



System i and System p  
Fans







System i and System p  
Fans

**Note**

Before using this information and the product it supports, read the information in “Notices” on page 99 and the *IBM Systems Safety Information* manual, G229-9054.

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## Safety and environmental notices

Safety notices may be printed throughout this guide:

- **DANGER** notices call attention to a situation that is potentially lethal or extremely hazardous to people.
- **CAUTION** notices call attention to a situation that is potentially hazardous to people because of some existing condition.
- **Attention** notices call attention to the possibility of damage to a program, device, system, or data.

### World Trade safety information

Several countries require the safety information contained in product publications to be presented in their national languages. If this requirement applies to your country, a safety information booklet is included in the publications package shipped with the product. The booklet contains the safety information in your national language with references to the U.S. English source. Before using a U.S. English publication to install, operate, or service this product, you must first become familiar with the related safety information in the booklet. You should also refer to the booklet any time you do not clearly understand any safety information in the U.S. English publications.

### Laser safety information

IBM® System i® models and System p® servers can use I/O cards or features that are fiber-optic based and that utilize lasers or LEDs.

#### Laser compliance

All lasers are certified in the U.S. to conform to the requirements of DHHS 21 CFR Subchapter J for class 1 laser products. Outside the U.S., they are certified to be in compliance with IEC 60825 as a class 1 laser product. Consult the label on each part for laser certification numbers and approval information.

#### CAUTION:

**This product might contain one or more of the following devices: CD-ROM drive, DVD-ROM drive, DVD-RAM drive, or laser module, which are Class 1 laser products. Note the following information:**

- **Do not remove the covers. Removing the covers of the laser product could result in exposure to hazardous laser radiation. There are no serviceable parts inside the device.**
- **Use of the controls or adjustments or performance of procedures other than those specified herein might result in hazardous radiation exposure.**

(C026)

#### CAUTION:

**Data processing environments can contain equipment transmitting on system links with laser modules that operate at greater than Class 1 power levels. For this reason, never look into the end of an optical fiber cable or open receptacle. (C027)**

#### CAUTION:

**This product contains a Class 1M laser. Do not view directly with optical instruments. (C028)**

#### CAUTION:

**Some laser products contain an embedded Class 3A or Class 3B laser diode. Note the following information: laser radiation when open. Do not stare into the beam, do not view directly with optical instruments, and avoid direct exposure to the beam. (C030)**

## Power and cabling information for NEBS (Network Equipment-Building System) GR-1089-CORE

The following comments apply to the IBM System i models and IBM System p servers that have been designated as conforming to NEBS (Network Equipment-Building System) GR-1089-CORE:

The equipment is suitable for installation in the following:

- Network telecommunications facilities
- Locations where the NEC (National Electrical Code) applies

The intrabuilding ports of this equipment are suitable for connection to intrabuilding or unexposed wiring or cabling only. The intrabuilding ports of this equipment *must not* be metallically connected to the interfaces that connect to the OSP (outside plant) or its wiring. These interfaces are designed for use as intrabuilding interfaces only (Type 2 or Type 4 ports as described in GR-1089-CORE) and require isolation from the exposed OSP cabling. The addition of primary protectors is not sufficient protection to connect these interfaces metallically to OSP wiring.

**Note:** All Ethernet cables must be shielded and grounded at both ends.

The ac-powered system does not require the use of an external surge protection device (SPD).

The dc-powered system employs an isolated DC return (DC-I) design. The DC battery return terminal *shall not* be connected to the chassis or frame ground.

### Product recycling and disposal

This unit must be recycled or discarded according to applicable local and national regulations. IBM encourages owners of information technology (IT) equipment to responsibly recycle their equipment when it is no longer needed. IBM offers a variety of product return programs and services in several countries to assist equipment owners in recycling their IT products. Information on IBM product recycling offerings can be found on IBM's Internet site at <http://www.ibm.com/ibm/environment/products/prp.shtml>.

Esta unidad debe reciclarse o desecharse de acuerdo con lo establecido en la normativa nacional o local aplicable. IBM recomienda a los propietarios de equipos de tecnología de la información (TI) que reciclen responsablemente sus equipos cuando éstos ya no les sean útiles. IBM dispone de una serie de programas y servicios de devolución de productos en varios países, a fin de ayudar a los propietarios de equipos a reciclar sus productos de TI. Se puede encontrar información sobre las ofertas de reciclado de productos de IBM en el sitio web de IBM <http://www.ibm.com/ibm/environment/products/prp.shtml>.



EU Only

**Note:** This mark applies only to countries within the European Union (EU) and Norway.

Appliances are labeled in accordance with European Directive 2002/96/EC concerning waste electrical and electronic equipment (WEEE). The Directive determines the framework for the return and recycling of used appliances as applicable throughout the European Union. This label is applied to various products to indicate that the product is not to be thrown away, but rather reclaimed upon end of life per this Directive.

In accordance with the European WEEE Directive, electrical and electronic equipment (EEE) is to be collected separately and to be reused, recycled, or recovered at end of life. Users of EEE with the WEEE marking per Annex IV of the WEEE Directive, as shown above, must not dispose of end of life EEE as unsorted municipal waste, but use the collection framework available to customers for the return, recycling, and recovery of WEEE. Customer participation is important to minimize any potential effects of EEE on the environment and human health due to the potential presence of hazardous substances in EEE. For proper collection and treatment, contact your local IBM representative.

## Battery return program

This product may contain sealed lead acid, nickel cadmium, nickel metal hydride, lithium, or lithium ion battery. Consult your user manual or service manual for specific battery information. The battery must be recycled or disposed of properly. Recycling facilities may not be available in your area. For information on disposal of batteries outside the United States, go to <http://www.ibm.com/ibm/environment/products/batteryrecycle.shtml> or contact your local waste disposal facility.

In the United States, IBM has established a return process for reuse, recycling, or proper disposal of used IBM sealed lead acid, nickel cadmium, nickel metal hydride, and other battery packs from IBM Equipment. For information on proper disposal of these batteries, contact IBM at 1-800-426-4333. Please have the IBM part number listed on the battery available prior to your call.

For Taiwan: Please recycle batteries.



For the European Union:



**Note:** This mark applies only to countries within the European Union (EU).

Batteries or packaging for batteries are labeled in accordance with European Directive 2006/66/EC concerning batteries and accumulators and waste batteries and accumulators. The Directive determines the framework for the return and recycling of used batteries and accumulators as applicable throughout the European Union. This label is applied to various batteries to indicate that the battery is not to be thrown away, but rather reclaimed upon end of life per this Directive.

In accordance with the European Directive 2006/66/EC, batteries and accumulators are labeled to indicate that they are to be collected separately and recycled at end of life. The label on the battery may also include a chemical symbol for the metal concerned in the battery (Pb for lead, Hg for mercury and Cd for cadmium). Users of batteries and accumulators must not dispose of batteries and accumulators as unsorted municipal waste, but use the collection framework available to customers for the return, recycling, and treatment of batteries and accumulators. Customer participation is important to minimize any potential effects of batteries and accumulators on the environment and human health due to the potential presence of hazardous substances. For proper collection and treatment, contact your local IBM representative.

For California: Perchlorate Material - special handling may apply. See [www.dtsc.ca.gov/hazardouswaste/perchlorate](http://www.dtsc.ca.gov/hazardouswaste/perchlorate).

The foregoing notice is provided in accordance with California Code of Regulations Title 22, Division 4.5 Chapter 33. Best Management Practices for Perchlorate Materials. This product/part may include a lithium manganese dioxide battery which contains a perchlorate substance.

### **IBM Cryptographic Coprocessor Card Return Program**

The following information applies only for systems originally sold prior to July 1, 2006:

This machine may contain an optional feature, the cryptographic coprocessor card, which includes a polyurethane material that contains mercury. Please follow local ordinances or regulations for disposal of this card. IBM has established a return program for certain IBM Cryptographic Coprocessor Cards. More information can be found at <http://www.ibm.com/ibm/environment/products/prp.shtml>.

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## About this topic

This topic provides users with instructions for removing and replacing system unit fans.

For information about the accessibility features of this product, for users who have a physical disability, see "Accessibility features," on page 97.



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## Fans

The following procedures describe the removal and replacement of system fans.

Replacing this feature is a customer task. You can perform this task yourself, or contact an authorized service provider to perform the task for you. You might be charged a fee by the authorized service provider for this service.

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## PDF file for Fan

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## Remove and replace the model 185 or A50 system unit air baffle

The air baffle covers the system board and most of the internal components, and might need to be opened or removed as a part of many other procedures.

Use these instructions to open or remove a model 7047-185 or 7037-A50 system unit air baffle.

## Open or remove the model 7047-185 or 7037-A50 system unit air baffle

You might need to open or remove the system unit air baffle. Use the procedure in this section to perform this task.

The system unit air baffle has a door on top. Removing this door to open the air baffle is all that is needed for most service procedures.

To remove a system unit air baffle, complete these steps:

1. Perform the prerequisite tasks described in "Before you begin" on page 42.
2. Stop the system ("Stop the system or logical partition" on page 46).
3. Remove the side cover ("Remove and replace model 7047-185 or 7037-A50 covers and doors" on page 65).
4. Lift the disk drive cage release lever **A**, and then rotate the disk drive cage all the way out of the system unit until it locks into place.

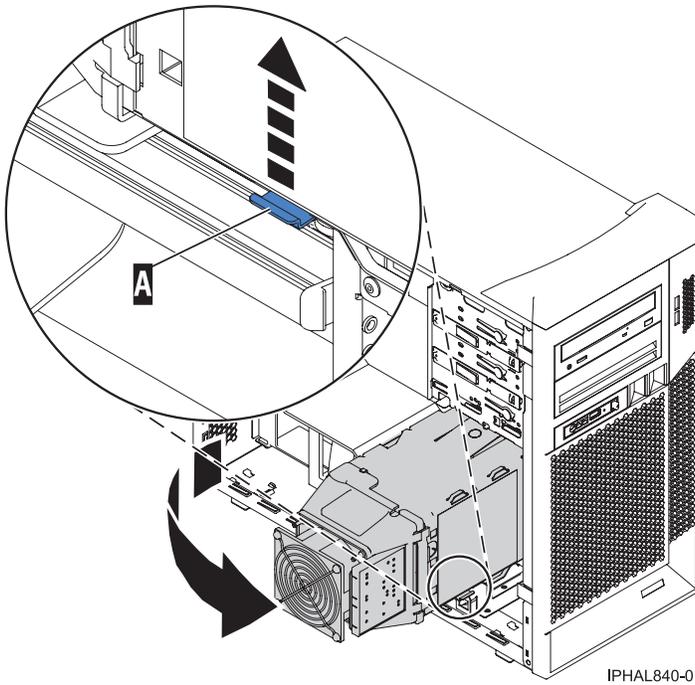
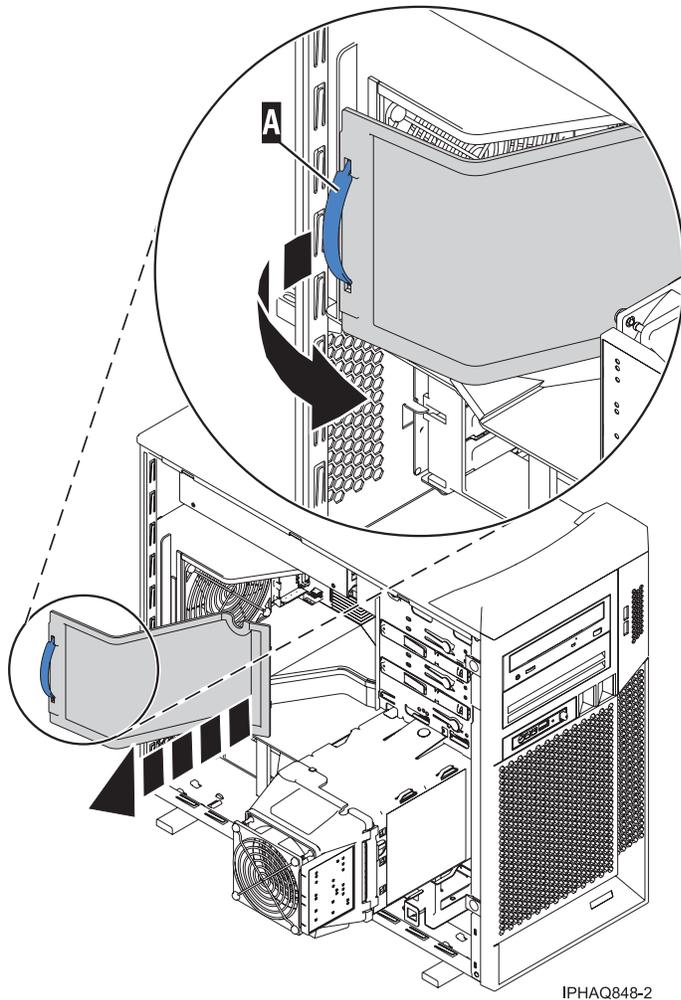


Figure 1. Open the disk drive cage

5. Lift the tab on the top of the air baffle door and detach it from the baffle.
6. Lift the air baffle door out of the system.

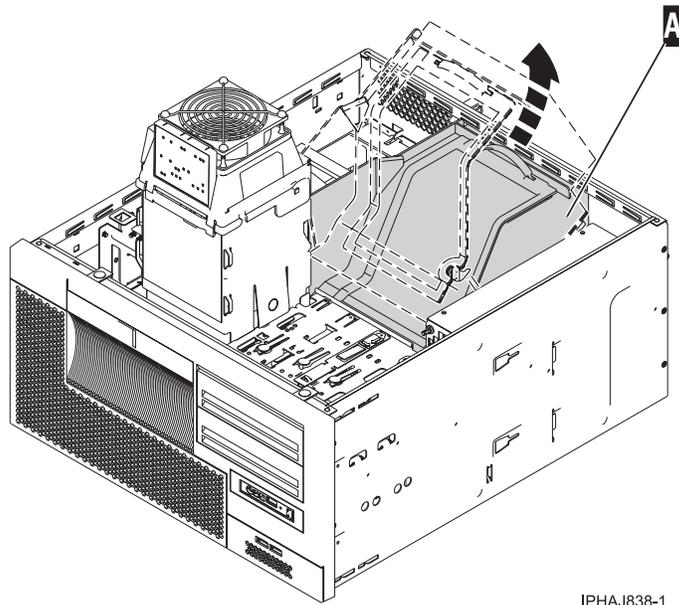


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*Figure 2. Removing the air baffle door*

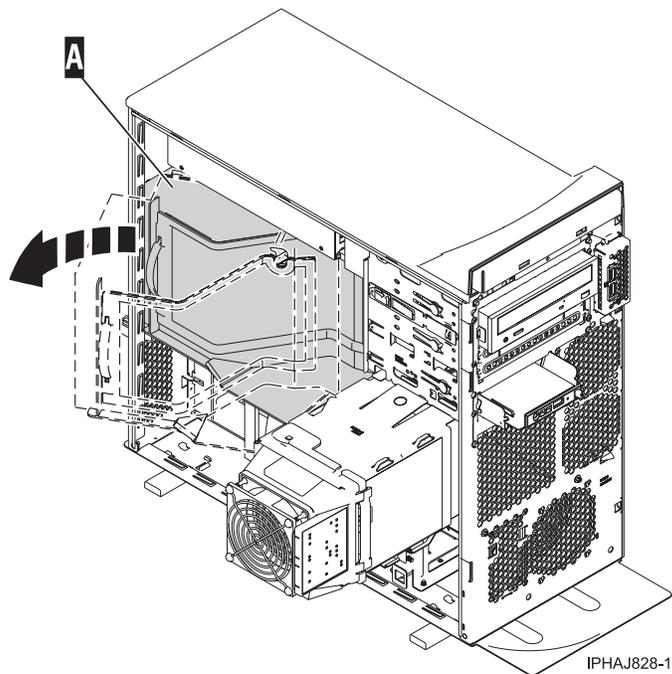
7. Disconnect and label any cables or cords connected through the air baffle door and cable guide.
8. Remove any cables or cords from obstructing the air baffle.
9. Press the baffle forward until it is disengaged from the lip of the back of the system unit.
10. Lift the baffle up from the back of the system unit and pull it out of the system as shown in the following figure.

**Important:** Make sure all cables and cords are clear when removing the air baffle from the server.



IPHAJ838-1

Figure 3. Removing the system unit air baffle in a rack-mounted system



IPHAJ828-1

Figure 4. Removing the system unit air baffle in a stand-alone system

If you are removing the air baffle as a part of another procedure return to that procedure now.

### Replace the model 7047-185 or 7037-A50 system unit air baffle

You might need to replace the system unit air baffle. Use the procedure in this section to perform this task.

To replace a model 7047-185 or 7037-A50 system unit air baffle, complete these steps:

**Note:** If you are just replacing the baffle door begin with step 6.

1. Perform the prerequisite tasks described in “Before you begin” on page 42.
2. As shown in Figure 5, place the baffle into the system unit **A** until it reaches the back of the system.

**Note:** Be sure no cables or cords catch or bind as you set the baffle into place.

3. Place the front of the baffle onto the ledge at the front of the system unit.
4. Lower the back of the baffle until it can fit under the lip at the back of the system unit.

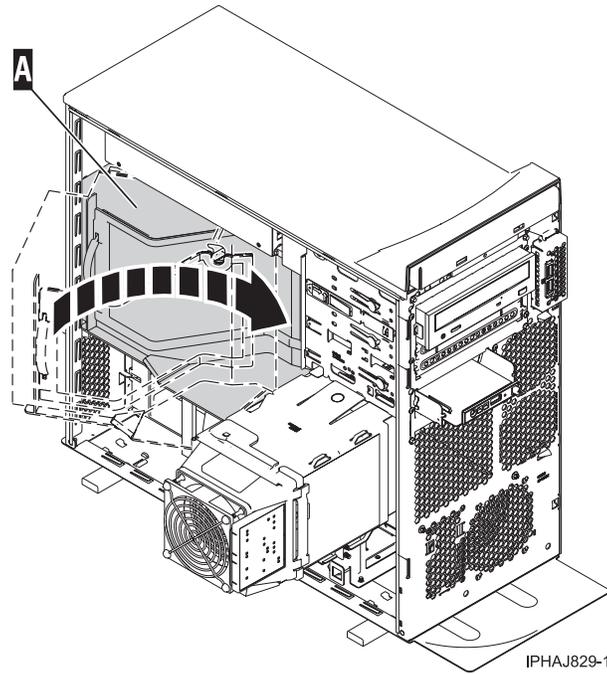
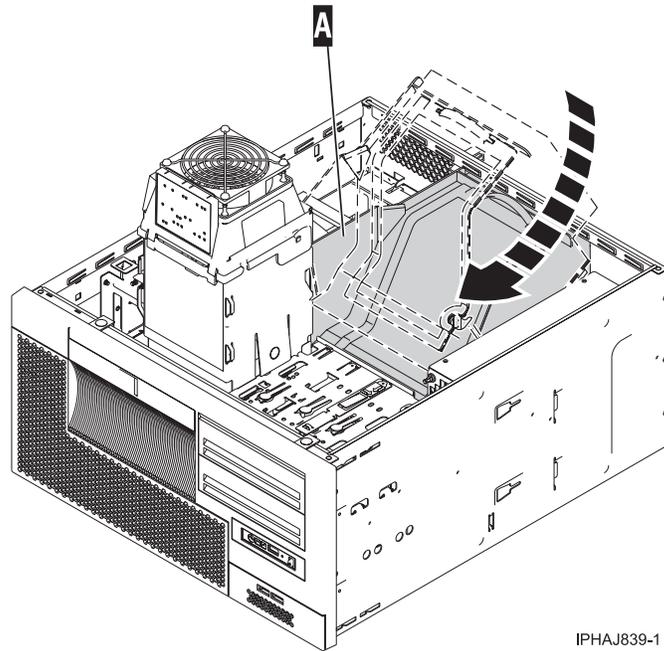


Figure 5. Replacing the model 7047-185 or 7037-A50 system unit air baffle in a stand alone system unit.



IPHAJ839-1

*Figure 6. Replacing the model 7047-185 or 7037-A50 system unit air baffle in a rack mounted system.*

5. Slide the top of the baffle under the lip at the back of the system unit.
6. Connect all the cables and cords through the top door of the baffle and secure them to the cable guide on the side of the baffle.
7. Place the bottom of the baffle door into the slot on the baffle.

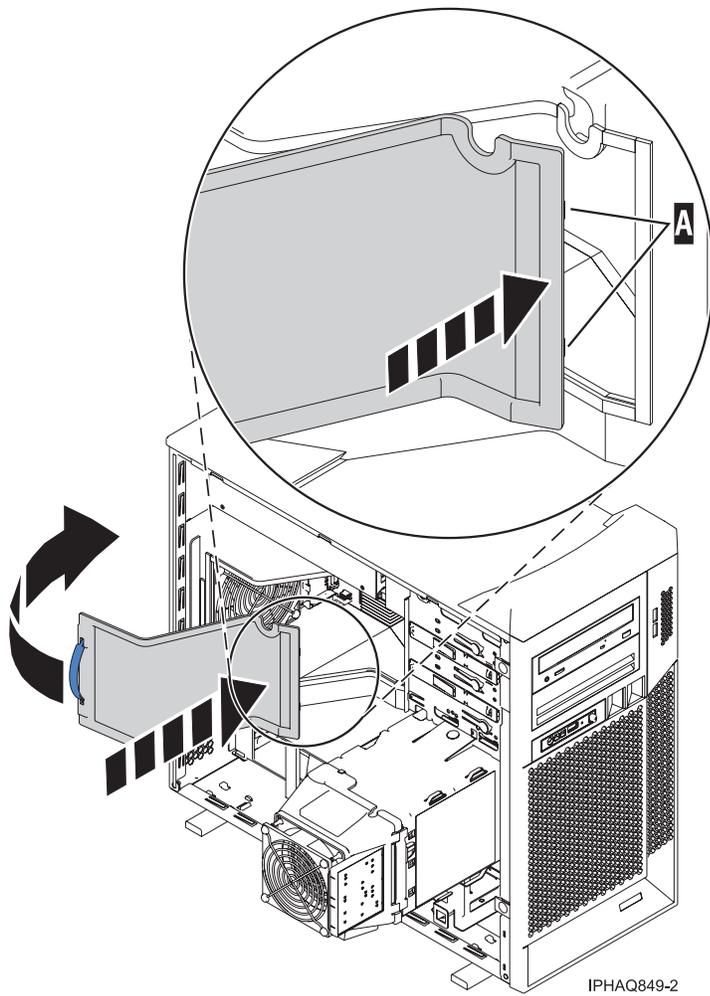


Figure 7. Attaching the air baffle door

8. Press the top of the baffle door forward until it attaches to the air baffle securely.
9. Push the drive cage slightly forward, press in on the drive-cage release tab, and rotate the drive cage back into the system unit.

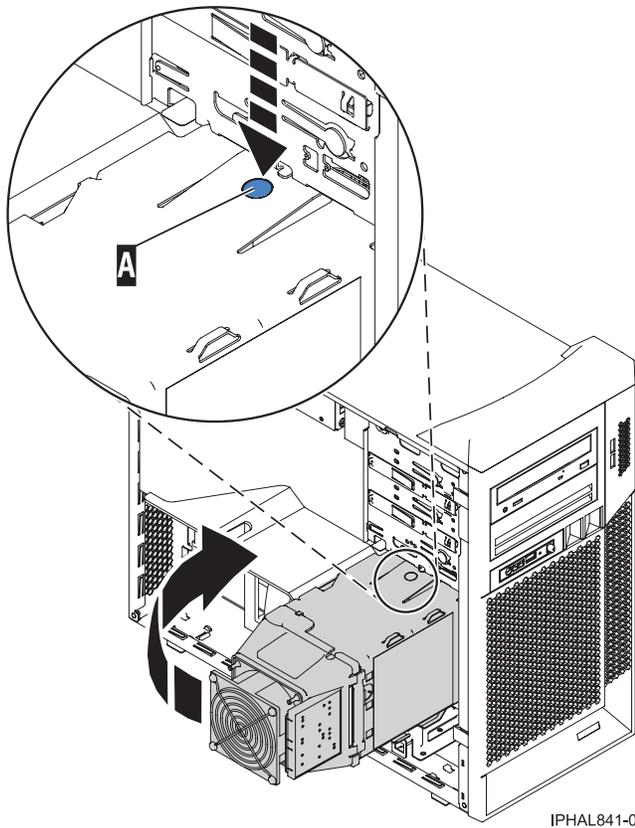


Figure 8. Closing the disk drive cage

10. Close the side cover. See “Remove and replace model 7047-185 or 7037-A50 covers and doors” on page 65.

If you are replacing the baffle as a part of another procedure, return to that procedure now.

---

## Remove and replace the model 185 or A50 system unit fans

You might need to remove or replace the system unit fans. This section includes procedures so that you can perform these tasks. The system unit electronics are cooled with three system unit cooling fans.

### Remove the model 7047-185 or 7037-A50 system unit fans

You might need to remove the system unit fan or fans. Use the procedure in this section to perform this task.

There are three fans in this model. From the following list complete the task for the fan that you want to remove:

- “Remove the main system cooling fan.” This fan cools the system processor and system board and is located at the back of the system.
- “Remove the disk drives fan” on page 10. This fan cools the disk drive cage and is directly attached to the cage.
- “Remove the PCI adapter fan” on page 12. This fan cools the PCI adapters and is located at the front of the system unit, directly in front of the PCI adapter slots.

### Remove the main system cooling fan

This fan cools the system processor and system board and is located at the back of the system. When installed, this fan is covered with a large air baffle to direct air from the fan to the system board.

To remove a system unit fan, follow these steps:

1. Perform the prerequisite tasks described in “Before you begin” on page 42.
2. “Identify a failing part” on page 89.
3. Stop the system. See “Stop the system or logical partition” on page 46.
4. Remove the side cover. See “Remove and replace model 7047-185 or 7037-A50 covers and doors” on page 65.
5. Lift the disk drive cage release tab and pull the drive cage up until it locks into place as shown in the following figure.

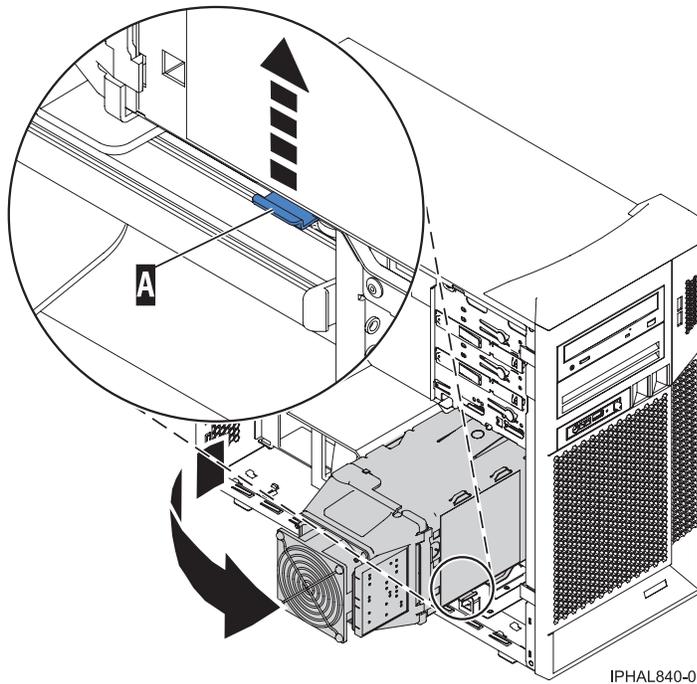
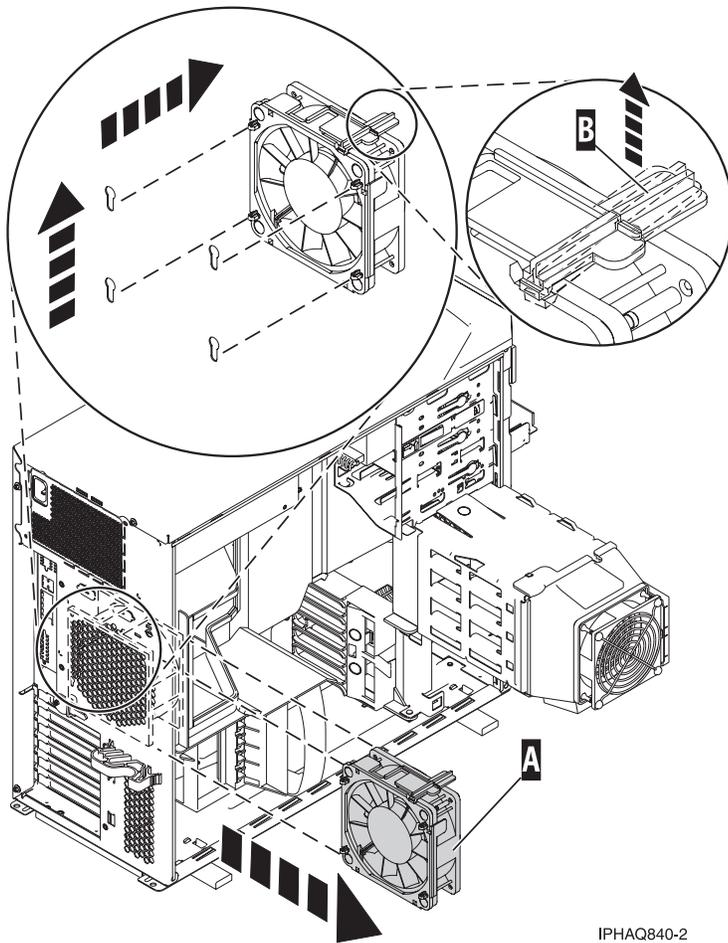


Figure 9. Lifting the disk drive cage

6. Open the air baffle door by grasping the tab on the top of the door and pulling the door off of the air baffle.
7. Unplug the fan power connector from the system board.

**Note:** Make note of the location of the fan power, you will need to reconnect the fan.

8. Push the release lever **B** toward the top of the system until the fan is released from the back of the system.
9. Lift the fan up and remove the fan from the system unit.



IPHAQ840-2

Figure 10. Removing the system unit fan in a stand-alone system

## Remove the disk drives fan

This fan cools the disk drive cage and is directly attached to the cage.

To remove a model disk drive fan, follow these steps:

1. Perform the prerequisite tasks described in “Before you begin” on page 42.
2. Identify the failing fan for instructions see, “Identify a failing part” on page 89.
3. “Stop the system or logical partition” on page 46.
4. Remove the side cover, “Remove and replace model 7047-185 or 7037-A50 covers and doors” on page 65.
5. Lift the disk drive cage release tab and pull the drive cage up until it locks into place as shown in the following figure.

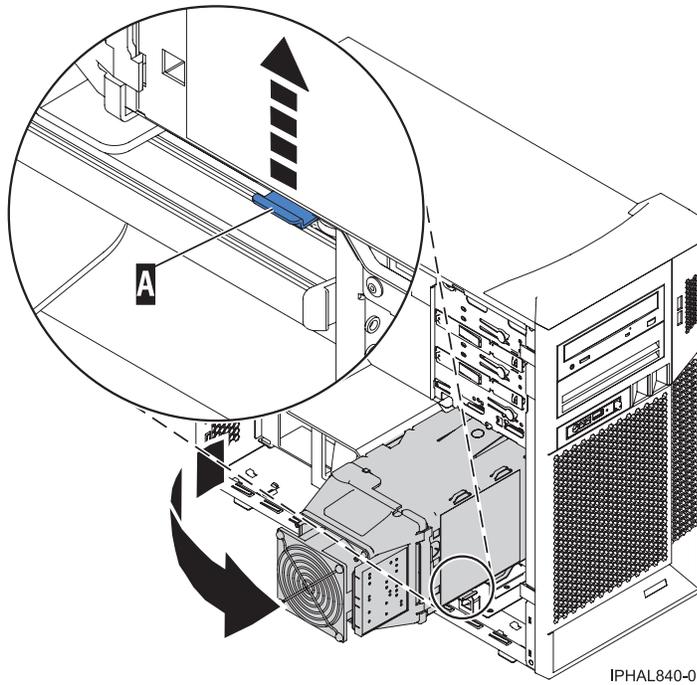


Figure 11. Lifting the disk drive cage

6. Press in on the tab at the front of the light path diagnostic card on the fan to release it from the fan baffle.
7. Lift the front of the light path diagnostic card and detach it from the fan baffle. Place the panel on a safe surface.

