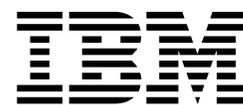


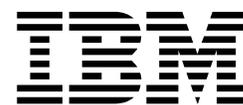
Enterprise Storage Server



Service Guide
2105 Models E10/E20, F10/F20, and
Expansion Enclosure
Volume 2

Chapters: 4, 5, and 6

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Note

Before using this information and the product it supports, be sure to read the general information under "Notices" on page xvii.

First Edition (December 2000)

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Safety notices are printed throughout this book. 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.

Translated Safety Notices

Several countries require that caution and danger safety notices be shown in their national languages.

Translations of the caution and danger safety notices are provided in a separate document, *IBM Storage Solution Safety Notices* book, form number GC26-7229.

Environmental Notices

This section contains information about:

- Product recycling for this product
- Environmental guidelines for this product

Product Recycling

This unit contains recyclable materials. These materials should be recycled where processing sites are available and according to local regulations. In some areas, IBM provides a product take-back program that ensures proper handling of the product. Contact your IBM representative for more information.

Product Disposal

This unit contains several types of batteries. Return all Pb-acid (lead-acid) batteries to IBM for proper recycling, according to the instructions received with the replacement batteries.

Electronic Emission Notices

Federal Communications Commission (FCC) Statement

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

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

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

Industry Canada Compliance Statement

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

Avis de conformité à la réglementation d'Industrie Canada

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

European Community Compliance Statement

This product is in conformity with the protection requirements of EC Council Directive 89/336/EEC 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.

Conformity with the Council Directive 73/23/EEC on the approximation of the laws of the Member States relating to electrical equipment designed for use within certain voltage limits is based on compliance with the following harmonized standard: EN60950.

Germany Only

Zulassungsbescheinigung laut Gesetz ueber die elektromagnetische Verträglichkeit von Geraeten (EMVG) vom 30. August 1995.

Dieses Geraet ist berechtigt, in Uebereinstimmung mit dem deutschen EMVG das EG-Konformitaetszeichen - CE - zu fuehren.

Der Aussteller der Konformitaetserklaeung ist die IBM Deutschland.

Informationen in Hinsicht EMVG Paragraph 3 Abs. (2) 2: Das Geraet erfuellt die Schutzanforderungen nach EN 50082-1 un EN 55022 Klasse A.

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Dieses Genehmigungsverfahren ist nach Paragraph 9 EMVG in Verbindung mit der entsprechenden Kostenverordnung (Amtsblatt 14/93) kostenpflichtig.

Nach der EN 55022: "Dies ist eine Einrichtung der Klasse A. Diese Einrichtung kann im Wohnbereich Funkstoerungen verursachen; in diesem Fall kann vom Betreiber verlangt werden, angemessene Massnahmen durchzufuehren und dafuer aufzukommen."

Anmerkung: Um die Einhaltung des EMVG sicherzustellen, sind die Geraete wie in den Handbuechern angegeben zu installieren und zu betreiben.

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Korean Government Ministry of Communication (MOC) Statement

Please note that this device has been approved for business purpose with regard to electromagnetic interference. If you find this is not suitable for your use, you may exchange it for a non-business purpose one.

Taiwan Class A Compliance Statement

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Using This Service Guide

This guide is for service representatives who are taught to install and repair the IBM 2105 Enterprise Storage Server. Internal components of this machine are designed and certified to be serviced by trained personnel only.

Where to Start

Start all service actions at "Entry MAP for All Service Actions" in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: When performing any service action on the IBM 2105 Enterprise Storage Server, follow the directions given in "Entry MAP for All Service Actions" in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*, or from the service terminal. This ensures that you use the correct remove, replace, or repair procedure, including the correct power on/off procedure, for this machine. Failure to follow these instructions can cause damage to the machine and might or might not also cause an unexpected loss of access to customer data.

Limited Vocabulary

This manual uses a specific range of words so that the text can be understood by IBM service representatives in countries where English is not the primary language.

Publications

This section describes the ESS library and publications for related products. It also gives ordering information.

ESS Product Library

The ESS is an IBM Enterprise architecture-based product. See the following publications for more information on the ESS:

- *Enterprise Storage Server Service Guide 2105 Models E10/E20, F10/F20, and Expansion Enclosure, Volume 1* book, GC27-7605
This is volume 1 of this book.
- *Enterprise Storage Server Service Guide 2105 Models E10/E20, F10/F20, and Expansion Enclosure, Volume 3* book, GC27-7609
This is volume 3 of this book.
- *2105 Model 100 Attachment to ESS Service Guide* book, SY27-7615
This guide is for service representatives who are taught to install and repair a VSS attached to an ESS.
- *ES Connection Link Fault Isolation*, SY22-9533 book, form number SY22-9533
- *Maintenance Information for S/390 Fiber Optic Links (ESCON, FICON, Coupling Links, and Open System Adapters)* book, form number SY27-2597.
- *IBM Enterprise Storage Server Introduction and Planning Guide* book, GC26-7294
This book introduces the product and lists the features you can order. It also provides guidelines on planning for installation and configuration of the ESS.
- *IBM Enterprise Storage Server User's Guide* book, SC26-7295
This book provides instructions for setting up and operating the ESS.
- *IBM Enterprise Storage Server SCSI Command Reference* book, SC26-7297

This book describes the functions of the ESS and gives reference information such as channel commands, sense bytes, and error recovery procedures.

- *Enterprise Storage Serve Parts Catalog* book, S127-0974
- *IBM Storage Solutions Safety Notices* book, GC26-7229

This book provides translations of the Danger and Caution notices used in the ESS publications.

- *IBM Enterprise Storage Server Web Users Interface Guide* book, SC26-7346
- *IBM Enterprise Storage Server Host Systems Attachment Guide* book, SC26-7296
- *IBM Enterprise Storage Server System/390 Command Reference* book, SC26-7298
- *DFSMS/MVS Software Support for the IBM Enterprise Storage Server* book, SC26-7318

- *IBM Enterprise Storage Server Quick Configuration Guide* book, SC26-7354
- *IBM Enterprise Storage Server Configuration Planner* book, SC26-7353

This book provides work sheets for planning the logical configuration of ESS. This book is only available on the product Web site:

<http://www.ibm.com/storage/ess>

Ordering Publications

All of the above publications are available on a CD-ROM that comes with the ESS. You can also order a hard copy of each of the publications. For additional CD-ROMs, order:

- ESS Service Documents CD-ROM, SK2T-8771
- ESS Customer Documents CD-ROM, SK2T-8770

Related Publications

The following publications provide

information on software products that the IBM Enterprise Storage Server supports:

- *IBM Subsystem Device Driver* book, SH26-7291
- *IBM Storage Area Network Data Gateway Installation and User's Guide* book, SC26-7304
- *IBM Advanced Copy Services* book, SC35-0355
- *IBM S/360, S/370, and S/390 Channel to Control Unit Original Equipment Manufacture's Information* book, SH26-7291

Web Sites

- IBM Storage home page:
<http://www.storage.ibm.com/>
- IBM Enterprise Storage Server home page:
<http://www.ibm.com/storage/ess>
<http://www.storage.ibm.com/hardsoft/product/refinfo.htm>

Other Related Publications

The following is a list of other related books.

- 7133 Model D40 Serial Disk Systems Service Guide* book, GY33-0192
- 7133 Model D40 Serial Disk System Installation Guide* book, GA33-3279
- 7133 SSA Disk Subsystem Service Guide* book, SY33-0185

7133 Models 010 and 020 SSA Disk Subsystem Installation Guide book,
GA33-3260
IBM Versatile Storage Server Service Guide, 2105 Models B09 and 100 book,
SY27-7603
IBM Input/Output Equipment, Installation Manual—Physical Planning ,
GC22-7064
IBM Storage Solutions Safety Notices , GC26-7229
Electrical Safety for IBM Customer Engineers S229-8124

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Overview of Repair Chapter

This chapter describes FRU removal and replacement procedures and ESD procedures.

Refer to “Working with ESD-Sensitive Parts” on page 4 before you work with any logic cards, logic board, or cables connected to FRUs that are sensitive to electrostatic discharge (ESD).

Because these instructions describe 2105 Model Exx/Fxx and 2105 Expansion Enclosure racks and SSA DASD Model 020 and 040 drawer and DDM bays, some diagrams might not specifically show the rack or drawer you are repairing.

Repair

FRU Removal and Replacement Procedures

Select the field replaceable unit (FRU) you want to repair from and go to the page shown. If you were not sent here from the service terminal, go to "Entry MAP for All Service Actions" in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*, to replace a FRU.

Using the Repair Chapter

This chapter describes how to remove and replace field-replaceable units (FRUs) from SSA DASD drawers and 2105 units.

Each FRU has its own removal and replacement procedure, for example, Drawer Power On and Off Procedure, 7133 Model 020. When a step in a procedure refers to another procedure, a reference to that procedure is given. For example:

1. Open the front cover of the 2105.
2. Locate the SSA DASD drawer and the disk drive module you will be removing (see "Disk Drive Module Locations, 7133 Model 020/040" on page 23).
3.

The references show you where to find more information, if you need it. Always return to the original procedure after referring to the information.

Standard Tools Needed

The following is a list of standard tools needed to service the 2105.

- Number 2 Supadriv screwdriver (P/N 4760542)
- Number 2 Supadriv bit (P/N 9900767)
- Screwdriver, ratchet magnetic tip (P/N 56X2974)
- Torx kit (P/N 39F8407)
- 8-mm socket wrench, 1/4-inch drive (in the basic tool kit)
- 7-mm socket wrench, 1/4-inch drive (P/N 179239, included in metric B/M 1749235 in the basic tool kit)
- ESD handling kit (P/N 93F2649)
- ESD wrist band (P/N 6425959)
- SSA tool, screwdriver (P/N 32H7059)
- ESCON wrap tool, P/N 5605670
- Fibre channel long wave (LW) wrap tool, P/N 78G9610
- Fibre channel short wave (SW) wrap tool, P/N 16G5609

Note: For a list of Special Tools needed, refer to Chapter 1 in Volume 1 of this book.

Working with ESD-Sensitive Parts

Attention: Always wear an electrostatic discharge (ESD) wrist strap properly connected to the ESD ground bracket when you service this machine. This prevents possible damage to the 2105 rack, SSA DASD Model 020 and 040 drawer, and DDM bay and decreases any possible impact to customer operations.

Following is a list of the ESD-sensitive parts in the 2105 rack. Always wear the ESD wrist strap when you work on or touch any of these parts.

- All logic cards
- All logic boards
- All drawer FRUs

- All DDM bay FRUs
- Any cables connected to ESD-sensitive parts

How to Attach the ESD Wrist Strap

Before you touch any ESD-sensitive part, place the ESD wrist strap on either wrist. This strap has a high resistance (>1 megohm) resistor in series with the grounding clip so there is no danger to you. It discharges the static electricity from your body.

Connect the clip on the flexible grounding cord to an unpainted frame ground point on the 2105 rack. Keep the strap on and connected while you touch, insert, or remove any ESD-sensitive part.

Attention: When you wear the ESD wrist strap, ensure the flexible grounding cord remains connected to you and to the frame of the machine.

ESD Precautions

To prevent damage when you work with ESD-sensitive parts, perform these instructions carefully.

- Keep the ESD-sensitive part in a special ESD bag until you are ready to install the part into the machine.
- Make the fewest possible movements with your body to prevent an increase of static electricity from clothing, fibers, carpets, and furniture.
- If instructed to do so, switch off the machine power before you remove ESD-sensitive parts.
- Just before touching the ESD-sensitive part, discharge to the machine any static electricity in your body by touching the metal frame or cover of the machine. If possible, keep one hand on the frame when you install or remove an ESD-sensitive part.
- Never touch or work on any electronic circuits without wearing the ESD wrist strap.

Touching the logic board pins without wearing the ESD wrist strap (for example, while counting the pins) can cause logic card failures. Touching the voltmeter leads when you measure board pins or cable connections can also cause ESD damage.

- Do not place any ESD-sensitive parts on the machine cover or on a metal table because large metal objects can become discharge paths if they are not grounded. If you must set aside an ESD-sensitive part, first place it into the special ESD bag.
- Prevent ESD-sensitive parts from being accidentally touched by other personnel such as service support representatives or customers. Reinstall all covers when you are not working on the machine.
- If possible, keep all ESD-sensitive parts in a grounded metal case.
- Be very careful when you work with ESD-sensitive parts in cold weather. Low humidity and heating increase static electricity.

Replacing a FRU Using the Service Terminal

Use the following service terminal procedure to select and replace a FRU not listed in a repair procedure.

Attention: This is *not* a stand-alone procedure.

Replacing a FRU Using the Service Terminal

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Replacing a Non-Cluster Bay FRU

1. Select **Repair Menu** from the Main Service Menu.
2. Select **Replace a FRU** from the Repair Menu
3. Move the cursor to the desired FRU Category and press Enter on the Select a FRU Category menu.
4. Move the cursor to the FRU being replaced and press Enter on the Select a FRU to Replace menu.
5. Follow the instructions displayed on the service terminal to complete the repair process.

Replacing a Cluster Bay FRU

1. Go to "MAP 4700: Cluster Bay FRU Replacement" in chapter 3 of the *Enterprise Storage Server Service Guide, Volume 1*.

DDM BAY FRU REPLACEMENT PROCEDURES:

The FRU remove and replace procedures for the DDM bay follow:

Disk Drive Module Locations, DDM Bay

Use the following information to locate a DDM bay and disk drive module in a 2105 Model Exx/Fxx or 2105 Expansion Enclosure rack.

This procedure is for DDM bays.

- For DDM bay locations in a 2105 Model Exx/Fxx, or a 2105 Expansion Enclosure, see "Locating a DDM Bay or SSA DASD Model 020 or 040 Drawer in a 2105 Rack" in chapter 7 of the *Enterprise Storage Server Service Guide, Volume 3*.
- Use Figure 1 to determine the position of the disk drive modules in a DDM bay.

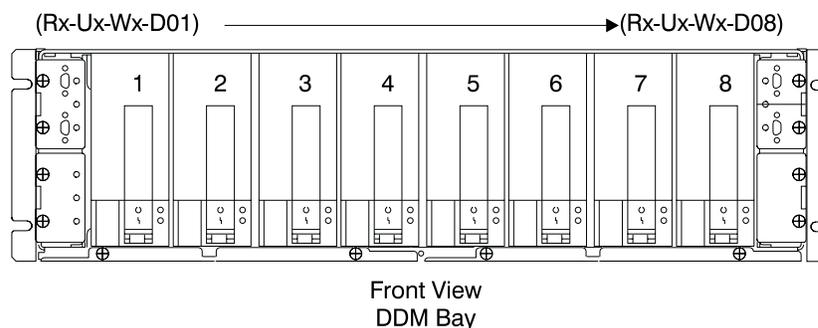


Figure 1. Disk Drive Module Locations in a DDM bay (S0077061)

SSA Disk Drive Module Removal and Replacement, DDM Bay

This procedure is for DDM bays only.

A disk drive module (DDM) is one FRU. Always replace it as a complete FRU.

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Removing a Disk Drive Module

Attention: Disk drive modules (DDMs) are fragile. Handle them with care, and keep them well away from strong magnetic fields.

Notes:

1. Unless you have a particular reason, *do not power off the 2105 when removing disk drive modules DDMs*.
2. If you are removing all DDMs as part of a DDM bay frame removal, carefully mark the locations of all DDMs before removing them. This ensures that you will reinstall the DDMs into their original slots. Attach identifying labels to the DDMs if you want to.
 1. Locate the DDM bay with the DDM you will be removing, see “Locating a DDM Bay or SSA DASD Model 020 or 040 Drawer in a 2105 Rack” in chapter 7 of the *Enterprise Storage Server Service Guide, Volume 3*.
 2. Open the front or rear cover of the 2105 Model E10/E20 or 2105 Expansion Enclosure rack you are working on.
 - Disk drive module (Rx-Ux-Wx-Dx)
 3. Find the DDM you are replacing see “Disk Drive Module Locations, DDM Bay” on page 6.

Note: The amber Check indicator **1** on the DDM you are replacing should be on.

With some failures, the Check indicator **1** will not turn on. If this is the case, verify again that you are working on the correct DDM, then continue with the next step.

SSA Disk Drive Module, DDM Bay

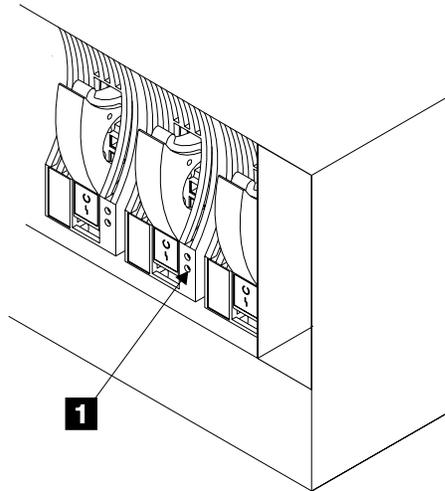


Figure 2. Disk Drive Module Check Indicator (S007715m)

4. Do the following steps only on the DDM you are removing.
5. If the DDM has a lock, ask the customer for the key **2**.
6. Insert the key into the lock, turn it counterclockwise, and remove the lock.

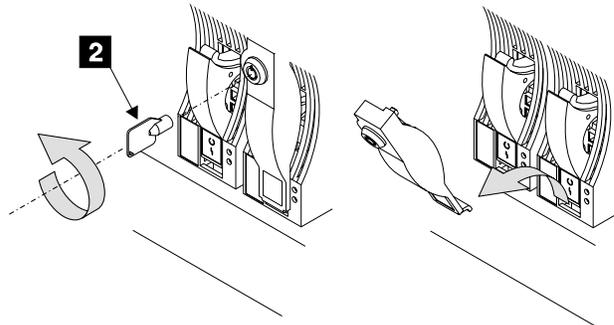


Figure 3. Drive Lock Removal (S007716m)

7. Open the DDM handle, press the blue latch **3**, and pull the handle down **4**. This action pulls the DDM partly out of its slot.

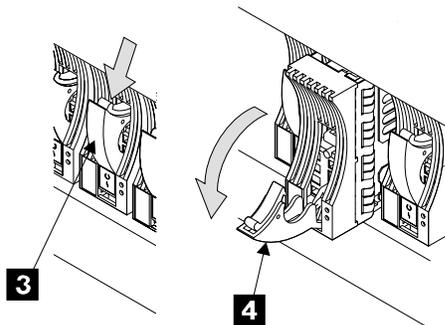


Figure 4. Drive Removal (S007718m)

SSA Disk Drive Module, DDM Bay

8. Grip the handle, and carefully pull the DDM module out of the drawer. As the drive comes out, put one hand under it to prevent it from falling.

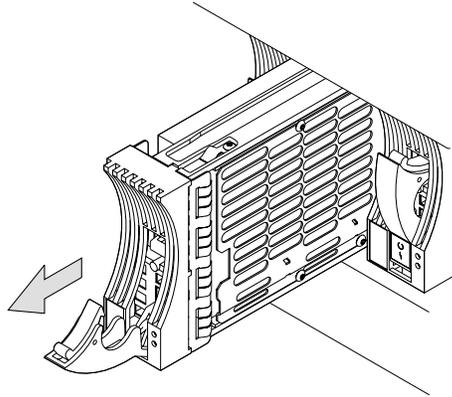


Figure 5. Disk Drive Removal (S007719m)

9. Lay the DDMs down so they rest on their supports **5**.

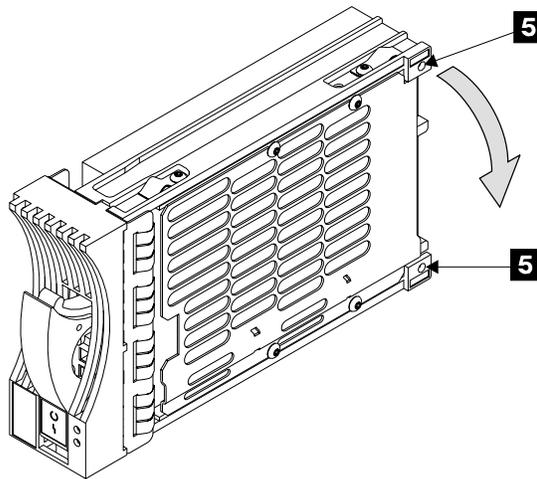


Figure 6. Placing a DDM in a Safe Position (S007720m)

10. Install a new DDM into the empty slot, go to “Replacing a Disk Drive Module”

Replacing a Disk Drive Module

Attention: If you bring a DDM into the operating environment from an area that is outside the normal operating temperature of 20 - 25 degrees C (66 - 77 degrees F), allow the DDM time to acclimate to the operating environment. Remove the DDM from any shipping package, leave the DDM in the sealed plastic bag (if present) to prevent condensation from forming.

1. Remove the factory-sealed wrapping from the new DDM only when you are ready to install it.
2. Open the DDM handle before installation, press the blue latch **1**, and pull the handle down **2**.

SSA Disk Drive Module, DDM Bay

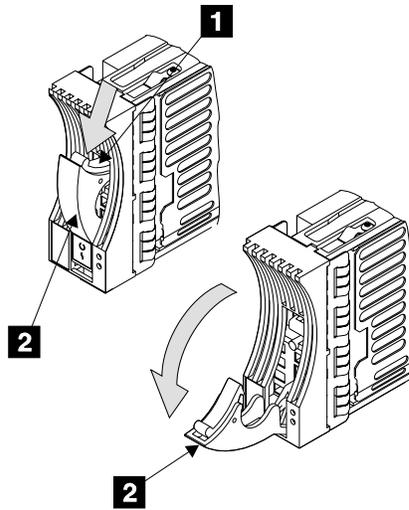


Figure 7. Disk Drive Module Replacement (S007721m)

3. With one hand under the DDM, align the DDM with the groove, and push it into its slot **3**.
The drive stops before it is fully seated.

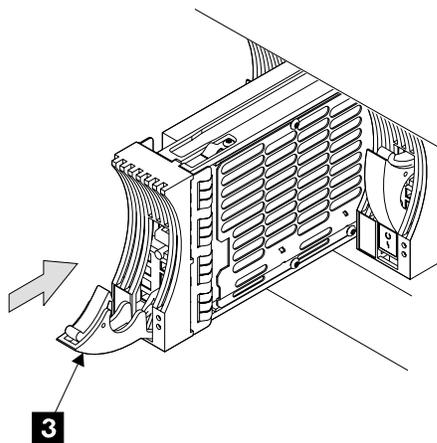


Figure 8. Drive Module Installation (S007722m)

4. Push the disk drive DDMs handle up until it latches closed: **4**.

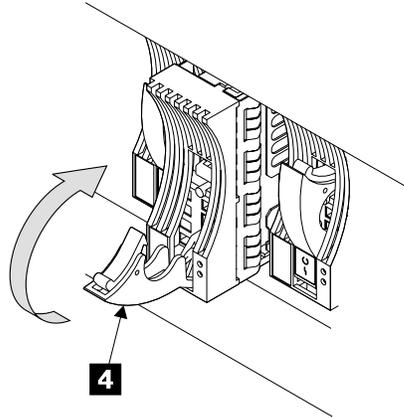


Figure 9. Drive Lock Installation (S007723m)

5. Verify that the front of the new DDM is aligned with the other DDMs.
6. If the DDM has a lock, install the lock and turn the key clockwise **5**. Return the key to the customer.

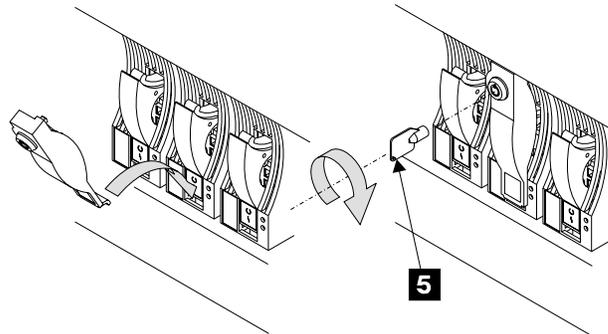


Figure 10. Drive Lock Installation (S007724m)

7. When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

Bypass and Passthrough Card Removal and Replacement, DDM Bay

This procedure is for DDM bays only.

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Note: Unless you have a particular reason, *do not power off the 2105 or DDM bay when removing a bypass or passthrough card.*

1. Open the front or rear cover of the 2105 Model Exx/Fxx or 2105 Expansion Enclosure rack and locate the DDM bay with the bypass or passthrough card

Bypass and Passthrough Cards, DDM Bay

you will be removing, see "Locating a DDM Bay or SSA DASD Model 020 or 040 Drawer in a 2105 Rack" in chapter 7 of the *Enterprise Storage Server Service Guide, Volume 3*.

- Bypass card, upper left (Rx-Ux-Wx-C1) **1**
- Passthrough card, upper right (upper) (Rx-Ux-Wx-C2) **2**
- Passthrough card, upper right (lower) (Rx-Ux-Wx-C4) **3**

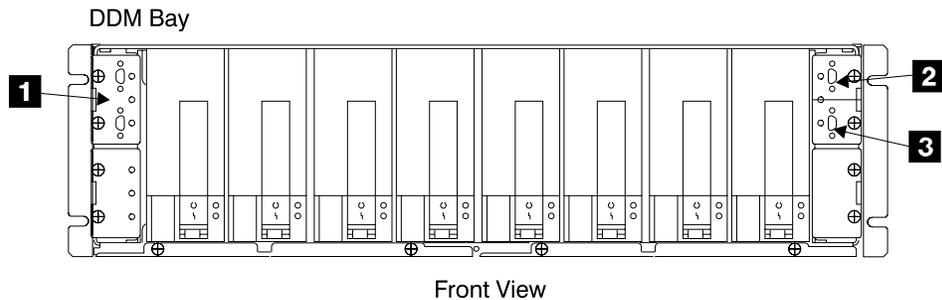


Figure 11. DDM bay Bypass and Passthrough Card Locations (S0077321)

2. Do the following steps only on the bypass or passthrough card you are replacing.
3. Disconnect the SSA device cable or cables from the bypass or passthrough card you are removing.

Notes:

- a. To prevent damage to the SSA device cable connector screws, always use the special screwdriver (SSA tool, P/N 32H7059) to turn them. This screwdriver is in the 2105 ship group.
 - b. For concurrent repairs, remove and replace only one bypass or passthrough card at a time.
4. Unscrew the captive screw or screws on the bypass or passthrough card you are replacing and pull the card out of the DDM bay:
 - Bypass card, unscrew two screws until free **4**
Remove the bypass card then continue with step 5.
 - Passthrough card, unscrew one screw till free **5** or **6**
Remove the passthrough card then continue with step 6 on page 13.

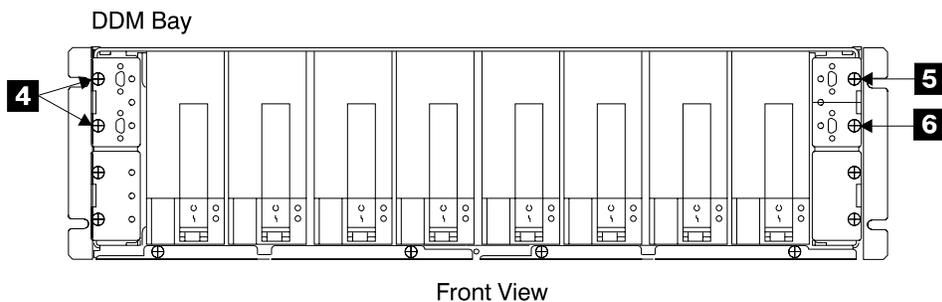


Figure 12. Bypass and Passthrough Card Removal (S0077331)

5. Verify that the jumpers on the bypass card **7** are set correctly. Jumper pins 2 to 3 at both **8** and **9**.

Bypass and Passthrough Cards, DDM Bay

Continue with step 6.

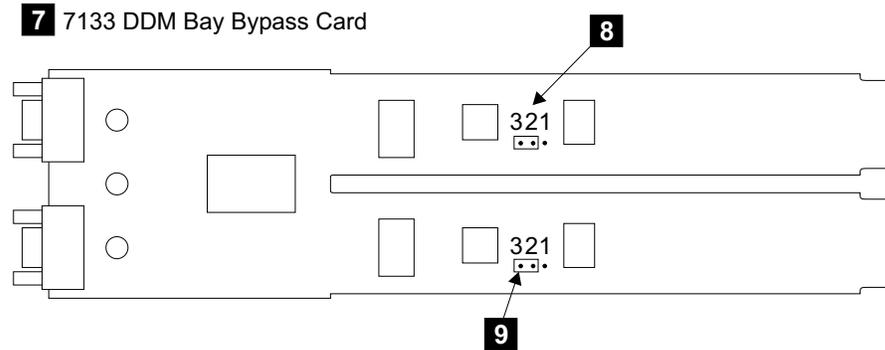


Figure 13. DDM bay Bypass Card Jumper Settings (S008524I)

6. Replace parts in the reverse order, remember to reconnect the SSA device cables.

Notes:

- a. When installing a bypass or passthrough card, insure that you push it in until it is seated.
- b. When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

Controller Card Removal and Replacement, DDM Bay

This procedure is for DDM bay only.

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Note: Unless you have a particular reason, *do not power off the 2105 or DDM bay when removing a controller card.*

1. Open the front or rear cover of the 2105 Model E10/E20 or 2105 Expansion Enclosure rack and locate the DDM bay with the controller card you will be removing, see “Locating a DDM Bay or SSA DASD Model 020 or 040 Drawer in a 2105 Rack” in chapter 7 of the *Enterprise Storage Server Service Guide, Volume 3*.
 - Controller card (DDM bay) (Rx-Ux-Wx-C5) **1**
2. Do the following steps only on the DDM bay controller card you are removing.
3. Unscrew the two captive screws **2** and **3**, on the controller card.
4. Pull the controller card **1**, out of the DDM bay.

Controller Card, DDM Bay

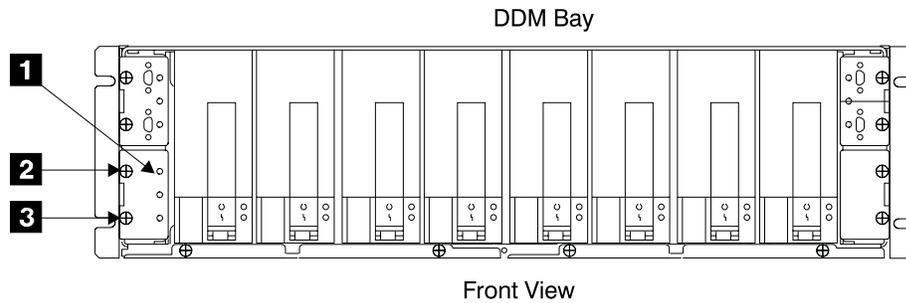


Figure 14. DDM bay Controller Card Removal (S007735)

5. Replace parts in the reverse order.

Notes:

1. When installing a controller cards, insure that you push it in until it is seated.
2. When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

Frame Assembly Removal and Replacement, DDM Bay

This procedure is for DDM bays only.

Notes:

1. **Use this procedure only if you are replacing the DDM bay frame assembly.** If you are removing a complete DDM bay from the 2105 (for example, to locate it elsewhere), go to “Chapter 5: Install and Remove” on page 201.

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Note: Unless you have a particular reason, *do not power off the 2105 when removing the frame assembly*. The external SSA cables that connect the DDM bay to the cluster bay SSA cards can be disconnected while that system is running.

1. Open the front or rear cover of the 2105 rack and locate the DDM bay you will be removing, see “Locating a DDM Bay or SSA DASD Model 020 or 040 Drawer in a 2105 Rack” in chapter 7 of the *Enterprise Storage Server Service Guide, Volume 3*.
 - Frame assembly (Rx-Ux-Wx-P1) **1**

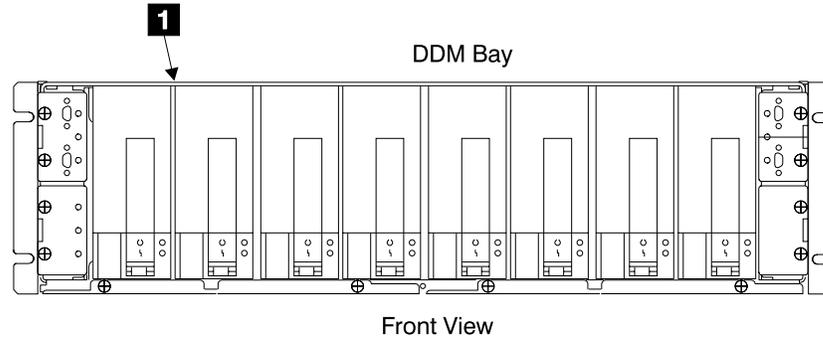


Figure 15. DDM Bay Frame Assembly Location (S007731)

2. Do the following steps only on the DDM bay frame assembly you are removing.
3. Carefully make a note of the locations of the disk drive modules (DDMs) that are in the DDM bay. This will aid in the reinstall of the DDMs into their original slots. Attach identifying labels to the DDMs.
Attention: Data will be lost if the DDMs are not reinstalled in the same positions they were removed from.
4. Remove all the disk drive modules. See “SSA Disk Drive Module Removal and Replacement, DDM Bay” on page 6.
5. Make a note of which SSA cables are connected to each bypass and passthrough card, see “SSA Cable Removal and Replacement, DDM Bay and 7133 Model 020/040” on page 17.
6. Disconnect the external SSA cables from the DDM bay two bypass and the four passthrough cards. To prevent damage to the SSA connector screws, use the special screwdriver (SSA tool, part 32H7059) to unscrew them. The screwdriver is supplied with the DDM bay ship group. See “SSA Cable Removal and Replacement, DDM Bay and 7133 Model 020/040” on page 17.
7. Remove the bypass card and the passthrough cards, see “Bypass and Passthrough Card Removal and Replacement, DDM Bay” on page 11.
8. Remove the controller card assembly from the front of the DDM bay, see “Controller Card Removal and Replacement, DDM Bay” on page 13.
9. Temporarily remove the cable clamping brackets **2** and **4** installed on the vertical mounting rails of the DDM Bay location.

Frame Assembly, DDM Bay

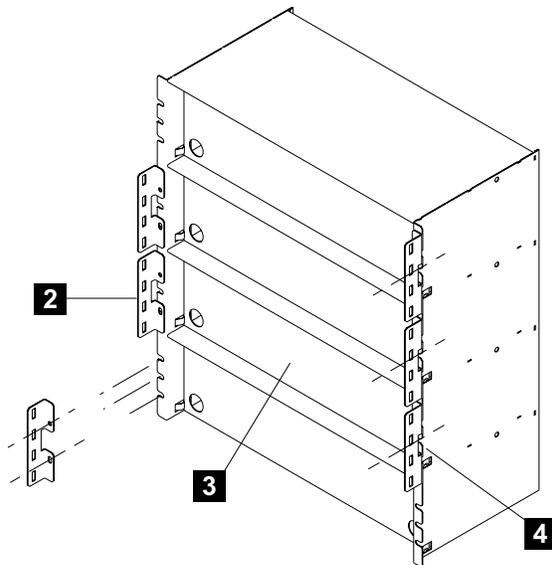


Figure 16. DDM Bay Cable Clamp Brackets (S008609m)

10. Remove the four DDM bay mounting screws, **5** in Figure 17, from the front of the frame assembly.
11. Pull the frame assembly forward and remove it from the 2105.
12. Pull the storage bay air door, **3** in Figure 16, down until it latches closed.
13. Transfer the plate with the serial number **7**, from the original frame assembly to the new frame assembly.
14. Locate the blank label in the ship group. Copy the information from serial number label onto the blank label. Install the label on the front right mounting flange **6**.

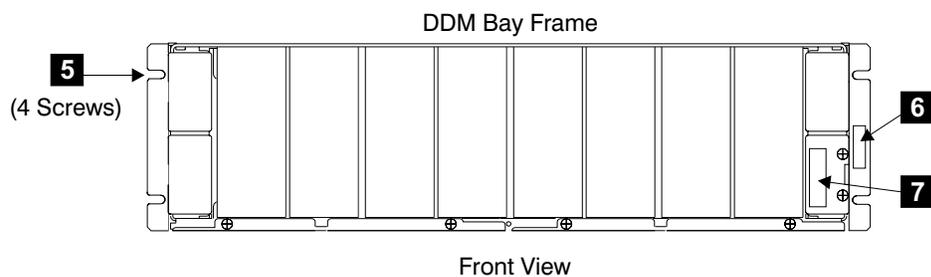


Figure 17. DDM bay Serial Number Plate Location (S007734I)

15. Replace parts in the reverse order.
- 16.

Notes:

- a. When you reinstall the frame assembly into the rack, reinstall the front mounting screws in the following sequence:
 - 1) Install the lower left-hand front mounting screw. This screw locates the 7133 laterally. Do not fully tighten the screw yet.
 - 2) Install the other three front mounting screws. Do not fully tighten the screws yet.
 - 3) Fully tighten the lower left-hand front mounting screw.

- 4) Fully tighten the other three front mounting screws.
 - b. When you reinstall the external SSA cables, use the special screwdriver (SSA tool, part 32H7059) to tighten the SSA connector screws.
17. Return to the procedure that sent you here.

DDM BAY and 7133 MODEL 020/040 DRAWER, SSA CABLE FRU REPLACEMENT PROCEDURES:

The SSA FRU remove and replace procedures for the DDM bay and 7133 Model 020/040 drawer follow:

SSA Cable Removal and Replacement, DDM Bay and 7133 Model 020/040

This procedure is for SSA DASD Model 020 and 040 drawers and DDM bays.

Note: An SSA Cable FRU Kit has is available for SSA cable replacement. Order SSA Cable FRU Kit P/N 34L8549 (length 5 meters).

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Note: Unless you have a particular reason, *do not power off the 2105, SSA DASD Model 020 and 040 drawer, or DDM bay when replacing an SSA cable.*

1. Determine which SSA cable you are replacing using the location information that was provided by the service terminal.

Note: Use the SSA Cable FRU Kit to replace individual SSA cables.

Use Locating an SSA Cable and “Locating a DDM Bay or SSA DASD Model 020 or 040 Drawer in a 2105 Rack”, both in chapter 7 of the *Enterprise Storage Server Service Guide, Volume 3*, to locate the SSA cables and SSA DASD Model 020 and 040 drawer or DDM bay.

The SSA device cable connector location codes for the cluster bay and the SSA DASD Model 020 or 040 drawer or DDM bay are:

- Cluster SSA card connectors (R1-Tx-Kx-yy) to:
 - DDM bay SSA connectors (Rx-Ux-Wx/Jx) or
 - SSA DASD Model 020 and 040 drawer SSA connectors (Rx-Yxx-Jx)

Record the connector location/number and the color of the loop bands of both ends of the SSA cable being replaced. See Figure 18 on page 18, Figure 19 on page 18, and Figure 20 on page 19 for SSA cable connector locations.

SSA Cables, DDM Bay and 7133 Model 020/040

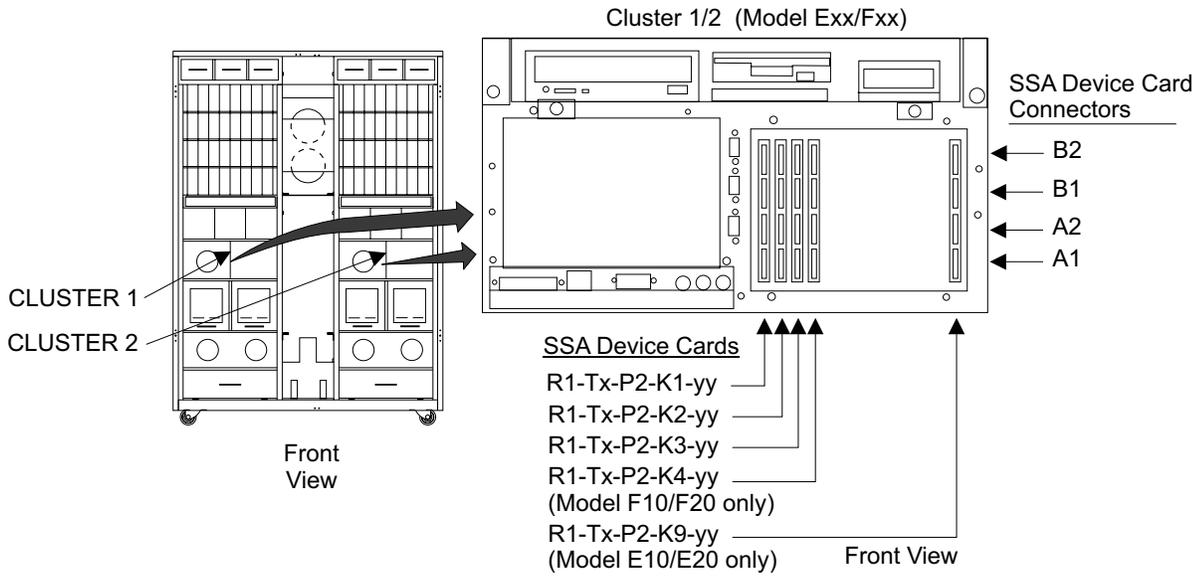


Figure 18. 2105 Model Exx/Fxx Cluster SSA Device Card Connectors (S008022m)

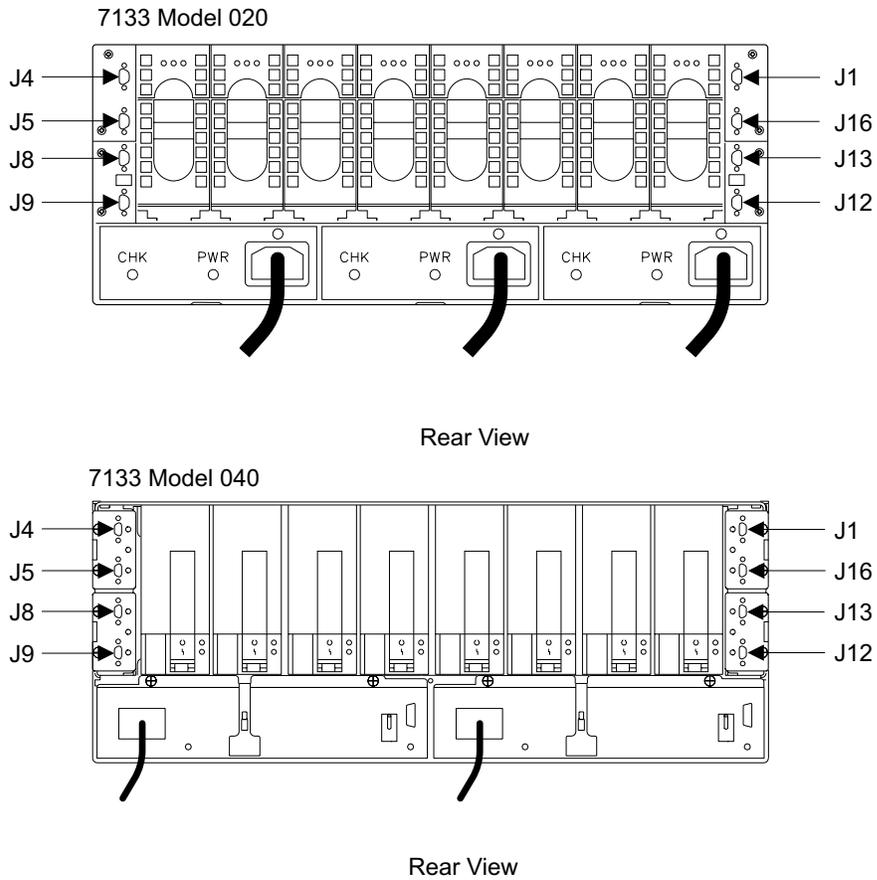


Figure 19. SSA DASD Model 020 and 040 Drawer SSA Connectors (S008762p)

SSA Cables, DDM Bay and 7133 Model 020/040

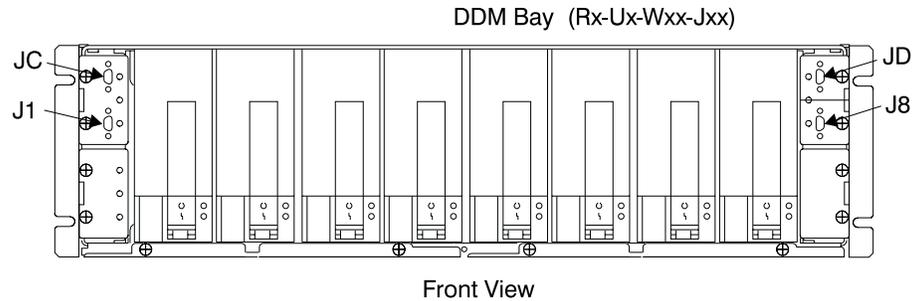


Figure 20. DDM bay SSA Connectors (S007693I)

2. Open the front cover of the 2105 Model Exx/Fxx and locate the cluster bay and the SSA device card with the SSA cable you will be removing. See 2105 Model Exx/Fxx SSA Device Card Location Codes and "Locating an SSA Cable" in chapter 7 of the *Enterprise Storage Server Service Guide, Volume 3*.

Note: From the front of the 2105 Model Exx/Fxx, cluster bay 1 (T1) is on the left and cluster bay 2 (T2) is on the right.

3. Do the following steps only on the SSA device cable you are removing.

4. Disconnect the end of the SSA cable (source) identified in the location code and connect the new SSA cable to the same connector.

Note: To prevent damage to the SSA device cable connector screws, always use the special screwdriver (SSA tool, P/N 32H7059) to turn them. This screwdriver is in the 2105 ship group.

5. Open the front cover of the 2105 Model 100 and locate the correct drawer or DDM bay. See "Locating a DDM Bay or SSA DASD Model 020 or 040 Drawer in a 2105 Rack" in chapter 7 of the *Enterprise Storage Server Service Guide, Volume 3*.
6. Disconnect the other end of the old SSA cable from the SSA DASD Model 020 and 040 drawer or DDM bay, and connect the new SSA cable to the same connector.

Note: Allow the new cable to hang free until testing is complete.

7. Return to the service terminal and complete the repair procedure.

Did repair verification show that the problem is resolved?

- **Yes**, go to step 9.
- **No**, go to step 8.

8. Remove the new SSA cable and reinstall the original cable, resolve the displayed problem.

9. Remove the old SSA cable from the rack and drawer retention while routing the new SSA cable in the same position using the same retention. Label the new cable with the same color loop bands and cable position information. The labels and colored tape are supplied with the SSA Cable FRU Kit.

10. Go to the service terminal **Machine Checkout Menu** and select **SSA Loops Menu**. Select the SSA loop being repaired and press Enter to test.

Did the SSA loop test run without error?

- **Yes**, the problem is resolved.
- **No**, resolve the displayed problem.

7133 MODEL 020/040 DRAWER FRU REPLACEMENT PROCEDURES:

The FRU remove and replace procedures for the 7133 Model 020/040 Drawer follow:

Drawer Power On and Off Procedure, 7133 Model 020

This procedure is for SSA DASD Model 020 drawers only.

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Power Off, Model 020 Drawer

Note: Unless you have a particular reason, *do not power off the 2105 or SSA DASD Model 020 drawer unless the instructions that you are following tell you to.*

1. Open the front cover of the 2105 rack and locate the SSA DASD Model 020 drawer, see “Locating a DDM Bay or SSA DASD Model 020 or 040 Drawer in a 2105 Rack” in chapter 7 of the *Enterprise Storage Server Service Guide, Volume 3*.
2. Do the following steps only on the drawer you are powering off or on.
3. Ensure that the disk drive modules in the SSA DASD Model 020 drawer you are powering off are no longer available to the using system.
4. Press and release the Power switch **1** to power the SSA DASD drawer off.
5. Wait for the SSA DASD drawer Subsystem Power indicator **2** to go off.

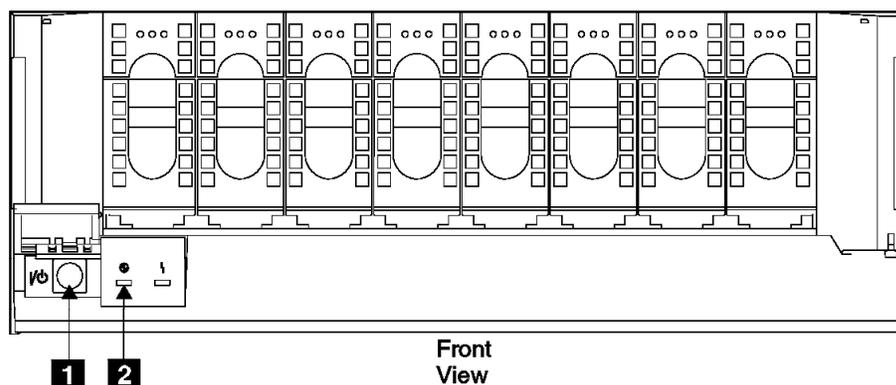


Figure 21. SSA DASD Model 020 Drawer Power Control (T007051)

6. Do this step to remove all power from the SSA DASD drawer.
Open the rear cover of the 2105 and disconnect all three power cables **3** from the rear of the drawer.

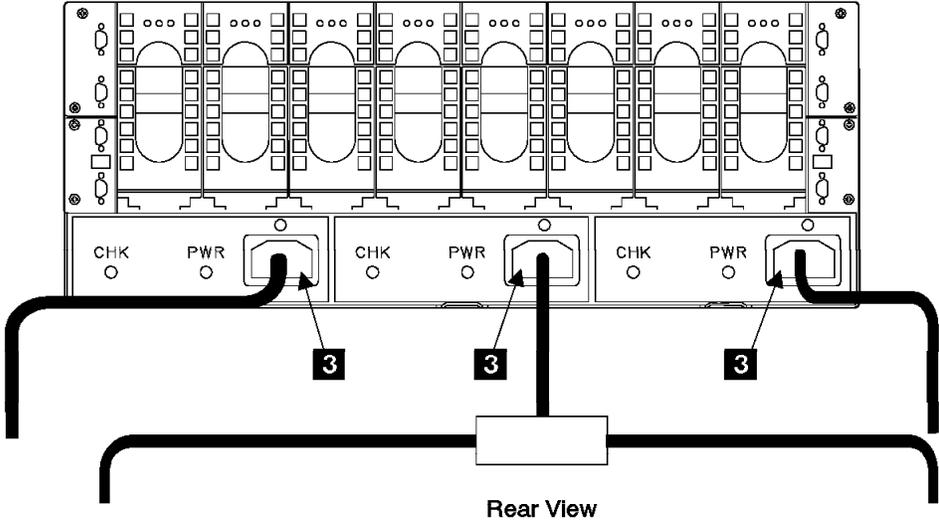


Figure 22. SSA DASD Model 020 Drawer Rear Power Connectors (T007241m)

7. Return to the procedure that sent you here.

Power On, Model 020 Drawer

1. Open the front cover of the 2105 and locate the SSA DASD Drawer you will be powering on, see "Locating a DDM Bay or SSA DASD Model 020 or 040 Drawer in a 2105 Rack" in chapter 7 of the *Enterprise Storage Server Service Guide, Volume 3*.
2. Open the rear cover of the 2105 and reconnect the three drawer power cables **1**, if they were disconnected earlier.

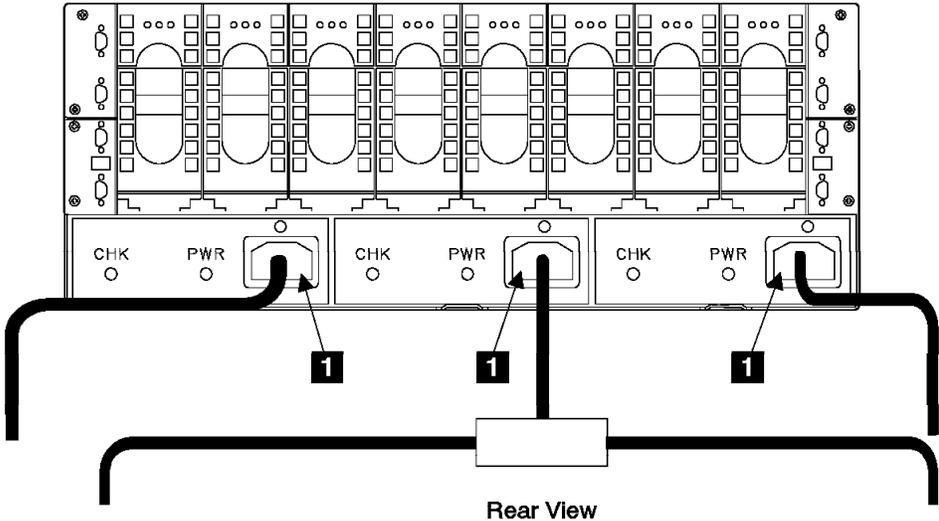


Figure 23. SSA DASD Model 020 Drawer Rear Power Connectors (T007246m)

3. Press and release the Power switch **2** to power the SSA DASD drawer on.

Drawer Power, 7133 Model 020

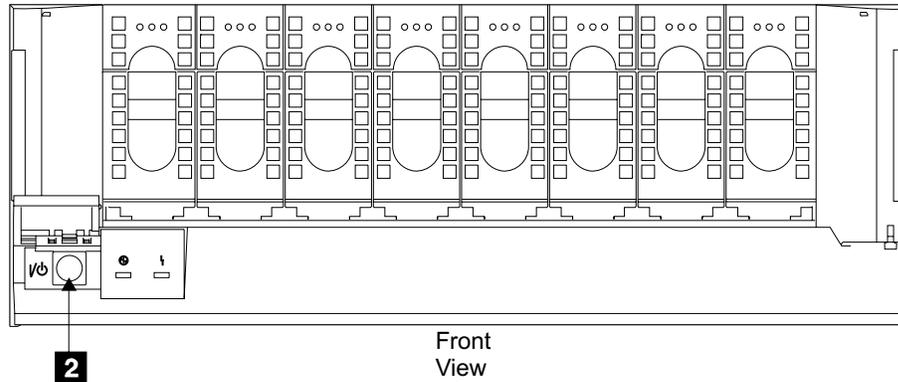


Figure 24. SSA DASD Model 020 Drawer Power Control Panel (S008610)

- Return to the procedure that sent you here.

Drawer Power On and Off Procedure, 7133 Model 040

This procedure is for SSA DASD Model 040 drawers only.

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Power Off, Model 040 Drawer

Note: Unless you have a particular reason, *do not power off the 2105 or SSA DASD Model 040 drawer unless the instructions that you are following tell you to.*

- Open the rear cover of the 2105 rack and locate the SSA DASD Model 040 drawer, see “Locating a DDM Bay or SSA DASD Model 020 or 040 Drawer in a 2105 Rack” in chapter 7 of the *Enterprise Storage Server Service Guide, Volume 3*.
- Do the following steps only on the drawer you are powering off or on.
- Ensure that the disk drive modules in the SSA DASD Model 040 drawer you are powering off are no longer available to the using system.
- Switch off drawer power supply 1 then 2.
 - Pull the PWR/FAULT RESET switch (PS-1) **2** out then push it down.
 - Pull the PWR/FAULT RESET switch (PS-2) **4** out then push it down.
- Do this step only if you wish to remove all power from the SSA DASD Model 040 drawer.

Unplug the power cable **1** and **3**, from each drawer power supply assembly.

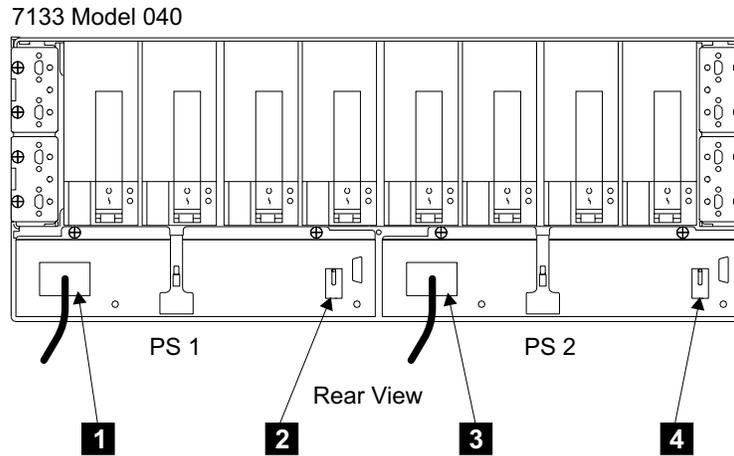


Figure 25. Model 040 Drawer Power Supply Assembly Locations (S008295m)

6. Return to the procedure that sent you here.

Power On, Model 040 Drawer

1. Open the rear cover of the 2105 and locate the SSA DASD Model 040 drawer you will be powering on, see "Locating a DDM Bay or SSA DASD Model 020 or 040 Drawer in a 2105 Rack" in chapter 7 of the *Enterprise Storage Server Service Guide, Volume 3*.
2. Reconnect the two drawer power cables **1** and **3**, if they were disconnected earlier.
3. Switch on drawer power supply 1 then 2.
 - a. Pull the PWR/FAULT RESET switch (PS-1) **2** out then push it up.
 - b. Pull the PWR/FAULT RESET switch (PS-2) **4** out then push it up.

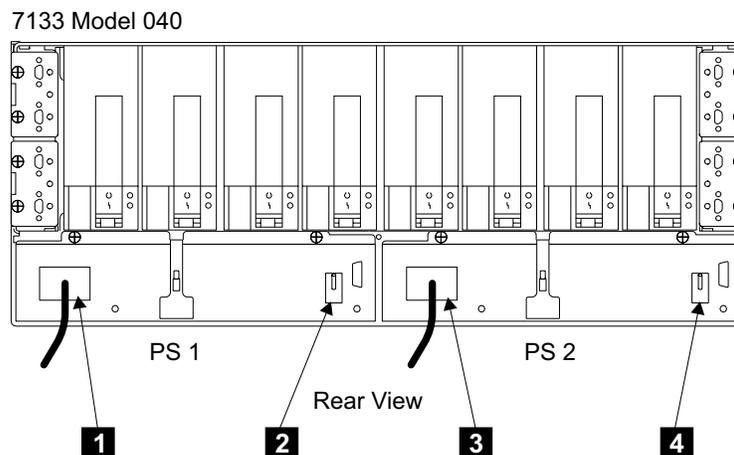


Figure 26. Model 040 Drawer Power Supply Assembly Locations (S008295m)

4. Return to the procedure that sent you here.

Disk Drive Module Locations, 7133 Model 020/040

This procedure is for SSA DASD Model 020 and 040 drawers.

DDM Locations 7133 Model 020/040

Use the following information to locate a SSA DASD Model 020 or 040 drawer and disk drive module in a 2105 Model 100.

- For drawer locations in a 2105 Model 100, see "Locating a DDM Bay or SSA DASD Model 020 or 040 Drawer in a 2105 Rack" in chapter 7 of the *Enterprise Storage Server Service Guide, Volume 3*.
- Use Figure 27 to determine the position of the disk drive modules in a SSA DASD Model 020 and 040 drawer.

Note: Model 020 drawer shown.

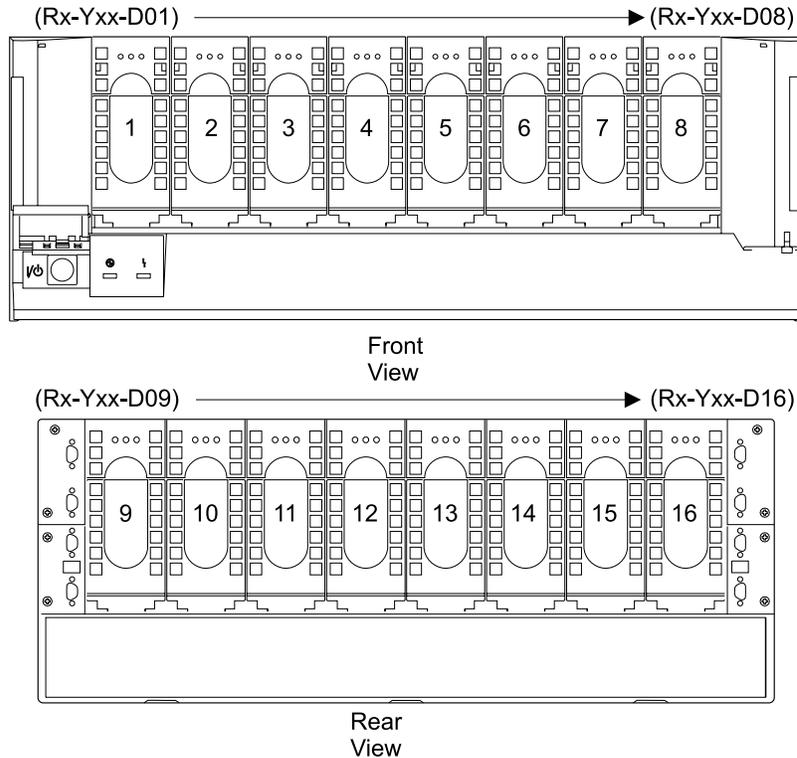


Figure 27. Disk Drive Module Locations in a SSA DASD Drawer (S007705m)

SSA Disk Drive Module Removal and Replacement, 7133 Model 020/040

This procedure is for SSA DASD Model 020 and 040 drawers.

A disk drive module (DDM) is one FRU. Always replace it as a complete FRU.

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in "Working with ESD-Sensitive Parts" on page 4.

Removing a Disk Drive Module

Attention:

- Disk drive modules are fragile. Handle them with care, and keep them well away from strong magnetic fields.
- All slots in the drawer must have a disk drive module (DDM). Dummy DDMs are not allowed in any drawer slot. The disk drive module provides continuity of the SSA string, and ensures that the correct airflow is maintained around the disk drive modules in the other slots.

Notes:

1. Unless you have a particular reason, *do not power off the 2105 or SSA DASD drawer when removing disk drive modules.*
2. If you are removing several DDMs as part of a drawer or backplane removal, carefully mark the locations of all modules before removing them. This ensures that you will reinstall the modules into their original slots. Attach identifying labels to the modules if you want to.
3. Locate the SSA DASD Model 020 and 040 drawer with the disk drive module you will be removing, see "Locating a DDM Bay or SSA DASD Model 020 or 040 Drawer in a 2105 Rack" in chapter 7 of the *Enterprise Storage Server Service Guide, Volume 3*.
 - Disk drive module (Rx-Yxx-Dxx), **1** or **2** in Figure 28,
2. Open the front or rear cover of the 2105 rack you are working on.
3. Find the disk drive module you are replacing.

Note: The amber Check indicator on the disk drive module you are replacing should be on:

- Model 020 Drawer, **1**
- Model 040 Drawer, **2**

With some failures, the Check indicator **1** or **2** will not turn on. If this is the case, verify again that you are working on the correct drive module, then continue with the next step.

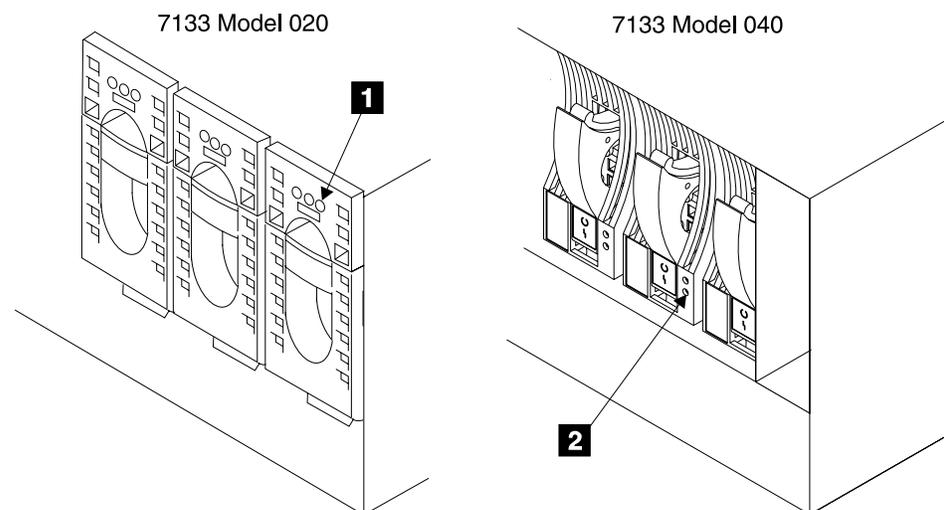


Figure 28. Disk Drive Module Check Indicator (S007707m)

4. Do the following steps only on the DDM you are removing.
5. If the disk drive module has a lock, ask the customer for the key:

SSA Disk Drive Module, 7133 Model 020/040

- Model 020 Drawer, **3**
 - Model 040 Drawer, **4**
6. Insert the key into the lock, turn it counterclockwise, and remove the lock.

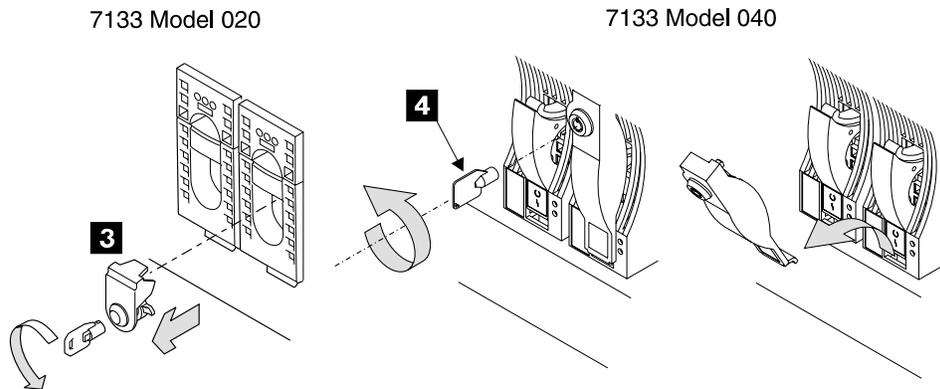


Figure 29. Drive Lock Removal (S007708m)

7. Open the DDM handle:
- Model 020 Drawer, press upward behind the red panel **5**, and pull the handle down **6**. This action pulls the disk drive module partly out of its slot.
 - Model 040 Drawer, press the blue latch **7**, and pull the handle down **8**. This action pulls the disk drive module partly out of its slot.

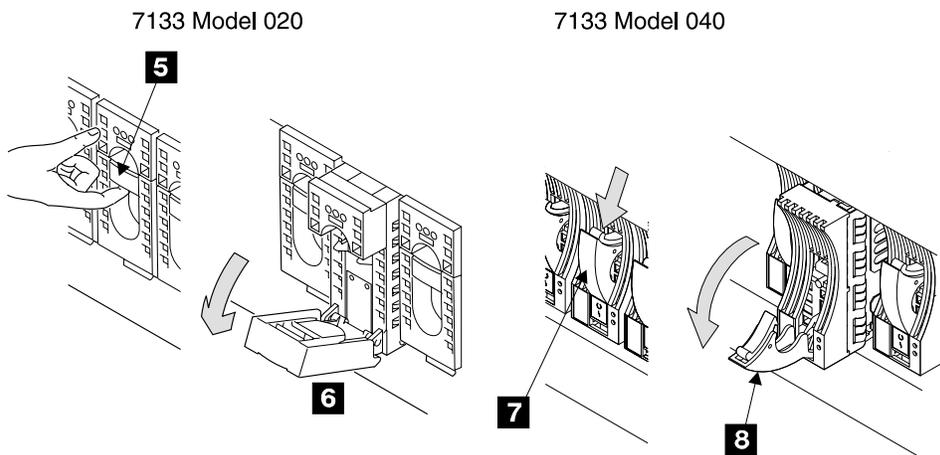


Figure 30. Drive Removal (S007709m)

8. Grip the handle, and carefully pull the disk drive module out of the drawer. As the drive comes out, put one hand under it to prevent it from falling.

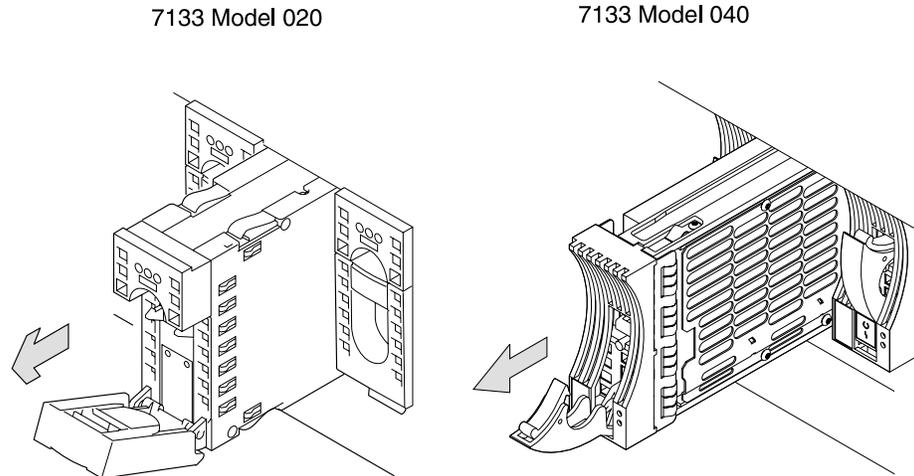


Figure 31. Disk Drive Removal (S007710m)

9. 7133 Model 040 DDMs only, lay the DDMs down so they rest on their supports **9**.

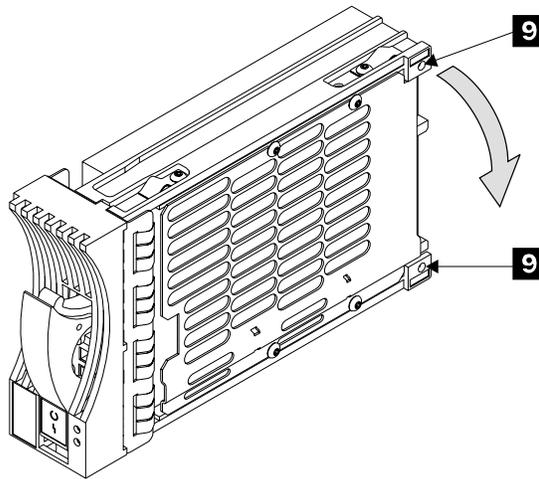


Figure 32. SSA DASD Model 040, Placing a DDM in a Safe Position (T007569m)

10. Install a new disk drive module into the empty slot, go to “Replacing a Disk Drive Module”

Replacing a Disk Drive Module

Attention: If you bring a DDM into the operating environment from an area that is outside the normal operating temperature of 20 - 25 degrees C (66 - 77 degrees F), allow the DDM time to acclimate to the operating environment. Remove the DDM from any shipping package, leave the DDM in the sealed plastic bag (if present) to prevent condensation from forming.

1. Remove the factory-sealed wrapping from the new disk drive module only when you are ready to install it.
2. Open the DDM handle before installation:
 - Model 020 Drawer, press upward behind the red panel **1**, and pull the handle down **2**.
 - Model 040 Drawer, press the blue latch **3**, and pull the handle down **4**

SSA Disk Drive Module, 7133 Model 020/040

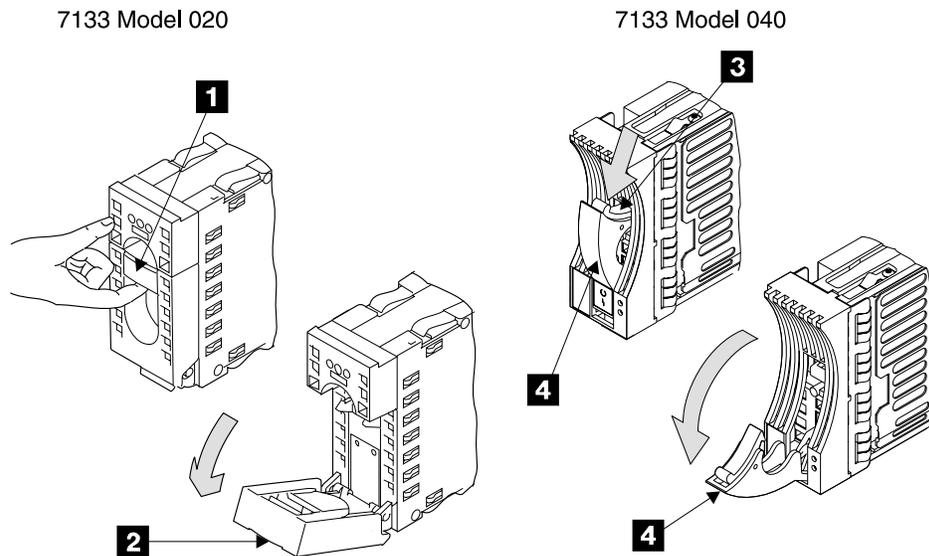


Figure 33. Disk Drive Module Replacement (S007711m)

3. With one hand under the drive, align the drive with the groove, and push it into its slot:

- Model 020 Drawer, **5**
- Model 040 Drawer, **6**

The drive stops before it is fully seated.

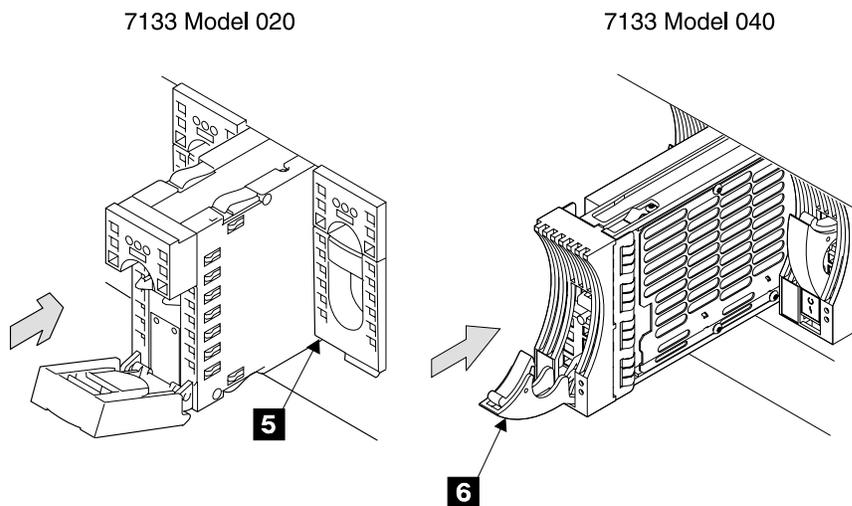


Figure 34. Drive Module Installation (S007712m)

4. Push the disk drive modules handle up until it latches closed:

- Model 020 Drawer, **7**
- Model 040 Drawer, **8**

SSA Disk Drive Module, 7133 Model 020/040

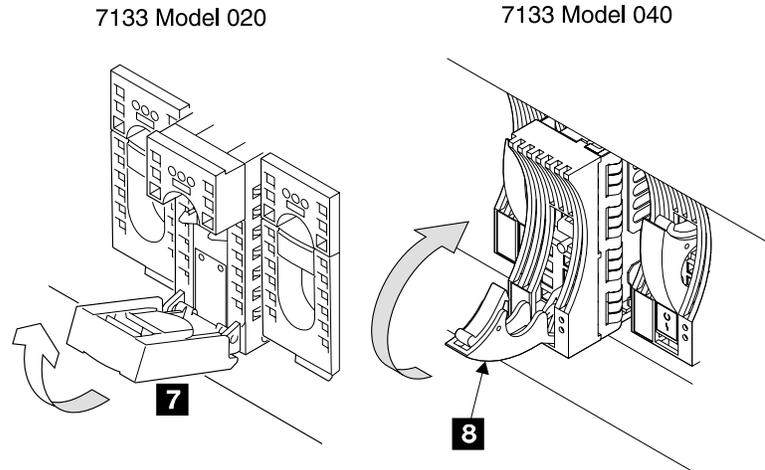


Figure 35. Drive Lock Installation (S007713m)

5. Verify that the front of the new drive module is aligned with the other drives.
6. If the disk drive module has a lock, install the lock and turn the key clockwise:
 - Model 020 Drawer, **9**
 - Model 040 Drawer, **10**

Return the key to the customer.

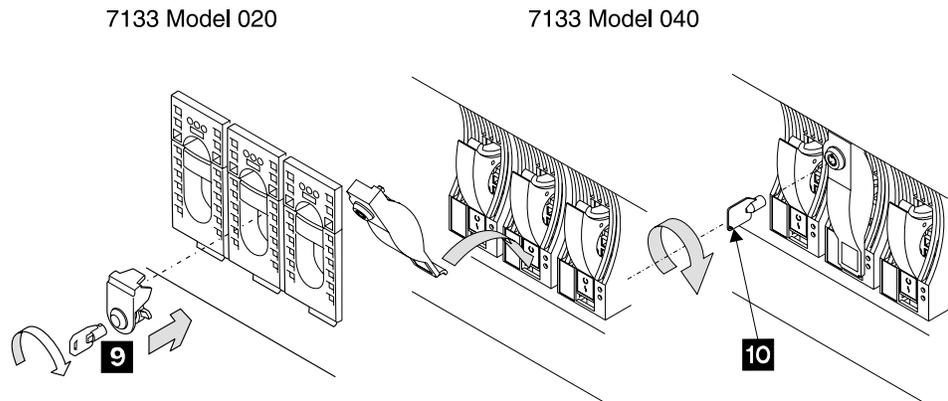


Figure 36. Drive Lock Installation (S007714m)

7. When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

Fan-and-Power-Supply Assembly Removal and Replacement, 7133 Model 020

This procedure is for SSA DASD Model 020 drawers only.

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Fan-and-Power-Supply Assembly, 7133 Model 020

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Attention: If you are replacing the fan-and-power-supply assembly concurrently, with power on, insure that you have only one fan-and-power-supply assembly removed from the SSA DASD Model 020 drawer at a time.

Note: Unless you have a particular reason, *do not power off the 2105, or SSA DASD Model 020 drawer when removing a fan-and-power-supply assembly.*

1. Open the rear cover of the 2105 Model 100 rack and locate the SSA DASD Model 020 drawer with the fan-and-power-supply assembly you will be removing, see “Locating a DDM Bay or SSA DASD Model 020 or 040 Drawer in a 2105 Rack” in chapter 7 of the *Enterprise Storage Server Service Guide, Volume 3*.
 - Fan-and-power-supply assembly 1 (R2-, R3-, R4-Yxx-V1) **1**
 - Fan-and-power-supply assembly 2 (R2-, R3-, R4-Yxx-V2) **2**
 - Fan-and-power-supply assembly 3 (R2-, R3-, R4-Yxx-V3) **3**

The CHK (check) indicator on the fan-and-power-supply assembly you are replacing should be on.

If the CHK (check) indicator is not on, verify that you are working on the correct rack, drawer, and fan power supply assembly.

Note: With some failures, the amber CHK (check) indicator will not turn on. If this is the case, verify again that you are working on the correct fan-and-power-supply assembly then continue with the next step.

2. Do the following steps only on the fan-and-power-supply assembly you are removing.

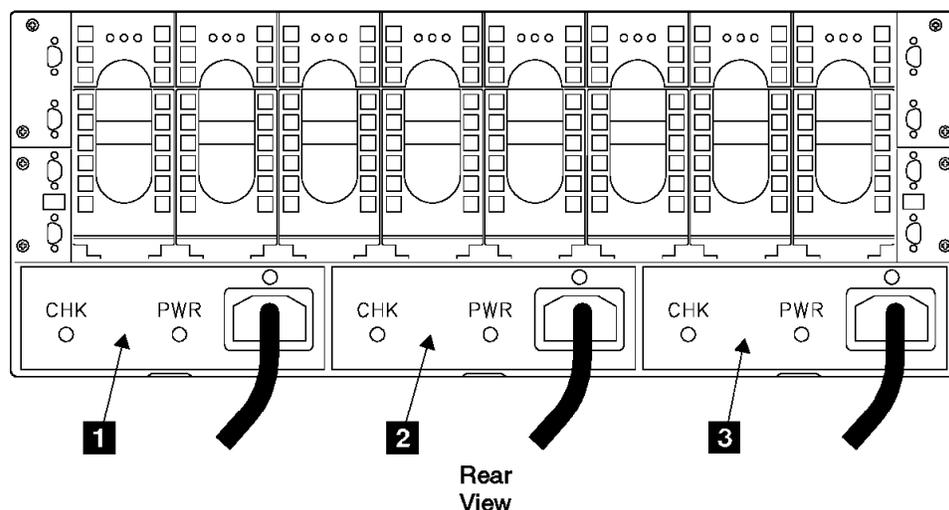


Figure 37. Fan and Power Supply Power Locations (T007068m)

3. At the rear of the SSA DASD Model 020 drawer, unplug the power cable J15 **5** from the fan-and-power-supply assembly (fan-and-power-supply 1 shown).
4. Open the latch **4** on the fan-and-power-supply assembly, and pull the assembly out of the SSA DASD Model 020 drawer.

Fan-and-Power-Supply Assembly, 7133 Model 020

DANGER

Do not attempt to open the covers of the power supply. Power supplies are not serviceable and are to be replaced as a unit. (1008)

Note: This notice is translated into selected languages. See "Translation of Cautions and Danger Notices" in chapter 11 of the *Enterprise Storage Server Service Guide, Volume 3*.

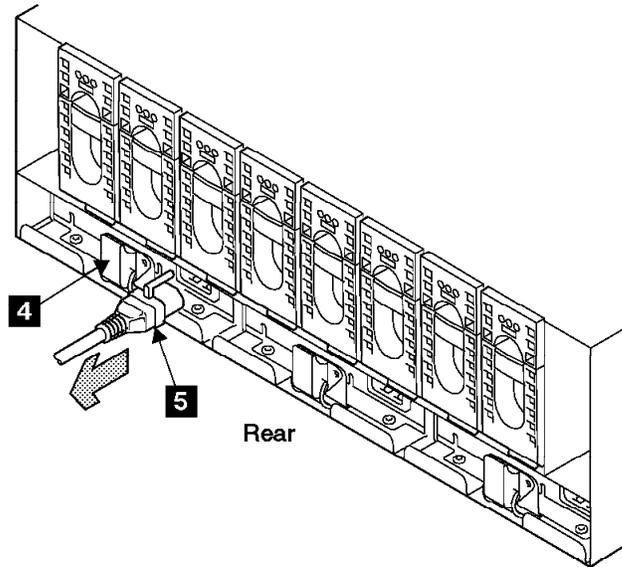


Figure 38. Fan-and-Power-Supply Power Latch and Power Connector (T007064m)

- Replace parts in the reverse order, then continue with step 6.
- Observe the PWR (power) indicator on the fan-and-power-supply assembly you just installed.

Is the PWR (power) indicator on?

- **Yes**, go to step 9 on page 32.
- **No**, go to step 7 on page 32.

7133 Model 020

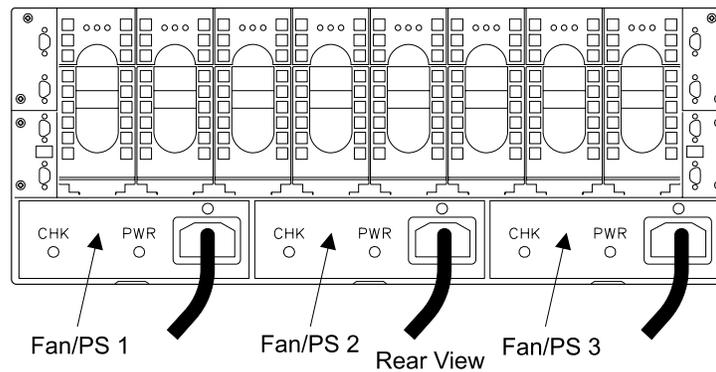


Figure 39. SSA DASD Drawer Fan-and-Power-Supply Assembly Indicators (S008023I)

Fan-and-Power-Supply Assembly, 7133 Model 020

7. PPS power to the fan-and-power-supply assembly may have automatically switched off in the rack power supply.
 - a. Go to the operator panel on the front of the 2105 Model Exx/Fxx.
 - b. Press the Local Power switch to On (up) then release it.

Note: Pressing the Local Power switch clears power error conditions that have been repaired, it does not affect 2105 power.

- c. Return to the fan-and-power-supply assembly. Wait 15 seconds then observe the PWR (power) indicator again.

Is the PWR (power) indicator on?

- **Yes**, go to step 9.
- **No**, continue with the next step.

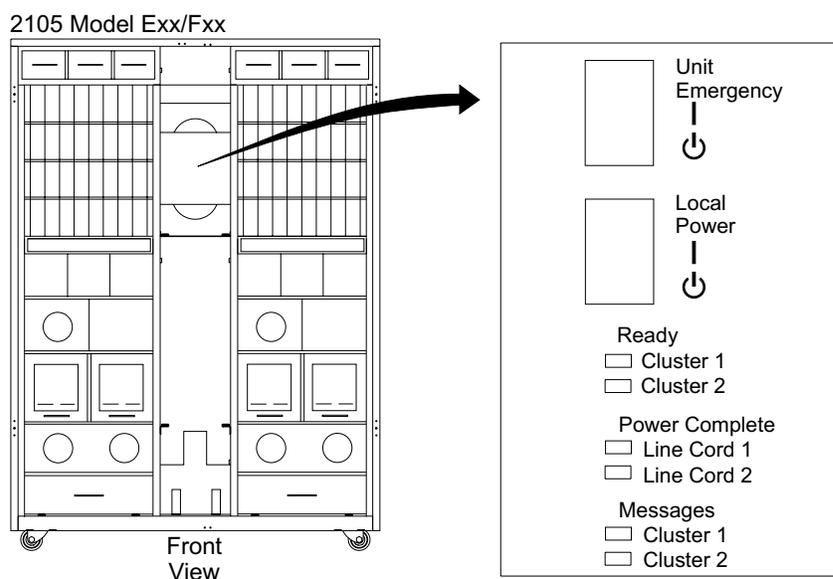


Figure 40. 2105 Model Exx/Fxx Operator Panel Locations (S008810m)

8. The PWR (power) indicator is off because of a failing primary power supply or fan-and-power-supply assembly. Do one or both of the following:
 - Find the rack power supply fault using "MAP 1320: Visual Symptoms" in chapter 3 of the *Enterprise Storage Server Service Guide, Volume 1*.
 - The new fan-and-power-supply assembly may be defective, replace it again.
9. Return to the procedure that sent you here.

Power Control Panel Removal and Replacement, 7133 Model 020

This procedure is for SSA DASD Model 020 drawers only.

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Power Control Panel, 7133 Model 020

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Note: Unless you have a particular reason, *do not power off the 2105 or SSA DASD Model 020 drawer when removing power control panel assemblies.*

1. Open the front cover of the 2105 Model 100 rack and locate the SSA DASD Model 020 drawer with the drawer power control panel you will be removing, see “Locating a DDM Bay or SSA DASD Model 020 or 040 Drawer in a 2105 Rack” in chapter 7 of the *Enterprise Storage Server Service Guide, Volume 3*.
 - Drawer power control panel (R2-, R3-, R4-Yxx-C9) **1**
2. Do the following steps only on the drawer power control panel you are removing.
3. Unscrew the captive screw **1**
 - Early type of drawer cover, left-hand side diagram.
 - Late type of drawer cover, right-hand side diagram.
4. Pull the power control panel **2** forward until it is free.

Note: If the 2105 rack is powered on, the SSA DASD Model 020 drawers internal dc power will come on (if previously powered off) when the control panel assembly is removed. The dc power remains powered on when the power control panel is reinstalled.

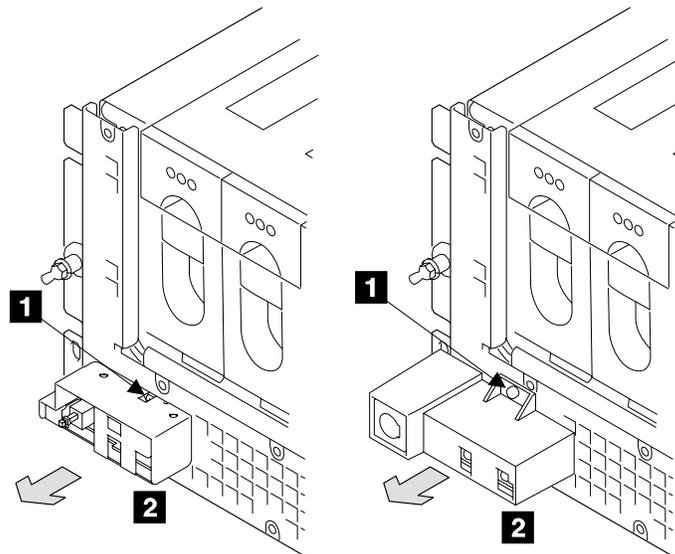


Figure 41. Drawer Power Control Panel (S008407m)

5. Replace parts in the reverse order, then return to the service guide or service terminal procedure that sent you here.

Power Distribution Tray Assembly Removal and Replacement, 7133 Model 020

This procedure is for SSA DASD Model 020 drawers only.

Attention: This is *not* a stand-alone procedure.

Power Distribution Tray Assembly, 7133 Model 020

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Attention: If you are servicing the SSA DASD Model 020 drawer concurrently, with power on, ensure that you remove only one power distribution tray.

Notes:

1. Unless you have a particular reason, *do not power off the 2105 or SSA DASD Model 020 drawer when removing power distribution tray assemblies.*
2. The diagrams in this may not be your SSA DASD drawer. The procedure for any SSA DASD Model 020 drawer is the same.
1. Open the front cover of the 2105 rack and locate the SSA DASD Model 020 drawer with the power distribution tray, see “Locating a DDM Bay or SSA DASD Model 020 or 040 Drawer in a 2105 Rack” in chapter 7 of the *Enterprise Storage Server Service Guide, Volume 3*.
 - Right power distribution tray, not visible (R2-, R3-, R4-Yxx-V9) **7** in Figure 43 on page 35
 - Left power distribution tray, not visible (R2-, R3-, R4-Yxx-V10) **6** in Figure 43 on page 35
2. Do the following steps only on the drawer power distribution tray you are removing.
3. Remove the drawer control panel assembly **4**, see “Power Control Panel Removal and Replacement, 7133 Model 020” on page 32.
4. Unscrew the 13 captive screws **1**, **3**, and **5**, and remove the RFI shield **2**.

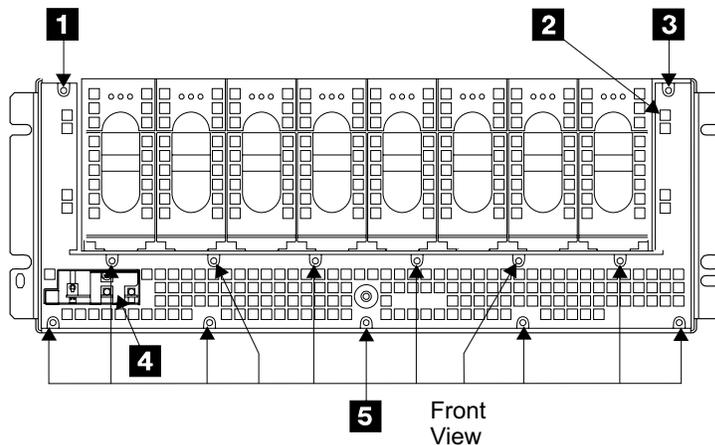


Figure 42. Drawer Power Distribution Tray (S008400m)

5. Locate the drawer power distribution tray assembly you will be removing:
 - Right power distribution tray (R2-, R3-, R4-Yxx-V9) **7**.
 - Left power distribution tray (R2-, R3-, R4-Yxx-V10) **6**.
6. **Attention** Errors will occur if you disconnect the power connector to the left and right power distribution trays while the SSA DASD Model 020 drawer is running.

Power Distribution Tray Assembly, 7133 Model 020

Disconnect both power connectors only when instructed to do so (for example, the removal of a front or rear backplane assembly).

Disconnect the power card cable from the power distribution tray:

- Right power distribution tray power cable **12** .
 - Left power distribution tray power cable **9** .
7. Unscrew the two captive screws on the power distribution tray:
- Right power distribution tray **11** and **13** .
 - Left power distribution tray power cable **8** and **10** .

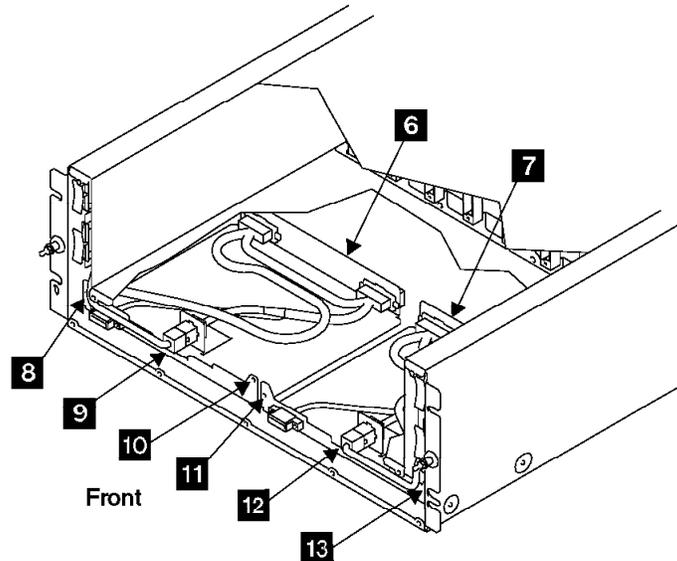


Figure 43. Drawer Power Distribution Tray Removal (T007073m)

8. **Attention** Each power distribution tray assembly consists of a connector tray and a power card:
- Right power distribution tray assembly
 - Right power connector tray **16**
 - Right power card **17**
 - Left power distribution tray assembly
 - Left power connector tray **15**
 - Left power card **14**

Pull the power card next to the power distribution tray you are removing forward until it releases from the backplane connector.

9. Carefully pull the power distribution tray assembly (power card and connector tray), out from the SSA DASD Model 020 drawer.

Power Distribution Tray Assembly, 7133 Model 020

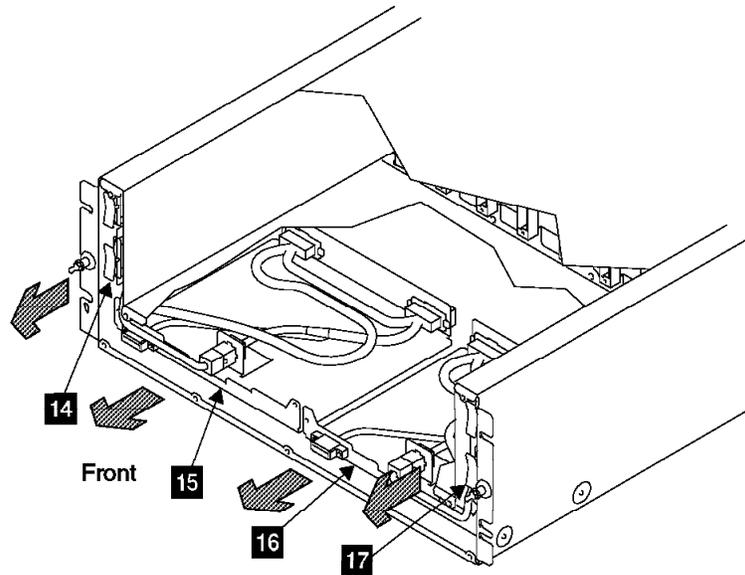


Figure 44. Drawer Power Distribution Tray Assembly Removal (T007075m)

10. Replace parts in the reverse order.

Notes:

- a. When installing the power-distribution tray assembly, insure that you push both the connector tray and the power card in until seated.
- b. When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

Back Power Card Removal and Replacement, 7133 Model 020

This procedure is for SSA DASD Model 020 drawers only.

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Attention: If you are servicing the SSA DASD Model 020 drawer concurrently, with power on, ensure that you remove only one back power card. “Working with ESD-Sensitive Parts” on page 4.

Note: Unless you have a particular reason, *do not power off the 2105 or SSA DASD Model 020 drawer when removing a back power card.*

1. Open the front cover of the 2105 rack and locate the SSA DASD Model 020 drawer with the back power card you will be removing, see “Locating a DDM Bay or SSA DASD Model 020 or 040 Drawer in a 2105 Rack” in chapter 7 of the *Enterprise Storage Server Service Guide, Volume 3*.

Back Power Cards, 7133 Model 020

- Back power card, right, not visible (R2-, R3-, R4-Yxx-C5), **7** in Figure 46 on page 38 ,
 - Back power card, left, not visible (R2-, R3-, R4-Yxx-C6), **6** in Figure 46 on page 38,
2. Do the following steps only on the drawer back power card you are removing.
 3. Remove the drawer control panel assembly **4** , see “Power Control Panel Removal and Replacement, 7133 Model 020” on page 32.
 4. Unscrew the 13 captive screws **1** , **3** , and **5** , and remove the RFI shield **2** .

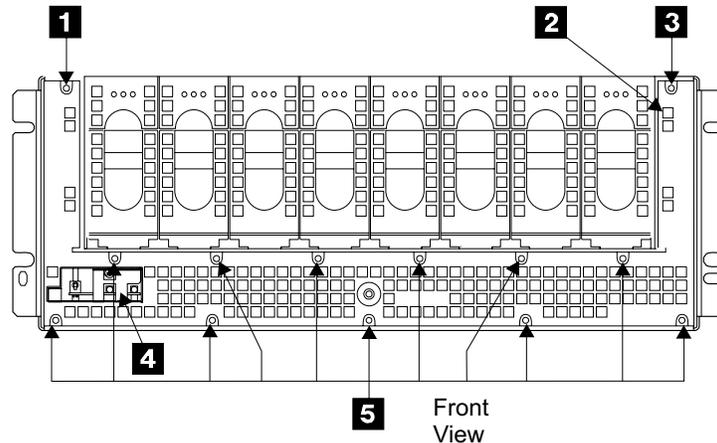


Figure 45. Drawer Back Power Cards (S008400m)

5. **Attention** Errors will occur if you disconnect the power connector to the left and right back power cards while the SSA DASD Model 020 drawer is running. Disconnect both power connectors only when instructed to do so (for example, the removal of a front or rear backplane assembly).
Disconnect the power card cable from the back power card:
 - Back power card, right power cable **9** .
 - Back power card, left power cable **8** .
6. Pull the back power card you are removing forward until it releases from the backplane connector.
 - Back power card, right **7** .
 - Back power card, left **6** .
7. Carefully pull the back power card out of the SSA DASD Model 020 drawer.

Back Power Cards, 7133 Model 020

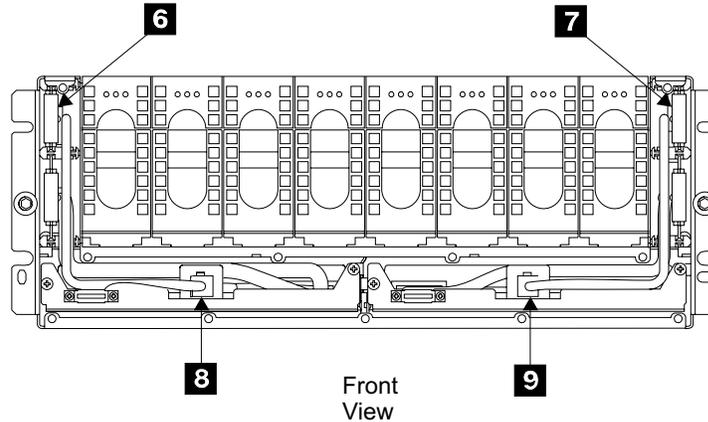


Figure 46. Drawer Back Power Cards Removal (S008401m)

8. Replace parts in the reverse order.

Notes:

1. When installing the back power card, insure that you push it in until seated.
2. When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

Front Backplane Assembly Removal and Replacement, 7133 Model 020

This procedure is for SSA DASD Model 020 drawers only.

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in "Working with ESD-Sensitive Parts" on page 4.

1. Open the front cover of the 2105 rack and locate the SSA DASD Model 020 drawer with the front backplane you will be removing, see "Locating a DDM Bay or SSA DASD Model 020 or 040 Drawer in a 2105 Rack" in chapter 7 of the *Enterprise Storage Server Service Guide, Volume 3*.
 - Front backplane assembly, not visible (R2-, R3-, R4-Yxx-P1) **15** in Figure 50 on page 41
2. Do the following steps only on the drawer front backplane assembly you are removing.
3. Power off the SSA DASD drawer, see "Drawer Power On and Off Procedure, 7133 Model 020" on page 20.
4. Carefully note the position of each disk drive module in the front of the SSA DASD Model 020 drawer and mark them 1 - 8, with 1 on the left and 8 on the right. This will aid in the reinstall of the DDMs into their original slots. Attach identifying labels to the DDMs.

Attention: Verification of the replacement will not be successful if the DDMs are not reinstalled in the same positions they were removed from.

Front Backplane Assembly, 7133 Model 020

5. Remove all the disk drive modules from the front of the SSA DASD Model 020 drawer, see “SSA Disk Drive Module Removal and Replacement, 7133 Model 020/040” on page 24.

Attention Handle the disk drive modules gently, and use care when placing them on the ESD mat. Always set them down in the same position and order as they were in the drawer.

6. Remove the drawer control panel assembly **4**, see “Power Control Panel Removal and Replacement, 7133 Model 020” on page 32.
7. Unscrew the 13 captive screws **1**, **3**, and **5**, and remove the RFI shield **2**.

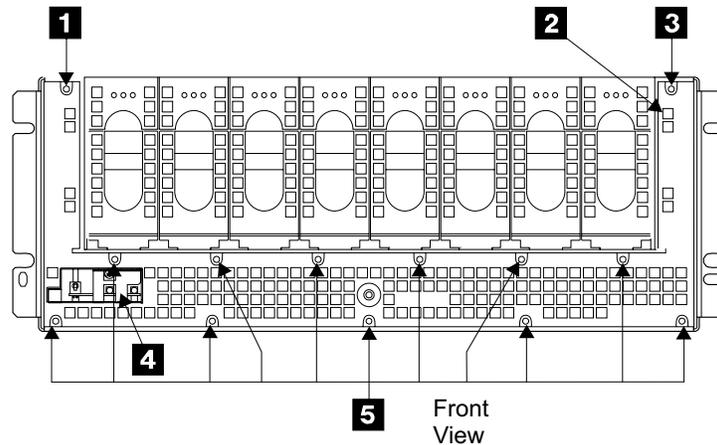


Figure 47. Drawer Front Backplane (S008400m)

8. Open the rear cover of the 2105 and disconnect the SSA device cables from the bypass cards at the rear of the SSA DASD Model 020 drawer:

Note: To prevent damage to the SSA device cable connector screws, always use the special screwdriver (SSA tool, P/N 32H7059) to turn them. This screwdriver is in the 2105 ship group.

- Bypass cards **6**, **8**, **7**, and **9**
9. Remove bypass cards:
 - Bypass cards **6**, **8**, **7**, and **9**

See “Bypass Card Removal and Replacement, 7133 Model 020/040” on page 44.

Front Backplane Assembly, 7133 Model 020

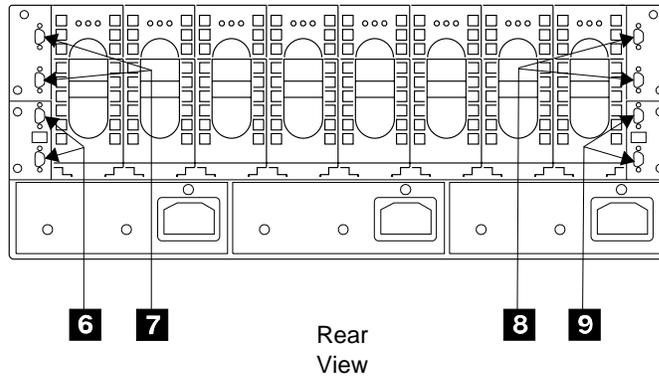


Figure 48. SSA DASD Model 020 SSA Device Cable Connectors (T007505m)

10. Go to the front of the drawer and gently pull the two front power cards **13** and **14** out as far as their cables allow.
11. Reach into the front of the SSA DASD drawer and unscrew the four captive screws **10**, and remove the bracket assembly **11**.
12. Unscrew the four captive screws on the backplane assembly **12**.

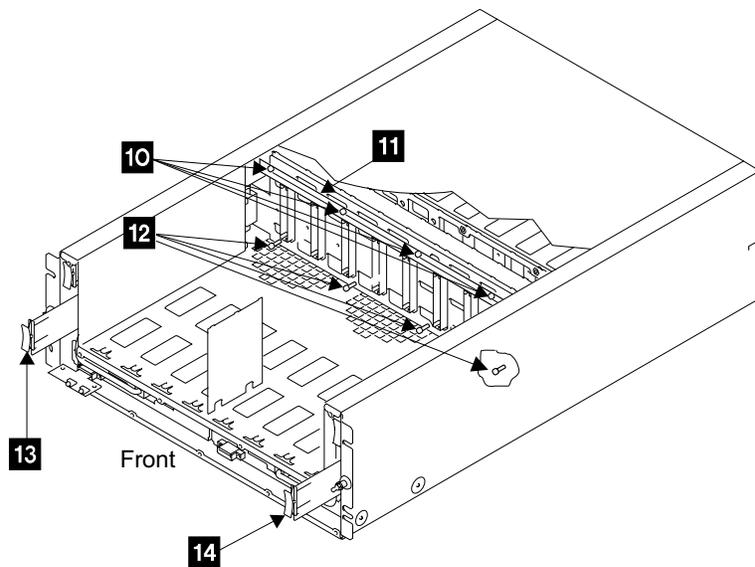


Figure 49. Front Backplane Assembly Mounting (S008402m)

13. Pull the right side of the backplane assembly **15** toward you, then pull the backplane assembly out through the front of the SSA DASD drawer

Front Backplane Assembly, 7133 Model 020

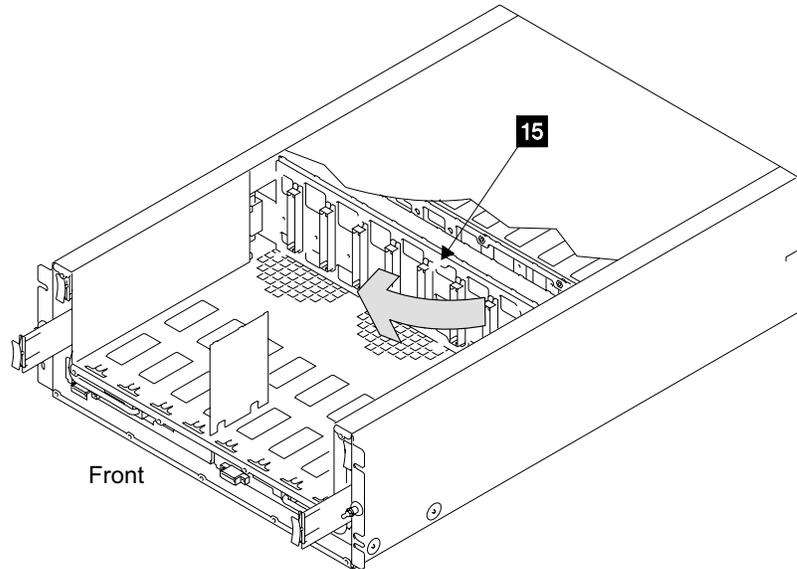


Figure 50. Front Backplane Assembly Removal (S008403m)

14. Replace parts in the reverse order.

Notes:

- a. Do not tighten the four captive screws in the backplane or the bracket until after you have reinstalled the power cards and bypass cards. The cards can be plugged in more easily if the backplane assembly is free to move slightly
- b. When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

Back Backplane Assembly Removal and Replacement, 7133 Model 020

This procedure is for SSA DASD Model 020 drawers only.

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

1. Open the front cover of the 2105 rack and locate the SSA DASD Model 020 drawer with the back backplane you will be removing, see “Locating a DDM Bay or SSA DASD Model 020 or 040 Drawer in a 2105 Rack” in chapter 7 of the *Enterprise Storage Server Service Guide, Volume 3*.
 - Back backplane assembly, not visible (R2-, R3-, R4-Yxx-P2) **10** in Figure 53 on page 43
2. Do the following steps only on the drawer whose back backplane assembly you are removing.
3. Power off the SSA DASD Model 020 drawer, see “Drawer Power On and Off Procedure, 7133 Model 020” on page 20.

Back Backplane Assembly, 7133 Model 020

4. Remove the two back power cards from the front of the SSA DASD Model 020 drawer, see "Back Power Card Removal and Replacement, 7133 Model 020" on page 36.

5. Open the rear cover of the 2105 Carefully note the position of each disk drive module in the rear of the SSA DASD Model 020 drawer and mark them 9 - 16, with 9 on the left and 16 on the right. This will aid in the reinstall of the DDMs into their original slots. Attach identifying labels to the DDMs.

Attention: Verification of the replacement will not be successful if the DDMs are not reinstalled in the same positions they were removed from.

6. Remove all the disk drive modules from the rear of the SSA DASD Model 020 drawer, see "SSA Disk Drive Module Removal and Replacement, 7133 Model 020/040" on page 24.

Attention: Handle the disk drive modules gently, and use care when placing them on the ESD mat. Always set them down in the same position and order as they were in the drawer.

7. Open the rear cover of the 2105 and disconnect the SSA device cables from the bypass cards at the rear of the SSA DASD Model 020 drawer. Reference **1**, **3**, **2**, and **4**.

Note: To prevent damage to the SSA device cable connector screws, always use the special screwdriver (SSA tool, P/N 32H7059) to turn them. This screwdriver is in the 2105 ship group.

8. Remove bypass cards:

- Bypass cards **1**, **3**, **2**, and **4**

See "Bypass Card Removal and Replacement, 7133 Model 020/040" on page 44.

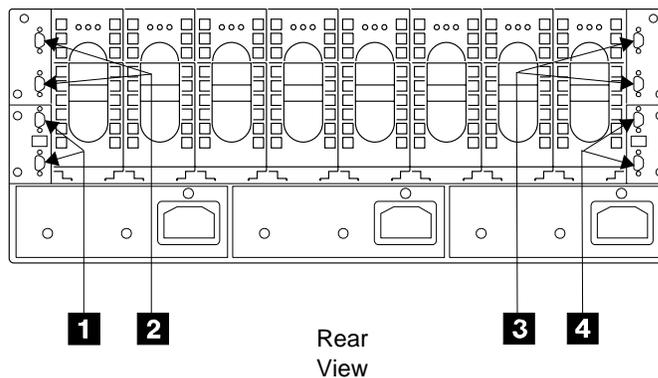


Figure 51. SSA DASD Drawer SSA Device Cable Connectors (T007506m)

9. Reach into the rear of the SSA DASD drawer and unscrew the four captive screws **5**, and remove the bracket assembly **6**.

10. If you are servicing a SSA DASD Model 020 drawer, remove the two self-adhesive plastic air baffles (P/N 31H8722) **7** and **8**.

Note: You will need to install two new plastic air baffles when reinstalling the back backplane assembly.

11. Unscrew the four captive screws on the backplane assembly **9**.

Back Backplane Assembly, 7133 Model 020

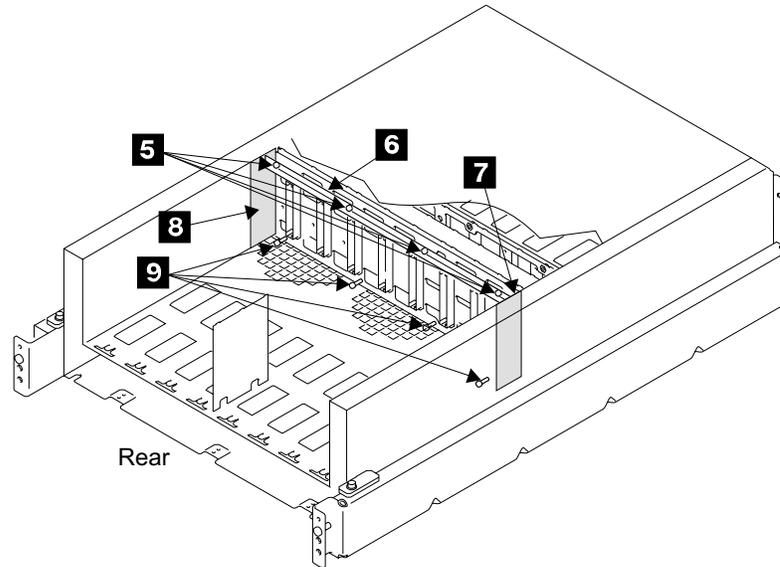


Figure 52. Back Backplane Assembly Mounting (S008404m)

12. Pull the right side of the backplane assembly **10** toward you, then pull the backplane assembly out through the rear of the SSA DASD Model 020 drawer.

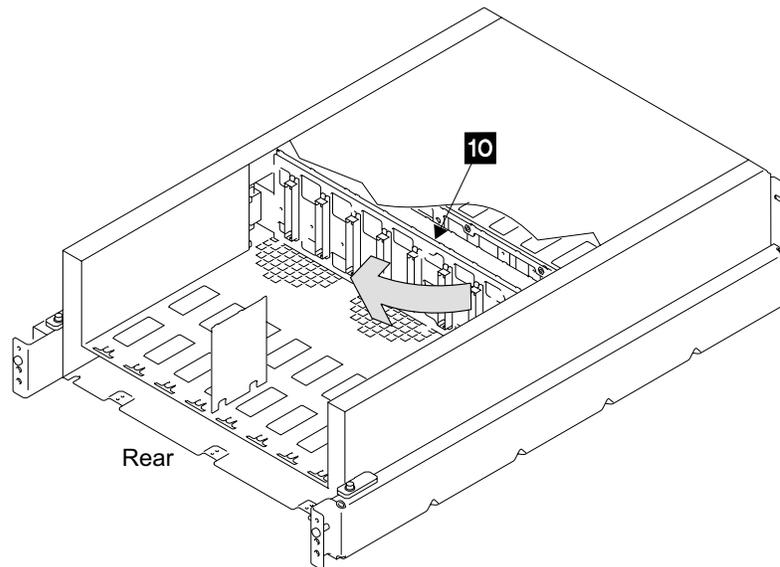


Figure 53. Back Backplane Assembly Removal (S008405m)

13. Replace parts in the reverse order.

Notes:

- a. Do not tighten the four captive screws in the backplane or the bracket until after you have reinstalled the power cards and bypass cards. The cards can be plugged in more easily if the backplane assembly is free to move slightly.
- b. If you are servicing a SSA DASD Model 020 drawer, ensure that you install two new plastic air baffles (P/N 31H8722). The baffles are self-adhesive. Pull off the protective cover, and attach the baffles.

Back Backplane Assembly, 7133 Model 020

- c. To prevent damage to the SSA device cable connector screws, always use the special screwdriver (SSA tool, P/N 32H7059) to turn them. This screwdriver is in the 2105 ship group.
- d. When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

Bypass Card Removal and Replacement, 7133 Model 020/040

This procedure is for SSA DASD Model 020 and 040 drawers only.

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Note: Unless you have a particular reason, *do not power off the 2105 or SSA DASD drawer when removing a bypass card.*

1. Open the rear cover of the 2105 Model 100 rack and locate the SSA DASD Model 020 or 040 drawer with the bypass card you will be removing. See “Locating a DDM Bay or SSA DASD Model 020 or 040 Drawer in a 2105 Rack” in chapter 7 of the *Enterprise Storage Server Service Guide, Volume 3*, and Figure 54 on page 45. in chapter 4, volume 2 of this book.
 - **Bypass cards, SSA DASD Model 020 and 040 drawer:**
 - Bypass card, upper left (R2-, R3-, R4-Yxx-C1) **1**
 - Bypass card, lower left (R2-, R3-, R4-Yxx-C5) **2**
 - Bypass card, upper right (R2-, R3-, R4-Yxx-C2) **3**
 - Bypass card, lower right (R2-, R3-, R4-Yxx-C6) or (R2-, R3-, R4-Yxx-C8) **4**
2. Do the following steps only on the bypass card you are replacing.
3. Disconnect the SSA device cable or cables from the bypass card you are removing.

Notes:

- a. To prevent damage to the SSA device cable connector screws, always use the special screwdriver (SSA tool, P/N 32H7059) to turn them. This screwdriver is in the 2105 ship group.
- b. For concurrent repairs, remove and replace only one bypass card at a time.

Bypass Cards, 7133 Model 020/040

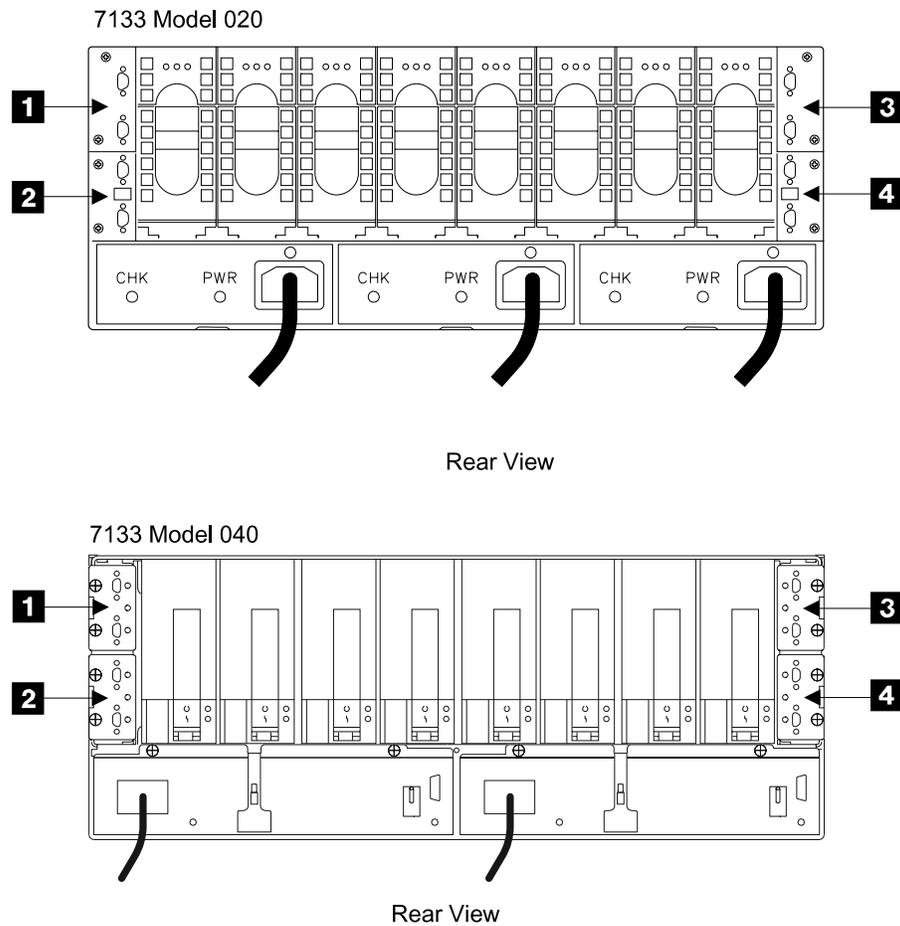


Figure 54. Bypass Card Locations (S007739p)

4. Unscrew the two captive screws **5** on the bypass card until they are free, then pull the card out of the SSA DASD drawer.

Bypass Cards, 7133 Model 020/040

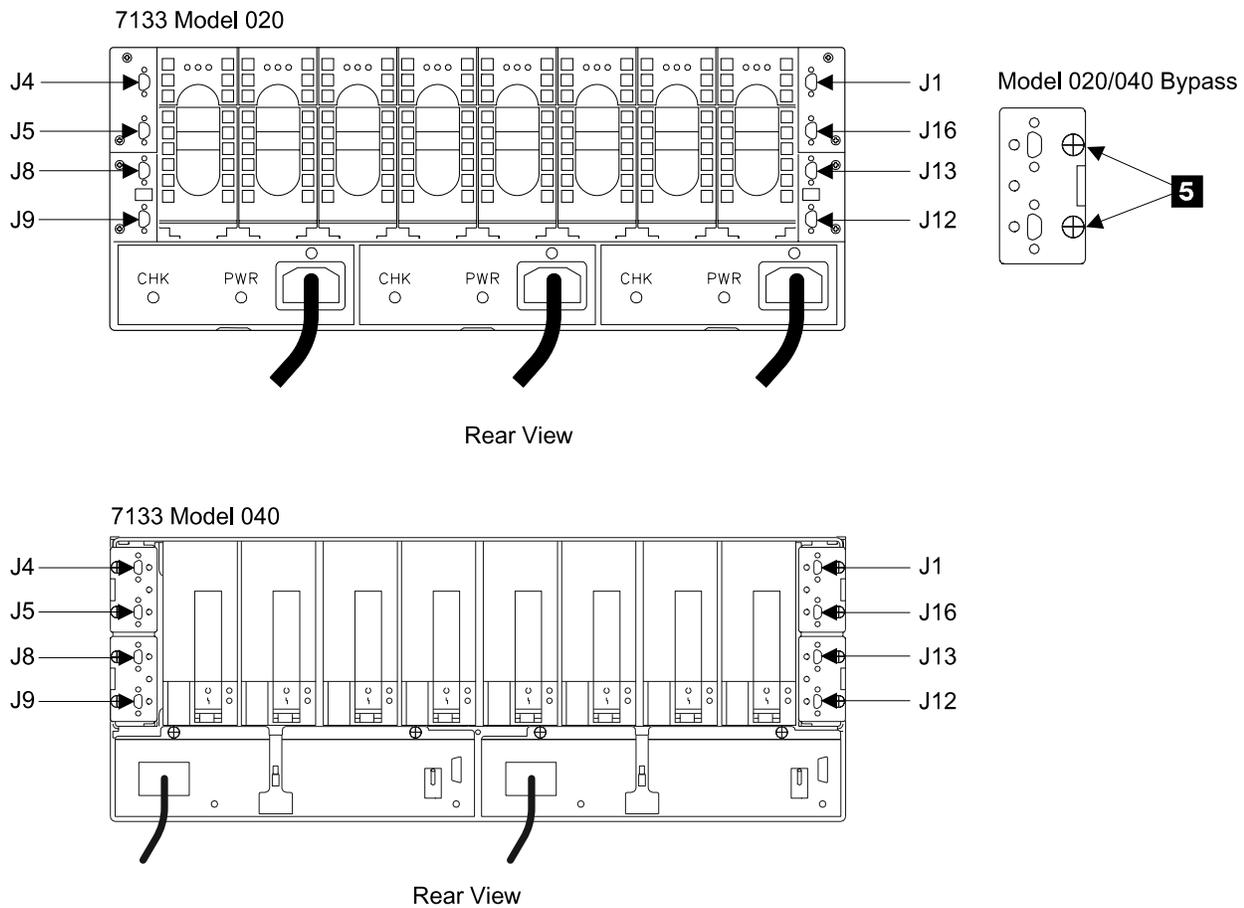
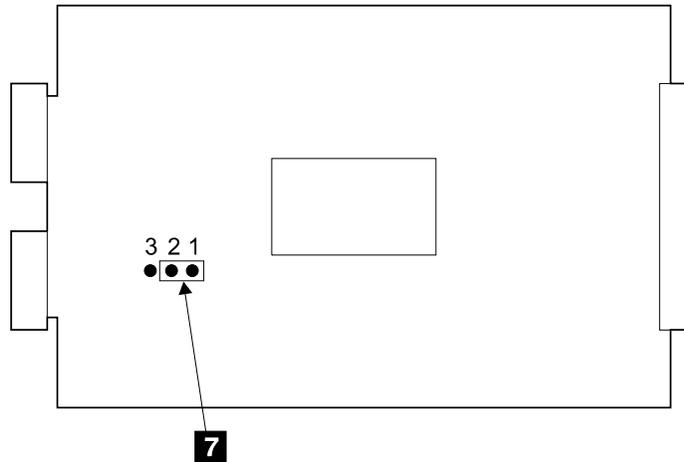


Figure 55. Bypass Card Connectors and Removal (S007738p)

5. Verify that the jumpers on the bypass card you are replacing are set correctly, see Figure 56 on page 47:
 - **SSA DASD Model 020 drawer**
Bypass card **6**, jumper pins 1 to 2 **7**.
 - **SSA DASD Model 040 drawer**
Bypass card **8**, jumper pins 2 to 3 **9** and **10**.

Continue with step 6 on page 47.

6 7133 Model 020 Bypass Card



8 7133 Model 040 Bypass Card

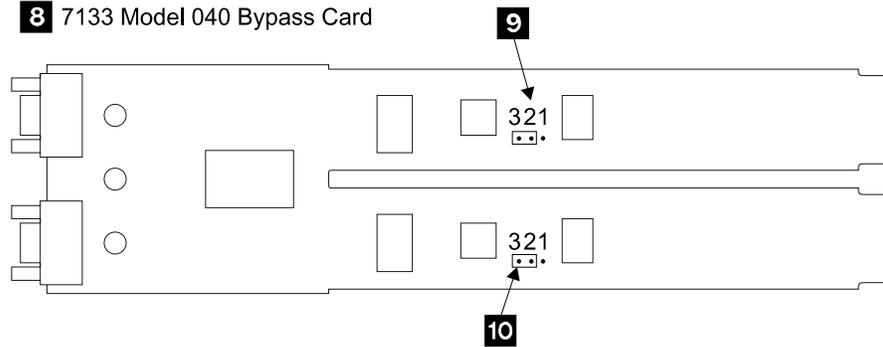


Figure 56. SSA DASD Model 020 and 040 Drawer Bypass Card Jumper Settings (S007737p)

6. Replace parts in the reverse order, remember to reconnect the SSA device cables.

Notes:

1. When installing a bypass card, insure that you push it in until it is seated.
2. When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

Fan Assembly Removal and Replacement, 7133 Model 040

This procedure is for SSA DASD Model 040 drawers only.

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Fan Assembly, 7133 Model 040

Note: Unless you have a particular reason, *do not turn off the 2105 or SSA DASD Model 040 drawer when removing the fan assembly.*

1. Open the front cover of the 2105 Model 100 rack and locate the SSA DASD Model 040 drawer with the fan assembly you will be removing, see "Locating a DDM Bay or SSA DASD Model 020 or 040 Drawer in a 2105 Rack" in chapter 7 of the *Enterprise Storage Server Service Guide, Volume 3*.
 - Fan assembly 1 (R2-, R3-, R4-Yxx-F1) **1**
 - Fan assembly 2 (R2-, R3-, R4-Yxx-F2) **2**
 - Fan assembly 3 (R2-, R3-, R4-Yxx-F3) **3**

The Fan Check indicator **5** on the fan assembly you are replacing should be on (Fan 1 shown).

If the Fan Check indicator is not on, verify that you are working on the correct rack, drawer, and fan power supply assembly.

Note: With some failures, the amber CHK (check) indicator will not turn on. If this is the case, verify again that you are working on the correct fan assembly then continue with the next step.

2. Do the following steps only on the SSA DASD Model 040 drawer fan assembly you are removing.
3. Unscrew the thumbscrew **4** on the fan assembly. Pull the fan out of the SSA DASD Model 040 drawer (Fan 1 shown).

Note: The speed of the operating fans should increase and decrease as the failing fan is removed and replaced.

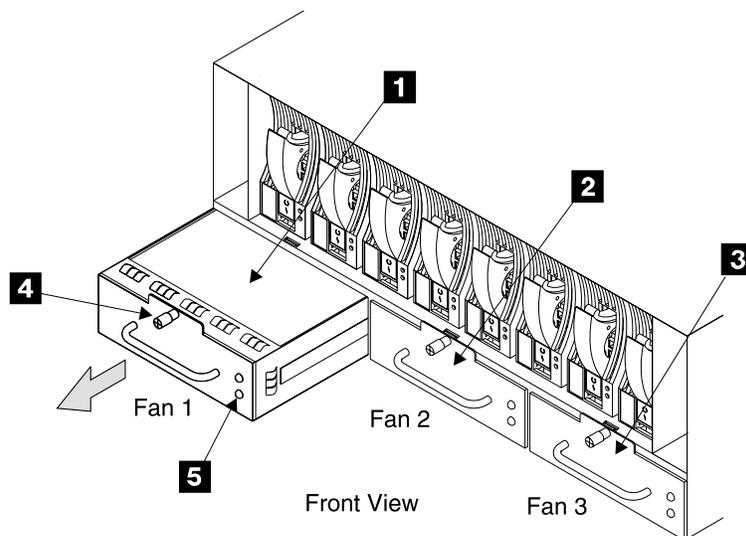


Figure 57. Model 040 Drawer Fan Assembly Locations (T007579m)

4. Replace parts in the reverse order.
5. Return to the procedure that sent you here.

Power Supply Assembly Removal and Replacement, 7133 Model 040

This procedure is for SSA DASD Model 040 drawers only.

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Attention: If you are replacing the power supply assembly concurrently, with power on, insure that you power off or remove only one power supply assembly removed from the SSA DASD Model 040 drawer at a time.

Note: Unless you have a particular reason, *do not power off the 2105 or SSA DASD Model 040 drawer when removing a power supply assembly.*

1. Open the rear cover of the 2105 rack and locate the SSA DASD Model 040 drawer with the power supply assembly you will be removing, see “Locating a DDM Bay or SSA DASD Model 020 or 040 Drawer in a 2105 Rack” in chapter 7 of the *Enterprise Storage Server Service Guide, Volume 3*.
 - Power supply assembly 1 (R2-, R3-, R4-Yxx-V1) **1**
 - Power supply assembly 2 (R2-, R3-, R4-Yxx-V2) **2**

The CHK/PWR (check/power) Good indicator on the power supply assembly you are replacing should be on (amber).

If the CHK/PWR (check/power) Good indicator is not on (amber), verify that you are working on the correct rack, drawer, and power supply assembly.

Note: With some failures, the indicator will not be on (amber). If this is the case, verify again that you are working on the correct power supply assembly then continue with the next step.

2. Do the following steps only on the drawer power supply assembly you are removing.
3. Switch off the power supply assembly. Pull the PWR/FAULT RESET switch **4** out then push it down.

Power supply assembly 1 shown.
4. Unplug the power cable **3** from the power supply assembly.

Power Supply Assembly, 7133 Model 040

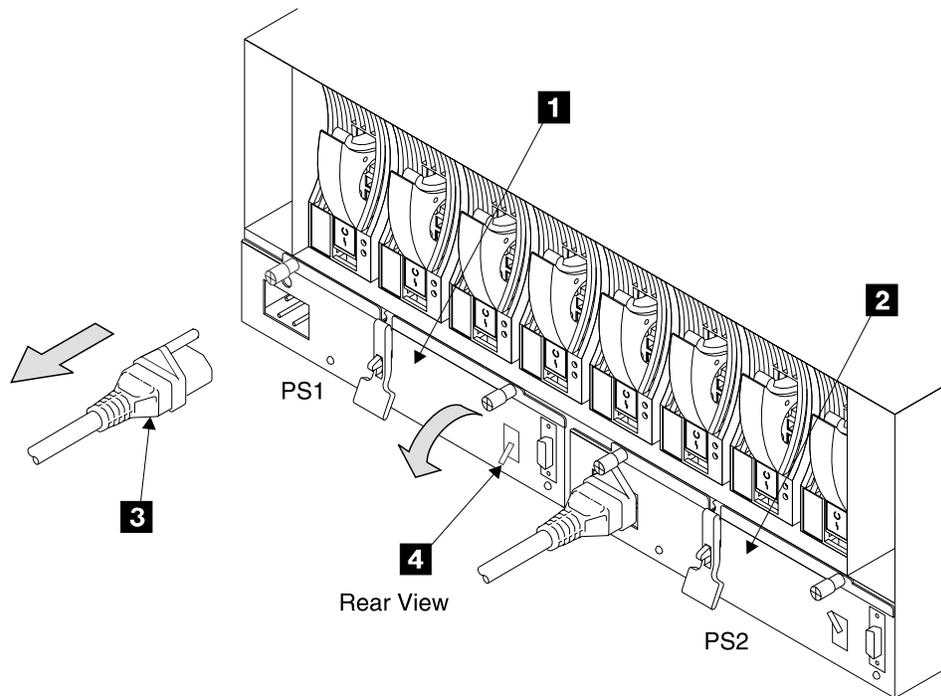


Figure 58. Model 040 Drawer Power Supply Assembly Locations (T007576m)

5. Unscrew the two thumb screws **5** and **6**.
Power supply assembly 1 shown.
6. Press the latch **7**, and pull the lever up **8**, on the power supply assembly.
Pull the assembly out of the SSA DASD Model 040 drawer.

