IBM

iSeries

PCI Card

Version 5

IBM

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What's new as of January 2007: If you are installing 5582, go to "Type 574F, auxiliary-write cache IOA (FC 5582)" on page 85 for more information.

What's new as of October 2004: Information about the Integrated xSeries® Adapter can now be found in a separate procedure, Integrated xSeries Adapter.

If you are installing 5580 or 5581, go to Type 5708, auxiliary-write cache IOA for more information.

Replacing and installing PCI cards are customer tasks. However, these tasks should be performed by an experienced user who understands industry terminology and who has system experience. When you use these instructions, you will perform some or all of the following tasks:
* Perform prerequisite tasks.
* Power down the system unit.
* Remove the system unit covers.
* Remove hardware.
* Install new hardware.
* Install covers.
* IPL your operating system.
* Verify your new hardware configuration.

You may need to allow additional time to complete your jobs, back up your system, IPL your system, and verify your hardware configuration.

You can choose to perform these tasks yourself or contact IBM or an authorized service provider to make arrangements for them to perform the tasks for a fee. Should you encounter difficulties when performing a task, contact your authorized dealer or service provider.

Select the instructions for the task you want to perform:
* "Move a card in your iSeries" on page 43
* "Replace a PCI card" on page 2
* "Install your new PCI card" on page 15

Before you begin

Before you begin a replacement or installation task, follow these steps:
__ 1. **For an installation and if possible, for a replacement, ensure that you have a current backup of your system (including operating system, licensed programs, and data).** If you have backed up the operating system and licensed programs since the last time you applied PTFs, that backup is acceptable.
__ 2. Ensure that you take a few minutes to become familiar with these instructions.
__ 3. Ensure that you have access to a medium flat-bladed screwdriver.
__ 4. If there are incorrect, missing, or visibly damaged parts, contact one of the following:
    * Your authorized service provider
    * In the United States: 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 numbers:

  `http://www.ibm.com/planetwide`

__ 5. If you are installing new hardware in logical partitions, you need to plan and understand the requirements to be successful. Go to Logical partitions in the *Information Center*. Then return to these instructions.

__ 6. If you encounter difficulties during the procedure, contact your authorized service provider or your authorized dealer.

__ 7. Determine if there are any existing PTF prerequisites before you install your new feature. Go to the following Web site:

  `http://www-912.ibm.com/s_dir/slkbase.NSF/slkbase`

  a. Select **All Documents**.
  b. Select **General Information**.
  c. Select **Offerings**.
  d. Select **Feature Prerequisites**.
  e. Select **Customer Installation Features Prerequisites**.
  f. Locate your feature number and OS/400® release, and check the prerequisites.
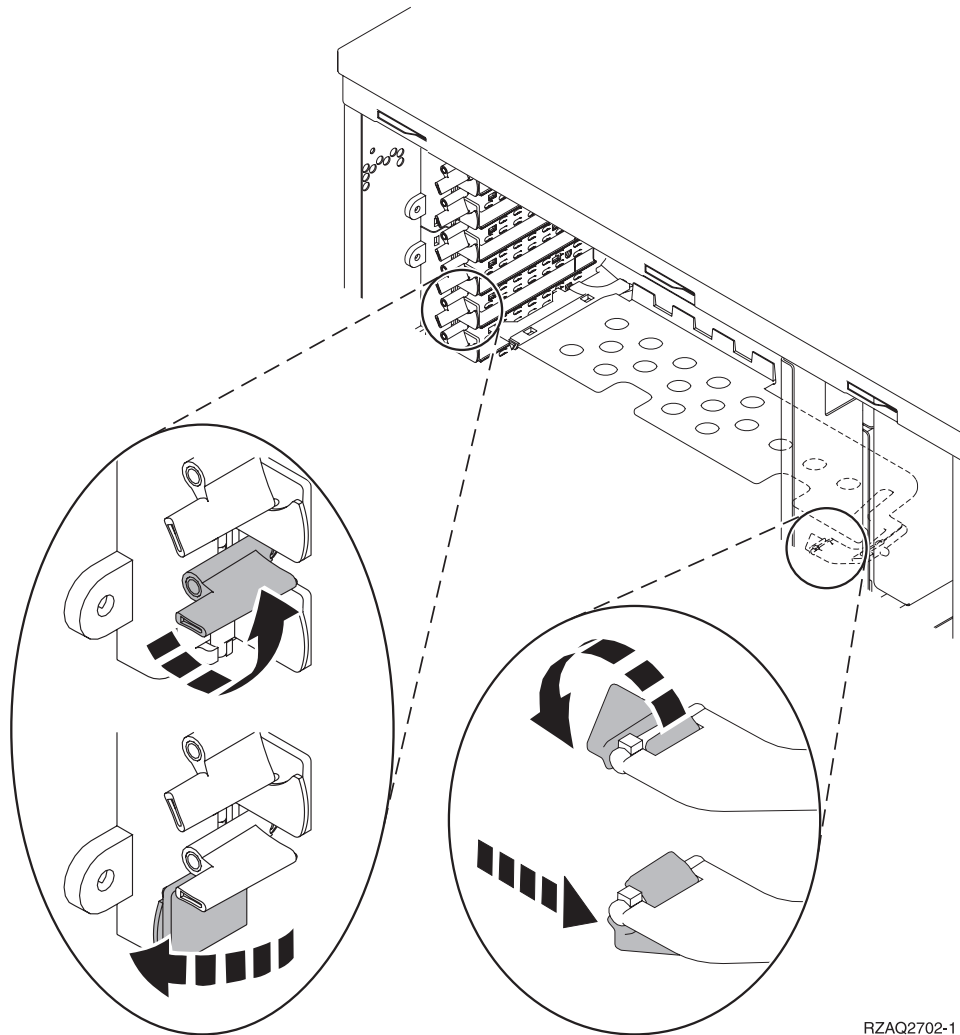
Replace a PCI card

To replace a PCI card, follow these steps:

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

__ 1. Perform prerequisite tasks as described in "Before you begin" on page 1.

__ 2. Remove or open the back cover and if necessary, the side cover of the system unit or expansion unit where you will replace the PCI card. Refer to "Remove the covers" on page 75 for more information.

__ 3. Locate the PCI card to be replaced.

__ 4. Either latches or screws secure the card in place.

Does the PCI card have latches?

__ **Yes**: Your system can either be powered off (non-concurrent) or powered on (concurrent) when you replace the PCI card. Select the preferred procedure from the following:
  - "Replace the PCI card with system powered on" on page 4
  - "Replace the PCI card with system powered off" on page 8

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__   **No**: The card is secured with screws.

   __ a. To replace a PCI card, your system must be powered off.

   __ b. Go to "Replace the PCI card with system powered off" on page 8.

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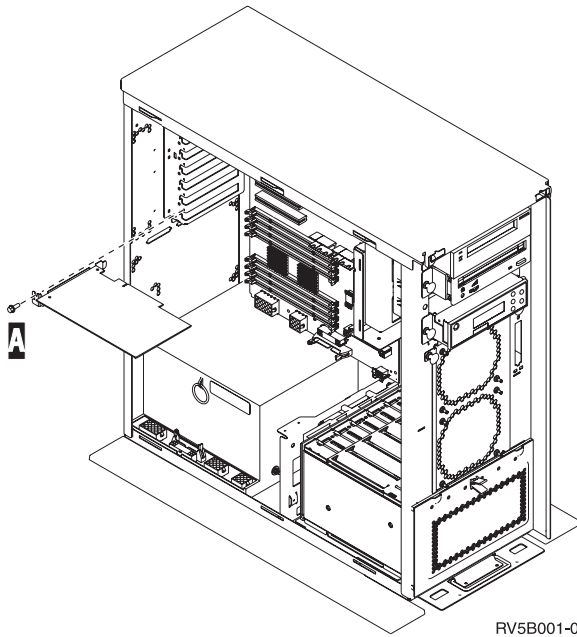
Replace the PCI card with system powered on

Be sure you understand the steps in this procedure before you begin. If you do not feel comfortable using the concurrent procedure, go to "Replace the PCI card with system powered off" on page 8.

To replace the PCI card, follow these steps:

__ 1. Type **strsst** on the command line of the *Main Menu* and press Enter.

__ 2. Type **your service tools user ID and service tools password** on the *System Service Tools (SST) Sign On* display and press Enter.

__ 3. Select **Start a service tool** from the *System Service Tools (SST)* display and press Enter.

__ 4. Select **Hardware service manager** from the *Start a Service Tool* display and press Enter.

__ 5. Select **Packaging hardware resources (system, frames, cards...)** from the *Hardware Service Manager* display and press Enter.

__ 6. Type **9** on the *System Unit* or *Expansion Unit* line of the unit where you are replacing the card and press Enter.

__ 7. Select **Include empty positions**.

__ 8. **If possible, use a wrist strap to prevent electrostatic discharge from damaging your hardware.** If you do not have a wrist strap, touch a metal surface of the system or expansion unit before installing or replacing hardware.

   If you received the 2209 Disposable Wrist Strap, follow these steps:

   __ a. Attach the disposable wrist strap. ⬜ View video.

   __ b. When you unroll the strap, remove the liner from the copper foil at the end.

   __ c. Attach the adhesive part of the copper foil to an **exposed, unpainted** metal surface on the frame of the unit.

   Note: Follow the same precautions you would use without the wrist strap. The 2209 Disposable Wrist Strap is for static control. It will not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

__ 9. Select **Concurrent Maintenance** on the card position where you want to replace the card. Press Enter.

__ 10. Select **Toggle LED blink off/on**. A light-emitting diode (LED) blinks identifying the position you chose.

__ 11. Select **Toggle LED blink off/on** again to stop the blinking LED.

> **Note:** For a double-wide adapter, there is only one power LED visible for both slots.

__ 12. Select the **Power off domain** option on the *Hardware Resource Concurrent Maintenance* display and press Enter.

__ 13. When the `Power off complete` message shows on the *Hardware Resource Concurrent Maintenance* display, disconnect all cables attached to the adapter that you plan to remove.

__ 14. Open the latch at the card position where you plan to replace the card. Move the latch counterclockwise and then swing the latch out.
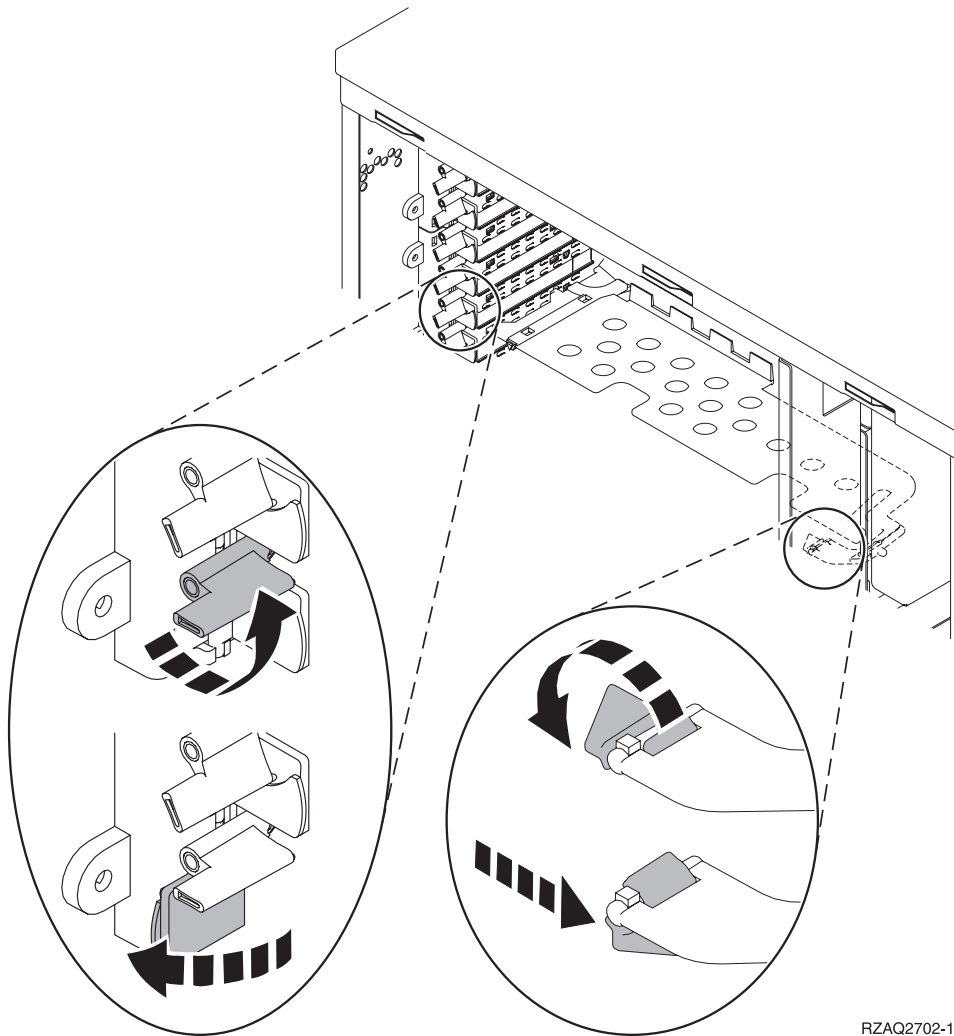
RZAQ2702-1

Figure 1. Example of 270, 800, 810, 820, 5075 Card Latch
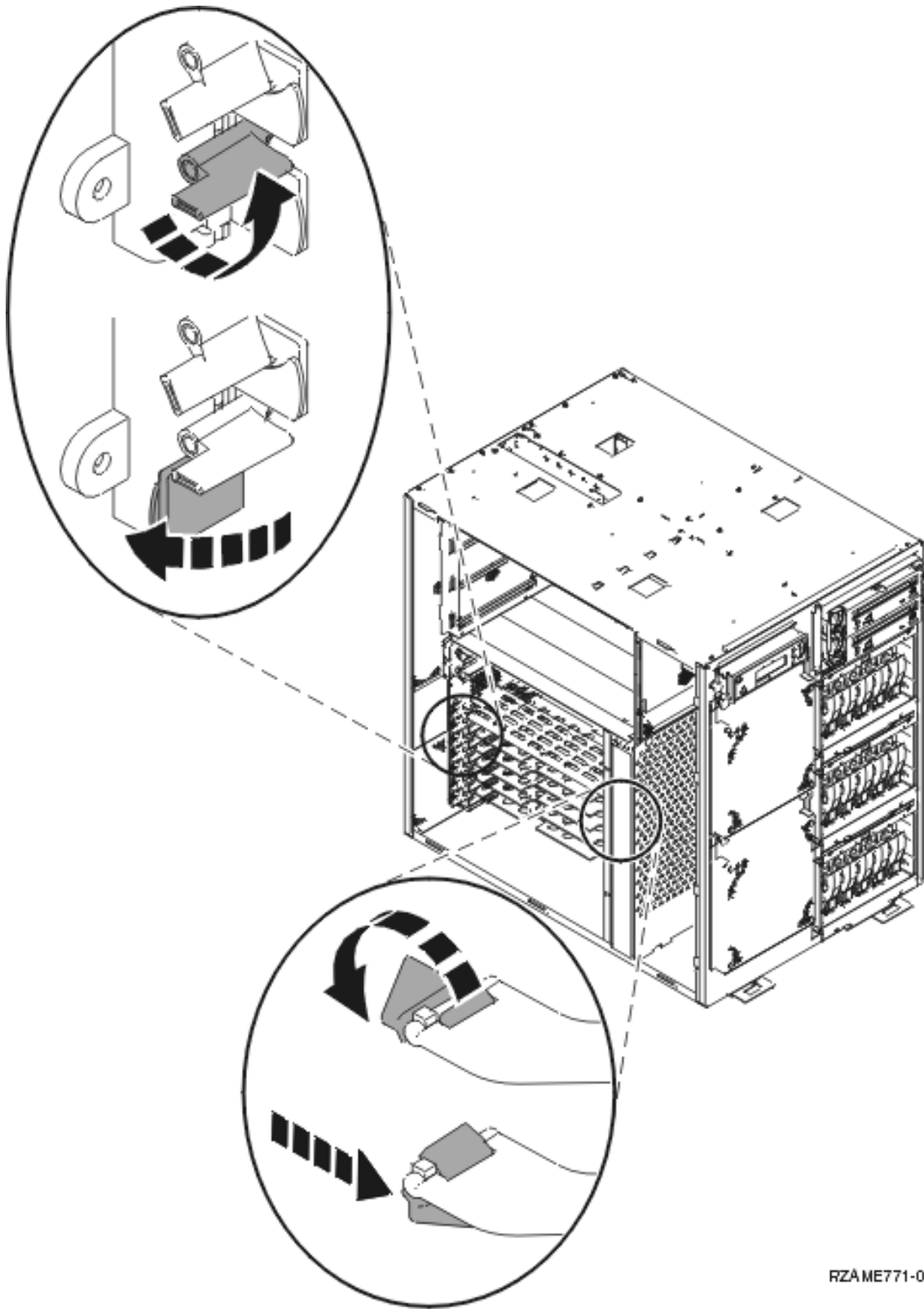
Figure 2. Example of 825 Card Latch

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Figure 3. Example of 830, 840, SB2, SB3, 5079 Card Latches

__ 15. Remove the card and place it in a protective package.

__ 16. Remove the new adapter card from the package.

Attention: Adapter cards are fragile:

- Handle only by the edges.
- Keep fingers off printed circuit area.
- Use static strap when handling.
- Leave in protective packaging until ready to install.

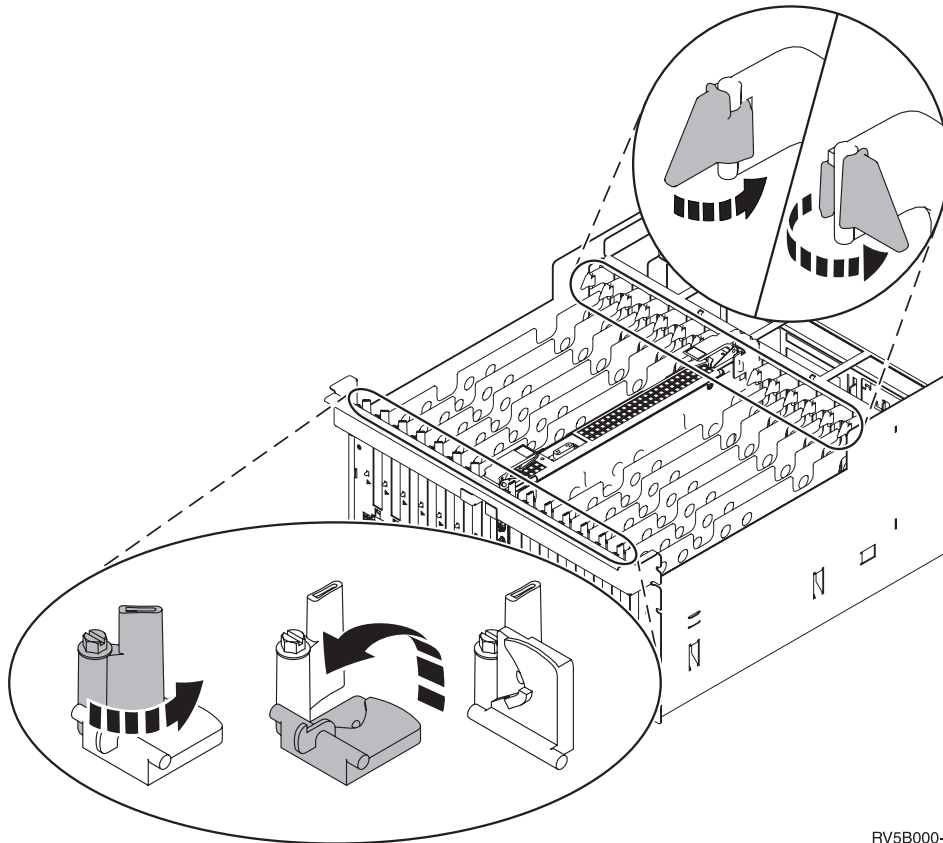__ 17. Align the adapter card with the card connector inside the system unit or expansion unit and push until it is connected securely. ⬚ View video.

__ 18. Swing the latch in and move the latch clockwise to secure the card.

__ 19. **DANGER**

> **To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)**

Connect any cables and label the cables with the card slot position.

__ 20. Select **Power on domain** on the *Hardware Resource Concurrent Maintenance* display. Press Enter.

__ 21. Select **Assign to** on the resource with the asterisk (*) on the *Work with Controlling Resource* display. Press Enter.

__ 22. Wait for the *Hardware Resource Concurrent Maintenance* display to appear with the message indicating Power on complete.

__ 23. Install the unit covers.

__ 24. Did you replace a 289x or 4810 IXS card?

__ **No**: Follow these steps:

    __ a. Sign on the system unit. Ensure that you have service tools authority.

    __ b. Type **strsst** on the command line and press Enter.

    __ c. Type **your service tools user ID and service tools password** on the *Start Service Tools (STRSST) Sign On* display and press Enter.

    __ d. Select **Start a service tool** from the *Start a Service Tools* display and press Enter.

    __ e. Select **Hardware service manager** from the display and press Enter.

    __ f. Select **Packaging hardware resources (system, frames, cards...)** from the display and press Enter.

    __ g. Type **9** on the *System Unit or Expansion Unit* line.

    __ h. Press Page Down if needed and look at the *Card Pos* column for the adapter card you just installed.

    __ i. Did you find the card you just replaced?

        __ **Yes**: Go to step 26.

        __ **No**: Return to step 1 on page 4 and verify the replacement procedure steps.

__ **Yes**: Follow these steps:

    __ a. If you replaced a 289x or 4810 IXS card, it is recommended that you perform a verification test.

    __ b. Sign on the system unit. Ensure that you have service tools authority.

    __ c. Type **strsst** on the command line and press Enter.

    __ d. Type **your service tools user ID and service tools password** on the *System Service Tools (SST) Sign On* display and press Enter.

    __ e. Select **Start a service tool** from the *Start a Service Tools* display and press Enter.

    __ f. Select **Hardware service manager** from the display and press Enter.

    __ g. Select **Packaging hardware resources (system, frames, cards...)** from the display and press Enter.

    __ h. Type **9** on the *System Unit or Expansion Unit* line.

    __ i. Press Page Down if needed and look at the *Card Pos* column for the card you just installed.

        __ 1) Select **Associated Logical Resources** on the line next to the 289x or 4810 that was just installed.

        __ 2) Select **Verify** on the line next to the 289x or 4810 card.

        __ 3) Press Enter at the *Verification Test* display.

        __ 4) Select **Processor Internal Test** and wait for it to complete.

        __ 5) Select **Hardware Memory Test** and wait for it to complete.

        __ 6) Press Enter at the *Number of Test Runs* display.

            Note: If the test fails, make sure that you have installed the card properly. If the test continues to fail, contact your authorized dealer or service provider.

        __ 7) When the test is complete, the message `This test is successful` appears on the *Verification Test Results* display.

        __ 8) Press Enter twice.

__ 25. Press F3 three times and press Enter to get back to the *Main Menu*.

__ 26. The replacement procedure is complete.

Replace the PCI card with system powered off

To replace the PCI card, follow these steps:

__ 1. If an Integrated xSeries Adapter (IXA) is present on they system, shut it down using the OS/400 options.

__ 2. Ensure that all jobs are complete.

__ 3. When all jobs are complete, type **pwrdwnsys *immed** on an OS/400 command line and press Enter.

__ 4. When the power down is complete, unplug any power cords, such as printers and displays, from electrical outlets.

__ 5. Unplug the system or expansion unit power cord from the electrical outlet.

__ 6. **If possible, use a wrist strap to prevent electrostatic discharge from damaging your hardware.** If you do not have a wrist strap, touch a metal surface of the system or expansion unit before installing or replacing hardware.

If you received the 2209 Disposable Wrist Strap, follow these steps:

    __ a. Attach the disposable wrist strap. View video.

    __ b. When you unroll the strap, remove the liner from the copper foil at the end.

   __ c. Attach the adhesive part of the copper foil to an **exposed, unpainted** metal surface on the frame of the unit.

    Note: Follow the same precautions you would use without the wrist strap. The 2209 Disposable Wrist Strap is for static control. It will not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

__ 7. Does your unit have screws to secure the cards?
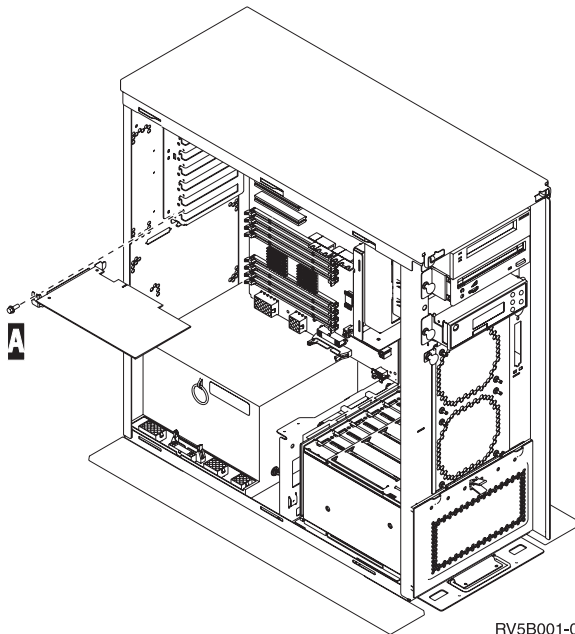
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    __ **No**: Continue with the next step.