**Note:** Use care not to disconnect the service light panel from the system board.

8. Lift up on the tab on the front of the fan until it opens.

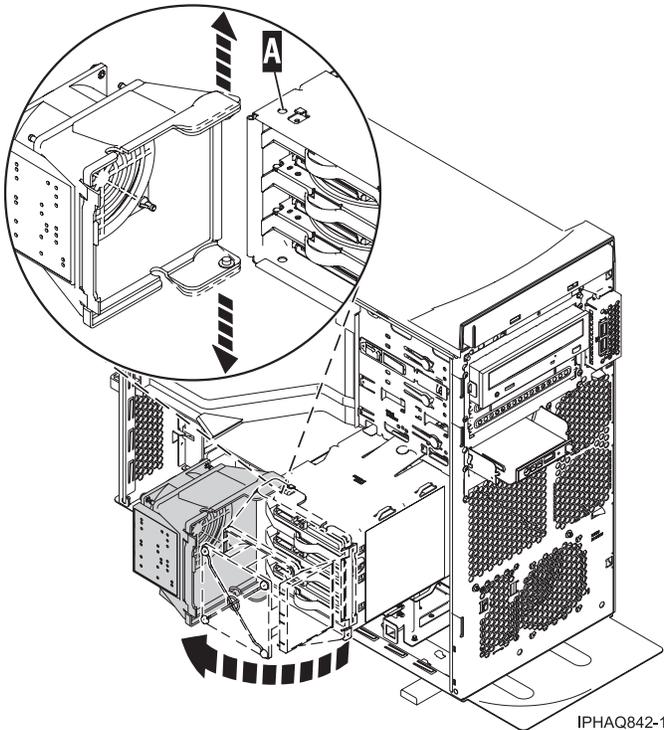


Figure 12. Removing the drive cage fan

9. "Open or remove the model 7047-185 or 7037-A50 system unit air baffle" on page 1.
10. Disconnect the power connector for the fan. Make note of the fan power connector location as you will need it to install the new fan.
11. Pull out on the sides of the fan connected to the disk drive cage A to dislodge the pins from the holes on the disk drive cage.
12. Remove the fan from the system unit.

To install the new fan see, "Install the disk drives fan" on page 14.

#### Remove the PCI adapter fan:

This fan cools the PCI adapters attached to the system unit and is located at the front of the system unit, directly in front of the PCI adapter slots.

To remove a PCI adapters fan, follow these steps:

1. Perform the prerequisite tasks described in "Before you begin" on page 42.
2. Identify the failing part, for instructions see, "Identify a failing part" on page 89.
3. Stop the system (see "Stop the system or logical partition" on page 46).
4. Remove the side cover and the front cover. For instructions see, "Remove and replace model 7047-185 or 7037-A50 covers and doors" on page 65.
5. Unplug the fan power connector from the system board.

**Note:** Make note of the power connector location you will need it to install the fan.

6. Press down on the fan release tab with one hand and release the fan from the system unit.
7. Pull the fan out of the system unit.

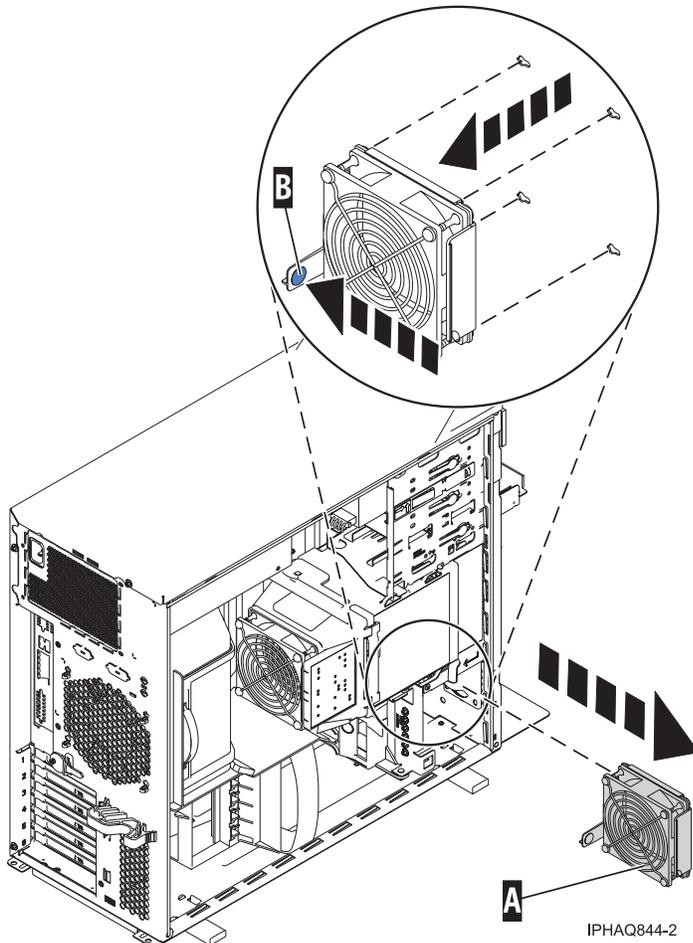


Figure 13. Removing the PCI adapter fan

To replace the fan see, “Install the PCI adapter fan” on page 15

## Replace the model 7047-185 or 7037-A50 system unit fans

You might need to replace the system unit fans. Use the procedure in this section to perform this task.

There are three fans in the . Choose the fan you are replacing from this list:

- “Install the main system cooling fan.” This fan cools the system processor and system board and is located at the back of the system.
- “Install the disk drives fan” on page 14. This fan cools the disk drive cage and is directly attached to the cage.
- “Install the PCI adapter fan” on page 15. This fan cools the PCI adapters and is located at the front of the system unit directly in front of the PCI adapter slots.

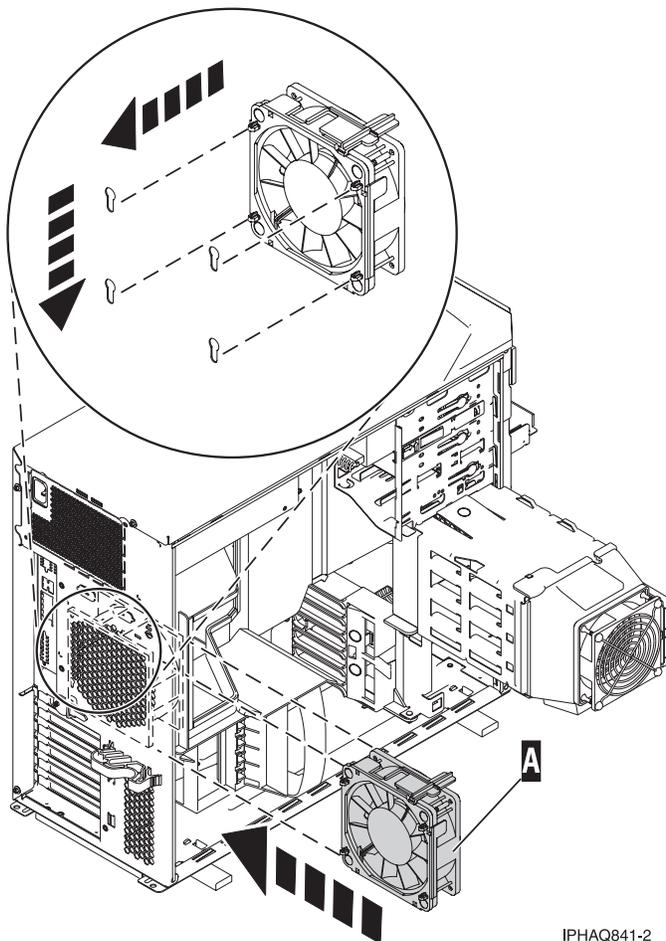
### Install the main system cooling fan

This fan cools the system processor and system board, and is located at the back of the system. When installed, this fan is covered with a large air baffle to direct air from the fan to the system board.

To replace a system unit fan, follow these steps:

1. Perform the prerequisite tasks described in “Before you begin” on page 42.
2. Remove the failing fan from the system unit as described in “Remove the model 7047-185 or 7037-A50 system unit fans” on page 8.

3. Align the fan posts with the mounting holes on the back of the system unit.
4. Place the fan posts into the mounting holes and lower the fan into place.
5. Press down on the fan until it locks into place.



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Figure 14. Replacing the system unit fan in a stand-alone system

6. Plug in the fan power connector see, Figure 17 on page 17 for connector location on system board.
7. Insert the bottom of the air baffle door into the slot on the baffle and lower the door into place.
8. Reattach the covers as described in “Remove and replace model 7047-185 or 7037-A50 covers and doors” on page 65.
9. Start the system. See “Start the system or logical partition” on page 44.
10. Verify that the new fan is functional. Refer to “Verify the installed part” on page 80.

### Install the disk drives fan

This fan cools the disk drive enclosure, and is directly attached to the enclosure.

To replace a disk drives fan, follow these steps:

1. Perform the prerequisite tasks described in “Before you begin” on page 42.
2. Remove the failing fan from the system unit as described in “Remove the disk drives fan” on page 10.
3. Align the fan baffle mounting posts **A** with the holes on the disk drive enclosure **B** and attach them.

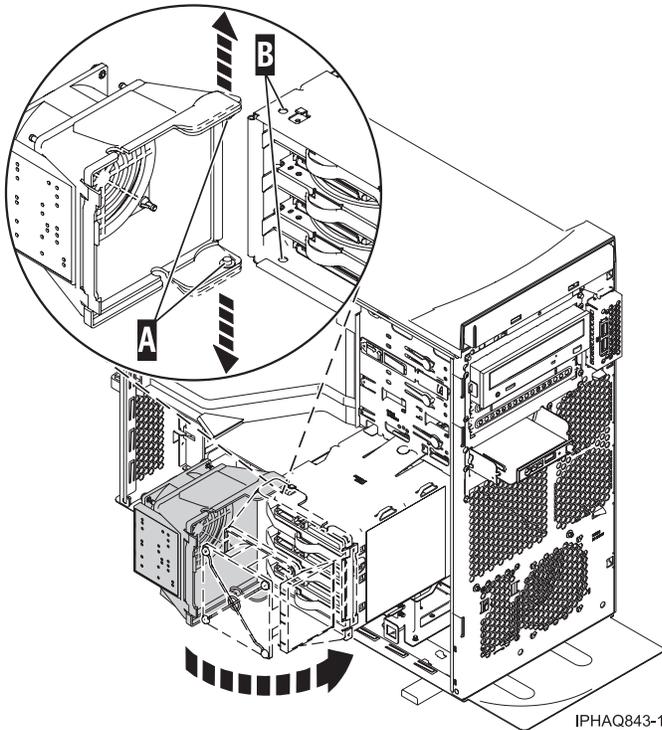


Figure 15. Attaching the disk drive cage fan

4. Plug in the fan power connector see, Figure 17 on page 17 for the connector location on the system board.
5. Lower the fan baffle until it covers the enclosure and snaps into place.
6. Press the two mounting pins on the light path diagnostic card into the holes on the top of the fan baffle and lower the card until it snaps into place.
7. Push the drive cage outward, and press the drive-cage release tab inward, then rotate the drive cage back into the system unit.
8. Attach the service cover. For instructions see, “Remove and replace model 7047-185 or 7037-A50 covers and doors” on page 65.
9. Start the system. See “Start the system or logical partition” on page 44.
10. Verify that the new fan is functional. Refer to “Verify the installed part” on page 80.

#### Install the PCI adapter fan:

This fan cools the PCI adapters attached to the server, and is located at the front of the system unit directly in front of the PCI adapter slots.

To replace a PCI adapters fan, follow these steps:

1. Perform the prerequisite tasks described in “Before you begin” on page 42.
2. Remove the failing fan from the system unit as described in “Remove the model 7047-185 or 7037-A50 system unit fans” on page 8.
3. Place the fan into the slot as shown in Figure 16 on page 16

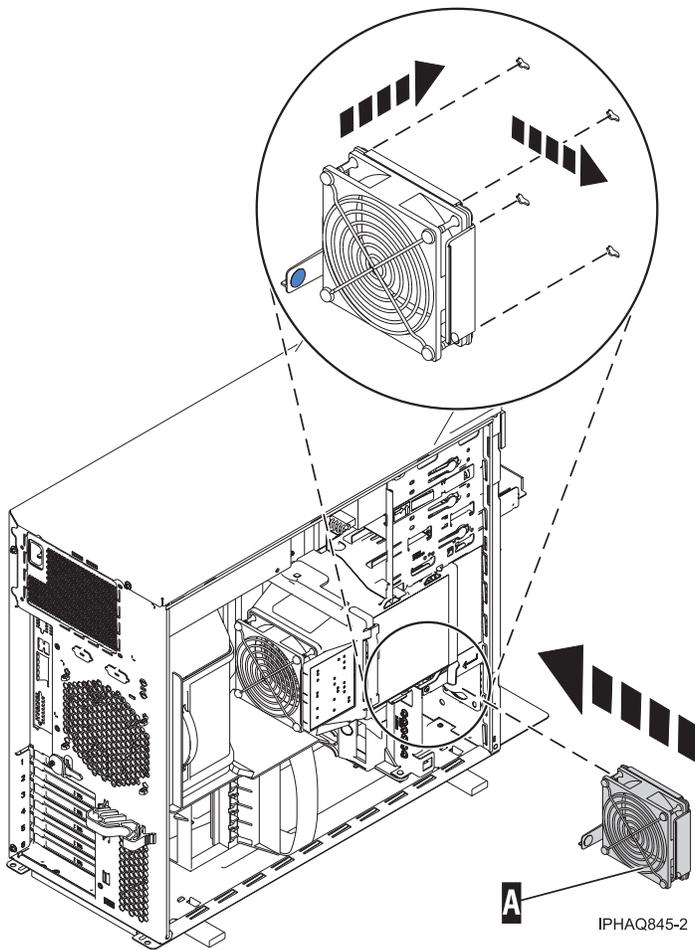


Figure 16. Installing the PCI adapter fan

4. Push the fan down into the brackets.
5. Plug in the fan power connector see, Figure 17 on page 17 for the connector location on the system board.
6. Secure the fan by pushing the release lever into the secure position.
7. Replace the service access panel. For instructions see, “Remove and replace model 7047-185 or 7037-A50 covers and doors” on page 65.
8. Start the system. See “Start the system or logical partition” on page 44.
9. Verify that the new fan is functional. Refer to “Verify the installed part” on page 80.

Use the following to note the locations of the fan power plugs:

- Main system fan **A** power connection
- Disk drive cage fan **B** power connection
- PCI adapter fan **C** power connection

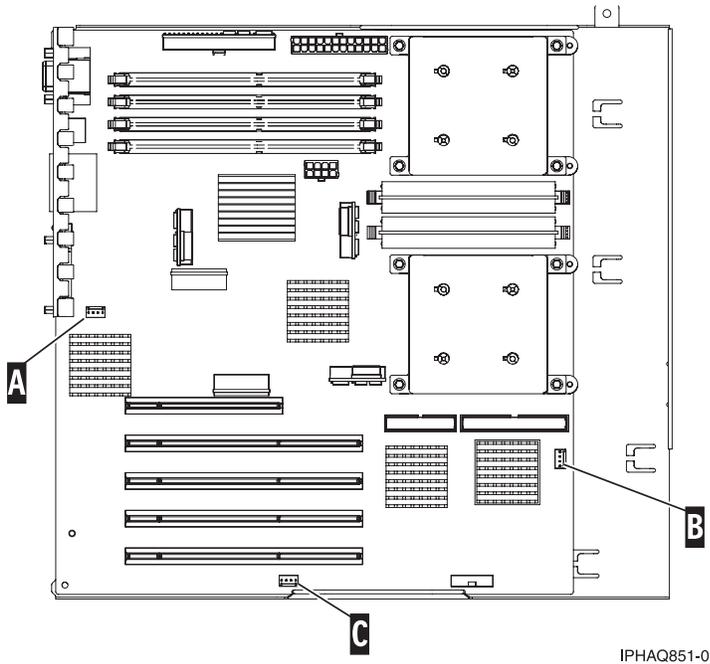


Figure 17. Fan power connector locations

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## Model p5 505 system unit fans

You might need to remove or replace the system unit fans. This section includes procedures so that you can perform these tasks.

The following procedures describe the removal and replacement of the model 505 system unit fans.

This system unit supports replacement of the fans with the system unit power on and redundant cooling. The system unit electronics are cooled with four system unit cooling fans.

### Remove a model 505 system unit fan

You might need to remove the system unit fan. Use the procedure in this section to perform this task.

To remove a system unit fan, do the following:

1. Perform the prerequisite tasks described in “Before you begin” on page 42.
2. To identify the failing part, see “Identify a failing part” on page 89.
3. Open the service access panel. See “Open the model 505 service access panel” on page 56.
4. Disconnect the fan power connector **A** for the failing fan.
5. Grasp the tab **B** on the top of the failing fan and lift the fan out of the system.

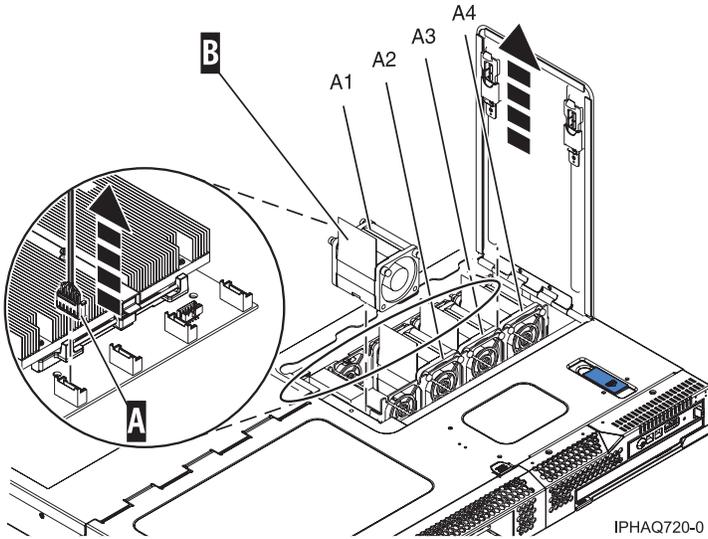


Figure 18. Removing a fan

## Replace a model 505 system unit fan

You might need to replace the system unit fan. Use the procedure in this section to perform this task.

To replace a system unit fan, do the following:

1. Perform the prerequisite tasks described in “Before you begin” on page 42.
2. Remove the failing fan from the system unit as described in “Remove a model 505 system unit fan” on page 17.
3. Align the fan with the slot C in the system.

**Tip:** The tab on the top of the fan indicates air flow direction. Be sure the air flow arrow is pointed to the back of the unit.

4. Place the fan into the system and press each of the mounting posts into place.

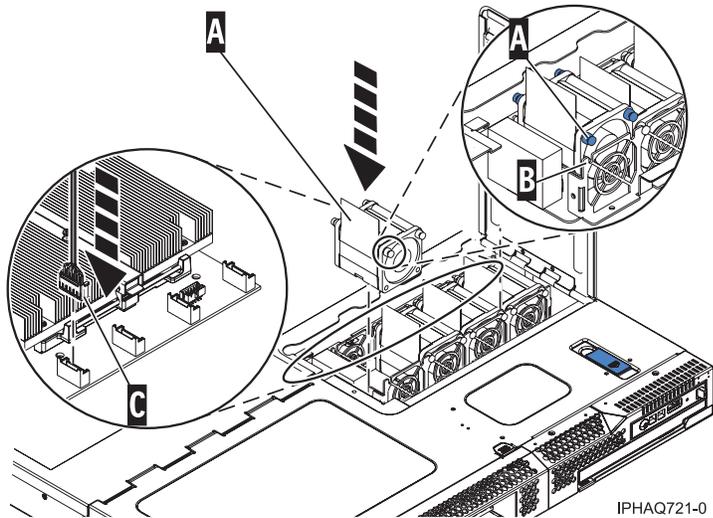


Figure 19. Installing a fan

5. Connect the fan power connector C.

**Note:** The fan starts to run when it is properly installed.

6. Close the service access panel and return the system to the operating position. See “Open the model 505 service access panel” on page 56

---

## Model 51x or OpenPower 710 system unit fans

You might need to remove or replace the system unit fans. This section includes procedures so that you can perform these tasks.

The following procedures describe the removal and replacement of the system unit fans.

This system unit supports replacement of the fans with the system unit power on and redundant cooling. The system unit electronics are cooled with two system unit cooling fans.

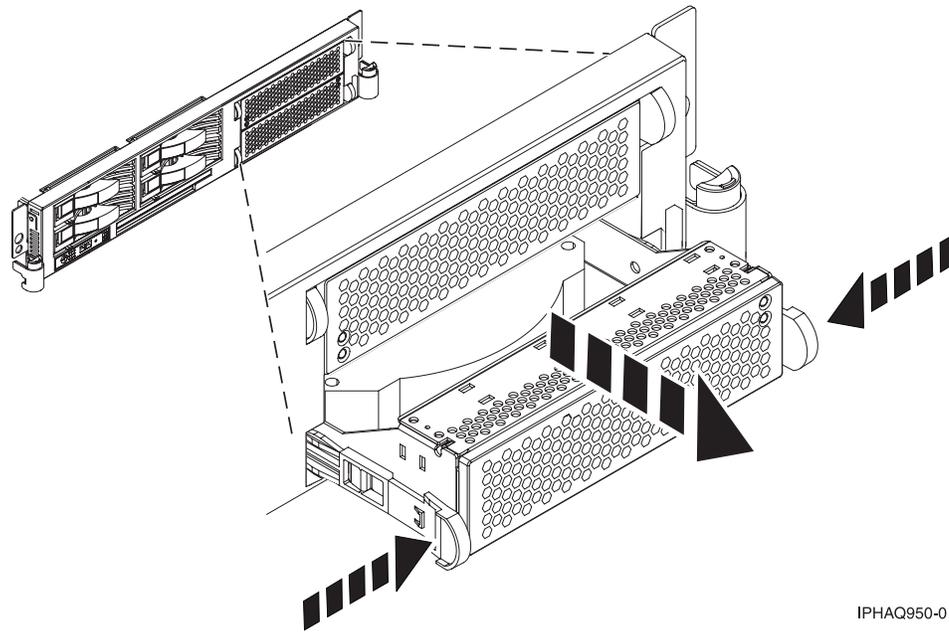
Each fan unit has two light emitting diodes (LEDs) on the cover. The green LED indicates the fan is operating properly. The amber LED indicates a fan failure.

### Remove a model 51x or OpenPower 710 system unit fan

You might need to remove the system unit fan. Use the procedure in this section to perform this task.

To remove a system unit fan, do the following:

1. Perform the prerequisite tasks described in “Before you begin” on page 42.
2. To identify the failing part, see “Identify a failing part” on page 89.
3. Remove the front cover, as described in “Remove the front cover from the model 51x or 710” on page 94.
4. As shown in Figure 20 on page 20, squeeze the orange tabs on the sides of the failing fan and hold them in the open position.
5. Slide the failing fan unit out of the system.



IPHAQ950-0

Figure 20. Rack-mounted system unit fan removal

## Replace a model 51x or OpenPower 710 system unit fan

You might need to replace the system unit fan. Use the procedure in this section to perform this task.

To replace a system unit fan, do the following:

1. Perform the prerequisite tasks described in “Before you begin” on page 42.
2. Remove the failing fan from the system unit as described in “Remove a model 51x or OpenPower 710 system unit fan” on page 19.
3. Align the fan with the slot in the system.
4. As shown in Figure 21 on page 21, hold the tabs in the open position as you place the fan into the system.
5. Press on the fan to ensure that the locking tabs lock in place.

**Note:** The fan starts to run when it is properly installed.

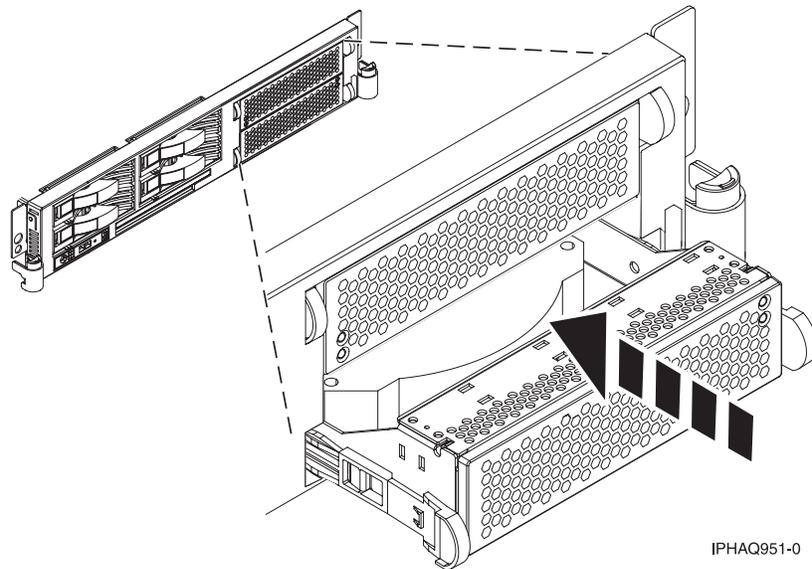


Figure 21. Rack-mounted system unit fan replacement

6. Replace the front cover, as described in “Install the front cover on the model 51x or 710” on page 94.

## Model 52x or 9111-285 system unit fans and fan tray assembly

You might need to remove or replace the system unit fans and fan tray assembly. This section includes procedures so that you can perform these tasks.

### Remove and replace the model 52x or IntelliStation® POWER® 285 system unit fans

You might need to remove or replace the system unit fans. This section includes procedures so that you can perform these tasks. This system unit supports replacement of the fans with the system unit power on and redundant cooling. The system unit electronics are cooled with three system unit cooling fans.

**Note:** Each fan unit has two light emitting diodes (LEDs) on the top cover. The green LED indicates the fan is operating properly. The amber LED indicates a fan failure.

#### Remove the model 52x or IntelliStation POWER 285 system unit fan

You might need to remove the system unit fan. Use the procedure in this section to perform this task.

If your system is managed by the Hardware Management Console (HMC), you can use the HMC to complete the steps for removing a system unit fan. For instructions, see “Remove a part using the Hardware Management Console” on page 87.

To remove a system unit fan, do the following:

1. Perform the prerequisite tasks described in “Before you begin” on page 42.
2. To identify the failing part, see “Identify a failing part” on page 89.
3. If you are servicing a rack-mounted system unit, “Place the rack-mounted system or expansion unit in the service position” on page 47. If you are servicing a stand-alone system unit, continue to the next step.
4. Remove the front cover (see “Remove the service access cover from the model 285, 51x, 52x, 55x, 710, or OpenPower 720” on page 59).
5. As shown in Figure 22 on page 22 and Figure 23 on page 23, pull on the locking knob A of the failing fan until you feel it unlock.

6. Press and hold the plastic tab **B** that is attached to the fan tray away from the system unit fan.
7. Pull on the locking knob of the failing fan again until you feel the fan pull away from its connector.
8. Lift the failing fan unit out of the fan tray.

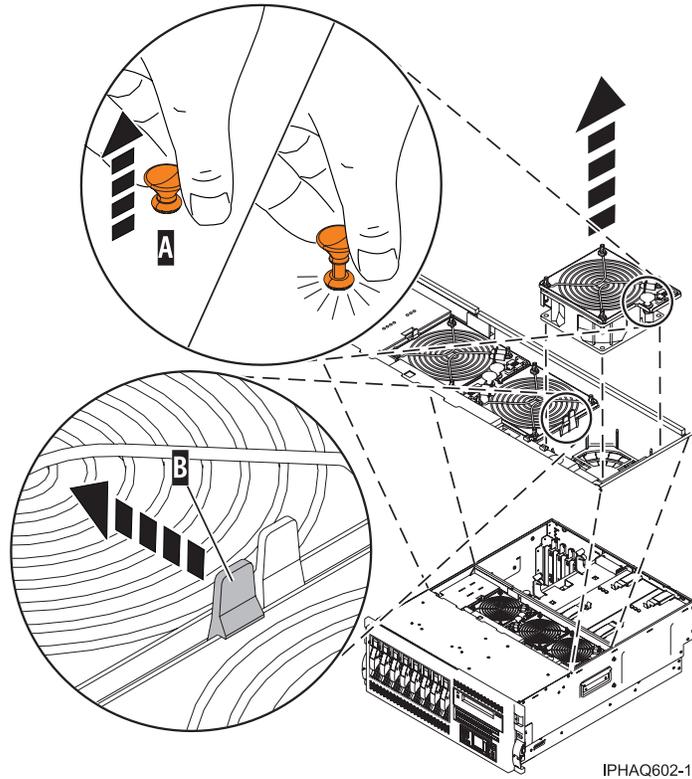


Figure 22. Removing the model 52x system unit fan in a rack-mounted system

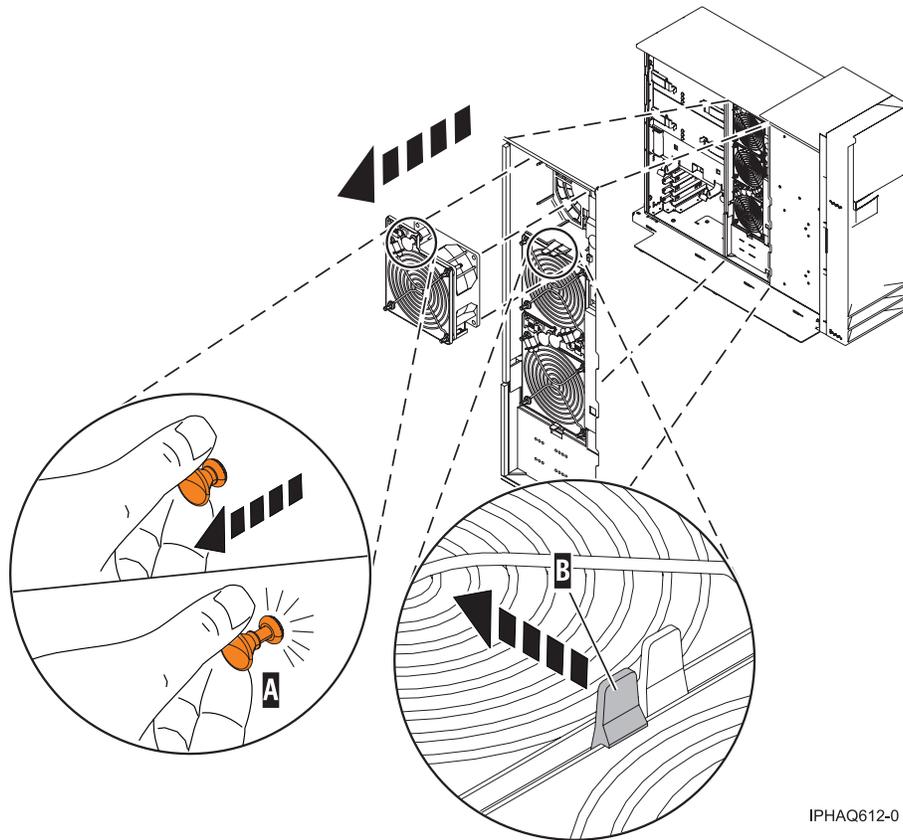


Figure 23. Removing the model 52x or, IntelliStation POWER 285 system unit fan unit in a stand-alone system

9. Replace the system unit fan. For instructions, see “Replace the model 52x or IntelliStation POWER 285 system unit fan.”

### Replace the model 52x or IntelliStation POWER 285 system unit fan

You might need to replace the system unit fan. Use the procedure in this section to perform this task.

If your system is managed by the Hardware Management Console (HMC), you can use the HMC to complete the steps for replacing a system unit fan. For instructions, see “Replace a part using the Hardware Management Console” on page 88.

