System z9 Enterprise Class

Installation Manual

GC28-6840-07

System z9 Enterprise Class

Installation Manual

GC28-6840-07

Note!

Before using this information and the product it supports, be sure to read the information under "Safety" on page ix, Appendix E, "Notices," on page E-1, and the *IBM Systems Environmental Notices and User Guide*, Z125–5823.

Eighth Edition (January 2009)

This edition, GC28-6840-07, applies to IBM® System z9® Enterprise Class servers. This edition replaces GC28-6840-06, A technical change to the text or illustration is indicated by a vertical line to the left of the change.

Figures included in this document illustrate concepts and are not necessarily accurate in content, appearance, or specific behavior.

There may be a newer version of this document in **PDF** format available on **Resource Link**. Go to *http://www.ibm.com/servers/resourcelink* and click on **Library** on the Navigation bar. A newer version is indicated by a lower-case, alphabetic letter following the form number suffix (for example: 00a, 00b, 01a, 01b).

Contents

Safety

Safety notices

Safety notices may be printed throughout this guide. **DANGER** notices warn you of conditions or procedures that can result in death or severe personal injury. **CAUTION** notices warn you of conditions or procedures that can cause personal injury that is neither lethal nor extremely hazardous. **Attention** notices warn you of conditions or procedures that can cause damage to machines, equipment, or programs.

The following **DANGER** notices appear in this installation manual:

DANGER

To prevent a possible shock from touching two surfaces with different protective ground (earth), use one hand, when possible, to connect or disconnect signal cables. (D001)

DANGER

If the receptacle has a metal shell, do not touch the shell until you have completed the voltage and grounding checks. Improper wiring or grounding could place dangerous voltage on the metal shell. If any of the conditions are not as described, *STOP*. Ensure the improper voltage or impedance conditions are corrected before proceeding. (D003)

DANGER

An electrical outlet that is not correctly wired could place hazardous voltage on the metal parts of the system or the devices that attach to the system. It is the responsibility of the customer to ensure that the outlet is correctly wired and grounded to prevent an electrical shock. (D004)

DANGER

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

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

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

  To disconnect:

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

  To connect:

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

  (D005)

DANGER

Heavy equipment—personal injury or equipment damage might result if mishandled. (D006)

The following **CAUTION** notices appear in this installation manual:

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

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

CAUTION:
The doors and covers to the product are to be closed at all times except for service by trained service personnel. All covers must be replaced and doors locked at the conclusion of the service operation. (C013)

CAUTION:
Ensure the building power circuit breakers are turned off *BEFORE* you connect the power cord or cords to the building power. (C023)

CAUTION:
The battery contains lithium. To avoid possible explosion, do not burn or charge the battery.

Do not:
__ **Throw or immerse into water**
__ **Heat to more than 100°C (212°F)**
__ **Repair or disassemble**

Exchange only with the IBM-approved part. Recycle or discard the battery as instructed by local regulations. In the United States, IBM has a process for the collection of this battery. For information, call 1-800-426-4333. Have the IBM part number for the battery unit available when you call. (C003)

World Trade safety information

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

Laser safety information

All System z models can use I/O cards such as PCI adapters, ESCON, FICON, Open Systems Adapter (OSA), InterSystem Coupling-3 (ISC-3), or other I/O features which are fiber optic based and utilize lasers or LEDs.

Laser compliance

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

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

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

About this publication

Using This Guide

Use this guide to install the IBM System z9 Enterprise Class (z9 EC) server (formerly known as IBM System z9 Enterprise Class).

Who Should Use This Guide

This guide is for service representatives who are trained to install and repair the System z9 Enterprise Class server and related I/O devices.

General Comments

- There may be product features represented in this manual that are not installed on the system and, although announced, may not be available at the time of publication.
- There may be product features on the system that are not represented in this manual.
- World Trade differences are identified where appropriate throughout the procedures rather than in a separate chapter.

Where to Start

Start all activity in Chapter 1.

Related Publications

For related publications, go to Resource Link at *http://www.ibm.com/servers/resourcelink.* Select **Library** on the Navigation bar on the left.

How to Send Your Comments

Your feedback is important in helping to provide the most accurate and high-quality information. Send your comments by using Resource Link at *http://www.ibm.com/servers/resourcelink*. Select **Feedback** on the Navigation bar on the left. Be sure to include the name of the book, the form number of the book, the version of the book, if applicable, and the specific location of the text you are commenting on (for example, a page number or table number).

Chapter 1. Beginning the installation

What the customer should provide

- A floor plan.
- Internet access to their completed *Planning* section of **Resource Link**. This will provide you with all the information needed to complete the input windows during the installation.
- An Input/Output Configuration Program (IOCP) input file on diskette. You will need to know the actual name of the file on the diskette and the file extension if one is assigned.
- A cabling plan. You will be directed to connect external I/O cables and then run the Input/Output Configuration Program (IOCP) later in this installation procedure. Verify that this system has either a Fiber Cabling Service contract in place for I/O cabling, or that there is another plan for how and when I/O cables will be connected. Make certain this customer understands that you cannot complete this installation without running the I/O configuration, and that the I/O cables need to be connected at that time. You can learn more about what the customer's cabling responsibilities are by reviewing the Fiber Cabling Service description at "Before you start" on page 11-1.

IMPORTANT:

Do not start to install this system without first determining that all customer I/O cabling responsibilities have been met.

- *All installation of any required fiber optic or OSA Express copper cables*
- *All routing of cables to correct front/back floor cutouts for proper installation to the machine*
- *All labeling of cables with PCHIDs (at a minimum) for proper installation to the machine.*

What you should provide

- An ECOS C7106 voltage tester, SureTest Model ST-1D with IG adapter (**P/N 25F9715**), or equivalent (USA only)
- An ESD wristband (Part 6428167).
- Complete the *Electrical Safety Training Course for IBM Customer Engineers* (self-study course 77170 or equivalent).
- Should be familiar with *Electrical Safety for IBM Customer Engineers*, S229-8124 at level -04 or higher (available at IBM Branch Offices.)

You will also need

- A copy of the PCHID Report for the server you are installing.
- If you are replacing an existing server, refer to the *Support Element Operations Guide*, SC28-6845, the chapter titled, ″Settings for System Operations″, and the heading, ″Exporting and Importing Profile Data″. This task allows you to export or import activation profiles or system activity profiles for the CPC to a diskette or to your hard drive. **Exporting and importing profiles is optional when you are replacing an existing system and support element with a new system and support element.**
- To verify that the machine is registered prior to beginning the installation.

Problems

If a failure should occur during this installation, refer to the *Service Guide*, GC28-6841.

Note: A PMH problem record **MUST** be opened for any problems encountered.

MOST IMPORTANT

Regardless of previous processor experience, you **MUST** follow the instructions in this manual to ensure a successful installation. Skipping steps or procedures is likely to cause problems or delays.

User interface (UI) styles

The Hardware Management Console and support element allow you to choose the interface style in which you prefer to work:

- Tree style user interface
- Classic style user interface (an older interface with object-oriented design).

The tree style user interface is the default for Operator, Advanced Operator, Access Administrator, and System Programmer user roles. The classic user interface is the default for the Service Representative user role.

Tree style user interface

The tree style user interface is the default for Operator, Advanced Operator, Access Administrator, and System Programmer user roles, but not for the Service Representative user role. When you first log on, the Welcome pane is displayed. Figure 1-1 on page 1-3 shows the Welcome pane on the Hardware Management Console.

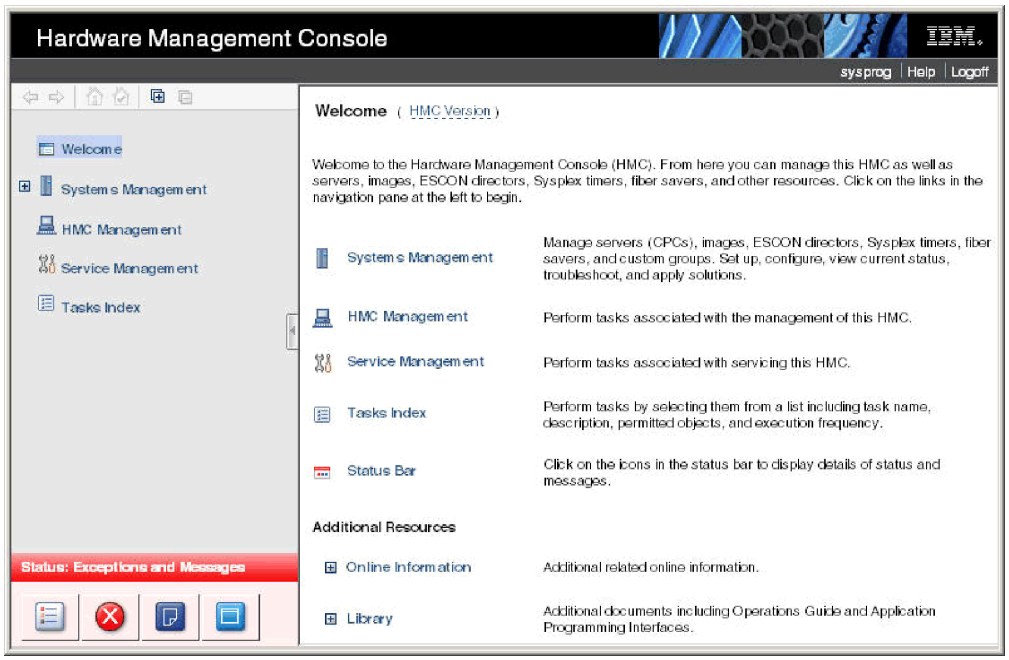


Figure 1-1. Hardware Management Console - tree style user interface - Welcome pane

The tree style user interface is comprised of several major components as shown in Figure 1-1:

Banner
Is optionally displayed across the top of the workplace and identifies the product and logo.

Taskbar
Is below the banner. This displays:

- The names of any tasks that are running (Task names are displayed on the left; no tasks are running in the example.)
- The user role (`sysprog` in the example)
- A link to online **Help** information
- A link to the **Logoff** task.

Navigation pane
Is in the left portion of the window. This contains the primary navigation links for managing your system resources and the console. The items are referred to as nodes.

Work pane
Is in the right portion of the window. This displays information based on the current selection from the navigation pane. For example, when Welcome is selected in the navigation pane, the Welcome content is displayed in the work pane, as shown in the example.

Status bar
Is in the bottom left portion of the window. This provides visual cues of current overall system status. It also contains a Status Overview icon which may be selected to display more detailed status information in the work pane.

Tree style navigation provides hierarchical views of system resources and tasks using drill-down and launch-in-context techniques to enable direct access to

hardware resources and task management capabilities. Figure 1-2 shows this.

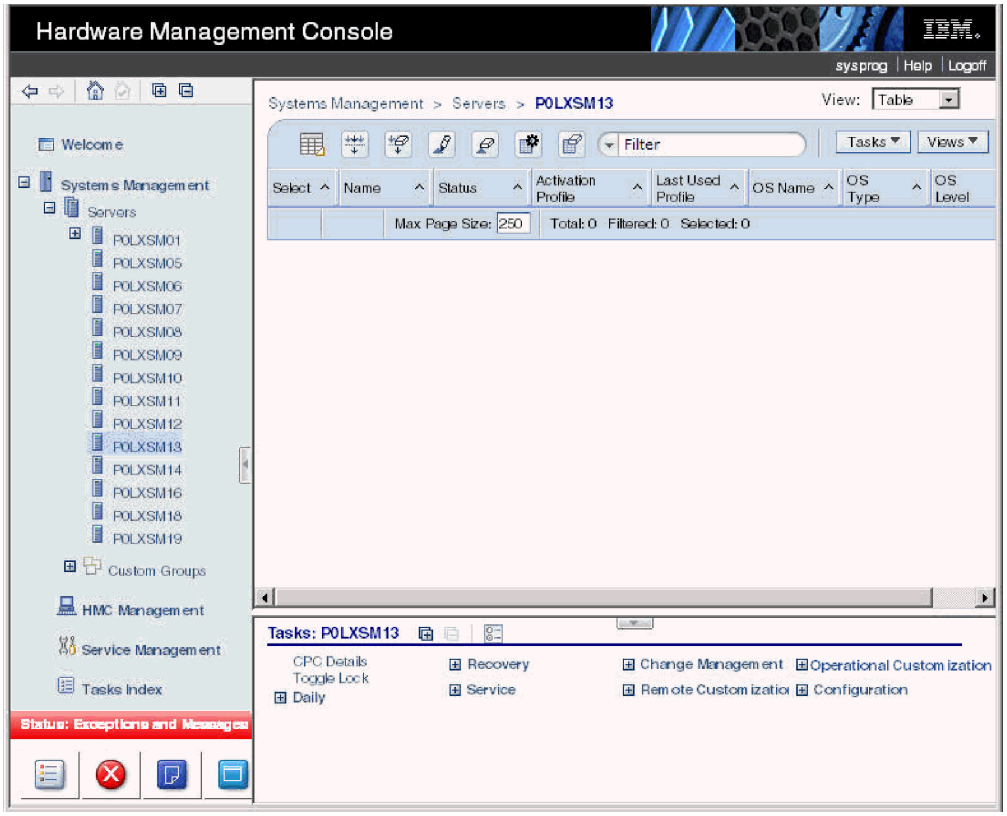


Figure 1-2. Server selected and task categories displayed

The tree style user interface uses common terminology where possible. For example, instead of referring to a *CPC*, a more general term of *server* is used for this interface. Similarly, in the tree style *partitions* are equivalent to *images* in the classic style.

For panes other than the Welcome pane, the contents of the work pane on the right portion of the window reflect your selections in the navigation pane on the left. The top portion of the work pane displays a table of objects based on your selection. The bottom portion of the work pane is called the tasks pad. Figure 1-2 shows this.

Tasks pad
: Is in the bottom portion of the work pane after you select an object in the navigation pane, such as server, partition, channel, or crypto. The tasks pad contains a list of available task categories or tasks for the selected object.

Classic style user interface

The classic style user interface (classic interface) is the original user interface. It has an object-oriented design. Figure 1-3 on page 1-5 shows the classic style user interface for the Hardware Management Console.

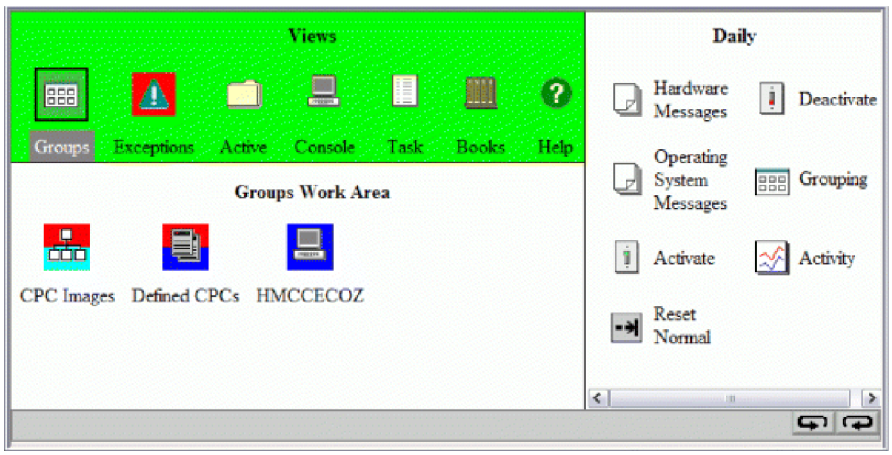


Figure 1-3. Hardware Management Console - Classic style user interface

You can directly manipulate the objects (such as CPCs) that are defined and be aware of changes to hardware status as they are detected. You can work with the objects on the workplace using the mouse to select them. There are several techniques for manipulating objects and tasks. One way to do this is to left-click an object to select it and double-click the task. An alternate method is the drag and drop technique, which involves using the mouse to pick up one or more objects, dragging them to a task, and then dropping them. These techniques are examples of what is known as direct manipulation.

Changing the user interface style

To change from the tree style interface to classic style, perform the following steps:

1. In the navigation pane in the left portion of the window, click **HMC Management**.
2. In the tasks pad in the bottom portion of the Work Pane, under Configuration, click **User Settings**.
3. Click the **UI Style** tab. This displays the User Style Information window.
4. Click **Classic Style**, and then click **Apply**.
5. Click **OK**.

To change from classic style back to tree style, perform the following steps:

1. Open **User Settings** (under **Console Actions** in the classic interface). The User Settings window is displayed.
2. Click the **UI Style** tab. The User Style Information window is displayed.
3. Click **Tree Style**, and then click **Apply**.
4. Click **OK**.

Chapter 2. Checking building power

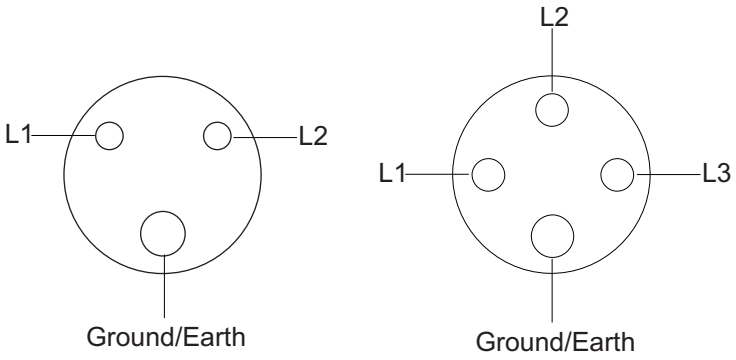
Do the following to ensure that the customer has provided the correct power to the system.

Checking the receptacle for wiring errors

DANGER

If the receptacle has a metal shell, do not touch the shell until you have completed the voltage and grounding checks. Improper wiring or grounding could place dangerous voltage on the metal shell. If any of the conditions are not as described, *STOP*. Ensure the improper voltage or impedance conditions are corrected before proceeding. (D003)

The receptacle the customer uses to supply power to the frames will be tested in the following steps.



Perform the following ***AC voltage checks*** with the wall breaker OFF.

__ Step 1. Using the CE meter, check to be sure there is no ac voltage between each phase pin and the ground/earth pin (and metal receptacle components).

__ Step 2. Using the CE meter, check to be sure there is no ac voltage from receptacle ground/earth to building ground/earth (water pipe, building steel, etc.). Grounded raised floors **may not** be an acceptable building ground/earth. A grounded raised floor **is acceptable** if:

a. It is bonded to building steel

b. It is a bolted stringer design

c. The stringer system is not corroded.

For metal receptacle shells or shells with metal components, check for no ac voltage from the receptacle ground/earth pin to the metal.

Checking the ground/earth path

Perform the ground/earth path ***checks*** using either Procedure A (below) or Procedure B (located on the next page). Procedure A is the preferred method in the USA if the proper equipment is available.

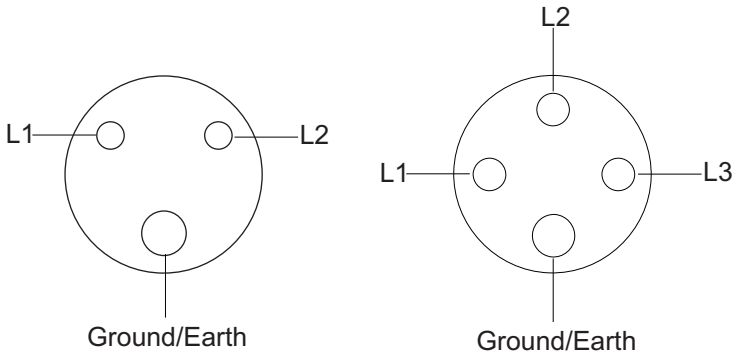
The wall breaker should be OFF.

Procedure A (preferred in the USA)

This procedure checks for a ground/earth impedance of one ohm or less at the receptacle ground/earth pin using either the ECOS C7106 tester (make sure the ECOS tester is Model C7106) or the SureTest Model ST-1D with IG adapter, **P/N 25F9715** (A SureTest Model ST-1THD tester, **P/N 25F9722**, is also acceptable).

Use of the word ″tester″

In the following procedure, the word tester refers to either the ECOS C7106 or the SureTest ST-1D. Be certain to follow the tester manufacturer's instructions to perform the electrical tests.



__ Step 1. Locate a ″live″ 120 volt outlet near the receptacle that will be tested. The 120 volt outlet selected **must** be derived from the same power source as the receptacle to be tested.

Attention:

Do not use a machine's convenience power receptacle or a customer's receptacle with GFCI protection.

__ Step 2. Insert the tester into the 120 volt outlet.

__ Step 3. Perform the impedance test as indicated in the instructions for the ECOS C7106 tester or the SureTest Model ST-1D.

__ Step 4. Unplug the tester.

__ Step 5. Plug the tester into the ground test probe.

__ Step 6. Attach the alligator clip from this probe to the ground/earth pin of the receptacle to be tested.

__ Step 7. Reinsert the tester into the 120 volt receptacle (you may need an extension cord).

__ Step 8. Repeat the test as specified in the tester instructions, looking for an indication of one ohm or less.

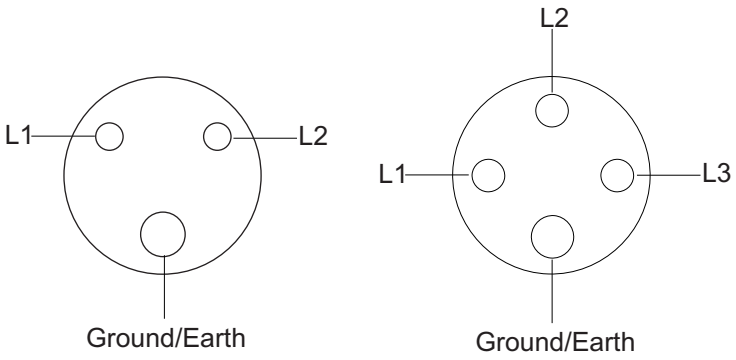
__ Step 9. If the connector has a metal shell or metal components, unplug the tester from the wall receptacle and reconnect the alligator clip to the

metal, then reinsert the tester and repeat the test. Refer to *Electrical Safety for IBM® Customer Engineers*, S229-8124-04 for more information.

Procedure B

This procedure checks for a ground/earth resistance of one ohm or less at the receptacle ground/earth pin using the CE meter.

The wall breaker should be OFF.



__ Step 1. Using the CE meter, measure the resistance from the ground/earth pin of the receptacle to building ground/earth. The reading should be one ohm or less.

__ Step 2. For metal receptacle shells or shells with metal components, also measure the resistance from the ground/earth pin of the receptacle to the metal. This reading should be 0.1 ohm or less.

Note: Digital meters may give unstable resistance readings if leakage current is flowing in the building ground/earth circuit. If the reading is above (or is fluctuating above) 1 ohm, **STOP**.

a. Have the customer's electrician inspect the ground path back to the power source.

b. If the electrician corrects the problem, retest.

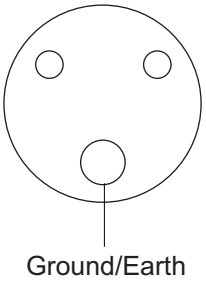
c. If the problem persists and the electrician has confirmed that the ground from the receptacle back to the power source is acceptable:

1) Document the electrician's finding in the installation report

2) Notify the supporting IPR for the account

3) Continue the installation.

Checking the AC voltage on single phase power



Perform the following ***AC voltage check*** with the wall breaker ON.

__ Step 1. Measure the customer supplied voltage and write the voltage here. If the voltage is outside the acceptable range (see below), advise the customer to have a licensed electrician correct the problem.

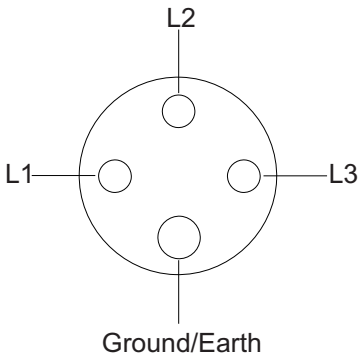
__ Step 2. single phase power supplies:

The acceptable voltage range for 50 Hz or 60 Hz is 90 - 254 Vac.

_____ Vac

__ Step 3. Turn the wall breaker OFF.

Checking the AC voltage on three phase power



__ Step 1. Measure the customer supplied voltage and write the voltage here. If the voltage is outside the acceptable range (see below), advise the customer to have a licensed electrician correct the problem.

__ Step 2. For three phase power supplies:

The acceptable voltage range for 50 Hz or 60 Hz, measured phase to phase, is 180 - 509 Vac.

_____ Vac

__ Step 3. Turn the wall breaker OFF.

After you perform this procedure for ALL the power supplies, go to Chapter 3, “Installing the frames,” on page 3-1.

Chapter 3. Installing the frames

DANGER

Heavy equipment—personal injury or equipment damage might result if mishandled. (D006)

The customer should prepare his environment to accept the new product based on the installation planning information provided, with assistance from an IBM Installation Planning Representative (IPR) or IBM authorized service provider. In anticipation of the equipment delivery, the final installation site should be prepared in advance such that professional movers or riggers can transport the equipment to the final installation site within the computer room. If for some reason, this is not possible at the time of delivery, the customer will need to make arrangements to have professional movers or riggers return to finish the transportation at a later date. Only professional movers or riggers should transport the equipment. The IBM authorized service provider will perform only minimal frame repositioning within the computer room, as needed, to complete required service actions. The customer is also responsible for using professional movers or riggers in the case of equipment relocation or disposal.

The minimum number of pieces you should have received for this system is 6:

- A frame
- Z frame
- A frame cover kit (approximately 59 kg/130 lbs)
- Z frame cover kit (approximately 59 kg/130 lbs)
- Basic ship group
- Z frame ship group

In addition, you may have received one or more Hardware Management Console containers.

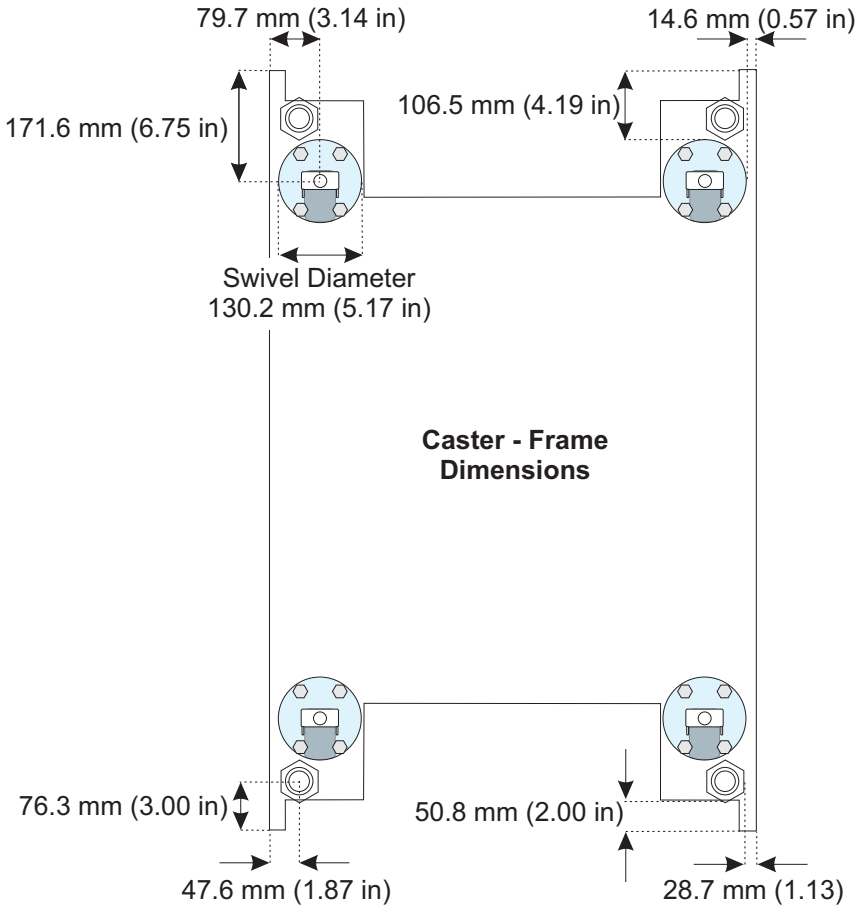
Before you unpack anything, find the inventory listing for this system in the basic ship group and perform a complete inventory of the ship group to confirm that you have received everything that was shipped.

The A and Z frames may be shrink-wrapped and movable on their own casters or palletized and crated. If the frames are on pallets, follow the instructions with the pallet for unloading the frames. Remove all of the packing material from the outside of each frame.

Remove the desiccant packages from the tailgate areas of frame A. Discard the desiccant and the tape, foil, and trays used to position the desiccant packages.

Raised floor panels

The following illustration shows the physical dimensions around the casters. When positioning the system, be aware that each caster swivels in a circle slightly larger than130 mm (5.1 in) in diameter. Exercise care when working around floor panel cutouts.



Caster - Frame Dimensions

Leveling Foot - Frame Dimensions

Fastening the frames together

IMPORTANT

If this system has FC 9975 (Height Reduction), go to Appendix B, “Height reduction,” on page B-1, and perform the top frame replacements before proceeding with the rest of this chapter.

Before you position the frames to fasten them together, you must install the following hardware:

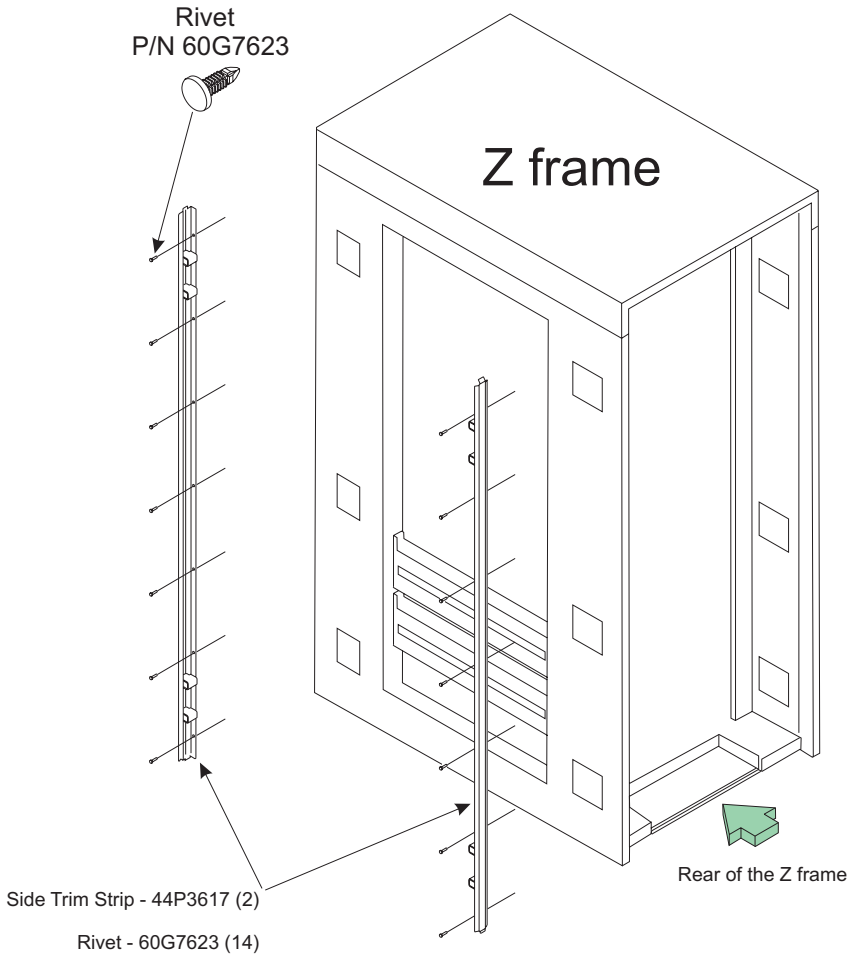
__ Step 1. In the ship group for the Z frame, find:

- 2 - foam strips P/N 44P3203
- 2 - foam strips P/N 44P3232
- 20 - rivets P/N 60G7623
- 6 - screws P/N 77G5099
- 4 - screws **EITHER** P/N 1621592 **OR** P/N 44P4188
- 4 - flat washers P/N 84X5850

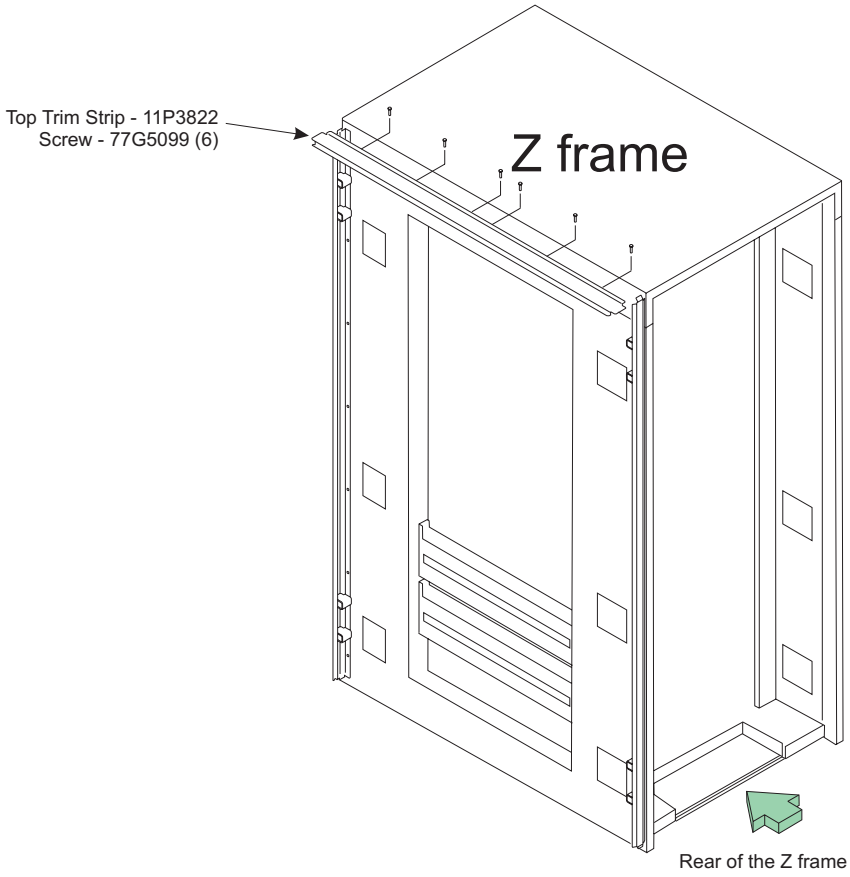
__ Step 2. In the ship group for the Z frame covers, find:

- 1 - top trim strip P/N 11P3822
- 1 - bottom trim strip P/N 11P3823
- 2 - side trim strips P/N 44P3617

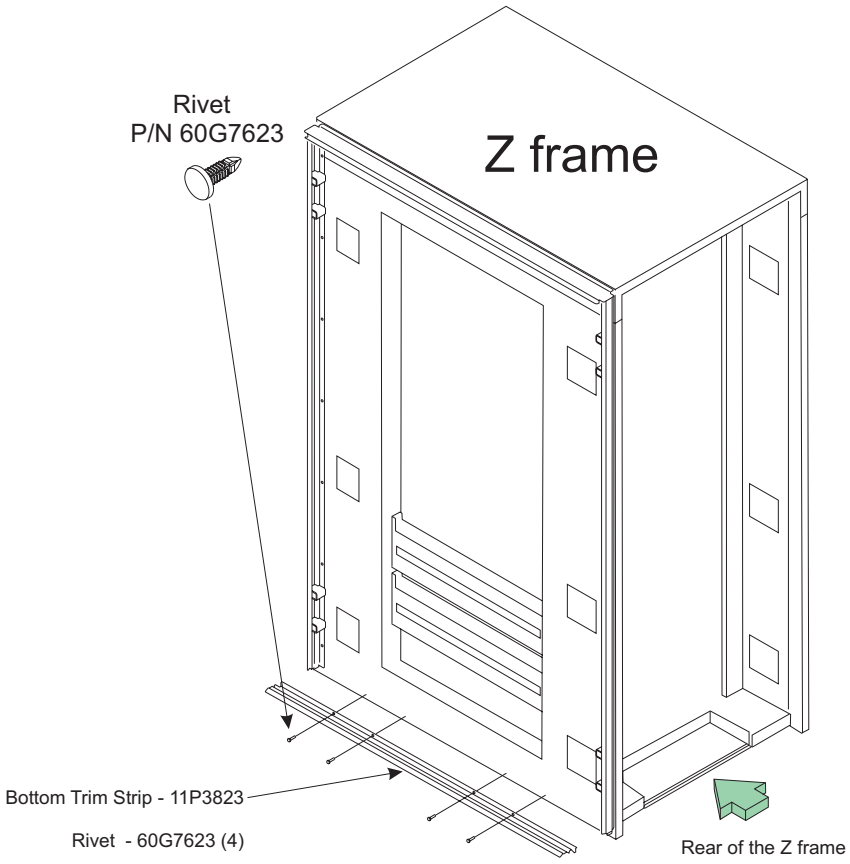
__ Step 3. Install the 2 side trim strips **P/N44P3617**. Fasten each strip with plastic rivets **P/N 60G7623**.



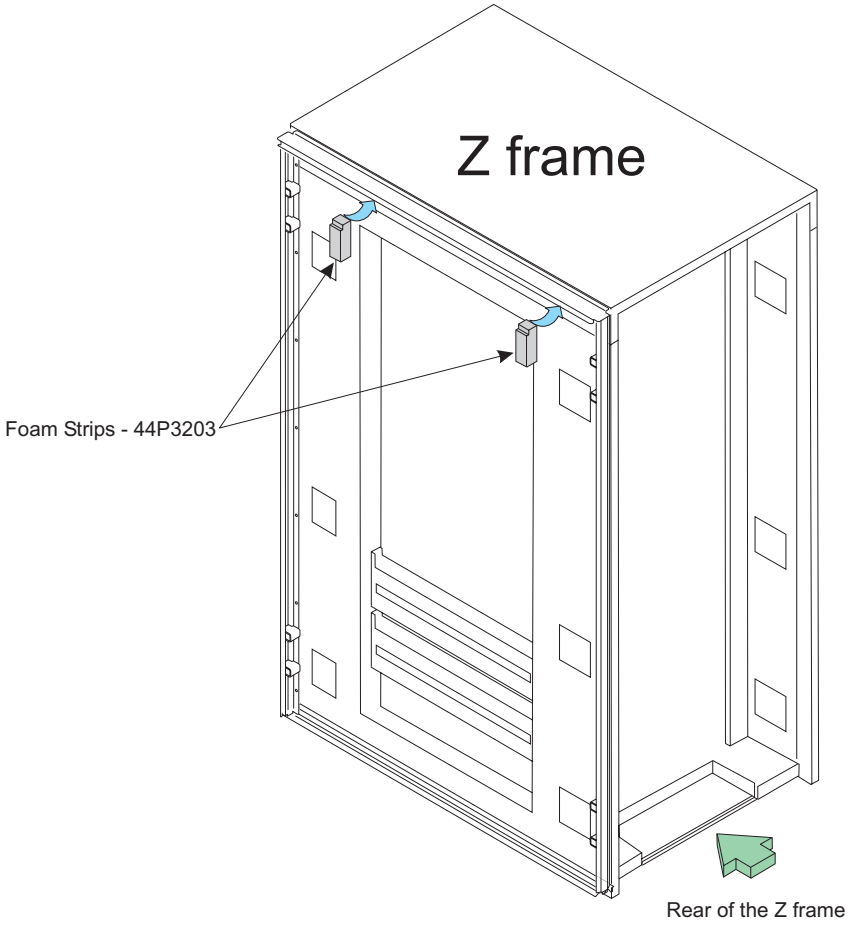
__ Step 4. Install the top trim strip **P/N 11P3822**. Fasten the strip with 6 screws **P/N 77G5099**.



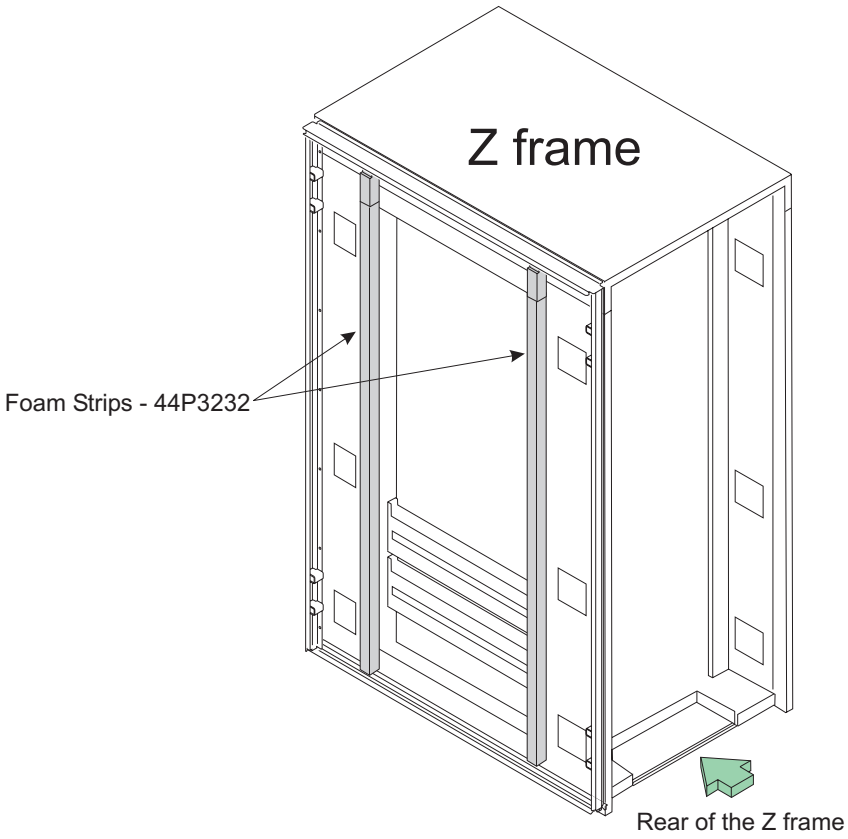
__ Step 5. Install the bottom trim strip **P/N 11P3823**. Fasten the strip with 4 plastic rivets **P/N 60G7623**.



__ Step 6. Install the 2 foam strips **P/N 44P3203**. Remove the adhesive backing from the foam strips, one at a time. Install the strips on the removable top portion of the side of the Z frame as shown. The inside vertical edges of the foam should line up with the edges of the open area in the side of the frame. The top of the foam strip should be positioned inside the channel of the Top Trim Strip.



__ Step 7. Install the 2 foam strips **P/N 44P3232**. Remove the adhesive backing from the foam strips, one at a time. Install the strips on the side of the Z frame as shown. The inside edges of the foam should line up with the edges of the open area in the side of the frame. The top edges should just touch the bottom of the two small foam pieces just installed. The bottom of the foam strip should be positioned inside the channel of the Bottom Trim Strip.



__ Step 8. If you lowered the leveling pads to install the top frame assemblies because this system has the Height Reduction Feature (FC 9975), raise the pads now so you can position the frames on the raised floor.

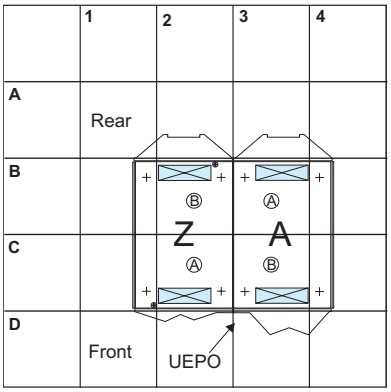
__ Step 9. Position the frames over the floor panel cutouts.

Ensure adequate floor space is available to place the frames over the floor panels exactly as shown on the raised floor diagram.

Note: Extra pedestals are recommended under panels B2, B3, C2, and C3. Depending on panel type, additional window supports (pedestals) may be required to restore the structural integrity of the panel.

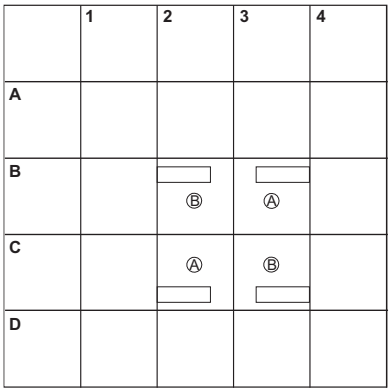
Use the raised floor diagram to place the frames in the proper positions.

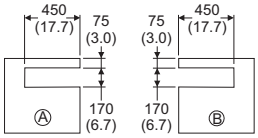
Frame Placement



Frame Entry/Exit	Dimension	
	(mm)	(in)
Front	117 x 403	4.6 x 15.9
Rear	117 x 403	4.6 x 15.9

Panel Cutout Dimensions





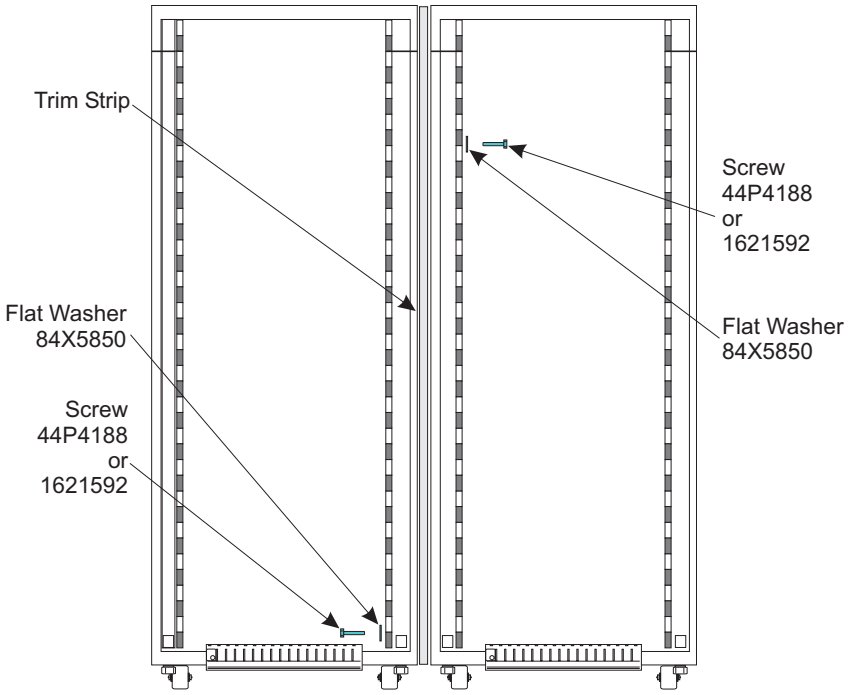
(Panels C2, B3)

(Panels B2, C3)

__ Step 10. Find the 4 screws **P/N 1621592** or **P/N 44P4188** and 4 flat washers **P/N 84X5850** in the Z frame ship group.

a. Place the flat washers on the four screws

b. Insert the screws through the four holes in the frames (the screws go through the frames from the right side at the top holes, front and back, and from the left side at the bottom holes, front and back)



__ Step 11. Push the frames together, and start each screw into the threaded hole in the other frame. **Do not tighten the screws until all four are started.**

__ Step 12. Use the torque wrench, **P/N 5449944**, from the ship group, set to 250 in/lbs. (28 NM), to tighten the screws.

Note: Tighten the upper screw on the front of the frames with an open-end or box wrench until the screw is snug. Use the torque wrench to finish tightening the upper front screw.

Frame tie-down

Feature Codes 7995 and 7996

If your server came with either of these frame tie-down Feature Codes, go to Appendix D, “Frame tie-down,” on page D-1 and install the feature you received. When you finish, return to this point.

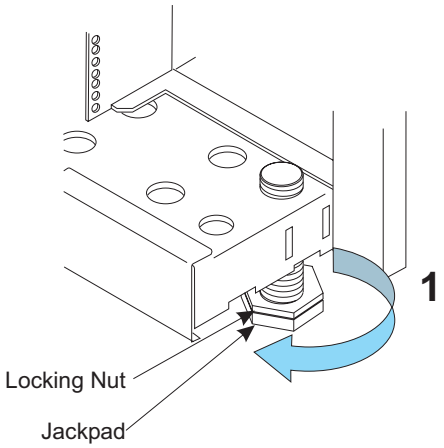
Proceed through the remainder of this chapter. Follow any instructions you did not perform while installing the tie-down feature.

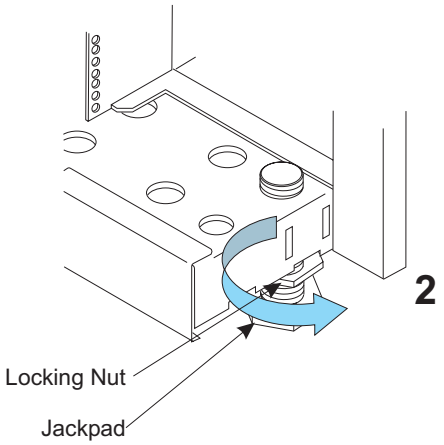
Leveling pads

__ Step 1. Use the wrench, **P/N 31L8313**, supplied in the basic ship group, to lower the leveling pad at each corner of the A frame. Lower each leveling pad jack pad far enough to transfer the frame weight from the caster to the leveling pad hardware.

__ Step 2. Hold the pad in contact with the floor and turn the locknut up until it contacts the bottom of the frame. While holding the pad in place with one hand, tighten the locknut using the wrench with your other hand.

__ Step 3. Repeat these steps for the Z frame.





Installing the batteries (FC 3210)

CAUTION:
Lead-acid batteries can present a risk of electrical burn from high, short-circuit current. Avoid battery contact with metal materials; remove watches, rings, or other metal objects, and use tools with insulated handles. To avoid possible explosion, do not burn.

Exchange only with the IBM-approved part. Recycle or discard the battery as instructed by local regulations. In the United States, IBM has a process for the collection of this battery. For information, call 1-800-426-4333. Have the IBM part number for the battery unit available when you call. (C004)

Read all **four** conditions below. Decide which condition applies to this system and follow the appropriate steps.

Condition 1

If your system has no internal batteries, go to Chapter 4, “Room disconnecting means/EPO cable,” on page 4-1.

Condition 2

If your system has:

__ Step 1. **No FC 9975** (height reduction feature) and

__ Step 2. **Two** internal batteries, (one pair in the A frame),

both of the batteries are installed. Go to Chapter 4, “Room disconnecting means/EPO cable,” on page 4-1.

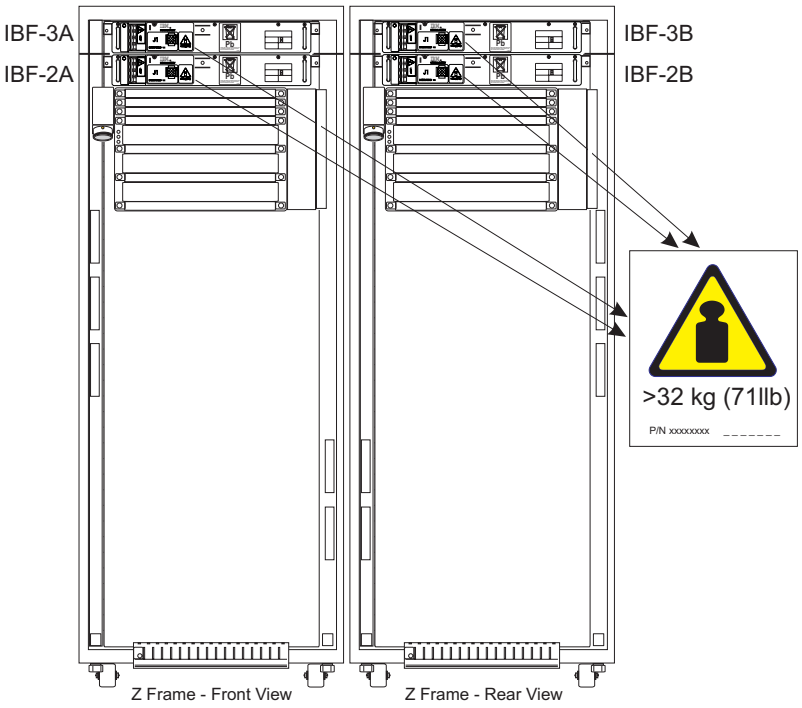
Condition 3

If your system has:

__ Step 1. **No FC 9975** (height reduction feature) and

__ Step 2. **Four** or **six** internal batteries,

you will need the hoist to install all of the batteries in the Z frame. Proceed below.

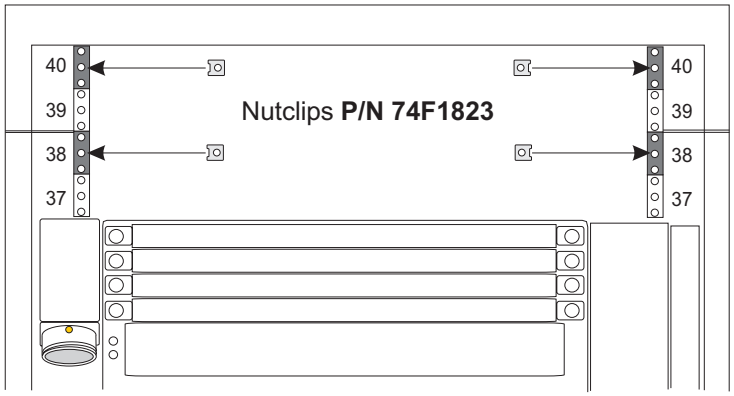


__ Step 1. Unpack the batteries.

__ Step 2. In the ship group, find the battery mounting hardware:

- Nut clips, **P/N 74F1823**
- Screws, **P/N 77G0599**
- Washers **P/N 5589089**.

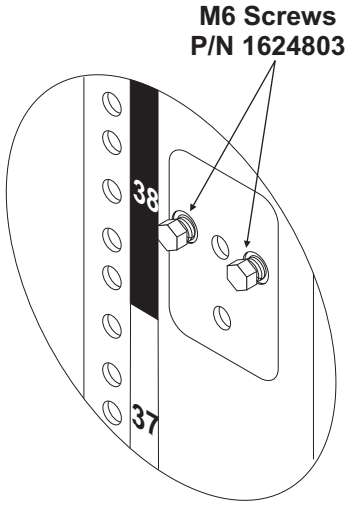
__ Step 3. Install the nut clips, **P/N 74F1823** (as needed) at the middle holes of EIA units 38 and 40 on both the front and rear of the Z frame.



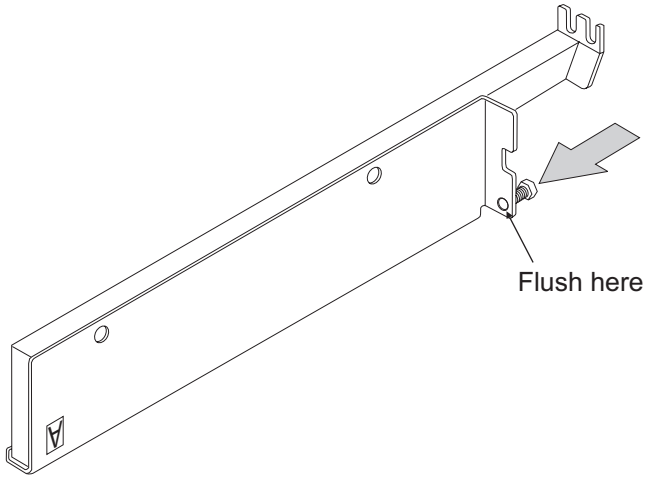
__ Step 4. Find and unpack the hoist, **P/N 44P3922**, and the IBF Service Kit tools, **P/N 44P4831**. You will also need the **Table Support Arms** and **M6 Screws** from the Account Tool Kit - Feature Code 9964. These tools should have been shipped with your system.

__ Step 5. Use the following instructions to install batteries in the Z frame.

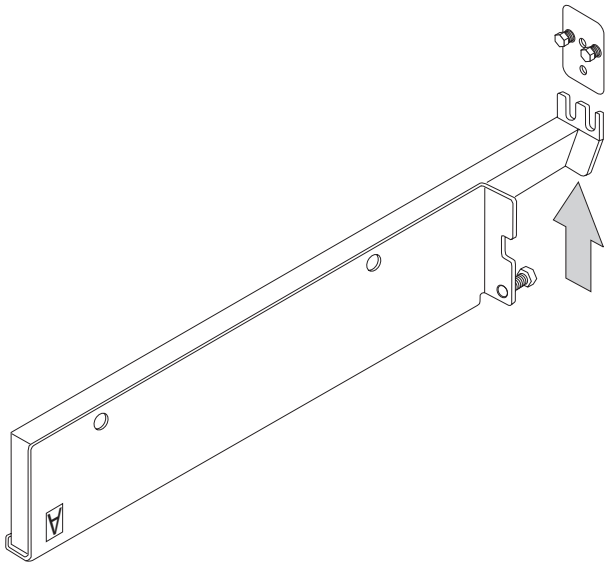
__ Step a. Standing at the front of the Z frame, locate the threaded holes on both sides of the frame outside the EIA labels at EIA 38. Install 4 M6 screws, 2 on each side, in the holes as shown. You are going to install the support table arms with these screws. Do not tighten the screws.