    __ **Yes**: Do the following:

        __ a. Remove the screw from the card position where you plan to remove the card.

        __ b. Go to step 9 on page 12.

__ 8. Open the latch at the card position where you plan to remove the card. Move the latch counterclockwise and then swing the latch out.
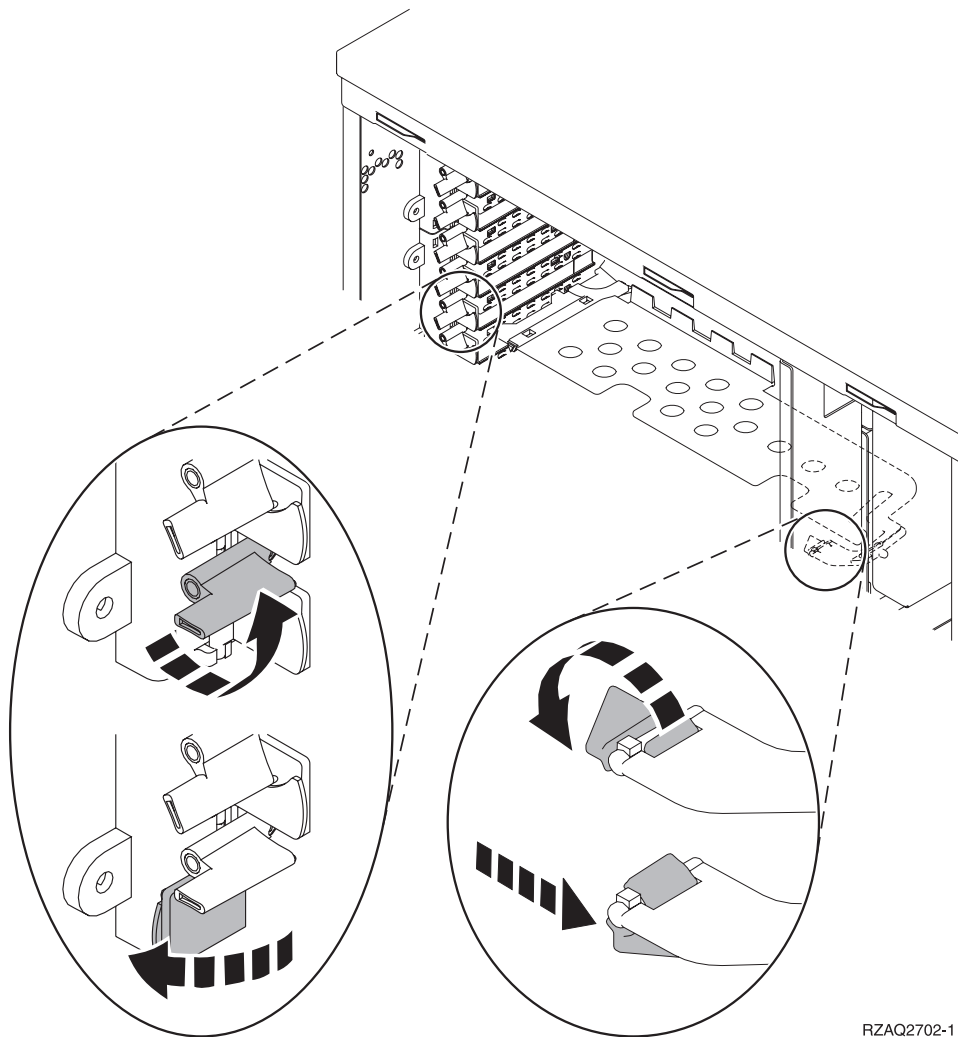
Figure 4. Example of 270, 800, 810, 820, 5075 Card Latch
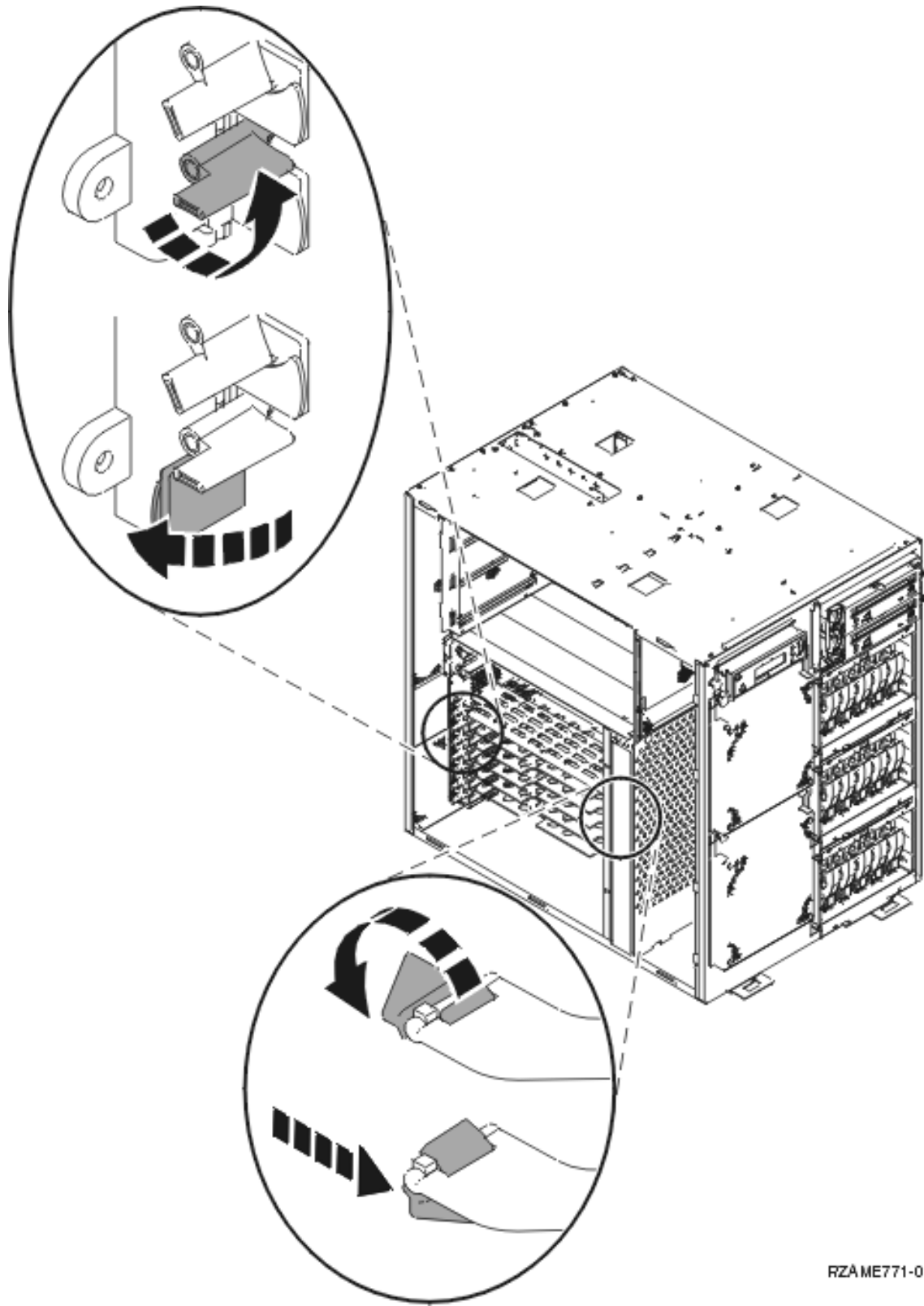
Figure 5. Example of 825 Card Latch

RZAME771-0
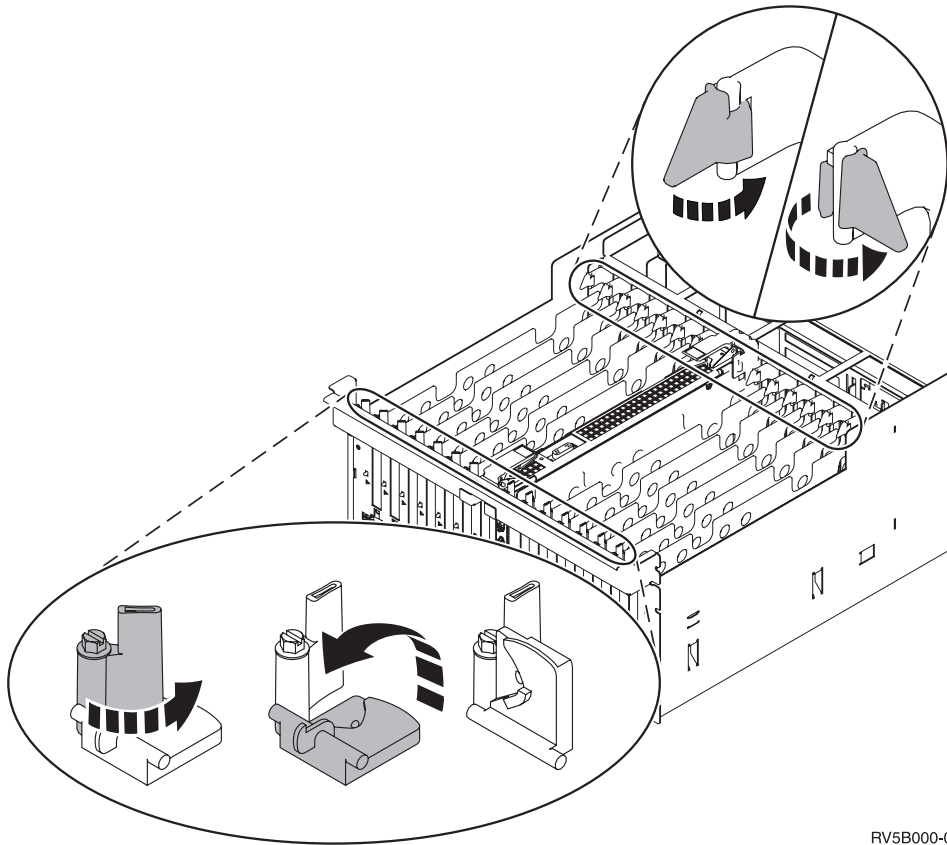
RV5B000-0

Figure 6. Example of 830, 840, 870, 890, SB2, SB3, 5079 Card Latches

__ 9. Remove the card and place it in a protective package.

__ 10. Remove the new adapter card from the package.

Attention: Adapter cards are fragile:

- Handle only by the edges.
- Keep fingers off printed circuit area.
- Use static strap when handling.
- Leave in protective packaging until ready to install.

__ 11. Align the adapter card with the card holders inside the system unit and push until it is connected securely.

__ 12. Swing the latch in and move the other latch clockwise or install the screw to secure the card.

__ 13. **DANGER**

> **To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)**

Connect any cables and label the cables with the card position.

__ 14. When you are finished, remove the wrist strap.

__ 15. Install the unit covers.

__ 16. **DANGER**

> **An electrical outlet that is not correctly wired could place hazardous voltage on metal parts of the system or the products that attach to the system. It is the customer's responsibility to ensure that the outlet is correctly wired and grounded to prevent an electrical shock. (RSFTD201)**

Plug in the system unit and system unit console into an electrical outlet. Plug in everything you previously unplugged such as printers and displays.

__ 17. Is your system unit a 270, 800, 810 or 820, 825, 830, 840, 870, 890?

__ **270, 800, or 810**: Continue with the next step.

__ **820, 825, 830, 840, 870, 890**: Go to step 20.

__ 18. Look at the Function/Data display on the control panel.

__ 19. Does **01 B V=S** appear in the Function/Data display with IPL mode Normal (OK) selected?

__ **Yes**: Go to step 22 on page 14.

__ **No**: Do the following:

__ a. Press the Mode Select button until the Manual mode indicator (a small hand) lights up.

__ b. Press the Increment/Decrement push button until **02** appears in the Function/Data display.

__ c. Press the Enter push button on the control panel.

__ d. Press the Increment/Decrement push button until **B** appears in the Function/Data display.

__ e. Press the Enter push button on the control panel.

__ f. Press the Increment/Decrement push button until **S** appears in the Function/Data display

__ g. Press the Enter push button on the control panel.

__ h. Press the Mode Select button until the Normal indicator (**OK**) lights up.

__ i. Press the Increment/Decrement push button until **01** appears in the Function/Data display.

__ j. Press the Enter push button on the control panel.

01 B S should appear in the Function/Display display. If it does not appear, repeat steps 19a through 19j. If it does, continue to the next step.

__ 20. Look at the Function/Data display on the control panel.

__ 21. Does **01 B V=S** appear in the Function/Data display?

__ **Yes**: Continue with the next step.

__ **No**: Do the following:

__ a. Press the Increment/Decrement push button until **02** appears in the Function/Data display.

__ b. Press the Enter push button on the control panel.

__ c. Press the Increment/Decrement push button until **B** appears in the Function/Data display.

__ d. Press the Enter push button on the control panel.

__ e. Press the Increment/Decrement push button until **S** appears in the Function/Data display

__ f. Press the Enter push button on the control panel.

__ g. Press the Increment/Decrement push button until **01** appears in the Function/Data display.

__ h. Press the Enter push button on the control panel.

01 B S should appear in the Function/Display panel. If it does appear, not repeat steps 21a on page 13 through 21h on page 13.

   __ i. Go to step 22.

__ 22. Press the Power push button that is located on the control panel. There is approximately a 10-second delay before the power-on light comes on, and data appears in the Function/Data display.

    Note: The system takes approximately 5 to 20 minutes to power on and complete an IPL. When the IPL is complete, **01 B N S** appears in the Function/Data display.

__ 23. Did you replace a 289x or 4810 IXS card?

   __   **No**: Follow these steps:

      __ a. Sign on the system unit. Ensure that you have service tools authority.

      __ b. Type **strsst** on the command line and press Enter.

      __ c. Type **your service tools user ID and service tools password** on the *System Service Tools (SST) Sign On* display and press Enter.

      __ d. Select **Start a service tool** from the *Start a Service Tools* display and press Enter.

      __ e. Select **Hardware service manager** from the display and press Enter.

      __ f. Select **Packaging hardware resources (system, frames, cards...)** from the display and press Enter.

      __ g. Type **9** on the *System Unit or Expansion Unit* line.

      __ h. Press Page Down if needed and look at the *Card Pos* column for the adapter card you just replaced.

      __ i. Did you find the card you just replaced?

         __   **Yes**: Go to step 25 on page 15.

         __   **No**: Return to step 2 on page 9 and verify the replacement procedure steps.

   __   **Yes**: Follow these steps:

      __ a. If you replaced a 289x or 4810 IXS card, it is recommended that you perform a verification test.

      __ b. Sign on the system unit. Ensure that you have service tools authority.

      __ c. Type **strsst** on the command line and press Enter.

      __ d. Type **your service tools user ID and service tools password** on the *System Service Tools (SST) Sign On* display and press Enter.

      __ e. Select **Start a service tool** from the *Start a Service Tools* display and press Enter.

      __ f. Select **Hardware service manager** from the display and press Enter.

      __ g. Select **Packaging hardware resources (system, frames, cards...)** from the display and press Enter.

      __ h. Type **9** on the *System Unit or Expansion Unit* line.

      __ i. Press Page Down if needed and look at the *Card Pos* column.

         __ 1) Select **Associated Logical Resources** on the line next to the 289x or 4810 that was just replaced.

         __ 2) Select **Verify** on the line next to the 289x or 4810 card.

         __ 3) Press Enter at the *Verification Test* display.

         __ 4) Select **Processor Internal Test** and wait for it to complete.

         __ 5) Select **Hardware Memory Test** and wait for it to complete.

         __ 6) Press Enter at the *Number of Test Runs* display.

> **Note:** If the test fails, make sure that you have installed the card properly. If the test continues to fail, contact your authorized dealer or service provider.

    __ 7) When the test is complete, the message `This test is successful` appears on the *Verification Test Results* display.

    __ 8) Press Enter twice.

    __ 9) Press F3 three times to return to the *Main Menu*.

__ 24. Press F3 three times and press Enter to get back to the *Main Menu*.

__ 25. The replacement procedure is complete.

Install your new PCI card

These instructions help you install a new feature card in your unit. In some cases it may be necessary to move cards already in your system. For more information on when it may be necessary to move PCI

cards, refer to the iSeries™ System Builder . Then return here and refer to "Move a card in your iSeries" on page 43.

Terms you need to know

IOA   Input/output adapter

IOP   Input/output processor

IOP card group

    An IOP and all the IOAs controlled by that IOP.

    • A maximum of one IOP and four IOAs are allowed in an IOP card group.

    • An exception is the IXS card (feature card 289x or 4810), which has a maximum of three IOAs in the same IOP card group.

Feature number
    The numbers used to order new features for system units and expansion units.

CCIN (customer card identification number)
    The identifier number on the feature card.

PCI bridge set
    A set of PCI card positions. IOP card groups may not cross PCI bridge set boundaries.

Find your current system configuration

Find out the current configuration of your iSeries system unit or expansion unit. Bring up an iSeries session and sign on to the system. If you have more than one iSeries, bring up a session on the system that is being upgraded and for which you have service tools authority.

__ 1. Type **strsst** on the command line of the *Main Menu* and press Enter.

__ 2. Type **your service tools user ID and service tools password** on the *Start Service Tools (STRSST) Sign On* display and press Enter.

__ 3. Select **Start a service tool** from the *System Service Tools (SST)* display and press Enter.

__ 4. Select **Hardware service manager** from the *Start a Service Tool* display and press Enter.

__ 5. Select **Packaging hardware resources (system, frames, cards...)** from the *Hardware Service Manager* display and press Enter.

__ 6. Type **9** on the **System Unit** line and press Enter.

__ 7. Select **Include empty positions**.

__ 8. Look for the cards in the **Card Pos** column (xxx). Write the **Type** number of the existing cards (xxxx) in the appropriate "Current configuration tables" on page 55.

__ 9. Press F12 one time.

__ 10. Do you have an expansion unit attached?

  __ **No:** Continue with the instructions.

  __ **Yes:** Do the following:

    __ a. Type **9** for the **System Expansion Unit** field and press Enter.

    __ b. Select **Include empty positions**.

    __ c. Look for the cards in the **Card Pos** column (Cxx). Write the **Type** number of the existing cards (Cxx) in the appropriate "Current configuration tables" on page 55.

    __ d. When complete, press F12 one time.

    __ e. If you have more than one expansion unit, go to step 10a and repeat the steps for each expansion unit that is listed.

Determine the best place to install your card

Note:

- In addition to these instructions, you can also use the LPAR Validation Tool to determine adapter placement. Go to the Dynamic Logical Partitioning Web site at http://www-03.ibm.com/servers/eserver/support/tools/systemplanningtool/.
- If you are installing a new feature, ensure that you have the software required to support the new feature and that you determine if there are any existing PTF prerequisites. To do this, use the IBM eServer Prerequisite Web page at www-912.ibm.com/e_dir/eServerPrereq.nsf.
- Adapters have different capabilities. Some adapters are 32 bit, some are 64 bit. Adapters also run at different frequencies, some at 33 MHz, 66 MHz, 133 MHz and 266 MHz. Systems and towers also have adapter slots that come in the same bit lengths and frequencies. For best performance the adapters should be placed in a slot with the same characteristics as the adapter. To the extent that an adapter does not match the slot, the performance may be reduced.
- In the 5074/5079 tower there are some 5V slots. You cannot place 3V (3.3V) adapters in these slots. To identify these slots, see "5074 expansion unit" and "5079 expansion unit".
- Adapters that are mixed under the same IOP have different priorities for IOP prioritization. For best performance of highly utilized adapters place the adapters under a dedicated IOP.

__ 1. Are you installing the card in logical partitions?

  __ **No:** Continue with the next step.

  __ **Yes:** The LPAR Validation Tool should be used to determine card placement. Go to Use the LPAR Validation Tool in the *Information Center*. Then return to these instructions and go to "Install your card" on page 30.

__ 2. Are you installing a 289x or 4810 feature?

  __ **No:** Continue with the next step.

  __ **Yes:** The 289x or 4810 IOP (IXS) card is customer installable in the 270 system unit with 5075, 5095 or 0595 expansion units attached or an 800 or 810 system unit with 5075, 5078, 0578, 5088, 0588, 5095, or 0595 expansion units attached.

    You may need to install memory cards on the 289x or 4810 IOP (IXS) card.

    Are you installing a 289x or 4810 in a 270 system unit with 5075, 5095 or 0595 expansion units attached or an 800 or 810 system unit with 5075, 5078, 0578, 5088, 0588, 5095, or 0595 expansion units attached?

    __ **No:** The 289x or the 4810 card is only customer installable in units listed above. Contact IBM Service to install the 289x or the 4810 in other units.

    __ **Yes:** Do the following:

      __ a. The 289x or 4810 is installed in the card position labeled **IXS**. Refer to "Current configuration tables" on page 55 for the IXS location.

__ b. In the 270, 800, or 810 system unit, the 2890, 2891, and 2899 card occupies one card position, and a second card position is reduced to a short card position. The 2892 and the 4810 occupy one card position.

  __ c. In the expansion units, the 2890, 2891, and 2899 card occupies two card positions, and a third card position is reduced to a short card position. The 2892 and the 4810 occupy two card positions.

  __ d. For the 2890, 2891, and 2899, place the first LAN IOA in the short card position. For the 2892 and the 4810, place the first LAN IOA in the position next to the 2892 or the 4810 card.

  __ e. If there is a second LAN, place that card in the next position.

  __ f. If there is a third LAN, place that card in the next position.

  __ g. Check your current system configuration to see if the IXS position and LAN IOA positions are available. If not, you need to move cards. Go to "Move a card in your iSeries" on page 43 if you need to move a card, or go to "Install your card" on page 30 if you can install the IXS card now.

__ 3. Are you installing a 2842, 2843, or 2844 IOP feature?

  __   **Yes**: Continue with the next step.

  __   **No**: Go to step 6 on page 19.

__ 4. Use Table 1 to locate values of your current configuration.

  • Install the 2842, 2843, or 2844 IOP in any card position labeled **IOP**. There are some imbedded IOPs. Refer to "Current configuration tables" on page 55 for the IOP locations.

  • You may need to move an IOA card to install your IOP. If you need to move an IOA, go to step 6 on page 19 to determine where to move the card.

  • By installing an IOP, you are creating a new IOP card group.

  • IOPs cannot be placed in consecutive positions. IOPs can be placed in the position following 2792, 2892, 4710, or 4810.

Table 1. IOP Card numbers, names, memory values, performance values and restrictions

Feature number	CCIN	Description	Restrictions	Maximum number IOAs	Memory value	Performance value
Imbed IOP	284B, 284C, 284D, 284E, 286C, 286F	Imbed IOP	• IOPs cannot be placed in consecutive positions	4	100	100
2790 2791 2799	2890–001 2890–002 2890–003	PCI Integrated xSeries Server	• Not customer installable	3	Not applicable	Not applicable
2792	2892–001	PCI Integrated xSeries Server	• Not customer installable	3	Not applicable	Not applicable
2842	2842	PCI Node Input/Output Processor (IOP)	• Only 270, 800, or 810 and 5075, 0595, 5095 • IOPs cannot be placed in consecutive positions • A maximum of: – Two 2842s in 270, 800, and 810 units – Three 2842's in 5075 units – Two 2842's in 5095 or 0595 units	4	100	100

Table 1. IOP Card numbers, names, memory values, performance values and restrictions (continued)

Feature number	CCIN	Description	Restrictions	Maximum number IOAs	Memory value	Performance value

2843	2843	PCI Node Input/Output Processor (IOP)	• IOPs cannot be placed in consecutive positions
			• A maximum of:
			  – Two 2843s in 800 or 810 units
			  – Five 2843s in 820 units
			  – Three 2843s in 825 units
			  – Three 2843s in 5075 units
			  – Two 2843s in 5095 or 0595
			  – Four 2843s in 830, 840, 870, 890 units
			  – Five 2843s in 5074, 5094, 0594, 8093 units
			  – Two 2843s in SB2/SB3 units
				4	211	100

2844	2844	PCI Input/Output Processor	• IOPs cannot be placed in consecutive positions
			• A maximum of:
			  – Two 2844s in 270, 800, 810, 5095, 0595 units
			  – Five 2844s in 820, 5074, 8093–002, 5094, 8093, 5088, 0588 units
			  – Three 2844s in 825, 5075 units
			  – Four 2844s in 830, 840, 870, 890 units
				4	211	100

2890 2891 2899	2890–001 2890–002 2890–003	Integrated xSeries Server Input/Output Processor (IOP)	• IOPs cannot be placed in consecutive positions • Only 4838, 2743, 2760, and 2744 IOAs can be added in the same CCIN 2890 card group • Two positions are used by the 2890 card except for 270, 800, or 810 units	2 (270, 800, 810, 5075, 5095, 0595) 3 (5078, 0578, 5088, 0588)	Not applicable	Not applicable
2892	2892–001	PCI Integrated xSeries Server	• IOPs cannot be placed in consecutive positions • Only 2744, 5700, 5701 IOAs can be added in the same IOP card group • Two positions are used by the 2892 or the 4810 card, except for 270, 800 or 810	2 (270, 800, 810, 5075, 5095, 0595) 3 (5078, 0578, 5088, 0588	Not applicable	Not applicable
4710	2892–002	PCI Integrated xSeries Server	• Not customer installable	3	Not applicable	Not applicable

Feature number	CCIN	Description	Restrictions	Maximum number IOAs	Memory value	Performance value
4810	2892–002	PCI Integrated xSeries Server	• IOPs cannot be placed in consecutive positions • Only 2744, 5700, 5701 IOAs can be added in the same IOP card group • Two positions are used by the 2892 or the 4810 card, except for 270, 800, or 810	2 (270, 800, 810, 5075, 5095, 0595) 3 (5078, 0578, 5088, 0588	Not applicable	Not applicable

__ 5. Install your IOP card. Go to "Install your card" on page 30.

__ 6. Fill in the "Placement tables" on page 71 to determine the best place to install or move your IOA card, using the card information on the "Current configuration tables" on page 55 (entered at step 8 on page 15).

    __ a. Locate the first IOP (2842, 2843, 2844, 289x, 4810 Imbed).

    __ b. Determine the IOAs controlled by the IOP (IOP card group).

        • An IOP card group is an IOP and all IOAs controlled by that IOP.

        • IOP card groups cannot cross PCI bridge set boundaries. Refer to "Current configuration tables" on page 55.

    __ c. Locate the first IOP card group with an empty position.

    __ d. Find and enter (on the placement table) the values of each IOA that is currently installed in this IOP card group with an empty position. Use Table 2 to find the values.

    __ e. Install the new card in the next available position in the IOP card group. Do not leave open positions if possible.

        You should try to not move your console position.

    __ f. Write down the feature number or CCIN of the new card in the table.

    __ g. Find and enter the values of the new card in the placement table.

    __ h. Add together the IOA's *Memory Value* and write down in the *IOA Totals*.

    __ i. Add together the IOA's *Performance Value* and write down in the *IOA Totals*.

    __ j. If the totals are **not** greater than the value of the IOP for that card group, verify the restrictions, such as card length to make sure the card can be installed in the empty position. If the restrictions are not met, choose another empty position and repeat the process. Otherwise, you are ready to install the new card in that empty position.

    __ k. If the totals **are** greater than either IOP card value, it is recommended to move to the next available IOP card group with an empty card position and repeat the steps to complete another *Placement Worksheet*.

