Power Systems

PCIe3 x8 SAS RAID and cache SAS RAID internal adapters for the 9009-41A, 9009-41G, 9009-42A, 9009-42G, 9223-42H, or 9223-42S

IBM

Note

Before using this information and the product it supports, read the information in "Safety notices" on page v, "Notices" on page 81, the *IBM Systems Safety Notices* manual, G229-9054, and the *IBM Environmental Notices and User Guide*, Z125–5823.

This edition applies to IBM® Power Systems servers that contain the POWER9™ processor and to all associated models.

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.
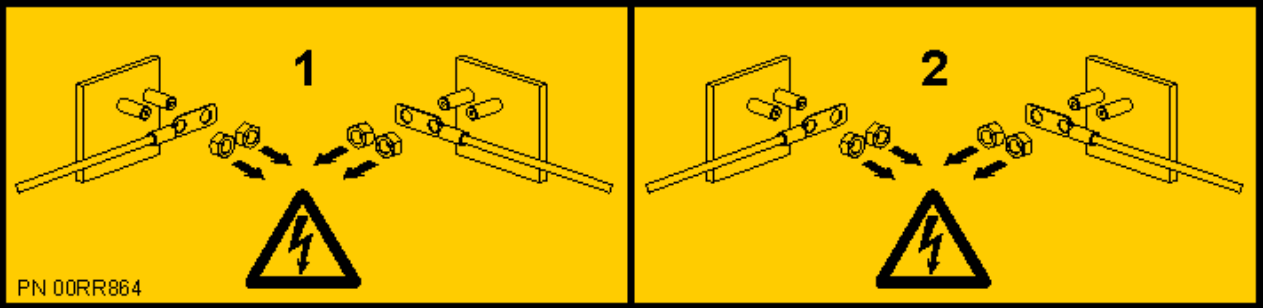
(L002)

(L003)
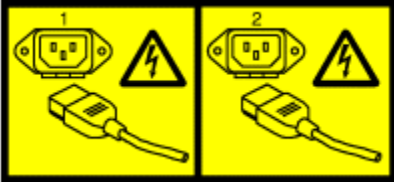
or

or

or

or

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.

PCIe3 x8 SAS RAID and cache SAS RAID internal adapters

Find information about installing, removing, and replacing a PCIe3 x8 SAS RAID and cache SAS RAID internal adapter in the IBM Power® System S914 (9009-41A and 9009-41G), IBM Power System S924 (9009-42A and 9009-42G), IBM Power System H924 (9223-42H), or IBM Power System H924S (9223-42S) server.

Installing a PCIe3 x8 SAS RAID or cache SAS RAID internal adapter in the 9009-41A, 9009-41G, 9009-42A, 9009-42G, 9223-42H, or 9223-42S system

Find information about installing a PCIe3 x8 SAS RAID or cache SAS RAID internal adapter in the IBM Power System S914 (9009-41A and 9009-41G), IBM Power System S924 (9009-42A and 9009-42G), IBM Power System H924 (9223-42H), or IBM Power System H924S (9223-42S) server.

About this task

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

If your system is managed by the Hardware Management Console (HMC), use the HMC to install the part in the system. For instructions, see Installing a part by using the HMC (www.ibm.com/support/knowledgecenter/POWER9/p9haj/hmcinstall.htm).

If you do not have an HMC, complete the steps in the following procedures to install a PCIe3 x8 SAS RAID or cache SAS RAID internal adapter.

Preparing the 9009-41A, 9009-41G, 9009-42A, 9009-42G, 9223-42H, or 9223-42S system to install a PCIe3 x8 SAS RAID or cache SAS RAD internal adapter

To prepare the system to install a PCIe3 x8 SAS RAID or cache SAS RAD internal adapter, complete the steps in this procedure.

Procedure

1. Identify the part and the system that you are working on. For instructions, see Identifying a part (www.ibm.com/support/knowledgecenter/POWER9/p9haj/sal.htm).

   Use the blue identify LED on the enclosure to locate the system. Ensure that the serial number of the system matches the serial number to be serviced.

2. Stop the system. For instructions, see Stopping a system (www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustopsys.htm).

3. Label and disconnect the power cords from the system unit.

   See Figure 1 on page 2 or Figure 2 on page 3.

   Notes:

   • This system might be equipped with two or more power supplies. If the removing and replacing procedures require the system power to be turned off, ensure that all the power sources to the system are disconnected.

- The power cord **(B)** is fastened to the system with hook-and-loop fastener **(A)**. If you are placing the system in a service position after you disconnect the power cords, ensure that you unstrap the fastener.
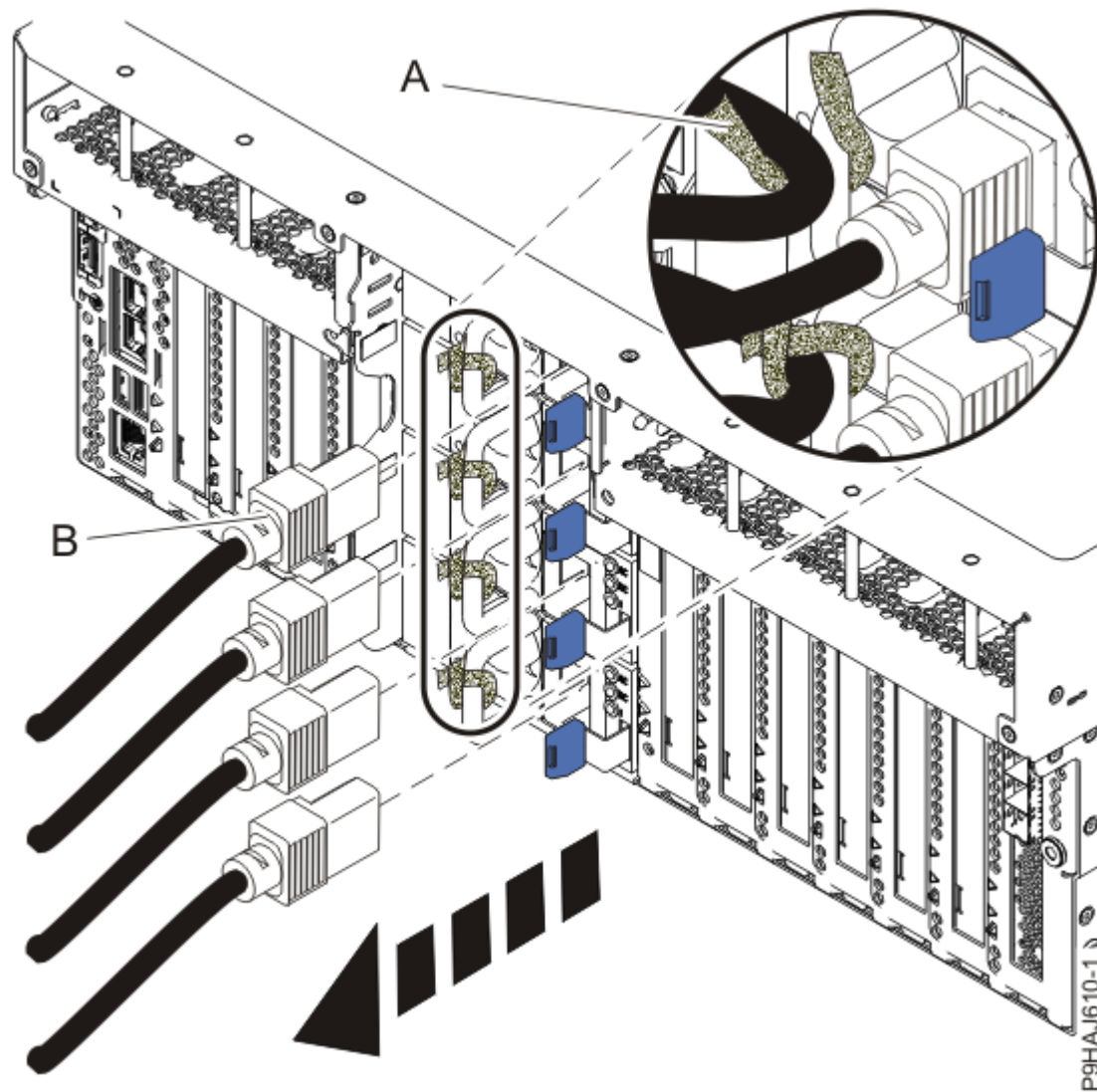

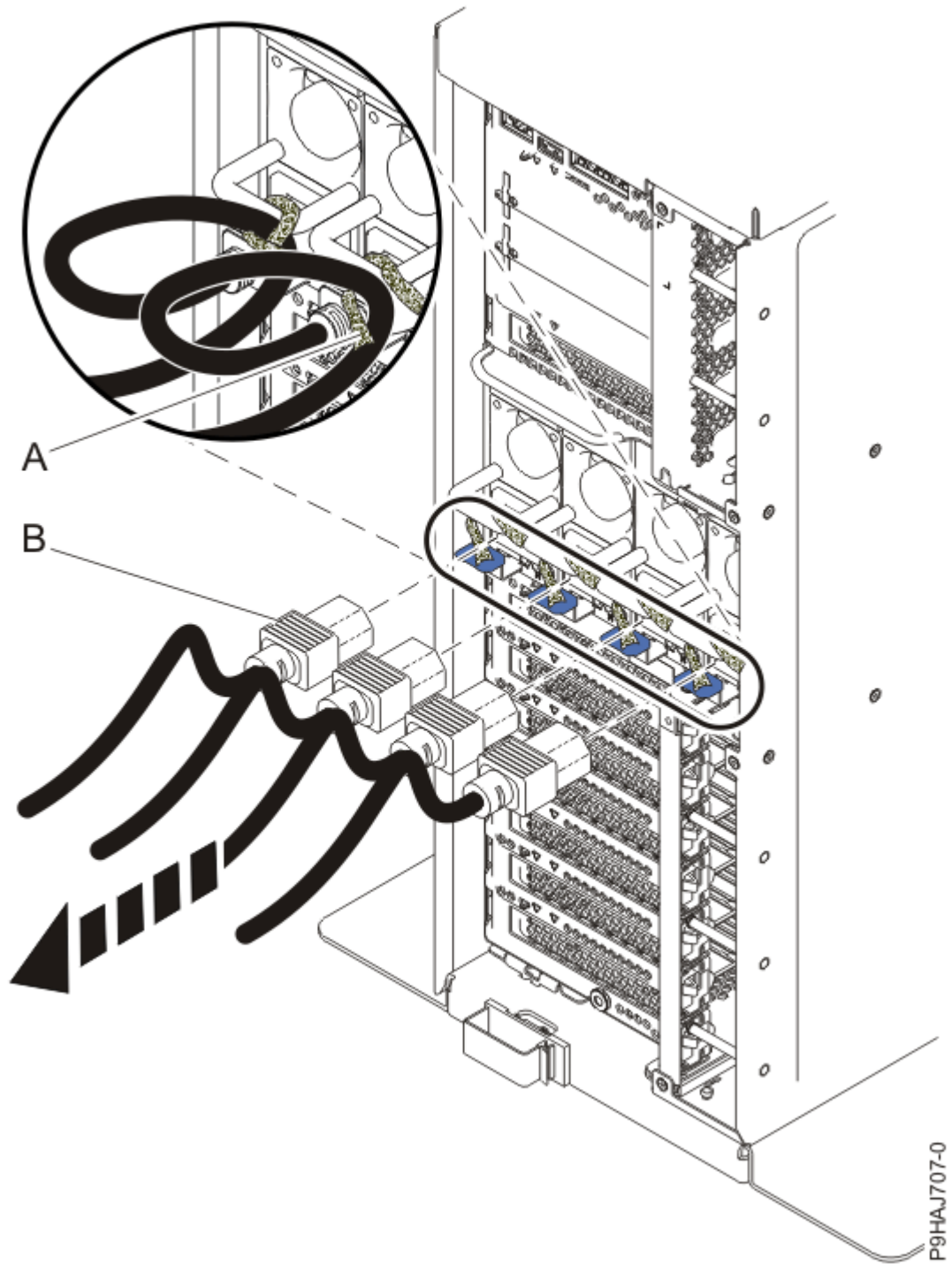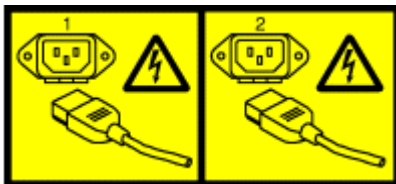*Figure 1. Removing the power cords from a rack-mounted server*

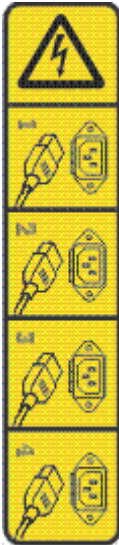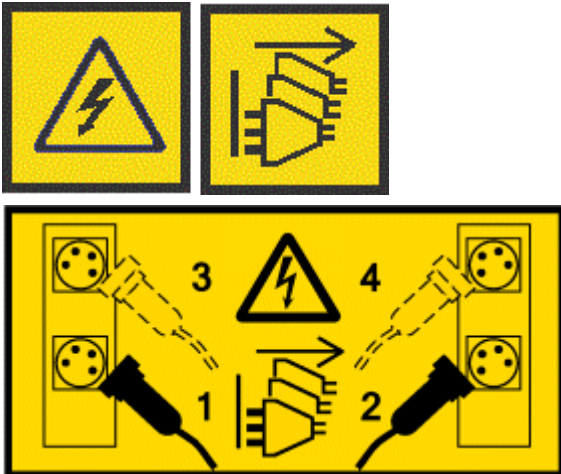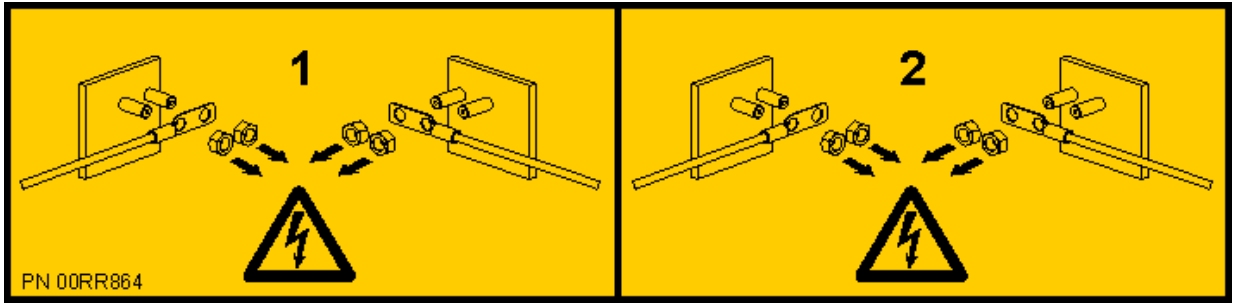*Figure 2. Removing the power cords from a stand-alone server*

(L003)

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)

4. For a rack-mounted system, open the side latches **(A)** and pull the latches to slide the system unit fully into the service position until the slides click and hold the system unit securely. Ensure that the screws inside the latches are not secured to the rack.

   See the following figure.

   Remove the hook-and-loop fasteners that secure the cable management arms. Ensure that the cable management arms can move freely. Ensure that the cables at the rear of the system do not catch or bind as you pull the system unit into the service position.

   Do not pull out or install any drawer or feature if the rack stabilizer brackets are not attached to the rack. Do not pull out more than one drawer at a time. The rack might become unstable if you pull out more than one drawer at a time.

Figure 3. Releasing the side latches

5. 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.

6. Remove the service access cover.

   For a rack-mounted system, complete the following steps. Refer to .

⚠️ **Attention:** Operating the system without the service access cover on for more than 10 minutes when the system power is turned on might damage the system components.

a. Release the service cover latch by pushing the release latch **(A)** in the direction shown.

b. Slide the cover **(B)** off 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.


Figure 4. Removing the service access cover from a rack-mounted system

For a stand-alone system, complete the following steps. Refer to .

⚠️ **Attention:** Operating the system without the service access cover on for more than 10 minutes when the system power is turned on might damage the system components.

a. Release the latch by pushing the release latch **(A)** in the direction shown.

b. Slide the cover **(B)** off the system unit. When the front of the service access cover has cleared the upper frame ledge, lift the cover up and off the system unit.
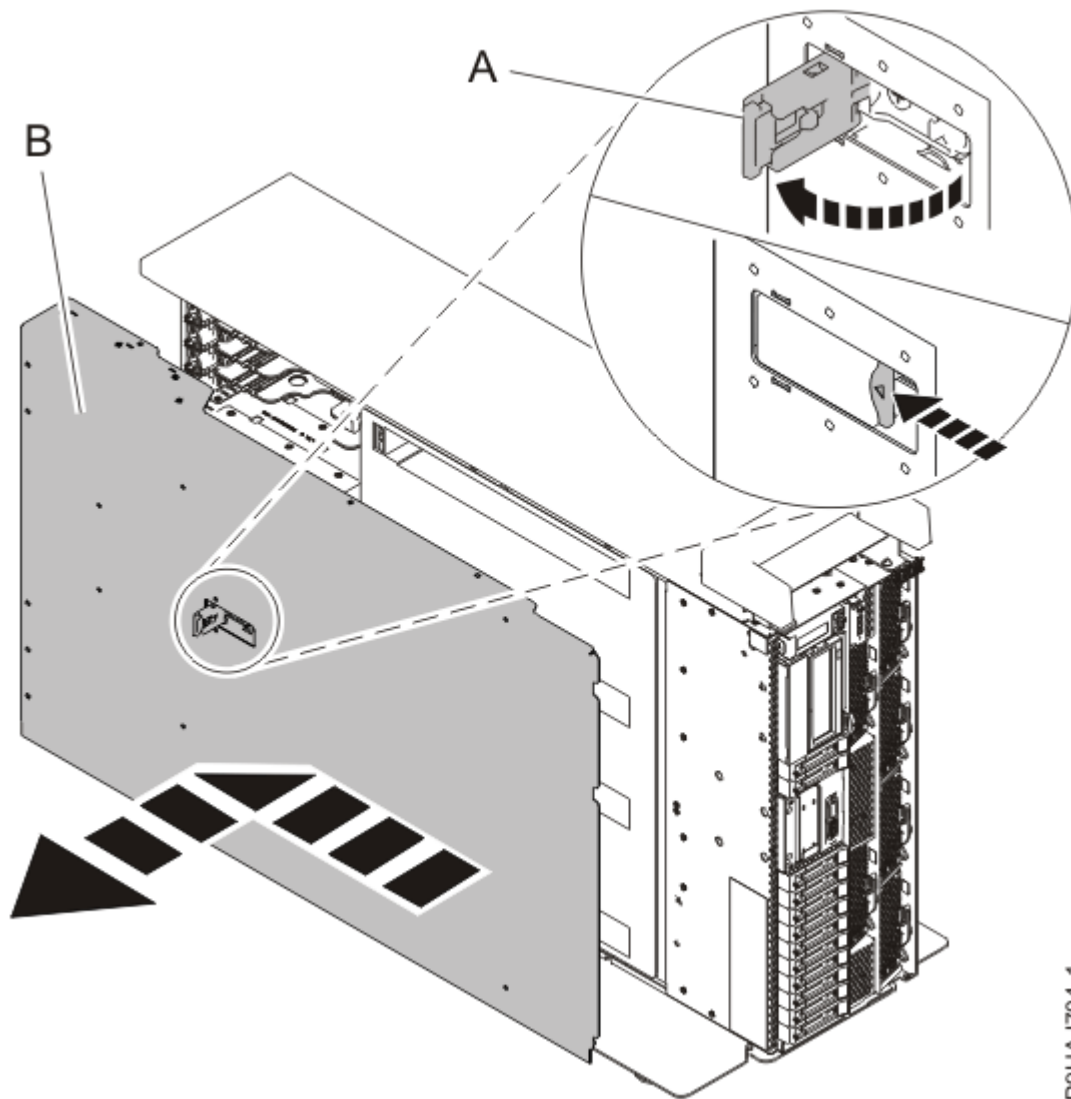
Figure 5. Removing the service access cover

Installing a PCIe3 x8 SAS RAID or cache SAS RAID internal adapter in the 9009-41A, 9009-41G, 9009-42A, 9009-42G, 9223-42H, or 9223-42S system

To install a PCIe3 x8 SAS RAID or cache SAS RAID internal adapter in the 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. For a rack-mounted system, lift the air baffle **(A)** straight up as shown in Figure 6 on page 9.

   For a stand-alone system, remove the air baffle **(A)** straight out as shown in Figure 7 on page 10.

   Place the air baffle upside down on a clean area.

