



System i and System p
Memory





System i and System p
Memory

Note

Before using this information and the product it supports, read the information in “Notices” on page 147 and the *IBM Systems Safety Information* manual, G229-9054.

Twelfth Edition (September 2007)

© Copyright International Business Machines Corporation 2004, 2007.

US Government Users Restricted Rights – Use, duplication or disclosure restricted by GSA ADP Schedule Contract with IBM Corp.

Contents

Safety and environmental notices	vii
About this topic	xi
Memory modules	1
PDF file for memory modules	1
Model 7047-185 or 7037-A50 memory modules	1
Remove and replace model 7047-185 or 7037-A50 memory modules	1
Remove model 7047-185 or 7037-A50 memory modules	1
Replace model 7047-185 or 7037-A50 memory modules	5
Install model 7047-185 or 7037-A50 memory modules.	9
Model 285 or 52x memory modules	17
Remove and replace model 285 or 52x memory modules	18
Remove model 285 or 52x memory modules	18
Replace model 285 or 52x memory modules	21
Install model 285 or 52x memory modules	23
Model 505 memory modules	29
Remove and replace model 505 memory modules	30
Remove model 505 memory modules.	30
Replace model 505 memory modules.	32
Install model 505 memory modules	34
Model 51x or 710 memory modules	38
Remove and replace model 51x or 710 memory modules	39
Remove model 51x or 710 memory modules	39
Replace model 51x or 710 memory modules	41
Install model 51x or 710 memory modules	44
Model 55x or 720 memory modules	49
Remove and replace model 55x or 720 memory modules	49
Remove model 55x or 720 memory modules	49
Replace model 55x or 720 memory modules	51
Install model 55x or 720 memory modules	52
Model 9116-561 or 570 memory modules	56
Remove and replace model 9116-561 or 570 memory modules	57
Remove model 9116-561 or 570 memory modules.	57
Prepare the system	58
Remove memory modules	59
Replace model 9116-561 or 570 memory modules.	62
Replace memory modules	63
Complete the procedure	65
Install model 9116-561 or 570 memory modules	66
Prepare the system	66
Install memory modules	69
Complete the procedure	71
Related procedures	72
Install a feature using the Hardware Management Console	72
Remove a part using the Hardware Management Console	73
Replace a part using the Hardware Management Console	74
Before you begin	75
Place the rack-mounted system or expansion unit in the service position or operating position	80
Place the rack-mounted system or expansion unit in the service position	80
Place the rack-mounted system or expansion unit in the operating position	84
Place the model 51x or 710 in the service position	86
Place the model 51x or 710 in the operating position	88
Place the rack-mounted model 7047-185 or 7037-A50 in the service position or operating position	89
Place the rack-mounted model 7047-185 or 7037-A50 in the service position	89

Place the rack-mounted model 7047-185 or 7037-A50 in the operating position	92
Open the model 505 service access panel	93
Place the model 505 in the service position	96
Place the model 505 in the operating position	100
Model 285, 51x, 52x, 55x, 710, or OpenPower 720 service access cover	101
Remove the service access cover from the model 285, 51x, 52x, 55x, 710, or OpenPower 720	101
Remove the service access cover from the rack-mounted model 51x, 52x, 55x, 710, or OpenPower 720	101
Remove the service access cover from the stand-alone model 285, 52x, 55x, or OpenPower 720	103
Remove the service access cover from the rack-mounted model 505	104
Install the service access cover on the model 285, 51x, 52x, 55x, 710, or OpenPower 720	105
Install the service access cover on the rack-mounted model 51x, 52x, 55x, 710, or OpenPower 720	105
Install the service access cover on the stand-alone model 285, 52x, 55x, or OpenPower 720	107
Install the service access cover on the rack-mounted model 505	108
Front cover	109
Front cover for models 285, 52x, 55x, or OpenPower 720 and the 0595 expansion unit	109
Remove the front cover from the model 285, 52x, 55x, OpenPower 720, or the 0595 expansion unit	109
Install the front cover on the model 285, 52x, 55x, OpenPower 720, or the 0595 expansion unit	111
Front cover for the model 9116-561 or 570	113
Remove the front cover from the model 9116-561 or 570	113
Install the front cover on the model 9116-561 or 570	114
Remove and replace model 7047-185 or 7037-A50 covers and doors	115
Remove and replace the model 7047-185 or 7037-A50 front cover	115
Remove and replace the model 7047-185 or 7037-A50 acoustic-feature back cover	116
Remove and replace the model 7047-185 or 7037-A50 side cover	118
Replace the side cover in a model 7047-185 or 7037-A50	119
Model 285, 52x, 55x, or OpenPower 720 door	120
Remove the door from the model 285, 52x, 55x, or OpenPower 720	120
Remove the door from the model 285 or 9131-52A	121
Install or replace the door on the model 285, 52x, 55x, or OpenPower 720	122
Install the door on the model 285 or 9131-52A	123
Remove the front cover from the model 51x or 710	124
Install the front cover on the model 51x or 710	125
Gain access to the model 51x and OpenPower 710 control panels	126
Identify a failing part.	127
Identify a failing part on an AIX system or logical partition	128
Locate a failing part in an AIX system or logical partition	128
Activate the indicator light for the failing part	129
Identify a failing part on an i5/OS system or logical partition	129
Activate the failing-part indicator light	129
Deactivate the failing-part indicator light	130
Identify a failing part on a Linux system or logical partition.	130
Locate a failing part and activate the indicator light	130
Activate the indicator light for the failing part	130
Deactivate the failing-part indicator light	130
Identify a failing part using stand-alone eServer diagnostics.	131
Identify a failing part using the Advanced System Management Interface	132
SMP processor cable connections	132
Disconnect the SMP processor cable from a system unit	132
Reconnect the SMP processor cable to a system unit	135
Verify the installed part	138
Verify an installed feature or replaced part on an AIX system or logical partition.	138
Verify the presence of an installed part on an i5/OS system or logical partition	141
Verify the installed part on a Linux system or logical partition (run AIX diagnostics)	142
Verify an installed part using the eServer stand-alone diagnostics	142
Verify the presence of an installed part using Hardware Management Console (HMC)	143
Verify the presence of an installed part using the Advanced System Management Interface	144

Appendix. Accessibility features 145

Notices 147

Trademarks	148
Electronic emission notices	149
Class A Notices.	149
Class B Notices.	152
Terms and conditions.	154

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.

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>.

About this topic

This topic provides users with instructions for installing, removing, and replacing memory modules.

For information about the accessibility features of this product, for users who have a physical disability, see "Accessibility features," on page 145.

Memory modules

You might need to remove, replace, or install dual in-line memory modules (DIMMs) in the server. This section includes procedures so that you can perform these tasks.

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

PDF file for memory modules

You can view and print a PDF file of this information.

To view or download the PDF version of this document, select Memory modules  (about 21 MB).

Saving PDF files

To save a PDF on your workstation for viewing or printing:

1. Right-click the PDF link in your browser.
2. Click the option that saves the PDF locally.
3. Navigate to the directory in which you want to save the PDF.
4. Click **Save**.

Downloading Adobe Reader

You need Adobe Reader installed on your system to view or print these PDFs. You can download a free copy from the Adobe Web site (www.adobe.com/products/acrobat/readstep2.html) .

Model 7047-185 or 7037-A50 memory modules

You might need to remove, replace, or install dual in-line memory modules (DIMMs) in the server. This section includes procedures so that you can perform these tasks.

Remove and replace model 7047-185 or 7037-A50 memory modules

You might need to remove or replace memory modules in the server. This section includes procedures so that you can perform these tasks.

These procedures describe how to remove and replace the memory modules in your server.

Remove model 7047-185 or 7037-A50 memory modules

You might need to remove memory modules from the server. Use the procedure in this section to perform this task.

To remove memory modules from the server, complete the following procedure:

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.

1. Perform the prerequisite tasks described in “Before you begin” on page 75.

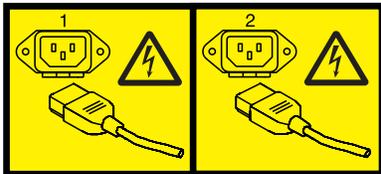
2. If you are removing the memory modules for a system upgrade or as part of another procedure, continue to the next step. If you are removing the memory modules because of a system failure, use the service action log to help identify the failing part. For more information, see “Identify a failing part” on page 127.
3. If necessary, “Place the rack-mounted model 7047-185 or 7037-A50 in the service position” on page 89.
4. Remove the side cover. For instructions, see “Remove and replace model 7047-185 or 7037-A50 covers and doors” on page 115.

Attention:

- Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.
 - When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
 - If you do not have a wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds.
5. If you are removing the memory modules because of a system failure, look at the LEDs to determine the location of the failed memory module. The LEDs are located on light path diagnostic card, see “Identify a failing part on a model 7047-185 or 7037-A50” on page 127.
 6. Stop the system. For instructions, see “Stop the system or logical partition” on page 79.
 7. 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



8. Push the drive-cage release tab **A** up and rotate the drive cage all the way out of the system until it locks into place over the drive-cage retention tab, as shown in the following figure.

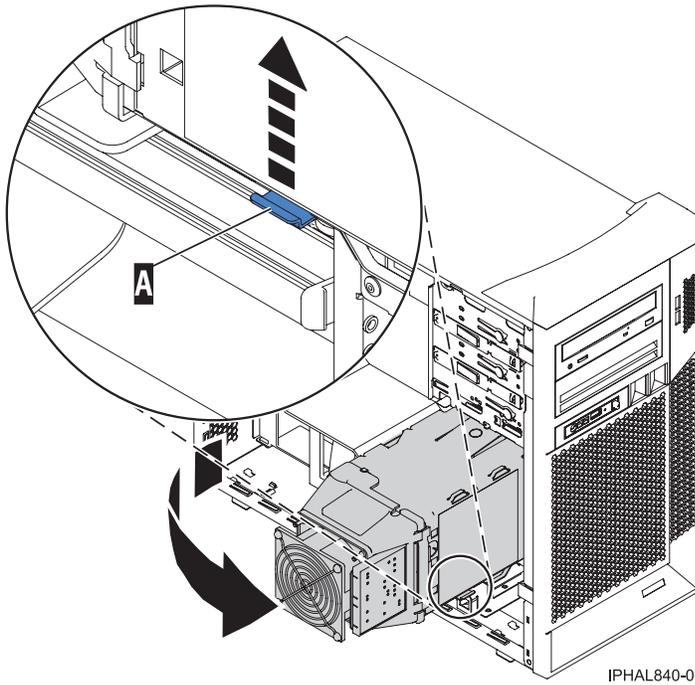
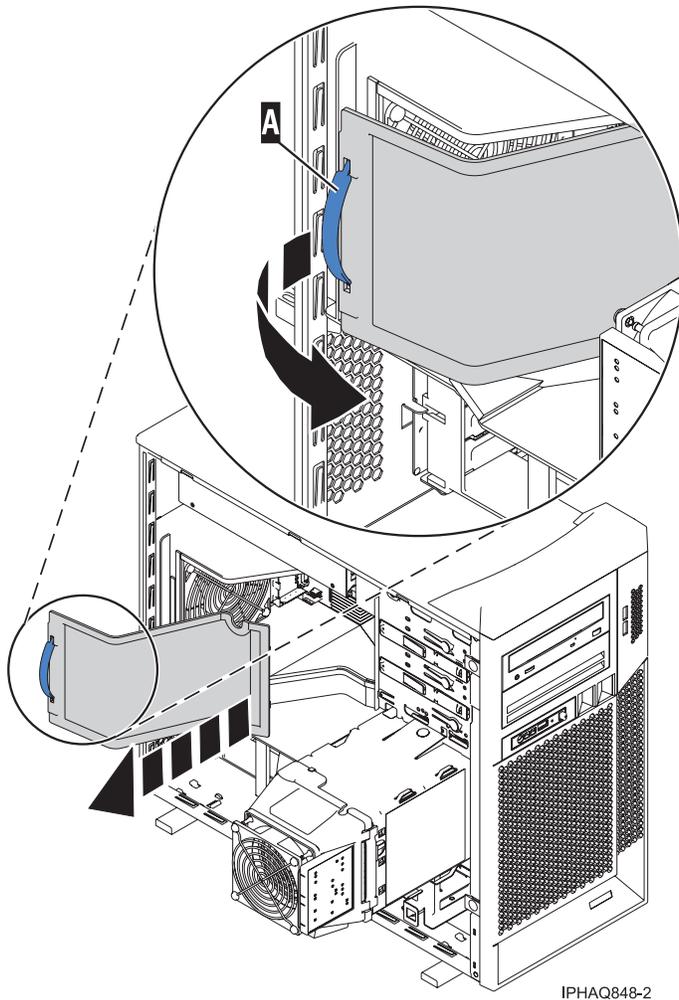


Figure 1. Rotate the drive cage out of the system

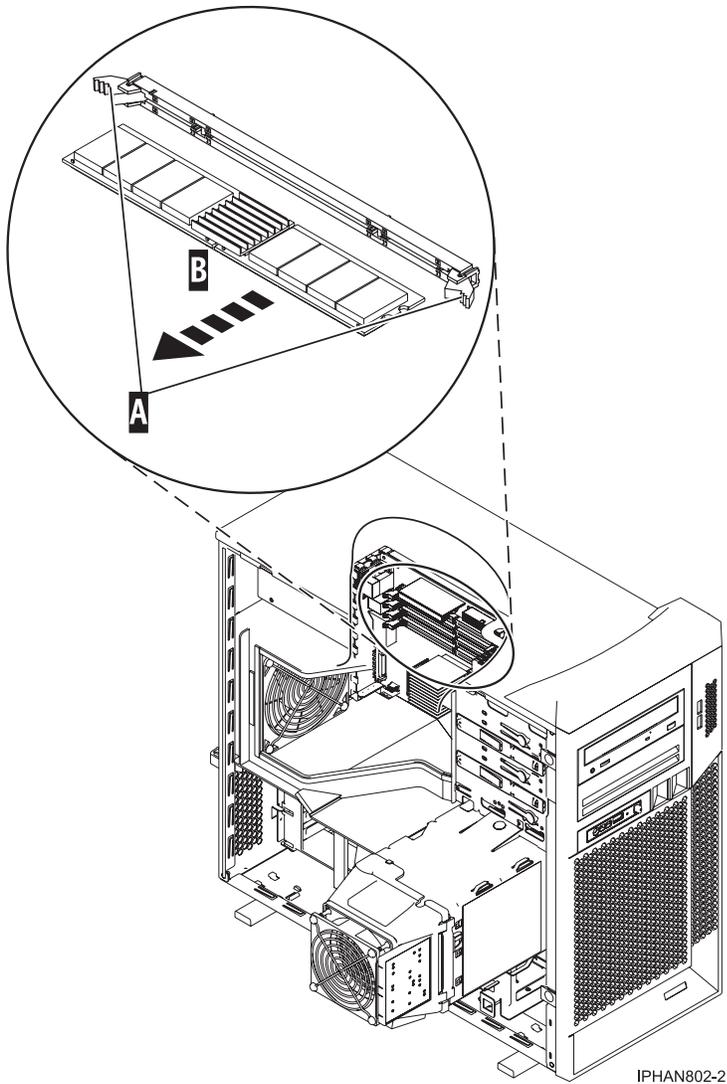
9. Remove the air baffle door by pulling outward on the handle **A**, as shown in the following figure.



IPHAQ848-2

Figure 2. Remove the air baffle door

10. Remove the memory module by pushing the locking tabs **A** out and then down, as shown in the following figure. The lever action of the tabs forces the memory module out of the connector.
11. Pull the memory module **B** out of the connector.



IPHAN802-2

Figure 3. Remove a memory module

Replace model 7047-185 or 7037-A50 memory modules

If you removed memory modules as a part of another procedure, you might need to replace the memory modules in the server. Use the procedure in this section to perform this task.

To replace the memory modules in your server, complete the following procedure:

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.

1. Perform the prerequisite tasks described in “Before you begin” on page 75.
2. If necessary, remove the memory module from its antistatic package.

Attention:

- Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.
 - When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
 - If you do not have a wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds.
3. Ensure that the connector locking tabs **A** are pulled out to the unlocked position before installing the new memory module, as shown in Figure 4 on page 7.

Attention: Memory modules are keyed to prevent a module from being installed incorrectly. Note the locations of the key tabs within the memory module connector before installing the memory module.

4. Carefully grasp the memory module along two edges and align the connector.
5. Insert the memory module **B** firmly into the connector, as shown in the following figure.
6. Secure the memory module with the locking tabs **A** located at each end of the memory module connector.

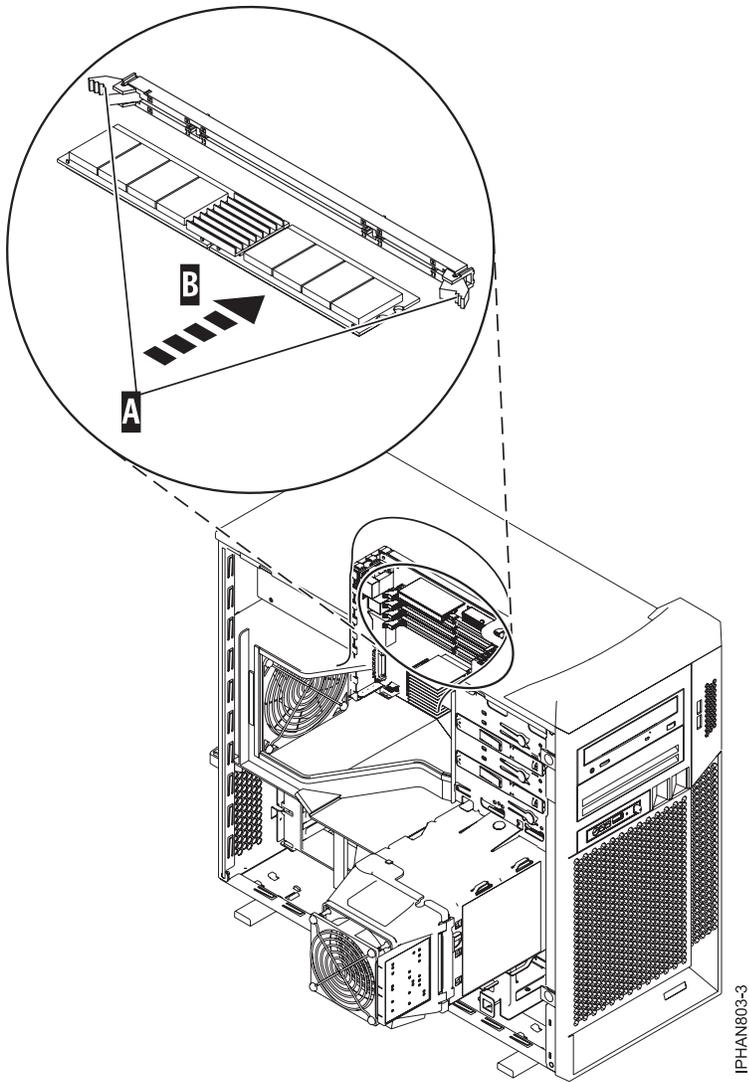


Figure 4. Install a memory module

7. Replace the air baffle door by sliding the lower edge **A** in to the system first, as shown in the following figure.

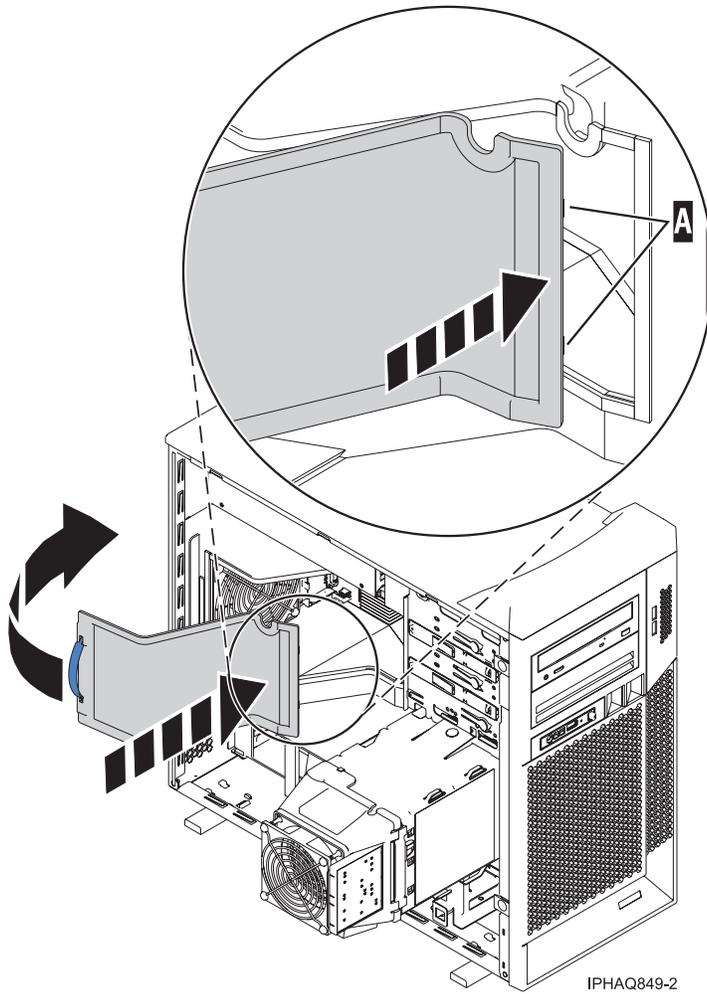
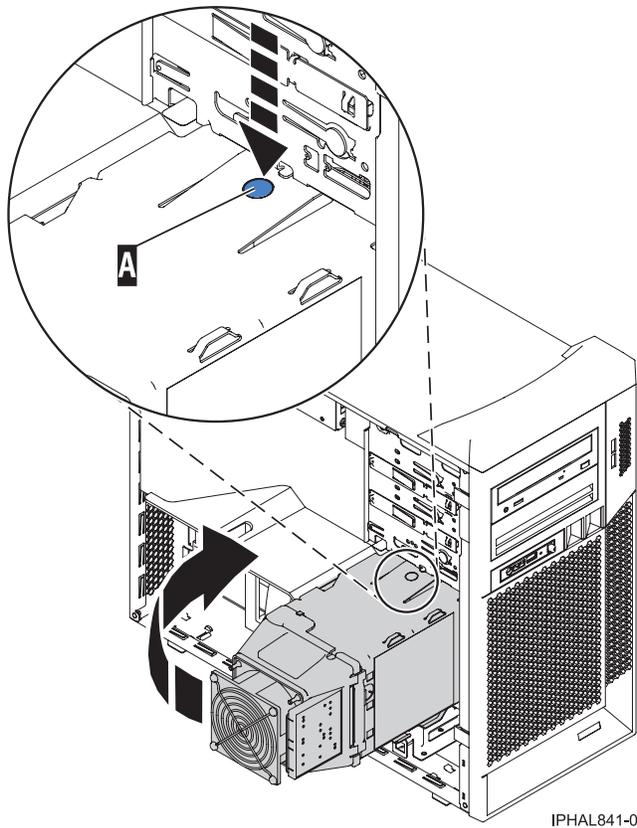


Figure 5. Replace the air baffle door

8. Push the disk-drive cage slightly forward, press the release tab A, and lower the cage into the system, as shown in the following figure.



IPHAL841-0

Figure 6. Rotate the drive cage into the system

9. Replace the side cover. For instructions, see “Remove and replace model 7047-185 or 7037-A50 covers and doors” on page 115.
10. If necessary, “Place the rack-mounted model 7047-185 or 7037-A50 in the operating position” on page 92.
11. Reconnect all power and signal cables to their respective connectors.
12. Start the system. For instructions, see “Start the system or logical partition” on page 77.
13. Verify that the new resource is functional. For instructions, see “Verify the installed part” on page 138.

Install model 7047-185 or 7037-A50 memory modules

You might need to install memory modules in the server. Use the procedure in this section to perform this task.

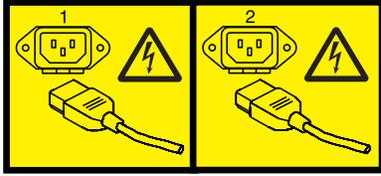
To install memory modules in your server, complete the following procedure:

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.

1. Perform the prerequisite tasks described in “Before you begin” on page 75.
2. Stop the system. For instructions, see “Stop the system or logical partition” on page 79.
3. 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



4. If necessary, “Place the rack-mounted model 7047-185 or 7037-A50 in the service position” on page 89.
 5. Remove the side cover. For instructions, see “Remove and replace model 7047-185 or 7037-A50 covers and doors” on page 115.
- Attention:**
- Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.
 - When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
 - If you do not have a wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds.
6. Push the drive-cage release tab **A** up and rotate the drive cage all the way out of the system until it locks into place over the drive-cage retention tab, as shown in the following figure.

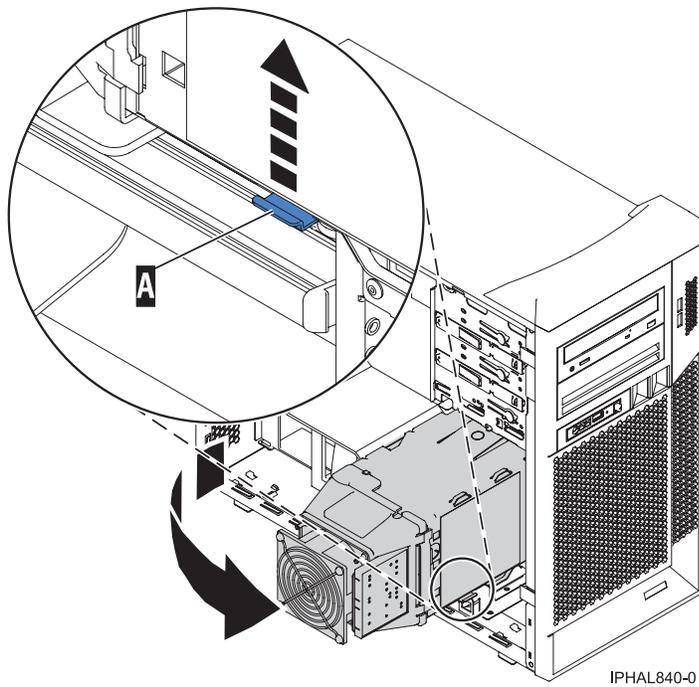
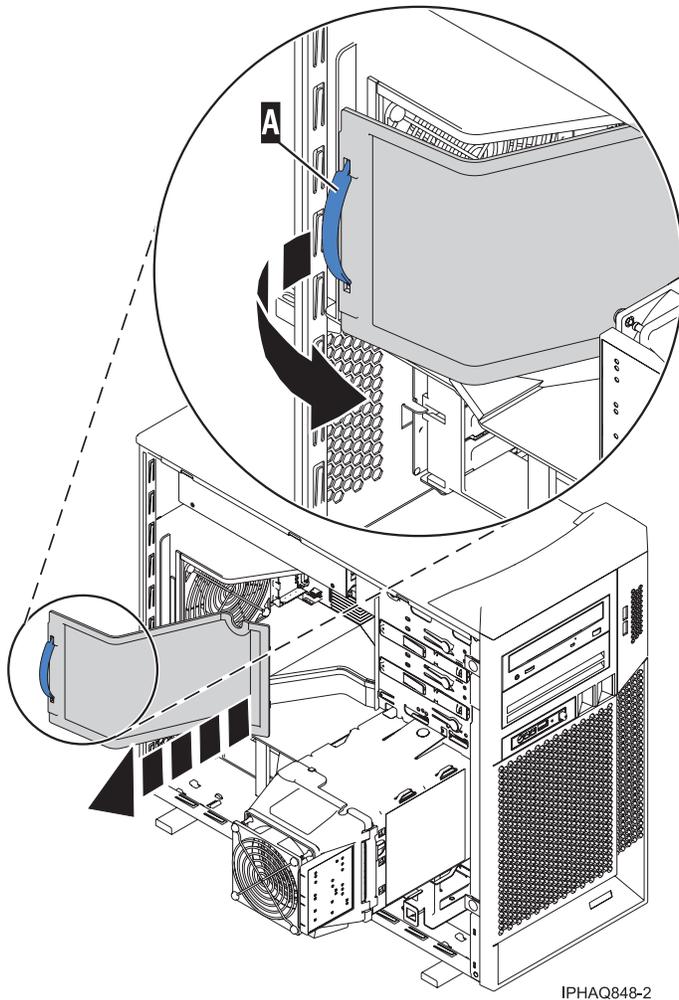


Figure 7. Rotate the drive cage out of the system

7. Remove the air baffle door by pulling outward on the handle A, as shown in the following figure.



IPHAQ848-2

Figure 8. Remove the air baffle door

8. Determine the slots in which the memory modules will be placed.

Note: Server configurations support a single pair of memory modules on initial order, and must be upgraded in pairs of modules when adding memory to the system unit. Use the following rules to install memory modules (see Figure 9 on page 13 for memory module slot locations on the system backplane):

- The first memory module pair is placed into memory module slots P1-C1 and P1-C4.
- The second memory module pair is placed into memory module slots P1-C2 and P1-C3.

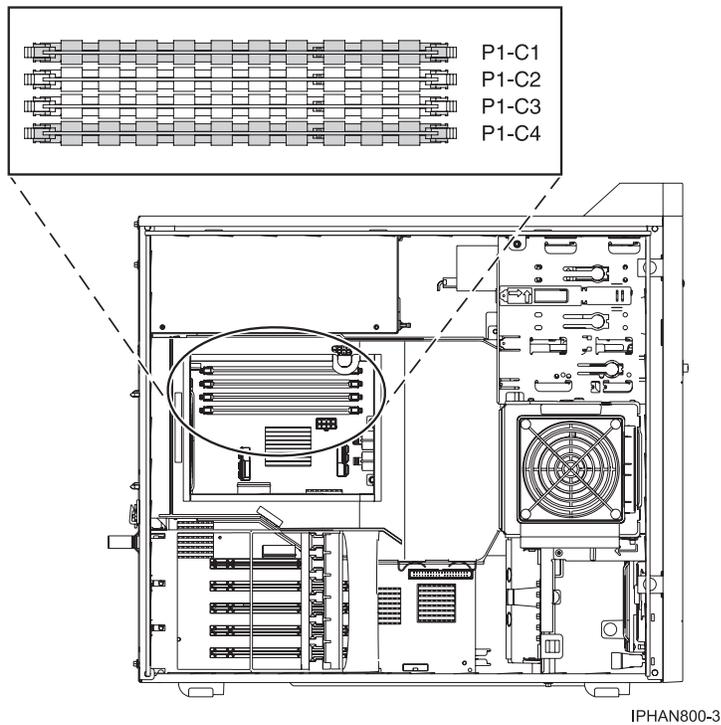


Figure 9. System backplane connector locations

9. If necessary, remove the memory module from its antistatic package.
10. If necessary, remove the memory module filler by pushing the locking tabs **A** out and then down, as shown in the following figure. The lever action of the tabs forces the memory module filler out of the connector.

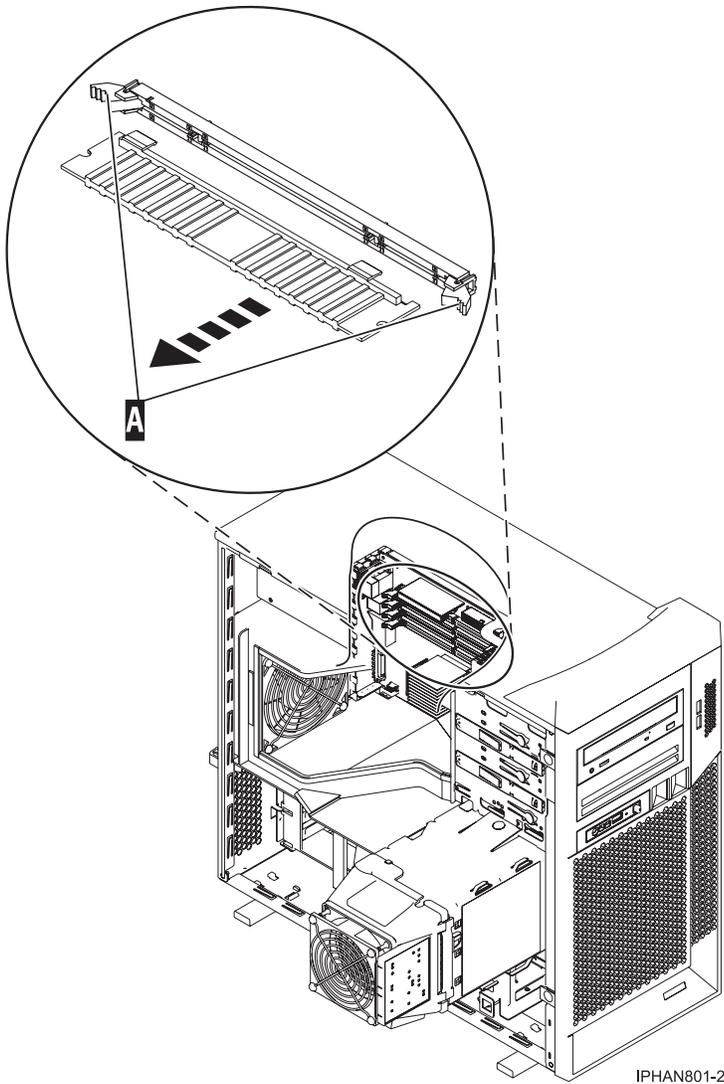


Figure 10. Remove a memory module filler

11. Ensure that the connector locking tabs **A** are pushed out in the unlocked position before installing a new memory module, as shown in Figure 10.

Attention: Memory modules are keyed to prevent a module from being installed incorrectly. Note the locations of the key tabs within the memory module connector before attempting to install the memory module.

12. Carefully grasp the memory module along two edges and align the connector.
13. Insert the memory module firmly into the connector.
14. Secure the memory module **B** with the locking tabs **A** located at each end of the memory module connector, as shown in the following figure.

