Power Systems

Servicing the IBM Power System AC922 (8335-GTG or 8335-GTH)

IBM

Note

Before using this information and the product it supports, read the information in "Safety notices" on page v, "Notices" on page 163, the *IBM Systems Safety Notices* manual, G229-9054, and the *IBM Environmental Notices and User Guide*, Z125–5823.

Contents

Safety notices

Safety notices may be printed throughout this guide:

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

World Trade safety information

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

Replacement or additional copies of safety information documentation can be obtained by calling the IBM Hotline at 1-800-300-8751.

German safety information

Das Produkt ist nicht für den Einsatz an Bildschirmarbeitsplätzen im Sinne § 2 der Bildschirmarbeitsverordnung geeignet.

Laser safety information

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

Laser compliance

IBM servers may be installed inside or outside of an IT equipment rack.

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

Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard: If IBM supplied the power cord(s), connect power to this unit only with the IBM provided power cord. Do not use the IBM provided power cord for any other product. Do not open or service any power supply assembly. Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.

- The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords. For AC power, disconnect all power cords from their AC power source. For racks with a DC power distribution panel (PDP), disconnect the customer's DC power source to the PDP.
- When connecting power to the product ensure all power cables are properly connected. For racks with AC power, connect all power cords to a properly wired and grounded electrical outlet. Ensure that the outlet supplies proper voltage and phase rotation according to the system rating plate. For racks with a DC power distribution panel (PDP), connect the customer's DC power source to the PDP. Ensure that the proper polarity is used when attaching the DC power and DC power return wiring.
- Connect any equipment that will be attached to this product to properly wired outlets.

- When possible, use one hand only to connect or disconnect signal cables.

- Never turn on any equipment when there is evidence of fire, water, or structural damage.

- Do not attempt to switch on power to the machine until all possible unsafe conditions are corrected.

- When performing a machine inspection: Assume that an electrical safety hazard is present. Perform all continuity, grounding, and power checks specified during the subsystem installation procedures to ensure that the machine meets safety requirements. Do not attempt to switch power to the machine until all possible unsafe conditions are corrected. Before you open the device covers, unless instructed otherwise in the installation and configuration procedures: Disconnect the attached AC power cords, turn off the applicable circuit breakers located in the rack power distribution panel (PDP), and disconnect any telecommunications systems, networks, and modems.

- Connect and disconnect cables as described in the following procedures when installing, moving, or opening covers on this product or attached devices.

  To Disconnect: 1) Turn off everything (unless instructed otherwise). 2) For AC power, remove the power cords from the outlets. 3) For racks with a DC power distribution panel (PDP), turn off the circuit breakers located in the PDP and remove the power from the Customer's DC power source. 4) Remove the signal cables from the connectors. 5) Remove all cables from the devices.

  To Connect: 1) Turn off everything (unless instructed otherwise). 2) Attach all cables to the devices. 3) Attach the signal cables to the connectors. 4) For AC power, attach the power cords to the outlets. 5) For racks with a DC power distribution panel (PDP), restore the power from the Customer's DC power source and turn on the circuit breakers located in the PDP. 6) Turn on the devices.

- Sharp edges, corners and joints may be present in and around the system. Use care when handling equipment to avoid cuts, scrapes and pinching. (D005)

(R001 part 1 of 2):

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

- Heavy equipment–personal injury or equipment damage might result if mishandled.

- Always lower the leveling pads on the rack cabinet.

- Always install stabilizer brackets on the rack cabinet if provided, unless the earthquake option is to be installed.

- To avoid hazardous conditions due to uneven mechanical loading, always install the heaviest devices in the bottom of the rack cabinet. Always install servers and optional devices starting from the bottom of the rack cabinet.

- Rack-mounted devices are not to be used as shelves or work spaces. Do not place objects on top of rack-mounted devices. In addition, do not lean on rack mounted devices and do not use them to stabilize your body position (for example, when working from a ladder).

- Stability hazard:

  - The rack may tip over causing serious personal injury.

  - Before extending the rack to the installation position, read the installation instructions.

  - Do not put any load on the slide-rail mounted equipment mounted in the installation position.

  - Do not leave the slide-rail mounted equipment in the installation position.

- Each rack cabinet might have more than one power cord.

  - For AC powered racks, be sure to disconnect all power cords in the rack cabinet when directed to disconnect power during servicing.

- For racks with a DC power distribution panel (PDP), turn off the circuit breaker that controls the power to the system unit(s), or disconnect the customer's DC power source, when directed to disconnect power during servicing.
- Connect all devices installed in a rack cabinet to power devices installed in the same rack cabinet. Do not plug a power cord from a device installed in one rack cabinet into a power device installed in a different rack cabinet.
- An electrical outlet that is not correctly wired could place hazardous voltage on the metal parts of the system or the devices that attach to the system. It is the responsibility of the customer to ensure that the outlet is correctly wired and grounded to prevent an electrical shock. (R001 part 1 of 2)

(R001 part 2 of 2):

⚠️ **CAUTION:**

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

- *(For fixed drawers.)* This drawer is a fixed drawer and must not be moved for servicing unless specified by the manufacturer. Attempting to move the drawer partially or completely out of the rack might cause the rack to become unstable or cause the drawer to fall out of the rack. (R001 part 2 of 2)

⚠️ **CAUTION:** Removing components from the upper positions in the rack cabinet improves rack stability during relocation. Follow these general guidelines whenever you relocate a populated rack cabinet within a room or building.

- Reduce the weight of the rack cabinet by removing equipment starting at the top of the rack cabinet. When possible, restore the rack cabinet to the configuration of the rack cabinet as you received it. If this configuration is not known, you must observe the following precautions:
  - Remove all devices in the 32U position and above.
  - Ensure that the heaviest devices are installed in the bottom of the rack cabinet.

- – Ensure that there are little-to-no empty U-levels between devices installed in the rack cabinet below the 32U level, unless the received configuration specifically allowed it.
- If the rack cabinet you are relocating is part of a suite of rack cabinets, detach the rack cabinet from the suite.
- If the rack cabinet you are relocating was supplied with removable outriggers they must be reinstalled before the cabinet is relocated.
- Inspect the route that you plan to take to eliminate potential hazards.
- Verify that the route that you choose can support the weight of the loaded rack cabinet. Refer to the documentation that comes with your rack cabinet for the weight of a loaded rack cabinet.
- Verify that all door openings are at least 760 x 2083 mm (30 x 82 in.).
- Ensure that all devices, shelves, drawers, doors, and cables are secure.
- Ensure that the four leveling pads are raised to their highest position.
- Ensure that there is no stabilizer bracket installed on the rack cabinet during movement.
- Do not use a ramp inclined at more than 10 degrees.
- When the rack cabinet is in the new location, complete the following steps:
  - – Lower the four leveling pads.
  - – Install stabilizer brackets on the rack cabinet or in an earthquake environment bolt the rack to the floor.
  - – If you removed any devices from the rack cabinet, repopulate the rack cabinet from the lowest position to the highest position.
- If a long-distance relocation is required, restore the rack cabinet to the configuration of the rack cabinet as you received it. Pack the rack cabinet in the original packaging material, or equivalent. Also lower the leveling pads to raise the casters off of the pallet and bolt the rack cabinet to the pallet.

(R002)

(L001)

⚠ **DANGER:** Hazardous voltage, current, or energy levels are present inside any component that has this label attached. Do not open any cover or barrier that contains this label. (L001)

(L002)

⚠ **DANGER:** Rack-mounted devices are not to be used as shelves or work spaces. Do not place objects on top of rack-mounted devices. In addition, do not lean on rack-mounted devices and do not use them to stabilize your body position (for example, when working from a ladder). Stability hazard:

- The rack may tip over causing serious personal injury.

- Before extending the rack to the installation position, read the installation instructions.
- Do not put any load on the slide-rail mounted equipment mounted in the installation position.
- Do not leave the slide-rail mounted equipment in the installation position.

(L002)

(L003)
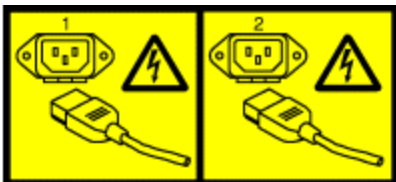
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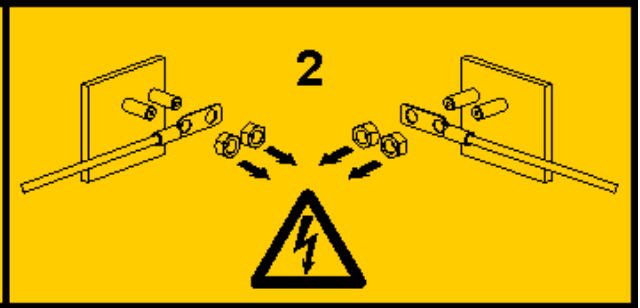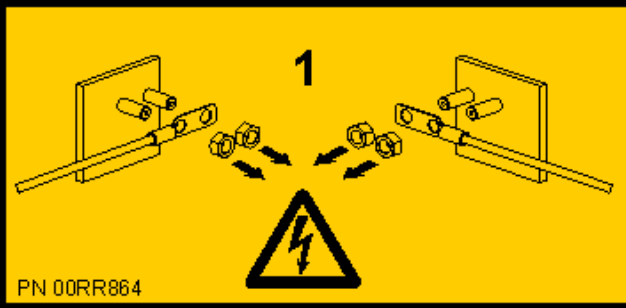
DANGER: Multiple power cords. The product might be equipped with multiple AC power cords or multiple DC power cables. To remove all hazardous voltages, disconnect all power cords and power cables. (L003)

(L007)

CAUTION: A hot surface nearby. (L007)

(L008)

CAUTION: Hazardous moving parts nearby. (L008)

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

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

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

(C026)

CAUTION: Data processing environments can contain equipment transmitting on system links with laser modules that operate at greater than Class 1 power levels. For this reason, never look into the end of an optical fiber cable or open receptacle. Although shining light into one end and looking into the other end of a disconnected optical fiber to verify the continuity of optic fibers may not injure the eye, this procedure is potentially dangerous. Therefore, verifying the continuity of optical fibers by shining light into one end and looking at the other end is not recommended. To verify continuity of a fiber optic cable, use an optical light source and power meter. (C027)

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

CAUTION: Some laser products contain an embedded Class 3A or Class 3B laser diode. Note the following information:

- Laser radiation when open.
- Do not stare into the beam, do not view directly with optical instruments, and avoid direct exposure to the beam. (C030)

(C030)

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

Do Not:

- Throw or immerse into water
- Heat to more than 100 degrees C (212 degrees F)
- Repair or disassemble

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

CAUTION: Regarding IBM provided VENDOR LIFT TOOL:

- Operation of LIFT TOOL by authorized personnel only.
- LIFT TOOL intended for use to assist, lift, install, remove units (load) up into rack elevations. It is not to be used loaded transporting over major ramps nor as a replacement for such designated tools like pallet jacks, walkies, fork trucks and such related relocation practices. When this is not practicable, specially trained persons or services must be used (for instance, riggers or movers).
- Read and completely understand the contents of LIFT TOOL operator's manual before using. Failure to read, understand, obey safety rules, and follow instructions may result in property damage and/or personal injury. If there are questions, contact the vendor's service and support. Local paper manual must remain with machine in provided storage sleeve area. Latest revision manual available on vendor's web site.
- Test verify stabilizer brake function before each use. Do not over-force moving or rolling the LIFT TOOL with stabilizer brake engaged.
- Do not raise, lower or slide platform load shelf unless stabilizer (brake pedal jack) is fully engaged. Keep stabilizer brake engaged when not in use or motion.
- Do not move LIFT TOOL while platform is raised, except for minor positioning.
- Do not exceed rated load capacity. See LOAD CAPACITY CHART regarding maximum loads at center versus edge of extended platform.
- Only raise load if properly centered on platform. Do not place more than 200 lb (91 kg) on edge of sliding platform shelf also considering the load's center of mass/gravity (CoG).
- Do not corner load the platforms, tilt riser, angled unit install wedge or other such accessory options. Secure such platforms -- riser tilt, wedge, etc options to main lift shelf or forks in all four

(4x or all other provisioned mounting) locations with provided hardware only, prior to use. Load objects are designed to slide on/off smooth platforms without appreciable force, so take care not to push or lean. Keep riser tilt [adjustable angling platform] option flat at all times except for final minor angle adjustment when needed.

- Do not stand under overhanging load.
- Do not use on uneven surface, incline or decline (major ramps).
- Do not stack loads.
- Do not operate while under the influence of drugs or alcohol.
- Do not support ladder against LIFT TOOL (unless the specific allowance is provided for one following qualified procedures for working at elevations with this TOOL).
- Tipping hazard. Do not push or lean against load with raised platform.
- Do not use as a personnel lifting platform or step. No riders.
- Do not stand on any part of lift. Not a step.
- Do not climb on mast.
- Do not operate a damaged or malfunctioning LIFT TOOL machine.
- Crush and pinch point hazard below platform. Only lower load in areas clear of personnel and obstructions. Keep hands and feet clear during operation.
- No Forks. Never lift or move bare LIFT TOOL MACHINE with pallet truck, jack or fork lift.
- Mast extends higher than platform. Be aware of ceiling height, cable trays, sprinklers, lights, and other overhead objects.
- Do not leave LIFT TOOL machine unattended with an elevated load.
- Watch and keep hands, fingers, and clothing clear when equipment is in motion.
- Turn Winch with hand power only. If winch handle cannot be cranked easily with one hand, it is probably over-loaded. Do not continue to turn winch past top or bottom of platform travel. Excessive unwinding will detach handle and damage cable. Always hold handle when lowering, unwinding. Always assure self that winch is holding load before releasing winch handle.
- A winch accident could cause serious injury. Not for moving humans. Make certain clicking sound is heard as the equipment is being raised. Be sure winch is locked in position before releasing handle. Read instruction page before operating this winch. Never allow winch to unwind freely. Freewheeling will cause uneven cable wrapping around winch drum, damage cable, and may cause serious injury.
- This TOOL must be maintained correctly for IBM Service personnel to use it. IBM shall inspect condition and verify maintenance history before operation. Personnel reserve the right not to use TOOL if inadequate. (C048)

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

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

The equipment is suitable for installation in the following:

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

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

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

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

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

The dc-powered system is intended to be installed in a common bonding network (CBN) as described in GR-1089-CORE.

Removing and replacing parts in the 8335-GTG or 8335-GTH system

Use these procedures to remove and replace failing parts.

Note: See the International Information Bulletin for Customers - Installation of IBM Machines (http://www.ibm.com/e-business/linkweb/publications/servlet/pbi.wss). This bulletin (Publication number SC27-6601-00) provides a list of the key IBM system installation activities and those activities that might be billable.

Before you begin a replacement, complete these tasks:

1. If you are completing a replacement procedure that might put your data at risk, ensure, if possible, that you have a current backup of your system or logical partition (including operating systems, licensed programs, and data).
2. Review the installation or replacement procedure for the feature or part.
3. Note the significance of color on your system. The color **blue** on the part indicates a touch point.
4. Ensure that you have access to a medium, flat-blade screwdriver, and a Phillips screwdriver.
5. If parts are incorrect, missing, or visibly damaged, contact the provider of the part or your next level of support.

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

Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard: If IBM supplied the power cord(s), connect power to this unit only with the IBM provided power cord. Do not use the IBM provided power cord for any other product. Do not open or service any power supply assembly. Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.

- The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords. For AC power, disconnect all power cords from their AC power source. For racks with a DC power distribution panel (PDP), disconnect the customer's DC power source to the PDP.
- When connecting power to the product ensure all power cables are properly connected. For racks with AC power, connect all power cords to a properly wired and grounded electrical outlet. Ensure that the outlet supplies proper voltage and phase rotation according to the system rating plate. For racks with a DC power distribution panel (PDP), connect the customer's DC power source to the PDP. Ensure that the proper polarity is used when attaching the DC power and DC power return wiring.
- Connect any equipment that will be attached to this product to properly wired outlets.
- When possible, use one hand only to connect or disconnect signal cables.
- Never turn on any equipment when there is evidence of fire, water, or structural damage.
- Do not attempt to switch on power to the machine until all possible unsafe conditions are corrected.
- When performing a machine inspection: Assume that an electrical safety hazard is present. Perform all continuity, grounding, and power checks specified during the subsystem installation procedures to ensure that the machine meets safety requirements. Do not attempt to switch power to the machine until all possible unsafe conditions are corrected. Before you open the device covers, unless instructed otherwise in the installation and configuration procedures: Disconnect the attached AC power cords, turn off the applicable circuit breakers located in the rack power distribution panel (PDP), and disconnect any telecommunications systems, networks, and modems.
- Connect and disconnect cables as described in the following procedures when installing, moving, or opening covers on this product or attached devices.

To Disconnect: 1) Turn off everything (unless instructed otherwise). 2) For AC power, remove the power cords from the outlets. 3) For racks with a DC power distribution panel (PDP), turn off the circuit breakers located in the PDP and remove the power from the Customer's DC power source. 4) Remove the signal cables from the connectors. 5) Remove all cables from the devices.

To Connect: 1) Turn off everything (unless instructed otherwise). 2) Attach all cables to the devices. 3) Attach the signal cables to the connectors. 4) For AC power, attach the power cords to the outlets. 5) For racks with a DC power distribution panel (PDP), restore the power from the Customer's DC power source and turn on the circuit breakers located in the PDP. 6) Turn on the devices.

- Sharp edges, corners and joints may be present in and around the system. Use care when handling equipment to avoid cuts, scrapes and pinching. (D005)

 Attention:

Failure to follow the step-by-step sequence for FRU removal or installation might result in FRU or system damage.

For safety, airflow purposes and thermal performance, the service access cover must be installed and fully seated before you power the system on.

For safety and airflow purposes and thermal performance, if you remove parts from the system, you must ensure that PCIe tailstock fillers are present.

Use the following precautions whenever you handle electronic components or cables.

- The electrostatic discharge (ESD) kit and the ESD wrist strap must be used when you handle logic cards, single chip modules (SCM), multichip modules (MCM), electronic boards, and disk drives.

- Keep all electronic components in the shipping container or envelope until you are ready to install them.

- If you remove and then reinstall an electronic component, temporarily place the component on an ESD pad or blanket.

Removing and replacing the BMC card in the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX

Learn how to remove and replace the baseboard management card (BMC) in the IBM Power® System AC922 (8335-GTC, 8335-GTG, and 8335-GTH) or IBM Power System AC922 (8335-GTW and 8335-GTX) system.

Removing the BMC card from the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system

To remove a the baseboard management card (BMC), complete the steps in this procedure.

Before you begin

Record the network settings. For instructions, see Network settings (www.ibm.com/support/knowledgecenter/POWER9/p9eih/p9eih_openbmc_networksetting.htm).

Power off the system and place it in the service position. For instructions, see "Preparing the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system to remove and replace internal parts" on page 138.

Procedure

1. Attach the electrostatic discharge (ESD) wrist strap.

The ESD wrist strap must be connected to an unpainted metal surface until the service procedure is completed, and if applicable, until the service access cover is replaced.

⚠️ **Attention:**

- Attach an electrostatic discharge (ESD) wrist strap to the front ESD jack, to the rear ESD jack, or to an unpainted metal surface of your hardware to prevent the electrostatic discharge from damaging your hardware.

- When you use an ESD wrist strap, follow all electrical safety procedures. An ESD wrist strap is used for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

- If you do not have an ESD wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds. If at any point in this service process you move away from the system, it is important to again discharge yourself by touching an unpainted metal surface for at least 5 seconds before you continue with the service process.

2. If needed, label and remove the cables from the BMC card.

3. To remove the BMC card, follow these steps as shown in Figure 1 on page 4.

   a) Remove the four screws that secure the rear of the card to the chassis at **(A)**.

   b) Slide the release latch at **(B)** away from the BMC card, then rotate the latch towards the front of the system to release and lift the BMC card from the system backplane.

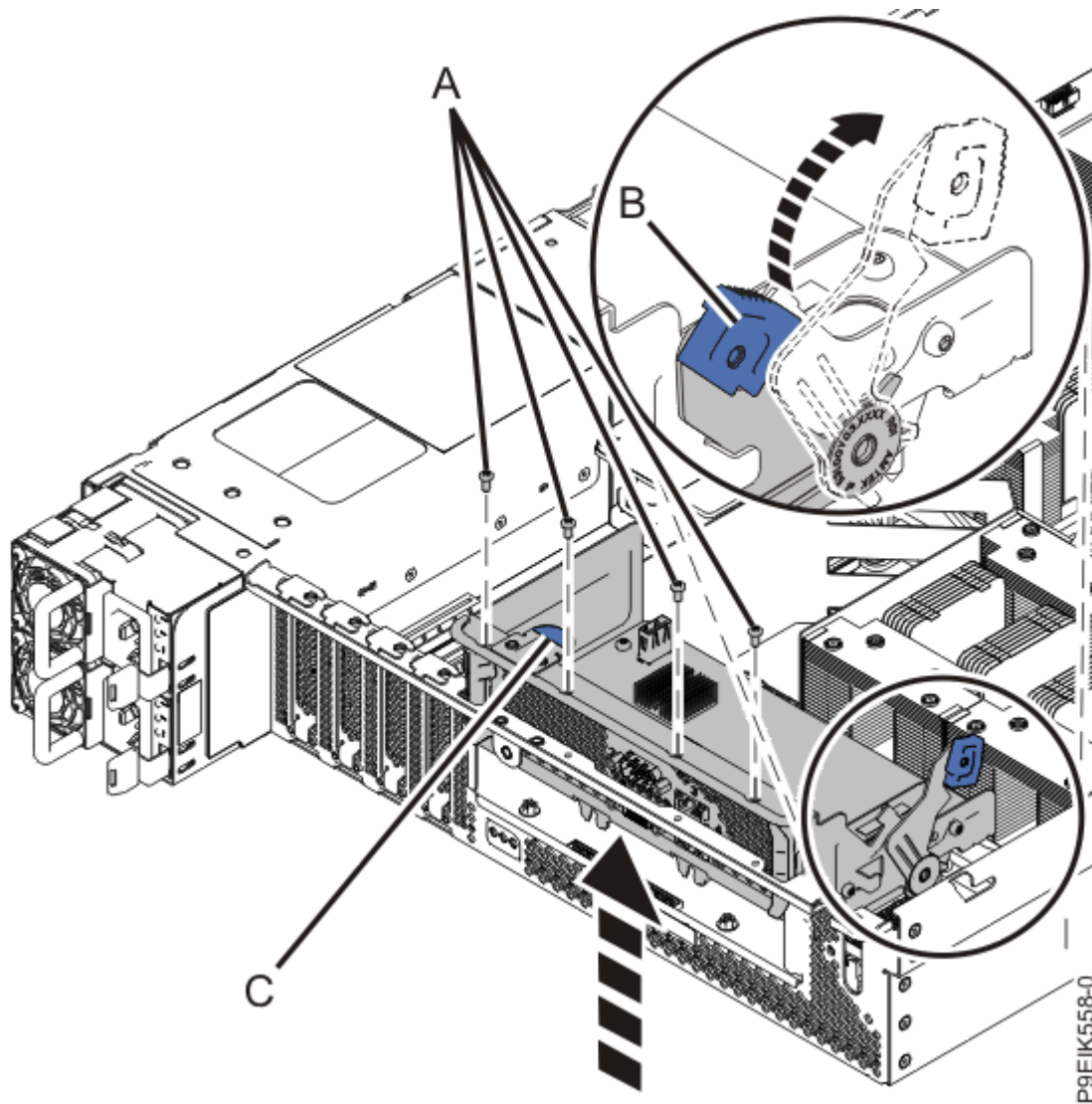   c) Using the blue tab at **(C)** and the handle **(B)**, lift the BMC card out of the chassis.

Figure 1. Removing the BMC card

4. Place the BMC card on an ESD mat.

Replacing the BMC card in the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system

To replace a the baseboard management card (BMC), complete the steps in this procedure.

Procedure

1. Ensure that you have the electrostatic discharge (ESD) wrist strap on and that the ESD clip is plugged into a ground jack or connected to an unpainted metal surface. If not, do so now.
2. Ensure that the release latch of the BMC card is opened to about a 60-degree angle .
3. Align the BMC card with the rear of the system.

   Use the plastic guides at **(A)** and the alignment pin **(B)** shown in Figure 2 on page 5 to help align the card to the chassis.
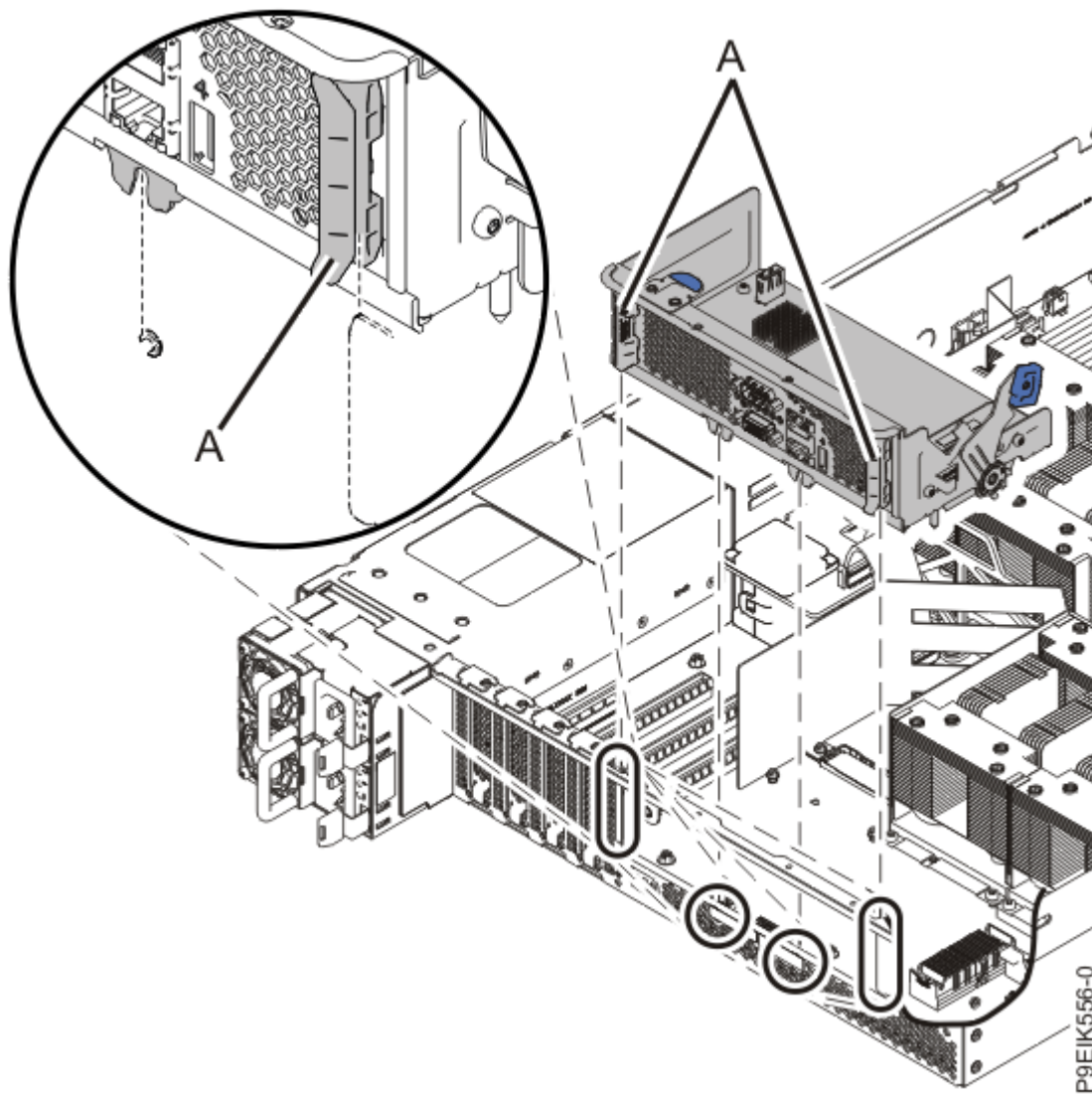
Figure 2. Aligning the BMC card in the chassis

4. Using the blue tab at **(A)** and the handle **(B)** as shown in Figure 3 on page 6, press the BMC card into the connector on the system backplane.
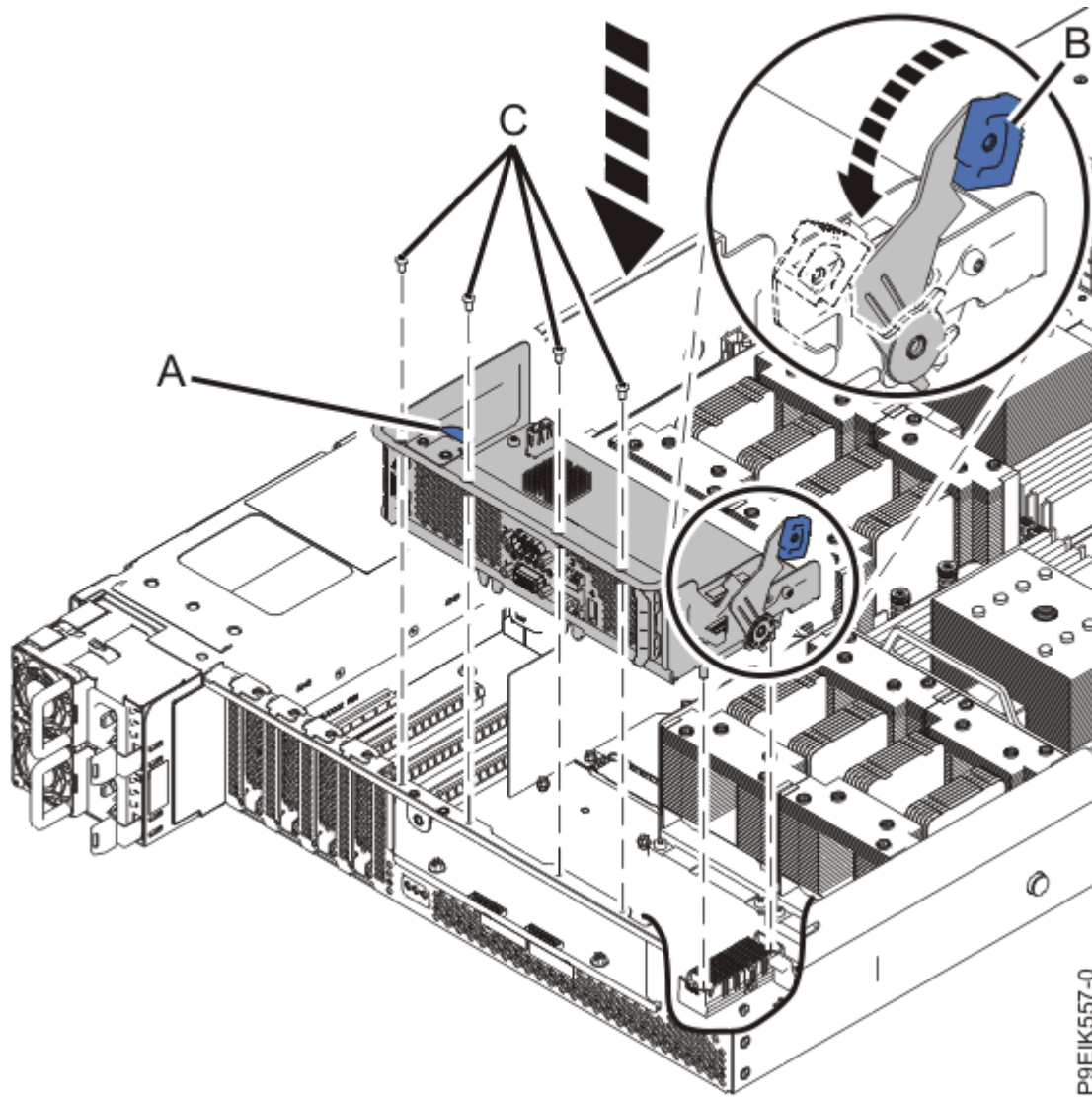
Figure 3. Replacing the BMC card

5. Rotate the release latch **(B)** towards the rear of the system and snap the latch into the closed position to fully seat the card.

6. Replace the four screws **(C)** to secure the BMC card to the rear of the chassis.

7. If needed, use your labels to replace the cables in the BMC card.

8. Apply the new MAC address label over the previous label, on the power supply housing of the chassis, as shown in .
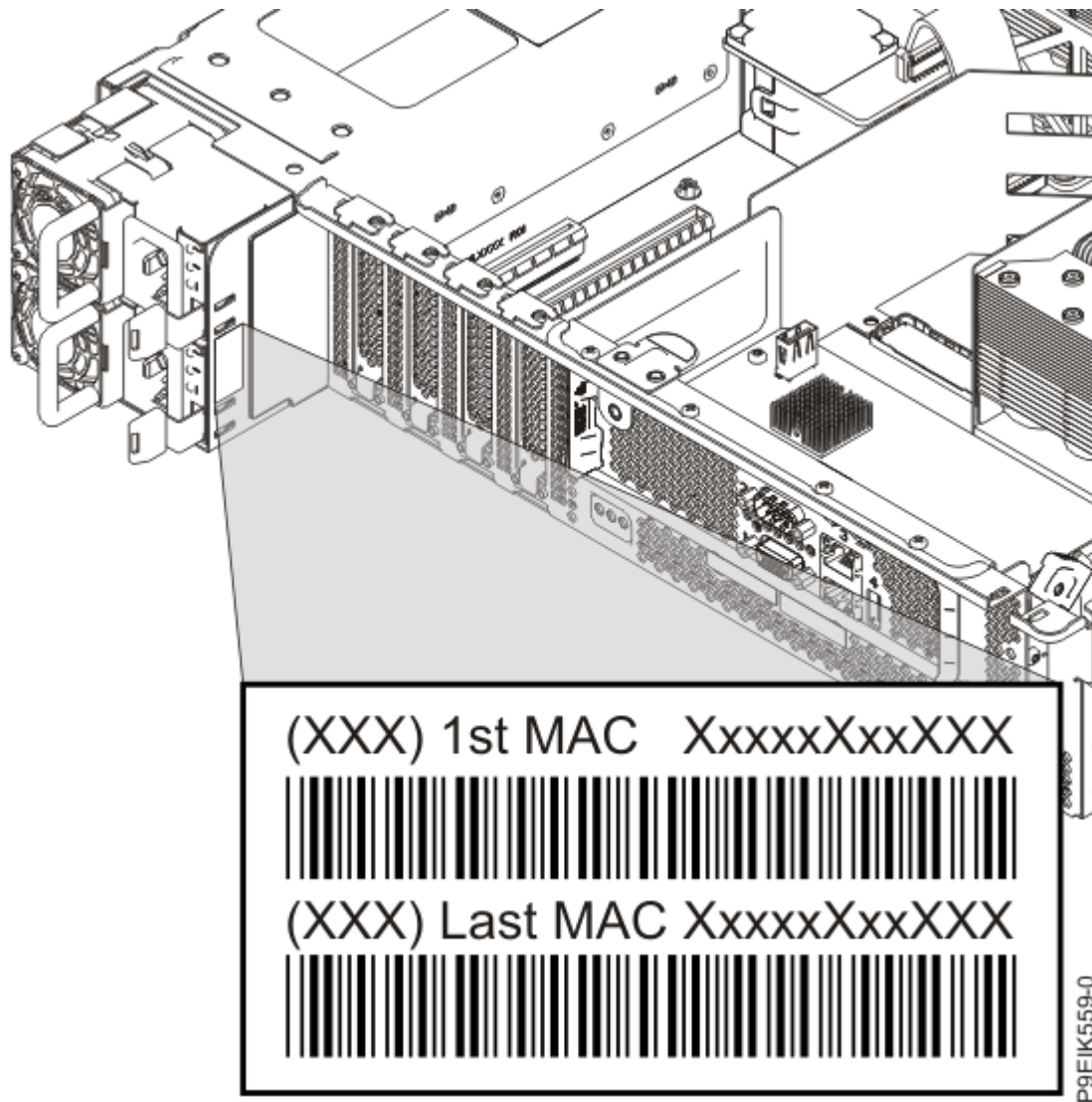
Figure 4. Applying the new MAC address label

9. If the system is an 8335-GTH or 8335-GTX and the system firmware level is OP940.20, or later, go to "Updating the system firmware level of a BMC card to OP940.20, or later, in an 8335-GTH or 8335-GTX system" on page 159.

What to do next

Prepare the system for operation. For instructions, see "Preparing the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system for operation after you remove and replace internal parts" on page 142.

Removing and replacing a disk drive in the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system

Learn how to remove and replace a disk drive in the IBM Power System AC922 (8335-GTC, 8335-GTG, and 8335-GTH) or IBM Power System AC922 (8335-GTW and 8335-GTX) system.

About this task

The drive might be a hard disk drive (HDD) or a solid-state drive (SSD).

Removing a disk drive from the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system

To remove a disk drive, complete the steps in this procedure.

Procedure

1. Remove the front cover. For instructions, see "Removing the front cover from an 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system" on page 148.
2. Attach the electrostatic discharge (ESD) wrist strap.

   The ESD wrist strap must be connected to an unpainted metal surface until the service procedure is completed, and if applicable, until the service access cover is replaced.

   ⚠️ **Attention:**

   - Attach an electrostatic discharge (ESD) wrist strap to the front ESD jack, to the rear ESD jack, or to an unpainted metal surface of your hardware to prevent the electrostatic discharge from damaging your hardware.
   - When you use an ESD wrist strap, follow all electrical safety procedures. An ESD wrist strap is used for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
   - If you do not have an ESD wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds. If at any point in this service process you move away from the system, it is important to again discharge yourself by touching an unpainted metal surface for at least 5 seconds before you continue with the service process.

3. Locate the faulty drive. The amber drive LED is turned on when a drive has an issue.

   If a drive's amber LED is lit, go to step "4" on page 9.

   If a drive has an issue and if the amber LED is not lit, use the following procedure to locate the drive. Run the following commands from an operating system command window.

   a) Determine the drive that must be replaced as indicated by the operating system.

      For example, the drive might be referenced as `sda` or `sdb`.

      ⚠️ **Attention:** The operating system is typically on `sda`. Do not remove this drive when the system powered on unless the `sda` drive is part of a RAID configuration. If the drive that contains the operating system needs to be removed, and that drive is not part of a RAID array, you must first power off the system before removing that drive.

   b) Gather the physical serial number of the identified drive by running the following `hdparm` command, where `sdX` is the drive to replace:

      ```
      hdparm —i /dev/sdX | grep —i serial
      ```

      The `hdparm` command is in the `hdparm` package; install the package if you have not installed it already.

      ```
      apt-get install hdparm
      ```

      Or:

      ```
      yum install hdparm
      ```

   c) Run the following command to identify the physical drive, where `sdX` is the drive to replace:

      The command causes the green LED on the drive to flash.

      ```
      dd if=/dev/sdX of =/dev/null
      ```

You can also use the optional `usysident` package to turn on or turn off the amber LED. Run the following command to turn on the amber LED:

```
usysident -d sdX -s identify
```

Run the following command to turn off the amber LED:

```
usysident -d sdX -s normal
```

d) To prepare the drive for removal, disable it by running the following command, where sdX is the drive to replace.

```
echo 0 >/sys/block/sdX/device/delete
```

e) Verify that you disabled the write operation on the drive by using the `lsscsi` command. When the drive is disabled, the drive no longer appears in the output.

```
lsscsi
```

4. Unlock the drive bay handle **(B)** by pushing the handle release **(A)** up. The handle **(B)** snaps out towards you. If the handle does not snap out all the way, the drive does not slide out of the system.

See .
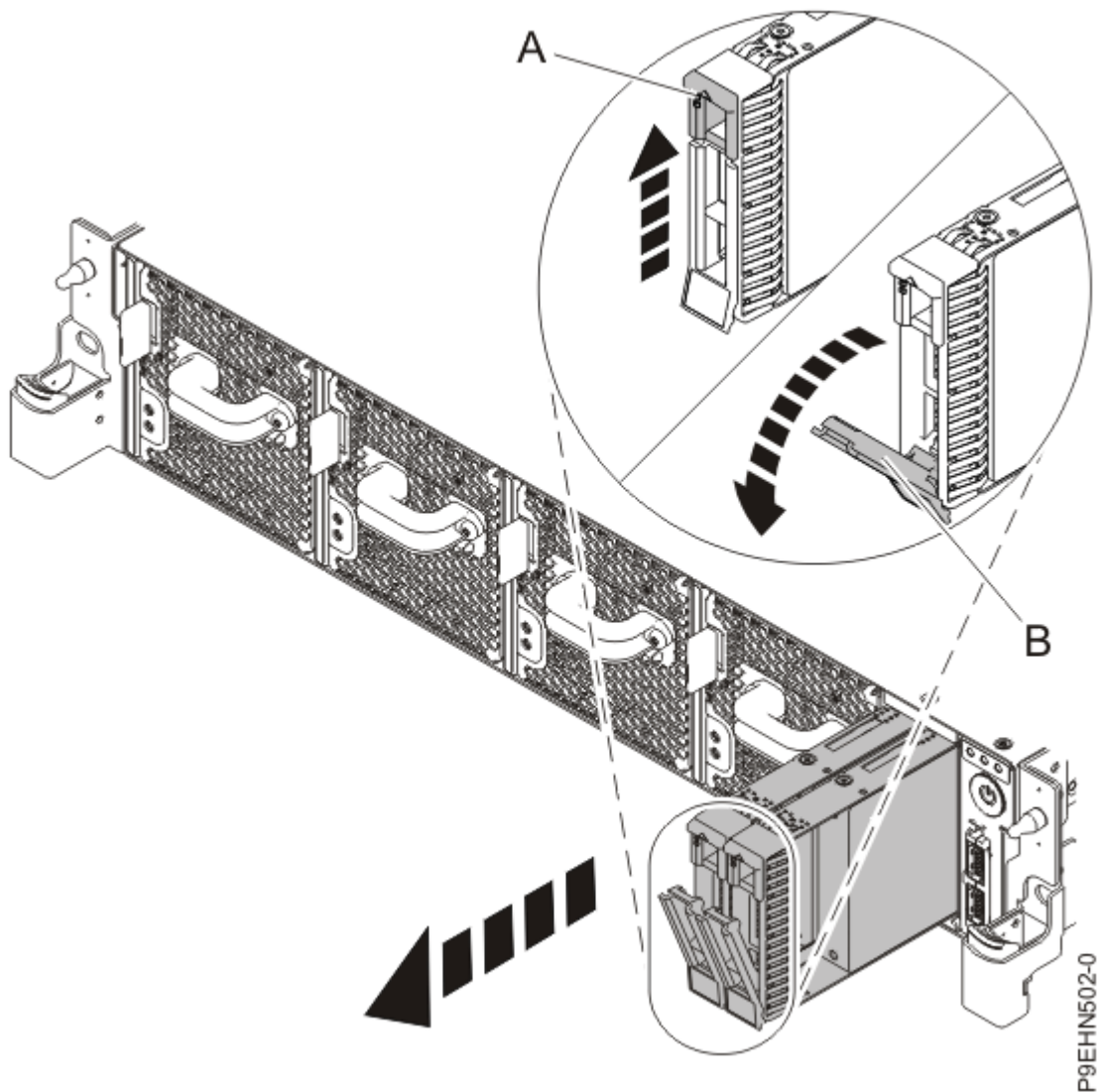
Figure 5. Disk drive lock detail

5. Support the bottom of the disk drive as you slide it out of the system. Do not hold the disk drive by the handle.
6. If you are removing more than one drive, repeat the steps in this procedure until all drives are removed.

Replacing a disk drive in the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system

To replace a disk drive, complete the steps in this procedure.

Procedure

1. Ensure that you have the electrostatic discharge (ESD) wrist strap on and that the ESD clip is plugged into a ground jack or connected to an unpainted metal surface. If not, do so now.
2. Hold the disk drive by the top and bottom edges as you position the disk drive, and insert it into the disk drive slot.

   Important: Ensure that the disk drive is fully seated and is all the way into the system.
3. Lock the disk drive bay handle **(A)** by pushing in the handle release.

   See .
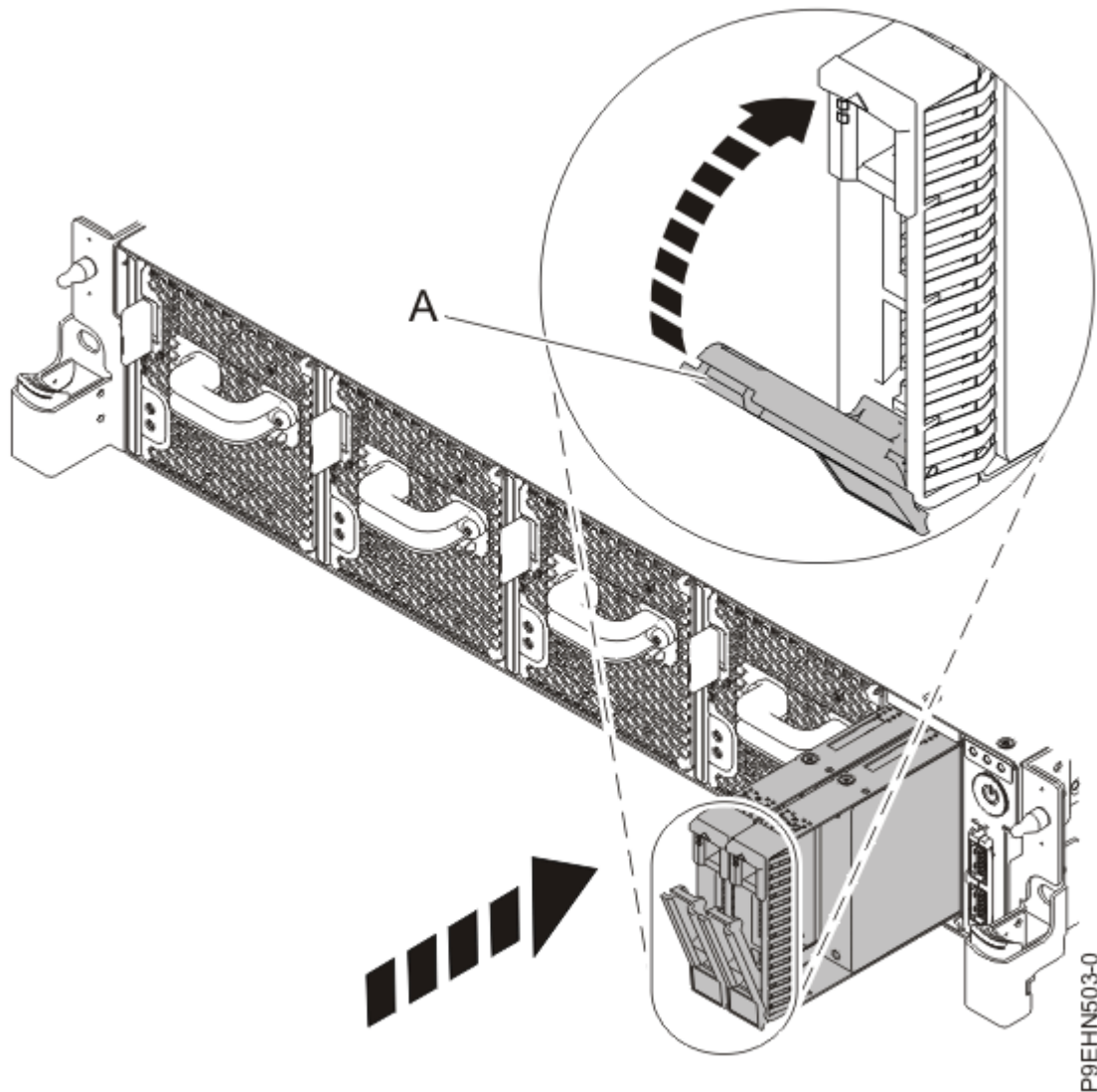
Figure 6. Disk drive lock detail

4. Configure the installed disk drive for your environment.

After you insert the new disk drive, you must scan for the device. Choose one of the following options depending on the operating system that you are using:

- **Ubuntu Linux operating system**:

  Ubuntu can automatically detect storage devices. You may not need to rescan the disk drives; proceed to verifying that the new disk drive is active.

  To run the `rescan-scsi-bus` command in the Ubuntu Linux operating system, log in to the system as the root user, and run the following command:

  ```
  rescan-scsi-bus
  ```

  The `rescan-scsi-bus` tool is available in the *scsitools* package; install the package by using the following command:

  ```
  sudo apt-get install scsitools
  ```

- **Red Hat Enterprise Linux (RHEL)**: To run the rescan command in the RHEL operating system, log in to the system as the root user, and run the command:

  ```
  rescan-scsi-bus.sh -a
  ```

  The `rescan-scsi-bus` tool is available in the *sg3_utils* package; install the package by using the following command:

  ```
  yum install sg3_utils
  ```

  You may also want to refer to: Adding a Storage Device or Path (https://access.redhat.com/documentation/en-US/Red_Hat_Enterprise_Linux/7/html/Storage_Administration_Guide/adding_storage-device-or-path.html)

  Verify that the new drive is active by running the following command:

  ```
  lsscsi
  ```

5. Load or restore data from your backup media.

Removing and replacing the disk drive and fan card in the 8335-GTG or 8335-GTH system

Learn how to remove and replace the disk drive and fan card in the IBM Power System AC922 (8335-GTG or 8335-GTH) system.

Removing the disk drive and fan card from the 8335-GTG or 8335-GTH system

To remove a disk drive and fan card, complete the steps in this procedure.

Before you begin

Power off the system and place it in the service position. For instructions, see "Preparing the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system to remove and replace internal parts" on page 138.

Procedure

1. Attach the electrostatic discharge (ESD) wrist strap.

   The ESD wrist strap must be connected to an unpainted metal surface until the service procedure is completed, and if applicable, until the service access cover is replaced.

⚠️ **Attention:**

- Attach an electrostatic discharge (ESD) wrist strap to the front ESD jack, to the rear ESD jack, or to an unpainted metal surface of your hardware to prevent the electrostatic discharge from damaging your hardware.

- When you use an ESD wrist strap, follow all electrical safety procedures. An ESD wrist strap is used for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

- If you do not have an ESD wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds. If at any point in this service process you move away from the system, it is important to again discharge yourself by touching an unpainted metal surface for at least 5 seconds before you continue with the service process.

2. Label and remove the fan power cable from the disk drive and fan card.

   For instructions, see "Removing the fan power cable from the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system" on page 29.

3. Label and remove the disk drive fan signal cable from the disk drive and fan card.

   For instructions, see "Removing the disk and fan signal cable from the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system" on page 22.

4. Unplug but do not remove the fans from their slots. Pull the fans out approximately 2.5 cm (1 in) to prevent them from interfering with the removal of the disk drive and fan card.

   For instructions, see "Removing a fan from the 8335-GTC, 8335-GTG, or 8335-GTH system" on page 27.

5. Unplug but do not remove the disk drives from their slots. Pull the drives out approximately 2.5 cm (1 in.) to prevent them from interfering with the removal of the disk drive and fan card.

   For instructions, see "Removing a disk drive from the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system" on page 8.

6. Remove the air baffles (A) and (B) as shown in Figure 7 on page 13.
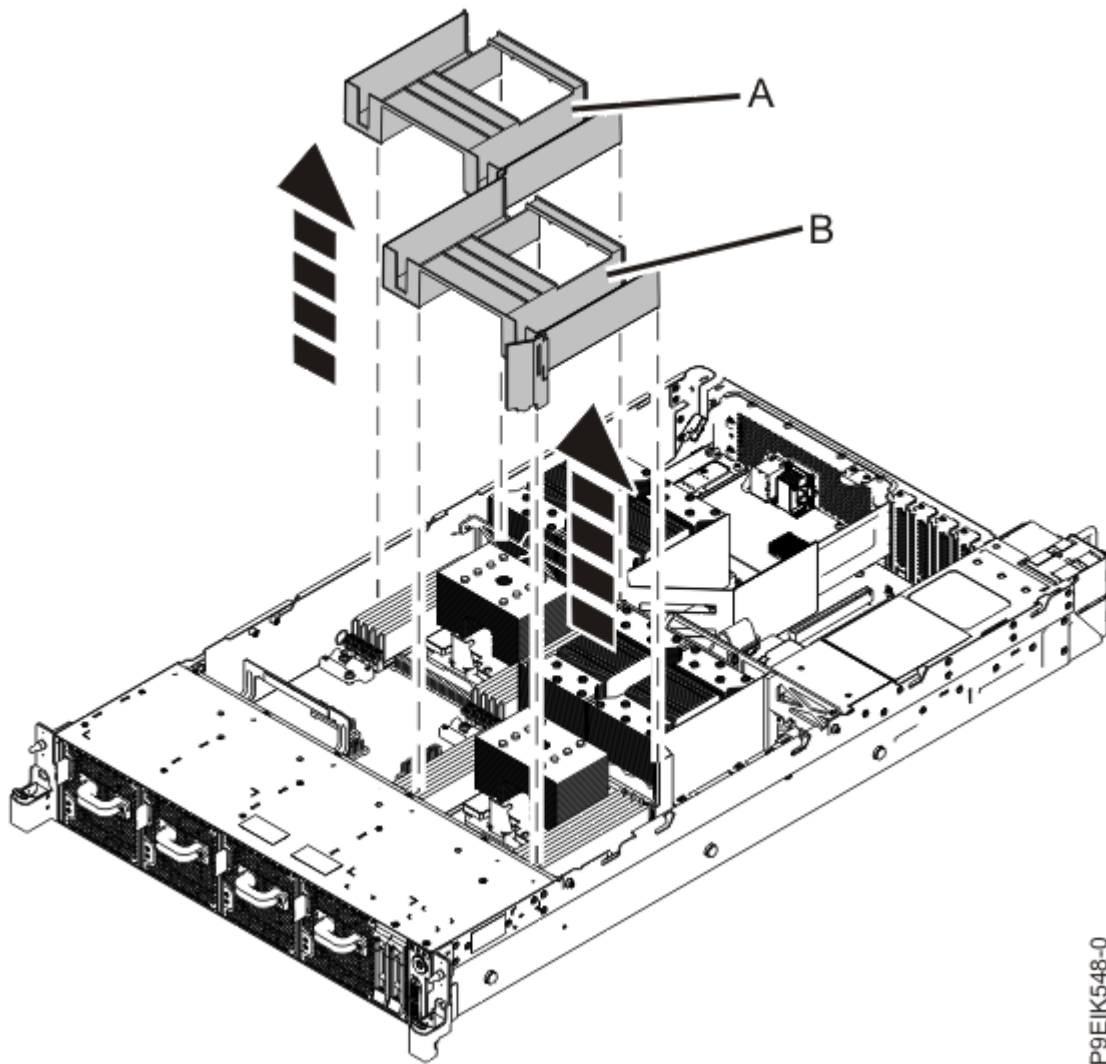
Figure 7. Removing the system processor air baffles

7. Remove the three screws **(A)** that secure the holder **(B)** to the system as shown in Figure 8 on page 14. Then, remove the holder from the system.
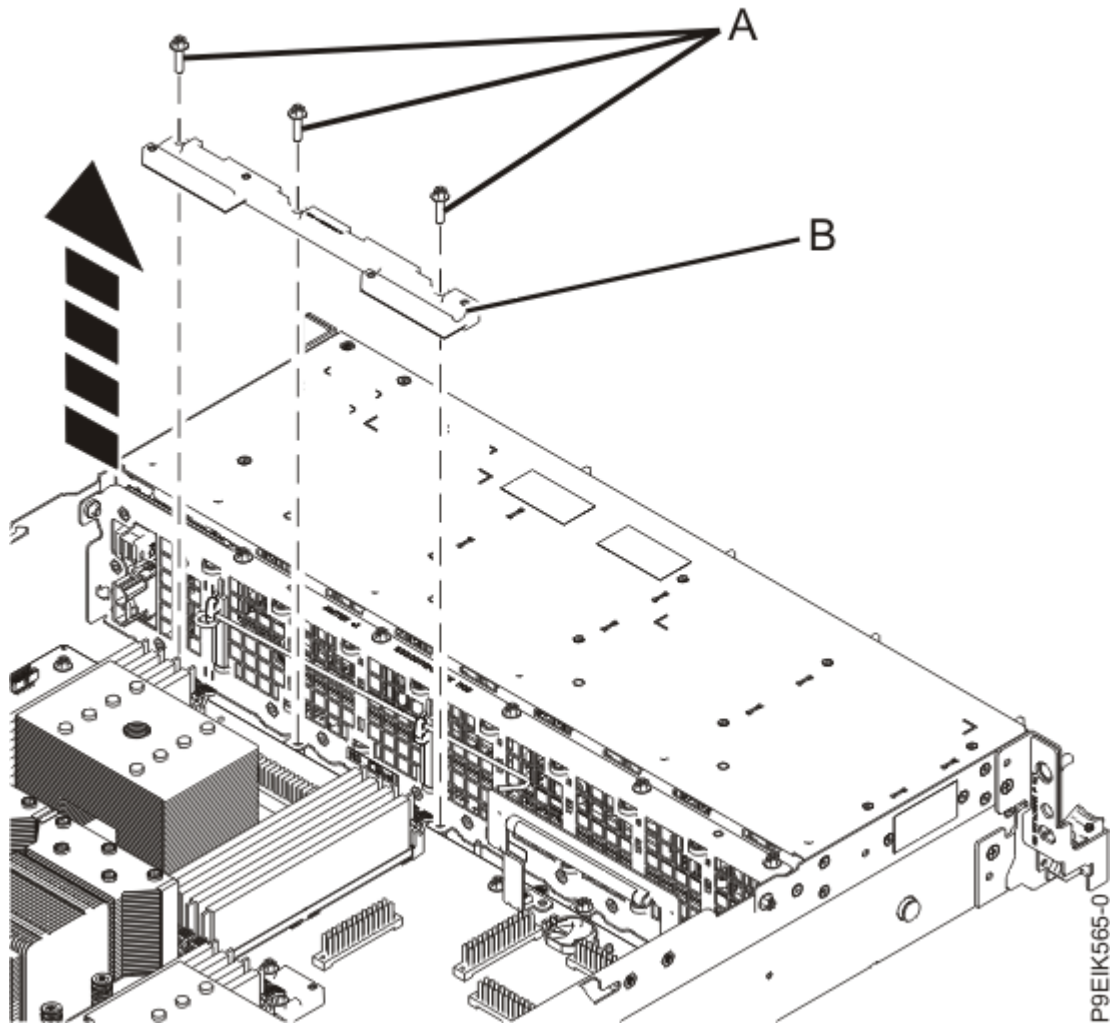
Figure 8. Removing the front holder

8. Remove five screws **(A)** from the top of the disk drive and fan card.
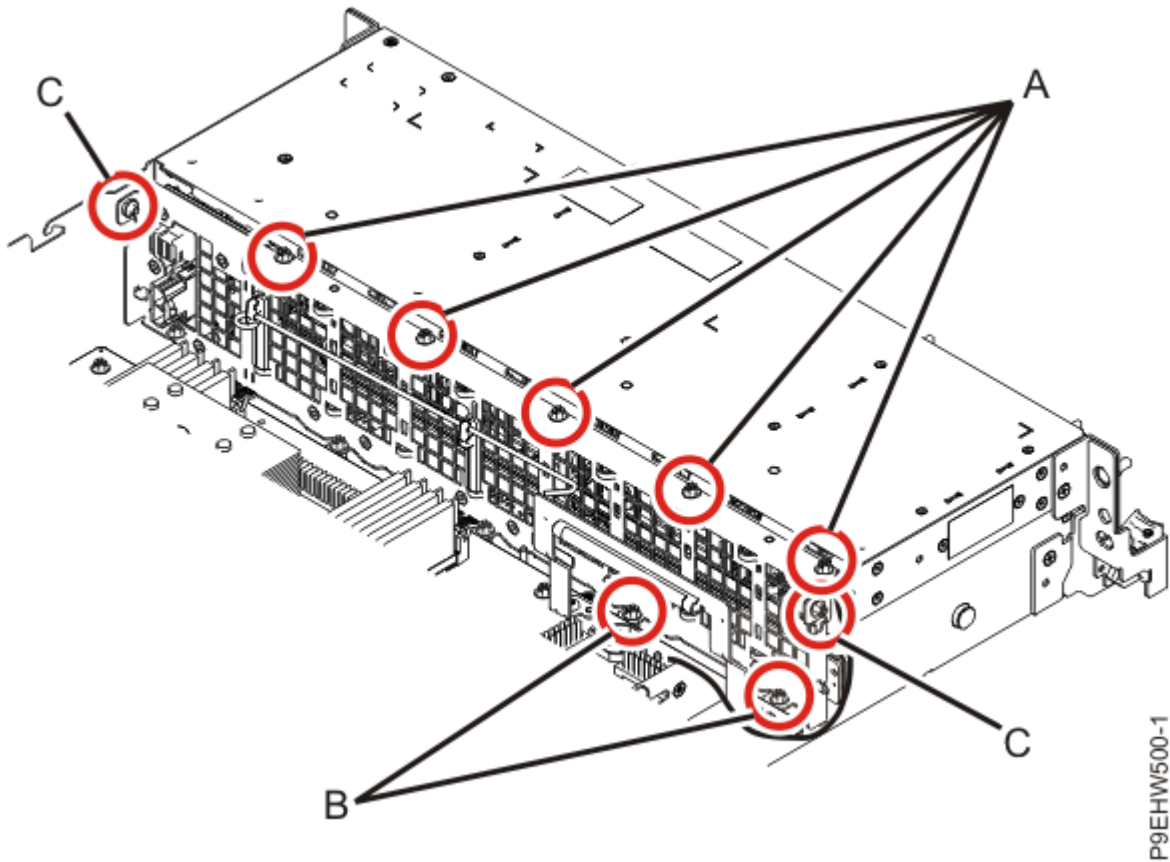
See Figure 9 on page 15 for the screw locations.

Figure 9. Screw locations for the disk drive and fan card

    a) Remove two screws **(B)** from the bottom of the disk drive and fan card.

    b) Remove one screw **(C)** from each side of the disk drive and fan card.

9. The disk drive and fan card **(A)** is aligned in the system by using two pins **(B)**. Pivot the disk drive and fan card away from the fan housing around the pins; then, lift out the card.
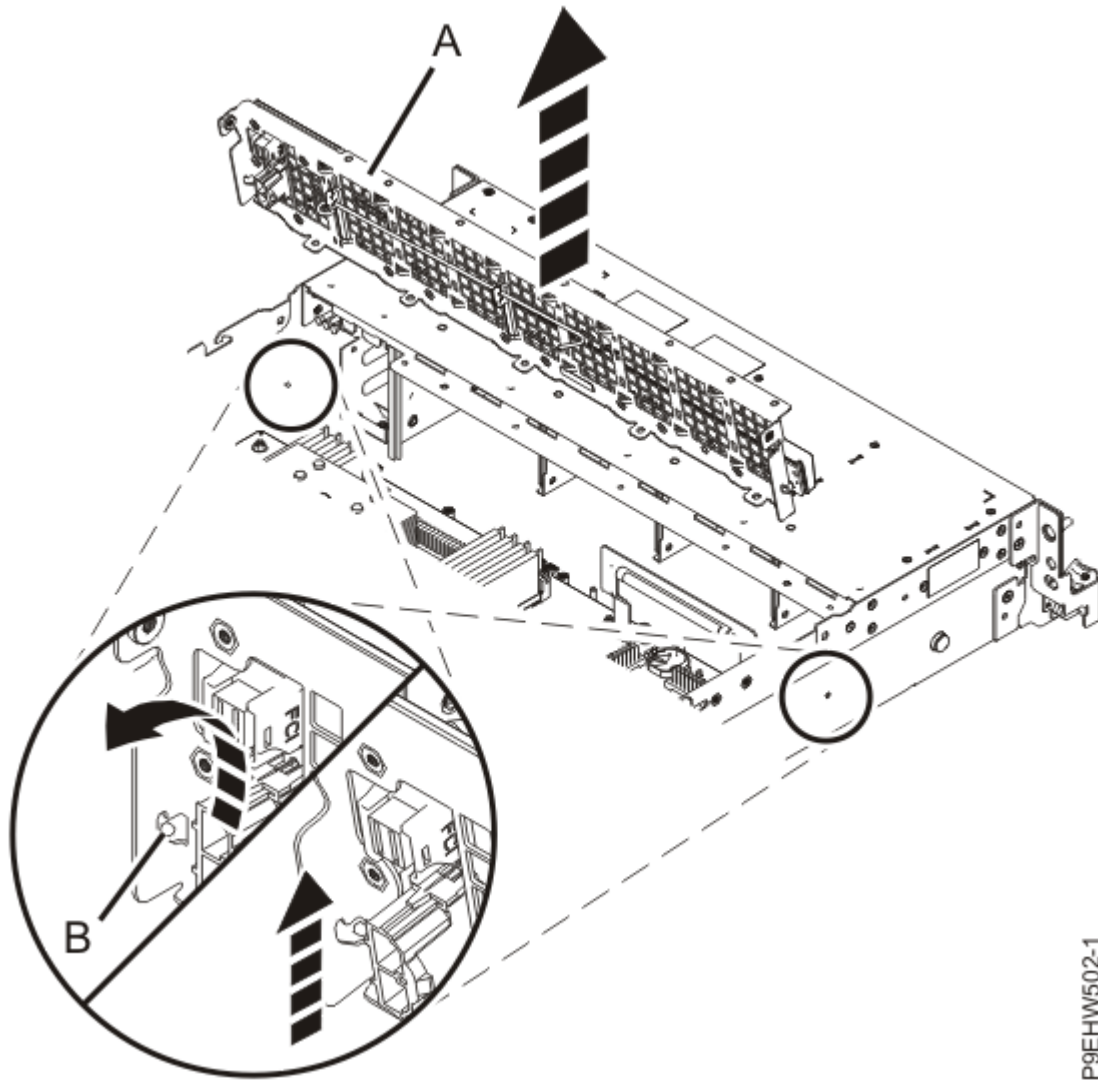
Figure 10. Removing the disk drive and fan card

10. Place the disk drive and fan card on the table.

Replacing the disk drive and fan card in the 8335-GTG or 8335-GTH system

To replace a disk drive and fan card, complete the steps in this procedure.

Procedure

1. Ensure that you have the electrostatic discharge (ESD) wrist strap on and that the ESD clip is plugged into a ground jack or connected to an unpainted metal surface. If not, do so now.
2. Remove the replacement disk drive and fan card from the protective plastic envelope.
3. Using the alignment pins (one on each side) **(A)** for the disk drive and fan card **(B)**, lower and pivot the card into place.