    __ l. Press F3 three times and press Enter to return to the *Main Menu*.

    __ m. Go to "Install your card" on page 30.

Table 2. Card numbers, names, memory values, performance values and restrictions

Feature Number	CCIN Number	Description	Restrictions	Card Length	Memory Value	Performance Value
0092	2689	Integrated Adapter for xSeries		Long	N/A	N/A
2742	2742	PCI Two-line WAN		Short	15	14

Table 2. Card numbers, names, memory values, performance values and restrictions (continued)

Feature Number	CCIN Number	Description	Restrictions	Card Length	Memory Value	Performance Value
2743 2760	2743 2760	PCI Ethernet/IEEE 802.3 adapter	These restrictions do not apply if 2743 is part of a CCIN 2890 IOP card groups. Only TCP/IP supported. • Do not place in a 5V position • Place in a 64-bit position except in 270, 800, and 810 where a 32-bit position must be used because there are no 64-bit positions or in 820 where a 64-bit position is preferred but a 32-bit position may be used • Limited to one 2743, 2760, 5700, or 5701 per PCI bridge set boundary • An IOP with a 2743 supports a maximum of one other IOA of any kind	Short	2	26
2744	2744	PCI 100/16/4MB Token-Ring	• No more than a total of two 4838, 2849 and 2744 in any combination allowed per IOP, except for CCIN 289x IOPs	Short	25	36
2749	2749	PCI Ultra Magnetic Media Controller	• If this card is added to PCI-X, system or tower performance could be reduced	Short	22	25
2757	2757	PCI RAID Disk Unit Controller	See "Restriction footnotes" on page 27.	Long	29	30
2760, 2743	2760, 2743	PCI 1 Gbps Ethernet UTP	These restrictions do not apply if 2760 is part of a CCIN 2890 IOP card group. • Do not place in a 5V position • Place in a 64-bit position except in 270, 800, and 810 where a 32-bit position must be used because there are no 64-bit positions or 820 where a 64-bit position is preferred but a 32-bit position may be used • Limited to one per PCI bridge set boundary • An IOP with a 2743 supports a maximum of one other IOA of any kind	Short	2	26

Table 2. Card numbers, names, memory values, performance values and restrictions (continued)

Feature Number	CCIN Number	Description	Restrictions	Card Length	Memory Value	Performance Value
2763	2763	PCI 2-Port RAID Disk Unit Controller	• Only on 270, 800, 810, 820, 5075, 5095, 0595 • No more than two allowed per IOP • No more than one 2757, 2763, 2780, 2782, 4748, 5703, 9748, 9757, 9763, 9778 or 9782 allowed per IOP when this IOP is also driving a 2817, 4815, 4816, or 4818	Long	29	21
2765	2765	PCI Fibre Channel Tape Controller	• For best performance, place in a 64-bit position • Limited to no more than two 2765s, 2766s, 2787s, or 5704s per PCI bridge set boundary	Short	36	50
2766	2766	PCI Fibre Channel Disk Unit Controller	• For best performance, place in a 64-bit position • Only one per IOP and no other IOAs • Limited to no more than two 2765s, 2766s, 2787s, or 5704s per PCI bridge set boundary • Not permitted in any SB2 or SB3 systems and attached units	Short	–	–
2772	2772	Dual WAN/Modem Adapter	Non-CIM (complex impedence matching)	Short	15	14
2773	2773	Dual WAN/Modem Adapter	CIM (complex impedence matching)	Short	15	14
2780	2780	PCI RAID Disk Unit Controller	See "Restriction footnotes" on page 27.	Long	29	30
9767	2767	PCI Disk Unit Controller IOA	• Only on 270, 820, 5075	Short	29	21
2776		HSL-2 Ports 8 Copper	Not customer installed.			
2768	2768	PCI Magnetic Media Controller		Short	22	25
2782	2782	PCI RAID Disk Unit Controller	See "Restriction footnotes" on page 27.	Long	29	21
2785	2785	HSL 2–Ports Copper				
2786	2786	HSL 2–Ports Optical				
2787	2787	PCI Fibre Channel Disk Unit Controller	• For best performance, place in a 64-bit position • Only one per IOP and no other IOAs • Limited to no more than two 2765s, 2766s, 2787s, or 5704s per PCI bridge set boundary • Not permitted in any SB2 or SB3 systems and attached units	Short	–	–

Table 2. Card numbers, names, memory values, performance values and restrictions (continued)

Feature Number	CCIN Number	Description	Restrictions	Card Length	Memory Value	Performance Value
2788	2788	HSL-2 Ports – 8 optical				
2793	2793	PCI 2–Line WAN with Modem	Non-CIM (complex impedence matching)	Short	15	14
2794	2793	PCI 2–Line WAN with Modem	CIM (complex impedence matching)	Short	15	14
2805	2805	PCI Quad Modem IOA Non-CIM (Complex impedence matching)		Long	15	14
2806	2806	PCI Quad Modem IOA CIM (Complex impedence matching)		Long	15	14
2817	2817	PCI 155 Mbps MMF ATM	• ATM is not supported after V5R2 • Only one 2817, 4815, 4816, or 4818 per IOP • Only one 2757, 2763, 2780, 2782, 4748, 4778, 5703, 5705, 9748, 9778 within the same IOP card group as 2817 • If you have one 2817, 4815, 4816, or 4818, then you can have only one 2744, 2849, or 4838 in the IOP card group	Short	35	47
2849	2849	PCI 100/10 Mbps Ethernet	• If this card is added to PCI-X, system or tower performance could be reduced • No more than total of two 2849, 4838 and 2744 in any combination allowed per IOP	Short	25	36
2886	2886	Optical Bus Adapter				
2887	2887	HSL-2 Bus Adapter				
4723	2723	PCI Ethernet/IEEE 10		Short	25	12
4745	2745	PCI Node WAN		Short	15	14
4746	2746	PCI Twinaxial Workstation Controller		Short	10	6
4748/ 9748	2748	PCI RAID Disk Unit Controller	See "Restriction footnotes" on page 27.	Long	29	21
4750	2750	PCI ISDN BRI U	• No more than one allowed per IOP • Not supported after V5R1	Long	25	7
4751	2751	PCI ISDN BRI S/T	• No more than one allowed per IOP • Not supported after V5R1	Long	25	7

Table 2. Card numbers, names, memory values, performance values and restrictions (continued)

Feature Number	CCIN Number	Description	Restrictions	Card Length	Memory Value	Performance Value
4761	2761	Remote Access Integrated Modem (8-port)	• No more than one allowed per IOP • Not supported after V5R1	Long	22	7
4778/ 9778	2778/ 4778/ 9778	PCI RAID Disk Unit Controller	See "Restriction footnotes" on page 27.	Long	29	25
4801	4758–023	PCI Cryptographic Coprocessor	• Cannot be controlled by the Imbed IOP in 270, 800, 810 or 820 units • Cannot be controlled by the load source IOP in 825, 830, 840, 870, 890, SB2, or SB3 units • See http:// publib.boulder.ibm.com/ infocenter/iseries/v5r3/ index.jsp?topic=/rzajc/ rzajcco4758.htm for more information and limits.	Short	11	18
4805	2058	PCI Cryptographic Accelerator	• Cannot be controlled by the load source IOP. • Maximum of one 4805 if 2743, 2760, 5700, or 5701 is also in the same IOP card group • Maximum of two 4805 per IOP	Short	2	26
4812	4812	PCI Integrated xSeries Server	• Maximum of 1 per IOP. • Requires 2 consecutive long slots. • Requires feature 2844 to serve as the IOP • Requires 3.3 v PCI slot. 64 bit slot recommended for best performance, but not required. • Maximum of 3 IXS adapters per tower in any combination.	Double-width	25	51
4815	2815	PCI 155MBPS UTP 0C3 ATM	• Not supported after V5R2 • Only one 2817, 4815, 4816, or 4818 per IOP • Only one 2763, 4748, 4778, 9748, 2782, 2780, 2757, 5703, 5705 or 9778 within the same IOP card group as 4815 • If you have one 2817, 4815, 4816, or 4818, then you can have only one 2744, 2849 or 4838 in the IOP card group	Short	35	47

Table 2. Card numbers, names, memory values, performance values and restrictions (continued)

Feature Number	CCIN Number	Description	Restrictions	Card Length	Memory Value	Performance Value
4816	2816	PCI 155Mbps MMF ATM	• Not supported after V5R2 • Only one 2817, 4815, 4816, or 4818 per IOP • Only one 2763, 4748, 4778, 9748, 2782, 2780, 2757, 5703, 5705 or 9778 within same IOP card group as 4816 • If you have one 2817, 4815, 4816, or 4818, then you can have only one 2744, 2849 or 4838 in the IOP card group	Short	35	47
4818	2818	PCI 155Mbps SMF 0C3 ATM	• Not supported after V5R2 • Only one 2817, 4815, 4816, or 4818 per IOP • Only one 2763, 4748, 4778, 9748, 2782, 2780, 2757, 5703, 5705 or 9778 within the same IOP card group as 4818 • If you have one 2817, 4815, 4816, or 4818, then you can have only one 2744, 2849 or 4838 in the IOP card group	Short	35	47
4838	2838	PCI 100/10Mbps Ethernet	• No more than a total of two 4838, 2849 and 2744 in any combination allowed per IOP	Short	25	36
5700 5701	5700 5701	PCI 1 Gbps Ethernet	• If installing in the 270, 820, 830, SB2, 840, SB3, 9074, 0550, 9079, 8079, 8093–002, 5074, 5075, or 5079, if possible, place in the 32–bit position. For any other system, place in the 64–bit position.	Short	2	26
5702, 5712	5702, 5712	PCI Ultra Tape Controller	See "Restriction footnotes" on page 27.	Short	2	21
5703	5703	PCI RAID Disk Unit Controller	See "Restriction footnotes" on page 27.	Long	29	21
5704	5704	PCI Fibre Channel Tape Controller	• For best performance, place in a 64-bit position • Limited to no more than two 2765s, 2766s, 2787s, or 5704s per PCI bridge set boundary	Short	36	50
5580	N/A	2780 Disk Controller with a secondary, auxiliary write cache IOA. (CCIN 2780/5708)	See "Restriction footnotes" on page 27.	Long	29	30

Table 2. Card numbers, names, memory values, performance values and restrictions (continued)

Feature Number	CCIN Number	Description	Restrictions	Card Length	Memory Value	Performance Value
5581	N/A	2757 Disk Controller with a secondary, auxiliary write cache IOA. (CCIN 2757/5708)	See "Restriction footnotes" on page 27.	Long	29	30
5582	N/A	5738 Disk Controller with See "Restriction footnotes" on page 27.a secondary, auxiliary write cache IOA. (CCIN 571E/574F)	See "Restriction footnotes" on page 27.	Long	29	30
5590	N/A	2780 Disk Controller with a secondary, auxiliary write cache IOA. (CCIN 2780/574F)	See "Restriction footnotes" on page 27.	Long	29	30
5591	N/A	2757 Disk Controller with a secondary, auxiliary write cache IOA. (CCIN 2757/574F)	See "Restriction footnotes" on page 27.	Long	29	30
5736	571A	PCI-X Disk/Tape Controller	See "Restriction footnotes" on page 27. 5736 supports a maximum of 6 DASD.	Short	29	21
5737	571B	PCI-X Disk Controller - 90MB	See "Restriction footnotes" on page 27.	Long	29	21
5738	571E	PCI-X Ultra320 SCSI Disk Controller	See "Restriction footnotes" on page 27.	Long	29	30
5739	571F (Aux write cache is 575B)	PCI-X Ultra320 SCSI Disk Controller with auxiliary write cache	• Double-wide adapter, requires two adjacent slots. The SCSI controller side of the adapter pair requires a 64-bit slot. The controller side is the side with the external SCSI connectors. • When used in a Logical Partition (LPAR) environment, this double-wide adapter must have both slots of the adapter assigned to the same logical partition. When doing Dynamic Logical Partitioning (DLPAR), both slots of the adapter must be managed together. • Because of the complexity of this adapter, concurrent maintenance is not supported through the HMC. Concurrent maintenance must be done from the Hardware Service Manager (HSM). • See "Restriction footnotes" on page 27.	Long, double-width	29	30

Table 2. Card numbers, names, memory values, performance values and restrictions (continued)

Feature Number	CCIN Number	Description	Restrictions	Card Length	Memory Value	Performance Value
5760	280E	PCI-X Fibre Channel Disk Unit Controller	For best performance, place the card in a 64-bit position. Only one card per IOP and no other IOAs. A maximum of two among 2765, 2766, 2787, 5704, 5758, 5760, or 5761 (any combination) per PCI bridge set boundary. This IOA can be used in Multipath configurations. To improve the availability provided by Multipath, place each IOA and its IOP on different HSL loops, in different expansion units, or on different multi-adapter bridges.	Short	N/A	N/A
5761	280D	PCI-X Fibre Channel Tape Controller	For best performance, place the card in a 64-bit position. A maximum of two among 2765, 2766, 2787, 5704, 5708, or 5761 in any combination, per PCI bridge set boundary.	Short	36	50
5766	571A	PCI-X Tape Controller	See "Restriction footnotes" on page 27.	Short	29	21
5705	5705	PCI Tape/DASD Controller	• No more than one 2757, 2763, 2780, 2782, 4748, 9748, 5703, 9757, 9763, 9778, or 9782 allowed per IOP when this IOP is also driving 2817, 4815, 4816, or 4818 • 5705 is supported on 800 and 810 • A maximum of three 2782, 2763, 2780, 2757, 4748, 9748, 4778, 9778, 5703, 5705 (only one 5705 allowed) allowed per IOP in any combination	Short	2	21
9767	2767	PCI Disk Unit Controller	• Only one per system • Only in 270, 820 and 5075 units	Short	29	21
9771	2771	PCI 2–Line WAN w/Modem	• Only one per system	Short	15	14
N/A	5708	Auxiliary Write Cache IOA	Integrated into feature codes 5580 and 5581. For more information, see those feature code descriptions in this table. See also "Type 5708, auxiliary-write cache IOA (FC 5580, 5581)" on page 82.	Long	29	1

Feature Number	CCIN Number	Description	Restrictions	Card Length	Memory Value	Performance Value
N/A	574F	Auxiliary Write Cache IOA	Integrated into feature numbers 5582. For more information, see those feature number descriptions in this table. See also "Type 574F, auxiliary-write cache IOA (FC 5582)" on page 85.	Long	29	1

Restriction footnotes for Table 2 on page 19:

a. A maximum of three among 2757, 2780, 4748, 4778, 5580, 5581, 5582, 5590, 5591, 5736, 5703, 5705, 5738, 5739, and 5737 allowed per IOP in any combination. Feature codes 5580, 5581, 5582, 5590, 5591, and 5739 contain two adapters. An auxiliary write cache IOA also counts as one IOA towards the maximum of three. For example, 5580 consists of two adapters so 5580 counts as two towards the three maximum when located under the same IOP.

   For more information about auxiliary write cache IOA features, see the Planning for IBM eServer i5 Data Protection with Auxiliary Write Cache Solutions redbook. (REDP-4003-00)

b. For i5/OS, a maximum of three 5580/5590, 5581/5591, 5582 in any combination allowed per 0694, 5094, 5294, 8093 (bottom unit), 8094 (both units), 8294 (both units), 9094 & 9194 enclosure. Maximum of four 4748, 4778. 2757, 2780, 5738 in any combination allowed per 0694, 5094, 5294, 8093 (bottom unit), 8094 (both units), 8294 (both units), 9094 enclosure.

c. A maximum of six , 0627/2780 , 5580, 5590, 2757 , 5581 , 5591, 5582 , 0649/5738, 0650/5739 allowed per 0694, 5094, 5294, 8093 (bottom unit), 8094 (both units), 8294 (both units), 9094 & 9194 Mantis-x(g) unit enclosure regardless of operating system. Features that include a SCSI controller paired with an auxiliary write-cache IOA CCIN 574F or CCIN 575B , the pair counts as only 1 adapter towards the 6 maximum. Features that include a SCSI controller paired with an auxiliary write-cache IOA CCIN 5708 Packet count as 2 adapters towards the 6 maximum.

d. For the 0574/5074 enclosures a maximum of three , 0605/4748/9748 0606/4778/9778 2780/5580/5590, 0618/2757/5581/5591, allowed per unit enclosure regardless of operating system. Features that include a SCSI controller paired with an auxiliary write-cache IOA CCIN 5708, 574F or CCIN 575B , the pair counts as only 1 adapter towards the 3 maximum.

e. For best practices it is recommended that that features 5702, 5712, 5715, and 5736 be included with the maximum of three adapters per IOP.

High performance SCSI, DASD controller placement

Not all PCI slots can accommodate the 0649, 2780, 5580, 5590, 5582, 5738, and 5739 SCSI controllers. Use the list in Table 3 on page 28 to cross reference adapter feature codes with their CCIN numbers and descriptions. See also the adapter tables in "Determine the best place to install your card" on page 16 for more detailed descriptions, notes, and restrictions for these adapters.

Go to one of the following system or expansion unit tables to determine which PCI slots can accommodate these adapters.

- "5074 or 5079 expansion unit" on page 28
- "5094 or 5294 expansion unit" on page 28
- "5088 or 0588 expansion unit" on page 29
- "5095 or 0595 expansion unit" on page 29

CAUTION:
Place these adapters only in an allowed slot. Placing these adapters in an unsupported slot may result in early life adapter failure.

Table 3. High performance SCSI controllers

Feature codes	CCIN numbers	Description	Variables
0627	2780	PCI-X Ultra 4 RAID Disk Unit Controller	Direct attach
2780	2780	PCI-X Ultra 4 RAID Disk Unit Controller	IOP controlled
5580, 5590	2780 and 574F	2780 Disk Controller with a secondary, auxiliary-write cache IOA	IOP controlled
0649	571E	PCI-X Ultra320 SCSI Disk Controller	Direct attach
5738	571E	PCI-X Ultra320 SCSI Disk Controller	IOP controlled
5582	571E and 574F	5738 Disk Controller with a secondary, auxiliary-write cache IOA	IOP controlled
5739	571F and 575B	PCI-X Ultra320 SCSI Disk Controller with auxiliary-write cache Double-wide adapter. 571F is the controller. 575B is the auxiliary-write cache.	IOP controlled

5074 or 5079 expansion unit

The supported CCIN numbers and allowed slots that the CCIN is allowed in are shown in the following table.

2780 and 574F are supported in the slots shown in the Allowed slots column.

CCIN number	Description	Variables	Allowed slots
2780	PCI-X Ultra 4 RAID Disk Unit Controller	IOP controlled	2, 3, 4, 9, 10, 14, 15
		Direct attach	2, 3, 4, 5, 9, 10, 11, 14, 15
574F	Auxiliary-Write Cache IOA	IOP controlled	2, 3, 4, 9, 10, 14, 15
		Direct attach	1, 2, 3, 4, 5, 9, 10, 11, 14, 15

5094 or 5294 expansion unit

The supported CCIN numbers and allowed slots that the CCIN is allowed in are shown in the following table.

Cooling fans and fan flaps are located at the back of the PCI adapter area. To insure proper cooling, make sure that cables are not located near the fan air exits. Cables should not be grouped together in way that would make for an obstacle to air flow. Spreading the cables out helps better distribution of air flow within the PCI adapter area.

CCIN numbers	Description	Variables	Allowed slots
2780	PCI-X Ultra 4 RAID Disk Unit Controller	IOP controlled	2, 3, 4, 6, 7, 8, 9, 12, 13, 14, 15
		Direct attach	2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15

CCIN numbers	Description	Variables	Allowed slots
574F	Auxiliary-Write Cache IOA	IOP controlled	2, 3, 4, 6, 7, 8, 9, 12, 13, 14, 15
		Direct attach	1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15
571E	PCI-X Ultra320 SCSI Disk Controller	IOP controlled	3, 6, 7, 8, 9
		Direct attach	1, 3, 5, 6, 7, 8, 9
571F and 575B	PCI-X Ultra320 SCSI Disk Controller with auxiliary-write cache	IOP controlled double-wide*	**2**, <u>3</u>, 4, **8**, 9
* Double-wide adapter, requires two adjacent slots. The SCSI controller side of the adapter pair requires a 64-bit slot. Slots with **bold** numbers can be used for the SCSI controller side of the adapter. Slots where the number is <u>underlined</u> can be used for either side of the adapter. The remaining slot numbers can be used for the cache side (575B) of the adapter.			

5088 or 0588 expansion unit

The supported CCIN numbers and allowed slots that the CCIN is allowed in are shown in the following table.

The double-wide adapter 571F/575B is supported in the slots shown in the Allowed slots column.

CCIN number	Description	Variables	Allowed slots
571F and 575B	PCI-X Ultra320 SCSI Disk Controller with auxiliary-write cache	IOP controlled double-wide*	8, 9
* Double-wide adapter, requires two adjacent slots. The SCSI controller side of the adapter pair can be placed in slot 8. The cache side of the adapter should be placed in slot 9.			

5095 or 0595 expansion unit

The supported CCIN numbers and allowed slots that the CCIN is allowed in are shown in the following table.

| CCIN number	Description	Variables	Allowed slots
2780	PCI-X Ultra 4 RAID Disk Unit Controller	IOP controlled	2, 3, 4, 7, 8
		Direct attach	1, 2, 3, 4, 6, 7, 8
574F	Auxiliary-Write Cache IOA	IOP controlled	2, 3, 4, 7, 8
		Direct attach	1, 2, 3, 4, 6, 7, 8

825 System unit

The supported CCIN numbers and allowed slots that the CCIN is allowed in are shown in the following table.

CCIN numbers	Description	Variables	Allowed slots
2780	PCI-X Ultra 4 RAID Disk Unit Controller	IOP controlled	1, 2, 3, 5, 10, 11
		Direct attach	1, 2, 3, 4, 5, 10, 11, 12
574F	Auxiliary-Write Cache IOA	IOP controlled	1, 2, 3, 5, 10, 11
		Direct attach	1, 2, 3, 4, 5, 10, 11, 12

| CCIN numbers	Description	Variables	Allowed slots
571E	PCI-X Ultra320 SCSI Disk Controller	IOP controlled	1, 2, 3, 5, 10, 11
		Direct attach	1, 2, 3, 4, 5, 10, 11, 12
571F and 575B	PCI-X Ultra320 SCSI Disk Controller with auxiliary-write cache	IOP controlled double-wide*	1, **2**, **3**, 10, **11**
		* Double-wide adapter, requires 2 adjacent slots. The SCSI controller side of the adapter pair requires a 64-bit slot. Slots with **bold** numbers can be used for the SCSI controller side of the adapter. Slots where the number is <u>underlined</u> can be used for either side of the adapter. The remaining slot numbers can be used for the cache side (575B) of the adapter.	

Install your card

__ 1. Remove or open the back cover, if you have one, of the system unit, expansion unit, or rack where you will install the new feature card. Make sure you are in the correct partition if using logical partitions. Refer to "Remove the covers" on page 75 for more information.

__ 2. Locate the feature card area.

__ 3. Determine if the feature cards are secured in place with either latches or screws.

Does your unit have card latches?

__ **Yes**: Your iSeries can either be powered off or powered on when you install your new card. Decide which way you want to install your card—"Your iSeries is powered on during installation" on page 32 or "Your iSeries is powered off during installation" on page 37.
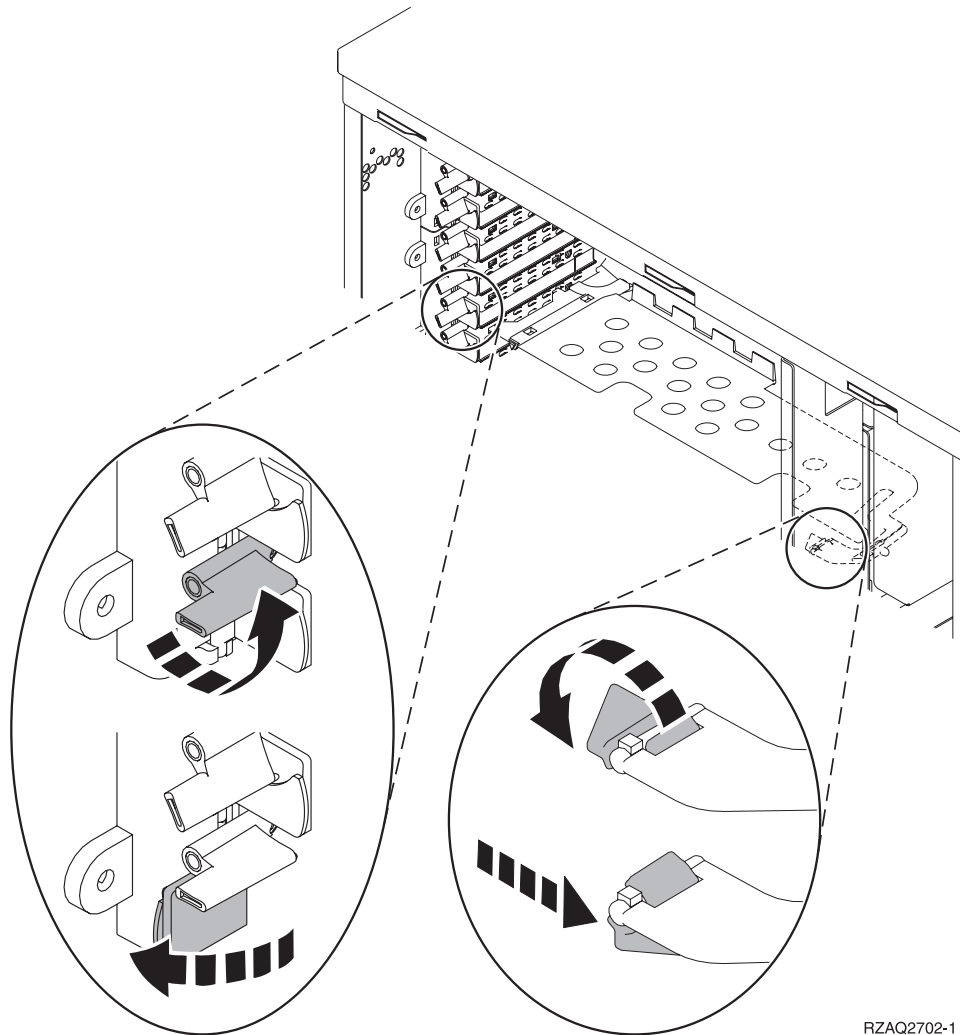
RZAQ2702-1

__ **No**: Your unit uses screws to secure the cards.

    __ a. To install the new feature card, you must power off your unit.

    __ b. Go to "Your iSeries is powered off during installation" on page 37.

A

RV5B001-0
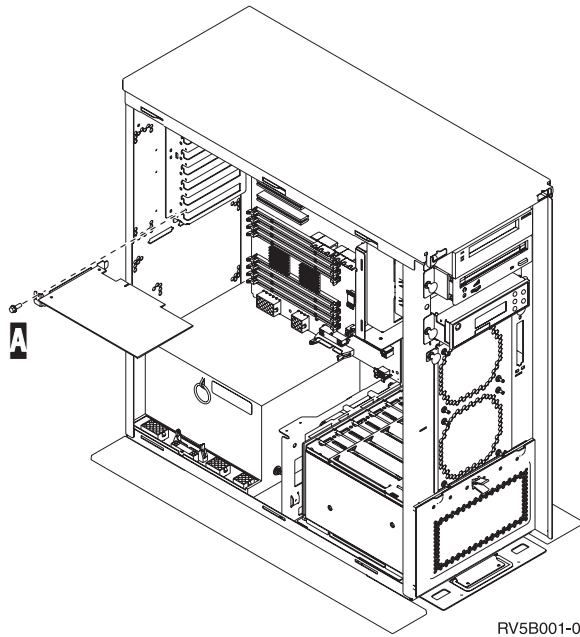
## Your iSeries is powered on during installation

__ 1. Type **strsst** on the command line of the *Main Menu* and press Enter.

__ 2. Type **your service tools user ID and service tools password** on the *System Service Tools (SST) Sign On* display and press Enter.

__ 3. Select **Start a service tool** from the *System Service Tools (SST)* display and press Enter.

__ 4. Select **Hardware service manager** from the *Start a Service Tool* display and press Enter.

__ 5. Select **Packaging hardware resources (system, frames, cards...)** from the *Hardware Service Manager* display and press Enter.

__ 6. Type **9** on the *System Unit* or *Expansion Unit* line of the unit where your are installing the new card and press Enter.

__ 7. Select **Include empty positions**.

__ 8. **Attach the disposable wrist strap to prevent electrostatic discharge from damaging a device.**

Attach the adhesive part of the foil to an unpainted surface. ⬚ View video.

Notes:

a. Follow the same precautions you would use without the wrist strap. The 2209 Disposable Wrist Strap is for static control. It will not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

b. Remove the liner from the copper foil at the end when you unroll the strap.

c. Attach the copper foil to an **exposed, unpainted** metal surface on the frame of the unit (electrical ground).

__ 9. Select **Concurrent Maintenance** on the empty card position where you plan to install the card. Press Enter. If using logical partitions, make sure this position is controlled by the logical partition you planned.

__ 10. Select **Toggle LED blink off/on**. A light-emitting diode (LED) blinks identifying the position you chose to install the new feature card.