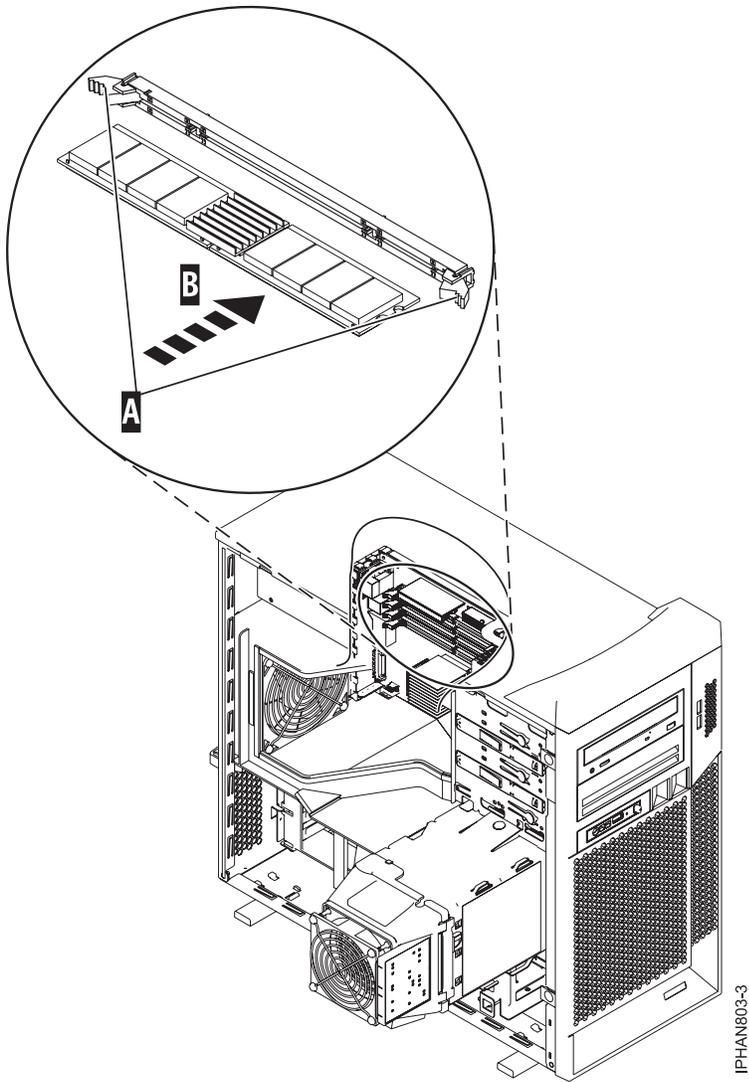


Figure 11. Install a memory module

15. Replace the air baffle door by sliding the lower edge **A** in to the system first, as shown in the following figure.

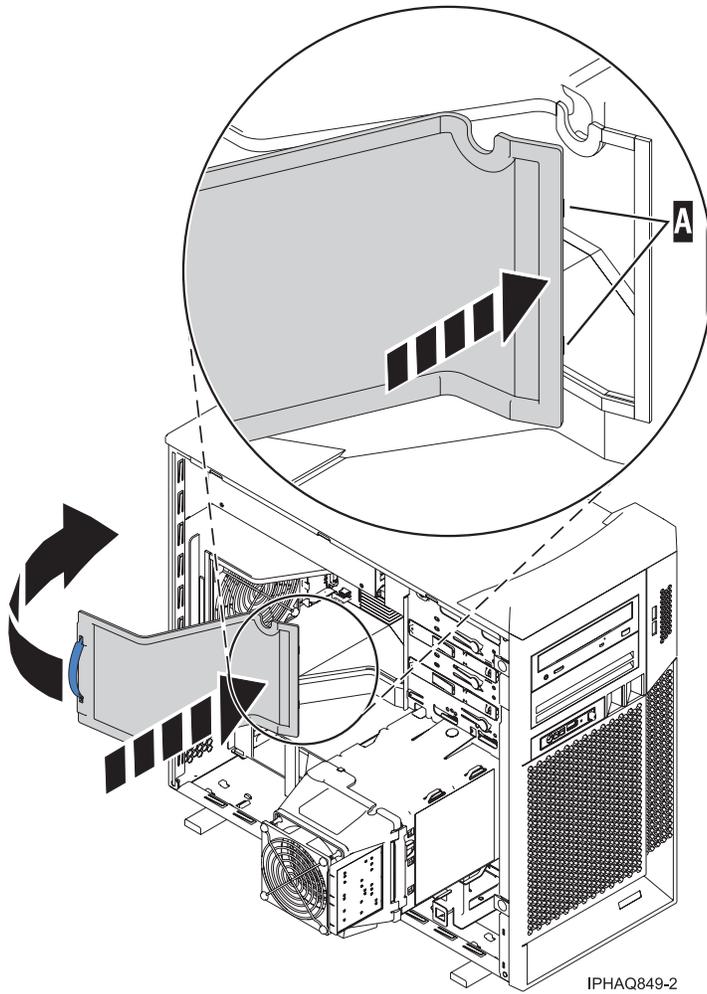


Figure 12. Replace the air baffle door

16. Push the disk drive cage slightly forward, press the release tab A, and lower the cage into the system, as shown in the following figure.

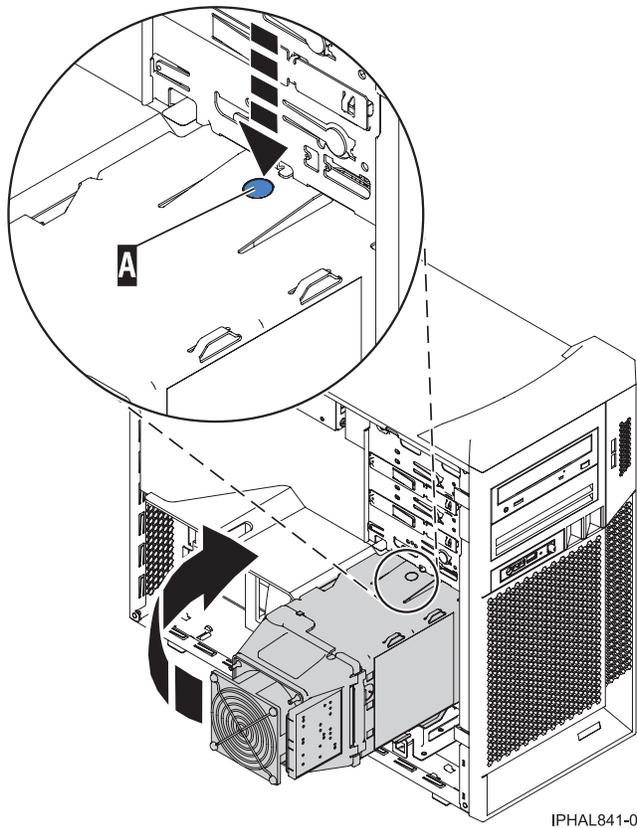


Figure 13. Rotate the drive cage into the system

17. Replace the side cover. For instructions, see “Remove and replace model 7047-185 or 7037-A50 covers and doors” on page 115.
18. If necessary, “Place the rack-mounted model 7047-185 or 7037-A50 in the operating position” on page 92.
19. Reconnect all power and signal cables to their respective connectors.
20. Start the system. For instructions, see “Start the system or logical partition” on page 77.
21. Verify that the new resource is functional. For instructions, see “Verify the installed part” on page 138.

Model 285 or 52x memory modules

You might need to remove, replace, or install dual in-line memory modules (DIMMs) in the server. This section includes procedures so that you can perform these tasks.

To complete these procedures for your server, you need to 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:

- Fan tray assembly
- Service processor
- Power supply
- Voltage regulator

If you are planning to use this information in printed form, be sure to print all of the information you need. You can find all of the information, in both HTML and PDF format, in the Installing features topic. Go to the procedures listed above, print them, and then return here.

Remove and replace model 285 or 52x memory modules

You might need to remove or replace memory modules in the server. This section includes procedures so that you can perform these tasks.

Remove model 285 or 52x memory modules

You might need to remove memory modules from the server. Use the procedure in this section to perform this task.

If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for removing memory modules from the server. For instructions, see “Remove a part using the Hardware Management Console” on page 73. If you do not have an HMC, complete the following steps to remove memory modules:

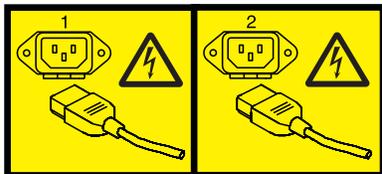
1. Perform the prerequisite tasks described in “Before you begin” on page 75.
2. If you are removing the memory modules for a system upgrade or as part of another procedure, continue to the next step. If you are removing the memory modules because of a system failure, use the service action log to help identify the failing part. See “Identify a failing part” on page 127.
3. Place the system in the service position. For instructions, see “Place the rack-mounted system or expansion unit in the service position” on page 80.
4. 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 101.

Attention:

- Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.
 - When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
 - If you do not have a wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds.
5. If you are removing the memory modules because of a system failure, look at the LEDs to determine the location of the failed memory module. The LEDs are located on the fan tray assembly.
 6. Stop the system. For instructions, see “Stop the system or logical partition” on page 79.
 7. 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)

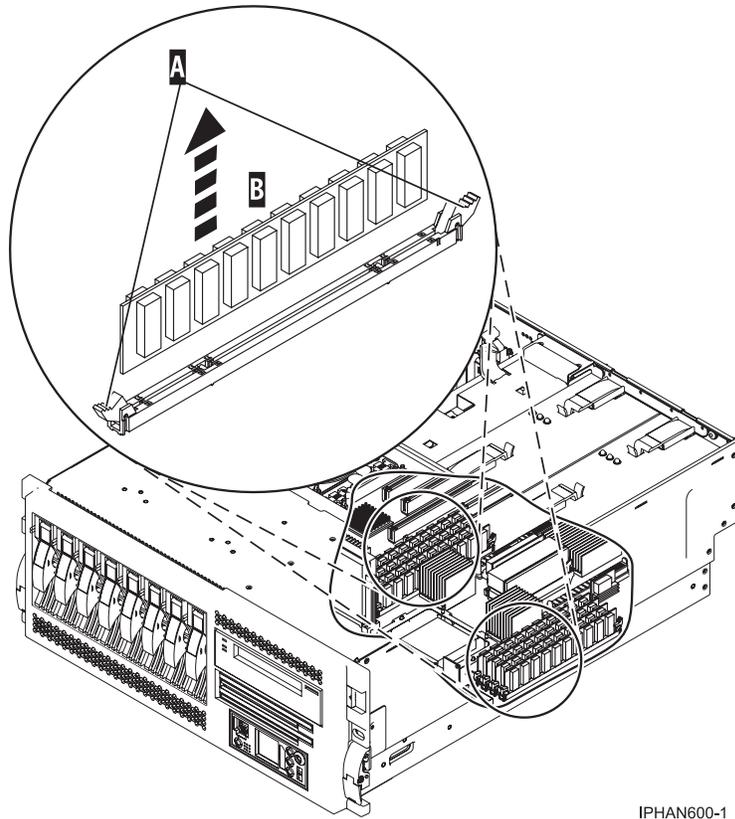


or



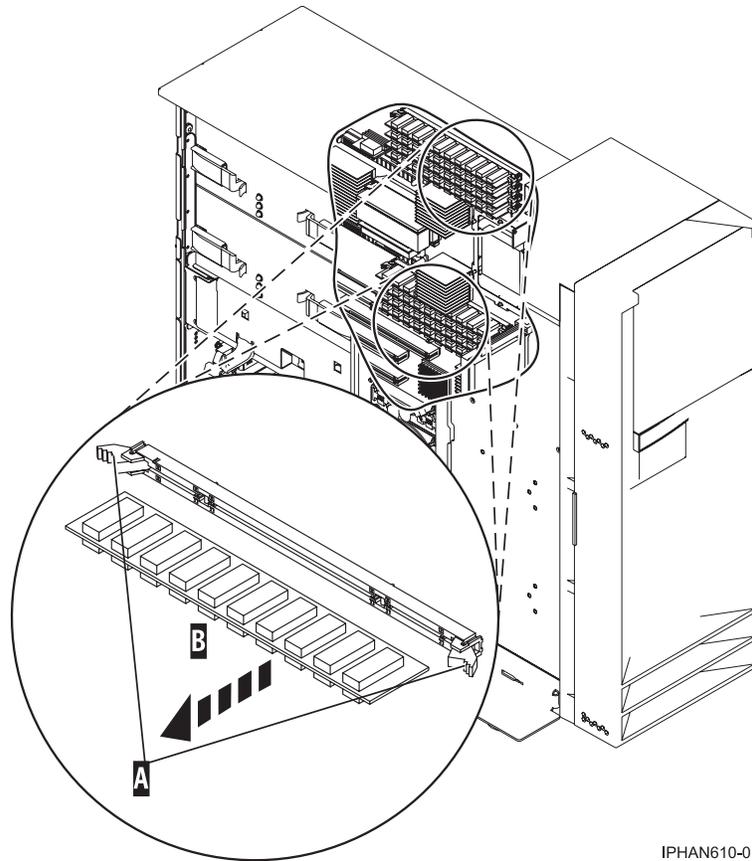
8. If necessary to access memory module positions on the system backplane, disconnect the cables from the power supplies or service processor assembly at the back of the system.
9. Remove the fan tray assembly. For instructions, see Remove the model 285 or 52x fan tray assembly.
10. If necessary, Remove the model 285 or 52x power supply to access memory modules on the system backplane.
11. If necessary, Remove the model 285 or 52x service processor assembly to access memory modules on the system backplane.
12. Remove the memory module by pushing the tabs **A** out and then down, as shown in Figure 14 on page 20 or Figure 15 on page 21. The tabs' lever action forces the memory module out of the connector.
13. Pull the memory module out of the connector.

Note: When removing a memory module, be sure to press the tabs **A** back to the upright position. Failure to do so might cause the fan assembly to not seat correctly, which might cause the system to power off.



IPHAN600-1

Figure 14. Remove a memory module from a rack-mounted system unit



IPHAN610-0

Figure 15. Remove a memory module from a stand-alone system unit

Replace model 285 or 52x memory modules

If you removed memory modules as a part of another procedure, you might need to replace memory modules. Use the procedure in this section to perform this task.

If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for replacing the memory modules in the server. For instructions, see “Replace a part using the Hardware Management Console” on page 74. If you do not have an HMC, do the following to replace the memory modules:

1. Perform the prerequisite tasks described in “Before you begin” on page 75.
2. If necessary, remove the memory module from its antistatic package.

Attention:

- Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.
 - When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
 - If you do not have a wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds.
3. Ensure that the connector locking tabs are pushed out in the unlocked position before installing the new memory module.

Attention: Memory modules are keyed to prevent a module from being installed incorrectly. Note the locations of the key tabs within the memory module connector before attempting to install the memory module.

4. Carefully grasp the memory module along two edges and align the connector.
5. Insert the memory module **A** firmly into the connector, as shown in Figure 16 or Figure 17 on page 23.
6. Secure the memory module **B** with the locking tabs **A** located at each end of the memory module connector.

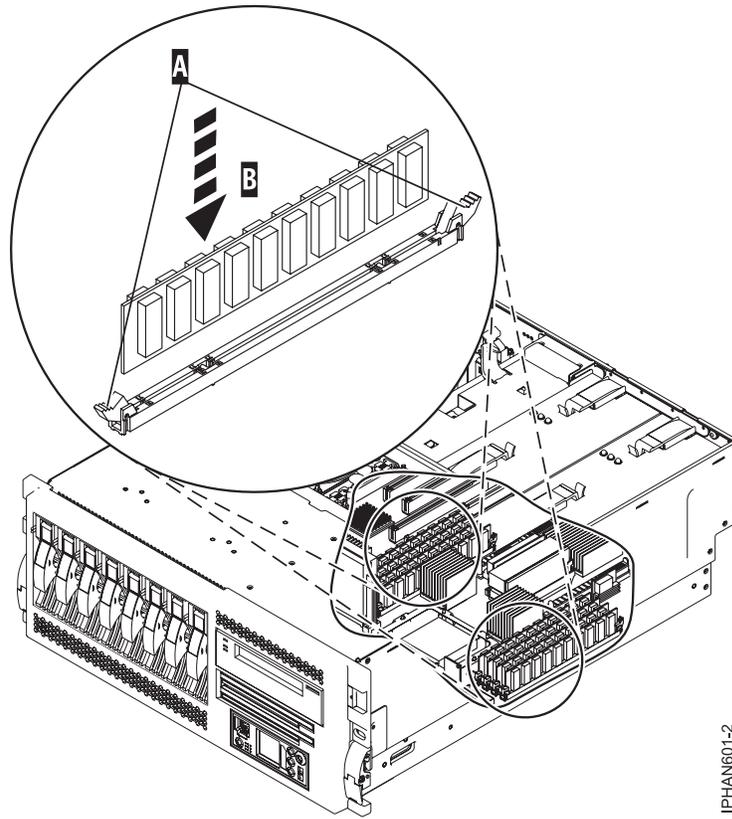


Figure 16. Replace a memory module in a rack-mounted system unit

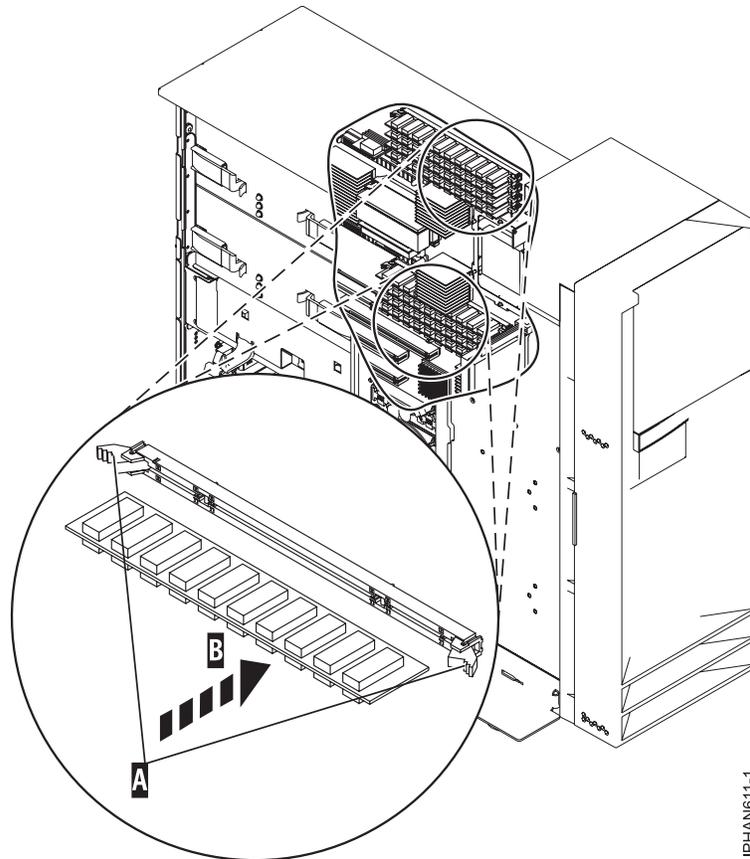


Figure 17. Replace a memory module in a stand-alone system unit

7. If necessary, replace the service processor. For instructions, see *Replace the model 285 or 52x service processor assembly*.
8. If necessary, replace the power supply. For instructions, see *Replace the model 285 or 52x power supply*.
9. Replace the fan tray. For instructions, see *Replace the model 285 or 52x fan tray assembly*.
10. Replace the service access cover. For instructions, see *“Install the service access cover on the model 285, 51x, 52x, 55x, 710, or OpenPower 720”* on page 105.
11. If you are servicing a rack-mounted system unit, *“Place the rack-mounted system or expansion unit in the operating position”* on page 84.
12. Reconnect all power and signal cables to their respective connectors.
13. Start the system. For instructions, see *“Start the system or logical partition”* on page 77.
14. Verify the installed part. For instructions, see *“Verify the installed part”* on page 138.

Install model 285 or 52x memory modules

You might need to install memory modules in the server. Use the procedure in this section to perform this task.

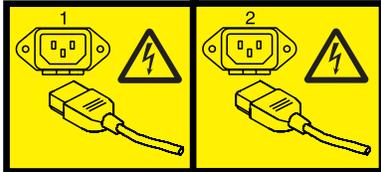
If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for installing the memory modules in the server. For instructions, see *“Install a feature using the Hardware Management Console”* on page 72. If you do not have an HMC, do the following to install the memory modules:

1. Perform the prerequisite tasks described in *“Before you begin”* on page 75.

2. If necessary, place the system unit in the service position. For instructions, see “Place the rack-mounted system or expansion unit in the service position” on page 80.
3. 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 101.
4. Stop the system. For instructions, see “Stop the system or logical partition” on page 79.
5. 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



6. If necessary to access memory module positions on the system backplane, disconnect the cables from the power supplies or service processor assembly at the back of the system.

Attention:

- Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.
- When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
- If you do not have a wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds.

7. Remove the fan tray assembly. For instructions, see Remove the model 285 or 52x fan tray assembly.
8. If necessary, remove the power supply to access memory modules on the system backplane. For instructions, see Remove the model 285 or 52x power supply.
9. If necessary, remove the service processor assembly to access memory modules on the system backplane. If necessary, Remove the model 285 or 52x service processor assembly.

10. Determine the slots in which the memory modules will be placed. See Figure 18 for memory module slot locations on the system backplane.

Restrictions:

- If your server has RIO/HSL ports P1-T3 and P1-T4 on the back of the system, then memory modules must be installed in sets of four, or quads. Use the following plugging order to install a quad of memory modules.

Exception: A 8950 processor might support a single pair of memory modules on initial order, and must be upgraded to quads of modules when adding memory.

- a. The first quad of memory modules is placed into memory module slots C9, C11, C14, and C16.
 - b. The second quad of memory modules is plugged into memory module slots C10, C12, C13, and C15.
- If your server does not have RIO/HSL ports P1-T3 and P1-T4 on the back of the system, then memory modules are installed in pairs. Use the following plugging order to install pairs of memory modules.
 - a. The first memory module pair is placed into memory module slots C9 and C16.
 - b. The second memory module pair is placed into memory module slots C11 and C14.
 - c. The third memory module pair is placed into memory module slots C10 and C15.
 - d. The fourth memory module pair is placed into memory module slots C12 and C13.

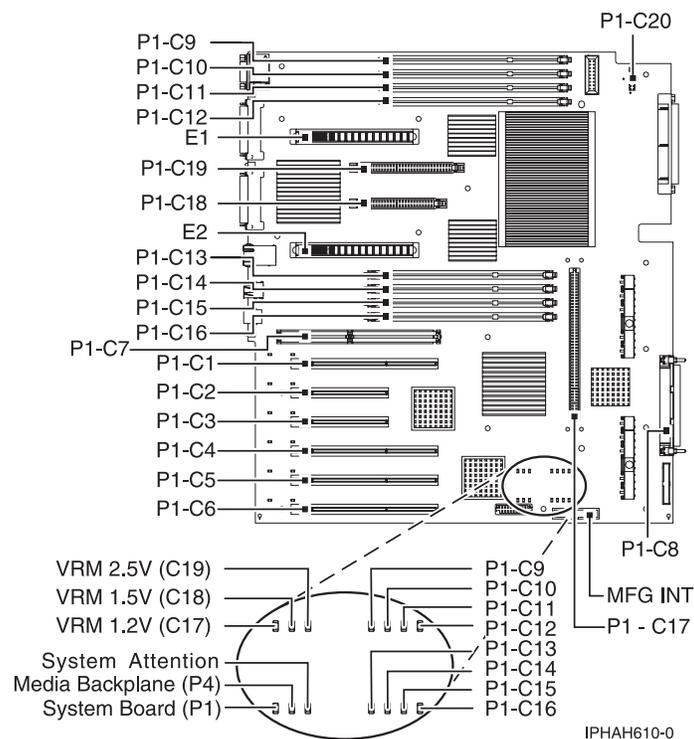
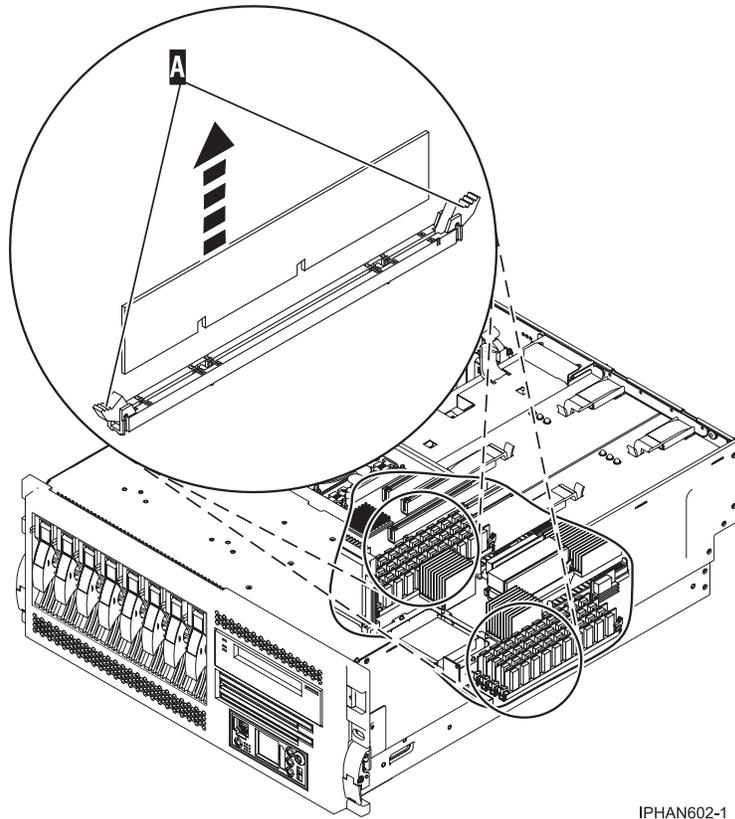


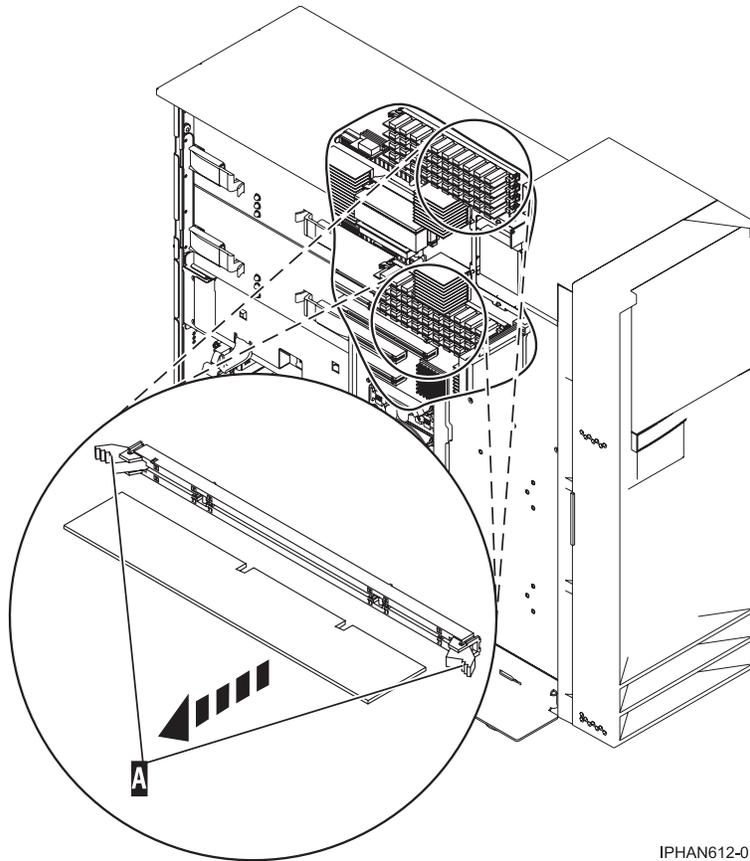
Figure 18. Backplane connector locations for the 285 and 52x models

11. If necessary, remove the memory module from its antistatic package.
12. Ensure the connector is ready to receive the memory module by removing the memory module filler, if one is present, by pushing the tabs A out and then down. The lever action of the tabs forces the memory module filler out of the connector.



IPHAN602-1

Figure 19. Remove a memory module filler from a rack-mounted system unit



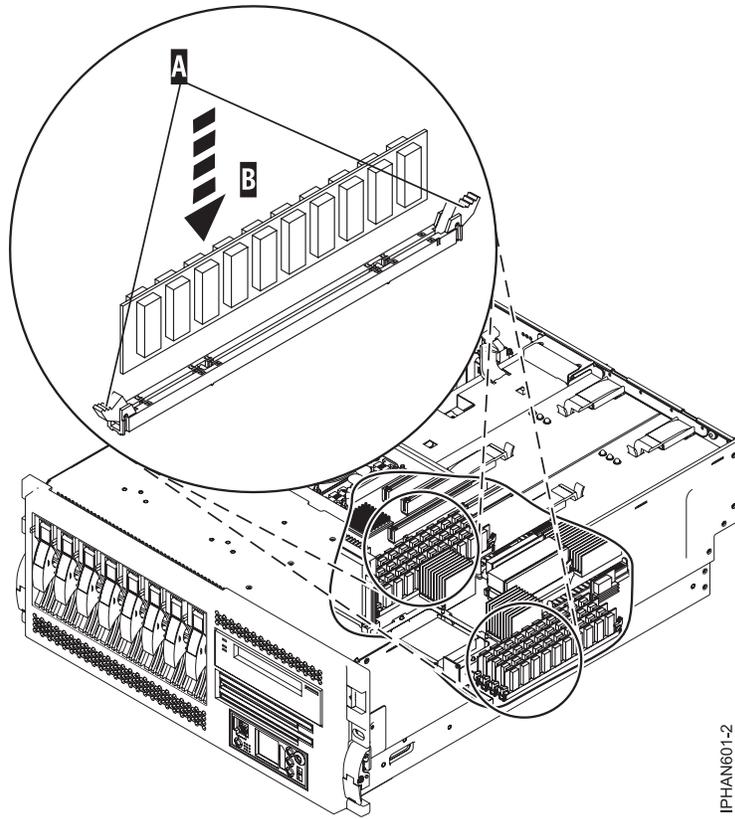
IPHAN612-0

Figure 20. Remove a memory module filler from a stand-alone system unit

13. Ensure that the connector locking tabs are pushed out to the unlocked position before installing a new memory module.

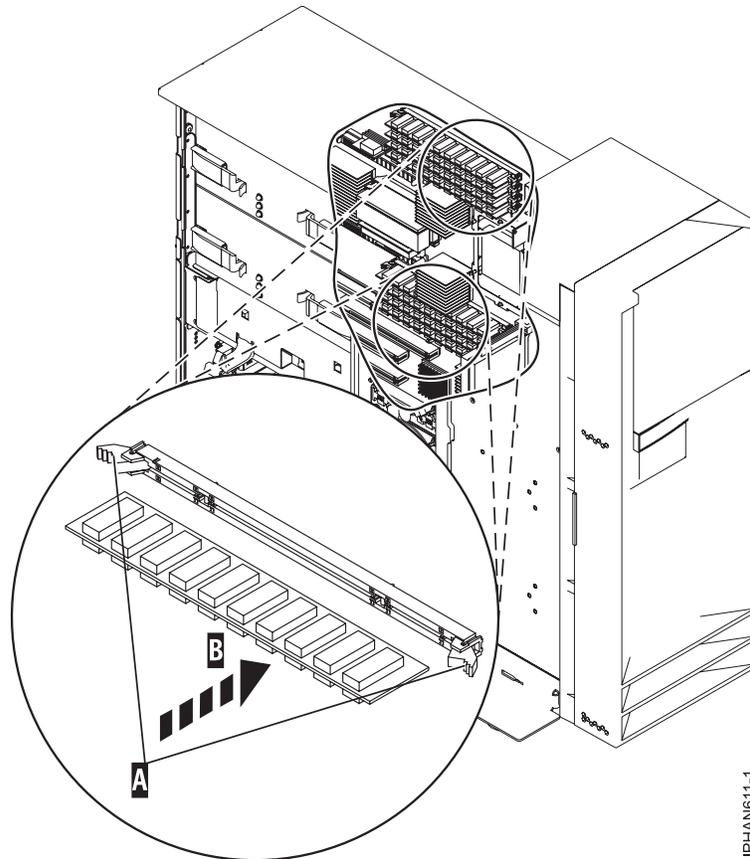
Attention: Memory modules are keyed to prevent a module from being installed incorrectly. Note the locations of the key tabs within the memory module connector before attempting to install the memory module.

14. Carefully grasp the memory module along two edges and align the connector.
15. Insert the memory modules firmly into the connector.
16. Secure the memory module **B** with the locking tabs **A** located at each end of the memory module connector, as shown in the following figure.



IPHAN601-2

Figure 21. Memory module installation in a rack-mounted system unit



IPHAN611-1

Figure 22. Memory module installation in a stand-alone system unit

17. If necessary, replace the service processor. For instructions, see Replace the model 285 or 52x service processor assembly.
18. If necessary, replace the power supply. For instructions, see Replace the model 285 or 52x power supply.
19. Replace the fan tray. For instructions, see Replace the model 285 or 52x fan tray assembly.
20. Replace the service access cover. For instructions, see “Install the service access cover on the model 285, 51x, 52x, 55x, 710, or OpenPower 720” on page 105.
21. If you are servicing a rack-mounted system unit, “Place the rack-mounted system or expansion unit in the operating position” on page 84.
22. Reconnect all power and signal cables to their respective connectors.
23. Start the system. For instructions, see “Start the system or logical partition” on page 77.
24. Verify the installed part. For instructions, “Verify the installed part” on page 138.

Model 505 memory modules

You might need to remove, replace, or install dual in-line memory modules (DIMMs) in the server. This section includes procedures so that you can perform these tasks.

The following procedures describe the installation, removal, and replacement of memory modules in the server.

Remove and replace model 505 memory modules

You might need to remove or replace memory modules in the server. This section includes procedures so that you can perform these tasks.

These procedures describe how to remove and replace memory modules in the server.

Remove model 505 memory modules

You might need to remove memory modules from the server. Use the procedure in this section to perform this task.

If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for removing memory modules from the server. For instructions, see “Remove a part using the Hardware Management Console” on page 73. If you do not have an HMC, complete the following steps to remove memory modules:

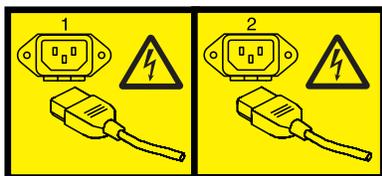
1. Perform the prerequisite tasks described in “Before you begin” on page 75.
2. If you are removing the memory modules for a system upgrade or as part of another procedure, continue to the next step. If you are removing the memory modules because of a system failure, use the service action log to help identify the failing part. See “Identify a failing part” on page 127.
3. Place the system unit into the service position. For instructions, see “Place the model 505 in the service position” on page 96.
4. Remove the service access cover. For instructions, see “Remove the service access cover from the rack-mounted model 505” on page 104.