   Note: Both the front USB cable and the power switch cable **(A)** need to be located in the recessed area **(B)** of the disk drive and fan card. If they are not located in that recessed area, they can be pinched and damaged.
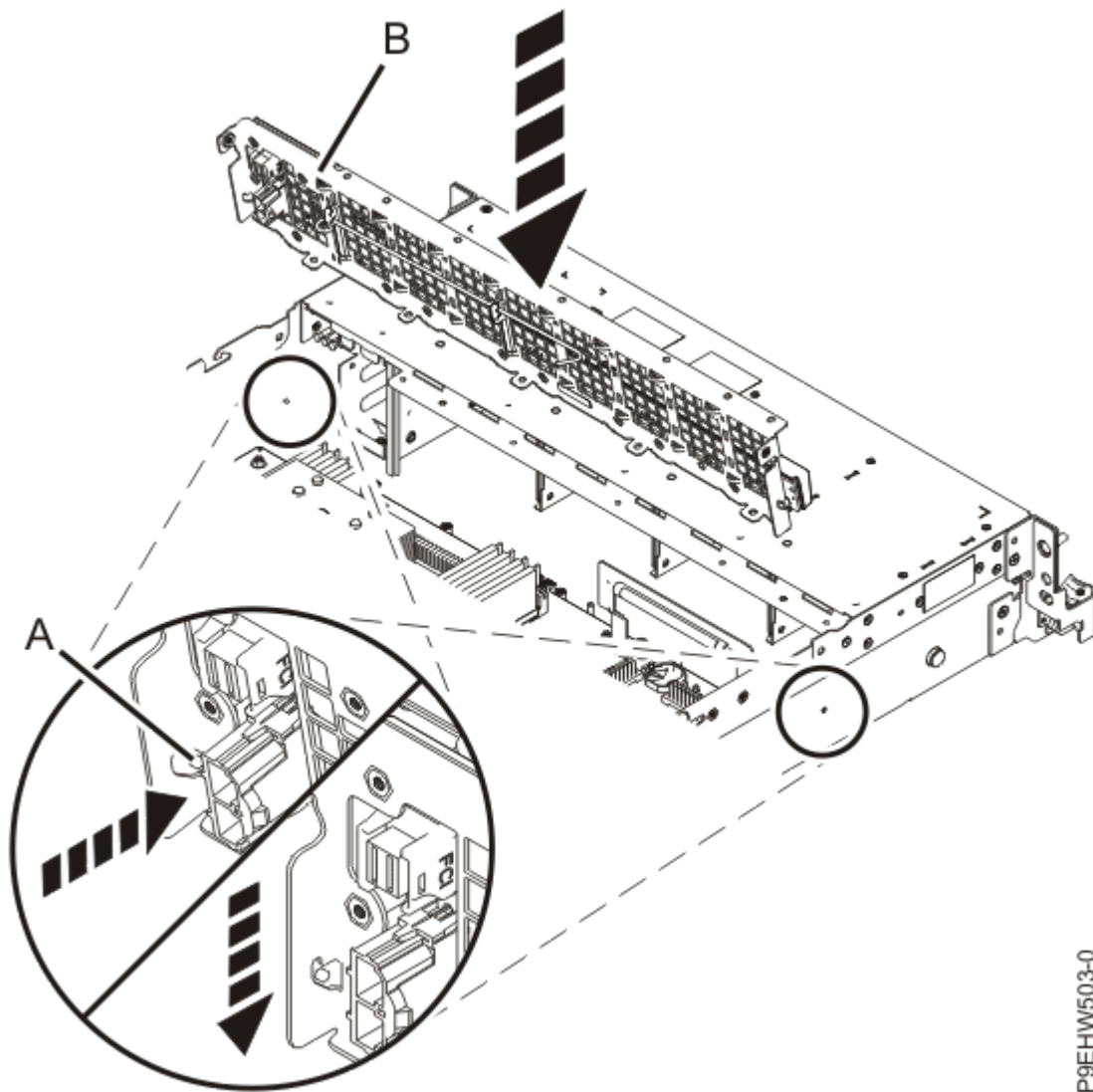
Figure 11. Inserting the disk drive and fan card
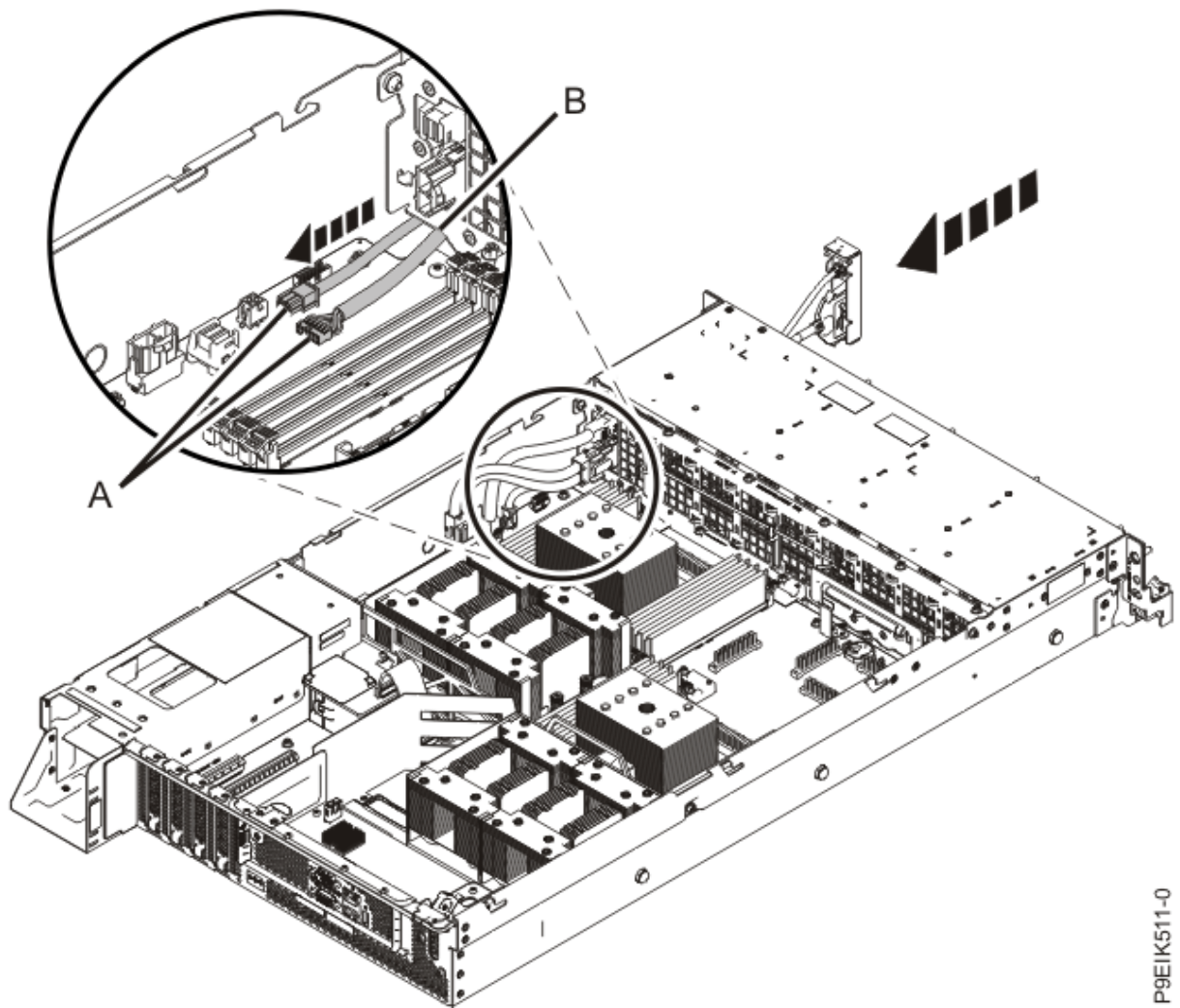
Figure 12. Routing the cables under the disk drive and fan card

4. Replace two screws **(B)** for the bottom of the disk drive and fan card.
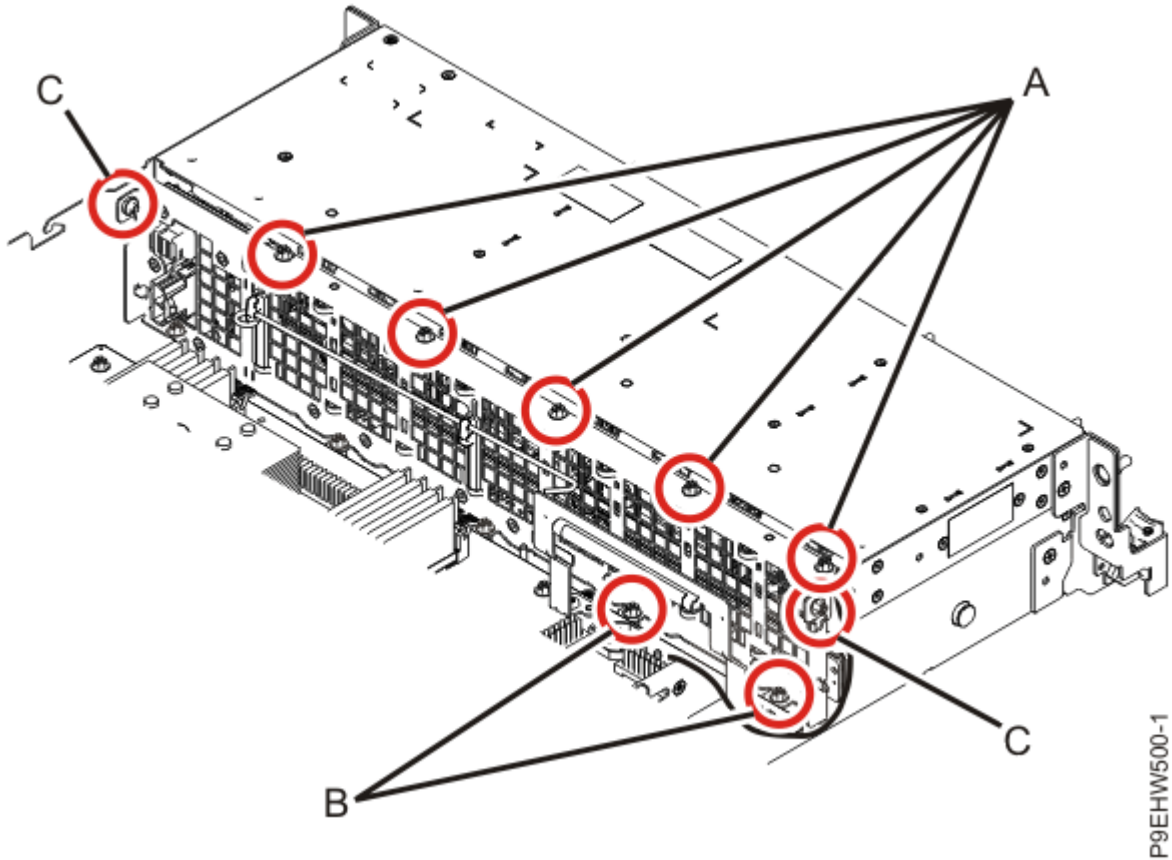
   shows the screw locations.

Figure 13. Screw locations for the disk drive and fan card

   a) Replace five screws **(A)** at the top of the disk drive and fan card.

   b) Replace one screw **(C)** in each side of the disk drive and fan card.

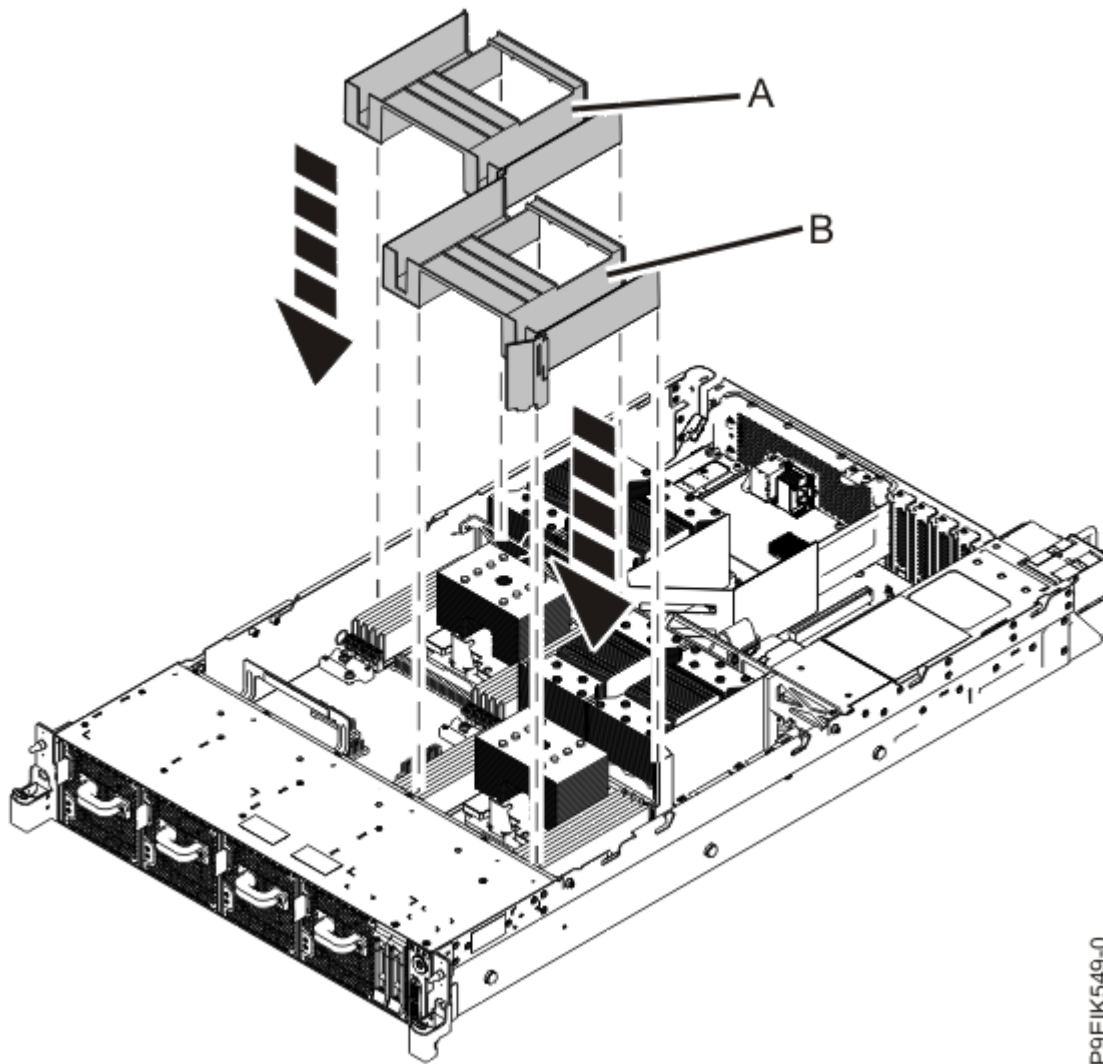5. Replace the holder **(A)** with three screws **(B)** as shown in .
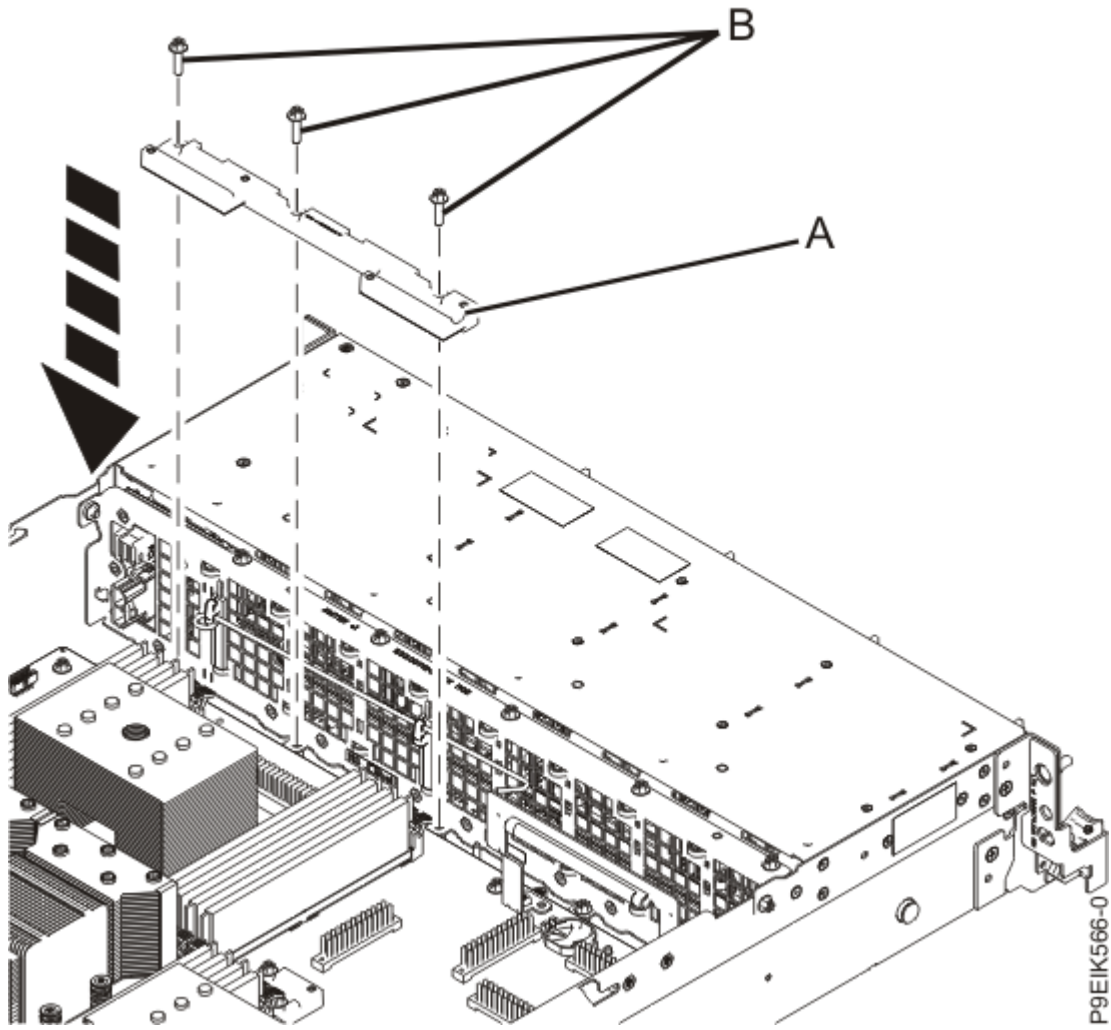
Figure 14. Replacing the front holder

6. Replace the air baffles (A) and (B) as shown in .

Figure 15. Replacing the system processor air baffles

7. Using your labels, replace the disk drives and any fillers.

   For instructions, see "Replacing a disk drive in the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system" on page 10.

8. Replace the fans.

   For instructions, see "Replacing a fan in the 8335-GTC, 8335-GTG, or 8335-GTH system" on page 28.

9. Using your label, plug the disk drive fan signal cable into the disk drive and fan card.

   For instructions, see "Replacing the disk and fan signal cable in the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system" on page 24.

10. Using your label, plug the power cable into the disk drive and fan card.

   For instructions, see "Replacing the fan power cable in the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system" on page 32.

What to do next

Prepare the system for operation. For instructions, see "Preparing the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system for operation after you remove and replace internal parts" on page 142.

Removing and replacing the disk and fan signal cable in the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX

Learn how to remove and replace a disk and fan signal cable in the IBM Power System AC922 (8335-GTC, 8335-GTG, and 8335-GTH) or IBM Power System AC922 (8335-GTW and 8335-GTX) system.

Removing the disk and fan signal cable from the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system

To remove a disk and fan signal cable, complete the steps in this procedure.

Before you begin

Power off the system and place it in the service position. For instructions, see "Preparing the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system to remove and replace internal parts" on page 138.

Procedure

1. Attach the electrostatic discharge (ESD) wrist strap.

   The ESD wrist strap must be connected to an unpainted metal surface until the service procedure is completed, and if applicable, until the service access cover is replaced.

   ⚠️ **Attention:**
   - Attach an electrostatic discharge (ESD) wrist strap to the front ESD jack, to the rear ESD jack, or to an unpainted metal surface of your hardware to prevent the electrostatic discharge from damaging your hardware.
   - When you use an ESD wrist strap, follow all electrical safety procedures. An ESD wrist strap is used for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
   - If you do not have an ESD wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds. If at any point in this service process you move away from the system, it is important to again discharge yourself by touching an unpainted metal surface for at least 5 seconds before you continue with the service process.

2. Locate the disk and fan signal cable **(A)**. It connects from the system backplane to the disk drive and fan card, along the inside of the system.
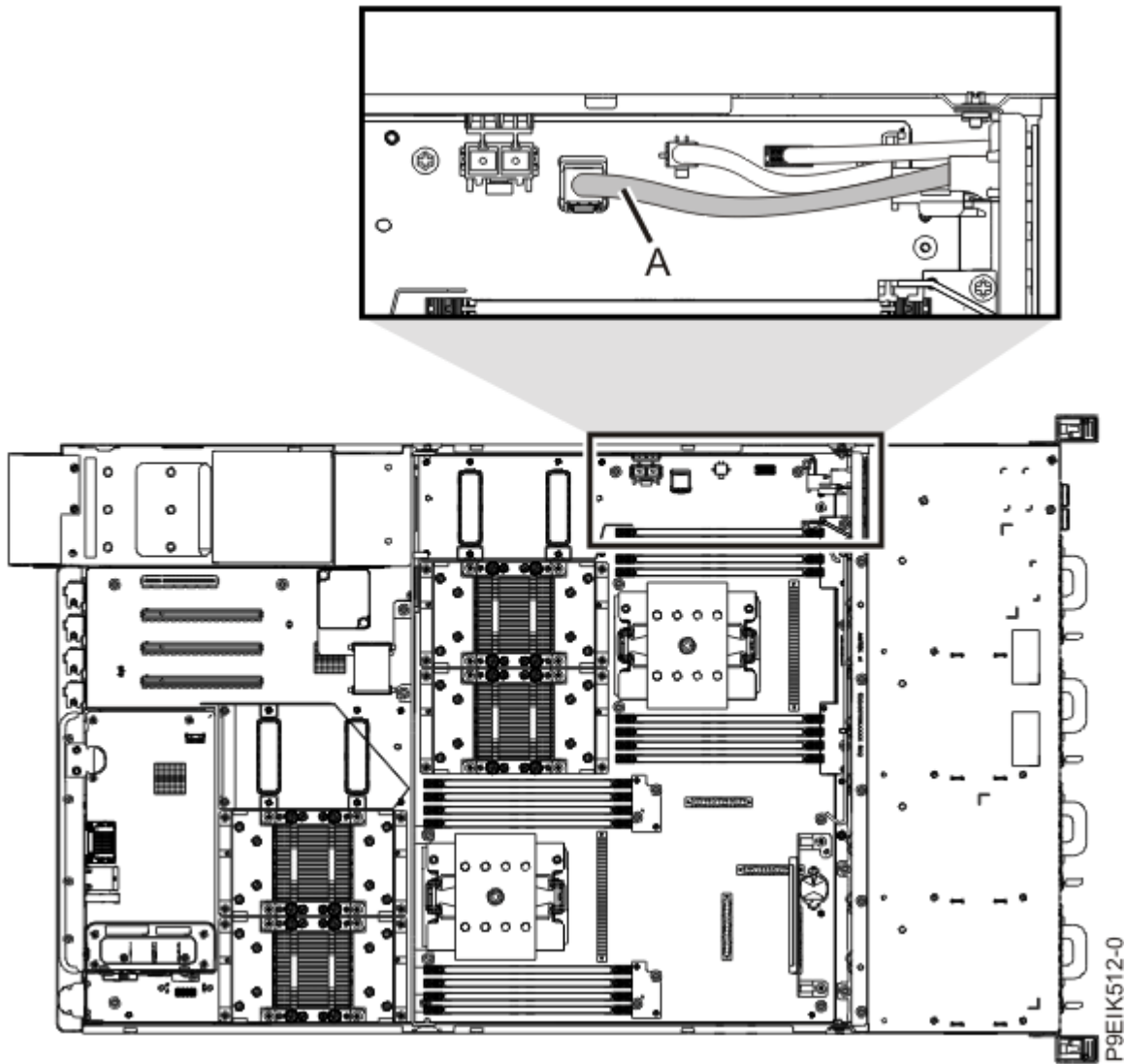
   See Figure 16 on page 23.

Figure 16. Location of the disk and fan signal cable and connectors

3. Release the cable from the retaining clip on the inside wall of the system.

4. Label and disconnect the disk and fan signal cable **(A)** from the disk drive and fan card **(B)** and from the system backplane **(C)**.

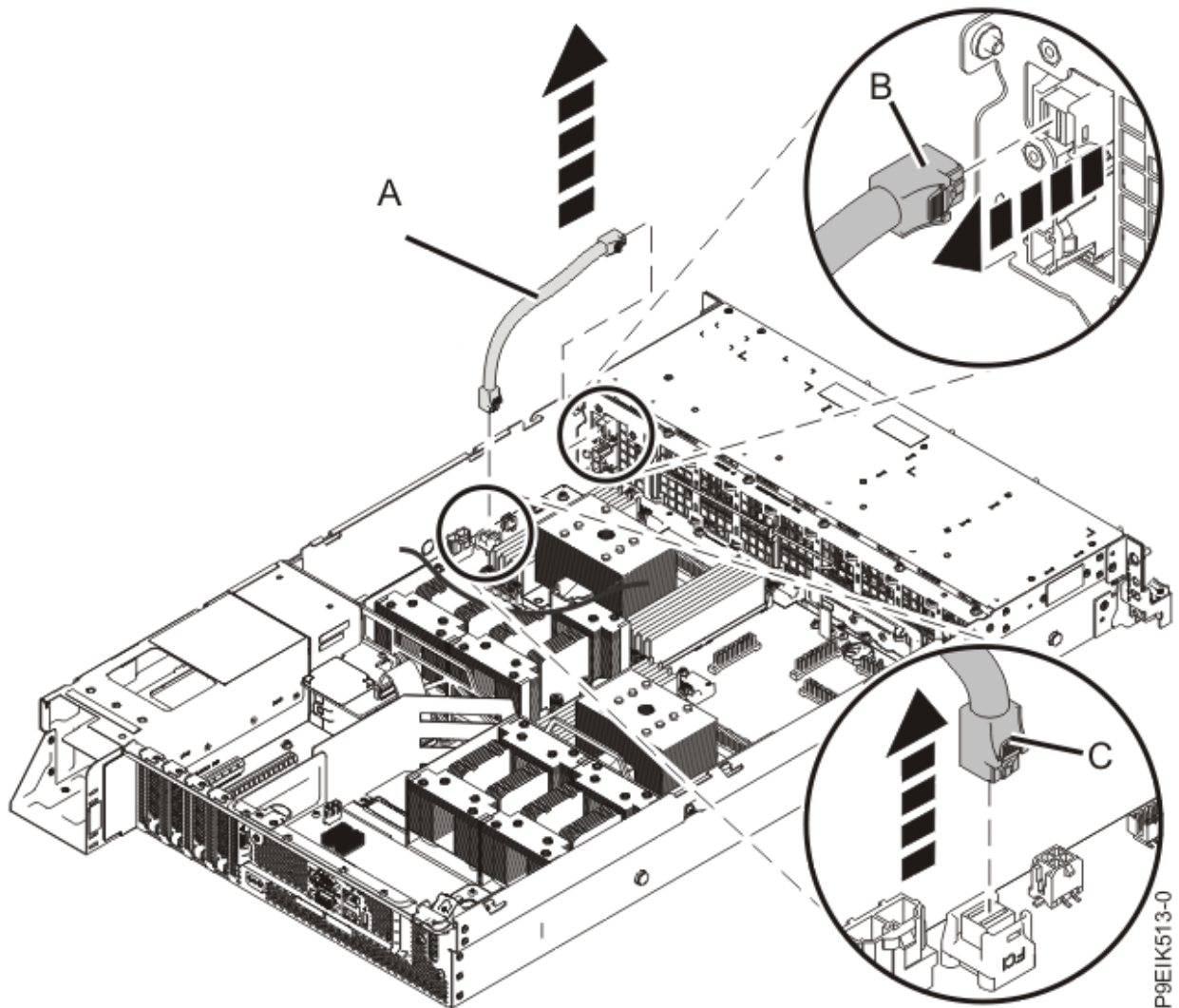   Using your thumb, press the release latch on the connector to remove a cable. See Figure 17 on page 24.

Figure 17. Removing the disk and fan signal cable

5. Place the cable on the table.

Replacing the disk and fan signal cable in the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system

To replace a disk and fan signal cable, complete the steps in this procedure.

Procedure

1. Ensure that you have the electrostatic discharge (ESD) wrist strap on and that the ESD clip is plugged into a ground jack or connected to an unpainted metal surface. If not, do so now.

2. Using the labels, connect the disk and fan signal cable **(A)** to the disk drive and fan card **(B)** and to the system backplane **(C)**.

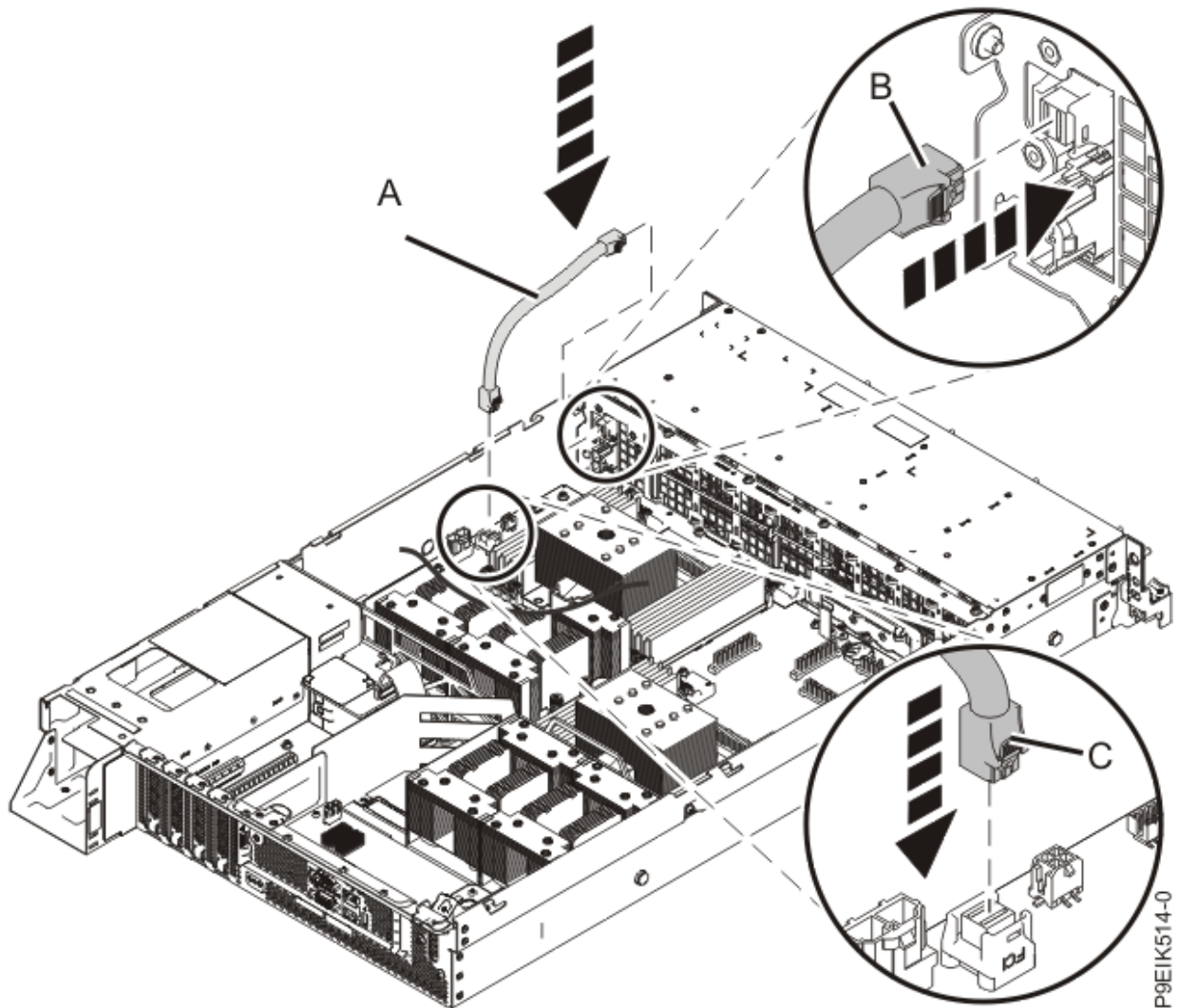   Ensure that the cable latch clip snaps into place on the connectors. See Figure 18 on page 25.

Figure 18. Replacing the disk and fan signal cable

3. Secure the cable in the retaining clip on the inside wall of the system.

What to do next

Prepare the system for operation. For instructions, see "Preparing the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system for operation after you remove and replace internal parts" on page 142.

External DVD drive for the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX

Find information about managing external DVD drives.

The following features are electromagnetic compatibility (EMC) Class B features. See the Class B Notices in the Hardware Notices section.

Table 1. Electromagnetic compatibility (EMC) Class B features	
Feature code (FC)	**Description**
EUA5	Standalone USB DVD Drive

Stand-alone USB DVD drive (FC EUA5) for the 5105-22E, 9008-22L, 9009-22A, 9009-22G, 9009-41A, 9009-41G, 9009-42A, 9009-42G, 9040-MR9, 9080-M9S, 9223-22H, 9223-22S, 9223-42H, or 9223-42S

Learn about the specifications of the feature code (FC) EUA5 DVD drive.

The stand-alone USB DVD drive (FC EUA5) is an optional, stand-alone external USB-DVD device. It requires high current at 5 V and must use the front USB 3.0 port on the system.

Specifications

- Part number: 01LU635
- Custom card identification number (CCIN): 6331 model 005
- Media:
  - Reads CD-ROM, CD-R, CD-RW, DVD-R, DVD+R, DVD-RW, DVD+RW, DVD-ROM, and DVD-RAM discs
  - Writes 4.7 GB DVD-RAM discs
  - CD read speed at 24X.
  - DVD-ROM read speed at 8X.
  - DVD-RAM at 5X.
  - DVD-RAM has a write speed of 5X.
  - The buffer size is 0.75 MB and cannot be disabled.
- Interface: USB
- Connector: USB 2.0
- Loading tray: supports 12 cm and 8 cm discs
- Operating positions: horizontal only (on a flat stable surface or floor)

  Note: A USB extension cable is included (P/N 32N1311). The USB extension cable is to be used when there are no safe, flat spots available in the rack. This cable allows the drive to reach the floor. Alternative or additional extension cables are not supported as the total USB cable length can be no longer than 3 meters.

- Form factor: Stand-alone USB DVD drive
- DVD video: not supported

Operating system or partition requirements

If you are installing a new feature, ensure that you have the software that is required to support the new feature and that you determine whether any prerequisites must be met for this feature and attaching devices. To check for operating system and partition requirements, see one of the following links:

- The latest version of enabling libraries and utilities can be downloaded from the Fix Central website (http://www.ibm.com/support/fixcentral/).
- Power Systems Prerequisites website (www14.software.ibm.com/support/customercare/iprt/home).
- IBM System Storage Interoperation Center (SSIC) website (http://www-03.ibm.com/systems/support/storage/ssic/interoperability.wss).
- The latest version of the device driver or the IBM Power RAID adapter utilities (iprutils) can be downloaded from the IBM Service and Productivity Tools website (http://www14.software.ibm.com/webapp/set2/sas/f/lopdiags/home.html).
- For information about important notices for Linux® on IBM Power Systems, see the Linux on IBM website (www14.software.ibm.com/webapp/set2/sas/f/lopdiags/info/LinuxAlerts.html).

Removing and replacing fans in the 8335-GTC, 8335-GTG, or 8335-GTH system

Learn how to remove and replace the fans in the IBM Power System AC922 (8335-GTC, 8335-GTG, and 8335-GTH) system.

Removing a fan from the 8335-GTC, 8335-GTG, or 8335-GTH system

To remove a fan, complete the steps in this procedure.

About this task

⚠️ **Attention:** If you are replacing a fan with the system power on, you must replace the failed fan within 5 minutes to avoid a system shutdown.

Procedure

1. Attach the electrostatic discharge (ESD) wrist strap.

   The ESD wrist strap must be connected to an unpainted metal surface until the service procedure is completed, and if applicable, until the service access cover is replaced.

   ⚠️ **Attention:**

   - Attach an electrostatic discharge (ESD) wrist strap to the front ESD jack, to the rear ESD jack, or to an unpainted metal surface of your hardware to prevent the electrostatic discharge from damaging your hardware.
   - When you use an ESD wrist strap, follow all electrical safety procedures. An ESD wrist strap is used for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
   - If you do not have an ESD wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds. If at any point in this service process you move away from the system, it is important to again discharge yourself by touching an unpainted metal surface for at least 5 seconds before you continue with the service process.

2. To unseat the fan from its position in the system, press in the locking-tab **(A)** as shown in .
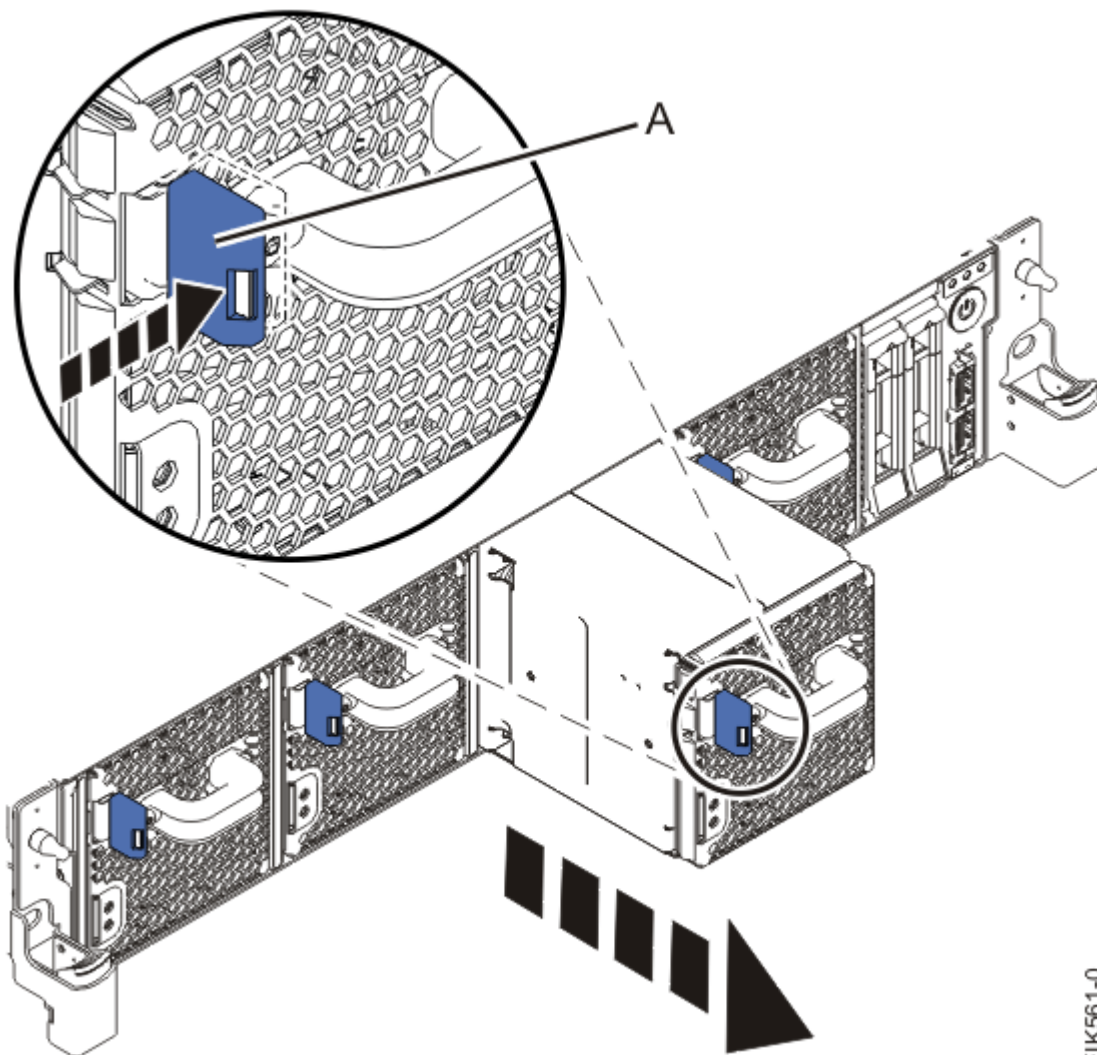
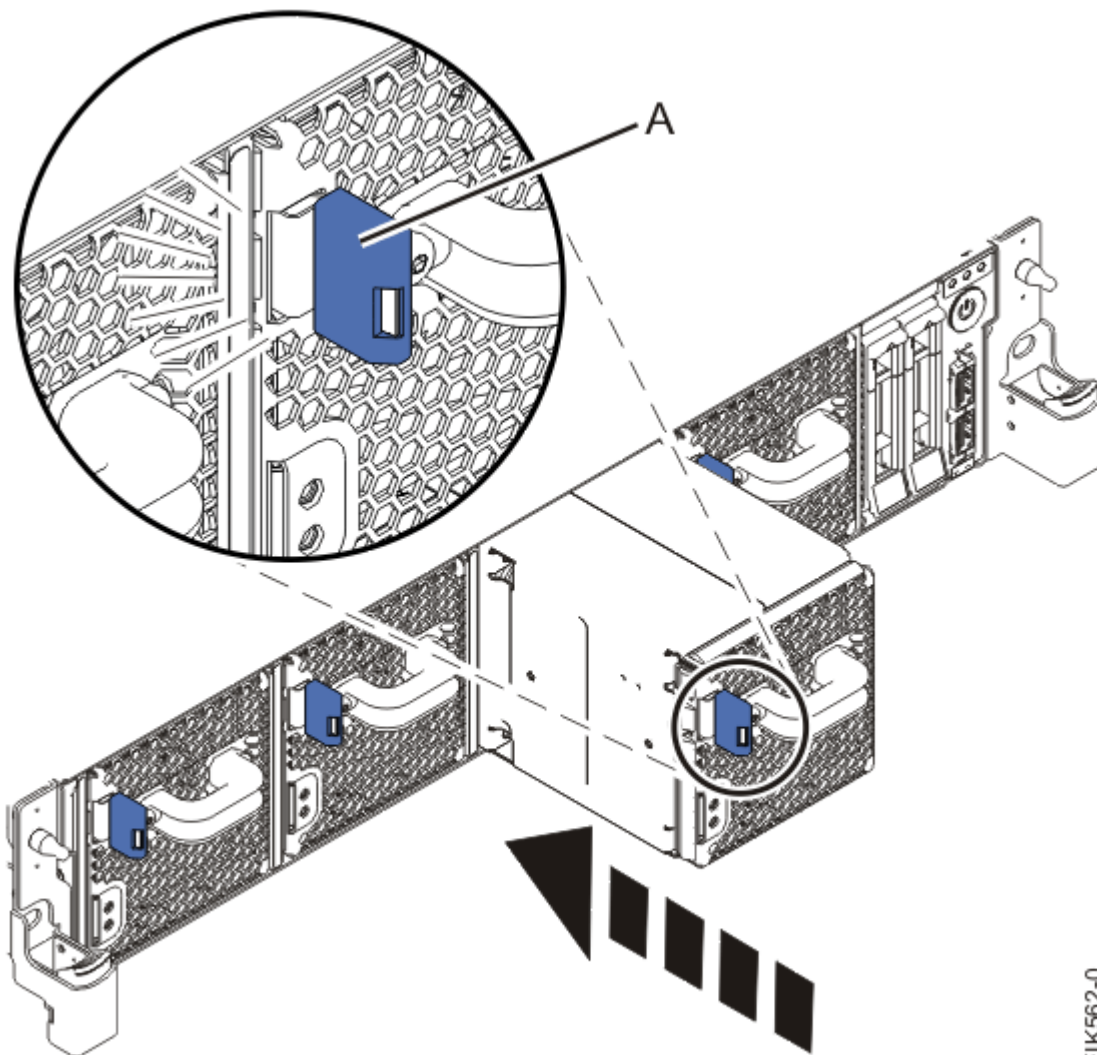*Figure 19. Removing a fan from the system*

3. While you hold onto the fan handle and use your hand to support the bottom of the fan, pull out the fan from its slot.

Replacing a fan in the 8335-GTC, 8335-GTG, or 8335-GTH system

To replace a fan, complete the steps in this procedure.

Procedure

1. Ensure that you have the electrostatic discharge (ESD) wrist strap on and that the ESD clip is plugged into a ground jack or connected to an unpainted metal surface. If not, do so now.
2. Using your hand to support the bottom of the fan, align the fan **(A)** with the fan slot and slide it into the system until the tab **(A)** locks in place as shown in .

Figure 20. Replacing a fan in the system

Removing and replacing the fan power cable in the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system

Learn how to remove and replace the fan power cable in the IBM Power System AC922 (8335-GTC, 8335-GTG, and 8335-GTH) or IBM Power System AC922 (8335-GTW and 8335-GTX) system.

Removing the fan power cable from the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system

To remove a fan power cable, complete the steps in this procedure.

Before you begin

Power off the system and place it in the service position. For instructions, see "Preparing the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system to remove and replace internal parts" on page 138.

Procedure

1. Attach the electrostatic discharge (ESD) wrist strap.

   The ESD wrist strap must be connected to an unpainted metal surface until the service procedure is completed, and if applicable, until the service access cover is replaced.

   ⚠️ **Attention:**

   - Attach an electrostatic discharge (ESD) wrist strap to the front ESD jack, to the rear ESD jack, or to an unpainted metal surface of your hardware to prevent the electrostatic discharge from damaging your hardware.

   - When you use an ESD wrist strap, follow all electrical safety procedures. An ESD wrist strap is used for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

   - If you do not have an ESD wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds. If at any point in this service process you move away from the system, it is important to again discharge yourself by touching an unpainted metal surface for at least 5 seconds before you continue with the service process.

2. Locate where the fan power cable is connected to the system backplane. See **(A)** in Figure 21 on page 30.
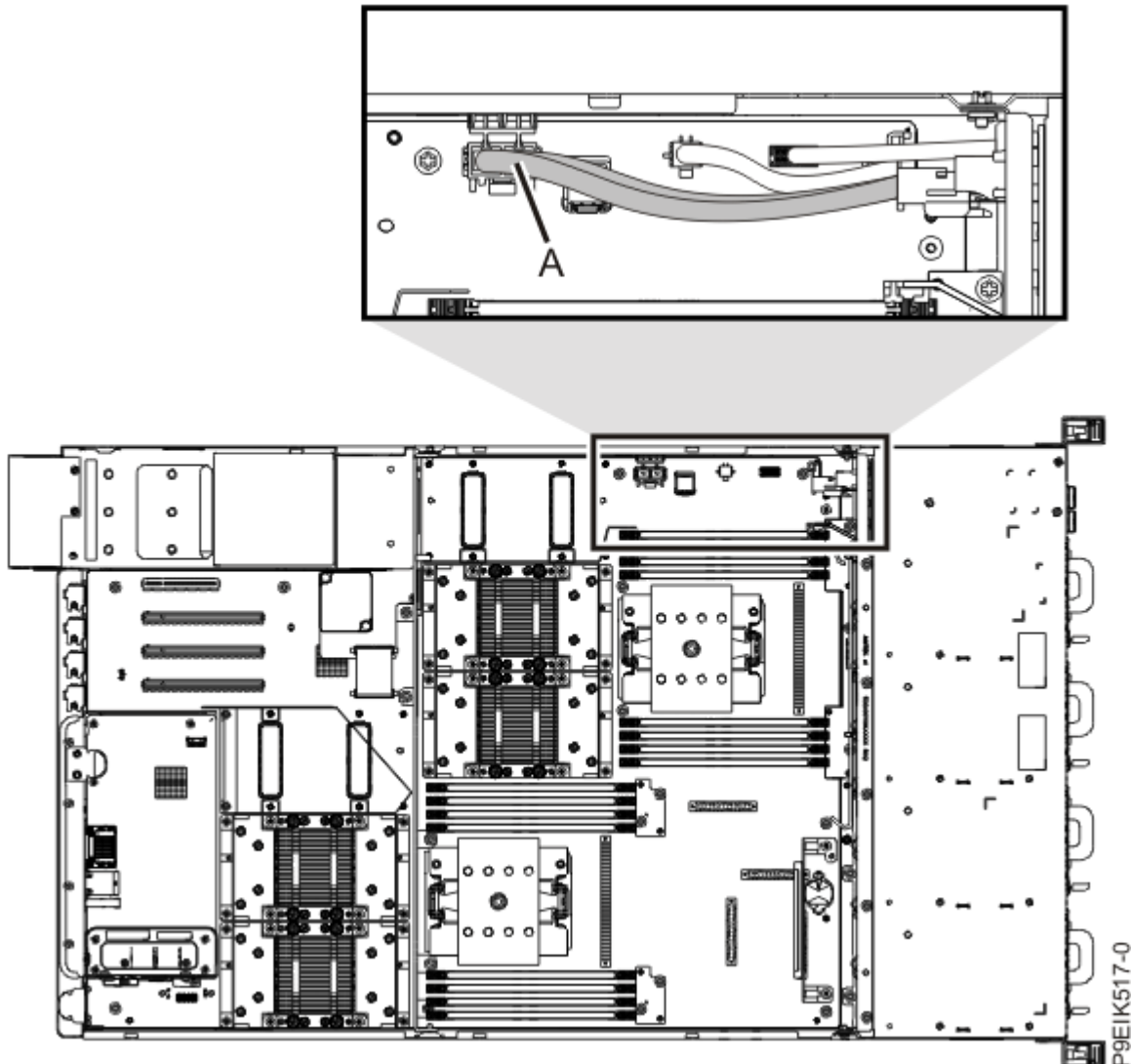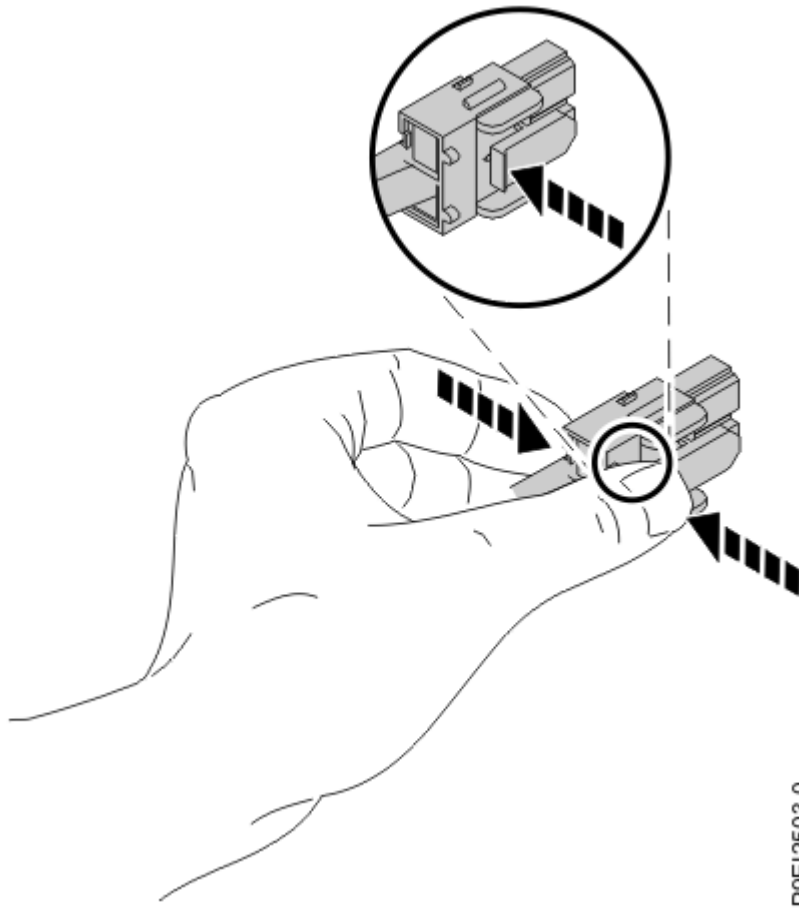

Figure 21. Location of the fan power cable and connectors

3. Grasp the connector end of the fan power cable that is connected to the power riser. See **(A)** in .
4. While you press the latch release lever with your thumb, disconnect the cable from the connector.

P9EI2503-0

Note: The latch release on the connector must be pressed before you unplug the cable. Failure to do so might damage the cable and the connector.

5. Disconnect the fan power cable connector end from the disk drive and fan card.
6. Lift the fan power cable to remove it from the system. Be careful to ensure that the ends of the cable do not catch on any components as you remove it.
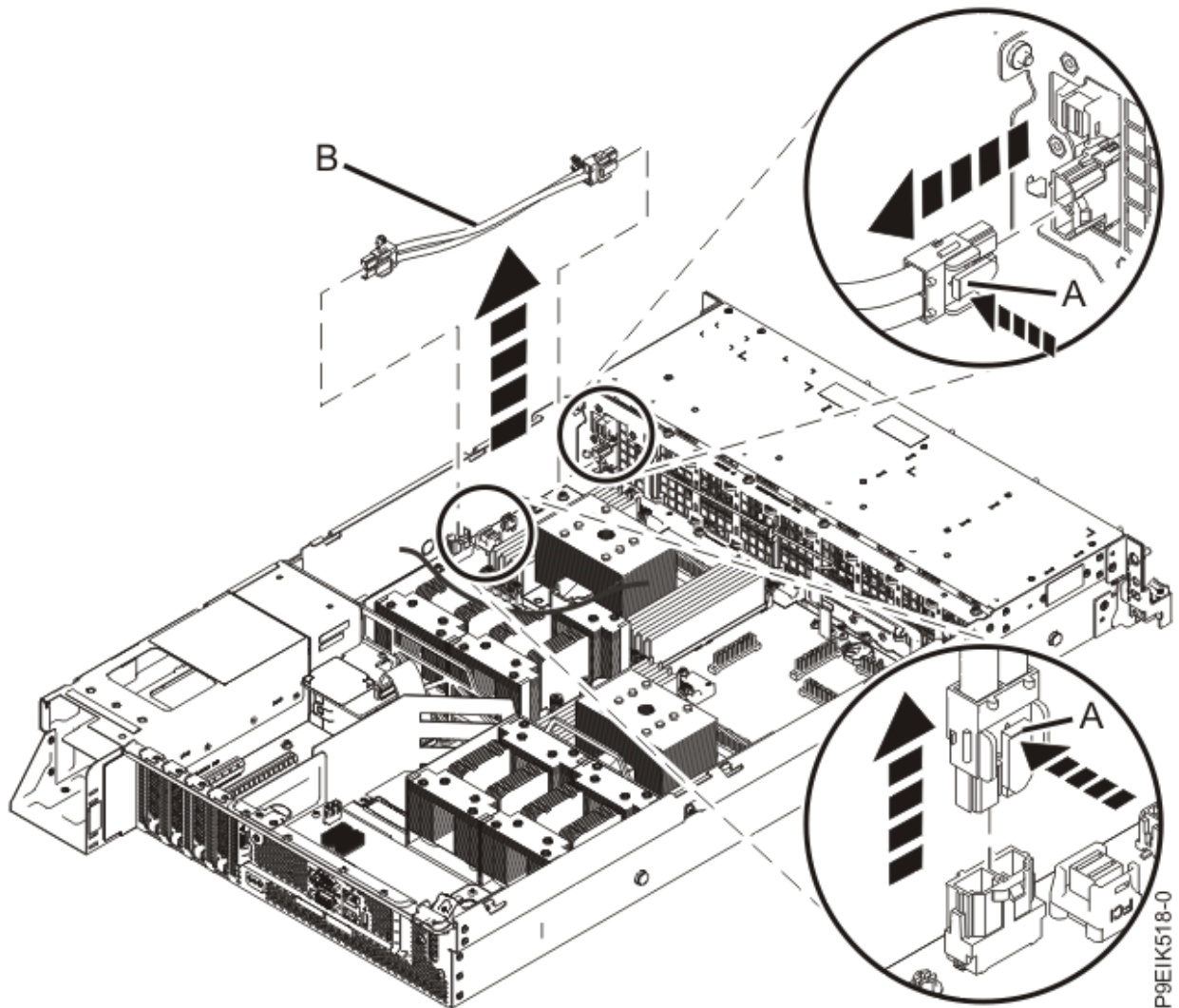
Figure 22. Removing the fan power cable from the system

Replacing the fan power cable in the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system

To replace a fan power cable, complete the steps in this procedure.

Procedure

1. Ensure that you have the electrostatic discharge (ESD) wrist strap on and that the ESD clip is plugged into a ground jack or connected to an unpainted metal surface. If not, do so now.

2. Route the fan power cable **(A)** connector end through the opening and connect it to the power riser as shown in Figure 23 on page 33.

   Ensure that the cable latch clip snaps into place on the connectors.

3. Connect the other end of the fan power cable into the disk drive and fan card as shown in Figure 23 on page 33.
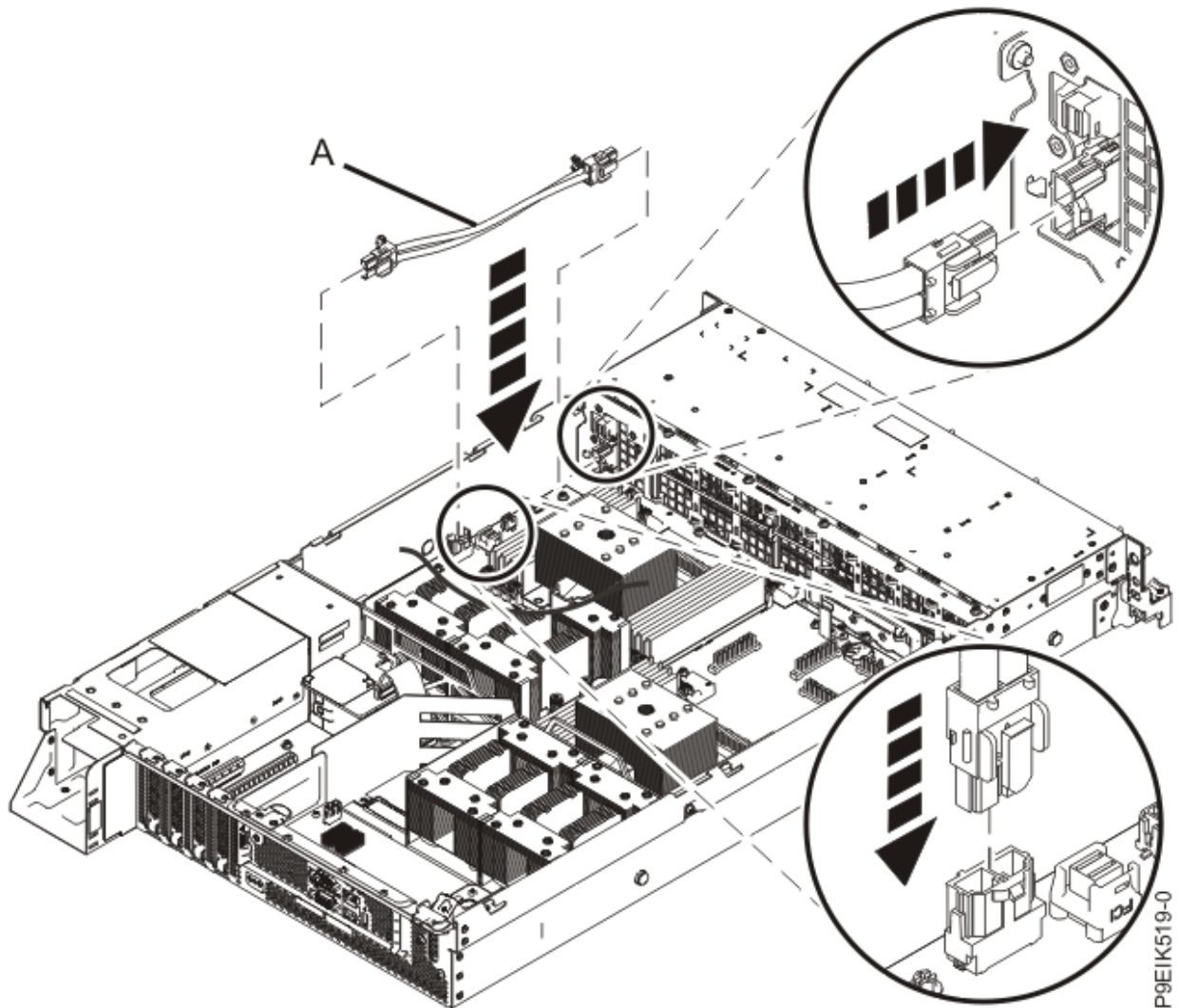
Figure 23. Installing the fan power cable

What to do next

Prepare the system for operation. For instructions, see "Preparing the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system for operation after you remove and replace internal parts" on page 142.

Removing and replacing a graphics processing unit in the 8335-GTC, 8335-GTG, or 8335-GTH system

Learn how to remove and replace a graphics processing unit (GPU) in the IBM Power System AC922 (8335-GTC, 8335-GTG, and 8335-GTH) system.

Removing the graphics processing unit from an air-cooled 8335-GTC, 8335-GTG, or 8335-GTH system

To remove a graphics processing unit from an air-cooled system, complete the steps in this procedure.

Before you begin

Power off the system and place it in the service position. For instructions, see "Preparing the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system to remove and replace internal parts" on page 138.

About this task

⚠️ **Attention:** For safety and airflow purposes, if you remove parts from the system, you must ensure that:

- PCIe tailstock fillers are present.
- Graphic processor unit (GPU) airflow baffles are present.

Procedure

1. Attach the electrostatic discharge (ESD) wrist strap.

   The ESD wrist strap must be connected to an unpainted metal surface until the service procedure is completed, and if applicable, until the service access cover is replaced.

   ⚠️ **Attention:**

   - Attach an electrostatic discharge (ESD) wrist strap to the front ESD jack, to the rear ESD jack, or to an unpainted metal surface of your hardware to prevent the electrostatic discharge from damaging your hardware.
   - When you use an ESD wrist strap, follow all electrical safety procedures. An ESD wrist strap is used for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
   - If you do not have an ESD wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds. If at any point in this service process you move away from the system, it is important to again discharge yourself by touching an unpainted metal surface for at least 5 seconds before you continue with the service process.

2. If you are removing multiple GPUs, label the GPUs, noting their positions and orientations.

3. For the GPU you are removing, remove the eight screws that are shown in Figure 24 on page 35.

   ⚠️ **Attention:** Do not unscrew the four spring-loaded screws that attach the heat sink to the GPU.
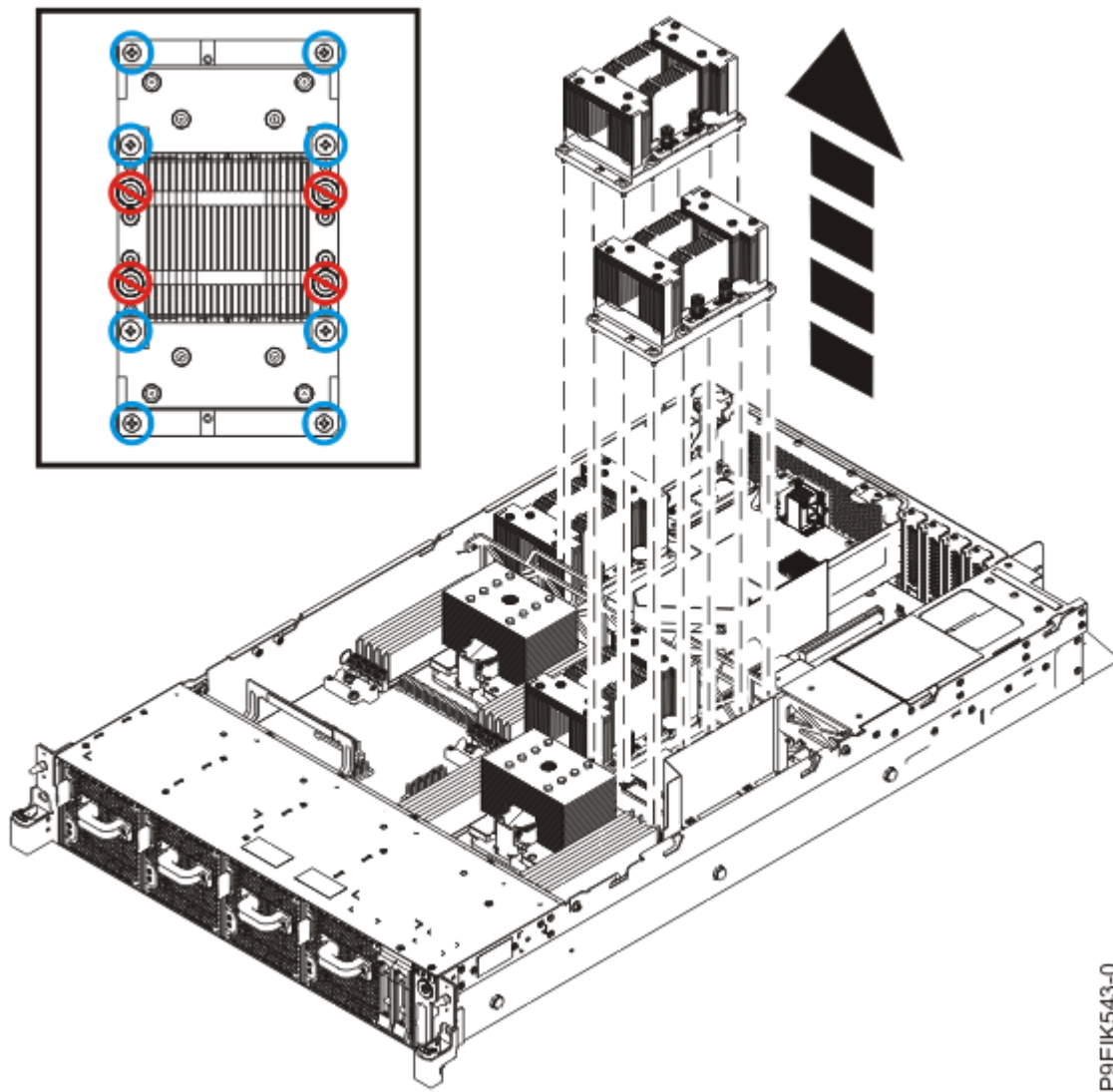
Figure 24. Remove eight GPU screws per GPU; do not loosen the four spring-loaded screws

4. Grasp the GPU by the heat sink, being careful not to bend the pins. Remove the GPU from the system backplane.

   Be careful of the pins on the bottom of the GPUs to avoid damaging the pins and the GPU.

Replacing the graphics processing unit in an air-cooled 8335-GTC, 8335-GTG, or 8335-GTH system

To replace a graphics processing unit an air-cooled system, complete the steps in this procedure.

Procedure

1. Ensure that you have the electrostatic discharge (ESD) wrist strap on and that the ESD clip is plugged into a ground jack or connected to an unpainted metal surface. If not, do so now.
2. Remove the GPU from the protective packaging. Remove the protective covers from the bottom of the GPU.

   Remove the protective cover starting with its corner.
3. Carefully align the GPU and heat sink such that the alignment pins fit into the system backplane.
   Ensure that the arrow on the heat sink that indicates airflow points to the rear of the chassis. Insert the GPU into the system backplane.

4. Secure the GPU to the system backplane. Use a #2 Phillips head screw driver. Tighten the screws in the sequence that is shown in Figure 25 on page 36.

   Start with the inner four screws. Thread the inner four screws half-way using the sequence that is shown. Once all four screws are threaded, then fully tighten them. Next, tighten the outer four screws by using the sequence that is shown. Take care to not damage the system backplane with the screw driver tip.
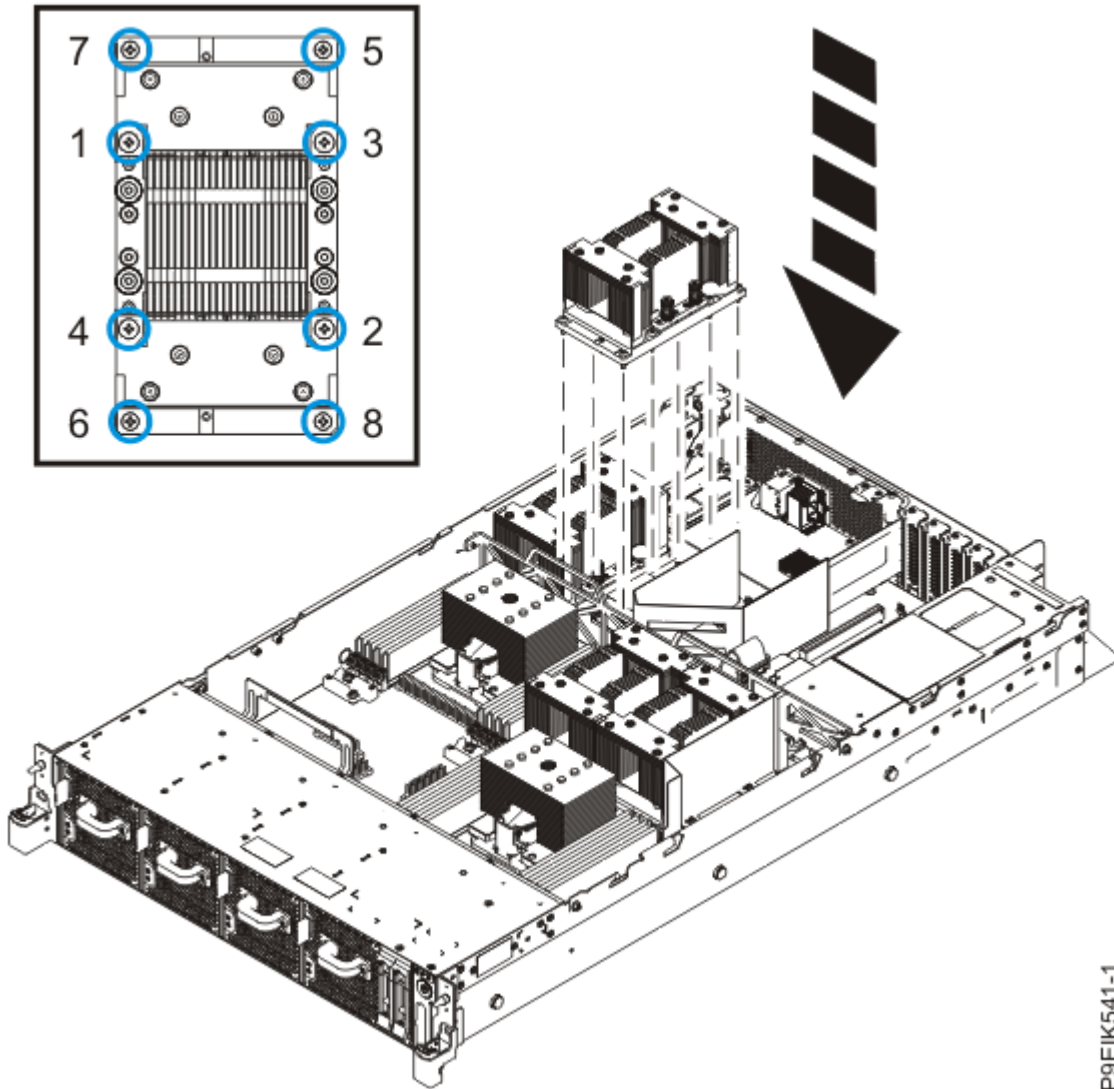
Figure 25. Replacing the GPU and heat sink into system backplane

5. Place the protective covers on the bottom of the replaced GPUs.

   This protects the pins when returning the GPU.

What to do next

Prepare the system for operation. For instructions, see "Preparing the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system for operation after you remove and replace internal parts" on page 142.

Removing and replacing memory modules in the 8335-GTC, 8335-GTG, or 8335-GTH system

Learn how to remove and replace memory modules in the IBM Power System AC922 (8335-GTC, 8335-GTG, and 8335-GTH) system.

Removing and replacing memory modules in the 8335-GTC, 8335-GTG, or 8335-GTH system

To remove and replace memory modules, complete the steps in this procedure.

Before you begin

Power off the system and place it in the service position. For instructions, see "Preparing the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system to remove and replace internal parts" on page 138.

Procedure

1. Attach the electrostatic discharge (ESD) wrist strap.

   The ESD wrist strap must be connected to an unpainted metal surface until the service procedure is completed, and if applicable, until the service access cover is replaced.

   ⚠️ **Attention:**

   - Attach an electrostatic discharge (ESD) wrist strap to the front ESD jack, to the rear ESD jack, or to an unpainted metal surface of your hardware to prevent the electrostatic discharge from damaging your hardware.

   - When you use an ESD wrist strap, follow all electrical safety procedures. An ESD wrist strap is used for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

   - If you do not have an ESD wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds. If at any point in this service process you move away from the system, it is important to again discharge yourself by touching an unpainted metal surface for at least 5 seconds before you continue with the service process.