A
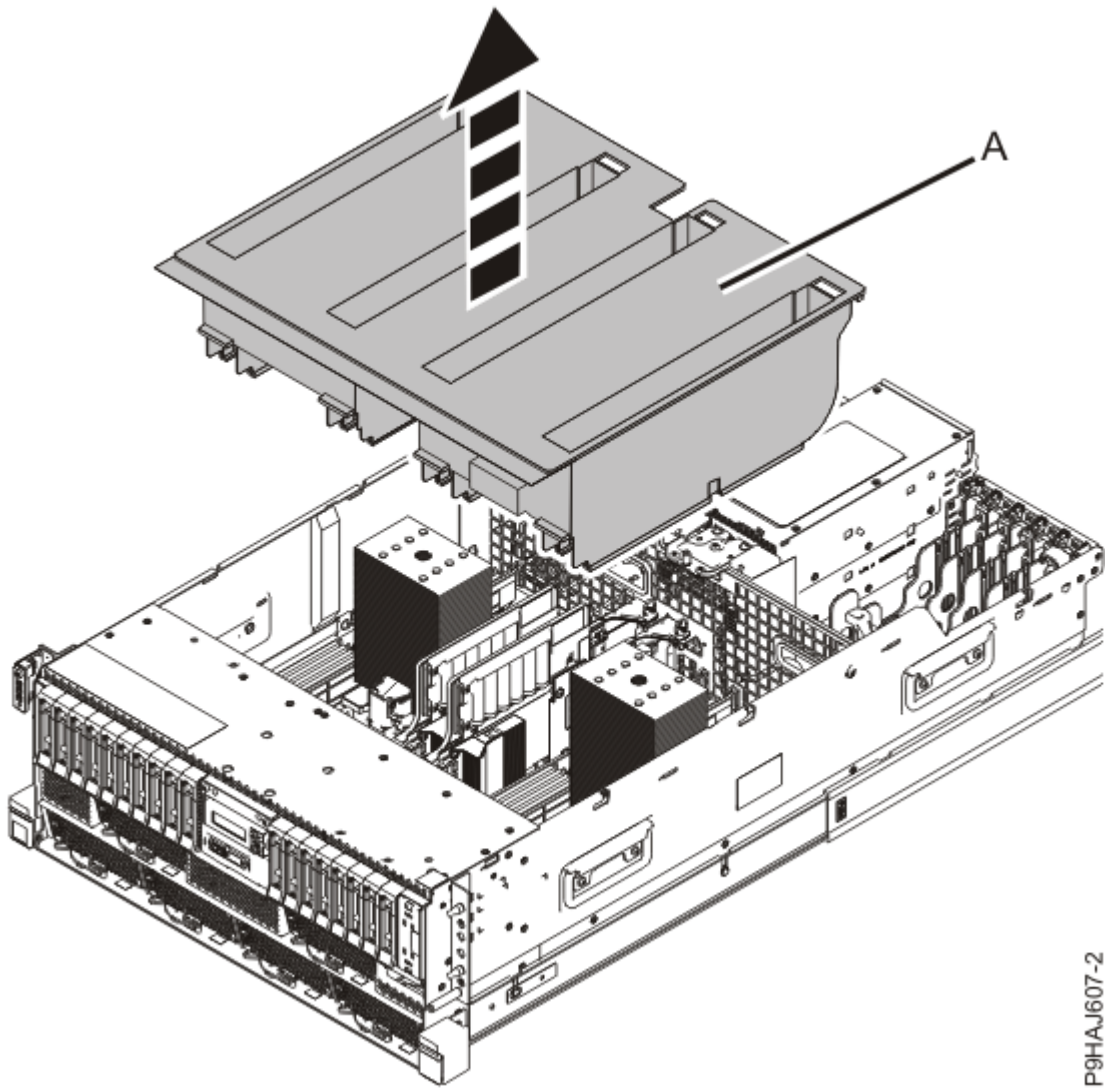
P9HAJ607-2

Figure 6. Removing the air baffle from a rack-mounted system
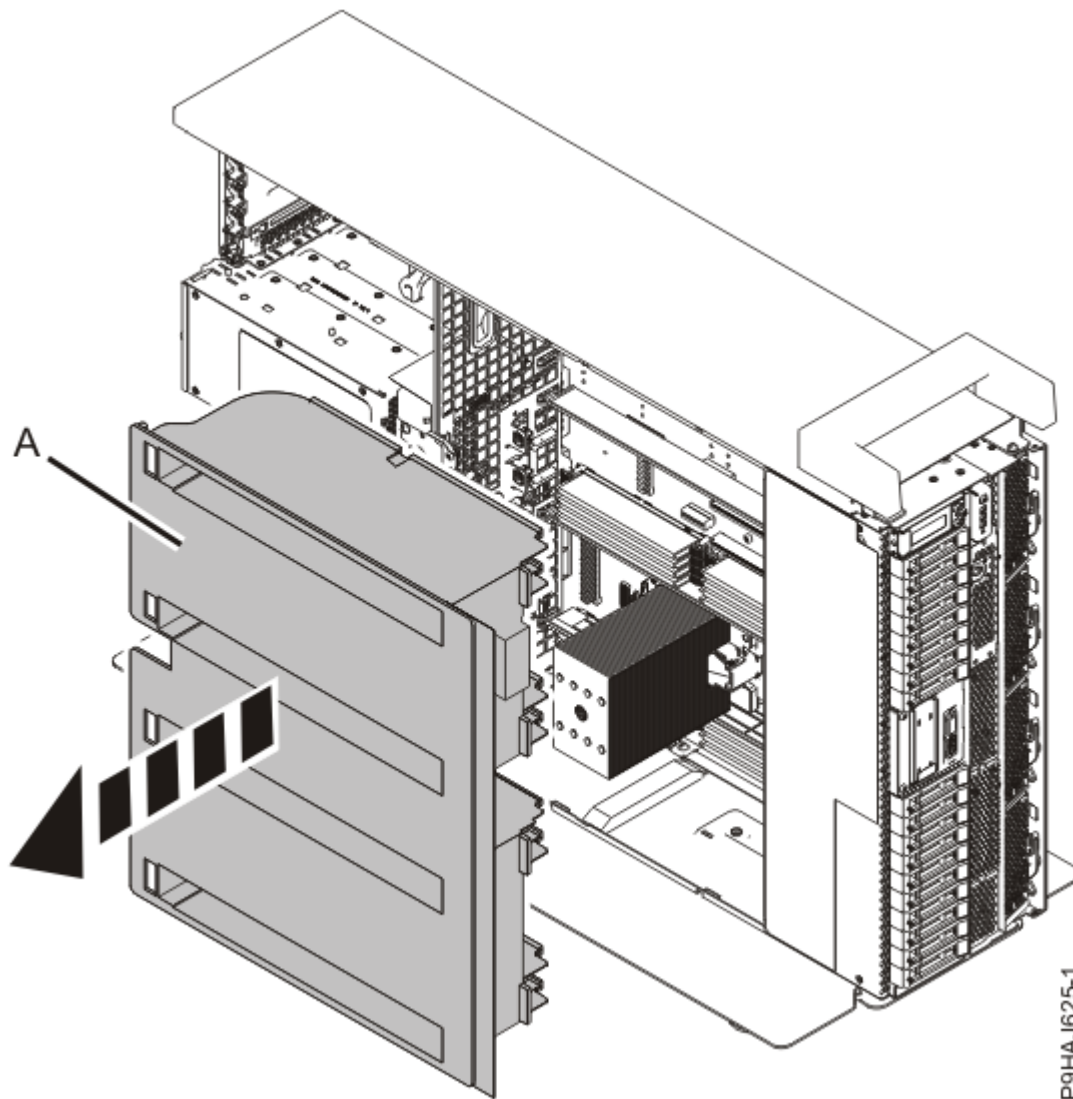
Figure 7. Removing the air baffle from a stand-alone system

3. Remove the clip-in filler and air divider by completing the following steps.

   a) Rotate the top of the clip-in filler until the bottom hook unclasps from the air screen.

   b) Lift the clip-in filler out of the system.
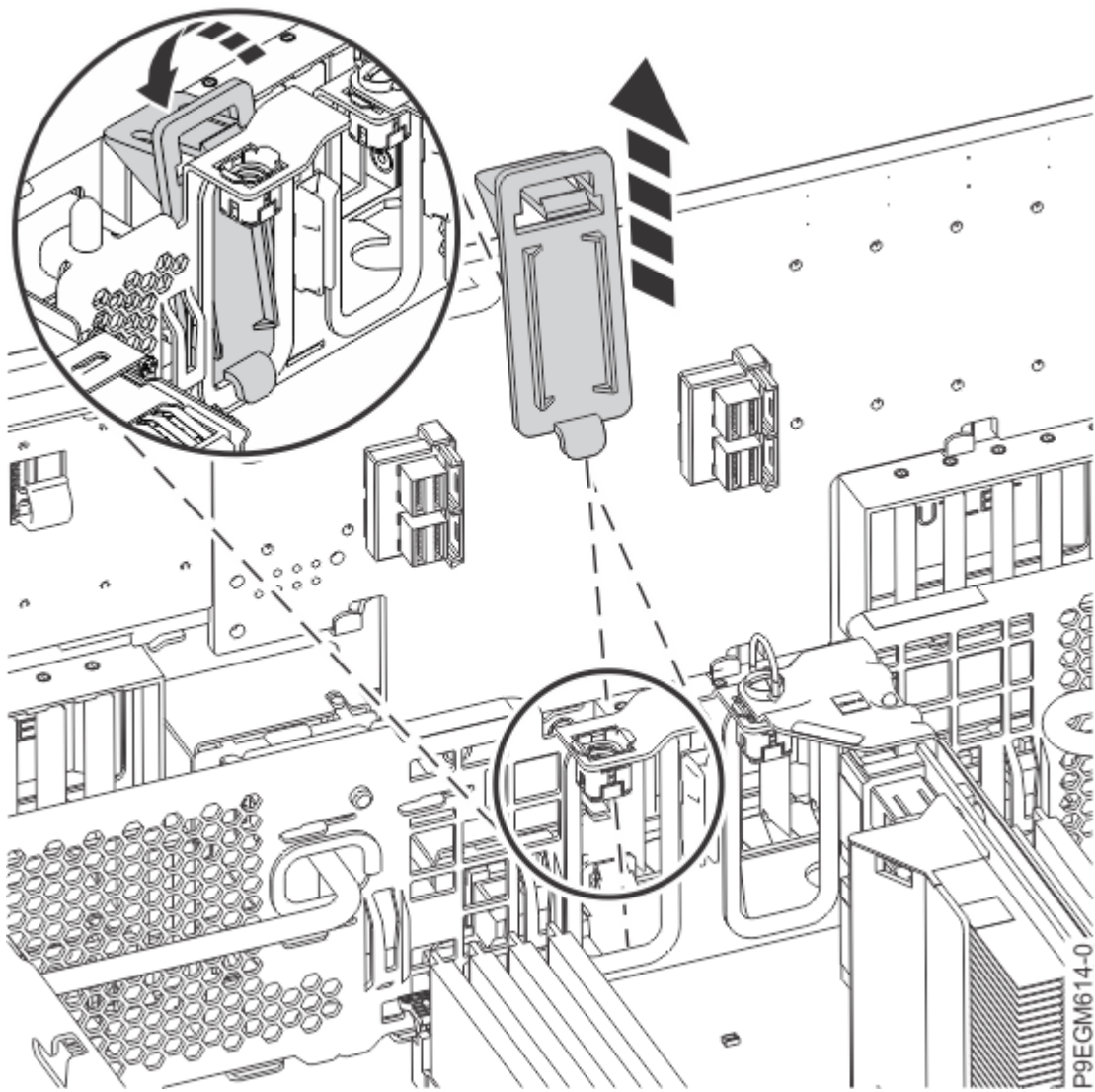
Figure 8. Removing the air divider

c) Lift the air divider up as shown in the following figure.
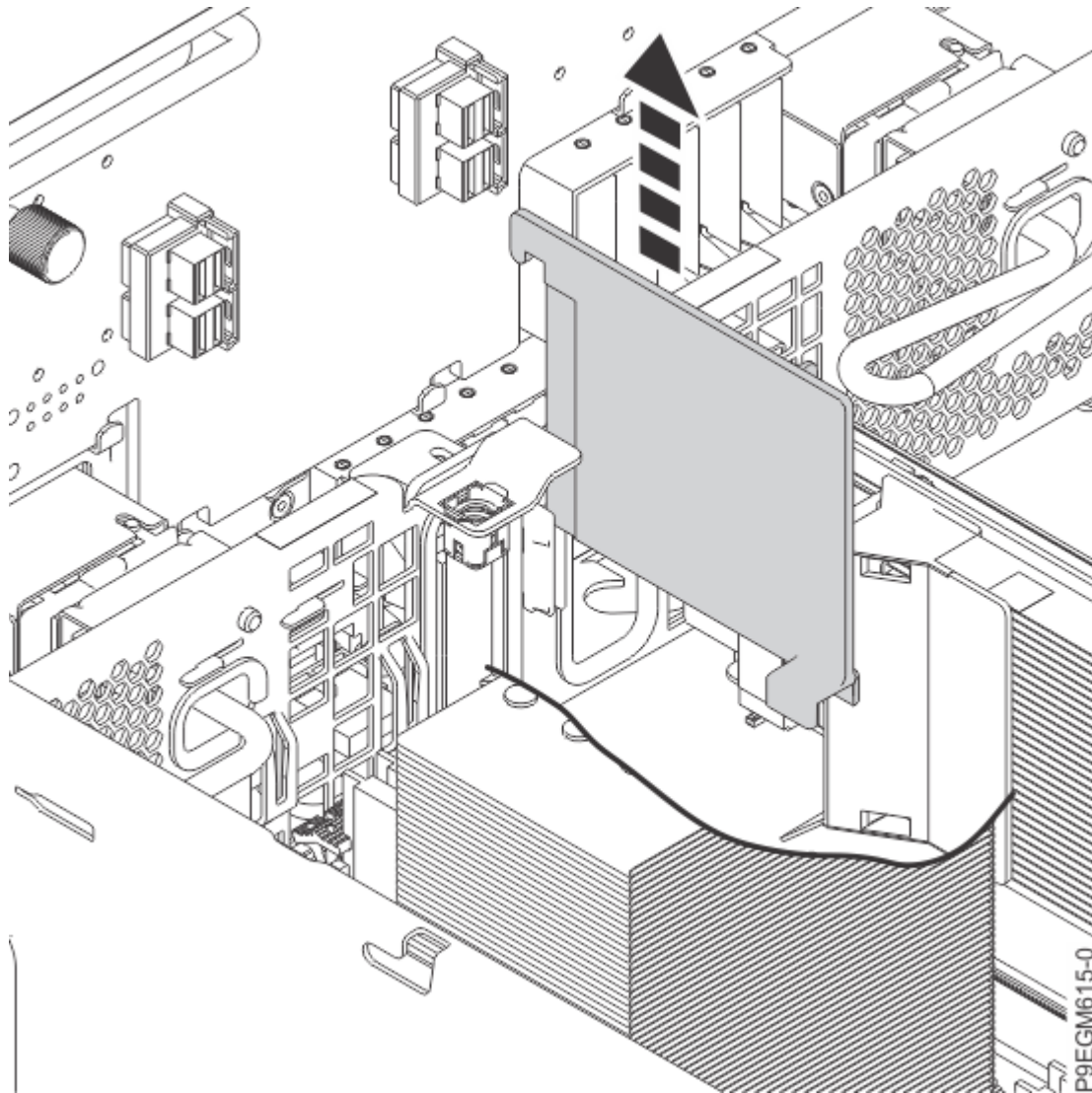
Figure 9. Removing the air divider

   d) Save the clip-in filler and air divider for a future use.

4. Plug the SAS cable into the front connector port of the new SAS RAID internal adapter. Push the connector in until the connector latch clicks. The end of the SAS cable that has the manufacturing label plugs into the disk drive backplane.

   • Use this information to plug SAS cables into the base function disk drive backplane:

   Notes:

   If you have one storage controller in slot P1-C49 (base-storage feature) and a filler in slot P1-C50

      One SAS cable connects the disk drive backplane connector J1 to the P1 connector on the storage controller. Another SAS cable connects the disk drive backplane connector J2 to the P2 connector on the same storage controller. See the following figure.

Figure 10. Reconnecting the SAS cable in a base-storage configuration

If you have two storage controllers (split-disk feature), in slots P1-C49 and P1-C50
One SAS cable connects the disk drive backplane connector J1 to the P1 connector on the storage controller in slot P1-C49. The other SAS cable connects the disk drive backplane connector J2 to the P2 connector on the storage controller in slot P1-C50. See the following figure.
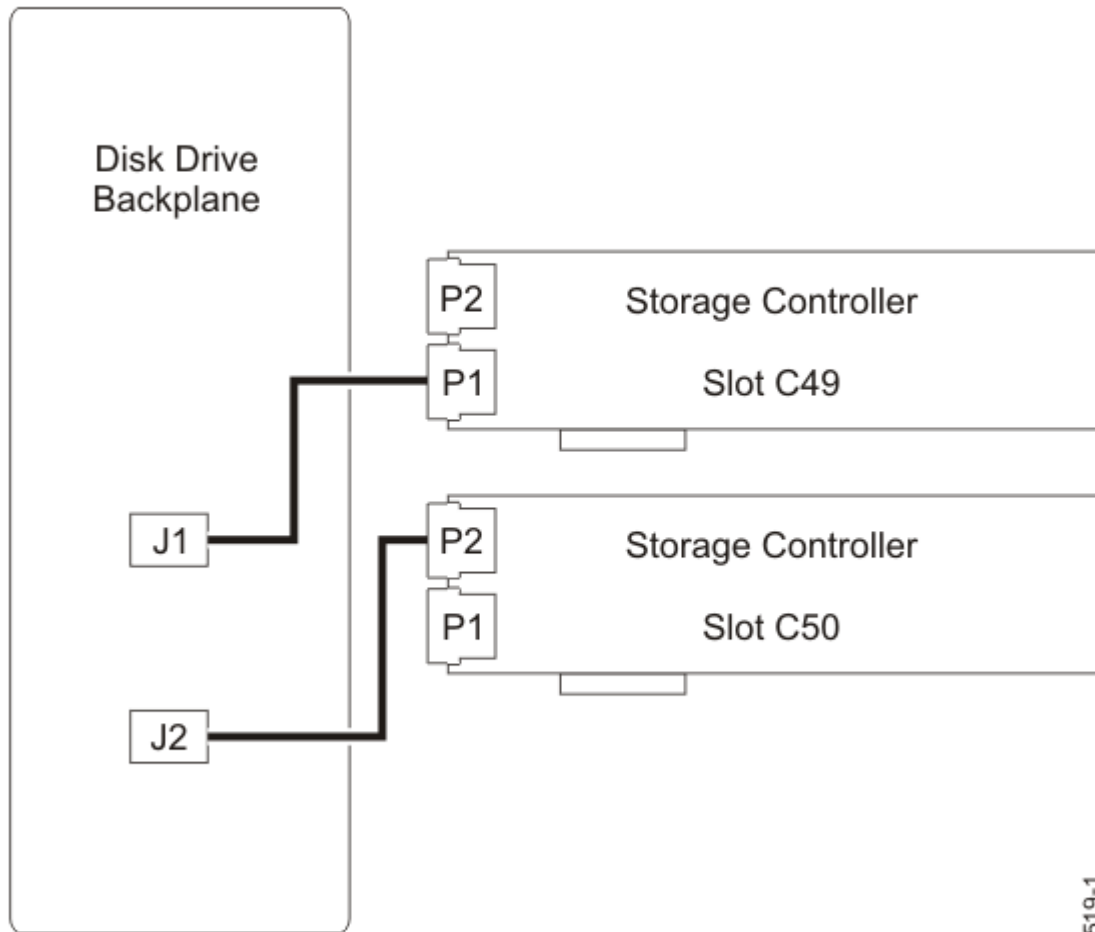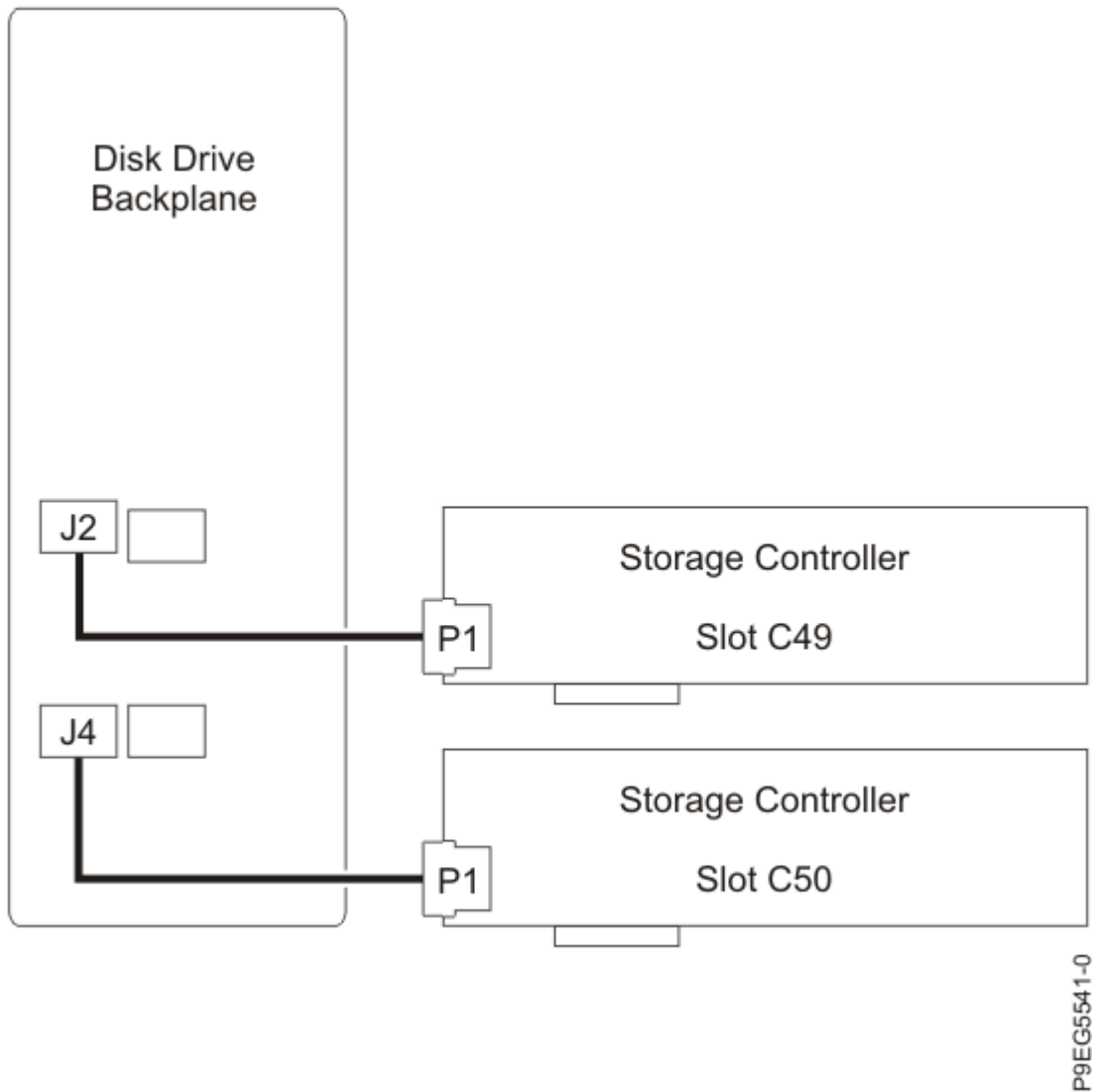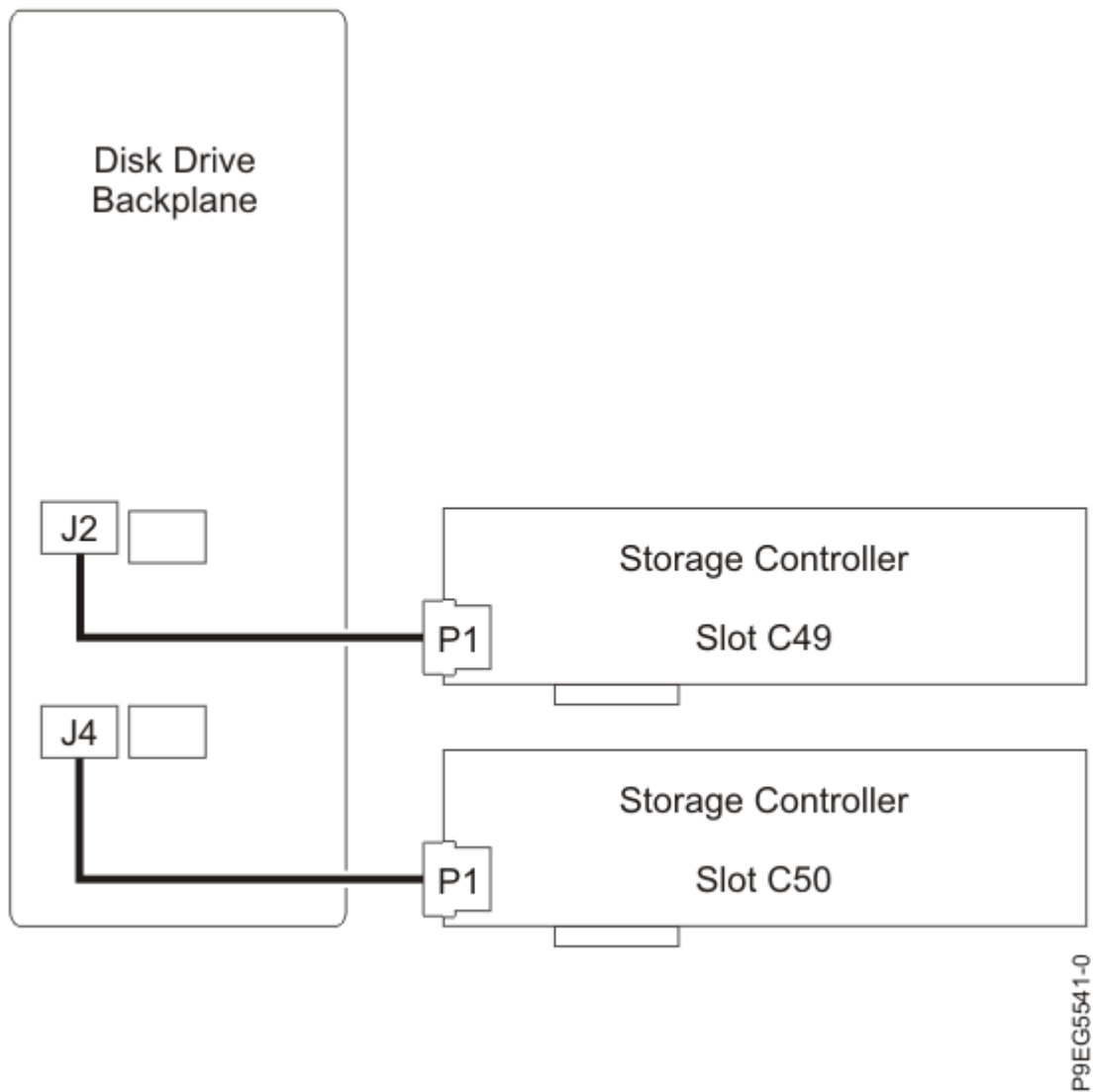
P9EG5519-1