__ Step b. Loosen the screw on the right-angle bracket of the right support arm (labeled A). The threaded end of the screw mst be flush with the bracket.

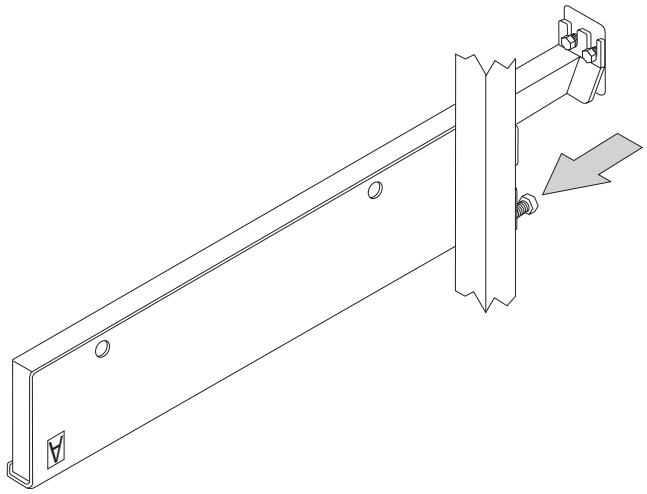


__ Step c. On the right side of the Z frame, slip the 2 slotted holes at the end of the right support arm under the two screws at EIA 38. The open slots are facing up.



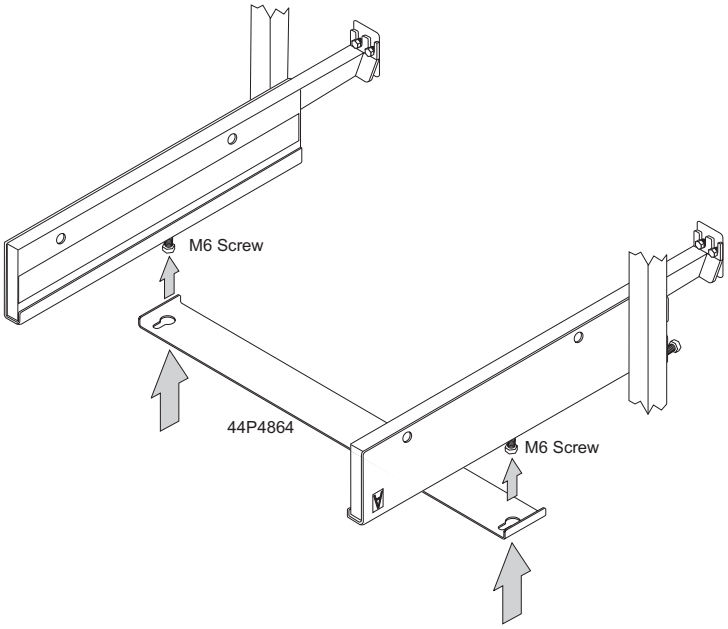
Tighten the 2 screws over the slots on the support arm

__ Step d. Tighten the adjusting screw against the Z frame member.

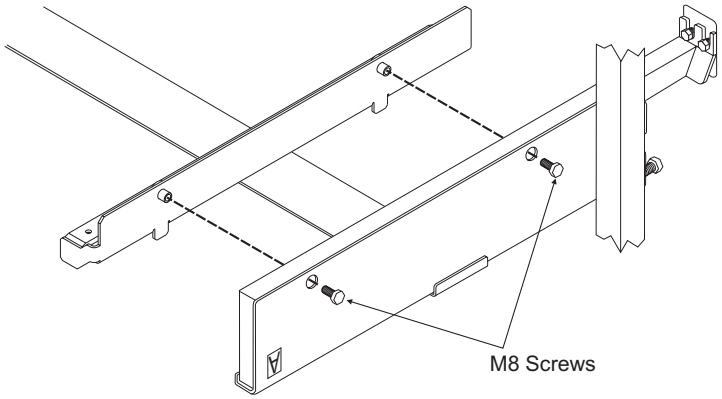


__ Step e. Repeat the two previous steps for the left support arm (labeled B).

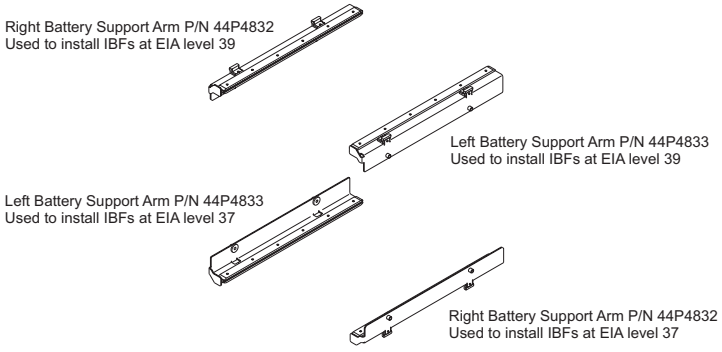
__ Step f. Install 1 M6 screw in the bottom of each table support arm as shown. Place the tie bracket over the heads of the screws and slide toward the frame. Tighten the 2 screws.



__ Step g. Install the right and left battery support arms using 2 M8 screws from the IBF Service Kit for each arm.

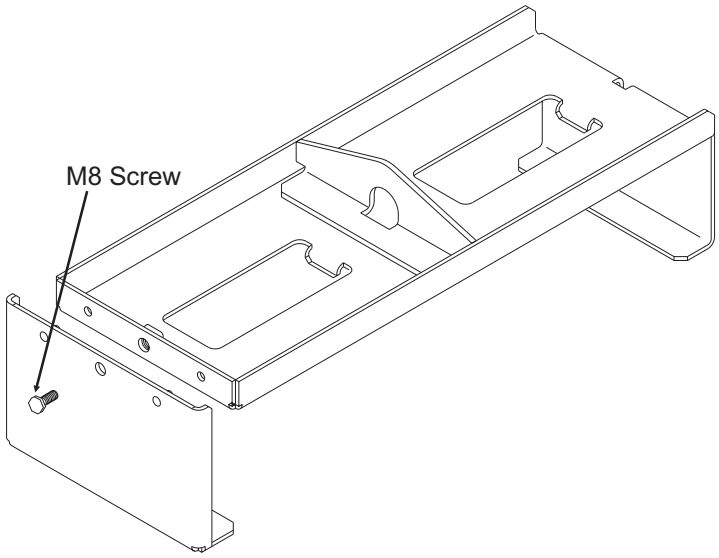


Install the battery at EIA 37 first.



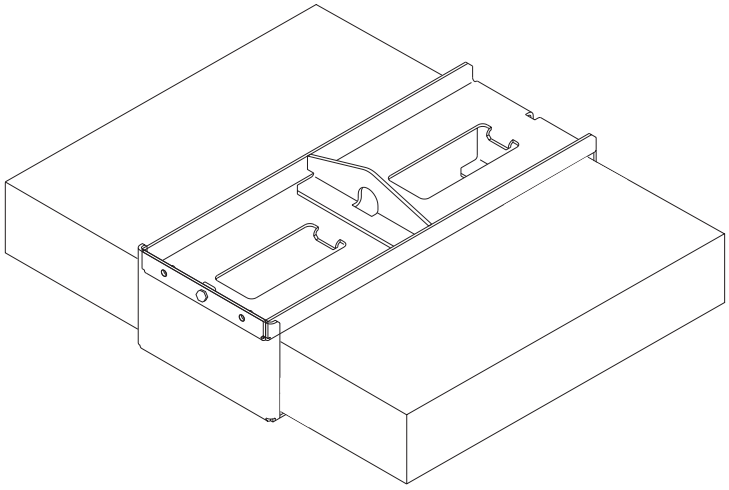
Note that the battery support arms are reversed right to left and upside down for installing batteries at EIA 39.

__ Step h. From the IBF Service Kit, find the battery lift bracket, the front bracket, and an M8 screw.



__ Step i. Set the battery lift bracket over the center of the battery, with the right-angle at the rear.

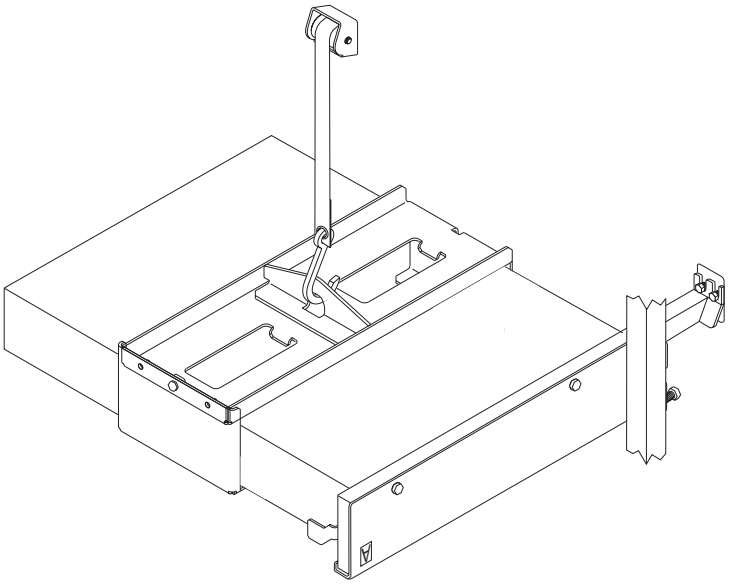
__ Step j. Slide the lift bracket forward so that the lip at the bottom of the right angle moves under the bottom rear edge of the battery. Align the pins on the front lift bracket with the holes in the lift bracket. Slide the lip on the front lift bracket under the battery until the front lift bracket is seated firmly against the lift bracket. Install the M8 screw through the front lift bracket and tighten to the lift bracket.



__ Step k. Install the hoist tool over the Z frame using the instructions that come with the tool.

__ Step l. Lower the hook on the lift tool to the battery, place the hook in the lifting ring of the battery lift bracket, and carefully raise the battery high enough to set it down on the battery support arms you have installed at EIA 37. **IMPORTANT**

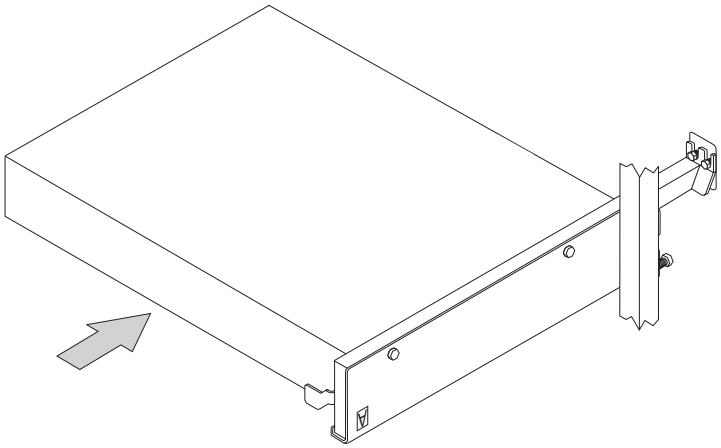
While using the hoist to lift IBFs into place, be careful to prevent the battery from hitting parts of the frame, like the cabling trays.



__ Step m. Set the battery down on the battery support arms, making certain the front edge of the battery is inside the stops on the support arms.

__ Step n. Remove the screw from the front battery lift bracket and remove both parts of the bracket.

__ Step o. Carefully push the battery into position on the mounting rails.



__ Step p. Secure the batteries in the Z frame with the screws, **P/N 77G0599,** and washers, **P/N 5589089**.

__ Step 6. Repeat the procedure above from step 5g on page 3-16 for the battery at EIA 39 in the front of the Z frame. You will have to remove the battery support arms and reverse them to install the battery at EIA 39.

__ Step 7. Repeat steps 5 on page 3-13 and 6 to install the batteries in the rear of the Z frame.

Go to Chapter 4, “Room disconnecting means/EPO cable,” on page 4-1.

Condition 4

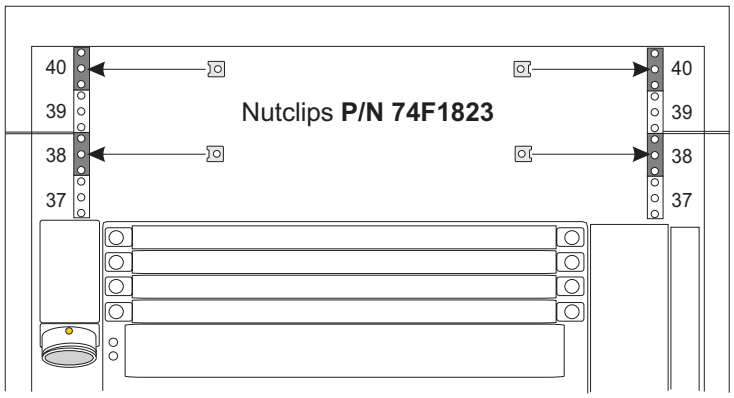
If your system has **FC 9975** (height reduction feature) and one, two or three internal battery features, you must install the batteries in the A frame and the Z frame (if needed).

__ Step 1. Unpack the batteries.

__ Step 2. In the ship group, find the battery mounting hardware:

- Nut clips, **P/N 74F1823**
- Screws, **P/N 77G0599**
- Washers **P/N 5589089**.

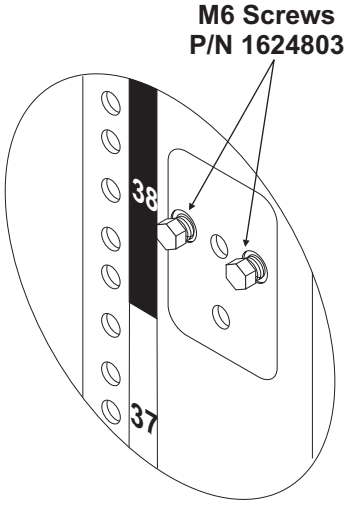
__ Step 3. Install the nut clips, **P/N 74F1823** (as needed) at the middle holes of EIA unit 40 on both the front and rear of the A frame and at EIA units 38 and 40 on both the front and rear of the Z frame. (Only the Z frame is shown.)



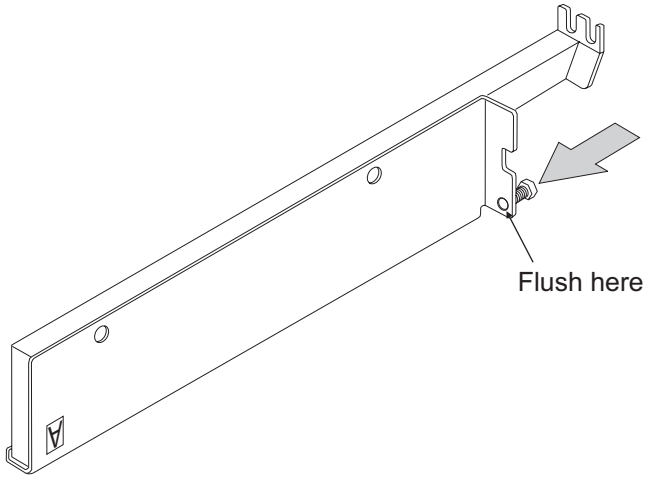
__ Step 4. Find and unpack the hoist, **P/N 44P3922**, and the IBF Service Kit tools, **P/N 44P4831**. You will also need the **Table Support Arms** and **M6 Screws** from the Account Tool Kit - Feature Code 9964. These tools should have been shipped with your system.

__ Step 5. Use the following instructions to install batteries in the Z frame.

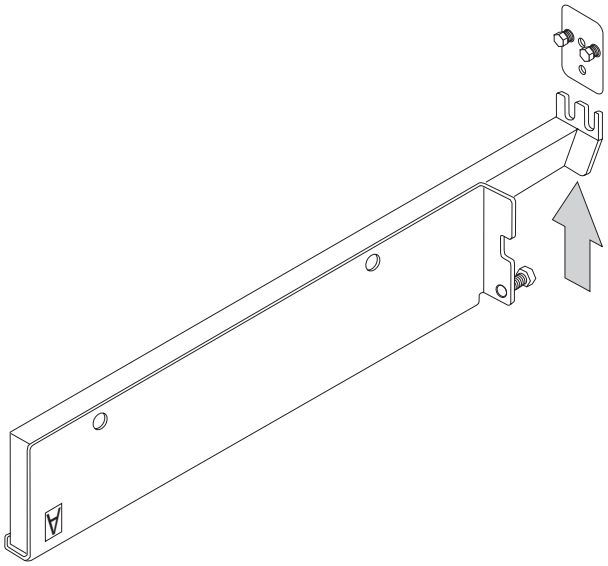
__ Step a. Standing at the front of the Z frame, locate the threaded holes on both sides of the frame outside the EIA labels at EIA 38. Install 4 M6 screws, 2 on each side, in the holes as shown. You are going to install the support table arms with these screws. Do not tighten the screws.



__ Step b. Loosen the screw on the right-angle bracket of the right support arm (labeled A). The threaded end of the screw mst be flush with the bracket.

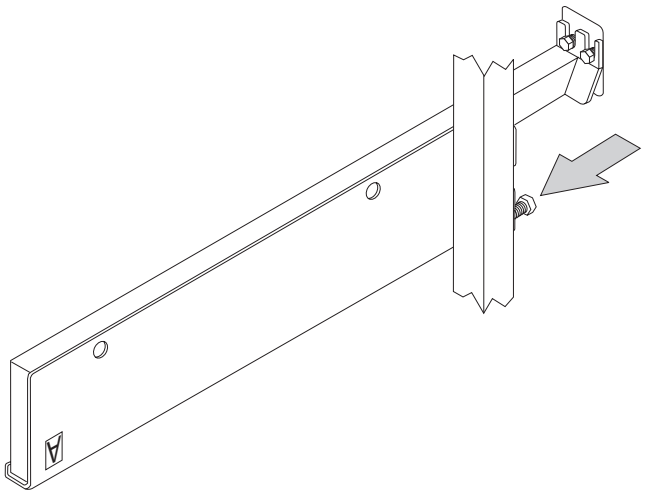


__ Step c. On the right side of the Z frame, slip the 2 slotted holes at the end of the right support arm under the two screws at EIA 38. The open slots are facing up.



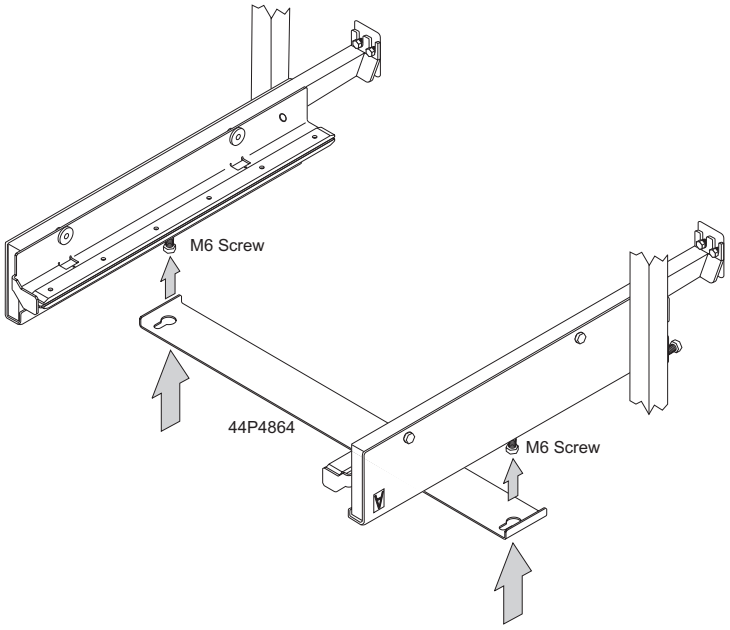
Tighten the 2 screws over the slots on the support arm

__ Step d. Tighten the adjusting screw against the Z frame member.

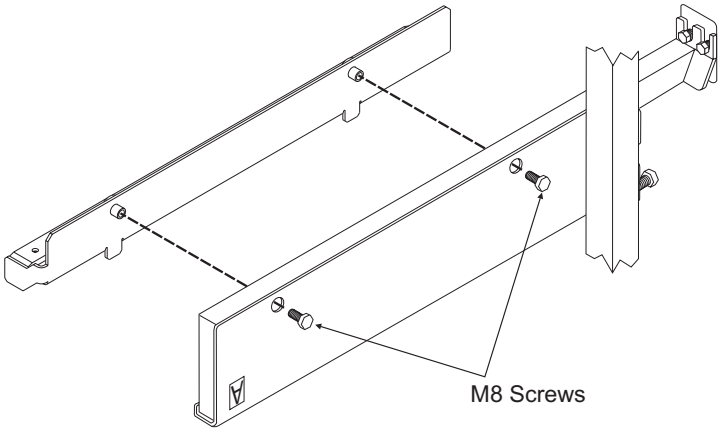


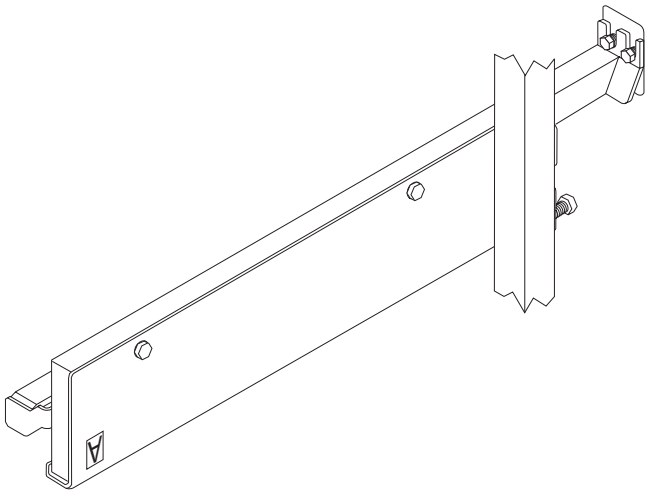
__ Step e. Repeat the two previous steps for the left support arm (labeled B).

__ Step f. Install 1 M6 screw in the bottom of each table support arm as shown. Place the tie bracket over the heads of the screws and slide toward the frame. Tighten the 2 screws.

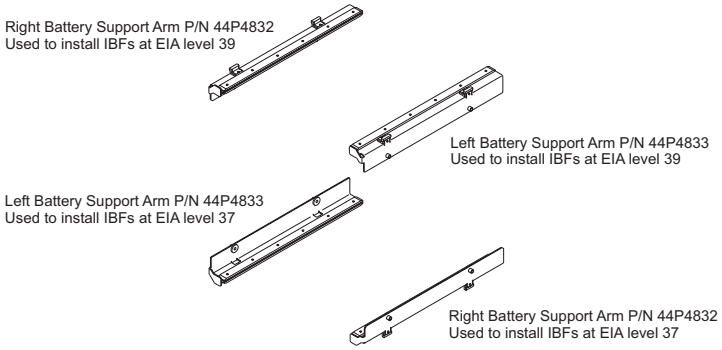


__ Step g. Install the right and left battery support arms using 2 M8 screws from the IBF Service Kit for each arm.



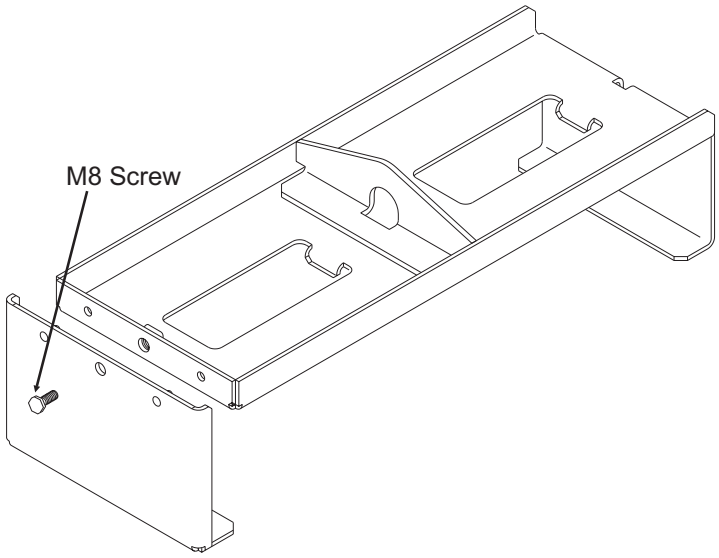


Install the battery at EIA 37 first.



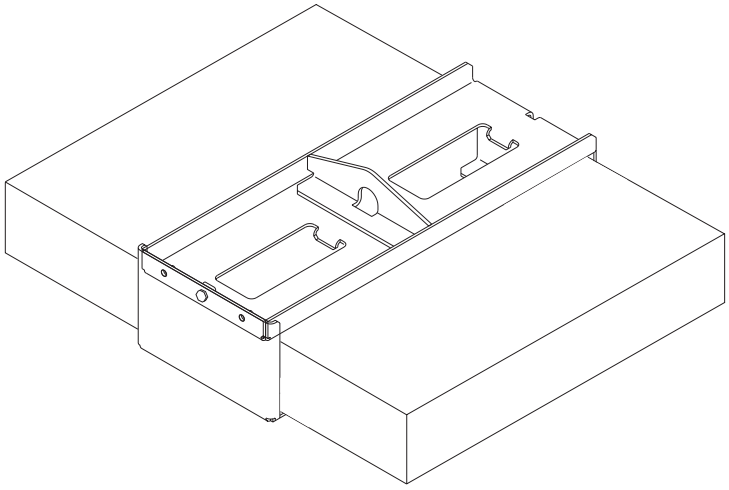
Note that the battery support arms are reversed right to left and upside down for installing batteries at EIA 39.

__ Step h. From the IBF Service Kit, find the battery lift bracket, the front bracket, and an M8 screw.



__ Step i. Set the battery lift bracket over the center of the battery, with the right-angle at the rear.

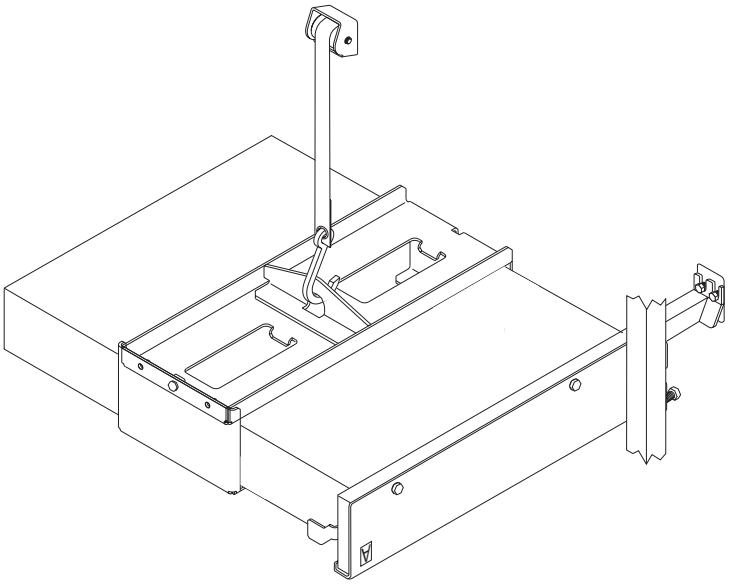
__ Step j. Slide the lift bracket forward so that the lip at the bottom of the right angle moves under the bottom rear edge of the battery. Align the pins on the front lift bracket with the holes in the lift bracket. Slide the lip on the front lift bracket under the battery until the front lift bracket is seated firmly against the lift bracket. Install the M8 screw through the front lift bracket and tighten to the lift bracket.



__ Step k. Install the hoist tool over the Z frame using the instructions that come with the tool.

__ Step l. Lower the hook on the lift tool to the battery, place the hook in the lifting ring of the battery lift bracket, and carefully raise the battery high enough to set it down on the battery support arms you have installed at EIA 37. **IMPORTANT**

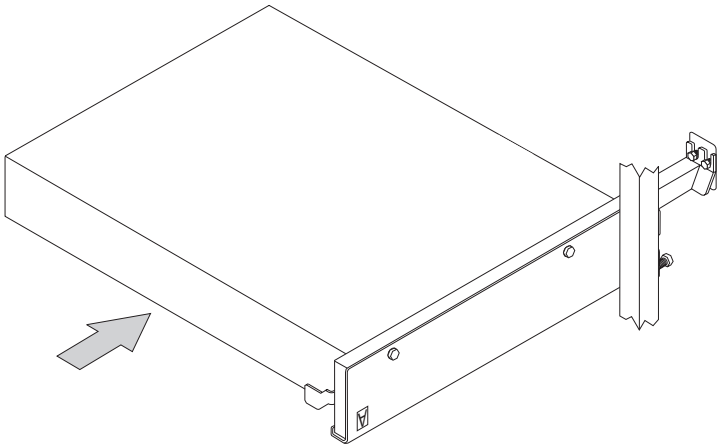
While using the hoist to lift IBFs into place, be careful to prevent the battery from hitting parts of the frame, like the cabling trays.



__ Step m. Set the battery down on the battery support arms, making certain the front edge of the battery is inside the stops on the support arms.

__ Step n. Remove the screw from the front battery lift bracket and remove both parts of the bracket.

__ Step o. Carefully push the battery into position on the mounting rails.



__ Step p. Secure the batteries in the Z frame with the screws, **P/N 77G0599,** and washers, **P/N 5589089**.

__ Step 6. Repeat the procedure above from step 5g on page 3-21 for the battery at EIA 39 in the front of the Z frame. You will have to remove the battery support arms and reverse them to install the battery at EIA 39.

__ Step 7. Repeat steps 5 on page 3-19 and 6 to install the batteries in the rear of the Z frame.

__ Step 8. Repeat step 5 on page 3-19, reversing the battery support arms for an EIA 39 installation, to install the batteries in the A frame.

Go to Chapter 4, “Room disconnecting means/EPO cable,” on page 4-1.

Chapter 4. Room disconnecting means/EPO cable

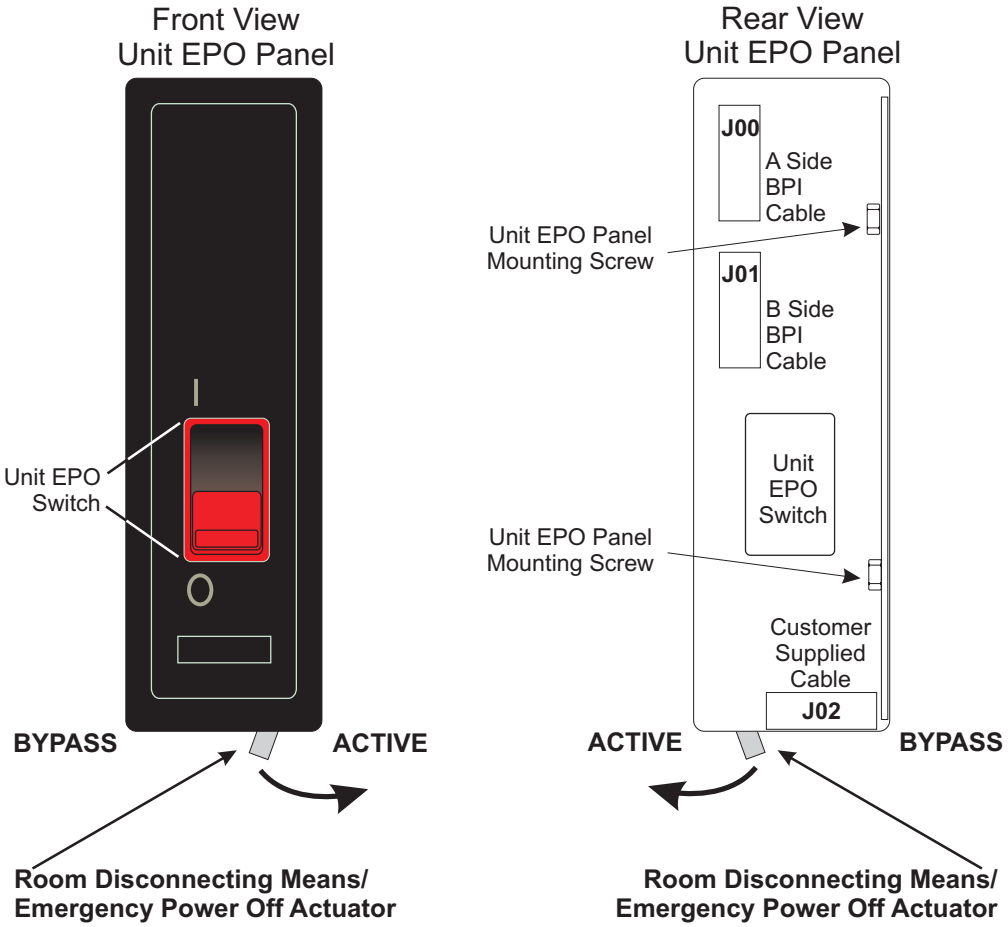
Electrical code in some geographies (for example, NFPA70, Article 645 in the U.S.) may require a computer or Information Technology room to have an electrical disconnecting means that removes all of the room equipment conductors from the source of supply power. Most electrical codes refer to this function as a **Disconnecting Means**, but it may also commonly be referred to as Emergency Power Off (EPO) or Remote Power Off.

Note: A remote room disconnecting means/Emergency Power Off may be required if IBF (Internal Battery Feature) is installed. Refer to your country's national electric code requirements.

If you are **not** installing a remote room disconnecting means/EPO (Emergency Power Off) cable:

- Verify that the room disconnecting means/EPO actuator is set to the **Room Disconnecting Means/EPO BYPASS** position.
- Go to Chapter 5, "Installing internal system cables," on page 5-1

If you are installing a remote room disconnecting means/EPO (Emergency Power Off) cable, continue with the following procedure.



__ Step 1. At the bottom of the Unit EPO window in the A-frame, move the room disconnecting means/EPO actuator to the **Room Disconnecting Means/EPO ACTIVE** position.

__ Step 2. Connect the disconnecting means/EPO cable to J02 of the Unit EPO window.

Notes:

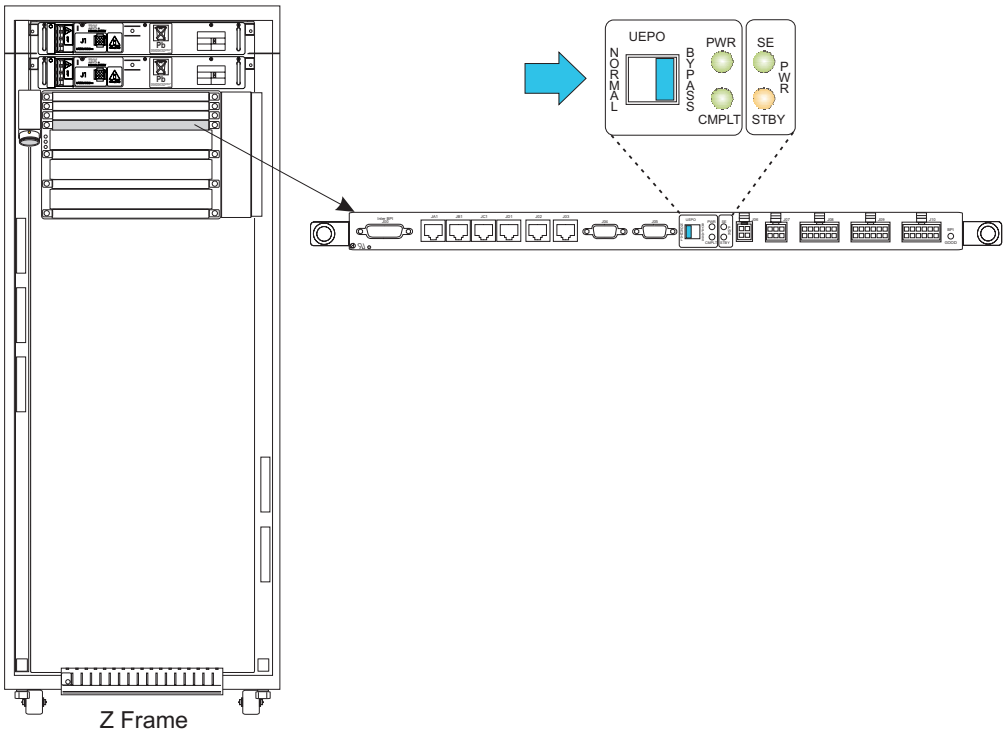
a. The disconnecting means/EPO cable is customer built and supplied in accordance with the specification in the IMPP, *Installation Manual for Physical Planning*, GC28-6824.

b. The permissible resistance of the customer connection is 5 Ohms maximum (~200' of #24 AWG).

__ Step 3. Note that, with the cable in place, the actuator is now set to the **Room Disconnecting Means/EPO ACTIVE** position.

IMPORTANT

Moving the room disconnecting means/EPO bypass actuator to the ACTIVE position with no cable attached to J02 at the bottom of the Unit EPO switch will remove AC power from the entire machine unless the ″EPO NORMAL/BYPASS″ switch is set to the ″BYPASS″ position on each bulk power interface (BPI).



Z Frame

Chapter 5. Installing internal system cables

Use the following procedures to install the cables that connect between the A and Z frames.

DANGER

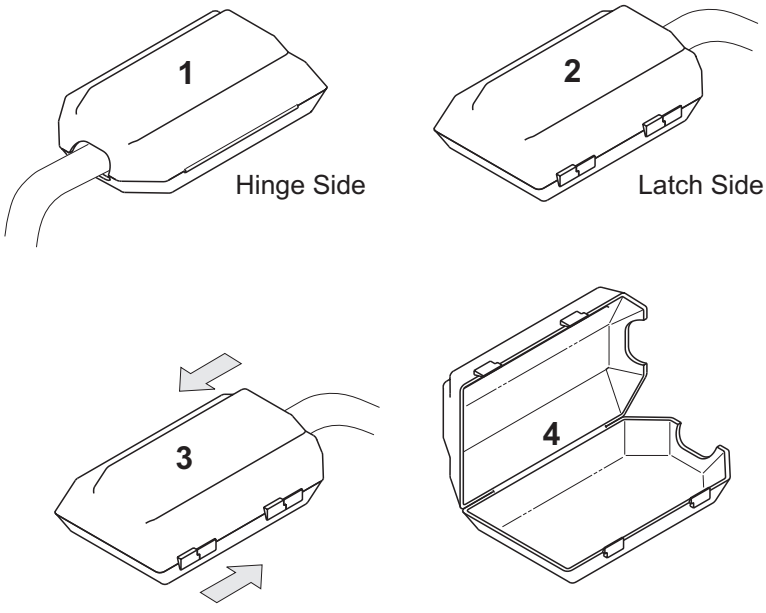
An electrical outlet that is not correctly wired could place hazardous voltage on the metal parts of the system or the devices that attach to the system. It is the responsibility of the customer to ensure that the outlet is correctly wired and grounded to prevent an electrical shock. (D004)

DANGER

To prevent a possible shock from touching two surfaces with different protective ground (earth), use one hand, when possible, to connect or disconnect signal cables. (D001)

Shipping covers for UPIC cable connectors

When you prepare to install the frame-to-frame cabling for your system, you may find UPIC cables shipped with a protective clamshell cover, as shown in **1** and **2** below.



To open the clamshell, grip it with your thumb on the top and one or two fingers on the bottom. Push in the directions shown in **3** to separate the latches on the side of the clamshell, then open it with your other hand **4**.

Checking cable connections

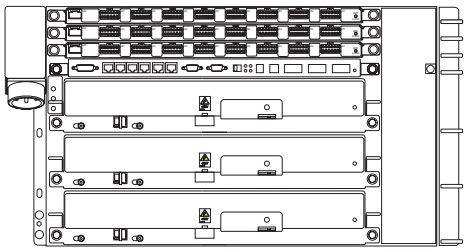
Take a few minutes to check all cable connections, especially UPIC cables, to verify that shipping has not caused a cable to become unseated. As you install additional cables during the installation of this system, be careful not to disturb connections you have already verified. Solid cable connections now, and as you proceed toward Power-On, will help insure a trouble-free installation.

I/O cage power connections

Use the following while performing frame-to-frame cabling.

- Bulk Power Assembly (BPA) label color coding scheme, Figure 5-1 on page 5-3
- BPA component jack locations, Figure 5-2 on page 5-4
- Z Frame front view, Figure 5-3 on page 5-5
- Z Frame rear view, Figure 5-4 on page 5-6
- A Frame front view, Figure 5-5 on page 5-7
- A Frame rear view, Figure 5-6 on page 5-8
- UPIC connector plugging procedure, Figure 5-7 on page 5-13
- “Connecting the IBF cables” on page 5-19

UPIC Connectors - Z Frame **Front** (”A” Side) **Striped** Color Connectors



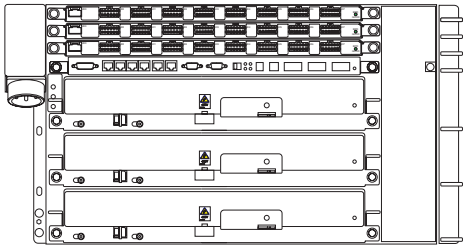
Processor Cage (RED Striped)

I/O Cage # 2 (YELLOW Striped)

I/O Cage # 1 (BLUE Striped)

I/O Cage # 3 (GREEN Striped)

UPIC Connectors - Z Frame **Rear** (”B” Side) **Solid** Color Connectors

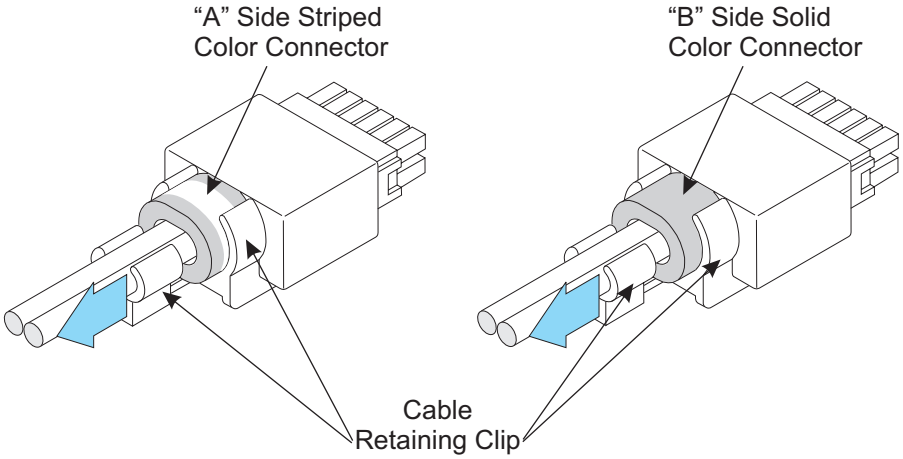


Processor Cage (RED)

I/O Cage # 2 (YELLOW)

I/O Cage # 1 (BLUE)

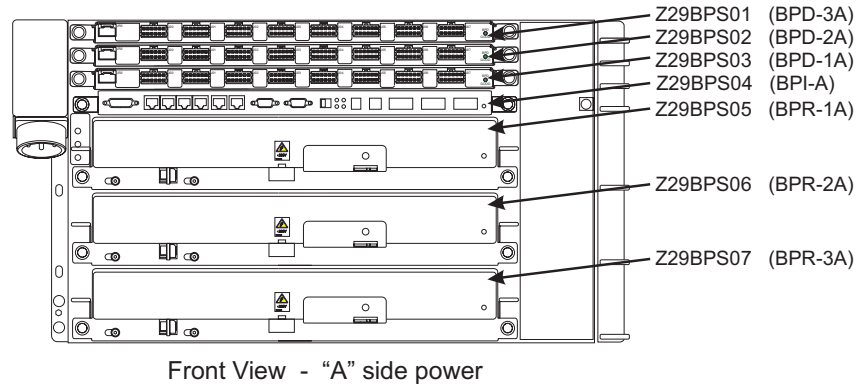
I/O Cage # 3 (GREEN)



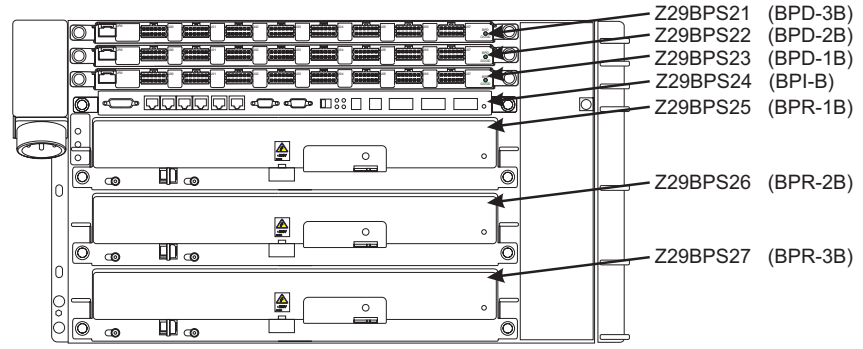
Notes:

1. UPIC connectors are shown upside down in this view.
2. Cable plugging location is shown on the colored band.
3. Slide the cable retaining clip back while holding the connector as shown to read the connector plugging location.

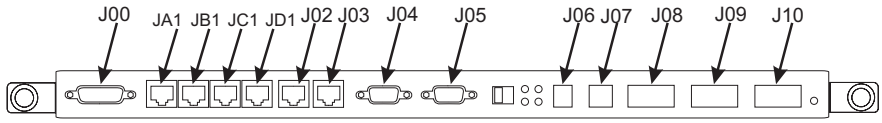
Figure 5-1. Bulk Power Assembly (BPA) label color coding scheme



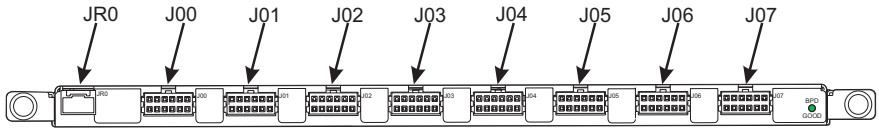
Front View - “A” side power



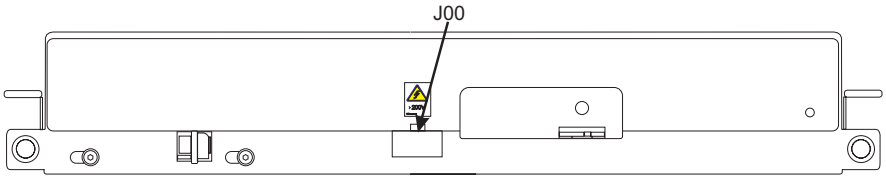
Rear View - “B” side power



BPI Connectors



BPD Connectors



BPR Connector

Figure 5-2. BPA component jack locations

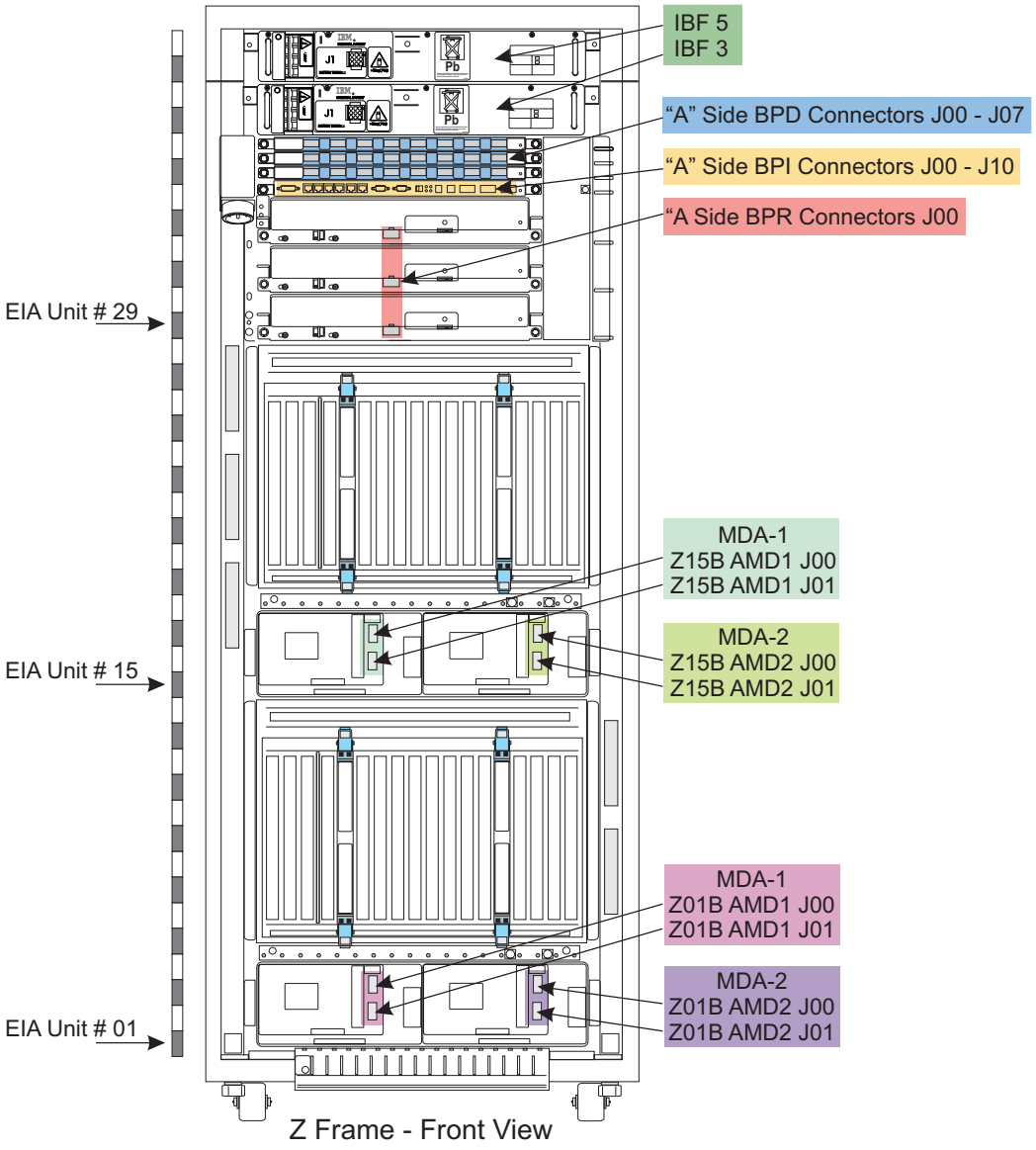


Figure 5-3. Z Frame front view

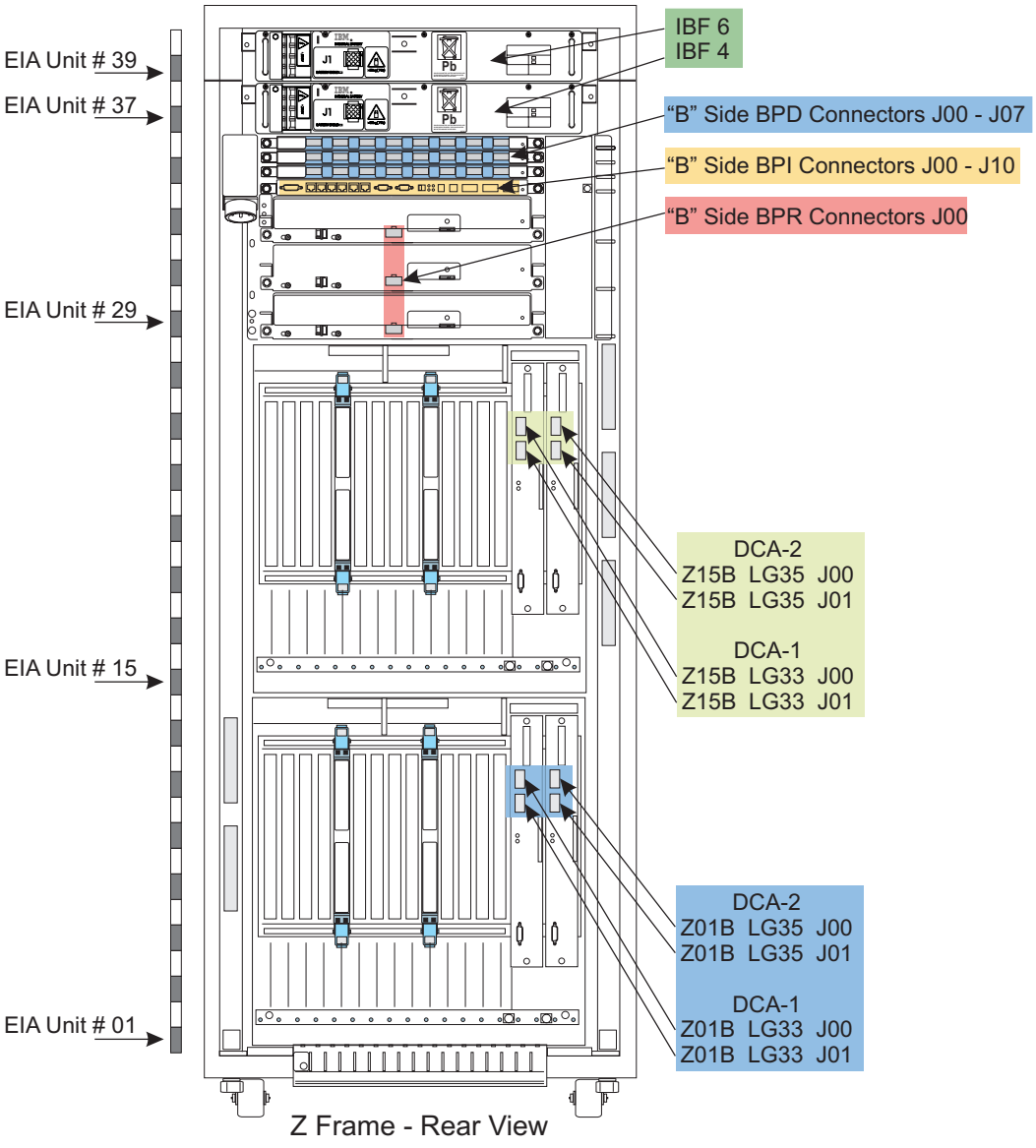


Figure 5-4. Z Frame rear view

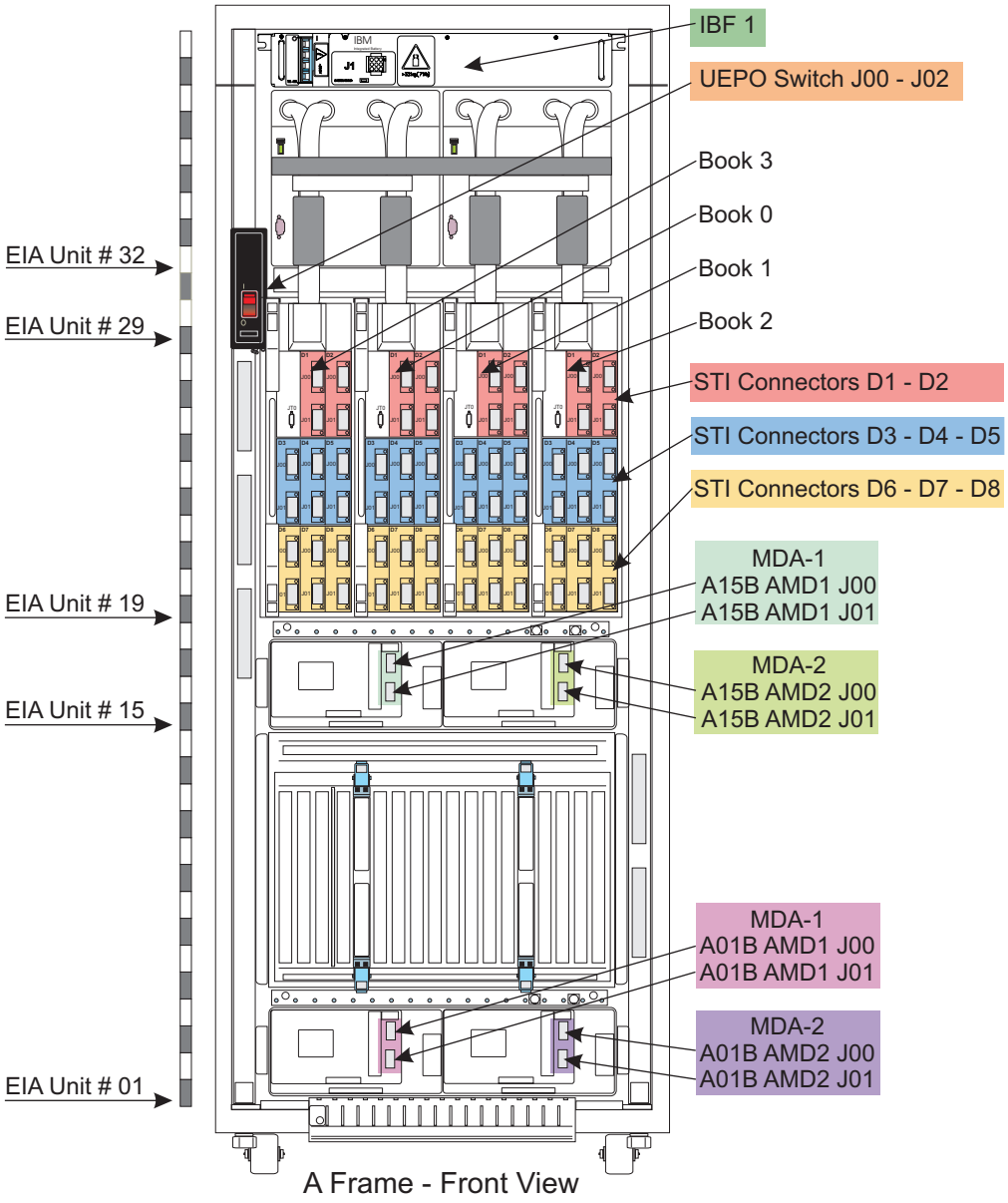


Figure 5-5. A Frame front view

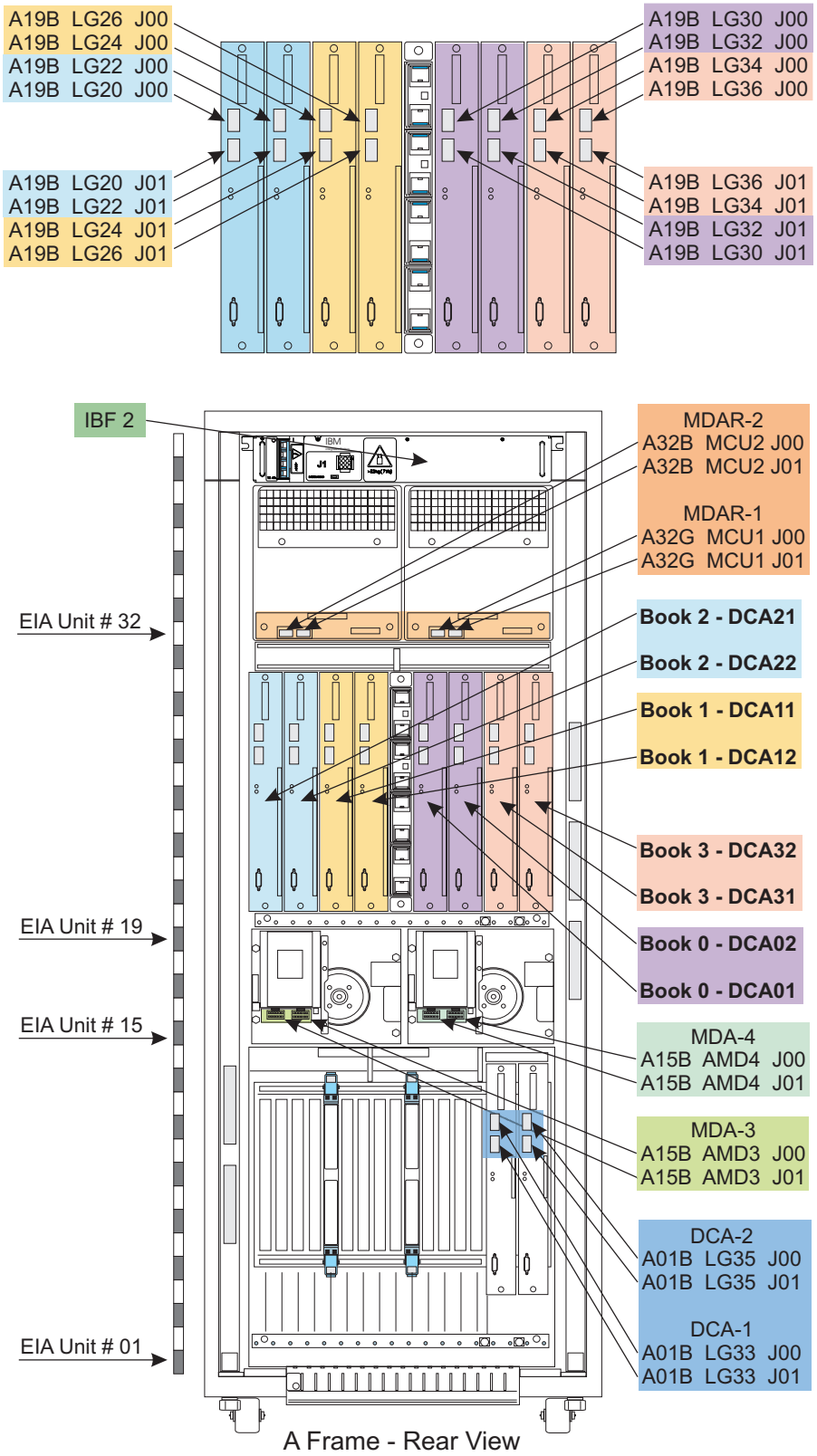


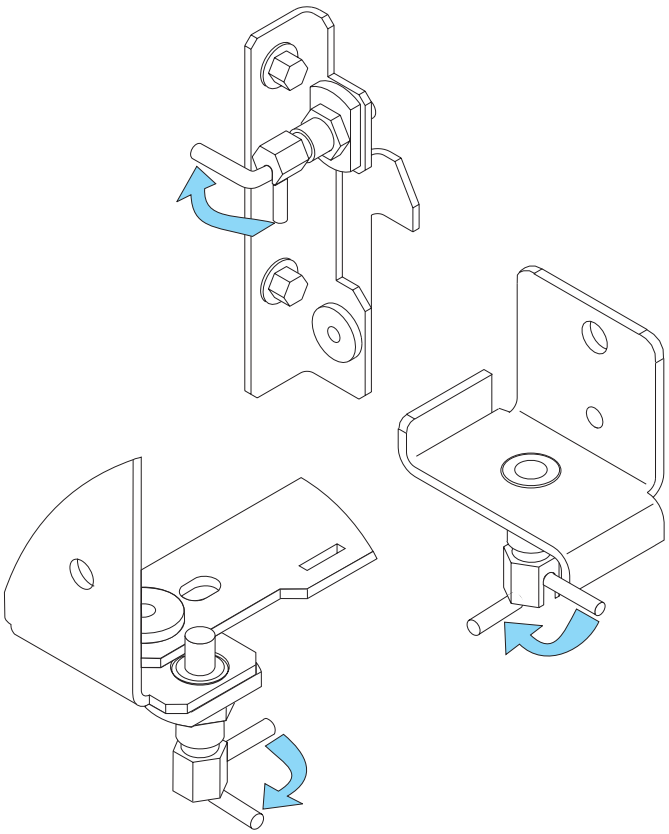
Figure 5-6. A Frame rear view

Support elements

The support elements for this system are installed in a tray frame that places the SEs one above the other.