Removing memory modules:

2. Remove the air baffles (A) and (B) as shown in Figure 26 on page 38.
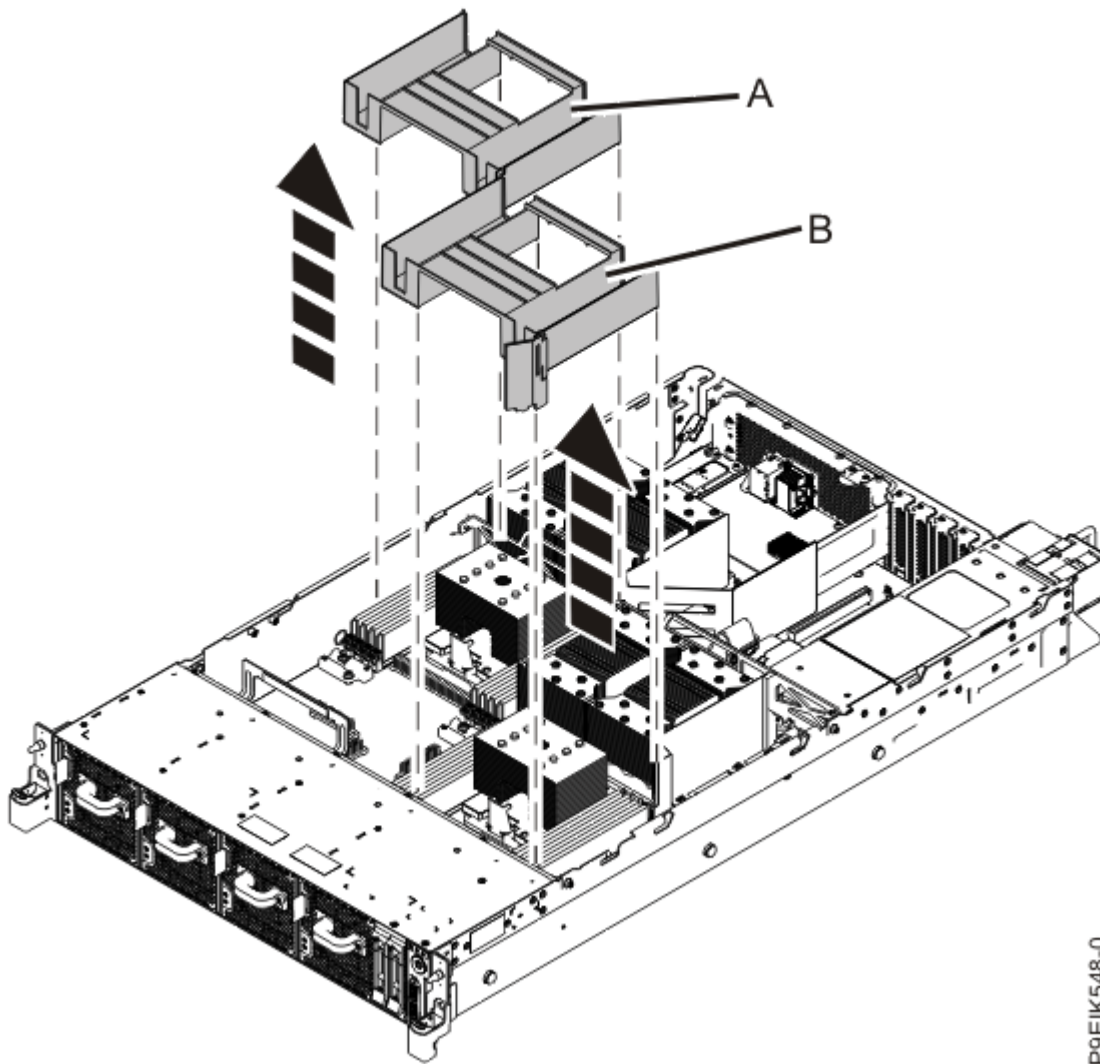
Figure 26. Removing the system processor air baffles

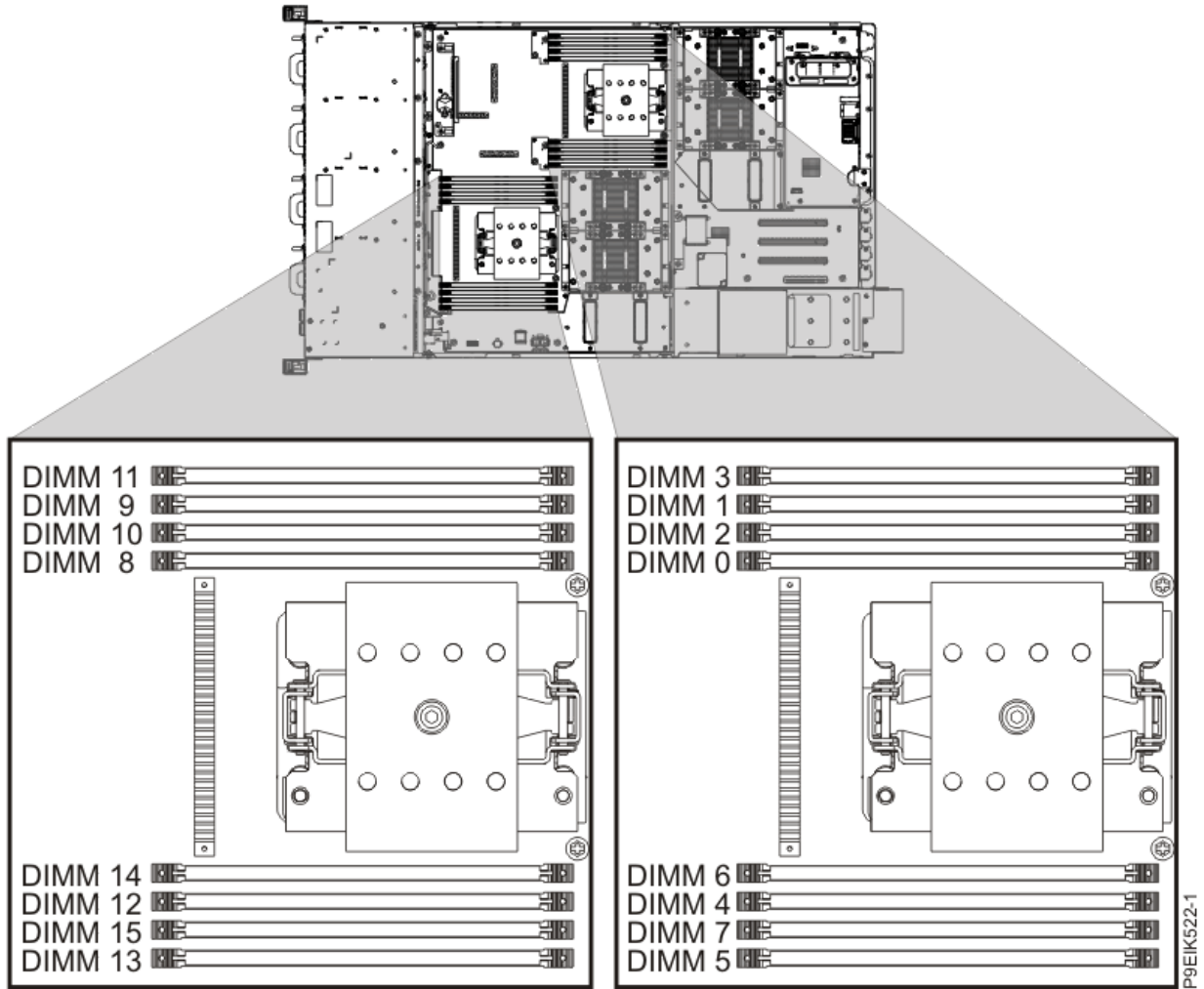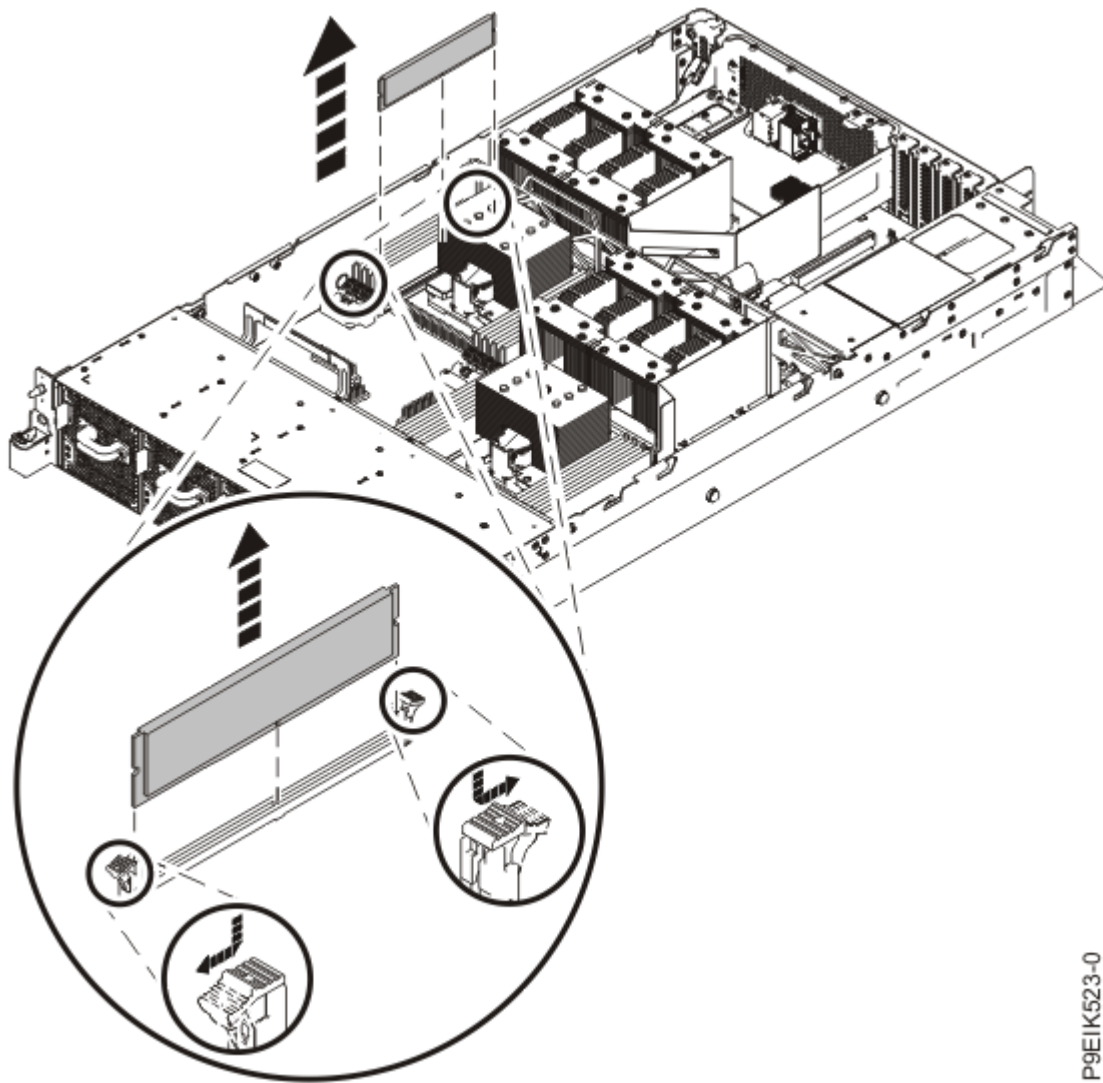3. Locate the memory module to remove. shows the location of the memory modules.

Figure 27. Location of the memory modules

4. Remove the memory module from the slot.

   a) Unlock the memory module by pushing the locking tabs away from the memory module, in the direction shown in Figure 28 on page 40.

   The lever action of opening the tabs pushes the memory module out of the slot.

Figure 28. Removing a memory module

     b) Hold the memory module by the edges and pull it out of the slot.

 5. Place the memory module on an ESD mat.

Replacing memory modules:

 6. To replace a memory module, complete the following steps:

     a) Push the locking tabs to the open position, away from the slot, in the direction shown in Figure 29 on page 41.
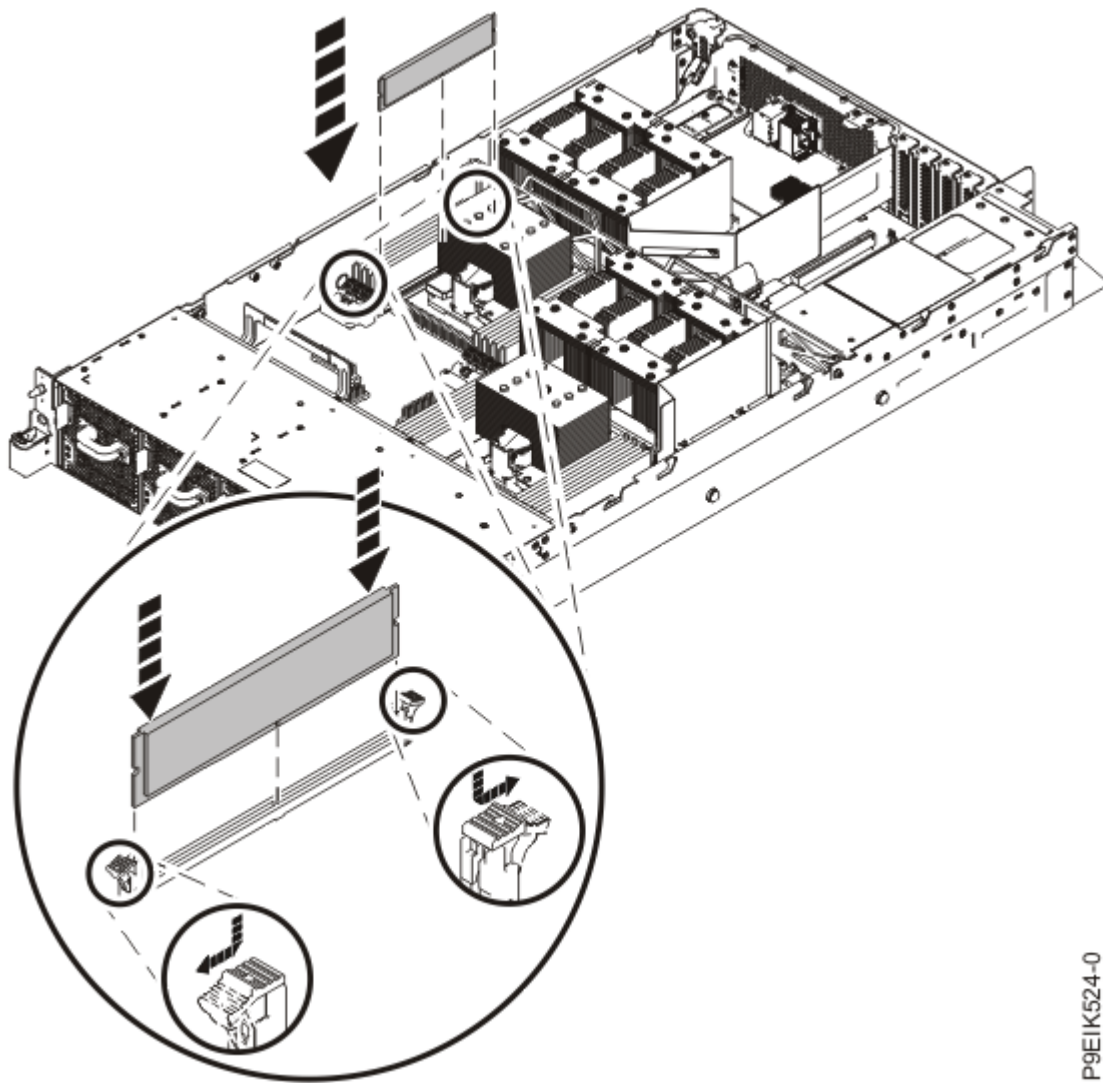
Figure 29. Replacing a memory module

b) Grasp the memory module along its edges and align it with the slot.

⚠️ **Attention:** The memory module is keyed to prevent it from being installed incorrectly. Note the location of the key tab within the memory connector before you attempt to install it.

c) Press firmly on each side of the memory module until the locking tab locks in place with an audible click.

7. Replace the air baffles (A) and (B) as shown in .
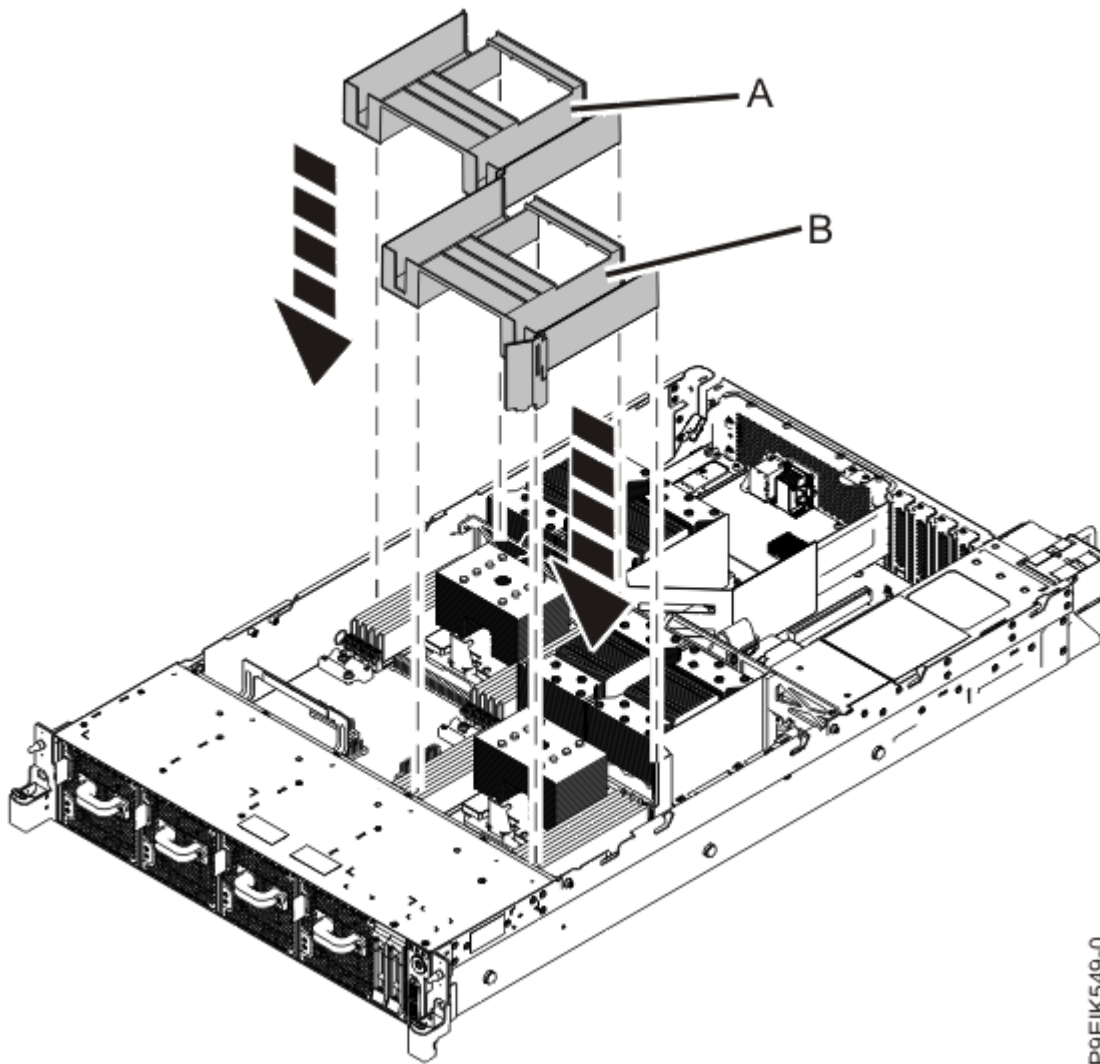
Figure 30. Replacing the system processor air baffles

What to do next

Prepare the system for operation. For instructions, see "Preparing the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system for operation after you remove and replace internal parts" on page 142.

Memory plugging rules in the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system

Learn the memory placement rules for the system.

The system has memory configurations of 128 GB, 256 GB, 512 GB, 1024 GB, or 2048 GB. All memory modules must be installed and must be of the same size and type. The system has a total of 16 memory modules. The supported memory module sizes are either 8 GB, 16 GB, 32 GB, or 128 GB. Mixing of memory module feature codes is not allowed.

Table 2 on page 42 lists the supported memory feature codes.

Table 2. Memory feature codes	
Supported feature codes (FC)	**Size**
EM60	8 GB

Table 2. Memory feature codes (continued)	
Supported feature codes (FC)	**Size**
EM61	16 GB
EM63	32 GB
EM64	64 GB
EM65	128 GB

Removing and replacing PCIe adapters in the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system

Learn about removing and replacing Peripheral Component Interconnect (PCI) Express (PCIe) adapters in the IBM Power System AC922 (8335-GTC, 8335-GTG, and 8335-GTH) or IBM Power System AC922 (8335-GTW and 8335-GTX) system.

About this task

⚠️ **Attention:** For safety and airflow purposes, if you remove parts from the system, you must ensure that:

- PCIe tailstock fillers are present.
- Graphic processor unit (GPU) airflow baffles are present.

Removing a PCIe adapter from the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system

To remove PCIe adapters, complete the steps in this procedure.

Before you begin

Power off the system and place it in the service position. For instructions, see "Preparing the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system to remove and replace internal parts" on page 138.

About this task

⚠️ **Attention:** For safety and airflow purposes, if you remove parts from the system, you must ensure that:

- PCIe tailstock fillers are present.
- Graphic processor unit (GPU) airflow baffles are present.

Procedure

1. Attach the electrostatic discharge (ESD) wrist strap.

   The ESD wrist strap must be connected to an unpainted metal surface until the service procedure is completed, and if applicable, until the service access cover is replaced.

   ⚠️ **Attention:**
   - Attach an electrostatic discharge (ESD) wrist strap to the front ESD jack, to the rear ESD jack, or to an unpainted metal surface of your hardware to prevent the electrostatic discharge from damaging your hardware.

- When you use an ESD wrist strap, follow all electrical safety procedures. An ESD wrist strap is used for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
- If you do not have an ESD wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds. If at any point in this service process you move away from the system, it is important to again discharge yourself by touching an unpainted metal surface for at least 5 seconds before you continue with the service process.

2. If needed, label and remove the cables from the PCIe adapter. Also, if needed, label and remove any plugs that extend out of the PCIe adapter.

3. Remove the PCIe adapter from the system backplane by lifting the adapter.
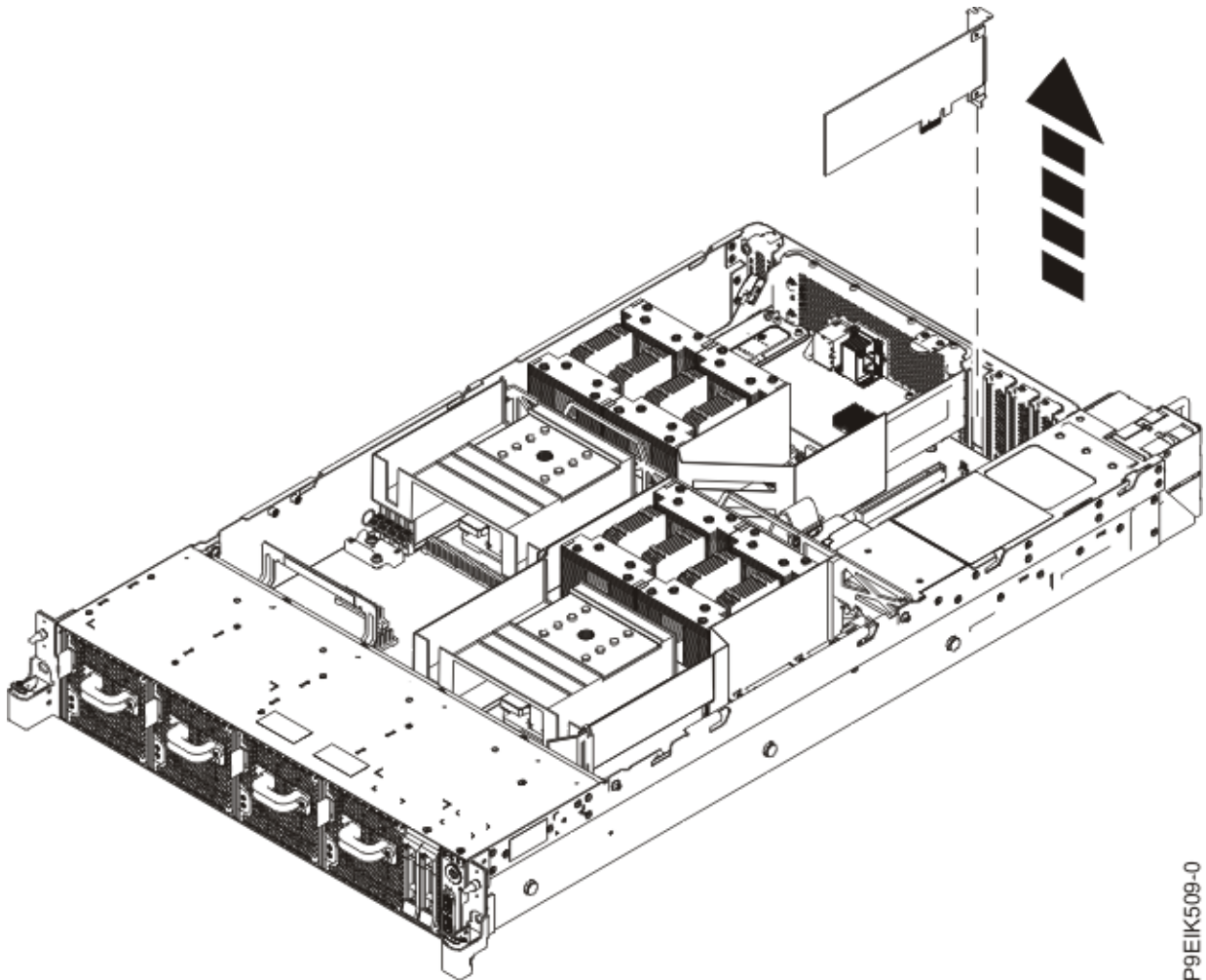
Figure 31. Removing a PCIe adapter

4. Place the PCIe adapter on an ESD mat.

Replacing a PCIe adapter in the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system

To replace PCIe adapters, complete the steps in this procedure.

About this task

⚠️ **Attention:** For safety and airflow purposes, if you remove parts from the system, you must ensure that:

- PCIe tailstock fillers are present.
- Graphic processor unit (GPU) airflow baffles are present.

Procedure

1. Ensure that you have the electrostatic discharge (ESD) wrist strap on and that the ESD clip is plugged into a ground jack or connected to an unpainted metal surface. If not, do so now.
2. Insert the replacement PCIe adapter into the system backplane as shown in Figure 32 on page 45, aligning the adapter properly and inserting it fully into the slot.
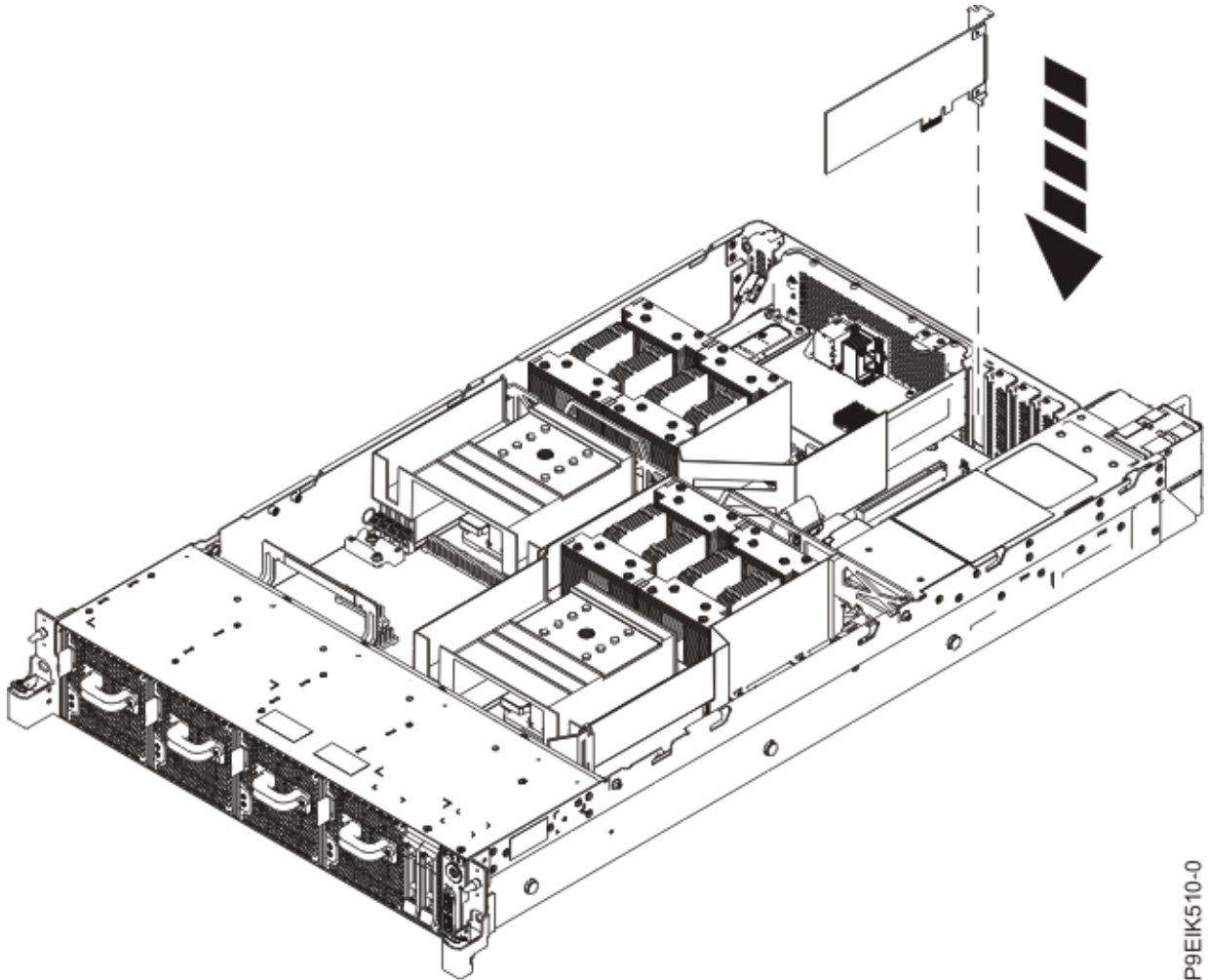
Figure 32. Inserting a PCIe adapter

3. Using your labels, replace any plugs that you removed from the PCIe adapter. Using your labels, insert the cables into the PCIe adapter.

What to do next

Prepare the system for operation. For instructions, see "Preparing the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system for operation after you remove and replace internal parts" on page 142.

Removing and replacing a power supply in the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system

Find information about removing and replacing power supplies in the IBM Power System AC922 (8335-GTC, 8335-GTG, and 8335-GTH) or IBM Power System AC922 (8335-GTW and 8335-GTX) system.

Removing a power supply from the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system

To replace a power supply, complete the steps in this procedure.

About this task

If one of the power supplies failed on a system with four GPUs, the power supply can be replaced while the system is running.

Procedure

1. Attach the electrostatic discharge (ESD) wrist strap.

   The ESD wrist strap must be connected to an unpainted metal surface until the service procedure is completed, and if applicable, until the service access cover is replaced.

   ⚠️ **Attention:**

   - Attach an electrostatic discharge (ESD) wrist strap to the front ESD jack, to the rear ESD jack, or to an unpainted metal surface of your hardware to prevent the electrostatic discharge from damaging your hardware.

   - When you use an ESD wrist strap, follow all electrical safety procedures. An ESD wrist strap is used for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

   - If you do not have an ESD wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds. If at any point in this service process you move away from the system, it is important to again discharge yourself by touching an unpainted metal surface for at least 5 seconds before you continue with the service process.

2. Disconnect the power source from the system by unplugging the system. For instructions, see "Disconnecting power cords from an 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system" on page 154.

   Note: The system might be equipped with redundant power supply. Before you continue with this procedure, ensure that all power to your system is disconnected.
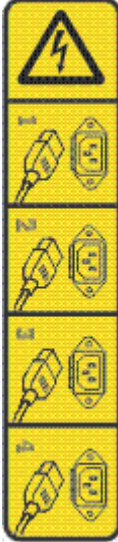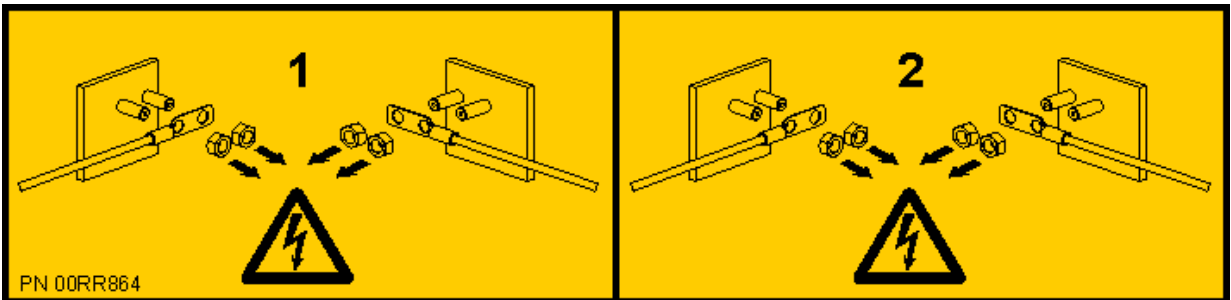
   (L003)

   or

   or

or

or

PN 00RR864

⚠ **DANGER:** Multiple power cords. The product might be equipped with multiple AC power cords or multiple DC power cables. To remove all hazardous voltages, disconnect all power cords and power cables. (L003)

(L005)

CAUTION: Hazardous energy present. Voltages with hazardous energy might cause heating when shorted with metal, which might result in splattered metal, burns, or both. (L005)

3. Remove the power supplies from the system as shown in Figure 33 on page 48.

   a) To release a power supply from its position in the system, pull the locking-tab **(A)** to the left.

   b) Grasp the power supply handle with one hand, and pull the power supply **(B)** partially out of the system.

   c) Place your other hand underneath the power supply and pull the power supply out of the system and place it on an ESD mat.

   d) Repeat steps "3.a" on page 48 - "3.c" on page 48 for the other power supply.
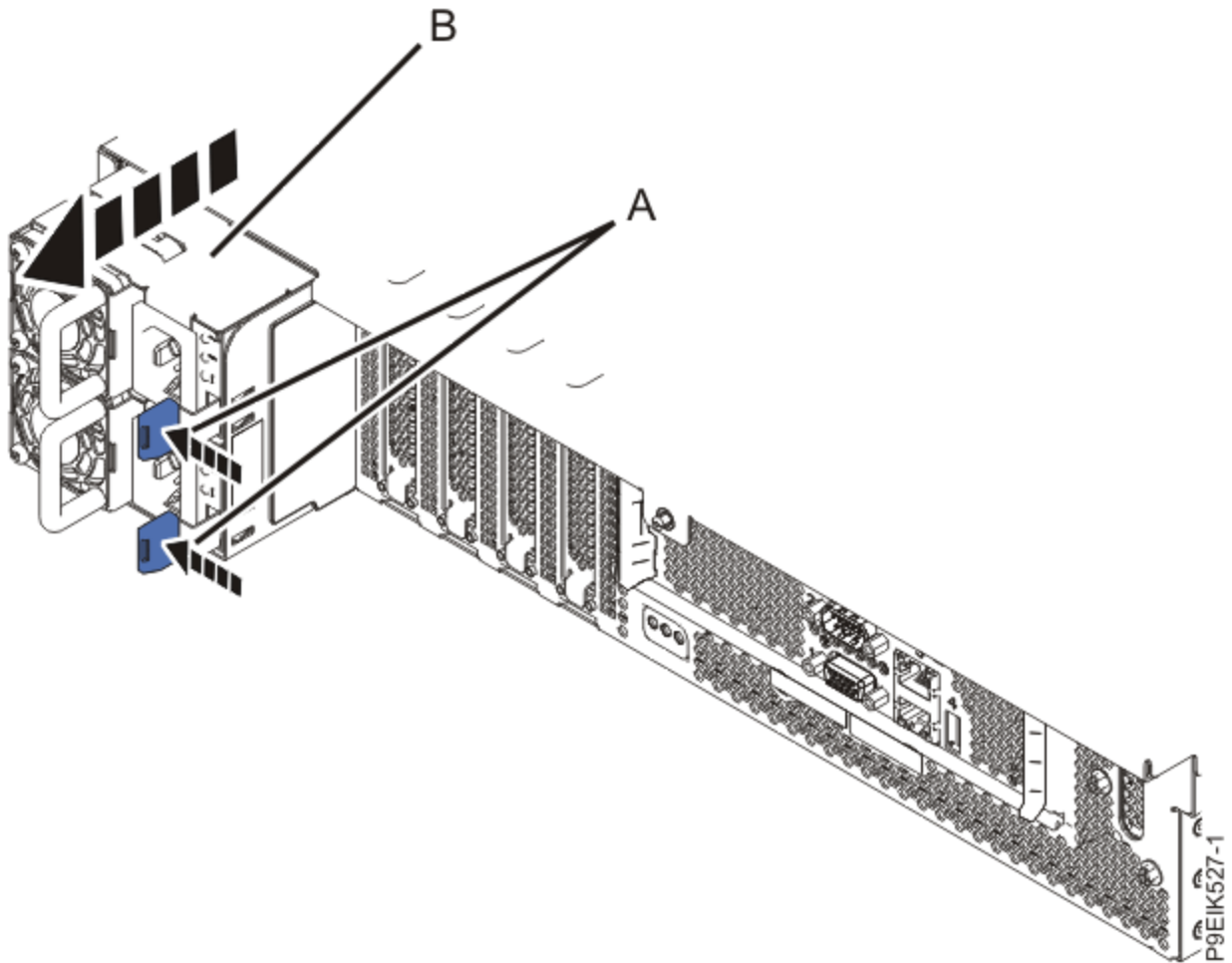
Figure 33. Removing the power supplies from the system

Replacing a power supply in the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system

To remove a power supply, complete the steps in this procedure.

Procedure

1. Ensure that you have the electrostatic discharge (ESD) wrist strap on and that the ESD clip is plugged into a ground jack or connected to an unpainted metal surface. If not, do so now.
2. Replace the power supplies as shown in Figure 34 on page 49.
   a) Place your other hand underneath the power supply.
   b) Align the power supply **(A)** with the bay with the fan to the left.
   c) Slide the power supply into the system until the latch **(B)** locks in place.
   d) Repeat steps "2.a" on page 49 - "2.c" on page 49 for the other power supply.
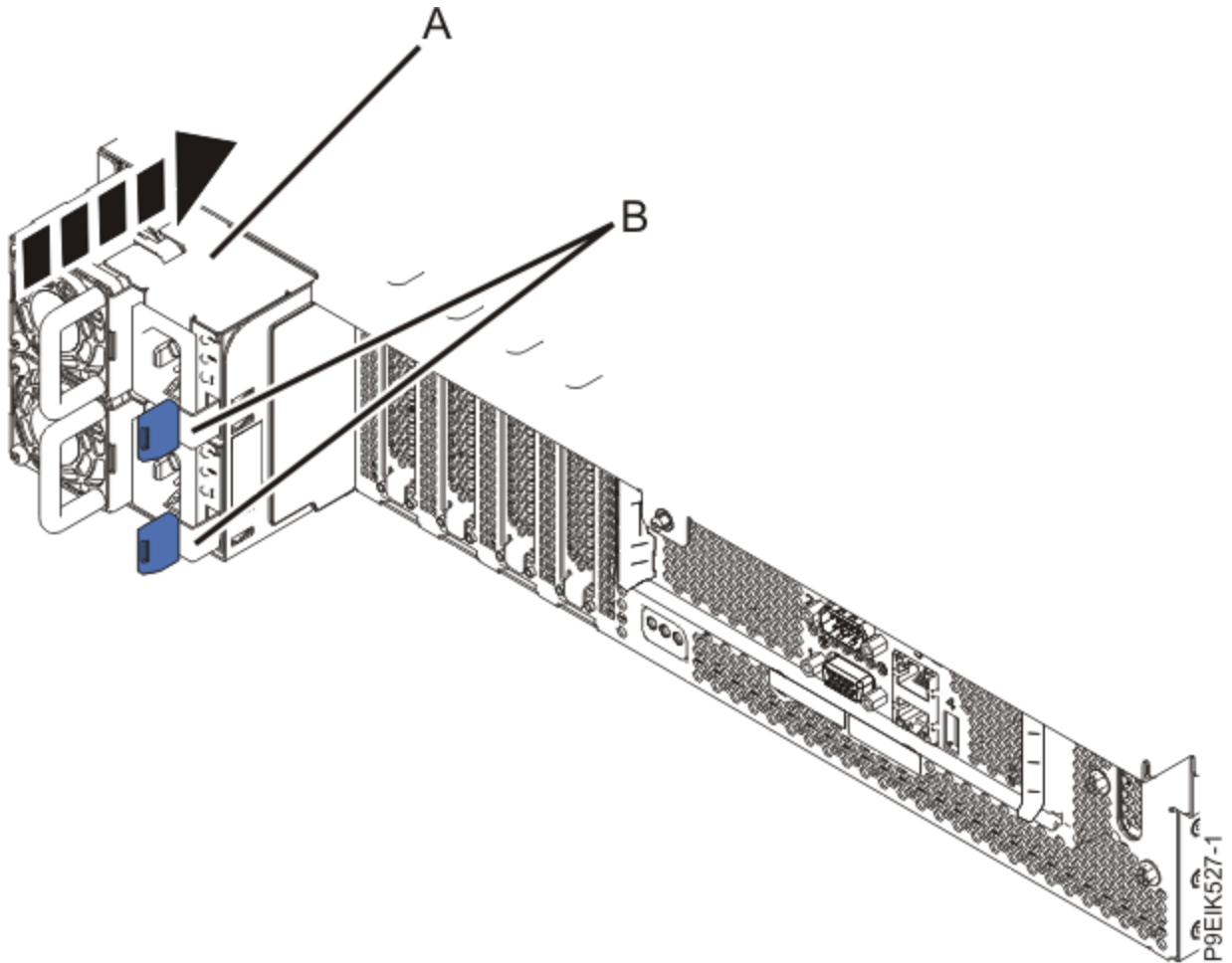
Figure 34. Replacing the power supplies in the system

3. Reconnect the power cords to the power supplies.

   For instructions, see "Connecting power cords to an 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system" on page 157.

Removing and replacing the power switch and cable in the 8335-GTG or 8335-GTH system

Learn how to remove and replace the power switch and cable in the system.

Removing the power switch and cable from the 8335-GTG or 8335-GTH system

To remove a power switch and cable, complete the steps in this procedure.

Before you begin

Power off the system and place it in the service position. For instructions, see "Preparing the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system to remove and replace internal parts" on page 138.

Procedure

1. Attach the electrostatic discharge (ESD) wrist strap.

   The ESD wrist strap must be connected to an unpainted metal surface until the service procedure is completed, and if applicable, until the service access cover is replaced.

   ⚠️ **Attention:**

   - Attach an electrostatic discharge (ESD) wrist strap to the front ESD jack, to the rear ESD jack, or to an unpainted metal surface of your hardware to prevent the electrostatic discharge from damaging your hardware.

   - When you use an ESD wrist strap, follow all electrical safety procedures. An ESD wrist strap is used for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

   - If you do not have an ESD wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds. If at any point in this service process you move away from the system, it is important to again discharge yourself by touching an unpainted metal surface for at least 5 seconds before you continue with the service process.

2. Remove the disk drive and fan card.

   For instructions, see "Removing the disk drive and fan card from the 8335-GTG or 8335-GTH system" on page 11.

3. Locate the USB cable and connector **(A)** and the power switch and cable **(B)**. They connect between the system backplane and the power switch along the inside of the system.
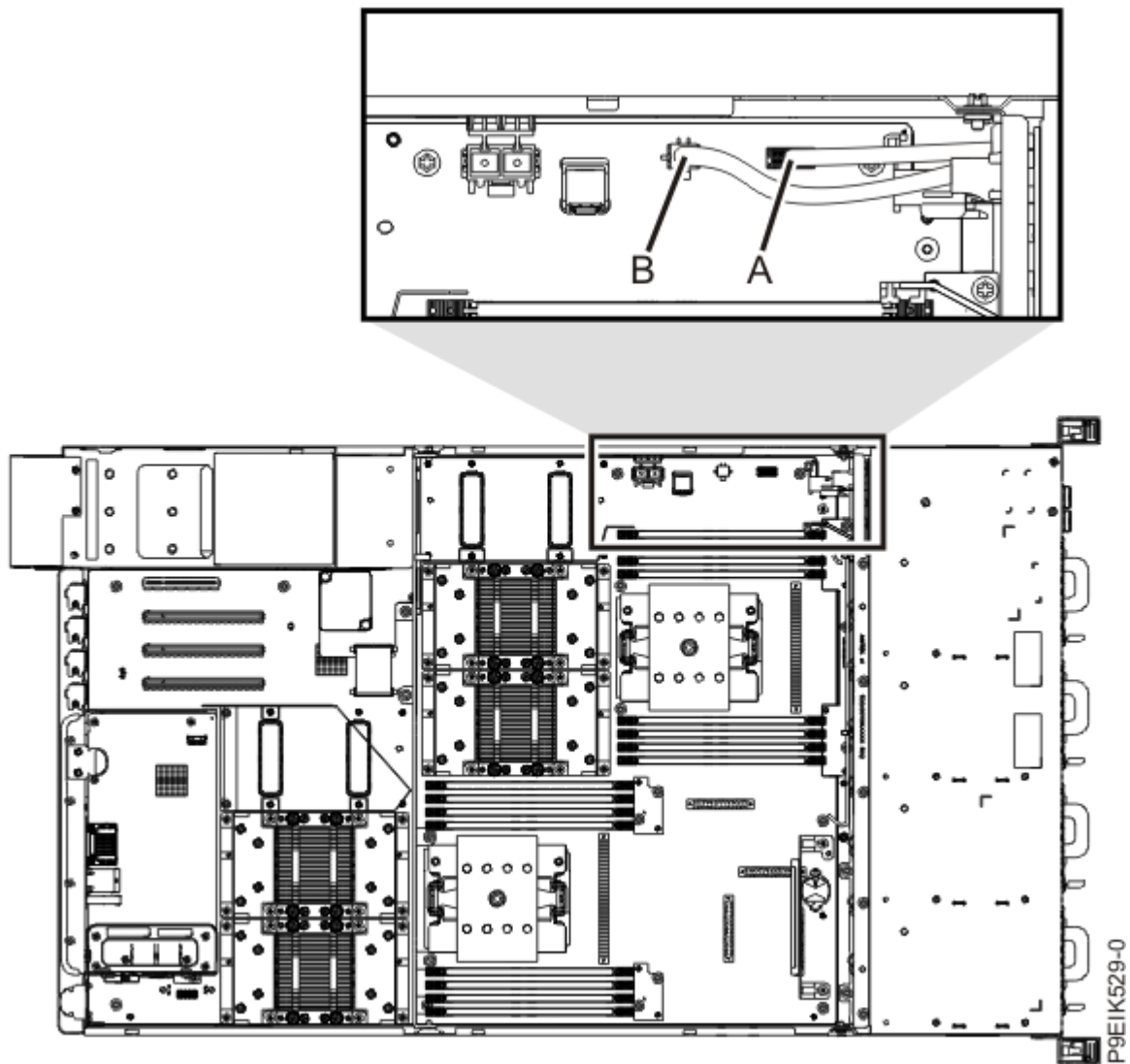
   See Figure 35 on page 51. Label each cable.

Figure 35. Location of the connectors for the USB cable and connector and the power switch and cable

4. Release each cable from the retaining clip on the inside wall of the system.

5. Pressing the latch release on the connector, disconnect the USB cable **(A)** as shown in .

   Note: The latch release on the connector must be pressed before you unplug the cable. Failure to do so might damage the cable and the connector.
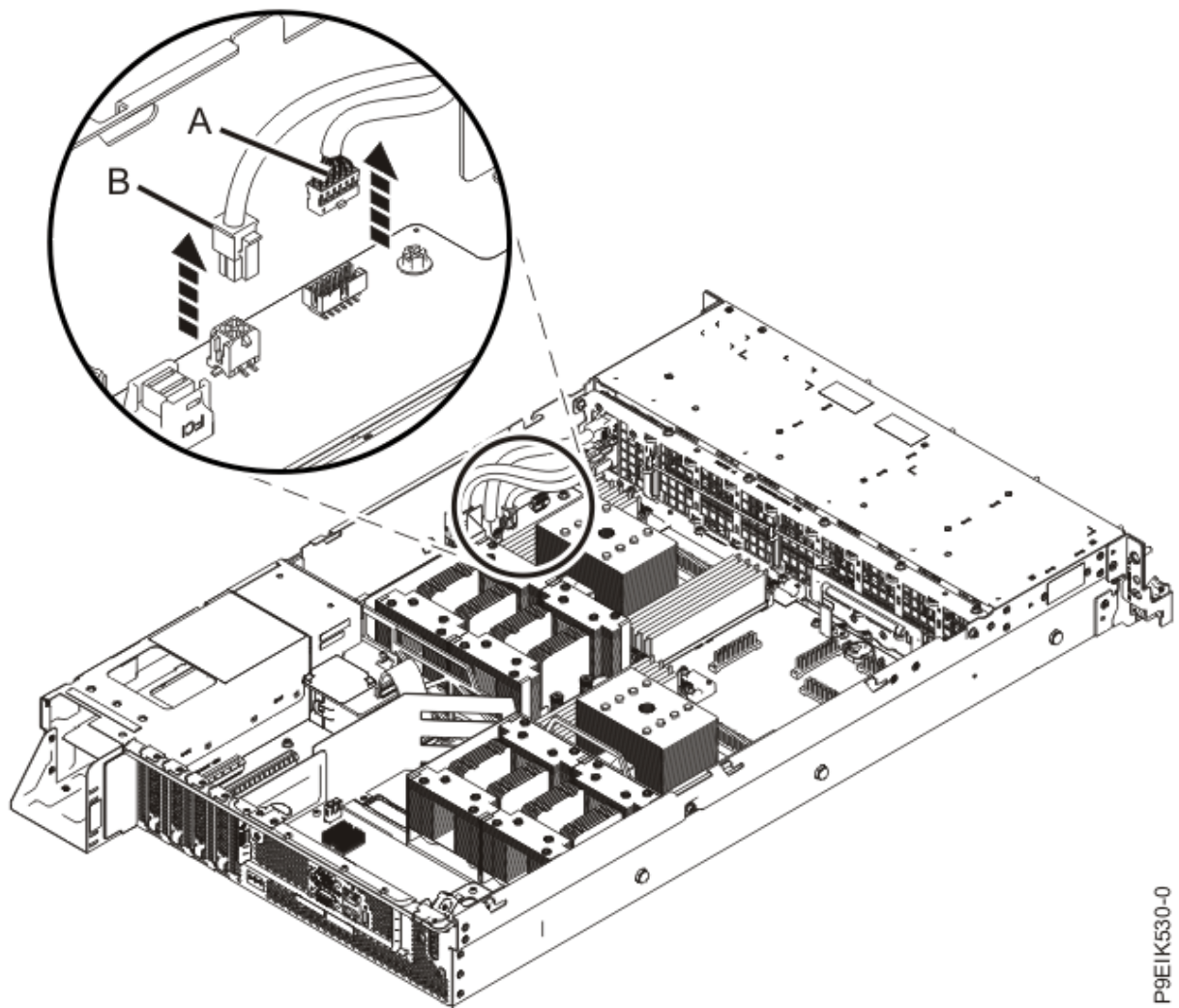
Figure 36. Removing the USB cable and the power switch and cable from the system backplane and the disk drive and fan card

6. Pressing the latch release on the connector, disconnect the power switch and cable **(B)** from the system backplane.
7. Remove the rack installation support from the side of the system as shown in .

P9EHY503-0
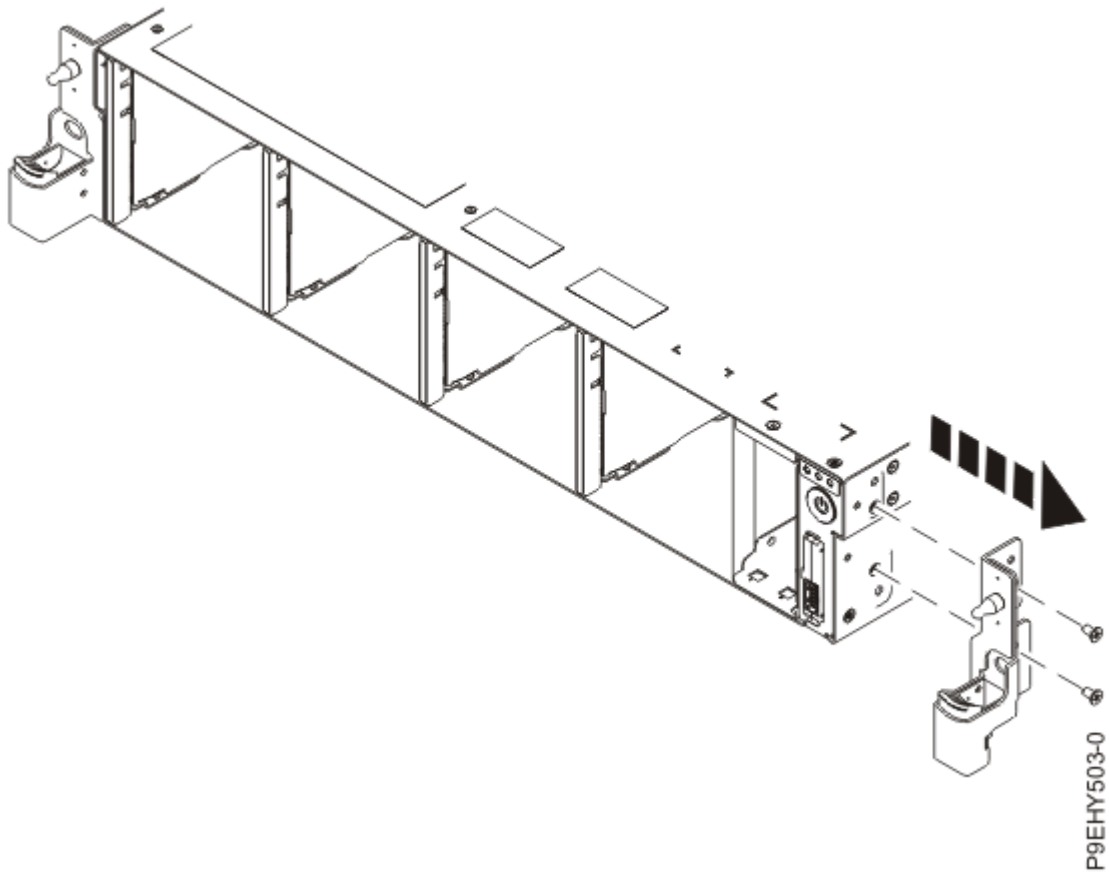
Figure 37. Removing the rack installation support

8. Remove the top and side screws from the power switch as shown in .
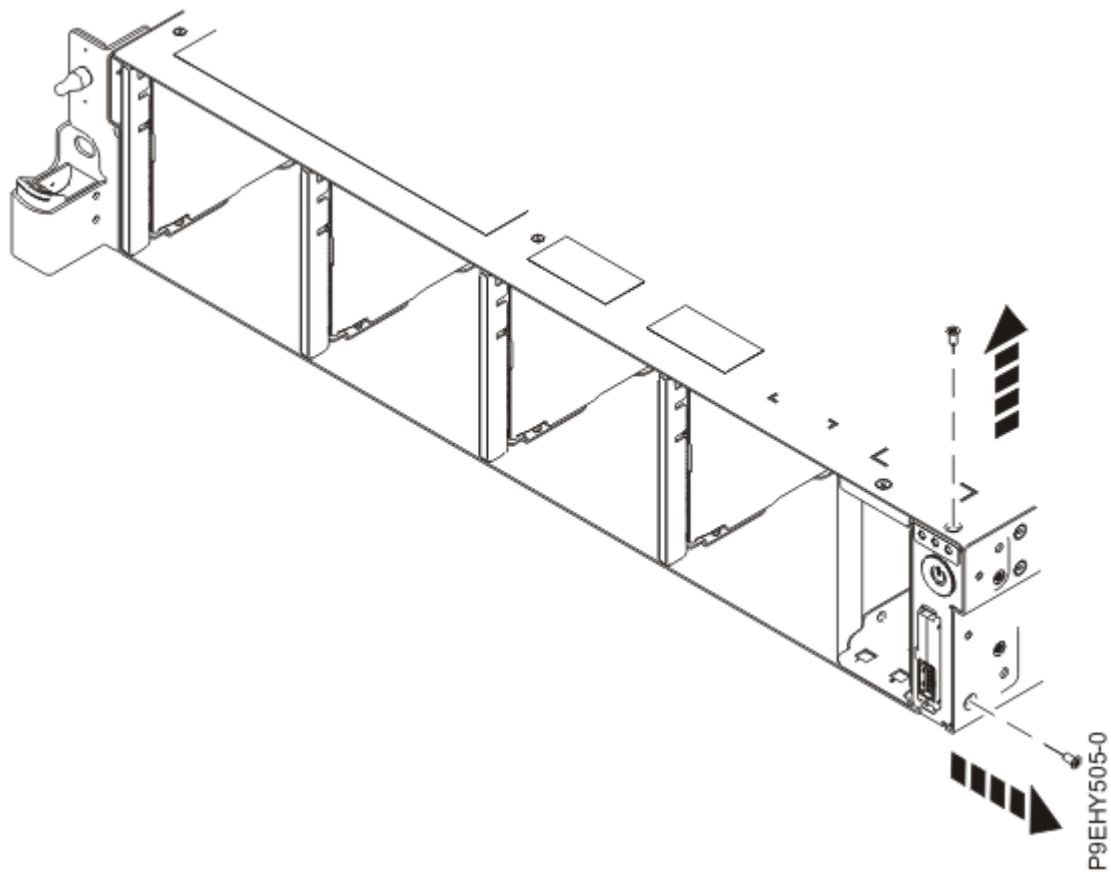
Figure 38. Remove the top and side screws

9. Pull the power switch from the system as shown in .
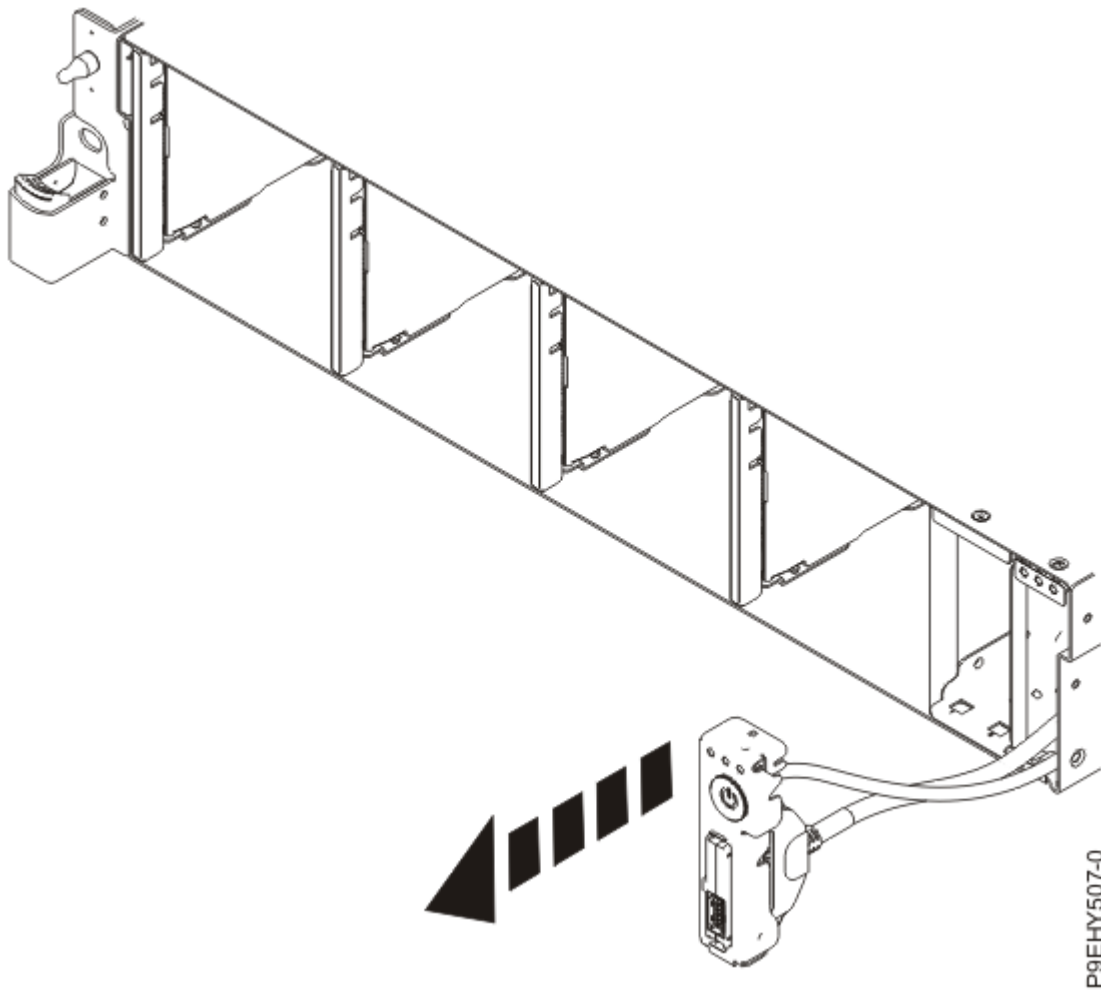
Figure 39. Pull out the power switch and cable

10. Pressing the latch releases **(A)** on the connector, disconnect the USB cable and connector from the power switch as shown in Figure 40 on page 55.
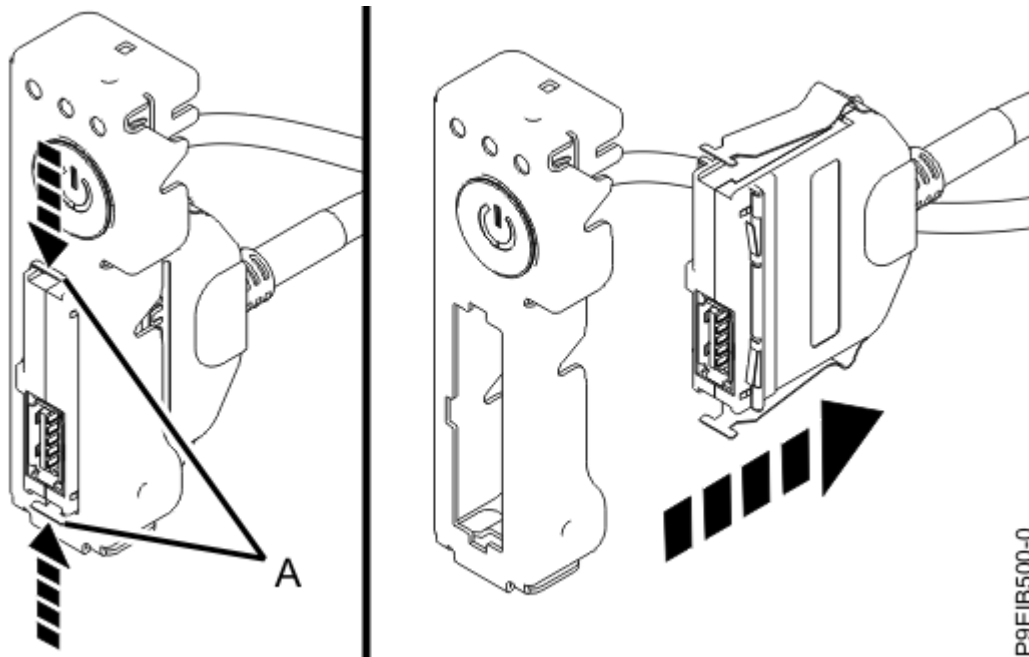
Figure 40. Removing USB cable and connector from the power switch

11. Place the USB cable and connector and the power switch and cable on the table.

Replacing the power switch and cable in the 8335-GTG or 8335-GTH system

To replace a power switch and cable, complete the steps in this procedure.

Procedure

1. Ensure that you have the electrostatic discharge (ESD) wrist strap on and that the ESD clip is plugged into a ground jack or connected to an unpainted metal surface. If not, do so now.
2. Find the replacement power switch and cable and remove it from the protective plastic envelope.
3. While you press the latches **(A)** in, connect the USB cable and connector to the power switch as shown in Figure 41 on page 56.
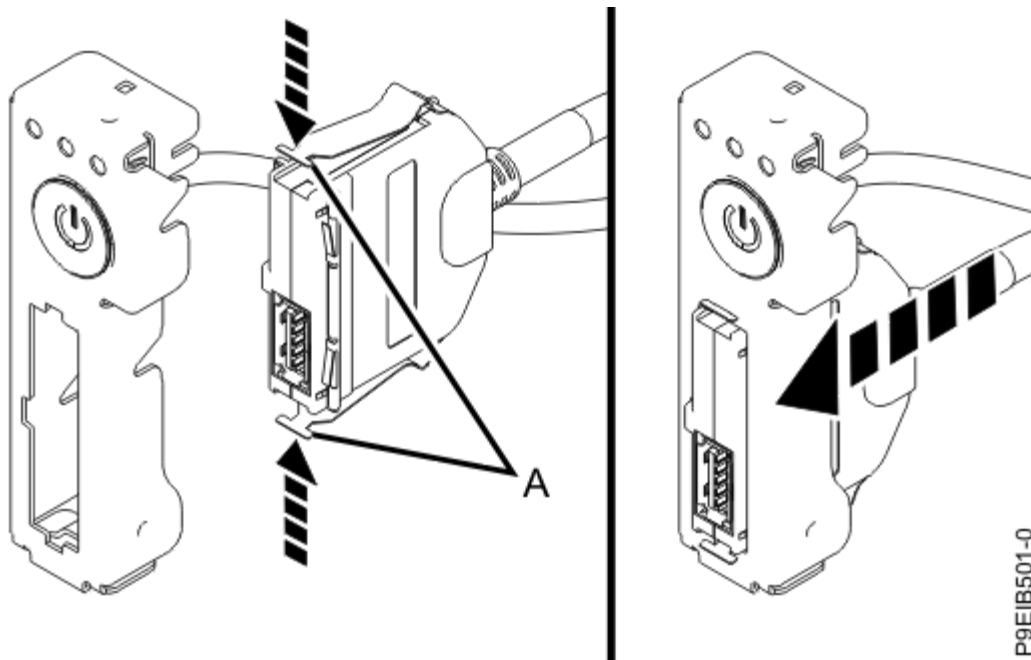
Figure 41. Attaching the USB cable and connector to the power switch

4. Insert the USB cable and the power switch and cable into the system as shown in Figure 42 on page 57. Be careful to route the cables through to the system backplane.
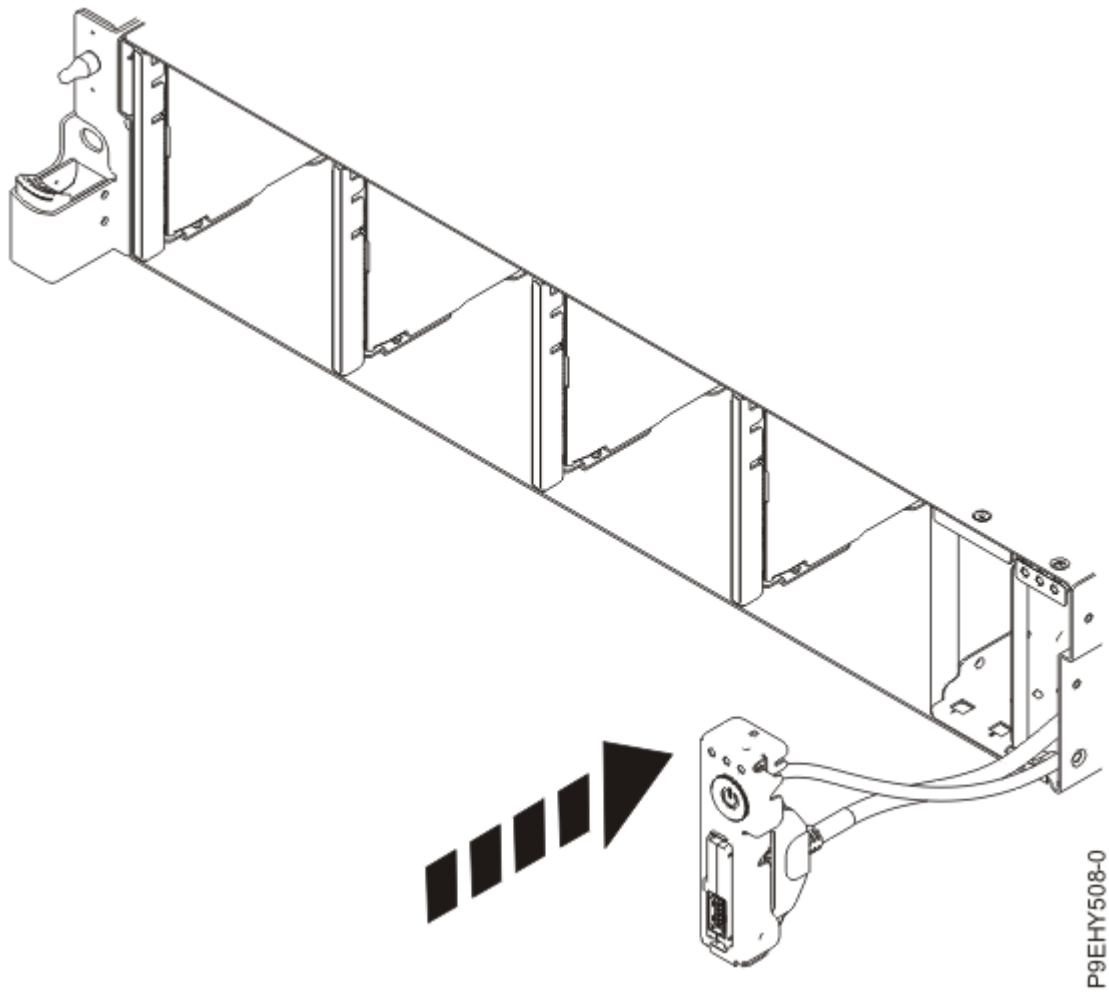
Figure 42. Replacing the front USB cable into the system backplane

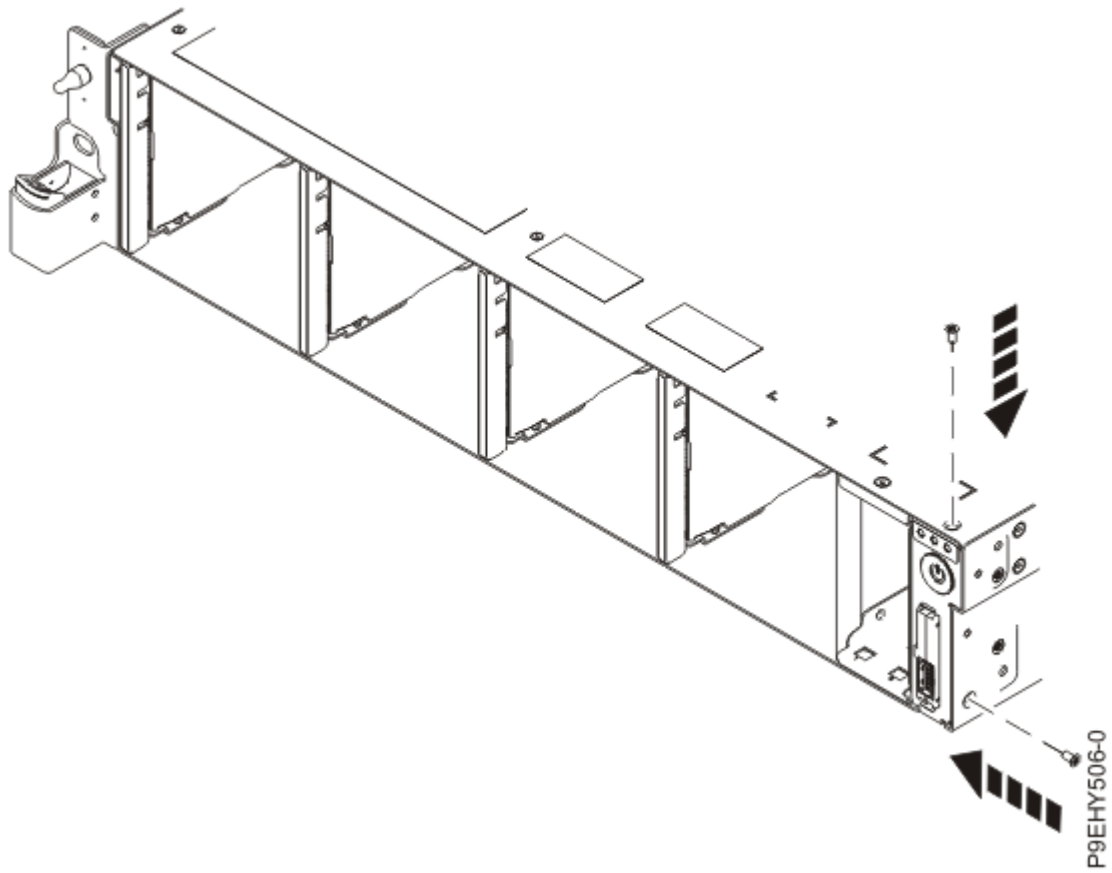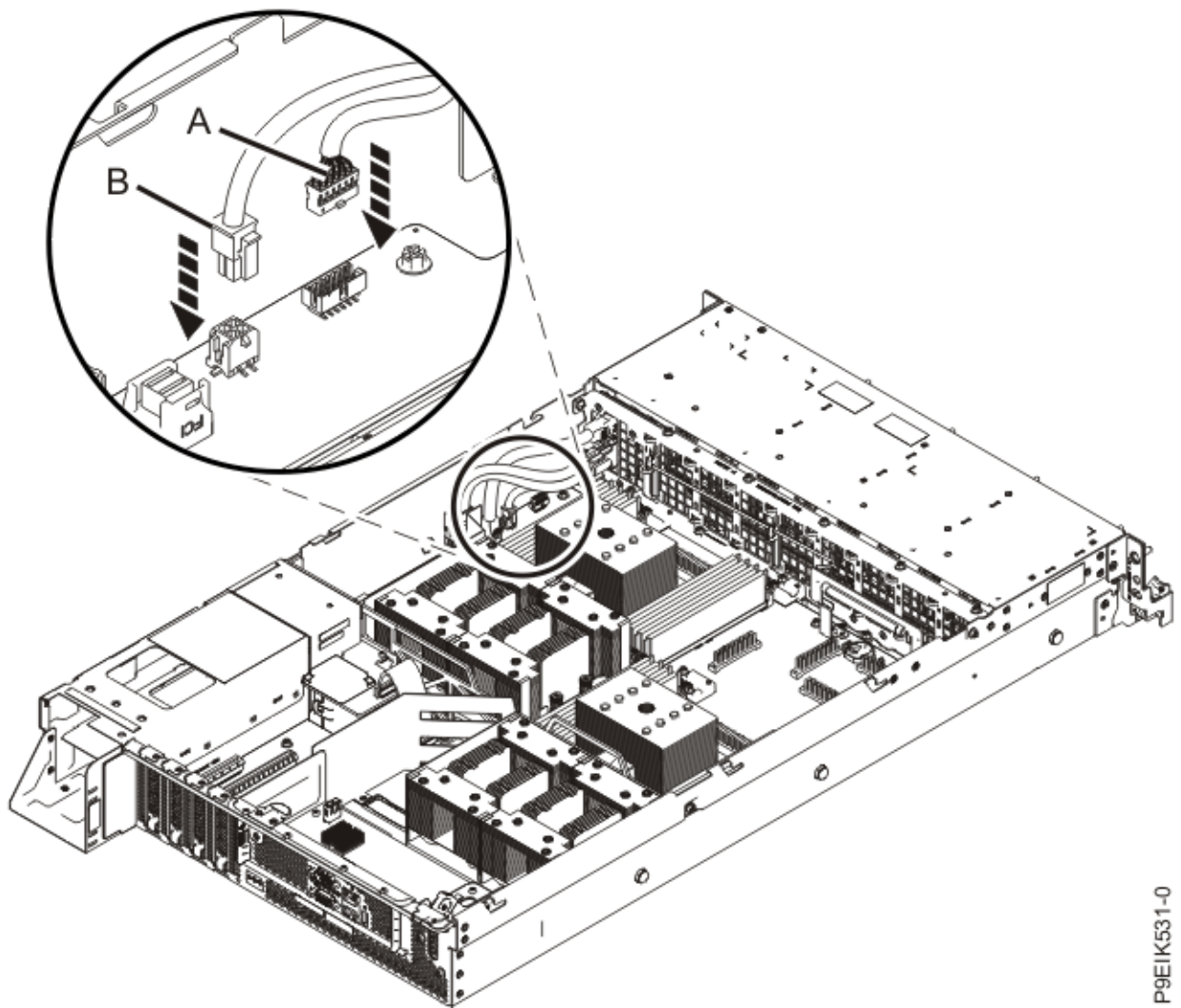5. Replace the top and side screws for the power switch as shown in .

