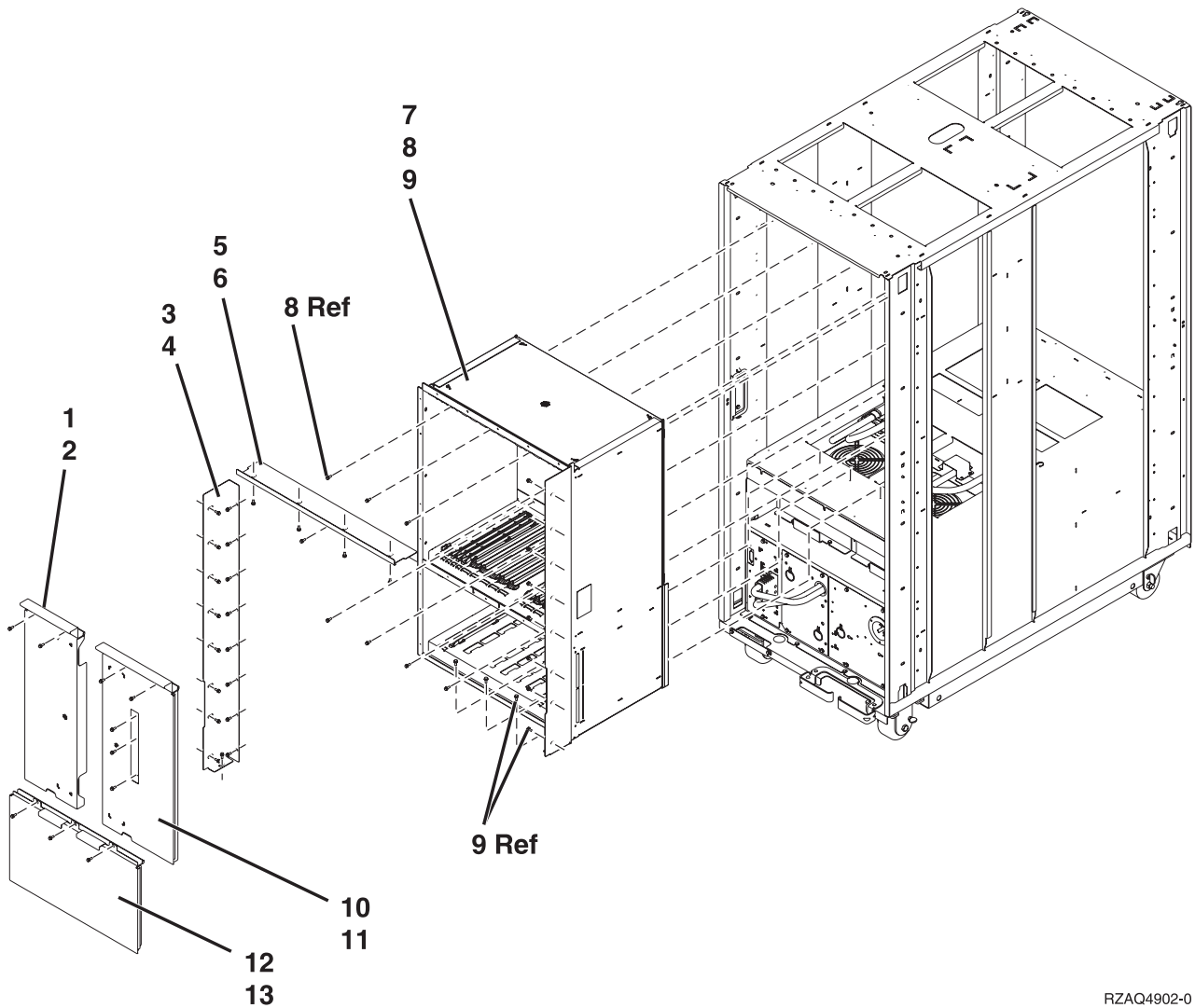
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Table 2. Final assembly, front - Models 840 and SB3 Processor Tower

Index	Part number	Units	Description
13	21H7719	AR	Bulk power
14	1621811	2	Screw, M4 (10mm)
15	86G6045	AR	Filler
16	1621811	2	Screw, M4 (10mm)
17	21H6959	2	Air moving device (AMD) assembly (AMD B01 and AMD B02)
18	1621811	4	Screw, M4 (10mm)
19	21H7516	1	EMC access plate, bulk power
20	1621811	4	Screw, M4 (10mm)

Final assembly, rear - Models 840 and SB3 Processor Tower: For use by authorized service providers.

Figure 1. Final assembly, rear - Models 840 and SB3 Processor Tower

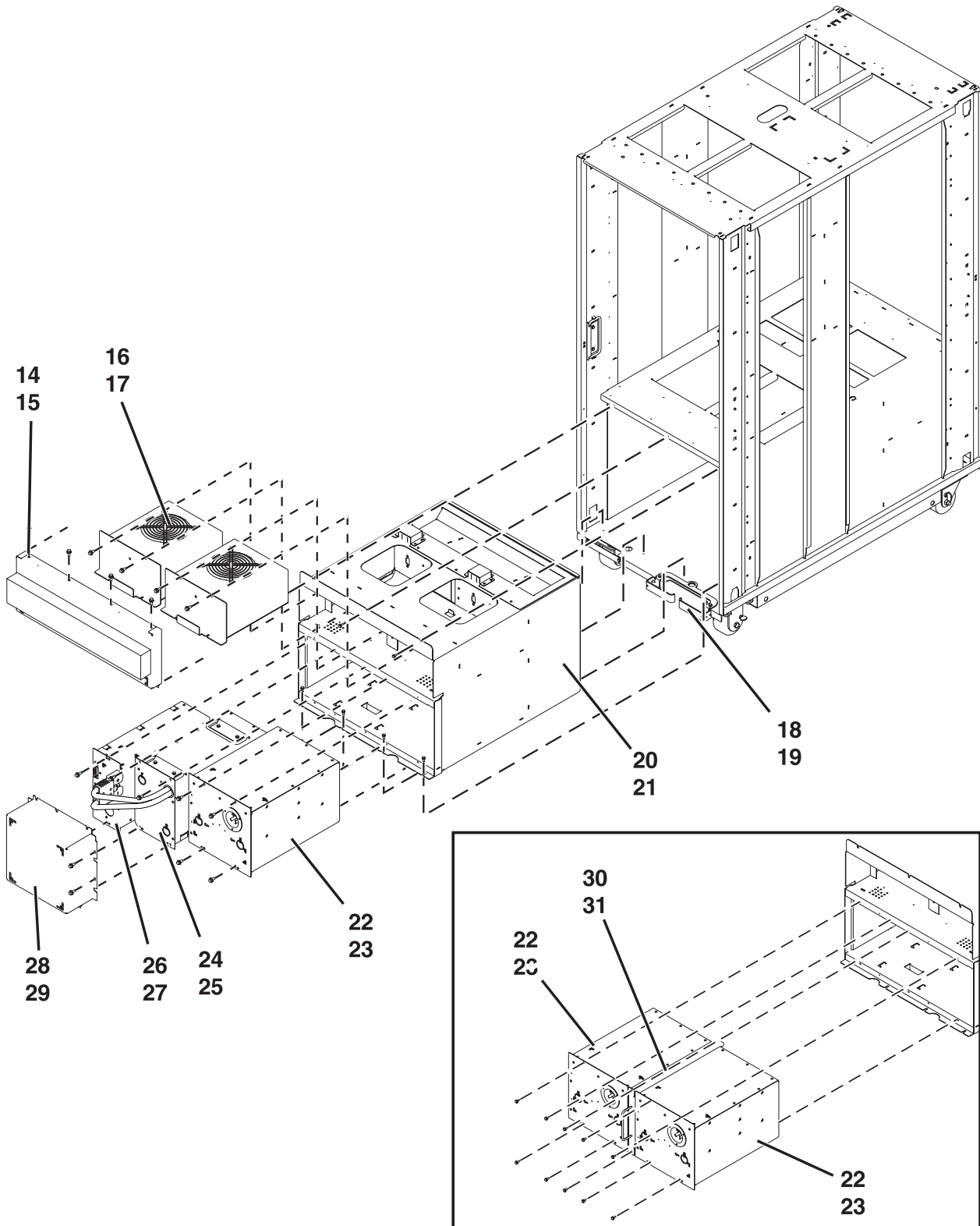


RZAQ4902-0

Table 1. Final assembly, rear - Models 840 and SB3 Processor Tower

Index	Part number	Units	Description
1	23L3366	1	EMC access plate
2	1621811	2	Screw, M4 (10mm)
3	23L3427	1	EMC bracket, left
4	1621811	17	Screw, M4 (10mm)
5	23L3428	1	EMC bracket, top
6	1621811	5	Screw, M4 (10mm)
7	23L3385	1	Cage assembly rear
8	1621811	13	Screw, M4 (10mm)
9	1624766	8	Screw
10	23L3447	1	EMC access plate
11	1621811	5	Screw, M4 (10mm)
12	23L3368	1	EMC access plate
13	1621811	3	Screw, M4 (10mm)

**Figure 2. Final assembly, rear - Models 840 and SB3 Processor Tower, continued**

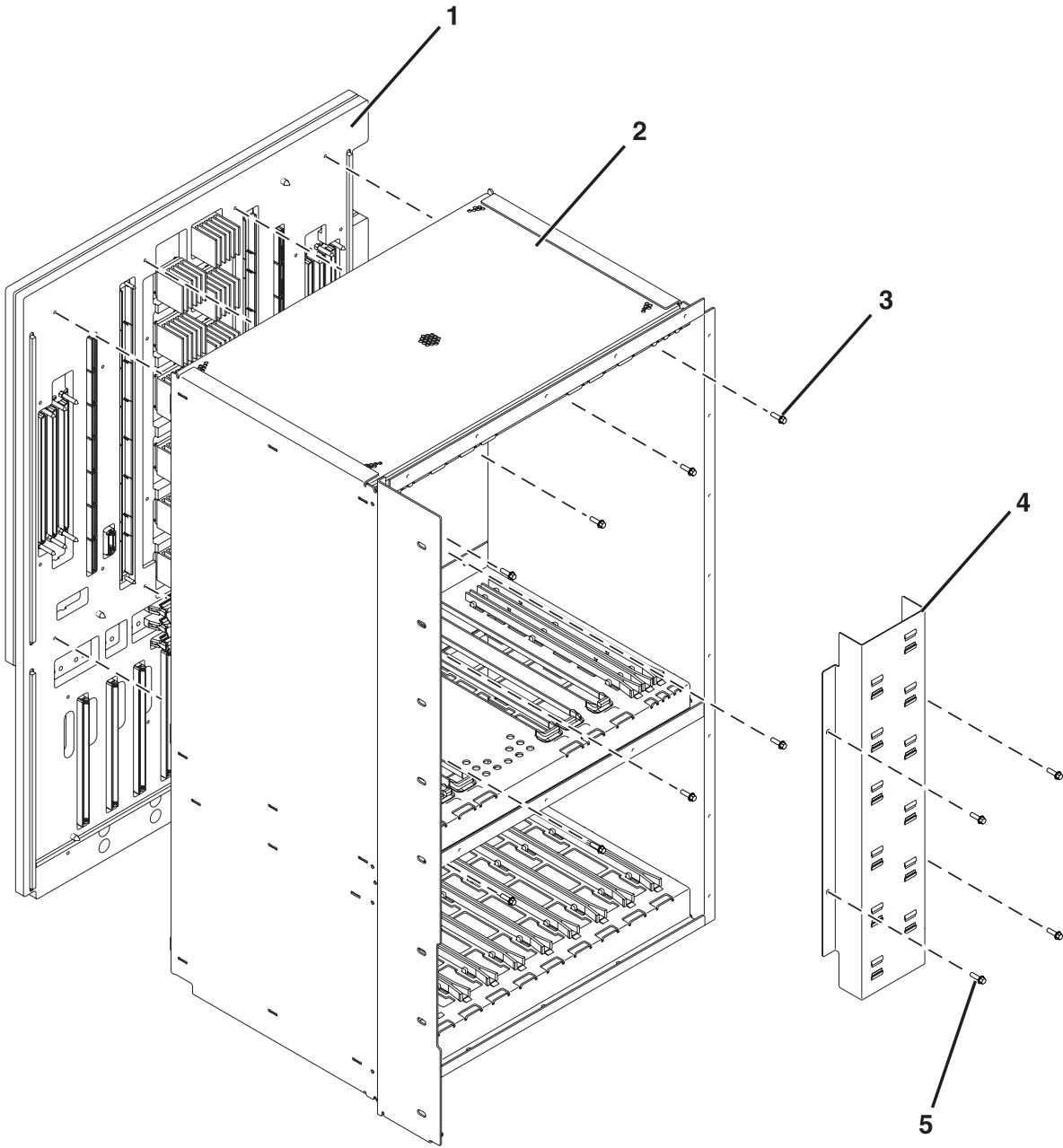


RZAQ4904-2

**Table 2. Final assembly, rear - Models 840 and SB3 Processor Tower, continued**

Index	Part number	Units	Description
14	04N2662	1	EMC access plate, rear air moving device (AMD)
15	1621811	4	Screw, M4 (10mm)
16	21H6959	2	Air moving device (AMD) assembly (AMD B03 and AMD B04)
17	1621811	8	Screw, M4 (10mm)
18	23L3646	1	Bracket, cable
19	1621811	2	Screw, M4 (10mm)
20	97P2348	1	Power subframe assembly for single line cord
20	21P4079	1	Power subframe assembly for dual line cord
21	1621811	7	Screw, M4 (10mm)
22	21H7000	1	AC box-domestic 1 phase. Quantity of two for dual line cord
-	21H7261	1	AC box world trade (WT) 1 phase
-	21H7264	1	AC box WT 2 phase
23	1621811		Screw, M4 (10mm)
24	21H7080	1	Battery assembly
25	1621811	4	Screw, M4 (10mm)
26	23L3640	1	Battery charger assembly
27	1621811	2	Screw, M4 (10mm)
28	21H7518	1	EMC access plate, battery backup
29	1621811	6	Screw, M4 (10mm)
30	04N6092	1	Concurrent maintenance adapter card - dual line cord system
31	1621811	6	Screw, M4 (10mm)

**Figure 3. Final assembly, rear - Models 840 and SB3 Processor Tower, continued**



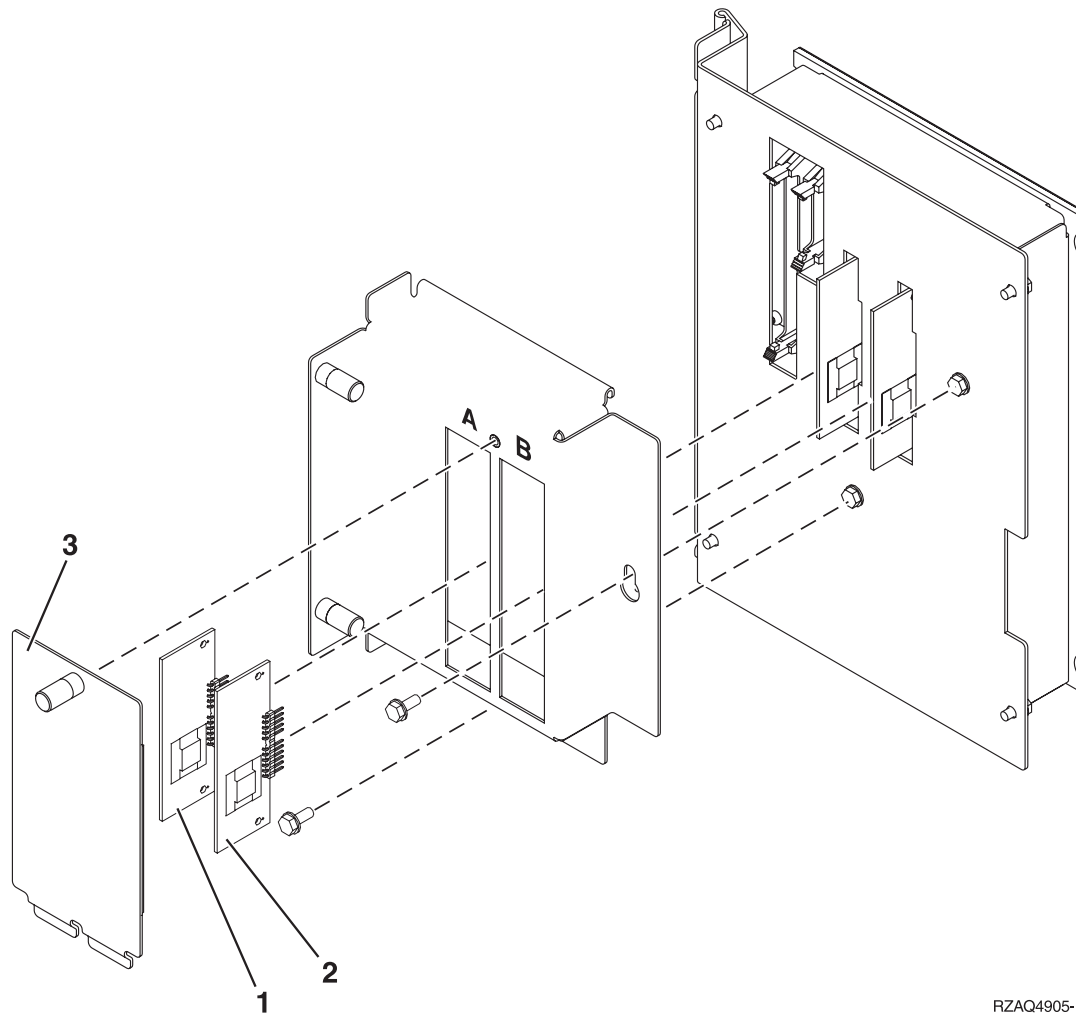
RZAQ4906-0

**Table 3. Final assembly, rear - Models 840 and SB3 Processor Tower, continued**

Index	Part number	Units	Description
1	04N3934	1	Backplane (MB1)
2	NONUM	1	Front cage assembly
3	1624766	8	Screw
4	NONUM	1	Air duct
5	1624764	4	Screw

Control panel assembly, processor tower - Models 840 and SB3: For use by authorized service providers.

**Figure 1. Control panel assembly, processor tower - Models 840 and SB3**



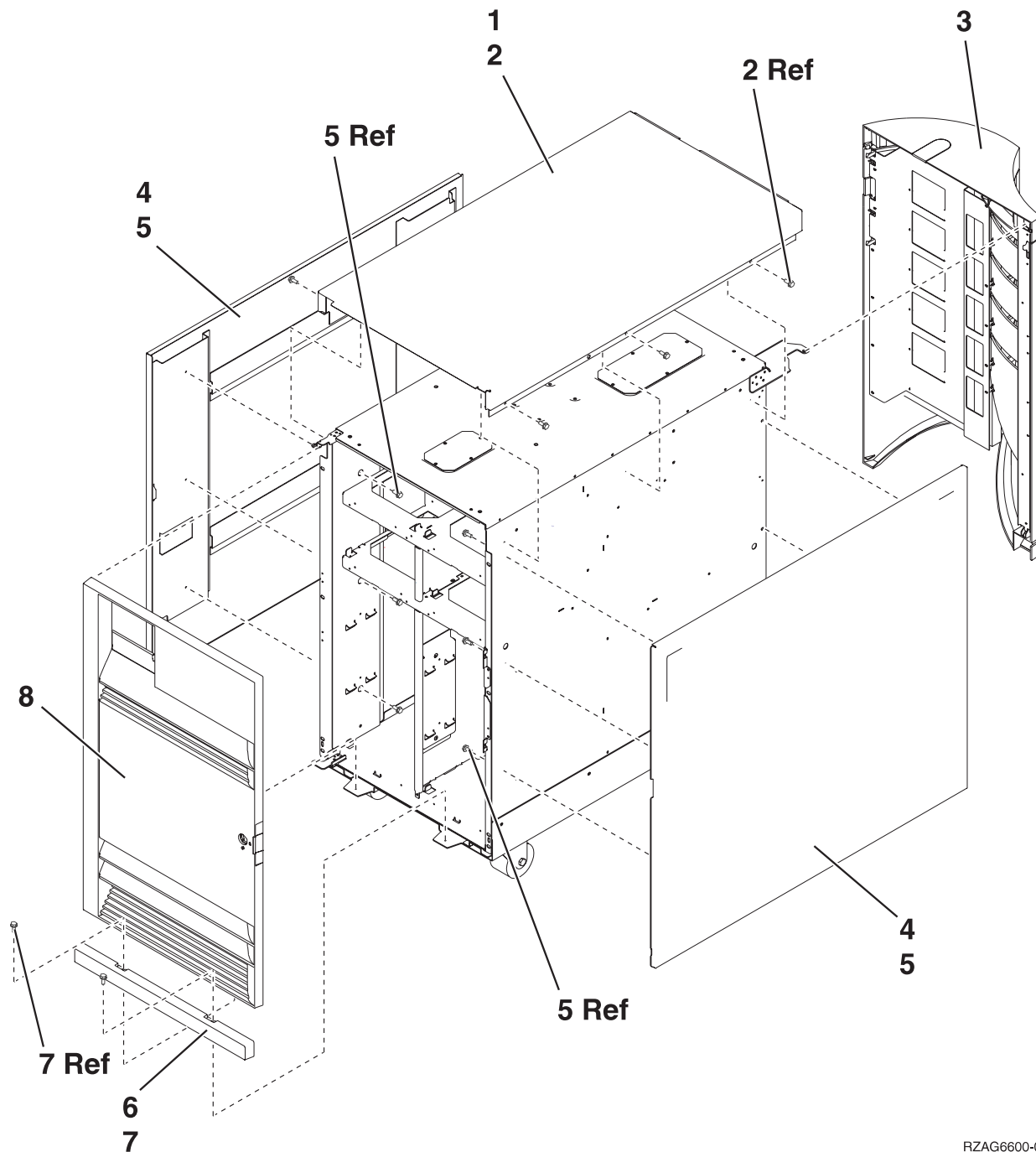
RZAQ4905-1

**Table 1. Control panel assembly, processor tower - Models 840 and SB3**

Index	Part number	Units	Description
1	AR	1	Processor capacity card (slot A). See the Type, model, and part number list.
2	AR	1	Interactive card (slot B). See the Type, model, and part number list.
3	NONUM	AR	Processor capacity access cover
	NONUM	AR	Control panel connector cover
	23L3469	1	Control panel card assembly
	23L3537	1	Control panel overlay

Cover assembly - FC 9079 Base I/O Tower (Models 840 and SB3): For use by authorized service providers.

Figure 1. Cover assembly - FC 9079 Base I/O Tower (Models 840 and SB3)



RZAG6600-0

Table 1. Cover assembly - FC 9079 Base I/O Tower (Models 840 and SB3)

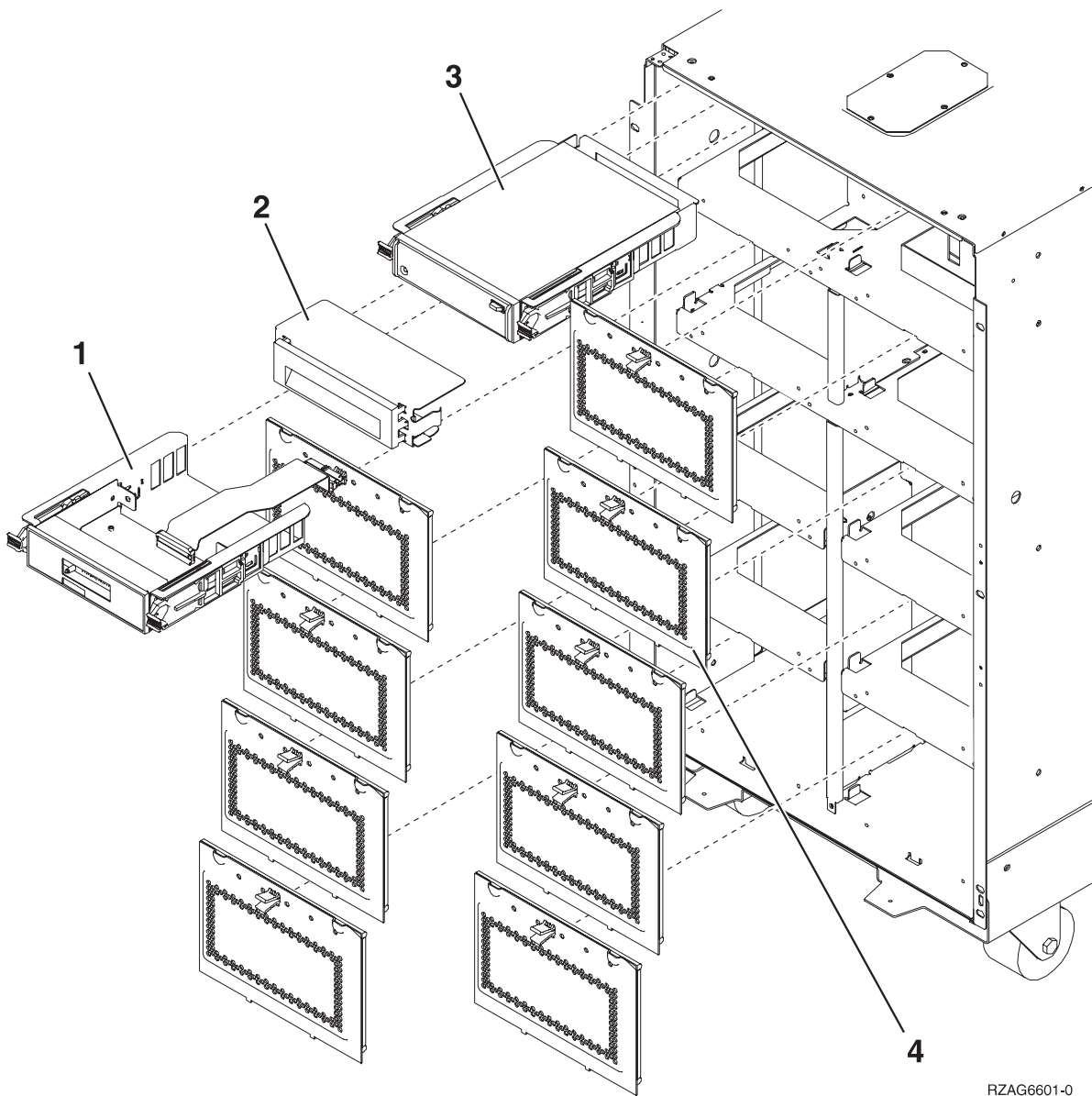
Index	Part number	Units	Description
1	24L0825	1	Top cover
2	1621811	2	Screw, M4 (10mm)



Index	Part number	Units	Description
3	24L1079 24L1071	1	Rear cover Hinge pin, top
4	24L0824	1	Side cover
5	1621811	12	Screw, M4 (10mm)
6	24L1078	1	Front filler plate
7	1621811	2	Screw, M4 (10mm)
8	24L1069 24L1071	1	Front cover Hinge pin, top

*Final assembly - FC 9079 Base I/O Tower (Models 840 and SB3): For use by authorized service providers.*

**Figure 1. Final assembly - FC 9079 Base I/O Tower (Models 840 and SB3)**

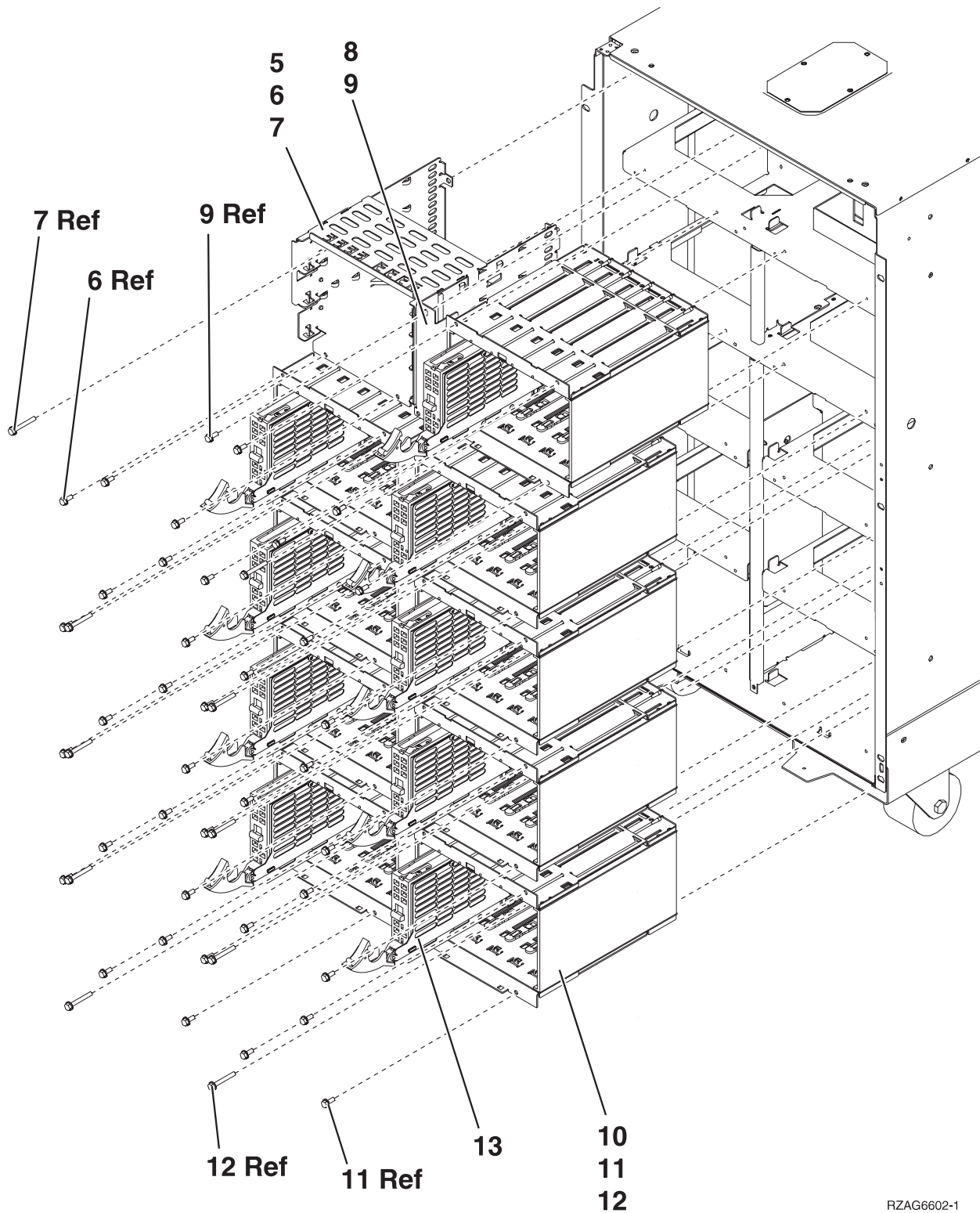


RZAG6601-0

**Table 1. Final assembly - FC 9079 Base I/O Tower (Models 840 and SB3)**

<b>Index</b>	<b>Part number</b>	<b>Units</b>	<b>Description</b>
1	24L0945	1	Control panel
2	44L8406	AR	Filler (removable media)
2		AR	Optical storage unit
3		AR	Removable media
4	24L0821	AR	Disk unit EMC access plate

**Figure 2. Final assembly - FC 9079 Base I/O Tower (Models 840 and SB3), (continued)**



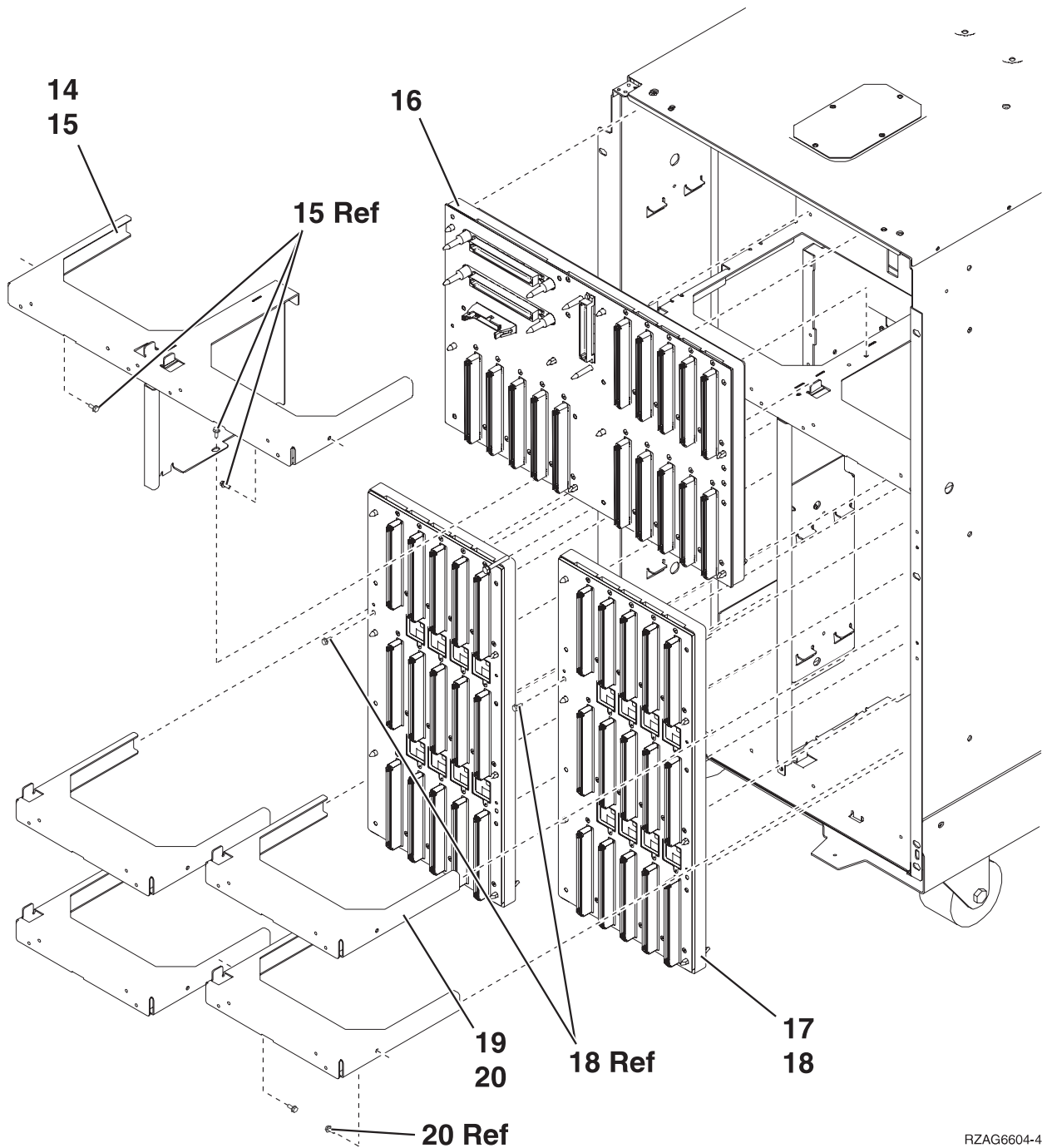
RZAG6602-1

**Table 2. Final assembly - FC 9079 Base I/O Tower (Models 840 and SB3), (continued)**

Index	Part number	Units	Description
5	NONUM	1	Removable media cage assembly
6	1621811	2	Screw, M4 (10mm)

Index	Part number	Units	Description
7	1621817	2	Screw
8	24L1067	1	Center support bracket
9	1621811	2	Screw, M4 (10mm)
10	NONUM	AR	5 Disk unit cage assembly
11	1621811	12	Screw, M4 (10mm)
12	1621817	6	Screw
13		AR	Disk unit assembly

**Figure 3. Final assembly - FC 9079 Base I/O Tower (Models 840 and SB3), (continued)**



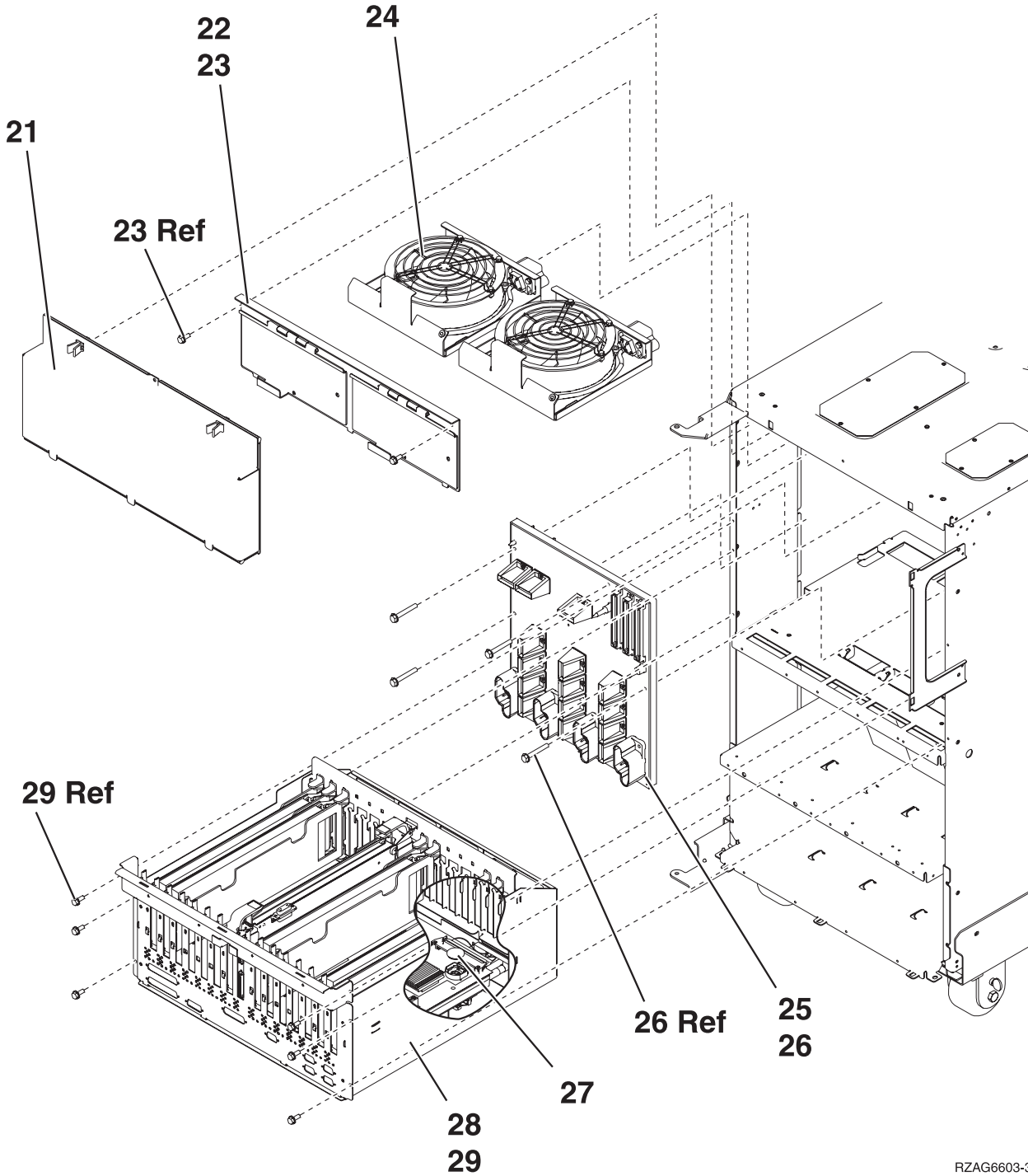
RZAG6604-4

**Table 3. Final assembly - FC 9079 Base I/O Tower (Models 840 and SB3), (continued)**

Index	Part number	Units	Description
14	NONUM	1	Shelf, base disk unit
15	1621811	3	Screw, M4 (10mm)
16	24L0892	1	Base disk unit board/stiffener assembly (DB3)
17	24L1029	AR	Disk unit board/stiffener assembly (DB1 and DB2)
18	1621838	1	Screw
19	NONUM	AR	Shelf, disk unit

Index	Part number	Units	Description
20	1621811	2	Screw, M4 (10mm)

Figure 4. Final assembly (continued) - FC 9079 Base I/O Tower (Models 840 and SB3)

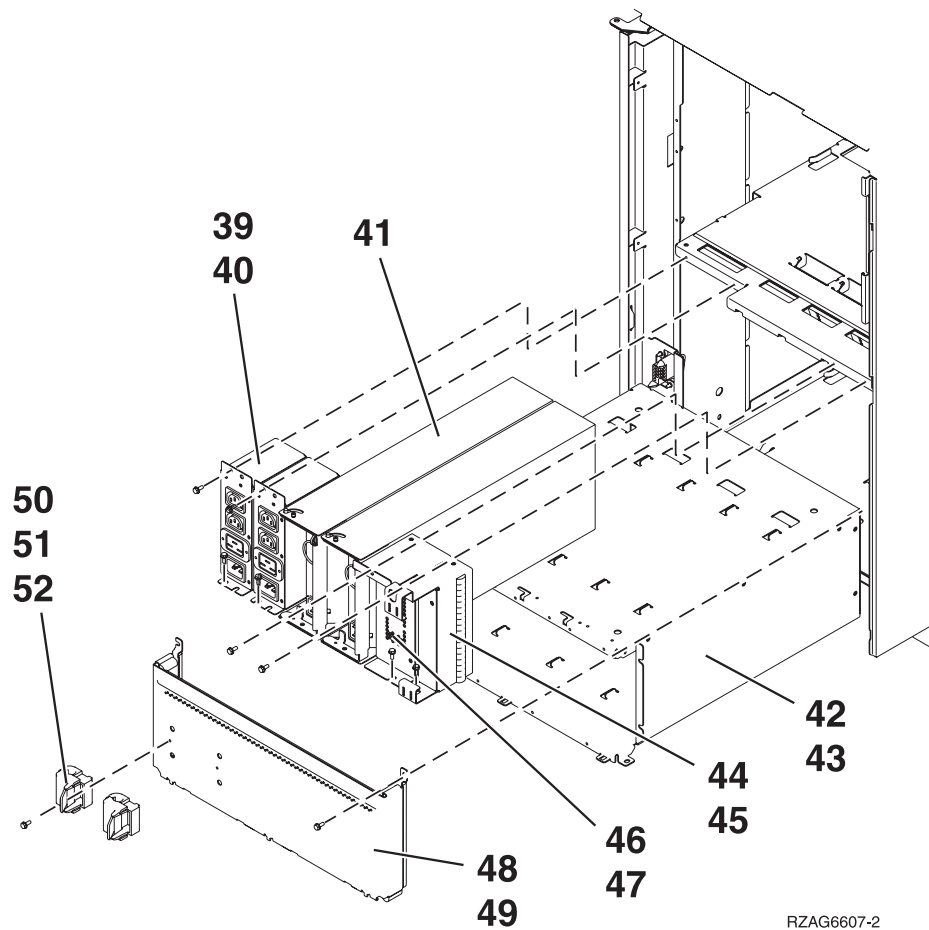


RZAG6603-3

Table 4. Final assembly (continued) - FC 9079 Base I/O Tower (Models 840 and SB3)

Index	Part number	Units	Description
21	24L0823	1	EMC access plate
22	NONUM	1	Air moving device (AMD) door assembly
23	1621811	2	Screw, M4 (10mm)
24	44L0023	2	Air moving device (AMD) (B01, B02)
25	24L0891	1	Power board/stiffener assembly (PB1)
26	1621816	6	Screw
27	16G8095	1	Time of day (TOD) battery
28	24L0926	1	PCI card cage assembly
29	1621811	6	Screw, M4 (10mm)

**Figure 5. Final assembly (continued) - FC 9079 Base I/O Tower (Models 840 and SB3 - 2 power supply dual line cord)**

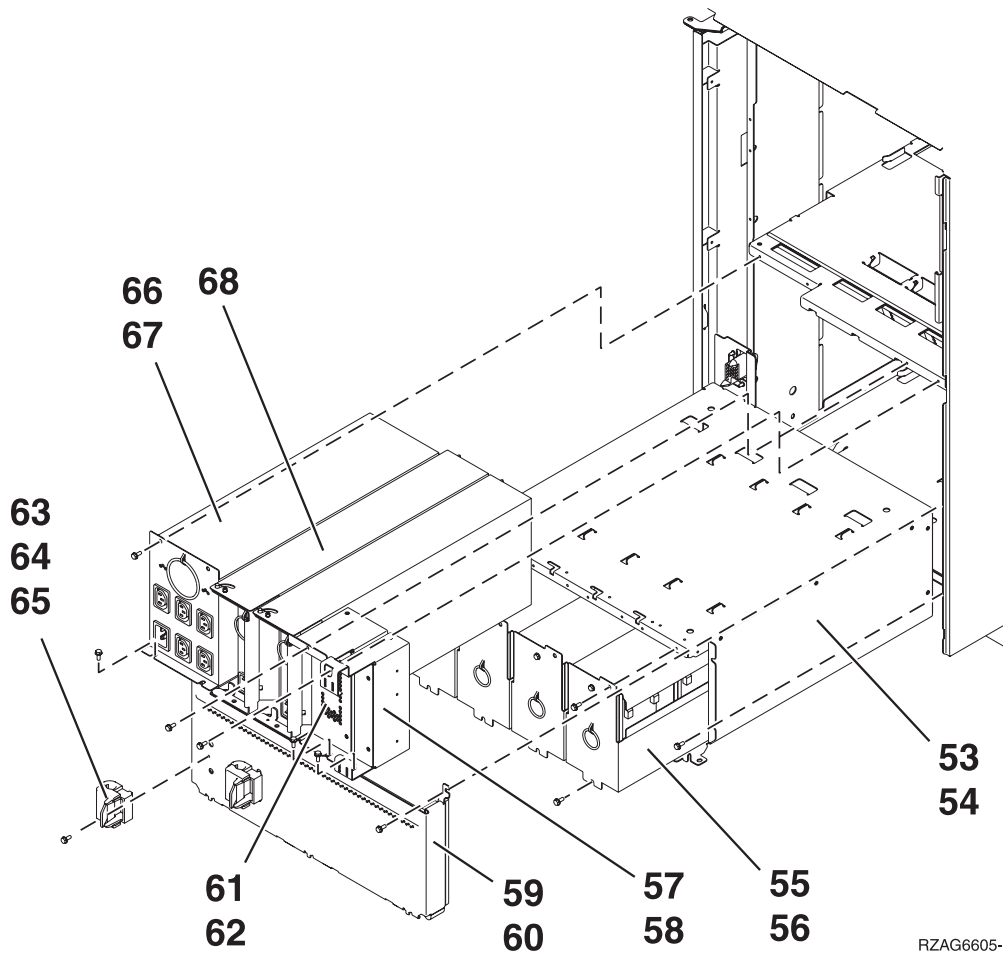


**Table 5. Final assembly (continued) - FC 9079 Base I/O Tower (Models 840 and SB3 - 2 power supply dual line cord)**

Index	Part number	Units	Description
39	21P6347	2	AC module
40	1621811	4	Screw, M4 (10mm)

Index	Part number	Units	Description
41	53P1038	2	Power supply — 840 watts (P01, P02)
42	53P4651	1	Power sub frame assembly
43	1621811	12	Screw, M4 (10mm)
44	24L0940	AR	Filler, spacer
45	1621811	2	Screw, M4 (10mm)
46	24L0939	AR	Filler, power supply
47	1621811	2	Screw, M4 (10mm)
48	NONUM	1	EMC access plate
49	1621811	2	Screw, M4 (10mm)
50	44H8641	2	Cable clamp, Top
51	44H8640	2	Cable clamp, base
52	1621811	2	Screw, M4 (10mm)

Figure 6. Final assembly (continued) - FC 9079 Base I/O Tower (Models 840 and SB3 - single line cord)



RZAG6605-3

Table 6. Final assembly (continued) - FC 9079 Base I/O Tower (Models 840 and SB3 - single line cord)



Index	Part number	Units	Description
53	53P4651	1	Power sub frame assembly
54	1621811	12	Screw, M4 (10mm)
55	97H7318	1	Battery pack - This part number includes four batteries. Refer to the BATTERY symbolic FRU for additional information.
56	1621811	12	Screw, M4 (10mm)
57	24L0940	AR	Filler, spacer
58	1621811	2	Screw, M4 (10mm)
59	NONUM	1	EMC access plate
60	1621811	2	Screw, M4 (10mm)
61	24L0939	AR	Filler, power supply
62	1621811	2	Screw, M4 (10mm)
63	44H8641	2	Cable clamp, top
64	44H8640	2	Cable clamp, base
65	1621811	2	Screw, M4 (10mm)
66	97H7316	1	Battery charger
67	1621811	4	Screw, M4 (10mm)
68	90H6629	3	Power supply — 765 watts (P01, P02, P03)

**Part assemblies - Models 870 and 890 (FC 9094 Base I/O Tower):** For use by authorized service providers.

**Bulk power enclosure assembly - Models 870 and 890**

**Control panel - FC 9094 Base I/O Tower**

**Cover assembly - FC 9094 Base I/O Tower**

**Cover assembly - Models 870 and 890 Processor Tower**

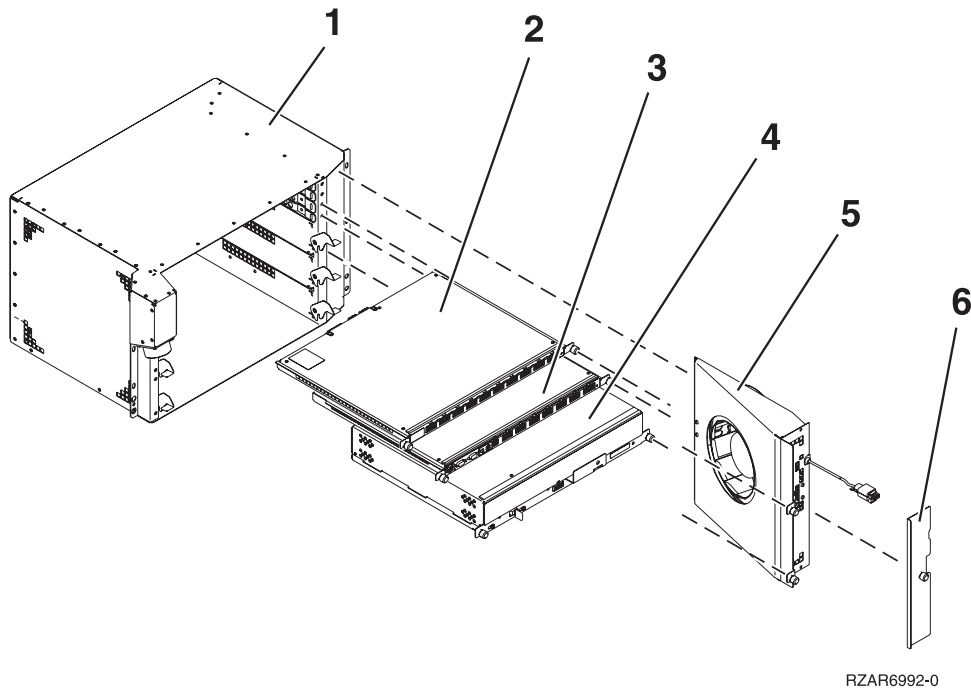
**Final assembly - FC 9094 Base I/O Tower**

**Final assembly - Models 870 and 890**

**Processor subsystem assembly - Models 870 and 890**

*Bulk power enclosure assembly - Models 870 and 890: For use by authorized service providers.*

**Figure 1. Bulk power enclosure assembly - Models 870 and 890**



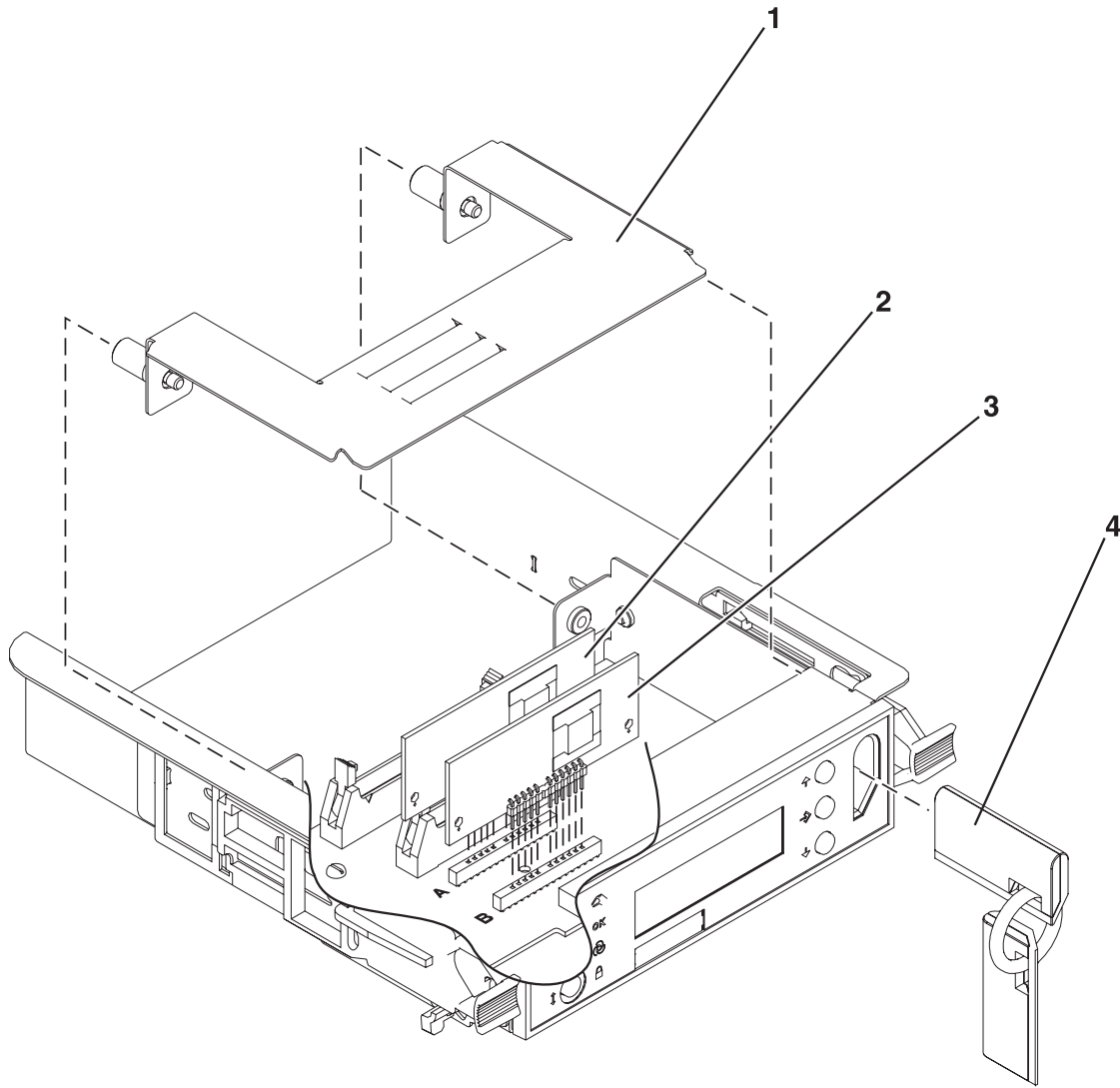
**Table 1. Bulk power enclosure assembly - Models 870 and 890**

Index	Part number	Units	Description
1	44P1958	2	Bulk power enclosure (BPE) assembly. See the Models 870 and 890 - Bulk power enclosure (BPE) remove and replace procedure.
2	44P1959	2	Bulk power distribution (BPD) assembly
2	31L8609	AR	Bulk power distribution filler
3	11P3645	2	Bulk power controller (BPC) assembly
4	44P1995	AR	Bulk power regulator (BPR) assembly
5	11P1787	3	Bulk Power F-airmover (BPF) assembly
6	11P0287	2	Cover, BPF

**Note:** The bulk power assembly (BPA) is a bulk power enclosure (BPE) with a complete set of parts installed.

*Control panel assembly, processor tower - FC 9094 Base I/O Tower: For use by authorized service providers.*

**Figure 1. Control panel assembly, processor tower - FC 9094 Base I/O Tower**



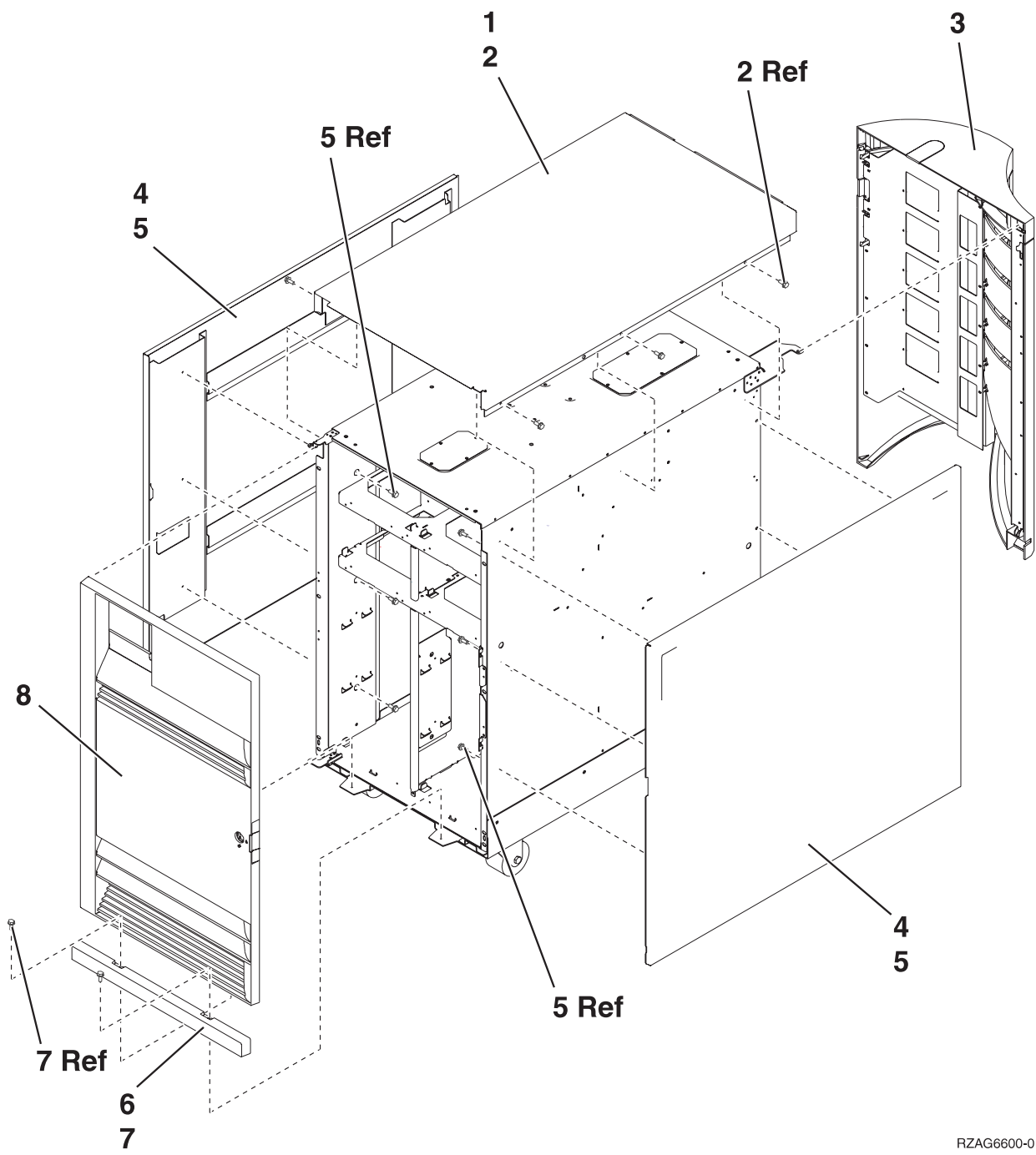
RZAQ4611-0

**Table 1. Control panel assembly, processor tower - FC 9094 Base I/O Tower**

Index	Part number	Units	Description
1	AR	1	Access cover
2	N/A	0	Not present in the FC 9094
3	N/A	0	Not present in the FC 9094
4	N/A	0	Keystick (part of panel)
	NONUM	AR	Control panel connector cover
	24L0945	1	Control panel assembly (NB1)