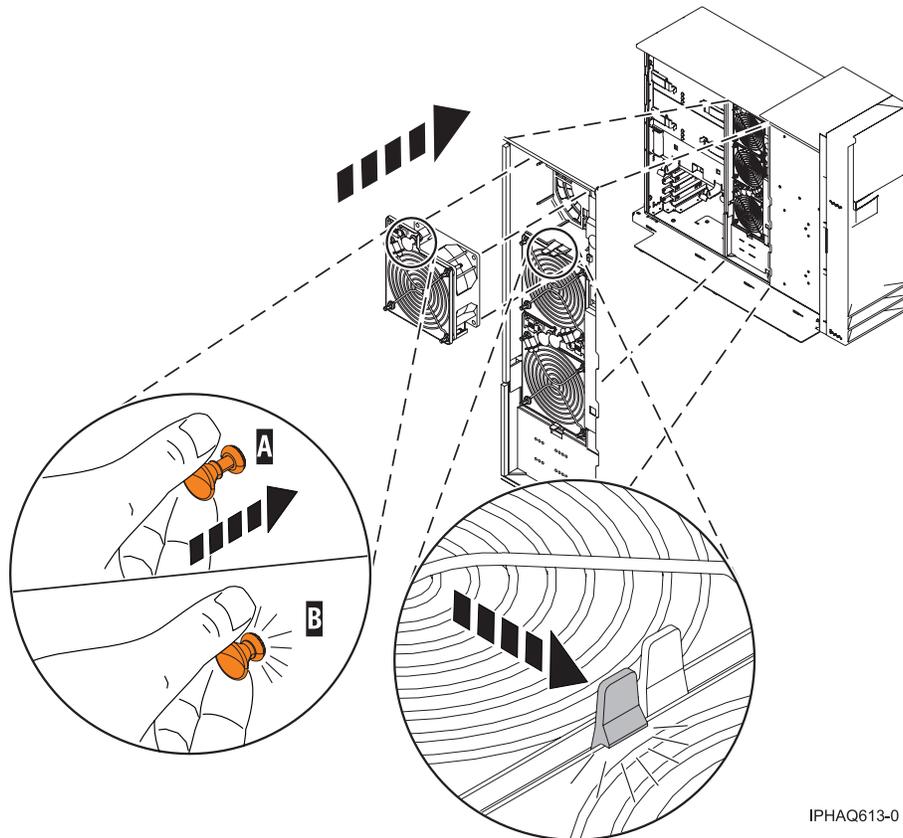
To replace a system unit fan, do the following:

1. Perform the prerequisite tasks described in “Before you begin” on page 42.
2. Remove the failing fan from the system unit as described in “Remove the model 52x or IntelliStation POWER 285 system unit fan” on page 21.
3. As shown in Figure 24 on page 24 and Figure 25 on page 25, pull up on the locking knob on the replacement fan to ensure that it is in the unlocked position **A**.
4. Align the fan with the slot in the fan tray assembly with the fan power plug over the connector.
5. Place the fan into the fan tray.
6. Press down on the fan to ensure that the power plug is connected.

**Note:** The fan starts to run when the power plug is connected.

7. Press the locking knob down until you feel it lock into position **B**.





IPHAQ613-0

Figure 25. Replacing the model 52x or IntelliStation POWER 285 system unit fan in a stand-alone system

8. "Install the service access cover on the model 285, 51x, 52x, 55x, 710, or OpenPower 720" on page 62.
9. If you are servicing a rack-mounted system unit, "Place the rack-mounted system or expansion unit in the operating position" on page 51.
10. Verify that the new resource is functional. Refer to "Verify the installed part" on page 80.

## Remove and replace the model 52x or IntelliStation POWER 285 fan tray assembly

You might need to remove or replace the fan tray assembly. This section includes procedures so that you can perform these tasks.

**Note:** The three system cooling fans are present in the fan tray. The fans can remain in the tray when the tray is removed or replaced as part of another procedure.

To complete these procedures, print the following instructions, and then return here. If the IBM Systems Hardware Information Center is available on a PC or a notebook that is close to the system on which you are installing or replacing parts, you can use the online version of these procedures.

- Media device backplane and enclosure
- Control panel and signal cable

### Remove the model 52x or IntelliStation POWER 285 fan tray assembly

You might need to remove the fan tray assembly. Use the procedure in this section to perform this task.

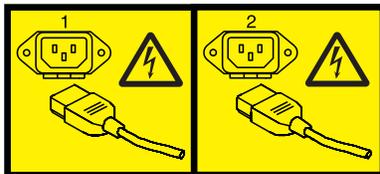
If your system is managed by the Hardware Management Console (HMC), you can use the HMC to complete the steps for removing a fan tray assembly. For instructions, see "Remove a part using the Hardware Management Console" on page 87.

To remove the fan tray assembly, do the following:

1. Perform the prerequisite tasks described in “Before you begin” on page 42.
2. If you are removing the fan tray assembly as part of another procedure, continue to the next step. If you are removing the assembly because it is not operational, you can identify the failing part. See “Identify a failing part” on page 89.
3. “Stop the system or logical partition” on page 46).
4. Disconnect the power source from the system by unplugging the system.

**Note:** This system may be equipped with a second power supply. Before continuing with this procedure, ensure that the power source to the system has been completely disconnected.

(L003)

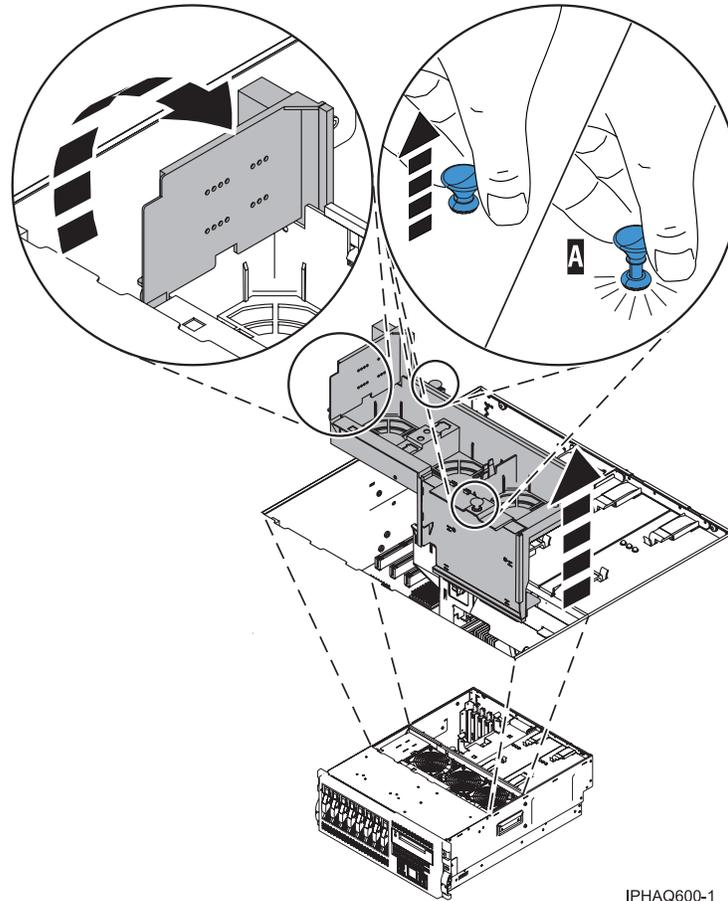


or



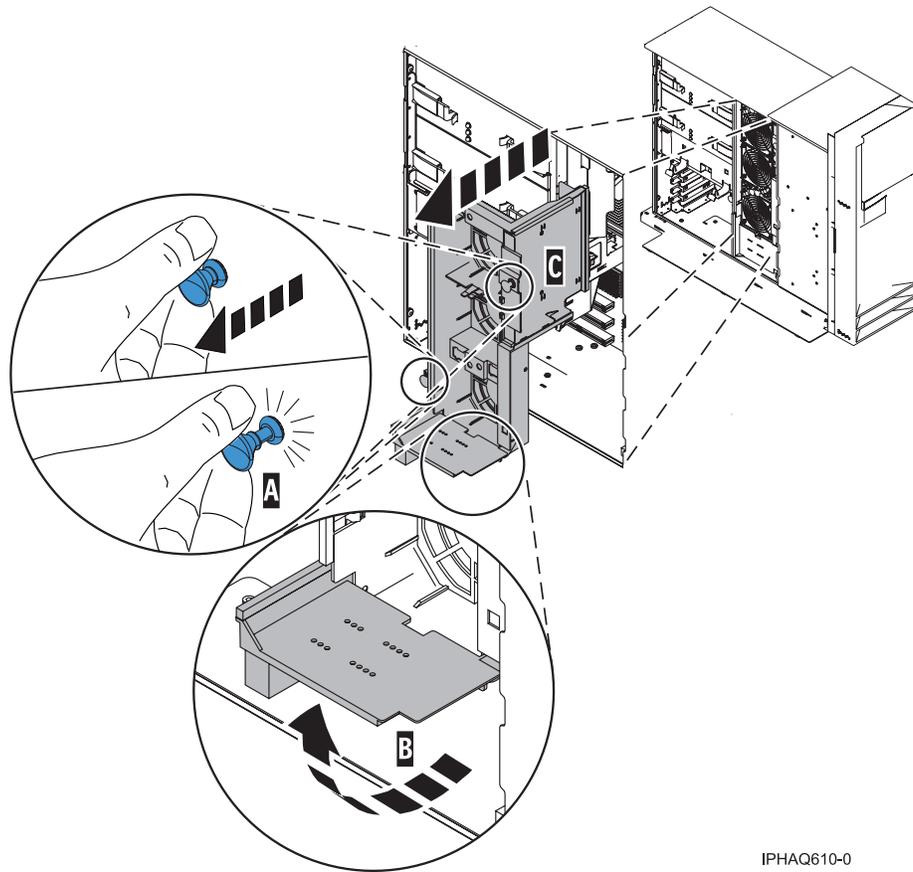
5. If you are servicing a rack-mounted system unit, “Place the rack-mounted system or expansion unit in the service position” on page 47. If you are servicing a stand-alone system unit, continue to the next step.
6. Remove the service access cover. For instructions, see “Remove the service access cover from the model 285, 51x, 52x, 55x, 710, or OpenPower 720” on page 59.
7. If your system does not contain a SCSI media device in the SCSI media-device enclosure, go to the next step. If your system does contain a SCSI media device, do the following:
  - a. Remove the front cover. For instructions, see “Remove the front cover from the model 285, 52x, 55x, OpenPower 720, or the 0595 expansion unit” on page 70.
  - b. Press the blue media-device enclosure latches and pull the enclosure forward in the system chassis, but do not remove it from the system chassis. For more information about the media-device enclosure, see “Media device backplane and enclosure” located in the Select by feature or part topic.
8. Locate the fan tray.

9. Release the LED light-pipe plate **B** attached to the fan tray by pressing the latch attached to the disk drive backplane and rotating the plate up and off of the LED light pipes, as shown in figure Figure 26 and Figure 27 on page 28.
10. Pull up on the two blue locking knobs **A** located at either end of the fan tray until you feel them unlock.
11. While holding the blue plastic tab on the back of the disk drive backplane, lift up on the end of the fan tray that is next to the tab until it clears the tab.
12. Using the two blue locking knobs at either end of the fan tray assembly, lift the assembly **C** straight up and out of the system unit.



IPHAQ600-1

Figure 26. Removing the fan tray assembly in a rack-mounted system removal



IPHAQ610-0

Figure 27. Removing the fan tray assembly from a stand-alone system

13. If you are removing the fan tray as part of another procedure, return to that procedure. If you are removing the fan tray because the fan tray itself is damaged or failing to operate correctly, remove the three system fans from the fan tray. For information on removing and replacing fans, see “Model 52x or 9111-285 system unit fans and fan tray assembly” on page 21.
14. Replace the fan tray assembly. For instructions, see “Replace the model 52x or IntelliStation POWER 285 fan tray assembly.”

### Replace the model 52x or IntelliStation POWER 285 fan tray assembly

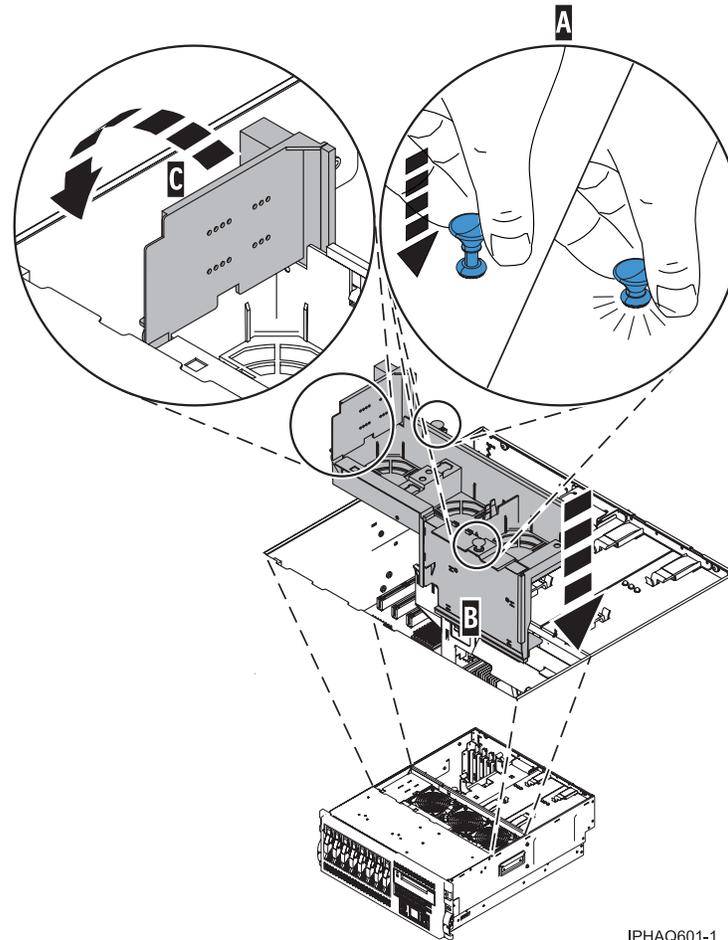
You might need to replace the fan tray assembly. Use the procedure in this section to perform this task.

If your system is managed by the Hardware Management Console (HMC), you can use the HMC to complete the steps for replacing a fan tray assembly. For instructions, see “Replace a part using the Hardware Management Console” on page 88.

To replace the fan tray, do the following:

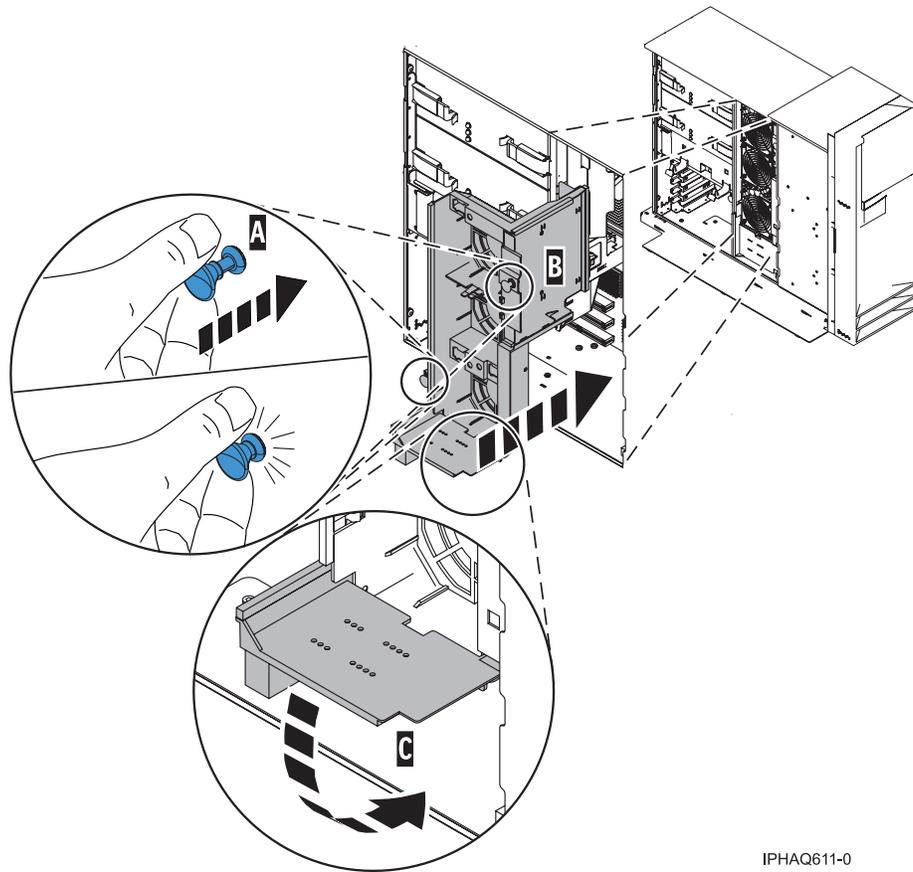
1. Perform the prerequisite tasks described in “Before you begin” on page 42.
2. Remove the fan tray assembly. For instructions, see “Remove the model 52x or IntelliStation POWER 285 fan tray assembly” on page 25.
3. If you are placing the fan tray assembly into the system as part of another procedure, continue to the next step. If you are replacing a failing or damaged fan tray with a new fan tray, place the three system fans into the fan tray before you continue to the next step.
4. Pull the locking knobs attached to the fan tray to ensure the knobs are in the unlocked position.

5. As shown in figure Figure 28 and Figure 29 on page 30, align the guides on the front of the fan tray **B** with the guide rails in the system chassis.
6. Lower the fan tray into the system, with the LED light-pipe cover plate toward the LED light pipes, and press the fan tray down into place.
7. Press the locking knobs **A** down until you feel them lock.
8. Press the LED light-pipe cover plate **C** down over the latch and LED light pipes until you feel it lock into place. Ensure the LED light pipes align with the appropriate holes in the LED light-pipe plate.



IPHAQ601-1

Figure 28. Replacing the model 52x fan tray assembly in a rack-mounted system



IPHAQ611-0

Figure 29. Replacing the fan tray assembly in a stand-alone system

9. If your system does not contain a SCSI media device, go to the next step. If your system does contain SCSI media device, do the following
  - a. Press the media-device enclosure into place until you feel the latches lock.
  - b. Replace the front bezel. For instructions, see “Install the front cover on the model 285, 52x, 55x, OpenPower 720, or the 0595 expansion unit” on page 72
10. Install the front cover. For instructions, see “Install the service access cover on the model 285, 51x, 52x, 55x, 710, or OpenPower 720” on page 62.
11. Reconnect all system power cables.
12. If you are servicing a rack-mounted system unit , place the system unit in the operating position. For instructions, see “Place the rack-mounted system or expansion unit in the operating position” on page 51.
13. Start the system (see “Start the system or logical partition” on page 44).
14. If you replaced the fan tray assembly as part of another procedure, return to that procedure now. If you replaced the assembly because it was not operational, verify that the new resource is functional using the Hardware Management Console (HMC) or the operating system that owns the resource by doing the following:
  - If your system is managed by the HMC, see Viewing information about the managed system using the HMC for information about verifying the resource.
  - If your system is not managed by the HMC, do the following:
    - a. Use the operating system to access the service action log to deactivate the failing item indicator.
    - b. Close the service action log entry.
    - c. Check to see if any new errors are logged. Refer to “Identify a failing part” on page 89.

- d. Use Hardware Service Manager (HSM) to verify the new resource. Refer to “Verify the installed part” on page 80.

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## Remove and replace model 55x or OpenPower 720 system unit fans

You might need to remove or replace the system unit fans. This system unit supports replacement of the fans with the system unit power on and redundant cooling. The system unit electronics are cooled with four system unit cooling fans. This section includes procedures so that you can perform these tasks.

### Remove a model 55x or OpenPower 720 system unit fan

You might need to remove the system unit fan. Use the procedure in this section to perform this task.

If your system is managed by the Hardware Management Console (HMC), you can use the HMC to complete the steps for removing a system unit fan. For instructions, see “Remove a part using the Hardware Management Console” on page 87.

To remove a system unit fan, do the following:

1. Perform the prerequisite tasks described in “Before you begin” on page 42.
2. To identify the failing part, see “Identify a failing part” on page 89.
3. If you are servicing a rack-mounted system unit, place the system in the service position as described in “Place the rack-mounted system or expansion unit in the service position” on page 47. If you are servicing a stand-alone system unit, continue to the next step.
4. Remove the service access cover, as described in “Remove the service access cover from the model 285, 51x, 52x, 55x, 710, or OpenPower 720” on page 59.
5. As shown in Figure 30 on page 32 and Figure 31 on page 33, unlock the locking tabs on top of the failing fan and hold them in the open position.
6. Lift the failing fan unit out of the system.

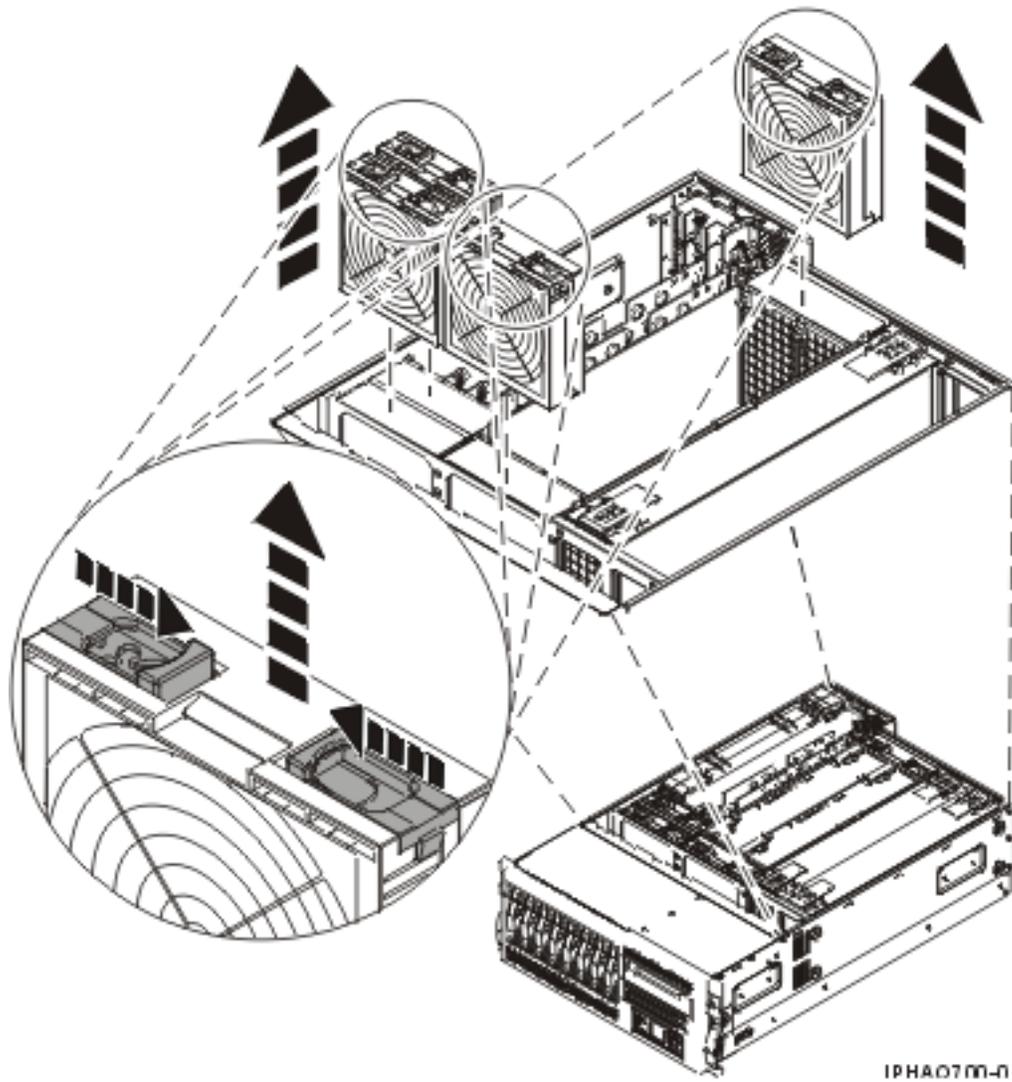


Figure 30. Removing the system unit fan in a rack-mounted system

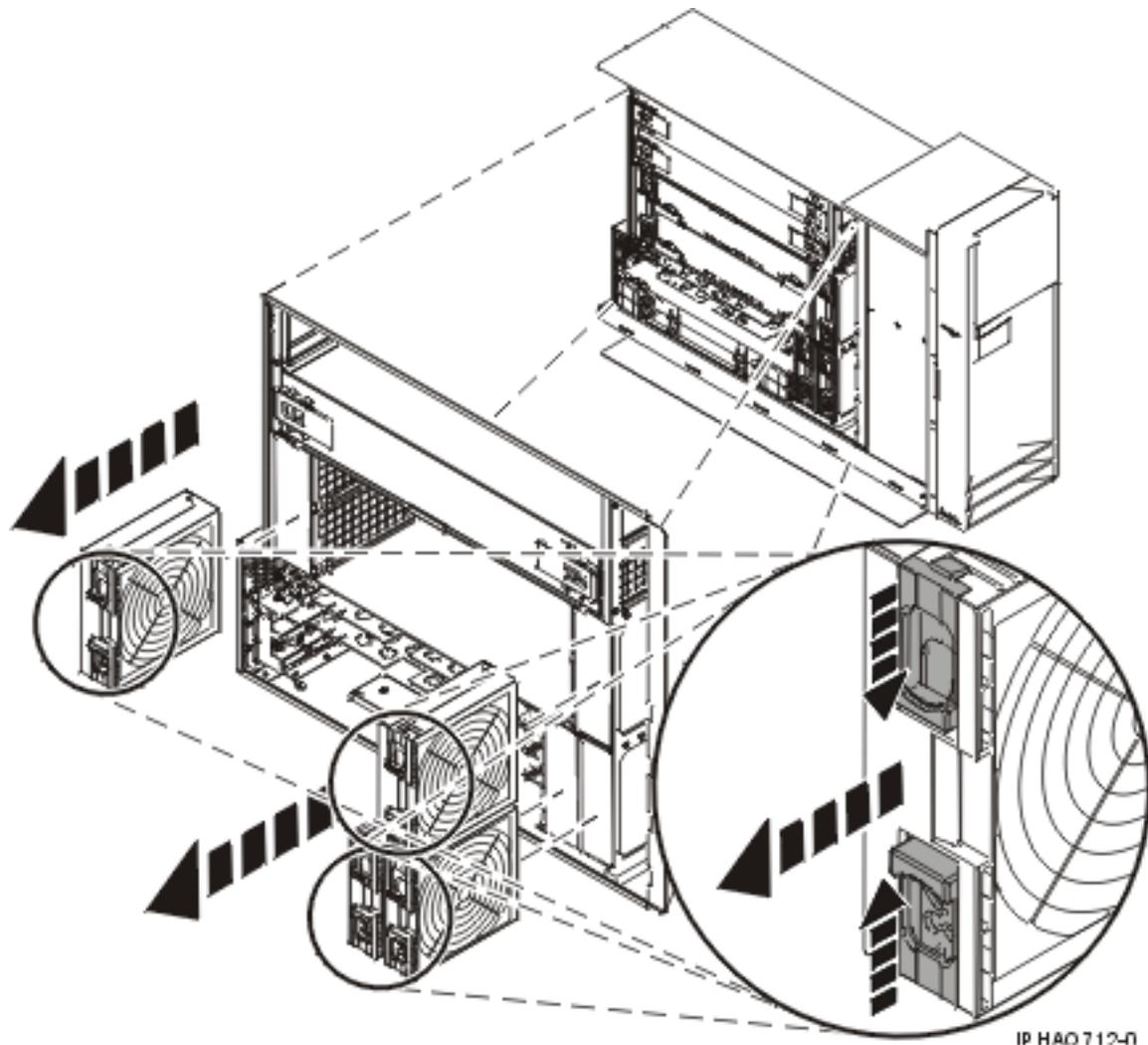


Figure 31. Removing the system unit fan in a stand-alone system

7. Replace the system unit fan, as described in “Replace the model 55x or OpenPower 720 system unit fan.”

## Replace the model 55x or OpenPower 720 system unit fan

You might need to replace the system unit fan. Use the procedure in this section to perform this task.

If your system is managed by the Hardware Management Console (HMC), you can use the HMC to complete the steps for replacing a system unit fan. For instructions, see “Replace a part using the Hardware Management Console” on page 88.

To replace a system unit fan, do the following:

1. Perform the prerequisite tasks described in “Before you begin” on page 42.
2. Remove the system unit fan. See “Remove a model 55x or OpenPower 720 system unit fan” on page 31 for instructions.
3. Align the fan with the slot in the system with the fan power plug over the connector.
4. As shown in Figure 32 on page 34 and Figure 33 on page 35, hold the locking tabs in the open position as you place the fan into the system.

5. Press down on the fan to ensure that the power plug is connected and that the locking tabs lock in place.

**Note:** The fan starts to run when the power plug is connected.

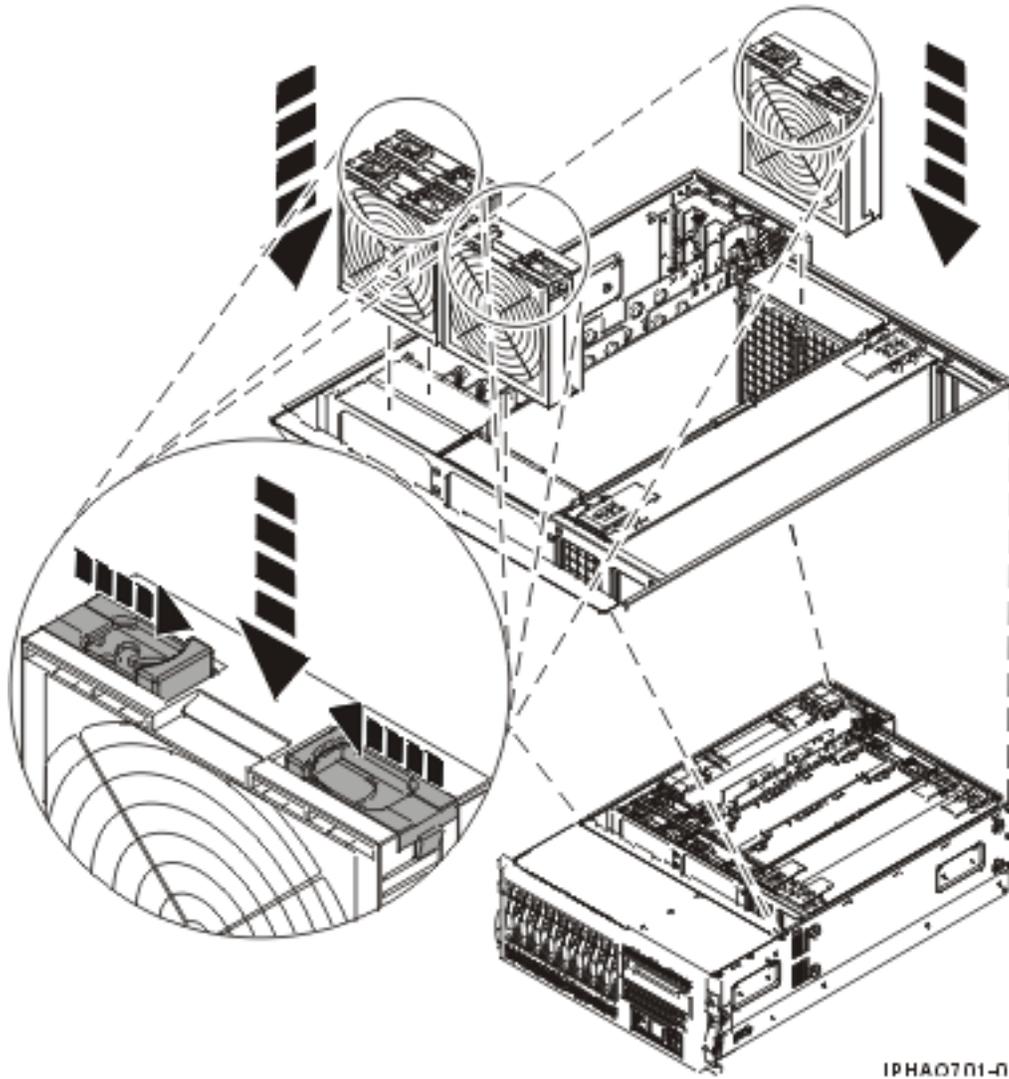


Figure 32. Replacing the system unit fan in a rack-mounted system

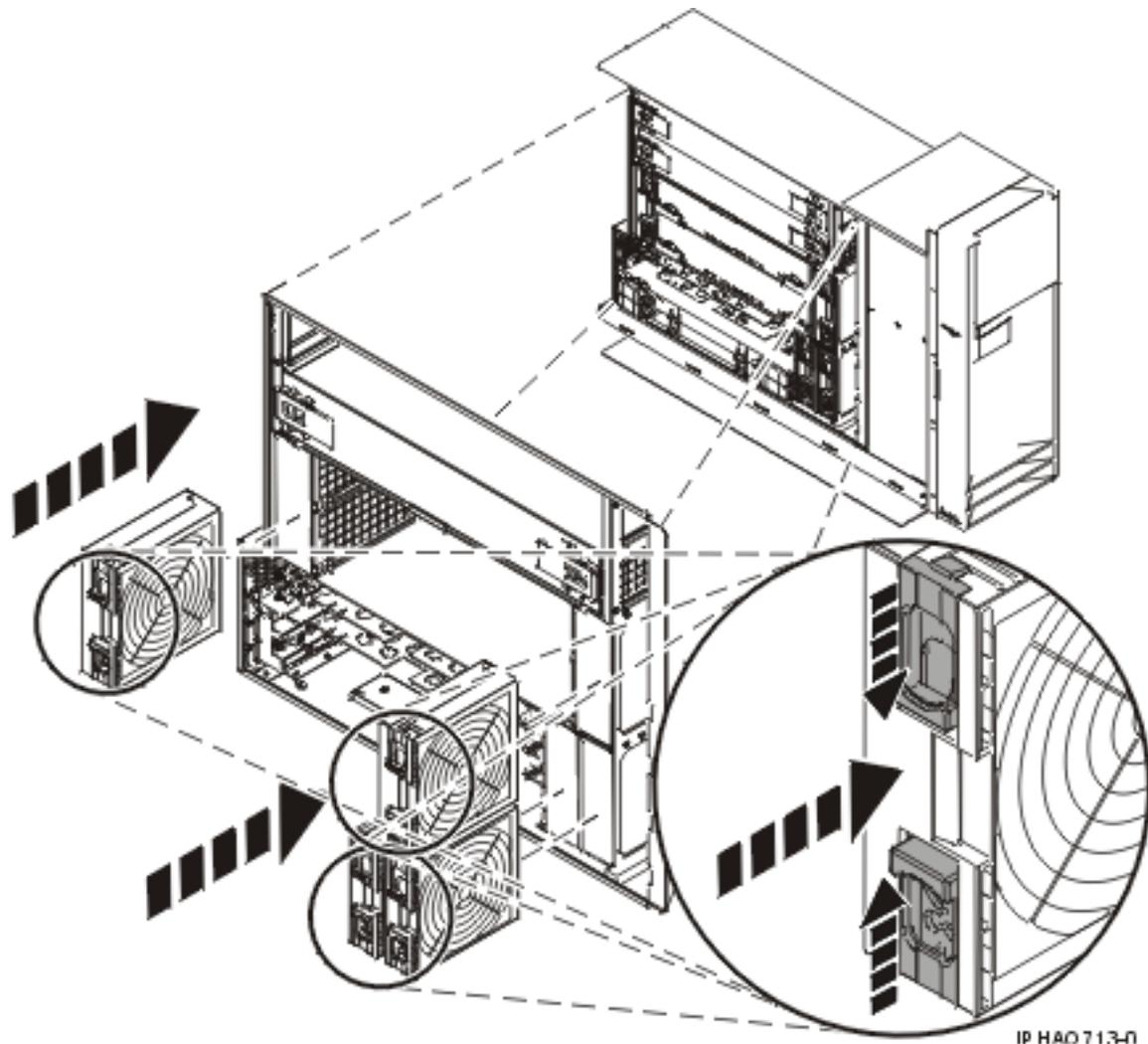


Figure 33. Replacing the system unit fan in a stand-alone system

6. Replace the service access cover, as described in “Install the service access cover on the model 285, 51x, 52x, 55x, 710, or OpenPower 720” on page 62.
7. If you are servicing a rack-mounted system unit, return the system to the operating position as described in “Place the rack-mounted system or expansion unit in the operating position” on page 51.
8. Verify that the new resource is functional. Refer to “Verify the installed part” on page 80.