Attention:

- Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.
 - When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
 - If you do not have a wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds.
5. If you are removing the memory modules because of a system failure, look at the LEDs to determine the location of the failed memory module. The LEDs are located on the system backplane next to the memory modules.
 6. Stop the system. For instructions, see “Stop the system or logical partition” on page 79.
 7. 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.

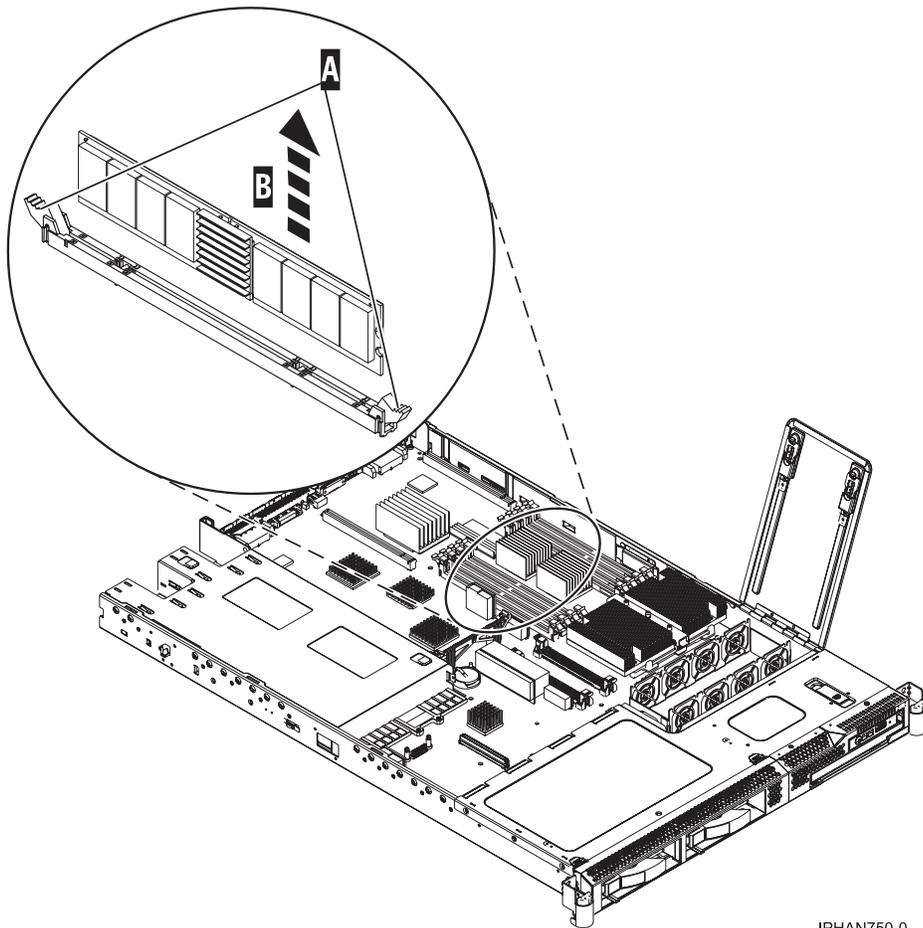
(L003)



or



8. Remove the memory module by pushing the locking tabs **A** out and then down. The tabs' lever action forces the memory module **B** out of the connector.
9. Pull the memory module out of the connector, as shown in the following graphic.



IPHAN750-0

Figure 23. Removing a memory module

Replace model 505 memory modules

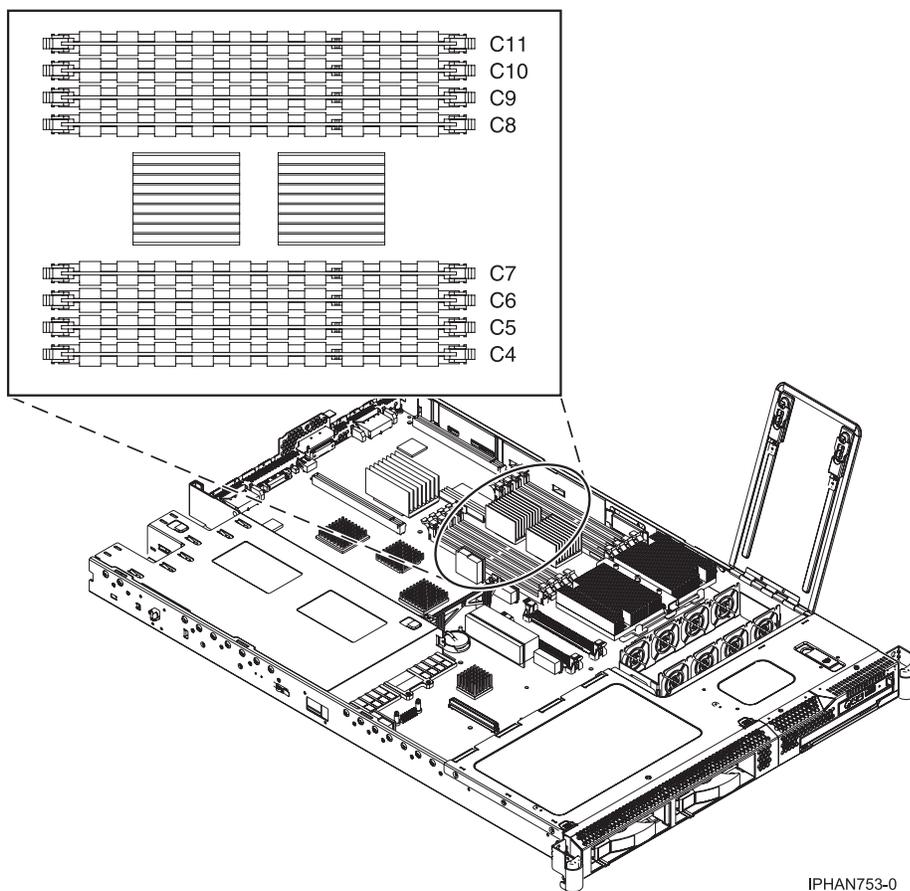
If you removed memory modules as a part of another procedure, you might need to replace memory modules. Use the procedure in this section to perform this task.

If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for replacing the memory modules in the server. For instructions, see “Replace a part using the Hardware Management Console” on page 74. If you do not have an HMC, complete the following steps to replace memory modules:

1. Perform the prerequisite tasks described in “Before you begin” on page 75.
2. If necessary, remove the memory module from its antistatic package.

Attention:

- Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.
 - When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
 - If you do not have a wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds.
3. Determine the slots in which the memory modules will be placed. Memory modules can be plugged in pairs or quads. The minimum memory requirement is 1 GB. The maximum memory that is supported is 32 GB.



IPHAN753-0

Figure 24. Memory module slot locations

Table 1. Memory module balancing

Memory	Location	Priority
Two memory modules		
	C4 and C11	1
	C6 and C9	2
	C5 and C10	3
	C7 and C8	4
Four memory modules		
	C4, C11, C6, and C9	1
	C5, C10, C7, and C8	2
Six memory modules		
	C4, C11, C6, C9, C5, and C10	1
	C6, C9, C7, C8, C4 and C11	2

- Ensure that the connector locking tabs are pushed out in the unlocked position before installing the new memory module.

Attention: Memory modules are keyed to prevent a module from being installed improperly. Note the locations of the key tabs within the memory module connector before attempting to install the memory module.

- Carefully grasp the memory module **B** along two edges and align the connector, as shown in Figure 25.
- Insert the memory module firmly into the connector.
- Secure the memory module with the locking tabs **A** located at each end of the memory module connector, as shown in Figure 25.

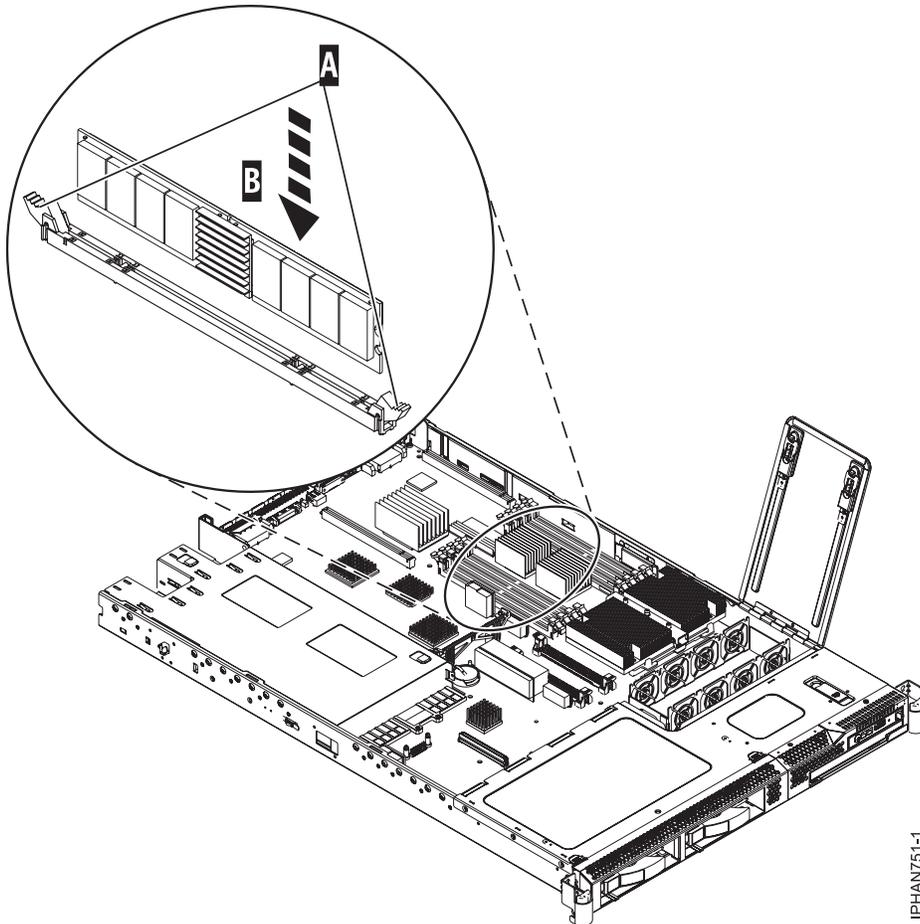


Figure 25. Installing a memory module

- Replace the service access cover. For instructions, see “Install the service access cover on the rack-mounted model 505” on page 108.
- If you are servicing a rack-mounted system unit, “Place the model 505 in the operating position” on page 100.
- Reconnect all power and signal cables to their respective connectors.
- Start the system. For instructions, see “Start the system or logical partition” on page 77.
- Verify the installed part. For instructions, see “Verify the installed part” on page 138.

Install model 505 memory modules

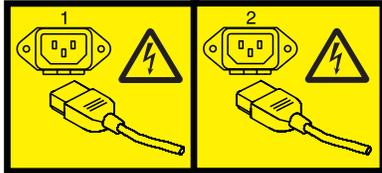
You might need to install memory modules in the server. Use the procedure in this section to perform this task.

If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for installing the memory modules in the server. For instructions, see “Install a feature using the Hardware Management Console” on page 72. If you do not have an HMC, complete the following steps to install memory modules:

1. Perform the prerequisite tasks described in “Before you begin” on page 75.
2. Stop the system. For instructions, see “Stop the system or logical partition” on page 79.
3. 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)



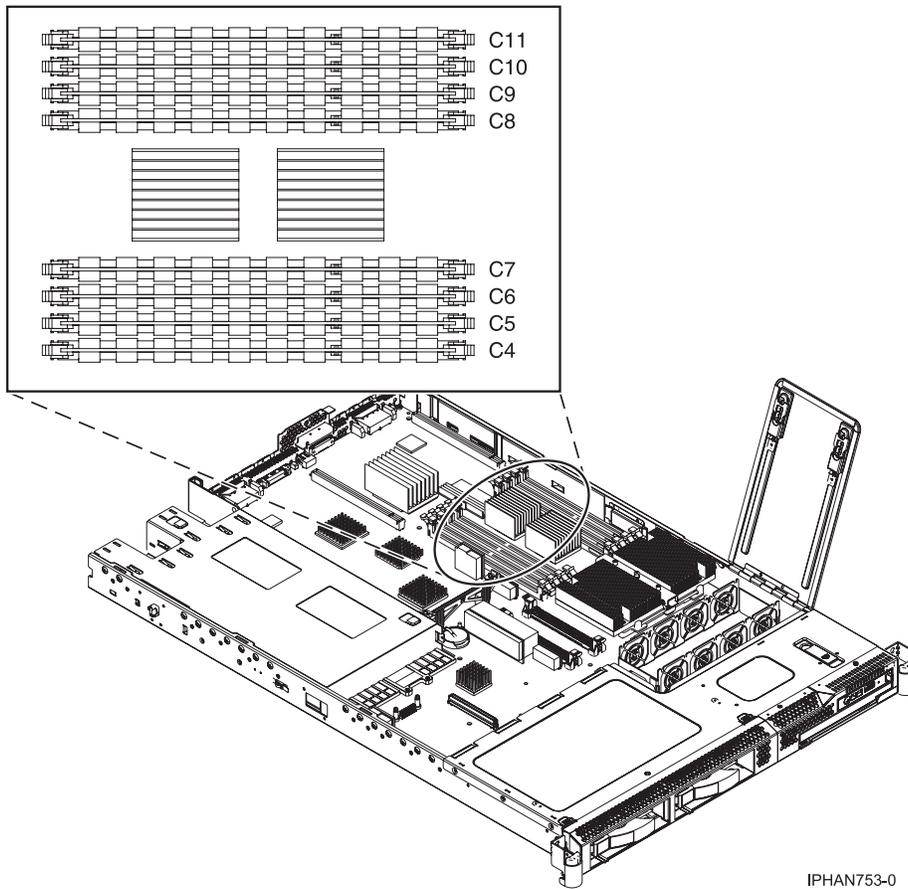
or



4. Place the system unit in the service position. For instructions, see “Place the model 505 in the service position” on page 96.
5. Remove the service access cover. For instructions, see “Remove the service access cover from the rack-mounted model 505” on page 104.

Attention:

- Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.
 - When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
 - If you do not have a wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds.
6. Determine the slots the memory modules will be placed in. Memory can be plugged in pairs or quads. The minimum memory requirement is 1 GB. The maximum memory that is supported is 32 GB.



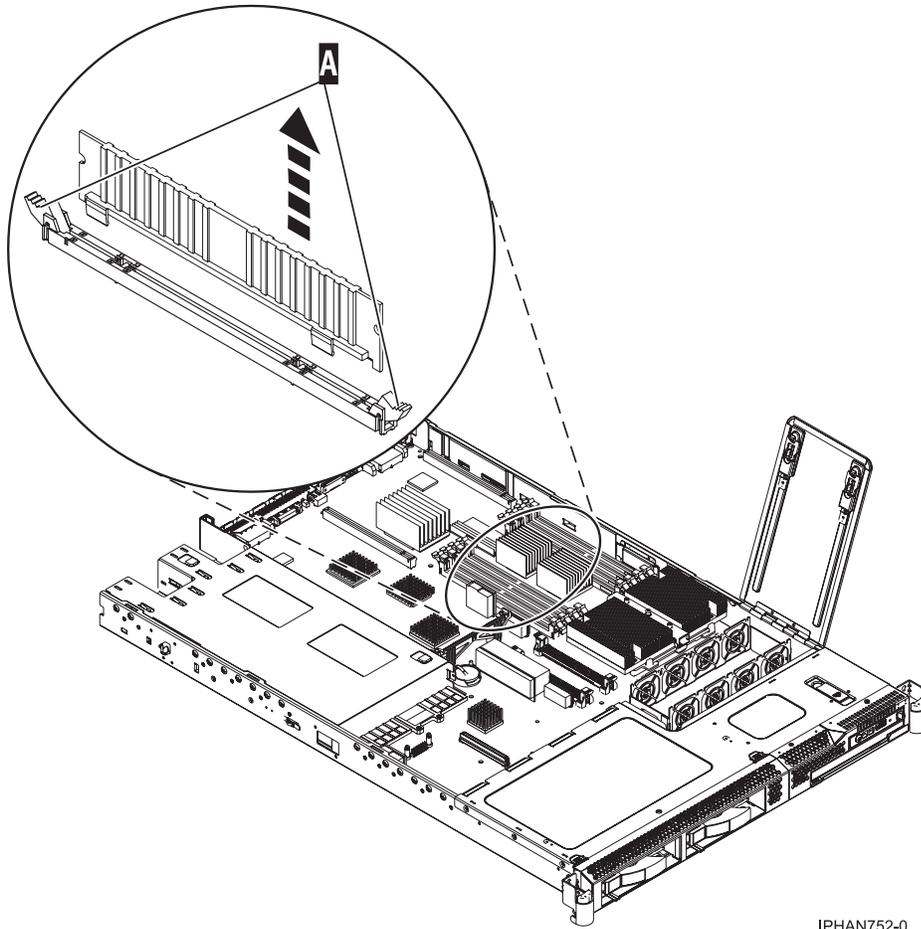
IPHAN753-0

Figure 26. Memory module slot locations

Table 2. Memory module balancing

Memory	Location	Priority
Two memory modules		
	C4 and C11	1
	C6 and C9	2
	C5 and C10	3
	C7 and C8	4
Four memory modules		
	C4, C11, C6, and C9	1
	C5, C10, C7, and C8	2
Six memory modules		
	C4, C11, C6, C9, C5, and C10	1
	C6, C9, C7, C8, C4 and C11	2

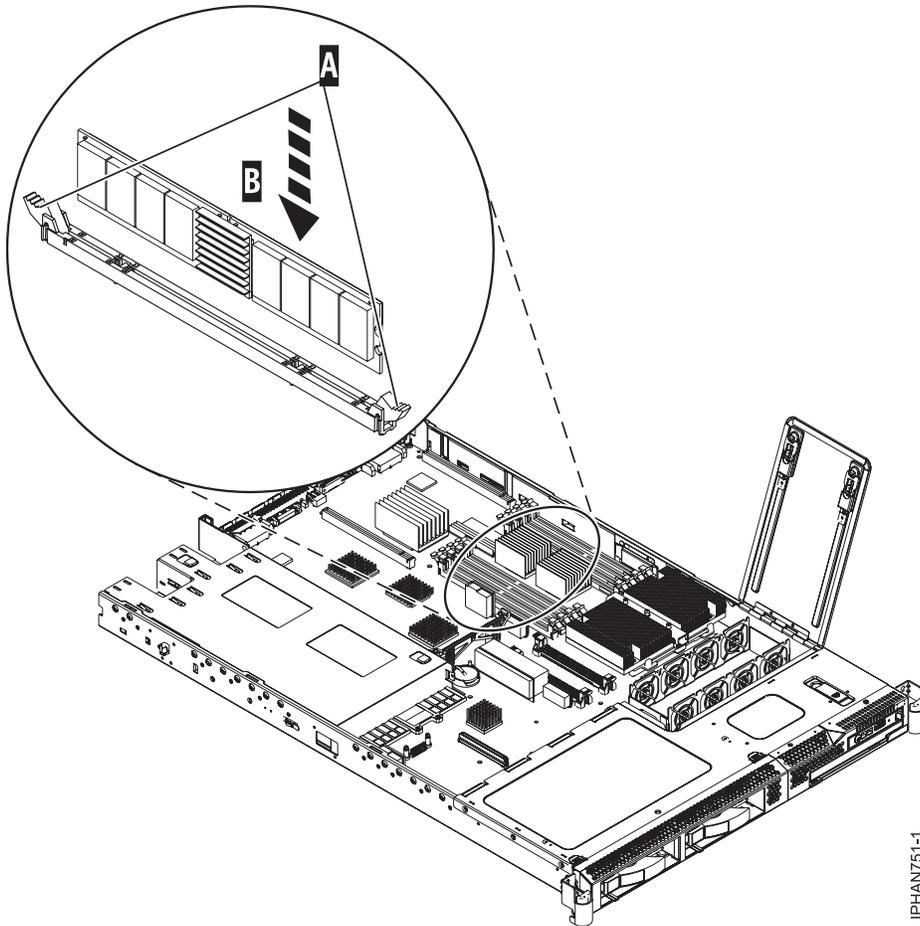
7. If necessary, remove the memory module from its antistatic package.
8. Ensure the connector is ready to receive the memory module by removing the memory module filler, if one is present, by pushing the tabs A out and then down as shown in Figure 27 on page 37. The tabs' lever action forces the memory module filler out of the connector.



IPHAN752-0

Figure 27. Removing a memory module filler from rack-mounted system unit

9. Ensure that the connector locking tabs are pushed out in the unlocked position before installing the new memory module.
Attention: Memory modules are keyed to prevent a module from being installed improperly. Note the locations of the key tabs within the memory module connector before attempting to install the memory module.
10. Carefully grasp the memory module along two edges and align the connector.
11. Insert the memory module firmly into the connector.
12. Secure the memory module **B** with the locking tabs **A** located at each end of the memory module connector, as shown in Figure 28 on page 38.



IPHAN751-1

Figure 28. Installing memory modules

13. Install the service access cover. For instructions, see “Install the service access cover on the rack-mounted model 505” on page 108.
14. If you are servicing a rack-mounted system unit, “Place the model 505 in the operating position” on page 100.
15. Reconnect all power and signal cables to their respective connectors.
16. Start the system. For instructions, see “Start the system or logical partition” on page 77.
17. Verify the installed part. For instructions, see “Verify the installed part” on page 138.

Model 51x or 710 memory modules

You might need to remove, replace, or install dual in-line memory modules (DIMMs) in the server. This section includes procedures so that you can perform these tasks.

To complete these procedures, you need to 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:

- Control panel and signal cable
- Power supply
- PCI Adapters

If you are planning to use this information in printed form, be sure to print all of the information you need. You can find all of the information, in both HTML and PDF format, in the Installing features topic. Go to the procedures listed above, print them, and then return here.

Remove and replace model 51x or 710 memory modules

You might need to remove or replace memory modules in the server. This section includes procedures so that you can perform these tasks.

These procedures describe how to remove and replace memory modules in the server.

Remove model 51x or 710 memory modules

You might need to remove memory modules from the server. Use the procedure in this section to perform this task.

If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for removing memory modules from the server. For instructions, see “Remove a part using the Hardware Management Console” on page 73. If you do not have an HMC, complete the following steps to remove memory modules:

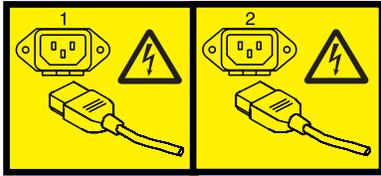
1. Perform the prerequisite tasks described in “Before you begin” on page 75.
2. If you are removing the memory modules for a system upgrade or as part of another procedure, continue to the next step. If you are removing the memory modules because of a system failure, use the service action log to help identify the failing part. For more information, see “Identify a failing part” on page 127.
3. Remove the front cover. For instructions, see “Remove the front cover from the model 51x or 710” on page 124.
4. Place the system unit in the service position. For instructions, see “Place the model 51x or 710 in the service position” on page 86.
5. 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 101.

Attention:

- Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.
 - When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
 - If you do not have a wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds.
6. If you are removing the memory modules because of a system failure, look at the LEDs to determine the location of the failed memory module. The LEDs are located on the system backplane next to the memory modules.
 7. Stop the system. For instructions, see “Stop the system or logical partition” on page 79.
 8. 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.

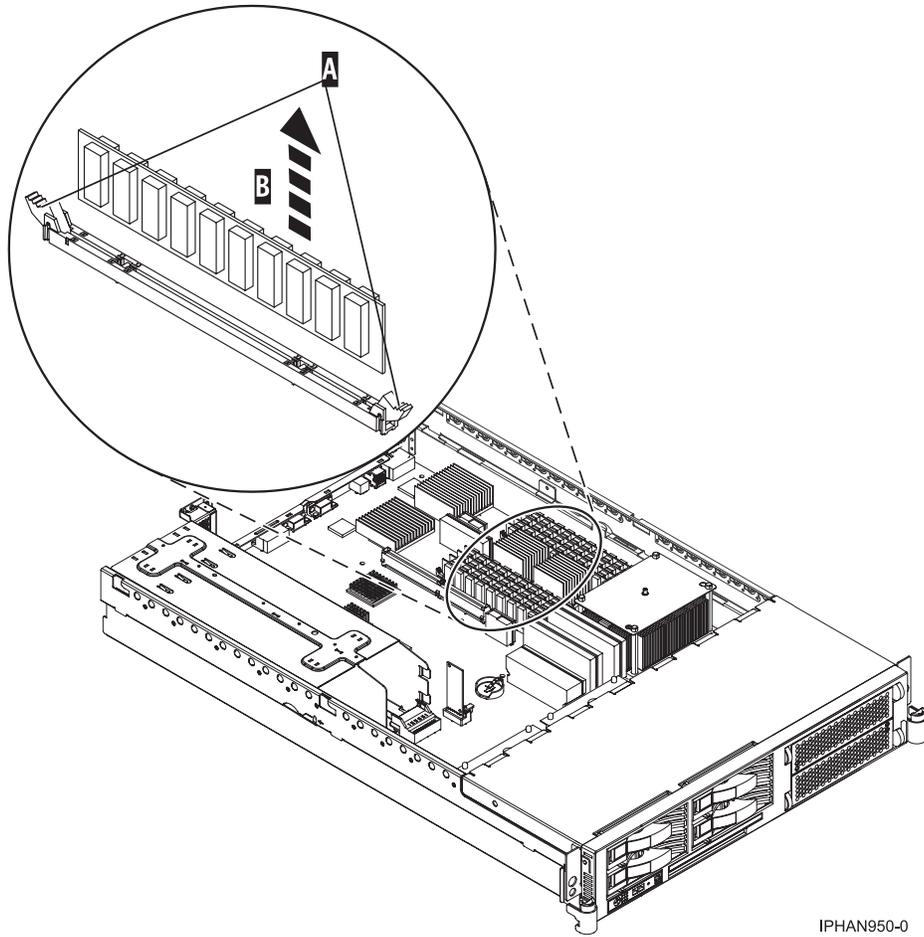
(L003)



or



9. Remove the PCI adapter enclosure. For instructions, see Remove the PCI adapter enclosure.
10. Remove the memory module by pushing the locking tabs **A** out and then down. The lever action of the tabs forces the memory module out of the connector.
11. Pull the memory module out of the connector, as shown in the following figure.



IPHAN950-0

Figure 29. Removing a memory module

Replace model 51x or 710 memory modules

If you removed memory modules as a part of another procedure, you might need to replace memory modules. Use the procedure in this section to perform this task

If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for replacing the memory modules in the server. For instructions, see “Replace a part using the Hardware Management Console” on page 74. If you do not have an HMC, complete the following steps to replace memory modules:

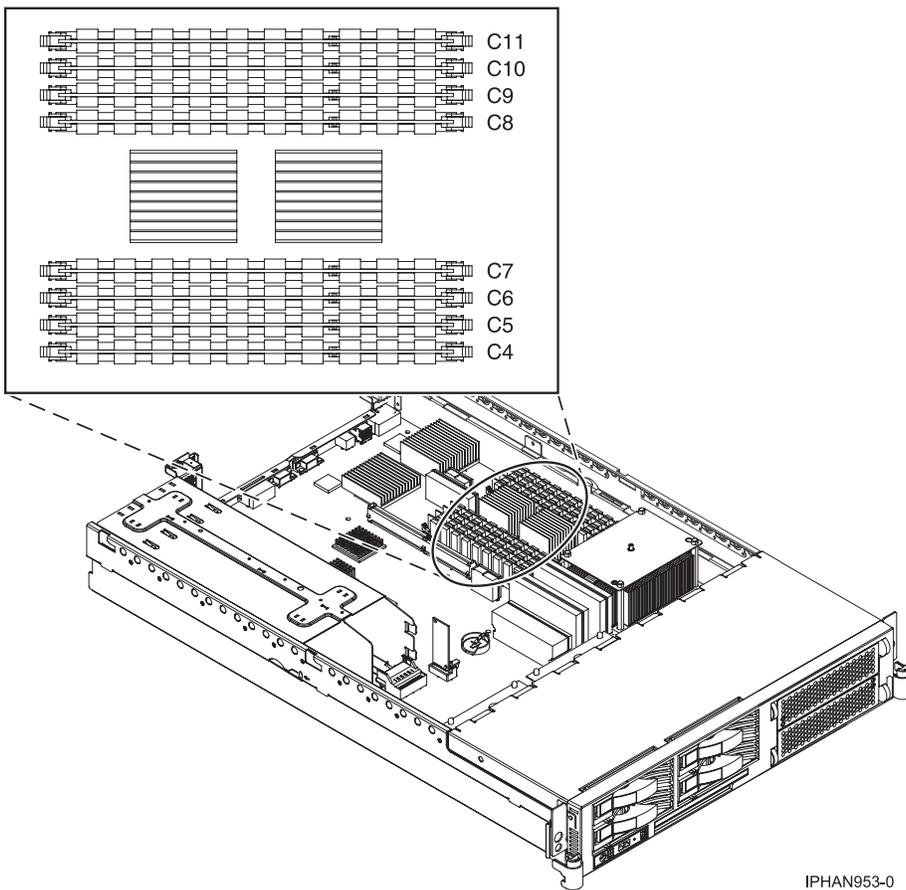
1. Perform the prerequisite tasks described in “Before you begin” on page 75.
2. If necessary, remove the memory module from its antistatic package.

Attention:

- Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.
 - When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
 - If you do not have a wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds.
3. Determine the slots that the memory modules will be placed in. Memory modules can be plugged in pairs or quads.

Tips:

- To balance memory modules in a model with the slot location codes C4 through C11, see Table 3.
- To balance memory modules in a model with the slot location codes C5 through C12, see Table 4 on page 43.



IPHAN953-0

Figure 30. Example of memory module slot locations

Table 3. Model 51x or 710 memory module balancing

Memory	Location	Priority
Two memory modules		
	C11 and C4	1

Table 3. Model 51x or 710 memory module balancing (continued)

Memory	Location	Priority
	C9 and C6	2
	C10 and C5	3
	C8 and C7	4
Four memory modules		
	C11, C4, C9, and C6	1
	C10, C5, C8, and C7	2
Six memory modules		
	C11, C4, C9, C6, C10, and C5	1
	C11, C4, C9, C6, C8 and C7	2

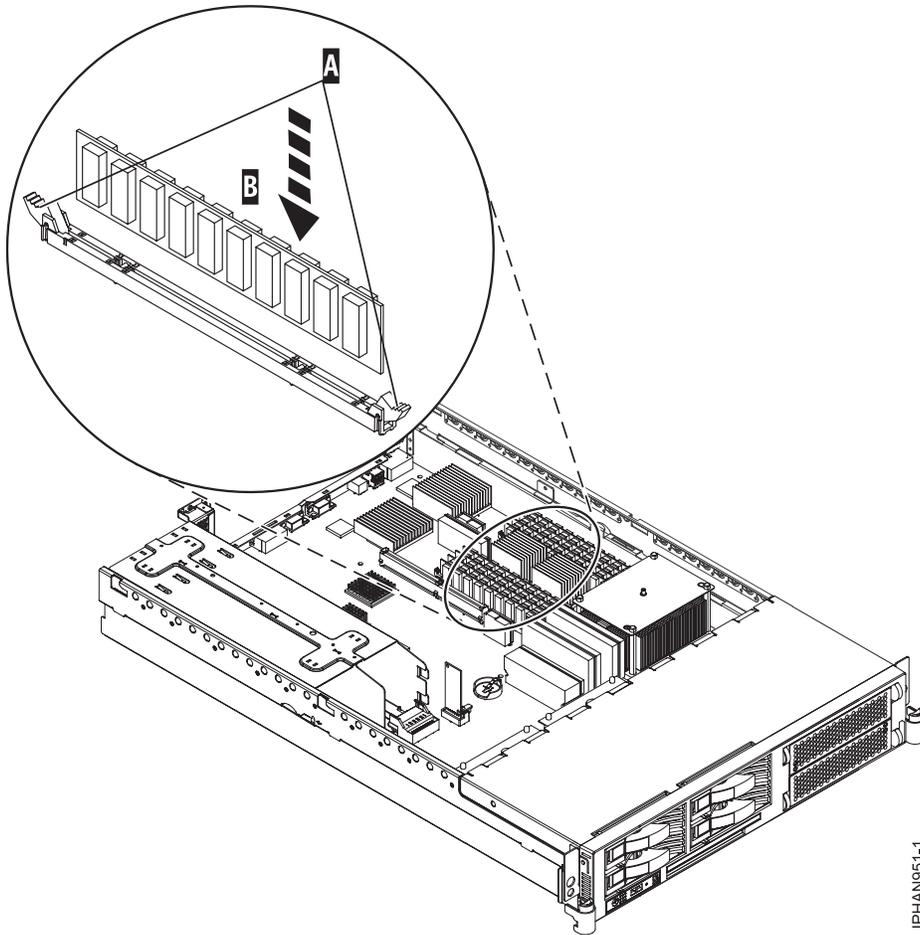
Table 4. Model 9110-51A memory module balancing

Memory	Location	Priority
Two memory modules		
	C12 and C5	1
	C10 and C7	2
	C11 and C6	3
	C9 and C8	4
Four memory modules		
	C12, C5, C10, and C7	1
	C11, C6, C9, and C8	2
Six memory modules		
	C12, C5, C10, C7, C11, and C6	1
	C12, C5, C10, C7, C9 and C8	2

4. Ensure that the connector locking tabs are pushed out in the unlocked position before installing the new memory module.

Attention: Memory modules are keyed to prevent a module from being installed incorrectly. Note the locations of the key tabs within the memory module connector before attempting to install the memory module.

5. Carefully grasp the memory module along two edges and align the connector.
6. Insert the memory module firmly into the connector.
7. Secure the memory module with the locking tabs **A** located at each end of the memory module connector, as shown in the following figure.