*Cover assembly - FC 9094 Base I/O Tower: For use by authorized service providers.*

**Figure 1. Cover assembly - FC 9094 Base I/O Tower**



RZAG6600-0

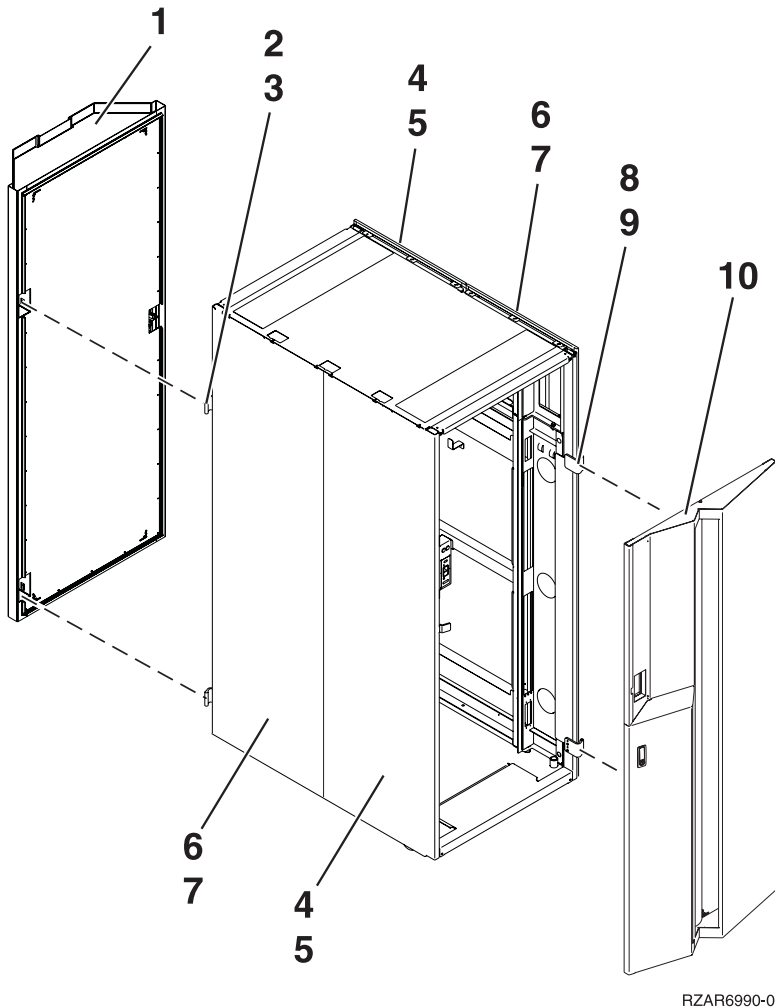
**Table 1. Cover assembly - FC 9094 Base I/O Tower**

Index	Part number	Units	Description
1	24L0825	1	Top cover
2	1621811	2	Screw, M4 (10mm)
3	24L1079 24L1071	1	Rear cover Hinge pin, top
4	24L0824	1	Side cover
5	1621811	12	Screw, M4 (10mm)

Index	Part number	Units	Description
6	24L1078	1	Front filler plate
7	1621811	2	Screw, M4 (10mm)
8	24L1069 24L1071	1	Front cover Hinge pin, top

*Cover assembly - Models 870 and 890 Processor Tower: For use by authorized service providers.*

**Figure 1. Cover assembly - Models 870 and 890 Processor Tower**



RZAR6990-0

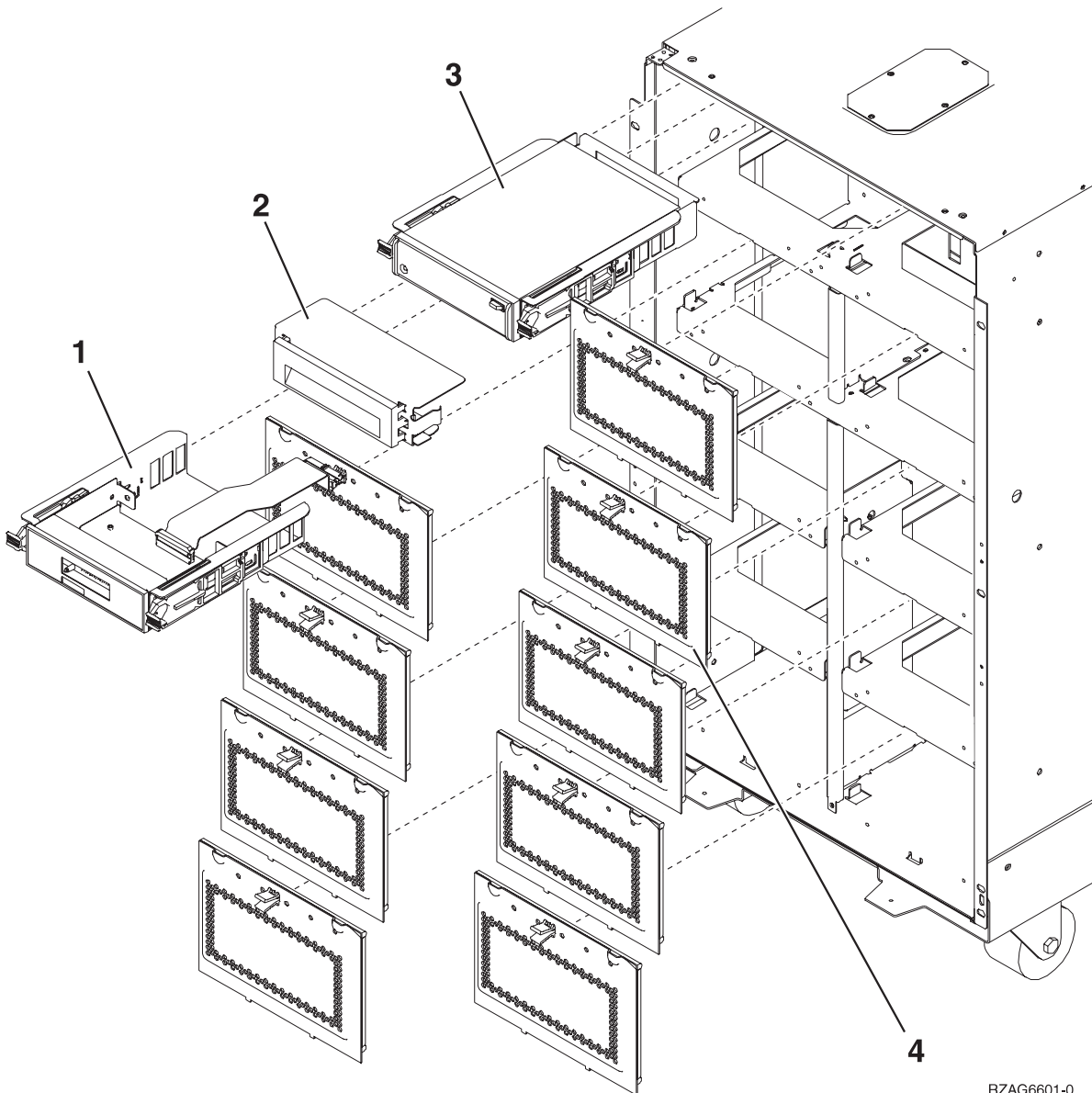
**Table 1. Cover assembly - Models 870 and 890 Processor Tower**

Index	Part number	Units	Description
1	44P0127	1	Cover assembly, back
2	11P4106	2	Hinge, back cover
3	2665525	4	Screw,
4	44P0126	2	Cover, right-side
5	54G2882	3	Screw,

Index	Part number	Units	Description
6	44P0125	2	Cover, left-side
7	54G2882	3	Screw,
8	11P3535	2	Hinge, front cover
9	2665525	4	Screw
10	53P2794	1	Cover assembly, front

*Final assembly - FC 9094 Base I/O Tower: For use by authorized service providers.*

**Figure 1. Final assembly (front) - FC 9094 Base I/O Tower**

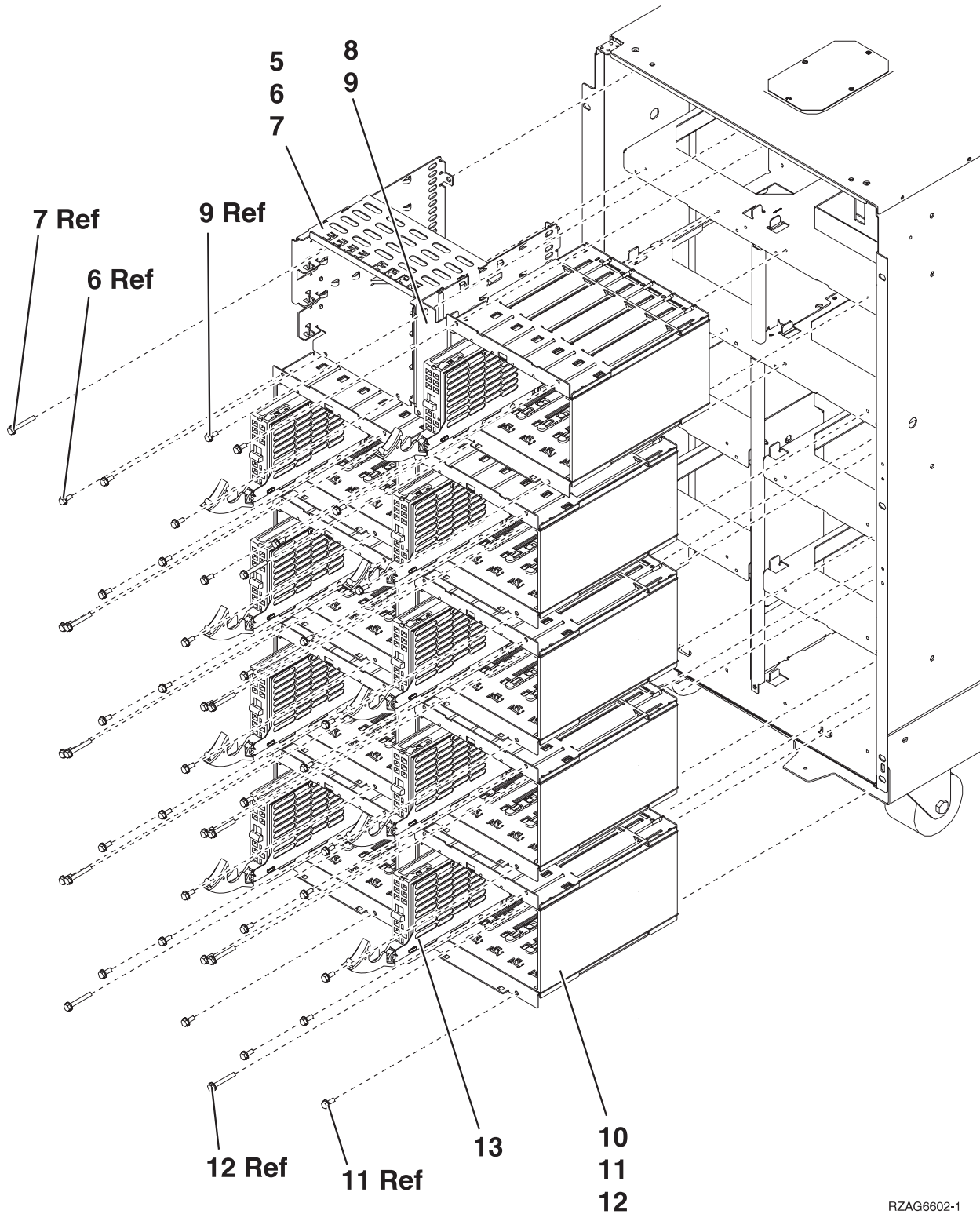


RZAG6601-0

**Table 1. Final assembly (front) - FC 9094 Base I/O Tower**

Index	Part number	Units	Description
1	24L0945	1	Control panel (NB1)
2	44L8406	AR	Filler (removable media)
2		AR	Optical storage unit. See the Type, model, and part number list.
3		AR	Removable media. See Type, model, and part number list.
4	24L0821	AR	Disk unit EMC access plate

**Figure 2. Final assembly (front) - FC 9094 Base I/O Tower, (continued)**

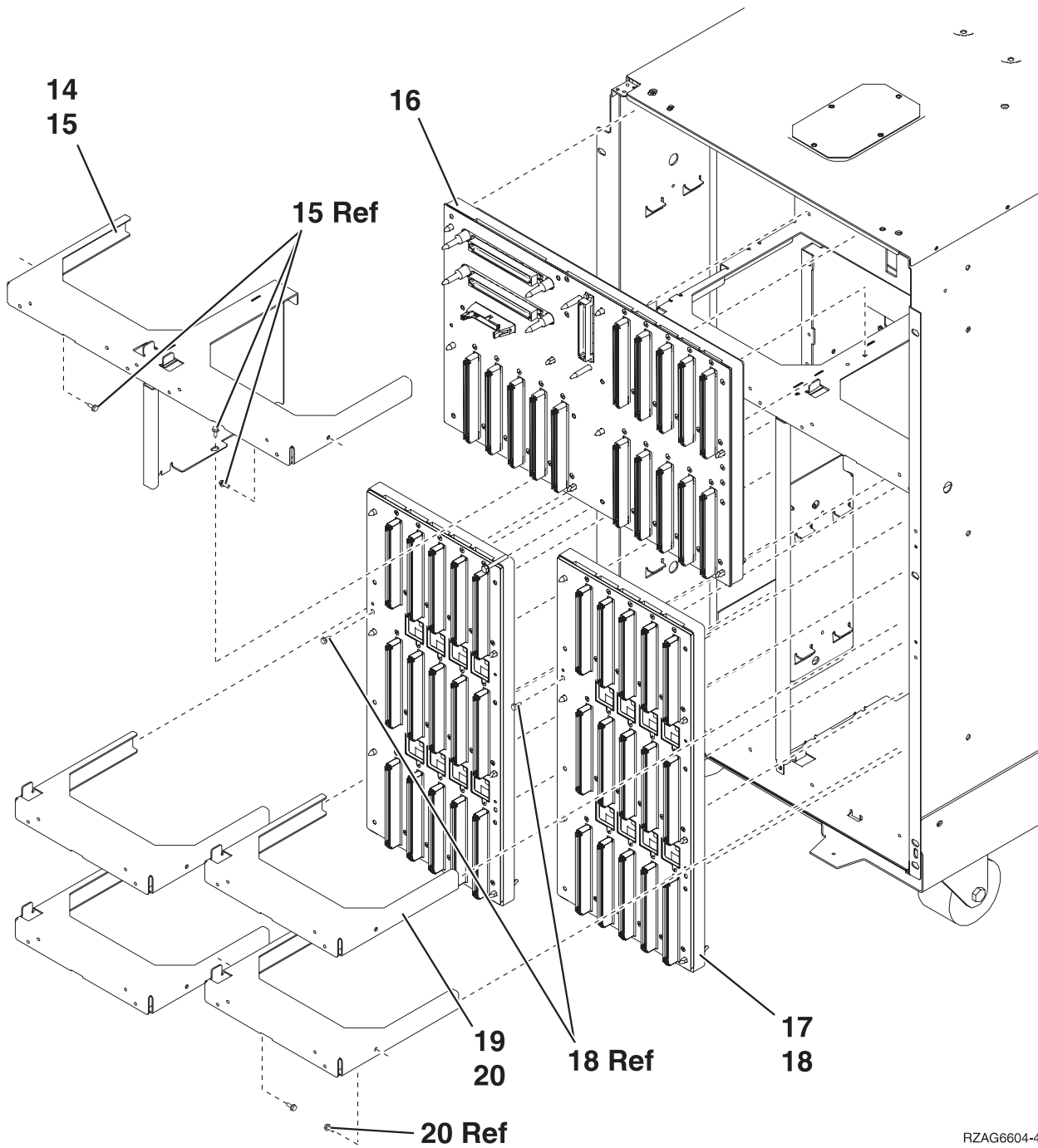


**Table 2. Final assembly (front) - FC 9094 Base I/O Tower, (continued)**



Index	Part number	Units	Description
5	NONUM	1	Removable media cage assembly
6	1621811	2	Screw, M4 (10mm)
7	1621817	2	Screw
8	24L1067	1	Center support bracket
9	1621811	2	Screw, M4 (10mm)
10	NONUM	AR	Five disk unit cage assembly
11	1621811	12	Screw, M4 (10mm)
12	1621817	6	Screw
13		AR	Disk unit assembly. See Type, model, and part number list.

**Figure 3. Final assembly (front) - FC 9094 Base I/O Tower, (continued)**



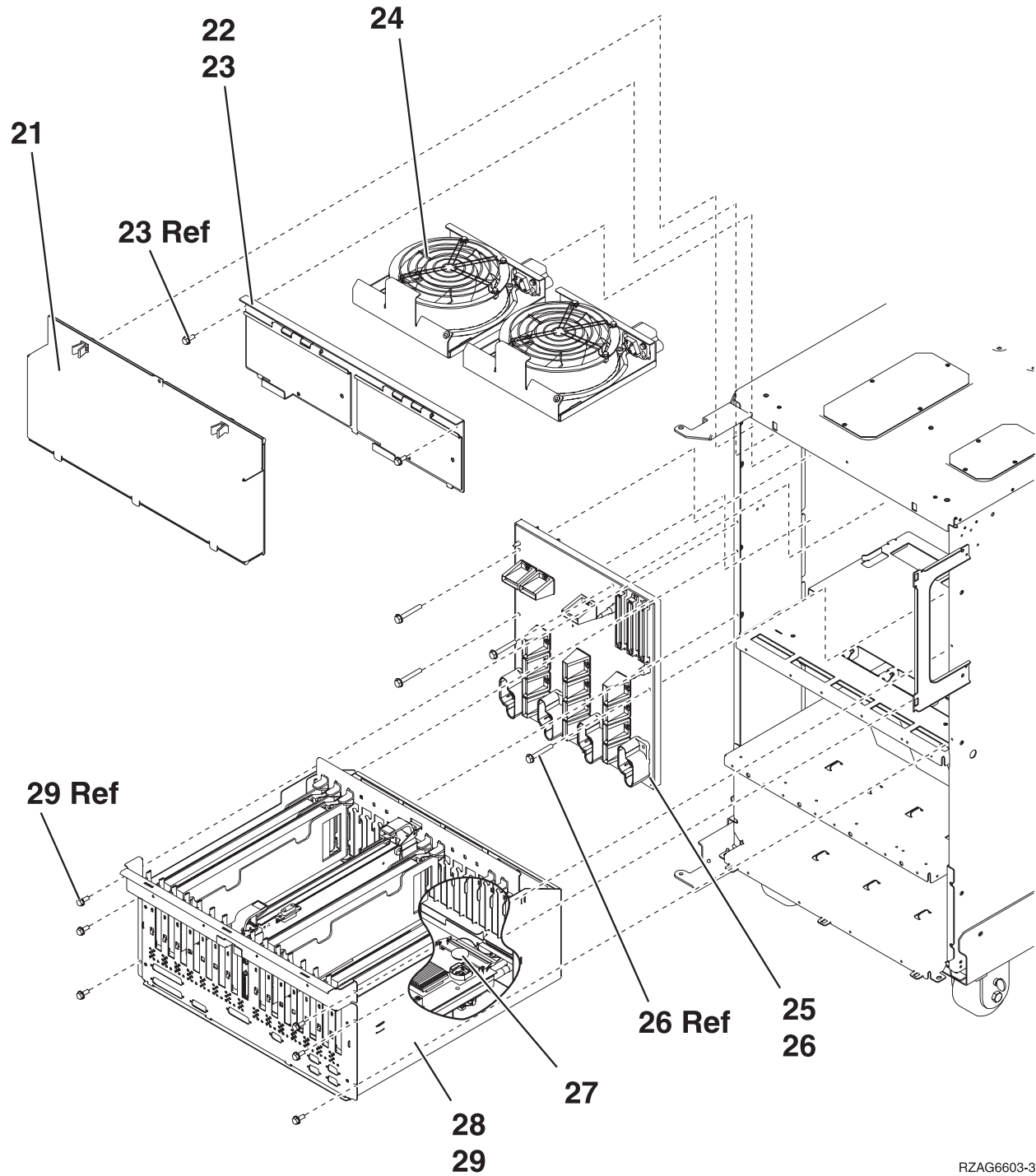
RZAG6604-4

**Table 3. Final assembly (front) - FC 9094 Base I/O Tower, (continued)**

Index	Part number	Units	Description
14	NONUM	1	Shelf, base disk unit
15	1621811	3	Screw, M4 (10mm)
16	53P4001	1	Base disk unit board/stiffener assembly (DB3)
17	53P4002	AR	Disk unit board/stiffener assembly (DB1 and DB2)
18	1621838	1	Screw
19	NONUM	AR	Shelf, disk unit

Index	Part number	Units	Description
20	1621811	2	Screw, M4 (10mm)

Figure 4. Final assembly (rear) - FC 9094 Base I/O Tower, (single line cord)

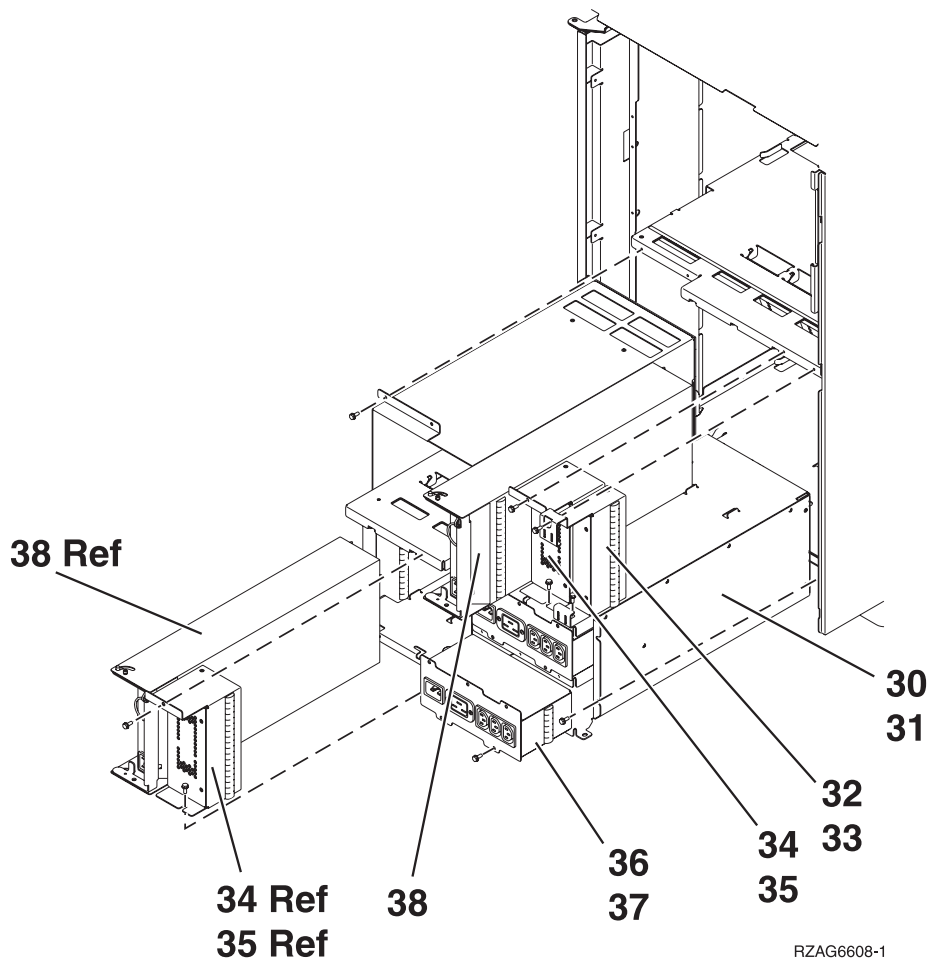


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Table 4. Final assembly (rear) - FC 9094 Base I/O Tower

Index	Part number	Units	Description
21	24L0823	1	EMC access plate
22	NONUM	1	Air moving device (AMD) door assembly
23	1621811	2	Screw, M4 (10mm)
24	44L0023	2	Air moving device (AMD) (B01, B02)
25	24L0891	1	Power board/stiffener assembly (PB1)
26	1621816	6	Screw
27	16G8095	1	Time of day (TOD) battery
28	53P3271	1	PCI card cage assembly
29	1621811	6	Screw, M4 (10mm)

**Figure 5. Final assembly (rear) - FC 9094 Base I/O Tower**



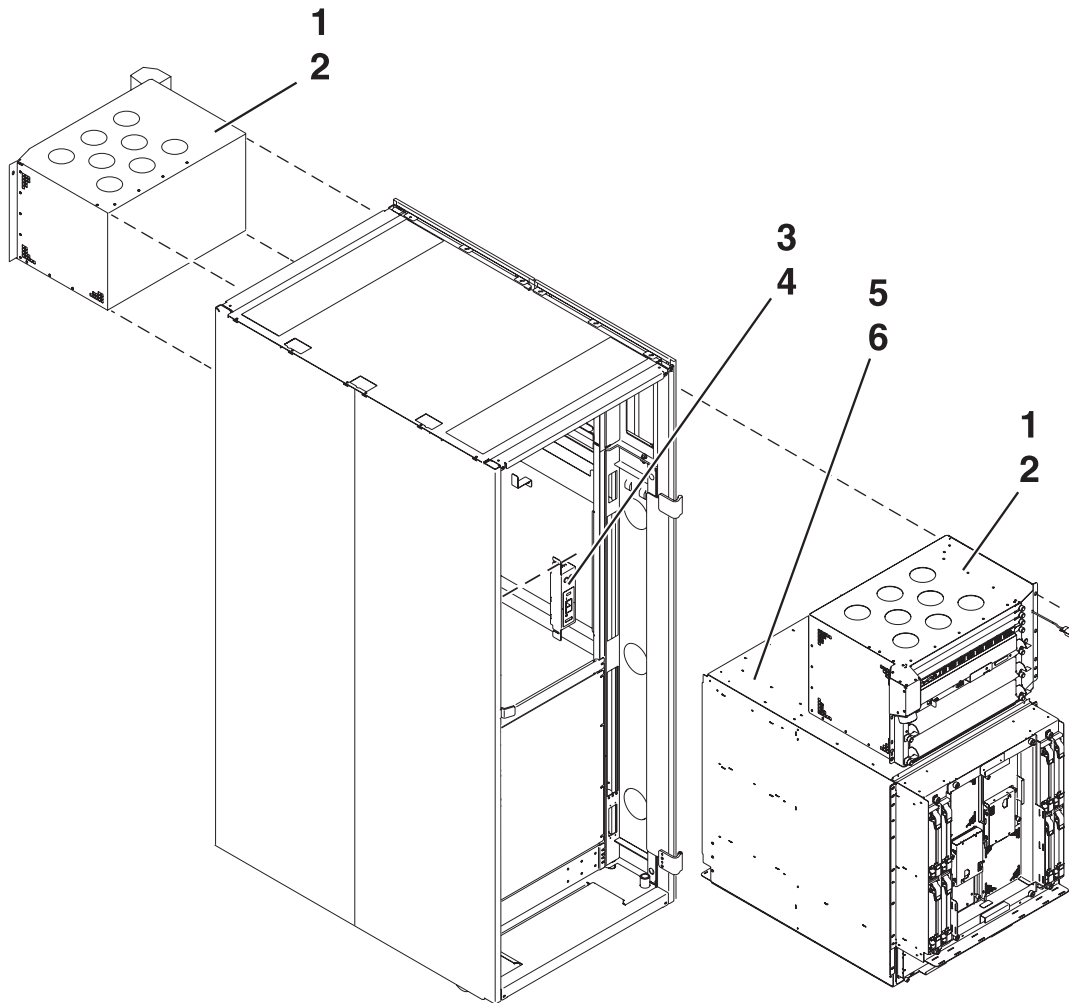
**Table 5. Final assembly (rear) - FC 9094 Base I/O Tower**

Index	Part number	Units	Description
30	53P5259	1	Dual line cord (DLC) power sub frame assembly
31	1621811	8	Screw, M4 (10mm)

Index	Part number	Units	Description
32	24L0940	1	Filler, spacer
33	1621811	2	Screw, M4 (10mm)
34	24L0939	2	Filler, power supply
35	1621811	4	Screw, M4 (10mm)
36	53P5263	2	AC power distribution assembly (ACMODUL) (A01, A02)
37	1621811	4	Screw, M4 (10mm)
38	53P1038	4	Power supply assembly - 840W (P00, P01, P02, P03)

*Final assembly - Models 870 and 890: For use by authorized service providers.*

**Figure 1. Final assembly - Models 870 and 890**



RZAR6991-0

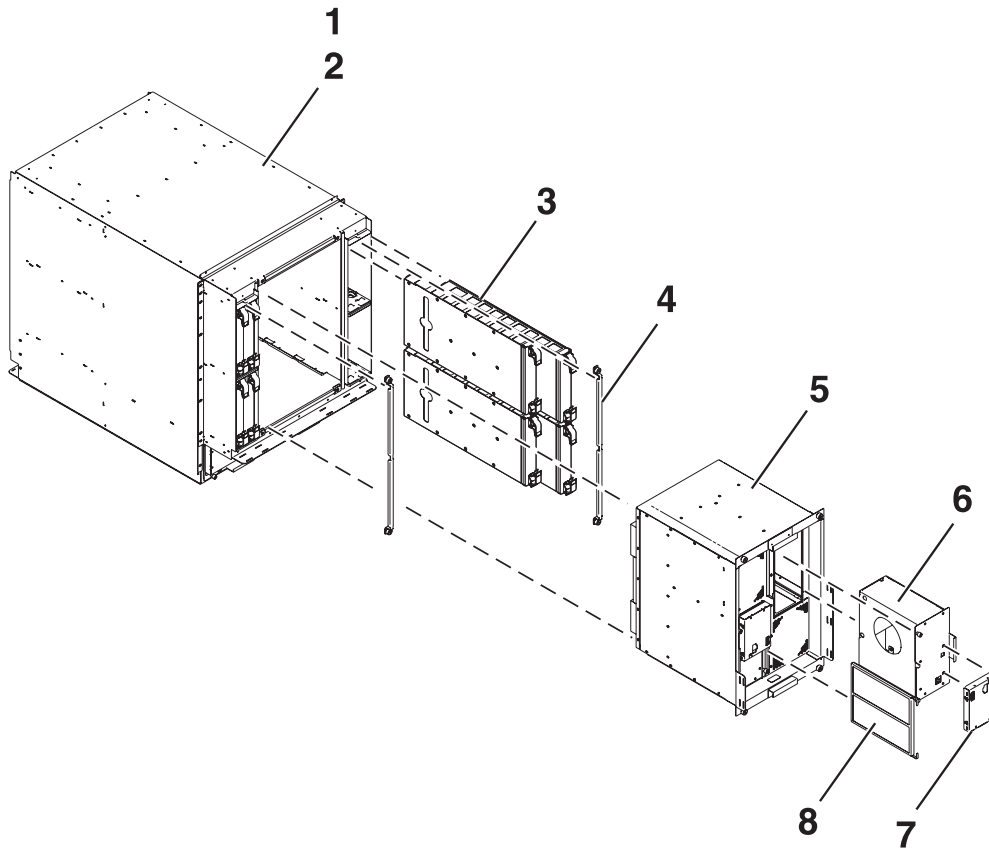
**Table 1. Final assembly - Models 870 and 890**

**Note:** For more details, follow the links given below.

Index	Part number	Units	Description
1	NONUM	2	Bulk power enclosure, see Bulk power enclosure assembly - Models 870 and 890
2	NONUM	4	Screw, (BPE mounting)
3	44P1124	1	Unit emergency power off (UEPO) switch. See the Models 870 and 890 - Unit Emergency Power Off (UEPO) card remove and replace procedure.
4	2665528	2	Screw
5	NONUM	1	CEC assembly, see Processor subsystem assembly - Models 870 and 890
6	NONUM	4	Screw, (CEC mounting)

*Processor subsystem assembly - Models 870 and 890: For use by authorized service providers.*

**Figure 1. Processor subsystem assembly, front - Models 870 and 890**

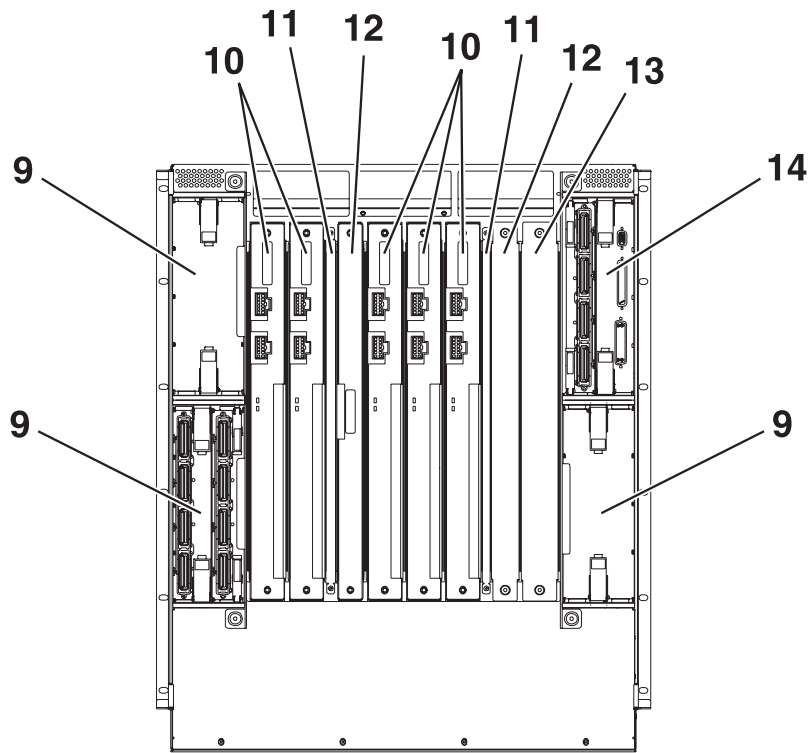


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**Table 1. Processor subsystem assembly, front - Models 870 and 890**

Index	Part number	Units	Description
1	44P0363	1	Processor subsystem assembly
2	NONUM	4	Screw,
3	NONUM	AR	Memory book assembly, See Models 870 and 890 - Memory books and memory blanks
3	21P8219	AR	Memory book filler assembly
4	11P2935	2	Security bar
5	11P4623	1	MSA (air mover) enclosure
6	07H5349	2	Motor scroll assembly (MSA)
7	31L7627	2	Motor drive assembly (MDA)
8	11P3781	2	Motor scroll assembly (MSA) air filter. See Models 870 and 890 - Motor scroll assembly (MSA) air filters.

**Figure 2. Processor subsystem assembly, back - Models 870 and 890**



RZAR6994-0

**Table 2. Processor subsystem assembly, back - Models 870 and 890**

Index	Part number	Units	Description
9	NONUM	AR	Bus adapter, see the Type, model, and part number list
9	53P1453	AR	Filler assembly
10	11P3492	AR	Distributed converter assembly (DCA)
11	11P2936	1	Security bar, left side
11	11P2937	1	Security bar, right side
12	11P1540	AR	Capacitor card assembly (CCA)
13	NONUM	1	Filler assembly
14	NONUM	2	Base HSL-2 adapter, see the Type, model, and part number list

**Part assemblies - FC 0550, FC 0551, FC 0578, FC 0588, FC 0595, FC 5079, FC 5294, FC 8079, FC 8093, and FC 8094:** For use by authorized service providers.

#### Cover and hardware assembly

See FC 0550, FC 0551, FC 0578, FC 0588, FC 5079, FC 8079 — Cover and hardware assembly

#### Optional hardware assembly



See FC 0550, FC 0551, FC 0578, FC 0588, FC 0588, FC 0595, FC 5079, FC 5294, FC 8079, FC 8093, FC 8094 — Optional hardware assembly

### **FC 5079**

The FC 5079 is two stacked FC 5074s. Refer to the **FC 5074** information in: Final assembly - FC 5074, FC 5094.

### **FC 5294**

The FC 5294 is two stacked FC 5094s. Refer to the **FC 5094** information in: Final assembly - FC 5074, FC 5094

### **FC 8079**

The FC 8079 is an FC 9079 and FC 5074 in the same rack.

- For FC 8079-001 (bottom): Refer to Final assembly - FC 9079 Base I/O Tower (Models 840 and SB3)
- For FC 8079-002 (top): Refer to the **FC 5074** information in: Final assembly - FC 5074, FC 5094

### **FC 8093**

The FC 8093 is an FC 9094 and FC 5074 in the same rack. For FC 8093-001 (bottom): Refer to the following FC 9094 links:

- Control panel - FC 9094 Base I/O Tower
- Final assembly - FC 9094 Base I/O Tower

For FC 8093-002 (top): Refer to the **FC 5074** information in: Final assembly - FC 5074, FC 5094

### **FC 8094**

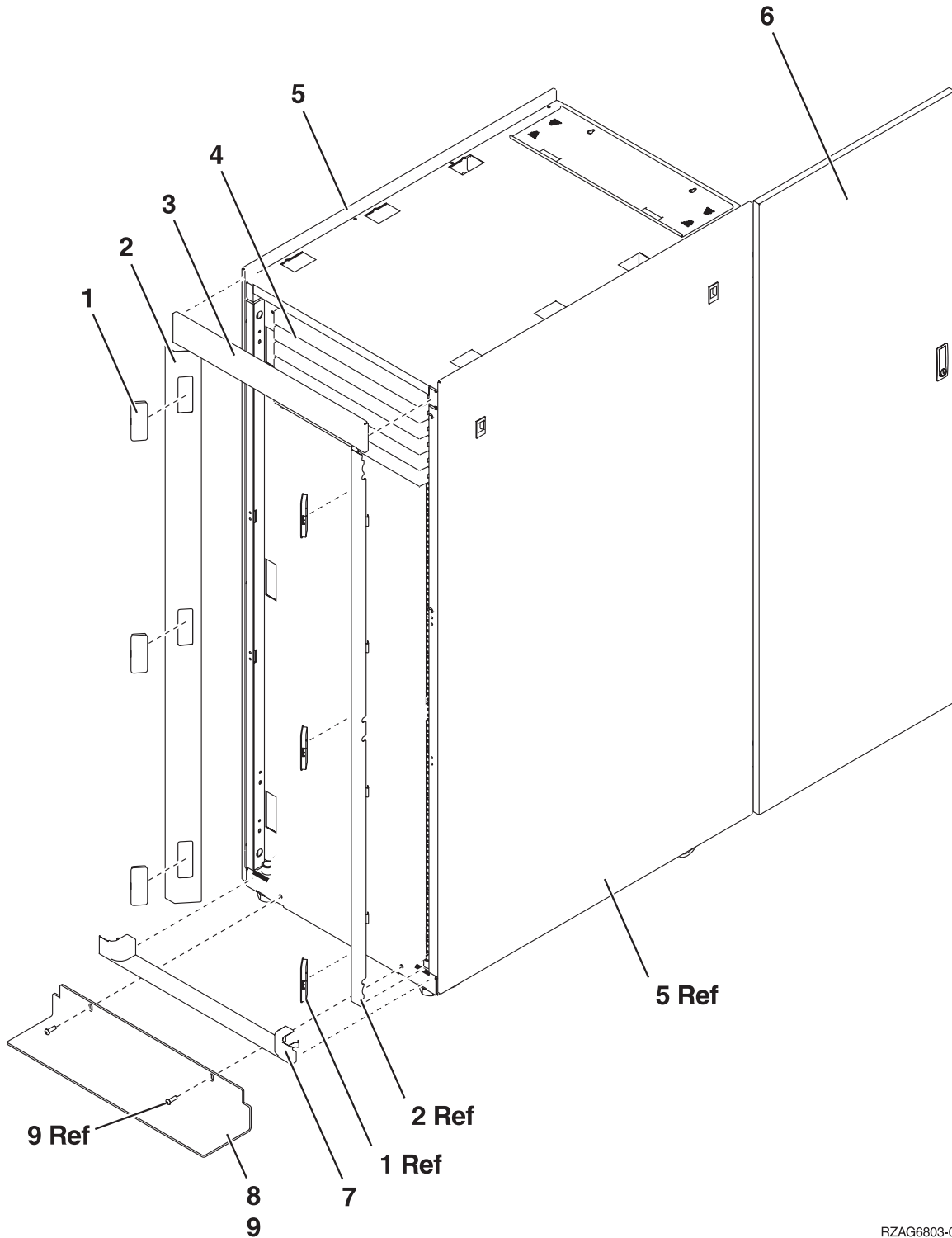
The FC 8094 is an FC 9094 and FC 5094 in the same rack. For FC 8094-001 (bottom): Refer to the following FC 9094 links:

- Control panel - FC 9094 Base I/O Tower
- Final assembly - FC 9094 Base I/O Tower

For FC 8094-002 (top): Refer to the following **FC 5094** information in: Final assembly - FC 5074, FC 5094

*Cover and hardware assembly — FC 0550, FC 0551, FC 0578, FC 0588, FC 5079, FC 8079: For use by authorized service providers.*

**Figure 1. Cover and hardware assembly — FC 0550, FC 0551, FC 0578, FC 0588, FC 5079, FC 8079**



RZAG6803-0

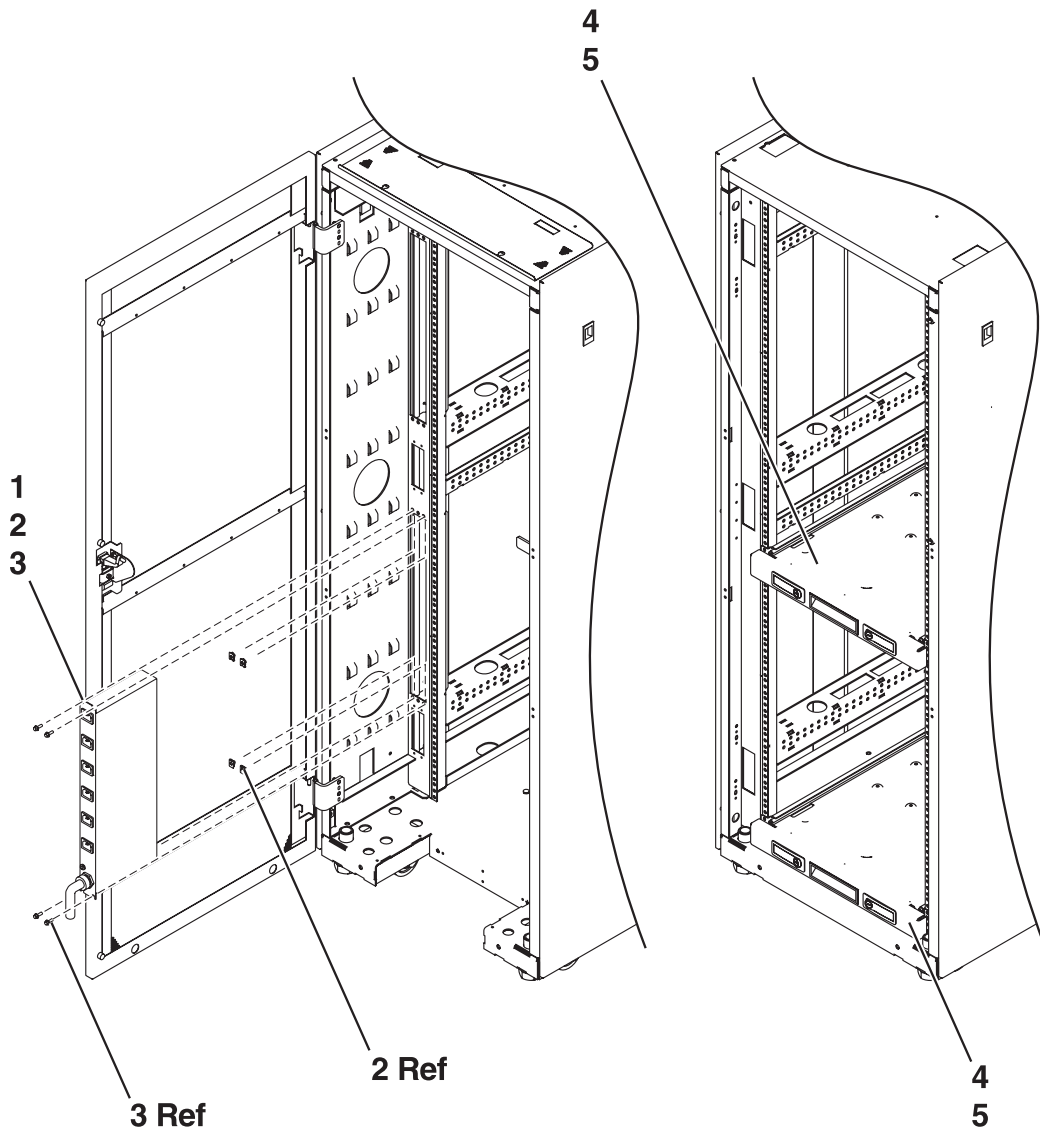
**Note:** For FC 0578 see Final assembly — FC 5078, FC 5088 for parts information.

**Table 1. Cover and hardware assembly — FC 0550, FC 0551, FC 0578, FC 0588, FC 5079, FC 8079**

Index	Part number	Units	Description
1	05N6809	6	Cover, trim kit

Index	Part number	Units	Description
2	12K0034	2	Side bezel, trim kit
3	12K0032	1	Top bezel,trim kit
4	97H9754	AR	1 high black EIA filler
4	97H9755	AR	3 high black EIA filler
4	97H9756	AR	5 high black EIA filler
5	31L7519	2	Cover, side
6	11P0724	1	Cover, rear
7	12K0024	1	Bottom bezel, trim kit
8	31L8305	1	Tip plate
9	24L0558	1	Screw M8x25

*Optional hardware assembly — FC 0550, FC 0551, FC 0578, FC 0588, FC 0595, FC 5079, FC 5294, FC 8079, FC 8093, FC 8094: For use by authorized service providers.*



RZAG6804-0

**Optional hardware assembly — FC 0550, FC 0551, FC 0578, FC 0588, FC 0595, FC 5079, FC 5294, FC 8079, FC 8093, FC 8094**

Index	Part number	Units	Description
1	00P2200	1	Power distribution unit (PDU) single phase US
1	00P2201	1	PDU two phase
1	00P2202	1	PDU three phase
1	00P2203	1	PDU single phase WT
2	1624779	4	Nut clip
3	74F1823	4	Screw

Index	Part number	Units	Description
4	21P4225	2	Shelf, tray assembly for Model 270 system (only used on FC 0551 rack)
5	1624779	16	Screw

**Part assemblies - FC 5074, FC 5075, FC 5078, FC 5088, and FC 5094:** For use by authorized service providers.

**Cover assembly - FC 5074, FC 5094**

**Cover assembly - FC 5075**

**Cover assembly - FC 5078, FC 5088**

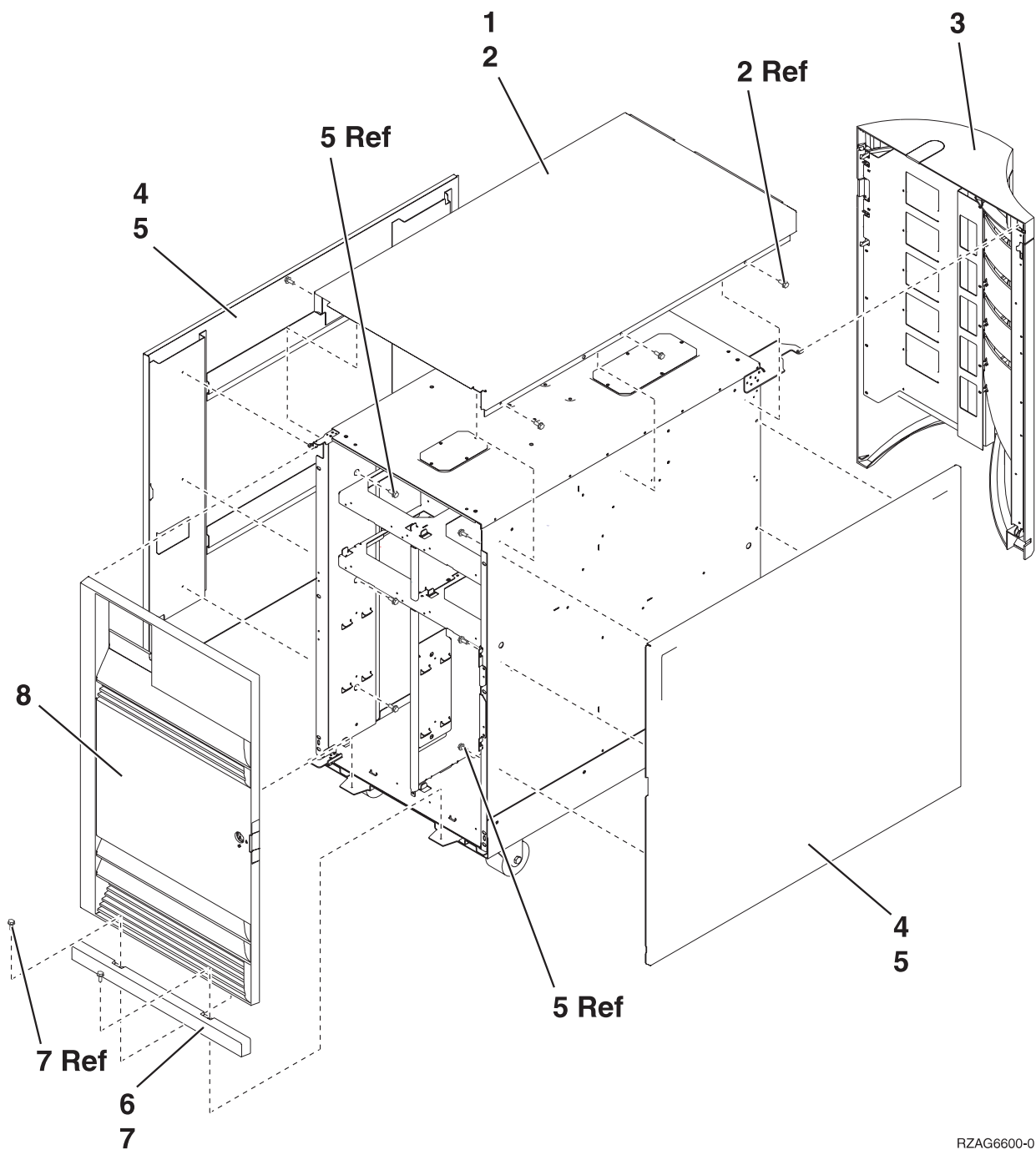
**Final assembly - FC 5074, FC 5094**

**Final assembly - FC 5075**

**Final assembly - FC 5078, FC 5088**

*Cover assembly — FC 5074, FC 5094: For use by authorized service providers.*

**Figure 1. Cover assembly — FC 5074, FC 5094**



RZAG6600-0

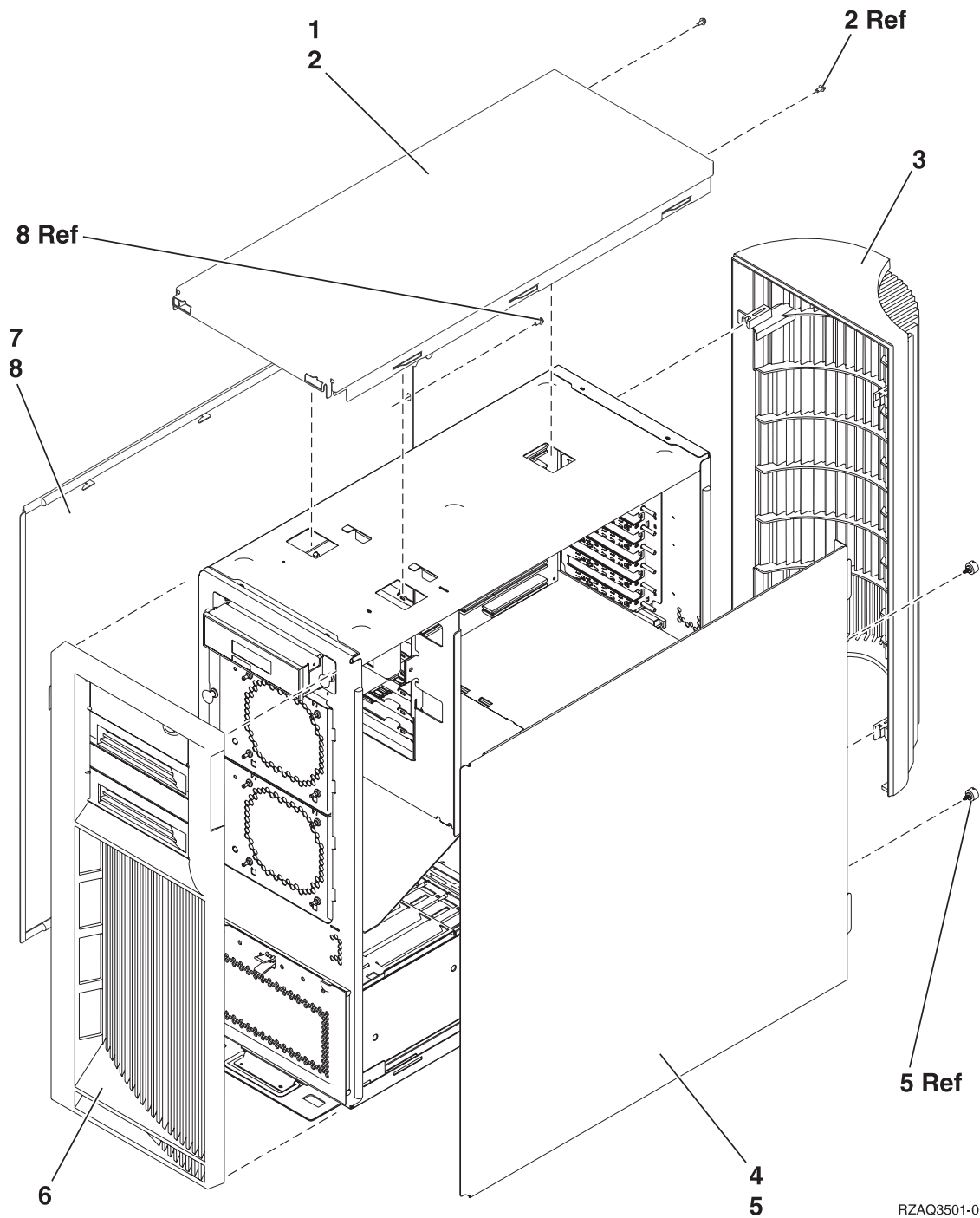
**Table 1. Cover assembly - FC 5074, FC 5094**

Index	Part number	Units	Description
1	24L0825	1	Top cover
2	1621811	4	Screw, M4 (10mm)
3	24L1079 24L1071	1	Rear cover Hinge pin, top
4	24L0824	1	Side cover
5	1621811	12	Screw, M4 (10mm)

Index	Part number	Units	Description
6	24L1078	1	Front filler cover
7	1621811	2	Screw, M4 (10mm)
8	24L1069 24L1071	1	Front cover Hinge pin, top

*Cover assembly — FC 5075: For use by authorized service providers.*

**Figure 1. Cover assembly — FC 5075**



RZAQ3501-0

**Table 1. Cover assembly — FC 5075**

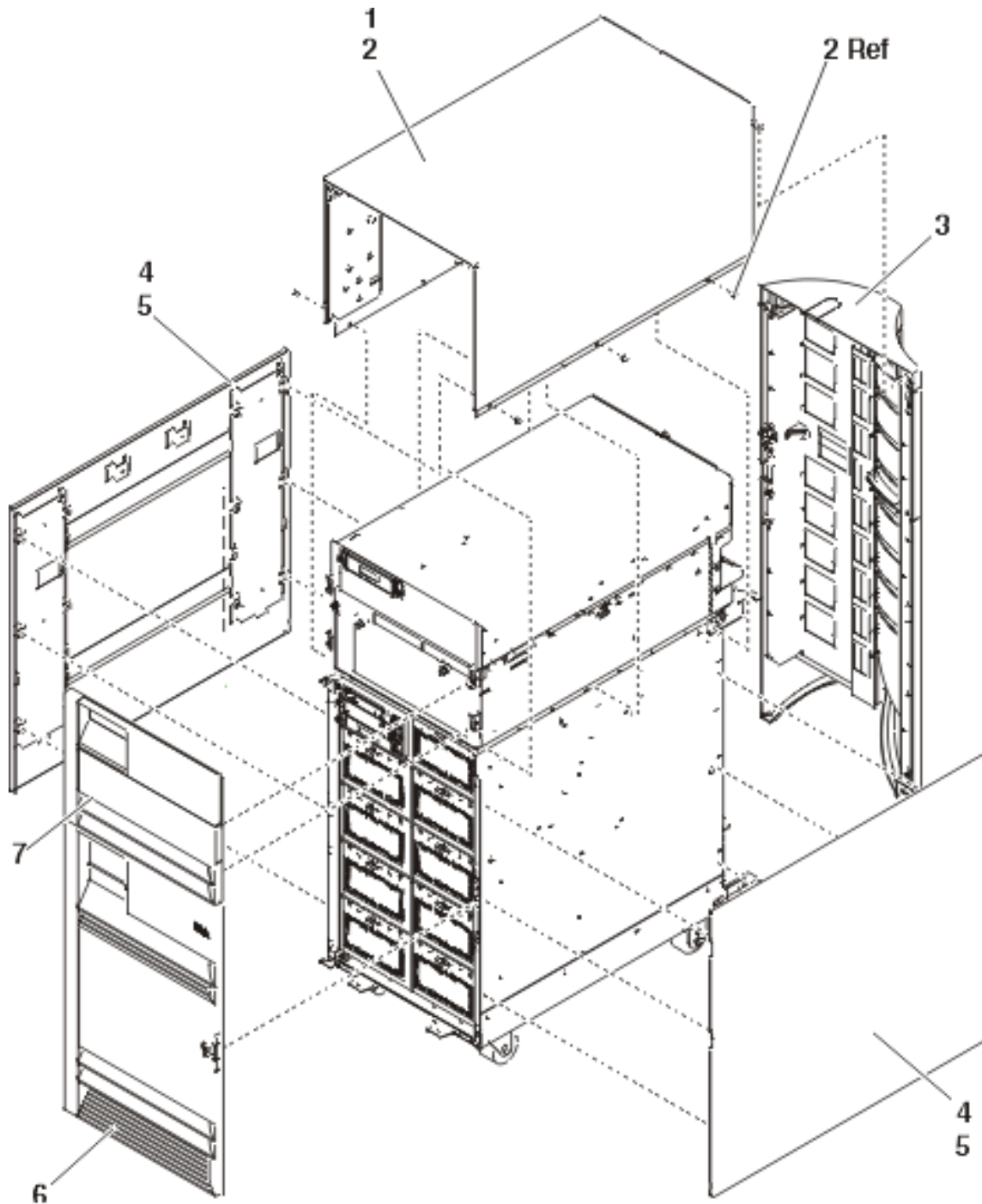
Index	Part number	Units	Description
1	24L1630	1	Cover, top
2	75G2878	2	Screw, M3.5 x 8mm
3	24L1652	1	Cover, rear
4	24L1632	1	Cover, side
5	24L1946	2	Thumbscrew



Index	Part number	Units	Description
6	24L1654	1	Cover, front
7	24L1632	1	Cover, side
8	75G2878	2	Screw, M3.5 x 8mm

Cover assembly — FC 5078, FC 5088: For use by authorized service providers.