DANGER

Do not attempt to open the covers of the power supply. Power supplies are not serviceable and are to be replaced as a unit. (1008)

Note: This notice is translated into selected languages. See "Translation of Cautions and Danger Notices" in chapter 11 of the *Enterprise Storage Server Service Guide, Volume 3*.

Power Supply Assembly, 7133 Model 040

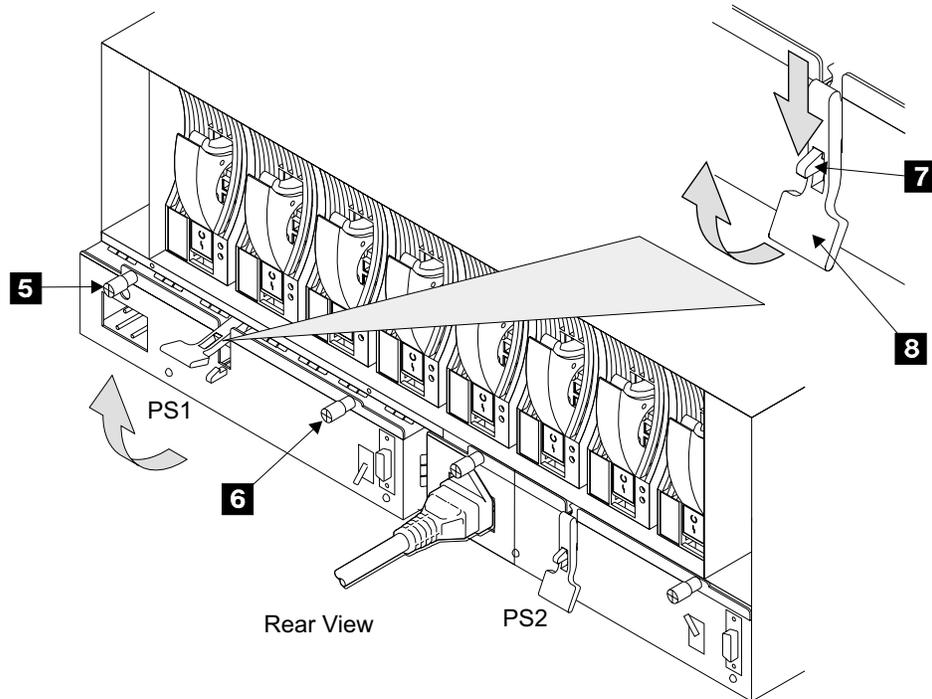


Figure 59. Model 040 Drawer Power Supply Assembly Locations (S008523n)

7. Replace parts in the reverse order, then continue with step 8.
8. Observe the PWR (power) indicator **9** or **10**, on the power supply assembly you just installed.
Is the PWR (power) indicator on?
 - **Yes**, go to step 11 on page 52.
 - **No**, go to step 9.

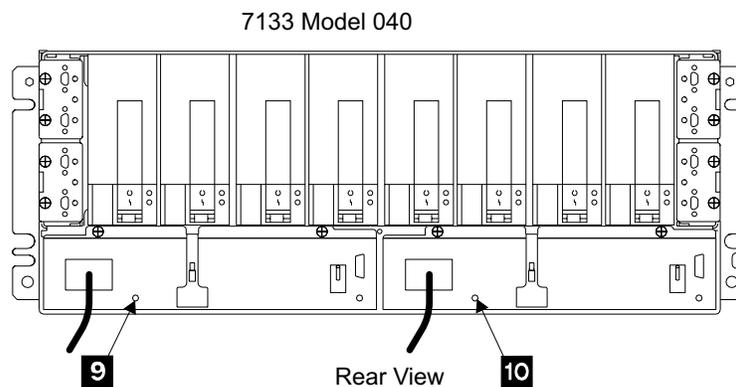


Figure 60. Power Supply Assembly Indicators (S008414l)

9. PPS power to the power supply assembly may have automatically switched off in the PPS.
 - a. Go to the operator panel on the front of the 2105 Model Exx/Fxx.
 - b. Press the Local Power switch to On (up) then release it.

Power Supply Assembly, 7133 Model 040

Note: Pressing the Local Power switch clears power error conditions that have been repaired, it does not affect 2105 power.

- c. Return to the power supply assembly. Wait 15 seconds then observe the PWR (power) indicator again.

Is the PWR (power) indicator on?

- **Yes**, go to step 11.
- **No**, go to step 10.

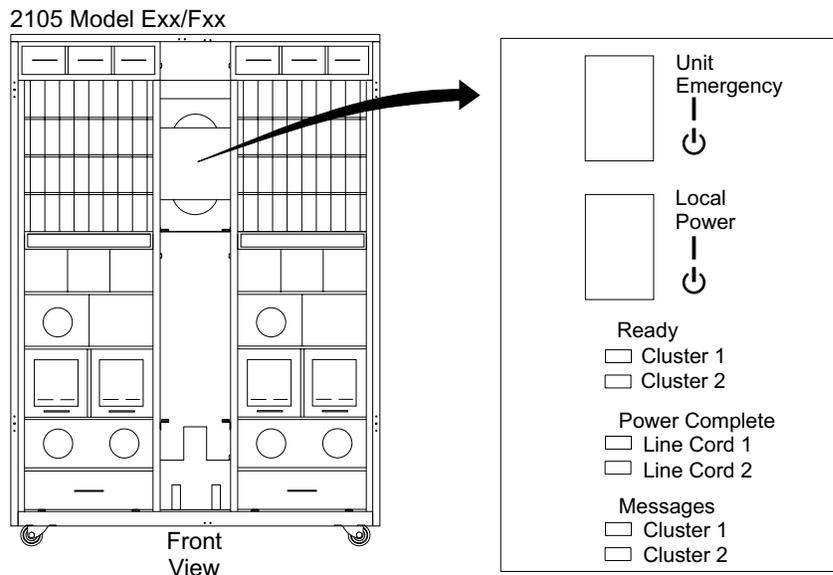


Figure 61. 2105 Model Exx/Fxx Operator Panel Locations (S008810m)

10. The PWR (power) indicator is off because of a failing primary power supply or power supply assembly. Do one or both of the following:
 - Find the primary power supply fault using "MAP 1320: Visual Symptoms" in chapter 3 of the *Enterprise Storage Server Service Guide, Volume 1*.
 - The new power supply assembly may be defective, replace it again.
11. Return to the procedure that sent you here.

Controller Card Assembly Removal and Replacement, 7133 Model 040

This procedure is for SSA DASD Model 040 drawers only.

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in "Working with ESD-Sensitive Parts" on page 4.

Note: Unless you have a particular reason, *do not power off the 2105 when removing a controller card.*

Controller Card Assembly, 7133 Model 040

1. Open the front cover of the 2105 rack and locate the SSA DASD Model 040 drawer with the controller card you will be removing, see "Locating a DDM Bay or SSA DASD Model 020 or 040 Drawer in a 2105 Rack" in chapter 7 of the *Enterprise Storage Server Service Guide, Volume 3*.
 - Controller card assembly (R2-, R3-, R4-Yxx-CA) **1**
2. Do the following steps only on the controller card you are removing.
3. Unscrew the two captive screws **2** and **3**, on the controller card
4. Pull the controller card **1**, out of the SSA DASD Model 040 drawer.

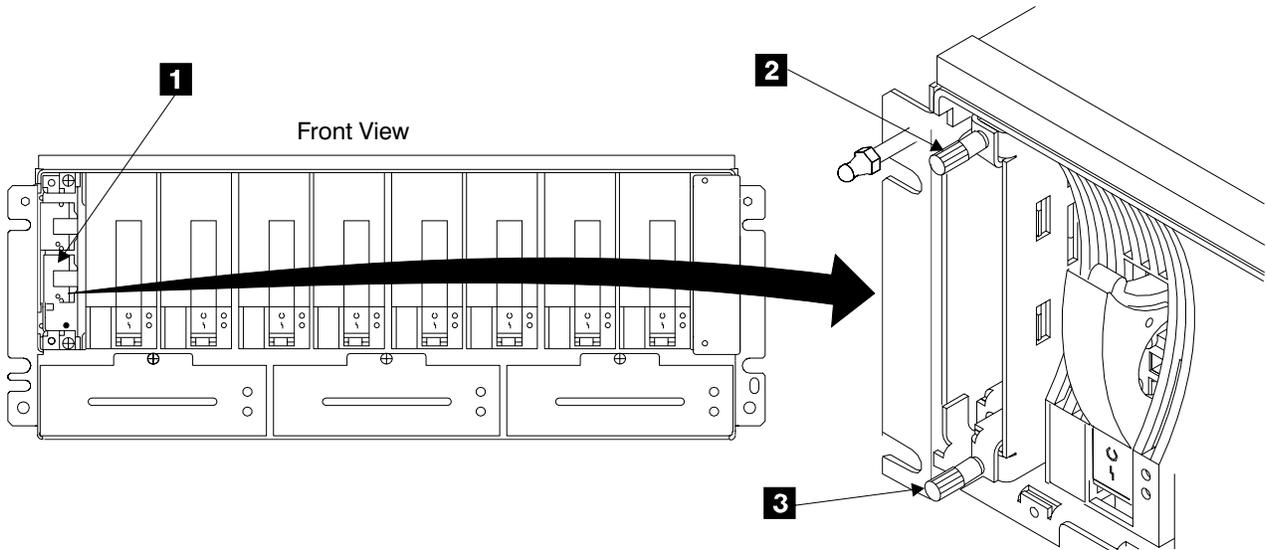


Figure 62. Controller Card Removal (S008415m)

5. Replace parts in the reverse order.

Notes:

1. When installing a controller cards, insure that you push it in until it is seated.
2. **Attention:** After the new controller card is installed, go to the rear of the drawer. Power both drawer power supplies off, pull both PWR/FAULT RESET switches, **4** in Figure 58 on page 50, out then push them down. Wait 20 seconds. Power both drawer power supplies on, pull the switches out then push them up.
3. When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

Frame Assembly Removal and Replacement, 7133 Model 040

This procedure is for SSA DASD Model 040 drawers only.

Notes:

1. **Use this procedure only if you are replacing the frame assembly of the Model 040 drawer.** If you are removing a complete Model 040 drawer from the 2105 (for example, to locate it elsewhere), go to "Chapter 5: Install and Remove" on page 201.
2. You will need another service support representative to help you remove the frame assembly from the rack.

Attention: This is *not* a stand-alone procedure.

Frame Assembly, 7133 Model 040

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Note: Unless you have a particular reason, *do not power off the 2105 when removing the frame assembly*. Power cables and external SSA cables that connect the Model 040 drawer to the using system can be disconnected while that system is running.

1. Open the front and rear covers of the 2105 rack and locate the SSA DASD Model 040 drawer with the frame assembly you will be removing, see “Locating a DDM Bay or SSA DASD Model 020 or 040 Drawer in a 2105 Rack” in chapter 7 of the *Enterprise Storage Server Service Guide, Volume 3*.
 - Frame assembly (R2-, R3-, R4-Yxx-P1)
2. Do the following steps only on the SSA DASD Model 040 drawer frame assembly you are removing.
3. Power off both power supply assemblies in the Model 040 drawer. Pull both PWR/FAULT RESET switches, **2** and **4** in Figure 25 on page 23, out then push them down (power supply assembly 1 shown).
4. Carefully make a note of the locations of the disk drive modules (DDMs) that are in the Model 040 drawer. This will aid in the reinstall of the DDMs into their original slots. Attach identifying labels to the DDMs.

Attention: Verification of the replacement will not be successful if the DDMs are not reinstalled in the same positions they were removed from.
5. Remove all of the front and rear disk drive modules. See “SSA Disk Drive Module Removal and Replacement, 7133 Model 020/040” on page 24.
6. Remove the three fan assemblies from the front of the Model 040 drawer, see “Fan Assembly Removal and Replacement, 7133 Model 040” on page 47.
7. Remove the controller card assembly from the front of the Model 040 drawer, see “Controller Card Assembly Removal and Replacement, 7133 Model 040” on page 52.
8. Remove the two power supply assemblies from the back of the Model 040 drawer, see “Power Supply Assembly Removal and Replacement, 7133 Model 040” on page 49.
9. Make a note of which SSA cables are connected to each bypass card and on which connector. See “SSA Cable Removal and Replacement, DDM Bay and 7133 Model 020/040” on page 17.
10. Disconnect the external SSA cables the four bypass cards. To prevent damage to the SSA connector screws, use the special screwdriver (SSA tool, part 32H7059) to unscrew them. The screwdriver is supplied with the Model 040 drawer ship group. See “SSA Cable Removal and Replacement, DDM Bay and 7133 Model 020/040” on page 17.
11. Remove the bypass cards from the drawer, see “Bypass Card Removal and Replacement, 7133 Model 020/040” on page 44.
12. Remove the four screws **1** from the front of the frame assembly.

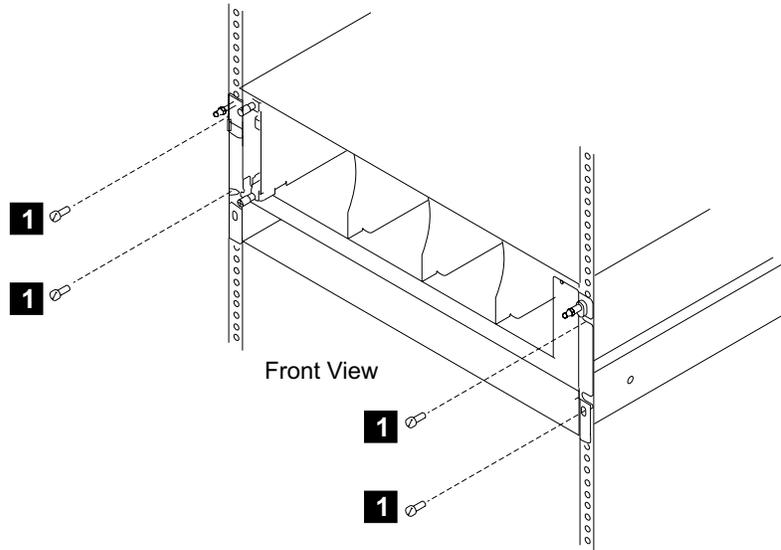


Figure 63. Removing the Frame Assembly From the Rack (S008611m)

13. Read the following Caution notice before continuing.

CAUTION:

This unit weighs between 18 kg (39.7 pounds) and 32 kg (70.5 pounds). Two persons are required to safely move it. Using less than two persons to move it can result in injury. (1054)

Note: This notice is translated into selected languages. See "Translation of Cautions and Danger Notices" in chapter 11 of the *Enterprise Storage Server Service Guide, Volume 3*.

With aid from another service support representative, pull the frame assembly forward and remove it from the 2105.

14. Locate the blank label in the ship group. Copy the information from serial number label **2**, onto the blank label. Install the label on the front right mounting flange **3**.

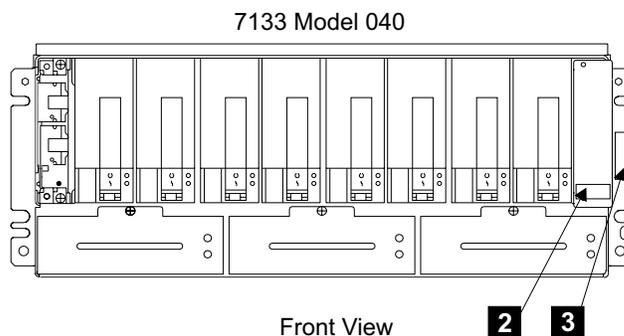


Figure 64. Model 040 Drawer Serial Number Plate Location (S008223l)

15. Replace parts in the reverse order.

Frame Assembly, 7133 Model 040

Notes:

- a. When you reinstall the frame assembly into the rack, reinstall the front mounting screws in the following sequence:
 - 1) Install the lower left-hand front mounting screw. This screw locates the 7133 laterally. Do not fully tighten the screw yet.
 - 2) Install the other three front mounting screws. Do not fully tighten the screws yet.
 - 3) Fully tighten the lower left-hand front mounting screw.
 - 4) Fully tighten the other three front mounting screws.
 - b. When you reinstall the external SSA cables, use the special screwdriver (SSA tool, part 32H7059) to tighten the SSA connector screws.
16. Return to the procedure that sent you here.

2105 MODEL Exx/Fxx and EXPANSION ENCLOSURE FRU REPLACEMENT PROCEDURES:

The FRU remove and replace procedures for the 2105 Model Exx/Fxx and Expansion Enclosure follow:

Rack, Subsystem Power On and Off Procedures, 2105 Model Exx/Fxx and Expansion Enclosure

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Subsystem Power Off

Note: When the subsystem is powered off, it goes into a power standby mode. In power standby mode, both primary power supplies are active and supply power to the RPC cards and operator panel switches.

1. Instruct the system operator to vary all of the devices in the subsystem offline.
2. Inform the customer that the complete storage facility subsystem will be unavailable.
3. Locate the subsystem operator panel on the front of the 2105 Model E10/E20 for the subsystem you are powering off.

Rack, Subsystem Power, 2105 Model Exx/Fxx and Expansion Enclosure

2105 Model Exx/Fxx

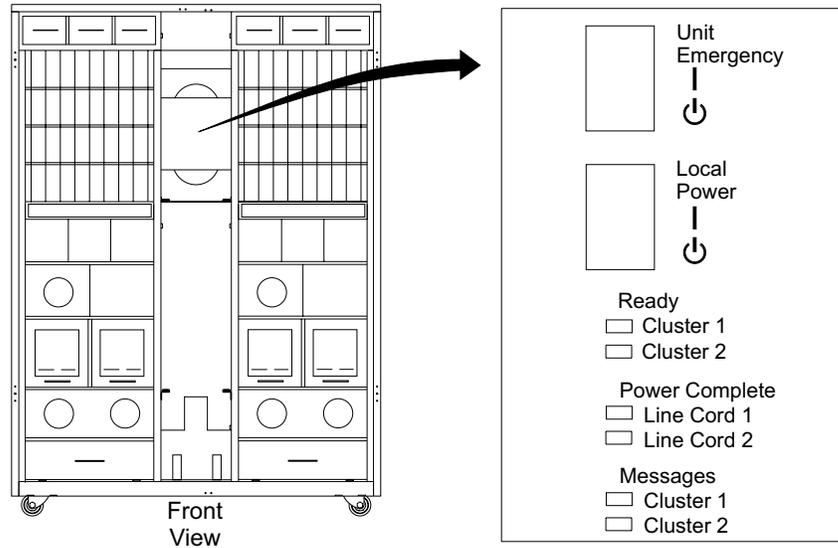


Figure 65. 2105 Model E10/E20 Operator Panel Location (S008810m)

- Set the Local Power switch to Off (down).
- Wait for the Power Complete indicators for Line Cords 1 and 2 to go off.

Subsystem Power On

- Locate the subsystem operator panel on the front of the 2105 Model E10/E20 you will be powering on.

2105 Model Exx/Fxx

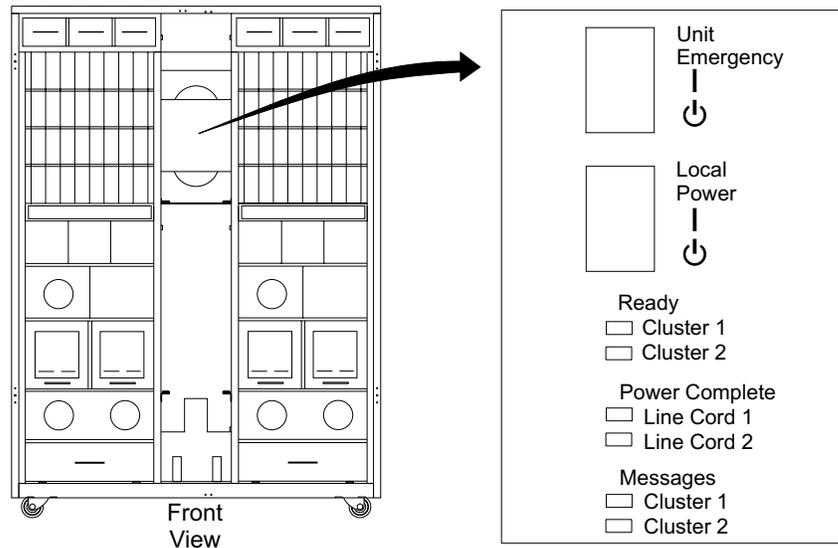


Figure 66. 2105 Model E10/E20 Operator Panel Location (S008810m)

- Set the Local Power switch to On (up).
- Wait for the Power Complete indicators for Line Cords 1 and 2 to go on.

Primary Power Supply, 2105 Model Exx/Fxx and Expansion Enclosure

Primary Power Supply Removal and Replacement, 2105 Model Exx/Fxx and Expansion Enclosure

The primary power supply (PPS) is one FRU. Always replace it as a complete FRU.

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Note: Unless you have a particular reason, *do not power off the 2105 Model Exx/Fxx or 2105 Expansion Enclosure rack when removing the primary power supply.*

1. Open the rear cover of the 2105 Model Exx/Fxx or 2105 Expansion Enclosure rack and locate the primary power supply you will be removing:

Note: 2105 Model Exx/Fxx rack shown.

- **2105 Model Exx/Fxx:**

- Primary power supply 1, right (R1-V1) **1**
- Primary power supply 2, left (R1-V2) **2**

- **2105 Expansion Enclosure:**

- Primary power supply 1, right (R2-V1) **1**
- Primary power supply 2, left (R2-V2) **2**

2. Determine the part number of the failing primary power supply by reading the bar-code label on the left side of the power supply, see Figure 67 on page 59. Check one of the following TDRs for the latest power supply part number information:
 - 2105 Models E10/E20, see TDR H167296
 - 2105 Model F10/F20, see TDR H17492

Primary Power Supply, 2105 Model Exx/Fxx and Expansion Enclosure

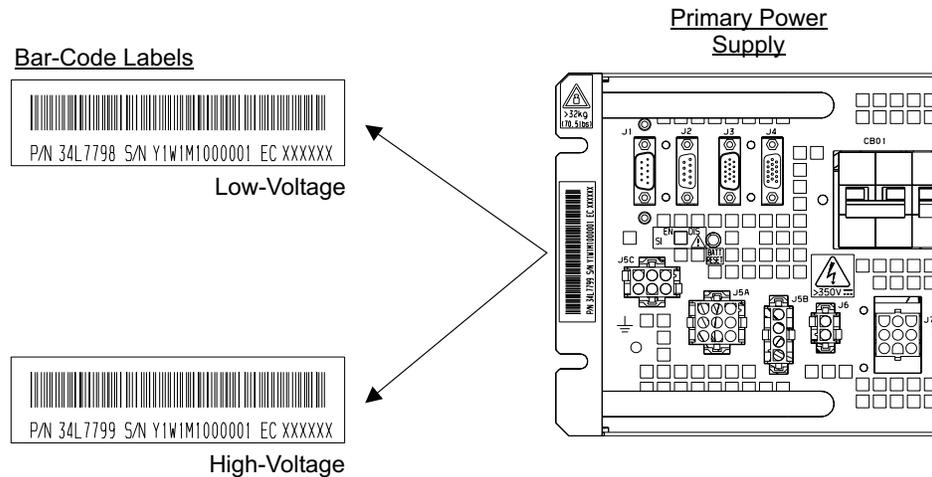


Figure 67. 2105 Low-/High-Voltage Primary Power Supply Identification (S008768m)

Note: The J5C connector on the low-voltage and high-voltage power supplies is not used on this product.

3. Select the latest available replacement primary power supply that meets the racks requirements for input voltage and the wattage:
 - 2105 Model Exx/Fxx, 6 kW PPS
 - 2105 Expansion Enclosure, 8.5 kW PPS

Notes:

- a. Always use the latest available primary power supply P/N.
- b. When an auto-ranging primary power supply is replaced with a power supply with a low-voltage or high-voltage designation, a new power information label is required. The new label replaces the label on the top corner of the right rear cover:
 - 2105 Model Exx/Fxx, combination plate label 34L3834
 - 2105 Expansion Enclosure, combination plate label 34L7907

Attention: Do not install a low voltage primary power supply in a high voltage 2105. A low-voltage primary power supply will be damaged if connected to a high voltage ac input.

4. Do the following steps only on the primary power supply you are replacing:
 - If you are replacing primary power supply 1 (Rx-V1), go to step 5.
 - If you are replacing primary power supply 2 (Rx-V2), go to step 6.
5. Set the 390 V battery 1 **5** MASTER circuit breaker **4** to Off (down), then go to step 6.

Attention: If the 390 V battery MASTER circuit breaker is not set to off, false battery failure errors will occur when the new PPS is powered on.

6. Press the PPS system power MAIN LINE circuit breaker (CB00), **7** to Off (down).
7. **Attention:** Logic voltages are present on the cable being removed in this step. Use caution when disconnecting all cables **8**. Unplug the cables by pulling the connector straight back from the primary power supply. Disconnect the J3 cable from the PPS.

Primary Power Supply, 2105 Model Exx/Fxx and Expansion Enclosure

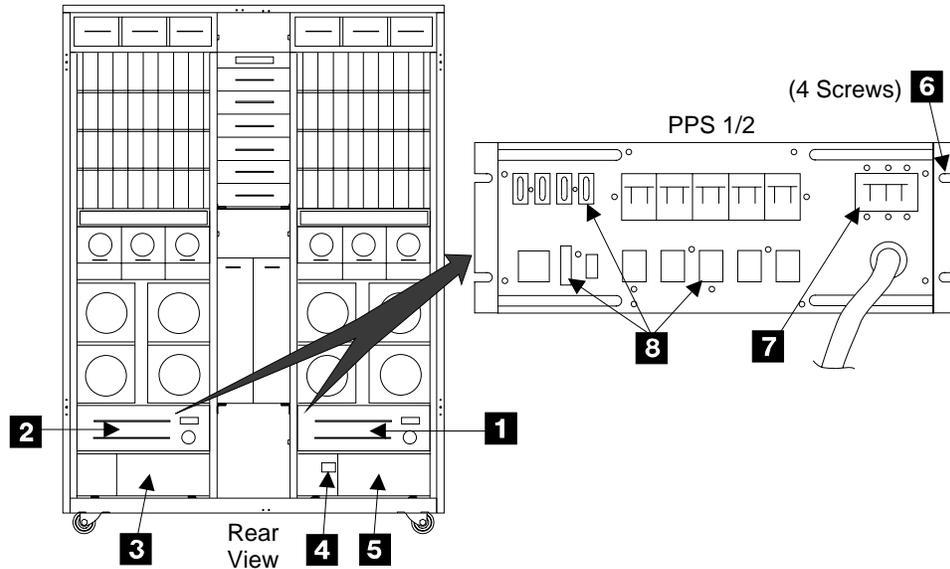


Figure 68. Primary Power Supply Locations (S007675m)

8. Disconnect the following cables from the PPS in the order shown: J7-5, J7-4, J7-3, J7-2, J7-1, J6, J4, then J2 (cable J2 is only present on PPSs in rack R2).
 9. Disconnect cable J5A then J5B from the PPS.
 10. Instruct the customer to switch off the circuit breaker that supplies mainline ac voltage to the power receptacle for the primary power supply you are replacing.
 11. **Attention:** Attach a "Do Not Operate" tag, S229-0237, and the safety lockout padlock to the customer's ac voltage circuit breaker. Refer to the *Electrical Safety for IBM Customer Engineers* book.
 12. Open the front cover of the 2105 rack. Disconnect the mainline power cable, for the PPS you are replacing, from the connector on the line cord bracket:
 - Primary Power Supply 1 **9**
 - Primary Power Supply 2 **10**
- Note:** The mainline power cables are connected to the line cord bracket next to the PPS being removed. 2105 Model Exx/Fxx rack shown.
13. Remove the mainline power cable connector mounting plate screw **11**. Remove the mounting plate **12**. Move the cable and connector so they are free of the line cord bracket.

Primary Power Supply, 2105 Model Exx/Fxx and Expansion Enclosure

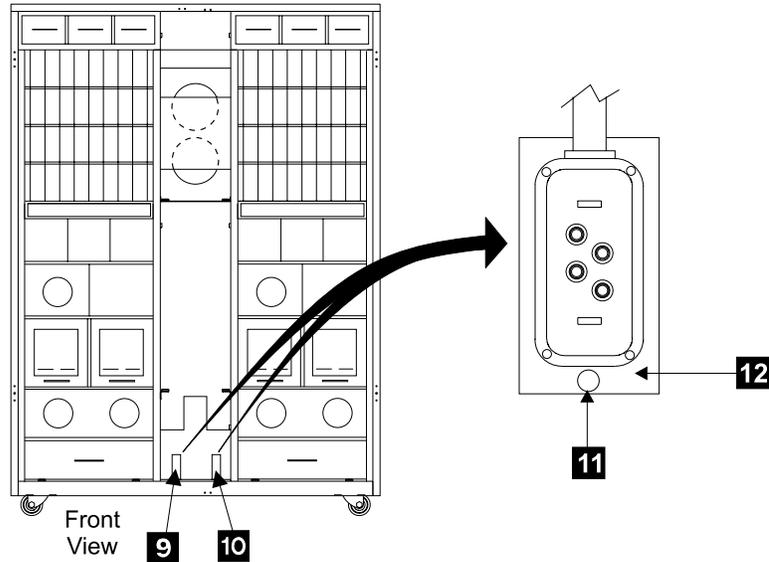


Figure 69. PPS Line Cord Bracket (S007668m)

14. PPS 1 only, loosen the two cable routing bracket screws **15** and slide the bracket **16** out the rear of the frame. Move the mainline power cable so it is not behind the bracket.
15. Disconnect any cable retention then push the PPS mainline power cable out the back of the 2105.
16. Remove the screw and star washer that mounts the PPS ground wire to the frame:
 - Primary Power Supply 1 **17**
 - Primary Power Supply 2 **14**

Note: Save the screw and any star washer for reassembly.

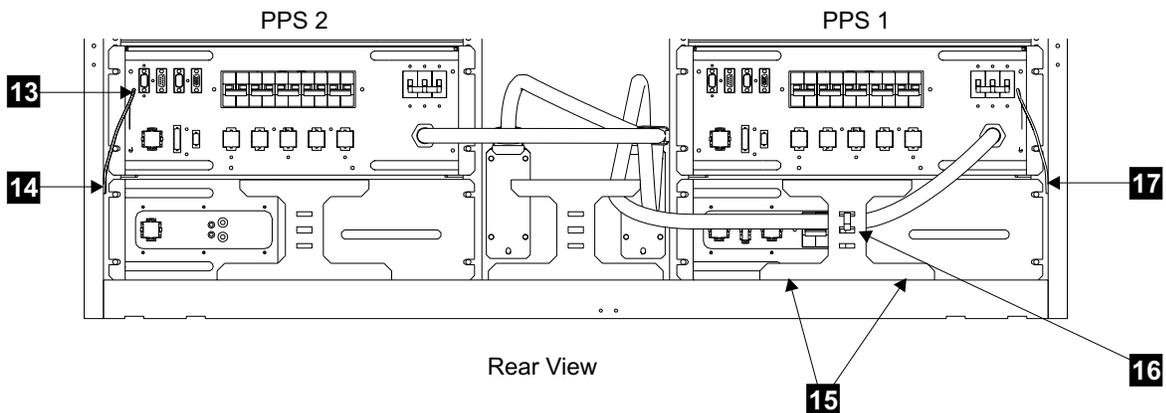


Figure 70. PPS Line Cord Bracket (S008383m)

17. Remove the four primary power supply mounting screws **6**.
18. Read the following Caution notice before continuing.

Primary Power Supply, 2105 Model Exx/Fxx and Expansion Enclosure

CAUTION:

This unit weighs between 32 kg (70.5 pounds) and 55 kg (121.2 pounds). Three persons are required to safely move it. Using less than three persons to move it can result in injury. (1055)

Slide the primary power supply out of the frame.

19. Locate the 2105 information label on the top corner of the right rear cover. Verify that the machine input voltage information on this label matches the voltage of the primary power supply being installed.
20. Before installing the new PPS into the frame do the following:
 - a. Set PPS switch S1 (micro-processor switch) **18** to the DIS (disable) position.
 - b. Set PPS system power MAIN LINE circuit breaker (CB00) to Off (down).
21. Install the PPS into the rear of the frame:
 - a. Install the four PPS mounting screws.
 - b. PPS 2 only, move the ground wire to the left side of the new PPS **13**.
 - c. Connect the PPS ground wire to the frame using the screw and star washer.
22. Install the mainline power cable connector into the line cord bracket. Install the mainline power cable mounting plate **12** and screw **11**.
23. PPS 1 only, install the cable routing bracket **16** with the mainline power cable behind it. Tighten the two cable routing bracket screws **15**. Reinstall any cable retention.
24. Connect the mainline power cable to the connector on the line cord bracket:
 - Primary Power Supply 1 **9**
 - Primary Power Supply 2 **10**

Note: The mainline power cables are connected to the line cord bracket next to the PPS being replaced.

25. Instruct the customer to switch on the mainline circuit breaker that supplies mainline ac voltage to the power receptacle for the primary power supply you are replacing.
26. Determine if you are replacing PPS 1 **1** or PPS 2 **2**:
 - If you are replacing PPS 1, continue with the next step.
 - If you are replacing PPS 2, go to 29
27. Connect cable J5B then J5A to the PPS.
28. Set the 390 V battery MASTER circuit breaker **4** to On (up).
29. Connect the following cables to the PPS in the order shown: J2 (cable J2 is only present on PPSs in rack R2), J4, J6, J7-1, J7-2, J7-3, J7-4, then J7-5.
30. **Attention:** Logic voltages are present on the cable being connected in this step. Use caution when connecting this cable. Connect the cable by pushing the cable connector straight into the PPS connector until it is firmly seated. Connect cable J3 to the PPS.
31. Verify that all other circuit protectors (CB01 to CB05) are set to On (up).
32. Set the PPS system power MAIN LINE circuit breaker (CB00) to On (up).
33. Press the operator panel Local Power switch momentarily to On (up).

Note: When the battery circuit breaker is off, PPS 1 may display a status code of 03 or 04. Do not take any action to repair the 03 or 04 status code,

Primary Power Supply, 2105 Model Exx/Fxx and Expansion Enclosure

continue with the replacement and verification of PPS 1. If the 03 or 04 status code is still displayed when this procedure is completed, repair the problem using "MAP2470: Battery Set Detection Problem" in chapter 3 of the *Enterprise Storage Server Service Guide, Volume 1* book.

34. When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here

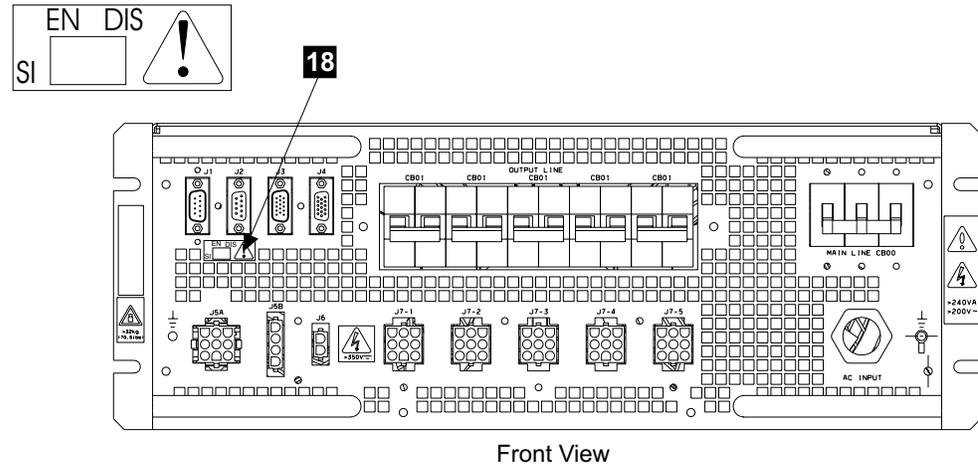


Figure 71. PPS Micro-Processor Switch Location (S008479m)

Mainline Power Cable Removal and Replacement, 2105 Model Exx/Fxx and Expansion Enclosure

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in "Working with ESD-Sensitive Parts" on page 4.

Note: Unless you have a particular reason, *do not power off the 2105 Model Exx/Fxx or 2105 Expansion Enclosure rack when removing the mainline power cable.*

1. Open the front cover of the 2105 Model Exx/Fxx or 2105 Expansion Enclosure rack and locate mainline power cable you will be removing:

Note: The mainline power cables are connected to the line cord bracket next to the PPS they feed.

2105 Model Exx/Fxx rack shown.

- **2105 Model Exx/Fxx:**
 - Mainline power cable 1, (R1-V1-Jx.x) **1**
 - Mainline power cable 2, (R1-V2-Jx.x) **2**
- **2105 Expansion Enclosure:**
 - Mainline power cable 1, (R2-V1-Jx.x) **1**

Mainline Power Cable, 2105 Model Exx/Fxx and Expansion Enclosure

- Mainline power cable 2, (R2-V2-Jx.x) **2**

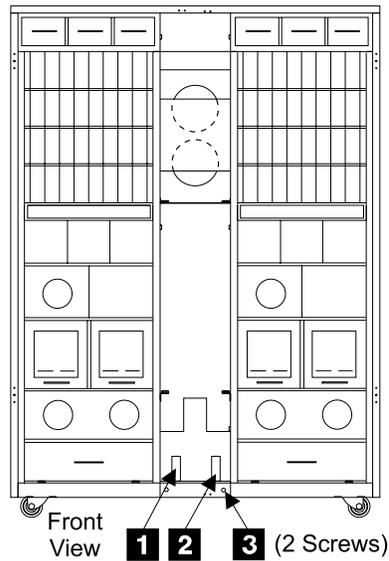


Figure 72. Mainline Power Cable Locations (S007666m)

- Set the 390 V battery 1 **7** MASTER circuit breaker (CB, S2) **6** to Off (down), then go to step 3.
- Do the following steps only on the mainline power cable you are replacing and the PPS it is attached to.
 - Mainline power cable 1 **1**, connects to PPS 1 **8**
 - Mainline power cable 2 **2**, connects to PPS 2 **4**
- Press the PPS System Power MAIN LINE circuit breaker (CB00), **9** to Off (down).

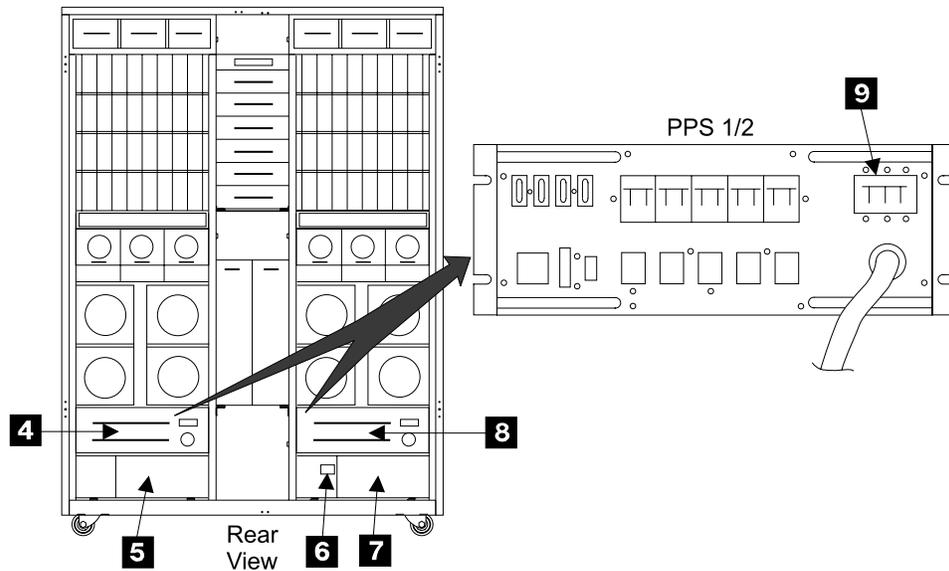


Figure 73. Primary Power Supply Locations (S007674m)

Mainline Power Cable, 2105 Model Exx/Fxx and Expansion Enclosure

5. Instruct the customer to switch off the circuit breaker that supplies mainline ac voltage to the power receptacle for the primary power supply you are replacing.
6. **Attention:** Attach a “Do Not Operate” tag, S229-0237, and the safety lockout padlock to the customer’s ac voltage circuit breaker. Refer to the *Electrical Safety for IBM Customer Engineers* book.
7. Disconnect the mainline power cable from the customers AC power outlet:
 - **Plug in connectors**, you can disconnect.
 - **Wired connection**, instruct the customer to call a licensed electrician to disconnect the wired mainline power cable from the customers mainline power source.
8. Remove the two center tailgate bar mounting crews **3** and remove the bar.
9. Release the top and bottom line cord latches, then disconnect the mainline power cable **1** or **2** from the line cord bracket.
10. Remove the mainline power cable from the 2105. With some installations you may have to remove the tailgate bar for additional clearance.
11. Replace parts in the reverse order.

After the replacement, do the following steps in the order shown:

 - a. Set the customer mainline AC circuit breaker to on.
 - b. Set the 390 V battery MASTER circuit breaker (CB, S2) to On (up).
 - c. Set the PPS System Power MAIN LINE circuit breaker (CB00) to On (up).
 - d. Press the operator panel Local Power switch momentarily to On (up).

Notes:

- 1) When the battery circuit breaker is off, PPS 1 may display a status code of 03 or 04. Do not take any action to repair the 03 or 04 status code, continue with the replacement and verification of PPS 1. If the 03 or 04 status code is still displayed when this procedure is completed, repair the problem using “MAP2470: Battery Set Detection Problem” in chapter 3 of the *Enterprise Storage Server Service Guide, Volume 1* book.
 - 2) Pressing the Local Power switch clears power error conditions that have been repaired, it does not affect 2105 power.
12. When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

Primary Power Supply Fan Removal and Replacement, 2105 Model Exx/Fxx and Expansion Enclosure

The primary power supply (PPS) fan is one FRU. Always replace it as a complete FRU.

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Primary Power Supply Fan, 2105 Model Exx/Fxx and Expansion Enclosure

Note: Unless you have a particular reason, *do not power off the 2105 Model E10/E20 or 2105 Expansion Enclosure rack when removing the primary P.S. fan.*

1. Open the front cover of the 2105 Model E10/E20 or 2105 Expansion Enclosure rack and locate the primary power supply fan you will be removing:

2105 Model E10/E20 rack shown.

- **2105 Model E10/E20:**

- Primary Power Supply 1, Fan 1, (R1-V1-F1) **1**
- Primary Power Supply 1, Fan 2, (R1-V1-F2) **2**
- Primary Power Supply 2, Fan 1, (R1-V2-F1) **3**
- Primary Power Supply 2, Fan 2, (R1-V2-F2) **4**

- **2105 Expansion Enclosure:**

- Primary Power Supply 1, Fan 1, (R2-V1-F1) **1**
- Primary Power Supply 1, Fan 2, (R2-V1-F2) **2**
- Primary Power Supply 2, Fan 1, (R2-V2-F1) **3**
- Primary Power Supply 2, Fan 2, (R2-V2-F2) **4**

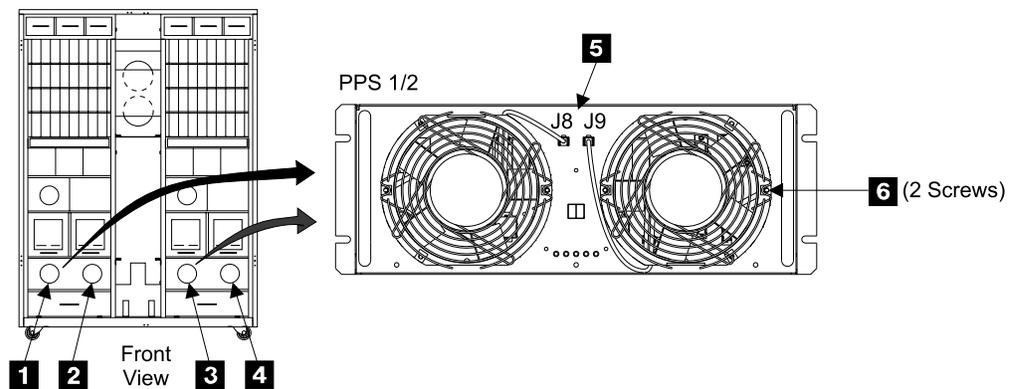


Figure 74. Primary Power Supply Fan Locations (S008050m)

2. Do the following steps only on the primary power supply (PPS) fan you are replacing.
3. Unplug the fan from its J8 or J9 connector **5** on the PPS.
4. Observe the fan you are removing so you can mount the new fan in exactly the same position. Note the airflow and rotation arrows and the location of the fan power cable.
5. Remove the two fan mounting screws **6** and remove the fan from the PPS
6. Transfer the wire fan guard to the new fan.
7. Replace parts in the reverse order.

Install the new fan with its power lead and airflow and rotation arrows in the same positions as on the fan you removed.

Note: When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

390 V Battery Set, 2105 Model Exx/Fxx and Expansion Enclosure

390 V Battery Set Removal and Replacement, 2105 Model Exx/Fxx and Expansion Enclosure

The 390 V battery set is one FRU. Always replace battery 1 and 2 at the same time.

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Note: Unless you have a particular reason, *do not power off the 2105 Model Exx/Fxx or 2105 Expansion Enclosure rack when removing the 390 V battery set.*

1. Open the rear cover of the 2105 Model Exx/Fxx or 2105 Expansion Enclosure rack and locate the 390 V battery set you will be removing:

2105 Model Exx/Fxx rack shown.

Attention: Both batteries in a 390 V battery set are always replaced at the same time. The FRU is always both batteries.

- **2105 Model Exx/Fxx:**

- 390 V Battery 1, (R1-V3) **1**
- 390 V Battery 2, (R1-V4) **2** and

- **2105 Expansion Enclosure:**

- 390 V Battery 1, (R2-V3) **1**
- 390 V Battery 2, (R2-V4) **2** and

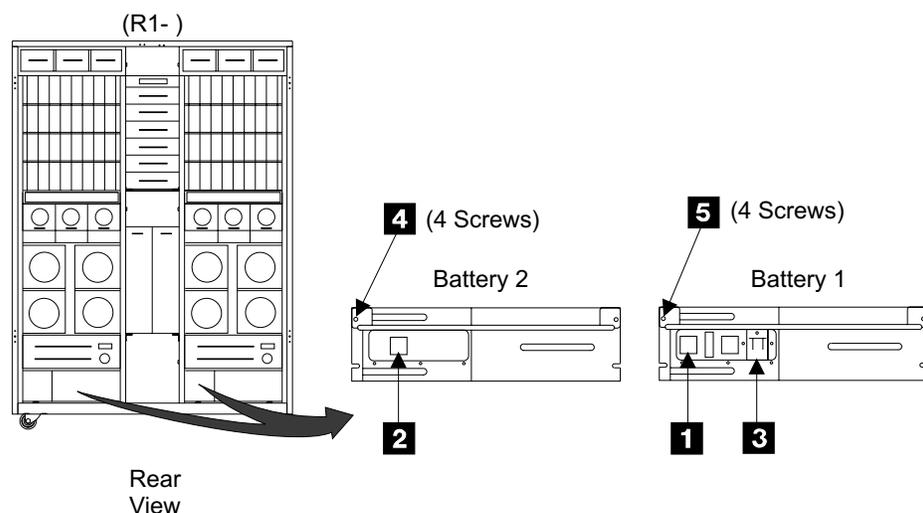


Figure 75. 390 V Battery Set Locations (S007677m)

2. Do the following procedures only on the 2105 with the battery set you are replacing.

390 V Battery Set, 2105 Model Exx/Fxx and Expansion Enclosure

3. Disconnect any cable fastened to the rear cable routing brackets **6** and **9**.
4. Loosen the two cable routing bracket screws **7** and **8** on each bracket, and slide the brackets **6** and **9** out the rear of the frame.

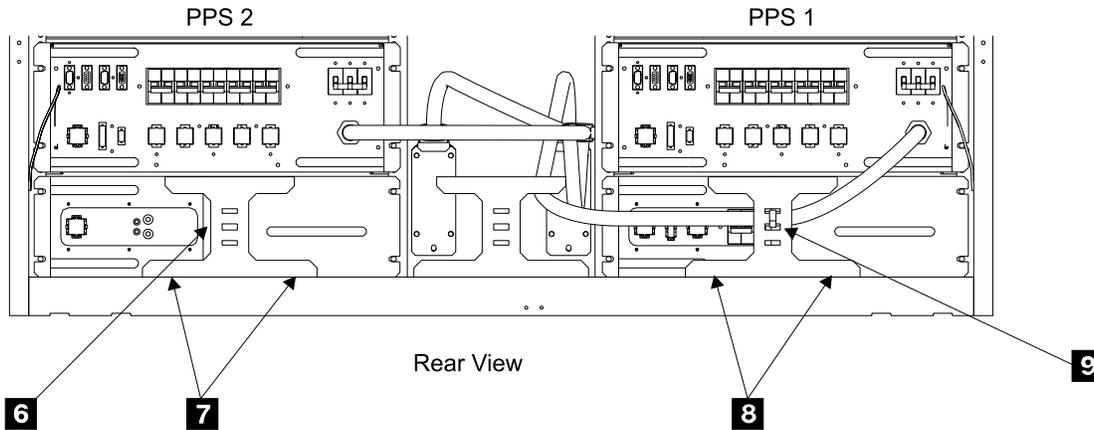


Figure 76. Cable Routing Bracket Removal (S008250m)

5. On 390 V battery set 1, set the MASTER circuit breaker (CB, S2) **3** to Off (down).
6. Read the following DANGER notice before continuing:

DANGER

Greater than 300 V dc present on the bulk P.S. to 390 V battery cable connector. To prevent a possible electrical shock, always disconnect this cable at the bulk power supply Battery Power connector before servicing the 390 V battery. (1011)

Note: This notice is translated into selected languages. See "Translation of Cautions and Danger Notices" in chapter 11 of the *Enterprise Storage Server Service Guide, Volume 3*.

Attention: When removing the battery, always disconnect J5A first, then J5B. When installing the battery always connect J5B first, then J5A.

- a. Disconnect the 390 V battery set 1 cable from PPS 1 connector J5A **10**.
- b. Disconnect the 390 V battery set 1 cable from PPS 1 connector J5B **11**.

390 V Battery Set, 2105 Model Exx/Fxx and Expansion Enclosure

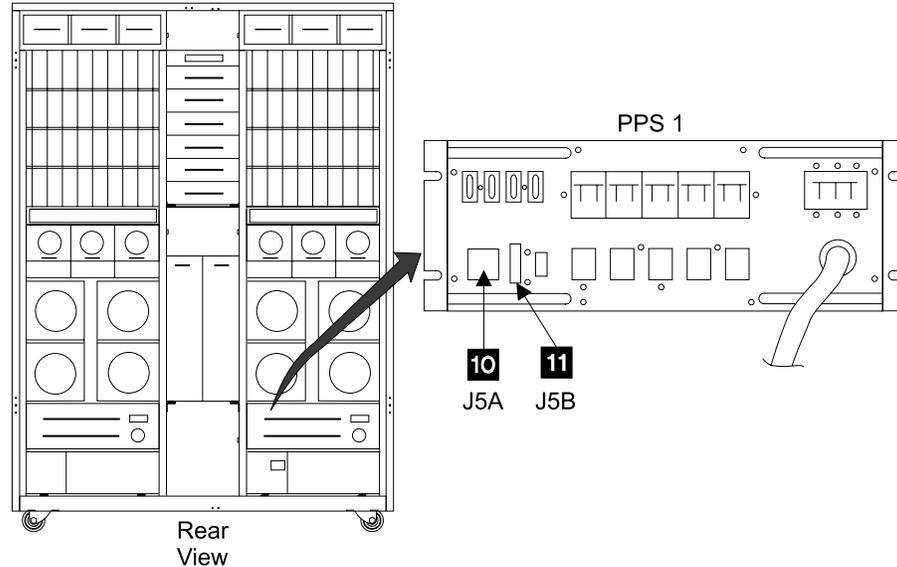


Figure 77. PPS 1, 390 V Battery Set Connector (S007676m)

7. Disconnect all of the other cables from both of the batteries in the 390 V battery set you are replacing.
8. Read the following DANGER notice before continuing:

CAUTION:

Each of the 390 V batteries in the battery set weighs >45 kg (>100 pounds). Two or more persons are required to safely move it. Using less than two persons to move it can result in injury. (1059)

Note: This notice is translated into selected languages. See "Translation of Cautions and Danger Notices" in chapter 11 of the *Enterprise Storage Server Service Guide, Volume 3*.

9. The following steps will completely remove and replace one of the 390 V batteries at a time.
10. Remove the battery replacement pallet, with casters, from the FRU shipping container.
11. Attach the pallet to the rear of the frame next to the battery you are removing.
12. Remove the four 390 V battery set mounting screws **4** or **5**, and slide the 390 V battery out of the rack onto the pallet.
13. Detach the pallet from the rack roll it near the FRU shipping container. Carefully slide the battery off of the pallet next to the FRU container.
14. Slide the new battery onto the pallet. Roll the pallet to the rear of the 2105 and attach it to the frame.
15. Slide the new battery into the rack. Detach the pallet from the rack.
 - If only one of the 390 V batteries have been replaced, return to step 11 and replace the second battery.
 - If both 390 V batteries have been replaced, continue with the next step.
16. Dispose of the battery set by returning it to IBM:

This product contains a SEALED LEAD BATTERY. The BATTERY MUST BE RECYCLED.

390 V Battery Set, 2105 Model Exx/Fxx and Expansion Enclosure

Attention: The 2105 390 V battery set assembly contains lead-acid-gel rechargeable batteries. Whenever the 390 V battery set assembly is replaced, the used battery set assembly must be returned to IBM by following the instructions that are shipped with the new battery set assembly.

17. Replace parts in the reverse order.

Notes:

- a. Verify that the CB on battery set 1 is set to Off (down) at the start of the replacement and On (up) when replacement is completed.
- b. After the repair is complete, press the operator panel Local Power switch momentarily to On (up).

Notes:

- 1) When the battery circuit breaker is off, PPS 1 may display a status code of 03 or 04. Do not take any action to repair the 03 or 04 status code, continue with the replacement and verification of PPS 1. If the 03 or 04 status code is still displayed when this procedure is completed, repair the problem using "MAP2470: Battery Set Detection Problem" in chapter 3 of the *Enterprise Storage Server Service Guide, Volume 1* book.
- 2) Pressing the Local Power switch clears power error conditions that have been repaired, it does not affect 2105 power.
- c. When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

Operator Panel Removal and Replacement, 2105 Model Exx/Fxx or 2105 Expansion Enclosure

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in "Working with ESD-Sensitive Parts" on page 4.

Note: Unless you have a particular reason, *do not power off the 2105 Model Exx/Fxx or 2105 Expansion Enclosure rack when removing the rack operator panel.*

1. Open the front cover of the 2105 Model Exx/Fxx or 2105 Expansion Enclosure and locate the operator panel card you will be removing.
 - **2105 Model Exx/Fxx and Expansion Enclosure:**
 - UEPO operator panel card, (R1-L1) **1**
 - ON / OFF operator panel card, (R1-L2) **2**
2. The entire subsystem must be powered off to replace the UEPO or ON/OFF operator panel card, see "Rack, Subsystem Power On and Off Procedures, 2105 Model Exx/Fxx and Expansion Enclosure" on page 56.
3. Turn the screw on the operator panel until it releases, then open the gate.
4. Pull the operator panel gate pins and move the operator panel to the vertical (shipping) position.

Operator Panel, 2105 Model Exx/Fxx or 2105 Expansion Enclosure

5. Release the three retaining clips and remove the cover from the rear of the operator panel.
6. Do the following steps only on the operator panel card you are replacing.
7. Disconnect all cables from rack operator panel card.
8. Press out on the clips that hold the operator panel card until the card is free. Remove the operator panel card from the housing.

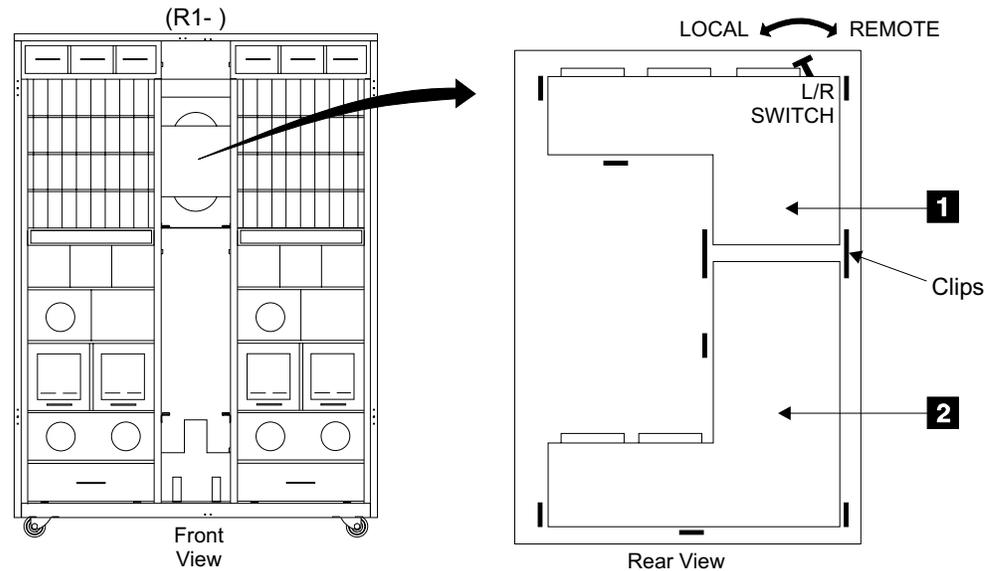


Figure 78. 2105 Model Exx/Fxx or 2105 Expansion Enclosure Rack Operator Panel Removal (S008081m)

9. Replace parts in the reverse order.

Note: After the repair is complete:

- a. Set the UEPO switch on the 2105 operator panel to On (up).
- b. Locate the hidden local/remote (L/R) switch on the back side of the UEPO operator panel card. Set the switch to the same position as it was on the original card. Set the switch by pulling up on it and moving it to the left (local) or right (remote) position.
- c. When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

Power Control Card Removal and Replacement, 2105 Model Exx/Fxx

The rack power control card is one FRU. Always replace it as a complete FRU.

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Power Control Card, 2105 Model Exx/Fxx

Note: Unless you have a particular reason, *do not power off the 2105 Model Exx/Fxx rack when removing a rack power control card.*

1. Open the rear cover of the 2105 rack and locate the rack power control card you will be removing:

- **2105 Model E10/E20:**

- Rack power control card 1, RPC 1 (R1-G1) **1**
- Rack power control card 2, RPC 2 (R1-G2) **2**

Note: For concurrent repairs, remove and replace only one rack power control (RPC) card at a time.

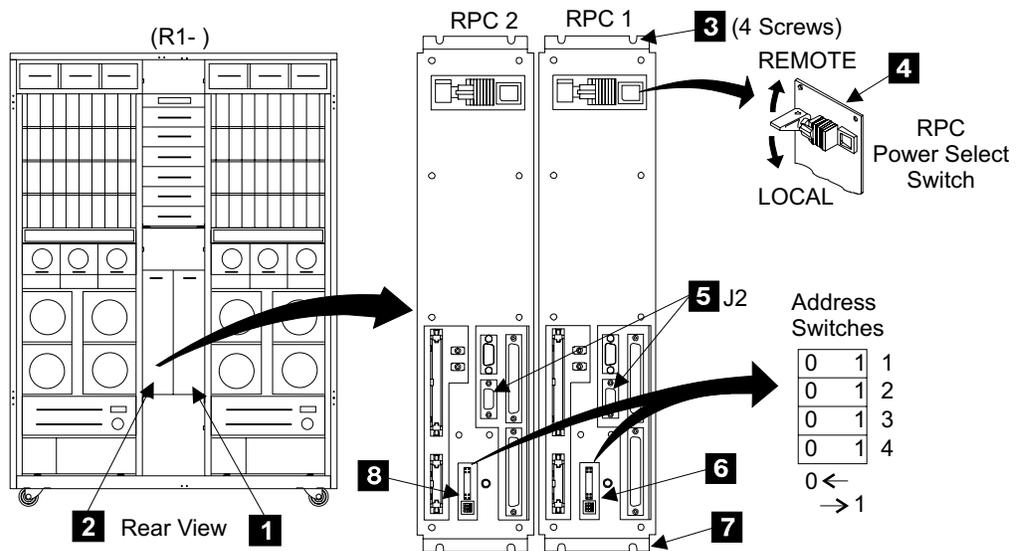


Figure 79. Rack Power Control Card Connectors (S007679m)

2. Set the Power Select switches **4** on both RPC cards to the local position (down).

Note: This will prevent any power disruptions during service.

3. Do the following steps only on the RPC card you are replacing.
4. **Attention:** Logic voltages are present on the cable being removed in this step. Use caution when disconnecting all cables. Unplug the cables by pulling the connector straight back from the RPC card.
Disconnect the RPC power cable connector J2 **5**.
5. If present, disconnect cable J3 from the RPC card.
6. Disconnect the following cables from the RPC card in the order shown: J1, J7, J6, J4, then J5.
7. Loosen the two bottom RPC card mounting screws **7**, then remove the two top mounting screws **3**. Lift the rack power control card **1** or **2**, out of the rack.
8. Remove the ten RPC card stiffener mounting screws **11** from the back of the RPC card. Remove the card **10** from the metal stiffener **9**.

Power Control Card, 2105 Model Exx/Fxx

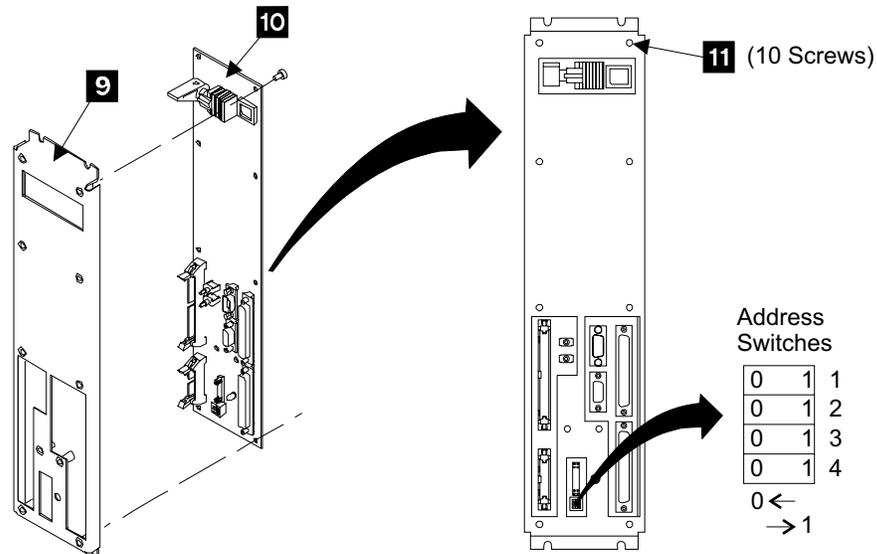


Figure 80. Rack Power Control Card Removal (S007678m)

9. Install the new RPC card **10** onto the metal stiffener **9**.
10. Install the RPC card assembly into the rack.
11. Set the address switches **6** or **8** on the new RPC card to the same positions as they were on the old card.
12. Set the Power Select switch **4** on the new RPC card to the Local position (down).
13. Connect the following cables to the RPC card in the order shown: J5, J4, J6, then J7.
14. **Attention:** Logic voltages are present on the cables being connected in this step. Use caution when connecting these cables. Connect these cables by pushing the cable connector straight into the RPC card connector until it is firmly seated.
Connect the following cables to the RPC card in the order shown: J1, J3, then J2.
15. Set the Power Select switches **4** on both RPC cards to the same position they were in before replacement.
16. When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

Remote Power Control Card Removal and Replacement, 2105 Model Exx/Fxx

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Remote Power Control Card, 2105 Model Exx/Fxx

Note: Unless you have a particular reason, *do not power off the 2105 Model Exx/Fxx rack when removing a remote power control card.*

1. Open the front cover of the 2105 rack and locate the remote power control card you will be removing:
 - **2105 Model E10/E20:**
 - Remote power control card, (R1-G3) **1**

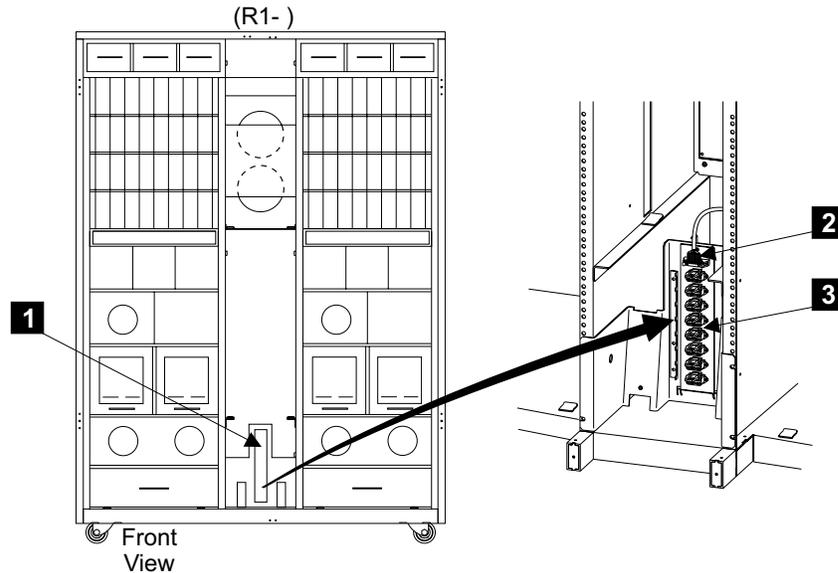


Figure 81. Remote Power Control Card (S008582m)

2. Open the rear cover of the 2105 Model Exx/Fxx. Set the local/remote switches on both RPC cards to the local position, **4** in Figure 79 on page 72.
3. Disconnect all cables, and their ground jumpers, from the remote power control card.
4. Remove the remote power control card mounting screw **2**.
5. Remove the remote power control card **3** from the rack.
6. Replace parts in the reverse order.

Set the local/remote switches on both RPC cards to their original positions.

Note: When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

Storage Cage Power Supply Removal and Replacement, 2105 Model Exx/Fxx and Expansion Enclosure

The storage cage power supply is one FRU. Always replace it as a complete FRU.

Attention: This is *not* a stand-alone procedure.

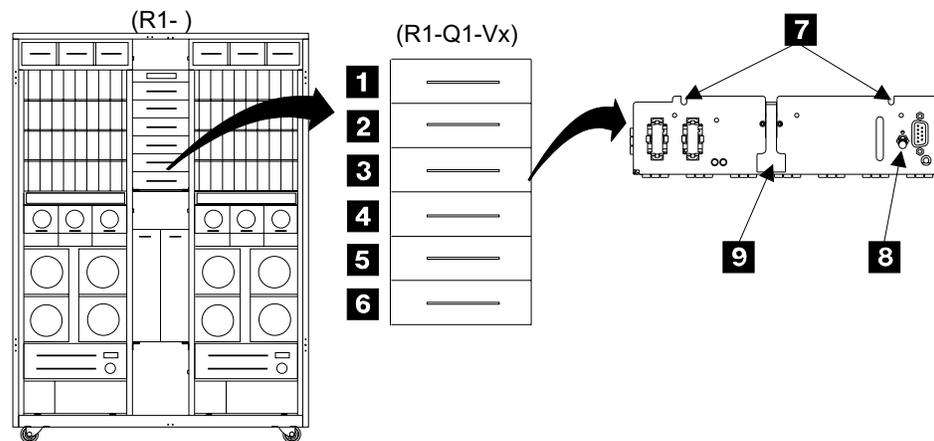
Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Storage Cage Power Supply, 2105 Model Exx/Fxx and Expansion Enclosure

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Note: Unless you have a particular reason, *do not power off the 2105 Model Exx/Fxx or 2105 Expansion Enclosure rack when removing the storage cage power supply.*

1. Open the front cover of the 2105 rack and locate the storage cage power supply you will be removing:
 - **2105 Model Exx/Fxx:**
 - Storage cage 1 and 2:
 - Storage cage 1 and 2, power supply 1, (R1-Q1-V1) **1**
 - Storage cage 1 and 2, power supply 2, (R1-Q1-V2) **2**
 - Storage cage 1 and 2, power supply 3, (R1-Q1-V3) **3**
 - Storage cage 1 and 2, power supply 4, (R1-Q1-V4) **4**
 - Storage cage 1 and 2, power supply 5, (R1-Q1-V5) **5**
 - Storage cage 1 and 2, power supply 6, (R1-Q1-V6) **6**



Rear View

Figure 82. Storage Cage Power Supply Locations (S007680m)

- **2105 Expansion Enclosure:**
 - Storage cage 1 and 2:
 - Storage cage 1 and 2, power supply 1, (R2-Q1-V1) **10**
 - Storage cage 1 and 2, power supply 2, (R2-Q1-V2) **11**
 - Storage cage 1 and 2, power supply 3, (R2-Q1-V3) **12**
 - Storage cage 1 and 2, power supply 4, (R2-Q1-V4) **13**
 - Storage cage 1 and 2, power supply 5, (R2-Q1-V5) **14**
 - Storage cage 1 and 2, power supply 6, (R2-Q1-V6) **15**
 - Storage cage 3 and 4:
 - Storage cage 3 and 4, power supply 1, (R2-Q2-V1) **16**
 - Storage cage 3 and 4, power supply 2, (R2-Q2-V2) **17**
 - Storage cage 3 and 4, power supply 3, (R2-Q2-V3) **18**

Storage Cage Power Supply, 2105 Model Exx/Fxx and Expansion Enclosure

- Storage cage 3 and 4, power supply 4, (R2-Q2-V4) **19**
- Storage cage 3 and 4, power supply 5, (R2-Q2-V5) **20**
- Storage cage 3 and 4, power supply 6, (R2-Q2-V6) **21**

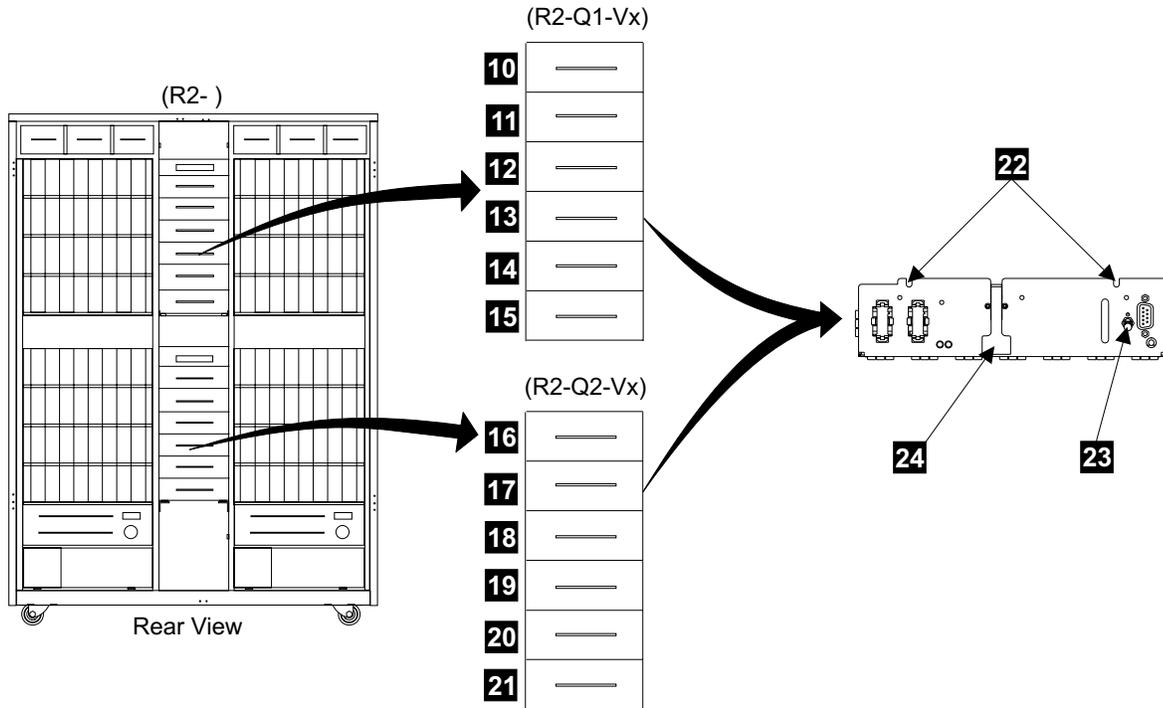


Figure 83. Storage Cage Power Supply Locations (S008104n)

2. Do the following steps only on the storage cage power supply you are replacing.
3. Set the storage cage power supply switch **24** to off (down).
4. Disconnect all of the cables from the storage cage power supply.
5. Remove the two storage cage power supply mounting screws **22**.
6. Pull the power supply latch handle **23** up, then slide the storage cage power supply out of the rack.

Note: The handle should be in the released (up) position when installing the power supply.

7. Replace parts in the reverse order.

Attention: The storage cage power supply switch **24** must be set to off (down) before the new supply is installed.

After the replacement, press the operator panel Local Power switch momentarily to On (up).

Notes:

- a. Pressing the Local Power switch clears power error conditions that have been repaired, it does not affect 2105 power.
- b. When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

Storage Cage Fan Removal and Replacement, 2105 Model Exx/Fxx and Expansion Enclosure

The storage cage fan is one FRU. Always replace it as a complete FRU.

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Note: Unless you have a particular reason, *do not power off the 2105 Model Exx/Fxx or 2105 Expansion Enclosure rack when removing a storage cage fan.*

1. Open the front or rear cover of the 2105 Model Exx/Fxx or 2105 Expansion Enclosure and locate the storage cage fan you will be removing: See Figure 84 on page 78.

Note: Storage cage fans are not installed in 2105 Model Exx/Fxx positions: **2**, **5**, **8**, and **11**.

• **2105 Model Exx/Fxx and Expansion Enclosure (Top Fans):**

- Storage cage 1 (U1):
 - Storage cage 1 fan 1, front (R1-, R2-U1-F1) **1**
 - Storage cage 1 fan 2, front (R1-, R2-U1-F2) **2**
 - Storage cage 1 fan 3, front (R1-, R2-U1-F3) **3**
 - Storage cage 1 fan 4, rear (R1-, R2-U1-F4) **4**
 - Storage cage 1 fan 5, rear (R1-, R2-U1-F5) **5**
 - Storage cage 1 fan 6, rear (R1-, R2-U1-F6) **6**
- Storage cage 2 (U2):
 - Storage cage 2 fan 1, front (R1-, R2-U2-F1) **7**
 - Storage cage 2 fan 2, front (R1-, R2-U2-F2) **8**
 - Storage cage 2 fan 3, front (R1-, R2-U2-F3) **9**
 - Storage cage 2 fan 4, rear (R1-, R2-U2-F4) **10**
 - Storage cage 2 fan 5, rear (R1-, R2-U2-F5) **11**
 - Storage cage 2 fan 6, rear (R1-, R2-U2-F6) **12**

Storage Cage Fan, 2105 Model Exx/Fxx and Expansion Enclosure

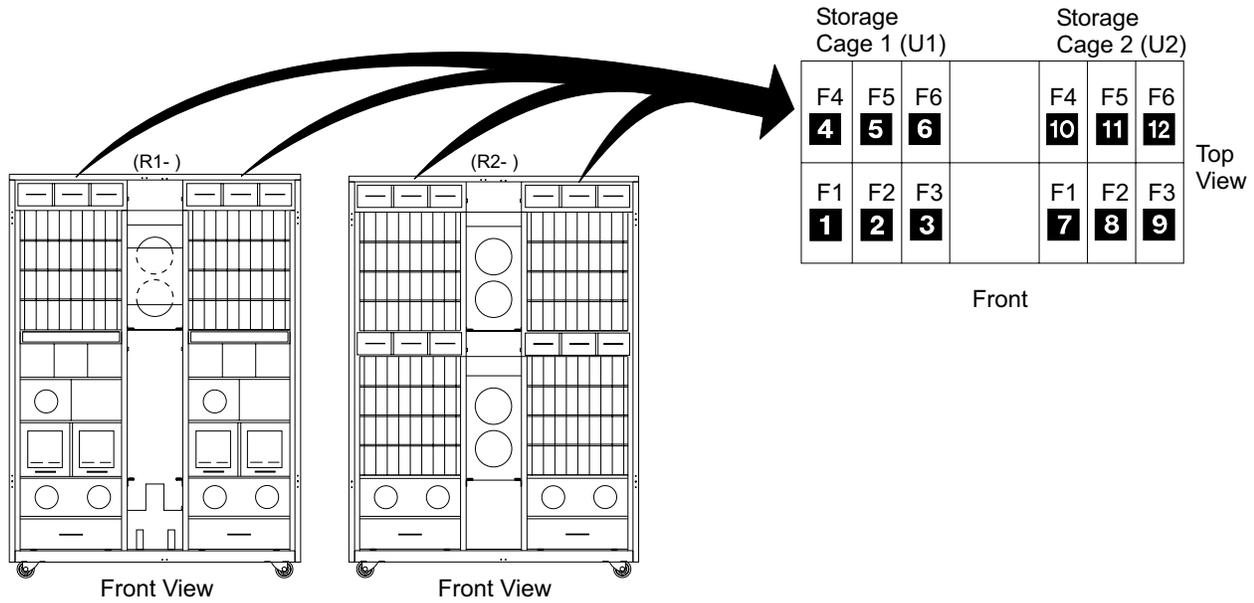


Figure 84. Storage Cage Fan Locations (S008251n)

2. Perform the following steps only on the storage cage fan you are replacing.
3. Disconnect the fans power connector **13** from the 2105.
4. Press the storage cage fan latch **14** up, and pull the fan out of the 2105.

Attention: Do not remove a fan unless you have a new fan ready to install immediately. Rack cooling is reduced while the fan is removed.

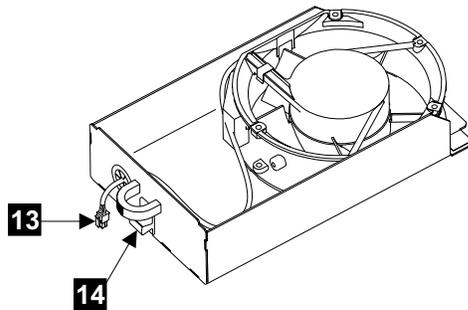


Figure 85. Storage Cage Fan Replacement (S008526l)

5. Replace parts in the reverse order.

Note: When you have completed this procedure, continue the repair returning to the service guide or service terminal procedure that sent you here.

Storage Cage Fan (Center) Removal and Replacement, 2105 Model Exx/Fxx and Expansion Enclosure

The storage cage fan is one FRU. Always replace it as a complete FRU.

Attention: This is *not* a stand-alone procedure.

Storage Cage Fan (Center), 2105 Model Exx/Fxx and Expansion Enclosure

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Note: Unless you have a particular reason, *do not power off the 2105 Model Exx/Fxx or 2105 Expansion Enclosure rack when removing a storage cage fan.*

1. Open the cover of the 2105 rack and locate the storage cage fan you will be removing:

Note: Open the operator panel gate in front of the storage cage fans.

- **2105 Model Exx/Fxx:**
 - Storage cage 1, fan 1, (R1-Q1-F1) **1**
 - Storage cage 1, fan 2, (R1-Q1-F2) **2**
- **2105 Expansion Enclosure:**
 - Storage cage 1, fan 1, (R2-Q1-F1) **3**
 - Storage cage 1, fan 2, (R2-Q1-F2) **4**
 - Storage cage 2, fan 1, (R2-Q2-F1) **5**
 - Storage cage 2, fan 2, (R2-Q2-F2) **6**

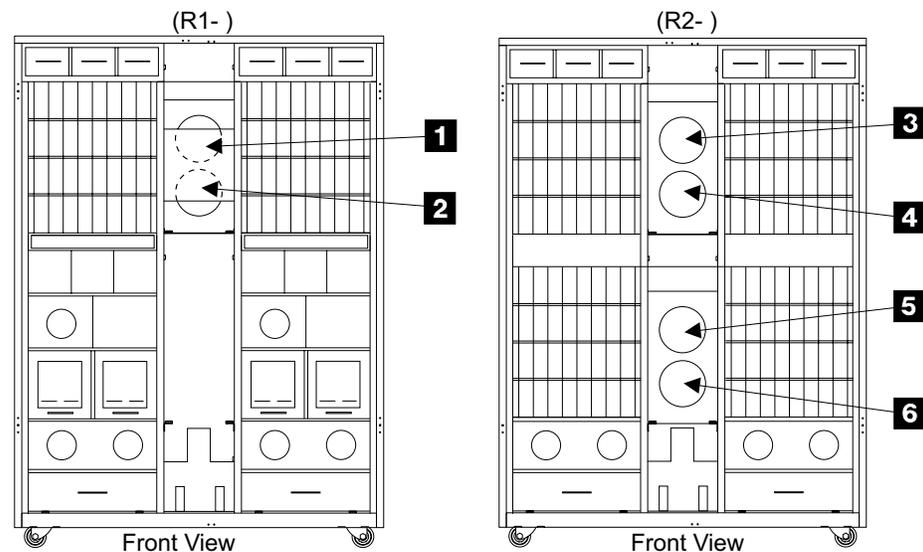


Figure 86. Storage Cage Fan (Center) Locations (S007669m)

2. Perform the following steps only on the storage cage fan you are replacing.

Note: If you are replacing a storage cage 1 fan, open the operator panel gate for access.

3. Disconnect the fans power connector from the top of the storage cage power planar:
 - Fan 1 (J43 FAN TOP), **8**

Storage Cage Fan (Center), 2105 Model Exx/Fxx and Expansion Enclosure

- Fan 2 (J44 FAN BOTTOM), **7**

Note: 2105 Model Exx/Fxx frame shown.

4. Release any cable ties holding the fan power cable.
5. Observe the fan you are removing so you can mount the new fan in exactly the same position. Note the airflow and rotation arrows and the location of the fan power cable.
6. Remove the two fan mounting screws **9** or **10**, and remove the fan from the 2105.

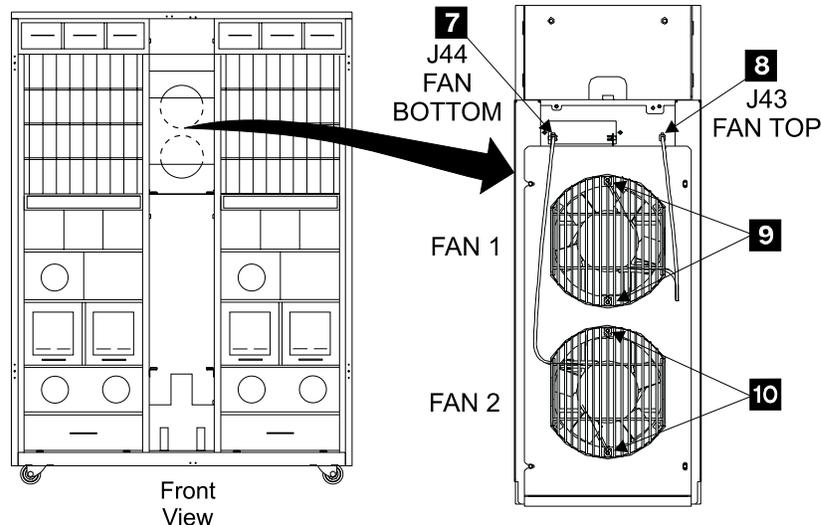


Figure 87. Storage Cage Fan (Center) Replacement (S007681m)

7. Transfer the wire fan guard to the new fan.
8. Replace parts in the reverse order.

Install the new fan with its power lead and airflow and rotation arrows in the same positions as on the fan you removed.

Note: When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

Storage Cage Power Planar Removal and Replacement, 2105 Model Exx/Fxx and Expansion Enclosure

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in "Working with ESD-Sensitive Parts" on page 4.

1. Verify that the 2105 subsystem is powered off.
2. Open the front cover of the 2105 rack and locate the storage cage power planar you will be removing:

Storage Cage Power Planar, 2105 Model Exx/Fxx and Expansion Enclosure

- **2105 Model Exx/Fxx:**
 - Storage cage power planar 1, (R1-Q1-P1) **1**
- **2105 Expansion Enclosure:**
 - Storage cage power planar 1, (R2-Q1-P1) **2**
 - Storage cage power planar 2, (R2-Q2-P1) **3**

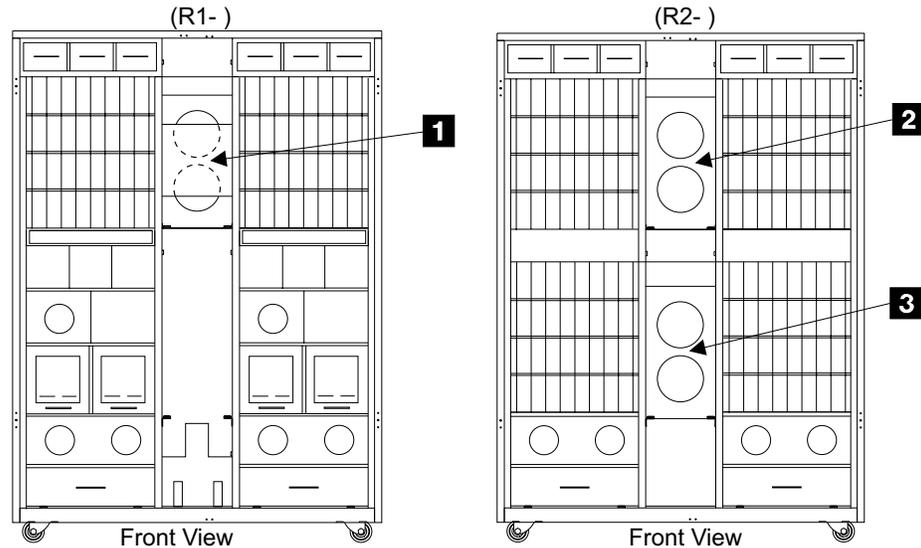


Figure 88. Storage Cage Power Planar Locations (S008082m)

3. Do the following steps only on the storage cage assemblies associated with the planar you are removing.
4. Go to the rear of the 2105 and locate the storage cage power supplies, plugged into the rear of the storage cage power planar. See “Storage Cage Power Supply Removal and Replacement, 2105 Model Exx/Fxx and Expansion Enclosure” on page 74.

Note: All of the storage cage power supplies may not be installed.

Unplug all of the storage cage power supplies from the storage cage planar. Follow the storage cage power supply removal instructions on “Storage Cage Power Supply Removal and Replacement, 2105 Model Exx/Fxx and Expansion Enclosure” on page 74. Do not completely remove the power supplies from the 2105, pull them out only about 5 cm (2 inches).

5. Locate the storage cage fan/power sense card, **1**, **2**, or **3** in Figure 92 on page 84, mounted just above the top storage cage power supply you just unplugged.

Remove the storage cage fan/power sense card, see “Storage Cage Fan/Power Sense Card Removal and Replacement, 2105 Model Exx/Fxx and 2105 Expansion Enclosure” on page 83.

6. Go to the front of the 2105 and locate the storage cage fan plate **8** in front of the power planar you are removing.

Note: If you are replacing a storage cage power planar 1, open the operator panel gate for access.

Storage Cage Power Planar, 2105 Model Exx/Fxx and Expansion Enclosure

Disconnect both fan power connectors **4** and **6** from the top of the power planar.

- Loosen the two left fan plate mounting screws **5** then remove the two right fan plate mounting screws **7**.

Remove the storage cage fan plate **8** from the 2105.

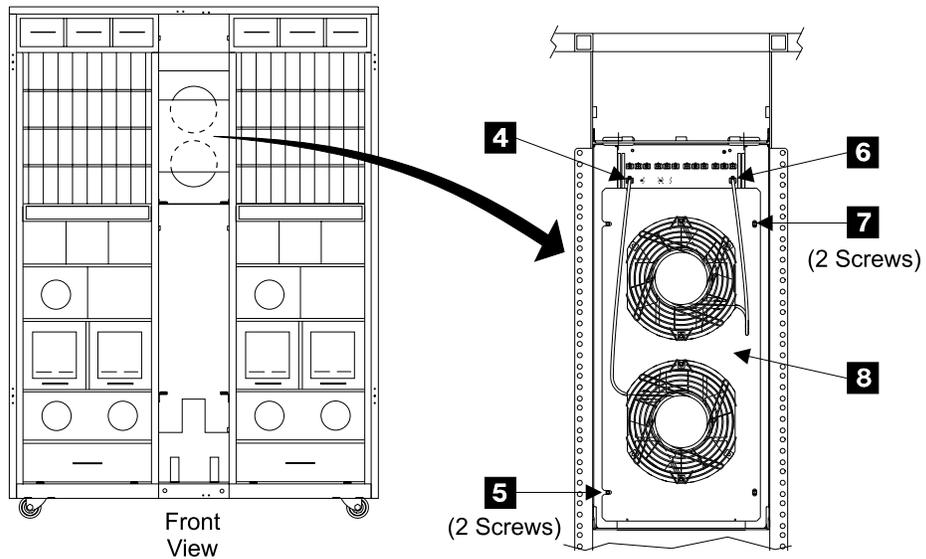


Figure 89. Storage Cage Fan Plate Removal (S008083m)

- Loosen the three right and left power cage bracket mounting screws **12** and **15**.

Remove both power cage brackets. **13** and **16**.

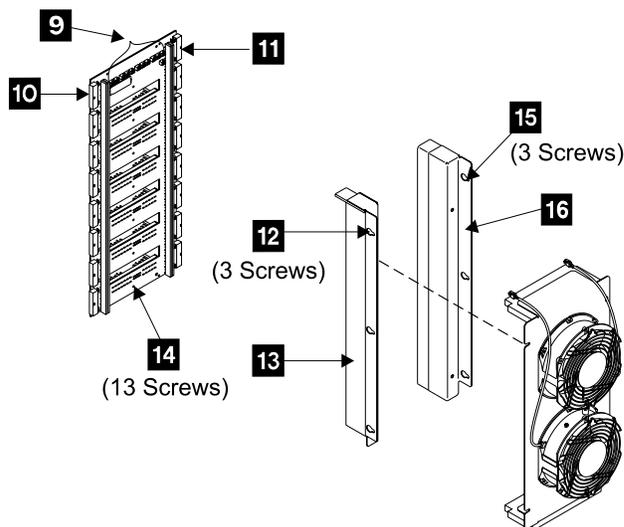


Figure 90. Storage Cage Power Planar Removal (S008084m)

- Disconnect all of the storage cage fan connectors from the top of the storage cage power planar **9**.

Storage Cage Power Planar, 2105 Model Exx/Fxx and Expansion Enclosure

If any fans are not installed, there will be fan jumper plugs on the unused fan connectors. Transfer these jumper plugs to the same connector positions on the new storage cage power planar.

10. Disconnect all of the storage cage DDM bay power cable connectors **10** and **11** from the power planar.

Note: You may have to access the power planar to DDM bay power cables by reaching in through the DDM bay opening **17**. You can reach into an unused DDM bay position, or remove the right and left DDM bays that give you the best access to the cables and connectors. See “Frame Assembly Removal and Replacement, DDM Bay” on page 14.

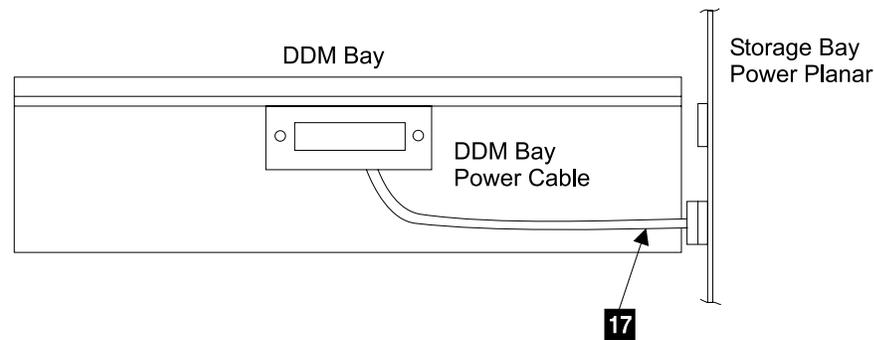


Figure 91. Power Planar to DDM Bay Power Cable Access (5008085)

11. Remove the 13 storage cage power planar mounting screws **14** then remove the planar.
12. Replace parts in the reverse order.

Notes:

- a. Make sure that all cables are connected to their original positions and are firmly seated.
- b. When you have completed this procedure, power the 2105 subsystem on. After the subsystem has powered on completely, continue the repair by returning to the service guide or service terminal procedure that sent you here.

Storage Cage Fan/Power Sense Card Removal and Replacement, 2105 Model Exx/Fxx and 2105 Expansion Enclosure

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

1. Open the rear cover of the 2105 Model Exx/Fxx or 2105 Expansion Enclosure and locate the storage cage fan/power sense card you will be removing:
 - **2105 Model Exx/Fxx:**
 - Storage cage fan/power sense card 1, (R1-Q1-C1) **1**

Storage Cage Fan/Power Sense Card, 2105 Model Exx/Fxx and 2105 Expansion Enclosure

- 2105 Expansion Enclosure:
 - Storage cage fan/power sense card 1, (R2-Q1-C1) **2**
 - Storage cage fan/power sense card 1, (R2-Q2-C1) **3**

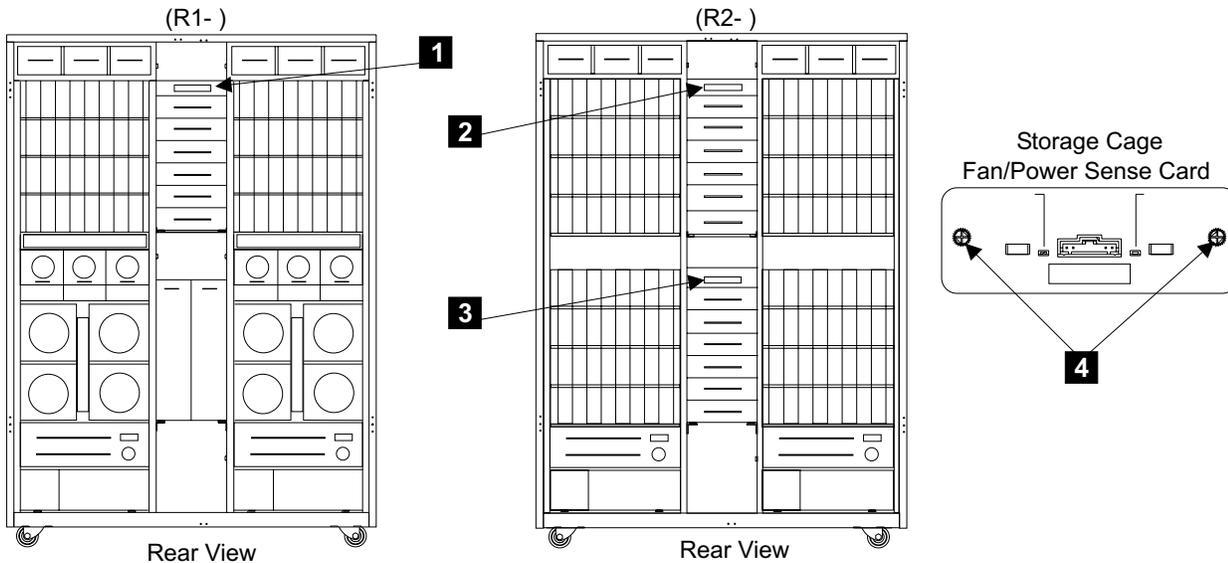


Figure 92. Storage Cage Fan/Power Sense Card Locations (S008086m)

2. Do the following steps only on the storage cage fan/power sense card you are replacing.
3. Loosen the two fan/power sense card screws **4** until they are free.
4. Pull the storage cage fan/power sense card out. Do NOT plug the new sense card in.

Note: The card is plugged into the rear of the storage cage power planar. Do NOT plug the new sense card in.

5. Check if there is an external jumper or cable plugged into the sense card you just removed. If there are, connect them to the same position on the new sense card before plugging the card into the 2105 Model Exx/Fxx.
6. Replace parts in the reverse order.

Note: When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

Electronics Cage Power Supply Removal and Replacement, 2105 Model Exx/Fxx

The electronics cage power supply is one FRU. Always replace it as a complete FRU.

Attention: This is *not* a stand-alone procedure.

Electronics Cage Power Supply, 2105 Model Exx/Fxx

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Note: Unless you have a particular reason, *do not power off the 2105 Model Exx/Fxx rack when removing a electronics cage power supply.*

1. Open the cover of the 2105 rack and locate the Electronics cage power supply you will be removing:
 - **2105 Model Exx/Fxx:**
 - Electronics cage 1
 - Electronics cage 1 power supply 1, (R1-T1-V1) **1**
 - Electronics cage 1 power supply 2, (R1-T1-V2) **2**
 - Electronics cage 1 power supply 3, (R1-T1-V3) **3**
 - Electronics cage 2
 - Electronics cage 2 power supply 1, (R1-T2-V1) **4**
 - Electronics cage 2 power supply 2, (R1-T2-V2) **5**
 - Electronics cage 2 power supply 3, (R1-T2-V3) **6**

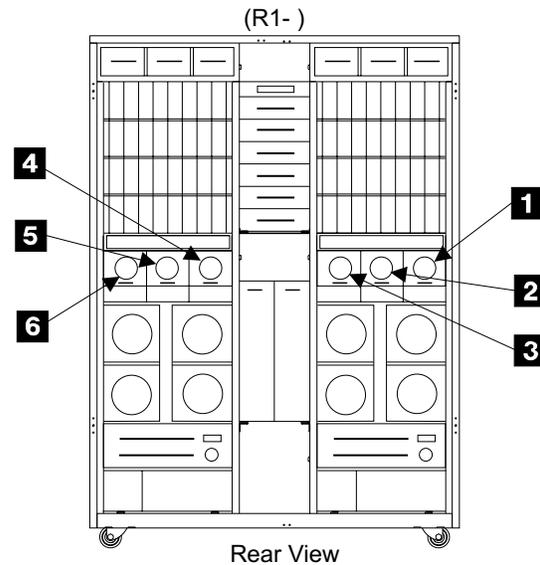


Figure 93. Electronics Cage Power Supply (S007673m)

2. Do the following steps only on the electronics cage power supply you are removing.
3. Set the electronics cage power supplies power switch **9** to OFF (down).
4. Disconnect the cables **8** from the electronics cage power supply.

Attention: This attention applies only to the electronics cage power supply replacement. When the first cable is connected to the newly installed power supply, an electric arc may result. This arc is caused by the charging of a large capacitor in the power supply and is normal.

Electronics Cage Power Supply, 2105 Model Exx/Fxx

5. Remove the two electronics cage power supply mounting screws **7** and **10** and pull the power supply out of the rack.

Note: The power supply plugs into the electronics cage power planar.

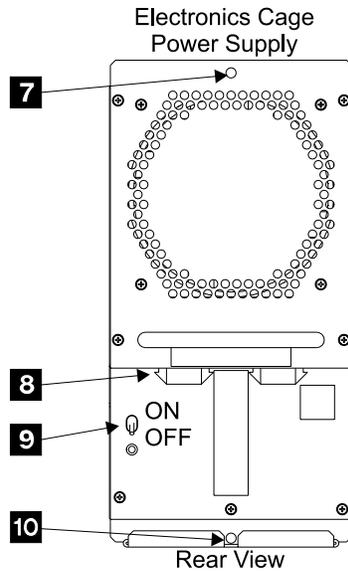


Figure 94. Electronics Cage Power Supply Removal (S008087m)

6. Replace parts in the reverse order.

Attention: Before installing the new electronics cage power supply, make sure that its power switch is set to OFF (down).

Note: When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

Electronics Cage Fan Removal and Replacement, 2105 Model Exx/Fxx

The electronics cage fan is one FRU. Always replace it as a complete FRU.

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Note: Unless you have a particular reason, *do not power off the 2105 Model Exx/Fxx rack when removing a electronics cage fan.*

1. Open the rear cover of the 2105 Model Exx/Fxx and locate the electronics cage fan you will be removing:
 - **2105 Model Exx/Fxx**
 - Electronics cage 1:

Electronics Cage Fan, 2105 Model Exx/Fxx

- Electronics cage 1 fan 1, (R1-T1-F1) **1**
- Electronics cage 1 fan 2, (R1-T1-F2) **2**
- Electronics cage 1 fan 3, (R1-T1-F3) **3**
- Electronics cage 1 fan 4, (R1-T1-F4) **4**
- Electronics cage 2:
 - Electronics cage 2 fan 1, (R1-T2-F1) **5**
 - Electronics cage 2 fan 2, (R1-T2-F2) **6**
 - Electronics cage 2 fan 3, (R1-T2-F3) **7**
 - Electronics cage 2 fan 4, (R1-T2-F4) **8**

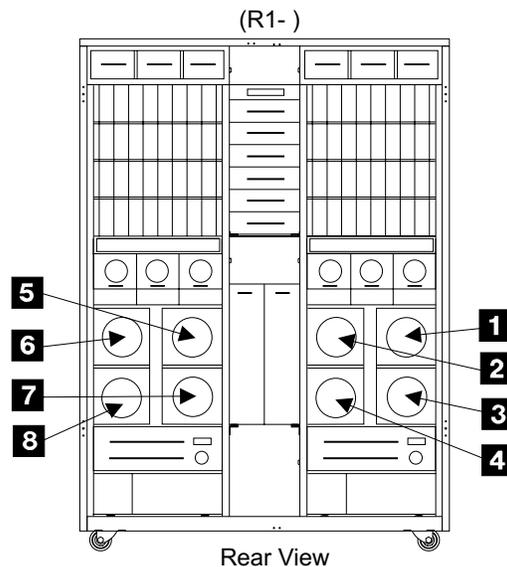


Figure 95. Electronics Cage Fan (S007671m)

2. Do the following steps only on the electronics cage fan you are removing.
3. Disconnect the fan power cable from the electronics cage sense card **9**.
4. Read this entire step before doing it.

Attention: When the fan guard is removed from the failing fan, the reverse airflow from the three running fans can spin the failing fan fast enough for its blades to possibly hurt your fingers.

- a. Fold a piece of notebook paper in half and roll it into a tube. This will be used to block rotation of the failing fans blades.
- b. Remove the four fan guard mounting screws **11** but do not remove the fan guard and flapper assembly **12**.
- c. Hold the fan guard and flapper assembly **12** in place for about 10 seconds.
- d. Quickly remove the fan guard and flapper assembly **12** and immediately jam the paper tube into the stopped or slowly turning fan blades.

Note: If the fan blades are turning rapidly, repeat the last step and this step.

- e. Leave the paper tube in place until the fan is removed from the frame.
5. With the fan blades still stopped, remove the two fan mounting screws **10** and remove the electronics cage fan.

Electronics Cage Fan, 2105 Model Exx/Fxx

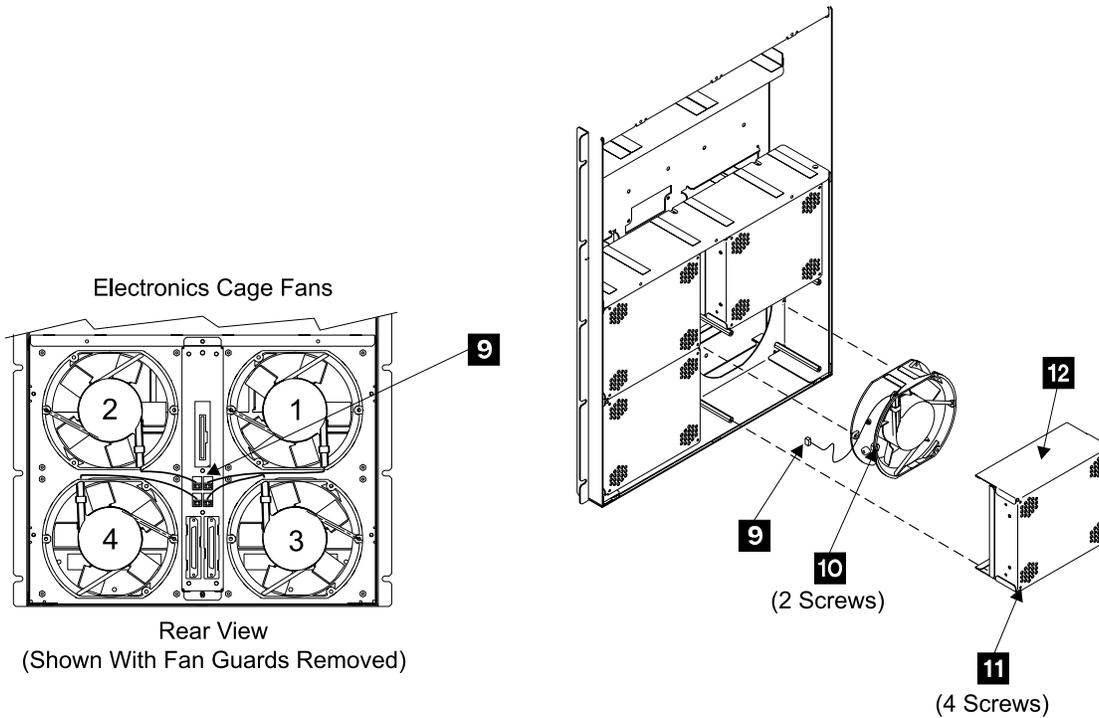


Figure 96. Electronics Cage Fan Removal (S008088n)

6. Replace parts in the reverse order.
 - a. Use the paper tube to block the rotation of the new fans blades so they do not turn while you are installing two fan mounting screws **10**.
 - b. Install the new fan with its power lead and airflow and rotation arrows in the same positions as on the fan you removed.
 - c. Remove the paper tube before installing the fan guard and flapper assembly **12**.

Note: When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

Electronics Cage Power Planar and Cable Removals and Replacements, 2105 Model Exx/Fxx

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Note: Unless you have a particular reason, *do not power off the 2105 Model Exx/Fxx rack when removing an electronics cage (EC) power planar or cable.*

Electronics Cage Power Planars and Cables, 2105 Model Exx/Fxx

1. Open the rear cover of the 2105 Model Exx/Fxx and locate the electronics cage power planar you will be removing:

Note: Electronics cage planars shown in Figure 97 with the electronics cage power supplies and fans removed.

- **2105 Model Exx/Fxx:**
 - Electronics cage 1 (rear right)
 - Electronics cage power planar (upper), (R1-T1-P4) **1**
 - Host bay power planar 2 (lower right), (R1-T1-P5) **2**
 - Host bay power planar 3 (lower left), (R1-T1-P6) **3**
 - Electronics cage 2 (rear left)
 - Electronics cage power planar (upper), (R1-T2-P4) **4**
 - Host bay power planar 2 (lower right), (R1-T2-P5) **5**
 - Host bay power planar 3 (lower left), (R1-T2-P6) **6**

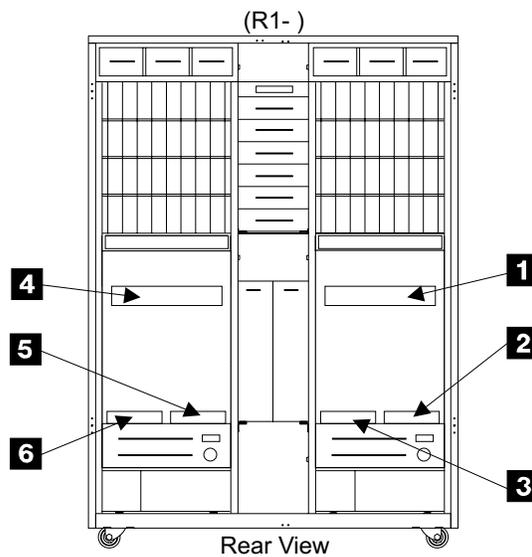


Figure 97. Electronics Cage Power Planar (S007672m)

2. Do the following steps only on the electronics cage and planar being replaced.
3. Remove all three electronics cage power supplies: See “Electronics Cage Power Supply Removal and Replacement, 2105 Model Exx/Fxx” on page 84
 - Electronics cage 1 EC power supplies, **7**
 - Electronics cage 2 EC power supplies, **8**

Electronics Cage Power Planars and Cables, 2105 Model Exx/Fxx

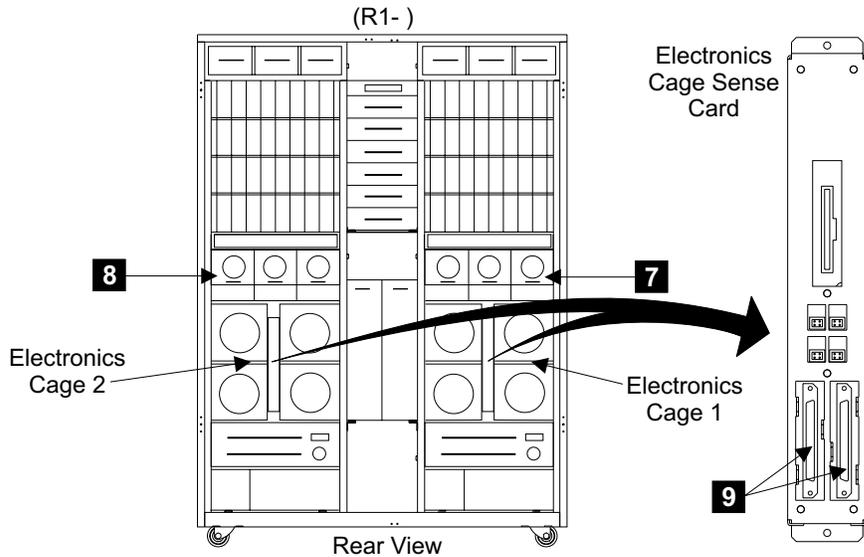


Figure 98. Electronics Cage Rear Locations (S008319m)

4. Remove the electronics cage fan mounting bracket:
 - a. Disconnect the two lower cables (CN401 and CN402) from the electronics cage sense card **9**, see Figure 98.
 - b. Remove the four electronics cage fan mounting plate screws **10**.
 - c. Lean the top of the fan mounting bracket out. Disconnect the EC sense card to EC planar cable **11** from the right side of the electronics cage power planar.
 - d. Remove the electronics cage fan mounting bracket assembly **12** from the 2105.
5. Find the electronics cage FRU you are replacing in the following list, and go to the step indicated:
 - Electronics cage power planar (upper), (R1-Tx-P4) Go to step 6.
 - Host bay power planar 2 (lower right), (R1-Tx-P5) Go to step 11 on page 92.
 - Host bay power planar 3 (lower left), (R1-T1-P6) Go to step 11 on page 92.
 - Electronics cage power planar cable, (R1-Tx-xx) Go to step 16 on page 94.
 - Fan/RPC to upper backplane cable, (R1-Tx-xx) Go to step 19 on page 94.
6. Disconnect all of the cables from the left **13** and right **14** side of the EC power planar.

Electronics Cage Power Planars and Cables, 2105 Model Exx/Fxx

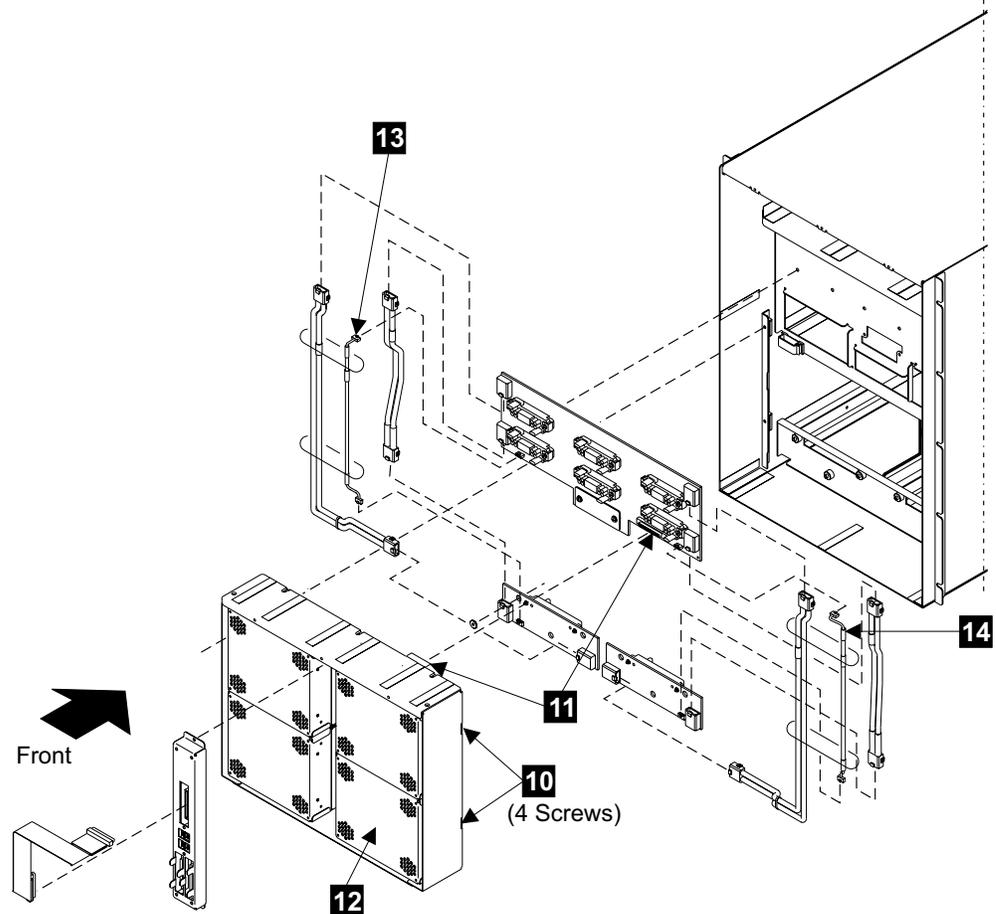


Figure 99. Electronics Cage Removal Locations (S008336p)

7. Go to the front of the 2105 Model Exx/Fxx and locate the cluster bay associated with the electronics cage you are working on:
 - Electronics cage 1, cluster bay 1
 - Electronics cage 2, cluster bay 2
 - a. Disconnect all cables from the front of the cluster bay.

Note: To prevent damage to the SSA device cable connector screws, always use the special screwdriver (SSA tool, P/N 32H7059) to turn them. This screwdriver is in the 2105 ship group.

- b. Pull the cluster bay to its service position.
Use the correct cluster bay model repair procedure:
 - **2105 Model E10/E20**, “Cluster Bay Service Position Procedure (E10/E20)” on page 159 or
 - **2105 Model F10/F20**, “Cluster Bay Service Position Procedure (F10/F20)” on page 111
 - c. Read the following DANGER notice before continuing:

CAUTION:

This unit weighs between 18 kg (39.7 pounds) and 32 kg (70.5 pounds). Two persons are required to safely move it. Using less than two persons to move it can result in injury. (1054)

Electronics Cage Power Planars and Cables, 2105 Model Exx/Fxx

- d. Remove the cluster bay from the 2105. Release the spring stop on each slide rail. Carefully pull the cluster bay out until it is free from the slide rails.

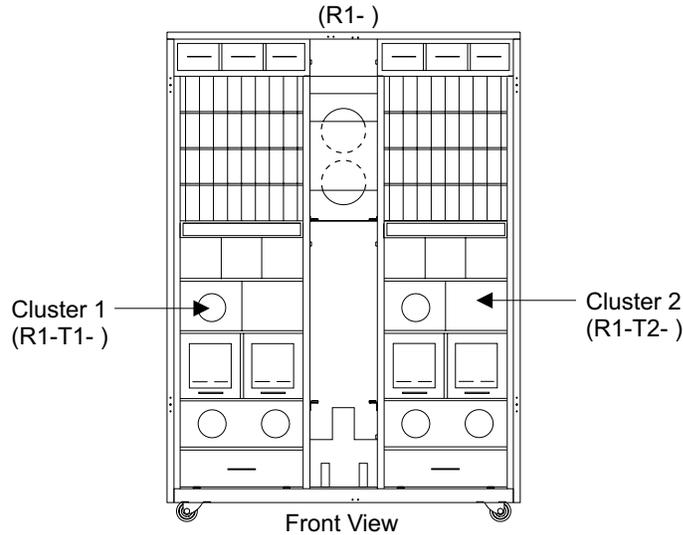


Figure 100. Electronics Cage and Cluster Bay Locations (S008091m)

8. Reach into the bay that the cluster bay was removed from. Push the door back and locate the 14 screws that mount the EC power planar to the rack. Remove the two bottom connector screws **15**. Remove the 12 planar mounting screws **16**.

Note: The two bottom screws are different than the 12 top screws.

9. Go to the rear of the 2105 and remove the EC power planar **16**.
10. Go to step 23 on page 95.

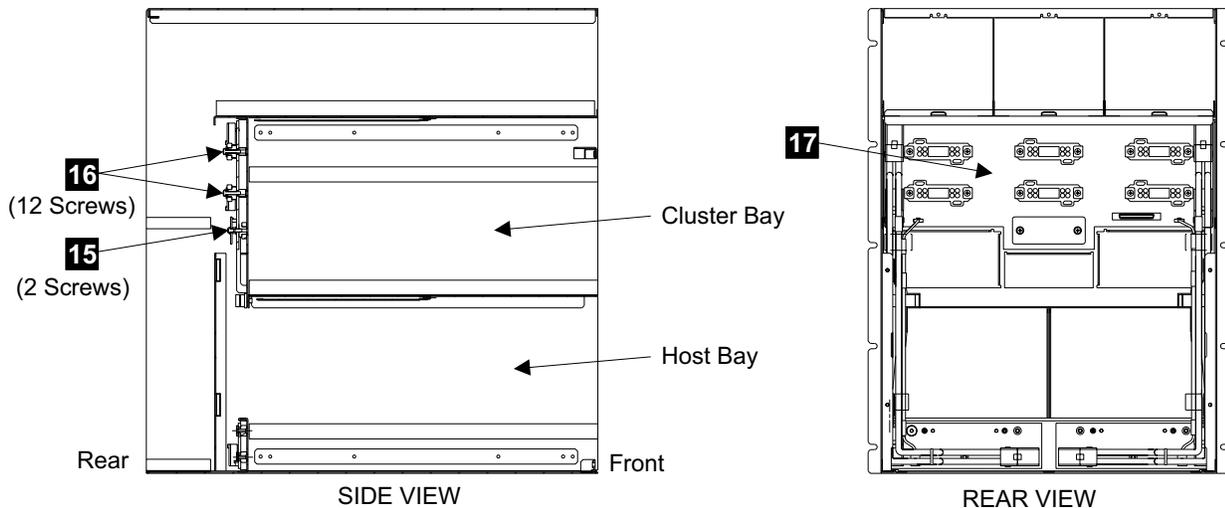


Figure 101. Electronics Cage Power Planar Removal (S008321m)

11. Go to the front of the 2105 Model Exx/Fxx and locate the host bays (HB) in the electronics cage you are working on.
Follow the instructions on moving the host bays to their service position, "Moving the Host Bay to Its Service Position, 2105 Model Exx/Fxx" on page 96.

Electronics Cage Power Planars and Cables, 2105 Model Exx/Fxx

Note: Do not pull the host bays completely out, pull them out about 5 cm (2 inches).

- Electronics cage 1 host bays, **18**
- Electronics cage 2, host bays, **19**

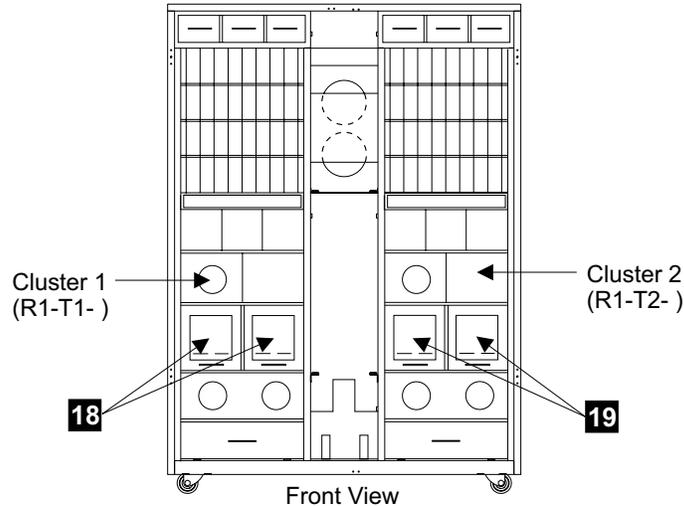


Figure 102. Electronics Cage Host Bay Locations (S008320m)

12. Disconnect all of the cables from the host bay power planar:
 - Host bay power planar 2 (lower right), (R1-Tx-P5) **20**
 - Host bay power planar 3 (lower left), (R1-Tx-P6) **21**
13. At the rear of the 2105 Model Exx/Fxx, remove the three HB power planar mounting screws
 - Host bay power planar 2 (lower right), (R1-Tx-P5) **22**
 - Host bay power planar 3 (lower left), (R1-Tx-P6) **23**
14. Remove the HB power planar.
15. Go to step 23 on page 95.

Electronics Cage Power Planars and Cables, 2105 Model Exx/Fxx

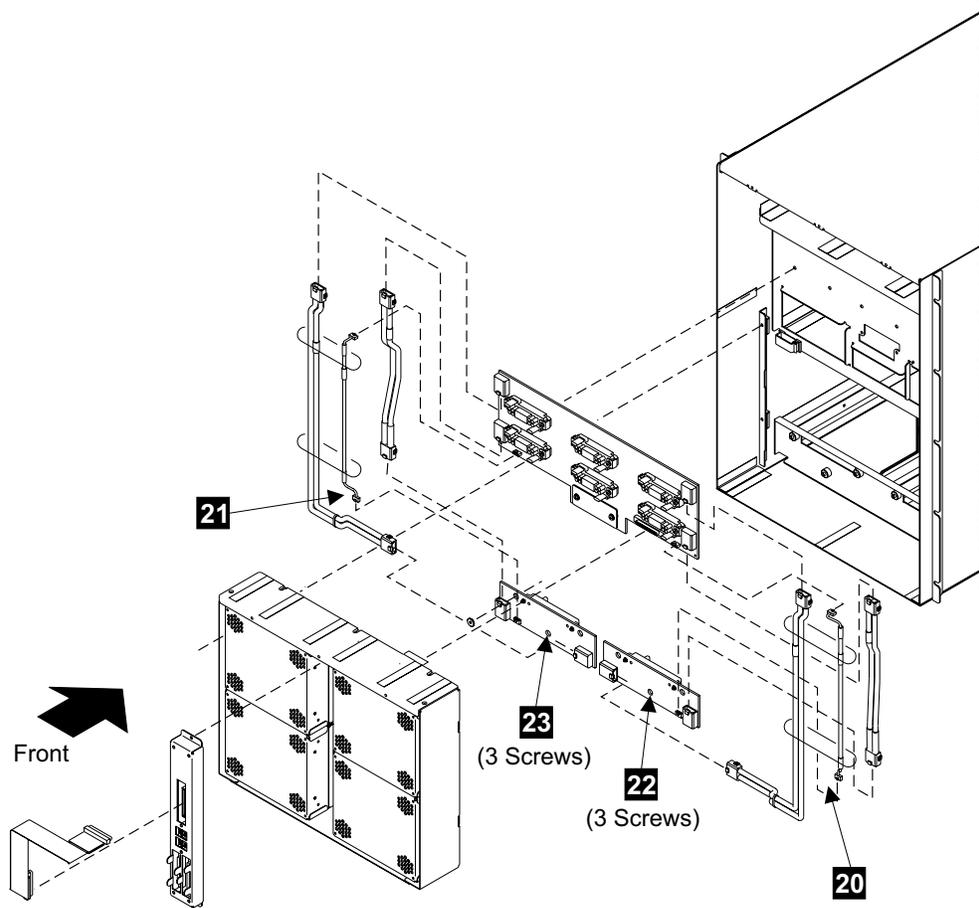


Figure 103. Host Bay Power Planar Removal (S008337p)

16. Locate the EC power cable you are replacing:
 - Electronics cage power cable 1, left (R1-Tx-xx) **24** .
 - Electronics cage power cable 2, left (R1-Tx-xx) **25** .
 - Electronics cage power cable 3, left (R1-Tx-xx) **26** .
 - Electronics cage power cable 1, right (R1-Tx-xx) **27** .
 - Electronics cage power cable 2, right (R1-Tx-xx) **28** .
 - Electronics cage power cable 3, right (R1-Tx-xx) **29** .
17. Remove the EC power cable.
18. Go to step 23 on page 95.
19. Remove the five fan bracket cover mounting screws **30** , then remove the cover.
20. Unplug the fan/ RPC to upper backplane cable from the fan sense card (CN451) **31** .
21. Remove the fan/ RPC to upper backplane cable.
22. Go to step 23 on page 95.

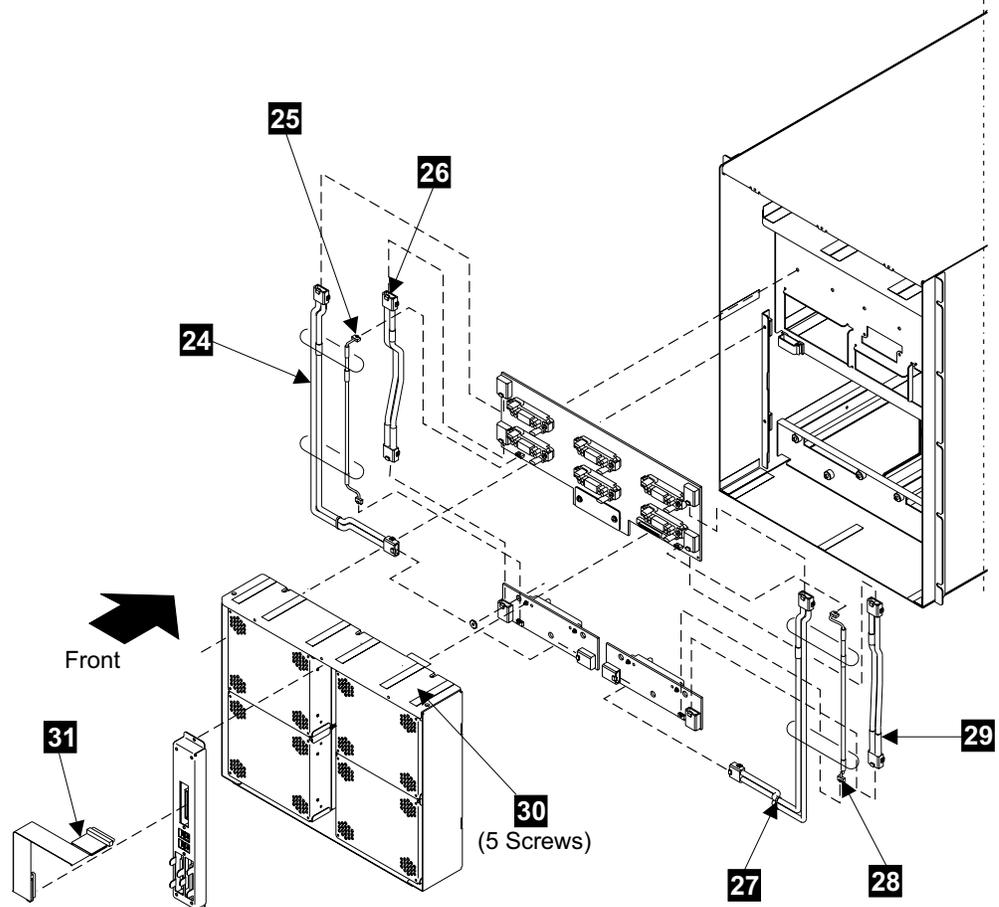


Figure 104. Electronics Cage Power Planar Cable Removals (S008338p)

23. Replace parts in the reverse order.

Note: When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

Electronics Cage Sense Card Removal and Replacement, 2105 Model Exx/Fxx

The electronics cage sense card is one FRU. Always replace it as a complete FRU.

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

1. Open the rear cover of the 2105 Model Exx/Fxx and locate the electronics cage sense card you will be removing:

Rack, Electronics Cage Sense Card, 2105 Model Exx/Fxx

- **2105 Model Exx/Fxx:**
 - Electronics cage 1 sense card, (R1-T1-C1) **1**
 - Electronics cage 2 sense card, (R1-T2-C1) **2**
- 2. Do the following steps only on the electronics cage sense card you are replacing.
- 3. Disconnect all cables from the electronics cage sense card **3**.
- 4. Remove the two electronics cage sense card cover screws **4** and **5**, and remove the card assembly.

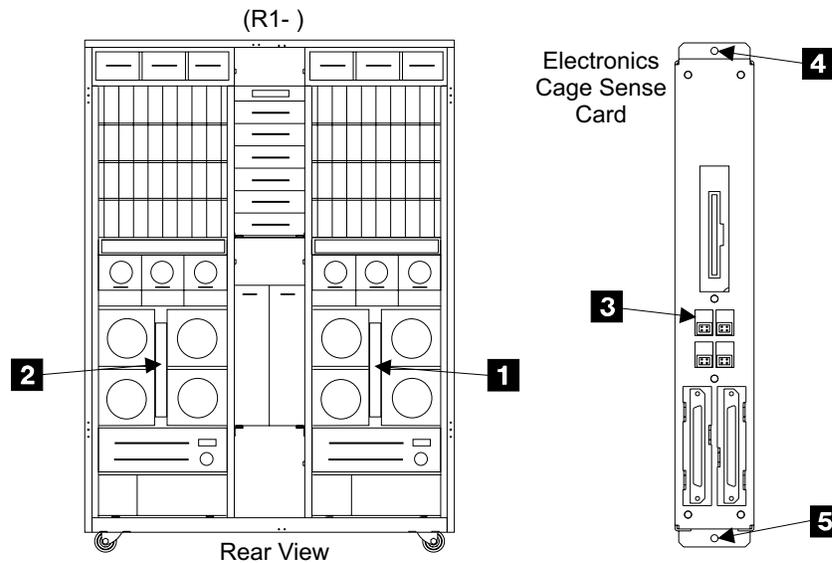


Figure 105. Electronics Cage Sense Card Removal (S007670m)

5. Replace parts in the reverse order.

Note: When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

Moving the Host Bay to Its Service Position, 2105 Model Exx/Fxx

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Note: Unless you have a particular reason, *do not power off the 2105 Model Exx/Fxx rack when moving the host bay to its service position.*

1. Open the front cover of the 2105 rack and locate the host bay with the card or planar you will be removing:

Note: All cards shown may not be installed.