IPHAN951-1

Figure 31. Replacing a memory module

8. Replace the PCI adapter enclosure. For instructions, see Replace the PCI adapter enclosure.
9. Replace the service access cover. For instructions, see “Install the service access cover on the model 285, 51x, 52x, 55x, 710, or OpenPower 720” on page 105.
10. If you are servicing a rack-mounted system unit, see “Place the model 51x or 710 in the operating position” on page 88.
11. Reconnect all power and signal cables to their respective connectors.
12. Install the front cover, see “Install the front cover on the model 51x or 710” on page 125.
13. Start the system. For instructions, see “Start the system or logical partition” on page 77.
14. Verify the installed part. For instructions, see “Verify the installed part” on page 138.

Install model 51x or 710 memory modules

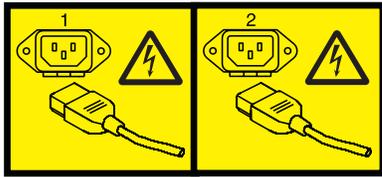
You might need to install memory modules in the server. Use the procedure in this section to perform this task.

If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for installing the memory modules in the server. For instructions, see “Install a feature using the Hardware Management Console” on page 72. If you do not have an HMC, complete the following steps to install memory modules:

1. Perform the prerequisite tasks described in “Before you begin” on page 75.
2. Stop the system. For instructions, see “Stop the system or logical partition” on page 79.
3. 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



4. Remove the front cover, see “Remove the front cover from the model 51x or 710” on page 124.
5. Place the system unit in the service position. For instructions, see “Place the model 51x or 710 in the service position” on page 86.
6. Remove the service access cover, see “Remove the service access cover from the model 285, 51x, 52x, 55x, 710, or OpenPower 720” on page 101.

Attention:

- Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.
 - When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
 - If you do not have a wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds.
7. Determine the slots that the memory modules will be placed in. Memory modules can be plugged in pairs or quads.

Tips:

- To balance memory modules a model with the slot location codes C4 through C11, see Table 5 on page 46.
- To balance memory modules a model with the slot location codes C5 through C12, see Table 6 on page 46.

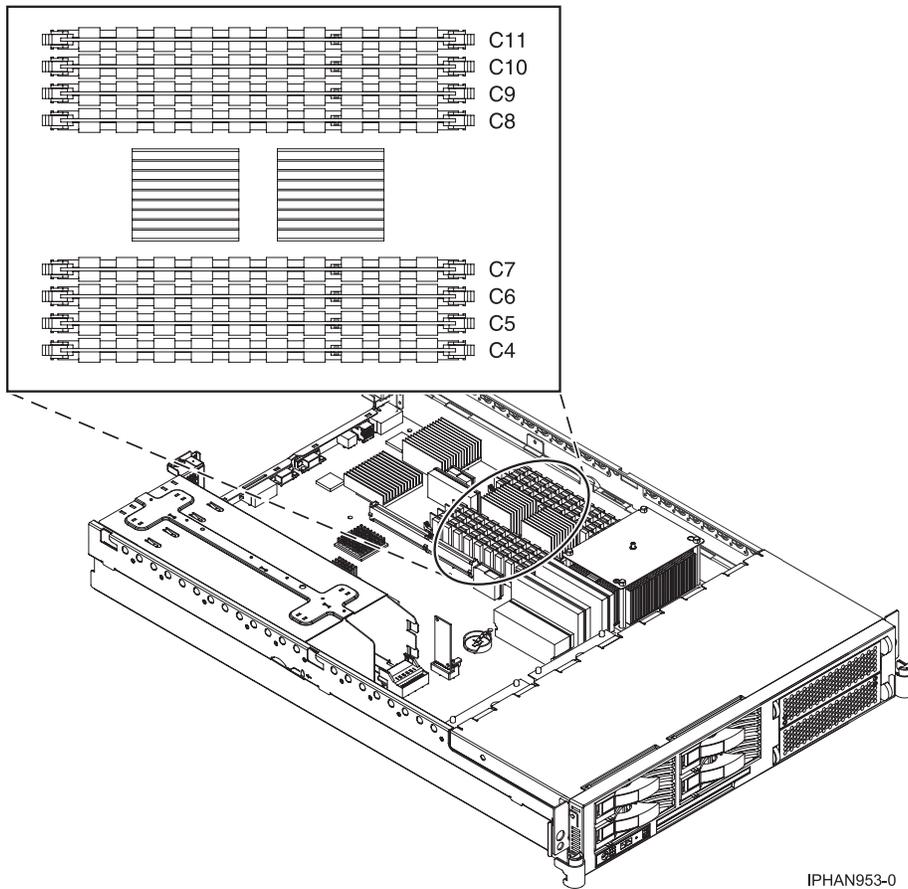


Figure 32. Example of memory module slot locations

IPHAN953-0

Table 5. Model 51x or 710 memory module balancing

Memory	Location	Priority
Two memory modules		
	C11 and C4	1
	C9 and C6	2
	C10 and C5	3
	C8 and C7	4
Four memory modules		
	C11, C4, C9, and C6	1
	C10, C5, C8, and C7	2
Six memory modules		
	C11, C4, C9, C6, C10, and C5	1
	C11, C4, C9, C6, C8 and C7	2

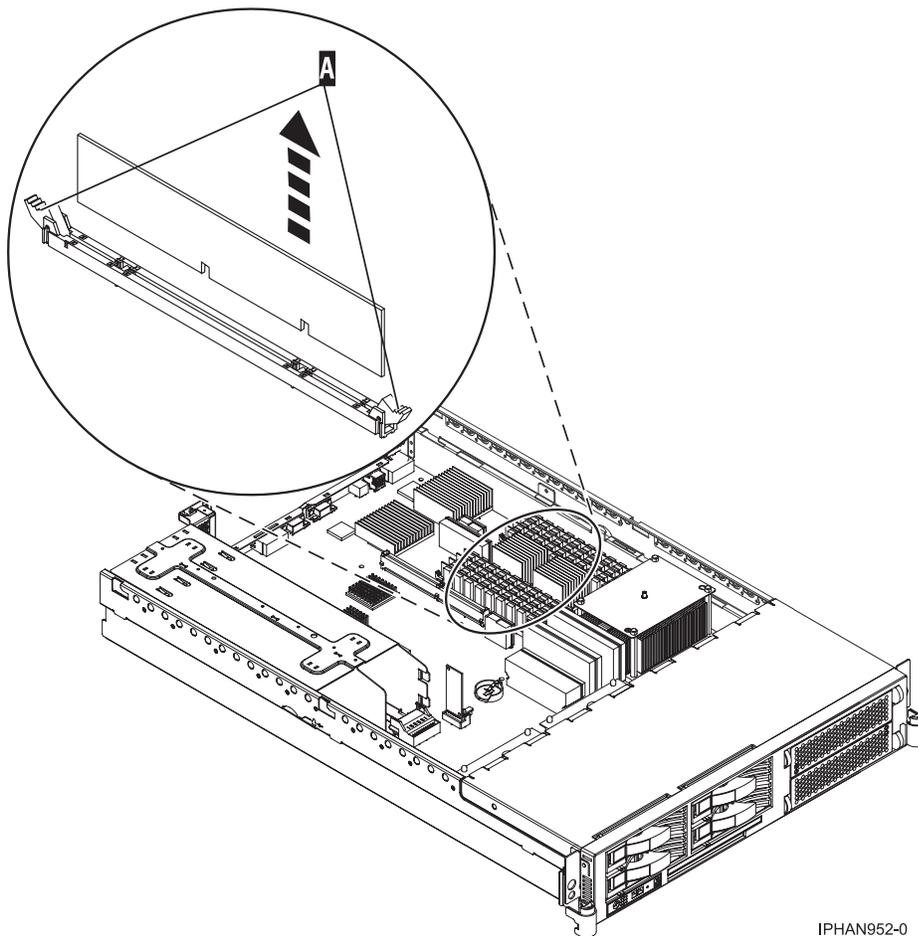
Table 6. Model 9110-51A memory module balancing

Memory	Location	Priority
Two memory modules		
	C12 and C5	1
	C10 and C7	2

Table 6. Model 9110-51A memory module balancing (continued)

Memory	Location	Priority
	C11 and C6	3
	C9 and C8	4
Four memory modules		
	C12, C5, C10, and C7	1
	C11, C6, C9, and C8	2
Six memory modules		
	C12, C5, C10, C7, C11, and C6	1
	C12, C5, C10, C7, C9 and C8	2

8. If necessary, remove the memory module from its antistatic package.
9. Ensure the connector is ready to receive the memory module by removing the memory module filler, if one is present, by pushing the locking tabs A out and then down. The lever action of the tabs forces the memory module filler out of the connector.



IPHAN952-0

Figure 33. Removing a memory module filler

10. Ensure that the connector locking tabs are pushed out in the unlocked position before installing a new memory module.

Attention: Memory modules are keyed to prevent a module from being installed incorrectly. Note the locations of the key tabs within the memory module connector before attempting to install the memory module.

11. Carefully grasp the memory module along two edges and align the connector.
12. Insert the memory module firmly into the connector.
13. Secure the memory module with the locking tabs A located at each end of the memory module connector, as shown in the following figure.

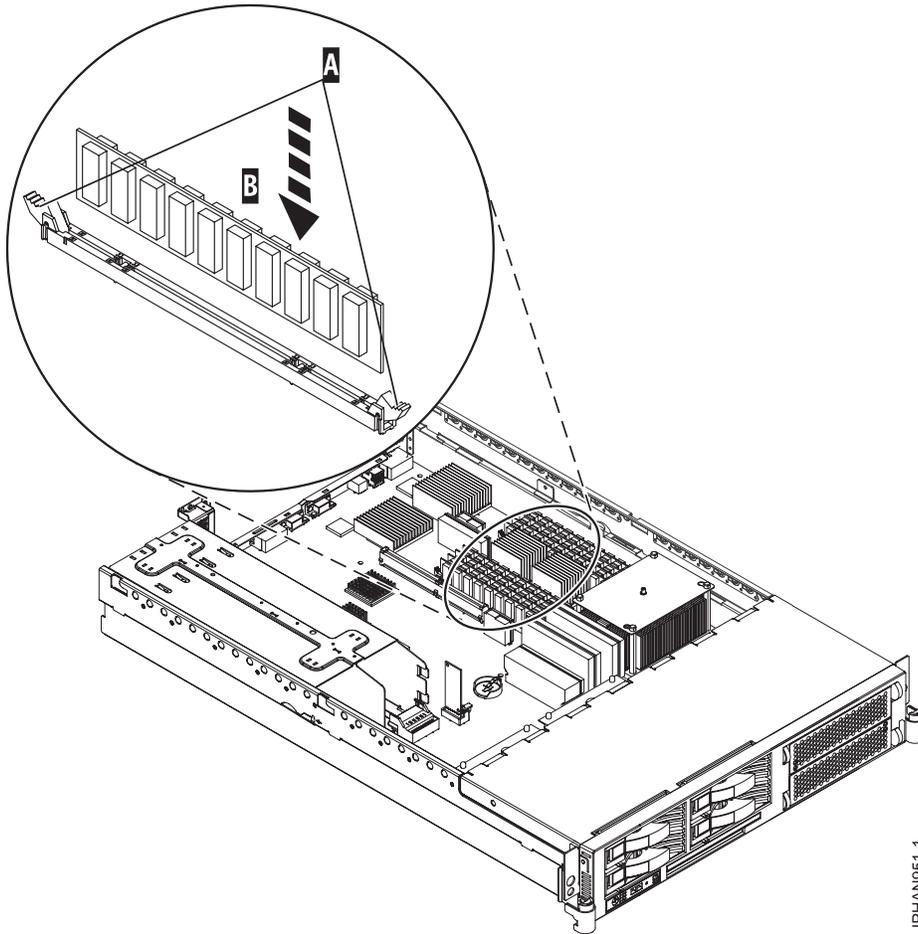


Figure 34. Installing a memory module

14. Replace the PCI adapter enclosure. For instructions, see Replace the PCI adapter enclosure.
15. Replace the service access cover. For instructions, see “Install the service access cover on the model 285, 51x, 52x, 55x, 710, or OpenPower 720” on page 105.
16. If you are servicing a rack-mounted system unit, see “Place the model 51x or 710 in the operating position” on page 88.
17. Reconnect all power and signal cables to their respective connectors.
18. Replace the front cover. For instructions, see “Install the front cover on the model 51x or 710” on page 125.
19. Start the system. For instructions, see “Start the system or logical partition” on page 77.
20. Verify the installed part. For instructions, “Verify the installed part” on page 138.

Model 55x or 720 memory modules

You might need to remove, replace, or install dual in-line memory modules (DIMMs) in the server. This section includes procedures so that you can perform these tasks.

To complete these procedures, you need to print the instructions for the System processor assembly, 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, use the online version of this procedure.

Remove and replace model 55x or 720 memory modules

You might need to remove or replace memory modules in the server. This section includes procedures so that you can perform these tasks.

These procedures describe how to remove and replace memory modules in your server.

Remove model 55x or 720 memory modules

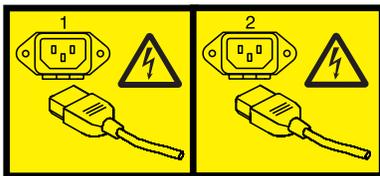
You might need to remove memory modules from the server. Use the procedure in this section to perform this task.

If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for removing memory modules from the server. For instructions, see “Remove a part using the Hardware Management Console” on page 73. If you do not have an HMC, complete the following steps to remove memory modules:

1. Perform the prerequisite tasks described in “Before you begin” on page 75.
2. If you are removing the memory modules for a system upgrade or as part of another procedure, continue to the next step. If you are removing the memory modules because of a system failure, use the service action log to help identify the failing part, see “Identify a failing part” on page 127. Identification LEDs for failing memory modules are on the top of the system processor assembly.
3. Stop the system. For instructions, see “Stop the system or logical partition” on page 79.
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)



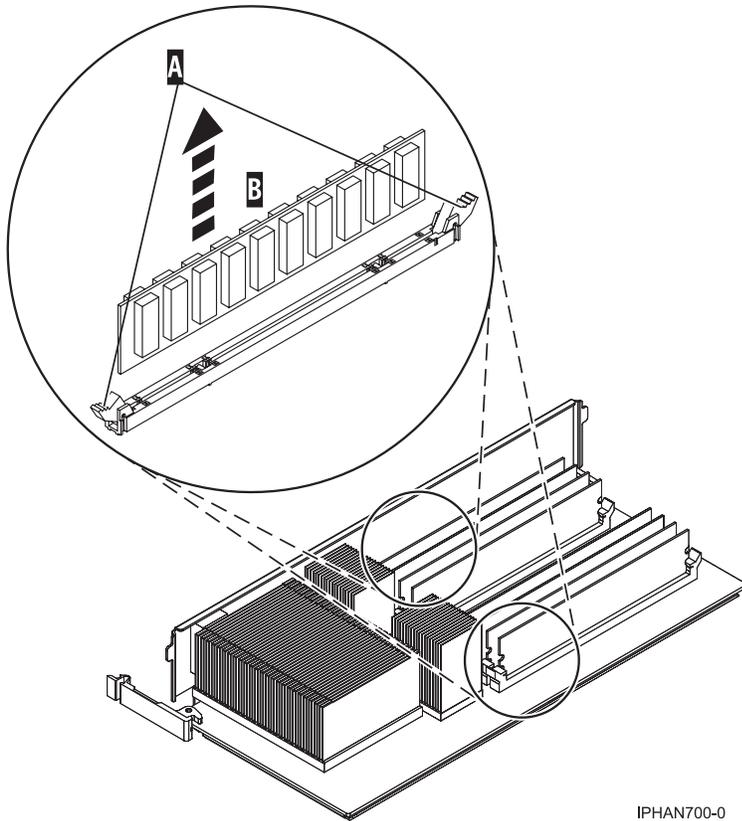
or



5. Remove the system processor assembly. For instructions, see Remove the model 55x or 720 system processor assembly.

Attention:

- Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.
 - When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
 - If you do not have a wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds.
6. Locate the memory module that you want to remove.
 7. Unlock the memory module by pushing the locking tabs **A** out and then down. The lever action of the tabs forces the memory module out of the connector.
 8. Lift the memory module out of the connector, as shown in the following figure.



IPHAN700-0

Figure 35. Removing a memory module

Replace model 55x or 720 memory modules

If you removed memory modules as a part of another procedure, you might need to replace memory modules. Use the procedure in this section to perform this task.

If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for replacing the memory modules in the server. For instructions, see “Replace a part using the Hardware Management Console” on page 74. If you do not have an HMC, complete the following steps to replace memory modules:

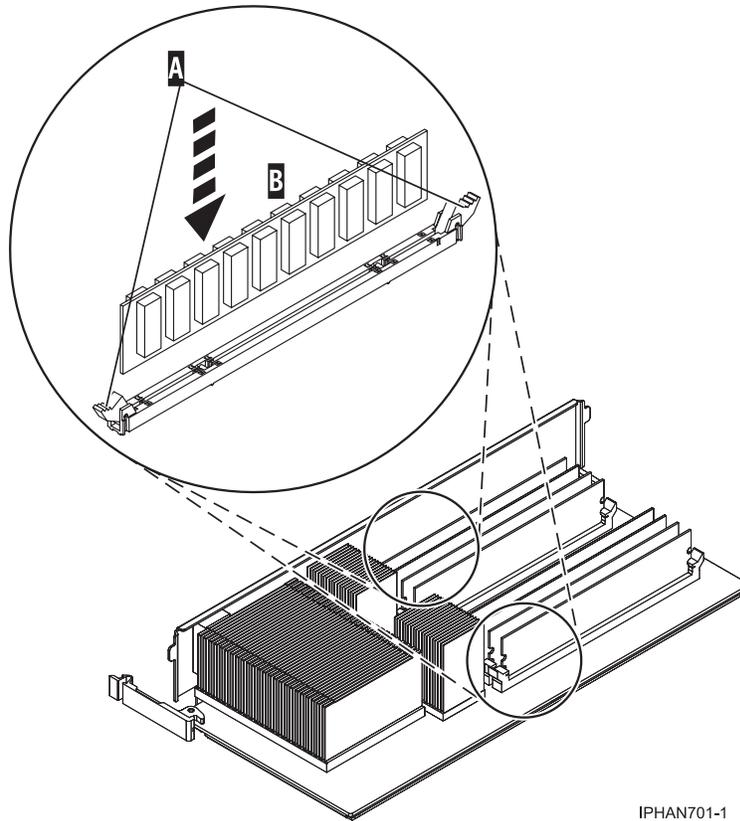
1. Perform the prerequisite tasks described in “Before you begin” on page 75.
2. If necessary, remove the memory module from its antistatic package.
3. Ensure that the connector locking tabs are pushed out in the unlocked position before installing a new memory module.

Attention: Memory modules are keyed to prevent a memory module from being installed incorrectly. Note the locations of the key tabs within the memory module connector before attempting to the memory module.

4. Carefully grasp the memory module along two edges and align the connector.
5. Insert the memory card firmly into the connector.

Note: If you are adding new memory modules, ensure that the memory modules are balanced correctly. See Table 7 on page 54.

6. Secure the memory module with the locking tabs **A** located at each end of the memory module connector, as shown in the following figure.



IPHAN701-1

Figure 36. Replacing a memory module

7. Replace the system processor assembly, see Replace model 55x or 720 system processor assembly.
8. Verify the installed part. For instructions, see “Verify the installed part” on page 138.

Install model 55x or 720 memory modules

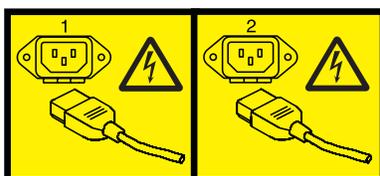
You might need to install memory modules in the server. Use the procedure in this section to perform this task.

If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for installing memory modules in the server. For instructions, see “Install a feature using the Hardware Management Console” on page 72. If you do not have an HMC, complete the following steps to install memory modules:

1. Perform the prerequisite tasks described in “Before you begin” on page 75.
2. Stop the system. For instructions, see “Stop the system or logical partition” on page 79.
3. 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



4. Remove the system processor assembly. See Remove the model 55x or 720 system processor assembly.

Attention:

- Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.
 - When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
 - If you do not have a wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds.
5. If necessary, remove the memory modules from the system processor assembly. For instructions, see “Remove model 55x or 720 memory modules” on page 49.
 6. Determine the slots in which the memory modules will be placed. Refer to Table 7 on page 54 to ensure memory modules are balanced. Each system processor assembly has eight memory module slots. The memory modules should be plugged into the slots as shown in the following table (see Figure 37 on page 54 for memory module slot locations in the system processor assembly).

Notes:

- When installing a quad of memory modules, all four memory modules must be the same type.
- When two processors are installed, alternate installing memory modules between the first processor and the second processor.
- For the models 55A and 720, memory can be installed in pairs. For the model 550, memory must be installed in quads.
- At least one pair of memory modules is required on each installed processor card for the models 55A and 720. For the model 550, at least one quad of memory modules is required on each installed processor card.

Table 7. Memory module balancing

Processors and memory	Where to install memory modules
Memory added in pairs	<ul style="list-style-type: none"> Plug the first pair of memory modules into memory module slots P1-C8-C1 and P1-C8-C8, or slots P1-C9-C and P1-C9-C8. Plug the second pair of memory modules into memory module slots P1-C8-C3 and P1-C8-C6, or slots P1-C9-C3 and P1-C9-C6. Plug the third pair of memory modules into memory module slots P1-C8-C2 and P1-C8-C7, or slots P1-C9-C2 and P1-C9-C7. Plug the fourth pair of memory modules into memory module slots P1-C8-C4 and P1-C8-C5, or slots P1-C9-C4 and P1-C9-C5.
One processor, memory added in quads	<ul style="list-style-type: none"> Plug the first quad of memory modules into memory module slots P1-C8-C1, P1-C8-C3, P1-C8-C6, and P1-C8-C8, or slots P1-C9-C1, P1-C9-C3, P1-C9-C6, and P1-C9-C8. Plug the second quad of memory modules into memory module slots P1-C8-C2, P1-C8-C4, P1-C8-C5, and P1-C8-C7, or slots P1-C9-C2, P1-C9-C4, P1-C9-C5, and P1-C9-C7.
Two processors, memory added in quads	<p>Memory should be balanced on each processor card.</p> <ul style="list-style-type: none"> Plug the first quad of memory modules into memory module slots P1-C8-C1, P1-C8-C3, P1-C8-C6, and P1-C8-C8 on each processor card, or slots P1-C9-C1, P1-C9-C3, P1-C9-C6, and P1-C9-C8 on each processor card. Plug the second quad of memory modules into memory module slots P1-C8-C2, P1-C8-C4, P1-C8-C5, and P1-C8-C7 on each processor card, or slots P1-C9-C2, P1-C9-C4, P1-C9-C5, and P1-C9-C7 on each processor card.

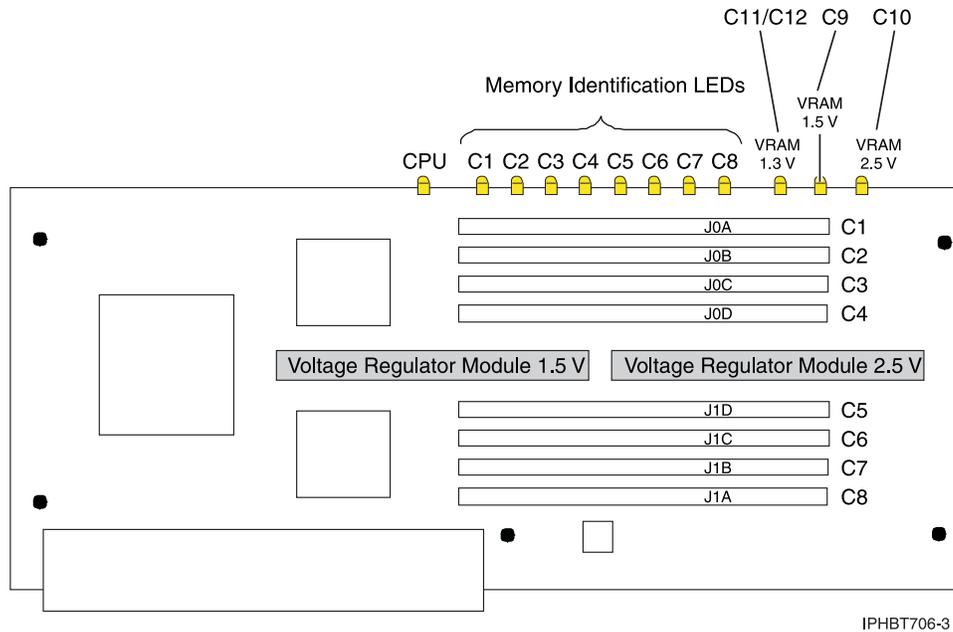
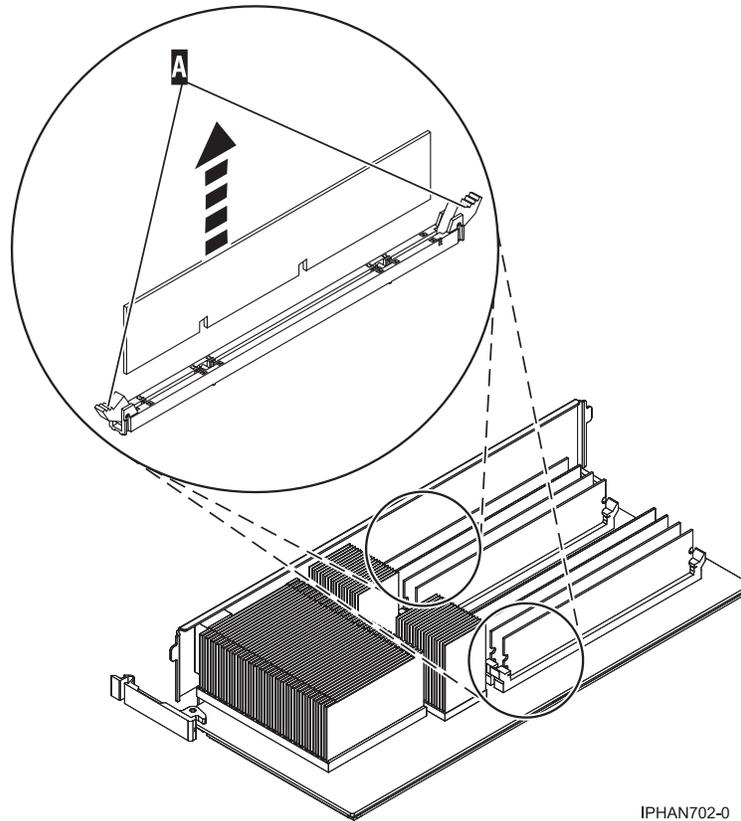


Figure 37. Memory module slot locations in the processor assembly

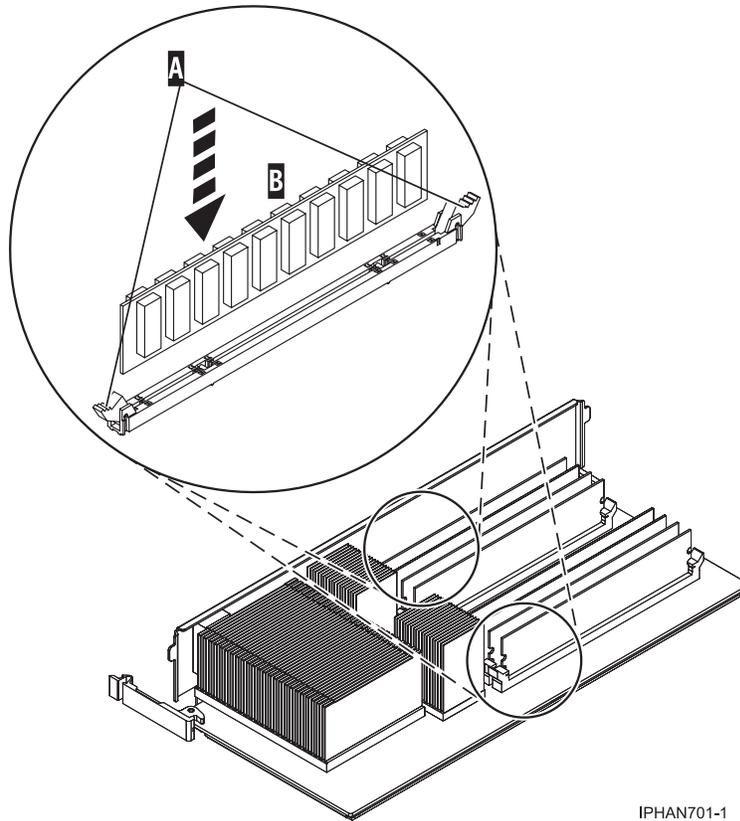
- Ensure that the connector is ready to receive the memory module. Remove the memory module filler, if one is present, by pushing the tabs **A** out and then down. The lever action of the tabs forces the memory module filler out of the connector.



IPHAN702-0

Figure 38. Removing a memory module filler

8. If necessary, remove the memory module from its antistatic package.
9. Ensure that the connector locking tabs **A** are pushed out into the unlocked position before installing a new memory module.
10. Carefully grasp the memory module **B** along two edges and align it with the connector.
Attention: Memory modules are keyed to prevent a memory module from being installed incorrectly. Note the locations of the key tabs within the memory module connector before attempting to install the memory module.
11. Push the memory module **B** firmly into the connector until the connector locking tabs engage.



IPHAN701-1

Figure 39. Replacing a memory module

12. Replace the system processor assembly. For instructions, see *Replace the model 55x or 720 system processor assembly*.
13. Verify the installed part. For instructions, see *“Verify the installed part”* on page 138.
14. If you are installing memory modules as part of another procedure, return to the procedure now.

Model 9116-561 or 570 memory modules

You might need to remove, replace, or install dual in-line memory modules (DIMMs) in the server. This section includes procedures so that you can perform these tasks.

To complete these procedures, you need to 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, use the online version of these procedures:

- Control panel and signal cable
- System backplane
- Voltage regulator

If you are planning to use this information in printed form, be sure to print all of the information you need. You can find all of the information, in both HTML and PDF format, in the *Installing features* topic. Go to the procedures listed above, print them, and then return here.

Important: Before installing or replacing memory modules in these systems you must understand the following restrictions and notes:

- Memory is installed in groups of four or quads of DIMMs mounted on the processor cards. Each processor card must contain 4 DIMMs minimum. Each processor card has 8 DIMM slots.

- DDR1 memory is supported on 1.5 GHz processor cards (feature 7834), 1.65 GHz processor cards (feature 7830), and 1.9 GHz processor cards (feature 7832). DDR2 memory is supported on 1.9 GHz processor cards (feature 7833), 1.9 GHz processor card (feature 7782), and 2.2 GHz processor card (feature 8338). All DIMMs in a 9117-570 system must use the same memory technology, either DDR1 or DDR2.

Note: For a list of CCIN codes that match the feature codes see the table Table 8.

- Each processor card must have at least 2 GB of memory installed.
- Memory should be balanced across a system. Installing the same amount of memory in each processor card allows the system to operate at optimum performance.
- Memory features 4499 (16 GB DDR2) and 4498 (32 GB DDR2) can only be used with 2.2 GHz processor feature 8338.
- Memory features 4498 and 4499 can be mixed on the same processor card; feature 8338. No other memory features can be installed on the same processor card with memory features 4498 or 4499.
- The presence of memory feature 4498 or 4499 in the system will reduce the frequency of all memory in the system to 400 MHz.
- The presence of memory features 4492, 4494, or 7049 in a system will reduce the frequency of all memory in the system to 200 MHz.
- Memory features 4492, 4494, and 7049 can be mixed on the same processor card. No other memory features can be installed on the same processor card with 4492, 4494, or 7049.
- Good planing is essential for optimum performance and to allow for future memory upgrades.

Table 8. Feature codes and Customer Card Identification Numbers (CCIN)

Feature Code	Customer Card Identification Number (CCIN)
4492	30F7
4494	310E
4498	314C
4499	314A
7049	310F
7782	53C8
7830	26F2
7832	26D9
7833	26DA
7834	26EF
8338	53C9

Remove and replace model 9116-561 or 570 memory modules

You might need to remove or replace memory modules in the server. This section includes procedures so that you can perform these tasks.

These procedures describe how to remove and replace memory modules in your server.

Remove model 9116-561 or 570 memory modules

You might need to remove memory modules from the server. Use the procedure in this section to perform this task.

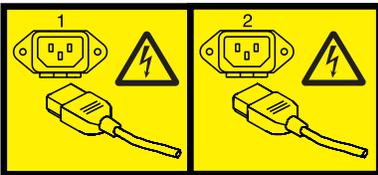
If your system unit is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for removing memory modules. For instructions, see “Remove a part using the Hardware Management Console” on page 73. If you do not have an HMC, complete the following steps to remove memory modules:

Prepare the system:

1. Perform the prerequisite tasks described in “Before you begin” on page 75.
2. If you are removing the modules for a system upgrade or as part of another procedure, continue to the next step. If you are removing the memory modules because of a system failure, use the service action log to help identify the failing part. See “Identify a failing part” on page 127.
3. Stop the system. For instructions, see “Stop the system or logical partition” on page 79.
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 113.

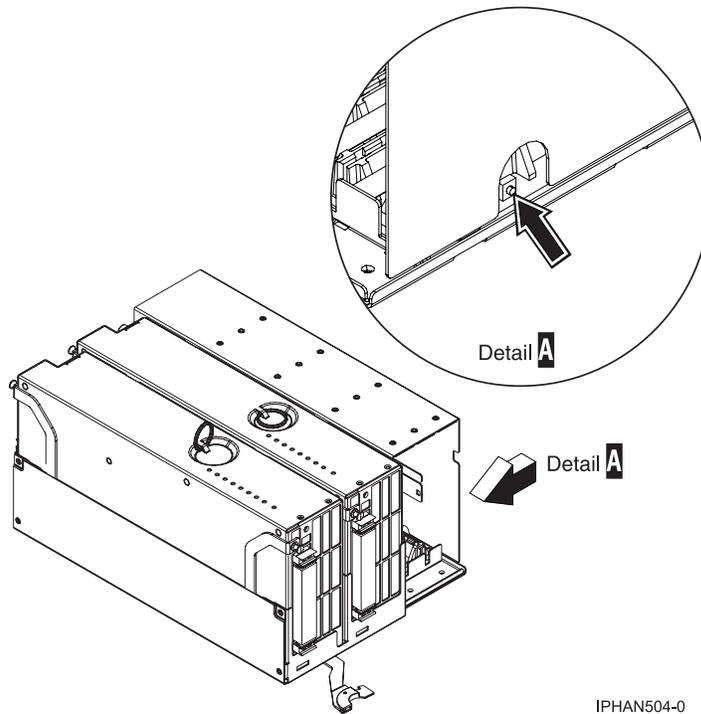
Attention:

- Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.
 - When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
 - If you do not have a wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds.
6. If necessary, “Disconnect the SMP processor cable from a system unit” on page 132.
 7. Remove the control panel. For instructions, see Remove the control panel with power off.
 8. Remove the voltage regulator card assemblies, as described in Model 9116-561 or 570 voltage regulator assembly.
 9. Remove the system backplane assembly. For instructions, see Remove the model 9116-561 or 570 system backplane. Skip any steps that you may have already completed.