Figure 1. Cover assembly — FC 5078, FC 5088

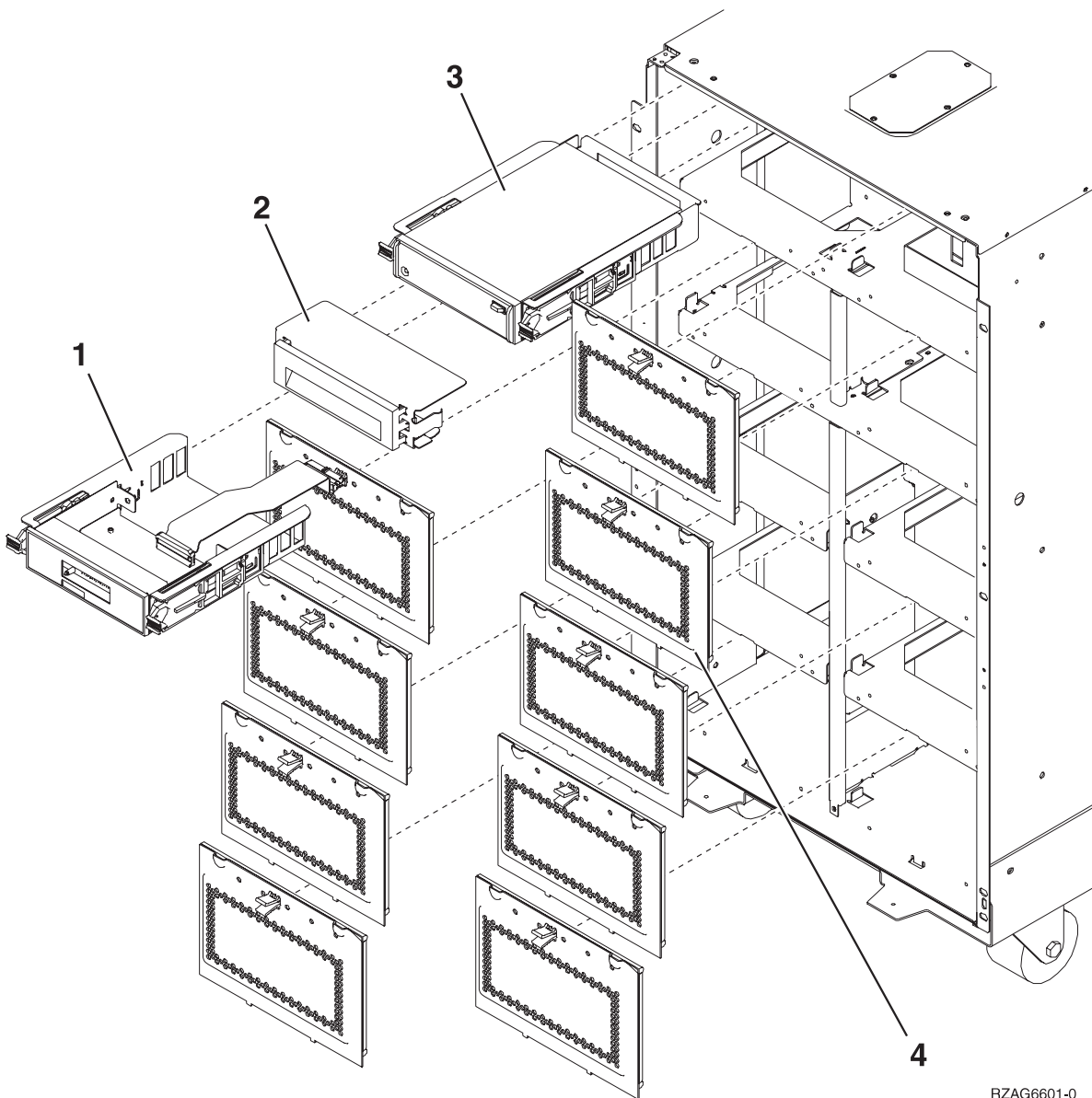


**Table 1. Cover assembly — FC 5078, FC 5088**

Index	Part number	Units	Description
1	21P4986	1	Top cover
2	1621811	6	Screw, M4 (10mm)
3	44L0247	1	Rear cover
4	24L0824	2	Side cover
5	1621811	16	Screw, M4 (10mm)
6	24L1069	1	Front cover, lower
7	44L0252	1	Front cover, upper

*Final assembly — FC 5074, FC 5094: For use by authorized service providers.*

**Figure 1. Final assembly — FC 5074, FC 5094**

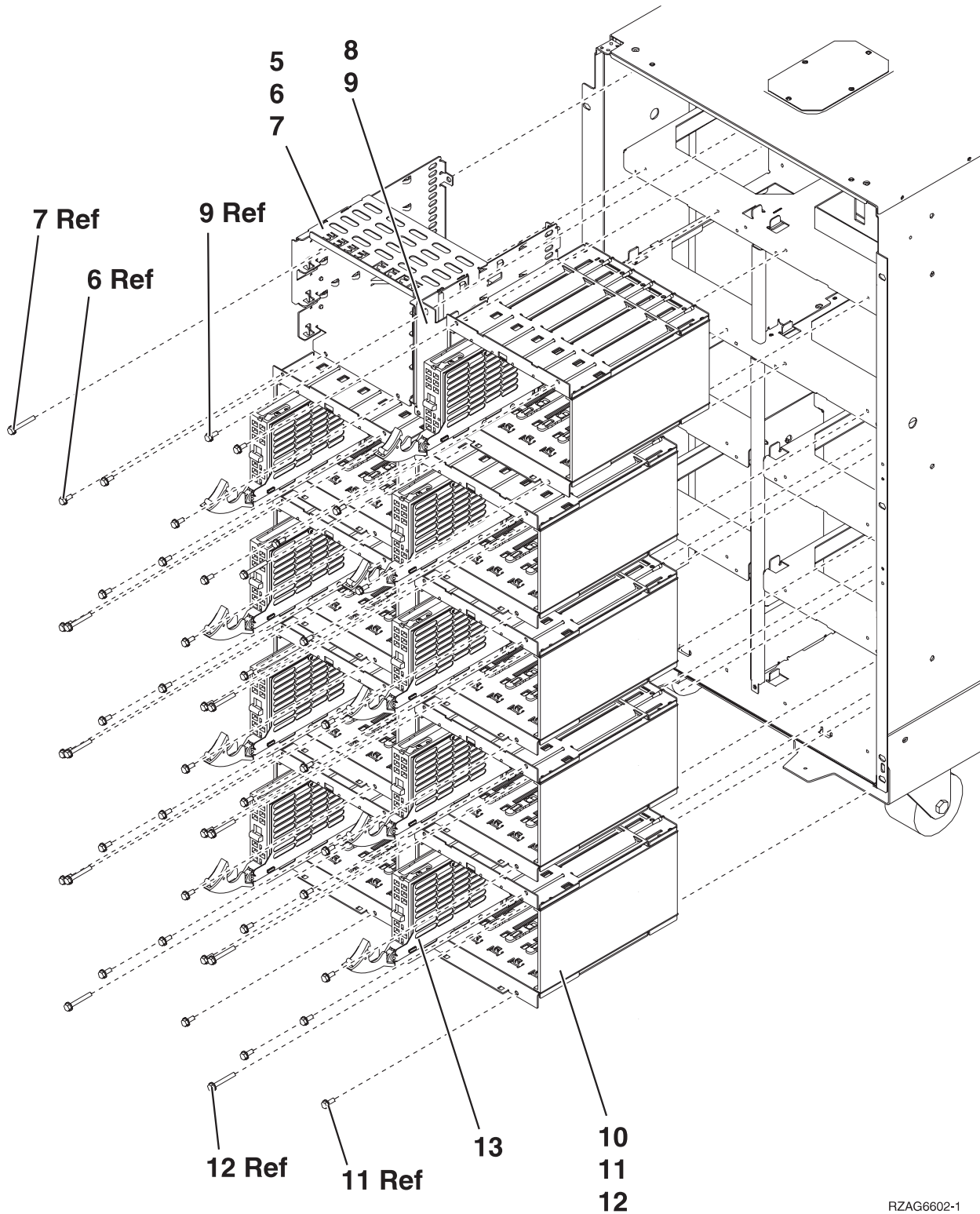


RZAG6601-0

**Table 1. Final assembly — FC 5074, FC 5094**

<b>Index</b>	<b>Part number</b>	<b>Units</b>	<b>Description</b>
1	24L0962	1	Display panel (NB1)
2	44H8406	AR	Filler (Removable media)
2		AR	Optical storage unit, see the Type, model, and part number list.
3		AR	Removable media, see the Type, model, and part number list.
4	24L0821	AR	Disk unit EMC access plate

**Figure 2. Final assembly — FC 5074, FC 5094, continued**



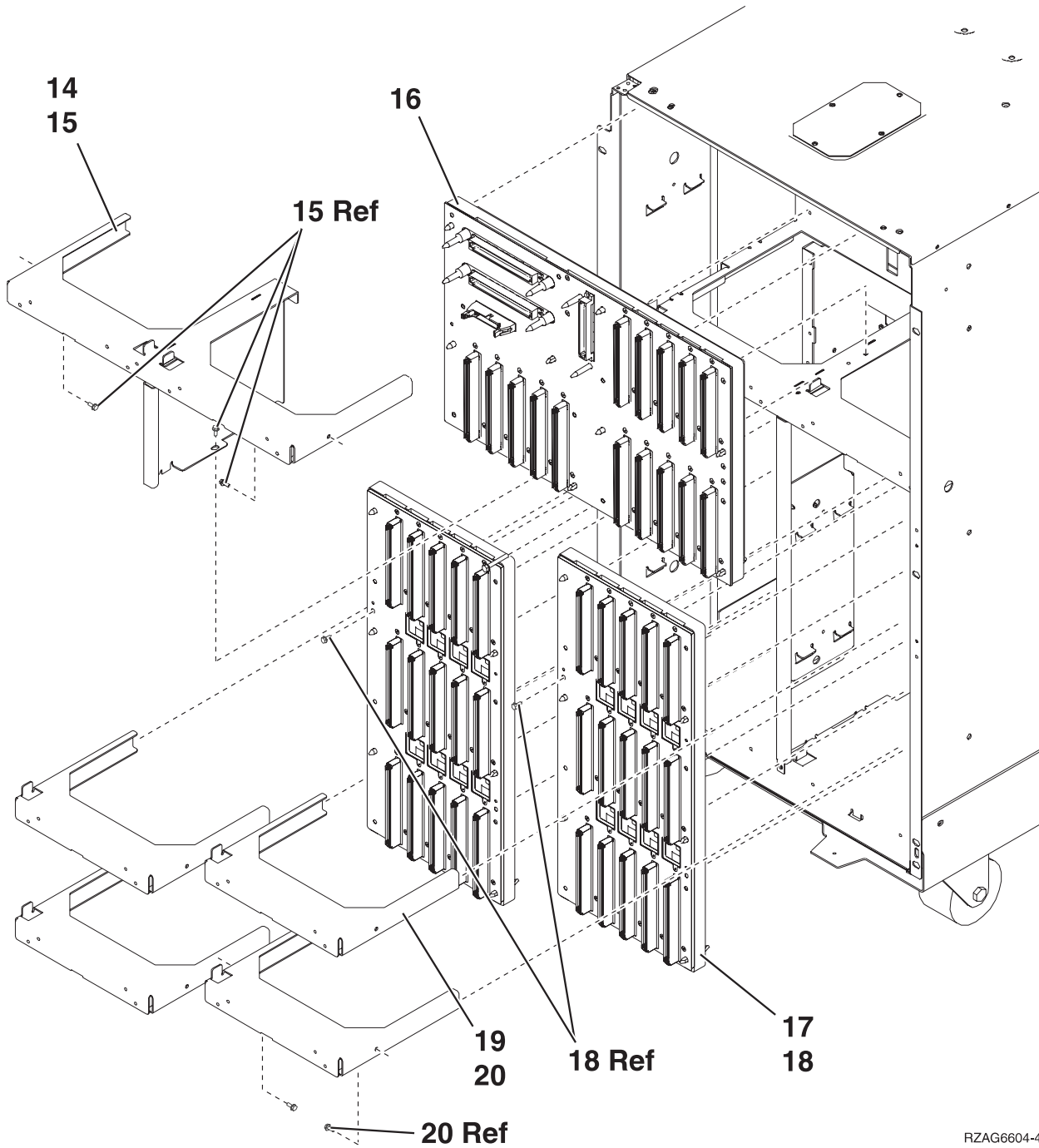
RZAG6602-1

**Table 2. Final assembly — FC 5074, FC 5094, continued**

Index	Part number	Units	Description
5	NONUM	1	Removable media cage assembly

Index	Part number	Units	Description
6	1621811	2	Screw, M4 (10mm)
7	1621817	2	Screw
8	24L1067	1	Center support bracket
9	1621811	2	Screw, M4 (10mm)
10	NONUM	AR	Five disk unit cage assembly
11	1621811	12	Screw, M4 (10mm)
12	1621817	6	Screw
13		AR	Disk unit assembly, see the Type, model, and part number list.

**Figure 3. Final assembly — FC 5074, FC 5094, continued**



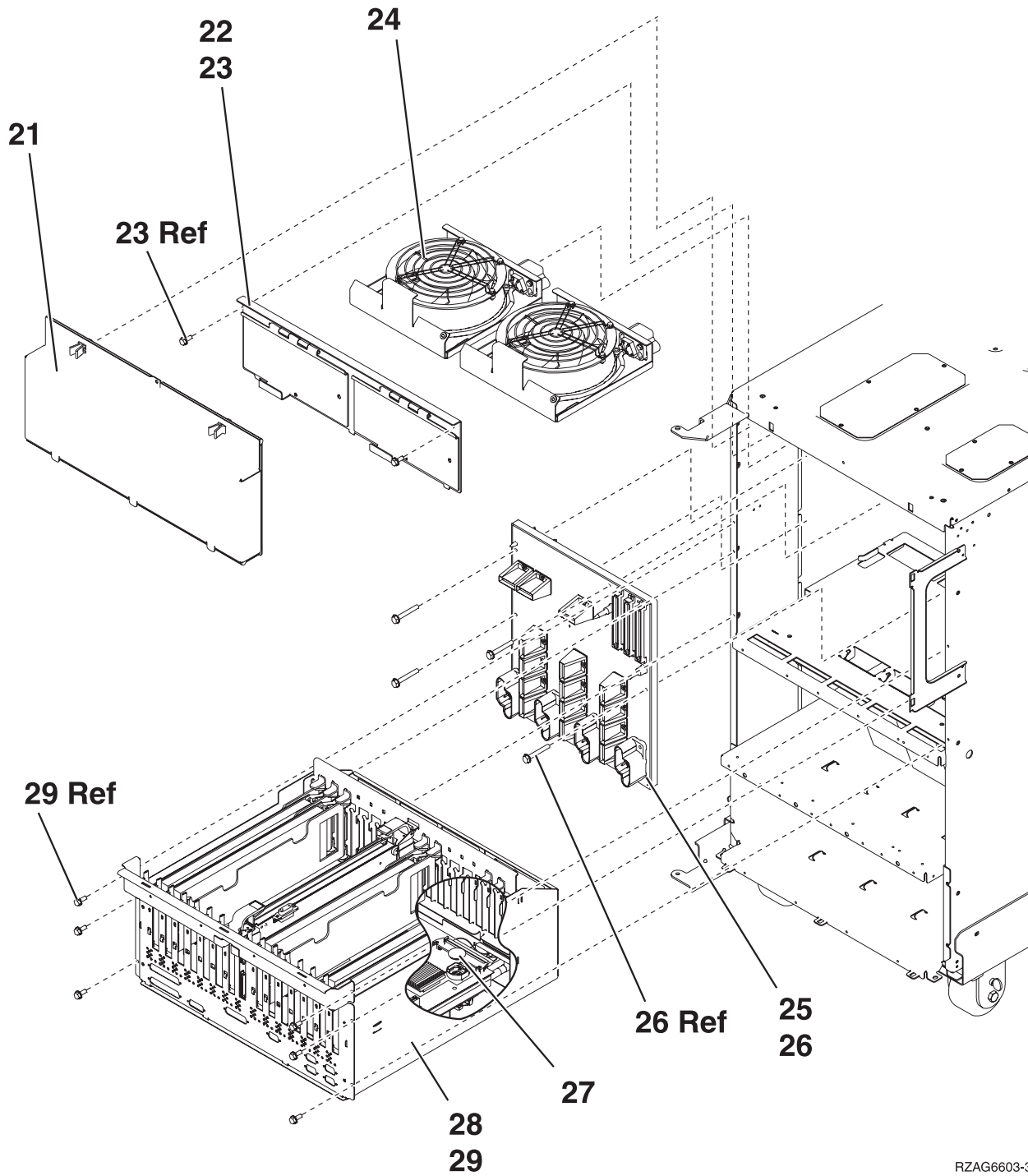
RZAG6604-4

**Table 3. Final assembly — FC 5074, FC 5094, continued**

Index	Part number	Units	Description
14	NONUM	1	Shelf, base disk unit
15	1621811	3	Screw, M4 (10mm)
16	<ul style="list-style-type: none"> <li>• 24L0892 (FC 5074)</li> <li>• 53P4001 (FC 5094)</li> </ul>	1	Base disk unit board/stiffener assembly (DB3)

Index	Part number	Units	Description
17	<ul style="list-style-type: none"> <li>• 24L1029 (FC 5074)</li> <li>• 53P4002 (FC 5094)</li> </ul>	AR	Disk unit board/stiffener assembly (DB1 and DB2)
18	1621838	1	Screw
19	NONUM	AR	Shelf, disk unit
20	1621811	2	Screw, M4 (10mm)

**Figure 4. Final assembly — FC 5074, FC 5094, continued**



RZAG6603-3

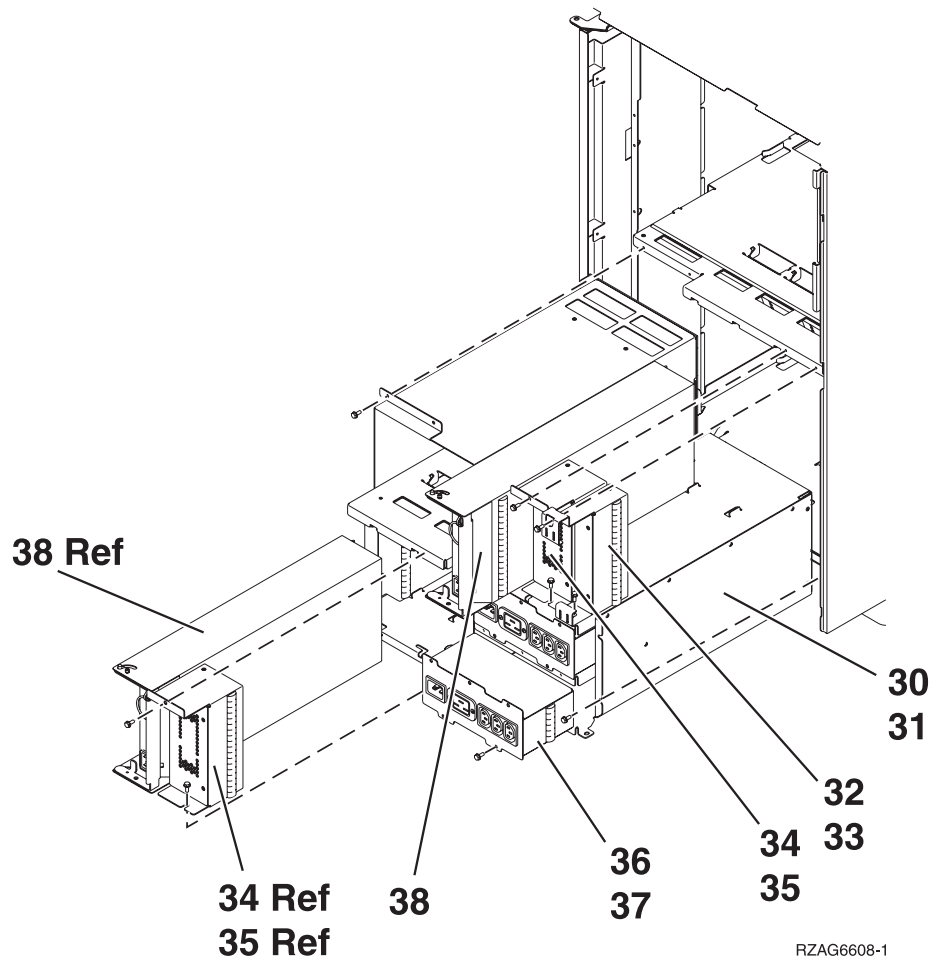
**Table 4. Final assembly — FC 5074, FC 5094, continued**

Index	Part number	Units	Description
21	24L0823	1	EMC access plate
22	NONUM	1	Air moving device (AMD) door assembly
23	1621811	2	Screw, M4 (10mm)
24	04N3345	2	Air moving device (AMD) (B01, B02)
25	24L0891	1	Power board/stiffener assembly (PB1)



Index	Part number	Units	Description
26	1621816	6	Screw
27	16G8095	1	Time of day (TOD) battery
28	<ul style="list-style-type: none"> <li>• 97H7307 (FC 5074)</li> <li>• 53P6023 (FC 5094)</li> </ul>	1	PCI card cage assembly
29	1621811	6	Screw, M4 (10mm) <b>Note:</b> This only applies to the FC 5074.

**Figure 5. Final assembly — FC 5094**

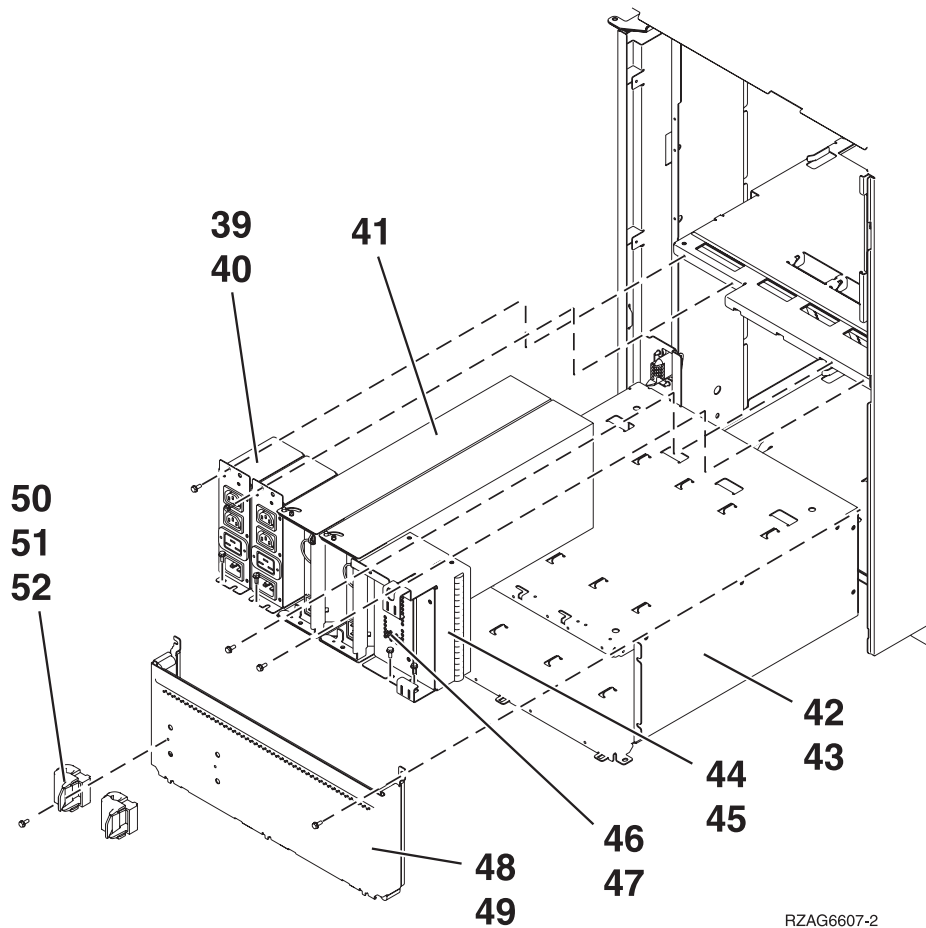


**Table 5. Final assembly — FC 5094**

Index	Part number	Units	Description
30	53P5259	1	Power sub frame assembly for dual line cord
31	1621811	8	Screw, M4 (10mm)
32	24L0940	2	Filler, spacer
33	1621811	2	Screw, M4 (10mm)
34	24L0939	2	Filler, power supply
35	1621811	4	Screw, M4 (10mm)

Index	Part number	Units	Description
36	53P5263	2	AC power distribution assembly (ACMODUL)
37	1621811	4	Screw, M4 (10mm)
38	53P1038	4	Power supply assembly - 840W (P00, P01, P02, P03)

**Figure 6. Final assembly — FC 5074 (2 power supply dual line cord)**

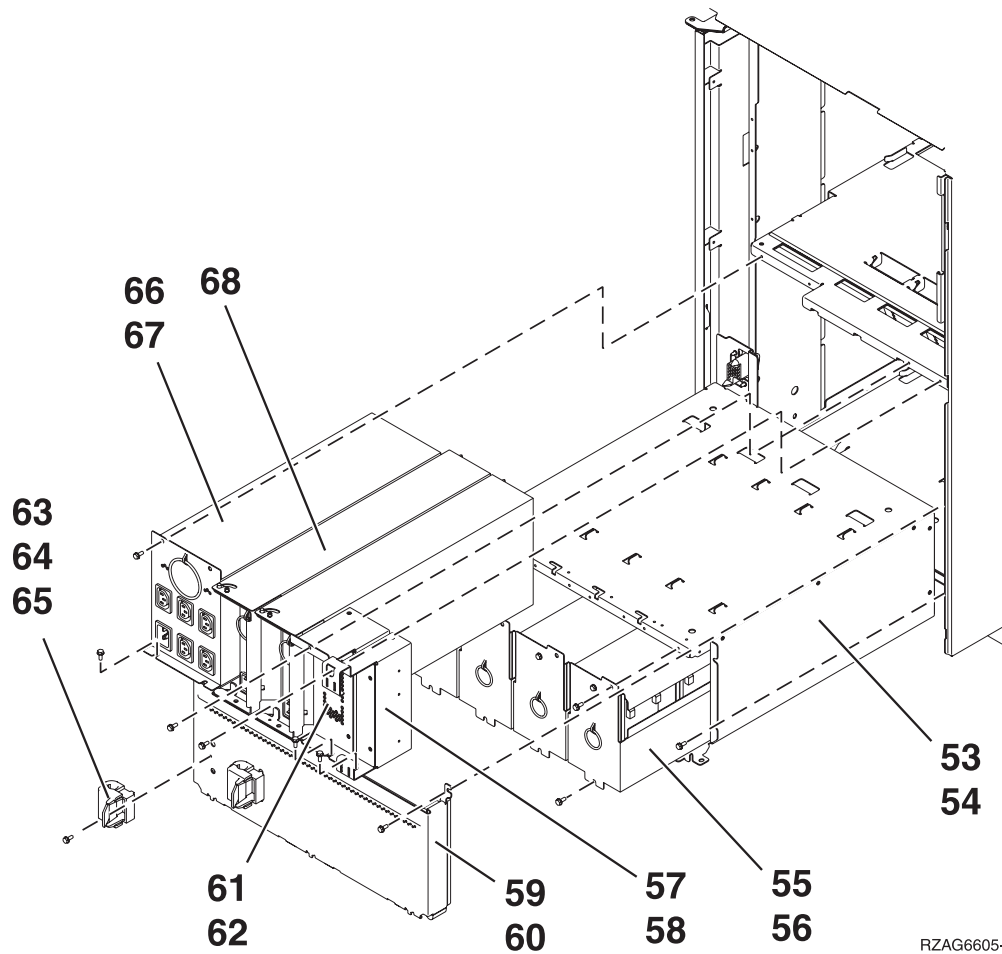


**Table 6. Final assembly — FC 5074 (2 power supply dual line cord)**

39	21P6347	2	AC module
40	1621811	4	Screw, M4 (10mm)
41	53P1038	2	Power supply — 840 watts (P01, P02)
42	53P4651	1	Power sub frame assembly
43	1621811	12	Screw, M4 (10mm)
44	24L0940	AR	Filler, Spacer
45	1621811	2	Screw, M4 (10mm)
46	24L0939	AR	Filler, power supply
47	1621811	2	Screw, M4 (10mm)
48	NONUM	1	EMC access plate

49	1621811	2	Screw, M4 (10mm)
50	44H8641	2	Cable Clamp, Top
51	44H8640	2	Cable Clamp, Base
52	1621811	2	Screw, M4 (10mm)

**Figure 7. Final assembly — FC 5074 (single line cord)**



RZAG6605-3

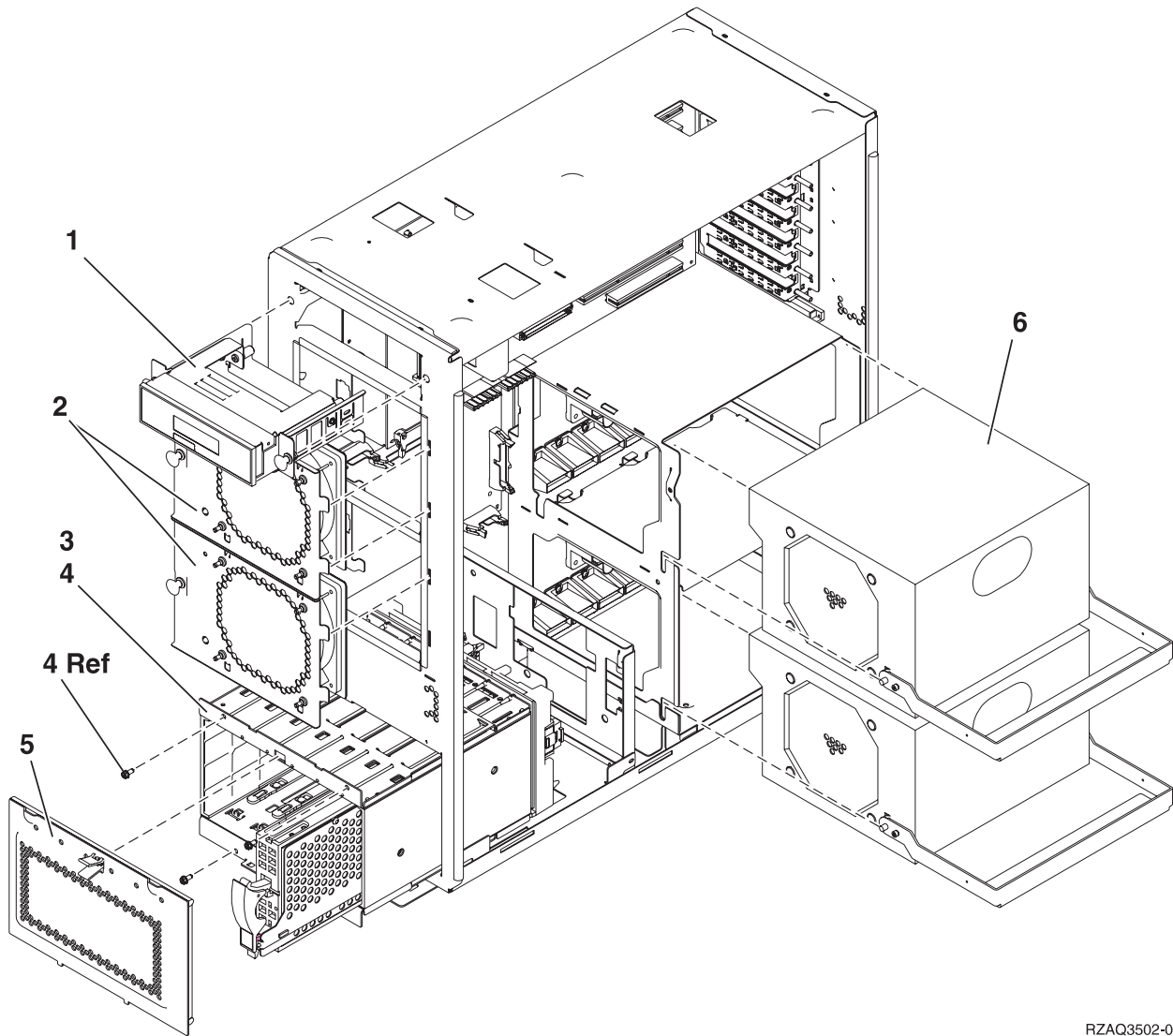
**Table 7. Final assembly — FC 5074 (single line cord)**

Index	Part number	Units	Description
53	53P4651	1	Power sub frame assembly
54	1621811	12	Screw, M4 (10mm)
55	97H7318	1	Battery pack - This part number includes four batteries. Refer to the BATTERY symbolic FRU for additional information.
56	1621811	12	Screw, M4 (10mm)
57	24L0940	AR	Filler, Spacer
58	1621811	2	Screw, M4 (10mm)

Index	Part number	Units	Description
59	NONUM	1	EMC access plate
60	1621811	2	Screw, M4 (10mm)
61	24L0939	AR	Filler, power supply
62	1621811	2	Screw, M4 (10mm)
63	44H8641	2	Cable Clamp, Top
64	44H8640	2	Cable Clamp, Base
65	1621811	2	Screw, M4 (10mm)
66	97H7316	1	Battery charger
67	1621811	4	Screw, M4 (10mm)
68	90H6629	3	Power supply — 765 watts (P01, P02, P03)

*Final assembly — FC 5075: For use by authorized service providers.*

**Figure 1. Final assembly — FC 5075**

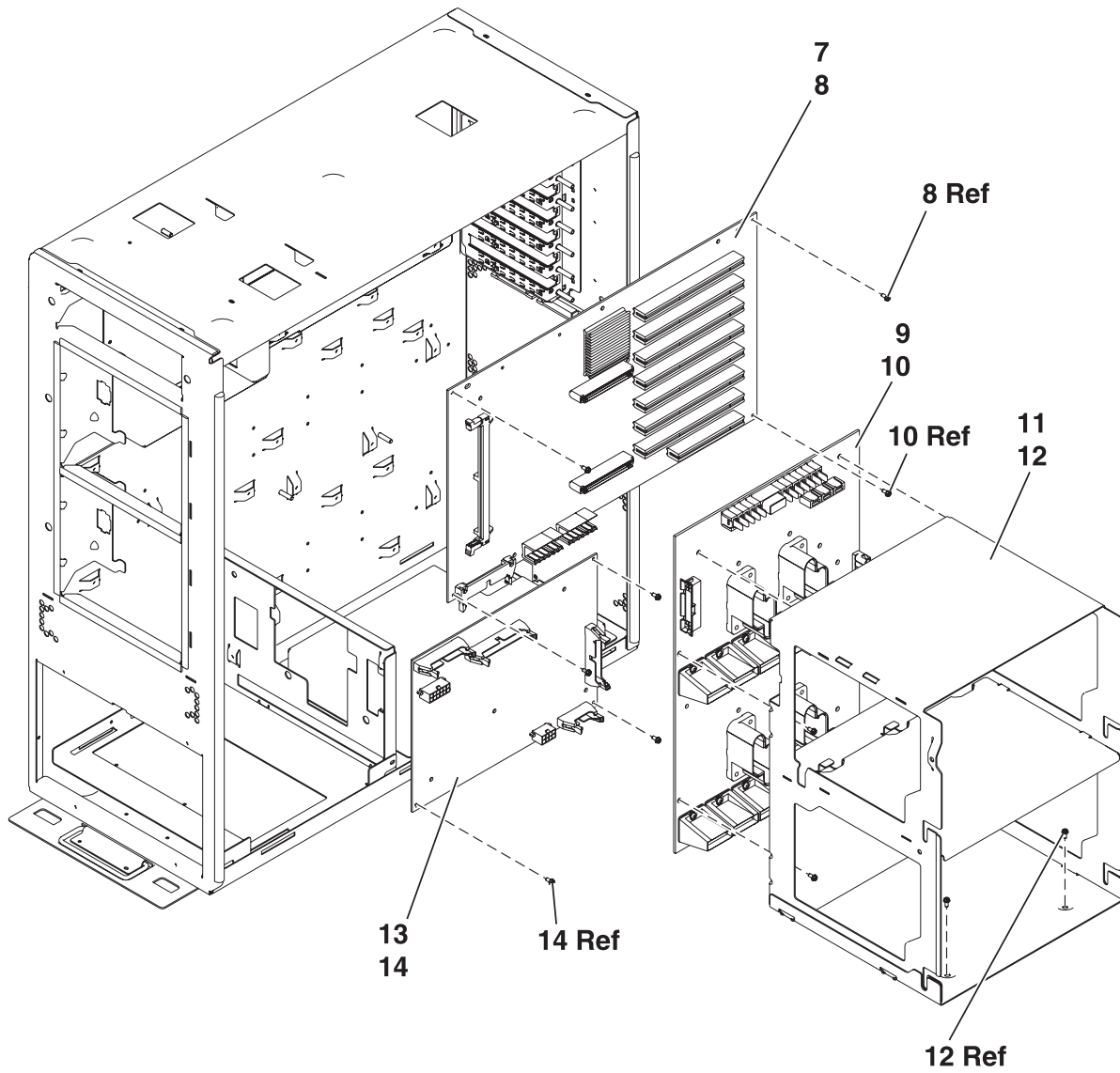


RZAQ3502-0

**Table 1. Final assembly — FC 5075**

Index	Part number	Units	Description
1	24L1592	1	Op panel
2	24L1730	2	Air moving device assembly
3	NONUM	1	Cage assembly disk unit
4	75G2878	4	Screw, M3.5 x 8mm
4A	04N3392	2	Screw, M3.5 x 35mm
5	24L1827	1	EMC shield, disk unit
5A	NONUM	AR	Disk unit assembly. See the Type, model, and part number list.
6	21P6417	AR	Power supply. See the Type, model, and part number list.

**Figure 2. Final assembly — FC 5075, continued**



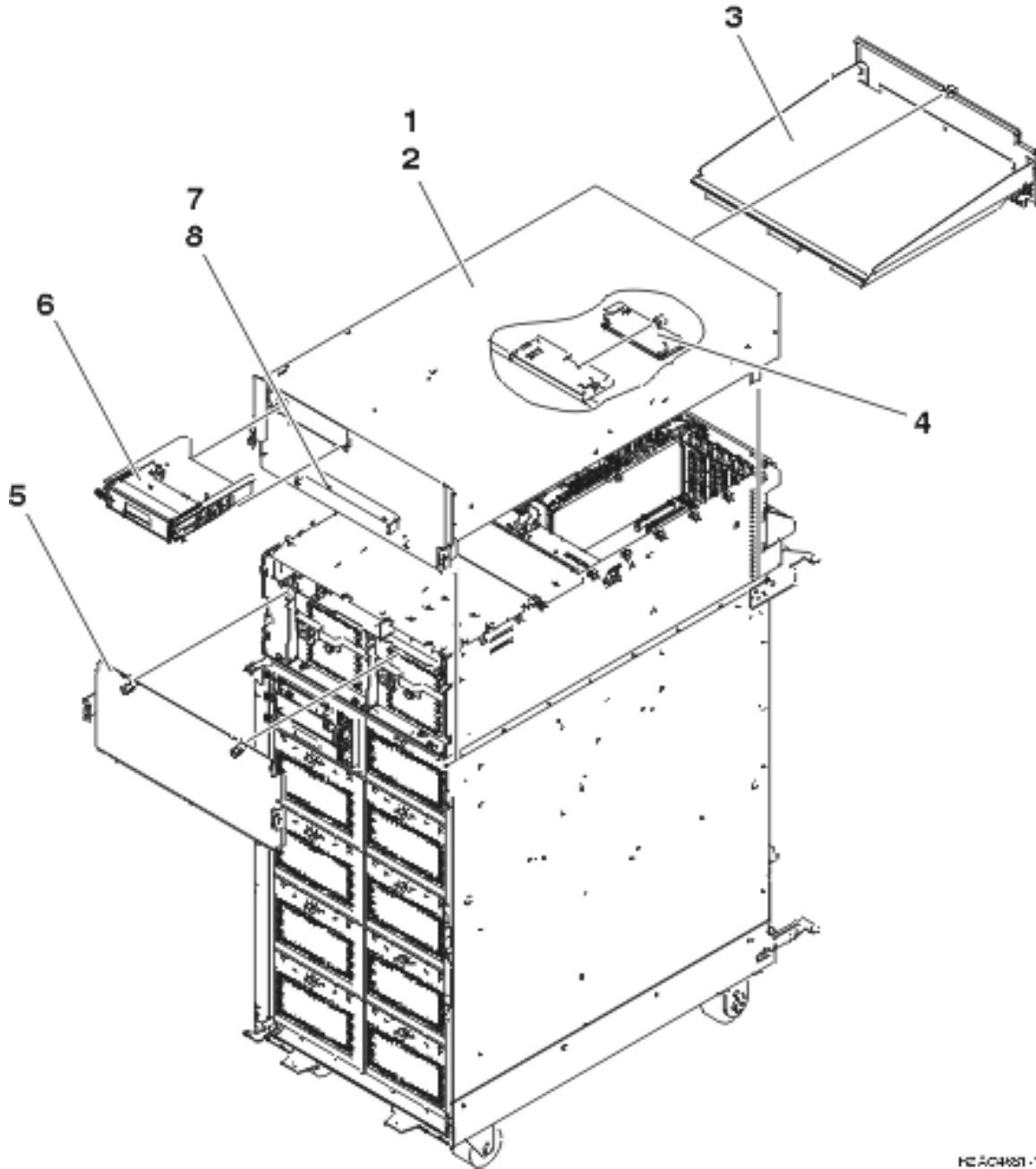
RZAQ3503-1

**Table 2. Final assembly — FC 5075, continued**

Index	Part number	Units	Description
7	NONUM	1	Backplane assembly
8	75G2878	8	Screw, M3.5 x 8mm
9	04N6111	1	Power distribution backplane (PB1)
10	75G2878	5	Screw, M3.5 x 8mm
11	NONUM	1	Power supply shelf
12	75G2878	11	Screw, M3.5 x 8mm
13	NONUM	1	Backplane assembly
14	75G2878	5	Screw, M3.5 x 8mm

Final assembly — FC 5078, FC 5088: For use by authorized service providers.

Figure 1. Final assembly — FC 5078, FC 5088



HC404821-1

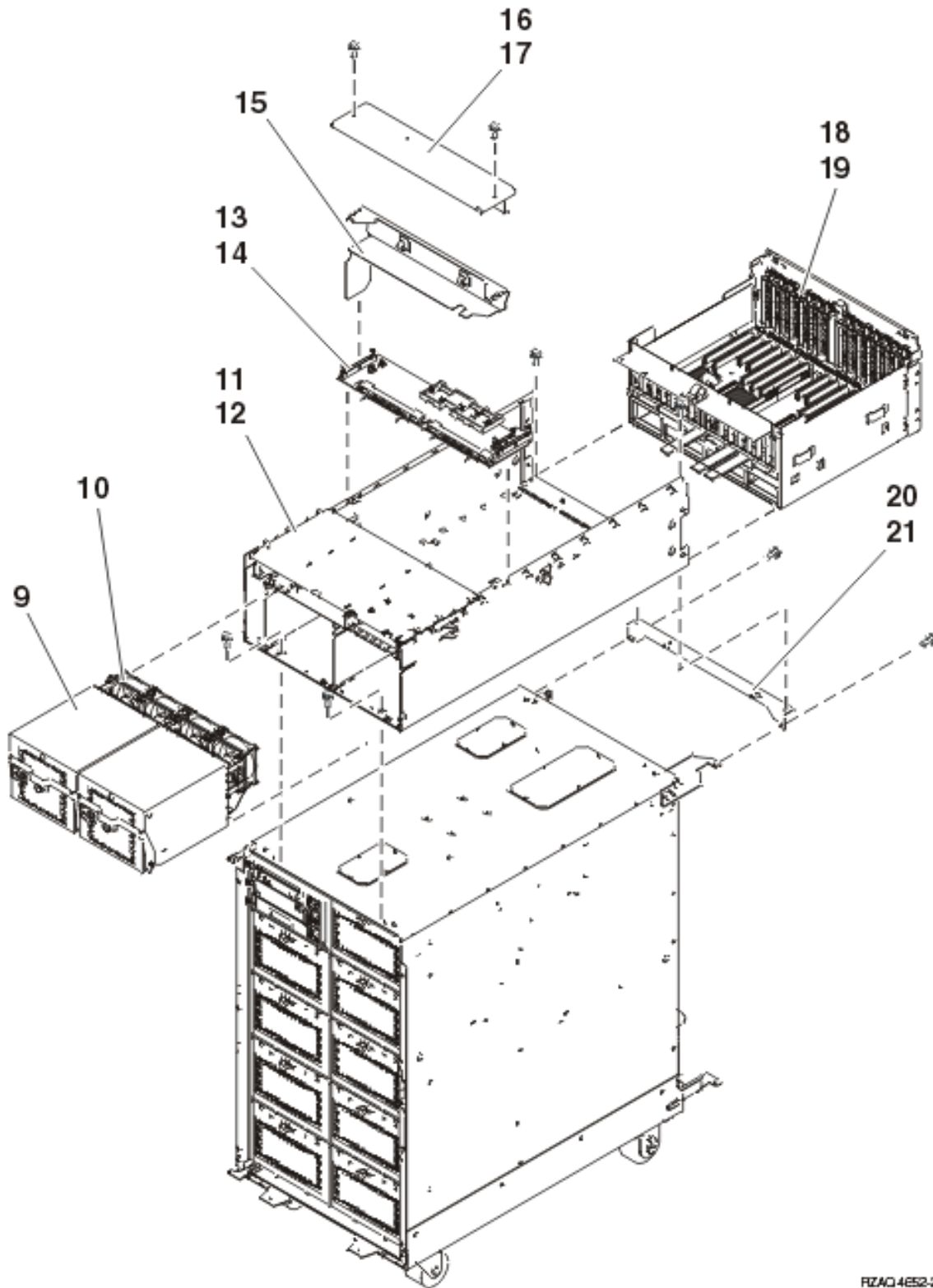
Table 1. Final assembly — FC 5078, FC 5088

Index	Part number	Units	Description
1	04N4523	1	Top wrap assembly
2	00G1268	4	Screws, M4X
3	04N4499	1	Rear EMC shield

Index	Part number	Units	Description
4	11K1107	1	Air moving device (Fans) control card (BB1)
5	04N4500	1	Front EMC shield
6	24L0962	1	Display panel assembly (NB1)
7	21P6303	1	Front cover bracket (for FC 5078)
7	21P6687	1	Front cover bracket (for FC 0578 in a rack)
8	00G1268	2	Screws, M4X

**Figure 2. Final assembly — FC 5078, FC 5088**





RZ4Q4E52-2

**Table 2. Final assembly — FC 5078, FC 5088, continued**

Index	Part number	Units	Description
9	00P3918	2	AC power supply (P01 and P02)

Index	Part number	Units	Description
10	41L5448	2	Air moving device (Fans) (B01 and B02)
11	21P4894	1	Chassis
12	1621811	6	Screw, M4 (10mm)
13	00P2382	1	Power distribution (PB1)
14	00G1268	6	Screws, M4X
15	44K0243	1	Cable tray
16	41L5206	1	Cover
17	00G1268	2	Screw, M4X
18	04N6797	AR	FC 5078, FC 0578 PCI node board assembly (CB1)
18	53P2354	AR	FC 5088, FC 0588 PCI node board assembly (CB1)
19	00G1268	6	Screw, M4X
20	04N4498	1	Mounting bracket
21	1621811	2	Screw, M4 (10mm)
NA	04N3038	AR	Power supply to PDU line cord
NA	21P6094	AR	Miscellaneous power cable
NA	41L5650	AR	SPCN cable
NA	41L5649	AR	Display panel cable
NA	41L5652	AR	Fan control cable

**Part assemblies - FC 5095, FC 0595:** For use by authorized service providers.

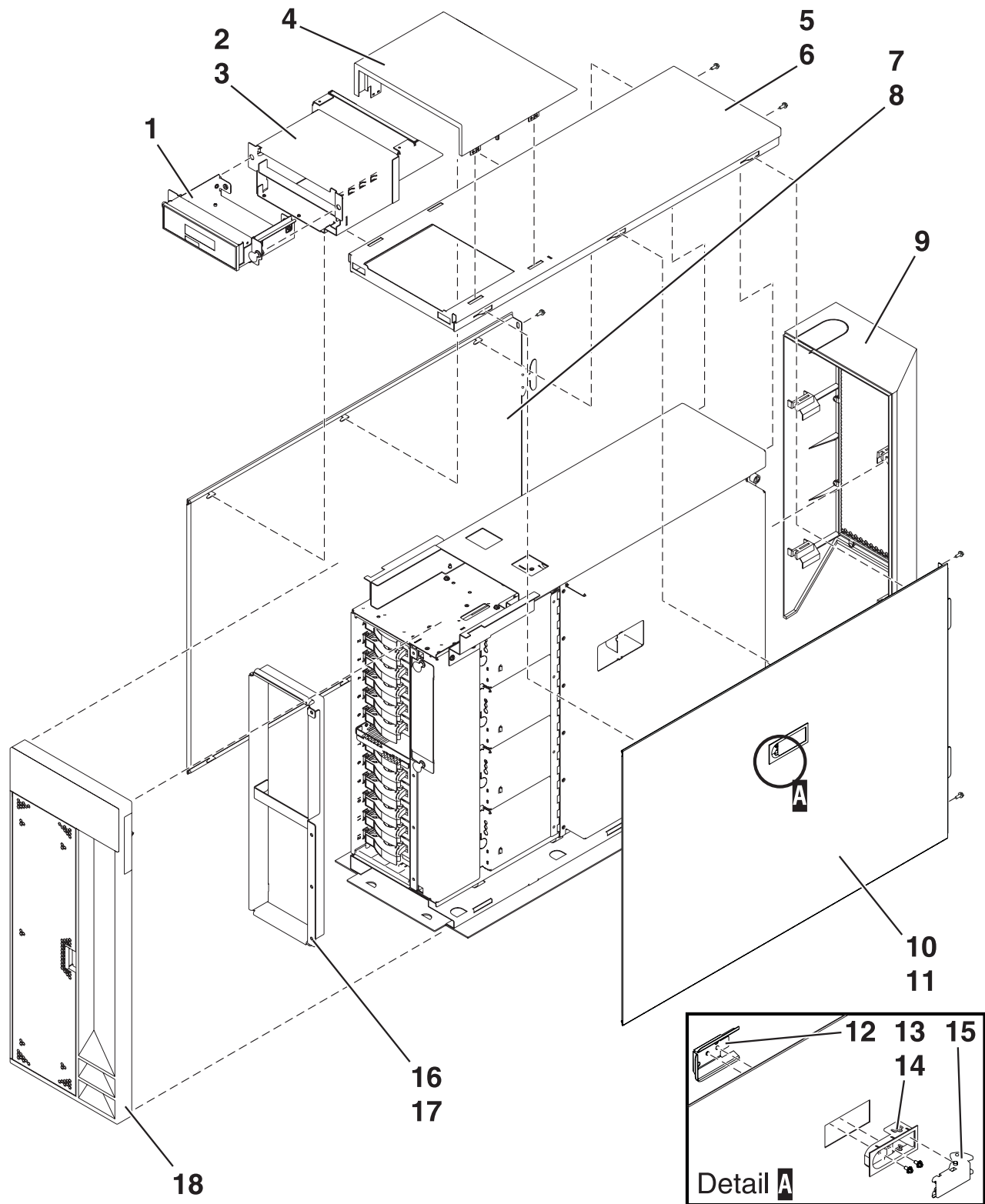
**Cover assembly - FC 5095**

**Final assembly - FC 5095**

**Final assembly - FC 0595 rack mounted expansion unit**

*Cover assembly - FC 5095 Expansion I/O Tower: For use by authorized service providers.*

**Figure 1. Cover assembly - FC 5095 Expansion I/O Tower**



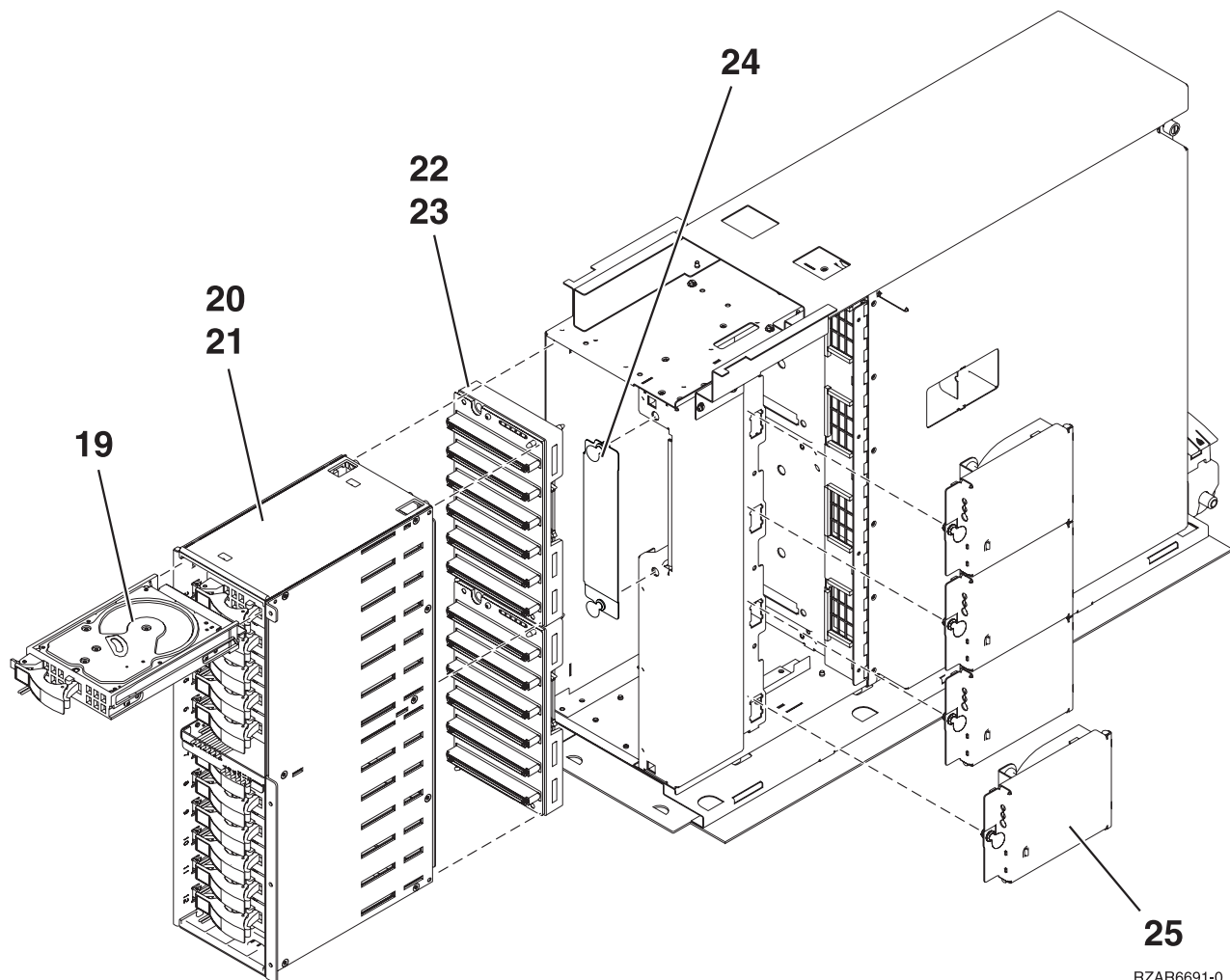
RZAR6690-0

Table 1. Cover assembly - FC 5095 Expansion I/O Tower

Index	Part number	Units	Description
1	53P0330	1	Display panel tray assembly
2	NONUM	1	Display panel enclosure assembly
3	53P0320	5	Screw
4	53P0308	1	Cover, Display panel
5	53P0280	1	Cover, top
6	53P0320	2	Screw
7	53P0285	1	Cover, left side
8	53P0320	2	Screw
9	53P0303	1	Cover assembly, back
10	53P0286	1	Cover assembly, right side
11	53P0320	2	Screw
12	53P0322	1	EMC bracket
13	06P5858	1	Latch housing
14	03K9553	2	Screw, M3.5 x 7
15	06P5857	1	Latch handle
16	53P0234	1	Bracket, DASD filler
17	44H7336	4	Screw
18	53P1359	1	Cover assembly, front

*Final assembly - FC 5095 Expansion I/O Tower: For use by authorized service providers.*

**Figure 1. Final assembly - FC 5095 Expansion I/O Tower**

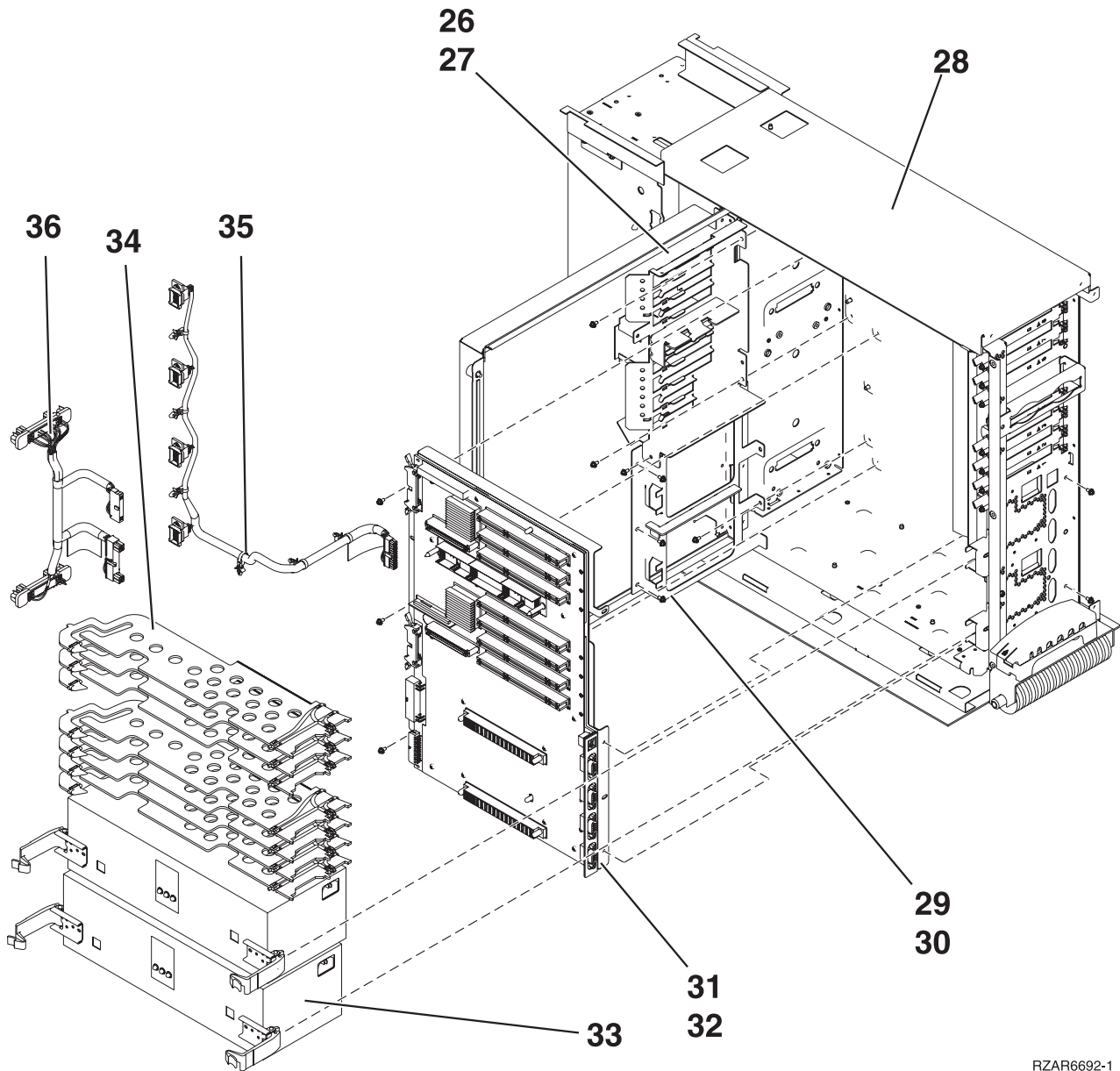


RZAR6691-0

**Table 1. Final assembly - FC 5095 Expansion I/O Tower**

Index	Part numbers	Units	Description
19	21P3593	AR	Disk unit
19	24L0900	AR	Disk unit
20	53P0250	2	Disk unit enclosure
21	44H7366	AR	Screw, M3.5 x 8mm
21	53P0319	AR	Screw
22	97P3138	2	Disk unit enclosure backplane
23	53P0321	8	Screw
24	53P0262	1	EMC enclosure
25	53P0262	4	Air moving device (Blower assembly)