Figure 43. Replace the top and side screws

6. Using the labels, plug the USB cable **(A)** and the power switch and cable **(B)** to the system backplane as shown in .

Ensure that the cable latch clip snaps into place on the connectors.

Figure 44. Plugging in the cables

7. Replace the rack installation support on the side of the system as shown in .
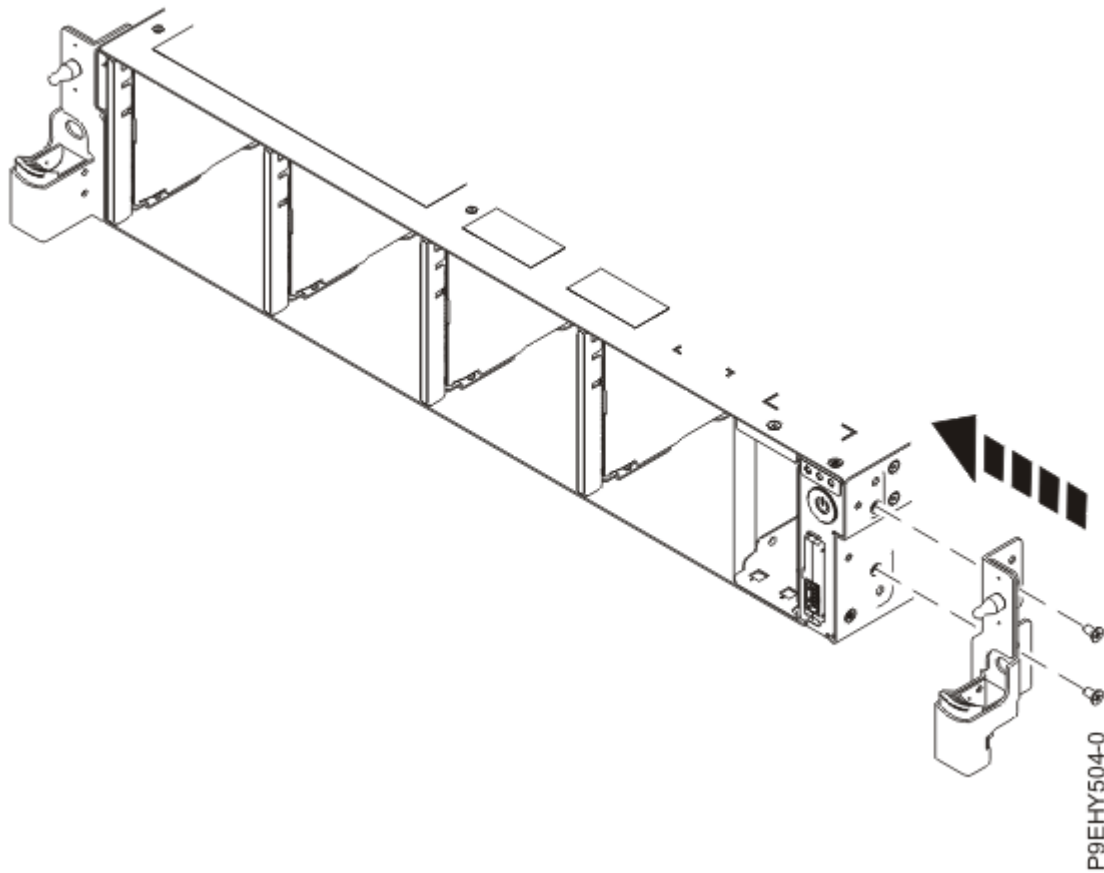
Figure 45. Replacing the rack installation support

8. Secure each cable in the retaining clip on the inside wall of the system.

9. Replace the disk drive and fan card.

   For instructions, see "Replacing the disk drive and fan card in the 8335-GTG or 8335-GTH system" on page 16.

What to do next

Prepare the system for operation. For instructions, see "Preparing the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system for operation after you remove and replace internal parts" on page 142.

Removing and replacing the system backplane in the 8335-GTG or 8335-GTH system

Learn how to remove and replace the system backplane in the system.

Preparing the 8335-GTG or 8335-GTH system to remove and replace the system backplane

To prepare the system to remove and replace a system backplane, complete the steps in this procedure.

Before you begin

Before you begin replacing the system backplane, record the system serial number and machine model type. After you replace the system backplane, you must set the system serial number and machine model type in the system backplane.

About this task

As part of the system backplane replacement, the system processor modules, graphics processors, and memory modules are moved from the system backplane to the replacement system backplane. Do not remove those parts from the system backplane until directed. You transfer those components from the system backplane as part of the system backplane replacement procedure. This process keeps the parts safe during the system backplane replacement.

As part of the system processor module replacement, the heat sink is removed. If the system processor module heat sink or if the thermal interface material (TIM) is damaged, it must be replaced. Ensure that you have spare system processor module heatsinks and system processor module TIMs available before proceeding.

⚠️ **CAUTION: The GPU must not be separated from its heatsink.**

Procedure

Power off the system and place it in the service position.

For instructions, see "Preparing the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system to remove and replace internal parts" on page 138.

Removing the system backplane from the 8335-GTG or 8335-GTH system

To remove a system backplane, complete the steps in this procedure.

About this task

As part of the system backplane replacement, the system processor modules, graphics processors, and memory modules are moved from the system backplane to the replacement system backplane. Do not remove those parts from the system backplane until directed. You transfer those components from the system backplane as part of the system backplane replacement procedure. This process keeps the parts safe during the system backplane replacement.

As part of the system processor module replacement, the heat sink is removed. If the system processor module heat sink or if the thermal interface material (TIM) is damaged, it must be replaced. Ensure that you have spare system processor module heatsinks and system processor module TIMs available before proceeding.

⚠️ **CAUTION: The GPU must not be separated from its heatsink.**

Procedure

1. Attach the electrostatic discharge (ESD) wrist strap.

   The ESD wrist strap must be connected to an unpainted metal surface until the service procedure is completed, and if applicable, until the service access cover is replaced.

   ⚠️ **Attention:**

   - Attach an electrostatic discharge (ESD) wrist strap to the front ESD jack, to the rear ESD jack, or to an unpainted metal surface of your hardware to prevent the electrostatic discharge from damaging your hardware.

   - When you use an ESD wrist strap, follow all electrical safety procedures. An ESD wrist strap is used for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

   - If you do not have an ESD wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds. If at any point in this service process you move away

from the system, it is important to again discharge yourself by touching an unpainted metal surface for at least 5 seconds before you continue with the service process.

2. Remove the air baffles (A) and (B) as shown in Figure 46 on page 62.
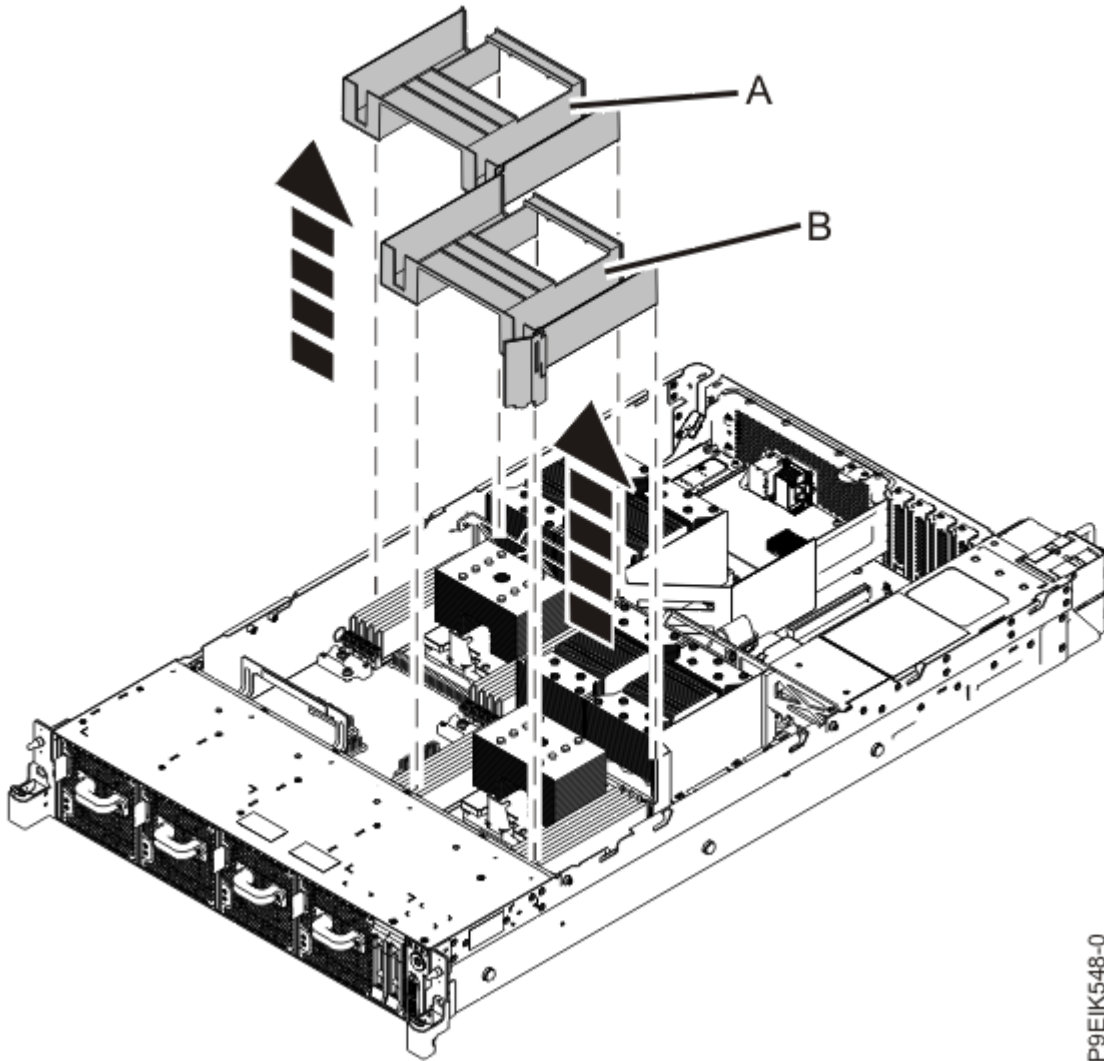
Figure 46. Removing the system processor air baffles

3. Remove the BMC card.

   For instructions, see "Removing the BMC card from the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system" on page 2.

4. Label and remove the PCIe adapters.

   For instructions, see "Removing a PCIe adapter from the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system" on page 43.

5. Label and remove the disk and fan signal cable from the system backplane.

   For instructions, see "Removing the disk and fan signal cable from the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system" on page 22.

6. Label and remove the fan power cable from the system backplane.

   For instructions, see "Removing the fan power cable from the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system" on page 29.

7. Label and remove the power switch and cable from the system backplane.

   For instructions, see "Removing the power switch and cable from the 8335-GTG or 8335-GTH system" on page 50.

8. Label and remove the USB cable from the system backplane.

   For instructions, see "Removing the USB cable and connector from the 8335-GTG or 8335-GTH system" on page 119.

9. Remove one screw **(B)** from each side of the middle support **(A)**.

   See Figure 47 on page 63.
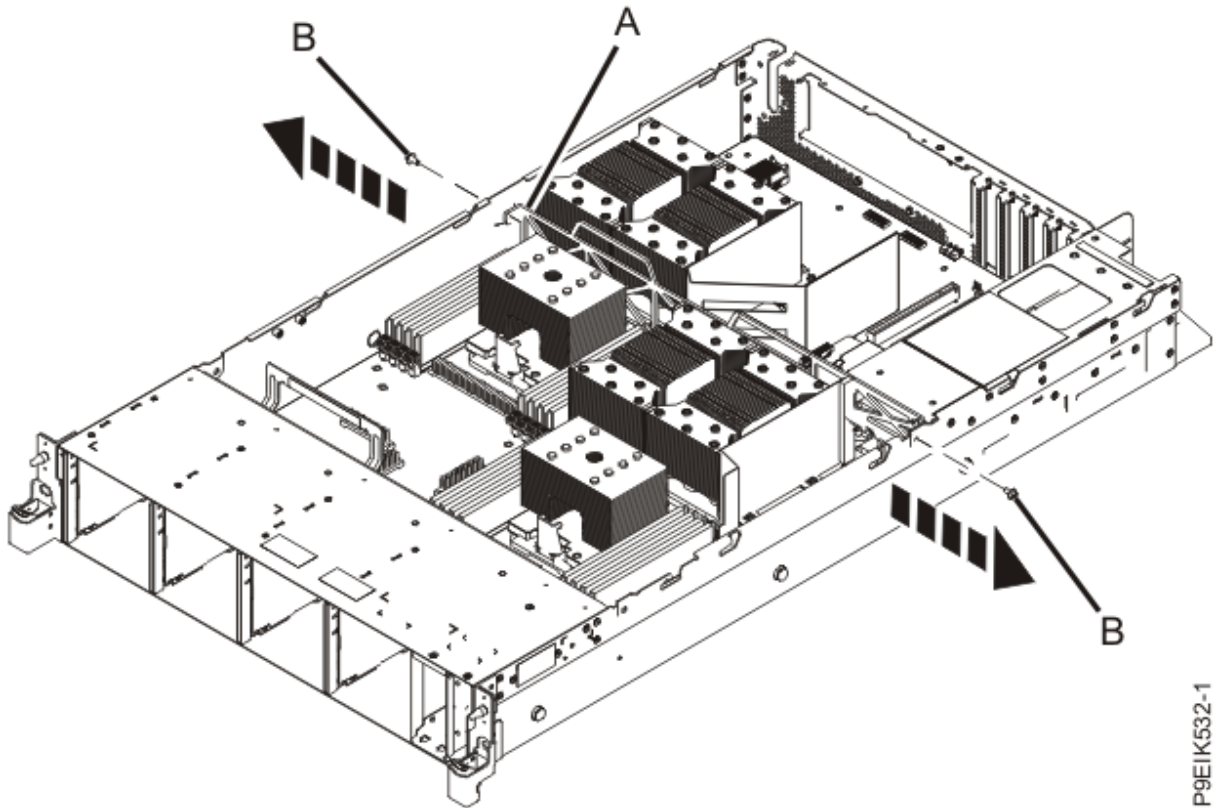
Figure 47. Remove the middle support side screws

10. Unscrew and remove 22 screws at locations **(A)**, **(B)**, and **(C)** from the system backplane and supports.

    The screw locations are shown in Figure 48 on page 64. The screws at **(A)** are the shortest. The screws at **(B)** and **(C)** are longer and secure the pipe supports.

    The three metal pipe supports at **(B)** and **(C)** need to be kept. They are used on the replacement system backplane.
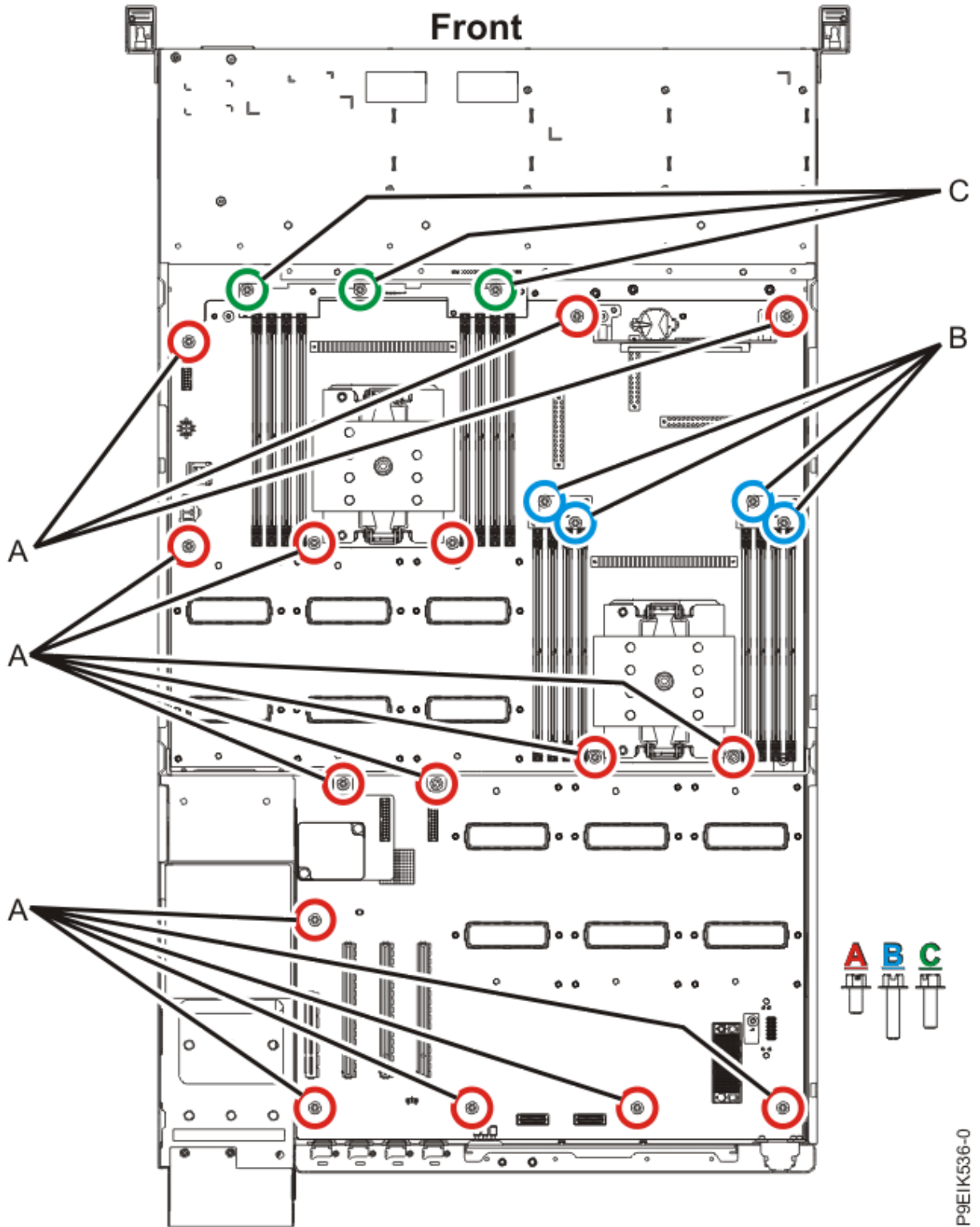
Figure 48. System backplane screw locations

11. Using the two blue handles **(A)**, lift the system backplane **(B)** straight up to remove it. See Figure 49 on page 65.
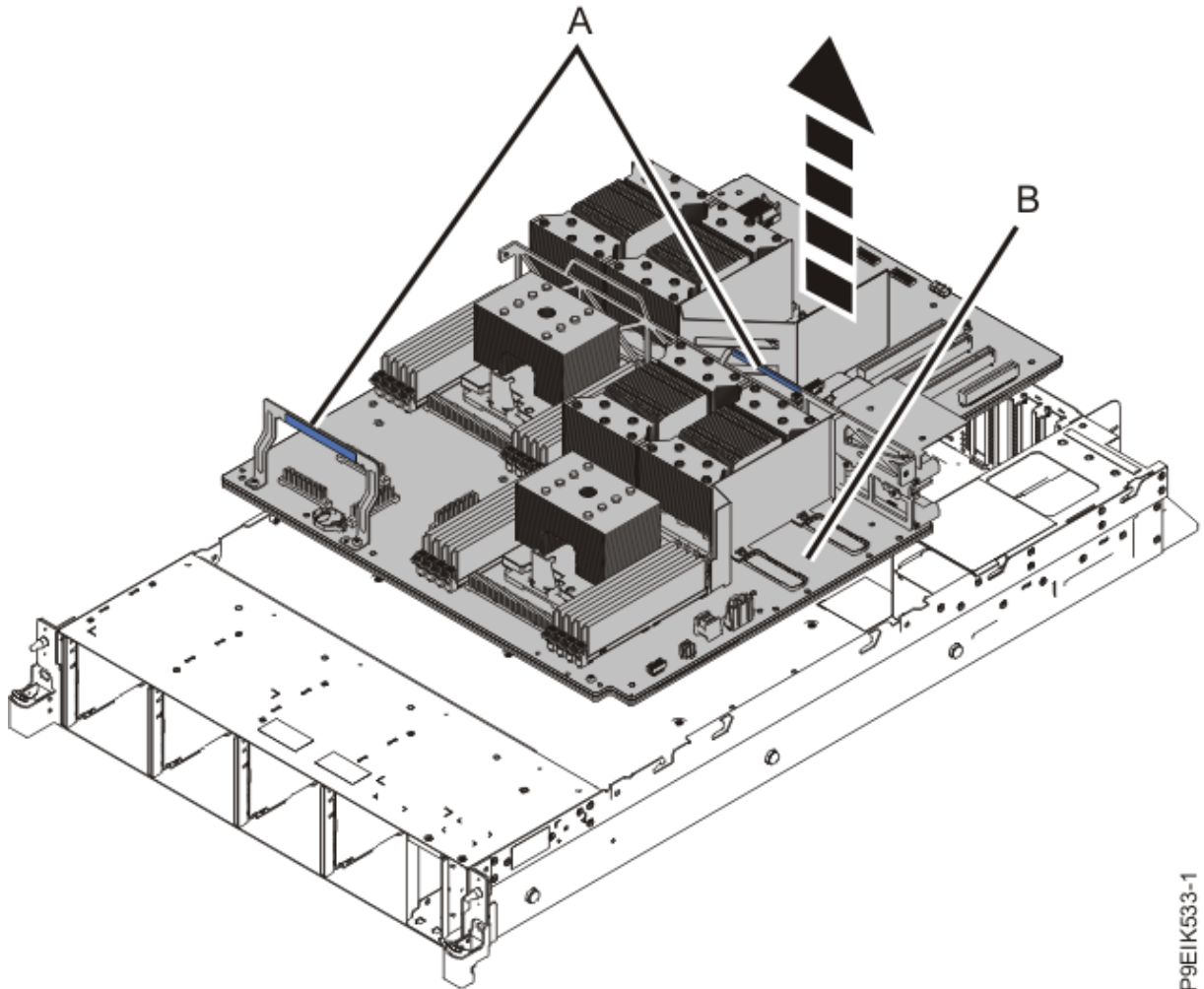
Figure 49. Lifting out the system backplane

12. Place the system backplane on the ESD mat.

Replacing the system backplane in the 8335-GTG or 8335-GTH system

To replace a system backplane, complete the steps in this procedure.

Procedure

1. Ensure that you have the electrostatic discharge (ESD) wrist strap on and that the ESD clip is plugged into a ground jack or connected to an unpainted metal surface. If not, do so now.
2. Remove the replacement system backplane from the static-protective package and place it on an ESD mat.
3. Using the blue handles **(A)**, lower the system backplane **(B)** into the system.
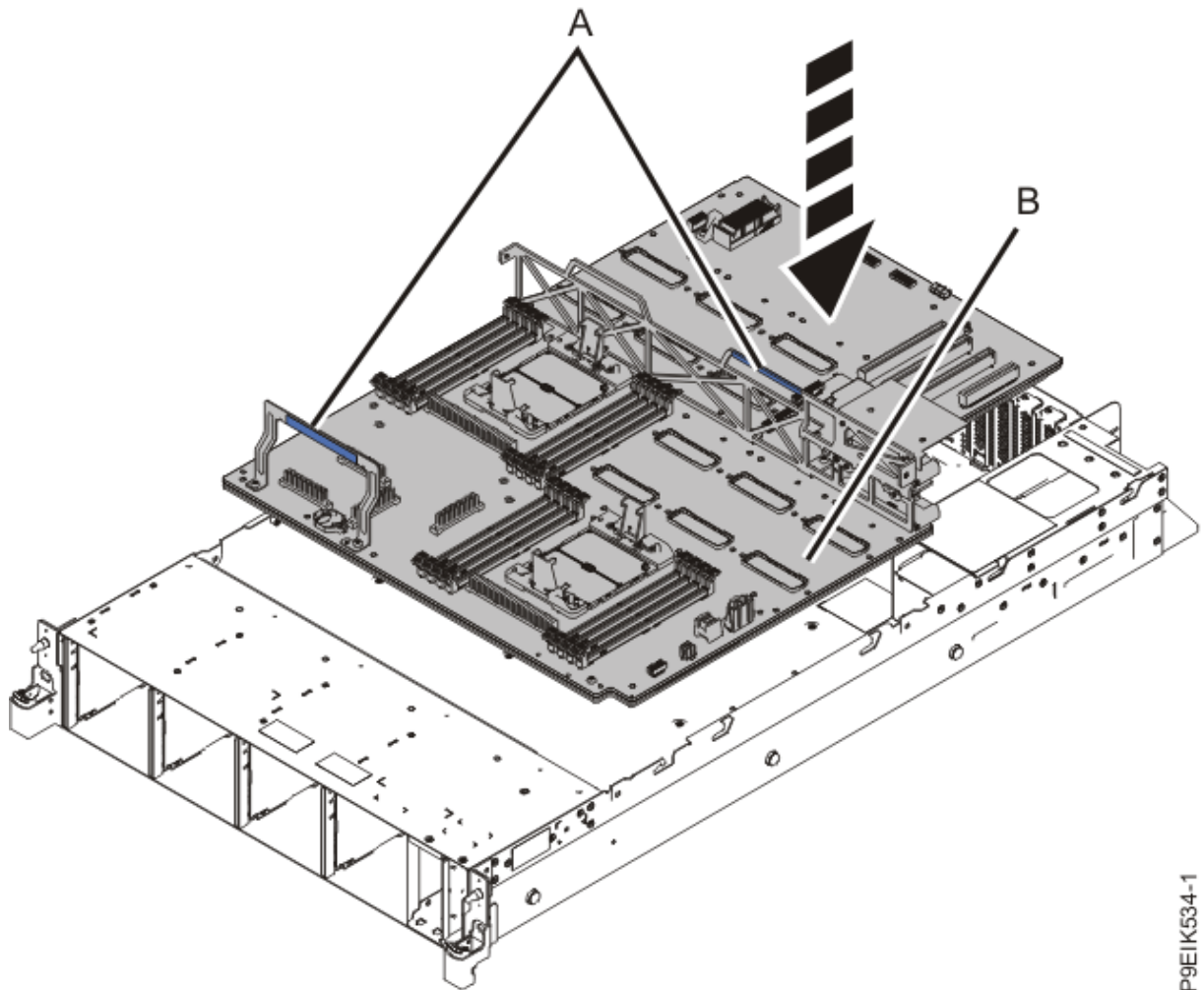
Figure 50. Lowering the system backplane into the system

4. Replace the three metal pipe supports at **(B)** (two smaller supports) and **(C)** (one longer support). Align and tighten the 22 screws into the system backplane at **(A)** and into the pipe supports at **(B)** and **(C)**.

The screw locations are shown in . The screws at **(A)** are the shortest. The screws at **(B)** and **(C)** are longer and secure the pipe supports.
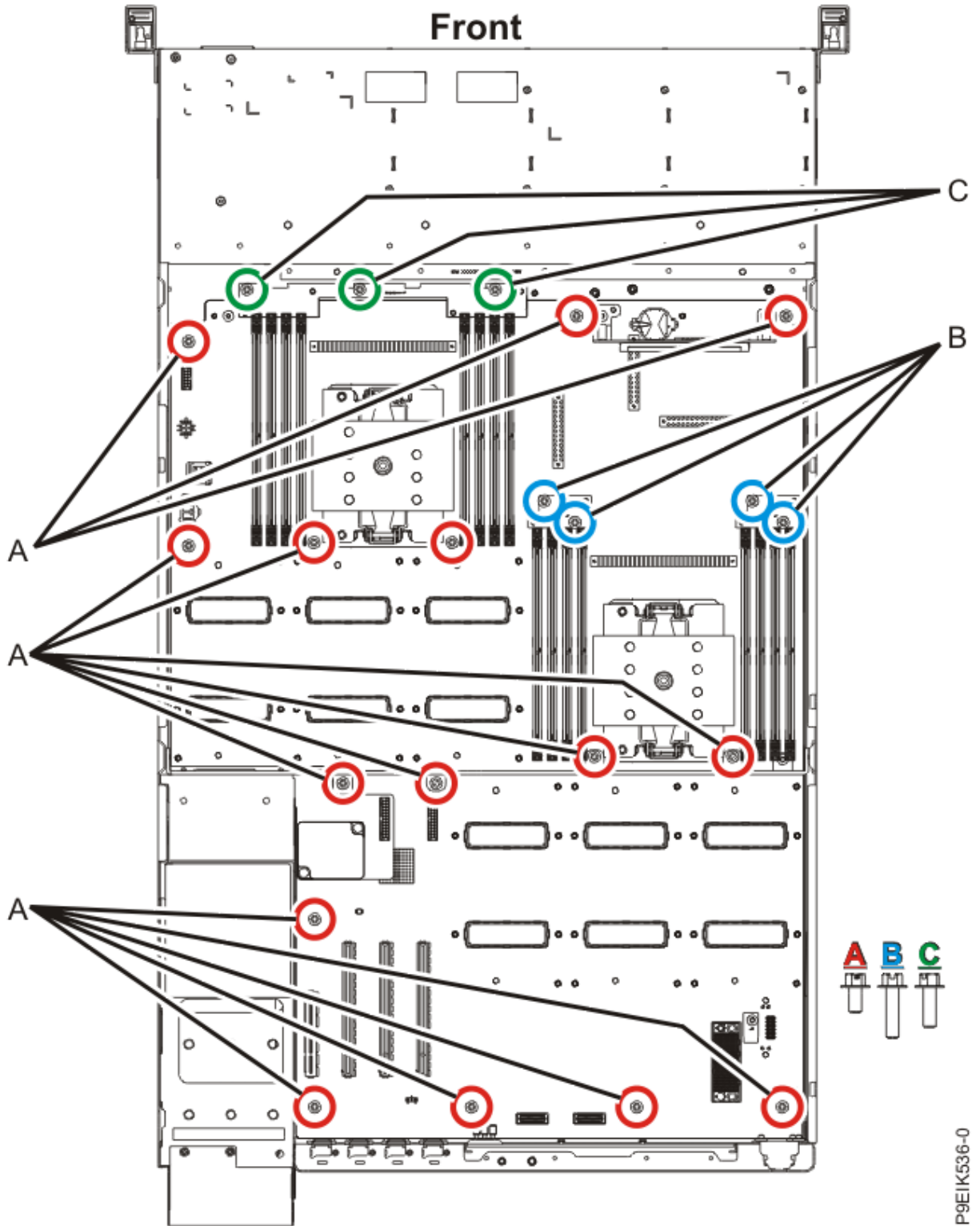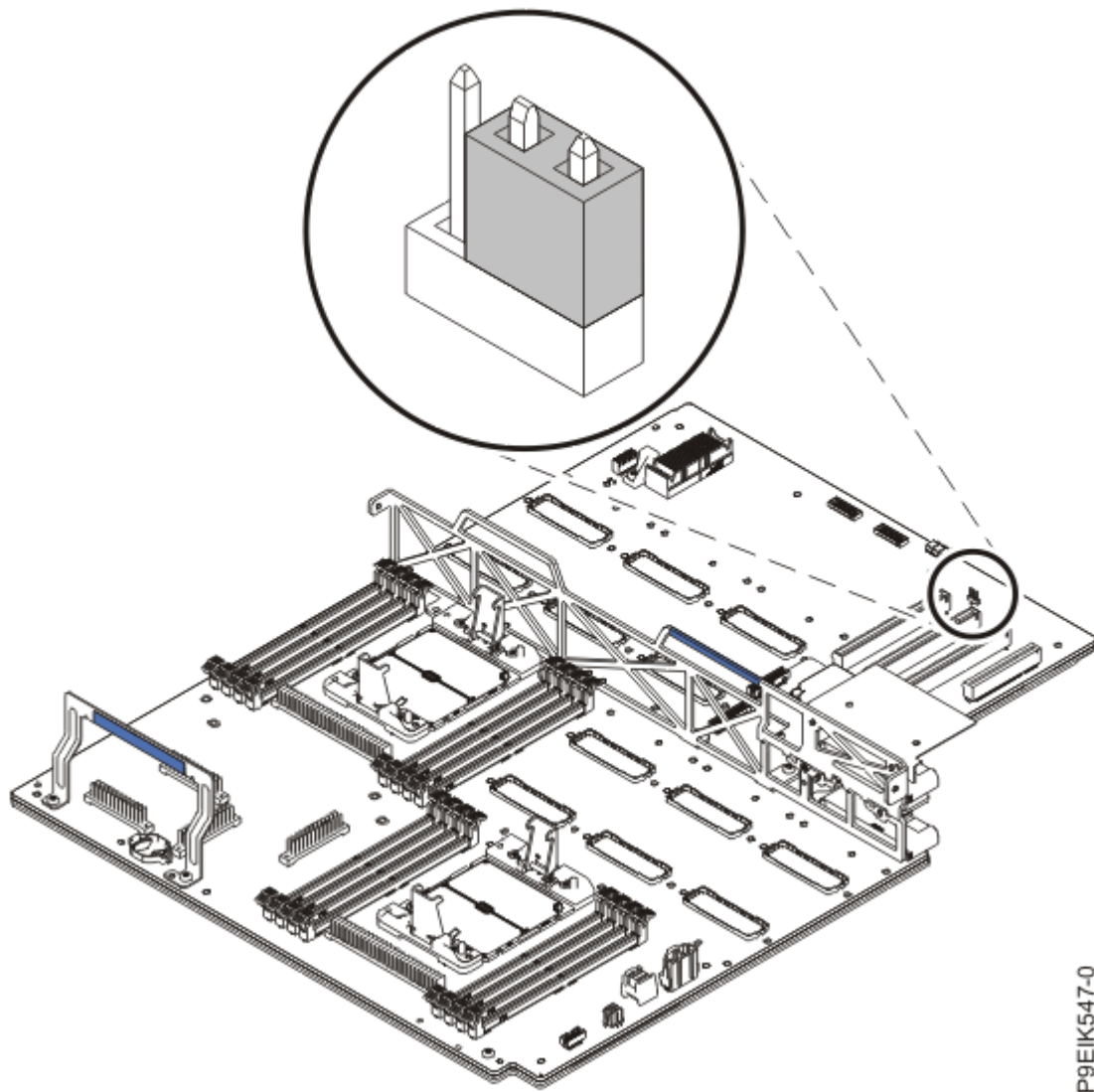
Figure 51. System backplane screw locations

5. Ensure that the jumper that is shown in is set to the air-cooled position.

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Figure 52. Jumper in air-cooled position

6. This step is only for the 8335-GTH system. If you are servicing a 8335-GTG system, skip to the next step. Check the system processor backplane jumper locations.

Ensure that system backplane has no jumpers in locations **(A)** and **(B)** as shown in . If there are jumpers in locations **(A)** and **(B)**, remove those jumpers.
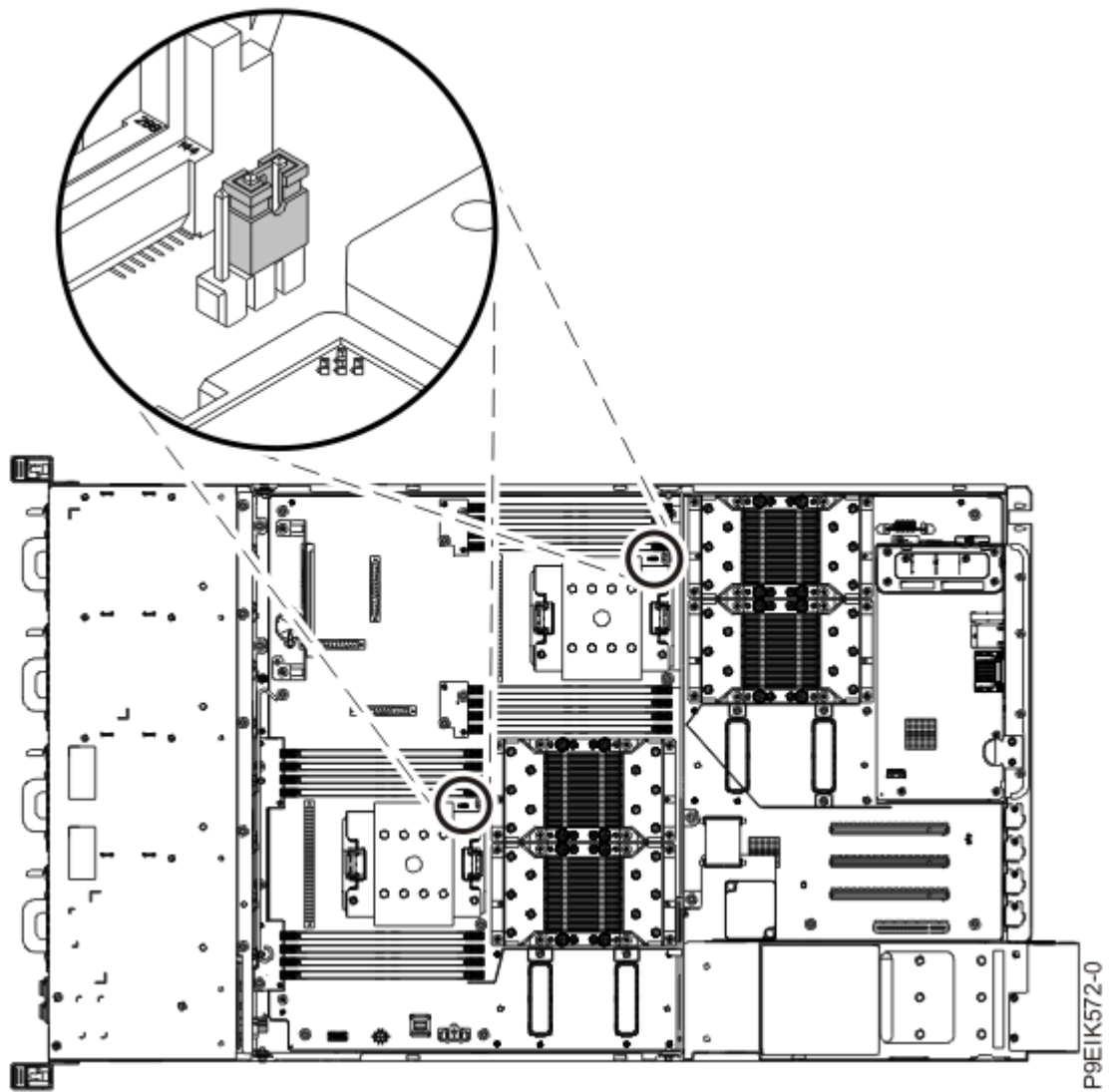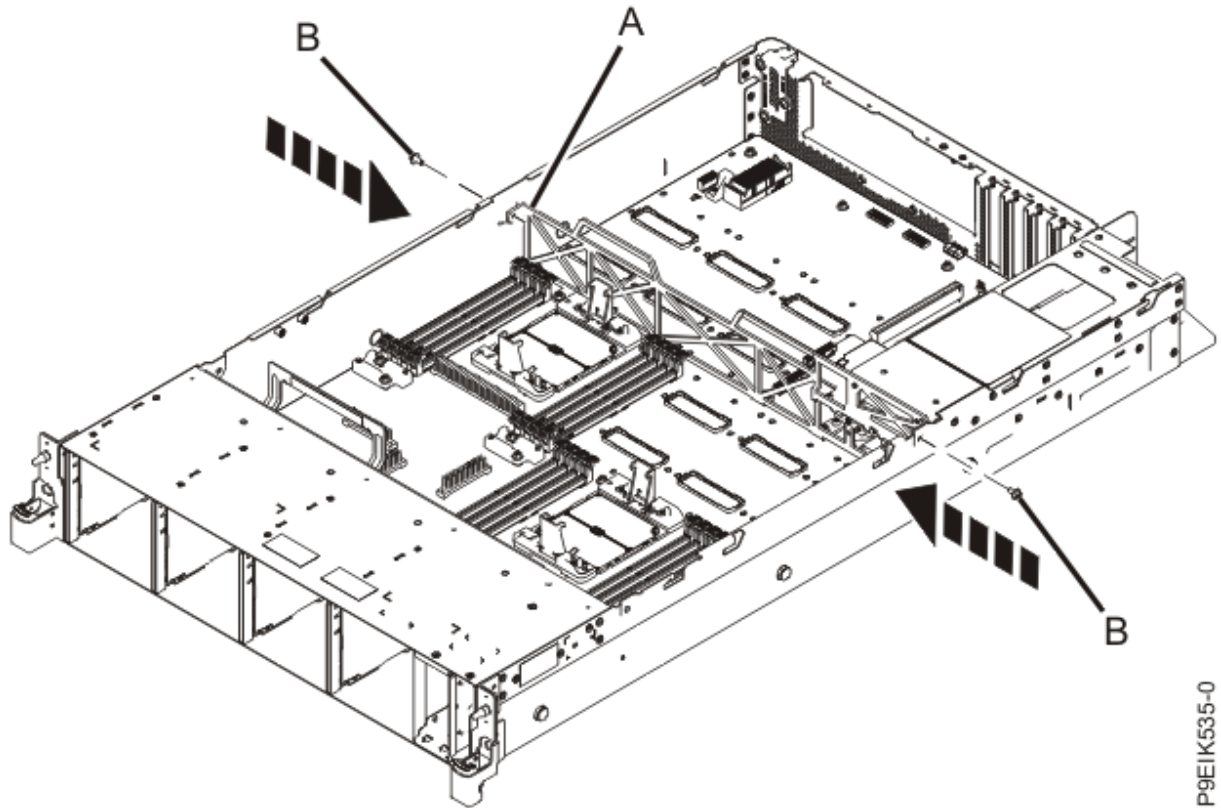
Figure 53. System processor jumper positions

7. Replace one screw **(B)** on each side of the middle support **(A)**.

   See Figure 54 on page 70.

Figure 54. Replacing the middle support screws

8. Begin the process of transferring the system processor modules, one at a time.

9. Remove the heat sink from the system processor module:

   a. Loosen the heat sink actuation screw by turning the supplied hex key counterclockwise **(A)**. Loosen the screw until it moves freely. See .

   b. Hold the heat sink **(B)** on opposing sides and remove the heat sink by lifting it upward. Set the heat sink aside with the module side face up.
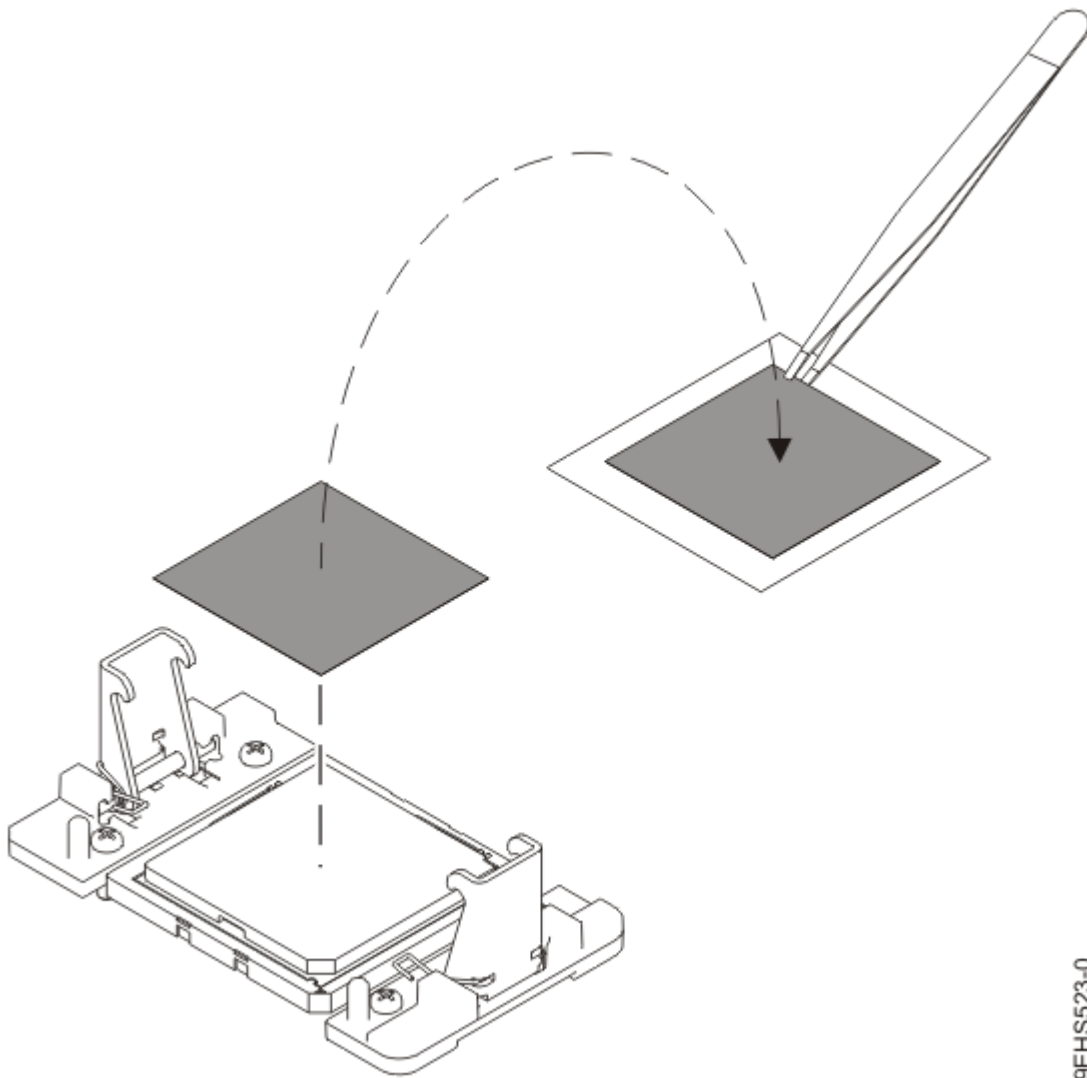
   Note: If you plan to remove dust or debris from the heat sink, this operation must be performed in another room that is greater than 7.6 m (24.9 ft) away from the work area.
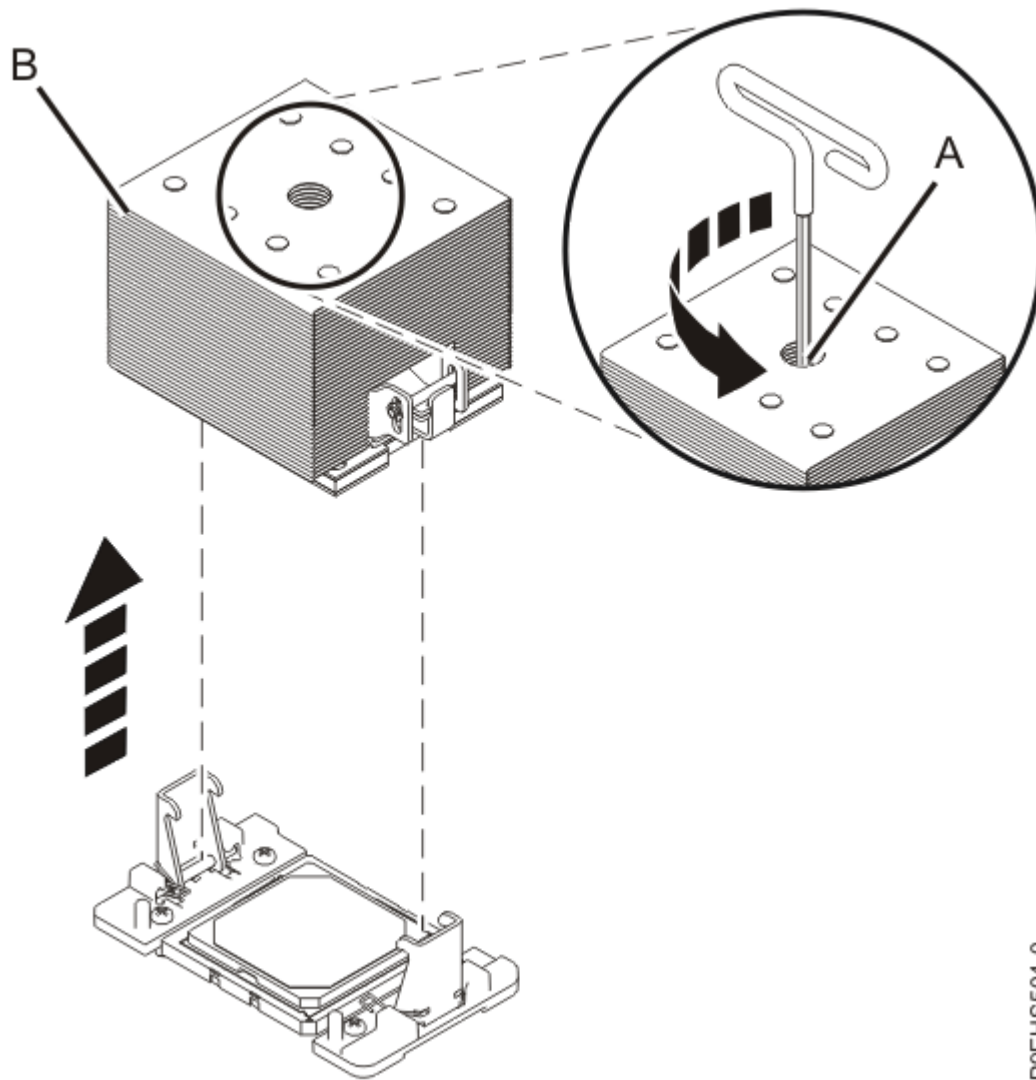
Figure 55. Removing the heat sink

10. Using tweezers, carefully remove the TIM from the top of the system processor module and place it in a clean, dry area as shown in .

The TIM can tear easily.

Figure 56. Removing the TIM from the system processor module

11. Remove dust and debris from the system processor module area.

    If dust or debris is present, use the supplied air pump to clean the system processor module area. Blow small bursts of air from the center toward the sides of the system processor module as shown in Figure 57 on page 73. If your air pump is not assembled as shown in Figure 57 on page 73, fasten the tip onto the bulb.
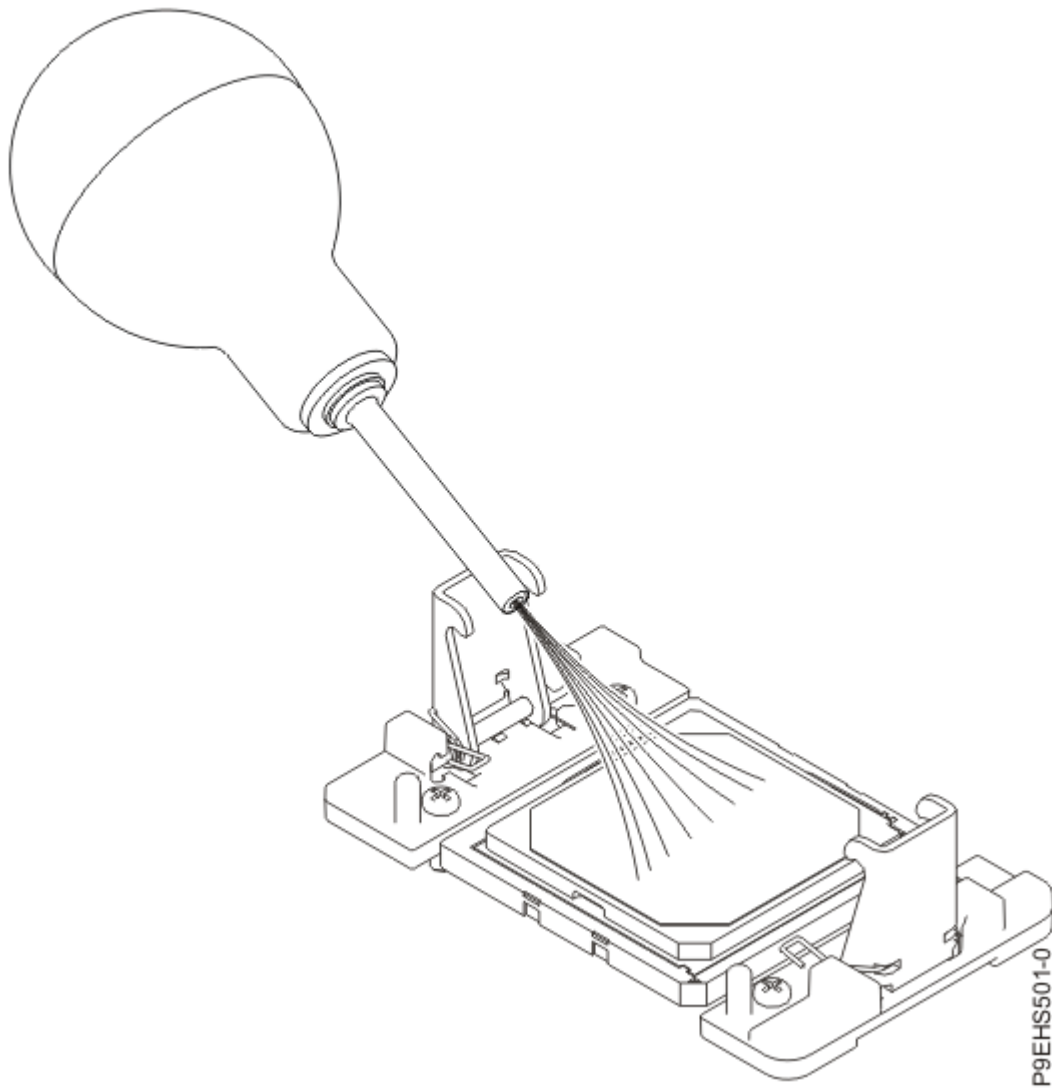
Figure 57. Removing dust and debris from the system processor module area

12. On the new system backplane, remove the socket cover from a system processor socket.

13. Prepare the system processor module for removal.

    a) Open the latches that hold the system processor module in the supplied removal tool **(A)**. Push down on the ring **(B)** while pressing in on the tabs **(C)**.
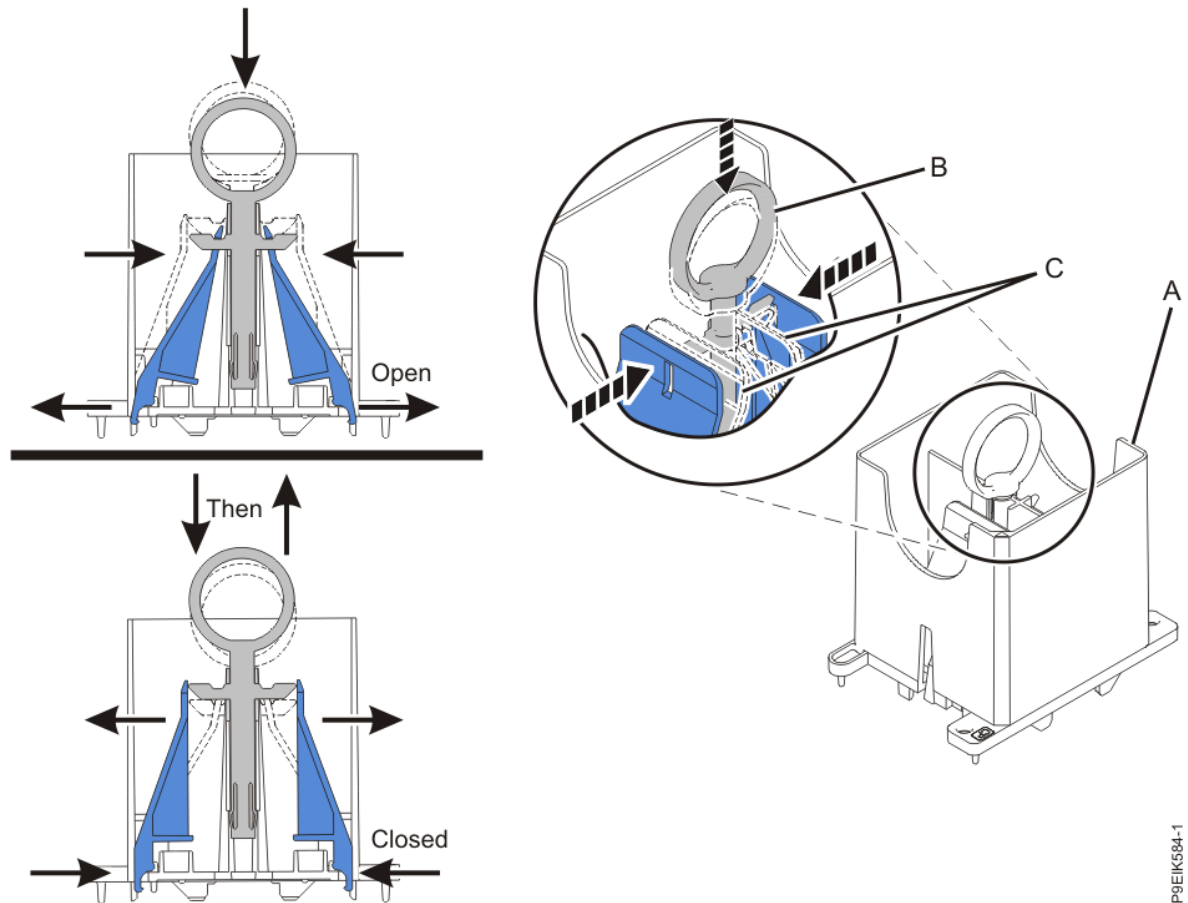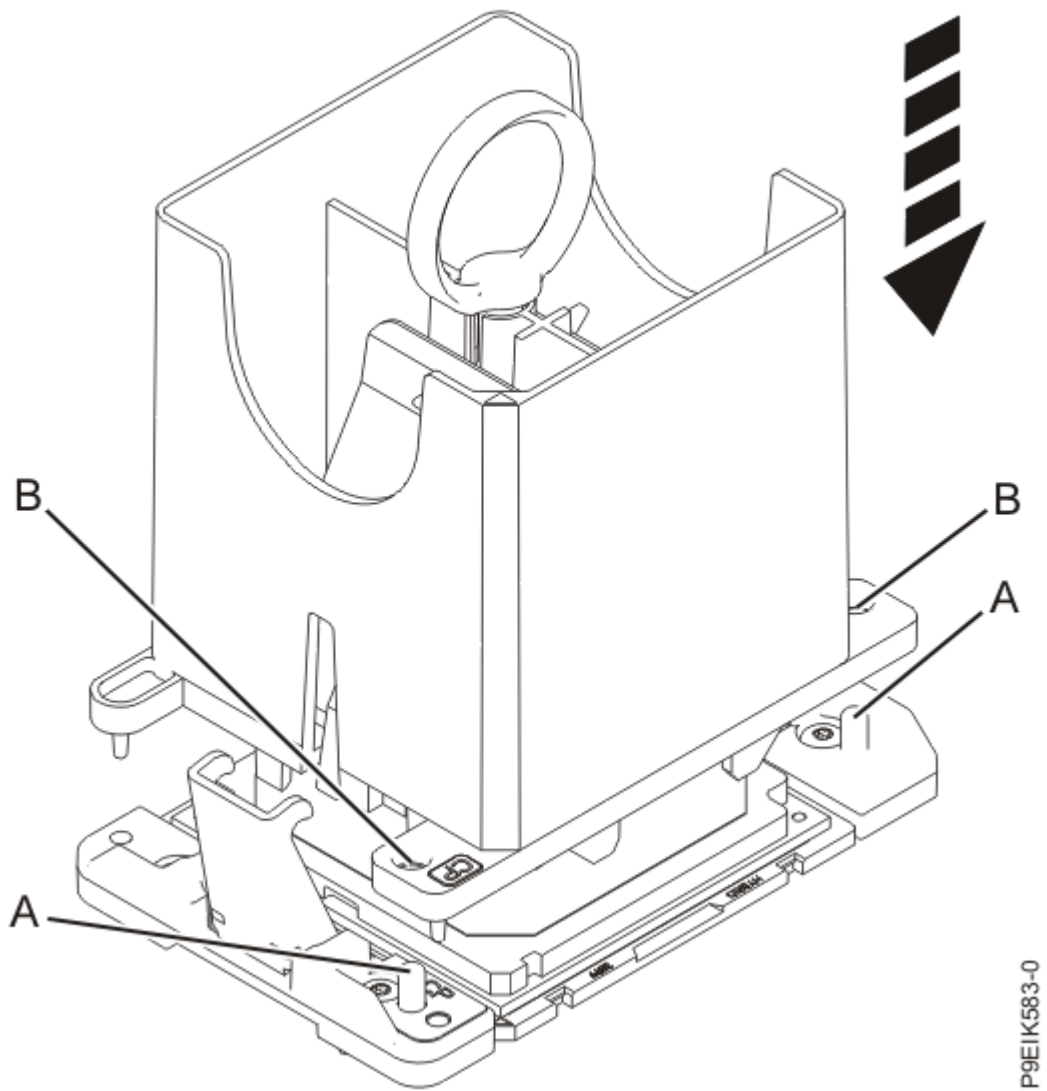

Figure 58. Opening the processor removal tool latches

b) Lower the tool over the system processor module while ensuring that the two guide pins **(A)** insert into the alignment holes **(B)** on each side of the tool.
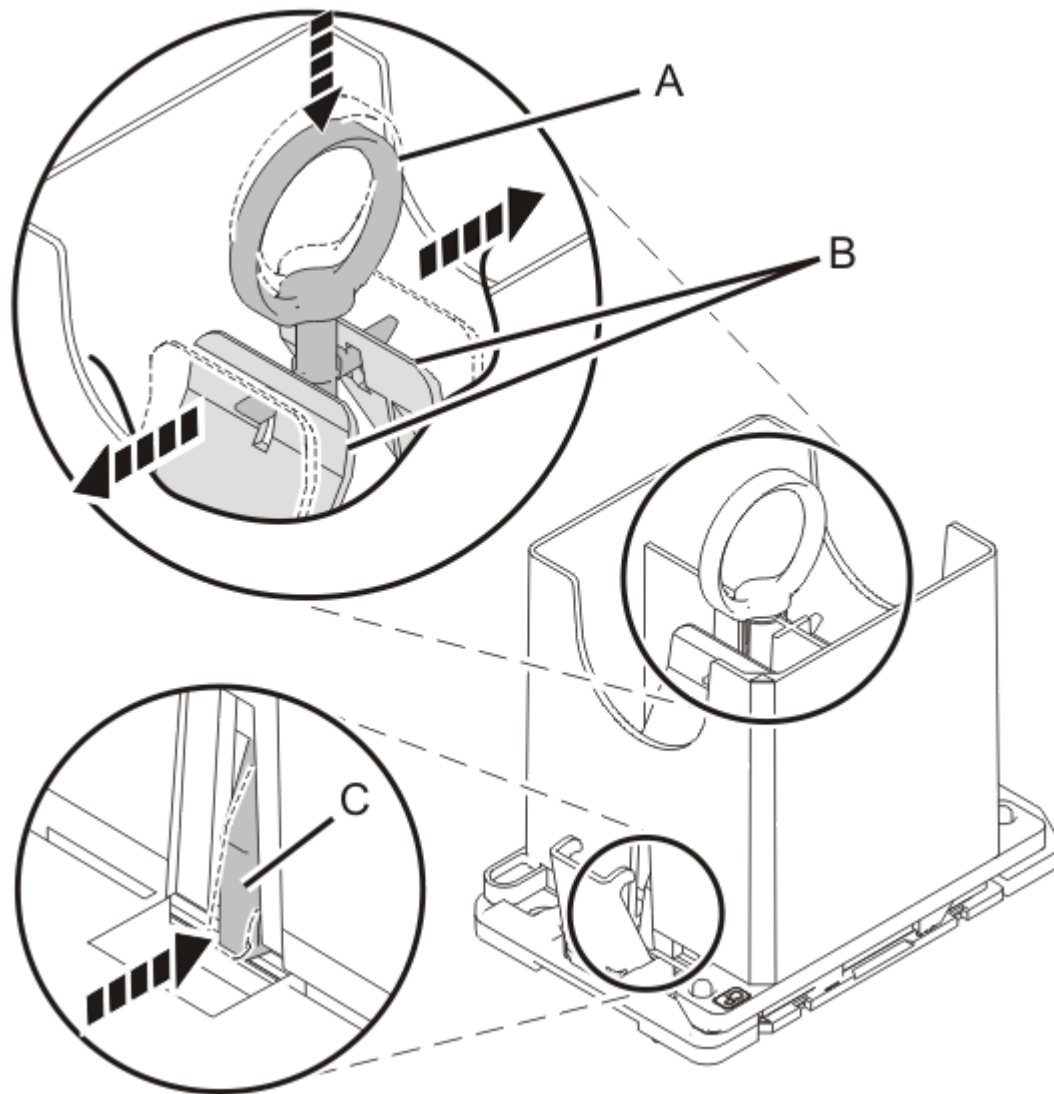
See .

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Figure 59. Lowering the removal tool onto the system processor module

c) With the removal tool sitting on top of the system processor module, push down on the ring **(A)** to close the latches **(C)** and lock the system processor module into the tool. Make sure that both of the tool jaws are locked on the system processor module.

See .

Figure 60. Locking the system processor module into the tool

14. Holding the outside of the tool, lift the tool and system processor module from the old system backplane socket to transfer it to the new system backplane socket.