Figure 11. Reconnecting the SAS cable in a split-disk configuration

- Use this information to plug SAS cables into the 12-drive expanded function disk drive backplane:

  Note: One SAS cable connects the disk drive backplane connector J2 to the P1 connector on the storage controller in slot P1-C49. The other SAS cable connects the disk drive backplane connector J4 to the P1 connector on the storage controller in slot P1-C50. See the following figure.

Figure 12. Reconnecting the SAS cable in the 12-drive expanded function configuration

- Use this information to plug SAS cables into the 18-drive expanded function disk drive backplane:

Note: One SAS cable connects the disk drive backplane connector J2 to the P1 connector on the storage controller in slot P1-C49. The other SAS cable connects the disk drive backplane connector J4 to the P1 connector on the storage controller in slot P1-C50. See the following figure.

Figure 13. Reconnecting the SAS cable in the 18-drive expanded function configuration

- Use this information to plug a front SAS cable into the NVMe drive backplane:

Note: The SAS cable connects from SAS port **(J1)** on the NVMe U.2 drive backplane to port **(P1)** on the SAS RAID internal adapter. See the following figure.
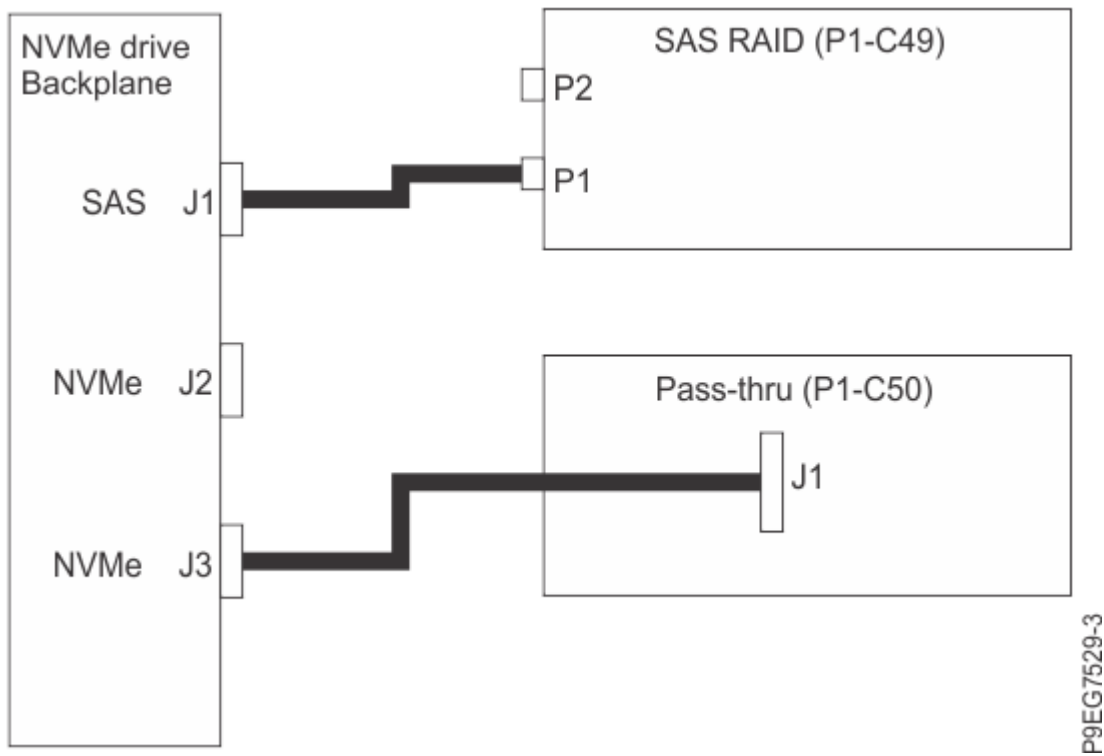
Figure 14. Connecting the SAS cable in the NVMe drive backplane configuration

5. Route the front SAS cables into position while you lower the SAS RAID adapter into its slot. Push the SAS RAID adapter down to seat the adapter. Push in and twist the screws **(A)** clockwise to fully seat the SAS RAID adapter.
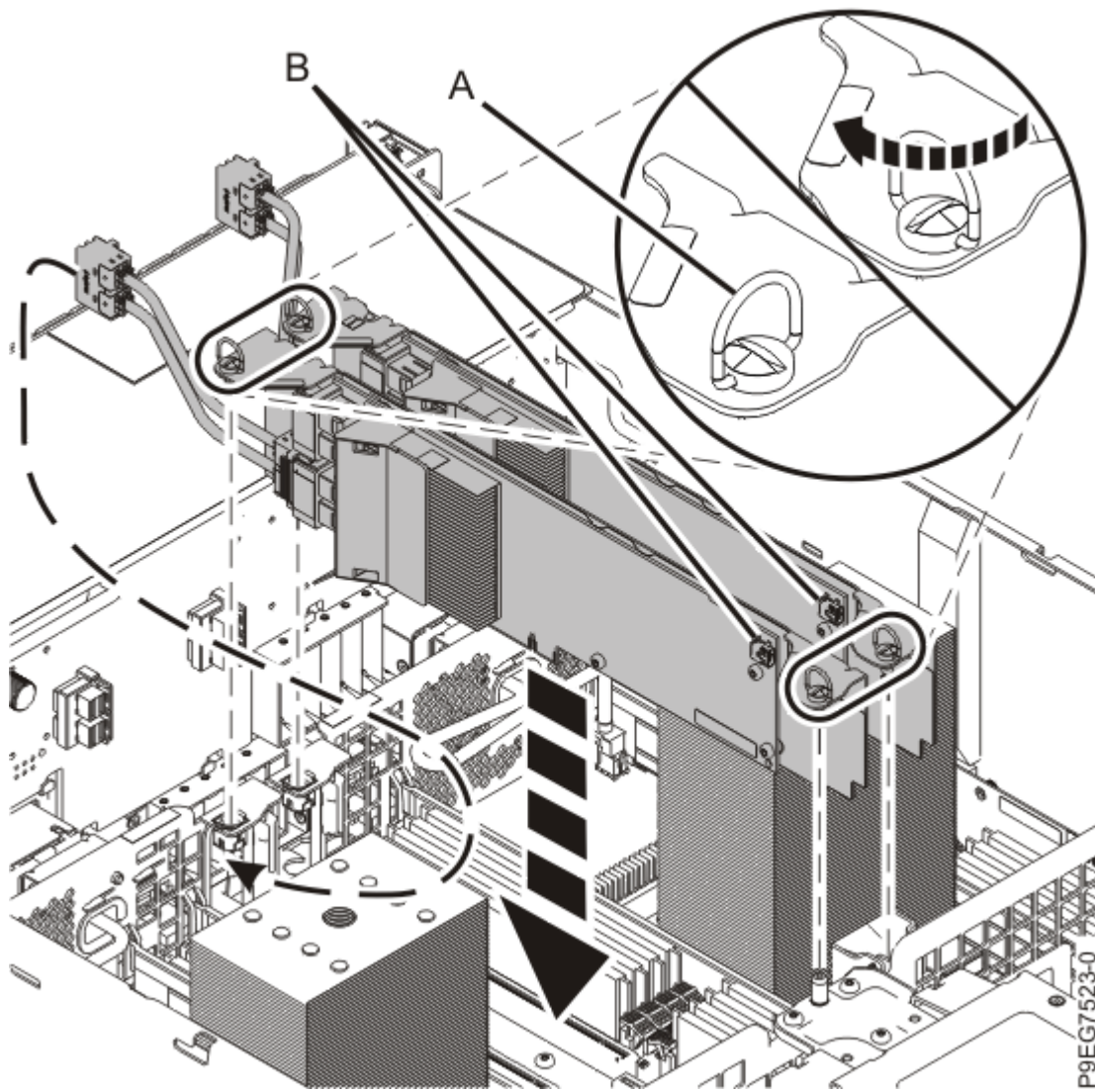
Figure 15. Seating the SAS RAID adapter

6. Reconnect the rear SAS cable **(A)** to the SAS RAID adapter rear connector, if the rear SAS cable is present.
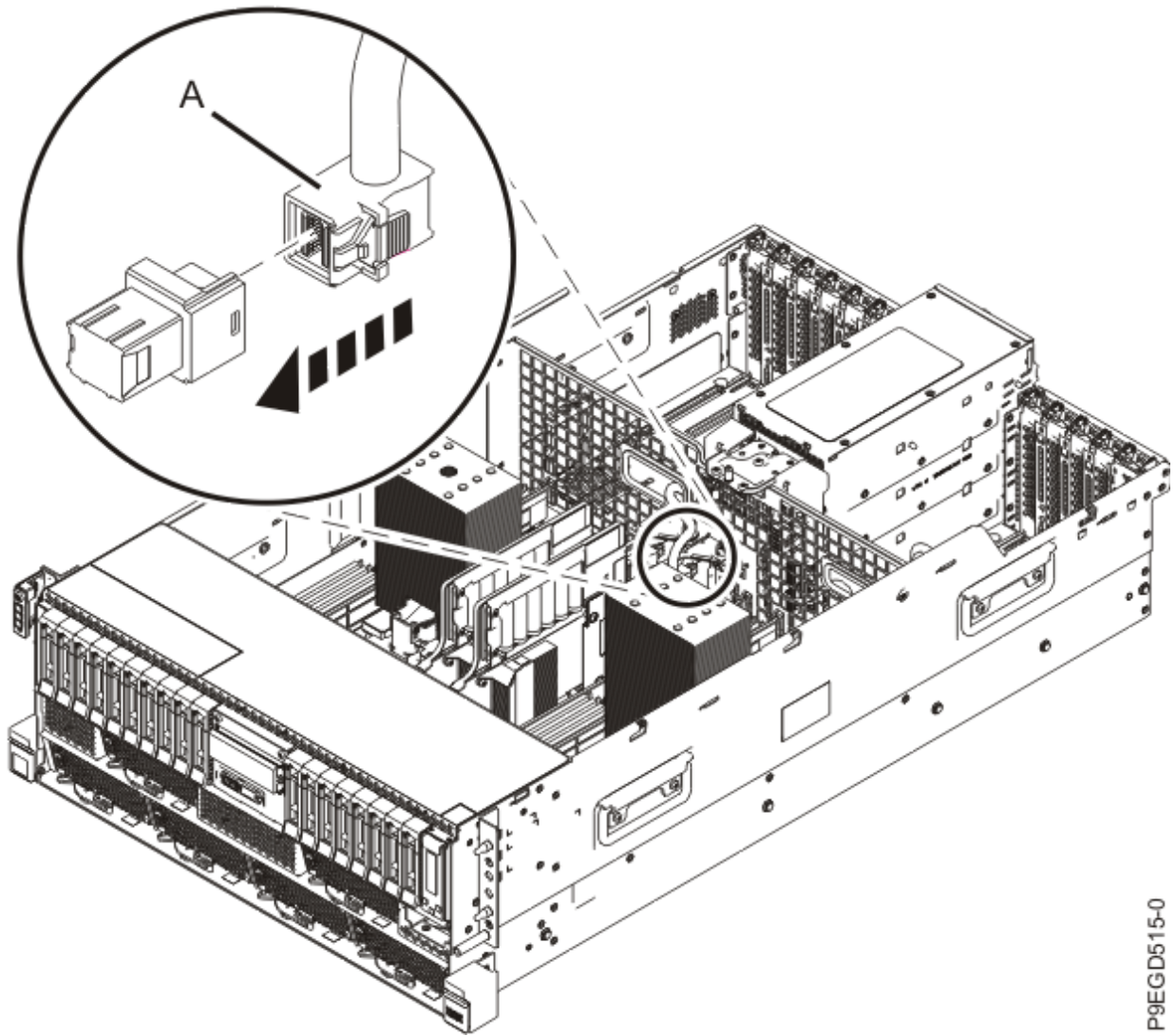
Figure 16. Reconnecting the rear SAS cables

7. Using your labels, reconnect the front SAS cables to the connector port on the disk drive backplane. Push the connector in until the connector latch clicks.

   To reconnect the front SAS cables, see Figure 17 on page 20 or Figure 18 on page 21 as appropriate.
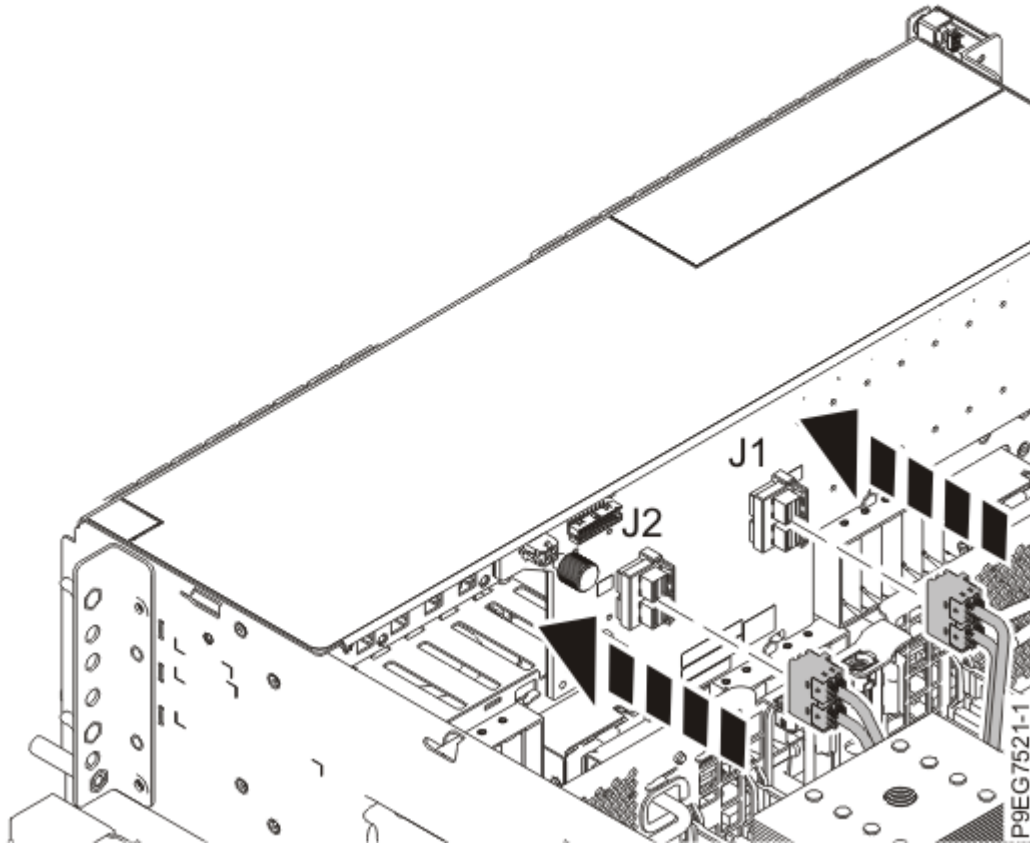
Figure 17. Reconnecting the front SAS cables for the base function disk drive backplane
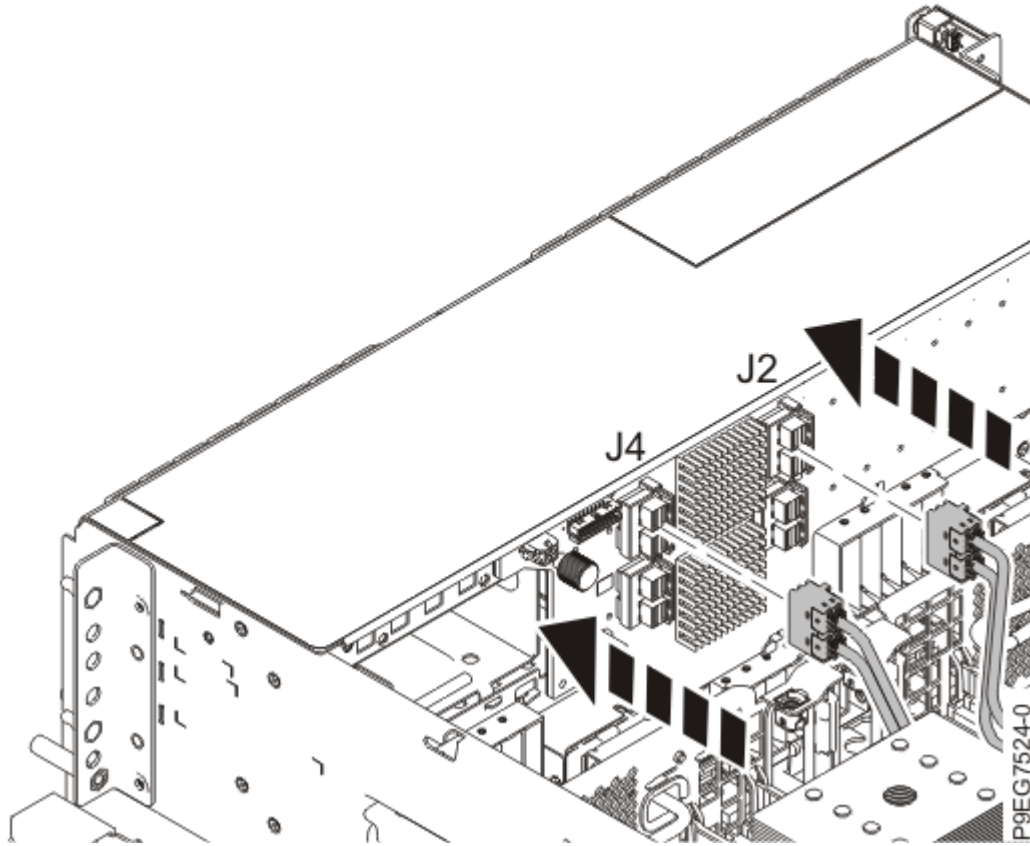
Figure 18. Reconnecting the front SAS cables for the 12-drive expanded function or 18-drive expanded function disk drive backplane

8. For a rack-mounted system, replace the air baffle **(A)** straight down into the chassis as shown in .

   For a stand-alone system, replace the air baffle **(A)** straight into the side of the chassis as shown in .

   Ensure that the front flap tucks under the front chassis.