**Figure 2. Final assembly - FC 5095 Expansion I/O Tower, continued**



RZAR6692-1

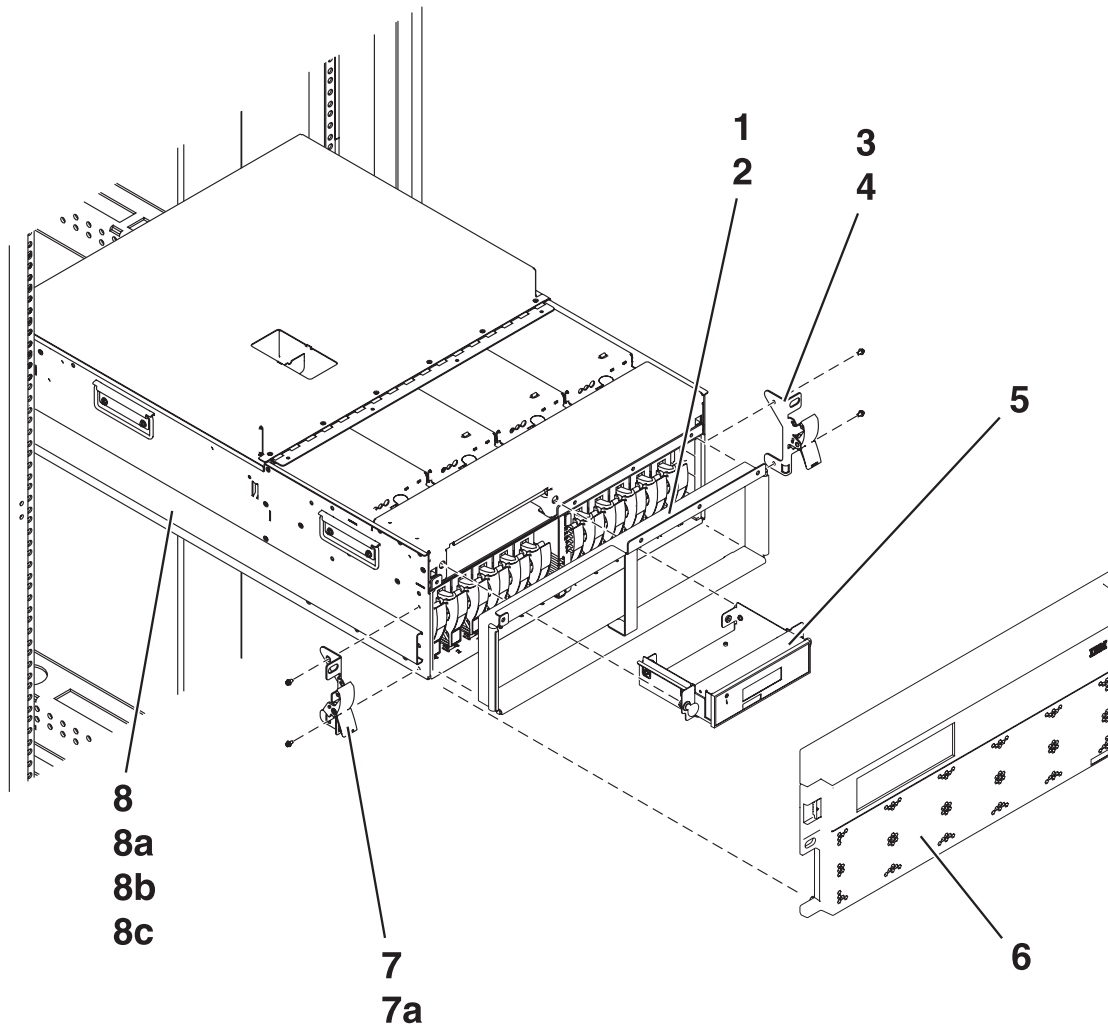
**Table 2. Final assembly - FC 5095 Expansion I/O Tower, continued**

Index	Part numbers	Units	Description
26	53P0249	1	Bracket, PCI Headstock
27	44H7366	3	Screw
28	53P0222	NP	Frame assembly
29	21P7602	1	Bracket, power supply
30	44H7366	4	Screw
31	53P0239	1	Processor backplane assembly
32	44H7366	5	Screw
33	21P7602	AR	Power supply

Index	Part numbers	Units	Description
33	53P0233	AR	Filler, Power supply
34	53P2728	AR	PCI divider
34	53P2729	AR	PCI divider

*Final assembly - FC 0595 rack mounted expansion unit: For use by authorized service providers.*

**Figure 1. Final assembly - FC 0595 rack mounted expansion unit**



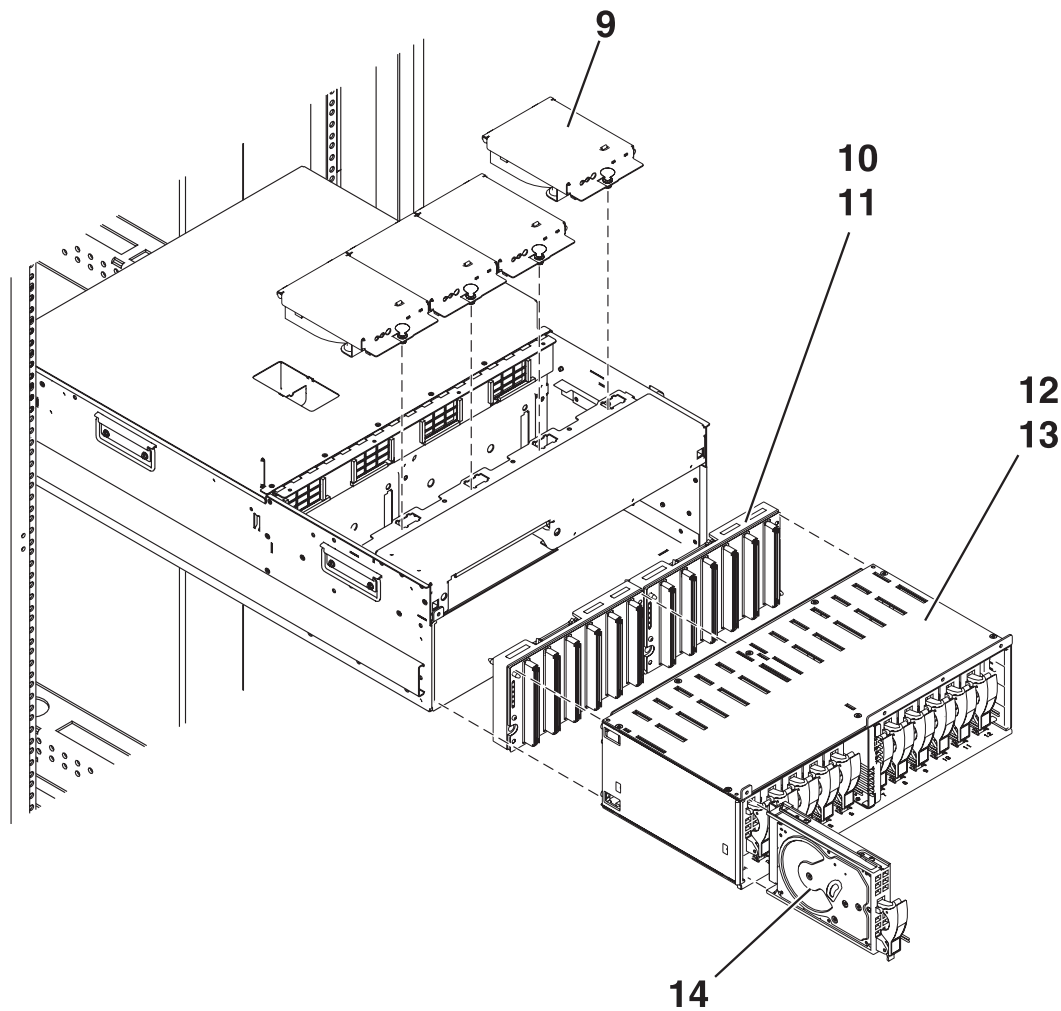
RZAR6699-1

**Table 1. Final assembly - FC 0595 rack mounted expansion unit**

Index	Part number	Units	Description
1	53P0234	1	Bracket, DASD filler
2	75G2878	4	Screw, M3.5 x 8mm
3	53P2573	1	Latch assembly, right
4	75G2878	2	Screw, M3.5 x 8mm

Index	Part number	Units	Description
5	53P0330	1	Display Panel tray assembly
6	53P1457	1	Cover assembly, front
7	53P2572	1	Latch assembly, left
7a	75G2878	2	Screw, M3.5 x 8mm
8	53P0296	1	General location, but not shown. Cable management arm
8a	53P3451	1	Slide assembly, left side
8b	53P3452	1	Slide assembly, right side
8c	53P3726	AR	Rail mounting hardware

**Figure 2. Final assembly - FC 0595 rack mounted expansion unit, continued**



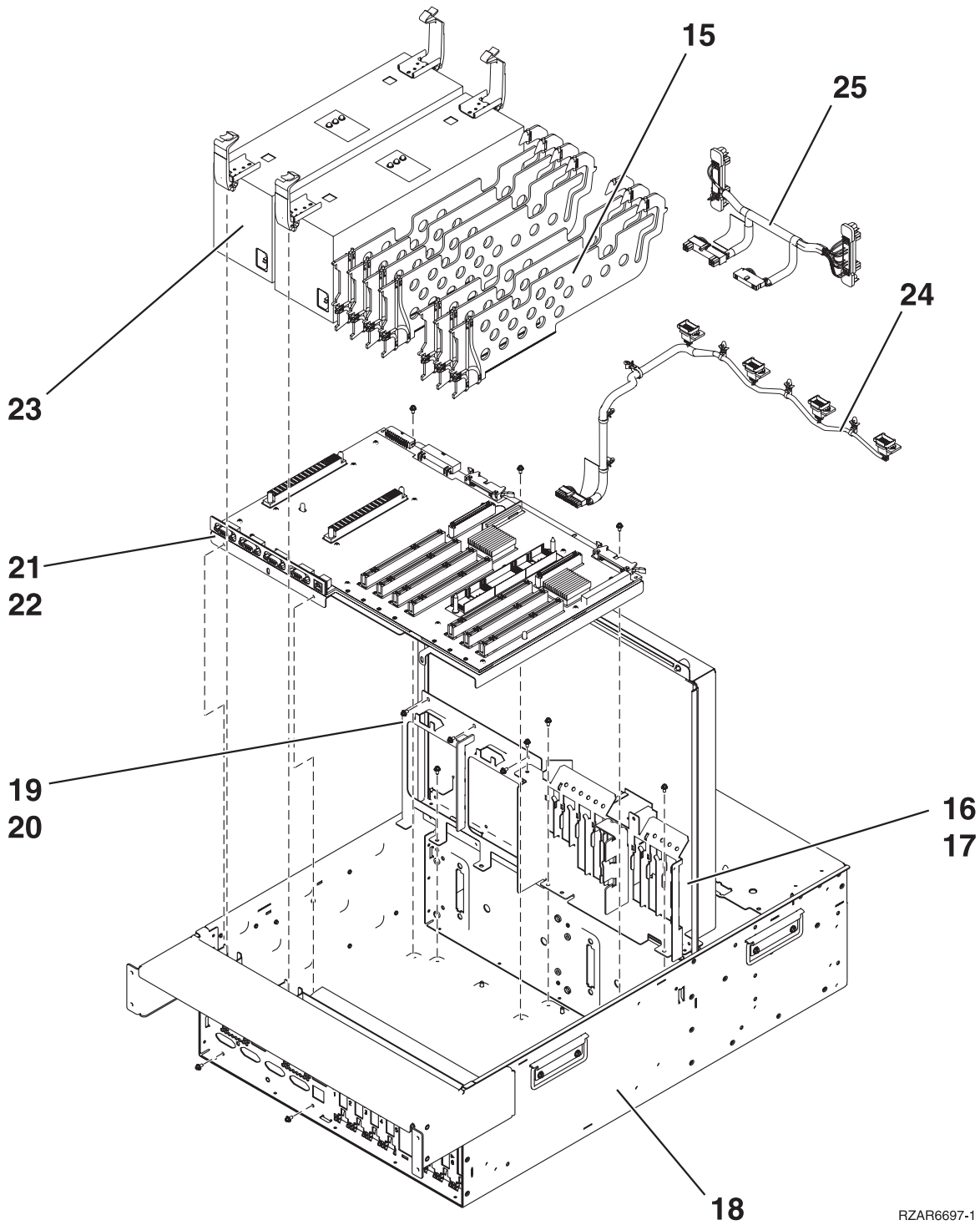
RZAR6698-0

**Table 2. Final assembly - FC 0595 rack mounted expansion unit, continued**



Index	Part number	Units	Description
9	53P0262	4	Blower assembly
10	97P3138	2	Disk unit enclosure backplane
11	75G2878	8	Screw, M3.5 x 8mm
12	53P0250	2	Disk unit enclosure
13	75G2878	4	Screw, M3.5 x 8mm
14	21P3593	AR	Disk unit
14	24L0900	AR	Disk unit

**Figure 3. Final assembly - FC 0595 rack mounted expansion unit, continued**



RZAR6697-1

**Table 3. Final assembly - FC 0595 rack mounted expansion unit, continued**

Index	Part number	Units	Description
15	53P2728	1	PCI divider
16	53P2729	1	PCI divider
17	75G2878	3	Screw, M3.5 x 8mm
18	53P0222	NP	Frame assembly

Index	Part number	Units	Description
19	53P0239	1	Processor backplane assembly
20	75G2878	5	Screw, M3.5 x 8mm
21	24L0900	AR	Disk unit
22	75G2878	5	Screw, M3.5 x 8mm
23	21P7602	AR	Power supply
23	53P0233	AR	Filler, power supply

## Power and signal cables

*For use by authorized service providers.*

The following diagrams illustrate the logical cable connections in the system unit, and in the storage expansion unit.

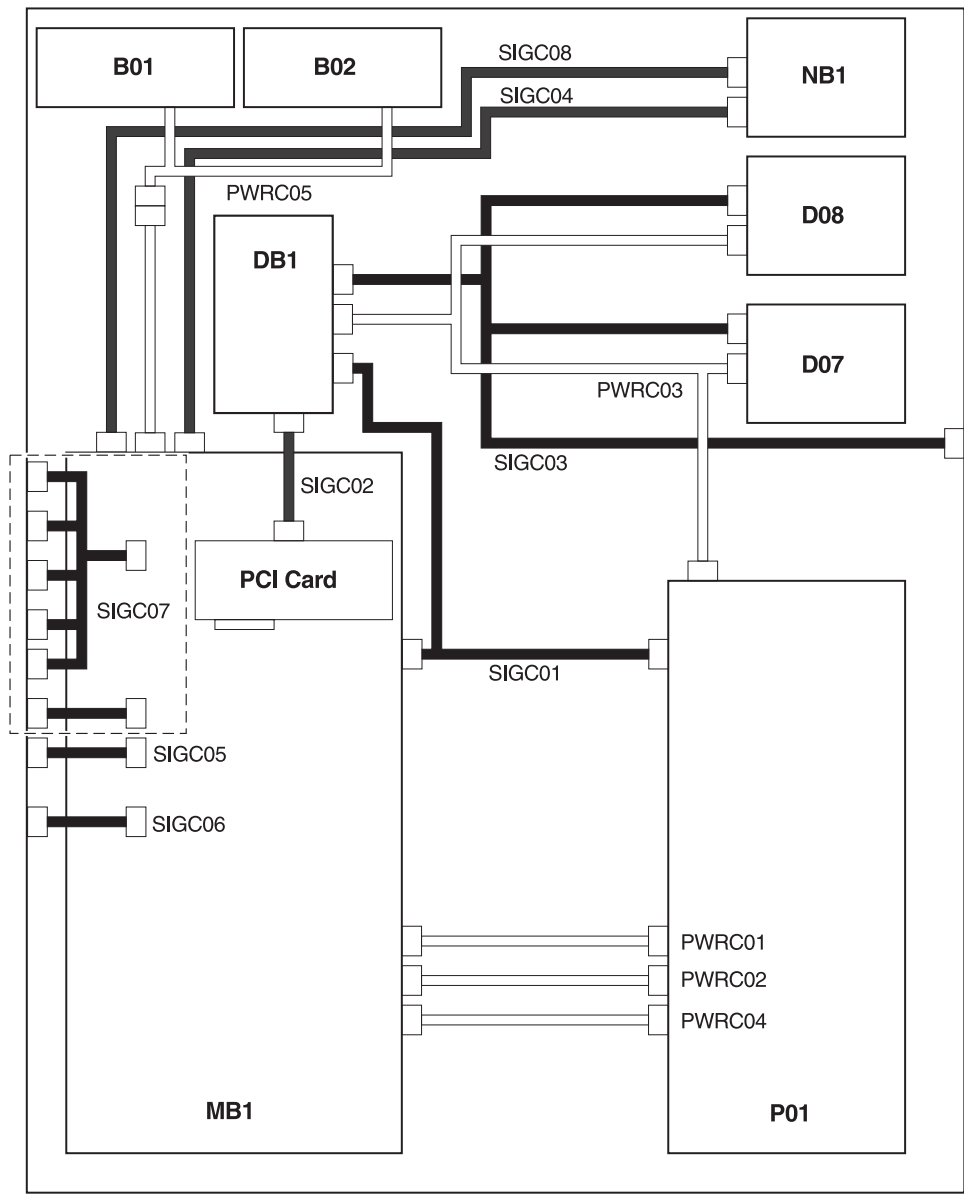
Select the model you are working on.

- “Models 270, 800, and 810”
- “Model 820” on page 483
- “Model 825” on page 489
- “Model 830 and SB2 with FC 9074” on page 492
- “Model 840, SB3 Processor Tower” on page 498
- “Models 870 and 890 processor towers” on page 506
- “FC 5074, FC 5079, FC 5094, FC 9094 Expansion I/O Tower” on page 511
- “FC 5075 Expansion I/O Tower” on page 515
- “FC 5078, FC 0578, FC 5088, or FC 0588 Expansion I/O Tower” on page 517
- “FC 5095 or FC 0595 Expansion I/O Tower” on page 517
- FC 5294 see “FC 5074, FC 5079, FC 5094, FC 9094 Expansion I/O Tower” on page 511
- FC 8079 see “FC 5074, FC 5079, FC 5094, FC 9094 Expansion I/O Tower” on page 511
- FC 8093 see “FC 5074, FC 5079, FC 5094, FC 9094 Expansion I/O Tower” on page 511 and “Models 870 and 890 processor towers” on page 506
- FC 8094 see “FC 5074, FC 5079, FC 5094, FC 9094 Expansion I/O Tower” on page 511 and “Models 870 and 890 processor towers” on page 506

**Models 270, 800, and 810:** Use the diagrams and tables below for information on the Power and signal cables for the Models 270, 800, and 810.

- Models 270, 800, or 810 **without** a system unit expansion (See page 479)
- Models 270, 800, or 810 **with** a system unit expansion (See page 481)

### Figure 1. Models 270, 800, or 810 (without a system unit expansion) Power and signal cables



Signal Cable
  Power Cable

RZAQ2523-2

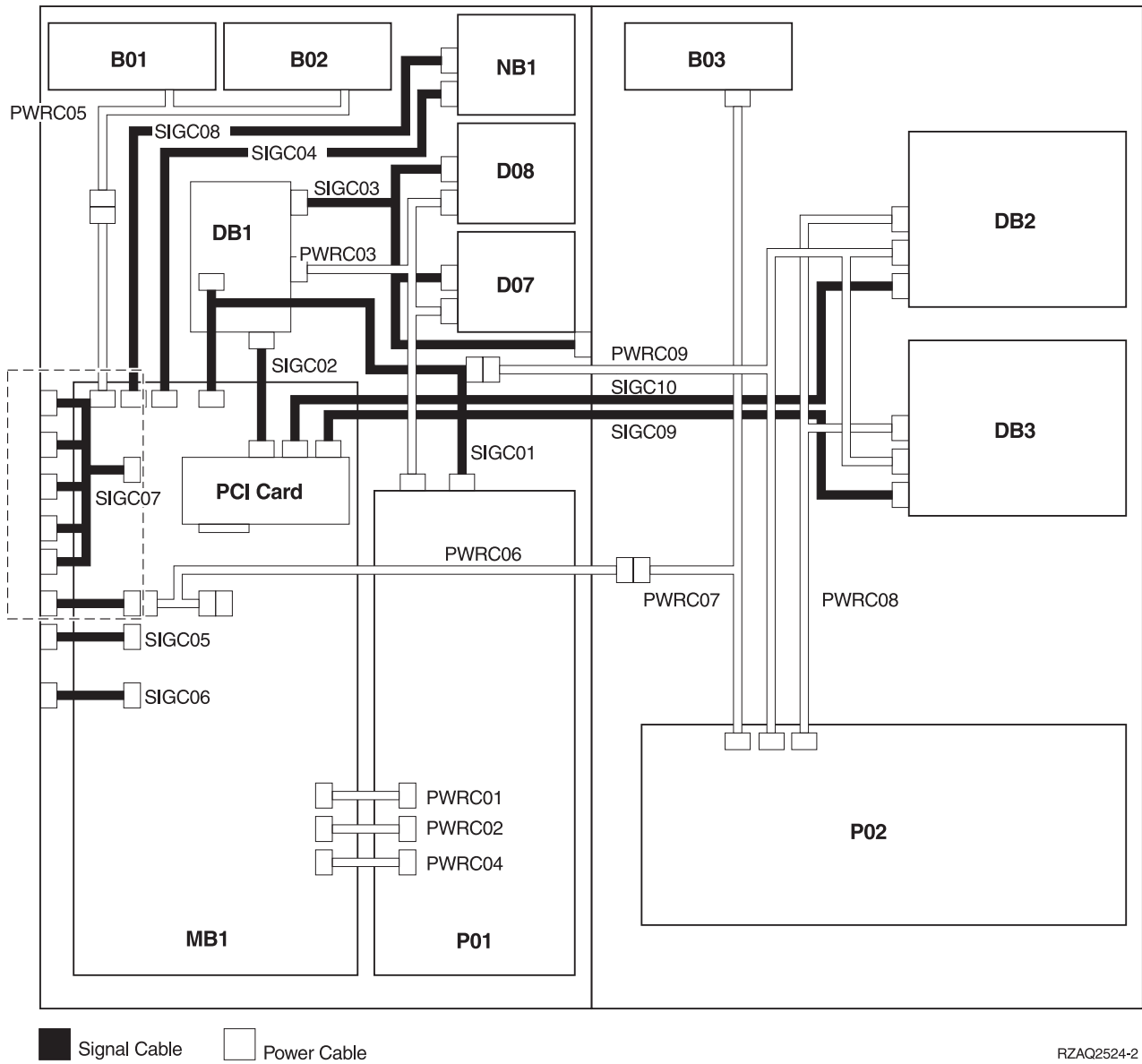
**Table 1. Models 270, 800, or 810 (without a system unit expansion) - Power cables**

Name	Description	Part number
PWRC01	Power supply (P01) to System unit backplane (MB1)	24L1888
PWRC02	Power supply (P01) to System unit backplane (MB1)	24L1890
PWRC03	Power supply (P01) to Optical (D07), Tape (D08), and Device board 1 (DB1)	04N4268
PWRC04	Power supply (P01) to System unit backplane (MB1)	24L1889
PWRC05	System unit backplane (MB1) to AMDs (B01 and B02)	24L1884

**Table 2. Models 270, 800, or 810 (without a system unit expansion) - Signal cables**

<b>Name</b>	<b>Description</b>	<b>Part number</b>
SIGC01	Power supply (P01) to System unit backplane (MB1) and Device board 1 (DB1)	23L2907
SIGC02	System unit backplane (MB1) to Device board 1 (DB1)	04N2273
SIGC03	Device board 1 (DB1) to Optical (D07) and Tape (D08)	04N4266
SIGC04	System Unit Backplane (MB1) to Control panel (NB1)	24L1886
SIGC05	System unit backplane (MB1) to rear bracket	24L1882
SIGC06	System unit backplane (MB1) to rear HSL connection	23L2889
SIGC07	System unit backplane (MB1) to rear bracket	04N4271
SIGC08	System unit backplane (MB1) to Control panel (NB1)	24L1752

**Figure 2. Models 270, 800, or 810 (with a system unit expansion) Power and signal cables**



RZAQ2524-2

**Table 3. Models 270, 800, or 810 (with a system unit expansion) - Power cables**

Name	Description	Part number
PWRC01	Power supply (P01) to System unit backplane (MB1)	24L1888
PWRC02	Power supply (P01) to System unit backplane (MB1)	24L1890
PWRC03	Power supply (P01) to Optical (D07), Tape (D08), and Device board 1 (DB1)	04N4268
PWRC04	Power supply (P01) to System unit backplane (MB1)	24L1889
PWRC05	System unit backplane (MB1) to AMDs (B01 and B02)	24L1884

Name	Description	Part number
PWRC06	Expansion unit interface to System unit backplane (MB1) and Debug Port	04N5595
PWRC07	Power supply (P02) to Expansion unit interface and AMD (B03)	04N5720
PWRC08	Power supply (P02) to Device boards (DB2 and DB3)	04N5594
PWRC09	Expansion unit interface to Device boards (DB2 and DB3) and to Power supply (P02)	04N5735

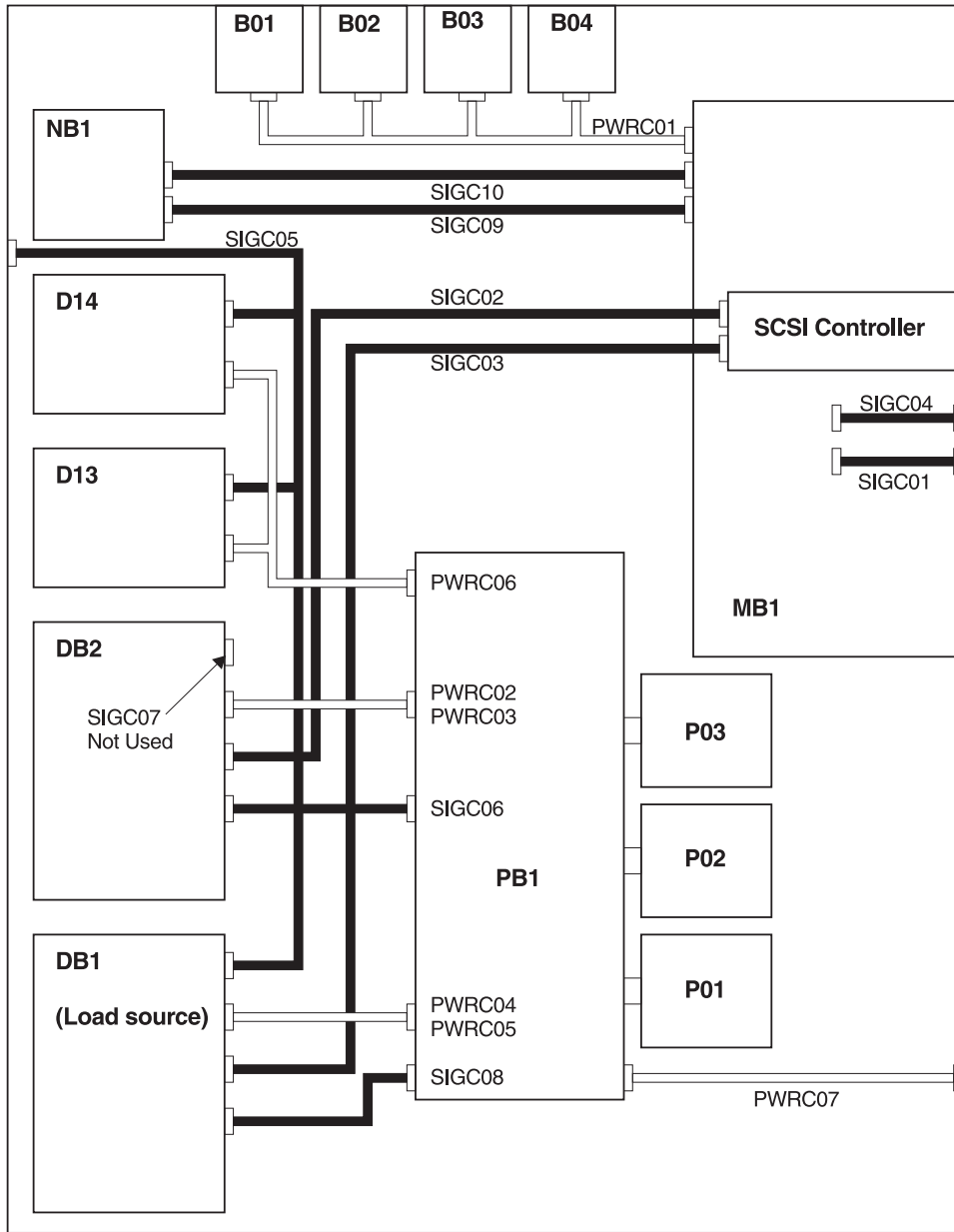
**Table 4. Models 270, 800, or 810 (with a system unit expansion) - Signal cables**

Name	Description	Part number
SIGC01	Power supply (P01) to System unit backplane (MB1) and to Device board 1 (DB1)	23L2907
SIGC02	System unit backplane (MB1) to Device board 1 (DB1)	04N2273
SIGC03	Device board 1 (DB1) to Optical (D07) and Tape (D08).	04N4266
SIGC04	System unit backplane (MB1) to Control panel (NB1)	24L1886
SIGC05	System unit backplane (MB1) to rear bracket	24L1882
SIGC06	System unit backplane (MB1) to rear HSL connection	23L2889
SIGC07	System unit backplane (MB1) to rear bracket	04N4271
SIGC08	System unit backplane (MB1) to Control panel (NB1)	24L1752
SIGC09	System unit backplane (MB1) to Device board 3 (DB3)	04N2273
SIGC10	System unit backplane (MB1) to Device board 2 (DB2)	04N2273

**Model 820:** Use the diagrams and tables below for information on the power and signal cables for the Model 820. There are three diagrams with corresponding tables:

- Model 820 - Single line cord (non-dual line cord enabled) (See page 483)
- Model 820 - Single line cord (dual line cord enabled) (See page 485)
- Model 820 - Dual line cord (See page 487)

**Figure 3. Model 820 - Single Line Cord Power and signal cables (non-dual line cord enabled)**



Signal Cable
  Power Cable

RZAQ2707-1

**Table 5. Model 820 - Power cables - single line cord (non-dual line cord enabled)**

Name	Description	Part number
PWRC01	System unit backplane (MB1) to AMDs (B01 through B04)	04N5743
PWRC02	Power distribution board (PB1) to Device board 2 (DB2)	04N2920
PWRC03	Power distribution board (PB1) to Device board 2 (DB2)	04N2920
PWRC04	Power distribution board (PB1) to Device board 1 (DB1)	04N2920

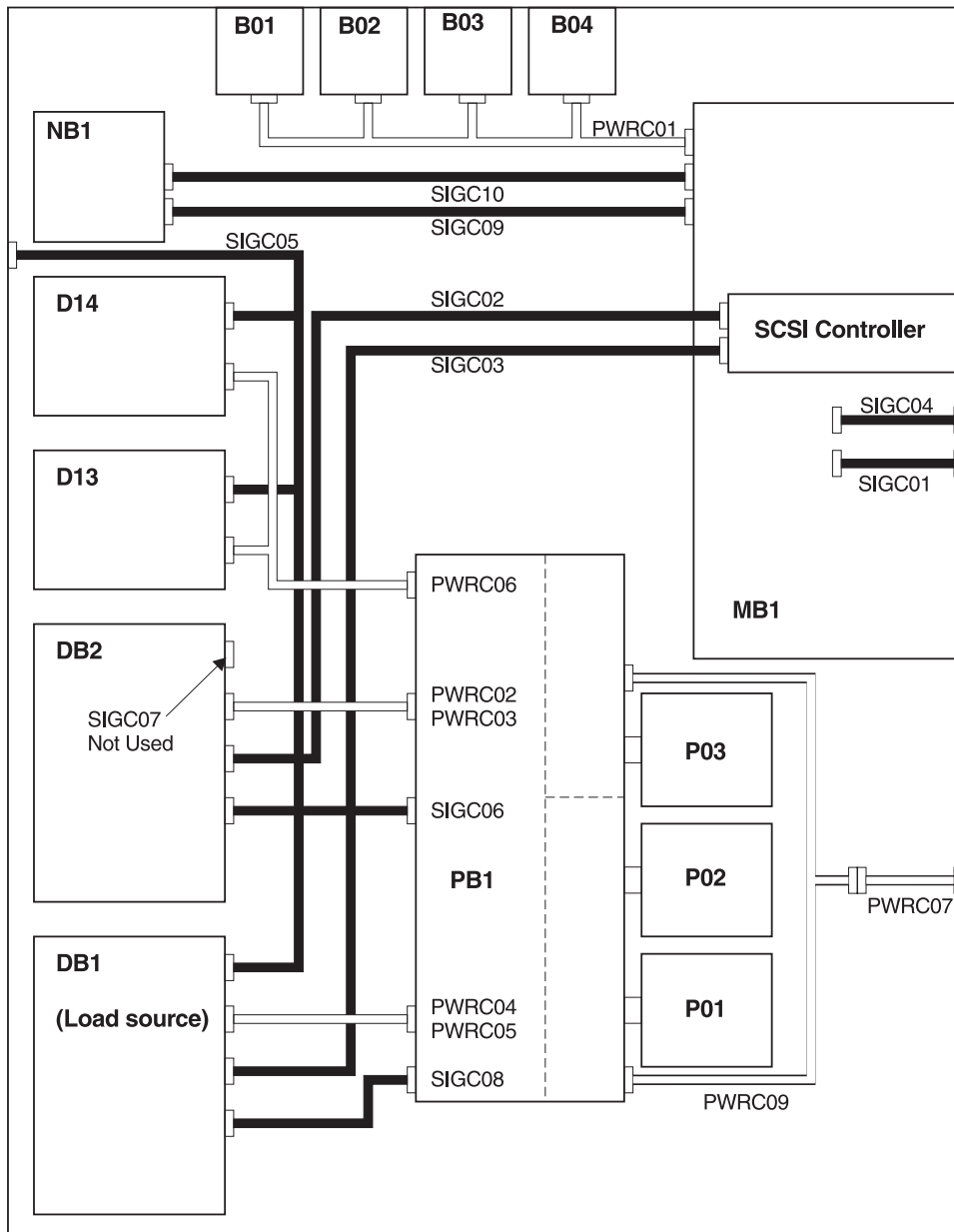


Name	Description	Part number
PWRC05	Power distribution board (PB1) to Device board 1 (DB1)	04N2920
PWRC06	Power distribution board (PB1) to Optical (D13) and Tape (D14)	04N4267 or 24L1762
PWRC07	Power distribution board (PB1) to Line cord connector	04N5192 or 23L8082

**Table 6. Model 820 - Signal cables - single line cord (non-dual line cord enabled)**

Name	Description	Part number
SIGC01	System unit backplane (MB1) to rear HSL connections	23L2889
SIGC02	System unit backplane (MB1) to Device board 2 (DB2)	04N2273
SIGC03	System unit backplane (MB1) to Device board 1 (DB1)	04N2273
SIGC04	JTAG	04N2921
SIGC05	Code load connector to Optical (D13), Tape (D14), and Device board 1 (DB1)	04N4266
SIGC06	Power distribution board (PB1) to Device board 2 (DB2)	24L1761
SIGC07	Not used	NA
SIGC08	Power distribution board (PB1) to Device board 1 (DB1)	24L1761
SIGC09	System unit backplane (MB1) to Control panel (NB1)	24L1752
SIGC10	System unit backplane (MB1) to Control panel (NB1)	24L1886

**Figure 4. Model 820 - Single line cord power and signal cables (dual line cord enabled)**



Signal Cable
  Power Cable

RZAQ2715-0

**Table 7. Model 820 - Power cables - single line cord (dual line cord enabled)**

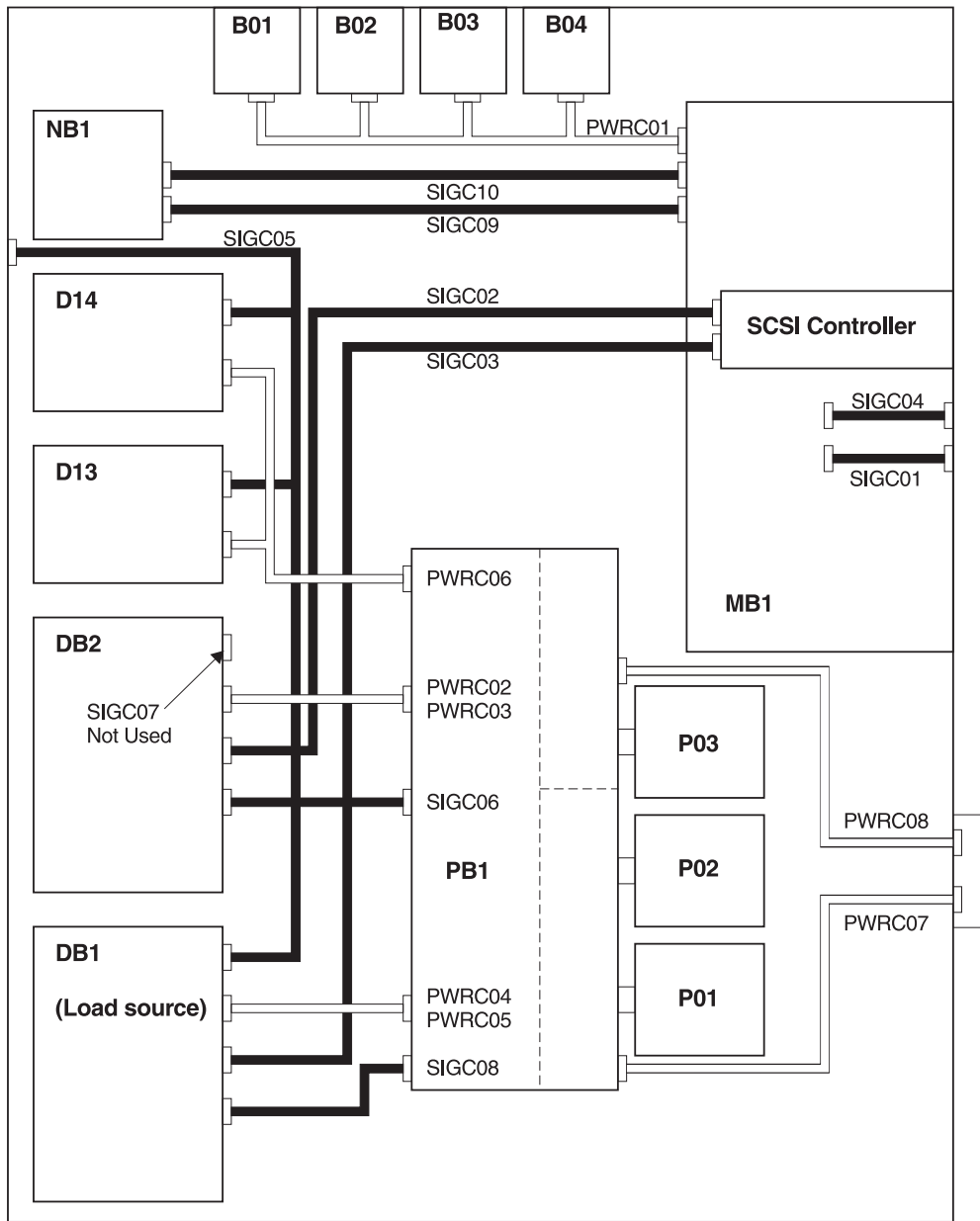
Name	Description	Part number
PWRC01	System unit backplane (MB1) to AMDs (B01 through B04)	04N5743
PWRC02	Power distribution board (PB1) to Device board 2 (DB2)	04N2920
PWRC03	Power distribution board (PB1) to Device board 2 (DB2)	04N2920
PWRC04	Power distribution board (PB1) to Device board 1 (DB1)	04N2920

Name	Description	Part number
PWRC05	Power distribution board (PB1) to Device board 1 (DB1)	04N2920
PWRC06	Power distribution board (PB1) to Optical (D13) and Tape (D14)	04N4267 or 24L1762
PWRC07	Line cord connector to Power cable	21P6346
PWRC09	Power cable to Power distribution board (PB1)	21P6322

**Table 8. Model 820 - Signal cables - single line cord (dual line cord enabled)**

Name	Description	Part number
SIGC01	System unit backplane (MB1) to rear HSL connections	23L2889
SIGC02	System unit backplane (MB1) to Device board 2 (DB2)	04N2273
SIGC03	System unit backplane (MB1) to Device board 1 (DB1)	04N2273
SIGC04	JTAG	04N2921
SIGC05	Code load connector to Optical (D13), Tape (D14), and Device board 1 (DB1)	04N4266
SIGC06	Power distribution board (PB1) to Device board 2 (DB2)	24L1761
SIGC07	Not used	NA
SIGC08	Power distribution board (PB1) to Device board 1 (DB1)	24L1761
SIGC09	System unit backplane (MB1) to Control panel (NB1)	24L1752
SIGC10	System unit backplane (MB1) to Control panel (NB1)	24L1886

**Figure 5. Model 820 - Power and signal cables - dual line cord**



Signal Cable
  Power Cable

RZAQ2714-0

**Table 9. Model 820 - Power cables - dual line cord**

Name	Description	Part number
PWRC01	System unit backplane (MB1) to AMDs (B01 through B04)	04N5743
PWRC02	Power distribution board (PB1) to Device board 2 (DB2)	04N2920
PWRC03	Power distribution board (PB1) to Device board 2 (DB2)	04N2920
PWRC04	Power distribution board (PB1) to Device board 1 (DB1)	04N2920

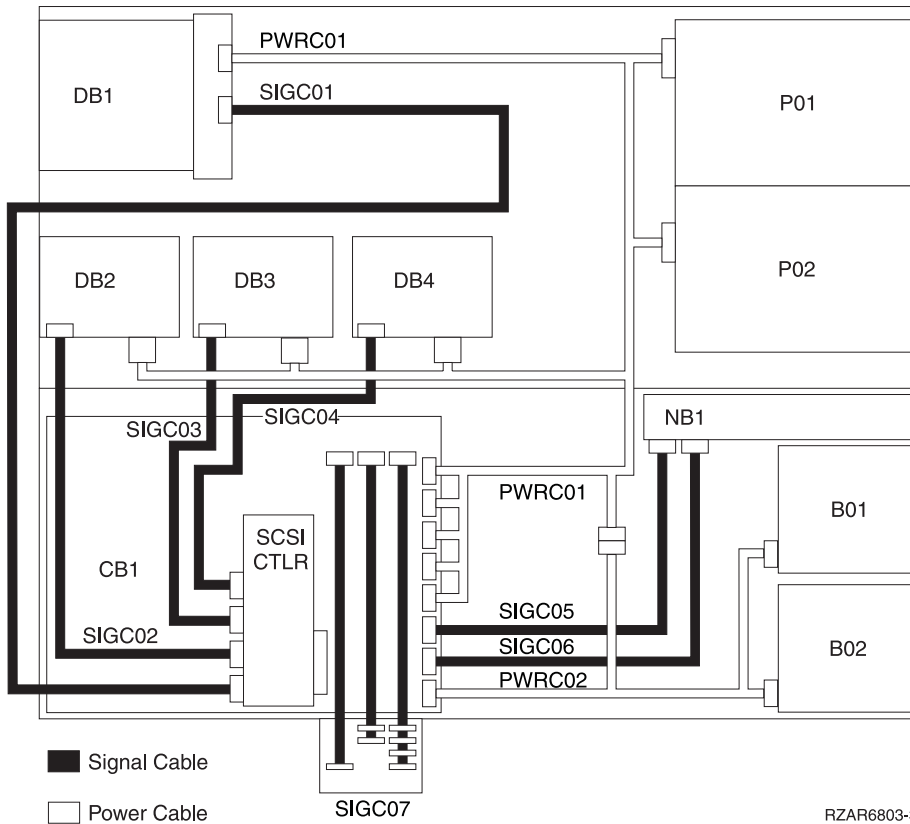
Name	Description	Part number
PWRC05	Power distribution board (PB1) to Device board 1 (DB1)	04N2920
PWRC06	Power distribution board (PB1) to Optical (D13) and Tape (D14)	04N4267 or 24L1762
PWRC07	Power cable to Power distribution board (PB1)	21P6346
PWRC08	Power cable to Power distribution board (PB1)	21P5192

**Table 10. Model 820 - Signal cables - dual line cord**

Name	Description	Part number
SIGC01	System unit backplane (MB1) to rear HSL connections	23L2889
SIGC02	System unit backplane (MB1) to Device board 2 (DB2)	04N2273
SIGC03	System unit backplane (MB1) to Device board 1 (DB1)	04N2273
SIGC04	JTAG	04N2921
SIGC05	Code load connector to Optical (D13), Tape (D14), and Device board 1 (DB1)	04N4266
SIGC06	Power distribution board (PB1) to Device board 2 (DB2)	24L1761
SIGC07	Not used	NA
SIGC08	Power distribution board (PB1) to Device board 1 (DB1)	24L1761
SIGC09	System unit backplane (MB1) to Control panel (NB1)	24L1752
SIGC10	System unit backplane (MB1) to Control panel (NB1)	24L1886

**Model 825:** Use the diagrams and tables below for information on the power and signal cables for the Model 825.

**Figure 6. Model 825 with FC 2757 - Power and signal cables**



**Note:** To see a detailed drawing of the SCSI controller adapter, see Current configuration tables for the Model 825 in the Hardware topic.

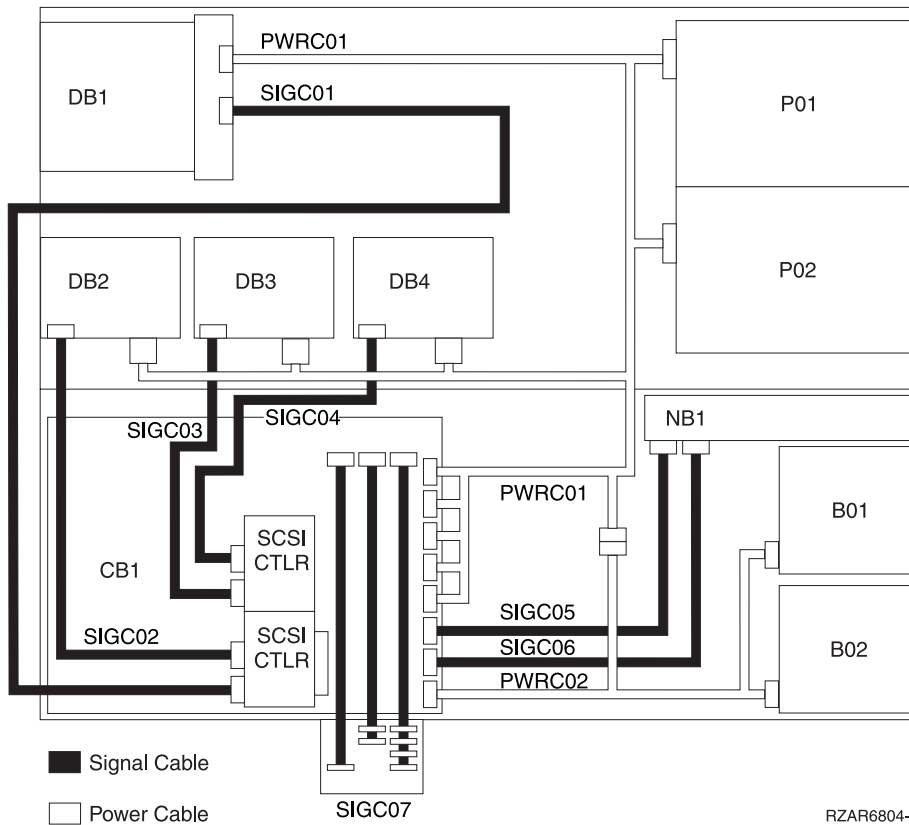
**Table 11. Model 825 with FC 2757 - Power cables**

Name	Description	Part number
PWR01	Power supply (P01 and P02) to Removable media device board (DB1) and System unit backplane (CB1)	97P2674
PWR02	System unit backplane (CB1) to AMDs (B01 and B02)	21P7064

**Table 12. Model 825 with FC 2757 - Signal cables**

Name	Description	Part number
SIGC01	SCSI controller to Removable media device board (DB1)	21P7062
SIGC02	SCSI controller to Device board (DB2)	21P7063
SIGC03	SCSI controller to Device board (DB3)	21P7063
SIGC04	SCSI controller to Device board (DB4)	21P7063
SIGC05	System unit backplane (CB1) to Control panel (NB1)	97P2893
SIGC06	System unit backplane (CB1) to Control panel (NB1)	21P6421
SIGC07	System unit backplane (CB1) to rear bracket	21P6424

**Figure 7. Model 825 with FC 2782 (two) - Power and signal cables**



RZAR6804-5

**Note:** To see a detailed drawing of the SCSI controller adapter, see Current configuration tables for the Model 825 in the Hardware topic.