Host Bay Service Position, 2105 Model Exx/Fxx

- **2105 Model Exx/Fxx:**
 - Host bay 1, (R1-B1-) **1**
 - Host bay 2, (R1-B2-) **2**
 - Host bay 3, (R1-B3-) **3**
 - Host bay 4, (R1-B4-) **4**

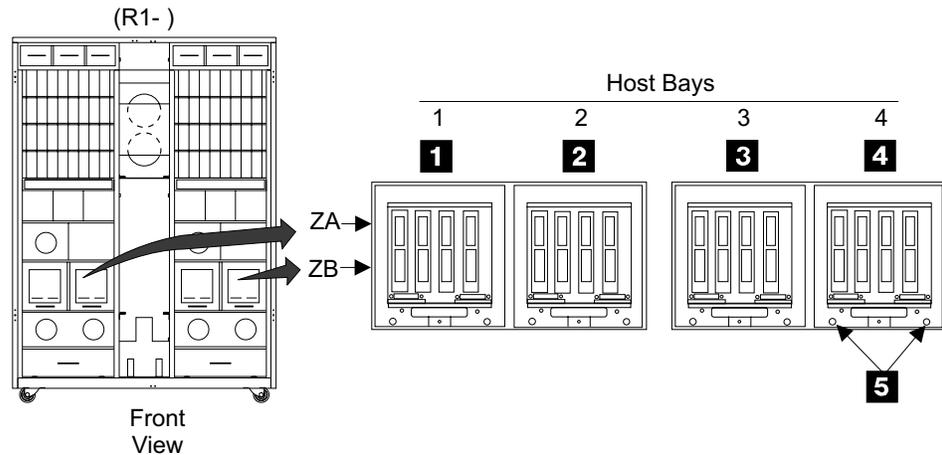


Figure 106. Host Bay Locations (S007665m)

2. Do the following steps only on the host bay you are moving to its service position.
3. Do not remove any bay cables unless instructed to do so.
4. Loosen the tailgate cable clamps that are clamping the host cables that go to the host bay being serviced. See “2105 Model Exx/Fxx Tailgate Cable Clamp Removal and Installation” on page 306.
5. Pull enough of the host cables from under the floor to allow the host bay to be moved to its service position (about 1 meter or 3 feet).
6. Loosen the two host bay retaining screws **5** until they are free.
7. Pull the host bay out slowly. Release any cable ties that restrict the movement of the cables attached to the bay.
8. Do this step if you will be removing or installing a host bay card or planar.
Loosen the two left **6** and two right **7** card retention plate screws, then lift the retention plate **8** off of the bay.

Note: To remove the two left screws **6** from host bay 1, you must remove the front left cover from the 2105 Model Exx/Fxx. To remove the two right screws **7** from host bay 4, you must remove the front right cover from the 2105 Model Exx/Fxx.

Host Bay Service Position, 2105 Model Exx/Fxx

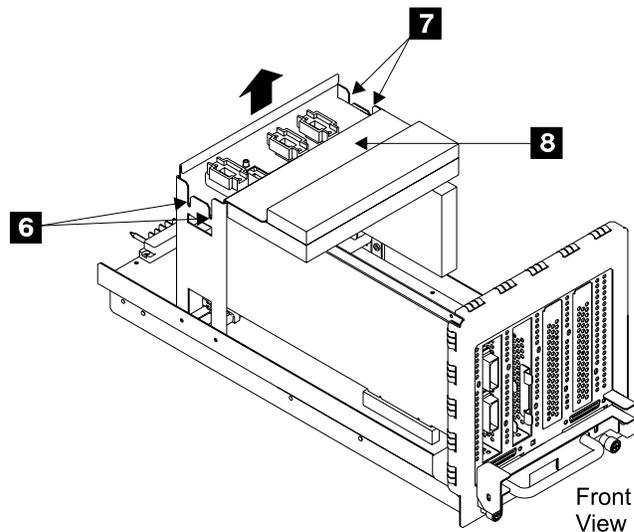


Figure 107. Host Bay Service Locations (S008089m)

9. Return to the procedure that sent you here to remove the host bay.
10. Replace parts in the reverse order.

Notes:

1. Release the latches on the side of each rail to slide the host bay into the 2105.
2. When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

Host Card Removal and Replacement, 2105 Model Exx/Fxx

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Note: Unless you have a particular reason, *do not power off the 2105 Model Exx/Fxx rack when removing the host bay.*

1. Move the host bay **1**, with the host card you are replacing to its service position, see “Moving the Host Bay to Its Service Position, 2105 Model Exx/Fxx” on page 96.
2. Locate the host card or cards you will be removing **2**, **4**, or **6**:

Note: The service terminal will allow single or multiple host card removals in the same host bay.

• 2105 Model Exx/Fxx:

- Host card 1, (R1-Bx-H1)
- Host card 2, (R1-Bx-H2)
- Host card 3, (R1-Bx-H3)

– Host card 4, (R1-Bx-H4)

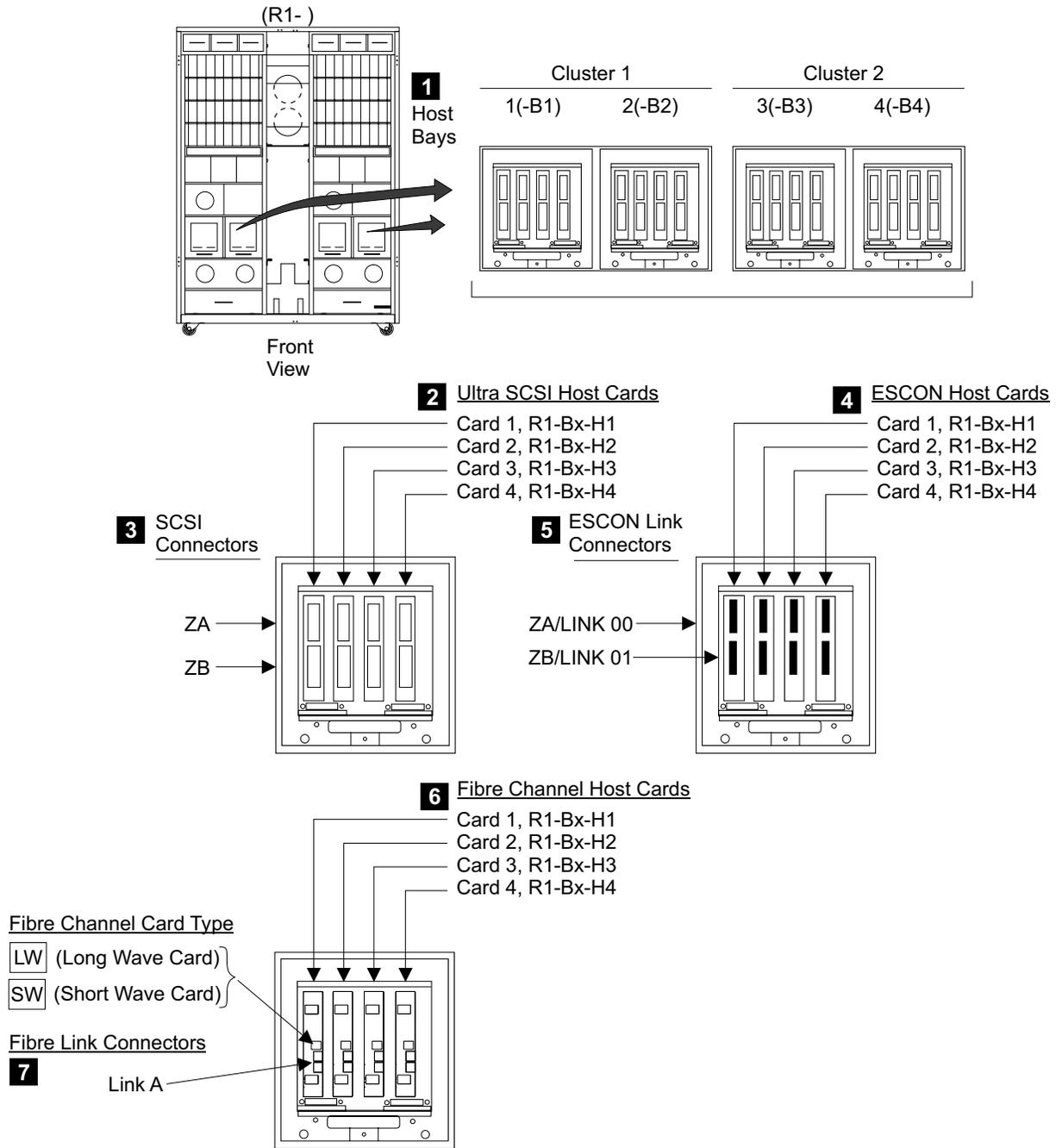


Figure 108. Host Bay and Card Locations (S008769r)

3. Do the following steps only on the host card you are replacing.
4. Disconnect both SCSI, ESCON, or Fibre host cables **3**, **5**, or **7** from the host bay card.

Attention: Before disconnecting/connecting any host cables, ask the customer to remove host I/O activities to all devices on the affected cables. The customer should refer to the host documentation to determine if host power also needs to be off.
5. Remove the two host card connector mounting screws **8**.

Host Card, 2105 Model Exx/Fxx

Note: All cards shown may not be installed.

6. Remove the host card, rear locking pin **10** from the rear of the host card.
7. Unplug the host card **9** from the host bay planar.

Note: Note the position of the card for reinstallation.

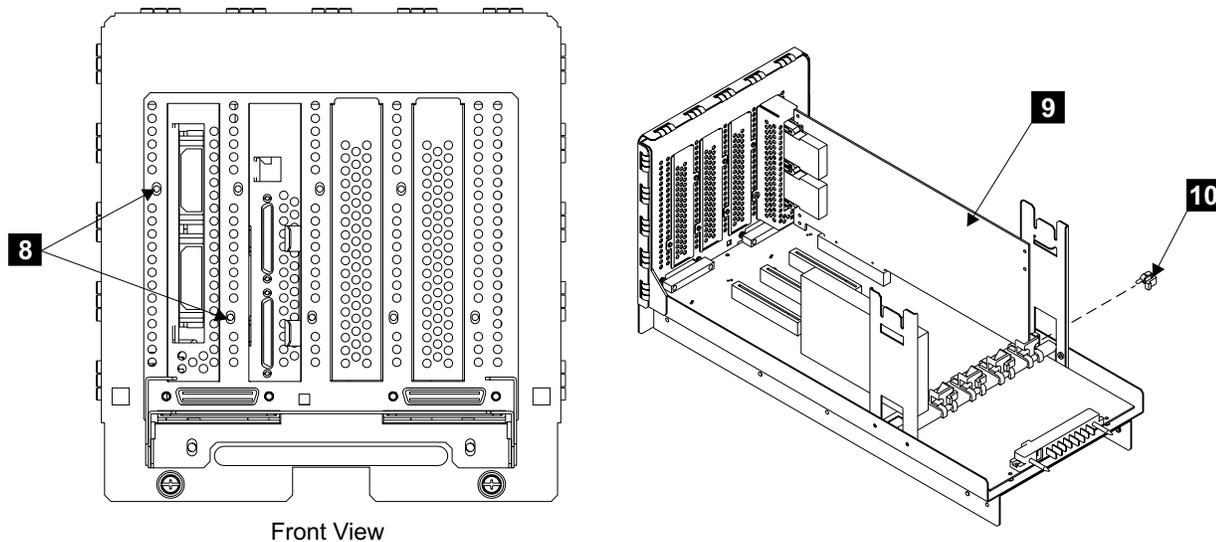


Figure 109. Removing Host Card from Host Bay (S008093m)

8. Replace parts in the reverse order.

Attention: To prevent electrostatic discharge, ensure you discharge all SCSI host cables to the ESD discharge pad, before you plug them into the 2105 Model Exx/Fxx. The ESD discharge pads are mounted on the front right and left corners of the 2105 Model Exx/Fxx frame, next to each tailgate. See Figure 113 on page 104 for the location of the ESD discharge pads.

Note: When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

ESCON and Fibre Channel Wrap Tools, 2105 Model Exx/Fxx

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Installing the ESCON or Fibre Channel Wrap Tool

To install a wrap tool, perform the following procedure:

1. Open the front cover of the 2105 Model Exx/Fxx.
2. At cluster bay 1 or 2, identify the ESCON or Fibre channel cable that you are testing.

ESCON and Fibre Channel Wrap Tools, 2105 Model Exx/Fxx

Note: There are two types of Fibre channel cards and cables:

- Short Wave (LW)
- Long Wave (SW)

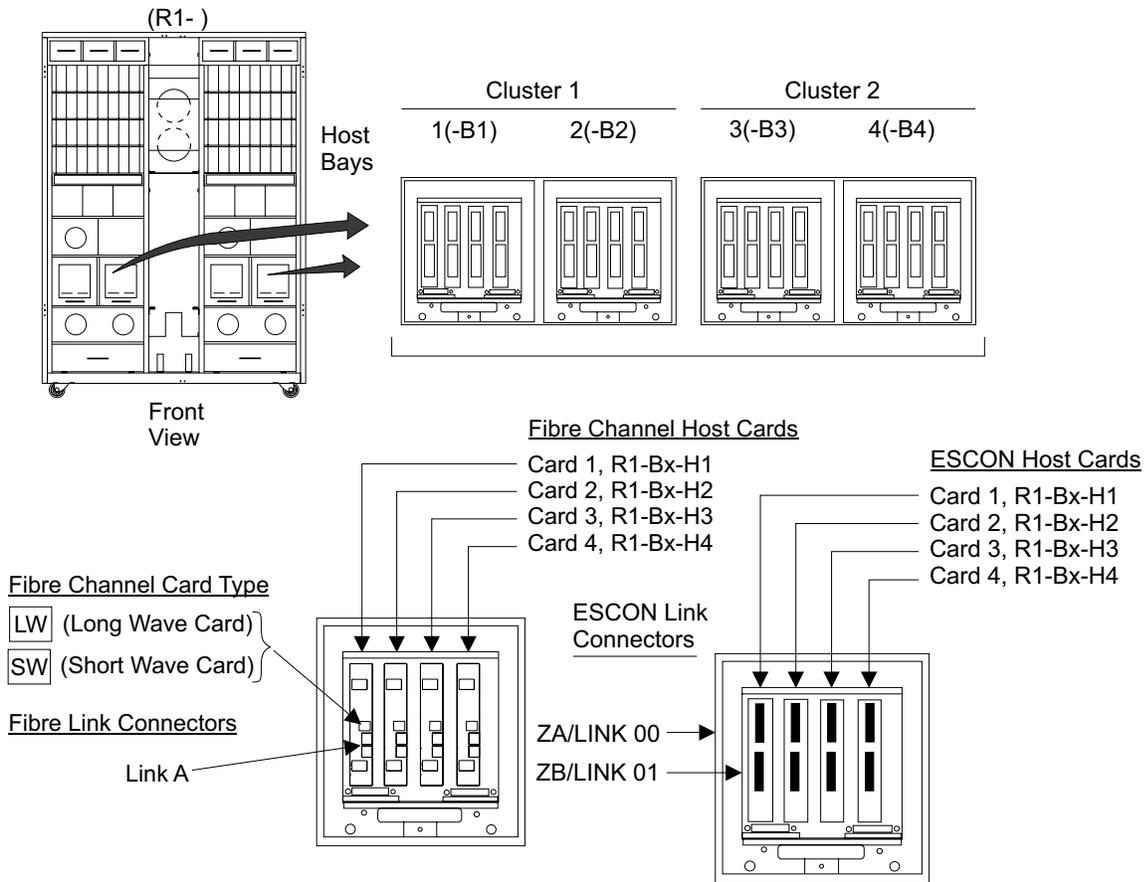


Figure 110. Host Bay and ESCON Card Locations (S008350p)

3. Unplug the ESCON or Fibre channel cable from the ESCON or Fibre channel host card. Press the locking clips on the cable connector and pull the connector out of the host card.
4. On ESCON cables only, install an ESCON cable connector cover (P/N 7333186) onto the free ESCON cable connector.
5. Clean the wrap tool before you install it into the host card:
 - ESCON wrap tool, P/N 5605670
 - Fibre channel long wave (LW) wrap tool, P/N 78G9610
 - Fibre channel short wave (SW) wrap tool, P/N 16G5609

See “Fiber Optic Tools” on page 102. Use the fiber optic cleaning procedure in the Fiber Optic Connector Cleaning Kit (New P/N 46G6844 or Old P/N 5453521).

6. Insert the clean wrap tool into the host card. Push the wrap tool in carefully until its latches click, locking the tool in place.
7. Return to the service terminal and follow the instructions on the SMIT screens.

Removing the ESCON or Fibre Channel Wrap Tool

To remove a wrap tool, perform the following procedure:

ESCON and Fibre Channel Wrap Tools, 2105 Model Exx/Fxx

1. Remove the wrap tool from the host card when the service terminal instructs you to do so. Press the locking clips on the wrap tool and pull the wrap tool out of the host card.
2. On ESCON cables only, remove the ESCON cable connector cover (P/N 7333186) from the ESCON cable connector.
3. Clean the ESCON or Fibre channel cable connector end faces before you install it into the host card. Use the fiber optic cleaning procedure in the Fiber Optic Connector Cleaning Kit (New P/N 46G6844 or Old P/N 5453521).
4. Insert the ESCON or Fibre channel cable connector into the host card. Push the cable connector in carefully until its latches click, locking the cable connector in place.
5. Determine if you have other ESCON or Fibre channel ports to test:
 - If you have more ports to test, follow the instructions on the SMIT screens to test the other port.
 - If this is the last port being tested, follow the instructions on the SMIT screens to exit this diagnostic.
6. Ensure that the customer resources are varied online at the completion of this call.

Fiber Optic Tools

The following tools are needed to service and maintain the fiber optic cables and connectors: All of these tools are in the 2105 Model Exx/Fxx ship group:

- **ESCON Fiber Optic Wrap Tool,**
P/N 5605670, this tool allows you to perform a machine checkout during installation and repair.
- **Fiber Optic Protective plug,**
P/N 18F6979, are used to protect host card connectors. These plugs are used during shipment, relocation, returning cards, and or when a cable is not connected to a port.
- **ESCON Cable Connector Cover,**
P/N 7333186, this cover protects the free end of the ESCON cable during maintenance or repair.
- **Fiber optic connector cleaning kit,**
New P/N 46G6844 or old P/N 5453521, is used to clean the fiber optic connectors and tools. Cleaning instructions are in the kit.

Host Bay Planar Removal and Replacement, 2105 Model Exx/Fxx

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Note: Unless you have a particular reason, *do not power off the 2105 Model Exx/Fxx rack when removing the host bay planar.*

Host Bay Planar, 2105 Model Exx/Fxx

1. Move the host bay with the host bay planar you will be removing to its service position, see "Moving the Host Bay to Its Service Position, 2105 Model Exx/Fxx" on page 96.
 - **2105 Model Exx/Fxx:**
 - Host bay planar 1, (R1-B1)
 - Host bay planar 2, (R1-B2)
 - Host bay planar 3, (R1-B3)
 - Host bay planar 4, (R1-B4)

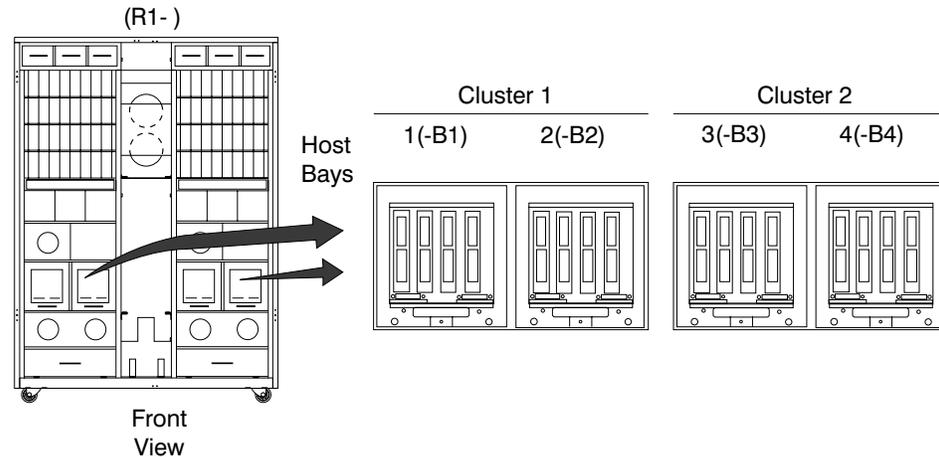


Figure 111. Host Bay Locations (S007630m)

2. Do the following steps only on the host bay with the planar you are replacing.
3. Remove all of the host cards from the host bay, use "Host Card Removal and Replacement, 2105 Model Exx/Fxx" on page 98.

Note: Note the position of each cable and card for reinstallation.
4. Loosen the cable clamps then disconnect both CPI cables from the two lower connectors on the front of the host bay.
5. Remove the two rear card retention bracket mounting screws **1** and **5** then remove the bracket **6**.
6. Remove the remaining 11 host bay planar mounting screws **2** then remove the planar **4**.

Host Bay Planar, 2105 Model Exx/Fxx

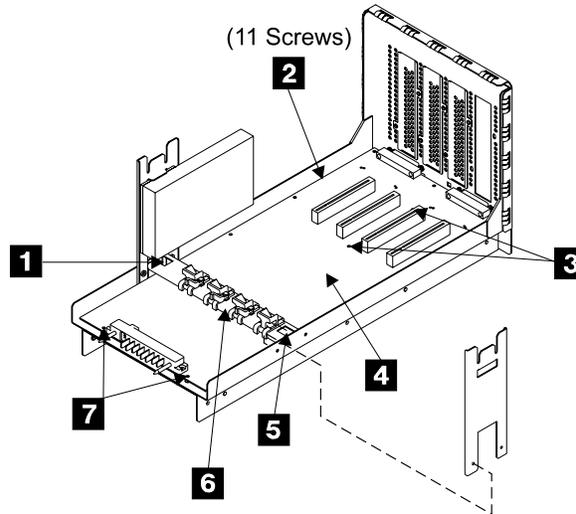


Figure 112. Host Bay Card and Planar Locations (S008096m)

7. Replace parts in the reverse order.
 - a. Check the bottom of the new planar for a protective plastic sheet. If present, remove the sheet before installing the new planar.
 - b. Transfer brackets and shields to the new planar as required.
 - c. To aid in alignment of the new planar, install the two front center screws first **3**, then the two rear screws **7**. The rest of the screws can be installed in any order.

Attention: To prevent electrostatic discharge, ensure you discharge all SCSI host cables to the ESD discharge pad, before you plug them into the 2105 Model Exx/Fxx. The ESD discharge pads are mounted on the front right and left corners of the 2105 Model Exx/Fxx frame, next to each tailgate. See Figure 113 for the location of the ESD discharge pads.

Note: When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

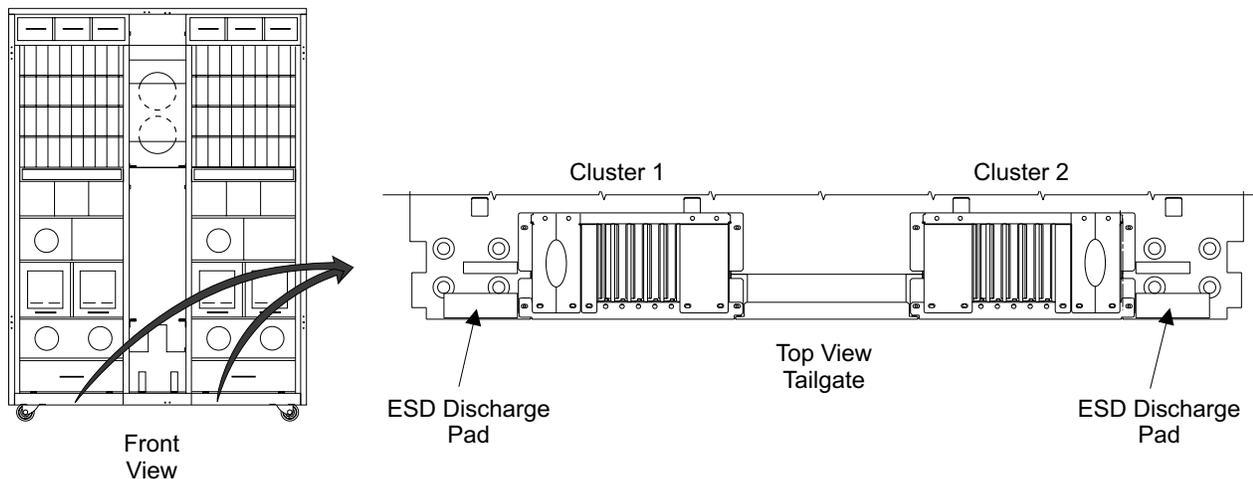


Figure 113. 2105 Model Exx/Fxx ESD Discharge Pad Locations (S008339m)

Cable Removals and Replacements, 2105 Model Exx/Fxx and Expansion Enclosure

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Attention: To prevent electrostatic discharge, ensure you discharge all SCSI host cables to the ESD discharge pad, before you plug them into the 2105 Model Exx/Fxx. The ESD discharge pads are mounted on the front right and left corners of the 2105 Model Exx/Fxx frame, next to each tailgate. See Figure 113 on page 104 for the location of the ESD discharge pads.

This procedure removes and replaces the following 2105 Model Exx/Fxx and Expansion Enclosure cables:

- PPS to Elec Cage PS Cable (R1-Vx-J7x.x)
- PPS to 390 V Battery Cable (Rx-Vx-J3.x)
- 390 V Battery 1 to 2 Cable (Rx-Vx-Jx.x)
- RPC to Operator Panel Cable (R1-Gx-Jx.x)
- Primary P.S. to EPO Panel Cable (R1-G1-Jx.x)
- RPC Interconnect Cable (R1-G1-J6.x)
- RPC to Electronics Cage Cable (R1-Gx-J3.x)
- Storage Cage Fan Cable Assembly (Rx-Ux-P1-Jx)
- Power Planar to DDM Bay Planar Cable (Rx-Qx-P1/Jx)
- SCSI Cable (R1-Bx-Hx/ZA.x)
- CPI Local Cable (R1-Tx-P2-lx/JB.1) Lower IOA connector
- CPI Remote Cable (R1-Tx-P2-lx/JA.1) Upper IOA connector
- SSA Device Cables (Rx-Bww-Kx), go to page 17
- Electronics Cage Power Cables (R1-Tx-xx), go to page 88
- Mainline Power Cables (Rx-Vx-Jx.x), go to page 63

Note: Unless you have a particular reason, *do not power off the 2105 Model Exx/Fxx, 2105 Expansion Enclosure, or SSA DASD drawer unless the instructions that you are following tell you to.*

1. Open the rear cover of the 2105 Model Exx/Fxx. Set the local/remote switches on both RPC cards to the local position, **4** in Figure 79 on page 72.
2. Get the 2105 parts catalog, *Enterprise Storage Serve Parts Catalog* book, S127-0974.
 - a. Look up the 2105 cable you are replacing in the parts catalog.
 - b. Use the parts catalog to locate the cable in the 2105, where it connects, and how it is routed.
3. Open the front or rear cover of the 2105 Model Exx/Fxx or 2105 Expansion Enclosure rack and find the cable you are replacing.
4. Disconnect the cables connectors.

Cables, 2105 Model Exx/Fxx and Expansion Enclosure

Attention: Failure to follow this attention could result in multiple, unnecessary power supply replacements. When replacing any power cables that attach to the rear of a primary power supply (PPS), observe the following rules:

- Disconnect the PPS end of the cable first when removing the cable.
 - Attach the PPS end of the cable last when installing the cable.
5. Remove cable retention, tailgate hardware, and tailgate cable clamps as required:

Attention: Carefully note the routing and retention of the cable you are removing, so you can position it correctly during the replacement.

- **2105 Model Exx/Fxx**, see “2105 Model Exx/Fxx Tailgate Cable Clamp Removal and Installation” on page 306
- **2105 Expansion Enclosure**, does not have a tailgate

Note: When replacing an individual storage cage fan cable, cut the cable bundle ties and remove the cable being replaced from the cable bundle.

6. Remove the cable from the 2105.
7. Replace parts in the reverse order. Reinstall cable retention, cable ties, and tailgate hardware.

Note: Before replacing an individual storage cage fan cables, fill out and install a connector location label on both ends of the cable. These labels come with the new cable.

8. Set the local/remote switches on both RPC cards to their original positions. After the replacement, press the operator panel Local Power switch momentarily to On (up).

Note: Pressing the Local Power switch clears power error conditions that have been repaired, it does not affect 2105 power.

9. When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

CLUSTER BAY FRU REPLACEMENT PROCEDURES, MODELS F10/F20:

The FRU remove and replace procedures for the 2105 Model F10/F20 cluster bays follow:

Cluster Bay Power On and Off Procedures, 2105 Model F10/F20

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Cluster Bay Power Off Using the Service Terminal

Note: Unless you have a particular reason, *do not power off the 2105 Model F10/F20 when servicing a cluster bay unless instructed to do so.*

1. Open the front cover of the 2105 Model F10/F20 rack and locate the cluster bay you will be powering off:
- **2105 Model F10/F20:**

Cluster Bay Power, 2105 Model F10/F20

- Cluster Bay 1, left, (R1-T1-)
- Cluster Bay 2, right, (R1-T2-)

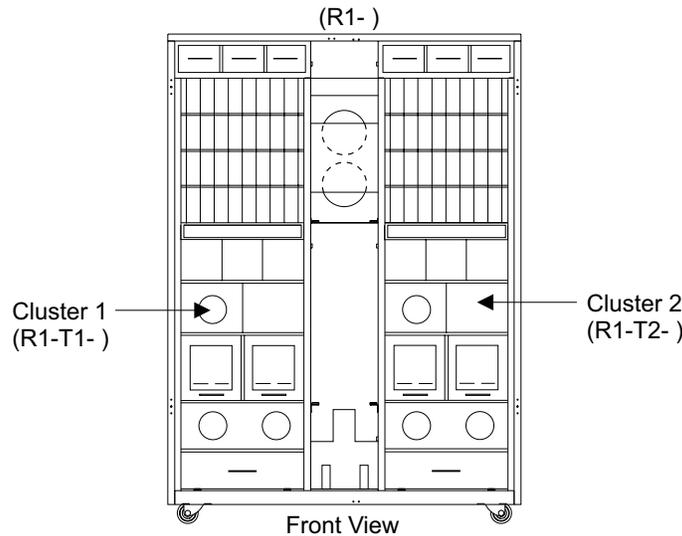


Figure 114. 2105 Model F10/F20 Cluster Bay Locations (S008091m)

2. Ensure that the cluster bay you are powering off is quiesced to prevent interruption of customer operation.

Attention: If the cluster bay being powered off is not quiesced, connect the service terminal to the other cluster bay, see "Service Login Connection" in chapter 8 of the *Enterprise Storage Server Service Guide, Volume 3*.

From the service terminal **Main Service Menu**, select:

Repair Menu

Alternate Cluster Bay Repair Menu

Quiesce the Alternate Cluster Bay

3. Power the cluster bay off, from the **Alternate Cluster Bay Repair Menu**, select **Power Off the Alternate Cluster Bay**.
4. Wait up to 4 minutes for the cluster bay operator panel to display **OK**, the cluster bay is powered off. Sometimes it may still display **READY**. Press the CD-ROM Drive eject button. If the CD tray does not open, the cluster bay has powered off.

Note: When the cluster bay is powered off its fans and service processor remain on. To remove all cluster bay power you must unplug the cluster bay from the 2105 Model F10/F20, see

"Cluster Bay Service Position Procedure (E10/E20)" on page 159.

5. Return to the procedure that sent you here.

Cluster Bay Power On Using the Service Terminal

Note: This procedure is only used when the cluster bay was powered off and not unplugged from the 2105 Model F10/F20 backplane. The cluster bay will not power on automatically when plugged into a 2105 Model F10/F20 that is powered on.

1. Open the front cover of the 2105 Model F10/F20 rack and locate the cluster bay you will be powering on:
 - Cluster Bay 1, left, (R1-T1-)

Cluster Bay Power, 2105 Model F10/F20

- Cluster Bay 2, right, (R1-T2-)

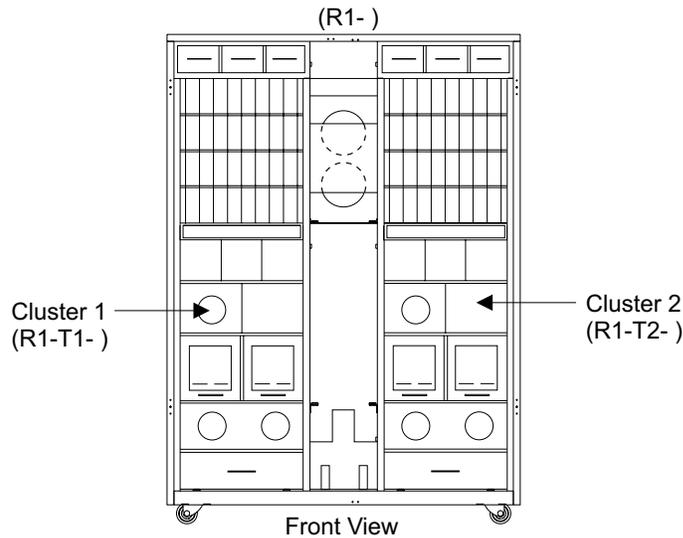


Figure 115. 2105 Model F10/F20 Cluster Bay Locations (S008091m)

2. Connect the service terminal to the other cluster bay, see "Service Login Connection" in chapter 8 of the *Enterprise Storage Server Service Guide, Volume 3*.
3. Power on the cluster bay using the service terminal.
From the service terminal **Main Service Menu**, select:
Repair Menu
Alternate Cluster Bay Repair Menu
Power On the Alternate Cluster Bay
4. Wait about 30 seconds for the cluster bay to power on. The cluster bay is powered on when the Line Cord indicators on the 2105 operator panel stop blinking. If you are not sure, press the CD-ROM Drive eject button. The CD tray will open if the cluster bay is powered on.
5. Return to the cluster bay procedure that sent you here.

Cluster Bay Power Off Using RPC Switches

Note: Unless you have a particular reason, *do not power off the 2105 Model F10/F20 when servicing a cluster bay unless instructed to do so.*

1. Open the front cover of the 2105 Model F10/F20 rack and locate the cluster bay you will be powering off:
 - Cluster Bay 1, left, (R1-T1-)
 - Cluster Bay 2, right, (R1-T2-)

Cluster Bay Power, 2105 Model F10/F20

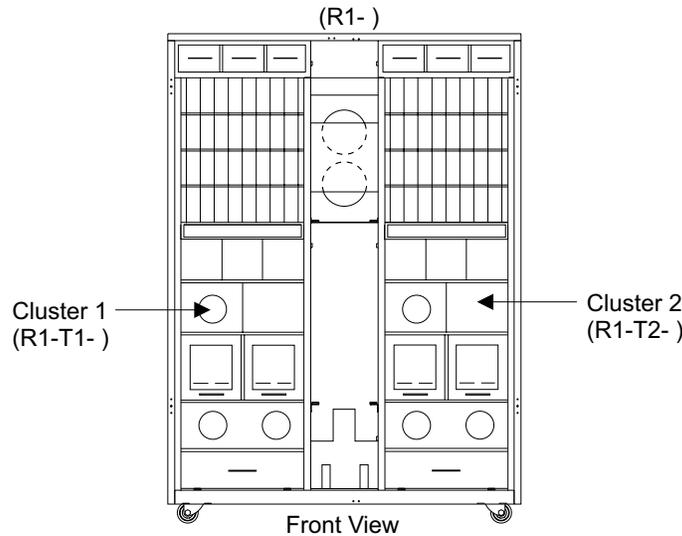


Figure 116. 2105 Model F10/F20 Cluster Bay Locations (S008091m)

2. Ensure that the cluster bay you are powering off is quiesced to prevent interruption of customer operation.

Attention: If the cluster bay being powered off is not quiesced, connect the service terminal to the other cluster bay.

From the service terminal **Main Service Menu**, select:

Repair Menu

Alternate Cluster Bay Repair Menu

Quiesce the Alternate Cluster Bay

3. Open the rear cover of the 2105 Model F10/F20 and locate the RPC cards **1**.
4. Power off cluster bay 1 or cluster bay 2:

Attention: The RPC card switches initiate a software shutdown that takes two to three minutes to complete.

- Cluster Bay 1, press the top switch **2** and **3** on both RPC cards at the same time.
- Cluster Bay 2, press the bottom switch **4** and **5** on both RPC cards at the same time.

Cluster Bay Power, 2105 Model F10/F20

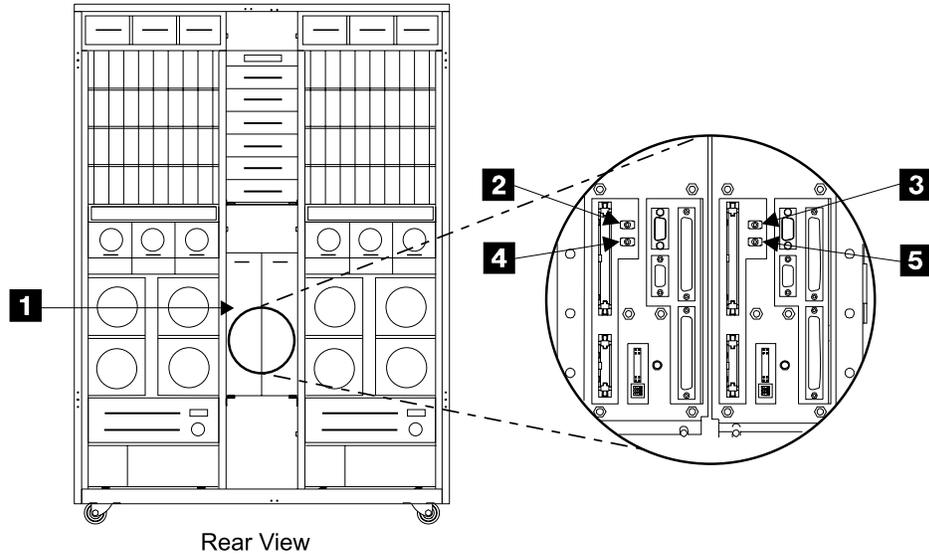


Figure 117. RPC Cluster Bay Power Switches (S007685m)

5. Wait up to 4 minutes for the cluster bay operator panel to display **OK**, the cluster bay is powered off. Sometimes it may still display **READY**. Press the CD-ROM Drive eject button. If the CD tray does not open, the cluster bay has powered off.

Note: When the cluster bay is powered off its fans and service processor remain on. To remove all cluster bay power you must unplug the cluster bay from the 2105 Model F10/F20, see

“Cluster Bay Service Position Procedure (E10/E20)” on page 159.

6. Return to the cluster bay procedure that sent you here to power the cluster bay off.

Cluster Bay Power On Using RPC Switches

Note: This procedure is only used when the cluster bay was powered off and not unplugged from the 2105 Model F10/F20 backplane. The cluster bay will not power on automatically when plugged into a 2105 Model F10/F20 that is powered on.

1. Open the rear cover of the 2105 Model F10/F20 and locate the RPC cards **1**.
2. Power on cluster bay 1 or cluster bay 2:
 - Cluster Bay 1, press the top switch **2** or **3** on either RPC card.
 - Cluster Bay 2, press the bottom switch **4** or **5** on either RPC card.

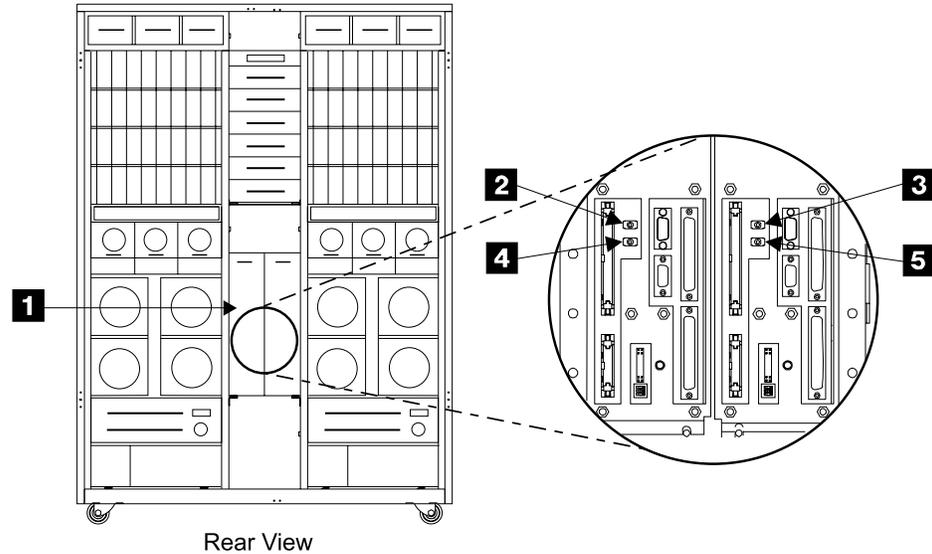


Figure 118. RPC Cluster Bay Power Switches (S007685m)

3. Wait about 30 seconds for the cluster bay to power on. The cluster bay is powered on when the Line Cord indicators on the 2105 operator panel stop blinking.
4. Return to the cluster bay procedure that sent you here to power the cluster bay on.

Cluster Bay Service Position Procedure (F10/F20)

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Note: Unless you have a particular reason, *do not power off the 2105 Model F10/F20 when servicing a cluster bay unless instructed to do so.*

1. Open the front cover of the 2105 rack and locate the cluster bay you will be moving to its service position:
 - **2105 Model F10/F20:**
 - Cluster Bay 1, left, (R1-T1-)
 - Cluster Bay 2, right, (R1-T2-)

Cluster Bay Service Position

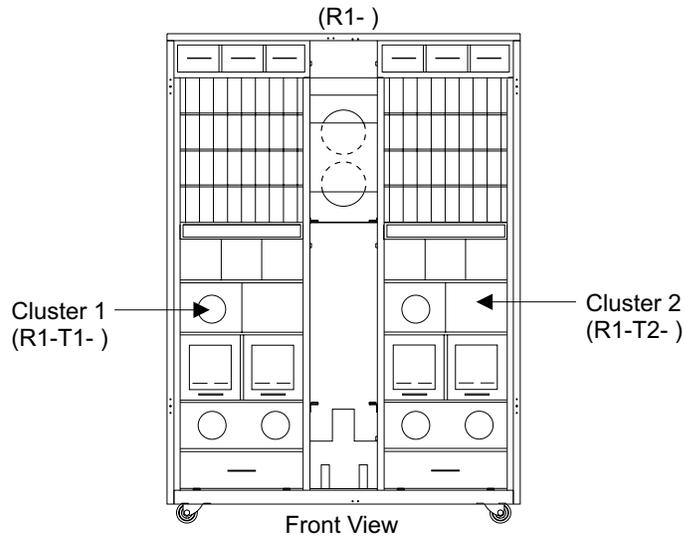


Figure 119. Cluster Bay Locations (S008091m)

2. Do the following steps only on the cluster bay you are moving to its service position.
3. Power the cluster bay being serviced off if it is still powered on, see “Cluster Bay Power Off Using the Service Terminal” on page 106.
4. Do not remove any cluster bay cables unless instructed to do so.
5. Loosen the two cluster bay retaining screws **1** and **2** until they are free.
6. Pull the cluster bay out slowly until it latches at its service position. Release any cable ties that restrict the movement of the cables attached to the cluster bay.

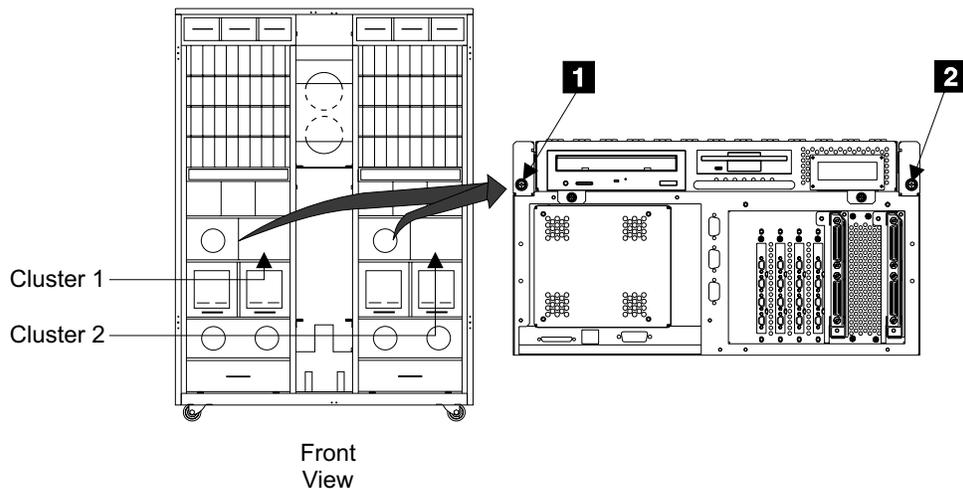


Figure 120. Cluster Bay Service Position (S008770m)

7. Return to the procedure that sent you here to remove the cluster bay. After the cluster bay repair activity is complete, return to step 8 to install the cluster bay into the 2105 Model F10/F20.
8. Replace parts in the reverse order.

Notes:

- a. Release the latches on the side of each rail to slide the cluster bay into the 2105.

Cluster Bay Service Position

- b. When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

Cluster Top Bay Service Access Procedure (F10/F20)

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

1. Loosen the two cluster top bay screws **1** and **3** until they are free.

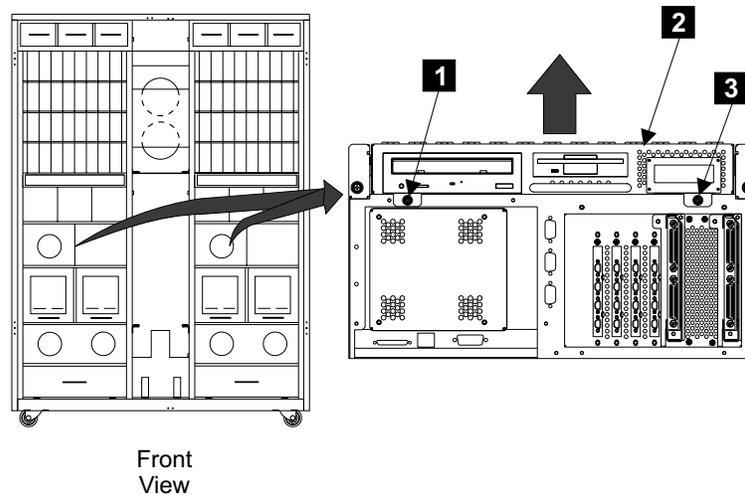


Figure 121. Cluster Top Bay Screws (S008771m)

2. Slowly raise the top bay **2** by its handle until it rotates past vertical and drops into its service position.

Note: While raising the cluster top bay, watch inside the cluster bay for any cable problems.

3. Return to the cluster bay FRU replacement procedure that sent you here to open the cluster top bay for service.
4. Close cluster top bay in the reverse order, lift up on the cluster top bay handle before closing.

Notes:

- a. While lowering the cluster top bay, watch inside the cluster bay for any cable problems.
- b. When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

Operator Panel Removal and Replacement, Cluster Bay (F10/F20)

Attention: This is *not* a stand-alone procedure.

Operator Panel, Cluster Bay

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Note: Unless you have a particular reason, *do not power off the 2105 Model F10/F20 when servicing a cluster bay unless instructed to do so.*

1. Open the front cover of the 2105 Model F10/F20 rack and locate the cluster bay with the cluster bay operator panel you are replacing.
 - **2105 Model F10/F20:**
 - Cluster Bay 1, operator panel, (R1-T1-L1) **1**
 - Cluster Bay 2, operator panel, (R1-T2-L1) **2**

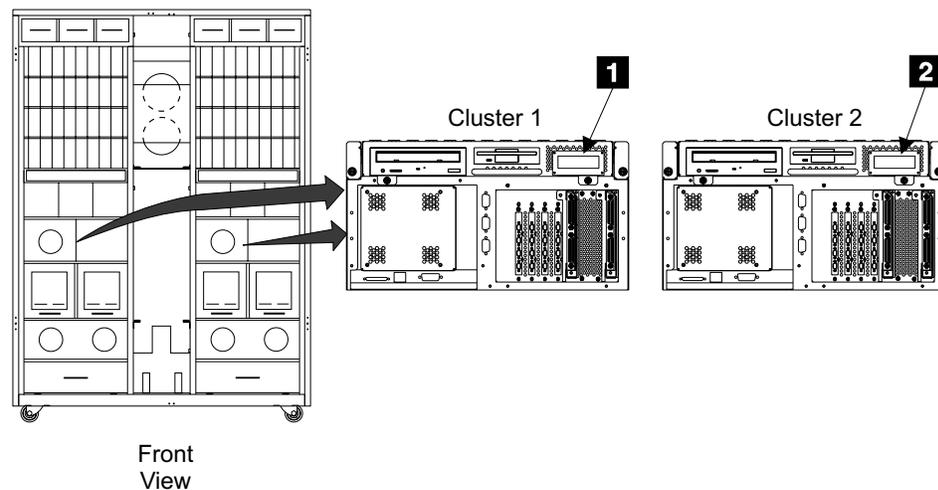


Figure 122. Cluster Bay Operator Panel (S008772m)

2. Do the following steps only on the cluster bay with the cluster bay operator panel you are replacing.
3. Power off the cluster bay, then pull the cluster bay out to the service position, see “Cluster Bay Service Position Procedure (F10/F20)” on page 111:
4. Disconnect the cable **5** from the cluster bay operator panel **3**.
5. Loosen the two cluster bay operator panel mounting screws **4** and remove the operator panel from the cluster bay.

Operator Panel, Cluster Bay

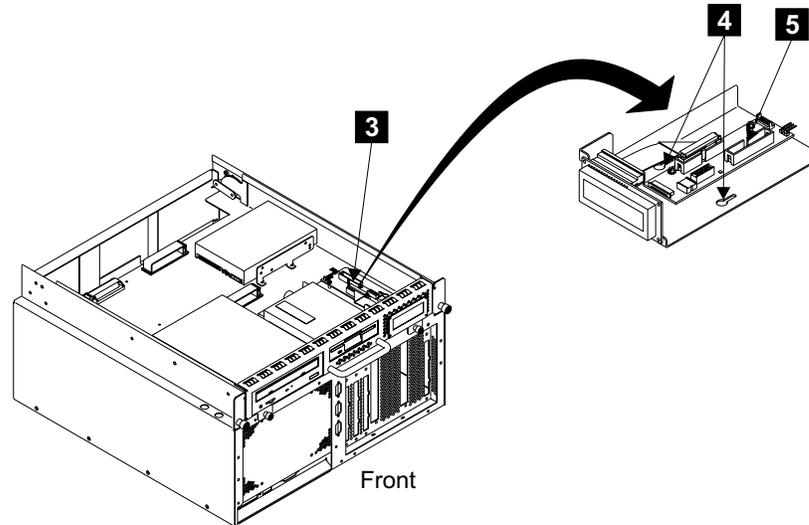


Figure 123. Cluster Bay Operator Panel Removal (S008315m)

6. Move the VPD module **6** (U2 on the operator panel card) from the old cluster bay operator panel to the new one. If the old VPD module is the problem, install the new VPD module and call technical support for recovery instructions.

Note: Install the VPD with the notch **7** to the right when viewed from the front.

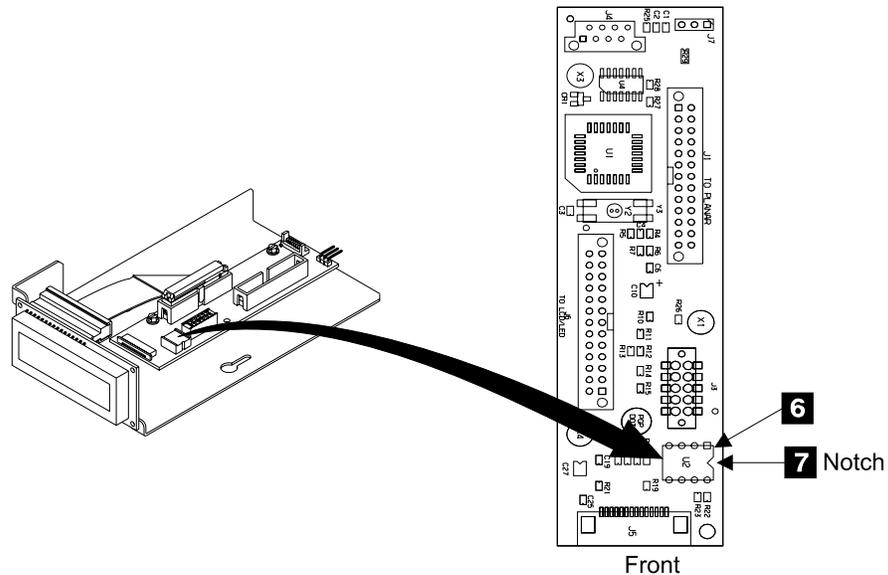


Figure 124. Cluster Bay Operator Panel VPD Module Swap (S008094m)

7. Replace parts in the reverse order.

Note: When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

Drives, Cluster Bay

CD-ROM, SCSI Hard Drive, and Diskette Drive Removals and Replacements, Cluster (F10/F20)

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Notes:

1. Unless you have a particular reason, *do not power off the 2105 Model F10/F20 when servicing a cluster bay unless instructed to do so.*
2. When directed to replace the SCSI hard drive, always use “MAP 4020: SCSI Hard Drive Build” in chapter 3 of the *Enterprise Storage Server Service Guide, Volume 1*.
1. Open the front cover of the 2105 Model F10/F20 rack and locate the cluster bay with the cluster bay CD-ROM drive, SCSI hard drive, or diskette drive you are replacing:

- **2105 Model F10/F20:**

- Cluster Bay 1:
 - CD-ROM drive (R1-T1-P2-Z1-A3) **2**
 - SCSI hard drive (R1-T1-P2-Z1-A0) **3**
 - Diskette drive (R1-T1-P2-D1) **1**
- Cluster Bay 2:
 - CD-ROM drive (R1-T2-P2-Z1-A3) **2**
 - SCSI hard drive (R1-T2-P2-Z1-A0) **3**
 - Diskette drive (R1-T2-P2-D1) **1**

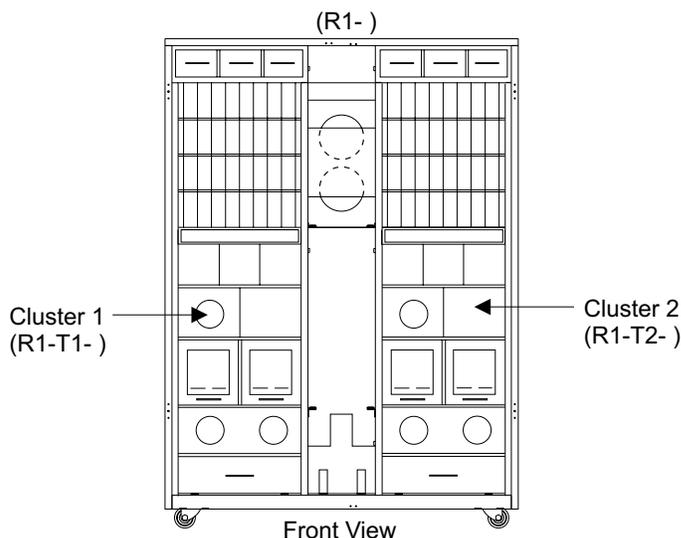


Figure 125. 2105 Model F10/F20 Cluster Bay Locations (S008091m)

Drives, Cluster Bay

2. Do the following steps only on the cluster bay and the cluster bay CD-ROM drive, SCSI hard drive, or diskette drive you are replacing.
3. Power off the cluster bay, then pull the cluster bay out to the service position, see “Cluster Bay Service Position Procedure (F10/F20)” on page 111:
4. Locate the drive you will be removing:
 - Diskette drive (R1-Tx-P2-D1) **1**
 - CD-ROM drive (R1-Tx-P2-Z1-A3) **2**
 - SCSI hard drive (R1-Tx-P2-Z1-A0) **3**

Attention: Read and understand “Additional SCSI Hard Drive Replacement Information, 2105 Models E10/E20” on page 167 before continuing with the SCSI hard drive replacement.

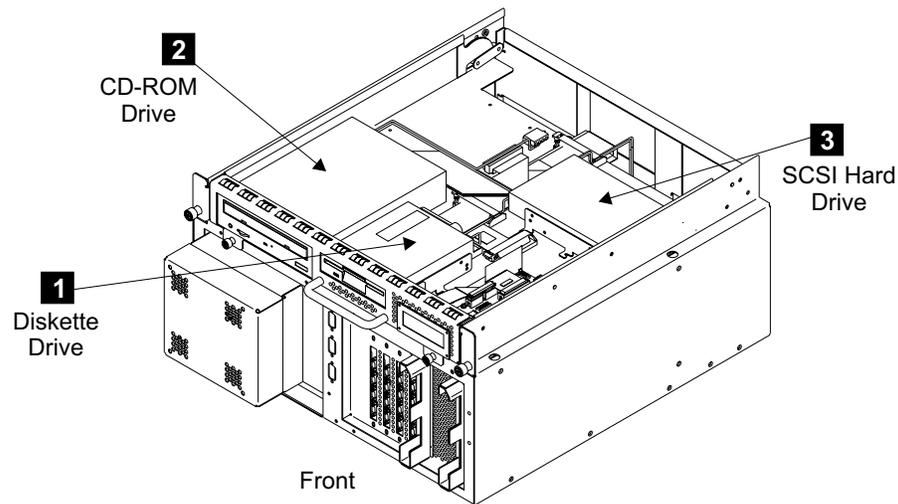


Figure 126. Cluster Bay Drive Locations (S008776m)

5. Disconnect the cables from the rear of the drive you are removing.
 - Diskette drive, cables P11 and FD0
 - CD-ROM drive, cables P9 and CDR0M
 - SCSI hard drive, cables P10 and HDD
6. Loosen the four drive mounting screws, two on each side, for the drive you are removing:
 - Diskette drive screws **7**
 - CD-ROM drive screws, shown removed **5**
 - SCSI hard drive screws **6**
7. Remove the drive from the cluster bay.

Drives, Cluster Bay

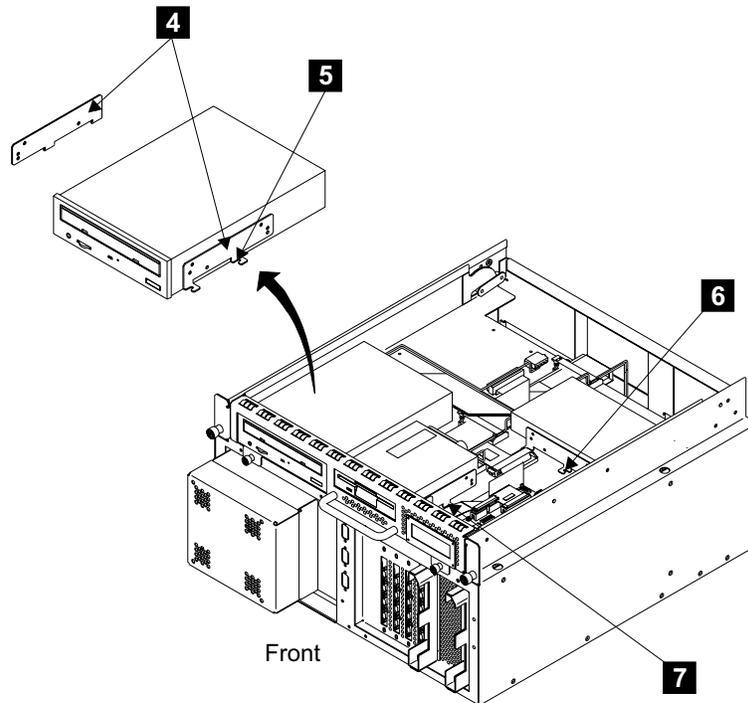


Figure 127. Cluster Bay Drive Mounting Screws (S008777n)

8. Replace parts in the reverse order.

Note: When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

Notes:

- a. Transfer the two side mounting brackets **4** from the old drive to the new drive. CD-ROM drive shown.
- b. When replacing the CD-ROM drive, verify that the three jumpers on the option block (pins 1, 2, and 4) on the rear of the new drive are in the same position, **8** in Figure 128 on page 119, as on the drive you are replacing.
- c. Determine if the rear of the new SCSI hard drive matches either of the drives shown in Figure 128 on page 119.
 - If the new drive matches one of those shown, verify that the jumper (active termination) shown in Figure 128 on page 119, is installed between pins 13 and 14 **9**, or pins 11 and 12 **10**.
 - If the new drive does not match one of those shown, determine if an active termination jumper is needed or call technical support.

Attention: New 2105 Model F10/F20 cluster bays will have different SCSI hard drives. The new style SCSI hard drives have a different jumper location, they require a jumper at position 8 (TI SYNC NEG0).

- d. Extend the CD-ROM tray and push the two lower tabs out (toward each other). These tabs will hold the bottom of the CD disk when the CD-ROM operates in the vertical position.

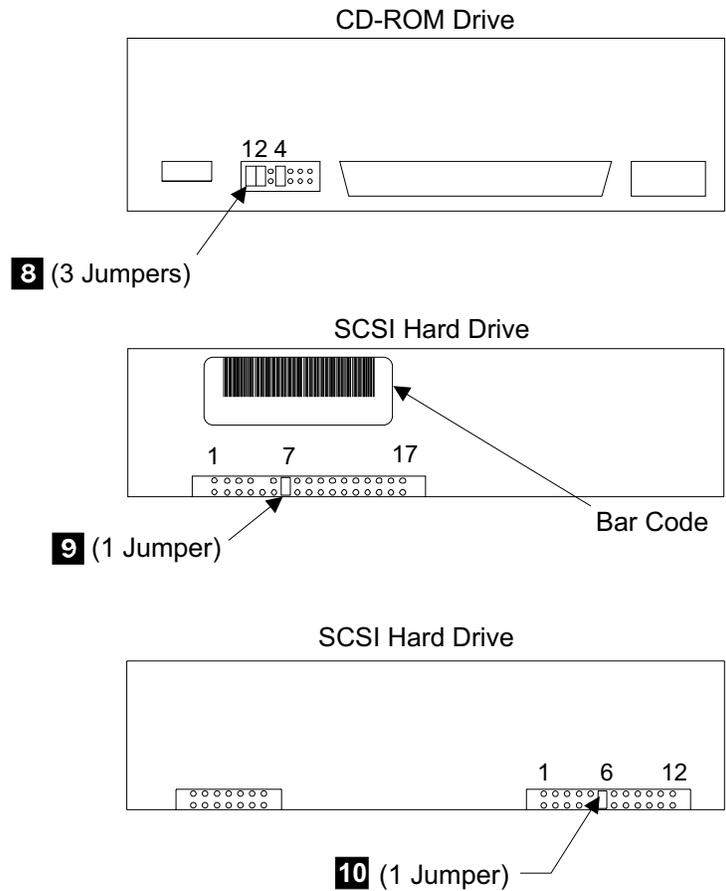


Figure 128. CD-ROM Drive and SCSI Hard Drive Jumpers (S008797p)

Additional SCSI Hard Drive Replacement Information, 2105 Model F10/F20

New cluster bay SCSI hard drives may be different from the existing drive. The original SCSI hard drives had interface termination built into them. The new SCSI hard drives do not have internal interface termination. With the new drive, an external interposer/terminator assembly is required. The new style SCSI hard drives are shipped with the new interposer/terminator assembly, and instructions on how to install it. The Interposer/terminator, when required, plugs into the SCSI connector on the rear of the CD-ROM drive (*NOT* the SCSI hard drive). The SCSI drive signal cable then plugs into the interposer/terminator. See Figure 129 on page 121.

In the future a new cluster bay SCSI drive signal cable will be available with interface termination built into it. With this new cable and a new type drive, the interposer/terminator is not required. See the table below for possible combinations of drives, cables, and interposer.

Attention: Errors will occur if the interposer/terminator assembly is installed with the old style, internally terminated, SCSI hard drive or with a SCSI drive signal cable with built in termination. Do not use this procedure for clusters bays in 2105 Models E10/E20 racks.

The new SCSI hard drives do not have option block jumpers.

The table below shows the combinations of drives, interposer/terminators, and jumpers.

Drives, Cluster Bay

Table 1. Cluster Bay SCSI Hard Drive Variations

SCSI Hard Drive Type	SCSI Drive Signal Cable Type	SCSI Interface Termination	Interposer / Terminator Required	SCSI Hard Drive Option Block Jumpers Present
Original Type (internal termination)	Original Type (no termination)	Internal in the SCSI Hard Drive	No	Yes
New Type (external termination)	Original Type	External to the SCSI Hard Drive	Yes	No
New Type	Original Type	External to the SCSI Hard Drive	Yes	No
New Type	New Type (built in termination)	External to the SCSI Hard Drive	No	No

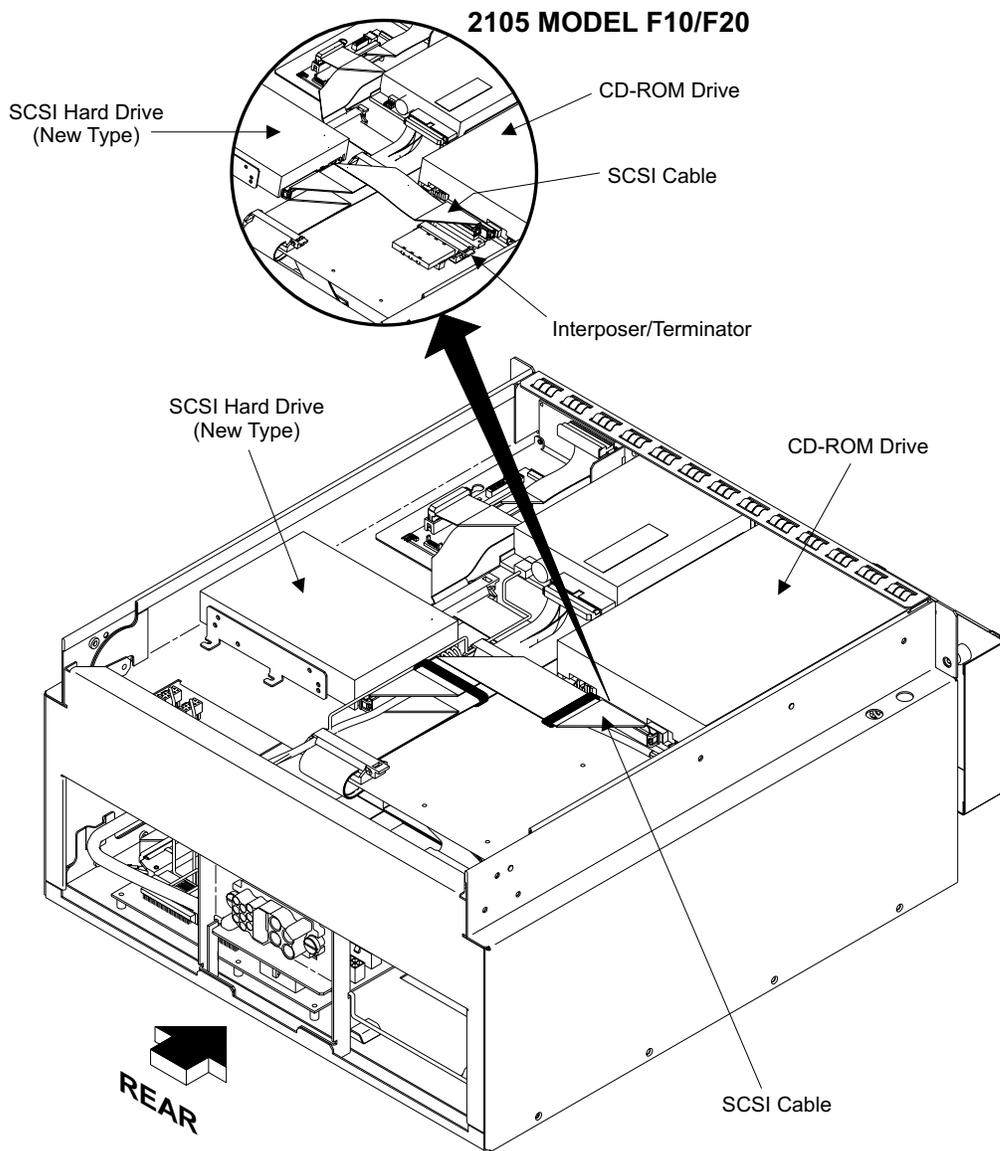


Figure 129. Cluster Bay SCSI Hard Drive Variations (S009091)

I/O Planar Battery Removal and Replacement, Cluster Bay (F10/F20)

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

I/O Planar Battery, Cluster Bay

CAUTION:

A lithium battery can cause fire, explosion, or a severe burn. Do not recharge, disassemble, heat above 100°C (212°F), solder directly to the cell, incinerate, or expose cell contents to water. Keep away from children. Replace only with the part number specified for your system. Use of another battery may present a risk of fire or explosion.

The battery connector is polarized; do not attempt to reverse polarity.

Dispose of the battery according to local regulations. (1056)

Note: This notice is translated into selected languages. See Translation of Cautions and Danger Notices in chapter 11 of the *Enterprise Storage Server Service Guide, Volume 3*.

Note: Unless you have a particular reason, *do not power off the 2105 Model F10/F20 when servicing a cluster bay unless instructed to do so.*

1. Open the front cover of the 2105 Model F10/F20 rack and locate the cluster bay with the I/O planar battery you are replacing.
 - **2105 Model F10/F20:**
 - Cluster Bay 1, I/O/planar battery, (R1-T1-V2)
 - Cluster Bay 2, I/O/planar battery, (R1-T2-V2)

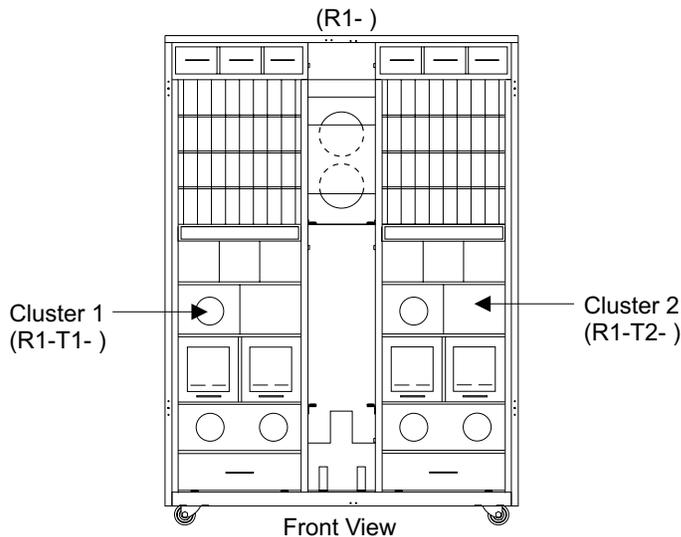


Figure 130. 2105 Model F10/F20 Cluster Bay Locations (S008091m)

2. Do the following steps only on the cluster bay and the I/O planar battery you are replacing.
3. Power off the cluster bay, then pull the cluster bay out to the service position, see “Cluster Bay Service Position Procedure (F10/F20)” on page 111:
4. Open the cluster bay top cover to the service position, see “Cluster Top Bay Service Access Procedure (F10/F20)” on page 113.
5. Remove the SSA device card in slot 9 (R1-Tx-P2-K9), see “SSA Device Card Removal and Replacement, Cluster Bay (F10/F20)” on page 130. This card must be removed to access the battery.
6. Locate the I/O planar battery you are removing:

- I/O planar battery (V2) **1**

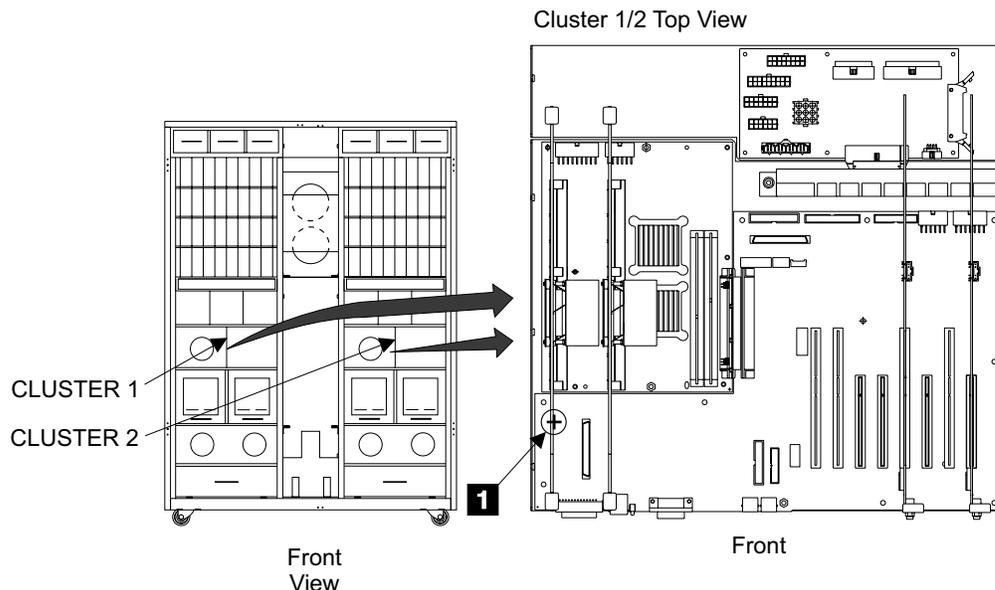


Figure 131. I/O Planar Battery Removal (S008790n)

7. Remove the I/O planar battery by sliding it out of the opening in the mounting socket.

Attention: Dispose of the battery according to local regulations. Lithium batteries are not returned to IBM.

8. Before you install the new battery, drain the charge on the NVRAM by doing one of the following:
 - Briefly short the planar battery mounting socket plus (+) and minus (-) contacts together with a metal tool. This will quickly drain the charge.
 - Wait 15 minutes for the charge to drain off.
9. Replace parts in the reverse order.

Note: When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

Always install the battery with the + symbol up.

Note: Use the service terminal to set the cluster bay time and date after the I/O planar battery is replaced. From the **Main Service Menu** select the following options:

Configuration Options Menu
Change/Show Date, Time and Time Zone
 Follow the service terminal instructions.

System, I/O, and Power Planar Removals and Replacements, Cluster Bay (F10/F20)

Attention: This is *not* a stand-alone procedure.

System, I/O, and Power Planars, Cluster Bay

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Note: Unless you have a particular reason, *do not power off the 2105 Model F10/F20 when servicing a cluster bay unless instructed to do so.*

1. Open the front cover of the 2105 Model F10/F20 rack and locate the cluster bay with the cluster bay system, I/O, or cluster bay power planar you are replacing:
 - **2105 Model F10/F20:**
 - Cluster Bay 1:
 - System planar (R1-T1-P1) **1**
 - I/O planar (R1-T1-P2) **2**
 - Cluster Bay Power planar (R1-T1-P3) **3**
 - Cluster Bay 2:
 - System planar (R1-T2-P1) **1**
 - I/O planar (R1-T2-P2) **2**
 - Cluster Bay Power planar (R1-T2-P3) **3**

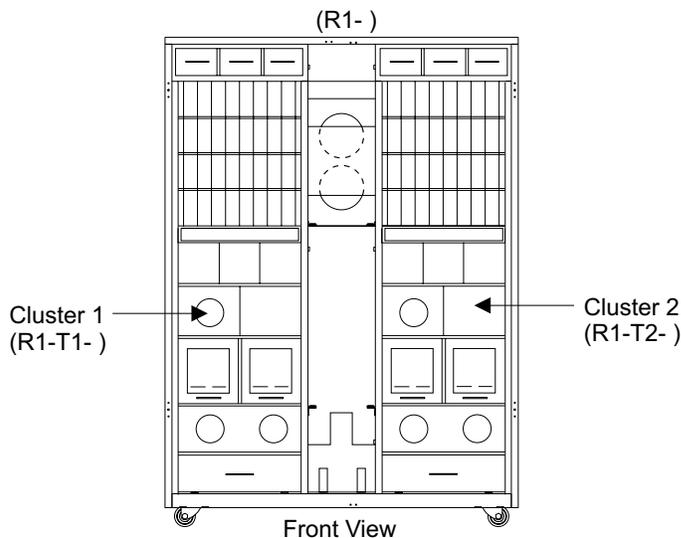


Figure 132. 2105 Model F10/F20 Cluster Bay Locations (S008091m)

2. Do the following steps only on the cluster bay with the system planar, I/O planar, or cluster bay power planar you are replacing.
3. Power off the cluster bay, then pull the cluster bay out to the service position, see “Cluster Bay Service Position Procedure (F10/F20)” on page 111:
4. Open the cluster bay top cover to the service position, see “Cluster Top Bay Service Access Procedure (F10/F20)” on page 113.
5. Locate the cluster bay planar you are removing:
 - System planar (R1-T1-P1) **1**, go to step 6 on page 125.

System, I/O, and Power Planars, Cluster Bay

- I/O planar (R1-T1-P2) **2**, go to step 6.
 - Cluster Bay Power planar (R1-T1-P3) **3**, go to step 18 on page 128.
6. Disconnect all of the cables from the front of the cluster:
- Communications cables **4**
 - SSA device card and I/O attachment card cables **5**

Note: To prevent damage to the SSA device cable connector screws, always use the special screwdriver (SSA tool, P/N 32H7059) to turn them. This screwdriver is in the 2105 ship group.

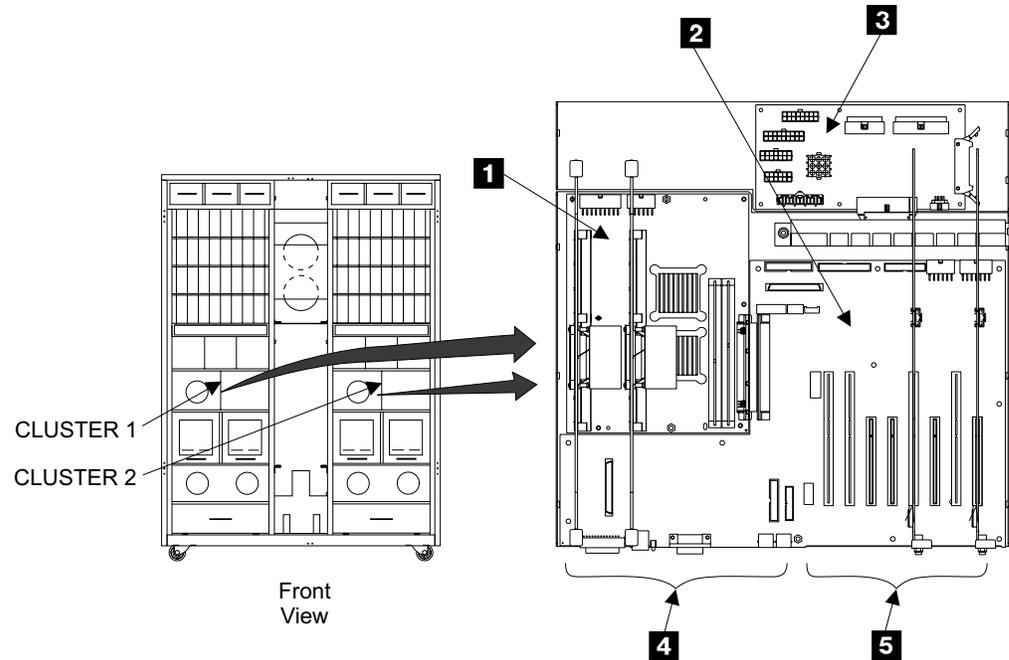


Figure 133. Cluster Bay Planar Locations (S008778n)

7. Loosen the left card retention bracket screws **6** and **7**, until they are free, then remove the bracket **8**.
8. Loosen the two right card retention bracket captured top screws until they are free **9** and **14**.
9. Loosen the two right side card retention bracket screws **11** and **12**.
10. Remove the two card retention brackets **10** and **13**.

System, I/O, and Power Planars, Cluster Bay

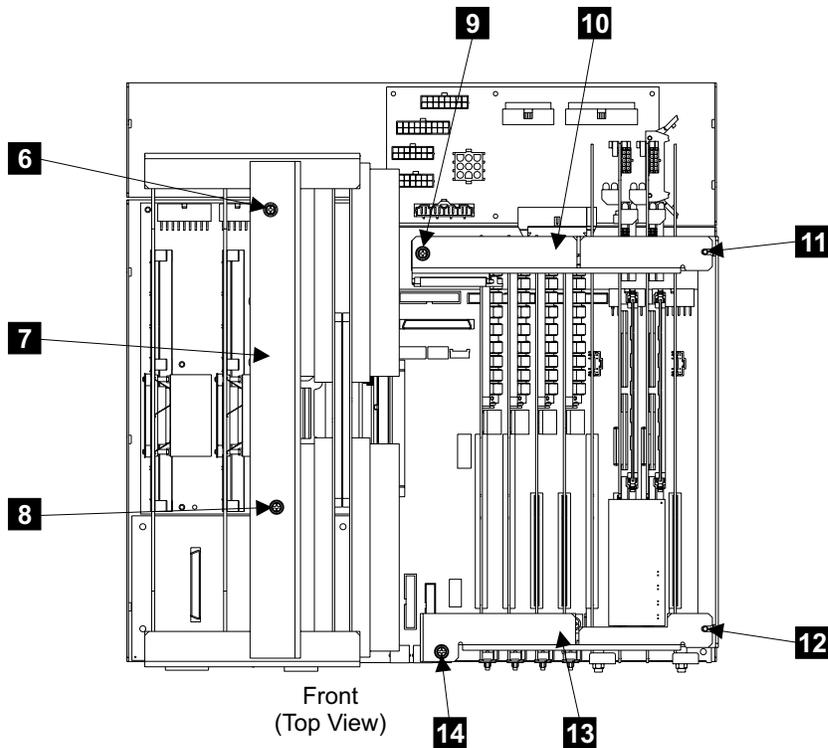


Figure 134. Cluster Bay Card Retention Bracket Removal (S008785n)

11. Remove all of the cards from the system planar **1** and the I/O planar **2** in Figure 133 on page 125:

Note: Remember which position the cards were removed from for reinstallation.

- 255 MHz CPU cards **15**, disconnect cables from left side of cards first. See, “255 MHz CPU Card Removal and Replacement, Cluster Bay (F10/F20)” on page 136
- Memory cards **16** See, “Memory Card Removal and Replacement, Cluster Bay (F10/F20)” on page 138
- SSA device cards **17** and **21** See, “SSA Device Card Removal and Replacement, Cluster Bay (F10/F20)” on page 130
- I/O attachment cards **18** and **20** See, “I/O Attachment Card Removal and Replacement, Cluster Bay (F10/F20)” on page 133
- NVS memory cards and top card crossover, **19**, unplug cables from the NVS cards and crossover. Unplug the crossover from the NVS memory cards then remove the cards. See, “NVS Memory Card and Top Card Crossover Removal and Replacement, Cluster Bay (F10/F20)” on page 143

System, I/O, and Power Planars, Cluster Bay

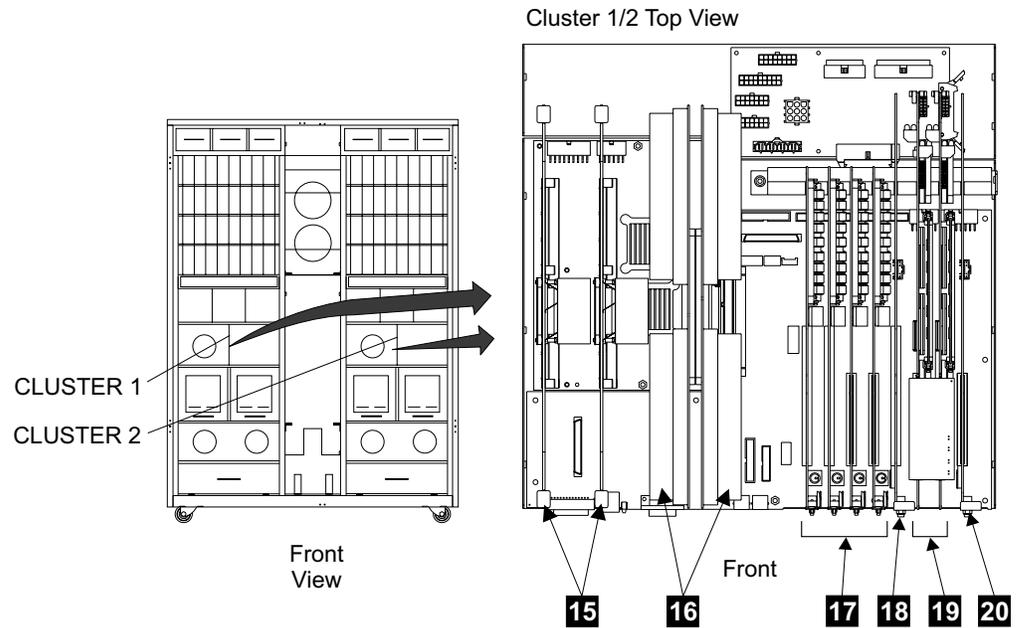


Figure 135. Cluster Bay Card Locations (S008779n)

12. Disconnect all of the internal cables from the system planar **1** and the I/O planar **2** in Figure 133 on page 125. See "Cluster Bay, System, I/O, and Power Planars Location Codes (F10/F20)" and "Cluster Bay, Cable Location Codes (F10/F20)" in chapter 7 of the *Enterprise Storage Server Service Guide, Volume 3* for cable locations.
13. Remove the two mounting screws **26** and **27** from each cluster bay communications connectors.
14. Remove the eight mounting screws **22** and two standoffs **21** from the system planar.
15. Remove the 11 mounting screws **24** and one standoff **23** from the I/O planar.
16. Remove the system and I/O planars from the cluster as a single unit. Carefully separate the two planars by pulling the system to I/O planar connector **25** apart. Carefully lift the system planar away from the I/O planar. Be *very careful* not to scrape or damage the components on the bottom of the system planar.
ATTENTION: Failure to carefully disengage the two planars could damage the components on the bottom of the system planar and result in damaging a good FRU. This damage could also result in additional customer delays.
17. Go to step 22 on page 129.

System, I/O, and Power Planars, Cluster Bay

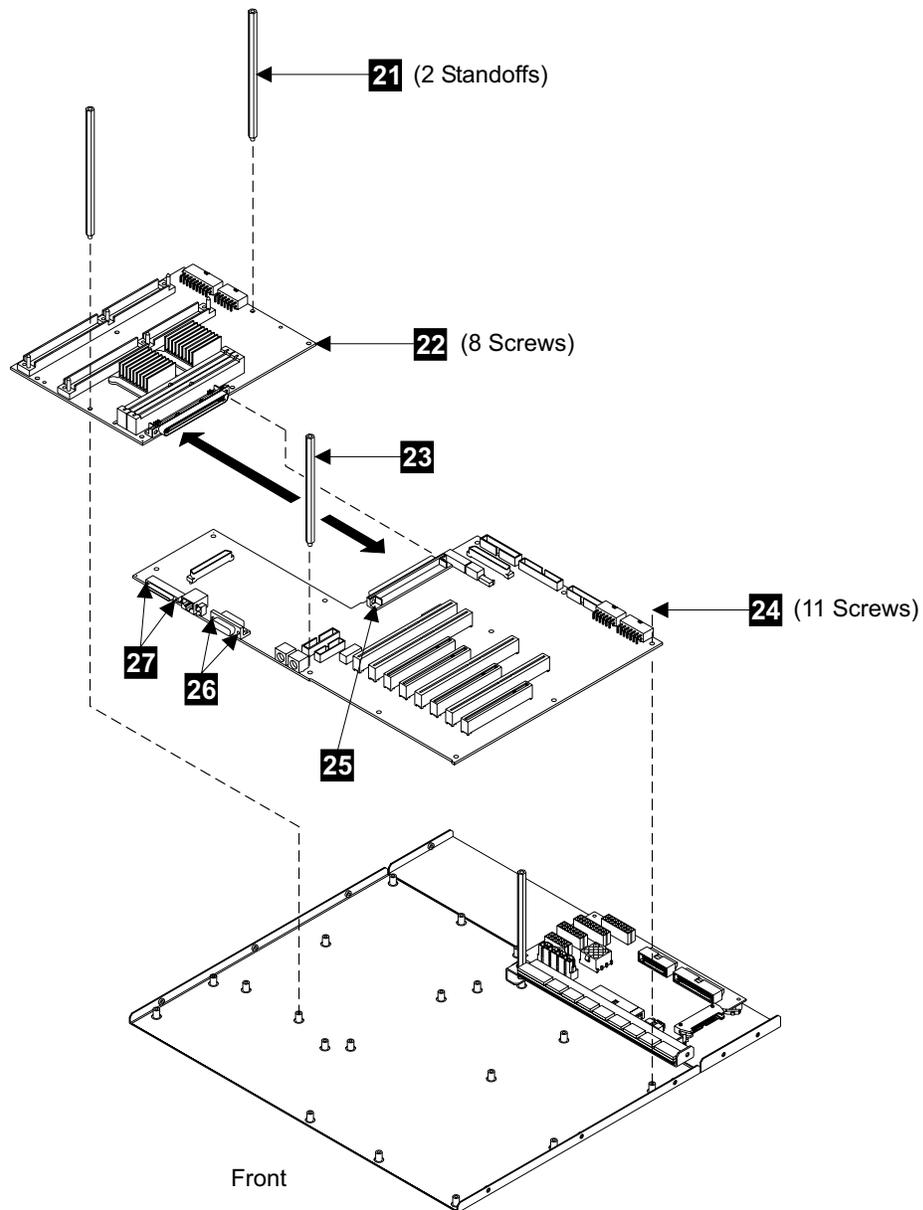


Figure 136. Cluster Bay Planar Removal (S008791r)

18. Remove all of the cards from the system planar **1**, in Figure 133 on page 125.

Note: Remember which position the cards were removed from for reinstallation.

- 255 MHz CPU cards **15**, in Figure 135 on page 127. disconnect cables from left side of cards first. See, “255 MHz CPU Card Removal and Replacement, Cluster Bay (F10/F20)” on page 136
 - Memory cards, **16**, in Figure 135 on page 127. See, “Memory Card Removal and Replacement, Cluster Bay (F10/F20)” on page 138
19. Disconnect all of the internal cables from the cluster bay power planar, **3** in Figure 133 on page 125. See “Cluster Bay, System, I/O, and Power Planars

System, I/O, and Power Planars, Cluster Bay

Location Codes (F10/F20)" and "Cluster Bay, Cable Location Codes (F10/F20)" in chapter 7 of the *Enterprise Storage Server Service Guide, Volume 3* for cable locations.

20. Remove the 6 mounting screws **28** from the cluster bay power planar.
21. Remove the cluster bay power planar from the cluster.

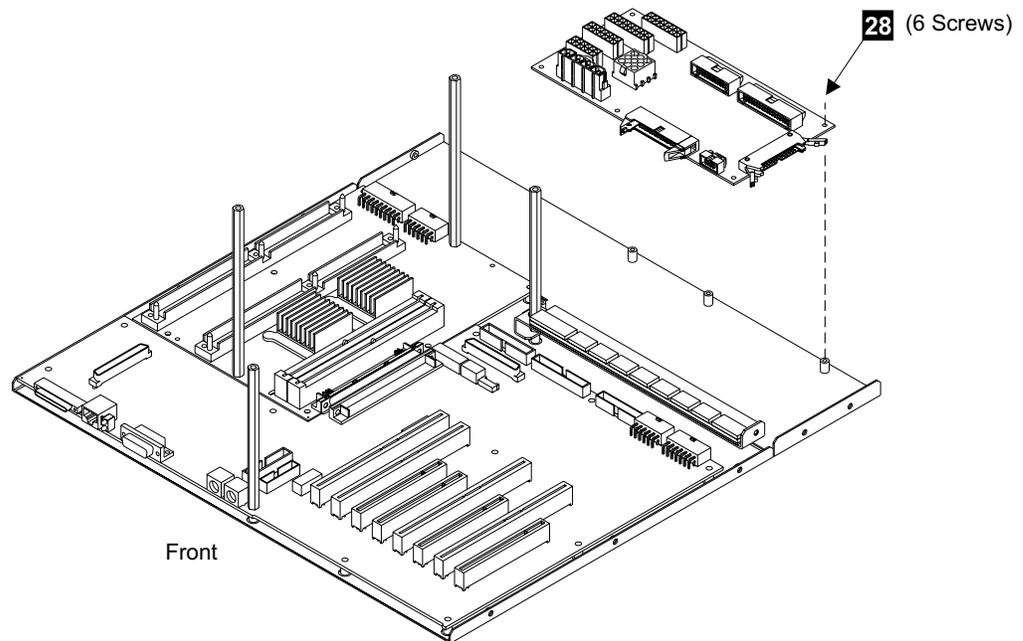


Figure 137. Cluster Bay Power Planar Removal (S008792n)

22. Replace parts in the reverse order.

Note: Transfer any connector covers to the new planar.

If the I/O planar is being replaced:

- Verify that a I/O planar battery is installed on the new I/O planar, see "I/O Planar Battery Removal and Replacement, Cluster Bay (F10/F20)" on page 121.
- Before you install the new I/O planar, do the following to drain the charge on the NVRAM:
 - Remove the I/O planar battery from the new I/O planar.
 - Briefly short the planar battery mounting socket plus (+) and minus (-) contacts together with a metal tool. This will quickly drain the charge.
 - Reinstall the I/O planar battery.
 - Install the I/O planar.

Attention: Use the service terminal to set the cluster bay time and date after the I/O planar battery is replaced. From the **Main Service Menu** select the following options:

Configuration Options Menu

Change/Show Date, Time and Time Zone

Follow the service terminal instructions.

System, I/O, and Power Planars, Cluster Bay

Note: When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

SSA Device Card Removal and Replacement, Cluster Bay (F10/F20)

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Note: Unless you have a particular reason, *do not power off the 2105 Model F10/F20 when servicing a cluster bay unless instructed to do so.*

1. Open the front cover of the 2105 Model F10/F20 rack and locate the cluster bay with the cluster bay SSA device card you are replacing, see Figure 138 on page 131:
 - **2105 Model F10/F20:**
 - Cluster Bay 1:
 - SSA device card (R1-T1-P2-K1)
 - SSA device card (R1-T1-P2-K2)
 - SSA device card (R1-T1-P2-K3)
 - SSA device card (R1-T1-P2-K4)
 - Cluster Bay 2:
 - SSA device card (R1-T2-P2-K1)
 - SSA device card (R1-T2-P2-K2)
 - SSA device card (R1-T2-P2-K3)
 - SSA device card (R1-T2-P2-K4)

SSA Device Card, Cluster Bay

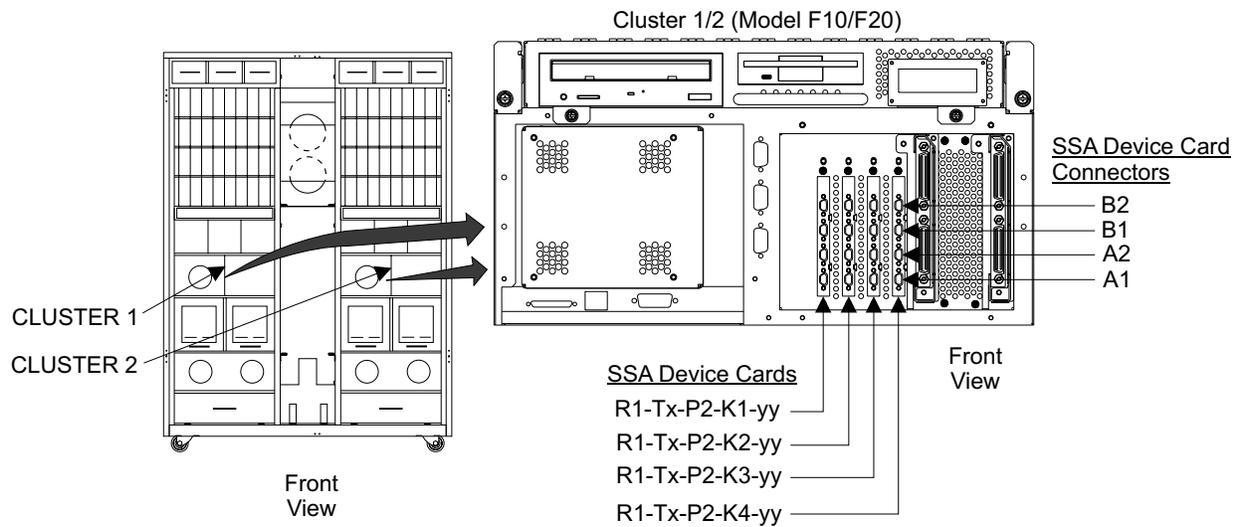


Figure 138. SSA Device Card Removal (S009109)

2. Do the following steps only on the cluster bay and the SSA device card you are replacing.
3. Power off the cluster bay, then pull the cluster bay out to the service position, see “Cluster Bay Service Position Procedure (F10/F20)” on page 111:
4. Open the cluster bay top cover to the service position, see “Cluster Top Bay Service Access Procedure (F10/F20)” on page 113.
5. Loosen the two right card retention bracket captured top screws until they are free **1** and **6**.
6. Loosen the two right side card retention bracket screws **3** and **4**.
7. Remove the two card retention brackets **2** and **5**.

SSA Device Card, Cluster Bay

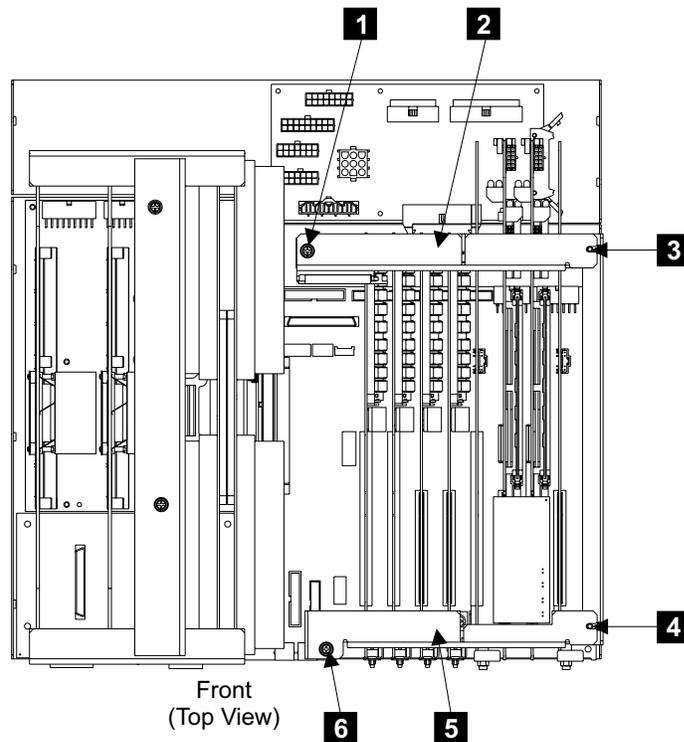


Figure 139. Cluster Bay Card Retention Bracket Removal (S008786n)

8. Locate the SSA device card you are removing:
 - SSA device card (R1-Tx-P2-K1)
 - SSA device card (R1-Tx-P2-K2)
 - SSA device card (R1-Tx-P2-K3)
 - SSA device card (R1-Tx-P2-K4)
9. Disconnect the SSA cables from the connectors on the front of the SSA device card connectors.

Notes:

- a. Label the SSA cables, before disconnecting them, so they can be reconnected to their original connectors.
 - b. To prevent damage to the SSA device cable connector screws, always use the special screwdriver (SSA tool, P/N 32H7059) to turn them. This screwdriver is in the 2105 ship group.
10. Remove the two front SSA device card mounting screws and the cable support bracket.
 11. Remove the SSA device card from the I/O planar by pulling straight up.
 12. Replace parts in the reverse order.

Transfer the SSA device card DRAM module to the new card or replace the failing SSA device card DRAM module, see “SSA Device Card DRAM Module Removal and Replacement, Cluster Bay (F10/F20)” on page 133.

Note: When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

SSA Device Card DRAM Module Removal and Replacement, Cluster Bay (F10/F20)

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Note: Unless you have a particular reason, *do not power off the 2105 Model F10/F20 rack when removing the SSA device card.*

1. Do the following steps only on the cluster bay with the SSA device card with the DRAM module you are replacing.
2. Remove the SSA device card with the DRAM module you are replacing. Use “SSA Device Card Removal and Replacement, Cluster Bay (F10/F20)” on page 130 to locate and remove the card, then return here and continue with the next step.
3. Locate the DRAM module you are replacing:
 - **2105 Model F10/F20:**
 - SSA device card
 - DRAM 1, (R1-Tx-P2-Kx-M1) **1**

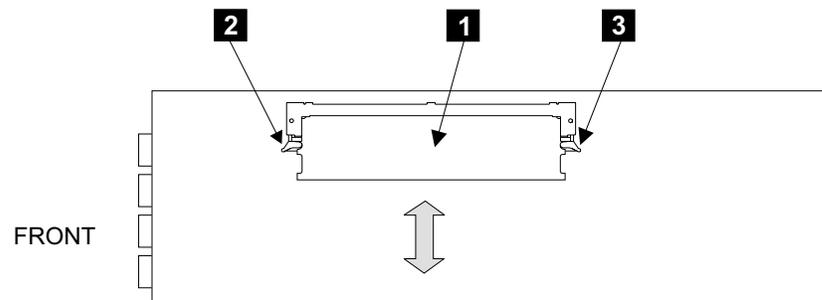


Figure 140. SSA Device Card DRAM Module Removal (S0085471)

4. Remove the DRAM module by pushing the locking tabs **2** and **3** out on the module connector.
5. Pull DRAM module **1** straight out of the connector.
6. Replace parts in the reverse order.

Note: When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

I/O Attachment Card Removal and Replacement, Cluster Bay (F10/F20)

Attention: This is *not* a stand-alone procedure.

I/O Attachment Card, Cluster Bay

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Note: Unless you have a particular reason, *do not power off the 2105 Model F10/F20 when servicing a cluster bay unless instructed to do so.*

1. Open the front cover of the 2105 Model F10/F20 rack and locate the cluster bay with the cluster bay I/O attachment card you are replacing:
 - **2105 Model F10/F20:**
 - Cluster Bay 1:
 - I/O attachment card (R1-T1-P2-I5)
 - I/O attachment card (R1-T1-P2-I8)
 - Cluster Bay 2:
 - I/O attachment card (R1-T2-P2-I5)
 - I/O attachment card (R1-T2-P2-I8)

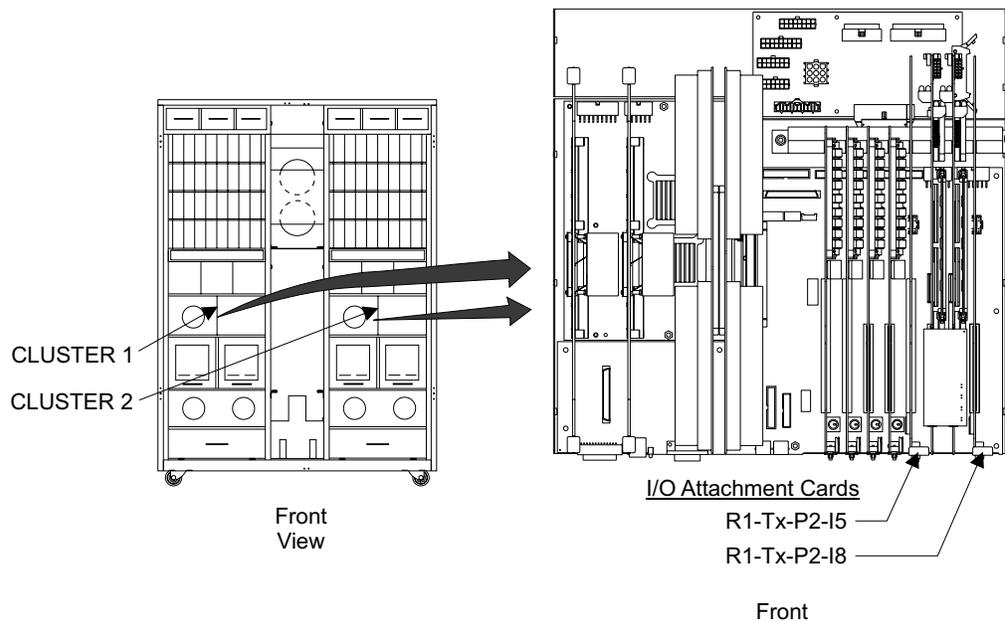


Figure 141. 2105 Model F10/F20 Cluster Bay Locations (S008780n)

2. Do the following steps only on the cluster bay and the I/O attachment card you are replacing.
3. Power off the cluster bay, then pull the cluster bay out to the service position, see “Cluster Bay Service Position Procedure (F10/F20)” on page 111:
4. Open the cluster bay top cover to the service position, see “Cluster Top Bay Service Access Procedure (F10/F20)” on page 113.
5. Loosen the two right card retention bracket captured top screws until they are free **1** and **6**.
6. Loosen the two right side card retention bracket screws **3** and **4**.

I/O Attachment Card, Cluster Bay

7. Remove the two card retention brackets **2** and **5**.

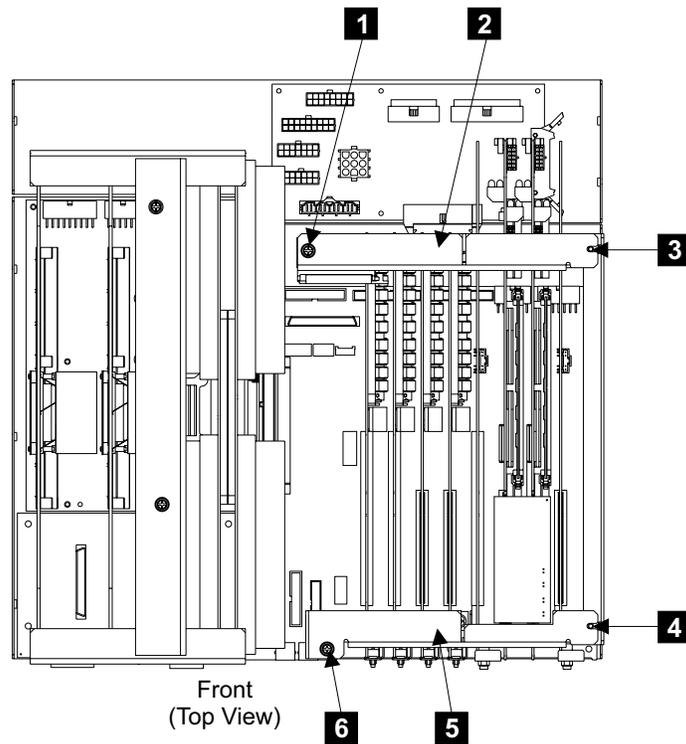


Figure 142. Cluster Bay Card Retention Bracket Removal (S008786n)

8. Locate the I/O attachment card you are removing:
 - I/O attachment card (R1-Tx-P2-I5)
 - I/O attachment card (R1-Tx-P2-I8)
9. Disconnect the SCSI cables **7** from the front of the I/O attachment card.
10. Disconnect the NVS to I/O attachment card cable **10** or **11** from the side of the I/O attachment card.
11. Remove the two front I/O attachment card mounting screws **8**, then remove the cable support bracket **9**.
12. Remove the I/O attachment card **7** from the I/O planar by pulling straight up.

I/O Attachment Card, Cluster Bay

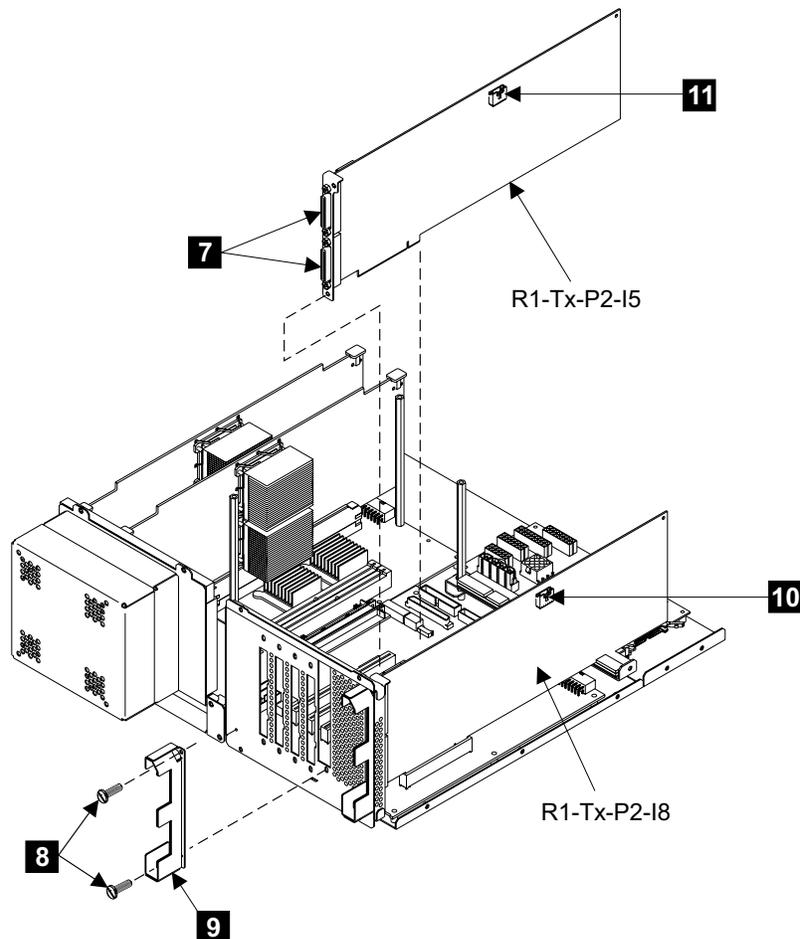


Figure 143. I/O Attachment Card Removal (S008788p)

13. Replace parts in the reverse order.

Note: When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

255 MHz CPU Card Removal and Replacement, Cluster Bay (F10/F20)

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Note: Unless you have a particular reason, *do not power off the 2105 Model F10/F20 when servicing a cluster bay unless instructed to do so.*

1. Open the front cover of the 2105 Model F10/F20 rack and locate the cluster bay with the 255 MHz CPU card you are replacing.

255 MHz CPU Card, Cluster Bay

- **2105 Model F10/F20:**
 - Cluster Bay 1:
 - 255 MHz CPU card 1, (R1-T1-P1-C1)
 - 255 MHz CPU card 2, (R1-T1-P1-C2)
 - Cluster Bay 2:
 - 255 MHz CPU card 1, (R1-T2-P1-C1)
 - 255 MHz CPU card 2, (R1-T2-P1-C2)

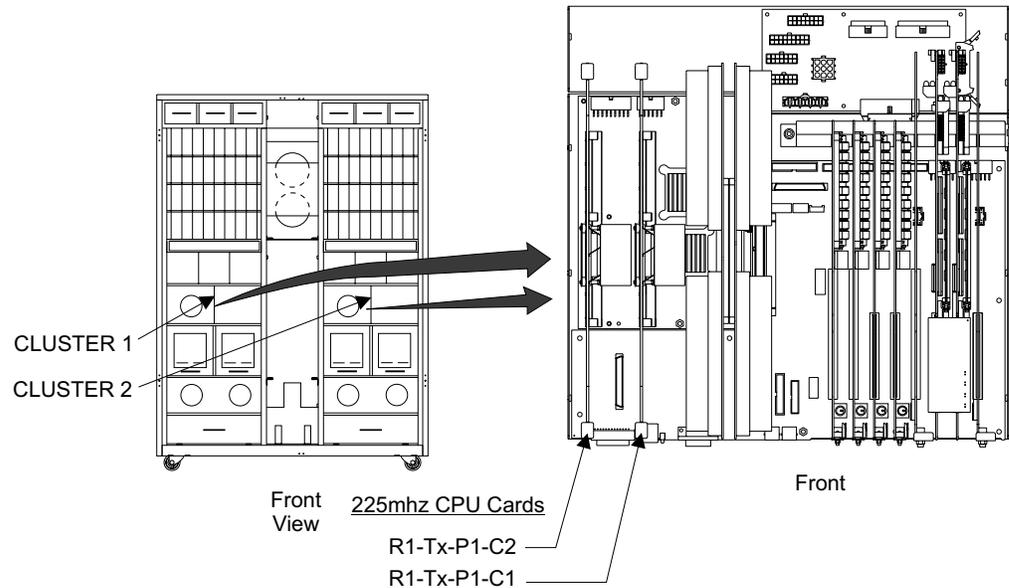


Figure 144. 2105 Model F10/F20 Cluster Bay Locations (S008781n)

2. Do the following steps only on the cluster bay and the 255 MHz CPU card you are replacing.
3. Power off the cluster bay, then pull the cluster bay out to the service position, see “Cluster Bay Service Position Procedure (F10/F20)” on page 111:
4. Open the cluster bay top cover to the service position, see “Cluster Top Bay Service Access Procedure (F10/F20)” on page 113.
5. Loosen the left card retention bracket screws **1** and **3**, until they are free, then remove the bracket **2**.

255 MHz CPU Card, Cluster Bay

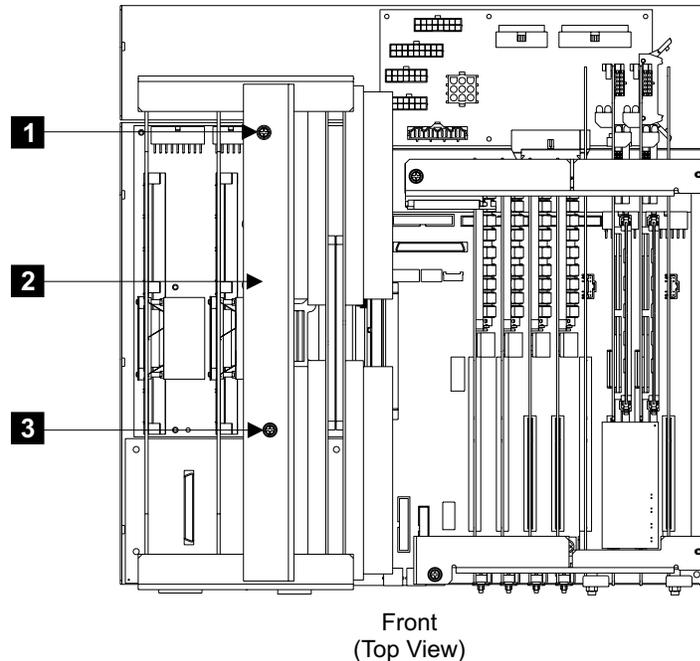


Figure 145. Cluster Bay Card Retention Bracket Removal (S008787n)

6. Locate the 255 MHz CPU card you are removing:
 - 255 MHz CPU card 1, (R1-Tx-P1-C1)
 - 255 MHz CPU card 2, (R1-Tx-P1-C2)
7. Remove the 255 MHz CPU card from the I/O planar by pulling straight up.
8. Replace parts in the reverse order.

Note: When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

Memory Card Removal and Replacement, Cluster Bay (F10/F20)

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Note: Unless you have a particular reason, *do not power off the 2105 Model F10/F20 when servicing a cluster bay unless instructed to do so.*

1. Open the front cover of the 2105 Model F10/F20 rack and locate the cluster bay with the cluster bay memory card you are replacing.
 - **2105 Model F10/F20:**
 - Cluster Bay 1:
 - Memory card 1, (R1-T1-P1-M1)

Memory Card, Cluster Bay

- Memory card 2, (R1-T1-P1-M2)
- Cluster Bay 2:
 - Memory card 1, (R1-T2-P1-M1)
 - Memory card 2, (R1-T2-P1-M2)

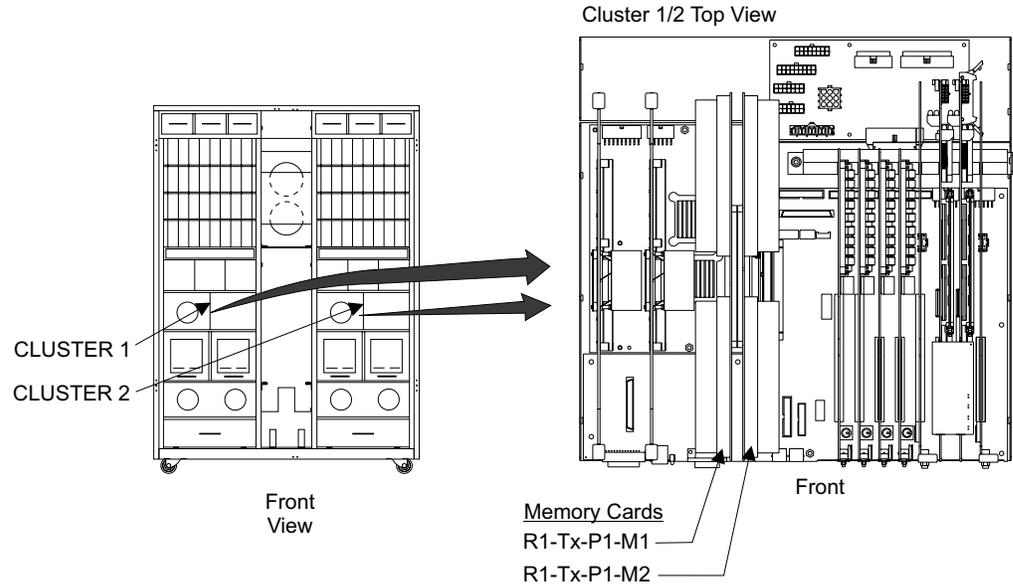


Figure 146. 2105 Model F10/F20 Cluster Bay Locations (S008782n)

2. Do the following steps only on the cluster bay and the memory card you are replacing.
3. Power off the cluster bay, then pull the cluster bay out to the service position, see “Cluster Bay Service Position Procedure (F10/F20)” on page 111:
4. Open the cluster bay top cover to the service position, see “Cluster Top Bay Service Access Procedure (F10/F20)” on page 113.
5. Loosen the left card retention bracket screws **1** and **3**, until they are free, then remove the bracket **2**.

Memory Card, Cluster Bay

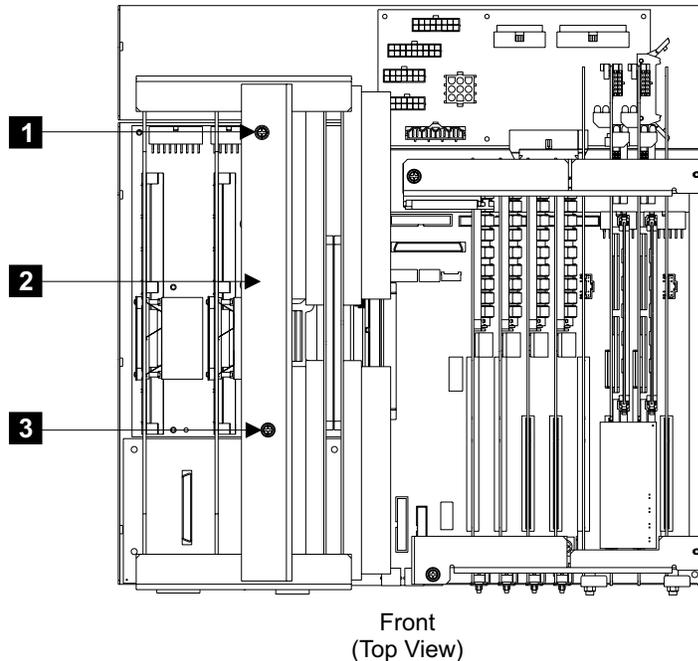


Figure 147. Cluster Bay Card Retention Bracket Removal (S008782n)

6. Locate the memory card you are removing:
 - Memory card 1, (R1-Tx-P1-M1)
 - Memory card 2, (R1-Tx-P1-M2)
7. Remove the memory card from the I/O planar by pulling straight up.
8. Replace parts in the reverse order.

Transfer the memory card modules to the new card or replace the failing memory card module, see “Memory Card, Memory Module Removal and Replacement, Cluster Bay (F10/F20)”.

Note: When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

Memory Card, Memory Module Removal and Replacement, Cluster Bay (F10/F20)

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Note: Unless you have a particular reason, *do not power off the 2105 Model F10/F20 or SSA DASD drawer unless the instructions that you are following tell you to.*

Memory Card, Memory Module, Cluster Bay

1. Remove the cluster bay memory card with memory module you are servicing, see "Memory Card Removal and Replacement, Cluster Bay (F10/F20)" on page 138.

Attention: If only one replacement DIMM is available, a swapping action is required to have a successful repair. When one DIMM fails, both DIMMs in the pair are made *unavailable*. Each DIMM has a unique internal serial number that is read at power up. Both DIMMs in the pair will be made *available* ONLY when both DIMM slots have a different DIMM serial number. When replacing memory modules (DIMMs) on a 2105 Model F10/F20, the DIMMs should be replaced in pairs to avoid a long service action.

Perform the following repair actions:

- a. Remove the defective DIMM from the indicated FRU location and mark it as defective.
 - b. Remove the working DIMM from the other slot in the pair. Swap this DIMM into the other slot that had the defective DIMM.
 - c. Install the new DIMM into the open slot.
2. Locate the memory module connectors and determine which module you are replacing, see Figure 148 on page 142:

- **2105 Model F10/F20:**

- Memory card

- memory module 1 (R1-Tx-P1-Mx.1) **1**
- memory module 2 (R1-Tx-P1-Mx.2) **2**
- memory module 3 (R1-Tx-P1-Mx.3) **3**
- memory module 4 (R1-Tx-P1-Mx.4) **4**
- memory module 5 (R1-Tx-P1-Mx.5) **5**
- memory module 6 (R1-Tx-P1-Mx.6) **6**
- memory module 7 (R1-Tx-P1-Mx.7) **7**
- memory module 8 (R1-Tx-P1-Mx.8) **8**
- memory module 9 (R1-Tx-P1-Mx.9) **9**
- memory module 10 (R1-Tx-P1-Mx.10) **10**
- memory module 11 (R1-Tx-P1-Mx.11) **11**
- memory module 12 (R1-Tx-P1-Mx.12) **12**
- memory module 13 (R1-Tx-P1-Mx.13) **13**
- memory module 14 (R1-Tx-P1-Mx.14) **14**
- memory module 15 (R1-Tx-P1-Mx.15) **15**
- memory module 16 (R1-Tx-P1-Mx.16) **16**

Memory Card, Memory Module, Cluster Bay

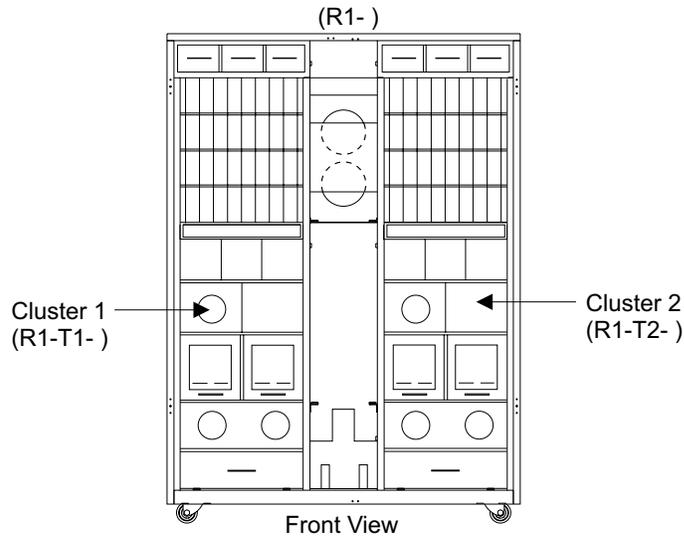


Figure 148. 2105 Model F10/F20 Cluster Bay Locations (S008091m)

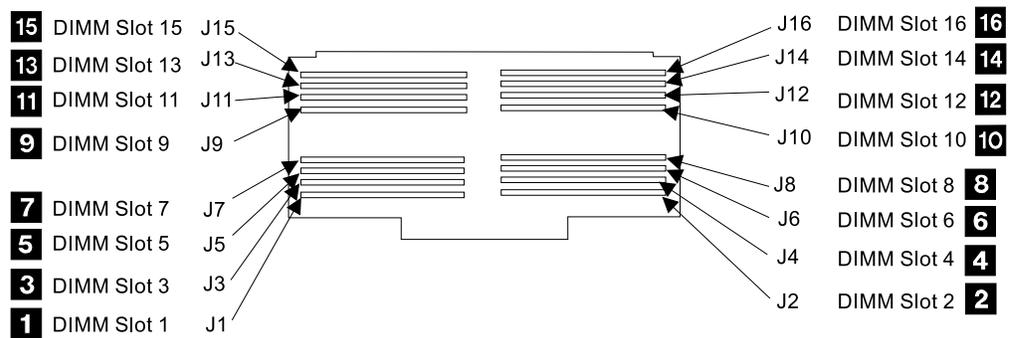


Figure 149. 2105 Model F10/F20 Cluster Bay Locations (S008208l)

3. Do the following steps only on the cluster bay with the memory card with the memory module you are replacing.
4. Remove the memory module by pushing the locking tabs **17** out on the memory connector. Then pull the memory module straight out of the connector.

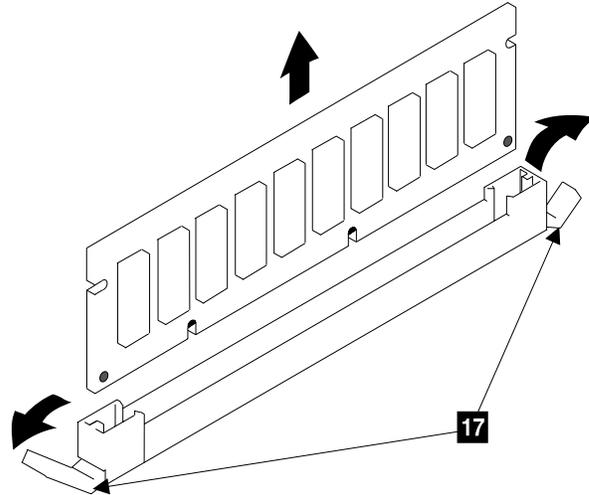


Figure 150. Memory Module Removal (S008408m)

5. Replace parts in the reverse order.

Align the slots in the memory module with the keys in the connector **18**. Then push the module down until the connector locking tabs move in and hold the module.

Note: When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

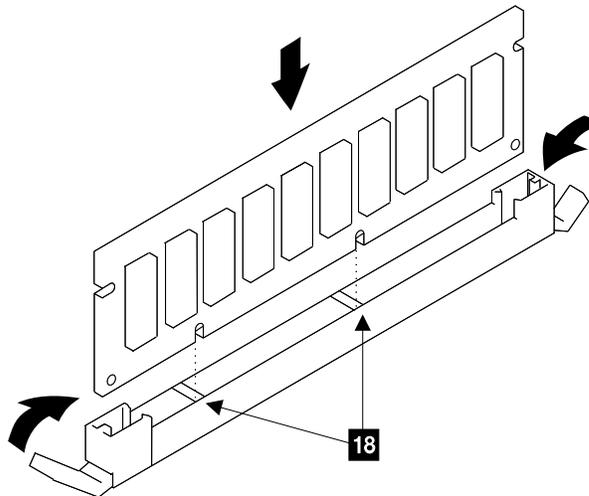


Figure 151. Memory Module Installation (S008409m)

NVS Memory Card and Top Card Crossover Removal and Replacement, Cluster Bay (F10/F20)

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

NVS Memory Card and Top Card Crossover, Cluster Bay

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

1. Open the front cover of the 2105 Model F10/F20 rack and locate the cluster bay with the NVS memory card you are replacing.

- **2105 Model F10/F20:**

- Cluster Bay 1:
 - NVS memory card 1, (R1-T1-P2-I6)
 - NVS memory card 2, (R1-T1-P2-I7)
 - NVS top card crossover, (R1-T1-P2-I6 to I7)
- Cluster Bay 2:
 - NVS memory card 1, (R1-T2-P2-I6)
 - NVS memory card 2, (R1-T2-P2-I7)
 - NVS top card crossover, (R1-T2-P2-I6 to I7)

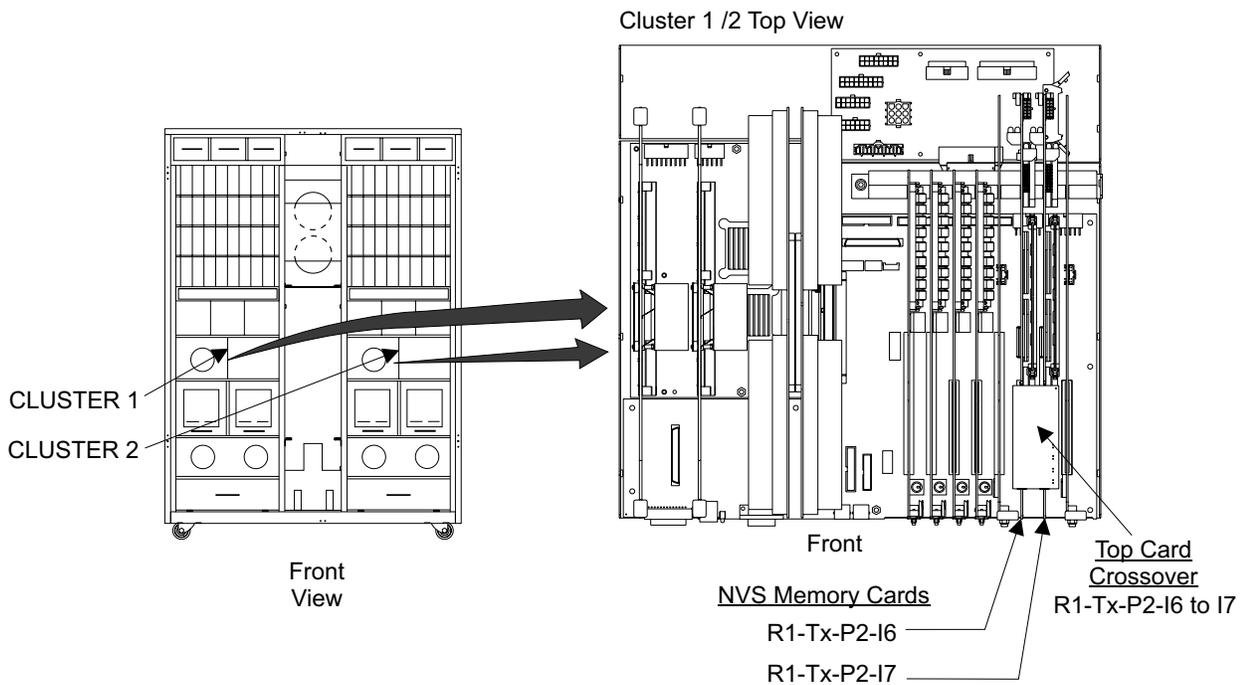


Figure 152. 2105 Model F10/F20 Cluster Bay Locations (S008783n)

2. Do the following steps only on the cluster bay and the NVS memory or crossover card you are replacing.

Attention: Place NVS cards only on a non-conducting surface when they are not mounted in the cluster bay. The static shield bag that the card comes in can be used as a non-conducting surface. If a NVS card is placed on a conductive surface, the cards internal battery can short, damaging the card.

3. Power off the cluster bay, then pull the cluster bay out to the service position, see “Cluster Bay Service Position Procedure (F10/F20)” on page 111:
4. Open the cluster bay top cover to the service position, see “Cluster Top Bay Service Access Procedure (F10/F20)” on page 113.
5. Loosen the two right card retention bracket captured top screws until they are free **1** and **6**.

NVS Memory Card and Top Card Crossover, Cluster Bay

6. Loosen the two right side card retention bracket screws **3** and **4**.
7. Remove the two card retention brackets **2** and **5**.

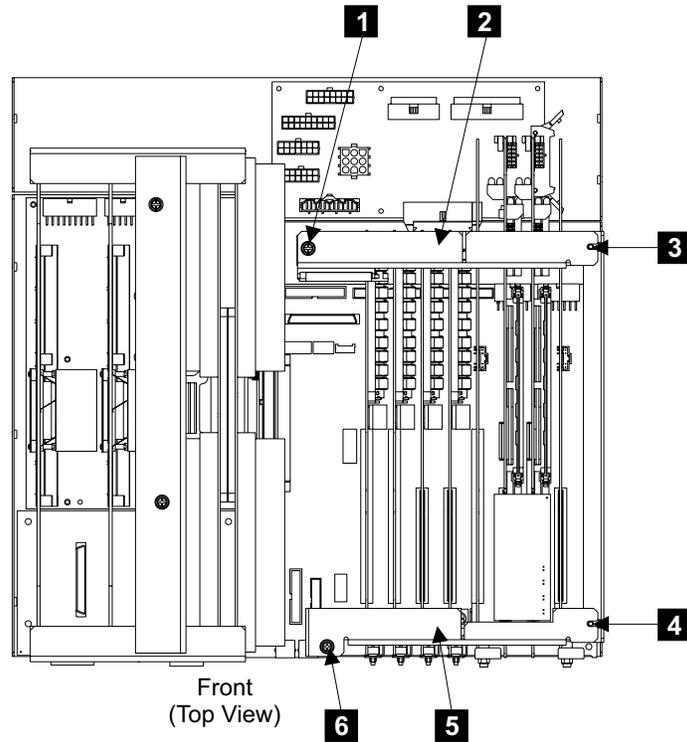


Figure 153. Cluster Bay Card Retention Bracket Removal (S008786n)

8. Locate the NVS memory card or NVS top card crossover you are removing:
 - NVS memory card 1, (R1-T2-P2-I6)
 - NVS memory card 2, (R1-T2-P2-I7)
 - NVS top card crossover, (R1-T2-P2-I6 to I7)
9. Disconnect the NVS to I/O attachment card cable, **12** or **13** in Figure 143 on page 136, from the side of the I/O attachment card.