15. Install the system processor module:

   a) If dust or debris is present on the system processor socket, use the supplied air pump to clean the socket. Blow small bursts of air from the center toward the sides of the socket, as shown in Figure 61 on page 77.
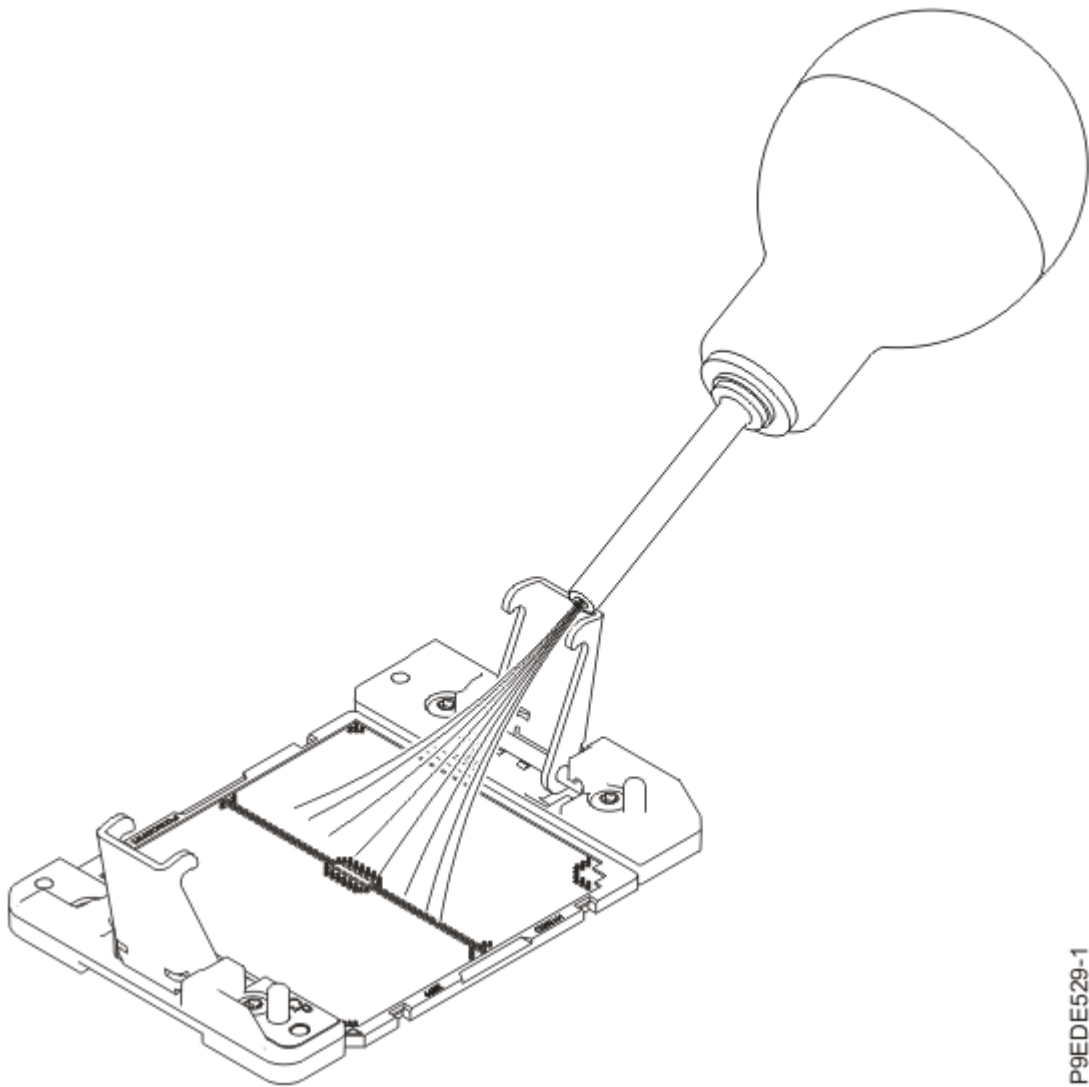
Figure 61. Removing dust and debris from the system processor socket

b) Lower the tool and system processor module onto the socket. Align the guide pins **(A)** with the alignment holes **(B)** on each side of the tool. Use care to lower the tool evenly without tilting the tool.

See .

Note: Do not attempt to slide the tool and the system processor module in any direction while the system processor module is touching the socket. If the tool and the system processor module are not aligned with the guide pins, lift the tool and the system processor module and reposition them.
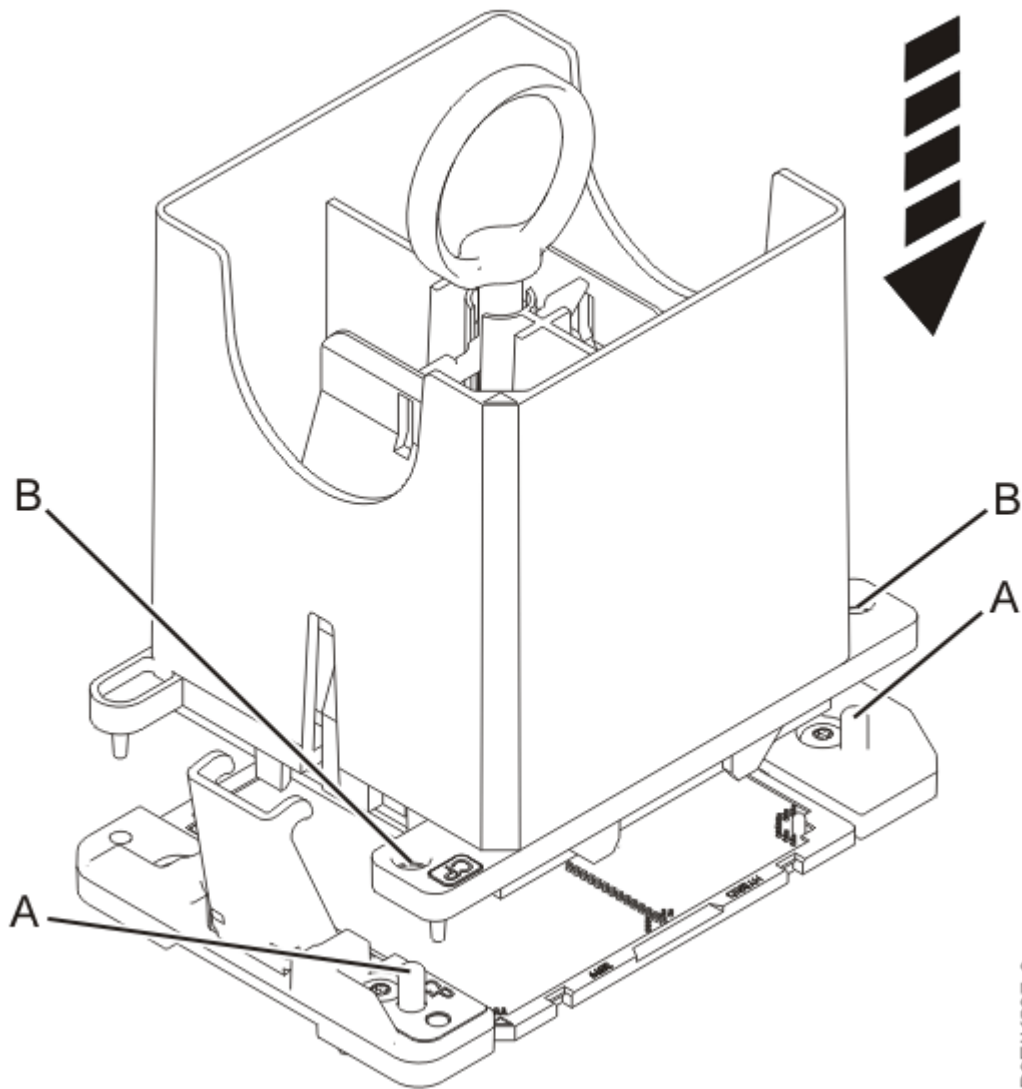
Figure 62. Installing the system processor module

c) Open the latches that hold the system processor module in the supplied removal tool **(A)**. Push down on the ring **(B)** while pressing in on the tabs **(C)**.

See
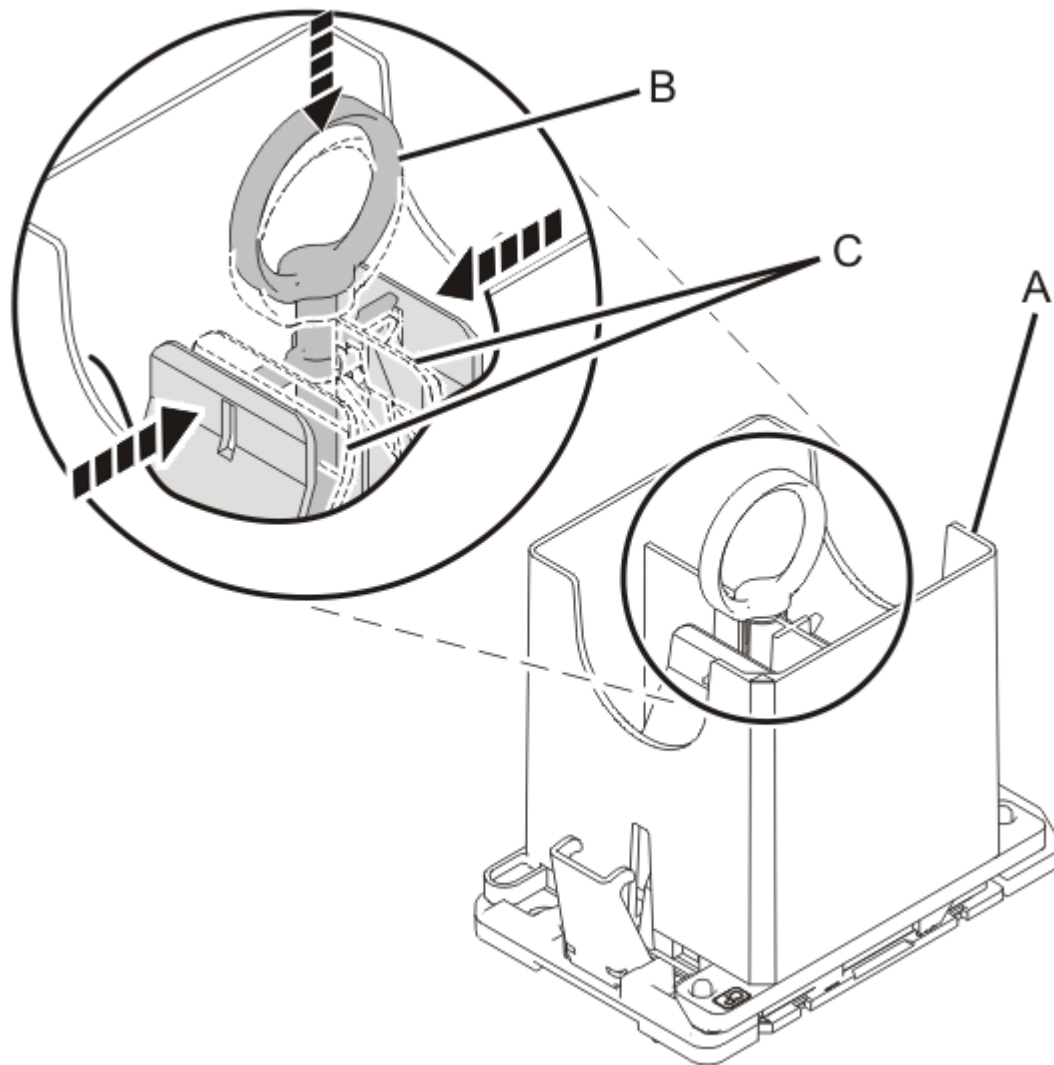
Figure 63. Removing the system processor module tool

d) Lift the tool off the system processor module.

16. Inspect the thermal interface material (TIM) for visible signs of damage, as shown in Figure 64 on page 80. If you see folds, tears, bends, or if you have doubts about the TIM, replace it.

Figure 64. Inspecting the thermal interface material
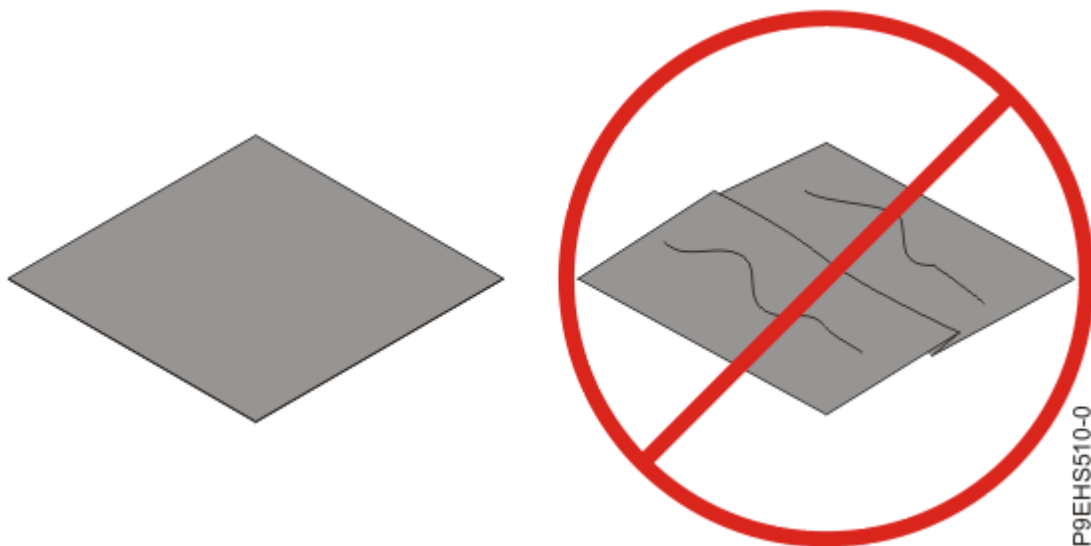
17. Choose one of the following repair options:

Option	Description
Is the TIM damaged?	It is damaged. Proceed to step "18" on page 80 to replace the gray-colored TIM and install the existing heat sink.
Is the TIM not damaged?	It is not damaged and can be reused. Proceed to step "19" on page 82 to move the gray-colored TIM and install the existing heat sink.

18. Use this step to install a new TIM and reuse the existing heat sink.

    a) Open the TIM packaging and carefully remove the TIM, holding it by the edges of the carrier strip and holding it away from the shipping container.

    b) Remove the protective film from the clear carrier strip by using the supplied tweezers.

    Note: The TIM must remain flat. Small wrinkles are acceptable, but folds are not acceptable.

    c) Using the tweezers, remove the TIM from the carrier strip and center it onto the system processor module.

    The TIM has no preferred up side. The TIM can be placed on the system processor module and centered as shown in Figure 65 on page 81.
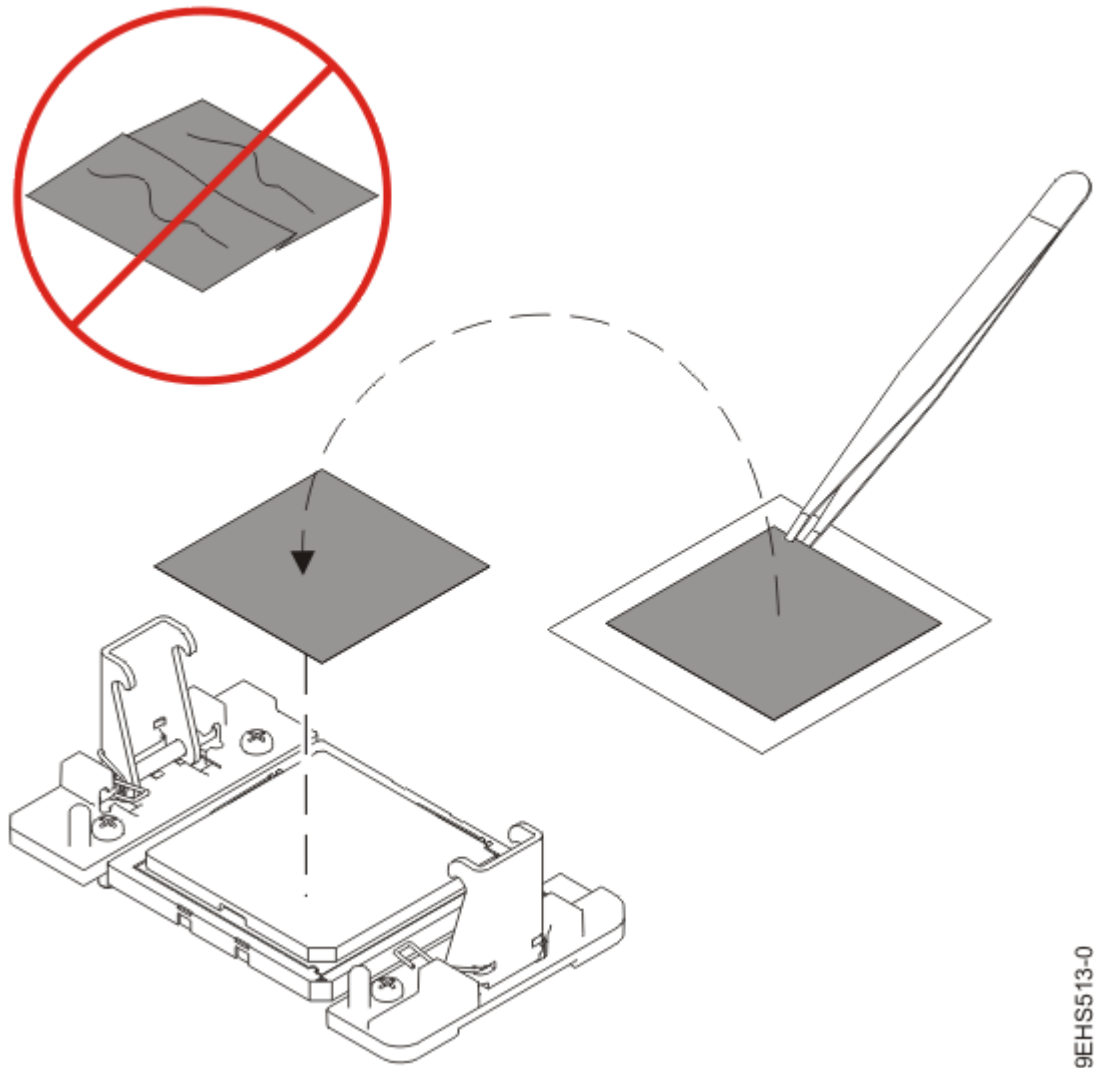
Figure 65. Installing a new TIM onto the system processor module

d) Place the heat sink on the TIM as shown in .
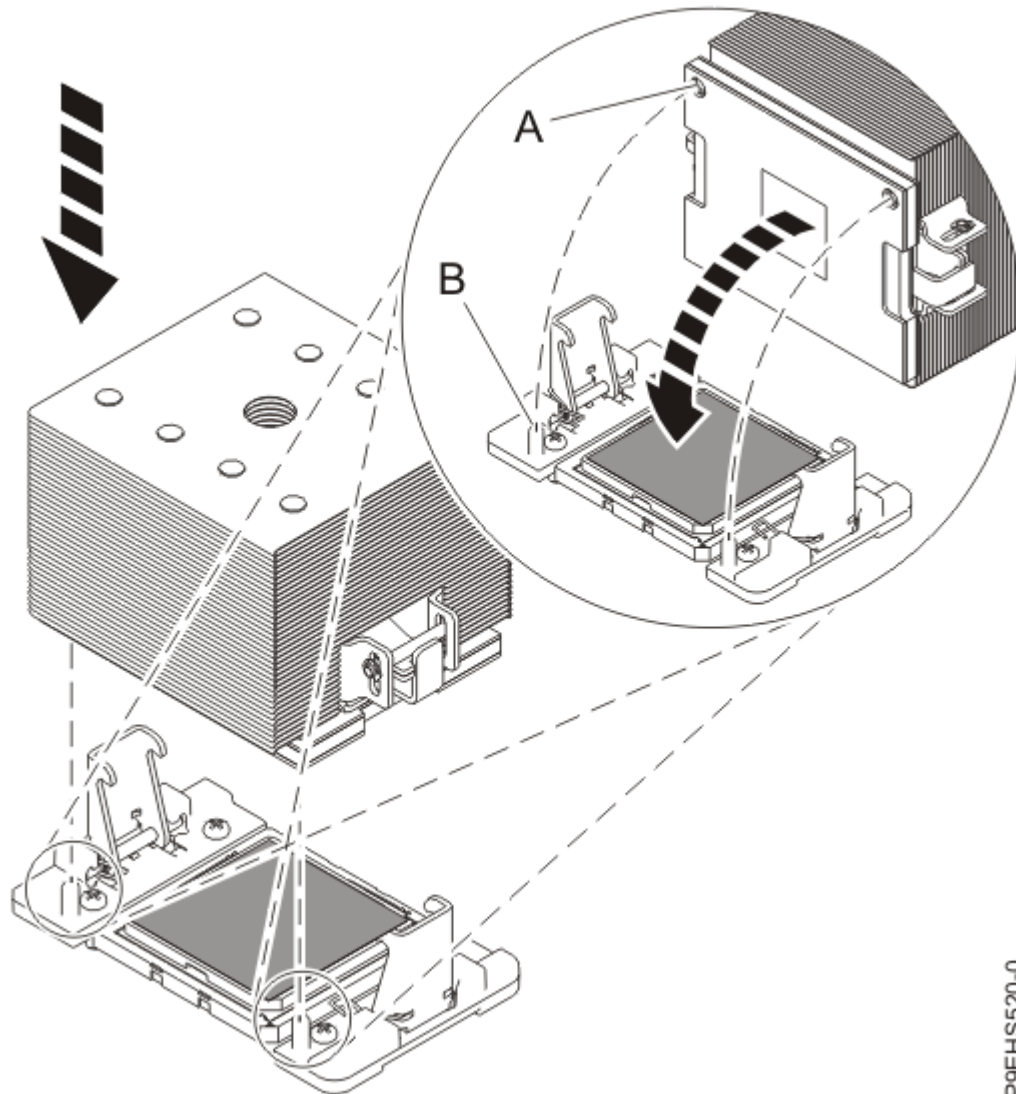
Figure 66. Installing the heat sink on the gray-colored TIM

Continue with step

19. Use this step to reuse the existing undamaged TIM and heat sink.

   a) Using the tweezers, move the old TIM from the clean, dry surface and center it onto the new system processor module.

   The TIM has no preferred up side. The TIM can be placed on the system processor module and centered as shown in
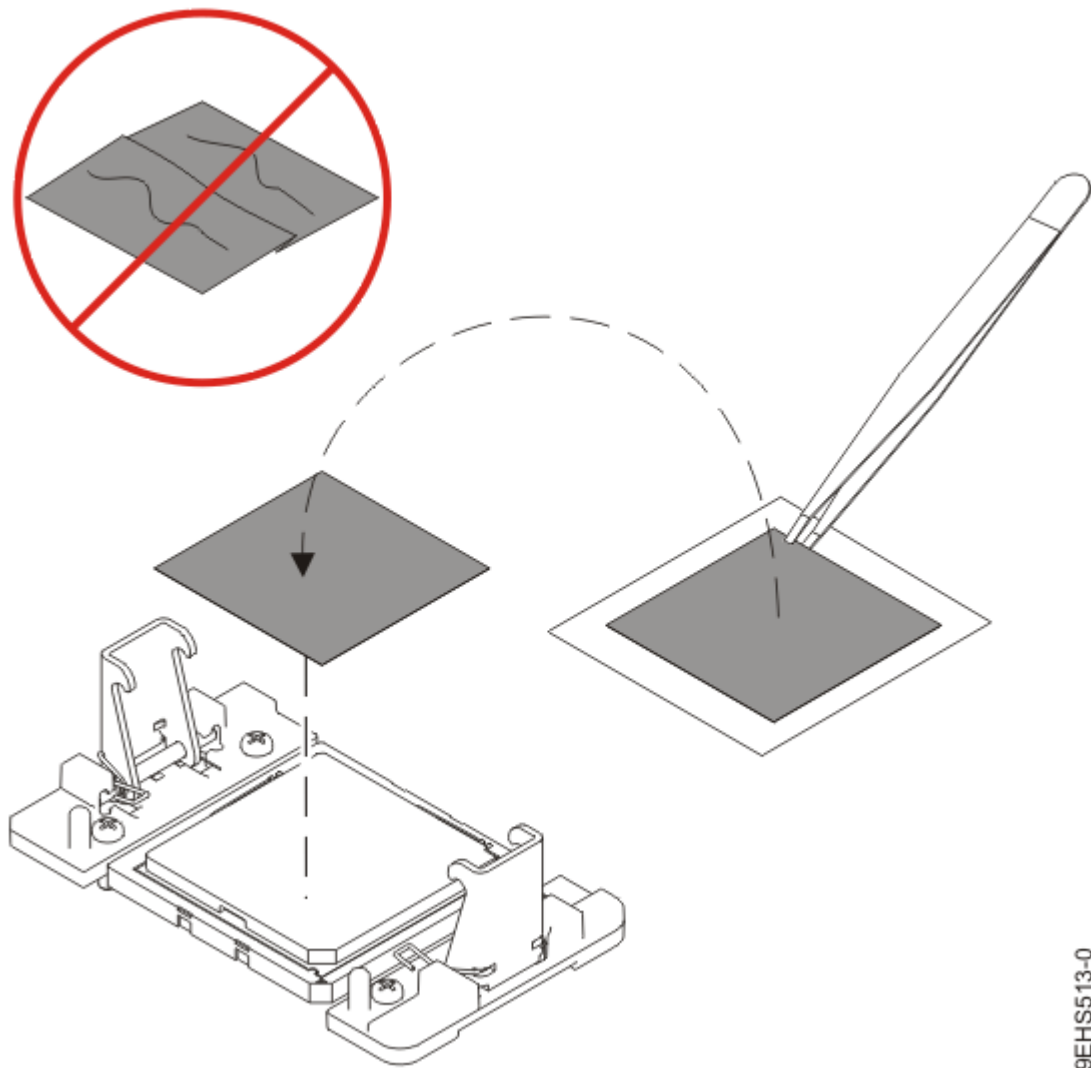
Figure 67. Replacing the TIM onto the system processor module

b) Place the heat sink on the TIM as shown in .
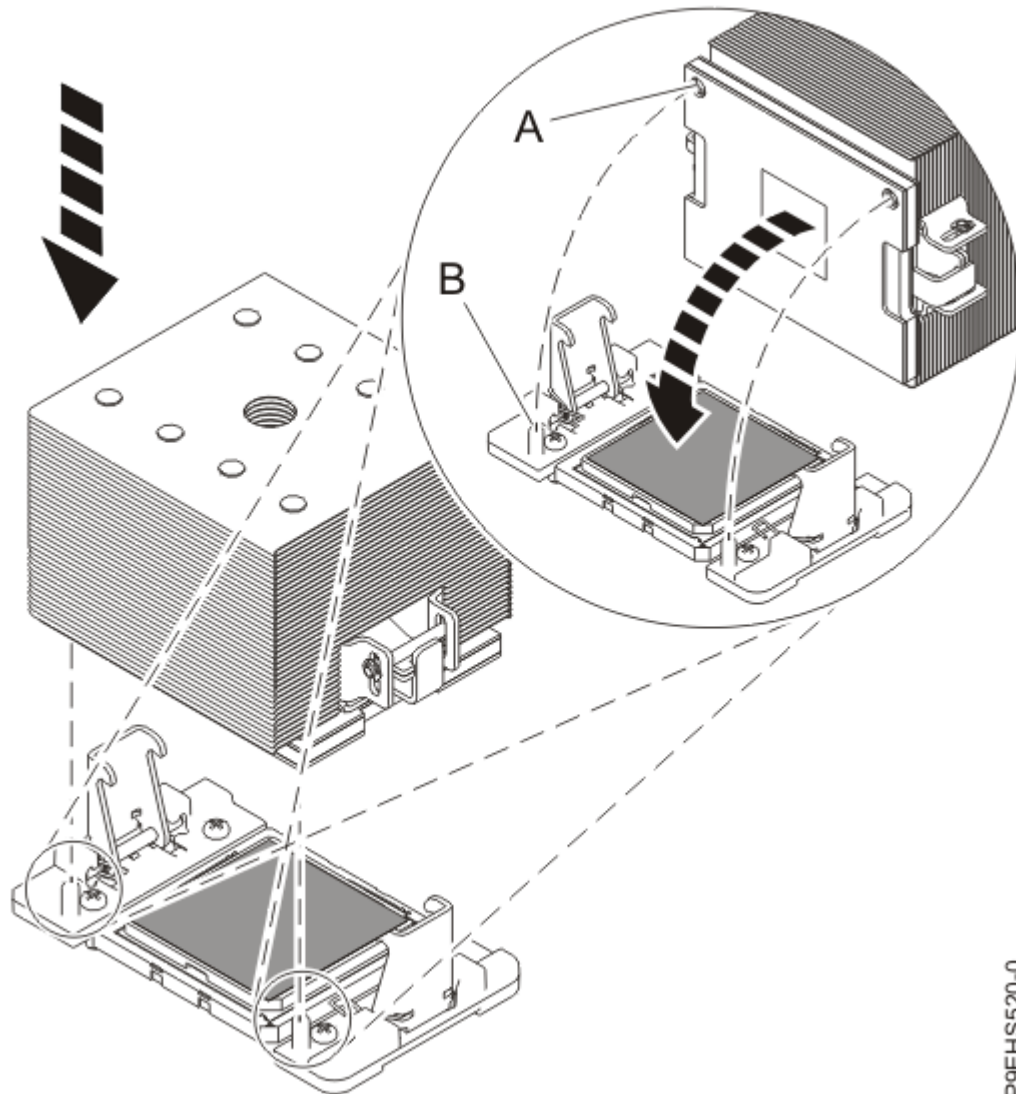
Figure 68. Installing the heat sink on the TIM

Continue with step .

20. Secure the TIM and heat sink to the system processor socket.

   a) Ensure that the heat sink load arms are engaged as shown by **(A)** in .

   b) Tighten the center load screw clockwise by using the supplied hex key as shown by **(B)** in until a firm stop is reached. If the heat sink moves noticeably, the load arms are not engaged. Unscrew the center load screw and repeat this step again.
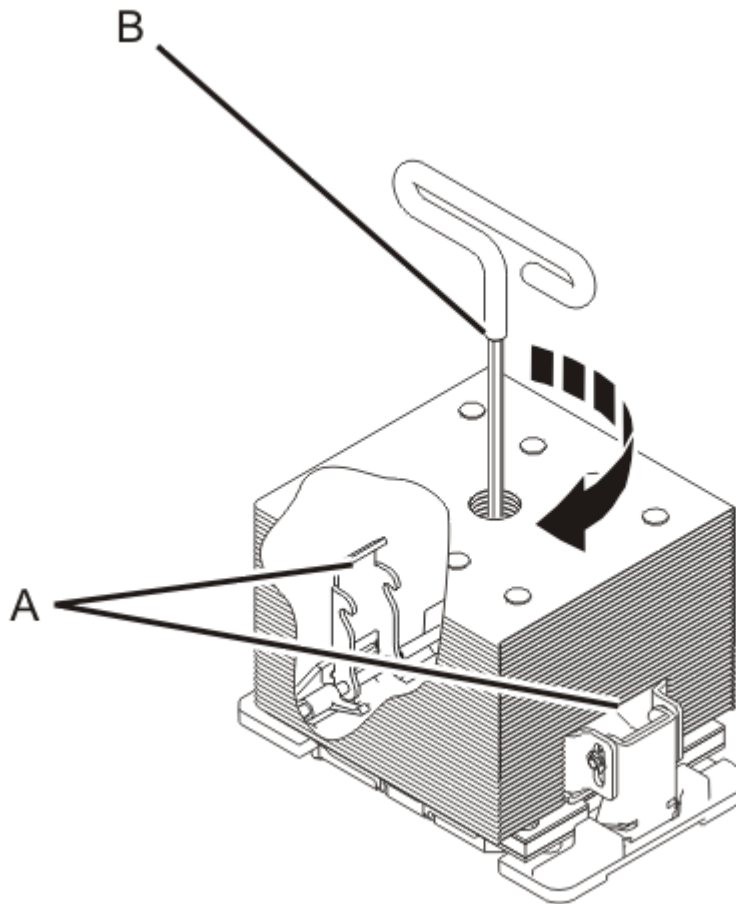
Figure 69. Tightening the center load screw on the heat sink

21. Repeat from step "8" on page 70 with the other system processor module

The following steps continue installing components into the new system backplane:

22. Using your labels, replace the USB cable into that connector in the system backplane.

    For instructions, see "Replacing the USB cable and connector in the 8335-GTG or 8335-GTH system" on page 125.

23. Using your labels, replace the power switch and cable into that connector in the system backplane.

    For instructions, see "Replacing the power switch and cable in the 8335-GTG or 8335-GTH system" on page 56.

24. Using your labels, replace the fan power cable into that connector in the power distribution card.

    For instructions, see "Replacing the fan power cable in the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system" on page 32.

25. Using your labels, replace the disk and fan signal cable into that connector in the system backplane.

    For instructions, see "Replacing the disk and fan signal cable in the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system" on page 24.

26. Using your labels, replace the PCIe adapters.

    For instructions, see "Replacing a PCIe adapter in the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system" on page 44.

27. Replace the BMC card.

    For instructions, see "Replacing the BMC card in the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system" on page 4.

28. Transfer the memory modules from the old system backplane to the new system backplane.

    For instructions, see "Removing and replacing memory modules in the 8335-GTC, 8335-GTG, or 8335-GTH system" on page 37.

29. Transfer the time-of-day battery from the old system backplane to the new system backplane.

    For instructions, see "Removing and replacing the time-of-day battery in the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system" on page 113.

30. Transfer the trusted platform module from the old system backplane to the new system backplane for the 8335-GTH system.

    For instructions, see "Removing and replacing the trusted platform module in the 8335-GTH or 8335-GTX system" on page 115.

31. Transfer the graphic processing units (GPUs) from the old system backplane to the new system backplane.

    The GPU must not be separated from its heatsink. For instructions, see "Replacing the graphics processing unit in an air-cooled 8335-GTC, 8335-GTG, or 8335-GTH system" on page 35.

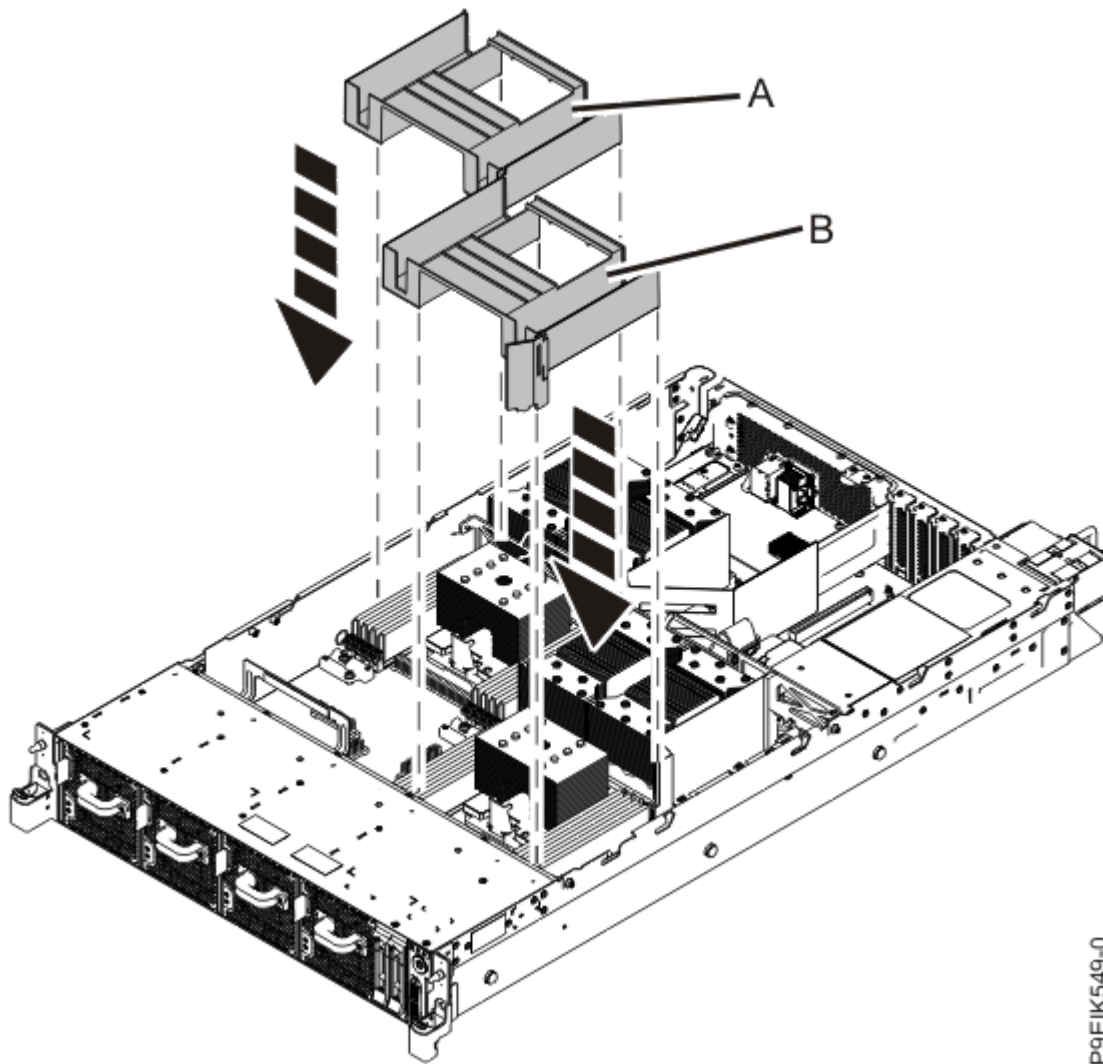32. Replace the air baffles (A) and (B) as shown in Figure 70 on page 86.

Figure 70. Replacing the system processor air baffles

Preparing the system for operation after removing and replacing the system backplane in the 8335-GTG or 8335-GTH system

To prepare the system for operation after removing and replacing a system backplane, complete the steps in this procedure.

Procedure

1. Prepare the system for operation.

   For instructions, see "Preparing the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system for operation after you remove and replace internal parts" on page 142.

2. Verify that the jumper is set to the air-cooled position by using the following command. The system must be powered on.

   ```
   openbmctool -U <username> -P <password> -H <BMC IP address or BMC host name> fru print | grep -i watercooled
   ```

   The value for the air-cooled jumper setting is 0 for the WaterCooled status:

   ```
   "WaterCooled": 0
   ```

   If the value returned is 1, which indicates a water-cooled jumper setting, you must correct the jumper setting as shown in "Replacing the system backplane in the 8335-GTG or 8335-GTH system" on page 65.

3. Ensure that the vital product data (VPD) update tool is installed.

   After you replace the system backplane, you must set the system serial number in the system backplane by using the vital product data (VPD) update tool. To download the tool, complete the following steps:

   a. Go to the IBM Support Portal website (http://www.ibm.com/mysupport/s/).

   b. In the search field, type `Scale-out LC System Event Log Collection Tool`.

   c. Click the **Scale-out LC System Event Log Collection Tool** entry and follow the directions that are provided with the tool to update the VPD.

4. Set the system serial number and model number in the system backplane by completing the following steps.

   These commands require root access and must be run from the host operating system, after the VPD update tool is installed.

   a) Update the machine serial number by running the following command, replacing *1234567* with your seven character serial number:

   The command must be run after the system is powered on.

   ```
   /opt/openpower/lht/bin/updateserial 1234567
   ```

   b) Update the machine model by running the following command:

   ```
   /opt/openpower/lht/bin/updatemodel 8335-GTG
   ```

   c) Ensure that those changes take effect by stopping and then starting the system.

   See:

   i) "Stopping the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system" on page 145

   ii) "Starting the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system " on page 144

Removing and replacing a system processor module in the 8335-GTC, 8335-GTG, or 8335-GTH system

Learn how to remove and replace a system processor module or how to upgrade all of the system processor modules in the IBM Power System AC922 (8335-GTC, 8335-GTG, and 8335-GTH) system.

Removing a system processor module from the 8335-GTC, 8335-GTG, or 8335-GTH system

To remove a system processor module, complete the steps in this procedure.

Before you begin

Power off the system and place it in the service position. For instructions, see "Preparing the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system to remove and replace internal parts" on page 138.

About this task

As part of the system processor module replacement, the heat sink is removed. If the heat sink or if the thermal interface material (TIM) is damaged, it must be replaced. Ensure that you have spare heatsinks and TIMs available before proceeding.

Procedure

1. Attach the electrostatic discharge (ESD) wrist strap.

   The ESD wrist strap must be connected to an unpainted metal surface until the service procedure is completed, and if applicable, until the service access cover is replaced.

   ⚠️ **Attention:**

   - Attach an electrostatic discharge (ESD) wrist strap to the front ESD jack, to the rear ESD jack, or to an unpainted metal surface of your hardware to prevent the electrostatic discharge from damaging your hardware.

   - When you use an ESD wrist strap, follow all electrical safety procedures. An ESD wrist strap is used for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

   - If you do not have an ESD wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds. If at any point in this service process you move away from the system, it is important to again discharge yourself by touching an unpainted metal surface for at least 5 seconds before you continue with the service process.

2. Open the packaging of the new system processor module, and place the cover upside down next to the tray, as shown in Figure 71 on page 89. The cover is used for the system processor module that you are replacing.
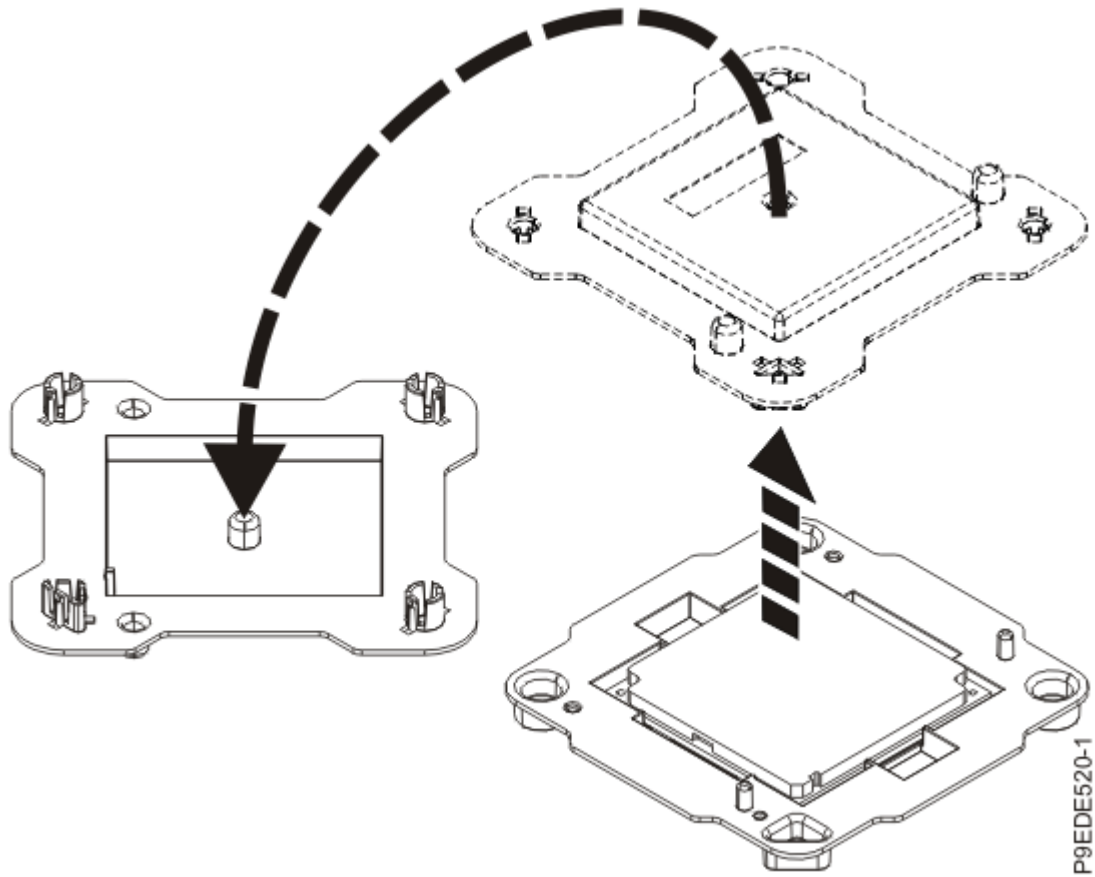
Figure 71. Opening the system processor module packaging
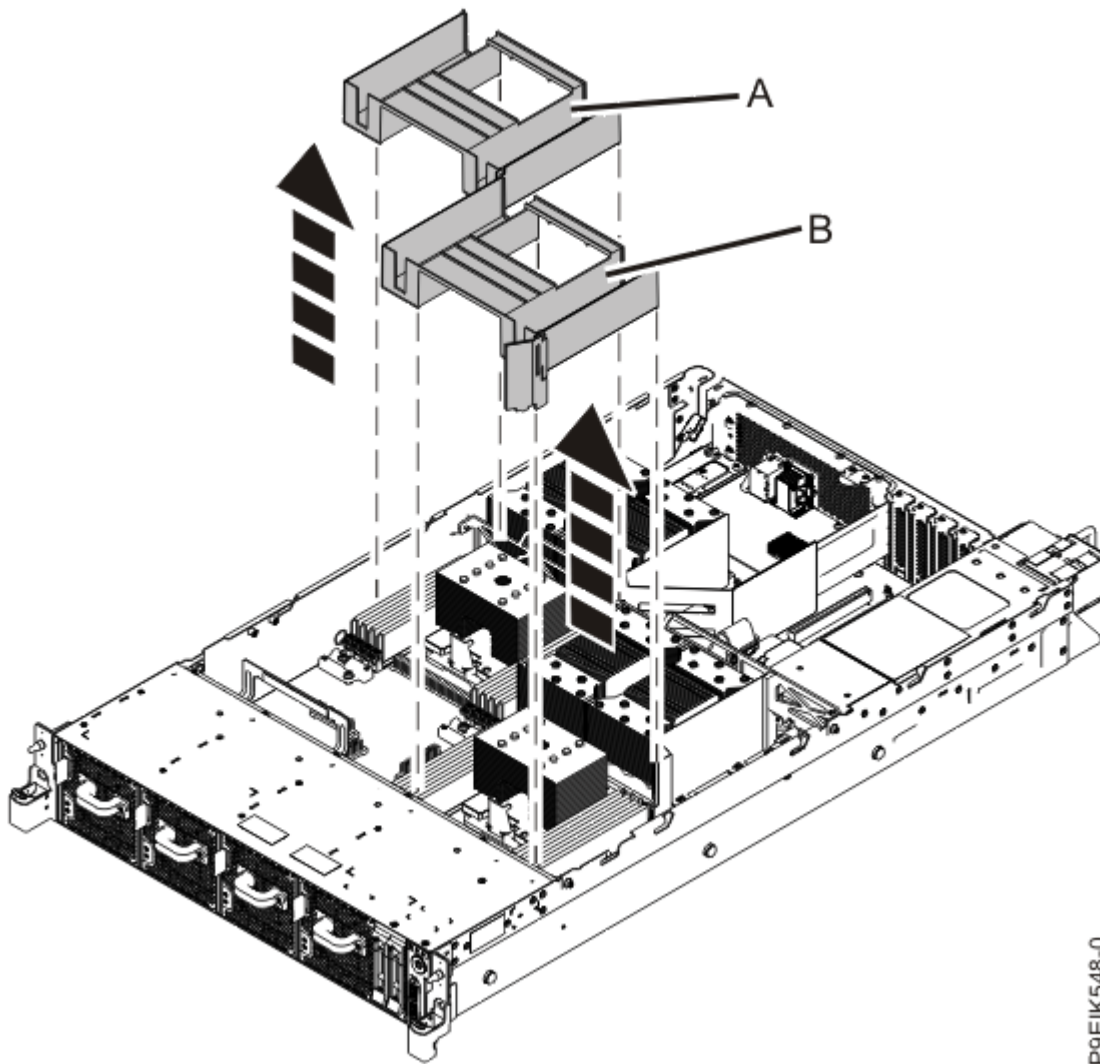
3. Remove the air baffles (A) and (B) as shown in .

Figure 72. Removing the system processor air baffles

4. Remove the heat sink from the system processor module:

   a. Loosen the heat sink actuation screw by turning the supplied hex key counterclockwise **(A)**. Loosen the screw until it moves freely. See .

   b. Hold the heat sink **(B)** on opposing sides and remove the heat sink by lifting it upward. Set the heat sink aside with the module side face up.

      Note: If you plan to remove dust or debris from the heat sink, this operation must be performed in another room that is greater than 7.6 m (24.9 ft) away from the work area.
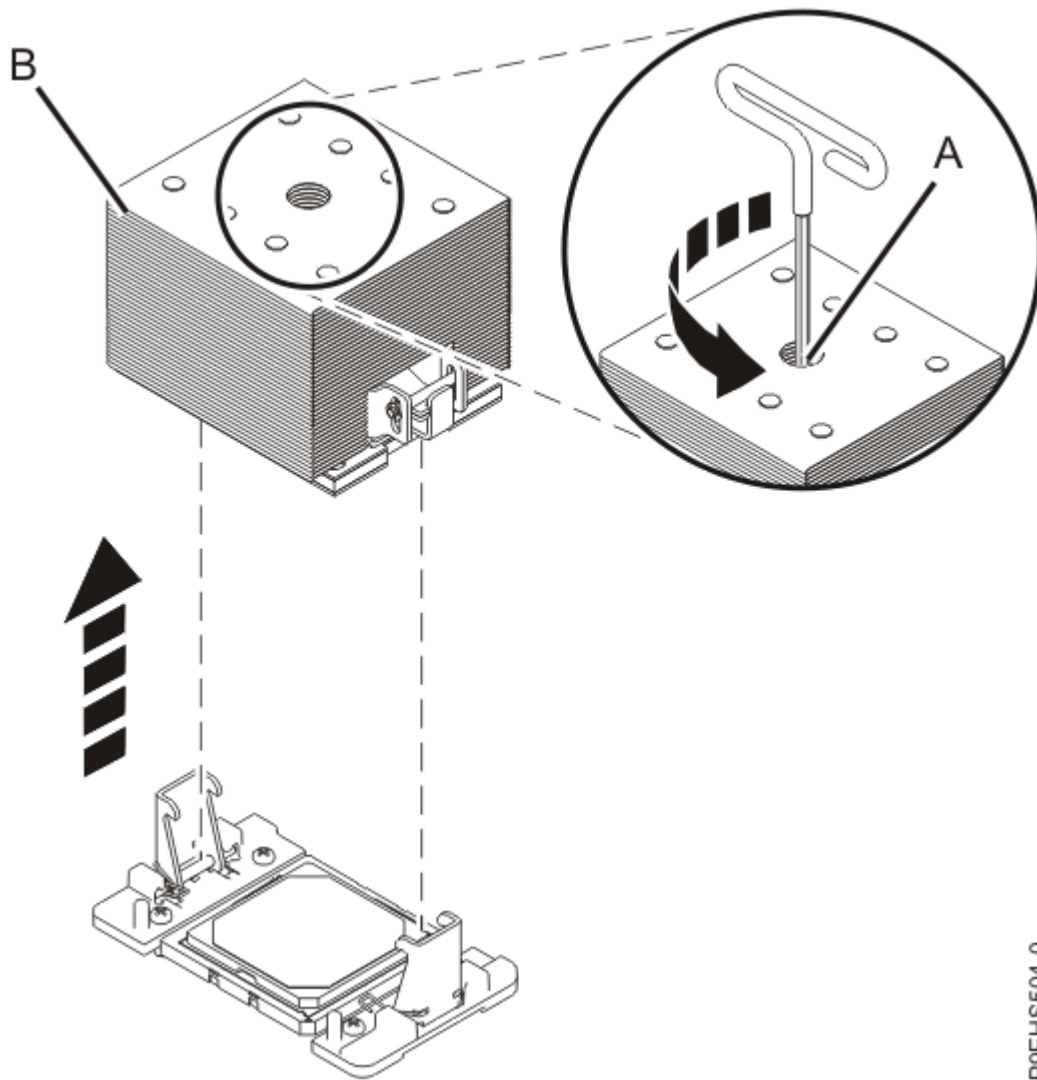
Figure 73. Removing the heat sink

5. Using tweezers, carefully remove the TIM from the top of the system processor module and place it in a clean, dry area as shown in .
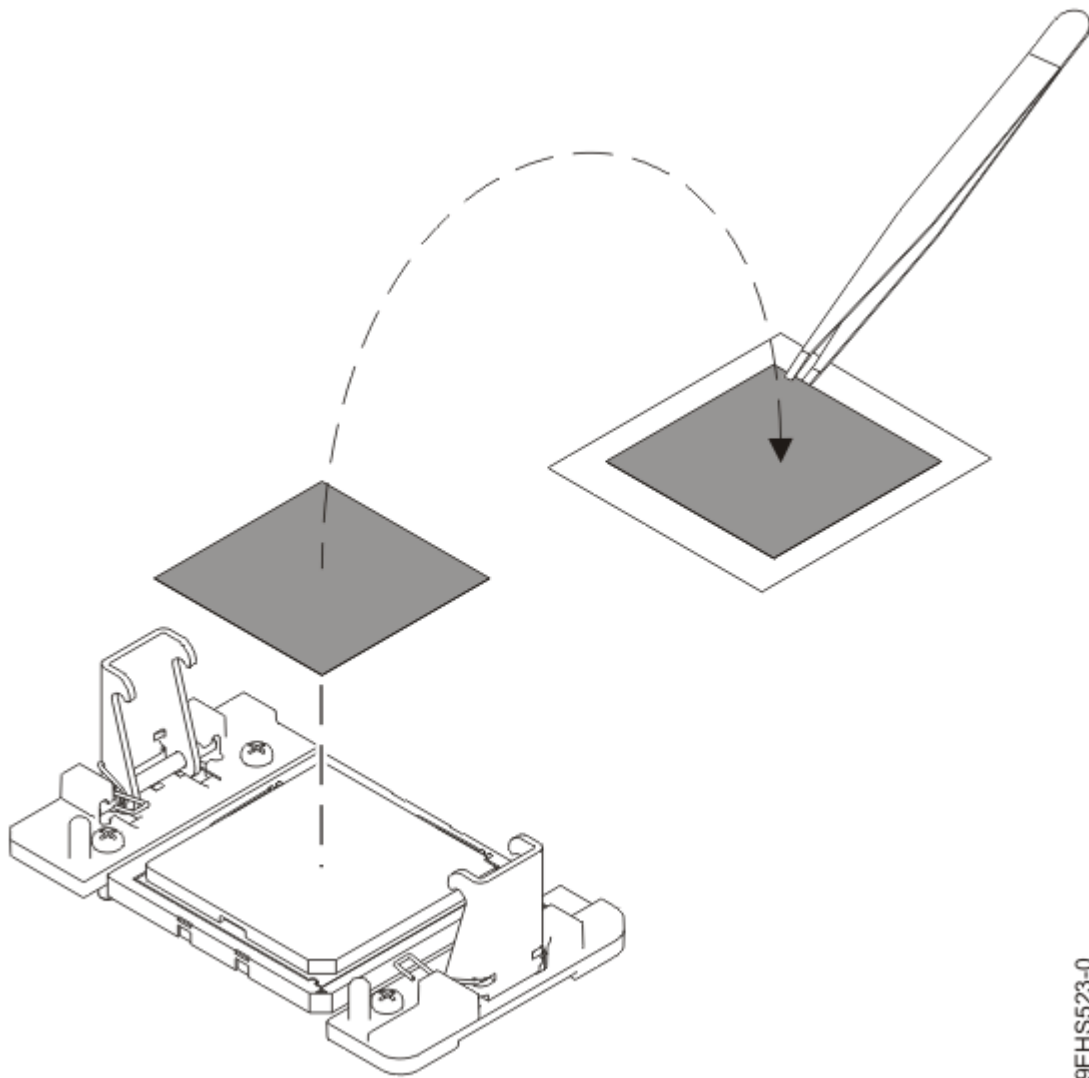
   The TIM can tear easily.

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Figure 74. Removing the TIM from the system processor module

6. Remove dust and debris from the system processor module area.

   If dust or debris is present, use the supplied air pump to clean the system processor module area. Blow small bursts of air from the center toward the sides of the system processor module as shown in Figure 75 on page 93. If your air pump is not assembled as shown in Figure 75 on page 93, fasten the tip onto the bulb.
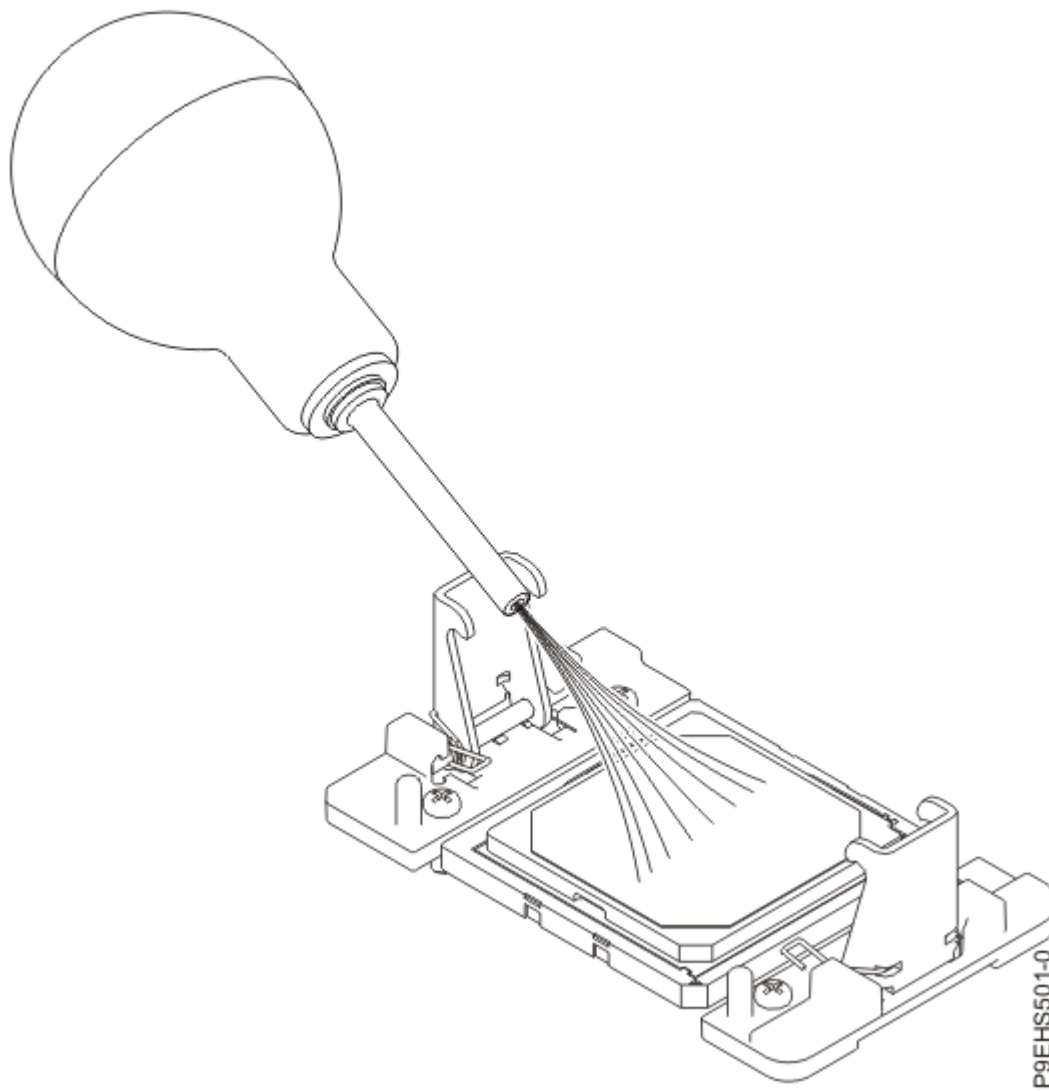
Figure 75. Removing dust and debris from the system processor module area

7. Prepare the system processor module for removal.

a) Open the latches that hold the system processor module in the supplied removal tool **(A)**. Push down on the ring **(B)** while pressing in on the tabs **(C)**.

See .

Figure 76. Opening the processor removal tool latches

b) Lower the tool over the system processor module while ensuring that the two guide pins **(A)** insert into the alignment holes **(B)** on each side of the tool.

See .

Figure 77. Lowering the removal tool onto the system processor module

c) With the removal tool sitting on top of the system processor module, push down on the ring **(A)** to close the latches **(C)** and lock the system processor module into the tool. Make sure that both of the tool jaws are locked on the system processor module.

See .
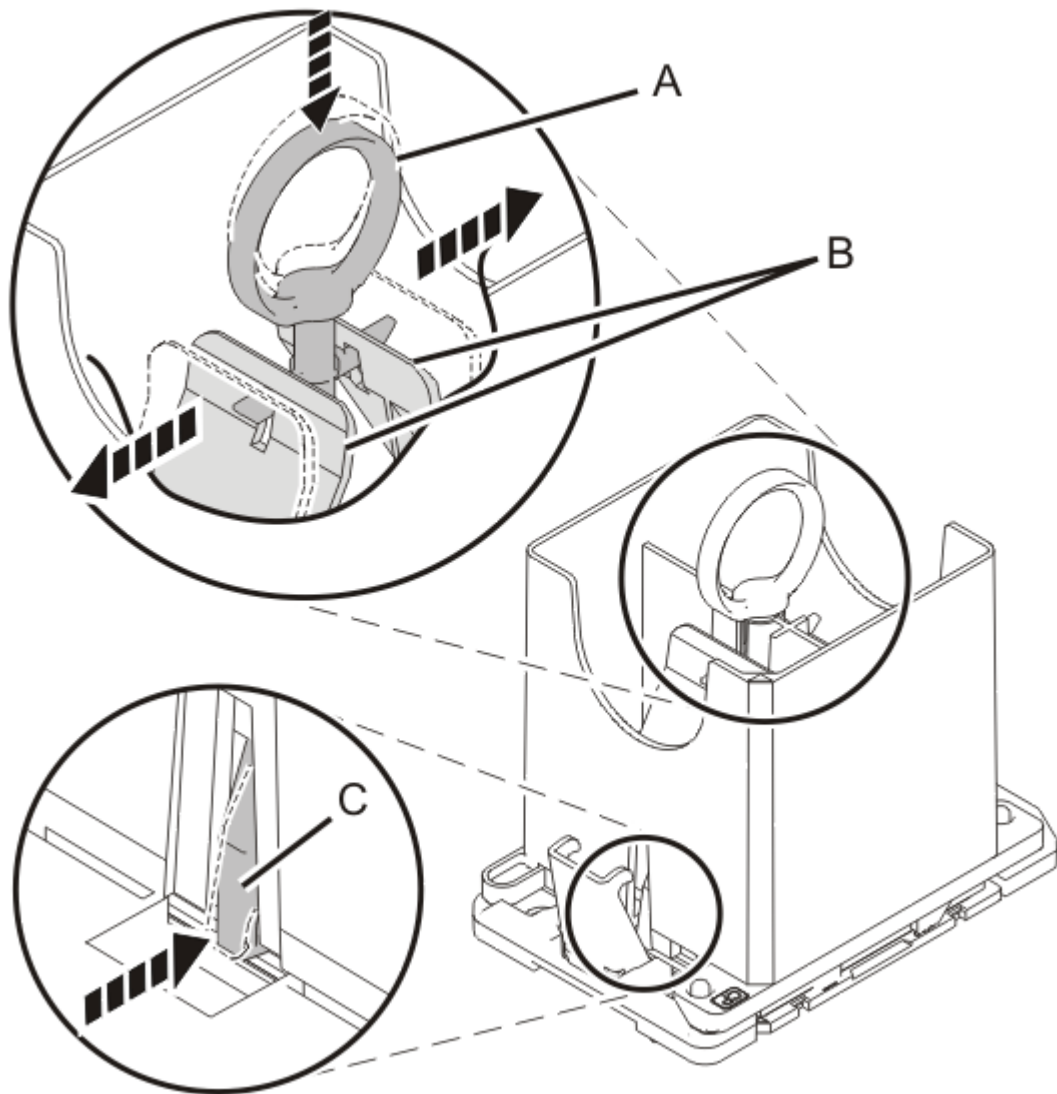
Figure 78. Locking the system processor module into the tool

8. Holding the outside of the tool, lift the tool and system processor module from the socket. Place them at an angle in the top cover of the system processor module packaging, as shown in Figure 79 on page 97.

   Note: Set the tool and system processor module at an angle on the top cover of the system processor module packaging. That makes the module easier to pick up and place into the package.
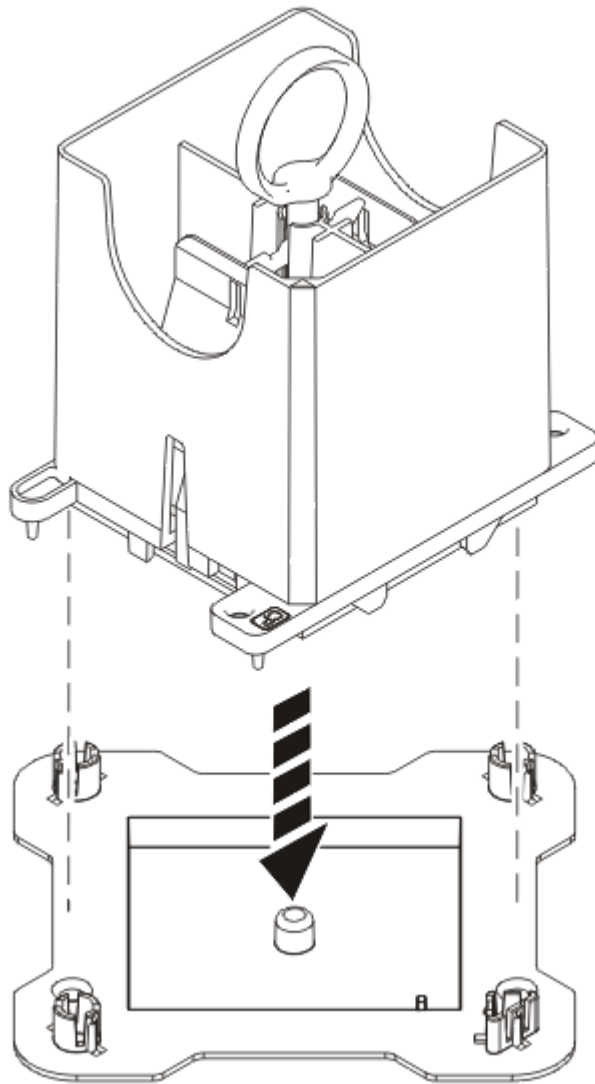
Figure 79. Placing the tool at an angle on the top cover of the packaging

9. Open the latches that hold the system processor module in the supplied removal tool **(A)**. Push down on the ring **(B)** while pressing in on the tabs **(C)**.
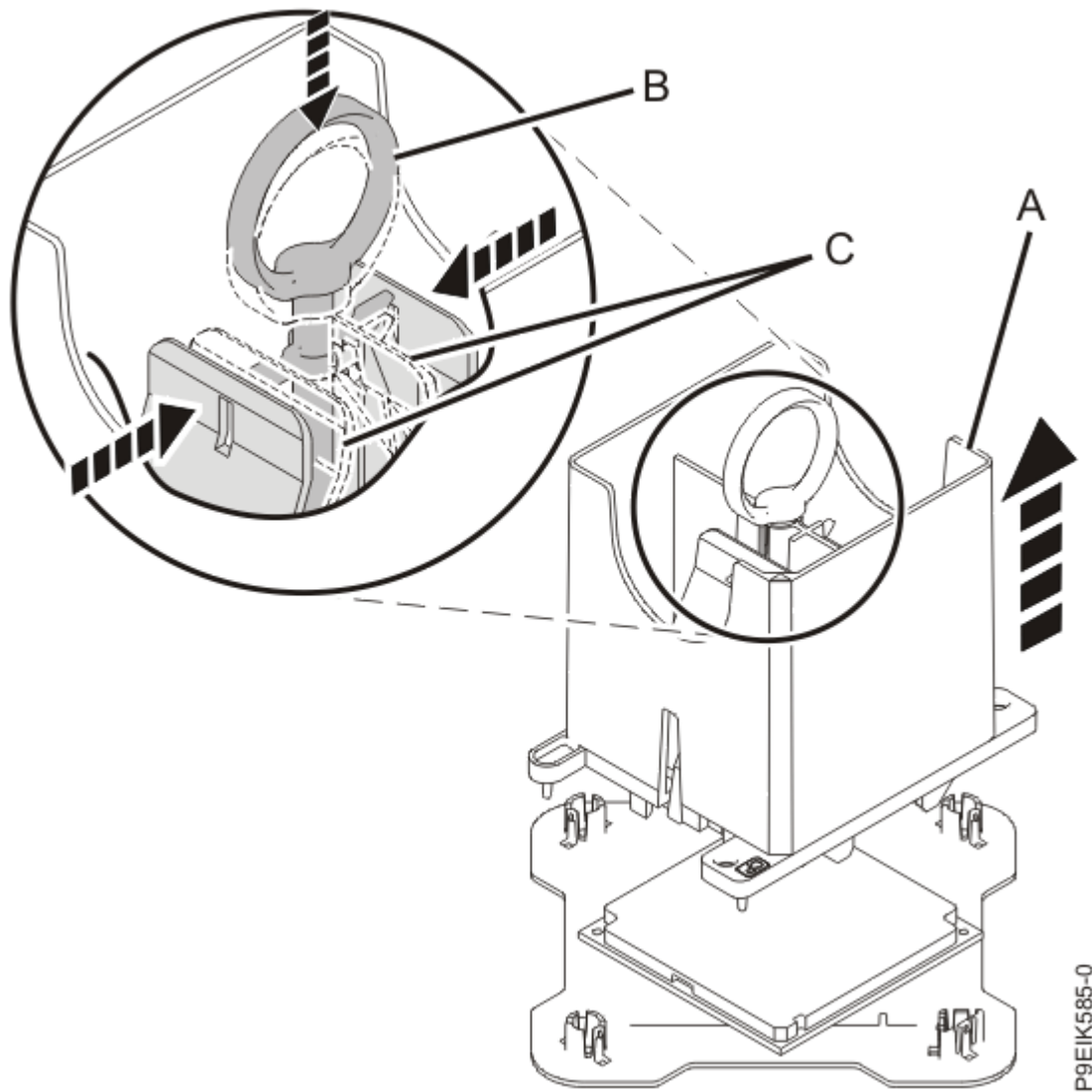
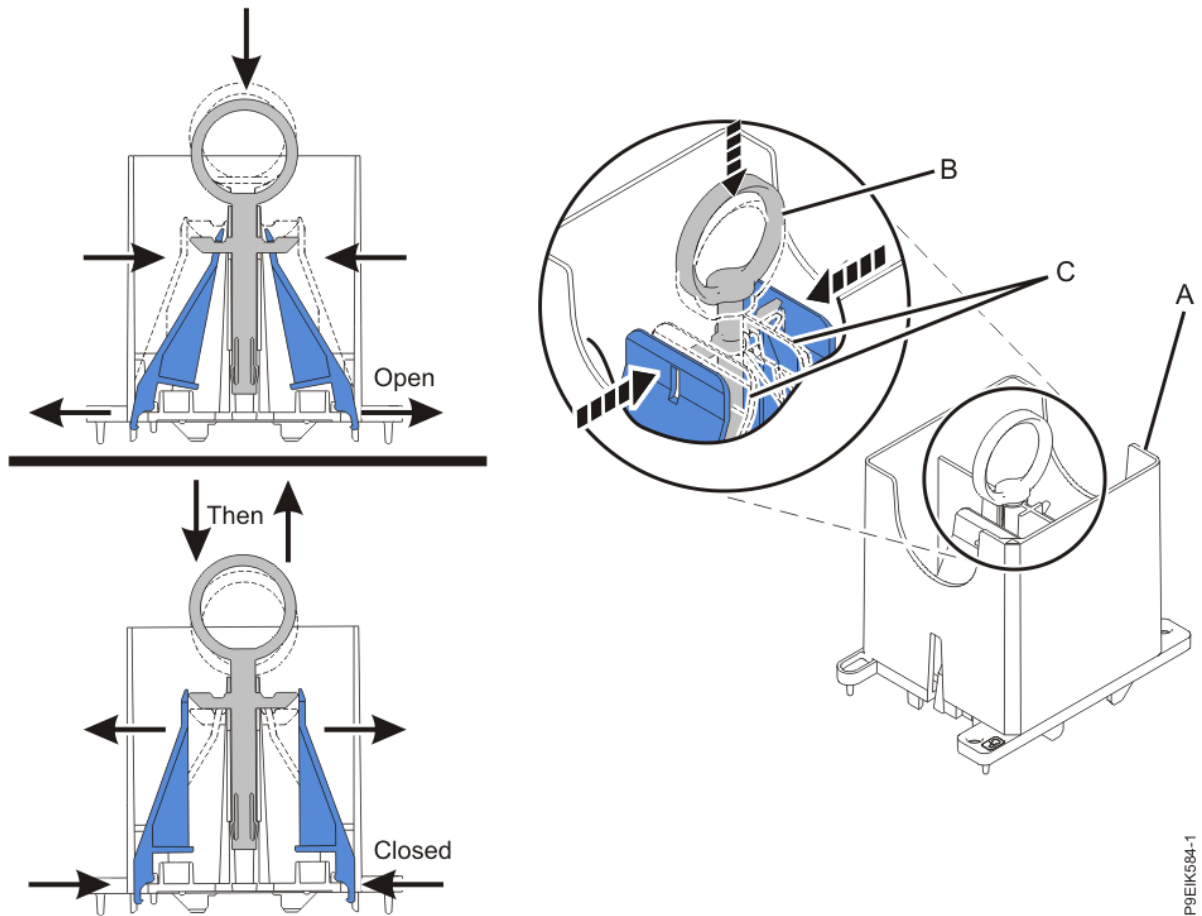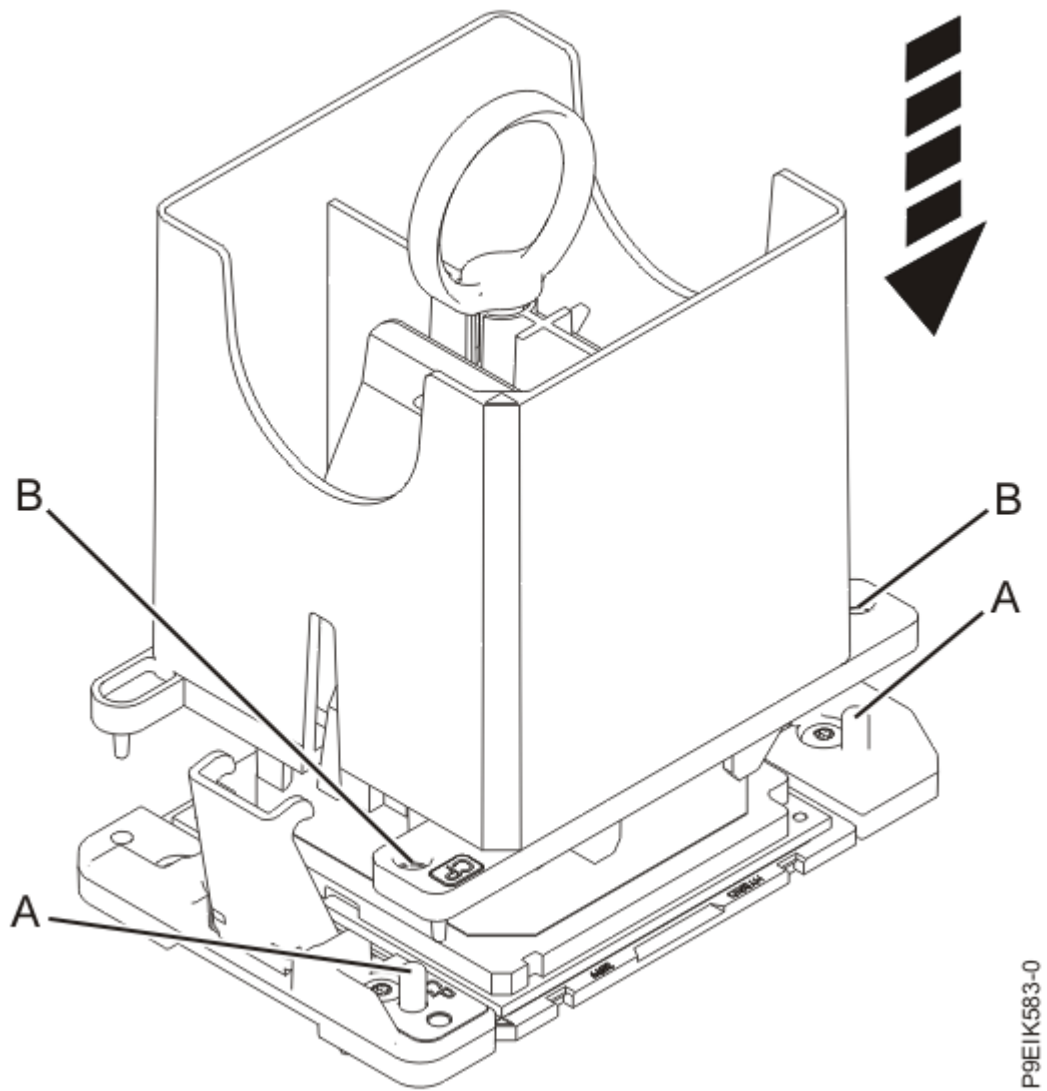*Figure 80. Releasing the system processor module from the tool*

Replacing a system processor module in the 8335-GTC, 8335-GTG, or 8335-GTH system

To replace a system processor module, complete the steps in this procedure.