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## Model 9116-561, or 570 system unit fans

The following procedures describe the removal and replacement of the system unit fans.

### Remove and replace model 9116-561, or 570 system unit fans with the system power on

You might need to remove or replace the system unit fans with the system power on. This section includes procedures so that you can perform these tasks.

To complete these procedures, you need to print the following instructions from the Select by feature or part topic, and then return here. If the eServer™ Hardware Information Center is available on a PC or a notebook that is close to the system on which you are installing or replacing parts, you can use the online version of these procedures.

- Media device backplane and enclosure
- Control panel and signal cable

### **Remove the model 9116-561, or 570 system unit fan with the system power on**

You might need to remove the system unit fans with the system power on. Use the procedure in this section to perform this task.

Be sure you read these instructions carefully and understand the complexity of the power on procedure before you begin. If you do not feel comfortable using this procedure, go to “Remove the model 9116-561 or 570 system unit fan with the system power off” on page 39.

**Attention:** Failure to follow these instructions could result in damage to the media device or to the system unit and could result in loss of data.

If your system is managed by the Hardware Management Console (HMC), you can use the HMC to complete the steps for removing a system unit fan. For instructions, see “Remove a part using the Hardware Management Console” on page 87.

#### **Prerequisites**

To remove a system unit fan with the power on, you must first complete the following items:

- Gain access to the Advanced System Management Interface (ASMI). See Accessing the Advanced System Management Interface for instructions.
- Determine if your system has the level of firmware needed to support the procedure. To determine the level of the system firmware, see View existing levels of server firmware. If the first 4 characters of the 9 character firmware release number are **SF22** (SF22xxxx), the control panel can be serviced with the system power on. If the first 4 characters of the 9 character firmware release number are **SF21** (SF21xxxx), the control panel must be serviced with the system power off.

**Attention:** If you are completing concurrent maintenance, ensure that both fans are securely attached before beginning the procedure.

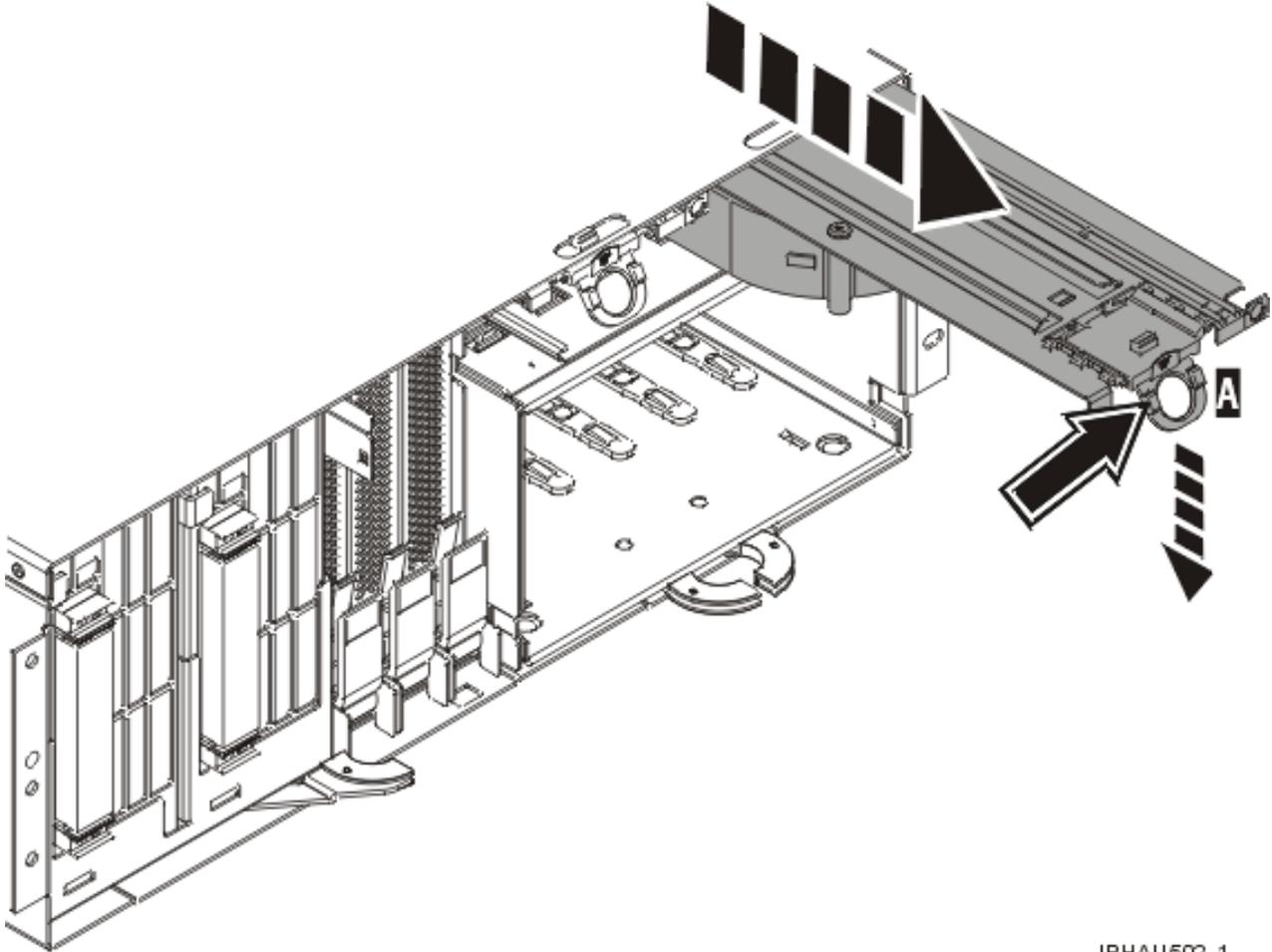
#### **Remove the system unit fan**

To remove a system unit fan, do the following:

1. Perform the prerequisite tasks described in “Before you begin” on page 42.
2. To help identify the failing part, see “Identify a failing part” on page 89.
3. Remove the front cover. See “Remove the front cover from the model 9116-561 or 570” on page 74 for instructions.
4. Remove the control panel. For instructions, see Remove the control panel with the power on.
5. Remove the media-device enclosure. See Remove the media-device enclosure for instructions.
6. As shown in Figure 34 on page 37, locate the ring **A** attached to the fan.

**Note:** Each fan unit has two light emitting diodes (LEDs) on the top cover. The green LED indicates the fan is operating properly. The amber LED indicates a fan failure.

7. Pull the ring downward to disengage it from the system chassis.
8. Using the ring, pull the fan out of the system unit.



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Figure 34. Removing the model 9116-561 or 570 system unit fan

9. Replace the system unit fan as described in “Replace the model 9116-561 or 570 system unit fan with the system power on.”

### Replace the model 9116-561 or 570 system unit fan with the system power on

You might need to replace the system unit fans with the system power on. Use the procedure in this section to perform this task.

#### Prerequisites

Be sure you read these instructions carefully and understand the complexity of the power on procedure before you begin.

To replace a system unit fan with the system power on, you must first complete the following items:

- Gain access to the Advanced System Management Interface (ASMI). See Accessing the Advanced System Management Interface for instructions.
- Determine if your system has the level of firmware needed to support the procedure. To determine the level of the system firmware, see View existing levels of server firmware. If the first 4 characters of the 9 character firmware release number are **SF22** (SF22xxxx), the control panel can be serviced with the system power on. If the first 4 characters of the 9 character firmware release number are **SF21** (SF21xxxx), the control panel must be serviced with the system power off.

#### Replace the system unit fan

To replace a system unit fan, do the following:

1. Perform the prerequisite tasks described in “Before you begin” on page 42.
2. Remove the failing fan from the system unit as described in “Remove the model 9116-561, or 570 system unit fan with the system power on” on page 36.
3. As shown in Figure 35, align the replacement fan **B** with the guide rails **A** inside of the fan slot.
4. Push the fan all the way into the fan slot.
5. Lift the attached ring up to lock the fan into place.

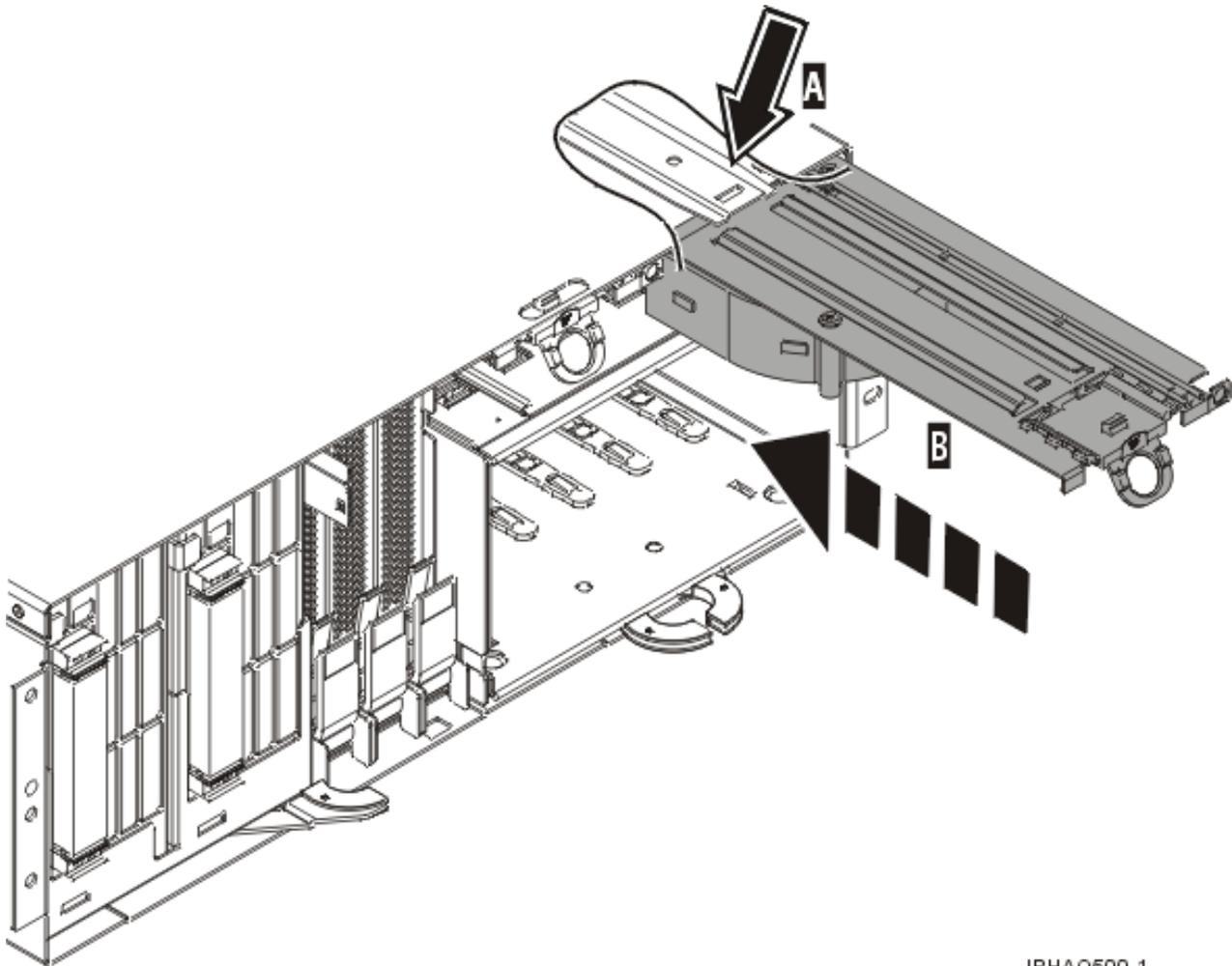


Figure 35. Fan replacement

6. Replace the media-device enclosure. See Replace the media-device enclosure for instructions.
7. Replace the control panel, as described in Replace the control panel with the power on.
8. Install the front cover. For instructions, see “Install the front cover on the model 9116-561 or 570” on page 75.

## Remove and replace model 9116-561 or 570 system unit fans with the system power off

You might need to remove or replace the system unit fans with the system power off. This section includes procedures so that you can perform these tasks.

To complete these procedures, you need to print the following instructions from the Select by feature or part topic, and then return here. If the eServer Hardware Information Center is available on a PC or a notebook that is close to the system on which you are installing or replacing parts, you can use the online version of these procedures.

- Media device backplane and enclosure
- Control panel and signal cable

### Remove the model 9116-561 or 570 system unit fan with the system power off

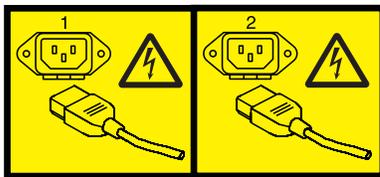
You might need to remove the system unit fan with the system power off. Use the procedure in this section to perform this task.

To remove a system unit fan with the system power off, do the following:

1. Perform the prerequisite tasks described in “Before you begin” on page 42.
2. To help identify the failing part, see “Identify a failing part” on page 89.
3. Stop the system (see “Stop the system or logical partition” on page 46).
4. Disconnect the power source from the system by unplugging the system.

**Note:** This system may be equipped with a second power supply. Before continuing with this procedure, ensure that the power source to the system has been completely disconnected.

(L003)



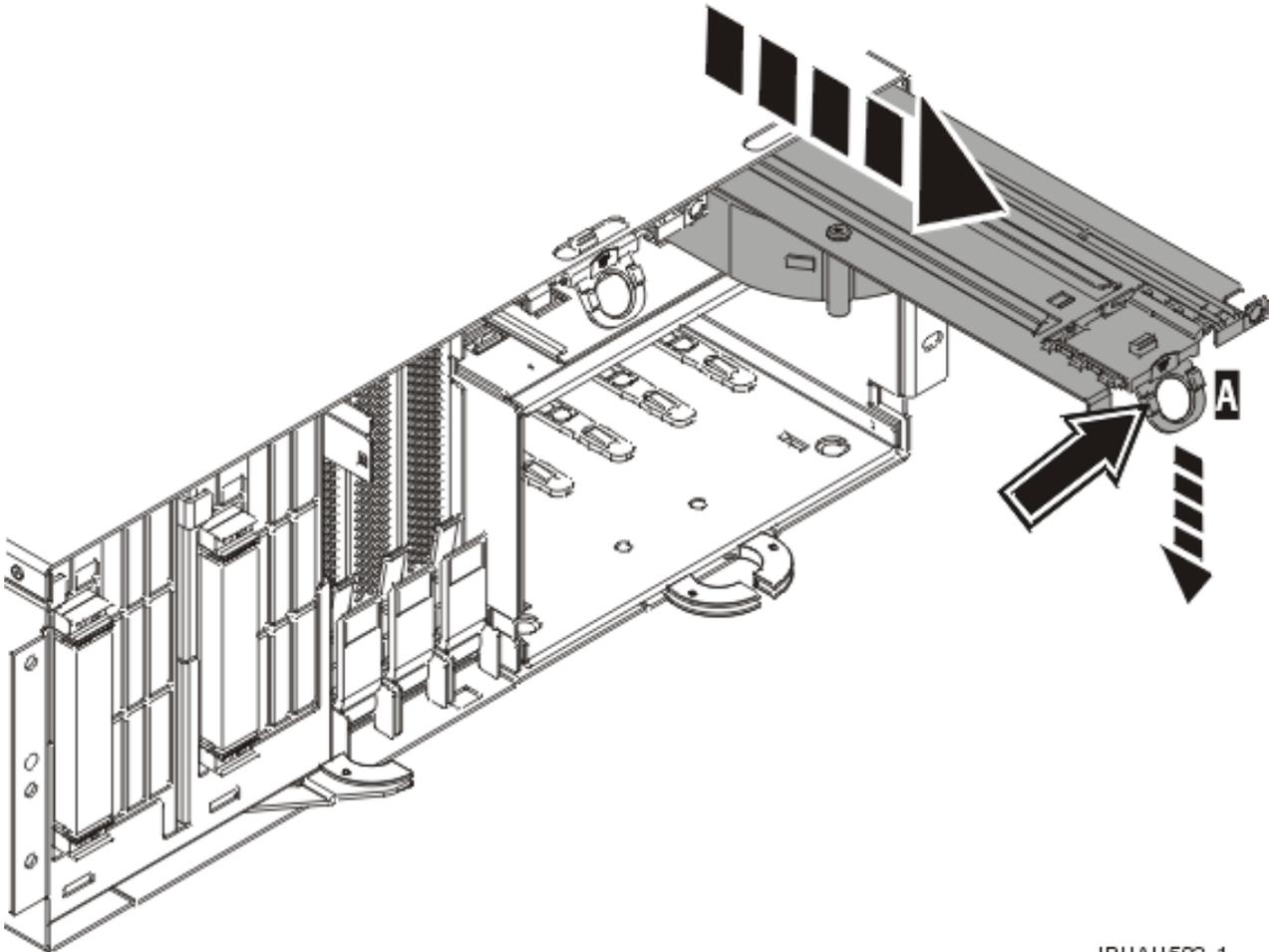
or



5. Remove the front cover. For instructions, see “Remove the front cover from the model 9116-561 or 570” on page 74.
6. Remove the control panel. For instructions, see Remove the control panel with the power off.
7. Remove the media-device enclosure. See Remove the media-device enclosure for instructions.
8. As shown in Figure 36 on page 40, locate the ring **A** attached to the fan.

**Note:** Each fan unit has two LEDs on the top cover. The green LED indicates the fan is operating properly. The amber LED indicates a fan failure.

9. Pull the ring downward to disengage it from the system chassis.
10. Using the ring, pull the fan out of the system unit.



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Figure 36. Fan removal

11. Replace the system unit fan. For instructions, see “Replace the model 9116-561 or 570 system unit fan with the system power off.”

### **Replace the model 9116-561 or 570 system unit fan with the system power off**

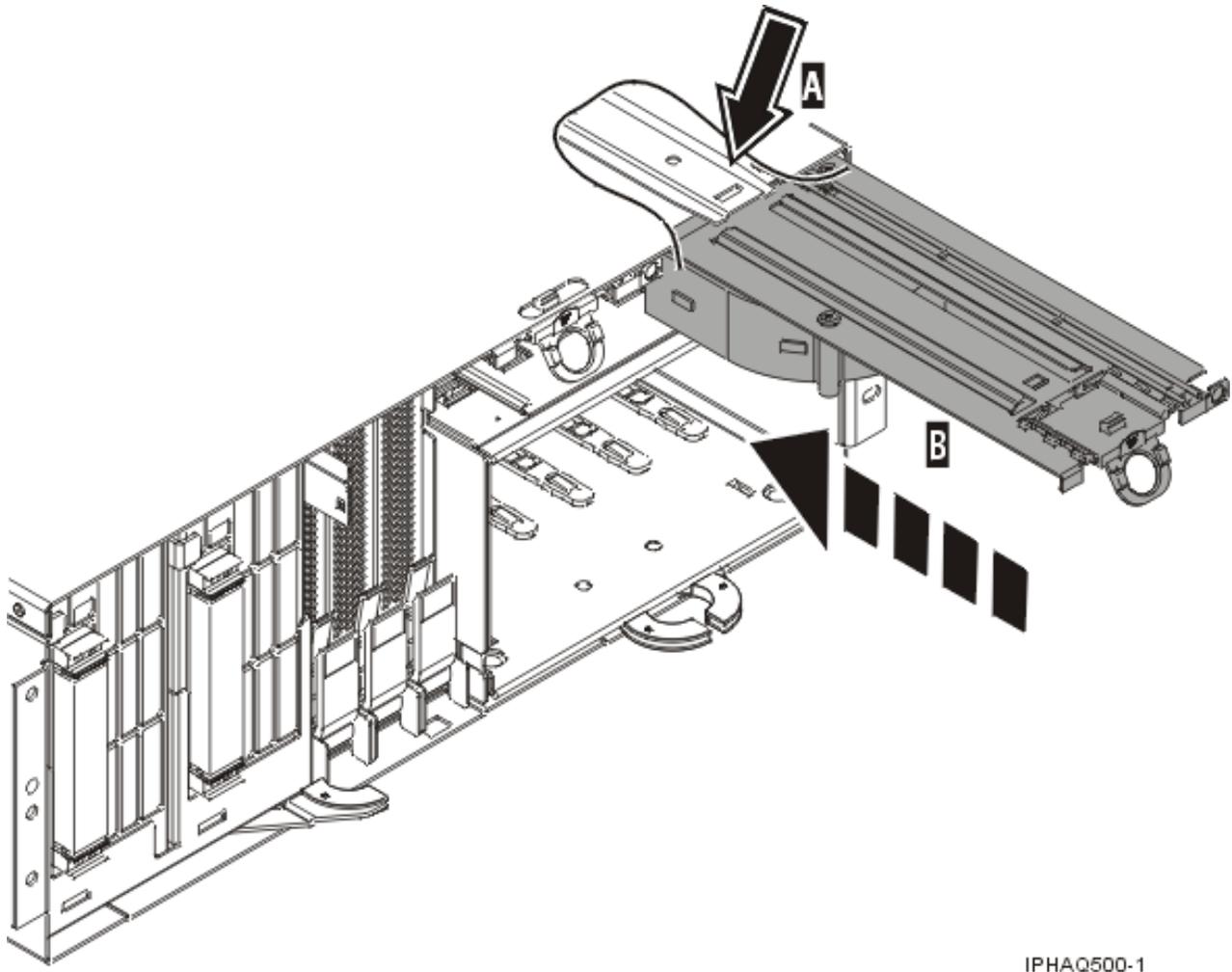
You might need to replace the system unit fan with the system power off. Use the procedure in this section to perform this task.

If your system is managed by the Hardware Management Console (HMC), you can use the HMC to complete the steps for replacing a system unit fan. For instructions, see “Replace a part using the Hardware Management Console” on page 88.

To replace a system unit fan, do the following:

1. Perform the prerequisite tasks described in “Before you begin” on page 42.
2. If you have not already done so, remove the failing fan from the system unit as described in “Remove the model 9116-561 or 570 system unit fan with the system power off” on page 39.

3. As shown in Figure 37, align the fan **B** with the guide rails **A** inside of the fan slot and install the fan.
4. Push the fan all the way into the fan slot.
5. Lift the attached ring up to lock the fan into place.



IPHAQ500-1

Figure 37. Fan replacement

6. Replace the media-device enclosure. See Replace the media-device enclosure for instructions.
7. Replace the control panel, as described in Replace the control panel with the power off.
8. Replace the front cover. For instructions, see “Install the front cover on the model 9116-561 or 570” on page 75.
9. Reconnect the power source to the system.
10. Start the system (see “Start the system or logical partition” on page 44).

---

## Related procedures

Locate instructions to complete some of the additional procedures you might need. These procedures might include removing covers and doors, starting and stopping the system, placing a system or server in the service position, identifying a failing part, or verifying a replaced part.

## Before you begin

Understand prerequisites for installing, removing, or replacing features and parts.

### DANGER

When working on or around the system, observe the following precautions:

Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard:

- Connect power to this unit only with the IBM provided power cord. Do not use the IBM provided power cord for any other product.
- Do not open or service any power supply assembly.
- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure that the outlet supplies proper voltage and phase rotation according to the system rating plate.
- Connect any equipment that will be attached to this product to properly wired outlets.
- When possible, use one hand only to connect or disconnect signal cables.
- Never turn on any equipment when there is evidence of fire, water, or structural damage.
- Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.
- Connect and disconnect cables as described in the following procedures when installing, moving, or opening covers on this product or attached devices.

To Disconnect:

1. Turn off everything (unless instructed otherwise).
2. Remove the power cords from the outlets.
3. Remove the signal cables from the connectors.
4. Remove all cables from the devices

To Connect:

1. Turn off everything (unless instructed otherwise).
2. Attach all cables to the devices.
3. Attach the signal cables to the connectors.
4. Attach the power cords to the outlets.
5. Turn on the devices.

(D005)

### DANGER

Observe the following precautions when working on or around your IT rack system:

- Heavy equipment—personal injury or equipment damage might result if mishandled.
- Always lower the leveling pads on the rack cabinet.
- Always install stabilizer brackets on the rack cabinet.
- To avoid hazardous conditions due to uneven mechanical loading, always install the heaviest devices in the bottom of the rack cabinet. Always install servers and optional devices starting from the bottom of the rack cabinet.
- Rack-mounted devices are not to be used as shelves or work spaces. Do not place objects on top of rack-mounted devices.



- Each rack cabinet might have more than one power cord. Be sure to disconnect all power cords in the rack cabinet when directed to disconnect power during servicing.
- Connect all devices installed in a rack cabinet to power devices installed in the same rack cabinet. Do not plug a power cord from a device installed in one rack cabinet into a power device installed in a different rack cabinet.
- An electrical outlet that is not correctly wired could place hazardous voltage on the metal parts of the system or the devices that attach to the system. It is the responsibility of the customer to ensure that the outlet is correctly wired and grounded to prevent an electrical shock.

#### CAUTION

- Do not install a unit in a rack where the internal rack ambient temperatures will exceed the manufacturer's recommended ambient temperature for all your rack-mounted devices.
- Do not install a unit in a rack where the air flow is compromised. Ensure that air flow is not blocked or reduced on any side, front, or back of a unit used for air flow through the unit.
- Consideration should be given to the connection of the equipment to the supply circuit so that overloading of the circuits does not compromise the supply wiring or overcurrent protection. To provide the correct power connection to a rack, refer to the rating labels located on the equipment in the rack to determine the total power requirement of the supply circuit.
- *(For sliding drawers.)* Do not pull out or install any drawer or feature if the rack stabilizer brackets are not attached to the rack. Do not pull out more than one drawer at a time. The rack might become unstable if you pull out more than one drawer at a time.
- *(For fixed drawers.)* This drawer is a fixed drawer and must not be moved for servicing unless specified by the manufacturer. Attempting to move the drawer partially or completely out of the rack might cause the rack to become unstable or cause the drawer to fall out of the rack.

(R001)

Before you begin a replacement or installation procedure, perform these tasks:

1. If you are installing a new feature, ensure that you have the software required to support the new feature and determine if there are any existing PTF prerequisites.

To do this, go to the following Web site: [http://www-912.ibm.com/e\\_dir/eServerPrereq.nsf](http://www-912.ibm.com/e_dir/eServerPrereq.nsf)

2. If you are performing an installation or replacement procedure that might put your data at risk, ensure, wherever possible, that you have a current backup of your system or logical partition (including operating systems, licensed programs, and data).

For information on backing up your system or logical partition, select from the following:

- AIX® backup
- i5/OS® backup

- Linux® backup
3. Review the installation or replacement procedure for the feature or part.
  4. Note the significance of color on your system.  
Blue or terra-cotta on a part of the hardware indicates a touch point where you can grip the hardware to remove it from or install it in the system, open or close a latch, and so on. Terra-cotta might also indicate that the part can be removed and replaced with the system or logical partition power on.
  5. Ensure that you have access to a medium, flat-blade screwdriver.
  6. If parts are incorrect, missing, or visibly damaged, do the following:
    - If you are replacing a part, contact your service provider or next level of support.
    - If you are installing a feature, contact one of the following:
      - Your service provider or next level of support.
      - In the United States, contact the IBM Rochester Manufacturing Automated Information Line (R-MAIL) at 1-800-300-8751.

In countries outside of the United States, use the following Web site to locate your service and support telephone numbers:  
<http://www.ibm.com/planetwide>
  7. If you encounter difficulties during the installation, contact your service provider, your IBM reseller, or your next level of support.
  8. If you are installing new hardware in a logical partition, you need to understand and plan for the implications of partitioning your system. For information, see Logical Partitioning, and then return to these instructions.

## Start or stop the system or logical partition

Learn how to start or stop a system or logical partition.

### Start the system or logical partition

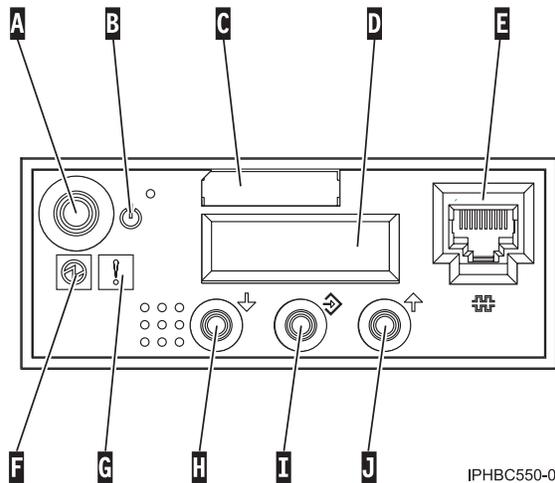
You might need to start a system or logical partition. You can use this procedure to start the system or logical partition.

#### Start a system that is not managed by a Hardware Management Console:

You can use the power button or the Advanced System Management Interface to start a system that is not managed by a Hardware Management Console.

To start a system that is not managed by a Hardware Management Console (HMC), follow these steps:

1. On a rack-mounted system unit, open the front rack door, if necessary. On a stand-alone system unit, open the front door.
2. Before you press the power button on the control panel, ensure that power is connected to the system unit as follows:
  - All system power cables are connected to a power source.
  - The power-on light **F**, as shown in the following figure, is slowly blinking.
  - The top of the display **D**, as shown in the following figure, shows 01 V=F.