Remove memory modules:

1. If you are removing the memory modules because of a system failure, look at the LEDs C located on the top processor assembly to identify the location of the failing memory modules. See Figure 40 on page 60. You can light the LEDs by doing the following:
 - If you used the service action log, ASMI, or HMC to activate the identify function prior to removing the processor backplane, the LEDs located on the top processor card assembly can be illuminated to identify the failing memory modules.
 - To illuminate the location LED for the failing memory module, press the LED actuator button located on the right side of the assembly. See Figure 40 on page 60 for the location of the LED actuator button A.

Note: The actuator button must be used soon after the system backplane assembly is removed from the system. The assembly retains the energy to light the LEDs only for a short period of time after the assembly is disconnected from the system power source.



IPHAN504-0

Figure 40. Backplane assembly LED activation

2. As shown in the following figure, pull out on the locking knobs **A** until you feel them unlock. Push the locking arms **B** down and out to unlock the processor assembly, and then lift it out of the system backplane assembly **C**.

Tip: If you are removing more than one processor assembly to access memory modules, record the location of each processor assembly being removed for use during reinstallation.

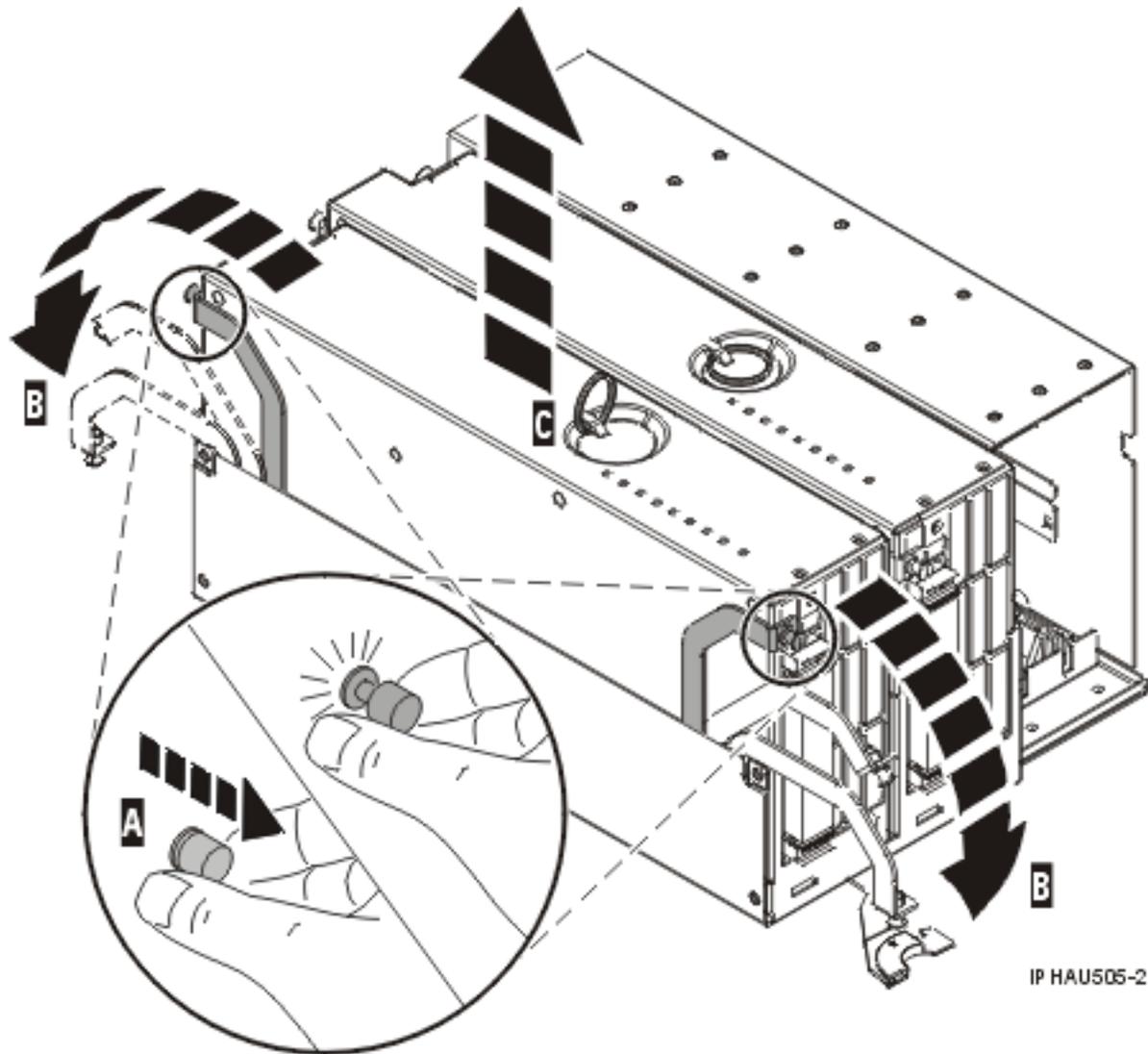


Figure 41. Removing the system processor assembly from the system backplane assembly

3. Remove the system processor assembly cover A by unlocking the two retention knobs B and pulling back and lifting up the cover, as shown in the following figure.

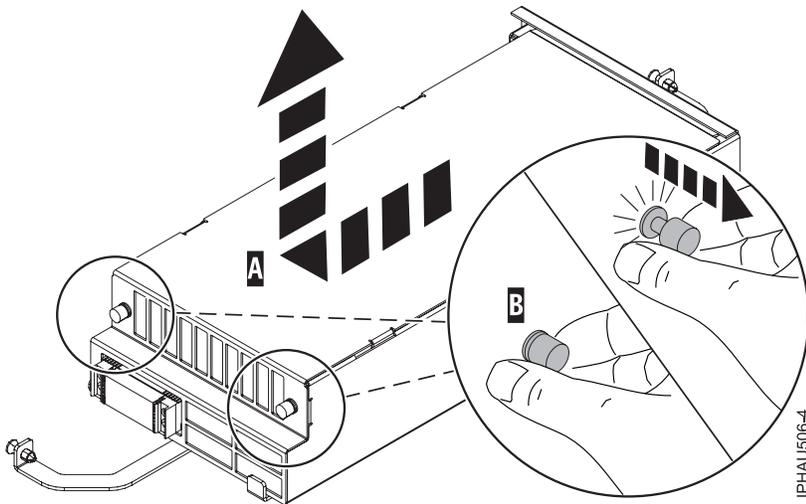


Figure 42. Removing the system processor assembly cover

4. If a Mylar cover is installed over the memory modules, remove the cover.
5. Locate the memory module you want to remove.
6. As shown in Figure 43, unlock the memory module by pushing the connector tabs **A** out. The lever action of the tabs forces the memory module **B** out of the connector.
7. Lift the memory module **B** out of the connector.

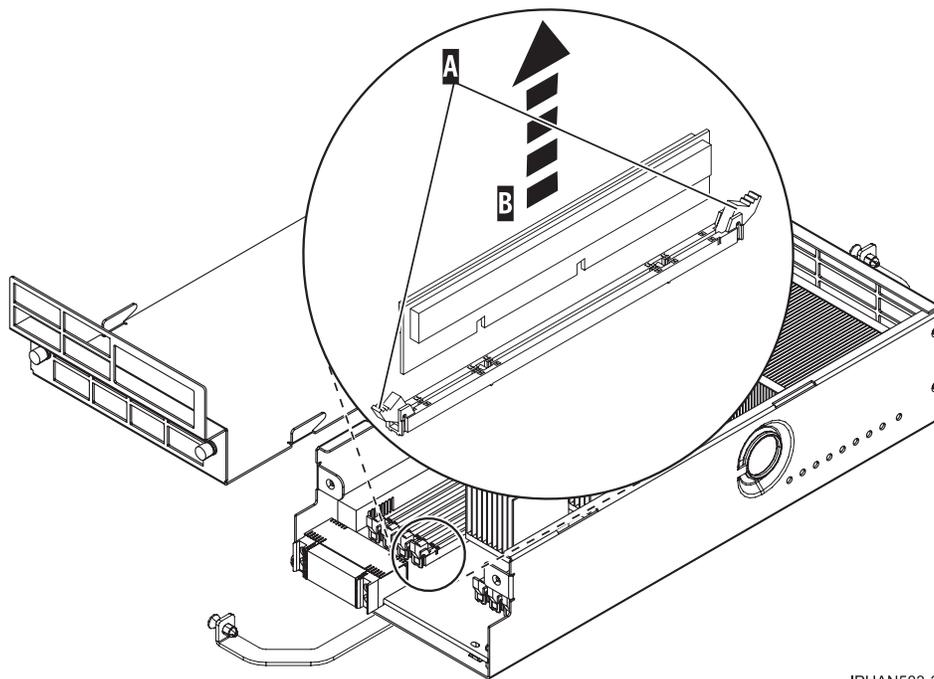


Figure 43. Removing a memory module

8. To replace memory modules, see “Replace model 9116-561 or 570 memory modules.”

Replace model 9116-561 or 570 memory modules

If you removed memory modules as a part of another procedure, you might need to replace memory modules. Use the procedure in this section to perform this task.

If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for replacing memory modules in the server. For instructions, see “Replace a part using the Hardware Management Console” on page 74. If you do not have an HMC, complete the following steps to replace memory modules:

Replace memory modules:

1. Perform the prerequisite tasks described in “Before you begin” on page 75.
2. If necessary, remove memory modules from the processor card assembly. For instructions, see “Remove model 9116-561 or 570 memory modules” on page 57.

Attention:

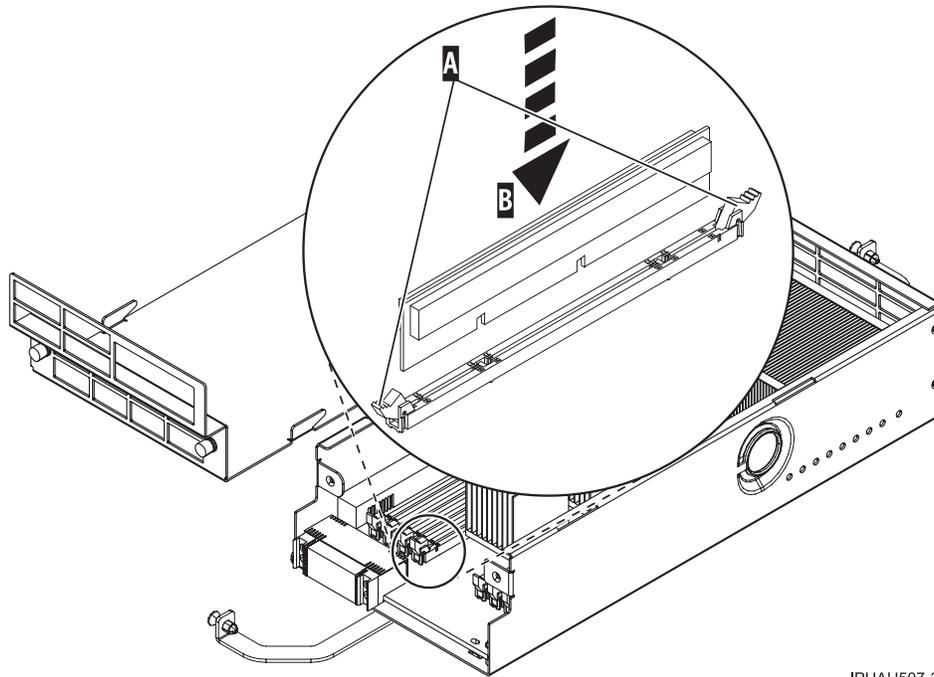
- Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.
 - When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
 - If you do not have a wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds.
3. If necessary, remove the memory module from its antistatic package.
 4. As shown in Figure 44 on page 64, ensure that the connector locking tabs **A** are pushed out into the unlocked position before installing a new memory module.

Note: Before you add memory to the system ensure you have read and understand the notes and restrictions in the notes section, see “Model 9116-561 or 570 memory modules” on page 56.

5. Carefully grasp the memory module **B** along two edges and align it with the connector.

Attention: Memory modules are keyed to prevent a memory module from being installed incorrectly. Note the locations of the key tabs within the memory module connector before attempting to install the memory module.

6. Push the memory module **B** firmly into the connector until the connector locking tabs engage.



IPHAU507-3

Figure 44. Replacing a memory module

7. If you have tall 4 GB or 8 GB memory modules, use the Mylar cover to prevent the memory modules from contacting the lid. When you have finished inserting the memory modules **A**, place the Mylar cover **B** over them, as shown in Figure 45 on page 65. If you replace tall 4 GB or 8 GB memory modules with any other size memory modules, remove the Mylar cover. Failing to remove the Mylar cover might restrict airflow in the unit.

Attention: Do not install 8 GB memory modules on a processor assembly with any size memory modules other than 4 GB memory modules. Installing 8 GB memory modules with sizes other than 4 GB memory modules might unconfigure the other size memory modules and you will see an associated System Reference Code of B123F688. Your system might have other size memory modules on a different processor assembly.

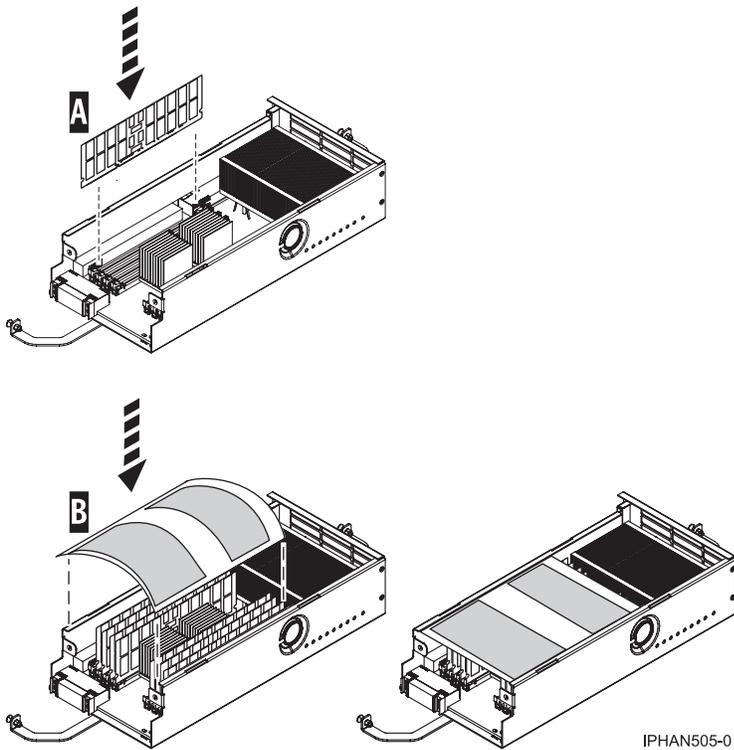


Figure 45. The Mylar cover placed over 4 GB or 8 GB memory modules

8. As shown in the following figure, place the cover A on the processor card assembly, and then lock the two retention knobs B.

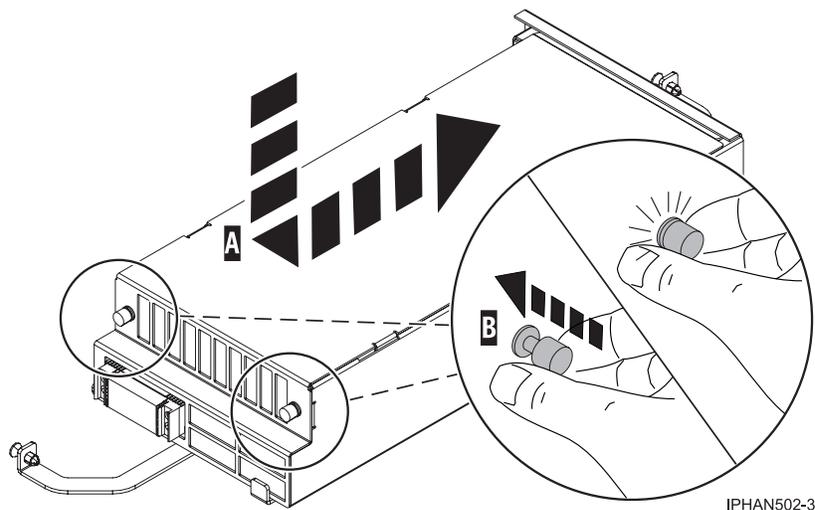


Figure 46. Replacing the system processor assembly cover replacement

Complete the procedure:

1. Replace the system backplane. For instructions, see Replace the model 9116-561 or 570 system backplane.
2. Replace the voltage regulator card assemblies, as described in Model 9116-561 or 570 voltage regulator assembly.
3. Replace the control panel. For instructions, see Replace the control panel with the power off.

4. Reconnect the SMP processor cable. For instructions, see “Reconnect the SMP processor cable to a system unit” on page 135.
5. Install the front cover. For instructions, see “Install the front cover on the model 9116-561 or 570” on page 114.
6. Reconnect all power and signal cables to their respective connectors.
7. Stop the system. For instructions, see “Start the system or logical partition” on page 77.
8. Verify the installed part. For instructions, see “Verify the installed part” on page 138.
9. If you are replacing memory modules as part of another procedure, return to the procedure now.

Install model 9116-561 or 570 memory modules

You might need to install memory modules in the server. Use the procedure in this section to perform this task.

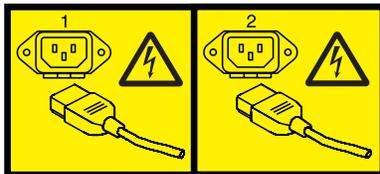
If your system is managed by the Hardware Management Console (HMC), see Table 9 on page 69 for the order in which you place the memory modules, and then use the HMC to complete the steps for installing memory modules. For instructions, see “Install a feature using the Hardware Management Console” on page 72. If you do not have an HMC, complete the following steps to install memory modules:

Prepare the system

1. Perform the prerequisite tasks described in “Before you begin” on page 75.
2. Stop the system. For instructions, see “Stop the system or logical partition” on page 79.
3. 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



4. Remove the front cover from the system unit. For instructions, see “Remove the front cover from the model 9116-561 or 570” on page 113.

Attention:

- Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.
 - When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
 - If you do not have a wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds.
5. If necessary, “Disconnect the SMP processor cable from a system unit” on page 132.
 6. Remove the control panel. For instructions, see Remove the control panel with power off.
 7. Remove the voltage regulator card assemblies, as described in Model 9116-561 or 570 voltage regulator assembly.
 8. Remove the system backplane assembly. For instructions, see Remove the model 9116-561 or 570 system backplane. Skip any steps that you have already completed.
 9. Remove the system processor assembly cover **A** by unlocking the two retention knobs **B** and pulling back and lifting up the cover, as shown in the following figure.

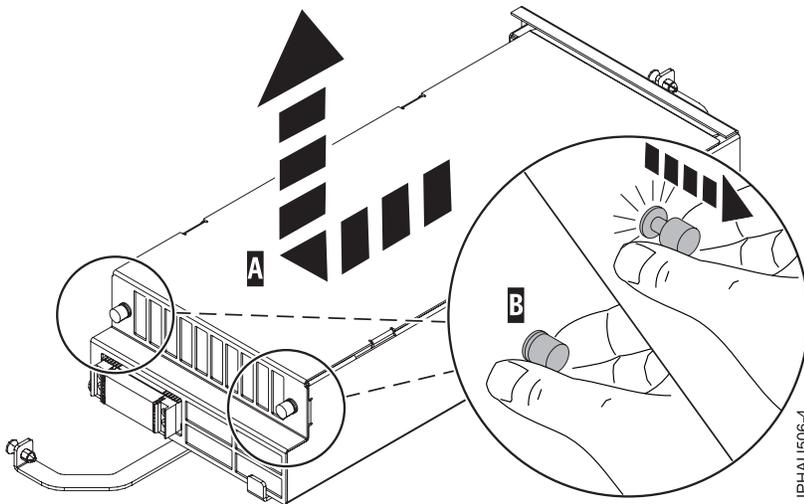
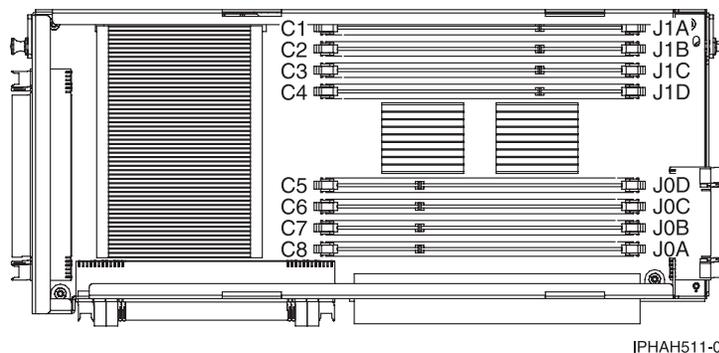


Figure 47. Removing the system processor assembly cover

10. If a Mylar cover is installed over the memory modules, remove the cover.
11. If necessary, remove memory modules from the processor card assembly. For instructions, see “Remove model 9116-561 or 570 memory modules” on page 57.
12. Remove the memory module filler, if one is present, by pushing the locking tabs out and then down. The lever action of the tabs forces the memory module filler out of the connector.
13. Determine the slots in which the memory modules will be placed.

Notes:

- Ensure you have read and understand the restrictions and notes at the beginning of this topic, see “Model 9116-561 or 570 memory modules” on page 56.
- Each processor assembly has eight memory module slots. The memory modules should be plugged into the slots as follows (see Figure 48 for memory module slot locations in the processor assembly):
 - First quad of memory modules is plugged into memory module slots P2-Cx-C1, P2-Cx-C3, P2-Cx-C6, and P2-Cx-C8.
 - Second quad of memory modules is plugged into memory module slots P2-Cx-C2, P2-Cx-C4, P2-Cx-C5, and P2-Cx-C7.



IPHAH511-0

Figure 48. Memory module slot locations in the processor assembly

- A quad set of 8 GB memory modules can only be installed in a processor card as a set alone, with another 8 GB quad set, or with a 4 GB quad set.

- For a maximum 16-way configured system, fill additional quads according to the order in Table 9. When adding additional memory modules, begin with the first open quad. If the system is less than a 16-way configured system, eliminate the appropriate number of enclosures and processor cards.

Table 9. Memory module plugging order

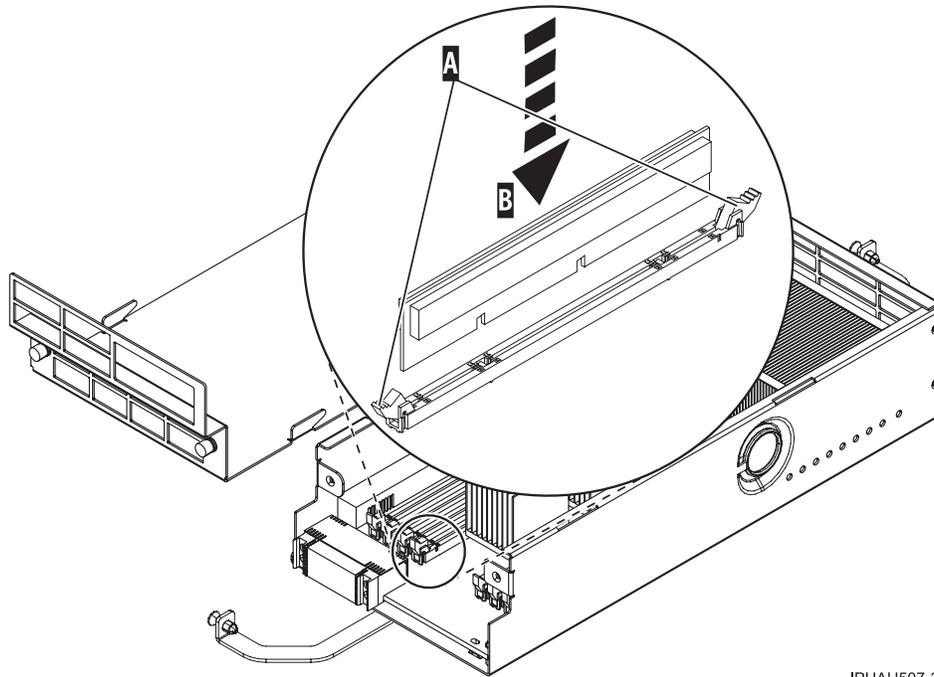
System unit	Processor card	Where to install memory modules
Enclosure 1	P2-C1	Slots C1, C3, C6, and C8
Enclosure 1	P2-C2	Slots C1, C3, C6, and C8
Enclosure 2	P2-C1	Slots C1, C3, C6, and C8
Enclosure 2	P2-C2	Slots C1, C3, C6, and C8
Enclosure 3	P2-C1	Slots C1, C3, C6, and C8
Enclosure 3	P2-C2	Slots C1, C3, C6, and C8
Enclosure 4	P2-C1	Slots C1, C3, C6, and C8
Enclosure 4	P2-C2	Slots C1, C3, C6, and C8
Enclosure 4	P2-C1	Slots C2, C4, C5, and C7
Enclosure 4	P2-C2	Slots C2, C4, C5, and C7
Enclosure 3	P2-C1	Slots C2, C4, C5, and C7
Enclosure 3	P2-C2	Slots C2, C4, C5, and C7
Enclosure 2	P2-C1	Slots C2, C4, C5, and C7
Enclosure 2	P2-C2	Slots C2, C4, C5, and C7
Enclosure 1	P2-C1	Slots C2, C4, C5, and C7
Enclosure 1	P2-C2	Slots C2, C4, C5, and C7

Install memory modules:

1. If necessary, remove the memory module from its antistatic package.
2. As shown in Figure 49 on page 70, ensure that the connector locking tabs **A** are pushed out into the unlocked position before installing a new memory module.
3. Carefully grasp the memory module **B** along two edges and align it with the connector.

Attention: Memory modules are keyed to prevent a memory module from being installed incorrectly. Note the locations of the key tabs within the memory module connector before attempting to install the memory module.

4. Push the memory module **B** firmly into the connector until the connector locking tabs **A** engage.



IPHAU507-3

Figure 49. Replacing a memory module

5. If you have tall 4 GB or 8 GB memory modules, use the Mylar cover to prevent the memory modules from contacting the lid. When you have finished inserting the memory modules **A**, place the Mylar cover **B** over them as shown in Figure 50 on page 71. If you replace tall 4 GB or 8 GB memory modules with any other size memory modules, remove the Mylar cover. If you do not to remove the Mylar cover it might restrict airflow in the unit.

Attention: Do not install 8 GB memory modules on a processor assembly with any size memory modules other than 4 GB memory modules. Installing 8 GB memory modules with sizes other than 4 GB memory modules might unconfigure of the other size memory modules and you will see an associated System Reference Code of B123F688. Your system might have other size memory modules on a different processor assembly.

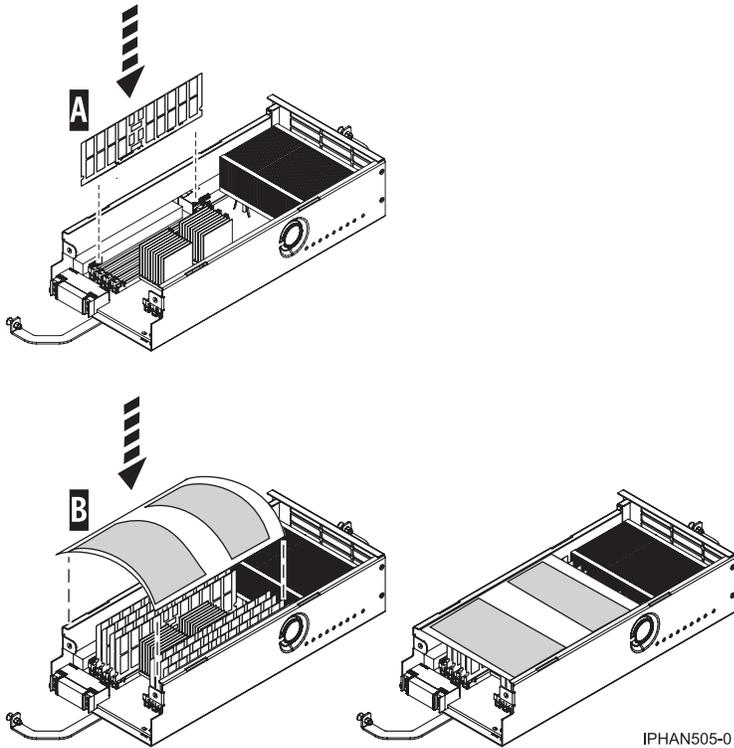


Figure 50. Mylar cover placed over 4 GB or 8 GB memory modules

Complete the procedure:

1. As shown in Figure 51, place the cover A on the processor assembly and then lock the two retention knobs B.

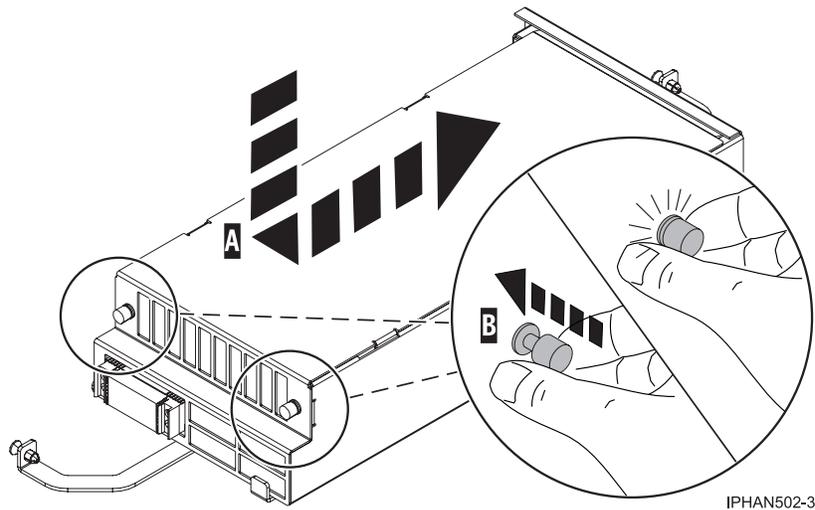


Figure 51. Replacing the system processor assembly cover

2. Replace the system backplane. For instructions, see Replace the model 9116-561 or 570 system backplane.
3. Replace the voltage regulator card assemblies, as described in Model 9116-561 or 570 voltage regulator assembly.
4. Replace the control panel. For instructions, see Replace the control panel with power off.

5. Install the front cover. For instructions, see “Install the front cover on the model 9116-561 or 570” on page 114.
6. Reconnect all power and signal cables to their respective connectors.
7. Start the system. For instructions, see “Start the system or logical partition” on page 77.
8. Verify the installed part. For instructions, see “Verify the installed part” on page 138.
9. If you installed memory modules as part of another procedure, return to the procedure now.

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.

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

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.

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

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

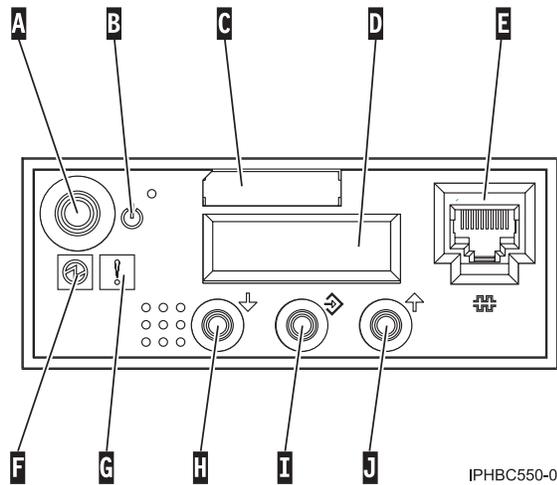
You might need to start a system or logical partition. You can use this procedure to start the system or logical partition.

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® 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:

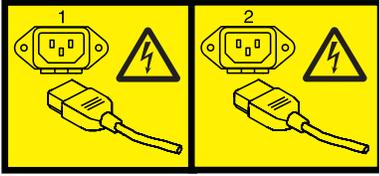
1. Log in to the system as a user with the authority to run the shutdown or pwrdownsys (Power Down System) command.
2. At the command line, enter one of the following commands:
 - If your system is running AIX, type **shutdown**.
 - If your system is running i5/OS, type **pwrdownsys *immed**.
 - If your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

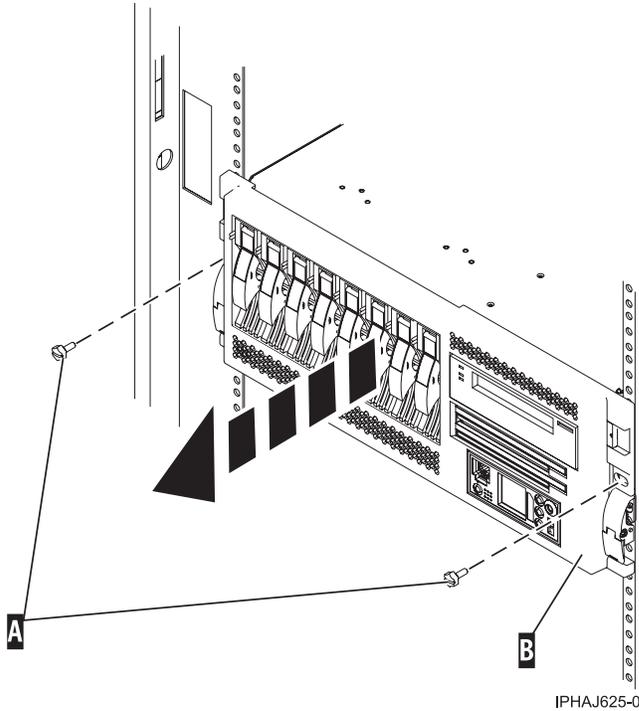
CAUTION

- 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.