**Table 13. Model 825 with FC 2782 (two) - Power cables**

Name	Description	Part number
PWRC01	Power supply (P01 and P02) to Removable media device board (DB1) and System unit backplane (CB1)	97P2674
PWRC02	System unit backplane (CB1) to AMDs (B01 and B02)	21P7064

**Table 14. Model 825 with FC 2782 - Signal cables**

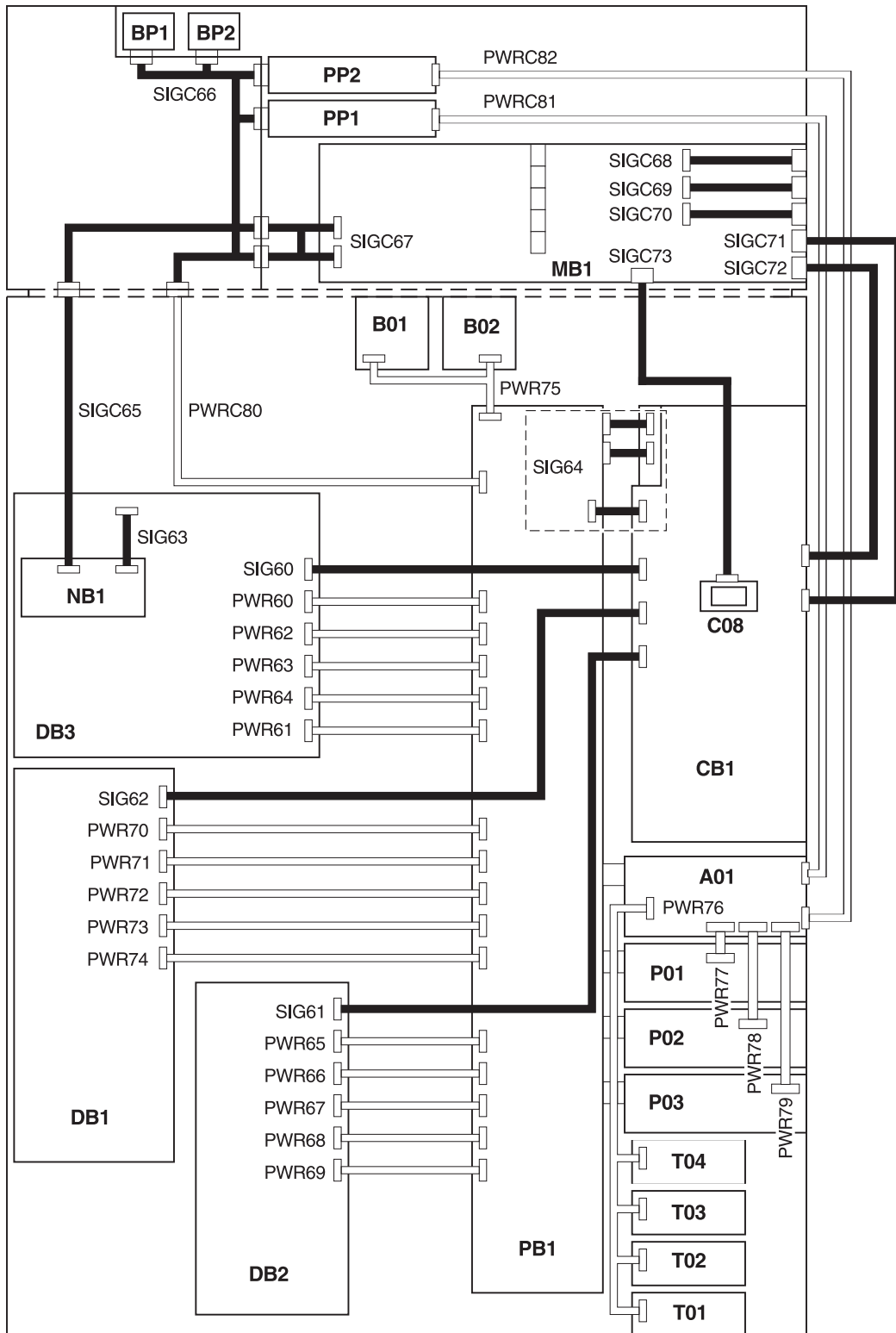
Name	Description	Part number
SIGC01	SCSI controller 1 to Device board (DB1)	21P7062
SIGC02	SCSI controller 2 to Device board (DB2)	21P7063
SIGC03	SCSI controller 1 to Device board (DB3)	21P7063
SIGC04	SCSI controller 1 to Device board (DB4)	21P7063
SIGC05	System unit backplane (CB1) to Control panel (NB1)	97P2893
SIGC06	System unit backplane (CB1) to Control panel (NB1)	21P6421
SIGC07	System unit backplane (CB1) to rear bracket	21P6424

**Model 830 and SB2 with FC 9074:** Use the diagrams and tables below for information on the Power and signal cables for the Models 830 and SB2. There are two figures/tables:

- Models 830, SB2 with FC 9074 Single line cord (non dual line cord enabled) (See page 492)
- Models 830, SB2 with FC 9074 Dual line cord Signal cables (See page 495)

**Figure 8. Models 830, SB2 System Unit with FC 9074 single line cord - non dual line cord enabled  
Power and signal cables**





Signal Cable
  Power Cable

RZAQ4504-5

**Table 15. Model 830, SB2 System Unit with FC 9074 - Power cables - single line cord**

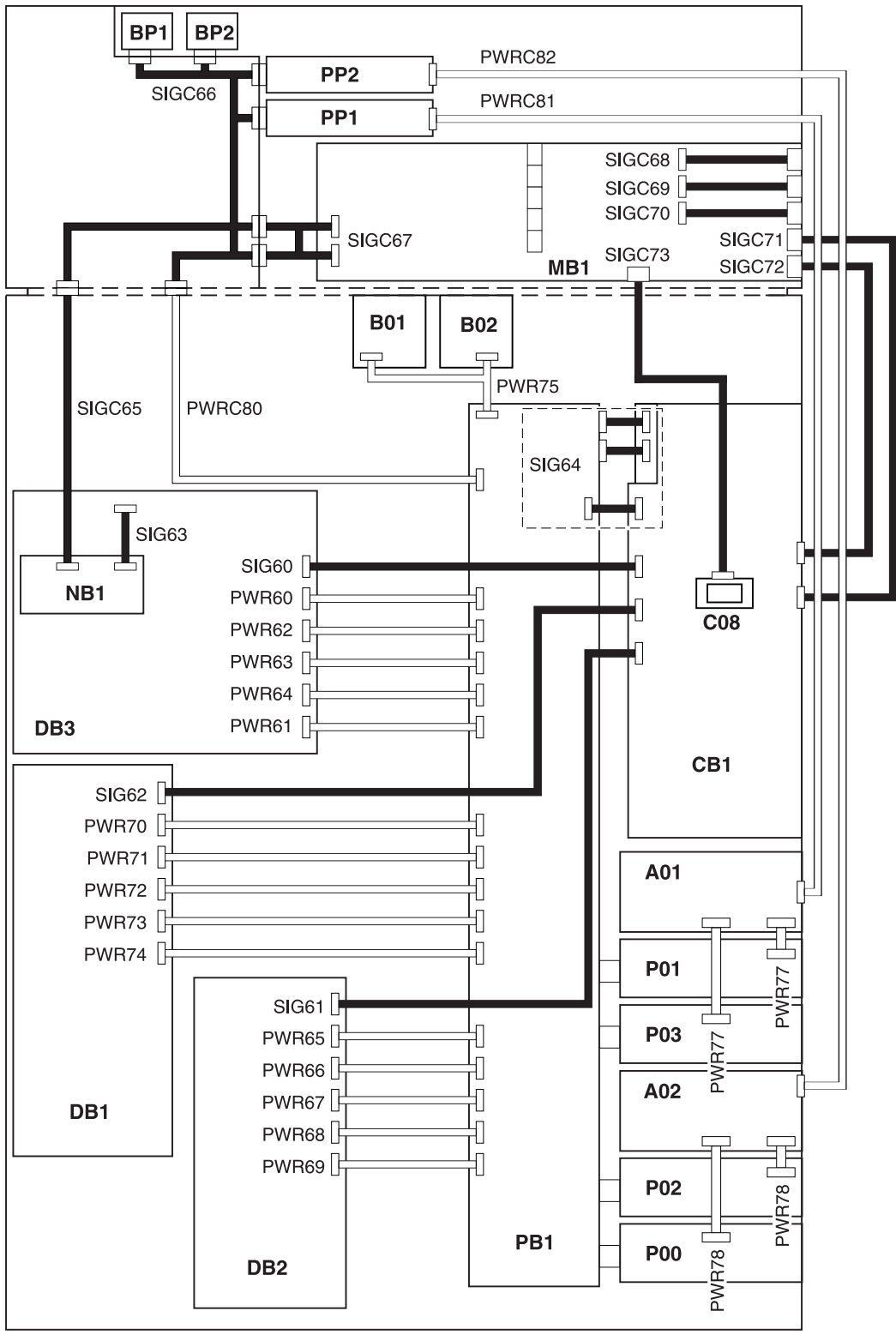
Name	Description	Part number
PWR60	Power distribution board (PB1) to Device board 3 (DB3)	24L1886
PWR61 to PWR64	Power distribution board (PB1) to Device board 2 (DB2)	97H7483
PWR61 to PWR64	Power distribution board (PB1) to Device board 2 (DB2)	97H7483
PWR65	Power distribution board (PB1) to Device board 2 (DB2)	97H7544
PWR66 to PWR69	Power distribution board (PB1) to Device board 2 (DB2)	97H7543
PWR70	Power distribution board (PB1) to Device board 1 (DB1)	97H7544
PWR71 to PWR74	Power distribution board (PB1) to Device board 1 (DB1)	97H7543
PWR75	Power distribution board (PB1) to AMDs (B01 and B02)	97H7475
PWR76	Charger (A01) to Batteries (T01 through T04)	97H7474
PWR77	Charger (A01) to Power supply 1 (P01)	04N2181
PWR78	Charger (A01) to Power supply 2 (P02)	04N2181
PWR79	Charger (A01) to Power supply 3 (P03)	04N2181
PWRC80	Power distribution board (PB1) to CEC interface	97H7479
PWRC81	Charger (A01) to Processor power (PP1)	04N6134
PWRC82	Charger (A01) to Processor power (PP2)	04N6134

**Table 16. Model 830, SB2 System Unit with FC 9074 - Signal cables - single line cord**

Name	Description	Part number
SIG60	IOA in tower card (CB1) to Device board 3 (DB3)	97H7481
SIG61	IOA in tower card (CB1) to Device board 2 (DB2)	44L0070
SIG62	IOA in tower card (CB1) to Device board 1 (DB1)	97H7484
SIG63	Control panel (NB1) to Device board 3 (DB3)	24L1752
SIG64	Tower card (CB1) to Power distribution board (PB1 - includes P/N 97H7476, 97H7477, 97H7607) (part of the Tower card FRU assembly)	24L0843
SIGC65	Control panel (NB1) to CEC interface	97H7327
SIGC66	CEC interface to CEC backplane interface, to Power supplies (PP1 and PP2), and to AMD (BP1 & BP2)	04N3037
SIGC67	CEC cage assembly to CEC bulkhead	97H7472
SIGC68	Part of backplane FRU assembly (MB1) (internal cable)	97H7601
SIGC69	Part of backplane FRU assembly (MB1) (internal cable)	97H7603
SIGC70	Part of backplane FRU assembly (MB1) (internal cable)	97H7600
SIGC71	JTAG-A (external cable) Tower card (CB1) to CEC cage assembly.	97H7486 (6 meter) 21H7375 (3 meter)

Name	Description	Part number
SIGC72	V/S COMM (external cable) Tower card (CB1) to CEC cage assembly.	44L0033
SIGC73	HSL (C08) to backplane FRU assembly MB1 cable	97H7326

**Figure 9. Models 830, SB2 System Unit with FC 9074 - dual line cord power and signal cables**



Signal Cable
  Power Cable

RZAQ4520-2

**Table 17. Models 830, SB2 System Unit with FC 9074 - Power cables - dual line cord**

Name	Description	Part number
PWR60	Power distribution board (PB1) to Device board 3 (DB3)	24L1886
PWR61 to PWR64	Power distribution board (PB1) to Device board 2 (DB2)	97H7483
PWR65	Power distribution board (PB1) to Device board 2 (DB2)	97H7544
PWR66 to PWR69	Power distribution board (PB1) to Device board 2 (DB2)	97H7543
PWR70	Power distribution board (PB1) to Device board 1 (DB1)	97H7544
PWR71 to PWR74	Power distribution board (PB1) to Device board 1 (DB1)	97H7543
PWR75	Power distribution board (PB1) to AMDs (B01 and B02)	97H7475
PWR77	AC Input (A01) to Power supply 1 (P01 and P03)	04N2181
PWR78	AC Input (A02) to Power supply 2 (P00 and P02)	04N2181
PWRC80	Power distribution board (PB1) to CEC interface	97H7479
PWRC81	AC Input (A01) to Processor power (PP1)	04N6134
PWRC82	AC Input (A02) to Processor power (PP2)	04N6134

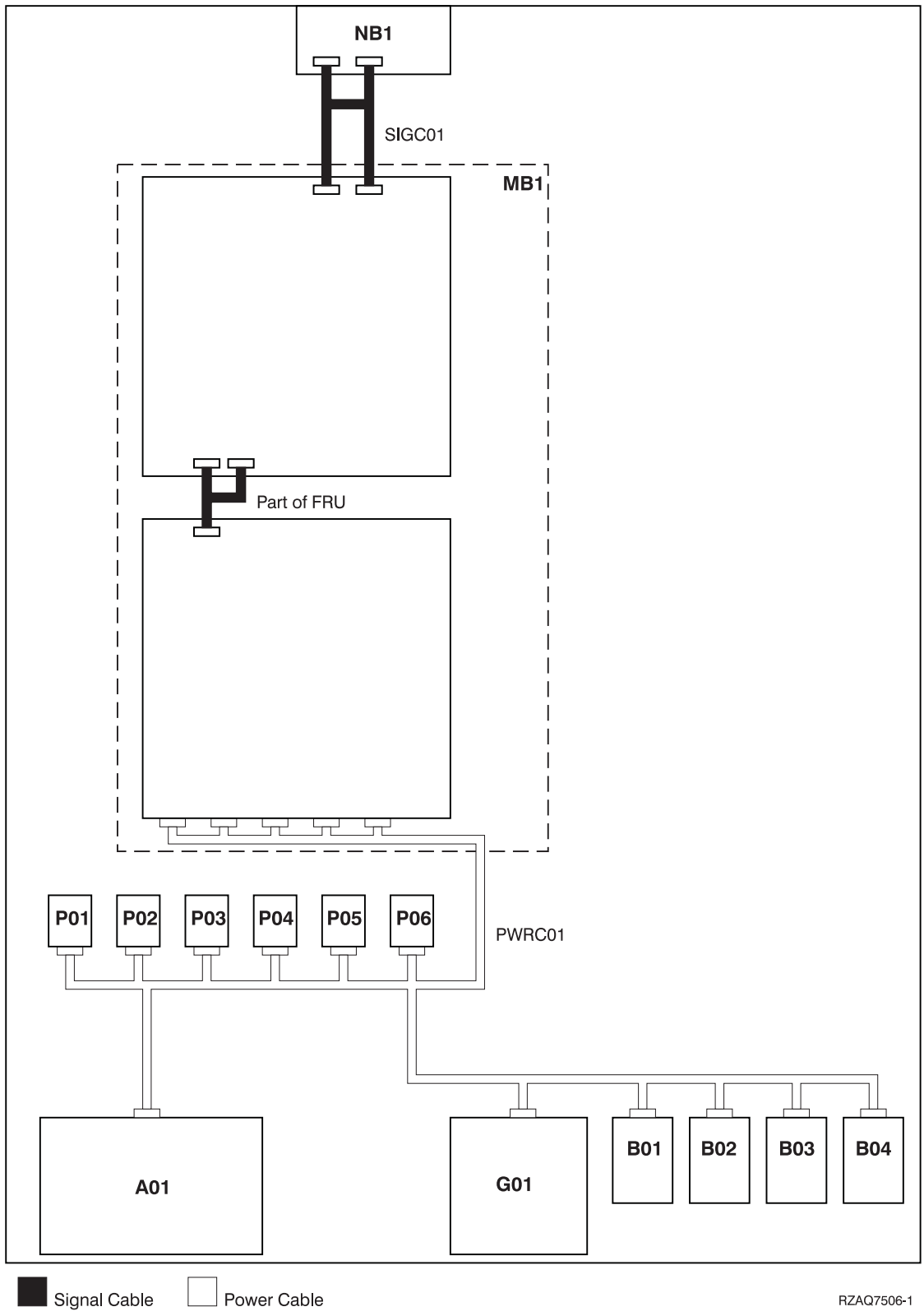
**Table 18. Models 830, SB2 System Unit with FC 9074 - Signal cables - dual line cord**

Name	Description	Part number
SIG60	IOA in tower card (CB1) to Device board 3 (DB3)	97H7481
SIG61	IOA in tower card (CB1) to Device board 2 (DB2)	44L0070
SIG62	IOA in tower card (CB1) to Device board 1 (DB1)	97H7484
SIG63	Control panel (NB1) to Device board 3 (DB3)	24L1752
SIG64	Tower card (CB1) to Power distribution board (PB1 - includes P/N 97H7476, 97H7477, 97H7607) (part of the Tower card FRU assembly)	24L0843
SIGC65	Control panel (NB1) to CEC interface	97H7327
SIGC66	CEC interface to CEC backplane interface, to Power supplies (PP1 and PP2), and to AMD (BP1 and BP2)	04N3037
SIGC67	CEC cage assembly to CEC bulkhead	97H7472
SIGC68	Part of backplane FRU assembly (MB1) (internal cable)	97H7601
SIGC69	Part of backplane FRU assembly (MB1) (internal cable)	97H7603
SIGC70	Part of backplane FRU assembly (MB1) (internal cable)	97H7600
SIGC71	JTAG-A (external cable) Tower card (CB1) to CEC cage assembly.	97H7486 (6 meter) 21H7375 (3 meter)
SIGC72	V/S COMM (external cable) Tower card (CB1) to CEC cage assembly.	44L0033
SIGC73	HSL (C08) to backplane FRU assembly MB1 cable	97H7326

**Model 840, SB3 Processor Tower:** Use the diagrams and tables below for information on the Power and signal cables for the Model 840, SB3 Processor Tower. There are four diagrams with corresponding tables:

- Model 840 and Model SB3 Processor Tower - Single Line Cord Power and Signal Cables (See page 498)
- Model 840 and Model SB3 Processor Tower - Dual Line Cord Power and Signal Cables (See page 500)
- Model 840 and Model SB3 (FC 9079) Base I/O Tower - Single line cord power and signal cables (See page 502)
- Model 840 and Model SB3 (FC 9079) Base I/O Tower - Dual Line Cord Power and Signal Cables (See page 504)

**Figure 10. Model 840, SB3 Processor Tower - Single Line Cord Power and Signal Cables**



**Table 19. Model 840, SB3 Processor Tower - Power cables - single line cord**

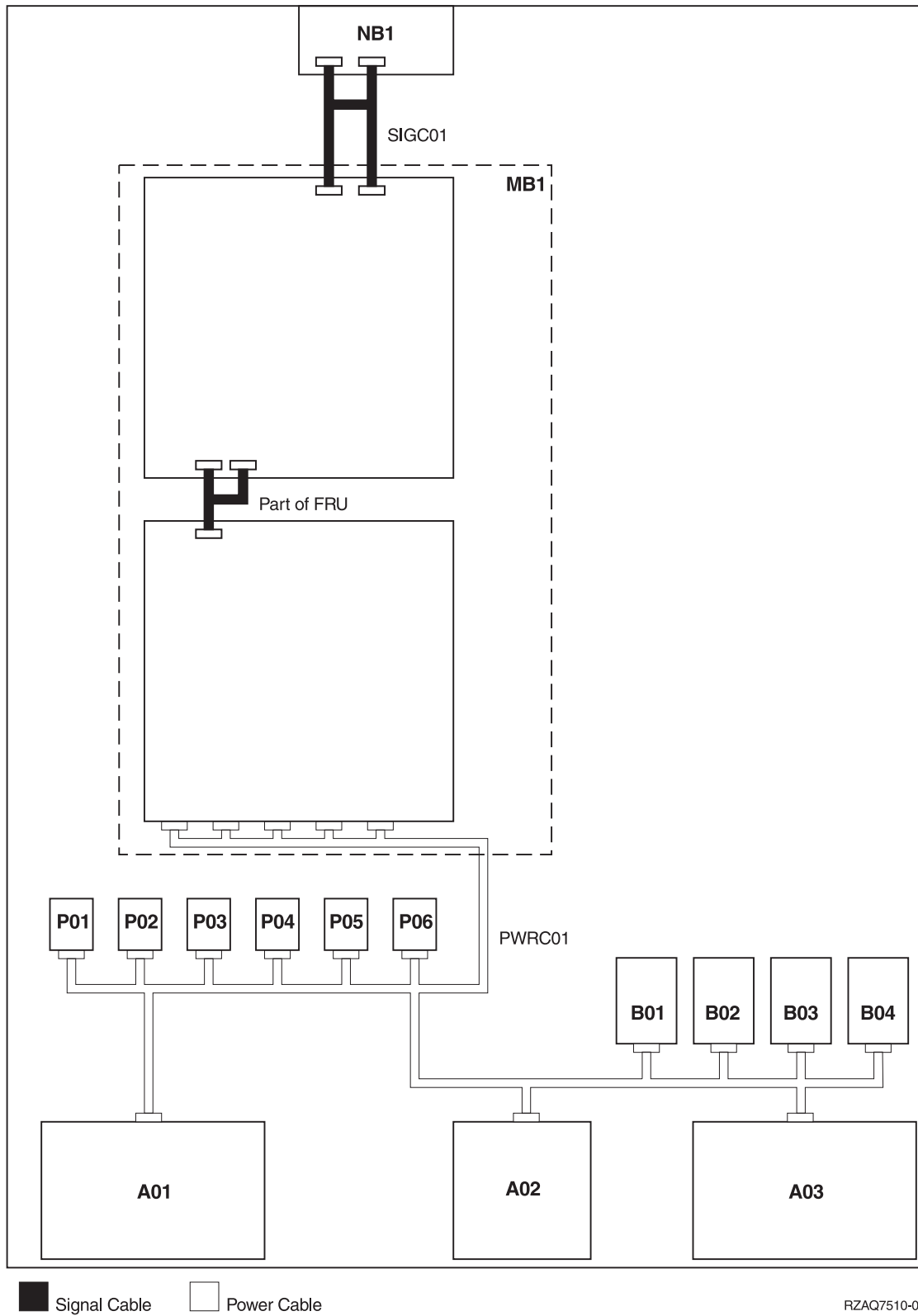
Name	Description	Part number
PWRC01	AC Box (A01) to Power supply 1 through 6 (P01 - P06), to Charger (G01), and to AMDs (B01 - B04)	97H2348

**Table 20. Model 840, SB3 Processor Tower - Signal cables - single line cord**

Name	Description	Part number
SIGC01	System unit backplane (MB1) to Control panel (NB1)	23L3363

**Figure 11. Model 840 and Model SB3 (9079) Base I/O Tower - Dual Line Cord Power and Signal Cables**





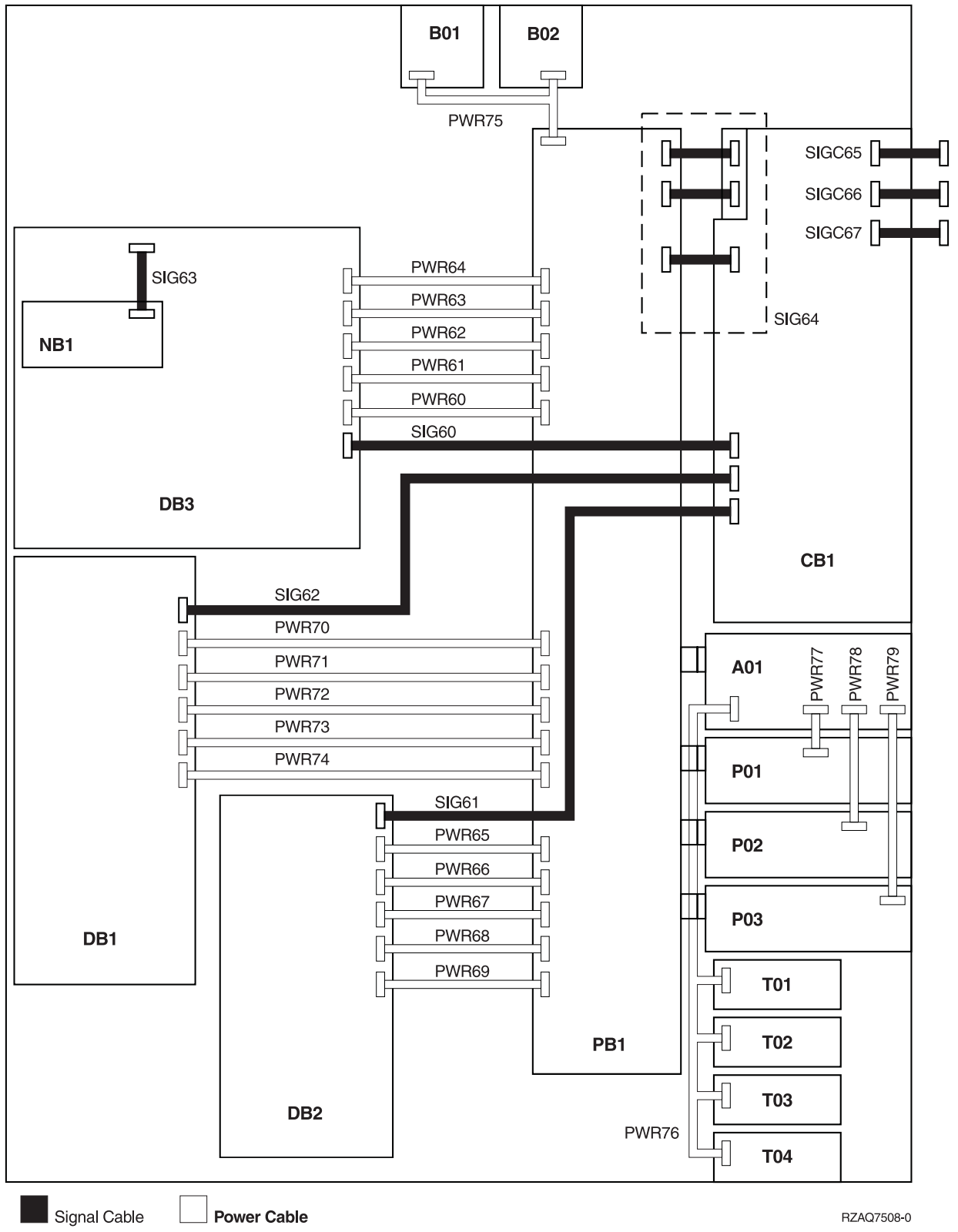
**Table 21. Model 840 and Model SB3 (9079) Base I/O Tower - Power cables - dual line cord**

Name	Description	Part number
PWRC01	AC Box (A01 and A03) to Power supply 1 through 6 (P01 - P06), to Concurrent Maintenance Adapter Card (A02), and to AMDs (B01 - B04)	21P4079

**Table 22. Model 840 and Model SB3 (9079) Base I/O Tower - Signal cables - dual line cord**

Name	Description	Part number
SIGC01	System unit backplane (MB1) to Control panel (NB1)	23L3363

**Figure 12. Model 840 and Model SB3 (FC 9079) Base I/O Tower - Single line cord power and signal cables**



**Table 23. Model 840 and Model SB3 (FC 9079) Base I/O Tower - Power cables - single line**

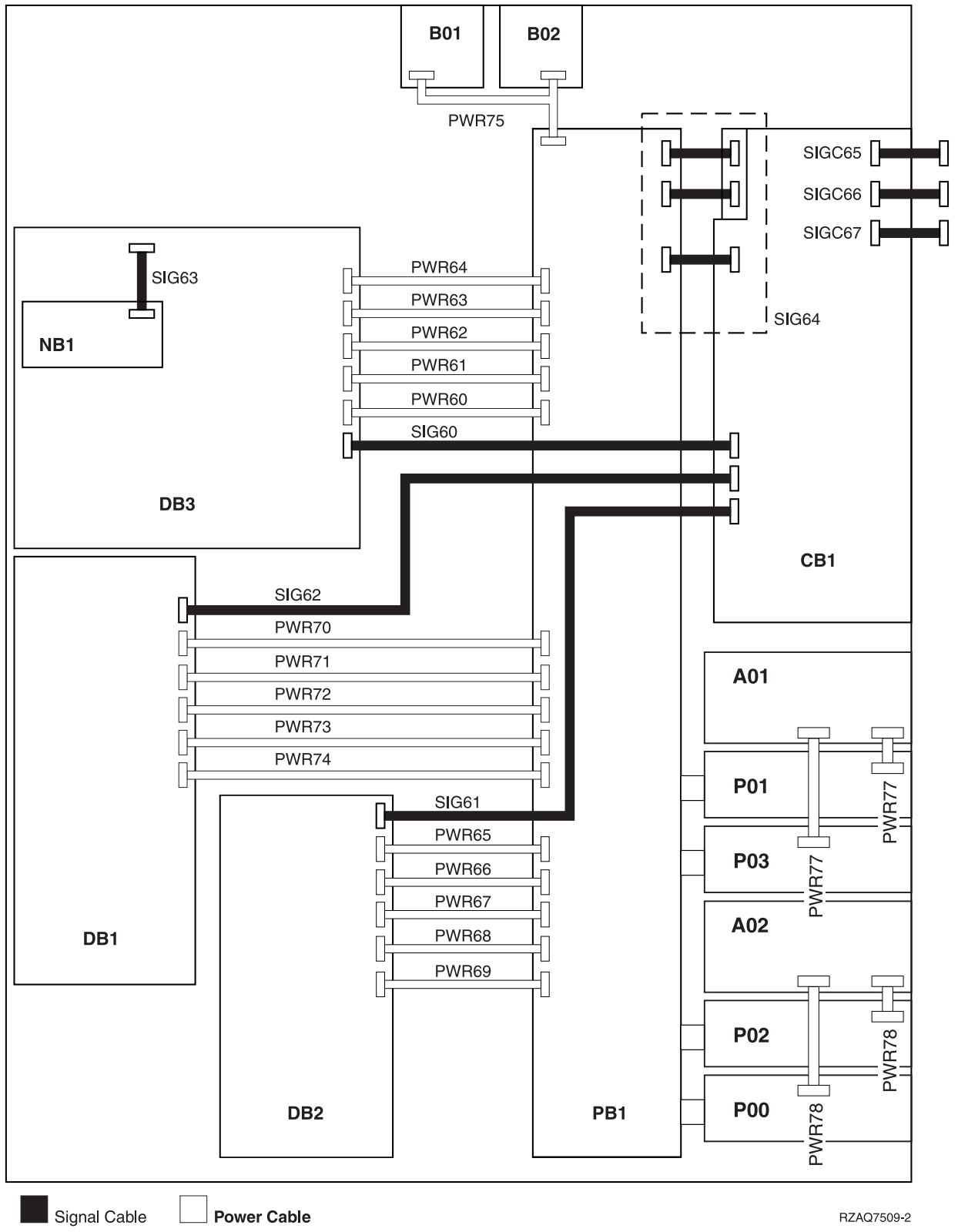
Name	Description	Part number
PWR60	Power distribution board (PB1) to Device board 3 (DB3)	24L1886

Name	Description	Part number
PWR61 to PWR64	Power distribution board (PB1) to Device board 3 (DB3)	97H7483
PWR65	Power distribution board (PB1) to Device board 2 (DB2)	97H7544
PWR66 to PWR69	Power distribution board (PB1) to Device board 2 (DB2)	97H7543
PWR70	Power distribution board (PB1) to Device board 1 (DB1)	97H7544
PWR71 to PWR74	Power distribution board (PB1) to Device board 1 (DB1)	97H7543
PWR75	Power distribution board (PB1) to AMDs (B01 and B02)	97H7475
PWR76	Charger (A01) to Batteries (T01 through T04)	97H7474
PWR77	Charger (A01) to Power supply 1 (P01)	04N2181
PWR78	Charger (A01) to Power supply 2 (P02)	04N2181
PWR79	Charger (A01) to Power supply 3 (P03)	04N2181

**Table 24. Model 840 and Model SB3 (FC 9079) Base I/O Tower - Signal cables - single line**

Name	Description	Part number
SIG60	Tower card (CB1) to Device board 3 (DB3)	97H7481
SIG61	Tower card (CB1) to Device board 2 (DB2)	44L0070
SIG62	Tower card (CB1) to Device board 1 (DB1)	97H7484
SIG63	Control panel (NB1) to Device board 3 (DB3)	24L1752
SIG64	Tower card (CB1) to Power distribution board (PB1) (Includes P/N 97H7476, 97H7477, 97H7607) (part of Tower card FRU assembly)	24L0843
SIGC65	JTAG A (internal to TWRCARD)	41L5946
SIGC66	V/S COMM (internal to TWRCARD)	44L0007
SIGC67	JTAG C/E (internal to TWRCARD)	24L0881

**Figure 13. Model 840 and Model SB3 (FC 9079) Base I/O Tower - Dual Line Cord Power and Signal Cables**



**Table 25. Model 840 and Model SB3 (FC 9079) Base I/O Tower - Power cables - dual line cord**

Name	Description	Part number
PWR60	Power distribution board (PB1) to Device board 3 (DB3)	24L1886

Name	Description	Part number
PWR61 to PWR64	Power distribution board (PB1) to Device board 3 (DB3)	97H7483
PWR65	Power distribution board (PB1) to Device board 2 (DB2)	97H7544
PWR66 to PWR69	Power distribution board (PB1) to Device board 2 (DB2)	97H7543
PWR70	Power distribution board (PB1) to Device board 1 (DB1)	97H7544
PWR71 to PWR74	Power distribution board (PB1) to Device board 1 (DB1)	97H7543
PWR75	Power distribution board (PB1) to AMDs (B01 and B02)	97H7475
PWR77	AC Input (A01) to Power supply 1 (P01 and P03)	04N2181
PWR78	AC Input (A02) to Power supply 2 (P00 and P02)	04N2181

**Table 26. Model 840 and Model SB3 (FC 9079) Base I/O Tower - Signal cables - dual line cord**

Name	Description	Part number
SIG60	Tower card (CB1) to Device board 3 (DB3)	97H7481
SIG61	Tower card (CB1) to Device board 2 (DB2)	44L0070
SIG62	Tower card (CB1) to Device board 1 (DB1)	97H7484
SIG63	Control panel (NB1) to Device board 3 (DB3)	24L1752
SIG64	Tower card (CB1) to Power distribution board (PB1) (Includes P/N 97H7476, 97H7477, 97H7607) (part of Tower card FRU assembly)	24L0843
SIGC65	JTAG A (internal to TWRCARD)	41L5946
SIGC66	V/S COMM (internal to TWRCARD)	44L0007
SIGC67	JTAG C/E (internal to TWRCARD)	24L0881

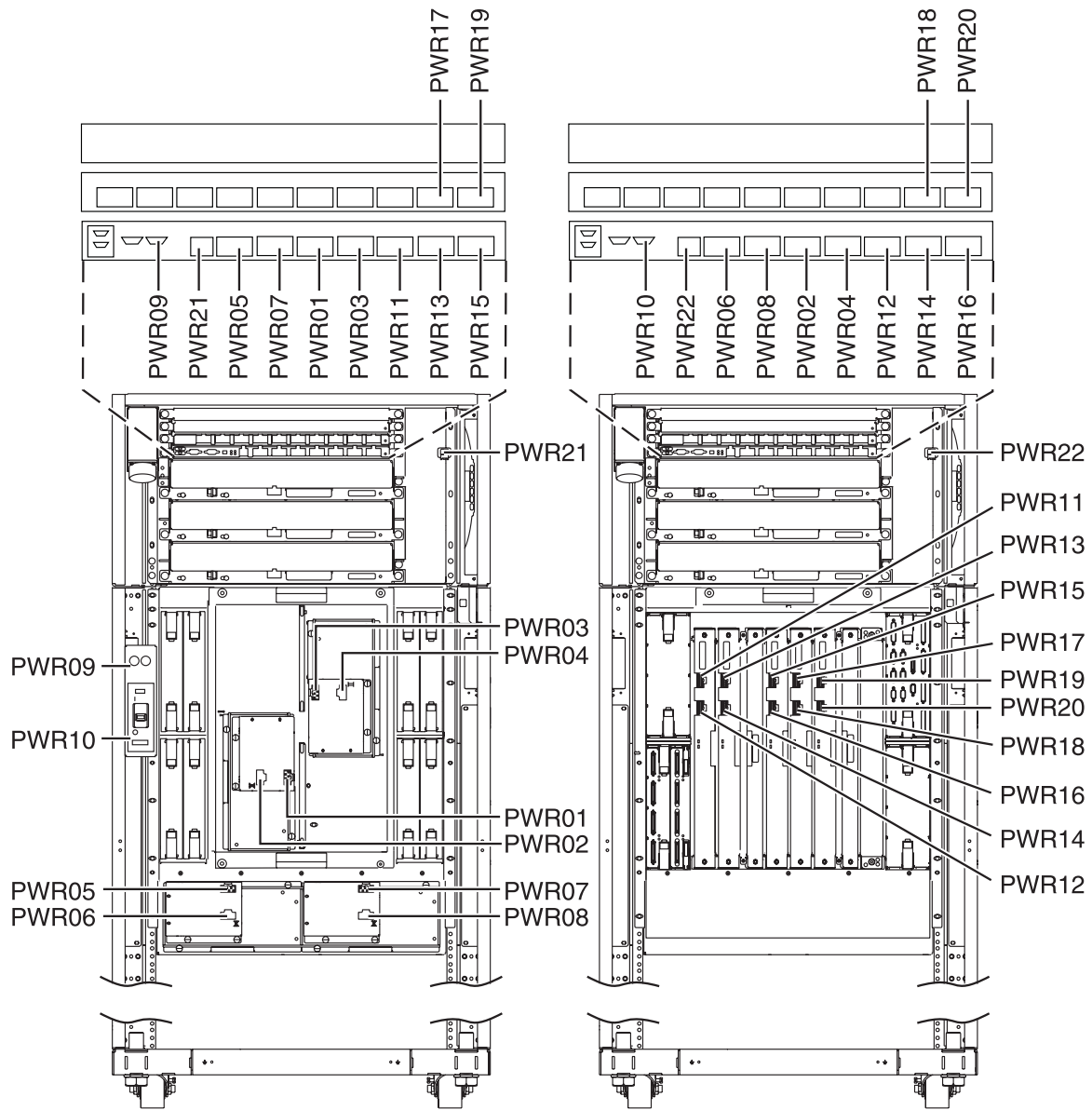
**Models 870 and 890 processor towers:** There are two tables covered here:

- Power cables (See page 506)
- AC line cords (See page 510)

#### **Models 870 and 890 Power cables**

Use the diagram and table below for information on the power cables for the Models 870 and 890.

#### **Figure 14. Models 870 and 890 - Power cables**

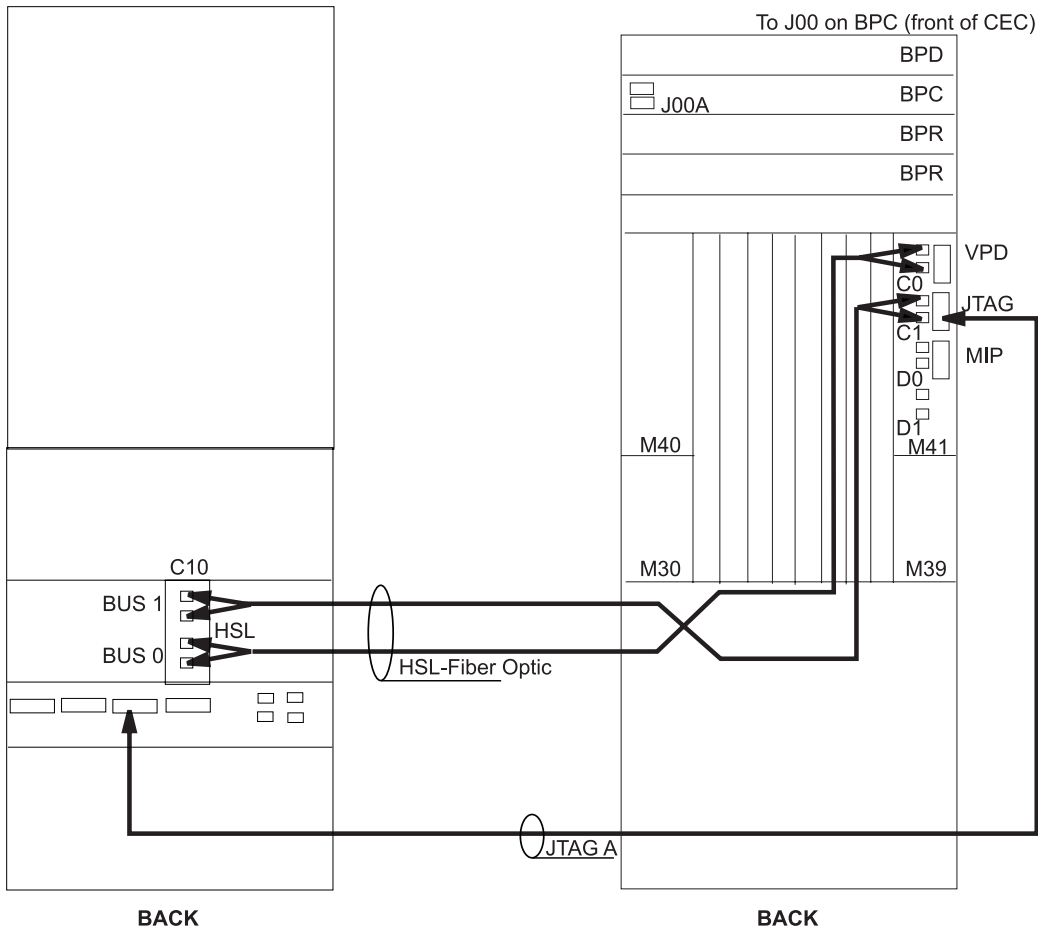


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Figure 15. Models 870 and 890 - Primary I/O to CEC interconnection (part 1)

FC.8094 Optional Base  
1.8m Rack PCI I/O Enclosure \*\*

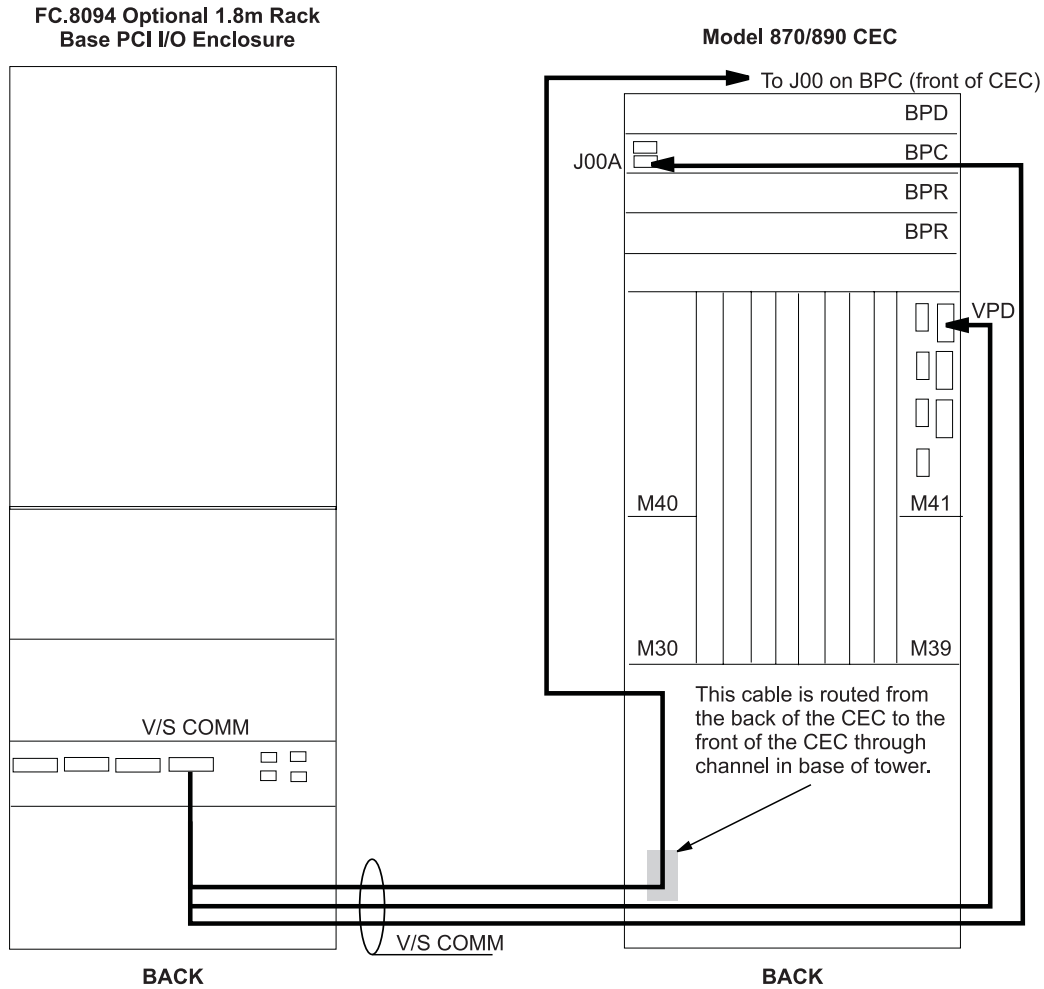
Model 870/890 CEC



RZAR5501-1

Figure 16. Models 870 and 890 - Primary I/O to CEC interconnection (part 2)





RZAR5502-1

**Table 27. Models 870 and 890 Power cables**

Name	Description	Part number
PWR01	Bulk Power Controller (BPCA - J06) to MDA F3 J01	11P4463
PWR02	Bulk Power Controller (BPCB - J06) to MDA F3 J02	11P4464
PWR03	Bulk Power Controller (BPCA - J07) to MDA F4 J01	11P4465
PWR04	Bulk Power Controller (BPCB - J07) to MDA F4 J02	11P4466
PWR05	Bulk Power Controller (BPCA - J04) to MDA F1 J01	11P4459
PWR06	Bulk Power Controller (BPCB - J04) to MDA F1 J02	11P4460
PWR07	Bulk Power Controller (BPCA - J05) to MDA F2 J01	11P4461
PWR08	Bulk Power Controller (BPCB - J05) to MDA F2 J02	11P4462

Name	Description	Part number
PWR09	Bulk Power Controller (BPCA - J02) to UEPO J00	11P1595
PWR10	Bulk Power Controller (BPCB - J02) to UEPO J01	11P1596
PWR11	Bulk Power Controller (BPCA - J08) to Distributed Converter Assembly (DCA 1 - J00)	11P4448
PWR12	Bulk Power Controller (BPCB - J08) to Distributed Converter Assembly (DCA 1 - J01)	11P4449
PWR13	Bulk Power Controller (BPCA - J09) to Distributed Converter Assembly (DCA 2 - J00)	11P4450
PWR14	Bulk Power Controller (BPCB - J09) to Distributed Converter Assembly (DCA 2 - J01)	11P4451
PWR15	Bulk Power Controller (BPCA - J10) to Distributed Converter Assembly (DCA 3 - J00)	11P4452
PWR16	Bulk Power Controller (BPCB - J10) to Distributed Converter Assembly (DCA 3 - J01)	11P4453
PWR17	Bulk Power Distribution (BPD1A - J08) to Distributed Converter Assembly (DCA 4 - J00)	11P4454
PWR18	Bulk Power Distribution (BPD1B - J08) to Distributed Converter Assembly (DCA 4 - J01)	11P4455
PWR19	Bulk Power Distribution (BPD1A - J09) to Distributed Converter Assembly (DCA 5 - J00)	11P4456
PWR20	Bulk Power Distribution (BPD1B - J09) to Distributed Converter Assembly (DCA 5 - J01)	11P4457
PWR21	Bulk Power Controller (BPCA - J03) to Bulk Power Fan (BPFA)	N/A
PWR22	Bulk Power Controller (BPCB - J03) to Bulk Power Fan (BPFB)	N/A
PWR23	BPC-A/B P00 and M41 VPD to CB1 (FC 9094) VSCOMM	04N3886

**Table 28. Models 870 and 890 AC line cords**

Description	Units per assembly	Part number
Line power cord, US, Canada, Japan, 30 AMP 480 V AC 1 (14ft / 4.3m)	2	11P0916
Line power cord, US, Canada, Japan, 60 AMP 240 V AC 1 (14ft / 4.3m)	2	11P0367
Line power cord, US, Chicago, 30 AMP 480 V AC 1 (6ft / 1.8m)	2	11P0914

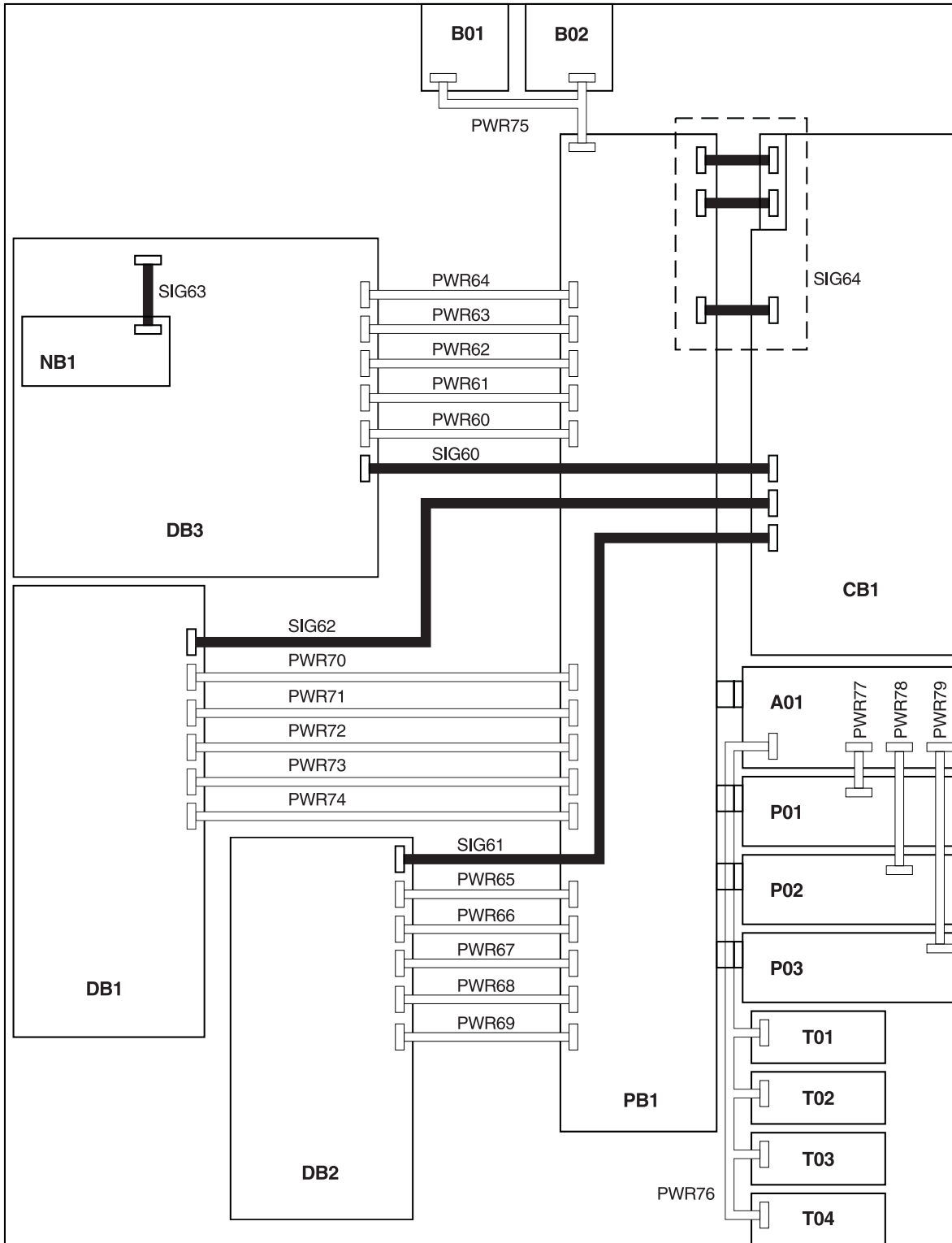
Description	Units per assembly	Part number
Line power cord, US, Chicago, 60 AMP 240 V AC 1 (6ft / 1.8m)	2	11P0365
World trade line power cord, 50 AMP 240 V AC (14ft / 4.3m)	2	11P0918

**FC 5074, FC 5079, FC 5094, FC 9094 Expansion I/O Tower:** **Note:** The FC 5079 Expansion I/O Tower is serviced as two FC 5074 Towers in the same frame. Cable names and part numbers are repeated in the upper and lower section of the FC 5079 frame.

There are two figures/tables:

- FC 5074, FC 5079, FC 5094, FC 9094 Expansion I/O Tower - Single line cord power and signal cables (See page 511)
- FC 5074, FC 5079, FC 5094, FC 9094 Expansion I/O Tower - Dual line cord power and signal cables (See page 513)

**Figure 17. FC 5074, FC 5079, FC 5094, FC 9094 Expansion I/O Tower - Single line cord power and signal cables**



RZQAQ7507-1

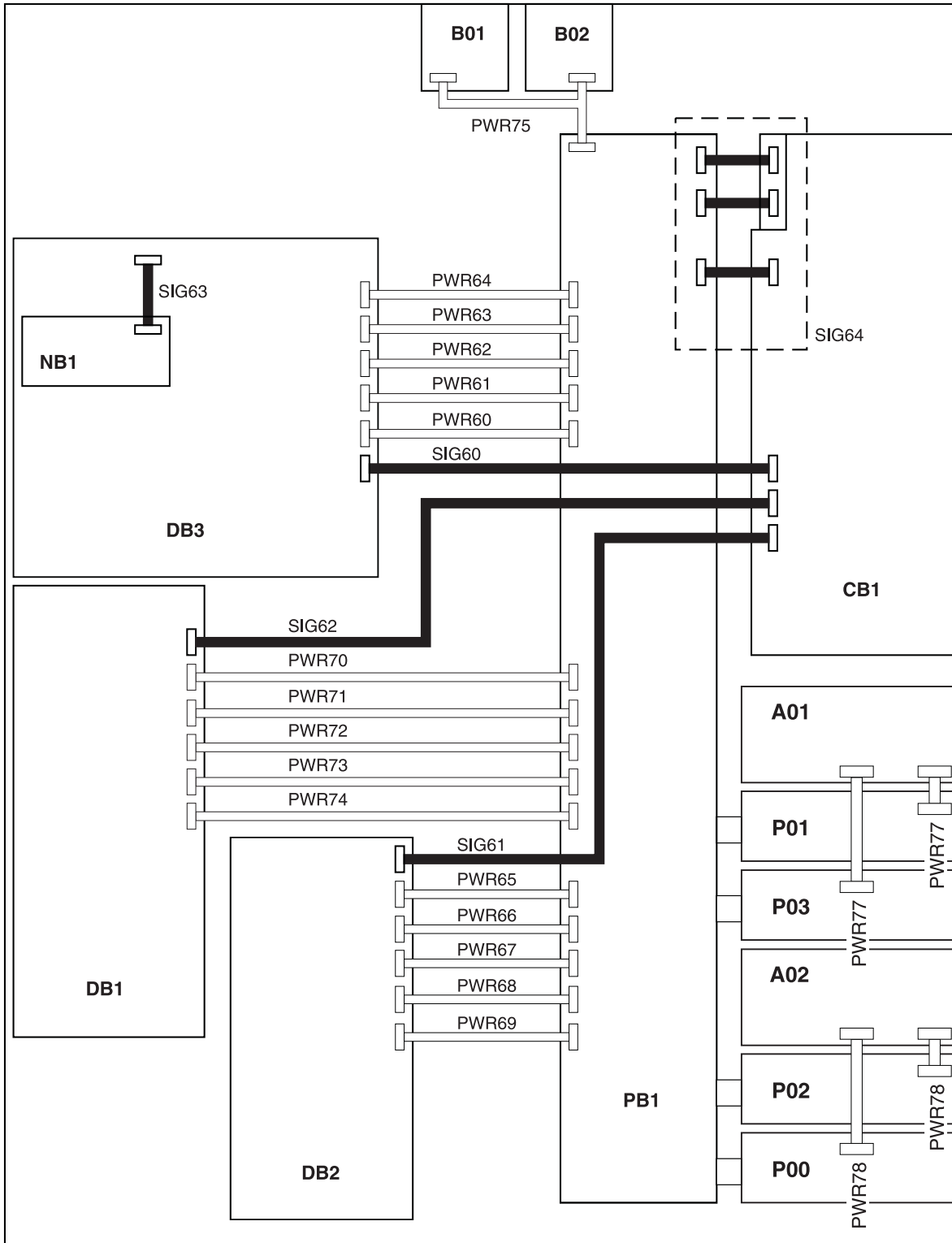
**Table 29. FC 5074, FC 5079, FC 5094, FC 9094 Expansion I/O Tower - Power cables - single line cord**

Name	Description	Part number
PWR60	Power distribution board (PB1) to Device board 3 (DB3)	24L1886
PWR61 to PWR64	Power distribution board (PB1) to Device board 3 (DB3)	97H7483
PWR65	Power distribution board (PB1) to Device board 2 (DB2)	97H7544
PWR66 to PWR69	Power distribution board (PB1) to Device board 2 (DB2)	97H7543
PWR70	Power distribution board (PB1) to Device board 1 (DB1)	97H7544
PWR71 to PWR74	Power distribution board (PB1) to Device board 1 (DB1)	97H7543
PWR75	Power distribution board (PB1) to AMDs (B01 and B02)	97H7475
PWR76	Charger (A01) to Batteries (T01 through T04)	97H7474
PWR77	Charger (A01) to Power supply 1 (P01)	04N2181
PWR78	Charger to Power supply 2 (P02)	04N2181
PWR79	Charger to Power supply 3 (P03)	04N2181

**Table 30. FC 5074, FC 5079, FC 5094, FC 9094 Expansion I/O Tower - Signal cables - single line cord**

Name	Description	Part number
SIG60	IOA in tower card (CB1) to Device board 3 (DB3)	97H7481
SIG61	IOA in tower card (CB1) to Device board 2 (DB2)	44L0070
SIG62	IOA in tower card (CB1) to Device board 1 (DB1)	97H7484
SIG63	Control panel (NB1) to Device board 3 (DB3)	24L1752
SIG64	Tower card (CB1) to Power distribution board (PB1 - includes P/N 97H7476, 97H7477, 97H7607) (Part of the tower card FRU assembly)	24L0843

**Figure 18. FC 5074, FC 5079, FC 5094, FC 9094 Expansion I/O Tower - Dual line cord power and signal cables**



Signal Cable
  Power Cable

RZQAQ7511-2

**Table 31. FC 5074, FC 5079, FC 5094, FC 9094 Expansion I/O Tower - Power cables - dual Line Cord**

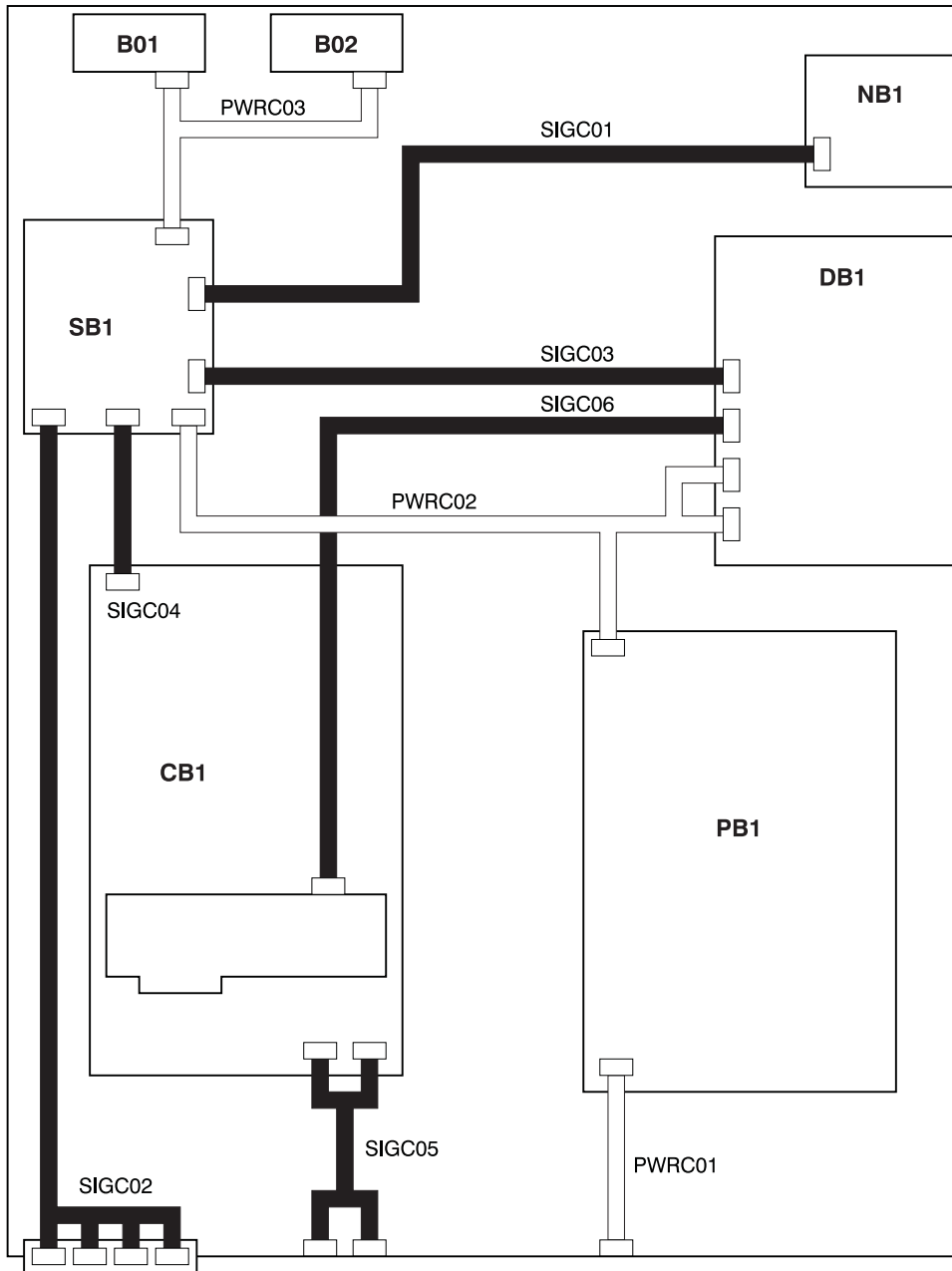
Name	Description	Part number
PWR60	Power distribution board (PB1) to Device board 3 (DB3)	24L1886

Name	Description	Part number
PWR61 to PWR64	Power distribution board (PB1) to Device board 3 (DB3)	97H7483
PWR65	Power distribution board (PB1) to Device board 2 (DB2)	97H7544
PWR66 to PWR69	Power distribution board (PB1) to Device board 2 (DB2)	97H7543
PWR70	Power distribution board (PB1) to Device board 1 (DB1)	97H7544
PWR71 to PWR74	Power distribution board (PB1) to Device board 1 (DB1)	97H7543
PWR75	Power distribution board (PB1) to AMDs (B01 and B02)	97H7475
PWR77	AC input (A01) to Power supply 1 (P01 and P03)	04N2181
PWR78	AC input (A02) to Power supply 2 (P00 and P02)	04N2181

**Table 32. FC 5074, FC 5079, FC 5094, FC 9094 Expansion I/O Tower - Signal cables - dual Line Cord**

Name	Description	Part number
SIG60	IOA in tower card (CB1) to Device board 3 (DB3)	97H7481
SIG61	IOA in tower card (CB1) to Device board 2 (DB2)	44L0070
SIG62	IOA in tower card (CB1) to Device board 1 (DB1)	97H7484
SIG63	Control panel (NB1) to Device board 3 (DB3)	24L1752
SIG64	Tower card (CB1) to Power distribution board (PB1 - includes P/N 97H7476, 97H7477, 97H7607) (Part of Tower card FRU assembly)	24L0843

**FC 5075 Expansion I/O Tower: Figure 19. FC 5075 Expansion I/O Tower power and signal cables**



Signal Cable
  Power Cable

RZAQ3505-1

**Table 33. FC 5075 Expansion I/O Tower Power cables**

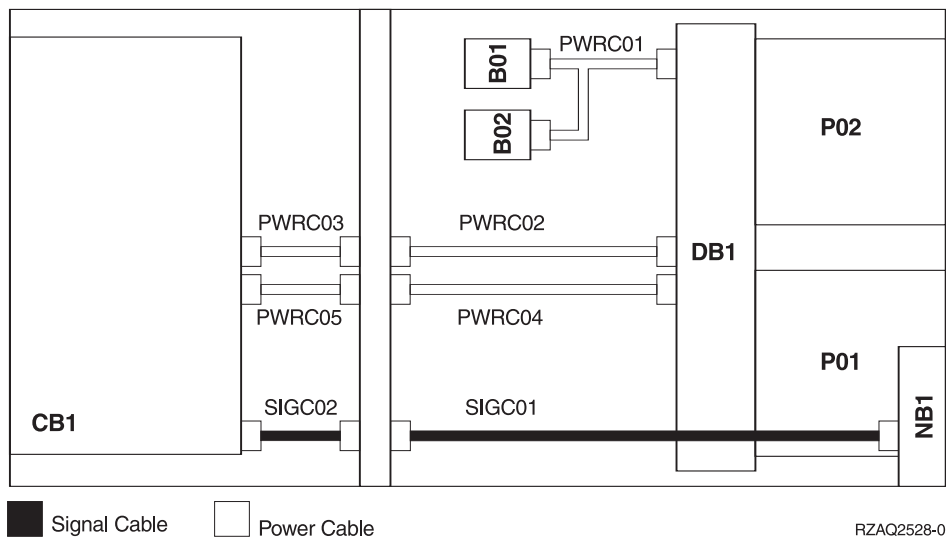
Name	Description	Part number
PWRC01	Line cord to Power Distribution Backplane (PB1)	04N5192
PWRC02	Power Distribution Backplane (PB1) to SPCN Card (SB1) and Device board (DB1)	23L2909
PWRC03	SPCN Card (SB1) to AMDs (B01 and B02)	23L2908



**Table 34. FC 5075 Expansion I/O Tower Signal cables**

Name	Description	Part number
SIGC01	SPCN Card (SB1) to Control panel (NB1)	04N6113
SIGC02	SPCN Card (SB1) to rear SPCN connectors	23L2910
SIGC03	SPCN Card (SB1) to Device board (DB1)	23L2911
SIGC04	Tower card (CB1) to SPCN Card (SB1)	23L2913
SIGC05	Tower card (CB1) to rear HSL connectors	23L2888
SIGC06	Tower card (CB1) to Device board (DB1)	23L2912

**FC 5078, FC 0578, FC 5088, or FC 0588 Expansion I/O Tower: Figure 20. FC 5078, FC 0578, FC 5088, or FC 0588 Expansion I/O Tower power and signal cables**



**Table 35. FC 5078, FC 0578, FC 5088, or FC 0588 Expansion I/O Tower - Power cables**

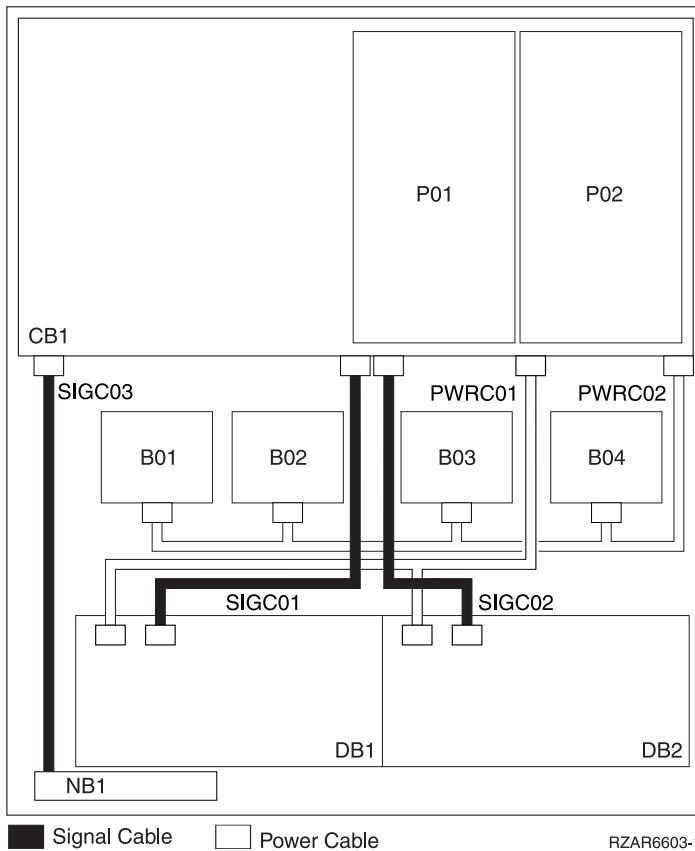
Name	Description	Part number
PWRC01	Power Distribution Backplane (PB1) to AMDs (B01 and B02)	41L5652
PWRC02	Power Distribution Backplane (PB1) to SPCN connector	41L5650
PWRC03	SPCN connector to Tower card (CB1)	21P6096
PWRC04	Power Distribution Backplane (PB1) to Power connector	21P6094
PWRC05	Power connector to Tower card (CB1)	21P6095

**Table 36. FC 5078, FC 0578, FC 5088, or FC 0588 Expansion I/O Tower - Signal cables**

Name	Description	Part number
SIGC01	Control panel (NB1) to Control panel connector	41L5649
SIGC02	Control panel (NB1) to Tower card (CB1)	41L5517

**FC 5095 or FC 0595 Expansion I/O Tower:** Use the diagram and table below for information on the Power and signal cables for the FC 5095 or FC 0595.