NVS Memory Card and Top Card Crossover, Cluster Bay

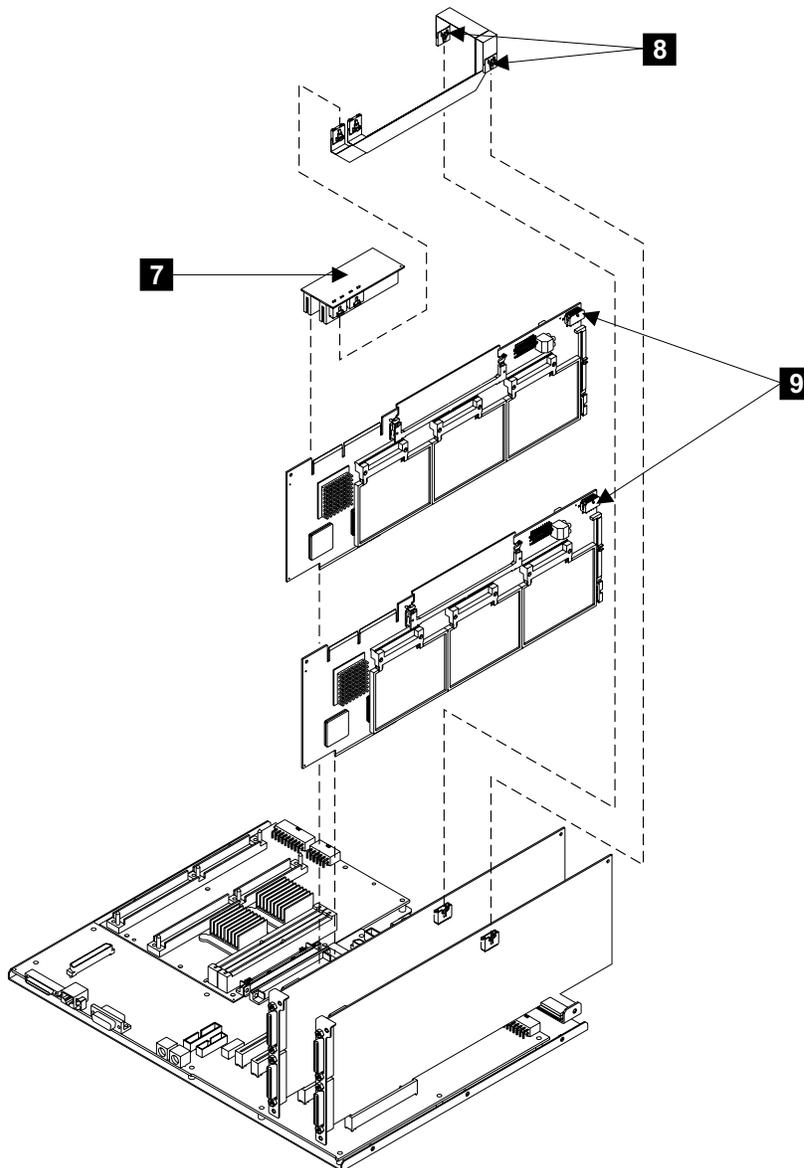


Figure 154. NVS Card Component View (S009110)

10. Disconnect the NVS top card crossover **7**, and NVS to I/O attachment card cable **8**, from the top of the NVS cards.
Are you replacing an NVS card or cache module?
 - **Yes**, go to step 11.
 - **No**, go to step 14.
11. Disconnect the power cable **9** from the rear of the NVS memory card
12. Remove the NVS memory card from the system planar by pulling straight up.
13. Are you replacing an NVS top card crossover?
 - **Yes**, go to step 14.
 - **No**, go to step 15.
14. Disconnect the two NVS to I/O attachment card cable connectors from the right side of the top card crossover. Transfer the cable to the new crossover.
15. Replace parts in the reverse order.

NVS Memory Card and Top Card Crossover, Cluster Bay

Transfer the NVS cache modules to the new card or replace the failing NVS memory card cache module, see “NVS Memory Card, Cache Module and Battery Removal and Replacement, Cluster Bay (F10/F20)”.

Note: When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

NVS Memory Card, Cache Module and Battery Removal and Replacement, Cluster Bay (F10/F20)

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Note: Unless you have a particular reason, *do not power off the 2105 Model F10/F20 rack when removing the NVS memory card.*

This procedure replaces the NVS cache module and battery assembly or the battery mounted on the NVS cache module assembly.

1. Remove the NVS memory card with the Cache module or battery you are replacing. Use “NVS Memory Card and Top Card Crossover Removal and Replacement, Cluster Bay (F10/F20)” on page 143 to locate and remove the card, then return here and continue with the next step.
2. Locate the NVS cache module you are replacing or exchanging the battery on, see Figure 155 on page 148:
 - **2105 Model F10/F20:**
 - NVS memory card:
 - NVS cache module 1, (R1-Tx-P2-Ly-M1) **1**
 - NVS cache module 2, (R1-Tx-P2-Ly-M2) **2**
 - NVS cache module 3, (R1-Tx-P2-Ly-M3) **3**
3. Do the following steps only on the cluster bay with the NVS memory card with the NVS cache module you are replacing or exchanging the battery on.

NVS Cache Module and Battery, Cluster Bay

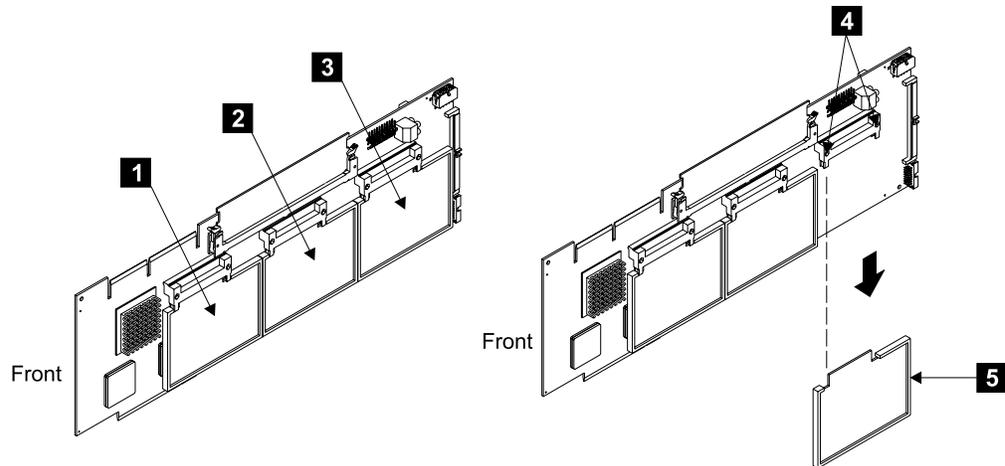


Figure 155. Cluster Bay NVS Remove and Replace (S008299m)

4. Remove the NVS cache module mounting screw and washer from the bottom of the module.
5. Unplug the Cache module you are removing **5** from the NVS memory card connector **4**.

Are you replacing the entire NVS cache module or just its battery?

- If replacing the entire NVS cache module assembly, go to 7.
- If replacing only the NVS cache module battery, go to 6.

6. Replace the NVS cache module with the following steps:
 - a. With the NVS cache module removed from the NVS card, hold the cache module so you can see the spring clip that holds the battery on the card. Most of the battery will be under the card.
 - b. With one hand, grasp the battery with your thumb on top and your fingers below. Release the spring clip by pressing it toward the battery. Push the battery down when the spring clip is released.

Note: The battery clip may be difficult to release. Do not use a metallic tool to release it. Use your finger or a non metallic tool like an orange stick.

- c. When the battery is free, turn the cache module over. Locate the battery connector on the cache module. Wiggle and pull on the connector until it is free.
- d. Install the new battery, replace parts in the reverse order.

Note: Dispose of the battery properly.

- e. Continue with step 8.
7. Install the new NVS cache module assembly.
8. Replace parts in the reverse order.

Attention: Before installing a new NVS cache module, carefully inspect the pins in the connector on the card for damage.

Note: When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

Cluster, Bay Fan Removal and Replacement (F10/F20)

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Note: Unless you have a particular reason, *do not power off the 2105 Model F10/F20 when servicing a cluster unless instructed to do so.*

Attention During the removal, note the position of all cables so they can be positioned correctly during the replacement.

1. Open the front cover of the 2105 Model F10/F20 rack and locate the cluster with the cluster fan you are replacing:
 - **2105 Model F10/F20:**
 - Cluster 1, cluster bay fan, (R1-T1-F5)
 - Cluster 2, cluster bay fan, (R1-T2-F5)

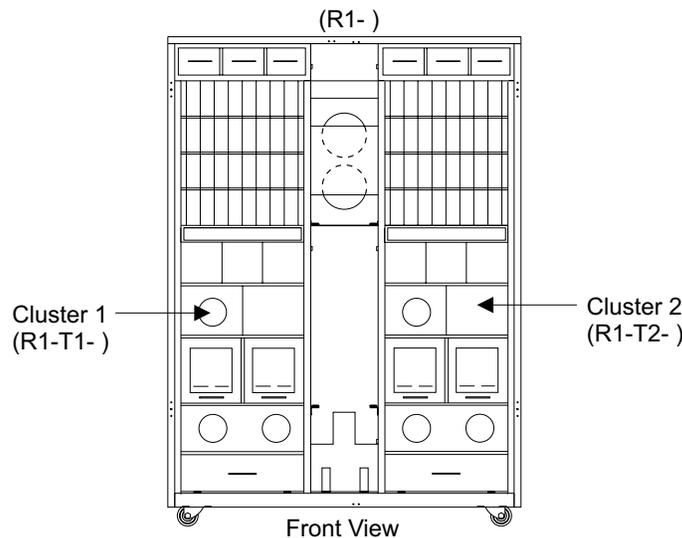


Figure 156. 2105 Model F10/F20 Cluster Locations (S008091m)

2. Do the following steps only on the cluster and the cluster fan you are replacing.
3. Unplug the fan from its connector (FAN*4) **3** on the front of the cluster.
4. Remove the four fan mounting screws **4**. Remove the fan guard **1** and fan **2** from the cluster.
5. Observe the fan you are removing so you can mount the new fan in exactly the same position. Note the airflow and rotation arrows and the location of the fan power cable.

Cluster, Bay Fan

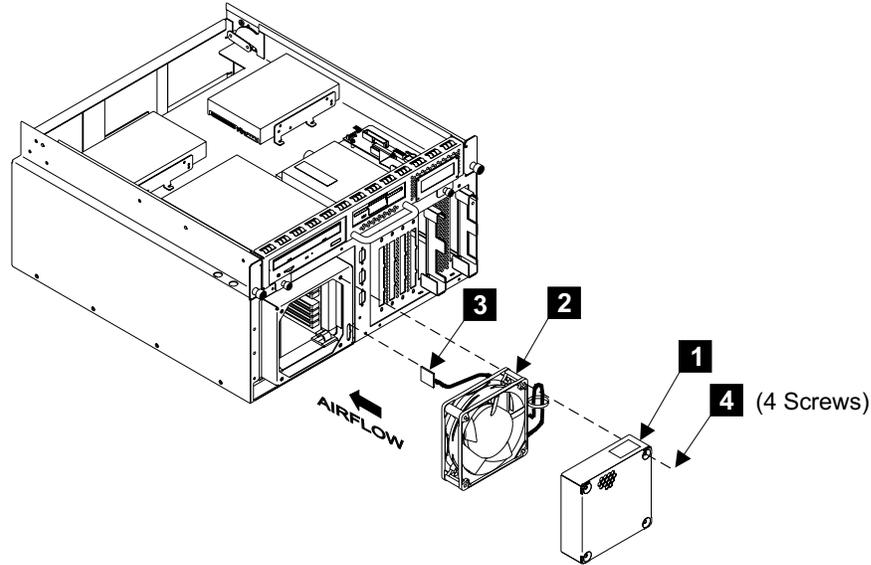


Figure 157. Cluster Bay Fan Removal (S008789m)

6. Remove the original fan from the fan guard and install the new fan into the fan guard.
7. Replace parts in the reverse order.
Install the new fan with its power lead and airflow and rotation arrows in the same positions as on the fan you removed.

Note: When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

Cable Removals and Replacements, Cluster Bay (F10/F20)

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Note: Unless you have a particular reason, *do not power off the 2105 Model F10/F20 when servicing a cluster bay unless instructed to do so.*

1. Open the front cover of the 2105 Model F10/F20 rack and locate the cluster bay with the cluster bay cable you are replacing, see Figure 158 on page 151.
 - Cluster Bay 1, (R1-T1-) or Cluster Bay 2, (R1-T2-)
 - Serial Interface Cable (S1/S2), (S1 = R1-Tx-P2-S1.1) (S2 = R1-Tx-P2-S2.1)
 - Serial Interface Cable (S3), (R1-Tx-P2-S3.1)
 - Power Planar Cable (IB11), (R1-Tx-P3-IB11.1)
 - Power Planar Cable (IB12), (R1-Tx-P3-IB12.1)

Cables, Cluster Bay

- Power Planar Cable (IB13), (R1-Tx-P3-IB13.1)
- Power Planar Cable (IB14), (R1-Tx-P3-IB14.1)
- Power Planar Cable (IB15), (R1-Tx-P3-IB15.1)
- SCSI Drive Signal Cable, (R1-Tx-P2-Z1.1)
- Cluster Bay Power Planar to Docking Connector Cable, (R1-Tx-N1.1)
- Cluster Operator Panel Cable, (R1-Tx-P2-L1.1)
- Diskette Drive Signal Cable, (R1-Tx-P2-D1.1)
- Cluster Internal Power Cable, (R1-Tx-P3-IB17.1)
- Cluster Drive Power Cable, (R1-Tx-P3-IB18.1)
- NVS Crossover to I/O Attachment Card Cable, (R1-Tx-P2-I5 to I6)

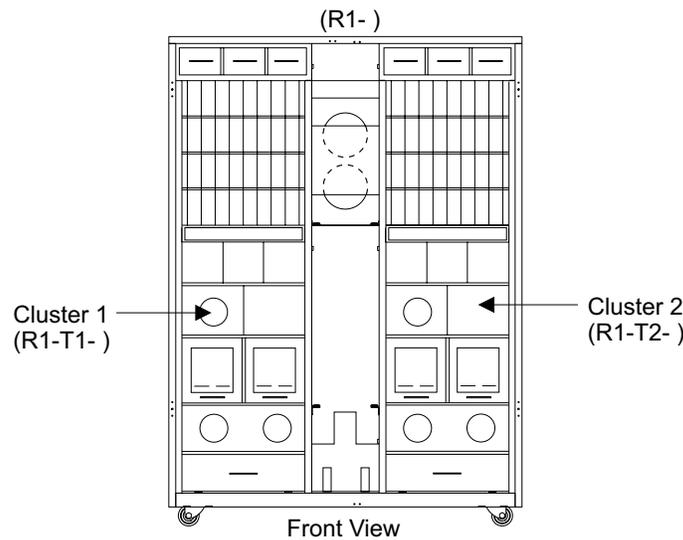


Figure 158. 2105 Model F10/F20 Cluster Bay Locations (S008091m)

2. Do the following steps only on the cluster bay with the cluster bay cable you are replacing.
3. Power off the cluster bay, then pull the cluster bay out to the service position, see "Cluster Bay Service Position Procedure (F10/F20)" on page 111:
4. Open the cluster bay top cover to the service position, see "Cluster Top Bay Service Access Procedure (F10/F20)" on page 113.
5. Locate the cable you are replacing in Table 2 on page 152.
6. Locate the cables connectors, from Table 2 on page 152, in the following figures:
 - Cluster Bay Planar Connector Locations, Figure 159 on page 153
 - Cluster Bay Card Connector Locations, "Cluster Bay Power On and Off Procedures, 2105 Model F10/F20" on page 106
 - Cluster Bay Drive and Docking Connector Locations, "Cluster Bay Power Off Using the Service Terminal" on page 106
 - Cluster Bay Front Chassis Connector Locations, Figure 114 on page 107

Cables, Cluster Bay

Table 2. Cluster Bay Cable and Connector Locations

Cluster Bay Cable Name	Cluster Bay Cable Connector Names and Locations,				
	From:	To:	To:	To:	To:
Serial Interface Cable (S1 = R1-Tx-P2-S1.1) (S2 = R1-Tx-P2-S2.1)	J6, I/O Planar	S1 and S2, Cluster Chassis Front			
Serial Interface Cable (R1-Tx-P2-S3.1)	J7, I/O Planar	S3, Cluster Chassis Front			
Power Planar Cable (IB11) (R1-Tx-P3-IB11.1)	IB11, Cluster Bay Power Planar	J5, System Planar			
Power Planar Cable (IB12) (R1-Tx-P3-IB12.1)	IB12, Cluster Bay Power Planar	J16, I/O Planar			
Power Planar Cable (IB13) (R1-Tx-P3-IB13.1)	IB13, Cluster Bay Power Planar	J7, System Planar			
Power Planar Cable (IB14) (R1-Tx-P3-IB14.1)	IB14, Cluster Bay Power Planar	J11, I/O Planar			
Power Planar Cable (IB15) (R1-Tx-P3-IB15.1)	IB15, Cluster Bay Power Planar	J28, I/O Planar			
SCSI Drive Signal Cable (R1-Tx-P2-Z1.1)	J12, I/O Planar	CD-ROM, CD-ROM Drive (signal)	HDD1, SCSI Hard Drive (signal)	HDD2, SCSI Hard Drive (signal, may not be used)	
Cluster Bay Power Planar to Docking Connector Cable (R1-Tx-N1.1)	CN161, Cluster Chassis Rear	IB01, IB02, and IB03, Cluster Bay Power Planar			
Cluster Operator Panel Cable (R1-Tx-P2-L1.1)	IB16, Cluster Bay Power Planar	J14, I/O Planar	OP-PNL, Cluster Operator Panel		
Diskette Drive Signal Cable (R1-Tx-P2-D1.1)	J13, I/O Planar	FDD, Diskette Drive (signal)			
Cluster Internal Power Cable (R1-Tx-P3-IB17.1)	IB17, Cluster Bay Power Planar	J5, I/O Planar	J6, NVS Memory Card 1 J7, NVS Memory Card 2	FAN*4, Cluster Chassis Front	FDD, Diskette Drive (power)
Cluster Drive Power Cable (R1-Tx-P3-IB18.1)	IB18, Cluster Bay Power Planar	J15, I/O Planar	CD-ROM, CD-ROM Drive (power)	HDD1, SCSI Hard Drive (power)	HDD2, SCSI Hard Drive (power, may not be used)
NVS Crossover to I/O Attachment Card Cable (R1-Tx-P2-I5 to I6)	P3, NVS Top Card Crossover	P4, NVS Top Card Crossover	H0P4, I/O Attachment Card 5	H1P4, I/O Attachment Card 8	

Cables, Cluster Bay

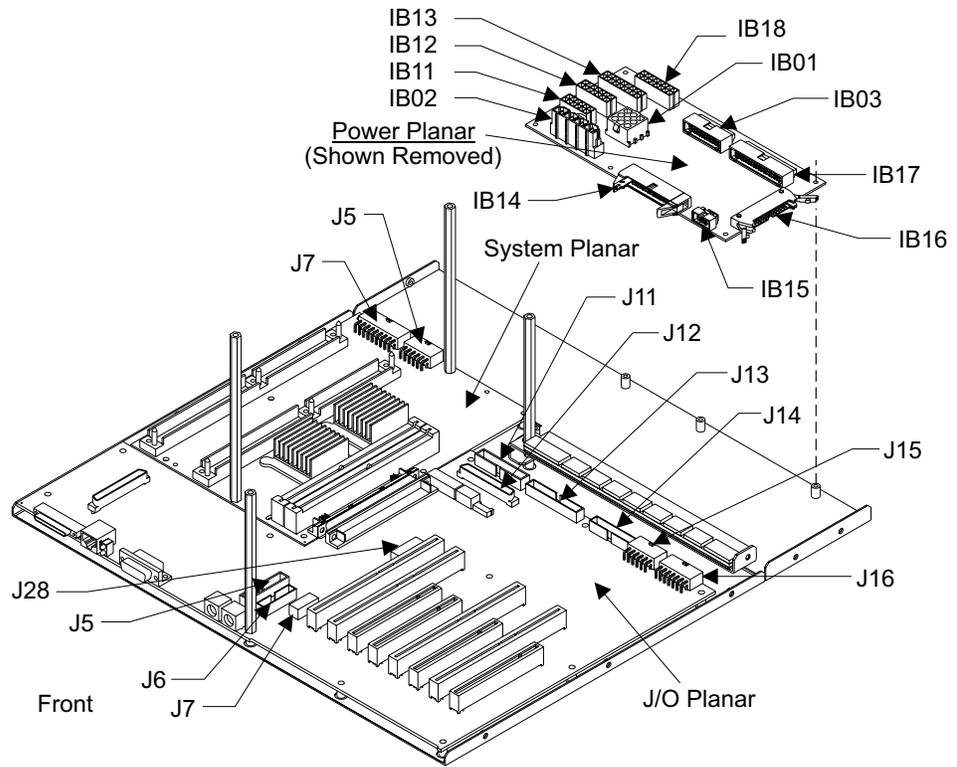


Figure 159. Cluster Bay Planar Connector Locations (S008793n)

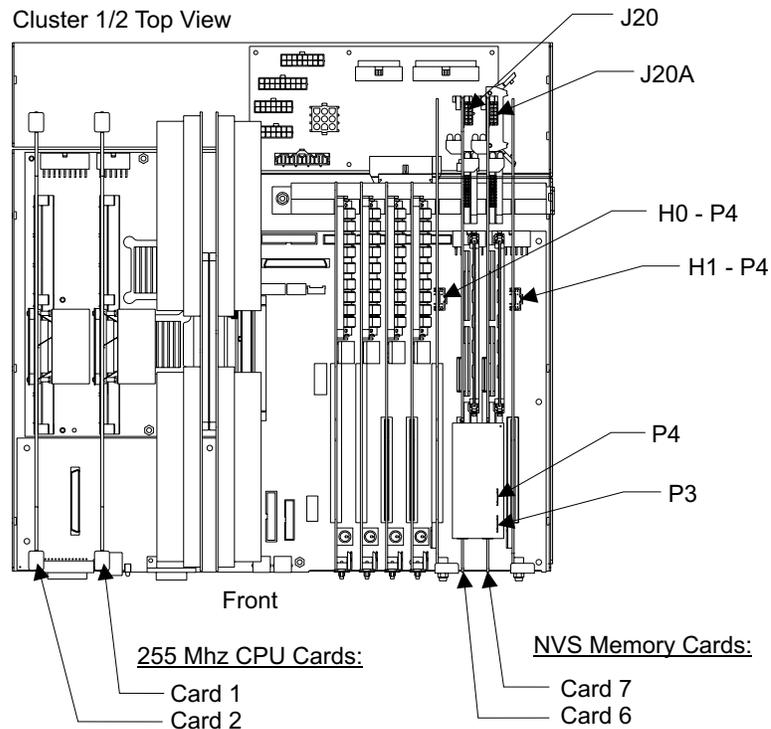


Figure 160. Cluster Bay Card Connector Locations (S008784n)

Cables, Cluster Bay

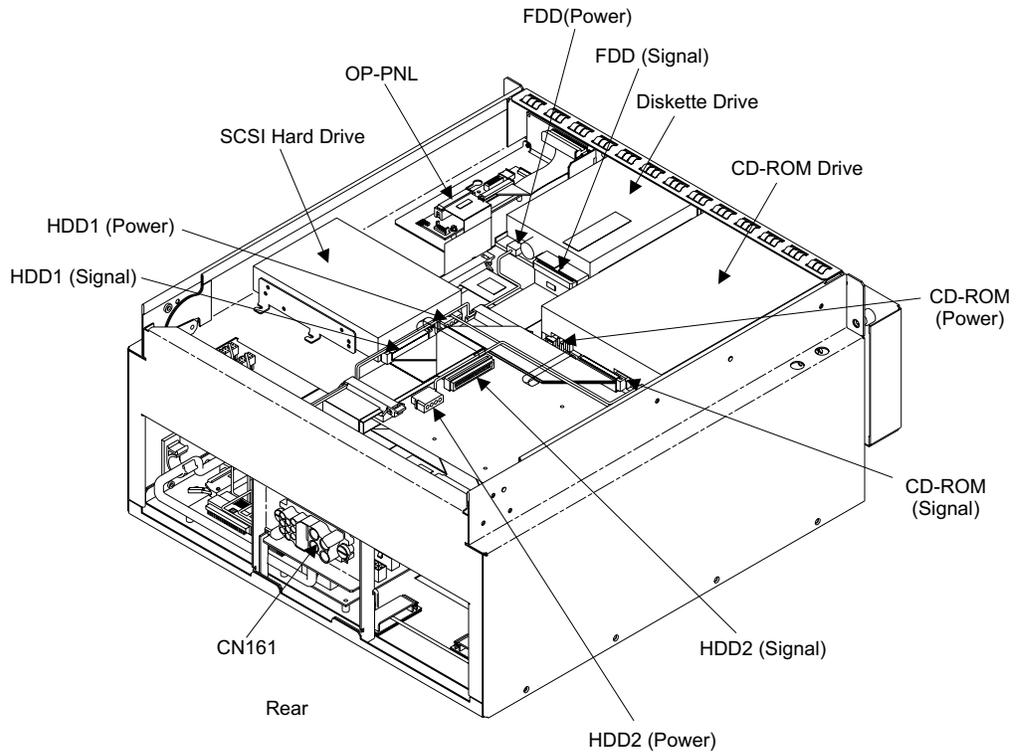


Figure 161. Cluster Bay Drive and Docking Connector Locations (S008795p)

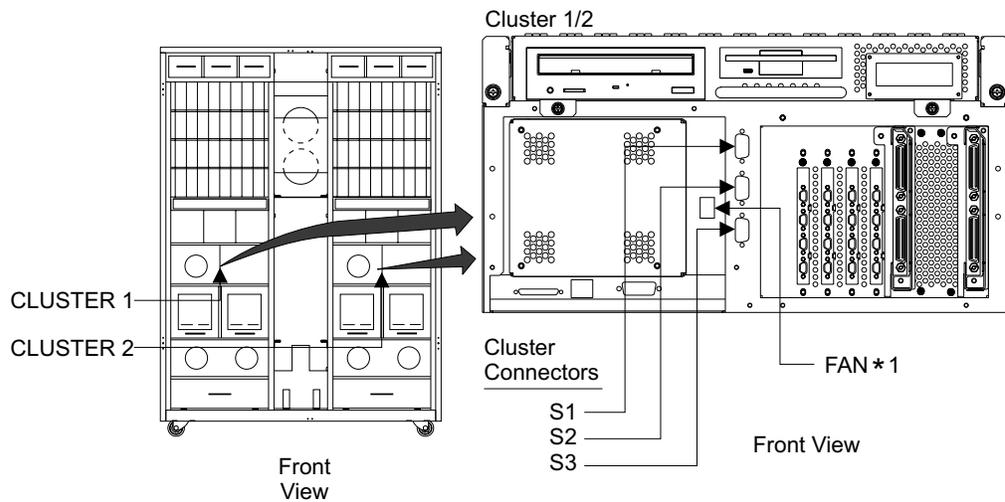


Figure 162. Cluster Bay Front Chassis Connector Locations (S008775m)

7. Use these drawings to locate all of the cables connectors and how the cable is routed and retained.
8. **Attention:** Carefully note the routing and retention of the cable you are removing, so you can position it correctly during the replacement.
Remove the cable from the cluster bay.
9. Replace parts in the reverse order.

Note: When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

CLUSTER BAY FRU REPLACEMENT PROCEDURES, MODEL E10/E20:

The FRU remove and replace procedures for the 2105 Model E10/E20 cluster bays follow:

Cluster Bay Power On and Off Procedures, 2105 Model E10/E20

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Cluster Bay Power Off Using the Service Terminal

Note: Unless you have a particular reason, *do not power off the 2105 Model E10/E20 when servicing a cluster bay unless instructed to do so.*

1. Open the front cover of the 2105 Model E10/E20 rack and locate the cluster bay you will be powering off:
 - **2105 Model E10/E20:**
 - Cluster Bay 1, left, (R1-T1-)
 - Cluster Bay 2, right, (R1-T2-)

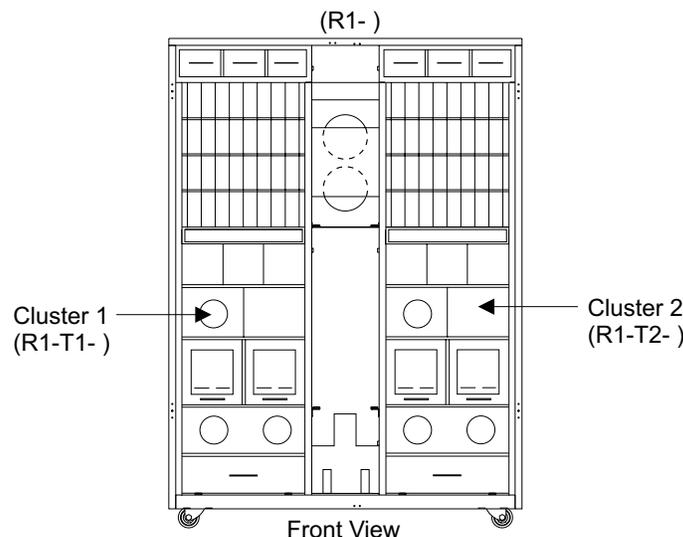


Figure 163. 2105 Model E10/E20 Cluster Bay Locations (S008091m)

2. Ensure that the cluster bay you are powering off is quiesced to prevent interruption of customer operation.

Attention: If the cluster bay being powered off is not quiesced, connect the service terminal to the other cluster bay, see "Service Login Connection" in chapter 8 of the *Enterprise Storage Server Service Guide, Volume 3*.

From the service terminal **Main Service Menu**, select:

Repair Menu

Cluster Bay Power, 2105 Model E10/E20

Alternate Cluster Bay Repair Menu

Quiesce the Alternate Cluster Bay

3. Power the cluster bay off, from the **Alternate Cluster Bay Repair Menu**, select **Power Off the Alternate Cluster Bay**.
4. Wait up to 4 minutes for the cluster bay operator panel to display **OK**, the cluster bay is powered off. Sometimes it may still display **READY**. Press the CD-ROM Drive eject button. If the CD tray does not open, the cluster bay has powered off.

Note: When the cluster bay is powered off its fans and service processor remain on. To remove all cluster bay power you must unplug the cluster bay from the 2105 Model E10/E20, see "Cluster Bay Service Position Procedure (E10/E20)" on page 159.

5. Return to the procedure that sent you here.

Cluster Bay Power On Using the Service Terminal

Note: This procedure is only used when the cluster bay was powered off and not unplugged from the 2105 Model E10/E20 backplane. The cluster bay will not power on automatically when plugged into a 2105 Model E10/E20 that is powered on.

1. Open the front cover of the 2105 Model E10/E20 rack and locate the cluster bay you will be powering on:
 - Cluster Bay 1, left, (R1-T1-)
 - Cluster Bay 2, right, (R1-T2-)

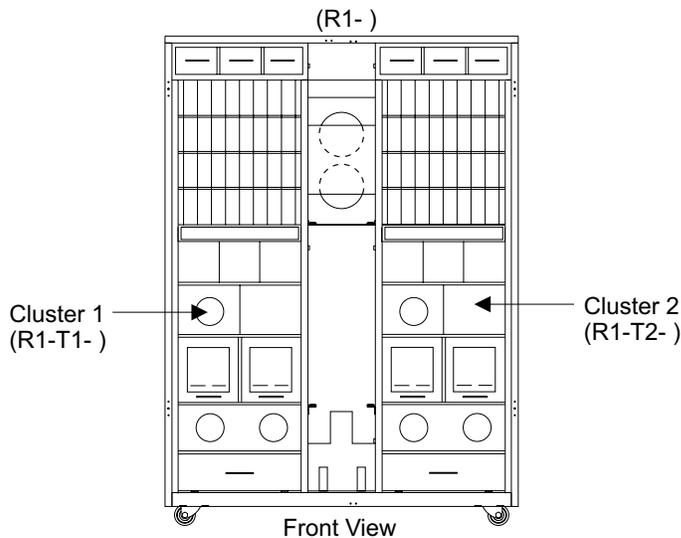


Figure 164. 2105 Model E10/E20 Cluster Bay Locations (S008091m)

2. Connect the service terminal to the other cluster bay, see "Service Login Connection" in chapter 8 of the *Enterprise Storage Server Service Guide, Volume 3*.
3. Power on the cluster bay using the service terminal.

From the service terminal **Main Service Menu**, select:

Repair Menu

Alternate Cluster Bay Repair Menu

Power On the Alternate Cluster Bay

Cluster Bay Power, 2105 Model E10/E20

4. Wait about 30 seconds for the cluster bay to power on. The cluster bay is powered on when the Line Cord indicators on the 2105 operator panel stop blinking. If you are not sure, press the CD-ROM Drive eject button. The CD tray will open if the cluster bay is powered on.
5. Return to the cluster bay procedure that sent you here.

Cluster Bay Power Off Using RPC Switches

Note: Unless you have a particular reason, *do not power off the 2105 Model E10/E20 when servicing a cluster bay unless instructed to do so.*

1. Open the front cover of the 2105 Model E10/E20 rack and locate the cluster bay you will be powering off:
 - Cluster Bay 1, left, (R1-T1-)
 - Cluster Bay 2, right, (R1-T2-)

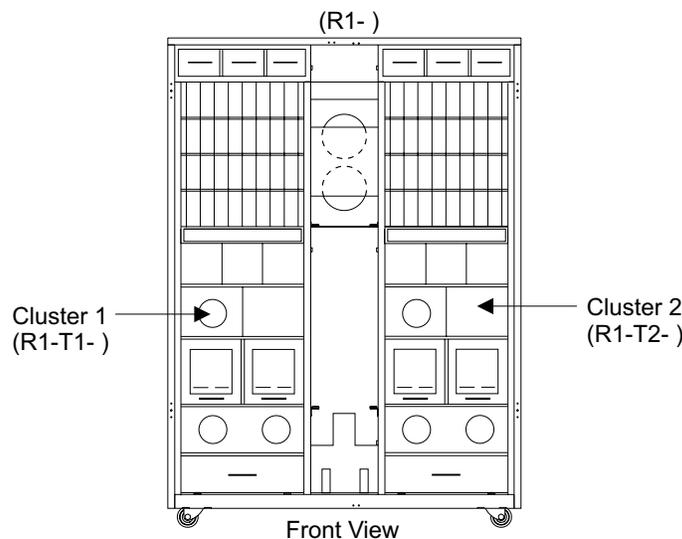


Figure 165. 2105 Model E10/E20 Cluster Bay Locations (S008091m)

2. Ensure that the cluster bay you are powering off is quiesced to prevent interruption of customer operation.

Attention: If the cluster bay being powered off is not quiesced, connect the service terminal to the other cluster bay.

From the service terminal **Main Service Menu**, select:

Repair Menu

Alternate Cluster Bay Repair Menu

Quiesce the Alternate Cluster Bay

3. Open the rear cover of the 2105 Model E10/E20 and locate the RPC cards **1**.
4. Power off cluster bay 1 or cluster bay 2:
 - Attention:** The RPC card switches initiate a software shutdown that takes two to three minutes to complete.
 - Cluster Bay 1, press the top switch **2** and **3** on both RPC cards at the same time.
 - Cluster Bay 2, press the bottom switch **4** and **5** on both RPC cards at the same time.

Cluster Bay Power, 2105 Model E10/E20

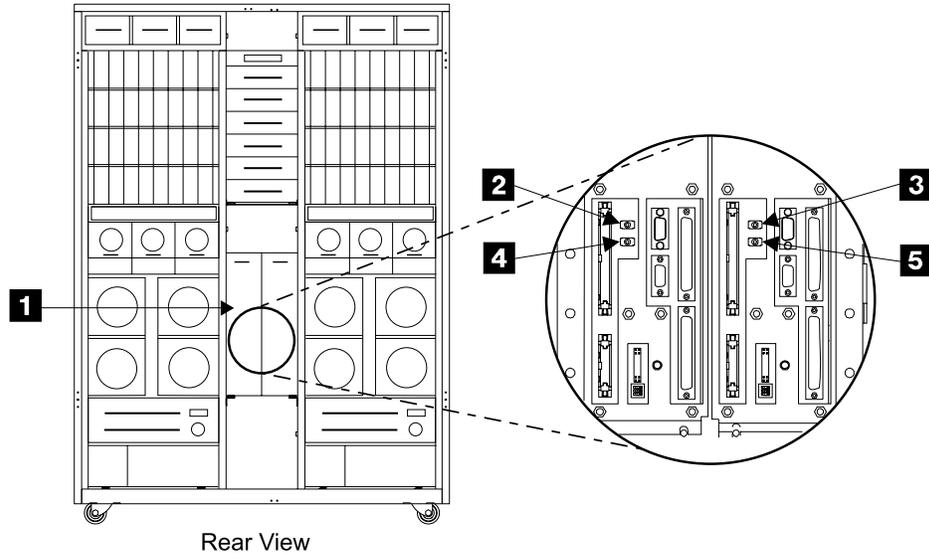


Figure 166. RPC Cluster Bay Power Switches (S007685m)

5. Wait up to 4 minutes for the cluster bay operator panel to display **OK**, the cluster bay is powered off. Sometimes it may still display **READY**. Press the CD-ROM Drive eject button. If the CD tray does not open, the cluster bay has powered off.

Note: When the cluster bay is powered off its fans and service processor remain on. To remove all cluster bay power you must unplug the cluster bay from the 2105 Model E10/E20, see “Cluster Bay Service Position Procedure (E10/E20)” on page 159.

6. Return to the cluster bay procedure that sent you here to power the cluster bay off.

Cluster Bay Power On Using RPC Switches

Note: This procedure is only used when the cluster bay was powered off and not unplugged from the 2105 Model E10/E20 backplane. The cluster bay will not power on automatically when plugged into a 2105 Model E10/E20 that is powered on.

1. Open the rear cover of the 2105 Model E10/E20 and locate the RPC cards **1**.
2. Power on cluster bay 1 or cluster bay 2:
 - Cluster Bay 1, press the top switch **2** or **3** on either RPC card.
 - Cluster Bay 2, press the bottom switch **4** or **5** on either RPC card.

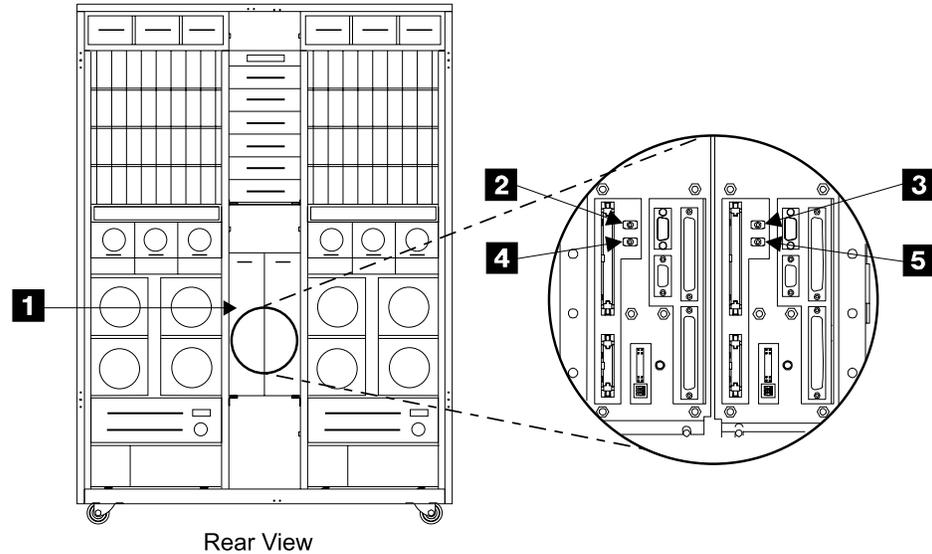


Figure 167. RPC Cluster Bay Power Switches (S007685m)

3. Wait about 30 seconds for the cluster bay to power on. The cluster bay is powered on when the Line Cord indicators on the 2105 operator panel stop blinking.
4. Return to the cluster bay procedure that sent you here to power the cluster bay on.

Cluster Bay Service Position Procedure (E10/E20)

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Note: Unless you have a particular reason, *do not power off the 2105 Model E10/E20 when servicing a cluster bay unless instructed to do so.*

1. Open the front cover of the 2105 rack and locate the cluster bay you will be moving to its service position:
 - **2105 Model E10/E20:**
 - Cluster Bay 1, left, (R1-T1-)
 - Cluster Bay 2, right, (R1-T2-)

Cluster Bay Service Position

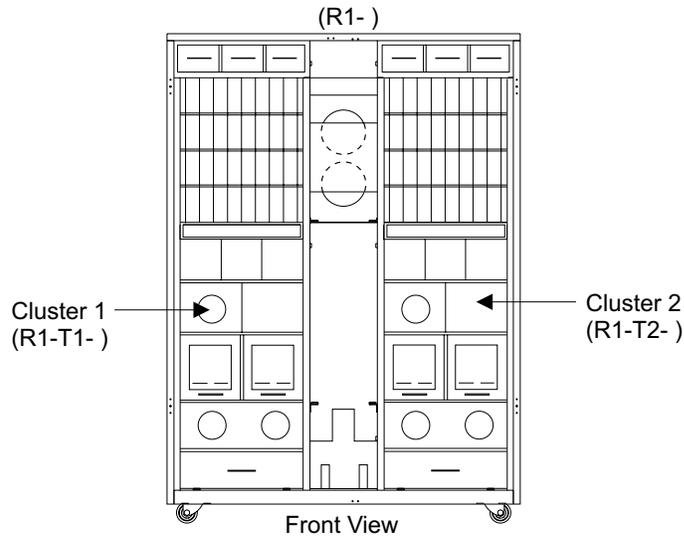


Figure 168. Cluster Bay Locations (S008091m)

2. Do the following steps only on the cluster bay you are moving to its service position.
3. Power the cluster bay being serviced off if it is still powered on, see “Cluster Bay Power Off Using the Service Terminal” on page 155.
4. Do not remove any cluster bay cables unless instructed to do so.
5. Loosen the two cluster bay retaining screws **1** and **2** until they are free.
6. Pull the cluster bay out slowly until it latches at its service position. Release any cable ties that restrict the movement of the cables attached to the cluster bay.

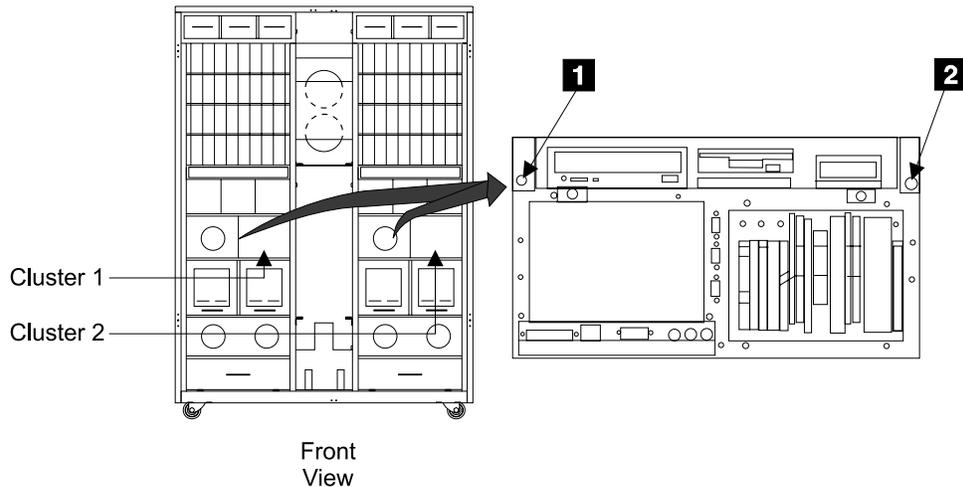


Figure 169. Cluster Bay Service Position (S008092m)

7. Return to the procedure that sent you here to remove the cluster bay. After the cluster bay repair activity is complete, return to step 8 to install the cluster bay into the 2105 Model E10/E20.
8. Replace parts in the reverse order.

Notes:

1. Release the latches on the side of each rail to slide the cluster bay into the 2105.
2. When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

Cluster Top Bay Service Access Procedure (E10/E20)

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

1. Loosen the two cluster top bay screws **1** and **3** until they are free.

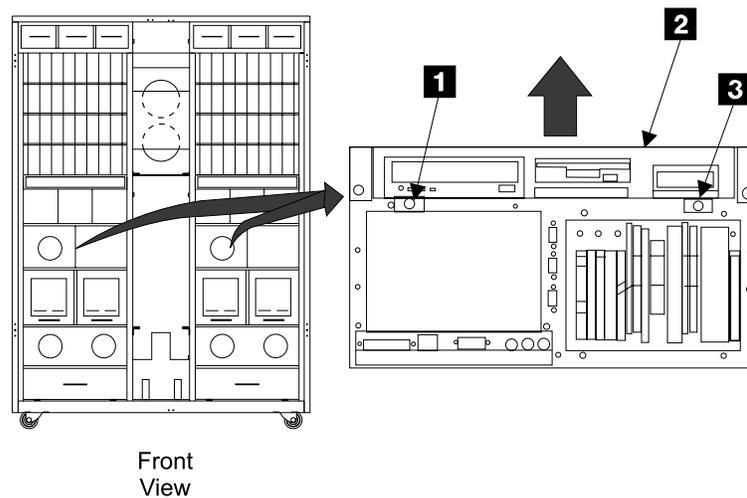


Figure 170. Cluster Top Bay Screws (S007689m)

2. Slowly raise the top bay **2** by its handle until it rotates past vertical and drops into its service position.

Note: While raising the cluster top bay, watch inside the cluster bay for any cable problems.

3. Return to the cluster bay FRU replacement procedure that sent you here to open the cluster top bay for service.
4. Close cluster top bay in the reverse order, lift up on the cluster top bay handle before closing.

Notes:

- a. While lowering the cluster top bay, watch inside the cluster bay for any cable problems.
- b. When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

Operator Panel, Cluster Bay

Operator Panel Removal and Replacement, Cluster Bay (E10/E20)

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Note: Unless you have a particular reason, *do not power off the 2105 Model E10/E20 when servicing a cluster bay unless instructed to do so.*

1. Open the front cover of the 2105 Model E10/E20 rack and locate the cluster bay with the cluster bay operator panel you are replacing.

- **2105 Model E10/E20:**

- Cluster Bay 1, operator panel, (R1-T1-L1) **1**
- Cluster Bay 2, operator panel, (R1-T2-L1) **2**

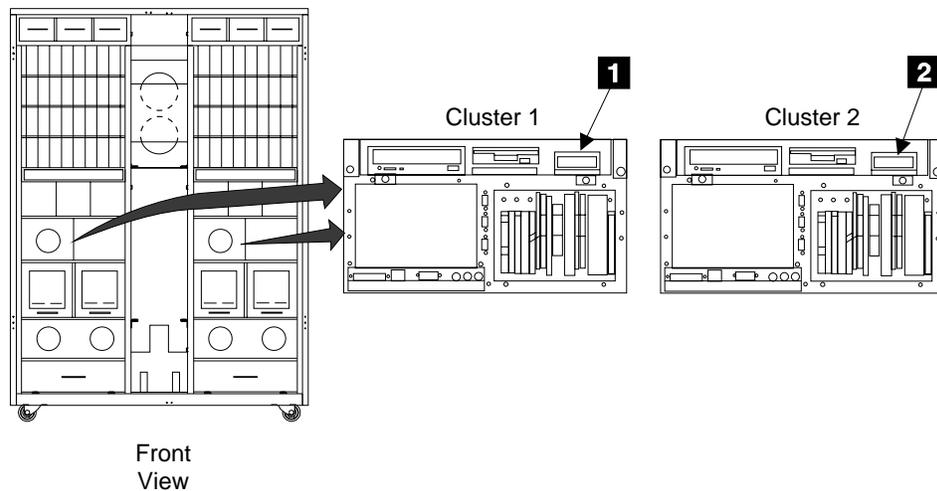


Figure 171. Cluster Bay Operator Panel (S007687m)

2. Do the following steps only on the cluster bay with the cluster bay operator panel you are replacing.
3. Power off the cluster bay, then pull the cluster bay out to the service position, see “Cluster Bay Service Position Procedure (E10/E20)” on page 159:
4. Disconnect the cable **5** from the cluster bay operator panel **3**.
5. Loosen the two cluster bay operator panel mounting screws **4** and remove the operator panel from the cluster bay.

Operator Panel, Cluster Bay

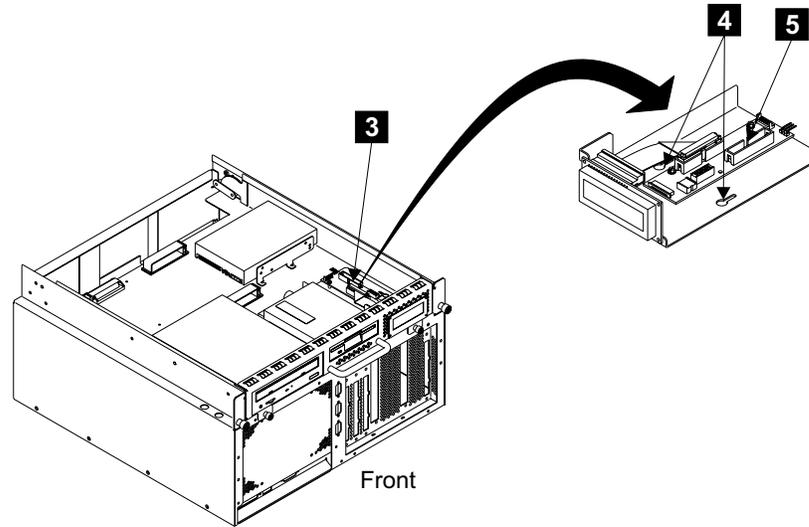


Figure 172. Cluster Bay Operator Panel Removal (S008315m)

6. Move the VPD module **6** (U2 on the operator panel card) from the old cluster bay operator panel to the new one. If the old VPD module is the problem, install the new VPD module and call technical support for recovery instructions.

Note: Install the VPD with the notch **7** to the right when viewed from the front.

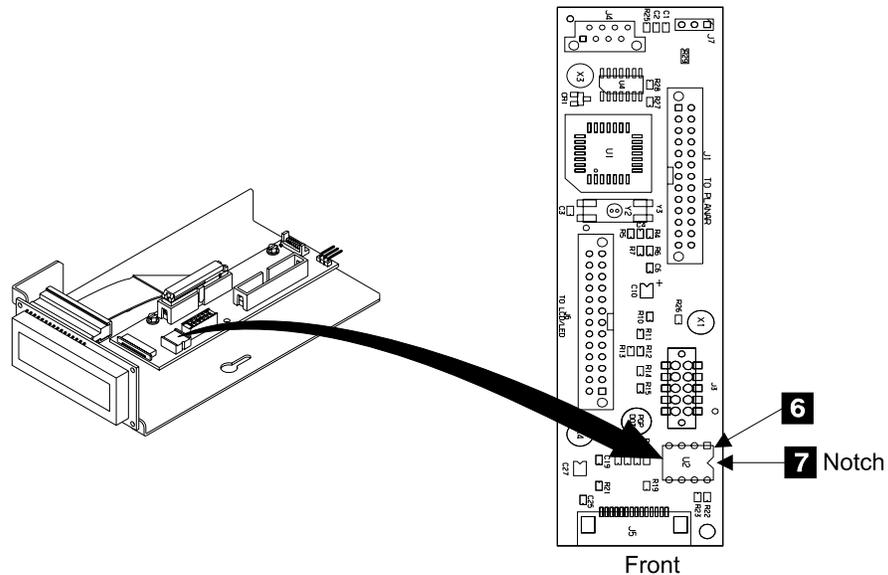


Figure 173. Cluster Bay Operator Panel VPD Module Swap (S008094m)

7. Replace parts in the reverse order.

Note: When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

Drives, Cluster Bay

CD-ROM, SCSI Hard Drive, and Diskette Drive Removals and Replacements, Cluster (E10/E20)

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Notes:

1. Unless you have a particular reason, *do not power off the 2105 Model E10/E20 when servicing a cluster bay unless instructed to do so.*
2. When directed to replace the SCSI hard drive, always use “MAP 4020: SCSI Hard Drive Build” in chapter 3 of the *Enterprise Storage Server Service Guide, Volume 1* as an entry point.
1. Open the front cover of the 2105 Model E10/E20 rack and locate the cluster bay with the cluster bay CD-ROM drive, SCSI hard drive, or diskette drive you are replacing:

- **2105 Model E10/E20:**

- Cluster Bay 1:
 - CD-ROM drive (R1-T1-P2-Z1-A3) **2**
 - SCSI hard drive (R1-T1-P2-Z1-A0) **3**
 - Diskette drive (R1-T1-P2-D1) **1**
- Cluster Bay 2:
 - CD-ROM drive (R1-T2-P2-Z1-A3) **2**
 - SCSI hard drive (R1-T2-P2-Z1-A0) **3**
 - Diskette drive (R1-T2-P2-D1) **1**

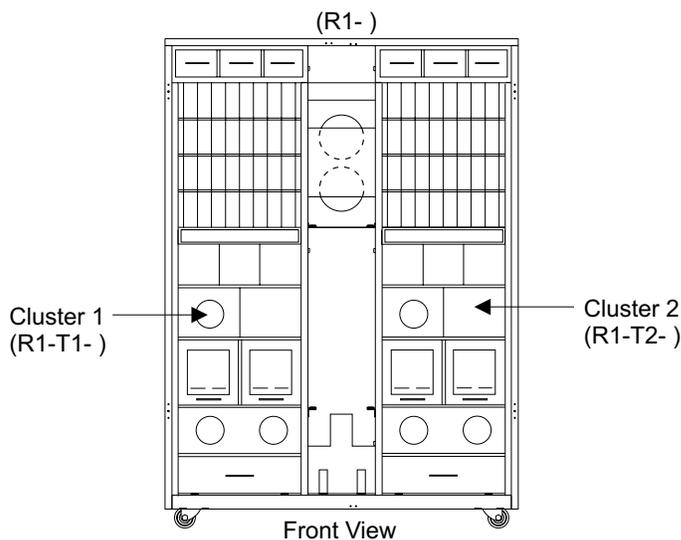


Figure 174. 2105 Model E10/E20 Cluster Bay Locations (S008091m)

Drives, Cluster Bay

2. Do the following steps only on the cluster bay and the cluster bay CD-ROM drive, SCSI hard drive, or diskette drive you are replacing.
3. Power off the cluster bay, then pull the cluster bay out to the service position, see “Cluster Bay Service Position Procedure (E10/E20)” on page 159:
4. Locate the drive you will be removing:
 - Diskette drive (R1-Tx-P2-D1) **1**
 - CD-ROM drive (R1-Tx-P2-Z1-A3) **2**
 - SCSI hard drive (R1-Tx-P2-Z1-A0) **3**

Attention: Read and understand “Additional SCSI Hard Drive Replacement Information, 2105 Models E10/E20” on page 167 before continuing with the SCSI hard drive replacement.

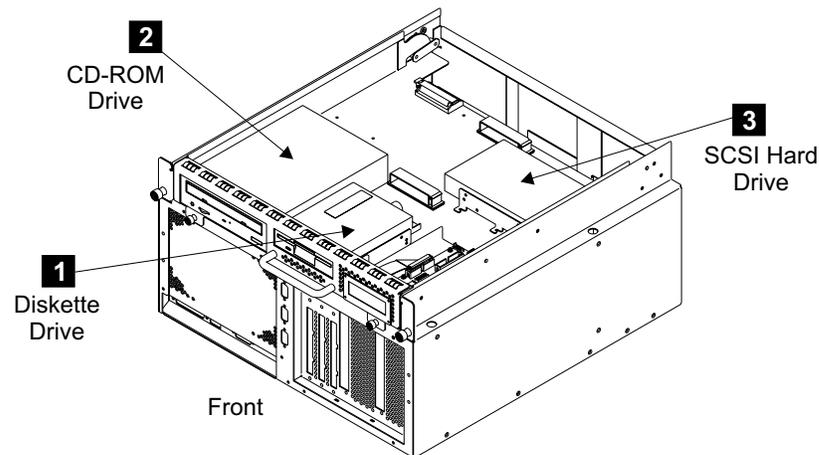


Figure 175. Cluster Bay Drive Locations (S008316m)

5. Disconnect the cables from the rear of the drive you are removing.
 - Diskette drive, cables P11 and FD0
 - CD-ROM drive, cables P9 and CDR0M
 - SCSI hard drive, cables P10 and HDD
6. Loosen the four drive mounting screws, two on each side, for the drive you are removing:
 - Diskette drive screws **7**
 - CD-ROM drive screws, shown removed **5**
 - SCSI hard drive screws **6**
7. Remove the drive from the cluster bay.

Drives, Cluster Bay

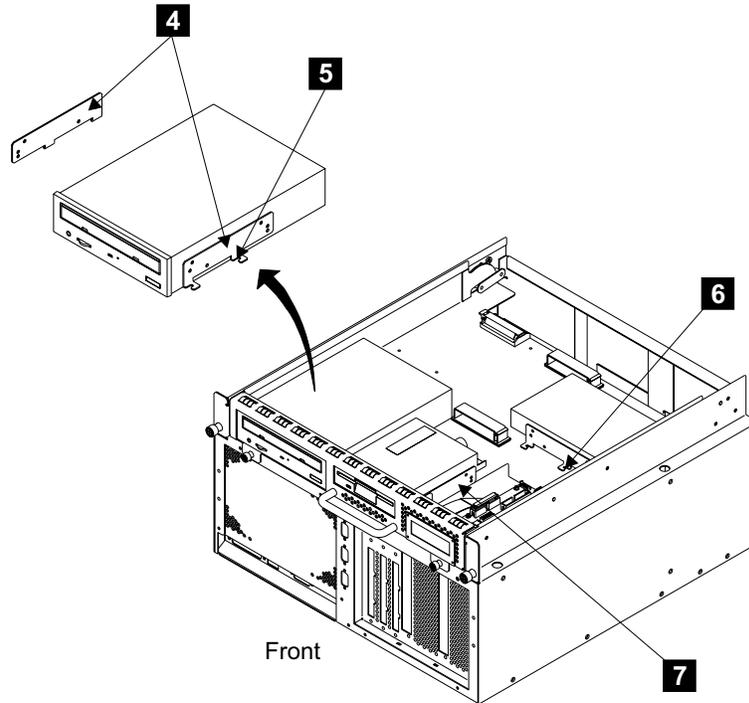


Figure 176. Cluster Bay Drive Mounting Screws (S008314n)

8. Replace parts in the reverse order.

Note: When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

Notes:

- a. Transfer the two side mounting brackets **4** from the old drive to the new drive. CD-ROM drive shown.
- b. When replacing the CD-ROM drive, verify that the three jumpers on the option block (pins 1, 2, and 4) on the rear of the new drive are in the same position, **8** in Figure 177 on page 167, as on the drive you are replacing.
- c. If the SCSI hard drive being installed has option block jumpers as shown in Figure 177 on page 167, verify that a jumper is installed between pins 13 and 14 **9**.

Attention: New 2105 Model E10/E20 cluster bays will have different SCSI hard drives. The new style SCSI hard drives have a different jumper location, they require a jumper at position 8 (TI SYNC NEG0).

- d. Extend the CD-ROM tray and push the two lower tabs out (toward each other). These tabs will hold the bottom of the CD disk when the CD-ROM operates in the vertical position.

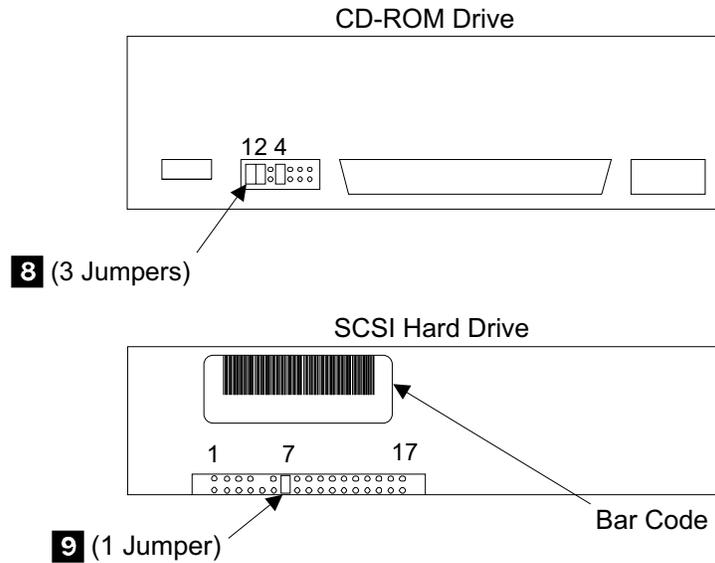


Figure 177. CD-ROM Drive and SCSI Hard Drive Jumpers (S007245m)

Additional SCSI Hard Drive Replacement Information, 2105 Models E10/E20

New cluster bay SCSI hard drives may be different from the existing drive. The original SCSI hard drives had interface termination built into them. The new SCSI hard drives do not have internal interface termination. With the new drive, an external interposer/terminator assembly is required. The new style SCSI hard drives are shipped with the new interposer/terminator assembly, and instructions on how to install it. The Interposer/terminator, when required, plugs into the SCSI connector on the rear of the SCSI hard drive. The SCSI drive signal cable then plugs into the interposer/terminator. See Figure 178 on page 168.

Attention: Errors will occur if the interposer/terminator assembly is installed with the old style, internally terminated, SCSI hard drive. Do not use this procedure for clusters bays in 2105 Model F10/F20 racks.

The new SCSI hard drives do not have option block jumpers.

The table below shows the combinations of drives, interposer/terminators, and jumpers.

Table 3. Cluster Bay SCSI Hard Drive Variations

SCSI Hard Drive Type	SCSI Interface Termination	Interposer / Terminator Required	SCSI Hard Drive Option Block Jumpers Present	Valid Configuration?
Original Type (internal termination)	Internal in the SCSI Hard Drive	No	Yes	Yes
New Type (external termination)	External to the SCSI Hard Drive	Yes	No	Yes

Service Processor Card, Cluster Bay

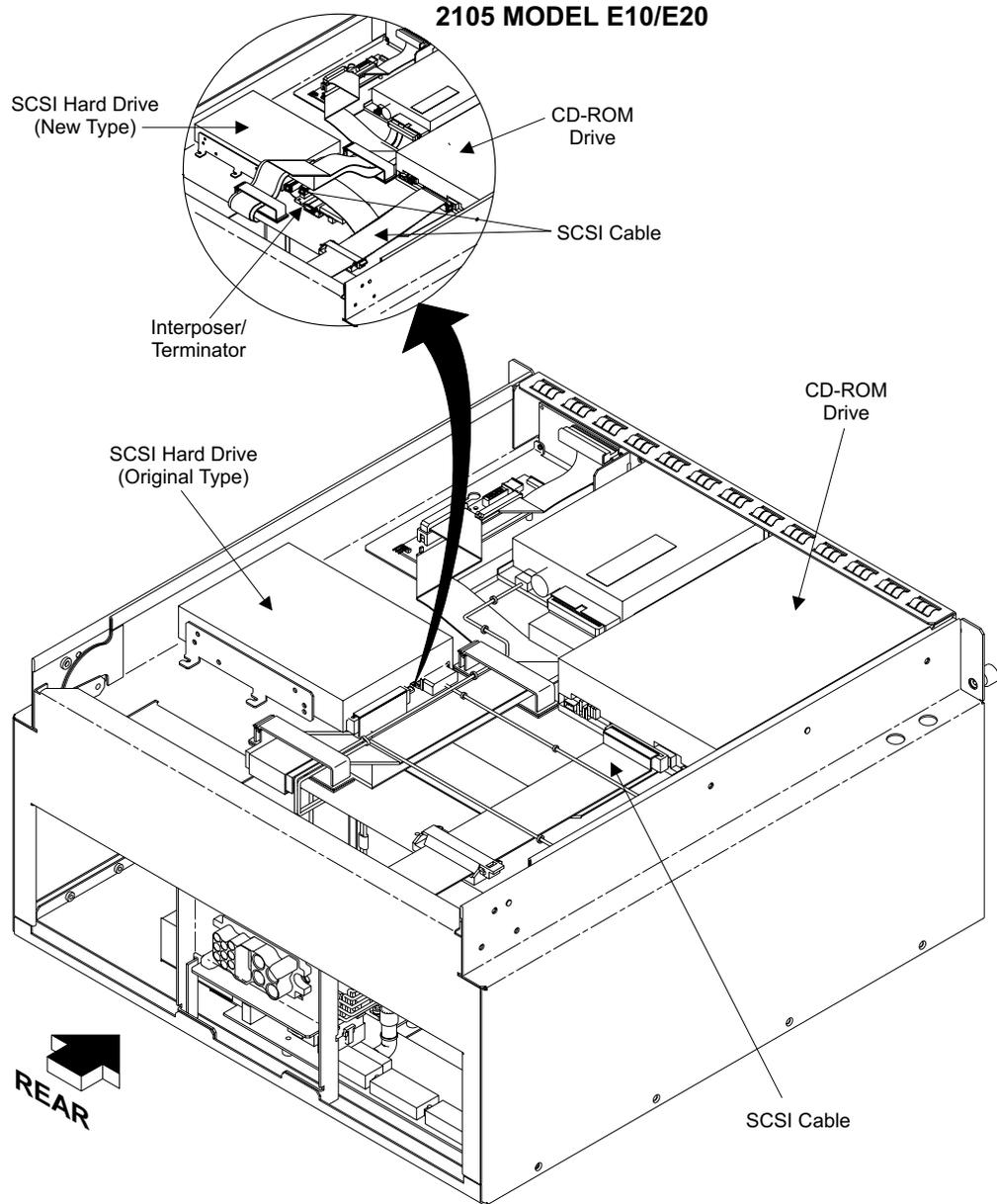


Figure 178. Cluster Bay SCSI Hard Drive Variations (S009090)

Service Processor Card Removal and Replacement, Cluster Bay (E10/E20)

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in "Working with ESD-Sensitive Parts" on page 4.

Service Processor Card, Cluster Bay

Note: Unless you have a particular reason, *do not power off the 2105 Model E10/E20 when servicing a cluster bay unless instructed to do so.*

1. Open the front cover of the 2105 Model E10/E20 rack and locate the cluster bay and the service processor card you are replacing.
 - **2105 Model E10/E20:**
 - Cluster Bay 1, service processor card, (R1-T1-P2-X1)
 - Cluster Bay 2, service processor card, (R1-T2-P2-X1)

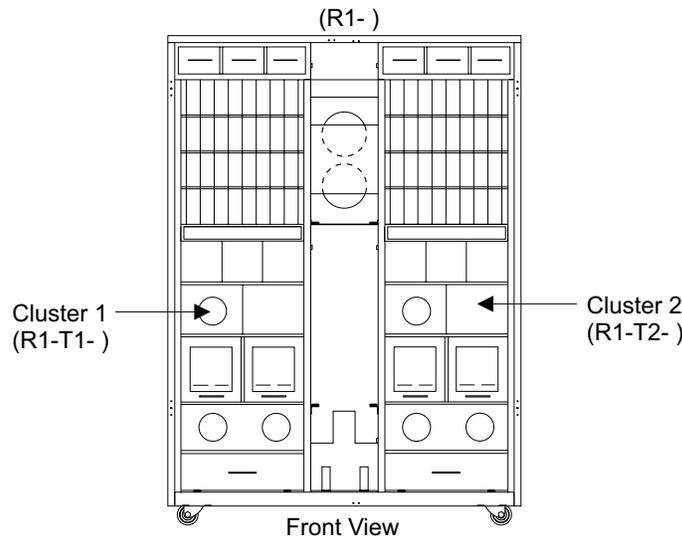


Figure 179. 2105 Model E10/E20 Cluster Bay Locations (S008091m)

2. Do the following steps only on the cluster bay and the service processor card you are removing.
3. Power off the cluster bay, then pull the cluster bay out to the service position, see "Cluster Bay Service Position Procedure (E10/E20)" on page 159:
4. Open the cluster bay top bay to the service position, see "Cluster Top Bay Service Access Procedure (E10/E20)" on page 161.
5. Locate the service processor card you are removing:
 - Service processor card (P2-X1) **1**
6. Loosen the two service processor card retainer screws **2** then remove the card retainer **3**
7. Carefully pull service processor card straight up until the cable connector on the right side of the card can be accessed.
8. Carefully release the weak cable clamps from the top and bottom of the cable then unplug the cable and remove the card.

Service Processor Card, Cluster Bay

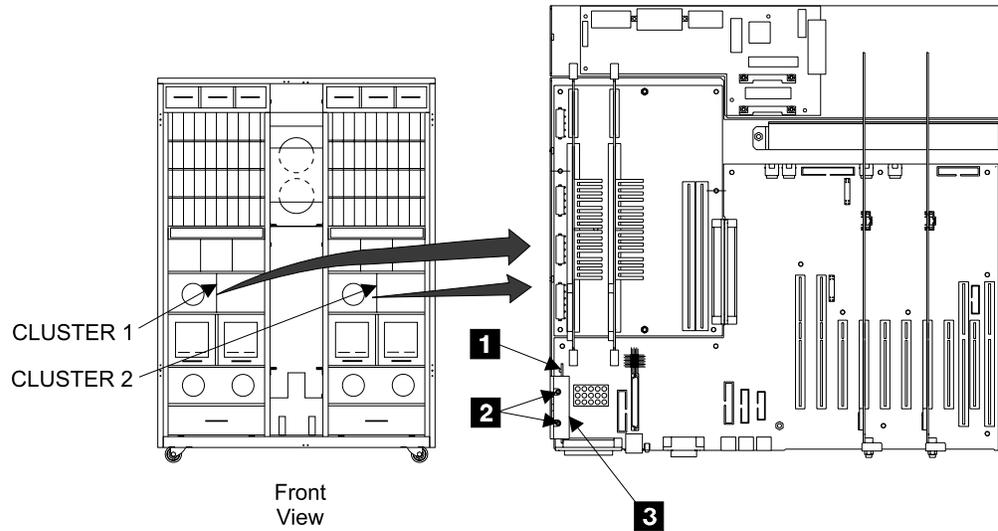


Figure 180. Service Processor Card Removal (s008195n)

9. Replace parts in the reverse order.

Note: When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

I/O Planar Battery Removal and Replacement, Cluster Bay (E10/E20)

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in "Working with ESD-Sensitive Parts" on page 4.

CAUTION:

A lithium battery can cause fire, explosion, or a severe burn. Do not recharge, disassemble, heat above 100°C (212°F), solder directly to the cell, incinerate, or expose cell contents to water. Keep away from children. Replace only with the part number specified for your system. Use of another battery may present a risk of fire or explosion.

The battery connector is polarized; do not attempt to reverse polarity.

Dispose of the battery according to local regulations. (1056)

Note: This notice is translated into selected languages. See "Translation of Cautions and Danger Notices" in chapter 11 of the *Enterprise Storage Server Service Guide, Volume 3*.

I/O Planar Battery, Cluster Bay

Note: Unless you have a particular reason, *do not power off the 2105 Model E10/E20 when servicing a cluster bay unless instructed to do so.*

1. Open the front cover of the 2105 Model E10/E20 rack and locate the cluster bay with the I/O planar battery you are replacing
 - **2105 Model E10/E20:**
 - Cluster Bay 1, I/O/planar battery, (R1-T1-V2)
 - Cluster Bay 2, I/O/planar battery, (R1-T2-V2)

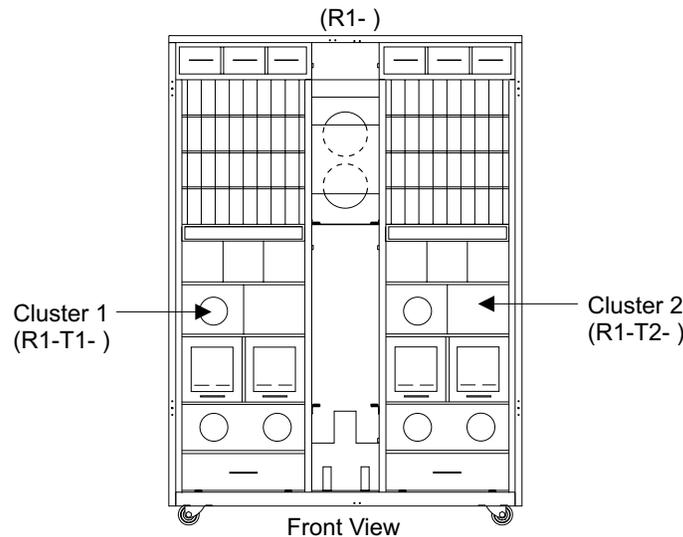


Figure 181. 2105 Model E10/E20 Cluster Bay Locations (S008091m)

2. Do the following steps only on the cluster bay and the I/O planar battery you are replacing.
3. Power off the cluster bay, then pull the cluster bay out to the service position, see “Cluster Bay Service Position Procedure (E10/E20)” on page 159:
4. Open the cluster bay top cover to the service position, see “Cluster Top Bay Service Access Procedure (E10/E20)” on page 161.
5. Remove the SSA device card in slot 9 (R1-Tx-P2-K9), see “SSA Device Card Removal and Replacement, Cluster Bay (E10/E20)” on page 179. This card must be removed to access the battery.
6. Locate the I/O planar battery you are removing:
 - I/O planar battery (V2) **1**

I/O Planar Battery, Cluster Bay

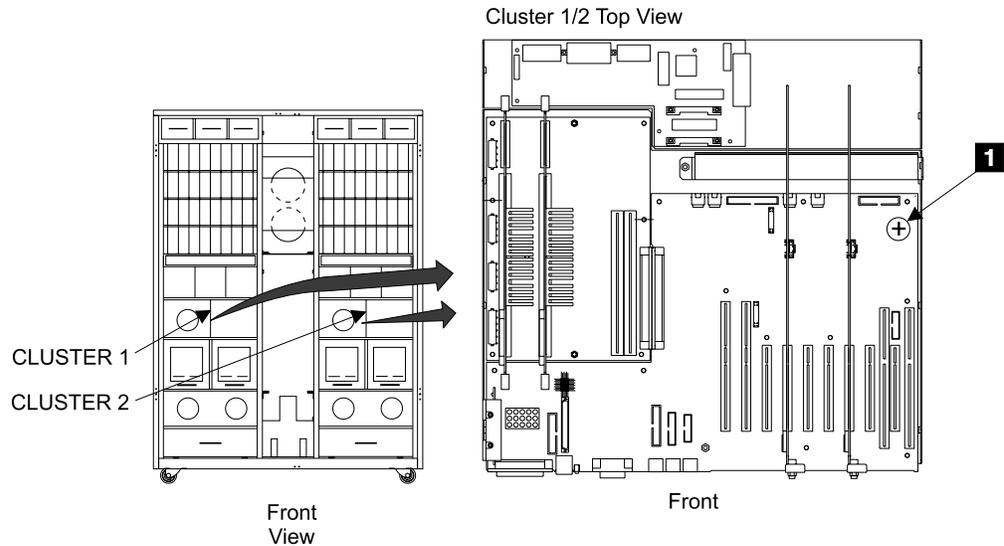


Figure 182. I/O Planar Battery Removal (S008194n)

7. Remove the I/O planar battery by sliding it out of the opening in the mounting socket.

Attention: Dispose of the battery according to local regulations. Lithium batteries are not returned to IBM.

8. Before you install the new battery, drain the charge on the NVRAM by doing one of the following:
 - Briefly short the planar battery mounting socket plus (+) and minus (-) contacts together with a metal tool. This will quickly drain the charge.
 - Wait 15 minutes for the charge to drain off.
9. Replace parts in the reverse order.

Note: When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

Always install the battery with the + symbol up.

- Note:** Use the service terminal to set the cluster bay time and date after the I/O planar battery is replaced. From the **Main Service Menu** select the following options:

Configuration Options Menu
Change/Show Date, Time and Time Zone
Follow the service terminal instructions.

System, I/O, and Power Planar Removals and Replacements, Cluster Bay (E10/E20)

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

System, I/O, and Power Planars, Cluster Bay

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Note: Unless you have a particular reason, *do not power off the 2105 Model E10/E20 when servicing a cluster bay unless instructed to do so.*

1. Open the front cover of the 2105 Model E10/E20 rack and locate the cluster bay with the cluster bay system, I/O, or cluster bay power planar you are replacing:
 - **2105 Model E10/E20:**
 - Cluster Bay 1:
 - System planar (R1-T1-P1) **1**
 - I/O planar (R1-T1-P2) **2**
 - Cluster Bay Power planar (R1-T1-P3) **3**
 - Cluster Bay 2:
 - System planar (R1-T2-P1) **1**
 - I/O planar (R1-T2-P2) **2**
 - Cluster Bay Power planar (R1-T2-P3) **3**

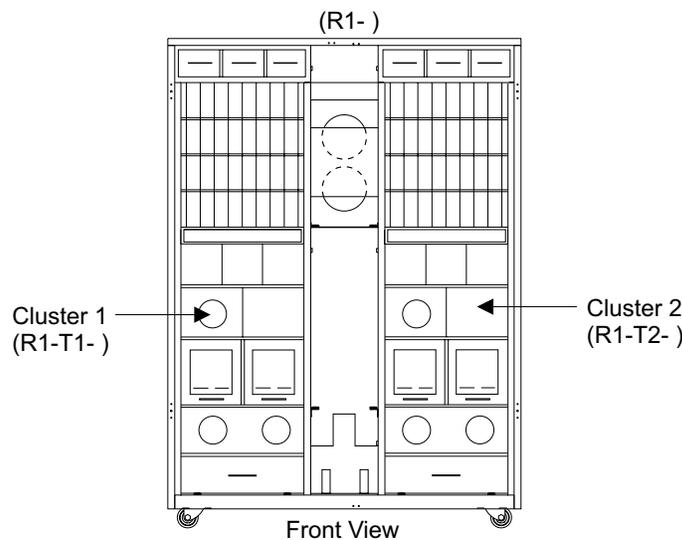


Figure 183. 2105 Model E10/E20 Cluster Bay Locations (S008091m)

2. Do the following steps only on the cluster bay with the system planar, I/O planar, or cluster bay power planar you are replacing.
3. Power off the cluster bay, then pull the cluster bay out to the service position, see “Cluster Bay Service Position Procedure (E10/E20)” on page 159:
4. Open the cluster bay top cover to the service position, see “Cluster Top Bay Service Access Procedure (E10/E20)” on page 161.
5. Locate the cluster bay planar you are removing:
 - System planar (R1-T1-P1) **1**, go to step 6.
 - I/O planar (R1-T1-P2) **2**, go to step 6.
 - Cluster Bay Power planar (R1-T1-P3) **3**, go to step 19 on page 177.
6. Remove the service processor card **4**. See “Service Processor Card Removal and Replacement, Cluster Bay (E10/E20)” on page 168.

System, I/O, and Power Planars, Cluster Bay

7. Disconnect all of the cables from the front of the cluster:
 - Communications cables **5**
 - SSA device card and I/O attachment card cables **6**

Note: To prevent damage to the SSA device cable connector screws, always use the special screwdriver (SSA tool, P/N 32H7059) to turn them. This screwdriver is in the 2105 ship group.

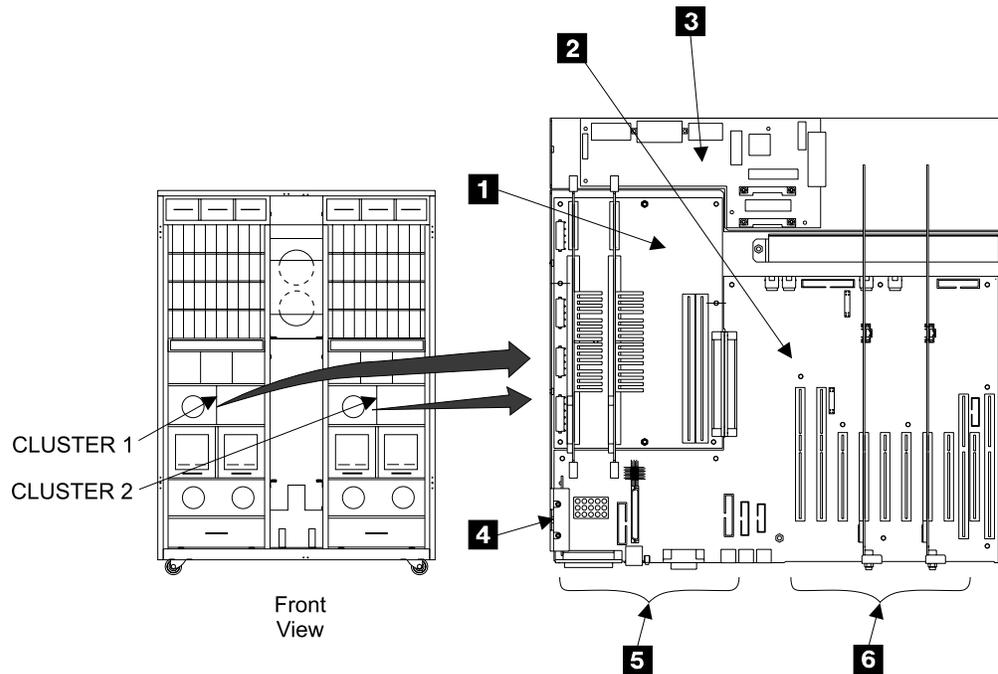


Figure 184. Cluster Bay Planar Locations (S008189n)

8. Remove the left card retention bracket screws **7** and **9**, then remove the bracket **8**.

Note: The front screw is hidden by the foam on the top of the bracket. Lift the foam to access the front screw, do not remove the foam from the bracket.

9. Remove the two right side card retention bracket screws **12** and **13**.
10. Loosen the two right card retention bracket captured top screws until they are free **10** and **15**.
11. Remove the two card retention brackets **11** and **14**.

System, I/O, and Power Planars, Cluster Bay

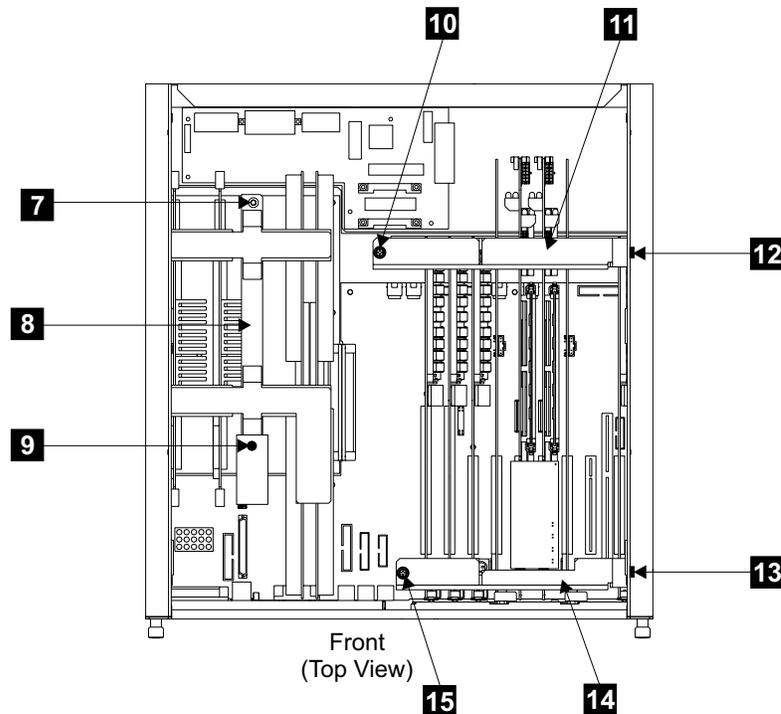


Figure 185. Cluster Bay Card Retention Bracket Removal (S008311n)

12. Remove all of the cards from the system planar **1** and the I/O planar **2** in Figure 184 on page 174:

Note: Remember which position the cards were removed from for reinstallation.

- 332 MHz CPU cards **16**, disconnect cables from left side of cards first. See, “332 MHz CPU Card Removal and Replacement, Cluster Bay (E10/E20)” on page 185
- Memory cards **17** See, “Memory Card Removal and Replacement, Cluster Bay (E10/E20)” on page 187
- SSA device cards **18** and **22** See, “SSA Device Card Removal and Replacement, Cluster Bay (E10/E20)” on page 179
- I/O attachment cards **19** and **21** See, “I/O Attachment Card Removal and Replacement, Cluster Bay (E10/E20)” on page 182
- NVS memory cards, **20**, unplug top card crossover from cards and disconnect cables from rear of cards first. See, “NVS Memory Card and Top Card Crossover Removal and Replacement, Cluster Bay (E10/E20)” on page 192

System, I/O, and Power Planars, Cluster Bay

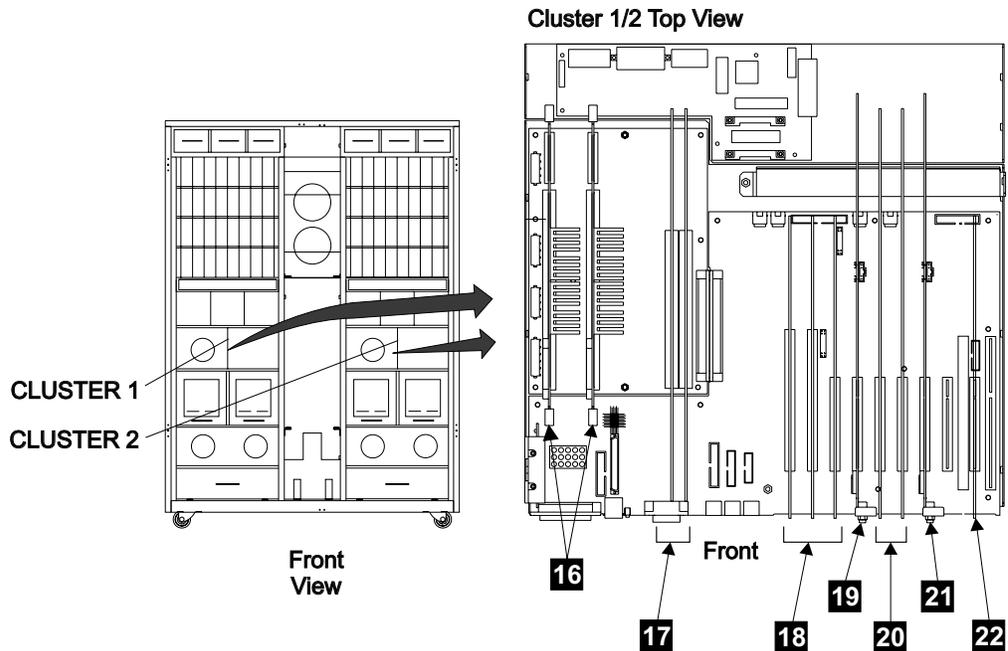


Figure 186. Cluster Bay Card Locations (S008246n)

13. Disconnect all of the internal cables from the system planar **1** and the I/O planar **2** in Figure 184 on page 174. See "Cluster Bay, System, I/O, and Power Planars Location Codes (E10/E20)" and "Cluster Bay, Cable Location Codes (E10/E20)" in chapter 7 of the *Enterprise Storage Server Service Guide, Volume 3*, for cable locations.
14. Remove the two mounting screws **28** and **29** from each cluster bay communications connectors.
15. Remove the seven mounting screws **24** and two standoffs **23** from the system planar.
16. Remove the 11 mounting screws **26** and one standoff **25** from the I/O planar.
17. Remove the system and I/O planars from the cluster as a single unit. Carefully separate the two planars by pulling the system to I/O planar connector **27** apart. Carefully lift the system planar away from the I/O planar. Be *very careful* not to scrape or damage the components on the bottom of the system planar.
ATTENTION: Failure to carefully disengage the two planars could damage the components on the bottom of the system planar and result in damaging a good FRU. This damage could also result in additional customer delays.
18. Go to step 23 on page 178.

System, I/O, and Power Planars, Cluster Bay

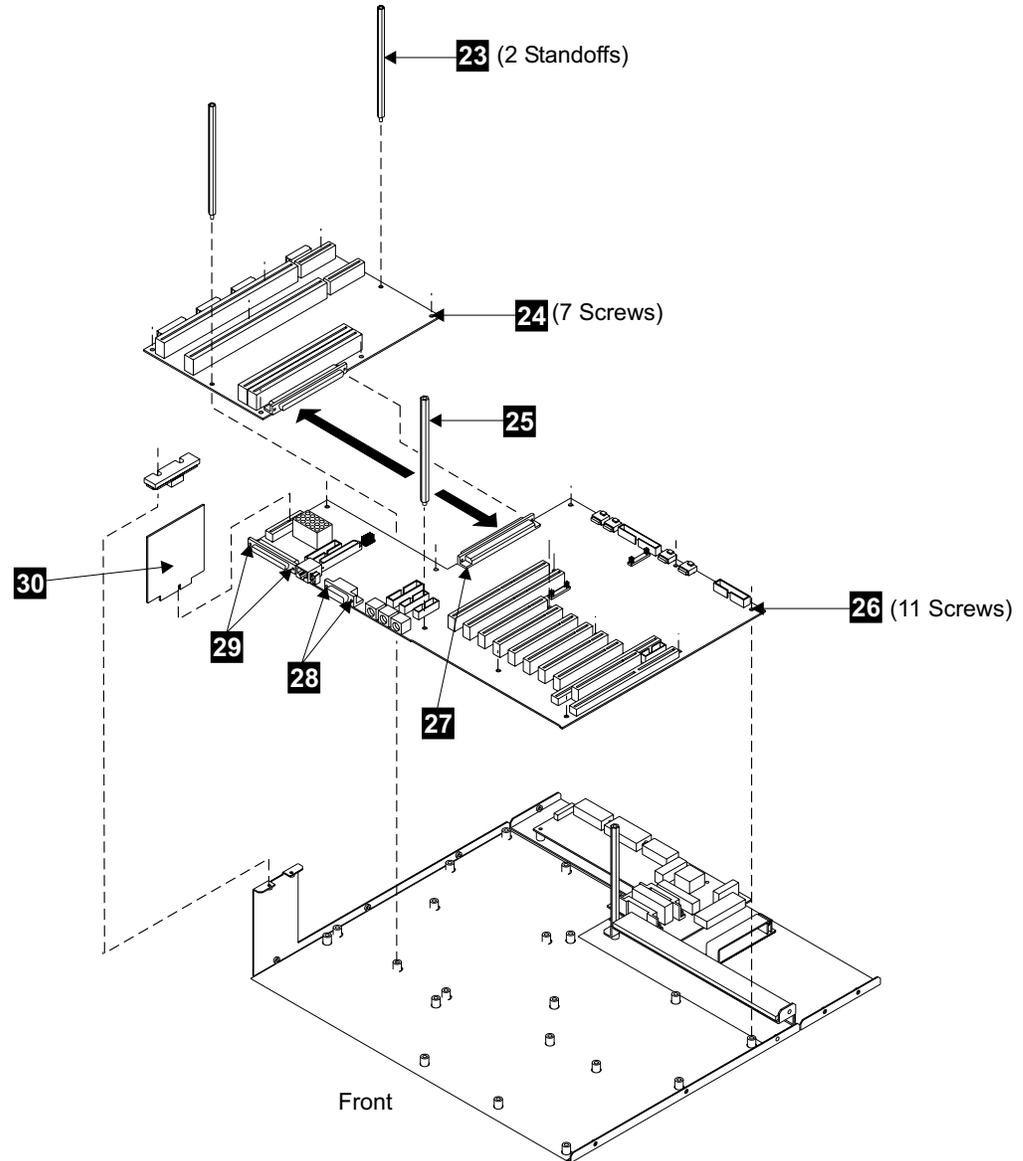


Figure 187. Cluster Bay Planar Removal (S008213r)

19. Remove all of the cards from the system planar **1**, in Figure 184 on page 174 .

Note: Remember which position the cards were removed from for reinstallation.

- 332 MHz CPU cards **16**, in Figure 186 on page 176. disconnect cables from left side of cards first. See, "332 MHz CPU Card Removal and Replacement, Cluster Bay (E10/E20)" on page 185
 - Memory cards, **17**, in Figure 186 on page 176. See, "Memory Card Removal and Replacement, Cluster Bay (E10/E20)" on page 187
20. Disconnect all of the internal cables from the cluster bay power planar, **3** in Figure 184 on page 174. See "Cluster Bay, System, I/O, and Power Planars Location Codes (E10/E20)" and "Cluster Bay, Cable Location Codes (E10/E20)" in chapter 7 of the *Enterprise Storage Server Service Guide, Volume 3* for cable locations.

System, I/O, and Power Planars, Cluster Bay

21. Remove the 6 mounting screws **31** from the cluster bay power planar.
22. Remove the cluster bay power planar from the cluster.

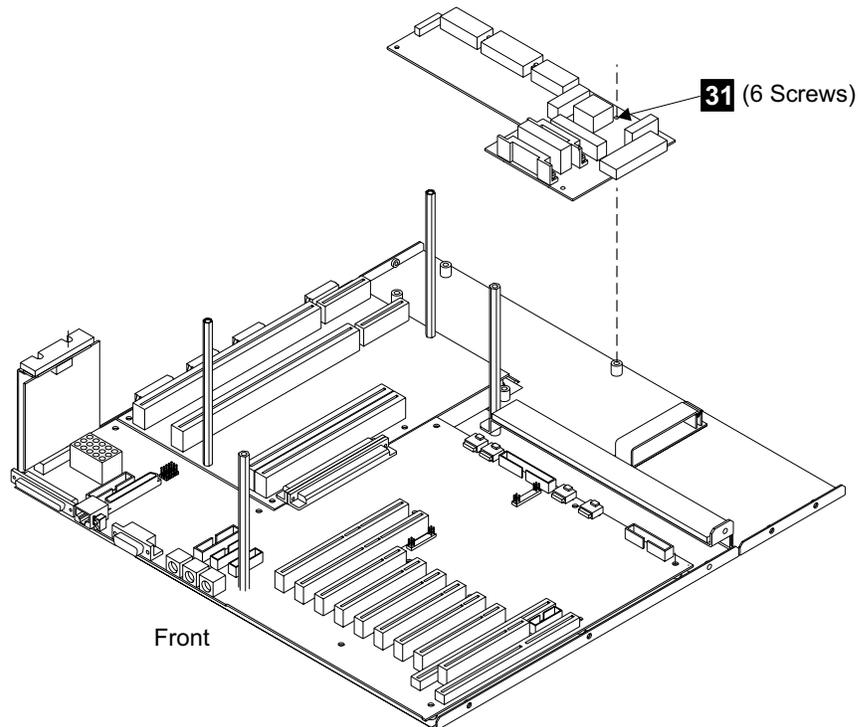


Figure 188. Cluster Bay Power Planar Removal (S008214n)

23. Replace parts in the reverse order.

Note: Transfer any connector covers to the new planar.

- If the I/O planar is being replaced:
 - Verify that a I/O planar battery is installed on the new I/O planar, see “I/O Planar Battery Removal and Replacement, Cluster Bay (E10/E20)” on page 170.
 - Before you install the new I/O planar, do the following to drain the charge on the NVRAM:
 - Remove the I/O planar battery from the new I/O planar.
 - Briefly short the planar battery mounting socket plus (+) and minus (-) contacts together with a metal tool. This will quickly drain the charge.
 - Reinstall the I/O planar battery.
 - Verify the five I/O planar jumpers **32** are all installed on pins 1 and 2.

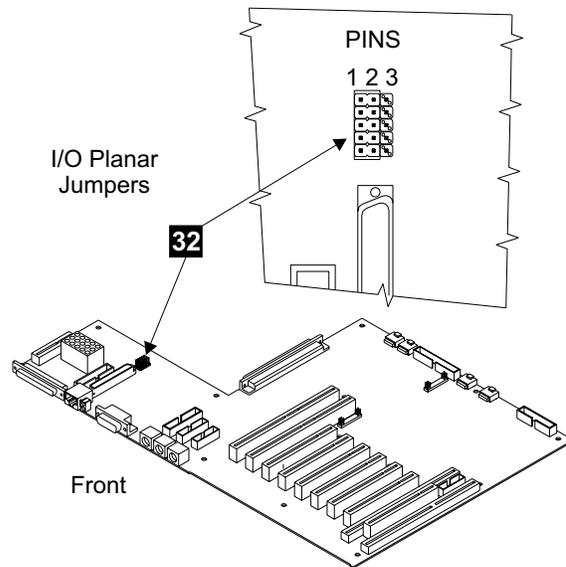


Figure 189. Cluster Bay I/O Planar Jumper Location (S008584m)

- Install the I/O planar.

Attention: Use the service terminal to set the cluster bay time and date after the I/O planar battery is replaced. From the **Main Service Menu** select the following options:

Configuration Options Menu
Change/Show Date, Time and Time Zone
Follow the service terminal instructions.

Note: When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

SSA Device Card Removal and Replacement, Cluster Bay (E10/E20)

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Note: Unless you have a particular reason, *do not power off the 2105 Model E10/E20 when servicing a cluster bay unless instructed to do so.*

1. Open the front cover of the 2105 Model E10/E20 rack and locate the cluster bay with the cluster bay SSA device card you are replacing, see Figure 190 on page 180:
 - **2105 Model E10/E20:**
 - Cluster Bay 1:
 - SSA device card (R1-T1-P2-K1)
 - SSA device card (R1-T1-P2-K2)

SSA Device Card, Cluster Bay

- SSA device card (R1-T1-P2-K3)
- SSA device card (R1-T1-P2-K9)
- Cluster Bay 2:
 - SSA device card (R1-T2-P2-K1)
 - SSA device card (R1-T2-P2-K2)
 - SSA device card (R1-T2-P2-K3)
 - SSA device card (R1-T2-P2-K9)

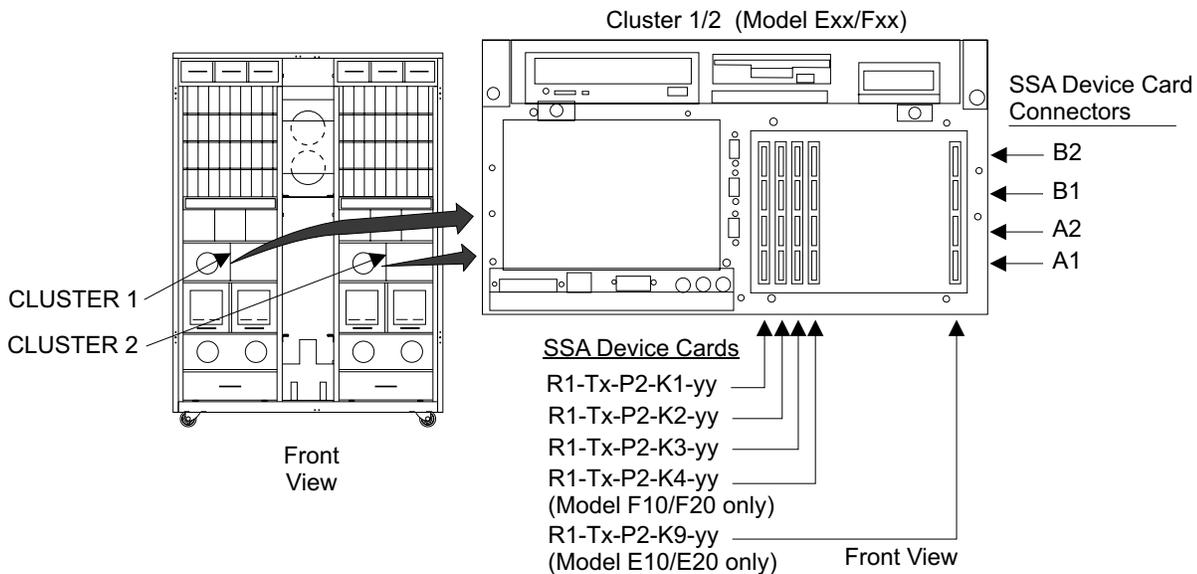


Figure 190. SSA Device Card Removal (S008022m)

2. Do the following steps only on the cluster bay and the SSA device card you are replacing.
3. Power off the cluster bay, then pull the cluster bay out to the service position, see “Cluster Bay Service Position Procedure (E10/E20)” on page 159:
4. Open the cluster bay top cover to the service position, see “Cluster Top Bay Service Access Procedure (E10/E20)” on page 161.
5. Remove the two right side card retention bracket screws **3** and **4**.
6. Loosen the two right card retention bracket captured top screws until they are free **1** and **6**.
7. Remove the two right card retention brackets **2** and **5**.

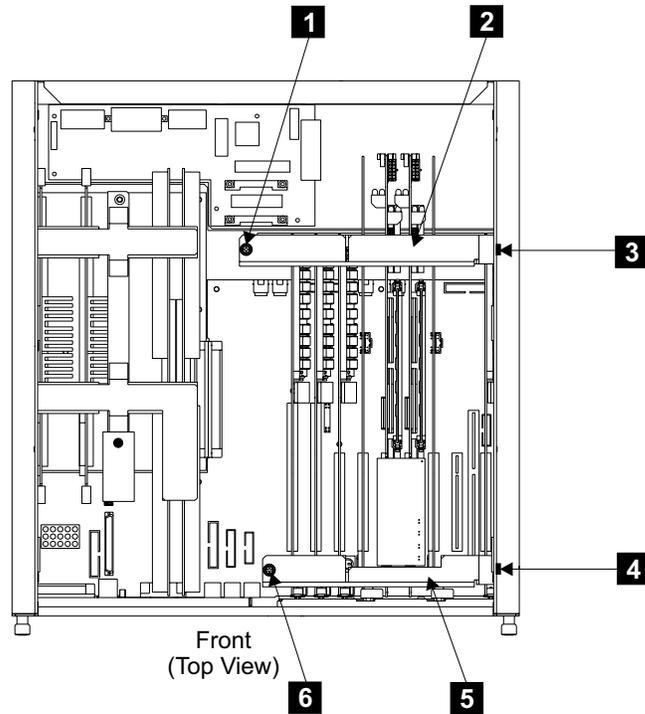


Figure 191. Cluster Bay Card Retention Bracket Removal (S008313n)

8. Locate the SSA device card you are removing:
 - SSA device card (R1-Tx-P2-K1)
 - SSA device card (R1-Tx-P2-K2)
 - SSA device card (R1-Tx-P2-K3)
 - SSA device card (R1-Tx-P2-K9)
9. Disconnect the SSA cables from the connectors on the front of the SSA device card connectors.

Notes:

- a. Label the SSA cables, before disconnecting them, so they can be reconnected to their original connectors.
 - b. To prevent damage to the SSA device cable connector screws, always use the special screwdriver (SSA tool, P/N 32H7059) to turn them. This screwdriver is in the 2105 ship group.
10. Remove the two front SSA device card mounting screws and the cable support bracket.
 11. Remove the SSA device card from the I/O planar by pulling straight up.
 12. Replace parts in the reverse order.

Transfer the SSA device card DRAM module to the new card or replace the failing SSA device card DRAM module, see “SSA Device Card DRAM Module Removal and Replacement, Cluster Bay (E10/E20)” on page 182.

Note: When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

SSA Device Card Dram Module, Cluster Bay

SSA Device Card DRAM Module Removal and Replacement, Cluster Bay (E10/E20)

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Note: Unless you have a particular reason, *do not power off the 2105 Model E10/E20 rack when removing the SSA device card.*

1. Do the following steps only on the cluster bay with the SSA device card with the with the DRAM module you are replacing.
2. Remove the SSA device card with the DRAM module you are replacing. Use “SSA Device Card Removal and Replacement, Cluster Bay (E10/E20)” on page 179 to locate and remove the card, then return here and continue with the next step.
3. Locate the DRAM module you are replacing:
 - **2105 Model E10/E20:**
 - SSA device card
 - DRAM 1, (R1-Tx-P2-Kx-M1) **1**

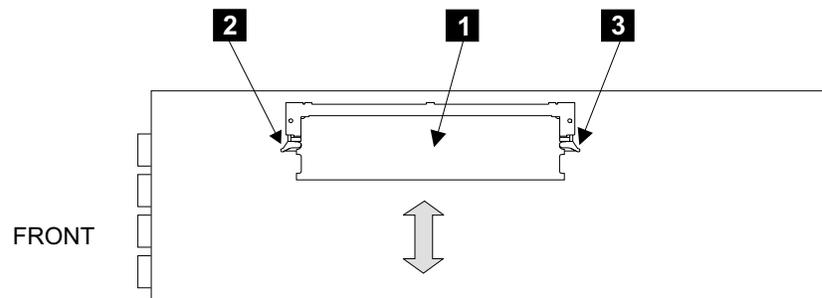


Figure 192. SSA Device Card DRAM Module Removal (S0085471)

4. Remove the DRAM module by pushing the locking tabs **2** and **3** out on the module connector.
5. Pull DRAM module **1** straight out of the connector.
6. Replace parts in the reverse order.

Note: When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

I/O Attachment Card Removal and Replacement, Cluster Bay (E10/E20)

Attention: This is *not* a stand-alone procedure.

I/O Attachment Card, Cluster Bay

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Note: Unless you have a particular reason, *do not power off the 2105 Model E10/E20 when servicing a cluster bay unless instructed to do so.*

1. Open the front cover of the 2105 Model E10/E20 rack and locate the cluster bay with the cluster bay I/O attachment card you are replacing:
 - **2105 Model E10/E20:**
 - Cluster Bay 1:
 - I/O attachment card (R1-T1-P2-I4)
 - I/O attachment card (R1-T1-P2-I7)
 - Cluster Bay 2:
 - I/O attachment card (R1-T2-P2-I4)
 - I/O attachment card (R1-T2-P2-I7)

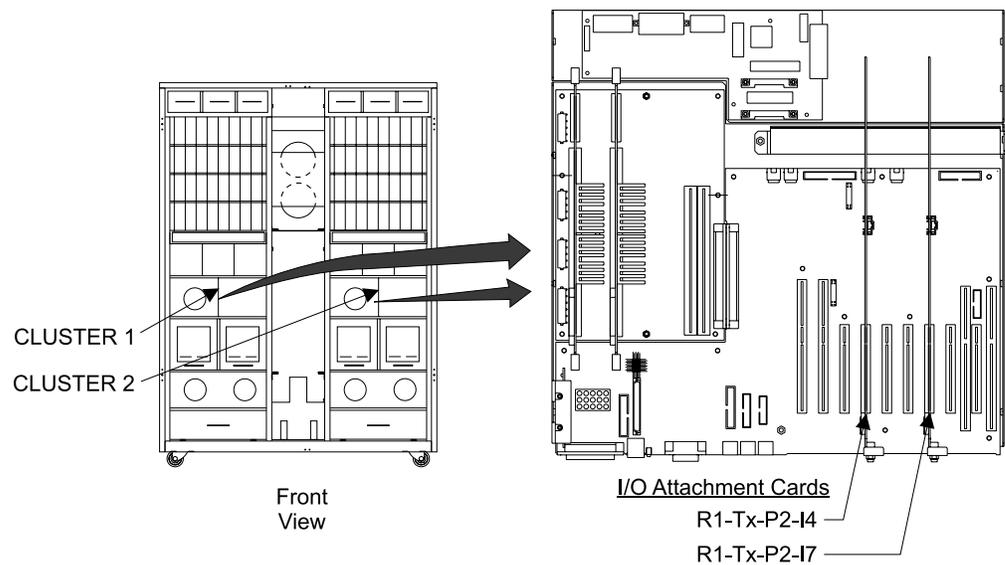


Figure 193. 2105 Model E10/E20 Cluster Bay Locations (S008190n)

2. Do the following steps only on the cluster bay and the I/O attachment card you are replacing.
3. Power off the cluster bay, then pull the cluster bay out to the service position, see “Cluster Bay Service Position Procedure (E10/E20)” on page 159:
4. Open the cluster bay top cover to the service position, see “Cluster Top Bay Service Access Procedure (E10/E20)” on page 161.
5. Remove the two right side card retention bracket screws **3** and **4**.
6. Loosen the two right card retention bracket captured top screws until they are free **1** and **6**.

I/O Attachment Card, Cluster Bay

7. Remove the two right card retention brackets **2** and **5**.

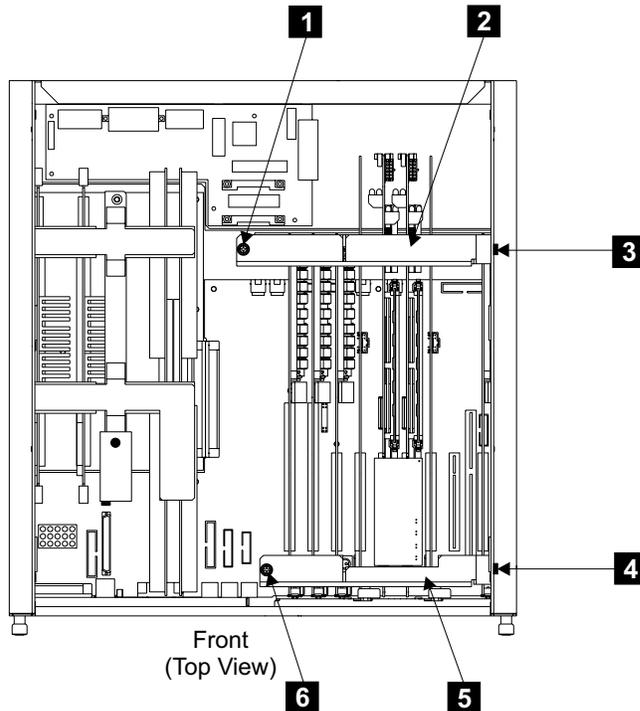


Figure 194. Cluster Bay Card Retention Bracket Removal (S008313n)

8. Locate the I/O attachment card you are removing:
 - I/O attachment card (R1-Tx-P2-I4)
 - I/O attachment card (R1-Tx-P2-I7)
9. Disconnect the SCSI cables **7** from the front of the I/O attachment card.
10. Disconnect the NVS to I/O attachment card cable **10** or **11** from the side of the I/O attachment card.
11. Remove the two front I/O attachment card mounting screws **8**, then remove the cable support bracket **9**.
12. Remove the I/O attachment card **7** from the I/O planar by pulling straight up.

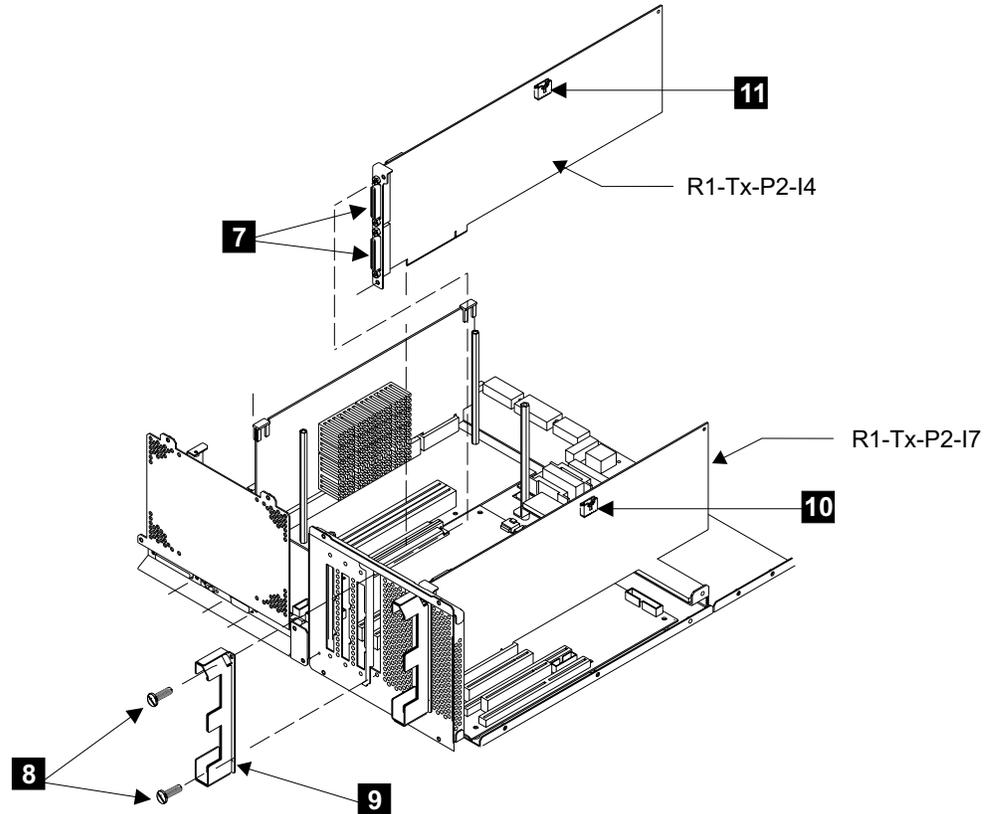


Figure 195. I/O Attachment Card Removal (S008581p)

13. Replace parts in the reverse order.

Note: When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

332 MHz CPU Card Removal and Replacement, Cluster Bay (E10/E20)

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Note: Unless you have a particular reason, *do not power off the 2105 Model E10/E20 when servicing a cluster bay unless instructed to do so.*

1. Open the front cover of the 2105 Model E10/E20 rack and locate the cluster bay with the 332 MHz CPU card you are replacing.
 - **2105 Model E10/E20:**
 - Cluster Bay 1:
 - 332 MHz CPU card 1, (R1-T1-P1-C1)

332 MHz CPU Card, Cluster Bay

- 332 MHz CPU card 2, (R1-T1-P1-C2)
- Cluster Bay 2:
 - 332 MHz CPU card 1, (R1-T2-P1-C1)
 - 332 MHz CPU card 2, (R1-T2-P1-C2)

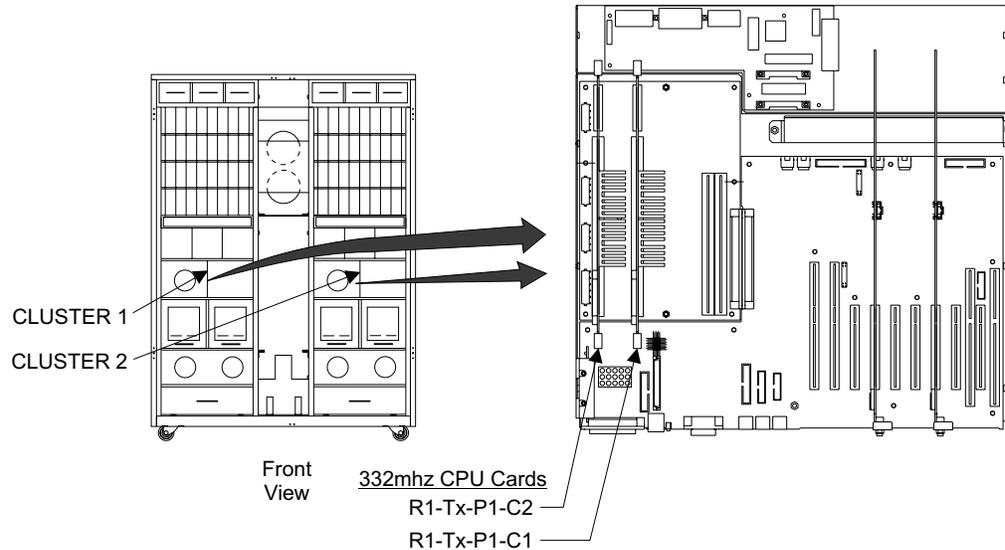


Figure 196. 2105 Model E10/E20 Cluster Bay Locations (S008191n)

2. Do the following steps only on the cluster bay and the 332 MHz CPU card you are replacing.
3. Power off the cluster bay, then pull the cluster bay out to the service position, see “Cluster Bay Service Position Procedure (E10/E20)” on page 159:
4. Open the cluster bay top cover to the service position, see “Cluster Top Bay Service Access Procedure (E10/E20)” on page 161.
5. Remove the left card retention bracket screws **1** and **3**.

Note: The front screw is hidden by the foam on the top of the bracket. Lift the foam to access the front screw, do not remove the foam from the bracket.

6. Remove the left card retention bracket **2**.

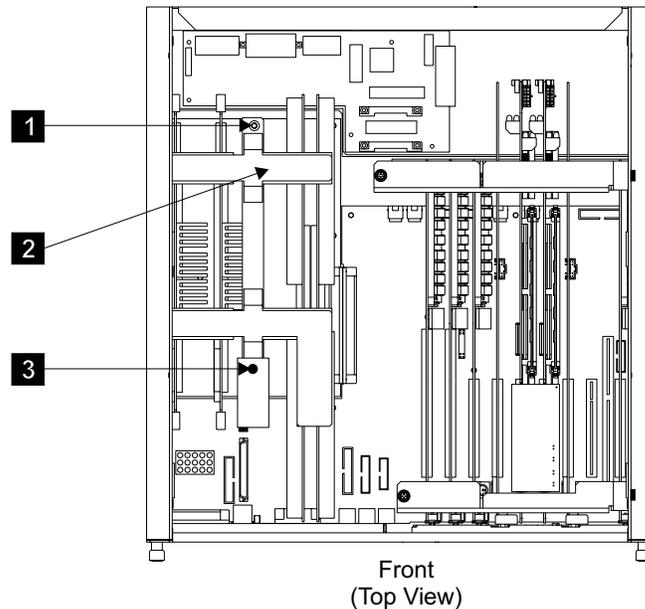


Figure 197. Cluster Bay Card Retention Bracket Removal (S008312n)

7. Locate the 332 MHz CPU card you are removing:
 - 332 MHz CPU card 1, (R1-Tx-P1-C1)
 - 332 MHz CPU card 2, (R1-Tx-P1-C2)
8. Unplug the internal cable from the front left side of the CPU card you are removing.
9. Remove the 332 MHz CPU card from the I/O planar by pulling straight up.
10. Replace parts in the reverse order.

Note: When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

Memory Card Removal and Replacement, Cluster Bay (E10/E20)

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Note: Unless you have a particular reason, *do not power off the 2105 Model E10/E20 when servicing a cluster bay unless instructed to do so.*

1. Open the front cover of the 2105 Model E10/E20 rack and locate the cluster bay with the cluster bay memory card you are replacing.
 - **2105 Model E10/E20:**
 - Cluster Bay 1:
 - Memory card 1, (R1-T1-P1-M1)

Memory Card, Cluster Bay

- Memory card 2, (R1-T1-P1-M2)
- Cluster Bay 2:
 - Memory card 1, (R1-T2-P1-M1)
 - Memory card 2, (R1-T2-P1-M2)

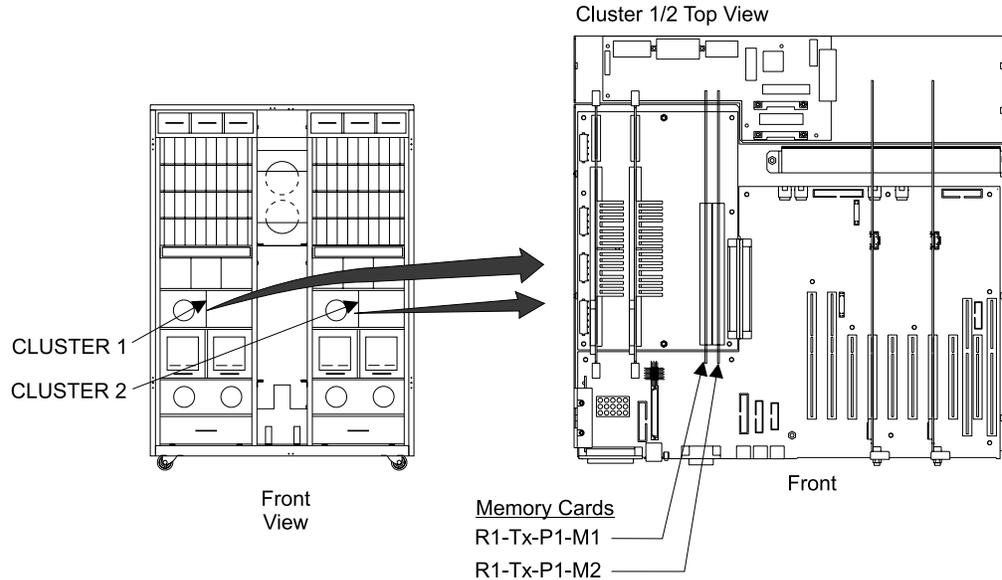


Figure 198. 2105 Model E10/E20 Cluster Bay Locations (S008192n)

2. Do the following steps only on the cluster bay and the memory card you are replacing.
3. Power off the cluster bay, then pull the cluster bay out to the service position, see “Cluster Bay Service Position Procedure (E10/E20)” on page 159:
4. Open the cluster bay top cover to the service position, see “Cluster Top Bay Service Access Procedure (E10/E20)” on page 161.
5. Remove the left card retention bracket screws **1** and **3**.

Note: The front screw is hidden by the foam on the top of the bracket. Lift the foam to access the front screw, do not remove the foam from the bracket.

6. Remove the left card retention bracket **2**.

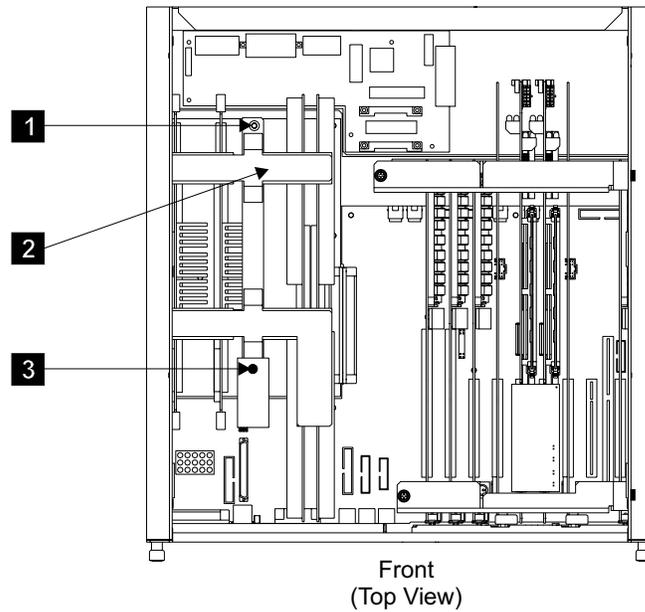


Figure 199. Cluster Bay Card Retention Bracket Removal (S008312n)

7. Locate the memory card you are removing:
 - Memory card 1, (R1-Tx-P1-M1)
 - Memory card 2, (R1-Tx-P1-M2)
8. Remove the memory card from the I/O planar by pulling straight up.
9. Replace parts in the reverse order.

Transfer the memory card modules to the new card or replace the failing memory card module, see “Memory Card, Memory Module Removal and Replacement, Cluster Bay (E10/E20)”.

Note: When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

Memory Card, Memory Module Removal and Replacement, Cluster Bay (E10/E20)

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Note: Unless you have a particular reason, *do not power off the 2105 Model E10/E20 or SSA DASD drawer unless the instructions that you are following tell you to.*

Memory Card, Memory Module, Cluster Bay

1. Remove the cluster bay memory card with memory module you are servicing, see "Memory Card Removal and Replacement, Cluster Bay (E10/E20)" on page 187.
2. Locate the memory module connectors and determine which module you are replacing, see Figure 200:
 - **2105 Model E10/E20:**
 - Memory card
 - memory module 1 (R1-Tx-P1-Mx.1) **1**
 - memory module 2 (R1-Tx-P1-Mx.2) **2**
 - memory module 3 (R1-Tx-P1-Mx.3) **3**
 - memory module 4 (R1-Tx-P1-Mx.4) **4**
 - memory module 5 (R1-Tx-P1-Mx.5) **5**
 - memory module 6 (R1-Tx-P1-Mx.6) **6**
 - memory module 7 (R1-Tx-P1-Mx.7) **7**
 - memory module 8 (R1-Tx-P1-Mx.8) **8**
 - memory module 9 (R1-Tx-P1-Mx.9) **9**
 - memory module 10 (R1-Tx-P1-Mx.10) **10**
 - memory module 11 (R1-Tx-P1-Mx.11) **11**
 - memory module 12 (R1-Tx-P1-Mx.12) **12**
 - memory module 13 (R1-Tx-P1-Mx.13) **13**
 - memory module 14 (R1-Tx-P1-Mx.14) **14**
 - memory module 15 (R1-Tx-P1-Mx.15) **15**
 - memory module 16 (R1-Tx-P1-Mx.16) **16**

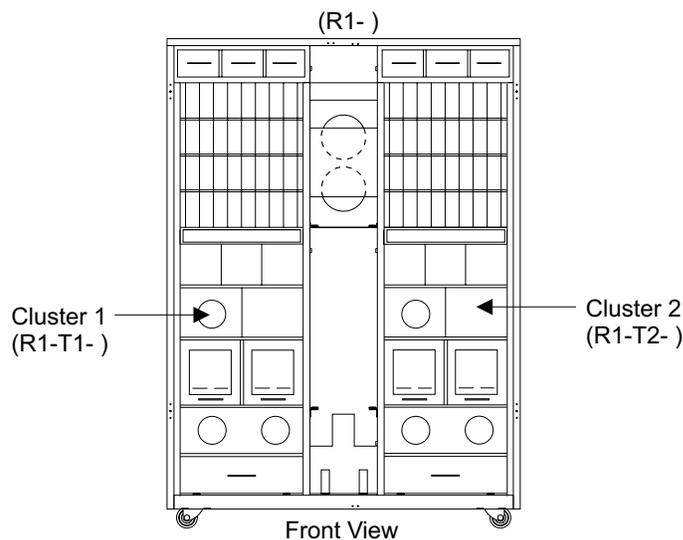


Figure 200. 2105 Model E10/E20 Cluster Bay Locations (S008091m)

Memory Card, Memory Module, Cluster Bay

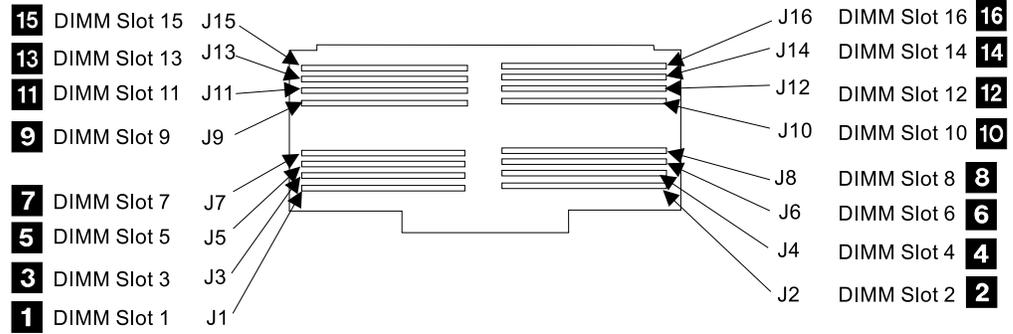


Figure 201. 2105 Model E10/E20 Cluster Bay Locations (S008208I)

- Do the following steps only on the cluster bay with the memory card with the memory module you are replacing.

Attention: When replacing memory modules (DIMMs) on a 2105 Model E10/E20, the DIMMs should be replaced in pairs to avoid a long service action.

Note: If only one replacement DIMM is available, replacing one DIMM has a 50 percent chance of a successful repair. If the verification tests fail, repeat the repair after replacing the other DIMM in the failing DIMM pair slot.

- Remove the memory module by pushing the locking tabs **17** out on the memory connector. Then pull the memory module straight out of the connector.

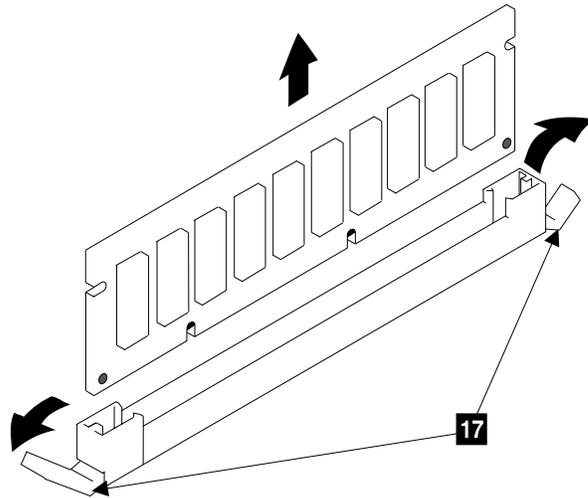


Figure 202. Memory Module Removal (S008408m)

- Replace parts in the reverse order.

Align the slots in the memory module with the keys in the connector **18**. Then push the module down until the connector locking tabs move in and hold the module.