A
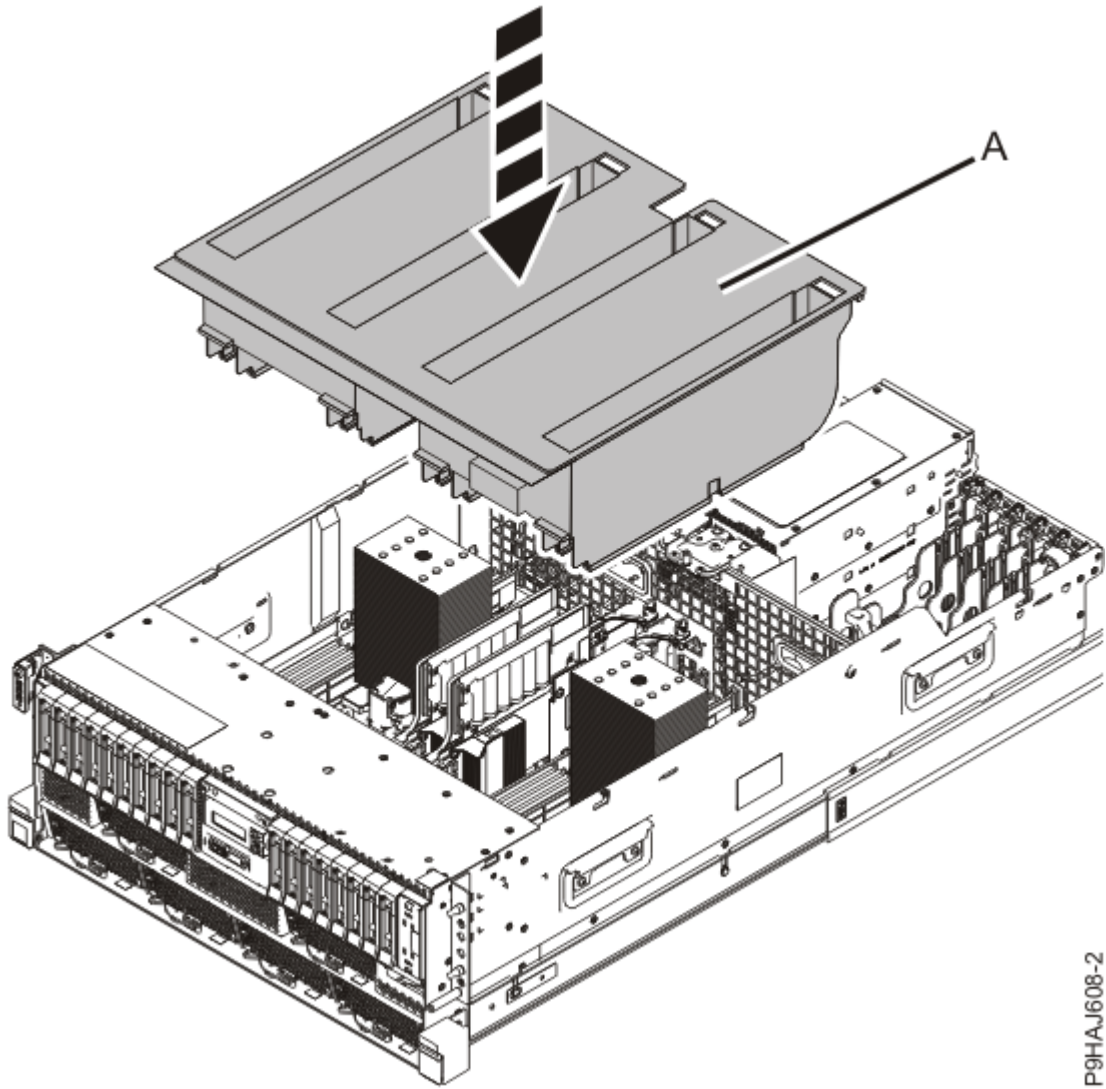
P9HAJ608-2

Figure 19. Replacing the air baffle in a rack-mounted system
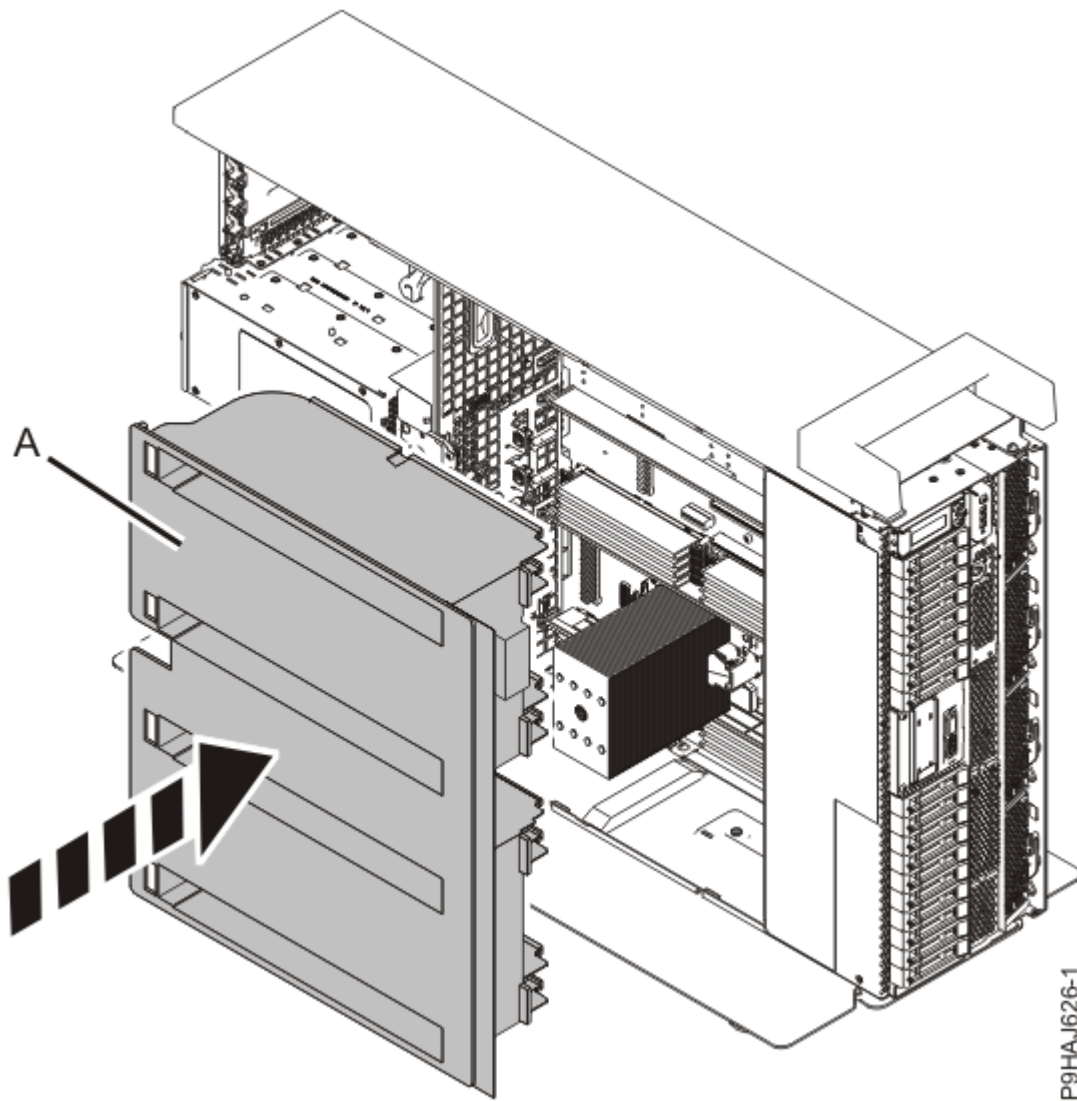
Figure 20. Replacing the air baffle in a stand-alone system

Preparing the 9009-41A, 9009-41G, 9009-42A, 9009-42G, 9223-42H, or 9223-42S system for operation after installing a PCIe3 x8 SAS RAID or cache SAS RAID internal adapter
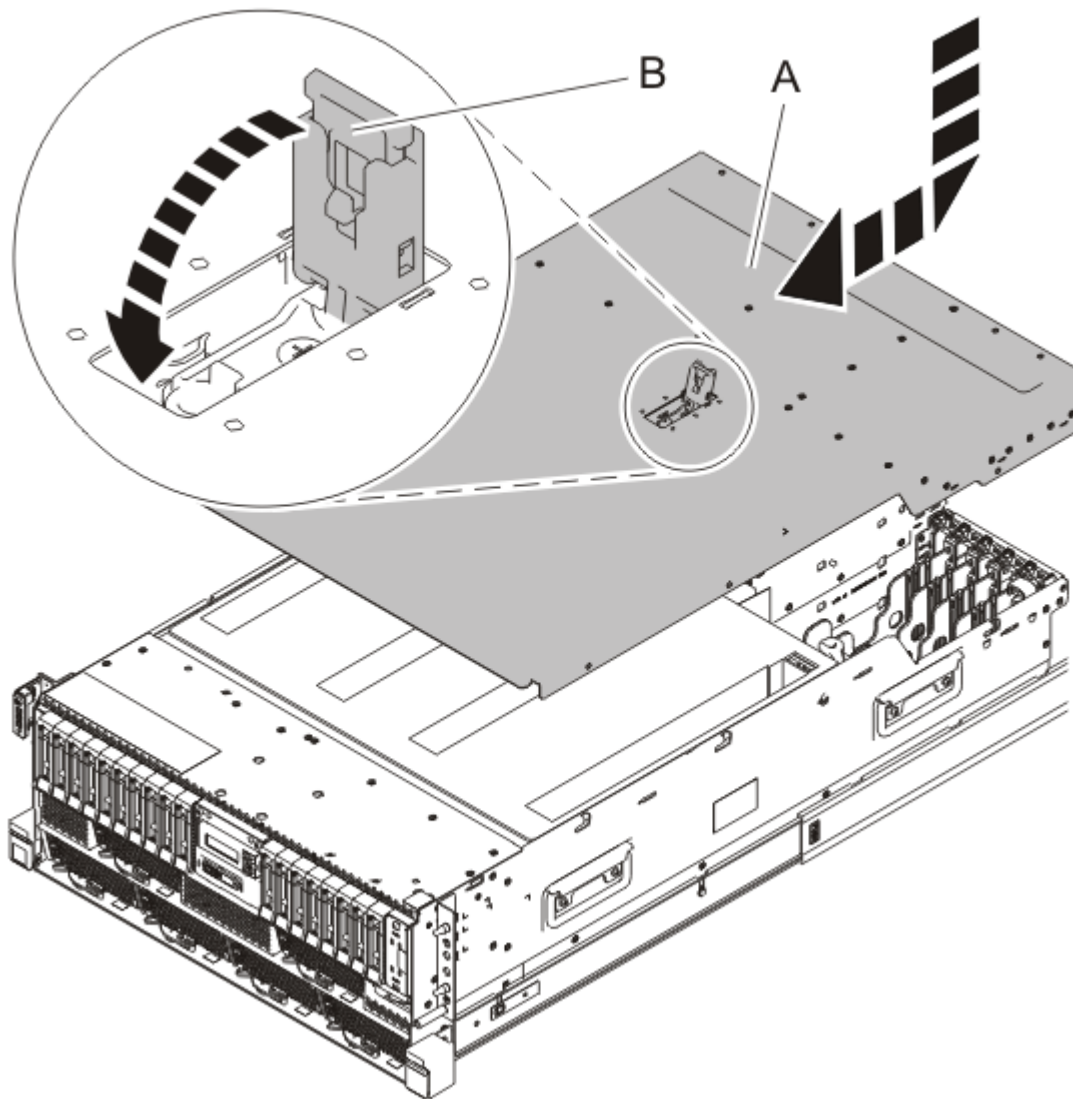
To prepare the system for operation after installing a PCIe3 x8 SAS RAID or cache SAS RAID internal adapter, complete the steps in this procedure.

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 a rack-mounted system, complete the following steps. Refer to .

   a. Slide the cover **(A)** onto the system unit.
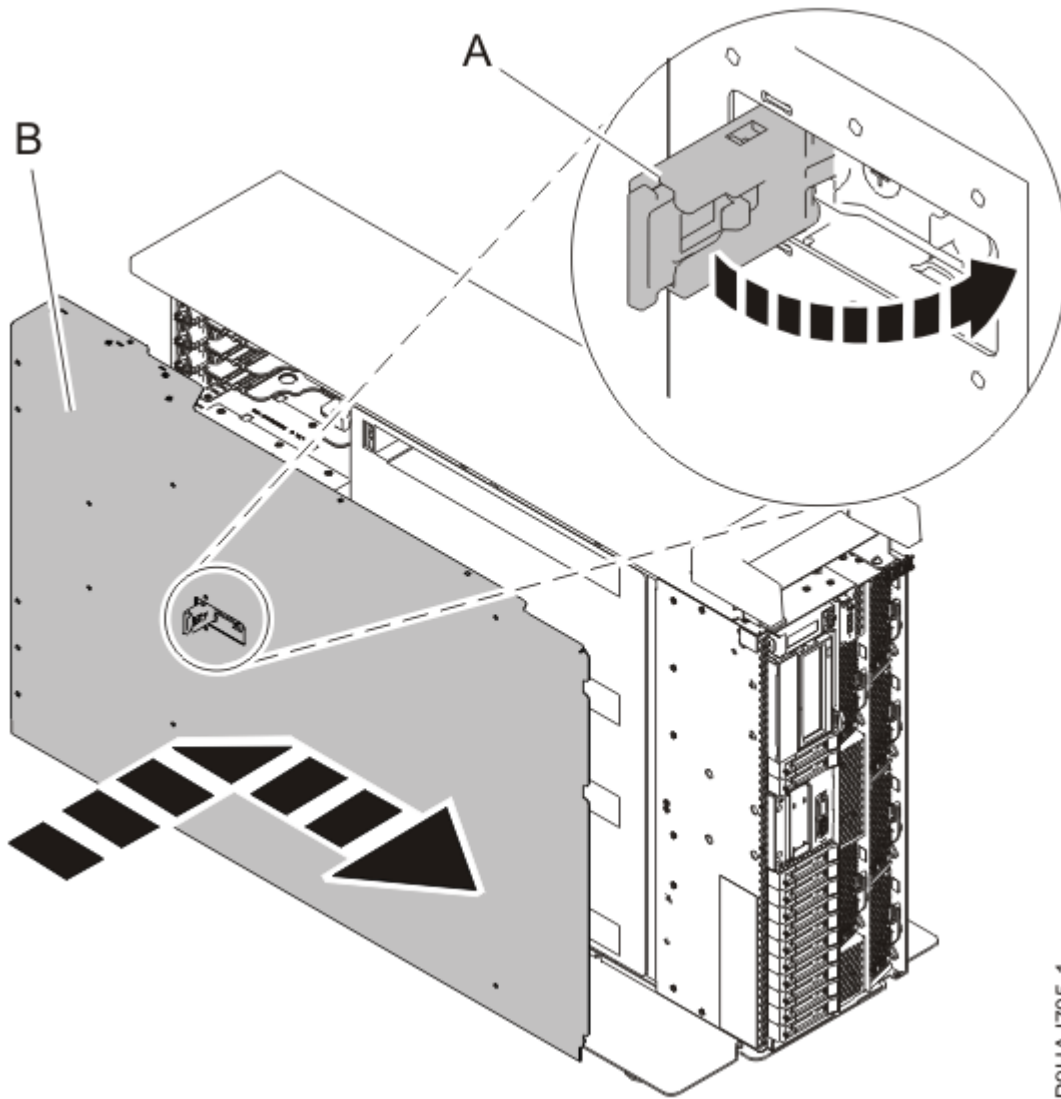   b. Close the release latch **(B)** by pushing it in the direction shown.

Figure 21. Installing the service access cover

For a stand-alone system, complete the following steps. Refer to .

 a. Slide the cover **(B)** on to the system unit as shown.
 b. Close the latch release **(A)** by pushing it in the direction shown.

Figure 22. Installing the service access cover

3. For a rack-mounted system, unlock the blue rail safety latches **(A)** as shown in by pushing them inward.

   Ensure that the cable management arms can move freely. Ensure that the cables at the rear of the unit do not catch or bind as you push the unit into the operating position.
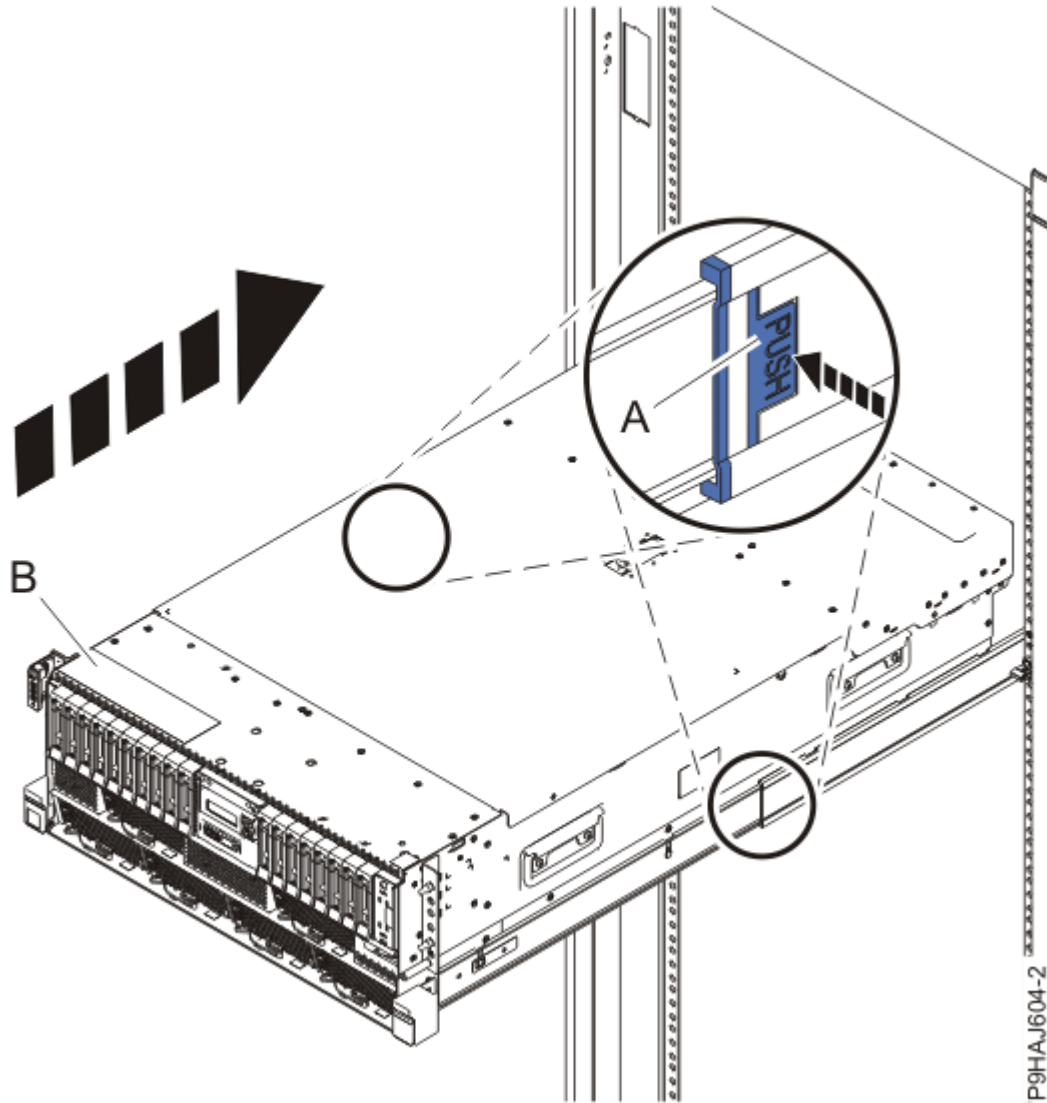
Figure 23. Placing the system into the operating position

4. For a rack-mounted system, push the system unit **(B)** as shown in the previous figure back into the rack until both release latches lock the system into position.

   Secure the cable management arm with hook-and-loop fasteners around the back side of the cable management arm, but not around the cables.