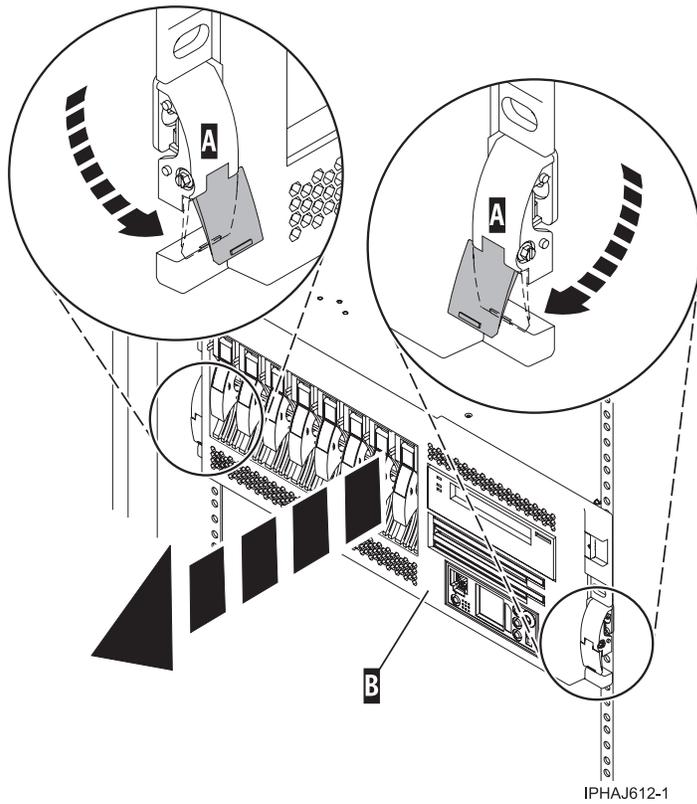
(R001)

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

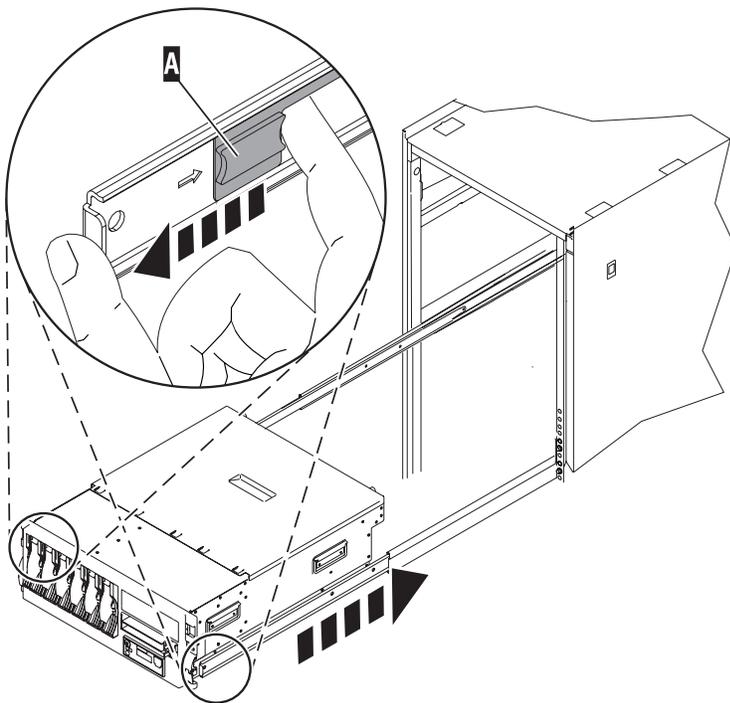
You might need to place the rack-mounted system or expansion unit in the operating position to make the unit available for use. Use the instructions in this section to accomplish this task.

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:

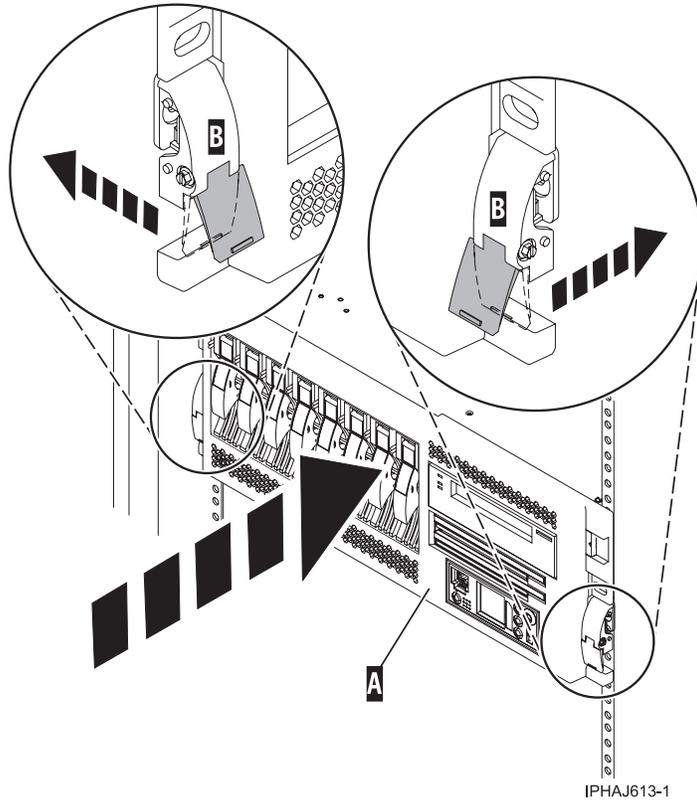
1. Simultaneously release the blue rail safety latches **A**, located near the front of each rail, and push the system or expansion unit into the rack as shown in the following figure.

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.

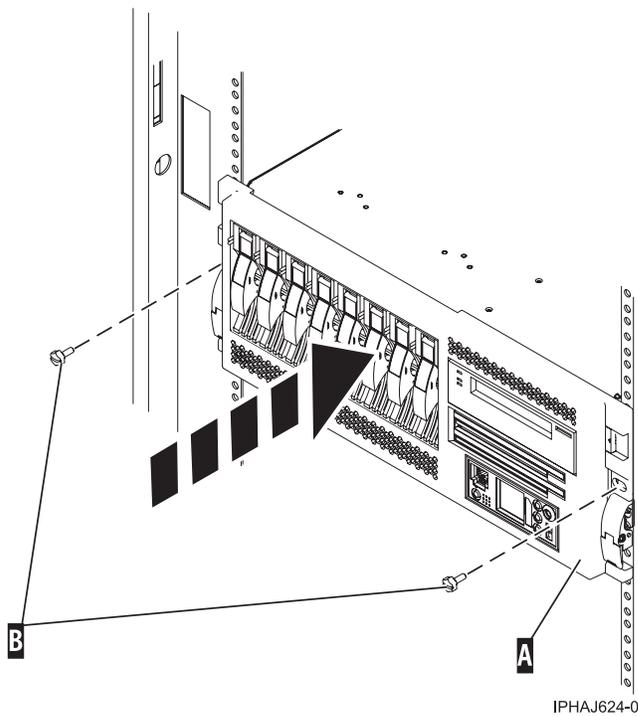


IPHBF509-1

- 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 model 51x or 710 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.

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.

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.

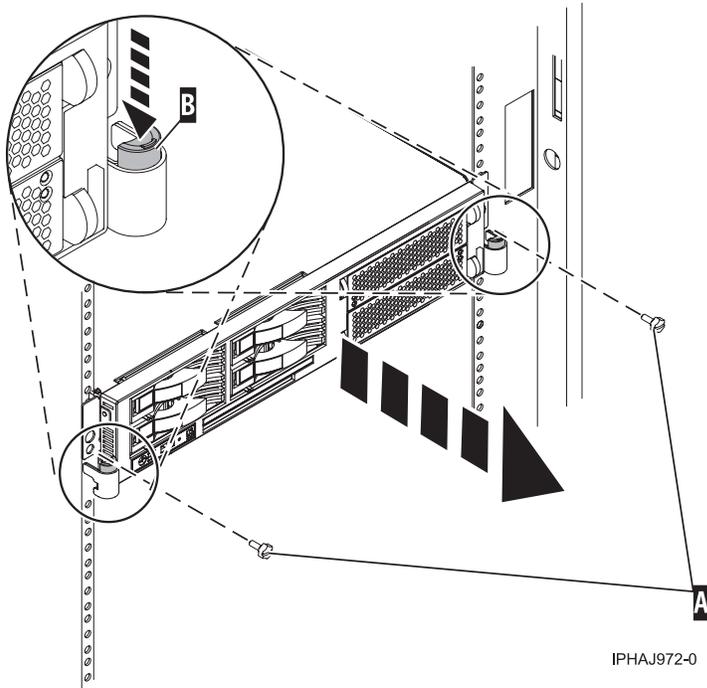
CAUTION

- 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 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 unit to the rack as shown in the following figure.



3. Release the rack latches **B** on both the left and right sides as shown in the previous figure.
4. Review the following note, and then slowly pull the system 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 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.

Place the model 51x or 710 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.

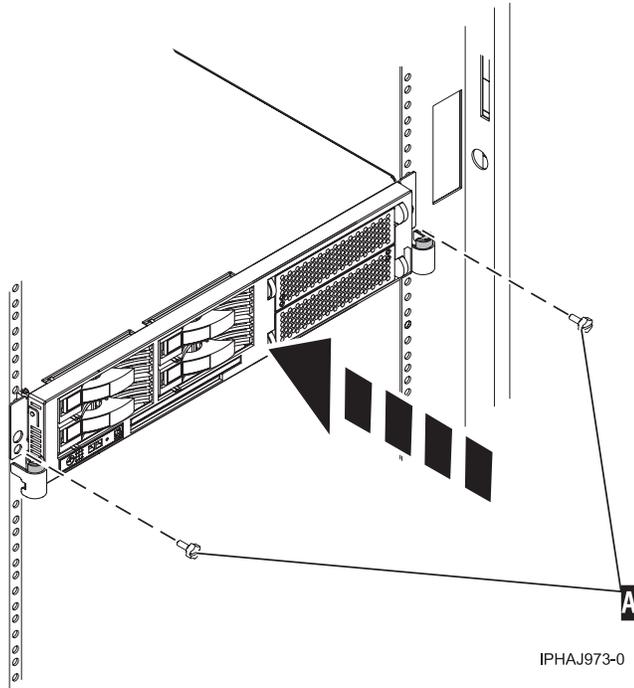
Tip: Some of the figures in these procedures might not look exactly like the system unit that you have. However, the steps to perform the task are the same.

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

1. Simultaneously release the blue rail safety latches, located near the middle of each rail, and push the system unit into the rack. Both rack latches should lock into position.

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

2. Replace and tighten the two thumbscrews **A** that secure the system unit 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.

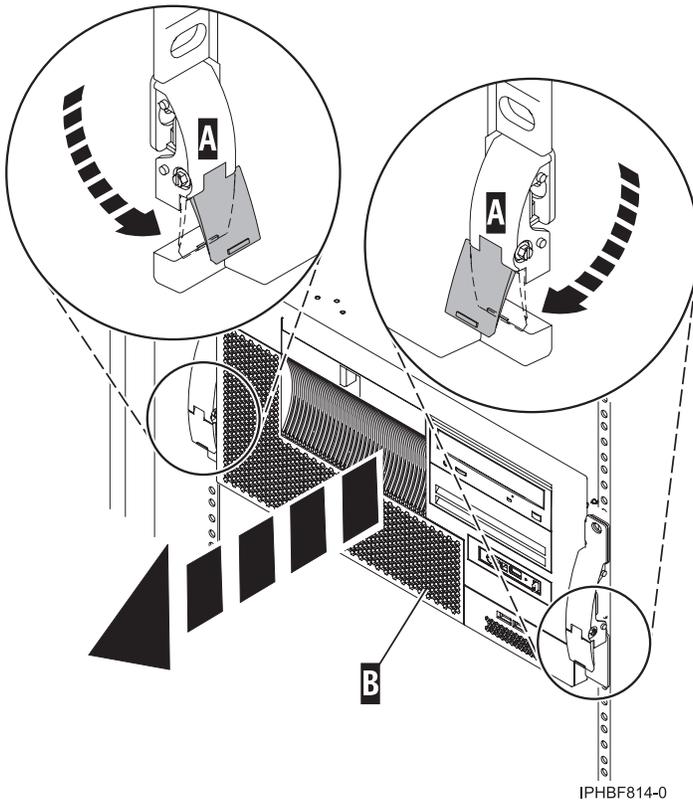


Figure 52. Placing the model in the service position

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

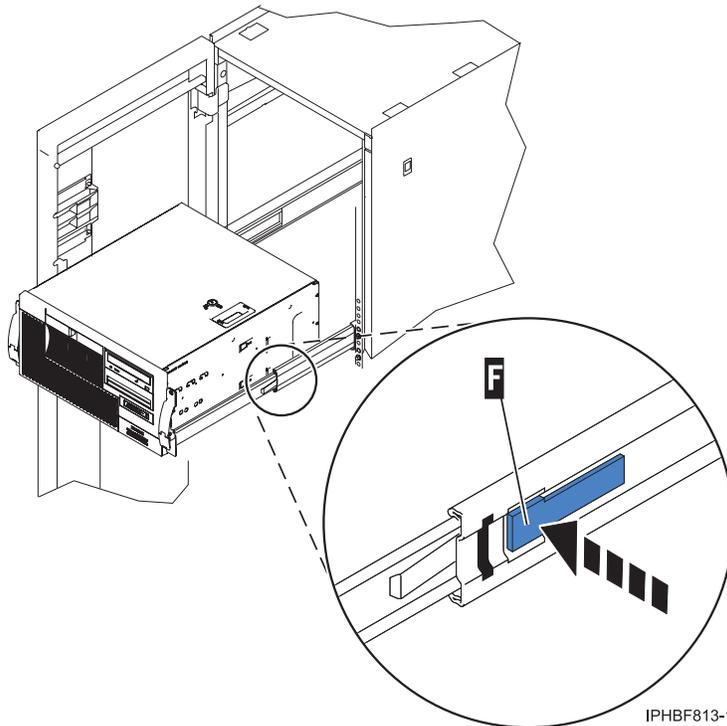
You might need to place a system into the operating position to make the system available for use. Use the procedure in this section to perform this task.

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

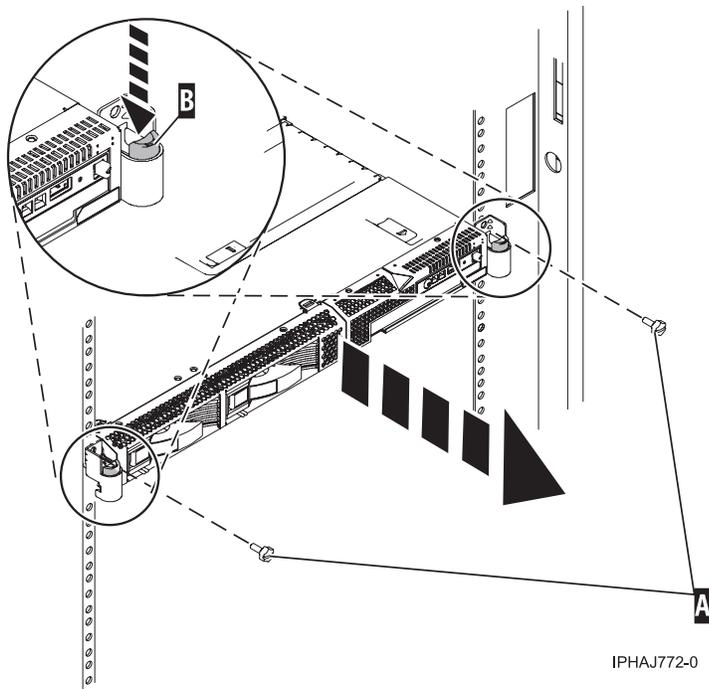
- a. Both rack latches should lock into position.
2. Replace and tighten the two thumbscrews that secure the system unit to the rack.
3. Close the front rack door.

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.



IPHAJ772-0

Figure 53. 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.

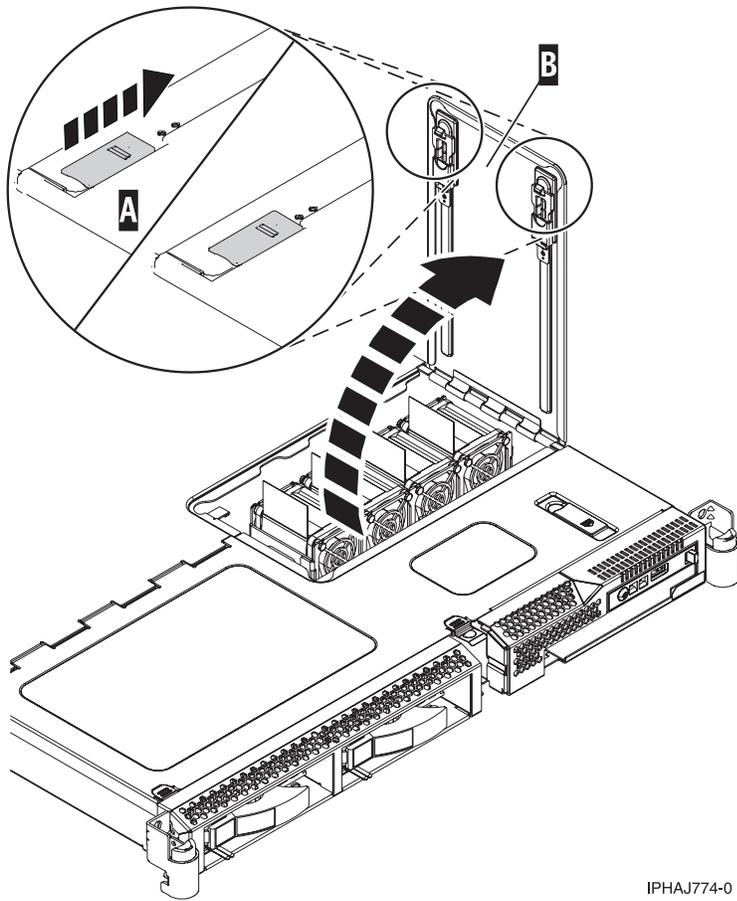
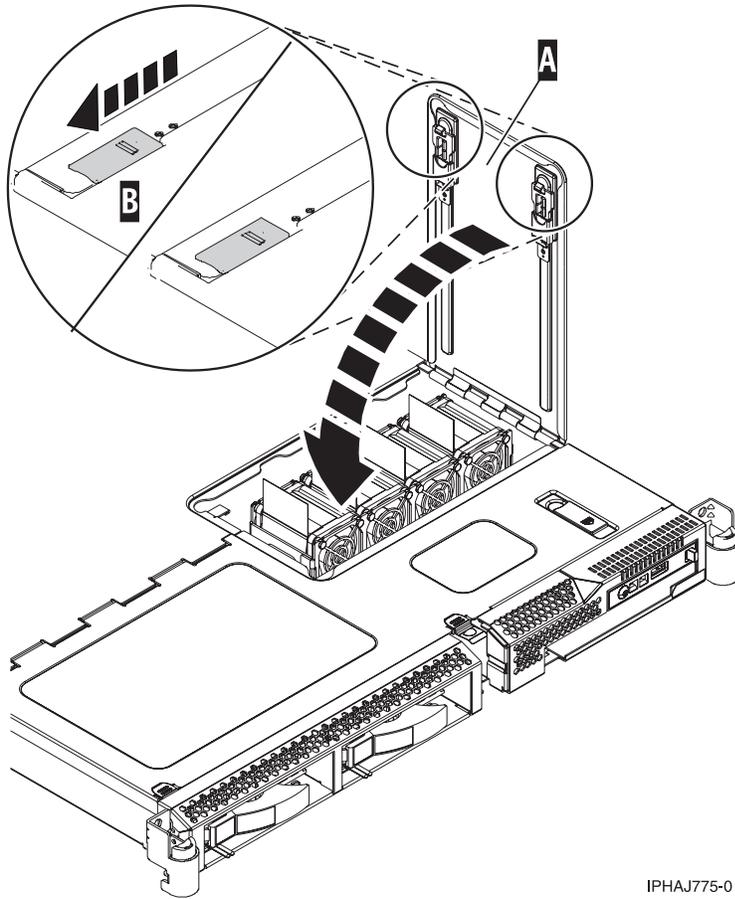


Figure 54. Open the service access panel

Complete the following steps to close the service access panel:

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

Figure 55. 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.

Place the model 505 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.

If you are servicing the fans or control panel see: “Open the model 505 service access panel” on page 93.

Important: To place the model 505 in the service position you will need to remove the system unit from the rack.

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.

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

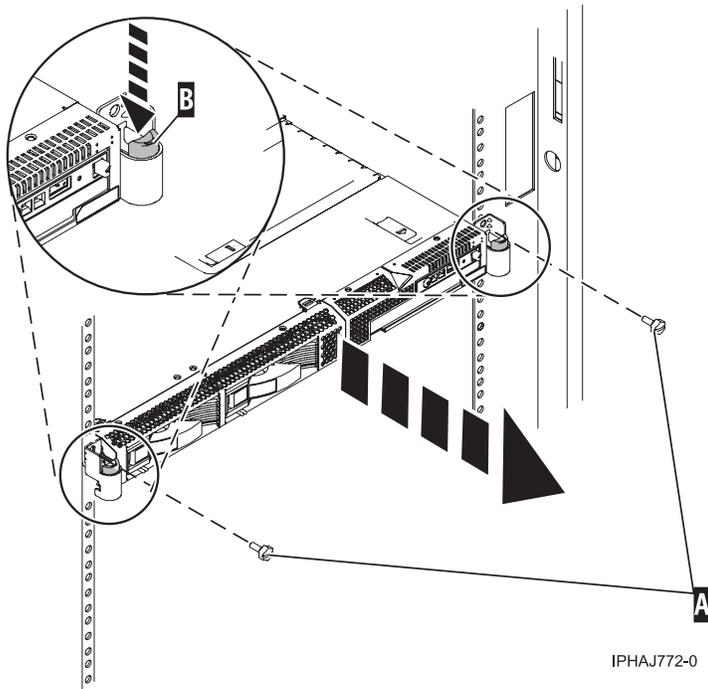
- Do not install a unit in a rack where the internal rack ambient temperatures will exceed the manufacturer's recommended ambient temperature for all your rack-mounted devices.
- Do not install a unit in a rack where the air flow is compromised. Ensure that air flow is not blocked or reduced on any side, 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 unit into the service position, follow these steps:

1. Record any error or log messages before you stop the system.
2. Stop the system. For instructions see, "Stop the system or logical partition" on page 79.
3. If necessary, open the front rack door.
4. Carefully label and remove all cables and cords from the unit.
5. Remove the cable management arm from the system by doing the following:
 - a. Pull the release latch in the lower-left corner into the unlocked position.
 - b. Slide the cable management arm to the right detaching it from the system unit.

- Remove the two screws **A** that secure the system unit to the rack as shown in the following figure.

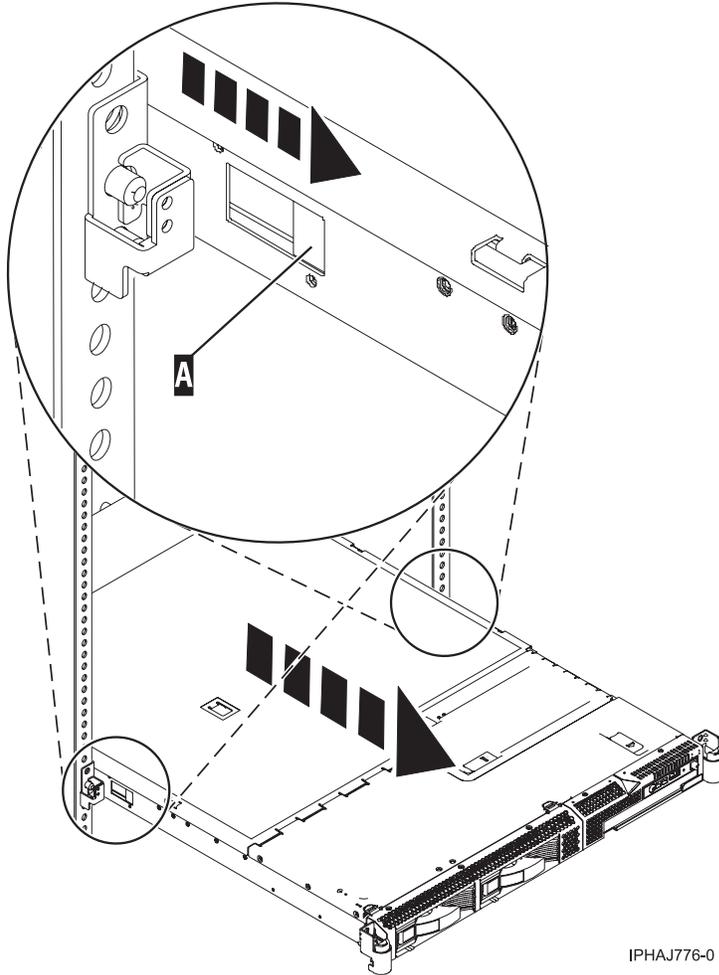


- Release the rack latches **B** on both the left and right sides as shown in the previous figure.
- Review the following notes, and then slowly pull the system unit out from the rack until the system unit is fully extended and locked.

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.
- 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.

9. Press the rail safety latches **A** to release the system from the rack, as shown in the following figure.



10. Grasp each side of the system unit and pull the system unit out of the rack.

CAUTION:

This unit weighs approximately 17 kg (37 pounds). Be sure you can safely support this weight when removing the system unit from the rack.

11. Place the system unit on a sturdy flat surface capable of safely supporting the system unit while you are servicing it.

Place the model 505 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.

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 system unit into the operating position, follow these steps:

1. Lift the system unit, and position over the rails.

CAUTION:

This unit weighs approximately 17 kg (37 pounds). Be sure you can safely support this weight when placing the system unit from the rack.

2. Simultaneously release the safety latches, located near the middle of each side of the system, and push the system unit into the rack. Both rack latches should lock into position.

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

3. Replace and tighten the two screws **A** that secure the system unit to the rack as shown in the following figure.

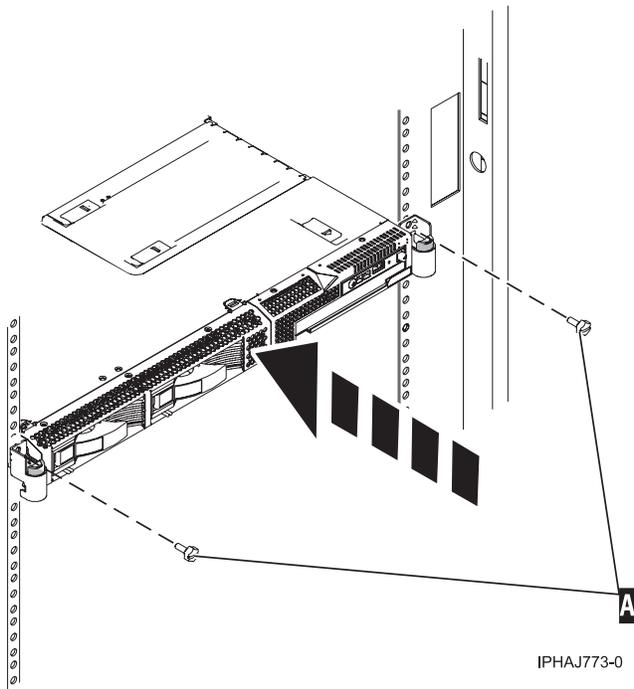


Figure 56. Replace the thumbscrews

4. Connect the cables and cords.
5. Replace the cable management arm.
6. Close the front rack door.

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:

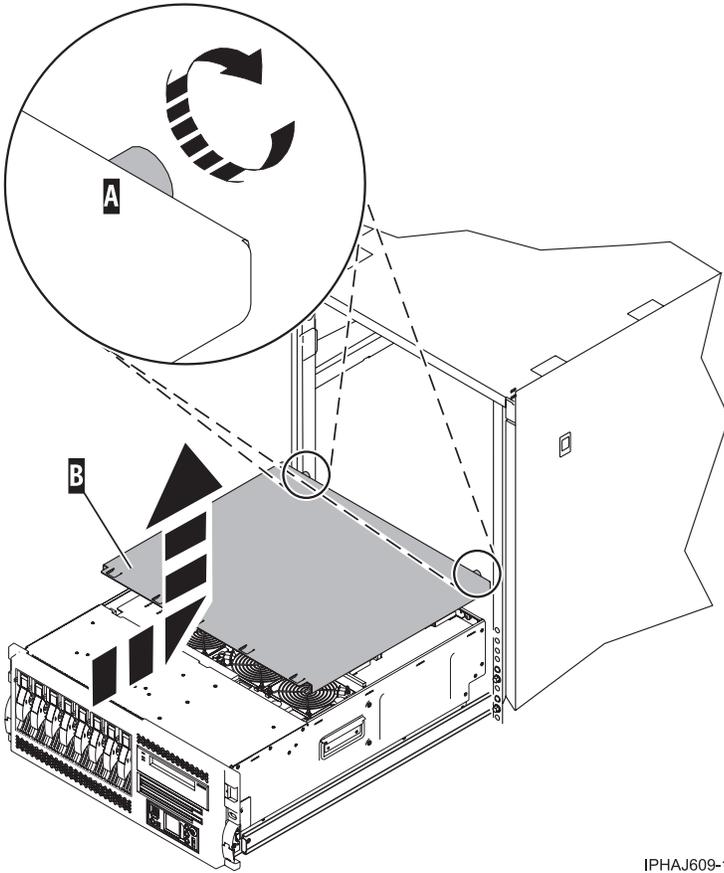
You might need to remove the service access cover to perform service or gain access to internal components. Use the procedure in this section to accomplish this task.

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 80.
2. Loosen the two thumbscrews located at the back of the cover.

3. 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 57. Remove the service access cover

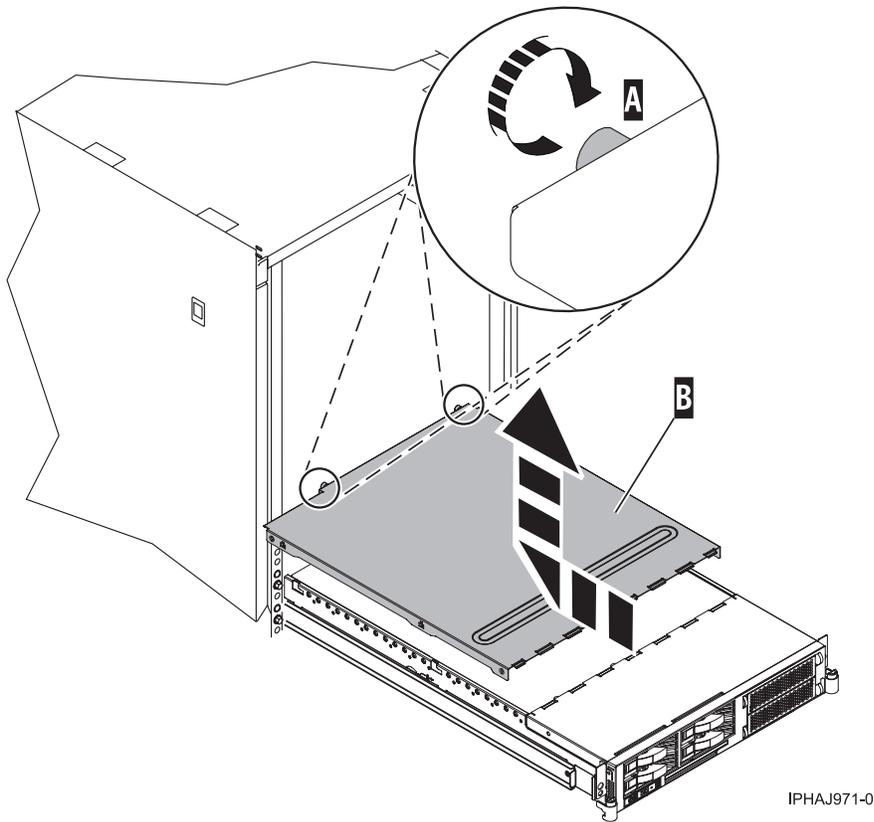


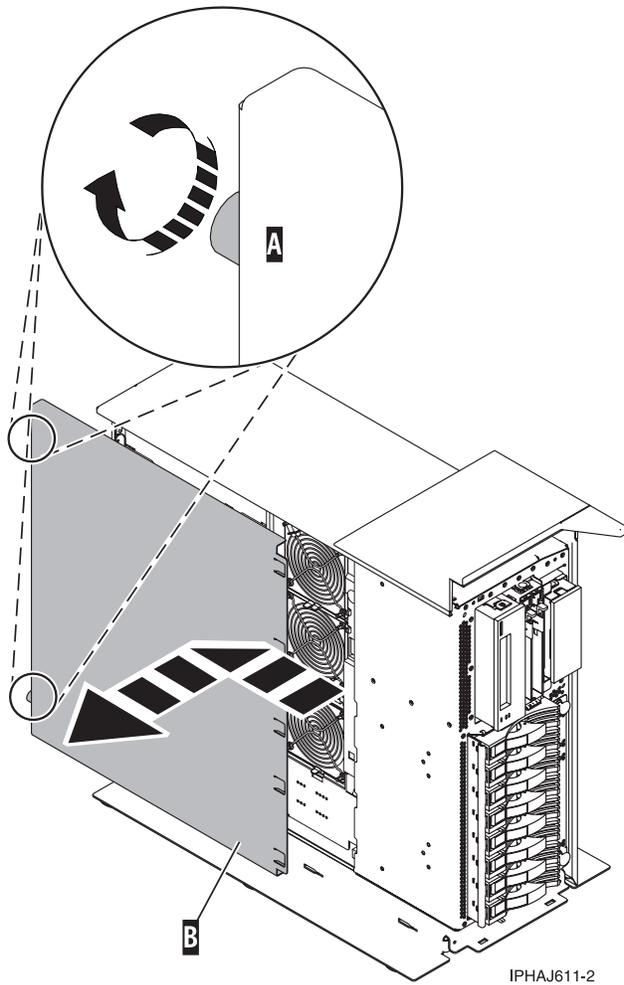
Figure 58. Remove the service access cover

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.