**Tip:** The system attention light **G**, as shown in the previous figure, does not appear on the control panel on the model 570.

3. Press the power button **A**, as shown in the previous figure, on the control panel.

**Note:** On the OpenPower® 710 or model 9110-510, the power button is on the operations panel.

4. Observe the following after pressing the power button:
  - The power-on light begins to blink faster.
  - The system cooling fans are activated after approximately 30 seconds and begin to accelerate to operating speed.
  - Progress indicators, also referred to as checkpoints, appear on the control panel display while the system is being started. The power-on light on the control panel stops blinking and remains on, indicating that system power is on.

**Tip:** If pressing the power button does not start the system, use the following to start the system using the Advanced System Management Interface (ASMI).

- Set up access to the ASMI. For instructions, see [Accessing the ASMI](#).
- Start the system using the ASMI. For instructions, see [Powering the system on and off](#).

### Start the system or logical partition using the Hardware Management Console:

You can use the Hardware Management Console (HMC) user interface to start the system or logical partition after the required cables are installed and the power cables are connected to a power source.

For instructions on working with the HMC, see [Managing the Hardware Management Console](#). For instructions on starting a logical partition, see [Activating a partition profile](#). For instructions on starting the system, see [Powering on the managed system](#).

Progress indicators, also referred to as checkpoints, appear on the control panel display while the system is being started. The power-on light on the control panel stops blinking and remains on, indicating that system power is on.

## Stop the system or logical partition

Learn how to stop a system or logical partition.

**Attention:** Using either the power-on button on the control panel or entering commands at the Hardware Management Console (HMC) to stop the system can cause unpredictable results in the data files. Also, the next time you start the system, it might take longer if all applications are not ended before stopping the system.

To stop the system or logical partition, select the appropriate procedure:

### Stop the system that is not managed by a Hardware Management Console:

You might need to stop the system to perform another task. Use these instructions to stop the system using the power button or Advanced System Management Interface.

The following procedure describes how to stop a system that is not managed by a Hardware Management Console (HMC).

After you stop the operating system, or if you need to use the control panel power button to power off the system see, Using the control panel power button to power off.

### Prepare to stop the system

Before you stop the system, do the following:

1. If an Integrated xSeries<sup>®</sup> Adapter (IXA) is present on the system, shut it down using i5/OS options.
2. Ensure that all jobs are completed and end all applications.
3. Ensure that the operating system is stopped. Failure to do so can result in the loss of data.
4. Record the IPL type and IPL mode from the control panel display to help you return the system to this state when the installation or replacement procedure is completed.
5. Write down the information displayed on the control panel if you are stopping your system due to an error or to make a repair. For more information, see Collecting reference codes and system information.

### Stop the system

To stop a system, follow these steps:

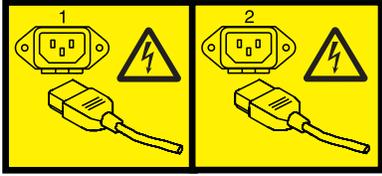
1. Log in to the system as a user with the authority to run the shutdown or pwrdownsys (Power Down System) command.
2. At the command line, enter one of the following commands:
  - If your system is running AIX, type **shutdown**.
  - If your system is running i5/OS, type **pwrdownsys \*immed**.
  - If your system is running Linux, type **shutdown -h now**.

The command stops the operating system. The system power turns off, the power-on light begins to slowly blink, and the system goes into a standby state.

3. Set the power switches of any devices connected to the system to off.
4. Unplug any power cables that are attached to the unit from electrical outlets. Ensure that you unplug power cables from peripheral devices, such as printers and expansion units.

**Important:** The system might be equipped with a second power supply. Before continuing with this procedure, ensure that all power sources to the system have been completely disconnected.

(L003)



or



**Stop the system or logical partition using the Hardware Management Console:**

You can use the Hardware Management Console (HMC) user interface to stop the system or a logical partition. For instructions on stopping the system, see [Powering off the managed system](#), or you can also find instructions at

## **Place the rack-mounted system or expansion unit in the service position or operating position**

You might need to place a system or expansion unit into the service position or operating position to perform service or gain access to internal components. Use the instructions in this section to perform these tasks.

### **Place the rack-mounted system or expansion unit in the service position**

You might need to perform service or gain access to internal components by placing the rack-mounted system or expansion unit in the service position. Use the procedure in this section to accomplish this task.

**Note:** Some of the figures in these procedures might not look exactly like the system or expansion unit that you have. However, the steps to perform the task are the same.

## DANGER

When working on or around the system, observe the following precautions:

Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard:

- Connect power to this unit only with the IBM provided power cord. Do not use the IBM provided power cord for any other product.
- Do not open or service any power supply assembly.
- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure that the outlet supplies proper voltage and phase rotation according to the system rating plate.
- Connect any equipment that will be attached to this product to properly wired outlets.
- When possible, use one hand only to connect or disconnect signal cables.
- Never turn on any equipment when there is evidence of fire, water, or structural damage.
- Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.
- Connect and disconnect cables as described in the following procedures when installing, moving, or opening covers on this product or attached devices.

To Disconnect:

1. Turn off everything (unless instructed otherwise).
2. Remove the power cords from the outlets.
3. Remove the signal cables from the connectors.
4. Remove all cables from the devices

To Connect:

1. Turn off everything (unless instructed otherwise).
2. Attach all cables to the devices.
3. Attach the signal cables to the connectors.
4. Attach the power cords to the outlets.
5. Turn on the devices.

(D005)

## DANGER

Observe the following precautions when working on or around your IT rack system:

- Heavy equipment—personal injury or equipment damage might result if mishandled.
- Always lower the leveling pads on the rack cabinet.
- Always install stabilizer brackets on the rack cabinet.
- To avoid hazardous conditions due to uneven mechanical loading, always install the heaviest devices in the bottom of the rack cabinet. Always install servers and optional devices starting from the bottom of the rack cabinet.
- Rack-mounted devices are not to be used as shelves or work spaces. Do not place objects on top of rack-mounted devices.



- Each rack cabinet might have more than one power cord. Be sure to disconnect all power cords in the rack cabinet when directed to disconnect power during servicing.
- Connect all devices installed in a rack cabinet to power devices installed in the same rack cabinet. Do not plug a power cord from a device installed in one rack cabinet into a power device installed in a different rack cabinet.
- An electrical outlet that is not correctly wired could place hazardous voltage on the metal parts of the system or the devices that attach to the system. It is the responsibility of the customer to ensure that the outlet is correctly wired and grounded to prevent an electrical shock.

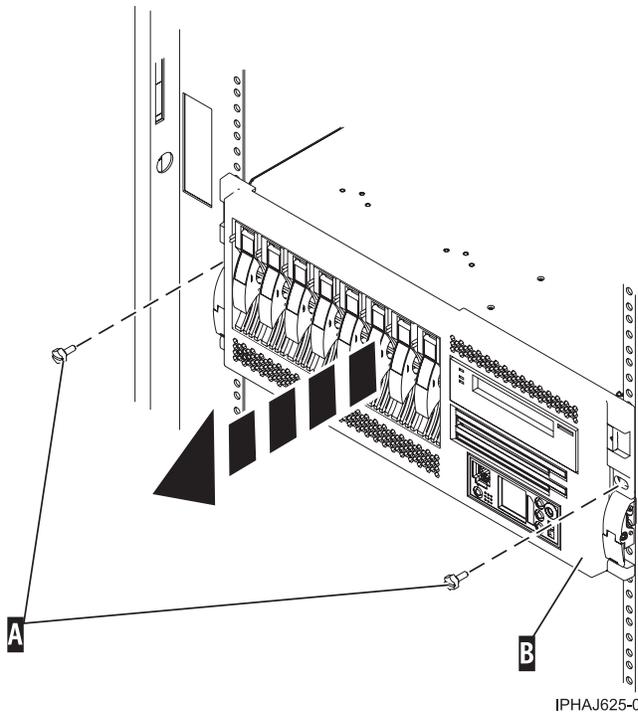
#### CAUTION

- Do not install a unit in a rack where the internal rack ambient temperatures will exceed the manufacturer's recommended ambient temperature for all your rack-mounted devices.
- Do not install a unit in a rack where the air flow is compromised. Ensure that air flow is not blocked or reduced on any side, front, or back of a unit used for air flow through the unit.
- Consideration should be given to the connection of the equipment to the supply circuit so that overloading of the circuits does not compromise the supply wiring or overcurrent protection. To provide the correct power connection to a rack, refer to the rating labels located on the equipment in the rack to determine the total power requirement of the supply circuit.
- *(For sliding drawers.)* Do not pull out or install any drawer or feature if the rack stabilizer brackets are not attached to the rack. Do not pull out more than one drawer at a time. The rack might become unstable if you pull out more than one drawer at a time.
- *(For fixed drawers.)* This drawer is a fixed drawer and must not be moved for servicing unless specified by the manufacturer. Attempting to move the drawer partially or completely out of the rack might cause the rack to become unstable or cause the drawer to fall out of the rack.

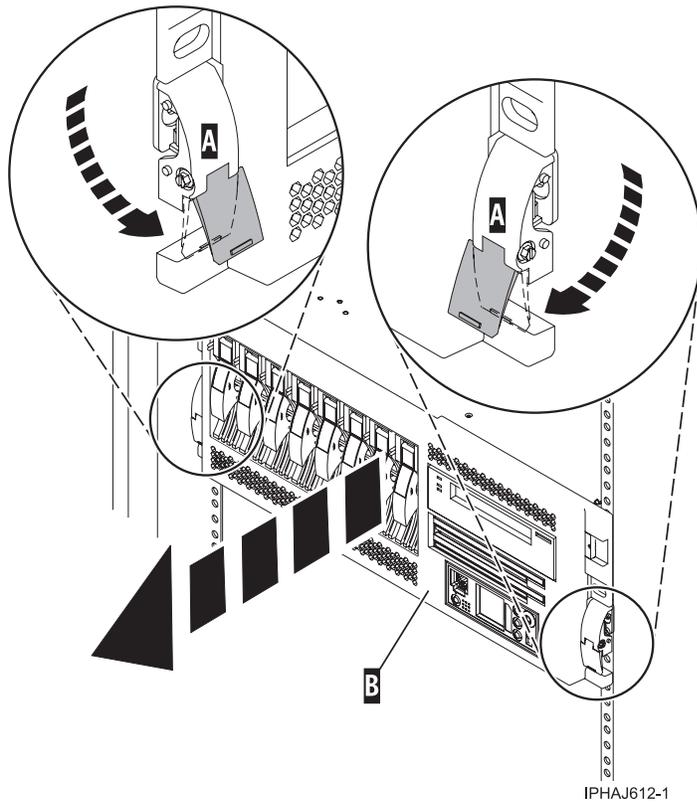
(R001)

To place the rack-mounted system or expansion unit into the service position, follow these steps:

1. If necessary, open the front rack door.
2. Remove the two thumbscrews **A** that secure the system or expansion unit **B** to the rack as shown in the following figure.



3. Release the rack latches A on both the left and right sides as shown in the following figure.



4. Review the following note, and then slowly pull the system or expansion unit out from the rack until the rails are fully extended and locked.

**Note:**

- If the procedure you are performing requires you to unplug cables from the back of the system or expansion unit, do so before you pull the unit out from the rack.
- Ensure that the cables at the rear of the system or expansion unit do not catch or bind as you pull the unit out from the rack.
- Ensure the rails are fully extended. When the rails are fully extended, the rail safety latches lock into place. This action prevents the system or expansion unit from being pulled out too far.

### Place the rack-mounted system or expansion unit in the operating position

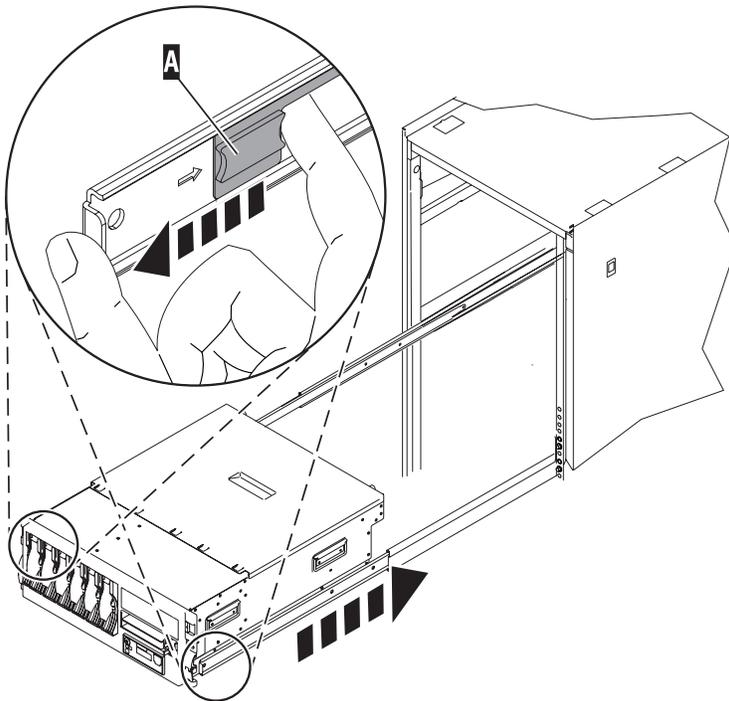
You might need to place the rack-mounted system or expansion unit in the operating position to make the unit available for use. Use the instructions in this section to accomplish this task.

**Tip:** Some of the figures in these procedures might not look exactly like the system or expansion unit that you have. However, the steps to perform the task are the same.

To place the rack-mounted system or expansion unit into the operating position, follow these steps:

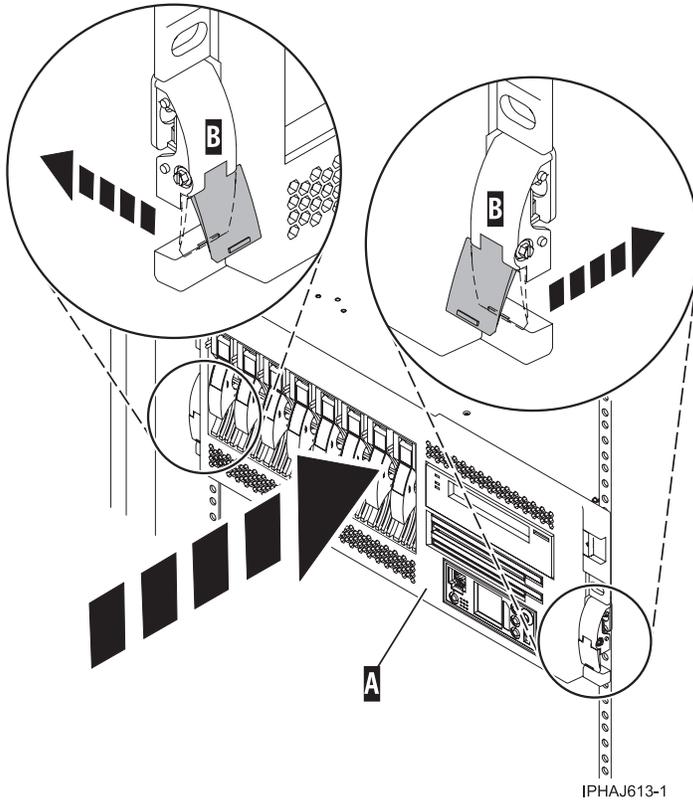
1. Simultaneously release the blue rail safety latches **A**, located near the front of each rail, and push the system or expansion unit into the rack as shown in the following figure.

**Note:** Ensure that the cables at the rear of the system or expansion unit do not catch or bind as you push the unit back into the rack.

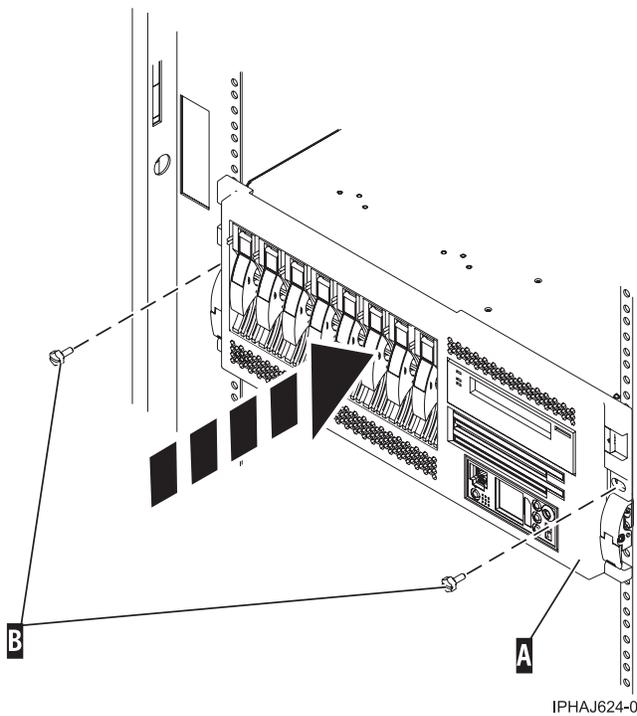


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- a. Both rack latches **B** should lock into position as shown in the following figure.



2. Replace and tighten the two thumbscrews **B** that secure the system or expansion unit **A** to the rack as shown in the following figure.



3. Close the front rack door.

## Place the rack-mounted model 7047-185 or 7037-A50 in the service position or operating position

You might need to place a system or expansion unit into the service position or operating position to perform service or gain access to internal components. Use the instructions in this section to perform these tasks.

### Place the rack-mounted model 7047-185 or 7037-A50 in the service position

You might need to place a system into the service position to perform service or gain access to internal components. Use the instructions in this section to perform this task.

**Tip:** Some of the figures in these procedures might not look exactly like the system unit that you have. However, the steps to perform the task are the same.

To place the rack-mounted system unit into the service position, follow these steps.

#### DANGER

When working on or around the system, observe the following precautions:

Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard:

- Connect power to this unit only with the IBM provided power cord. Do not use the IBM provided power cord for any other product.
- Do not open or service any power supply assembly.
- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure that the outlet supplies proper voltage and phase rotation according to the system rating plate.
- Connect any equipment that will be attached to this product to properly wired outlets.
- When possible, use one hand only to connect or disconnect signal cables.
- Never turn on any equipment when there is evidence of fire, water, or structural damage.
- Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.
- Connect and disconnect cables as described in the following procedures when installing, moving, or opening covers on this product or attached devices.

#### To Disconnect:

1. Turn off everything (unless instructed otherwise).
2. Remove the power cords from the outlets.
3. Remove the signal cables from the connectors.
4. Remove all cables from the devices

#### To Connect:

1. Turn off everything (unless instructed otherwise).
2. Attach all cables to the devices.
3. Attach the signal cables to the connectors.
4. Attach the power cords to the outlets.
5. Turn on the devices.

(D005)

#### DANGER

Observe the following precautions when working on or around your IT rack system:

- Heavy equipment—personal injury or equipment damage might result if mishandled.
- Always lower the leveling pads on the rack cabinet.
- Always install stabilizer brackets on the rack cabinet.
- To avoid hazardous conditions due to uneven mechanical loading, always install the heaviest devices in the bottom of the rack cabinet. Always install servers and optional devices starting from the bottom of the rack cabinet.
- Rack-mounted devices are not to be used as shelves or work spaces. Do not place objects on top of rack-mounted devices.



- Each rack cabinet might have more than one power cord. Be sure to disconnect all power cords in the rack cabinet when directed to disconnect power during servicing.
- Connect all devices installed in a rack cabinet to power devices installed in the same rack cabinet. Do not plug a power cord from a device installed in one rack cabinet into a power device installed in a different rack cabinet.
- An electrical outlet that is not correctly wired could place hazardous voltage on the metal parts of the system or the devices that attach to the system. It is the responsibility of the customer to ensure that the outlet is correctly wired and grounded to prevent an electrical shock.

#### CAUTION

- Do not install a unit in a rack where the internal rack ambient temperatures will exceed the manufacturer's recommended ambient temperature for all your rack-mounted devices.
- Do not install a unit in a rack where the air flow is compromised. Ensure that air flow is not blocked or reduced on any side, front, or back of a unit used for air flow through the unit.
- Consideration should be given to the connection of the equipment to the supply circuit so that overloading of the circuits does not compromise the supply wiring or overcurrent protection. To provide the correct power connection to a rack, refer to the rating labels located on the equipment in the rack to determine the total power requirement of the supply circuit.
- *(For sliding drawers.)* Do not pull out or install any drawer or feature if the rack stabilizer brackets are not attached to the rack. Do not pull out more than one drawer at a time. The rack might become unstable if you pull out more than one drawer at a time.
- *(For fixed drawers.)* This drawer is a fixed drawer and must not be moved for servicing unless specified by the manufacturer. Attempting to move the drawer partially or completely out of the rack might cause the rack to become unstable or cause the drawer to fall out of the rack.

(R001)

1. If necessary, open the front rack door.
2. Release the rack latches **A** on both the left and right sides as shown in the following figure.
3. Review the following note, and then slowly pull the system unit **B** out from the rack until the rails are fully extended and locked.

#### Note:

- If the procedure you are performing requires you to unplug cables from the back of the system unit, do so before you pull the unit out from the rack.
- Ensure that the cables at the rear of the system unit do not catch or bind as you pull the unit out from the rack.

- Ensure the rails are fully extended. When the rails are fully extended, the rail safety latches lock into place. This action prevents the system unit from being pulled out too far.

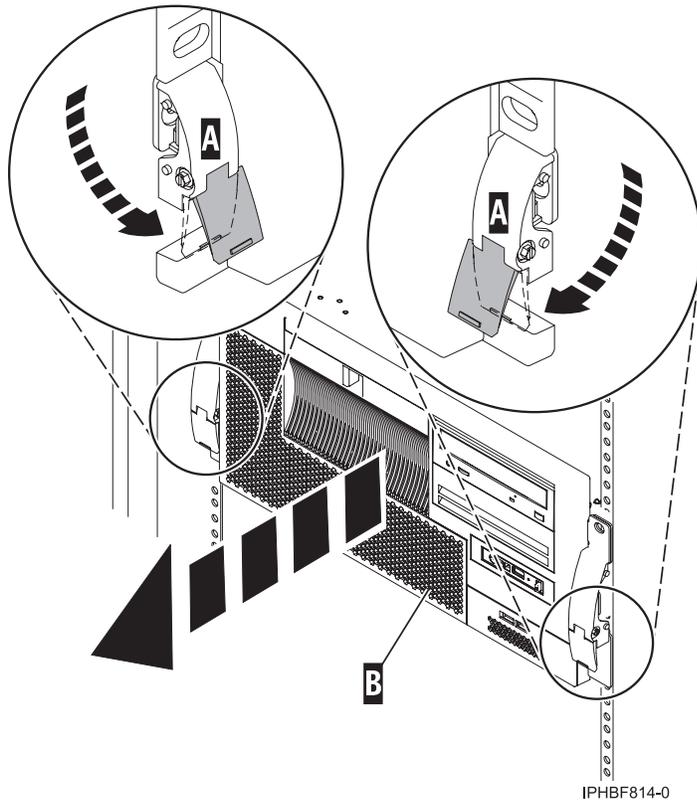


Figure 38. Placing the model in the service position

### Place the rack-mounted model 7047-185 or 7037-A50 in the operating position

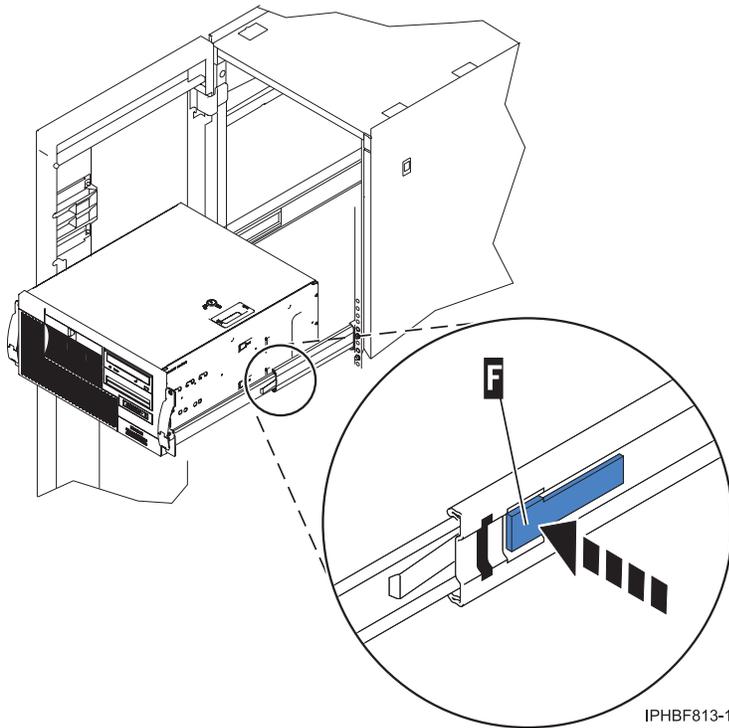
You might need to place a system into the operating position to make the system available for use. Use the procedure in this section to perform this task.

**Note:** Some of the figures in these procedures might not look exactly like the system unit that you have. However, the steps to perform the task are the same.

To place the rack-mounted system unit into the operating position, follow these steps:

1. Simultaneously release the blue rail safety latches F located near the front of each rail, and push the system or expansion unit into the rack as shown in the following figure.

**Note:** Ensure that the cables at the rear of the unit do not catch or bind as you push the unit back into the rack.



IPHBF813-1

- a. Both rack latches should lock into position.
2. Replace and tighten the two thumbscrews that secure the system unit to the rack.
3. Close the front rack door.

## Open the model 505 service access panel

You might need to open the service access panel to perform service on the fans, control panel, or to access other internal components. Use the procedure in this section to perform this task.

To open the service access panel on a rack-mounted model 505 follow these steps:

1. If necessary, open the front rack door.
2. If they are present, remove the two thumbscrews **A** that secure the system unit to the rack as shown in the following figure.

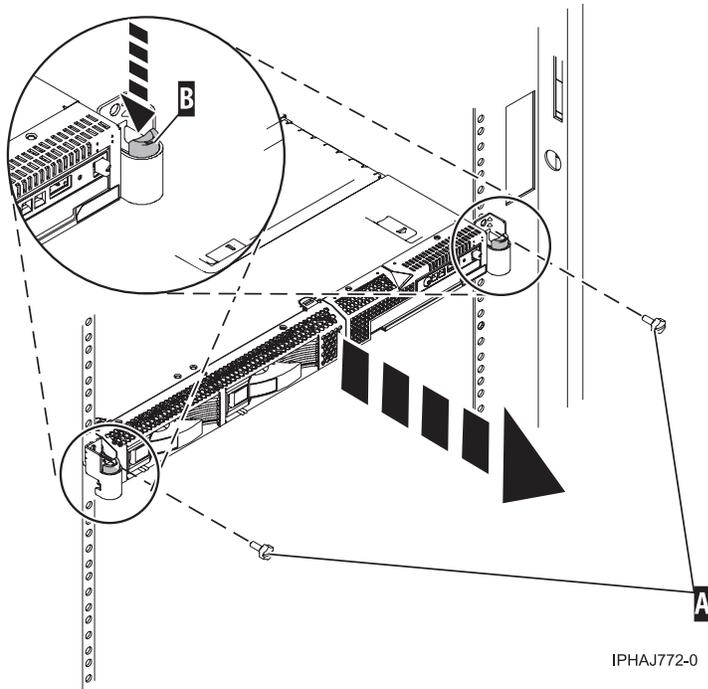
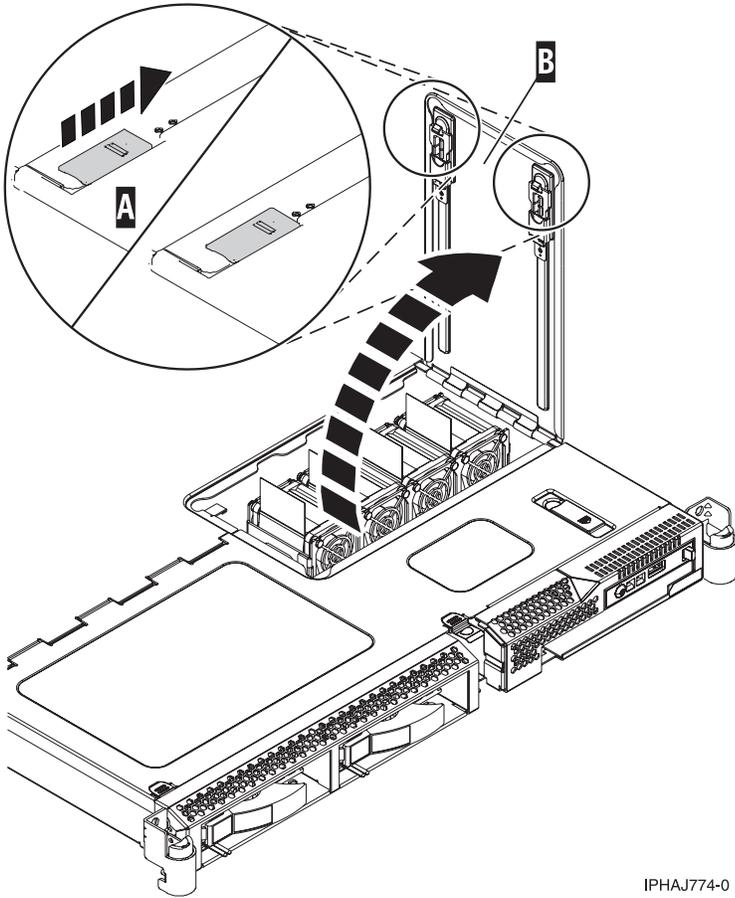


Figure 39. Remove thumbscrews

3. Release the rack latches **B** on both the left and right sides as shown in the previous figure.

**Note:**

- Ensure that the cables at the rear of the system unit do not catch or bind as you pull the unit out from the rack.
  - When the rails are fully extended, the rail safety latches lock into place. This action prevents the system unit from being pulled out too far.
4. Slowly pull the system unit out from the rack until the service access panel is completely exposed.
  5. Push the panel release tabs **A** until you can open the panel lid, as shown in the following figure.
  6. Lift the panel lid **B** to its fully opened position.



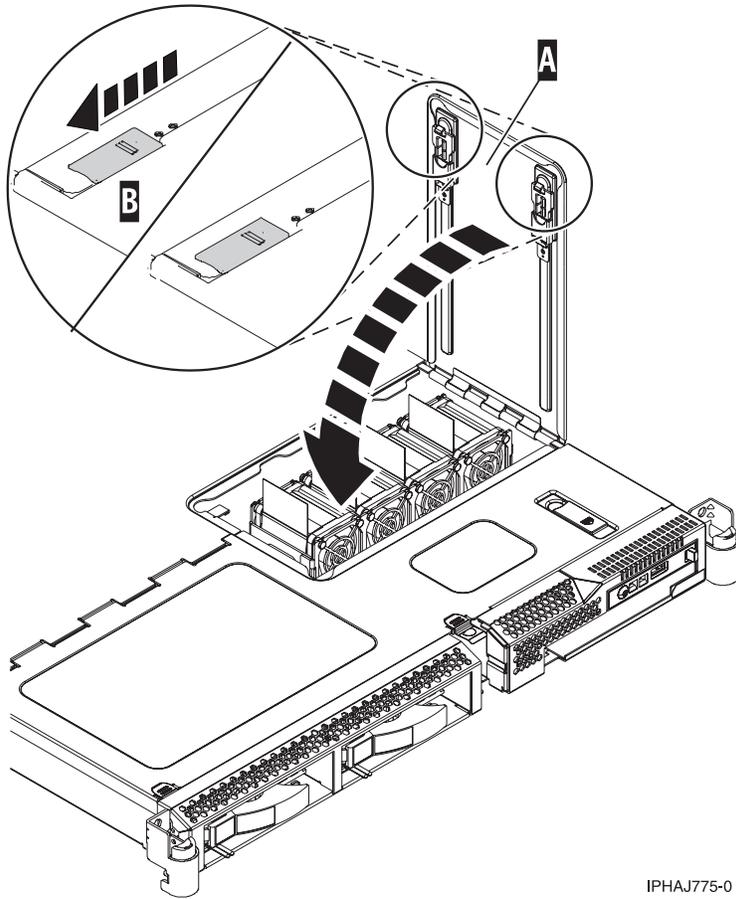
IPHAJ774-0

*Figure 40. Open the service access panel*

Complete the following steps to close the service access panel:

1. Close the panel lid A, as shown in the following figure.

*Figure 41. Close the service access panel*



IPHAJ775-0

2. Push the panel release tabs **B** back into the locked position.
3. Gently push the server back into the rack until the rack latches lock into place.
4. Replace the thumbscrews if necessary.