5. Using your labels, reconnect the power cords **(A)** to the system unit.

   Fasten the power cords **(A)** to the system using the hook-and-loop fasteners **(B)** as shown in Figure 24 on page 27 or Figure 25 on page 28.
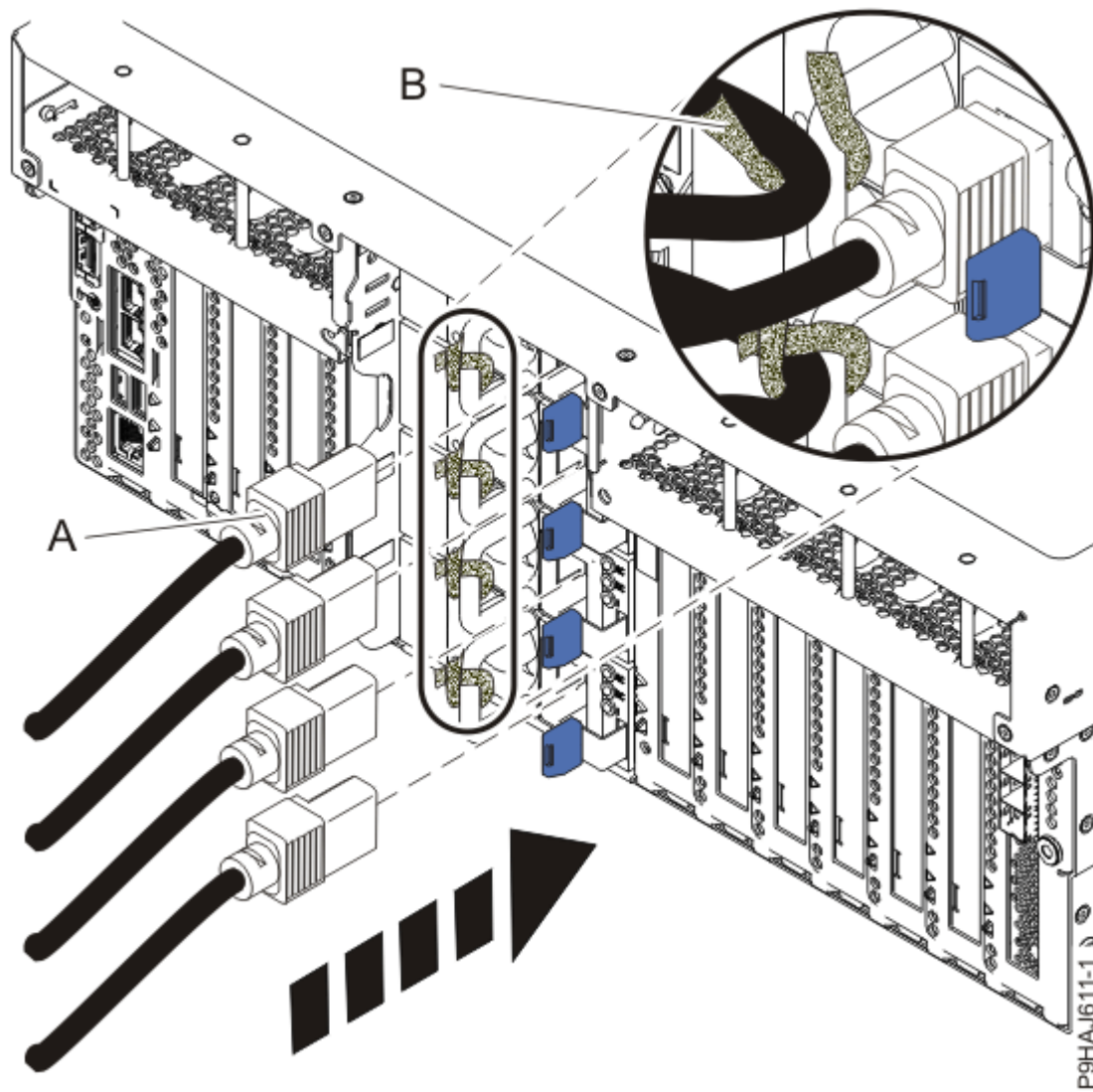
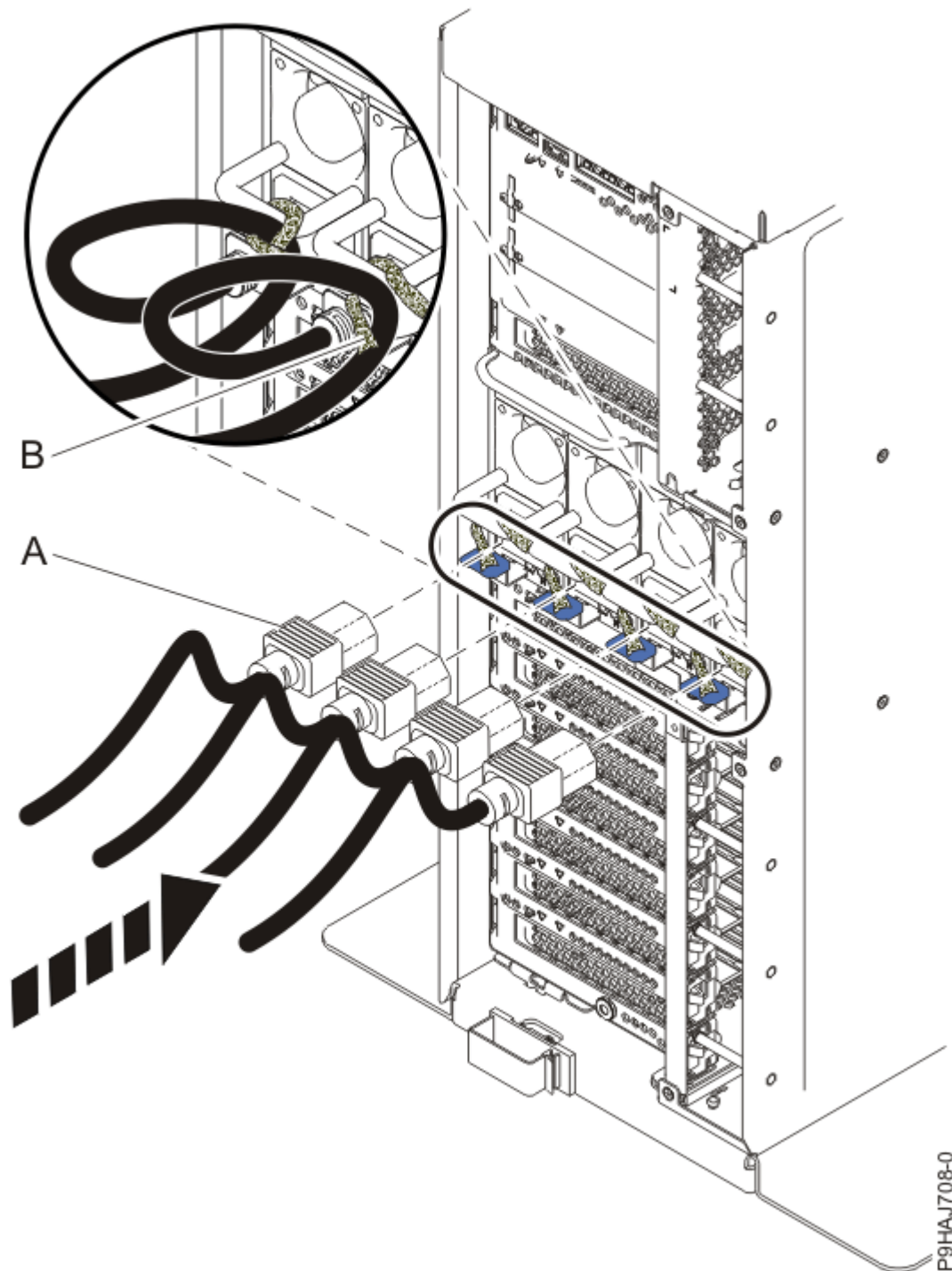*Figure 24. Connecting the power cords to a rack-mounted system*

Figure 25. Connecting the power cords to a stand-alone system

6. Start the system. For instructions, see Starting a system (www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustartsys.htm).

7. Turn off the identify LED. For instructions, see Deactivating an identify LED (www.ibm.com/support/knowledgecenter/POWER9/p9haj/p9haj_turn_off_identify_led.htm).

8. Verify the installed part.

   - If you replaced the part because of a service action, verify the installed part. For instructions, see Verifying a repair (www.ibm.com/support/knowledgecenter/POWER9/p9ect/pxect_verifyrepair.htm).

   - If you installed the part for any other reason, verify the installed part. For instructions, see Verifying the installed part (www.ibm.com/support/knowledgecenter/POWER9/p9haj/pxhaj_hsmverify.htm).

Removing and replacing a PCIe3 x8 SAS RAID or cache SAS RAID internal adapter in the 9009-41A, 9009-41G, 9009-42A, 9009-42G, 9223-42H, or 9223-42S system

Find information about how to remove and replace a PCIe3 x8 SAS RAID or cache SAS RAID internal adapter in the IBM Power System S914 (9009-41A and 9009-41G), IBM Power System S924 (9009-42A and 9009-42G), IBM Power System H924 (9223-42H), or IBM Power System H924S (9223-42S) server.

About this task

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

If your system is managed by the Hardware Management Console (HMC), use the HMC to repair a part in the system. For instructions, see Repairing a part by using the HMC (www.ibm.com/support/knowledgecenter/POWER9/p9haj/p9haj_hmc_repair.htm).

If you do not have an HMC, complete the steps in the following procedures to remove and replace a PCIe3 x8 SAS RAID or cache SAS RAID internal adapter.

Preparing the 9009-41A, 9009-41G, 9009-42A, 9009-42G, 9223-42H, or 9223-42S system to remove and replace a PCIe3 x8 SAS RAID or cache SAS RAID internal adapter

To prepare the system to remove and replace a PCIe3 x8 SAS RAID or cache SAS RAID internal adapter, complete the steps in this procedure.

Procedure

1. Identify the part and the system that you are working on. For instructions, see Identifying a part (www.ibm.com/support/knowledgecenter/POWER9/p9haj/sal.htm).

   Use the blue identify LED on the enclosure to locate the system. Ensure that the serial number of the system matches the serial number to be serviced.

2. Stop the system. For instructions, see Stopping a system (www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustopsys.htm).

3. Label and disconnect the power cords from the system unit.

   See Figure 26 on page 30 or Figure 27 on page 31.

   Notes:

   • This system might be equipped with two or more power supplies. If the removing and replacing procedures require the system power to be turned off, ensure that all the power sources to the system are disconnected.

   • The power cord **(B)** is fastened to the system with hook-and-loop fastener **(A)**. If you are placing the system in a service position after you disconnect the power cords, ensure that you unstrap the fastener.
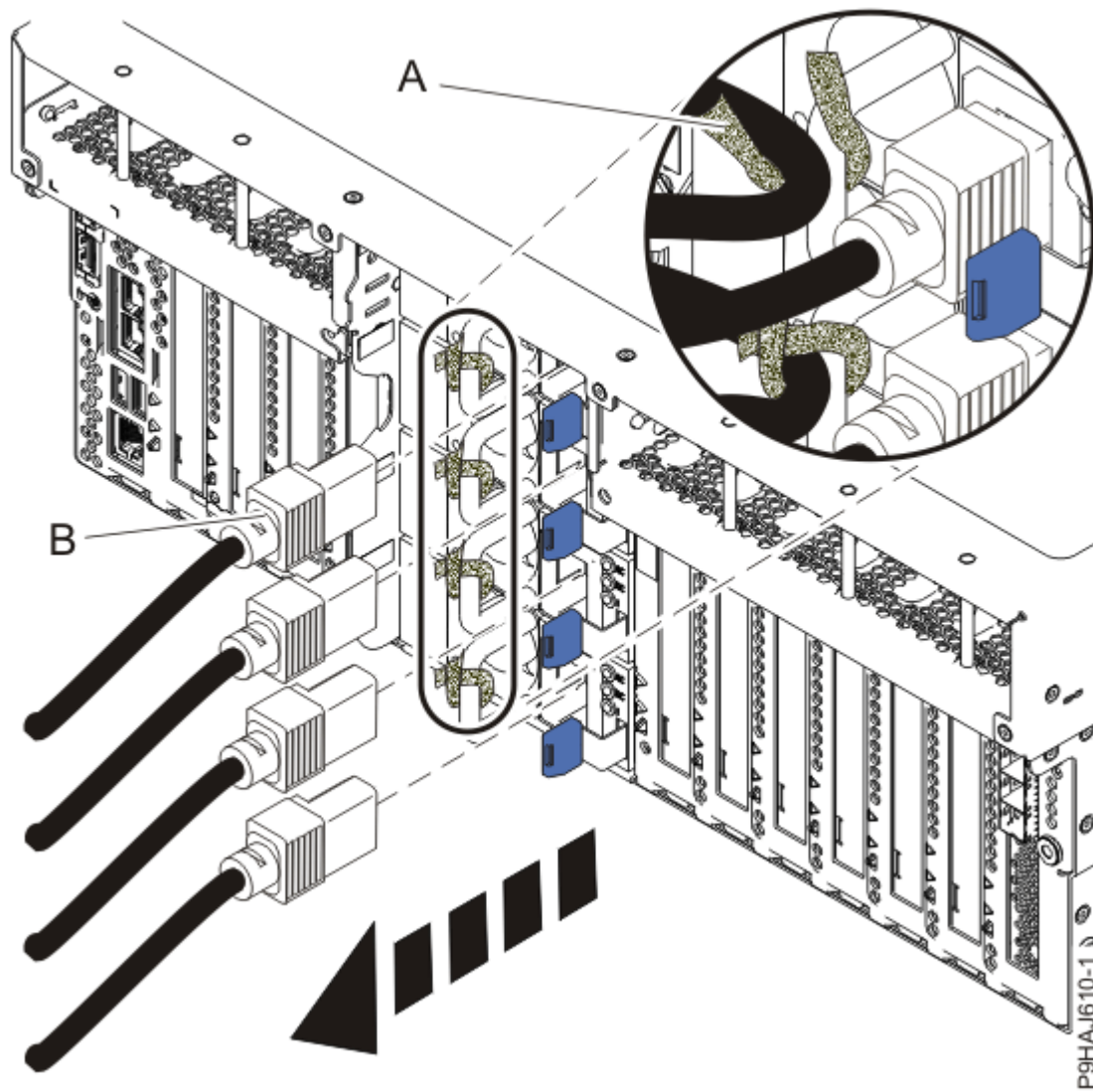
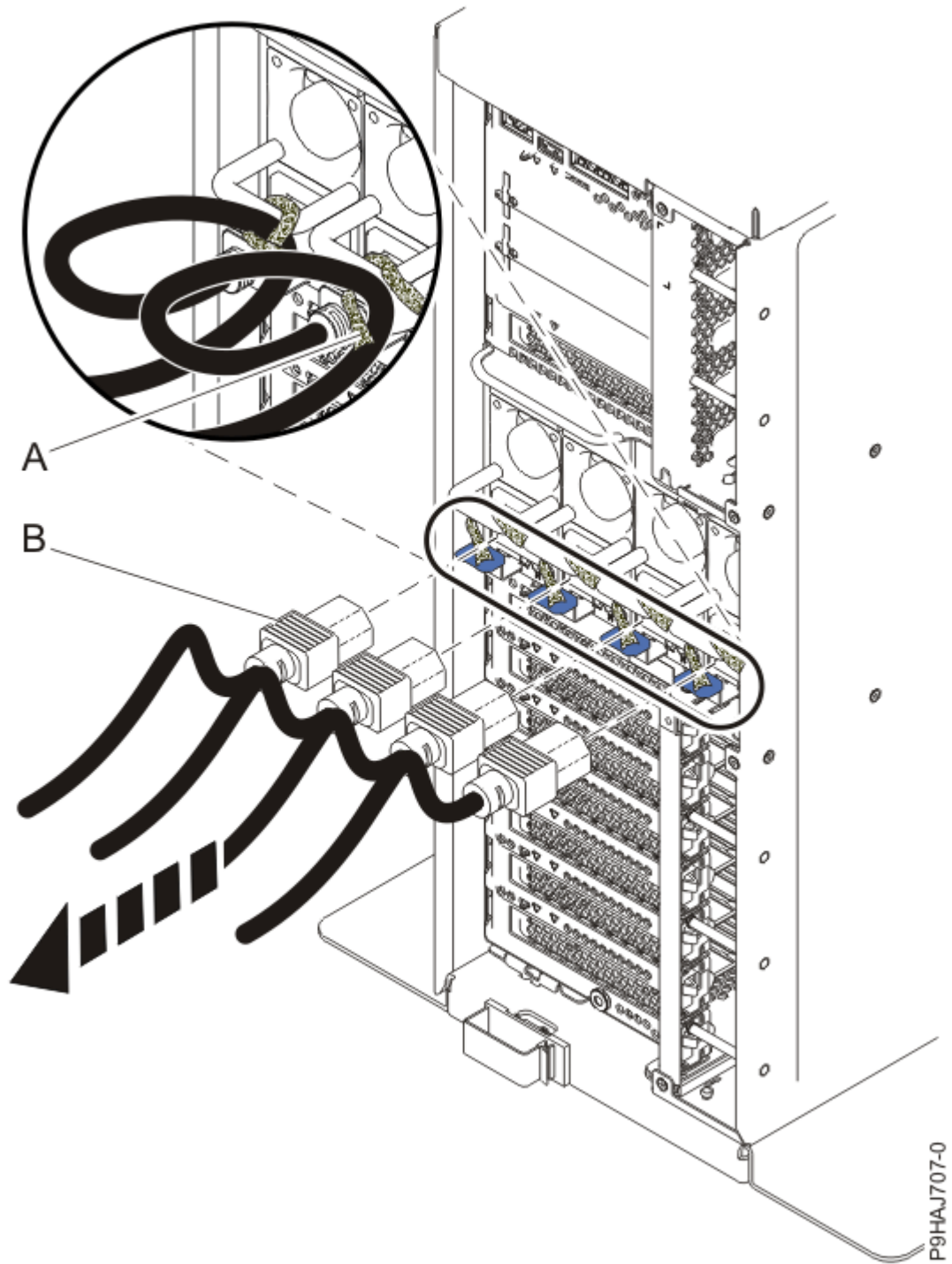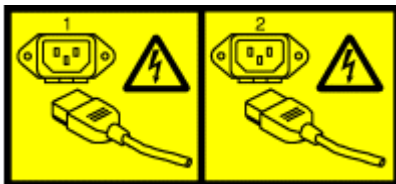*Figure 26. Removing the power cords from a rack-mounted server*

Figure 27. Removing the power cords from a stand-alone server
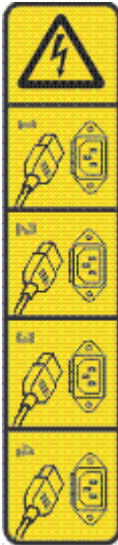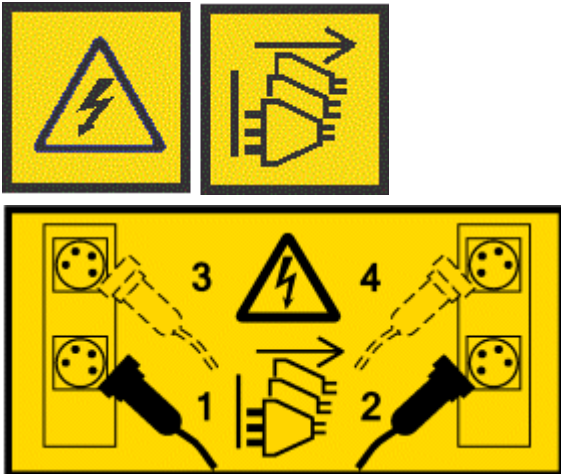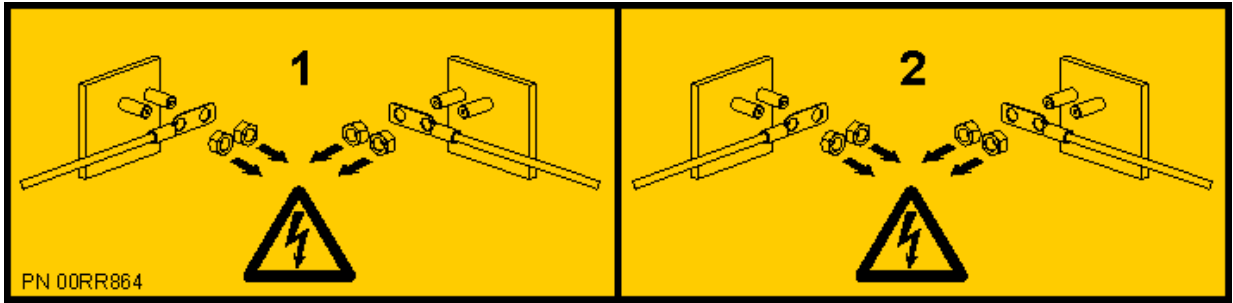
(L003)

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)

4. For a rack-mounted system, open the side latches **(A)** and pull the latches to slide the system unit fully into the service position until the slides click and hold the system unit securely. Ensure that the screws inside the latches are not secured to the rack.

See the following figure.

Remove the hook-and-loop fasteners that secure the cable management arms. Ensure that the cable management arms can move freely. Ensure that the cables at the rear of the system do not catch or bind as you pull the system unit into the service position.

Do not pull out or install any drawer or feature if the rack stabilizer brackets are not attached to the rack. Do not pull out more than one drawer at a time. The rack might become unstable if you pull out more than one drawer at a time.
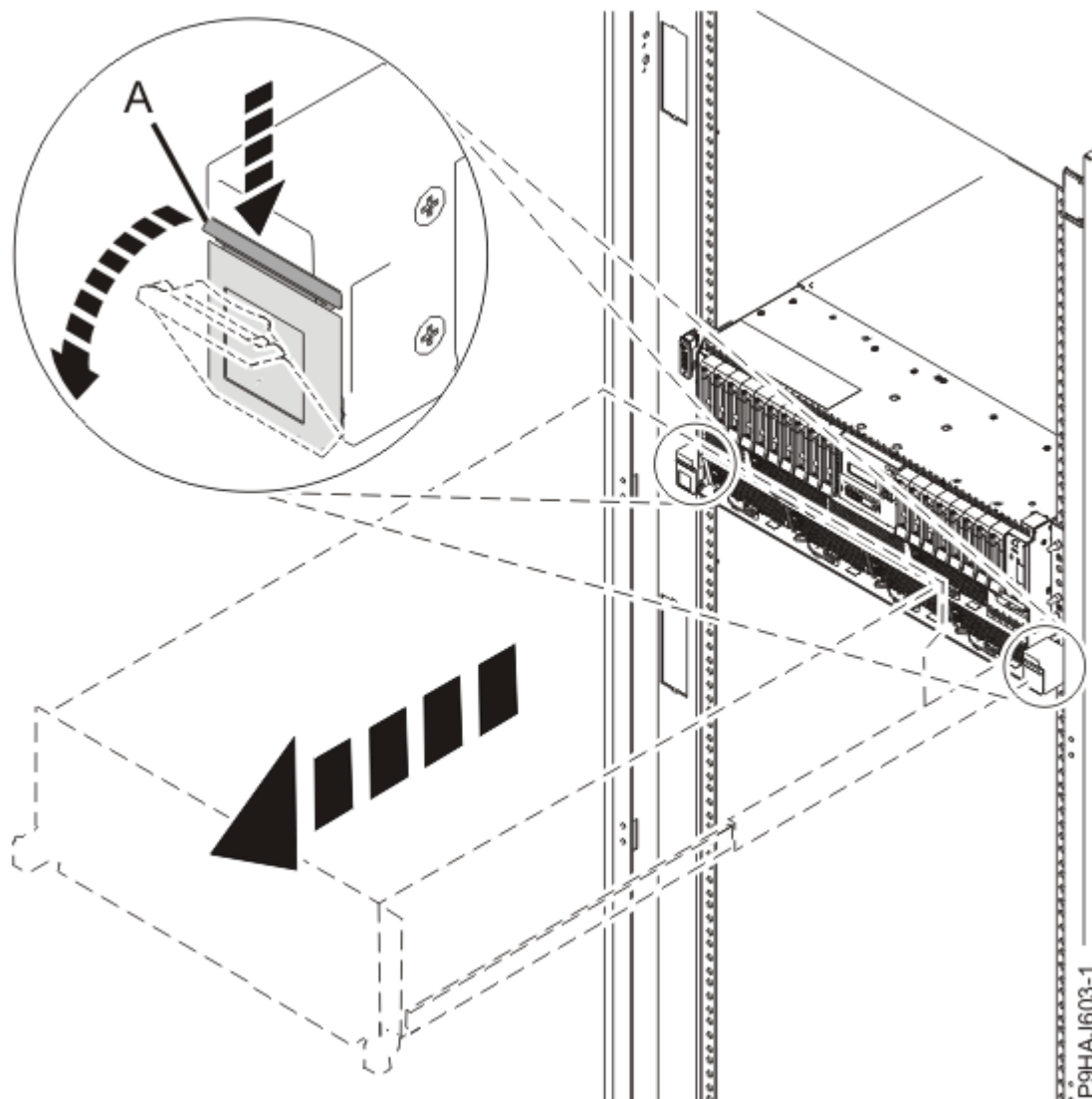
Figure 28. Releasing the side latches

5. 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.
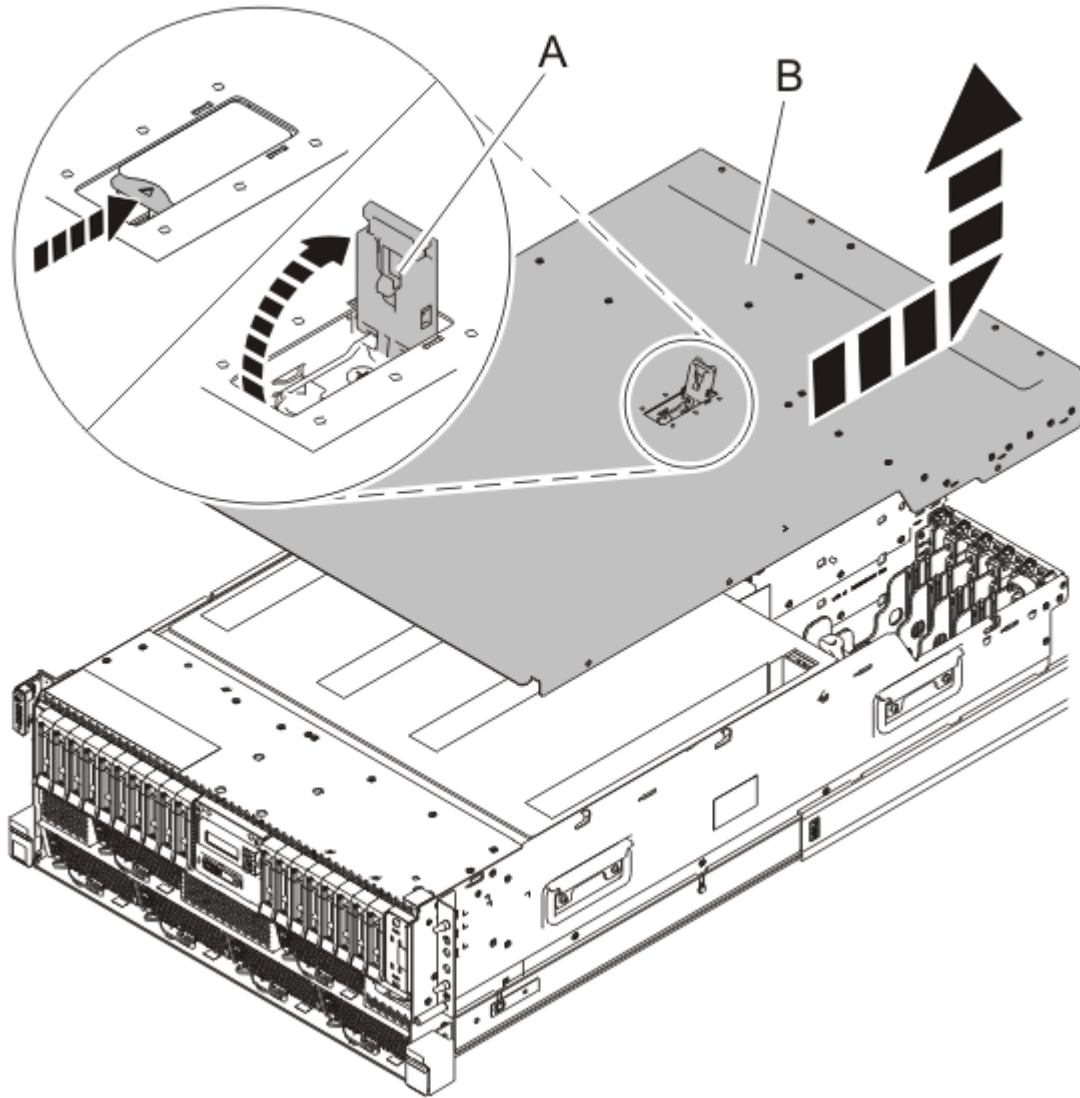
   ⚠️ **Attention:**

   - 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.