Procedure

1. Ensure that you have the electrostatic discharge (ESD) wrist strap on and that the ESD clip is plugged into a ground jack or connected to an unpainted metal surface. If not, do so now.
2. Remove dust and debris from the system processor socket area.

   If dust or debris is present, use the supplied air pump to clean the system processor socket area.
3. Prepare the system processor module for installation:

   a) Open the latches that hold the system processor module in the supplied removal tool **(A)**. Push down on the ring **(B)** while pressing in on the tabs **(C)**.

   See Figure 81 on page 99.

Figure 81. Opening the processor removal tool latches

b) Lower the tool over the system processor module while ensuring that the two guide pins **(A)** insert into the alignment holes **(B)** on each side of the tool.

See .

Figure 82. Lowering the removal tool onto the system processor module

c) With the removal tool sitting on top of the system processor module, push down on the ring **(A)** to close the latches **(C)** and lock the system processor module into the tool. Make sure that both of the tool jaws are locked on the system processor module.

See .
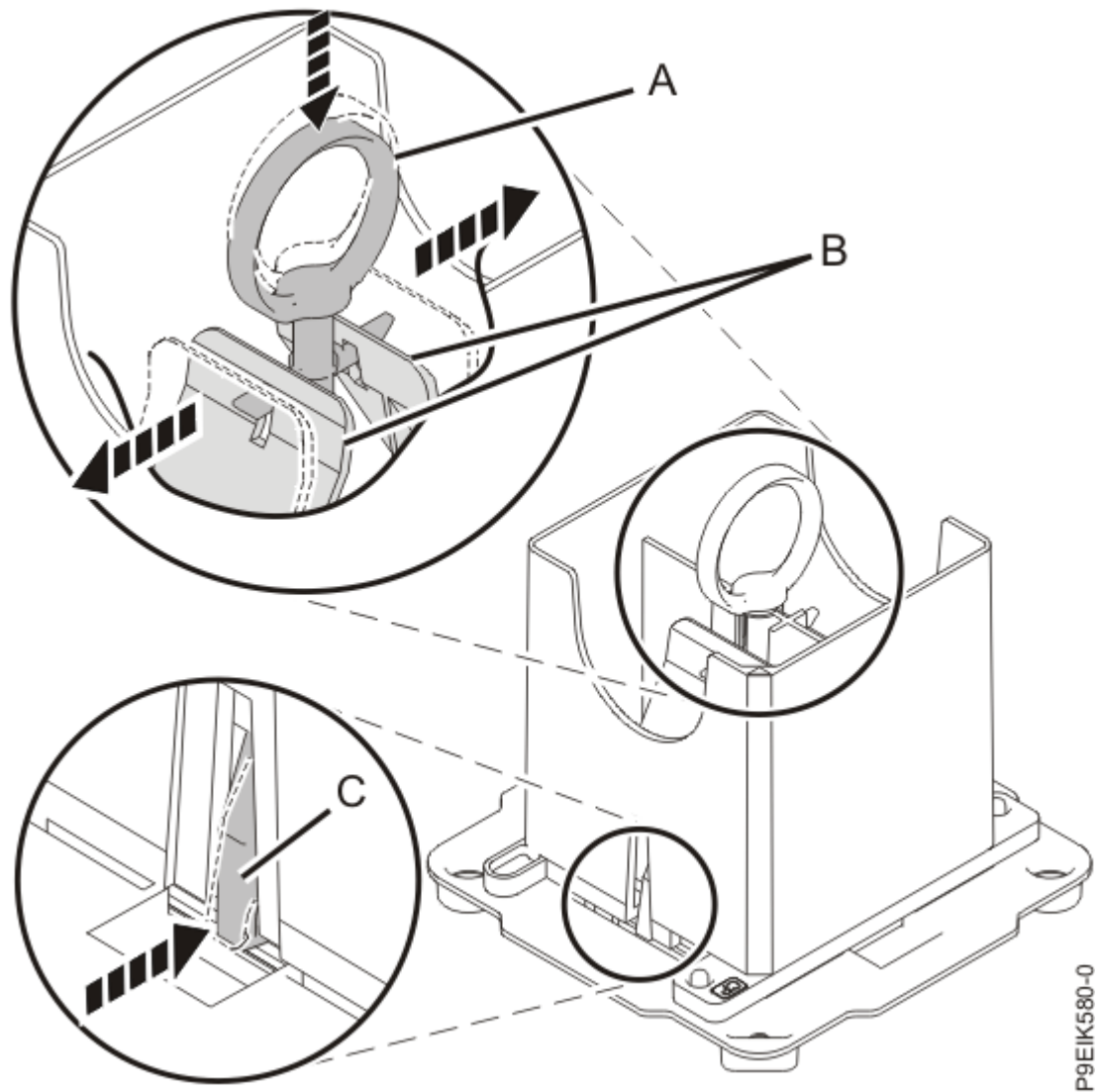
Figure 83. Locking the system processor module into the tool

4. Hold the sides of the tool with system processor module and carefully lift the tool out of the system processor module tray.

5. Install the system processor module:

   a) If dust or debris is present on the system processor socket, use the supplied air pump to clean the socket. Blow small bursts of air from the center toward the sides of the socket, as shown in Figure 84 on page 102.
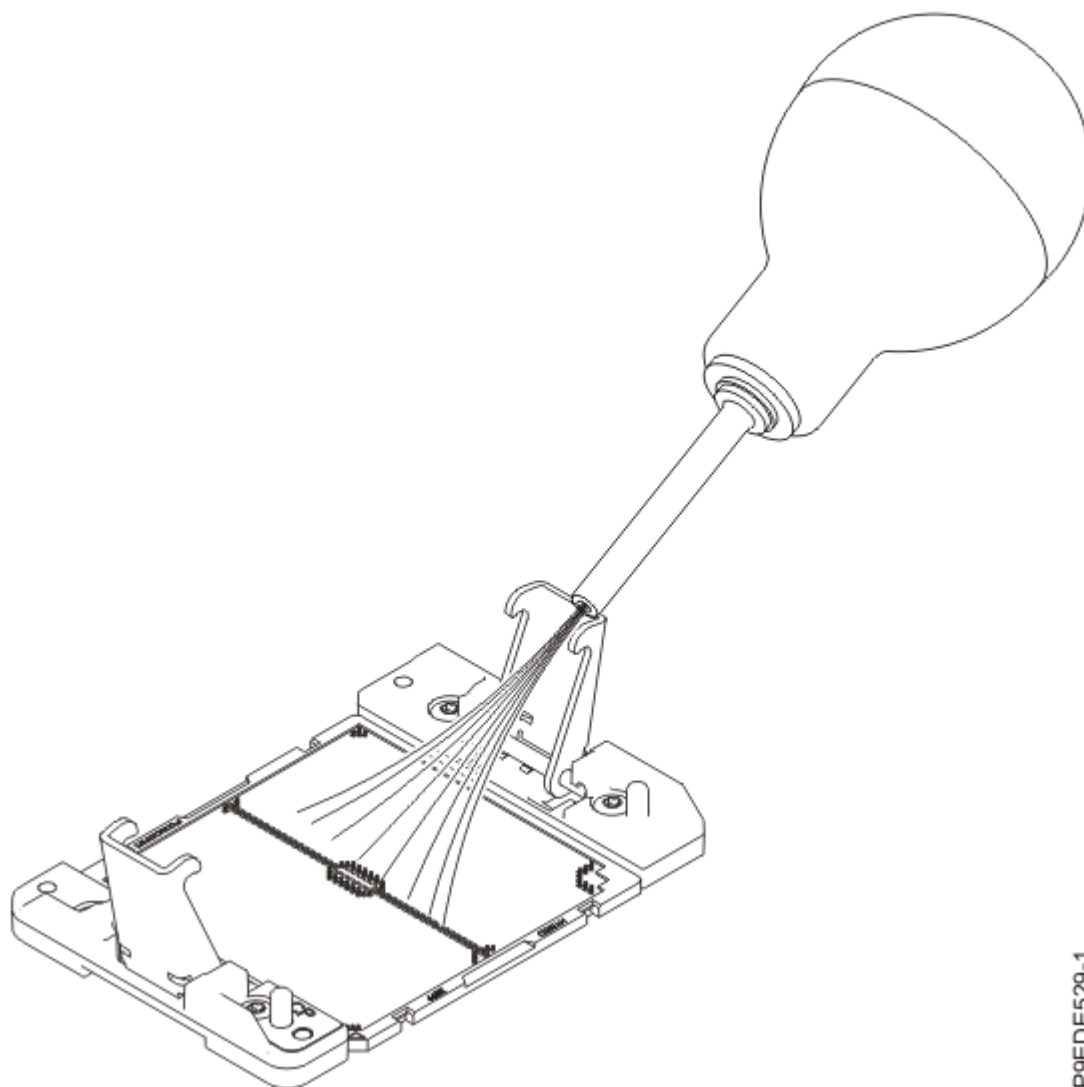
Figure 84. Removing dust and debris from the system processor socket

b) Lower the tool and system processor module onto the socket. Align the guide pins **(A)** with the alignment holes **(B)** on each side of the tool. Use care to lower the tool evenly without tilting the tool.

See .

Note: Do not attempt to slide the tool and the system processor module in any direction while the system processor module is touching the socket. If the tool and the system processor module are not aligned with the guide pins, lift the tool and the system processor module and reposition them.
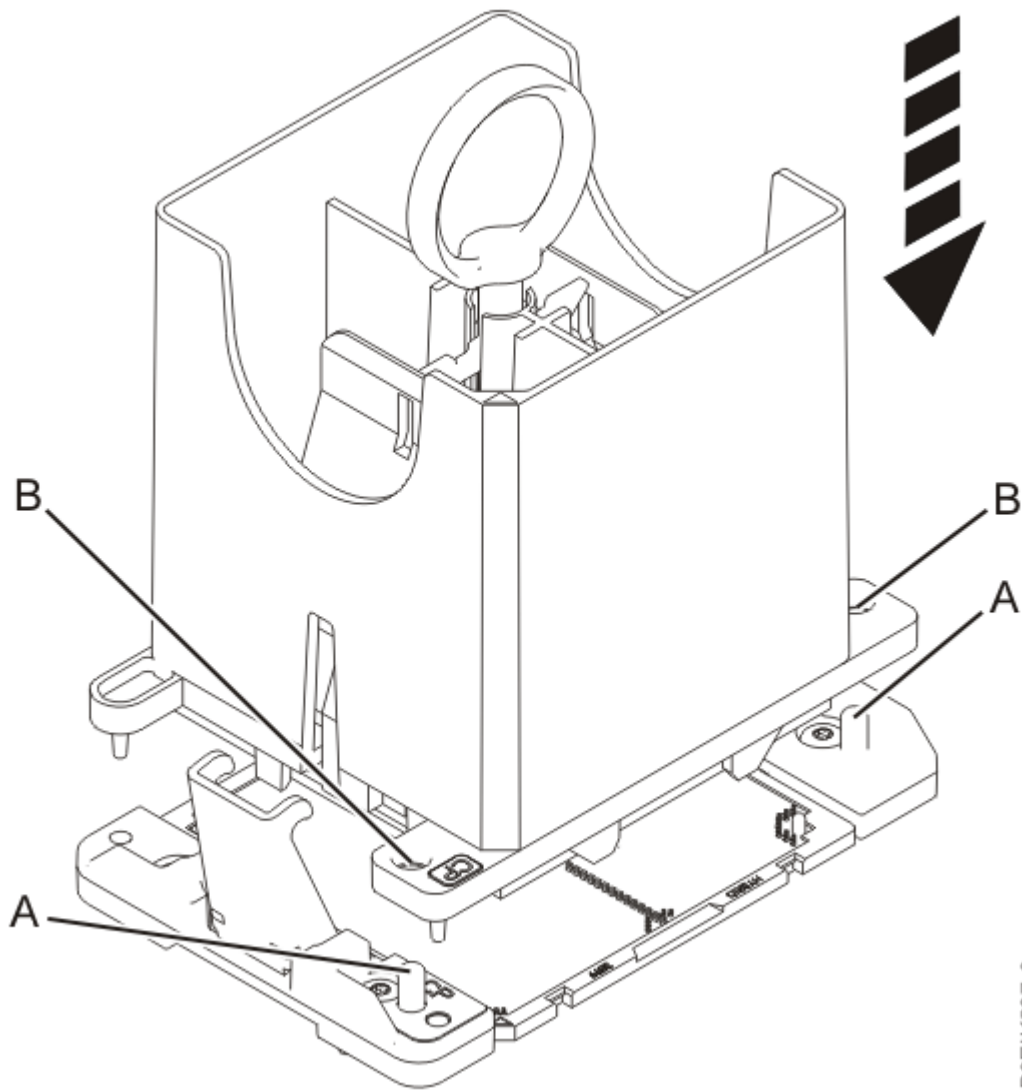
Figure 85. Installing the system processor module

c) Open the latches that hold the system processor module in the supplied removal tool **(A)**. Push down on the ring **(B)** while pressing in on the tabs **(C)**.
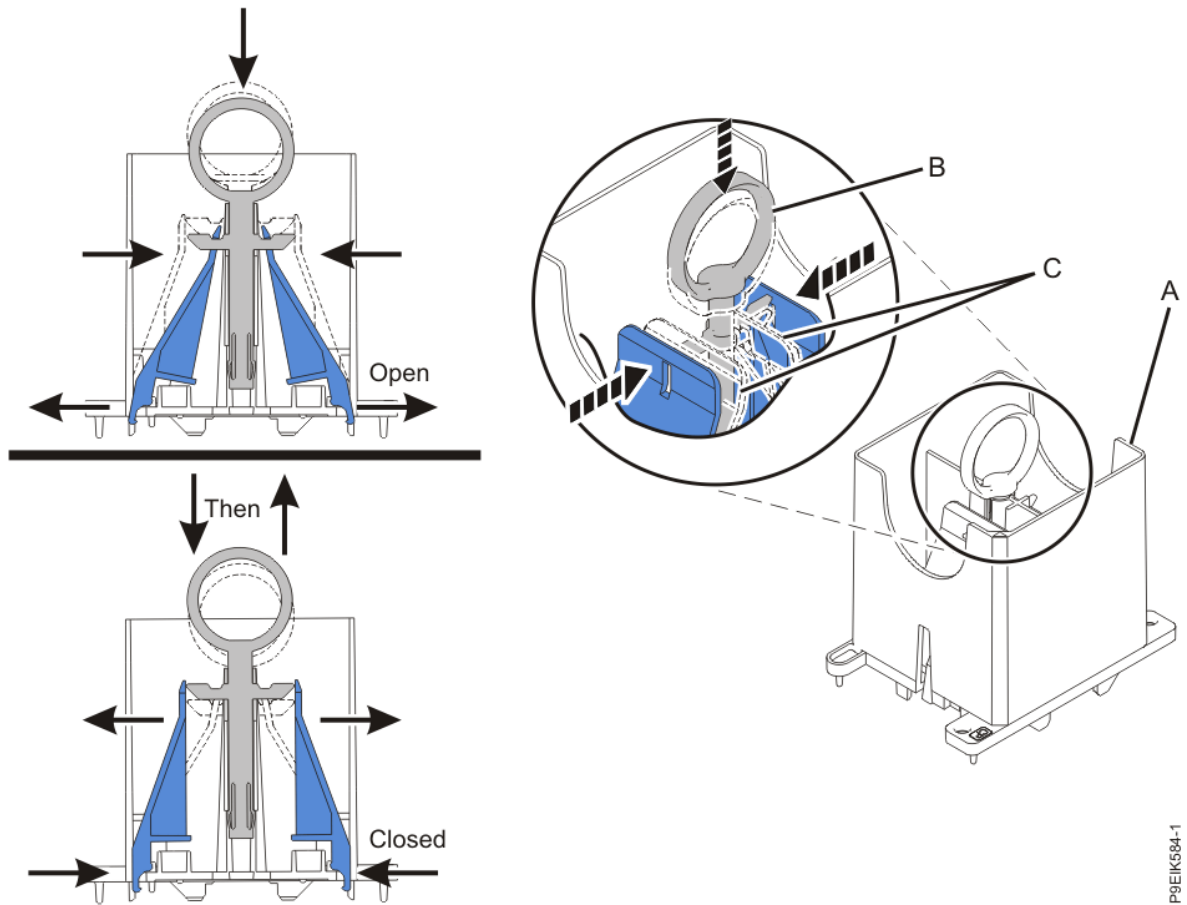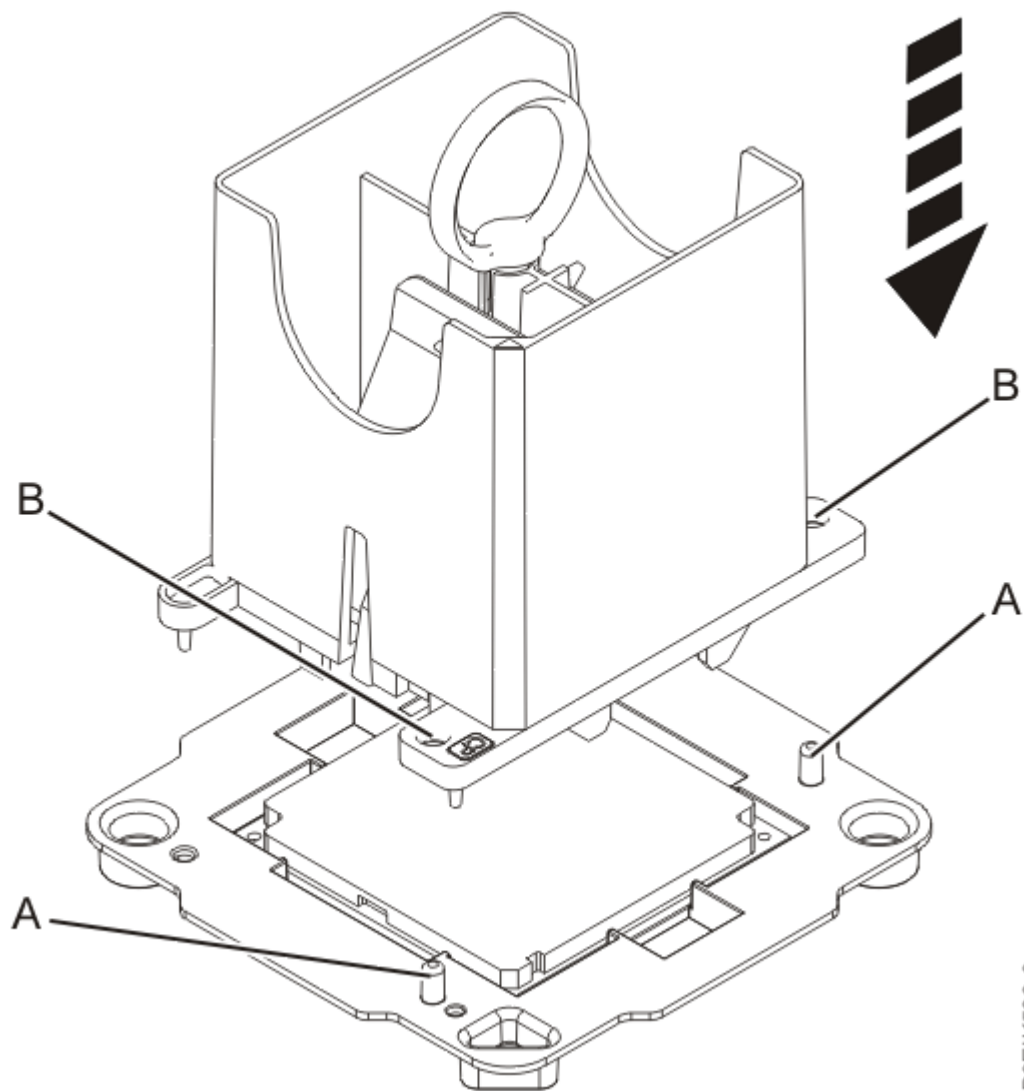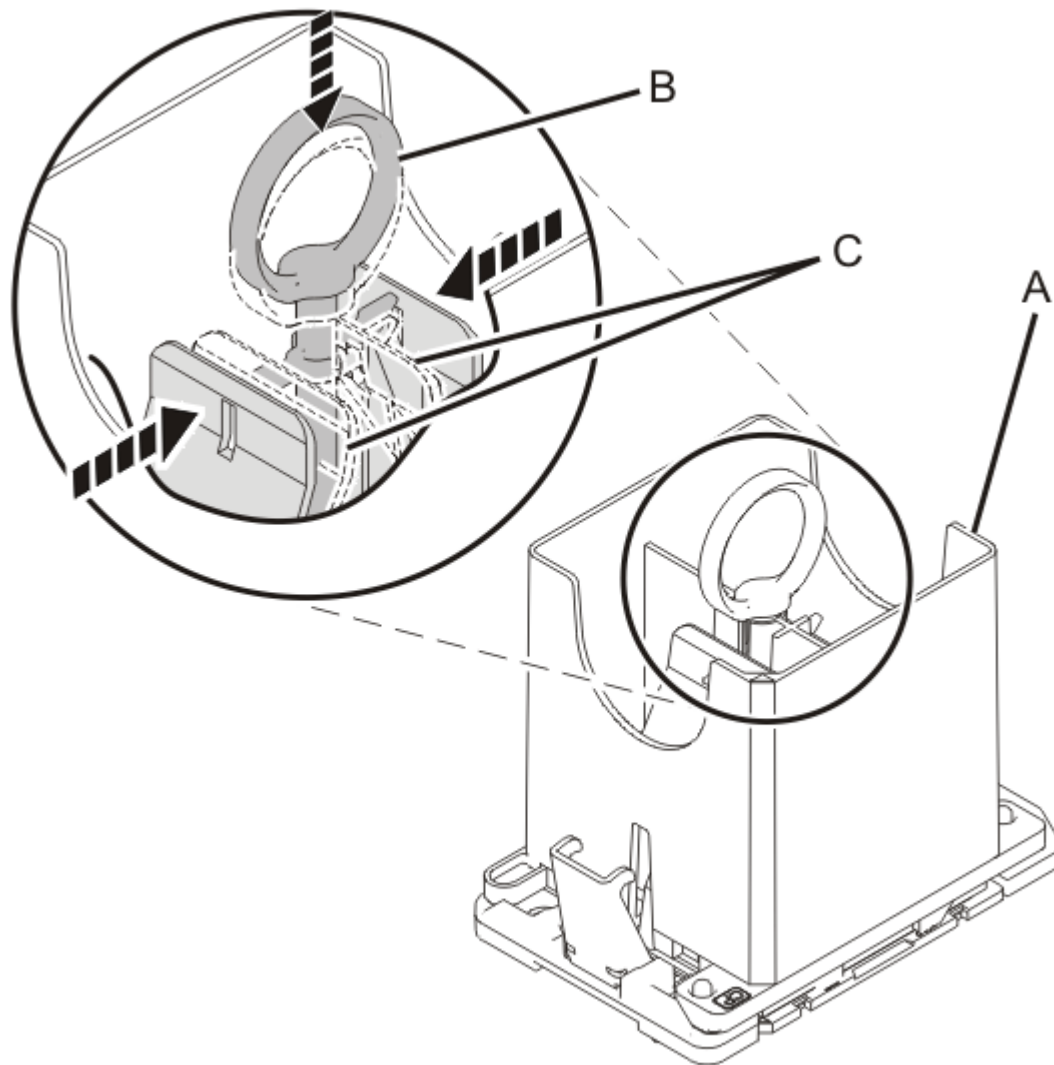
P9EIK582-0

Figure 86. Removing the system processor module tool

d) Lift the tool off the system processor module.

6. Inspect the thermal interface material (TIM) for visible signs of damage, as shown in Figure 87 on page 105. If you see folds, tears, bends, or if you have doubts about the TIM, replace it.
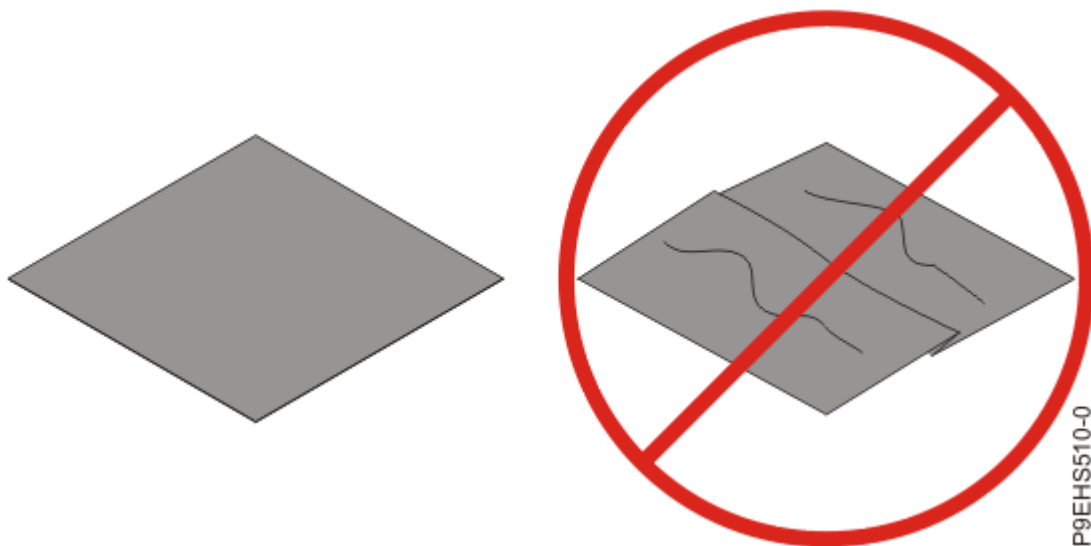
Figure 87. Inspecting the thermal interface material

7. Choose one of the following repair options:

Option	Description
Is the TIM damaged?	It is damaged. Proceed to step "8" on page 105 to replace the TIM and install the existing heat sink.
Is the TIM OK?	It is not damaged and can be reused. Proceed to step "9" on page 107 to reuse the TIM and install the existing heat sink.

8. Use this step to install a new TIM and reuse the existing heat sink.

    a) Open the TIM packaging and carefully remove the TIM, holding it by the edges of the carrier strip and holding it away from the shipping container.

    b) Remove the protective film from the clear carrier strip by using the supplied tweezers.

       Note: The TIM must remain flat. Small wrinkles are acceptable, but folds are not acceptable.

    c) Using the tweezers, remove the TIM from the carrier strip and center it onto the system processor module.

       The TIM has no preferred up side. The TIM can be placed on the system processor module and centered as shown in Figure 88 on page 106.
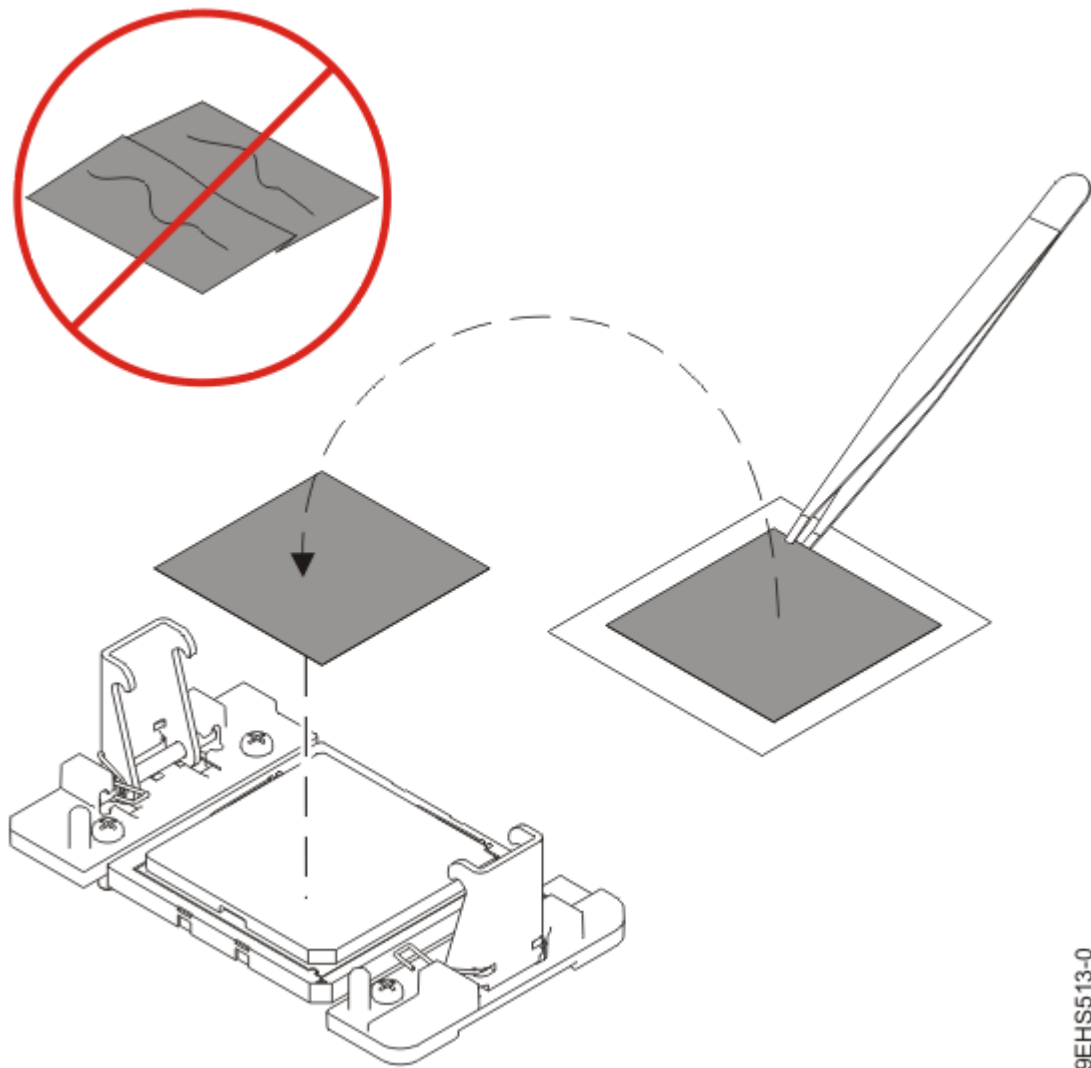
Figure 88. Installing a new TIM onto the system processor module

d) Place the heat sink on the TIM as shown in .
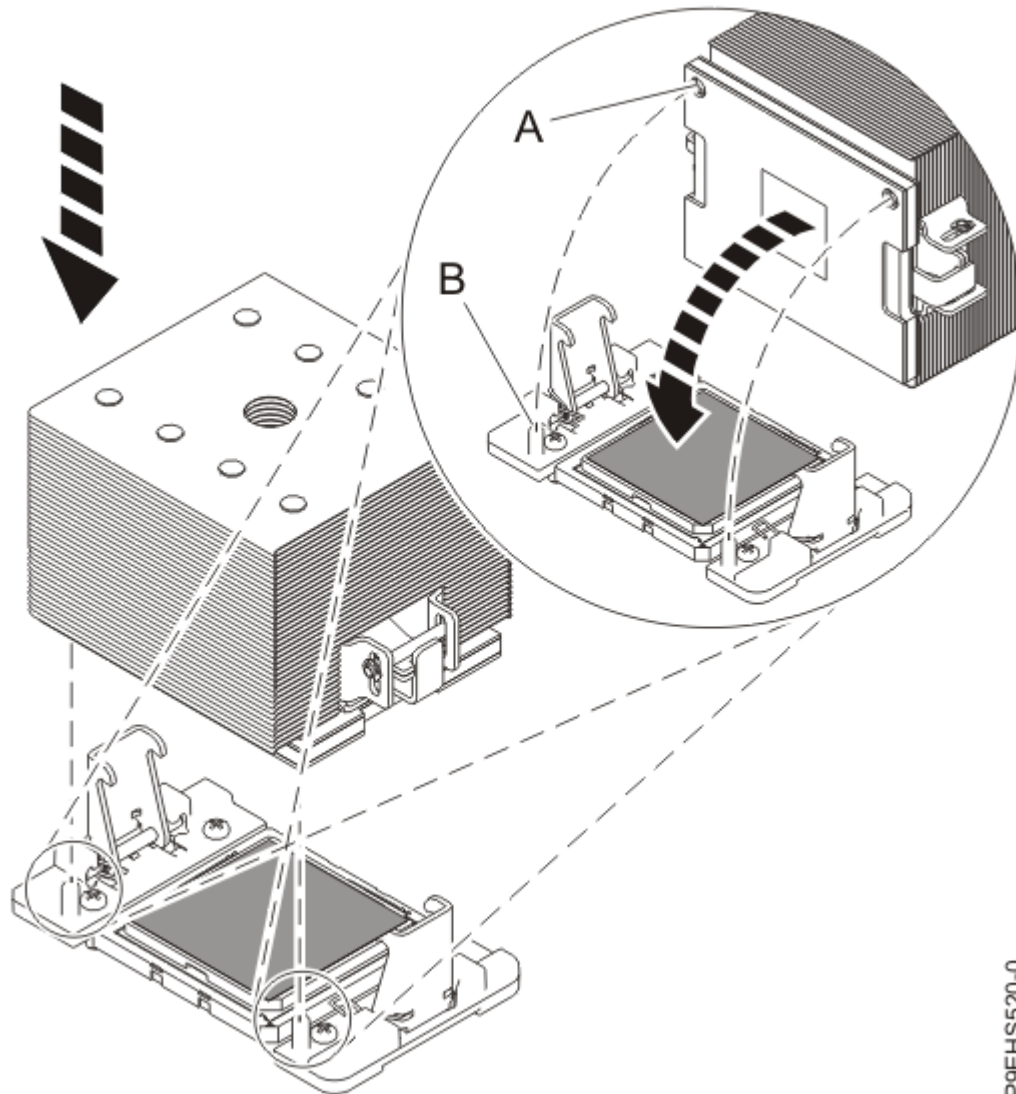
Figure 89. Installing the heat sink on the gray-colored TIM

Continue with step .

9. Use this step to reuse the existing undamaged TIM and heat sink.

   a) Using the tweezers, move the old TIM from the clean, dry surface and center it onto the new system processor module.

   The TIM has no preferred up side. The TIM can be placed on the system processor module and centered as shown in .
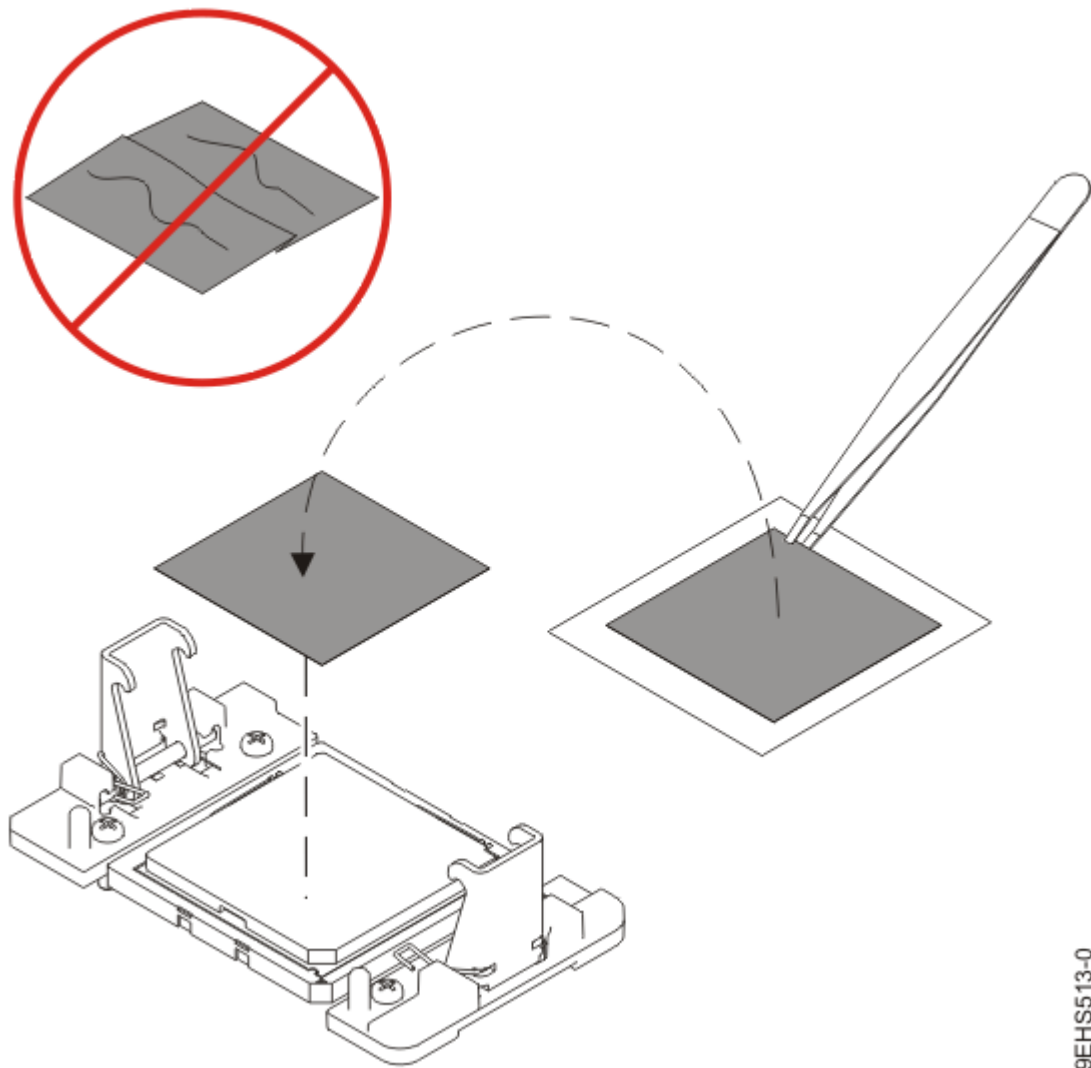
Figure 90. Replacing the TIM onto the system processor module

b) Place the heat sink on the TIM as shown in .
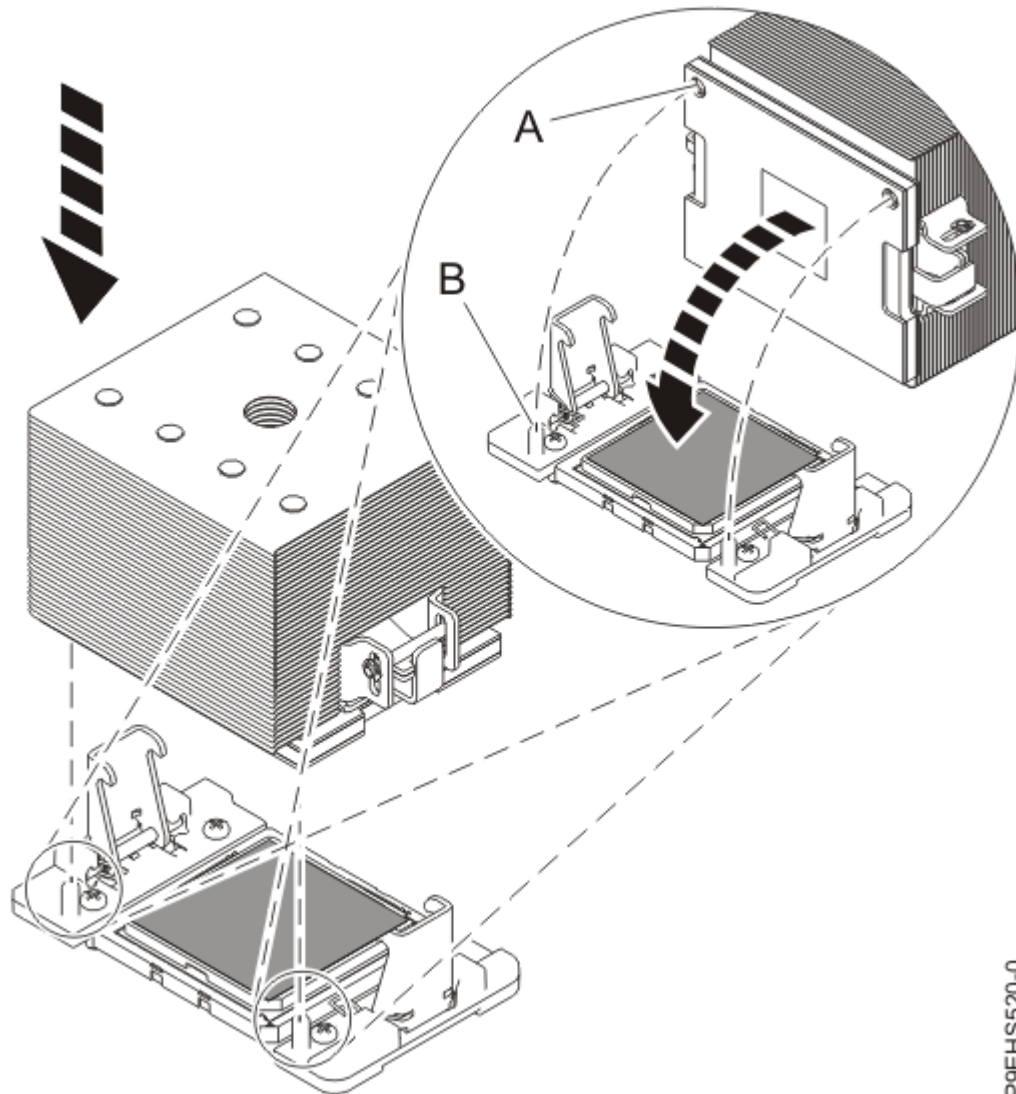
Figure 91. Installing the heat sink on the TIM

10. Secure the TIM and heat sink to the system processor socket.

    a) Ensure that the heat sink load arms are engaged as shown by **(A)** in .

    b) Tighten the center load screw clockwise by using the supplied hex key as shown by **(B)** in until a firm stop is reached. If the heat sink moves noticeably, the load arms are not engaged. Unscrew the center load screw and repeat this step again.
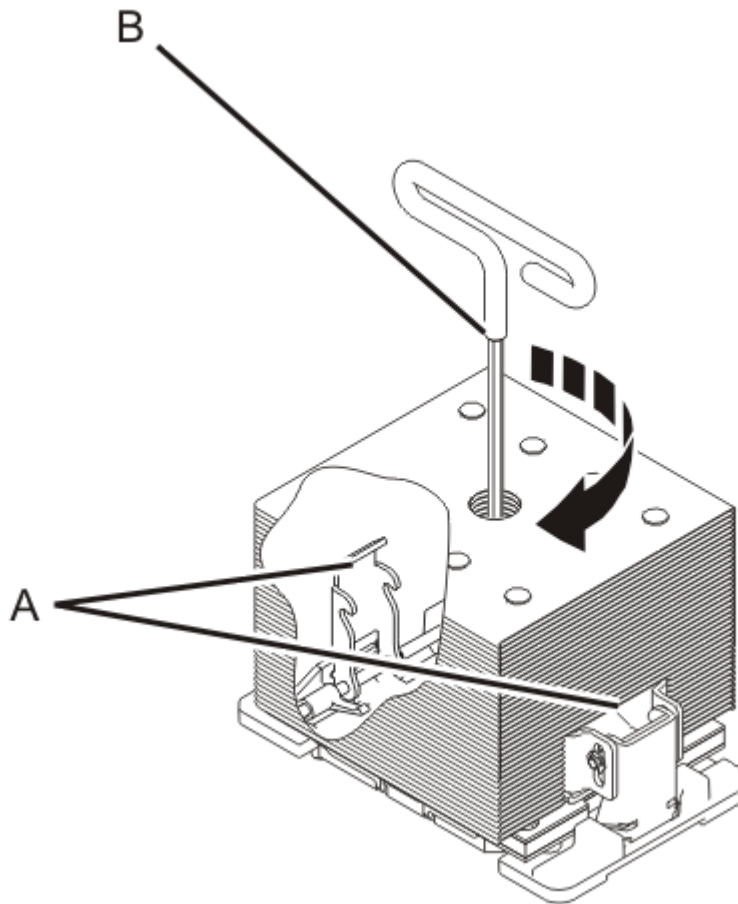
P9EHS507-0

Figure 92. Tightening the center load screw on the heat sink

11. Replace the air baffles (A) and (B) as shown in .

Figure 93. Replacing the system processor air baffles

12. Lightly grip the system processor module that you replaced by the edges and lift it off the packaging cover. Align the beveled corner of the module **(A)** to the corner of the packaging with triangle **(B)** and place it in the packaging, as shown in Figure 94 on page 112. Close the packaging cover.
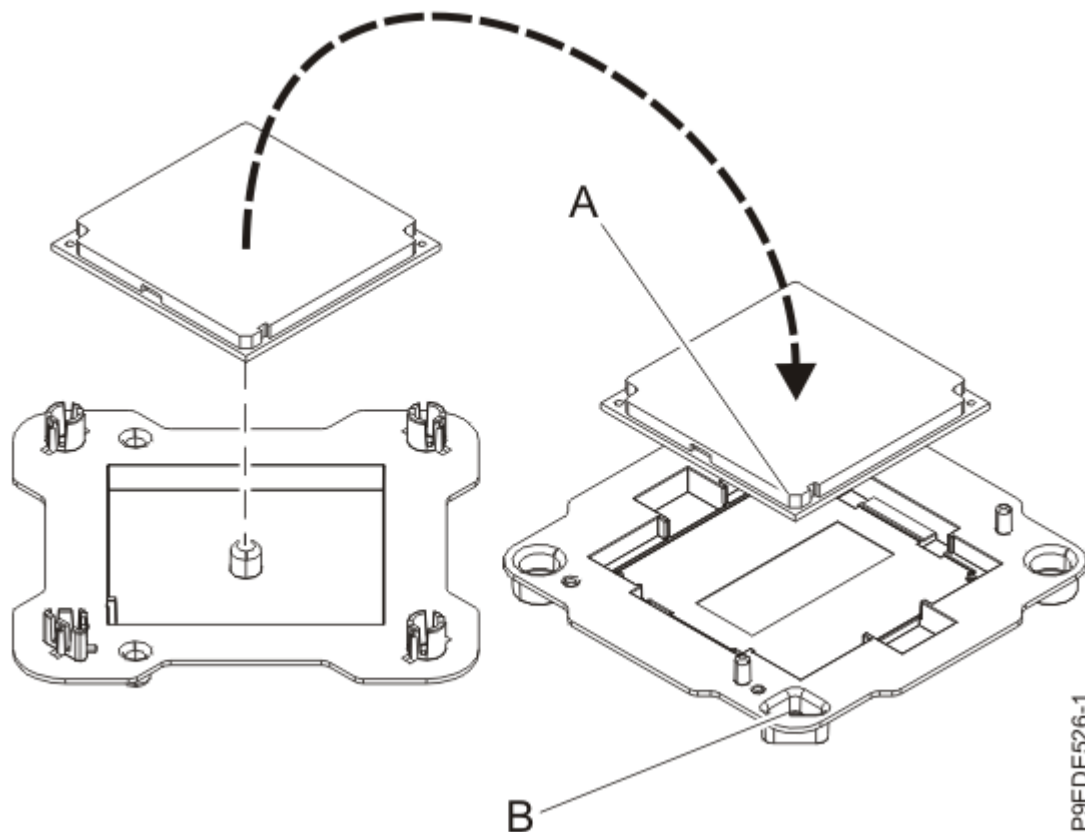
Figure 94. Placing the system processor module into the packaging

What to do next

Prepare the system for operation. For instructions, see "Preparing the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system for operation after you remove and replace internal parts" on page 142.

Upgrading system processor modules in a 8335-GTC, 8335-GTG, or 8335-GTH system

To upgrade system processor modules, complete the steps in this procedure.

Before you begin

8335-GTC, 8335-GTG, or 8335-GTH systems do not support mixing system processors with different DDx.y levels. You should only complete this procedure if you are removing and replacing all of the system processor modules with new system processor modules.

Procedure

1. Review the following table to determine which firmware level is compatible with the new system processor modules you are installing.

System processor module level	Supported firmware level
DD2.1	OP910
DD2.2	OP920 or OP930
DD2.3	OP930

2. Update the system firmware to a version that is compatible with the new system processor modules you are installing.

For instructions, see Getting fixes.

3. Remove all the system processor modules.

   For instructions, see "Removing a system processor module from the 8335-GTC, 8335-GTG, or 8335-GTH system" on page 88.

4. Replace all the system processor modules.

   For instructions, see "Replacing a system processor module in the 8335-GTC, 8335-GTG, or 8335-GTH system" on page 98.

Removing and replacing the time-of-day battery in the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system

To remove and replace the time-of-day battery, complete the steps in this procedure.

Before you begin

Power off the system and place it in the service position. For instructions, see "Preparing the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system to remove and replace internal parts" on page 138.

Procedure

1. Attach the electrostatic discharge (ESD) wrist strap.

   The ESD wrist strap must be connected to an unpainted metal surface until the service procedure is completed, and if applicable, until the service access cover is replaced.

   ⚠️ **Attention:**

   - Attach an electrostatic discharge (ESD) wrist strap to the front ESD jack, to the rear ESD jack, or to an unpainted metal surface of your hardware to prevent the electrostatic discharge from damaging your hardware.

   - When you use an ESD wrist strap, follow all electrical safety procedures. An ESD wrist strap is used for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

   - If you do not have an ESD wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds. If at any point in this service process you move away from the system, it is important to again discharge yourself by touching an unpainted metal surface for at least 5 seconds before you continue with the service process.

Removing:

2. Remove the time-of-day battery from its slot on the system backplane as shown in Figure 95 on page 114. Ensure that you record the orientation of the polarity of the battery so that you can insert it with the same orientation later.
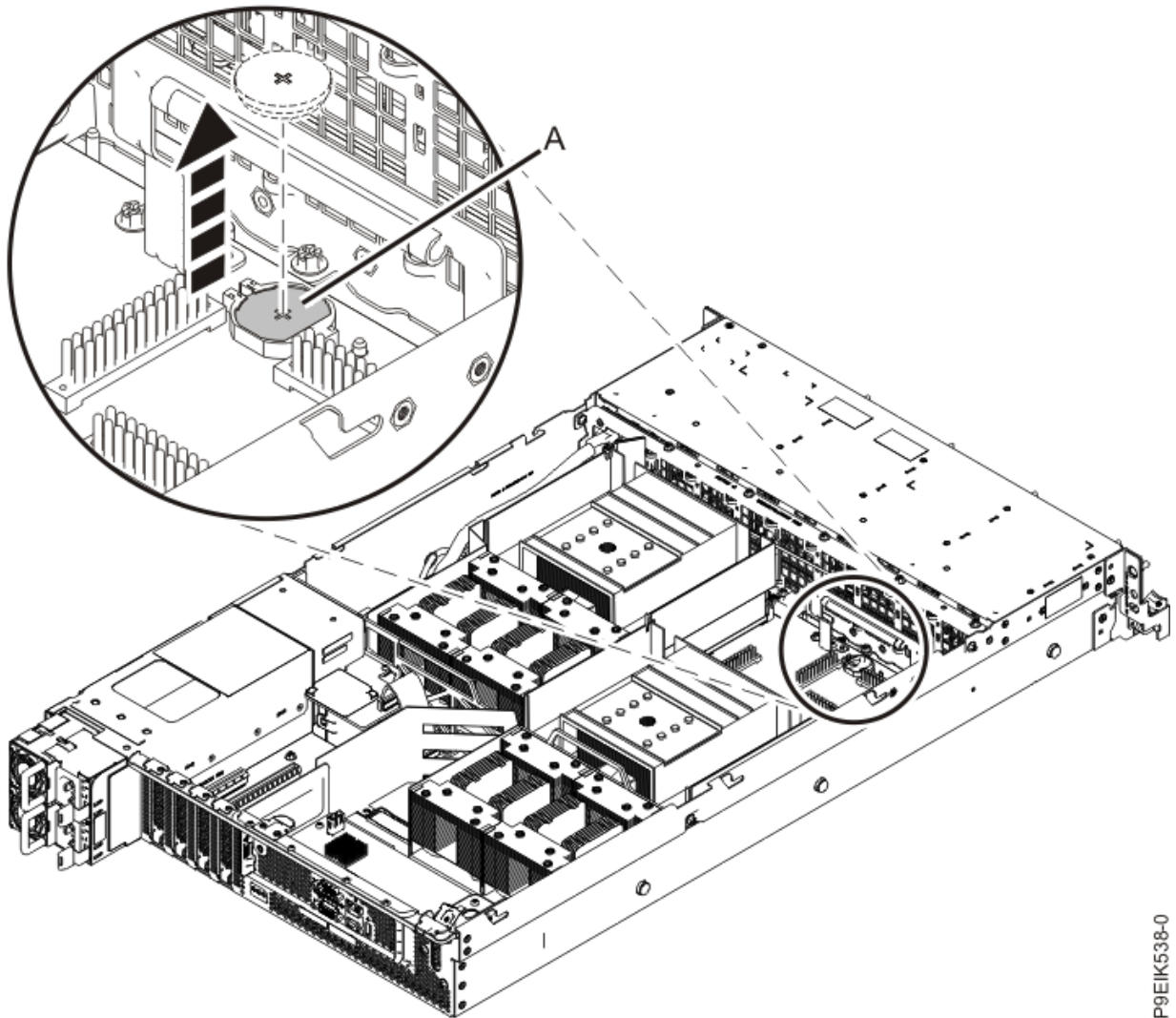
Figure 95. Removing the time-of-day battery from the system backplane

Replacing:

3. Insert the time-of-day battery in the slot on the system backplane as shown in . Ensure to insert the battery with the correct polarity as recorded during removing of the battery.
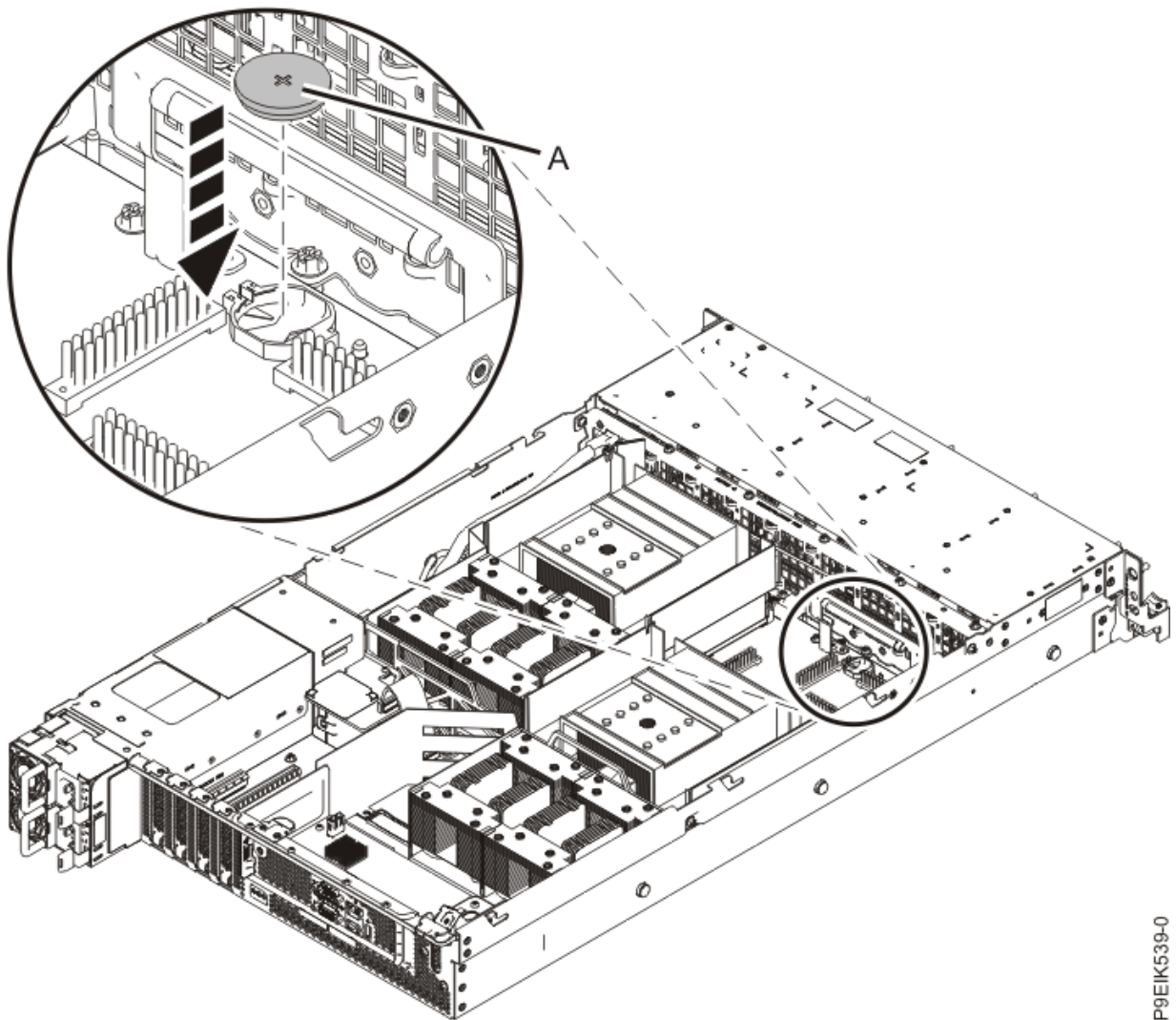
Figure 96. Replacing the time-of-day battery on the system backplane

What to do next

Prepare the system for operation. For instructions, see "Preparing the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system for operation after you remove and replace internal parts" on page 142.

Removing and replacing the trusted platform module in the 8335-GTH or 8335-GTX system

Learn how to remove and replace a trusted platform module in the IBM Power System AC922 (8335-GTH or 8335-GTX) system.

Removing the trusted platform module from the 8335-GTH or 8335-GTX system

To remove a trusted platform module, complete the steps in this procedure.

Before you begin

Power off the system and place it in the service position. For instructions, see "Preparing the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system to remove and replace internal parts" on page 138.

Procedure

1. Attach the electrostatic discharge (ESD) wrist strap.

   The ESD wrist strap must be connected to an unpainted metal surface until the service procedure is completed, and if applicable, until the service access cover is replaced.

   ⚠️ **Attention:**

   - Attach an electrostatic discharge (ESD) wrist strap to the front ESD jack, to the rear ESD jack, or to an unpainted metal surface of your hardware to prevent the electrostatic discharge from damaging your hardware.

   - When you use an ESD wrist strap, follow all electrical safety procedures. An ESD wrist strap is used for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

   - If you do not have an ESD wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds. If at any point in this service process you move away from the system, it is important to again discharge yourself by touching an unpainted metal surface for at least 5 seconds before you continue with the service process.

2. Pull the lever **(A)** to release the trusted platform module (TPM), and lift the TPM straight up from the system backplane as shown in Figure 97 on page 117.
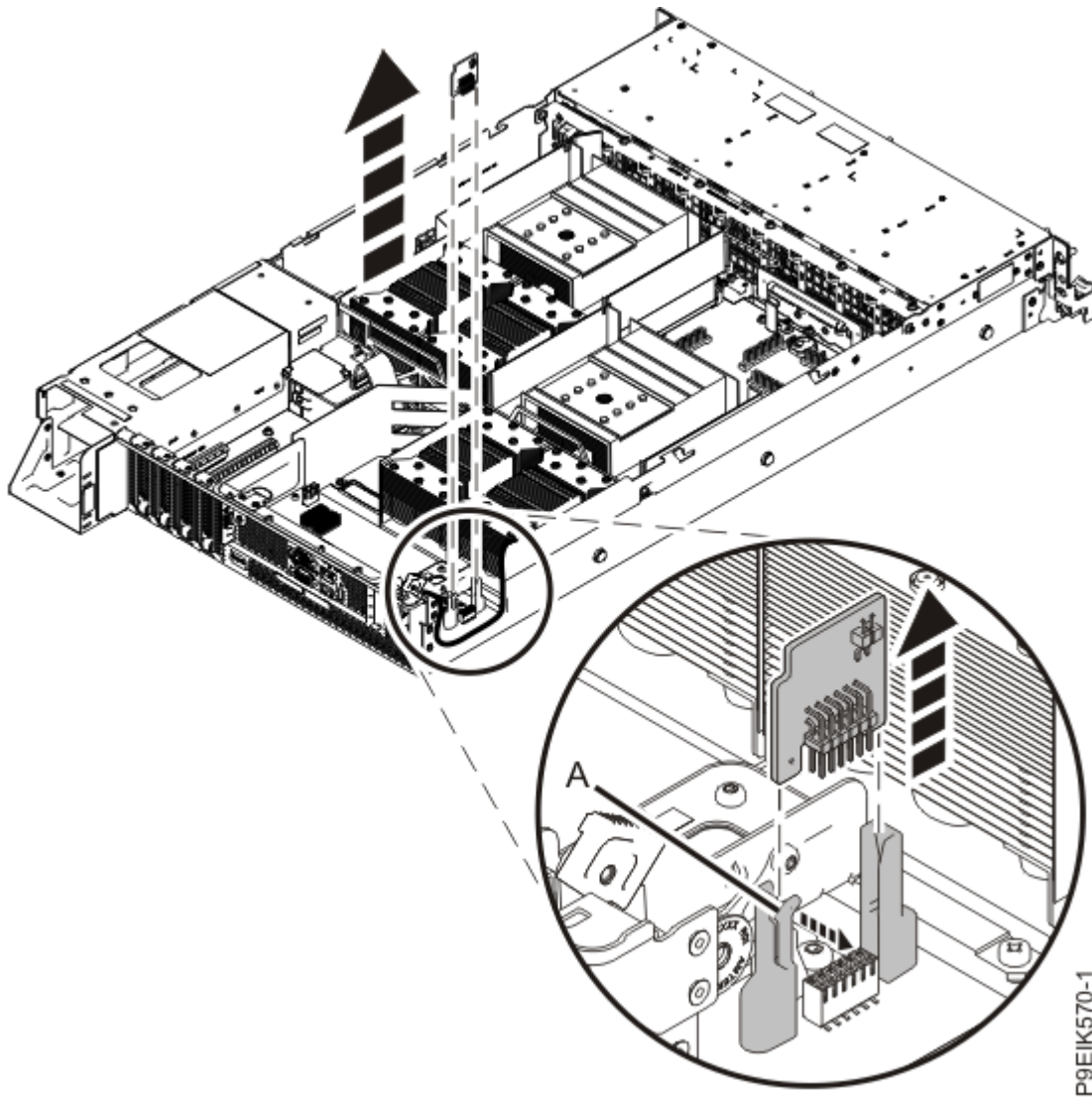
Figure 97. Removing the trusted platform module

3. Place the trusted platform module on an ESD mat.

Replacing the trusted platform module in the 8335-GTH or 8335-GTX system

To replace a trusted platform module, complete the steps in this procedure.

Procedure

1. Ensure that you have the electrostatic discharge (ESD) wrist strap on and that the ESD clip is plugged into a ground jack or connected to an unpainted metal surface. If not, do so now.
2. Align the trusted platform module with the plastic guides as shown in Figure 98 on page 118, and push the trusted platform module straight into the system backplane, until it is fully seated and the lever **(A)** clicks into place.
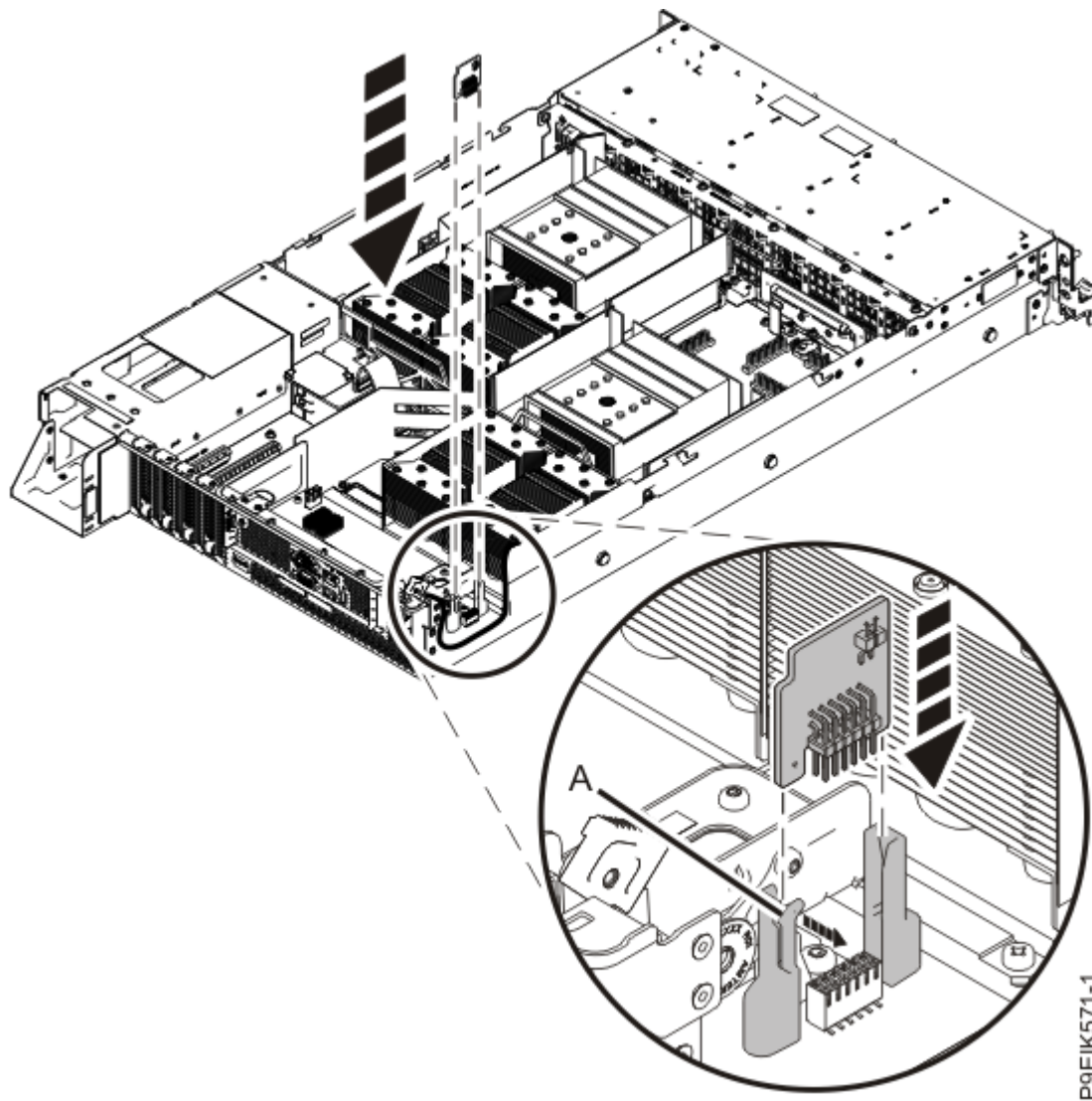
Figure 98. Replacing the trusted platform module

What to do next

Prepare the system for operation. For instructions, see "Preparing the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system for operation after you remove and replace internal parts" on page 142.