### **Model 285, 51x, 52x, 55x, 710, or OpenPower 720 service access cover**

You might need to remove and replace the service access cover to perform service or gain access to internal components. Use the instructions in this section to accomplish these tasks.

#### **Remove the service access cover from the model 285, 51x, 52x, 55x, 710, or OpenPower 720**

You might need to remove the service access cover to perform service or gain access to internal components. Use the instructions in this section to accomplish this task.

**Tip:** Some of the figures in these procedures may not look exactly like the system unit that you have. However, the steps to perform the task are the same.

#### **Remove the service access cover from the rack-mounted model 51x, 52x, 55x, 710, or OpenPower 720:**

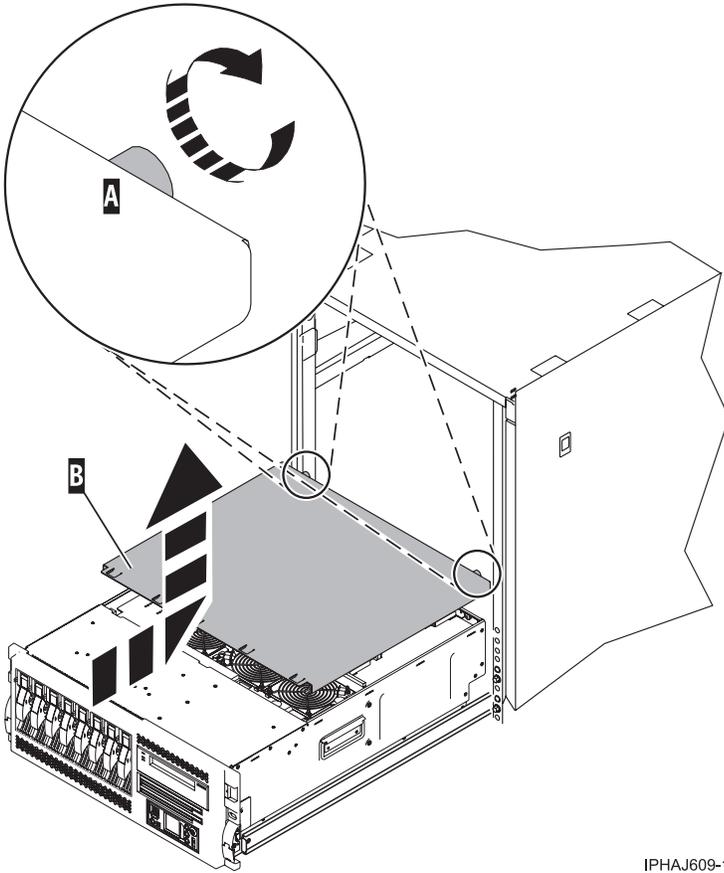
You might need remove the service access cover to perform service or gain access to internal components. Use the procedure in this section to accomplish this task.

To remove the service access cover from a rack-mounted model follow these steps:

1. "Place the rack-mounted system or expansion unit in the service position" on page 47.
2. Loosen the two thumbscrews located at the back of the cover.

- Slide the cover toward the back of the system unit. When the front of the service access cover clears the upper frame ledge, lift the cover up and off the system unit.

**Attention:** For proper cooling and airflow, install the cover before starting the system. Operating the system without the cover for more than 30 minutes could damage the system components.



IPHAJ609-1

Figure 42. Remove the service access cover

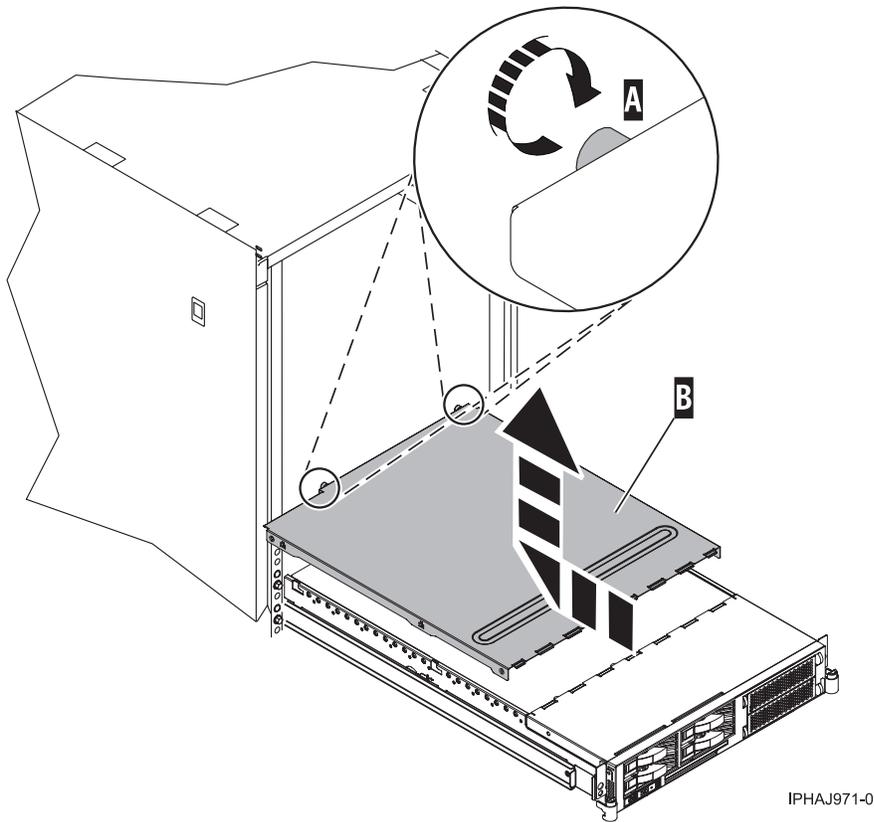


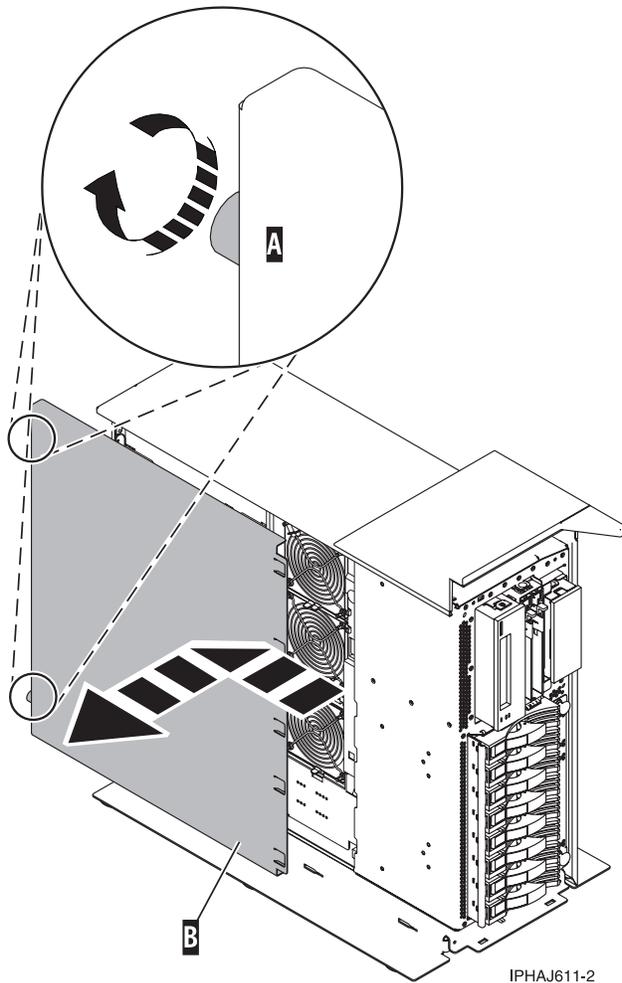
Figure 43. Remove the service access cover

**Remove the service access cover from the stand-alone model 285, 52x, 55x, or OpenPower 720:**

You might need remove the service access cove to perform service or gain access to internal components. Use the procedure in this section to accomplish this task.

To remove the service access cover from a stand-alone model do the following:

1. Loosen the two thumbscrews located at the back of the service access cover as shown in the following figure.



2. Slide the service access cover toward the back of the system unit. When the front of the cover clears the front frame ledge, lift the cover off the system unit.

**Attention:** For proper cooling and airflow, install the cover before starting the system. Operating the system without the cover for more than 30 minutes could damage the system components.

### Install the service access cover on the model 285, 51x, 52x, 55x, 710, or OpenPower 720

You might need to install the service access cover after performing service or accessing internal components. Use the instructions in this section to accomplish this task for your model.

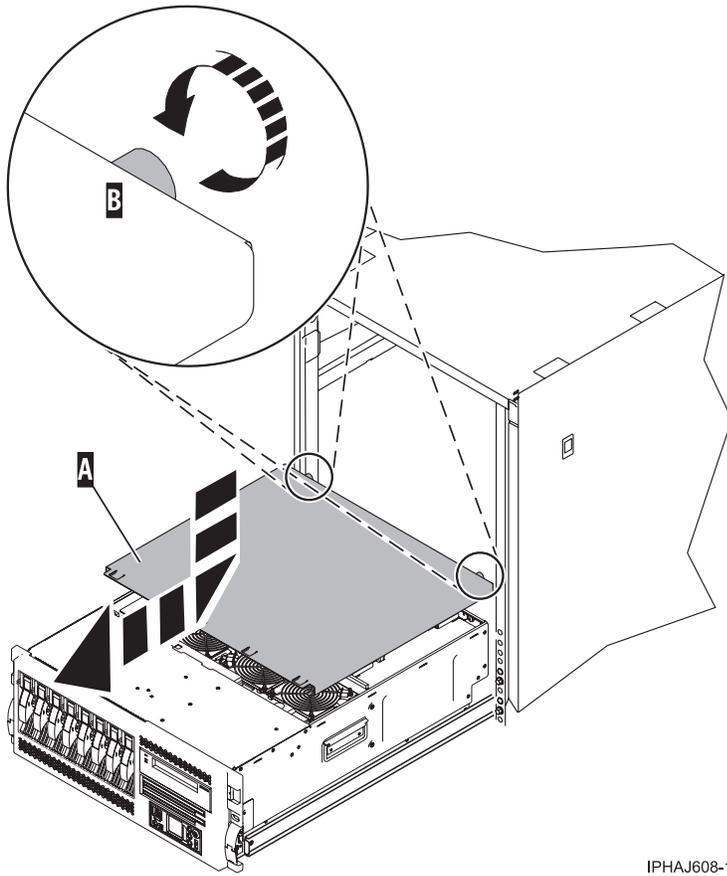
#### Install the service access cover on the rack-mounted model 51x, 52x, 55x, 710, or OpenPower 720:

You might need to install the service access cover after performing service or accessing internal components. Use the procedure in this section to perform this task.

To install the service access cover on a rack-mounted model refer to Figure 44 on page 63 and Figure 45 on page 64, and follow these steps:

1. Place the service access cover **A** on the top of the system unit, approximately 25 mm (1 in.) from the front of the system unit.
2. Hold the service access cover against the system unit, and slide it toward the front of the system. Ensure that the fan LED cables do not get caught on the front edge of the service access cover as you move it forward. The tabs on the service access cover slide beneath the upper chassis ledge, and the two thumbscrews align with the screw holes at the back of the system unit.

3. Tighten the thumbscrews **B** located at the back of the cover.



IPHAJ608-1

Figure 44. Install the service access cover on the rack-mounted model

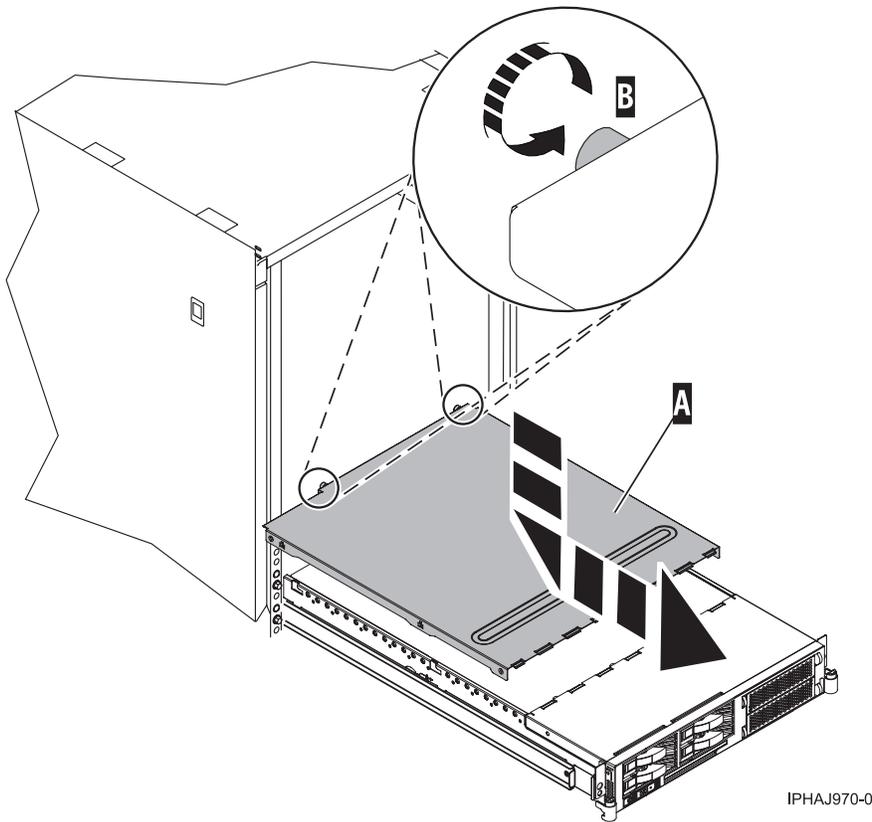


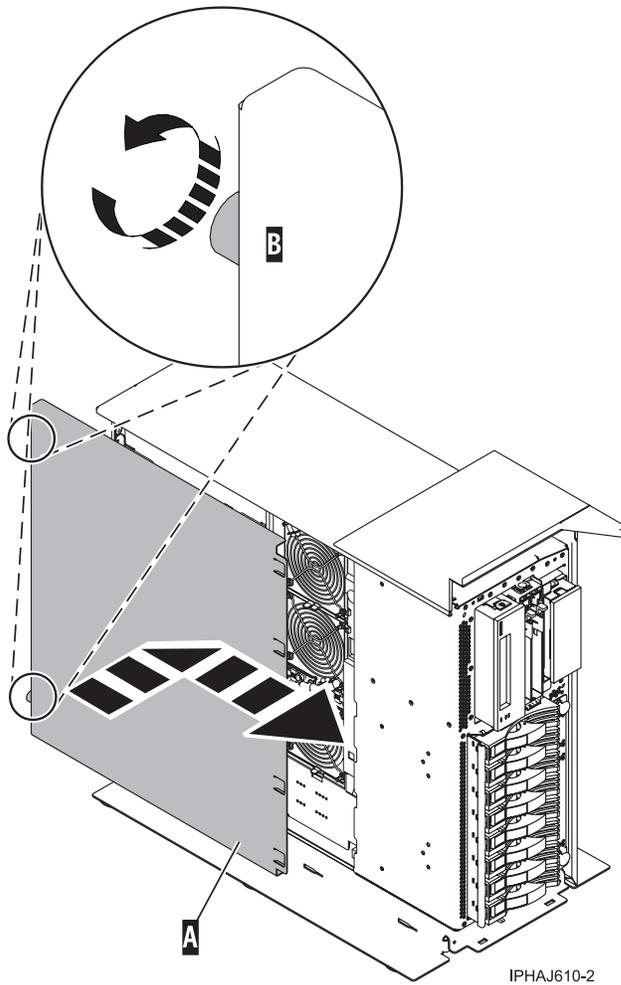
Figure 45. Install the service access cover on the rack-mounted model

**Install the service access cover on the stand-alone model 285, 52x, 55x, or OpenPower 720:**

You might need to install the service access cover after performing service or accessing internal components. Use the procedure in this section to perform this task.

To install the service access cover on a stand-alone model follow these steps:

1. Align the service access cover pins with the slots in the system. The flanges on the top and bottom of the cover wrap around the system frame, as shown in the following figure.
2. Hold the service access cover against the system unit **A** and slide it toward the front of the system.
3. Tighten the two thumbscrews **B** located at the back of the cover.



## Front cover

You might need to remove, replace, or install covers to access components or perform service. Use the instructions in this section to accomplish these tasks.

### Remove and replace model 7047-185 or 7037-A50 covers and doors

You might need to remove and replace covers and doors to access components or perform service. Use the instructions in this section to accomplish these tasks.

#### Remove and replace the model 7047-185 or 7037-A50 front cover:

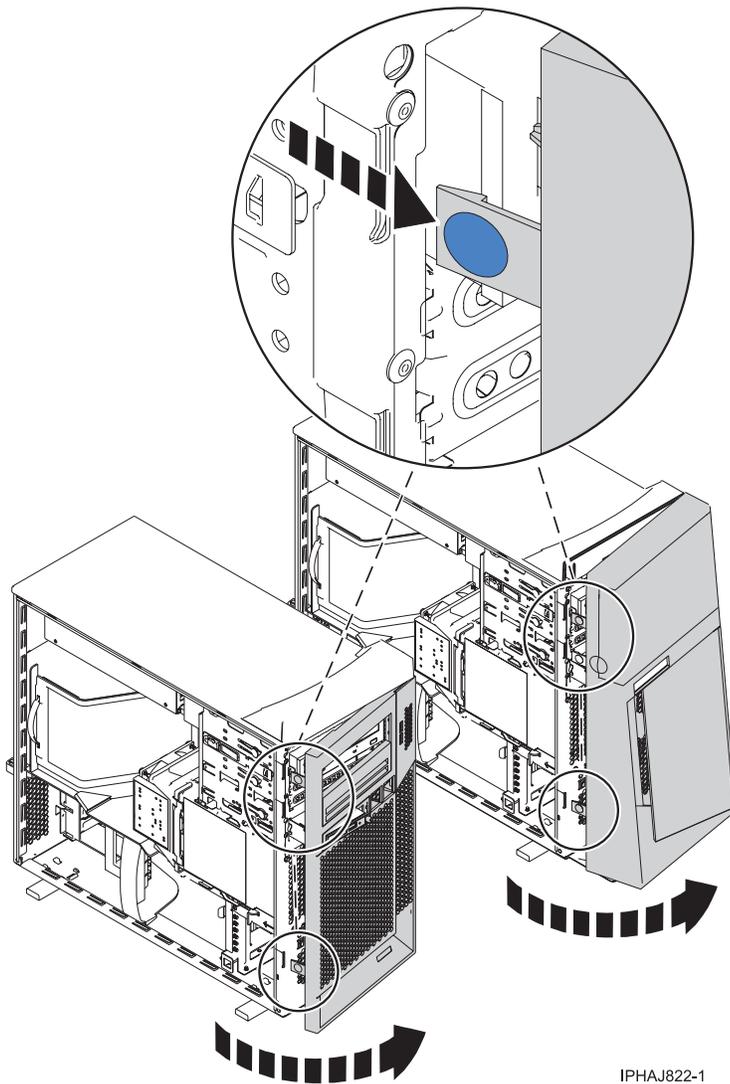
You might need to remove the cover to access components or perform service. Use the procedure in this section to accomplish this task.

To remove the front cover follow these steps:

1. Remove the side cover. See, "Remove and replace the model 7047-185 or 7037-A50 side cover" on page 68
2. Lift each of the tabs on the front cover until it is released from the system unit, as shown in the following figure.

**Tip:** On the open face cover there are two tabs to release. On the acoustic feature front cover there are three tabs to release.

3. Pull the cover open until it can be removed from the system unit.



IPHAJ822-1

Figure 46. Removing the front cover

#### Remove and replace the model 7047-185 or 7037-A50 acoustic-feature back cover:

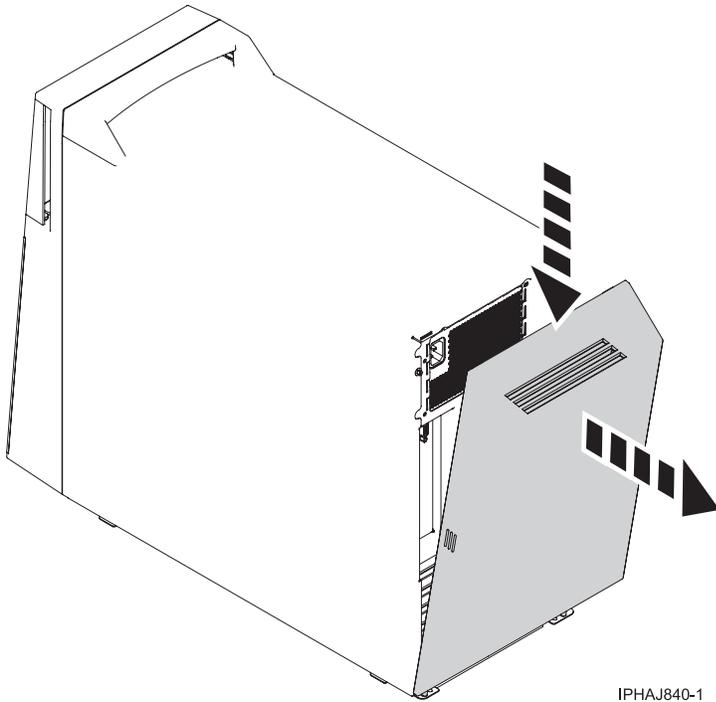
You might need to remove the cover to access components or perform service. Use the procedure in this section to accomplish this task.

To remove the back cover follow these steps:

1. Press down on the center tab of the cover until you unseat it from the back of the system unit, as shown in the following figure.

**Remember:** Use care not to dislodge any of the cables or cords attached to the system unit during this procedure.

2. Lift the top of the cover until the pins on the bottom clear the holes and the cover can be removed.



IPHAJ840-1

*Figure 47. Removing the back cover*

To replace the back cover follow these steps:

1. Attach all cables and cords.
2. Place the pins on the bottom of the cover into the slot at the bottom of the system unit, as shown in the following figure.
3. Rotate the cover until it snaps into place on the back of the system unit.

**Remember:** Use care not to dislodge any of the cables or cords attached to the system unit during this procedure.

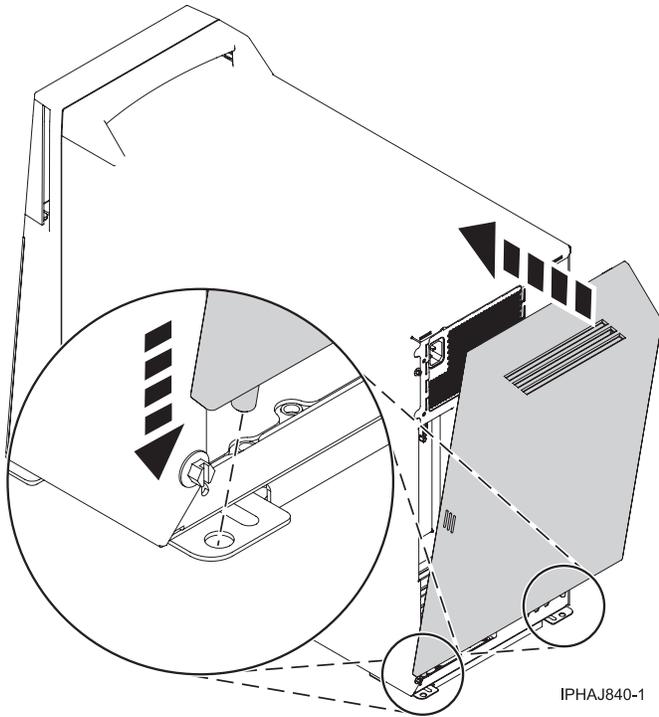


Figure 48. Replacing the back cover

**Remove and replace the model 7047-185 or 7037-A50 side cover:**

You might need to remove the cover to access components or perform service. Use the procedure in this section to accomplish this task.

To remove the side cover follow these steps:

1. Unlock the security lock **A** if it is locked, as shown in the following figure.
2. Press down on the latch **B** to open the cover and pull it away from the system unit.
3. Lift the panel out of the ledge on the bottom of the system unit.

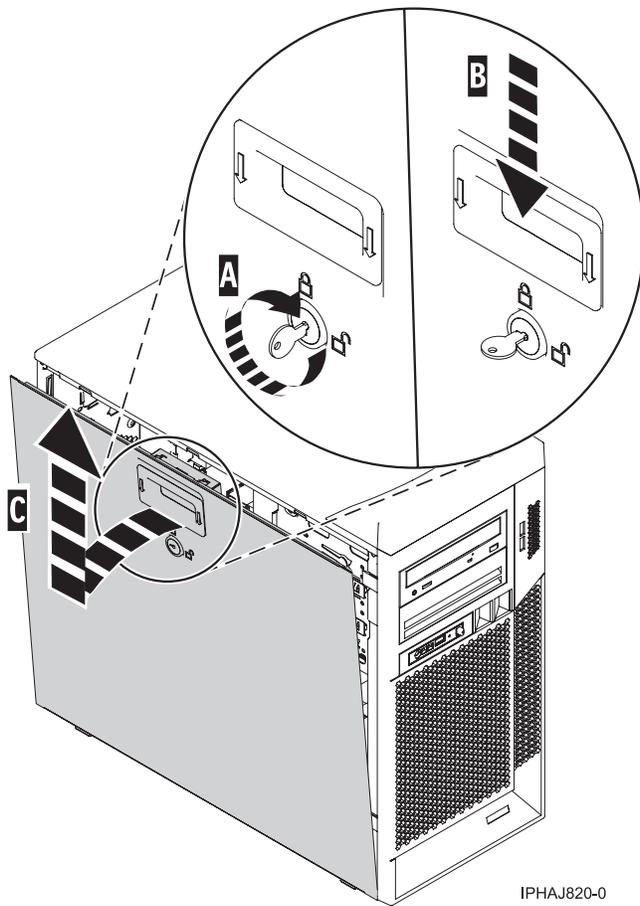


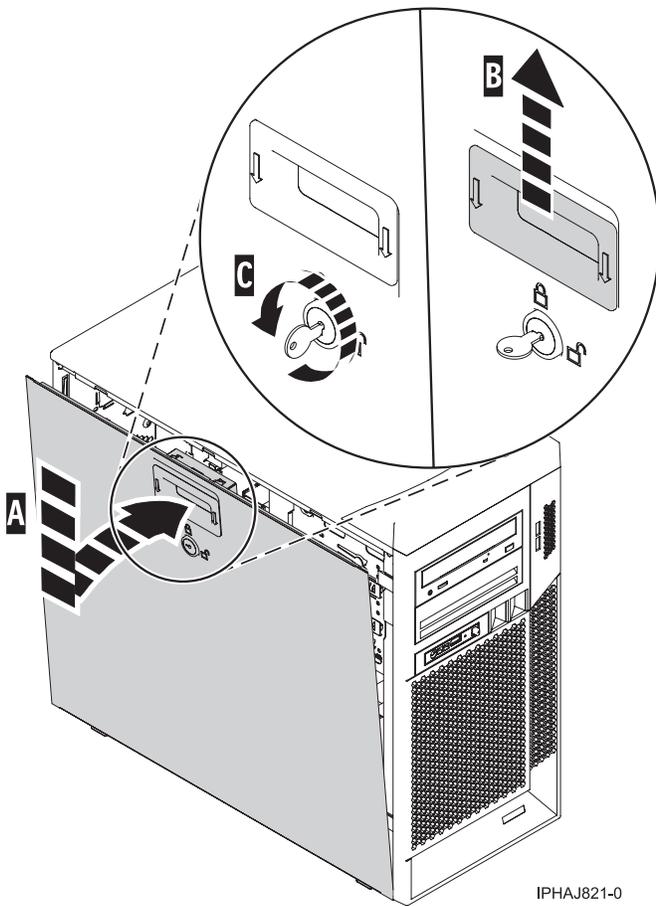
Figure 49. Removing the side cover

Replace the side cover in a model 7047-185 or 7037-A50:

You might need to replace the cover after accessing components or performing service. Use the procedure in this section to accomplish this task.

To replace the side cover follow these steps:

1. Insert the bottom lip of the cover into the ledge on the bottom of the system unit.
2. Rotate the panel up **A** until the latch snaps into place **B**, as shown in the following figure.



IPHAJ821-0

Figure 50. Replacing the service panel

3. Lock the security lock C if needed.

### Front cover for models 285, 52x, 55x, or OpenPower 720 and the 0595 expansion unit

You might need to remove or replace covers to access components or perform service. Use the instructions in this section to accomplish these tasks.

#### Remove the front cover from the model 285, 52x, 55x, OpenPower 720, or the 0595 expansion unit:

You might need to remove the cover to access components or perform service. Use the procedures in this section to accomplish this task.

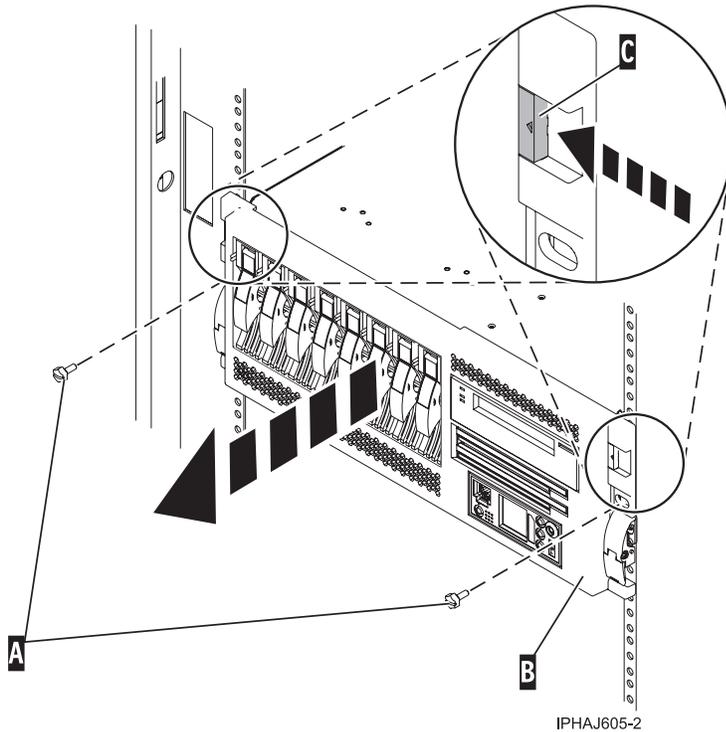
*Remove the front cover from the rack-mounted model 285, 52x, 55x, or OpenPower 720 and the 0595 expansion unit:*

You might need to remove the cover to access components or perform service. Use the procedure in this section to accomplish this task.

To remove the rack-mounted system or expansion unit front cover, follow these steps:

1. Open the front rack door.
2. Remove the two thumbscrews A that secure the system or expansion unit B to the rack as shown in the following figure.
3. Push both cover-release latches C in the direction of the arrows to release the cover from the system or expansion unit.

4. Pull the cover out and away from the system or expansion unit.



*Remove the front cover from the stand-alone model 285, 52x, 55x, or OpenPower 720:*

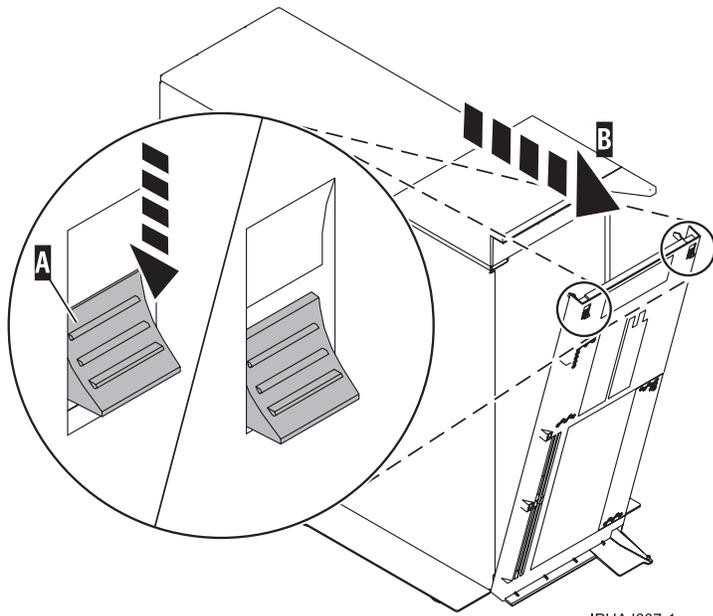
You might need to remove the cover to access components or perform service. Use the procedure in this section to accomplish this task.