Prepare the support elements for use:

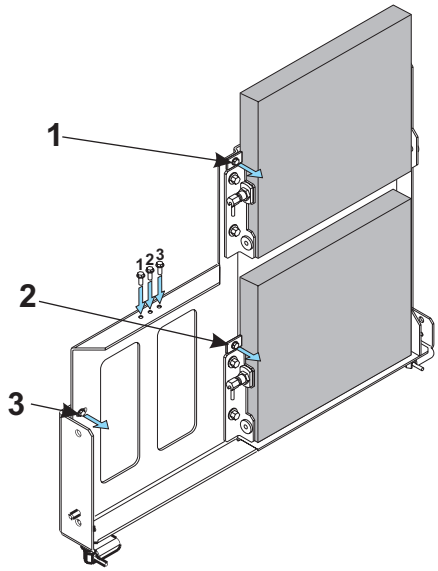
All latches on the SE gate open the same way:



__ Step 1. Pull the latch arm out far enough to clear the latch body.

__ Step 2. Rotate the latch arm clockwise 90 degrees to lock the latch in the open position.

Remove the shipping screws from the support elements:

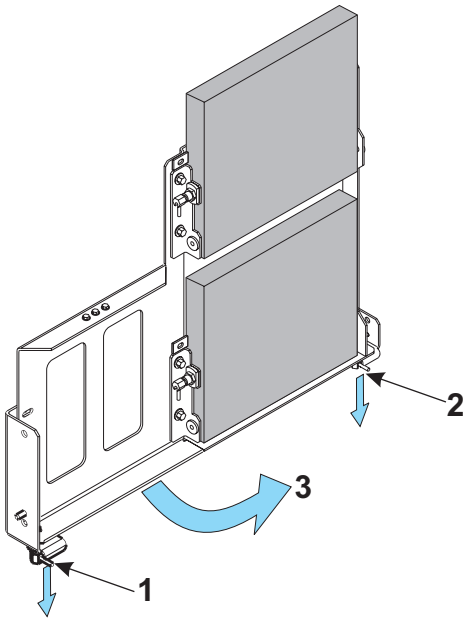


__ Step 1. Remove the screw (**1, next to the orange dot**) from the bracket on the left side of the upper SE tray and store it in the left hole on the top of the SE gate as indicated.

__ Step 2. Remove the screw (**2, next to the orange dot**) from the bracket on the left side of the lower SE tray and store it in the middle hole on the top of the SE gate as indicated.

__ Step 3. Remove the screw (**3, next to the orange dot**) from the left side of the SE gate and store it in the right hole on the top of the SE gate as indicated.

Open the SE gate:



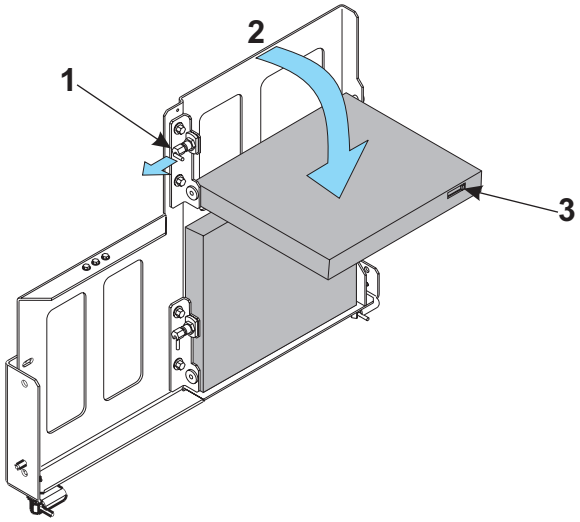
__ Step 1. Operate the latch on the lower left side of the SE gate (**1**).

__ Step 2. Operate the latch on the lower right side of the SE gate (**2**).

__ Step 3. Swing the gate open to the right (**3**).

__ Step 4. Latch the gate open at either a 45 or 90 degree angle using the latch on the lower right side of the SE gate (**2**).

Open the support eElement



__ Step 1. Operate the latch on the left side of the SE (**1**).

__ Step 2. Pivot the SE to a level position (**2**).

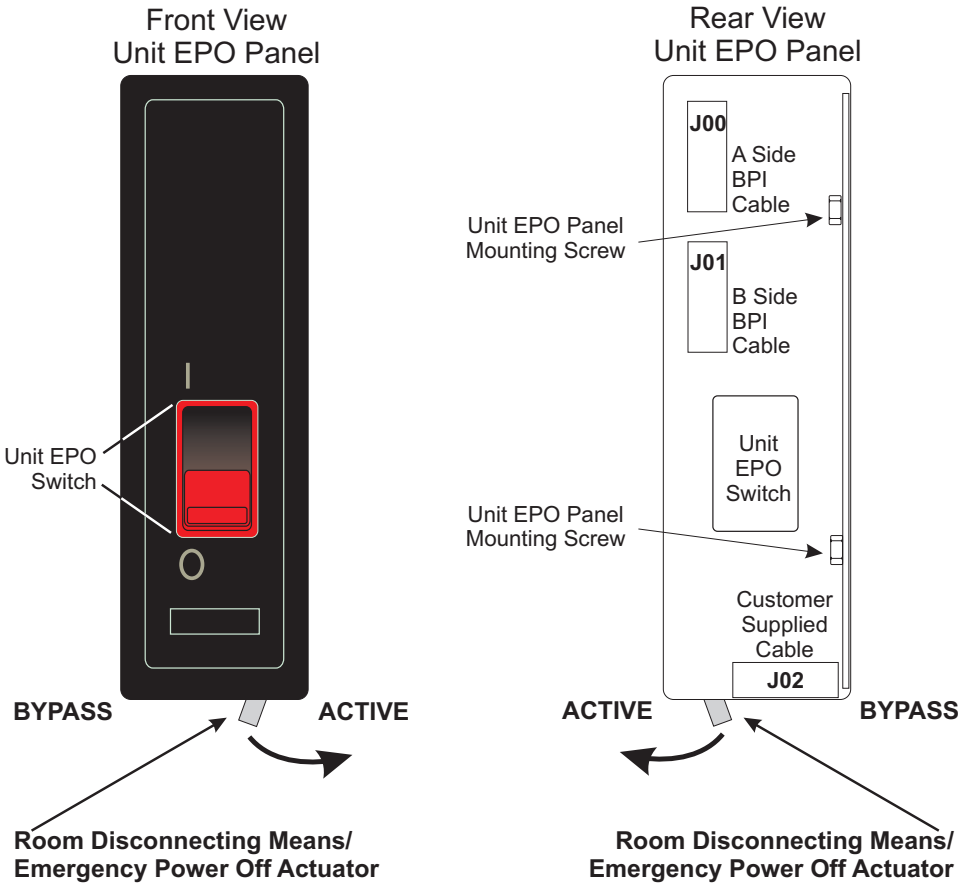
__ Step 3. Unlatch the display and tilt it to a comfortable viewing position (**3**).

Connecting bulk power cables

Connect BPD and BPI power cables.

Notes:

1. You may want to remove the UEPO switch to facilitate feeding UPIC cables between frames.
   __ Step a. If you have connected an EPO cable, remember to set the locking actuator to **Inactive** before disconnecting the EPO cable at J02.
   __ Step b. Disconnect the cables from the switch assembly at J00 and J01.
   __ Step c. Loosen the two switch assembly mounting screws and slide the switch up to remove it.



2. You may want to disconnect the power cord to the ″B″ side BPA to make routing the cables through the portal to the cable tray easier.

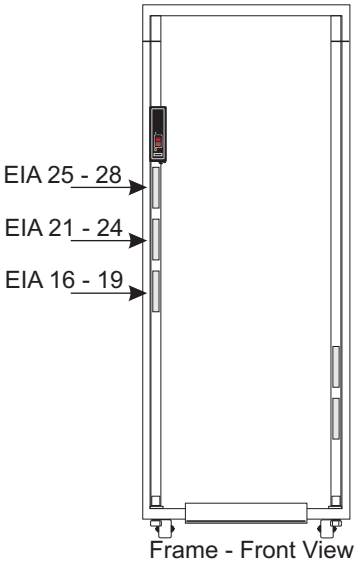
__ Step 1. Separate cables by BPD location (All cables that plug into PS01/PS21, all cables that plug into PS02/PS22, all cables that plug into PS03/PS23)

__ Step 2. Route UPIC cables from the A frame to the Z frame through the upper cable portal on each frame.

- Cables running across the rear of the Z frame to the BPA should cross the frame in the cable tray at EIA 28, then route under the bottom finger, up the right side of the BPA cable bracket to the appropriate fingers, as described below.
- Cables that need to be run from the front to the rear of a frame can be routed through one of three cable troughs:

– EIA 16 through 19 - used primarily for STI cables
– EIA 21 through 24 - used primarily for STI cables
– EIA 25 through 28 - used primarily for UPIC cables.

These troughs are located at the extreme left side of each frame, viewed from the front, and are on the outside of the EIA label.



Frame - Front View

Always select the least-congested trough for the next cable you are routing.

- Route PS01/PS21 cables over the top finger projecting from the BPA frame next to the fan.
- Route PS02/PS22 cables over the second finger from the top, projecting from the BPA frame next to the fan.
- Route PS03/PS23 cables over the third finger from the top, projecting from the BPA frame next to the fan.
- UPIC connector plugging procedure:

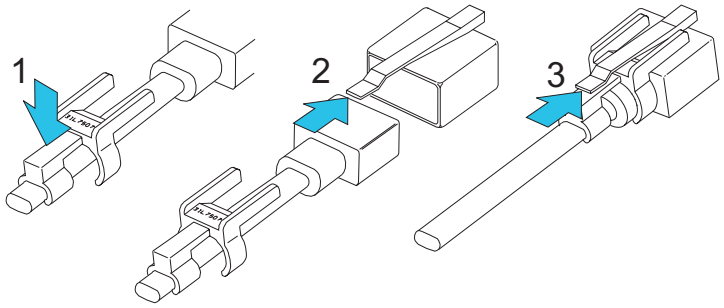


Figure 5-7. UPIC Connector Plugging Procedure

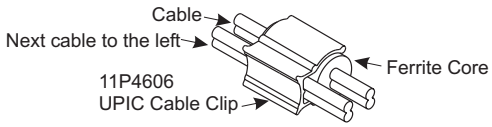
__ Step a. Check the plugging location as described in Figure 5-1 on page 5-3.
__ Step b. Push the cable retaining clip over the cable(**1**).
__ Step c. Plug the connector (**2**). If you listen carefully, you will hear two clicks, indicating a solid connection.

__ Step d. Slide the cable retaining clip under the connector locking clip (**3**). Gently pull on the cable to test for a solid connection.

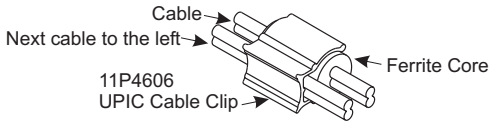
__ Step e. Neatly dress all cables.

__ Step 3. Use Table 5-1 on page 5-16, Table 5-2 on page 5-16, Table 5-3 on page 5-17, and Table 5-4 on page 5-18 to help with bulk power cable plugging.

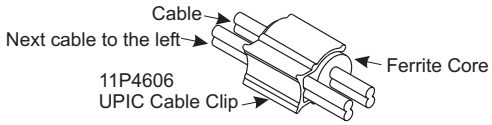
__ Step 4. Verify or plug the UPIC connectors in PS01/PS21, from right to left. If not already installed, add clips, **P/N 11P4606**, between every pair of UPIC cables plugged to PS01/PS21.



__ Step 5. Verify or plug the UPIC connectors in PS02/PS22, from right to left. If not already installed, add clips, **P/N 11P4606**, between every pair of UPIC cables plugged to PS02/PS22.



__ Step 6. Verify or plug the UPIC connectors in PS03/PS23, from right to left. If not already installed, add clips, **P/N 11P4606**, between every pair of UPIC cables plugged to PS03/PS23.



__ Step 7. Route PS04/PS24 cables over the fourth finger from the top, projecting from the BPA frame next to the fan. Use cable ties to keep all of the cables plugged to PS04/PS24 neatly bundled.

__ Step 8. After all cables have been routed and connected to PS01/PS21, PS02/PS22, PS03/PS23, and PS04/PS24, gently pull any slack toward the fingers on the right side of the BPA.

The following tables show all of the connections between the bulk power assembly and the rest of the system. These tables are for reference to verify proper plugging for any loose or disconnected cables.

Note: Your system may not have all of the feature components listed.

Table 5-1. Bulk Power Interface (BPI) connections - A SIDE

EIA---From - To	Connector---From - To	Label Color
Z29BPS04J00 - Z29BPS24J00	BPI-A J00 - BPI-B J00	Red Striped
Z29BPS04JA1 - Z29BPS03JR0	BPI-A JA1 - BPD-1A JR0	Red Striped
Z29BPS04JB1 - Z29BPS02JR0	BPI-A JB1 - BPD-2A JR0	Red Striped
Z29BPS04JC1 - Z29BPS01JR0	BPI-A JC1 - BPD-3A JR0	Red Striped
Z29BPS04JD1 - A99S (in frame Z)	BPI-A JD1 - SE1 COMM	Red Striped
Z29BPS04J02 - A19BLG30J00	BPI-A J02 - DCA01 J00	Red Striped
Z29BPS04J03 - A19BLG32J00	BPI-A J03 - DCA02 J00	Red Striped
Z29BPS04J04 - UPS	BPI-A J04 - UPS Interface	
Z29BPS04J05 - EPO-J00	BPI-A J05 - EPO-J00	Red Striped
Z29BPS04J06 - A99S (in frame Z)	BPI-A J06 - SE1 PWR	Red Striped
Z29BPS04J07 - Z29BBPF-A	BPI-A J07 - BPF-A	White
Z29BPS04J08 - Z29BPS24J08	BPI-A J08 - BPI-B J08	Red Striped
Z29BPS04J09 - A19BLG30J00	BPI-A J09 - DCA01 J00	Red Striped
Z29BPS04J10 - A19BLG32J00	BPI-A J10 - DCA02 J00	Red Striped

Table 5-2. Bulk Power Interface (BPI) connections - B SIDE

EIA---From - To	Connector---From - To	Label Color
Z29BPS24J00 - Z29BPS04J00	BPI-B J00 - BPI-A J00	Red
Z29BPS24JA1 - Z29BPS23JR0	BPI-B JA1 - BPD-1B JR0	Red
Z29BPS24JB1 - Z29BPS22JR0	BPI-B JB1 - BPD-2B JR0	Red
Z29BPS24JC1 - Z29BPS21JR0	BPI-B JC1 - BPD-3B JR0	Red
Z29BPS24JD1 - A99B (in frame Z)	BPI-B JD1 - SE2 COMM	Red
Z29BPS24J02 - A19BLG30J01	BPI-B J02 - DCA01 J01	Red
Z29BPS24J03 - A19BLG32J01	BPI-B J03 - DCA02 J01	Red
Z29BPS24J04 - UPS	BPI-B J04 - UPS Interface	
Z29BPS24J05 - EPO-J01	BPI-B J05 - EPO-J01	Red
Z29BPS24J06 - A99B (in frame Z)	BPI-B J06 - SE2 PWR	Red
Z29BPS24J07 - Z29BBPF-B	BPI-B J07 - BPF-B	White
Z29BPS24J08 - Z29BPS04J08	BPI-B J08 - BPI-A J08	Red
Z29BPS24J09 - A19BLG30J01	BPI-B J09 - DCA01 J01	Red
Z29BPS24J10 - A19BLG32J01	BPI-B J10 - DCA02 J01	Red

Table 5-3. Bulk Power Distribution (BPD) connections - A SIDE

EIA---From - To	Connector---From - To	Color
BPD - 1A		
Z29B PS03 J00 - A19B LG24 J00	BPD-1A J00 - CEC DCA-11 J00	Red Striped
Z29B PS03 J01 - A19B LG26 J00	BPD-1A J01 - CEC DCA-12 J00	Red Striped
Z29B PS03 J02 - A19B LG20 J00	BPD-1A J02 - CEC DCA-21 J00	Red Striped
Z29B PS03 J03 - A19B LG22 J00	BPD-1A J03 - CEC DCA-22 J00	Red Striped
Z29B PS03 J04 - A32B MCU1 J00	BPD-1A J04 - CEC MCU1 J00	Red Striped
Z29B PS03 J05 - A15B AMD4 J00	BPD-1A J05 - CEC MDA4 J00	Red Striped
Z29B PS03 J06 - A15B AMD1 J00	BPD-1A J06 - CEC MDA1 J00	Red Striped
Z29B PS03 J07 - A15B AMD2 J00	BPD-1A J07 - CEC MDA2 J00	Red Striped
BPD - 2A		
Z29B PS02 J00 - A19B LG34 J00	BPD-2A J00 - CEC DCA-31 J00	Red Striped
Z29B PS02 J01 - A19B LG36 J00	BPD-2A J01 - CEC DCA-32 J00	Red Striped
Z29B PS02 J02 - A01B LG33 J00	BPD-2A J02 - I/O 1 DCA-1 J00	Blue Striped
Z29B PS02 J03 - A01B LG35 J00	BPD-2A J03 - I/O 1 DCA-2 J00	Blue Striped
Z29B PS02 J04 - A32G MCU2 J00	BPD-2A J04 - CEC MCU2 J00	Red Striped
Z29B PS02 J05 - A15B AMD3 J00	BPD-2A J05 - CEC MDA3 J00	Red Striped
Z29B PS02 J06 - A01B AMD1 J00	BPD-2A J06 - I/O 1 MDA1 J00	Blue Striped
Z29B PS02 J07 - A01B AMD2 J00	BPD-2A J07 - I/O 1 MDA2 J00	Blue Striped
BPD - 3A (These cables should all be connected)		
Z29B PS01 J00 - Z01B LG33 J00	BPD-3A J00 - I/O 2 DCA-1 J00	Yellow Striped
Z29B PS01 J01 - Z01B LG35 J00	BPD-3A J01 - I/O 2 DCA-2 J00	Yellow Striped
Z29B PS01 J02 - Z15B LG33 J00	BPD-3A J02 - I/O 3 DCA-1 J00	Green Striped
Z29B PS01 J03 - Z15B LG35 J00	BPD-3A J03 - I/O 3 DCA-2 J00	Green Striped
Z29B PS01 J04 - Z01B AMD1 J00	BPD-3A J04 - I/O 2 MDA1 J00	Yellow Striped
Z29B PS01 J05 - Z01B AMD2 J00	BPD-3A J05 - I/O 2 MDA2 J00	Yellow Striped
Z29B PS01 J06 - Z15B AMD1 J00	BPD-3A J06 - I/O 3 MDA1 J00	Green Striped
Z29B PS01 J07 - Z15B AMD2 J00	BPD-3A J07 - I/O 3 MDA2 J00	Green Striped

Table 5-4. Bulk Power Distribution (BPD) connections - B SIDE

EIA---From - To	Connector---From - To	Color
BPD - 1B		
Z29B PS23 J00 - A19B LG24 J01	BPD-1B J00 - CEC DCA-11 J01	Red
Z29B PS23 J01 - A19B LG26 J01	BPD-1B J01 - CEC DCA-12 J01	Red
Z29B PS23 J02 - A19B LG20 J01	BPD-1B J02 - CEC DCA-21 J01	Red
Z29B PS23 J03 - A19B LG22 J01	BPD-1B J03 - CEC DCA-22 J01	Red
Z29B PS23 J04 - A32B MCU1 J01	BPD-1B J04 - CEC MCU1 J01	Red
Z29B PS23 J05 - A15B AMD4 J01	BPD-1B J05 - CEC MDA4 J01	Red
Z29B PS23 J06 - A15B AMD1 J01	BPD-1B J06 - CEC MDA1 J01	Red
Z29B PS23 J07 - A15B AMD2 J01	BPD-1B J07 - CEC MDA2 J01	Red
BPD - 2B		
Z29B PS22 J00 - A19B LG34 J01	BPD-2B J00 - CEC DCA-31 J01	Red
Z29B PS22 J01 - A19B LG36 J01	BPD-2B J01 - CEC DCA-32 J01	Red
Z29B PS22 J02 - A01B LG33 J01	BPD-2B J02 - I/O 1 DCA-1 J01	Blue
Z29B PS22 J03 - A01B LG35 J01	BPD-2B J03 - I/O 1 DCA-2 J01	Blue
Z29B PS22 J04 - A32G MCU2 J01	BPD-2B J04 - CEC MCU2 J01	Red
Z29B PS22 J05 - A15B AMD3 J01	BPD-2B J05 - CEC MDA3 J01	Red
Z29B PS22 J06 - A01B AMD1 J01	BPD-2B J06 - I/O 1 MDA1 J01	Blue
Z29B PS22 J07 - A01B AMD2 J01	BPD-2B J07 - I/O 1 MDA2 J01	Blue
BPD - 3B (These cables should all be connected)		
Z29B PS21 J00 - Z01B LG33 J01	BPD-3B J00 - I/O 2 DCA-1 J01	Yellow
Z29B PS21 J01 - Z01B LG35 J01	BPD-3B J01 - I/O 2 DCA-2 J01	Yellow
Z29B PS21 J02 - Z15B LG33 J01	BPD-3B J02 - I/O 3 DCA-1 J01	Green
Z29B PS21 J03 - Z15B LG35 J01	BPD-3B J03 - I/O 3 DCA-2 J01	Green
Z29B PS21 J04 - Z01B AMD1 J01	BPD-3B J04 - I/O 2 MDA1 J01	Yellow
Z29B PS21 J05 - Z01B AMD2 J01	BPD-3B J05 - I/O 2 MDA2 J01	Yellow
Z29B PS21 J06 - Z15B AMD1 J01	BPD-3B J06 - I/O 3 MDA1 J01	Green
Z29B PS21 J07 - Z15B AMD2 J01	BPD-3B J07 - I/O 3 MDA2 J01	Green

Connecting the IBF cables

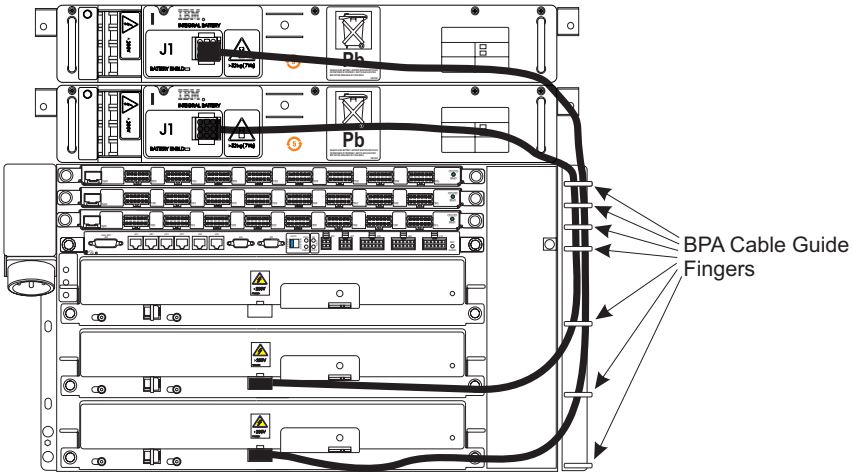
If your system has no internal batteries, go to“Installing the STI cables” on page 5-22. Verify or plug and verify the following cables:

Note: Your system may not have all of the feature components listed.

Z Frame Cables

EIA---From - To	Connector---From - To	Color
Z29BPS06 - Z37BIBF3	BPR- 2A J00 -IBF-2A J1	Black
Z29BPS07 - Z39BIBF5	BPR- 3A J00 - IBF-3A J1	Black
Z29BPS26 - Z37PIBF4	BPR- 2B J00 - IBF-2B J1	Black
Z29BPS27 - Z39PIBF6	BPR- 3B J00 - IBF-3B J1	Black

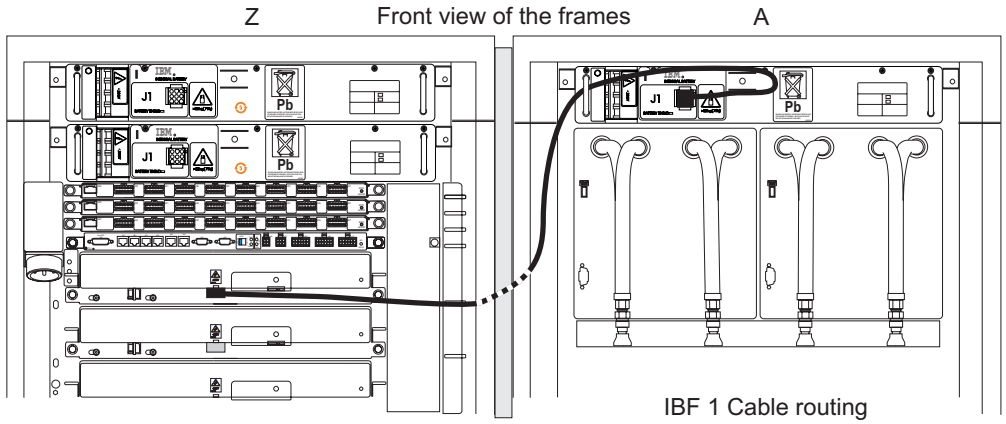
Route the BPR-to-battery cables in the Z frame as shown.



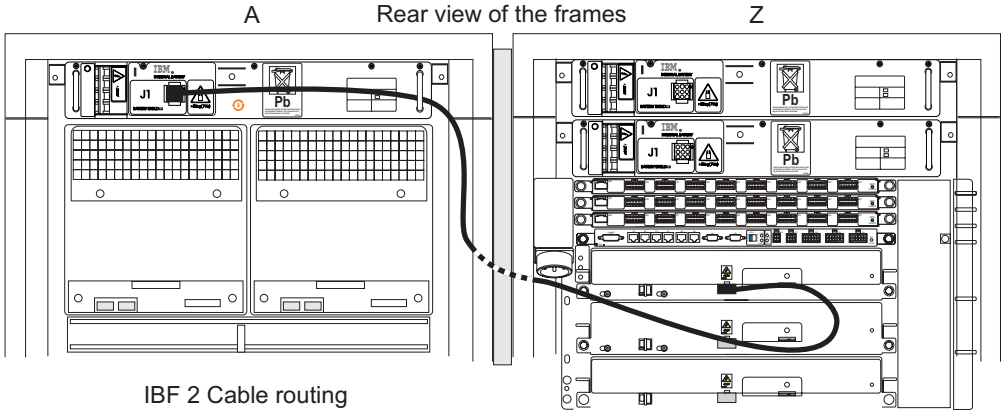
A to Z Frame Cables

EIA---From - To	Connector---From - To	Color
Z29BPS05 - A39BIBF1	BPR-1A J00 - IBF-1A J1	Black
Z29BPS25 - A39PIBF2	BPR-1B J00 - IBF-1B J1	Black

In the rear of the Z frame, route the IBF cable from PS25 between the fifth and sixth fingers on the cable bracket to allow enough slack in the cable. Secure all of the IBF cables to the BPA cable guide fingers with cable ties.



IBF 1 Cable routing



IBF 2 Cable routing

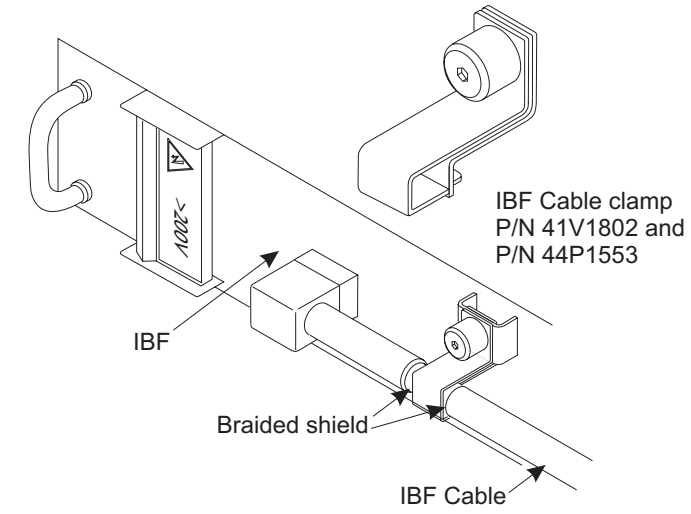
Install cable clamps **P/N 41V1802** and **P/N 44P1553** over the braided shield at both ends of the IBF cable.

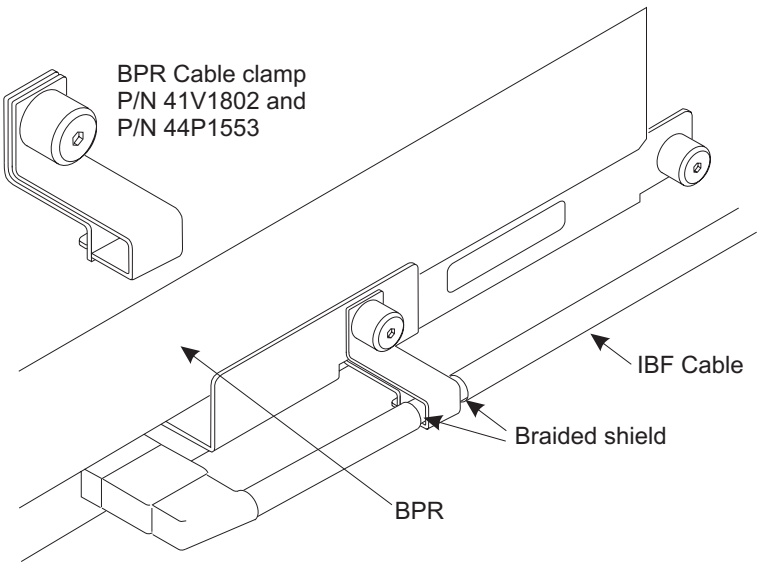
__ Step 1. Loosen the thumbscrew until the front and rear of the clamp separate.

__ Step 2. Place the braided shield on the cable in the pocket at the bottom of the clamp.

__ Step 3. Place the rear plate of the clamp behind the hole in the bracket on either the battery or the BPR.

__ Step 4. Push the front of the clamp up to the hole, insert the thumbscrew through the hole, and fasten it to the rear plate.



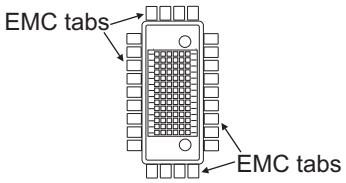


Installing the STI cables

DANGER

To prevent a possible shock from touching two surfaces with different protective ground (earth), use one hand, when possible, to connect or disconnect signal cables. (D001)

There are two types of ICB features supported on the 2094. Both ICB features use STI cables with connectors similar to the one shown below.



Use extreme caution when plugging these cables to prevent bending the EMC tabs. If any tabs are bent or missing, contact your support organization before proceeding.

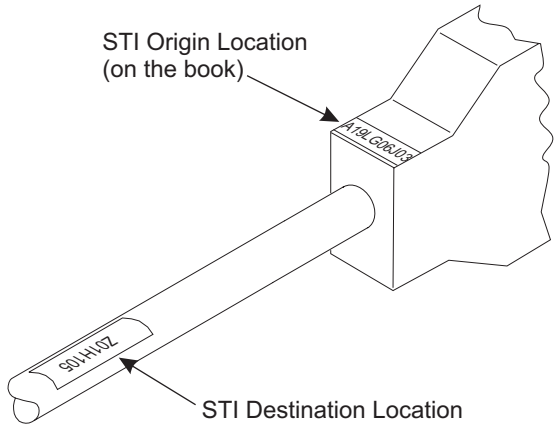
Verify or plug and verify the STI connections from the book(s) to the I/O cage(s) using the following information. You may want to remove the UEPO switch to facilitate feeding STI cables between frames. If you have connected an EPO cable to the switch, remember to set the locking actuator to **Bypass** before disconnecting it, and to set it to **Active** when you reinstall the switch.

Do the following for each STI cable:

__ Step 1. The following illustrations show connector positions on both the books and the I/O cages. Use the card slot numbers on the light strips to help find STI card slots.

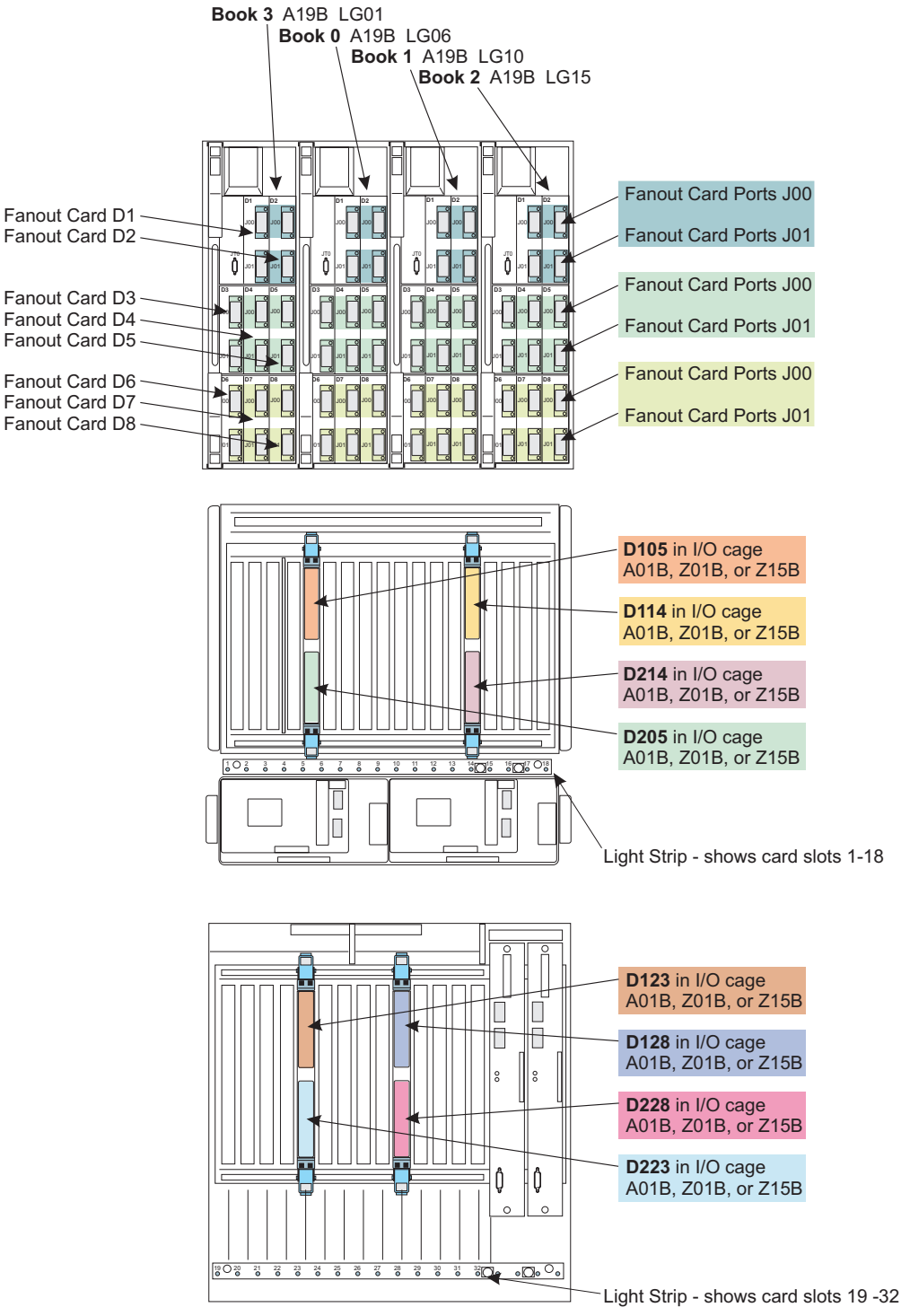
__ Step 2. Route the STI cables through the cable portal nearest the card plug location in the Z frame I/O cage. Use the cable trays to help route the STI cables. Secure the cables with cable ties where appropriate. Try to keep the STI cables as close to the front of the A frame as possible to avoid a potential problem with closing the front door when you finish this installation.

__ Step 3. Connect the STI cables from frame A to frame Z according to the cable labels.



Note: Several PCHIDs can be associated with the same STI cable.

STI locations: processor and I/O cages



Notes:
1. D1xx is the **upper** STI card in slots 05, 14, 23, or 28.
2. D2xx is the **lower** STI card in slots 05, 14, 23, or 28.

STI plug locations at the I/O cages

Table 5-5. I/O card to STI-MP card association in I/O Cage FC3023

Domain Number	I/O Cage Card Slots in Domain	I/O Cage STI-MP Card Slot
0	01, 03, 06, 08	D105
1	02, 04, 07, 09	D205
2	10, 12, 15, 17	D114
3	11, 13, 16, 18	D214
4	19, 21, 24, 26	D123
5	20, 22, 25, 27	D223
6	29, 30, 31, 32	D128

This table shows which I/O card slots are controlled by which domain, and where the STI-MP cable connects in the I/O cage for each domain.

Installing the Crypto Express2 (FC 0863) cards

The Crypto Express2 cards are temperature-sensitive, and are shipped in separate containers.

__ Step 1. Locate the shipping container(s) with the Crypto Express2 cards.

__ Step 2. Unpack each of the cards.

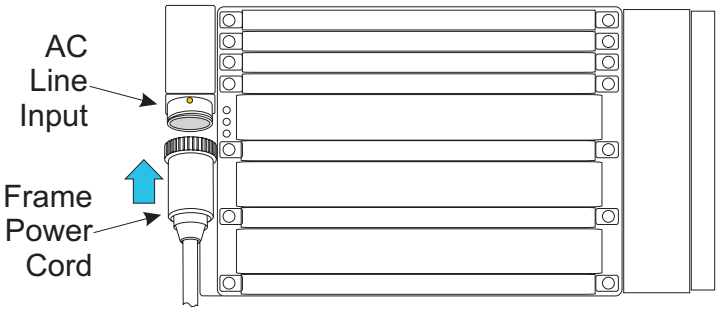
__ Step 3. You will find open card slots in the I/O cages where the crypto cards were plugged for testing during the assembly of this server. Carefully install the Crypto Express2 cards into the card locations that are open.

__ Step 4. Verify that all Crypto Express2 cards are properly seated.

Closing the support element gate

Perform the following procedures as necessary:

__ Step 1. If you disconnected the power cord to the ″B″ Side BPA to facilitate cable routing, reconnect the power cord now.

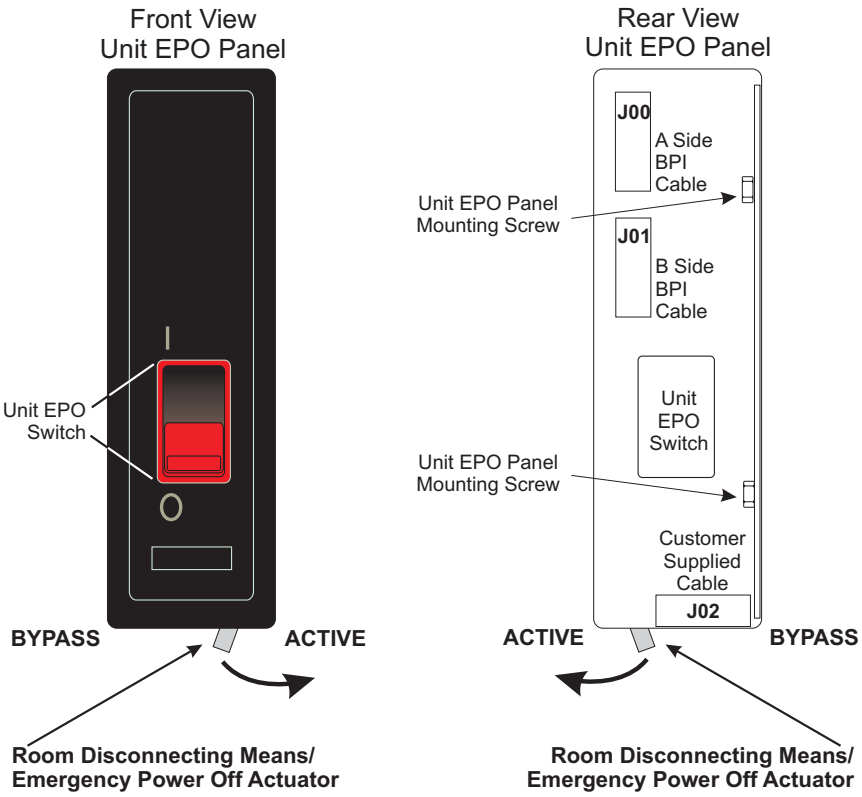


__ Step 2. If you removed the UEPO switch to facilitate cable routing, reinstall the switch now.

a. Slide the switch assembly down over the two screws in the left side of the frame. Tighten the two switch assembly mounting screws.

b. Reconnect the cables from the BPIs to the switch assembly at J00 and J01.

c. If you have an EPO cable, connect it to J02. Set the locking actuator to **Active**.

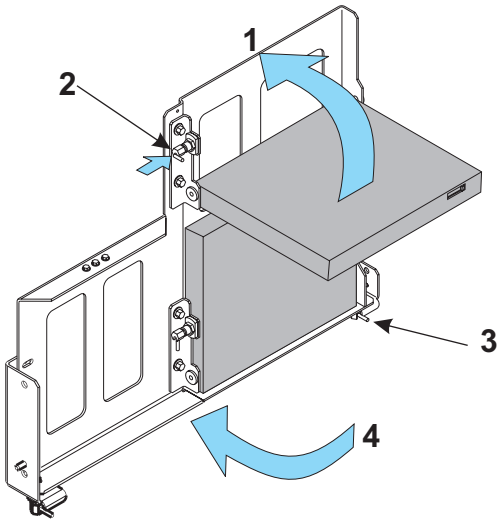


__ Step 3. Before attempting to close the SE gate assembly, arrange the STI cables to fit as closely as possible against the Z Frame. Ideally, the SE gate assembly should not touch the STI cables when it closes.

__ Step 4. To close the SE gate and tray assembly:

__ Step a. Close the SE display, then lift the SE to its vertical storage position (**1**).

__ Step b. Release the latch (**2**) to secure the SE in its storage position.



__ Step c. Lift the latch (**3**).

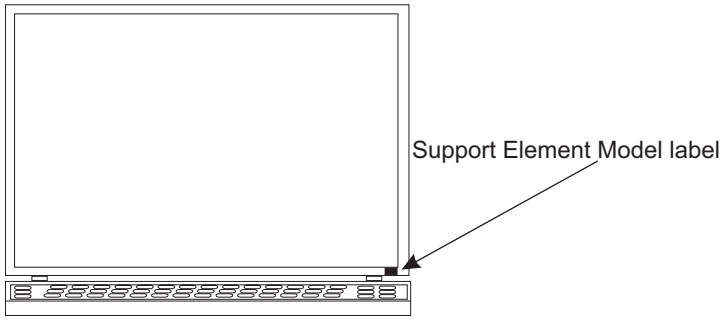
__ Step d. Push the SE gate and tray assembly in tight (**4**) and release the latch (**3**) to lock the assembly in place.

Chapter 6. Creating the LAN (Local Area Network)

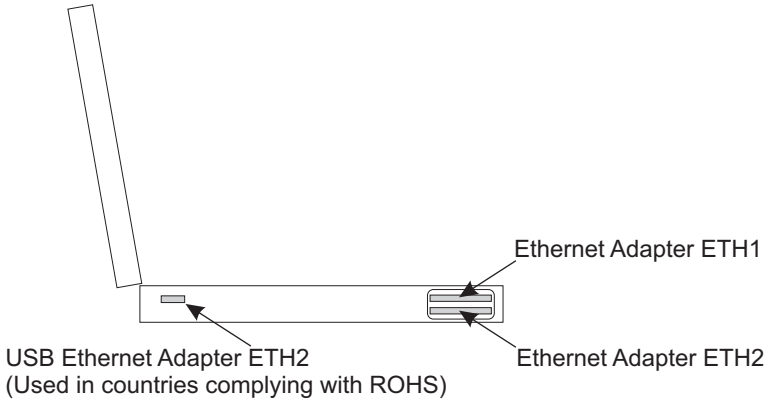
This procedure creates the LAN that connects the support elements to the Hardware Management Console.

You should know the following about setting up the LAN:

- At any given moment, one SE is the Primary and the other one is the Alternate. Both SEs will be configured the same.
- You can identify what model your support elements are by looking for a small label immediately below the lower right corner of the display window.

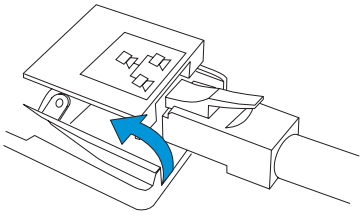


- There are two Ethernet adapters in each support eElement.



For T43 support elements:

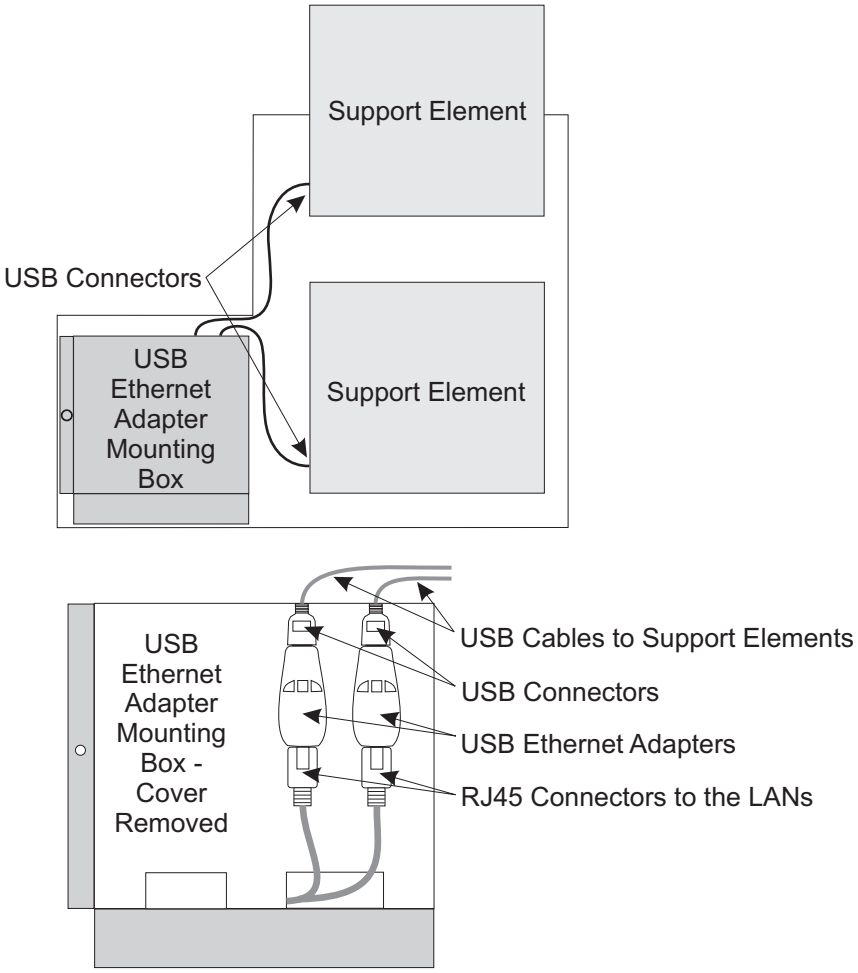
– The top network adapter position is identified as **ETH1** in the Connectivity setup windows. To use ETH1, lift up and push the top of the connector toward the body of the SE. Plug the RJ-45 LAN connector into the opening.



– The bottom network adapter is identified as **ETH2** in the Connectivity setup windows. There is a short cable attached to the adapter. The RJ45 connector is on the end of the cable.

– In countries that are complying with the **Restrictions on Hazardous Substances** (**ROHS**) standard, there is no Ethernet adapter in the lower

adapter position on the support element. ETH2 is a separate Ethernet adapter, mounted inside a box on the left side of the support element gate. The adapter is connected to a USB port in the support element.



- You must route the Ethernet cable supplied with the ship group (**P/N 41V0143**) between one of the SE Ethernet adapters and the LAN to which the Hardware Management Console is connected. (See the illustration of the LAN network under “Ethernet network connection recommendations” on page 6-4). Be certain to match TCP/IP addresses between the support element Ethernet adapter and the Hardware Management Console.
- If there are customer-supplied Ethernet cables available, they will connect to the other Ethernet adapters in each SE.
- The LAN is comprised of Ethernet cable(s) supplied in the ship group (or equivalent CAT 5 cabling) connected to a switch.
- ALWAYS use cable ties to provide LAN cable strain relief.

Ethernet LAN switch support

If you do not have an Ethernet Switch to install, continue at Chapter 7, “Installing the Hardware Management Console,” on page 7-1

ATTENTION:

The following is general information relevant to many Ethernet Switches. Refer to the manufacturer's User's Guide that came with your Switch for installation instructions.

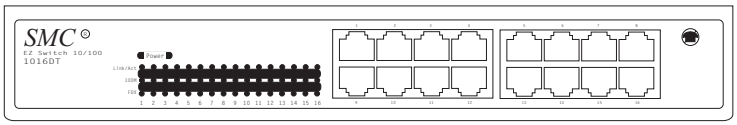
The primary and alternate SEs must be on the same physical LAN as the local HMC with no firewall between them.