__ 11. Select **Toggle LED blink off/on** to stop the blinking LED.

__ 12. Open the latch at the card position where you plan to install the card. Move the latch counterclockwise and then swing the latch out.
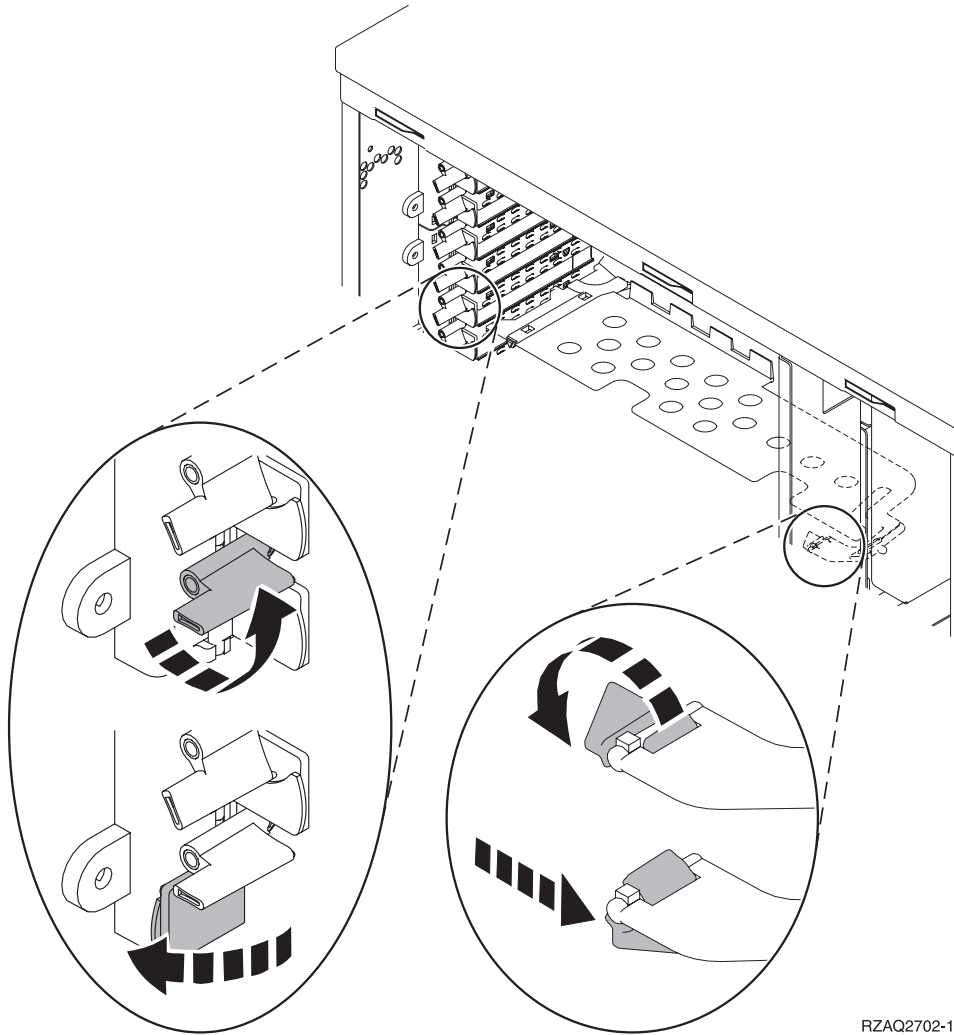
RZAQ2702-1

Figure 7. Example of 270, 800, 810, 820, 5075 Card Latch
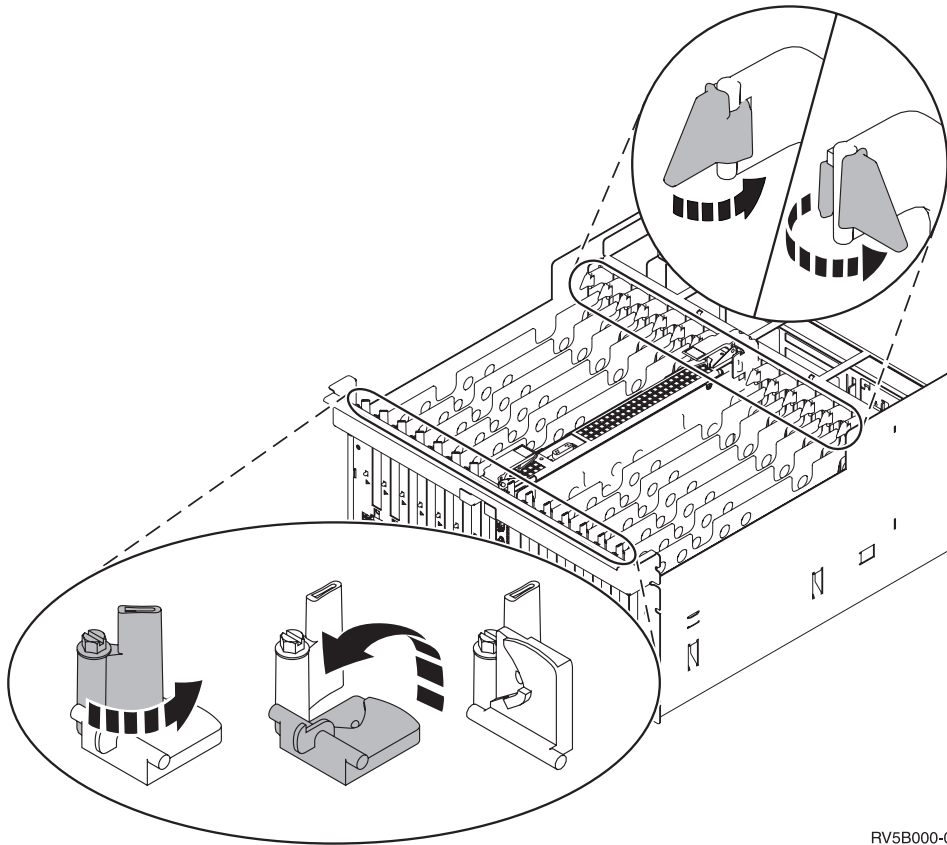
RV5B000-0

Figure 8. Example of 830, 840, 870, 890, SB2, SB3, 5079 Card Latches

__ 13. Remove the card filler plate. ⬚ View video.

__ 14. Are you installing a 289x or 4810 IXS card?

  __ **No**: Go to step 15 on page 35.

  __ **Yes**: Do the following:

    __ a. If you have memory cards to install on the IXS card, follow these steps:

      __ 1) Align the memory card with the next available connector on the IXS card.

      __ 2) Snap the card in place by moving it downward in the connector. The memory card has a distinct click as it snaps into the connector.

RZAQ4800-0

Figure 9. Location of memory on IXS

           __ 3) Repeat this step if you have another 289x memory card to install.

        __ b. Remove a second card filler plate below the one you removed in step 13 on page 34.

        __ c. Remove the plastic card dividers from the positions the card will occupy. Press down on the ends and pull away from the backplane.

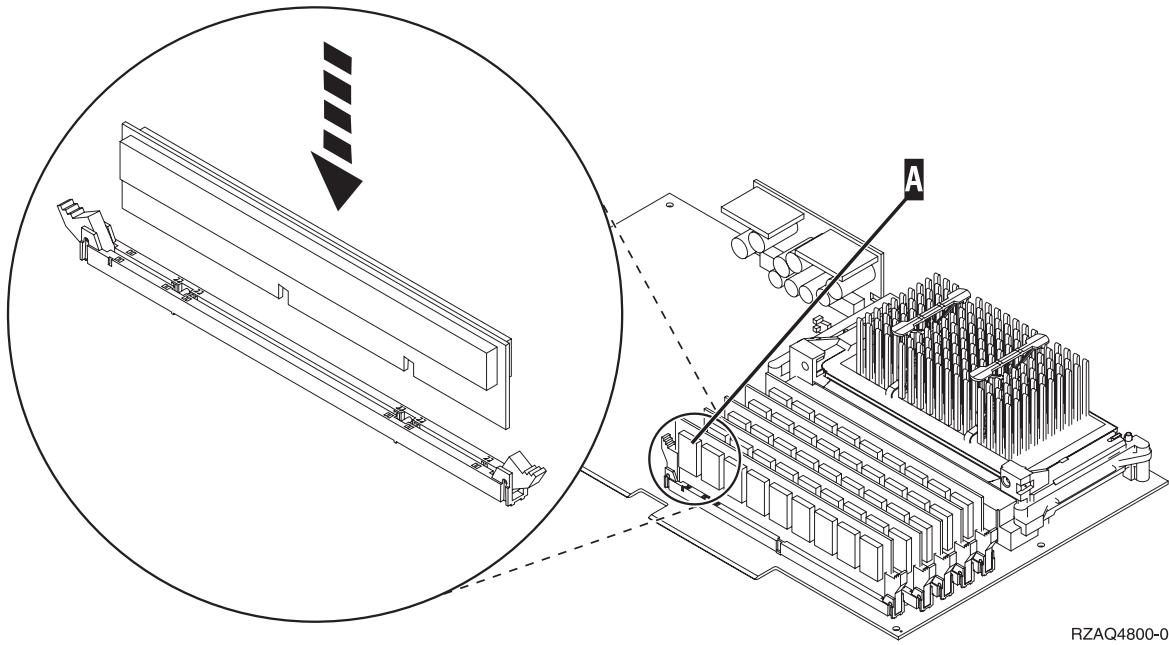__ 15. **Attention:** Adapter cards are fragile:

- Handle only by the edges.
- Keep fingers off printed circuit area.
- Use static strap when handling.
- Leave in protective packaging until ready to install.

__ 16. Align the new adapter card with the card connector inside the system unit or expansion unit and push until it is connected securely. ▢ View video.

__ 17. Swing the latch in and move the latch clockwise to secure the card.

__ 18. **DANGER**

> **To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)**

Connect any cables and label the cables with the card slot position.

__ 19. Select **Power on domain** on the *Hardware Resource Concurrent Maintenance* display. Press Enter.

__ 20. Select **Assign to** on the resource with the * (asterisk) on the *Work with Controlling Resource* display. Press Enter.

__ 21. Wait for the *Hardware Resource Concurrent Maintenance* display to appear with the message indicating Power on complete.

__ 22. If you have more cards to install, go to "Determine the best place to install your card" on page 16 and repeat the steps to install the next card.

__ 23. If you are finished installing all the cards, remove the wrist strap.

__ 24. Install the unit covers.

__ 25. Did you install a 289x or 4810 IXS card?

__ **No**: Do the following:

__ a. Sign on the system unit. Ensure that you have service tools authority.

__ b. Type **strsst** on the command line of the iSeries session and press Enter.

__ c. Type **your service tools user ID and service tools password** on the *Start a Service Tools (STRSST) Sign On* display and press Enter.

__ d. Select **Start a service tool** from the *Start a Service Tools* display and press Enter.

__ e. Select **Hardware service manager** from the display and press Enter.

__ f. Select **Packaging hardware resources (system, frames, cards...)** from the display and press Enter.

__ g. Type **9** on the *System Unit or Expansion Unit* line.

__ h. Press Page Down if needed and look at the *Card Pos* column for the adapter card you just installed.

__ i. Did you find the card you just installed?

__ **Yes**: Go to step 26 on page 37.

__ **No**: Return to step 1 on page 32 and verify the install procedure steps.

__ **Yes**: Do the following:

__ a. If you installed a 289x or 4810 IXS card, it is recommended that you perform a verification test.

__ b. Sign on the system unit. Ensure that you have service tools authority.

__ c. Type **strsst** on the command line and press Enter.

__ d. Type **your service tools user ID and service tools password** on the *System Service Tools (SST) Sign On* display and press Enter.

__ e. Select **Start a service tool** from the *Start a Service Tools* display and press Enter.

__ f. Select **Hardware service manager** from the display and press Enter.

__ g. Select **Packaging hardware resources (system, frames, cards...)** from the display and press Enter.

__ h. Type **9** on the *System Unit or Expansion Unit* line.

__ i. Press Page Down if needed and look at the *Card Pos* column to find the card you just installed.

__ 1) Select **Associated Logical Resources** on the line next to the 289x or 4810 that was just installed. Press Enter.

__ 2) Select **Verify** on the line next to the 289x or 4810 card (Communication IOA).

__ 3) Press Enter at the *Verification Test* display.

__ 4) Select **Processor Internal Test** and press Enter.

__ 5) Press Enter at the *Number of Test Runs* display.

__ 6) When the test is complete, the message `The test is successful` appears on the *Verification Test Results* display.

__ 7) Press Enter twice.

__ 8) Select **Hardware Memory Test** and press Enter.

__ 9) Press Enter at the *Number of Test Runs* display.

Note: If the test fails, make sure that you have installed the card properly. If the test continues to fail, contact your authorized dealer or service provider.

__ 10) When the test is complete, the message `The test is successful` appears on the *Verification Test Results* display.

__ 11) Press Enter twice.

__ 12) Press F3 three times and press Enter to return to the *Main Menu*.

__ 26. Your feature upgrade is complete.

__ 27. Press F3 three times and press Enter to get back to the *Main Menu*.

Your iSeries is powered off during installation

__ 1. If an Integrated xSeries Adapter (IXA) is present on the system, shut it down using OS/400 options.

__ 2. Ensure that all jobs are complete.

__ 3. When all jobs are complete, type `pwrdwnsys *immed` on an iSeries command line and press Enter.

__ 4. When the iSeries power down is complete, unplug any power cords, such as printers and displays, from electrical outlets.

__ 5. Unplug the system or expansion-unit power cord from the electrical outlet.

__ 6. **Attach the disposable wrist strap to prevent electrostatic discharge from damaging a device.**

View video. Attach the adhesive part of the foil to an unpainted surface on the frame of the unit.

Notes:

a. Follow the same precautions you would use without the wrist strap. The 2209 Disposable Wrist Strap is for static control. It will not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

b. Remove the liner from the copper foil at the end when you unroll the strap.

c. Attach the copper foil to an **exposed, unpainted** metal surface on the frame of the unit (electrical ground).

__ 7. Locate the adapter card positions inside your system unit.

__ 8. Does your unit have screws to secure the cards?

RV5B001-0

__ **No**: Continue with the next step.

__ **Yes**: Do the following:

__ a. Remove the screw from the card position where you plan to install the card.

__ b. Go to step 10 on page 39.

__ 9. Open the latch at the card position where you plan to install the card. Move the latch counterclockwise and then swing the latch out. If using logical partitions, make sure this position is controlled by the logical partition you planned.
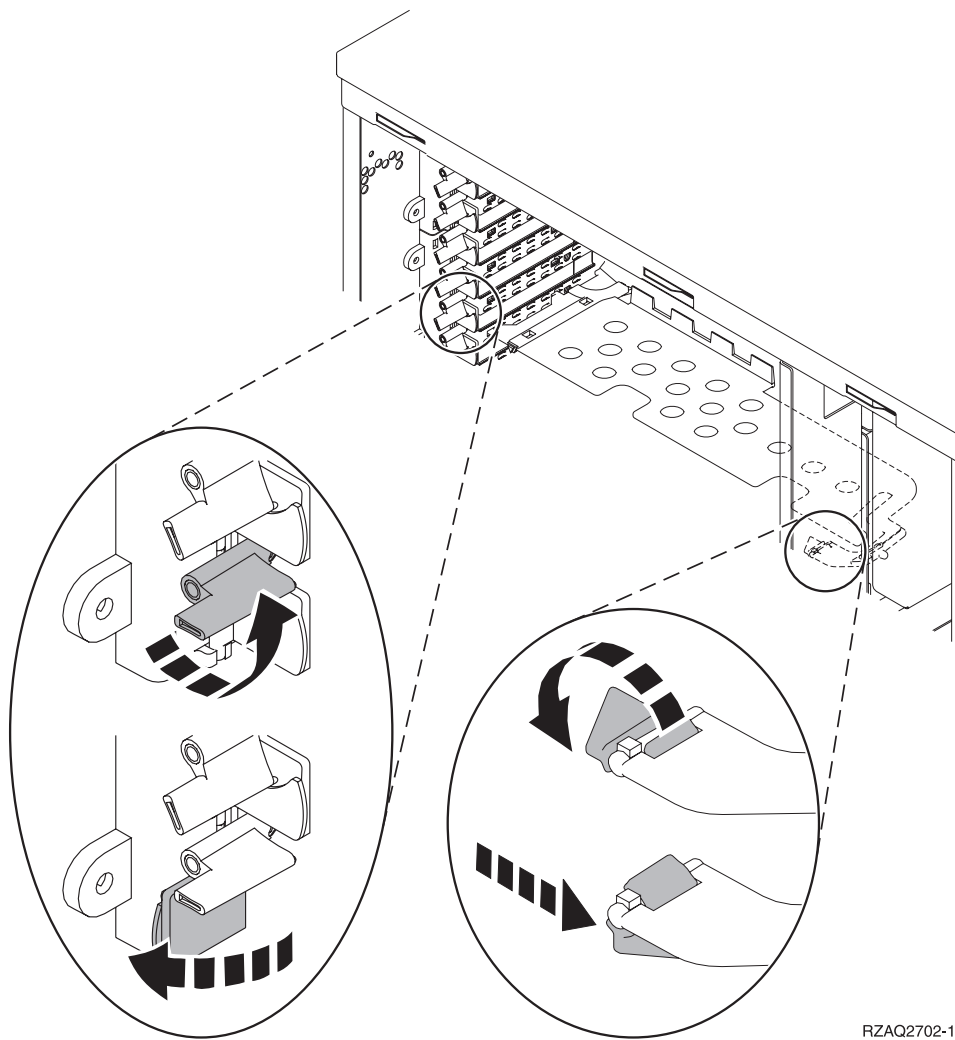
RZAQ2702-1

Figure 10. Example of 270, 800, 810, 820, 825, 5075, 9094, 9094 Card Latch

RV5B000-0

Figure 11. Example of 830, 840, 870, 890, SB2, SB3, 5079, 5294 Card Latches

__ 10. Remove the card filler plate. 🖵 View video.

__ 11. Are you installing the 289x or 4810 IXS card?

- **No**: Go to step 12 on page 40.
- **Yes**: Do the following:

  __ a. If you have memory cards to install on the IXS card, follow these steps:

  __ 1) Align the memory card with the next available connector on the IXS card.

  __ 2) Snap the card in place by moving it downward in the connector. The memory card has a distinct click as it snaps into the connector.
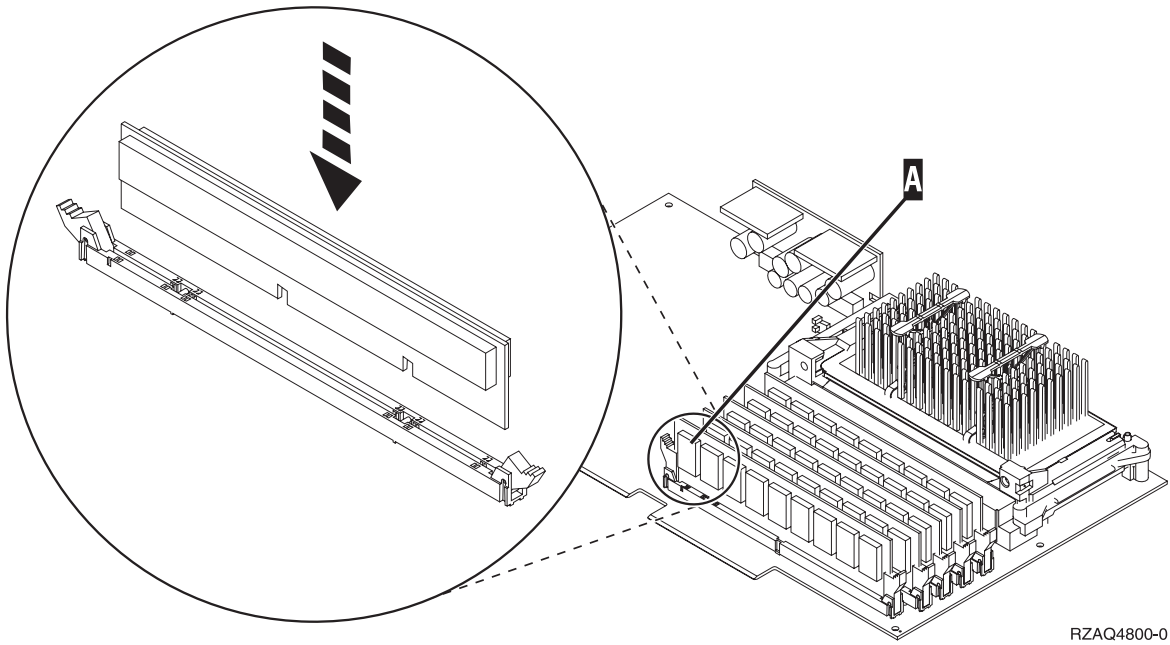
RZAQ4800-0

Figure 12. Location of memory on IXS

      __ 3) Repeat this step if you have another 289x memory card to install.

    __ b. Remove a second card filler plate below the first one removed.

    __ c. Remove the plastic card dividers from the positions the IXS card will occupy. Press down on the release lever at the headstock end and pull away from the backplane.

__ 12. **Attention:** Adapter cards are fragile:

- Handle only by the edges.
- Keep fingers off printed circuit area.
- Use static strap when handling.
- Leave in protective packaging until ready to install.

__ 13. Align the new adapter card with the card holders inside the system unit and push until it is connected securely. ⬚ View video.

__ 14. Swing the latch in and move the latch clockwise or install the screw to secure the card.

__ 15. **DANGER**

> **To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)**

Connect any cables and label the cables with the card position.

__ 16. If you have more cards to install, go to step 7 on page 37 and repeat the steps to install the next card.

__ 17. If you are finished installing all cards, remove the wrist strap.

__ 18. Install the unit covers.

__ 19. **DANGER**

> **An electrical outlet that is not correctly wired could place hazardous voltage on metal parts of the system or the products that attach to the system. It is the customer's responsibility to ensure that the outlet is correctly wired and grounded to prevent an electrical shock. (RSFTD201)**

Plug in the system unit and system unit console into an electrical outlet. Plug in everything you previously unplugged such as printers and displays.

__ 20. Is your system unit an iSeries 270, 800, 810 or 820, 825, 830, 840, 870, 890?

   __   **270, 800, 810**: Continue with the next step.

   __   **820, 825, 830, 840, 870, 890**: Go to step 23.

__ 21. Look at the Function/Data display on the control panel.

__ 22. Does **01 B N V=S** appear in the Function/Data display?

   __   **Yes**: Go to step 25 on page 42.

   __   **No**: Do the following:

     __ a. Press the Increment/Decrement push button until **02** appears in the Function/Data display.

     __ b. Press the Enter push button on the control panel.

     __ c. Press the Increment/Decrement push button until **B** appears in the Function/Data display.

     __ d. Press the Enter push button on the control panel.

     __ e. Press the Increment/Decrement push button until **N** appears in the Function/Data display.

     __ f. Press the Enter push button on the control panel.

     __ g. Press the Increment/Decrement push button until **S** appears in the Function/Data display.

     __ h. Press the Enter push button on the control panel.

     __ i. Press the Increment/Decrement push button until **01** appears in the Function/Data display.

     __ j. Press the Enter push button on the control panel.

       01 B N S should appear in the Function/Data display. If it does not, repeat steps 22a through 22j. If it does, go to step 25 on page 42.

__ 23. Look at the Function/Data display on the control panel.

__ 24. Does **01 B V=S** appear in the Function/Data display with IPL mode Normal (OK) selected?

   __   **Yes**: Continue with the next step.

   __   **No**: Do the following:

     __ a. Press the Mode Select button until the Manual mode indicator (a small hand) lights up.

     __ b. Press the Increment/Decrement push button until **02** appears in the Function/Data display.

     __ c. Press the Enter push button on the control panel.

     __ d. Press the Increment/Decrement push button until **B** appears in the Function/Data display.

     __ e. Press the Enter push button on the control panel.

     __ f. Press the Increment/Decrement push button until **S** appears in the Function/Data display

     __ g. Press the Enter push button on the control panel.

     __ h. Press the Mode Select button until the Normal indicator (**OK**) lights up.

__ i. Press the Increment/Decrement push button until **01** appears in the Function/Data display.

__ j. Press the Enter push button on the control panel.

01 B S should appear in the Function/Display display. If it does not appear, repeat steps 24a on page 41 through 24j. If it does, continue to the next step.

__ 25. Press the Power push button that is located on the iSeries control panel. There is approximately a 10-second delay before the power-on light comes on, and data appears in the Function/Data display.

Note: The system takes approximately 5 to 20 minutes to power on and complete an IPL. When the IPL is complete, 01 B N S appears in the Function/Data display.

__ 26. Did you install a 289x or 4810 IXS card?

__ **No**: Do the following:

__ a. Sign on the system unit. Ensure that you have service tools authority.

__ b. Type **strsst** on the command line of the iSeries session and press Enter.

__ c. Type **your service tools user ID and service tools password** on the *Start a Service Tools (STRSST) Sign On* display and press Enter.

__ d. Select **Start a service tool** from the *Start a Service Tools* display and press Enter.

__ e. Select **Hardware service manager** from the display and press Enter.

__ f. Select **Packaging hardware resources (system, frames, cards...)** from the display and press Enter.

__ g. Type **9** on the *System Unit or Expansion Unit* line.

__ h. Press Page Down if needed and look at the *Card Pos* column for the adapter card you just installed.

__ i. Did you find the card you just installed?

__ **Yes**: Go to step 27 on page 43.

__ **No**: Return to step 2 on page 37 and verify the install procedure steps.

__ **Yes**: Do the following:

__ a. If you installed a 289x or 4810 IXS card, it is recommended that you perform a verification test.

__ b. Sign on the system unit. Ensure that you have service tools authority.

__ c. Type **strsst** on the command line of the iSeries session and press Enter.

__ d. Type **your service tools user ID and service tools password** on the *Start a Service Tools (STRSST) Sign On* display and press Enter.

__ e. Select **Start a service tool** from the *Start a Service Tools* display and press Enter.

__ f. Select **Hardware service manager** from the display and press Enter.

__ g. Select **Packaging hardware resources (system, frames, cards...)** from the display and press Enter.

__ h. Type **9** on the *System Unit or Expansion Unit* line.

__ i. Press Page Down if needed and look at the *Card Pos* column for the card you just installed.

__ 1) Select **Associated Logical Resources** on the line next to the 289x or 4810 that was just installed. Press Enter.

__ 2) Select **Verify** on the line next to the 289x or 4810 card (Communication IOA).

__ 3) Press Enter at the *Verification Test* display.

__ 4) Select **Processor Internal Test** and press Enter.

__ 5) Press Enter at the *Number of Test Runs* display.

    __ 6) When the test is complete, the message `The test is successful` appears on the *Verification Test Results* display.

    __ 7) Press Enter twice.

    __ 8) Select **Hardware Memory Test** and press Enter.

    __ 9) Press Enter at the *Number of Test Runs* display.

> **Note:** If the test fails, make sure that you have installed the card properly. If the test continues to fail, contact your authorized dealer or service provider.

    __ 10) When the test is complete, the message `The test is successful` appears on the *Verification Test Results* display.

    __ 11) Press Enter twice.

    __ 12) Press F3 three times and press Enter to return to the *Main Menu*.

__ 27. Your feature installation is complete.

__ 28. Press F3 three times and press Enter to get back to the *Main Menu*.

Move a card in your iSeries

__ 1. Remove or open the back cover of the system unit or expansion unit where you will remove the feature card. Refer to "Remove the covers" on page 75 for more information.

__ 2. Locate the feature card area.

__ 3. Either latches or screws secure the cards in place.

Does your unit have card latches?