To remove the stand-alone front cover, follow these steps:

1. "Remove the door from the model 285, 52x, 55x, or OpenPower 720" on page 76.

**Tip:** If you have a large four slot filler in the bottom drive bays you must remove the filler before removing the front cover. You might also wish to remove any fillers in the two bottom drive bays for easier access to the cover.

2. Press down on the two cover-release levers.
3. Pull the top of the cover out and away from the system as shown in the following figure.



IPHAJ607-1

4. Gently pull the cover up and off the base, releasing the lower cover-locking tabs.

**Install the front cover on the model 285, 52x, 55x, OpenPower 720, or the 0595 expansion unit:**

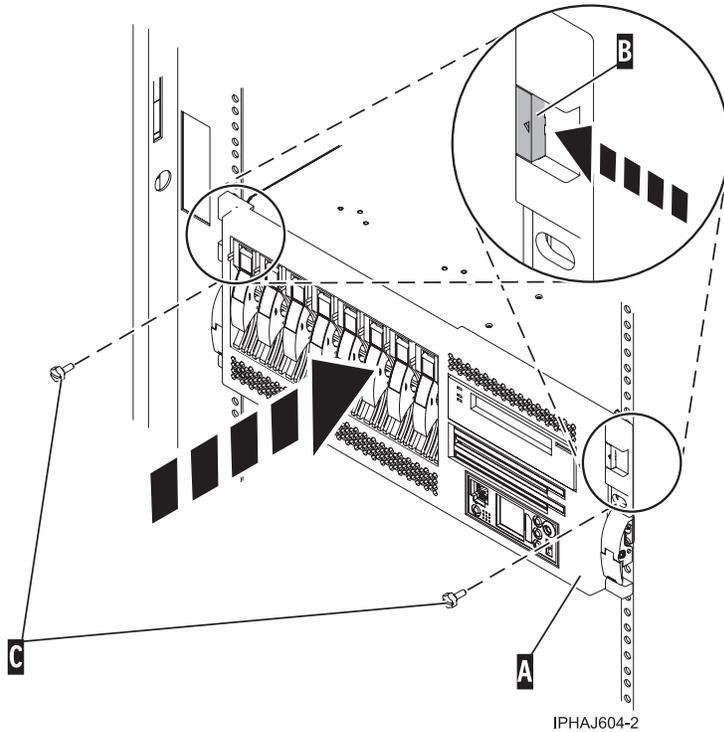
You might need to install the cover after accessing components or performing service. Use the procedures in this section to accomplish this task.

*Install the front cover on the rack-mounted model 285, 52x, 55x, or OpenPower 720, or the 0595 expansion unit:*

You might need to install the cover after accessing components or performing service. Use the procedure in this section to accomplish this task.

To install the front cover on a rack-mounted model follow these steps:

1. Position the cover on the front of the system or expansion unit so that the two thumbscrews **C** align with the screw holes on the front of the system or expansion unit **A**, as shown in the following figure.
2. Push the cover-release latches **B** in the direction of the arrows to attach the cover to the front of the system or expansion unit. The latches will hold the cover in place.



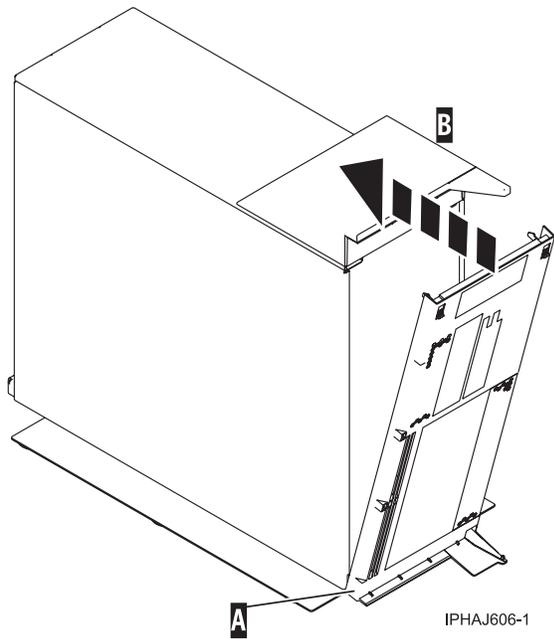
3. Tighten the thumbscrews.
4. Close the front rack door.

*Install the front cover on the stand-alone model 285, 52x, 55x, or OpenPower 720:*

You might need to install the cover after accessing components or performing service. Use the procedure in this section to accomplish this task.

To install the stand-alone model front cover, follow these steps:

1. Place the two lower cover-locking tabs into the retaining slots located on the base of the system unit as shown in the following figure.



2. Rotate the cover up toward the top of the system, ensuring that the aligning pins are aligned with their matching slots located on the system.
3. Gently push the cover in until the two cover-release levers are seated in their respective slots.
4. "Install or replace the door on the model 285, 52x, 55x, or OpenPower 720" on page 78.

### **Front cover for the model 9116-561 or 570**

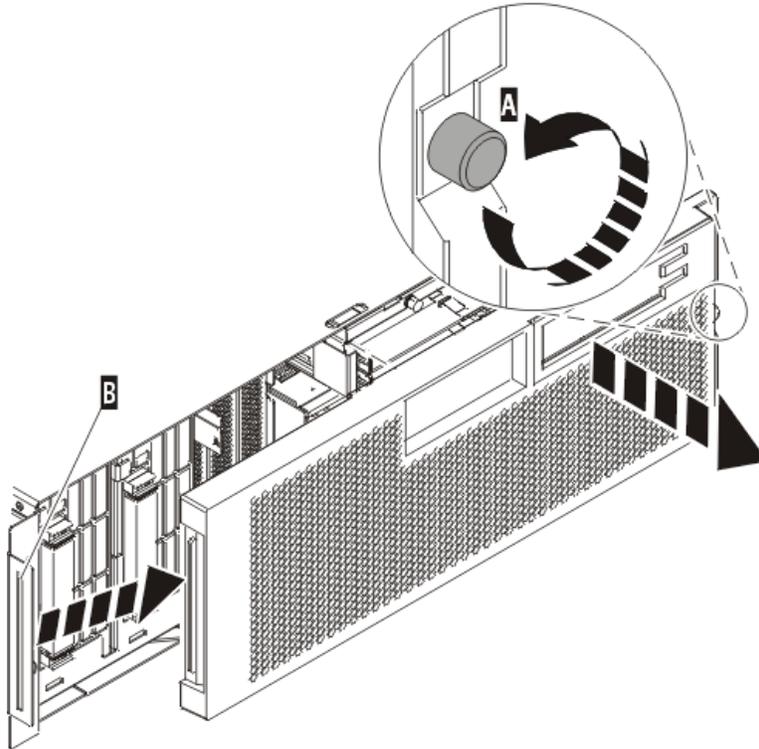
You might need to remove and replace the cover to access components or perform service. Use the procedures in this section to accomplish these tasks.

#### **Remove the front cover from the model 9116-561 or 570:**

You might need to remove the cover to access components or perform service. Use the procedure in this section to accomplish this task.

To remove the front cover follow these steps:

1. If necessary, open the front rack door.
2. Loosen the thumbscrew on the right side of the cover as shown in the following figure.



IPHA1701-1

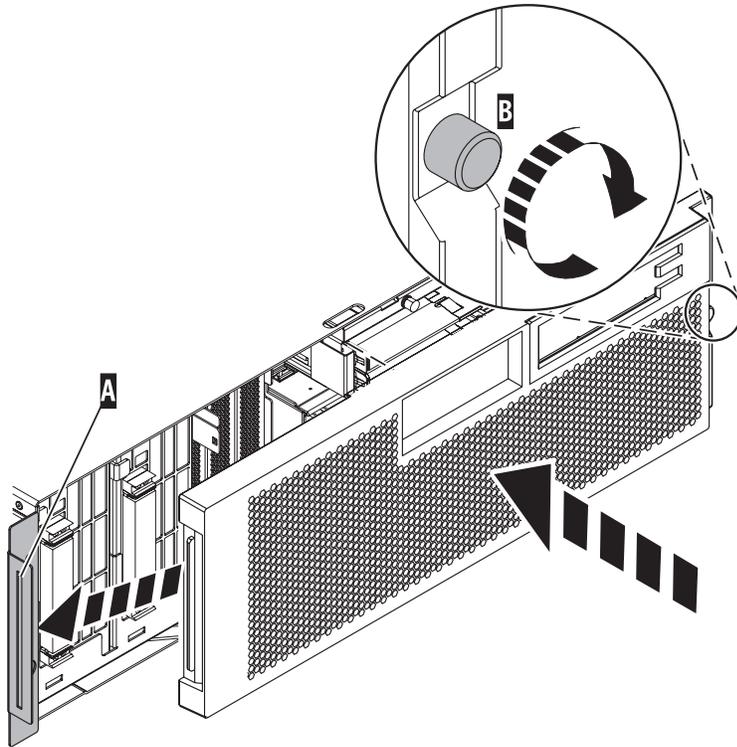
3. Slide the cover to the right and remove it from the system unit.

**Install the front cover on the model 9116-561 or 570:**

You might need to install the cover after accessing components or performing service. Use the procedure in this section to accomplish this task.

To install the front cover follow these steps:

1. Position the cover on the front of the system unit so that the tab on the left side of the cover is in the matching slot on the left side of the system unit as shown in the following figure.



IPHAJ500-1

2. Tighten the thumbscrew on the right side of the cover.
3. Close the front rack door.

## Model 285, 52x, 55x, or OpenPower 720 door

You might need to remove and replace the front door of a stand-alone model. This section includes procedures so that you can perform this task.

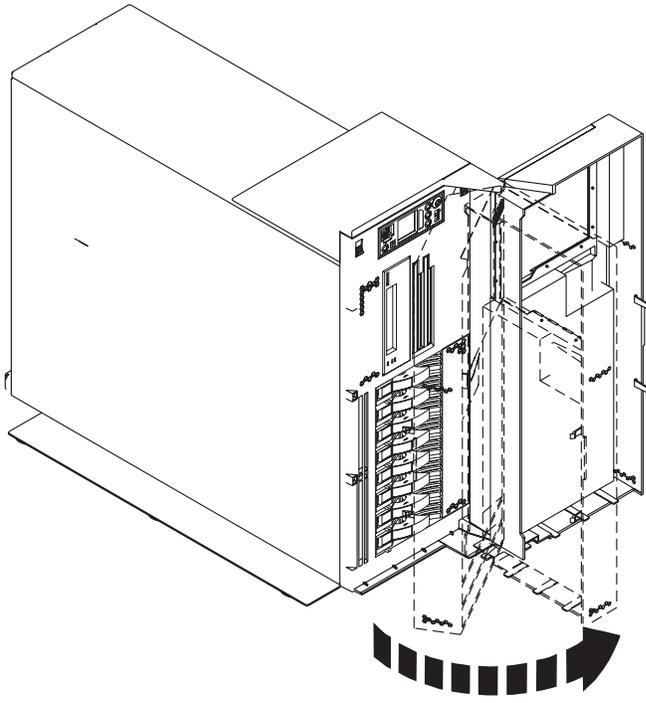
### Remove the door from the model 285, 52x, 55x, or OpenPower 720

You might need to remove the door to access components or perform service. Use the procedure in this section to accomplish this task.

To remove the door from the model 285 or 9131-52A see, "Remove the door from the model 285 or 9131-52A" on page 77.

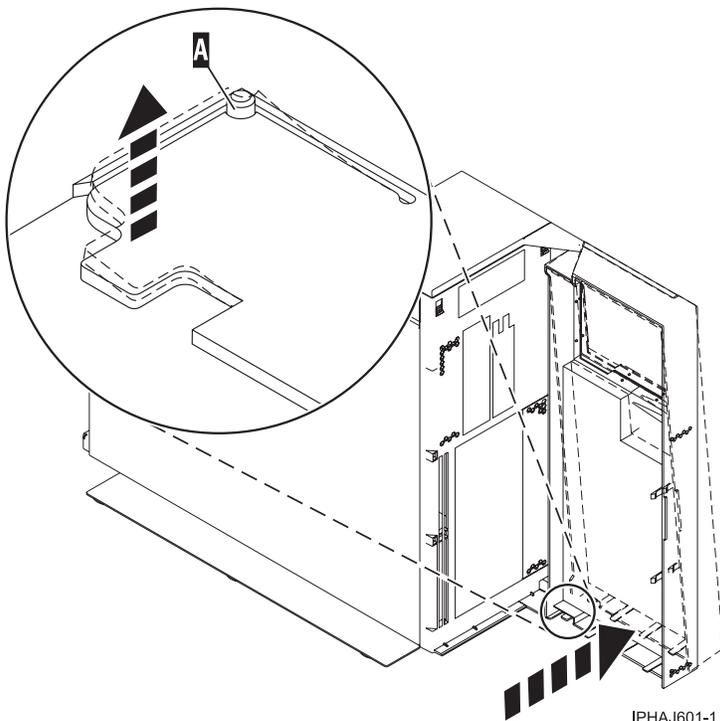
To remove the 52x, 55x, or OpenPower 720 door, do the following:

1. Open the front door by grasping the door handle and pulling the door out and away from the system unit as shown in the following figure.



IPHAJ602-0

2. To remove the door, press down on the top back edge of the door.
3. Gently swivel the top back edge of the door forward and out past the top of the system unit.
4. Lift the door up to release it from the lower retaining post.



IPHAJ601-1

**Remove the door from the model 285 or 9131-52A:**

You might need to remove the door to access components or perform service. Use the procedure in this section to accomplish this task.

The model 285 or 9131-52A has two doors. The top door allows access to the media and the bottom allows access to the DASD. Use the following procedure for removing both doors.

1. Open the door that you want to remove and release the tab at the center hinge point as shown in the following figure.
  - a. Lift up the bottom tab at hinge **A** to release the top door.
  - b. Press down on the top tab at the hinge **A** to release the bottom door
2. Gently swivel the top back edge of the door forward until it releases from the system unit.

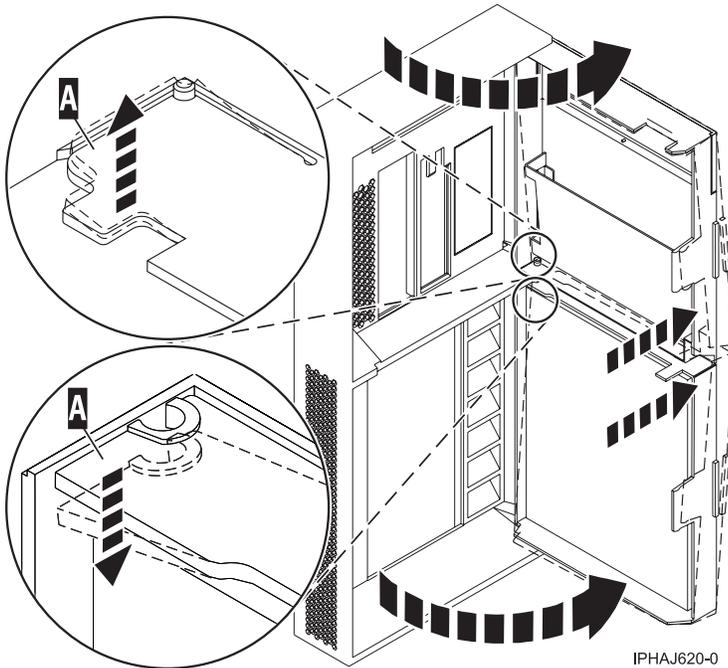


Figure 51. Removing the model 285 or 9131-52A door

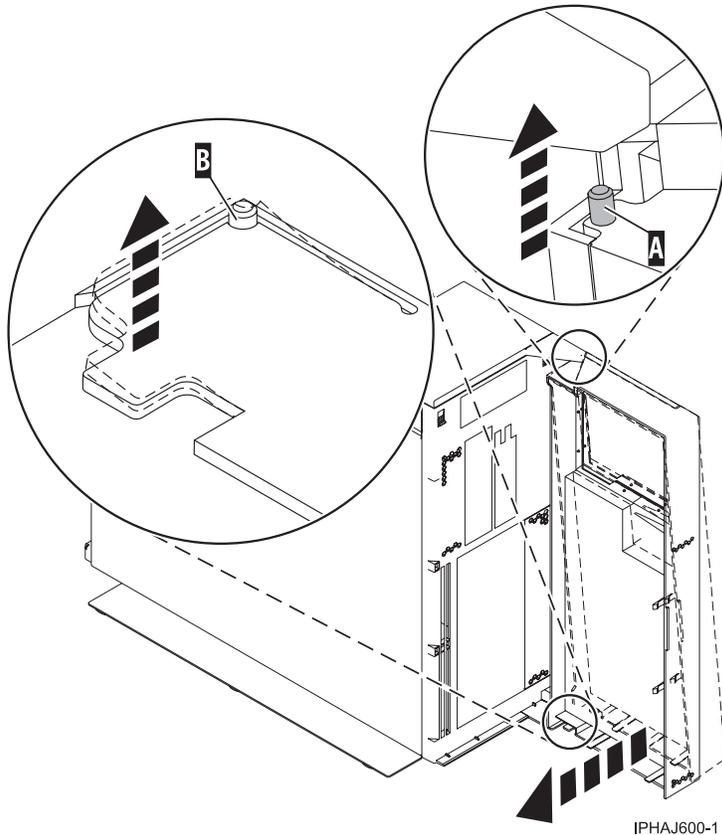
### Install or replace the door on the model 285, 52x, 55x, or OpenPower 720

You might need to install the door after accessing components or performing service. Use the instructions in this section to accomplish this task.

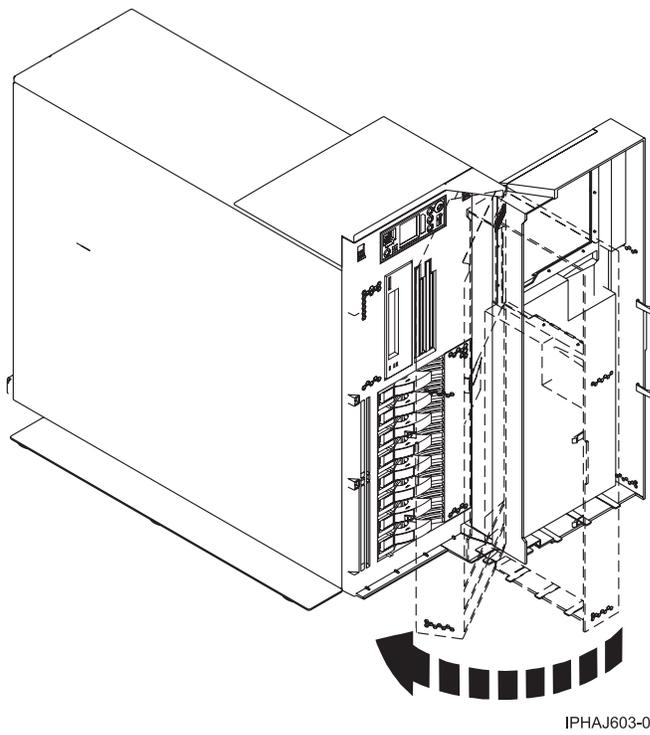
To install the model 285 or 9131-52A with acoustic feature front door see, "Install the door on the model 285 or 9131-52A" on page 79

To install the model 52x, 55x, or OpenPower 720 front door, do the following:

1. Set the door on the lower retaining post **B**, as shown in the following figure.
2. Rotate the door toward the top of the system unit.
3. Press down on the lower back edge of the door, and seat the top post **A** into its matching slot.



4. Close the door.



Install the door on the model 285 or 9131-52A:

You might need to install the door after accessing components or performing service. Use the instructions in this section to accomplish this task.

The model 285 or 9131-52A has two doors. The top door covers the media bays, and the bottom door covers the DASD bays.

1. Set the door into the retaining post A.

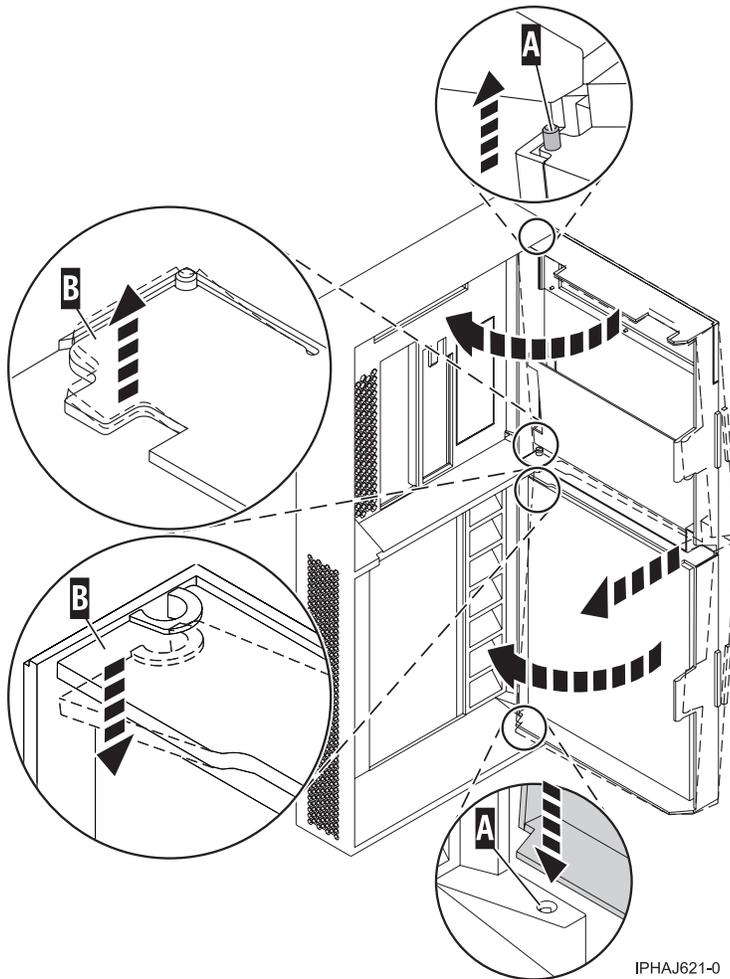


Figure 52. Installing the model 285 door

2. Rotate the door toward the system unit.
3. Press down on the back edge of the door, and seat the post B into its matching slot.
4. Close the door.

## Verify the installed part

Use the instructions in this section to learn how to verify a newly installed or replaced part on your system, logical partition, or expansion unit by selecting the appropriate procedure for the operating system or console.

## Verify an installed feature or replaced part on an AIX system or logical partition

If you installed feature or replaced a part you might want to use the tools in AIX to verify that the feature or part is recognized by the system or logical partition. Use the procedure in this section to accomplish this task.

To verify the operation of a newly installed feature or replacement part, select the appropriate procedure:

- Verify the installed feature using AIX
- Verifying the replaced part using AIX

Verify the installed feature using AIX:

1. Log in as root user.
2. At the command line, type `diag` and press Enter.
3. Select **Advanced Diagnostics Routines**. Press Enter.
4. From the **Diagnostic Mode Selection** menu, select **System Verification**. Press Enter.
5. When the **Advanced Diagnostic Selection** menu appears, do one of the following:
  - To test a single resource, select the resource that you just installed from the list of resources and press Enter.
  - To test all the resources available to the operating system, select **All Resources** and press Enter.
6. Select **Commit**, and wait until the diagnostic programs run to completion, responding to any prompts that appear.
7. Did the diagnostics run to completion and display the message No trouble was found?
  - **No:** If a service request number (SRN) or other reference code is displayed, suspect a loose adapter or cable connection. You can learn more about these codes in Reference codes. Review the installation procedures to ensure that the new feature is installed correctly. If you cannot correct the problem, collect all SRNs or any other reference code information that you see. If the system is running in LPAR mode, note the logical partition in which you installed the feature. Contact your service provider for assistance.
  - **Yes:** The new device is installed correctly. Exit the diagnostic programs and return the system to normal operations.

Verify the replacement part using AIX

To verify the operation of a newly installed feature or replacement part, follow these steps:

1. Did you replace the part using either AIX or the online diagnostics service aid's concurrent (hot-swap) service operation?
  - No:** Go to step 2.
  - Yes:** Go to step 5 on page 82.
2. Is the system powered off?
  - Yes:** If the system supports slow boot, set the system to perform a slow boot. For information, see Performing a slow boot.
  - No:** Go to step 4.
3. Start the system and wait until the AIX operating system login prompt displays or until apparent system activity on the operator panel or display has stopped.

Did the AIX login prompt display?

  - **Yes:** Go to step 4
  - **No:** If an SRN or other reference code is displayed, suspect a loose adapter or cable connection. You can learn more about these codes in the Reference codes. Review the procedures for the part that you replaced to ensure that the new part is installed correctly. If you cannot correct the problem, collect all SRNs or any other reference code information that you see. If the system does not start or you have no login prompt, see: Problems with loading and starting the operating system.

If the system is partitioned, note the logical partition in which you replaced the part. Contact your service provider for assistance.
4. At the command prompt, type `diag -a` and press Enter to check for missing resources. If you see a command prompt, go to step 5 on page 82.

If the **Diagnostic selection** menu is shown with **M** appearing next to any resource, follow these steps:

- a. Select the resource and press Enter.
- b. Select **Commit**.
- c. Follow any instructions that are shown.
- d. If a *Do you want to review the previously displayed error?* message is shown, select **Yes** and press Enter.
- e. If an SRN is shown, suspect a loose card or connection. If no obvious problem is shown, record the SRN and go to AIX fast-path problem isolation.
- f. If no SRN is shown, go to 5.

5. Test the part by doing the following:

- a. At the command line, type `diag` and press Enter.
- b. From the **Function Selection** menu, select **Advanced Diagnostics Routines**. Press Enter.
- c. From the **Diagnostic Mode Selection** menu, select **System Verification**. Press Enter.
- d. Select **All Resources**, or select the diagnostics for the individual part to test only the part you replaced, and any devices that are attached to the part you replaced. Press Enter.

Did the **Resource Repair Action** menu appear?

**No:** Go to step 6.

**Yes:** Go to step 7.

6. Did the *Testing Complete, No trouble was found* message appear?

- **No:** There is still a problem. Contact your service provider. **This ends the procedure.**
- **Yes:** Select **Log Repair Action**, if not previously logged, from the **Task Selection** menu to update the AIX error log. If the repair action was reseating a cable or adapter, select the resource associated with that repair action. If the resource associated with your action is not displayed on the Resource List, select **sysplanar0**. Press Enter.

**Tip:** This action changes the indicator light for the part from the fault state to the normal state. Go to step 9 on page 83

7. When a test is run on a resource in system verification mode, and that resource has an entry in the AIX error log, if the test on the resource was successful, the *Resource Repair Action* menu appears. After replacing a part, you must select the resource for that part from the *Resource Repair Action* menu. This updates the AIX error log to indicate that a system-detectable part has been replaced.

**Note:** On systems with a indicator light for the failing part, this changes the indicator light to the normal state.

Follow these steps:

- a. Select the resource that has been replaced from the *Resource Repair Action* menu. If the repair action was reseating a cable or adapter, select the resource associated with that repair action. If the resource associated with your action does not appear on the Resource List, select **sysplanar0**. Press Enter.

- b. Select **Commit** after you make your selections. Did another *Resource Repair Action* display appear?

**No:** If the *No Trouble Found* display appears, go to step 9 on page 83

**Yes:** Go to step 8.

8. The parent or child of the resource you just replaced may also require that you run the Resource Repair Action option on it. When a test is run on a resource in system verification mode, and that resource has an entry in the AIX error log, if the test on the resource was successful, the *Resource Repair Action* menu appears. After replacing that part, you must select the resource for that part from the *Resource Repair Action* menu. This updates the AIX error log to indicate that a system-detectable part has been replaced.

**Note:** This changes the indicator light for the part from the fault state to the normal state.

Follow these steps:

- a. From the *Resource Repair Action* menu, select the parent or child of the resource that has been replaced. If the repair action was to reseal a cable or adapter, select the resource associated with that repair action. If the resource associated with your action does not appear on the Resource List, select **sysplanar0**. Press Enter.
  - b. Select **Commit** after you make your selections.
  - c. If the *No Trouble Found* display appears, go to step 9.
9. If you changed the service processor or network settings, as instructed in previous procedures, restore the settings to the value they had prior to servicing the system.
  10. Did you do any hot-plug procedures before doing this procedure?  
**No:** Go to step 11.  
**Yes:** Go to step 12.
  11. Start the operating system, with the system or logical partition in normal mode. Were you able to start the operating system?  
**No:** Contact your service provider. **This ends the procedure.**  
**Yes:** Go to step 12.
  12. Are the indicator lights still on?
    - **No. This ends the procedure.**
    - **Yes.** Turn off the lights. See one of the following for instructions:
      - Identify a failing part using stand-alone eServer diagnostics
      - Running the stand-alone eServer diagnostics from a Network Installation Management server
      - Changing service indicators with the ASMI menus

### **Verify the presence of an installed part on an i5/OS system or logical partition**

If you have installed a new feature or part, verify that the system recognizes the feature or part by using the i5/OS system service tools. Use the procedure in this section to accomplish this task.

1. Deactivate the failing item indicator light and close the service action log entry. For instructions, see "Deactivate the failing-part indicator light" on page 92.
2. Be sure you are signed on **with at least service level authority**.
3. On the command line of the i5/OS session, type `strsst` and press Enter.

**Note:** If you cannot get to the System Service Tools display, use function 21 from the control panel. Alternatively, if the system is managed by Hardware Management Console (HMC), use the Service Focal Point Utilities to get to the Dedicated Service Tools (DST) display.

4. Type your service tools user ID and service tools password on the System Service Tools (SST) Sign On display. Press Enter.

**Note:** The service tools password is case-sensitive.

5. Select **Start a service tool** from the System Service Tools (SST) display. Press Enter.
6. Select **Hardware service manager** from the Start a Service Tool display. Press Enter.
7. Select **Logical hardware resources (buses, IOPs, controllers)** from the Hardware Service Manager display. This option allows you to display and work with logical resources. Logical hardware resources are the functional resources of the system used by the operating system.
8. Press Enter.

When you select one of the options from the Logical Hardware Resources display, you can do the following:

- Display logical hardware resource status

- Display or change logical hardware resource information
- Display associated packaging hardware resources

For more information on collecting information and performing specific functions using the options and function keys from the Logical Hardware Resources display or for details on the symbols that appear next to the Resource Description field, see the online Help information.

## Verify the installed part on a Linux system or logical partition (run AIX diagnostics)

If you have installed a new part, use the instructions in this section to learn how to verify that the system recognizes the part.

To verify the newly installed or replaced part, choose one of the following:

### Verify an installed part using the eServer stand-alone diagnostics:

If you have installed or replaced a part, verify that the system recognizes the new part. Use the procedure in this section to accomplish this task.

You can use stand-alone diagnostics to verify an installed part in a Linux system, expansion unit, or logical partition. You access these diagnostics from a CD-ROM or from the Network Installation Management (NIM) server. This procedure describes how to use the diagnostics from a CD-ROM. For information on running diagnostics from the Network Installation Management (NIM) server, see Running the eServer stand-alone diagnostics from a Network Installation Management server.

### Prerequisites

- If this server is directly attached to another server or attached to a network, be sure communication with the other servers is stopped.
- eServer stand-alone diagnostics require use of all of the logical partition resources. No other activity can be running on the logical partition.
- eServer stand-alone diagnostics require access to the system console.

To use stand-alone diagnostics, follow these steps:

1. Stop all jobs and applications and then stop the operating system on the system or logical partition.
2. Remove all tapes, diskettes, and CD-ROM.
3. Turn off the system unit power. The next step boots the server or logical partition from the eServer stand-alone diagnostics CD-ROM. If the optical drive is not available as the boot device on the server or logical partition on which you are working, follow these steps:
  - a. Access the ASMI. See Managing your server using the Advanced System Management Interface for information on using the ASMI.
  - b. On the ASMI main menu, click on **Power/Restart Control**.
  - c. Click on Power On/Off System.
  - d. Select the **Service mode boot from default boot list** option in the AIX/Linux logical partition mode boot drop-down menu.
  - e. Click on **Save settings and power on**. As soon as the optical drive has power, insert the eServer standalone diagnostic CD-ROM.
  - f. Go to step 5.
4. Turn on the system unit power and immediately insert the diagnostics CD-ROM into the optical drive.
5. After the **keyboard** POST indicator displays on the system console and before the last POST indicator (**speaker**) displays, press the numeric 5 key on the system console to indicate that a service mode boot should be initiated using the default service mode boot list.