The Switch is a standalone unit located outside the frame and which operates on building AC power. The particular unit you have received is based on availability at the time of shipment.

Typical Ethernet Switch characteristics:

- 16 auto-negotiation ports
- 10/100 Mbps data rate
- Full or half duplex operation
- Auto-MDIX on all ports
- Port Status LEDs
- 100 to 240 VAC, 50 or 60 Hz power

Switch Example

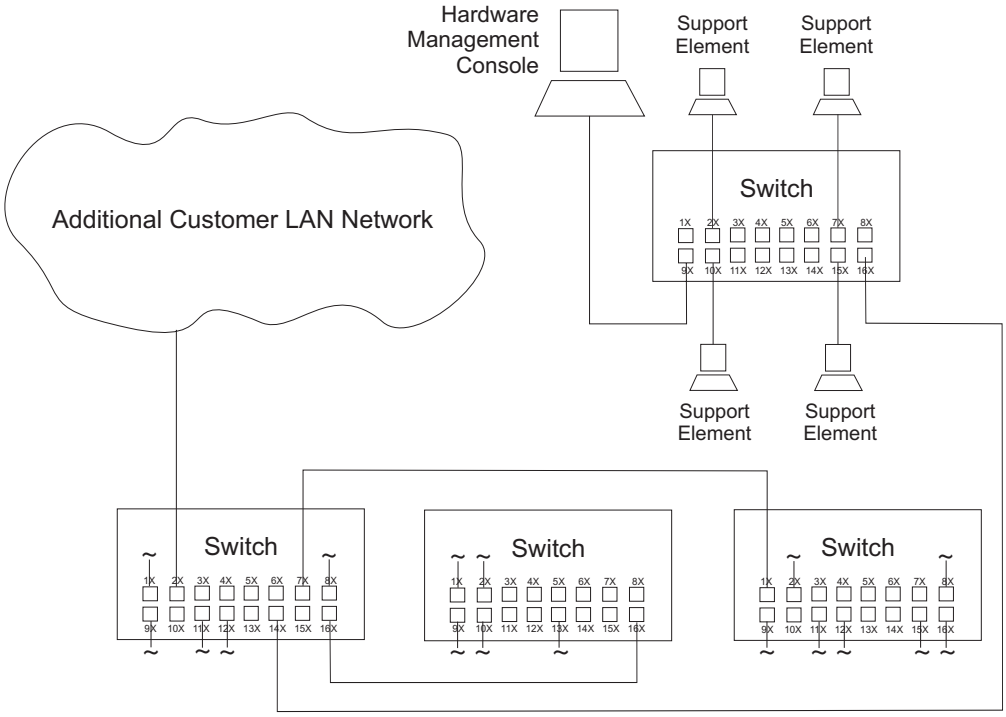


Ethernet network connection recommendations

To reduce network complexity, IBM recommends that the install team connect the ETH1 (top) Ethernet adapters for both the Primary and the Alternate SE and any HMC(s) into a local IBM supplied Switch. This local switch can then be connected to the customer network as required. (See the illustration below).

The ETH2 (bottom) Ethernet adapters in both SEs), if configured, can be installed directly into the customer network or into a second local Switch.

This recommended configuration will greatly reduce the risk of System z9 network-related problems and supply full connectivity to the customer network.



Connecting the switch to the LAN

The top communications adapter slot in the support element is typically used for LAN connection to the Hardware Management Console. The bottom communications adapter slot is the customer LAN connection and will be manually configured later in this publication. (If the customer LAN connection isn't being used at this time leave the cable tie-wrapped within the frame).

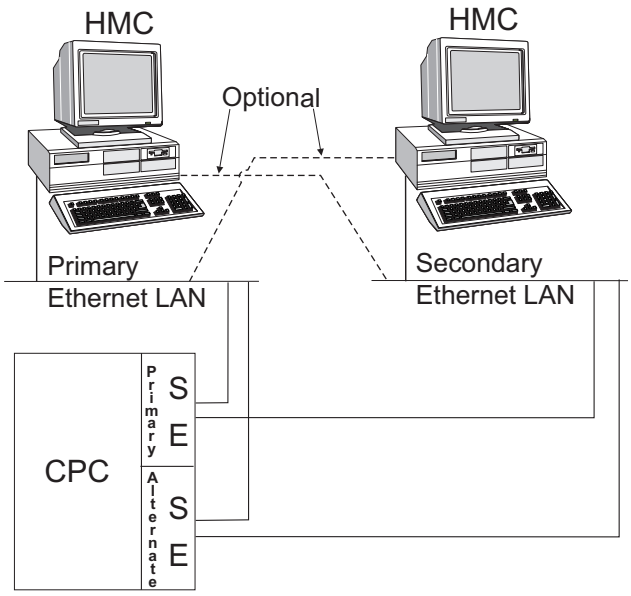
Ethernet Switches supporting auto-MDIX on all ports use a straight-through cable between any two ports.

__ Step 1. Connect the Ethernet cable(s) supplied in the ship group (or equivalent CAT 5 cabling) to the Switch.

__ Step 2. Connect AC power.

- Use the correct line cord approved for your country.
- Connect the power cord to the Switch.
- Connect the power cord to building AC power.
- If equipped with one, set the power switch to ON.

Connecting the string(s) together



System z and zSeries

This illustration provides general Ethernet cabling information and is not intended to illustrate connection to a particular server or network.

Chapter 7. Installing the Hardware Management Console

If this installation is using an existing Hardware Management Console from a previous installation and does not have a new Hardware Management Console shipped with this order, ensure that you have performed the hardware upgrade **Code Load Instructions** shipped with the new code. See *Service Guide for Hardware Management Consoles and Support Elements*, GC28-6861, for the procedure. After performing the instructions for loading code, return to “Remote facility modems” on page 7-6

DANGER

An electrical outlet that is not correctly wired could place hazardous voltage on the metal parts of the system or the devices that attach to the system. It is the responsibility of the customer to ensure that the outlet is correctly wired and grounded to prevent an electrical shock. (D004)

DANGER

To prevent a possible shock from touching two surfaces with different protective ground (earth), use one hand, when possible, to connect or disconnect signal cables. (D001)

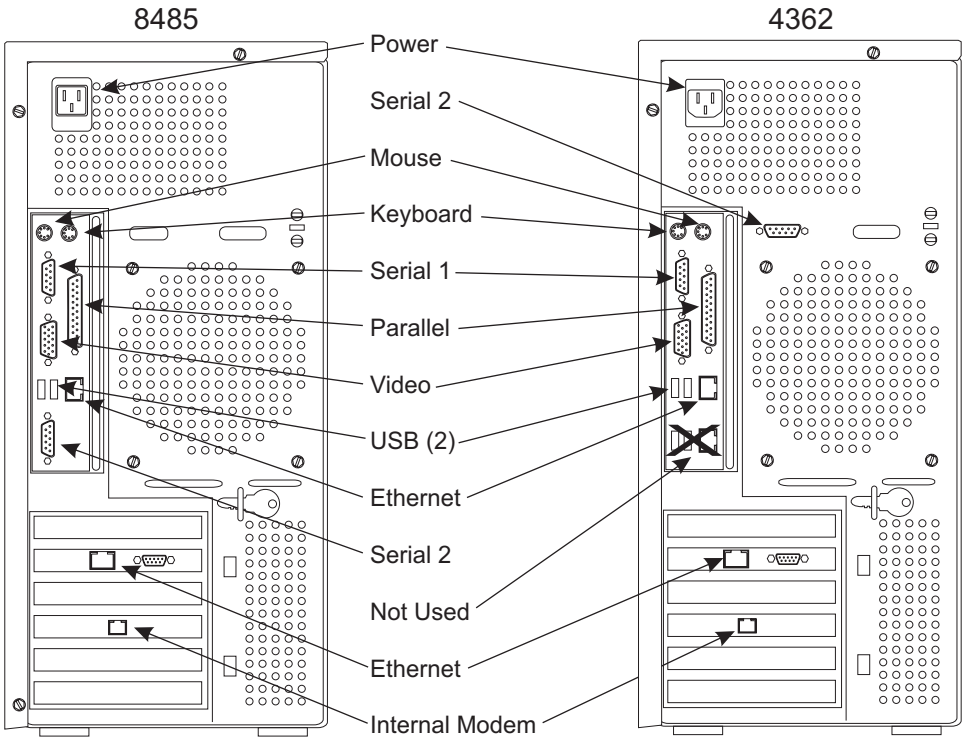
Read this first

IMPORTANT

If you have any adapters to install in the Hardware Management Console, be certain to perform the adapter installation(s) with the power cords for the console, monitor and modem removed from their power sources.

Perform the following procedure on each new console to be installed.

- If your console is a machine type **8485** or **4362**, shown below,



go to “Setting up the units” on page 7-3.

- If your console is none of the above, follow these instructions as closely as possible. Proceed to “Setting up the units” on page 7-3.
- If there are no new consoles to install go to Chapter 8, “System power-on,” on page 8-1

Setting up the units

__ Step 1. Open and unpack the shipping box that contains the Hardware Management Console.

This box also contains:

- An external modem and two cables, OR
- A single cable to connect an internal modem to a telephone line

  Note: All illustrations in this chapter show the internal modem connector in slot 4 at the rear of the console system unit. If you received an external modem, slot 4 is unused.

- Modem documentation.

  Note: For those countries with modems requiring metric screws, screws have been provided (**P/N 37H9729**). Remove the thumbscrews from the 25 pin ″D″ shell and replace with the metric screws provided.

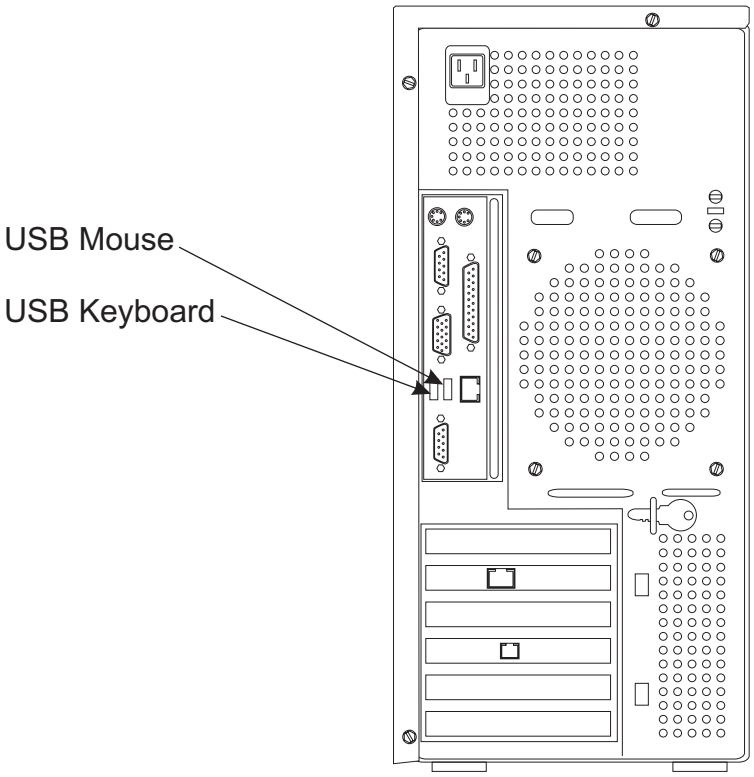
__ Step 2. Store the Hardware Management Console documentation and the documentation for the modem in an area near the console for future service use.

Illustrations show the 8485 except for the Serial 2 connection. All of the other connectors that are used are identical.

Connecting the mouse and keyboard

__ Step 1. Connect the mouse cable at the rear of the system unit. Use the USB port to the left of the Ethernet connector.

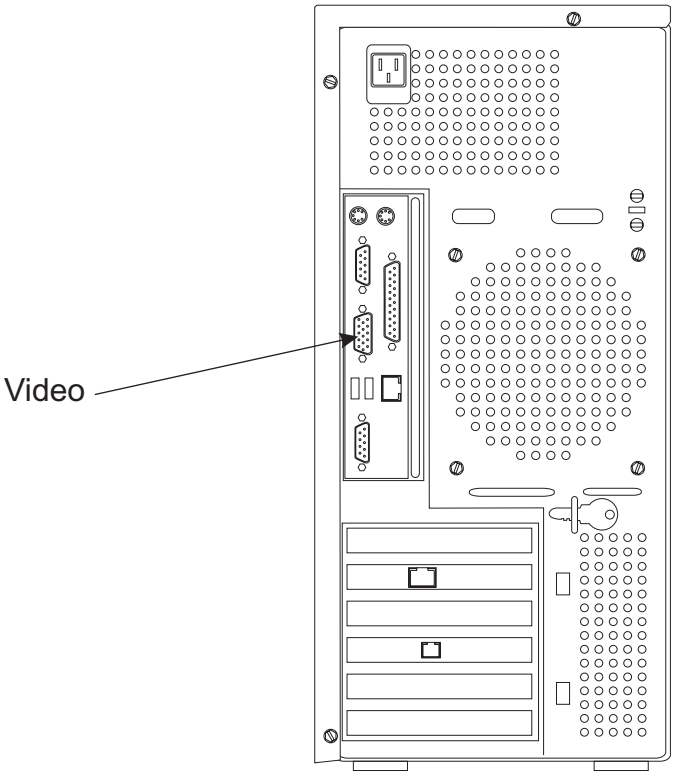
__ Step 2. Connect the keyboard cable at the rear of the system unit. Use the left-most USB port.



Connecting the monitor

__ Step 1. This system ships with a flat window display. After connecting the display, follow any unique installation instructions that may have been sent with it before proceeding.

__ Step 2. Connect the display or flat window display monitor signal cable to the monitor and to the **Video** connector at the rear of the system unit. You will find a monitor symbol at the correct plug location.



Remote facility modems

Your Hardware Management Console shipped with either an internal or external modem, depending on the country in which the console will be installed.

Internal modem installation

If your Hardware Management Console has an internal modem, you received a telephone cable with an RJ11 plug on one end and a country-specific plug on the other end.

1. Connect the telephone cable RJ11 plug to the internal modem jack in slot 4 at the rear of the console system unit.
2. Connect the plug on the other end of the cable to the customer telephone line.

Go to “Connecting console power” on page 7-9.

External modem installation

External modem configuration

Modem configuration is dependent on the modem type and model.

Select the modem you are going to install for this system from the list below. Go to the page referenced to configure the modem.

Note: The MT5600BA-V90 and MT5600BA-V92 look very similar. To determine which modem you have,
- The MT5600BA-V92 has a round barrel power connector.
- The MT5600BA-V90 has a rectangular two-prong power plug.

- **MultiTech MT5600BA-V92**, go to “MT5600BA-V92” below.
- **MultiTech MT5600BA-V90**, go to “MT5600BA-V90” on page 7-7.
- **IBM 7852 Model 400 modem**, go to “IBM 7852 Model 400 modem settings” on page 7-7.
- **Non-IBM modem**, use the documentation supplied by the manufacturer to set switches, then go to “Connecting console power” on page 7-9.

MT5600BA-V92

The MultiTech MultiModem II, Model MT5600BA-V92 is a global modem that requires minimal configuration based on the country code under which the modem was ordered. Configuration is performed using the LC window/buttons and is documented in the following (listed in the order you should use them, if necessary).

1. ″Read This First - MT5600BA for IBM″ card
   - How to Set Your Country Code
   - IBM - Specific AT Commands
2. Step 3, ″Set Country Code (MT5600BA-V92 only)″ in the *Multimodem II Quick Start Guide*
3. Chapter 2, ″Installation, Setting Your Country Code″, in the *Multimodem II User's Guide*.

From the factory, the country code should be set to ″B5″, supporting most countries. However, the code should be verified using one of the preceding three procedures.

For System z9 Business Class applications, this modem does not support synchronous operation, and can be used only for asynchronous installations.

Continue with “Connecting console power” on page 7-9.

MT5600BA-V90

The MultiTech MultiModem II, Model MT5600BA-V90 is set for asynchronous operation and requires no configuration changes or software installation. For System z9 Business Class applications, this modem does not support synchronous operation, and can be used only for asynchronous installations.

For more information about this modem refer to *Multimodem II Quick Start Guide* (hardcopy) and the *Multimodem II User's Guide*, on the CD-ROM MTECH subdirectory, 88302601.PDF.

Continue with “Connecting console power” on page 7-9.

IBM 7852 Model 400 modem settings

Set the modem switches to the following configuration for **Asynchronous** operation:

Switch	Set To	Meaning
1	Up	DTR dependent on interface
2	Up	Hardware flow control
3	Down	Enable command responses (dial-up)
4	Down	Reserved
5	Up	Enable automatic answer (Dial-up)
6	Up	Maximum throughput on
7	Up	RTS dependent on interface
8	Down	Enable command mode
9	Down	Remote digital loopback
10	Up	Dial-up operation
11	Down	Extended responses
12	Down	Asynchronous operation
13	Up	28.8 Kbps
14	Up	28.8 Kbps
15	Up	CD and DSR function normally
16	Up	Two wire leased

For more information, refer to *IBM 7852 Model 400 External Data/FAX Modem Technical Reference*

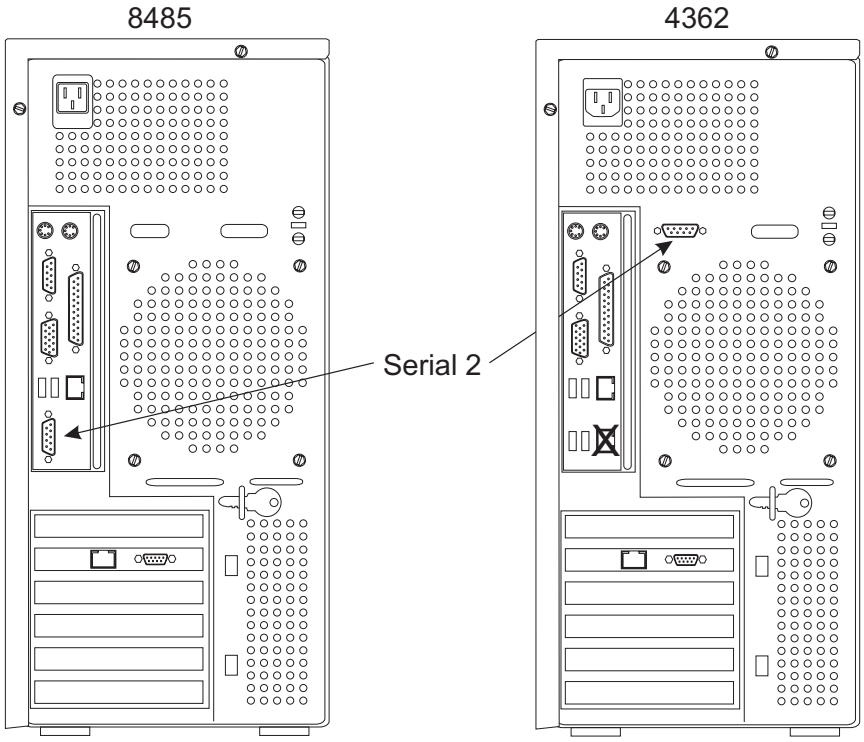
Continue with “Connecting console power” on page 7-9.

Connecting the external modem cables

Locate the communication adapter cable. For the MultiTech MultiModem II Model MT5600BA and the IBM 7852 Model 400 this cable is **P/N 21L4322** or **P/N 23R3164**.

Note: The modem may be customer supplied; if so ask the customer to give you the communications adapter cable.

__ Step 1. Connect the communication cable to the serial port **Serial 2** and to the modem and tighten the screws.



__ Step 2. Connect the telephone cable sent with the modem to the modem connector labeled PSN or PSTN and to the telephone line.

__ Step 3. **Optional:** Connect the telephone set to the modem connector with the picture of the telephone receiver.

__ Step 4. Connect the modem power cable to the modem and to building power.

Connecting console power

Perform the impedance measurements using the ECOS C7106 tester (USA only). Reference: *Electrical Safety for IBM Customer Engineers*, Chapter 4. If the proper equipment is not available, refer to “Procedure B” on page 2-3. and perform the necessary measurements.

Country-specific power cords are included in the large shipping box that came with the server. Use the power cords in the shipping box, instead of the cords that come with the console system unit, display, or switch.

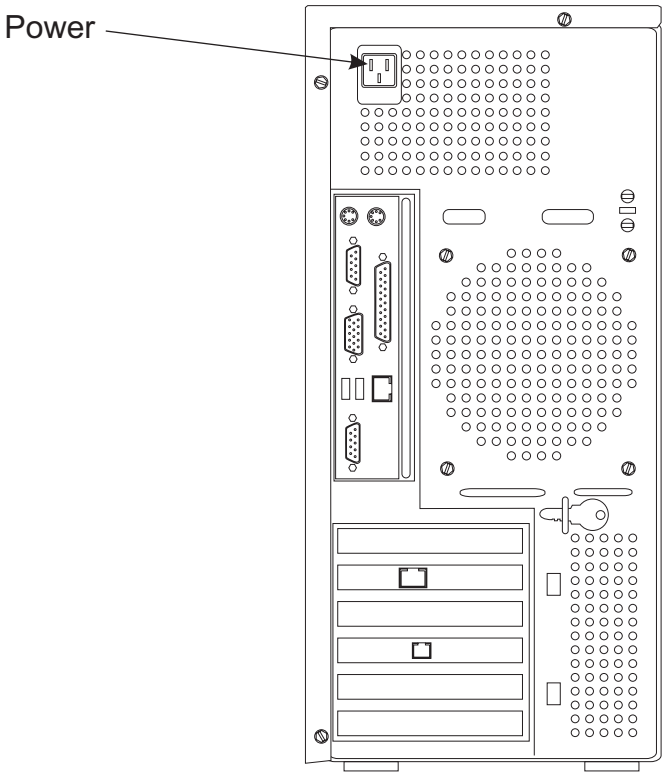
__ Step 1. Connect the display power cable to the rear of the display.

__ Step 2. Connect the display power cable to the building power.

__ Step 3. If this installation includes an Ethernet switch:

- Connect the Ethernet switch power cable to the switch.
- Connect the Ethernet switch power cable to building power.

__ Step 4. Connect the system unit power cable to the system unit.



__ Step 5. Connect the system unit power cable to building power.

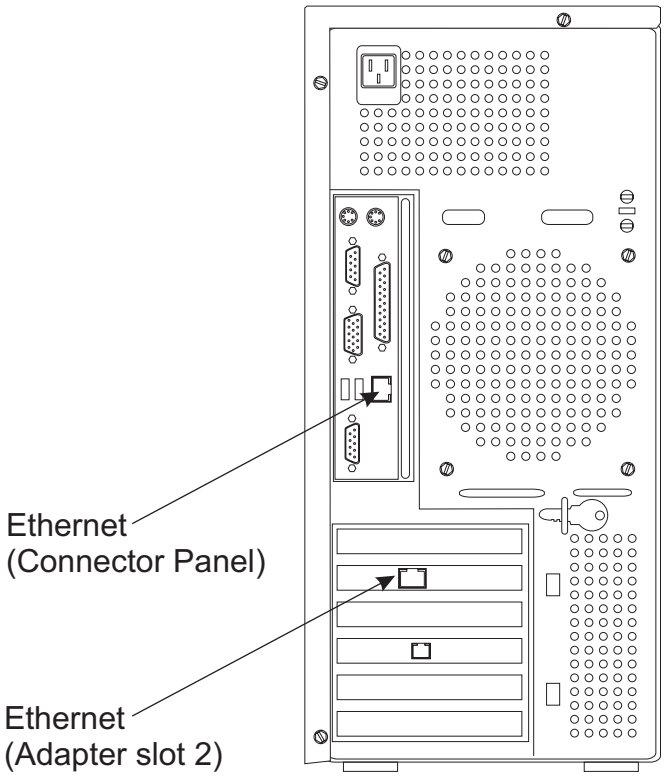
__ Step 6. **DO NOT** power on the Hardware Management Console at this time.

Repeat this procedure if you have additional Hardware Management Consoles to install.

Note: When installing an additional Hardware Management Console without a modem you may receive a power-on error **PMC0021**, ignore this error and continue. Communications Manager is searching for a modem and doesn’t find it.

Connecting the LAN cable - FC0079

This illustration shows a Hardware Management Console with dual Ethernet configuration.



There is no guarantee of which Ethernet port is ***eth0*** and which is ***eth1***.

1. Connect the Ethernet cable **P/N 41V0143** into the RJ45 connector on the Ethernet adapter in slot 2.
2. If there is no Ethernet adapter card, plug the Ethernet cable **P/N 41V0143** into the RJ45 connector on the Connector window.
3. Connect the other end of the Ethernet cable to the Switch.
4. If the Hardware Management Console does not connect to the LAN when you power the server on:
   - Remove the Ethernet cable from the adapter card in slot 2 and plug it into the other RJ45 connector on the Connector window.
   - If you only have one Ethernet connector available, the problem is most likely in the LAN itself.

Chapter 8. System power-on

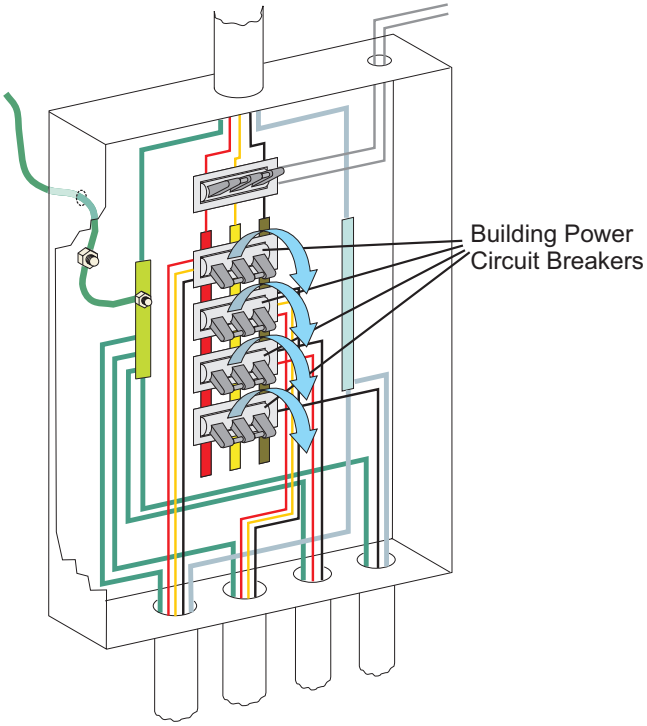
Connecting frame power

System power-on cable connection check

Check all cable connections, especially UPIC cables, to verify that each cable is well seated.

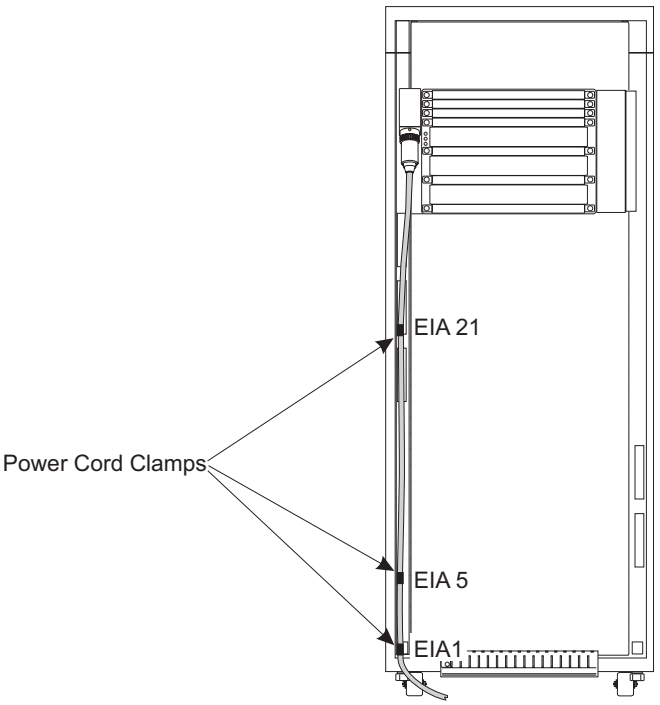
Turning off the wall breaker

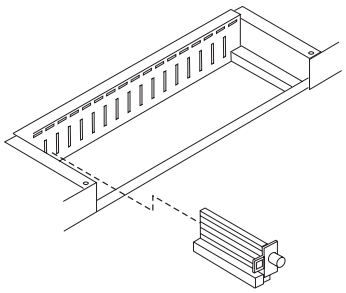
CAUTION:
Ensure the building power circuit breakers are turned off *BEFORE* you connect the power cord or cords to the building power. (C023)



Routing the power cords

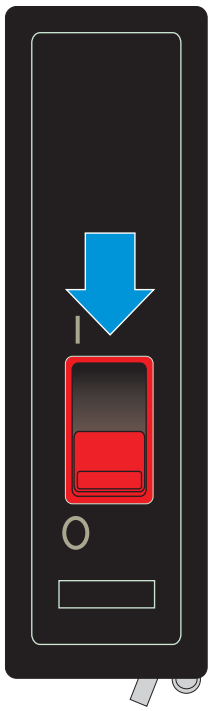
There are power cord clamps installed on the frame at approximately EIA 21, EIA 5, and just to the left of the tailgate at EIA 1. You may choose to route the power cord inside the tailgate instead of under the frame. If so, do not use the bottom power cord clamp. Instead, use strain relief P/N 07H6823 to secure each line cord in the tailgate, both front and rear.





Setting controls

At the front of frame A, set the red Unit Emergency Power Off Switch to the OFF position (O).



IMPORTANT

AC and DC voltages are still present in the Bulk Power Assembly (BPA) components and on the Integrated Battery Feature (IBF) UPIC cable connectors.

Connecting the power cord

DANGER

An electrical outlet that is not correctly wired could place hazardous voltage on the metal parts of the system or the devices that attach to the system. It is the responsibility of the customer to ensure that the outlet is correctly wired and grounded to prevent an electrical shock. (D004)

DANGER

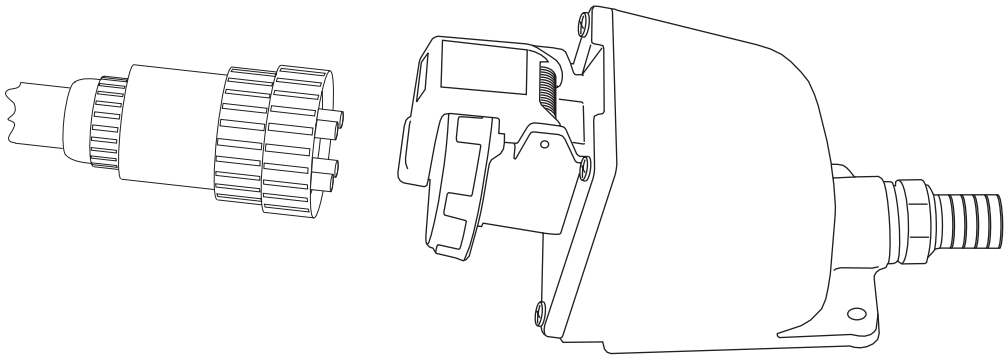
To prevent a possible shock from touching two surfaces with different protective ground (earth), use one hand, when possible, to connect or disconnect signal cables. (D001)

IMPORTANT

If you have not done the building power safety checks, perform them now. Refer to Chapter 2, “Checking building power,” on page 2-1.

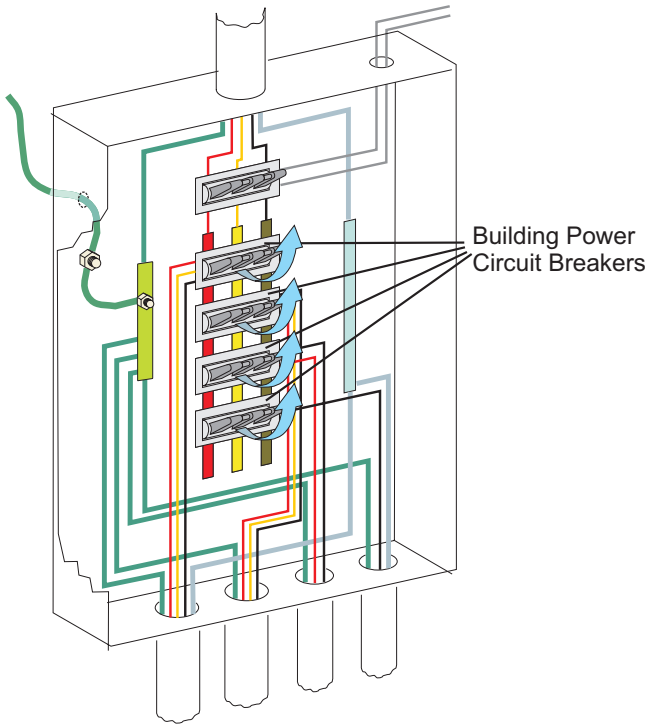
Connect the frame power cord(s) to building power.

Your power cord plug and receptacle may be different than the one shown.



Setting breakers

Have the customer set the wall breaker(s) controlling voltage to this installation to On.



What to do if you have trouble

If a failure should occur while performing any of the following steps, or if the results are not as expected, STOP. Try to perform the step a second time. If the results are still incorrect, refer to the *Service Guide*, to begin troubleshooting the problem.

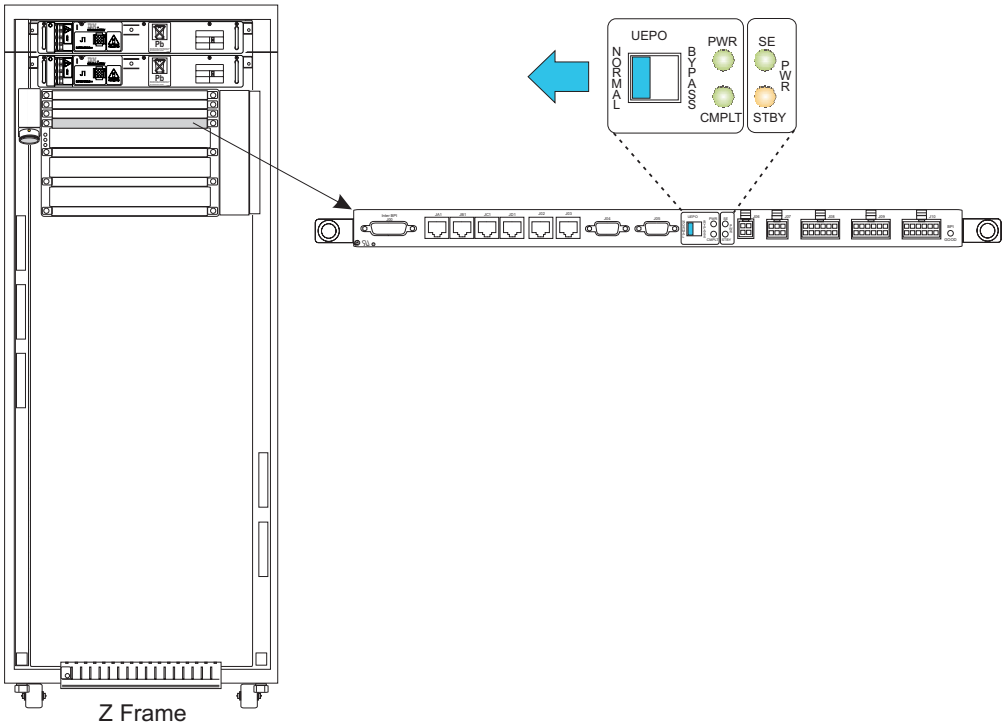
Note: For any failure occurring during the Frame Power-On Procedures, follow the *Service Guide* START Instructions. Use any failure indications seen during the Hardware Management Console or support element Power-Up procedure to aid in problem isolation.

Frame power-on

UEPO bypass switches

On each BPI card, there is a UEPO Bypass switch. Verify that the switch is in the **NORMAL** position.

Front **Z29BPS04**
Rear **Z29BPS24**



Z Frame

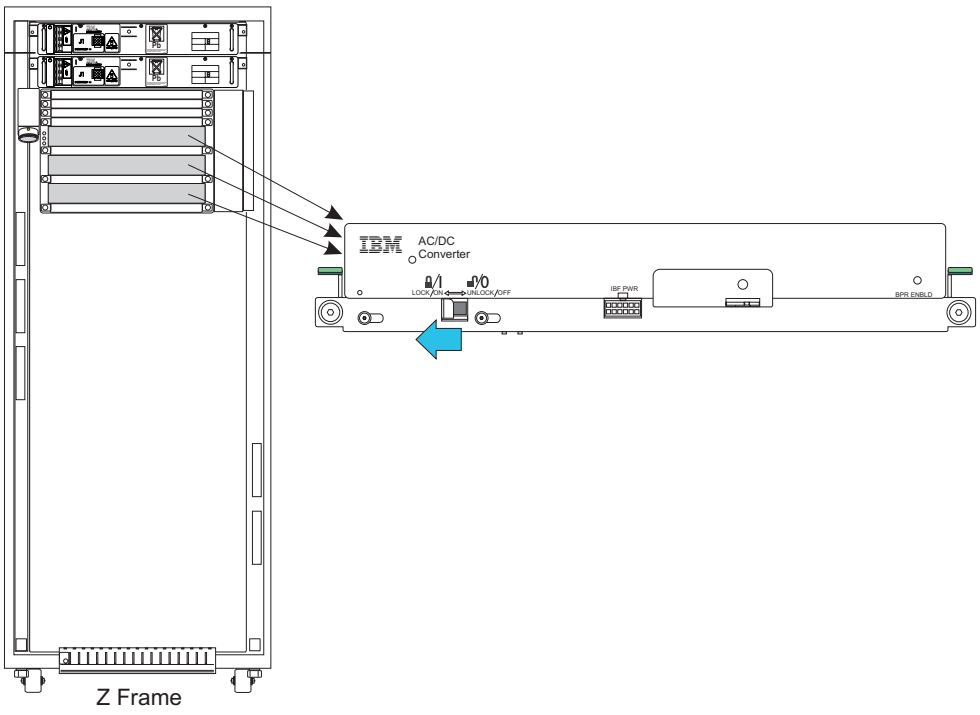
BPR LOCK/ON switches

On the front of each BPR, there is a sliding switch. Verify that the switch is in the **LOCK/ON** position.

Front **Z29BPS05**
Front **Z29BPS06**
Front **Z29BPS07**
Rear **Z29BPS25**
Rear **Z29BPS26**
Rear **Z29BPS27**

Note:

Some BPRs may not be present, depending on the configuration of your system.



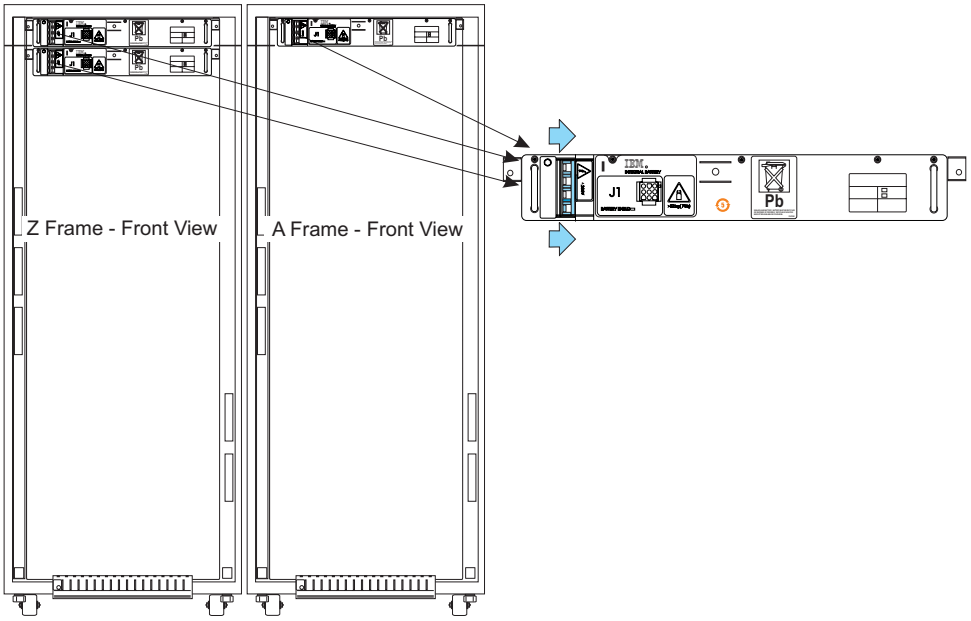
IBF power switches

Ensure that the breaker switch of each IBF (Internal Battery Feature) is in the On position.

Front **A39BIBF1**
Rear **A39PIBF2**
Front **Z37BIBF3**
Rear **Z37PIBF4**
Front **Z39BIBF5**
Rear **Z39PIBF6**

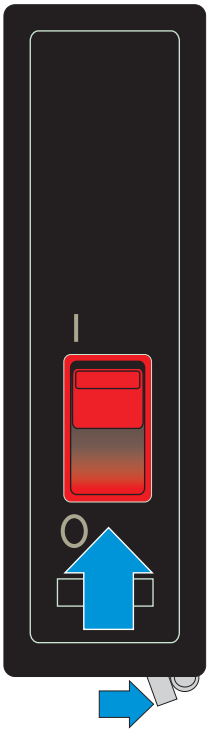
Notes:

1. Some IBFs may not be present, depending on the configuration of your system.
2. Only the front view is shown. Also check the batteries in the rear of the frames.



Setting switches

If an EPO cable is installed in connector J02 on the rear of the switch, make certain that you set the actuator to **Active**. At the front of frame A, set the red Unit Emergency Power Off switch to the ON position (I).

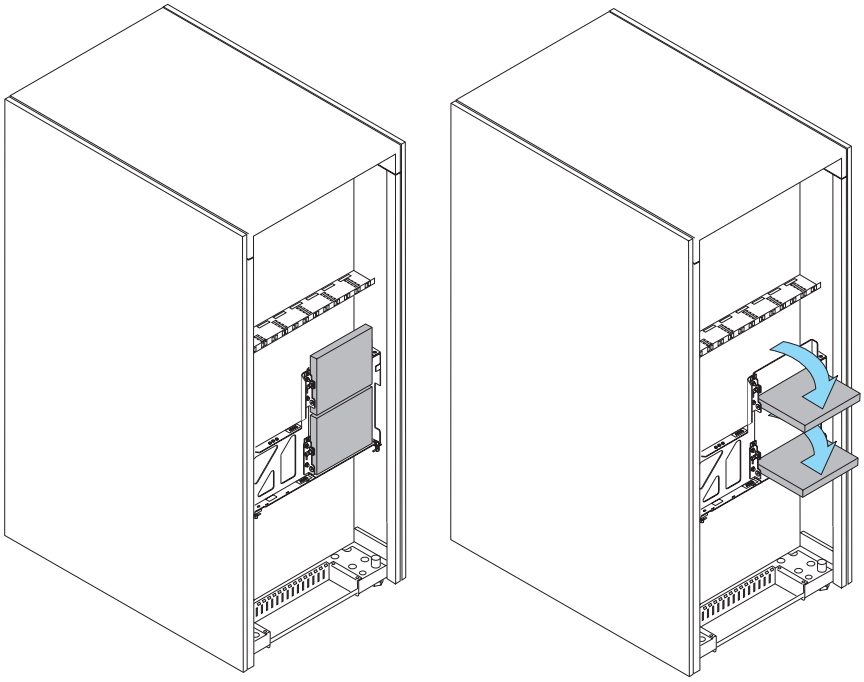


EPO actuator set to Active

Preparing the support elements

Do the following for **each** of the support elements:

__ Step 1. Put the support element trays in the service position.



__ Step 2. Open each support element display.

__ Step 3. Ensure that each support element is powered on.

__ Step 4. Determine which support element is primary.

Note: If the support element is not powering on, the interface connector on the bottom may have become dislodged during shipment. Consult the *Service Guide* to correct the problem.

Power on

Ensure the following power up sequence:

1. After activating the red UEPO switch, and approximately 8 to 15 minutes from when the support element was powered on, the **BPI** leds will blink and remain on (solid).
2. The green **DCA PWR** led on the DCAs will turn on solid.
3. The amber **CCBOOT/LOGIC PWR** led on the DCAs will flash, then turn off. These same leds will turn on and remain lit when system power on is complete.
4. The **Support Element Welcome** window will be displayed on each support element. One support element will display ″primary″ and the other will display ″alternate″ in the window title bar.

At the primary SE:

__ Step 1. Select **Log on and launch the Support Element web application**. The **Primary Support Element Console Logon** window displays.

__ Step 2. Type **SERVICE** in the **User identification** field.

__ Step 3. Press the tab key to move the cursor to the next field.

__ Step 4. Type **SERVMODE** in the **Password** field.

__ Step 5. Select **Log on**.

__ Step 6. Open **Task List** from the **Views** area.

__ Step 7. Open **Service** from the **Task List** work area.

__ Step 8. Open **Groups** from the **Views** area.

__ Step 9. Drag and drop **CPC** on **Service Status** in the **Service** area.

__ Step 10. Select the **CPC** to customize.

__ Step 11. Select **Options** from the action bar.

__ Step 12. Select **Enable Service Status** from the pull-down.

__ Step 13. Select **Save**.

__ Step 14. Select **OK**.

__ Step 15. Select **Cancel** to return.

__ Step 16. Open **Task List** from the **Views** area.

__ Step 17. Open **CPC Recovery** from the **Task List Work Area**.

__ Step 18. Open **Groups** from the **Views** area.

__ Step 19. Open the **CPC** group.

__ Step 20. Drag and Drop the **CPC** on the **Power-On** task to start it.

Note: Investigate and resolve any hardware messages that appear during power-on. Messages specifying CCIN=2B20, 2B73, or 2B74 are normal. These three CCINs refer to the daughter cards plugged into FICON Express4 features. The FICON adapter Vital Product Data (VPD) is recognized as installed, but the daughter cards are not. Each power-on of these FICON Express4 channels generates CCIN hardware messages stating that uninstalled hardware (the FICON daughter cards) has been found.

__ Step 21. Click **OK** to close the window when power-on completes successfully.

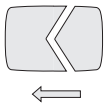
Hardware Management Console power-on

Set the display power switch, modem power switch and the Hardware Management Console system unit power switch to On.

Notes:

1. The display model/type connected to this PC may not be identical with the model/type used by manufacturing during code load. If so, during first power up/initialization, the ″Configuration/Setup Utility″ may be invoked and it may flag the ″Video Display Type″ as changed. This is not an error unless it occurs every time the PC is powered on. Save the new settings by either ″Save Settings then Exit Setup″ or ″Exit Setup″, then selecting the ″Yes, save...″ option on the ″Exit Setup″ menu.
2. If you are installing a flat window display and there is no visible image, push the Analog/Digital button.

3. If you are installing a flat window display, and part of the screen image is off the edge of the display, push the resize button



   to automatically adjust the image to fit the flat window display area.
4. If you have added this install to an existing LAN you may receive an error when the Hardware Management Console boots up, saying there is a duplicate name and/or address. Ignore the error at this time.

If you have a Trusted Key Entry (TKE) Workstation to install, refer to Appendix C, “Installing the 8485 TKE Workstation,” on page C-1

Chapter 9. Configuring the Hardware Management Console and support elements

Defining the support elements to the Hardware Management Console

Before you start

Verify that the Alternate support element status is ″Operating.″

__ Step 1. At the Primary support element, select **CPC** in the **Groups Work Area**.

__ Step 2. Double-click **CPC** in the **CPC Work Area**.

- If the alternate SE is not operating, determine the cause of the problem and correct it before continuing. If you cannot determine the cause of the SE-to-SE communication problem, **STOP**. Contact the next level of support for help.
- When the Alternate support element status is ″Operating″, select **Cancel**, then continue with the following procedure.

__ Step 3. At the Primary support element, double click **Console Actions**.

__ Step 4. Double click **Support Element Settings**.

__ Step 5. Double click **Customize Network Settings**.

__ Step 6. The window opens to the **ID** tab. If the customer has supplied a console name, enter it here.

__ Step 7. Click on the **LAN Adapter** tab and update **ETH1** and **ETH2** with the customer-supplied TCP/IP address, network mask, and routing.

Note: If both LAN adapters in either a Hardware Management Console or support element are connected to a LAN, each adapter should be configured to be on a different TCP/IP subnet. When a Hardware Management Console and support element are located in the **same** physical network, the Hardware Management Console will be able to auto-discover the SE if the SE is configured to be in the same TCPIP subnet as the Hardware Management Console. The SE would then appear in the **Hardware Management Console Undefined CPCs** group (unless it is already defined to this Hardware Management Console).

Notes:

a. The default TCP/IP addresses for the support elements are:

2094, 2096, 2084, 2086	Top Ethernet Adapter (Xterasys adapter)	Bottom Ethernet Adapter (CardBus or USB adapter)
Upper (Primary) SE (A99S)	182.158.10.20	192.168.4.20
Lower (Alternate) SE (A99B)	182.158.10.25	192.168.4.25
Network Mask	255.255.255.0	255.255.255.0

b. **You must change these addresses to the numbers supplied by the customer.**

__ Step 8. Record each support element TCPIP address.

__ Step 9. After the LAN adapter TCP/IP addresses are updated, select **OK**. This will cause the support elements to reboot.

__ Step 10. After the reboot is complete, logon to each SE and verify the LAN adapter settings you just changed.

Logging on to the Hardware Management Console

When the Hardware Management Console Logon window displays:

__ Step 1. Select **Log on and launch the Hardware Management Console web application**.

The Hardware Management Console Workplace window displays.

__ Step 2. Type **SERVICE** in the **User identification** field.

__ Step 3. Press the tab key to move the cursor to the next field.

__ Step 4. Type **SERVMODE** in the **Password** field.

__ Step 5. Select **Logon**.

Customizing the Hardware Management Console date/time

Note: If this server is either connected to a Sysplex Timer or has the Server Time Protocol (STP) feature installed, HMC time will be automatically updated and synchronized. To successfully complete this installation, continue with this procedure to set the time for your time zone. To successfully complete this installation, continue with this procedure to set the time for your time zone.

From the Hardware Management Console Workplace window:

__ Step 1. Double-click **Console Actions** in the **Views** Area.

__ Step 2. Double-click **Customize Console Date/Time** from the **Console Actions Work Area**.

The **Customize Console Time and Date** window displays.

__ Step 3. Use the instructions on the window or press **Help** to enter the data for all the fields on this window. Consult with the customer for accuracy when setting the clock, then select **Customize**.

The Customize Console Time and Date message displays, stating that the operation was successful.

__ Step 4. Select **OK** from the message window.

The Customize Time and Date window displays.

__ Step 5. Select **Cancel**.

Customizing the Hardware Management Console networking settings

__ Step 1.

Note: Customizing Network Settings should only be performed if you are installing a new Hardware Management Console.

Open **Console Actions Work Area** from the **Views** area.

__ Step 2. Open **Hardware Management Console Settings** from the **Console Actions Work Area**.

__ Step 3. Select **Customize Network Settings** from the **Hardware Management Console Settings**. The **Customize Network Settings** window displays.

__ Step 4. Click on **Identification**.

- Using customer-supplied information, type in the Console Name, Domain Name, and Description (optional). Use **Help** if necessary.
- Click OK.

__ Step 5. Click on **LAN Adapters**.

- Click on **Details**.
- The Hardware Management Console is shipped with the following default TCP/IP addresses.

2094 or 2096	Built-in Ethernet (motherboard)	PCI Ethernet (slot 2 - M/T 8485)
Hardware Management Console	ETH0 = 182.158.10.**x**	ETH1 = 192.168.4.**x**
Network Mask	255.255.255.0	255.255.255.0
"**x**" is 100, 110, 120, 130, 140, 150, 160, 170, 180, or 190, depending on how many HMCs are connected to this server.		

- Using customer-supplied information, select **Specify an IP address** and:
  - type in the **TCP/IP interface address**
  - type in the **TCP/IP interface network mask**

  Or, select **Obtain an IP address automatically**. Use **Help** if necessary.
- Click **OK**.

__ Step 6. Click on **Name Services** if the customer has supplied this information. Otherwise proceed to the next step.

- By clicking on **DNS Enabled**, you can add or remove server search order addresses or domain suffix search order names. Use **Help** if necessary.
- Click OK.

__ Step 7. Click on **Routing** if the customer has supplied this information. Otherwise proceed to the next step.

- Use **Help** to learn what data, if any, may be entered for **Routing Information** and **Default Gateway Information**.
- Click OK.

__ Step 8. Follow prompts to exit.

Completing the support element definition

Note: It is important that all CPCs are defined to one Hardware Management Console so that Licensed Internal Code changes are received by the CPC support elements. This should be the same Hardware Management Console that is defined as LIC Change Enabled in the “Enabling Hardware Management Console services” on page 9-5. When objects are defined to a Hardware Management Console they become part of that Hardware Management Console's **DOMAIN**.

From the Hardware Management Console Workplace window:

__ Step 1. Open **Task List** from the **Views** area.

__ Step 2. Open **Object Definition** from the **Task List Work Area**.

__ Step 3. Open **Groups** from the **Views** area.

__ Step 4. Open **Undefined CPCs** from the **Groups** work area.

Either:

- Drag and drop the selected objects on **Add Object Definition** in the **Object Definition** area,
  OR
- If the CPC does not appear in the **Undefined CPCs** group, drag and drop the **CPC Manual Definition** icon onto the **Add Object Definition** task in the in **Object Definition** task area. Then enter one of the TCP/IP addresses of the Primary SE when prompted.

__ Step 5. Change the CPC name to the customer's choice.

Note: Make sure that all CPC names and TCPIP addresses are unique. When the Hardware Management Console and Support support element are located in the **same** physical network, the TCPIP addresses **must** be in the same subnet for the Hardware Management Console to auto-discover an SE from the **Hardware Management Console Undefined CPCs** groups.

__ Step 6. Select Yes to **Act as phone server**. (Make certain you have satisfied the conditions described in **Notes** and **Rules** under “The remote support facility” on page 9-7).

__ Step 7. Select Yes to **Report loss of communications**.

Note: It is recommended that only one hardware management console report loss of communication unless the customer wants redundancy. Then, only two consoles should report, and neither console should be a remote Hardware Management Console unless specifically requested by the customer.

__ Step 8. Select **Save**.

The Add Object Definition Task Confirmation window displays.

__ Step 9. Select **Yes**.

If the Add Object Definition Task does not complete as described, **STOP**. Call the next level of support. Otherwise, proceed with the remainder of this procedure.

Continue the installation using the LIC Change Enabled Hardware Management Console.

Entering account information

From the Hardware Management Console Workplace window:

__ Step 1. Select all the CPCs you want to customize at one time.

__ Step 2. Drag and drop the selected objects on **Customer Information** in the **Remote Customization** area.

__ Step 3. The Account Information window displays. Type the information into the fields under **Administrator**, **System**, and **Account** as required. Use the scroll bars to see all the fields, use the tab key to move the cursor, use the helps if necessary, then select **OK**.

Note: Information messages may appear if you did not correctly complete all fields. Select **OK** to close the message window. The cursor will be in the incorrect field, re-enter the correct information, then select **OK** to continue.

When all the information is entered in the **Company** window, select **Account** by clicking on the tab. When all pages are completed, Select **Save**.

The Account Information Customization Confirmation window displays.

__ Step 4. Select **Save**.

__ Step 5. Click **Yes** to confirm saving the settings.

__ Step 6. Click **OK** to exit the task.

Enabling Hardware Management Console services

Upgrading installed Hardware Management Consoles

Note: This procedure is for a customer who intends to use an existing Hardware Management Console to operate the 2097. The customer should have already upgraded the HMC prior to this installation, and the procedure is provided here as a backup in case the upgrade failed.

If the upgrade has already been done, proceed to “The remote support facility” on page 9-7.

I M P O R T A N T:

It is recommended that all Hardware Management Consoles on this LAN be upgraded. If this condition can not be met, ensure that at least one console (Licensed Internal Code Version 2.9.0 or later) has all of the CPCs on the LAN defined to it.

Note: If the customer intends to enable the HMC to Call Home to IBM via the customer network to the Internet, and if the customer intends to use a proxy server for this connection, then at least one HMC must be at Licensed Internal Code Version 2.9.2 or later.

Use the procedure **Driver 55 to Driver 6x Upgrade** if you are upgrading an HMC from Licensed Internal Code Version 1.8.2 to Licensed Internal Code Version 2.9.2 or later. Use the procedure **Driver 63, 64, or Driver 67 to Driver 73 Upgrade** if you are upgrading an HMC from Licensed Internal Code Version 2.9.0, 2.9.1, or 2.9.2 to Licensed Machine Code Version 2.10.0 or later.