Removing and replacing the USB cable and connector in the 8335-GTG or 8335-GTH system

Learn how to remove and replace the USB cable and connector in the system.

Removing the USB cable and connector from the 8335-GTG or 8335-GTH system

To remove a USB cable and connector, complete the steps in this procedure.

Before you begin

Power off the system and place it in the service position. For instructions, see "Preparing the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system to remove and replace internal parts" on page 138.

Procedure

1. Attach the electrostatic discharge (ESD) wrist strap.

   The ESD wrist strap must be connected to an unpainted metal surface until the service procedure is completed, and if applicable, until the service access cover is replaced.

   ⚠️ **Attention:**

   - Attach an electrostatic discharge (ESD) wrist strap to the front ESD jack, to the rear ESD jack, or to an unpainted metal surface of your hardware to prevent the electrostatic discharge from damaging your hardware.
   - When you use an ESD wrist strap, follow all electrical safety procedures. An ESD wrist strap is used for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
   - If you do not have an ESD wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds. If at any point in this service process you move away from the system, it is important to again discharge yourself by touching an unpainted metal surface for at least 5 seconds before you continue with the service process.

2. Remove the disk drive and fan card.

   For instructions, see "Removing the disk drive and fan card from the 8335-GTG or 8335-GTH system" on page 11.

3. Locate the USB cable and connector **(A)** and the power switch and cable **(B)**. They connect between the system backplane and the power switch along the inside of the system.

   See Figure 99 on page 120. Label each cable.
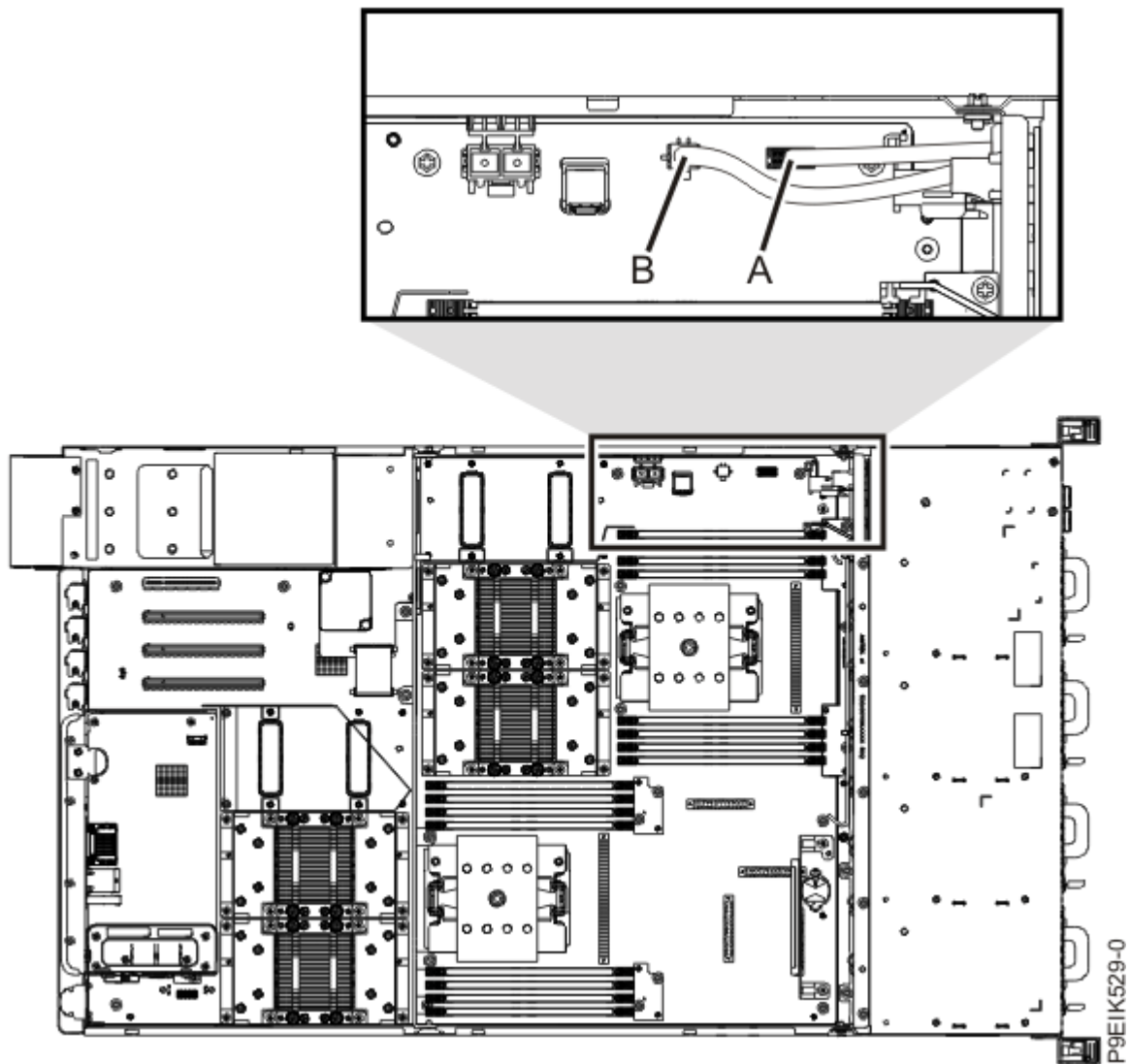
Figure 99. Location of the connectors for the USB cable and connector and the power switch and cable

4. Release each cable from the retaining clip on the inside wall of the system.

5. Pressing the latch release on the connector, disconnect the USB cable **(A)** as shown in Figure 100 on page 121.

   Note: The latch release on the connector must be pressed before you unplug the cable. Failure to do so might damage the cable and the connector.
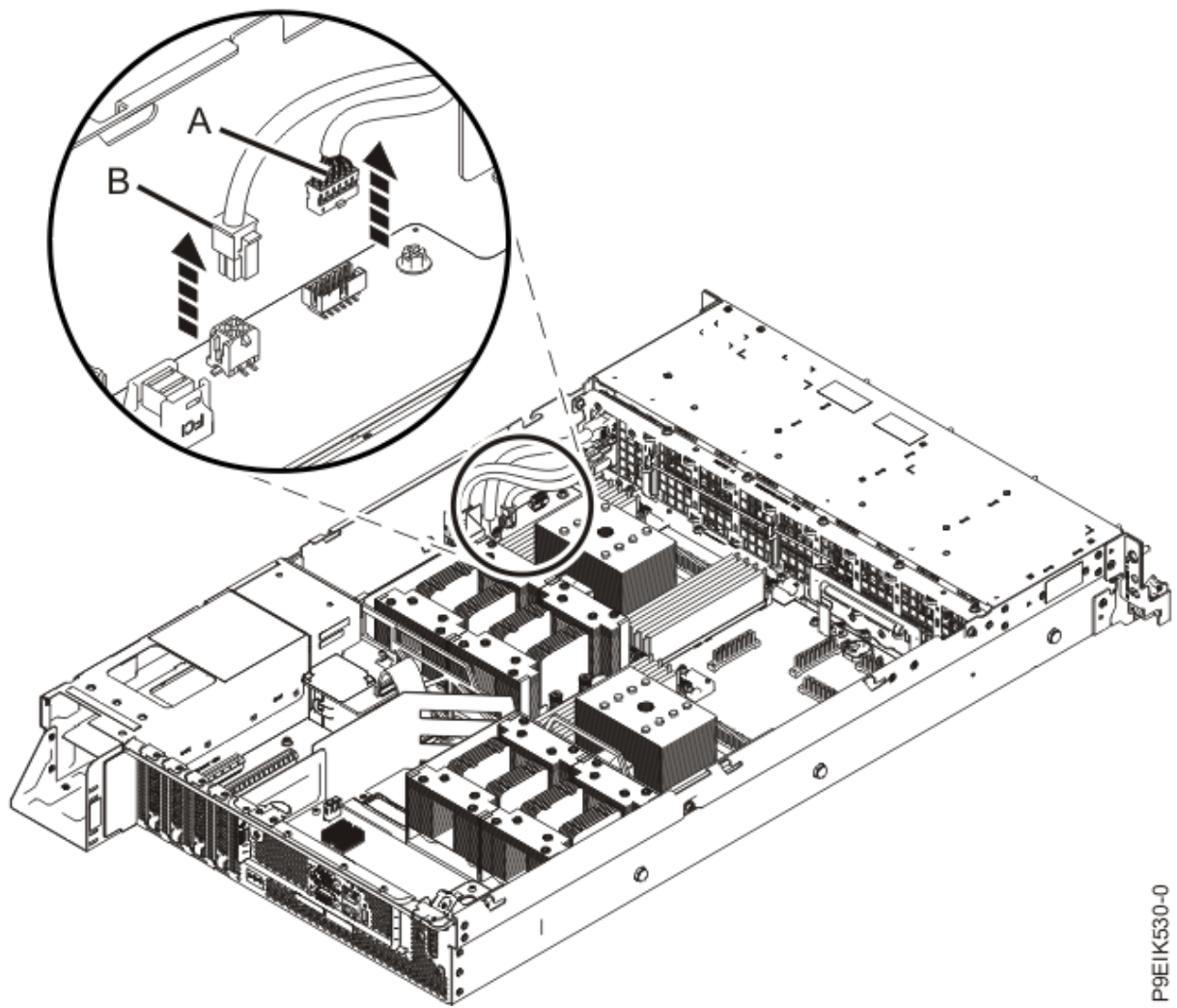
Figure 100. Removing the USB cable and the power switch and cable from the system backplane and the disk drive and fan card

6. Pressing the latch release on the connector, disconnect the power switch and cable **(B)** from the system backplane.

7. Remove the rack installation support from the side of the system as shown in Figure 101 on page 122.
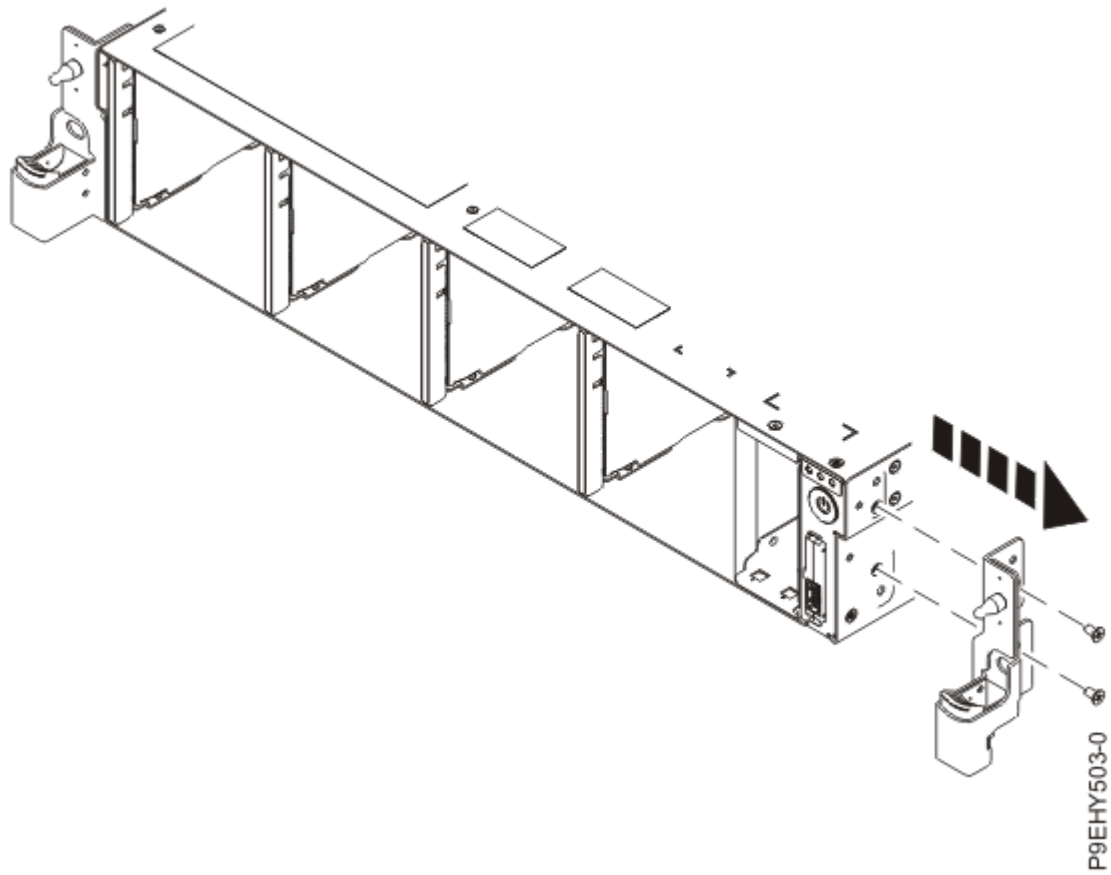
Figure 101. Removing the rack installation support

8. Remove the top and side screws from the power switch as shown in .
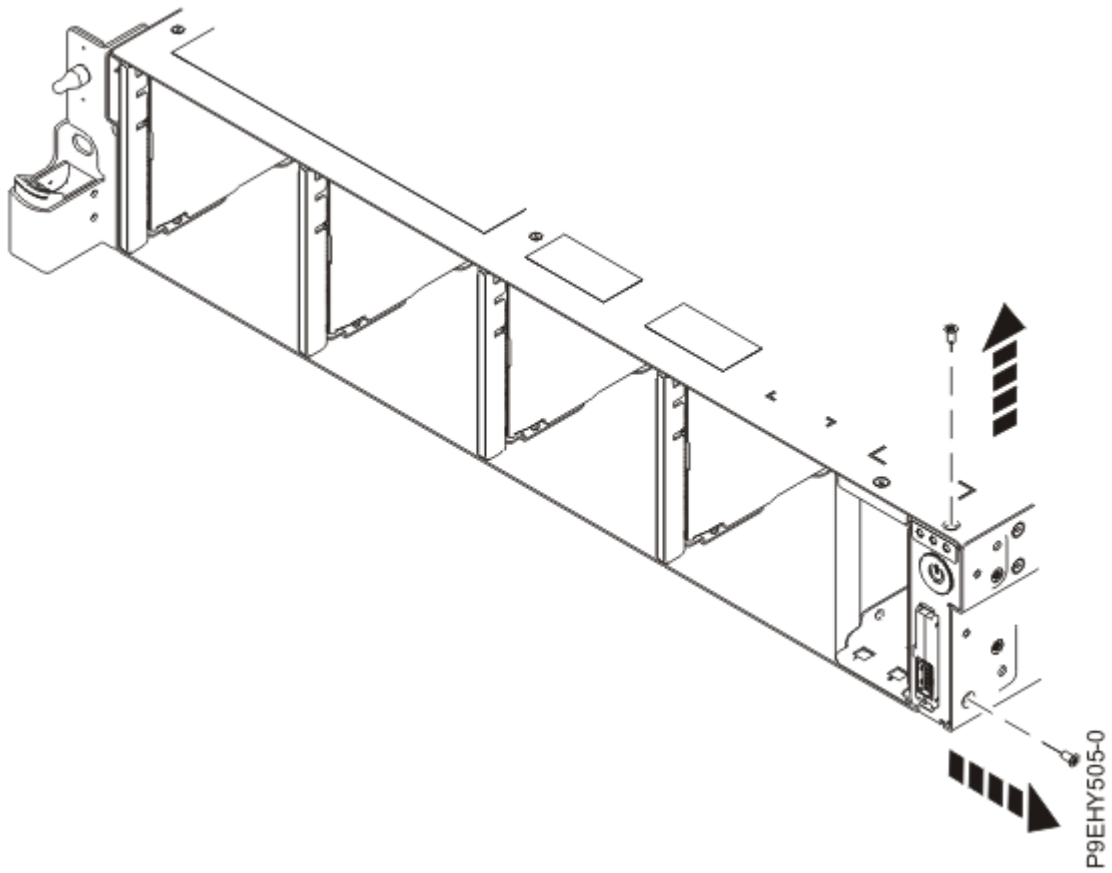
Figure 102. Remove the top and side screws

9. Pull the power switch from the system as shown in .
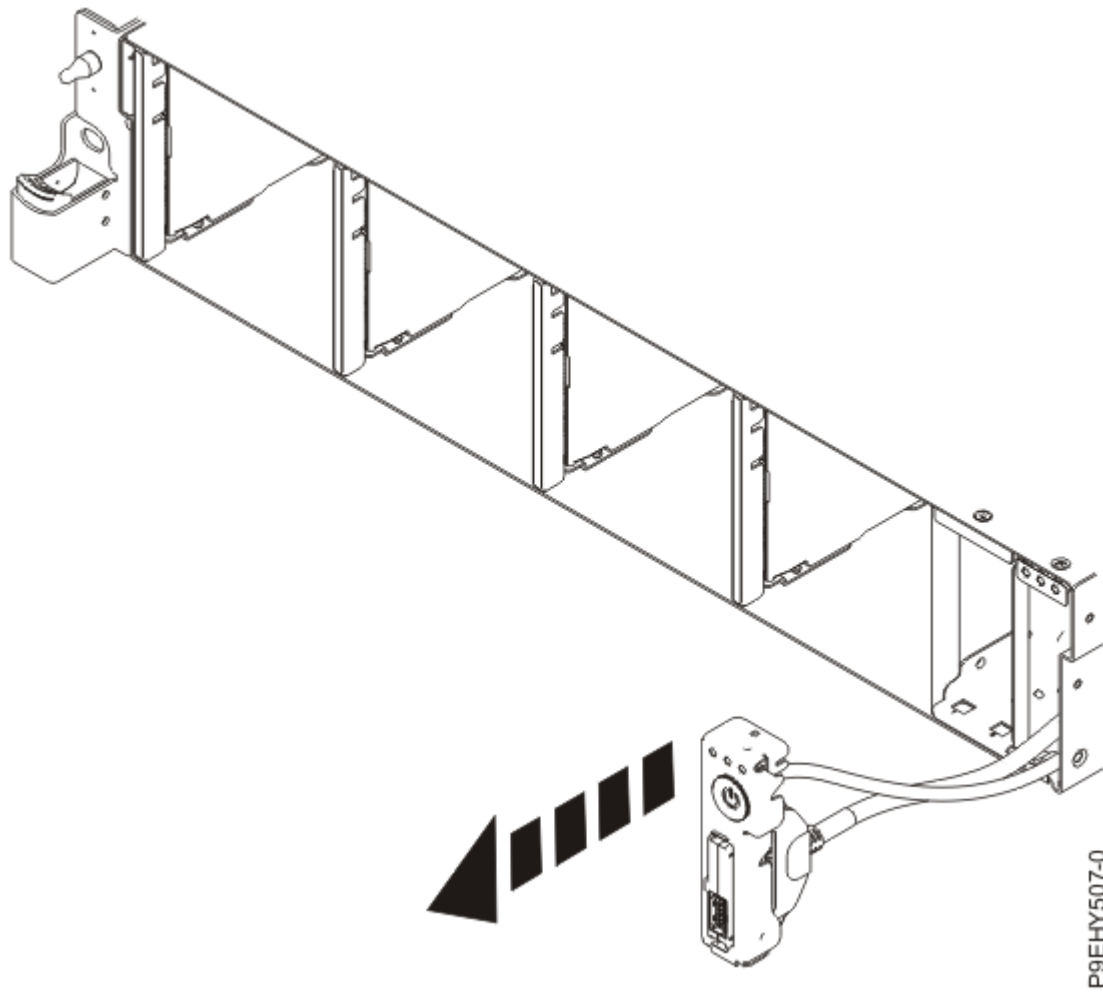
Figure 103. Pull out the power switch and cable

10. Pressing the latch releases **(A)** on the connector, disconnect the USB cable and connector from the power switch as shown in .
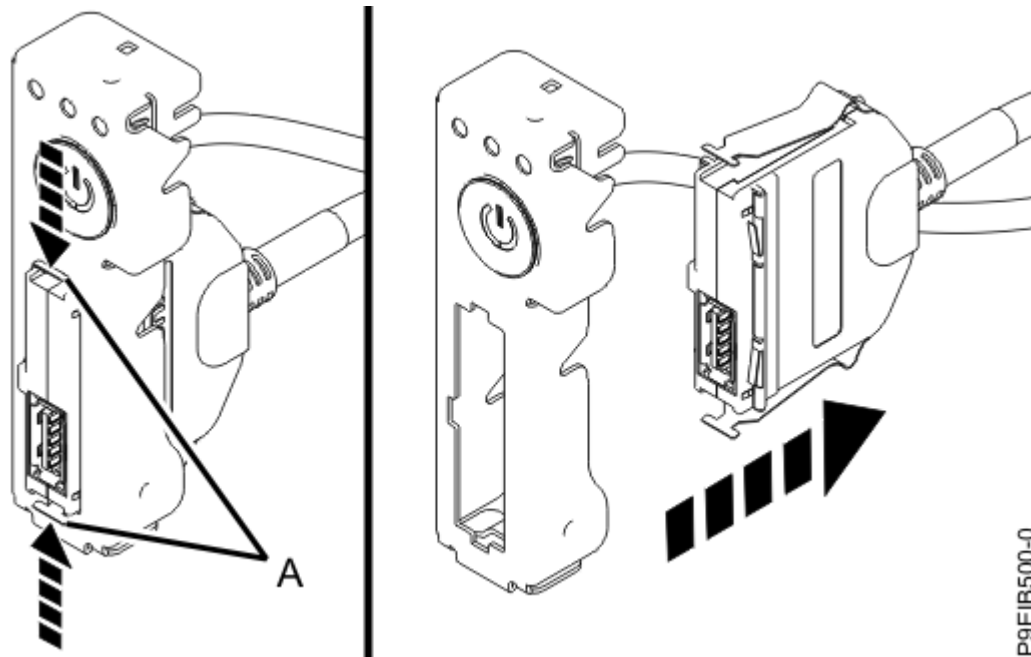
Figure 104. Removing USB cable and connector from the power switch

11. Place the USB cable and connector and the power switch and cable on the table.

Replacing the USB cable and connector in the 8335-GTG or 8335-GTH system

To replace a USB cable and connector, complete the steps in this procedure.

Procedure

1. Ensure that you have the electrostatic discharge (ESD) wrist strap on and that the ESD clip is plugged into a ground jack or connected to an unpainted metal surface. If not, do so now.
2. Find the replacement USB cable and connector and remove it from the protective plastic envelope.
3. While you press the latches **(A)** in, connect the USB cable and connector to the power switch as shown in Figure 105 on page 125.
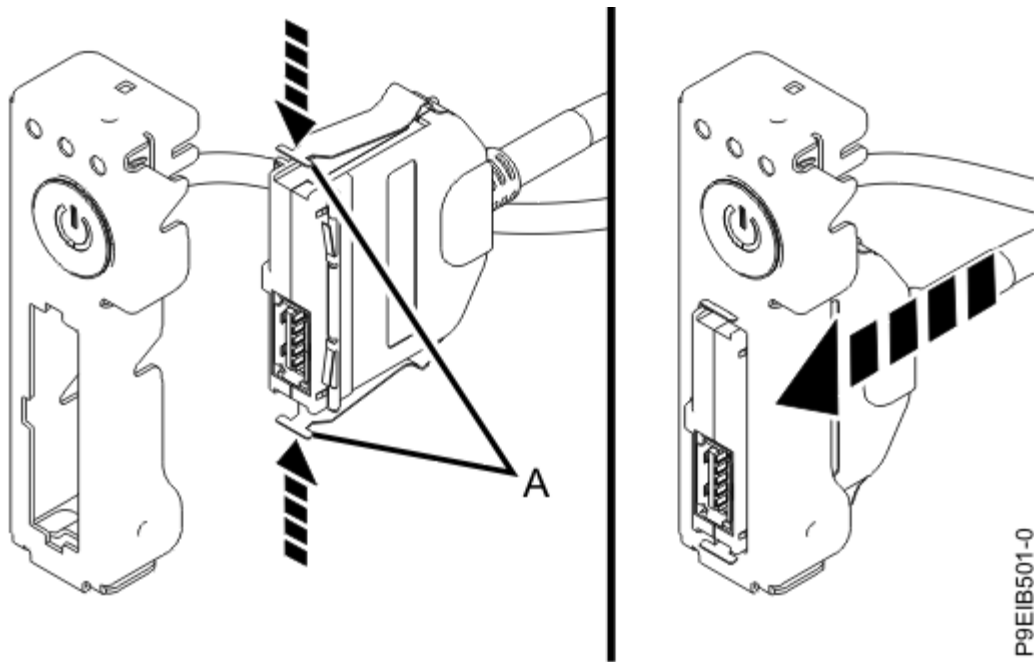
Figure 105. Attaching the USB cable and connector to the power switch

4. Insert the USB cable and the power switch and cable into the system as shown in Figure 106 on page 126. Be careful to route the cables through to the system backplane.
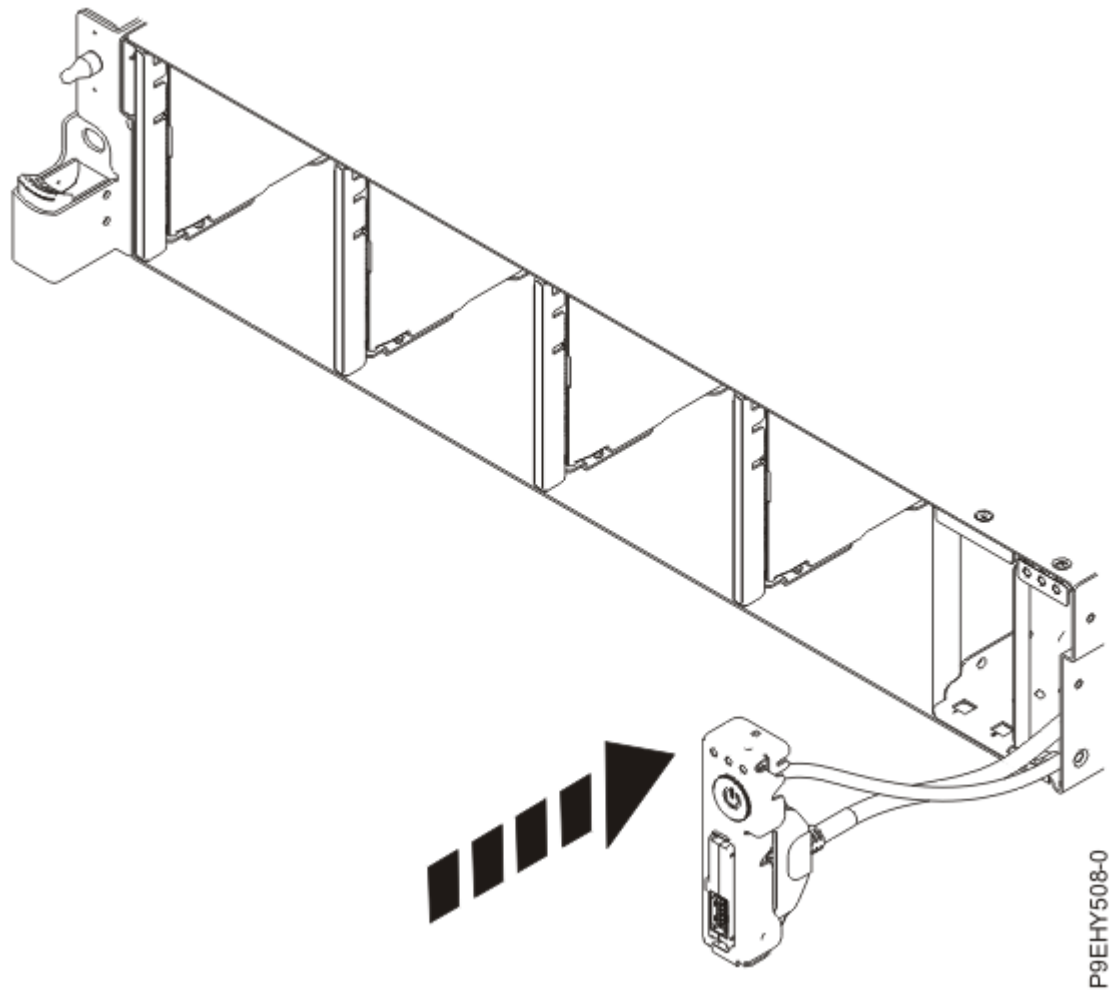
Figure 106. Replacing the front USB cable into the system backplane

5. Replace the top and side screws for the power switch as shown in .
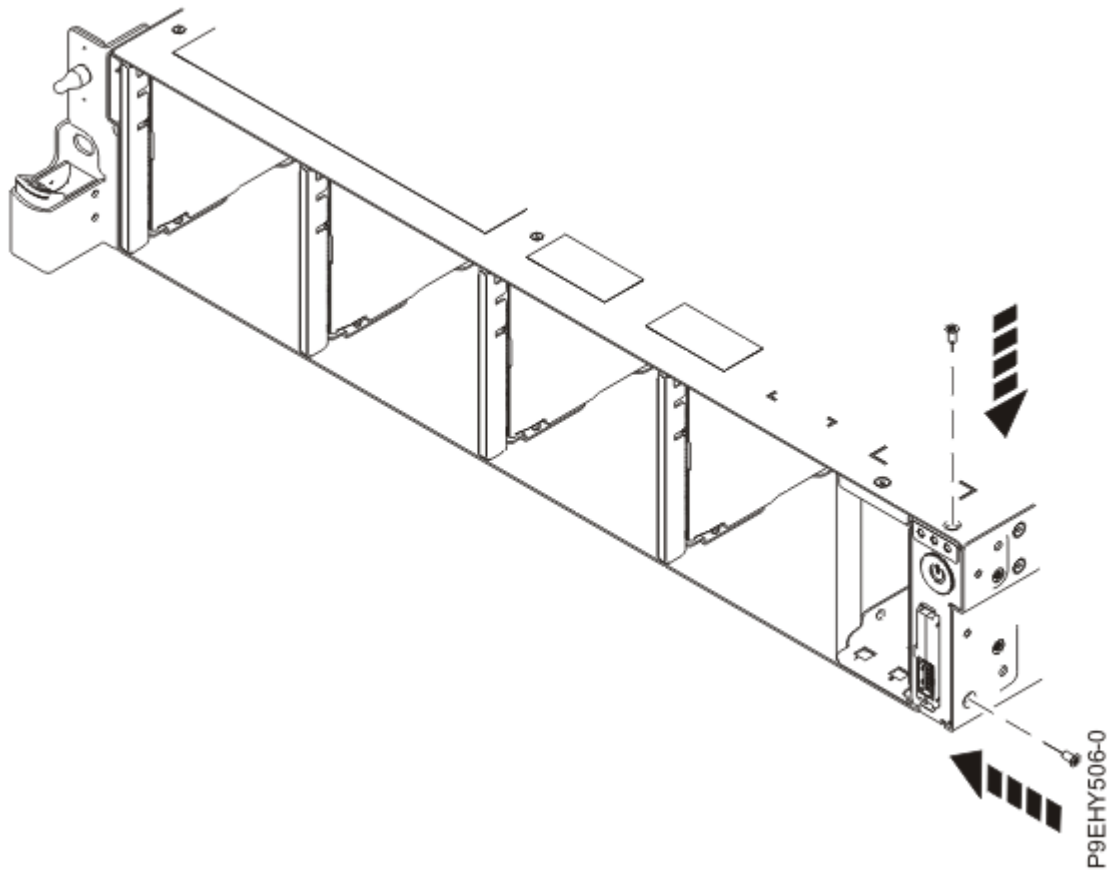
Figure 107. Replace the top and side screws

6. Using the labels, plug the USB cable **(A)** and the power switch and cable **(B)** to the system backplane as shown in Figure 108 on page 128.

   Ensure that the cable latch clip snaps into place on the connectors.
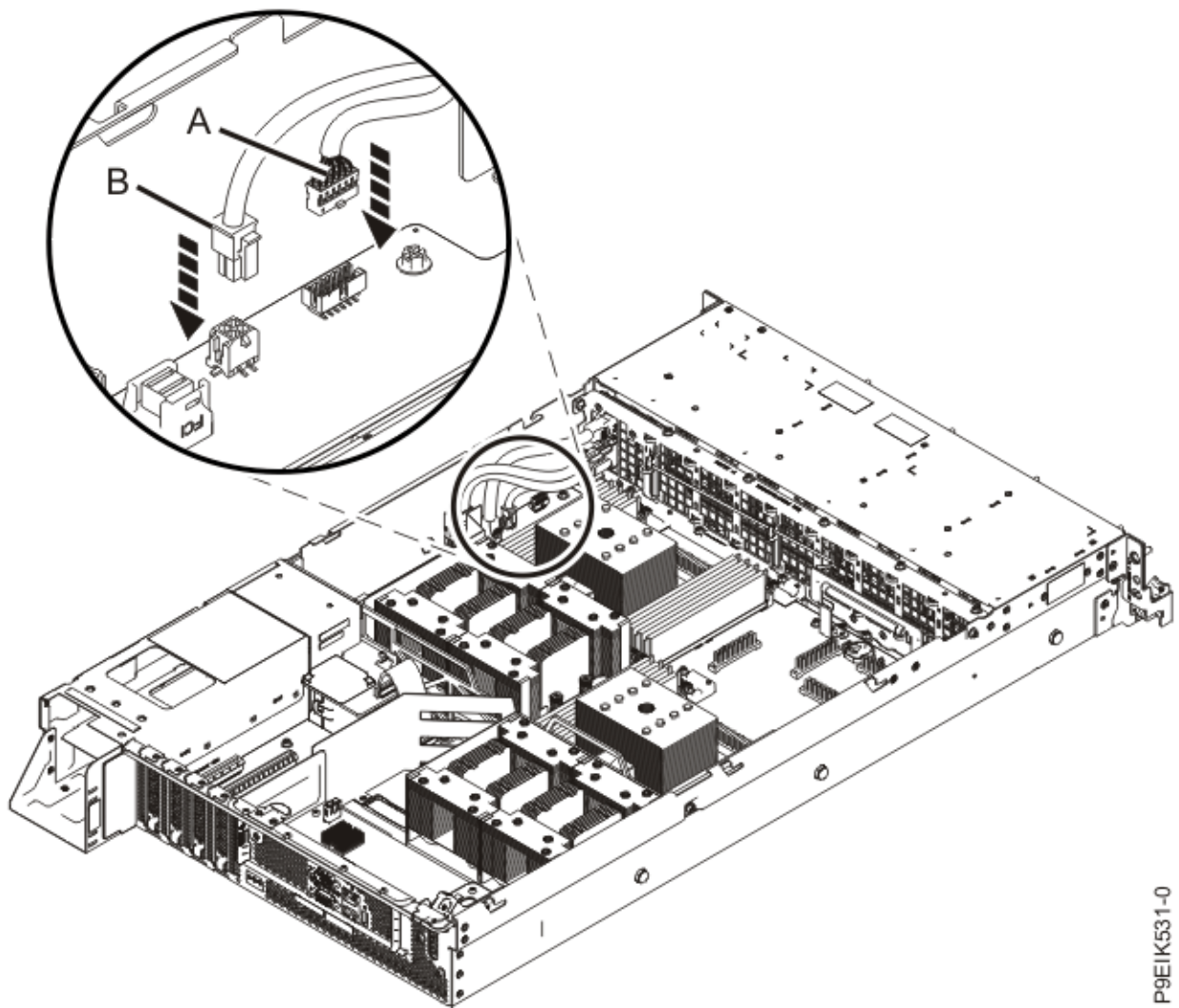
Figure 108. Plugging in the cables

7. Replace the rack installation support on the side of the system as shown in
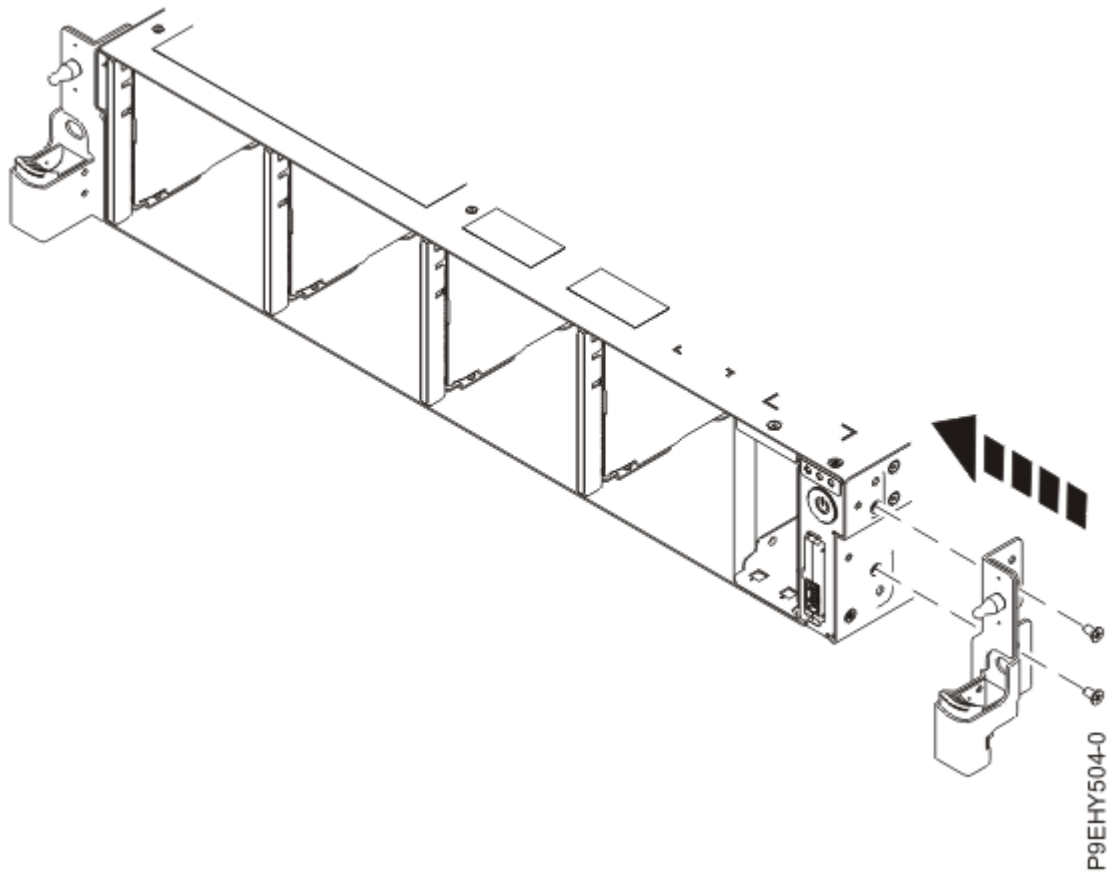
Figure 109. Replacing the rack installation support

8. Secure each cable in the retaining clip on the inside wall of the system.

9. Replace the disk drive and fan card.

   For instructions, see "Replacing the disk drive and fan card in the 8335-GTG or 8335-GTH system" on page 16.

What to do next

Prepare the system for operation. For instructions, see "Preparing the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system for operation after you remove and replace internal parts" on page 142.

Common procedures for servicing or installing features in the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system

Learn about the common procedures related to installing, removing, and replacing features in the system.

Before you begin

Observe these precautions when you are installing, removing, or replacing features and parts.

About this task

These precautions are intended to create a safe environment to service your system and do not provide steps for servicing your system. The installation, removal, and replacement procedures provide the step-by-step processes that are required to service your system.

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

Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard: If IBM supplied the power cord(s), connect power to this unit only with the IBM provided power cord. Do not use the IBM provided power cord for any other product. Do not open or service any power supply assembly. Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.

- The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords. For AC power, disconnect all power cords from their AC power source. For racks with a DC power distribution panel (PDP), disconnect the customer's DC power source to the PDP.

- When connecting power to the product ensure all power cables are properly connected. For racks with AC power, connect all power cords to a properly wired and grounded electrical outlet. Ensure that the outlet supplies proper voltage and phase rotation according to the system rating plate. For racks with a DC power distribution panel (PDP), connect the customer's DC power source to the PDP. Ensure that the proper polarity is used when attaching the DC power and DC power return wiring.

- Connect any equipment that will be attached to this product to properly wired outlets.

- When possible, use one hand only to connect or disconnect signal cables.

- Never turn on any equipment when there is evidence of fire, water, or structural damage.

- Do not attempt to switch on power to the machine until all possible unsafe conditions are corrected.

- When performing a machine inspection: Assume that an electrical safety hazard is present. Perform all continuity, grounding, and power checks specified during the subsystem installation procedures to ensure that the machine meets safety requirements. Do not attempt to switch power to the machine until all possible unsafe conditions are corrected. Before you open the device covers, unless instructed otherwise in the installation and configuration procedures: Disconnect the attached AC power cords, turn off the applicable circuit breakers located in the rack power distribution panel (PDP), and disconnect any telecommunications systems, networks, and modems.

- Connect and disconnect cables as described in the following procedures when installing, moving, or opening covers on this product or attached devices.

  To Disconnect: 1) Turn off everything (unless instructed otherwise). 2) For AC power, remove the power cords from the outlets. 3) For racks with a DC power distribution panel (PDP), turn off the circuit breakers located in the PDP and remove the power from the Customer's DC power source. 4) Remove the signal cables from the connectors. 5) Remove all cables from the devices.

To Connect: 1) Turn off everything (unless instructed otherwise). 2) Attach all cables to the devices. 3) Attach the signal cables to the connectors. 4) For AC power, attach the power cords to the outlets. 5) For racks with a DC power distribution panel (PDP), restore the power from the Customer's DC power source and turn on the circuit breakers located in the PDP. 6) Turn on the devices.

- Sharp edges, corners and joints may be present in and around the system. Use care when handling equipment to avoid cuts, scrapes and pinching. (D005)

(R001 part 1 of 2):

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

- Heavy equipment–personal injury or equipment damage might result if mishandled.

- Always lower the leveling pads on the rack cabinet.

- Always install stabilizer brackets on the rack cabinet if provided, unless the earthquake option is to be installed.

- To avoid hazardous conditions due to uneven mechanical loading, always install the heaviest devices in the bottom of the rack cabinet. Always install servers and optional devices starting from the bottom of the rack cabinet.

- Rack-mounted devices are not to be used as shelves or work spaces. Do not place objects on top of rack-mounted devices. In addition, do not lean on rack mounted devices and do not use them to stabilize your body position (for example, when working from a ladder).

- Stability hazard:

  – The rack may tip over causing serious personal injury.

  – Before extending the rack to the installation position, read the installation instructions.

  – Do not put any load on the slide-rail mounted equipment mounted in the installation position.

  – Do not leave the slide-rail mounted equipment in the installation position.

- Each rack cabinet might have more than one power cord.

  – For AC powered racks, be sure to disconnect all power cords in the rack cabinet when directed to disconnect power during servicing.

  – For racks with a DC power distribution panel (PDP), turn off the circuit breaker that controls the power to the system unit(s), or disconnect the customer's DC power source, when directed to disconnect power during servicing.

- Connect all devices installed in a rack cabinet to power devices installed in the same rack cabinet. Do not plug a power cord from a device installed in one rack cabinet into a power device installed in a different rack cabinet.

- An electrical outlet that is not correctly wired could place hazardous voltage on the metal parts of the system or the devices that attach to the system. It is the responsibility of the customer to ensure that the outlet is correctly wired and grounded to prevent an electrical shock. (R001 part 1 of 2)

(R001 part 2 of 2):

 CAUTION:

- Do not install a unit in a rack where the internal rack ambient temperatures will exceed the manufacturer's recommended ambient temperature for all your rack-mounted devices.

- Do not install a unit in a rack where the air flow is compromised. Ensure that air flow is not blocked or reduced on any side, front, or back of a unit used for air flow through the unit.

- Consideration should be given to the connection of the equipment to the supply circuit so that overloading of the circuits does not compromise the supply wiring or overcurrent protection. To provide the correct power connection to a rack, refer to the rating labels located on the equipment in the rack to determine the total power requirement of the supply circuit.
- *(For sliding drawers.)* Do not pull out or install any drawer or feature if the rack stabilizer brackets are not attached to the rack or if the rack is not bolted to the floor. Do not pull out more than one drawer at a time. The rack might become unstable if you pull out more than one drawer at a time.

- *(For fixed drawers.)* This drawer is a fixed drawer and must not be moved for servicing unless specified by the manufacturer. Attempting to move the drawer partially or completely out of the rack might cause the rack to become unstable or cause the drawer to fall out of the rack. (R001 part 2 of 2)

(L003)

or

or

or
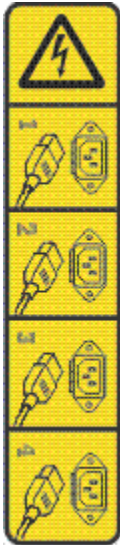
or
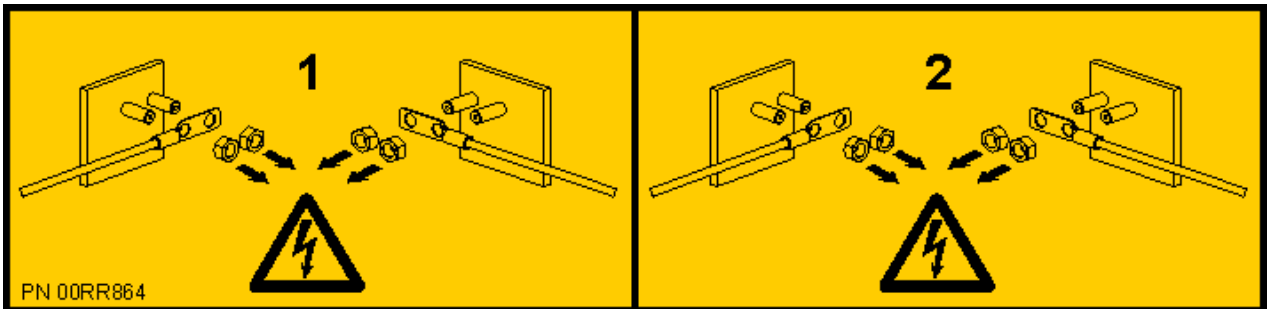
PN 00RR864

DANGER: Multiple power cords. The product might be equipped with multiple AC power cords or multiple DC power cables. To remove all hazardous voltages, disconnect all power cords and power cables. (L003)

(L005)

CAUTION: Hazardous energy present. Voltages with hazardous energy might cause heating when shorted with metal, which might result in splattered metal, burns, or both. (L005)

Procedure

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

1. If you are installing a new feature, ensure that you install the required software to support the new feature. See IBM Prerequisite.

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

3. Review the installation or replacement procedure for the feature or part.

4. Note the significance of color on your system.

   Blue on a part of the hardware indicates a touch point where you can grip the hardware to remove it from or install it in the system, open or close a latch, and so on.

5. Ensure that you have access to a medium flat-blade screwdriver, a Phillips screwdriver, and a pair of scissors.

6. If parts are incorrect, missing, or visibly damaged, do the following steps:

   • If you are replacing a part, contact the provider of your parts or next level of support.

   • If you are installing a feature, contact one of the following service organizations:

     – The provider of your parts or next level of support.

     – In the United States, the IBM Rochester Manufacturing Automated Information Line (R-MAIL) at 1-800-300-8751.

   In countries and regions outside of the United States, see the Directory of worldwide contacts (http://www.ibm.com/planetwide).

7. If you encounter difficulties during the installation, contact your service provider, your IBM reseller, or your next level of support.

8. For the IBM Power System AC922 (8335-GTC, 8335-GTG, and 8335-GTH) or IBM Power System AC922 (8335-GTW and 8335-GTX) systems, ensure that the top cover is on when the system is running for thermal performance.

Identifying the system that contains the part to replace

Learn how to determine which server or enclosure has the part you want to replace.

About this task

If the part does not have problem indicator LED, you need to use a troubleshooting program such as `impitool` to identify the issue.

LEDs on the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system

Use this information as a guide to the LEDs on the IBM Power System AC922 (8335-GTC, 8335-GTG, and 8335-GTH) or IBM Power System AC922 (8335-GTW and 8335-GTX) system.

The LEDs indicate various system statuses. These LEDs are at the front (as shown in Figure 110 on page 136 and Figure 111 on page 136) and at the rear of the system (as shown in Figure 112 on page 137).

• The green LED indicates the power status.

  – A constant light indicates full system power to the unit.

  – A flashing light indicates standby power to the unit.

• The blue LED is used to identify the system that requires service.

• The amber LED indicates a problem in the system. After a part is repaired, the amber LED takes a minute to turn off.
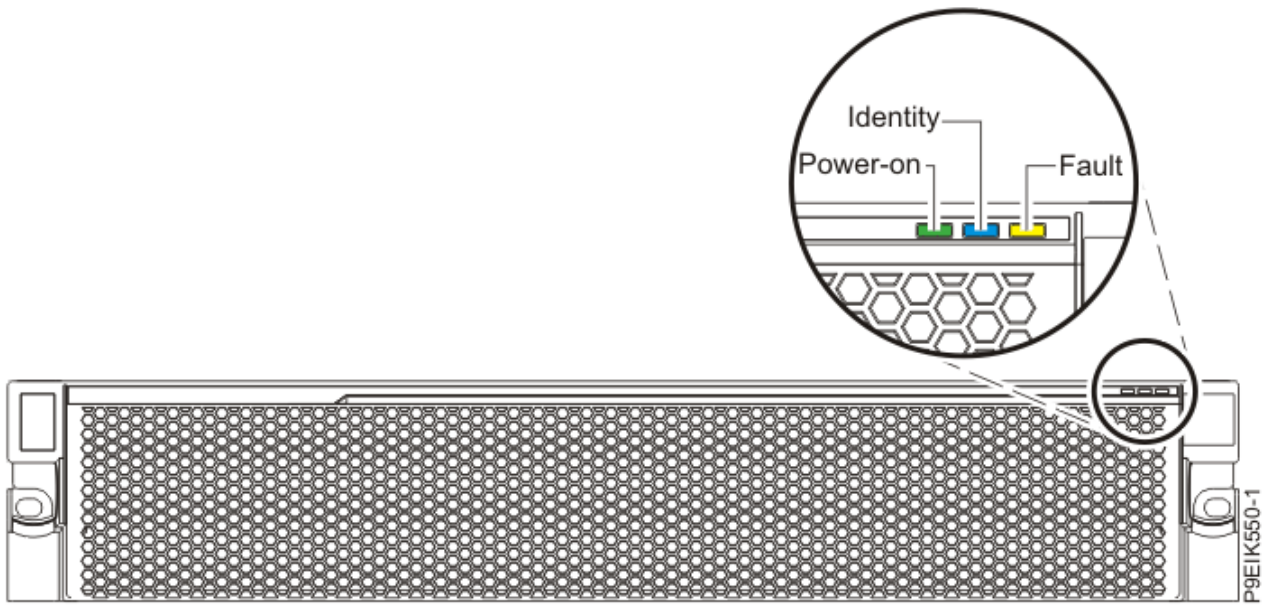
Figure 110. Front LEDs with bezel on
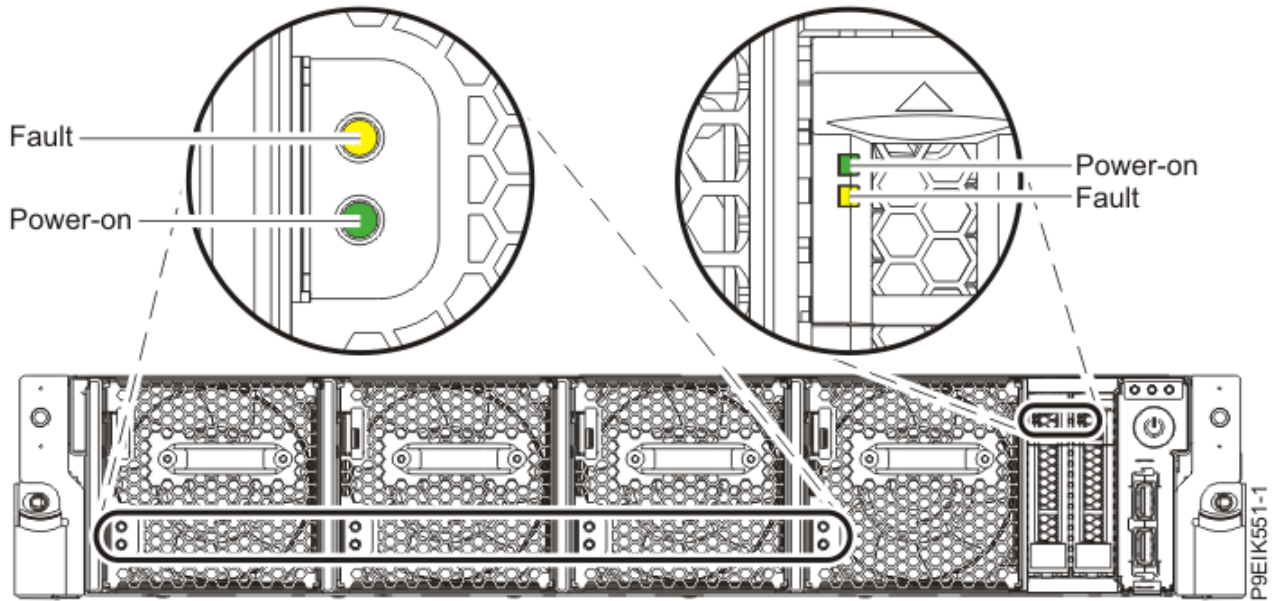
Figure 111. Front LEDs with bezel off
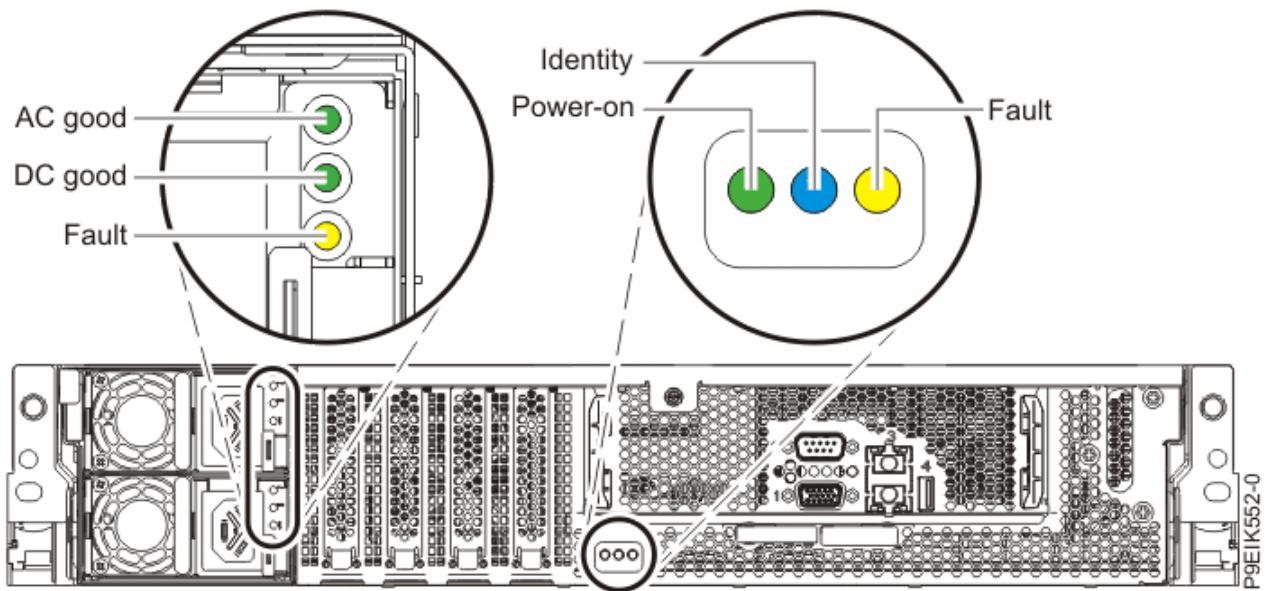
Figure 112. Rear LEDs

LED indicators are on the following parts:

- At the front of the system:
  - Disk drives (green LED indicates activity; amber LED indicates a problem).
  - Fans (green LED indicates activity; amber LED indicates a problem).
- At the rear of the system:
  - Backplane, near the rightmost PCIe slot port: Green, amber, and blue (same as on the front next to the power button).
  - Power supplies (Two green LEDs indicate AC and DC power; amber LED indicates a problem).

Identifying the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system that needs servicing

Learn how to turn on the blue identify LED to help you find the system that needs servicing.

Procedure

To activate the blue system identify LED, use the following command:

```
openbmctool -U <username> -P <password> -H <BMC IP address or BMC host name> chassis identify on
```

To turn off the blue system identify LED, use the following command:

```
openbmctool -U <username> -P <password> -H <BMC IP address or BMC host name> chassis identify off
```

To check the status of the blue system identify LED, use the following command:

```
openbmctool -U <username> -P <password> -H <BMC IP address or BMC host name> chassis identify status
```

Preparing the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system to remove and replace internal parts

To prepare the IBM Power System AC922 (8335-GTC, 8335-GTG, and 8335-GTH) or IBM Power System AC922 (8335-GTW and 8335-GTX) system to remove and replace internal parts, complete the steps in this procedure.

Procedure

1. Complete the prerequisite tasks. For instructions, see "Before you begin" on page 131.
2. Identify the part and the system that you need to work on. For instructions, see "Identifying the system that contains the part to replace" on page 135.
3. If applicable, open the rack front door.
4. Attach the electrostatic discharge (ESD) wrist strap.

   The ESD wrist strap must be connected to an unpainted metal surface until the service procedure is completed, and if applicable, until the service access cover is replaced.

   ⚠️ **Attention:**

   - Attach an electrostatic discharge (ESD) wrist strap to the front ESD jack, to the rear ESD jack, or to an unpainted metal surface of your hardware to prevent the electrostatic discharge from damaging your hardware.
   - When you use an ESD wrist strap, follow all electrical safety procedures. An ESD wrist strap is used for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
   - If you do not have an ESD wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds. If at any point in this service process you move away from the system, it is important to again discharge yourself by touching an unpainted metal surface for at least 5 seconds before you continue with the service process.

5. Remove the front cover. For instructions, see "Removing the front cover from an 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system" on page 148.

   (L007)

   ⚠️ **CAUTION:** A hot surface nearby. (L007)

6. Stop the system. For instructions, see "Stopping the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system" on page 145.
7. If applicable, open the rack door at the rear of the system.
8. Disconnect the power source from the system by unplugging the system. For instructions, see "Disconnecting power cords from an 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system" on page 154.

   Note: The system might be equipped with redundant power supply. Before you continue with this procedure, ensure that all power to your system is disconnected.

   (L003)

or

or

or

or

PN 00RR864

DANGER: Multiple power cords. The product might be equipped with multiple AC power cords or multiple DC power cables. To remove all hazardous voltages, disconnect all power cords and power cables. (L003)

(L005)

>240VA
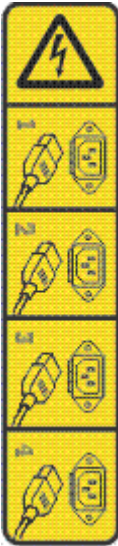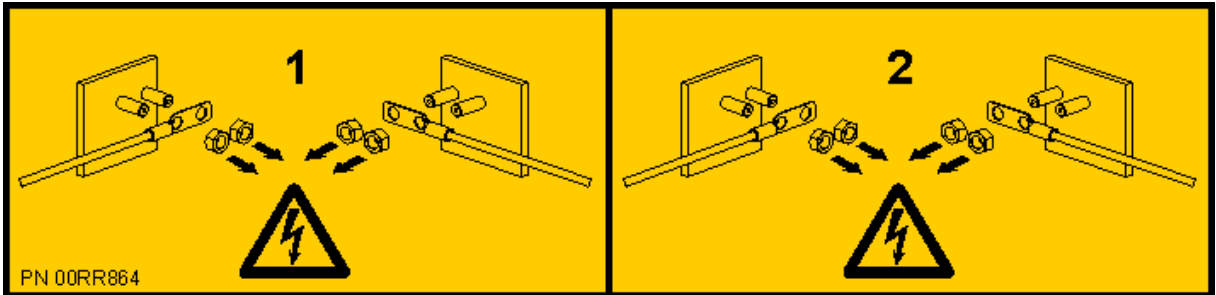
CAUTION: Hazardous energy present. Voltages with hazardous energy might cause heating when shorted with metal, which might result in splattered metal, burns, or both. (L005)

9. Remove the power supplies from the system as shown in Figure 113 on page 141.

   a) To release a power supply from its position in the system, pull the locking-tab **(A)** to the left.

   b) Grasp the power supply handle with one hand, and pull the power supply **(B)** partially out of the system.

   c) Place your other hand underneath the power supply and pull the power supply out of the system and place it on an ESD mat.

   d) Repeat steps "9.a" on page 140 - "9.c" on page 140 for the other power supply.
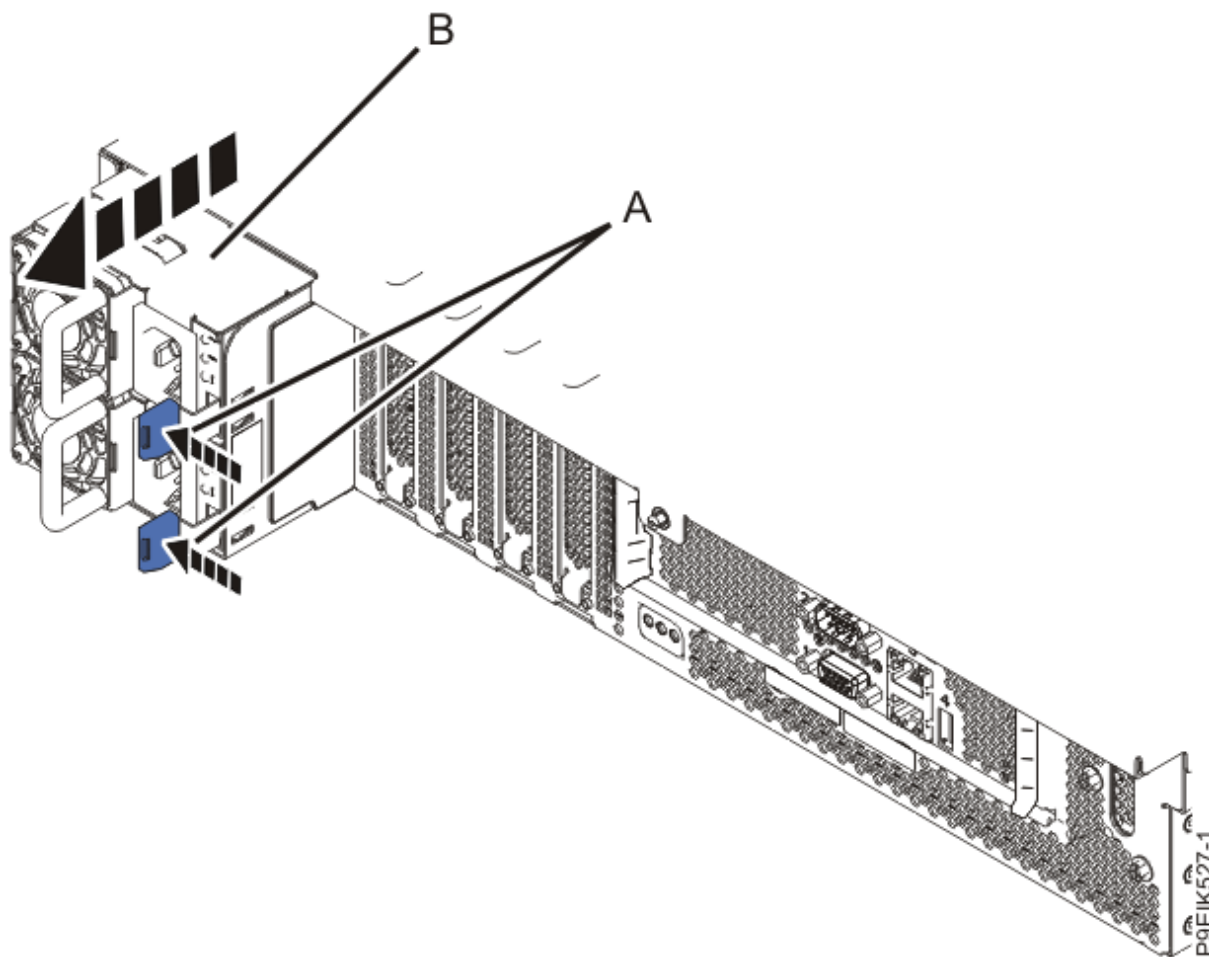
Figure 113. Removing the power supplies from the system

10. Place the system into the service position. For instructions, see "Placing an 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system into the service position" on page 149.

⚠️ **CAUTION:** Do not place any object on top of a rack-mounted device unless that rack-mounted device is intended for use as a shelf. (R008)

(L012)

⚠️ **CAUTION:** Pinch hazard. (L012)

11. Remove the service access cover. For instructions, see "Removing the service access cover from an 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system" on page 146.
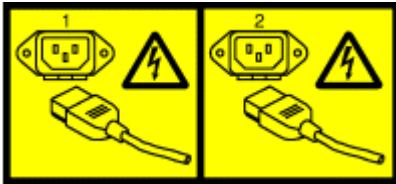
Preparing the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system for operation after you remove and replace internal parts

To prepare the IBM Power System AC922 (8335-GTC, 8335-GTG, and 8335-GTH) or IBM Power System AC922 (8335-GTW and 8335-GTX) system for operation after you remove and replace internal parts, complete the steps in this procedure.

Procedure

1. Ensure that you have the electrostatic discharge (ESD) wrist strap on and that the ESD clip is plugged into a ground jack or connected to an unpainted metal surface. If not, do so now.
2. Replace the service access cover. For instructions, see "Installing the service access cover on an 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system" on page 147.
3. Place the system into the operating position. For instructions, see "Placing an 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system into the operating position" on page 151.

(L012)

⚠ **CAUTION:** Pinch hazard. (L012)

⚠ **Attention:** For a water-cooled system, before you power on the system, ensure that cooling water is circulating through the system.

4. Replace the power supplies as shown in Figure 114 on page 143.
   a) Place your other hand underneath the power supply.
   b) Align the power supply **(A)** with the bay with the fan to the left.
   c) Slide the power supply into the system until the latch **(B)** locks in place.
   d) Repeat steps "4.a" on page 142 - "4.c" on page 142 for the other power supply.
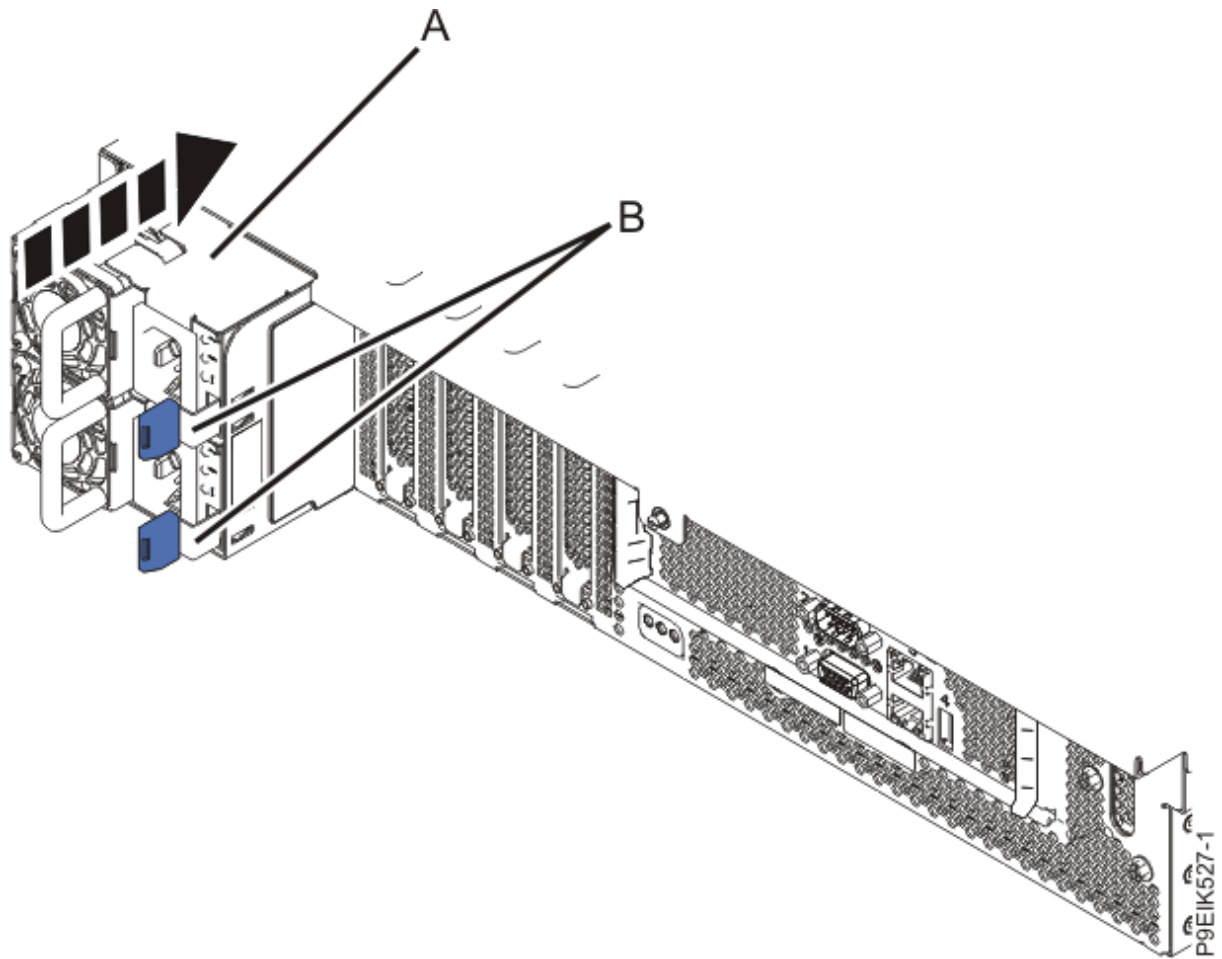
Figure 114. Replacing the power supplies in the system

   5. Reconnect the power cords to the power supplies.

   For instructions, see "Connecting power cords to an 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system" on page 157.