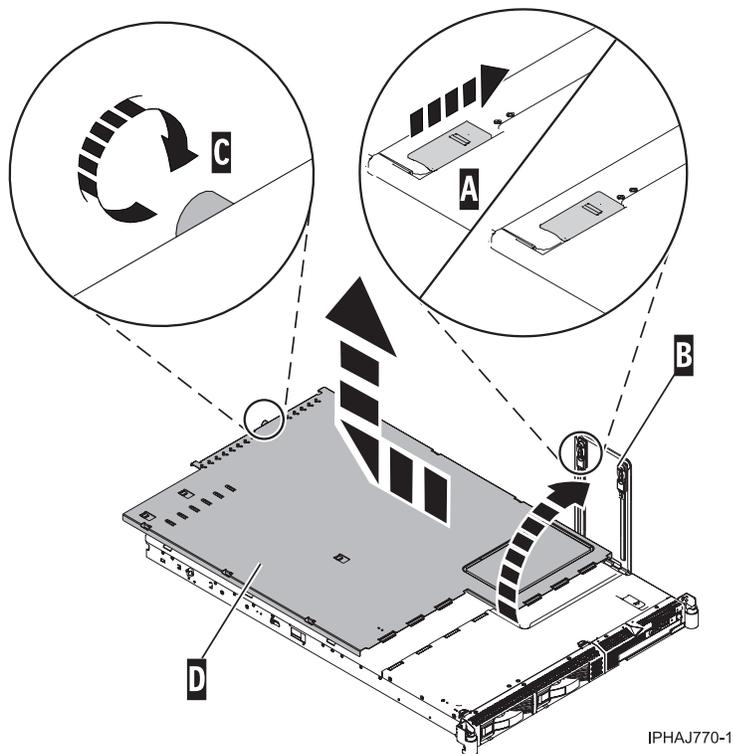
Remove the service access cover from the rack-mounted model 505:

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 model 505 in the service position" on page 96.
2. Push the release tab **A** to open the service access panel **B**, as shown in the following figure.
3. Loosen the thumbscrew located at the back of the cover **C**.
4. Slide the cover **D** 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.



IPHAJ770-1

Figure 59. Remove the service access cover

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

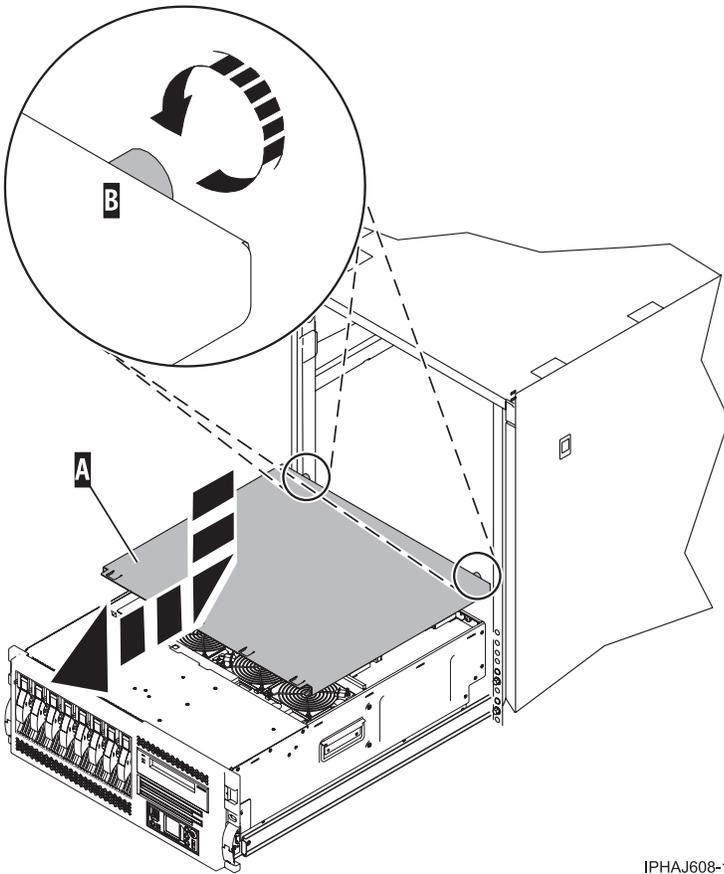
You might need to install the service access cover after performing service or accessing internal components. Use the instructions in this section to accomplish this task for your model.

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 60 on page 106 and Figure 61 on page 107, 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 60. Install the service access cover on the rack-mounted model

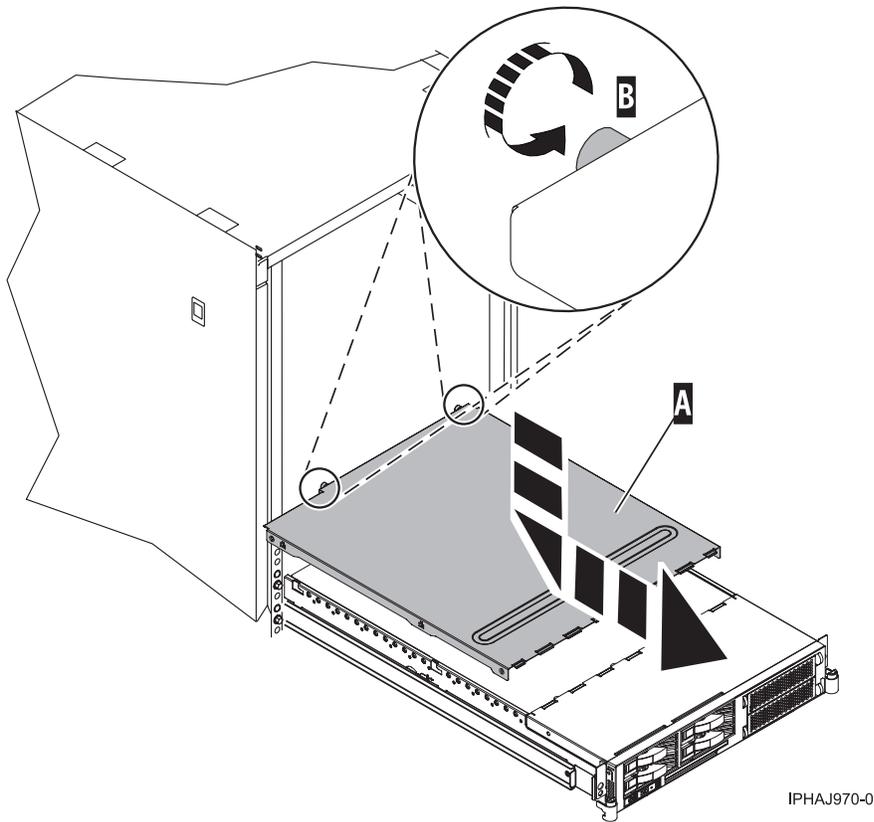


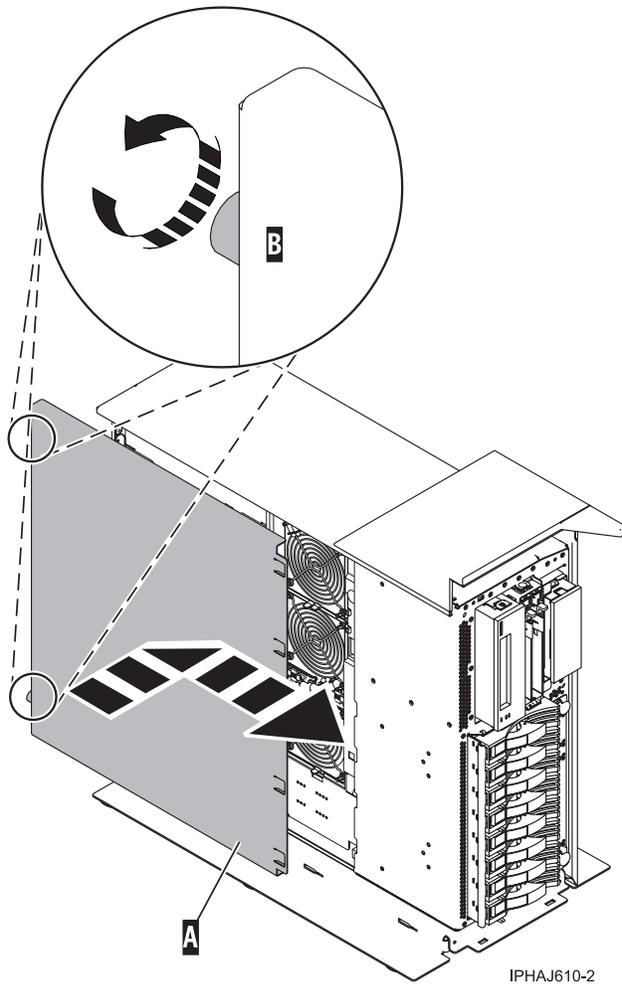
Figure 61. Install the service access cover on the rack-mounted model

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.



IPHAJ610-2

Install the service access cover on the rack-mounted model 505:

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 and follow these steps:

1. Ensure that the service access panel **C** is open while installing the service access cover.
2. 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, as shown in the following figure.
3. 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 thumbscrew aligns with the screw hole at the back of the system unit.

4. Tighten the thumbscrew **B** located at the back of the cover.

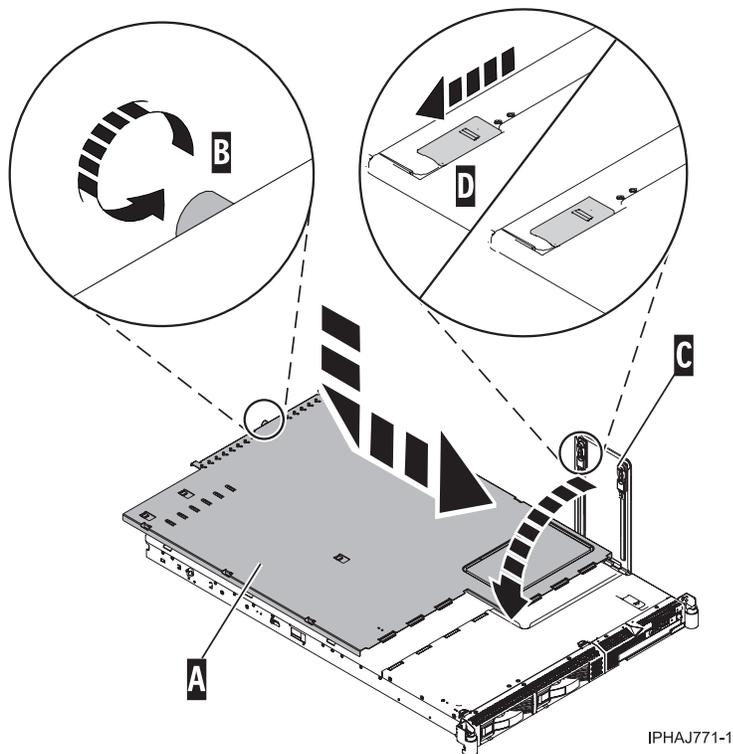


Figure 62. Install the service access cover on the rack-mounted model

5. Close the service access panel C and ensure the tabs D lock into place.

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.

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.

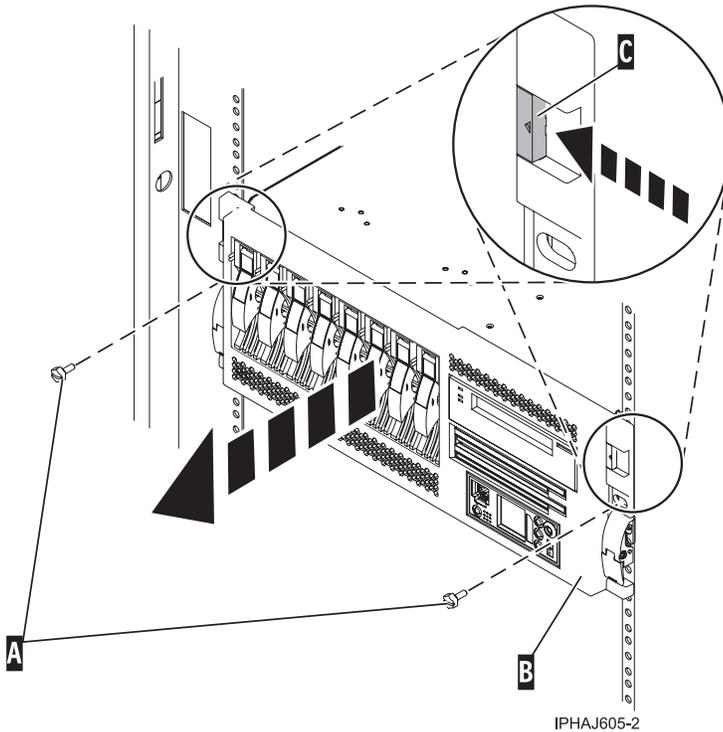
Remove the front cover from the rack-mounted model 285, 52x, 55x, or OpenPower 720 and the 0595 expansion unit:

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:

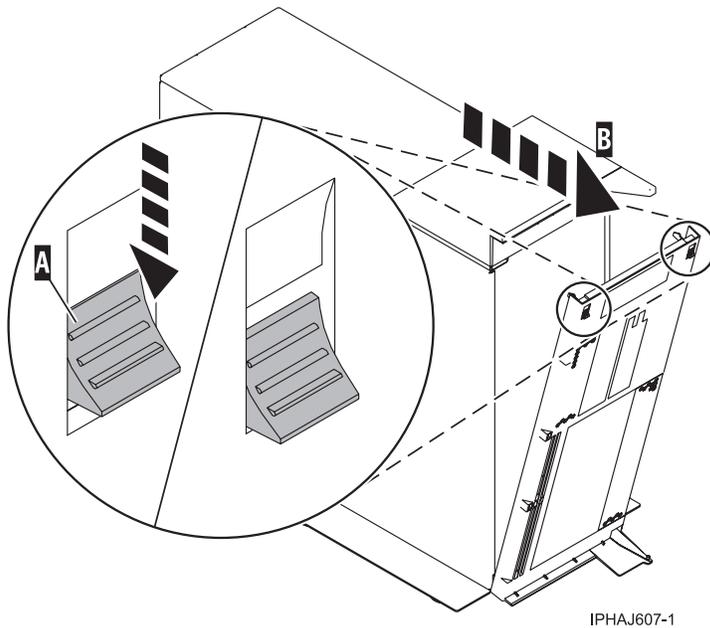
You might need to remove the cover to access components or perform service. Use the procedure in this section to accomplish this task.

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 120.

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:

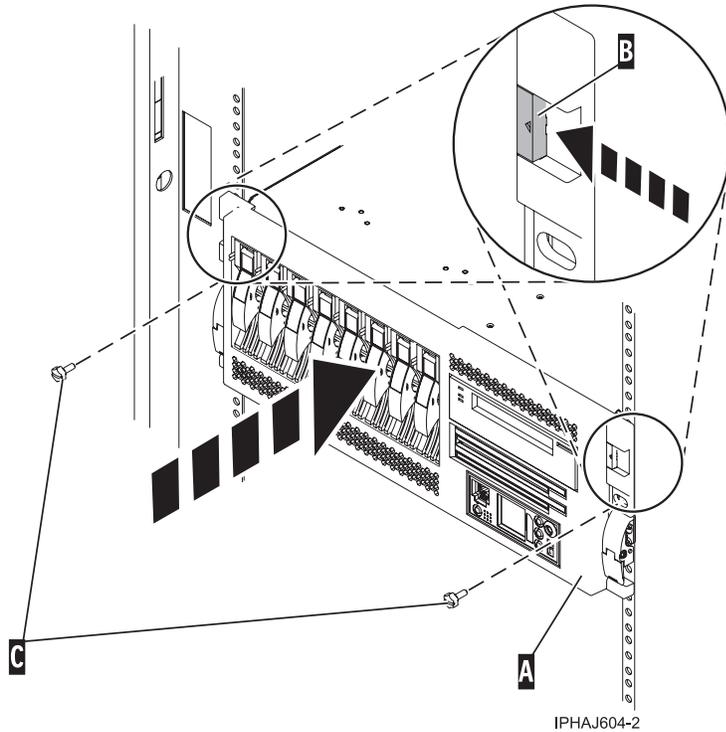
You might need to install the cover after accessing components or performing service. Use the procedures in this section to accomplish this task.

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.



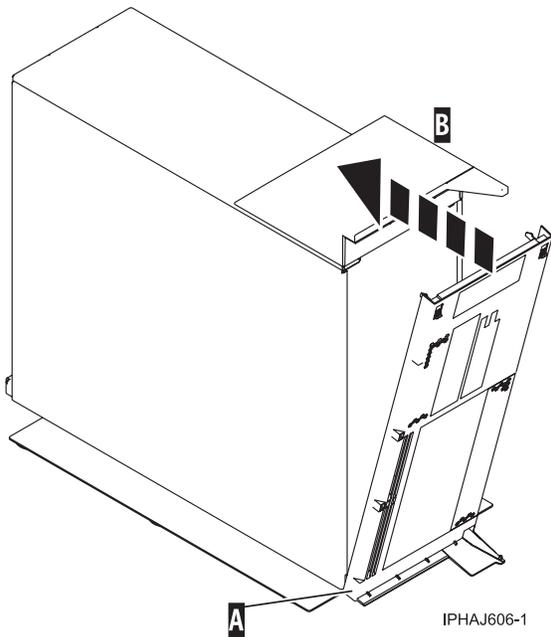
3. Tighten the thumbscrews.
4. Close the front rack door.

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 122.

Front cover for the model 9116-561 or 570

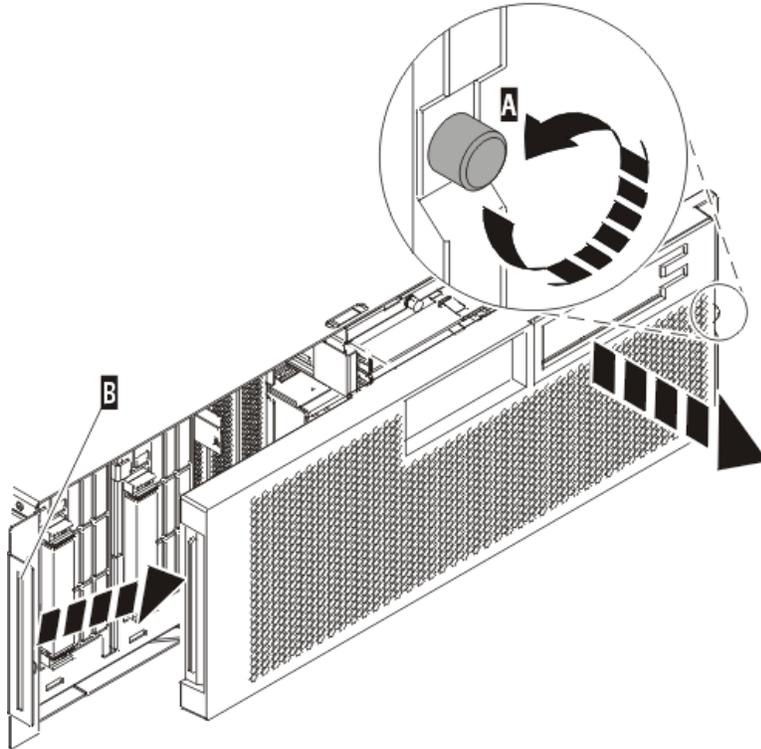
You might need to remove and replace the cover to access components or perform service. Use the procedures in this section to accomplish these tasks.

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

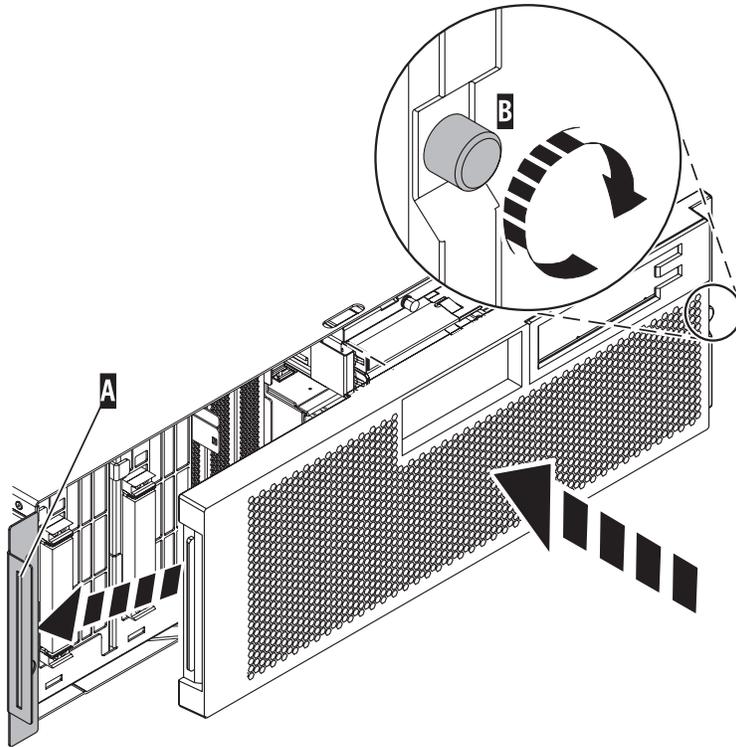
3. Slide the cover to the right and remove it from the system unit.

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.

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

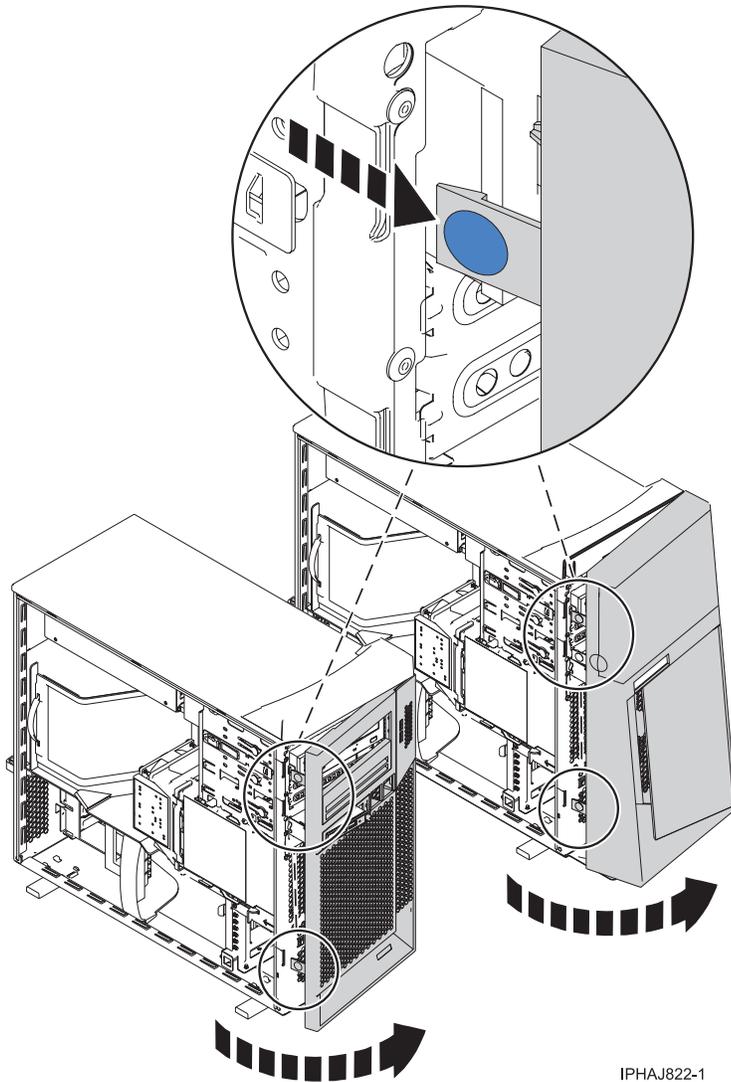
You might need to remove the cover to access components or perform service. Use the procedure in this section to accomplish this task.

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 118
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 63. Removing the front cover

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

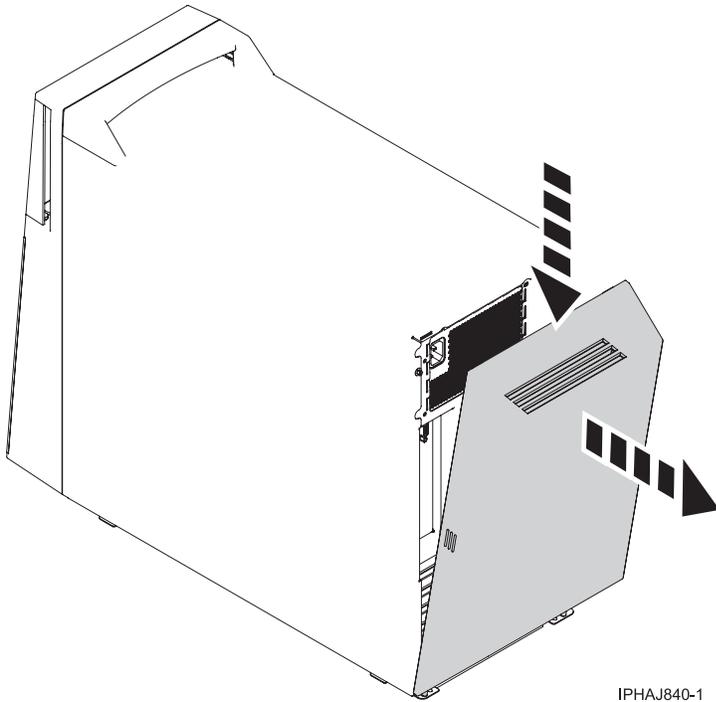
You might need to remove the cover to access components or perform service. Use the procedure in this section to accomplish this task.

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 64. 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.

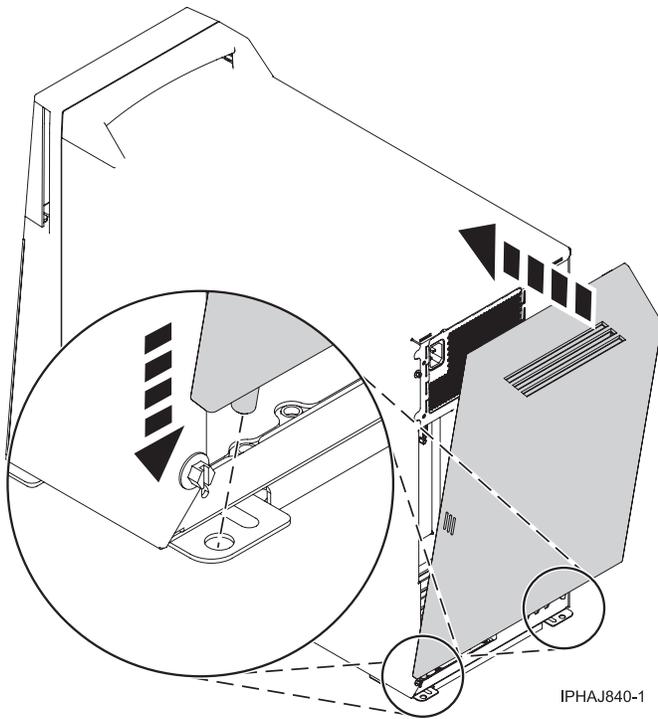


Figure 65. Replacing the back cover

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.

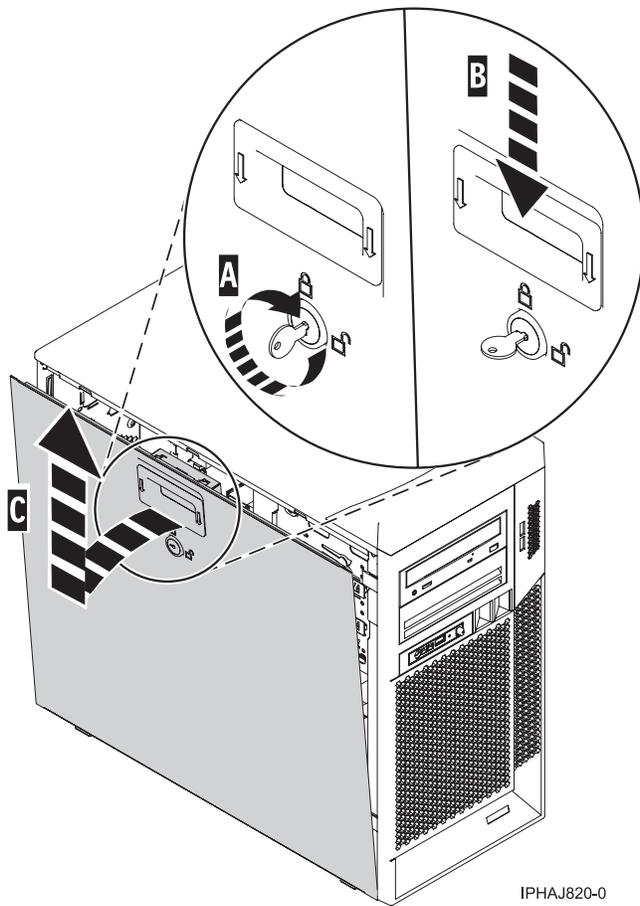


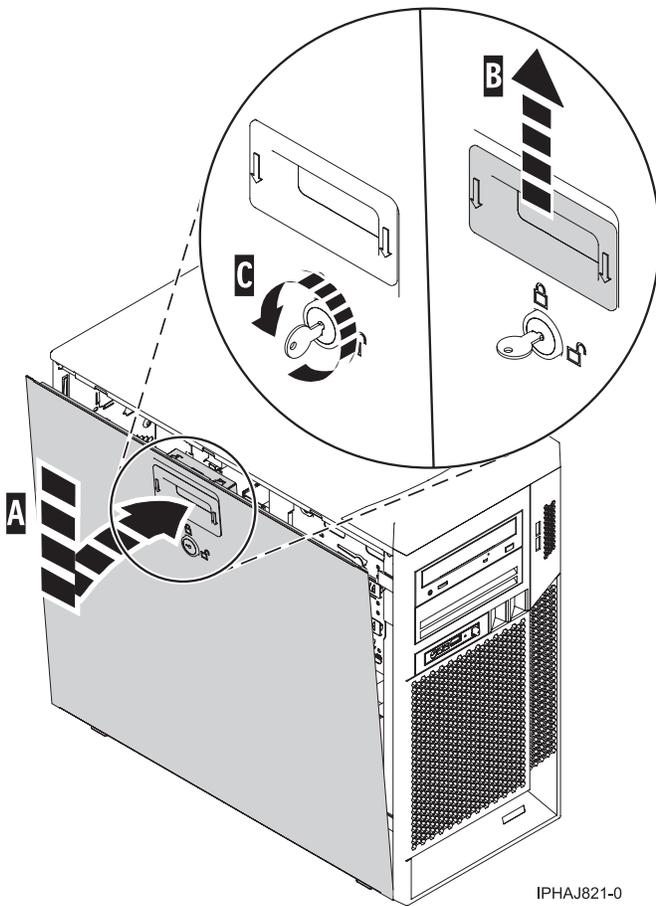
Figure 66. Removing the side cover

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 67. Replacing the service panel

3. Lock the security lock C if needed.

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.

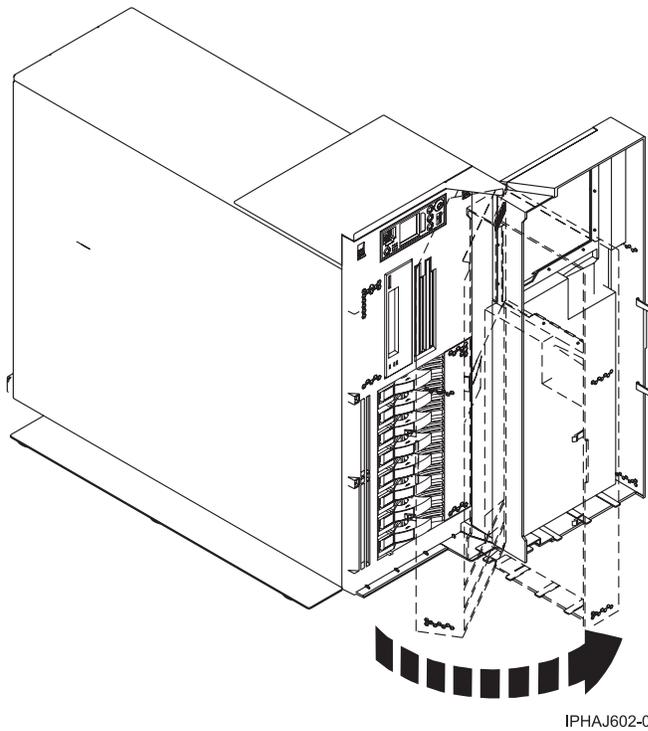
Remove the door from the model 285, 52x, 55x, or OpenPower 720

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 121.

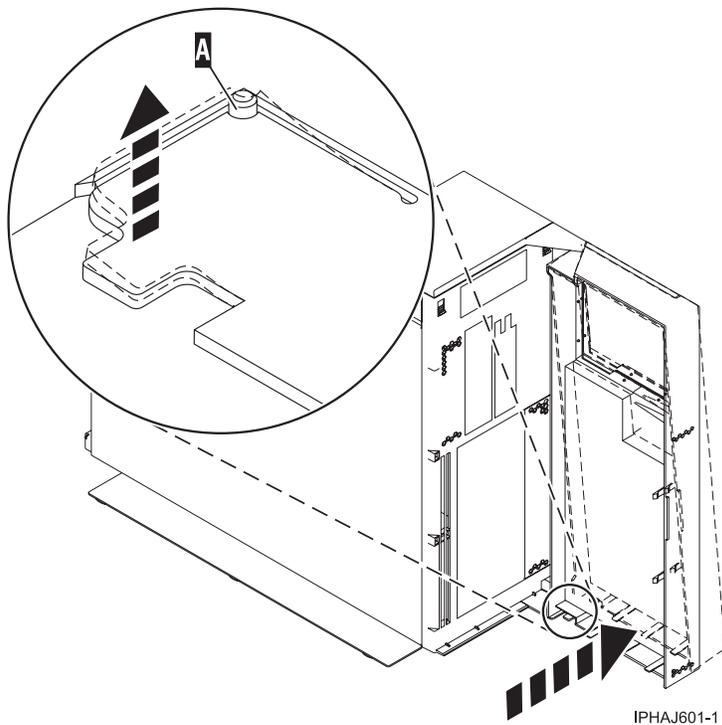
To remove the 52x, 55x, or OpenPower 720 door, do the following:

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.