Note: When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

NVS Memory Card and Top Card Crossover, Cluster Bay

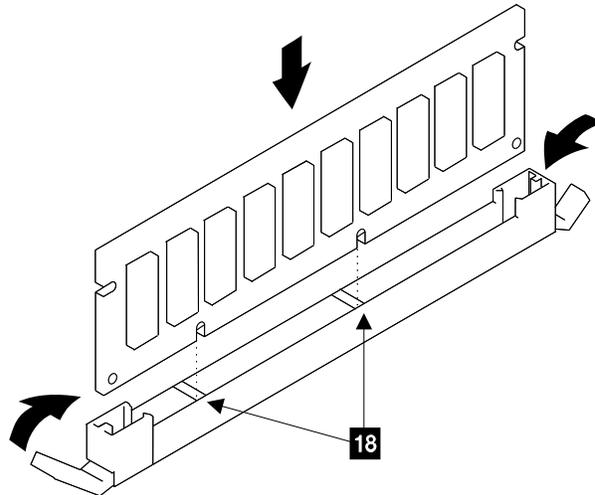


Figure 203. Memory Module Installation (S008409m)

NVS Memory Card and Top Card Crossover Removal and Replacement, Cluster Bay (E10/E20)

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

1. Open the front cover of the 2105 Model E10/E20 rack and locate the cluster bay with the NVS memory card you are replacing.
 - **2105 Model E10/E20:**
 - Cluster Bay 1:
 - NVS memory card 1, (R1-T1-P2-I5)
 - NVS memory card 2, (R1-T1-P2-I6)
 - NVS top card crossover, (R1-T1-P2-I5 to I6)
 - Cluster Bay 2:
 - NVS memory card 1, (R1-T2-P2-I5)
 - NVS memory card 2, (R1-T2-P2-I6)
 - NVS top card crossover, (R1-T2-P2-I5 to I6)

NVS Memory Card and Top Card Crossover, Cluster Bay

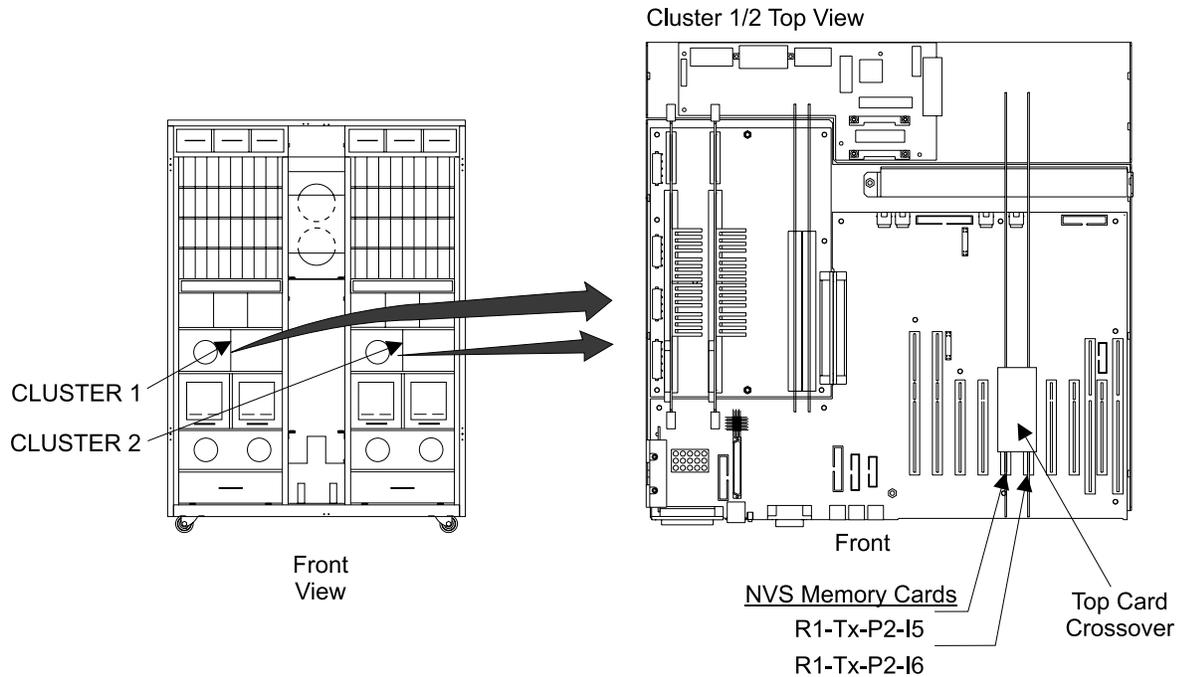


Figure 204. 2105 Model E10/E20 Cluster Bay Locations (S008193n)

2. Do the following steps only on the cluster bay and the NVS memory or crossover card you are replacing.
Attention: Place NVS cards only on a non-conducting surface when they are not mounted in the cluster bay. The static shield bag that the card comes in can be used as a non-conducting surface. If a NVS card is placed on a conductive surface, the cards internal battery can short, damaging the card.
3. Power off the cluster bay, then pull the cluster bay out to the service position, see “Cluster Bay Service Position Procedure (E10/E20)” on page 159:
4. Open the cluster bay top cover to the service position, see “Cluster Top Bay Service Access Procedure (E10/E20)” on page 161.
5. Remove the two right side card retention bracket screws **3** and **4**.
6. Loosen the two right card retention bracket captured top screws until they are free **1** and **6**.
7. Remove the two right card retention brackets **2** and **5**.

NVS Memory Card and Top Card Crossover, Cluster Bay

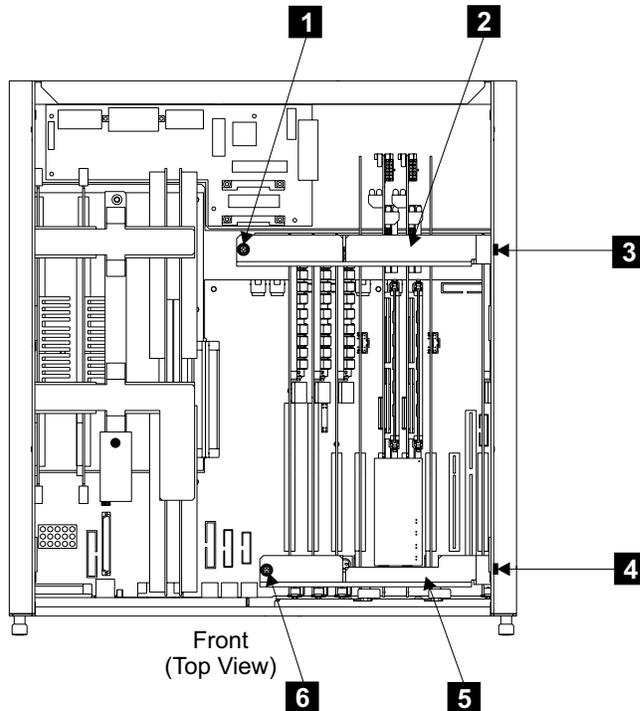


Figure 205. Cluster Bay Card Retention Bracket Removal (S008313n)

8. Locate the NVS memory card or NVS top card crossover you are removing:
 - NVS memory card 1, (R1-T2-P2-I5)
 - NVS memory card 2, (R1-T2-P2-I6)
 - NVS top card crossover, (R1-T2-P2-I5 to I6)
9. Disconnect the NVS to I/O attachment card cable, **10** or **11** in Figure 195 on page 185, from the side of the I/O attachment card.
10. Disconnect the NVS top card crossover, and NVS to I/O attachment card cable, from the top of the NVS cards.

Are you replacing an NVS card or cache module?

 - **Yes**, go to step 11.
 - **No**, go to step 14.
11. Disconnect the power cable from the rear of the NVS memory card
12. Remove the NVS memory card from the system planar by pulling straight up.
13. Are you replacing an NVS top card crossover?
 - **Yes**, go to step 14.
 - **No**, go to step 15.
14. Disconnect the two NVS to I/O attachment card cable connectors from the right side of the top card crossover. Transfer the cable to the new crossover.
15. Replace parts in the reverse order.

Transfer the NVS cache modules to the new card or replace the failing NVS memory card cache module, see “NVS Memory Card, Cache Module and Battery Removal and Replacement, Cluster Bay (E10/E20)” on page 195.

Note: When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

NVS Memory Card, Cache Module and Battery Removal and Replacement, Cluster Bay (E10/E20)

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Note: Unless you have a particular reason, *do not power off the 2105 Model F10/F20 rack when removing the NVS memory card.*

This procedure replaces the NVS cache module and battery assembly or the battery mounted on the NVS cache module assembly.

1. Remove the NVS memory card with the Cache module or battery you are replacing. Use “NVS Memory Card and Top Card Crossover Removal and Replacement, Cluster Bay (E10/E20)” on page 192 to locate and remove the card, then return here and continue with the next step.
2. Locate the NVS cache module you are replacing or exchanging the battery on, see Figure 206:
 - **2105 Model F10/F20:**
 - NVS memory card:
 - NVS cache module 1, (R1-Tx-P2-Ly-M1) **1**
 - NVS cache module 2, (R1-Tx-P2-Ly-M2) **2**
 - NVS cache module 3, (R1-Tx-P2-Ly-M3) **3**
3. Do the following steps only on the cluster bay with the NVS memory card with the NVS cache module you are replacing or exchanging the battery on.

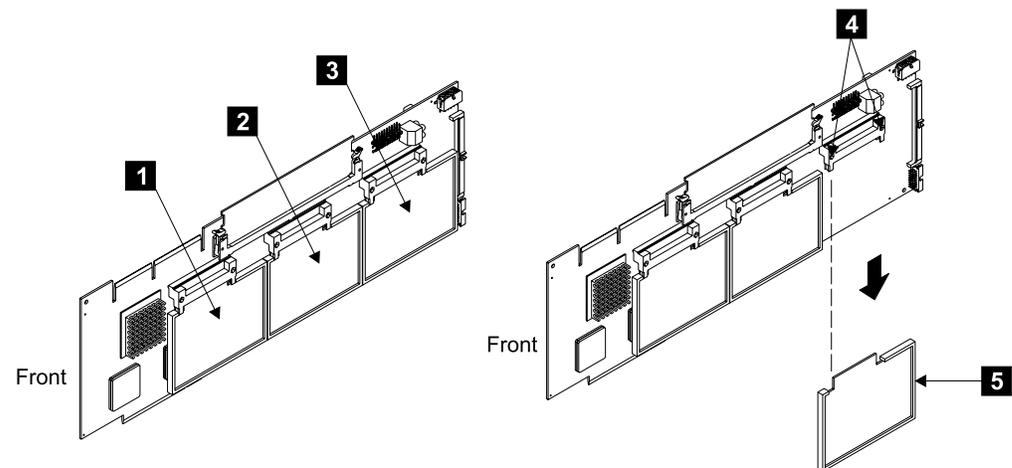


Figure 206. Cluster Bay NVS Remove and Replace (S008299m)

4. Remove the NVS cache module mounting screw and washer from the bottom of the module.

NVS Cache Module and Battery, Cluster Bay

5. Unplug the Cache module you are removing **5** from the NVS memory card connector **4**.

Are you replacing the entire NVS cache module or just its battery?

- If replacing the entire NVS cache module assembly, go to 7.
- If replacing only the NVS cache module battery, go to 6.

6. Replace the NVS cache module with the following steps:
 - a. With the NVS cache module removed from the NVS card, hold the cache module so you can see the spring clip that holds the battery on the card. Most of the battery will be under the card.
 - b. With one hand, grasp the battery with your thumb on top and your fingers below. Release the spring clip by pressing it toward the battery. Push the battery down when the spring clip is released.

Note: The battery clip may be difficult to release. Do not use a metallic tool to release it. Use your finger or a non metallic tool like an orange stick.

- c. When the battery is free, turn the cache module over. Locate the battery connector on the cache module. Wiggle and pull on the connector until it is free.
- d. Install the new battery, replace parts in the reverse order.

Note: Dispose of the battery properly.

- e. Continue with step 8.
7. Install the new NVS cache module assembly.
 8. Replace parts in the reverse order.

Attention: Before installing a new NVS cache module, carefully inspect the pins in the connector on the card for damage.

Note: When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

Cable Removals and Replacements, Cluster Bay (E10/E20)

Attention: This is *not* a stand-alone procedure.

Customer disruption may occur if microcode and power boundaries are not in the proper conditions for this service action. Ensure that you start all service activities in Entry MAP for All Service Actions in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Note: Unless you have a particular reason, *do not power off the 2105 Model E10/E20 when servicing a cluster bay unless instructed to do so.*

1. Open the front cover of the 2105 Model E10/E20 rack and locate the cluster bay with the cluster bay cable you are replacing, see Figure 207 on page 197.
 - Cluster Bay 1, (R1-T1-) or Cluster Bay 2, (R1-T2-)
 - Serial Interface Cable (S1/S2), (S1 = R1-Tx-P2-S1.1) (S2 = R1-Tx-P2-S2.1)

- Serial Interface Cable (S3), (R1-Tx-P2-S3.1)
- Power Planar Cable (IB11), (R1-Tx-P3-IB11.1)
- Power Planar Cable (IB12), (R1-Tx-P3-IB12.1)
- Power Planar Cable (IB15), (R1-Tx-P3-IB15.1)
- Service Processor Card Cable, (R1-Tx-P2-X1.1)
- SCSI Drive Signal Cable, (R1-Tx-P2-Z1.1)
- CPU Card 1 Cable, (R1-Tx-P1-C1.1)
- CPU Card 2 Cable, (R1-Tx-P1-C2.1)
- Cluster Bay Power Planar to Docking Connector Cable, (R1-Tx-N1.1)
- NVS Card Cable, (Card 1 = R1-Tx-P1-M1.1) (Card 2 = R1-Tx-P1-M2.1)
- Cluster Operator Panel Cable, (R1-Tx-P2-L1.1)
- Diskette Drive Signal Cable, (R1-Tx-P2-D1.1)
- Cluster Drive Power Cable, (R1-Tx-P3-IB16.1)

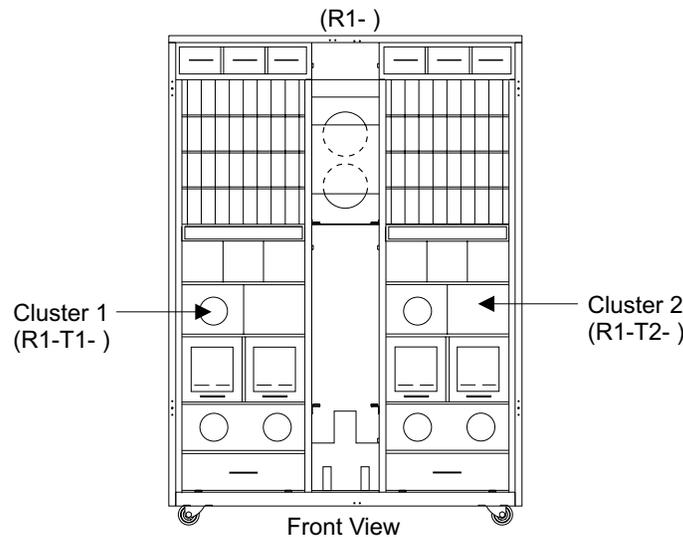


Figure 207. 2105 Model E10/E20 Cluster Bay Locations (S008091m)

2. Do the following steps only on the cluster bay with the cluster bay cable you are replacing.
3. Power off the cluster bay, then pull the cluster bay out to the service position, see "Cluster Bay Service Position Procedure (E10/E20)" on page 159:
4. Open the cluster bay top cover to the service position, see "Cluster Top Bay Service Access Procedure (E10/E20)" on page 161.
5. Locate the cable you are replacing in Table 4 on page 198.
6. Locate the cables connectors, from Table 4 on page 198, in the following figures:
 - Cluster Bay Planar Connector Locations, Figure 208 on page 199
 - Cluster Bay Card Connector Locations, Figure 209 on page 199
 - Cluster Bay Drive and Docking Connector Locations, Figure 210 on page 200
 - Cluster Bay Front Chassis Connector Locations, Figure 211 on page 200

Cables, Cluster Bay

Table 4. Cluster Bay Cable and Connector Locations

Cluster Bay Cable Name	Cluster Bay Cable Connector Names and Locations:				
	From:	To:	To:	To:	To:
Serial Interface Cable (S1 = R1-Tx-P2-S1.1) (S2 = R1-Tx-P2-S2.1)	J41, I/O Planar	S1 and S2, Cluster Chassis Front			
Serial Interface Cable (R1-Tx-P2-S3.1)	J50, I/O Planar	S3, Cluster Chassis Front			
Power Planar Cable (IB11) (R1-Tx-P3-IB11.1)	IB11, Cluster Bay Power Planar	J01, I/O Planar	J15 and J16, System Planar		
Power Planar Cable (IB12) (R1-Tx-P3-IB12.1)	IB12, Cluster Bay Power Planar	J02 and J47, I/O Planar	J07, System Planar		
Power Planar Cable (IB15) (R1-Tx-P3-IB15.1)	IB15, Cluster Bay Power Planar	J17, System Planar			
Service Processor Card Cable (R1-Tx-P2-X1.1)	IB17, Cluster Bay Power Planar	J50, Service Processor Card			
SCSI Drive Signal Cable (R1-Tx-P2-Z1.1)	J30, I/O Planar	CD-ROM, CD-ROM Drive	HDD1, SCSI Hard Drive		
CPU Card 1 Cable (R1-Tx-P1-C1.1)	IB13, Cluster Bay Power Planar	J3, 332MHz CPU Card 1			
CPU Card 2 Cable (R1-Tx-P1-C2.1)	IB14, Cluster Bay Power Planar	J4, 332MHz CPU Card 2			
Cluster Bay Power Planar to Docking Connector Cable (R1-Tx-N1.1)	CN161, Cluster Chassis Rear	IB01, IB02, and IB03, Cluster Bay Power Planar			
NVS Card Cable (Card 1 = R1-Tx-P1-M1.1) (Card 2 = R1-Tx-P1-M2.1)	IB19, Cluster Bay Power Planar	J20, NVS Memory Card 1	J20A, NVS Memory Card 2		
Cluster Operator Panel Cable (R1-Tx-P2-L1.1)	IB18, Cluster Bay Power Planar	J22A, I/O Planar	OP-PNL, Cluster Operator Panel		
Diskette Drive Signal Cable (R1-Tx-P2-D1.1)	J13, I/O Planar	FDD, Diskette Drive			
Cluster Drive Power Cable (R1-Tx-P3-IB16.1)	IB16, Cluster Bay Power Planar	J12, J15, J17, and J19, I/O Planar	J09, CD-ROM Drive	J10, SCSI Hard Drive	J11, Diskette Drive

Cluster Bay

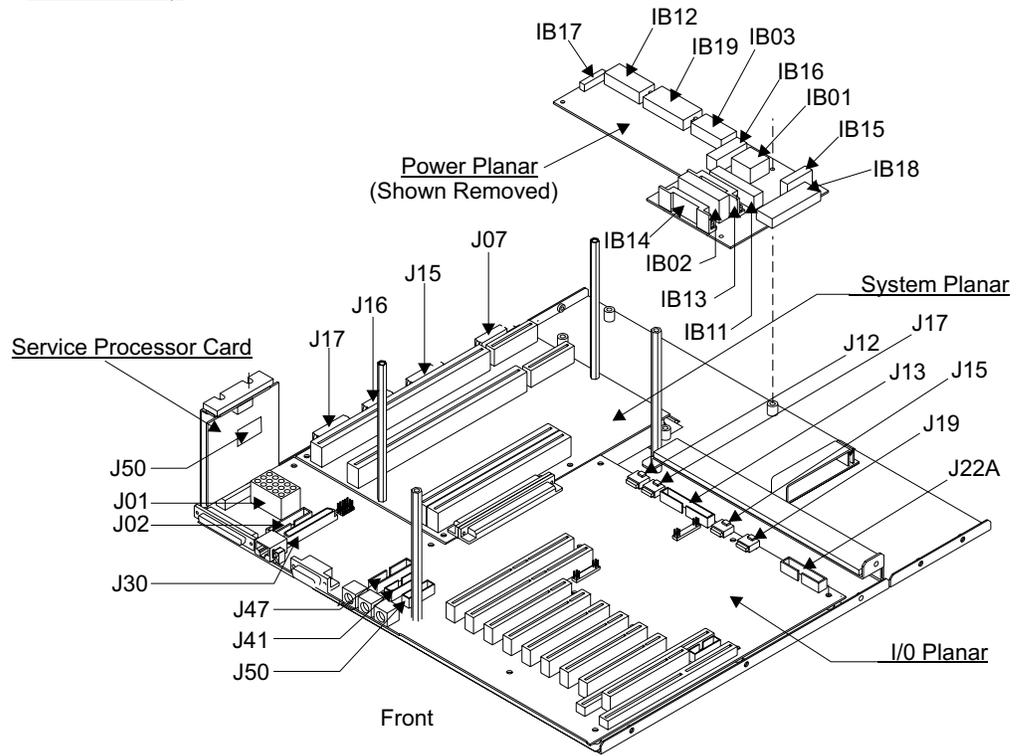


Figure 208. Cluster Bay Planar Connector Locations (S008649p)

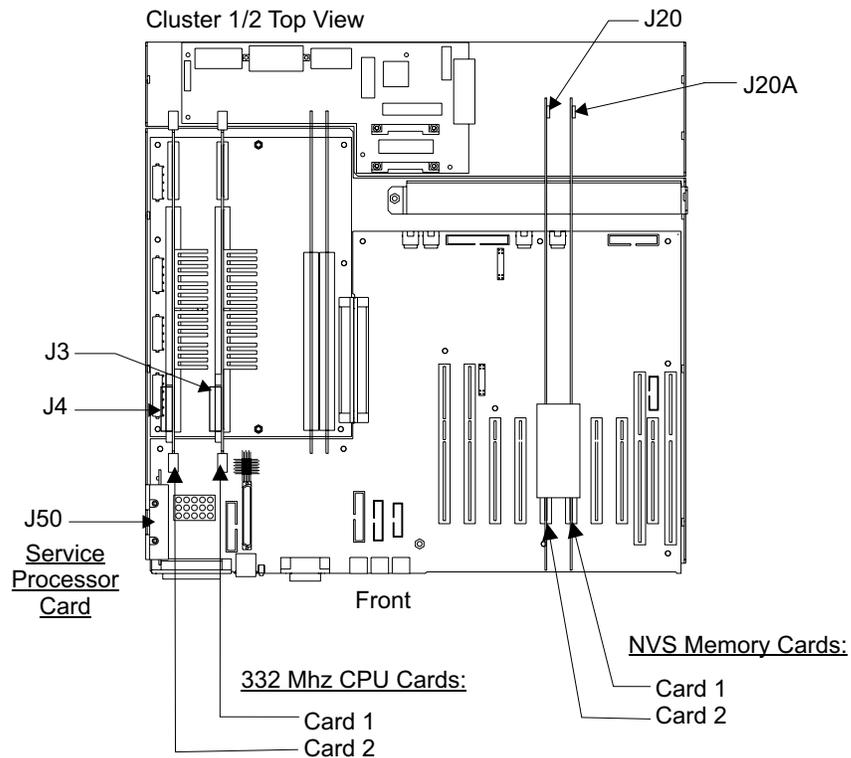


Figure 209. Cluster Bay Card Connector Locations (S008650n)

Cables, Cluster Bay

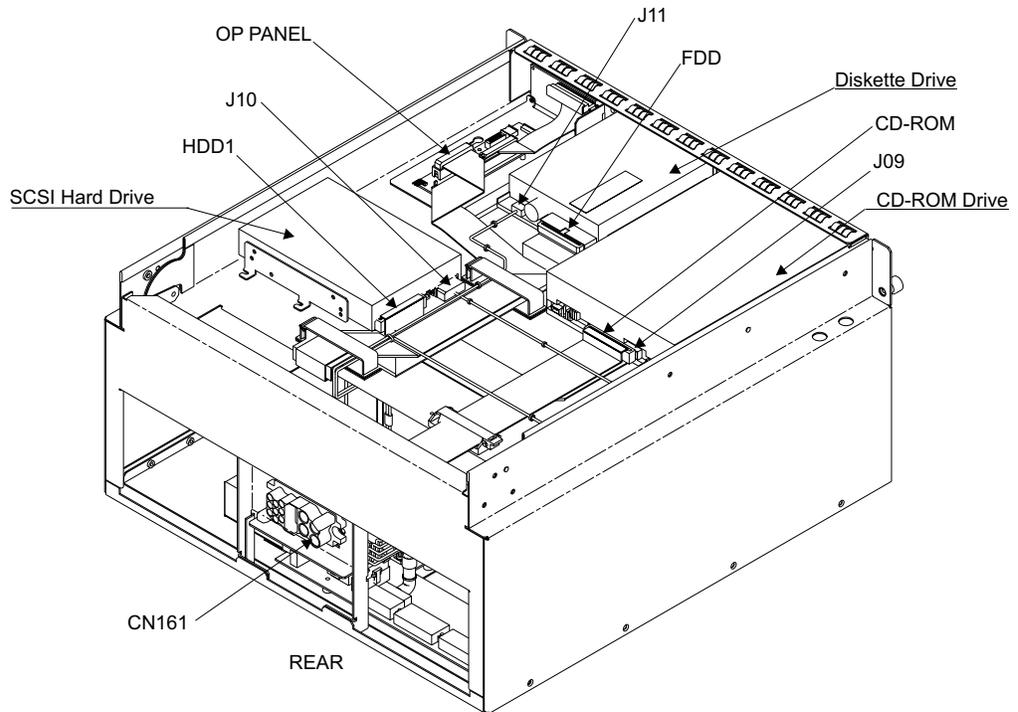


Figure 210. Cluster Bay Drive and Docking Connector Locations (S008648p)

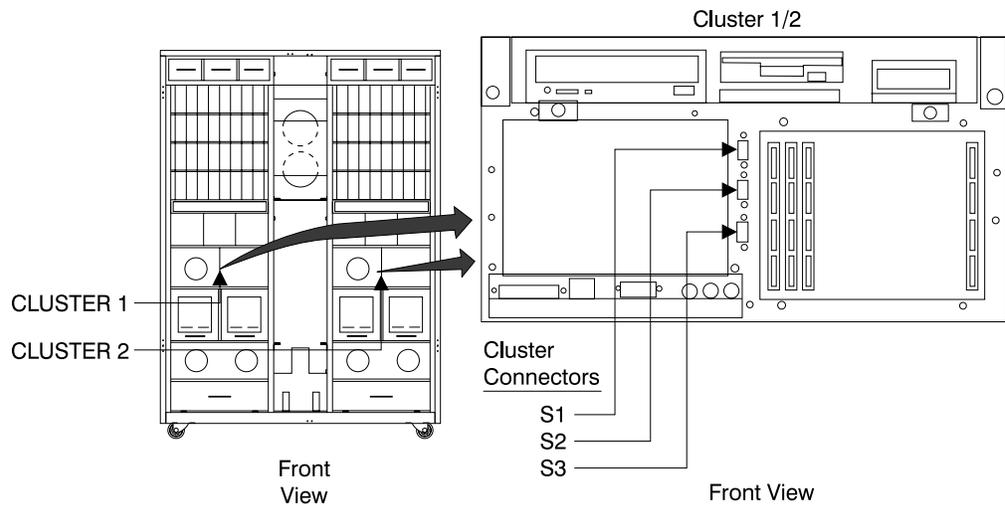


Figure 211. Cluster Bay Front Chassis Connector Locations (S008027m)

7. Use these drawings to locate all of the cables connectors and how the cable is routed and retained.
8. **Attention:** Carefully note the routing and retention of the cable you are removing, so you can position it correctly during the replacement.
Remove the cable from the cluster bay.
9. Replace parts in the reverse order.

Note: When you have completed this procedure, continue the repair by returning to the service guide or service terminal procedure that sent you here.

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Install

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Installing and Testing the 2105 Model Exx/Fxx Unit

These instructions describe:

- What to do before you install the 2105 Model Exx/Fxx rack.
- How to install the 2105 Model Exx/Fxx rack.
- How to power on the 2105 Model Exx/Fxx and test the installation.

Attention: The Diagnostic CD-ROMs are NOT to be used for diagnosing 2105 subsystem problems. Use the Diagnostic CD-ROM only at the direction of PE (product engineering) support.

- How to connect the 2105 Model Exx/Fxx to the host system.
- How to complete the 2105 Model Exx/Fxx installation.

These instructions assume that you have access to or have ordered:

- Preinstallation planning and subsystem communication configuration information from the Communication Resources Worksheets found in the *IBM Enterprise Storage Server Introduction and Planning Guide* book, form number GC26-7294.
- Logical configuration information from the Configuration Worksheets found in the *IBM Enterprise Storage Server Configuration Planner* book, form number GC26-7353.
- *ES Connection Link Fault Isolation*, SY22-9533 book, form number SY22-9533
- *Maintenance Information for S/390 Fiber Optic Links (ESCON, FICON, Coupling Links, and Open System Adapters)* book, form number SY27-2597.

Before You Install the 2105 Model Exx/Fxx Unit

This section describes the actions that should be done and safety items that should be considered before you start to install a 2105 Model Exx/Fxx.

- Verify the ship group is complete.
- Check that customer preparation is complete.
- Label and route cables.

Verify the Ship Group is Complete

Place a check mark next to each completed step.

- ___ 1. Remove the CE Unpacking Instructions from the CE envelope taped to the front of the bagged 2105 Model Exx/Fxx. Use the CE Unpacking Instructions to unpack the 2105 Model Exx/Fxx and prepare it for installation.
- ___ 2. Perform the safety inspection if the 2105 Model Exx/Fxx was previously installed and was not previously leased from IBM or maintained by IBM service support representatives. See "Safety Inspection" in chapter 12 of the *Enterprise Storage Server Service Guide, Volume 3*, to perform this inspection.
- ___ 3. Verify that all items in the ship group were received. See the parts list (B/M 09L5458) in the ship group box.
- ___ 4. Remove the *Customer Software Enclosed* envelope from the ship group box and give it to the customer. This envelope contains customer documents and the host attach CD-ROM.
- ___ 5. Verify that the cluster bay communication Ethernet (RJ45) cable, P/N 09L0294, is installed between the Ethernet 10BaseT connectors on cluster bay 1 and cluster bay 2 **1** [Figure 212].

Installing the 2105 Model Exx/Fxx

Attention: The cluster bay communication Ethernet (RJ45) cable must be installed, as described, before the installation of the 2105 Model Exx/Fxx can continue.

Note: This cable is installed on new 2105 Model Exx/Fxx subsystems shipped from IBM manufacturing. The cable may have been removed, and stored in the ship group, if the 2105 Model Exx/Fxx was previously installed at another location.

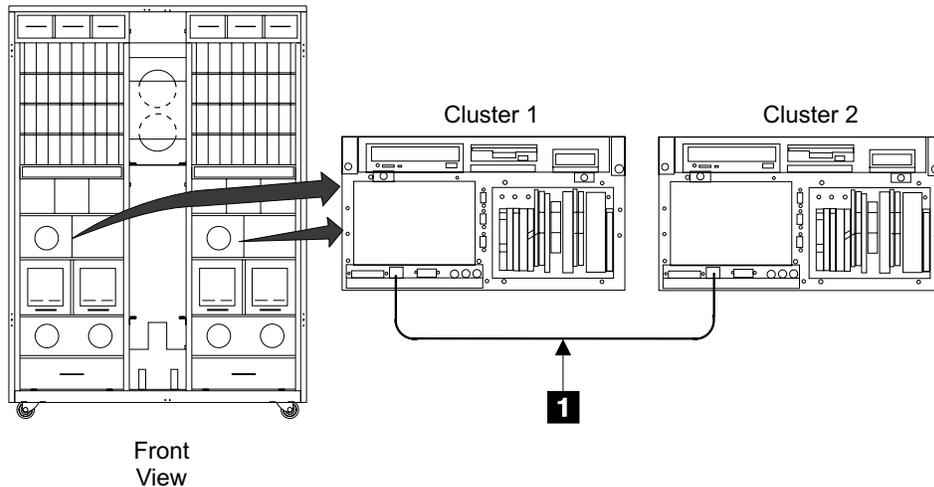


Figure 212. Cluster Bay Communications Cable Location (S007621m)

- ___ 6. Place the ship group parts list at the end of this manual for use during removal of the 2105 Model Exx/Fxx.
- ___ 7. Inspect the 2105 Model Exx/Fxx for any damage that might have occurred during shipping.
If you observe shipping damage or missing items, do not install the 2105 Model Exx/Fxx without IBM management approval. Report all observed damage immediately, following existing procedures.
- ___ 8. Continue with "Extraction Procedure".

LIC Feature Control Record Extraction

Determine if LIC Features have been ordered for this machine.

- ___ 1. Was the Machine Index Card provided in the CE Unpacking Instructions?
 - **Yes**, continue with the next step.
 - **No**, you will have to perform the Extraction Procedure to determine if LIC Features have been ordered for this machine. Continue with step 3.
- ___ 2. Are any LIC Feature codes (18xx) called-out on the Machine Index Card?
 - **Yes**, continue with the next step.
 - **No**, there are no LIC Features to install. Continue with "Checking the Customer Preparation" on page 206.
- ___ 3. You will have to perform the Extraction Procedure to determine if LIC Features have been ordered for this machine and, if needed, make a LIC Feature Control diskette. Continue with "Extraction Procedure"

Extraction Procedure

This procedure will guide you to determine if LIC Features have been ordered for this machine and, if needed, make a LIC Feature Control diskette.

Installing the 2105 Model Exx/Fxx

Note: The LIC Feature Control Records diskette will be used at a later time during installation configuration.

Requirements:

- PC with WEB Browser and diskette drive
- DOS formatted 1.44 MB, 3.5 inch diskette

Attention: the ESS diskette drive only reads 1.44 MB formatted diskettes that were formatted by a 1.44 MB drive.

Procedure:

- ___ 1. Bring up IBM ViewBlue with the following URL:
http://w3.viewblue.ibm.com
- ___ 2. At the IBM ViewBlue Information and Services Logon screen, do the following.
 - a. Select your Country
 - b. Enter your IBM employee Serial Number.
 - c. Click the **Logon** box
- ___ 3. If you get an informational screen, click on **Continue**.
- ___ 4. At the IBM Public Information and Services Main Menu, do the following.
 - a. Scroll down to **Technical**
 - b. Click **FCDB** - Feature Code Database
- ___ 5. At the Feature Code Database - Main Menu screen, click on **Extract Machine Data**.
- ___ 6. At the Feature Code Database - Select Machine screen, do the following:
 - a. Select your Machine Type/Model
 - b. Enter the two character Plant of Manufacture Code
 - 1) 13 = San Jose, USA
 - 2) 75 = Vac, Hungary
 - 3) 82 = Sumare, Brazil
 - 4) 97 = Fujisawa, Japan
 - c. Enter the five character Machine Serial Number
 - d. Click the **Submit** box

If a file name of **FEA#####.BIN** is displayed, a LIC Feature Control diskette is required.

Was file name **FEA#####.BIN** displayed?

- **Yes**, go to step 7.
 - **No**, continue with "Checking the Customer Preparation" on page 206.
- ___ 7. At the Feature Code Database - Download Control File screen, do the following:
 - a. Click on the Download Filename displayed in the format of **FEA#####.BIN**
 - b. At the Save as... pop up screen, do the following
 - 1) At the Save In folder, select **3.5 inch Floppy (A:)**
 - 2) Click the **Save** box
 - ___ 8. The file is now saved on the 3.5 inch DOS diskette. Close all browser windows.

Installing the 2105 Model Exx/Fxx

- ___ 9. Label the Diskette and save it for later use with Installation Configuration.
- ___ 10. Continue with "Checking the Customer Preparation".

Checking the Customer Preparation

- ___ 1. Ensure the customer has filled out the Communication Resources Worksheets and the Configuration Worksheets for the 2105 Model Exx/Fxx being installed. For the Communication Resources worksheets, refer to the *IBM Enterprise Storage Server Introduction and Planning Guide* book, form number GC26-7294. For the Configuration Worksheets, refer to the *IBM Enterprise Storage Server Configuration Planner* book, form number GC26-7353.

Note: The 2105 Model Exx/Fxx ship group contains additional copies of the SCSI host attachment installation code. This code comes on both diskettes and CD-ROM.

- ___ 2. Go to the "Pre-Installation Configuration Worksheets" on page 375 and fill in those worksheet fields that need to be entered by the service support representative.

Note: The Cluster Bay Expander Port Information fields will be filled out during the installation of the modem and modem expander.

Return here when the worksheets are filled out.

- ___ 3. Ensure the customer has installed the unique open system software required to support the 2105 Model Exx/Fxx rack being installed, refer to the *IBM Enterprise Storage Server Introduction and Planning Guide* book, form number GC26-7294.
- ___ 4. Ensure that the customer has the necessary support software:

Note: If the customer chooses not to connect the ESSNet to the customer network, they will need additional SNMP and E-mail host software to utilize these functions.

- SNMP
- E-mail

- ___ 5. Ensure the customer has two ac power supply cables for the 2105 Model Exx/Fxx from two separate power sources for maximum fault tolerance.

Notes:

- a. Operation with a single mainline power cable is not supported at installation.
 - b. The IBM 2105 Model Exx/Fxx is designed for connection to an IT power distribution system. An IT power distribution system is one where the neutral conductor *is isolated* from earth (ground) by an impedance with exposed conductive parts in the installation tied directly to earth. No service support representative action is needed, information is for compliance with international Electrotechnical Commission standard 950 for the safety of information technology equipment, and electrical business equipment.
- ___ 6. If the 2105 Model Exx/Fxx will be installed on a raised floor, ensure the customer has correct airflow for cooling.

Note: The 2105 Model Exx/Fxx rack cooling airflow comes in through the front and rear covers and leaves through the top and rear covers. The bottom of the 2105 Model Exx/Fxx is sealed.

Installing the 2105 Model Exx/Fxx

To correctly cool a 2105 Model Exx/Fxx, place two floor tiles that have holes for airflow, directly in the front and rear of the 2105 Model Exx/Fxx.

- ___ 7. The temperature operating environment requirements for 2105 are found in the *IBM Enterprise Storage Server Introduction and Planning Guide* book.
- ___ 8. Ensure that the customer has ordered and supplied the following:
 - SCSI host cables from the host to the host adapter.
 - ESCON host cables from the host to the host adapter.
 - Fibre host cables from the host to the host adapter.
 - An ethernet LAN signal cable (if used allows the customer to connect to the ESSNet hub).
 - A **functional** analog telephone line to the modem within 15 meters (50 feet) of the 2105 Model Exx/Fxx.
 - AC service to the modem and modem expander within 4.5 meters (15 feet) of the modem.

Note: The modem and modem expander are installed with the initial 2105 Model Exx/Fxx. They support the initial 2105 Model Exx/Fxx and the next six 2105 Model Exx/Fxxs via the modem expander. If an eighth 2105 Model Exx/Fxx is installed, a new modem and modem expander must be installed.

- AC service for the service terminal within 2.5 meters (8 feet) of the 2105 Model Exx/Fxx.
- AC service for the ESSNet hub, PC, and console within 2.5 meters (8 feet) of each unit.
- Continue with “Labeling and Routing the Cables for a 2105 Model Exx/Fxx Installation”.

Labeling and Routing the Cables for a 2105 Model Exx/Fxx Installation

Label and route cables from their source to where the 2105 Model Exx/Fxx will be positioned, using available customer-supplied labels and methods.

- ___ 1. Label the SCSI, ESCON, or Fibre host cables:

Attention: *Do not* connect any cables to the 2105 Model Exx/Fxx until you are instructed to do so.

Note: To allow correct connection and disconnection of external cables, cables should be labeled using the customer’s current cable-identification convention and with labels provided by your customer.

- Label the SCSI host cables from each customer host adapter. Route the cables (referenced in the Configuration Worksheets) to where the front of the 2105 Model Exx/Fxx will be.
 - Label the ESCON host cables from each customer host adapter. Route the cables (referenced in the Configuration Worksheets) to where the front of the 2105 Model Exx/Fxx will be.
 - Label the Fibre host cables from each customer host adapter. Route the cables (referenced in the Configuration Worksheets) to where the front of the 2105 Model Exx/Fxx will be.
- ___ 2. Label and route the customer provided Ethernet LAN cable to the ESSNet Hub location.

Note: The Ethernet LAN cable is not required if the customer chooses not to connect to the ESSNet.

Installing the 2105 Model Exx/Fxx

- ___ 3. Label and route the customer analog telephone line to be used later by the modem. Then route the utility power cord from the customers convenience outlet to the modem and modem expander.

Note: These cables are required only with the initial 2105 Model Exx/Fxx and every eighth 2105 Model Exx/Fxx after that. The customer must supply an AC convenience outlet that the modem and modem expander plug into.

Note: The modem expander must be located within 15 meters (50 feet) of all 2105 cluster bays that attach to it.

- ___ 4. Locate the utility power cord in the ship group. Route the cable from the customers AC convenience outlet to where the 2105 Model Exx/Fxx will be installed.

Note: The customer must supply an additional AC convenience outlet that the utility power cord plugs into. This is an additional requirement to that described in the note with step 3.

- ___ 5. Continue with "How to Install the 2105 Model Exx/Fxx Unit".

How to Install the 2105 Model Exx/Fxx Unit

This section describes positioning the 2105 Model Exx/Fxx rack and preparation for customer power checks.

- If this is a raised floor installation, position the 2105 Model Exx/Fxx for installation
- Lock casters

Position the 2105 Model Exx/Fxx Rack

If you have any questions about floor loading and service clearances of the ESS racks, review the *Site Requirements for the ESS* section in the *IBM Enterprise Storage Server Introduction and Planning Guide* book, form number GC26-7294.

CAUTION:

A fully configured unit in the crate can weigh up to 1500 kilograms (3305 pounds). Using less than three persons to move it can result in injury. (1060)

Note: This notice is translated into selected languages. See "Translation of Cautions and Danger Notices" in chapter 11 of the *Enterprise Storage Server Service Guide, Volume 3*.

- ___ 1. Ensure that the new location meets the necessary service clearances for the 2105 Model Exx/Fxx and any attached racks, refer to the *Site Requirements for the ESS* section in *IBM Enterprise Storage Server Introduction and Planning Guide* book.
- ___ 2. On raised floors, position the floor tiles with holes for cable entry to the front of the 2105 Model Exx/Fxx, as shown in the *IBM Enterprise Storage Server Introduction and Planning Guide* book, form number GC26-7294.

Attention: The weight of the 2105 Model Exx/Fxx can be as high as 1204 kilograms (2650 pounds) per rack. The weight of this rack should be reviewed with the customer to ensure that their raised floors have adequate support.

- ___ 3. Move the 2105 Model Exx/Fxx rack to its permanent location with the cutout floor tiles beneath the front of the 2105 Model Exx/Fxx. Position the cutouts for access to the left, center, and right tailgate areas.

Installing the 2105 Model Exx/Fxx

- ___ 4. Install the wedge locks **1** [Figure 213] (located in the ship group) on all four casters.

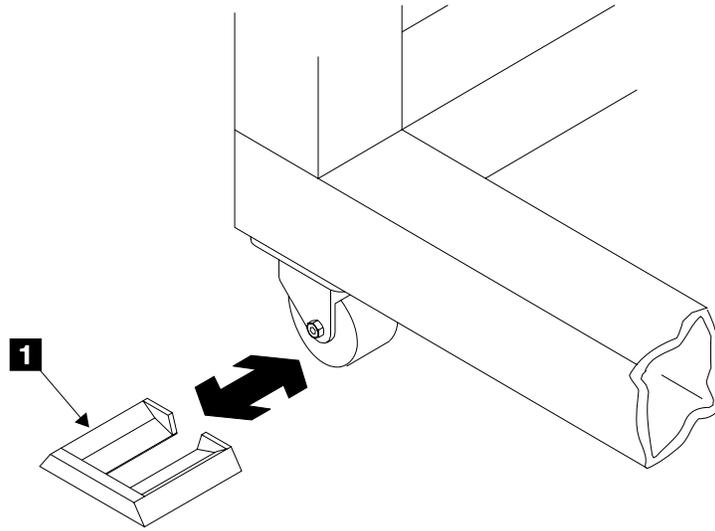


Figure 213. Caster Wedge Locks (S008406m)

- ___ 5. Install the decorative top hat onto the top of the 2105 Model Exx/Fxx:
 - a. Lift the top hat onto the top of the 2105 Model Exx/Fxx, position it with the side opening **2** [Figure 214] to the front of the 2105.
 - b. Open the front and rear covers of the 2105 Model Exx/Fxx.
 - c. Install the six screws (three on each side) **3** up through the holes in the frame **4** into the threaded holes in the top hat.

Installing the 2105 Model Exx/Fxx

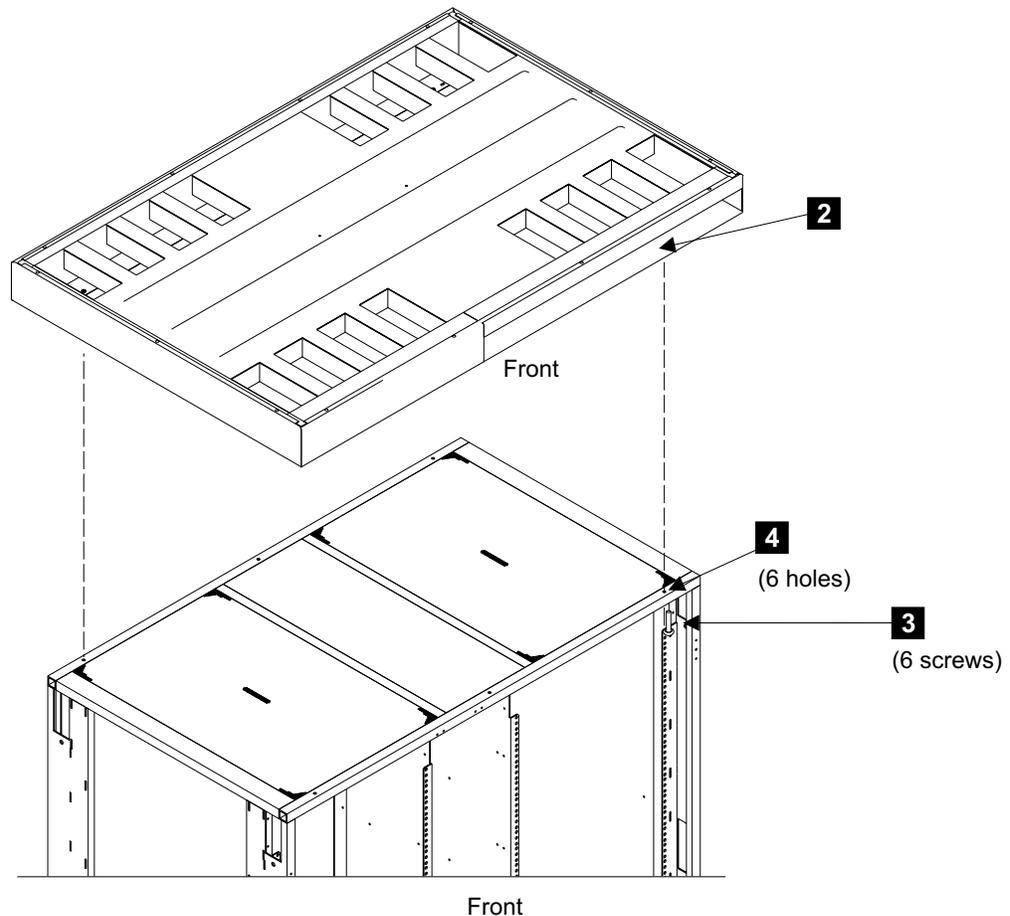


Figure 214. Top Hat Installation (S008583p)

- ___ 6. Unroll the mainline power cables that shipped with the ship group.
- ___ 7. Verify that all front and rear internal power and signal cables are connected and not damaged.

Attention: Do not connect any external cables to the 2105 Model Exx/Fxx until you are instructed to do so.

- ___ 8. Go to the front of the 2105 Model Exx/Fxx. Remove the two tailgate bar mounting screws **6** [Figure 215] then remove the bar **5**.
- ___ 9. Feed both mainline power cables down through the center of the 2105 Model Exx/Fxx **5** [Figure 215] to the customers power connectors.

CAUTION:

Do not connect the mainline power cables until instructed to do so. (1053)

Note: This notice is translated into selected languages. See "Translation of Cautions and Danger Notices" in chapter 11 of the *Enterprise Storage Server Service Guide, Volume 3*.

- **Raised floor installations**, route the mainline power cables under the floor and set them next to the customers power connectors.
- **Non-raised floor installations** route the mainline power cables to the rear of the 2105. Then route both mainline power cables and set them next to the customers power connectors.

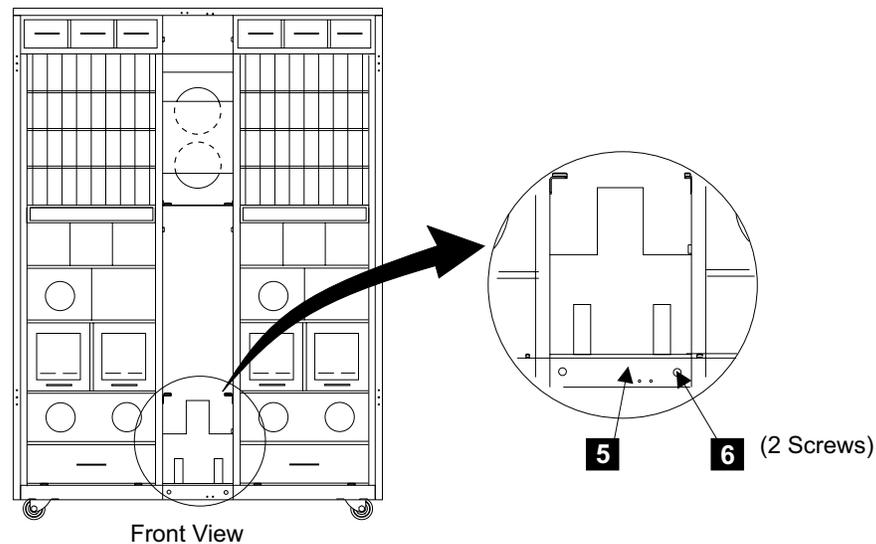


Figure 215. 2105 Model Exx/Fxx Mainline Power Cable Installation (S008351m)

___ 10. Continue with “Checking the Customer’s Power”.

Checking the Customer’s Power

DANGER

Lethal voltages are present in this area of the machine. (1007)

Note: This notice is translated into selected languages. See “Translation of Cautions and Danger Notices” in chapter 11 of the *Enterprise Storage Server Service Guide, Volume 3*.

This section describes the power and safety checks that must be done before you power on the 2105 Model Exx/Fxx.

- Conduct safety power checks.
- Complete AC input power checks.

The fault-tolerant system on the 2105 Model Exx/Fxx has two power systems. If one power system fails, the other will supply all required power. You will perform power checks, cabling, and preparation on power system 1 *and* on power system 2.

Always perform power safety checks with the recommended analog meter. Do not use a digital meter when you perform power checks. A digital meter is sensitive to external electrical currents on the low-range scale.

You will need these tools to perform the power safety checks:

- Analog multimeter (P/N 9900167) or a substitute meter approved by IBM for this check.
- High voltage test probe tips (or equivalent):
 - Red (P/N 1749249)
 - Black (P/N 1749250)

Installing the 2105 Model Exx/Fxx

Check the Ground Continuity

Attention: Use an IBM-approved analog multimeter. Do not use a digital meter.

Attention: The 2105 Model Exx/Fxx features two mainline power cables. Complete all steps of this section for *both* power sources and receptacles and for *both* power plugs, mainline power cables, and primary power supplies (PPS).

1. Switch off each 2105 Model Exx/Fxx customer circuit breaker that supplies AC voltage to the mainline power cables.

CAUTION:

Do not connect the mainline power cables until instructed to do so. (1053)

Note: This notice is translated into selected languages. See "Translation of Cautions and Danger Notices" in chapter 11 of the *Enterprise Storage Server Service Guide, Volume 3*.

2. **Attention:** Attach a "Do Not Operate" tag (S229-0237) and the safety lockout padlock to each 2105 Model Exx/Fxx customer circuit breaker. Refer to the *Electrical Safety for IBM Customer Engineers* book.
3. Ensure the system power MAIN LINE circuit breaker (CB00) **1** [Figure 216] on the rear of both primary power supplies is set to Off (down).

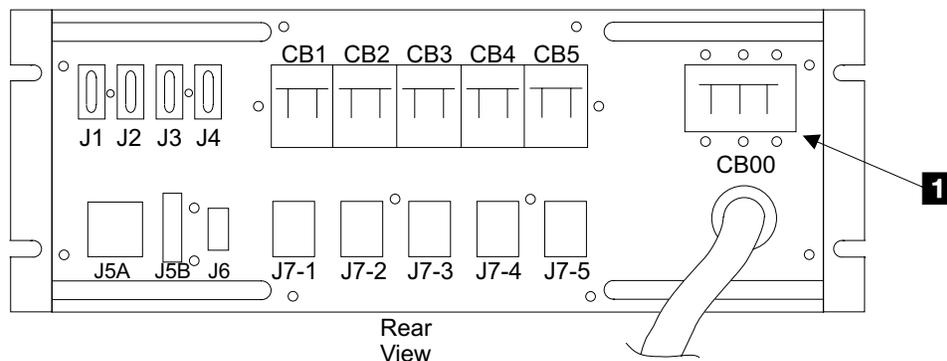


Figure 216. Primary Power Supply Mainline Circuit Breaker (S008099I)

4. Go to the front of the 2105 Model Exx/Fxx. Connect each mainline power cable to its inlet on the line cord bracket:

Note: The mainline power cables are connected to the line cord bracket next to the PPS they feed.

- PPS 1, **2** [Figure 217]
- PPS 2, **3** [Figure 217]

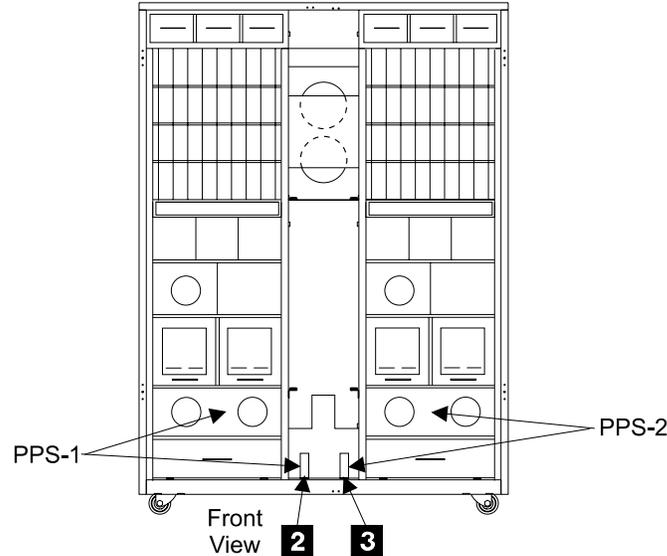


Figure 217. Line Cord Bracket Connectors (S008103m)

- ___ 5. Locate the customer end of the mainline power cables. Determine if the customer end of the mainline power cables are for plug in or wired installations:
 - **Plug In:** The cable has a plug at both ends.
 - **Wired:** The cable has a plug at one end and bare wires at the other end.
- ___ 6. Prepare the multimeter to measure 0.1 ohm or less resistance. For connector information, refer to figure Figure 218.
 - **For the mainline power cable (plug in):** Place one lead of the multimeter on each ground pin of the male plug on the mainline power cable. Place the other lead on the bare metal of each primary power supply enclosure.
 - If there is 0.1 ohm or less resistance, go to step 9 on page 214.
 - If there is more than 0.1 ohm resistance, go to “Repair the Ground Continuity” on page 215.

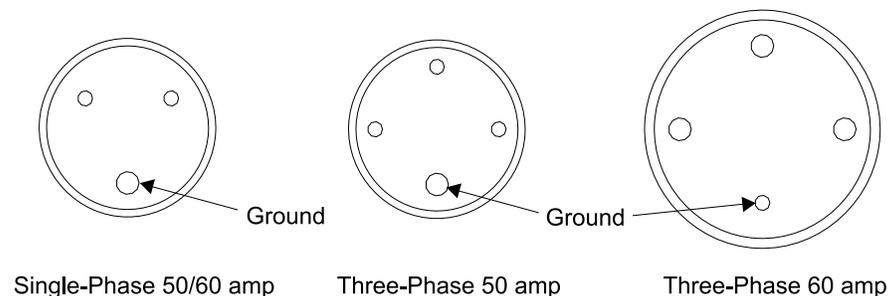


Figure 218. Male Plug on the Mainline Power Cable (S008045I)

- **For the mainline power cable (wired):** Place one lead of the multimeter on the green and yellow wire the customer end of each mainline power cable. Place the other lead on the bare metal of each primary power supply enclosure.

Installing the 2105 Model Exx/Fxx

- If there is 0.1 ohm or less resistance, continue with step 7 .
 - there is more than 0.1 ohm resistance, go to “Repair the Ground Continuity” on page 215.
- ___ 7. On wired machines only, disconnect each wired mainline power cable **4** [Figure 219] from the line cord bracket.

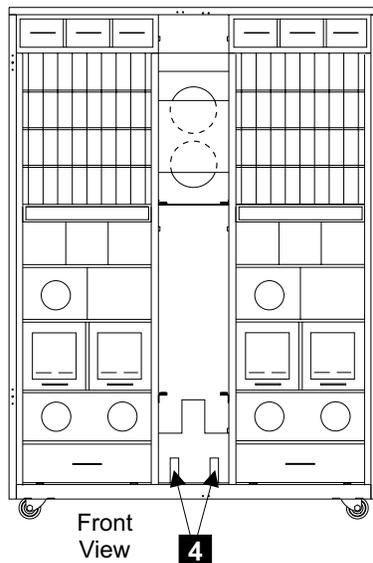


Figure 219. Line Cord Bracket Connectors (S007631m)

- ___ 8. On wired machines only. Instruct the customer to call a licensed electrician to connect each wired mainline power cable to the customer mainline power source.
- Attention:** For EMEA installations, review the information in “EMEA Electrician Information”, then return here and continue.
- ___ 9. Continue with “Check the Customer’s Circuit Breaker with the Power Off” on page 216.

EMEA Electrician Information

THE MAINLINE POWER CORD OF THIS MACHINE MUST BE CONNECTED TO THE CUSTOMERS MAINLINE POWER SOURCE BY A LICENSED ELECTRICIAN.

THE MAINLINE POWER CABLE CANNOT BE MODIFIED IN ANY WAY.

- FOR 3 PHASE MACHINES:

This machine must be connected to a 3 phase AC power net.

The mainline power cable is a four conductor cable with the following color code:

- L1 (phase 1) = black
- L2 (phase 2) = blue
- L3 (phase 3) = brown
- PE (ground) = green/yellow

The connection to the AC power net must be made without neutral, the blue wire must be used as a phase.

- FOR 1 PHASE MACHINES:

Installing the 2105 Model Exx/Fxx

The mainline power cable is a three conductor cable with the following color code:

- L (phase) = brown
- N (neutral) = blue
- PE (ground) = green/yellow

Repair the Ground Continuity

If the previous procedure measured more than 0.1 ohm resistance between the ground pin of the mainline power cable and the primary power supply enclosure. Follow these steps to check the ground continuity.

1. Disconnect the problem mainline power cable **1** [Figure 220] or **2** from the line cord bracket.

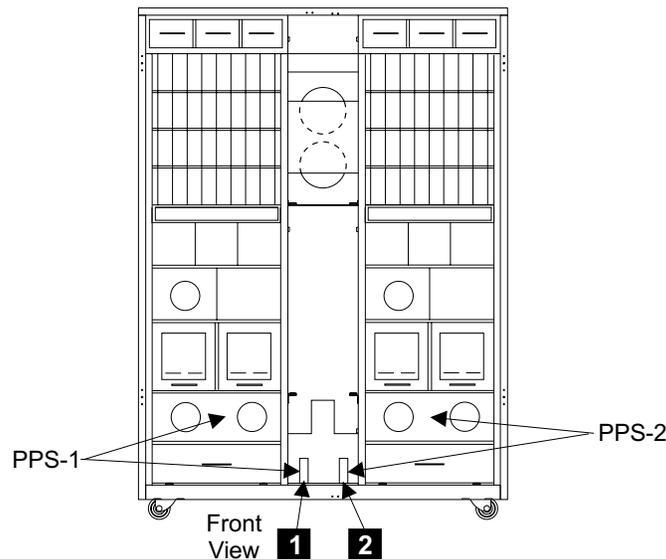


Figure 220. Line Cord Bracket Connectors (S008605m)

2. Prepare the multimeter to measure 0.1 ohm or less resistance. For connector information, refer to figure Figure 222 on page 216.
 - **For the mainline power cable (plug in):** Place one lead of the multimeter on the ground pin of the male plug on the mainline power cable.

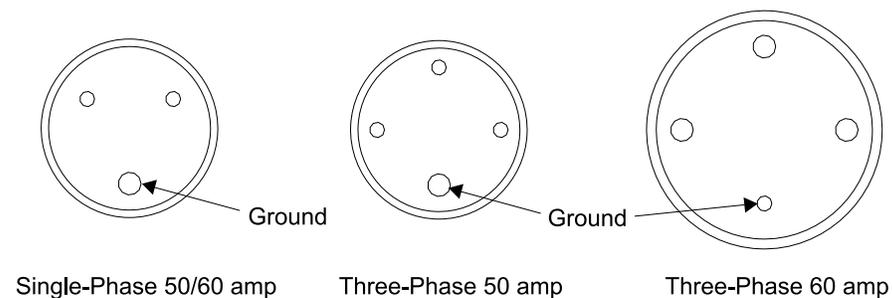


Figure 221. Male Plug on the Mainline Power Cable (S008045I)

- **For the mainline power cable (wired):** Place one lead of the multimeter on the green and yellow wire at the customer end of the mainline power cable.

Installing the 2105 Model Exx/Fxx

3. Place the other lead on the ground pin of the female connector on the mainline power cable.

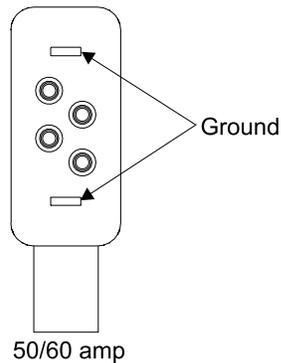


Figure 222. Female Connector on the Mainline Power Cable (S008046I)

- If there is 0.1 ohm or less resistance, the mainline power cable is good but the primary power supply enclosure is not grounded. Perform steps 7 through 9.
 - If there is more than 0.1 ohm resistance, the mainline power cable ground lead is open or has resistance. Perform steps 4 through 6.
4. The ground lead on the primary power supply is open or has resistance. Replace the mainline power cable. Go to “Primary Power Supply Removal and Replacement, 2105 Model Exx/Fxx and Expansion Enclosure” on page 58, and then return here to continue.
 5. Insert the female connector on the new mainline power cable into the inlet on the line cord bracket.
 6. Return to step 6 on page 213 to verify that ground continuity now measures 0.1 ohm or less resistance on the replaced cable.
 7. The primary power supply enclosure is not grounded, replace the primary power supply. Go to “Primary Power Supply Removal and Replacement, 2105 Model Exx/Fxx and Expansion Enclosure” on page 58, and then return here to continue.
 8. Insert the female connector on the mainline power cable into the inlet on the line cord bracket.
 9. Return to step 6 on page 213 to verify that ground continuity now measures 0.1 ohm or less resistance.

Check the Customer’s Circuit Breaker with the Power Off

This procedure verifies that *both* customer outlet receptacles are grounded correctly and that there is no voltage present at either outlet when *both* outlet circuit breakers are off.

1. Prepare the multimeter to measure 1.0 V ac or less. For connector information, refer to figures Figure 223 on page 217.

DANGER

Do not touch the pins of either mainline power cable plugs with anything except high voltage probes until you complete this step. (1004)

Note: This notice is translated into selected languages. See "Translation of Cautions and Danger Notices" in chapter 11 of the *Enterprise Storage Server Service Guide, Volume 3*.

- **For the mainline power cable (plug in):** Measure the voltage at the customer's ac power outlet between the ground pin and the building ground.

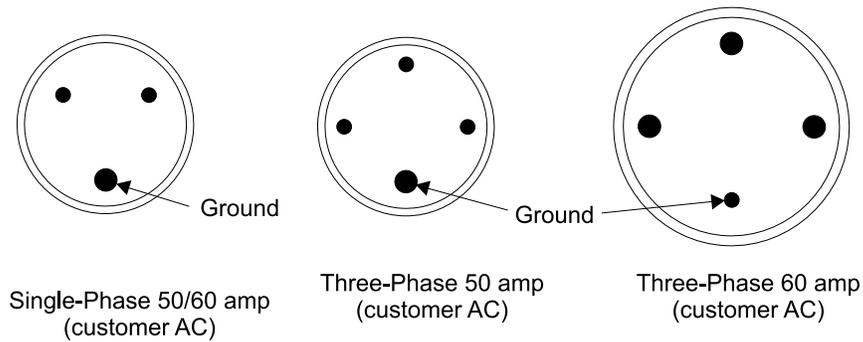


Figure 223. Female Connector on the Mainline Power Cable and Customer AC (S008047I)

- **For the mainline power cable (wired):** Measure the voltage between the female ground pin on each mainline power cable and the building ground.

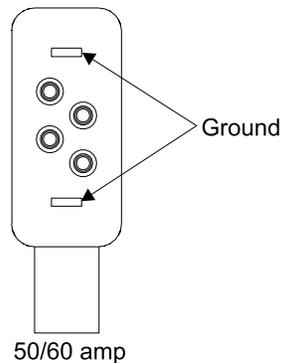


Figure 224. Female Connector on the Mainline Power Cable (S008046I)

- If the measured voltage is less than 1.0 V ac, go to step 3 on page 218.
 - If the measured voltage is 1.0 V ac or greater, continue with step 2.
- ___ 2. Voltage is present at a customer outlet with both outlet circuit breakers off.

Installing the 2105 Model Exx/Fxx

DANGER

Inform the customer that, even though the circuit breaker is off, voltage higher than 1.0 V ac is measured at the failing customer voltage outlet pins.

Do not continue until the voltage is less than 1.0 V ac. (1003)

Note: This notice is translated into selected languages. See "Translation of Cautions and Danger Notices" in chapter 11 of the *Enterprise Storage Server Service Guide, Volume 3*.

- **For the mainline power cable (plug in):** Inform the customer that voltage higher than 1.0 V ac is measured at the ground pin of the failing customer voltage outlet.

Do not continue until the voltage is less than 1.0 V ac.

- **For the mainline power cable (wired):** Inform the customer that voltage higher than 1.0 V ac is measured at the ground pin of the failing wired ac mainline power cable.

Do not continue until the voltage is less than 1.0 V ac.

3. Prepare the multimeter to measure 0.1 ohm or less of resistance.

- **For the mainline power cable (plug in):** Measure the resistance between the customer ac power outlet ground pin on each mainline power cable and the building ground. A reading of 0.1 ohm or less shows a safe, continuous grounding conductor.

- **For the mainline power cable (wired):** Measure the resistance between the female connector ground pin and the building ground. A reading of 0.1 ohm or less shows a safe, continuous grounding conductor.

- If the measured resistance at the ground pin is 0.1 ohm or less, continue with "Check the Single- or Three-Phase ac Power Cable or Outlet".

- If the measured resistance is more than 0.1 ohm on the connector, inform the customer. Do not continue until the resistance is 0.1 ohm or less.

Check the Single- or Three-Phase ac Power Cable or Outlet

1. Prepare the multimeter to measure 1.0 V ac or less.

- **For the mainline power cable (plug in):** Measure ac voltages at the customer's ac power outlet (female). c

- **For the mainline power cable (wired):** Measure ac voltages at the female connector on each mainline power cable.

- For single-phase AC see Table 5 and Figure 226 on page 219.

- For three-phase AC see Table 6 on page 219 and Figure 226 on page 219.

Table 5. Measuring Points for Single Phase ac Voltages

Phase-to-phase	Phase-to-ground
V ac between A and B	V ac between A and ground
	V ac between B and ground

Table 6. Measuring Points for Three Phase ac Voltages

Phase-to-phase	Phase-to-ground
V ac between A and B	V ac between A and ground
V ac between B and C	V ac between B and ground
V ac between A and C	V ac between C and ground

- If all measured voltages (phase-to-phase and phase-to-ground) at the voltage pins on the female connector or at the customer’s ac power outlet (female) are less than 1.0 V ac, continue with “Check the Customer’s Circuit Breaker with the Power On”.
 - If any measured voltage is 1.0 V ac or greater, inform the customer that, even though the circuit breaker is off, voltage higher than 1.0 V ac is measured at the failing wired ac mainline power cable voltage pins or the failing customer voltage outlet pins.
- Do not continue until the voltage is less than 1.0 V ac.

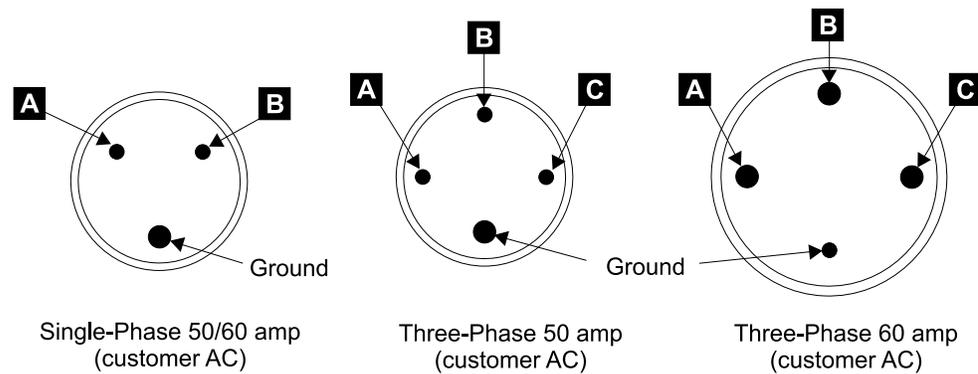


Figure 225. Single Phase Female Connector on the Mainline Power Cable and Customer AC (S008048I)

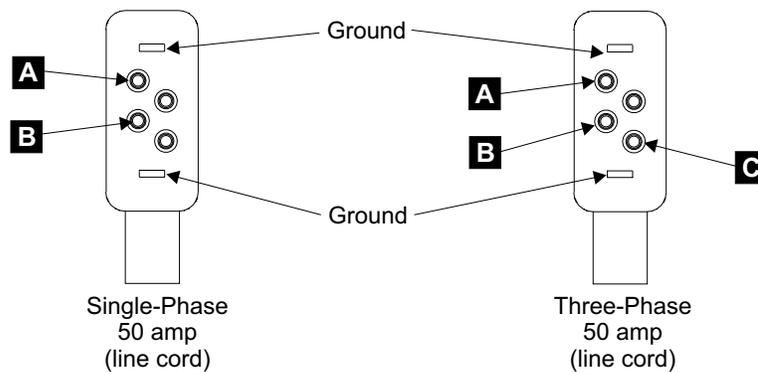


Figure 226. Female Connector on the Mainline Power Cable (S008049I)

___ 2. Continue with “Check the Customer’s Circuit Breaker with the Power On”.

Check the Customer’s Circuit Breaker with the Power On

This procedure verifies that *both* customer outlet receptacles are grounded correctly and that the correct voltages are present at *both* outlets when the outlet circuit breakers are on.

Installing the 2105 Model Exx/Fxx

Always perform power checks with the recommended analog meter. Do not use a digital meter.

- ___ 1. Remove the “Do Not Operate” tag and the lockout padlock from each customer mainline ac voltage circuit breaker.
- ___ 2. Switch on each customer circuit breaker to supply mainline ac voltage to the 2105 Model Exx/Fxx.
 - For **plug** in mainline power cables, go to go to step 4 on page 221.
 - For **wired** mainline power cables, go to step 3.
- ___ 3. Prepare the multimeter to read line voltage AC. For connector information, refer to figure Figure 227 on page 221.

DANGER

Dangerous voltages may be present. Do not touch the internal parts (pins and connectors) of the mainline power cable plugs. (1006)

Note: This notice is translated into selected languages. See “Translation of Cautions and Danger Notices” in chapter 11 of the *Enterprise Storage Server Service Guide, Volume 3*.

For the mainline power cable (wired): Measure the ac voltage at the voltage pins of each female connector on both mainline power cables when both 2105 Model Exx/Fxx customer circuit breakers are on.

- For single-phase AC see Table 7 and Figure 227 on page 221 .
- For three-phase AC see Table 8 and Figure 227 on page 221.

Record the measured ac voltages in step 5 on page 222 then continue from there.

Table 7. Measuring Points for Single Phase ac Voltages

Phase-to-phase	Phase-to-ground
V ac between A and B	V ac between A and ground
	V ac between B and ground

Table 8. Measuring Points for Three Phase ac Voltages

Phase-to-phase	Phase-to-ground
V ac between A and B	V ac between A and ground
V ac between B and C	V ac between B and ground
V ac between A and C	V ac between C and ground

Installing the 2105 Model Exx/Fxx

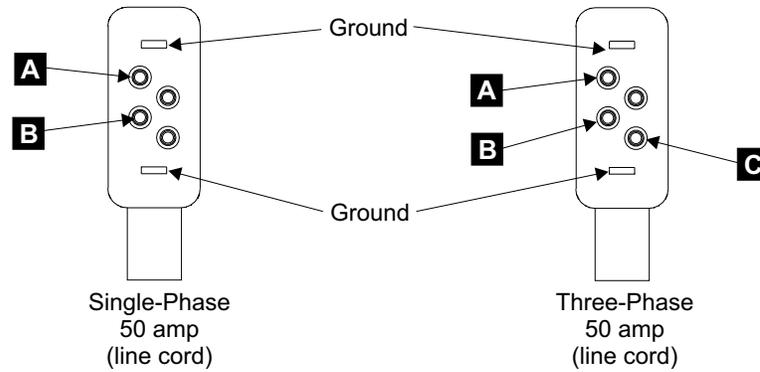


Figure 227. Female Connector on the Mainline Power Cable (S008049I)

4. Prepare the multimeter to read line voltage AC. For connector information, refer to figures Figure 228 on page 222.

DANGER

Dangerous voltages may be present. Do not touch the internal parts (pins and connectors) of either customer voltage outlet. (1005)

Note: This notice is translated into selected languages. See "Translation of Cautions and Danger Notices" in chapter 11 of the *Enterprise Storage Server Service Guide, Volume 3*.

For the mainline power cable (plug in): Measure the ac voltage at the voltage pins of each customer's ac power outlet when both 2105 Model Exx/Fxx customer circuit breakers are on.

- For single-phase AC see Table 9 and Figure 228 on page 222.
- For three-phase AC see Table 10 and Figure 228 on page 222.

Table 9. Measuring Points for Single Phase ac Voltages

Phase-to-phase	Phase-to-ground
V ac between A and B	V ac between A and ground
	V ac between B and ground

Table 10. Measuring Points for Three Phase ac Voltages

Phase-to-phase	Phase-to-ground
V ac between A and B	V ac between A and ground
V ac between B and C	V ac between B and ground
V ac between A and C	V ac between C and ground

Record the measured ac voltages in step 5 on page 222 then continue from there.

Installing the 2105 Model Exx/Fxx

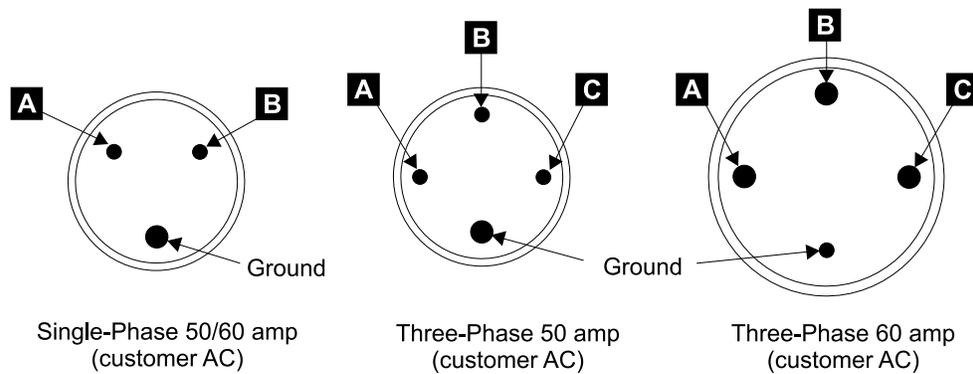


Figure 228. Single Phase Female Connector on the Mainline Power Cable and Customer AC (S008048I)

- ___ 5. Record the voltages measured:
 - For single-phase voltage, record the voltages in Table 11.
 - For three-phase voltage, record the voltages in Table 12.

Table 11. Single-Phase ac Line Voltages

Measure the ac Voltages	Power Outlet Voltage Connector 1 (PPS-1)	Power Outlet Voltage Connector 2 (PPS-2)
Between A and B		

Table 12. Three-Phase ac Line Voltages

Measure the ac Voltages	Power Outlet Voltage Connector 1 (PPS-1)	Power Outlet Voltage Connector 2 (PPS-2)
Between A and B		
Between B and C		
Between A and C		

- ___ 6. Continue with 7.
- ___ 7. Verify AC input voltages from Table 11 or Table 12 are correct.

Locate the 2105 information label on the top corner of the right rear cover. Verify that the AC input voltage just measured matches the machine input voltage information on this label.

Does the voltage measured match the voltage on the 2105 information label?

 - **Yes, continue with step 8.**
 - **No, inform the customer if the voltage is outside this range.**
- ___ 8. Switch **OFF** each 2105 Model Exx/Fxx customer circuit breaker that supplies AC voltage to the mainline power cables.
- ___ 9. **Attention:** Attach a “Do Not Operate” tag (S229-0237) and the safety lockout padlock to each 2105 Model Exx/Fxx customer circuit breaker. Refer to the *Electrical Safety for IBM Customer Engineers* book.
- ___ 10. Connect the mainline power cables:

Note: Determine if the customer will be providing an UPS (uninterruptable power system) and how many UPS connections (one or two) will be available for this frame:

Installing the 2105 Model Exx/Fxx

- *If only one UPS connection is available for this frame, ensure the UPS is connected to mainline power cable 1. The 390 V batteries are only charged by the primary power supply attached to mainline power cable 1.*
- *If two UPS connections are available for this frame, connect each UPS to a mainline power cable (1 or 2).*
- **For the mainline power cable (plug in):** Connect each plug in mainline power cable to each customer ac power outlet.
- **For the mainline power cable (wired):** Connect each wired mainline power cable to each connector on the line cord bracket.

Note: The mainline power cables are connected to the line cord bracket next to the PPS they feed.

- PPS 1, **1** [Figure 229]
- PPS 2, **2** [Figure 229]

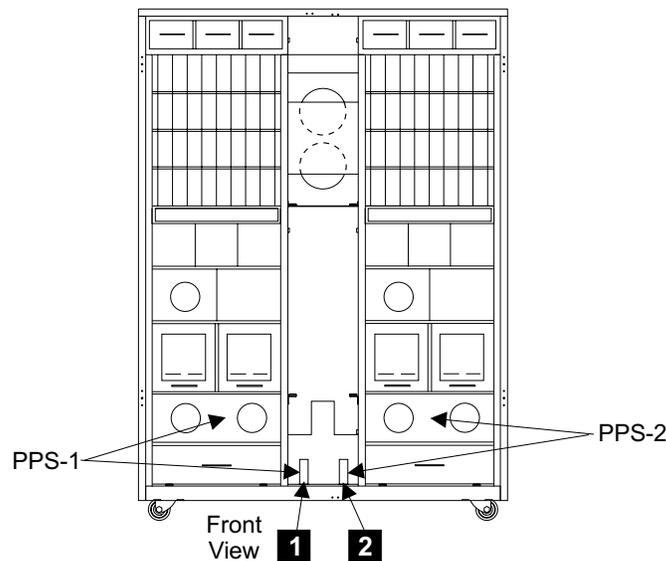


Figure 229. Line Cord Bracket Connectors (S008605m)

- ___ 11. Reinstall the frame tailgate bar (center) removed earlier, see **5** [Figure 215].
- ___ 12. Are you installing a 2105 Model E20/F20 and 2105 Expansion Enclosure at the same time?
 - **Yes**, go to “Installing and Testing the 2105 Expansion Enclosure” on page 269
 - **No**, continue with “Checking the 2105 Model Exx/Fxx Switch Settings”.

Checking the 2105 Model Exx/Fxx Switch Settings

- ___ 1. Go to the front of the 2105 Model Exx/Fxx. Set the 2105 Model Exx/Fxx rack operator panel switches [Figure 230] to the positions shown in Table 13 on page 224.

Installing the 2105 Model Exx/Fxx

Table 13. 2105 Model Exx/Fxx Rack Operator Panel Switches

Switch Name	Position
Unit Emergency	Off (down)
UEPO Local/Remote Switch (inside door)	Push to the Left (Local)

Note: To access the UEPO Local/Remote switch, you will need to loosen the single screw on the left side of the operator panel and swing the operator panel out. Pull the Local/Remote switch out before changing its position.

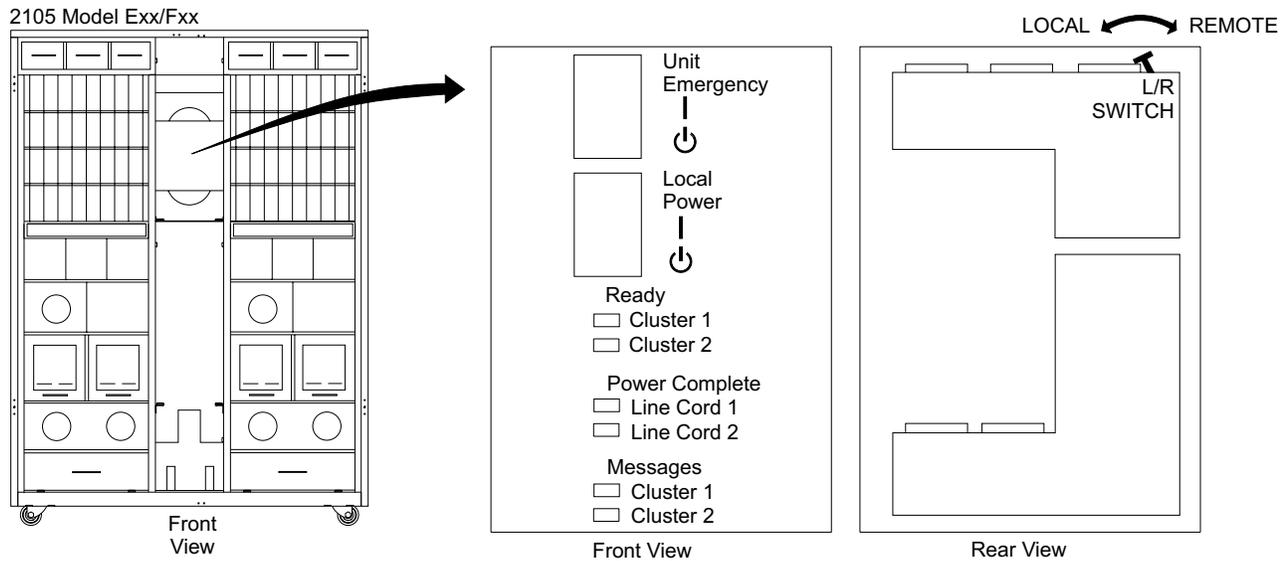


Figure 230. 2105 Model Exx/Fxx Operator Panel Locations (S008811m)

- 2. Go to the rear of the 2105 Model Exx/Fxx. Ensure that the power switches on all six electronics cage power supplies **2** [Figure 231] and **3** are set to On.
- 3. Ensure that the power switches on all of the installed storage cage power supplies **1** [Figure 231] are set to On.

Installing the 2105 Model Exx/Fxx

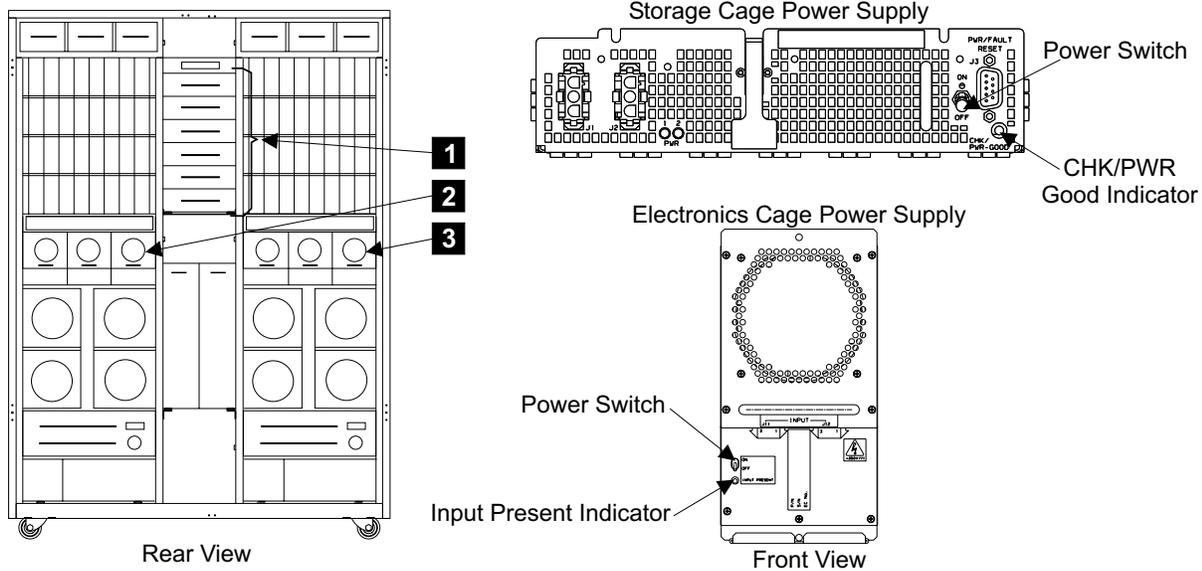


Figure 231. Electronics and Storage Cage Power Supply Switches (S007637m)

- ___ 4. Ensure that the five circuit breakers (CB01 to CB05) on each primary power supply **4** [Figure 232] are set to On (up).
- ___ 5. The main circuit breakers **5** [Figure 232] on each primary power supply should be set to Off (down).

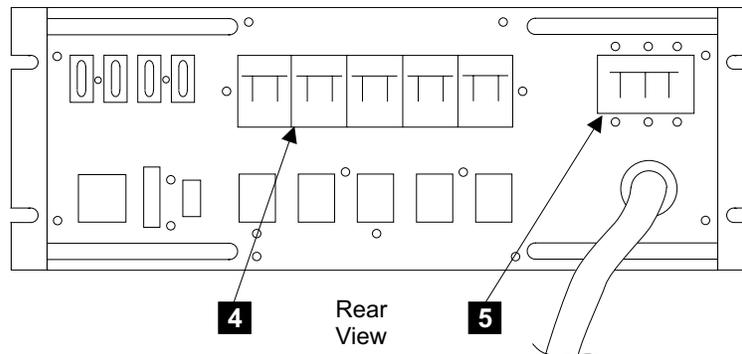


Figure 232. Primary Power Supply Circuit Breaker Locations (S007627I)

- ___ 6. Set the Power Select switch **6** [Figure 233] and **7** on each RPC card to the Local position (down).
- ___ 7. Verify that the address switches on both RPC cards are set as follows:
 - Cluster Bay 1, RPC-1 **9** [Figure 233]
 - Switch 1 = On (push switch to right →)
 - Switch 2 = Off (push switch to left ←)
 - Switch 3: Check with the customer to see if they will be using the remote power control feature.
 - With remote power feature installed, switch 3 = On (push switch to right →)
 - Without remote power feature installed, switch 3 = Off (push switch to left ←)
 - Switch 4 = Off (push switch to left ←)
 - Cluster Bay 2, RPC-2 **8** [Figure 233]

Installing the 2105 Model Exx/Fxx

- Switch 1 = Off (push switch to left ←)
- Switch 2 = On (push switch to right →)
- Switch 3: Check with the customer to see if they will be using the remote power control feature.
 - With remote power feature installed, switch 3 = On (push switch to right →)
 - Without remote power feature installed, switch 3 = Off (push switch to left ←)
- Switch 4 = Off (push switch to left ←)

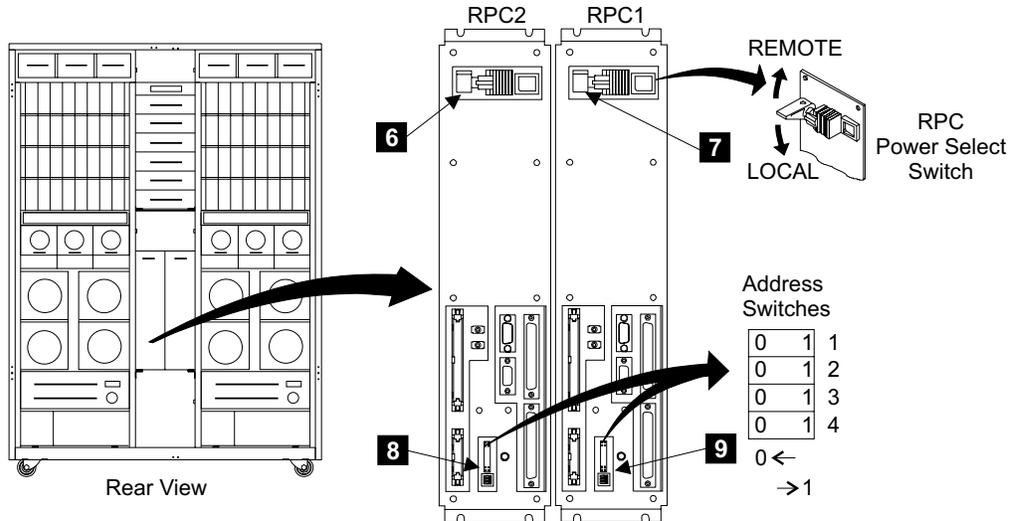


Figure 233. Rack Power Control Card Switch Locations (S008606m)

8. Remove the “Do Not Operate” tag and the lockout padlock from each customer mainline ac voltage circuit breaker.
9. Instruct the customer to switch on each circuit breaker that supplies the mainline ac power to each customer ac power outlet or wired mainline power cable.
10. Switch the System Power CB **10** [Figure 234] on the rear of each primary power supplies to On (up).

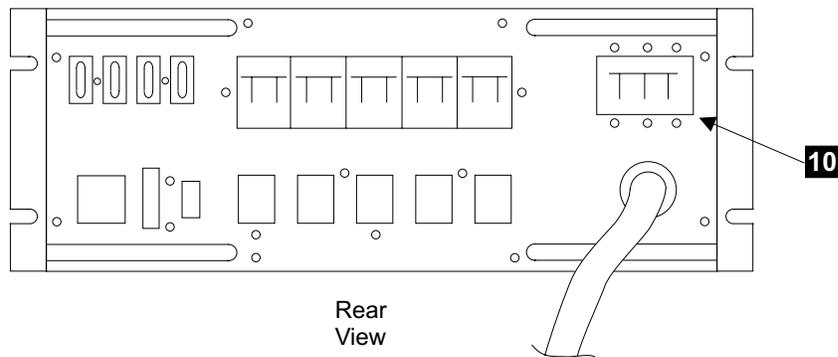


Figure 234. Primary Power Supply (S007626l)

Installing the 2105 Model Exx/Fxx

- ___ 11. Verify that all the 390 V battery cables are connected to battery 1 (three cables) **12** [Figure 235] and battery 2 (one cable) **11** the primary power supplies.

Note: If battery cables are disconnected set the circuit breaker on 390 V battery 1 **13** [Figure 235] to Off before connecting any 390 V battery cable.

- ___ 12. Set the MASTER circuit breaker (CB, S2) on 390 V battery 1 **13** [Figure 235] to On (up).

Note: This circuit breaker is normally set to off by manufacturing.

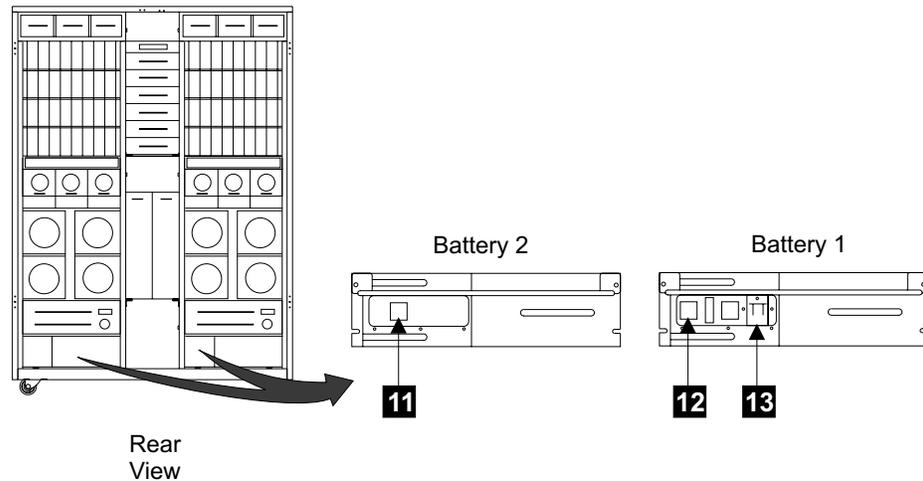


Figure 235. 2105 Model Exx/Fxx 390 V Battery Circuit Breaker (S007629m)

- ___ 13. Continue with “How to Power on the 2105 Model Exx/Fxx and Test the Installation”.

How to Power on the 2105 Model Exx/Fxx and Test the Installation

This section describes the actions that should be done to power on and test the 2105 Model Exx/Fxx.

- Powering on the 2105 Model Exx/Fxx
- Attachment and activation of the service terminal.
- Installation using the service terminal.

Check the 2105 Model Exx/Fxx Rack Operator Panel Switches

Attention: Do not install any cables until you are instructed to do so.

- ___ 1. Set the Unit Emergency switch [Figure 236] to Off (down).
- ___ 2. Set the Local Power switch [Figure 236] to On (up) then release it.

Note: This testing is to verify that the 2105 will not power on with the UEPO switch set to Off (down).

Installing the 2105 Model Exx/Fxx

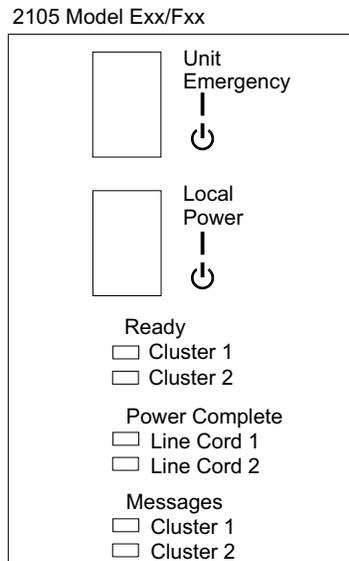


Figure 236. 2105 Model Exx/Fxx Operator Panel Locations (S008814m)

- ___ 3. Observe the Power Complete indicators for Line Cords 1 and 2 and [Figure 236] **perform the action described in Table 14.**

Attention: If the 2105 powers on, the Unit Emergency switch is not working. You must repair the problem before continuing, see "MAP 2360: UEPO" in chapter 3 of the *Enterprise Storage Server Service Guide, Volume 1*.

Table 14. 2105 Model Exx/Fxx Rack Operator Panel Power Complete Indicators

Power Complete, Line Cord 1	Power Complete, Line Cord 2	Action
Off	Off	Normal, go to step 5
Blinking	Blinking	Go to "MAP 2360: UEPO" in chapter 3 of the <i>Enterprise Storage Server Service Guide, Volume 1</i> .
On	On	Go to "MAP 2360: UEPO" in chapter 3 of the <i>Enterprise Storage Server Service Guide, Volume 1</i> .
On	Off	Go to "MAP 2360: UEPO" in chapter 3 of the <i>Enterprise Storage Server Service Guide, Volume 1</i> .
Off	On	Go to "MAP 2360: UEPO" in chapter 3 of the <i>Enterprise Storage Server Service Guide, Volume 1</i> .

- ___ 4. When you complete the repair, return here and continue with the next step.
- ___ 5. Set the Local Power switch [Figure 237] to Off (down), then release it.
- ___ 6. Set the Unit Emergency switch [Figure 237] to On (up).
- ___ 7. Set the Local Power switch [Figure 237] to On (up), then release it. You may have to wait up to four minutes for the final state of the Power Complete, Line Cord indicators (indicators stop blinking and remain on).

Note: This power sequence testing does not require waiting for IML to complete.

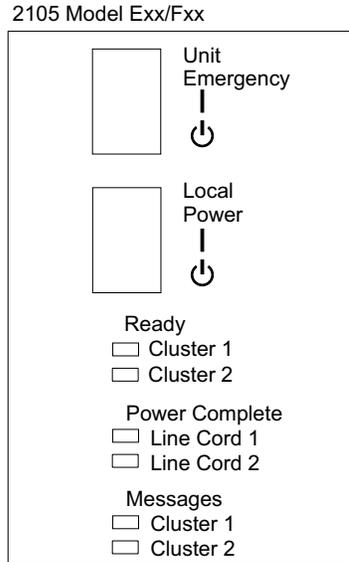


Figure 237. 2105 Model Exx/Fxx Operator Panel Locations (S008814m)

- ___ 8. Observe the Power Complete indicators for Line Cords 1 and 2 [Figure 237] and **perform the action described in Table 15.**

Table 15. 2105 Model Exx/Fxx Rack Operator Panel Power Complete Indicators

Power Complete, Line Cord 1	Power Complete, Line Cord 2	Action
On	On	Normal, go to step 10.
On	Off	Go to "MAP 2400: Local Power On" in chapter 3 of the <i>Enterprise Storage Server Service Guide, Volume 1.</i>
Off	On	Go to "MAP 2400: Local Power On" in chapter 3 of the <i>Enterprise Storage Server Service Guide, Volume 1.</i>
Off or blinking	Off or blinking	Go to "MAP 2400: Local Power On" in chapter 3 of the <i>Enterprise Storage Server Service Guide, Volume 1.</i>

- ___ 9. When you complete the repair, return here and continue with the next step.
- ___ 10. Go to the rear of the 2105 Model Exx/Fxx. Observe the INPUT PRESENT indicator **2** [Figure 238], on the three left electronics cage power supplies **Perform the action described in table Table 16 on page 230.**

Note: On early machines this indicator may be labeled *POWER STANDBY*.

Installing the 2105 Model Exx/Fxx

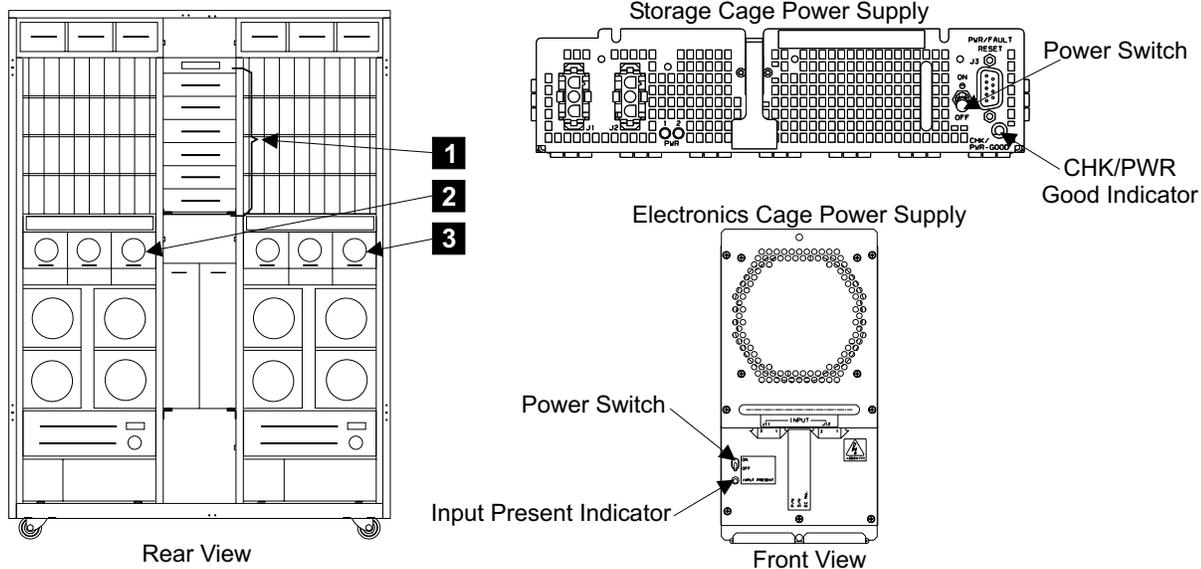


Figure 238. Storage and Electronics Cage Power Supply Indicators (S007637m)

Table 16. 2105 Model Exx/Fxx Electronics Cage Power Supply INPUT PRESENT Indicators

Left Three Power Supply INPUT PRESENT Indicators	Action
3 on	Normal, go to step 12
2 on, 1 off	Delay repair, go to 12.
1 on, 2 off	Go to "MAP 1320: Visual Symptoms" in chapter 3 of the <i>Enterprise Storage Server Service Guide, Volume 1</i> .
3 off	Go to "MAP 1320: Visual Symptoms" in chapter 3 of the <i>Enterprise Storage Server Service Guide, Volume 1</i> .

- __ 11. When you complete the repair, return here and continue with the next step.
- __ 12. Go to the rear of the 2105 Model Exx/Fxx. Observe the INPUT PRESENT indicator **3** [Figure 238], on the three right electronics cage power supplies. **Perform the action described in table Table 17.**

Note: On early machines this indicator may be labeled *POWER STANDBY*.

Table 17. 2105 Model Exx/Fxx Electronics Cage Power Supply INPUT PRESENT Indicators

Right Three Power Supply INPUT PRESENT Indicators	Action
3 on	Normal, go to step 14 on page 231
2 on, 1 off	Delay repair, go to 14 on page 231.
1 on, 2 off	Go to "MAP 1320: Visual Symptoms" in chapter 3 of the <i>Enterprise Storage Server Service Guide, Volume 1</i> .
3 off	Go to "MAP 1320: Visual Symptoms" in chapter 3 of the <i>Enterprise Storage Server Service Guide, Volume 1</i> .

- __ 13. When you complete the repair, return here and continue with the next step.

Installing the 2105 Model Exx/Fxx

- ___ 14. Observe the CHK/PWR-GOOD (check/power) indicator **1** [Figure 238], on the installed storage cage power supplies. **Perform the action described in table Table 18.**

Table 18. 2105 Model Exx/Fxx Storage Cage Power Supply CHK/PWR-GOOD Indicators

Power Supply CHK/PWR-GOOD Indicators	Action
all on (green)	Normal, go to step 16
only 1 off/amber	Delay repair, go to 16.
2 or more off/amber	Go to "MAP 1320: Visual Symptoms" in chapter 3 of the <i>Enterprise Storage Server Service Guide, Volume 1</i> .

- ___ 15. When you complete the repair, return here and continue with the next step.
- ___ 16. Go to the front of the 2105 Model Exx/Fxx. Verify that the PWR Good indicator **4** [Figure 239], on the front of both primary power supplies 1 and 2 is on. **Perform the action described in table Table 19.**

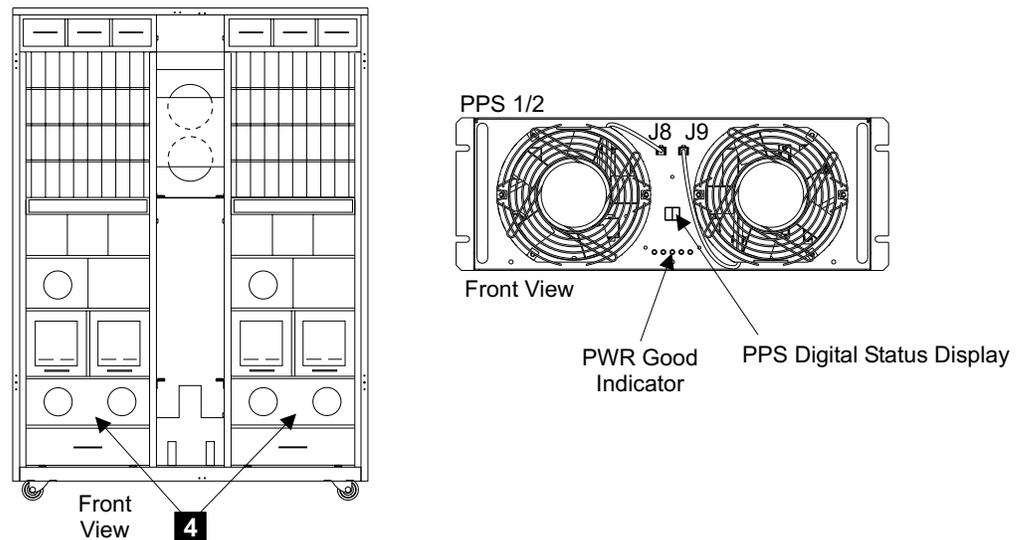


Figure 239. Primary Power Supply (S007632m)

Table 19. 2105 Model Exx/Fxx Primary Power Supply PPS Good Indicators

Power Supply PWR Good Indicators	Action
Both on	Normal, go to step 18
1 on, 1 off	Go to "MAP 1320: Visual Symptoms" in chapter 3 of the <i>Enterprise Storage Server Service Guide, Volume 1</i> .
Both off	Go to "MAP 1320: Visual Symptoms" in chapter 3 of the <i>Enterprise Storage Server Service Guide, Volume 1</i> .

- ___ 17. When you complete the repair, return here and continue with the next step.
- ___ 18. Verify that the PPS digital status display **4** [Figure 239], on the front of primary power supplies 1 and 2 is blank.
- If both digital displays are blank, go to step 20 on page 232.

Installing the 2105 Model Exx/Fxx

- If either status display is NOT blank, go to "MAP 1320: Visual Symptoms" in chapter 3 of the *Enterprise Storage Server Service Guide, Volume 1*, to isolate the problem.
 - If both status display is NOT blank, go to "MAP 1320: Visual Symptoms" in chapter 3 of the *Enterprise Storage Server Service Guide, Volume 1*, to isolate the problem.
- ___ 19. When you complete the repair, return here and continue with the next step.
- ___ 20. Observe the three POWER ON indicators **5** [Figure 240], on the front of each of the three left electronics cage power supplies. Perform the action described in Table 20:

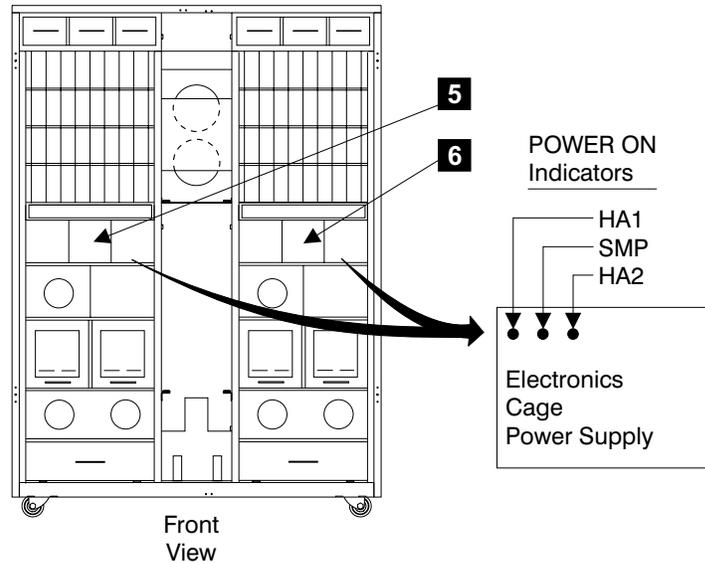


Figure 240. Electronics Cage Power Supply Indicators (S008028m)

Table 20. 2105 Model Exx/Fxx Left Electronics Cage Power Supply POWER ON Indicators

Power Supply POWER ON Indicators	Action
All POWER ON indicators on green (9 total)	Normal, go to step 22
One SMP indicator off	Delay repair, go to step 22
One or more HA indicators off	Delay repair, go to step 22
Two or more SMP indicators off	Repair the problem, go to "MAP 1320: Visual Symptoms" in chapter 3 of the <i>Enterprise Storage Server Service Guide, Volume 1</i> .

- ___ 21. When you complete the repair, return here and continue with the next step.
- ___ 22. Observe the three POWER ON indicators **6** [Figure 240], on the front of each of the three right electronics cage power supplies. Perform the action described in Table 21 on page 233:

Table 21. 2105 Model Exx/Fxx Right Electronics Cage Power Supply POWER ON Indicators

Power Supply POWER ON Indicators	Action
All POWER ON indicators on green (9 total)	Normal, go to step 24
One SMP indicator off	Delay repair, go to step 24
One or more HA indicators off	Delay repair, go to step 24
Two or more SMP indicators off	Repair the problem, go to "MAP 1320: Visual Symptoms" in chapter 3 of the <i>Enterprise Storage Server Service Guide, Volume 1</i> .

- ___ 23. When you complete the repair, return here and continue with the next step.
- ___ 24. Are you installing a 2105 Model E20/F20 and 2105 Expansion Enclosure at the same time?
- **Yes**, continue with the next step.
 - **No**, go to "Connecting the Service Terminal to the 2105".
- ___ 25. Is the 2105 Expansion Enclosure part of an MES?
- **Yes**, the 2105 Expansion Enclosure was not physically configured with the 2105 Model E20/F20 by IBM Manufacturing. The 2105 Model E20/F20 will be installed later in this procedure. Continue with "Installing the 2105 Model Exx/Fxx Using the Service Terminal" on page 236.
 - **No**, the 2105 Expansion Enclosure was physically configured as part of this 2105 subsystem by IBM Manufacturing. The 2105 Expansion Enclosure must be installed and tested at this time, continue with the next step.
- ___ 26. Continue with "How to Power on the 2105 Expansion Enclosure and Test the Installation" on page 295.

Connecting the Service Terminal to the 2105

Attention: The 2105 and cables in this procedure are ESD-sensitive. Always wear an ESD wrist strap during this procedure. Follow the ESD procedures in "Working with ESD-Sensitive Parts" on page 4.

- ___ 1. Route and connect the service terminal convenience outlet power cord:
- a. Locate the service terminal convenience outlet power cord in the ship group.

Note: This cable is ordered as a separate feature code but is shipped with the ship group. The cable connector must match the receptacle supplied by the customer.
 - b. Route the convenience outlet power cord through the center tailgate **3** [Figure 241].
 - c. Route the convenience outlet power cord up the center of the 2105 Model Exx/Fxx and loop it twice through the cable retainer **1** [Figure 241]. Allow enough cable so the connector can reach the service terminal table **2**.
 - d. Connect the convenience outlet power cord to the AC service provided by the customer.

Installing the 2105 Model Exx/Fxx

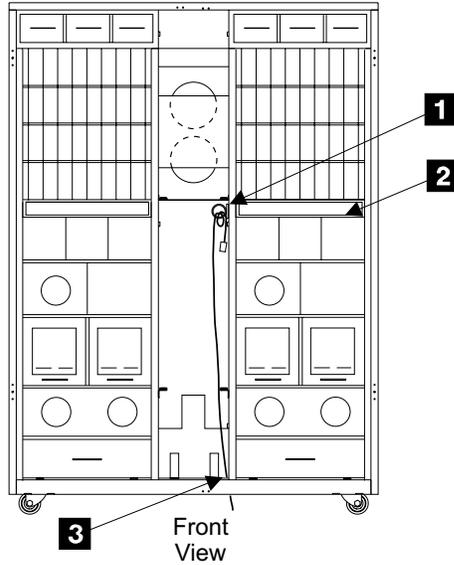


Figure 241. Service Terminal Utility Power Cord Routing (S007634m)

- ___ 2. Press the latches on the front service terminal table **4** [Figure 242] and pull the table out until it stops.

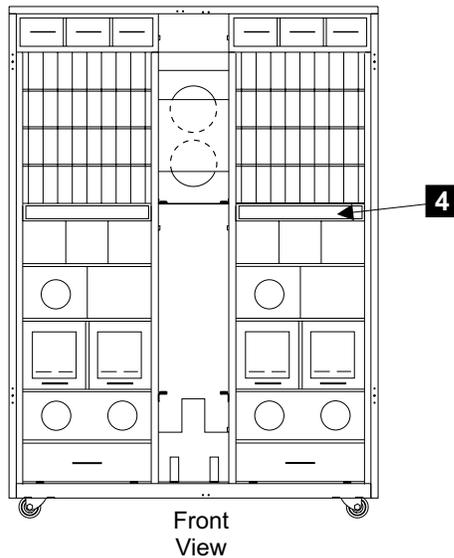


Figure 242. Accessing the Service Terminal Table (S008607m)

- ___ 3. Place the service terminal on the pullout service terminal table.
- ___ 4. Connect the service terminal AC adapter cable to the service terminal.
- ___ 5. Connect the service terminal AC adapter to the utility power cord, **1** [Figure 241].

Note: Always operate the service terminal from AC power because the duration of the service activity may exceed the capacity of the service terminal battery.

- ___ 6. Connect the service terminal null modem cable (P/N 08L8045, in the ship group), to cluster bay 1:

Installing the 2105 Model Exx/Fxx

- a. Connect the service terminal interface cable to the serial port connector (9 pin) on the service terminal.
- b. Connect the other end of the cable to S2 [Figure 243] on the front of cluster bay 1.

Note: The service terminal interface cable is stored in the 2105 Model Exx/Fxx rack or connected to S2 on the front of cluster bay 1.

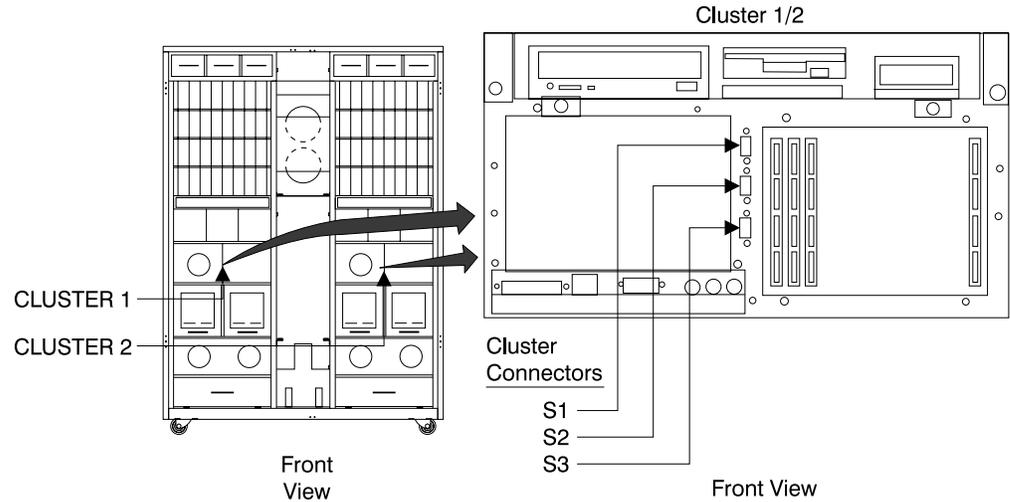


Figure 243. Cluster Bay Connectors for Service Terminal (S008027m)

- ___ 7. Verify that the Ready indicators on the operator panel for Cluster 1 and Cluster 2 [Figure 244] are on.

Note: You may have to wait up to 30 minutes for AIX to finish booting.

Did the Cluster 1 and 2 Ready indicators come on?

- **Yes**, Continue with the next step.
- **No**, go to "MAP 4360: Cluster Operator Panel Codes" in chapter 3 of the *Enterprise Storage Server Service Guide, Volume 1*.

Installing the 2105 Model Exx/Fxx

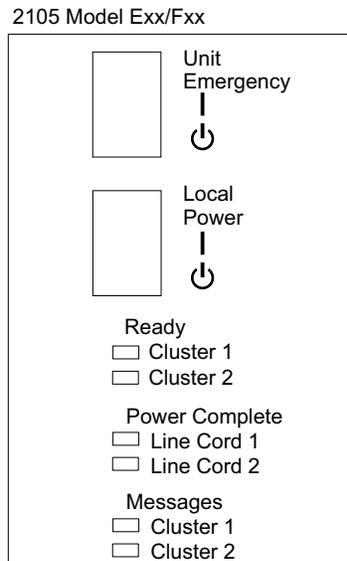


Figure 244. 2105 Model Exx/Fxx Operator Panel Locations (S008814m)

- ___ 8. Power the service terminal on and verify that the service terminal has been configured for use on the 2105 subsystem, see "Service Terminal Setup" in chapter 8 of the *Enterprise Storage Server Service Guide, Volume 3*.
- ___ 9. Login then verify that the Copyright and Login screen is displayed for cluster bay 1:
 - If the copyright screen is not displayed for cluster bay 1, go to "MAP 6060: Service Terminal Login" in chapter 3 of the *Enterprise Storage Server Service Guide, Volume 1*. After the repair, return here and continue with the next step.
 - If the copyright screen is displayed for cluster bay 1, enter the login ID of **service** (lower case) and press Enter. Then continue with the next step.
- ___ 10. From the service terminal toolbar, click on toolbar option "Disconnect".
- ___ 11. Move the service terminal interface cable from the S2 connector on cluster bay 1 to the S2 connector on cluster bay 2.
- ___ 12. From the service terminal toolbar, click on toolbar option "Connect".
- ___ 13. Login then verify that the Copyright and Login screen is displayed for cluster bay 2:
 - If the copyright screen is not displayed for cluster bay 2, go to "MAP 6060: Service Terminal Login" in chapter 3 of the *Enterprise Storage Server Service Guide, Volume 1*. After the repair, return here and continue with the next step.
 - If the copyright screen is displayed for cluster bay 2, enter the login ID of **service** (lower case) and press Enter.
- ___ 14. Continue with "Installing the 2105 Model Exx/Fxx Using the Service Terminal".

Installing the 2105 Model Exx/Fxx Using the Service Terminal

The service terminal will guide you through the physical installation and testing of the 2105 Model Exx/Fxx. The 2105 Model Exx/Fxx will be logically configured later in this procedure after testing verifies that the 2105 is operating correctly.

Installing the 2105 Model Exx/Fxx

Attention: Ensure that the Communications and Configuration Worksheets are available and have been completed by both the customer and the service support representative.

___ 1. From the service terminal **Main Service Menu**, select:

Install/Remove Menu

Enterprise Storage Service Menu

Install/Re-install/Relocate Storage Facility

Follow the instructions on the service terminal to install the 2105 Model Exx/Fxx. When the service terminal prompts for TCP/IP information, select **Change/Show TCP/IP Settings** and then **Minimum Configuration and Startup** option. Under **Available Network Interfaces**, select **en0 Standard Ethernet Network Interface**. Then enter the TCP/IP Address information provided on the worksheets.

Attention:The TCP/IP addresses and Hostname must be entered correctly on both clusters to avoid cluster-to-cluster communication errors. These communication errors will cause cluster-to-cluster timeouts that will greatly increase IML time.

- a. Do the Communications Resources Worksheets have customer TCP/IP information filled in?
 - **Yes**, enter TCP/IP information from the worksheets.
 - **No**, continue with next step.
- b. Is the ESSNet already attached to the Customer Network?
 - **Yes**, in order to continue this installation, the customer must provide TCP/IP information to avoid LAN conflicts.
 - **No**, Use the Default TCP/IP Settings from Table 22

Table 22. Default TCP/IP Settings

2105 Subsystem on ESSNet	Cluster Bay	HOST NAME	Internet Address	Network Mask
First	1	ess1c1	172.31.1.1	255.255.255.0
First	2	ess1c2	172.31.1.2	255.255.255.0
Second	1	ess2c1	172.31.1.3	255.255.255.0
Second	2	ess2c2	172.31.1.4	255.255.255.0
Third	1	ess3c1	172.31.1.5	255.255.255.0
Third	2	ess3c2	172.31.1.6	255.255.255.0
Fourth	1	ess4c1	172.31.1.7	255.255.255.0
Fourth	2	ess4c2	172.31.1.8	255.255.255.0
Fifth	1	ess5c1	172.31.1.9	255.255.255.0
Fifth	2	ess5c2	172.31.1.10	255.255.255.0
Sixth	1	ess6c1	172.31.1.11	255.255.255.0
Sixth	2	ess6c2	172.31.1.12	255.255.255.0
Seventh	1	ess7c1	172.31.1.13	255.255.255.0
Seventh	2	ess7c2	172.31.1.14	255.255.255.0

___ 2. Continue with "Complete the Physical Install of the 2105" on page 238.

Installing the 2105 Model Exx/Fxx

Complete the Physical Install of the 2105

This section describes the actions that will be done after the installation using the service terminal has completed.

- Check the rack and drawer indicators.
- Indicator problem repair.

Checking the SSA DASD DDM Bay Indicators

The operation of all 2105 Model Exx/Fxx and SSA DASD DDM bays has been verified, the operation of the previously unchecked indicators are verified here.

1. Observe the indicators [Figure 245] on all front and rear SSA DASD DDM bays in the 2105 Model Exx/Fxx:
 - All disk drive module Ready indicators, On
 - All disk drive module Check indicators, Off
 - If all of the DDM Ready indicators are on, and all of the DDM Check indicators are off, continue with step 2.
 - If any of the DDM Ready indicators are off, or any of the DDM check indicators are on, go to "MAP 1320: Visual Symptoms" in chapter 3 of the *Enterprise Storage Server Service Guide, Volume 1*.
After the repair, continue with step 2.

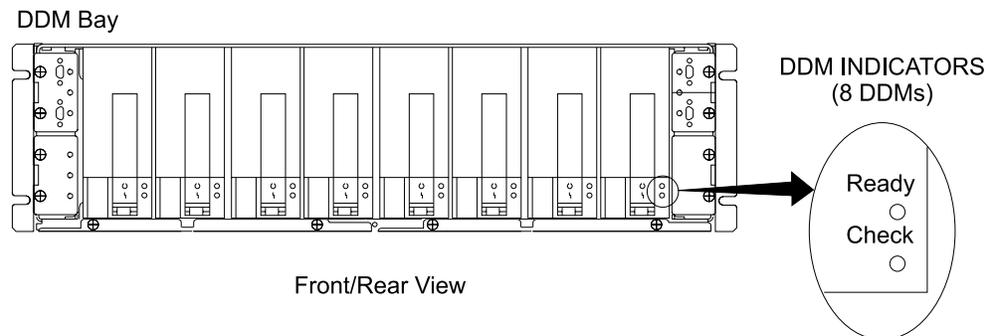


Figure 245. SSA DASD DDM Bay Indicators (S0080211)

2. Continue with "Connecting the Modem and Modem Expander Cables for Remote Support".

Connecting the Modem and Modem Expander Cables for Remote Support

Attention: The modem and modem expander are installed with the initial 2105 Model Exx/Fxx. They support the initial 2105 Model Exx/Fxx and the next six 2105 Model Exx/Fxxs via the modem expander. If an eighth 2105 Model Exx/Fxx is installed, a new modem and modem expander must be installed.

Attention: The 2105 and cables in this procedure are ESD-sensitive. Always wear an ESD wrist strap during this procedure. Follow the ESD procedures in "Working with ESD-Sensitive Parts" on page 4.

1. Verify that the customer has supplied the required analog telephone connection and cables, and that there are two AC service connections available for the modem and modem expander.

Installing the 2105 Model Exx/Fxx

Note: This is an additional AC service requirement for the customer, do not connect the modem or modem expander to the AC cord required for the service terminal.

2. Locate the Modem Kit, ordered separately, but shipped with the 2105 Model Exx/Fxx Ship Group (Feature Code for US/Canada 2715). Place the modem **1** [Figure 246] and the modem expander (asynchronous port switch) **6** [Figure 246] in an area between the customer supplied AC service and the 2105 Model Exx/Fxx cluster bays.

Note: Feature code 2715 contains remote support switch parts for the modem and ESSNet.

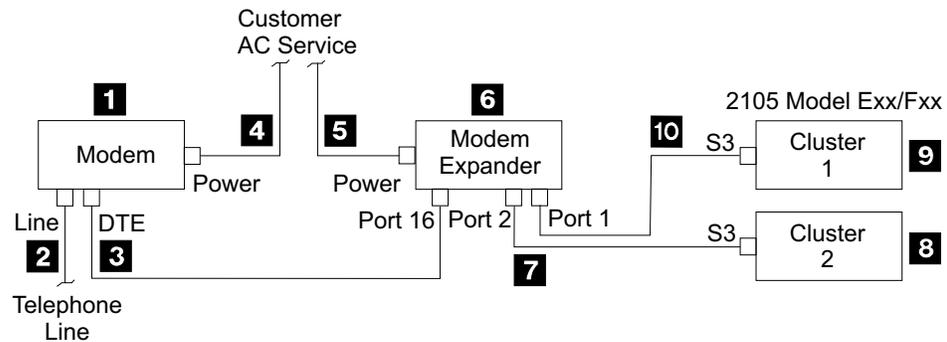


Figure 246. Modem and Modem Expander Attachment Diagram (S008815I)

3. Is the modem you are attaching a Microcom DeskPort?
 - **Yes**, continue with the next step.
 - **No**, go to step 5.
4. Verify that the Modem Configuration Switches [Figure 247] are set correctly, all switches down.

Note: To access the switches, use a thin blade screwdriver to lift off the modem nameplate on the left side of the front panel. The two banks of switches are located behind the nameplate.

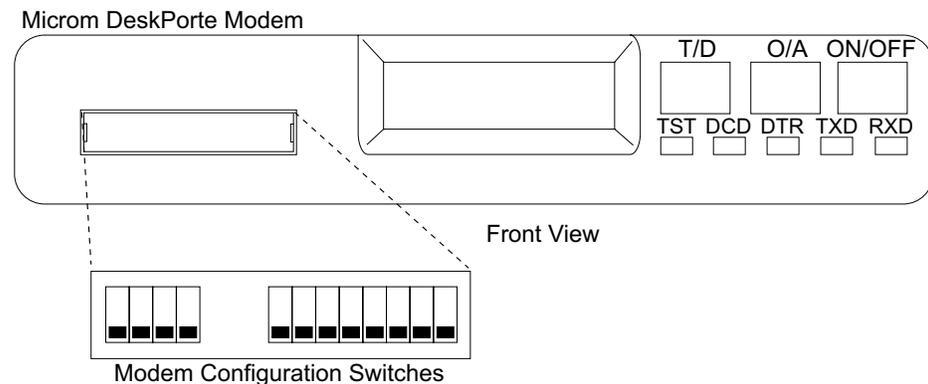


Figure 247. Modem Configuration Switch Settings (S007457I)

5. Verify that the Modem Expander Setup Switches [Figure 248] on the bottom of the expander are set correctly. Switches 1 and 3 should be OFF (0) and all other switches should be ON (1).

Installing the 2105 Model Exx/Fxx

Note: Setting switches 1 and 3 to OFF (0) sets the modem baud rate at 38.4 kb.



Figure 248. Modem Expander Setup Switch Settings (S007455I)

- ___ 6. Plug the 25-pin end of the data cable **3** [Figure 246], into the DTE connector **12** [Figure 249] on the back of the modem. Plug the 9-pin end of the data cable into Port 16 **16** [Figure 250] on the back of the modem expander. Tighten the cable connector retention screws.
- ___ 7. Plug the RJ-11 telephone cable **2** [Figure 246], into the LINE connector, **13** [Figure 249] on the back of the modem. Plug the other end of the cable into the customers telephone line connector.
- ___ 8. Plug the modem power adapter **4** [Figure 246], into the POWER connector **11** [Figure 249] on the rear of the modem. Plug the other end of the cable into the customers AC service outlet.
- ___ 9. Determine if the customer supplied AC input voltage for the modem expander is in the range of 115 V ac or 230 V ac. Set the voltage range switch **18** [Figure 250] on the rear of the modem expander to match the customers AC voltage:
 - **115 V ac range**, push the switch to the left
 - **230 V ac range**, push the switch to the right
- ___ 10. Plug the power cord **5** [Figure 246], supplied with the modem expander, into the power connector **19** [Figure 250] on the rear of the modem expander. Plug the other end of the cable into the customers AC service outlet.

Installing the 2105 Model Exx/Fxx

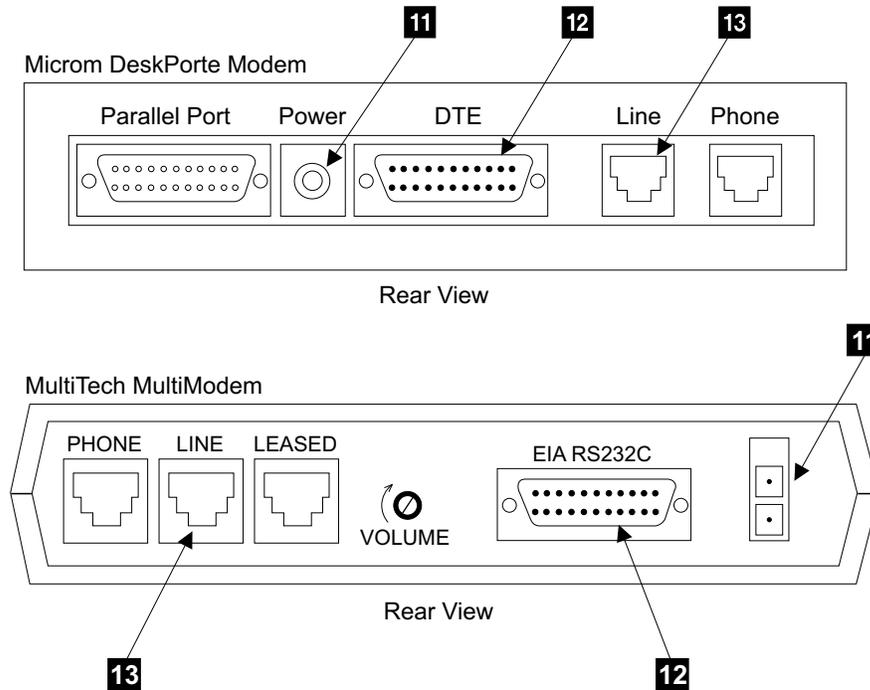


Figure 249. Modem Rear View (S008410I)

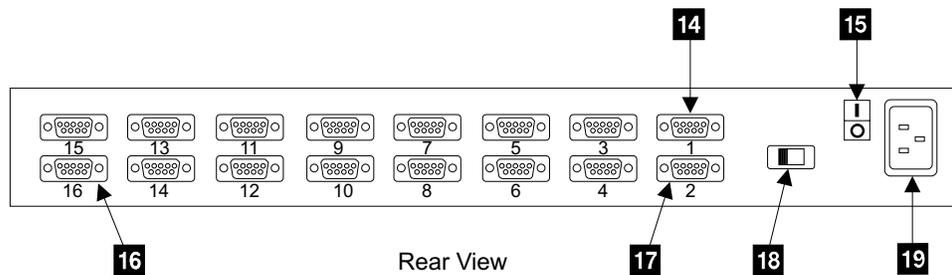


Figure 250. Modem Expander Rear View (S008411I)

- ___ 11. Locate the two null-modem cables (P/N 34L7144, length 15 meters, 50 feet) in the ship group.
- ___ 12. Determine if this is the first 2105 Model Exx/Fxx being installed on the modem expander:
 - If this is the first 2105 Model Exx/Fxx being installed on the modem expander, go to step 13.
 - If this is not the first 2105 Model Exx/Fxx being installed on the modem expander, go to step 15 on page 242.
- ___ 13. Connect cluster bay 1 **9** [Figure 246] to modem expander port 1: Plug the connector labeled *CLUSTER S3* of the null-modem cable **10** [Figure 246], into the cluster bay 1, S3 connector **20** [Figure 251], on the front of cluster bay 1. Plug the other end of the cable labeled *MODEM EXPANDER* into Port 1 **14** [Figure 250], on the rear of the modem expander.

Attention: For correct modem expander initialization, cluster bay 1 of the first 2105 subsystem installed must be connected to port 1 of the modem

Installing the 2105 Model Exx/Fxx

expander. This connection is critical because the modem expander can only be configured through the cluster bay 1/port 1 connection.

- ___ 14. Connect cluster bay 2 **8** [Figure 246] to modem expander port 2:
Connect the other null-modem cable **7** [Figure 246] to the S3 connector **21** [Figure 251] on the front of cluster bay 2. Plug the other end of the cable into the into Port 2 **17** [Figure 250], on the rear of the modem expander, go to step 17.

Attention: Both cluster bays must be connected to the modem expander for the 2105 service strategy to work.

Note: After each null modem cable is connected to the cluster bay, run each loose cable into the center cable bundle. Allow a loop of about 1 meter (3 feet) under the 2105 or floor, to allow the bays to be moved to their service position.

- ___ 15. Connect cluster bay 1 **9** [Figure 246] to the next available modem expander port:
Plug the 9-pin connector end of the null-modem cable **10** [Figure 246], into the S3 connector **20** [Figure 251] on the front of cluster bay 1. Plug the other end of the cable into the lowest numbered port available on the rear of the modem expander [Figure 250].
 - ___ 16. Connect cluster bay 2 to the next available modem expander port:
Connect the other null-modem cable to into the S3 connector **21** [Figure 251] on the front of cluster bay 2. Plug the other end of the cable into the lowest numbered port available on the rear of the modem expander [Figure 250]. Go to step 17.
- Attention:** Both cluster bays must be connected to the modem expander for the 2105 service strategy to work.
- ___ 17. Enter the Cluster Bay Modem Expander Port information for cluster bays 1 and 2 on the Communications Worksheets.