   6. If applicable, close the rack door at the rear of the system.

   7. Start the system. For instructions, see "Starting the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system " on page 144.

   8. If the BMC card was replaced continue to the next step, otherwise go to step "12" on page 144.

   9. Configure the BMC IP address.

   For instructions, see Configuring the BMC IP address (www.ibm.com/support/knowledgecenter/POWER9/p9eih/p9eih_configuring_bmc_ip.htm).

   10. Enter the network settings that you recorded earlier.

   For instructions, see Network settings (www.ibm.com/support/knowledgecenter/POWER9/p9eih/p9eih_openbmc_networksetting.htm).

   11. Complete the following steps to ensure that **fieldmode** is set to **true**:

   a. Logon to the BMC by using Secure Socket Shell (SSH).

   b. Run the following command:

   ```
   fw_printenv fieldmode
   ```

   c. Is the output of the command **fieldmode**=**true**?

   • **Yes**: Continue with step "12" on page 144.

   • **No**: Continue with step "11.d" on page 144.

d. Run the following command:

```
fw_setenv fieldmode true
```

12. Replace the front cover. For instructions, see "Installing the front cover on an 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system" on page 149.

13. If applicable, close the rack front door.

14. Verify the installed part.

    See Verifying a repair (www.ibm.com/support/knowledgecenter/POWER9/p9ei3/ p9ei3_verifyrepair.htm).

Starting and stopping the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system

Learn how to start and stop the IBM Power System AC922 (8335-GTC, 8335-GTG, and 8335-GTH) or IBM Power System AC922 (8335-GTW and 8335-GTX) system to perform a service action or system upgrade operation.

Starting the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system

You use the power button to start the system.

About this task

⚠️ **Attention:** For safety, airflow purposes and thermal performance, the service access cover must be installed and fully seated before powering on the system on.

⚠️ **Attention:** For a water-cooled system, before you power on the system, ensure that cooling water is circulating through the system.

You can use this procedure to power on the system; or you can use a console to power on the system.

Procedure

1. Open the front rack door, if necessary.

2. Before you press the power button, ensure that the power supplies are connected to the system unit and verify the following items:

   • All system power cables are connected to a power source.

   • The power-on LED as shown in Figure 115 on page 145, is flashing. A flashing light indicates standby power to the unit.

3. Press the power button that is shown in Figure 115 on page 145.

   The power-on light stops flashing and remains on, indicating that the system power is on. The system cooling fans first run at a high speed, and after approximately 30 seconds, return to operating speed.
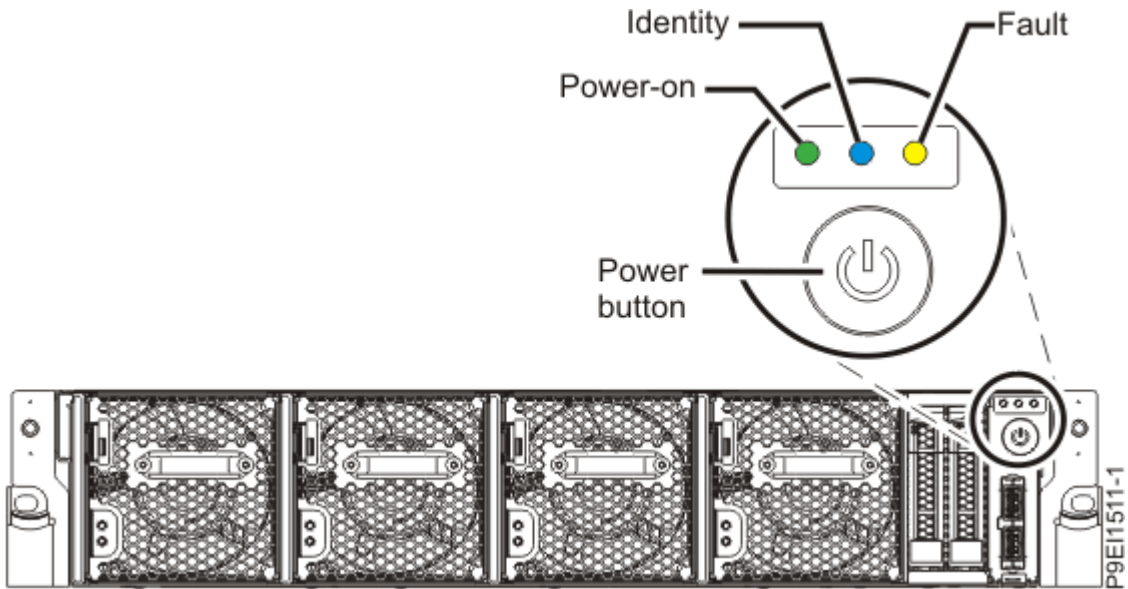
Figure 115. Power button

What to do next
If you press the power button and the system does not start, contact your next level of support or your service provider.

Stopping the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system

You can use the power button or a command to stop the system.

Procedure

- You can press and hold the power button to stop and power off the system.
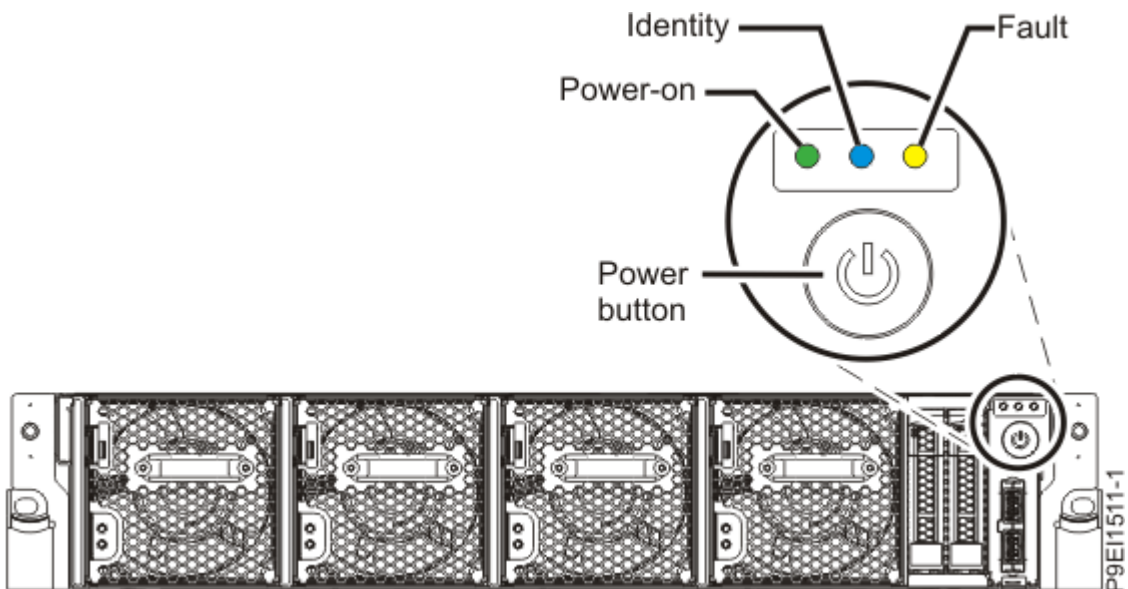
Figure 116. Power button

- You can use the Linux `shutdown` command to stop and power off the system.

For example, the following command shuts down the system in 10 minutes and sends the message "Repairs coming" to the users.

```
shutdown -P +10 "Repairs coming"
```

The `-P` setting instructs the system to shut down and then power off. The + indicates the time in minutes before the shutdown occurs.

Sensor status

You can check the sensor status to quickly determine the general health of the system without using the event codes.

To view the sensor status, use the following command:

```
openbmctool -U <username> -P <password> -H <BMC IP address or BMC host name> fru status
```

To view the sensor status and any corresponding event codes, use the following command:

```
openbmctool -U <username> -P <password> -H <BMC IP address or BMC host name> fru status -v
```

Sensors that have a status of **present** and **functional** do not require a service action. Sensors that have a status of **present** and **not functional** require a service action.

Some occurrences of errors in the system might not appear in the sensor status. After you view the sensor status, look for event codes to determine whether a service action is required.

Removing and replacing covers on an 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system

Learn how to remove and replace the covers for an IBM Power System AC922 (8335-GTC, 8335-GTG, and 8335-GTH) or IBM Power System AC922 (8335-GTW and 8335-GTX) system so that you can access the hardware parts or service the system.

Removing the service access cover from an 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system

To remove the service access cover, complete the steps in this procedure.

Procedure

1. Ensure that you removed both power supplies from the system.

   For instructions, see "Preparing the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system to remove and replace internal parts" on page 138.

   (L005)

   ⚠ **CAUTION:** Hazardous energy present. Voltages with hazardous energy might cause heating when shorted with metal, which might result in splattered metal, burns, or both. (L005)

2. At the rear of the system, loosen the cover screw **(A)** that fastens the cover to the chassis.
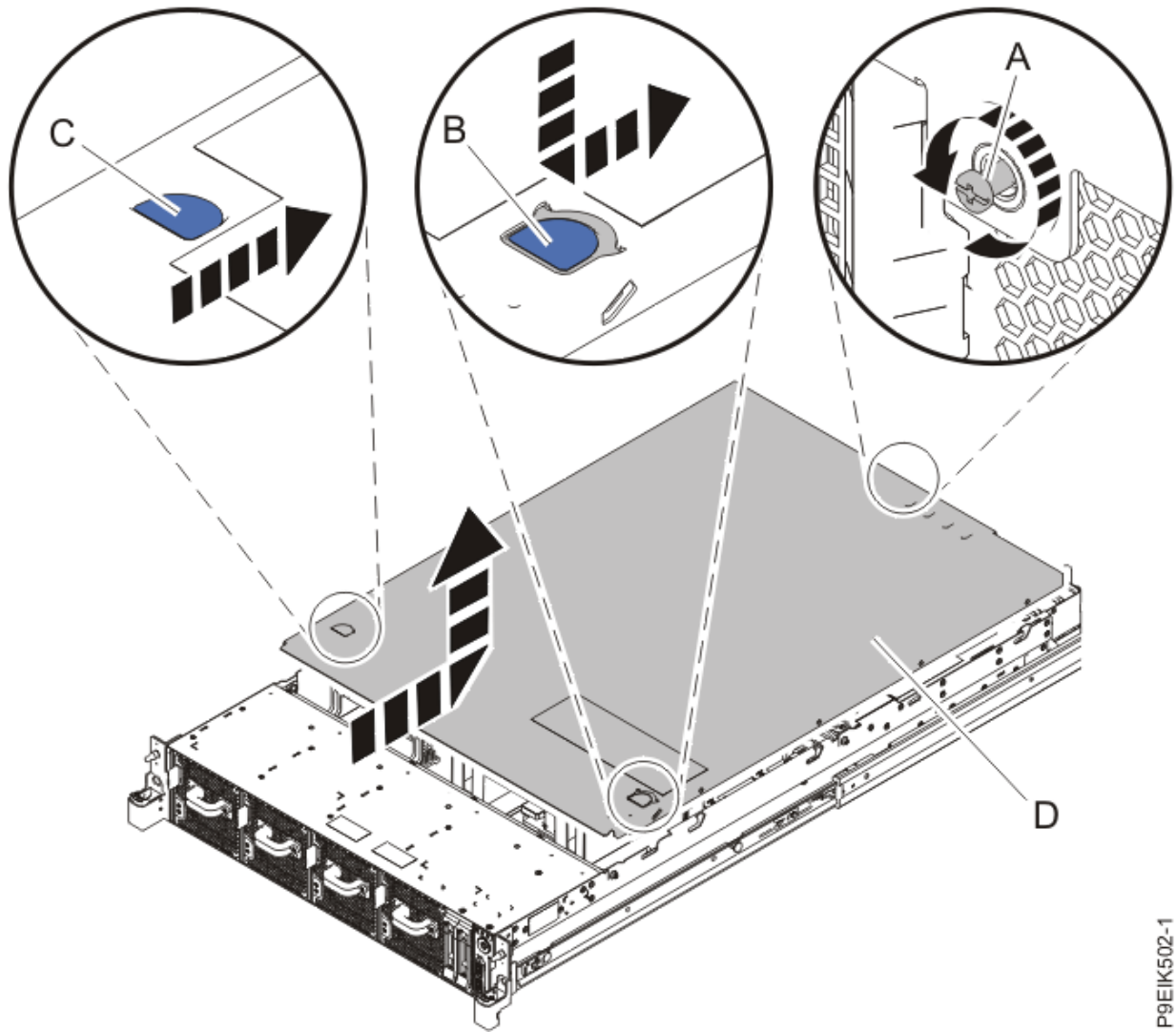
Figure 117. Removing the cover

3. While you press down on latch **(B)** and touch point **(C)**, slide the cover **(D)** towards the rear of the system unit. When the front of the service access cover clears the upper frame ledge, lift the cover up and off the system unit.

⚠️ **Attention:** For proper cooling and airflow, replace the cover before you power on the system.

Installing the service access cover on an 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system

To replace the service access cover, complete the steps in this procedure.

About this task

⚠️ **Attention:** For safety, airflow purposes and thermal performance, the service access cover must be installed and fully seated before powering on the system on.

Procedure

1. Place the cover **(A)** on the system unit such that the alignment pins on the cover are aligned to the slots on the chassis. Slide the cover to the front of the system until the blue release latch **(B)** locks in to place as shown in .

2. Fasten the cover screw **(C)** at the rear of the cover.
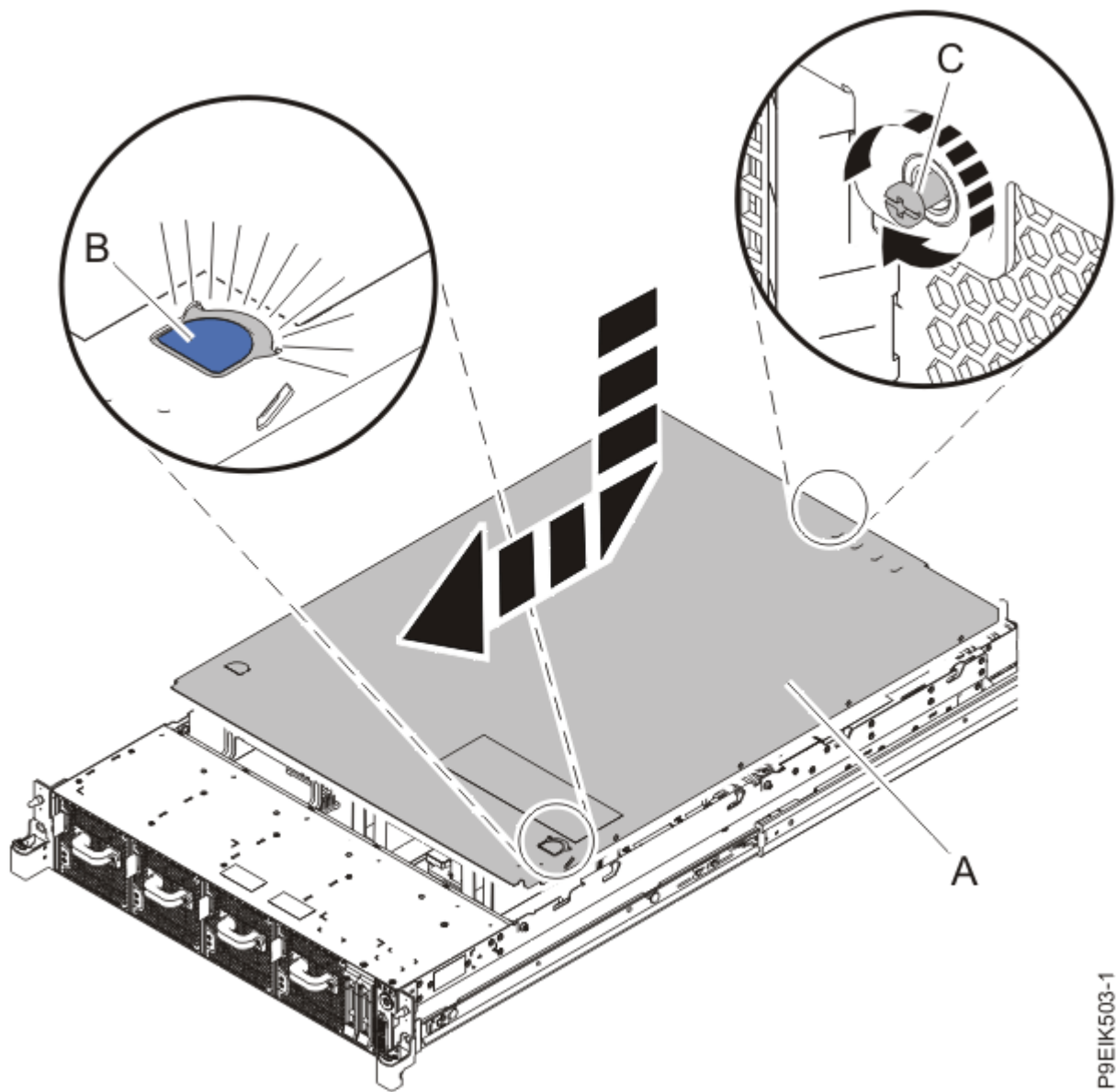
Figure 118. Installing the cover

Removing the front cover from an 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system

To remove the front cover, complete the steps in this procedure.

Procedure

1. If necessary, open the front rack door.
2. Ensure that you have the electrostatic discharge (ESD) wrist strap on and that the ESD clip is plugged into a ground jack or connected to an unpainted metal surface. If not, do so now.
3. If applicable, remove the screws that are on both sides of the cover to disengage the cover from the system unit.
4. Pull the cover away from the system.

Installing the front cover on an 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system

To replace the front cover, complete the steps in this procedure.

Procedure

1. Ensure that you have the electrostatic discharge (ESD) wrist strap on and that the ESD clip is plugged into a ground jack or connected to an unpainted metal surface. If not, do so now.
2. Position the cover on the front of the system unit so that the pins on the system match the holes at the rear of the cover.
3. Press the cover on to the system unit such that the pins engage with the holes and the cover is firmly seated in place.
4. If applicable, replace the screws on each side of the cover to secure the system to the rack.
5. Close the front rack door.

Service and operating positions for the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system

Learn how to place on an IBM Power System AC922 (8335-GTC, 8335-GTG, and 8335-GTH) or IBM Power System AC922 (8335-GTW and 8335-GTX) system into the service or operating position.

Placing an 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system into the service position

To place a system into the service position, complete the steps in this procedure.

About this task
Pick the proper type of rails for your system:

Slide rails

Use this procedure when your system is installed using slide rails.

Before you begin

Notes:

- When you place the system into the service position, you must ensure that all stability plates are firmly installed to prevent the rack from toppling. Ensure that only one system unit is in the service position at a time.
- Ensure that the cables at the rear of the system unit do not catch or bind as you pull the system unit forward in the rack.
- When the slide rails are fully extended, the rail safety latches lock into place. This action prevents the system from being pulled out too far.

Procedure

1. Remove the screws on either side of the system that secure the system to the rack.
2. Push down the front latches **(A)** that secure the system unit to the rack.
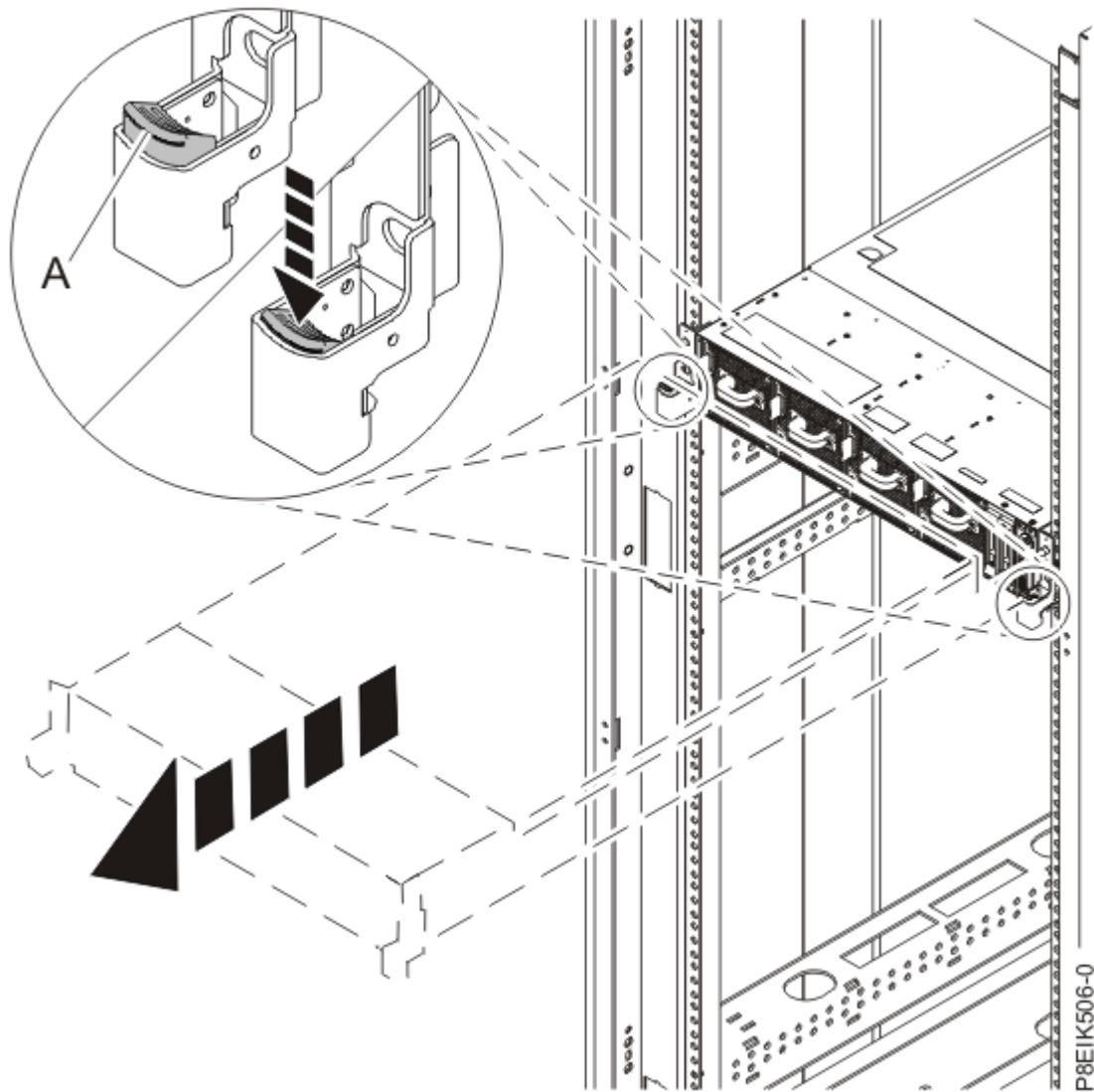
Figure 119. Placing the system into the service position

3. Pull the system unit out of the rack.

Fixed rails

Use this procedure when your system is installed using fixed rails.

Before you begin

⚠️ **CAUTION:** This system requires two people to remove the system from the rack. Do not begin this procedure unless physical assistance is available to remove the system from the rack.

Note: When you place the system into the service position, you must ensure that all stability plates are firmly installed to prevent the rack from toppling. Ensure that only one system unit is removed at a time.

Procedure

1. Label and disconnect the cables at the rear of the system unit.
2. For a water-cooled system, label and disconnect the water hoses at the manifold. Pull the coupling toward you to disconnect the water hoses as shown in .

Figure 120. Disconnecting the water hoses

3. Remove the screws on either side of the system that secure the system to the rack.

4. While one person is supporting the weight of the front of the system, have the second person move to the rear of the system and push the system partially out of the rack.

5. Position one person on the left side of the system and one person on the right side of the system.

6. Tilt and lift the system from the rails.

7. Carefully set the system on a table with an appropriate ESD surface.

Placing an 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system into the operating position

To place a system into the operating position, complete the steps in this procedure.

About this task

Pick the proper type of rails for your system:

- "Slide rails" on page 152
- "Fixed rails" on page 153

Slide rails

Use this procedure when your system is installed using slide rails.

Before you begin

When you place the system in the operating position, ensure that the cables at the rear of the system do not catch or bind as you push the system unit back into the rack.

Procedure

1. Unlock the blue rail safety latches **(A)** by lifting them upward.

2. Align the system unit on to the rails and push the system unit back into the rack until both release latches lock into position.

   See .
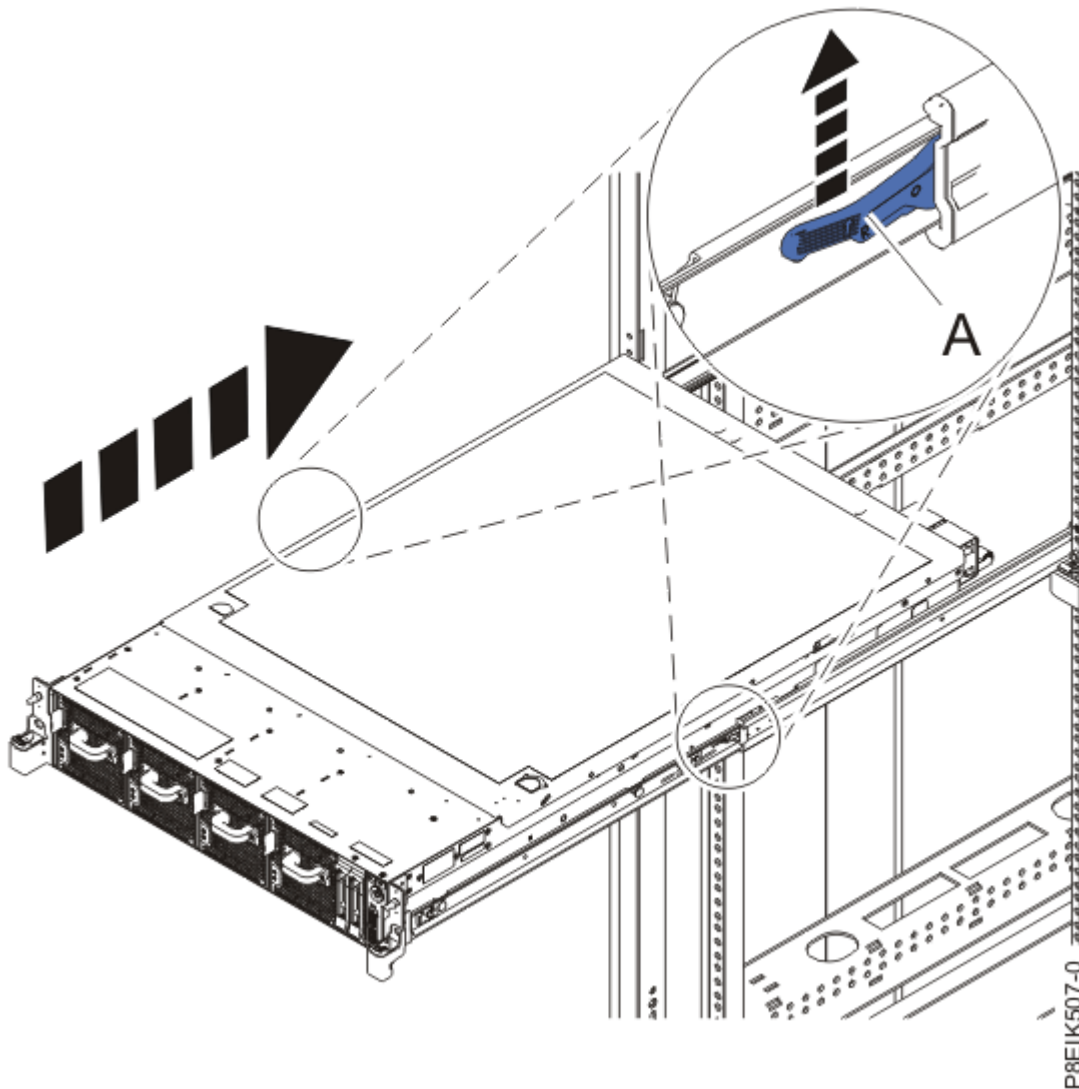
Figure 121. Placing the system into the operating position

3. Replace the screws on either side of the system that secure the system to the rack.

Fixed rails

Use this procedure when your system is installed using fixed rails.

Before you begin

⚠️ **CAUTION:** This system requires two people to replace the system into the rack. Do not begin this procedure unless physical assistance is available to replace the system into the rack.

Note: When you place the system into the operating position, you must ensure that all stability plates are firmly installed to prevent the rack from toppling. Ensure that only one system unit is replaced at a time.

Procedure

1. Position one person on the left side of the system and one person on the right side of the system.
2. Lift the system.
3. Tilt the system into position over the fixed rack rails.
4. Carefully lower the system until the rear of the system rests on the rails.
5. While one person is supporting the weight of the system, have the second person move to the front of the system and push the system all the way into the rack.
6. Using your labels, reconnect the cables at the rear of the system unit.
7. For a water-cooled system, connect the water hoses at the rear of the rack to the manifold, as shown in the following figure.

   Ensure that you plug the male hose into the female manifold plug, and plug the female hose into the male manifold plug.

   ⚠️ **Attention:** Before powering on the system, ensure that cooling water is circulating through the system.

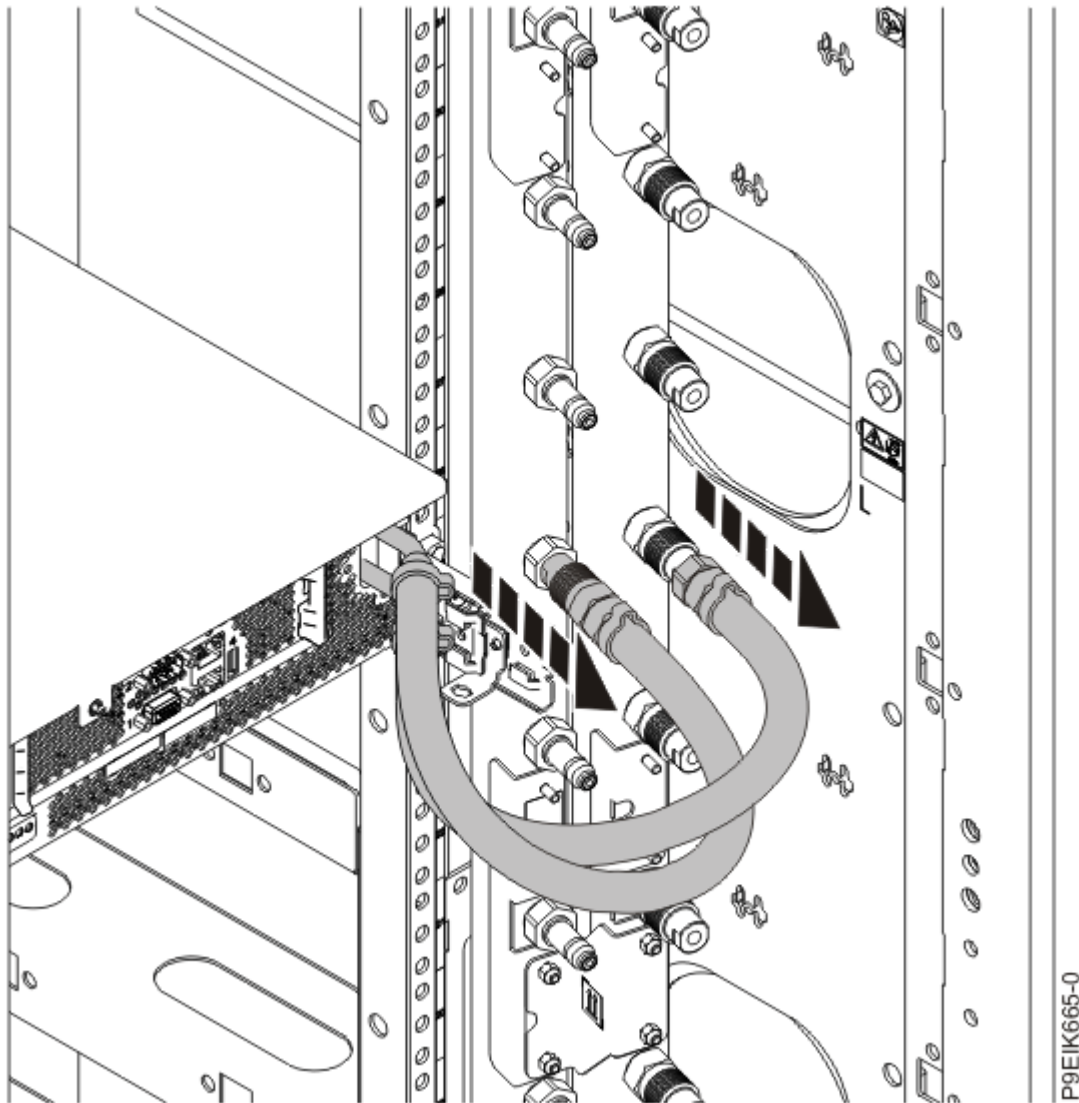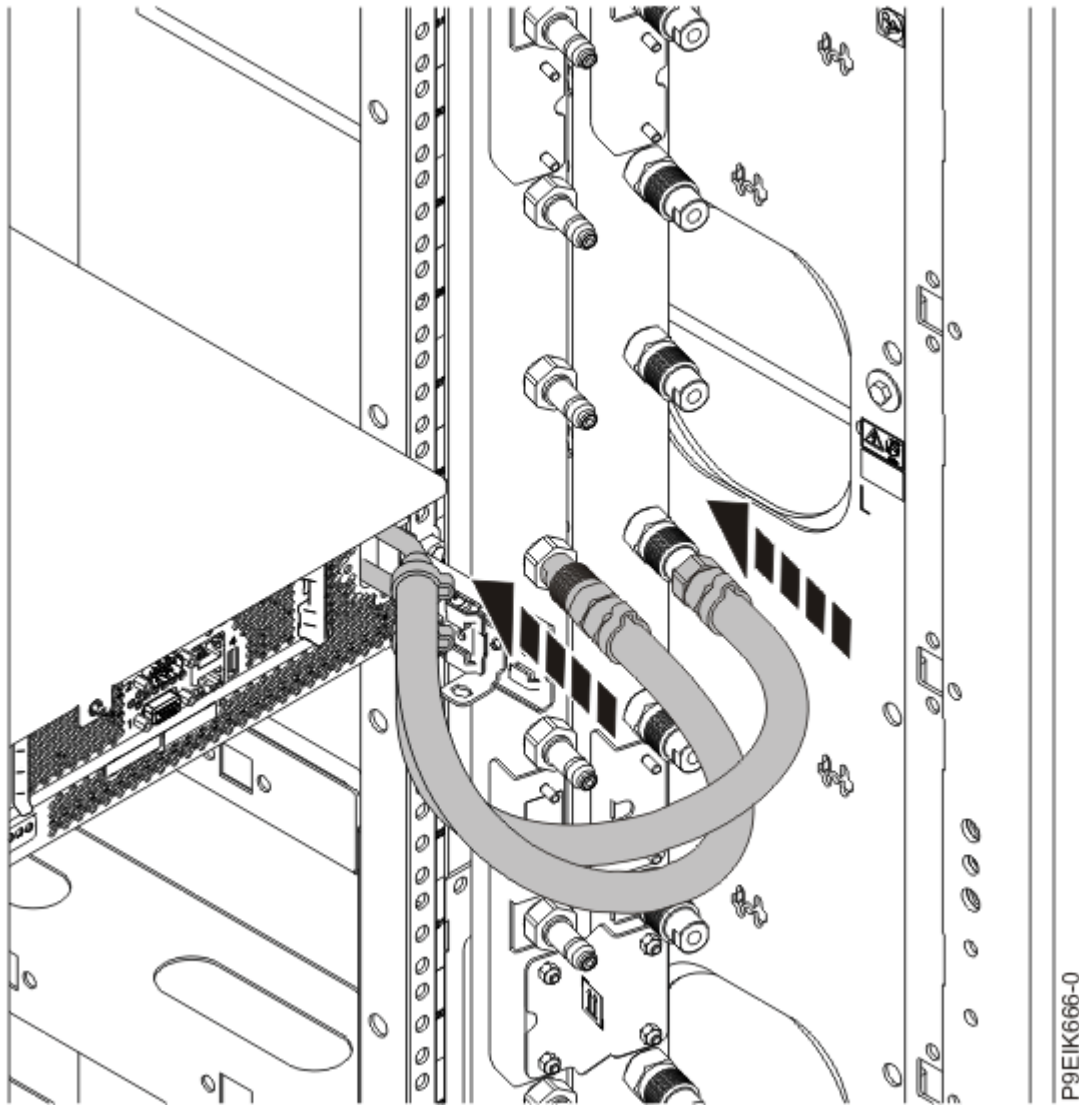*Figure 122. Connecting the water hoses*

8. Replace the screws on either side of the system that secure the system to the rack.

Removing and replacing power cords in the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system

Find information about removing and replacing power cords in an IBM Power System AC922 (8335-GTC, 8335-GTG, and 8335-GTH) or IBM Power System AC922 (8335-GTW and 8335-GTX) system.

Disconnecting power cords from an 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system

To disconnect a power cord, complete the steps in this procedure.

Procedure

1. Open the rear rack door on the system unit that you are servicing.
2. Identify the system unit that you are servicing in the rack.
3. Label and disconnect the power cords from the power supply handle.

Unfasten the hook-and-loop fastener that ties the power cord to the power supply handle. Note how the power is looped; you need to make that same loop when you reattach the power cords.

Figure 123. Routing the power cord loop in the cable management arm
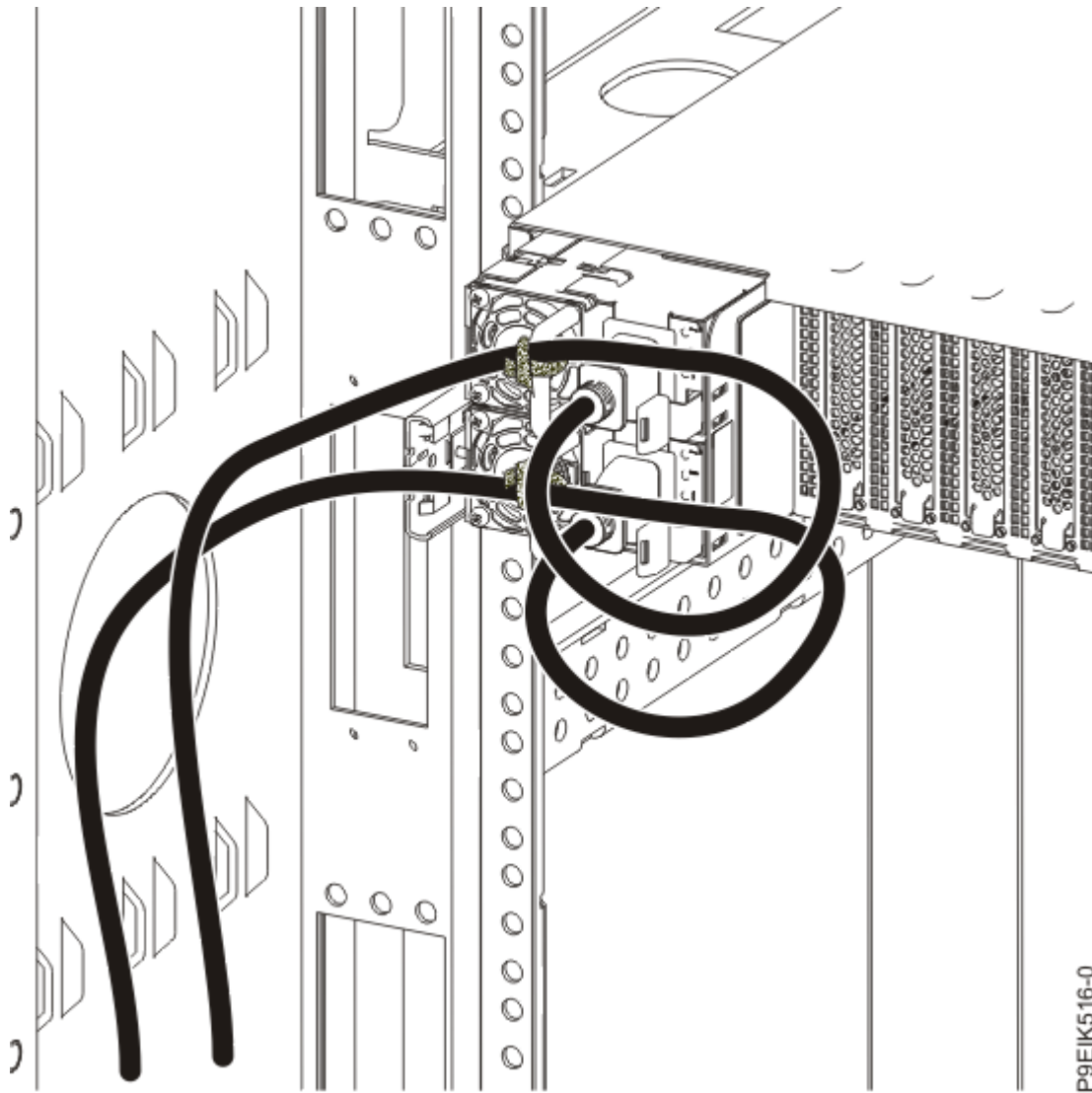
Figure 124. Power cord loop with sidewall routing

4. Disconnect the power cords from the system unit as shown in .

Note: This system might be equipped with two or more power supplies. If the removing and replacing procedures require the power to be off, then ensure that all the power sources to the system are disconnected.
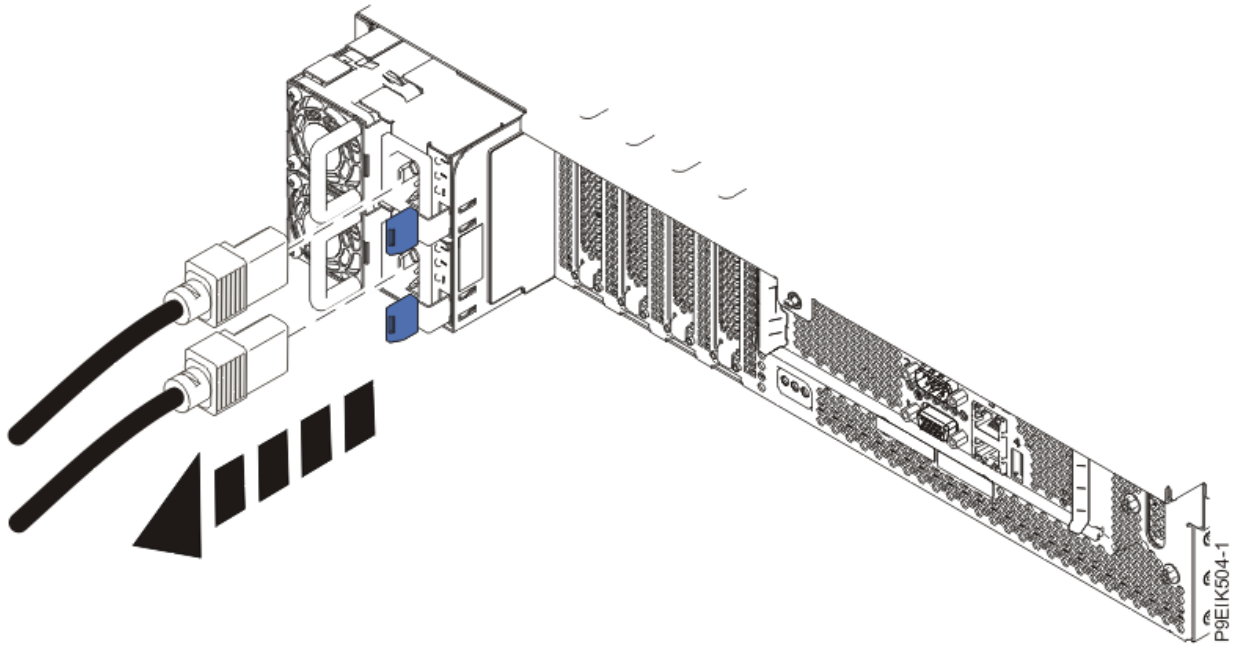
Figure 125. Removing the power cords from the system

Connecting power cords to an 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system

To connect a power cord, complete the steps in this procedure.

Procedure

1. Open the rear rack door on the system unit that you are servicing.
2. Using your labels, reconnect the power cords to the system unit as shown in .
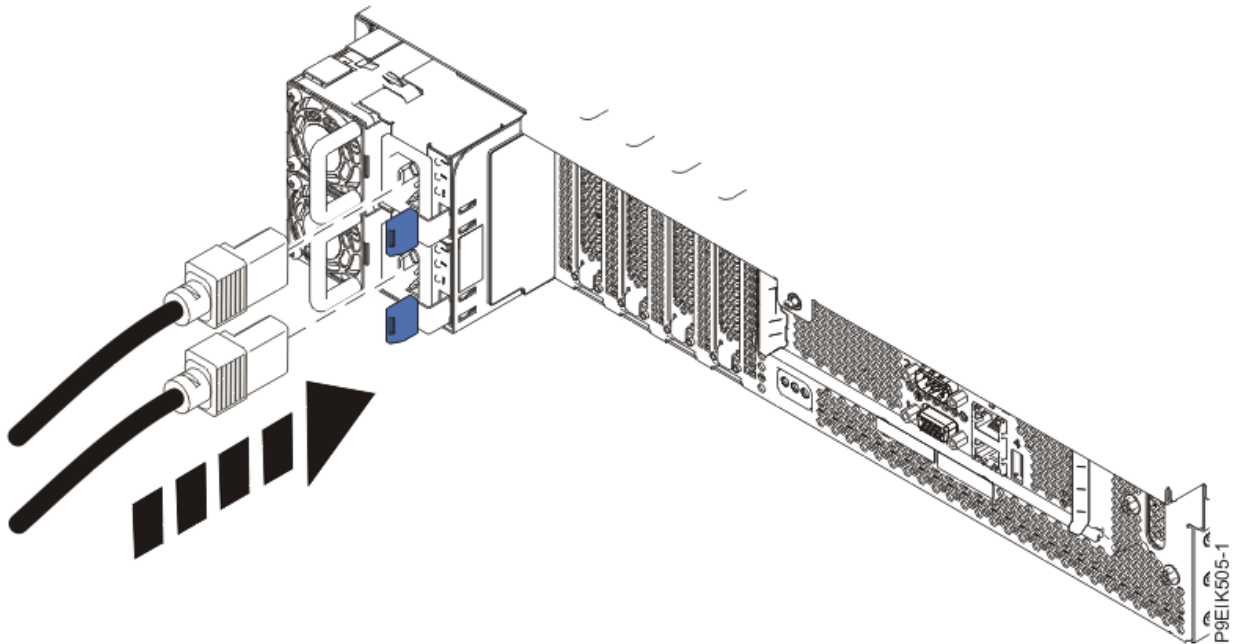
Figure 126. Connecting the power cords to the system

3. Loop and attach the power cords to the power supply handle.

Note how the power is looped; be sure to maintain at least a 5 cm (2 in.) diameter loop. Use the hook-and-loop fastener to tie the power cord to the power supply handle.

Figure 127 on page 158 and Figure 128 on page 159 shows how to loop the cables.
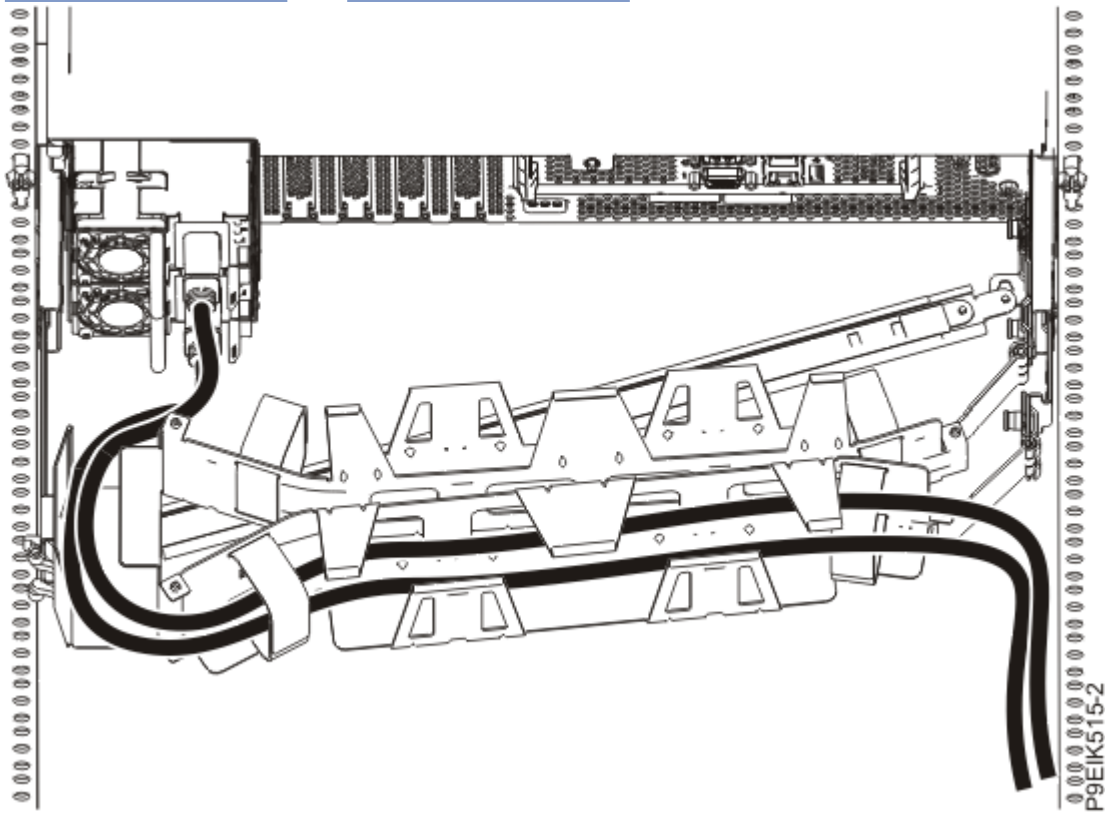
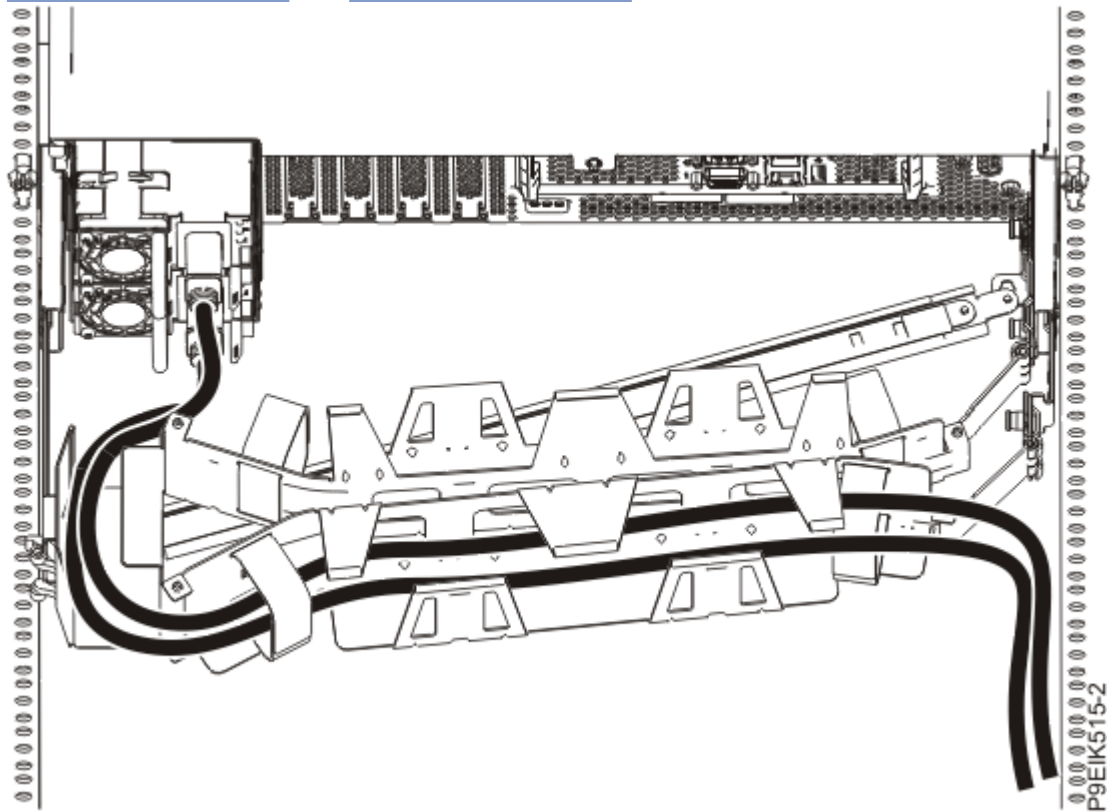*Figure 127. Routing the power cord loop in the cable management arm*
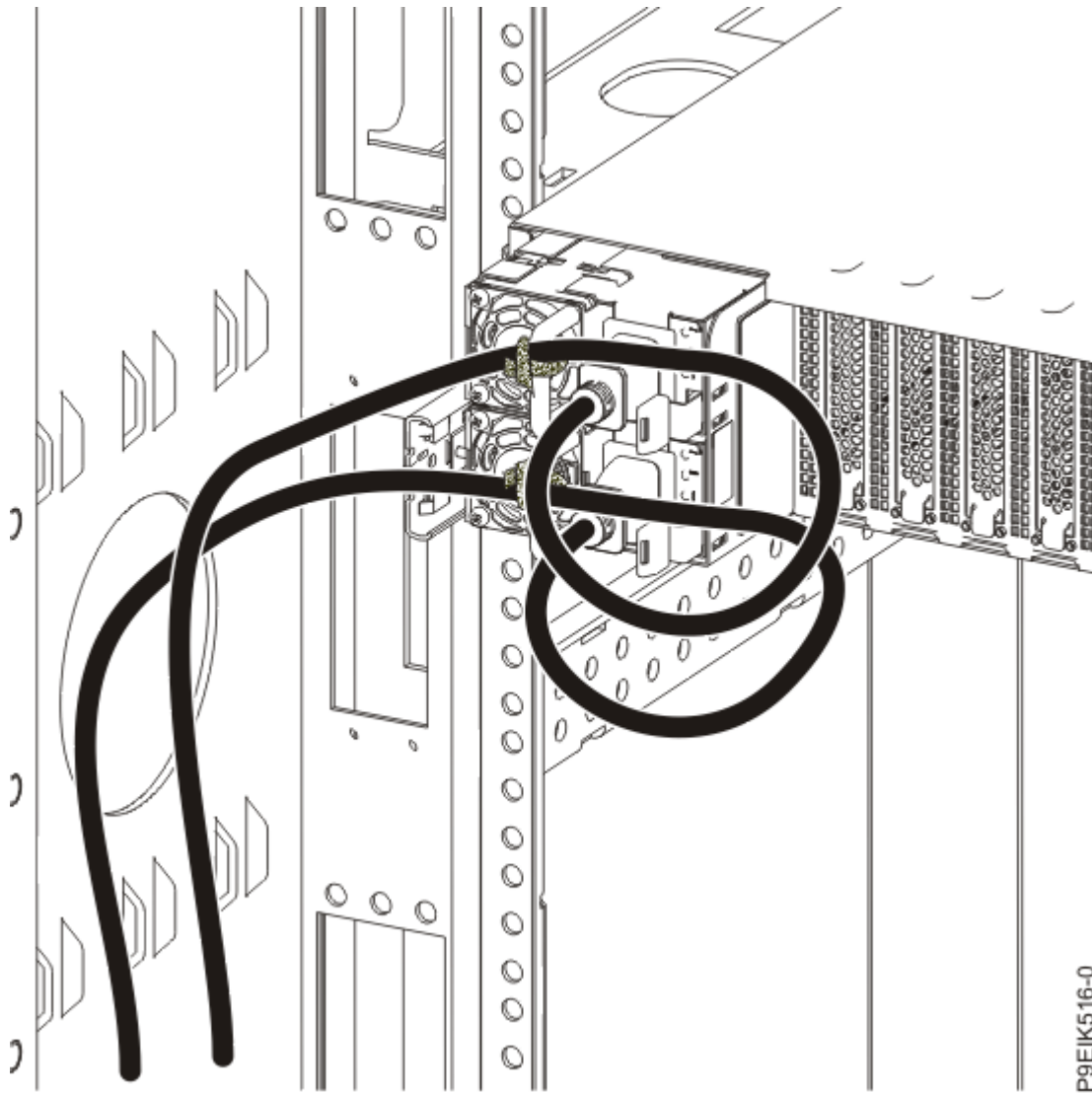
Figure 128. Power cord loop with sidewall routing

4. Close the rack door at the rear of the system.

Updating the system firmware level of a BMC card to OP940.20, or later, in an 8335-GTH or 8335-GTX system

To update the system firmware level of a BMC card to OP940.20, or later, complete the steps in this procedure.

Procedure

1. Are you able to connect the BMC card to the network with a Dynamic Host Configuration Protocol (DHCP) IP address?

If	Then
Yes	Update the system firmware level of the BMC card to OP940.20, or later. For instructions, see Updating the system firmware by using the OpenBMC tool. If you are not able to update the system firmware level, continue with the next step.
No	Continue with the next step.

2. Power off the system and place it in the service position. For instructions, see "Preparing the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system to remove and replace internal parts" on page 138.

3. Attach the electrostatic discharge (ESD) wrist strap.

   The ESD wrist strap must be connected to an unpainted metal surface until the service procedure is completed, and if applicable, until the service access cover is replaced.

   ⚠️ **Attention:**

   - Attach an electrostatic discharge (ESD) wrist strap to the front ESD jack, to the rear ESD jack, or to an unpainted metal surface of your hardware to prevent the electrostatic discharge from damaging your hardware.

   - When you use an ESD wrist strap, follow all electrical safety procedures. An ESD wrist strap is used for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

   - If you do not have an ESD wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds. If at any point in this service process you move away from the system, it is important to again discharge yourself by touching an unpainted metal surface for at least 5 seconds before you continue with the service process.

4. Remove the air baffles.

5. Install the system processor jumpers on the system backplane as shown in Figure 129 on page 161.

Figure 129. System processor jumper positions

6. Install the air baffles.

7. Prepare the system for operation. For instructions, see "Preparing the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system for operation after you remove and replace internal parts" on page 142.

8. Update the system firmware level of the BMC card to OP940.20, or later. For instructions, see Updating the system firmware by using the OpenBMC tool.

   Note: If you are not able to update the system firmware level, contact your next level of support.

9. Power off the system and place it in the service position. For instructions, see "Preparing the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system to remove and replace internal parts" on page 138.

10. Attach the electrostatic discharge (ESD) wrist strap.

    The ESD wrist strap must be connected to an unpainted metal surface until the service procedure is completed, and if applicable, until the service access cover is replaced.

    ⚠️ **Attention:**

    - Attach an electrostatic discharge (ESD) wrist strap to the front ESD jack, to the rear ESD jack, or to an unpainted metal surface of your hardware to prevent the electrostatic discharge from damaging your hardware.

- When you use an ESD wrist strap, follow all electrical safety procedures. An ESD wrist strap is used for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

- If you do not have an ESD wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds. If at any point in this service process you move away from the system, it is important to again discharge yourself by touching an unpainted metal surface for at least 5 seconds before you continue with the service process.

11. Remove the air baffles.

12. Remove the system processor jumpers from the system backplane as shown in Figure 130 on page 162.
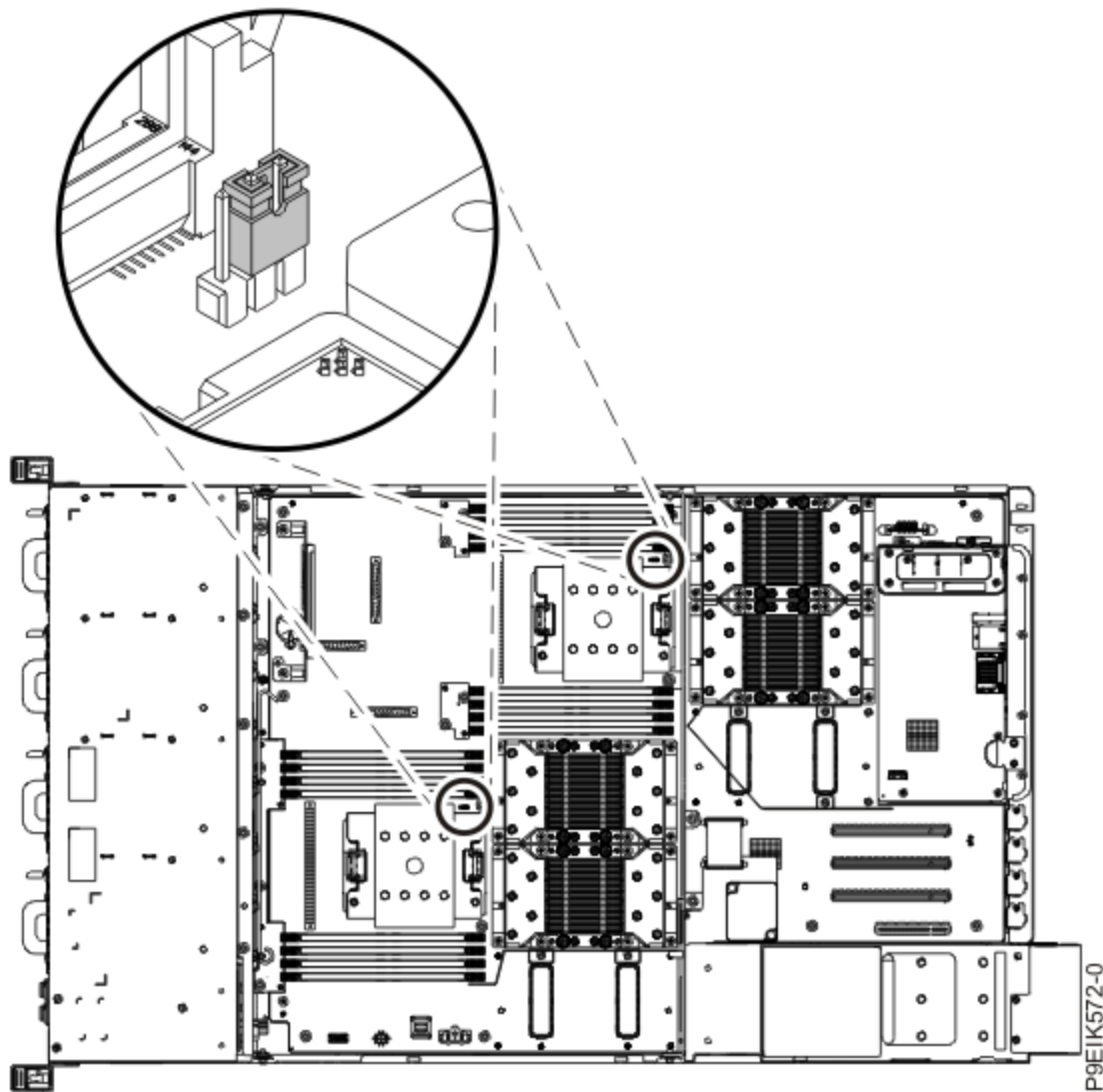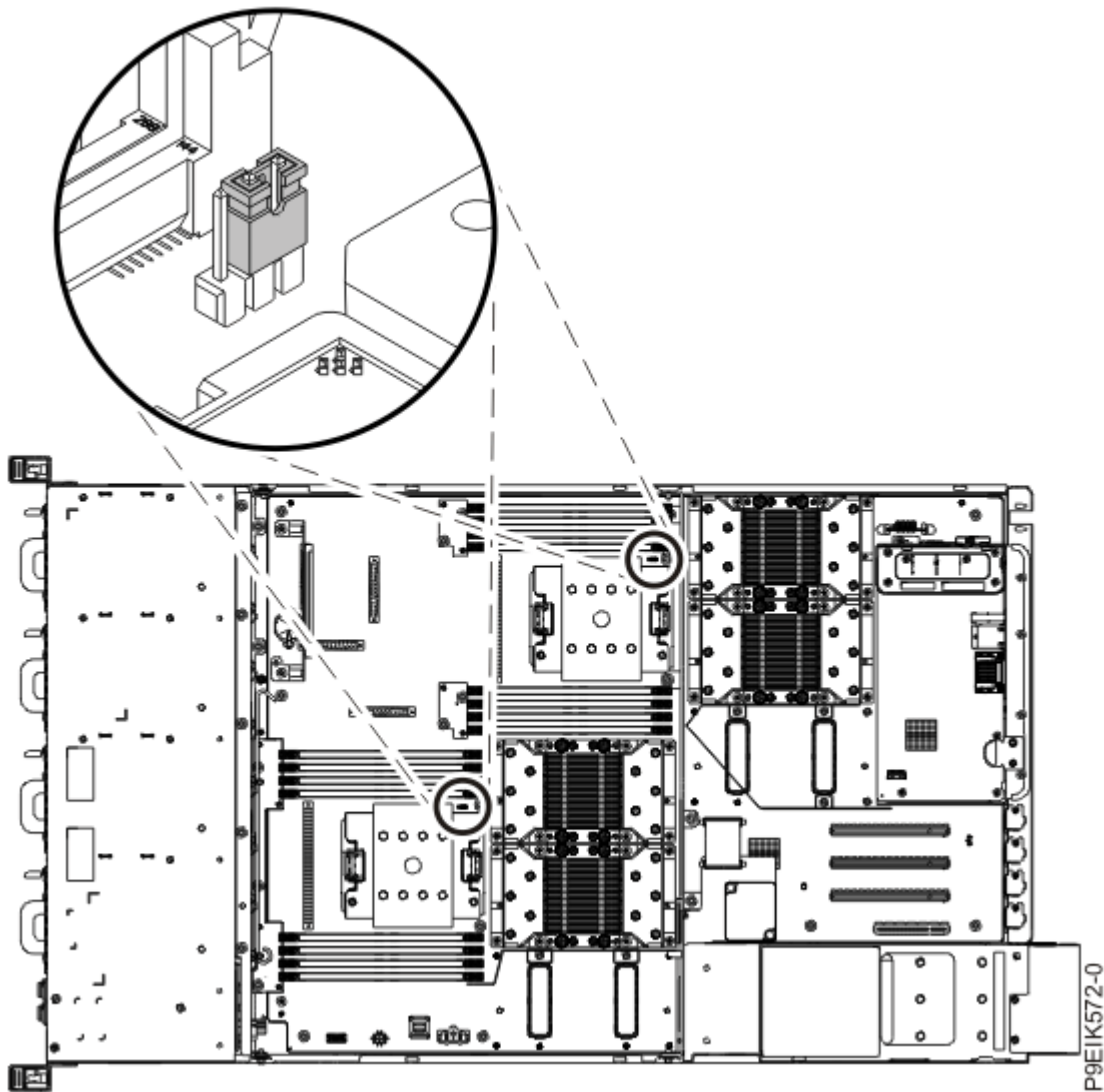

Figure 130. System processor jumper positions

13. Install the air baffles.

14. Prepare the system for operation. For instructions, see "Preparing the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system for operation after you remove and replace internal parts" on page 142.

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Accessibility features for IBM Power Systems servers

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

Overview

The IBM Power Systems servers include the following major accessibility features:

• Keyboard-only operation
• Operations that use a screen reader

The IBM Power Systems servers use the latest W3C Standard, WAI-ARIA 1.0 (www.w3.org/TR/wai-aria/), to ensure compliance with US Section 508 (www.access-board.gov/guidelines-and-standards/communications-and-it/about-the-section-508-standards/section-508-standards) and Web Content Accessibility Guidelines (WCAG) 2.0 (www.w3.org/TR/WCAG20/). To take advantage of accessibility features, use the latest release of your screen reader and the latest web browser that is supported by the IBM Power Systems servers.

The IBM Power Systems servers online product documentation in IBM Knowledge Center is enabled for accessibility. The accessibility features of IBM Knowledge Center are described in the Accessibility section of the IBM Knowledge Center help (www.ibm.com/support/knowledgecenter/doc/kc_help.html#accessibility).

Keyboard navigation

This product uses standard navigation keys.

Interface information

The IBM Power Systems servers user interfaces do not have content that flashes 2 - 55 times per second.

The IBM Power Systems servers web user interface relies on cascading style sheets to render content properly and to provide a usable experience. The application provides an equivalent way for low-vision users to use system display settings, including high-contrast mode. You can control font size by using the device or web browser settings.

The IBM Power Systems servers web user interface includes WAI-ARIA navigational landmarks that you can use to quickly navigate to functional areas in the application.

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Warning: This equipment is compliant with Class A of CISPR 32. In a residential environment this equipment may cause radio interference.

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Deutschland: Einhaltung des Gesetzes über die elektromagnetische Verträglichkeit von Geräten

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電話：0800-016-888

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Generelle Informationen:

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本装置は、「高圧又は特別高圧で受電する需要家の高調波抑制対
策ガイドライン」対象機器（高調波発生機器）です。
・回路分類　：６（単相、ＰＦＣ回路付）
・換算係数　：０
```

This statement applies to products greater than 20 A per phase, three-phase.

```
高調波電流規格　JIS C 61000-3-2 準用品
```

```
本装置は、「高圧又は特別高圧で受電する需要家の高調波抑制対
策ガイドライン」対象機器（高調波発生機器）です。
・回路分類　：５（３相、ＰＦＣ回路付）
・換算係数　：０
```

Japan Voluntary Control Council for Interference (VCCI) Notice

この装置は，クラスB情報技術装置です。この装置は，家庭環境で使用することを目的としていますが，この装置がラジオやテレビジョン受信機に近接して使用されると，受信障害を引き起こすことがあります。

取扱説明書に従って正しい取り扱いをして下さい。　　　VCCI－B

Taiwan Notice

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

United States Federal Communications Commission (FCC) Notice

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

• Reorient or relocate the receiving antenna.

• Increase the separation between the equipment and receiver.

• Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

• Consult an IBM-authorized dealer or service representative for help.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. Proper cables and connectors are available from IBM-authorized dealers. IBM is not responsible for any radio or television interference caused by using other than recommended cables 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.

Responsible Party:

International Business Machines Corporation
New Orchard Road
Armonk, New York 10504
Contact for FCC compliance information only: fccinfo@us.ibm.com

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