    __ **Yes**: Your iSeries can either be powered off or powered on when you install your new card. Decide which way you want to install your card—"Your iSeries is powered on while moving cards" on page 45 or "Your iSeries is powered off while moving cards" on page 49.
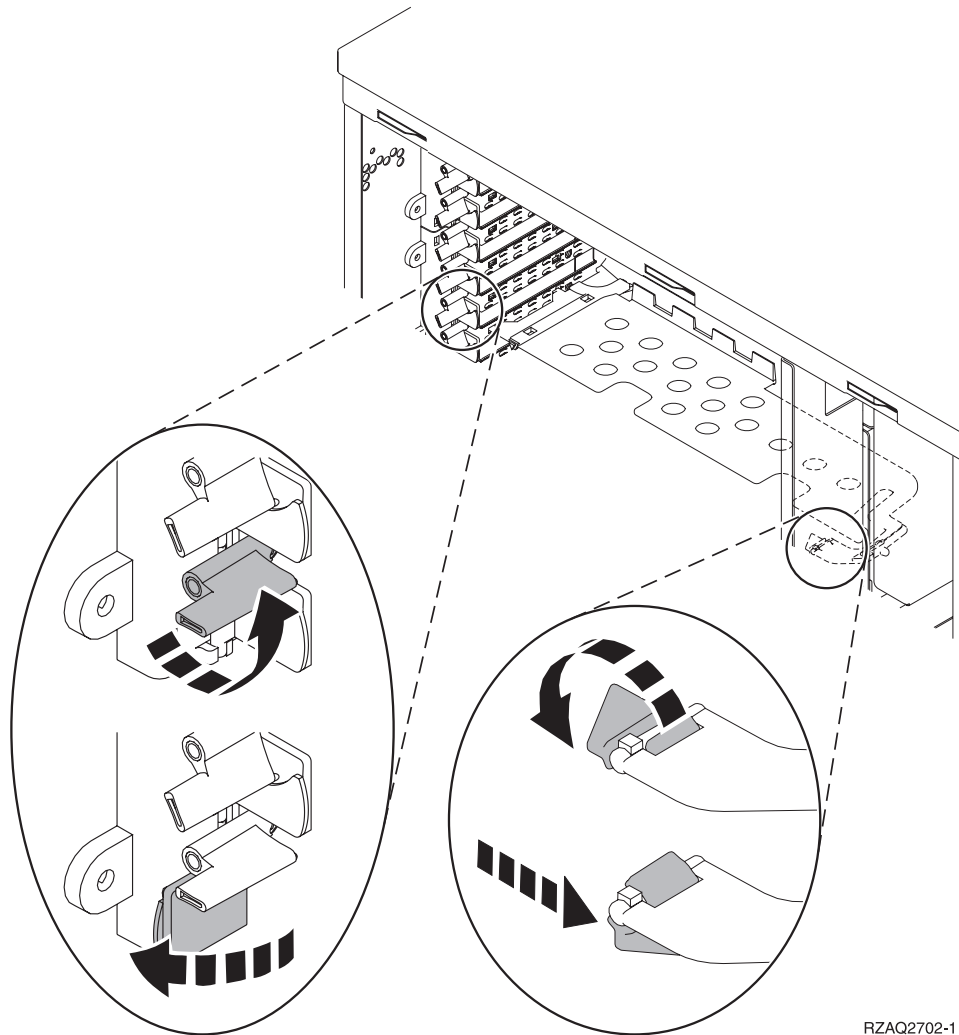
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__ **No**: Your unit has screws to secure the cards.

　　__ a. To move or install a feature card, you must power off your unit.

　　__ b. Go to "Your iSeries is powered off while moving cards" on page 49.

RV5B001-0
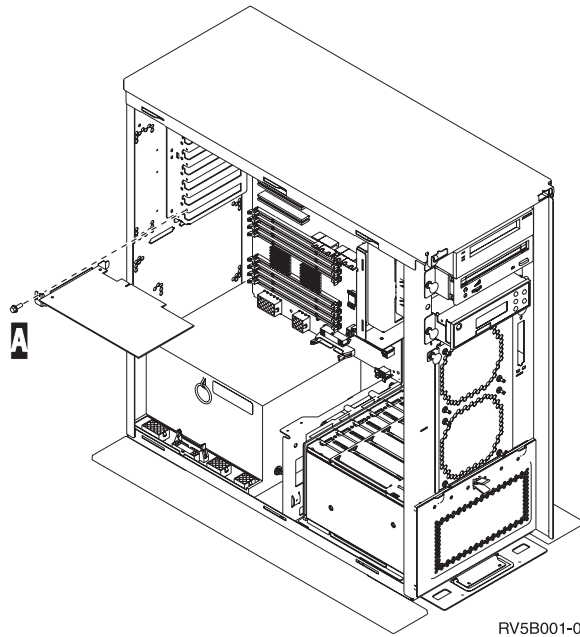
Your iSeries is powered on while moving cards

___ 1. Type **strsst** on the command line of the *Main Menu* and press Enter.

___ 2. Type **your service tools user ID and service tools password** on the *Start Service Tools (STRSST) Sign On* display and press Enter.

___ 3. Select **Start a service tool** from the *System Service Tools (SST)* display and press Enter.

___ 4. Select **Hardware service manager** from the *Start a Service Tool* display and press Enter.

___ 5. Select **Packaging hardware resources (system, frames, cards...)** from the *Hardware Service Manager* display and press Enter.

___ 6. Type **9** on the *System Unit* or *Expansion Unit* line of the unit where you are installing the new card and press Enter.

___ 7. Select **Include empty positions**.

___ 8. **Attach the disposable wrist strap to prevent electrostatic discharge from damaging a device.** Attach the adhesive part of the foil to an unpainted metal surface on the frame of the unit.

   Notes:

   a. Follow the same precautions you would use without the wrist strap. The 2209 Disposable Wrist Strap is for static control. It will not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

   b. Remove the liner from the copper foil at the end when you unroll the strap.

   c. Attach the copper foil to an **exposed, unpainted** metal surface on the frame of the unit (electrical ground).

___ 9. Select **Concurrent Maintenance** on the card position where you want to remove the card. Press Enter.

___ 10. Select **Toggle LED blink off/on**. A light-emitting diode (LED) blinks identifying the position you chose.

___ 11. Select **Toggle LED blink off/on** to stop the blinking LED.

___ 12. Select **Power off domain** on the *Hardware Resource Concurrent Maintenance* display. Press Enter.

___ 13. Wait for the *Hardware Resource Concurrent Maintenance* display to appear with the message indicating Power off complete.

__ 14. Open the latch at the card position where you plan to remove the card. Move the latch counterclockwise and then swing the latch out.
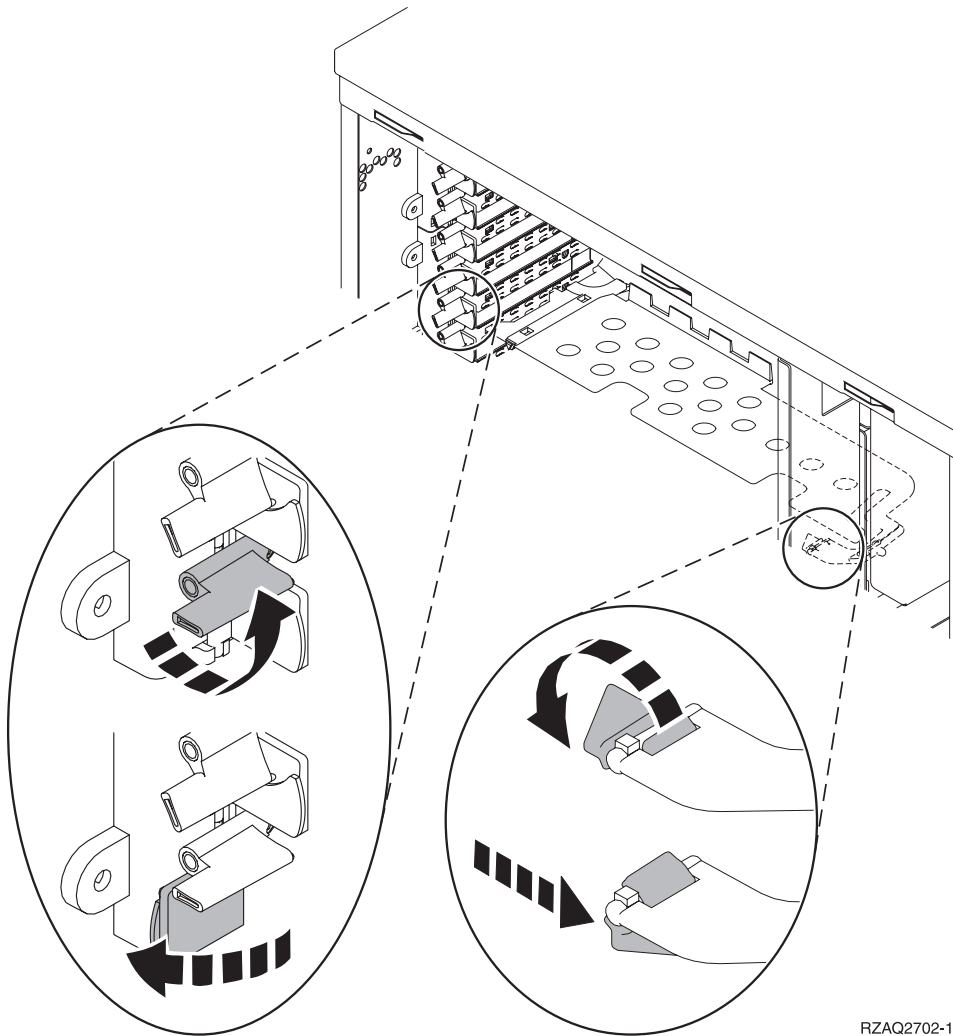
RZAQ2702-1

Figure 13. Example of 270, 800, 810, 820, 5075 Card Latch

Figure 14. Example of 830, 840, SB2, SB3, 5079 Card Latches

__ 15. Remove the card and place it in a protective package.

__ 16. **Attention:** Adapter cards are fragile:

- Handle only by the edges.
- Keep fingers off printed circuit area.
- Use static strap when handling.
- Leave in protective packaging until ready to install.

__ 17. Locate the adapter card you want to install in this position.

__ 18. If installing the 289x or 4810 IXS card:

    __ a. Remove a second card filler plate below the first one removed.

    __ b. Remove the plastic card dividers from the positions the IXS card will occupy. Press down on the release lever at the headstock end and pull away from the backplane.

__ 19. Align the adapter card with the card connector inside the system unit or expansion unit and push until it is connected securely.

__ 20. Swing the latch in and move the latch clockwise to secure the card.

__ 21. Connect any cables and label the cables with the card position.

__ 22. Select **Power on domain** on the *Hardware Resource Concurrent Maintenance* display. Press Enter.

__ 23. Press Enter.

__ 24. Select **Assign to** on the resource with the asterisk (*) on the *Work with Controlling Resource* display. Press Enter.

__ 25. Wait for the *Hardware Resource Concurrent Maintenance* display to appear with the message indicating `Power on complete`.

__ 26. If you have more cards to move or want to install the card you removed in another position, go to "Determine the best place to install your card" on page 16.

__ 27. If you are finished moving and installing all the cards, remove the wrist strap.

__ 28. Install the unit covers.

__ 29. Did you install a 289x or 4810 IXS card?

> __ **No**: Do the following:
>
> > __ a. Sign on the system unit. Ensure that you have service tools authority.
> >
> > __ b. Type **strsst** on the command line and press Enter.
> >
> > __ c. Type **your service tools user ID and service tools password** on the *Start Service Tools (STRSST) Sign On* display and press Enter.
> >
> > __ d. Select **Start a service tool** from the *Start a Service Tools* display and press Enter.
> >
> > __ e. Select **Hardware service manager** from the display and press Enter.
> >
> > __ f. Select **Packaging hardware resources (system, frames, cards...)** from the display and press Enter.
> >
> > __ g. Type **9** on the *System Unit or Expansion Unit* line.
> >
> > __ h. Press Page Down if needed and look at the *Card Pos* column for the adapter card you just installed.
> >
> > __ i. Did you find the card you just installed?
> >
> > > __ **Yes**: Go to step 30 on page 49.
> > >
> > > __ **No**: Return to step 1 on page 45 and verify the installation procedure steps.
>
> __ **Yes**: Do the following:
>
> > __ a. If you installed a 289x or 4810 IXS card, it is recommended that you perform a verification test.
> >
> > __ b. Sign on the system unit. Ensure that you have service tools authority.
> >
> > __ c. Type **strsst** on the command line and press Enter.
> >
> > __ d. Type **your service tools user ID and service tools password** on the *Start Service Tools (STRSST) Sign On* display and press Enter.
> >
> > __ e. Select **Start a service tool** from the *Start a Service Tools* display and press Enter.
> >
> > __ f. Select **Hardware service manager** from the display and press Enter.
> >
> > __ g. Select **Packaging hardware resources (system, frames, cards...)** from the display and press Enter.
> >
> > __ h. Type **9** on the *System Unit or Expansion Unit* line.
> >
> > __ i. Press Page Down if needed and look at the *Card Pos* column for the card you just installed.
> >
> > > __ 1) Select **Associated Logical Resources** on the line next to the 289x or 4810 that was just installed.
> > >
> > > __ 2) Select **Verify** on the line next to the 289x or 4810 card.
> > >
> > > __ 3) Press Enter at the *Verification Test* display.
> > >
> > > __ 4) Select **Processor Internal Test** and wait for it to complete.
> > >
> > > __ 5) Select **Hardware Memory Test** and wait for it to complete.
> > >
> > > __ 6) Press Enter at the *Number of Test Runs* display.
> > >
> > > > **Note:** If the test fails, make sure that you have installed the card properly. If the test continues to fail, contact your authorized dealer or service provider.
> > >
> > > __ 7) When the test is complete, the message `This test is successful` appears on the *Verification Test Results* display.
> > >
> > > __ 8) Press Enter twice.

__ 30. Your feature upgrade is complete.

__ 31. Press F3 three times and press Enter to get back to the *Main Menu*.

Your iSeries is powered off while moving cards

__ 1. If an Integrated xSeries Adapter (IXA) is present on the system, shut it down using OS/400 options.

__ 2. Ensure that all jobs are complete.

__ 3. When all jobs are complete, type **pwrdwnsys *immed** on an iSeries command line and press Enter.

__ 4. When the iSeries power down is complete, unplug any power cords, such as printers and displays, from electrical outlets.

__ 5. Unplug the system or expansion unit power cord from the electrical outlet.

__ 6. **Attach the disposable wrist strap to prevent electrostatic discharge from damaging a device.** Attach the adhesive part of the foil to an unpainted surface on the frame of the unit.

> **Notes:**
>
> a. Follow the same precautions you would use without the wrist strap. The 2209 Disposable Wrist Strap is for static control. It will not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
>
> b. Remove the liner from the copper foil at the end when you unroll the strap.
>
> c. Attach the copper foil to an **exposed, unpainted** metal surface on the frame of the system unit (electrical ground).

__ 7. Locate the adapter card positions inside your system unit.

__ 8. Does your unit have screws to secure the cards?

RV5B001-0
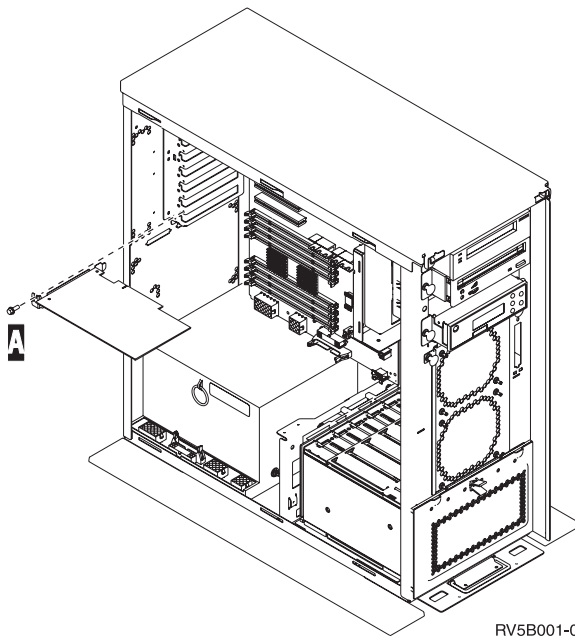
> __ **No**: Continue with the next step.
>
> __ **Yes**: Do the following:
>
> > __ a. Remove the screw from the card position where you plan to remove the card.
> >
> > __ b. Go to step 10 on page 51.

__ 9. Open the latch at the card position where you plan to remove the card. Move the latch counterclockwise and then swing the latch out.
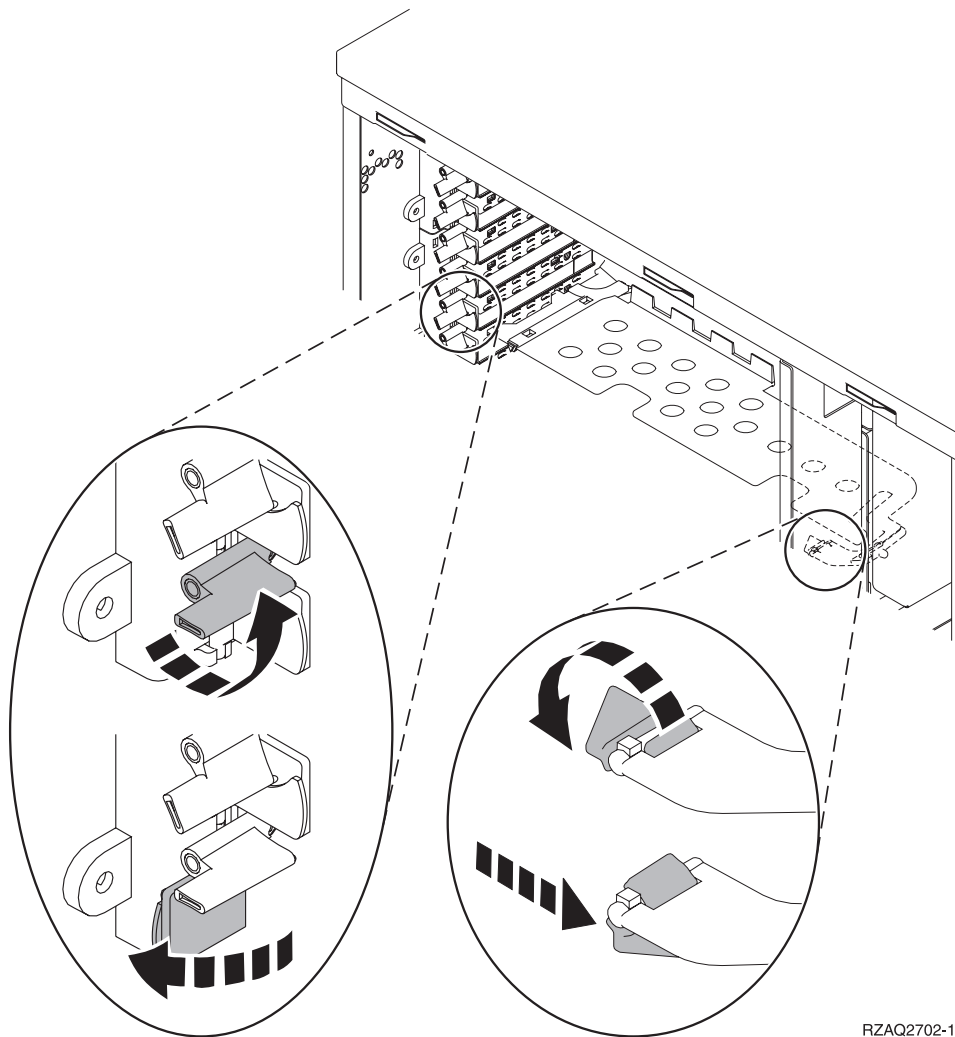
Figure 15. Example of 270, 800, 810, 820, 5075 Card Latch
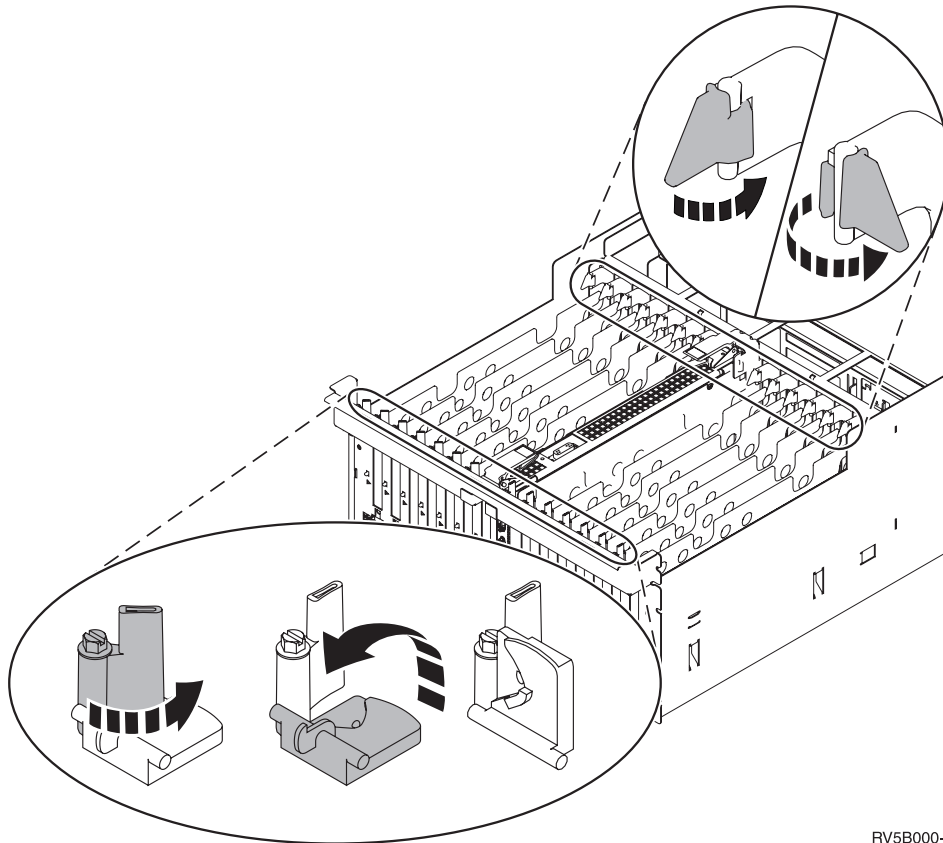
Figure 16. Example of 830, 840, 870, 890, SB2, SB3, 5079 Card Latches

__ 10. Remove the card and place it in a protective package.

__ 11. **Attention:** Adapter cards are fragile:

  • Handle only by the edges.

  • Keep fingers off printed circuit area.

  • Use static strap when handling.

  • Leave in protective packaging until ready to install.

__ 12. Locate the adapter card you want to install in this position.

__ 13. If installing the 289x or 4810 IXS card:

  __ a. Remove a second card filler plate below the first one removed.

  __ b. Remove the plastic card dividers from the positions the IXS card will occupy. Press down on the release lever at the headstock end and pull away from the backplane.

__ 14. Align the adapter card with the card holders inside the system unit and push until it is connected securely.

__ 15. Swing the latch in and move the other latch clockwise or install the screw to secure the card.

__ 16. **DANGER**

> **To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)**

Connect any cables and label the cables with the card position.

__ 17. If you have more cards to move or want to install the card you removed in another position, go to "Determine the best place to install your card" on page 16.

__ 18. Then go to "Your iSeries is powered off while moving cards" on page 49 and repeat the steps to install the next card.

__ 19. If you are finished moving and installing all cards, remove the wrist strap.

__ 20. Install the unit covers.

__ 21. **DANGER**

> **An electrical outlet that is not correctly wired could place hazardous voltage on metal parts of the system or the products that attach to the system. It is the customer's responsibility to ensure that the outlet is correctly wired and grounded to prevent an electrical shock. (RSFTD201)**

Plug in the system unit and system unit console into an electrical outlet. Plug in everything you previously unplugged such as printers and displays.

__ 22. Is your system unit an iSeries 270, 800, or 810 or 820, 825, 830, 840, 870, 890?

__ **270, 800, or 810**: Continue with the next step.

__ **820, 825, 830, 840, 870, 890**: Go to step 25.

__ 23. Look at the Function/Data display on the control panel.

__ 24. Does **01 B N V=S** appear in the Function/Data display?

__ **Yes**: Go to step 28 on page 53.

__ **No**: Do the following:

__ a. Press the Increment/Decrement push button until **02** appears in the Function/Data display.

__ b. Press the Enter push button on the control panel.

__ c. Press the Increment/Decrement push button until **B** appears in the Function/Data display.

__ d. Press the Enter push button on the control panel.

__ e. Press the Increment/Decrement push button until **N** appears in the Function/Data display.

__ f. Press the Enter push button on the control panel.

__ g. Press the Increment/Decrement push button until **S** appears in the Function/Data display.

__ h. Press the Enter push button on the control panel.

__ i. Press the Increment/Decrement push button until **01** appears in the Function/Data display.

__ j. Press the Enter push button on the control panel.

01 B N S should appear in the Function/Data display. If it does not, repeat steps 24a through 24i. If it does, go to step 28 on page 53.

__ 25. Look at the Function/Data display on the control panel.

__ 26. Does **01 B V=S** appear in the Function/Data display?

__ **Yes**: Continue with the next step.

__ **No**: Do the following:

__ a. Press the Increment/Decrement push button until **02** appears in the Function/Data display.

__ b. Press the Enter push button on the control panel.

__ c. Press the Increment/Decrement push button until **B** appears in the Function/Data display.

__ d. Press the Enter push button on the control panel.

__ e. Press the Increment/Decrement push button until **S** appears in the Function/Data display

    __ f. Press the Enter push button on the control panel.

    __ g. Press the Increment/Decrement push button until **01** appears in the Function/Data display.

    __ h. Press the Enter push button on the control panel.

         01 B S should appear in the Function/Display panel. If it does appear, not repeat steps 26a on page 52 through 26h.

    __ i. Go to step 27.

__ 27. Press the Power push button that is located on the iSeries control panel. There is approximately a 10-second delay before the power-on light comes on, and data appears in the Function/Data display.

    Note: The system takes approximately 5 to 20 minutes to power on and complete an IPL. When the IPL is complete, 01 B N S appears in the Function/Data display.

__ 28. Did you install a 289x or 4810 IXS card?

    __ **No**: Do the following:

        __ a. Sign on the system unit. Ensure that you have service tools authority.

        __ b. Type **strsst** on the command line and press Enter.

        __ c. Type **your service tools user ID and service tools password** on the *System Service Tools (SST) Sign On* display and press Enter.

        __ d. Select **Start a service tool** from the *Start a Service Tools* display and press Enter.

        __ e. Select **Hardware service manager** from the display and press Enter.

        __ f. Select **Packaging hardware resources (system, frames, cards...)** from the display and press Enter.

        __ g. Type **9** on the *System Unit or Expansion Unit* line.

        __ h. Press Page Down if needed and look at the *Card Pos* column for the adapter card you just installed.

        __ i. Did you find the card you just installed?

            __ **Yes**: Go to step 29 on page 54.

            __ **No**: Return to step 2 on page 49 and verify the installation procedure steps.

    __ **Yes**: Do the following:

        __ a. If you installed a 289x or 4810 IXS card, it is recommended that you perform a verification test.

        __ b. Sign on the system unit. Ensure that you have service tools authority.

        __ c. Type **strsst** on the command line and press Enter.

        __ d. Type **your service tools user ID and service tools password** on the *System Service Tools (SST) Sign On* display and press Enter.

        __ e. Select **Start a service tool** from the *Start a Service Tools* display and press Enter.

        __ f. Select **Hardware service manager** from the display and press Enter.

        __ g. Select **Packaging hardware resources (system, frames, cards...)** from the display and press Enter.

        __ h. Type **9** on the *System Unit or Expansion Unit* line.

        __ i. Press Page Down if needed and look at the *Card Pos* column.

            __ 1) Select **Associated Logical Resources** on the line next to the 289x or 4810 that was just installed.

            __ 2) Select **Verify** on the line next to the 289x or 4810 card.

            __ 3) Press Enter at the *Verification Test* display.

            __ 4) Select **Processor Internal Test** and wait for it to complete.

            __ 5) Select **Hardware Memory Test** and wait for it to complete.

    __ 6) Press Enter at the *Number of Test Runs* display.

        Note: If the test fails, make sure that you have installed the card properly. If the test continues to fail, contact your authorized dealer or service provider.