Driver 55 to Driver 6x Upgrade

1. If you are upgrading a Hardware Management Console at Licensed Internal Code Version 1.8.2 to Licensed Internal Code Version 2.9.0 or later, this procedure will copy most of the customized data automatically.
2. Use the following table to determine which HMCs you have that may need to be updated.

LIC Version	Driver #
1.8.2	55
2.9.0	63
2.9.1	64
2.9.2	67
2.10.0	73

At the Hardware Management Console at Licensed Internal Code Version 1.8.2:

__ Step 1. Logon in **SERVICE** mode.

__ Step 2. Select **Console Actions**.

__ Step 3. Select **Save Upgrade Data**.

__ Step 4. Select **Save to Hard drive**.

__ Step 5. Insert **HWMCA - Save/Restore Customizable Console Data** diskette, **P/N 41V1443**, into the diskette drive of the Hardware Management Console at Licensed Internal Code Version 1.8.2.

__ Step 6. Log off and shutdown the Hardware Management Console.

__ Step 7. When shutdown completes, reboot the Hardware Management Console. (The diskette is bootable and will give you a selection window.)

__ Step 8. Select **Save Hardware Master Console customizable data**. This is option F1.

__ Step 9. A successful completion message will be displayed when done. Remove the diskette from the Hardware Management Console at Licensed Internal Code Version 1.8.2.

Follow this procedure to restore Customizable Data on the Hardware Management Console at Licensed Internal Code Version 2.9.0.

__ Step 1. Power off the Hardware Management Console at Licensed Internal Code Version 2.9.0.

__ Step 2. Install the **HWMCA Save/Restore Customizable data** diskette into the diskette drive of the Hardware Management Console at Licensed Internal Code Version 2.9.0.

__ Step 3. Power on the Hardware Management Console. (The diskette is bootable and will give you a selection window.)

__ Step 4. Select **Restore Hardware Master Console customizable configuration data**. This is option F8.

__ Step 5. A successful completion message will be displayed when done.

__ Step 6. Remove the diskette from the diskette drive.

__ Step 7. Reboot the Hardware Management Console at Licensed Internal Code Version 2.9.0. The system will restore the data on the reboot.

I M P O R T A N T:

Some data is not transferable using this procedure and must be moved manually. Verify all of the customized data on the upgraded Hardware Management Console.

Driver 63 or 64 to Driver 67 Upgrade

At the Hardware Management Console at Licensed Internal Code Version 2.9.0 or 2.9.1:

__ Step 1. Logon in **administrator** mode (**acsadmin/password**).

__ Step 2. Insert a diskette, DVD, or USB portable storage device into the appropriate drive or port.

__ Step 3. Select **Console Actions**.

__ Step 4. Select **Save/Restore Customizable Console Data**.

__ Step 5. Select up to eleven types of data to transfer.

Note: Ensure the media is formatted. Use the **format media** icon. Label is not important.

- To save to diskette, enter /media/floppy/ccdata.dat
- To save to DVD, enter /media/cdrom/ccdata.dat
- To save to USB, enter /media/sda1/ccdata.dat

__ Step 6. Follow the prompts to save the data on the storage media and exit.

At the Hardware Management Console at Licensed Internal Code Version 2.9.2:

__ Step 1. Logon in **administrator** mode (**acsadmin/password**).

__ Step 2. Insert the customized diskette, DVD, or USB portable storage device into the appropriate drive or port.

__ Step 3. Select **Console Actions**.

__ Step 4. Select **Save/Restore Customizable Console Data**.

- To restore from diskette, enter /media/floppy/ccdata.dat
- To restore from DVD, enter /media/cdrom/ccdata.dat
- To restore from USB, enter /media/sda1/ccdata.dat

__ Step 5. Follow the prompts to restore the data and exit.

The remote support facility

This facility allows the server to automatically report problems to IBM. It also allows you to receive the latest licensed internal code changes from the IBM Service Support System.

Configuring the server for Remote Support Facility is done on the **Customize Outbound Connectivity** window. This window includes a tab to configure **External Time Source**, allowing configuration of the modem to connect to an external time source for a Server Time Protocol Coordinated Timing Network.

If you have existing Hardware Management Consoles using LIC Versions **other than** 2.9.2 attached to the same LAN as this console, Use a Hardware Management Console at LIC Version 2.9.2 or later as a ″Call Home″ server for Remote Support to take full advantage of all Remote Support Options.

If the customer does not authorize you to use this facility, or you are unable to establish a phone server or Internet server connection to the IBM Service Support System, go to “Enable services” on page 9-11. If you are setting up the Remote Support Facility, continue below.

Notes:

1. You may configure Remote Support Facility to connect to IBM using a modem and phone line, a direct connection from the HMC, or an indirect connection using a proxy server.
2. A Hardware Management Console can only serve as a Call Home server to a CPC defined to it.
3. At least one Hardware Management Console (V2.9.0 or later) that you are installing:
   - Must have Call Home server enabled
   - Must have All CPCs within the security domain defined to it.
   - Can apply LIC changes to all CPC's within the security domain. (Do not enable a Hardware Management Console for LIC Change if all CPCs within the security domain are not defined to it.)
4. It is recommended that CPCs be assigned to more than one Hardware Management Console Call Home server.

Authorizing remote service

From the Hardware Management Console Workplace window:

__ Step 1. Open **Console Actions Work Area** from the **Views** area.

__ Step 2. Open **Hardware Management Console Settings** from the **Console Actions Work Area**.

__ Step 3. Select **Customize Remote Service** from the **Hardware Management Console Settings**. The **Customize Remote Service** window displays.

__ Step 4. Check **Enable remote service requests**.

__ Step 5. Check **Authorize automatic service call reporting** only if the customer wants this option. The customer must decide if he wants to allow automatic service call reporting. Refer to the help window if necessary for more information.

__ Step 6. Type the current phone number for product service in the **Customer Service Center Telephone Number** space. Automatic call reporting can be turned off by unchecking the box in front of **Enable remote service requests**.

__ Step 7. Select OK.

Customizing outbound connectivity

Before you begin to customize outbound connectivity, determine if this customer wants to enable Call Home using a modem or the Internet or both.

You also need to ask if the customer has the STP feature installed and whether he is planning to dial out from the HMC for better time accuracy.

The Hardware Management Console Internet connection for the Remote Support Facility can be either direct or indirect (through an SSL proxy).

If this customer has chosen to use an SSL proxy server for Internet connection, the customer must supply an IP address and port number for the proxy, and, optionally, a proxy userid and password, if authentication is required for that proxy server.

Configuring an external firewall

If the customer has an external firewall, that firewall must be configured to allow the HMC or the proxy server to initiate outbound connection to the IBM Service Support System network, using HTTPS port 443.

If you are configuring an external firewall, skip to “Configuring outbound connectivity on the HMC.” Otherwise, continue below.

Any HMC being installed with this server (using Licensed Internal Code at version 2.10.1 or later) should use the IPv4 addresses in Table 9-2. Servers using Licensed Internal Code at version 2.10.0 and earlier use the IPv4 addresses in Table 9-1 for internet access to the IBM System Authentication Server (SAS).

Table 9-1. LIC 2.10.0 and earlier IPv4 addresses

for internet access to the System Authentication Server (SAS)	**for internet access to IBM Service from North or South America**	**for internet access to IBM Service from all other regions**
129.42.160.48	129.42.160.49	129.42.160.50
207.25.252.200	207.25.252.204	207.25.252.205

The following IPv4 addresses work with, and are **required** for, RSF connection to Hardware Management Consoles using Licensed Internal Code at version 2.10.1 or later.

Table 9-2. LIC 2.10.1 and later IPv4 addresses

LIC 2.10.1 and later IPv4 addresses
129.42.26.224
129.42.34.224
129.42.42.224

Internet Protocol version 6 (IPv6) vastly extends the range of available IP addresses. Although IPv6 is not required for remote support facility connection, IBM now offers the capability to migrate to IPv6. The following IPv6 address table is provided as reference. Otherwise use the IPv4 addresses shown above.

The following addresses work with Hardware Management Consoles using Licensed Internal Code at version 2.10.0 or later for RSF connection with IPv6.

Table 9-3. LIC 2.10.0 and later IPv6 addresses

LIC 2.10.0 and later IPv6 addresses
2620:0:6C0:1::1000
2620:0:6C1:1::1000
2620:0:6C2:1::1000

Configuring outbound connectivity on the HMC

From the Hardware Management Console Workplace window:

__ Step 1. Open **Console Actions** from the **Views** area.

__ Step 2. Open **Hardware Management Console Settings** from the **Console Actions Work Area**.

__ Step 3. Open **Customize Outbound Connectivity**.

__ Step 4. Click the **Configure** box to begin the customization.

__ Step 5. Check **Enable local system as a call-home server** to allow the Hardware Management Console to connect to your service provider’s remote support facility through a local modem, an Internet connection,

or both. If you are going to use a modem connection only for Remote Support facility, skip to step 11. For Internet setup, proceed with the next step.

__ Step 6. Click the Internet tab at the top of the **Customize Outbound Connectivity** window to enable the use of an existing Internet connection for outbound connectivity that allows the Hardware Management Console to perform call-home functions over an encrypted Internet Secure Sockets Layer (SSL) connection.

__ Step 7. Check **Allow an existing Internet connection for service** if there is a connection available.

__ Step 8. Regardless of whether or not this server will use a proxy, you must now select an Internet Protocol from the box at the bottom of this window. Choose **IPv4**, **IPv6**, or **IPv6 and IPv4**. **Unless you know for certain that IPv6 is going to be used, select IPv4.**

__ Step 9. If you are using a proxy server,

- __ Check the box **Use SSL proxy**
- __ Enter an IP **Address** supplied by the customer
- __ Enter the **Port** number supplied by the customer
- __ If the customer has supplied a userid and password for authentication, check the box **Authenticate with the SSL proxy**
- __ Enter the **User** name
- __ Enter the **Password** and **Confirm password**.

__ Step 10. You can test the connection with the **Test** button. If successful, the last message in the test status will be **Test completed successfully**.

__ Step 11. If you are not going to use a modem and a telephone connection, continue to step 12 on page 9-11. Otherwise, to begin modem set up for remote support, on the **Local Modems** tab, check **Allow dialing using the local modem** (using either an internal or external modem).

- __ Click **Modem Configuration**. On the **Customize Modem Settings** window:
  - __ Select **Dial Type**.
  - __ Use **Help** to select **Other Settings**.
  - __ Enter a **Dial prefix** if needed.

    Note: When a dialing prefix is added here, do not add the prefix to any other dialing strings requested on the following windows.
- __ When complete, click **OK** at the bottom of the **Customize Modem Settings** window to save.
- __ Click the **Add** button under **Phone Numbers** to choose local telephone numbers to call home. You may configure up to 5 telephone numbers. It is recommended that you configure at least two telephone numbers (a primary and backup). The numbers will be attempted in the order configured. You may edit, move, test, or remove phone numbers using the other buttons under **Phone Numbers**.
  - __ Select your Country identifier.
  - __ In the U.S. or Canada, select your state or province.
  - __ Select appropriate phone numbers from the list of phone numbers that appears.

Notes:

a. If no numbers appear in the selection field, or if you need to manually override the default numbers, you can manually input the numbers into the calling fields.

b. Dialing prefixes are not needed. They are passed through the previous window.

c. Modify the selected numbers as necessary. For example, predefined numbers include area codes. If the call is a local call from your location, the area code can be removed from the dialing string.

__ When complete, select **Add**.

__ Test each phone number you have entered:

__ Select a phone number and click **Test**.

__ At the **Test telephone number** window, select **Start**.

__ Wait for **Test completed successfully** message. If you receive any other result, work with customer personnel to determine the reason for the test failure.

__ Step 12. If the customer does not plan to install the Server Time Protocol (STP) feature, continue to the next step. Otherwise, click the **External Time Source** tab.

Note: If this customer is planning to use the Network Time Protocol feature (NTP) of STP, skip this step. Go to 13.

__ If the customer wants to use a dial out service to get better time accuracy, check the box to **Allow external time source dialing** using the local modem.

__ Select the applicable **Protocol**.

__ Select **Modem Configuration** to set the dial prefix and other modem settings if not already done.

__ Select **Add** under **Phone Numbers** to input telephone numbers.

__ Test each phone number you have entered:

__ Select a phone number and click **Test**.

__ At the **Test telephone number** window, select **Start**.

__ Wait for **Test completed successfully** message. If you receive any other result, work with customer personnel to determine the reason for the test failure.

__ Step 13. When complete, click **OK** at the bottom of the **Customize Outbound Connectivity** window to save.

Enable services

__ Step 1. Open **Customize Console Services**.

Notes:

a. Use Remote Operation to control whether this Hardware Management Console can be operated through a remote workstation.

b. You may have more than one Hardware Management Console to install. Only Hardware Management Consoles with all CPCs within the security domain defined to it should be LIC Change enabled.

c. Optical Error Analysis must be enabled for the Hardware Management Console to act as Problem Analysis focal point for problems occurring on ESCON® or Coupling Facility channel links.

__ Step 2. select **OK** when complete.

Enabling service status

From the Hardware Management Console Workplace window.

__ Step 1. Open **Task List** from the **Views** area

__ Step 2. Open **Service** from the **Task List Work Area**.

__ Step 3. Open **Groups** from the **Views** area.

__ Step 4. Drag and Drop **Defined CPCs** on **Service Status** in the **Service** area.

__ Step 5. Select a CPC to customize.

__ Step 6. Select **Options** from the action bar.

__ Step 7. Select **Enable service status** from the pull-down.

__ Step 8. Repeat 5, 6, and 7 until all CPCs are enabled.

__ Step 9. Select **Save**.

__ Step 10. Select **OK**.

__ Step 11. Select **Cancel** to return.

Customizing the support element date and time

Skip this procedure if all CPCs are connected to a Sysplex Timer or have the Server Time Protocol (STP) feature installed and go to “Remote customization (support element).”

Setting the date and time

From the Hardware Management Console Workplace window:

__ Step 1. Open **Task List** from the **Views** area.

__ Step 2. Open **Operational Customization** from the **Task List Work Area**.

__ Step 3. Open **Groups** from the **Views** area.

__ Step 4. Open **Defined CPCs** from the **Groups Work Area**.

__ Step 5. Select all the CPCs you want to customize at one time.

__ Step 6. Drag and drop the selected objects on **Customize Support Element Date/Time** in the **Operational Customization** area.

The **Customize Support Element Date/Time** window displays with the current date and time.

__ Step 7. Select **Use Console Time**.

Customize Support Element Date and Time Confirmation window displays.

__ Step 8. Select **YES**.

The **In Progress** window displays.

__ Step 9. When the operation completes, select **OK** to close the window.

Remote customization (support element)

Skip this procedure if your system has been pre-configured or if you have a pre-configuration diskette and go to “Licensed Internal Code changes” on page 9-13.

Customizing the remote service facility

From the Hardware Management Console Workplace window:

__ Step 1. Open **Task List** from the **Views** area.

__ Step 2. Open **Remote Customization** from the **Task List Work Area**.

__ Step 3. Open **Groups** from the **Views** area.

__ Step 4. Open **Defined CPCs** from the **Groups Work Area**.

__ Step 5. Select all the CPCs you want to customize at one time.

__ Step 6. Drag and drop the selected objects on **Remote Service** in the **Remote Customization** area.

Authorizing remote service

The Remote Service window displays.

__ Step 1. Activate **Enable remote service**.

__ Step 2. Activate **Authorize automatic service call reporting** only if the customer wants this option. The customer must decide if he wants to allow automatic service call reporting. Refer to the help window if necessary for more information.

__ Step 3. Type the current phone number for product service in the **Customer Service Center Telephone Number** space.

__ Step 4. Select **OK**.

Licensed Internal Code changes

If this system is able to connect to the IBM Support System, load Licensed Internal Code changes using the following Single Step MCL procedure. If you are unable to connect to the IBM Support System, refer to the *Service Guide*, GC28-6853, to the Chapter titled ″Licensed Internal Code Changes″, the heading titled ″Sequence of Change Tasks″ to install code changes from an SUL.

Single step MCL

Single Step MCL allows the user to perform the application of Licensed Internal Code changes in a single easy step.

The following are the components of the automatic process performed by Single Step MCL:

__ Step 1. Verify the machine environment (support element MCL apply only). If either of the following conditions is **not** true, the process will be stopped:

a. Verify that the Alternate SE is operating.

b. Verify that Service Required state does not exist.

__ Step 2. Backup critical data

__ Step 3. Accept internal code changes

__ Step 4. Retrieve internal code changes from the IBM Support System

__ Step 5. Connects to the IBM Support System to verify MCL integrity

__ Step 6. Install and activate internal code changes

__ Step 7. Mirror data to the alternate SE.

Single step console internal code change on a Hardware Management Console

Blocking automatic microcode installation

If this customer wants to block automatic code updates, follow steps 1 and 2 below then check the box to **Block automatic microcode installation**. Otherwise, before starting the single step internal code change procedure, verify that automatic blocking of microcode installation is disabled and proceed to "Starting the operation."

__ Step 1. You must log off of **service mode** and log on in **acsadmin** mode.

__ Step 2. Select **Service Management**.

__ Step 3. Select **Block automatic microcode installation** from the **Tasks Index** list.

__ Step 4. Verify that the checkbox in the top left corner of the window is NOT checked. If this customer will allow automatic updates, click **Cancel** to exit and proceed to "Starting the operation."

__ Step 5. Click **Save** to exit.

__ Step 6. Exit **acsadmin** mode and log back on in **servmode**. Proceed to "Starting the operation."

Starting the operation

__ Step 1. Select **Console Actions** from the **Views** area of the Hardware Management Console.

__ Step 2. Select **Single Step Console Internal Code** from the **Console Actions Work area**.

__ Step 3. The **Single Step Console Internal Code** window displays.

Choose one of the two following options:

a. **OPTION 1**

You either do not have a scheduled operation set to retrieve internal code changes or you want to retrieve them now. Insert the ACTBKP DVD-RAM into the DVD drive and select the **Retrieve and apply internal code changes** radio button.

b. **OPTION 2**

Internal code changes were retrieved by a scheduled operation but not applied or you have retrieved code changes from removable media (possibly because you may not be able to connect to the IBM Support System. Select the **Apply internal code changes only** radio button.

Note: Code changes may have already been retrieved from either a scheduled operation or from removable media.

c. If you are applying changes, you must choose either:

1) **Apply concurrent internal code changes only**.

2) **Apply both concurrent and disruptive internal code changes**.

Note: Disruptive code changes require the system to be shut down. Before making this selection, discuss the best time to apply these changes with the customer.

__ Step 4. Follow the instructions on subsequent windows to complete the task.

Execution of the operation

__ Step 1. An in-progress window opens.

One or more of the following messages displays:

- Initiating Single step internal code changes apply
- Initiating Single step internal code changes remove
- Backing up critical hard disk information
- Accepting installed changes that were activated
- Retrieving internal code changes
- Downloading internal code changes status updates
- Installing and activating internal code changes
- Removing and activating internal code changes
- Completed
- Failed
- Cancelled by user.

__ Step 2. Select **OK** when the procedure completes.

Single Step internal code change on a support element

Starting the operation

__ Step 1. Select **Task List** from the **Views** area of the Hardware Management Console.

__ Step 2. Select **Change Management** from the **Task List Work area**.

__ Step 3. Select **Groups** from the **Views** area.

__ Step 4. Select **Defined CPCs** from the **Groups Work Area**.

Opening the change window

__ Step 1. Drag and drop the CPCs to which you intend to apply or remove internal code changes to **Single Step Internal Code Changes** in the **Change Management** area.

__ Step 2. The **Single Step Internal Code Change Apply** window displays.

Choose one of the following options:

a. **Retrieve and apply internal code changes**.

b. **Apply internal code changes only**.

Note: Code changes may have already been retrieved from either a scheduled operation or from removable media.

__ Step 3. If you are applying changes, you must choose either:

a. **Apply concurrent internal code changes only**.

b. **Apply both concurrent and disruptive internal code changes**.

Note: Disruptive code changes require the system to be shut down. Before making this selection, discuss the best time to apply these changes with the customer.

Execution of the operation

__ Step 1. Select the appropriate **Apply internal code changes** pushbutton.

__ Step 2. For either applying or removing changes, an in-progress window opens.

One or more of the following messages displays:

- Initiating Single step internal code changes apply
- Initiating Single step internal code changes remove
- Verifying system environment
- Backing up critical hard disk information
- Accepting installed changes that were activated
- Retrieving internal code changes
- Downloading internal code changes status updates
- Installing and activating internal code changes
- Removing and activating internal code changes
- Mirroring data to the alternate support element
- Completed
- Completed-disruptive changes were not applied
- Failed
- Cancelled by user.

Select **OK** when the procedure completes.

Crypto Express2 (FC 0863) general information

Crypto Express2 feature cards contain batteries.

CAUTION:
The battery contains lithium. To avoid possible explosion, do not burn or charge the battery.

Do not:

__ **Throw or immerse into water**
__ **Heat to more than 100°C (212°F)**
__ **Repair or disassemble**

Exchange only with the IBM-approved part. Recycle or discard the battery as instructed by local regulations. In the United States, IBM has a process for the collection of this battery. For information, call 1-800-426-4333. Have the IBM part number for the battery unit available when you call. (C003)

The Crypto Express2 features are installed in the I/O cage slots and connected as STI direct connection adapters. There are no cables associated with FC 0863.

There is no configuration or enablement needed for Crypto Express2 features prior to running the system checkout test. Cryptographic keys should not be loaded until the system is turned over to the customer, and then, only by customer personnel.

There is an intrusion latch within the Crypto Express2 logic which is set any time the feature is removed from the system. If the feature is reinstalled, when power is applied, the feature keys and secrets are zeroized and the intrusion latch is reset.

If the customer has a TKE workstation, the feature may first be disabled, using the TKE workstation, before removing from the system. In that case, when the feature is reinstalled, the keys and secrets are not zeroized, but the intrusion latch is reset and the feature remains in the disabled state. The feature then may be enabled

from the TKE workstation and normal operations may resume. See the ICSF TKE Workstation User's Guide for more information.

Notes:

1. Additional information on cryptographic function, once the customer has loaded the keys, is available in the *Support Element Operations Guide*.
2. If this system order includes a TKE (Trusted Key Entry) workstation, refer to Appendix C, "Installing the 8485 TKE Workstation," on page C-1 for installation of the workstation.

Chapter 10. Running the checkout tests

The tests can be run either:

- From the Hardware Management Console using single object operations (see "Running the checkout tests from a single object operations session" below)
- Directly from the support element (see "Running the checkout tests from the support element" on page 10-2)

Running the checkout tests from a single object operations session

Establishing a single object operations session

At the Hardware Management Console:

__ Step 1. Open **Task List** from the **Views** area.

__ Step 2. Open **CPC Recovery** from the **Task List Work Area**.

__ Step 3. Open **Groups** from the **Views** area.

__ Step 4. Open the **CPC** group that contains the object with the support element to which you want to connect.

__ Step 5. Select one CPC.

__ Step 6. Drag and drop the selected CPC on **Single Object Operations** in the **CPC Recovery** tasks area.

The **Single Object Operations Task Confirmation** window displays. Follow the instructions on the Confirmation window to complete the task.

Running the tests

__ Step 1. Logon the Hardware Management Console as a service representative.

__ Step 2. Open **Task List** from the **Views** area.

__ Step 3. Open **Service** from the **Task List Work Area**.

__ Step 4. Open **Groups** from the **Views** area.

__ Step 5. Open the **CPC** from the **Groups Work Area**.

__ Step 6. Select the CPC you want to test.

__ Step 7. Drag and drop the CPC on the **Checkout Tests** task. The **Checkout Tests** window displays.

__ Step 8. Click **Run test** from the **Checkout Tests** window to start the tests.

When complete, the test results are displayed.

Note: Use the procedure, ″Viewing Problem Analysis Results″ in the Service Guide to examine the Checkout Tests results and see if any errors were detected.

__ Step 9. To exit the test, select **OK** from the Checkout Tests window.

The Activate tested CPC's window displays with a warning message stating that an activation must be performed.

Do Not attempt to activate at this time.

__ Step 10. Select **OK** from the window.

__ Step 11. Open **Console Actions** From the **Views** area.

__ Step 12. Select **Log off** from the **Console Actions Work Area**.

The Service Mode is active window displays.

__ Step 13. Select **No**.

Running the checkout tests from the support element

Skip this step if you ran Checkout Tests from **Single Object Operations** on the Hardware Management Console.

__ Step 1. Logon the support element as a service representative.

__ Step 2. Open **Task List** from the **Views** area.

__ Step 3. Open **Service** from the **Task List Work Area**.

__ Step 4. Open **Groups** from the **Views** area.

__ Step 5. Open the **CPC** from the **Groups Work Area**.

__ Step 6. Select the CPC you want to test.

__ Step 7. Drag and drop the CPC on the **Checkout Tests** task. The **Checkout Tests** window displays.

__ Step 8. Click **Run test** from the **Checkout Tests** window to start the tests.

When complete, the test results are displayed.

Note: Use the procedure, ″Viewing Problem Analysis Results″ in the Service Guide to examine the Checkout Tests results and see if any errors were detected.

__ Step 9. To exit the test, select **OK** from the Checkout Tests window.

The Activate tested CPC's window displays with a warning message stating that an activation must be performed.

Do Not attempt to activate at this time.

__ Step 10. Select **OK** from the window.

__ Step 11. Open **Console Actions** From the **Views** area.

__ Step 12. Select **Log off** from the **Console Actions Work Area**.

The Service Mode is active window displays.

__ Step 13. Select **No**.

Chapter 11. Installing external I/O cables

Before you start

This chapter explains how to install external I/O cables from the proper floor cutout to the proper I/O card or adapter in the machine.

IMPORTANT

You must determine your responsibility for cable installation **BEFORE** you continue in this Chapter.

IBM Site and Facilities Services offers comprehensive cabling services to handle all planning, laying, labeling, and installation of fiber-optic cables. **Read the description of these services before proceeding:**

Fiber-optic cables and cable routing are a customer responsibility.

The connectivity environment is complex, and proper planning and installation of fiber cabling is critical to maximize the benefits of high-speed protocols such as FICON®, Fibre Channel Protocol (FCP), Coupling Facility links and Gigabit Ethernet. These protocols require planning for different fiber types, new fiber-optic connectors, and current and future data rates to determine optimal connectivity and cabling options.

IBM Site and Facilities Services can help customers with their cabling responsibilities. These services provide the correct level of planning, fiber-optic cable choices and installation needed to quickly and efficiently integrate the IBM System z server into the IT infrastructure and minimize installation costs.

Features of the services include:

1. *Configuration services to effectively plan the fiber-optic cabling needed*
2. *Consulting to design a scalable, flexible solution that supports the new system configuration*
3. *Assisting with existing cabling migration activities during upgrades including sorting, re-labeling, re-routing, and re-plugging.*
4. *Procurement of fiber-optic cables and components that are reliable and meet IBM physical interface specifications*
5. *Installation services, including physical routing and labeling, to integrate the cabling system into the customer's infrastructure*
6. *Documenting the fiber-optic cable installed.*

If the customer has opted to purchase these cabling services, ensure that any perform time for fiber cabling work is charged against the services contract. Be certain to report fiber cabling contract time separately from the system installation time.

If the customer elected not to use* IBM Site and Facilities Services *(offered by IBM Global Services), then the customer will be responsible for performing the following tasks prior to system installation:

1. *All cable planning and support*
2. *All purchasing of necessary fiber optic cables*

3. *All installation of any required fiber optic or OSA Express copper cables.*
4. *All routing of cables to correct front/back floor cutouts for proper installation to the machine*
5. *All labeling of cables with PCHIDs (at a minimum) for proper installation to the machine.*

Failure to accomplish these cabling tasks properly could lead to additional service charges during the machine installation in order to correct any problems incurred.

I M P O R T A N T

Verify that **all five** customer tasks described here have been completed before initiating cable installation.

1. *All cable planning and support*
2. *All purchasing of correct qualified cables*
3. *All installation of any required fiber optic or OSA Express copper cables.*
4. *All routing of cables to correct front/back floor cutouts for proper installation to machine*
5. *All labeling of cables with PCHID numbers for proper installation to machine.*

If the customer **DID NOT** purchase a cabling contract and any of these tasks is **NOT COMPLETE**, inform the customer that all five steps must be completed **BEFORE** you can continue with the cable installation.

If the customer requests IPR/Connectivity Specialist and/or SSR/CE involvement to complete these tasks, you must tell the customer that time is billable.

General information

- If you are planning to use the Fiber Quick Connect feature for ESCON channels, contact IBM Networking Services for assistance.
- The customer should have prepared for fiber trunking by securing the actual trunk portion of the server end of the cables under the raised floor. for either a raised floor or non-raised floor installation, only the individual fiber cables should pass through the tailgates.
- 12 mm (1/2 in) is the minimum bend radius for fiber-optic cables.
- Install a protective plug in a fiber-optic receptacle when the fiber-optic connector is removed.
- Use IBM Fiber-Optic Cleaning Kit, **P/N 5453521**, to clean the cable connector before installing it into the receptacle of the card.
- Replace the plastic cover on each uninstalled fiber-optic connector.

Read the following DANGER information

DANGER

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

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

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

  To disconnect:

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

  To connect:

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

  (D005)

Read the following CAUTION information

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

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

Installing customer cables

DANGER

An electrical outlet that is not correctly wired could place hazardous voltage on the metal parts of the system or the devices that attach to the system. It is the responsibility of the customer to ensure that the outlet is correctly wired and grounded to prevent an electrical shock. (D004)

Determining which cards are installed

Use the PCHID Report to determine the types of cards and cables to install.

- If you have ETR cables or pulse per second cables to connect, go to "Connecting the time synchronization cable(s)" on page 11-7.
- If you have FC 2323 (16 port ESCON) cables to connect, go to "16 port ESCON" on page 11-14.
- If you have FCs 0217, 0218, and 0219 (ISC), go to "ISC-3" on page 11-15.
- If you have FCs 2319, 2320, 3319, 3320, 3321, 3322, or 3324 (FICON) cables to connect, go to "FICON Express" on page 11-18.
- If you have FCs 3364, 3365, 3366, 3368, 1364, 1365, 1366, 2364, 2365, or 2366 (OSA-Express2, OSA Express, or OSA) cables to connect, go to "OSA-Express connections" on page 11-19.
- If you have FC 0227 (ICB-3, FC 0993) or 0228 (ICB-4, FC 3393) cables to connect, go to "ICB (Integrated Cluster Bus)" on page 11-24.

Example of a PCHID report

The following is an **example** of a PCHID report. **Use the PCHID Report for the system you are installing**.

```
PCHIDSTART
03634147                          PCHID Report                      Feb 05,2003
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
Book/Jack/MBA    Cage   Slot   F/C   PCHID/Ports                        Comment
3/J.11/2         A19B   01     3393  00B/J11
0/J.00/0         A01B   D101   0218  100/J00  101/J01
0/J.00/0         A01B   D201   0218  108/J00  109/J01
1/J.00/0         A01B   02     0862  110/P00  111/P01
0/J.00/0         A01B   03     2319  120/J00  121/J01
1/J.00/0         A01B   04     2319  130/J00  131/J01
0/J.00/0         A01B   06     2367  140/J00  141/J01
1/J.00/0         A01B   07     1365  150/J00  151/J01
0/J.00/0         A01B   08     1364  160/J00  161/J01
1/J.00/0         A01B   09     2323  170/J00  171/J01  172/J02  173/J03
                                      174/J04  175/J05  176/J06  177/J07
                                      178/J08  179/J09  17A/J10  17B/J11
                                      17C/J12  17D/J13  17E/J14
3/J.04/1         Z01B   01     0862  300/P00  301/P01
2/J.04/1         Z01B   D102   0218  310/J00  311/J01
2/J.04/1         Z01B   D202   0218  318/J00
3/J.04/1         Z01B   03     2320  320/J00  321/J01
2/J.04/1         Z01B   04     2320  330/J00  331/J01
3/J.04/1         Z01B   06     2367  340/J00  341/J01
2/J.04/1         Z01B   07     1366  350/J00  351/J01
3/J.04/1         Z01B   08     1366  360/J00  361/J01
2/J.04/1         Z01B   09     2323  370/J00  371/J01  372/J02  373/J03
                                      374/J04  375/J05  376/J06
3/J.04/1         Z01B   10     2323  400/J00  401/J01  402/J02  403/J03
                                      404/J04  405/J05  406/J06  407/J07
                                      408/J08  409/J09
0/J.08/2         Z15B   01     0862  500/P00  501/P01
3/J.08/2         Z15B   D102   0218  510/J00  511/J01
3/J.08/2         Z15B   D202   0218  518/J00  519/J01
1/J.08/2         Z15B   03     2323  520/J00  521/J01  522/J02  523/J03
                                      524/J04  525/J05  526/J06  527/J07
                                      528/J08
3/J.08/2         Z15B   04     2323  530/J00  531/J01  532/J02  533/J03
                                      534/J04  535/J05  536/J06  537/J07
                                      538/J08
1/J.08/2         Z15B   06     2323  540/J00  541/J01  542/J02  543/J03
                                      544/J04  545/J05  546/J06
3/J.08/2         Z15B   07     2323  550/J00  551/J01  552/J02  553/J03
                                      554/J04  555/J05  556/J06  557/J07
                                      558/J08  559/J09  55A/J10  55B/J11
1/J.05/1         Z15B   08     2323  560/J00  561/J01
3/J.05/1         Z15B   09     2323  570/J00  571/J01  572/J02  573/J03
                                      574/J04  575/J05  576/J06
1/J.05/1         Z15B   10     2323  600/J00  601/J01  602/J02  603/J03
                                      604/J04  605/J05  606/J06  607/J07
                                      608/J08  609/J09


Legend:
A19B   Top of A frame
A01B   Bottom of A frame
Z01B   Bottom of Z frame
Z15B   Top of Z frame
D1xx   Half-high card at the top of slot xx
D2xx   Half-high card at the bottom of slot xx
3393   ICB 4 Link
0218   ISC D <10km
0862   PCI CA
2319   FICON Express LX
2367   OSA E 1.5 High Speed token ring
1365   OSA E Gbe SX
1364   OSA E Gbe LX
2323   ESCON 16 ports
2320   FICON Express SX
1366   OSA E Fast Ethernet 1000 base
```

Part two of a PCHID report

Part two of the PCHID Report is generated if the customer has the Fiber Quick Connect feature. Here is an example of part two:

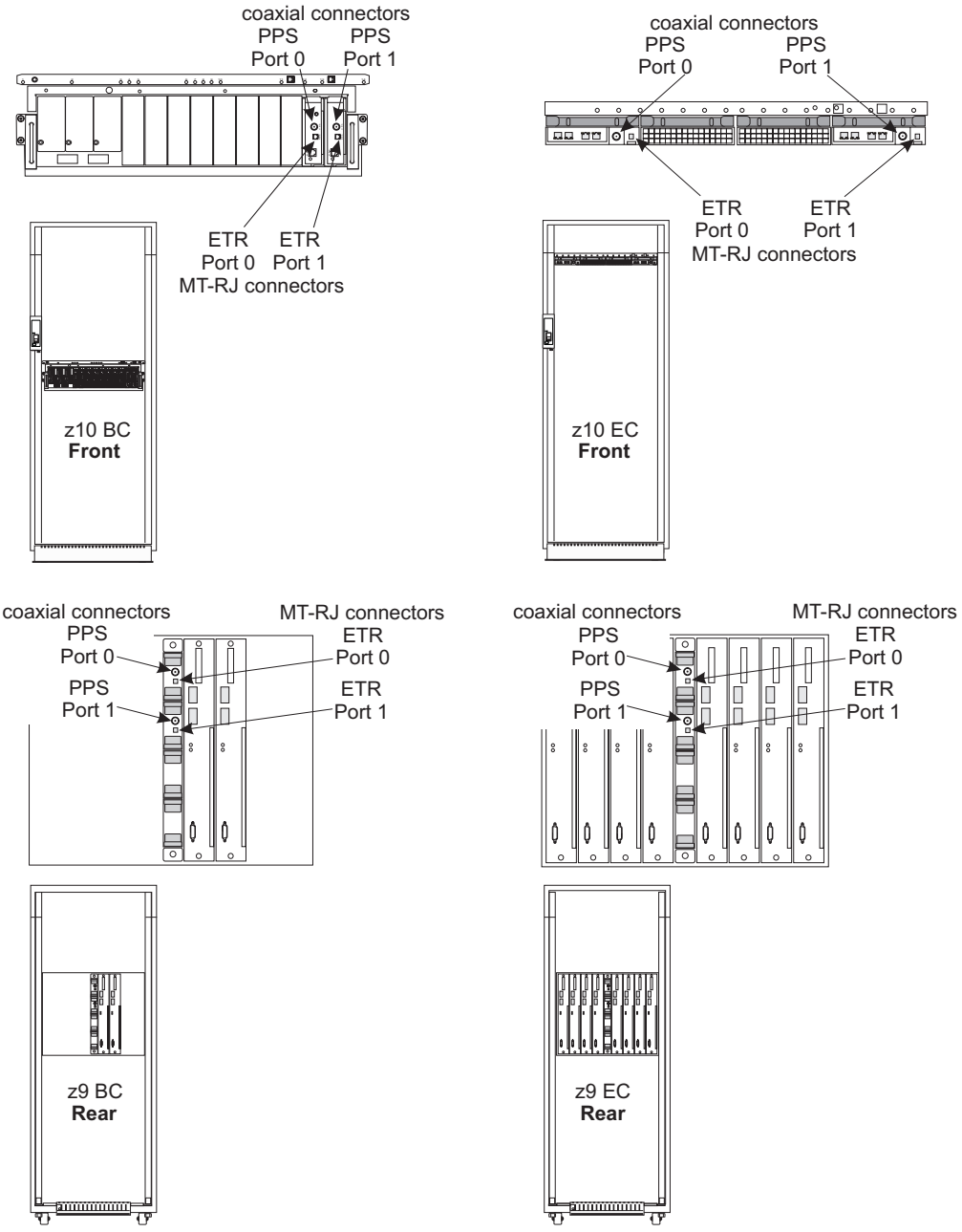
```
Cage  Slot  F/C    Brkt         PCHID/Harn/Leg
-----  ---  -----  ---------    ------------------
A01B   03    2323   1F(6.10)R    120/6-1 121/6-2 122/6-3 123/6-4
                                 124/6-5 125/6-6 126/7-1 127/7-2
                                 128/7-3 129/7-4 12A/7-5 12B/7-6
                                 12C/8-1 12D/8-2 12E/8-3
A01B   04    2323   1F(6.10)R    130/8-4 131/8-5 132/8-6 133/9-1
                                 134/9-2 135/9-3 136/9-4 137/9-5
                                 138/9-6 139/A-1 13A/A-2 13B/A-3
                                 13C/A-4 13D/A-5 13E/A-6
A01B   06    2323   2F(1.5)R     140/1-1 141/1-2 142/1-3 143/1-4
                                 144/1-5 145/1-6 146/2-1 147/2-2
                                 148/2-3 149/2-4 14A/2-5 14B/2-6
                                 14C/2-1 14D/2-2 14E/2-3
A01B   07    2323   2F(1.5)R     150/3-4 151/3-5 152/3-6 153/4-1
                                 154/4-2 155/4-3 156/4-4 157/4-5
                                 158/4-6 159/5-1 15A/5-2 15B/5-3
                                 15C/5-4 15D/5-5 15E/5-6


Legend:
A19B   Top of A frame
A01B   Bottom of A frame
Z01B   Bottom of Z frame
Z15B   Top of Z frame

Bracket Legend:

   2F(1.5)R
   ||| | |
   ||| |  Frame side (Right or Left)
   ||  Group
   |Frame (Front or Rear)
   Bracket number
```

Connecting the time synchronization cable(s)

Synchronized time is possible in a Sysplex using External Time Reference (ETR), Server Time Protocol (STP), or a combination of both features. If ETR cards are installed in the server, cabling is required to:

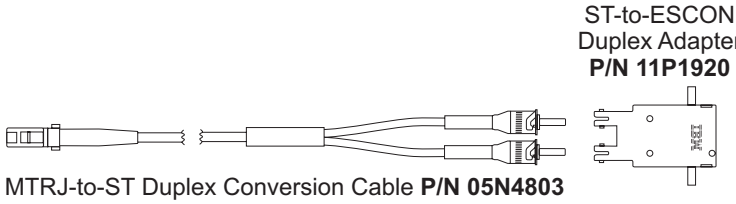
1. Attach directly to a Sysplex Timer when participating in an ETR network or Mixed Coordinated Timing Network (CTN).
2. Set up this server to be either a Preferred Time Server or Backup Time Server in an STP-only CTN using Network Time Protocol (NTP) with pulse per second (PPS) as the external time source.

The following illustration shows where the ETR and PPS connections are located in the z10 BC, z10 EC™, z9® BC, and z9 EC servers.



If you are connecting this server to a Sysplex Timer, use the following instuctions:

Note: An MT-RJ/ESCON Duplex Conversion Kit (**P/N 05N4804**) may be required to connect the Sysplex Timer cables to existing ESCON Duplex cables.



MTRJ-to-ST Duplex Conversion Cable **P/N 05N4803**

__ Step 1. If an MT-RJ/ESCON Duplex conversion kit is needed,

__ Connect the Conversion Kit cable (**P/N 05N4803**) to the MT-RJ connector on the upper ETR card, Port 0 position, at **(A19B-Q128)**.

__ Connect the Conversion Kit ST-to-ESCON Duplex adapter (**P/N 11P1920**) to the ST connector end of the conversion cable.

__ Connect the ST-to-ESCON Duplex adapter to the ESCON Duplex cable on the Sysplex Timer.

Otherwise, connect an MT-RJ cable directly to the Port 0 position at **(A19B-Q128)**.

__ Step 2. If a second ETR feature is to be connected, repeat the previous steps for the conversion kit, if needed, or connect an MT-RJ cable directly to the MT-RJ connector on the lower ETR card, Port 1 position, at **(A19B-Q228)**.

__ Step 3. Route the cables as directed in “Cable routing views” on page 11-11.

If you are connecting this server to a pulse per second time source:

1. Connect the coaxial cables, if available. PPS Port 0 is the coaxial connector at **(A19B–Q128)**. PPS Port 1 is the coaxial connector at **(A19B–Q228)**.

   Note: One NTP time server can be configured to each PPS port.
2. Connecting the pulse per second coaxial cable to the NTP time server may be done by either customer or service personnel.

Activating external time reference

__ Step 1. Open **Task List** from the **Views** area.

__ Step 2. Open **CPC Configuration** from the **Task List Work Area**. The Configuration task list contains the **System (Sysplex) Time** task that you will start.

__ Step 3. Open **Groups** from the **Views** area.

__ Step 4. Open the **Defined CPCs** group to display all CPCs that have been defined to your Hardware Management Console.

__ Step 5. Select the appropriate CPC.

__ Step 6. Drag and drop the CPC on the **System (Sysplex) Time** task to start it.

__ Step 7. The System (Sysplex) Time window displays tabs that show the current configuration and status of the ETR ports. If STP is installed, there are additional tabs displayed for configuration and ID of STP and combined ETR/STP networks.

__ Step 8. Select the **ETR Configuration** tab.

__ Step 9. Enter the customer-provided ETR Network ID.

__ Step 10. Enable Port 0 and Port 1.

__ Step 11. Click **Apply** to save the configuration.

__ Step 12. Click **OK** to exit the task.

Activating Server Time Protocol

Server Time Protocol (STP) supports two types of Coordinated Timing Networks (CTNs) : Mixed and STP-only.

- A Mixed CTN is a timing network that contains a collection of servers (CPCs), and has at least one STP-configured server (CPC) stepping to timing signals

provided by the Sysplex Timer. The CTN ID must have a valid STP network ID and the ETR network ID must be in the range of 0 to 31.

- The STP-only CTN is a timing network that contains a collection of servers (CPCs) configured to be in STP timing mode.

An STP-only CTN has the capability of configuring as its External Time Source (ETS) a Network Time Protocol (NTP) time server that has a pulse per second (PPS) output signal. This type of external time device is available worldwide from several vendors that provide network timing solutions. Typically, the NTP output of the time server is connected to the support element (SE) LAN, because the NTP client runs on the SE. The PPS output of the NTP time server is connected to the PPS input coaxial connector, provided on the External Time Reference (ETR) card of the System z10 or System z9 server.

If this server is going to be in a Mixed CTN, directly connected to the Sysplex Timer, or in an STP-only CTN using NTP with pulse per second as the ETS, perform the following steps. If not, proceed to "Cable routing views" on page 11-11.

__ Step 1. Open **Task List** from the **Views** area.

__ Step 2. Open **CPC Configuration** from the **Task List Work Area**. The Configuration task list contains the **System (Sysplex) Time** task that you will start.

__ Step 3. Open **Groups** from the **Views** area.

__ Step 4. Open the **Defined CPCs** group to display all CPCs that have been defined to your Hardware Management Console.

__ Step 5. Select the appropriate CPC.

__ Step 6. Drag and drop the CPC on the **System (Sysplex) Time** task to start it.

__ Step 7. Select the **STP Configuration** tab.

__ Step 8. Enter the customer-provided **Coordinated Timing Network (CTN)** Network ID and click Apply.

Note: The CTN ID consists of two parts: Up to eight alphanumeric characters for the STP network ID and the two-digit ETR network ID.

__ For an STP-only CTN, enter only the 1-8 character STP ID.

__ For a Mixed CTN (using ETR and STP), enter the 1-8 character STP ID. The ETR ID is already entered.

Note: Steps 9 thru 11 are not needed for a Mixed CTN.

__ Step 9. Select the **ETS Configuration** tab.

__ Step 10. Select **Use NTP with pulse per second (PPS)**. The **NTP Time Server Information** box is displayed. The customer must provide either the IP address or the Web address of the NTP time server to be used. Enter the IP address or the Web address, then click **Query**.

__ Step 11. Review the results, and if the displayed status is acceptable, then click **Apply** to save the configuration.

__ Step 12. Click **OK**.

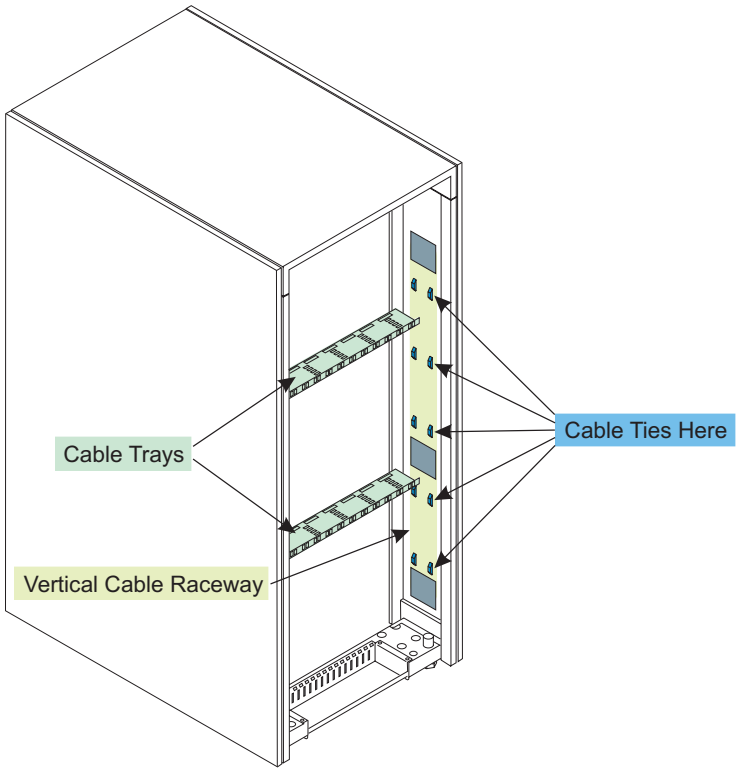
Refer to the *Server Time Protocol Planning Guide*, SG24-7280, or *Server Time Protocol Implementation Guide*, SG24-7281, for additional information about using the Server Time Protocol feature.

Cable routing views

The following illustrations show the recommended fiber-optic cable placement and routing for the z9 EC.

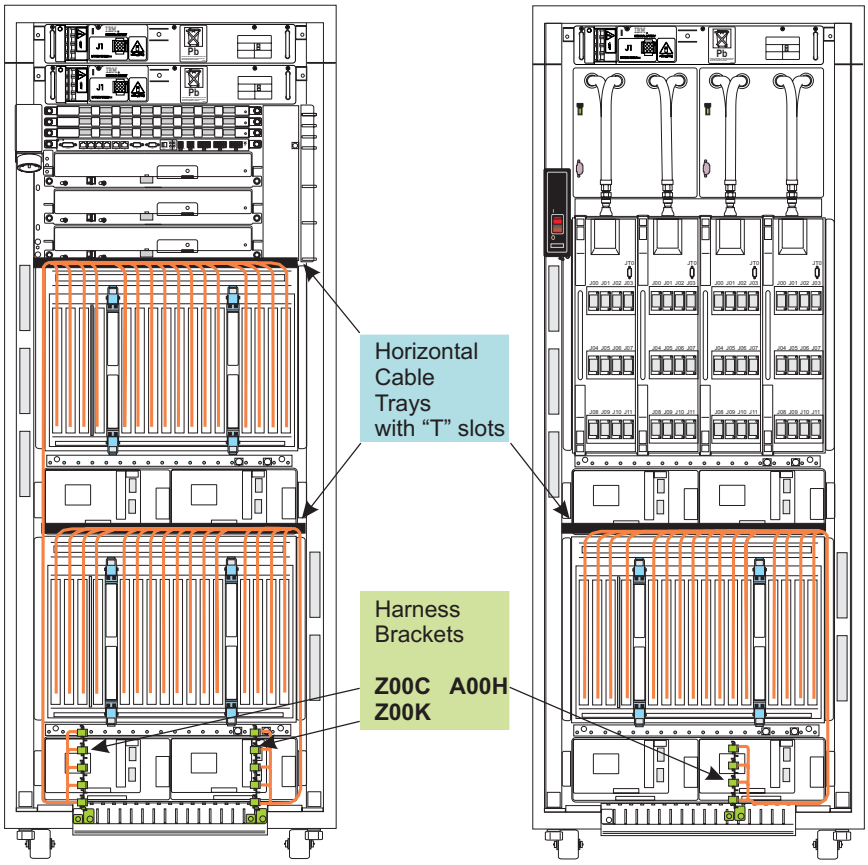
IMPORTANT

It is important to follow these routing illustrations and use available strain relief to ensure that the cables will perform as designed.



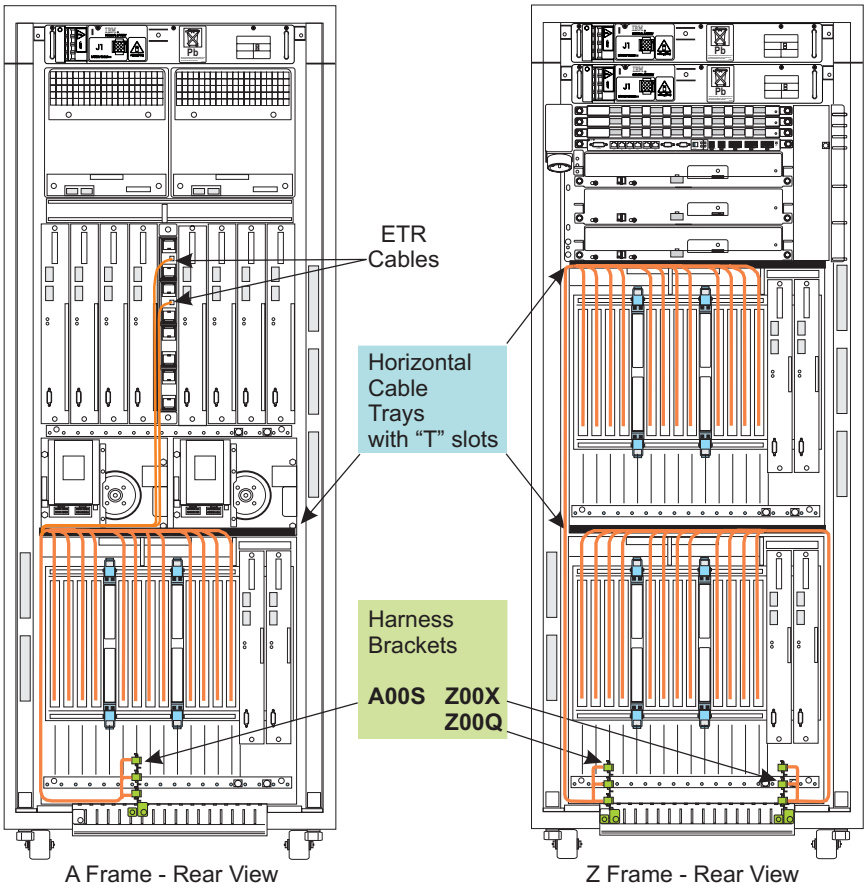
- Place the fiber optic cables in the ″T″ shaped slots along the rear edge of the cable trays running across the upper front and rear of each I/O cage.
- Use cable ties to secure the fiber optic cables to the cable trays.
- Use cable ties to secure the cables to the vertical raceways running down the sides of the frame.
- Be certain to allow slack in each bend of the cables.
- Use strain relief P/N 07H6805 at the tailgate for all fiber optic cables.

Fiber cable routing - front view



Although the cable routing views include the harness brackets for ESCON Fiber Quick Connect cabling, ALL fiber optic and OSA copper cables should be routed across the cable trays and down the vertical cable raceways to the tailgates.

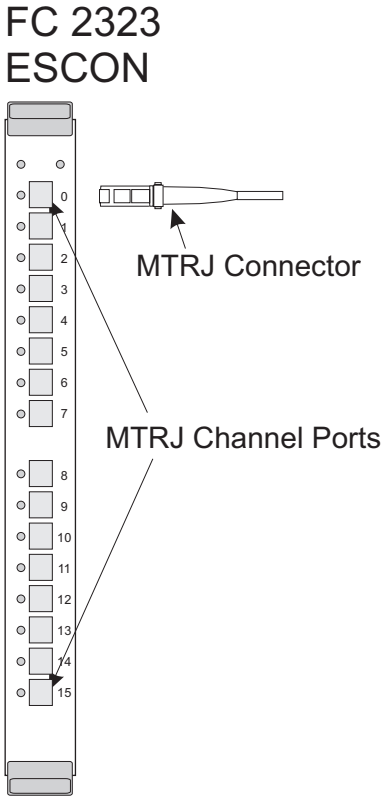
Fiber cable routing - rear view



Although the cable routing views include the harness brackets for ESCON Fiber Quick Connect cabling, ALL fiber optic and OSA copper cables should be routed across the cable trays and down the vertical cable raceways to the tailgates.

Connecting channel cables

16 port ESCON



__ Step 1. Cable type - Multimode 62.5 micron

__ Step 2. Connect the cable to the correct port on the ESCON feature card OR the Fiber Quick Connect bracket.

Notes:

a. The ports are numbered 0 thru 7 and 8 thru 15 (top to bottom).

b. Ensure that the fiber-optic connector is positioned correctly when installing it into a card receptacle. The connector is keyed. The receptacle shell can be cracked if the connector is installed in the reversed position.

c. When installing an ESCON fiber-optic cable connector into a card receptacle, save both the cover removed from the connector and the protective plug that was removed from the card receptacle. You will need the protective plugs for the card receptacles if you ever have to return the card, and the cable connectors must be covered when not connected to a card.

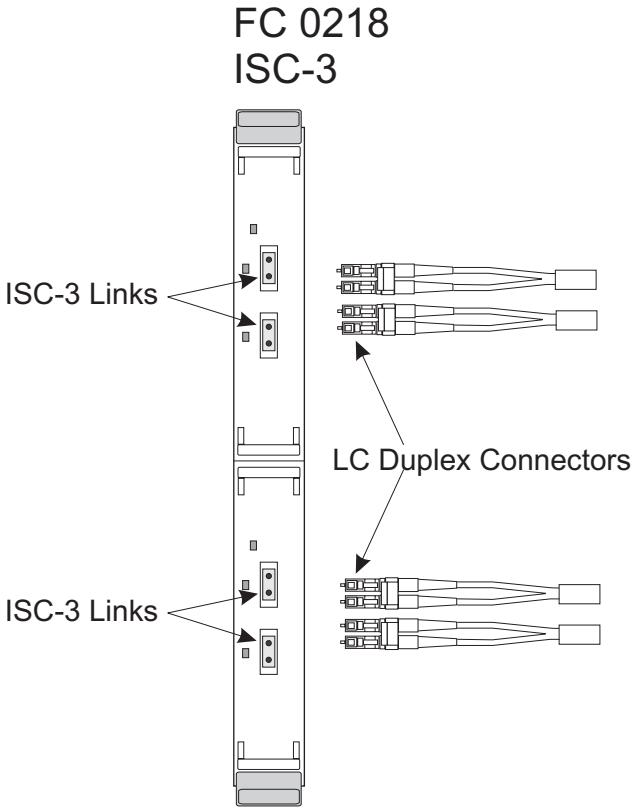
__ Step 3. Route the cable upward, across the cable tray at the top of the cage, down along the vertical cable raceway, and down to the tailgate.