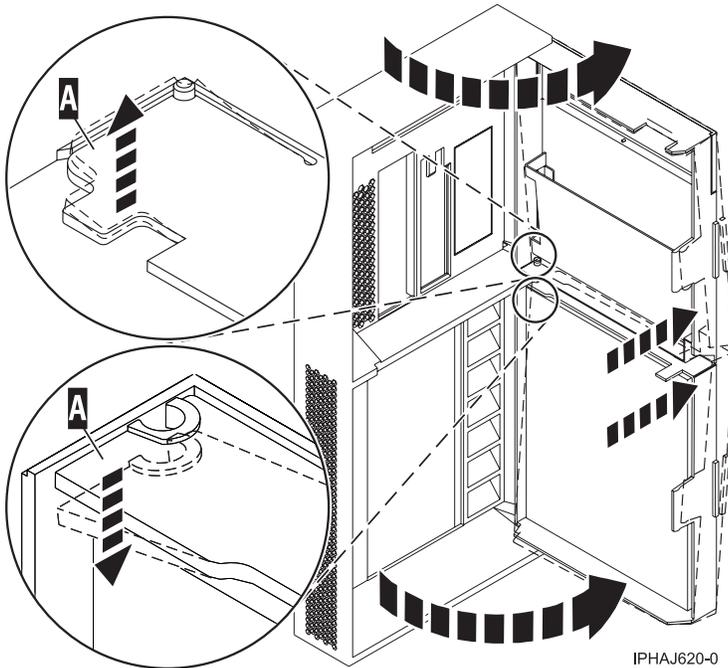


Figure 68. Removing the model 285 or 9131-52A door

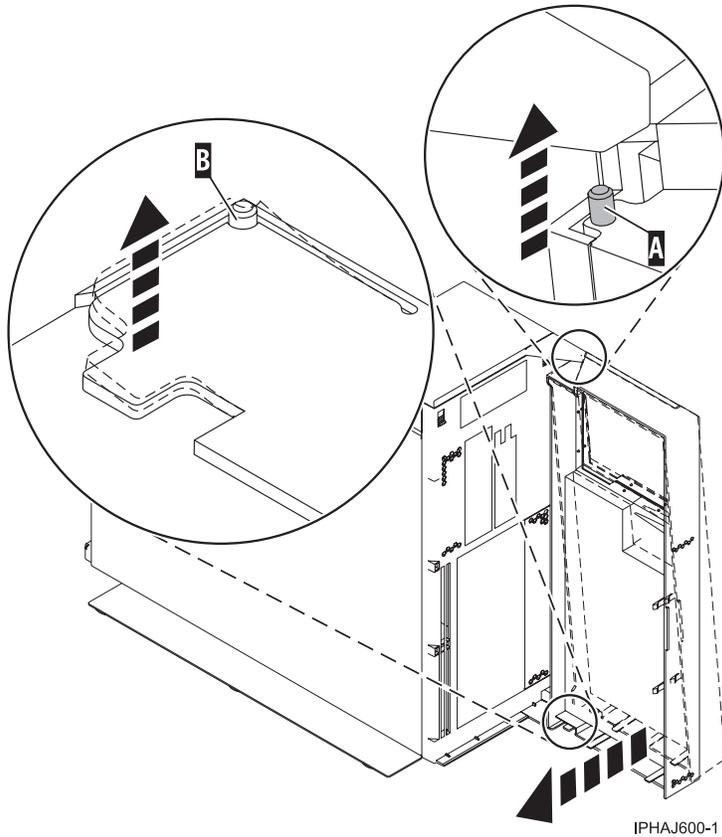
Install or replace the door on the model 285, 52x, 55x, or OpenPower 720

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 123

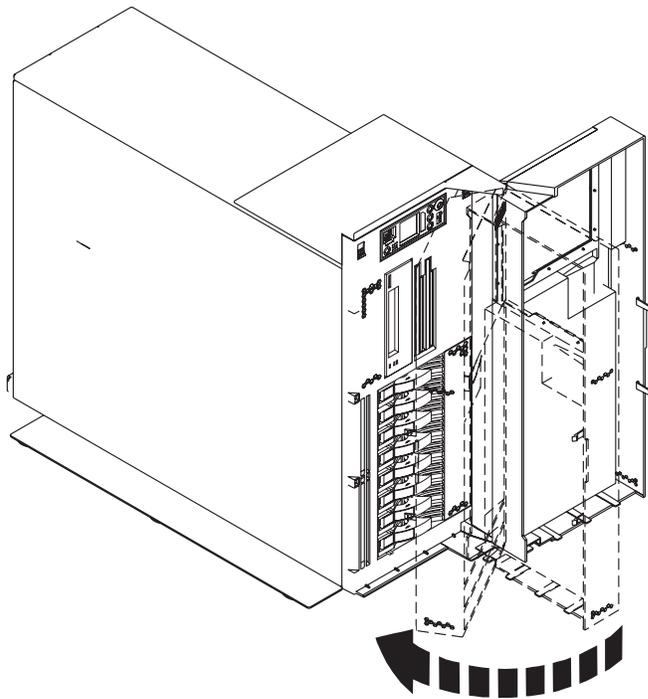
To install the model 52x, 55x, or OpenPower 720 front door, do the following:

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.



IPHAJ600-1

4. Close the door.



IPHAJ603-0

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**.

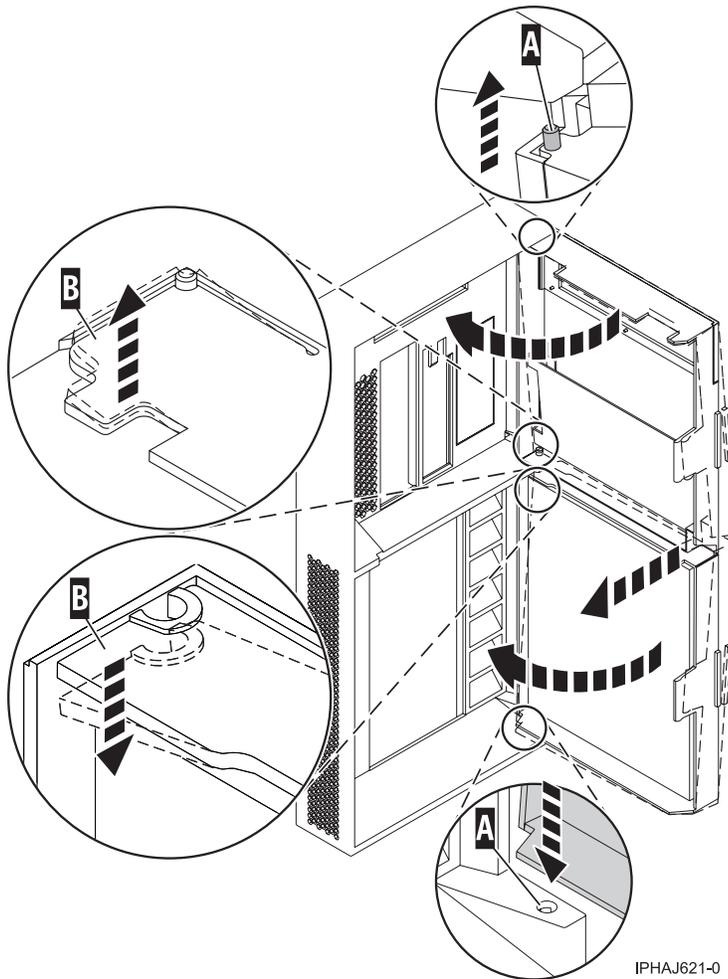


Figure 69. Installing the model 285 door

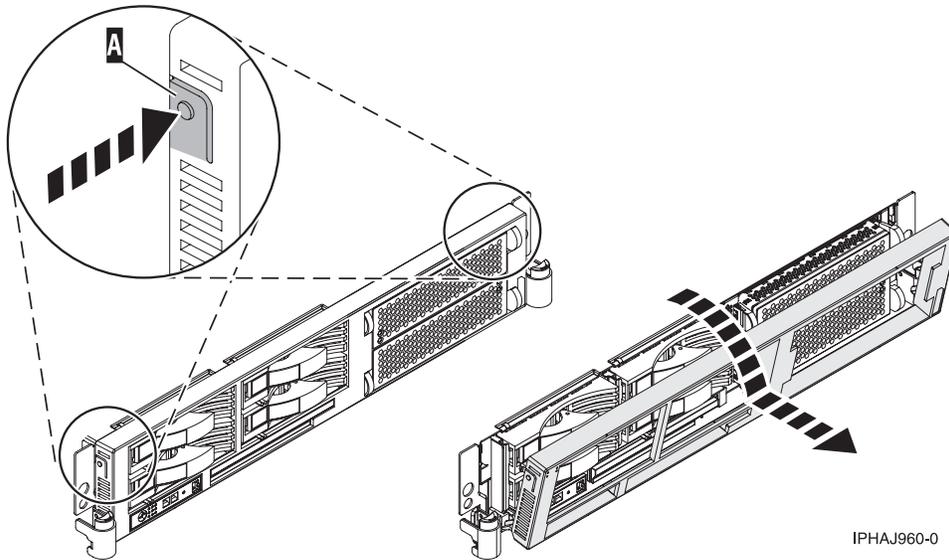
2. Rotate the door toward the system unit.
3. Press down on the back edge of the door, and seat the post **B** into its matching slot.
4. Close the door.

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.



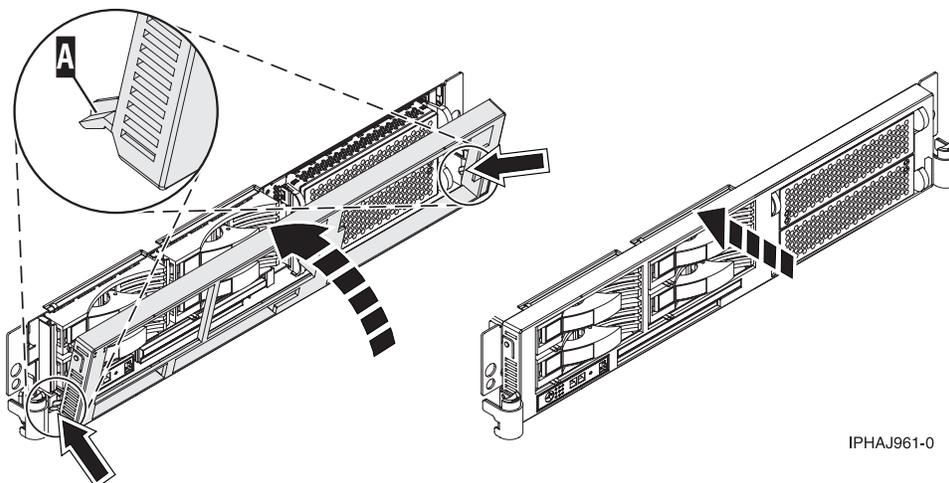
3. Pivot the cover from the bottom and swing the top of the cover out.
4. Pull the bottom of the cover up and then away from the system unit. This releases the two tabs located on the bottom of the cover.
5. Put the cover in a safe place.

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.

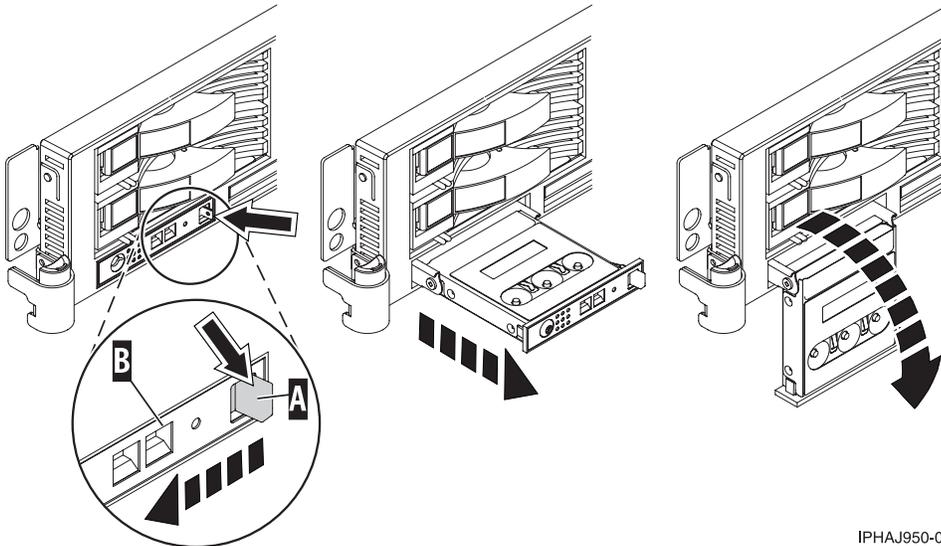
Gain access to the model 51x and OpenPower 710 control panels

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:

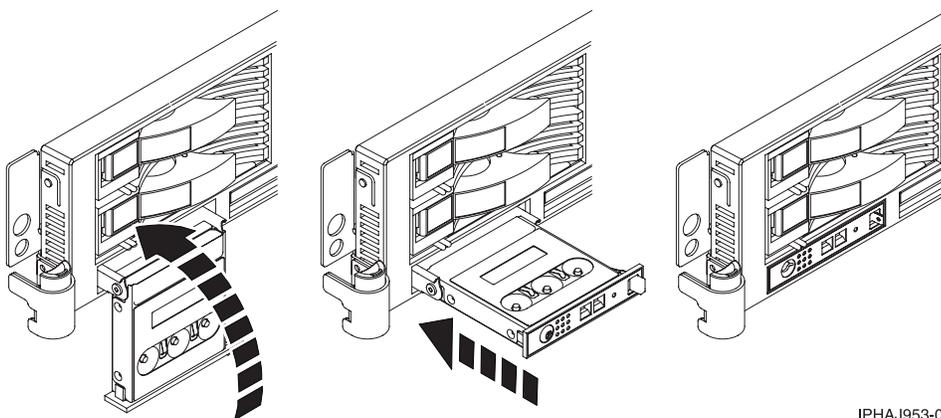
1. Press inward on the spring-loaded tab **A** located on the right side of the control panel **B** so that it pops out slightly, as shown in the following figure.



IPHAJ950-0

Figure 70. 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 71. Close the control panels

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 89.
2. "Remove and replace the model 7047-185 or 7037-A50 side cover" on page 118.
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.

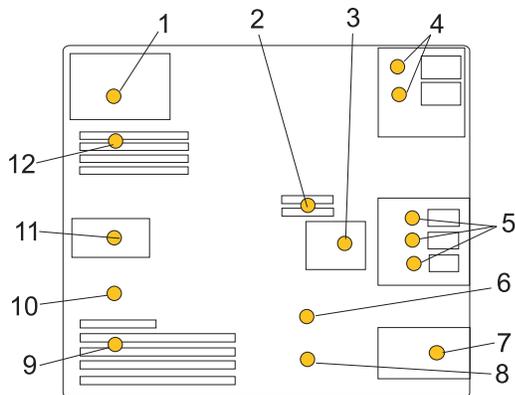


Figure 72. Light path diagnostic card indicator LED layout

Table 10. 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
5	Disk-drive bay fault-indicator LEDs	11	Rear fan 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.

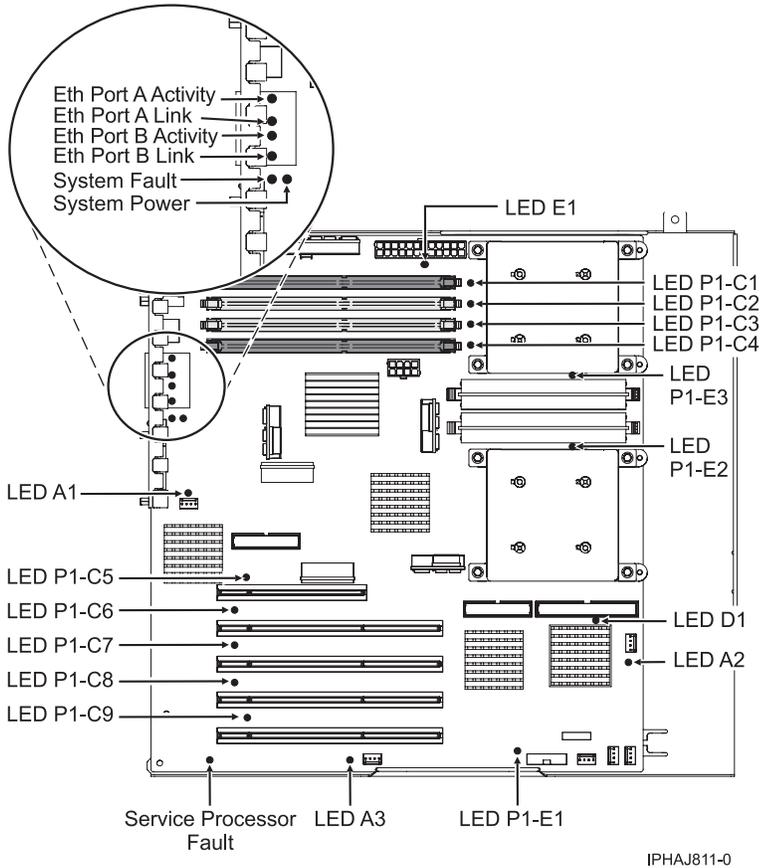


Figure 73. System backplane indicator LED layout

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*.

SMP processor cable connections

You might need to disconnect and reconnect this cable to add or remove memory or processors. Use the procedures in this section to accomplish these tasks.

This feature is initially installed by a service provider.

The following procedures describe how to disconnect and reconnect the SMP processor cable from individual model 570 system units.

Disconnect the SMP processor cable from a system unit

You might need to disconnect this cable to add or remove memory or processors. Use the procedure in this section to accomplish this task.

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.

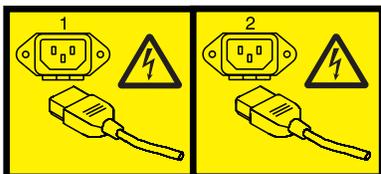
(D005)

To disconnect an SMP processor cable connection from a system unit, complete the following steps:

1. If necessary, open the front door of the rack.
2. Disconnect the power source from the system by unplugging the system.

Note: This system can 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



3. "Remove the front cover from the model 9116-561 or 570" on page 113.
4. Remove the left edge of the trim kit on the system rack to expose the left edge of the SMP processor cable.

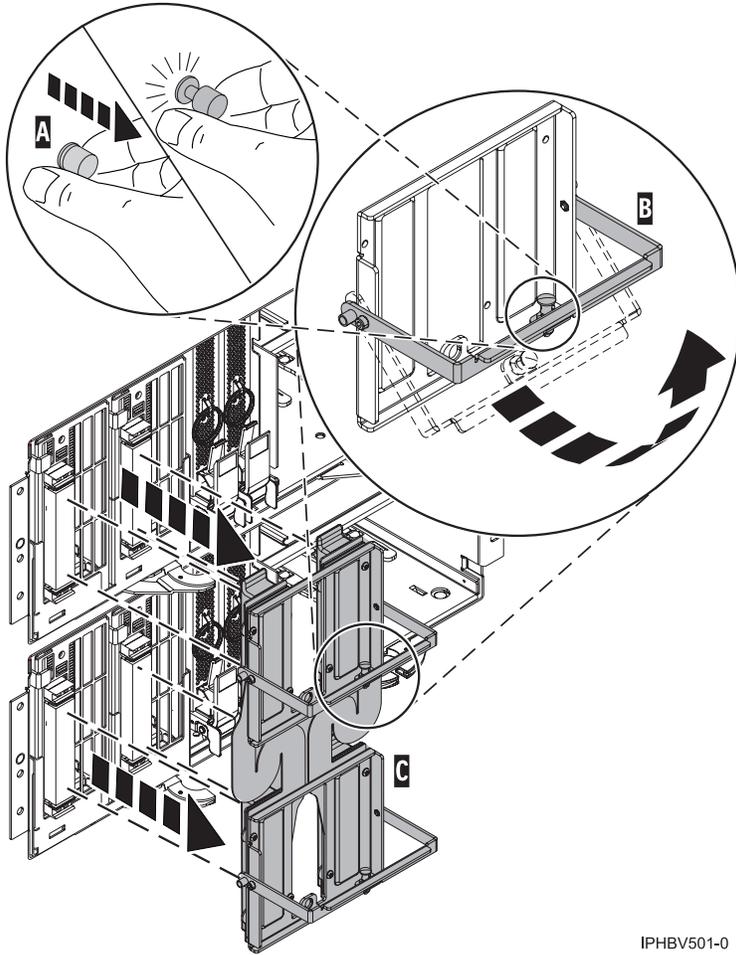
Attention:

Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.

When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

If you do not have a wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds.

5. Unlatch the plastic fastener **A**, as shown in the following figure.
6. Lift the latch handle **B** until the connector is unseated.



IPHBV501-0

7. Carefully pull the connector from the system.
8. When the guide pins are free, carefully pull the flexible cable C away from the system unit to gain access to the system unit.

Reconnect the SMP processor cable to a system unit

You might need to reconnect this cable after adding or removing memory or processors. Use the procedure in this section to accomplish this task.

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.

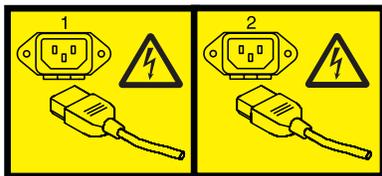
(D005)

To connect an SMP processor cable to a single system unit, complete the following steps:

1. Perform prerequisite tasks as described in “Before you begin” on page 75.
2. Stop all system units. Refer to “Stop the system or logical partition” on page 79.
3. If necessary, open the front rack door.
4. Disconnect the power source from the system by unplugging the system.

Note: This system can 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)



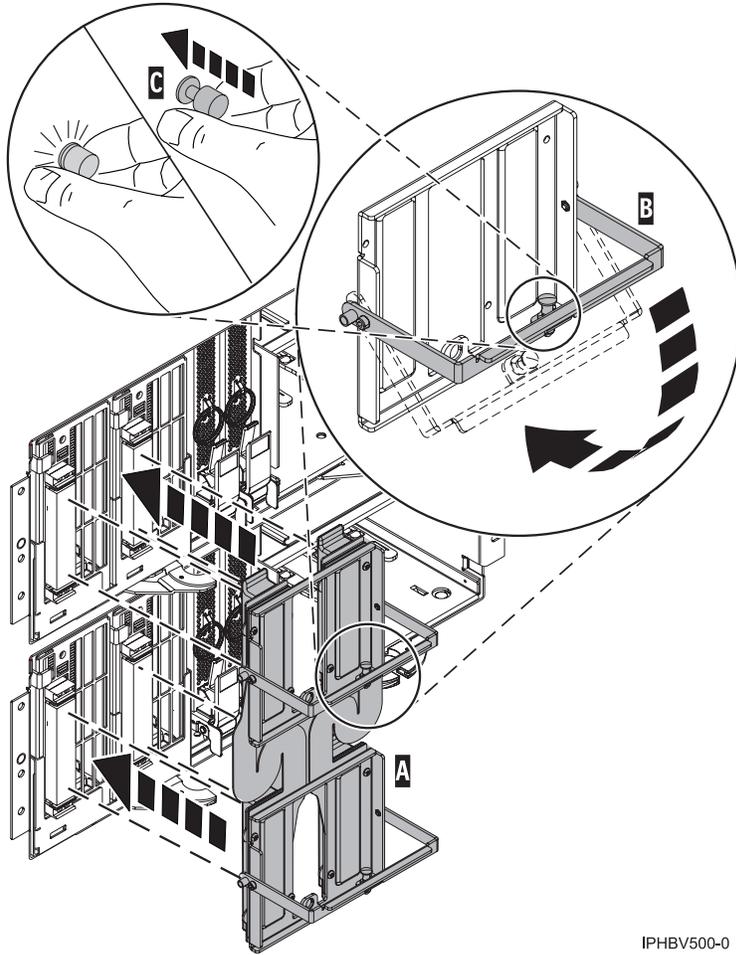
or



5. If necessary, remove the left edge of the trim kit on the system rack.

Attention:

- Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.
 - When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
 - If you do not have a wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds.
6. Lift the latch handle **B** to the open position, as shown in the following figure.



IPHBV500-0

7. Align the guide pins with the connector on the system unit.
8. Carefully push the connector **A** into the system unit connection.
9. Push the latch handle down to seat the pins.
10. Secure the plastic fastener **C**.
11. Replace the left edge of the trim kit.
12. "Install the front cover on the model 9116-561 or 570" on page 114.
13. Close the front rack 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 140.
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 140.

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 141
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 141
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 130.
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.

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.

Notices

This information was developed for products and services offered in the U.S.A.

The manufacturer may not offer the products, services, or features discussed in this document in other countries. Consult the manufacturer's representative for information on the products and services currently available in your area. Any reference to the manufacturer's product, program, or service is not intended to state or imply that only that product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any intellectual property right of the manufacturer may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any product, program, or service.

The manufacturer may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not give you any license to these patents. You can send license inquiries, in writing, to the manufacturer.

The following paragraph does not apply to the United Kingdom or any other country where such provisions are inconsistent with local law: THIS INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. The manufacturer may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

Any references in this information to Web sites not owned by the manufacturer are provided for convenience only and do not in any manner serve as an endorsement of those Web sites. The materials at those Web sites are not part of the materials for this product and use of those Web sites is at your own risk.

The manufacturer may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligation to you.

Any performance data contained herein was determined in a controlled environment. Therefore, the results obtained in other operating environments may vary significantly. Some measurements may have been made on development-level systems and there is no guarantee that these measurements will be the same on generally available systems. Furthermore, some measurements may have been estimated through extrapolation. Actual results may vary. Users of this document should verify the applicable data for their specific environment.

Information concerning products not produced by this manufacturer was obtained from the suppliers of those products, their published announcements or other publicly available sources. This manufacturer has not tested those products and cannot confirm the accuracy of performance, compatibility or any other claims related to products not produced by this manufacturer. Questions on the capabilities of products not produced by this manufacturer should be addressed to the suppliers of those products.

All statements regarding the manufacturer's future direction or intent are subject to change or withdrawal without notice, and represent goals and objectives only.

The manufacturer's prices shown are the manufacturer's suggested retail prices, are current and are subject to change without notice. Dealer prices may vary.

This information is for planning purposes only. The information herein is subject to change before the products described become available.

This information contains examples of data and reports used in daily business operations. To illustrate them as completely as possible, the examples include the names of individuals, companies, brands, and products. All of these names are fictitious and any similarity to the names and addresses used by an actual business enterprise is entirely coincidental.

If you are viewing this information in softcopy, the photographs and color illustrations may not appear.

The drawings and specifications contained herein shall not be reproduced in whole or in part without the written permission of the manufacturer.

The manufacturer has prepared this information for use with the specific machines indicated. The manufacturer makes no representations that it is suitable for any other purpose.

The manufacturer's computer systems contain mechanisms designed to reduce the possibility of undetected data corruption or loss. This risk, however, cannot be eliminated. Users who experience unplanned outages, system failures, power fluctuations or outages, or component failures must verify the accuracy of operations performed and data saved or transmitted by the system at or near the time of the outage or failure. In addition, users must establish procedures to ensure that there is independent data verification before relying on such data in sensitive or critical operations. Users should periodically check the manufacturer's support websites for updated information and fixes applicable to the system and related software.

Trademarks

The following terms are trademarks of International Business Machines Corporation in the United States, other countries, or both:

AIX
i5/OS
OpenPower
IBM
IntelliStation
iSeries
POWER
pSeries
xSeries
System i
System i5
System p
System p5

Linux is a registered trademark of Linus Torvalds in the United States, other countries, or both.

Other company, product or service names may be trademarks or service marks of others.

Electronic emission notices

Class A Notices

The following Class A statements apply to the IBM System i models and IBM System p servers with the exception of those that are specifically identified as Class B.

Federal Communications Commission (FCC) statement

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

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. 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

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

VCCI Statement - Japan

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラスA情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

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

This product is a Class A Information Technology Equipment and conforms to the standards set by the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

Electromagnetic Interference (EMI) Statement - People's Republic of China

声 明

此为A级产品，在生活环境中，该产品可能会造成无线电干扰。在这种情况下，可能需要用户对其干扰采取切实可行的措施。

Declaration: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may need to perform practical action.

Electromagnetic Interference (EMI) Statement - Taiwan

警告使用者：

這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

The following is a summary of the EMI Taiwan statement above.

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

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

Electromagnetic Interference (EMI) Statement - Korea

이 기기는 업무용으로 전자파적합등록을 한 기기이오니 판매자 또는 사용자는 이점을 주의하시기 바라며, 만약 잘못 판매 또는 구입하였을 때에는 가정용으로 교환하시기 바랍니다.

Please note that this equipment has obtained EMC registration for commercial use. In the event that it has been mistakenly sold or purchased, please exchange it for equipment certified for home use.

Germany Compliance Statement

Deutschsprachiger EU Hinweis: Hinweis für Geräte der Klasse A EU-Richtlinie zur Elektromagnetischen Verträglichkeit

Dieses Produkt entspricht den Schutzanforderungen der EU-Richtlinie 2004/108/EG zur Angleichung der Rechtsvorschriften über die elektromagnetische Verträglichkeit in den EU-Mitgliedsstaaten und hält die Grenzwerte der EN 55022 Klasse A ein.

Um dieses sicherzustellen, sind die Geräte wie in den Handbüchern beschrieben zu installieren und zu betreiben. Des Weiteren dürfen auch nur von der IBM empfohlene Kabel angeschlossen werden. IBM übernimmt keine Verantwortung für die Einhaltung der Schutzanforderungen, wenn das Produkt ohne Zustimmung der IBM verändert bzw. wenn Erweiterungskomponenten von Fremdherstellern ohne Empfehlung der IBM gesteckt/eingebaut werden.

EN 55022 Klasse A Geräte müssen mit folgendem Warnhinweis versehen werden:

"Warnung: Dieses ist eine Einrichtung der Klasse A. Diese Einrichtung kann im Wohnbereich Funk-Störungen verursachen; in diesem Fall kann vom Betreiber verlangt werden, angemessene Maßnahmen zu ergreifen und dafür aufzukommen."

Deutschland: Einhaltung des Gesetzes über die elektromagnetische Verträglichkeit von Geräten

Dieses Produkt entspricht dem "Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG)". Dies ist die Umsetzung der EU-Richtlinie 2004/108/EG in der Bundesrepublik Deutschland.

Zulassungsbescheinigung laut dem Deutschen Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG) (bzw. der EMC EG Richtlinie 2004/108/EG) für Geräte der Klasse A.

Dieses Gerät ist berechtigt, in Übereinstimmung mit dem Deutschen EMVG das EG-Konformitätszeichen - CE - zu führen.

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.

Electromagnetic Interference (EMI) Statement - Russia

ВНИМАНИЕ! Настоящее изделие относится к классу А.
В жилых помещениях оно может создавать радиопомехи, для снижения которых необходимы дополнительные меры

Class B Notices

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

Note: This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

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

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

European Community Compliance Statement

This product is in conformity with the protection requirements of EC 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 B Information Technology Equipment according to CISPR 22 / European Standard EN 55022. The limits for Class B equipment were derived for typical residential environments to provide reasonable protection against interference with licensed communication devices.

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

VCCI Statement - Japan

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラスB情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。
取扱説明書に従って正しい取り扱いをして下さい。

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

This is a Class B product based on the standard of the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance may arise. When such trouble occurs, the user may be required to take corrective actions.

IBM Taiwan Product Service 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

Electromagnetic Interference (EMI) Statement - Korea

이 기기는 가정용으로 전자파적합등록을 한 기기로서 주거 지역에서는 물론 모든 지역에서 사용할 수 있습니다.

Radio Protection for Germany

Deutschsprachiger EU Hinweis: Hinweis für Geräte der Klasse B EU-Richtlinie zur Elektromagnetischen Verträglichkeit

Dieses Produkt entspricht den Schutzanforderungen der EU-Richtlinie 2004/108/EG zur Angleichung der Rechtsvorschriften über die elektromagnetische Verträglichkeit in den EU-Mitgliedsstaaten und hält die Grenzwerte der EN 55022 Klasse B ein.

Um dieses sicherzustellen, sind die Geräte wie in den Handbüchern beschrieben zu installieren und zu betreiben. Des Weiteren dürfen auch nur von der IBM empfohlene Kabel angeschlossen werden. IBM übernimmt keine Verantwortung für die Einhaltung der Schutzanforderungen, wenn das Produkt ohne Zustimmung der IBM verändert bzw. wenn Erweiterungskomponenten von Fremdherstellern ohne Empfehlung der IBM gesteckt/eingebaut werden.

Deutschland: Einhaltung des Gesetzes über die elektromagnetische Verträglichkeit von Geräten

Dieses Produkt entspricht dem "Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG)". Dies ist die Umsetzung der EU-Richtlinie 2004/108/EG in der Bundesrepublik Deutschland.

Zulassungsbescheinigung laut dem Deutschen Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG) (bzw. der EMC EG Richtlinie 2004/108/EG) für Geräte der Klasse B.

Dieses Gerät ist berechtigt, in Übereinstimmung mit dem Deutschen EMVG das EG-Konformitätszeichen - CE - zu führen.

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 B.

Terms and conditions

Permissions for the use of these publications is granted subject to the following terms and conditions.

Personal Use: You may reproduce these publications for your personal, noncommercial use provided that all proprietary notices are preserved. You may not distribute, display or make derivative works of these publications, or any portion thereof, without the express consent of the manufacturer.

Commercial Use: You may reproduce, distribute and display these publications solely within your enterprise provided that all proprietary notices are preserved. You may not make derivative works of these publications, or reproduce, distribute or display these publications or any portion thereof outside your enterprise, without the express consent of the manufacturer.

Except as expressly granted in this permission, no other permissions, licenses or rights are granted, either express or implied, to the publications or any data, software or other intellectual property contained therein.

The manufacturer reserves the right to withdraw the permissions granted herein whenever, in its discretion, the use of the publications is detrimental to its interest or, as determined by the manufacturer, the above instructions are not being properly followed.

You may not download, export or re-export this information except in full compliance with all applicable laws and regulations, including all United States export laws and regulations.

THE MANUFACTURER MAKES NO GUARANTEE ABOUT THE CONTENT OF THESE PUBLICATIONS. THESE PUBLICATIONS ARE PROVIDED "AS-IS" AND WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY, NON-INFRINGEMENT, AND FITNESS FOR A PARTICULAR PURPOSE.



Printed in USA