    __ 7) When the test is complete, the message `This test is successful` appears on the *Verification Test Results* display.

    __ 8) Press Enter twice.

    __ 9) Press F3 three times to return to the *Main Menu*.

__ 29. Your feature upgrade is complete.

__ 30. Press F3 three times and press Enter to get back to the *Main Menu*.

Current configuration tables

Locate your unit and current configuration:
- "270, 800, and 810 system unit"
- "820 system unit" on page 57
- "825 system unit" on page 58
- "830, 840, SB2, and SB3 system unit" on page 59
- "8079 unit" on page 61
- "8094 unit" on page 61
- "5075 expansion unit" on page 61
- "5074, 0574, or 8093–002 expansion unit" on page 62
- "5078 or 0578 expansion unit" on page 64
- "5079 expansion unit" on page 64
- "5088 or 0588 PCI-X expansion unit" on page 66
- "5094 or 8093–001 PCI-X expansion unit" on page 66
- "5095 or 0595 PCI-X expansion unit" on page 67
- "5294 PCI-X expansion unit" on page 68

270, 800, and 810 system unit

Position	Type
Imbed IOP	
C07	———
C06	———
C05	———
C04	———
C03	———
C02	———
C01	———

Imbed IOP

Short Feature Cards Only

ECS C07
IOP/IOA C06
IOP/IOA C05
IOP/IOA/IXS C04

PCI Bridge Set

IOP/IOA C03
IOA C02
SCSI/IOA C01

Long or Short Feature Cards

Note: All of the connectors are 32 Bit

= positions occupied if 2890, 2891, or 2899 IXS is installed

= positions occupied if 2892 or 4810 IXS is installed
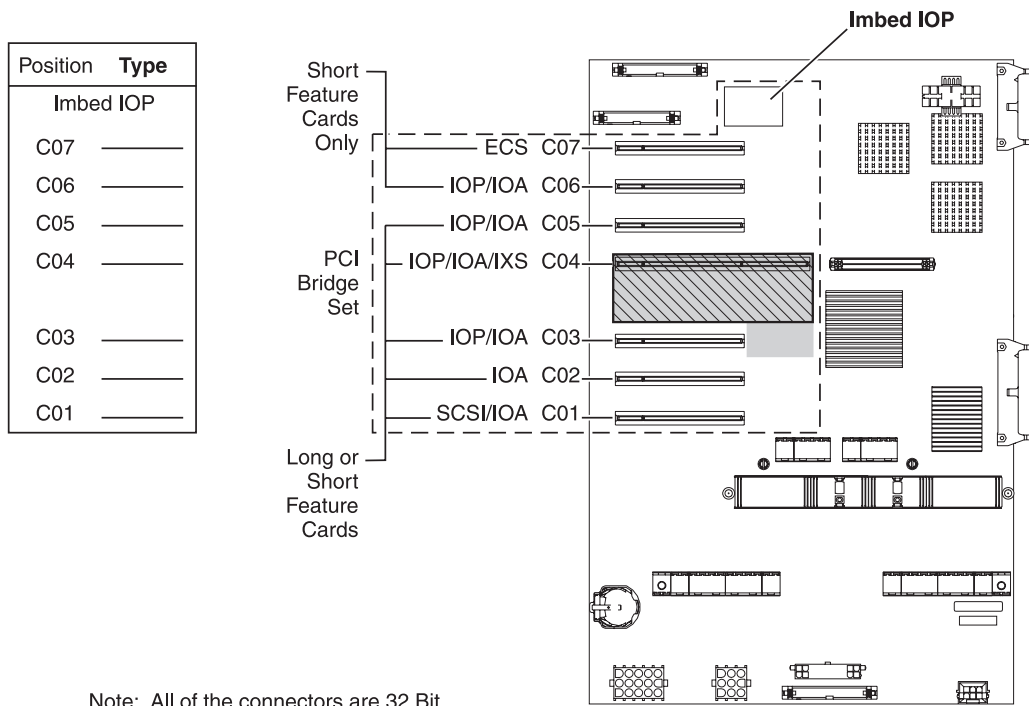
RZAQ5504-5

- The Imbed IOP controls positions C07, C01, and possibly C06 and C05.

55

- IOPs control the IOAs in the positions below the IOP. For example, an IOP in C04 would control IOAs in C03 and C02.
- SCSI in the diagram indicates the first internal disk unit controller position (cards 2757, 2763, 2780, 2782, 4748, 4778, 5703, 5705, or 9767). (9767 is only in 270 units.) The first disk unit controller card must be in C01 and connect the load source disk unit, internal tape, and CD–ROM or DVD device to SCSI Bus Port 0.
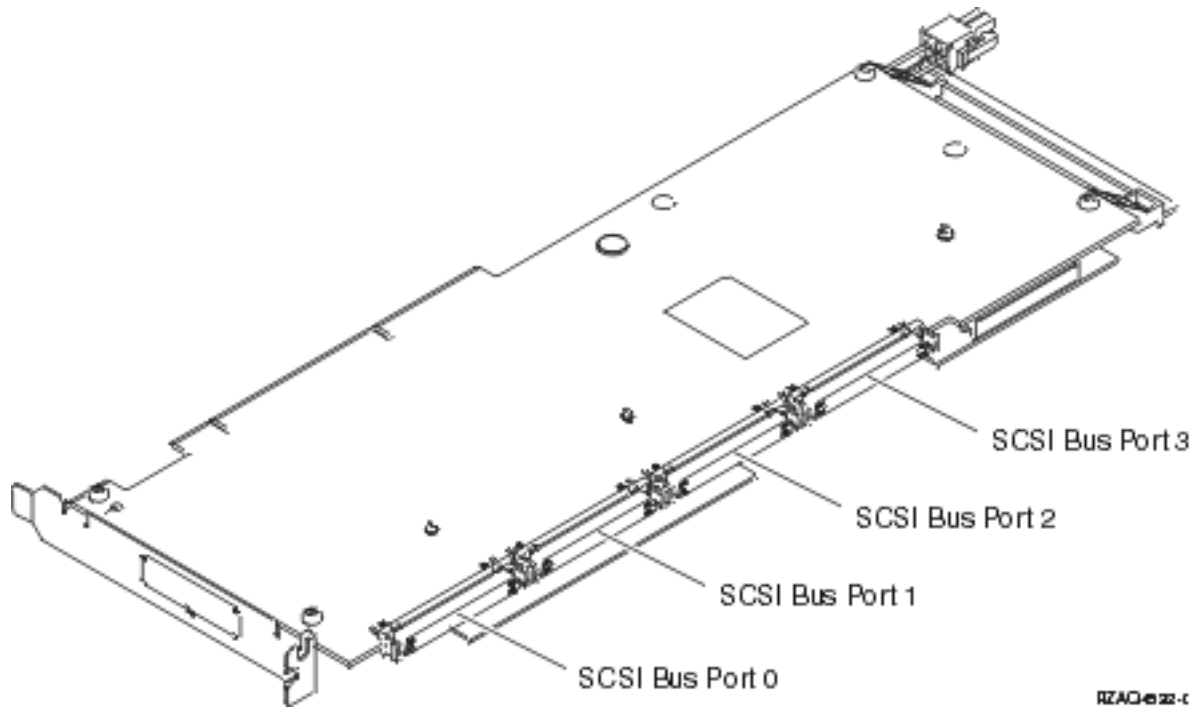
SCSI Bus Port 3
SCSI Bus Port 2
SCSI Bus Port 1
SCSI Bus Port 0
RZAQ4922-0

Note: The adapter shown has 4 ports. Although other adapters may have 2 or 3 ports, the bus port numbering is the same.

- A second 2757, 2763, 2780, 2782, 4748, 4778, or 5703 is allowed in a 270, 800, and 810 system unit with an attached 7104 or 7116 expansion unit.

820 system unit

Position	Type
C12	————
C11	————
C10	————
C09	————
C08	————
C07	————
C06	————
C05	————
C04	————
C03	————
C02	————
C01	————

Imbed IOP

Short Feature Cards Only

PCI Bridge Set 2

PCI Bridge Set 1

Long or Short Feature Cards

IOP	C12
IOA	C11
IOP/IOA/IXS	C10
IOP/IOA	C09
IOP/IOA	C08
IOA	C07
ECS	C06
SCSI	C05
IOP/IOA/IXS	C04
IOP/IOA	C03
IOP/IOA	C02
IOA	C01

32 Bit Connector

Imbed IOP

64 Bit Connectors

▨ = positions occupied if 2890, 2891, or 2899 IXS is installed

▨ = positions occupied if 2892 or 4810 IXS is installed

RZAQ5505-5

- The Imbed IOP controls C06, C05, and possibly C04 and C03.
- IOPs control IOAs in the direction of the arrows in the PCI bridge set.
- SCSI in the diagram indicates the first internal disk unit controller position. Place IOA 2757, 2763, 2780, 2782, 4748, 4778, 5703, or 9767 in position C05. The first disk unit controller card must be in C05 and connect the load source disk unit, internal tape, and CD–ROM or DVD device.
- Two internal disk unit controllers are allowed per 820 system unit.
- A second internal disk unit controller in the system unit is only allowed when removable cable retention mechanisms are installed.
- The second internal disk unit controller cannot be in card position C07 or C08.

825 system unit

Position	Type
C12	———
C11	———
C10	———
C09	HSL
C08	HSL
Imbed IOA	———
C06	———
C05	———
C04	———
C03	———
C02	———
C01	———

PCI Bridge Set 3

IOP/IOA C12
IOP/IOA C11
IOA C10
HSL C09
HSL C08

PCI Bridge Set 2

IOP C07
ECS C06
SCSI C05

PCI Bridge Set 1

IOP/IOA/IXS C04
IOP/IOA C03
IOP/IOA C02
IOA C01

▨ = positions occupied if 2890, 2891, or 2899 IXS is installed

▧ = positions occupied if 2892 or 4810 IXS is installed

RZAQ5514-1

- The IOP controls C06, C05.
- IOPs control IOAs in the direction of the arrows in the PCI bridge set.
- SCSI in the diagram indicates the first internal disk unit controller position (cards 2757, 2763, 2780, 2782, 4748, 4778, 5703) The first disk unit controller card must be in C05 and connect the load source disk unit, internal tape, and CD–ROM or DVD device. The load source disk unit (DB2®) connects into SCSI Bus Port 0. The removable media devices (DB1) plug into SCSI Bus Port 1.
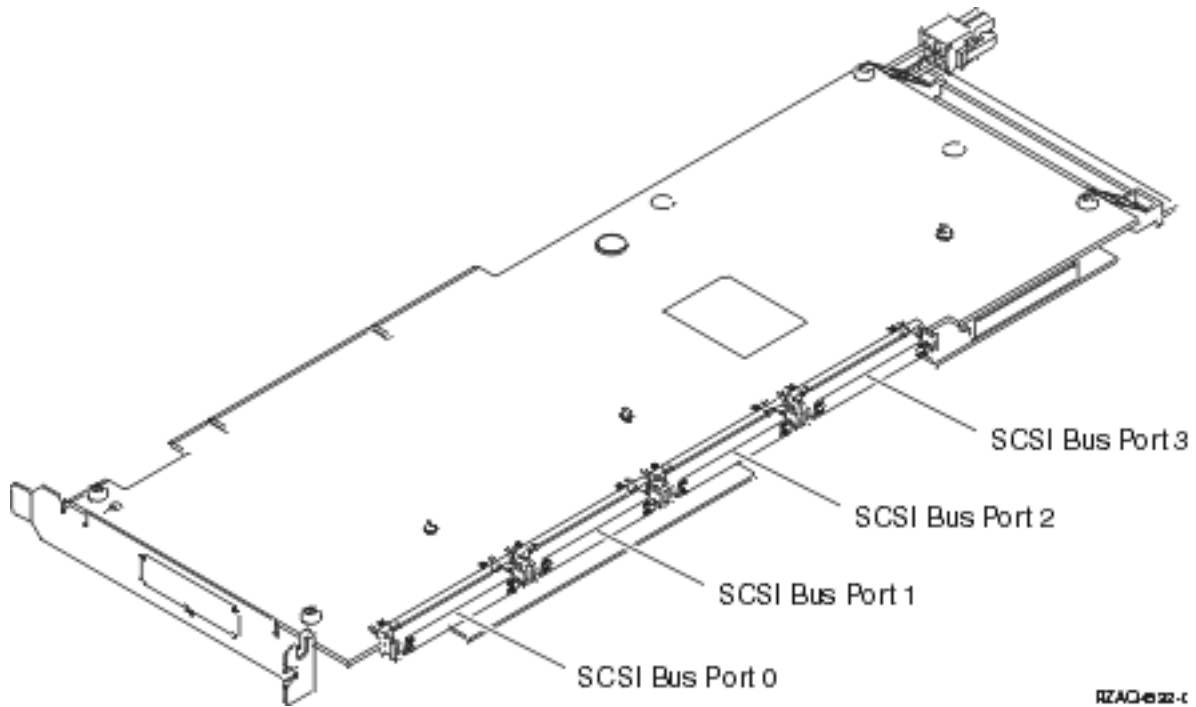
SCSI Bus Port 3
SCSI Bus Port 2
SCSI Bus Port 1
SCSI Bus Port 0

RZAQ4622-0

Note: The adapter shown has 4 ports. Although other adapters may have 2 or 3 ports, the bus port numbering is the same.
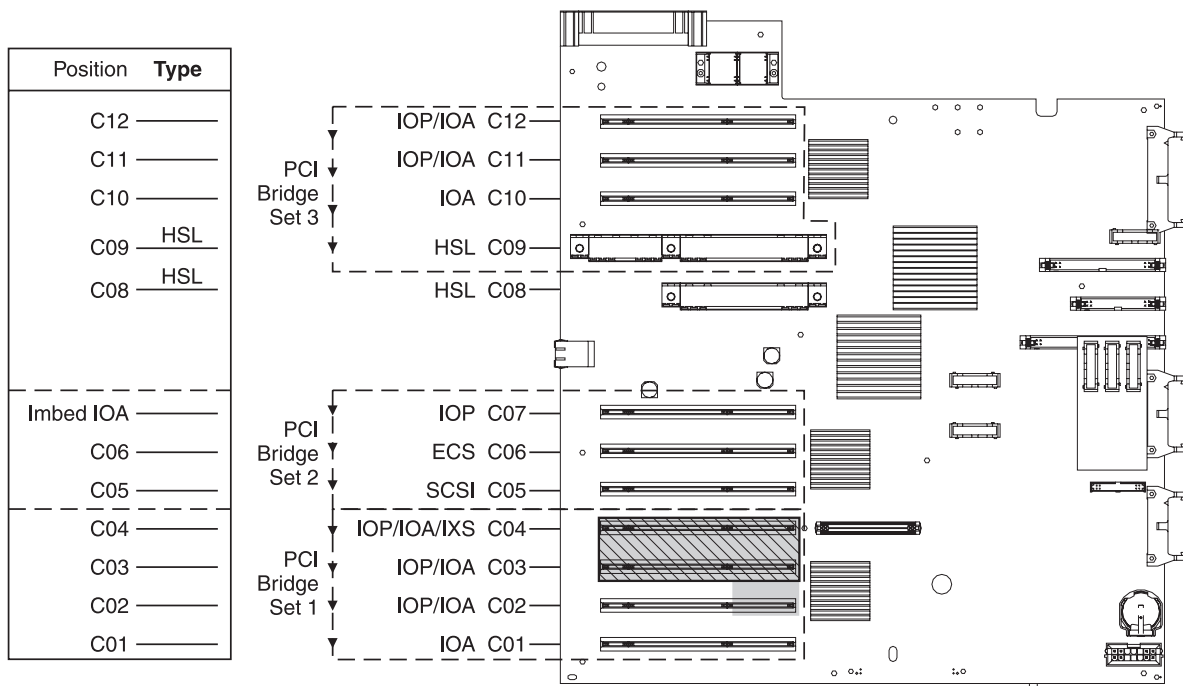
- Three internal disk unit controllers are allowed per 825 system unit.

830, 840, SB2, and SB3 system unit

- IOPs control IOAs in the direction of the arrows in the PCI bridge sets.
- SCSI in the diagram indicates the first internal disk unit controller position (cards 2757, 2780, 4778, 4748, 9748 or 9778). The first disk unit controller card must be in C03 and connect the load source disk unit, internal tape, and CD-ROM or DVD.
- In addition, two additional disk unit controllers are allowed in 830 or 840 system units.
- Additional disk unit controllers are not allowed in SB2 and SB3 system units.

PCI Bridge Set 1   PCI Bridge Set 2   PCI Bridge Set 3

C01 C02 C03 C04 C05 C06 C07 C08 C09 C10 C11 C12 C13 C14 C15

64 Bit | 64 Bit | 64 Bit | 64 Bit | 64 Bit | 32 Bit | 32 Bit | HSL | 64 Bit | 64 Bit | 64 Bit | 32 Bit | 32 Bit | 64 Bit | 64 Bit

5V | 5V | 5V | 5V | 5V

IOP | ECS | SCSI | IOA | IOP/IXS | IOA | IOA | IOP/IOA | IOA | IOP/IXS | IOA | IOA | IOP/IOA | IOA

JTAG C/E   JTAG A   DEBUG   J11 J14
V/S COMM   J15 J16
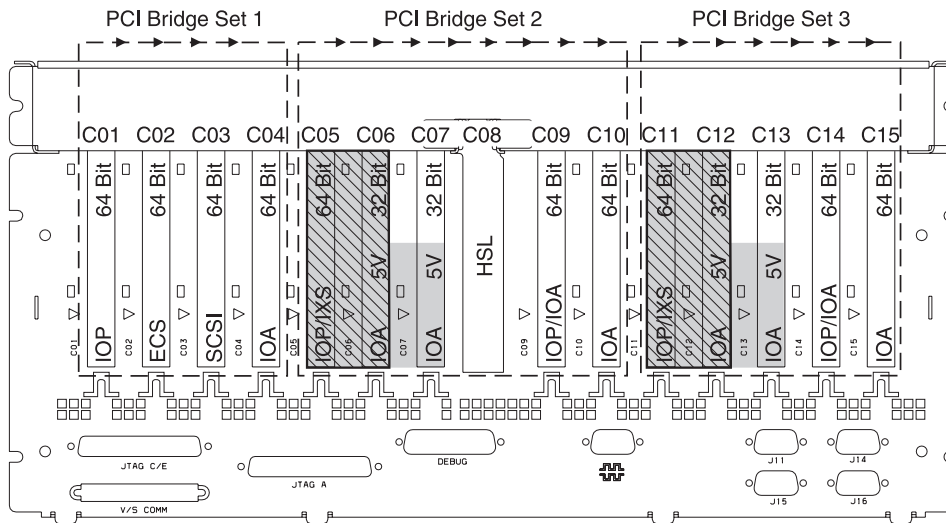
☐ = positions occupied if CCIN 289x IXS is installed

☒ = positions occupied if 2892 or 4810 IXS is installed

Note: Long or short feature cards can go in any position.

Position	Type							HSL							
	C01	C02	C03	C04	C05	C06	C07	C08	C09	C10	C11	C12	C13	C14	C15

RZAQ5506-7

870 and 890 system unit

- IOPs control IOAs in the direction of the arrows in the PCI bridge sets.
- SCSI in the diagram indicates the first internal disk unit controller position. The first disk unit controller card must be in C03 and connect the load source disk unit, internal tape, and CD-ROM or DVD.
- In addition, four disk unit controllers are allowed in 870 or 890 system units.
- Additional disk unit controllers are not allowed in SB2 and SB3 system units.
- Maximum 3 IXS adapters per expansion unit.
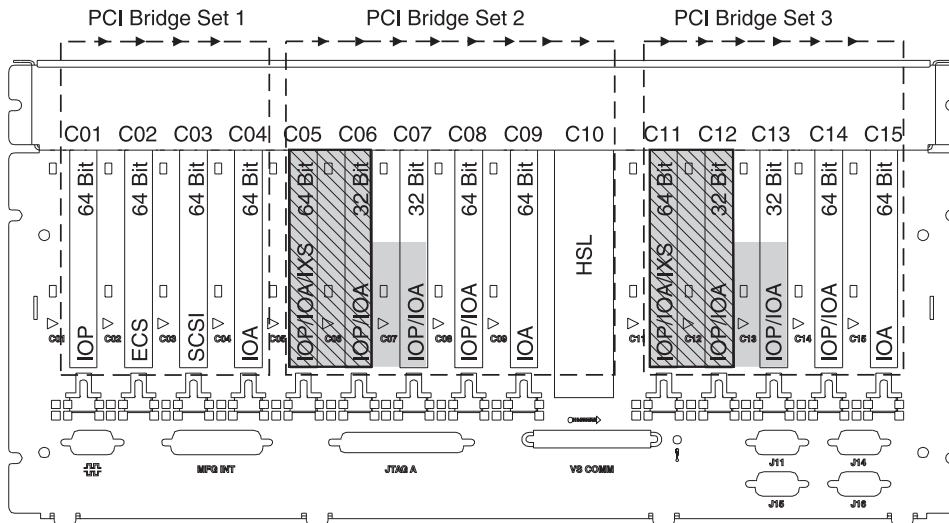
PCI Bridge Set 1   PCI Bridge Set 2   PCI Bridge Set 3

| Position | Type | C01 | C02 | C03 | C04 | C05 | C06 | C07 | C08 | C09 | C10 HSL | C11 | C12 | C13 | C14 | C15 |

RZAQ5511-1

□ = positions occupied if 2890, 2891, or 2899 IXS is installed

◨ = positions occupied if 2892 or 4810 IXS is installed

Note: Long or short feature cards can go in any position.

8079 unit

For the lower unit, refer to an 840 system unit and for the upper unit, refer to the 5074 expansion unit.

8093 unit

For the lower unit, refer to an 890 system unit and for the upper unit, refer to the 5074 expansion unit.

8094 unit

For the lower unit, refer to an 890 system unit and for the upper unit, refer to the 5094 expansion unit.

5075 expansion unit

You need one diagram for each expansion unit attached to the system unit. Copy the diagram for your use.

*   The Imbed IOP controls C01 and possibly C02, C03, and C04.
*   IOPs control IOAs in the direction of the arrows in the PCI bridge set.
*   SCSI in the diagram indicates the disk unit controller position. The first disk unit controller card must be in position C01.

    Resource Name: _____

*   Maximum 3 IXS adapters per expansion unit.

	64 Bit Connectors	Short Feature Cards Only		Type	Position

C08 — IOA
C07 — IOP/IOA   PCI Bridge Set 2
C06 — IOA
C05 — IOP/IXS

C04 — IOA
C03 — IOP/IOA   PCI Bridge Set 1
C02 — IOP/IOA/IXS
C01 — IOA/SCSI

Imbed IOP   32 Bit Connector   Long or Short Feature Cards

Type	Position
_____	C08
_____	C07
_____	C06
_____	C05
_____	C04
_____	C03
_____	C02
_____	C01
Imbed IOP	

▨ = positions occupied if 2890, 2891, or 2899 IXS is installed

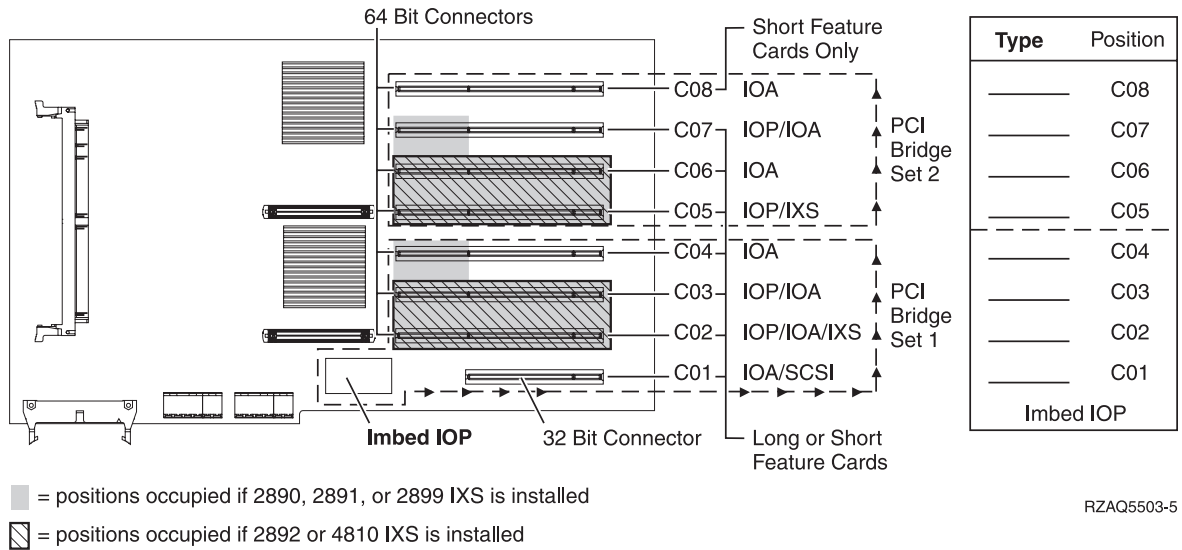▧ = positions occupied if 2892 or 4810 IXS is installed

RZAQ5503-5

5074, 0574, or 8093–002 expansion unit

You need one diagram for each expansion unit attached to the system unit. Copy the diagram for your use.

- Place the first disk unit controller card 2757, 2780, 4748, 4778, 5703, or 9778 in position C02, C03, or C04.
- 5074, 0574, or 8093–002 expansion units have a maximum of three disk unit controllers.
- IOPs control IOAs in the direction of the arrows in the PCI bridge sets.

  Slots C6, C7, C12, and C13 are 5V only slots.

  Resource Name: _____

PCI Bridge Set 1   PCI Bridge Set 2   PCI Bridge Set 3

C01	C02	C03	C04	C05	C06	C07	C08	C09	C10	C11	C12	C13	C14	C15
64 Bit	64 Bit	64 Bit	64 Bit	64 Bit	32 Bit	32 Bit	HSL	64 Bit	64 Bit	64 Bit	32 Bit	32 Bit	64 Bit	64 Bit
IOP	IOA	IOP/IOA	IOA	IOP/IXS	IOA	IOA		IOP/IOA	IOA	IOP/IXS	IOA	IOA	IOP/IOA	IOA

J11   J14
J15   J16
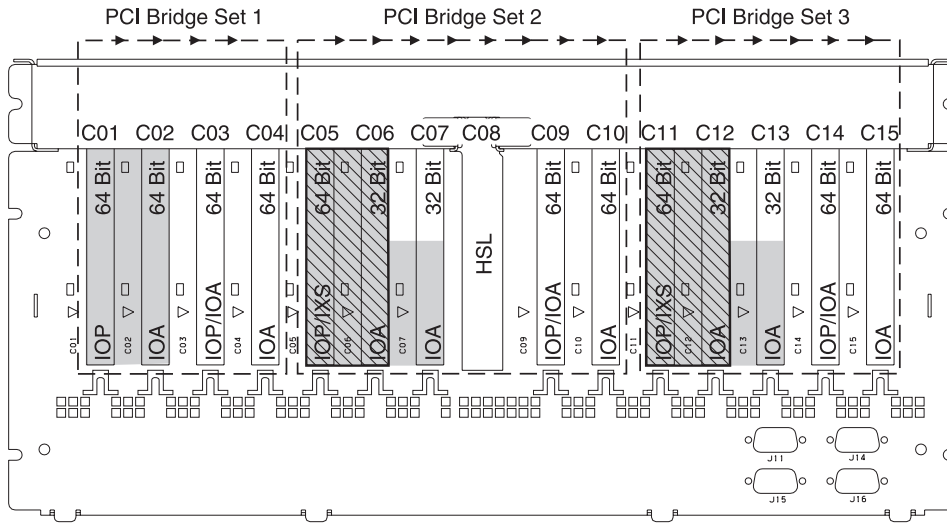
□ = positions occupied if 2890, 2891, or 2899 IXS is installed

▨ = positions occupied if 2892 or 4810 IXS is installed

Note: Long or short feature cards can go in any position.