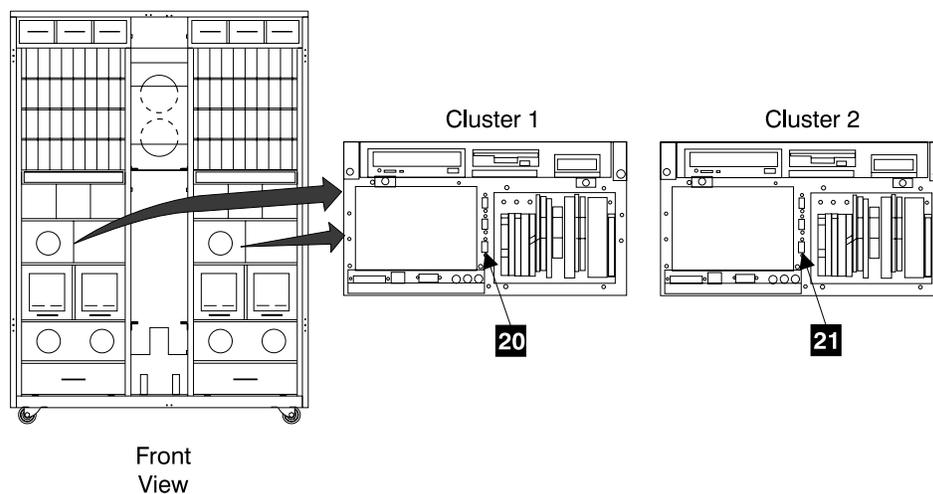


Figure 251. Cluster Bay Modem Connectors (S007625m)

- ___ 18. Power on the modem expander. At the rear of the expander press the power switch **15** [Figure 250], to On (up).
- ___ 19. Is the modem you are attaching a MultiTech MultiModem?
 - **Yes**, continue with the next step.

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- **No**, go to step 21.
- ___ 20. Turn on the modem using the on/off switch located on the front panel. When you apply power, the modem performs a diagnostic self-test, indicated by the TM indicator lighting for a few seconds after which the LCD should light. If this does not happen, check that the power switch is on, the power supply is solidly connected correctly and the AC outlet voltage is present. If these checks do not work, see Chapter 8 of the Users Guide supplied with the modem, *Solving Problems*.
Go to step 22.
- ___ 21. Power on the modem. At the front of the modem press the ON/OFF switch, **22** [Figure 252]. The light in the switch comes on when the modem is powered on.

Note: Pressing the ON/OFF switch is the same as unplugging the modem from its AC power source and plugging it back in. Each time you power the modem off then on, it performs its power-up diagnostics. These tests take about 5 seconds and the modem ignores all commands while diagnostics are running. If the TST light is on steady (not blinking) for more than 5 seconds after the test, the modem has detected an error. Repair the problem using the trouble shooting section of the user guide supplied with the modem.

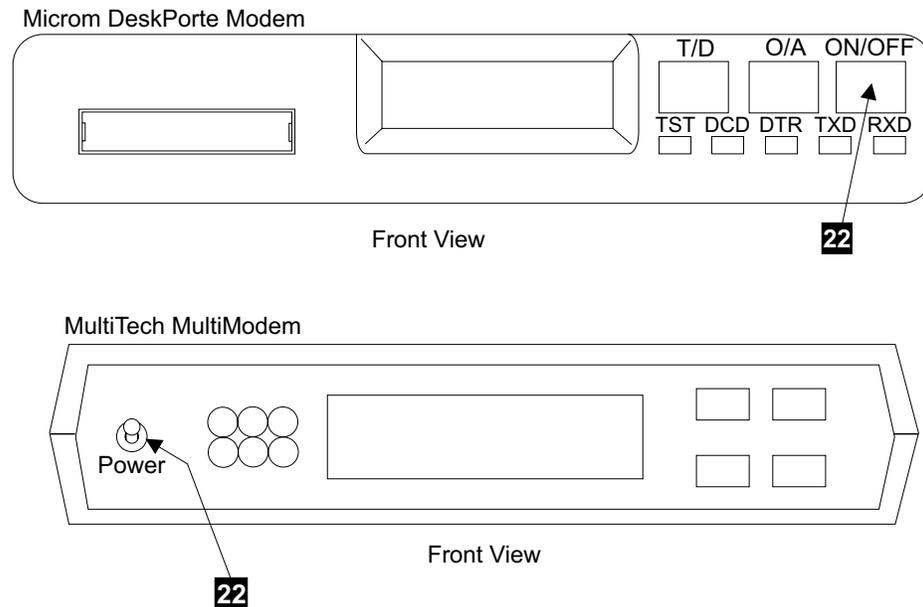


Figure 252. Modem Front Panel Locations (S008412I)

- ___ 22. Initialize the modem expander:
- a. Go to the front of the modem expander and locate the CLEAR **23** [Figure 253] and SET **24** switches.
 - b. Press and hold the SET and CLEAR switches at the same time.
 - c. Release the CLEAR switch, wait one second, and then release the SET switch.

Installing the 2105 Model Exx/Fxx

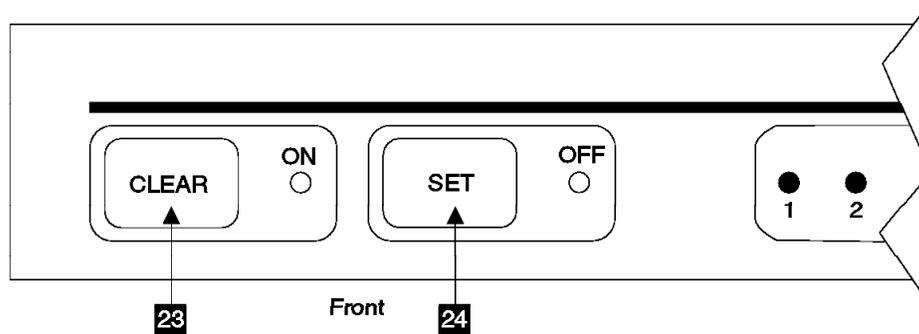


Figure 253. Modem Expander Switches and Indicators (S007486I)

- ___ 23. Is the modem being installed as part of the initial 2105 installation?
- **Yes**, continue with “Completing the Installation of the 2105 Model Exx/Fxx Unit”.
 - **No**, the 2105 was previously installed without a modem, continue with the next step.
- ___ 24. Ensure that the Communications Resources Worksheet has been filled in for the Call Home/Remote Services and Modem Configuration fields. Refer to the *IBM Enterprise Storage Server Introduction and Planning Guide* book, form number GC26-7294 for the worksheets, and to “Filling in fields on the Communications Resources Worksheet” on page 375 for the procedure.

When the worksheets have been filled out by both the customer and the service support representative, go to the service terminal and perform “Configure Call Home / Remote Services” on page 378.

Completing the Installation of the 2105 Model Exx/Fxx Unit

This section describes the actions that should be done after the 2105 Model Exx/Fxx has been physically installed.

- Installing the ESSNet
- Configure subsystem
- Connect the Ethernet LAN cables required for customer E-mail reports and ESS Specialist functions.
- Connect the modem cables for remote support of the 2105 Model Exx/Fxx
- Update installation records
- Organize installation documents and forms

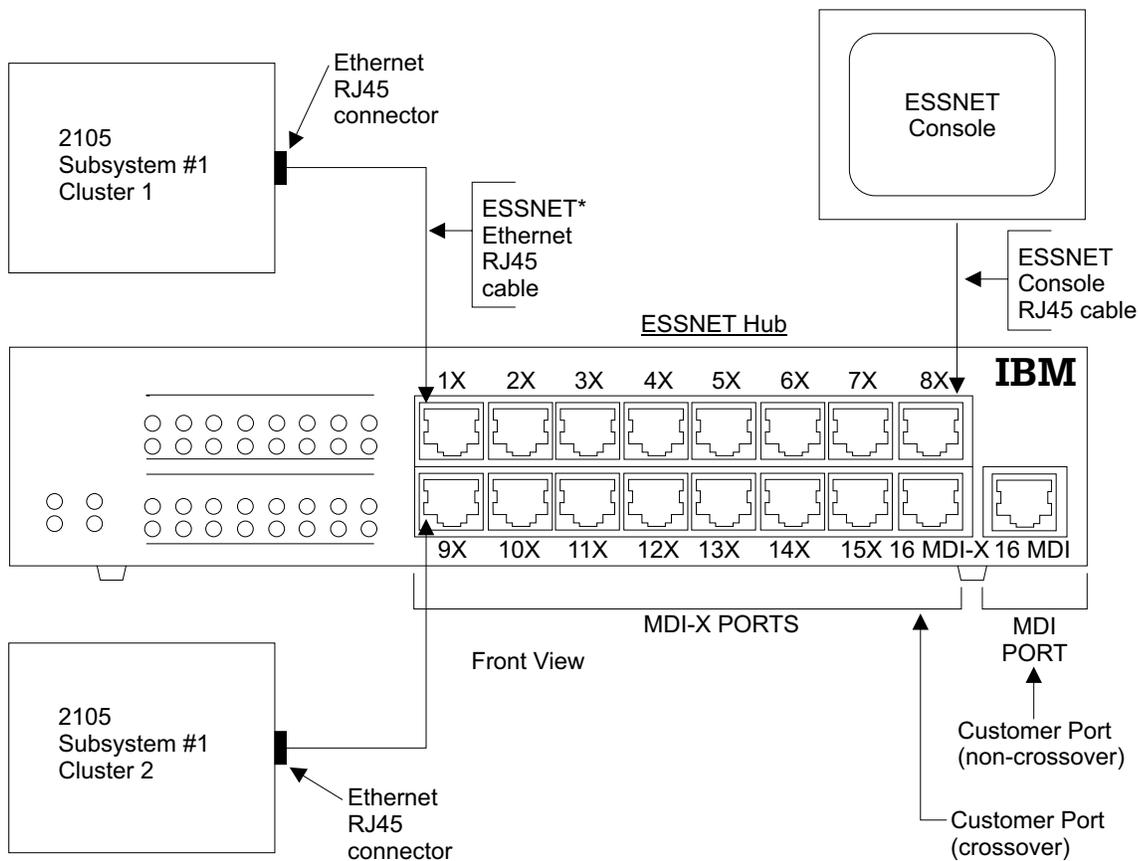
Installation of the ESSNet and ESSNet Console

Do the following steps to install the ESSNet and console.

Connecting the ESSNet Hub

- ___ 1. Is this the first 2105 Model Exx/Fxx to be installed on this ESSNet?
- **Yes**, continue with the next step.
 - **No**, the ESSNet hub is already installed, go to “Connecting the 2105 Model Exx/Fxx to the ESSNet Hub” on page 245.
- ___ 2. Locate the ESSNet hub, its power cord, and three RJ45 Ethernet cables in the ship group.
- ___ 3. Place the ESSNet hub within 15 meters (50 feet) of the 2105 Model Exx/Fxx.

Installing the 2105 Model Exx/Fxx



* Note: See table for recommended plugging of additional 2105 subsystem connections to the ESSNET Hub

Figure 255. ESSNet Hub Port Connector Locations (S008603p)

- ___ 3. Connect the service terminal to cluster bay 1. Use the Repair Menu, Display / Repair Problems Needing Repair option, which displays problems from both cluster bays. If the cluster bay to cluster bay communication is not working, it will give an error message for cluster bay 2.
Is there an error message for cluster bay 2?
 - **Yes**, go to "MAP 4390: Cluster to Cluster Ethernet" in chapter 3 of the *Enterprise Storage Server Service Guide, Volume 1*.
 - **No**, continue with the next step.
- ___ 4. Is this the first 2105 Model Exx/Fxx being installed on this ESSNet?
 - **Yes**, continue with the next step.
 - **No**, go to "Configuring the 2105 Model Exx/Fxx" on page 256.
- ___ 5. Continue with "Installing and Connecting the ESSNet Console to the ESSNet Hub".

Installing and Connecting the ESSNet Console to the ESSNet Hub

- ___ 1. Check that the voltage setting for the input power is correct for the ESSNet console. The switch is above the power connector on the rear of the console (115V or 230V).

Installing the 2105 Model Exx/Fxx

- ___ 2. The following installation steps may have already been performed by Manufacturing. There are two ways to determine if the installation and setup has already been performed:
 - The ESSNet Console shipping carton contains a note saying that setup has already been done by manufacturing
 - The ESSNet Console does not display a Windows Setup screen when it is powered ON
- ___ 3. Do either of the two above conditions exist?
 - **Yes**, the setup and installation procedure has already been performed, go to “Configuring the 2105 Model Exx/Fxx” on page 256.
 - **No**, continue with the next step.
- ___ 4. Determine which type of ESSNet console you have. The ESSNet console come in two models:
 - Personal Computer Model 300PL
 - NetVista model

Each console requires a different set of installation instructions. Look at the front of the console to determine which model your console is.

Is the ESSNet console a NetVista model?

- **Yes**, the NetVista operating system must be converted from Windows NT 2000 to NT 4.0, continue with “Converting Windows NT 2000 to Windows NT 4.0, NetVista”.
- **No**, continue with “ESSNet Console Installation, Personal Computer 300PL Only” on page 252.

Converting Windows NT 2000 to Windows NT 4.0, NetVista:

- ___ 1. Install and power on the ESSNet console using the documentation that came with the NetVista hardware being used as the ESSNet console. The ESSNet console must be located within 15 meters (50 feet) of the ESSNet Ethernet hub.

Note: Use the documentation that came with the NetVista hardware to analyze and repair any problems with the ESSNet console hardware.

- ___ 2. Power on the ESSNet console by pressing and releasing the ESSNet console ON/OFF switch. Wait for the ESSNet console to power up and display the **Windows 2000 Professional Setup** window.
- ___ 3. Power the ESSNet console off by pressing the ON/OFF button for one minute.

Note: If the console does not power off after one minute, unplug the power cord to the console. Leave the power cord disconnected for one minute then reconnect it.

- ___ 4. Power on the ESSNet console by pressing and releasing the ESSNet console ON/OFF switch.
- ___ 5. As soon as **To Start the Product Recovery Program, Press F11** is displayed, *immediately* press **F11**.
- ___ 6. When **IBM Product Recovery Program Version 5.0** is displayed, select **Windows NT 4.0** and press the Enter key.
- ___ 7. At the **Main Menu** window, select **Full Recovery** and press the Enter key.
- ___ 8. At the **Terms and Conditions** window, press the **y** key to accept these conditions.

Installing the 2105 Model Exx/Fxx

- ___ 9. At the **ATTENTION-READ THIS BEFORE YOU CONTINUE** window, press the **y** key to continue.
- ___ 10. When **Your hard disk will be formatted, and all files will be deleted** is displayed, press the **y** key to continue.
- ___ 11. Wait seven to ten minutes for the recovery to complete.
- ___ 12. When the **Recovery is Complete** is displayed, press the Enter key to restart the computer.
- ___ 13. Wait for the system to reboot and go through the IBM Windows NT Setup several times. Be patient, it takes 10 to 15 minutes to complete.
- ___ 14. When the **Window NT Work Station Setup** window displays **Window NT Setup**, continue with "ESSNet Console Installation for NetVista".

ESSNet Console Installation for NetVista:

1. At the Windows NT Setup screen:
 - a. Click **Next**.
 - b. Click the **I accept this agreement** button, then click **Next**.
 - 1) Enter **essnet1** as the **name**, leave **organization** blank, then click **Next**.
 - 2) Enter **ESSNET1** as the **computer name**, then click **Next**.

Note: The computer name will always appear in uppercase.

 - 3) Enter the Password of password, enter the Password of password again to confirm it, then click **Next**.

Note: Enter password in lower case.

 - 4) Click on **Finish**, the machine will reboot.
2. At the **Begin Logon** screen, press the **Ctrl + Alt + Delete** keys.
3. At the **Logon Information** window, enter Username: Administrator, password = password. Click **OK**.
4. Display the Setup of the ESSNet Console:
 - a. Right click on a clear area of the desktop (not over any icon).
 - b. Select **Properties**.
 - c. Select the **Background** tab, then select **None**.
 - d. Select the **Screen Saver** tab.
 - e. Open the drop down list box and select **3D Text (Open GL)**.
 - f. At Screen Saver click on **Settings**.
 - g. Click on the **Text** button then enter **IBM ESSNet** next to the radio button.
 - h. Click **OK**.
 - i. Set the wait time to 15 minutes.
 - j. At Display Properties, select the **Settings** tab.
 - k. At Color Palette, select **65536 Colors** from the drop down menu.
 - l. At Desktop Area, adjust the slider to **800 x 600**.
 - m. Click on **Test**.
 - n. At the Testing Mode window, click **OK** and wait to view the test screen.
 - o. If you saw the bit map correctly, click **Yes**.
 - p. At the Display Properties window, click **Apply**.
 - q. Click **OK** to close the Display Properties window.

- r. Continue with "TCP/IP Setup of the ESSNet Console for NetVista"

TCP/IP Setup of the ESSNet Console for NetVista:

1. Right click on the Network Neighborhood icon.
2. Select **Properties**.
3. At Network Configuration, click **Yes** to install the NT Networking.
4. Check the **Wired to the Network** box, then click **Next**.
5. Click **Start Search** to find the ethernet adapter.
6. Verify that the ethernet adapter is checked, then click **Next**.
7. Verify that **TCP/IP Protocol** is checked, then click **Next**.
8. Verify that all four Network Services boxes are checked, then click **Next**.
9. Click **Next** to install the selected components.
10. Click **Continue** to install the drives from the **drive c:...**
11. Click **Continue** to copy some Windows NT files.
12. If a DHCP question is asked, click **NO**.
13. Under the Adapter drop down menu, verify that **(1) Intel(R) PRO/100 VE Desktop Connection** is selected.
14. Select the **Specify an IP Address** radio button.
15. Enter an IP Address of 172.31.1.250.
16. Enter a Subnet Mask of 255.255.255.0.
17. Leave the **Default Gateway** blank.
18. Select **Apply**.
19. Select **OK**.
20. Click **Next**.
21. Click **Next** again to start the network.
22. Verify the **Workgroup** radio button is selected, then click **Next**.
23. Click **Finish**.
24. Click **Yes** to reboot the ESSNet Console.
25. Continue with "ESSNet Setup for NetVista".

ESSNet Setup for NetVista:

1. At the Begin Logon screen, press the **Ctrl + Alt + Delete** keys.
2. At the **Logon Information** window, enter Username: Administrator, password = password. Click **OK**.
3. Insert the current ESSNet Console Installation Diskette into the floppy diskette drive.
4. On the desktop, click **Start**, then **Run**.
5. Enter `a:setupenc.exe`, then press Enter.
6. Follow the instructions on the screen by selecting **Yes** to continue.
7. At the **Installshield Self - extracting EXE** window, click **Yes**, then **Next**, then **Yes**, then **Next** then **Finish**.
8. After clicking **Finish**, remove the ESSNet Console Installation Diskette from the a: drive.
9. Close the ESS Network window.
10. On the ESSNet console desktop, double click on the ESSNet Toolkit icon.
11. At the **Missing Setup Files...** dialog box, click **OK**.

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12. Click the **Install/Configure** tab.
13. Click **ESSNet Configuration**.
14. Click the **Subsystem** tab.
15. Click **Add ESS** (2105).
16. Click **Save**.
17. Click **OK**.
18. Close the ESSNet Toolkit.
19. Continue with "Web Browser Setup for NetVista".

Web Browser Setup for NetVista:

1. Start the web browser by clicking the **Windows Start** menu then choose **Programs, ESS Network, ESSNet Console...**
2. From the pull down menu, click on **Tools->Internet Options**. This will bring up the **Internet Options** panel.
3. Under the **General** tab, click the **Use Current** button.
4. Click the **Security** tab.
5. Click the **Internet** icon.
6. Click the **Custom Level**. This will bring up the **Security Settings** panel.
7. Scroll through the Java section and under **Java Permissions**, click on the **Custom** radio button.
8. At the bottom of the **Security Settings** panel, click on **Java Custom Settings**. This will display the **Internet** panel.
9. Click the **Edit Permissions** tab.
10. At **Run Unsigned Content**, click the **Enable** radio button.
11. At the **Internet** panel, click **OK**.
12. At the **Security Settings** panel, click **OK**.
13. At the **Warning !** screen, click **Yes**.
14. At the **Internet** option panel, click **OK**.
15. Maximize the web browser window (Home-Microsoft Internet Explorer).
16. Click the **ESS Specialist** button.
17. After the window changes, under **Select a cluster**, click **(ESS-1 cluster-1)**.
18. At the **Internet Connection Wizard** window, click **Cancel**.
19. At another **Internet Connection Wizard** window, check **Do not show the Internet Connection Wizard in the future**, then click **Yes**.
20. Close the web browser (Specialist-Microsoft Internet Explorer).
21. Continue with "Cleanup Desktop for NetVista".

Cleanup Desktop for NetVista:

1. Move (drag and drop) all of the following icons to the right side of the desktop:
 - ESSNet Toolkit
 - Internet Explorer
 - My Computer
 - Network Neighborhood
 - Inbox
 - My Briefcase
 - Recycle bin

Delete all of the remaining icons on the left side of the desktop.

Installing the 2105 Model Exx/Fxx

- Note:** To move an icon: 1. Left click and hold on the icon, 2. Move mouse/icon, 3. Release the mouse button to drop the icon. To delete an icon: 1. Right click on the icon, 2. Select Delete from the drop down menu.
2. Reply **Yes** to the boxes that ask you to confirm deletion of the icons.
 3. Right click on the desktop (not over any icon on the desktop). From the drop down menu select **Arrange Icons** then **Auto Arrange**.
 4. Continue with "Install Netscape Browser for NetVista".

Install Netscape Browser for NetVista: The Netscape browser can be installed two different ways, this is determined by which installation CD-ROM was shipped with your system:

- "Installing Netscape Browser Using Software Selections CD-ROM"
- "Installing Netscape Browser Using Ready-to-Configure Utility Program CD-ROM"

Installing Netscape Browser Using Software Selections CD-ROM:

1. Insert the Software Selections CD-ROM, that came with the PC system, into the PC's CD-ROM drive. It will take a minute to display the **Software Selections for IBM** window.
2. At the **Software Selections for IBM** window:
 - a. At the Install column, check **Netscape Communicator**. Remove the checks from all other boxes.
 - b. Click **Install**, then click **OK**.
3. When the installation completes, at the **Software Selections for IBM** window, click **Exit**.
4. Close the **Netscape Communicator** window, then remove the Software Selections CD-ROM from the CD-ROM drive.
5. Continue with "Setup Netscape Browser for NetVista" on page 252.

Installing Netscape Browser Using Ready-to-Configure Utility Program CD-ROM:

1. Insert the Ready-to-Configure Utility Program CD-ROM, that came with the PC system, into the PC's CD-ROM drive.
2. Double click the **My Computer** icon.
3. Double click the **D:drive** (Nirtcn019ww).
4. Double click the **Common** folder.
5. Double click the **Netscape** folder.
6. Double click the **Setup** icon (with the **green monitor** icon).
7. At the Netscape Communicator 4.5 Setup window, click **Next**.
8. At the Software license agreement, click **Yes**.
9. Click **Next**.
10. At the Question window, click **Yes**.
11. Click **Next**.
12. Click **Install**.
13. Click **No** for not viewing the README file.
14. Click **OK**.
15. At Restarting windows, click **OK** to restart my computer now.
16. At the **Begin Logon** screen, press the **Ctrl + Alt + Delete** keys.
17. At the **Logon Information** window, enter Username: Administrator, password = password. Click **OK**.
18. Close all of the windows.

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19. Remove the Ready-to-Configure Utility Program CD-ROM from the CD-ROM drive.
20. Continue with "Setup Netscape Browser for NetVista".

Setup Netscape Browser for NetVista:

1. On the desktop, double click on the **Nescape Communicator** icon.
2. As different windows are displayed, click on **Next** five times.
3. At the **Set up your Newsgroups Server** window, click on **Finish**.
4. At the Netscape Navigator window, check **Do Not Perform This Check In The Future**, then click **No**.
5. At the Netscape warning window, click **OK**.
6. At the Netscape Browser, click **EDIT**.
7. Click **Preferences**.
8. At the Home Page location field, enter c:Program Files\ESSNet\www\index.htm.
9. Click **OK**.
10. Close the Netscape Browser window.
11. Shut the system down: click the **Start** button, select **shutdown**, then click **OK**.
12. Continue with "Setup Verification for NetVista".

Setup Verification for NetVista:

1. Power the ESSNet console on.
2. At the **Begin Logon** screen, press the **Ctrl + Alt + Delete** keys.
3. At the **Logon Information** window, enter Username: Administrator, password = password.
4. Maximize the window or scroll down until **Welcome to IBM StorWatch Enterprise Storage Network** is displayed.
If this is not displayed, the SharkNet setup has failed. Perform the ESSNet setup again by going to "Converting Windows NT 2000 to Windows NT 4.0, NetVista" on page 247.
5. Close the **Welcome to IBM StorWatch...** window.
6. At the desk top, double click on the **ESSNet Toolkit** icon.
7. The **ESSNet Toolkit** window should be displayed.
If a **Missing Setup Files** message is displayed, the SharkNet setup has failed. Perform the ESSNet setup again by going to "Converting Windows NT 2000 to Windows NT 4.0, NetVista" on page 247.
8. Close the **ESSNet Toolkit** window.
9. Continue with "Configuring the 2105 Model Exx/Fxx" on page 256.

ESSNet Console Installation, Personal Computer 300PL Only:

- 1. Install and power on the ESSNet console using the documentation that came with the hardware being used as the ESSNet console. The ESSNet console must be located within 15 meters (50 feet) of the ESSNet Ethernet hub.
Use the documentation that came with the hardware to analyze and repair any problems with the ESSNet console hardware.

Note: The ESSNet console may be set to boot from the network first. Press Escape if **Press Escape (Esc) to Cancel the DHCP Network Load** is displayed. If not, the ESSNet console should boot after one minute.

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- ___ 2. NT Setup (only valid during initial power on):
 - a. Ensure that ESSNet console is powered on.
 - b. Click **Next** on **Windows NT Setup**.
 - c. Select the Radio button **I accept this agreement** and click **Next**.
 - d. Enter `essnet1` as the **name**, and leave **organization** blank and click **Next**.
 - e. Enter the 20 digit Product ID found on the Certificate of Authenticity and click **Next**.
 - f. Enter `ESSNET1` as the computer name.

Note: The computer name will only appear in uppercase regardless of which case it is typed.
 - g. Set the Password to *password*.

Note: Enter *password* in lower case.
 - h. Click on **Finish**, and reboot machine.
- ___ 3. Login to the NT operating system with login = administrator, password = password.
- ___ 4. The Display Setup of ESSNet Console:
 - a. If This is the first boot of the workstation you may have to close the Microsoft Internet Explorer window.
 - b. Right click on the desktop (not over any icon on the desktop).
 - c. Select **Properties**.
 - d. Select the **Background** tab, and select **None**.
 - e. Select the **Screen Saver** tab.
 - f. Open the drop down list box and select **3D Text** (Open GL).
 - g. Click on **Settings**.
 - h. Click on the **Text** radio button and type *ESSNet* next to the radio button.
 - i. Click **OK**.
 - j. Set the Wait to 15 minutes.
 - k. Select the **Settings** tab.
 - l. Select **65536 Colors** from the drop down menu under **Color Palette**.
 - m. Adjust the slider to the desired setting under **Desktop Area**:
 - 15 inch monitors, recommended setting **800 x 600**
 - 17 inch monitors, recommended setting **1024 x 768**
 - n. Click on **Test**.
 - o. Click **OK** on the **Testing Mode** window and wait to view the test screen.
 - p. Click **Yes** if you saw the bitmap correctly.
 - q. Click **Apply** on the **Display Properties** window.
 - r. Click **OK** to close the **Display Properties** window.
 - s. Use the buttons at the bottom of the monitor to adjust the screen.
- ___ 5. Connect the ESSNet console to the Ethernet hub using the remaining RJ45 cable. Connect to hub port (8X) on the hub, do not connect to either hub port 16MDI-X or 16MDI. See in Figure 255 on page 246.

Installing the 2105 Model Exx/Fxx

TCP/IP Setup of the ESSNet Console, Personal Computer 300PL Only

- ___ 1. Right click the mouse on the Network Neighborhood icon.
- ___ 2. Select Properties:
 - Note:** Do steps 3 to 12 only if this is the initial setup of TCP/IP on the workstation. If this is **not** the initial setup of TCP/IP, do the following:
 - a. Click on the **Protocols** tab.
 - b. Highlight the **TCP/IP Protocol**.
 - c. Click on the **Properties** tab.
 - d. Continue with step 13.
- ___ 3. Click Yes under **Network Configuration** to install NT Networking.
- ___ 4. Check the box by **Wired to the Network**, and click **Next**.
- ___ 5. Click **Start Search** to find the Ethernet adapter.
- ___ 6. Ensure that the ethernet adapter is checked and click **Next**.
- ___ 7. Ensure that **TCP/IP Protocol** is checked and click **Next**.
- ___ 8. Ensure all Network Services are checked and click **Next**.
- ___ 9. Click **Next** to install selected components.
- ___ 10. Click **Continue** to install the drivers from the c: drive.
- ___ 11. Click **Continue** to copy some Windows NT files.
- ___ 12. Click **OK**, when the Ethernet Adapter properties are shown, if a question is asked about *DHCP*, click **NO**.
- ___ 13. Ensure the ethernet adapter is selected under Adapter drop down menu.
- ___ 14. Select the Specify an IP address radio button.
- ___ 15. Enter 172.31.1.250 for the **IP Address**.
- ___ 16. Enter 255.255.255.0 for the **Subnet Mask**.
- ___ 17. Leave **Default Gateway** blank.
- ___ 18. Select **Apply**.
- ___ 19. Select **OK**:

- Note:** Do steps 20 to 24 only if this is the initial setup of TCP/IP on the workstation. If this is **not** the initial setup of TCP/IP, do the following:
 - a. Click **OK**.
 - b. Click the **Start** button.
 - c. Click the **Shutdown** button and restart the ESSNet console.
 - d. Go to step 25.
- ___ 20. Click **Next**.
- ___ 21. Click **Next** to start the network.
- ___ 22. Ensure the **Workgroup** radio button is selected then click **Next**.
- ___ 23. Click **Finish**.
- ___ 24. Click **Yes** to reboot the ESSNet Console.
- ___ 25. Press the Escape (Esc) key to cancel DHCP Load during bootup.

ESSNet Setup, Personal Computer 300PL Only

- ___ 1. Login as administrator.

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- ___ 2. Insert the ESSNet Console Installation Diskette into the floppy diskette drive.
- ___ 3. On the desktop click **start** then **Run...**
- ___ 4. Enter `a:setupenc.exe`.
- ___ 5. Follow the instructions on the screen.
- ___ 6. Remove the ESSNet Console Installation Diskette from the a: drive.
- ___ 7. On the ESSNet console desktop, double click on the ESSNet Toolkit icon.
- ___ 8. When you get the **Missing Setup Files...** dialog box, click **OK**. If you do not get this box, see ESSTOOLKIT NOTES in README.TXT.
- ___ 9. Click **Install/Configure** tab.
- ___ 10. Click **ESSNet Configuration**.
- ___ 11. Click **Subsystem** tab.
- ___ 12. Click **Add ESS (2105)**.

Note: If the ESSNet is already connected to the customers network, enter the information from the Communication Resources Worksheets before clicking **Save**.

- ___ 13. Click **Save**.
- ___ 14. Click **OK**.
- ___ 15. Close the ESSNet Toolkit.
- ___ 16. Close the ESSNetwork window.

Web Browser Setup, Personal Computer 300PL Only

- ___ 1. Internet Explorer comes preloaded with Windows NT. If you choose to use a different browser such as Netscape Communicator install it now.

Note: For approved web browsers, see *IBM Enterprise Storage Server Introduction and Planning Guide* book (GC26-7294) or *IBM Enterprise Storage Server Web Users Interface Guide* book (SC26-7346).

- ___ 2. Bring up the web browser by clicking the Windows Start menu and choosing **Programs, ESS Network, ESSNet Console**.
- ___ 3. You may have to follow the instructions to set the default profiles if this is the first invocation of the browser.
- ___ 4. Set the current page to the homepage:
 - If the browser is Netscape:
 - a. Click **Edit** from the Menu Bar.
 - b. Select **Preferences**.
 - c. Highlight the **Navigator** category.
 - d. Click on the **Use Current Page** button.
 - e. Click **OK**.
 - If the browser is Internet Explorer @4.0:
 - a. Click **View**, from the Menu Bar.
 - b. Select **Internet Options**.
 - c. Click the **Use Current** button under the **General** tab.
 - d. Click the **Security** tab.
 - e. Select **Internet Zone** from the drop down box next to **Zone:**.
 - f. Click on the **Custom** radio button then click **Settings**.

Installing the 2105 Model Exx/Fxx

- g. Scroll through to the Java section and click the **Custom** radio button, under **Java Permissions**.
- h. Click **Java Custom Settings** at the bottom of the **Security Settings** panel. This brings up the *Internet Zone* panel.
- i. Click the **Edit Permissions** tab.
- j. Click the **Enable** radio button under **Run Unsigned Content**.
- k. Click **OK** on the **Internet Zone** panel.
- l. Click **OK** on the **Security Settings** panel.
- m. Click **OK** on the **Internet Options** panel.
- If the browser is Internet Explorer @5.0:
 - a. Click **Tools->Internet Options** from the menu pull down. This brings up a new panel called **Internet Options**.
 - b. Click the **Use Current** button under the **General** tab.
 - c. Click the **Security** tab.
 - d. Click the **Internet** icon.
 - e. Click the **Custom Level**. This brings up the **Security Settings** panel.
 - f. Scroll through to the Java section and click the **Custom** radio button, under **Java Permissions**.
 - g. Click **Java Custom Settings** at the bottom of the **Security Settings** panel. This brings up the **Internet** panel.
 - h. Click the **Edit Permissions** tab.
 - i. Click the **Enable** radio button, under **Run Unsigned Content**.
 - j. Click **OK** on the **Internet** panel.
 - k. Click **OK** on the **Security Settings** panel.
 - l. Click **OK** on the **Internet Options** panel.
- __ 5. Close the web browser.

Cleanup Desktop, Personal Computer 300PL Only

- __ 1. Delete all icons on the desktop **except** ESSNet Toolkit, Netscape, Internet Explorer, My computer, Network Neighborhood, Inbox, Ethernet, My Briefcase, and Recycle bin.
- __ 2. Click **Yes** on the **Confirm File Delete** panels.
- __ 3. Restart the console.
- __ 4. Continue with "Configuring the 2105 Model Exx/Fxx".

Configuring the 2105 Model Exx/Fxx

- __ 1. Determine if you will be installing a 2105 Expansion Enclosure as an MES.

Note: The 2105 Model E10/F10 does not support 2105 Expansion Enclosure attachment.

Do you have an 2105 Expansion Enclosure MES box to install?

- **Yes**, communications and logical configuration of the 2105 Expansion Enclosure will be delayed until after the 2105 Expansion Enclosures have been physically installed, go to "Installing and Testing the 2105 Expansion Enclosure" on page 269.
 - **No**, go to step 2.
- __ 2. **Perform the communications and the logical configuration of the 2105 Model Exx/Fxx.** Using the Communication Resources Worksheets from the

Installing the 2105 Model Exx/Fxx

IBM Enterprise Storage Server Introduction and Planning Guide book, and the Configuration Worksheets from the IBM Enterprise Storage Server Configuration Planner book, do the configuration procedures from “Communications Configuration of the 2105” on page 376 through “Logical Configurations” on page 379.

Return here when the configuration is completed.

- ___ 3. Make a copy of all of the customer worksheets and put the copy in the 2105 Model Exx/Fxx document enclosure. This information may be needed for future repair or configuration activities.
- ___ 4. Continue with step “Verifying the ESSNet Setup”.

Verifying the ESSNet Setup

- ___ 1. Ensure that the ESSNet console is powered on and the web browser is started.
- ___ 2. Click on the browser's **Home** button. This will display the Enterprise Storage Servers network home page.
- ___ 3. Click on the **ESS Specialist** button on the left side of the panel.
- ___ 4. Click on the 2105 Model Exx/Fxx cluster (1 or 2) that you want to connect to. This will start a new browser window and start the ESS Specialist on the selected cluster.

Did the web browser connect correctly to the selected Cluster?

- **Yes**, continue with step “Connecting the 2105 Model Exx/Fxx to the Host System”.
- **No**, go to “MAP 5000: ESS Specialist Cannot Access Cluster” in chapter 3 of the *Enterprise Storage Server Service Guide, Volume 1*.

Connecting the 2105 Model Exx/Fxx to the Host System

This section describes the actions that should be done to connect the external host cables to the 2105 Model Exx/Fxx.

Attention: The 2105 and cables in this procedure are ESD-sensitive. Always wear an ESD wrist strap during this procedure. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

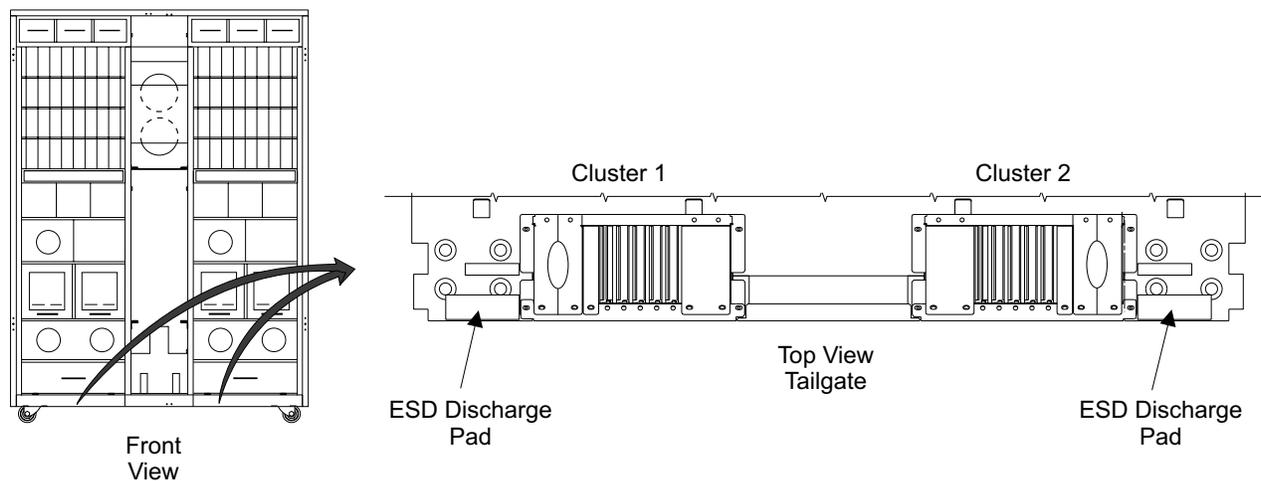


Figure 256. 2105 Model Exx/Fxx ESD Discharge Pad Locations (S008339m)

Installing the 2105 Model Exx/Fxx

- ___ 1. Ensure that the customer has made the configuration changes at the host that are needed to support the 2105 Model Exx/Fxx subsystem attachment.
- ___ 2. Identify the 2105 Model Exx/Fxx host bay that the host cables from the host will be attached to using the Configuration Worksheets from the *IBM Enterprise Storage Server Configuration Planner* book, form number GC26-7353.

Attention: To prevent electrostatic discharge, ensure you discharge all SCSI host cables to the ESD discharge pad [Figure 256], before you plug them into the 2105 Model Exx/Fxx. The ESD discharge pads are mounted on the front right and left corners of the 2105 Model Exx/Fxx frame, next to each tailgate.

- ___ 3. Route and connect the host cables to the appropriate host bay [Figure 257]. Allow a loop of about 1 meter (3 feet) under the 2105 or floor, to allow the bays to be moved to their service position.

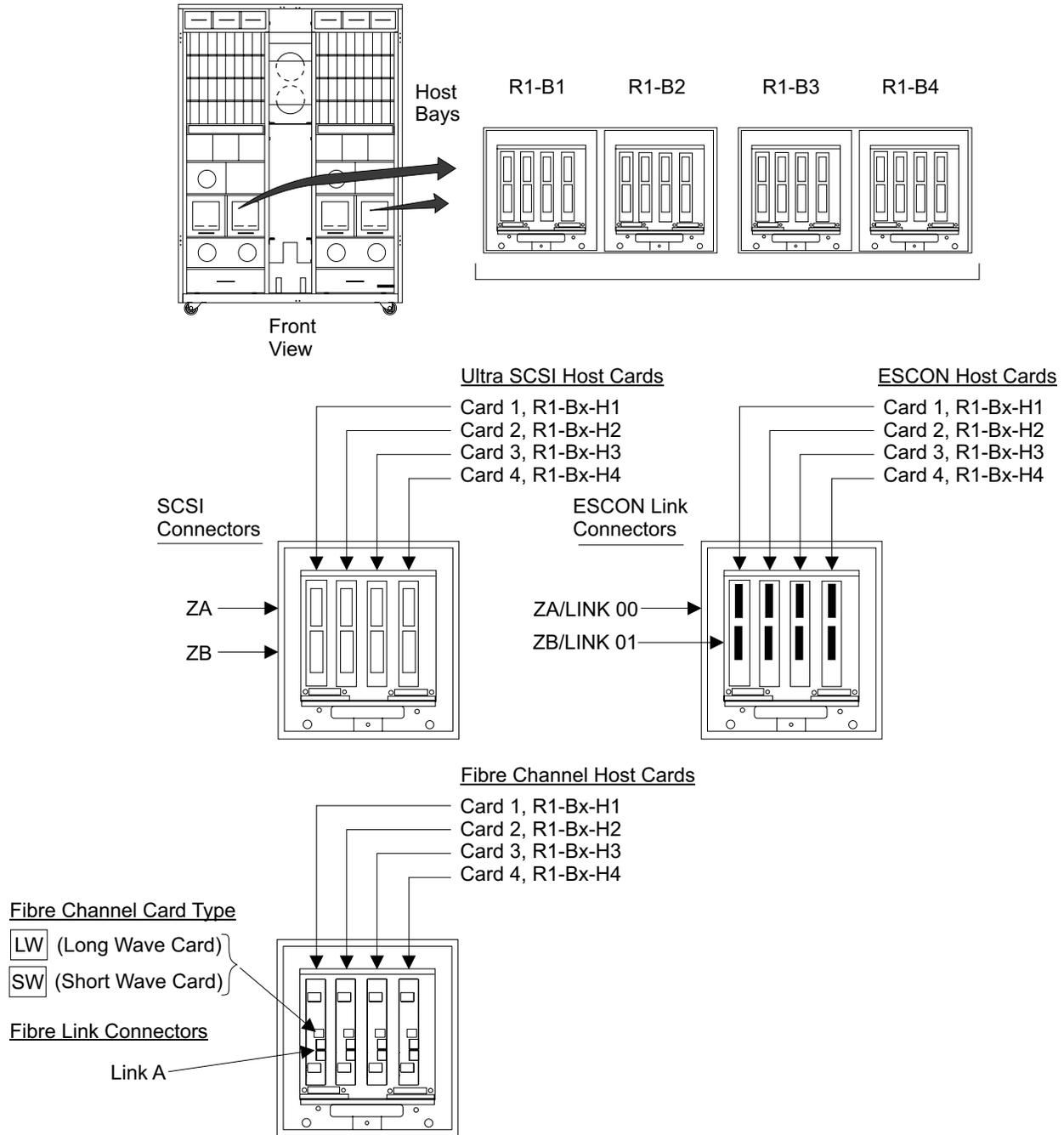


Figure 257. 2105 Model Exx/Fxx Host Bay Connector Locations (S008024r)

- ___ 4. Continue with “Testing Modem Communications”.

Testing Modem Communications

- ___ 1. Connect the service terminal interface cable to the S2 connector [Figure 258] on the front of cluster bay 1 and log into cluster bay 1.
- ___ 2. Select **Machine Test Menu** from the Main Service Menu.
- ___ 3. Select **Send Test Notification Menu** from the Machine Test Menu
- ___ 4. Select **Service Notification (via modem)** from the Send Test Notification Menu.

Installing the 2105 Model Exx/Fxx

- ___ 5. Follow the instructions on the service terminal to test call home problem reporting to IBM.
- ___ 6. Verify that the message was received at the IBM RETAIN system.
- ___ 7. Determine if the Pager User was configured:
 - If the Pager User WAS configured, go to step 8.
 - If the Pager User was NOT configured, go to step 13.
- ___ 8. Select **Machine Test Menu** from the Main Service Menu.
- ___ 9. Select **Send Test Notification Menu** from the Machine Test Menu
- ___ 10. Select **Pager Notification (via Pager)** from the Send Test Notification Menu.
- ___ 11. Follow the instructions on the service terminal to test call home problem reporting to IBM.
- ___ 12. Verify that the page was received.
- ___ 13. When the service notification message from cluster bay 1 is received by the IBM RETAIN system is successful, move the service terminal interface cable to S2 on cluster bay 2. Repeat the same test on cluster bay 2.

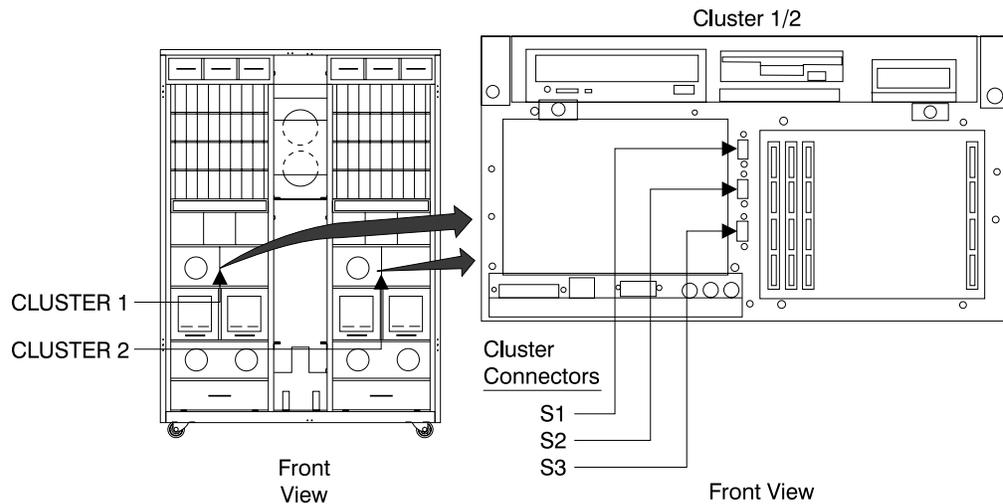


Figure 258. Cluster Bay Connectors for Service Terminal (S008027m)

- ___ 14. Continue with “Completing the Installation”.

Completing the Installation

- ___ 1. Verify that all of the signal and interface cables that enter the 2105 Model Exx/Fxx are retained by the tailgate cable clamps:
 - Cluster Bay 1 tailgate, **1** [Figure 259]
 - Cluster Bay 2 tailgate, **2** [Figure 259]

Verify that the tailgate hardware is installed correctly. See “2105 Model Exx/Fxx Tailgate Cable Clamp Removal and Installation” on page 306.

Note: The SSA device cables to a attached 2105 Expansion Enclosure do not pass through the tailgate. They are routed up through the top of the frames.

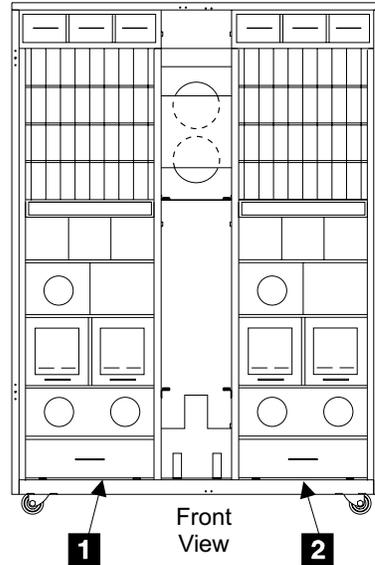


Figure 259. Tailgate Cable Strain Relief Clamps (S007636m)

- ___ 2. Refer to the "Entry MAP for All Service Actions" in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*, for other 2105 subsystem hardware installation procedures.
- ___ 3. Before returning the 2105 to the customer, verify that the storage configuration is complete:

From the service terminal **Main Service Menu**, select:

Configuration Options Menu

ESS Batch Configuration Tool Menu

Display Status of Apply Process

Configuration is complete when the status shows

Application of the Defined Configuration Successfully Completed.

Note: If additional configuration needs to be completed, use the ESS Specialist from the ESSNet console.

- ___ 4. Is the ESSNet already attached to the customers network?
 - **Yes**, go to step 6.
 - **No**, continue with the next step.
- ___ 5. Determine if the customer wants to attach his network to the ESSNet at this time.

Does the customer want to attach to the ESSNet now?

 - **Yes**, go to "Attaching The ESSNet to a Customer Network" on page 265. Return here and continue with the next step.
 - **No**, go to step 13 on page 262.
- ___ 6. Use the service terminal to test the network connection with the E-Mail Test to a customer defined E-mail recipient.
- ___ 7. Connect the service terminal interface cable to the S2 connector on the front of cluster bay 1 and log into cluster bay 1.

From the service terminal **Main Service Menu**, select:

Machine Test Menu

Installing the 2105 Model Exx/Fxx

Send Test Notification Menu

Customer Notification (via E-Mail)

Follow the instructions on the service terminal to send E-mail to a customer designated E-mail recipient.

- ___ 8. Use the service terminal to test the network connection with the SNMP test to a customer defined SNMP recipient:

From the service terminal **Main Service Menu**, select:

Machine Test Menu

Send Test Notification Menu

Customer Notification (via SNMP)

Follow the instructions on the service terminal to send a customer notification via SNMP.

- ___ 9. Verify that the E-mail and the SNMP notification were received by the customer.
- ___ 10. When the E-mail and SNMP messages are successful, move the service terminal interface cable to S2 on cluster bay 2. Repeat the same tests, steps 6 on page 261 to 9, on cluster bay 2.
- ___ 11. Have you installed any Copy Services features on this machine?
 - **Yes**, go to step continue with the next step.
 - **No**, go to step 13.
- ___ 12. Is the customer using Copy Services with the Domain Name Server (DNS) configured?
 - **Yes**, go to “Configure Copy Services, with DNS” on page 383.
 - **No**, go to “Configure Copy Services, without DNS” on page 385.

Note: Use the Communications Resources (ESS Web Copy Services) Worksheet information to determine the use of DNS.

- ___ 13. Disconnect the service terminal cables from the 2105 Model Exx/Fxx and remove the service terminal from the table.
- ___ 14. Push the service terminal table **3** [Figure 260] in until the latches on each side engage the frame on both sides.

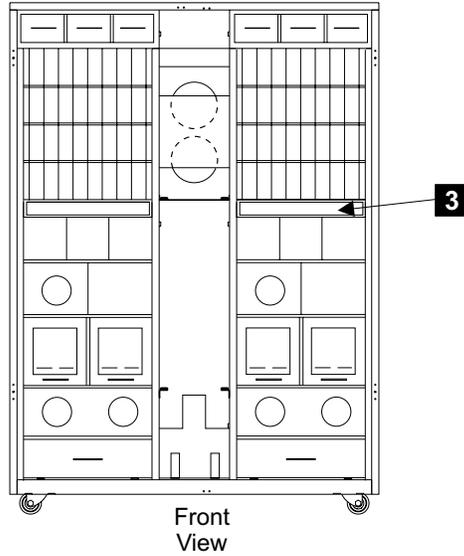


Figure 260. Storing the Service Terminal Table (S008608m)

- ___ 15. Has the customer ordered the remote power control feature?
 - **Yes**, continue with the next step.
 - **No**, go to step 18 on page 264.
- ___ 16. Attach the remote power control cable from the host to the remote power control card **4** [Figure 261].

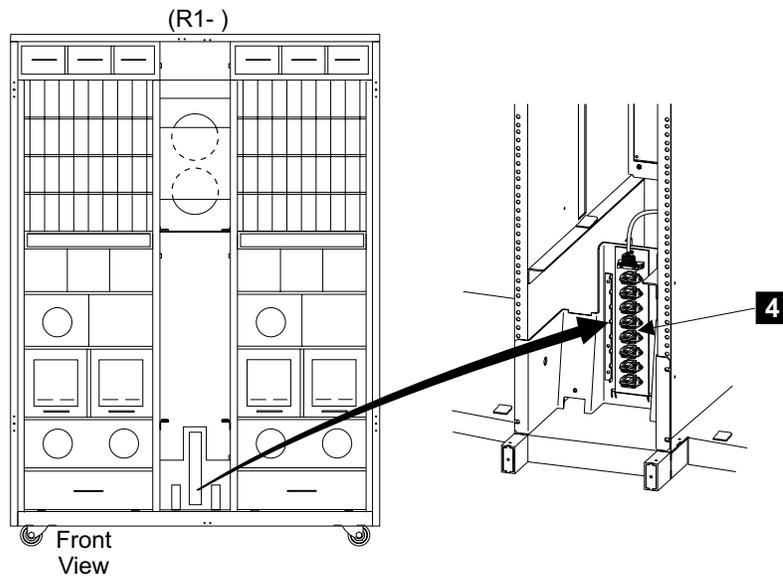


Figure 261. Tailgate Cable Strain Relief Clamps (S009053)

- ___ 17. Set the Local/Remote switches on both RPC cards to the Remote position.

Installing the 2105 Model Exx/Fxx

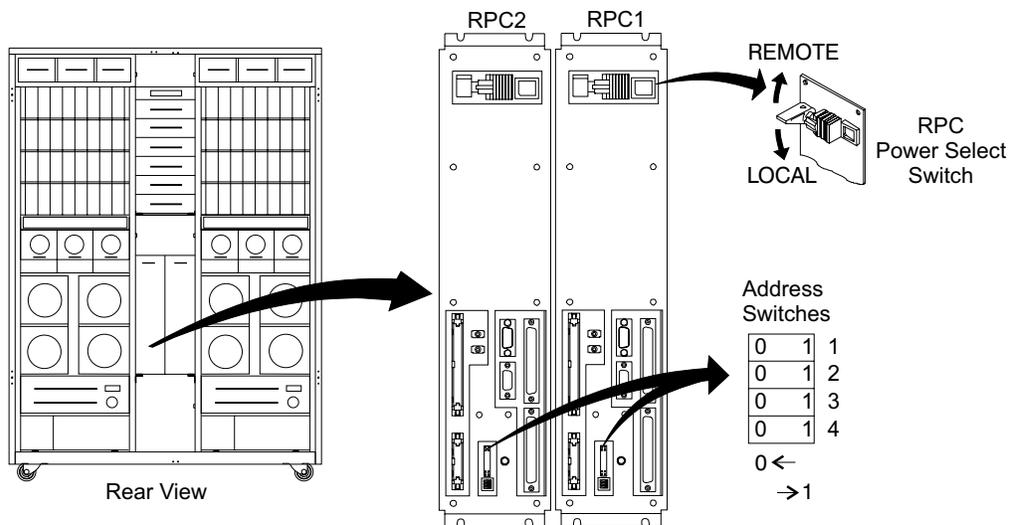


Figure 262. RPC Card Local/Remote Switch Locations (S008612m)

- ___ 18. Place the following items in the front and rear document enclosures for future reference and use:
 - Copies of the configuration worksheets
 - Spare ship group components
 - CD-ROMs
 - Spare labels
 - Cable planning worksheets
- ___ 19. Complete all installation records.
- ___ 20. Update the account records to include this installation.
- ___ 21. Reference the pack/unpack instructions for return/discard information. Discard the shipping material locally.

Installation Complete: the installation of the IBM 2105 Enterprise Storage Server is complete.

Note: After the initial install is complete, if the customer wants to change the TCP/IP or Hostname communication information, they must have the service representative do it. The service representative must use “Additional Configuration Procedures” on page 380. The changes will need to be added separately to both clusters to prevent cluster-to-cluster communication errors/timeouts. These communication problems will greatly increase IML time.

1. The ESSNet is completely installed and the customer can now begin configuring all of the 2105s connected to the ESSNet from the ESSNet console. After the customer is ready to connect their network, go to “Attaching The ESSNet to a Customer Network” on page 265.

Note: Configuration and connecting logical volumes is a customer operation using the ESS Specialist.

2. Have the customer, do the following:
 - a. Start the web browser and click on the browsers **Home** button. This will display the Enterprise Storage Servers network home page.
 - b. Click on the **ESS Specialist** button on the left panel.

- c. Click on the 2105 Model Exx/Fxx cluster (1 or 2) that you want to connect to. This will display a new browser window and start the ESS Specialist on that cluster.

Attaching The ESSNet to a Customer Network

Attention: In order to avoid LAN conflicts, the customer **MUST** provide TCP/IP information for ALL 2105 subsystems that are currently attached to the ESSNet. Before continuing, ensure that the customer TCP/IP information is available.

- ___ 1. Verify that all ESS Specialist sessions are closed before continuing.
- ___ 2. Change the ESSNet Console TCP/IP Information in all 2105s on the ESSNet.
 - a. Using the Service Terminal, login to the 2105 Model Exx/Fxx as service. From the service terminal **Main Service Menu**, select:

Configuration Options Menu

Configure Communications Resources Menu

Change / Show TCP/IP Configuration

Further Configuration

Name Resolution

Hosts Table (/etc/hosts)

Add a Host

- b. Use the Communications Resources Worksheets to enter the customer supplied INTERNET ADDRESS (dotted decimal) and HOST NAME of the ESSNet console connected to your ESSNet. (The default name and address was essnet1 and 172.31.1.250.)
- c. Press Enter.
- d. After OK received, press **F3** until the **Change / Show TCP/IP Configuration** menu is displayed.

Note: Pressing **F3** too many times will cause the daemons to restart and will add unnecessary delay.

- ___ 3. Changing Network information of the 2105s
 - a. Select **Minimum Configuration & Startup**.
 - b. Select **en0**.

Note: If the customer wants to use the **et0** Ethernet interface, call your next level of support.

- c. Modify the following as supplied by the customer on the Communication Resources Work Sheet, and then press Enter.
 - 1) Hostname
 - 2) Internet Address
 - 3) Subnet Mask
 - 4) Nameserver
 - 5) Domain Name
 - 6) Gateway Server
- d. Press Enter.
- e. After OK received, press **F3** until the **Change / Show TCP/IP Configuration** menu is displayed.

Attaching The ESSNet to a Customer Network

Note: Pressing **F3** too many times will cause the daemons to restart and will add unnecessary delay.

- ___ 4. Configuring the Alternate Cluster:
 - a. Select **Configure Alternate Cluster IP Address and Hostname**.
 - b. Enter the customer supplied INTERNET ADDRESS (dotted decimal) and HOST NAME of the alternate cluster (the cluster bay the service terminal is NOT connected to) of the 2105.
 - c. Press Enter.
 - d. After OK received, press **F3** until the **Change / Show TCP/IP Configuration** menu is displayed.
- ___ 5. Restarting Daemons.

Press **F3** until you receive the Restarting TCP/IP daemons... message. Then type Y and press enter, wait for the Press enter to continue message, then press enter again.
- ___ 6. The ESS Specialist Certificate must be regenerated.

From the service terminal **Main Service Menu**, select:

 - Configuration Options Menu**
 - Configure Communications Resources Menu**
 - ESS Specialist Menu**
 - Disable the ESS Specialist**

From the service terminal **Main Service Menu**, select:

 - Configuration Options Menu**
 - Configure Communications Resources Menu**
 - ESS Specialist Menu**
 - Create New Key Files/Certificate**

Follow the service terminal instructions.

From the service terminal **Main Service Menu**, select:

 - Configuration Options Menu**
 - Configure Communications Resources Menu**
 - ESS Specialist Menu**
 - Enable the ESS Specialist**

Continue with the next step.
- ___ 7. Press F10 to exit SMIT.
- ___ 8. This is a very important step, read the following *Attention* carefully:

Attention: Repeat steps 1 on page 265 to 7 for **each** Cluster of **each** 2105 subsystem connected to the ESSNet.
- ___ 9. Configuring the Network Information of the 2105s on the ESSNet Console:
 - a. On the ESSNet console, double click the ESSNet Toolkit icon on the desktop.
 - b. Select the **Install/Configure** tab.
 - c. Click on the **ESSNet Configuration** Button.
 - d. Select the **Primary ESSNet Console** tab.
 - e. Enter the following as supplied by the customer in the communications resources worksheets from any attached 2105.
 - Hostname of the ESSNet Console

Attaching The ESSNet to a Customer Network

- IP Address of the ESSNet Console
 - Subnet Mask of the ESSNet Console
- f. Click on the **Subsystem** tab.
 - g. Select the HostName of the cluster of the 2105 that needs to be changed. (To do this click on the Device-Model of the row you wish to edit.)
 - h. Click on **Edit Subsystem** and change the following as supplied by the customer in the *IBM Enterprise Storage Server Introduction and Planning Guide* book, form number GC26-7294.. (This information needs to match the IP information already updated on the clusters of the 2105.) Update the following for each cluster of the 2105 Model Exx/Fxx:
 - HostName
 - IP Address
 - Subnet Mask
 - i. Click on **Save**

Note: The window may not close if data is missing or not correct.
 - j. Repeat steps 9g to 9i for each 2105 on the ESSNet.
 - k. Click **OK**.
 - l. Close the ESSNet Toolkit window.
- ___ 10. Configuring the ESSNet Console Network Information.
- a. Point the mouse at the **Network Neighborhood** icon.
 - b. Press right mouse button.
 - c. Select **Properties** on pop-up menu.
 - d. Select the **Identification** tab.
 - e. Click on the **Change** button.
 - f. Change the **Computer Name** to the customer supplied Hostname.
 - g. Click **OK**.
 - h. Click **OK** on the window that shows that the computer name has been changed.
 - i. Select **Protocols** tab.
 - j. Highlight **TCP/IP Protocol**.
 - k. Click on the **Properties** button.
 - l. Select the **IP Address** tab and update the following for the ESSNet Console with the information provided by the customer:
 - The IP address of the ESSNet Console
 - The Subnet Mask of the ESSNet Console
 - The Default Gateway of the ESSNet Console
 - m. Select the **DNS** tab and update the following for the ESSNet Console with the information provided by the customer:
 - The Hostname of the ESSNet Console
 - The Domain of the ESSNet Console
 - The DNS Servers Gateway of the ESSNet Console
 - n. Select **Apply**.
 - o. Select **OK**.
 - p. Select **OK**.

Attaching The ESSNet to a Customer Network

- q. Reboot ESSNet Console.
- ___ 11. Verifying the Network Connection.
 - a. Ensure that the ESSNet console is powered on and the web browser is started.
 - b. Click on the browsers **Home** button. This will display the Enterprise Storage Servers network home page.
 - c. Click on the **ESS Specialist** button on the left side of the panel.
 - d. Click on each 2105 Model Exx/Fxx cluster (1 and 2) that you want to connect to. This will start a new browser window and start the ESS Specialist on the selected cluster.
 - e. Verify that the rack serial number is correct for each cluster.

Did the web browser connect correctly to each Cluster?

 - **Yes**, continue with the next step.
 - **No**, go to "MAP 5000: ESS Specialist Cannot Access Cluster" in chapter 3 of the *Enterprise Storage Server Service Guide, Volume 1*.
- ___ 12. Plug the customer's RJ45 cable into the hub. If the customer's connector requires a non-crossover port, use port 16MDI. If the customer requires a crossover port, use 16MDI-X, see Figure 255 on page 246. Never connect a cable in both connectors 16MDI-X and 16MDI at the same time. For more information, refer to documentation provided with hub.
- ___ 13. Have the customer verify the connection by bringing up the ESS Specialist to one of the attached 2105 clusters.

Did the web browser connect correctly to the selected cluster?

 - **Yes**, continue with the next step.
 - **No**, go to "MAP 5000: ESS Specialist Cannot Access Cluster" in chapter 3 of the *Enterprise Storage Server Service Guide, Volume 1*.
- ___ 14. Use the service terminal to test the network connection with the E-Mail Test to a customer defined E-mail recipient.

Connect the service terminal interface cable to the S2 connector on the front of cluster bay 1 and log into cluster bay 1.

From the service terminal **Main Service Menu**, select:

 - Machine Test Menu**
 - Send Test Notification Menu**
 - Customer Notification (via E-Mail)**

Follow the instructions on the service terminal to send E-mail to a customer designated E-mail recipient.
- ___ 15. Use the service terminal to test the network connection with the SNMP test to a customer defined SNMP recipient:

From the service terminal **Main Service Menu**, select:

 - Machine Test Menu**
 - Send Test Notification Menu**
 - Customer Notification (via SNMP)**

Follow the instructions on the service terminal to send a customer notification via SNMP.
- ___ 16. Verify that the E-mail and the SNMP notification were received by the customer.
- ___ 17. When the E-mail and SNMP messages are successful, move the service terminal interface cable to S2 on cluster bay 2. Repeat the same tests, steps 14 to 16, on cluster bay 2.

Attaching The ESSNet to a Customer Network

- ___ 18. Setup is complete, inform the customer that he is now attached to the ESSNet.
- ___ 19. Return to the procedure that sent you here.

Installing and Testing the 2105 Expansion Enclosure

Attention:A 2105 Expansion Enclosure can only be installed with a 2105 Model E20/F20.

These instructions describe:

- What to do before you install the 2105 Expansion Enclosure rack.
- How to install the 2105 Expansion Enclosure rack.
- How to power on the 2105 Expansion Enclosure and test the installation.
- How to complete the 2105 Expansion Enclosure installation.

These instructions assume that you have access to:

- The *IBM Enterprise Storage Server Introduction and Planning Guide* book, form number GC26-7294.
- Logical configuration information from the Configuration Worksheets found in the *IBM Enterprise Storage Server Configuration Planner* book, form number GC26-7353.

Before You Install the 2105 Expansion Enclosure

This section describes the actions that should be done and safety items that should be considered before you start to install a 2105 Expansion Enclosure.

- Verify the ship group is complete.
- Check that customer preparation is complete.
- Label and route cables.

Attention: If IBM Manufacturing shipped the 2105 Expansion Enclosure and the 2105 Model E20/F20 at the same time, the 2105 Expansion Enclosure is already physically configured as part of the 2105 storage facility subsystem. If all cables are not connected correctly, an *Unexpected Resources* message will be generated during **Install Storage Facility** at the service terminal.

Verify the Ship Group is Complete

Place a check mark next to each completed step.

- ___ 1. Remove the CE Unpacking Instructions from the CE envelope taped to the front of the bagged 2105 Expansion Enclosure. Use the CE Unpacking Instructions to unpack the 2105 Expansion Enclosure and prepare it for installation.
- ___ 2. Perform the safety inspection if the 2105 Expansion Enclosure was previously installed and was not previously leased from IBM or maintained by IBM service support representatives. See "Safety Inspection" in chapter 12 of the *Enterprise Storage Server Service Guide, Volume 3*, to perform this inspection.
- ___ 3. Verify that all items in the ship group were received. See the parts list (B/M 34L3285) in the ship group box.
- ___ 4. Place the ship group parts list at the end of this manual for use during removal of the 2105 Expansion Enclosure.
- ___ 5. Inspect the 2105 Expansion Enclosure for any damage that might have occurred during shipping.

Installing the 2105 Expansion Enclosure

If you observe shipping damage or missing items, do not install the 2105 Expansion Enclosure without IBM management approval. Report all observed damage immediately, following existing procedures.

- ___ 6. Are you installing the 2105 Expansion Enclosure and a 2105 Model E20/F20 at the same time?
- **Yes**, the LIC Feature Control Record was already generated. Continue with "Checking the Customer Preparation" on page 271.
 - **No**, continue with "LIC Feature Control Record Extraction".

LIC Feature Control Record Extraction

Check if a diskette containing LIC Feature Control Records was supplied in the ship group or a MES.

- If a LIC Feature Control Record diskette WAS supplied, this procedure is not necessary. Continue with "Checking the Customer Preparation" on page 271.
- If a LIC Feature Control Record diskette WAS NOT supplied, you (the service support representative) will have to determine if LIC features have been ordered for this machine. Do the following procedure to determine if LIC features have or have not been ordered. If LIC features have been ordered, this procedure will guide you to make a LIC Feature Control diskette.

Note: The LIC Feature Control Records diskette will be used later during installation configuration.

Requirements::

- PC with Web browser and diskette drive
- DOS formatted 1.44 MB, 3.5 inch diskette

Attention: The ESS diskette drive only reads 1.44 formatted diskettes formatted by a 1.44 drive.

Procedure::

- ___ 1. Bring up IBM ViewBlue with the following URL:
<http://w3.viewblue.ibm.com>
- ___ 2. At the IBM ViewBlue Information and Services Logon screen, do the following.
- a. Select your Country
 - b. Enter your IBM employee Serial Number.
 - c. Click the **Logon** box
- ___ 3. If you get an informational screen, click on **Continue**.
- ___ 4. At the IBM Public Information and Services Main Menu, do the following.
- a. Scroll down to **Technical**
 - b. Click **FCDB** - Feature Code Database
- ___ 5. At the Feature Code Database - Main Menu screen, click on **Extract Machine Data**.
- ___ 6. At the Feature Code Database - Select Machine screen, do the following:
- a. Select your Machine Type/Model
 - b. Enter the two character Plant of Manufacture Code
 - 1) 13 = San Jose, USA
 - 2) 75 = Vac, Hungary
 - 3) 82 = Sumare, Brazil
 - 4) 97 = Fujisawa, Japan

Installing the 2105 Expansion Enclosure

- c. Enter the five character Machine Serial Number
- d. Click the **Submit** box

If a file name of **FEA#####.BIN** is displayed, a LIC Feature Control diskette is required.

Was file name **FEA#####.BIN** displayed?

- **Yes**, go to step 7.
- **No**, continue with “Checking the Customer Preparation”.

- ___ 7. At the Feature Code Database - Download Control File screen, do the following:
 - a. Click on the Download Filename displayed in the format of **FEA#####.BIN**
 - b. At the Save as... pop up screen, do the following
 - 1) At the Save In folder, select **3.5 inch Floppy (A:)**
 - 2) Click the **Save** box
- ___ 8. The file is now saved on the 3.5 inch DOS diskette. Close all browser windows.
- ___ 9. Label the Diskette and save it for later use with Installation Configuration.
- ___ 10. Continue with “Checking the Customer Preparation”.

Checking the Customer Preparation

- ___ 1. Ensure the customer has filled out the Configuration Worksheets for the 2105 Expansion Enclosure being installed. For the Configuration Worksheets, refer to the *IBM Enterprise Storage Server Configuration Planner* book, form number GC26-7353.
- ___ 2. Ensure the customer has two ac power supply cables for the 2105 Expansion Enclosure from two separate power sources for maximum fault tolerance.

Notes:

- a. Operation with a single mainline power cable is not supported at installation.
 - b. The IBM 2105 Expansion Enclosure is designed for connection to an IT power distribution system. An IT power distribution system is one where the neutral conductor *is isolated* from earth (ground) by an impedance with exposed conductive parts in the installation tied directly to earth. No service support representative action is needed, information is for compliance with international Electrotechnical Commission standard 950 for the safety of information technology equipment, and electrical business equipment.
- ___ 3. If the 2105 Expansion Enclosure will be installed on a raised floor, ensure the customer has correct airflow for cooling.

Note: The 2105 Expansion Enclosure rack cooling airflow comes in through the front and rear covers and leaves through the top and rear covers. The bottom of the 2105 Expansion Enclosure is sealed.

To correctly cool a 2105 Expansion Enclosure, place two floor tiles that have holes for airflow, directly in the front and rear of the 2105 Expansion Enclosure.

Installing the 2105 Expansion Enclosure

- ___ 4. The temperature operating environment requirements for 2105 are found in the *IBM Enterprise Storage Server Introduction and Planning Guide* book, form number GC26-7294.
- ___ 5. Continue with "How to Install the 2105 Expansion Enclosure".

How to Install the 2105 Expansion Enclosure

This section describes positioning the 2105 Expansion Enclosure, attaching to the 2105 Model E20/F20, and preparation for customer power checks.

- If this is a raised floor installation, position the 2105 Expansion Enclosure for installation
- Install the rack spacers
- Lock casters
- Install the primary power supply interconnect cables
- Install the top hat

CAUTION:

A fully configured unit in the crate can weigh up to 1500 kilograms (3305 pounds). Using less than three persons to move it can result in injury. (1060)

Note: This notice is translated into selected languages. See "Translation of Cautions and Danger Notices" in chapter 11 of the *Enterprise Storage Server Service Guide, Volume 3*.

Position the 2105 Expansion Enclosure Rack

If you have any questions about floor loading and service clearances of the ESS racks, review the *Site Requirements for the ESS* section in the *IBM Enterprise Storage Server Introduction and Planning Guide* book, form number GC26-7294.

- ___ 1. Ensure that the location meets the necessary service clearances for the 2105 subsystem, refer to *Site Requirements for the ESS* section in *IBM Enterprise Storage Server Introduction and Planning Guide* book, form number GC26-7294.
- ___ 2. Position the floor tiles with ventilation hole for cable entry to the front of the 2105 Expansion Enclosure, as shown in the *IBM Enterprise Storage Server Introduction and Planning Guide* book, form number GC26-7294.

Attention: The weight of the 2105 Expansion Enclosure can be as high as 1340 kilograms (2950 pounds) per rack. The weight of the two rack 2105 subsystem can be as high as 2545 kilograms (5600 pounds).

The weight of this subsystem should be reviewed with the customer to ensure that their raised floors have adequate support.

- ___ 3. Remove the cover and its mounting hardware from the right side of the 2105 Model E20/F20.
- ___ 4. Install the cover mounting hardware and the cover onto the right side of the 2105 Expansion Enclosure.
- ___ 5. Verify that the 2105 Model E20/F20 is in its permanent location. Move the 2105 Expansion Enclosure so it is next to the right side of the 2105 Model E20/F20 from the front of the 2105 subsystem. Allow about 30 cm (12 inches) of space between the two frames.
- ___ 6. Install the rack spacers between the 2105 Model E20/F20 and the 2105 Expansion Enclosure:
 - a. Refer to Figure 263 on page 273.

Installing the 2105 Expansion Enclosure

- b. Install the top spacer onto the top of the 2105 Model E20/F20 so its studs **2** fit through the holes in the 2105 Model E20/F20 frame **1**. Install the nuts onto the studs loosely so the top spacer can move freely.
- c. Install the bottom spacer onto the bottom of the 2105 Model E20/F20 so its studs **7** fit through the holes in the 2105 Model E20/F20 frame **8**. Install the nuts onto the studs loosely so the bottom spacer can move freely.
- d. Loosely install the lower two spacer side panel mounting screws **6** into the holes on the front of the lower stiffener.
- e. Position the front spacer side panel so its screw slots **5** slide onto the two screws in the front of the lower stiffener **6**.
- f. Push the front spacer side panel in and install the two top screws **4**.
- g. Install the rear spacer side panel **3** the same as the front spacer side panel.
- h. Move the 2105 Expansion Enclosure frame so the studs in the upper and lower spacers fit through the holes in the top and bottom of its frame.
- i. Install the eight nuts onto the top and bottom spacer mounting studs. Tighten all eight of the spacer nuts in both frames.
- j. Tighten all eight spacer side panel mounting screws.

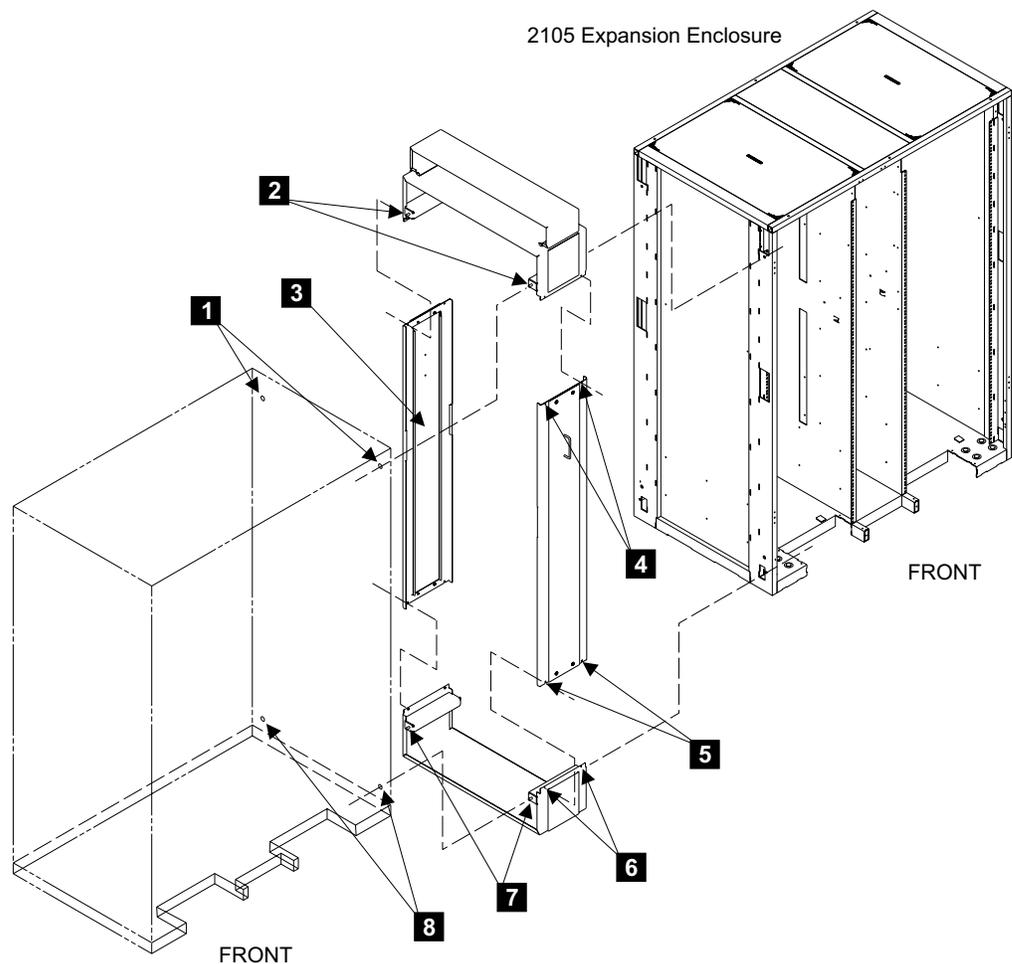


Figure 263. Installation of 2105 Rack Spacers (S008671q)

Installing the 2105 Expansion Enclosure

- ___ 7. Use this step to remove the rack spacer service access panels from the front **11** and rear **9** of the 2105 subsystem.
 - a. Loosen the service panels two lower mounting screws **12**.
 - b. Remove the service panels two upper mounting screws **10**.
 - c. Pull the side spacer out by the handle **11**, and lift off of the lower screws **12**.
 - d. Reinstall the service panels when service access is no longer needed.

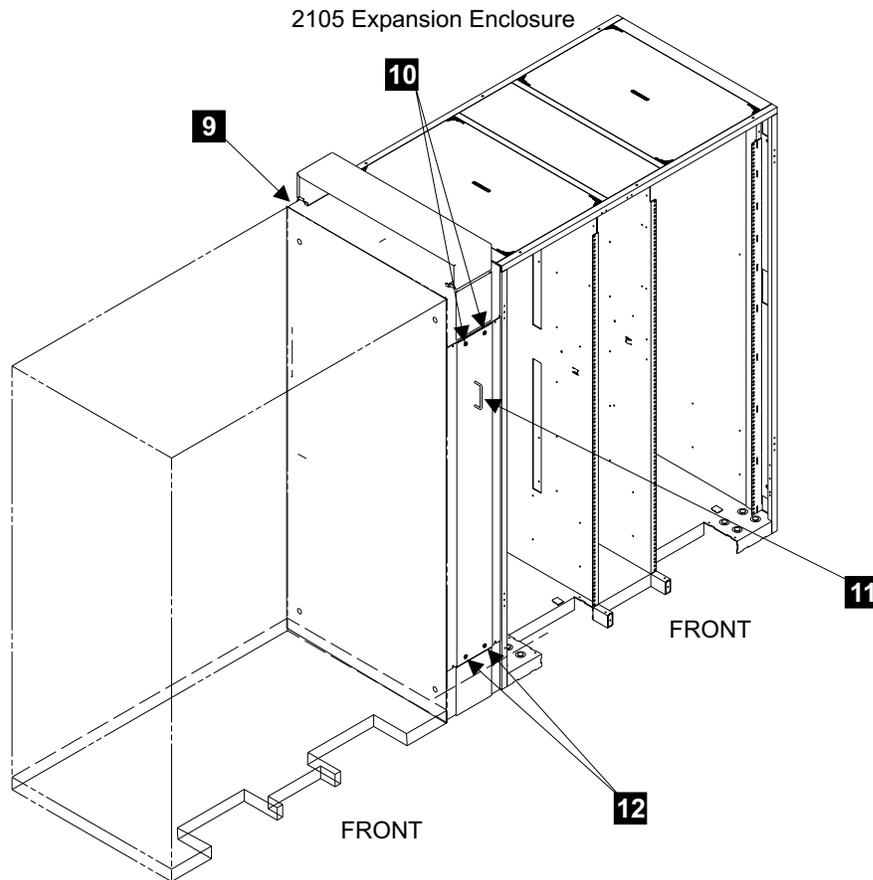


Figure 264. Rack Spacer Service Panel Removal (S008672p)

- ___ 8. Locate the ground strap **13** on the 2105 Expansion Enclosure. Remove one of the ground strap mounting screws. Feed the loose ground strap through the frame spacer and attach it to the 2105 Model E20/F20 frame.

Installing the 2105 Expansion Enclosure

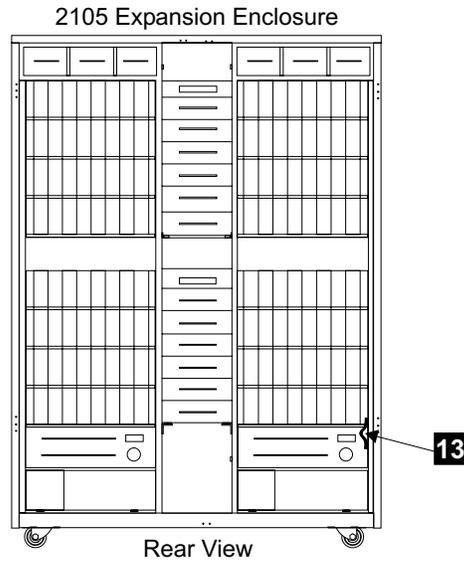


Figure 265. 2105 Expansion Enclosure Ground Strap Location (S008670m)

- ___ 9. Verify the cutout floor tiles beneath the front of the 2105 Expansion Enclosure allow access to the center tailgate area.
- ___ 10. Install the wedge locks **14** (located in the ship group) on all four casters.

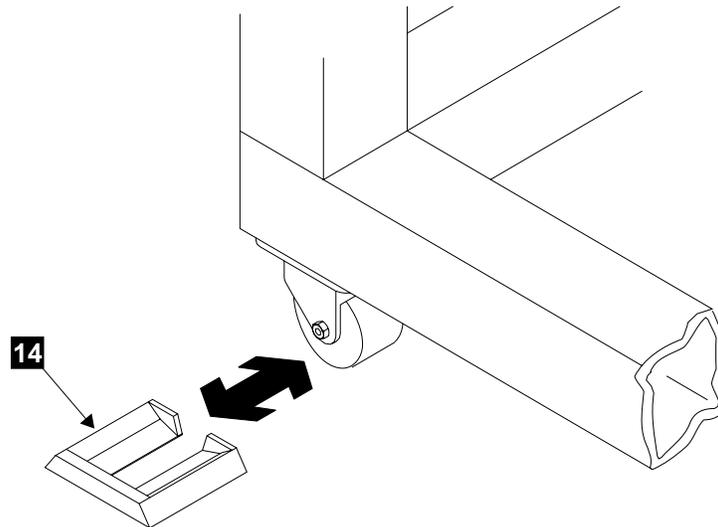


Figure 266. Caster Wedge Locks (S009050)

- ___ 11. Install the decorative top hat onto the top of the 2105 Expansion Enclosure:
 - a. Lift the top hat onto the top of the 2105 Expansion Enclosure, position it with the side opening **15** to the front of the 2105.
 - b. Open the front and rear covers of the 2105 Expansion Enclosure.
 - c. Install the six screws (three on each side) **17** up through the holes in the frame **16** into the threaded holes in the top hat.

Installing the 2105 Expansion Enclosure

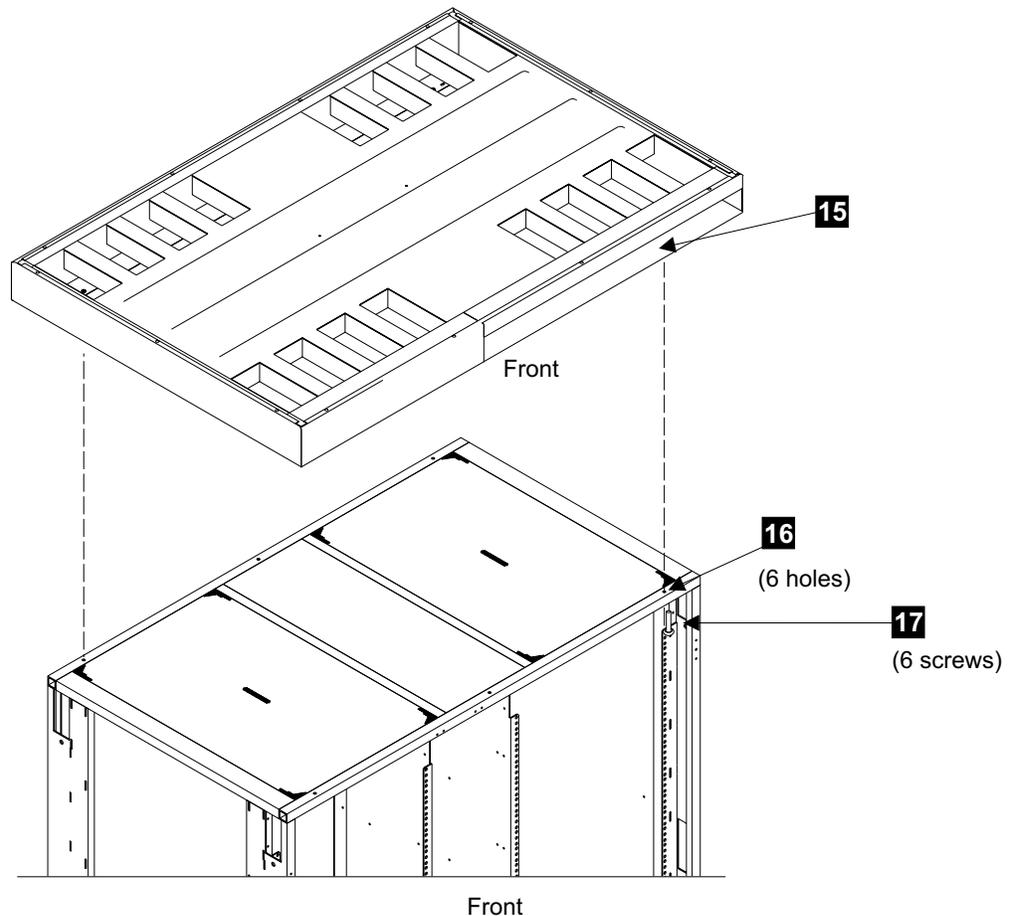


Figure 267. Top Hat Installation (S009049)

2105 Expansion Enclosure Install

- ___ 1. Unroll the mainline power cables that shipped with the ship group.
- ___ 2. Verify that all front and rear internal power and signal cables are connected and not damaged.

Attention: Do not connect any external cables to the 2105 Expansion Enclosure until you are instructed to do so.

- ___ 3. Go to the front of the 2105 Expansion Enclosure. Remove the two tailgate bar mounting screws **2** then remove the bar **1**.
- ___ 4. Feed both mainline power cables down through the center of the 2105 Expansion Enclosure **1** to the customers power connectors.

CAUTION:

Do not connect the mainline power cables until instructed to do so. (1053)

Note: This notice is translated into selected languages. See "Translation of Cautions and Danger Notices" in chapter 11 of the *Enterprise Storage Server Service Guide, Volume 3*.

- *Raised floor installations*, route the mainline power cables under the floor and set them next to the customers power connectors.

Installing the 2105 Expansion Enclosure

- *Non-raised floor installations* route the mainline power cables to the rear of the 2105. Then route both mainline power cables and set them next to the customer's power connectors.

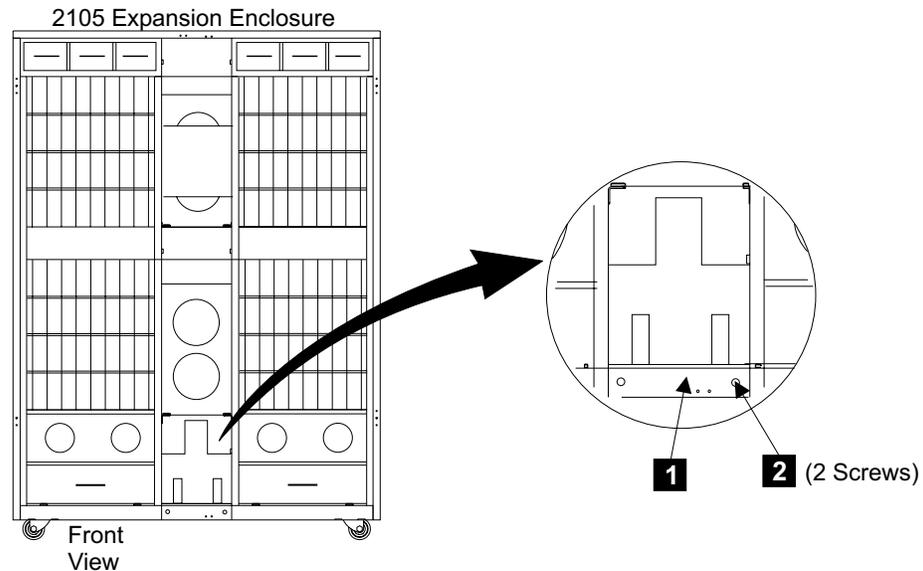


Figure 268. 2105 Expansion Enclosure Mainline Power Cable Installation (S008662m)

__ 5. Continue with "Checking the Customer's Power".

Checking the Customer's Power

DANGER

Lethal voltages are present in this area of the machine. (1007)

Note: This notice is translated into selected languages. See "Translation of Cautions and Danger Notices" in chapter 11 of the *Enterprise Storage Server Service Guide, Volume 3*.

This section describes the power and safety checks that must be done before you power on the 2105 Expansion Enclosure.

- Conduct safety power checks.
- Complete AC input power checks.

The fault-tolerant system on the 2105 Expansion Enclosure has two power systems. If one power system fails, the other will supply all required power. You will perform power checks, cabling, and preparation on power system 1 *and* on power system 2.

Always perform power safety checks with the recommended analog meter. Do not use a digital meter when you perform power checks. A digital meter is sensitive to external electrical currents on the low-range scale.

You will need these tools to perform the power safety checks:

- Analog multimeter (P/N 9900167) or a substitute meter approved by IBM for this check.

Installing the 2105 Expansion Enclosure

- High voltage test probe tips (or equivalent):
 - Red (P/N 1749249)
 - Black (P/N 1749250)

Check the Ground Continuity

Attention: Use an IBM-approved analog multimeter. Do not use a digital meter.

Attention: The 2105 Expansion Enclosure features two mainline power cables. Complete all steps of this section for *both* power sources and receptacles and for *both* power plugs, mainline power cables, and primary power supplies (PPS).

1. Switch off each customer circuit breaker that supplies AC voltage to the 2105 Expansion Enclosure mainline power cables.

CAUTION:

Do not connect the mainline power cables until instructed to do so. (1053)

Note: This notice is translated into selected languages. See "Translation of Cautions and Danger Notices" in chapter 11 of the *Enterprise Storage Server Service Guide, Volume 3*.

2. **Attention:** Attach a "Do Not Operate" tag (S229-0237) and the safety lockout padlock to each 2105 Expansion Enclosure customer circuit breaker. Refer to the *Electrical Safety for IBM Customer Engineers* book.
3. Ensure the system power MAIN LINE circuit breaker (CB00) **1** on the rear of both primary power supplies is set to Off (down).

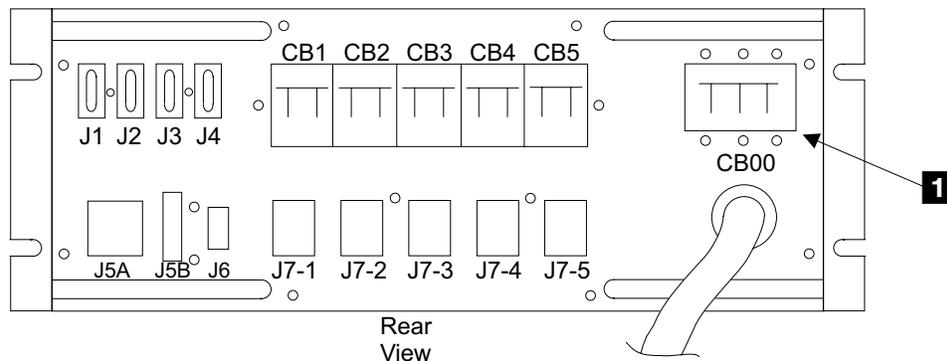


Figure 269. Primary Power Supply Mainline Circuit Breaker (S008099I)

4. Go to the front of the 2105 Expansion Enclosure. Connect each mainline power cable to its inlet on the line cord bracket:

Note: The mainline power cables are connected to the line cord bracket next to the PPS they feed.

- PPS 1, **2**
- PPS 2, **3**

Installing the 2105 Expansion Enclosure

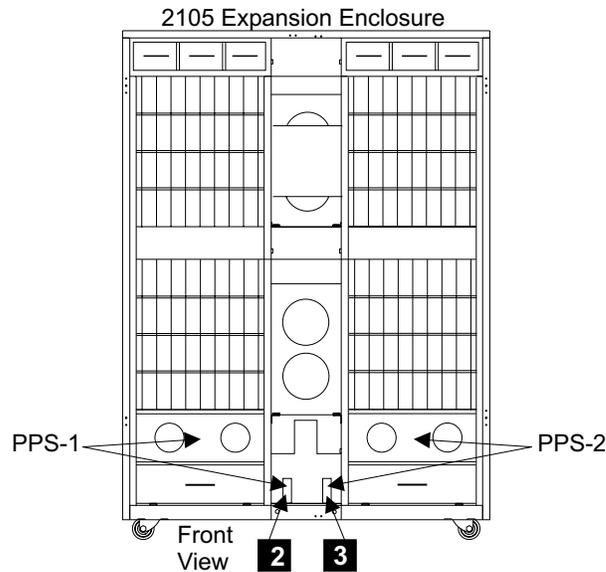


Figure 270. Line Cord Bracket Connectors (S008663m)

- ___ 5. Locate the customer end of the mainline power cables.
Determine if the customer end of the mainline power cables are for plug in or wired installations:
 - **Plug In:** The cable has a plug at both ends.
 - **Wired:** The cable has a plug at one end and bare wires at the other end.
- ___ 6. Prepare the multimeter to measure 0.1 ohm or less resistance. For connector information, refer to figure Figure 271.
 - **For the mainline power cable (plug in):** Place one lead of the multimeter on each ground pin of the male plug on the mainline power cable. Place the other lead on the bare metal of each primary power supply enclosure.
 - If there is 0.1 ohm or less resistance, go to step 9 on page 280.
 - If there is more than 0.1 ohm resistance, go to “Repair the Ground Continuity” on page 281.

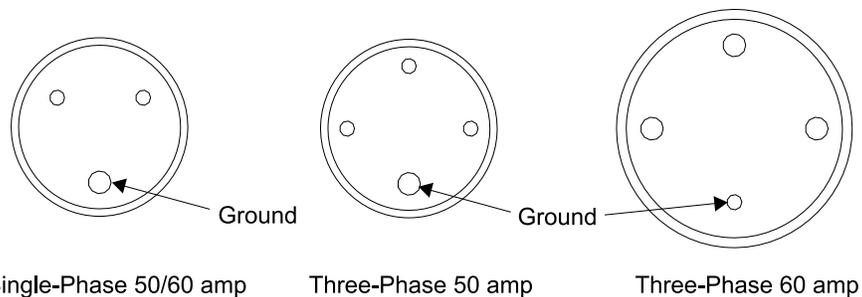


Figure 271. Male Plug on the Mainline Power Cable (S008045I)

- **For the mainline power cable (wired):** Place one lead of the multimeter on the green and yellow wire the customer end of each mainline power cable. Place the other lead on the bare metal of each primary power supply enclosure.

Installing the 2105 Expansion Enclosure

- If there is 0.1 ohm or less resistance, continue with step 7 .
 - there is more than 0.1 ohm resistance, go to “Repair the Ground Continuity” on page 281.
- ___ 7. On wired machines only, disconnect each wired mainline power cable **4** from the line cord bracket.

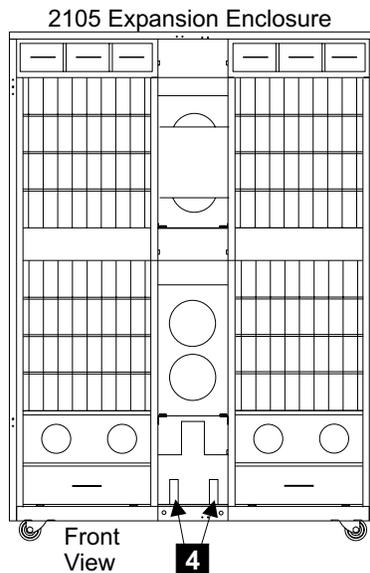


Figure 272. Line Cord Bracket Connectors (S008661m)

- ___ 8. On wired machines only. Instruct the customer to call a licensed electrician to connect each wired mainline power cable to the customer mainline power source.
- Attention:**For EMEA installations, review the information in “EMEA Electrician Information”, then return here and continue.
- ___ 9. Continue with “Check the Customer’s Circuit Breaker with the Power Off” on page 282.

EMEA Electrician Information

THE MAINLINE POWER CORD OF THIS MACHINE MUST BE CONNECTED TO THE CUSTOMERS MAINLINE POWER SOURCE BY A LICENSED ELECTRICIAN.

THE MAINLINE POWER CABLE CANNOT BE MODIFIED IN ANY WAY.

- FOR 3 PHASE MACHINES:

This machine must be connected to a 3 phase AC power net.

The mainline power cable is a four conductor cable with the following color code:

- L1 (phase 1) = black
- L2 (phase 2) = blue
- L3 (phase 3) = brown
- PE (ground) = green/yellow

The connection to the AC power net must be made without neutral, the blue wire must be used as a phase.

- FOR 1 PHASE MACHINES:

Installing the 2105 Expansion Enclosure

The mainline power cable is a three conductor cable with the following color code:

- L (phase) = brown
- N (neutral) = blue
- PE (ground) = green/yellow

Repair the Ground Continuity

If the previous procedure measured more than 0.1 ohm resistance between the ground pin of the mainline power cable and the primary power supply enclosure. Follow these steps to check the ground continuity.

1. Disconnect the problem mainline power cable **1** or **2** from the line cord bracket.

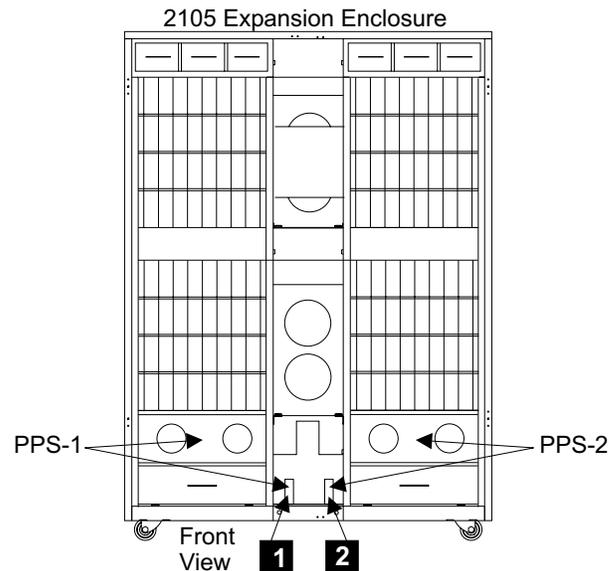


Figure 273. Line Cord Bracket Connectors (S008664m)

2. Prepare the multimeter to measure 0.1 ohm or less resistance. For connector information, refer to figure Figure 275 on page 282.
 - **For the mainline power cable (plug in):** Place one lead of the multimeter on the ground pin of the male plug on the mainline power cable.

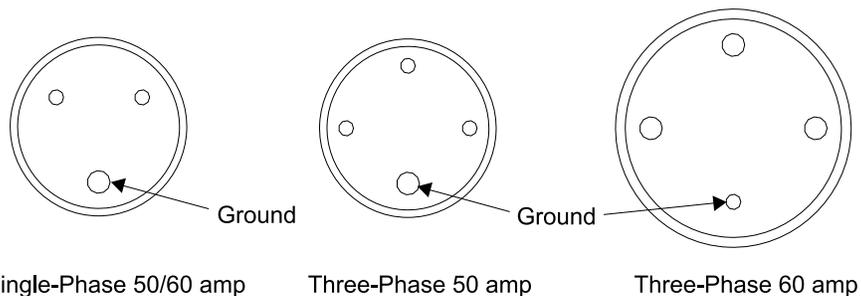


Figure 274. Male Plug on the Mainline Power Cable (S008045I)

Installing the 2105 Expansion Enclosure

- **For the mainline power cable (wired):** Place one lead of the multimeter on the green and yellow wire at the customer end of the mainline power cable.
- ___ 3. Place the other lead on the ground pin of the female connector on the mainline power cable.

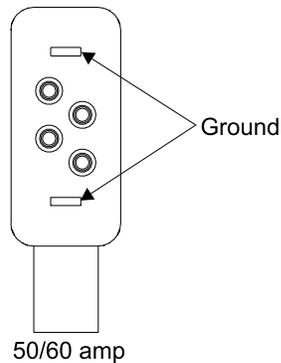


Figure 275. Female Connector on the Mainline Power Cable (S0080461)

- If there is 0.1 ohm or less resistance, the mainline power cable is good but the primary power supply enclosure is not grounded. Perform steps 7 through 9.
 - If there is more than 0.1 ohm resistance, the mainline power cable ground lead is open or has resistance. Perform steps 4 through 6.
- ___ 4. The ground lead on the primary power supply is open or has resistance. Replace the mainline power cable. Go to “Primary Power Supply Removal and Replacement, 2105 Model Exx/Fxx and Expansion Enclosure” on page 58, and then return here to continue.
- ___ 5. Insert the female connector on the new mainline power cable into the inlet on the line cord bracket.
- ___ 6. Return to step 6 on page 279 to verify that ground continuity now measures 0.1 ohm or less resistance on the replaced cable.
- ___ 7. The primary power supply enclosure is not grounded, replace the primary power supply. Go to “Primary Power Supply Removal and Replacement, 2105 Model Exx/Fxx and Expansion Enclosure” on page 58, and then return here to continue.
- ___ 8. Insert the female connector on the mainline power cable into the inlet on the line cord bracket.
- ___ 9. Return to step 6 on page 279 to verify that ground continuity now measures 0.1 ohm or less resistance.

Check the Customer’s Circuit Breaker with the Power Off

This procedure verifies that *both* customer outlet receptacles are grounded correctly and that there is no voltage present at either outlet when *both* outlet circuit breakers are off.

- ___ 1. Prepare the multimeter to measure 1.0 V ac or less. For connector information, refer to figures Figure 276 on page 283.

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DANGER

Do not touch the pins of either mainline power cable plugs with anything except high voltage probes until you complete this step. (1004)

Note: This notice is translated into selected languages. See "Translation of Cautions and Danger Notices" in chapter 11 of the *Enterprise Storage Server Service Guide, Volume 3*.

- **For the mainline power cable (plug in):** Measure the voltage at the customer's ac power outlet between the ground pin and the building ground.

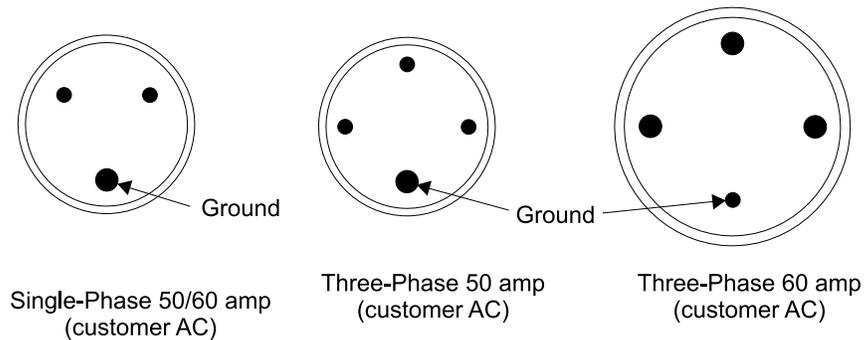


Figure 276. Female Connector on the Mainline Power Cable and Customer AC (S008047I)

- **For the mainline power cable (wired):** Measure the voltage between the female ground pin on each mainline power cable and the building ground.

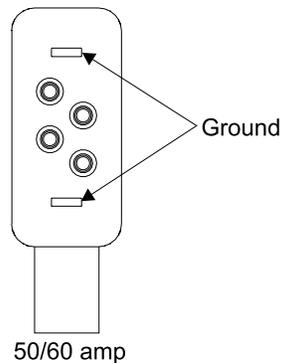


Figure 277. Female Connector on the Mainline Power Cable (S008046I)

- If the measured voltage is less than 1.0 V ac, go to step 3 on page 284.
 - If the measured voltage is 1.0 V ac or greater, continue with step 2.
- ___ 2. Voltage is present at a customer outlet with both outlet circuit breakers off.

Installing the 2105 Expansion Enclosure

DANGER

Inform the customer that, even though the circuit breaker is off, voltage higher than 1.0 V ac is measured at the failing customer voltage outlet pins.

Do not continue until the voltage is less than 1.0 V ac. (1003)

Note: This notice is translated into selected languages. See "Translation of Cautions and Danger Notices" in chapter 11 of the *Enterprise Storage Server Service Guide, Volume 3*.

- **For the mainline power cable (plug in):** Inform the customer that voltage higher than 1.0 V ac is measured at the ground pin of the failing customer voltage outlet.

Do not continue until the voltage is less than 1.0 V ac.

- **For the mainline power cable (wired):** Inform the customer that voltage higher than 1.0 V ac is measured at the ground pin of the failing wired ac mainline power cable.

Do not continue until the voltage is less than 1.0 V ac.

- ___ 3. Prepare the multimeter to measure 0.1 ohm or less of resistance.

- **For the mainline power cable (plug in):** Measure the resistance between the customer ac power outlet ground pin on each mainline power cable and the building ground. A reading of 0.1 ohm or less shows a safe, continuous grounding conductor.

- **For the mainline power cable (wired):** Measure the resistance between the female connector ground pin and the building ground. A reading of 0.1 ohm or less shows a safe, continuous grounding conductor.

- If the measured resistance at the ground pin is 0.1 ohm or less, continue with "Check the Single- or Three-Phase ac Power Cable or Outlet".

- If the measured resistance is more than 0.1 ohm on the connector, inform the customer. Do not continue until the resistance is 0.1 ohm or less.

Check the Single- or Three-Phase ac Power Cable or Outlet

- ___ 1. Prepare the multimeter to measure 1.0 V ac or less.

- **For the mainline power cable (plug in):** Measure ac voltages at the customer's ac power outlet (female).

- For single-phase AC see Table 24 on page 285 and Figure 278 on page 285.

- For three-phase AC see Table 25 on page 285 and Figure 278 on page 285.

- **For the mainline power cable (wired):** Measure ac voltages at the female connector on each mainline power cable.

- For single-phase AC see Table 24 on page 285 and Figure 279 on page 285.

- For three-phase AC see Table 25 on page 285 and Figure 279 on page 285.

Installing the 2105 Expansion Enclosure

Table 24. Measuring Points for Single Phase ac Voltages

Phase-to-phase	Phase-to-ground
V ac between A and B	V ac between A and ground
	V ac between B and ground

Table 25. Measuring Points for Three Phase ac Voltages

Phase-to-phase	Phase-to-ground
V ac between A and B	V ac between A and ground
V ac between B and C	V ac between B and ground
V ac between A and C	V ac between C and ground

- If all measured voltages (phase-to-phase and phase-to-ground) at the voltage pins on the female connector or at the customer’s ac power outlet (female) are less than 1.0 V ac, continue with “Check the Customer’s Circuit Breaker with the Power On” on page 286.
 - If any measured voltage is 1.0 V ac or greater, inform the customer that, even though the circuit breaker is off, voltage higher than 1.0 V ac is measured at the failing wired ac mainline power cable voltage pins or the failing customer voltage outlet pins.
- Do not continue until the voltage is less than 1.0 V ac.

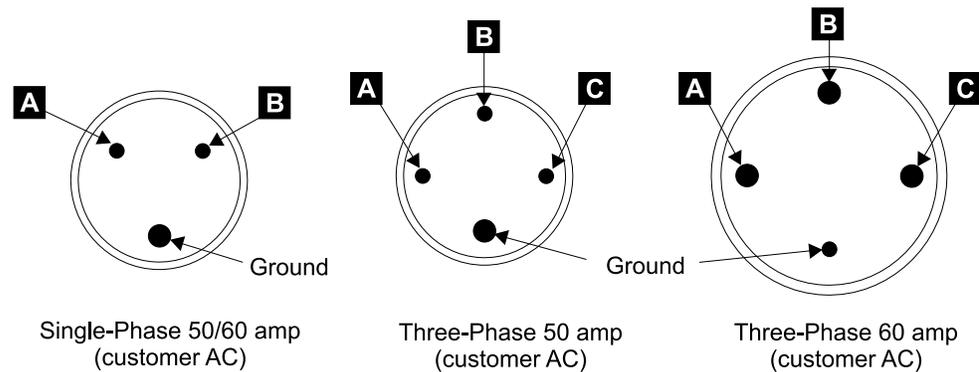


Figure 278. Single Phase Female Connector on the Mainline Power Cable and Customer AC (S0080481)

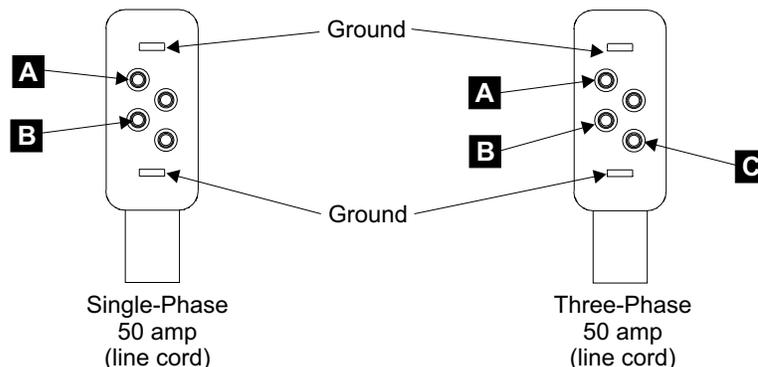


Figure 279. Female Connector on the Mainline Power Cable (S0080491)

2. Continue with “Check the Customer’s Circuit Breaker with the Power On” on page 286.

Installing the 2105 Expansion Enclosure

Check the Customer's Circuit Breaker with the Power On

This procedure verifies that *both* customer outlet receptacles are grounded correctly and that the correct voltages are present at *both* outlets when the outlet circuit breakers are on.

Always perform power checks with the recommended analog meter. Do not use a digital meter.

- ___ 1. Remove the "Do Not Operate" tag and the lockout padlock from each customer mainline ac voltage circuit breaker.
- ___ 2. Switch on each customer circuit breaker to supply mainline ac voltage to the 2105 Expansion Enclosure.
 - For **plug** in mainline power cables, go to go to step 4.
 - For **wired** mainline power cables, go to step 3.
- ___ 3. Prepare the multimeter to read line voltage AC. For connector information, refer to figure Figure 280.

DANGER

Dangerous voltages may be present. Do not touch the internal parts (pins and connectors) of the mainline power cable plugs. (1006)

Note: This notice is translated into selected languages. See "Translation of Cautions and Danger Notices" in chapter 11 of the *Enterprise Storage Server Service Guide, Volume 3*.

For the mainline power cable (wired): Measure the ac voltage at the voltage pins of each female connector on both mainline power cables when both 2105 Expansion Enclosure customer circuit breakers are on.

Record the measured ac voltages in step 5 on page 287 then continue from there.

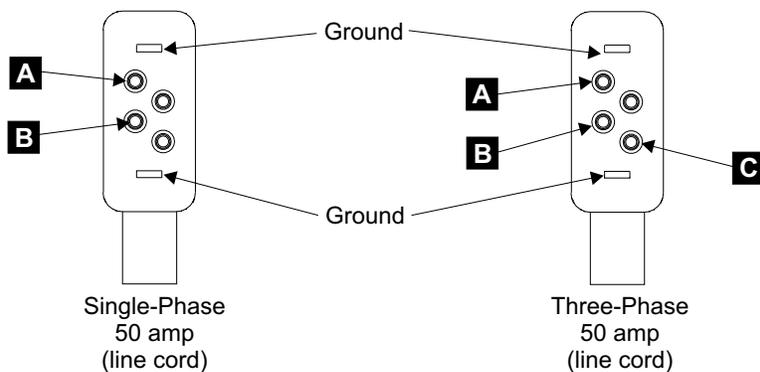


Figure 280. Female Connector on the Mainline Power Cable (S008049I)

- ___ 4. Prepare the multimeter to read line voltage AC. For connector information, refer to figures Figure 281 on page 287.

Installing the 2105 Expansion Enclosure

DANGER

Dangerous voltages may be present. Do not touch the internal parts (pins and connectors) of either customer voltage outlet. (1005)

Note: This notice is translated into selected languages. See "Translation of Cautions and Danger Notices" in chapter 11 of the *Enterprise Storage Server Service Guide, Volume 3*.

For the mainline power cable (plug in): Measure the ac voltage at the voltage pins of each customer's ac power outlet when both 2105 Expansion Enclosure customer circuit breakers are on.

Record the measured ac voltages in step 5 then continue from there.

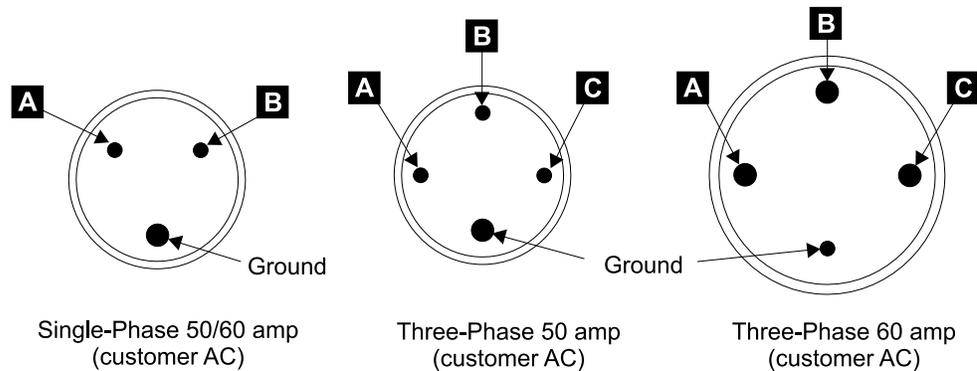


Figure 281. Single Phase Female Connector on the Mainline Power Cable and Customer AC (S008048I)

- ___ 5. Record the voltages measured:
 - For single-phase voltage, record the voltages in Table 26.
 - For three-phase voltage, record the voltages in Table 27.

Table 26. Single-Phase ac Line Voltages

Measure the ac Voltages	Power Outlet Voltage Connector 1 (PPS-1)	Power Outlet Voltage Connector 2 (PPS-2)
Between A and B		

Table 27. Three-Phase ac Line Voltages

Measure the ac Voltages	Power Outlet Voltage Connector 1 (PPS-1)	Power Outlet Voltage Connector 2 (PPS-2)
Between A and B		
Between B and C		
Between A and C		

- ___ 6. Continue with 7.
- ___ 7. Verify AC input voltages from Table 26 or Table 27 are correct.

Locate the 2105 information label on the top corner of the right rear cover. Verify that the AC input voltage just measured matches the machine input voltage information on this label.

Installing the 2105 Expansion Enclosure

Does the voltage measured match the voltage on the 2105 information label?

- **Yes, continue with step 8.**
 - **No, inform the customer if the voltage is outside this range.**
- ___ 8. Switch **OFF** each 2105 Expansion Enclosure customer circuit breaker that supplies AC voltage to the mainline power cables.
 - ___ 9. **Attention:** Attach a “Do Not Operate” tag (S229-0237) and the safety lockout padlock to each 2105 Expansion Enclosure customer circuit breaker. Refer to the *Electrical Safety for IBM Customer Engineers* book.
 - ___ 10. Connect the mainline power cables:

Note: Determine if the customer will be providing an UPS (uninterruptable power system) and how many UPS connections (one or two) will be available for this frame:

- *If only one UPS connection is available for this frame, ensure the UPS is connected to mainline power cable 1. The 390 V batteries are only charged by the primary power supply attached to mainline power cable 1.*
- *If two UPS connections are available for this frame, connect each UPS to a mainline power cable (1 or 2).*
- **For the mainline power cable (plug in):** Connect each plug in mainline power cable to each customer ac power outlet.
- **For the mainline power cable (wired):** Connect each wired mainline power cable to each connector on the line cord bracket.

Note: The mainline power cables are connected to the line cord bracket next to the PPS they feed.

- PPS 1, **1**
- PPS 2, **2**

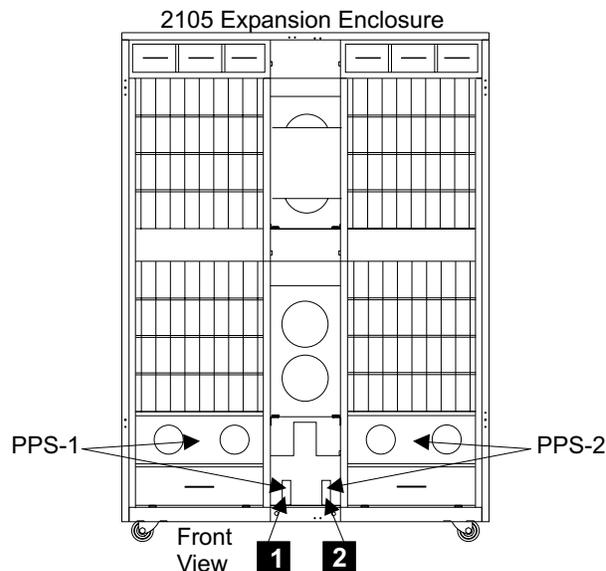


Figure 282. Line Cord Bracket Connectors (S008664m)

Installing the 2105 Expansion Enclosure

- ___ 11. Reinstall the frame tailgate bar (center) removed earlier, see **3** and **4** in Figure 283.

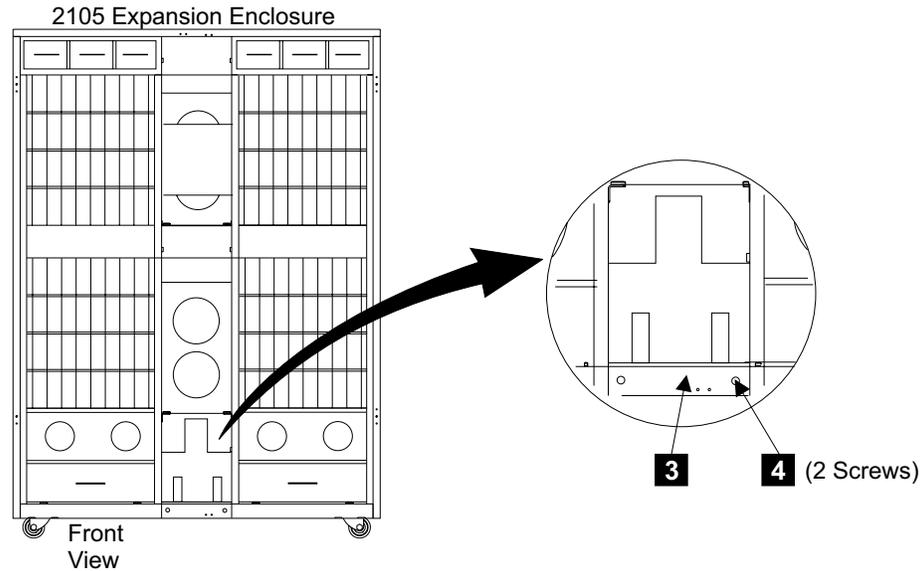


Figure 283. Tailgate Bar Location (S009107)

- ___ 12. Continue with “Checking the 2105 Expansion Enclosure Switch Settings” .

Checking the 2105 Expansion Enclosure Switch Settings

- ___ 1. Go to the front of the 2105 Expansion Enclosure. Set the 2105 Expansion Enclosure rack operator panel switches to the positions shown in Table 28.

Table 28. 2105 Expansion Enclosure Rack Operator Panel Switches

Switch Name	Position
Unit Emergency	Off (down)
UEPO Local/Remote Switch (inside door)	Push to the Left (Local)

Note: To access the UEPO Local/Remote switch, you will need to loosen the single screw on the left side of the operator panel and swing the operator panel out. Pull the Local/Remote switch out before changing its position.

Installing the 2105 Expansion Enclosure

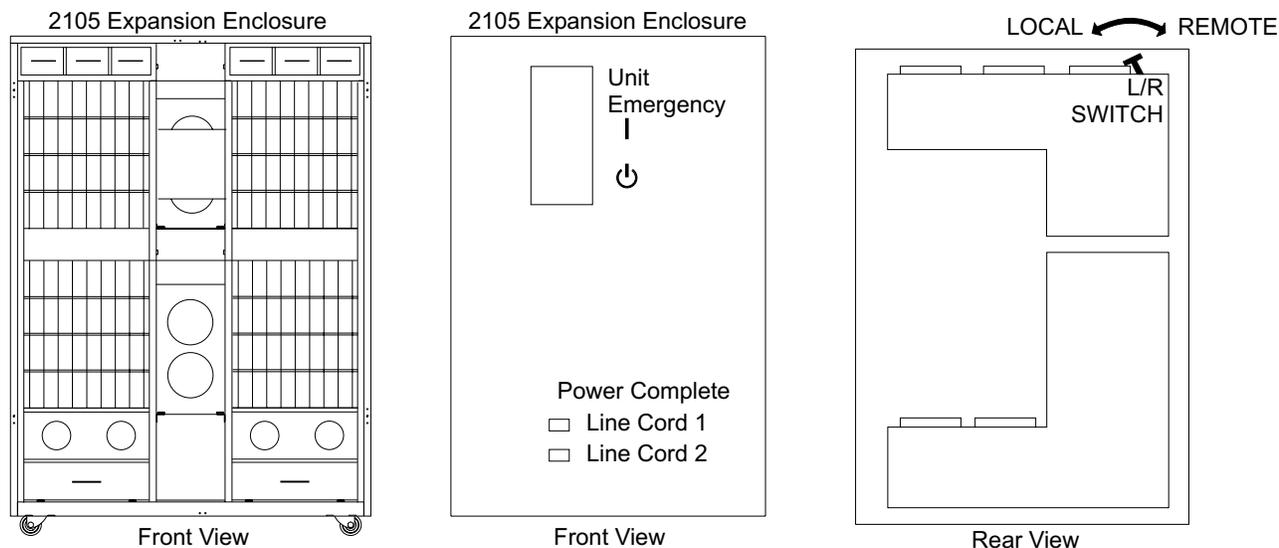


Figure 284. 2105 Expansion Enclosure Operator Panel Locations (S008656m)

2. Go to the rear of the 2105 Expansion Enclosure. Ensure that the power switches on all of the installed storage cage power supplies **1** and **2**, are set to On.

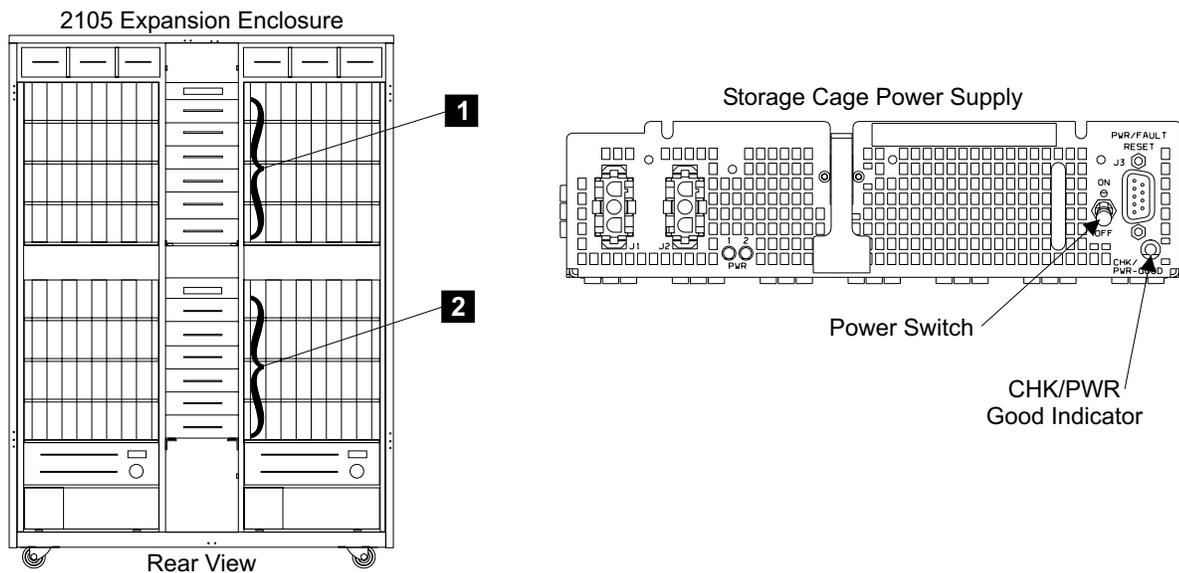


Figure 285. Storage Cage Power Supply Switches (S008666m)

3. Ensure that the five circuit breakers (CB01 to CB05) on each primary power supply **3** are set to On (up).
4. The main circuit breakers **4** on each primary power supply should be set to Off (down).

Installing the 2105 Expansion Enclosure

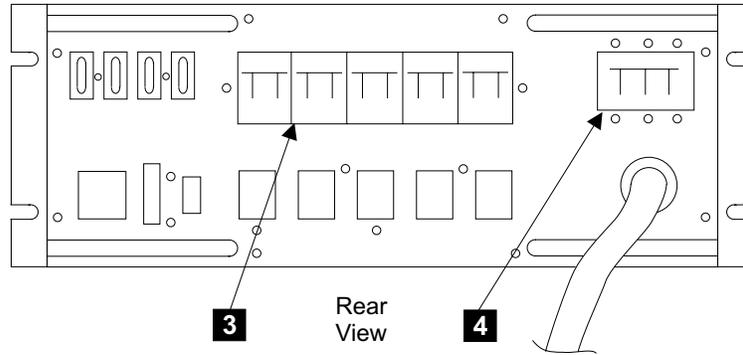


Figure 286. Primary Power Supply Circuit Breaker Locations (S009051)

5. Connect the two primary power supply to RPC control cables between the 2105 Expansion Enclosure primary power supplies 1 **10** and 2 **11** and the 2105 Model E20 rack power control cards 1 **5** and 2 **6**. See Figure 287 on page 292.

Note: The primary power supply to RPC control cables run through the openings in the sides of the attached 2105s. Do not attempt to route these cable through the 2105 tailgates.

- a. Locate the rolled up control cables connected to the 2105 Expansion Enclosure primary power supply (PPS) J4 connectors **9** (PPS 1) and **12** (PPS 2).
- b. Unroll the cables.
- c. Feed the unused connector end of the cables through the rear side of the 2105 Expansion Enclosure, the rack spacer, and into the 2105 Model E20.
- d. Attach the connector, from PPS1, labeled *RPC-1 P3* to the RPC 1 connector J3 (RPC-1 J3) **8**.
- e. Attach the connector, from PPS 2, labeled *RPC 2 P3* to the RPC 2 connector J3 (RPC-2 J3) **7**.
- f. Coil up the excess cable and store it in the rear rack spacer between the frames.

Installing the 2105 Expansion Enclosure

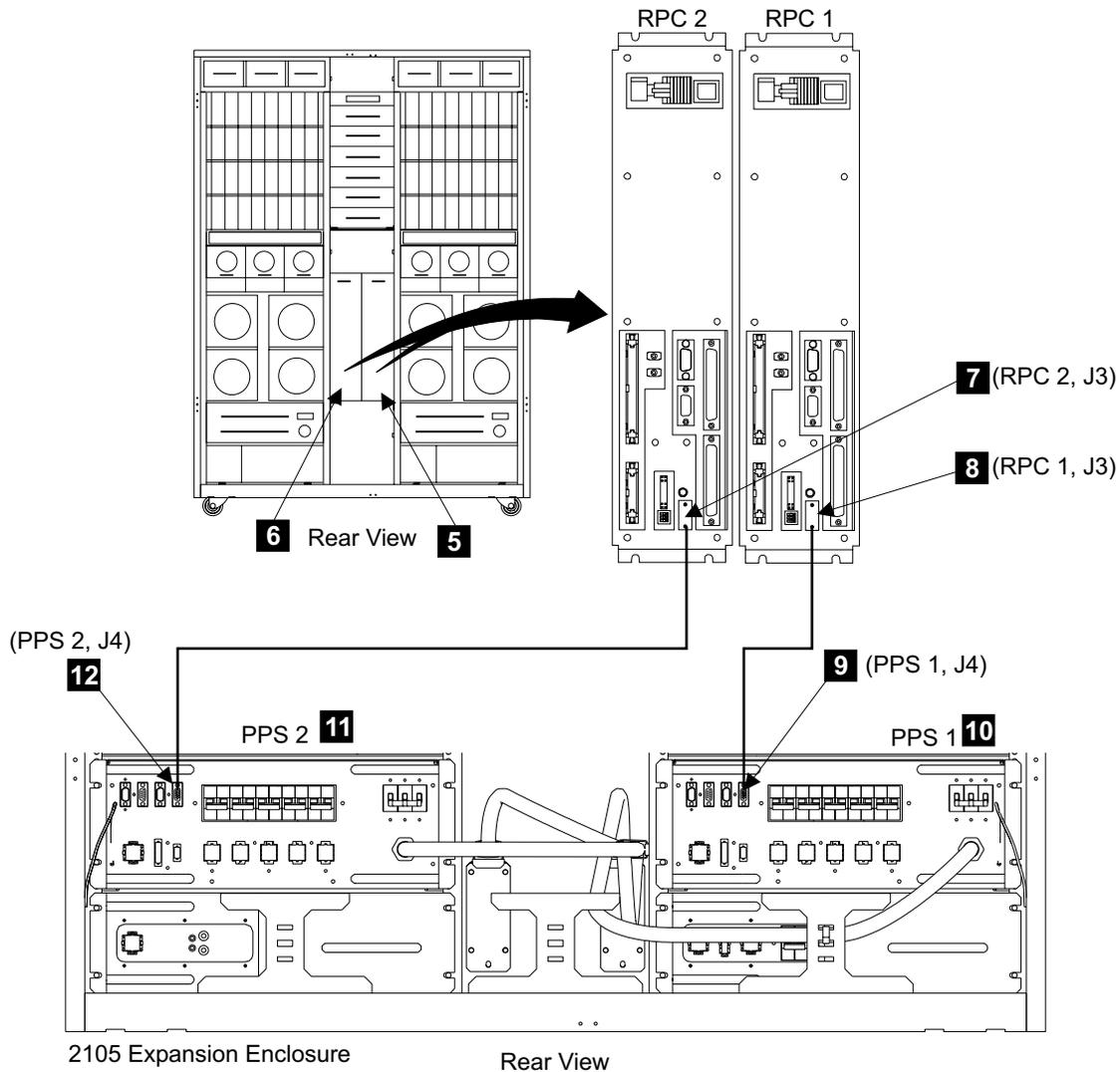


Figure 287. Primary Power Interconnect Cable Installation (S008655q)

- ___ 6. Are you installing the 2105 Expansion Enclosure as part of an MES?
 - **Yes**, the SSA cables will be installed when the DDM bays are logically installed later in this procedure. Go to step 8 on page 294.
 - **No**, continue with the next step.
- ___ 7. Route and connect the SSA device cables stored in the 2105 Expansion Enclosure through to the DDM bay they connect to in the 2105 Model E20/F20. Refer to the label on each SSA cable. See Figure 288 on page 293 and Figure 289 on page 294. Connect the SSA device cables to the indicated 2105 Model E20/F20 DDM bays.