__ Step 4. Use strain relief (P/N 07H6805) to secure cables at tailgate.

Repeat these steps for all ESCON cards.

ISC-3

Note: The ISCM (mother card) can have one or two ISCD (daughter) cards installed within it.



__ Step 1. Cable type - Single Mode 9 micron

__ Step 2. Connect the ISC-3 cable to the ISC daughter card.

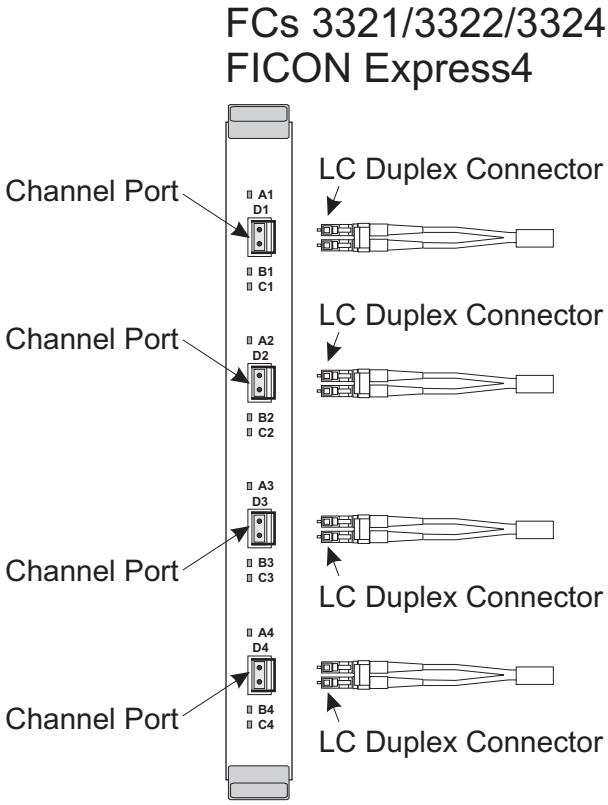
__ Step 3. Route the cable upward, across the cable tray at the top of the cage, down along the vertical cable raceway, and down to the tailgate.

__ Step 4. Connect the opposite end of the ISC-3 cable to the correct ISC daughter card in the other server.

__ Step 5. Use strain relief (P/N 07H6805) to secure the cable at the tailgate.

Repeat these steps for all ISC-3 cards.

FICON Express4



__ Step 1. Cable type:
- FCs 3321 and 3324 - Single Mode 9 micron
- FC 3322 - Multimode 50 or 62.5 micron

__ Step 2. Connect the LC Duplex cable to the correct port on the FICON card.

Notes:

a. The FICON Express4 card supports 2 types of channels:
   - FC - Native FICON or Channel -to-Channel (CTC)
   - FCP - Fibre Channel Protocol for attachment to SCSI devices

b. Ensure that the fiber-optic connector is positioned correctly when installing it into a channel port. The connector is keyed.

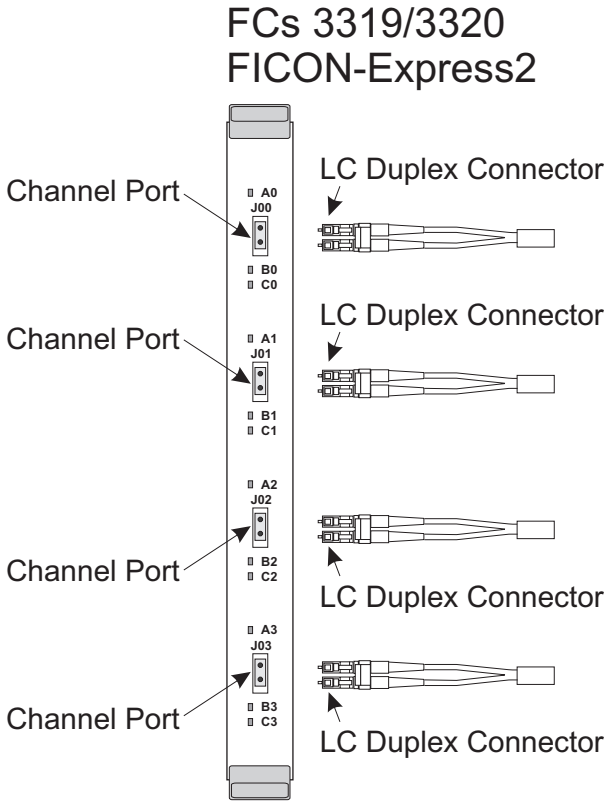
c. When installing a fiber-optic connector into a channel port, use the plastic cover removed from the connector to store the protective plug that was removed from the port.

__ Step 3. Route the cable upward, across the cable tray at the top of the cage, down along the vertical cable raceway, and down to the tailgate.

__ Step 4. Use strain relief (P/N 07H6805) to secure the cable at the tailgate.

Repeat these steps for all FICON Express4 cards.

FICON Express2



__ Step 1. Cable type:
- FC 3319 - Single Mode 9 micron
- FC 3320 - Multimode 50 or 62.5 micron

__ Step 2. Connect the LC Duplex cable to the correct port on the FICON card.

Notes:

a. The FICON Express card supports 2 types of channels:
   - FC - Native FICON or Channel -to-Channel (CTC)
   - FCP - Fibre Channel Protocol for attachment to SCSI devices

b. Ensure that the fiber-optic connector is positioned correctly when installing it into a card receptacle. The connector is keyed.

c. When installing a fiber-optic connector into a card receptacle, use the plastic cover removed from the connector to store the protective plug that was removed from the receptacle.

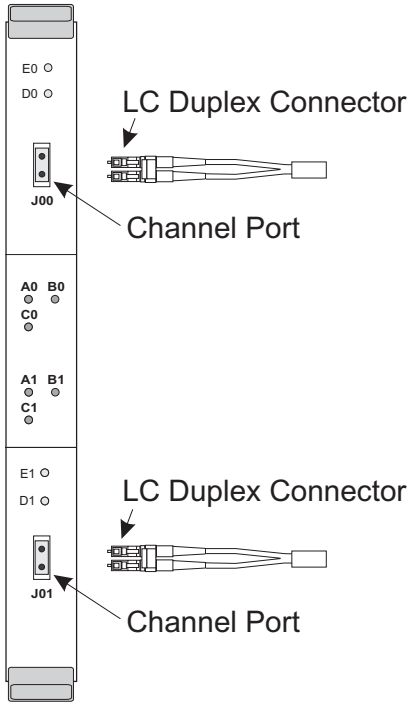
__ Step 3. Route the cable upward, across the cable tray at the top of the cage, down along the vertical cable raceway, and down to the tailgate.

__ Step 4. Use strain relief (P/N 07H6805) to secure the cable at the tailgate.

Repeat these steps for all FICON Express2 cards.

FICON Express

FCs 2319/2320
FICON Express



__ Step 1. Cable type:
- FC 2319 - Single Mode 9 micron
- FC 2320 - Multimode 50 or 62.5 micron

__ Step 2. Connect the LC Duplex cable to the correct port on the FICON card.

Notes:

a. The FICON Express card supports 3 types of channels:
   - FC - Native FICON or Channel-to-Channel (CTC)
   - FCP - Fibre Channel Protocol for attachment to SCSI devices
   - FCV - Fibre Channel Converter

b. Ensure that the fiber-optic connector is positioned correctly when installing it into a channel port. The connector is keyed.

c. When installing a fiber-optic connector into a channel port, use the plastic cover removed from the connector to store the protective plug that was removed from the port.

__ Step 3. Route the cable upward, across the cable tray at the top of the cage, down along the vertical cable raceway, and down to the tailgate.

__ Step 4. Use strain relief (P/N 07H6805) to secure the cable at the tailgate.

Repeat these steps for all FICON cards.

OSA-Express connections

You may have some or all of the following OSA-Express2 or OSA-Express features to install:

- GbE LX (FC 3364)
- GbE SX (FC 3365)
- 1000BASE-T Ethernet (FC 3366)
- 10 GbE LR (FC 3368)
- GbE LX (FC 1364)
- GbE SX (FC 1365)
- 1000BASE-T Ethernet (FC 1366)
- 1GbE LX (FC 2364)
- GbE SX (FC 2365)
- Fast Ethernet (FC 2366)

Ensure the configuration matches the customer order. Corrections will be made at the end of this procedure.

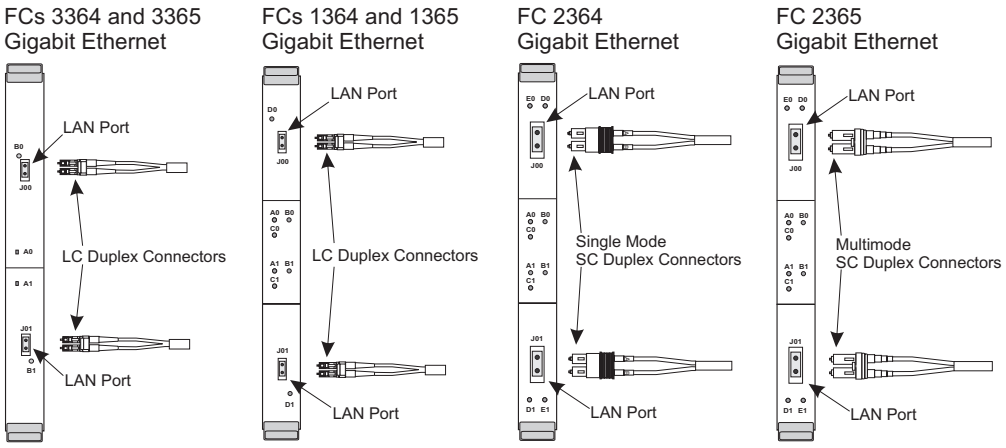
The following wrap plugs may be required:

- FCs 2364, 1364, and 3364 - (P/N 15R7536 replaces P/N 11P3847 or 12R9314).
- FCs 2365, 1365, and 3365 - (P/N 15R7536 replaces P/N 11P3847 or 12R9314).
- FCs 2366, 1366, and 3366 - (P/N 00G2380 or 03N6070).

  Note: There is also a wrap cable required to test the 1000Base-T FCs (1366 and 3366) - P/N 44P3710 or 41V0139.

- FC 3368 - (P/N 12R6249 or 12R9315).

GbE OSA-Express2 and OSA-Express (FC 3364/3365, 1364/1365, and 2364/2365)



__ Step 1. Cable type:
- FC 3364, 1364, 2364 - Single Mode 9 micron
- FC 3365, 1365, 2365 - Multimode 50 or 62.5 micron

__ Step 2. Connect the LC Duplex or SC Duplex connector to the Gigabit Ethernet LAN port.

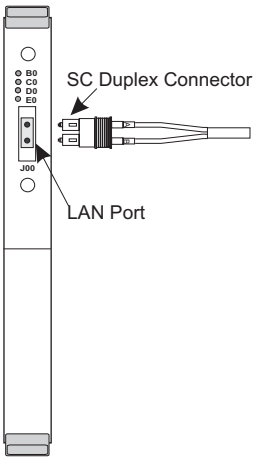
__ Step 3. Route the cable upward, across the cable tray at the top of the cage, down along the vertical cable raceway, and down to the tailgate.

__ Step 4. Use strain relief (P/N 07H6805) to secure the cable at the tailgate.

Repeat these steps for all OSA-E2 Gigabit Ethernet cards.

10 Gigabit Ethernet LR OSA-Express2 (FC 3368)

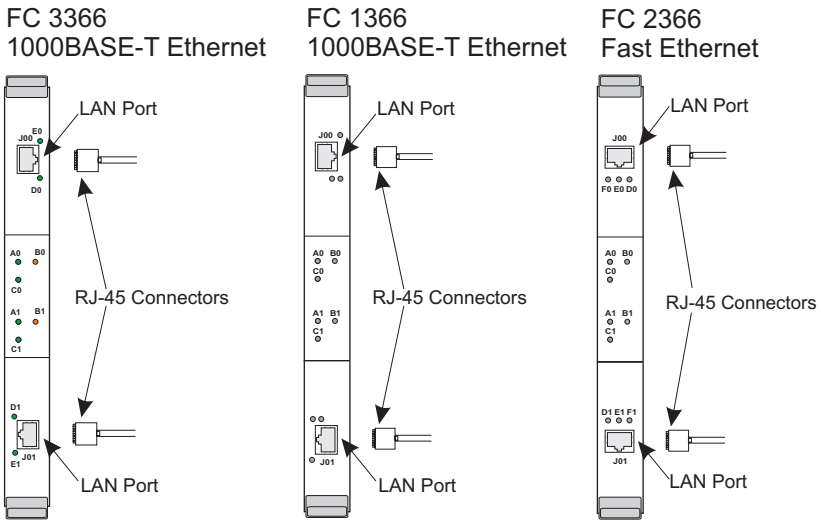
FC 3368
10 Gigabit Ethernet LR



__ Step 1. Cable type - Single Mode 9 micron
__ Step 2. Connect the SC Duplex connector to the 10 Gigabit Ethernet LAN port.
__ Step 3. Route the cable upward, across the cable tray at the top of the cage, down along the vertical cable raceway, and down to the tailgate.
__ Step 4. Use strain relief (P/N 07H6805) to secure the cable at the tailgate.

Repeat these steps for all OSA-E2 10 Gigabit Ethernet cards.

1000BASE-T Ethernet OSA-Express2 and OSA-Express (FC 3366, 1366) and Fast Ethernet (FC 2366)



__ Step 1. Cable type - Category 5 copper Unshielded Twisted Pair (UTP)

__ Step 2. Connect the RJ-45 connector to the 1000BASE-T or Fast Ethernet LAN port.

__ Step 3. Route the cable upward, across the cable tray at the top of the cage, down along the vertical cable raceway, and down to the tailgate.

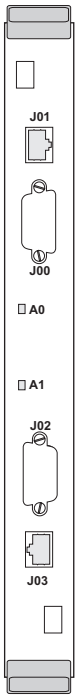
__ Step 4. Use strain relief (P/N 07H6805) to secure the cable at the tailgate.

Repeat these steps for all OSA-Express2 1000BASE-T Ethernet adapters.

Cryptographic coprocessor

The cryptographic coprocessor cards have no usable cable connections. There are a pair of connectors for each coprocessor on each feature card, but they are not to be used by field personnel.

Cryptographic FC 0863



Ethernet connector
This port is for service personnel only

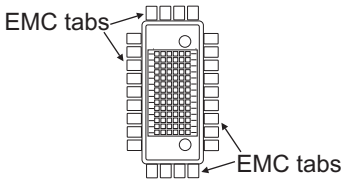
9-pin D-shell serial connector
This port is not to be used

9-pin D-shell serial connector
This port is not to be used

Ethernet connector
This port is for service personnel only

ICB (Integrated Cluster Bus)

There are two types of ICB features supported on the 2094. Both ICB features use STI cables with connectors similar to the one shown below.

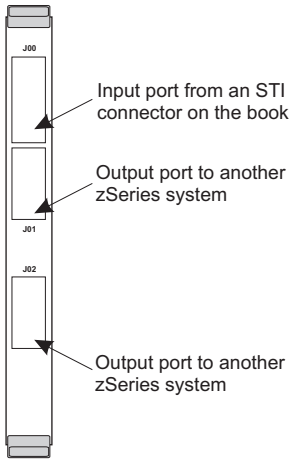


Use extreme caution when plugging these cables to prevent bending the EMC tabs. If any tabs are bent or missing, contact your support organization before proceeding.

- FC 0993 (ICB-3) provides a 1 GBps Integrated Cluster Bus connection to:
  - z9 EC
  - z9 BC
  - z990
  - z890
  - z900
  - z800

  ICB-3 cards plug into the I/O cage and use cable FC 0227.

  FC 0993
  ICB-3



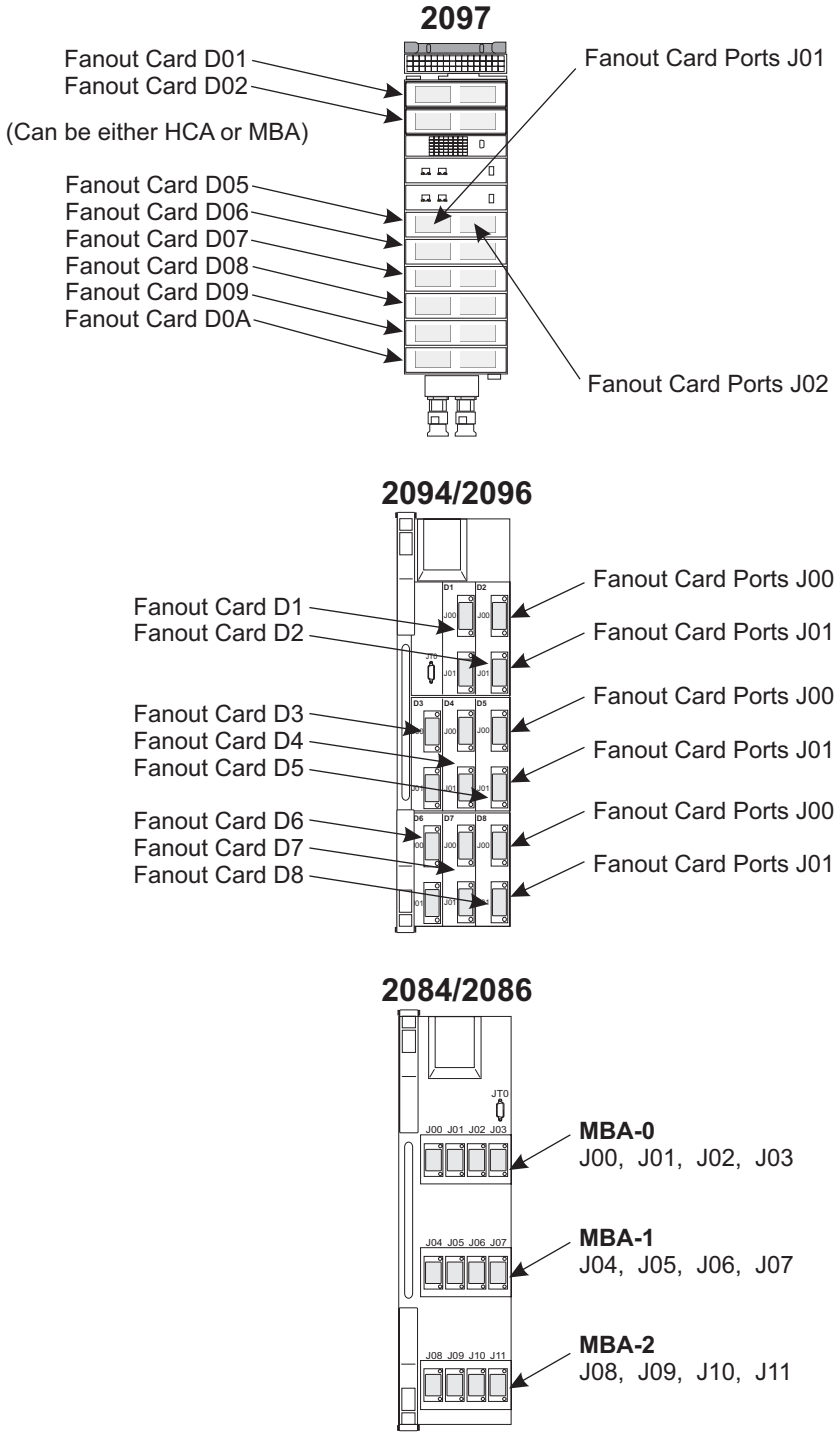
- ICB-4 provides a 2.0 GBps Integrated Cluster Bus connection to:
  - z10 EC
  - z9 EC
  - z9 BC
  - z990
  - z890

  ICB-4 connects directly from an STI port on a System z10 EC processor book to an STI port on a processor book in another system. ICB-4 uses the following cable features:
  - z10 EC to z10 EC- FC 0230
  - z10 EC to z9 EC - FC 0229
  - z10 EC to z9 BC - FC 0229

– z10 EC to z990 - FC 0229
– z10 EC to z890 - FC 0229

Note: FC 0228 cables are used to connect ICB-4 links between z9 EC, z9 BC, z990 and z890 servers. **These cables will not work with z10 EC servers and must be replaced with FC 0229 cables.** If this z9 EC server is to link with a z10 EC server, and you did not receive a Feature Code 0229 cable for the link, contact your support structure about the cable shortage. Attempting to reuse a cable that was previously connected to a non-z10 server will not work.

Integrated Cluster Bus - 4



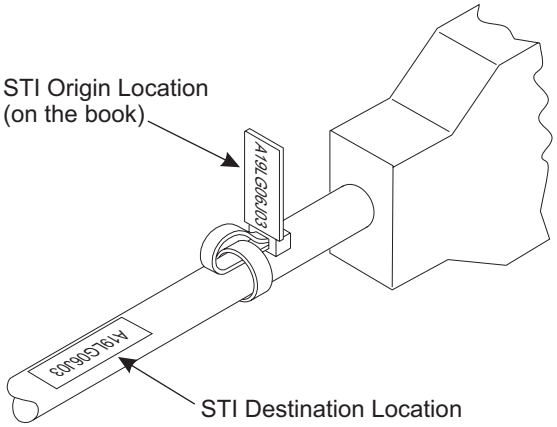
Before you connect ICB-4 cables from this installation to other servers, review **RETAIN tip H187128**. You must be certain to use the **Nondisruptive Hardware Change** procedure to add any HCA adapters and ICB cables to other servers.

At the primary support element of the server to which the ICB cable is to be connected:

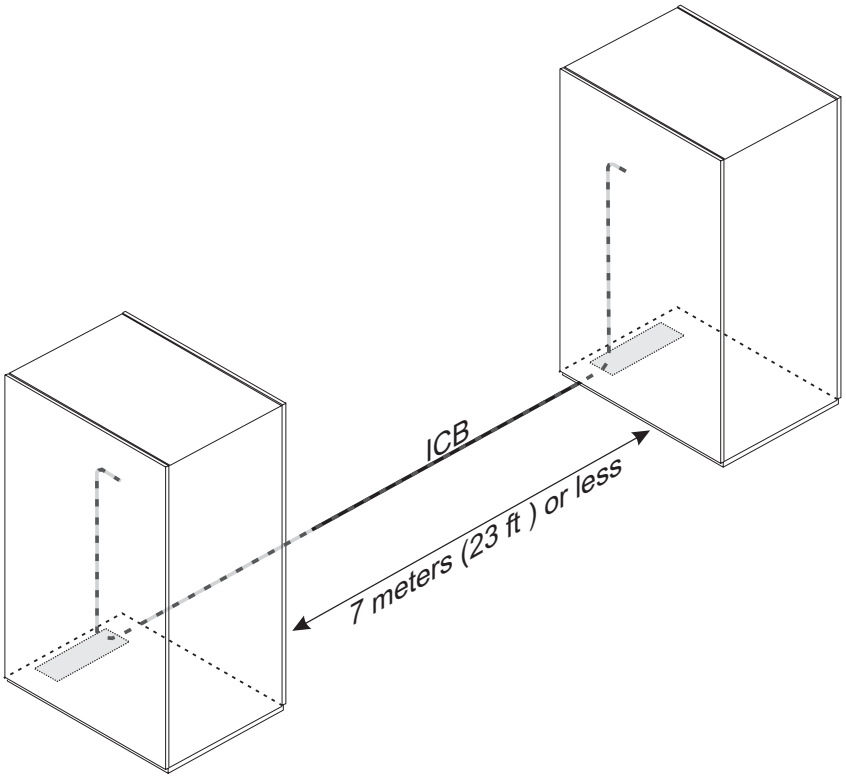
__ Step 1. Open **Task List** from the **Views** area.
__ Step 2. Open **CPC Configuration** from the **Task List Work Area**.
__ Step 3. Open **Groups** from the **Views** area.
__ Step 4. Open **Defined CPCs** from the **Groups Work Area**.
__ Step 5. Select the CPC to which you are going to connect the ICB cable.
__ Step 6. Drag and drop the selected object on **Nondisruptive Hardware Change** in the task area at the right.
__ Step 7. Follow the prompts in the **Nondisruptive Hardware Change** windows to add or remove HCA adapter cards and ICB cables.

Failure to follow these procedures will result in ICB links that **do not work**. If, after reviewing the RETAIN tip and the **Nondisruptive Hardware Change** procedure, you are still uncertain what must be done to correctly connect an ICB link in your particular installation, invoke your support structure **before** you attempt the connection.

- Each cable end is plugged according to what STIs are available in the systems being connected.
- There are blank labels and clear tape supplied in the ship group that can be used to label each end of the ICB cables as you connect them.

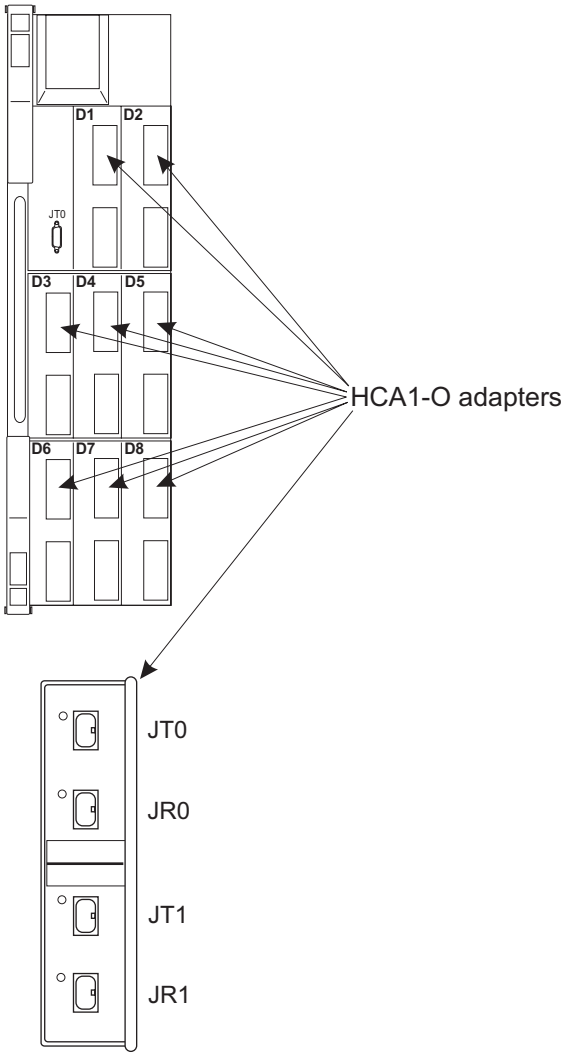


- ICB cables are 10 meters (32.8 ft) long. Because some of that length will be used inside each frame to reach the connection point, the systems may have to be as close together as 7 meters (23 ft) or less.



- To locate the ICB PCHIDs/CHPIDs, use the PCHID or CHPID Report shipped with your system or supplied by the customer. For an example of the Report, refer to “Example of a PCHID report” on page 11-6.

InfiniBand fiber optic



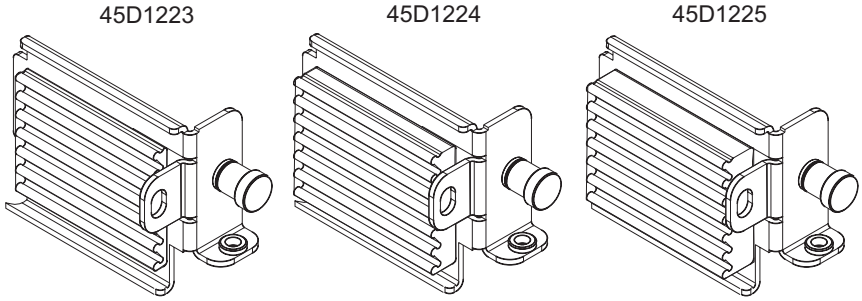
InfiniBand fiber optic cabling may be used to connect System z9 EC servers to other servers in a Parallel Sysplex. InfiniBand cabling is installed under the Fiber Cabling Services program.

__ Step 1. Cable type - InfiniBand with split Transmit and Receive fiber optic MPO connectors.

__ Step 2. Plug the InfiniBand MPO connectors to the HCA1-O adapter on the front of the processor book according to the PCHID report sent with the server. HCA1-O adapters can be installed in positions D1 through D8.

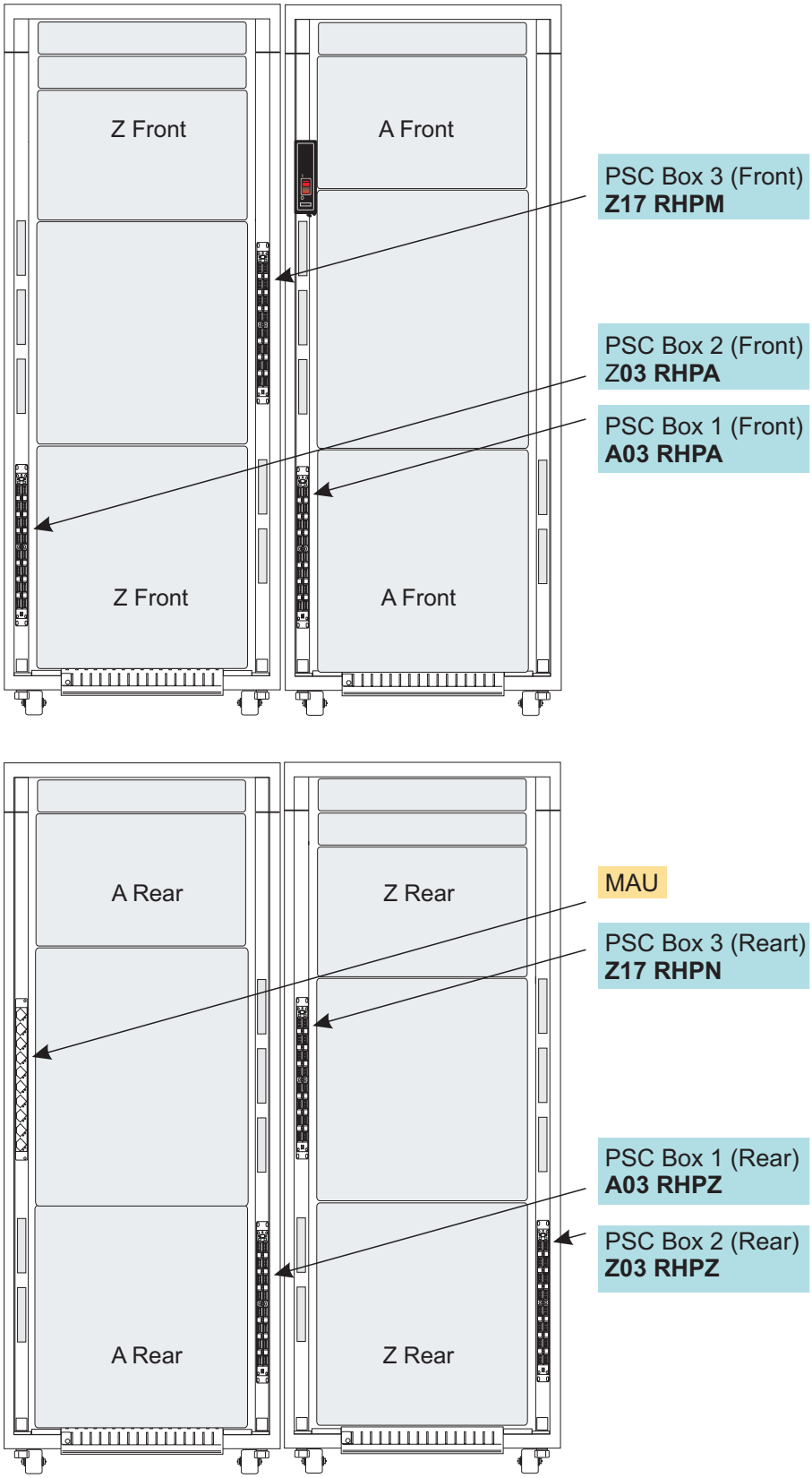
__ Step 3. Route the cable across the bottom of the processor book cage using the cable tray, then down along the vertical cable raceways, and finally to the tailgate.

__ Step 4. Use the appropriate strain relief (**P/N 45D1223, 45D1224, or 45D1225**) to secure the cable at the tailgate.

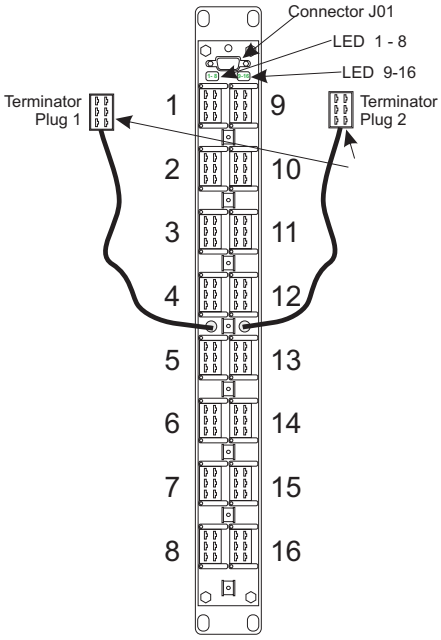

45D1223
45D1224
45D1225

Power sequence control

The following illustration shows where the power sequence controllers (PSC) are located.



If there are no PSCs installed, skip this procedure.



__ Step 1. Route the PSC cables from the I/O devices up through the tailgates to the power sequence controllers.

__ Step 2. Begin installing the device PSC cables at connector position 1. Continue plugging cables sequentially, from connector 2 through connector 16.

Note: Label the cables as you install them for problem analysis use later.

__ Step 3. Install the two terminator plugs according to the chart below:

Number of cables	Instructions
0	Place plug 1 in position 1.
1-7	Place plug 1 in the position immediately following the last cable. Place plug 2 in position 9.
8-15	Do not connect plug 1. Place plug 2 in the position immediately following the last cable.
16	Do not connect plugs 1 or 2.

Repeat this procedure for each PSC if more than 16 devices are powered on and off from the processor.

Completing the cabling

Make sure all channels are properly terminated.

Note: If ESCON channels are defined as CVC and ESCON converters are not attached, the channels will fail Power-On-Reset and go into a permanent standby state. To prevent these errors the channels can be put in Single Channel Service until ESCON converters are installed.

Chapter 12. Running the input/output configuration program (IOCP)

Before you start

The Input/Output Configuration Program (IOCP) runs in LPAR mode. The customer must provide you with an input file for this program. The input file is in 80 column card image format and must be provided on a diskette or the Hardware Management Console hard drive. The IOCP input file must be in American National Standard Code for Information Interchange (ASCII) format or have been compressed using a ZIP-compatible format. The input file contains all the I/O information necessary for the program to define the channel paths, control units, and devices.

For additional information about the IOCP program, refer to *Input/Output Configuration Program Users Guide* and the *Stand-Alone Input/Output Configuration Program Users Guide*, both available on Resource Link.

Note: Before continuing with this procedure you will need to LOG ON the Hardware Management Console as the **SYSPROG**. The password is **PASSWORD**.

Go to "Establishing a CPC console connection" to work from the Hardware Management Console

Establishing a CPC console connection

Use the following procedures to configure each CPC being installed unless the following is true.

1. The customer has predefined all the new CPCs using Hardware Configuration Definition (HCD) release 5.1 or later and all definitions are in one IODF.
2. All of the new CPCs are defined to a common Hardware Management Console with LIC Change enabled.

If the above is true, you may use one of the following alternatives:

- If HCD is up and running on a previously installed CPC, also defined to the common Hardware Management Console as the new CPC you are installing, the system programmer can download the new IOCDS to the new CPC once the new CPC support elements are powered on.
- If you are installing more than one new CPC, and all are defined to a common Hardware Management Console, then one of the new systems can be loaded using the following procedures. Once that is complete, and the first system has been IPLed with MVS™/HCD running, the system programmer can download the IOCDS from that system to the others.

or

You will have to repeat the procedures on the following pages for EACH CPC in your system if MVS is not running.

Remote CPC connection

From the Hardware Management Console Workplace window:

__ Step 1. Open **Task List** from the **Views** area.

__ Step 2. Open **CPC Recovery** from the **Task List Work Area**.

__ Step 3. Open **Groups** from the **Views** area.

__ Step 4. Open **Defined CPCs** from the **Groups Work Area**.

__ Step 5. All the CPCs in your system will display in the work area.

__ Step 6. Select one CPC with which you want to establish CPC console connection.

__ Step 7. Drag and drop the selected object on **Single Object Operations** in the **CPC Recovery** area.

The Single Object Operations Confirmation window displays.

__ Step 8. Select **Yes**.

The support element workplace window displays.

You now have a CPC console connection. The Hardware Management Console acts as the support element for the selected CPC. All the keyboard and display functions of the support element can now be performed using the Hardware Management Console.

Determining which input file procedure to follow

Choose one of the following:

- If you have an input file on diskette or a hard drive, go to “Input file on diskette or hard drive” on page 12-3.
- If the customer does not provide you with an input file, read below “What to do if the input file is not provided.”

Note: Tape is no longer a valid input file. Follow the path for “What to do if the input file is not provided”

What to do if the input file is not provided

If the customer does not provide you with an input file, explain to the customer that the processor has been tested, but the connectivity and cable paths to the I/O have not been tested. Continue with the installation, but make arrangements to return once the customer has the input file. That time should be recorded as post install activity. If the customer requires assistance creating the input file, contact your marketing representative. Continue the installation, LOG OFF and LOG back on in **SERVICE** mode then go to Chapter 13, “Accepting licensed internal code changes,” on page 13-1

Input file on diskette or hard drive

Special Instructions - If Errors Occur

If errors are detected during this procedure, refer to the *Service Guide*, G229-9027.

If the I/O Configuration Program returns error messages in the IOCP source file, refer to the **IOCP Users Guide** available on Resource Link.

If you are able to correct the error, restart this procedure.

If you cannot correct the error, make arrangements to return (in order to run the checkout test), once the customer has the input file correct and loaded. That time should be recorded as post install activity. If the customer requires assistance creating the input file, contact your marketing representative. Continue the installation, LOG OFF and LOG back on in **SERVICE** mode then go to “Accepting licensed internal code changes (support element)” on page 13-1

Starting the program

From the support element workplace:

Important

Refer to the customer configuration planning documentation for the data that you will enter on these panels.

Power-on reset of the CPC

__ Step 1. Open **Task List** from the **Views** area.

__ Step 2. Open **CPC Recovery** from the **Task List Work Area**.

__ Step 3. Open **Groups** from the **Views** area.

__ Step 4. Drag and drop the **CPC** icon on the **Power-on Reset** task in the **CPC Recovery** area.

The Power-on Reset window displays.

__ Step 5. Select the **D0** IOCDS.

__ Step 6. Select **Perform Power-on Reset**.

__ Step 7. Select **Power-on Reset**.

A power-on-reset in progress window displays while the power-on reset is performed. A power-on reset takes approximately 5 minutes to complete. When complete, a message displays confirming the function is complete.

__ Step 8. Select **OK**.

Activating a logical partition

__ Step 1. After the POR completes, open **Daily Task** from the **Task List Work Area**.

__ Step 2. Open **Groups** from the **Views** area.

__ Step 3. Open **Images** from the **CPC Work Area**.

__ Step 4. Drag and drop the selected **Image** on the **Activate** task in the **Daily** area.

__ Step 5. Select **Yes**.

__ Step 6. Select **OK**.

Starting the i/o configuration process

__ Step 1. Open **Task List** from the **Views** area.

__ Step 2. Open **CPC Configuration** from the **Task List Work Area**.

__ Step 3. Open **Groups** from the **Views** area.

__ Step 4. Open **Images** from the **Groups Work Area**.

__ Step 5. Select an activated logical partition image icon in the **Groups Work Area**.

__ Step 6. Drag and drop the selected object on the **Input/Output (I/O) Configuration** task in the **CPC Configuration** area.

The Input/Output Configuration window displays.

Note: If the data set you want to change is write protected,

1. Select the data set
2. Select **Options** from the action bar
3. Select **Disable write protection** from the pull-down.

Importing the source file

__ Step 1. Log onto the support element on the Hardware Management Console through **Single Object Operations**. Use SERVICE mode.

__ Step 2. Open **Task List** from the **Views** area.

__ Step 3. Open **CPC Configuration** from the **Task List Work Area**.

__ Step 4. Open **Groups** from the **Views** area.

__ Step 5. Open **Images** from the **Groups Work Area**.

__ Step 6. Drag and drop the selected image on the **Input/Output (I/O) Configuration** task to start it.

__ Step 7. Select **Options** from the action bar on the **Input/Output (I/O) Configuration** window.

__ Step 8. Select **Import Source File** and then select the appropriate source.

__ Step 9. Follow the option prompts for the file you selected.

Building the data set

The Input/Output Configuration window displays.

__ Step 1. Select **Options** from the action bar.

__ Step 2. Select **Build data set** from the pull-down.

__ Step 3. Select **OK**.

The Build Configuration Data Set window displays.

__ Step 4. Select **OK**.

The Confirm the Action window displays. (This window only displays the first time a build is requested.)

__ Step 5. Select **OK**.

A Configuration Task in Progress window displays while the IOCP program is run. The IOCP program may take up to 12 minutes to complete. When complete, a message displays confirming the function is complete.

__ Step 6. Select **OK**.

__ Step 7. Select **Options** from the action bar.

__ Step 8. Select **Exit** from the pull-down.

Note: You may want to restore write protection to the data set.

1. Select the data set
2. Select **Options** from the action bar
3. Select **Enable write protection** from the pull-down.

Performing a power-on reset

Have the customer create a reset profile and customize the image profiles at this time for the data set that was built.

From the support element Workplace:

__ Step 1. Open **Task List** from the **Views** area.

__ Step 2. Open **CPC Recovery** from the **Task List Work Area**.

__ Step 3. Open **Groups** from the **Views** area.

__ Step 4. Drag and drop the **CPC** object on the **Power-on reset** task in the **CPC Recovery** area.

The Power-on Reset window displays.

__ Step 5. Under the title of **Input/output configuration data sets (IOCDS)**, select the data set you just built.

__ Step 6. If the IOCDS is dynamic I/O capable and the customer wishes the initial POR to be enabled for dynamic, select the **Dynamic** tab, then select **Allow dynamic changes to the channel subsystem input/output (I/O) definition**.

__ Step 7. Select **Perform Power-on reset**.

__ Step 8. Select **Power-on Reset**.

A power-on-reset in progress window displays while the power-on reset is performed. A power-on reset takes approximately 5 minutes to complete. When complete, a message displays confirming the function is complete.

__ Step 9. Select **OK** on the Power-on Reset message window.

Ensure the customer is aware of which data set (A0, A1, A2, or A3) contains the valid IOCDS.

When complete,

- Ensure that you LOGON in **SERVICE** mode before continuing.
- It has been recommended that if you have a connectivity program available to you, such as **PATHVER**, you should run it at this time. If not available, continue without connectivity testing.
- Go to Chapter 13, “Accepting licensed internal code changes,” on page 13-1.

In order to protect the data, it is recommended that this file be write protected. Inform the customer’s system programmer to refer to the *Hardware Management Console Operations Guide*, SC28-6830.

Chapter 13. Accepting licensed internal code changes

This section accepts licensed internal code changes on the support elements and Hardware Management Console(s) and backs up critical data.

Accepting licensed internal code changes (support element)

If there are no support element LIC Changes to accept go to “Accepting licensed internal code changes (Hardware Management Console)” on page 13-2.

This procedure allows you to accept licensed internal code changes as a permanent part of the support element’s licensed internal code.

Note: Once a change is accepted, it cannot be removed. A new change must be retrieved and accepted to replace it.

Starting the operation

__ Step 1. If not already logged on, log on using **SERVICE** mode.
__ Step 2. Open **Task List** from the **Views** area.
__ Step 3. Open **Change Management** from the **Task List Work Area**.
__ Step 4. Open **Groups** from the **Views**.
__ Step 5. Open **Defined CPCs** from the **Groups Work Area**.
__ Step 6. Select all the CPCs with internal code changes to be made at one time.
__ Step 7. Drag and drop the selected object(s) on **Change Internal Code** in the **Change Management** area.

Accepting the changes

The Change Internal Code window displays.

__ Step 1. Select **Accept installed changes that were activated** from the menu.
__ Step 2. Select **OK**.

Selecting the changes

The Select Internal Code Changes window displays.

__ Step 1. Select **All internal code changes** from the menu.
__ Step 2. Select **OK**.

Confirming the request

The Confirm the Action window displays.

Select **Accept**.

Completing the operation

A message stating that the changes have been accepted or no changes available to accept displays.

__ Step 1. Select **OK**.
__ Step 2. Press **Cancel** to exit the procedure.

Accepting licensed internal code changes (Hardware Management Console)

If there are no Hardware Management Console LIC Changes to accept go to "Backing up the support elements and Hardware Management Console(s)" on page 13-3 to backup critical data.

This procedure allows you to accept licensed internal code changes as a permanent part of the Hardware Management Console's licensed internal code.

Note: Once a change is accepted, it cannot be removed. A new change must be retrieved and accepted to replace it.

Starting the operation

The Hardware Management Console Workplace window displays.

__ Step 1. Open **Console Actions** from the **Views** area.

__ Step 2. Open **Change Console Internal Code** from the **Console Actions Work Area**.

Accepting the changes

The Change Internal Code window displays.

__ Step 1. Select **Accept all installed changes that were activated** from the menu.

Note: If **Accept all installed changes that were activated** is ″grayed out″ it means there are no changes to accept. If there are no changes to accept, go to "Backing up the support elements and Hardware Management Console(s)" on page 13-3 to backup critical data.

__ Step 2. Select **OK**.

Selecting the changes

The Select Internal Code Changes window displays.

__ Step 1. Select **All internal code changes** from the menu.

__ Step 2. Select **OK**.

Confirming the request

The Confirm the Action window displays.

Select **Accept**.

Completing the operation

A message stating that the changes have been accepted displays.

__ Step 1. Select **OK**.

__ Step 2. Press **Cancel** to exit the procedure.

When complete, go to "Backing up the support elements and Hardware Management Console(s)" on page 13-3 to backup critical data.

Backing up the support elements and Hardware Management Console(s)

To backup the Support Element:

__ Step 1. Open **Task List** from the **Views** area.
__ Step 2. Open **Service** from the **Task List Work Area**.
__ Step 3. Open **Groups** from the **Views** area.
__ Step 4. Drag and drop selected CPCs from the **Groups Work Area** onto **Backup Critical Data** in the **Service** area.
__ Step 5. The **Backup Critical Data Confirmation** window appears.
__ Step 6. If not already done, insert the backup DVD-RAM in the drive on the Hardware Management Console.
__ Step 7. Click **Backup** to begin.
__ Step 8. Follow the instructions on this window, then select **OK**.
__ Step 9. Press **Cancel** to exit the procedure.

Leave the DVD-RAM in the drive.

To backup the Hardware Management Console:

__ Step 1. Open **Console Actions** from the **Views** area
__ Step 2. Open **Backup Critical Console Data** from **Console Actions**.
__ Step 3. The **Backup Critical Data Confirmation** window appears.
__ Step 4. Click **Backup** to begin.
__ Step 5. The **Backup Critical Console Data** progress window displays.
__ Step 6. When backup is complete, click **OK**.

Note: If you have additional Hardware Management Console(s) select **Backup Critical Console Data** from **Console Actions** in the **Views** area. Perform this action from each additional Hardware Management Console.

Go to“Customizing scheduled operations (Hardware Management Console)” on page 14-1

Chapter 14. Completing the installation

Customizing scheduled operations (Hardware Management Console)

Skip this procedure if you do not have a Hardware Management Console and go to "Customizing scheduled sperations (support element)."

Note: Scheduled backups and scheduled internal code retrievals should not be performed across a bridged network.

__ Step 1. Open **Console Actions** from the **Views** area.

__ Step 2. Open **Customize Scheduled Operations**.

__ Step 3. The **Customize Scheduled Operations** window displays.

Note: For preventative maintenance reasons, it is recommended that the following operations be scheduled in the sequence shown:

a. Backup critical hard disk information

b. Retrieve internal code changes

c. Retrieve internal code changes for all defined CPCs (These changes are installed in the procedure, "Customizing scheduled sperations (support element)"

d. Transmit system availability data

__ Step 4. Select **Options** from the menu bar.

__ Step 5. Select **New** from the pull-down.

Notes:

a. On-line help is available to guide you through completion of the task.

b. It is recommended to perform scheduled operations weekly and to choose off hours for transmissions. Consult with your customer for preferred times.

__ Step 6. Set the schedule for each option:

a. Select the radio button for the object to be customized and Click **OK**.

b. Enter the **Day**, **Time**, and **Time Window** information.

c. Click the **Repeat** tab and enter settings as needed.

d. Click **Save**.

e. Click **OK** to complete action on this option.

f. Return to step 4 to select the next option.

__ Step 7. When all changes are made, select **Exit** from the **Options** pull-down.

__ Step 8. Proceed with "Customizing scheduled sperations (support element)."

Customizing scheduled sperations (support element)

Note: Scheduled backups and scheduled internal code retrievals should not be performed across a bridged network.

__ Step 1. Open the **Task List** from the **Views** area.

__ Step 2. Open **CPC Operational Customization** from the **Task List Work Area**.

__ Step 3. Open **Groups** from the **Views** area.

__ Step 4. Drag and drop **Defined CPCs** from the **Groups Work Area** onto **Customize Scheduled Operations** in the **CPC Operational Customization** area.

__ Step 5. The **Customize Scheduled Operations** window displays.

Note: For preventative maintenance reasons, it is recommended that the following procedure be scheduled in the sequence shown:

a. Backup critical hard disk information

b. Transmit system availability data

__ Step 6. Select **Options** from the menu bar

__ Step 7. Select **NEW** from the pull-down

Notes:

a. On-line help is available to guide you through completion of the task.

b. It is recommended to perform scheduled operations weekly and to choose off hours for transmissions. Consult with your customer for preferred times.

__ Step 8. If this server is going to operate in an **STP-only** CTN, and you want to schedule time adjustment via a dial out time service:

- All timing adjustments in an STP-only CTN must be done at the Current Time Server. Therefore, the scheduled call to the ETS must be defined on the support element of the Current Time Server.
- Define the same scheduled operation on both the Preferred Time Server and Backup Time Servers to ensure that the time adjustment will complete successfully on one of the servers, irrespective of Current Time Server location.

Select **Access external time source** and click **OK**. A panel will be displayed, allowing the date and time to be entered. Once the settings are correct, the new entry can be saved by clicking the **Save** button.

Notes:

a. This procedure applies to STP-only CTNs (ETR supplies the time source in a mixed CTN or ETR timing network).

b. In order for the dial to work when **Scheduled Operations** pops up on the SE, there is some configuration that needs to be done on the Hardware Management Console using “Customizing outbound connectivity” on page 9-8.

c. If this server is using **Network Time Protocol (NTP)**, you do not need to set a schedule for accessing the time source. NTP automatically adjusts the time.

__ Step 9. When all changes are made, select **Exit** from the **Options** pull-down.

__ Step 10. Proceed with “Vital product data.”

Vital product data

This task will collect VPD data from all defined CPCs that are connected to the Hardware Management Console.

This procedure collects VPD for the support elements

__ Step 1. Open the **Task List** from the **Views** area.

__ Step 2. Open **Configuration** from the **Task List Work Area**.

__ Step 3. Open **Groups** from the **Views** area.
__ Step 4. Drag and drop **Defined CPCs** from the **Groups Work Area** onto **Transmit Vital Product Data** in the **CPC Configuration** area.
__ Step 5. The **Transmit Vital Product Data to IBM** window displays.
__ Step 6. Select **System (Support Element) Vital Product Data**.
__ Step 7. Select the destination to which you are sending the VPD. Select **OK**.
__ Step 8. Follow the instructions you are given on the window to complete this task.

This procedure collects VPD for the Hardware Management Console.

__ Step 1. Open the **Task List** from the **Views** area.
__ Step 2. Open **Configuration** from the **Task List Work Area**.
__ Step 3. Open **Groups** from the **Views** area.
__ Step 4. Drag and drop **Defined CPCs** from the **Groups Work Area** onto **Transmit Vital Product Data** in the **Configuration** area.
__ Step 5. The **Transmit Vital Product Data to IBM** window displays.
__ Step 6. Select **Hardware Management Console Vital Product Data**.
__ Step 7. Select the destination to which you are sending the VPD. Select **OK**.
__ Step 8. Follow the instructions you are given on the window to complete this task.

Disabling service status

From the Hardware Management Console Workplace window:

__ Step 1. Open **Task List** from the **Views** area.
__ Step 2. Open **Service** from the **Task List Work Area**.
__ Step 3. Open **Groups** from the **Views** area.
__ Step 4. Drag and drop the **Defined CPCs** from the **Groups Work Area** onto **Service Status** in the **Service** area.
__ Step 5. Select a CPC to customize.
__ Step 6. Select **Options** from the action bar.
__ Step 7. Select **Disable service status** from the pull-down.
__ Step 8. Repeat 5, 6, and 7 until all CPCs are disabled.
__ Step 9. Select **Save**.
__ Step 10. Select **Yes**.
__ Step 11. Select **OK**.
__ Step 12. Select **Cancel** to return.

Mirroring the support element

Mirroring must be performed from the Primary support element.

__ Step 1. Select **Task List** from the **Views** Area.
__ Step 2. Select **Change Management** from the **Task List Work Area**.
__ Step 3. Select **Groups** from the **Views** Area.
__ Step 4. Select the **CPC** from the **Groups Work Area**.
__ Step 5. Drag and Drop the selected **CPC** onto **Alternate Support Element** in the **Change Management Area**.

__ Step 6. Select **Mirror the Primary Support Element data to the Alternate Support Element**.

__ Step 7. Select **OK**.

The Alternate support element progress window displays.

__ Step 8. When the task completes, select **OK**.

Verifying the external time reference status

__ Step 1. Open **Task List** from the **Views** area.

__ Step 2. Open **Configuration** from the **Task List Work Area**. The Configuration task list contains the **System (Sysplex) Time** task that you will start.

__ Step 3. Open **Groups** from the **Views** area.

__ Step 4. Open the **CPC Group** that contains the object with the support element to which you want to connect.

__ Step 5. Select the **CPC**.

__ Step 6. Drag and drop the **CPC** on the **System (Sysplex) Time** task to start it.

__ Step 7. The System (Sysplex) Time window displays a notebook that shows the current configuration and status of the ETR ports.

__ Step 8. Select the **ETR Status** tab.

__ Step 9. Verify that both Ports are Operational. If the Ports are not operational, return to “Activating external time reference” on page 11-9 and check that the network IDs for the ports are correct and that both ports are enabled.

__ Step 10. Select **OK**.

Note: STP status cannot be verified until the customer completes network configuration and activation.

Refer to the *Support Element Operations Guide*. See online help for additional information.

Advising the customer of their responsibilities

Direct the customer to the following publications on Resource Link:

- *Hardware Management Console Operations Guide*.
- *Support Element Operations Guide*.
- *PR/SM Planning Guide*.
- *Server Time Protocol Planning Guide*.

Demonstrate to appropriate customer personnel (system administrators, operators, and supervisors) how to perform problem analysis.

Advise customer personnel that they are responsible for customizing and cabling non-IBM channels.

Advise customer personnel that they are responsible for:

- Running the IOCP program
- Installing and maintaining labels on communication and work station cables
- Backing up the system configuration

- Backing up the I/O load source (program load source)
- Updating channel address labels on the system I/O if configuration changes alter those addresses
- Inform the customer that the Cryptographic Coprocessor features are ready to have the keys loaded. It is the customer's responsibility to load the keys.

Inform the customer's Access Administrator that all access mode passwords **MUST** be changed to prevent unauthorized access to the Hardware Management Console controls.