6. Remove the service access cover.

   For a rack-mounted system, complete the following steps. Refer to .

⚠️ **Attention:** Operating the system without the service access cover on for more than 10 minutes when the system power is turned on might damage the system components.

a. Release the service cover latch by pushing the release latch **(A)** in the direction shown.

b. Slide the cover **(B)** off 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.

Figure 29. Removing the service access cover from a rack-mounted system

For a stand-alone system, complete the following steps. Refer to Figure 30 on page 36.

⚠️ **Attention:** Operating the system without the service access cover on for more than 10 minutes when the system power is turned on might damage the system components.

a. Release the latch by pushing the release latch **(A)** in the direction shown.

b. Slide the cover **(B)** off the system unit. When the front of the service access cover has cleared the upper frame ledge, lift the cover up and off the system unit.
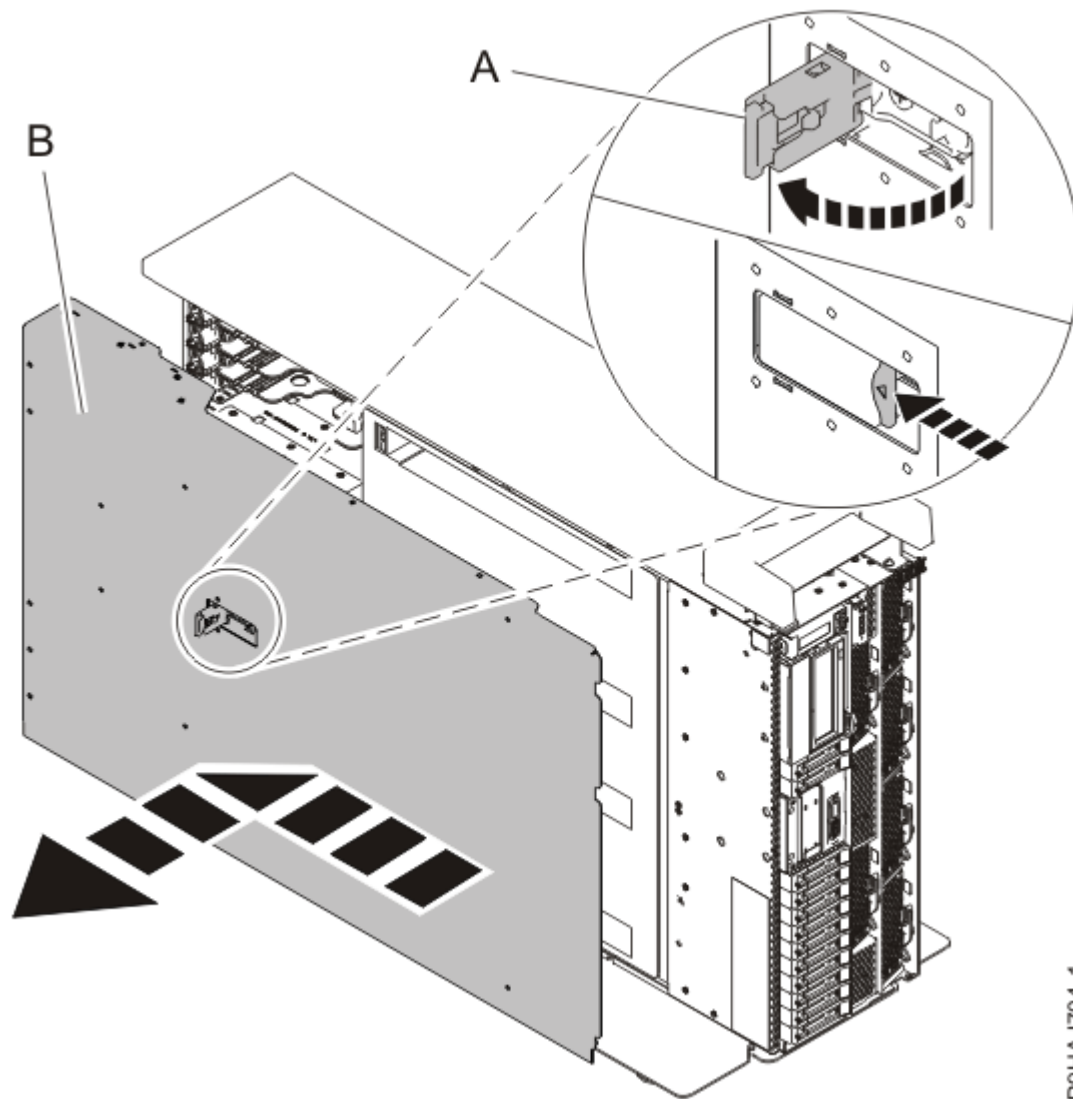
Figure 30. Removing the service access cover

Removing a PCIe3 x8 SAS RAID or cache SAS RAID internal adapter from the 9009-41A, 9009-41G, 9009-42A, 9009-42G, 9223-42H, or 9223-42S system

To remove a PCIe3 x8 SAS RAID or cache SAS RAID internal adapter from the 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. For a rack-mounted system, lift the air baffle **(A)** straight up as shown in Figure 31 on page 37.

   For a stand-alone system, remove the air baffle **(A)** straight out as shown in Figure 32 on page 38.

   Place the air baffle upside down on a clean area.

A
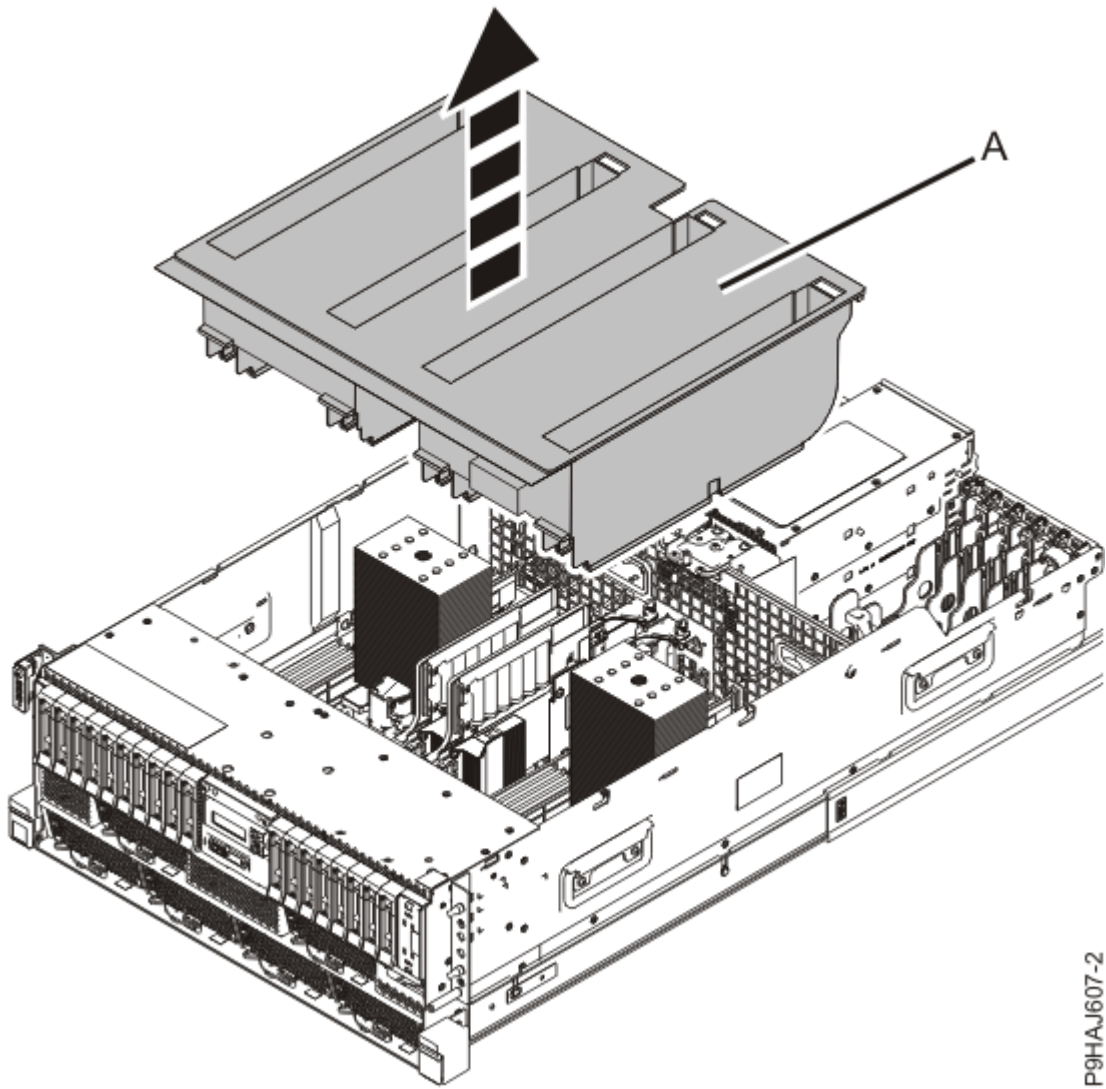
P9HAJ607-2

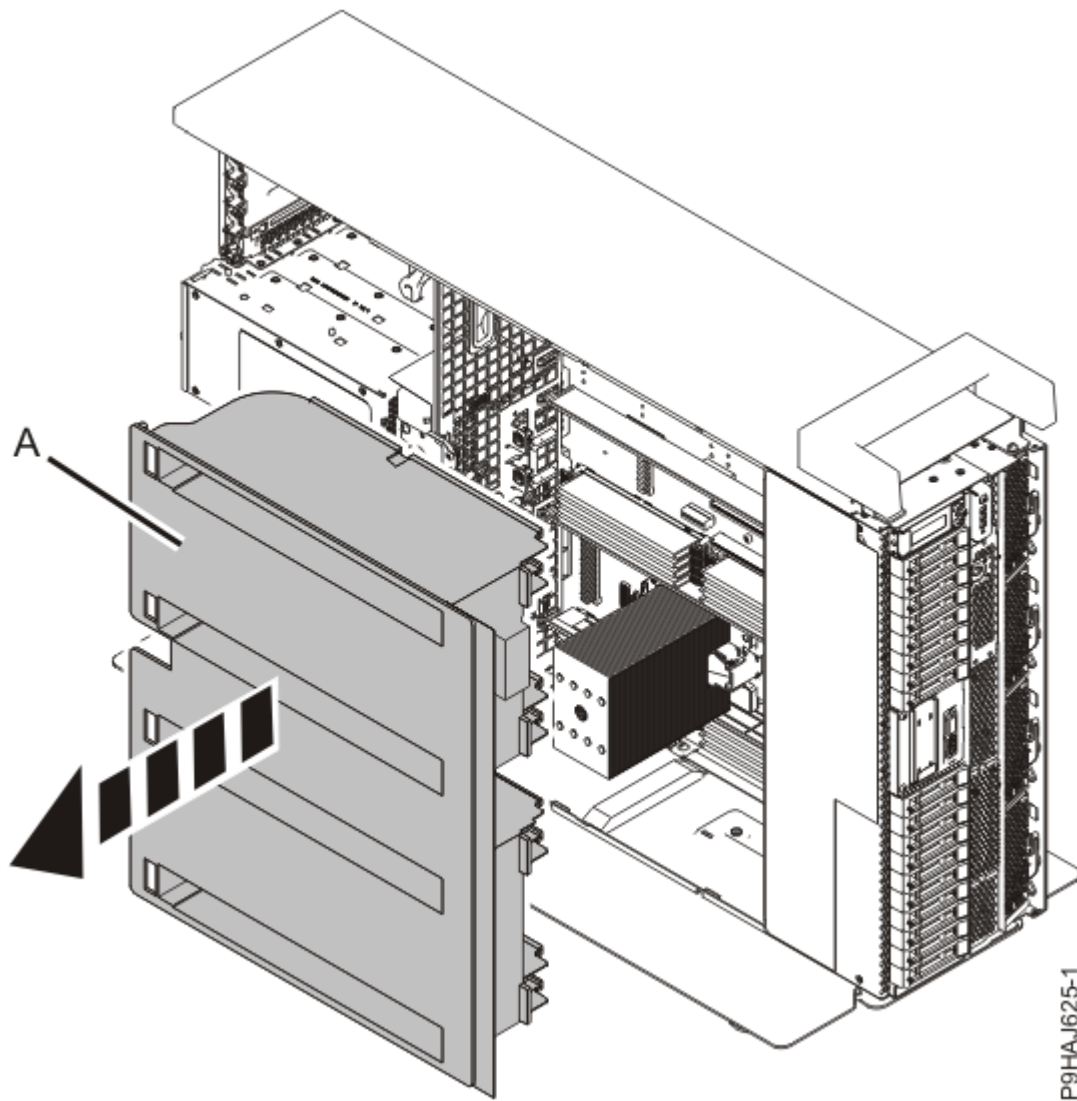*Figure 31. Removing the air baffle from a rack-mounted system*

Figure 32. Removing the air baffle from a stand-alone system

3. Label the front SAS cables, paying attention to the connectors to which each cable is attached on the drive backplane and the SAS RAID internal adapter.

4. Identify to which SAS RAID adapter the front SAS cable is connected. Depending on which SAS RAID adapter is installed in your system, one or two front SAS cables are connected to the SAS RAID adapter. A rear SAS cable might also be connected to the SAS RAID adapter.

5. Press the latch on connector **(A)** and unplug the front SAS cables from the disk drive backplane. Leave the other end of these cables plugged in to the SAS RAID adapter until directed to unplug them.
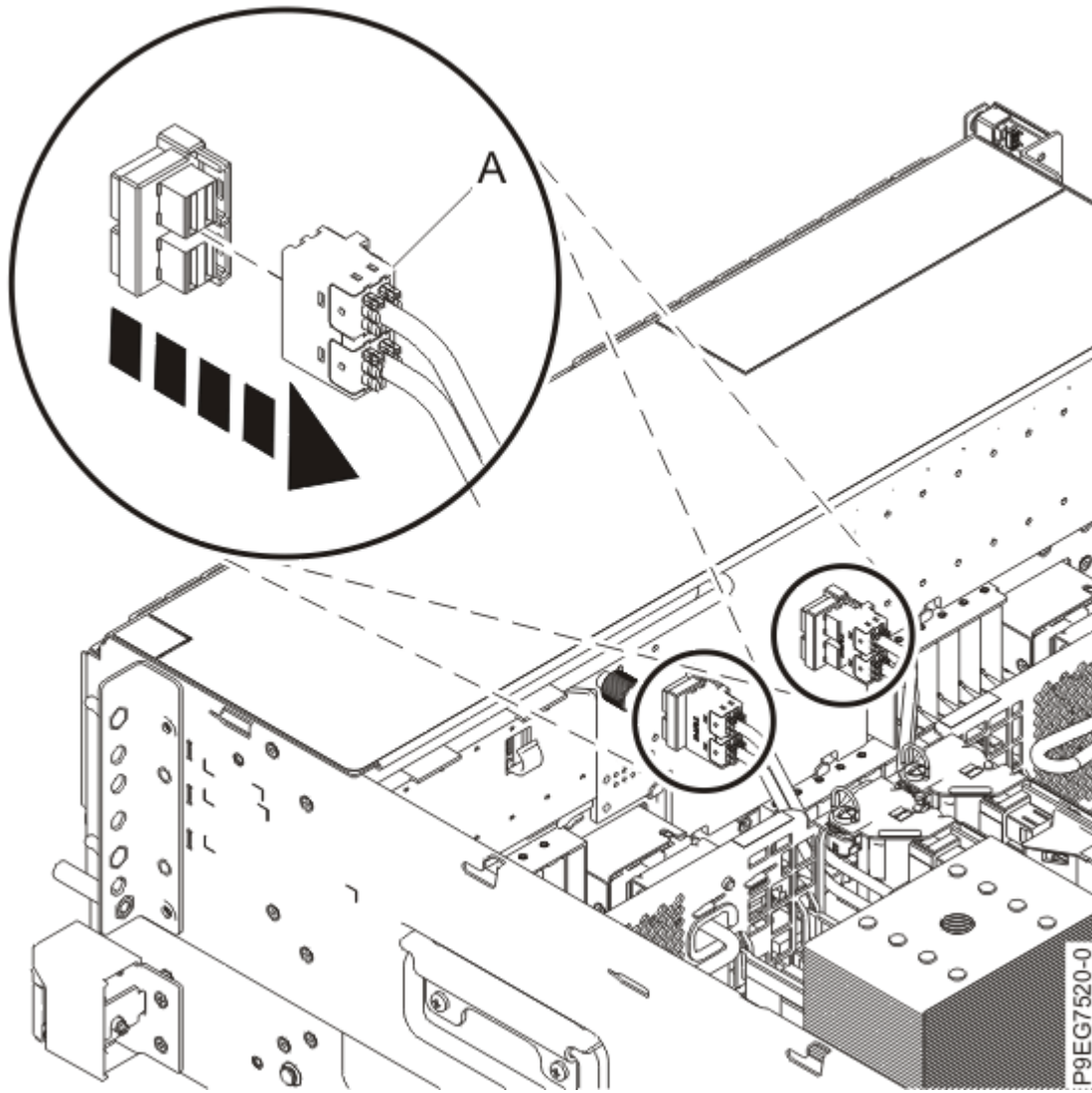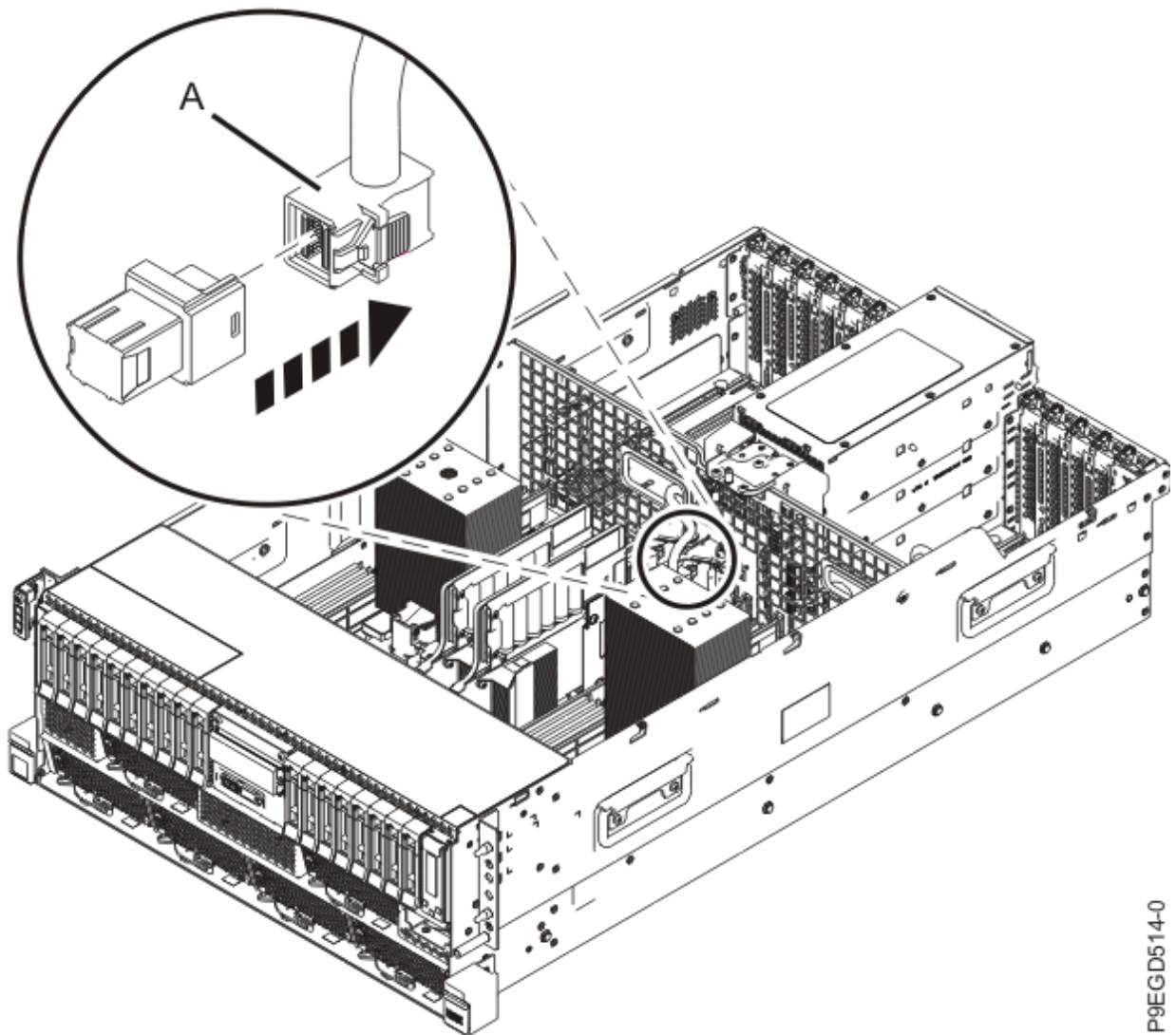
Figure 33. Unplugging the front SAS cables

6. If a rear SAS cable is attached to the SAS RAID adapter, disconnect it from the SAS RAID adapter by pressing the connector latch **(A)** and unplugging the cable.