Attention: When routing the new SSA cables, avoid making sharp (90 degree) bends that might damage the cables or connectors. Follow the routing and bends used on previously installed SSA cables. For examples, see SSA cables installed by manufacturing.

Installing the 2105 Expansion Enclosure

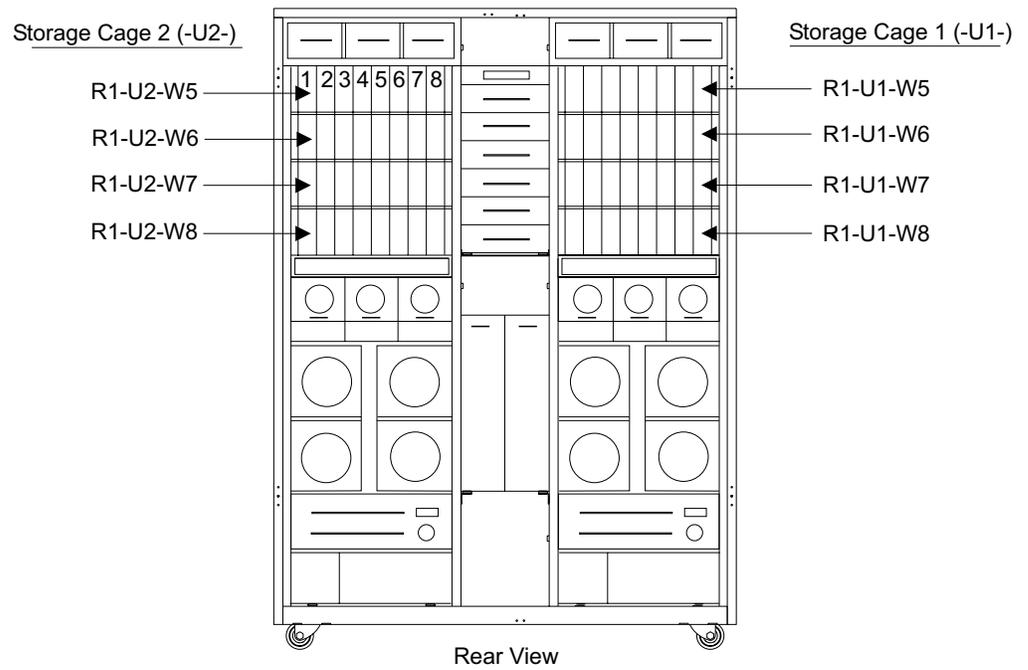
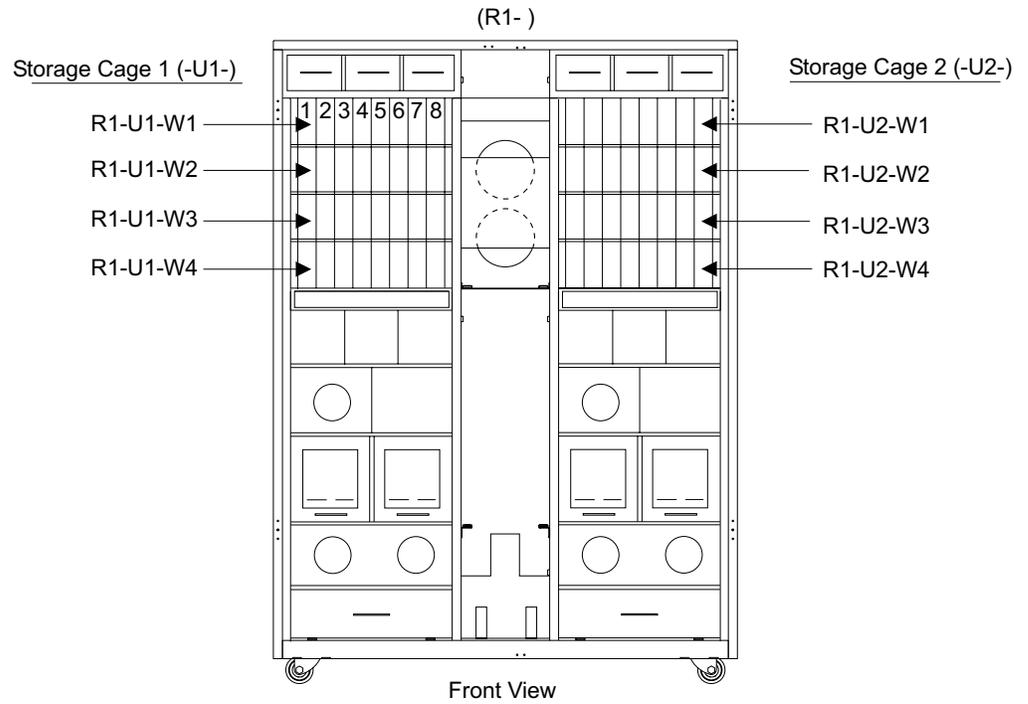


Figure 288. 2105 Model E20/F20 DDM bay Locations (S007740s)

Installing the 2105 Expansion Enclosure

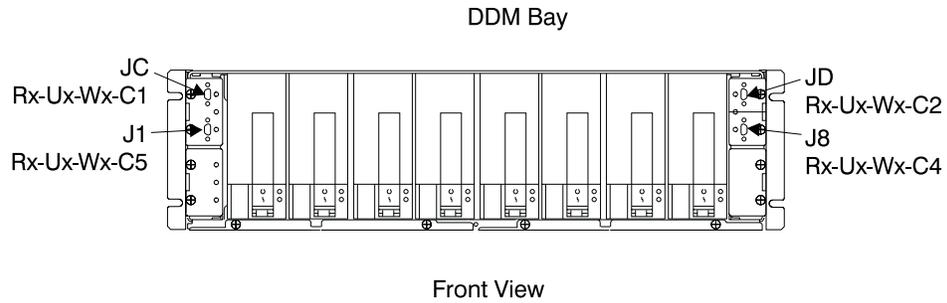


Figure 289. DDM bay SSA Connector Locations (S007703I)

- ___ 8. Remove the “Do Not Operate” tag and the lockout padlock from each customer mainline ac voltage circuit breaker.
- ___ 9. Instruct the customer to switch on each circuit breaker that supplies the mainline ac power to each customer ac power outlet or wired mainline power cable.
- ___ 10. Switch the System Power CB **13** on the rear of each primary power supplies to On (up).

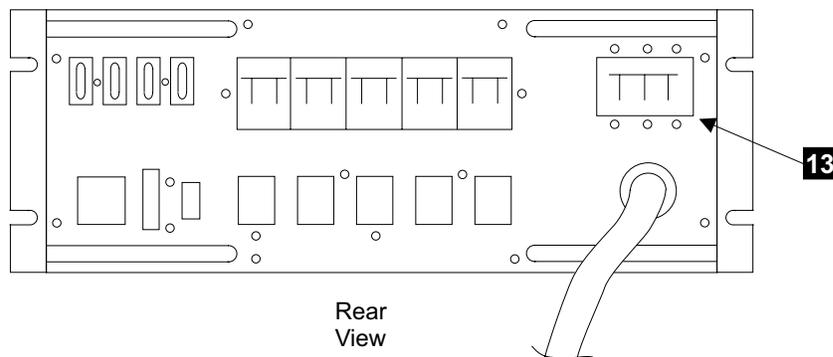


Figure 290. Primary Power Supply (S009108)

- ___ 11. Verify that all the 390 V battery cables are connected to battery 1 (three cables) **15** and battery 2 (one cable) **14**.

Note: If battery cables are disconnected set the circuit breaker on 390 V battery 1 **16** to Off before connecting any 390 V battery cable.

- ___ 12. Set the MASTER circuit breaker (CB, S2) on 390 V battery 1 **16** to On (up).

Note: This circuit breaker is normally set to off by manufacturing.

Installing the 2105 Expansion Enclosure

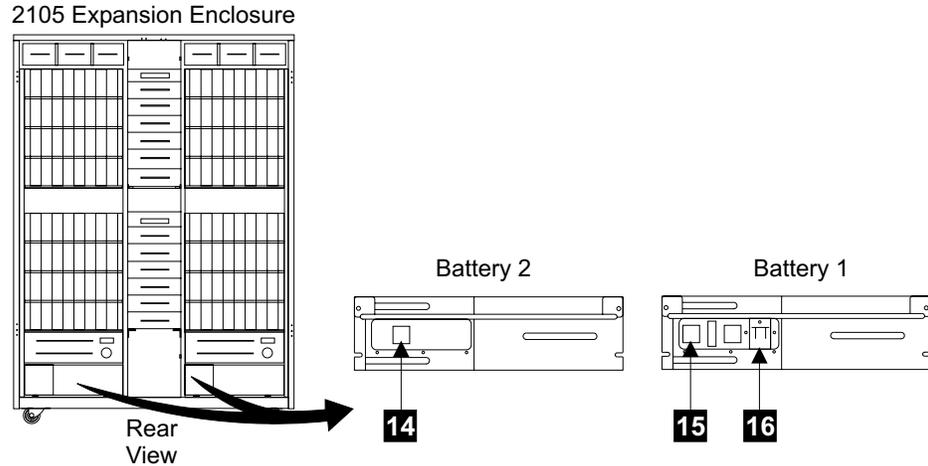


Figure 291. 2105 Expansion Enclosure 390 V Battery Circuit Breaker (S008667m)

- ___ 13. Determine if the 2105 Expansion Enclosure is being installed as part of an MES?

Note: The 2105 Expansion Enclosure is being installed with an MES if it is being installed by itself, not concurrently with a 2105 Model E20/F20.

Is the 2105 Expansion Enclosure being installed as part of an MES?

- **Yes**, continue with “How to Power on the 2105 Expansion Enclosure and Test the Installation”.
 - **No**, continue with the next step.
- ___ 14. On the 2105 Expansion Enclosure operator panel, set the Unit Emergency switch, **2** in Figure 292 on page 296, to On (up).
- ___ 15. Continue with “Checking the 2105 Model Exx/Fxx Switch Settings” on page 223.

How to Power on the 2105 Expansion Enclosure and Test the Installation

This section describes the actions that should be done to power on and test the 2105 Expansion Enclosure.

- Powering on the 2105 Expansion Enclosure
- Attachment and activation of the service terminal.
- Installation using the service terminal.

Check the 2105 Expansion Enclosure Rack Operator Panel Switches

Attention: Do not install any cables until you are instructed to do so.

- ___ 1. On the 2105 Expansion Enclosure operator panel, set the Unit Emergency switch **2** to Off (down).
- ___ 2. On the 2105 Model E20/F20 operator panel, set the Local Power switch **1** to On (up) momentarily, then release it.

Note: This testing is to verify that the 2105 will not power on with the UEPO switch set to Off (down).

Installing the 2105 Expansion Enclosure

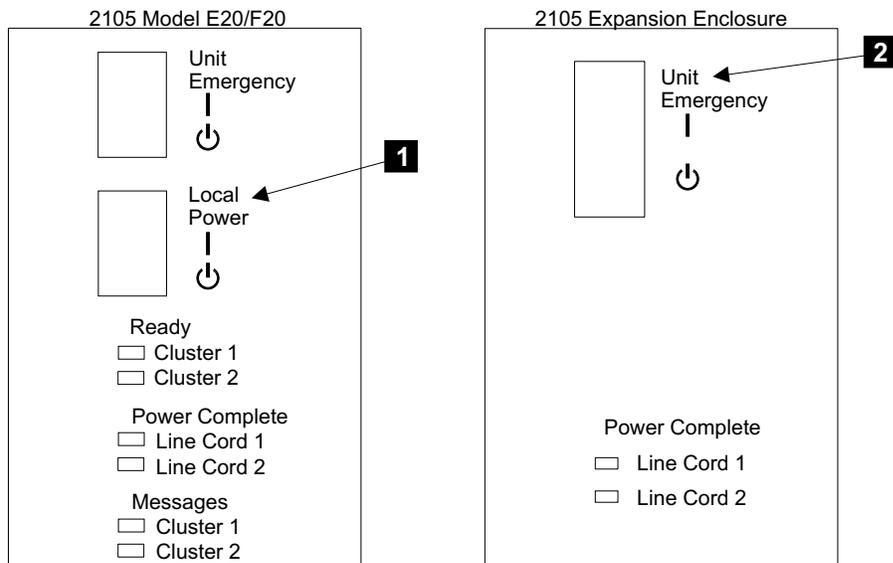


Figure 292. 2105 Expansion Enclosure Operator Panel Locations (S008816m)

3. Go to the 2105 Expansion Enclosure operator panel. Observe the Power Complete indicators for Line Cords 1 and 2 and **perform the action described in Table 29.**

Attention: If the 2105 powers on, the Unit Emergency switch is not working. You must repair the problem before continuing, see "MAP 2360: UEPO" in chapter 3 of the *Enterprise Storage Server Service Guide, Volume 1*.

Table 29. 2105 Expansion Enclosure Rack Operator Panel Power Complete Indicators

Power Complete, Line Cord 1	Power Complete, Line Cord 2	Action
Off	Off	Normal, go to step 5
Blinking	Blinking	Go to "MAP 2380: 2105 Expansion Enclosure UEPO" in chapter 3 of the <i>Enterprise Storage Server Service Guide, Volume 1</i> .
On	On	Go to "MAP 2380: 2105 Expansion Enclosure UEPO" in chapter 3 of the <i>Enterprise Storage Server Service Guide, Volume 1</i> .
On	Off	Go to "MAP 2380: 2105 Expansion Enclosure UEPO" in chapter 3 of the <i>Enterprise Storage Server Service Guide, Volume 1</i> .
Off	On	Go to "MAP 2380: 2105 Expansion Enclosure UEPO" in chapter 3 of the <i>Enterprise Storage Server Service Guide, Volume 1</i> .

4. When you complete the repair, return here and continue with the next step.
5. On the 2105 Expansion Enclosure operator panel, set the Unit Emergency switch **2**, in Figure 292, to On (up).
6. On the 2105 Model E20/F20 operator panel, set the Local Power switch **1**, in Figure 292, to On (up), then release it. You may have to wait up to four minutes for the final state of the Power Complete, Line Cord indicators (indicators stop blinking and remain on).

Installing the 2105 Expansion Enclosure

Note: This power sequence testing does not require waiting for IML to complete.

- ___ 7. Observe the Power Complete indicators for Line Cords 1 and 2 and **perform the action described in Table 30.**

Table 30. 2105 Expansion Enclosure Rack Operator Panel Power Complete Indicators

Power Complete, Line Cord 1	Power Complete, Line Cord 2	Action
On	On	Normal, go to step 9.
On	Off	Go to "MAP 2420: 2105 Expansion Enclosure Local Power On Problems" in chapter 3 of the <i>Enterprise Storage Server Service Guide, Volume 1</i> .
Off	On	Go to "MAP 2420: 2105 Expansion Enclosure Local Power On Problems" in chapter 3 of the <i>Enterprise Storage Server Service Guide, Volume 1</i> .
Off or blinking	Off or blinking	Go to "MAP 2420: 2105 Expansion Enclosure Local Power On Problems" in chapter 3 of the <i>Enterprise Storage Server Service Guide, Volume 1</i> .

- ___ 8. When you complete the repair, return here and continue with the next step.
- ___ 9. Go to the front of the 2105 Expansion Enclosure. Verify that the PWR Good indicator, **3** in Figure 293, on the front of both primary power supplies 1 and 2 is on. **Perform the action described in table Table 31 on page 298.**

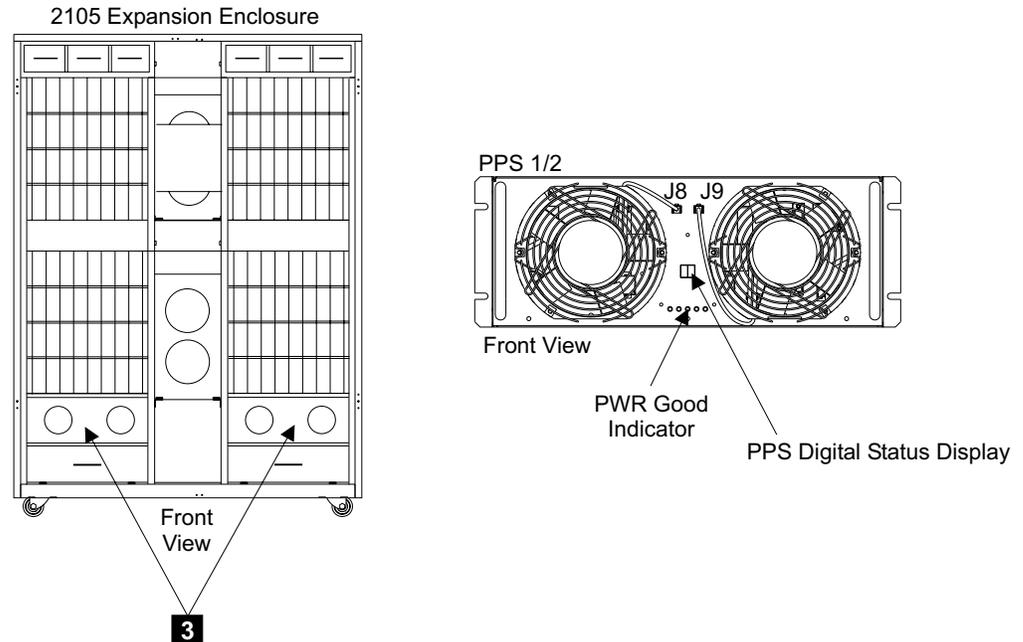


Figure 293. Primary Power Supply (S008668n)

Installing the 2105 Expansion Enclosure

Table 31. 2105 Expansion Enclosure Primary Power Supply PPS Good Indicators

Power Supply PWR Good Indicators	Action
Both on	Normal, go to step 11
1 on, 1 off	Go to "MAP 1320: Visual Symptoms" in chapter 3 of the <i>Enterprise Storage Server Service Guide, Volume 1</i> .
Both off	Go to "MAP 1320: Visual Symptoms" in chapter 3 of the <i>Enterprise Storage Server Service Guide, Volume 1</i> .

- ___ 10. When you complete the repair, return here and continue with the next step.
- ___ 11. Verify that the digital display, **4** in Figure 293 on page 297, on the front of primary power supplies 1 and 2 is blank.
- You may have to wait up to four minutes for the final state of the Power Complete, Line Cord indicators (indicators stop blinking and remain on).
- If both digital displays are blank, go to step 13.
 - If either status display is NOT blank, go to "MAP 1320: Visual Symptoms" in chapter 3 of the *Enterprise Storage Server Service Guide, Volume 1*, to isolate the problem.
 - If both status display is NOT blank, go to "MAP 1320: Visual Symptoms" in chapter 3 of the *Enterprise Storage Server Service Guide, Volume 1*, to isolate the problem.
- ___ 12. When you complete the repair, return here and continue with the next step.
- ___ 13. Is the 2105 Expansion Enclosure being installed as part of an MES?
- **Yes**, continue with "Connecting the Service Terminal to the 2105 Model E20/F20".
 - **No**, continue with "Connecting the Service Terminal to the 2105" on page 233.

Connecting the Service Terminal to the 2105 Model E20/F20

Attention: The 2105 and cables in this procedure are ESD-sensitive. Always wear an ESD wrist strap during this procedure. Follow the ESD procedures in "Working with ESD-Sensitive Parts" on page 4.

- ___ 1. Press the latches on the front service terminal table **4**, on the 2105 Model E20/F20, and pull the table out until it stops.

Installing the 2105 Expansion Enclosure

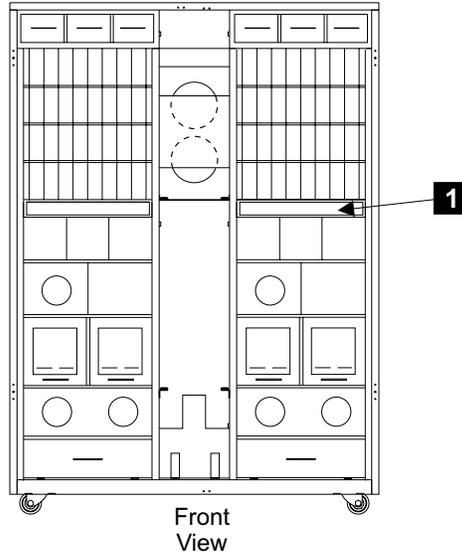


Figure 294. Accessing the Service Terminal Table (S009052)

- ___ 2. Place the service terminal on the pullout service terminal table.
- ___ 3. Connect the service terminal AC adapter cable to the service terminal.
- ___ 4. Connect the service terminal AC adapter to the utility power cord.

Note: Always operate the service terminal from AC power because the duration of the service activity may exceed the capacity of the service terminal battery.

- ___ 5. Connect the service terminal null modem cable (P/N 08L8045, in the ship group), to cluster bay 1:
 - a. Connect the service terminal interface cable to the serial port connector (9 pin) on the service terminal.
 - b. Connect the other end of the cable to S2 on the front of cluster bay 1.

Note: The service terminal interface cable is stored in the 2105 Model E20/F20 rack or connected to S2 on the front of cluster bay 1.

Installing the 2105 Expansion Enclosure

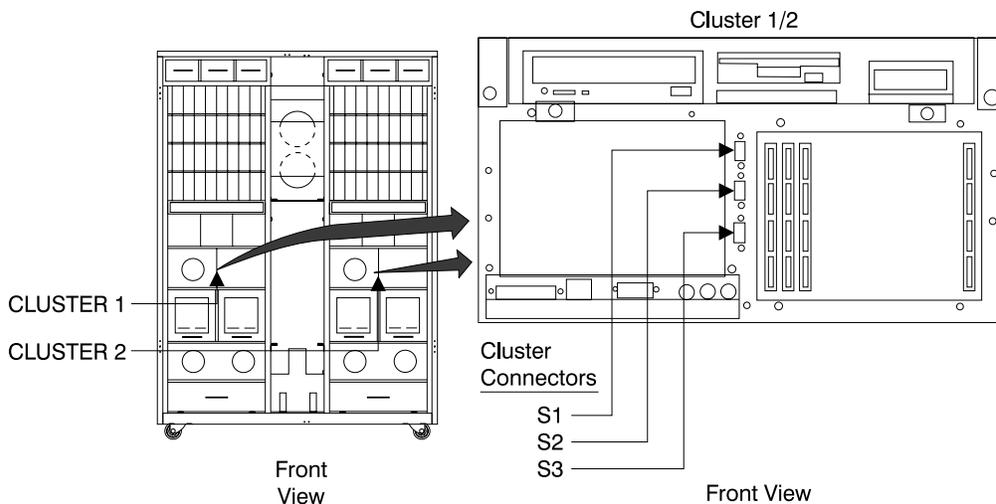


Figure 295. Cluster Bay Connectors for Service Terminal (S008027m)

- ___ 6. Verify that the Ready indicators, on the 2105 Model E20/F20 operator panel, for Cluster 1 and Cluster 2 are on.

Note: You may have to wait up to 30 minutes for AIX to finish booting.

Did the Cluster 1 and 2 Ready indicators come on?

- **Yes**, Continue with the next step.
- **No**, go to "MAP 4360: Cluster Operator Panel Codes" in chapter 3 of the *Enterprise Storage Server Service Guide, Volume 1*.

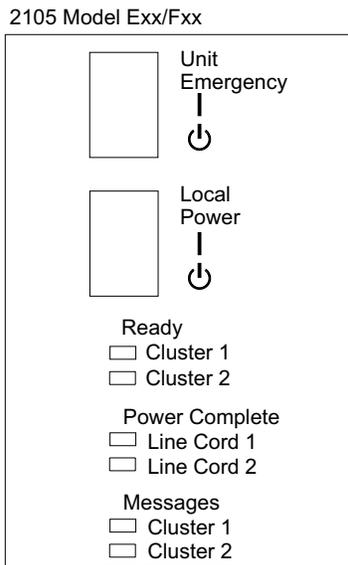


Figure 296. 2105 Model E20/F20 Operator Panel Locations (S008814m)

- ___ 7. Power the service terminal on and verify that the service terminal has been configured for use on the 2105 subsystem, see "Service Terminal Setup" in chapter 8 of the *Enterprise Storage Server Service Guide, Volume 3*.
- ___ 8. Login then verify that the Copyright and Login screen is displayed for cluster bay 1:

Installing the 2105 Expansion Enclosure

- If the copyright screen is not displayed for cluster bay 1, go to "MAP 6060: Service Terminal Login" in chapter 3 of the *Enterprise Storage Server Service Guide, Volume 1*. After the repair, return here and continue with the next step.
 - If the copyright screen is displayed for cluster bay 1, enter the login ID of **service** (lower case) and press enter. Then continue with the next step.
- ___ 9. From the service terminal toolbar, click on toolbar option "Disconnect".
 - ___ 10. Move the service terminal interface cable from the S2 connector on cluster bay 1 to the S2 connector on cluster bay 2.
 - ___ 11. From the service terminal toolbar, click on toolbar option "Connect".
 - ___ 12. Login then verify that the Copyright and Login screen is displayed for cluster bay 2:
 - If the copyright screen is not displayed for cluster bay 2, go to "MAP 6060: Service Terminal Login" in chapter 3 of the *Enterprise Storage Server Service Guide, Volume 1*. After the repair, return here and continue with the next step.
 - If the copyright screen is displayed for cluster bay 2, enter the login ID of **service** (lower case) and press enter.
 - ___ 13. Continue with "Installing the 2105 Expansion Enclosure Using the Service Terminal".

Installing the 2105 Expansion Enclosure Using the Service Terminal

The service terminal will guide you through the physical installation and testing of the 2105 Expansion Enclosure. The 2105 Expansion Enclosure will be logically configured later in this procedure after testing verifies that the 2105 is operating correctly.

Attention: Ensure that the Configuration Worksheets are available and have been completed by both the customer and the service support representative.

- ___ 1. Refer to the Configuration Worksheets from the *IBM Enterprise Storage Server Configuration Planner* book.

Note: The service terminal should still be connected and logged into cluster bay 2.

- ___ 2. From the service terminal **Main Service Menu**, select:
 - Install/Remove Menu**
 - Rack Menu**
 - Install an Additional Rack**
- ___ 3. Using the configuration worksheets, follow the instructions on the service terminal to install the 2105 Expansion Enclosure.
- ___ 4. Continue with "Complete the Physical Install of the 2105".

Complete the Physical Install of the 2105

This section describes the actions that will be done after the rack has been installed using the service terminal.

- Check the rack and drawer indicators.
- Indicator problem repair.

Checking the SSA DASD DDM Bay Indicators

The operation of all 2105 Expansion Enclosure and SSA DASD DDM bays has been verified, the operation of the previously unchecked indicators are verified here.

Installing the 2105 Expansion Enclosure

- ___ 1. Observe the indicators on all front and rear SSA DASD DDM bays in the 2105 Expansion Enclosure: Refer to Figure 297.
 - All disk drive module Ready indicators, On
 - All disk drive module Check indicators, Off
 - If all of the DDM Ready indicators are on, and all of the DDM Check indicators are off, continue with step 2.
 - If any of the DDM Ready indicators are off, or any of the DDM check indicators are on, go to "MAP 1320: Visual Symptoms" in chapter 3 of the *Enterprise Storage Server Service Guide, Volume 1*.
After the repair, continue with step 2.

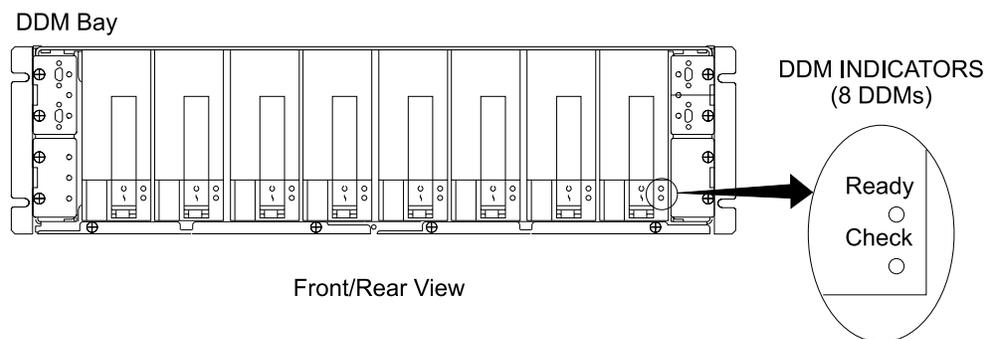


Figure 297. SSA DASD DDM Bay Indicators (S008021)

- ___ 2. Continue with "Completing the Installation of the 2105 Expansion Enclosure".

Completing the Installation of the 2105 Expansion Enclosure

This section describes the actions that should be done after the 2105 Expansion Enclosure has been physically installed.

- Logically install the storage cages containing DDM bays
- Connect the SSA cables to the DDM bays per service terminal instructions
- Logically install the DDM bays
- Configure subsystem
- Update installation records
- Organize installation documents and forms

Logically Install the Storage Cages and DDM bays

This procedure will logically install both the DDM bays and the storage cages that they are installed in.

- ___ 1. Determine the locations of the storage cages installed in the 2105 Expansion Enclosure using Figure 298 on page 304.
- ___ 2. Logically install the storage cages.
From the service terminal **Main Service Menu**, select:
 - Install/Remove Menu**
 - Storage Cage Menu**
 - Install an SSA Storage Cage**
- ___ 3. Using the storage cage locations information obtained above, follow the instructions on the service terminal to logically install the 2105 Expansion Enclosure storage cages.

Installing the 2105 Expansion Enclosure

- ___ 4. Determine the locations of the DDM bays installed in the 2105 Expansion Enclosure using Figure 298 on page 304.
- ___ 5. Logically install the DDM Bays.

Note: The service terminal will tell you when and where to connect the SSA cables from the DDM bays in the 2105 Expansion Enclosure to the device cards in the 2105 Model E20/F20. Store the extra SSA cable loops in the front and rear side spacer area.

Go to “Installing the DDM bay Device Drawer Using the Service Terminal” on page 328. Return here when all of the DDM bays and SSA cables have been installed in the 2105 Expansion Enclosure.

- ___ 6. Continue with “Configuring the 2105 Expansion Enclosure” on page 304.

Installing the 2105 Expansion Enclosure

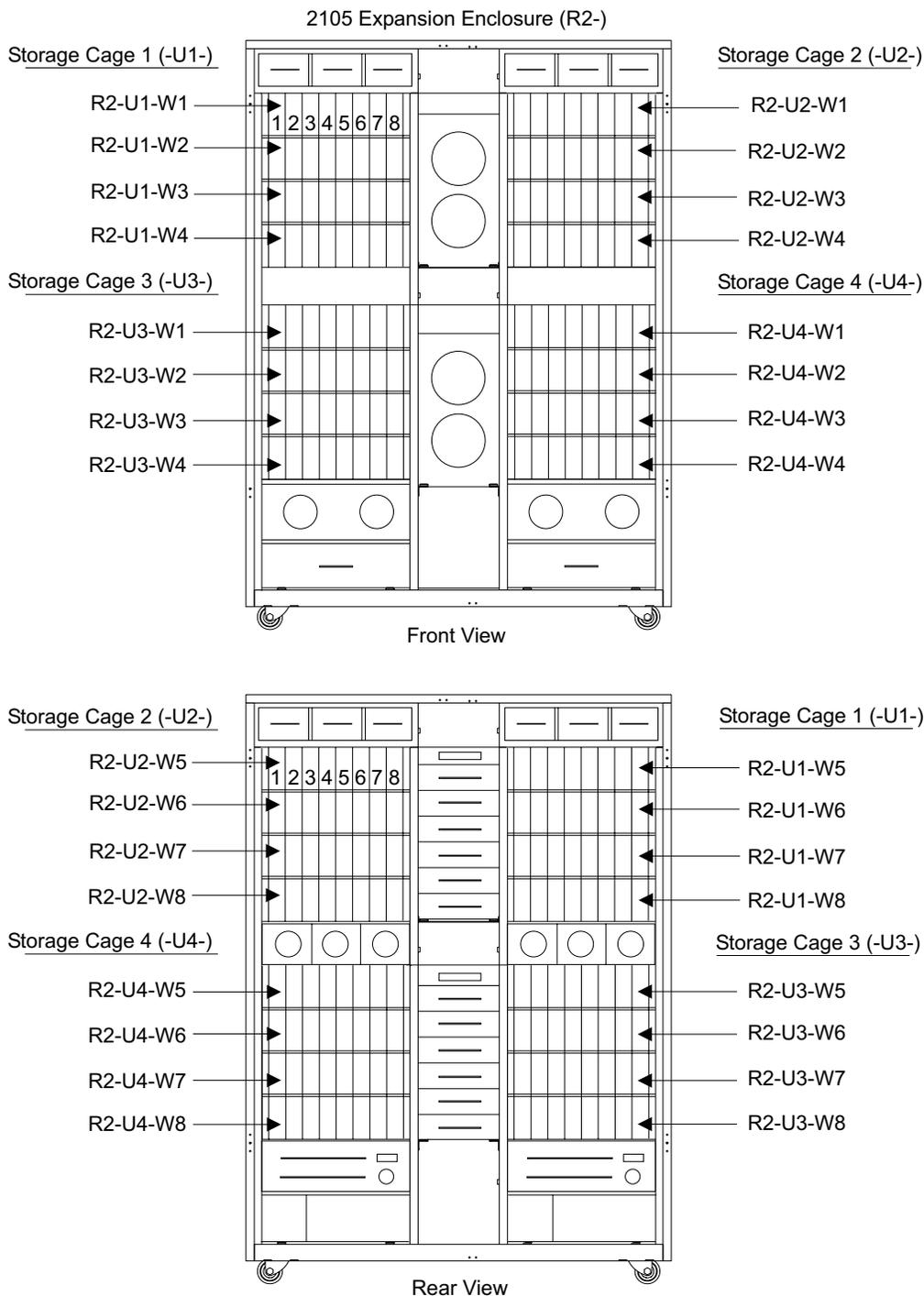


Figure 298. Location Codes for DDM bays in a 2105 Expansion Enclosure (S007741s)

Configuring the 2105 Expansion Enclosure

- Are you installing the 2105 Expansion Enclosure and a 2105 Model E20/F20 at the same time?
 - Yes**, the logical configuration of the 2105 Expansion Enclosure will be performed at the same time as the 2105 Model E20/F20, go to "Configuring the 2105 Model Exx/Fxx" on page 256.

Installing the 2105 Expansion Enclosure

- **No**, continue with the next step.
- ___ 2. **Perform the logical configuration of the 2105 Expansion Enclosure**, using the Configuration Worksheets from the *IBM Enterprise Storage Server Configuration Planner* book. Do the procedure for “Logical Configurations” on page 379.
Return here when the configuration is completed and continue with the next step.
- ___ 3. Make a copy of all of the customer worksheets and put the copy in the 2105 Model E20/F20 document enclosure. This information may be needed for future repair or configuration activities.
- ___ 4. Continue with step “Completing the Installation”.

Completing the Installation

- ___ 1. Refer to “Entry MAP for All Service Actions” in chapter 2 of the *Enterprise Storage Server Service Guide, Volume 1*, for other 2105 subsystem hardware installation procedures.
- ___ 2. Before returning the 2105 to the customer, verify that the storage configuration is complete:

From the service terminal **Main Service Menu**, select:

Configuration Options Menu

ESS Batch Configuration Tool Menu

Display Status of Apply Process

Configuration is complete when the status shows

Application of the Defined Configuration Successfully Completed.

Note: If additional configuration needs to be completed, use the ESS Specialist from the ESSNet console.

- ___ 3. Disconnect the service terminal cables from the 2105 Model Exx/Fxx and remove the service terminal from the table.
- ___ 4. Push the service terminal table **1** in until the latches on each side engage the frame on both sides.

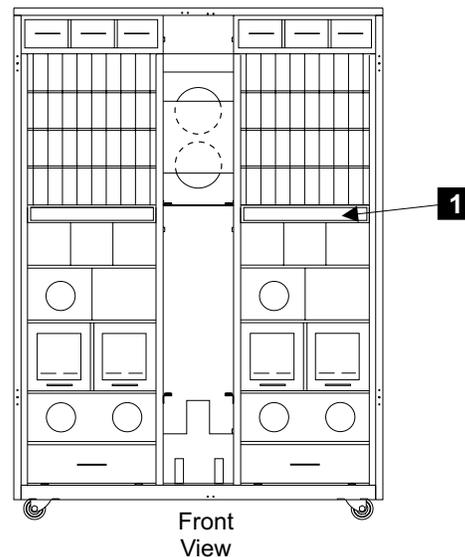


Figure 299. Storing the Service Terminal Table (S009052)

Installing the 2105 Expansion Enclosure

- ___ 5. Install the front or rear spacer service panels, see step 7 on page 274. To install the service panels, do the step in the reverse order
- ___ 6. Place the following items in the front and rear document enclosures for future reference and use:
 - Copies of the configuration worksheets
 - Spare ship group components
 - CD-ROMs
 - Cable planning worksheets
- ___ 7. Complete all installation records.
- ___ 8. Update the account records to include this installation.
- ___ 9. Reference the pack/unpack instructions for return/discard information. Discard the shipping material locally.

Installation Complete

The installation of the 2105 Expansion Enclosure is complete.

2105 Model Exx/Fxx Tailgate Cable Clamp Removal and Installation

Attention: This is *not* a stand-alone procedure. You should have started this procedure at the service terminal. Perform the tailgate cable clamp procedures *only* at the direction of the service terminal or other service guide procedures.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when working with cables and clamps in the tailgate area. Follow the ESD procedures in "Working with ESD-Sensitive Parts" on page 4.

- ___ 1. Determine if the cables you are working with are associated with:
 - Cluster Bay 1
 - Cluster Bay 2
 - Cluster Bays 1 and 2

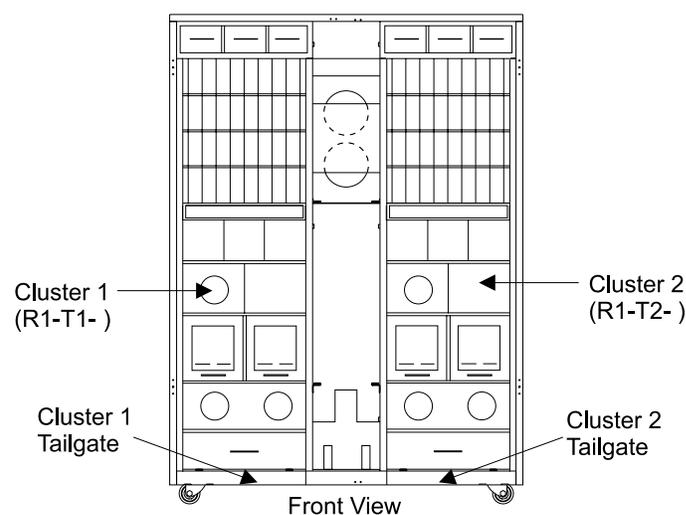


Figure 300. 2105 Model Exx/Fxx Cluster Bay Locations (S008272m)

- ___ 2. Do the following steps only on the tailgate or tailgates with the cables you are installing or removing.

2105 Model Exx/Fxx Tailgate Cable Clamp Removal and Installation

- ___ 3. Determine which cables you will be installing or removing:
- SCSI cables
 - Cluster Bay communication: Ethernet, LAN, or Modem cables
 - Fibre channel or ESCON cables

Are you installing or removing ONLY Fibre channel or ESCON cables?

- **Yes**, go to “Cluster Bay Fibre Channel and ESCON Cable Tailgate Clamps” on page 312.
- **No**, go to “Tailgate Hardware Removal and Installation”.

Tailgate Hardware Removal and Installation

The tailgate hardware must be removed to access the tailgate cable clamps.

- ___ 1. Determine if the 2105 Model Exx/Fxx tailgate you are working on is a SCSI or Fibre/ESCON/SCSI tailgate:
- SCSI cable tailgate, has solid end tailgate plates at **1** and **2**.
 - If it is a SCSI cable tailgate, continue with step 6.
 - Fibre/ESCON/SCSI cable tailgate, has end plates with rubber grommet at **3** and **4**.
 - If it is a Fibre/ESCON/SCSI cable tailgate, continue with step 2.

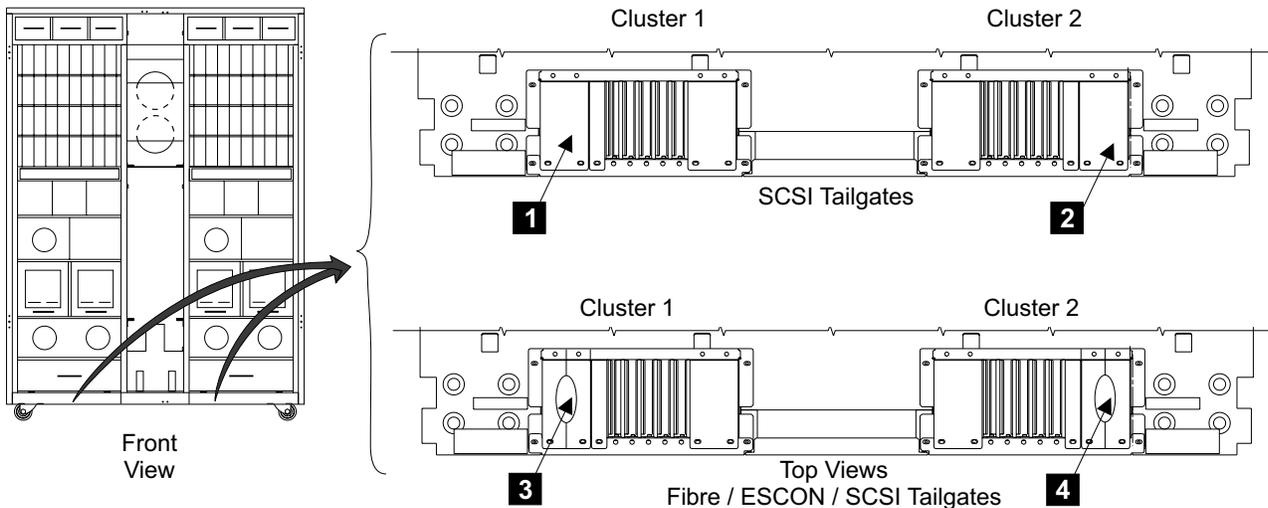


Figure 301. 2105 Model Exx/Fxx Tailgate Configurations (S008273m)

- ___ 2. Remove the two rear end plate screws:
- Cluster Bay 1 **5**
 - Cluster Bay 2 **6**
- ___ 3. Remove the front screw from the end plate:
- Cluster Bay 1 **8**
 - Cluster Bay 2 **11**
- ___ 4. Remove the free end plate from the tailgate.
- ___ 5. Pull the rubber cable grommet out of the plate that is still fastened to the tailgate.
- ___ 6. Remove the two end tailgate plate bracket mounting screws:
- Cluster Bay 1 **7** and **9**

2105 Model Exx/Fxx Tailgate Cable Clamp Removal and Installation

- Cluster Bay 2 **10** and **12**

Remove the tailgate bar and the attached tailgate plates from the tailgate.

7. Continue with “Cluster Bay SCSI and Communication Cable Tailgate Clamps”.

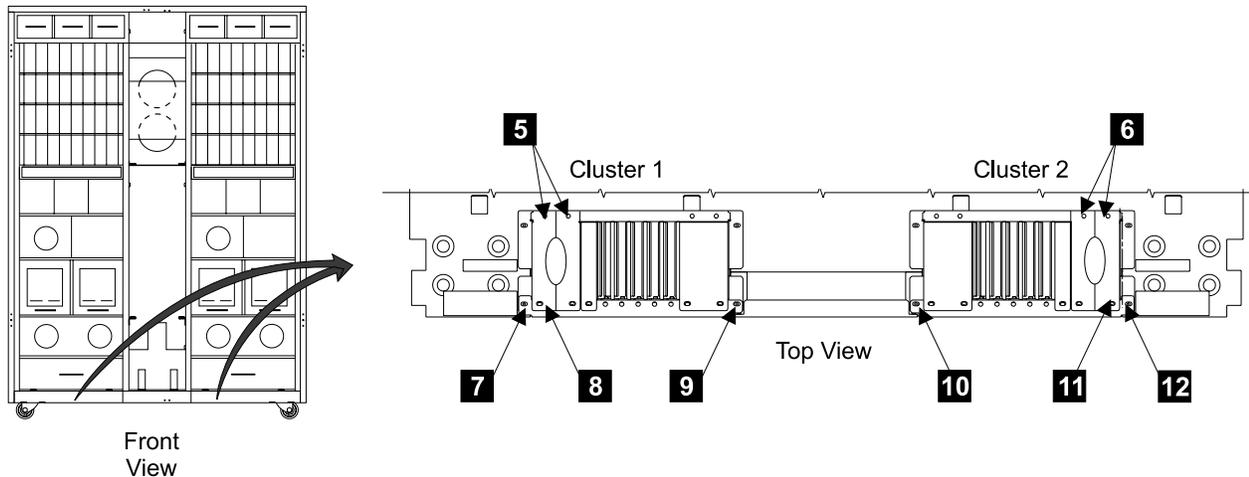


Figure 302. Tailgate Bar Removal (S008274m)

Cluster Bay SCSI and Communication Cable Tailgate Clamps

1. Use the following figures to determine which tailgate cable clamps you need to remove from the tailgate:
 - SCSI cable tailgate information, see Figure 305 on page 311
 - Cluster Bay communication cable tailgate information, see Figure 306 on page 311
2. Refer to the following figures to determine the location of the cable clamps in each tailgate:
 - Cluster Bay 1, see Figure 307 on page 312
 - Cluster Bay 2, see Figure 308 on page 312
3. Remove the cable clamps from the tailgate:
See Figure 303 on page 309.
 - **Left cable clamp removal:**
 - a. Remove the screw from the bottom **1** of each cable clamp you are removing.
 - b. Pull the pin out on the clamp you are removing **2**.
 - c. Move the front of the clamp to the left and lift it out of the rear slot in the tailgate.
 - **Right cable clamp removal:**
 - a. Remove the screw from the bottom **4** of each cable clamp you are removing.
 - b. Pull the pin out on the clamp next to the clamp you are removing **3**.
 - c. Move the front of the clamp to the right and lift it out of the rear slot in the tailgate.

2105 Model Exx/Fxx Tailgate Cable Clamp Removal and Installation

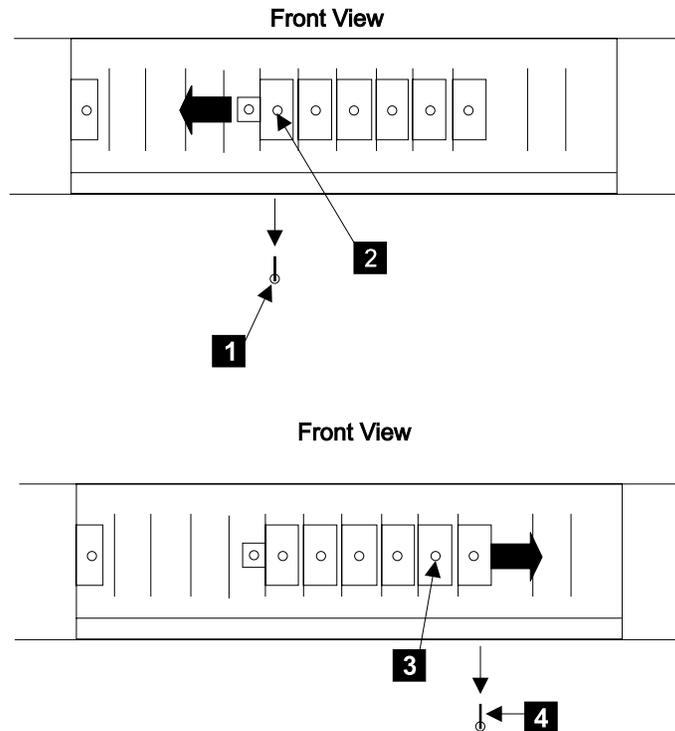


Figure 303. Tailgate Clamp Removal (S008275n)

4. Install or remove the SCSI or cluster bay communication cables.
If installing cables, feed enough of the cable through the strain relief gate so the cable reaches the cluster bay and can be retained.

Note: Position the SCSI cables in the tailgate so the cables exposed metal braid will be clamped by the grounding area of the clamp.

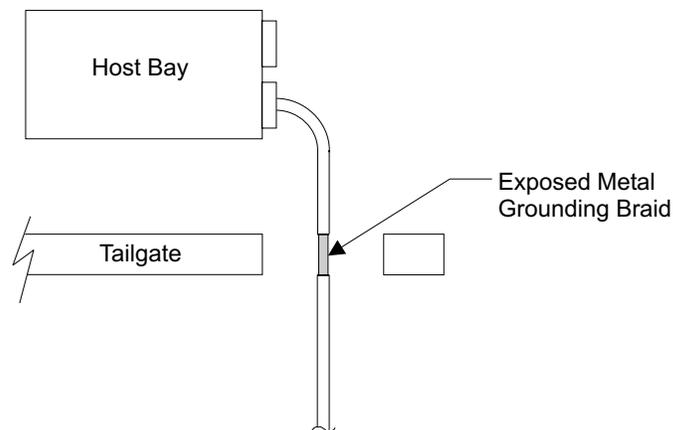


Figure 304. SCSI Cable Grounding Braid Position in Tailgate (S008525m)

Special Instructions for ESSNet and Null-Modem Cables:

Use the following procedure to retain the ESSNet cables, null modem cables, or both cables to cluster bay 1 or 2. Do the procedure on the cluster bay and tailgate below it.

2105 Model Exx/Fxx Tailgate Cable Clamp Removal and Installation

- a. Locate the cluster bay end of the cables with the square toroids clamped near the end of the cables.
- b. Position these cables in the tailgate with the toroids just above the tailgate clamps. This will support the toroids and allow the correct cable length for cluster bay service access.
- c. Feed the cables up behind the CPI cables, then up to the cluster bay.
- d. Allow enough free cable for attachment to the cluster bays later in this procedure. Do not connect the cables until instructed to do so.
- e. Retain the cables to the trays in front of the cluster bays with the velcro straps.
- f. Feed the cables down with the CPI cables. Retain the cables to the lower cluster bay cable bracket with the CPI velcro cable clamps.

Note: The cable service loop should be between the lower cluster bay cable bracket and the tailgate. This will allow the cluster bay to move to its service position.

Attention: Do not connect or disconnect any cables until instructed to do so. Cable changes must be supported by configuration changes.

- __ 5. Reinstall any cable strain relief as required.
- __ 6. Reinstall the cluster bay tailgate clamps and bottom mounting screws.
- __ 7. Reinstall the tailgate bar and plates.
- __ 8. Do you have any fibre channel or ESCON cables to install?
 - **Yes**, go to "Cluster Bay Fibre Channel and ESCON Cable Tailgate Clamps" on page 312.
 - **No**, continue with the next step.
- __ 9. If this is a Fibre/ESCON/SCSI tailgate, reinstall the rubber grommet and the end plate.
- __ 10. Verify that all tailgate screws and hardware have been installed correctly.
- __ 11. Return to the procedure that sent you here.

2105 Model Exx/Fxx Tailgate Cable Clamp Removal and Installation

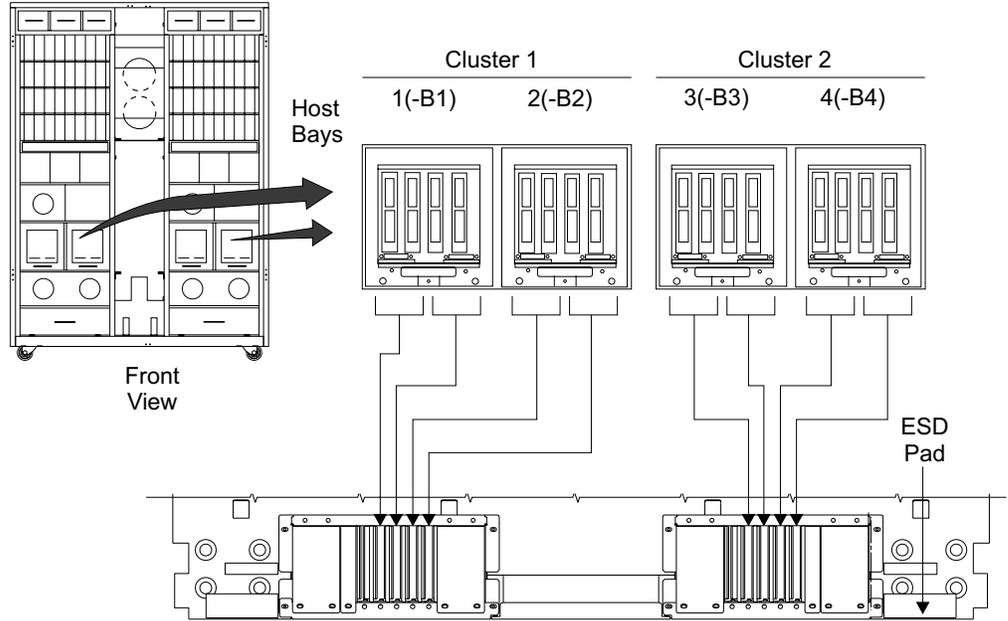


Figure 305. Cluster Bay SCSI Cable Tailgate Clamps (S008255n)

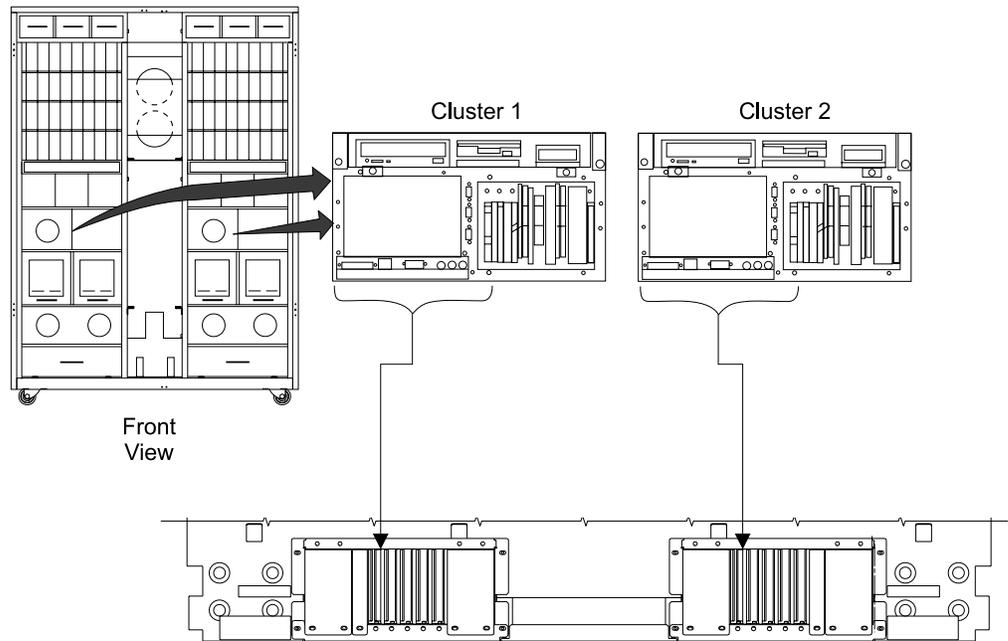


Figure 306. Cluster Bay Communication Cable Tailgate Clamps (S008254n)

2105 Model Exx/Fxx Tailgate Cable Clamp Removal and Installation

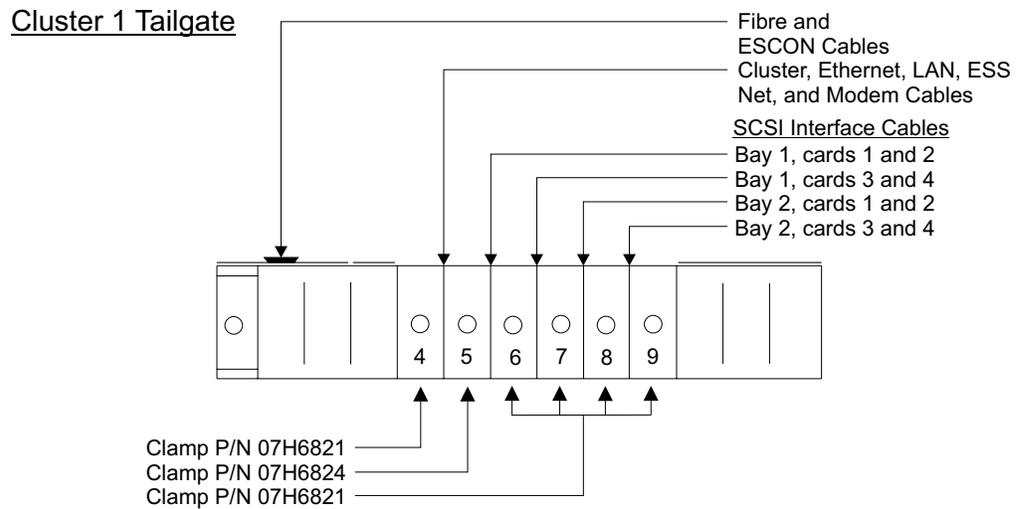


Figure 307. Cluster Bay 1, Tailgate Cable and Cable Clamp Locations (S008270m)

Cluster 2 Tailgate

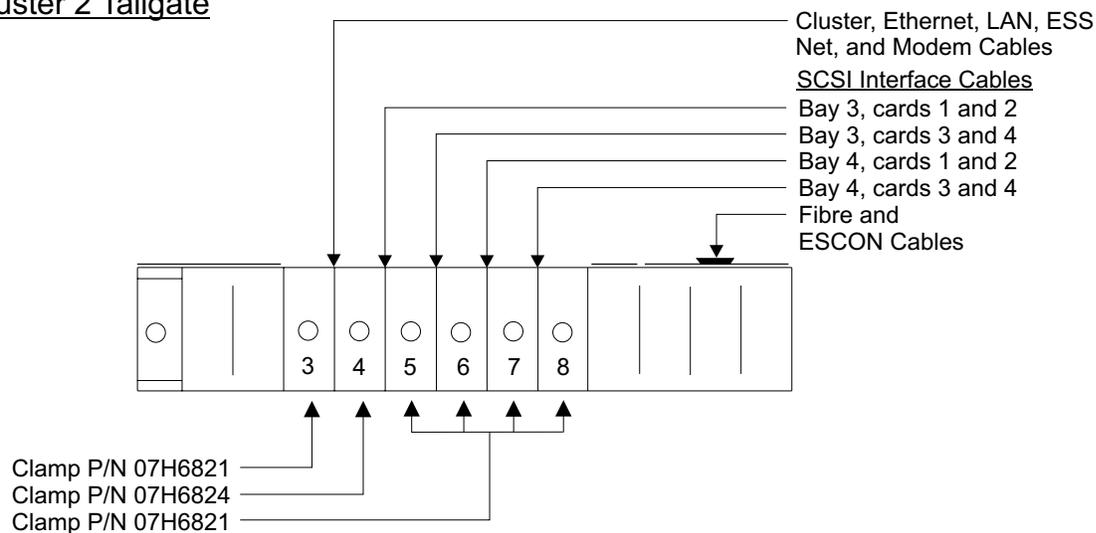


Figure 308. Cluster Bay 2, Tailgate Cable and Cable Clamp Locations (S008271m)

Cluster Bay Fibre Channel and ESCON Cable Tailgate Clamps

- ___ 1. Determine if you are installing or removing fibre channel or ESCON Cables:
 - If installing a fibre channel or ESCON cable, continue with the next step.
 - If removing a fibre channel or ESCON cable, go to step 3 on page 314.
- ___ 2. Feed the fibre channel or ESCON cable through the rubber grommet in the end plate:
 - Cluster Bay 1 **1**
 - Cluster Bay 2 **2**

2105 Model Exx/Fxx Tailgate Cable Clamp Removal and Installation

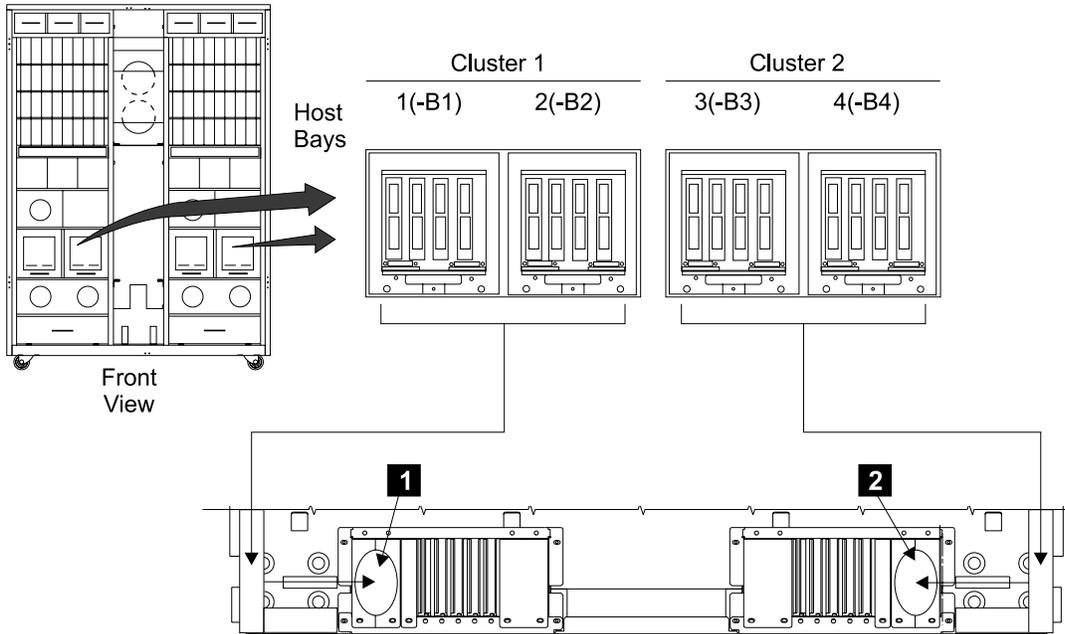


Figure 309. Cluster Bay Fibre Channel or ESCON Cable Installation (S008258n)

If there is not enough room for the fibre channel or ESCON connector to pass through the grommet, do the following steps:

- a. Remove both screws from the end plate:

See Figure 310 on page 314.

- Cluster Bay 1 **3** and **5**
- Cluster Bay 2 **4** and **6**

- b. Remove the free end plate from the tailgate.
- c. Pull the rubber cable grommet out of the plate that is still fastened to the tailgate.
- d. Open the split in the rubber grommet and add or remove the fibre channel or ESCON cable.
- e. Reinstall the grommet and end plate into the tailgate.
- f. Continue with the next step.

2105 Model Exx/Fxx Tailgate Cable Clamp Removal and Installation

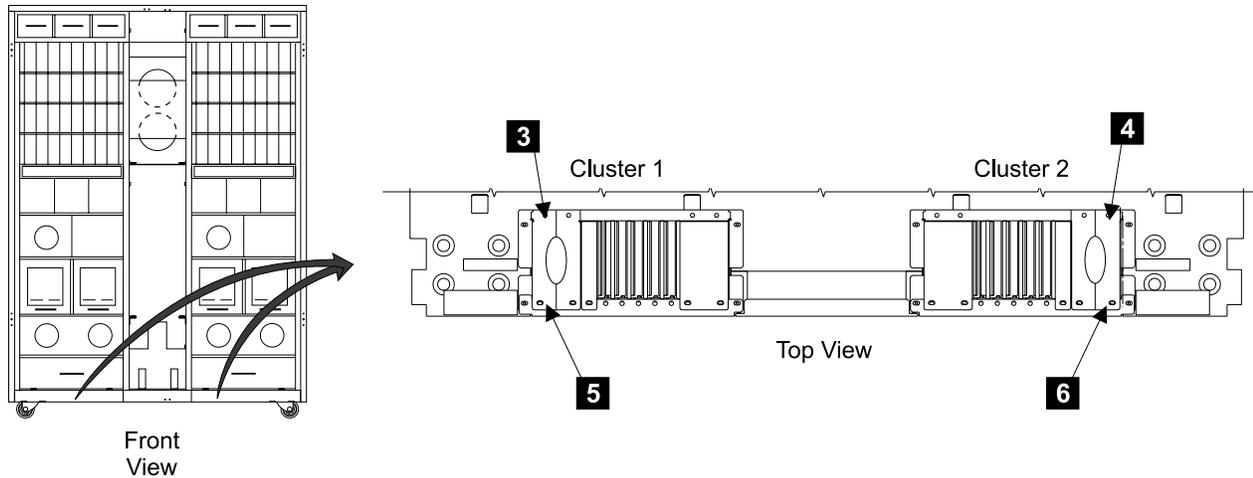


Figure 310. Tailgate Bar Removal (S008300m)

- 3. Determine if you have an ESCON only gate or ESCON/fibre bracket for cable strain relief. See Figure 311 on page 315.
 - If ESCON only strain relief gate, continue with the next step.
 - If ESCON/fibre strain relief bracket, go to 12 on page 317.

Note: Both brackets can retain ESCON cables, if you have any fibre channel cables you must have the fibre/ESCON strain relief bracket.

2105 Model Exx/Fxx Tailgate Cable Clamp Removal and Installation

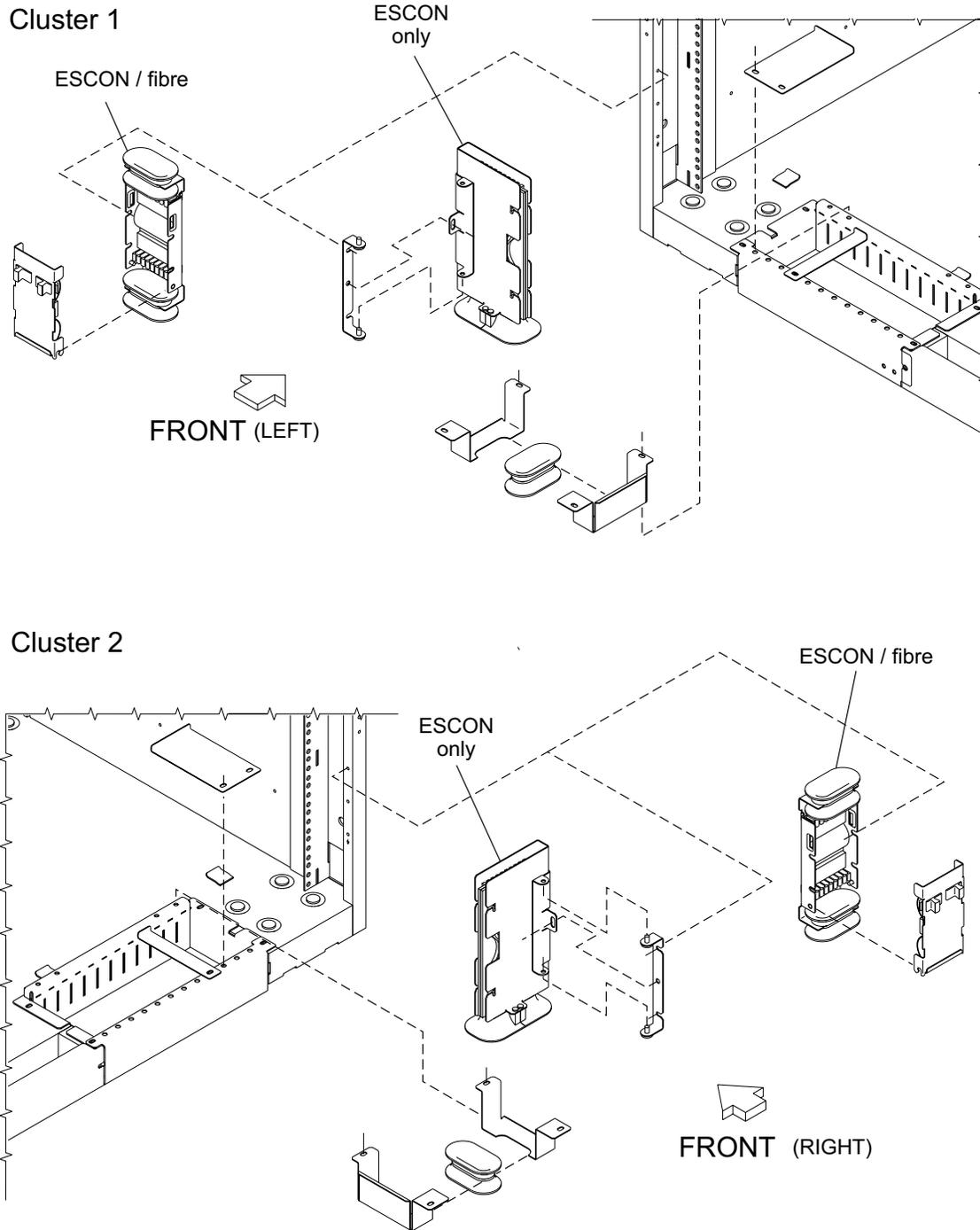


Figure 311. ESCON and ESCON/fibre Strain Relief Hardware (S009012S)

- 4. Refer to Figure 312 on page 316 for the following steps. Remove the screw **7** that holds the ESCON strain relief gate closed.
- 5. Open the strain relief gate and remove the strain relief plate **9**.
If removing an ESCON cable, remove it from the strain relief plate.
- 6. Feed the ESCON cable through the grommet **10** in the bottom of the strain relief gate.
 - If installing an ESCON cable, continue with the next step.
 - If removing an ESCON cable, go to step 8 on page 316.

2105 Model Exx/Fxx Tailgate Cable Clamp Removal and Installation

- ___ 7. Feed enough of the cable **8** through the strain relief gate so the cable reaches the cluster bay and can be retained.

Attention: Do not connect or disconnect any ESCON cables until instructed to do so. ESCON cable changes must be supported by configuration changes.

- ___ 8. Feed the ESCON cable through the rubber grommet in the end plate:
 - Cluster Bay 1 **1**
 - Cluster Bay 2 **2**

If there is not enough room for the ESCON connector to pass through the grommet, do the procedure in step 2 on page 312.

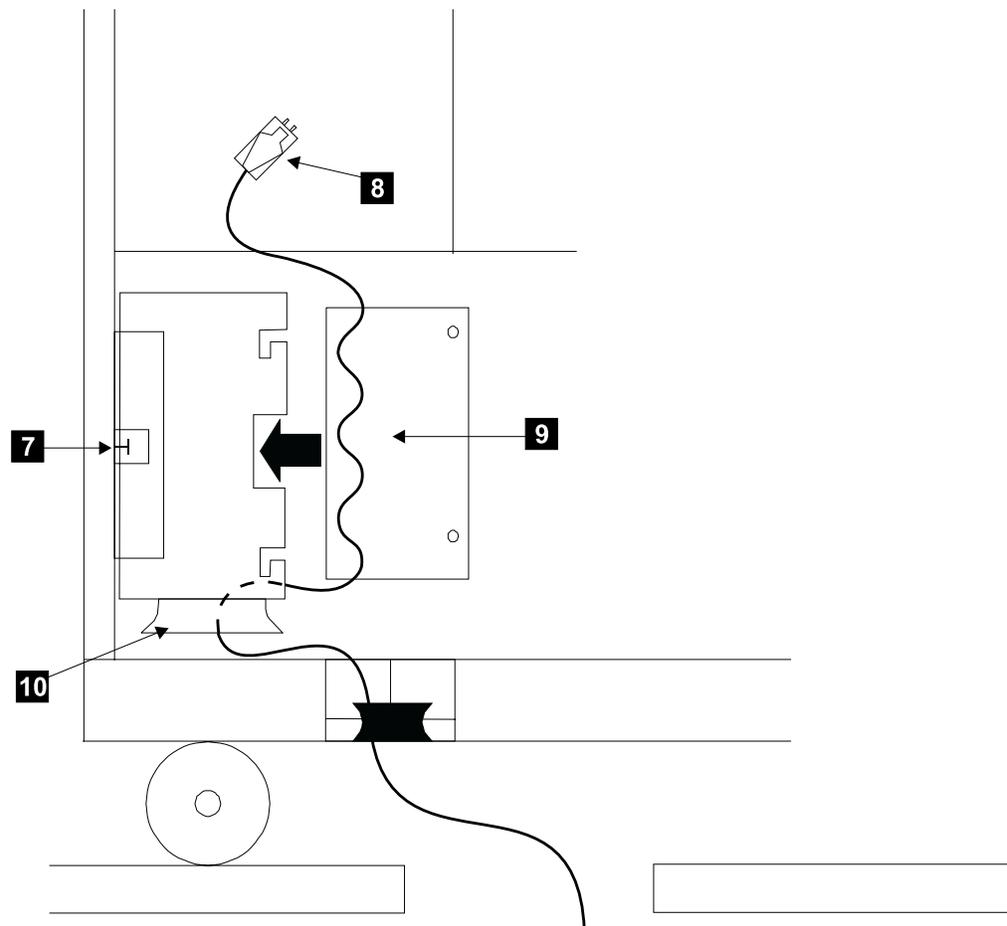


Figure 312. ESCON Cable Strain Relief Hardware (S008276p)

- ___ 9. Reinstall any ESCON cable strain relief as required.

Note: Allow enough extra cable length so the host bays can be moved to their service position with all cables connected.

- If installing an ESCON cable, install the new cable into the strain relief plate. Then reinstall the cable strain relief plate into the gate.
- If removing an ESCON cable, reinstall the cable strain relief plate into the gate.

2105 Model Exx/Fxx Tailgate Cable Clamp Removal and Installation

- ___ 10. Close the ESCON cable strain relief gate and install the locking screw.
- ___ 11. Return to the procedure that sent you here.
- ___ 12. Refer to Figure 313 on page 318 and Figure 314 on page 318 for the following steps.
- ___ 13. Press the latches **11** on the strain relief bracket cover together and pull the cover **12** out. Lift the cover off of the side pins on the bracket.
If removing a fibre channel or ESCON cable **14**, remove it from the upper and lower fingers **15** on the bracket.
- ___ 14. Feed the fibre channel or ESCON cable through the bottom and top grommets **13** and **15** in the strain relief bracket.

Note: These grommets are split and can be removed from the bracket.

- If installing a fibre channel or ESCON cable, continue with the next step.
- If removing a fibre channel or ESCON cable, go to step 16.

- ___ 15. Feed enough of the cable through the strain relief bracket so the cable reaches the cluster bay and can be retained.

Attention: Do not connect or disconnect any fibre channel or ESCON cables until instructed to do so. Fibre channel or ESCON cable changes must be supported by configuration changes.

- ___ 16. Feed the fibre channel or ESCON cable through the rubber grommet in the end plate:

See Figure 309 on page 313.

- Cluster Bay 1 **1**
- Cluster Bay 2 **2**

If there is not enough room for the ESCON connector to pass through the grommet, do the procedure in step 2 on page 312.

- ___ 17. Reinstall any fibre or ESCON cable strain relief as required.

Note: Allow enough extra cable length so the host bays can be moved to their service position with all cables connected.

- If installing a fibre channel or ESCON cable, install the new cable **14** into the fingers **15** on the strain relief bracket.

Note: Do not install more than two cables into each bracket finger slot **15**.

- If removing a fibre channel or ESCON cable, reinstall the cable strain relief plate into the gate.

- ___ 18. Reinstall the cable strain relief cover **12** onto the bracket.
- ___ 19. Return to the procedure that sent you here.

2105 Model Exx/Fxx Tailgate Cable Clamp Removal and Installation

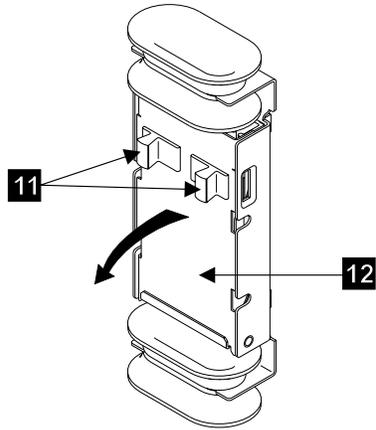


Figure 313. Fibre/ESCON Cable Strain Relief Cover Removal (S009014M)

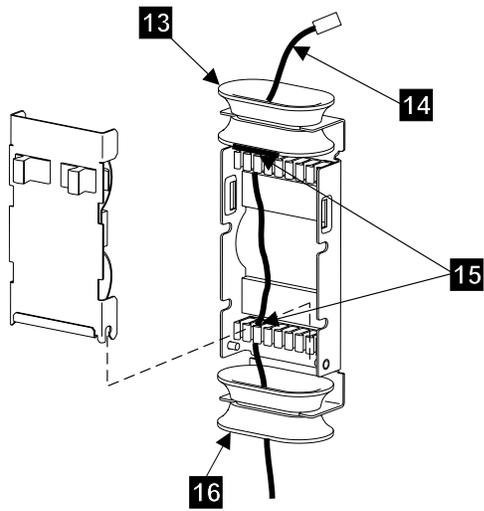


Figure 314. Fibre/ESCON Cable Strain Relief Bracket Hardware (S009013M)

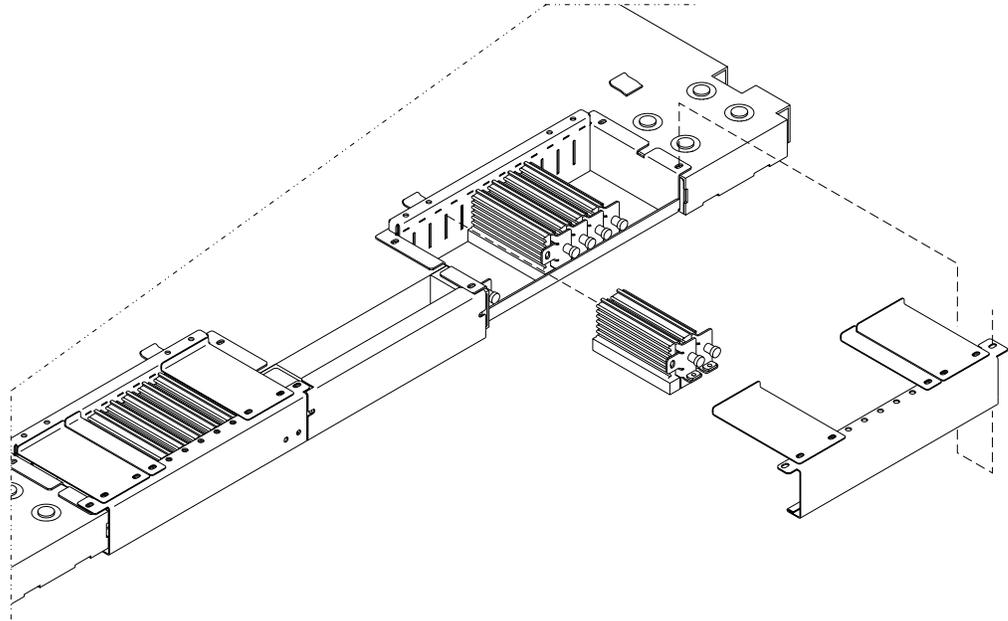


Figure 315. Cluster Bay Fibre/ESCON Cable Tailgate Clamps (S008259p)

Installing a DDM Bay

Attention: This procedure can be performed concurrent with customer operation, and is *not* a stand-alone procedure.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

These instructions describe how to:

- Install a DDM bay into a 2105 Model Exx/Fxx or 2105 Expansion Enclosure rack.
- Connect the DDM bay to the SSA loop.
- Test the installation.

These instructions assume that:

- The SSA loop does not yet have the maximum number of DDMs installed (48 DDMs per loop).
- The SSA loop is on a matched set of SSA device cards, one in the same I/O Planar slot of each cluster bay.
- You have access to:
 - Preinstallation planning information for the system.
 - The Communication Resources Worksheets from the *IBM Enterprise Storage Server Introduction and Planning Guide* book, and the Configuration Worksheets from the *IBM Enterprise Storage Server Configuration Planner* book.

Installing a DDM Bay into a Rack

Place a check mark next to each completed step.

Installing a DDM Bay

1. A detailed list of items is shipped with the DDM bay. Ensure that you have all the items that are shown on the list. Refer to the diagram below to identify the items.

- 1** Frame, DDM bay (1 frame)
- 2** Host Bypass Card, (1 card)
- 3** Controller Card, (1 card)
- 4** Front mounting screws (4 screws)
- 5** Disk Drive Modules, (8 DDMs)
- 6** SSA device cables, (2 cables)
- 7** Passthrough Card, (2 cards)

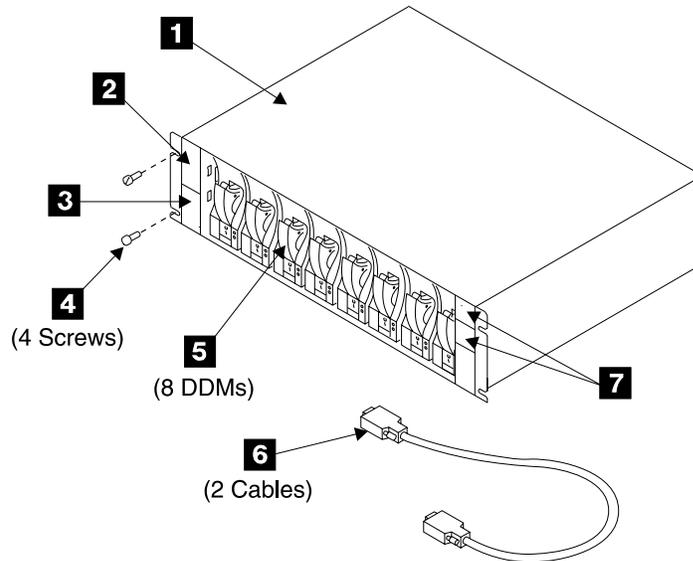


Figure 316. DDM bay Installation Parts (S007694m)

Preparing the Rack for Drawer Installation

1. Use the preinstallation planning information, or other relevant information, determine the physical location where the DDM bay will be installed. This includes the which rack, which storage cage and which DDM bay position.

- **2105 Model Exx/Fxx (R1-):**

- Storage cage 1 (-U1-):
 - DDM bay 1, (R1-U1-W1) **1**
 - DDM bay 2, (R1-U1-W2) **2**
 - DDM bay 3, (R1-U1-W3) **3**
 - DDM bay 4, (R1-U1-W4) **4**
 - DDM bay 5, (R1-U1-W5) **5**
 - DDM bay 6, (R1-U1-W6) **6**
 - DDM bay 7, (R1-U1-W7) **7**
 - DDM bay 8, (R1-U1-W8) **8**
- Storage cage 2 (-U2-):
 - DDM bay 1, (R1-U2-W1) **9**
 - DDM bay 2, (R1-U2-W2) **10**
 - DDM bay 3, (R1-U2-W3) **11**
 - DDM bay 4, (R1-U2-W4) **12**
 - DDM bay 5, (R1-U2-W5) **13**
 - DDM bay 6, (R1-U2-W6) **14**
 - DDM bay 7, (R1-U2-W7) **15**

- DDM bay 8, (R1-U2-W8) **16**

Note: The recommended installation sequence of DDM bays in a 2105 follows:

- If any front 2105 DDM bay locations are available, install DDM bays starting with the lowest (closest to the floor) available front location. Continue adding DDM bays to the lowest (closest to the floor) available location until the front of the 2105 is completely populated. The last DDM bay installed in the front is the top one.
- If all front 2105 locations have DDM bays, go to the rear of the 2105. Install the DDM bays starting with the lowest (closest to the floor) available rear location. Continue adding DDM bays to the lowest (closest to the floor) available location until the rear of the 2105 is completely populated. The last DDM bay installed in the rear is the top one.

Installing a DDM Bay

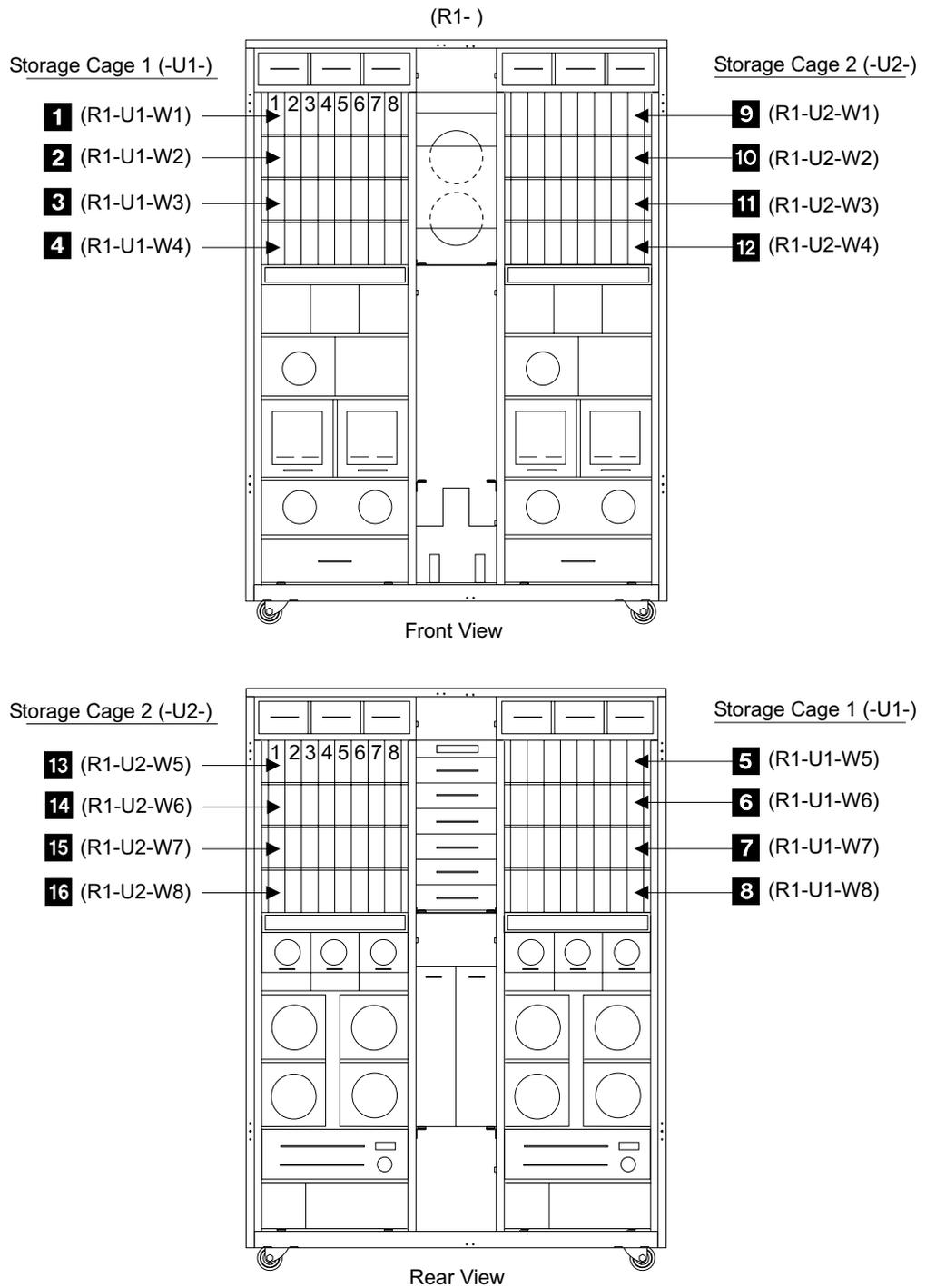


Figure 317. 2105 Model Exx/Fxx DDM Bay Locations (S007695s)

- **2105 Expansion Enclosure (R2-):**

- Storage cage 1 (-U1-):

- DDM bay 1, (R2-U1-W1) **1**
- DDM bay 2, (R2-U1-W2) **2**
- DDM bay 3, (R2-U1-W3) **3**
- DDM bay 4, (R2-U1-W4) **4**
- DDM bay 5, (R2-U1-W5) **5**
- DDM bay 6, (R2-U1-W6) **6**

- DDM bay 7, (R2-U1-W7) **7**
- DDM bay 8, (R2-U1-W8) **8**
- Storage cage 2 (-U2-):
 - DDM bay 1, (R2-U2-W1) **9**
 - DDM bay 2, (R2-U2-W2) **10**
 - DDM bay 3, (R2-U2-W3) **11**
 - DDM bay 4, (R2-U2-W4) **12**
 - DDM bay 5, (R2-U2-W5) **13**
 - DDM bay 6, (R2-U2-W6) **14**
 - DDM bay 7, (R2-U2-W7) **15**
 - DDM bay 8, (R2-U2-W8) **16**
- Storage cage 3 (-U3-):
 - DDM bay 1, (R2-U3-W1) **17**
 - DDM bay 2, (R2-U3-W2) **18**
 - DDM bay 3, (R2-U3-W3) **19**
 - DDM bay 4, (R2-U3-W4) **20**
 - DDM bay 5, (R2-U3-W5) **21**
 - DDM bay 6, (R2-U3-W6) **22**
 - DDM bay 7, (R2-U3-W7) **23**
 - DDM bay 8, (R2-U3-W8) **24**
- Storage cage 4 (-U4-):
 - DDM bay 1, (R2-U4-W1) **25**
 - DDM bay 2, (R2-U4-W2) **26**
 - DDM bay 3, (R2-U4-W3) **27**
 - DDM bay 4, (R2-U4-W4) **28**
 - DDM bay 5, (R2-U4-W5) **29**
 - DDM bay 6, (R2-U4-W6) **30**
 - DDM bay 7, (R2-U4-W7) **31**
 - DDM bay 8, (R2-U4-W8) **32**

Note: The recommended installation sequence of DDM bays in a 2105 follows:

- If any front 2105 DDM bay locations are available, install DDM bays starting with the lowest available front location. Continue adding DDM bays to the lowest available location until the front of the 2105 is completely populated.
- If all front 2105 locations have DDM bays, go to the rear of the 2105. Install the DDM bays starting with the lowest available rear location, and continue to the top.

Installing a DDM Bay

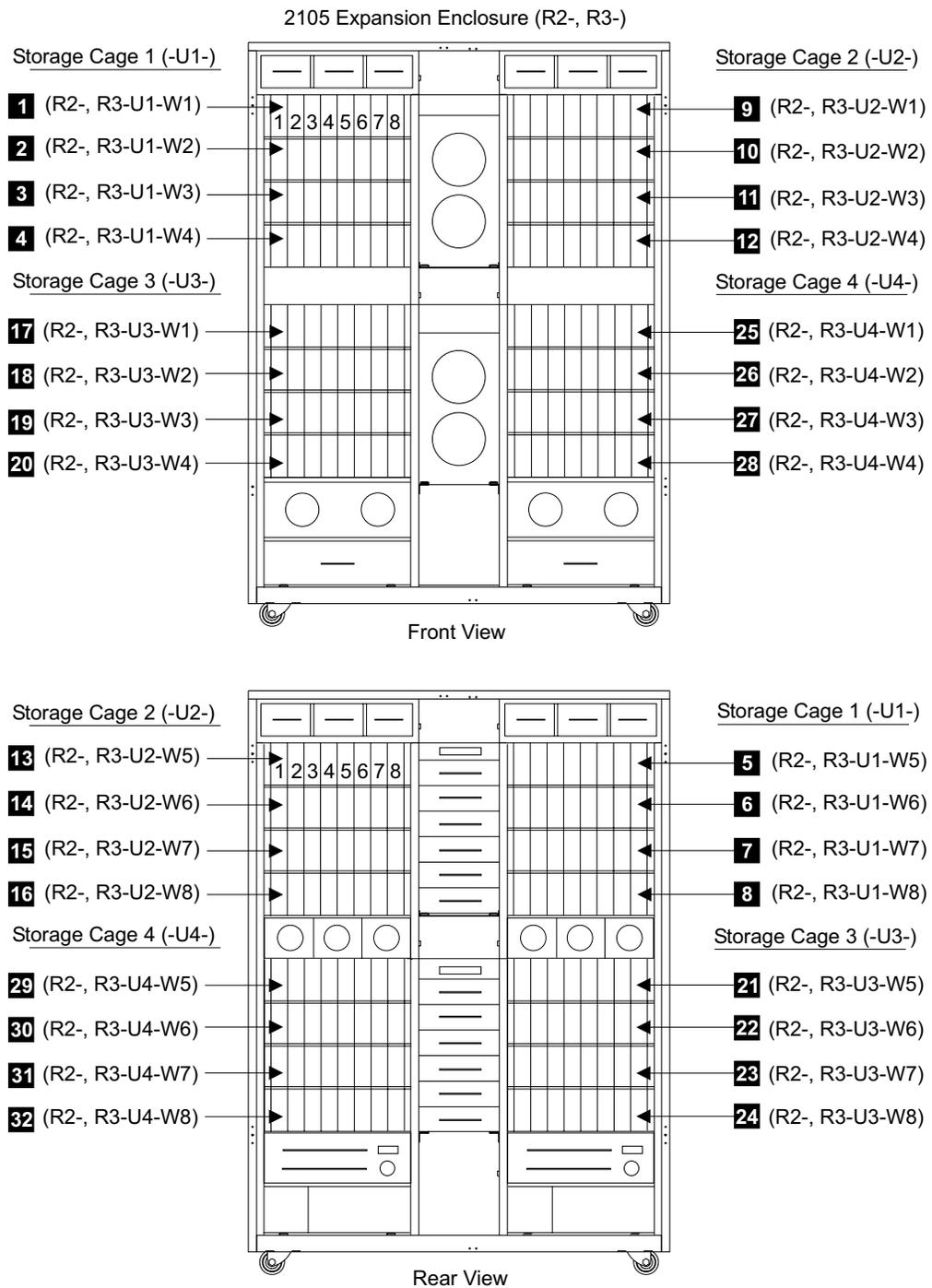


Figure 318. 2105 Expansion Enclosure DDM Bay Locations (S007696S)

2. Locate the physical location where the DDM bay is to be installed. Unlatch the air door **33** and push it in and look into the opening.
 - a. Check that the power cable docking connector is installed in the rear crossbar **34**.
 - b. Check that the other end of the cable is plugged into the correct storage cage power planar **35** connector. See Figure 320 on page 325 and Figure 321 on page 326.

Installing a DDM Bay

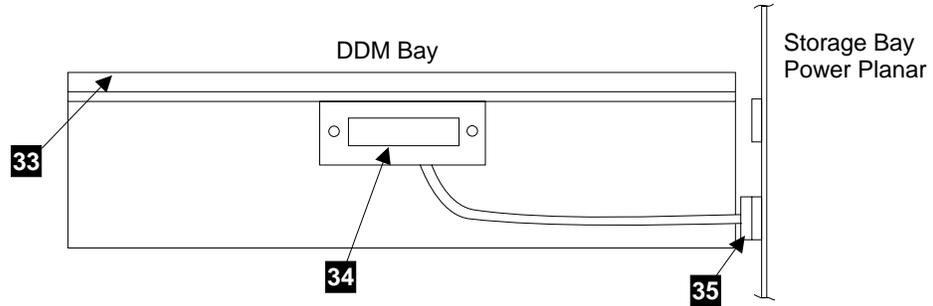


Figure 319. DDM Bay Air Door and Power Cable (S007697L)

2105 Model Exx/Fxx and Expansion Enclosure

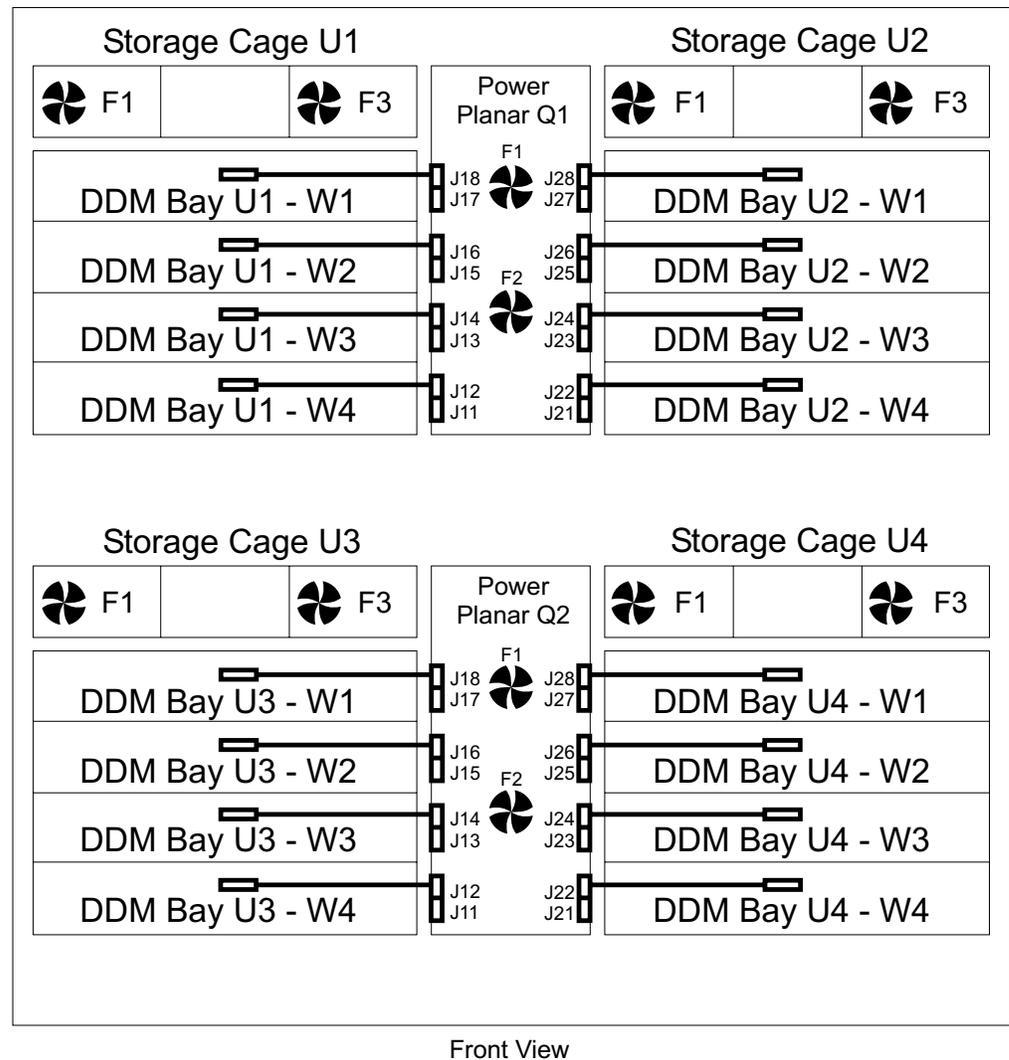


Figure 320. DDM Bay Front Power Cable Locations (S008812s)

Installing a DDM Bay

2105 Model Exx/Fxx and Expansion Enclosure

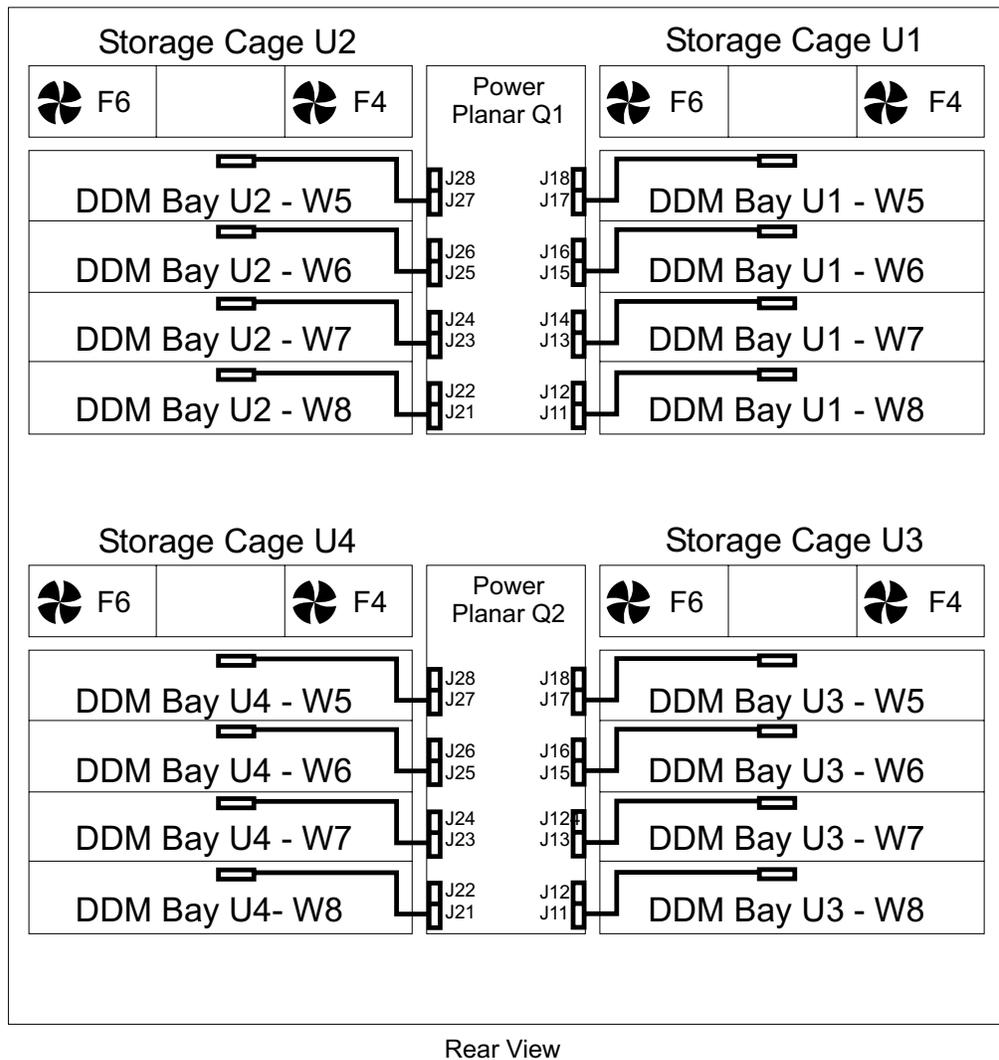


Figure 321. DDM Bay Rear Power Cable Locations (S008813s)

- ___ 3. Pull the air door down until it latches closed.
- ___ 4. Continue with "Installing the DDM Bay."

Installing the DDM Bay.

- ___ 1. Temporarily remove any sheet metal cable clamping brackets **1** and **3** installed on the vertical mounting rails of the DDM bay location.
- ___ 2. Ensure that the DDM bay being installed does not have any cards or DDMs installed in it.
- ___ 3. Press the storage cage air door **2** in until it is free of the latch.
Attention: The DDMs must be removed or un-latched and pulled out slightly before the DDM bay is installed. This will avoid any power surges that could disrupt concurrent operations.
- ___ 4. Position the DDM bay frame with its serial number plate on the lower right corner **5**. Slide the DDM bay frame fully into the storage cage slot.

Installing a DDM Bay

5. Install the four DDM bay frame front mounting screws **4** and the cable clamping brackets **1** and **3**.

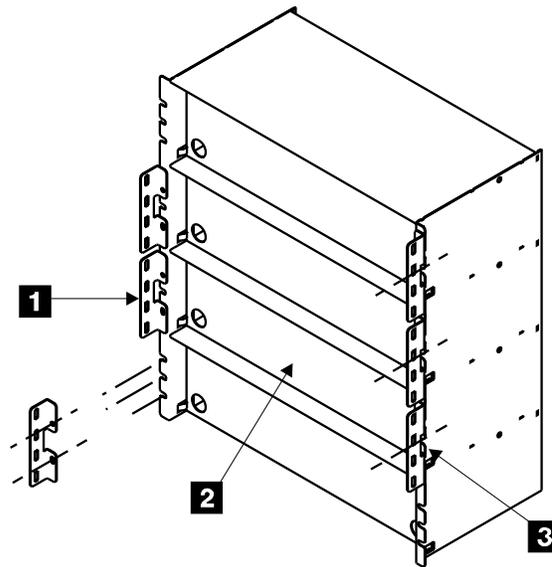


Figure 322. DDM Bay Cable Clamp Brackets (S007698m)

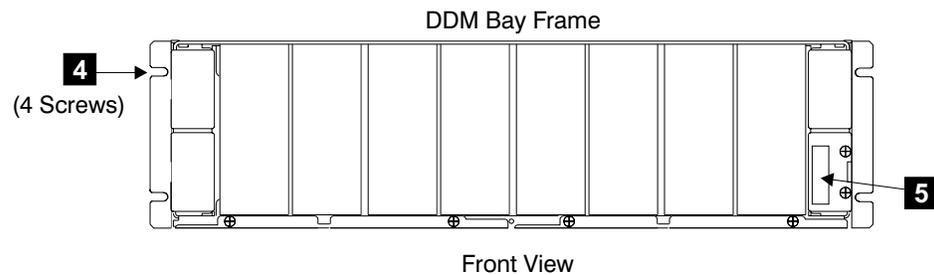


Figure 323. DDM Bay Frame Installation (S007699L)

Installing the Logic Cards.

1. Install the Controller Card into the lower left slot **2** of the DDM bay frame (location Rx-Ux-Wx-C5).
2. Install the two passthrough cards into the upper right slots **3** and **4** of the DDM bay frame (location Rx-Ux-Wx-C2 and C4).
3. Install the bypass card into the upper left slot **1** of the DDM bay frame (location Rx-Ux-Wx-C1).

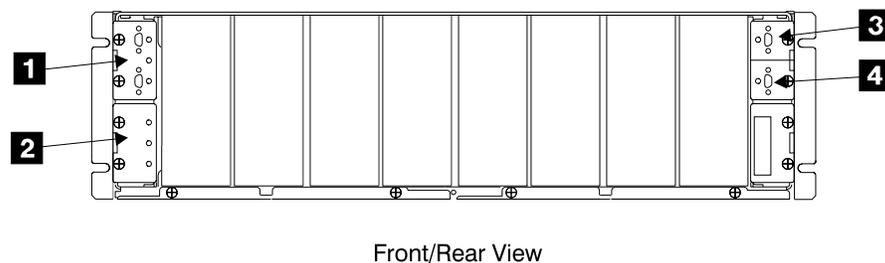


Figure 324. DDM Bay Logic Card Locations (S007700L)

Installing a DDM Bay

Installing the Disk Drive Modules

Attention: Disk drive modules (DDMs) are fragile. Handle them with care, and keep them well away from strong magnetic fields.

- ___ 1. Install all eight DDMs as follows:
 - a. Open the DDM handle before installation, press the blue latch **1**, and pull the handle down **2**
 - b. With one hand under the DDM, and the handle down **3**, align the drive with the groove and push it into its slot **4**.
The drive stops before it is fully seated.
 - c. Push the DDM handle up **5** until it latches closed.
 - d. Repeat the above steps for all eight disk drive modules.
 - e. Verify that the front of all of the DDMs are aligned.

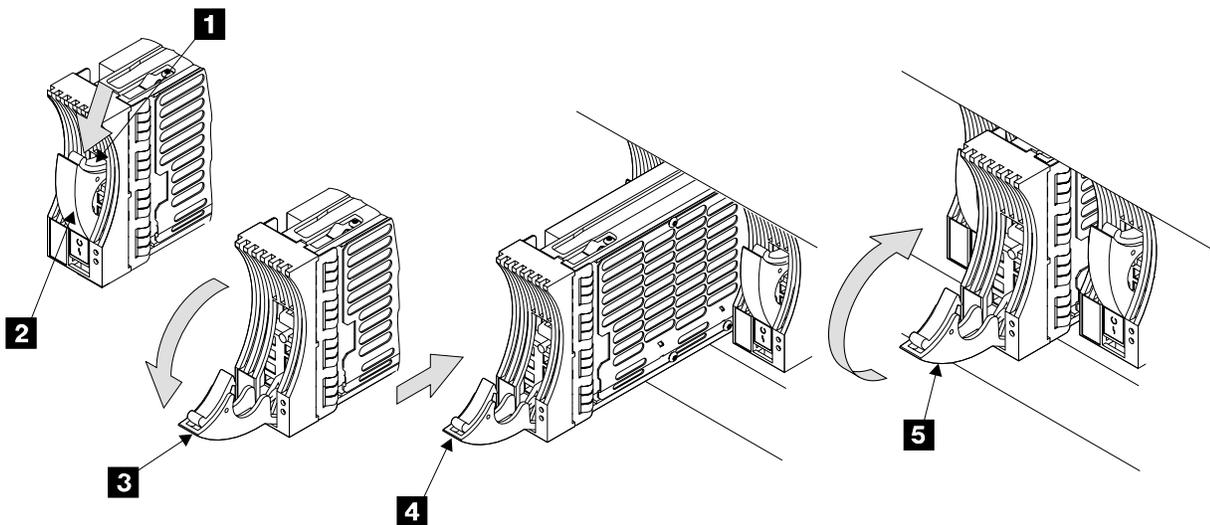


Figure 325. Disk Drive Module Installation (S007701m)

- ___ 2. Are you installing multiple DDM bays on a loop at the same time?

Note: Installing DDM bays at the same time will take much less time than installing them one at a time. Installing multiple DDM bays on a loop with an existing DDM bay, requires that you take the existing DDM Bay from the customer during the installation.

- **Yes**, go to step 3.
 - **No**, go to “Installing the DDM bay Device Drawer Using the Service Terminal”.
- ___ 3. Is this the last DDM bay being installed on this loop?
 - **Yes**, go to “Installing the DDM bay Device Drawer Using the Service Terminal”.
 - **No**, to install the next DDM bay, return to “Installing a DDM Bay into a Rack” on page 319.

Installing the DDM bay Device Drawer Using the Service Terminal

- ___ 1. Ensure that the storage cage or cages that contains the new DDM bay or bays are logically installed. From the service terminal **Main Service Menu**, select:

Install/Remove Menu**Storage Cage Menu****List Installed Storage Cages**

If the storage cage or cages are not logically installed, use the Storage Cage Menu, Install a Storage Cage option. Install the cage or cages now and then return here and continue with the next step.

- ___ 2. From the service terminal **Main Service Menu**, select:

Install/Remove Menu**Device Drawer (DDM Bay or 7133 Drawer) Menu****Install a Single Device Drawer or****Install Multiple Device Drawers****Notes:**

- a. With **Install a Single Device Drawer**, a drawer can be installed non-disruptive (concurrent loop install) when there are drawers already installed on a loop. This process is slower, but doesn't interrupt customer access to drawers currently on the loop.
 - b. With **Install Multiple Device Drawers**, multiple drawers can be installed disruptively (disruptive loop install) when there are drawers already on a loop. This process is faster, but requires that the customer give up access to drawers currently on the loop.
 - c. When single or multiple device drawers are installed on an empty loop, the **Install Multiple Device Drawers** option should always be used (its faster).
 - d. When installing **Single or Multiple Device Drawers**, the sequence that the DDM bays are installed is critical on racks where the SSA cables were pre-installed in manufacturing. If the rack was pre-cabled, *refer* to "Install Sequence of DDM Bays in Pre-Cabled Racks" on page 330 for the correct DDM bay installation sequence. Use the tables with "Install Sequence of DDM Bays in Pre-Cabled Racks" on page 330 to install the device drawers in the correct sequence and on the loop indicated.
- ___ 3. Follow the service terminal guided procedure. The following is help text for screens that will be displayed in these two options:
- The **Select a Device Drawer** screen displays any drawers not fully installed (normally due to delaying formatting) and a new drawer option. Select New Drawer.
 - At the **Select Device Drawer Type** screen, use F4 to display and select the 2105 DDM bay.
 - At the **Select an SSA Loop** screen, select the SSA loop with the appropriate location code and Loop. Each loop has two location codes, one for each end of the loop:
 - a. **SSA device card, R1-Tx-P2-Kx:**
 - R1=Rack 1
 - Tx=Cluster Bay X
 - P2=I/O Planar
 - Kx=I/O Planar slot for SSA card
 - yy=cable connector, A1, A2, B1, or B2
 - b. **SSA device card connectors, loop A or B:**
 - A=A1/A2 connectors
 - B=B1/B2 connectors

Installing a DDM Bay

- At the **Drawer Information Options** screen, use F4 to list and select the Drawer Location.

Install Sequence of DDM Bays in Pre-Cabled Racks

This reference section describes single and multiple DDM bay installation sequences and the SSA loop each DDM bay connects to. This section is **ONLY** for racks with pre-cabled (standard) SSA cables.

1. Verify that the DDM bays are cabled per the standard pre-cabled (manufacturing configuration), see the four tables in “Manufacturings Pre-Cabled SSA Loop Configuration” on page 331. The SSA cables to each drawer location should match the colored loop indicated in the four tables under “Manufacturings Pre-Cabled SSA Loop Configuration” on page 331.
2. Verify that each colored loop row contains the correct sequence of DDM bay locations for each loop. Use Table 32 on page 331 for any number of DDM bays on a standard pre-cabled SSA loop. Use the information in Table 32 on page 331 during the install drawer process.

Example of how to use Table 32 on page 331:

Four DDM bays are being added to the Green loop. The Green loop has two previously installed DDM bays. (A 2105 Expansion Enclosure is being added to a 2105 Model Exx/Fxx.)

1. When prompted to, select the location for **Drawer 1 of 4**, go to the Green row of the table.
 - Go to the column marked **3rd**. The 1st and 2nd DDM bays are already installed.
 - Select the indicated location, R2–U1–W4, on the service terminal.
2. When prompted to, select the location for **Drawer 2 of 4**, go to the Green row of the table.
 - Go to the column marked **4th**.
 - Select the indicated location, R2–U1–W3, on the service terminal.
3. When prompted to, select the location for **Drawer 3 of 4**, go to the Green row of the table.
 - Go to the column marked **5th**.
 - Select the indicated location, R2–U3–W4, on the service terminal.
4. When prompted to, select the location for **Drawer 4 of 4**, go to the Green row of the table.
 - Go to the column marked **6th**.
 - Select the indicated location, R2–U3–W3, on the service terminal.

Table 32. Install Sequence of DDM Bays in Pre-cabled Racks

	2105 Model Exx/Fxx		2105 Expansion Enclosure			
	1st	2nd	3rd	4th	5th	6th
Green	R1-U1-W4	R1-U1-W3	R2-U1-W4	R2-U1-W3	R2-U3-W4	R2-U3-W3
Red	R1-U2-W4	R1-U2-W3	R2-U2-W4	R2-U2-W3	R2-U4-W4	R2-U4-W3
Gray	R1-U1-W2	R1-U1-W1	R2-U1-W2	R2-U1-W1	R2-U3-W2	R2-U3-W1
Orange	R1-U2-W2	R1-U2-W1	R2-U2-W2	R2-U2-W1	R2-U4-W2	R2-U4-W1
Violet	R1-U1-W8	R1-U1-W7	R2-U1-W8	R2-U1-W7	R2-U3-W8	R2-U3-W7
Yellow	R1-U2-W8	R1-U2-W7	R2-U2-W8	R2-U2-W7	R2-U4-W8	R2-U4-W7
Blue	R1-U1-W6	R1-U1-W5	R2-U1-W6	R2-U1-W5	R2-U3-W6	R2-U3-W5
Brown	R1-U2-W6	R1-U2-W5	R2-U2-W6	R2-U2-W5	R2-U4-W6	R2-U4-W5

Manufacturings Pre-Cabled SSA Loop Configuration

Note: The text in parentheses, such as (1st) and (2nd), correspond to the columns in Table 32.

Table 33. 2105 Model Exx/Fxx (Front View)

2105 Model Exx/Fxx (Front View)		
	R1-U1	R1-U2
(2nd) W1	Gray	Orange
(1st) W2	Gray	Orange
(2nd) W3	Green	Red
(1st) W4	Green	Red

Note: The cage locations are *reversed* to simulate the view as seen from the rear of the rack.

Table 34.

2105 Model Exx/Fxx (Rear View)		
	R1-U1	R1-U2
(2nd) W5	Brown	Blue
(1st) W6	Brown	Blue
(2nd) W7	Yellow	Violet
(1st) W8	Yellow	Violet

Installing a DDM Bay

Table 35.

2105 Expansion Enclosure (Front View)		
	R2-U1	R2-U2
(4th) W1	Gray	Orange
(3rd) W2	Gray	Orange
(4th) W3	Green	Red
(3rd) W4	Green	Red
	R2-U3	R2-U4
(6th) W1	Gray	Orange
(5th) W2	Gray	Orange
(6th) W3	Green	Red
(5th) W4	Green	Red

Note: The cage locations are *reversed* to simulate the view as seen from the rear of the rack.

Table 36.

2105 Expansion Enclosure (Rear View)		
	R2-U2	R2-U1
(4th) W5	Brown	Blue
(3rd) W6	Brown	Blue
(4th) W7	Yellow	Violet
(3rd) W8	Yellow	Violet
	R2-U4	R2-U3
(6th) W5	Brown	Blue
(5th) W6	Brown	Blue
(6th) W7	Yellow	Violet
(5th) W8	Yellow	Violet

Installing a DDM Bay

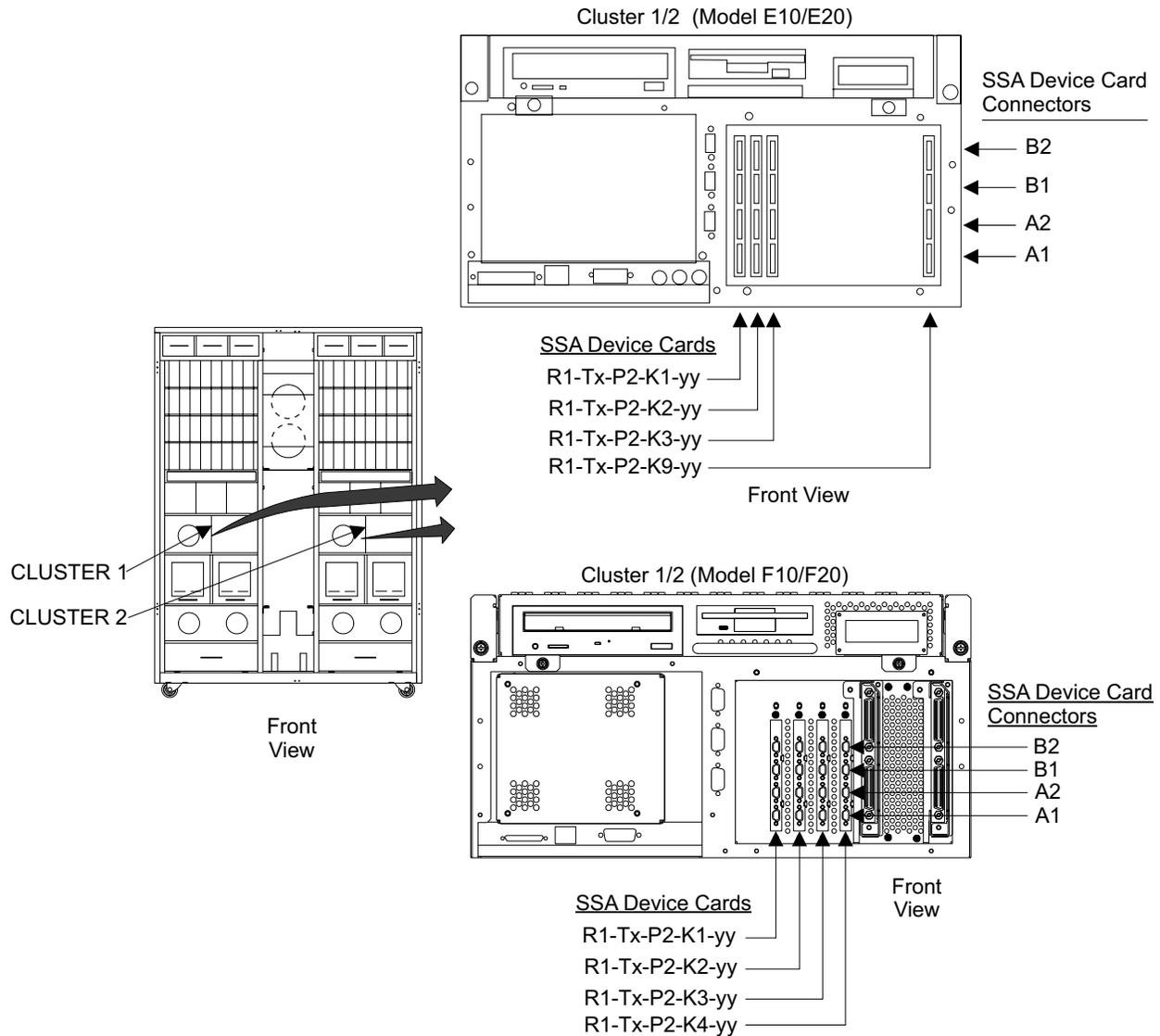


Figure 326. Cluster Bay SSA Device Card Connector Locations (S008801q)

Continuing the Installation of a DDM Bay

Attention: The logic cards the SSA cables connect to in this procedure are ESD-sensitive. Always wear an ESD wrist strap during this procedure. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

- ___ 1. The **Install SSA Cables** screen has directed you back here for additional information. The screen lists the SSA locations and three actions needed to connect the new DDM bays into the SSA loop.
 - a. **The following cable location(s) need to be disconnected.**
Disconnect both ends of each cable. Do not remove the cable yet, as it may be used below as a new cable.
 - b. **The following cable location(s) are new. Please add or move cables to the appropriate locations.**
 - The SSA cables are ordered and supplied with the DDM bay.

Installing a DDM Bay

Attention: When routing the new SSA cables, avoid making sharp (90 degree) bends that might damage the cables or connectors. Follow the routing and bends used on previously installed SSA cables. For examples, see SSA cables installed by manufacturing.

c. **The following cable location(s) remain the same.**

These SSA cables are already installed and will stay connected to the existing locations. These cables and the list of new cables above are all cables on this SSA loop.

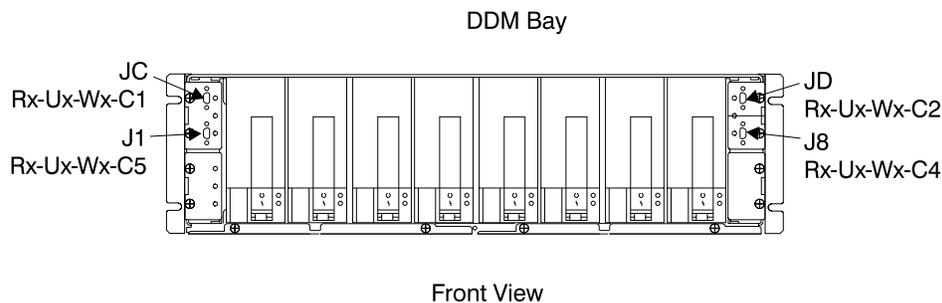


Figure 327. DDM Bay SSA Connector Locations (S007703I)

- ___ 2. Locate the SSA device cable identification labels in the 2105 Model E10/E20 ship group, P/N 34L3484.
- ___ 3. A label is attached only to each SSA cable that connects to an SSA Card in each cluster bay. The label lists the cluster bay I/O Planar slot the SSA card is plugged into. It also lists the SSA card connector the cable is plugged into.

Notes:

- a. To prevent damage to the SSA device cable connector screws, always use the special screwdriver (SSA tool, P/N 32H7059) to turn them. This screwdriver is in the 2105 ship group.
- b. The SSA DASD drawer and SSA card indicators will come on and off as cables are connected and disconnected. The state of these indicators should be ignored until they are tested later in the install procedure.
- ___ 4. The SSA device card automatically configures the SSA loop when power is supplied to the disk drive modules. This configuration might take a few minutes to complete. When the indicators of all the disk drive modules are on continuously (not blinking), configuration is complete.
- ___ 5. The DDM bay indicators are as described here: Refer to Figure 328 on page 335.

Controller card, Power indicator 1 :	On
Controller card, DDM Check indicator 2 :	Off
Controller Card Check indicator 3 :	Off
All disk drive module, Ready indicators 4 :	On
All disk drive module, Check indicators 5 :	Off

When the service terminal configuration process is complete, and any related problems have been repaired, ensure the indicators are as listed above. If any indicator is not correct, replace the FRU that contains the indicator. See “Replacing a FRU Using the Service Terminal” on page 5 and “Chapter 4: FRU Removal and Replacement Procedures” on page 1.

Installing a DDM Bay

When all the Power indicators and Ready indicators are on, and all the Check indicators are off, continue with the next step.



Front/Rear View

Figure 328. DDM bay Indicator Locations (S007704)

Completing the Installation of a DDM bay

- ___ 1. Do you have any additional DDM bays to install on this SSA loop?
 - **Yes**, Go to “Installing the DDM bay Device Drawer Using the Service Terminal” on page 328.
 - **No**, go to step 3.
- ___ 2. Do you have any additional DDM bays to install on another SSA loop?
 - **Yes**, Go to “Installing the DDM bay Device Drawer Using the Service Terminal” on page 328.
 - **No**, go to step 3.
- ___ 3. Do the following:
 - Complete the physical install of each SSA cable by ensuring it is properly routed and all velcro cable ties are fastened.
 - Remove any SSA cables that were disconnected and not reused.
 - Ensure all SSA cables plugged into SSA cards have a location label at the SSA card connector end.
 - Ensure that the new DDM bays have been formatted.
- ___ 4. The installation of the DDM bay or bays is complete, inform the customer the new DDM bay is ready to be configured with ESS Specialist.

Installing a Host Card

Attention: This is *not* a stand-alone procedure. You should have started this procedure at the service terminal. Perform the installation of a host card *only* at the direction of the service terminal or other service guide procedures. Go to the service terminal and perform **Install A Host Card**.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Place a check mark next to each completed step.

Note: Unless you have a particular reason, *do not power off the 2105 Model Exx/Fxx rack when removing the host bay.*

- ___ 1. This procedure supports the installation and testing of single or multiple host cards. You **MUST** use the correct action indicated by the selected service terminal procedure:

Installing a Host Card

- **Installing Single Host Card**, for single host card installation
 - **Installing Multiple Host Cards** for multiple host card installations
- ___ 2. Ensure that the customer has made the configuration changes at the host that are needed to support the attachment of the type of 2105 host card that you are installing.
 - ___ 3. Ensure that the customer has the MES available for the installation of the new host interface cables.
 - ___ 4. Locate the host bay you will be installing the host cards into. Move the host bay to the service position, see "Moving the Host Bay to Its Service Position, 2105 Model Exx/Fxx" on page 96.

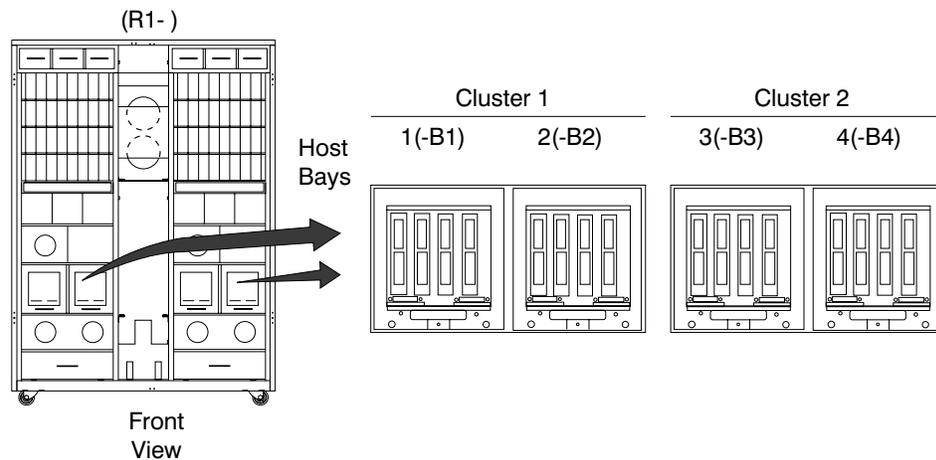


Figure 329. Locating a Host Bay (S007630m)

- ___ 5. Install the host cards in the card slot indicated by the service terminal:
 - Host card 1, (R1-Bx-H1)
 - Host card 2, (R1-Bx-H2)
 - Host card 3, (R1-Bx-H3)
 - Host card 4, (R1-Bx-H4)

Installing a Host Card

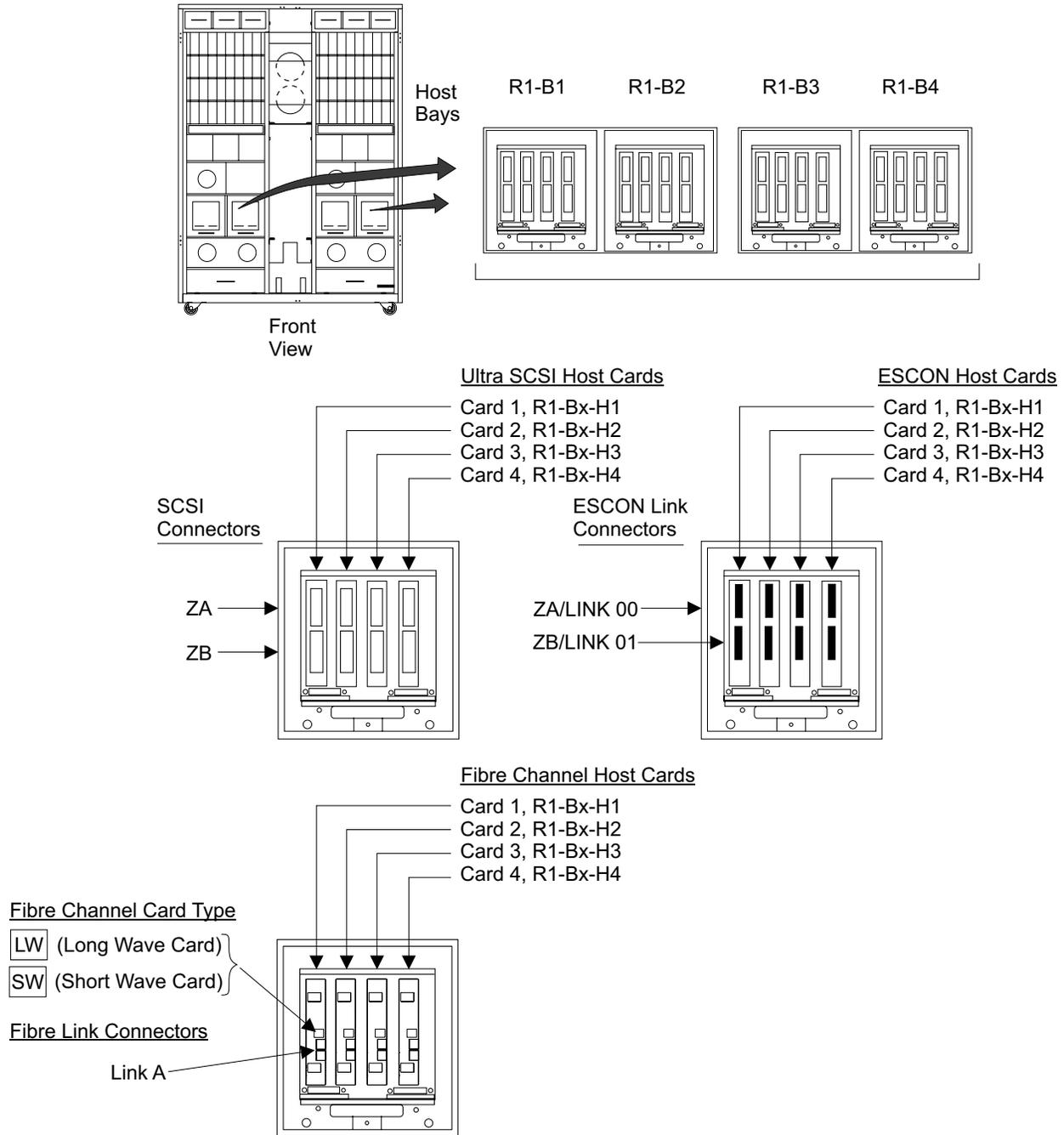


Figure 330. Host Card Locations (S008024r)

- a. Do the following steps only on the host cards and the host bay slots the cards are being installed into.