6. Enter any requested password.
7. At the *Diagnostic Operating Instructions* display, press Enter.

**Note:** If an SRN or other reference code is displayed, suspect a loose adapter or cable connection. Review the procedures for the part that you replaced to ensure that the new part is installed correctly. If you cannot correct the problem, collect all SRNs or any other reference code information that you see. If the system will not boot or you have no login prompt go to Problems with loading and starting the operating system.

**Note:** If you received an SRN or any other reference code when you attempted to start the system, you can learn more about these codes in Reference codes.

8. If the terminal type is requested, you must use the **Initialize Terminal** option on the *Function Selection* menu to initialize the operating system before you can continue.
9. From the Function Selection menu, select **Advanced Diagnostics Routines**. Press Enter.
10. From the Diagnostic Mode Selection menu, select **System Verification**. Press Enter.
11. When the Advanced Diagnostic Selection menu appears, select **All Resources**, or test only the part you replaced, and any devices that are attached to the part you replaced, by selecting the diagnostics for the individual part. Press Enter.
12. Did the *Testing Complete, No trouble was found* message appear?
  - **No:** There is still a problem. Contact your service provider.
  - **Yes:** Go to step 13.
13. If you changed the service processor or network settings, as instructed in previous procedures, restore the settings to the value they had prior to servicing the system.
14. If the indicator lights are still on, follow these steps:
  - a. Select **Identify and Attention Indicators** from the *Task Selection* menu to turn off the system attention and indicator lights. Press Enter.
  - b. Select **Set System Attention Indicator to NORMAL** and press Enter.
  - c. Select **Set All Identify Indicators to NORMAL** and press Enter.
  - d. Choose **Commit**.

**Note:** This changes the system attention and identify indicators from the *Fault* state to the *Normal* state.

- e. Exit to the command line.

## Verify the presence of an installed part using Hardware Management Console (HMC)

If you have installed or replaced a part, use the Hardware Management Console (HMC) to update your HMC records after you have completed a service action on your server. Use the procedure in this section to accomplish this task. If you have reference codes, symptoms, or location codes that you used during the service action, locate the records to use during this procedure.

1. At the HMC, examine the service action event log for any open service action events. See Viewing serviceable events for details.
2. Are there any service action events that are open?
  - No:** If the system attention LED is still on, use the HMC to turn off the LED. See Activating and Deactivating LEDs. **This ends the procedure.**
  - Yes:** Continue with the next step.
3. Record the list of open service action events.
4. Examine the details of the open service action event. Is the error code associated with this service action event the same as you gathered earlier.
  - **Yes:** Continue with the next step.

- **No:** Choose from the following options:
    - Review the other serviceable events and find one that does match and continue with the next step.
    - If the log does not match what you had gathered earlier, contact your service provider.
5. Select and highlight the service action event from the Error Associated With This Serviceable Event window.
  6. Click **Close Event**.
  7. Add comments for the serviceable event. Include any unique additional information. Click **OK**.
  8. Did you replace, add, or modify a FRU of the open service action event?
    - **No:** Select the **No FRU Replaced for this Serviceable Event** option and click **OK** to close the service action event.
    - **Yes:** Perform the following steps:
      - a. From the FRU list, select a FRU that you need to update.
      - b. Double-click the FRU and update the FRU information.
      - c. Click **OK** to close the service action event.
  9. If you continue to have problems, contact your service provider.

### **Verify the presence of an installed part using the Advanced System Management Interface**

If you have installed or replaced a part, verify that the system recognizes the new part and turn off the failing part indicator light. Use the procedure in this section to accomplish this task using the Advanced System Management Interface (ASMI).

For information on accessing up the ASMI, refer to Accessing the Advanced System Management Interface

Use the instructions from Changing service indicators to turn off the indicator light.

### **Install a feature using the Hardware Management Console**

You might need to use the Hardware Management Console to install a feature. Use the procedure in this section to perform this task.

- If you are using if you are using an HMC with Version 6 or earlier use the following steps 1
  - If you are using a an HMC with Version 7 or later use the steps in the next section “Install a feature using the HMC Version 7 or later” on page 87
1. In the navigation area, expand **Management Environment**.
  2. Expand the managed system into which you are installing a feature.
  3. Expand **Service Applications**.
  4. Select **Service Focal Point**.
  5. In the contents area, select **Install/Add/Remove Hardware**.
  6. In the **Install/Add/Remove Hardware** window, highlight system or unit into which you are installing a feature.
  7. Click **Selected**.
  8. From the Selected menu, select **Add FRU**.
  9. In the **Enclosure type** field, select the system or expansion unit into which you are installing a feature.
  10. In the FRU types for selected enclosure, select the feature you are installing.
  11. Click **Next**.

12. Follow the instructions to install the feature.

**Note:** The HMC might open the information center instructions for installing the feature. If so, follow these instructions to install the feature.

### **Install a feature using the HMC Version 7 or later**

1. In the navigation area, expand **Systems Management**.
2. Expand **Servers**.
3. Select the managed system you will install the part in.
4. In the Tasks area expand **Serviceability**.
5. Expand **Hardware**.
6. Select **Add FRU**.
7. In the **Add/Install/Remove Hardware** window select the system or enclosure into which you are installing the feature.
8. Select the type of feature you are installing from the menu and click **Next**
9. Select the location code for where you will install the feature and click **Add**.
10. Once the FRU is in pending actions click **Launch Procedure** and follow the instructions to install the feature.

**Note:** The HMC might open external instructions for installing the feature. If so, follow these instructions to install the feature.

### **Remove a part using the Hardware Management Console**

You might need to use the Hardware Management Console to facilitate removing a part from your managed system. Use the procedure in this section to accomplish this task.

- If you are using if you are using an HMC with Version 6 or earlier use the following steps 1.
- If you are using a an HMC with Version 7 or later use the steps in the next section “Remove a part using the HMC Version 7 or later” on page 88.

To use the Hardware Management Console user interface to remove a part in a system or expansion unit that is managed by a Hardware Management Console (HMC), follow these steps:

1. In the navigation area, expand the **Management Environment**.
2. Expand the managed system in which you are replacing a part.
3. Expand **Service Applications**.
4. Select **Service Focal Point**.
5. In the contents area, select **Install/Add/Remove Hardware**.
6. In the **Install/Add/Remove Hardware** window, click System Processor.
7. From the Selected menu, select **Remove FRU**.
8. In the **Installed enclosure types** field, select the system or expansion unit from which you are removing a part.
9. In the Available FRU types for selected enclosure, select the part you are removing.
10. Click **Next**.
11. Follow the instructions to remove the part.

**Note:** The HMC might open the information center instructions for removing the part. If so, follow these instructions to remove the part.

## Remove a part using the HMC Version 7 or later

1. In the navigation area, expand **Systems Management**.
2. Expand **Servers**.
3. Select the managed system from which you are removing a part.
4. In the Tasks area expand **Serviceability**.
5. Expand **Hardware**.
6. Select **Remove FRU**.
7. In the **Add/Install/Remove Hardware - Remove FRU, Select FRU Type** window select the system or enclosure from which you are removing the part from the list.
8. Select the type of part you are removing from the menu and click **Next**.
9. Select the location of the part you are removing and click **Add**.
10. Once the part is listed in **Pending Actions** click **Launch Procedure** and follow the instructions to remove the part.

**Note:** The HMC might open external instructions for removing the part. If so, follow these instructions to remove the part.

## Replace a part using the Hardware Management Console

You might need to use the Hardware Management Console to replace a part in your managed system. Use the procedure in this section to accomplish this task.

To use the Hardware Management Console Version 6 or earlier, follow these steps, 1

1. In the navigation area, expand the **Management Environment**.
2. Expand the managed system in which you are replacing a part.
3. Expand **Service Applications**.
4. Select **Service Focal Point**.
5. In the contents area, select **Repair Serviceable Event**.
6. Select the system and click **OK**.
7. In the window, click the problem number for the part you want to replace.
8. Follow the instructions to replace the part.

**Note:** The HMC might open the information center instructions for replacing the part. If so, follow these instructions to replace the part.

## Exchange a part using the HMC Version 7

1. In the navigation area, expand **Systems Management**.
2. Expand **Servers**.
3. Select the managed system in which you are exchanging a part.
4. In the Tasks area expand **Serviceability**.
5. Expand **Hardware**.
6. Select **Exchange FRU**.
7. In the **Replace Hardware - Replace FRU, Select FRU Type** window select the system or enclosure in which you will exchange a part from the list.
8. Select the type of part you will exchange from the menu and click **Next**.
9. Select the location code of the part you will exchange from the menu and click **Add**.
10. Once the part is listed in **Pending Actions** click **Launch Procedure** and follow the instructions to exchange the part.

**Note:** The HMC might open external instructions for replacing the part. If so, follow these instructions to replace the part.

## Identify a failing part

Use the instructions in this section to learn how to locate and identify a failing part on your system or expansion unit using the appropriate method for your system.

### Identify a failing part on a model 7047-185 or 7037-A50

You might need to use the light path diagnostics to help locate or identify a failing part. Use the procedure in this section to accomplish this task.

Light path diagnostics provide a path that you can follow to help you identify the source of an error. The server must be connected to a power source for the light-emitting diodes (LED) inside the server to be lit; the server does not have to be turned on for the LEDs to be lit.

The server is designed so that LEDs remain lit when the server is connected to an ac power source but is not turned on, provided that the power supply is operating correctly. This feature helps you to isolate the problem when the operating system is shut down.

Many errors are first indicated by a lit information LED or system-error LED on the operator information panel on the front of the server. If one or both of these LEDs are lit, one or more LEDs elsewhere in the server might also be lit and can direct you to the source of the error.

To identify a failing part follow these steps:

1. If this is a rack mounted server, “Place the rack-mounted model 7047-185 or 7037-A50 in the service position or operating position” on page 53.
2. “Remove and replace the model 7047-185 or 7037-A50 side cover” on page 68.
3. Find the light-path diagnostic card on top of the fan attached to the disk drive cage. Use the following figure and table to identify each light on the card.

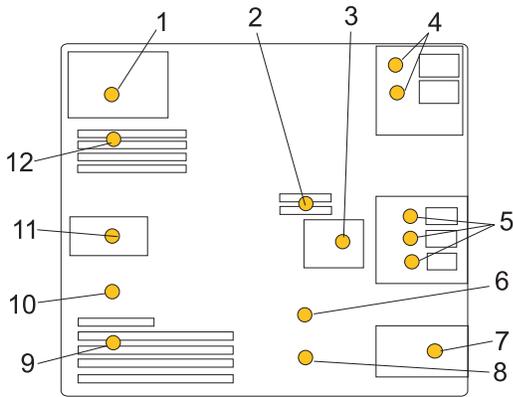


Figure 53. Light path diagnostic card indicator LED layout

Table 1. Fault-indicator LEDs

1	Power supply fault-indicator LED	7	Front fan fault-indicator LED
2	Voltage-regulator module fault-indicator LED	8	Battery fault-indicator LED
3	Disk-drive bay fan fault-indicator LED	9	PCI adapter fault-indicator LED
4	Optical-media bay fault-indicator LEDs	10	Thermal fault-indicator LED

Table 1. Fault-indicator LEDs (continued)

5	Disk-drive bay fault-indicator LEDs	11	Rear fan fault-indicator LED
6	System backplane fault-indicator LED	12	Memory fault-indicator LED

4. Refer to the service label on your system or the following figure to locate an LED on the system backplane for replaceable parts.

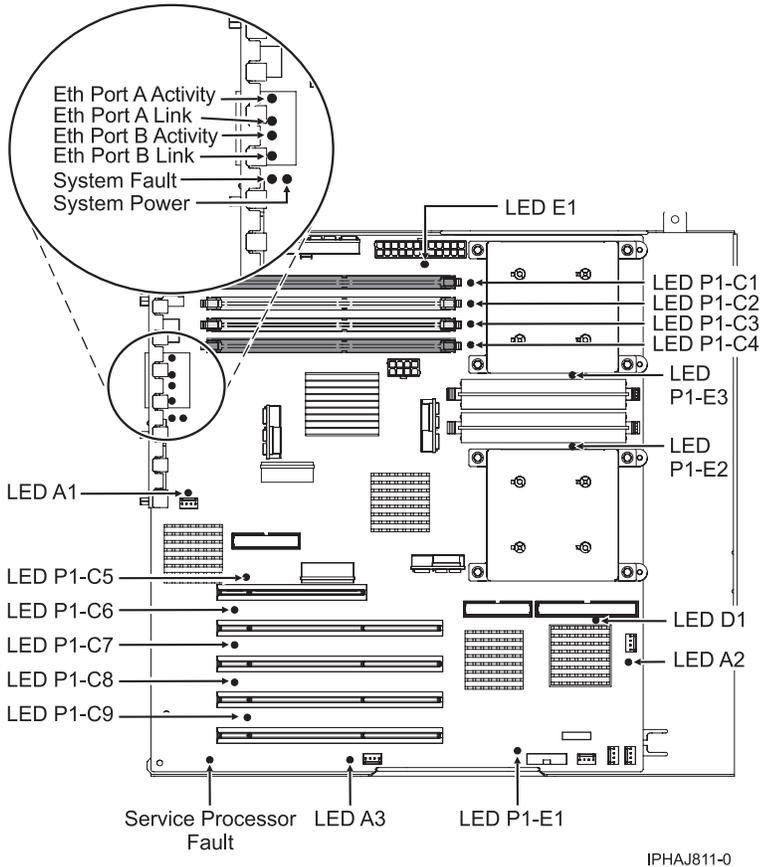


Figure 54. System backplane indicator LED layout

### Identify a failing part on an AIX system or logical partition

Use the instructions in this section to learn how to locate a failing part, and then activate the indicator light for that part on a system or logical partition running AIX.

#### Locate a failing part in an AIX system or logical partition:

You might need to use AIX tools, before activating the indicator light, to locate a part that is failing. Use the procedure in this section to accomplish this task.

1. Log in as root user or celogin-.
2. At the command line, type `diag` and press Enter.
3. From the **Function Selection** menu, select **Task Selection** and press Enter.
4. Select **Display Previous Diagnostic Results** and press Enter.
5. From the **Display Previous Diagnostic Results** display, select **Display Diagnostic Log Summary**. A **Display Diagnostic Log** display appears. This display contains a chronological list of events.
6. Look in the T column for the most recent S entry. Select this row in the table and press Enter.

7. Choose **Commit**. The details of this log entry are shown.
8. Record the location information and the SRN value shown near the end of the entry.
9. Exit to the command line.

Use the location information for the failing part to activate the indicator light that identifies the failing part. For instructions, see “Activate the indicator light for the failing part.”

#### **Activate the indicator light for the failing part:**

You might need to use the indicator light to help you physically locate a part. Use the procedure in this section to accomplish this task.

1. Log in as root user.
2. At the command line, type `diag` and press Enter.
3. From the **Function Selection** menu, select **Task Selection**. Press Enter.
4. From the **Task Selection** menu, select **Identify and Attention Indicators**. Press Enter.
5. From the list of lights, select the location code for the failing part and press Enter.
6. Select **Commit**. This turns on the system attention and indicator light for the failing part.
7. Exit to the command line.

#### **Identify a failing part on an i5/OS system or logical partition**

You might need to activate or deactivate the indicator light using i5/OS to assist in locating a failing part. Use the instructions in this section to accomplish these tasks.

#### **Activate the failing-part indicator light:**

You might need to search the service action log for an entry that matches the time, reference code, or resource of a problem, and then activate the indicator light for a failing part. Use the procedure in this section to accomplish this task.

1. Signed on to an i5/OS session, **with at least service level authority**.
2. On the command line of the i5/OS session, type `strsst` and press Enter.

**Note:** If you cannot get to the System Service Tools display, use function 21 from the control panel. Alternatively, if the system is managed by a Hardware Management Console (HMC), use the Service Focal Point utilities to get to the Dedicated Service Tools (DST) display.

3. Type your service tools user ID and service tools password on the System Service Tools (SST) Sign On display. Press Enter.

**Remember:** The service tools password is case-sensitive.

4. Select **Start a service tool** from the System Service Tools (SST) display. Press Enter.
5. Select **Hardware service manager** from the Start a Service Tool display. Press Enter.
6. Select **Work with service action log** from the Hardware Service Manager display. Press Enter.
7. On the Select Timeframe display, change the **From: Date and Time** field to a date and time prior to when the problem occurred.
8. Search for an entry that matches one or more conditions of the problem:
  - Reference code
  - Resource
  - Date and Time
  - Failing item list
9. Select option 2, Display failing item information, to display the service action log entry.

10. Select option 2, Display details, to display location information for the failing part to be replaced. The information displayed in the date and time fields is the date and time for the first occurrence of the specific reference code for the resource displayed during the time range selected.
11. If location information is available, select option 6, indicator on, to turn on the failing part's indicator light.

**Tip:** If the failing part does not contain a physical indicator light, a higher-level indicator light will be activated. For example, the indicator light for the backplane or unit that contains the failing part might be lit. In this case, use the location information to locate the actual failing part.

12. Look for the enclosure indicator light to locate the enclosure that contains the failing part.

#### **Deactivate the failing-part indicator light:**

If you turned on the indicator light during a removal and replacement procedure, turn it off to complete that procedure. Use the instructions in this section to accomplish this task.

1. Select option 7, Indicator off, to turn off the indicator light.
2. If all problems have been resolved, use the **Acknowledge all errors** function at the bottom of the service action log display.
3. Close the log entry by selecting option 8, Close a new entry, on the service action log report display.

#### **Identify a failing part on a Linux system or logical partition**

Use the instructions in this section to learn how to identify a failing part using one of a number of methods on a system or logical partition running Linux.

#### **Locate a failing part and activate the indicator light:**

If the service aids have been installed on a system or logical partition running Linux, you can use the instructions in this section to locate the failing part, and then activate the indicator light for that part.

*Locate a failing part in a Linux system or logical partition:*

If you do not know the location code of the failing part, use the instructions in this section to locate the failing part.

To locate the failing part in a system or logical partition running Linux, follow these steps:

1. Log in as root user.
2. At the command line, type `grep diagela /var/log/platform` and press Enter.
3. Look for the most recent entry that contains a system reference code (SRC).
4. Record the location information.

#### **Activate the indicator light for the failing part:**

If you know the location code of the failing part, activate the indicator light to help you locate which part to replace. Use the procedure in this section to accomplish this task.

To activate the indicator light, follow these steps:

1. Log in as root user.
2. At the command line, type `/usr/sbin/usysident -s identify -l<location code>` and press Enter. Substituting the location code of the failing unit for `<location code>`.
3. Look for the system attention light to identify the enclosure that contains the failing part.

#### **Deactivate the failing-part indicator light:**

After you complete a removal and replacement procedure, use this task to deactivate the failing-part indicator light.

1. Log in as root user.
2. At the command line, type `/usr/sbin/usysident -s normal -l<location code>` and press Enter. Substitute the location code of the failing unit for *<location code>*.
3. Look for the system attention light to identify the enclosure that contains the failing part.

### Identify a failing part using stand-alone eServer diagnostics:

If the operating system is stopped or if you need to stop the system or logical partition to replace the failing part, use the procedure in this section to identify a failing part.

You can use stand-alone diagnostics to identify a failing part in a Linux system, expansion unit, or logical partition. You access these diagnostics from a CD-ROM or from the Network Installation Management (NIM) server. This procedure describes how to use the diagnostics from a CD-ROM. For information on running diagnostics from the Network Installation Management (NIM) Server, see *Running the stand-alone eServer diagnostics from a Network Installation Management server*.

#### Prerequisites:

- If this server is directly attached to another server or attached to a network, be sure communications with the other servers are stopped.
- Ensure that no other activity is running on the logical partition. Stand-alone eServer diagnostics require use of all of the logical partition resources. No other activity can be running on the logical partition.
- You must have access to the system console to use stand-alone eServer diagnostics.

To use stand-alone diagnostics from a CD-ROM, follow these steps:

1. Stop all jobs and applications, and then stop the operating system on the system or logical partition.
2. Remove all tapes, diskettes, and CD-ROM.
3. Turn off the system unit power.

**Note:** The next step starts the server or logical partition from the eServer stand-alone diagnostic CD-ROM. If the CD-ROM or DVD-ROM drive is not available as the startup device on the server or logical partition on which you are working, follow these steps:

- a. Access the Advanced System Management Interface (ASMI). See *Managing your server using the Advanced System Management Interface* for information on using the ASMI.
  - b. On the ASMI main menu, click **Power/Restart Control**.
  - c. Click **Power On/Off System**.
  - d. Select the **Service mode boot** from **default boot list** option in the AIX or Linux logical partition mode boot list.
  - e. Click **Save settings** and power on the system. As soon as the optical drive has power, insert the AIX diagnostic diskette.
  - f. Go to step 5.
4. Turn on the system unit power and insert the diagnostics CD-ROM into the CD-ROM drive.
  5. After the keyboard POST indicator displays on the firmware console and before the last POST indicator (speaker) displays, press the 5 key on either the directly attached keyboard or the ASCII terminal. This indicates that a service mode boot should be initiated using the default service mode boot list.
  6. Enter any requested password.
  7. At the Diagnostic Operating Instructions display, press Enter.

**Tip:** If the Diagnostic Operating Instructions display does not appear, contact your support center for assistance.

8. If the terminal type is requested, use the **Initialize Terminal** option on the **Function Selection** menu to initialize the operating system.

### Identify a failing part using the Advanced System Management Interface

If the Linux operating system is running on the system or logical partition, use the procedure in this section to identify a failing part.

To activate the indicator light for a failing part, follow these steps:

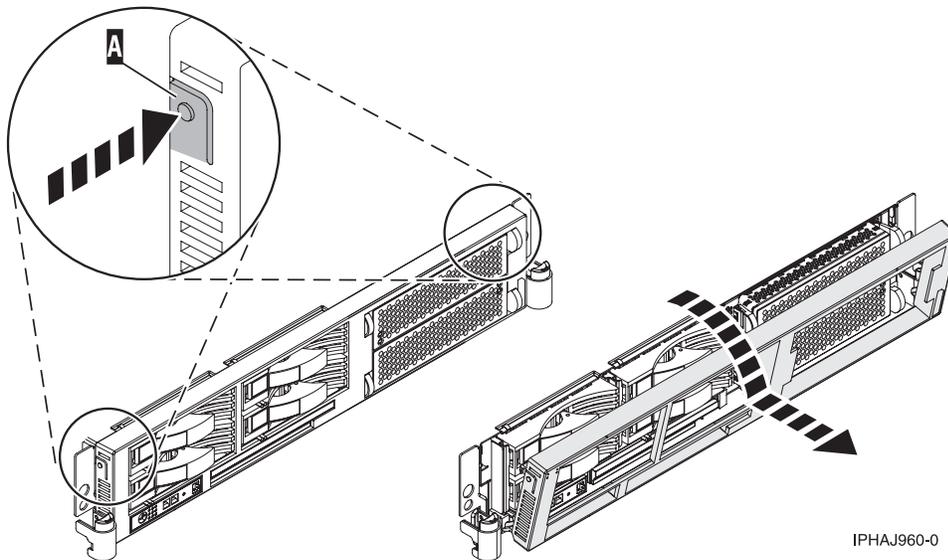
1. If the unit ID does not match the label on the system or expansion unit, update the configuration information.
  - For information on setting up the ASMI refer to Accessing the Advanced System Management Interface.
  - For information on using the ASMI, refer to Managing your server using the Advanced System Management Interface
2. Turn on the failing part indicator light. For instructions, see Changing service indicators.

### Remove the front cover from the model 51x or 710

You might need to remove the cover to access components or perform service. Use the procedure in this section to accomplish this task.

To remove the front cover, follow these steps:

1. If necessary, open the front rack door.
2. Push both cover-release latches **A** down to release the cover as shown in the following figure.



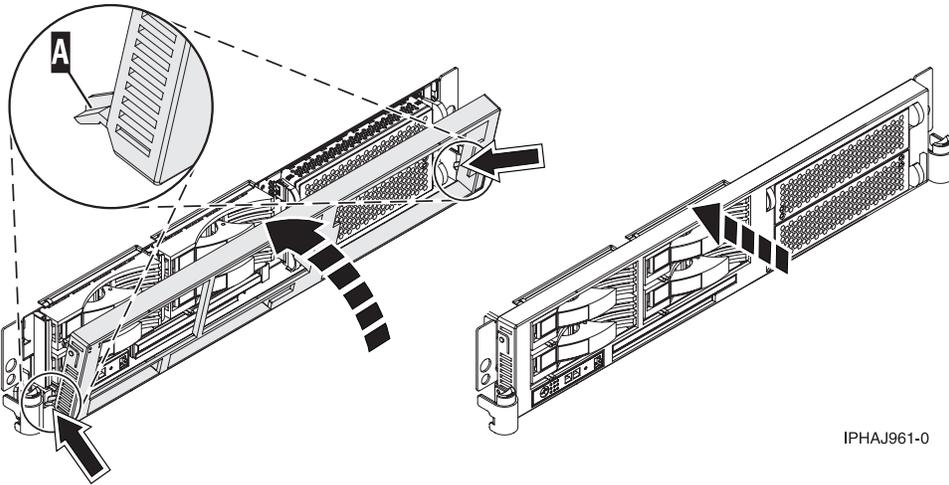
3. Pivot the cover from the bottom and swing the top of the cover out.
4. Pull the bottom of the cover up and then away from the system unit. This releases the two tabs located on the bottom of the cover.
5. Put the cover in a safe place.

### Install the front cover on the model 51x or 710

You might need to install the cover after accessing components or performing service. Use the procedure in this section to accomplish this task.

To install the front cover, follow these steps:

1. If necessary, open the front rack door.
2. Insert the two tabs **A** located on the bottom edge of the cover into their locking slots, located on the system unit frame as shown in the following figure.



3. Pivot the front cover up toward the top of the system unit frame.
4. Align the tabs to the matching slots located on the front of the system unit frame.
5. Gently push the tabs into the slots until the cover seats against the front of the system unit.
6. Close the front rack door.

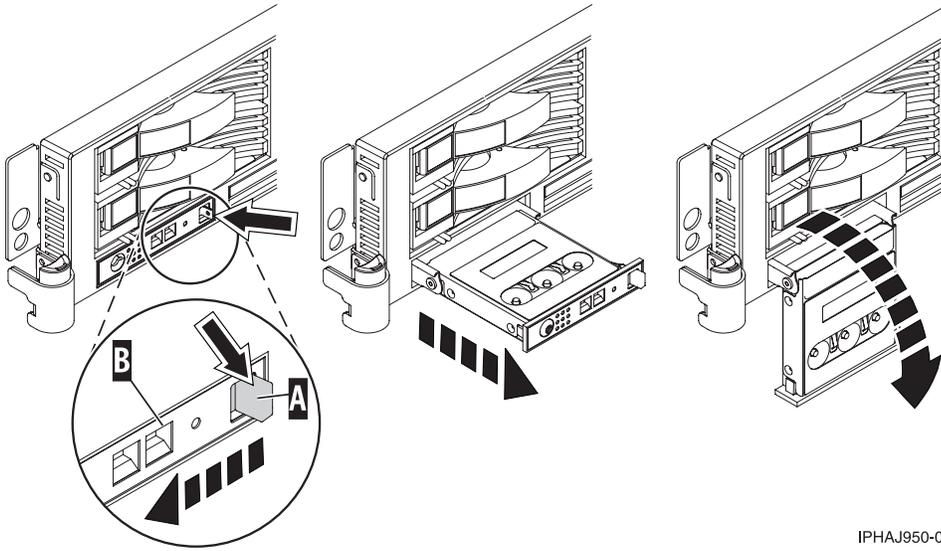
### **Gain access to the model 51x and OpenPower 710 control panels**

Since only part of the control panel is visible from the front of the server, you can use this procedure to gain access to all of the control panel's features, including the display.

Because only part of the control panel is visible from the front of the server, the following procedure describes how to gain access to all of the control panel's features, including the display.

To access all of the control panel's features, complete the following steps:

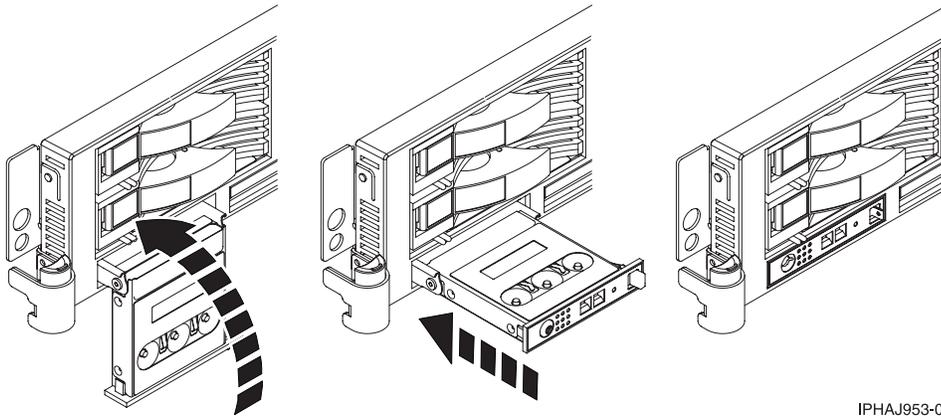
1. Press inward on the spring-loaded tab **A** located on the right side of the control panel **B** so that it pops out slightly, as shown in the following figure.



IPHAJ950-0

Figure 55. Gain access to the control panels

2. Pull the control panel out, toward the front of the system, until it can be pivoted downward on its hinge.
3. To move the control panel back into the device enclosure, lift the control panel up to align it with the opening and push it into place until you feel the tab lock, as shown in the following figure.



IPHAJ953-0

Figure 56. Close the control panels

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## **Appendix. Accessibility features**

Accessibility features help users who have a physical disability, such as restricted mobility or limited vision, to use information technology products successfully.

The following list includes the major accessibility features:

- Keyboard-only operation
- Interfaces that are commonly used by screen readers
- Keys that are tactilely discernible and do not activate just by touching them
- Industry-standard devices for ports and connectors
- The attachment of alternative input and output devices

### **IBM and accessibility**

See the IBM Accessibility Center at <http://www.ibm.com/able/> for more information about the commitment that IBM has to accessibility.



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## **Federal Communications Commission (FCC) statement**

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Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. IBM is not responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

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

## **Industry Canada Compliance Statement**

This Class A digital apparatus complies with Canadian ICES-003.

## **Avis de conformité à la réglementation d'Industrie Canada**

Cet appareil numérique de la classe A respecte est conforme à la norme NMB-003 du Canada.

## **European Community Compliance Statement**

This product is in conformity with the protection requirements of EU Council Directive 2004/108/EC on the approximation of the laws of the Member States relating to electromagnetic compatibility. IBM cannot accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of the product, including the fitting of non-IBM option cards.

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

European Community contact:  
IBM Technical Regulations  
Pascalstr. 100, Stuttgart, Germany 70569  
Tele: 0049 (0)711 785 1176  
Fax: 0049 (0)711 785 1283  
E-mail: tjahn@de.ibm.com

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**IBM Taiwan Contact Information:**

台灣IBM 產品服務聯絡方式：  
台灣國際商業機器股份有限公司  
台北市松仁路7號3樓  
電話：0800-016-888

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Verantwortlich für die Konformitätserklärung nach des EMVG ist die IBM Deutschland GmbH, 70548 Stuttgart.

Generelle Informationen:

Das Gerät erfüllt die Schutzanforderungen nach EN 55024 und EN 55022 Klasse A.

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The following Class B statements apply to model 9111-520 (stand-alone version), 9131-52A (stand-alone version), 7047-185 and the 9111-285.

### **Federal Communications Commission (FCC) statement**

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

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. Proper cables and connectors are available from IBM authorized dealers. IBM is not responsible for any radio or television interference caused by using other than recommended cables or connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

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

### **Industry Canada Compliance Statement**

This Class B digital apparatus complies with Canadian ICES-003.

### **Avis de conformité à la réglementation d'Industrie Canada**

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Properly shielded and grounded cables and connectors must be used in order to reduce the potential for causing interference to radio and TV communications and to other electrical or electronic equipment. Such cables and connectors are available from IBM authorized dealers. IBM cannot accept responsibility for an interference caused by using other than recommended cables and connectors.

European Community contact:  
IBM Technical Regulations  
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## IBM Taiwan Product Service Contact Information

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台灣國際商業機器股份有限公司  
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Verantwortlich für die Konformitätserklärung nach des EMVG ist die IBM Deutschland GmbH, 70548 Stuttgart.

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