Relocation/discontinue

You must be certain to inform the customer of the following:

•

DANGER

Heavy equipment—personal injury or equipment damage might result if mishandled. (D006)

The customer should prepare his environment to accept the new product based on the installation planning information provided, with assistance from an IBM Installation Planning Representative (IPR) or IBM authorized service provider. In anticipation of the equipment delivery, the final installation site should be prepared in advance such that professional movers or riggers can transport the equipment to the final installation site within the computer room. If for some reason, this is not possible at the time of delivery, the customer will need to make arrangements to have professional movers or riggers return to finish the transportation at a later date. Only professional movers or riggers should transport the equipment. The IBM authorized service provider will perform only minimal frame repositioning within the computer room, as needed, to complete required service actions. The customer is also responsible for using professional movers or riggers in the case of equipment relocation or disposal.

  – There may be a need to provide packaging or physical disassembly BEFORE relocation/discontinuance.
  – Any physical movement of the z9 EC should only be performed under the supervision of product-trained service representatives.

- If this system has the Internal Battery Feature (IBF), FC 3210, any batteries in the Z frame must be removed with the Lift Tool prior to movement up or down any ramp.

  CAUTION:
  Lead-acid batteries can present a risk of electrical burn from high, short-circuit current. Avoid battery contact with metal materials; remove watches, rings, or other metal objects, and use tools with insulated handles. To avoid possible explosion, do not burn.

  Exchange only with the IBM-approved part. Recycle or discard the battery as instructed by local regulations. In the United States, IBM has a process for the collection of this battery. For information, call 1-800-426-4333. Have the IBM part number for the battery unit available when you call. (C004)

- If this system has FC 0863 (Crypto Express2) cards installed, those features must have environmental packaging materials to be removed from the I/O cages in which they are installed.

CAUTION:
The battery contains lithium. To avoid possible explosion, do not burn or charge the battery.

Do not:
__ **Throw or immerse into water**
__ **Heat to more than 100°C (212°F)**
__ **Repair or disassemble**

Exchange only with the IBM-approved part. Recycle or discard the battery as instructed by local regulations. In the United States, IBM has a process for the collection of this battery. For information, call 1-800-426-4333. Have the IBM part number for the battery unit available when you call. (C003)

- If this system has FC 0863 (Crypto Express2) cards installed, those features must be zeroized prior to sale or discontinuance of the system.

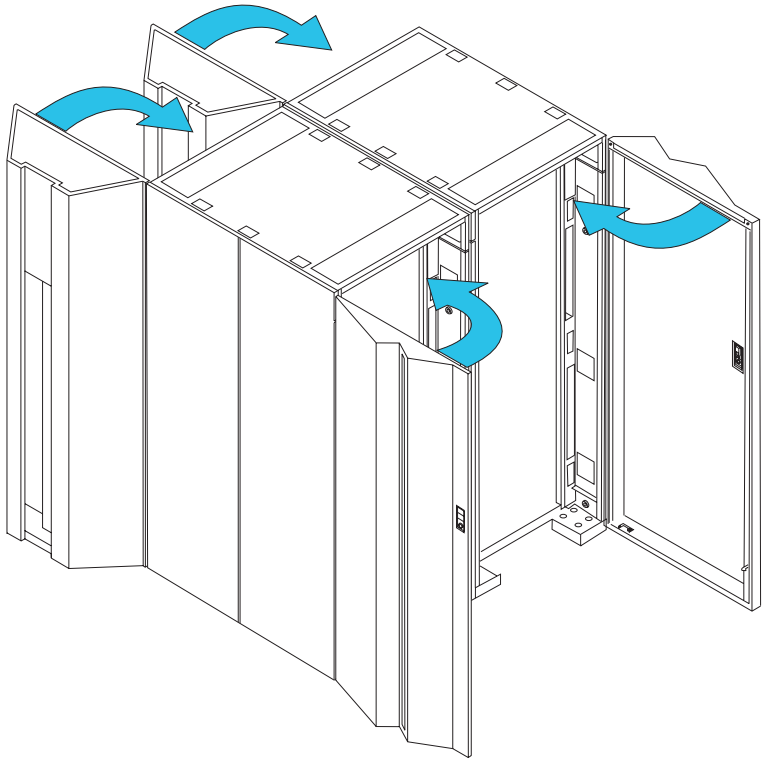
Completing the installation

Completing the physical installation

__ Step 1. Store the unused wrap plugs that were shipped.

__ Step 2. Give all extra cables to the customer (some customers may have ordered extra cables when the system was ordered).

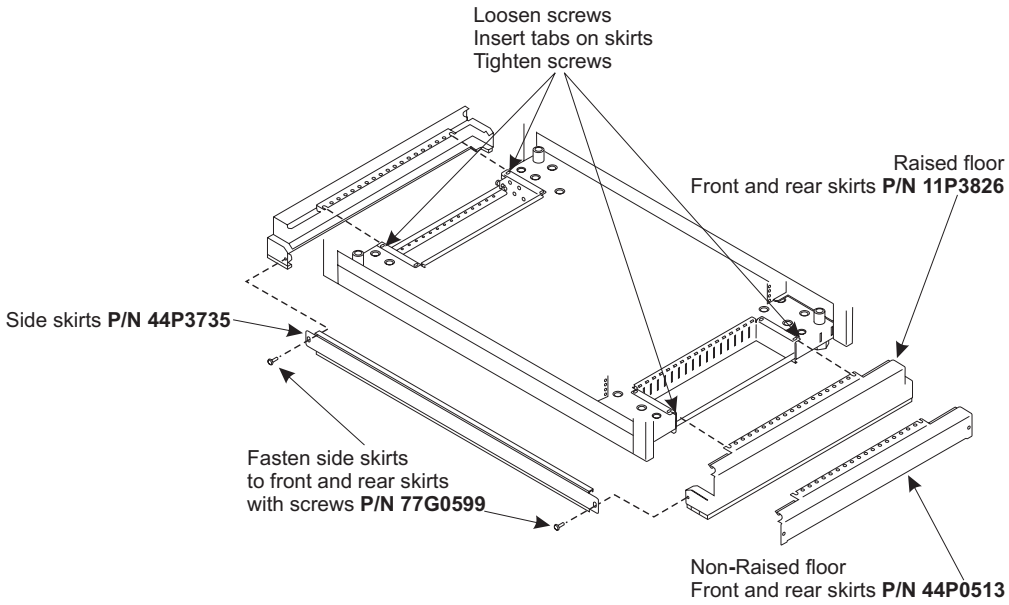
__ Step 3. Unpack the front and rear doors and hang them on the hinges. The rear doors are identical and are hinged on the right side as you face the outside of the door. The A frame front door is also hinged on the right side. The Z frame front door is hinged on the left side. Close all covers.



CAUTION:
The doors and covers to the product are to be closed at all times except for service by trained service personnel. All covers must be replaced and doors locked at the conclusion of the service operation. (C013)

Install the EMC skirts around the bottom of the frame.

Note: The front and rear skirts may be for either a raised floor or non-raised floor installation. The server you are installing may not accommodate a non-raised floor environment.



Setting up the documentation

__ Step 1. Direct the Customer to Resource Link for product, Hardware Management Console, and support element documentation.

__ Step 2. Save all diskettes and store them in the box in which they came.

__ Step 3. Save all DVD-RAMs and CDs sent with the system.

__ Step 4. Store all unused items in the system area where they can be easily retrieved.

Reporting the installation

IMPORTANT

You **MUST** file an *Installation Complete Report*, either online or by telephone. IBM's global installed equipment database uses this report to locate and track all IBM machines. Completing this report with the PMH number you used to open this installation is mandatory.

Hardware Management Console

Be certain to record installation time against **each** machine type/serial that you installed.

Refer to *Service Guide*, GC28-6841, and close all open problems before turning the system over to the customer.

__ Step 1. Open **Console Actions** from the **Views** area.
__ Step 2. Open **Installation Complete Report** from the **Console Actions Work Area**.
__ Step 3. Fill in the appropriate fields.
__ Step 4. Select **OK** when complete.

If more than one report is required, type over the first report after selecting **OK** to complete the report. Repeat this action until all reports are filed.

__ Step 1. Open the **Task List** from the **Views** area.
__ Step 2. Select **Service** from the **Task List Work Area**.
__ Step 3. Open **Groups** from the **Views** area.
__ Step 4. Select **Defined CPC** from the **Groups Work Area**.
__ Step 5. Drag and drop the selected object on **Transmit Service Data** in the **Service** area.
__ Step 6. Select IBM Service Support system.
__ Step 7. Input the PMH number for the install.
__ Step 8. Check the box for Installation Completion Report.
__ Step 9. Select **Send** to transmit the Installation Complete Report and the PMH number.

IMPORTANT

If you do not have the proper telecommunications equipment defined to send the service data to the IBM Service Support system, or if the customer does not authorize you to use this facility, **call the Service Support system to close the install PMH**.

RSF testing

Perform the ″Report a Problem″ task.

__ Step 1. Open **Task List** from the **Views** area.
__ Step 2. Open **Service** from the **Task List Work Area**.
__ Step 3. Open **Groups** from the **Views** area.
__ Step 4. Drag and drop the **Defined CPCs** from the **Groups Work Area** onto **Report a Problem** in the **Service** area.

__ Step 5. Select **Test automatic problem reporting** from the list of problem types.

In the problem Description area enter the following:

- XXRSFInstall
- BMCE Txxx Bxxx and your name (where Txxx = your territory and Bxxx = your branch office)
- Support Center, please close this problem - testing connection only

__ Step 6. Select **Request Service**.

__ Step 7. Select **OK**.

__ Step 8. Wait approximately 5 minutes for a message to appear stating **Service Authorization Complete**.

If the **Service Authorization Complete** message does not appear, contact the next level of support.

This installation is complete.

Appendix A. Preparing for relocation

You must be certain to inform the customer of the following:

DANGER

Heavy equipment—personal injury or equipment damage might result if mishandled. (D006)

- If relocating this server, the customer should prepare his environment to accept the relocated product based on the installation planning information provided, with assistance from an IBM Installation Planning Representative (IPR) or IBM authorized service provider. In anticipation of the equipment delivery, the final installation site should be prepared in advance such that professional movers or riggers can transport the equipment to the final installation site within the computer room. If for some reason, this is not possible at the time of delivery, the customer will need to make arrangements to have professional movers or riggers return to finish the transportation at a later date. Only professional movers or riggers should transport the equipment. The IBM authorized service provider will perform only minimal frame repositioning within the computer room, as needed, to complete required service actions. The customer is also responsible for using professional movers or riggers in the case of equipment relocation or disposal.
  - There may be a need to provide packaging or physical disassembly BEFORE relocation/discontinuance.
  - Any physical movement of the z9 BC should only be performed under the supervision of product-trained service representatives.
- If this system has FC 0863 (Crypto Express2) cards installed, those features must have environmental packaging materials to be removed from the I/O cages in which they are installed.
- If this system has FC 0863 (CryptoExpress2) cards installed, those features must be zeroized prior to sale or discontinuance of the system.
- **If this server is part of a Sysplex, be certain the timing links have been considered before disconnecting cables.**

The remainder of this appendix describes the steps necessary to safely shut down and disconnect the z9 EC and prepare the system for shipment.

Before starting this procedure, be certain you have the required tools, instructions, and packing and shipping materials for your particular system. Does your system require any of the following special considerations?

__ Step 1. Environmental packaging

__ Step 2. Packing and instructions for cryptographic (FC 0863) cards (if required)

__ Step 3. Packing, instructions, and the lift tool for FC 3210 batteries. **If this system has the Internal Battery Feature (IBF), FC 3210, any batteries in the Z frame must be removed with the Lift Tool prior to movement up or down any ramp.**

__ Step 4. Packing and instructions for height reduction. Instructions are in “Top frame removal” on page B-4

Obtain all needed materials before proceeding.

Before turning off system power

Zeroizing Crypto Express2 cards (FC 0863)

Attention: Zeroizing a Crypto Express2 card erases its configuration data and clears all cryptographic keys.

- You must zeroize Crypto Express2 cards prior to selling or transferring ownership of the CPC.
- A service representative may zeroize Crypto Express2 cards prior to upgrading the CPC, if required.
- You may want to zeroize Crypto Express2 cards if, in an emergency, it is the only way to maintain the security of encrypted data.

To manually zeroize Crypto Express2 cards, either one at a time or all at the same time, the following conditions must exist:

- The Crypto Express2 cards must have been configured and enabled.
- A power-on reset of the CPC must be complete.
- The CP to which the Crypto Express2 card is attached cannot be checkstopped.
- You must be **logged onto the support element** in the system programmer or service representative user mode.

To establish a support element console session from a Hardware Management Console:

__ Step 1. At the Hardware Management Console, locate the task.

__ Step 2. Open the **Task List** from the **Views** area.

__ Step 3. Open **CPC Recovery** from the **Task List Work Area**.

__ Step 4. Open **Groups** from the **Views** area.

__ Step 5. Open the **CPC group** that contains the object with the support element to which you want to connect.

__ Step 6. Select one **CPC**.

__ Step 7. Drag and drop the selected **CPC** on **Single Object Operations** in the **CPC Recovery tasks area**.

From the support element, start the task **PCI Cryptographic Configuration**. This task displays the Crypto Express2 configuration window. The window lists the Crypto Express2 features installed in the CPC and provides push buttons for working with them.

__ Step 1. Open the **Task List** from the **Views area**.

__ Step 2. Open **CPC Configuration** from the **Task List Work Area**. The **CPC Configuration task list** contains the **PCI Cryptographic Configuration task** that you will start.

__ Step 3. Open **Groups** from the **Views** area.

__ Step 4. Open the **CPC group** from the **Groups Work Area**.

__ Step 5. Drag and drop the **CPC** on the **PCI Cryptographic Configuration task** to start it.

To manually zeroize Crypto Express2 cards **one at a time**:

__ Step 1. Select from the list the Crypto Express2 card you want to zeroize.

__ Step 2. Select the **Zeroize** push button to zeroize the selected Crypto Express2 card.

__ Step 3. A **Zeroize Warning** window displays indicating that the configuration data will be cleared.

__ Step 4. Select the **Zeroize** push button to confirm your request to zeroize the selected Crypto Express2 card.

Deactivating the CPC(s)

To safely power off the z9 EC and Hardware Management Consoles, all processing must be completed. The steps necessary to complete CPC processing will depend on your operating system and local procedures. Be sure that processing is complete before deactivating the CPC(s).

Note: If this server is the Current Time Server in an STP-only CTN comprising multiple CPCs , deactivation will be blocked until the Current Time Server role is transferred to another server.

All CPCs must be deactivated before power is removed. If you have a Hardware Management Console that has all of your CPCs defined to it, you can deactivate all of them at one time by deactivating the **Defined CPCs** group on that Hardware Management Console. If you do not have a Hardware Management Console that has all of your CPCs defined to it, you will need to perform the following steps on each of your support elements.

__ Step 1. Open the **Task List** from the **Views** area

__ Step 2. Open **Daily Tasks** from the **Task List Work Area**

__ Step 3. Open **Groups** from the **Views** area

__ Step 4. Select the **Defined CPC(s)** on a Hardware Management Console

__ Step 5. Drag and drop the selected group on **Deactivate** in the **Daily Tasks** area

__ Step 6. Select **Yes** on the **Deactivate Task Confirmation** window

Attention

Although all of the CPC(s) are deactivated, there is still processing being done by the CPC support elements. This processing must be completed, otherwise, support element data could be left in an unusable state. Wait at least two minutes. This will provide the time needed for the support elements to complete processing.

Removing object definitions

To prevent other connected Hardware Management Consoles from detecting CPC communication failures, you must remove the discontinued CPC(s) from the enterprise.

Logon in **ACSADMIN** mode.

__ Step 1. Open the **Task List** from the **Views** area

__ Step 2. Open **Object Definition** from the **Task List Work Area**

__ Step 3. Open **Groups** from the **Views** area

For individual CPCs:

a. Open the group that contains the CPCs with the definition that you want to remove

b. Select one or more objects.

For a group of CPCs:

a. Select the group of CPCs that you want to remove.

__ Step 4. Drag and drop the selected objects on **Remove Object Definition** in the **Object Definition** tasks area. The **Remove Object Definition Task Confirmation** window is displayed.

__ Step 5. When you have finished removing all objects, log off from **ACSADMIN** mode.

Discontinue the system

If this system is being relocated, skip this procedure and continue with "Logging off/shutting down the Hardware Management Console(s)" below. If this system is being discontinued, perform the following action:

Logon in **SERVICE** mode.

__ Step 1. Open **Console Actions** from the **Views** area

__ Step 2. Select **Installation Completion Report** from the **Console Actions Work Area**

__ Step 3. Select **Discontinue** from the **Installation Completion Report** window

__ Step 4. Fill in the appropriate fields.

__ Step 5. Select **OK** when complete.

__ Step 6. Open **Transmit Console Service Data** from the **Console Actions Work Area**.

__ Step 7. Select IBM Service Support system.

__ Step 8. Select **Send** to transmit the Installation Complete Report.

IMPORTANT:

If you do not have the proper telecommunications equipment defined to send the service data to the IBM Service Support system, or if the customer does not authorize you to use this facility, **call the Service Support system to complete the discontinuance of this system.**

Logging off/shutting down the Hardware Management Console(s)

Before turning the Hardware Management Console off, you should shut down each operating system. Perform the following shut down procedure at **each** support element, then at the Hardware Management Console.

Logon in **SERVICE** mode.

__ Step 1. Open **Console Actions** from the **Views** area

__ Step 2. Open **Shutdown or Restart** from the **Console Actions Work Area**

__ Step 3. Select **Power off/shutdown console** on the **Shutdown or Restart** window

__ Step 4. Click **OK**.

__ Step 5. Wait at least 90 seconds for all console hard disk activity to complete.

Removing system power

DANGER

An electrical outlet that is not correctly wired could place hazardous voltage on the metal parts of the system or the devices that attach to the system. It is the responsibility of the customer to ensure that the outlet is correctly wired and grounded to prevent an electrical shock. (D004)

DANGER

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

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

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

  To disconnect:

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

  To connect:

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

  (D005)

__ Step 1. At the front of frame ″A″ set the red Unit Emergency Power Off switch to the Off position (refer to “Setting controls” on page 8-2)

__ Step 2. Have the customer set the building circuit breaker for system(s) power to OFF (refer to “Turning off the wall breaker” on page 8-1)

__ Step 3. Disconnect the AC line cords from building power. (refer to “Routing the power cords” on page 8-2)

__ Step 4. Set the circuit breakers to OFF on the front of all installed batteries (FC 3210).

Disconnecting the system

Disconnecting the Hardware Management Console

- For an **8485** Hardware Management Console, refer to Chapter 7, “Installing the Hardware Management Console,” on page 7-1 and perform the following steps:

__ Step 1. Disconnect building power from the console system unit.

__ Step 2. Disconnect building power from the display.

__ Step 3. Disconnect building power from the modem, if present.

__ Step 4. Disconnect the communication adapter cable from the console and modem, if present.

__ Step 5. Disconnect the LAN cable(s) from the rear of the console and the LANs (Token Ring/Ethernet).

__ Step 6. At the rear of the console, disconnect:

- The keyboard
- The mouse
- The display signal cable.

__ Step 7. Package all parts to be shipped.

Disconnecting the customer cables

Before continuing, read the following **Caution** information:

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

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

IMPORTANT
Make certain timing links between Sysplex servers have been considered before disconnecting cables.

__ Step 1. Disconnect all fiber-optic cables from Sysplex Timer or ETR cards. Install a dust protector in each port after the cable is removed. (refer to “Connecting the time synchronization cable(s)” on page 11-7)

__ Step 2. Disconnect all ESCON fiber-optic cables from channel cards. Install a dust protector in each port after the cable is removed. (refer to “16 port ESCON” on page 11-14)

__ Step 3. Disconnect all FICON fiber-optic cables from channel cards. Install a dust protector in each port after the cable is removed. (refer to “FICON Express” on page 11-18)

__ Step 4. Disconnect all ISC fiber-optic cables from ISC-M cards. Install a dust protector in each port after the cable is removed. (refer to “ISC-3” on page 11-15)

__ Step 5. Disconnect all OSA-E fiber-optic cables from OSA channel cards. Install a wrap plug in each port after the cable is removed. (refer to the various OSA cable connections beginning at “OSA-Express connections” on page 11-19)

__ Step 6. Remove all disconnected cables from the strain relief area in both the front and rear tailgates.

__ Step 7. Disconnect channel Power Sequence and Control (PSC) cables from the channel power control unit. (refer to “Power sequence control” on page 11-31)

__ Step 8. Package all of the cables and the strain reliefs for shipping.

Disconnecting the remaining system cables

__ Step 1. Disconnect STI cables between frames. (refer to “ICB (Integrated Cluster Bus)” on page 11-24).

__ Step 2. Disconnect UPIC cables between frames. (refer to “I/O cage power connections” on page 5-2).

__ Step 3. Disconnect the LAN cables between frames. (refer to Chapter 6, “Creating the LAN (Local Area Network),” on page 6-1).

__ Step 4. Disconnect the EPO cable from the UEPO window, if present. (refer to Chapter 4, “Room disconnecting means/EPO cable,” on page 4-1)

__ Step 5. Disconnect any other Hardware Management Console LAN cables from the MAU at the front of frame A, if present.

__ Step 6. Disconnect the IBF cables from the batteries in the A frame, if present. Route both cables back into the Z frame and secure them with cable ties.

__ Step 7. Disconnect both ends of all IBF cables in the Z frame, if present.

__ Step 8. Use the IBF tools and the hoist to remove all batteries from the top of the Z frame.

__ Step 9. If this system has the height reduction feature, (FC 9975) remove the batteries from the top of the A frame.

__ Step 10. Package loose cables for shipment and tie back any cables still connected in one frame.

__ Step 11. Package any batteries removed from the Z or A frames.

Final preparation

__ Step 1. Remove and package any Cryptographic feature cards that require separate packaging (if present).

__ Step 2. Raise the leveling pads to approximately 6 mm (1/4 in) from the bottom of the frame.

__ Step 3. Unbolt and separate frames A and Z. (refer to “Fastening the frames together” on page 3-3)

__ Step 4. If the upper portion of the frames is to be removed for height reduction, follow the instructions supplied in “Top frame removal” on page B-4.

__ Step 5. Place all loose hardware in bags or boxes supplied with the packing materials.

__ Step 6. Tie back AC power cords in each frame.

__ Step 7. Install environmental packaging as follows:

__ Step a. Open the environmental packaging Bill of Material and find eight desiccant packages.

__ Step b. Tape the desiccant, two packages each, in the bottom corners of frame A.

__ Step c. Tape one humidity indicator to the front of the processor cage.

__ Step d. Place a white corrugated sheet under the front of frame A, with the slots around the threads on each leveling pad.

__ Step e. Tighten the two front leveling pads against the corrugated sheet.

__ Step f. Use the tape supplied with the packaging Bill of Material to tape the flap on the corrugated sheet to the front of frame A.

__ Step g. Repeat the previous three steps for the rear of frame A.

__ Step h. Open and install the plastic bag over the top of frame A. Be certain the bag is pulled completely down over the frame and hangs loosely at the bottom of the frame. If you reduced the frame height, tape the bottom edge of the bag even with the bottom edge of the frame.

__ Step i. Open and install the silver bag over the top of frame A. Be certain the bag is pulled completely down over the frame and hangs loosely at the bottom of the frame. If you reduced the frame height, tape the bottom edge of the bag even with the bottom edge of the frame.

__ Step j. Position the silver cross on the floor, silver side down, under the frame so that each arm of the cross extends beyond the frame.

__ Step k. Use the tape supplied with the packaging Bill of Material to tape the arms of the cross up over the bottom edge of the silver bag, all the way around frame A. When you finish, only the casters should be exposed to view.

__ Step l. Tape the second humidity indicator to the front of the silver bag, approximately at eye level.

__ Step 8. Install external packaging to both frames as required.

__ Step 9. Relocation preparation is complete. The system may be relocated or discontinued.

Appendix B. Height reduction

DANGER

Heavy equipment—personal injury or equipment damage might result if mishandled. (D006)

Follow this procedure to replace the top frames of your system.

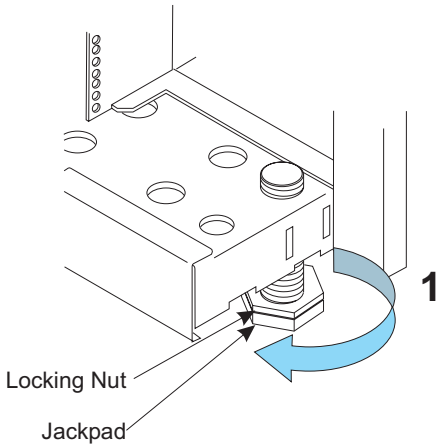
Leveling pads

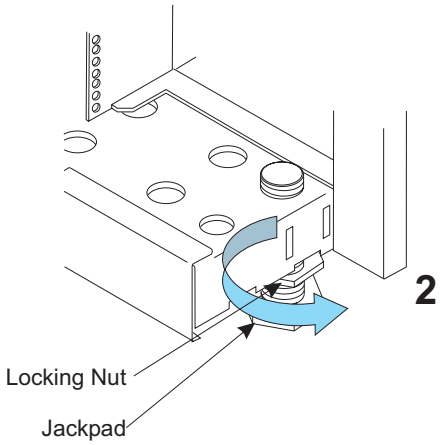
Position the frames in a safe spot, away from floor cutouts, near the installation site.

__ Step 1. Use the wrench, **P/N 31L8313**, supplied in the basic ship group, to lower the leveling pad at each corner of the A frame. Lower the pad until it fully contacts the floor.

__ Step 2. Hold the pad in contact with the floor and turn the locknut up until it contacts the bottom of the frame. While holding the pad in place with one hand, tighten the locknut using the wrench with your other hand.

__ Step 3. Repeat these steps for the Z frame.





Top frame replacement

Replace the top frames and side covers beginning with frame A.

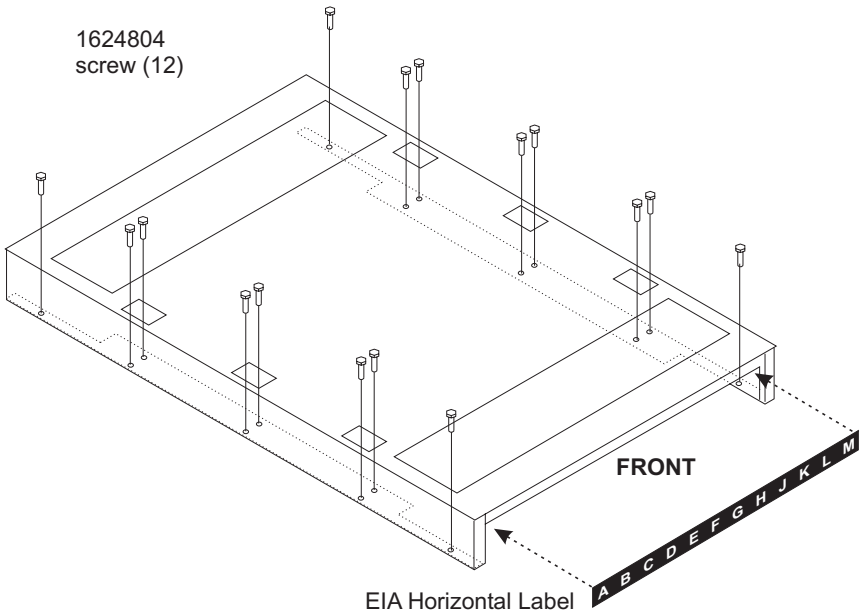
__ Step 1. Open the crate containing the top frames. Remove the frames and set one aside. Remove any protective packaging.

__ Step 2. Remove the bag containing the screws that fasten the top frame and remove the screws from the bag.

__ Step 3. With one person at the front and one person at the rear, lift the top frame up and set it on the frame.

Note: Make certain that the horizontal EIA label (with the letters **A-M**) is oriented to the **front** of the frame as shown below.

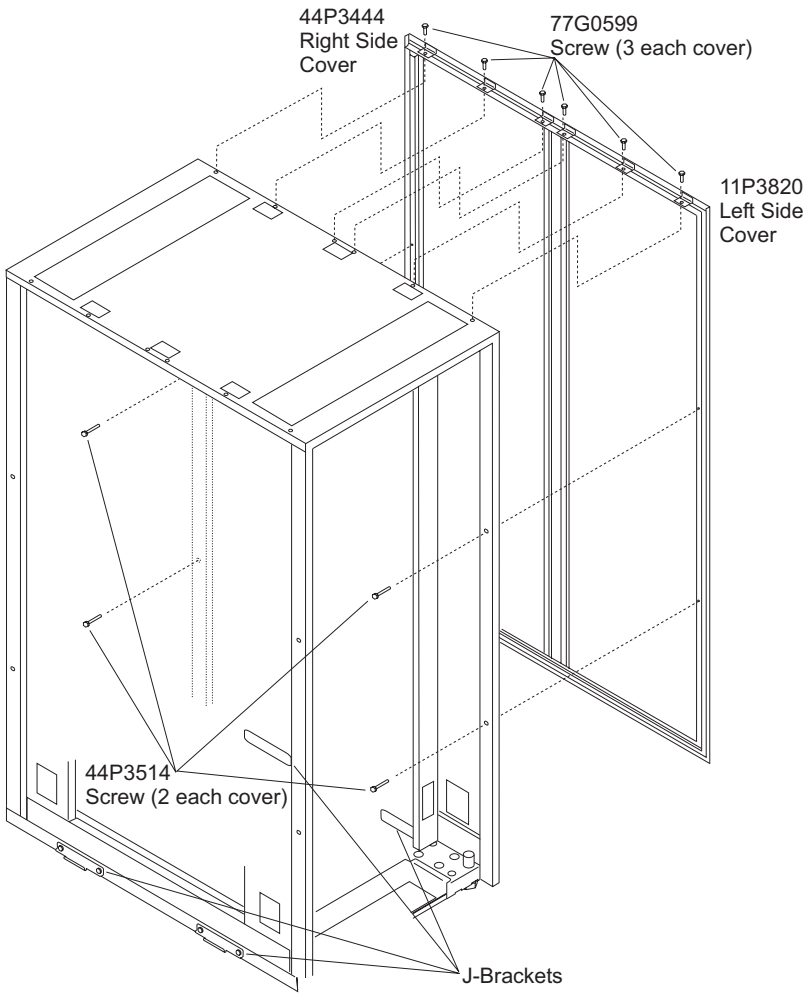
__ Step 4. Install 16 screws, **(P/N 1624804)**, holding the top frame to the frame. The screws at the corners of the frame can be installed while standing at the front or rear of the frame. The remaining 12 screws are reached through the 6 access holes in the top of the frame. You will need a small step stool or ladder to reach these screws.



__ Step 5. Install the side covers on the frame. Install the side covers on the A frame first.

- Open the package containing the side covers and the mounting screws. Select:
  a. one left side cover, **(P/N 11P3820)**
  b. six screws, **(P/N 77G0599)**
  c. one right side cover, **(P/N 44P3444)** and
  d. four screws, **(P/N 44P3514)**
- If you are here to install the side covers on the A frame, go to step 4a below.
- If you are here to install the side covers on the Z frame, go to step 4b on page B-3 below.

a. Facing the front of the A frame, the side covers are installed on the **right side** of the frame. Move to the **right side** of the A frame. Facing the **right side** of the A frame, lift the left side cover, **(P/N 11P3820)**, and set it in the J-bracket at the bottom of the frame. Go to step 4c on page B-3.



b. Facing the front of the Z frame, the side covers are installed on the **left side** of the frame. Move to the **left side** of the Z frame. Facing the **left side** of the Z frame, lift the left side cover, **(P/N 11P3820)**, and set it in the J-bracket at the bottom of the frame.

c. Install three screws, **(P/N 77G0599)**, through the three tabs into the top of the top frame. Do not tighten these screws yet.

d. Lift the right side cover, **(P/N 44P3444)**, and position it above the J-bracket on the right side of the frame.

   1) Place the left vertical edge of the right side cover against the vertical tab on the left side cover.

   2) While holding the right side cover above the J-bracket, pull the right edge of the right side cover toward you as you push the left edge against the tab on the left side cover.

   3) When the right side cover slips over the tab on the left side cover, lower the right side cover onto the J-bracket.

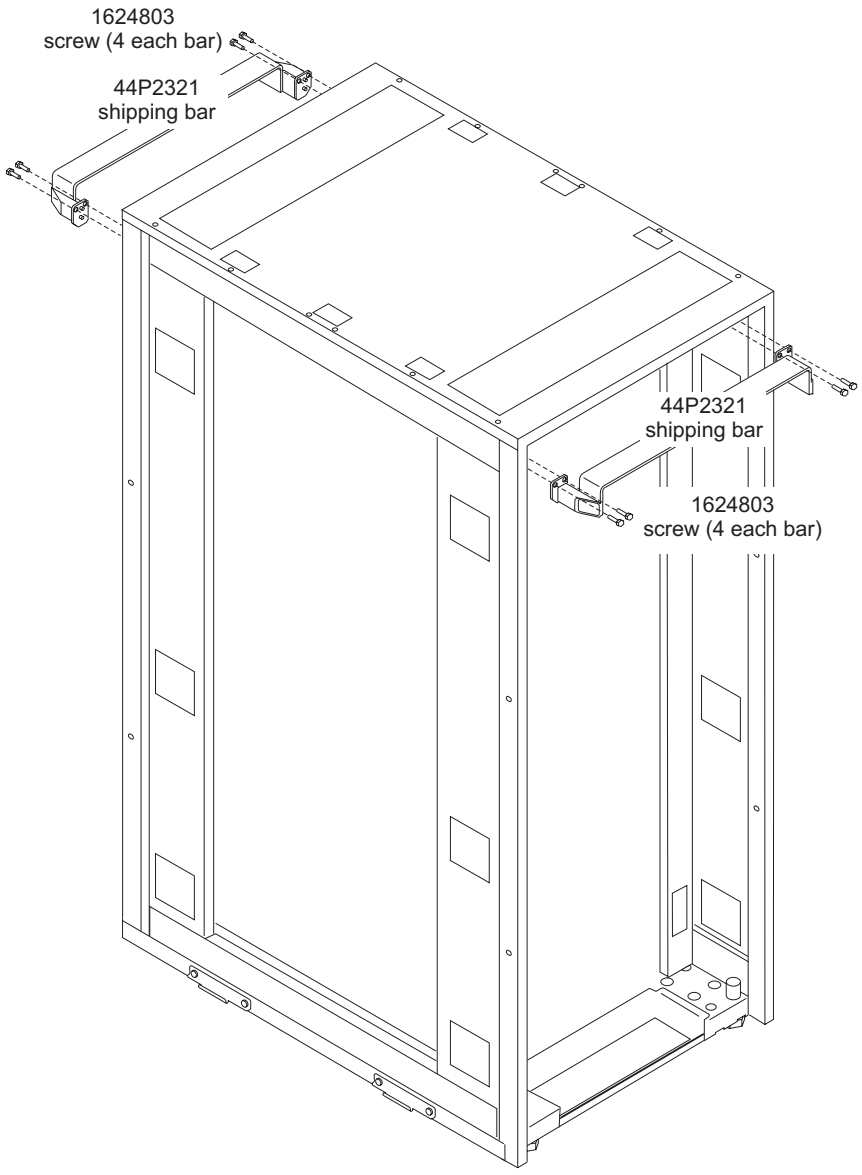
e. Install three screws, **(P/N 77G0599)**, through the three tabs into the top of the top frame. Do not tighten these screws yet.

__ Step 6. Install the four screws, **(P/N 44P3514)** through the frame rails into the outside edges of the covers. These screws are located at approximately **EIA 11** and **EIA 26**.

__ Step 7. Tighten the 3 screws at the top of the each side cover. Tighten the 2 screws along the edge of each side cover.

__ Step 8. If this is your first time to this step, return to step 3 on page B-2. Repeat steps 3 on page B-2 through 7 on page B-3 on this page to replace the top frame and side covers on frame Z. If you have replaced both top frames and all four side covers, proceed with the next step.

__ Step 9. Remove and store the two shipping bars, **(P/N 44P2321)**, and their screws, **(P/N 1624803)**, from each frame.



Return to “Fastening the frames together” on page 3-3.

Note: internal batteries will be installed later in the installation process.

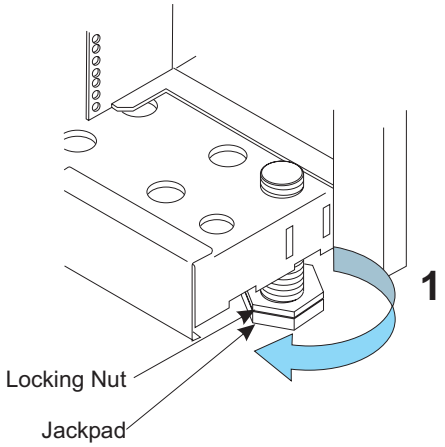
Top frame removal

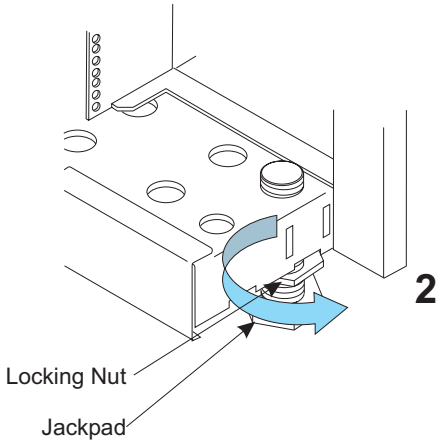
Power must be completely removed from the system and all IBFs must be removed before performing this procedure. Perform system shutdown and IBF removal before continuing if you have not already done so.

__ Step 1. To remove system power, see “Removing system power” on page A-4

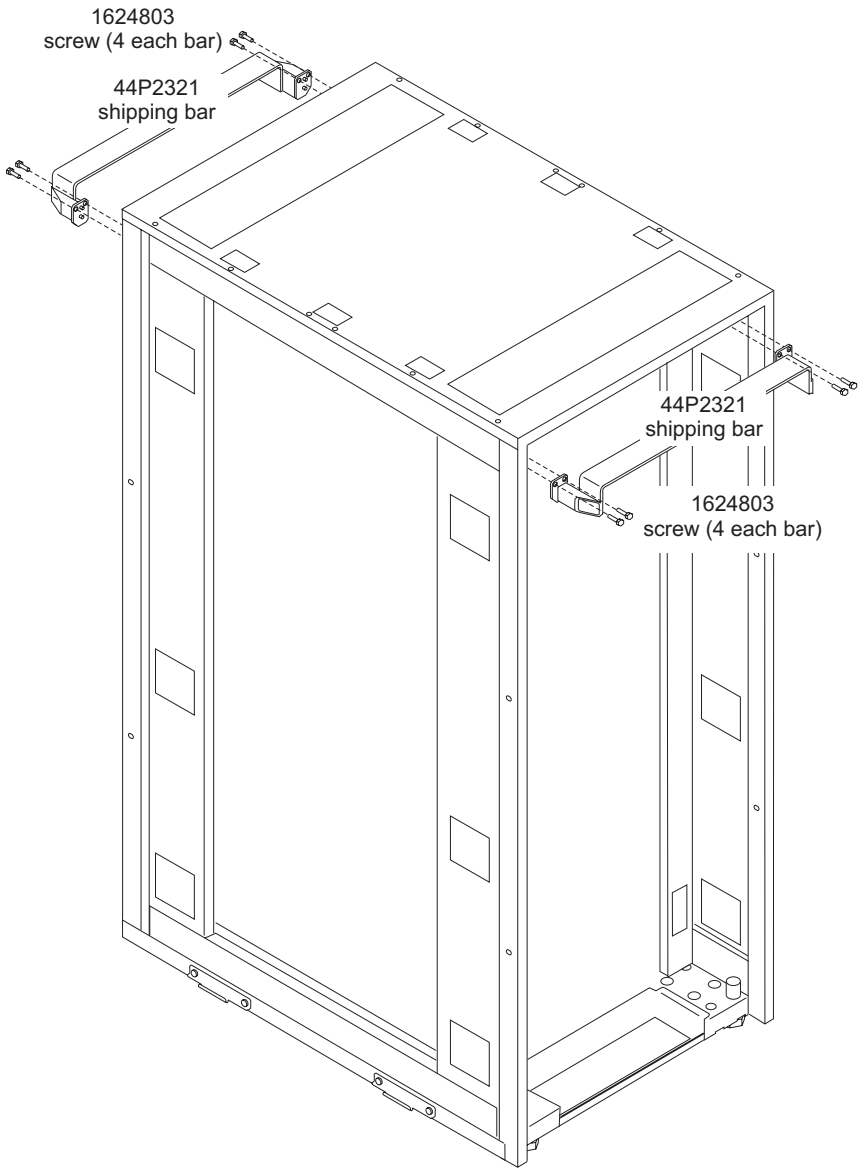
__ Step 2. To remove the batteries from each frame, see steps 6 on page A-7 through 9 on page A-7 under ″Disconnecting the remaining system cables″.

__ Step 1. Use the wrench, **P/N 31L8313**, supplied in the basic ship group, to lower the leveling pad at each corner of each frame. Lower the pad until it fully contacts the floor.



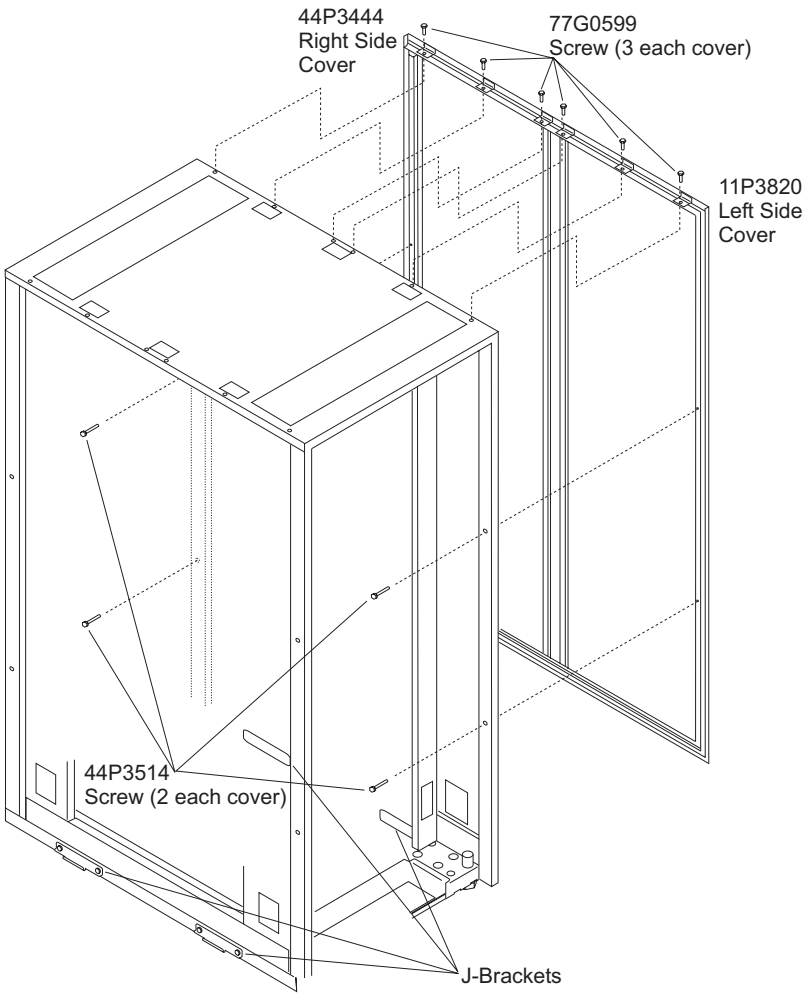


__ Step 2. Find and install the two shipping bars, **(P/N 44P2321)**, at **EIA 38**, using screws, **(P/N 1624803)**, on the front and rear of each frame.



__ Step 3. Remove the side covers on the A frame:

a. From inside the A frame, remove the four screws, **(P/N 44P3514)** that secure the outside edges of the covers. These screws are located at approximately **EIA 11** and **EIA 26**.



b. Remove the three screws, **(P/N 77G0599)**, fastening the three tabs on the top of the right side cover, **(P/N 44P3444)**.

c. Loosen the three screws, **(P/N 77G0599)**, fastening the three tabs on the top of the left side cover, **(P/N 11P3820)**.

d. Lift the right side cover, **(P/N 44P3444)**, above the J-bracket and pull the right edge of the right side cover toward you as you separate the left edge from the tab on the left side cover.

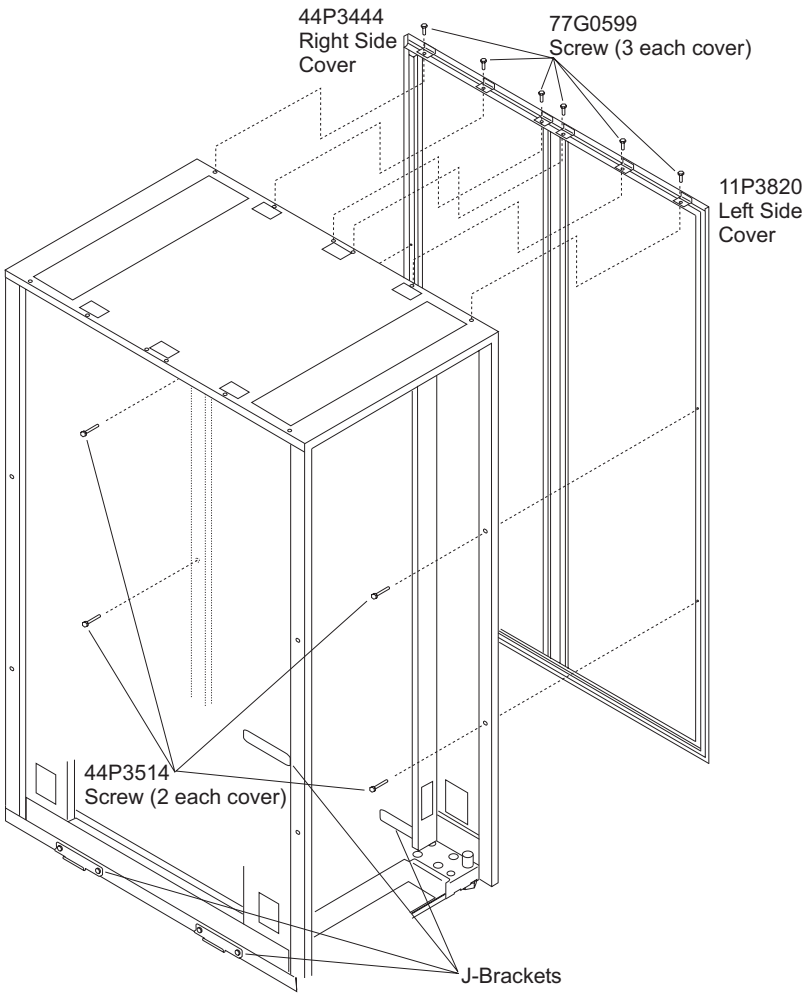
e. Set the right side cover out of the way.

f. Remove the three screws, **(P/N 77G0599)**, fastening the three tabs on the top of the left side cover, **(P/N 11P3820)**.

g. Lift the left side cover, **(P/N 11P3820)**, above the J-bracket, and set the left side cover with the right side cover.

__ Step 4. Remove the side covers on the Z frame:

a. From inside the Z frame, remove the four screws, **(P/N 44P3514)** that secure the outside edges of the covers. These screws are located at approximately **EIA 11** and **EIA 26**.



b. Remove the three screws, **(P/N 77G0599)**, fastening the three tabs on the top of the right side cover, **(P/N 44P3444)**.

c. Loosen the three screws, **(P/N 77G0599)**, fastening the three tabs on the top of the left side cover, **(P/N 11P3820)**.

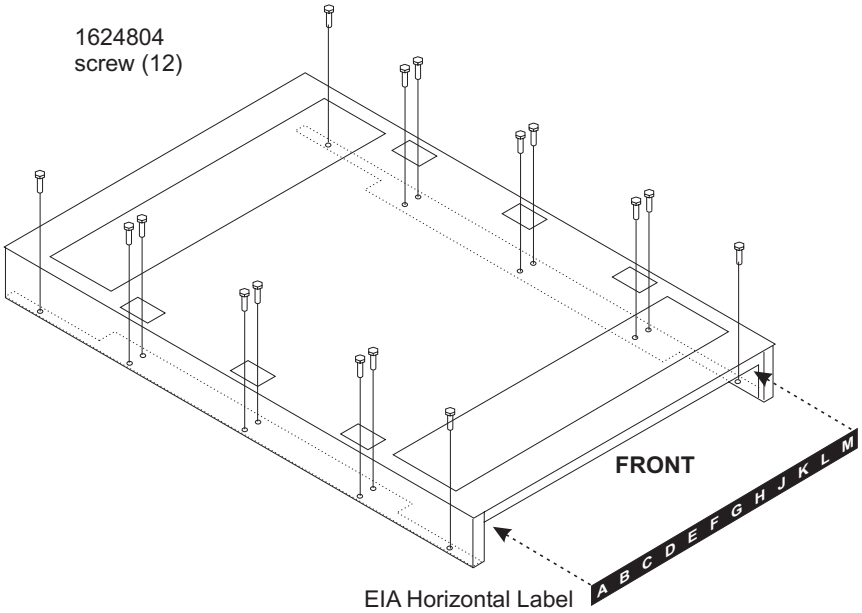
d. Lift the right side cover, **(P/N 44P3444)**, above the J-bracket and pull the right edge of the right side cover toward you as you separate the left edge from the tab on the left side cover.

e. Set the right side cover out of the way.

f. Remove the three screws, **(P/N 77G0599)**, fastening the three tabs on the top of the left side cover, **(P/N 11P3820)**.

g. Lift the left side cover, **(P/N 11P3820)**, above the J-bracket, and set the left side cover with the right side cover.

__ Step 5. Remove 16 screws, **(P/N 1624804)**, holding the top frame to the A frame. The screws at the corners of the frame can be removed while standing at the front or rear of the frame. The remaining 12 screws are reached through the 6 access holes in the top of the frame. You will need a small step stool or ladder to reach these screws. Remove the 16 screws, **(P/N 1624804)**, holding the top frame to the Z frame.



__ Step 6. Package the side covers and all loose screws and bolts for shipment.

__ Step 7. Use the wrench, **P/N 31L8313**, supplied in the basic ship group, to raise the leveling pad at each corner of each frame. Raise the pad as far up under the frame as possible. Tighten the lock nut on each pad.

Return to step 4 on page A-7 under ″Final preparation″.

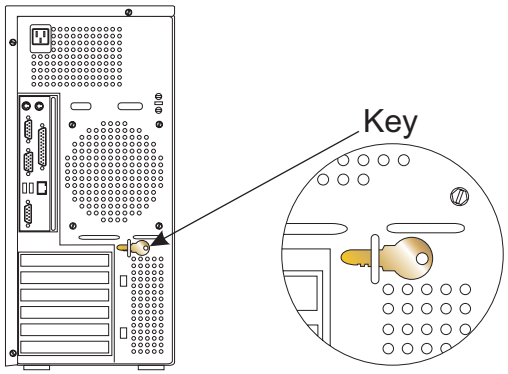
Appendix C. Installing the 8485 TKE Workstation

This section instructs you how to install the 8485 TKE Workstation and connect it to the system.

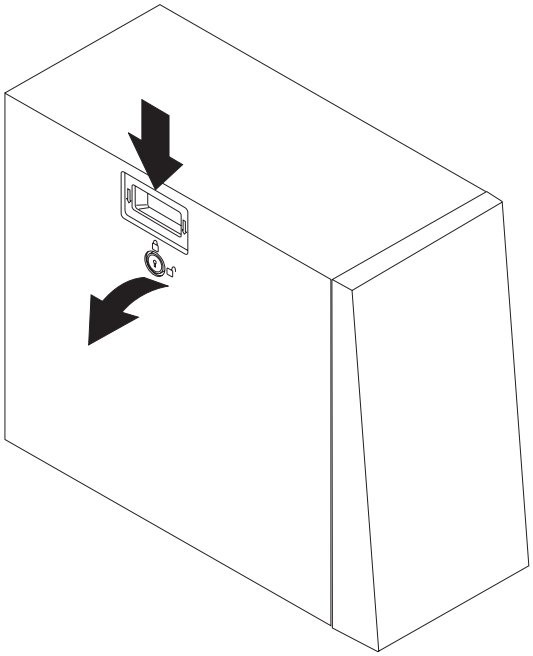
1. Open and unpack the ship box containing the TKE Workstation.

   This box also contains the cables, DVD-RAM for internal code restore, the Backup DVD-RAM, diskettes for diagnostics, and documentation. TKE 5.0 and TKE 5.1 will contain a diskette for customer-specific data. TKE 5.2 and later will contain a DVD-RAM for customer-specific data. Store the Code DVD-RAM, Backup DVD-RAM, diagnostic diskette, customer-specific data diskette or DVD-RAM, documentation, and the key in an area near the console for future service use.

2. Find the key in its storage position on the rear of the machine.



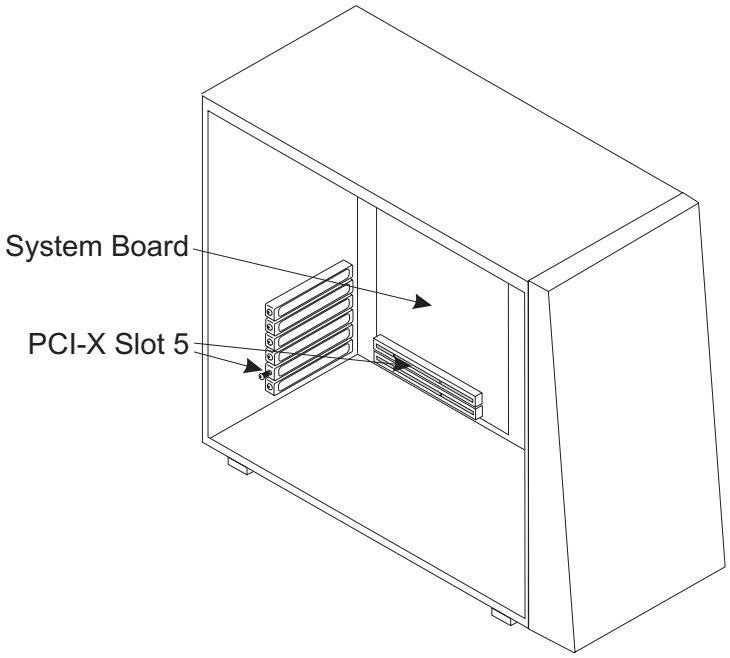
   Unlock the side cover, then press the cover latch down.



   Tilt the top of the cover away from the machine, then lift the cover off and set it aside.

3. Rotate the rear adapter retention bracket (if present) to the open (unlocked) position and remove it from the machine.

   Remove the screw securing the expansion slot cover for slot 5.



Remove the expansion slot cover and store the slot cover and its screw in a safe place for future use.

4. Install the **PCIX Cryptographic Coprocessor**
   a. Remove the PCIX Cryptographic Coprocessor from its shipping carton and static bag.

      Electrostatic discharge (ESD) can damage the card and its components. Wear an ESD wrist strap while handling and installing the card, or take the following precautions:

      Notes®:

      1) Limit your movements; this helps prevent static electricity building up around you.
      2) Prevent others from touching the card or other components.
      3) Before removing the card from the anti-static bag, touch the bag to an unpainted metal surface on the computer and hold it there for at least two seconds.
      4) Store the carton and bag as they may be needed if the workstation is transported.

   b. Verify that the jumpers on the card are positioned correctly.