**Figure 21. FC 5095 or FC 0595 Expansion I/O Tower - power and signal cables**



**Table 37. FC 5095 or FC 0595 Expansion I/O Tower - Power cables**

Name	Description	Part number
PWRC01	CB1 to device backplanes DB1 and DB2	52P0416
PWRC02	CB1 to Air moving devices (AMDs) B01, B02, B03, and B04	53P4065

**Table 38. FC 5095 or FC 0595 Expansion I/O Tower - Signal cables**

Name	Description	Part number
SIGC01	CB1 to Device backplane (DB1, left/top)	53P0417
SIGC02	CB1 to Device backplane (DB2, right/bottom)	53P0418
SIGC03	Operation panel (NB1) to System unit backplane (CB1)	53P0414

## Removable media address jumper positions

*For use by authorized service providers.*

Note the following:

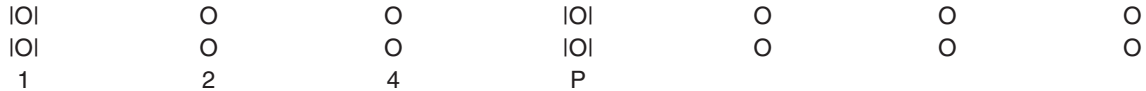
- On Models 270, 800, and 810, only devices in location D07 require address jumpers. Devices in location D08 do not require address jumpers.
- On the Model 820, only devices in location D13 require address jumpers. Devices in location D14 do not require address jumpers.

**4685 tape unit:** Figure 1. 4685 tape unit jumpers for location D07 (Models 270, 800, and 810) and D13 (Model 820)



**6321 CD-ROM Optical Unit:** Figure 2. 6321 CD-ROM optical unit jumpers for location D07 (Models 270, 800, and 810) and D13 (Model 820)

**Note:** The 6321 optical unit uses jumper part number 1675209.



**6330 DVD-RAM optical unit:** Figure 3. 6330 DVD-RAM optical unit jumpers for location D07 (Models 270, 800, and 810) and D13 (Model 820)

**Note:** The 6330 optical unit uses jumper part number 1675209.



**6336 DVD-ROM optical unit:** Figure 4. DVD-ROM optical unit jumpers for location D07 (Models 270, 800, and 810) and D13 (Model 820)

**Note:** The 6336 optical unit uses jumper part number 1675209.



**6382 tape unit:** Figure 5. 6382 tape unit address jumpers for location D07 (Models 270, 800, and 810) and D13 (Model 820)

**Note:** The 6382 tape unit uses jumper part number 1675209.



**6383, 6384, 6386, 6387 tape unit:** Figure 6. 6383, 6384, 6386, 6387 tape unit address jumpers for location D07 (Models 270, 800, and 810) and D13 (Model 820)

**Note:** The 6383, 6384, 6386, and 6387 tape units use jumper part number 61X7052.



## Type, model, and part number list

For use by authorized service providers.

Three tables are included on this page:

- “Hardware part number information”: Which includes part numbers for hardware
- “Power-related part number information” on page 533: Part numbers and descriptions for parts involved in servicing power-related hardware.
- “Internal and external cables” on page 535: Which includes part numbers and descriptions on external and internal cables
- “Cleaning, testing, and miscellaneous parts” on page 537: Which includes part numbers for cleaning, testing, and miscellaneous parts

**Tip:** To search on a type or description, press **Ctrl+F**, and type the information you want to search on.

**Hardware part number information:** The following table correlates a hardware type, description, model numbers and tower feature codes on which the hardware is allowed, and a part number.

**Table 1. Hardware part number information**

Type	Description	Model	Part number
0150	Processor capacity card	820	21P6947
0151	Processor capacity card	820	21P6949
0152	Processor capacity card	820	21P6951
0153	Processor capacity card	830	53P3372
0158	Processor capacity card	840	53P3374
0159	Processor capacity card	840	53P3376
0197	Processor capacity card	890	53P1098
0198	Processor capacity card	890	53P1100
0446	512 MB IXS memory module	ALL	26P0989
0447	1 GB IXS memory module	ALL	26P1159
1517	Interactive card	270	04N2625
1518	Interactive card	270	04N4648
1519	Interactive card	270	04N4649
1520	Interactive card	270	04N4650
1521	Interactive card	820	04N2624
1522	Interactive card	820	04N2623
1523	Interactive card	820	04N2622
1524	Interactive card	820	04N2621
1525	Interactive card	820	04N2620
1526	Interactive card	820	04N2619
1527	Interactive card	820	04N2618
1531	Interactive card	830	04N2617
1532	Interactive card	830	04N2616
1533	Interactive card	830	04N2615
1534	Interactive card	830	04N2614
1535	Interactive card	830	04N2613

Type	Description	Model	Part number
1536	Interactive card	830	04N2612
1537	Interactive card	830	04N2611
1540	Interactive card	840	04N4651
1541	Interactive card	840	04N2610
1542	Interactive card	840	04N2609
1543	Interactive card	840	04N2608
1544	Interactive card	840	04N2607
1545	Interactive card	840	04N2606
1546	Interactive card	840	04N2605
1547	Interactive card	840	04N2604
1548	Interactive card	840	21P4452
1576	Interactive card	890	53P1116
1577	Interactive card	890	53P1118
1578	Interactive card	890	53P1129
1579	Interactive card	890	53P1122
1581	Interactive card	890	53P1126
1583	Interactive card	890	53P1130
1585	Interactive card	890	53P1134
1587	Interactive card	890	53P1138
1588	Interactive card	890	53P1140
1591	Interactive card	890	53P1755
2058	PCI cryptographic processor	All	11P3106
2248	Processor capacity card	270	04N4647
2249	System unit backplane	270 (processor feature codes 22A2, 22A4, 22A5, 2422)	04N6319
224A	System unit backplane with embedded processor	270 (processor feature codes 2301, 2302)	21P5692
224B	System processor	820	21P5686
2250	Processor capacity card	270	04N2598
2252	Processor capacity card	270	04N2597
2253	Processor capacity card	270	04N2596
2301	Processor capacity card	270	21P5759
2302	Processor capacity card	270	21P5761
2303	Processor capacity card	270, 820	21P5763
2315	Processor capacity card	SB2	04N2586
2316	Processor capacity card	SB3	04N2585
2318	Processor capacity card	SB3	04N2571
2349	Processor capacity card	830	53P3433
2350	Processor capacity card	270, 820	21P4398
2351	Processor capacity card	830	21P4400
2352	Processor capacity card	840	21P4402

Type	Description	Model	Part number
2353	Processor capacity card	840	21P4404
2354	Processor capacity card	840	21P4406
2395	Processor capacity card	820	04N2595
2396	Processor capacity card	820	04N2594
2397	Processor capacity card	820	04N2593
2398	Processor capacity card	820	04N2592
2400	Processor capacity card	830	04N2591
2402	Processor capacity card	830	04N2590
2403	Processor capacity card	830	04N2589
2416	Processor capacity card	840	21P4392
2417	Processor capacity card	840	21P4394
2418	Processor capacity card	840	04N2588
2419	Processor capacity card	840	21P4396
2420	Processor capacity card	840	04N2587
2423	Processor capacity card	270	04N3759
2424	Processor capacity card	270	04N3761
2425	Processor capacity card	820	04N3763
2426	Processor capacity card	820	04N3765
2427	Processor capacity card	820	03P0004
2431	Processor capacity card	270, 820	21P4444
2432	Processor capacity card	270, 820	04N5166
2434	Processor capacity card	270, 820	04N5168
2435	Processor capacity card	270, 820	21P4446
2436	Processor capacity card	270, 820	04N5169
2437	Processor capacity card	270, 820	04N5170
2438	Processor capacity card	270, 820	04N5171
243C	Processor / interactive set	820	N/A
243D	Processor / interactive set	820	N/A
243F	Processor / interactive set	820	N/A
244A	System processor card (1-way)	820	24L2694
244D	System processor card (2-way)	820	23L7738
244E	Processor (4-way)	820	04N6738
2452	Processor capacity cards	270	04N5172
2454	Processor capacity cards	270	04N5174
2456	Processor capacity cards	820	04N5175
2457	Processor capacity cards	820	04N5176
2458	Processor capacity cards	820	04N5177
245C	System processor card (2-way)	830	04N6928
245D	System processor card 4-way)	830, SB2	04N6929
245E	System processor card (6-way)	840, SB3	04N6247
245F	System processor card (6-way)	840, SB3	04N6235

Type	Description	Model	Part number
2460	Processor capacity card	840	21P4448
2461	Processor capacity card	840	21P4450
246C	Termination / passthru card	840, SB3	23L7848
246D	Clock terminator / filler	840	04N5635
246E	System processor for processors 2 through 4 (four through sixteen way processor systems)	840	21P4517
246F	System processor for processor 1 (4 thru 16-way processor systems)	840	21P4511
247A	Control panel	870/890 (FC 9094)	24L0945
247B	Display panel	FC 5065, FC 5066, FC 5074, FC 5078, FC 0578, FC 5088, FC 0588, FC 5094	24L0962
247D	Control panel	Models 270, 800, 810	24L1591
247E	Display panel	FC 5075	24L1592
247F	Control panel	820	24L1750
2487	Processor capacity card	890	21P7658
2488	Processor capacity card	890	53P1114
24A0	Processor (1-way)	270 (processor feature codes 22A7, 22A8, 22AA, 22AB, 2423, 2424), 820	04N4758
24A2	Processor (2-way)	270	04N6751
250A	Op panel with keystick	825	21P7333
250C	Display panel	FC 5095, FC 0595	53P0330
25AA	Clock card  This is a combined FRU, with oscillator: 1. 25AC <b>OR</b> 2. 25AF	840, SB3	1. 21P6103 (Kit for 25AA/25AC) <b>OR</b> 2. 04N7015 (Kit for 25AA/25AF)
25AB	Clock card	830, SB2	74G6394
25AC	Oscillator Card	840, SB3	For Part number, see type 25AA (See page 523) in this table.
25AD	Clock card	830, SB2	74G6398
25AF	Oscillator	840, SB3	For part number, see type 25AA (See page 523) in this table.
25B3	4-way processor	830	04N3416
25B4	2-way processor	830	04N3423
25B9	System unit backplane with embedded processor	270, 800, 810	53P2454
25BA	System unit backplane with embedded processor	270, 800, 810	53P2465
25BC	System processor	820	04N5345
25BD	System processor	270, 820	23L7785
25BE	System processor	820	23L7794

Type	Description	Model	Part number
25C0	System unit backplane	870, 890	44P0499
25C1	Clock card	870, 890	21P7271
25CA	System unit backplane	825	53P5510
25D3	System processor	870, 890	00P2818
25DC	System processor	825	09P5740
25EB	System processor	810 (processor feature codes 7428, 7430)	09P6525
25F0	System processor	810 (processor feature codes 7410, 7411, 7412)	53P2478
25F1	L3 cache VPD card and module	870, 890	00P2849
25FE	Regulator	830	23L3613
263D	Memory riser filler card	820	23L8127
2681	HSL I/O bridge	830, SB2 (FC 9074)	04N6911
2689	1. Integrated xSeries <sup>(TM)</sup> Adapter (IXA) 2. SPCN Y-cable 3. RS485 cable	All	1. 21P5840 2. 04N2652 3. 21P4162
2691	HSL I/O bridge	820, 840, and SB3 FC 5074, 5079, (FC 9079), 8079-001, 8079-002	04N6907
2714	Processor regulator	840	23L3613
2716	Memory control regulator R03	840, SB3	23L3603
2723	Ethernet IOA	All	21H9201
272D	PASS through feature card to replace MCM (no VPD)	870, 890	21P7753
2732	Network Interface Controller (NIC)	830	23L7707
2737	Network Interface Controller (NIC)	840	04N2344
2738	Bus adapter 8 HSL ports	870, 890	53P3381
2739	Optical bus adapter	830, 840, FC 5074, FC 5079, FC 5078, and FC 0578	23L7829
273B	Base HSL Bus adapter with four copper connectors	870, 890	53P3388
2742	2-line communications IOA	All	21P5267
2743	Ethernet 1 Gb/sec IOA	All	09P2098
2744	Token ring 100 Mb/sec IOA	All	23L4288
2745	Multiline communications IOA	All	21H5490
2746	Twinaxial IOA	All	21H5497
2748	Storage IOA 1. Card (non-Japan) 2. Card (Japan) 3. Cache battery pack (non-Japan) 4. Cache battery pack (Japan) 5. Mode jumper	All	1. 91H3987 2. 23L2841 3. 44L0302 4. 44L0301 5. 23L3442
2749	Storage IOA (external removable media)	All	04N2296



Type	Description	Model	Part number
274F	Capacitor card	870, 890	11P1540
274E	DCA card	870, 890	11P3492
2750	ISDN communications IOA	All	97H7674
2751	ISDN communications IOA	All	97H7675
2754	Network Interface Controller with 8 ports (copper)	830, SB2	04N5386
2755	Network Interface Controller (NIC) with 16 ports (copper)	840, SB3	04N5508
2757	Storage IOA 1. Card 2. Cache battery pack	All	1. 21P5899 2. 53P0941
2758	Network Interface Controller (NIC) with 8 ports (2 optical - 6 copper)	830, SB2	23L7609
2759	Network Interface Controller (NIC) with 16 ports (4 optical - 12 copper)	840, SB3	03P0049
2760	Ethernet 1 Gigabit/sec IOA	All	00P1690
2761	Integrated Modem IOA 1. United States 2. Europe 3. Germany 4. Australia 5. Spain 6. Czechoslovakia	All	1. 97H7678 2. 97H7679 3. 97H7680 4. 97H7681 5. 97H7682 6. 97H7683
2763	Storage IOA 1. Card 2. Cache battery pack	All	1. 91H4082 2. 44L0313
2765	Fibre channel IOA (for removable media attachment only)	All	03N2451
2766	Fibre channel IOA (for disk drive attachment only)	All	03N2453
2767	Storage IOA	All	04N2304
2768	Storage IOA (external removable media)	All	04N2310
2771	V.90 WAN IOA 1. All <b>EXCEPT</b> Australia, New Zealand 2. Australia, New Zealand	All	1. 04N4519 2. 04N4520
2772	Two-port V.90 socket modem IOA 1. All <b>EXCEPT</b> Australia, New Zealand 2. Australia, New Zealand	All	1. 04N4537 2. 04N4539
2776	HSL-2 Bus adapter with 8 ports (copper)	870, 890	53P3378
2778	Storage IOA 1. Card 2. Cache battery pack 3. Mode Jumper	All	1. 21P3735 2. 44L0313 3. 23L3442
2779	Bus adapter	All	21P5342

Type	Description	Model	Part number
2780	Storage IOA 1. Card 2. Cache battery pack	All	1. 97P6094 2. 97P4846
2782	Storage IOA 1. Card 2. Cache battery pack	All	1. 21P6477 2. 44L0313
2785	Bus adapter 2 ports (copper)	825	21P5968
2786	Bus adapter 2 (optical)	825	21P5974
2787	Fibre Channel IOA (for disk drive attachment only)	All	00P4339
2788	Bus adapter 8 (optical)	870, 890	53P2778
2789	Base HSL-2, 4 port optical	870, 890	53P3445
2793	V.92 communications IOA 1. All <b>EXCEPT</b> Australia, New Zealand 2. Australia, New Zealand	All	1. 21P5289 2. 21P5295
27AA	2-way and 4-way processor regulator	830	24L0965
27AB	8-way processor regulator	830	24L0964
2805	4-port V.92 Communications IOA 1. All <b>EXCEPT</b> Australia, New Zealand 2. Australia, New Zealand	All	1. 21P8186 2. 21P8190
2815	ATM 155 Mbps IOA	All	21H7977
2816	ATM 155 Mbps IOA	All	21H7909
2817	ATM 155 Mbps IOA	All	04N2907
2818	ATM 155 Mbps IOA	All	21H7975
281A	System unit backplane	830, SB2	04N6571  <b>Attention:</b> You must also order and replace the processors, see "Model 830/SB2 - Processor feature codes and CCINs" on page 68.
282B	System unit backplane	840, SB3	04N3934
282D	System unit backplane	820	24L1460
282F	System unit backplane	270 (processor feature codes 22A7, 22A8, 22AA, 22AB, 23F4, 23F5, 2423, 2424, 2454), 810 (processor features 7428, 7429, 7430)	04N5658
2838	100 Mbps Ethernet IOA	All	21H5460
283B	Tower Card	FC 5075	04N4723
283C	Device Backplane (DB3)	5074, 5079, 8093-002, 9079	04N6601
283D	Device Backplane (DB1 and DB2)	5074, 5079, 8093-002, 9079	04N6602
283E	DASD cage assembly (non-concurrent maintenance) (DB1, DB2, DB3)	270, 800, 810	23L2890

Type	Description	Model	Part number
283F	DASD cage assembly (concurrent maintenance) (DB1, DB2, DB3)	270, 820, FC 5075	04N2472
2842	Combined function IOP - 32 MB	All	04N5090
2843	Combined function IOP - 64 MB	All	04N5095
2844	Combined function IOP - 64 MB	All	21P6018
2849	10/100 Mbps Ethernet IOA	All	53P0057
284B	Embedded combined function IOP	FC 5075	04N4723
284C	Embedded combined function IOP	820	24L1460
284D	Embedded combined function IOP	270	For part number, see type 2249 (See page 521) in this table.
284E	Embedded combined function IOP	270	For part number, see type 282F (See page 526) in this table.
286C	Embedded combined function IOP	270	For part number, see type 25B9 (See page 523) in this table.
286D	Embedded combined function IOP	270	For part number, see type 25BA (See page 523) in this table.
286E	Embedded combined function IOP	800, 810	For part number, see type 25F0 (See page 524) in this table.
286F	Embedded combined function IOP	270	For part number, see type 224A (See page 521) in this table.
287F	Embedded Ethernet IOA	825	For part number, see type 25CA (See page 524) in this table.
2881	Memory riser card	830, SB2	04N3027
2884	Memory riser card for DIMMs	270, 800, 810, and 820	04N4801
2886	Bus adapter with two external ports (optical)	FC 5094, FC 5095, FC 5088, FC 5294, and FC 8094	53P2270
2887	Bus adapter with two external ports	FC 5094, FC 5095, FC 5088, FC 5294, and FC 8094	53P2272
1. 2890-001 2. 2890-002 3. 2890-003	Integrated xSeries <sup>(TM)</sup> Server (IXS)	All	1. 23L4306 2. 04N6176 3. 53P1887
2892-001	Integrated xSeries <sup>(TM)</sup> Server (IXS)	All	21P6867
2892-002	Integrated xSeries <sup>(TM)</sup> Server (IXS)	All	97P3108
2895	128 MB IXS memory module	270, 800, and 810	29L0955
2896	256 MB IXS memory module	270, 800, and 810	29L0956
2897	1 GB IXS memory module	270	29L0957
289D	Backplane extender- right side (for 6-way systems)	825	09P6261
28AA	PCI drawer (includes the tower card)	830, SB2, 840, SB3	24L0926

Type	Description	Model	Part number
28AB	PCI drawer (includes the tower card)	FC 5074, FC 5079, FC 8079-002	97H7307
28AE	PCI drawer assembly	830, 840, FC 5078, and FC 0578	04N6797
28B3	System unit backplane expansion card	825	53P3850
28B6	PCI drawer (9094)	FC 9094, FC 8094-001	53P3271
28B7	PCI drawer (5094)	FC 5094, FC 5294-001, FC 5294-002, FC 8094-002	53P6023
28B8	PCI drawer (5088)	FC 5088, FC 0588	53P2354
28B9	PCI board assembly	5095	53P0257
28BC	DASD cage/board assembly	825	53P1387
28BE	PCI board assembly (concurrent maintenance)	FC 5095, FC 0595	53P2970
28CB	Device backplane (DB3)	5094, 5294, 8093-001, 8094-001, 9094	53P4001
28CC	Device Backplane (DB1 and DB2)	5094, 5294, 8093-001, 8094-001, 9094	53P4002
28CD	DASD cage assembly (concurrent maintenance)	800, 810	53P4064
3002	128 MB main storage-DIMM	270, 820, 830	21H6512
3003	256 MB main storage	270	90H9586
3004	256 MB main storage-DIMM	270, 820, 830	90H9359
3005	512 MB main storage-DIMM	270, 820, 830	97H6436
3006	512 MB main storage-DIMM	270, 820, 830	99H4341
3007	1GB 256 MB main storage-DIMM	820, 830	23L7697
3008	32 MB main storage	270	24L1892
3009	128 MB (x8) main storage	820	04N5487
300F	256 MB main storage-DIMM	SB2	23L7520
3015	8 GB memory card	870, 890	53P0372
3016	8 GB memory card	890	53P0384
3017	32 GB memory card	870, 890	53P0380
3018	32 GB memory card	890	53P0392
3020	4 GB main storage	870, 890	53P1011
3021	4 GB main storage	890	53P1016
3022	128 MB main storage	270, 810	04N4524
3024	256 MB main storage	270, 810	04N4527
3025	512 MB main storage	270, 810	04N4530
3026	512 MB main storage	270, 810	04N5943
3027	1 GB main storage	270, 810	04N6547
3029	128 MB (x8) main storage	270, 810	04N5493
3032	256 MB main storage	270	09P0970
3033	512 MB main storage	270	09P0971
3034	1 GB main storage	270	09P0972

Type	Description	Model	Part number
3035	16 GB main storage	870, 890	53P0376
3036	16 GB main storage	890	53P0388
3042	256 MB main storage	825	53P1603
3043	512 MB main storage	825	53P1611
3044	1 GB main storage	825	53P1632
3046	2 GB main storage	825	53P1639
3092	256 MB main storage	800, 810	53P1605
3093	512 MB main storage	800, 810	53P1613
3094	1 GB main storage	800, 810	53P1634
3096	2 GB main storage	800, 810	53P1641
3195	4096 MB main storage card	840	23L7592
3196	8192 MB main storage card	840	99H4458
3197	1024 MB main storage card	840	23L7574
3198	2048 MB main storage card	840	23L7583
319A	2048 MB main storage card	SB3	23L7586
31A0	2048 MB main storage card	SB3	03P0030
31A1	2048 MB main storage card	SB3	04N5001
358X	External ultrium drive; refer to the device maintenance information manual to determine the part number(s) to replace.		
3590	Model Exx - External 1/2 cartridge tape drive; refer to the device maintenance information manual to determine the part numbers(s) to replace.		
3612	1024 MB main storage card	840	04N4991
3613	2048 MB main storage card	840	04N4998
3614	4096 MB main storage card	840	04N5008
3621	16 GB main storage	870, 890	53P4337
3622	32 GB main storage	870, 890	53P4344
3624	16 GB main storage	870, 890	53P4365
3625	32 GB main storage	870, 890	53P4372
4320	Disk unit and carrier	All	53P3346
4322	Disk unit and carrier	All	21P7140
4323	Disk unit and carrier	All	21P7141
4325	Disk unit and carrier	All	53P3347
4326	Disk unit and carrier	All	53P3348
4327	Disk unit and carrier	All	53P3360
4328	Disk unit and carrier	All	53P3361

Type	Description	Model	Part number
4685	VXA2 tape drive	<ol style="list-style-type: none"> <li>270, 800, 810, 820</li> <li>825, 830, 840, 870, 890, SB2, SB3</li> <li>FC 5065, 5066, 5074, 5079</li> <li>For externally attached drives, refer to the device service information to determine part number(s) to replace</li> </ol>	<ol style="list-style-type: none"> <li>97P3045</li> <li>97P3046</li> <li>97P3046</li> </ol>
4758	PCI cryptographic processor- battery Kit	All	09J8199 (need to order 2 kits)
4758- 023	PCI cryptographic processor	All	10J0593
515B	Power Supply	830, SB2	53P1040
5306	Removable media backplane (concurrent maintenance)	825	00P3215
5700	Ethernet 1 GB/sec IOA	All	09P5386
5701	Ethernet 1 GB/sec IOA	All	09P5389
5702	Storage IOA	All	53P0978
5703	Storage IOA <ol style="list-style-type: none"> <li>Card</li> <li>Cache battery pack</li> </ol>	All	<ol style="list-style-type: none"> <li>97P3960</li> <li>44L0313</li> </ol>
5704	Fibre Channel IOA (for removable media attachment only)	All	00P4297
5708	Auxiliary cache adapter <ol style="list-style-type: none"> <li>Card</li> <li>Auxiliary cache to SCSI adapter cable (FC 5580, FC 5581)</li> <li>Cache battery</li> </ol>	All	<ol style="list-style-type: none"> <li>39J0686</li> <li>39J1702</li> <li>97P4846</li> </ol>
6321	CD-ROM	<ol style="list-style-type: none"> <li>270 and 820</li> <li>830, 840, SB2, SB3, FC 5074, and FC 5079</li> </ol>	<ol style="list-style-type: none"> <li>04N2568</li> <li>97H7330</li> </ol>
6330	DVD-RAM	<ol style="list-style-type: none"> <li>270, 800, 810, 820</li> <li>825, 870, 890, FC 5094</li> <li>830, SB2, 840, SB3, FC 5074</li> </ol>	<ol style="list-style-type: none"> <li>04N2569</li> <li>53P2646</li> <li>04N5966</li> </ol>
6336	DVD-ROM	<ol style="list-style-type: none"> <li>270, 800, 810, 820</li> <li>825, 830, SB2, 840, SB3, 870, 890, FC 5065, FC 5066, FC 5074, FC 5094</li> </ol>	<ol style="list-style-type: none"> <li>97P2377</li> <li>97P2376</li> </ol>
6381	Internal 1/4 inch cartridge drive with QIC-2GB (DC) on the door.	<ol style="list-style-type: none"> <li>FC 5072, 5073, 5077 expansion towers</li> <li>All other towers</li> </ol>	<ol style="list-style-type: none"> <li>21H7658</li> <li>59H2742</li> </ol>

Type	Description	Model	Part number
6382	Internal 1/4 inch cartridge drive with QIC-4GB (DC) on the door.	<ol style="list-style-type: none"> <li>1. System Models 270, 800, 810, and 820</li> <li>2. System Model 825, 830, 840, 870, 890, SB2, and SB3 system unit</li> <li>3. FC 5072, 5073, 5077 expansion towers</li> <li>4. FC 5065, 5066, 5074, 5079 expansion towers</li> <li>5. All other towers</li> </ol>	<ol style="list-style-type: none"> <li>1. 04N2564</li> <li>2. 53P2647</li> <li>3. 21H7019</li> <li>4. 53P2647</li> <li>5. 59H3745</li> </ol>
6383	Internal 1/4 Inch cartridge drive with MLR1-S on the front cover	<ol style="list-style-type: none"> <li>1. System Model 270, 800, 810, and 820</li> <li>2. System Model 825, 830, 840, 870, 890, SB2, and SB3 system unit</li> <li>3. FC 5072, 5073, 5077 expansion towers</li> <li>4. FC 5065, 5066, 5074, 5079 expansion towers</li> <li>5. All other towers</li> </ol>	<ol style="list-style-type: none"> <li>1. 04N2565</li> <li>2. 53P2648</li> <li>3. 97H7717</li> <li>4. 24L1064</li> <li>5. 59H4533</li> </ol>
6384	Internal 1/4 inch cartridge drive with SLR60 on the front cover.	<ol style="list-style-type: none"> <li>1. System Model 270, 800, 810, and 820</li> <li>2. System Model 825, 830, 840, 870, 890, SB2, and SB3 system unit</li> <li>3. FC 5065, 5066, 5074, 5079 expansion towers</li> </ol>	<ol style="list-style-type: none"> <li>1. 53P2385</li> <li>2. 53P2386</li> <li>3. 53P2386</li> </ol>
6386	Internal 1/4 inch cartridge drive with MLR3 on the front cover.	<ol style="list-style-type: none"> <li>1. System Models 270, 800, 810, and 820 system unit</li> <li>2. System Models 825, 830, 840, 870, 890, SB2, and SB3 system unit</li> <li>3. FC 5072, 5073, 5077 expansion towers</li> <li>4. FC 5065, 5066, 5074, 5079 expansion towers</li> <li>5. All other towers</li> </ol>	<ol style="list-style-type: none"> <li>1. 04N2566</li> <li>2. 53P2650</li> <li>3. 97H7528</li> <li>4. 24L1065</li> <li>5. 59H4130</li> </ol>
6387	Internal 1/4 inch cartridge drive with SLR100 on the front cover.	<ol style="list-style-type: none"> <li>1. For system Models 270, 800, 810, and 820</li> <li>2. For system Models 825, 830, 840, 870, 890, SB2, SB3 sytem unit</li> <li>3. For FC 5065, 5066, 5074, 5079 expansion towers</li> </ol>	<ol style="list-style-type: none"> <li>1. 04N2567</li> <li>2. 53P2650</li> <li>3. 53P2650</li> </ol>
6600	Disk unit and carrier. Remove the disk unit from the system to determine the part number of the failing component.	All	N/A
6607	Disk unit and carrier	All	44L0061
6713	Disk unit and carrier	All	44L0062

Type	Description	Model	Part number
6714	Disk unit and carrier	All	44L0063
6717	Disk unit and carrier	All	97H7332
6718	Disk unit and carrier	All	04N2737
6719	Disk unit and carrier	All	04N4638
6731	Read cache and carrier	All	24L1095
7207 model 122	External 1/4 inch cartridge drive with QIC-4GB-DC on the door	All	59H4434
7208 Model 342	External 8mm tape drive; refer to the device service information to determine the part number or numbers to replace.		
7208 Model 345	External 8mm tape drive; refer to the device service information to determine the part number or numbers to replace.		
7239 Model 308	External 1/4 inch cartridge tape library; refer to the device service information to determine the part number or numbers to replace.		
7400	Processor capacity card	800	53P5281
7401	Processor capacity card	810	53P5283
7402	Processor capacity card	810	53P5285
7403	Processor capacity card	810	53P5287
7404	Processor capacity card	810	53P5289
7405	Processor capacity card	810	53P5291
7406	Processor capacity card	810	53P5293
7407	Processor capacity card	810	53P5295
7408	Processor capacity card	800	53P5297
7409	Processor capacity card	810	53P5299
7410	Processor capacity card	810	53P5301
7412	Processor capacity card	810	53P5305
7416	Processor capacity card	825	53P5313
7418	Processor capacity card	825	53P5317
7419	Processor capacity card	870	53P5319
7421	Processor capacity card	870	53P5323
7422	Processor capacity card	890	53P5325
7424	Processor capacity card	890	53P5329
7425	Processor capacity card	890	53P5331
7427	Processor capacity card	890	53P5335
7428	Processor capacity card	810	53P5896
7430	Processor capacity card	810	53P5900
7431	Processor capacity card	870	97P3129
7433	Processor capacity card	870	97P3131
7439	Processor capacity card	825	97P3878
7440	Processor capacity card	870	97P3880



Type	Description	Model	Part number
7441	Processor capacity card	890	97P3882
9348	External 1/2 inch reel tape unit.	Refer to the Instructions for 9348 (See page 533) below.	

### Instructions for 9348:

Is one of the following status codes displayed anywhere on the 9348 control panel? (x = any number)

Exxx

Fxxx

\*\*\*xx

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- **No:** Refer to the 9348 Service Information and use the "Running Diagnostic Tests" procedure to run Diagnostic Test 1. If the test fails, use the 9348 Service Information to determine the failing items.
- **Yes:** Use the "Status Codes" section of the 9348 Service Information to determine the failing items. For other device type, refer to the device Service Information to determine the part number or part numbers that need to be replaced.

### Power-related part number information: Table 2. Power-related part number information

Description	Model	Part number
AC input/battery charger	FC 5074 or FC 5079 (single line cord), FC 5065, FC 5066, FC 9074, FC 9079	97H7316
AC module	FC 5074, FC 5079, FC 9074, FC 9079 (2 power supply dual line cord)	21P6347
AC module	Models 840 and SB3 single and dual line cord (USA)	21H7000
AC module	Models 840 and SB3 single and dual line cord (WT) 1 phase	21H7261
AC module	Models 840 and SB3 single and dual line cord (WT) 2 phase	21H7264
AC module	FC 5071, FC 5073, FC 5077, FC 5081, FC 5083, FC 9251 Base I/O	21H7697
AC module	FC 5070, FC 5072, FC 5080, FC 5082	87G6300
AC module	FC 5094, FC 9094 base I/O	53P5263
Air moving device (AMD) panel	FC 503x	44H7756
Air moving device (AMD) 1, 6B	FC 503x	44H8336
Air moving device (AMD) 2	FC 503x	44H7889
Air moving device (AMD) 5	FC 503x	44H7904
Air moving device (AMD) 6A	FC 503x	44H8259
Air moving device (AMD) control card	FC 5078, 0578	11K1107
Battery back-up (one-piece)	FC 507x and 508x	46G3890
Battery charger assembly	Models 840, SB3	23L3640
Battery power unit	FC 5065, FC 5066, FC 5074, FC 5079, FC 9074, FC 9079	97H7318
Battery unit assembly (includes both batteries)	FC 5033, FC 5034, FC 5035	44H7785

Description	Model	Part number
Bulk power controller (BPC) assembly	Models 870 and 890	11P3645
Bulk power distribution (BPD) assembly	Models 870 and 890	44P1959
Bulk power F-airmover (BPF) assembly	Models 870 and 890	11P1787
Bulk power regulator (BPR) assembly	Models 870 and 890	44P1995
Clock card regulator (M19, R23)	Models 840 and SB3	23L7654
External battery power unit	Models 840, SB3	90H6294
External battery power unit 2 battery pack	FC 507x and FC 508x	86G7714
External battery power unit 2 cable	FC 507x and FC 508x	86G7712
External battery power unit 2 charger	FC 5071, 5073, 5081, 5083	86G7750
Integrated xSeries <sup>(TM)</sup> adapter (IXA)	Models 270, 820, 830, 840, SB2, SB3, 800, 810, 825, 870, and 890	23L4307
Interlock switch assembly	Model 825	53P1911
Internal battery power unit 1 or 2 battery pack	FC 507x and FC 508x	86G8040
Internal battery power unit 1 or 2 charger	FC 5071, 5073, 5081, 5083	86G8020
Internal battery unit pack assembly	Models 840, SB3	21H7080
Motor drive assembly (MDA)	Models 870, 890	31L7627
Motor scrolling assembly (MSA)	Models 870, 890	07H5349
PCI/SPCN backplane assembly	FC 5065 and 5066	24L0921
Power regulator	FC 5077 expansion I/O tower	21H4829
Power regulator	FC 507x system unit expansion	87G6049
Power regulator	FC 508x storage expansion tower	17G1209
Power supply	Model 270, FC 7104, FC 7116	24L1402
Power supply	Model 820, FC 5075	21P6417
Power supply	Model 825	53P2858
Power supply	Model 840, SB3	21H7719
Power supply (PP1, PP2)	Model 830, 840, SB2, SB3	24L0728
Power supply	FC 5078, FC 0578, FC 5088, FC 0588	00P3918
Power supply	FC 5095, FC 0595	21P7602
Power supply	FC 5074, FC 5079, FC 5094, FC 5294, FC 8093, FC 8094, FC 9074, FC 9079, FC 9094	53P1038
Power supply	FC 5065, FC 5066	90H6629
Power supply	FC 5073, FC 5077, FC 5083	87G6110
Power supply (Feature 1 and 2)	all except FC 5073, FC 5077, FC 5083	87G6290
Programmable regulator R01, R02, R04-R11, R20	Model 840/SB3	21H7763
SPCN card	Model 840/SB3 non-dual-line cord	04N4552
SPCN card	Model 840/SB3 dual-line cord	21P6806
SPCN card	FC 5075	23L8145
SPNLCARD	FC 5033, 5034, 5035	04N4441
Time of day battery	all models	16G8095
Uninterruptible power supply (UPS) base unit	FC 5033, 5034, 5035	44H7784

**Internal and external cables:** Select the type of cable you are working with:

- Internal cables (See page 535)
- External cables (See page 535)

### Internal cables

For internal cable information, see the “Power and signal cables” on page 479 page.

### External cables

Use the tables below for external cables. There are two tables:

- Table 2. General external cables (See page 535)
- Table 3. External ac line cords (See page 537)

**Table 2. General external cables**

Part number	Units	Description
21H4902		Internal modem cable (FC1010) - Austria
21H4903		Internal modem cable (FC1011) - Belgium
21H4904		Internal modem cable (FC1012) - Africa
21H4905		Internal modem cable (FC1013) - Israel
75G3802		Internal modem cable (FC1014) - Italy
75G3803		Internal modem cable (FC1015) - France
75G3804		Internal modem cable (FC1016) - Germany
75G3805		Internal modem cable (FC1017) - UK
75G3806		Internal modem cable (FC1018) - Iceland/Sweden
75G3807		Internal modem cable (FC1019) - Australia
75G3808		Internal modem cable (FC1020) - HK/NZ
75G3809		Internal modem cable (FC1021) - Fin/Nor
75G3810		Internal modem cable (FC1022) - Netherlands
75G3811		Internal modem cable (FC1023) - Switzerland
75G3812		Internal modem cable (FC1024) - Denmark
87G6236		Internal modem cable (FC1025) - US/Canada
6339098		Cable, token ring (FC2745) 8ft
75G2865		Cable, Ethernet (FC4723) RJ-45
21F5093		Cable, 8 Port Twinax (FC4746)
97H7699		Cable, ISDN RJ-45
97H7385		Cable, ATM filtered (FC4815)
44H8676		Cable, VIDEO EXT (FC0325)
44H8677		Cable, mouse, keyboard extension (FC0325)
07G3794		Keyboard/mouse splitter cable (CCIN 2890)
44L0007		V/S COMM - 6m cable (031A)
04N3886		VSCOM (6m) (31B)
44H7480		V.24 - 20' cable (0348)
44H7482		V.24 - 20' cable - Germany (0348)

Part number	Units	Description
44H7484		V.24 - 20' cable - Japan (0348)
44H7481		V.24 - 50' cable (0349)
44H7483		V.24 - 50' cable - Germany (0349)
44H7485		V.24 - 50' cable - Japan (0349)
44H7486		V.24 - 20' cable (0350)
44H7489		V.24 - 20' cable - Germany (0350)
44H7492		V.24 - 20' cable - Japan (0350)
44H7487		V.24 - 50' cable (0351)
44H7490		V.24 - 50' cable - Germany (0351)
44H7491		V.24 - 50' cable - Japan (0351)
44H7488		V.24 - 80' cable (0352)
44H7491		V.24 - 80' cable - Germany (0352)
44H7494		V.24 - 80' cable - Japan (0352)
44H7495		V.35 - 20' cable (0353)
44H7496		V.35 - 50' cable (0354)
44H7497		V.35 - 80' cable (0355)
44H7498		V.36 - 20' cable (0356)
44H7499		V.36 - 50' cable (0357)
44H7500		V.36 - 80' cable (0358)
44H7501		X.21 - 20' cable (0359)
44H7502		X.21 - 50' cable (0360)
97H7386		RS232 - 80' cable (0365)
97H7387		RS232 - 80' cable - Germany (0365)
97H7388		RS232 - 80' cable - Japan (0365)
44L0005		HSL cable (3m) (1460)
97H7490		HSL cable (6m) (1461)
04N7014		HSL cable (15m) (1462)
21P5014		HSL optical cable (6m) (1470)
21P5015		HSL optical cable (30m) (1471)
21P5016		HSL optical cable (100m) (1472)
21P6326		HSL optical cable (250m) (1473)
21P5477		HSL to HSL2 (6m) (1474)
21P5458		HSL to HSL2 (10m) (1475)
21P5454		HSL2 (1m) (1481)
53P2676		HSL2 (3.5m) (1482)
21P5456		HSL2 (10m) (1483)
21P5457		HSL2 (15m) (1485)
53P5704		Remote control panel cable
87G6235		SPCN cable (2m) (1463)
21F9469		SPCN cable (6m) (1464)
21F9358		SPCN cable (15m) (1465)

Part number	Units	Description
21F9359		SPCN cable (30m) (1466)
21F9360		SPCN cable (60m) (1467)
21F9415		Optical SPCN cable (100m) (0369)
21P6325		Optical SPCN cable (250m) (1468)
49G6456		External SCSI cable (.5M)
49G6457		External SCSI cable (4.5M)
49G6458		External SCSI cable (12M)
49G6459		External SCSI cable (18M)
04N2652		SPCN Y-cable
21P4162		RS485 cable
97H7486		J-TAG A cable (033A)
97H7487		J-TAG C cable (033B)
97H7604		J-TAG E cable (033C)
11P1373		50 micron Fibre Channel conversion cable (0371)
11P1374		62.5 micron Fibre Channel conversion cable (0372)
44H8388		AC Jumper Non-DLC (5094 - 5294 only) A01 to A02

**Table 3. External ac line cords**

Description	Units per assembly	Feature code	Length	Part number
Line power cord, US, Canada, Japan, 30 AMP 480 V AC 1 2	2	1303	14 feet	11P0916
Line power cord, US, Canada, Japan, 60 AMP 240 V AC 1 2	2	1301	14 feet	11P0367
Line power cord, US, Chicago, 30 AMP 480 V AC 1 2	2	1302	6 feet	11P0914
Line power cord, US, Chicago, 60 AMP 240 V AC 1 2	2	1300	6 feet	11P0365
World trade line power cord, 50 AMP 240 V AC 2	2	1304	14 feet	11P0918

**Cleaning, testing, and miscellaneous parts:** Use this parts listing for part numbers, units, and descriptions of cleaning, testing, and miscellaneous parts.

**Table 4. Cleaning, testing, and miscellaneous parts**

Part number	Units	Description
59H4366		QIC cleaning cartridge
59H3661		Test tape QIC 4GB
87G1626		Test tape QIC 16GB

Part number	Units	Description
59H4127		Test tape QIC 25GB
35L0967		Test tape QIC 50GB
46G6844		Cleaning kit, optical cables
81F8902		CD-ROM test disk (FC 4425, FC 4525)
19P0484		DVD test disk (FC 4430, FC 4530)
19P0489		DVD cleaning kit
76H5078		Mouse (FC 1700)
6165899	AR	II card wrap (TR LAN) FC 2744
21H3548	AR	LL card wrap
21H3547	AR	MM card wrap
42H0540	AR	NN card wrap
45H2364	AR	OO card wrap (WS PCI)
44H7479	AR	QQ card wrap (WAN PCI)
21H4811	AR	SS RJ45 card wrap FC 2838 and FC 2892
97H7749	AR	UU card wrap (ISDN) FC 2750
97H7745	AR	VV card wrap (ISDN) FC 2751
97H7754	AR	WW card wrap FC 2761
44L0082	AR	XX card wrap (FC 2744)
16G5609	AR	YY card wrap (FC 2743)
4N6074	AR	ZZ card wrap USB (FC 2890 and FC 2892)
75G2725	AR	Optical card wrap
21P4745	AR	GL card wrap (Ethernet) - (FC 2760 and FC 5701)
53P1677	AR	GM card wrap (FC 2742)
17G2642	1	ASync cable wrap
21H3761	1	V.24AD cable wrap
21H3762	1	RS232AD cable wrap
21H3763	1	V35AD cable wrap
21H3790	1	RS449AD cable wrap
21H3791	1	X21AD cable wrap
59X4262	AR	Twinax port tester (93X2040)
46G0298	AR	Adapter, 25 pin to 9 pin EIA232
15F8409	AR	Battery, Integrated xSeries <sup>(TM)</sup> Server (IXS) (2890) adapter card
08J0653	AR	DIMM, Integrated xSeries <sup>(TM)</sup> Server (IXS) (2890) adapter card IOP
04N2653	AR	FC 5077 jumper
03K8992		PCI card filler plate
53P2599		PCI U3 DASD tray
11P3847	AR	GF card wrap (Ethernet) - (FC 5700)
53P1678	AR	V35GM cable wrap
5556740	AR	Power cord retainer clip (Models 270, 800, 810, 820, 825, and FC 5075)

## Data recovery and general information

*For use by authorized service providers.*

### Recovery procedures

#### Verify the repair

#### Power on/off the system and logical partitions

#### Expansion unit power procedure

#### Storage I/O card modes and jumpers

#### System reference codes (SRC) address formats

#### Cryptographic I/O processor

#### Determine if the system has logical partitions

#### Determine if the system has guest partitions

#### Determine the release level of a guest partition

#### Determine the hosting partition of a guest partition

#### Determine the load source disk and alternate IPL device

#### Reclaim IOP cache storage

### Recovery procedures

*For use by authorized service providers.*

This topic contains the procedures and information to recover from disk unit failures with a minimum loss of customer data.

The procedures in this section do not give support to rack-mounted disk units such as an IBM 9337. For disk service support on rack-mounted disk units, use the *FC 504x Problem Analysis and Repair and Parts, SY44-4934* information.

The procedures in this section do not give support to IBM 2105 disk units. Use the "*IBM 2105 maintenance*" information for disk service support.

Start all service actions at [Start disk service here](#) and follow the steps in the procedures to determine the following:

- The storage protection method that is used by the customer
- When and how to save customer data
- When to exchange a failing disk unit
- How to restore saved data
- How to resume storage protection

The following sub-topics are included in the recovery procedures topic:

#### [Start disk service here](#)

## Exchange a disk unit with device parity protection

## Exchange a disk unit with mirrored protection

## Resume mirrored protection

## Save data and initialize disk unit

## Initialize disk unit and copy to disk

## Dedicated service tools (DST) procedures

**Start disk service here:** For use by authorized service providers.

Before exchanging a disk unit, you must attempt to save customer data. This procedure directs you to the correct recovery procedure to use when attempting to save customer data.

1. Is the disk unit a type 673x?
  - **No:** Continue with the next step.
  - **Yes:** Type 673x is a read cache which does not contain data that needs to be saved. Exchange the read cache using the disk unit procedure in the “Remove and replace procedures” on page 2 topic.  
**Note:** If you can get to a Dedicated Service Tools (DST) or System Service Tools (SST) screen use the concurrent maintenance procedure.  
**This ends the procedure.**
2. Choose one of the following:
  - If your system has mirrored protection for the failing disk unit, go to “Exchange a disk unit with mirrored protection” on page 542. (See “Determine storage protection status” below.)  
**This ends the procedure.**
  - If your system has device parity protection for the failing disk unit, go to “Exchange a disk unit with device parity protection” on page 541. (See “Determine storage protection status” below.)  
**This ends the procedure.**
  - If neither of the above conditions apply, then continue with the next step.
3. You are exchanging the disk unit. Choose from the following:
  - To save the data by copying to tape, go to “Save data and initialize disk unit” on page 546.
  - To save the data by copying to another disk, go to Initialize disk unit and copy to disk.  
**This ends the procedure.**

**Determine storage protection status:** The customer should know if the system is configured for storage protection and should have kept a printout of the storage protection configuration. Ask the customer for this information.

If the customer does not know if the system has storage protection configured on it, **and** the system does not IPL to Dedicated Service Tools (DST), then contact your next level of support. Otherwise, perform the following procedure.

1. Select **System Service Tools (SST)**.  
If you cannot get to SST, select DST (see Dedicated Service Tools (DST) in the *iSeries Service Functions*



) book.

**Note:** Do not IPL the system to get to DST.

2. From the Service Tools display, select **Work with disk units**—>**Display disk configuration**—>**Display disk configuration status**.



3. A list of each auxiliary storage pool (ASP) will display, showing the disk units that are members of the ASP. The *Status* column shows one of the following protection statuses for the ASP:

- **Mirrored.** These ASPs are configured for mirrored protection.

If the failing disk unit has mirrored protection, write down the status of the failing disk unit and its mirrored pair. You will need this information later in one of the recovery procedures.

- **Unprotected.** An ASP with a status of Unprotected may contain disk units that are data parity protected. Look in the *Status* column of the Display Disk Configuration Status display.

A unit with one of the following statuses has data parity protection only if all other units in the array are operational:

- DPY/Active
- DPY/Failed
- DPY/HDW Failure
- DPY/Degraded
- DPY/Power Loss
- DPY/Not Ready
- DPY/Unknown

A unit with any other status (such as DPY/Rebuild or DPY/Unprotected) does not have data parity protection.

**Examples:**

- Suppose one unit has a status of DPY/Failed while all other units have a status of DPY/Unprotected. In this case, only the unit with the DPY/Failed status is protected. Servicing the failed unit will not result in data loss. Removing any of the unprotected units could result in data loss.
- If all units have a status of DPY/Active or DPY/Degraded, all units are protected. In this case, exchanging any unit will not result in data loss.

**Note:** For more information about the meaning of a status for any unit, use the Help key as indicated on the display.

4. Return to the procedure that sent you here.

**This ends the procedure.**

**Exchange a disk unit with device parity protection:** *For use by authorized service providers.*

1. Does the failing unit have data parity protection that allows service without possible data loss? (See “Determine storage protection status” on page 540.)

- **No:** Customer data may be lost if serviced. Ask your next level of support for assistance.

**This ends the procedure.**

- **Yes:** Perform the following:

- a. Record the disk unit location and resource name for later use. If you do not already have the disk unit location information, use the location information in the Service Action Log. If the location is not available, find the address (see “System reference codes (SRC) address formats” on page 573). Use the address to find the location (see “Locations and addresses” on page 224).
- b. Exchange the failing disk unit. See “Remove and replace procedures” on page 2. Select “Disk unit (concurrent)” for the model or FC that you are working on.
- c. If the concurrent procedure fails, go to step 4 (See page 542). Otherwise, continue with the next step of this procedure.

2. Perform the following:

- a. Select System Service Tools (SST). If you cannot get to SST, select Dedicated Service Tools (DST). (See Dedicated Service Tools (DST) in the *iSeries Service Functions*



book.)

**Note:** Do not IPL the system to get to DST.

- b. From the Service Tools display, select **Work with disk units**—>**Work with disk unit recovery**—>**Rebuild disk unit data**.

Does the resource name of the disk unit you just exchanged appear on the display as a unit that can be rebuilt?

- **Yes:** Continue with the next step.
- **No:** It can take up to five minutes for the input/output processor (IOP) to report the device to the system. Keep trying the **Rebuild Disk Unit Data** option until the device is available. If the Rebuild Disk Unit Data Failed display continues to appear even after 5 minutes, try a different disk unit or ask your next level of support for assistance.

3. Perform the following:

- a. Select the disk unit on the display with the resource name of the disk unit you just exchanged.
- b. Rebuild the disk unit data. When the new disk unit is rebuilt, the display will show that the status is complete (this may take 30 minutes or longer).

**Note:** Once the rebuild has started, it is not necessary to wait to verify the array rebuild completes successfully.

- c. Return to the procedure that sent you here.

**This ends the procedure.**

4. Exchange the failing disk unit. (See “Remove and replace procedures” on page 2.)

5. Perform the following:

- a. Ask the customer to stop all active applications on the system and power the system off with the Power Down System (PWRDWSYS) command.
- b. Perform an IPL to DST. (See Performing an IPL to DST in the *iSeries Service Functions*



book.)

- c. From the Service Tools display, select **Work with disk units**—>**Work with disk unit recovery**—>**Rebuild disk unit data**.

- d. Select the disk unit on the display that was installed in place of the failing disk unit.
- e. Rebuild the disk unit data. When the new disk unit is rebuilt, the display shows that the status is complete (this may take 30 minutes or longer).
- f. After verifying that the status is complete, press Enter.

6. Perform the following:

- a. Return to the Use Dedicated Service Tools (DST) display.
- b. Select **Perform an IPL** to complete the IPL.
- c. Return to the procedure that sent you here.

**This ends the procedure.**

**Exchange a disk unit with mirrored protection:** *For use by authorized service providers.*

Definitions:

- **Local load source:** A disk used as the source for IPL data.

Primary partition:

- For system models 270 and 820, this disk unit must be located in position D01, D02, D03, or D04.

- For system models 830, 840, SB2, and SB3, this disk unit must be located in position D31, D32, D33, or D34.

Secondary partition:

- See *Locating a Secondary Partition's Load Source From the Primary Partition's Console in the iSeries Service Functions*



information.

- **Remote load source:** A load source disk unit that is not a local load source.

1. Display the disk unit status by performing the following:

- a. Select System Service Tools (SST).

If you cannot get to SST, select Dedicated Service Tools (DST) (see *Dedicated Service Tools (DST)* in the *iSeries Service Functions*



).

**Notes:**

- If the customer is running applications on the system, do not power off the system or IPL the system to get to DST.
- If you cannot get to SST or DST, and the system fails during the IPL to DST, the local load source disk unit may be in the wrong location or in a failed state. SRC B1xx4504 is displayed during the IPL to DST if a functional load source disk unit is failing or not in one of the positions indicated by the local load source definition above.

Systems that have remote load source mirror protection can be recovered by using the steps in "Recover remote load source" on page 557. If you do know if this system has remote load source mirror protection, contact your next level of support.

- b. From the Service Tools display, select **Work with disk units**—>**Display disk configuration**—>**Display disk configuration status**.

Does the failing disk unit have a status of "Suspended"?

- **Yes:** Go to step **8** (See page 544).
- **No:** Continue with the next step.

2. Does the disk unit that is mirrored to the failing disk unit have a status of "Suspended"?

- **No:** Go to step **7** (See page 544).
- **Yes:** Continue with the next step.

3. Is the failing disk unit the load source (disk unit 1)?

- **Yes:** Continue with the next step.
- **No:** Ask the customer to end all applications that are running on the system and power the system off with the Power Down System command (PWRDWSYS).

To save the data by copying to tape, go to *Save data and initialize disk unit*.

To save the data by copying to another disk, go to *Initialize disk unit and copy to disk*.

4. Is the failing load source disk unit a local load source?

- **No:** Continue with the next step.
- **Yes:** Ask the customer to end all applications that are running on the system and power the system off with the Power Down System command (PWRDWSYS).

To save the data by copying to tape, go to *Save data and initialize disk unit*.

To save the data by copying to another disk, go to *Initialize disk unit and copy to disk*.

5. Perform the following to attempt to repair the local load source. Doing this procedure reduces the duration of the repair time.

- a. Record the location of the local load source disk unit.
- b. Exchange the local load source disk unit using concurrent maintenance for the model or FC that you are working on. (See “Remove and replace procedures” on page 2.)

Was the disk unit exchanged successfully using the concurrent maintenance procedure?

- **Yes:** Go to step **9** (See page 544).
- **No:** Continue with the next step.

6. Ask the customer to stop all applications that are running on the system and power the system off with the Power Down System command (PWRDWSYS).

Was the local load source disk unit exchanged using the dedicated maintenance procedures?

- **No:** Exchange the failing local load source disk unit by using the dedicated maintenance procedures for the model or FC that you are working on. (See “Remove and replace procedures” on page 2.)

After exchanging the disk unit, go to “Recover remote load source” on page 557.

**This ends the procedure.**

- **Yes:** Go to “Recover remote load source” on page 557.  
**This ends the procedure.**

7. Is the disk unit that is mirrored to the failing disk unit missing?

**Note:** If a disk unit is missing, a note at the bottom of the display with an asterisk (\*) indicates the unit missing from the configuration.

- **Yes:** Ensure that the customer is not running any jobs before performing the following:
  - a. Power off the system.
  - b. Go to LIC-PIP11 and use cause code 0002.
  - c. If you cannot determine why the unit is missing, contact your next level of support.
  - d. If you correct the missing disk unit problem, go to “Start disk service here” on page 540 to locate and perform the correct recovery procedure.  
**This ends the procedure.**
- **No:** Does the disk unit that is mirrored to the failing disk unit have a status of “Active”?
  - **No:** Continue with the next step.
  - **Yes:** Suspend mirrored protection on the failing disk unit by performing the following:
    - a. Return to the Work With Disk Units menu.
    - b. Select **Work with disk unit recovery**—>**Suspend mirrored protection**.
    - c. Follow the instructions on the display to suspend mirrored protection on the failing disk unit. Continue with the next step.

8. Record the disk unit location for later use. Then exchange the failing disk unit. (See “Remove and replace procedures” on page 2.)

Did the concurrent remove and replace procedure fail?

- **Yes:** Go to step **12** (See page 545).
- **No:** Continue with the next step.

9. Perform the following:

- a. Select System Service Tools (SST).

If you cannot get to SST, select DST (see Dedicated Service Tools (DST) in the *iSeries Service Functions*



).

**Note:** Do not IPL the system to get to DST.

- b. Select **Work with disk units**—>**Display disk configuration**—>**Display non-configured units**.

**Note:** It can take up to 5 minutes for the IOP to report the device to the system. If the disk unit you just exchanged does not appear as a non-configured unit on the display, wait a few minutes. Then, press F5 to refresh the display. When the disk unit you just exchanged appears as a non-configured unit on the display, continue with the next step.