Figure 34. Disconnecting the rear SAS cables from the SAS RAID internal adapter in slot location P1-C49 and P-C50

7. Leave the front SAS cable connected to this SAS RAID adapter. Twist the screws **(A)** counterclockwise to release the SAS RAID adapter. Lift both the SAS RAID adapter and the front SAS cable out of the slot. Ensure that the front SAS cable does not catch on any components while you are lifting the SAS RAID adapter out of the slot.
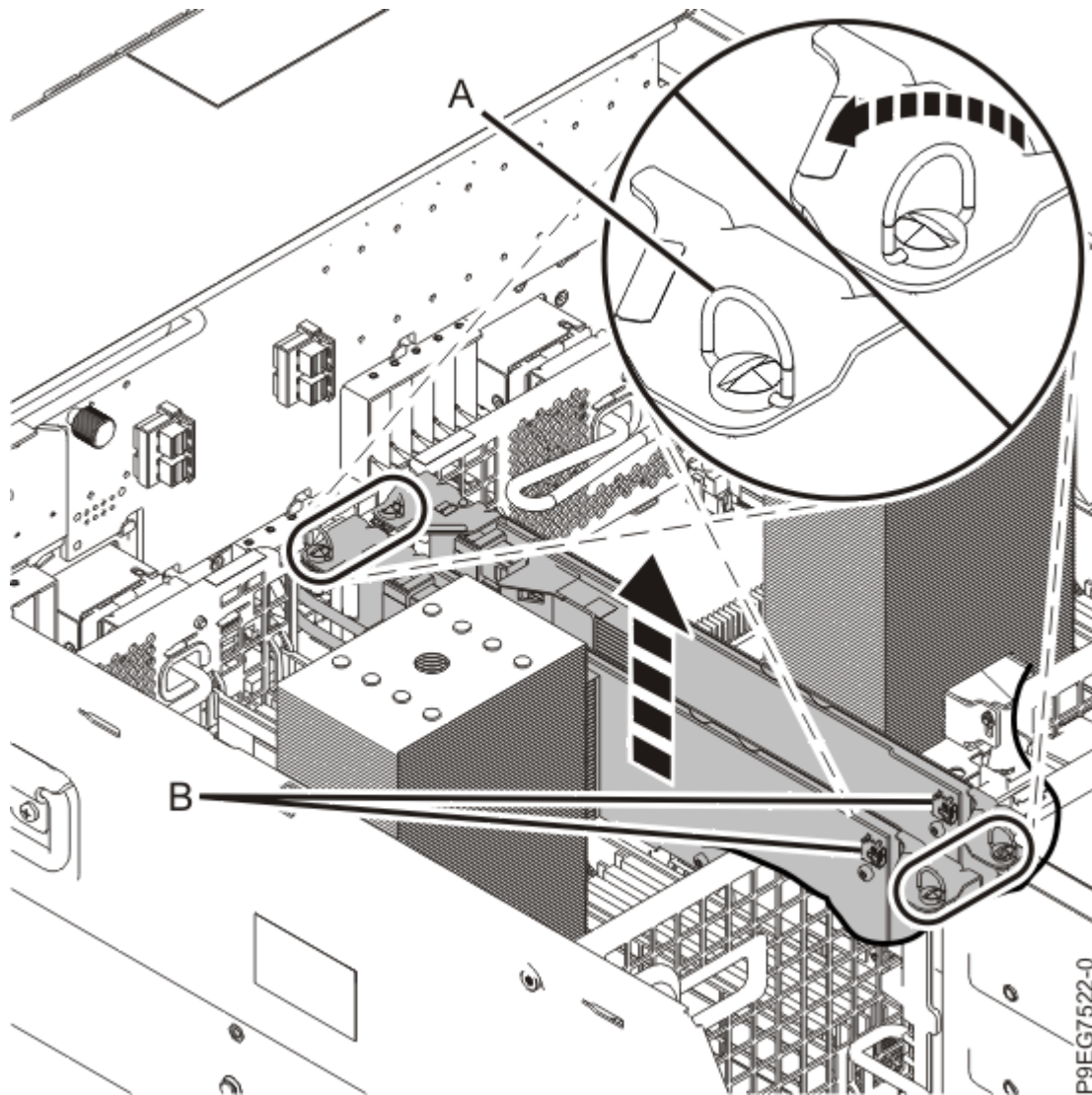
Figure 35. Removing the SAS RAID adapter

8. Press the connector latch and disconnect the front SAS cable to remove it from the SAS RAID adapter. This ends the removal procedure for the front SAS cable. Continue with the replacement procedure.

9. Place the SAS RAID adapter on an appropriate ESD surface.

Replacing a PCIe3 x8 SAS RAID or cache SAS RAID internal adapter in the 9009-41A, 9009-41G, 9009-42A, 9009-42G, 9223-42H, or 9223-42S system

To replace a PCIe3 x8 SAS RAID or cache SAS RAID internal adapter, 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. Plug the SAS cable into the front connector port of the new SAS RAID internal adapter. Push the connector in until the connector latch clicks. The end of the SAS cable that has the manufacturing label plugs into the disk drive backplane.

   • Use this information to plug SAS cables into the base function disk drive backplane:

     Notes:

If you have one storage controller in slot P1-C49 (base-storage feature) and a filler in slot P1-C50

One SAS cable connects the disk drive backplane connector J1 to the P1 connector on the storage controller. Another SAS cable connects the disk drive backplane connector J2 to the P2 connector on the same storage controller. See the following figure.

Figure 36. Reconnecting the SAS cable in a base-storage configuration

If you have two storage controllers (split-disk feature), in slots P1-C49 and P1-C50

One SAS cable connects the disk drive backplane connector J1 to the P1 connector on the storage controller in slot P1-C49. The other SAS cable connects the disk drive backplane connector J2 to the P2 connector on the storage controller in slot P1-C50. See the following figure.

Figure 37. Reconnecting the SAS cable in a split-disk configuration

- Use this information to plug SAS cables into the 12-drive expanded function disk drive backplane:

  Note: One SAS cable connects the disk drive backplane connector J2 to the P1 connector on the storage controller in slot P1-C49. The other SAS cable connects the disk drive backplane connector J4 to the P1 connector on the storage controller in slot P1-C50. See the following figure.
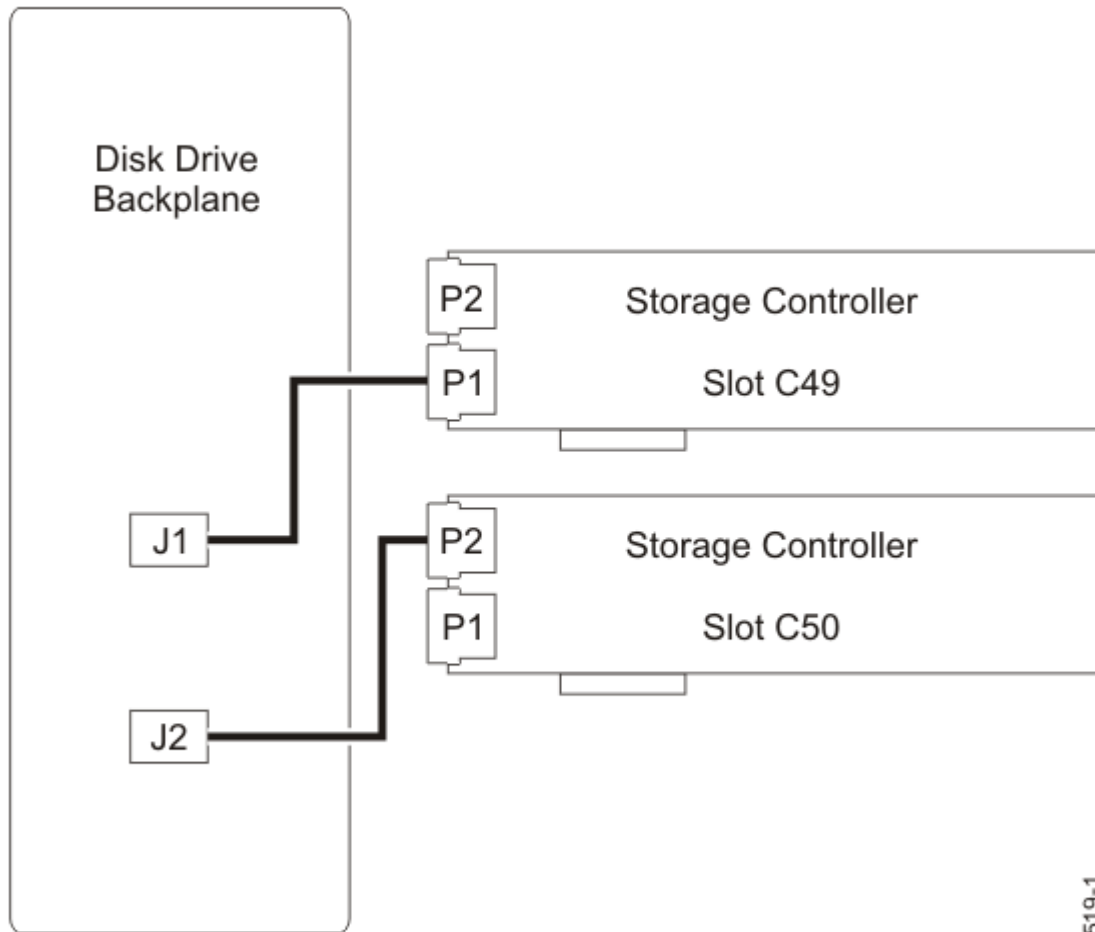
P9EG5541-0

Figure 38. Reconnecting the SAS cable in the 12-drive expanded function configuration

- Use this information to plug SAS cables into the 18-drive expanded function disk drive backplane:

  Note: One SAS cable connects the disk drive backplane connector J2 to the P1 connector on the storage controller in slot P1-C49. The other SAS cable connects the disk drive backplane connector J4 to the P1 connector on the storage controller in slot P1-C50. See the following figure.
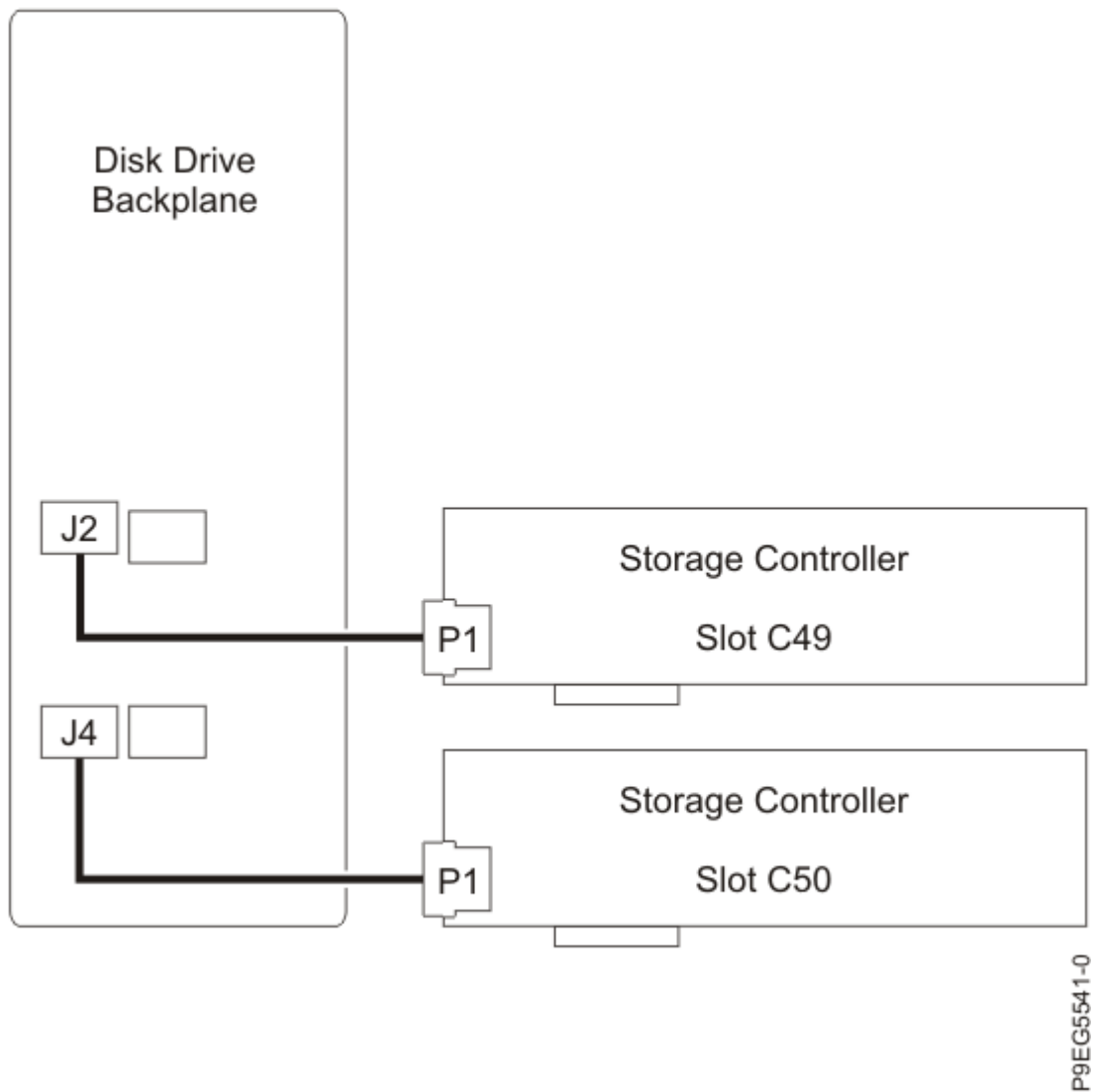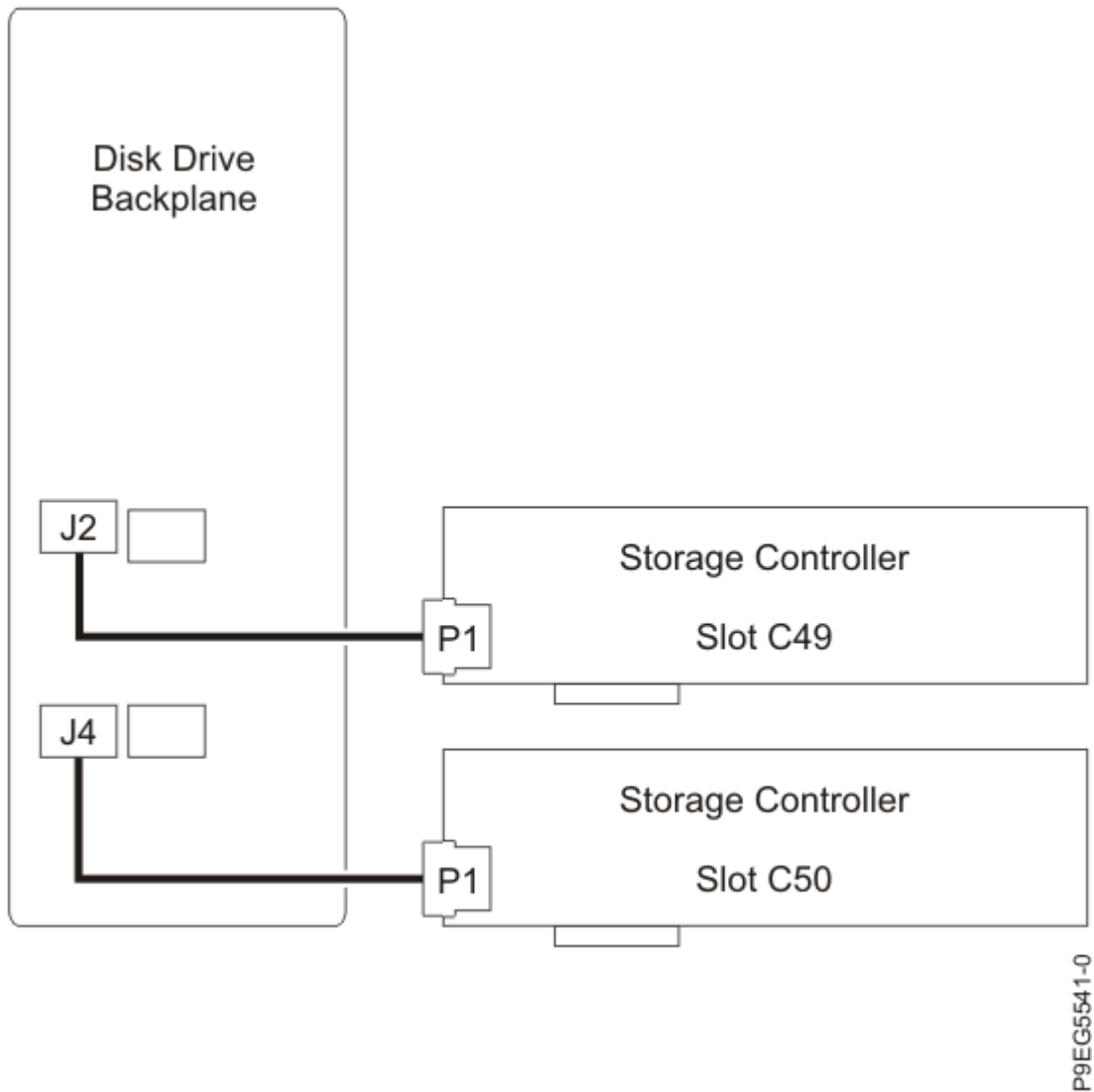
Figure 39. Reconnecting the SAS cable in the 18-drive expanded function configuration

- Use this information to plug a front SAS cable into the NVMe drive backplane:

Note: The SAS cable connects from SAS port **(J1)** on the NVMe U.2 drive backplane to port **(P1)** on the SAS RAID internal adapter. See the following figure.
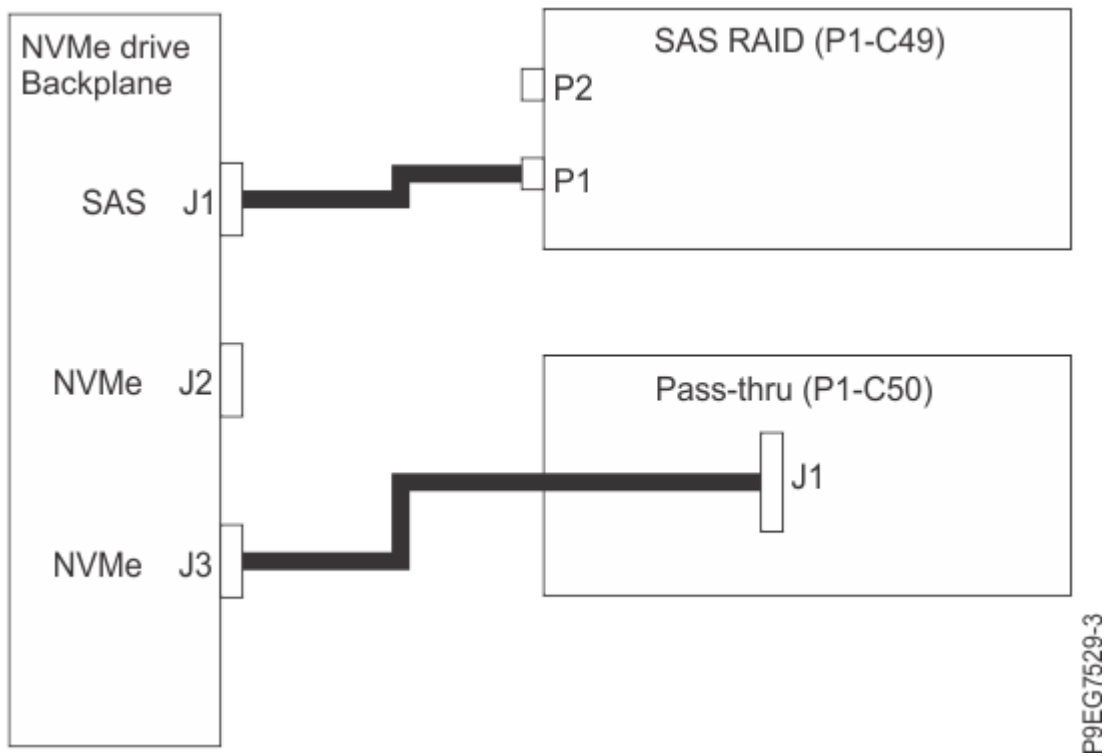
Figure 40. Connecting the SAS cable in the NVMe drive backplane configuration