Note: Repeat the following steps for multiple cards.

- b. Remove the two block plate mounting screws **1** then remove the block plate **2**.

Note: This plate is not be used when the host card is installed.

- c. If not previously done, loosen the two left **4** and two right **6** card retention plate screws, then lift the retention plate **3** off of the bay.

Installing a Host Card

Note: To remove the two left screws **6** from host bay 1, you must remove the front left cover from the 2105 Model Exx/Fxx. To remove the two right screws **7** from host bay 4, you must remove the front right cover from the 2105 Model Exx/Fxx.

- d. Remove the host card, rear locking pin **5**.

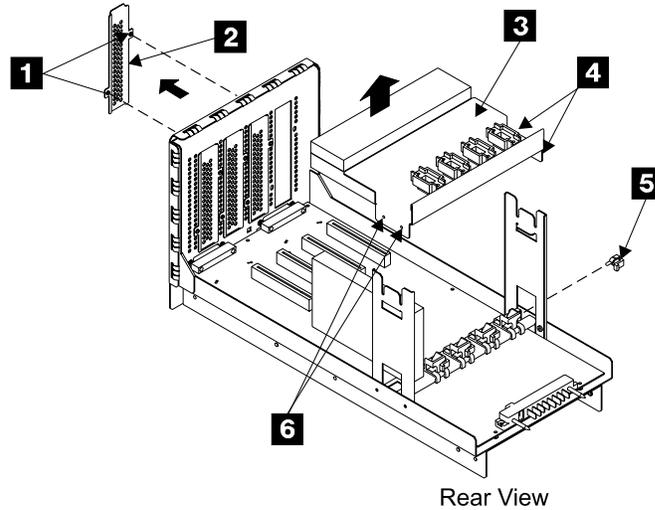


Figure 331. Host Card Installation Locations (S008097m)

- e. Install the host cards **9** with its connector bracket **8** against the inside of the front of the host bay.
- f. Install and tighten the two host card connector bracket screws **7**,
- g. Install the host card, rear locking pin **10**.

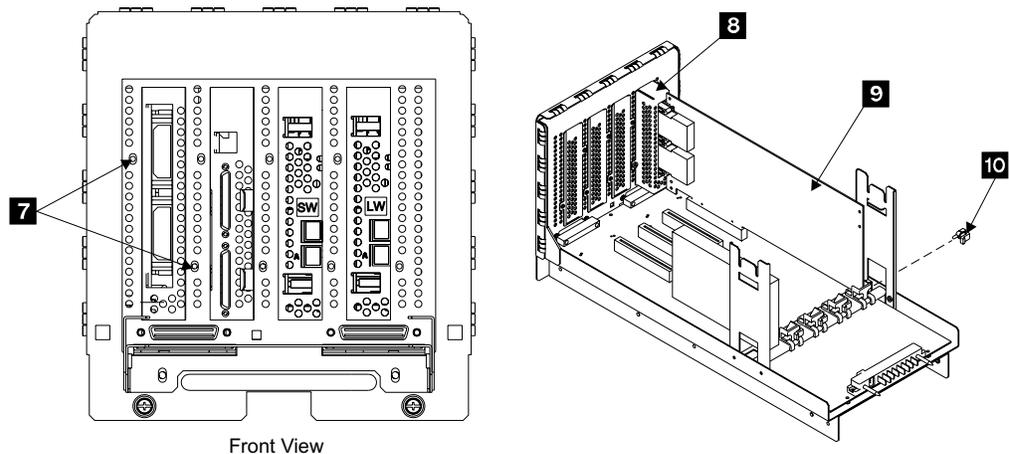


Figure 332. Host Card Installation Locations (S008095m)

- h. Install the top card retainers on the top or bottom of the card retention plate:
- **SCSI host cards**, install the top card retainer **12** on the **bottom** of the card retention plate **11**.

Installing a Host Card

- **ESCON or Fibre channel host cards**, install the top card retainer **14** and spacer **15** on the **top** of the card retention plate **13**.

Note: The spacer **15** is only used with ESCON or Fibre channel host cards.

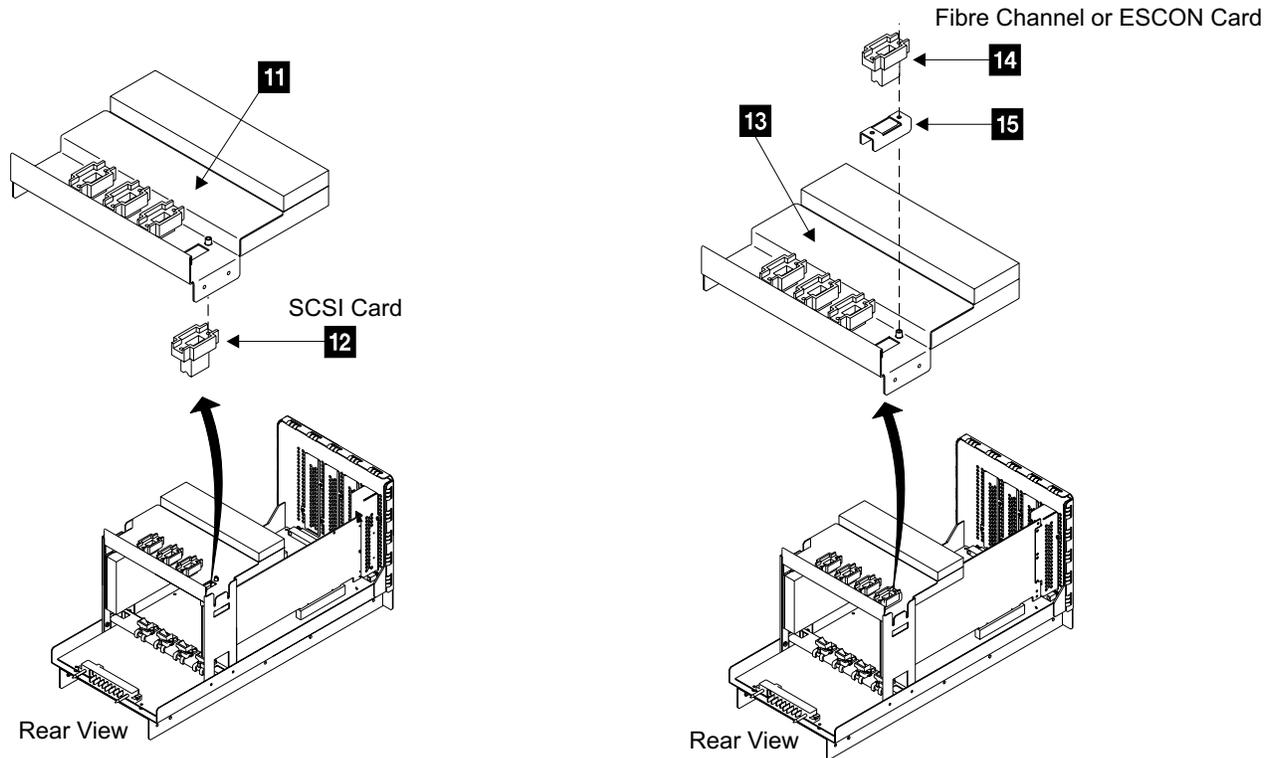


Figure 333. Host Bay Host Card Installation (S008098n)

- ___ 6. Replace parts in the reverse order, see “Moving the Host Bay to Its Service Position, 2105 Model Exx/Fxx” on page 96.
- ___ 7. After the part replacement is complete, return to the service terminal to continue the install process. This will test the complete host bay and its cards.

Completing the Installation of a Host Card

Note: If the service terminal directed you to this procedure, the testing of the new host cards was successful.

Attention: To prevent electrostatic discharge, ensure you discharge all SCSI host cables to the ESD discharge pad, before you plug them into the 2105 Model Exx/Fxx. The ESD discharge pads are mounted on the front right and left corners of the 2105 Model Exx/Fxx frame, next to each tailgate. See Figure 256 on page 257 for the location of the ESD discharge pads.

- ___ 1. Are you installing single or multiple host cards?
 - **Single** host card install, go to step 6 on page 340.
 - **Multiple** host card install, continue with the next step.
- ___ 2. Verify that no problems were created during the multiple host card installation.

Installing a Host Card

Note: If you have already checked for problems, continue with the next step.

Log back onto the cluster bay being serviced. From the service terminal **Main Service Menu**, select:

Repair Menu

Show/Repair Problems Needing Repair

Repair any new problems. If no new problems were found, continue with the next step.

- ___ 3. Was an ESCON host card installed?
 - **Yes**, continue with the next step.
 - **No**, go to step 6.
- ___ 4. Before installing the host cables, do you want to test the FOSA interface?

Note: Running the ESCON wrap test will require the installation of the ESCON wrap tool (P/N 5605670) from the ship group.

- **Yes**, continue with the next step.
- **No**, go to step 6.
- ___ 5. Use the service terminal to run the ESCON Port Optical Wrap Test.
From the service terminal **Main Service Menu**, select:

Machine Test Menu

Host Interface Cards Menu

ESCON Host Ports Menu

ESCON Port Optical Wrap Test

Follow the service terminal instructions.

Note: The wrap test will instruct you when to install and remove the ESCON wrap tool.

When the wrap test is complete, continue with step 6.

- ___ 6. Was a Fibre channel host card installed?
 - **Yes**, continue with the next step.
 - **No**, go to step 11 on page 341.
- ___ 7. Use the configuration resources worksheets to set the Port Topology for the card or cards that were just installed:

From the service terminal **Main Service Menu**, select:

Configuration Options Menu

Systems Attachment Resources Menu

Configure Fibre Channel Port

Select the desired host port and then set the Network Topology Type to either FCAL or Point-to-Point as indicated on the configuration resources worksheets.

- ___ 8. Before installing the host cables, do you want to test the Fibre channel interface?

Note: Running the Fibre channel wrap test requires the installation of one of the following Fibre channel wrap tools:

- p/n 78G9610 = long wave (grey), use with LW Fibre card
- p/n 16G5609 = short wave (black), use with SW Fibre card

- **Yes**, continue with the next step.
 - **No**, go to step 11.
- ___ 9. Use the service terminal to run the Fibre channel Port Optical Wrap Test. From the service terminal **Main Service Menu**, select:

Machine Test Menu

Host Interface Cards Menu

Fibre Channel Host Ports Menu

Fibre Channel Port Optical Wrap Test

Follow the service terminal instructions.

Note: The wrap test will instruct you when to install and remove the Fibre channel wrap tool.

When the wrap test is complete, continue with step 11.

Note: There is no wrap test for SCSI host cards.

- ___ 10. Verify that the LUN Access Control has been set correctly for fibre channel (Any or Restricted).

From the service terminal **Main Service Menu**, select:

Configuration Options Menu

Change / Show Control Switches

Fibre Channel LUN Access Control

Enter the information from the configuration resources worksheet.

Note: If the control switches are changed, inform the customer that the subsystem must be rebooted for the change to take effect.

- ___ 11. Label and route each host cable from the customer host adapter through the front right or left tailgate of the 2105 Model Exx/Fxx. Route each host cable to the host card connector referenced in the Configuration Worksheets.
- ___ 12. Clean the host card connectors and host cable connectors using the Fibre Optic Connector Cleaning Kit (P/N 5453521).
- ___ 13. Connect the host cables to the host system. The cables are supplied with the host adapter Feature Code (FC). Refer to "Connecting the 2105 Model Exx/Fxx to the Host System" on page 257.
- ___ 14. Install the host cables to the host card connectors indicated by the Configuration Worksheets. See Figure 334 on page 342 for card and connector locations.

Installing a Host Card

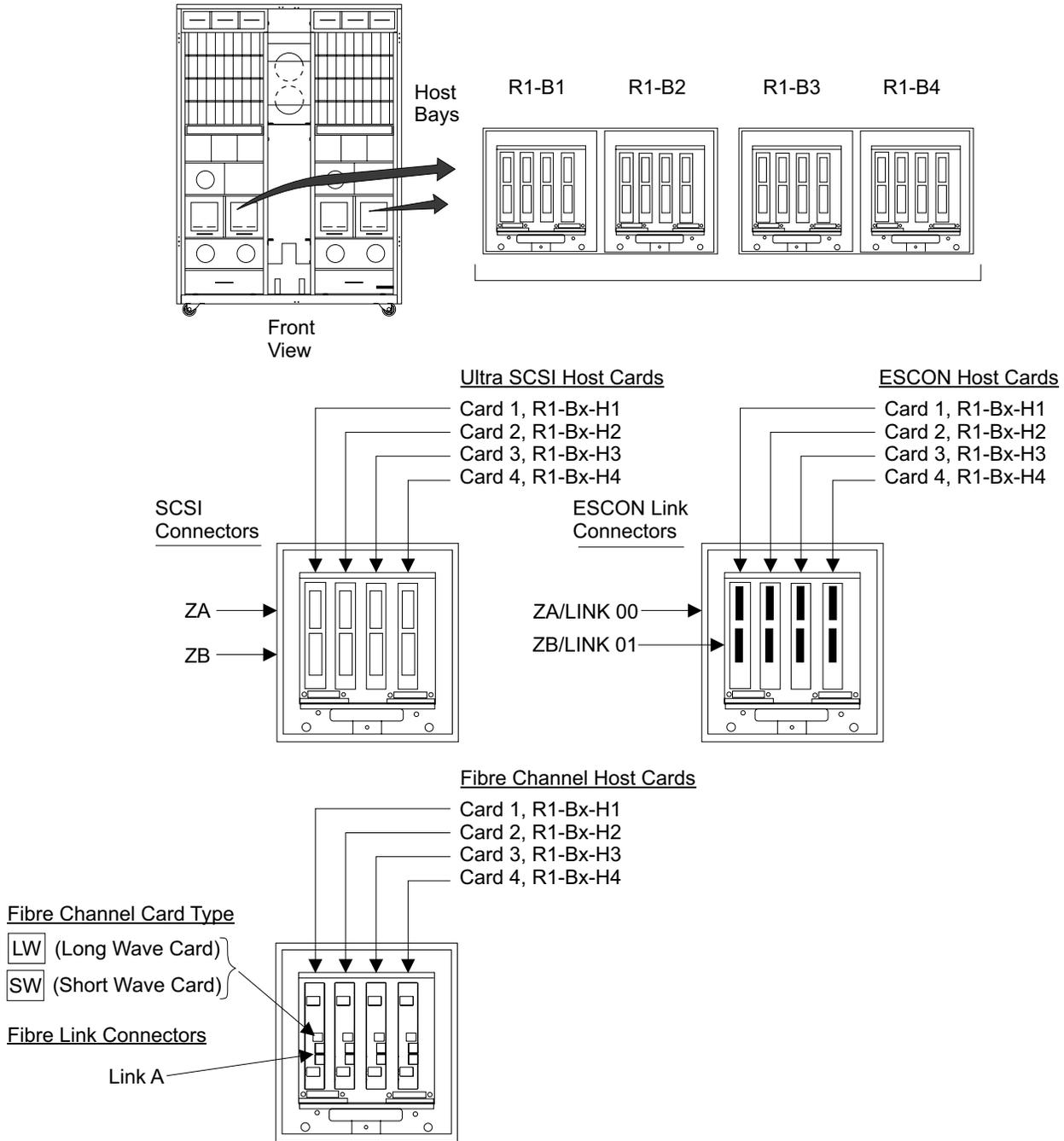


Figure 334. Host Bay Card Connectors (S008024r)

- ___ 15. Verify that each host cable passes through the 2105 Model Exx/Fxx tailgate below it, and is held by the tailgate cable clamps. Verify that the tailgate hardware is installed correctly. See "2105 Model Exx/Fxx Tailgate Cable Clamp Removal and Installation" on page 306.
- ___ 16. Inform the customer that the 2105 host connections are ready for use.

Note: Configuration and connecting logical volumes is a customer operation using the ESS Specialist.

Removing a Host Card

Attention: This is *not* a stand-alone procedure. You should have started this procedure at the service terminal. Perform the installation of a host card *only* at the direction of the service terminal or other service guide procedures. Go to the service terminal and perform **Remove Host Cards**.

Note: The service terminal will allow single or multiple host card removals in the same host bay.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Place a check mark next to each completed step.

Note: Unless you have a particular reason, *do not power off the 2105 Model Exx/Fxx rack when removing the host bay.*

- ___ 1. Ensure that the customer has made the configuration changes at the host that are needed to support the removal of the 2105.
- ___ 2. Locate the host bay you will be removing the host card or cards from. Move the host bay to the service position, see “Moving the Host Bay to Its Service Position, 2105 Model Exx/Fxx” on page 96.

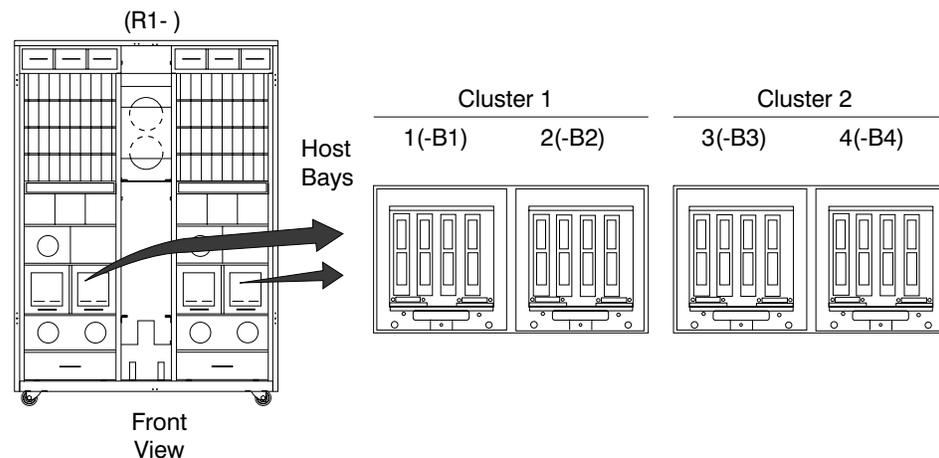


Figure 335. Locating a Host Bay (S007630m)

- ___ 3. Remove the host card from the card slot indicated by the service terminal:
 - Host card 1, (R1-Bx-H1)
 - Host card 2, (R1-Bx-H2)
 - Host card 3, (R1-Bx-H3)
 - Host card 4, (R1-Bx-H4)

Removing a Host Card

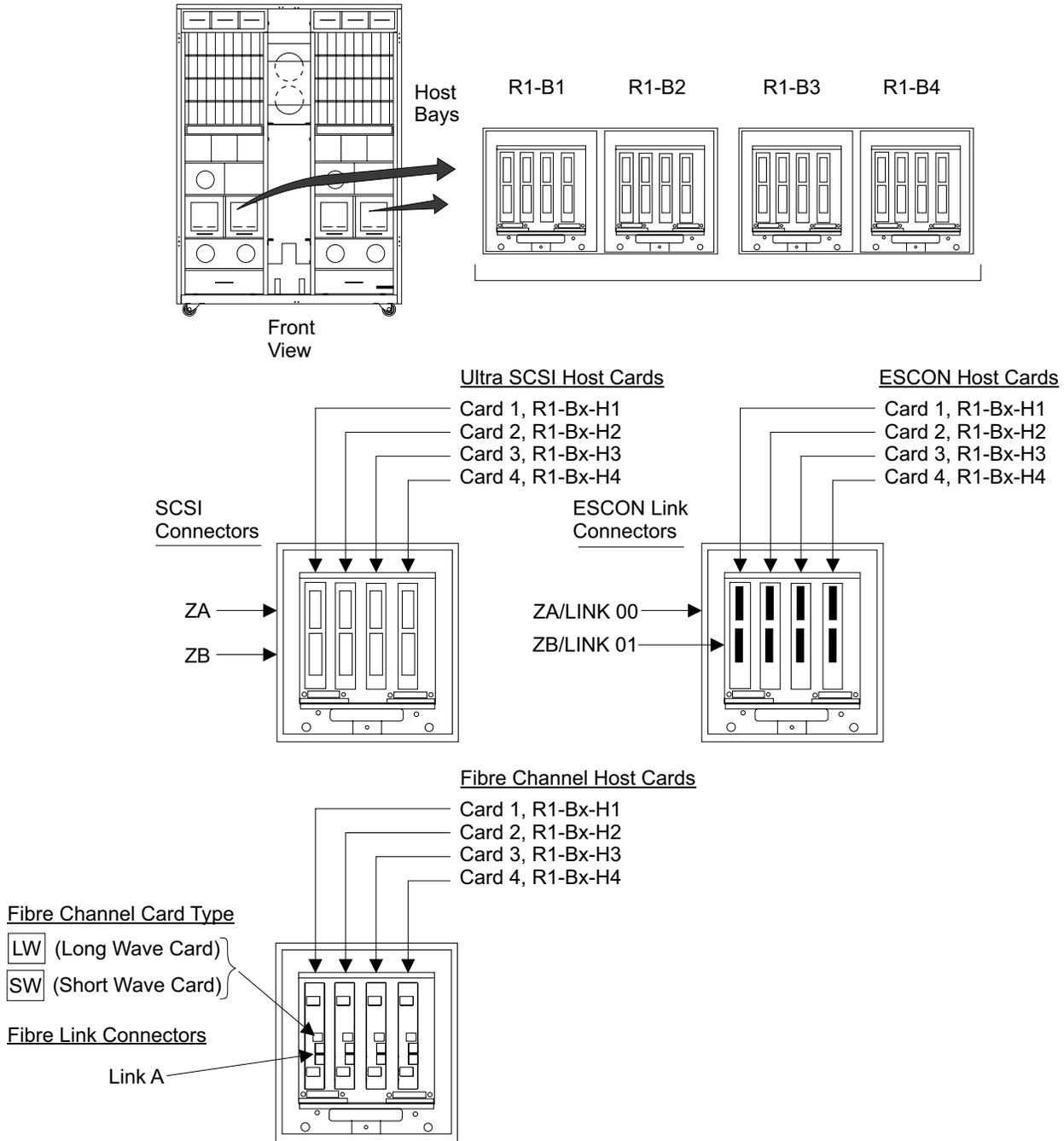


Figure 336. Host Card Locations (S008024r)

- a. Do the following steps only on the host card and the host bay slot it is being removed from.
- b. If not previously done, loosen the two left **2** and two right **3** card retention plate screws, then lift the retention plate **4** off of the bay.

Note: To remove the two left screws **2** from host bay 1, you must remove the front left cover from the 2105 Model Exx/Fxx. To remove the two right screws **3** from host bay 4, you must remove the front right cover from the 2105 Model Exx/Fxx.

Removing a Host Card

- c. Remove the two card connector plate mounting screws **1**

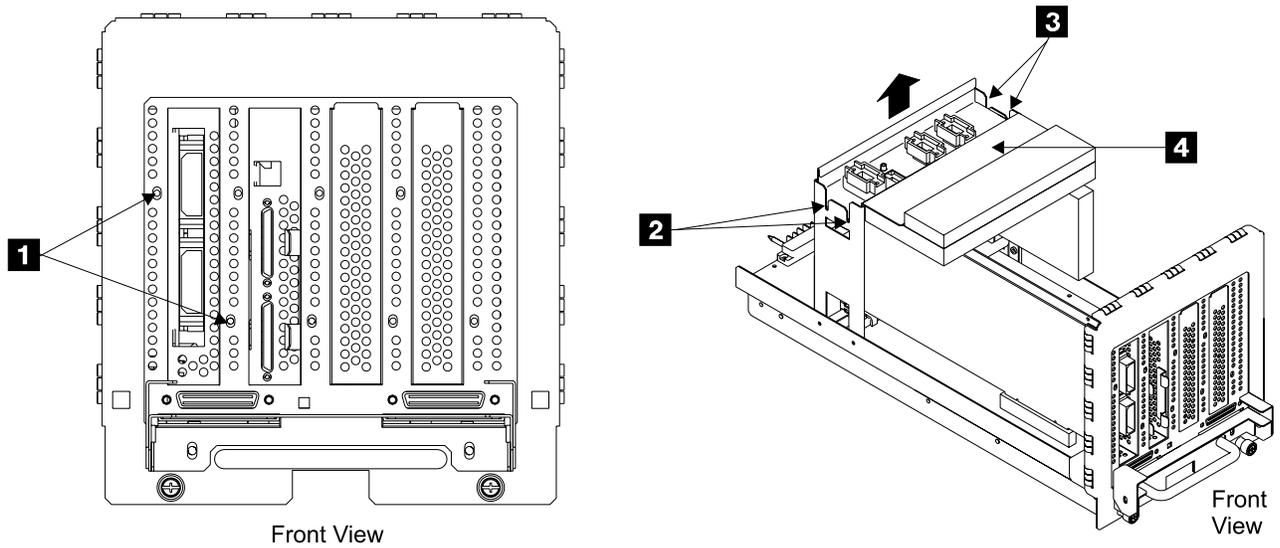


Figure 337. Host Card Removal Locations (S008100m)

- d. Remove the host card, rear locking pin **6** .
e. Remove the host card **5** from the bay by pulling straight up.

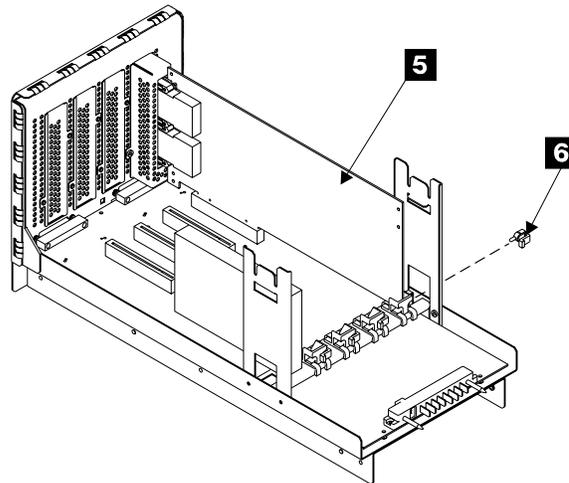


Figure 338. Host Card Removal Locations (S008101m)

- f. Install the block plate **8** , install and tighten the two block plate screws **7** .
g. Install the host card, rear locking pin **11** .
h. Install the card retention plate **9** and tighten all four of its mounting screws **10** and **12** .

Removing a Host Card

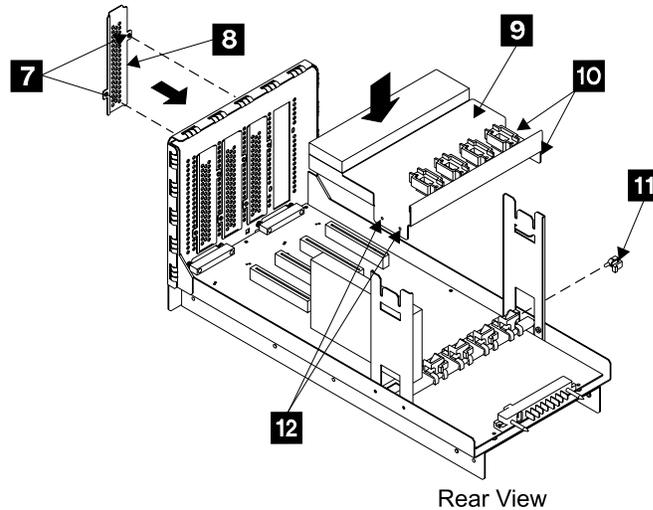


Figure 339. Host Card Removal Locations (S008102m)

- ___ 4. Replace parts in the reverse order, see “Moving the Host Bay to Its Service Position, 2105 Model Exx/Fxx” on page 96.
- ___ 5. After the part replacement is complete, return to the service terminal to continue the removal process. This will test the complete host bay and its cards.

Installing an SSA Device Card

Attention: This is *not* a stand-alone procedure. You should have started this procedure at the service terminal. Perform the installation of a SSA device card *only* at the direction of the service terminal or other service guide procedures. Go to the service terminal and perform **Install SSA Device Cards**.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Note: Unless you have a particular reason, *do not power off the 2105 Model Exx/Fxx when servicing a cluster bay unless instructed to do so.*

Attention: Only one card can be added (installed) at a time into a cluster bay. Attempting to add more than one card will result in configuration failure.

- ___ 1. Ensure that the customer has the MESs available for the installation of the new SSA device cables, SSA device card, and the DDM bay or SSA DASD drawer.
- ___ 2. Inspect the new SSA device card for push on jumpers. If any jumpers are present, remove all of them before installing the card.
- ___ 3. Open the front cover of the 2105 Model Exx/Fxx rack and locate the cluster bay with the cluster bay SSA device card you are installing the card into, see Figure 341 on page 349:
 - **2105 Model Exx/Fxx:**
 - Cluster Bay 1, (R1-T1)
 - SSA device card (R1-T1-P2-K1)
 - SSA device card (R1-T1-P2-K2)

Installing an SSA Device Card

- SSA device card (R1-T1-P2-K3)
 - SSA device card (R1-T1-P2-K4), 2105 Model F10/F20 only
 - SSA device card (R1-T1-P2-K9), 2105 Model E10/E20 only
 - Cluster Bay 2, (R1-T2)
 - SSA device card (R1-T2-P2-K1)
 - SSA device card (R1-T2-P2-K2)
 - SSA device card (R1-T2-P2-K3)
 - SSA device card (R1-T2-P2-K4), 2105 Model F10/F20 only
 - SSA device card (R1-T2-P2-K9), 2105 Model E10/E20 only
- ___ 4. Do the following steps only on the cluster bay and the SSA device card you are installing.
- ___ 5. Pull the cluster bay out to the service position.
Use the correct cluster bay model repair procedure:
- **2105 Model E10/E20**, “Cluster Bay Service Position Procedure (E10/E20)” on page 159 or
 - **2105 Model F10/F20**, “Cluster Bay Service Position Procedure (F10/F20)” on page 111
- ___ 6. Open the cluster bay top cover,
Use the correct cluster bay model repair procedure:
- **2105 Model E10/E20**, “Cluster Top Bay Service Access Procedure (E10/E20)” on page 161 or
 - **2105 Model F10/F20**, “Cluster Top Bay Service Access Procedure (F10/F20)” on page 113
- ___ 7. Remove the two right card retention bracket screws **3** and **4**.
Right side screw locations vary for each cluster model:
- **2105 Model E10/E20**, screws are on the right side of the cluster.
 - **2105 Model F10/F20**, screws are on top right of each retention bracket.
- Note:** 2105 Model E10/E20 cluster shown.
- ___ 8. Loosen the two right card retention bracket captured top screws until they are free **1** and **6**.
- ___ 9. Remove the two right card retention brackets **2** and **5**.

Installing an SSA Device Card

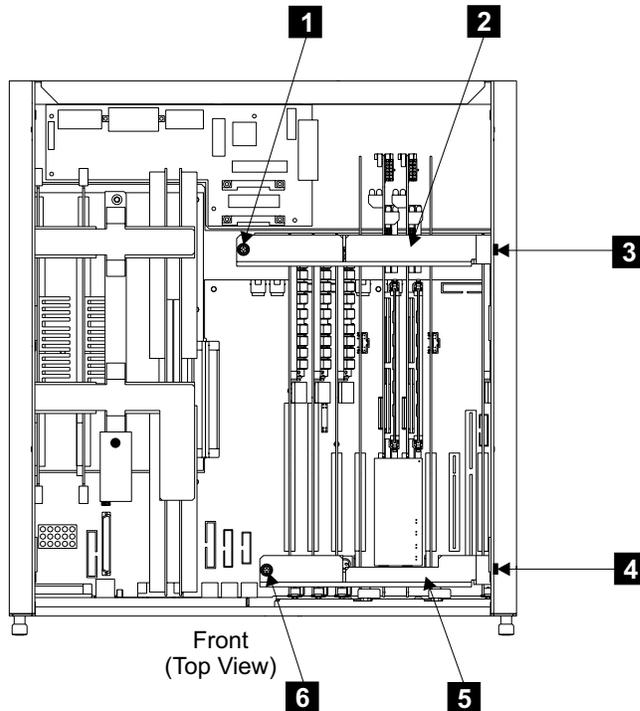


Figure 340. Cluster Bay Card Retention Bracket Removal (S008313n)

- ___ 10. Locate the SSA device card you are installing:
 - SSA device card (R1-Tx-P2-K1)
 - SSA device card (R1-Tx-P2-K2)
 - SSA device card (R1-Tx-P2-K3)
 - SSA device card (R1-Tx-P2-K4), 2105 Model F10/F20 only
 - SSA device card (R1-Tx-P2-K9), 2105 Model E10/E20 only
- ___ 11. Remove the two front SSA device card mounting screws and the cable support bracket.
- ___ 12. Install the SSA device card into the I/O planar.

Installing an SSA Device Card

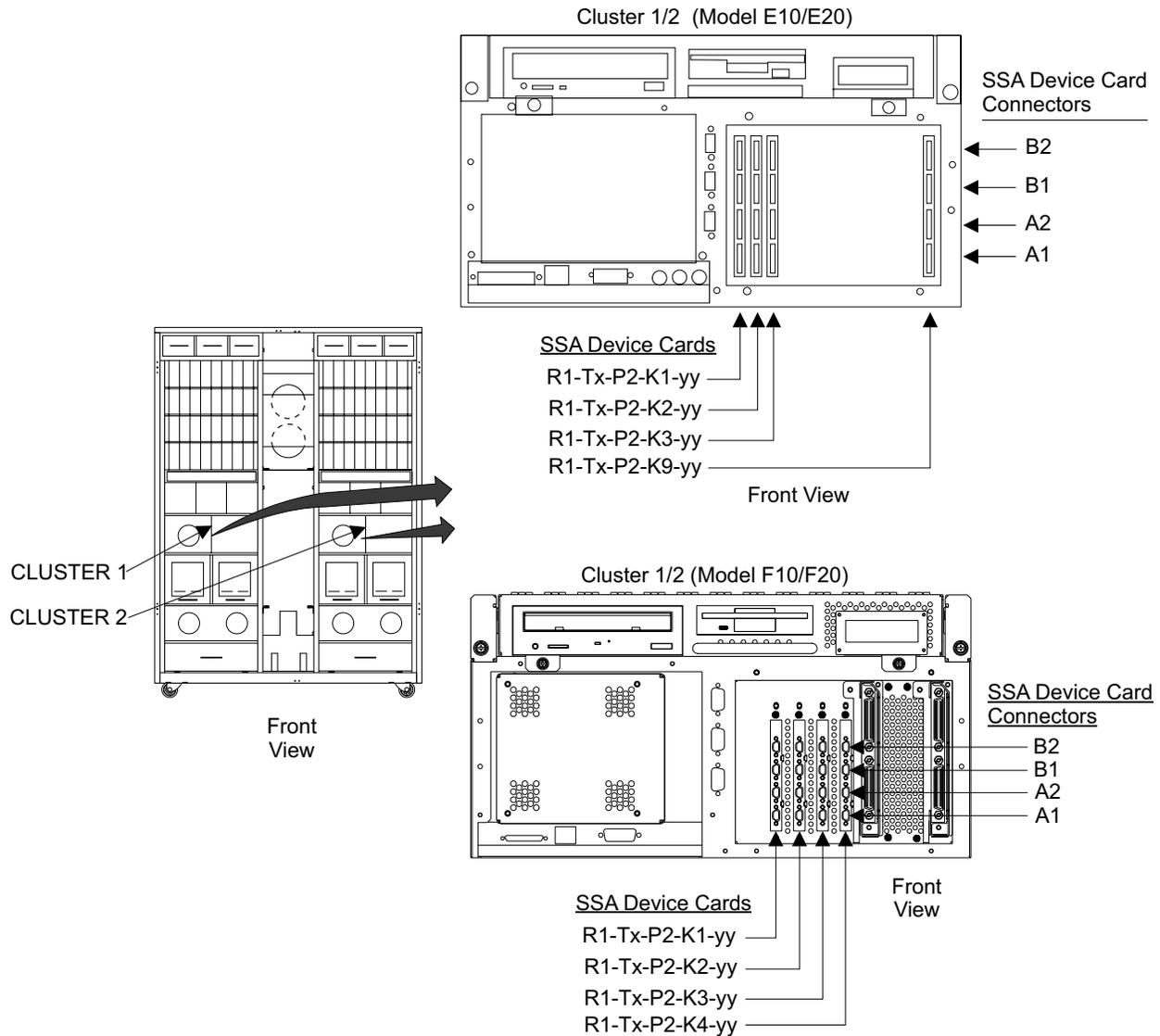


Figure 341. SSA Device Card Removal (S008801q)

- ___ 13. Replace parts in the reverse order.
- ___ 14. Lower the top cover to its operating position and install the cluster bay into the 2105 Model Exx/Fxx, 4 on page 161.
- ___ 15. After the cluster bay installation is complete, return to the service terminal and continue with the install process. This process will test the SSA device card.

Completing the Installation of an SSA Device Card

Note: If the service terminal directed you to this procedure, the testing of the new SSA device card was successful.

Before the SSA device cables can be connected the new DDM bay or SSA DASD drawer must be installed. Go to the service terminal and perform **Insta11 7133 Device Drawers**.

Removing an SSA Device Card

Attention: This is *not* a stand-alone procedure. You should have started this procedure at the service terminal. Perform the removal of a SSA device card *only* at the direction of the service terminal or other service guide procedures. Go to the service terminal and perform **Remove SSA Device Cards**.

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Note: Unless you have a particular reason, *do not power off the 2105 Model Exx/Fxx when servicing a cluster bay unless instructed to do so.*

Attention: Only one card can be removed at a time from a cluster bay. Attempting to add more than one card will result in configuration failure.

- ___ 1. Open the front cover of the 2105 Model Exx/Fxx rack and locate the cluster bay with the cluster bay SSA device card you are removing the card from, see Figure 343 on page 352:
 - **2105 Model Exx/Fxx:**
 - Cluster Bay 1, (R1-T1)
 - SSA device card (R1-T1-P2-K1)
 - SSA device card (R1-T1-P2-K2)
 - SSA device card (R1-T1-P2-K3)
 - SSA device card (R1-T1-P2-K4), 2105 Model F10/F20 only
 - SSA device card (R1-T1-P2-K9), 2105 Model E10/E20 only
 - Cluster Bay 2, (R1-T2)
 - SSA device card (R1-T2-P2-K1)
 - SSA device card (R1-T2-P2-K2)
 - SSA device card (R1-T2-P2-K3)
 - SSA device card (R1-T2-P2-K4), 2105 Model F10/F20 only
 - SSA device card (R1-T2-P2-K9), 2105 Model E10/E20 only
- ___ 2. Do the following steps only on the cluster bay and the SSA device card you are removing.
- ___ 3. Pull the cluster bay out to the service position.

Use the correct cluster bay model repair procedure:

 - **2105 Model E10/E20**, “Cluster Bay Service Position Procedure (E10/E20)” on page 159 or
 - **2105 Model F10/F20**, “Cluster Bay Service Position Procedure (F10/F20)” on page 111
- ___ 4. Open the cluster bay top cover.

Go to the correct cluster bay model repair procedure:

 - **2105 Model E10/E20**, “Cluster Top Bay Service Access Procedure (E10/E20)” on page 161 or
 - **2105 Model F10/F20**, “Cluster Top Bay Service Access Procedure (F10/F20)” on page 113
- ___ 5. Remove the two right card retention bracket screws **3** and **4**.

Right side screw locations vary for each cluster model:

 - **2105 Model E10/E20**, screws are on the right side of the cluster.

Removing an SSA Device Card

- 2105 Model F10/F20, screws are on top right of each retention bracket.

Note: 2105 Model E10/E20 cluster shown.

- ___ 6. Loosen the two right card retention bracket captured top screws until they are free **1** and **6**.
- ___ 7. Remove the two right card retention brackets **2** and **5**.

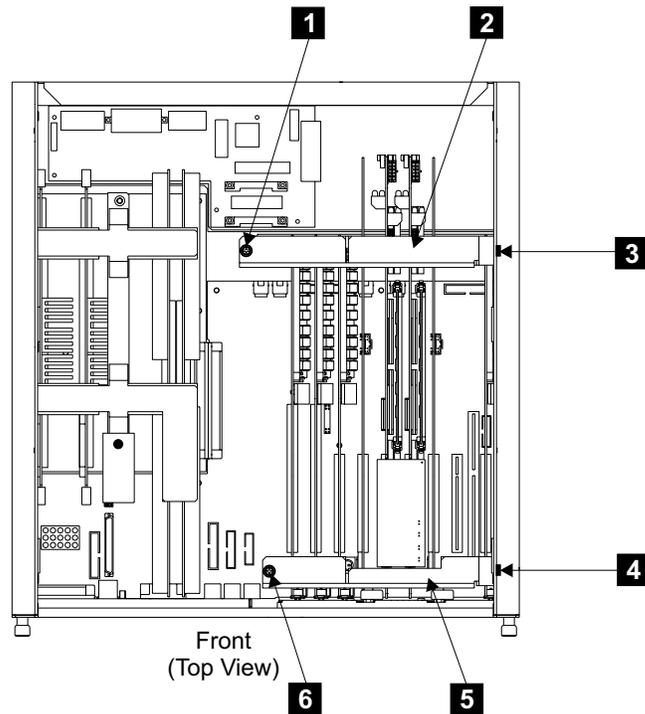


Figure 342. Cluster Bay Card Retention Bracket Removal (S008313n)

- ___ 8. Locate the SSA device card you are removing:
 - SSA device card (R1-Tx-P2-K1)
 - SSA device card (R1-Tx-P2-K2)
 - SSA device card (R1-Tx-P2-K3)
 - SSA device card (R1-Tx-P2-K4), 2105 Model F10/F20 only
 - SSA device card (R1-Tx-P2-K9), 2105 Model E10/E20 only
- ___ 9. Remove the two front SSA device card mounting screws and the cable support bracket.
- ___ 10. Remove the SSA device card from the I/O planar.

Removing an SSA Device Card

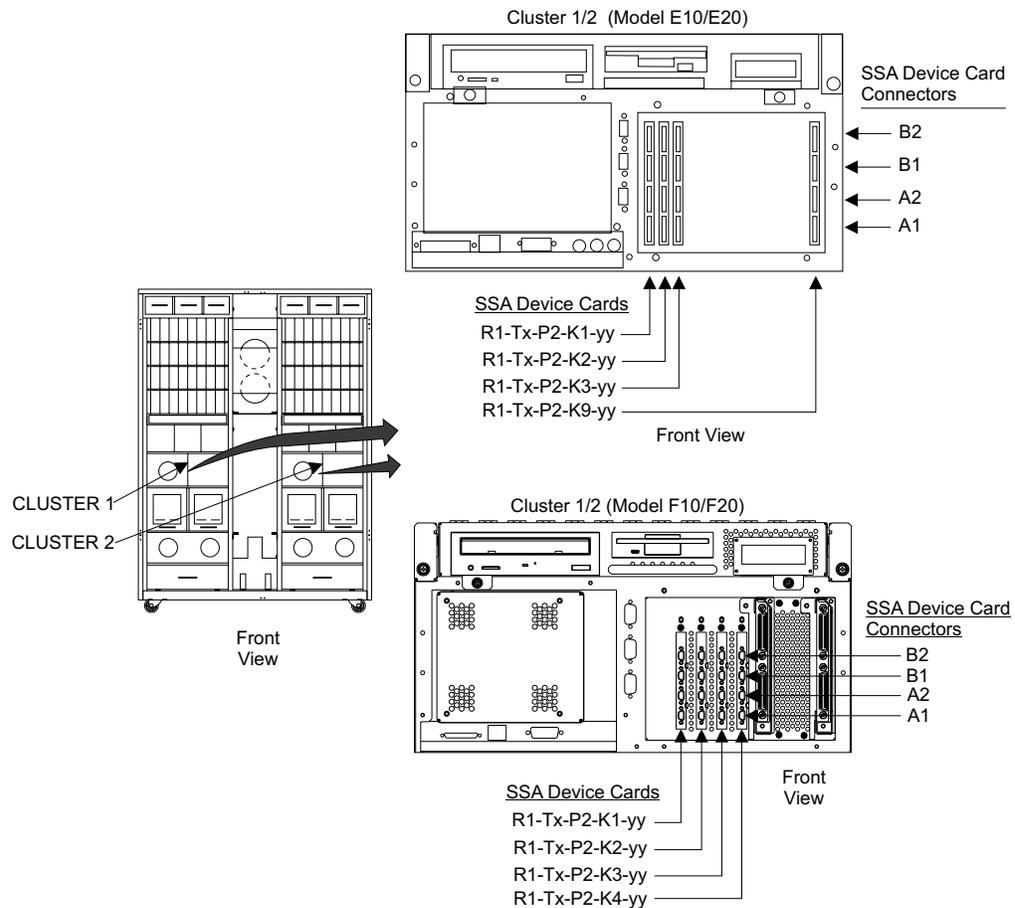


Figure 343. SSA Device Card Removal (S008801q)

- ___ 11. Replace parts in the reverse order.
- ___ 12. Lower the top cover to its operating position and install the cluster bay into the 2105 Model Exx/Fxx, step 4 on page 161.
- ___ 13. After the cluster bay installation is complete, return to the service terminal and continue with the install process. This process will test the SSA device card.

Relocating a 2105 Model Exx/Fxx Subsystem

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

Note: These instructions are only to be used to relocate (move) an entire 2105 subsystem.

These instructions describe how to:

- Repair any existing problems.
- Power off the 2105.
- Identify and label disconnected cable connectors.
- Disconnect the 2105 power cables.

Relocating a 2105 Subsystem

- Disconnect the 2105 Model Exx/Fxx interface, control, and communication cables.
- Disconnect 2105 Expansion Enclosure racks from a 2105 Model E20/F20 rack.
- Reinstall the 2105 subsystem at the new location.
- Use the service terminal to test the 2105 subsystem after relocation

Notes:

1. These instructions describe moving 2105 Model Exx/Fxx and 2105 Expansion Enclosure racks within an account (relocating). The term *moving* will be used in this procedure to identify relocation activities.
2. These instructions only support moving all 2105 Model Exx/Fxx and 2105 Expansion Enclosure racks in a subsystem at the same time.
3. This procedure supports moving multiple 2105 racks only when they are part of the same subsystem.
4. Because these instructions describe moving 2105 Model Exx/Fxx and 2105 Expansion Enclosure racks, some diagrams might not specifically show the model that you are moving.
5. Before you can move a 2105 subsystem, all problems must be repaired.

Data Considerations when Moving a 2105

Before moving a 2105 advise the customer to make a copy of any needed data before continuing.

Determine if Shipping Containers are Required?

Place a check mark next to each completed step.

1. Determine if you are relocating the 2105 to another location on the same floor, or relocating it to another floor/building:
 - **Relocating to same floor**, go to “Determine Configuration and Racks Being Moved”.
 - **Relocating to another floor/building**, go to step 2.
2. Verify that the correct Asset Sealing kit is available for the 2105 Model Exx/Fxx or 2105 Expansion Enclosure you are relocating:
 - 2105 Model Exx/Fxx, use Asset Sealing kit part number 7334847
 - 2105 Expansion Enclosure, use Asset Sealing kit part number 7334847

Continue with “Determine Configuration and Racks Being Moved”.

Determine Configuration and Racks Being Moved

Place a check mark next to each completed step.

1. Determine what the configuration of the subsystem you are working with is.
2. Determine the Type-Model and Serial Number of each 2105 you will be moving.
3. Continue with “Check the Customer Preparation”.

Check the Customer Preparation

Place a check mark next to each completed step.

1. Inform the customer that all devices in the entire 2105 subsystem will be powered off and all of the devices will not be available.

Relocating a 2105 Subsystem

Attention: Before disconnecting/connecting host cables, ask the customer to remove host I/O activities to all devices on the affected cables. The customer should refer to the host documentation to determine if host power also needs to be off.

- ___ 2. Verify that the customer knows which logical devices will be affected by the removal of the physical devices in the 2105 you are moving.
- ___ 3. Verify that the customer has copied all needed data to other devices.
- ___ 4. Verify that the customer has performed all needed data security procedures on the machine or machines you are moving.
- ___ 5. Continue with "Considerations when Moving a 2105".

Considerations when Moving a 2105

Place a check mark next to each completed step.

- ___ 1. Ensure the customer has varied offline all the devices in the subsystem.
- ___ 2. Continue with "Repairing Existing Problems Using the Service Terminal".

Repairing Existing Problems Using the Service Terminal

Place a check mark next to each completed step.

- ___ 1. Connect the service terminal to the S2 connector on the front of cluster bay 1 in the 2105 Model Exx/Fxx. For service terminal connection and activation, see "Preparing the Service Terminal for Use with the 2105" in chapter 8 of the *Enterprise Storage Server Service Guide, Volume 3*.

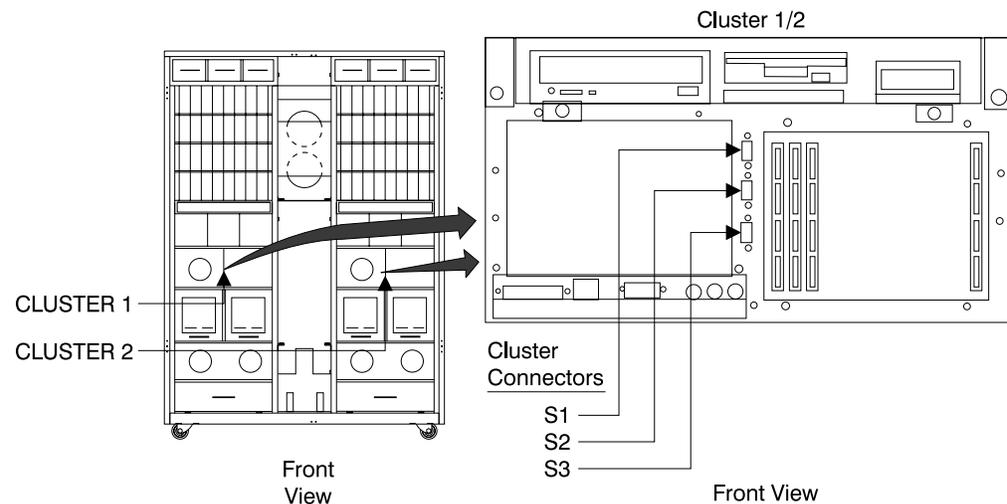


Figure 344. Service Terminal Interface Connection (s008027m)

- ___ 2. From the service terminal **Main Service Menu**, select:
Repair Menu
Show/Repair Problems Needing Repair Menu
Select and repair all open problems.
- ___ 3. Disconnect the service terminal from the 2105 Model Exx/Fxx and push the service terminal table in.
Continue with "Powering Off the 2105 Subsystem" on page 355.

Powering Off the 2105 Subsystem

Place a check mark next to each completed step.

- ___ 1. Set the Local Power switch on the 2105 Model Exx/Fxx operator panel to off (down). Wait about 30 seconds for the subsystem to completely power off.

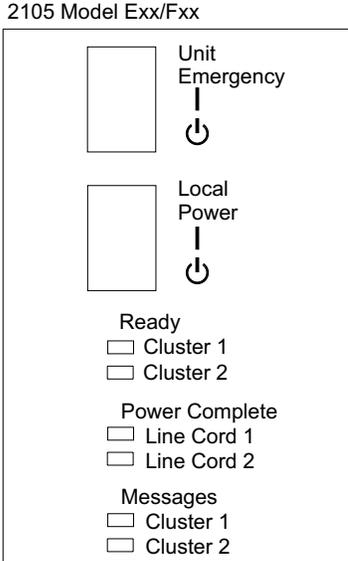


Figure 345. 2105 Model Exx/Fxx Operator Panel Switch Locations (S008814m)

- ___ 2. At the rear of each 2105 in the subsystem, set the 390 V battery 1 MASTER circuit breaker (CB, S2) **1** to Off (down).

Note: 2105 Model Exx/Fxx shown.

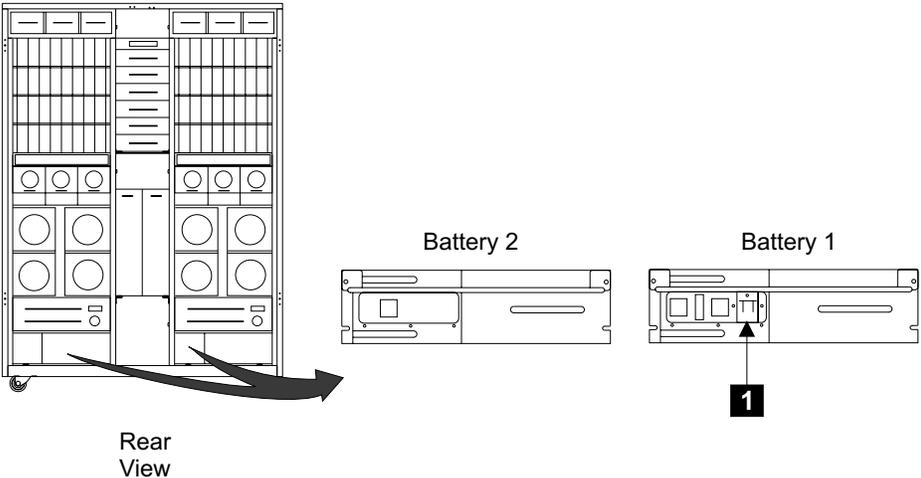


Figure 346. 350 Volt Battery Locations (S008687m)

- ___ 3. Open the rear cover of each 2105 Model Exx/Fxx or 2105 Expansion Enclosure rack in the subsystem and locate the primary power supplies (PPS):
 - **2105 Model Exx/Fxx:**
 - Primary power supply 1, right **3**

Relocating a 2105 Subsystem

- Primary power supply 2, left **2**
- **2105 Expansion Enclosure:**
 - Primary power supply 1, right **5**
 - Primary power supply 2, left **4**

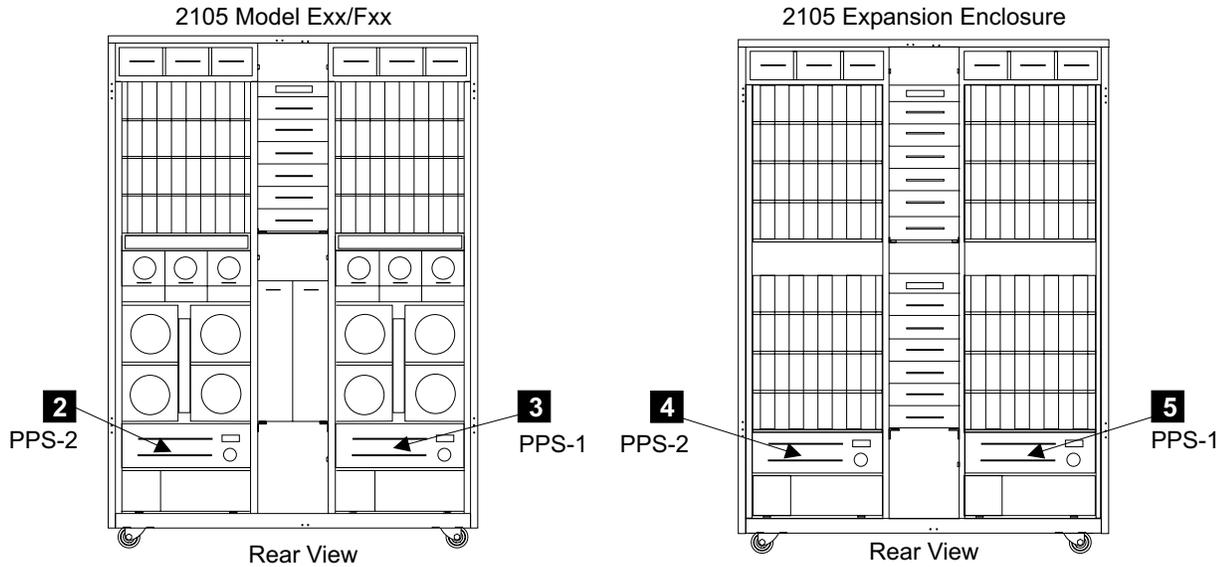


Figure 347. Bulk Power Supply Locations (S008817m)

4. Switch the PPS system power MAIN LINE circuit breaker (CB00) **6** to Off (down) on all primary power supplies in the subsystem.

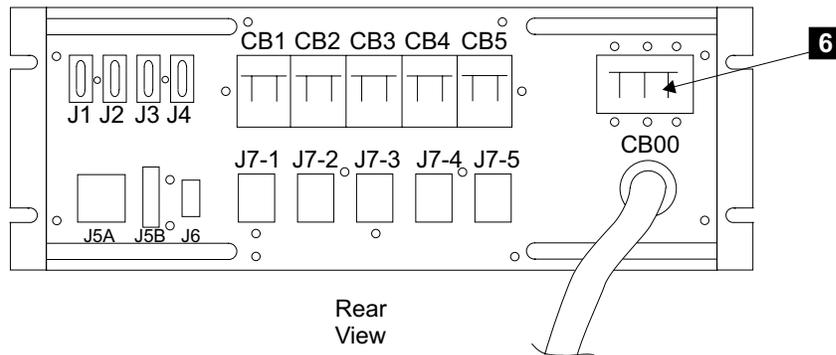


Figure 348. Bulk Power Supply System Power CB Location (S008689I)

5. Instruct the customer to switch off the circuit breaker that supplies mainline ac voltage to both mainline power cables for each 2105 rack you are moving in the subsystem.

Attach a “Do Not Operate” tag (S229-0237) and the safety lockout padlock to each of these tripped customer ac mainline voltage circuit breakers. Refer to *Electrical Safety for IBM Customer Engineers* book.

Note: Each 2105 Model Exx/Fxx and 2105 Expansion Enclosure rack in the subsystem has two mainline power cables that connect to the primary power supplies in each rack.

Relocating a 2105 Subsystem

- 6. Determine where the two mainline power cables from each 2105 you are moving connect to the customers power. Note if the customer end of the mainline power cable is connected to customer power by a pluggable connector or wires and terminals.

Disconnect these mainline power cables from the customers AC power:

- For **plug** in mainline power cables, you can disconnect the connector.
- For **wired** in mainline power cables, instruct the customer to call a license electrician to disconnect the wired mainline power cables from the customers mainline power sources.

Continue with “Disconnect Mainline Power Cables from Rack Being Moved”.

Disconnect Mainline Power Cables from Rack Being Moved

Attention: Do the following mainline power cable procedures only on the 2105 being moved.

Place a check mark next to each completed step.

- 1. Open the front cover of the 2105 Model Exx/Fxx or 2105 Expansion Enclosure rack and locate mainline power cable you will be removing:

Note: The mainline power cables are connected to the line cord bracket next to the PPS they feed.

- **2105 Model Exx/Fxx:**
 - Mainline power cable 1, **1**
 - Mainline power cable 2, **2**
- **2105 Expansion Enclosure:**
 - Mainline power cable 1, **1**
 - Mainline power cable 2, **2**

Note: 2105 Model Exx/Fxx shown.

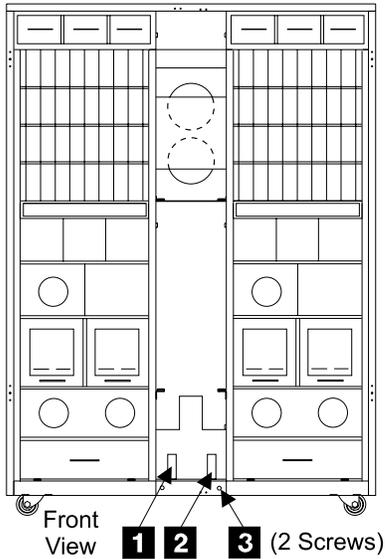


Figure 349. Mainline Power Cable Locations (S007666m)

Relocating a 2105 Subsystem

- ___ 2. Remove the two center tailgate bar mounting screws **3** and remove the bar.
- ___ 3. Release the top and bottom line cord latches, then disconnect the mainline power cables **1** and **2** from the line cord brackets
- ___ 4. Remove the mainline power cables from the 2105. With some installations, you may have to remove the tailgate bar for additional clearance.
- ___ 5. Continue with “Disconnect Control and Interface Cables”.

Disconnect Control and Interface Cables

Place a check mark next to each completed step.

- ___ 1. Does this 2105 subsystem have an 2105 Expansion Enclosure?
 - **Yes**, continue with the next step.
 - **No**, go to step 7 on page 360.
- ___ 2. Use this step to remove and install the rack spacer service access panels from the front **3** and rear **1** of the 2105 subsystem.
 - a. Loosen the service panels two lower mounting screws **4**.
 - b. Remove the service panels two upper mounting screws **2**.
 - c. Pull the side spacer out by the handle **3**, and lift off of the lower screws **4**.
 - d. Reinstall the service panels when service access is no longer needed.

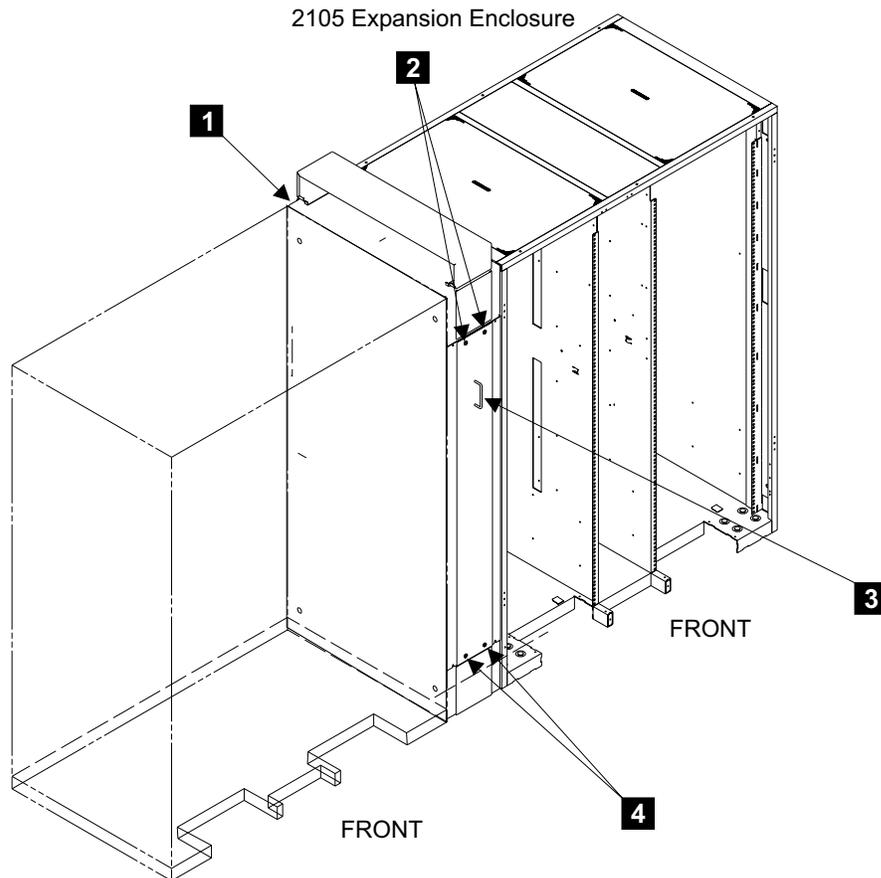


Figure 350. Rack Spacer Service Panel Removal (S008695p)

Relocating a 2105 Subsystem

3. Locate and disconnect the two primary power supply to RPC control cables. These cables are between the 2105 Expansion Enclosure primary power supplies 1 **8** and 2 **7** and the 2105 Model E20/F20 rack power control cards 1 **6** and 2 **5**. See Figure 351.

Note: The primary power supply to RPC control cables run through the openings in the sides of the attached 2105s.

- a. Disconnect the control cables connected to the 2105 Model E20/F20 RPC cards at **5** and **6**.
- b. Verify that the disconnected cable connectors are labeled for reinstallation.
- c. Feed the disconnected end of the cables through the rear side of the rack spacer, and into the 2105 Expansion Enclosure.
- d. Coil up the excess cable and store it in the 2105 Expansion Enclosure.

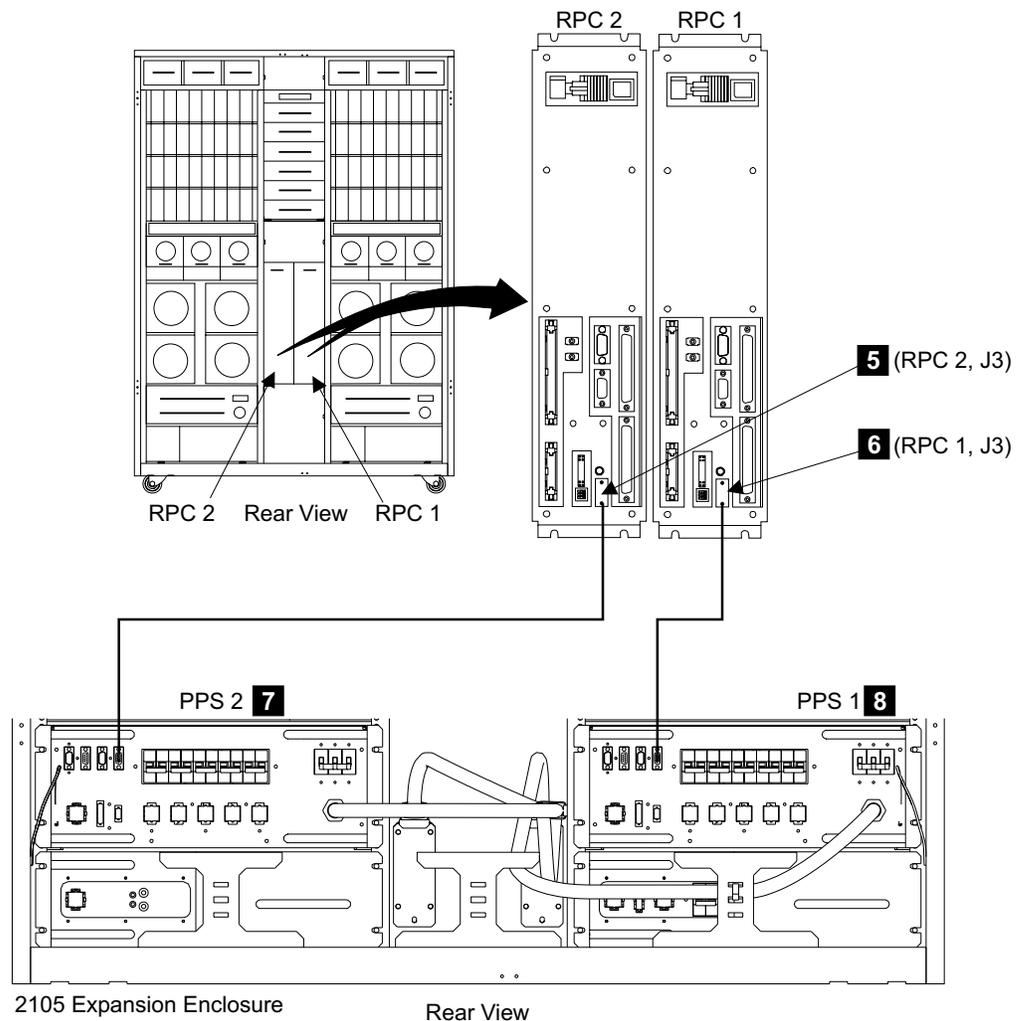


Figure 351. Primary Power Supply Control Cable Locations (S008690q)

4. Locate the frame ground strap **9** from the 2105 Expansion Enclosure to the 2105 Model E20/F20. Remove the ground strap screw from the 2105 Model

Relocating a 2105 Subsystem

E20/F20 end of the ground strap. Feed the ground strap through the frame spacer and attach it to the 2105 Expansion Enclosure frame.

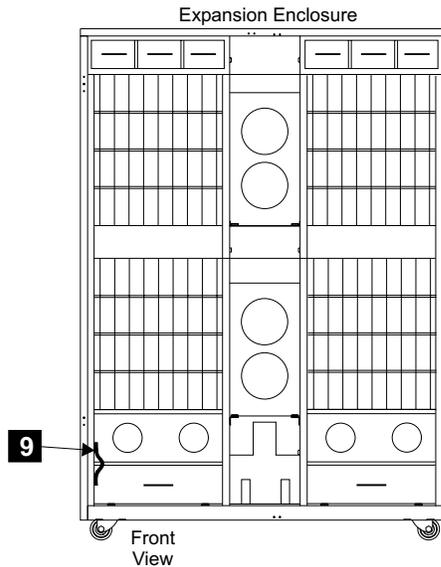


Figure 352. 2105 Expansion Enclosure Ground Strap Location (S008696m)

- ___ 5. Locate all of the SSA device cables from the 2105 Expansion Enclosure to the 2105 Model E20/F20 DDM bays. Disconnect all of these SSA cables from the 2105 Model E20/F20 DDM bays they attach to.

Notes:

- a. Ensure that all SSA device cable connectors are labeled for reinstallation before disconnecting them.
- b. To prevent damage to the SSA device cable connector screws, always use the special screwdriver (SSA tool, P/N 32H7059) to turn them. This screwdriver is in the 2105 ship group.

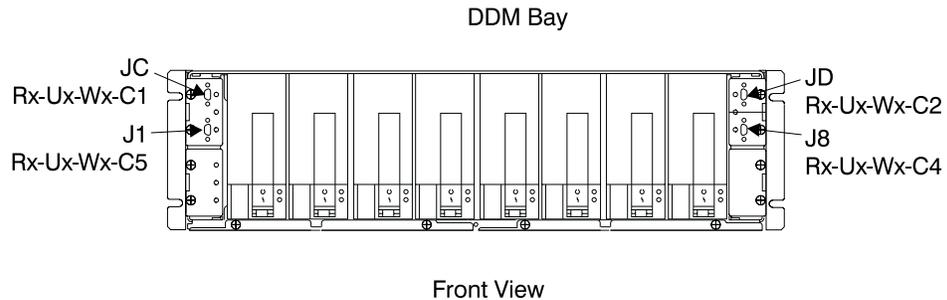


Figure 353. DDM bay SSA Connector Locations (S007703I)

- ___ 6. Free the SSA device cables from the 2105 Model E20/F20 and pull them through the rack spacer into the 2105 Expansion Enclosure. Roll these cables up and strap or tape them, in any open area, near the opening in the 2105 Expansion Enclosure they feed through.
- ___ 7. At the front of the 2105 Model E20/F20, disconnect all of the SCSI, ESCON, or Fibre channel host cables from the host bay, see Figure 354 on page 361.

Relocating a 2105 Subsystem

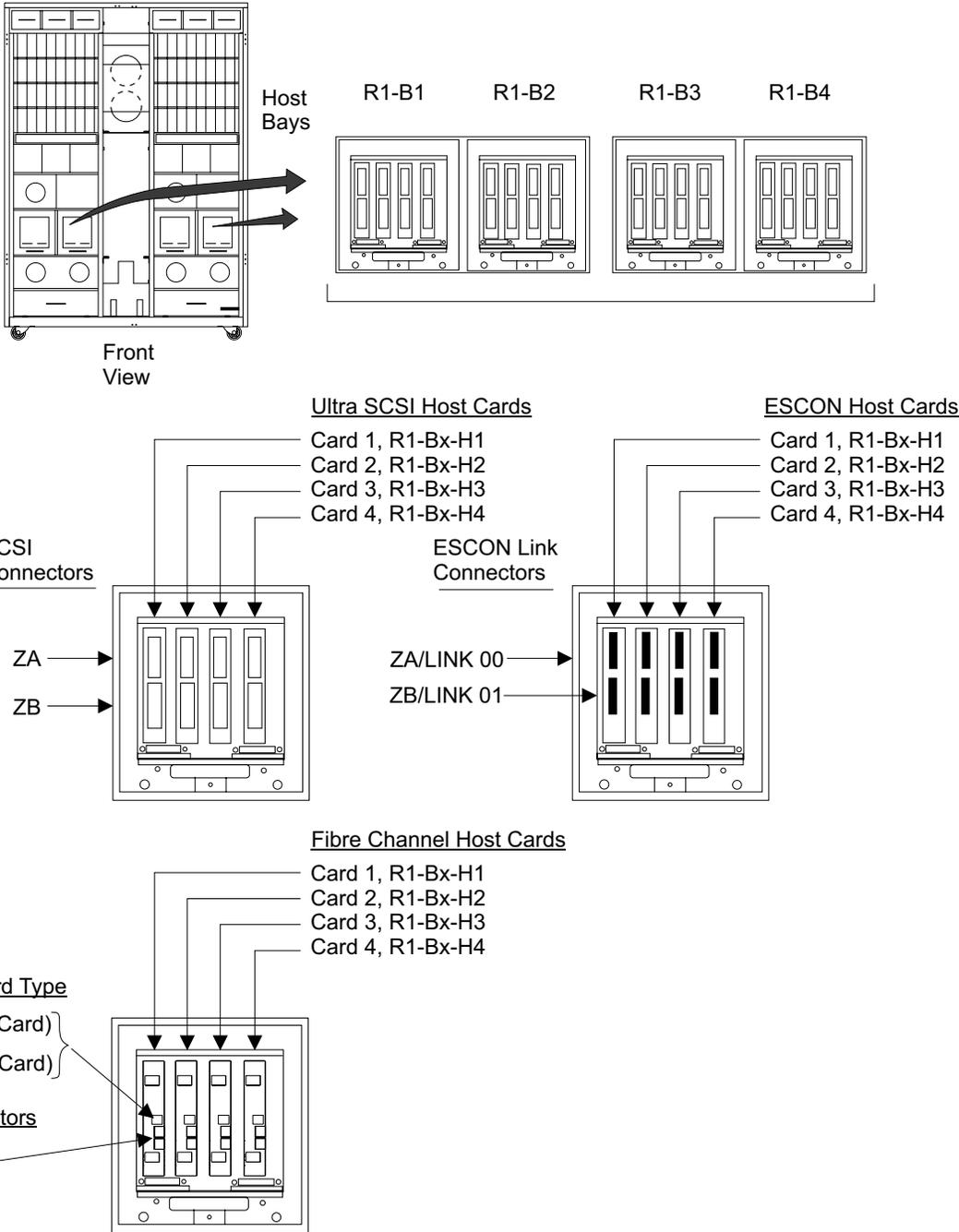


Figure 354. 2105 Model E20/F20 Host Bay Connector Locations (S008024r)

- 8. Disconnect all Ethernet **10** and modem **11** cables from the front of cluster bay 1 and cluster bay 2.

Note: Ensure that all disconnected cable connectors are properly labeled for reinstallation.

Relocating a 2105 Subsystem

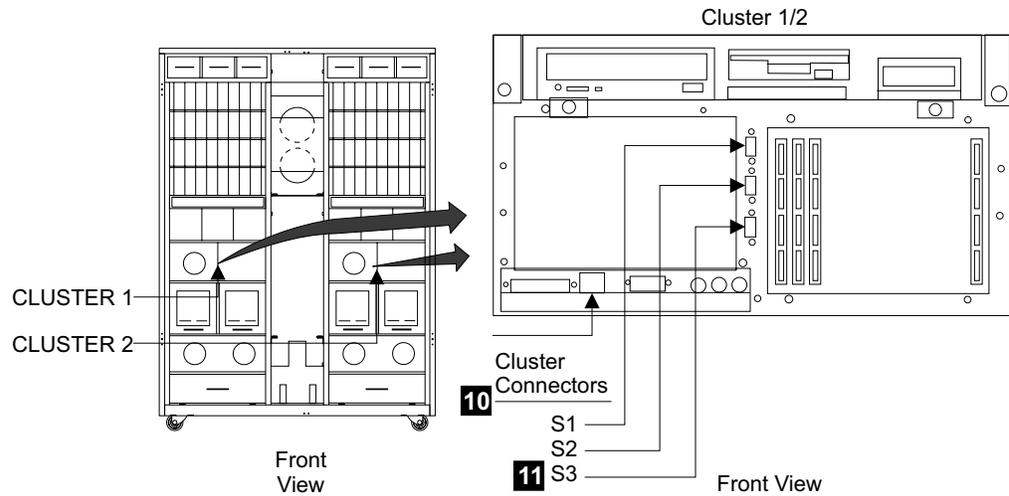


Figure 355. Cluster Bay Connector Locations (S008698m)

- ___ 9. If the remote power control feature is installed, disconnect the remote power control cables from the remote power control card. See Figure 81 on page 74.
- ___ 10. Free all cables retained by the tailgate cable clamps, use “2105 Model Exx/Fxx Tailgate Cable Clamp Removal and Installation” on page 306. Pull all of the free SCSI, ESCON, fibre channel, and communication cables out of the 2105 Model Exx/Fxx.
- ___ 11. Does the 2105 subsystem have 2105 Model 100s attached?
 - **Yes**, go to “Relocating a 2105 Model Exx/Fxx Subsystem” in chapter 5 of the *2105 Model 100 Attachment to ESS Server Service Guide*.
 - **No**, continue with “Disconnecting 2105 Model Exx/Fxx and 2105 Expansion Enclosure Frames”.

Disconnecting 2105 Model Exx/Fxx and 2105 Expansion Enclosure Frames

Place a check mark next to each completed step.

- ___ 1. Remove the wedge locks **1** from the casters of all 2105s you will be moving.

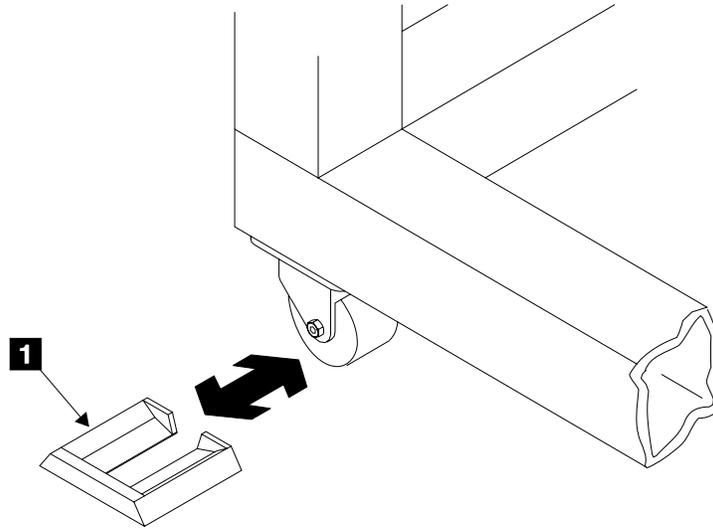


Figure 356. Caster Wedge Locks (S008406m)

- ___ 2. Remove the rack spacers between the 2105 Model E20/F20 and the 2105 Expansion Enclosure:
 - a. Refer to Figure 357 on page 364.
 - b. Reinstall the front and rear rack spacer service access panels, see step 2 on page 358.
 - c. Remove the front and rear spacer side panels. Loosen the two bottom screws **6** then remove the two top screws **5** and lift the side panel **4** off of the bottom screws. Reinstall all screws after removing the side panels.
 - d. Remove the eight nuts from the top and bottom spacer mounting studs **2** and **9**.
 - e. Move the 2105 Expansion Enclosure frame so the studs **3** and **8** in the upper and lower spacers slide out of the holes in the top and bottom of its frame.
 - f. Remove the upper and lower spacers. Loosely install the eight nuts on the spacer studs for reinstallation.

Relocating a 2105 Subsystem

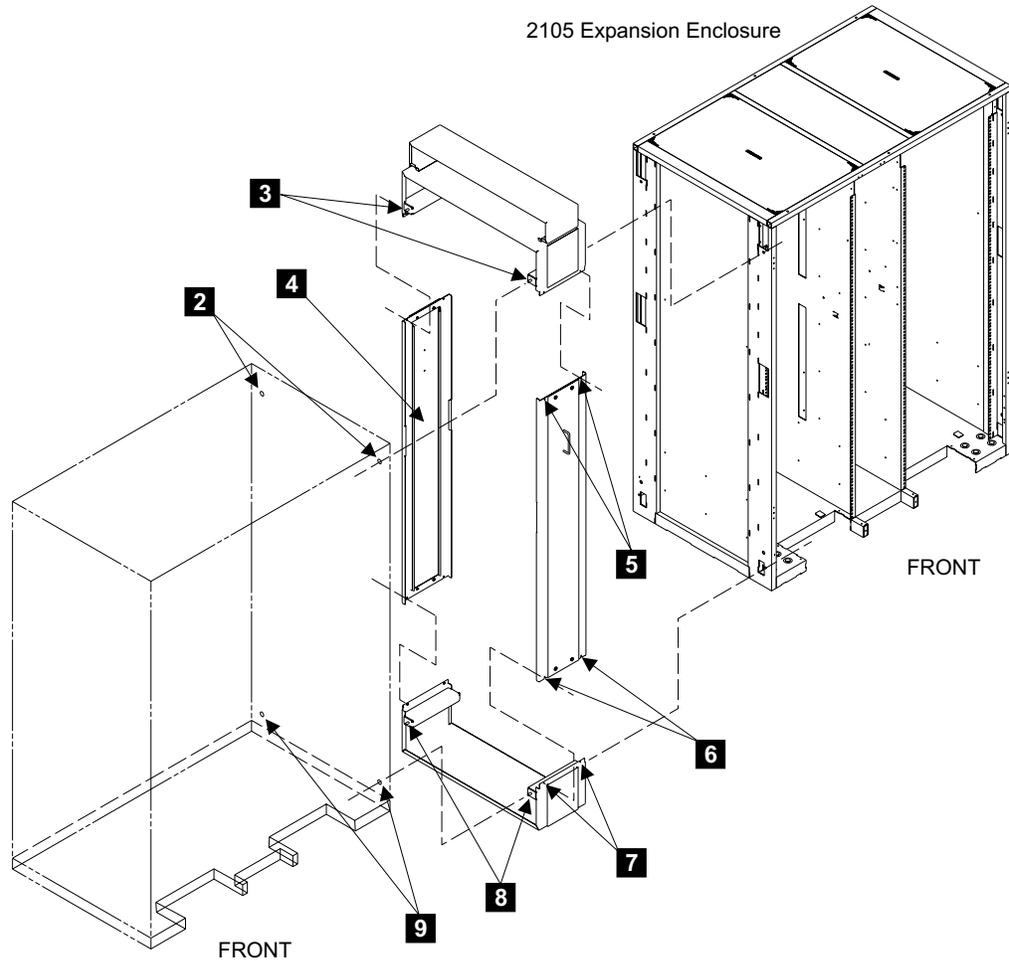


Figure 357. Installation of 2105 Rack Spacers (S008699q)

- ___ 3. On the 2105 Model Exx/Fxx rack being moved, reinstall all of the tailgate cable clamps and ESD plates. See “2105 Model Exx/Fxx Tailgate Cable Clamp Removal and Installation” on page 306.
- ___ 4. Continue with “Moving the 2105 Model Exx/Fxx Subsystem”.

Moving the 2105 Model Exx/Fxx Subsystem

Place a check mark next to each completed step.

- ___ 1. Select your move activity below:

- **Relocating 2105 subsystem on the same floor:**

Note: If you are installing 2105 Model Exx/Fxx and 2105 Expansion Enclosure or 2105 Model 100 racks, always install the 2105 Model Exx/Fxx rack first.

Continue with “Installing a Relocated 2105 Model Exx/Fxx and Expansion Enclosure Subsystem” on page 367.

- **Relocating 2105 subsystem to another floor/building:**

Pack the 2105 Model Exx/Fxx or 2105 Expansion Enclosure for removal. Follow the instructions that come with the Asset Sealing kit packing materials to pack the 2105 for shipping.

Relocating a 2105 Subsystem

Shipping From	Part Number
U.S. or Canada	7334847
Asia Pacific	7334847
Latin America	7334847
EMEA	7334847

Continue with “Installing a Relocated 2105 Model Exx/Fxx and Expansion Enclosure Subsystem” on page 367.

Discontinuing a 2105 Model Exx/Fxx Subsystem

Attention: This procedure should ONLY be used when the customer wants to discontinue the 2105 Model Exx/Fxx subsystem. All customer data will be *destroyed*. Ensure that the customer has removed all data that needs to be saved.

Attention: To discontinue a 2105 subsystem, the logical configuration of the subsystem MUST be removed before the subsystem is taken apart. The logical configuration (for example: arrays, volumes, host connections, installed resource ODM) must be removed to ensure that the individual subsystem components can be installed later in other subsystems. Failure to follow this procedure will make all the drawers unusable in other subsystems and re-installation of the 2105 Model Exx/Fxx in a new account will require Product Engineering assistance.

This procedure will:

- Allow the repair of all existing problems.
- Remove the logical configuration from the ESS subsystem, including: racks, drawers, and arrays.

Note: If a VSS attachment subsystem is installed, all logical configuration from it will also be removed.

- Provide instructions to mechanically disconnect any package the subsystem.

Discontinuing a 2105 Model Exx/Fxx Subsystem Using the Service Terminal

Attention: The 2105 Model Exx/Fxx and cable in this procedure are ESD-sensitive. Always wear an ESD wrist strap during this procedure. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4.

1. Connect the service terminal to the S2 connector on the front of cluster 1 in the 2105 Model Exx/Fxx. For service terminal connection and activation, see “Connecting the Service Terminal to the 2105 Model E20/F20” on page 298.

Discontinuing a 2105 Model Exx/Fxx Subsystem

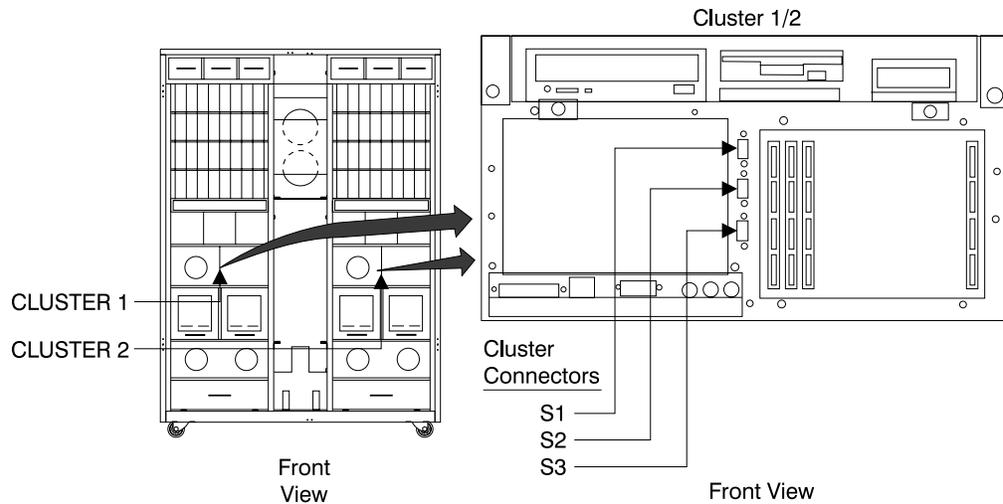


Figure 358. Service Terminal Interface Connection (s008027m)

___ 2.

From the service terminal **Main Service Menu**, select:

Install/Remove Menu

Enterprise Storage Server Menu

Discontinue 2105 (Enterprise Storage Server)

Notes:

- a. Early levels of code may not show **Discontinue** as an available option. For those machines, contact your next level of support.
- b. Follow the instructions on the service terminal. Repair any existing problems and remove all racks and logical configuration.

___ 3. When the service terminal returns the service representative to this procedure, the removal of the logical configuration of this 2105 Model Exx/Fxx subsystem is complete.

Note: If the customer wants you to verify that all arrays have been destroyed, you must re-booted the subsystem before you can see the altered configuration. To avoid errors, all SSA cables to the SSA Device cards must be removed before the subsystem is re-booted. For SSA device card connector locations, see Figure 341 on page 349.

___ 4. Use the "Relocating a 2105 Model Exx/Fxx Subsystem" on page 352 procedure to:

- Power off the 2105 Model Exx/Fxx
- Identify and label disconnected cable connectors.
- Disconnect the 2105 Model Exx/Fxx power cables.
- Disconnect the interface, control, and communication cables.
- Disconnect 2105 Expansion Enclosure racks from a 2105 Model Exx/Fxx rack.
- Place the 2105 Model Exx/Fxx racks in their shipping containers.

Discontinuing a 2105 Model Exx/Fxx Subsystem

Note: Do only the steps in this procedure necessary to discontinue or relocate the 2105 Model Exx/Fxx subsystem racks using their shipping containers.

- ___ 5. If the ESS subsystem has an attached VSS subsystem, disconnect and package the VSS subsystem. Use "Relocating a 2105 VSS Attachment Subsystem" in the *2105 Model 100 Attachment to ESS Service Guide* book, SY27-7615.

Installing a Relocated 2105 Model Exx/Fxx and Expansion Enclosure Subsystem

Attention: This FRU is ESD-sensitive. Always wear an ESD wrist strap when servicing this FRU. Follow the ESD procedures in "Working with ESD-Sensitive Parts" on page 4.

Note: These instructions are only to be used to relocate (move) an entire 2105 subsystem. The procedure to remove (discontinue) the subsystem or a 2105 Model Exx/Fxx is not offered at this time.

These instructions describe how to:

- Connect the 2105 Expansion Enclosure racks to a 2105 Model Exx/Fxx rack.
- Connect the 2105 power cables.
- Connect disconnected cable connectors.
- Connect the 2105 Model Exx/Fxx interface, control, and communication cables.
- Power on the 2105 subsystem.
- Use the service terminal to test the 2105 subsystem after relocation.

Reinstallation of a 2105 Subsystem

Attention: In order to preserve the integrity of customer data, it is critical that 2105 subsystem be reconnected **exactly** the way it was connected before it was disassembled for relocation.

Note: Hardware can not be changed or added during the relocation process.

The following procedure will reassemble the 2105 subsystem by reversing the just completed disassembly process and by providing reference information to the normal 2105 installation process.

Place a check mark next to each completed step.

- ___ 1. If the 2105 subsystem was relocated using the Asset Sealing kit, unpack the 2105(s) using the unpack instructions that come with the kit.
- ___ 2. Ensure that the required customer preparation has been completed at the new location, perform steps 5 on page 206 through 8 on page 207.
- ___ 3. Position the 2105 racks in their new locations then:
 - Install the rack spacers.
 - Bolt the frames together.
 - Install the frame ground strap.
 - Install the caster wedge locks.
 - Connect the primary power interconnect cables between frames.
 - Route the mainline power cable to the customer's power connectors.

Installing a Relocated 2105 Subsystem

- **2105 Model Exx/Fxx:** Perform steps 1 on page 212 through 8 on page 214 .
 - **2105 Expansion Enclosure:** Perform steps 1 on page 278 through 8 on page 280.
- ___ 4. Determine if the customer power at the new location had been used previously and was checked for safety:
- **Customer power previously safety checked,** go to step 5.
 - **Customer power is new and requires a safety check:**
 - **2105 Model Exx/Fxx:** Perform “Check the Customer’s Circuit Breaker with the Power Off” on page 216 to step 11 on page 223.
 - **2105 Expansion Enclosure:** Perform “Check the Customer’s Circuit Breaker with the Power Off” on page 282 to step 11 on page 289.
- ___ 5. Read the following attentions before connecting the host cables:
- Attention:** The FRUs and cables in this procedure are ESD-sensitive. Always wear an ESD wrist strap during this isolation procedure. Follow the ESD procedures in “Working with ESD-Sensitive Parts” on page 4 in chapter 4, volume 2 of this book.
- Attention:** To prevent electrostatic discharge, ensure you discharge all SCSI host cables to the ESD discharge pad, before you plug them into the 2105 Model Exx/Fxx. The ESD discharge pads are mounted on the front right and left corners of the 2105 Model Exx/Fxx frame, next to each tailgate.
- Attention:** Before disconnecting/connecting SCSI host cables, ask the customer to remove host I/O activities to all devices on the affected SCSI cables. The customer should refer to the host documentation to determine if host power also needs to be off.

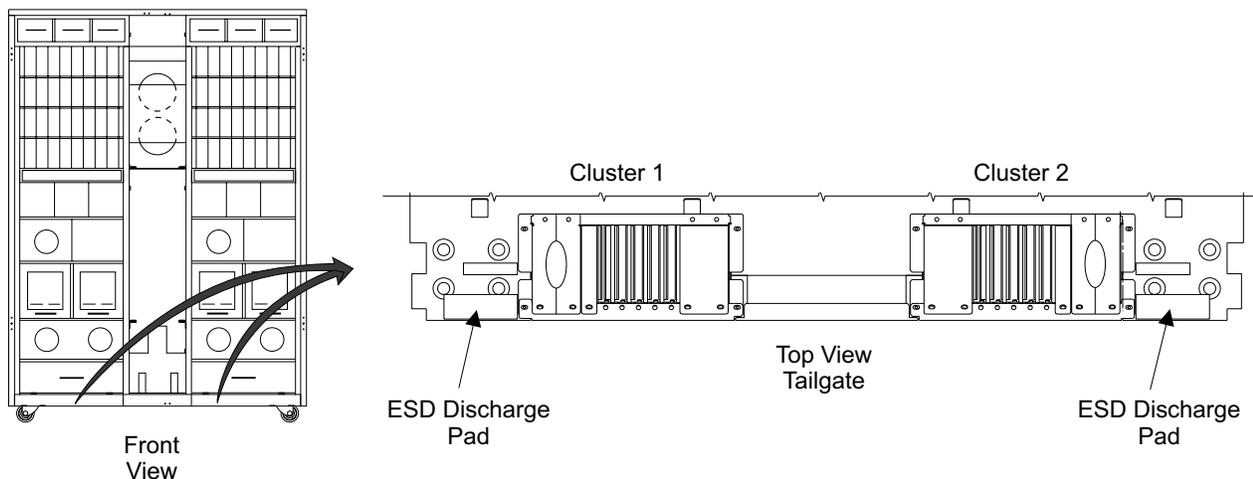


Figure 359. 2105 Model Exx/Fxx ESD Discharge Pad Location (S008339m)

Route and connect the SCSI, ESCON, or Fibre channel host cables to the cluster bay connector locations identified by the labels on the cables.

Installing a Relocated 2105 Subsystem

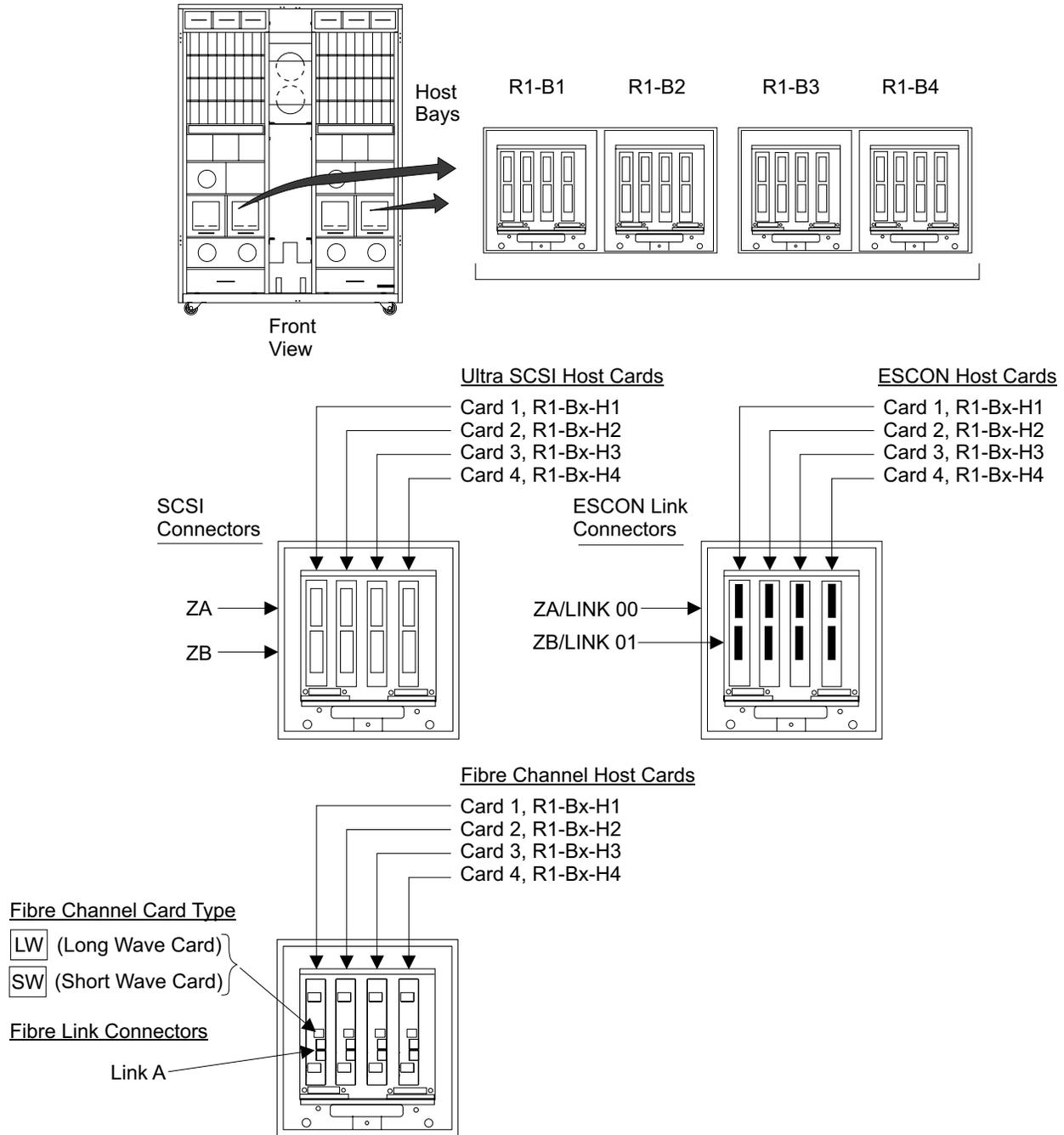


Figure 360. 2105 Model Exx/Fxx Host Bay SCSI Connector Locations (S008024r)

- ___ 6. Route and connect the SSA device cables stored in the 2105 Expansion Enclosure through to the DDM bay they connect to in the 2105 Model E20/F20. Refer to the label on each SSA cable. See Figure 361 on page 370 and Figure 362 on page 371. Connect the SSA device cables to the indicated 2105 Model E20/F20 DDM bays.

Installing a Relocated 2105 Subsystem

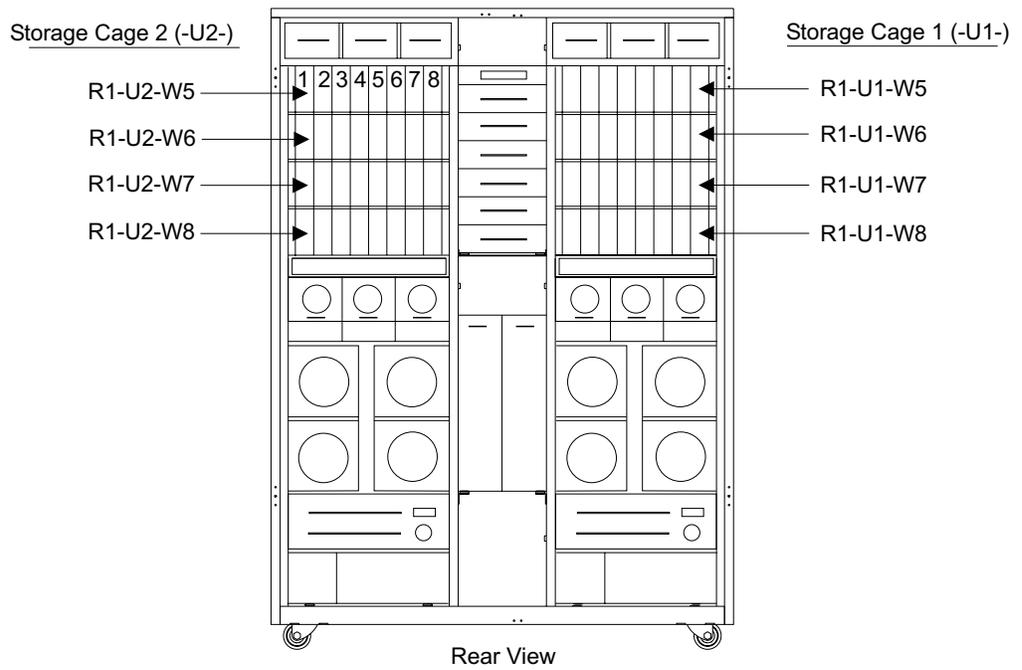
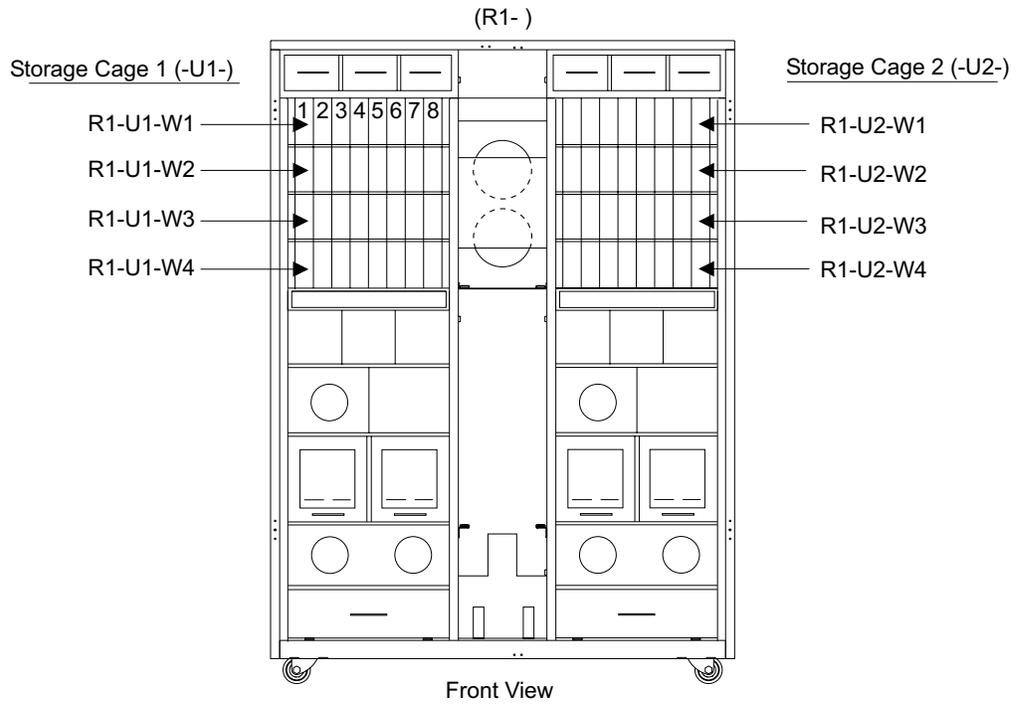


Figure 361. 2105 Model E20/F20 DDM bay Locations (S007740s)

Installing a Relocated 2105 Subsystem

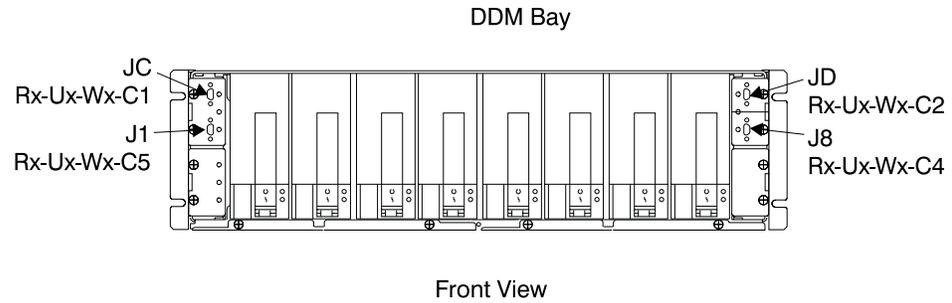


Figure 362. DDM bay SSA Connector Locations (S007703I)

- ___ 7. Connect the ethernet LAN cables to the RJ45 connector on each cluster bay using the labels on the cables.

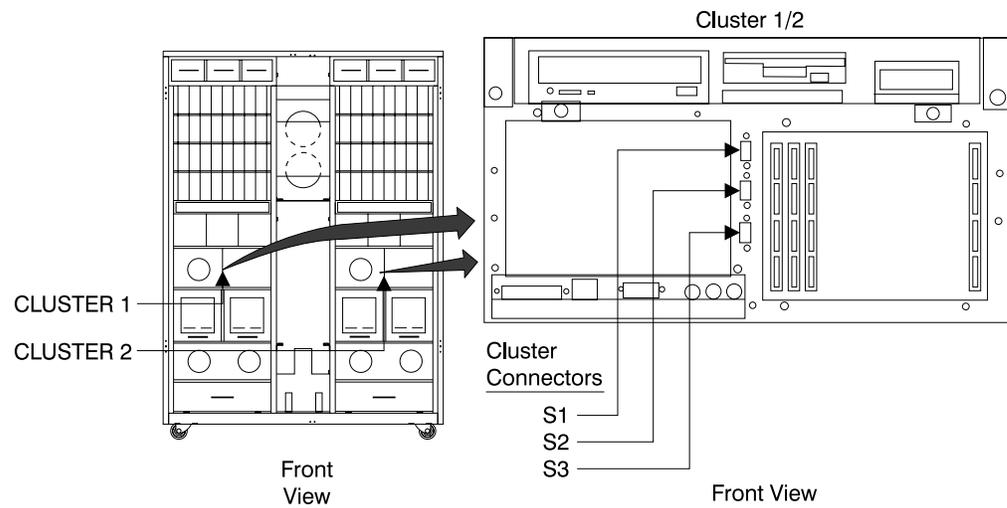
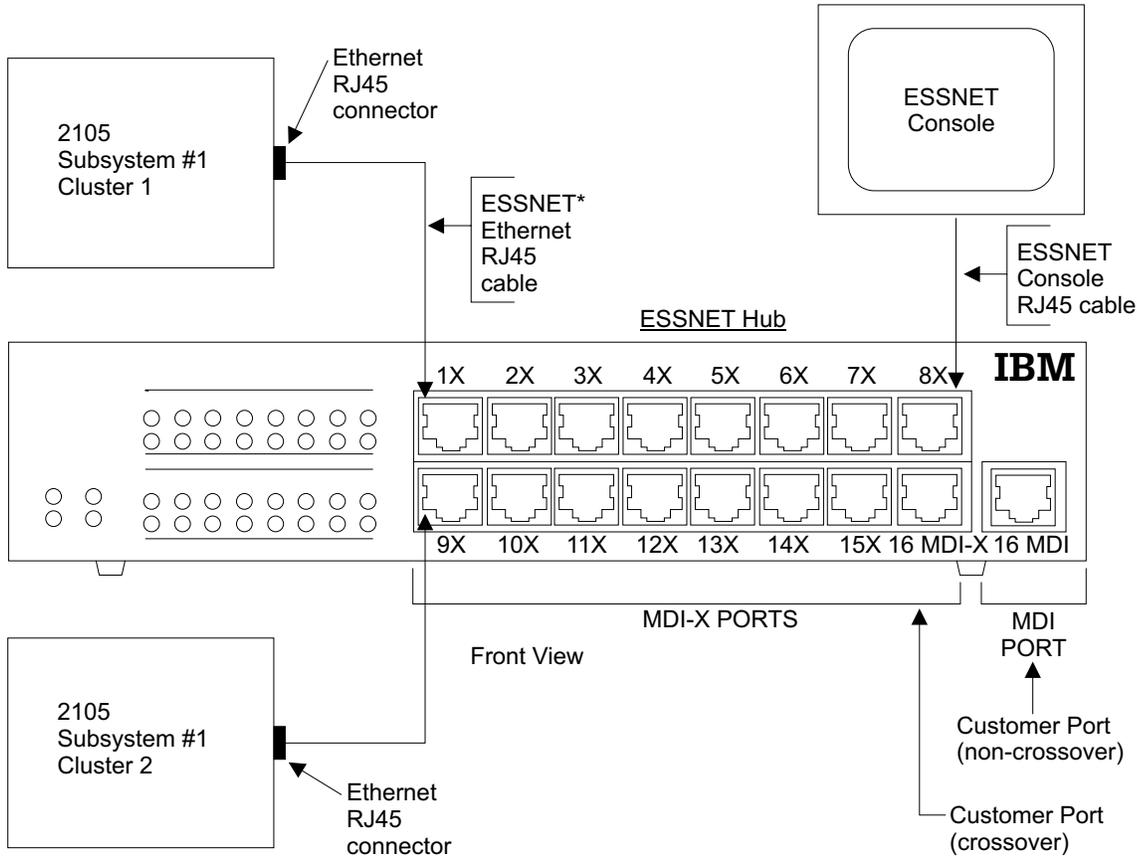


Figure 363. Cluster Bay Ethernet Connectors (S008027m)

- ___ 8. Connect the ESSNet hub and ESSNet console. Using Figure 364 on page 372, perform steps 2 on page 244 to 5 on page 245 and step 2 on page 245.

Installing a Relocated 2105 Subsystem



* Note: See table for recommended plugging of additional 2105 subsystem connections to the ESSNET Hub

Figure 364. ESSNet Hub Port Connector Locations (S008603p)

- ___ 9. Install all the cable clamps and strain relief for all cables entering the 2105 Model Exx/Fxx, see "2105 Model Exx/Fxx Tailgate Cable Clamp Removal and Installation" on page 306.

Powering On a Relocated 2105 Subsystem

Place a check mark next to each completed step.

- ___ 1. Prepare the 2105 subsystem for powering on, perform steps 1 on page 223 through 12 on page 227.
- ___ 2. Power on the 2105 subsystem, perform steps 1 on page 227 through 2 on page 227.

Testing a Relocated 2105 Subsystem

Place a check mark next to each completed step.

- ___ 1. Connect the service terminal to cluster bay 1, perform steps 1 on page 233 through step 8 on page 236.
- ___ 2. Use the service terminal to **Install/Re-Install/Relocate Storage Facility**, perform step 1 on page 237.
- ___ 3. Follow the instructions on the service terminal to test the relocated 2105 subsystem.

Testing Customer Ethernet LAN Cables and ESSNet Console

Place a check mark next to each completed step.

Installing a Relocated 2105 Subsystem

- ___ 1. Use the service terminal to test the ethernet LAN and ESSNet console, perform step 2 on page 245 and steps 6 on page 261 through 10 on page 262.

Testing Modem Communications

Place a check mark next to each completed step.

- ___ 1. Use the service terminal to test the modem connections, perform steps 1 on page 259 through 13 on page 260.

Completing the Relocation

Place a check mark next to each completed step.

- ___ 1. Disconnect the service terminal, perform steps 13 on page 262 and 14 on page 262.
- ___ 2. Connect the remote power control cables. Perform steps 16 on page 263 and 17 on page 263.
- ___ 3. Reference the Asset Sealing kit for instructions on returning and discarding information. Discard shipping material locally.
- ___ 4. Inform the customer that the 2105 Subsystem has been relocated and is available.

Installing a Relocated 2105 Subsystem

Chapter 6: Logical Configuration of Storage Facility

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Pre-Installation Configuration Worksheets

Overview

The following customer worksheets have fields that must be filled in AFTER the customer has completed their portion of the Communication Resources Worksheets from the *IBM Enterprise Storage Server Introduction and Planning Guide* book, and the Configuration Worksheets from the *IBM Enterprise Storage Server Configuration Planner* book. The service support representative must then fill in additional information (shaded areas on the worksheets) PRIOR to:

- installation or reconfiguration of the IBM 2105 Enterprise Storage Server
- adding SSA DASD drawers
- adding SCSI Host Cards

Filling in fields on the Communications Resources Worksheet

Looking at the Communications Resources Worksheet, you need to fill in all the shaded-information areas for Call Home/Remote Services, Modem Configuration, Change Optional Remote Access Password, and Enable Product Engineering Password.

Configuration

Fill in the Remote Telephone Numbers

Locate the remote telephone numbers (Call Home) for your area in the following list and fill in the area on the worksheet.

- IBM U.S. 1-800-783-4525
- AP (inside Japan) 0120-36-2105
- AP (international) 81-44-244-4892
- EMEA, see the IBM ESDP Boeblingen web site for 2105 RSF Catcher PC phone numbers:

<http://w3.uk.ibm.com/esdpboeb/boedevd.htm>

Fill in the Callback and Optional Remote Access Passwords

There are two non-CE logins ID's allowed on ESS systems, support and PE. These logins ID's are intended for use by field support and product engineering personnel for remote service purposes and are not intended to be used by customer engineering personnel.

There are two passwords associated with the support login ID:

- **Callback Password:** This is a public password set by the CE during the configuration of Call Home/Remote Services. It will be used in the header of each Call Home record. The recommended setting is *support*.
- **Optional Remote Access Password:** This password is intended to add further security to the support login ID and should be set in agreement-with and shared-with the customer.

Fill in the Enable Product Engineering Password

The PE login ID is intended to be used only by IBM product engineering and development personnel. This login is enabled and a password generated when the CE invokes *Enable Product Engineering Access* during the configuration of Call Home/Remote Services. The enablement is only valid for seven days.

- **Enable Product Engineering Access:** Enable only under PE direction and then record the displayed password.

Note: This can also be enabled using the ESS Specialist.

Communications Configuration of the 2105

Ensure that the customer has filled out the Communications Resources Worksheets for the 2105 being installed and that the service representative has completed the additional information that they are responsible for. Refer to the *IBM Enterprise Storage Server Introduction and Planning Guide* book, form number GC26-7294, for the worksheets. To perform the logical configuration, the service support representative will also need the Configuration Worksheets found in the *IBM Enterprise Storage Server Configuration Planner* book, form number GC26-7353.

Use the completed worksheets during the following procedures to enter the appropriate information as it is requested by the service terminal.

Note: When all of the following procedures have been completed, return to the procedure that sent you here.

Activating LIC Features

Note: This procedure requires the LIC Feature Control Records diskette. This diskette may have been provided in the ship group or MES or it may have been created earlier during installation. See “Extraction Procedure” on page 204.

Requirements:

Must have the DOS diskette containing the LIC Feature Control Record specifically written for the selected 2105 storage server. The diskette will be labeled **FEA#####.BIN**, with ##### the serial number of the 2105.

Procedure:

1. Connect the service terminal interface cable to the S2 connector on the front of cluster bay 1.
2. Log the service terminal into cluster bay 1.

From the service terminal **Main Service Menu**, select:

Licensed Internal Code Maintenance Menu

LIC Feature Menu

Activate LIC Feature

- a. Follow all of the screen instructions, they will guide you through the diskette insertion and removal steps.
- b. When completed, all LIC features will be enabled per the file record on the diskette.

Change Customer Information

From the service terminal **Main Service Menu**, select:

Configuration Options Menu

Configure Communications Resources Menu

Change / Show Customer Information

Enter information from the Communication Resources Worksheet

Change SIM Reporting Options (System/390 only)

Note: If the 2105 subsystem is not attached to a System/390 host, skip to “Change Maximum Overall Problem Presentation Count”.

From the service terminal **Main Service Menu**, select:

Configuration Options Menu

Configure Communications Resources Menu

Change/Show SIM Reporting Options

Enter information from the Communication Resources Worksheet.

Change Maximum Overall Problem Presentation Count

From the service terminal **Main Service Menu**, select:

Configuration Options Menu

Configure Communications Resources Menu

Change/Show Maximum Overall Problem Presentation Count

Configuration

Enter information from the Communication Resources Worksheet.

Configure Call Home / Remote Services

Note: Configuring call home and remote services before the modem and modem expander are physically installed, will result in an error in the problem log.

From the service terminal **Main Service Menu**, select:

Configuration Options Menu

Configure Communications Resources Menu

Call Home / Remote Services Menu

Change / Show Modem Configuration

Enter information from the Communication Resources Worksheet then return to the **Call Home / Remote Services Menu** and select:

Select the Microcom DeskPorte modem even if you are installing a Multitech MultiModem.

Change / Show Call Home / Remote Services

Enter information from the Communication Resources Worksheet.

Configure E-Mail

From the service terminal **Main Service Menu**, select:

Configuration Options Menu

Configure Communications Resources Menu

E-Mail Menu

Change / Show Error Notification Count

Enter information from the Communication Resources Worksheet then return to the **Configure E-Mail Menu** and select one of the following:

- **Smart-Host Relay Menu**
- Enter information from the Communication Resources Worksheet then return to the **Configure E-Mail Menu** and select:
- **Enable Local E-Mail**
- Enter information from the Communication Resources worksheet.

Note: Local E-Mail and Smart-Host Relay can not be enabled at the same time.

Add E-Mail Destination

Enter information from the Communication Resources Worksheet then return to the **Configure E-Mail Menu** and select:

Change / Show E-Mail Destination Settings

Enter information from the Communication Resources Worksheet.

Configure SNMP

From the service terminal **Main Service Menu**, select:

Configuration Options Menu

Configure Communications Resources Menu

SNMP Menu

Change / Show SNMP Configuration

Enter information from the Communication Resources Worksheet.

Pager Users

Note: This menu will allow both the customer and the service personnel to enter pager information.

From the service terminal **Main Service Menu**, select:

Configuration Options Menu

Configure Communications Resources Menu

Pager Menu

Pager Users Menu

Logical Configurations

Notes:

1. If the customer chooses to perform their own logical configuration using the ESS Specialist, this procedure is not necessary.
2. When storage is being added to a previously configured SSA loop, the ESS Specialist must be used. The ESS Batch Configuration Tool (below) can only be used on previously unconfigured SSA loops.

From the service terminal **Main Service Menu**, select:

Configuration Options Menu

ESS Batch Configuration Tool Menu

Define a Storage Configuration

Note: Check if the SSA card that you want to configure is in the **A List of All Unconfigured SSA Cards**. If the SSA card is not listed, the drawers belonging to that SSA card must be configured using the ESS Specialist.

Enter the information from the Configuration Worksheets found in the *IBM Enterprise Storage Server Configuration Planner* book, form number GC26-7353.

Apply Defined Storage Configuration List

Note: The application of the Defined Storage Configuration is a background process that may take several hours to complete. This installation procedure will later use the **Display Status of Apply Process** to verify completion status before giving the 2105 to the customer.

Perform ESS Specialist Configuration from ESSNet Console

If additional configuration needs to be completed, use the ESS Specialist from the ESSNet console.

Configuration

Configure ESS Specialist

From the service terminal **Main Service Menu**, select:

Configuration Options Menu

Configure Communications Resources Menu

ESS Specialist Menu

Enter information from the Communication Resources Worksheet

If the 2105 Model Exx/Fxx has Fibre channel host connections, use the information on the Configuration Resources Worksheets with the screens in “Configure Fibre Channel Port Topology” and “Change/Show Control Switches”.

Configure Fibre Channel Port Topology

Note: Control switches only need to be set if this ESS has fibre channel host connections.

From the service terminal **Main Service Menu**, select:

Configuration Options Menu

Systems Attachment Resources Menu

Configure Fibre Channel Port

Select the desired host port and then set the Network Topology Type to either FCAL or Point-to-Point as indicated on the configuration resources worksheets.

Change/Show Control Switches

Note: Control switches only need to be set if this ESS has fibre channel host connections.

From the service terminal **Main Service Menu**, select:

Configuration Options Menu

Change / Show Control Switches

Fibre Channel LUN Access Control

Enter information from the Configuration Resources Worksheet.

Note: Control switches cannot be set by the customer using the ESS Specialist. You, the field service representative, must set the control switches correctly for fibre channel operation.

Continue with “Configuring the 2105 Model Exx/Fxx” on page 256.

Additional Configuration Procedures

Ensure that the customer has filled out the Communications Resources Worksheets for the 2105 being installed and that the service representative has completed the additional information that they are responsible for. Refer to the *IBM Enterprise Storage Server Introduction and Planning Guide* book, form number GC26-7294, for the worksheets. To perform the logical configuration, the service support representative will also need the Configuration Worksheets found in the *IBM Enterprise Storage Server Configuration Planner* book, form number GC26-7353.

Use the completed worksheets during the following procedures to enter the appropriate information as it is requested by the service terminal.

Note: When all of the following procedures have been completed, return to the procedure that sent you here.

Change Date, Time, and Time Zone

Note: To activate configuration changes to date, time, and time zone, this procedure will reboot each cluster bay. This can take up to 45 minutes to complete.

From the service terminal **Main Service Menu**, select:

Configuration Options Menu

Change / Show Date, Time, and Time Zone

Enter information from the Communication Resources Worksheet.

Changing TCP/IP Configuration

This procedure allows changes to the TCP/IP configuration **after** the initial minimal TCP/IP configuration has already been installed.

Ensure that the customer has filled out the Configuration Worksheets for the 2105 being installed and that the service representative has completed the additional information that they are responsible for. Refer to the *IBM Enterprise Storage Server Introduction and Planning Guide* book, form number GC26-7294, for the worksheets.

Use the completed worksheets during the following procedures to enter the appropriate information as it is requested by the service terminal.

Note: When all of the following procedures have been completed, return to the procedure that sent you here.

From the service terminal **Main Service Menu**, select:

Configuration Options Menu

Configure Communications Resources Menu

ESS Specialist Menu

Disable the ESS Specialist

Attention: The TCP/IP addresses and Hostname must be entered correctly on both clusters to avoid cluster-to-cluster communication errors. These communication errors will cause cluster-to-cluster timeouts that will greatly increase IML time.

From the service terminal **Main Service Menu**, select:

Configuration Options Menu

Configure Communications Resources Menu

Change / Show TCP/IP Configuration

Minimum Configuration & Startup

Select **en0**.

Note: If the customer wants to use **et0** Ethernet interface, call your next level of support.

Configuration

Is the ESSNet already attached to the customers network?

- **Yes**, enter information from the Communication Resources Worksheet.
- **No**, enter the default TCP/IP configuration information from Table 37.

Note: Defaults can only be used when the ESSNet is not attached to the customer network.

Table 37. Default TCP/IP Settings

2105 Subsystem on ESSNet	Cluster Bay	HOST NAME	Internet Address	Network Mask
First	1	ess1c1	172.31.1.1	255.255.255.0
First	2	ess1c2	172.31.1.2	255.255.255.0
Second	1	ess2c1	172.31.1.3	255.255.255.0
Second	2	ess2c2	172.31.1.4	255.255.255.0
Third	1	ess3c1	172.31.1.5	255.255.255.0
Third	2	ess3c2	172.31.1.6	255.255.255.0
Fourth	1	ess4c1	172.31.1.7	255.255.255.0
Fourth	2	ess4c2	172.31.1.8	255.255.255.0
Fifth	1	ess5c1	172.31.1.9	255.255.255.0
Fifth	2	ess5c2	172.31.1.10	255.255.255.0
Sixth	1	ess6c1	172.31.1.11	255.255.255.0
Sixth	2	ess6c2	172.31.1.12	255.255.255.0
Seventh	1	ess7c1	172.31.1.13	255.255.255.0
Seventh	2	ess7c2	172.31.1.14	255.255.255.0

1. Set the following additional TCP/IP Settings not covered in the table above as follows:
 - NAME SERVER Internet Address, blank*.
 - NAME SERVER Domain Name, blank*.
 - Default Gateway Address, blank*.

Note: A *blank** indicates that this field should be blank.
2. Press **F3** to **Change / Show TCP/IP Configuration Configure Alternate Cluster IP Address and Hostname**. Enter the customer supplied INTERNET ADDRESS (dotted decimal) and HOSTNAME of the **Alternate** cluster (the cluster bay the service terminal is NOT connected to) of the 2105.

Attention: The same TCP/IP and Hostname information must be repeated and entered on both clusters to avoid cluster-to-cluster communication error/timeouts. This will be done later in step 5 on page 383.
3. Press **F3** until you receive the Restarting TCP/IP daemons... message, type **y**, then press enter, and wait for the Press enter to continue message then press enter.
4. A new ESS Specialist certificate must be created if this machine was previously installed at another location, or the NAMESERVER Domain Name was changed. Use the following procedure:

From the service terminal **Main Service Menu**, select:

Configuration Options Menu

Configure Communications Resources Menu

ESS Specialist Menu

Create New Key Files/Certificate

Follow the service terminal instructions.

5. Connect the service terminal to the other cluster and repeat steps 1 on page 382 to step 4 on page 382 on this page.

From the service terminal **Main Service Menu**, select:

Configuration Options Menu

Configure Communications Resources Menu

ESS Specialist Menu

Enable the ESS Specialist

Regenerate ESS Specialist Certificate

From the service terminal **Main Service Menu**, select:

Configuration Options Menu

Configure Communications Resources Menu

ESS Specialist Menu

Disable the ESS Specialist

From the service terminal **Main Service Menu**, select:

Configuration Options Menu

Configure Communications Resources Menu

ESS Specialist Menu

Create New Key Files/Certificate

Follow the service terminal instructions.

From the service terminal **Main Service Menu**, select:

Configuration Options Menu

Configure Communications Resources Menu

ESS Specialist Menu

Enable the ESS Specialist

Configure Copy Services, with DNS

This section covers the steps needed to configure the ESS Specialist Copy Services.

Attention:

1. The microcode in this ESS subsystem must be at EC F25683 or higher to use the Copy Services feature.
2. Ensure that the LIC features have been ordered and installed for the Copy Services feature. Refer to “Activating LIC Features” on page 377.
3. The Communication Resources Worksheets must be available, with the Copy Services information completed by the customer, for this ESS subsystem before starting copy services configuration.

Configuration

4. The ESS subsystem with the cluster designated as the Primary Server must be configured first, then the ESS subsystem with the Backup Server can be configured.
5. The first step is to have ALL of the 2105 subsystems that will be using ESS Specialist Copy Services connected to the customer network. Before continuing, follow the steps in "Attaching The ESSNet to a Customer Network" on page 265, then return here to configure the ESS Specialist Copy Services.

Procedure

1. Verify that DNS is configured.

From the service terminal **Main Service Menu**, select:

Configuration Options Menu

Configure Communication Resources Menu

Change / Show TCP/IP Configuration

Minimum Configuration and Startup

Select **en0**.

Note: Verify that under the NAMESERVER, the internet ADDRESS and DOMAIN Name are specified. If not, enter the information from the Communications Resources Worksheets. If the NAMESERVER internet ADDRESS or DOMAIN Name are changed, this information change must be repeated on the other cluster. You will be asked if you want to switch cluster connections at the end of this procedure.

2. Enable ESS Specialist Copy Services for S/390.

From the service terminal **Main Service Menu**, select:

Configuration Options Menu

Change / Show Control Switches

WEB Copy Service Commands for S/390 Volumes

Note: Early levels of this SMIT screen may show **System 390 Command Switch for smitty**.

Enter the information from the Communications Resources Worksheet (ESS Web Copy Services).

3. Configure the ESS Specialist Copy Services primary and backup servers.

From the service terminal **Main Service Menu**, select:

Configuration Options Menu

Copy Services Menu

Copy Services Server Menu

Change Server Definitions

Enter the Primary Server and Backup Server IP Address then enter the requested client Cluster x Hostname and IP Address information. This information is from the Communications Resources (ESS Web Copy Services) Worksheet.

4. If NAMESERVER internet ADDRESS or DOMAIN Name were changed in step 1, connect the service terminal to the other cluster and repeat step 1.
5. Are you configuring copy services on the Primary Server?

- **Yes**, to complete the configuration of copy services on the entire Server Group, this procedure must also be performed on the ESS subsystem containing the backup server (unless the backup server is on the same ESS subsystem).

Instruct the customer to ensure that the Backup Server site has:

- a. Copies of the Communications Resources ESS Web Copy Services Worksheets for this ESS group
 - b. Microcode at EC F25683 or higher installed
 - c. A new ESS subsystem needs to be installed or an MES is required to install Copy Services on a currently installed machine
 - d. Continue with the next step.
- **No**, continue with the next step.
6. Are you performing an installation of this ESS subsystem?
 - **Yes**, return to step 13 on page 262.
 - **No**, return to the document (MES) that sent you here.

Configure Copy Services, without DNS

This section covers the steps needed to configure the ESS Specialist Copy Services.

Attention:

1. The microcode in this ESS subsystem must be at EC F25683 or higher to use the Copy Services feature.
2. Ensure that the LIC features have been ordered and installed for the Copy Services feature. Refer to “Activating LIC Features” on page 377.
3. The Communication Resources (ESS Web Copy Services) Worksheets must be available, with the Copy Services information completed by the customer, for this ESS machine before starting copy services configuration.
4. The ESS machine with the cluster designated as the Primary Server must be configured first, then the ESS machine with the Backup Server can be configured.
5. Verify that the LIC feature has been installed.
6. The first step is to have ALL of the 2105 subsystems that will be using ESS Specialist Copy Services connected to the customer network. Before continuing, follow the steps in “Attaching The ESSNet to a Customer Network” on page 265, then return here to configure the ESS Specialist Copy Services.

Procedure

1. Enable ESS Specialist Copy Services for S/390.

From the service terminal **Main Service Menu**, select:

Configuration Options Menu

Change / Show Control Switches

WEB Copy Service Commands for S/390 Volumes

Note: Early levels of this SMIT screen may show **System 390 Command Switch for smitty**.

Enter the information from the Communications Resources (ESS Web Copy Services) Worksheet.

2. Configure the ESS Specialist Copy Services primary and backup servers.

Configuration

From the service terminal **Main Service Menu**, select:

Configuration Options Menu

Copy Services Menu

Copy Services Server Menu

Change Server Definitions

Enter the Primary Server and Backup Server IP Address then enter the requested client Cluster x Hostname and IP Address information. This information is from the Communications Resources (ESS Web Copy Services) Worksheet.

3. Configure the Host Tables for each ESS cluster in this server group.

From the service terminal **Main Service Menu**, select:

Configuration Options Menu

Configure Communications Resources Menu

Configure/Show TCP/IP Configuration

Further Configuration

Name Resolution

Host Tables (/etc/hosts)

Add a Host

From the Communications Resources (ESS Web Copy Services) Worksheets, enter the:

- IP Address and Hostname for every ESS cluster in this server group (except the cluster that you are attached to), from the Enable Copy Services table
- IP Address and Hostname of each Host that uses CLI commands to this server group, from the Enable Copy Services without DNS worksheet
- IP Address and Hostname of the ESSNet, from the Enable Copy Services without DNS table

Attention: If the current host table needs to be modified, use the **Remove a Host** option and then the **Add a Host** option to replace existing information. Using the **Change** option may result in multiple entries for the same host.

Connect the service terminal to the other ESS cluster and repeat step 3. Remember, *do not include the cluster that you are attached to!*

4. Are you configuring copy services on the Primary Server?
 - **Yes**, to complete the configuration of copy services on the entire Server Group, this procedure must be performed on the ESS subsystem containing the Backup server (unless the Backup server is on the same ESS subsystem).
 - a. Instruct the customer to ensure that the backup server site has:
 - 1) Copies of the Communications Resources ESS Web Copy Services Worksheets for this ESS group
 - 2) Microcode at EC F25683 or higher installed
 - 3) A new ESS subsystem needs to be installed or an MES is required to install Copy Services on a currently installed machine
 - b. Instruct the customer to ensure that all Host machines have:

- 1) Updated the Host Tables in the host to include the IP Addresses and Hostnames of all attached ESS clusters and any other hosts in this server group
- 2) Continue with the next step.
 - **No**, continue with the next step.
5. Are you performing an install of this ESS subsystem?
 - **Yes**, return to step 13 on page 262.
 - **No**, return to the document (MES) that sent you here.

Change/Show Control Switches

From the service terminal **Main Service Menu**, select:

Configuration Options Menu

Change / Show Control Switches

Enter the information from the configuration resources worksheet.

Note: If the control switches were changed, the subsystem must be rebooted for the change to take effect.

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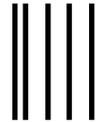
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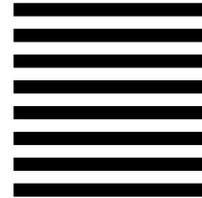
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