10. Format and initialize the disk unit by doing the following:
  - a. From the Service Tools display, select **Work with disk units**—>**Work with disk unit recovery**—>**Disk unit problem recovery procedures**—>**Initialize and format disk unit**.
  - b. On the display, select the disk unit that you just installed.
  - c. Initialize and format the disk unit. When the new disk unit is initialized and formatted, the display shows that the status is complete (this may take 30 minutes or longer).
11. Perform the following:
  - a. Return to the Work with Disk Unit Recovery display and select **Replace configured unit**.
  - b. On the Select Configured Unit to Replace display, select the configured disk unit to exchange.
  - c. On the Select Replacement Unit display, select the replacement disk unit. Return to the procedure that sent you here.  
**This ends the procedure.**
12. Is the failing disk unit a load source?
  - **No:** Go to step **14** (See page 545).
  - **Yes:** Continue with the next step.
13. Is the disk unit that is mirrored to the failing disk unit also a local load source?
  - **Yes:** Continue with the next step.
  - **No:** Ask the customer to end all applications that are running on the system and power the system off with the Power Down System command (PWRDWN SYS). Then go to “Recover remote load source” on page 557.  
**This ends the procedure.**
14. Ask the customer to end all applications that are running on the system and power the system off with the Power Down System command (PWRDWN SYS). Then, exchange the failing disk unit. (See “Remove and replace procedures” on page 2.) Continue with the next step.
15. Perform an IPL to DST. (See Performing an IPL to DST in the *iSeries Service Functions*



information.)

16. Format and initialize the disk unit by doing the following:
  - a. From the Use Dedicated Service Tools (DST) display, select **Work with disk units**—>**Work with disk unit recovery**—>**Disk unit problem recovery procedures**—>**Initialize and format disk unit**.
  - b. On the display, select the disk unit that you just installed.
  - c. Initialize and format the disk unit. When the new disk unit is initialized and formatted, the display shows that the status is complete (this may take 30 minutes or longer).
17. Perform the following:
  - a. Select the **Replace configured unit** option on the Work with Disk Unit Recovery display.
  - b. On the Select Configured Unit to Replace display, select the configured disk unit to exchange.
  - c. On the Select Replacement Unit display, select the replacement disk unit.
18. Perform the following:
  - a. Return to the Use Dedicated Service Tools (DST) display.
  - b. Select **Perform an IPL** to complete the IPL. The system copies data to the new disk unit during the IPL.

- c. Return to the procedure that sent you here.  
**This ends the procedure.**

**Resume mirrored protection:** *For use by authorized service providers.*

Use this procedure to resume mirrored protection on suspended disk units.

1. From the System Service Tools (SST) display or on the Use Dedicated Service Tools (DST) display, select **Work with disk units** → **Work with disk unit recovery** → **Resume mirrored protection**.
2. On the Resume Mirrored Protection display, select the disk unit that you just replaced. It has a status of suspended.
3. Is the disk unit in an Independent Auxiliary Storage Pool (IASP)?
  - **Yes:** The disk unit that you selected will become active when the IASP is varied on.  
**This ends the procedure.**
  - **No:** Continue with the next step.
4. Are you in SST?
  - **Yes:** The disk unit that you selected will become active when the system is operational.  
**This ends the procedure.**
  - **No:** Return to the Use Dedicated Service Tools (DST) display and perform an IPL. The disk unit that you selected will become active during the IPL.  
**This ends the procedure.**

**Save data and initialize disk unit:** *For use by authorized service providers.*

To complete this procedure, you may need the latest set of Save System (SAVSYS) or SAVSTG tapes that were made before the problem occurred. You will also need three blank tapes.

1. Are you exchanging a disk unit because a disk unit failure caused system operations to stop completely?
  - **Yes:** Continue with the next step.
  - **No:** You may be able to use the Remove Units from Configuration function of DST. This function allows you to move all data from the disk unit you want to exchange to the other disk units in the same auxiliary storage pool (ASP). Go to step 17 (See page 550).
2. Perform an IPL to Dedicated Service Tools (DST). See Performing an IPL to DST in the *iSeries Service Functions*



information.

Does the Use Dedicated Service Tools (DST) display appear?

- **Yes:** Continue with the next step.
  - **No:** Did any messages regarding missing disk units appear?
    - **Yes:** Ignore the messages and go to step 3 (See page 546).
    - **No:** Repeat this step. If the same system reference code (SRC) occurs again, the customer data is not recoverable. Go to step 5 (See page 547). If a different SRC occurs, use it to correct the problem. (See System Reference Codes.)  
**This ends the procedure.**
3. From the Use Dedicated Service Tools (DST) display, perform the following to save the customer data from the failing disk unit.
    - a. Select **Work with disk units**→**Work with disk unit recovery**→**Save disk unit data**.
    - b. On the Select Disk Unit Data to Save display, select the disk unit from which you want to save the data. Record the ASP of the disk unit that you are saving. If the disk unit is missing, you cannot save the customer data to tape at this time. Go to step 5 (See page 547).

- c. Install a tape in the tape unit. The Specify Volume Identifier prompt appears.
  - d. Enter the volume identifier for the tape. Write down the tape volume identifier. You will use the tape volume identifier later in this procedure. The Select Tape Unit prompt appears.
  - e. Select the tape unit that you loaded with a tape. The Function Status display shows the percent of disk data saved.
 

**Note:** If the tape volume identifier that you entered does not match the tape volume identifier on the tape you loaded, the Device Intervention Required prompt appears. The message "Wrong volume loaded" appears at the bottom of the display. Select the Format option and press **Enter** to continue the save operation.
  - f. If the tape is full, the Device Intervention display appears. The message "Load next volume" appears at the bottom of the display. Insert the next tape into the tape unit and select the option to retry, and then press **Enter** to continue the save operation.
  - g. Continue saving the disk unit data until the status of the save is complete.
 

**Note:** Customer data is not recoverable if one of the following occurs:

    - The copy operation does not complete.
    - A large number of unreadable pages must be copied from the disk unit.
 Continue with the next step.
4. Does the display show that the status of the save is complete?
    - **No:** Continue with the next step.
    - **Yes:** Go to step 6 (See page 547).
  5. Have you already exchanged the storage IOA?
    - **Yes:** Continue with the next step.
    - **No:** Perform the following:
      - a. Power off the system.
      - b. Exchange the storage IOA. (See "Remove and replace procedures" on page 2.) If you do not know the part number, see "Type, model, and part number list" on page 520.
      - c. Perform an IPL to Dedicated Service Tools (DST). See Dedicated Service Tools (DST) in the *iSeries Service Functions*



information. Select one of the following:

- If the same system reference code (SRC) occurs, go to step 6 (See page 547).
- If a different SRC occurs, use it to correct the problem. (See System Reference Codes.)
- If no SRC occurs, then the problem was solved by exchanging the IOA.

**This ends the procedure.**

6. Power off the system and exchange the failing disk unit. (See "Remove and replace procedures" on page 2.)
7. Did you just exchange disk unit 1 in the system unit?
  - **Yes:** Go to step 9 (See page 548).
  - **No:** Format and initialize the new disk unit by doing the following:
    - a. Perform an IPL to DST. See Performing an IPL to DST in the *iSeries Service Functions*



information.

If any messages regarding missing disk units appear, ignore the message.

- b. From the Use Dedicated Service Tools (DST) display, select the **Work with disk units**—>**Work with disk unit recovery**—>**Disk unit problem recovery procedures**—>**Initialize and format disk unit**.

- c. Select the disk unit you wish to initialize and format.
  - d. Press **F10** on the confirmation display. The system formats and initializes the new disk unit. The display shows when the status is complete (this may take 30 minutes or longer). Continue with the next step.
8. Is most of the customer data recoverable (see step 3 (See page 546))?
- **No:** Go to step 15 (See page 550).
  - **Yes:** Restore the customer data from the tape to the new disk unit by doing the following:
    - a. Return to the Work With Disk Unit Recovery display and select **Restore disk unit data**.
    - b. Enter the tape volume identifier. This is the volume identifier that you entered during the save procedure.
    - c. Install the first tape that the data was saved to in the tape unit.
    - d. On the Select Tape Unit display, select the tape unit that you want the data restored from.
    - e. On the Restore Disk Unit Data display, select the disk unit on which you want to restore the data.
    - f. Press **F10** to confirm the restore. The Function Status display shows the percentage of customer data restored. The system will IPL to the Use Dedicated Service Tools (DST) display when the restore has completed.
- Note:** Any damaged objects that were restored must be loaded again by the customer (have the customer see the *Backup and Recovery* information).

The system is ready for the next IPL.

**This ends the procedure.**

9. Is the customer data recoverable (see step 3 (See page 546))?
- **No:** Go to step 12 (See page 549).
  - **Yes:** Perform an IPL from removable media and select the option to install Licensed Internal Code and restore disk unit data. See Utility to Install Licensed Internal Code in the *iSeries Service Functions*



information.

10. Did you get a Disk Configuration Error Report with a *Unit has incorrect logical partition configuration* warning?
- **No:** Continue with the next step.
  - **Yes:** You have logical partitions that need to be recovered before you can continue with this disk unit recovery procedure. Perform the following:
    - a. Select the **Use Dedicated Service Tools (DST)** option from the IPL or Install the System display.
    - b. Enter the password 22222222. If this password is not valid, ask the customer for the correct password.
    - c. From the Use Dedicated Service Tools (DST) display, select **Work with system partitions**—>**Recover configuration data**—>**Recover primary partition configuration data**.
    - d. Review the information on the Select Disk Unit for Configuration Data Recovery display. Select the disk unit with the most recent date and the correct system serial number, and then press **Enter**. The system automatically copies the configuration data to the primary partition's load source, and performs an IPL.

Continue with the next step.

11. Restore the customer data from the tape to the new disk unit by doing the following:
- a. Select **Use Dedicated Service Tools (DST)** from the IPL or Install the System display.
  - b. Enter the password 22222222. If this password is not valid, ask the customer for the correct password.



- c. From the Use Dedicated Service Tools (DST) display, select **Work with disk units**—>**Work with disk unit recovery**—>**Restore disk unit data**.
- d. Enter the tape volume identifier. This is the volume identifier that you entered during the save procedure.
- e. Install the first tape to which the data was saved in the tape unit.
- f. On the Select Tape Unit display, select the tape unit that you want the data restored from.
- g. On the Restore Disk Unit Data display, select the disk unit on which you want to restore the data.
- h. Press F10 to confirm the restore.

The Function Status display shows the percentage of customer data restored.

**Note:** When the load-source disk is restored, the system automatically performs an IPL to the Use Dedicated Service Tools (DST) display. This occurs after the restore operation completes.

When all customer data from the tape to the disk restores successfully, the display shows that the status of the restore operation is complete. Press **Enter** to complete the restore operation.

- i. Power off the system.

**Note:** Any damaged objects that were restored must be loaded again by the customer (have the customer see the *Backup and Recovery* information).

The system is ready for the next IPL.

**This ends the procedure.**

12. Perform an IPL from removable media and select the option to install Licensed Internal Code and recover configuration. See Utility to Install Licensed Internal Code in the *iSeries Service Functions*



information.

13. Did you get a Disk Configuration Error Report with a *Unit has incorrect logical partition configuration* warning?

- **No:** Continue with the next step.
- **Yes:** You have logical partitions that need to be recovered before you can continue with this disk unit recovery procedure. Perform the following:
  - a. Enter **Use Dedicated Service Tools (DST)** from the IPL or Install the System display.
  - b. Enter the password 22222222. If this password is not valid, ask the customer for the correct password.
  - c. From the Use Dedicated Service Tools (DST) display, select **Work with system partitions**—>**Recover configuration data**—>**Recover primary partition configuration data**.
  - d. Review the information on the Select Disk Unit for Configuration Data Recovery display. Select the disk unit with the most recent date and the correct system serial number, and then press **Enter**. The system will automatically copy the configuration data to the primary partition's load source, and then perform an IPL.
  - e. Continue with the next step.

14. The system ASP will be cleared because customer data was not recoverable.

Recover the configuration to disk unit 1 in the system unit by doing the following:

- a. Enter **Use Dedicated Service Tools (DST)** from the IPL or Install the System display.
- b. Enter the password 22222222. If this password is not valid, ask the customer for the correct password.
- c. From the Use Dedicated Service Tools (DST) display, select **Work with disk units**—>**Work with disk unit recovery**.
- d. Select **Recover configuration** on the Work with Disk Unit Recovery display. This option assembles the system configuration information on disk unit 1 in the system unit.

**Note:** A warning message will appear stating that recovering the configuration destroys all system data.

- e. If you have a system with only one disk unit, a message may appear stating that your request to recover the configuration was not successful. The recover configuration function cannot be performed on a system with only one disk unit. Go to step **15** (See page 550).
  - f. Otherwise, go to step **16** (See page 550).
15. Because the disk data was not recoverable, clear the auxiliary storage pool (ASP) to which the disk unit is assigned by doing the following:
- a. Return to the Work with Disk Units display. Select **Work with disk configuration**—>**Work with ASP configuration**—>**Delete ASP data**.
  - b. Enter the **Delete** option for the ASP that you recorded in step **3** (See page 546).
  - c. Confirm the Delete ASP Data.
  - d. Return to the Work with Disk Units display, and select **Work with disk unit recovery**—>**Replace configured unit**.
  - e. On the Select Configured Unit to Replace display, select the configured disk unit to exchange.
  - f. On the Select Replacement Unit display, select the new disk unit.
  - g. Press **Enter** to confirm the replace operation (this operation takes 10 to 15 minutes to complete).
- Attention:** The auxiliary storage pool to which the disk unit is assigned was erased. The customer must restore the data to the auxiliary storage pool (have the customer see the *Backup and Recovery* information).
16. The ASP to which the failing disk unit was assigned was erased. The customer should do the following:
- If the disk unit you exchanged is in ASP 1, have the customer see the *Backup and Recovery* information to restore the operating system (OS/400 Licensed Program) and all customer data.
  - If the disk unit is in a user ASP (ASP 2 through ASP 16), data in the ASP is lost. See the *Backup and Recovery* information.
- This ends the procedure.**
17. The remaining steps of this procedure require a dedicated system.  
Have the customer do a normal power-off procedure of the system.
18. Perform an IPL to DST. See Performing an IPL to DST in the *iSeries Service Functions*



information.

Is the IPL or Install the System display shown, or is DST available?

- **No:** Go to step **2** (See page 546).
  - **Yes:** Select **Use dedicated service tools (DST)** on the display or use a function key. You need the customer password to get to the Use Dedicated Service Tools (DST) display. Continue with the next step.
19. Perform the following:
- a. From the Use Dedicated Service Tools (DST) display, select **Work with disk units**—>**Work with disk configuration**—>**Display disk configuration**—>**Display disk configuration status**.
  - b. Record the ASP, unit, serial number, type, and resource name of the disk unit.
  - c. On the Display Disk Configuration Status display, ensure the following:
    - The disk unit is not the load-source disk unit (disk unit 1).
    - No disk units are missing from the configuration.

**Note:** An asterisk (\*) next to the unit number indicates a missing unit.

    - The status field of the disk unit to be removed shows *Configured*.
- Are all these conditions true?
- **Yes:** Continue with the next step.
  - **No:** You cannot use the Remove Units from Configuration function. Go to step **2** (See page 546).

20. Return to the Display Disk Configuration display and select **Display disk configuration capacity**. Does the % *Used* field for the disk unit to be removed show an asterisk (\*)?
  - **No:** Continue with the next step.
  - **Yes:** You cannot use the Remove Units from Configuration function. Go to step 2 (See page 546).
21. Return to the Work with Disk Units display and perform the following:
  - a. Select **Work with disk unit recovery**—>**Disk unit problem recovery procedures**—>**Analyze disk unit surface**.
  - b. Select the disk unit to analyze.
  - c. Press F10 to analyze the disk unit surface.
  - d. Wait until the Analyze function is complete. This will take several minutes.
 Is the number of pages with errors zero?
  - **Yes:** Continue with the next step.
  - **No:** You cannot use the Remove Units from Configuration function. Go to step 2 (See page 546).
22. Return to the Work with Disk Units display and perform the following:
  - a. Select **Work with disk configuration**—>**Work with ASP configuration**—>**Remove units from configuration**.
  - b. Select the disk unit to be removed. If the disk unit does not display, go to step 2 (See page 546).
  - c. If the Confirm Continuation display appears, press **Enter** to continue. Wait for the next display.
  - d. If there is enough storage in the ASP, the Confirm Remove Disk Units display appears. If there is not enough storage, an error message display appears.
 Does any error message display appear?
  - **No:** Continue with the next step.
  - **Yes:** Go to step 2 (See page 546).
23. Press **Enter** to verify the Remove Disk Units function.
 

The Remove Disk Units function takes several minutes. When it is complete, a message will appear stating whether it was successful.

 Was the Remove Disk Units function successful?
  - **No:** Go to step 2 (See page 546).
  - **Yes:** Continue with the next step.
24. On the Work with ASP Configuration display, select **Display disk configuration capacity**. Press F11 twice to display non-configured units.
 

Is the unit you removed shown as a non-configured unit?

  - **No:** Go to step 2 (See page 546).
  - **Yes:** Continue with the next step.
25. You can exchange the disk unit at a later time because the disk unit is removed from the configuration. Do you want to exchange the disk unit now?
  - **Yes:** Continue with the next step.
  - **No: This ends the procedure.**
26. Power off the system and exchange the failing disk unit. (See “Remove and replace procedures” on page 2.)
27. Format and initialize the new disk unit by doing the following:
  - a. Perform an IPL to DST. See Performing an IPL to DST in the *iSeries Service Functions*



information.

- b. From the Use Dedicated Service Tools (DST) display, select **Work with disk units**—>**Work with disk unit recovery**—>**Disk unit problem recovery procedures**—>**Initialize and format disk unit**.
  - c. Select the disk unit to initialize and format.
  - d. Press F10 on the confirmation display.
  - e. The system initializes and formats the new disk unit. The display shows when the status is complete (this may take 30 minutes or longer).
28. In this step, you use the ASP, unit, serial number, type, and resource name information that you recorded in step **19** (See page 550).  
Return to the Work with Disk Units display and perform the following:
- a. Select **Work with disk configuration**—>**Work with ASP configuration**—>**Add units to ASPs**.
  - b. Specify the ASP from which the disk units were removed.
  - c. Select the unit to add to the ASP.
  - d. When the Confirm Add Units display appears, press **Enter** to continue. Wait for the next display.
29. The Add Disk Units function takes several minutes. When it is complete, a message appears stating whether it was successful.  
Was the Add Disk Units function successful?
- **Yes:** On the Work with ASP Configuration display, select **Display disk configuration capacity**. The unit you that added should be shown in the correct ASP.  
**This ends the procedure.**
  - **No:** Continue with the next step.
30. Do you have more FRUs to exchange?
- **Yes:** Go to step **26** (See page 551).
  - **No:** Ask your next level of support for assistance.  
**This ends the procedure.**

**Initialize disk unit and copy to disk:** *For use by authorized service providers.*

1. Perform an IPL to Dedicated Service Tools (DST). (See Dedicated Service Tools (DST) in the *iSeries Service Functions*



information.)

Does the Use Dedicated Service Tools (DST) display appear?

- **Yes:** Continue with the next step.
  - **No:** Repeat this step and then choose one of the following:
    - If the same system reference code (SRC) occurs again, the customer data is not recoverable. Go to step **12** (See page 554).
    - If a different SRC occurs, use it to correct the problem.  
**This ends the procedure.**
2. Is this a single disk unit system?
    - **No:** Continue with the next step.
    - **Yes:** Perform “Save data and initialize disk unit” on page 546.  
**This ends the procedure.**
  3. Is the failing disk unit the load-source disk unit (disk unit 1 contains the load-source disk unit)?
    - **Yes:** Continue with the next step.
    - **No:** Go to step **17** (See page 555).
  4. Find another disk unit on the system and perform the following to install the new disk unit:
    - a. Power off the system.

- b. Slide the disk unit you found out of the system. (See “Remove and replace procedures” on page 2.)
  - c. Be very careful with the disk unit. You will install it again when the service actions to the failing load-source disk unit are complete.
  - d. Install the new disk unit.
5. Perform an IPL to DST. (See Dedicated Service Tools (DST) in the *iSeries Service Functions*



information.) Does the Use Dedicated Service Tools (DST) display appear?

- **Yes:** Continue with the next step.
  - **No:** Repeat step 1 (See page 552).
6. From the Use Dedicated Service Tools (DST) display, perform the following to format and initialize the disk drive that you installed in step 4 (See page 552).
- a. From the Use Dedicated Service Tools (DST) display, select **Work with disk units**—>**Work with disk unit recovery**—>**Disk unit problem recovery procedures**—>**Initialize and format disk unit**.
  - b. Select the nonconfigured unit that you installed in step 4 (See page 552) as the unit to work with.
  - c. Press F10 to verify the initialization and formatting. The initialization and formatting may take 30 minutes or longer to complete.
7. Return to the Work with Disk Unit Recovery display and perform the following to copy data from the load-source disk unit to the disk drive you installed in step 4 (See page 552).
- a. Select **Copy disk unit data**.
  - b. Select the load-source disk unit (disk unit 1) as the unit to copy.
  - c. Select the nonconfigured unit that you installed in step 4 (See page 552) as the unit to copy to.
  - d. The console displays the percentage of the data copied. Write down the number of unreadable pages if it displays; you will use it later in this procedure.
  - e. Wait until the status of the copy is *Complete*. Customer data is not recoverable if one of the following occurs.
    - The copy operation does not complete.
    - There is a large number of unreadable pages to copy from the disk unit.
 Continue with the next step.
8. Perform the following to remove the failing load-source disk unit from the system:
- a. Power off the system.
  - b. Find the load-source disk unit. Slide the disk unit out of the system. (See “Remove and replace procedures” on page 2.)
9. Perform the following to move the new disk unit into the load-source disk unit location:
- a. Slide the disk unit at the location you found in step 4 (See page 552) out of the system. (See “Remove and replace procedures” on page 2.) Be very careful with the disk unit. It contains the load-source data.
  - b. Install the new disk unit into the location that used to contain the load-source disk unit.
10. Install the disk unit that you removed in step 4 (See page 552).
11. Were any pages unreadable during the copy operation (see step 7 (See page 553))?
- **No:** The system is ready for the next IPL.  
**This ends the procedure.**
  - **Yes:** Perform an IPL from removable media and restore the Licensed Internal Code. (See Restoring Licensed Internal Code in the *iSeries Service Functions*



information.) This information shows you how to perform an IPL and restore the Licensed Internal Code.

**Note:** Some objects may be damaged. The customer may have to load the damaged objects again. (See the *Backup and Recovery* information.)

**This ends the procedure.**

12. Perform the following to remove the failing load-source disk unit on the system:
  - a. Power off the system.
  - b. Find the load-source disk unit. Slide the disk unit out of the system. (See “Remove and replace procedures” on page 2.)
  - c. Install the new disk unit.
13. Perform an IPL from removable media and select the option to install Licensed Internal Code and recover the configuration. (See Utility to install Licensed Internal Code in the *iSeries Service Functions*




information, which performs an IPL and installs the Licensed Internal Code.)

14. Did you get a Disk Configuration Error Report with a *Unit has incorrect logical partition configuration* warning?
  - **No:** Continue with the next step.
  - **Yes:** You have logical partitions that need to be recovered before you can continue with this disk unit recovery procedure. Perform the following:
    - a. Select **Use Dedicated Service Tools (DST)** option from the IPL or Install the System display.
    - b. Enter the password 22222222. If this password is not valid, ask the customer for the correct password.
    - c. From the Use Dedicated Service Tools (DST) display, select **Work with system partitions**—>**Recover configuration data**—>**Recover primary partition configuration data**.
    - d. Review the information on the Select Disk Unit for Configuration Data Recovery display. Select the disk unit with the most recent date and correct system serial number and press **Enter**.
    - e. The system will automatically copy the configuration data to the primary partition’s load source, and perform an IPL.  
Continue with the next step.
15. The system ASP will be cleared because customer data was not recoverable. Recover the configuration to disk unit 1 in the system unit by doing the following:
  - a. Select **Use Dedicated Service Tools (DST)** option from the IPL or Install the System display.
  - b. Enter the password 22222222. If this password is not valid, ask the customer for the correct password.
  - c. From the Use Dedicated Service Tools (DST) display, select **Work with disk units**—>**Work with disk unit recovery**.
  - d. Select **Recover configuration option** on the Work With Disk Unit Recovery display. This option assembles the system configuration information on disk unit 1 in the system unit.

**Notes:**

  - 1) A warning message will appear stating that recovering the configuration destroys all system data.
  - 2) If you have a system with only one disk unit, a message may appear stating that your request to recover the configuration was not successful. The recover configuration function cannot be performed on a system with only one disk unit.
  - e. Continue with the next step.
16. The ASP to which the failing disk unit was assigned is cleared. The customer should do the following:

- If the disk unit you exchanged is in ASP 1, have the customer see the *Backup and Recovery* information. You must restore the operating system (OS/400 Licensed Program) and all customer data.
  - If the disk unit is in a user ASP (ASP 2 through ASP 16), data in the ASP is lost. See the *Backup and Recovery* information.  
**This ends the procedure.**
17. Is the failing unit missing from the configuration?
    - **No:** Find another disk unit on the system, other than the load-source disk unit. Continue with the next step.
    - **Yes:** Go to step **26** (See page 556).
  18. Perform the following to install a new disk unit on the system:
    - a. Power off the system. Slide the disk unit that you found in the previous step of this procedure out of the system. (See “Remove and replace procedures” on page 2.)
    - b. Be very careful with the disk unit. You will install it again when the repair actions to the failing disk unit are complete.
    - c. Install the new disk unit.
  19. Perform an IPL to DST. (See Dedicated Service Tools (DST) in the *iSeries Service Functions*


information.)

Does the Use Dedicated Service Tools (DST) display appear?

    - **Yes:** Continue with the next step.
    - **No:** Repeat step **1** (See page 552).
  20. Perform the following to format and initialize the disk drive you installed in step **18** (See page 555).
    - a. From the Use Dedicated Service Tools (DST) display, select **Work with disk units**—>**Work with disk unit recovery**—>**Disk unit problem recovery procedures**—>**Initialize and format disk unit**.
    - b. Select the nonconfigured disk unit that you installed in step **18** (See page 555) as the unit to work with.
    - c. Press F10 to verify the initialization and formatting. The initialization and formatting may take 30 minutes or longer to complete.
    - d. Return to the Work with Disk Unit Recovery display.
  21. Perform the following to copy data from the failing disk drive to the disk drive you installed in step **18** (See page 555).
    - a. Select **Copy disk unit data** on the Work with Disk Unit Recovery display.
    - b. Select the failing unit as the unit to copy.
    - c. Select the nonconfigured unit that you installed in step **18** (See page 555) as the unit to copy to.
    - d. The console displays the percentage of the data copied. Write down the number of unreadable pages if it displays; you will use it later in this procedure.
    - e. Wait until the status of the copy is *Complete*. Customer data is not recoverable if one of the following occurs:
      - The copy operation does not complete.
      - A large number of unreadable pages must be copied from the disk unit.

Continue with the next step.
  22. Perform the following to remove the failing disk unit from the system:
    - a. Power off the system.
    - b. Find the failing disk unit. Slide the disk unit out of the system.
  23. Perform the following to move the new disk unit into the location that held the failing disk unit:

- a. Remove the new disk unit from the location you found in step 17 (See page 555). Be very careful with the disk unit. It contains the disk unit data.
  - b. Install the new disk unit into the location that contained the failing disk unit. (You removed the failing disk unit in step 22 (See page 555).)
24. Install the disk unit you removed in step 18 (See page 555).
25. Were any pages unreadable during the copy operation (see step 21 (See page 555))?
- **No:** The system is ready for the next IPL.  
**This ends the procedure.**
  - **Yes:** Some objects may be damaged. The customer may have to load the damaged objects again. Have the customer see the *Backup and Recovery* information.  
**This ends the procedure.**
26. Are there multiple failing disk units under the same IOA?
- **No:** Continue with the next step.
  - **Yes:** Perform the following:
    - a. Power off the system.
    - b. Exchange the storage IOA (see “Remove and replace procedures” on page 2). If you do not know the part number, see “Type, model, and part number list” on page 520.
    - c. Go to step 1 (See page 552).
27. Because the disk data was not recoverable, clear the auxiliary storage pool (ASP) to which the disk unit is assigned by doing the following:
- a. Return to the Work with Disk Units display and select **Work with disk configuration—>Work with ASP configuration—>Delete ASP data**.
  - b. Enter **Delete** for the ASP that you recorded in step 3 (See page 552).
  - c. Confirm the Delete ASP Data.
  - d. Return to the Work with Disk Units display and select **Work with disk unit recovery—>Replace configured unit**.
  - e. On the Select Configured Unit to Replace display, select the configured disk unit to exchange.
  - f. On the Select Replacement Unit display, select the replacement disk unit.
  - g. Press **Enter** to confirm the replace operation (this operation takes 10 to 15 minutes to complete).  
**Attention:** The auxiliary storage pool to which the disk unit is assigned was erased. The customer must restore the data to the auxiliary storage pool (have the customer see the *Backup and Recovery* information).
28. The ASP to which the failing disk unit was assigned is cleared. The customer should do the following:
- If the disk unit you exchanged is in ASP 1, have the customer see the *Backup and Recovery* information. You must restore the operating system (OS/400 Licensed Program) and all customer data.
  - If the disk unit is in a user ASP (ASP 2 through ASP 16), data in the ASP is lost. See the *Backup and Recovery* information.  
**This ends the procedure.**

**Dedicated service tools (DST) procedures:** For use by authorized service providers.

This topic includes information on the following:

- “Recover remote load source” on page 557
- “Copy the contents of the LIC log” on page 558

**Definitions:**

- **Local load source:** A disk used as the source for IPL data.  
Primary partition:



- For system models 270 and 820, this disk unit must be located in position D01, D02, D03, or D04.
- For system models 830, 840, SB2 and SB3, this disk unit must be located in position D31, D32, D33, or D34.

Secondary partition:

- See *Locating a Secondary Partition's Load Source From the Primary Partition's Console* in the *iSeries Service Functions*



information.

- **Remote load source:** A load source disk unit that is not a local load source.

*Recover remote load source:*

1. Have you exchanged the local load source disk unit?
  - **Yes:** Continue with the next step.
  - **No:** Exchange the failing disk unit. See the Remove and replace procedures for the model or FC you are working on, and perform the Disk Unit (concurrent) remove and replace procedure.
2. Perform an alternate IPL to Dedicated Service Tools (DST) (Type D IPL). (See *Performing an alternate IPL to DST (Type D IPL)* in the *iSeries Service Functions*)



information.) The Install Licensed Internal Code display appears on the system console.

3. Select **Install Licensed Internal Code**. (See *Utilities to Install and Restore Licensed Internal Code* in the *iSeries Service Functions*)



information.)

When the install is complete, the system automatically performs an IPL from disk. The Disk Configuration Attention Report displays. Press F3 to exit to Dedicated Service Tools (DST). Do not select F10 from the Disk Configuration Attention Report display when you are performing this Recover remote load source procedure.

4. At this time, the load source disk is the only configured disk unit in the system. The following steps ensure that the destruction of customer data and programs will not occur.

Did you get a Disk Configuration Error Report with a *Unit has incorrect logical partition configuration* warning?

- **No:** Continue with the next step.
- **Yes:** You have logical partitions that need to be recovered before you can continue with this disk unit recovery procedure. Perform the following:
  - a. Enter the **Use Dedicated Service Tools (DST)** option from the IPL or Install the System display.
  - b. Enter the password 22222222. If this password is not valid, ask the customer for the correct password.
  - c. From the Use Dedicated Service Tools (DST) display, select **Work with system partitions**—>**Recover configuration data**—>**Recover primary partition configuration data**.
  - d. Review the information on the Select Disk Unit for Configuration Data Recovery display. Select the disk unit with the most recent date and correct system serial number and press Enter.
  - e. The system automatically copies the configuration data to the primary partition's load source, and performs an IPL. The Disk Configuration Attention Report displays. Press F3 to exit to Dedicated Service Tools (DST). Do not select F10 from the Disk Configuration Attention Report display when you are performing this Recover remote load source procedure.

**Note:** At this time, the load source disk is the only configured disk unit in the system. The following steps ensure that the destruction of customer data and programs will not occur.

Continue with the next step.

5. Select **Start the Dedicated Service Tools**.

6. Sign on to DST.

Use 22222222 as both the user ID and password. If the customer has changed the ID or password, ask the customer for the correct values.

7. Select **Work with disk units**—>**Work with disk unit recovery**.

8. Select **Recover Mirrored Load source**. This function checks the disk units that are attached to the system. If remote mirroring became enabled and a mirror-protected load-source disk unit is located, a confirmation display appears. If a mirror-protected load-source disk unit is not located, an error display appears.

9. After the confirmation display appears, press **F10** to confirm the selection and begin the recover function.

While the Recover remote load source function is running, SRC C6xx 4205 (xx represents the percentage of recovery completed) displays on the system control panel.

When the Recover remote load source function completes, the system will automatically perform an IPL from disk to the IPL or Install the System display. All of the system data, user data, and user ASPs are now available to the system.

**This ends the procedure.**

*Copy the contents of the LIC log:*

1. From the Use Dedicated Service Tools (DST) display, select **Start a Service Tool**—>**Licensed Internal Code log**.

2. Select either:

- Dump entries to tape from the LIC log
- Dump entries to diskette from the LIC log

3. At the bottom of the Dump entries to tape (or diskette) from LIC log display, type a 3 to dump entry header and complete entry.

4. Then, press **Enter**. The system will prompt you through the remainder of the displays that are used in this procedure. When the copy of the LIC log contents finishes, a message appears indicating that the dump (copy) completed.

5. Press **Enter**. Then, select **End Licensed Internal Code**.

**Attention:** The file does not close until you select **End Licensed Internal Code**. If you remove the tape or diskette before selecting this option, do not use the information that is on the tape or diskette.

**This ends the procedure.**

## Verify the repair

*For use by authorized service providers.*

Choose from the following:

- If you were sent here after completing a concurrent maintenance procedure, then follow the “Verify concurrent repair” instructions.
- If you were sent here after completing a dedicated maintenance procedure, then follow the “Verify dedicated repair” on page 560 instructions.

**Verify concurrent repair:** Use this procedure to verify a repair that was performed using concurrent maintenance.

1. Was concurrent maintenance just performed on an optical storage unit?
  - **No:** Continue with the next step.

- **Yes:** The Product Activity Log and Service Action Log, in most cases, contains an SRC for the optical storage unit when concurrent maintenance is performed which should be ignored. Perform the following:
  - Perform the Verification Procedures in the *iSeries Service Functions*



information to verify that the problem is corrected.

- Return the system to the customer and ensure that the customer verifies the system date and time.

**This ends the procedure.**

2. Use the service action log to look for any new SRCs. See Use the Service action log.

Are there any new SRCs?

- **No:** Go to step 4 (See page 559).
- **Yes:** Continue with the next step.

3. Is the SRC the same as the original SRC?

- **No:** A new symptom may have occurred. Use the SRC information and go to System reference codes to determine the cause of the problem.

**This ends the procedure.**

- **Yes:** Are there any other failing items that remain to be exchanged?

- **Yes:** Exchange the next failing item listed for this URC.

**This ends the procedure.**

- **No:** Ask your next level of support for assistance.

**This ends the procedure.**

4. Are you working with a tape device?

- **No:** Continue with the next step.
- **Yes:** Perform the Verification Procedures in the *iSeries Service Functions*



information to verify that the problem is corrected. After the verification test has completed, the tape device description will be set to the "Failed" state because a resource change was detected.

Perform the following:

- Vary the tape device description off and back on before it can be used.
- Return the system to the customer and ensure that the customer verifies the system date and time.

**This ends the procedure.**

5. Are you working with an IOP or an IOA?

- **No:** Perform the Verification Procedures in the *iSeries Service Functions*



to verify that the problem is corrected.

Resources which normally vary on automatically during IPL or which were previously varied on manually, may need to be varied back on after Verification Procedures have been completed.

Return the system to the customer and ensure that the customer verifies the system date and time.

**This ends the procedure.**

- **Yes:** Use the display hardware configuration service function to check for any missing or failed hardware.

- a. On the command line, enter the Start System Service Tools command:

STRSST

If you cannot get to SST, select DST. See *Dedicated Service Tools (DST) in the iSeries Service Functions*



**Note:** Do not IPL the system to get to DST.

- b. On the Start Service Tools Sign On display, type in a User ID with QSRV authority and Password.
- c. Select **Start a service tool** —> **Hardware service manager** —> **Logical hardware resources** —> **High-speed link (HSL)**.
- d. Select the function key for **Include non-reporting resources**.

If the IOP or IOA that you just replaced is a "failed" or "non-reporting resource", the problem has not been fixed. Continue to the next failing item in the failing item list.

**This ends the procedure.**

**Verify dedicated repair:** Use this procedure to verify a repair that was performed using dedicated maintenance.

1. Perform the following:
  - a. Verify that the power cable is plugged into the power outlet.
  - b. Verify that power is available at the customer's power outlet.
2. Select the IPL type and mode that the customer uses. See *iSeries Service Functions*



and Power on/off the system and logical partitions.

**Note:** If you select Normal mode when you power on the system, the **Dedicated service tools** option will not be shown.

3. Start an IPL by powering on the system. See *Power on/off the system and logical partitions*.  
Did the system complete the IPL?
  - **Yes:** Continue with the next step.
  - **No:** This may be a new problem. Go to Starting point for all problems.  
**This ends the procedure.**
4. Use the service action log to look for any system reference codes (SRCs) that are related to this IPL. See *Use the service action log*.  
Are there any SRCs that are related to this IPL?
  - **Yes:** Continue with the next step.
  - **No:** Perform the Verification Procedures in the *iSeries Service Functions*



information to verify that the problem is corrected.

**Note:** The verification procedures only cover removable media, communications, and diskette problems.

Return the system to the customer and ensure that the customer verifies the system date and time.

**This ends the procedure.**

5. Is the SRC the same as the original SRC?
  - **Yes:** Continue with the next step.
  - **No:** A new symptom may have occurred.  
Use the SRC information and go to System reference codes to determine the cause of the problem.  
**This ends the procedure.**

6. Are there any other failing items that remain to be exchanged?
  - **Yes:** Exchange the next failing item listed for this URC.  
**This ends the procedure.**
  - **No:** Ask your next level of support for assistance.  
**This ends the procedure.**

## Power on/off the system and logical partitions

*For use by authorized service providers.*

Use this procedure when performing the following tasks:

- “Power on the system”
- “Power on a secondary partition”
- “Power off the system” on page 562
- “Power off a system with multiple logical partitions” on page 562
- “Power off a system with multiple logical partitions using the Control Panel or primary partition’s console” on page 563
- “Power off a secondary partition” on page 564

### **Power on the system:**

**Note:** On Models 870 and 890 processor towers, there is a 5-minute delay after ac is applied for thermal calibration before system power on can be completed.

1. Open the control panel cover.
2. Press the Power (white) button on the control panel. The Power On light starts blinking at the fast rate of one blink per second as the system is powered on. The light stops blinking and stays on when power on is complete.
3. Go to Bus-PIP HSL06 to determine if there are other system units on any loop. Instead of checking a specific loop, follow the directions for each loop listed. You may stop when you find the first remote NIC on any loop.
4. If there are other system units on any loop, enable clustering and perform a failover. See the on-line help in iSeries Navigator for details.
5. If the system has multiple partitions, some secondary partitions may not power on if they have been configured to *Hold*. To determine if a secondary partition has been configured to *Hold* check the *Sys IPL Action* for the partition on the Work With Partition Status display. See iSeries Service Functions



If you need to IPL a secondary partition with a *Sys IPL Action* of *Hold*, see “Power on a secondary partition” in this page.

**This ends the procedure.**

**Power on a secondary partition: Attention:** Powering on a secondary partition will not power on any expansion I/O towers that the logical partition owns. If it is necessary to power on expansion towers owned by the secondary partition, use the “Expansion unit power procedure” on page 564 before powering on the secondary partition.

1. Go to the Primary partition’s console.
2. From the Use Dedicated Service Tools (DST) display select **Work with system partitions**.
3. On the Work With System Partitions display, select **Work with Partition Status** → **Power On** (next to the logical partition that you want to IPL), and press **Enter**.  
**This ends the procedure.**

**Power off the system: Attention:** Powering off and powering on a system with multiple partitions is different than a system with a single partition. Read and understand the power off and power on procedures referenced when a procedure directs you to power on or power off a system or partition.

Choose one of the following:

- If the system is operating under Dedicated Service Tools (DST), perform the following:
  1. Power off the system by selecting **Power off the system** on the Start a Service Tool display.
  2. To completely remove power from the system, turn off the UEPO switch, then disconnect both power cords from the customer's receptacle.
- If the system is operating under OS/400:
  1. Choose from the following:
    - For consoles that run iSeries Access, a delayed power-off is required. Enter the PWRDWN SYS command. You **must** stop all applications, including console applications, and subsystems that are running, before the delayed power-off operation is complete.
    - All others, enter the PWRDWN SYS command to power off the system.
  2. To completely remove power from the system, turn off the UEPO switch, then disconnect both power cords from the customer's receptacle.
- If you cannot use these methods, you can power off the system by using the "Control panel power button" procedure below.

**Control panel power button: Attention:** Using the control panel Power push-button to power off the system may cause unpredictable results in the data files, and the next IPL will take longer to complete.

1. Open the control panel cover.
2. Select **Manual** mode if it is not already selected. See *iSeries Service Functions*



3. Press the Power button (white) on the control panel. The Data-Function display shows **O?** (the international power-off symbol).
4. Press the Power button (white) on the control panel again.

**Note:** To cancel the power-off operation, do not press the Power button a second time. Instead, press any other control panel button.
5. The Power On light starts blinking at the fast rate of one blink per second as the system powers off. The light starts blinking at the slow rate of one blink per three seconds when the power-off operation is complete.

Does the system power off successfully?

- **Yes: This ends the procedure.**
- **No:** Perform the following:
  - a. Press the **^** or the **V** button until function 08 is shown in the Function display.
  - b. Press **Enter**. An SRC A100 8008 will appear on the Data display.
  - c. Press the Power button (white) on the control panel. The Data-Function display shows **O?** (the international power-off symbol).
  - d. Press the Power button (white) on the control panel again. The system powers off and the Power On light blinks at the slow rate of one blink per three seconds.

**Note:** To cancel the power-off operation, do not select function 08. Instead, press any other control panel button.

**This ends the procedure.**

**Power off a system with multiple logical partitions:** Use the following table to determine if the system must be powered off, or if only the secondary partition that you are servicing must be powered off.

**Note:** To completely remove power from the system, turn off the UEPO switch, then disconnect both power cords from the customer’s receptacle.

The Service Action is:	Go to:
A power or system power control network problem.	“Power off a system with multiple logical partitions using the Control Panel or primary partition’s console” on this page.
A processor, system storage or processor clock problem.	“Power off a system with multiple logical partitions using the Control Panel or primary partition’s console” on this page.
A problem with any resource owned by the Primary partition.	“Power off a system with multiple logical partitions using the Control Panel or primary partition’s console” on this page.
The SRC came from the system control panel.	“Power off a system with multiple logical partitions using the Control Panel or primary partition’s console” on this page.
The part to remove or install or isolate is in the system unit. The part to remove or install or isolate is in the system expansion unit.	“Power off a system with multiple logical partitions using the Control Panel or primary partition’s console” on this page.
The part to remove or install or isolate is in an expansion tower. <b>AND</b> The expansion tower can be powered down using the Hardware Service Manager in the <b>Secondary</b> partition that you are servicing.	Power off the secondary partition using the “Power off a secondary partition” on page 564 procedure on this page, then power off the expansion tower using the “Expansion unit power procedure” on page 564.
The part to remove or install or isolate is in an expansion tower. <b>AND</b> The expansion tower cannot be powered off from the secondary partition that owns it. The tower can only be powered off using the Hardware Service Manager in the <b>Primary</b> partition.	Power off the secondary partition using the “Power off a secondary partition” on page 564 on this page, then power off the expansion tower using the “Expansion unit power procedure” on page 564.
Powering off a secondary partition failed.	“Power off a system with multiple logical partitions using the Control Panel or primary partition’s console” on this page.
From the Primary partition you were instructed to power down the system.	“Power off a system with multiple logical partitions using the Control Panel or primary partition’s console” on this page.

**Power off a system with multiple logical partitions using the Control Panel or primary partition’s console: Attention:** This procedure will result in powering off the entire system including all secondary partitions. Be certain that all secondary partitions are able to be powered off at this time. Do not continue with this procedure until the customer will allow all logical partitions to be powered off.

**Note:** Abnormal IPLs in the secondary partitions can result from powering off the Primary partition. To avoid abnormal IPLs in secondary partitions, power off all secondary partitions, when possible, before powering off the Primary partition.

Choose one of the following:

- If the Primary partition is under Dedicated Service Tools (DST), power off the system from the Primary partition by selecting **Power Off the System** on the Start a Service Tool (SST) display of the Primary partition’s console.
- If the Primary partition is operating under OS/400, from the Primary partition’s console, enter the PWRDWN SYS command to power off the system.

If you cannot use these methods, you can power off the system by using the procedure “Control panel power button” on page 562.

**Note:** For consoles on the Primary partition that run iSeries Access, a delayed power-off operation by using the PWRDWNSYS command is required. You must stop all applications, including console applications, and subsystems that are running in all logical partitions, before the delayed power-off operation is complete.

**Attention:** Using the control panel power push-button to power off the system may cause unpredictable results in the data files, and the next IPL will take longer to complete.

**Power off a secondary partition: Attention:** Powering off a secondary partition will not power off any expansion tower(s) that the partition owns. If it is necessary to power off the expansion tower(s) owned by the secondary partition, use the “Expansion unit power procedure.” Power off the secondary partition(s) before powering off the expansion tower(s) owned by the logical partition(s).

Choose one of the following:

- If the secondary partition is operating under Dedicated Service Tools (DST), power off the logical partition by selecting **Power Off the System** on the Start a Service Tool (SST) display of the secondary partition’s console.

**Note:** To locate the secondary partition’s console or alternative console, see Locating a secondary partition’s console in the *iSeries Service Functions*



- If the secondary partition is operating under OS/400, from the logical partition’s console enter the PWRDWNSYS command to power off the secondary partition.

**Note:** For consoles on the secondary partition that run iSeries Access, a delayed power-off operation by using the PWRDWNSYS command is required. You must stop all applications, including console applications, and subsystems that are running in the **secondary** partition before the delayed power-off operation is complete.

- If the secondary partition fails to power off or if the console of the secondary partition is not functioning:
  1. Go to the console of the Primary partition.
  2. From the Use Dedicated Service Tools (DST) display, select **Work with System Partitions** —> **Work with Partition Status** —> **Power off Delayed**. Press Enter.
  3. If the secondary partition fails to power off, then go to “Power off a system with multiple logical partitions using the Control Panel or primary partition’s console” on page 563 in this page.

## Expansion unit power procedure

*For use by authorized service providers.*

Use this procedure only to power off an expansion tower or unit when you are performing one of the following:

- Removing or replacing a failing part within an expansion tower or unit.
- Adding, moving, removing, or replacing a failing item within an expansion tower or unit.

**Do not** use this procedure on the system unit or the system unit’s integrated expansion unit. For system units and system unit integrated expansion units use the “Power on/off the system and logical partitions” on page 561 procedure.

**Do not** use this procedure to replace disk units that are supported under device concurrent maintenance. Use device concurrent maintenance instead.



**Do not** use this procedure on FC 503x, FC 5076 and FC 5077 SPD migrated towers. For those towers, use the “Power on/off the system and logical partitions” on page 561 procedure.

**Do not** use this procedure for FC 504x towers. If you are powering off a FC 504x tower, then power off the system unit. Go to “Power on/off the system and logical partitions” on page 561.

**Attention:** If there is an SPD migrated tower on the HSL loop with this tower, then follow this procedure very carefully. This procedure will help you determine if the SPD migrated tower is the next tower (leading link) or the previous tower (trailing link) from this tower on the loop. Powering down a tower when the next tower or the previous tower on the loop is an SPD migrated tower will cause a machine check that will crash the entire system.

**Note:** If the system has logical partitions, then all operations on the console refer to the console of the logical partition in which you are working.

**Note:** To locate a secondary partition’s console, see *iSeries<sup>(TM)</sup> Service Functions*



Perform the following with the assistance of the customer:

1. Determine if a tower on the HSL OptiConnect Loop is configured as a switchable tower. To determine this either ask the customer or refer to Service Reference Procedures in the *iSeries Service Functions*



information.

Is the tower configured as a switchable tower?

- **Yes:** Continue with the next step.
  - **No:** The expansion tower or unit is privately owned by this system. Go to step **8** (See page 566).
2. Determine if the system which controls the SPCN for this tower also owns the tower’s HSL I/O bridge resource. To determine this, refer to Service Reference Procedures in the *iSeries Service Functions*



information.

Is the tower’s SPCN controlling system the same as the tower’s HSL I/O bridge owner?

- **No:** Continue with the next step.
  - **Yes:** Go to step **6** (See page 566).
3. Is the tower’s SPCN controlling system already IPL’d and running OS/400<sup>(R)</sup> or DST?
    - **Yes:** Continue with the next step.
    - **No:** You cannot power off the tower at this time. The SPCN controlling system must be running OS/400 or at SST/DST to power off the tower. Correct that problem first, then perform this procedure again.  
**This ends the procedure.**
  4. Work with the customer to switch ownership of the tower’s HSL I/O bridge resource to the tower’s SPCN controlling system. To do this use the *OptiConnect for OS/400* information.  
Were you able to switch ownership of the tower’s HSL I/O bridge resource to the tower’s SPCN controlling system using the *OptiConnect for OS/400* information?
    - **No:** Continue with the next step.

- **Yes:** Go to step 6 (See page 566).
- Working with the customer, use Hardware Service Manager (HSM) to switch ownership of the tower's switchable resources to the tower's SPCN (Power) controlling system. To do this use the Service Reference Procedures in the *iSeries Service Functions*



information.

Were you able to switch ownership of the tower's switchable resources to the tower's SPCN (Power) controlling system?

- **Yes:** Continue with the next step.
  - **No:** Contact your next level of support.
- This ends the procedure.**
- Perform this procedure from the SPCN controlling system's Primary partition until you are directed to do otherwise.  
Work with the customer to end the Cluster Resource Group (CRG) containing DASD units configured as independent ASPs (IASP) under the tower's HSL I/O bridge resource. Refer to the *OptiConnect for OS/400* information.  
Were you able to end the CRG?
    - **No:** Continue with the next step.
    - **Yes:** Go to step 8 (See page 566).
  - Working with the customer, use Hardware Service Manager to switch the towers mode to "Private" using the Service Reference Procedures in the *iSeries Service Functions*



information.

Were you able to switch the towers mode to "Private"?

- **Yes:** Continue with the next step.
  - **No:** Contact your next level of support.
- This ends the procedure.**
- Check to see that no other towers controlled by this system's SPCN are powered off at this time. Perform Bus PIP HSL-05, then return here and continue with the next step of this procedure.  
**Attention:** During this procedure only one tower connected to this system can be powered off. You must not have more than one tower powered off at any given time during this service action.
  - Using the HSL loop configuration and status form, identify the tower that you are working on. Look at the "Link status" of the other rows to see if there are any *failed* links, other than the links that you recorded for the tower that you are working on.  
Are there any other *failed* links that are not associated with the tower that you are working on?
    - **Yes:** Continue with the next step.
    - **No:** Go to step 11 (See page 566).
  - On the form, look to see if there are any "*operational*" links between this tower and a *failed* link.  
Are there any such "*operational*" links?
    - **No:** Continue with the next step.
    - **Yes:** You can not use this procedure to power off the tower. Doing so will cause resources to be lost as well as a possible system failure. You must power down the system to continue working on this tower. See Power on/off the system and logical partitions.  
**This ends the procedure.**
  - Examine table "HSL loop configuration and status form" on page 590, to determine if the tower that you are working on is linked to an SPD migrated tower (FC 5033, 5034, 5035, or 5077).  
Is an SPD migrated tower the next link (leading or trailing) from the tower that you are working on?

- **No:** Continue with the next step.
  - **Yes:** You can not use this procedure to power off the tower. Doing so will cause a system failure. You must power down the system to continue working on this tower. See Power on/off the system and logical partitions.  
**This ends the procedure.**
12. Are you working in a FC 5079 expansion tower or unit?
- **No:** Continue with the next step.
  - **Yes:** Power off only the expansion tower or unit (FC 5074) that you are servicing and continue with the next step.  
**Attention:** Only one expansion tower inside the 1.8 meter rack may be powered off at any given time.
13. Were you directed to power off the tower to set the SPCN configuration ID?
- **No:** Continue with the next step.
  - **Yes:** Go to step **16** (See page 567).
14. Verify that the "type numbers" (that is, IOPs, IOAs, and so on) contained in the expansion tower or unit that you are powering off matches what is shown on the system by performing the following:
- a. From the SST or DST menu, select **Start a service tool** → **Hardware service manager** → **Packaging Hardware Resources (systems, frames, cards, and so on.)**.
  - b. Select **Hardware contained within package** for the Frame ID of the Expansion Unit. Ensure that all of the resources displayed match the resources in the expansion tower or unit that you are powering off.  
**Note:** If you have only the resource name, select **Locate Resource by Resource Name** and display the *Associated packaging resource(s)* for the selected resource. Use the Frame ID shown.
15. Work with the customer to end all bus activity in the tower by performing one of the following:
- Note:** If multiple logical partitions own IOPs on the bus, then the customer will be directed to end all of the bus activity in each of those partitions.
- If the expansion tower or unit does not contain disk unit IOPs, work with the customer to end all jobs and vary off all devices, lines, and controllers for that expansion tower or unit.
  - If the expansion tower or unit contains disk unit IOPs and the disk units are not mirrored to disk units in other expansion towers or units, work with the customer to end all communications activities to these disk units by ending all subsystems.
  - If the expansion tower or unit contains disk unit IOPs and these disk units are mirrored to disk units in other expansion towers or units, you do not need to end all subsystems. Mirroring will assist during the service action.
  - If the system has a non-redundant (single hub configuration) OptiConnect bus, work with the customer to end all jobs and vary off the QSOC resources on the affected system.  
**Note:** Use the WRKOPCACT command to work with the QSOC resources on the affected system.
  - If the system has a redundant (dual hub configuration) OptiConnect bus, you do not need to end subsystems or vary off the resources. Redundancy will assist during the service action.
16. Ensure that any external DVD-RAM storage device (containing its own power supply) is powered off prior to powering off the expansion tower. Then, power off the expansion tower or unit by performing the following:
- Attention:** If any console for a logical partition resides on the bus that you are powering off, then powering off the bus will result in the loss of that partition's console. If this condition exists for the partition that you are working in, you will need to perform this procedure from the primary partition's console.
- a. Use the system console and get to the SST or DST menu. Select **Start a service tool** → **Hardware service manager** → **Packaging Hardware Resources (systems, frames, cards, and so on.)**.

- b. From the Packaging Hardware Resources display, specify the **Concurrent Maintenance** option for the expansion tower or unit that you are powering off, then press the power off PF key.

**Note:** If resources on the bus or buses are active, you will receive a message indicating which resources are in use and the expansion tower or unit will not power off. Return to step **16** (See page 567) of this procedure and ensure that all resources on the bus are varied off. Follow the instructions on the screen for locating the active resources and varying them off.

**Note:** If the system has logical partitions and multiple logical partitions own IOPs on the bus, then you must do the power off from the Primary partition's console. When instructed to power on the expansion tower or unit, do it from the console of the Primary partition.

- c. The Confirm Power Off display appears. Follow the instructions on the display. You may be directed to perform a function 68 to power the tower down and a function 69 to power the tower back on, or you may be directed to do only a function 69 to power the tower back on.

**Attention:** Make a note of what you were instructed to do at this time. You will need this information to complete the repair. Ensure that the frame ID displayed is correct for the expansion tower or unit that you intend to power off, and press Enter.

- d. Wait for the expansion tower or unit to power off. This may take up to 15 minutes depending on the I/O configuration and number of buses in the system power control network.

When the power off action is initiated, DST reports that the expansion tower or unit is powered off successfully. However, to ensure that the expansion tower or unit is actually powered off, verify that one of the two air moving devices (AMD) in the expansion tower or unit has stopped and that the power LED indicator on the expansion tower or unit control panel is off.

**Note:** If the expansion tower or unit contains disk IOPs, an attention SRC may appear on the control panel. Note the following:

- Ignore the SRCs if the expansion tower or unit completes the power off procedure.
- If the expansion tower or unit does not power off in the maximum time allowed, the system may be hung. You must power off the entire system from the control panel to do the repair.

17. Were you directed to power off the tower to set the SPCN configuration ID?

- **No:** Continue with the next step.
- **Yes:** You can now return to the procedure that sent you here to set the configuration ID in the tower card. When you are instructed to power the tower on, go to step **23b** (See page 569).

18. Is this an expansion tower with ac power cords connected from this tower's ac input/charger to an SPCN controlled expansion unit? (For example: an FC 5078/0578 expansion I/O unit)?

- **Yes:** Servicing this expansion tower may affect an SPCN controlled expansion unit that is receiving ac power from this tower. Continue with the next step.
- **No:** This expansion tower or unit can be serviced without affecting an SPCN controlled expansion unit. Go to step **21** (See page 569).

19. You may be able to maintain ac power to the expansion unit and remove power from this expansion tower so that you can service this tower. The following steps will help you to determine what you can do. Are you here to exchange the ac input/charger, any of the device boards, or the power board?

- **Yes:** You must search for an alternate ac power source for the expansion unit. An adapter cord for ac wall power outlets may be available at the customer site or an alternate expansion tower with ac power outlets may be close enough for the expansion unit's ac power cords to reach. Continue with the next step.
- **No:** You can maintain ac power to the expansion unit while you are servicing this tower. When the expansion tower is powered off, open the rear cover and trace the ac jumper cords from the three power supplies to the ac input charger. Then disconnect them at the ac charger. Power is now removed from the components that you will be working with or near. Go to step **22** (See page 569)

20. Can you find an alternate ac power source for the expansion unit?

- **No:** You must power off the system to service this tower. Do **not** attempt to power off the expansion unit. You must power on this expansion tower and then use dedicated service to power

off the system for the FRU that you are exchanging. Go to step **23** (See page 569) to power on this expansion tower. Continue with the next step.

- **Yes:** Move each of the expansion unit's ac power cords one at a time to the alternate ac power source to prevent the expansion unit from losing ac power. Go to step **21** (See page 569).
21. When the expansion tower or unit is powered off, disconnect the power cord.
  22. Remove or install the part using the procedure that sent you here. Then, continue with the next step in this procedure.

**Notes:**

- a. Ensure that you replace the failing IOP, IOA, or feature card with the same type and model.
  - b. When IOPs and feature cards are moved or removed, ensure that the configuration rules are followed.
23. Perform the following:
    - a. Reconnect the power cord or cords that you disconnected in step **21** (See page 569) or the power supply cords that you disconnected in step **19** (See page 568).

**Note:** The tower will automatically power on. However, you will need to finish the steps in this procedure to complete the power on and restore the system to normal operation.
    - b. Were you instructed to perform a function 69 to power the tower on?
      - **Yes:** Continue with the next step.
      - **No:** Go to step **23f** (See page 569).
    - c. Are you working on a system that has multiple partitions?
      - **Yes:** Continue with the next step.
      - **No:** Perform the function 69 (with the control panel set to Manual Mode) from the control panel. See Control Panel Functions in the *iSeries Service Functions*



information. Then, go to step **24** (See page 570).

- d. Are you working in the Primary partition?
  - **No:** Continue with the next step.
  - **Yes:** Perform the function 69 (with the control panel set to Manual Mode) from the control panel. See Control Panel Functions in the *iSeries Service Functions*



information. Then, go to step **24** (See page 570).

- e. Perform function 69 from the Work with Partition Status display in the Primary partition. Then, go to step **24** (See page 570).
- f. If the Packaging Hardware Resources display is available, specify the **Power on** option for the expansion tower or unit you **were** working on and press **Enter**.