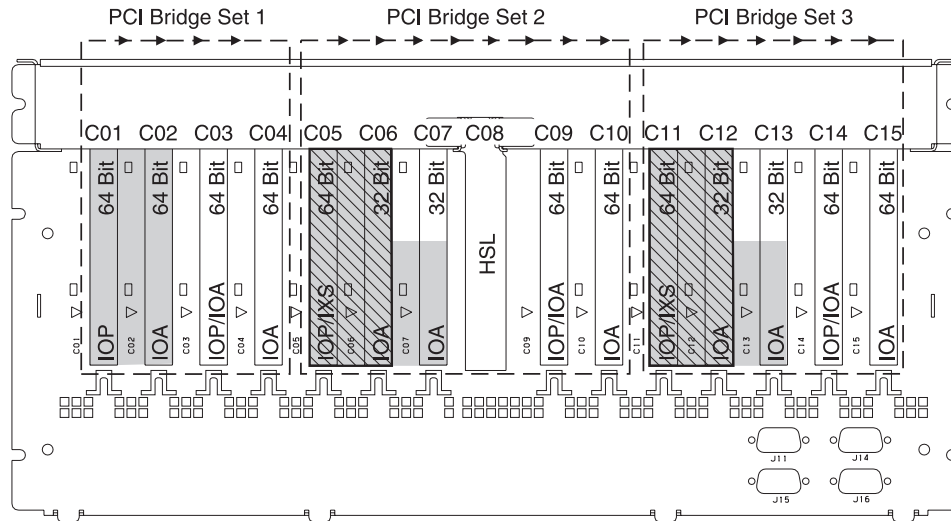| Position	Type													
C01														
C02														
C03														
C04														
C05														
C06														
C07														
C08	HSL													
C09														
C10														
C11														
C12														
C13														
C14														
C15														

RZAQ5507-9

5078 or 0578 expansion unit

IOPs control IOAs in the direction of the arrows in the PCI bridge sets.

Slots C6, C7, C12, and C13 are 5V only slots.

Resource Name: _____

☐ = positions occupied if 2890, 2891, or 2899 IXS is installed

◩ = positions occupied if 2892 or 4810 IXS is installed

Note: Long or short feature cards can go in any position.

Position	Type														
	C01	C02	C03	C04	C05	C06	C07	HSL C08	C09	C10	C11	C12	C13	C14	C15

RZAQ5507-9

Maximum 3 IXS adapters per expansion unit.

5079 expansion unit

You need one diagram for each expansion unit attached to the system unit. Copy the diagram for your use.

* Place the first disk unit controller card in position C02, C03, or C04.
* 5074 expansion units have a maximum of six disk unit controllers.
* IOPs control IOAs in the direction of the arrows in the PCI bridge sets.

Slots C6, C7, C12, and C13 are 5V only slots.

Resource Name: _____

Maximum 3 IXS adapters per expansion unit.
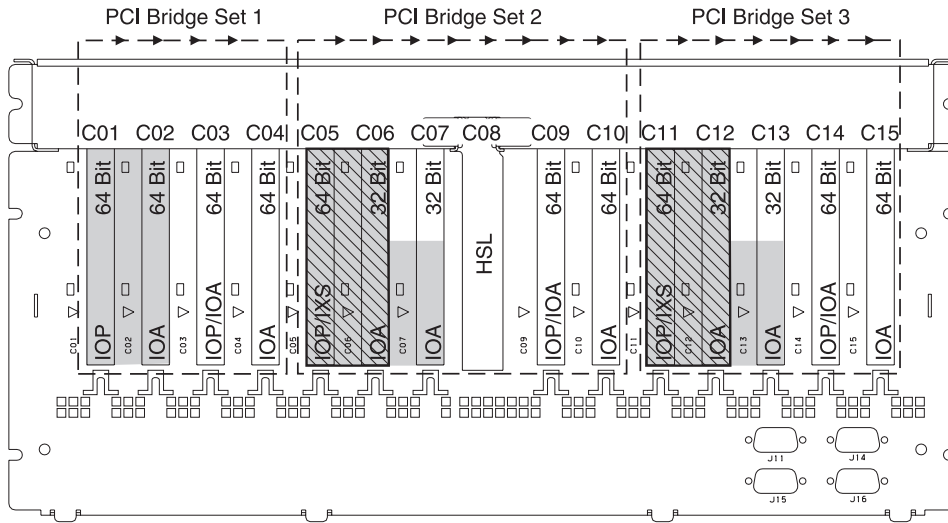
= positions occupied if 2890, 2891, or 2899 IXS is installed

= positions occupied if 2892 or 4810 IXS is installed

Note: Long or short feature cards can go in any position.

Position	Type
C01	
C02	
C03	
C04	
C05	
C06	
C07	
C08	HSL
C09	
C10	
C11	
C12	
C13	
C14	
C15	

RZAQ5507-9

5088 or 0588 PCI-X expansion unit

- 2892 and 4810 are the only IXS cards allowed in C01.
- IOPs control IOAs in the direction of the arrows in the PCI bridge sets.

Resource Name: _____

PCI Bridge Set 1   PCI Bridge Set 2   PCI Bridge Set 3

C01 C02 C03 C04 C05 C06 C07 C08 C09 C10 C11 C12 C13 C14 C15

| | 64 Bit | 64 Bit | 64 Bit | 64 Bit | 64 Bit | 32 Bit | 32 Bit | HSL | 64 Bit | 64 Bit | 64 Bit | 32 Bit | 32 Bit | 64 Bit | 64 Bit |

IOP | IOA | IOP/IOA | IOA | IOP/IXS | IOA | IOA | IOP/IOA | IOA | IOP/IXS | IOA | IOA | IOP/IOA | IOA

J11 J14
J15 J16

▨ = positions occupied if 2890, 2891, or 2899 IXS is installed

◪ = positions occupied if 2892 or 4810 IXS is installed

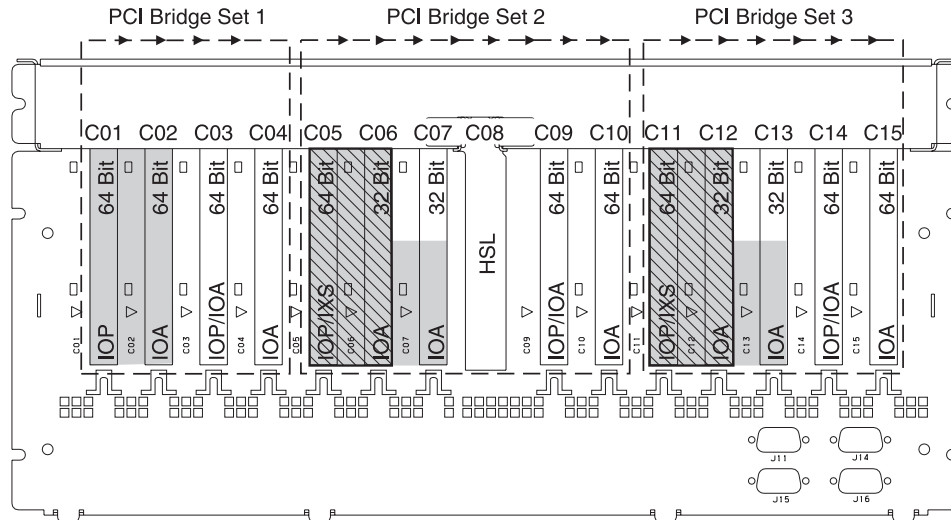Note: Long or short feature cards can go in any position.

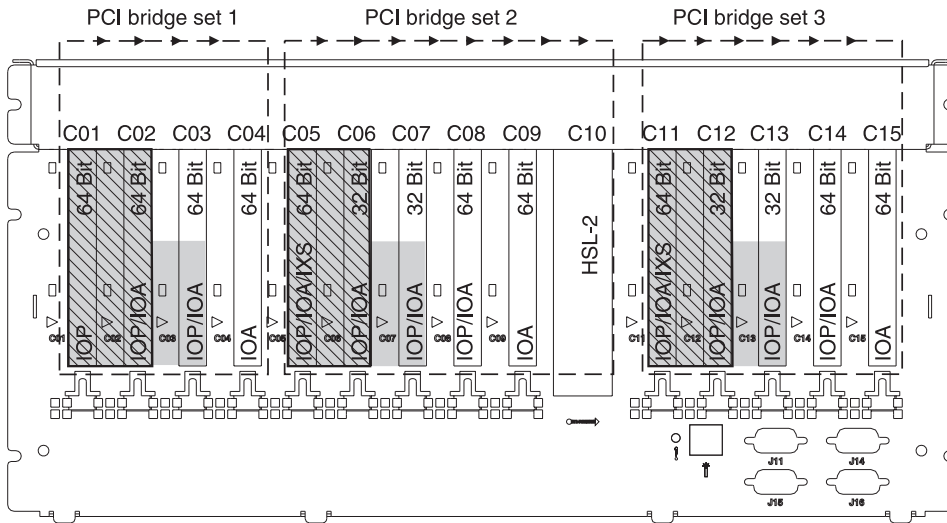| Type								HSL							
Position	C01	C02	C03	C04	C05	C06	C07	C08	C09	C10	C11	C12	C13	C14	C15

RZAQ5507-9

Maximum 3 IXS adapters per expansion unit.

5094 or 8093–001 PCI-X expansion unit

You need one diagram for each expansion unit attached to the system unit. Copy the diagram for your use.

- Place the first disk unit controller card in position C02, C03, C04, C05, C06, C07, C08, or C09 .
- 5094 or 8093–001 expansion units have a maximum of six disk unit controllers.
- IOPs control IOAs in the direction of the arrows in the PCI bridge sets.

  Resource Name: _____

PCI bridge set 1   PCI bridge set 2   PCI bridge set 3

C01 C02 C03 C04 C05 C06 C07 C08 C09 C10 C11 C12 C13 C14 C15

64 Bit 64 Bit 64 Bit 64 Bit 64 Bit 32 Bit 32 Bit 64 Bit 64 Bit 64 Bit 32 Bit 32 Bit 64 Bit 64 Bit

HSL-2

IOP IOP/IOA IOP/IOA IOA IOP/IOA/IXS IOP/IOA IOP/IOA IOP/IOA IOA IOP/IOA/IXS IOP/IOA IOP/IOA IOP/IOA IOA

J11 J14
J15 J16

= Positions occupied if 2890, 2891, or 2899 IXS is installed

= Positions occupied if 2892 or 4810 IXS is installed

Note: Long or short feature cards can go in any position.

Position	Type								HSL-2				
	C01	C02	C03	C04	C05	C06	C07	C08	C09	C10	C11	C12	C13	C14	C15

RZAQ5512-3

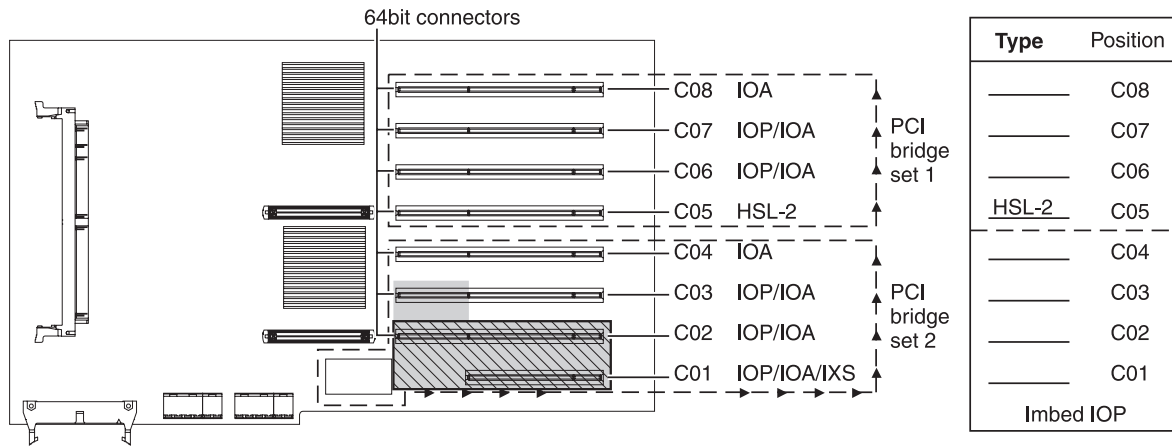Maximum 3 IXS adapters per expansion unit.

Important::

Cooling fans and fan flaps are located at the back of the PCI adapter area. Make sure that cables are not located near the fan air exits to ensure proper cooling. Cables should not be grouped together in a way that hinders air flow. Spreading the cables out helps better distribution of air flow within the PCI adapter area.

5095 or 0595 PCI-X expansion unit

You need one diagram for each expansion unit attached to the system unit. Copy the diagram for your use.

- The IOP controls C02 and possibly C03 and C04.
- IOPs control IOAs in the direction of the arrows in the PCI-X bridge set.
- SCSI in the diagram indicates the disk unit controller position.

    Resource Name: _____

64bit connectors

	C08	IOA	
	C07	IOP/IOA	PCI bridge set 1
	C06	IOP/IOA	
	C05	HSL-2	
	C04	IOA	
	C03	IOP/IOA	PCI bridge set 2
	C02	IOP/IOA	
	C01	IOP/IOA/IXS	

Type	Position
_____	C08
_____	C07
_____	C06
HSL-2	C05
_____	C04
_____	C03
_____	C02
_____	C01
Imbed IOP	

▨ = Positions occupied if 2890, 2891, or 2899 IXS is installed

▨ = Positions occupied if 2892 or 4810 IXS is installed
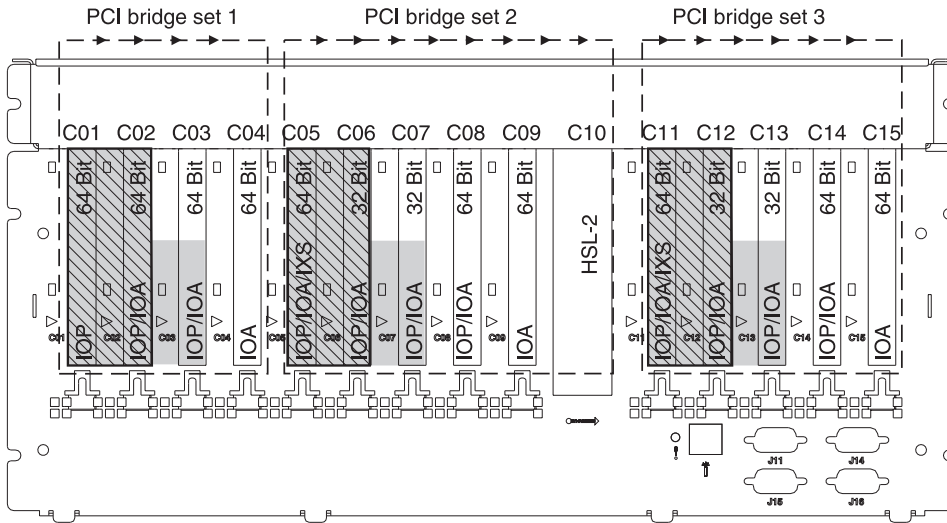
RZAQ5513-3

Maximum 3 IXS adapters per expansion unit.

5294 PCI-X expansion unit

You need one diagram for each expansion unit attached to the system unit. Copy the diagram for your use.

- Place the first disk unit controller card in position C02, C03, or C04, C05, C06, C07, C08, or C09.
- 5094 expansion units have a maximum of twelve disk unit controllers.
- IOPs control IOAs in the direction of the arrows in the PCI bridge sets.

  Resource Name: _____

PCI bridge set 1   PCI bridge set 2   PCI bridge set 3

C01 C02 C03 C04 C05 C06 C07 C08 C09 C10 C11 C12 C13 C14 C15

64 Bit 64 Bit 64 Bit 64 Bit 64 Bit 32 Bit 32 Bit 64 Bit 64 Bit HSL-2 64 Bit 32 Bit 32 Bit 64 Bit 64 Bit

IOP IOP/IOA IOP/IOA IOA IOP/IOA/IXS IOP/IOA IOP/IOA IOP/IOA IOA IOP/IOA/IXS IOP/IOA IOP/IOA IOP/IOA IOA

J11 J14
J15 J16

□ = Positions occupied if CCIN 289x IXS is installed

▨ = Positions occupied if 2892 or 4810 IXS is installed

Note: Long or short feature cards can go in any position.

Position	Type									HSL-2				
	C01	C02	C03	C04	C05	C06	C07	C08	C09	C10	C11	C12	C13	C14	C15

RZAQ5517-0

Maximum 3 IXS adapters per expansion unit.

Important::

Cooling fans and fan flaps are located at the back of the PCI adapter area. Make sure that cables are not located near the fan air exits to ensure proper cooling. Cables should not be grouped together in a way that hinders air flow. Spreading the cables out helps better distribution of air flow within the PCI adapter area.

Placement tables

If your unit is powered off, look at the back of the unit and write down the numbers on the cards in the correct table. Refer to the "Current configuration tables" on page 55 for the location of Imbed IOPs.

Use one worksheet for each IOP in all of your units.
- "Example of a completed placement table"
- "Imbed IOP"
- "2842 IOP"
- "2843 IOP" on page 72
- "2844 IOP" on page 72
- "289x or 4810 Integrated xSeries Server IOP" on page 72

Example of a completed placement table

IOP Card Group	Card Position	Feature Number or CCIN Number from Type Column	Memory Value	Performance Value
IOP	**C01**	**2842**	**100**	**100**
IOA	C02	2748	30	21
IOA	C03	4745	15	7
IOA	C04	4746	10	6
IOA	C05	4838 (added card)	26	37
	IOA Totals		81	71

Imbed IOP

IOP Card Group	Card Position	Feature Number or CCIN Number from Type Column	Memory Value	Performance Value
IOP	**C**	**Imbed**	**100**	**100**
IOA	C			
IOA	C			
IOA	C			
IOA	C			
	IOA Totals			

2842 IOP

IOP Card Group	Card Position	Feature Number or CCIN Number from Type Column	Memory Value	Performance Value
IOP	**C**	**2842**	**100**	**100**
IOA	C			
IOA	C			
IOA	C			

IOP Card Group	Card Position	Feature Number or CCIN Number from Type Column	Memory Value	Performance Value
IOP	C	2842	100	100
IOA	C			
	IOA Totals			

2843 IOP

IOP Card Group	Card Position	Feature Number or CCIN Number from Type Column	Memory Value	Performance Value
	C	2843	211	100
	C			
	C			
	C			
	C			
	IOA Totals			

2844 IOP

IOP Card Group	Card Position	Feature Number or CCIN Number from Type Column	Memory Value	Performance Value
	C	2844	211	100
	C			
	C			
	C			
	C			
	IOA Totals			

289x or 4810 Integrated xSeries Server IOP

CCIN 2890 (feature codes 2790, 2791, 2799, 2890, 2891, 2899) restrictions:

- Add only 4838, 2744, 2743, and 2760 IOAs.
- Except for the 270 or 810 system unit, the 2890 card uses three positions (if an IOA is used).
- There are no maximum limits for memory, or performance values.

CCIN 2892 (feature codes 2792, 2892, 4710, 4810) restrictions:

- Add only 2744, 5700, and 5701 IOAs.
- Two positions are used.
- There are no maximum limits for memory, or performance values.

IOP Card Group	Card Position	Feature Number or CCIN Number from Card Position
	C	289x IXS
	C	
	C	

IOP Card Group	Card Position	Feature Number or CCIN Number from Card Position
	C	289x IXS
	C	

Remove the covers

Locate the diagram of the unit you are working on:

- "270, 800, 810 or 820 system units"
- "825 system unit" on page 76
- "830, 840, 870, 890, SB2, SB3, 5074, 5079, and 5094 units" on page 77
- "5075 and 5095 expansion unit" on page 78
- "5078 and 5088 expansion unit" on page 79
- "Access units in a rack" on page 80
- "System-unit control panel" on page 81
- "Type 5708, auxiliary-write cache IOA (FC 5580, 5581)" on page 82
- "Type 574F, auxiliary-write cache IOA (FC 5582)" on page 85

270, 800, 810 or 820 system units

To access the PCI card location, you need to remove the back cover, if you have one, and the side cover:

__ 1. Place your hand near the bottom of the back cover and lift up and out.

__ 2. **Attention:** If you are removing the side cover while the server is powered on, errors may occur due to electromagnetic interference.

Remove the right side cover (view from back) by loosening the thumbscrews and sliding the cover from front to back until it stops.
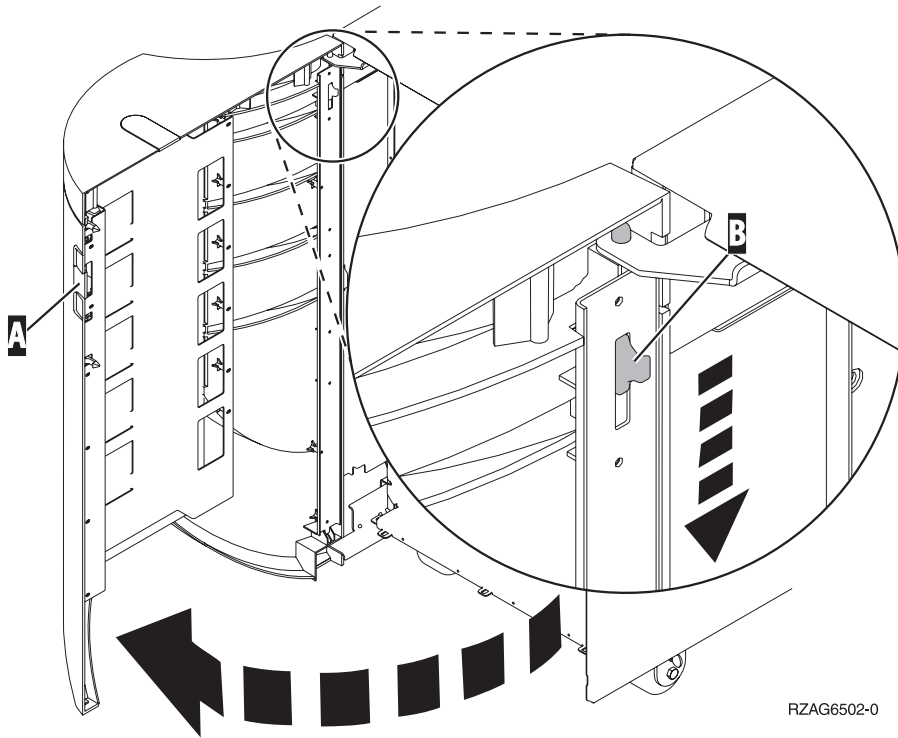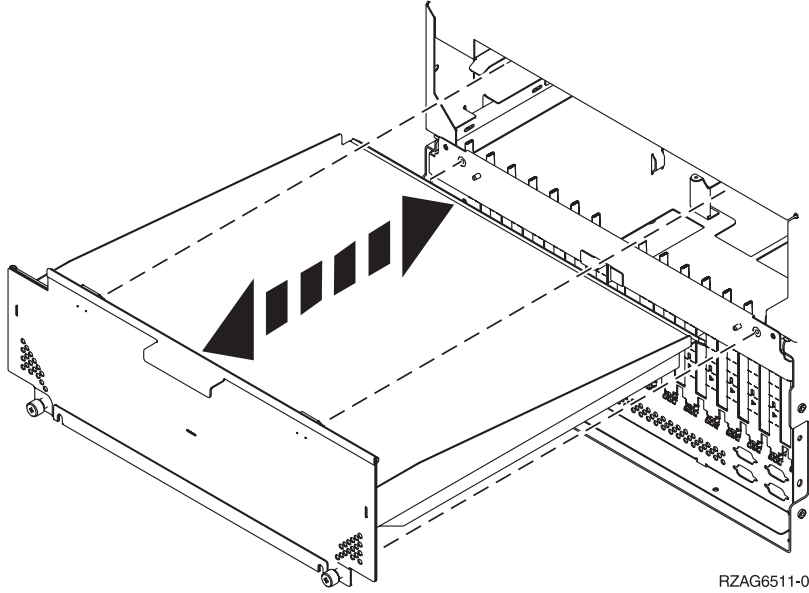
__ 3. Pull the cover out.
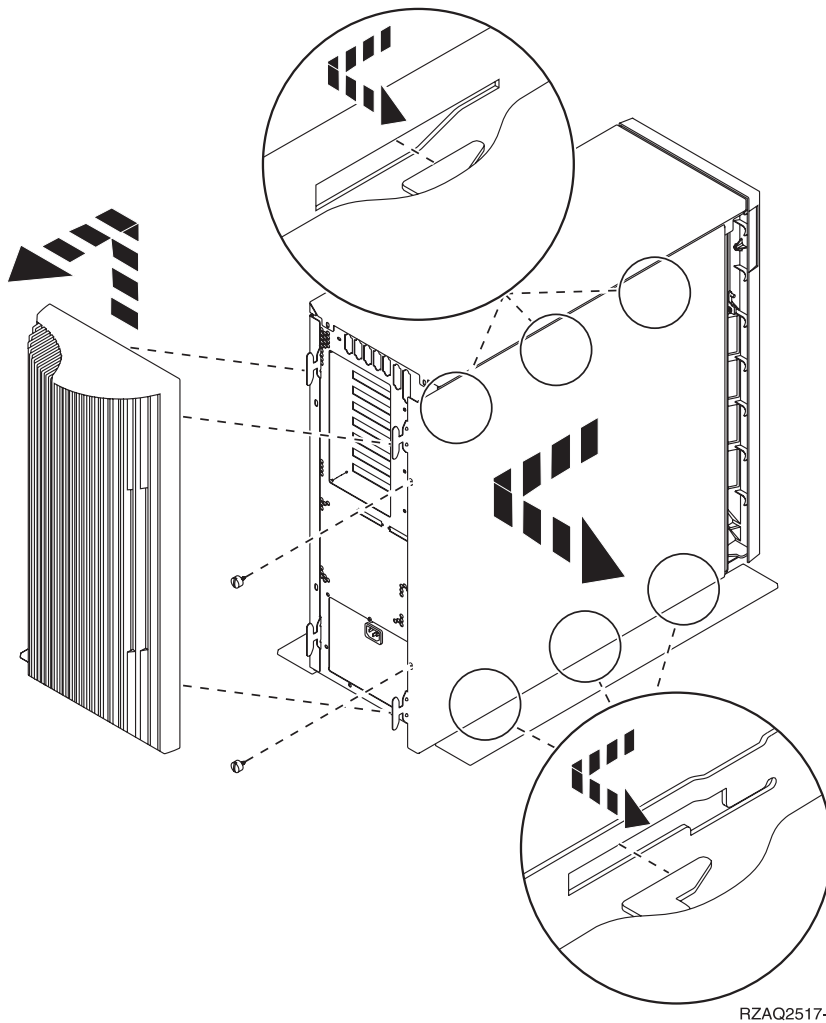
RZAQ2517-0

825 system unit

To access the PCI card location, you need to remove the back cover and the side cover:

__ 1. Place your hand near the bottom of the back cover and lift up and out.

__ 2. Remove the right side cover (view from back) by loosening the thumbscrews and sliding the cover from front to back until it stops.