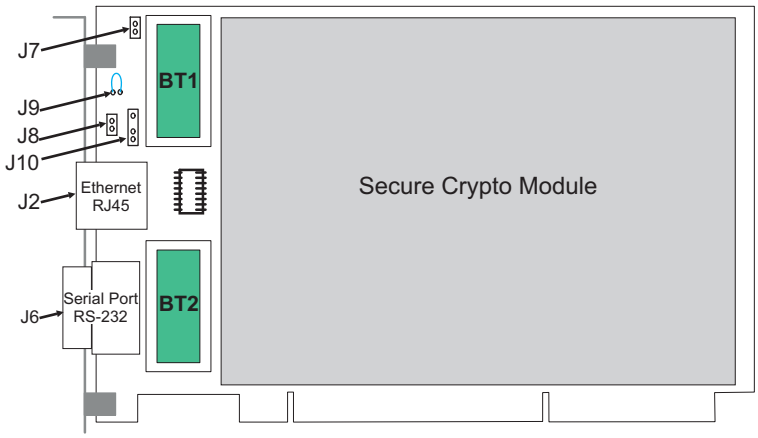


Table C-1. Jumpers on a PCIX Bus-Based Cryptographic Adapter

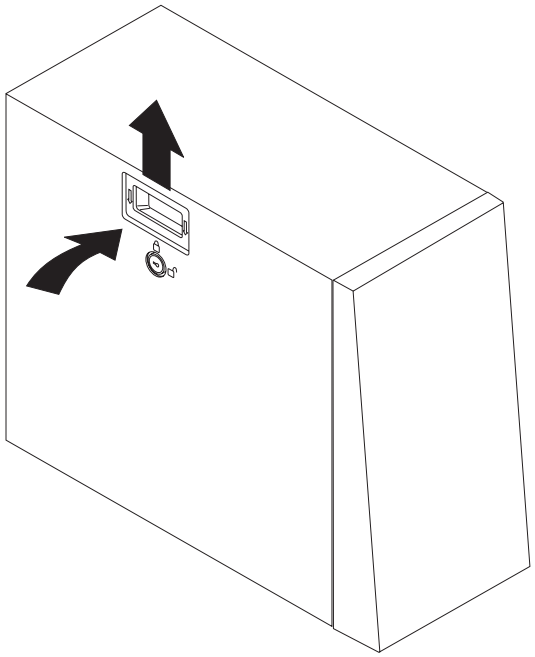
Jumper	# Pins	Name of Jumper	Jumper Position
J7	2	PCIX VPD EEPROM WRITE Jumpered = PCIX EEPROM write-enabled No jumper = PCIX EEPROM write disabled	Jumpered
J10	3	BATTERY REPLACEMENT Connects to power cord externally while changing batteries BT1 and BT2.	Not Jumpered
J6	9	RS232 SERIAL PORT D-shell connector	
J2	8	Ethernet PORT RJ45 connector	
J11	5	EXTERNAL INTRUSION LATCH Pin 1 - Ground Pin 2 - B03 PCIX edge connector Pin 3 - External Warning Pin 4 - B94 PCIX edge connector Pin 5 - Ground Pin layout viewed from the back of the card: o o o o o 5 4 3 2 1	Pins 1,2,3,4 jumpered = Hydra 3, iSeries®, pSeries®, and OEM applications [PCIX slot pin B94] Pins 2,3,4,5 jumpered = Hydra 1.75 applications [PCIX slot pin B03]
J9	2	BATTERY DISCONNECT WIRE Allows opening the battery circuit by cutting the jumper wire. This zeroizes the on-card secure data and keys for the application.	Jumpered
J8	2	EXTERNAL INTRUSION LATCH DISABLE JUMPER HEADER This header may have a BERG jumper installed to disable the warning activation. Platforms that use the External Intrusion Latch Warning feature will remove this jumper in their assembly process.	Not Jumpered

c. Remove the expansion slot cover located over slot 5. Insert the Coprocessor in slot 5, making sure it is firmly seated.

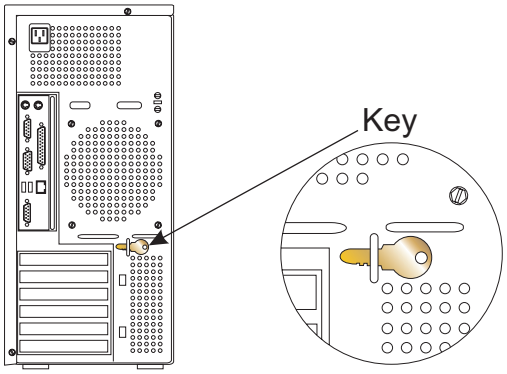
Secure the adapter with the screw supplied. Do not replace the rear adapter retention bracket.

5. Insert the tabs inside the side cover into the slots in the server frame.

   Press the side cover against the frame, making certain that the tabs all fit into their corresponding slots, then push the cover latch up.



Return the key to its storage position on the rear of the machine.



Note: If you do not have the Smart Card Reader option continue to step 8 on page C-5.

6. Installing the Omnikey Smart Card Reader

   __ a. The Omnikey reader is a USB Smart Card reader. If you are using an Omnikey reader, simply plug it into any available USB port on the TKE machine.

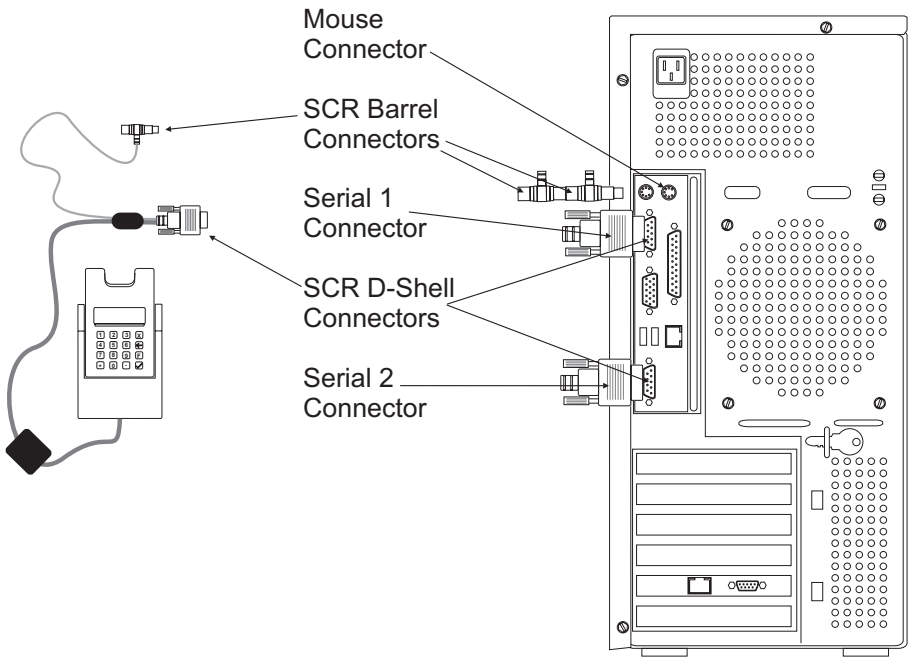
7. Installing the Kobil Smart Card Reader

   __ a. Verify there is no power cord connected to the TKE system unit.

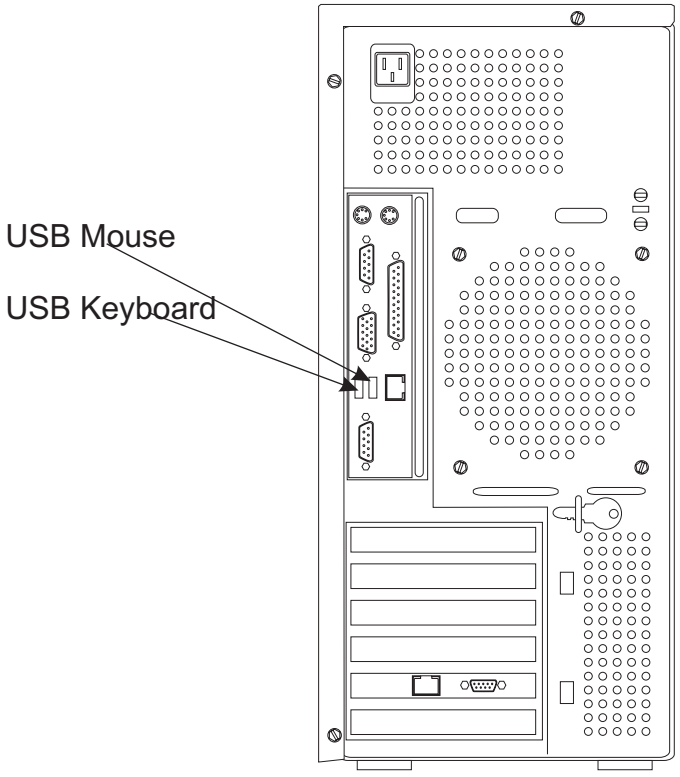
   __ b. Plug one barrel connector from the Smart Card Reader(s) to the PS/2 mouse port .

   __ c. Plug the second barrel connector from the Smart Card Reader(s) to the back of the first barrel connector.

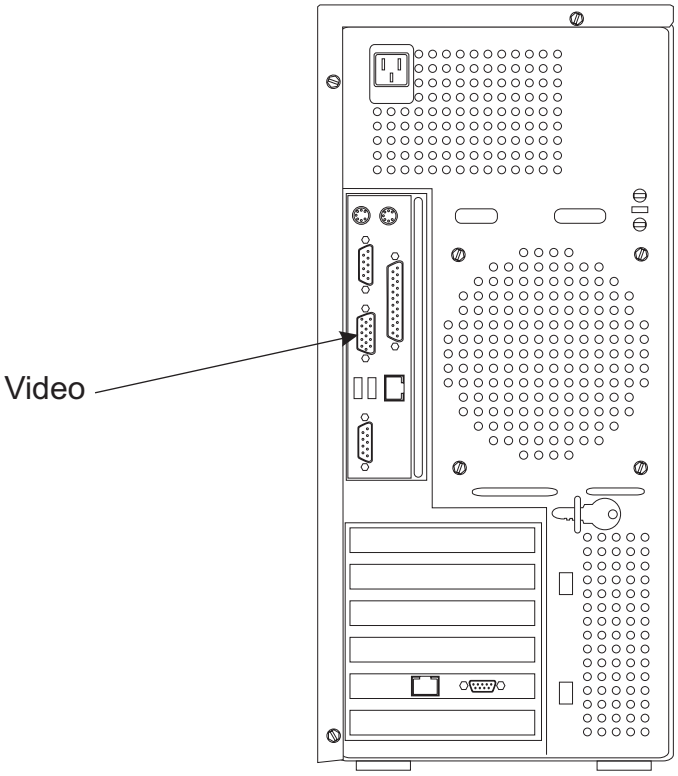
__ d. Connect the D-shell serial cable from one reader to Serial1 and the D-shell serial cable from the other reader to the Serial 2 connection at the rear of the system unit.



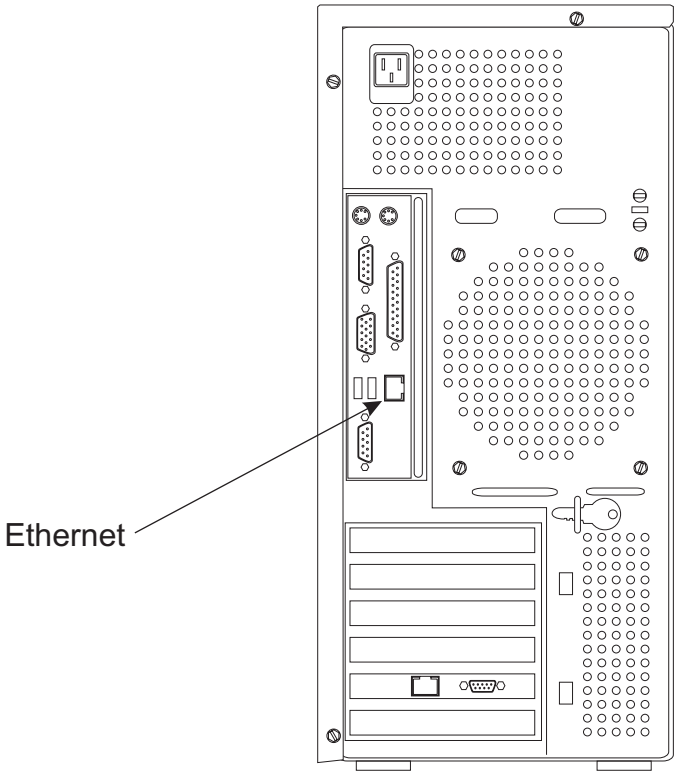
8. Connect the mouse cable to the USB port at the left of the Ethernet connector. Connect the keyboard cable to the left-most USB port.



9. Connect the display signal cable to the display connection at the rear of the system unit. You will find a display symbol defining the correct plug location.



10. Plug the Ethernet cable, **P/N 41V0143**, into the RJ45 port on the system unit connector panel.



Connect the other end of the Ethernet cable to the Switch.

11. Perform™ the impedance measurements using the ECOS C7106 tester (USA only).

If the ECOS tester is not available, go to step 12.

When the impedance measurements are correct, continue with the next step.

12. This procedure checks for a ground/earth resistance of one ohm or less at the receptacle ground/earth pin using the CE meter.

    The wall breaker should be OFF. Do the following to check the customer's power source:

    __ a. Using the CE meter, measure the resistance from the ground/earth pin of the receptacle to building ground/earth. The reading should be one ohm or less.

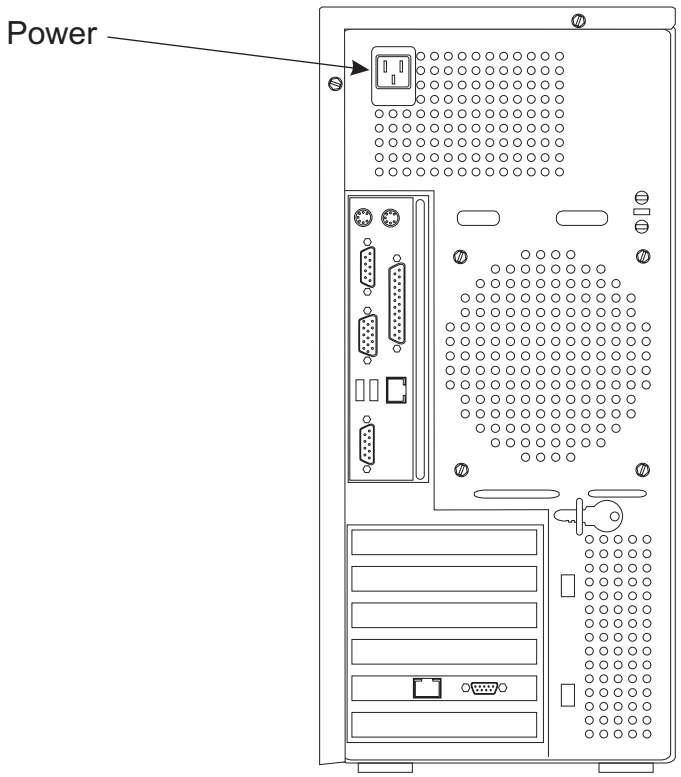
    __ b. For metal receptacle shells, also measure the resistance from the ground/earth pin of the receptacle to the metal shell. This reading should be 0.1 ohm or less.

    Note: Digital meters may give unstable resistance readings if leakage current is flowing in the building ground/earth circuit. If the reading appears unstable, or is greater than one ohm, contact your branch office installation planning representative or field manager.

13. **Attention:** Check the primary voltage switches on the system unit, display, and, if installed, the modem to ensure proper setting for your customer's power source (115V or 230V).

    Note: The display may not have primary voltage switches. Ensure it is enabled for the input voltage supplied by your customer.

    Connect the system unit and video display power cables to the rear of the units



    Connect the power cables to building power.

14. Do the following to complete the installation:

__ a. Power on the display, system unit, and, if installed, the modem and security interface unit.

__ b. Ensure that the power on indicators are on for all units.

__ c. Wait for the TKE Workstation to complete loading.

__ d. Do not start the TKE application. Turn the Workstation over to the customer to complete the setup.

If the TKE Workstation does not start, use the procedures in this manual to resolve the problem.

Appendix D. Frame tie-down

These instructions are for the installation of Feature Code 7996, frame tie-down for low raised floor installations (229 - 330 mm or 9 - 13 in.), or Feature Code 7995, frame tie-down for high raised floor installations (305 - 559 mm or 12 - 22 in.).

The frame should be unpacked and positioned in the room by a professional mover. The eyebolts should be installed according to the specifications in the Appendix titled ″Frame Tie-Down″ in the *Installation Manual for Physical Planning* and the concrete installation should be stable. If the frame or the eyebolts are not ready for you to perform the installation, consult with the customer and your marketing reperesentative before proceeding with any part of the frame tie-down install process.

These tie downs are designed to help secure the frame on a raised floor installation. This document and its contents (drawings, data, instructions etc.) are provided on AN ″AS IS″ BASIS, WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OR CONDITIONS OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. We conducted limited tests and, therefore, not all situations are tested. The following information is provided to help you install the design.

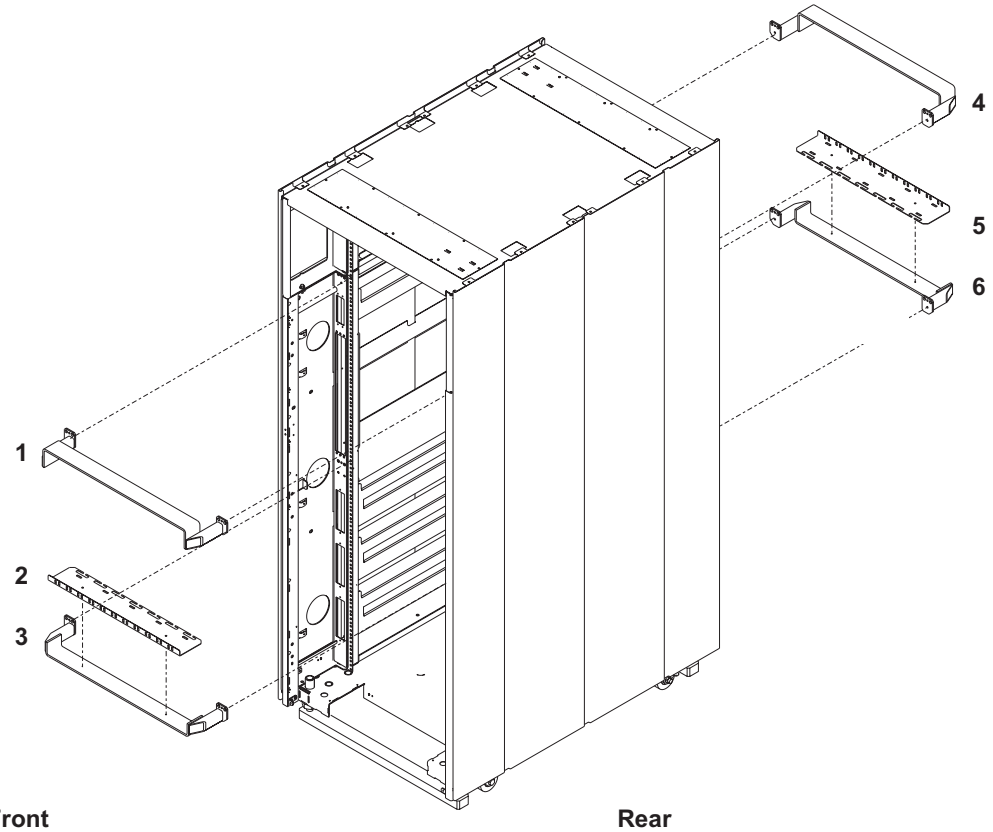
Installing the ruggedized frame kit

Refer to the table below for the parts to be installed. This installation may not require you to install all of the parts shown in the illustrations.

Table D-1.

Upper Bracket		Lower Bracket		Cable Tray		Support Bar	
A Frame Front 41V1825	A Frame Rear 41V1825	A Frame Front 44P4656		A Frame Front 44P4657		A Frame Rear 11P3531	
Z Frame Front 41V1825	Z Frame Rear 41V1825	Z Frame Front 44P4656	Z Frame Rear 44P4656	Z Frame Front 44P4657	Z Frame Rear 44P4657		Z Frame Rear 11P3531

A Frame



Front

1 Upper Support bracket, 41V1825
Screw, M8, 1624804 (4)

2 Cable Tray, 44P4657
Screw, M5, 1624775 (2)

3 Lower Support bracket, 44P4656
Screw, M8, 1624804 (4)

Rear

4 Upper Support bracket, 41V1825
Screw, M8, 1624804 (4)

5 Cable Tray, 44P4657
Screw, M5, 1624775 (2)

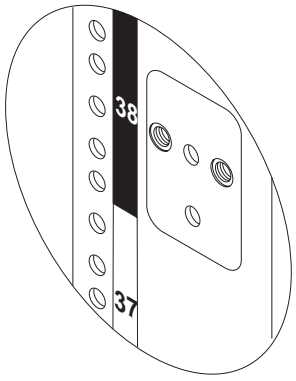
6 Lower Support bracket, 44P4656
(11P3527 for M/T 2084 ONLY)
Screw, M8, 1624804 (4)

Figure D-1. A Frame ruggedizing brackets

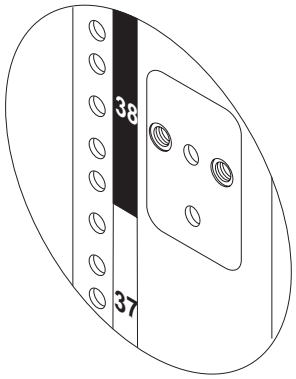
Check off each step as you proceed.

__ Step 1. *Use Figure D-1 on page D-2 as a reference for steps 1 through 4.*

Use four M8 screws (1624804) to install the upper bracket in the **front** of the A frame at EIA unit 38.

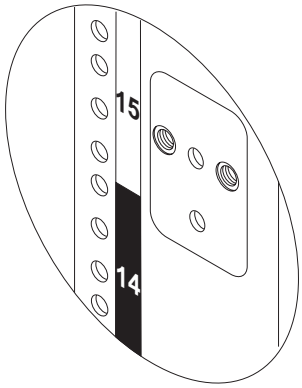


__ Step 2. Use four M8 screws (1624804) to install the upper bracket in the **rear** of the A frame at EIA unit 38.



__ Step 3. Remove the **front** lower cable tray at EIA 15. Use two M5 screws (1624775) to fasten a cable tray (44P4657) to a lower bracket (44P4656).

__ Step 4. Use four M8 screws (1624804) to install the lower bracket and cable tray assembly in the **front** of the A frame at EIA unit 15.



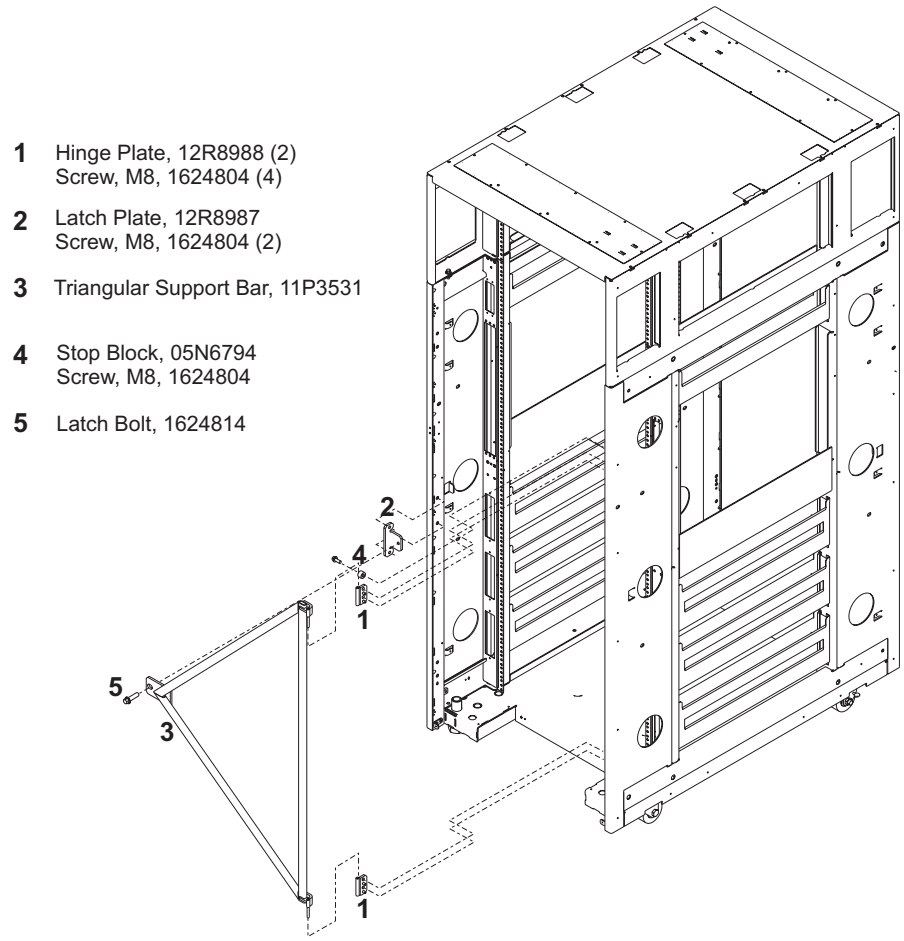


Figure D-2. A Frame triangular support bar

__ Step 5. *Use Figure D-2 as a reference for steps 5 through 10.*

Use two M8 screws (1624804) to install a hinge plate (12R8988) on the inside of the **front right** vertical frame member at approximately EIA unit 30.

__ Step 6. Use two M8 screws (1624804) to install a hinge plate (12R8988) on the inside of the **front right** vertical frame member at approximately EIA unit 8.

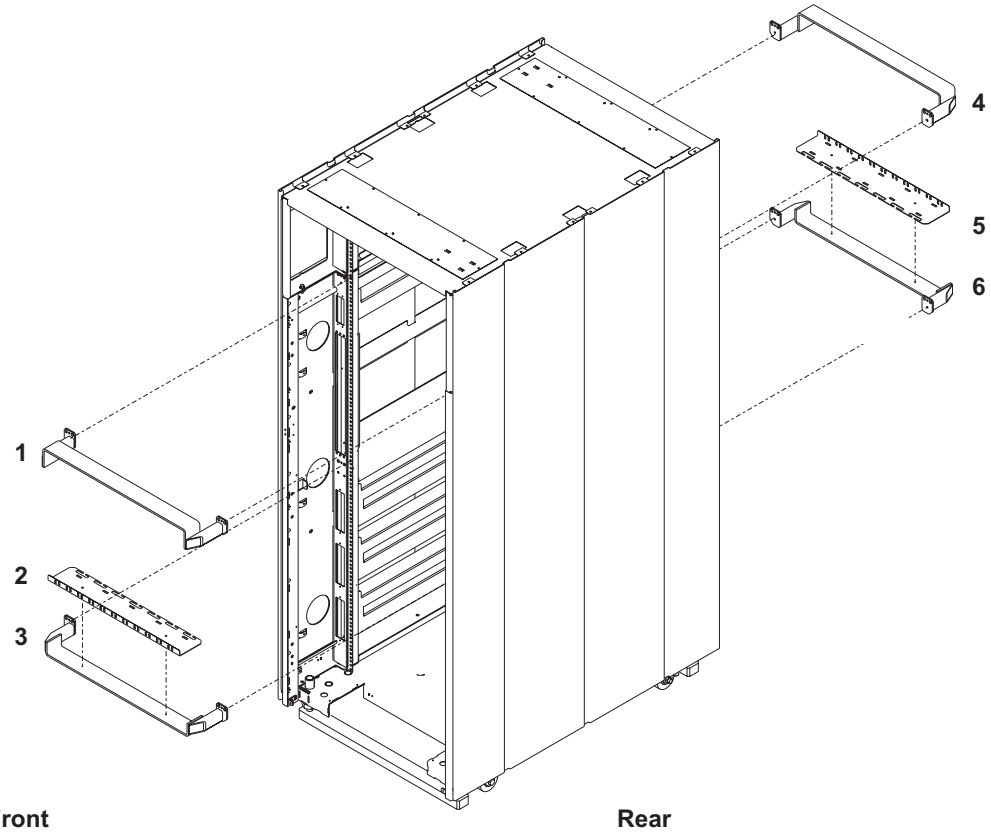
__ Step 7. Use two M8 screws (1624804) to install the latch plate (12R8987) on the inside of the **front left** vertical frame member at approximately EIA unit 18.

__ Step 8. Lower the hinge pins on the triangular support bar (11P3531) into the hinges at EIA 30 and 8. Check to see that the bar pivots freely.

__ Step 9. Close the bar and fasten it to the latch plate with the latch bolt (1624814).

__ Step 10. Use one M8 screw (1624804) to install the stop block (05N6794) on the inside of the **front right** vertical frame member at approximately EIA unit 32.

Z Frame



Front

1 Upper Support bracket, 41V1825
Screw, M8, 1624804 (4)

2 Cable Tray, 44P4657
Screw, M5, 1624775 (2)

3 Lower Support bracket, 44P4656
Screw, M8, 1624804 (4)

Rear

4 Upper Support bracket, 41V1825
Screw, M8, 1624804 (4)

5 Cable Tray, 44P4657
Screw, M5, 1624775 (2)

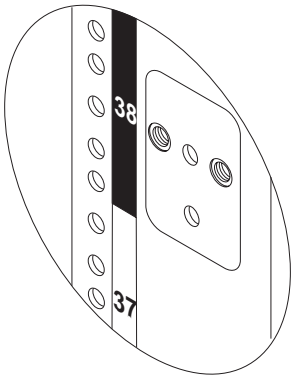
6 Lower Support bracket, 44P4656
(11P3527 for M/T 2084 ONLY)
Screw, M8, 1624804 (4)

Figure D-3. Z Frame ruggedizing brackets

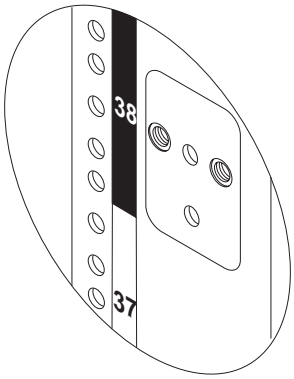
Check off each step as you proceed.

__ Step 1. *Use Figure D-3 on page D-5 as a reference for steps 1 through 6.*

Use four M8 screws (1624804) to install the upper bracket in the **front** of the Z frame at EIA unit 38.

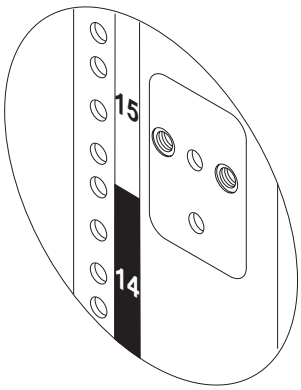


__ Step 2. Use four M8 screws (1624804) to install the upper bracket in the **rear** of the Z frame at EIA unit 38.



__ Step 3. Remove the **front** lower cable tray at EIA 15. Use two M5 screws (1624775) to fasten a cable tray (44P4657) to a lower bracket (44P4656).

__ Step 4. Use four M8 screws (1624804) to install the lower bracket and cable tray assembly in the **front** of the Z frame at EIA unit 15.



__ Step 5. Remove the **rear** lower cable tray at EIA 15. Use two M5 screws (1624775) to fasten a cable tray (44P4657) to a lower bracket (44P4656).

__ Step 6. Use four M8 screws (1624804) to install the lower bracket and cable tray assembly in the **rear** of the Z frame at EIA unit 15.

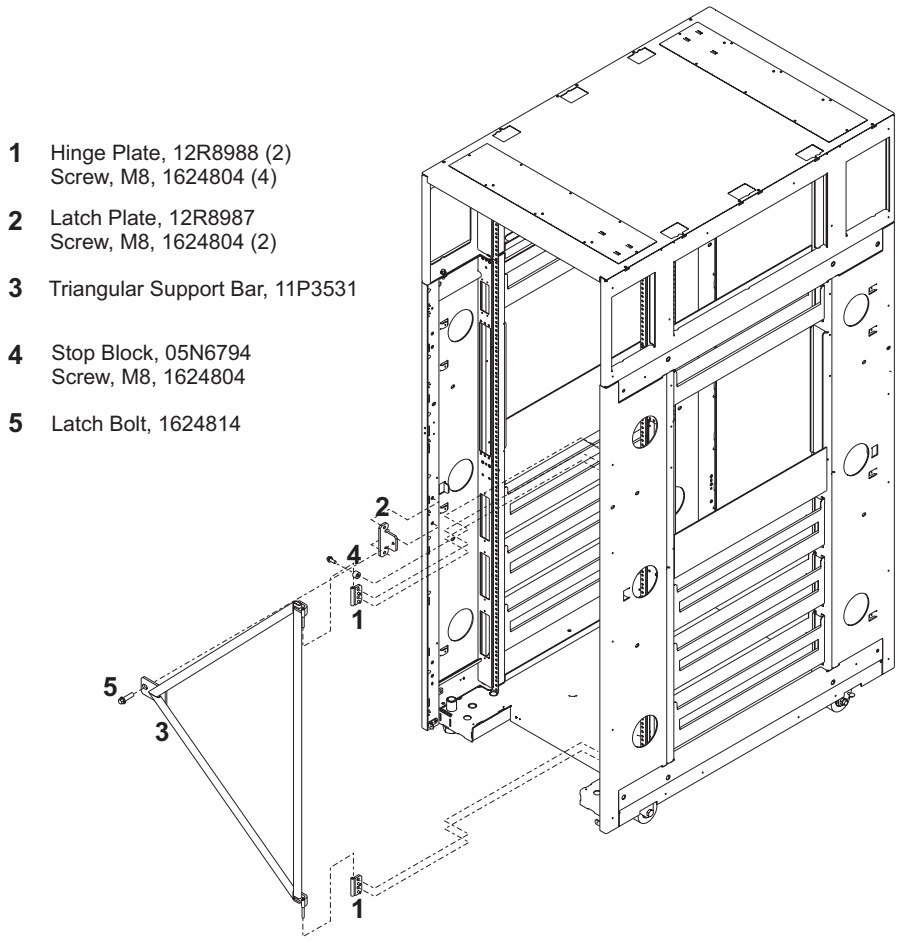


Figure D-4. Z Frame triangular support bar

__ Step 7. *Use Figure D-4 as a reference for steps 7 through 12.*

Use two M8 screws (1624804) to install a hinge plate (12R8988) on the inside of the **front right** vertical frame member at approximately EIA unit 30.

__ Step 8. Use two M8 screws (1624804) to install a hinge plate (12R8988) on the inside of the **rear right** vertical frame member at approximately EIA unit 8.

__ Step 9. Use two M8 screws (1624804) to install the latch plate (12R8987) on the inside of the **rear left** vertical frame member at approximately EIA unit 18.

__ Step 10. Lower the hinge pins on the triangular support bar (11P3531) into the hinges at EIA 30 and 8. Check to see that the bar pivots freely.

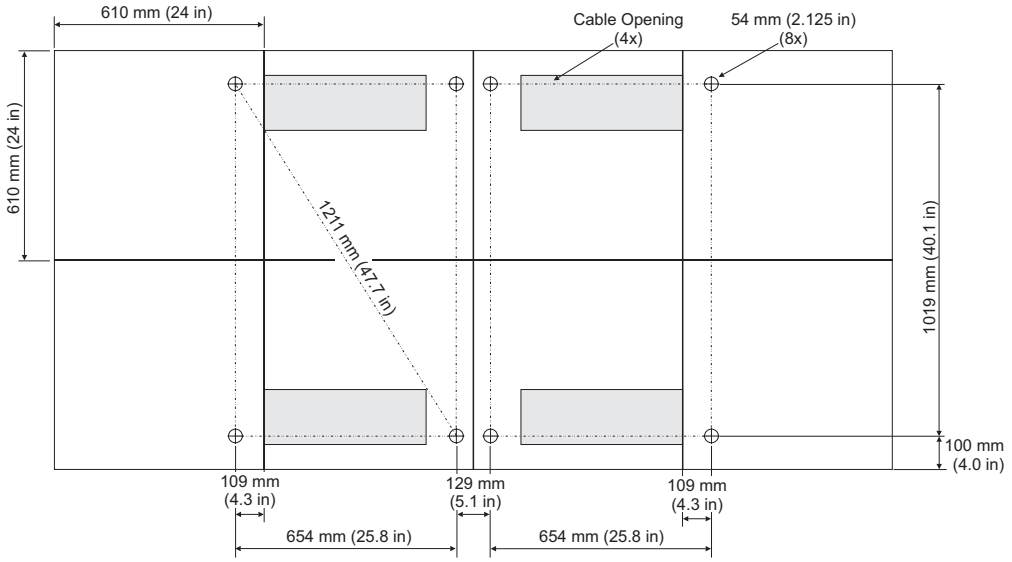
__ Step 11. Close the bar and fasten it to the latch plate with the latch bolt (1624814).

__ Step 12. Use one M8 screw (1624804) to install the stop block (05N6794) on the inside of the **rear right** vertical frame member at approximately EIA unit 32.

Installing the raised floor tie-down kit

Before starting the tie-down kit installation, check the floor panels to be sure all of the cuts match the dimensions in the following illustration and in the illustration in “Raised floor panels” on page 3-2.

Eyebolt positioning for 610 mm (24 in) floor tiles



Eyebolt positioning for 600 mm (23.5 in) floor tiles

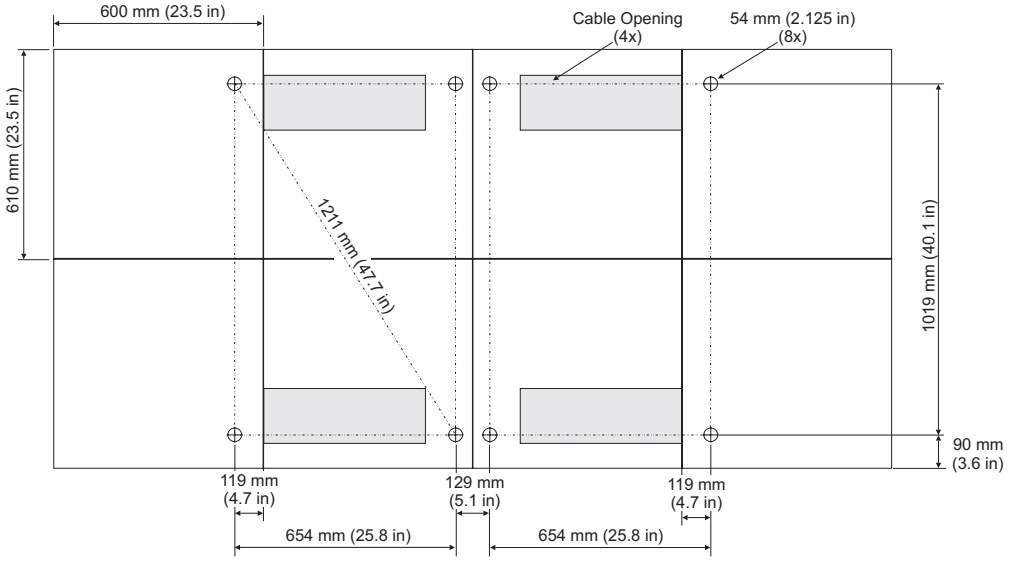


Figure D-5. Floor panel cutouts

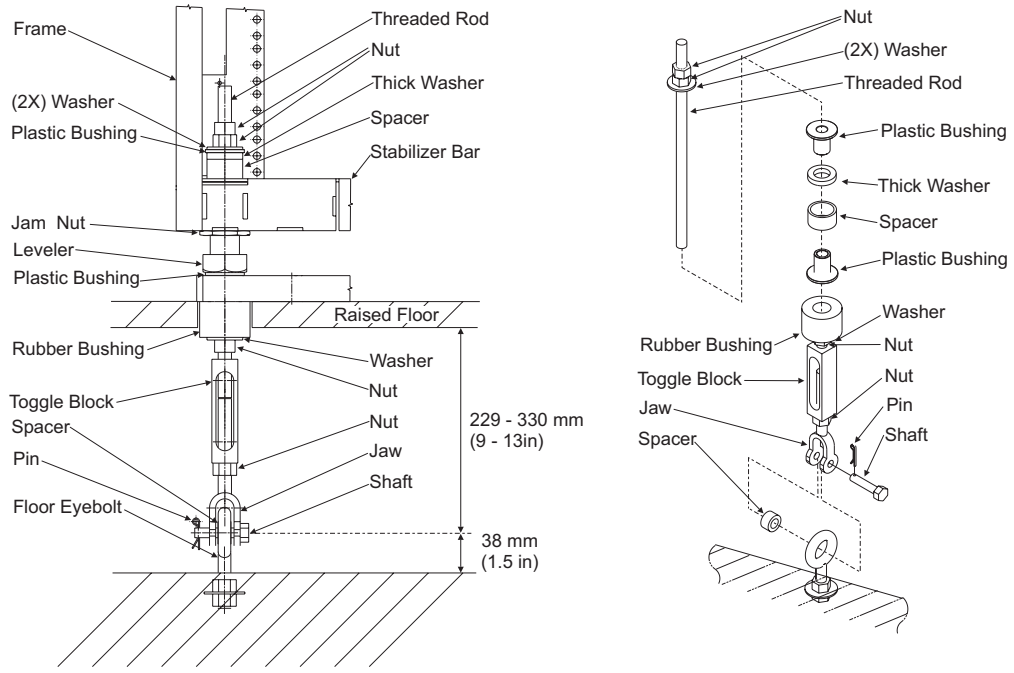


Figure D-6. Turnbuckle assembly - low raised floor (FC 7996)

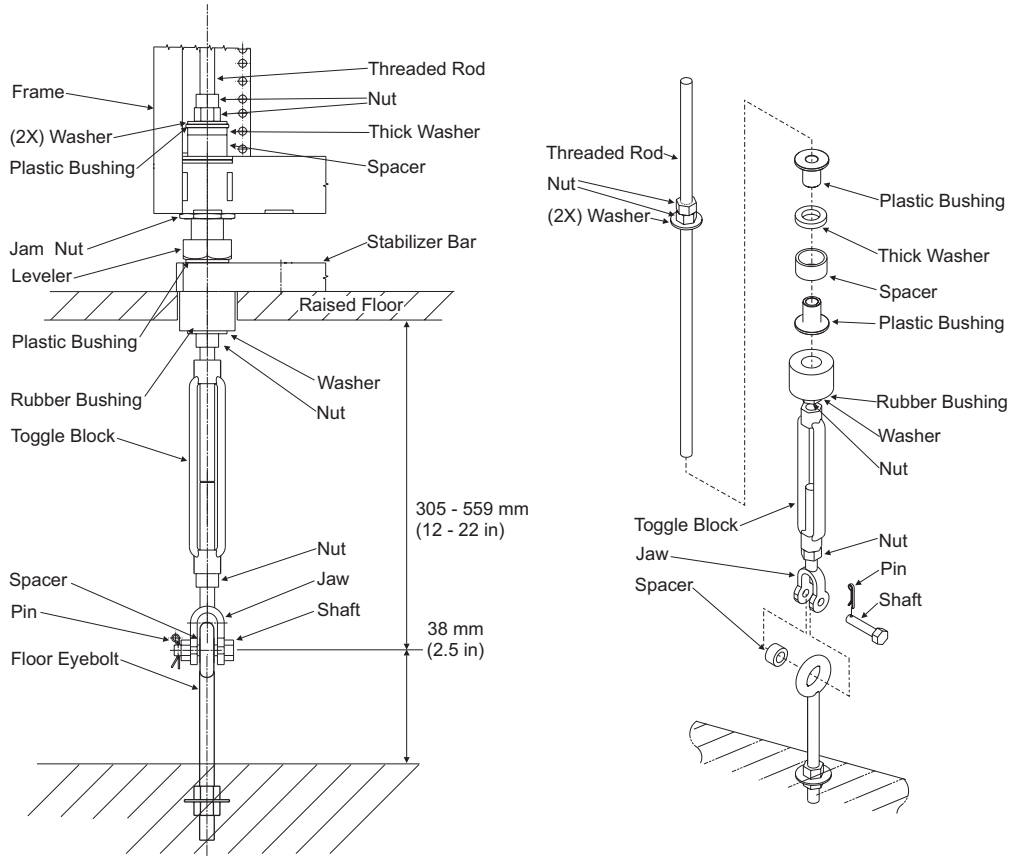


Figure D-7. Turnbuckle assembly - high raised floor (FC 7995)

Check off each step as you proceed.

__ Step 1. Refer to either Figure D-6 on page D-9 or Figure D-7 on page D-9 and remove all of the turnbuckle parts above the toggle block.

__ Step 2. Refer to either illustration above and remove the pin, shaft and spacer from the lower jaw of one of the turnbuckle assemblies.

Note: The shaft may be secured with a nut instead of a pin.

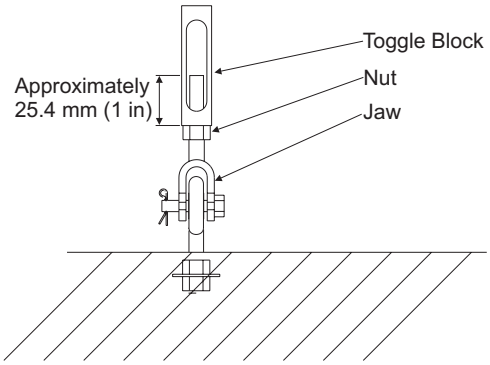
__ Step 3. Beginning at the right front corner of the A frame, place the jaw spacer inside the opening of the right front eyebolt.

__ Step 4. Place the jaw over the eyebolt and spacer.

__ Step 5. Insert the shaft through the eyebolt and spacer and secure it with either the pin or the nut.

__ Step 6. Loosen the nut above the jaw.

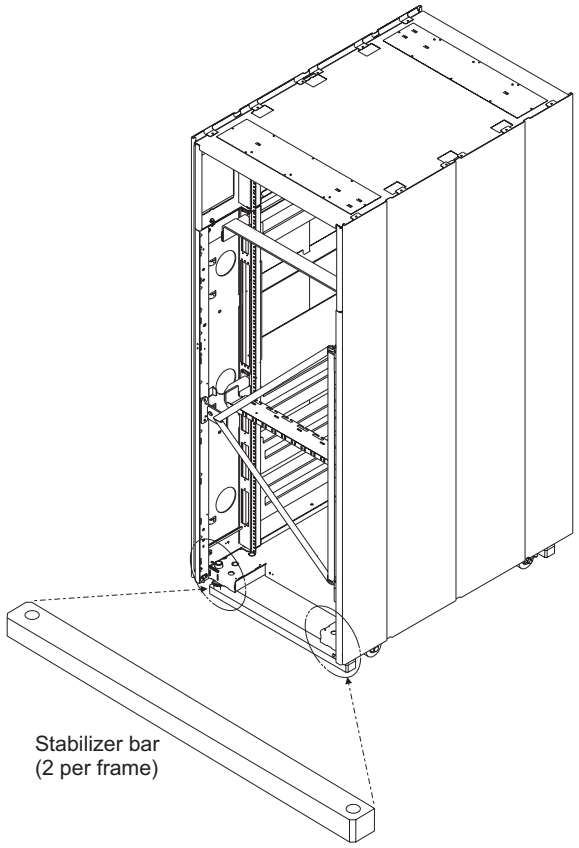
__ Step 7. Turn the body of the turnbuckle so that approximately 25.4 mm (1 in) of the threaded shaft on the top of the jaw is inside the toggle block.



__ Step 8. Tighten the nut above the jaw securely against the bottom of the toggle block.

__ Step 9. Move the server frame into position over the holes in the floor tiles and lower both rear levelers to keep the frame from moving while you are working on the front turnbuckles.

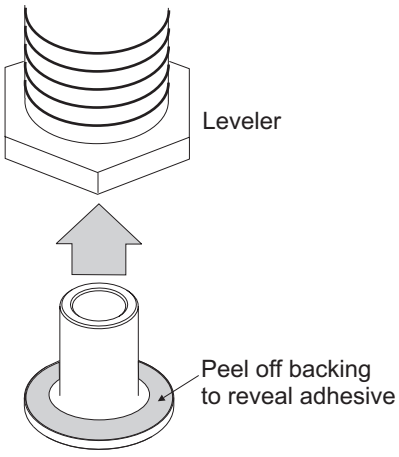
__ Step 10. Place the stabilizer on the floor tiles, with the hole in each end of the stabilizer aligned with the frame leveler and the holes in the floor tile.



__ Step 11. Read the following note before proceeding.

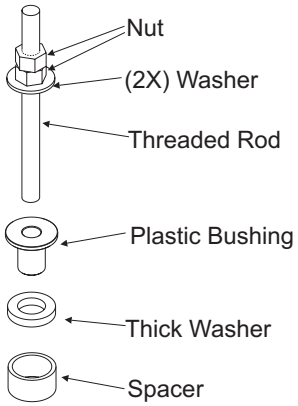
Note: The plastic bushing is intended to isolate the metal leveler from ground. If frame-to-ground isolation is not required, the bushing may be omitted.

Peel off the paper backing on the plastic bushing and press the bushing to the bottom of the leveler.



__ Step 12. Turn the leveler down until it contacts the stabilizer bar.

__ Step 13. Place the following parts down through the leveler:

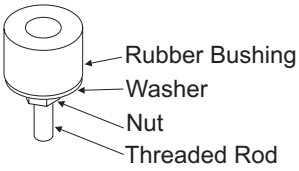


- The spacer
- The thick washer
- The other plastic bushing

Note: The plastic bushing is intended to isolate the metal leveler from ground. If frame-to-ground isolation is not required, the bushing may be omitted.

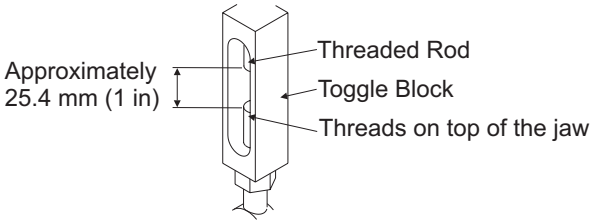
- The two washers
- The threaded rod with the two nuts at the top.

__ Step 14. From under the floor tile, place the rubber bushing over the bottom of the threaded rod and push it up against the bottom of the stabilizer.



__ Step 15. Place the remaining washer and nut on the bottom of the threaded rod and thread the nut approximately 101.6 mm (4 in) up the rod.

__ Step 16. Insert the lower end of the threaded rod into the toggle block and turn the rod until there is approximately 25.4 mm (1 in) between the bottom end of the threaded rod and the end of the threads on top of the jaw.



__ Step 17. Tighten down the two nuts at the top of the threaded rod, lower nut first, until all vertical play is removed from the turnbuckle assembly. Finger tighten the lower nut, then use a wrench to tighten the upper nut against the lower one.

__ Step 18. Tighten up the nut below the rubber bushing so that the bushing is pressing firmly against the bottom of the stabilizer bar.

__ Step 19. Repeat this entire procedure for the left front corner of the frame, then the two rear corners of the frame.

__ Step 20. After completing the fourth turnbuckle assembly, go back and check the other turnbuckles and adjust the top two nuts to remove any vertical play.

__ Step 21. If you had to remove additional vertical play, also tighten the nut under the rubber bushing to make certain the bushing is pressing firmly against the bottom of the stabilizer bar.

__ Step 22. Repeat all steps for the Z frame.

Frame tie-down is complete when all turnbuckles for this server are installed and there is no vertical play in any turnbuckle.

Installing the ruggedized cover door latch kit

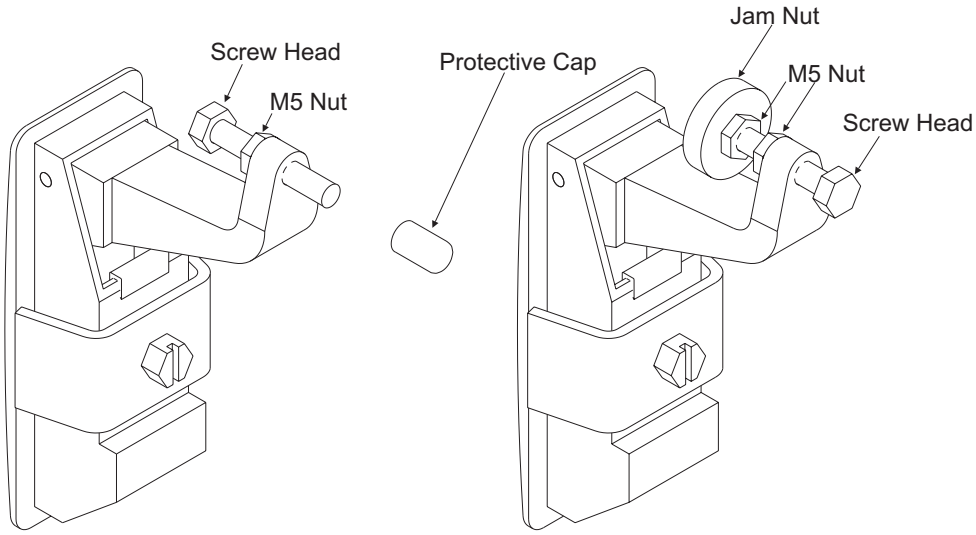


Figure D-8. Ruggedized door latch kit

Check off each step as you proceed.

__ Step 1. Remove the protective cap from the screw.

__ Step 2. Remove the screw and M5 nut from the latch.

__ Step 3. Remove the M5 nut from the screw.

__ Step 4. Reverse the screw and thread it back into the latch.

__ Step 5. Thread the original M5 nut onto the screw.

__ Step 6. Thread the M5 nut from the kit onto the screw.

__ Step 7. Thread the large jam nut from the kit onto the screw. The end of the screw should be flush with the outer surface of the large jam nut.

__ Step 8. Tighten the new M5 nut against the large jam nut.

__ Step 9. Adjust the screw to latch securely when closed, then tighten the original M5 nut against the latch body.

__ Step 10. Repeat all steps for each latch kit you received.

Return to the install procedure at the paragraph under the heading “Frame tie-down” on page 3-10.

Appendix E. Notices

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

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

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

IBM Director of Licensing
IBM Corporation
North Castle Drive
Armonk, NY 10504-1785 U.S.A.

The following paragraph does not apply to the United Kingdom or any other country where such provisions are inconsistent with local law:

INTERNATIONAL BUSINESS MACHINES CORPORATION PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

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

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

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

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

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

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

All IBM prices shown are IBM's suggested retail prices, are current and are subject to change without notice. Dealer prices may vary.

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

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

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

Trademarks

IBM, the IBM logo, and ibm.com are trademarks or registered trademarks of International Business Machines Corporation in the United States, other countries, or both. If these and other IBM trademarked terms are marked on their first occurrence in this information with a trademark symbol (® or ™), these symbols indicate U.S. registered or common law trademarks owned by IBM at the time this information was published. Such trademarks may also be registered or common law trademarks in other countries. A current list of IBM trademarks is available on the Web at "Copyright and trademark information" at www.ibm.com/legal/copytrade.shtml.

INFINIBAND, InfiniBand Trade Association and the INFINIBAND design marks are trademarks and/or service marks of the INFINIBAND Trade Association.

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

Electronic emission notices

The following statements apply to this IBM product. The statement for other IBM products intended for use with this product will appear in their accompanying manuals.

Federal Communications Commission (FCC) Statement

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if

not installed and used in accordance with the instructions contained in the installation manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

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

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

Canadian Department of Communications Compliance Statement

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

Avis de conformlté aux normes du ministère des Communications du Canada

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

European Union (EU) Electromagnetic Compatibility Directive

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

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

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

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

EC Declaration of Conformity (In German)

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

Dieses Produkt entspricht den Schutzanforderungen der EU-Richtlinie 89/336/EWG zur Angleichung der Rechtsvorschriften über die elektromagnetische Verträglichkeit in den EU-Mitgliedsstaaten und hält die Grenzwerte der EN 55022 Klasse A ein.

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

EN 55022 Klasse A Geräte müssen mit folgendem Warnhinweis versehen werden: ″Warnung: Dieses ist eine Einrichtung der Klasse A. Diese Einrichtung kann im Wohnbereich Funk-Störungen verursachen; in diesem Fall kann vom Betreiber verlangt werden, angemessene Maßnahmen zu ergreifen und dafür aufzukommen.″

Deutschland: Einhaltung des Gesetzes über die elektromagnetische Verträglichkeit von Geräten

Dieses Produkt entspricht dem “Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG)“. Dies ist die Umsetzung der EU-Richtlinie 89/336/EWG in der Bundesrepublik Deutschland.

Zulassungsbescheinigung laut dem Deutschen Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG) vom 18. September 1998 (bzw. der EMC EG Richtlinie 89/336) für Geräte der Klasse A.

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

Verantwortlich für die Konformitätserklärung nach Paragraf 5 des EMVG ist die IBM Deutschland GmbH, 70548 Stuttgart.

Informationen in Hinsicht EMVG Paragraf 4 Abs. (1) 4:

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

update: 2004/12/07

People’s Republic of China Class A Compliance Statement

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

声　明

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

Japan Class A Compliance Statement

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

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

Korean Class A Compliance Statement

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

Taiwan Class A Compliance Statement

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

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

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

Printed in USA

GC28-6840-07

Spine information:

System z9 Enterprise Class Install