**Note:** In some cases, FRU replacement may generate a new SPCN ID in **both** the expansion tower control panel and in HSM. If this occurs, use the new SPCN ID to complete the power on procedure.
- g. If the Packaging Hardware Resources display is not available, select (with the control panel set to Manual Mode) the SPCN control panel function to power on the expansion tower or unit. See Control Panel Functions in the *iSeries Service Functions*



information.

- 1) Select function **07** and press **Enter**.

- 2) Increment to **A1** and press **Enter**. This will send out a Rack Power On command on the SPCN Network which will restore power to the expansion tower or unit, which has become powered off.

24. Were you sent here from a tower card remove and replace procedure?

- **No:** Continue with the next step.
- **Yes:** Choose from the following options:
  - If you have not set the configuration ID, return to the tower card remove and replace procedure to set it.
  - If you have already set the configuration ID, then continue with the next step of this procedure.

25. From the Packaging Hardware Resources display, select **Associated Logical Resource(s)** for the expansion tower or unit.

The Logical Hardware Resources Associated a Packaging Resource display shows the status of devices and IOPs.

When all expected resources appear with an operational status, work with the customer to bring the system to the operational state.

**Note:** For V4R3 and following (more recent) releases, a resource that has been removed will show a status of "Not Connected". For earlier systems the status will show as "Disabled".

Work with the customer to restart all bus activity:

- Start all subsystems that were ended.
- Vary on all devices, lines, and controllers for the expansion tower or unit that was powered off.
- Start customer applications.

Was the tower configured as a switchable tower under iSeries OptiConnect for HSL when you entered this procedure?

- **Yes:** Continue with the next step.
- **No:** If you moved the ac power cords of an expansion unit from this tower to an alternate ac power source during this procedure, then move them back to this expansion tower. Move only one of the expansion unit's ac power cords at a time to this tower to prevent the expansion unit from losing ac power.

**This ends the procedure.**

26. Did you change the tower's mode to *Private* using HSM?

- **No:** Continue with the next step.
- **Yes:** Work with the customer to restore the mode of the tower to *Switchable* using the Service Reference Procedures in the *iSeries Service Functions*



information.

Then, continue with the next step.

27. Work with the customer to start the CRG that you ended during this procedure. Refer to the *OptiConnect for OS/400* information.

Were you able to start the CRG?

- **Yes:** Continue with the next step.
- **No:** Contact your next level of support.

**This ends the procedure.**

28. Work with the customer to restore ownership of the tower's HSL I/O bridge resource to the system that the customer prefers. Refer to the *OptiConnect for OS/400* information.

Were you able to restore the ownership of the tower's HSL I/O bridge resource to the system that the customer prefers?

- **Yes: This ends the procedure.**

- **No:** Contact your next level of support.  
**This ends the procedure.**

## Storage I/O card modes and jumpers

*For use by authorized service providers.*

The 2748 and 2778 I/O card can run in either compression mode or enhanced mode.

- **Compression Mode:** Compression mode should only be used when you want to run Integrated Hardware Disk Compression. In compression mode, the write cache size is 4 MB.
- **Enhanced Mode:** Enhanced mode has an enhanced write cache size. In Enhanced mode, the write cache size for the 2748 I/O Card is 26MB, and the maximum compressed write cache size for the 2778 I/O Card is 104MB. Enhanced mode also provides support for Extended Adaptive Cache (by attachment of a read cache device) and Extended Adaptive Cache Simulator.

The following pages are included here:

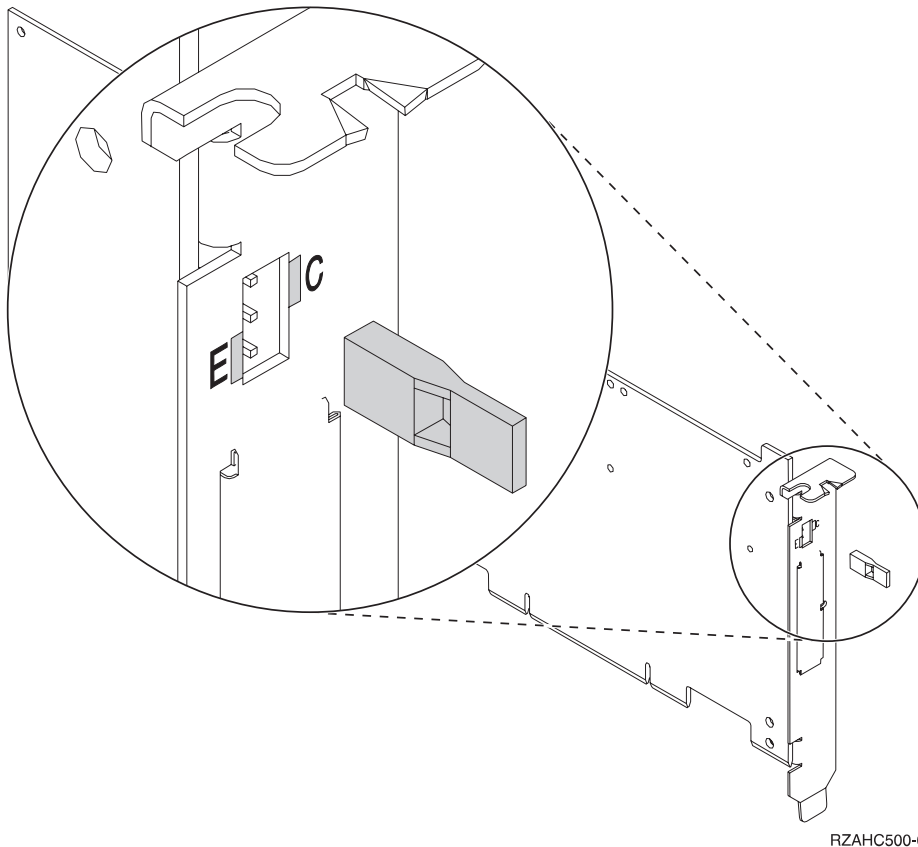
- “Set or change the mode of an I/O card.”
- When an error regarding the mode of the storage I/O card appears, the error message indicates whether the jumper is missing or overridden.
  - If the error message is CPPEA20, the I/O card has overridden the mode set by the jumper. See Mode jumper has been overridden.
  - If the error message is CPPEA21, the I/O card has detected that the jumper is missing. See Mode jumper is missing.

***Set or change the mode of an I/O card:*** *For use by authorized service providers.*

The 2748 and 2778 I/O card supports two modes: Compression and Enhanced. The rear of the I/O card is marked with a **C**, indicating compression mode, and an **E**, indicating enhanced mode. Three pins on the rear of the I/O card determine the mode of the card, depending on which of the pins have a jumper placed on them.

The jumper may be moved at any time, but changes only take effect during a system IPL. Refer to the illustration below while changing the mode jumper.

### Figure 1. Changing the mode jumper



1. Power off the system, ensuring that no jobs are currently processing. See *Power on/off the system and logical partitions*.
2. Choose from the following options:
  - To set the mode of the card to Compressed (**C**), place the jumper on the top and middle pins.
  - To set the mode of the card to Enhanced (**E**), place the jumper on the middle and bottom pins.
3. Select the IPL type and mode. See the *iSeries Service Functions*



information.

4. Power on the system.

For information on disk compression, see the *Choose compression type* page in the *Backup and Recovery* topic in the *iSeries Information Center*.

**Mode jumper has been overridden:** *For use by authorized service providers.*

The error message **CPPEA20** appears when the mode jumper has been overridden. This is due to cache data that is in a conflicting mode.

1. To begin correcting this error, examine the mode jumpers in the rear section of the storage I/O card.
 

**Note:** The mode jumper is accessible without requiring the removal of the I/O card.
2. Choose from the following options:
  - If the mode jumper is not in the desired position, follow the steps in *Set or change the mode of an I/O card*.
  - If the mode jumper is in the desired position and any other I/O card or device system reference codes (SRCs) occurred at about the same time as this error, contact your service representative.



- If the mode jumper is in the desired position and no other I/O card or device system reference codes (SRCs) occurred at about the same time as this error, then power the system down normally and IPL. See Power on/off the system and logical partitions.

**This ends the procedure.**

**Mode jumper is missing:** For use by authorized service providers.

The error message **CPPEA21** appears when the mode jumper is missing from the storage I/O card.

1. Locate the jumper.
2. Power off the system. See Power on/off the system and logical partitions.
3. Install the jumper in the correct position. See Set or change the mode of an I/O card.
4. Power on the system.

**This ends the procedure.**

## System reference codes (SRC) address formats

For use by authorized service providers.

Use this procedure to determine the IOP, IOA, or device address from either a control panel or a console display.

**Note:** If the IOP, IOA, or device is located in a migrated tower, see SRC address formats in the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site



1. Was the SRC and addressing information obtained either from a control panel display or the Main Storage Dump Manager display?
  - **No:** Continue with the next step.
  - **Yes:** Addressing information is in the Bus-Bus-Bus-Bus/Card-card/board-board (BBBBCcbb) format as follows:
    - If characters 7 and 8 of the top 16-character line of function 12 (word two) are 60:
      - The IOP address is characters 1-8 of the bottom 16-character line of function 12 (word four) in the format "BBBBCcbb".
      - The device address is characters 9-16 of the bottom 16-character line of function 12 (word five) in the format "abcd efgh".
    - If characters 7 and 8 of the top 16-character line of function 12 (word two) are 13, 17, 27, or 29:
      - The IOP address is characters 9-16 of the top 16-character line of function 12 (word three) in the format "BBBBCcbb".
      - The device address is characters 1-8 of the bottom 16-character line of function 12 (word four) in the format "abcd efgh".
    - If characters 7 and 8 of the top 16-character line of function 12 (word two) are 62:
      - The IOP address may be characters 9-16 of the top 16-character line of function 13 (word seven) in the format "BBBBCcbb".
      - The device address may be characters 1-8 of the top 16-character line of function 13 (word six) in the format "abcd efgh".

Go to step **8** (See page 575).

2. Are you using the Service Action Log?
  - **No:** Continue with the next step.

- **Yes:** Go to step 6 (See page 575).
3. Are you using OS/400 communication-diagnostic panels that are displayed by the commands VFYCMN, WRKPRB, or ANZPRB?
    - **Yes:** Go to step 10 (See page 576).
    - **No:** Continue with the next step.
  4. Addressing information is in the Bus/Board/Card format.

**Note:** This format shows the system bus number in decimal form.

If no address information is available in the console error message, check the product activity log entry that is associated with the console error message. Figure 1. Product Activity Log display example (See page 574) below is an example of a product activity log display for a storage device. Other devices (for example, workstations or communications) have similar displays. For more information about the product activity log, see Product Activity Log in the *iSeries Service Functions*



book.

**Figure 1. Product Activity Log display example**

```

+-----+
| Display Address Information for Resource |
+-----+
| Name           Type      Model      Serial          Resource |
| Storage        6607      050        83-00834        DD001   |
+-----+
| Physical Location |
| Frame ID . . . . . : 1 |
+-----+
| Device Position . . . . . : L01 |
+-----+
| Logical Address: |
| SPD Bus:         |
| System Bus . . . . . : 1 | Storage: |
| System Board . . . . . : 0 | I/O Adapter . . . . . : 0 |
| System Card . . . . . : 1 | I/O Bus . . . . . : 0 |
|                   | Controller. . . . . : 1 |
|                   | Device . . . . . : 0 |
+-----+

```

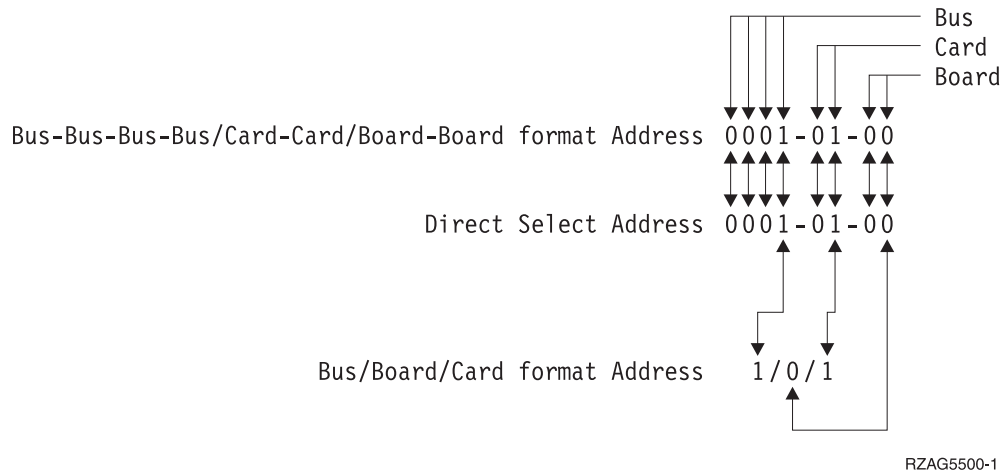
In the above example, the contents of "Storage" are defined as follows.

**Table 1. Storage definitions**

Reference	Description
<b>I/O Bus</b>	This is the SCSI bus to which the device is connected.
<b>I/O Adapter</b>	This is the adapter that the I/O bus connects to on the I/O processor.
<b>Controller</b>	This is the logical controller for the addressed device.
<b>Device</b>	This is the <i>logical</i> device that is attached to the <i>logical</i> device controller.

5. Use Figure 2. Format conversion (See page 574) below to understand how addresses in the Bus/Board/Card format relate to the Bus-Bus-Bus-Bus/Card-Card/Board-Board format. You can also use it to understand how addresses in the Bus/Board/Card format relate to the direct select addresses used in Locations and addresses.

**Figure 2. Format conversion**



**Note:** When converting from Bus/Board/Card format to Bus-Bus-Bus-Bus/Card-Card/Board-Board format, the numbers must be converted from Decimal to Hexadecimal.

Go to step 9 (See page 576) for IOA and device address information.

6. Display the FRU details for the problem that you are attempting to fix. The location information in the field-replaceable unit detail is only available for IOPs, IOAs, and devices.

Is the field-replaceable unit an IOP, IOA, or device *and* is there location information in the Location field of the display?

- **No:** Continue with the next step.
- **Yes:** Use the location information and return to the procedure that sent you here.  
**This ends the procedure.**

7. There is no location information in the Location field. Are there Additional Words displayed at the bottom of the screen?

- **No:** Go to Hexadecimal Product Activity Log Data in the *iSeries Service Functions*



book to obtain the address information. Then, return here and continue with the next step.

- **Yes:** Use the additional words to find the address information:
  - If characters 7 and 8 of word two are 60:
    - The IOP address is word four in the format "BBBBcbb".
    - The device address is word five in the format "abcd efgh".
  - If characters 7 and 8 of word two are 13, 17, 27, or 29:
    - The IOP address is word three in the format "BBBBcbb".
    - The device address is word four in the format "abcd efgh".
  - If characters 7 and 8 of word two are 62:
    - The IOP address may be word seven in the format "BBBBcbb".
    - The device address may be word six in the format "abcd efgh".

Continue with the next step.

8. The BBBBCcbb format is the hexadecimal direct select address of a card location in the system unit. The format definition is:

BBBB—System Bus

## Cc—System Card

### bb—System Board

Continue with the next step for IOA and device address information.

- Unit (Device) Address Definitions are explained in an "abcd efgh" format. For example, if the unit address is 0001 00FF, the address relates to the "abcd efgh" format as follows:

**Figure 3. Example of Unit (Device) Address Definitions**

```

0 0 0 1   0 0 F F
^ ^ ^ ^   ^ ^ ^ ^
V V V V   V V V V
a b c d   e f g h

```

The characters "abcd efgh" can have different meanings, depending on the subsystem that reports the problem. However, they define the information that is contained in the unit (device) address as follows.

**Table 2. Character definitions**

<b>Disk, tape, or optical</b>	
a	I/O adapter
b	I/O bus
cd	Controller
ef	Device
gh	FF
<b>Communications</b>	
a	I/O bus
b	Adapter
c	0
d	Port
e	0
f	Channel
GH	FF
<b>Workstation</b>	
a	I/O Bus
b	Adapter
cd	Port
e	0
f	Device
g	0
h	Session

**Note:** If the failing item or procedure that sent you here indicates that the I/O Adapter is the failing item, but you only have a device address, convert the device address into an I/O Adapter address by making the last 7 digits FFFFFFFF so that the address becomes xFFFFFFF, where x is the I/O adapter number.

**Note:** If the unit (device) address appears as FFFF FFFF, the address cannot be determined.

**This ends the procedure.**

- OS/400 communication-diagnostic panels that are displayed by the commands VFYCMN, WRKPRB, and ANZPRB use the following address format:

x1 x2 x3x4

**Table 3. Decimal Address Values**

Value	Description
<b>x1</b> = System bus	The one, two, or three digit decimal representation of the hexadecimal <b>Bus</b> value of the <b>Bus-Bus-Bus-Bus/Card-Card/Board-Board format Address</b> at the top of Figure 2. Format conversion (See page 574) shown above.
<b>x2</b> = System board	The one or two digit decimal representation of the hexadecimal <b>Board</b> value of the <b>Bus-Bus-Bus-Bus/Card-Card/Board-Board format Address</b> at the top of Figure 2. Format conversion (See page 574) shown above.
<b>x3</b> = System card	The one or two digit decimal representation of the hexadecimal <b>Card</b> value of the <b>Bus-Bus-Bus-Bus/Card-Card/Board-Board format Address</b> at the top of Figure 2. Format conversion (See page 574) shown above.
<b>x4</b> = Adapter location	The one or two digit decimal representation of the hexadecimal <b>b Adapter</b> value of the <b>Communications unit address</b> value in step 9 (See page 576).

11. Return to the information that sent you to this procedure.

**This ends the procedure.**

**Note:** See Hardware SRC formats for more formatting information.

**Hardware SRC formats:** For use by authorized service providers.

**Table 1. SRC format examples**

**Note:** Other formats exist; if necessary contact your next level of support.

SRC Word Number	Panel function, digits x to y (from left to right)	IOP SRC format 13	IOP SRC format 17	Device SRC format 27	LIC SRC Format 60	LIC SRC format 61	LIC SRC format 62	LIC SRC format 63
1	11, 1-8	TTTT RRRR	TTTT RRRR	tttt rrrr	A6xx RRRR	B6xx RRRR	ww00 RRRR	A600 RRRR
2	12, 1-8	MIGV EP13	MIGV EP17	MIGV EP27	MIGV EP60	MIGV EP61	MIGV EP62	MIGV EP63
3	12, 9-16	BBBB Ccbb	BBBB Ccbb	BBBB Ccbb	PPPP 0000	cccc cccc	cccc cccc	AAAA BBBB
4	12, 17-24	aaaa aaaa	aaaa aaaa	aaaa aaaa	BBBB Ccbb	pppp pppp	pppp pppp	CCCC DDDD
5	12, 25-32	TTTT LMMM	TTTT LMMM	tttt lmmm	aaaa aaaa	qqqq qqqq	RRRR rrrr	EEEE FFFF
6	13, 1-8	uuuu uuuu	tttt lmmm	TTTT LMMM	tttt mmmm	qqqq qqqq	aaaa aaaa	GGGG HHHH
7	13, 9-16	uuuu uuuu	ZZZZ rrrr	ZZZZ RRRR	ssss ssss	0000 0000	BBBB Ccbb	JJJJ KKKK
8	13, 17-24	uuuu uuuu	ssss ssss	ssss ssss	NNNN 0000	0000 0000	tttt lmmm	TTTT OMMM
9	13, 25-32	uuuu uuuu	uuuu uuuu	uuuu uuuu	0000 0000	0000 0000	ZZZZ ZZZZ	SSSS SSSS

For further definition of the Logical Address Format, see Logical Address Format in the *iSeries Service Functions*



information.

### SRC format examples (continued)

<b>AAAA</b>	Type of I/O Bus (see Logical Address Format — field 'A').
<b>aaaa</b>	Unit address.
<b>BBBB</b>	System Bus Number (see Logical Address Format — field 'B').
<b>BBBBCcbb</b>	Bus, bus, bus, bus, card, card, and board, board address (Direct Select Address or DSA). <ul style="list-style-type: none"> <li>• For PCI system busses 0001-0003 and 0018-FFFF the Cc field is a one digit multi-adapter bridge number and a one digit multi-adapter bridge function number.</li> <li>• For SPD system busses 0004-0017 the Cc field is a two digit card number.</li> </ul>
<b>CCCC</b>	System Board Number (see Logical Address Format — field 'C').
<b>cccc cccc</b>	Component reference code. Format 62 varies by component.
<b>DDDD</b>	System Card Number (see Logical Address Format — field 'D').
<b>EEEE</b>	(see Logical Address Format — Unit Address type — field 'E').
<b>FFFF</b>	(see Logical Address Format — Unit Address type — field 'F').
<b>GGGG</b>	(see Logical Address Format — Unit Address type — field 'G').
<b>HHHH</b>	(see Logical Address Format — Unit Address type — field 'H').
<b>JJJJ</b>	(see Logical Address Format — Unit Address type — field 'J').
<b>KKKK</b>	(see Logical Address Format — Unit Address type — field 'K').
<b>LMMM</b>	Level indicator plus 3" digit model number (for example, 0001).
<b>Immm</b>	Level indicator plus 3" digit model number of failing device.
<b>OMMM</b>	Model number of failing device (i.e. MMM='001').
<b>MIGV EP</b>	General system status.
<b>NNNN</b>	Number of disk device facilities that are missing.
<b>PPPP</b>	Cause code.
<b>pppp pppp</b>	Programming reference code.
<b>qqqq qqqq</b>	Programming reference code qualifier.
<b>RRRR</b>	Unit reference code (URC).
<b>rrrr</b>	Outboard failing unit reference code (URC).
<b>SSSSSSSS</b>	System Reference Code — this SRC is used to determine why the primary console failed to respond.
<b>ssss</b>	Serial number of failing unit.
<b>TTTT</b>	Type number or card identification number (hex).
<b>tttt</b>	Outboard failing unit type number (i.e. 6607).
<b>uuuu</b>	Unit-specific data
<b>ww</b>	SRC type
<b>ZZZZ</b>	Reserved

**Note:** Function 20 displays the machine type (940x), model number, and processor feature code.

## Cryptographic I/O processor

*For use by authorized service providers.*

This information applies to Models 830, 840, SB2, and SB3 only.

**Attention:** The type 2620 or type 2628 cryptographic I/O processor should not be removed or disconnected except by qualified IBM service personnel. Performing this action *for any reason* causes the loss of the primary encryption key.

Before disconnecting or removing the cryptographic I/O processor, ensure that the customer has access to a record of the primary encryption key. After any service action that involves disconnecting or removing the processor, the customer must reinstall the primary encryption key. This is the only way that the customer can access the data encryption function. Refer the customer to this document for more information:

*IBM Common Cryptographic Architecture Services/400 Installation and Operating Guide, SC41-0102*

## Determine if the system has logical partitions

*For use by authorized service providers.*

This procedure instructs the user on how to determine if the system has logical partitions.

1. Go to the Primary partition system console. From the SST or DST display, select **Work with system partitions**.
2. At the Work With System Partitions display:
  - a. Note the "Partition manager release".
  - b. Note the "Number of partitions".
3. Each system will always have at least one (1) or more logical partitions. The first partition in the system will always be named the "primary" partition. Some systems have the primary partition and multiple (secondary) partitions configured.

Is the number of partitions one (1)?

- **No:** The system has multiple logical partitions. Read and understand Logical Partitions in the *iSeries Service Functions*



. Then return to the procedure, failing item, or symbolic FRU that sent you here.

**This ends the procedure.**

- **Yes:** The system does not have multiple logical partitions. You are working with a system that has a primary partition only. Return to the procedure, failing item, or symbolic FRU that sent you here.

**This ends the procedure.**

## Determine if the system has guest partitions

*For use by authorized service providers.*

This procedure instructs the user on how to determine if the system has Guest Partitions.

1. Go to the Primary partition system console. From the SST or DST display, select **Work with system partitions**.
2. At the Work With System Partitions display, the number of partitions and the partition manager release level are shown. This is the release level of the Primary partition.  
Select **Display partition information**—>**Display partition operating environment**.
3. At the Display Partition Operating Environment display, the partition identifier, partition name, operating system type ("OS/400" or "Guest"), and operating system version/release will be displayed for each system partition. If there are any guest partitions on the system, they are labeled as "Guest."

Record the partition ID, partition name, operating system type, and version/release of the guest partition(s) for later use.

**This ends the procedure.**

## Determine the release level of a guest partition

*For use by authorized service providers.*

Use this procedure to determine the release level of the operating system environment in a guest partition.

1. Go to the Primary partition system console or the console of the hosting partition for a guest partition. For information on determining the hosting partition for a guest partition see “Determine the hosting partition of a guest partition.”

**Note:** The hosting partition may not have a console session established via Telnet. In that case use the “Primary” partition’s console.

2. From the SST or DST display select **Work with system partitions—>Display partition information—>Display partition operating environment.**

3. At the Display Partition Operating Environment display, the operating system (Kernel) and the operating system’s (Kernel’s) version level will be displayed.

**Note:** The guest partition must have been IPL’d at least once for the version to be displayed correctly.

Record the partition ID, partition name, operating system, and operating system version of the guest partition for later use.

**This ends the procedure.**

## Determine the hosting partition of a guest partition

*For use by authorized service providers.*

Use this procedure to determine the partition ID and partition name of the hosting partition of a guest partition.

1. Go to the Primary partition system console. From the SST or DST display, select **Work with system partitions—>Display partition information—>Display guest environment host information.** The hosting partition for a guest partition will be displayed.

2. Record the hosting partition information of the guest partition that you are working on for later use.

**This ends the procedure.**

## Determine the load source disk and alternate IPL device

*For use by authorized service providers.*

If you have a system configuration list that shows the load source disk unit and the alternate IPL device, use that information. If not, use the following information and, when found, make a note of the locations (see “Locations and addresses” on page 224).

### Find the load-source disk on systems without mirrored protection

### What you should know about load-source disks on systems with mirrored protection

### Find the load-source disks on systems with mirrored protection

### Alternate IPL device

**Find the load-source disk on systems without mirrored protection:** *For use by authorized service providers.*

The load source disk is disk unit 1 in the system unit.



**What you should know about load source disks on systems with mirrored protection:** For use by authorized service providers.

- **Local load source:** A disk used as the source for IPL data.

Primary Partition:

- For system Models 270, 800, 810, 820, and 825: This disk unit must be located in position D01, D02, D03, or D04.
- For system Models 830, 840, 870, 890, SB2, and SB3: This disk unit must be located in position D31, D32, D33, or D34.

Secondary Partition:

- See Locating a Secondary Partition's Load Source From the Primary Partition's Console in the *iSeries Service Functions*



information.

- **Remote load source:** A load source disk unit that is not a local load source. A load source that is not in one of the positions described for 'Local load source'.

#### **For systems in which both of the mirrored load source disk units are local load sources:**

The system can use either disk as its source for IPL data. The disk that first reports to the service processor is the one that is used. The system starts the IPL with this device and later synchronizes the second load source disk with the first.

If the first load source disk fails after the Licensed Internal Code determines that the system has mirrored protection, the Licensed Internal Code performs the IPL by using the second load source disk.

If the first load source disk fails before the Licensed Internal Code determines that the system has mirrored protection, the IPL stops with a system reference code (SRC) displayed.

If the system starts the IPL on a load source disk that contains data which is back level compared to the data on the other load source, the Licensed Internal Code attempts to start the IPL from the second load source disk. If the second attempt fails, the IPL stops with an SRC displayed.

#### **For systems in which one of the mirror load source disk units is a local load source, and one load source is a remote load source:**

The system can use only the local load source as its source for IPL data. The system starts the IPL with this local load source device and later synchronizes the remote load source disk with the data on the local load source. If the local load source disk fails, the IPL stops with a system reference code (SRC) displayed.

**Find the load source disks on systems with mirrored protection:** For use by authorized service providers.

When the system auxiliary storage pool (ASP1) has mirrored protection, the system has two disk units that are load source disks.

Use the **Work with disk units** option under Dedicated Service Tools (DST) or System Service Tools (SST) to display the configuration.

**Alternate IPL device:** For use by authorized service providers.

Before continuing with this procedure, go to Determine if the system has logical partitions. If the system has logical partitions, this procedure is for the Primary partition **only**. To locate the alternate IPL device for

a secondary partition, see the *iSeries Service Functions*



book.

The process of performing an IPL from removable media is an alternate or Type **D** IPL. The device that contains the IPL media is the alternate IPL device. The system searches for the alternate IPL device in a specific sequence. See Search sequence for the alternate IPL device (See page 582) below.

The alternate IPL device is attached to the system either internally (in the system unit) or externally.

The system configuration list shows the alternate IPL devices. For information on how to print the system configuration list, see Hardware Service Manager in the *iSeries Service Functions*



information.

### **Search sequence for the alternate IPL device:**

The system attempts an IPL from the first alternate IPL device it finds that is ready and contains IPL media.

The system will search system bus 1 for storage IOAs. The IOA slots are searched in the order shown below:

- For Models 270, 800, or 810 systems: C07, C01, C06, C05, C04, C03, C02.
- For Model 820 systems: C06, C05, C04, C03, C02, C01.
- For Model 825 systems: C07, C06, C05.
- For Model 830, 840, SB2, and SB3 systems: C02, C03, C04.
- For Model 870 and 890 systems: C01, C02, C03, C04.

Whenever a storage IOA is detected the system will then search for an alternate IPL device attached to that IOA. The following search sequence is used to search for an alternate IPL device attached to a storage IOA:

1. Device attached to SCSI bus 0 with a controller address of 7.
2. Device attached to SCSI bus 0 with a controller address of 6.
3. Device attached to SCSI bus 0 with a controller address of 5.
4. Device attached to SCSI bus 1 with a controller address of 7.
5. Device attached to SCSI bus 1 with a controller address of 6.
6. Device attached to SCSI bus 1 with a controller address of 5.
7. Device attached to SCSI bus 2 with a controller address of 7.
8. Device attached to SCSI bus 2 with a controller address of 6.
9. Device attached to SCSI bus 2 with a controller address of 5.
10. Device attached to SCSI bus 3 with a controller address of 7. (Models 800, 810, 825, 870, and 890 only)
11. Device attached to SCSI bus 3 with a controller address of 6. (Models 800, 810, 825, 870, and 890 only)
12. Device attached to SCSI bus 3 with a controller address of 5. (Models 800, 810, 825, 870, and 890 only)

If the system cannot find a device to use as the alternate IPL device, it displays an SRC on the control panel.

**Note:** The SRC that is displayed, is for the most severe error that is found during the search sequence for the alternate IPL device. There may not be an association between the error and the alternate IPL device that you are using. Before using the displayed SRC to analyze the problem, ensure that the alternate IPL device is ready and contains the correct IPL media.

*External device addressing:* The external alternate IPL device must have a controller address of 7, 6, or 5. For most devices, the controller comes with the address preset to 7, and you cannot alter it. For devices that have changeable addresses, use the following information:

For 34xx, 35xx, and 7208 models 342, 345 tape devices you must set the SCSI address to 0, 1, or 2. For an IBM 9427 8mm Tape Cartridge Library, you must set the tape library address for the drive that is used as the alternate IPL device to 0, 1, or 2.

For the location of the address switch on external devices, see the information in the device installation service manual.

## Reclaim IOP cache storage

*For use by authorized service providers.*

Use this procedure to reclaim IOP cache storage.

1. If you are not already using Dedicated Service Tools, perform an IPL to DST. See Performing an IPL to DST in the *iSeries Service Functions*



information. If you cannot perform a type A or B IPL, perform a type D IPL from removable media.

Did you get to DST with a Type D IPL?

- **No:** Continue with the next step.
  - **Yes:** Perform the following:
    - a. Select **Work with disk units** —> **Reclaim IOP cache storage**.
    - b. Follow the on-line instructions to reclaim cache storage. The system will automatically perform an IPL to a Disk Configuration Attention Report or a Disk Configuration Warning Report display. Select the option to display the report. Because the Reclaim Cache Storage was selected after a D-IPL, the system will now require another Reclaim Cache Storage to be performed.
2. Select **Work with disk units** —> **Work with disk unit recovery** —> **Reclaim IOP Cache Storage**.
  3. Follow the on-line instructions to reclaim cache storage. Depending on the reason for performing the Reclaim IOP Cache procedure, there may be a message requiring the ASP be cleared before performing this option, or a message stating the number of lost sectors.

**Note:** If there are lost sectors, some objects may be damaged. The customer may have to load the damaged objects again. (See the *Backup and Recovery* for more information.) When the IOP performs a Reset/Reload, if there is a storage IOA attached that is running the local load source, Cxxx xxxx codes will be displayed in the system control panel. The DST console may then have a blank screen with 01B displayed on the system control panel for up to 15 minutes before it is restored.

**This ends the procedure.**

## Forms

*For use by authorized service providers.*

**Problem summary form**

**Preventive maintenance**

**Work with electrostatic discharge-sensitive parts**

## System safety inspection

## Service log

## HSL loop configuration and status form

## HSL link status diagnosis form

## Installed features in a PCI bridge set form

## HSL cable location form

## Problem summary form

*For use by authorized service providers.*

Use this form to record information displayed on the control panel when a problem occurs on the system.

**Note:** Determine if the system has logical partitions. Go to Determine if the system has logical partitions before continuing with this procedure.

If the system has logical partitions, then use this form to record information displayed on either the control panel or the Work with Partition Status display. To access the panel functions of a logically partitioned system, see Accessing the panel functions of a logical partition in the *iSeries Service Functions*



**Note:** You may copy this form as necessary.

1. Describe the problem.
2. Record the date and time.
3. Record any control panel lights that are on.
  - Power active
  - Processor active
  - Attention
4. Does the system have logical partitions?
  - **No:** Continue with the next step.
  - **Yes:** Record the following information.

Partition information	
Partition's ID	
Partition's Name (Not Req'd)	
Partition's State Examples: Failed, Hold, etc.	
Partition's OS/400 Version and Release Example: V4R4	
Record the Date and Time system values set in the partition if possible.	

5. Use the following table to record the information shown for functions 1, 5, 11 through 13, and 20.

**Note:** If the system has logical partitions and the problem is in a secondary partition, then some of the functions may not be available. Use the system control panel or option 20 on the *Work with Partition Status* screen to record function 20 information.

**Note:** All functions may not display, depending on the failure.

Functions	Descriptions	SRC words
Function 1	IPL mode or type	
Function 5	Power SRC (if applicable)	
Function 11	SRC word 1, extended SRC characters 9-32	
Function 12	SRC words 2, 3, 4, 5	
Function 13	SRC words 6, 7, 8, 9	
Function 20	System model, type, and processor feature	

6. Return to the procedure that sent you here.

**This ends the procedure.**

## Preventive maintenance (PM)

*For use by authorized service providers.*

On models 870 and 890, the motor scroll assembly (MSA) air filters must be inspected every six months and replaced as necessary to maintain proper air flow. See the Models 870 and 890 - Motor scroll assembly (MSA) air filters remove and replace procedure.

Loading and applying all PTFs is the responsibility of the customer. Refer the customer to the Use software fixes page.

## Work with electrostatic discharge-sensitive parts

*For use by authorized service providers.*

When holding or installing electrostatic discharge-sensitive (ESD) parts, use the ESD handling kit (IBM\* part 6428316) or similar. Read the instructions inside the top cover of the carrying case.

All system logic cards are sensitive to electrostatic discharge. To prevent damage to ESD-sensitive logic cards, follow these instructions:

- Switch off power to the system or device before removing logic cards.
- Keep the ESD-sensitive card in the original shipping container until you install the card in the machine.
- When holding logic cards, move your body as little as possible to prevent an increase of static electricity from clothing fibers, carpet fibers, and furniture.
- Just before touching the ESD-sensitive card, discharge any static electricity in your body by touching the metal frame or cover of the machine. If possible, keep one hand on the frame when, for example, you are installing or removing a logic card.
- Hold the ESD-sensitive card by the edge or connector shroud cover. Do not touch the pins. If you are removing a field-replaceable module, use the correct tool.
- Return the card to the special container when it is not being used. Do not place the ESD-sensitive card on the machine cover or on a metal table. Machine covers and metal tables are electrical grounds. They make a discharge path from the ESD-sensitive card through your body to ground, increasing the risk of damage to the card. Large metal objects can be discharge paths without being grounded.

- Prevent ESD-sensitive cards from being touched accidentally by other persons. Reinstall machine covers when you are not working on the machine. Do not place unprotected ESD-sensitive cards on a table.
- Be careful when working with ESD-sensitive cards during cold weather heating. Cold weather heating causes low humidity and increases the risk of static electricity.

## **System safety inspection**

*For use by authorized service providers.*

A safety inspection for the system should be performed:

- When it is inspected for an IBM maintenance agreement
- When IBM service is requested and no service has recently been performed by IBM
- When an alterations and attachments review is performed
- When changes have been made to the equipment that might affect its safety

If the inspection indicates safety conditions that are not acceptable, the conditions must be corrected before IBM services the machine.

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

While performing this inspection, special attention must be given to these areas:

- Feature and model changes and engineering change (EC) upgrades
- Additions of non-IBM power supplies or attachments
- Missing safety covers
- Removed, faded, or painted-over safety labels
- Replacement requirements concerning parts for primary power
- Any other items relating to the product's safety

Before you start, you must have completed the *Electrical Safety Education Course for IBM Service Representatives* (self-study course 77170 or equivalent).

You will need these items:

- An IBM service representative tool kit (or equivalent)
- A copy of iSeries Service Memorandums (SMs), which include engineering change announcements (ECAs) and service aids (SAs) documents for the system
- Latest machine history, if possible
- *Electrical Safety for IBM Service Representatives*, S229-8124
- A Fluke\*\* 8060A digital voltmeter (part 8496278) or equivalent

Perform each safety check on the following pages:

- Covers - all models
- AC power cords - all models
- AC safety grounds
- Safety labels
- Power off and on (system unit) - all models
- Internal mechanical inspection

**Covers - all models:** *For use by authorized service providers.*

1. Check for damaged or missing covers.
2. Check covers for sharp edges.

**AC power cords - all models:** For use by authorized service providers.

Use this procedure to check the ac power cords on all models.

1. With the machine powered off, remove the power cord from the electrical outlet.
2. Check the power cord and power plug for visible cracks, wear, or damage.
3. Check for 1.0 ohm or less of resistance between the power cord ground and the power supply frame.
4. Ensure that the power cord is fully inserted and secured into position on the machine end.
5. Ensure that the power cord required for your country or region, and system is installed. See Determine line cord, plug, and receptacle type in the Plan for hardware and software topic in Information Center, to determine the power cable part number for systems in your country or region. This information is also available in the Plan for hardware and software



book under the Power topic.  
**This ends the procedure.**

**AC safety grounds:** For use by authorized service providers.

Use this procedure to check the ac safety grounds.

1. Ensure that all power supply mounting screws are tight.
2. Ensure that the mounting screws of the AC module or internal uninterruptible power supply are tight.  
**This ends the procedure.**

**Safety labels:** For use by authorized service providers.

Ensure that all the safety labels are visible and readable:

- Main power rating attached to the right side frame at the back of the machine.
- 240 V AC attached to each 23 pin connector (J2 and J3) on AC modules that have SPCN connectors (J15 and J16) (46G3576).
- Danger up to 240 V AC attached to the bottom frame under the power supplies (46G3575).
- Weight restriction label attached under the handle on the cover of the External Battery Backup Unit (74F9976).
- Main power rating attached to the left side frame at the back of the machine.
- Danger up to 240 V AC attached to the bottom frame under each power supply (90H6275).
- Caution Lead Acid battery attached to side of internal battery unit (21H7089).
- Weight restriction label attached to top of internal battery (74F9976).
- Weight restriction label attached to top of power sub-frame assembly (74F9976).
- Models 640, 730 and S30 only: Two weight restriction labels attached to SPD/DASD cage sub-frame assembly (74F9976).
- Two weight restriction labels attached to active back plane assembly (74F9976).
- Main power rating attached to back plate on external battery unit.
- Caution lead Acid battery label attached to back plate on external battery unit (21H7089).
- Weight restriction label attached to base at rear of external battery unit (74F9978).

**Power off and on (system unit) - all models:** For use by authorized service providers.

1. Ensure that the system powers off correctly.
2. Ensure that the system powers on correctly.

**Internal mechanical inspection:** For use by authorized service providers.

1. Ensure that air moving device (AMD) shields are installed on the AC module AMD assembly.







Date	Description of problem/action taken (do not record hours or part numbers.)	Service representative

## HSL loop configuration and status form

*For use by authorized service providers.*

Use this HSL loop configuration and status form to record the status of the HSL ports in the loop.

**Note:** You may copy this form as necessary.

HSL loop configuration and status worksheet for system \_\_\_\_\_, Loop number \_\_\_\_\_

### HSL loop configuration and status form

HSL resource information	Leading port information	Trailing port information
Resource type: _____ Resource name: _____ Frame ID: _____	Port number (may be internal): _____ Link status (operational /failed): _____	Port number (may be internal): _____ Link status (operational / failed): _____
Resource type: _____ Resource name: _____ Frame ID: _____	Port number (may be internal): _____ Link status (operational /failed): _____	Port number (may be internal): _____ Link status (operational / failed): _____
Resource type: _____ Resource name: _____ Frame ID: _____	Port number (may be internal): _____ Link status (operational /failed): _____	Port number (may be internal): _____ Link status (operational / failed): _____
Resource type: _____ Resource name: _____ Frame ID: _____	Port number (may be internal): _____ Link status (operational /failed): _____	Port number (may be internal): _____ Link status (operational / failed): _____

HSL resource information	Leading port information	Trailing port information
Resource type: <hr/> Resource name: <hr/> Frame ID: <hr/>	Port number (may be internal): <hr/> Link status (operational /failed): <hr/>	Port number (may be internal): <hr/> Link status (operational / failed): <hr/>
Resource type: <hr/> Resource name: <hr/> Frame ID: <hr/>	Port number (may be internal): <hr/> Link status (operational /failed): <hr/>	Port number (may be internal): <hr/> Link status (operational / failed): <hr/>
Resource type: <hr/> Resource name: <hr/> Frame ID: <hr/>	Port number (may be internal): <hr/> Link status (operational /failed): <hr/>	Port number (may be internal): <hr/> Link status (operational / failed): <hr/>
Resource type: <hr/> Resource name: <hr/> Frame ID: <hr/>	Port number (may be internal): <hr/> Link status (operational /failed): <hr/>	Port number (may be internal): <hr/> Link status (operational / failed): <hr/>
Resource type: <hr/> Resource name: <hr/> Frame ID: <hr/>	Port number (may be internal): <hr/> Link status (operational /failed): <hr/>	Port number (may be internal): <hr/> Link status (operational / failed): <hr/>
Resource type: <hr/> Resource name: <hr/> Frame ID: <hr/>	Port number (may be internal): <hr/> Link status (operational /failed): <hr/>	Port number (may be internal): <hr/> Link status (operational / failed): <hr/>
Resource type: <hr/> Resource name: <hr/> Frame ID: <hr/>	Port number (may be internal): <hr/> Link status (operational /failed): <hr/>	Port number (may be internal): <hr/> Link status (operational / failed): <hr/>

HSL resource information	Leading port information	Trailing port information
Resource type: _____	Port number (may be internal): _____	Port number (may be internal): _____
Resource name: _____	Link status (operational /failed): _____	Link status (operational / failed): _____
Frame ID: _____		
Resource type: _____	Port number (may be internal): _____	Port number (may be internal): _____
Resource name: _____	Link status (operational /failed): _____	Link status (operational / failed): _____
Frame ID: _____		
Resource type: _____	Port number (may be internal): _____	Port number (may be internal): _____
Resource name: _____	Link status (operational /failed): _____	Link status (operational / failed): _____
Frame ID: _____		
Resource type: _____	Port number (may be internal): _____	Port number (may be internal): _____
Resource name: _____	Link status (operational /failed): _____	Link status (operational / failed): _____
Frame ID: _____		
Resource type: _____	Port number (may be internal): _____	Port number (may be internal): _____
Resource name: _____	Link status (operational /failed): _____	Link status (operational / failed): _____
Frame ID: _____		
Resource type: _____	Port number (may be internal): _____	Port number (may be internal): _____
Resource name: _____	Link status (operational /failed): _____	Link status (operational / failed): _____
Frame ID: _____		

### HSL link status diagnosis form

*For use by authorized service providers.*

Use this form to record the status of the HSL links.

**Note:** You may copy this form as necessary.

### HSL link status diagnosis form

	Column A (starting status)		Column B	Column C (column A is "Failed" and column B is "Failed")	Column D	Column E (column B is "Failed" and column D is "Failed")
Resource with failing link	Port info	Port status	Port status		Port status	
First	Frame ID _____	Port _0 (or internal) _____	Port _0 (or internal) _____		Port _0 (or internal) _____	
	Card Position _____					
Second	Port # _____	Port _1 (or internal) _____	Port _1 (or internal) _____		Port _1 (or internal) _____	
	Frame ID _____	Port _0 (or internal) _____	Port _0 (or internal) _____		Port _0 (or internal) _____	
	Card Position _____					
	Port # _____	Port _1 (or internal) _____	Port _1 (or internal) _____		Port _1 (or internal) _____	

### Installed features in a PCI bridge set form

*For use by authorized service providers.*

Use this form to record the "PCI Bridge Set" card positions, and multi-adapter bridge function numbers.

**Note:** You may copy this form as necessary.

**Table 1. Installed features in a PCI bridge set**

PCI bridge set card positions	Multi-adapter bridge function number	Record if "IOP" or "IOA" is installed.
	0	
	1	
	2	
	3	
	4	
	5	
	6	
	7	

### HSL cable location form

*For use by authorized service providers.*

Use this worksheet to determine the loop number, frame ID, and HSL port label for an HSL cable that you will be replacing. Record information in the table below when you are directed to do so.

**Note:** You may copy this form as necessary.

**Table 1. HSL cable location form**

Loop number	From frame ID	From HSL port label	To frame ID	To HSL port label
Hexadecimal loop number _____	Hexadecimal frame ID _____		Hexadecimal frame ID _____	
Decimal loop number _____	Decimal frame ID _____		Decimal frame ID _____	
Cable type (optical or copper) _____				

## Terminology

*For use by authorized service providers.*

This topic includes a list of terms or related terms to use in conjunction with the Analyze hardware problems topic. For additional terms, see the iSeries Information Center Glossary

**ac** Alternating current.

### **adapter card**

A smaller card that attaches to a full-size card.

### **allocate**

To assign.

### **alternative console**

A display device assigned by the operating system to function as the console if the console is not working.

### **American National Standards Institute**

An organization sponsored by the Computer and Business Equipment Manufacturers Association for establishing voluntary industry standards.

**ANSI** American National Standards Institute. An organization sponsored by the Computer and Business Equipment Manufacturers Association for establishing voluntary industry standards.

**APAR** Authorized program analysis report. A request for correction of a problem in a release of an IBM-supplied program.

**ASC** Asynchronous.

**ASP** Auxiliary storage pool. A group of disk units defined from the auxiliary storage devices. See also *system ASP* and *user ASP*.

### **authorized program analysis report**

A request for correction of a problem in a release of an IBM-supplied program.

### **auxiliary storage pool**

A group of disk units defined from the auxiliary storage devices. See also *system ASP* and *user ASP*.

### **backplane**

A hardware part that has (in one or more planes) logic paths, low-voltage distribution paths, and grounding paths of a section of a machine.

### **basic assurance test**

An automatic testing of a machine when the power is switched on.

**BAT** basic assurance test. An automatic testing of a machine when the power is switched on.

**battery power unit**

A source of electrical power that can be used when the normal utility power fails.

**BBBBCcbb**

Addressing scheme for the bus (BBBB), card (Cc), and board (bb).

**bring up**

The process of starting a computer system or a subsystem that is to operate under the control of the system.

**BSC** Bisynchronous.

**card enclosure**

The area in the system unit that contains the logic cards.

**CCM** Concurrent maintenance. The process of removing or replacing hardware while the system is in use.

**CD** Compact disk; an optical storage medium.

**CFIOP**

Combined Function Input Output Processor.

**concurrent maintenance**

The process of removing or replacing hardware while the system is in use.

**configure**

To describe to a system the devices, optional features, and programs installed on the system.

**cryptography**

A method of transforming customer data to conceal its meaning. Cryptographic services include data encryption and message authentication.

**DASD** Direct access storage device. Also referred to as disk unit.

**dc** Direct current.

**debug** To check, diagnose, and remove errors in programs.

**dedicated service tools**

The part of the service function used to service the system when the operating system is not working.

**device parity protection**

A function that protects data stored on a disk unit subsystem from being lost because of the failure of a single disk unit in the disk unit subsystem. When a disk unit subsystem has device parity protection and one of the disk units in the subsystem fails, the system continues to run. The disk unit subsystem reconstructs the data after the disk unit in the subsystem is repaired or exchanged.

**DFCI** Disk file control interface.

**DIMM** Dual in-line memory module.

**disk enclosure**

The part of a disk unit that contains the read and write heads, the magnetic disks, and the actuators.

**download**

To transfer data from a processing unit to an attached device, such as a microcomputer, for processing.

**DST** Dedicated service tools. The part of the service function used to service the system when the operating system is not working.

**EMC** Electromagnetic compatibility.

- EMI** Electromagnetic interference.
- EPO** Emergency power-off.
- ERC** Extended reference code
- ESD** Electrostatic discharge.

**expansion unit**

An expansion unit contains I/O hardware such as cards, tapes and disk units. The system may have multiple expansion units.

An expansion unit can be bolted directly to the side of a system unit and is contained within the system unit covers.

An expansion unit can also be mounted on top of a rack or tower and has its own covers.

Internal signal cables interconnect the expansion unit to the system unit, rack, or tower.

- FAX** Facsimile machine.
- FC** Feature code.
- FDS** Flexible distribution system.
- FRU** Field-replaceable unit.
- GND** Ground (electrical).

**Guest partition**

This is a secondary partition which is running an operating system other than OS/400. The guest partition requires another partition to host it. The purpose of the hosting partition is to supply paths from virtual I/O in the guest partition's operating system to real I/O hardware drivers in the hosting partition. The guest partition requires a console in order to provide an interface to DST console functions. TELNET is used to establish a guest console from the hosting partition. The guest partition's console should not be confused with the console used by the operating system running in the guest partition. They are separate console sessions.

**high-speed link (HSL)**

A hardware connectivity architecture that links system processors to input/output processors (IOPs) and other system units.

**Hosting partition**

This is a partition, either the Primary or a secondary partition that is not a guest partition. The hosting partition has the real I/O devices that the virtual I/O device drivers in a guest partition connect to. The hosting partition also supplies the guest partition's DST console session, via a TELNET connection into the hosting partition. The guest partition's console is not part of the hosting partition's console. The host partition's console, the guest partition's console session and the guest partition's operating system's console are all different console sessions.

**HSL Ring**

High Speed Link Ring (shown as "System Interconnect" on the display). This is a logical ring of HSL connections originating from the HSL Controller of a processor unit, sequentially connecting I/O or other processor units and ending back at the HSL Controller where the ring originated.

- ID** Identification.

**input/output processor**

A device that processes programmed instructions and controls one or more I/O devices or adapters.

- I/O** Input/output.
- IOA** Input/output adapter.



**IOP** Input/output processor. A device that processes programmed instructions and controls one or more I/O devices or adapters.

**IPL** Initial program load.

**IXA** Integrated xSeries Adaptor (IXA)

**IXS** Integrated xSeries Server (IXS)

**LAN** Local area network. A computer network located on a user's premises within a limited geographical area.

**LIC** Licensed Internal Code.

**license**

A permission granted by competent authority to engage in a business or occupation or in an action otherwise unlawful.

**Licensed Internal Code**

Programming that defines logical operations on data.

**LICTR** Licensed Internal Code trouble report.

**local area network**

A computer network located on a user's premises within a limited geographical area.

**logo** An identifying statement.

**media** Magnetic disks or tapes and compact disks (CD).

**Multi-adapter bridge domain**

This is the set of all card locations controlled by one multi-adapter bridge.

**Multi-adapter bridge Function**

This identifies a single PCI adapter card location under an multi-adapter bridge. The multi-adapter bridge function number is part of the Direct Select Address for a PCI I/O adapter. The multi-adapter bridge number and the multi-adapter bridge function number together indicate a unique card location connected to a given system PCI bus. The bus number and the multi-adapter bridge number and the multi-adapter bridge function number together identify a unique PCI I/O resource in the system.

**MES** Miscellaneous equipment specification.

The process of either an upgrade of your existing system or moving parts from an existing system to a new system, are called miscellaneous equipment specification (MES).

**MFIOP**

Multiple Function I/O Processor.

**mirrored protection**

A function that protects data by duplicating all disk unit data on one storage unit in an auxiliary storage pool to another storage unit in the same auxiliary storage pool.

**MSD** Main store dump.

**MSIOP**

Magnetic Storage I/O Processor.

**Multi-adapter Bridge**

This is a PCI bridge resource in the I/O hardware which provides for the connection of PCI adapters to the system PCI I/O bus. Each PCI adapter connected under an multi-adapter bridge is controlled individually by the multi-adapter bridge. The multi-adapter bridge number identifies an multi-adapter bridge on a given system PCI I/O bus and is part of the Direct Select Address for a PCI I/O adapter. The bus number and the multi-adapter bridge number together identify a unique multi-adapter bridge in the system.

**network interface controller (NIC)**

Hardware that provides the interface control between system main storage and external high-speed link (HSL) ports.

**OEM** Original equipment manufacturer.

**odd/even bus pair**

An optical link card supports a pair of buses; one has an even number and the other has an odd number (for example, bus 2 and 3).

**optical redundancy**

A second optical path used to keep the system operational when a hardware failure occurs.

**overview**

A general survey or summary.

**PAR** Problem analysis and resolution.

**PCC** Power control compartment.

**PIP** Problem isolation procedure. Written information used by service representatives to repair IBM equipment. A problem isolation procedure contains actions and yes/no questions that send the user to the failing part of the equipment.

**plenum**

A space used for environmental air.

**PM** Preventive maintenance.

**pool** (1) A readily available supply.

(2) A designated place to store data.

**power off**

To turn off the power.

**power on**

To turn on the power.

**primary link**

The optical connection between a local optical link card and a remote bus adapter card.

**problem isolation procedure**

Written information used by service representatives to repair IBM equipment. A problem isolation procedure contains actions and yes/no questions that send the user to the failing part of the equipment.

**program temporary fix**

A temporary solution to, or bypass of, a problem in a licensed program.

**PTF** Program temporary fix. A temporary solution to, or bypass of, a problem in a licensed program.

**reallocate**

To allocate again.

**restore**

To return to an original value or image; for example, to restore data to main storage from auxiliary storage.

**SAL** Service action log

**SAVSYS tape**

A tape that is generated by the SAVSYS command, on which system data is recorded and saved.

**SCSI** Small Computer System Interface

**SDIOP**

Storage Device I/O Processor.

**secondary link**

The optical connection between two remote bus adapter cards.

**sign-on**

The procedure by which the user starts working at a workstation.

**SIMM**

Single in-line memory module.

**single bus connection**

Only one bus is connected to the optical link card. One connector is not used.

**SPCN** System Power Control Network.**SPD bus**

An AS/400 input/output bus architecture.

**SRC**

System reference code. A group of characters that identifies the machine status or a specific error condition. The system reference code can be displayed on the console from the problem log.

**system ASP**

The auxiliary storage pool where system programs and data reside. It is the storage pool used if a storage pool is not defined by the user. See also *auxiliary storage pool* and *user ASP*.

**system reference code**

A group of characters that identifies the machine status or a specific error condition. The system reference code can be displayed on the console from the problem log.

**tower**

A frame-like structure that, since the introduction of the 3xx/4xx models, has been used to repackage devices formerly housed in racks. Towers provide the equivalent function of racks and have since replaced racks.

A tower can be used for either the system unit or for system expansion. The system unit always contains the processor(s). Towers are standalone and usually have black covers. Like racks, towers can vary in height.

**UEPO**

Unit emergency power-off.

**upgrade**

To change the system configuration to a later level.

**URC**

Unit reference code. Last 4 characters of SRC.

**user ASP**

One or more auxiliary storage pools used to isolate journals, journal receivers, and save files from the other system objects stored in the system ASP. See also *auxiliary storage pool* and *system ASP*.

**vital product data**

A structured description of a device or program. For devices, it is recorded in the device at manufacture and includes at least the type, model, serial number, and installed features. It may include the manufacturer's ID and other fields. For programs, it is compiled as a data area accompanying the program and includes the name of the licensed program or Licensed Internal Code group, the release and modification, the program module names, the national language or languages selected, and possibly other fields. Vital product data is transferred from the device to the system and is retained for display. Vital product data is also visible on the device name plate or a similar tag.

**VLIC**

Vertical Licensed Internal Code.

**VPD**

See *vital product data*.

**workstation I/O processor**

An I/O processor card in the card enclosure that provides the direct connection of local workstations to the system.

**WSIOP**

Workstation I/O processor. An I/O processor card in the card enclosure that provides the direct connection of local workstations to the system.

**X.25** In data communications, a specification of the CCITT that defines the interface to an X.25 (packet-switching) network.

## Related information for Analyze hardware problems

*For use by authorized service providers.*

Listed below are the iSeries<sup>™</sup> manuals (in PDF format), Web sites, and Information Center topics that relate to the Analyze hardware topic. You can view or print any of the PDFs.

**Manuals**

- **iSeries Service Functions**



(about 1780 KB or 360 pages)

A manual located on the *Supplemental Manuals* CD-ROM that provides basic information about iSeries service functions that are commonly used by hardware service representatives. The book is meant to assist the hardware service representative in gathering information about commonly encountered hardware problems. It does not cover all service functions available on the iSeries server.

- **Migrated Expansion Tower Problem Analysis, Repair and Parts**



, on the V5R1 Supplemental Manuals web site (about 3000 KB or 921 pages)

A manual that is located on the version 5 release 1 iSeries installation and service library Web site that provides information to be used in conjunction with the Analyze hardware topic. You will be referred to this book when necessary, you should never go to this book as a starting point.

- **Plan for hardware and software**



(about 1790 KB or 540 pages)

The planning information in this topic helps you place the server, plan power needs, print any special cabling or setup instructions, meet any PC requirements, and prepare for unique configurations based on how you will use the server (for example, clustering of servers, Internet connections and rack mounting).

**Web sites**

- For information on Optical Disk Drive in the Optical Library, refer to the All 3995 Publications and Documentation Web Site at <http://snjInt02.sanjose.ibm.com/tape/tapetec.nsf/pages/3995pub>



- The *ESS Web Interface User's Guide* can be found at the following URL:  
<http://ssddom02.storage.ibm.com/disk/ess/documentation.html>

**iSeries Information Center**

- For information about commands related to communications, see the CL command finder in the Programming, CL topic.
- For information about Windows NT<sup>(R)</sup> Server user problems, refer to the Windows<sup>(R)</sup> server on iSeries<sup>(TM)</sup> page in the Networking topic.

**Cabling information:**

- Planning for cabling: See the Plan for cables page in the Plan for hardware and software, Planning reference topic.
- For power cable part numbers: See Determine line cord, plug, and receptacle type in the Plan for hardware and software topic.
- For Cabling instructions: See Print server and rack cabling instructions in the Plan for hardware and software topic.
- For information on environment controls, see Environment reference in the Plan for hardware and software topic.
- For information on problem handling procedures, see the Getting started with server troubleshooting page in the Troubleshooting and service topic.
- For information on disk compression, see the Choose compression type page in the Systems management, Back up your server, Before you save anything topic.

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