__ 3. Pull the cover out.
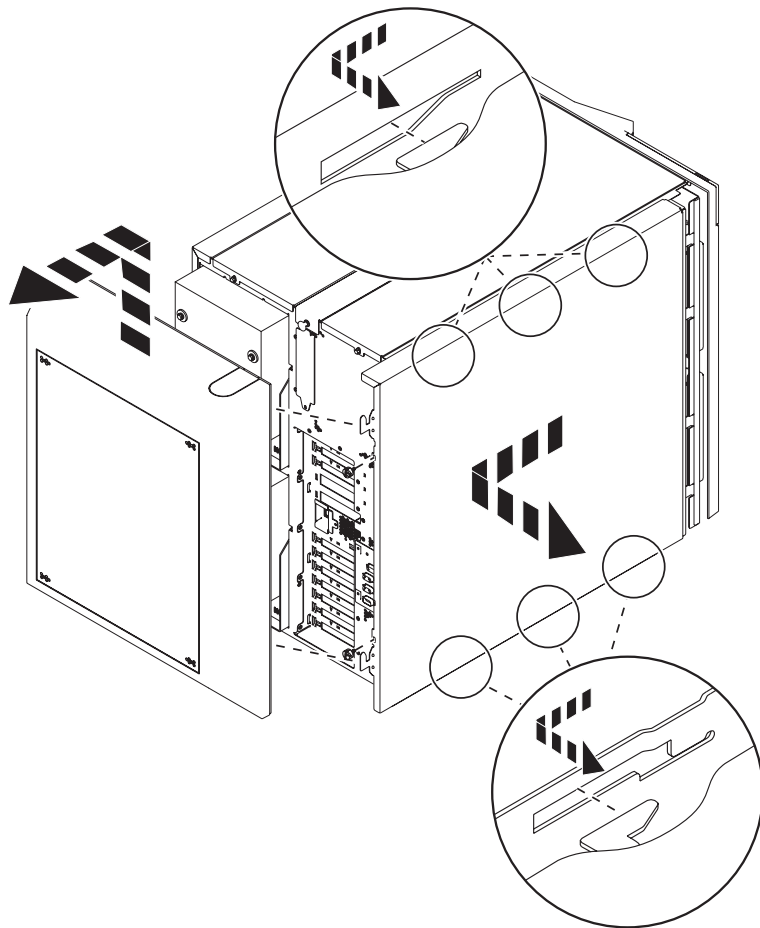
RZAME601-0

830, 840, 870, 890, SB2, SB3, 5074, 5079, and 5094 units

To access the PCI card location, you need to open the back cover:

- **A** Open the back cover.
- **B** Remove the back cover.
- Remove the PCI card access plate.

RZAG6502-0

5075 and 5095 expansion unit

To access the PCI card location, you need to remove the back cover and the side cover:

__ 1. Place your hand near the bottom of the back cover and lift up and out.

__ 2. **Attention:** If removing the side cover while the server is powered on, errors may occur due to electromagnetic interference.

Remove the left side cover (view from back) by loosening the thumbscrews and sliding the cover from front to back until it stops.

__ 3. Pull the cover out.
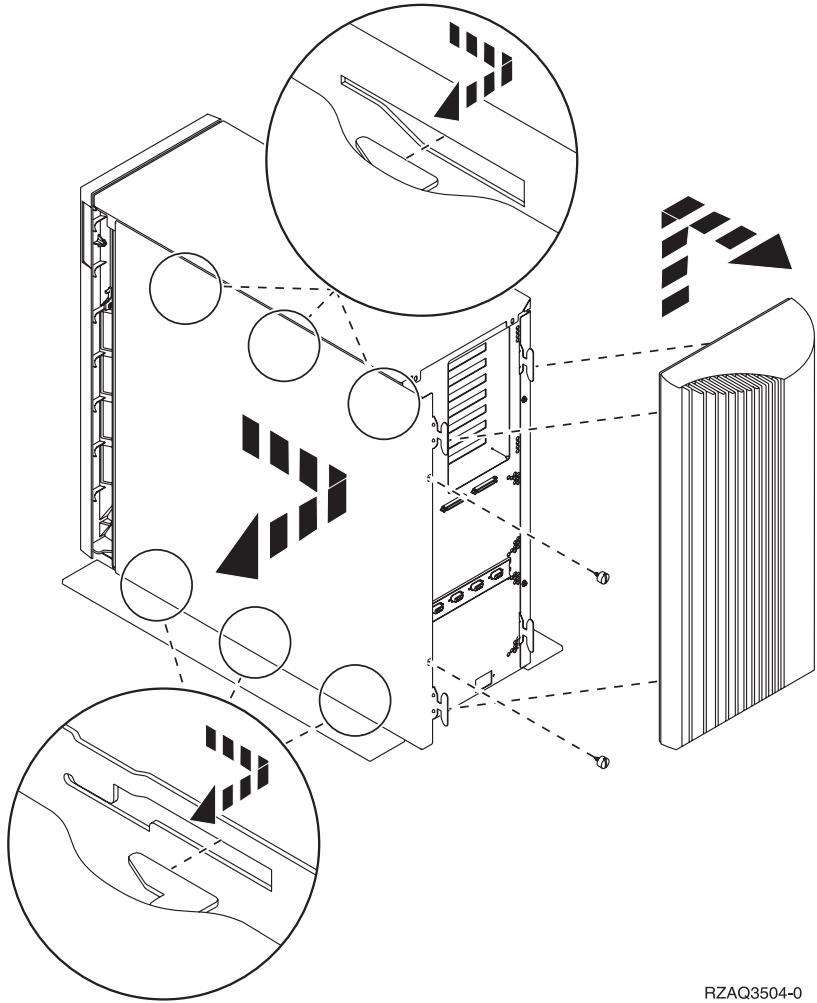
RZAQ3504-0

5078 and 5088 expansion unit

To access the PCI card location, open the back and remove the air flow shield.

RZAG6511-0

Access units in a rack

__ 1. Press latches **B** and pull the server out using the handle **C** .
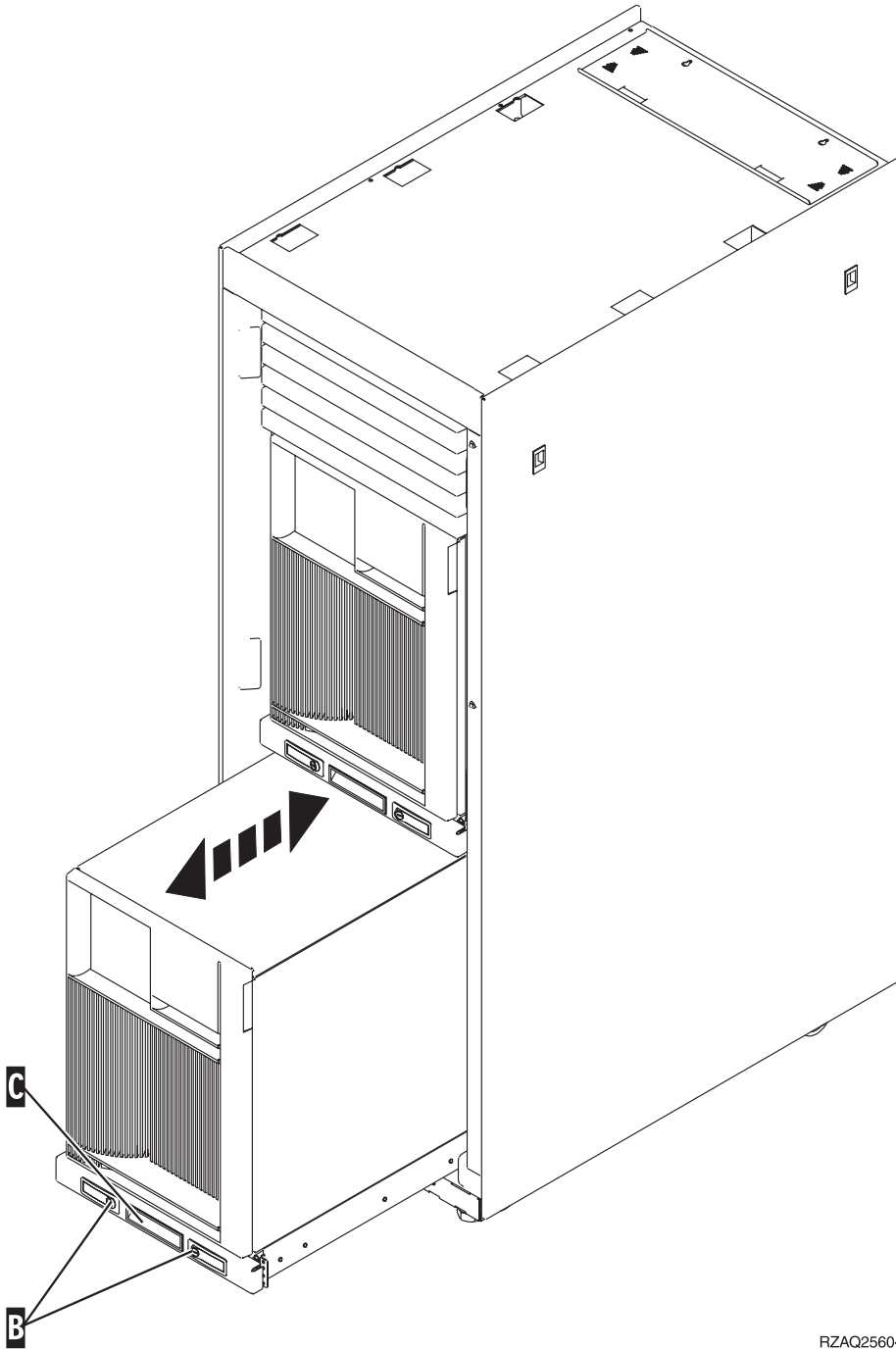
RZAQ2560-0

__ 2. Refer to previous unit diagrams to remove the side cover.

__ 3. If you are cabling the server, feed the excess cabling along the cable management arm **D** and secure the cables with the fasteners.

RZAQ2561-0
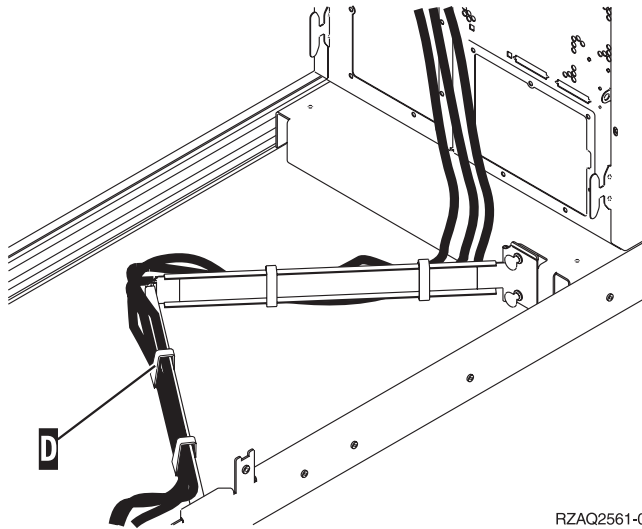
System-unit control panel

Go to the front of your iSeries system unit. Open the control panel door.

Your control panel looks like either Figure 17 or Figure 18 on page 82. Refer to the control panel for your unit.
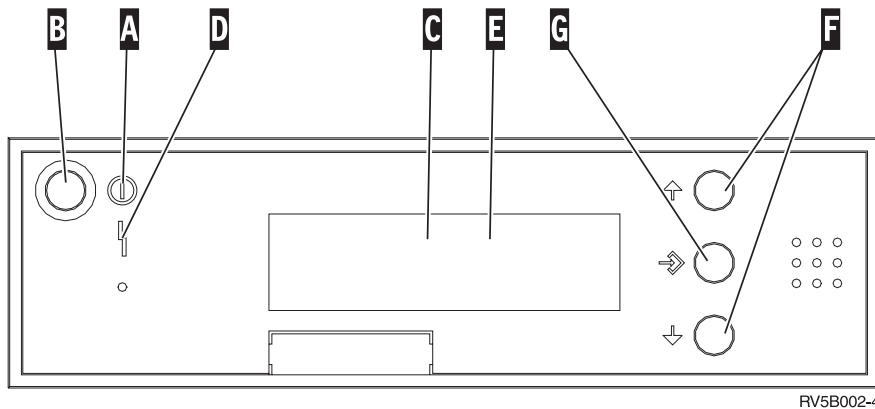

RV5B002-4

Figure 17. Control panel without Electronic Keystick

Following are the descriptions of the Figure 17 callouts:

A   Power On Light
  • A blinking light indicates power to the unit.
  • A constant light indicates that the unit is on and working.

B   Power Push button

C   Processor Activity

D   System Attention

E   Function/Data Display

F   Increment/Decrement buttons

G   Enter Push button

If your control panel looks like Figure 18, before you can use **F** Increment/Decrement buttons and **G** Enter push button, you need to press **H** Mode Selects to select Manual mode **N** . To use Mode Select, the keystick needs to be inserted.
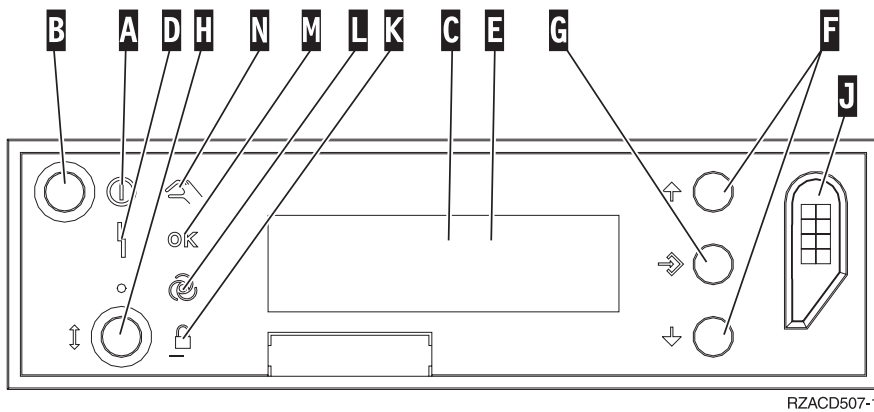

Figure 18. Control panel with Electronic Keystick

A   Power On Light
  - A blinking light indicates power to the unit.
  - A constant light indicates that the unit is on and working.

B   Power Push button

C   Processor Activity

D   System Attention

E   Function/Data Display

F   Increment/Decrement buttons

G   Enter Push button

H   Mode Selects

J   Electronic Keystick Slot

K   Secure

L   Auto

M   Normal

N   Manual

## Type 5708, auxiliary-write cache IOA (FC 5580, 5581)

Feature 5580 includes a 2780 PCI-X Ultra4 RAID disk-controller adapter, a 5708 auxiliary-write cache IOA adapter, and the required connection cable.

Feature 5581 includes a 2757 PCI-X Ultra4 RAID disk-controller adapter, a 5708 auxiliary-write cache IOA adapter, and the required connection cable.

A physical cable connection is required between the 5708 adapter and SCSI port 4 of a 2780 or 2757 adapter. Both 5708 and the disk-controller adapter it is connected to must be installed in the same physical system unit or expansion unit, and must be installed in the same partition.

The 5708 adapter has 757MB of auxiliary maximum compressed write cache. The adapter mirrors the write cache of the disk-controller adapter its connected to. Protection of data is enhanced by having two

copies of the write cache stored on separate adapters. If a failure occurs to the write cache of the disk-controller, the 5708 adapter provides a backup copy during the recovery of the failed IOA.

IPHCD500-0
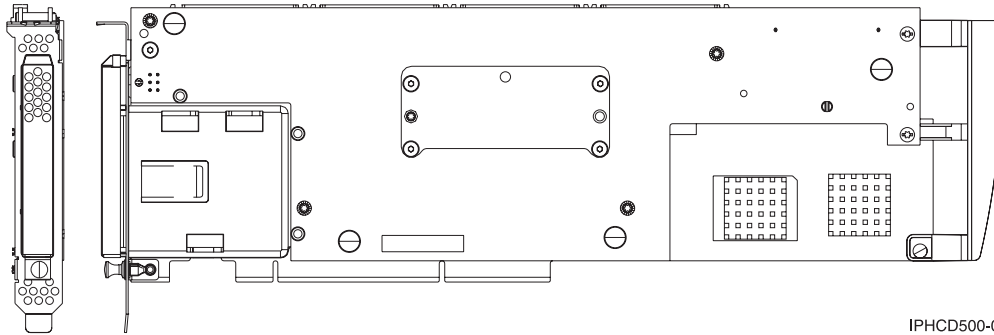
Considerations for installing or converting to feature 5580 or 5581

Attention: Converting your adapters to feature 5580 or 5581 will require extensive planning. If the planning is not done correctly, the result could be an extended server outage, loss of data, or both. A system restore might be required.

Read the following considerations in relation to your system:
- Are you converting from feature 2780 to feature 5580?
- Are you converting from feature 2757 to feature 5581?
- Are you replacing any other existing storage adapters with features 5580 and 5581?
- Is your server partitioned (LPAR)?

If the answer to any of these questions is yes, or you are unsure of the answers, it is strongly recommended that you contact your authorized service provider for planning and deployment services.

For planning information and examples of deployment for features 5580 and 5581, see **Planning for Disk Storage Availability with Cache Solutions**.

5708 adapter specifications

Item	Description
Adapter FRU number	39J0686
Battery FRU number	97P4846
Cable FRU number	39J1702
Cables	Specific Storage Adapter to Auxiliary Storage Adapter SCSI cable is necessary and is provided with each feature or conversion.
I/O bus architecture	PCI 2.2 power/bus compliant
Unit description	- Long, 64 bit, 133 MHz, 3.3 V edge connector, single-slot - PCI-X 2.0 compliant - Compatible down to 32 bit, 33 MHz PCI adapter slots
Operating system or partition requirements	Supported in the i5/OS operating systems or partitions only, versions V5R2, V5R3, and later.
Maximum number	For system-specific adapter placement, see Determine the best place to install your card.

| Item	Description
Partition information	• If you are placing the feature in the primary partition (legacy) or any non-partitioned system, the auxiliary cache IOA for the load source adapter must be in the same enclosure as the load source IOA. • If you are placing the feature in the secondary partition on any system, the auxiliary cache IOA for the load source adapter must be under the load source IOP.
Related information	• This feature must be placed in attached expansion units. • The disk controller adapter and the auxiliary-write cache adapter each require one PCI slot. • Both adapters must be installed in the same enclosure. • The adapters are connected by a SCSI cable (provided). • The operating system identifies the 5708 adapter as a storage controller with no devices attached. • The 5708 adapter is not supported in an environment without an IOP. • Types 2780 and 2757 will not appear on ordering, shipping, or inventory documentation when received as part of these features.

Installing the adapters

To install the adapters, see Determine the best place to install your card, then return here for instruction on installing the SCSI cable.

Installing the SCSI cable

The disk controller adapter and the auxiliary-write cache adapter are connected by a SCSI cable.

To install the SCSI cable, do the following:
1. Attach the SCSI cable to SCSI bus port 3 (fourth physical port) of the disk controller adapter.
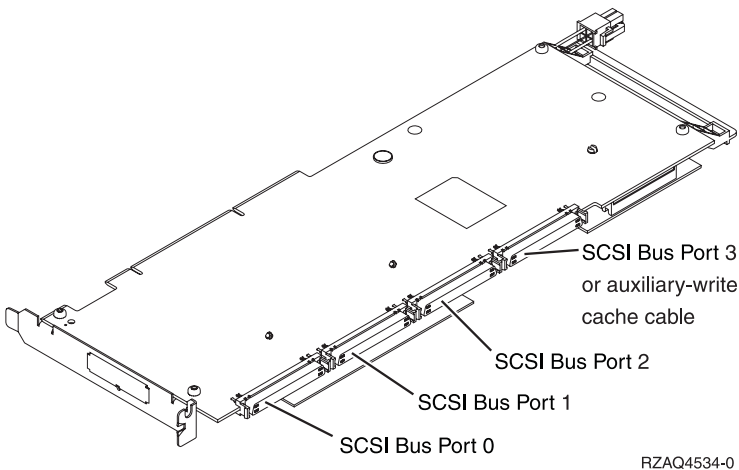
2. Attach the cable to the SCSI port on the auxiliary-write cache adapter.

Notes:
1. Attaching the cable to the disk controller reduces the number of SCSI buses that support disk drives from four to three.

2. Reducing the number of SCSI buses might also reduce the number of disk drives supported by the disk controller, depending on the system unit or expansion drawer in which the disk controller is installed.

3. No disk drives are driven by the auxiliary-write cache adapter. This adapter protects against extended outage caused by loss of write cache, but does not protect against a disk controller failure.

Type 574F, auxiliary-write cache IOA (FC 5582)

Custom Card Identification Number (CCIN) 574F is an auxiliary-write cache IOA that provides 1.5 GB of (compressed) auxiliary-write cache when paired with the 5738 PCI-X quad-channel Ultra320 SCSI RAID adapter.

- The 574F auxiliary-write cache IOA can be used with the 5738, 2780, and 2757 disk controllers.
- 574F can be used as a replacement IOA for the 5708 auxiliary-write cache IOA.
- 5582 includes an IOP-based 5738 PCI-X quad-channel Ultra320 SCSI RAID adapter and a CCIN 574F auxiliary-write cache IOA.

The auxiliary-write cache IOA mirrors the write cache of the disk-controller IOA to which it is connected. If a failure occurs to the write cache of the disk-controller, the auxiliary-write cache IOA provides a backup copy during the recovery of the failed IOA.

The disk controller IOA and the secondary, auxiliary-write cache IOA each require one PCI-X slot and must be installed together in the same enclosure. The disk controller IOA and the auxiliary-write cache IOA are connected by a SCSI cable (provided). The connecting SCSI cable is attached to SCSI bus port 3 of the disk controller IOA, reducing the number of SCSI buses that support disk drives from four to three. The reduction of SCSI buses can also reduce the number of disk drives supported by the disk controller, depending on the enclosure in which the disk controller is installed. No disk drives are driven by the auxiliary-write cache IOA.

Figure 19. Auxiliary-write cache IOA
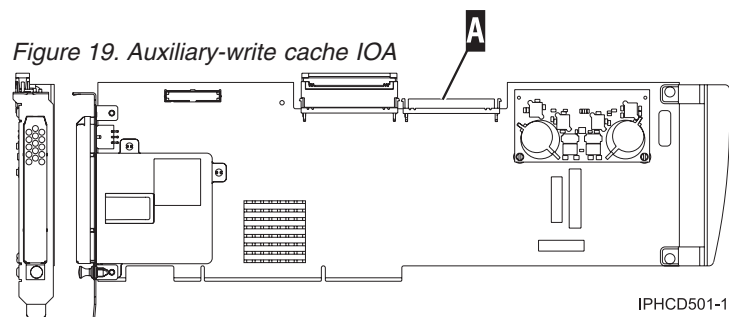
A   SCSI connector

Considerations for installing or converting to feature 5582

Attention: Converting your adapters to feature 5582 requires extensive planning. If the planning is not done correctly, the result could be an extended server outage, loss of data, or both. You might need to do a system restore.

Read the following questions in relation to your system:

- Are you converting from feature 5738 to feature 5582?
- Are you replacing any other existing storage adapters with features 5582?
- Is your server partitioned, meaning is it an LPAR?

If the answer to any of these questions is yes, or you are unsure of the answers, it is strongly recommended that you contact your authorized service provider for planning and deployment services.

574F adapter specifications

Table 4.

Item	Description
Adapter FRU number	42R5133
Cache battery FRU number	39J5554
Cable FRU number	39J1702
Cables	Specific Storage Adapter to Auxiliary Storage Adapter SCSI cable is necessary and is provided with each feature or conversion.
Unit description	• Long, 64 bit, 133 MHz, 3.3 V edge connector, single-slot • PCI-X 2.2 compliant • Compatible down to 32 bit, 33 MHz PCI adapter slots
Operating system or partition requirements	Supported in the i5/OS operating systems or partitions only. When 574F is used with the 2780 or 2757 controller, the feature is supported in V5R2 or later. When 574F is used with the 5738 controller, the feature is supported in V5R3 or later. **Important:** There will be a PTF/Cume level prerequisite for each release. Check the IBM Prerequisite Web site at http://www-912.ibm.com/s_dir/slkbase.NSF/slkbase.
Maximum number	For system-specific adapter placement, see Determine the best place to install your card.
Partition information	• If you are placing the feature in the primary partition or any non-partitioned system, the auxiliary cache IOA for the load source (LS) adapter must be in the same enclosure as the LS IOA. • If you are placing the feature in the secondary partition on any system, the auxiliary cache IOA for the LS adapter must be under the LS IOP.
Related information	• The disk controller adapter and the auxiliary-write cache adapter each require one PCI slot. • Both adapters must be installed in the same enclosure. • The adapters are connected by a SCSI cable that is provided. • The operating system identifies the auxiliary-write cache IOA as a storage controller with no devices attached. The operating system does not identify which controller the auxiliary-write cache IOA is connected to. • The adapter pairs must both be IOP controlled. 5582 includes an IOP-based 5738 PCI-X quad-channel Ultra320 SCSI RAID adapter and a CCIN 574F auxiliary-write cache IOA.

Installing the adapters

To install the adapters, see Determine the best place to install your card, and then return here for instruction on installing the SCSI cable.
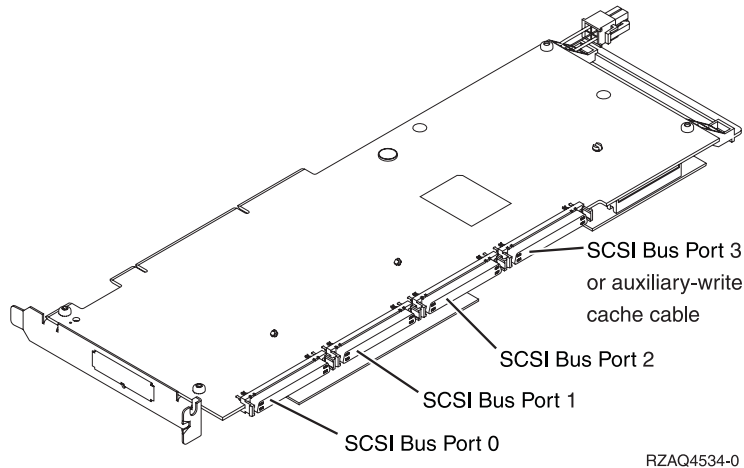
Installing the SCSI cable

The disk controller adapter and the auxiliary-write cache adapter are connected by a SCSI cable.

Attention: Do not install or remove the adapter cable if the adapters have the power on. Use the service procedures to turn off the power to the adapter slots or shut down the system or partition in which the adapters are placed.

To install the SCSI cable, follow these steps:

1. Attach the SCSI cable to SCSI bus port 3 (the fourth physical port) of the disk controller adapter.

SCSI Bus Port 3
or auxiliary-write
cache cable

SCSI Bus Port 2

SCSI Bus Port 1

SCSI Bus Port 0

RZAQ4534-0

2. Attach the cable to the SCSI port on the auxiliary-write cache adapter.

Notes:

1. Attaching the cable to the disk controller reduces the number of SCSI buses that support disk drives from four to three.
2. Reducing the number of SCSI buses might also reduce the number of disk drives supported by the disk controller, depending on the system unit or expansion drawer in which the disk controller is installed.
3. No disk drives are driven by the auxiliary-write cache adapter. This adapter protects against extended outage caused by loss of write cache, but does not protect against a disk controller failure.

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