3. Route the front SAS cables into position while you lower the SAS RAID adapter into its slot. Push the SAS RAID adapter down to seat the adapter. Push in and twist the screws **(A)** clockwise to fully seat the SAS RAID adapter.
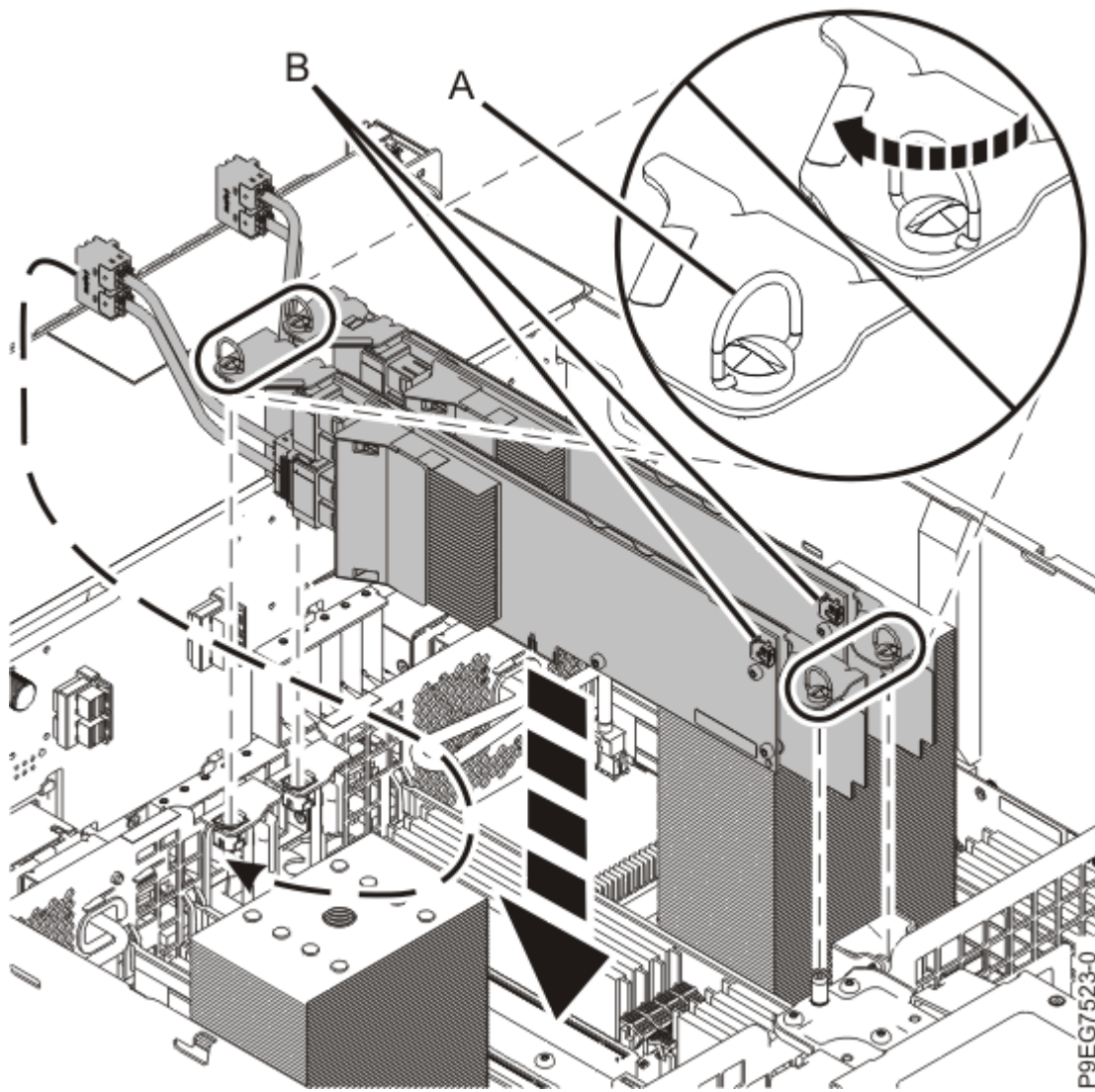
Figure 41. Seating the SAS RAID adapter

4. Reconnect the rear SAS cable **(A)** to the SAS RAID adapter rear connector, if the rear SAS cable is present.
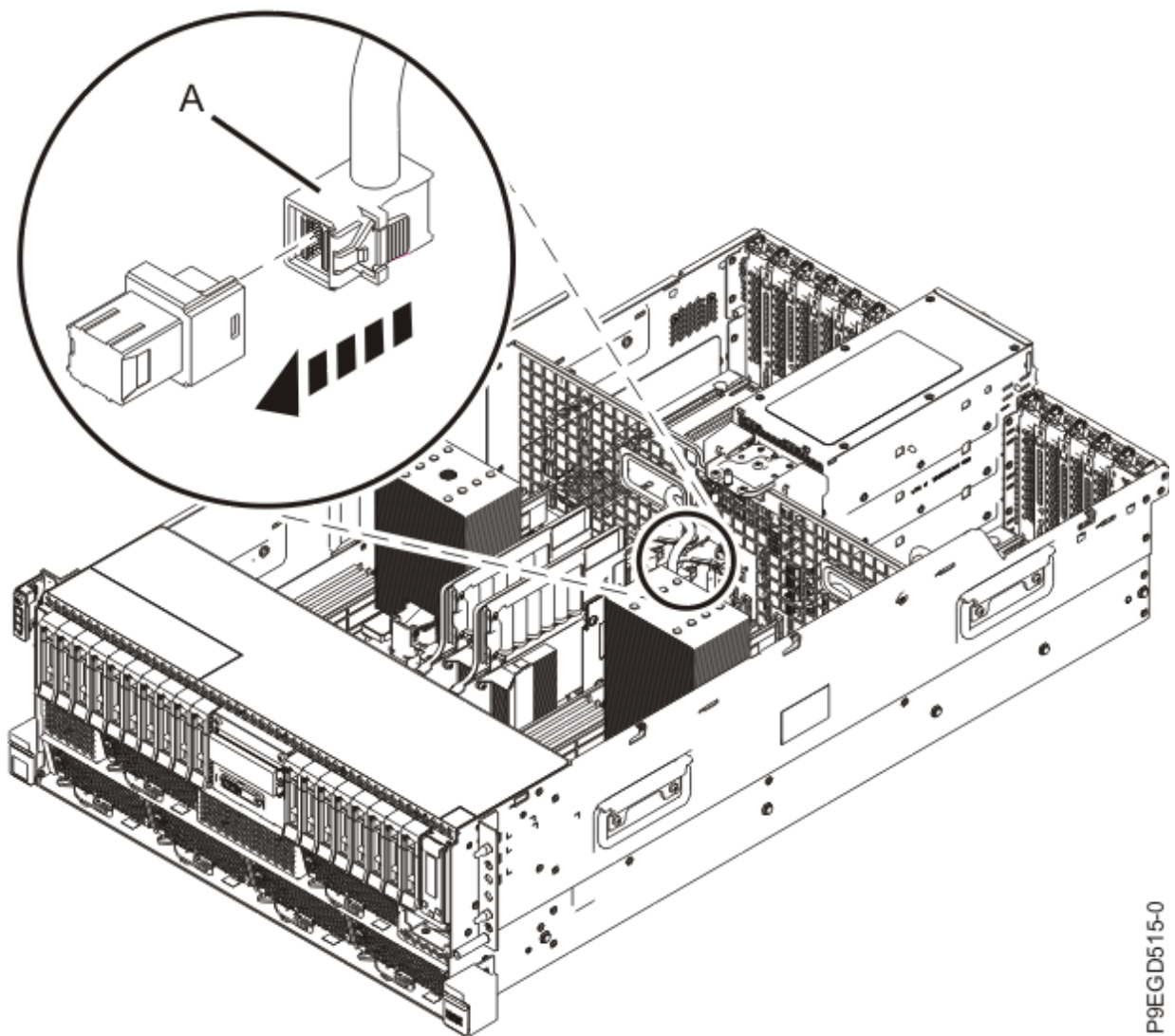
Figure 42. Reconnecting the rear SAS cables

5. Using your labels, reconnect the front SAS cables to the connector port on the disk drive backplane. Push the connector in until the connector latch clicks.

   To reconnect the front SAS cables, see <u>Figure 43 on page 49</u> or <u>Figure 44 on page 50</u> as appropriate.
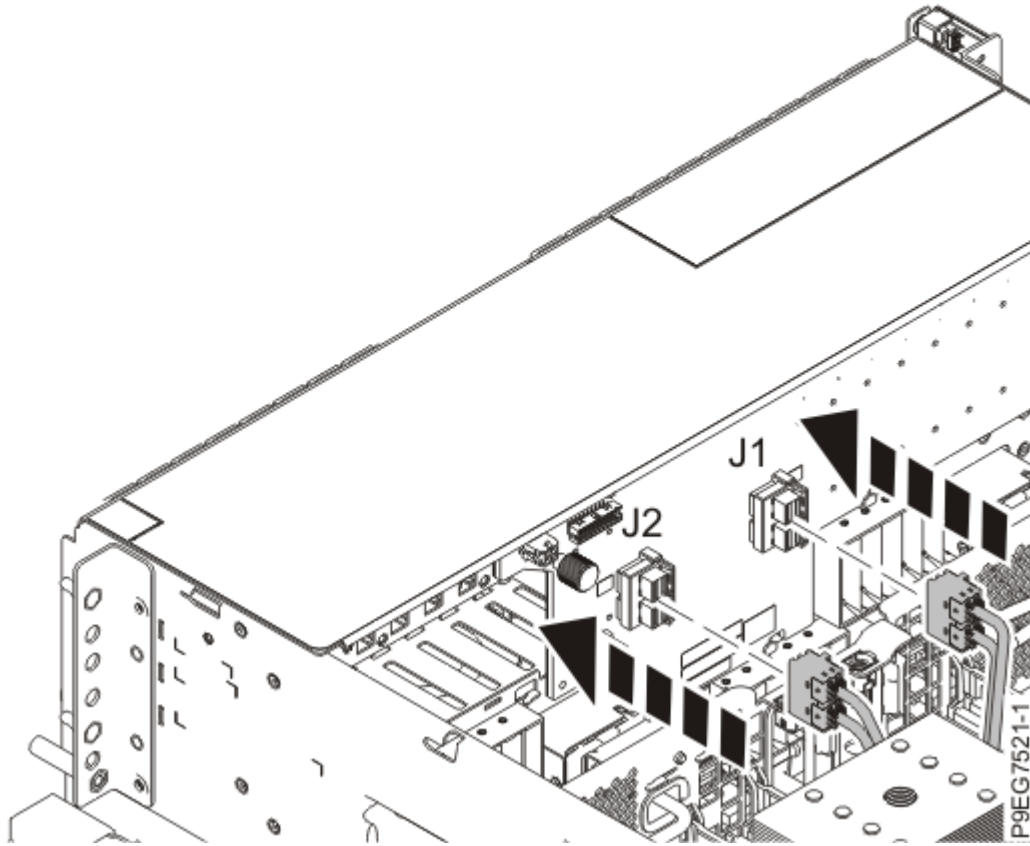
Figure 43. Reconnecting the front SAS cables for the base function disk drive backplane
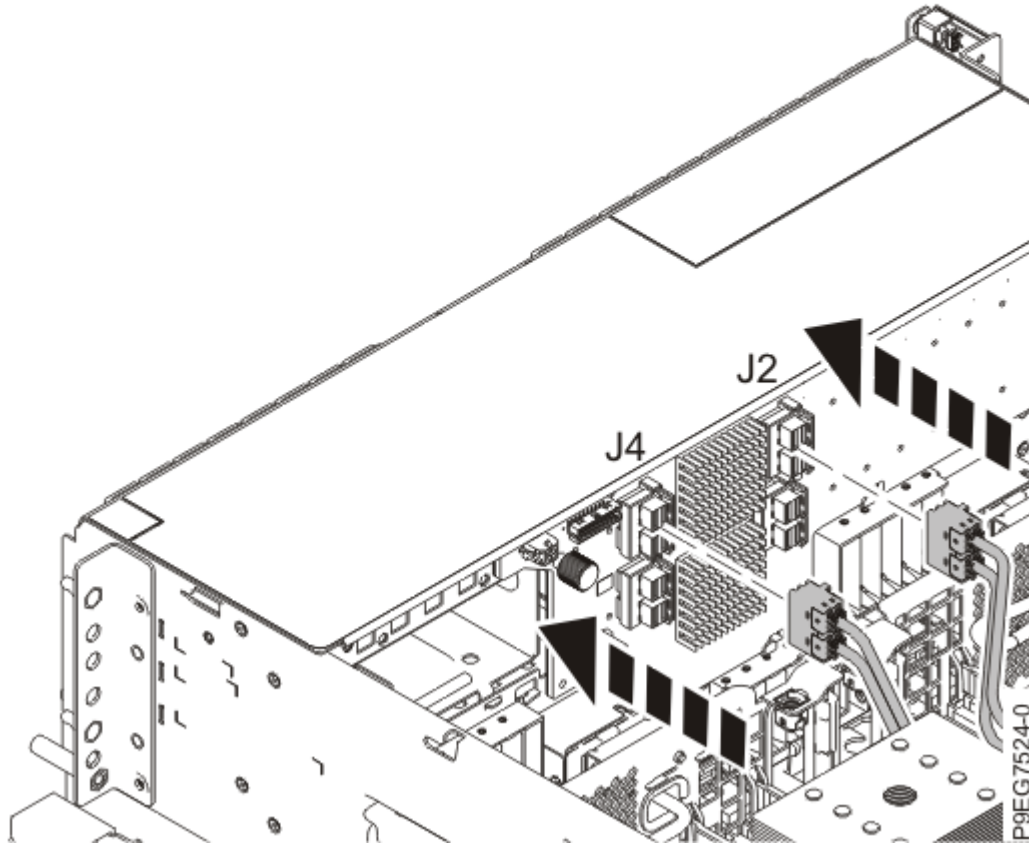
Figure 44. Reconnecting the front SAS cables for the 12-drive expanded function or 18-drive expanded function disk drive backplane

6. For a rack-mounted system, replace the air baffle **(A)** straight down into the chassis as shown in Figure 45 on page 51.

   For a stand-alone system, replace the air baffle **(A)** straight into the side of the chassis as shown in Figure 46 on page 52.

   Ensure that the front flap tucks under the front chassis.

A
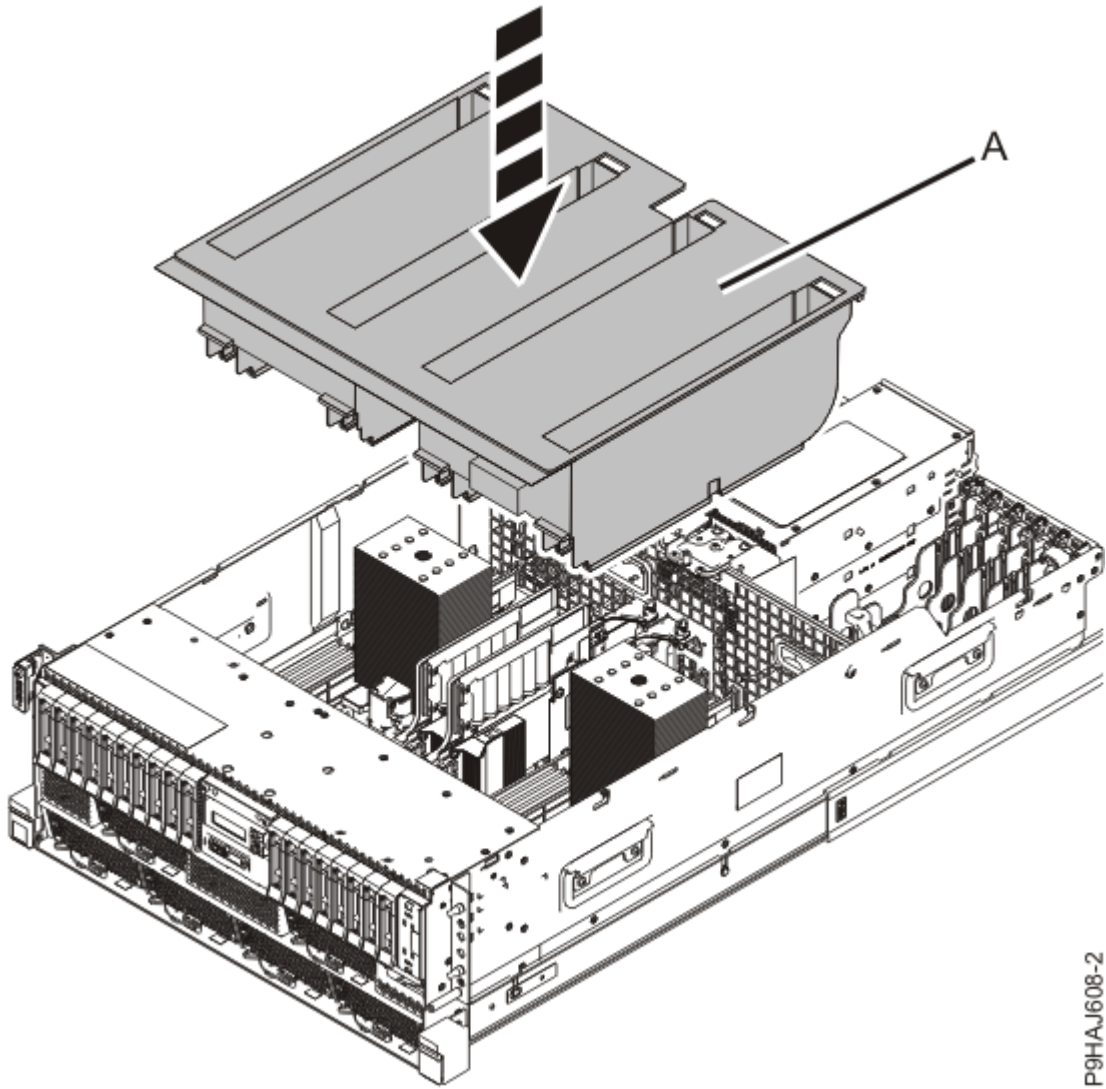
Figure 45. Replacing the air baffle in a rack-mounted system
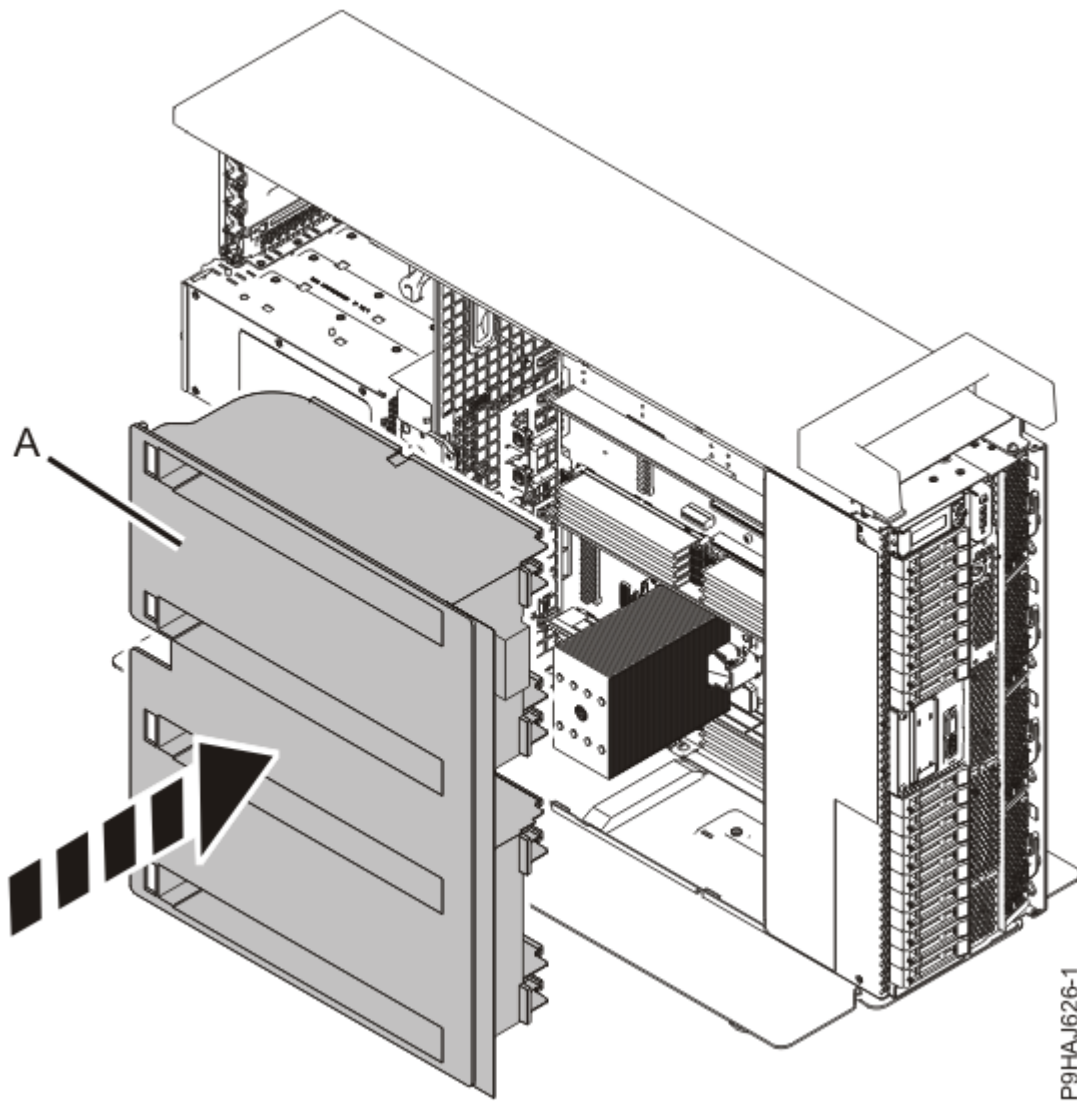
Figure 46. Replacing the air baffle in a stand-alone system

Preparing the 9009-41A, 9009-41G, 9009-42A, 9009-42G, 9223-42H, or 9223-42S system for operation after removing and replacing a PCIe3 x8 SAS RAID or cache SAS RAID internal adapter

To prepare the system for operation after removing and replacing a PCIe3 x8 SAS RAID or cache SAS RAID internal adapter, 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 a rack-mounted system, complete the following steps. Refer to .

   a. Slide the cover **(A)** onto the system unit.
   b. Close the release latch **(B)** by pushing it in the direction shown.

Figure 47. Installing the service access cover

For a stand-alone system, complete the following steps. Refer to .

a. Slide the cover **(B)** on to the system unit as shown.

b. Close the latch release **(A)** by pushing it in the direction shown.
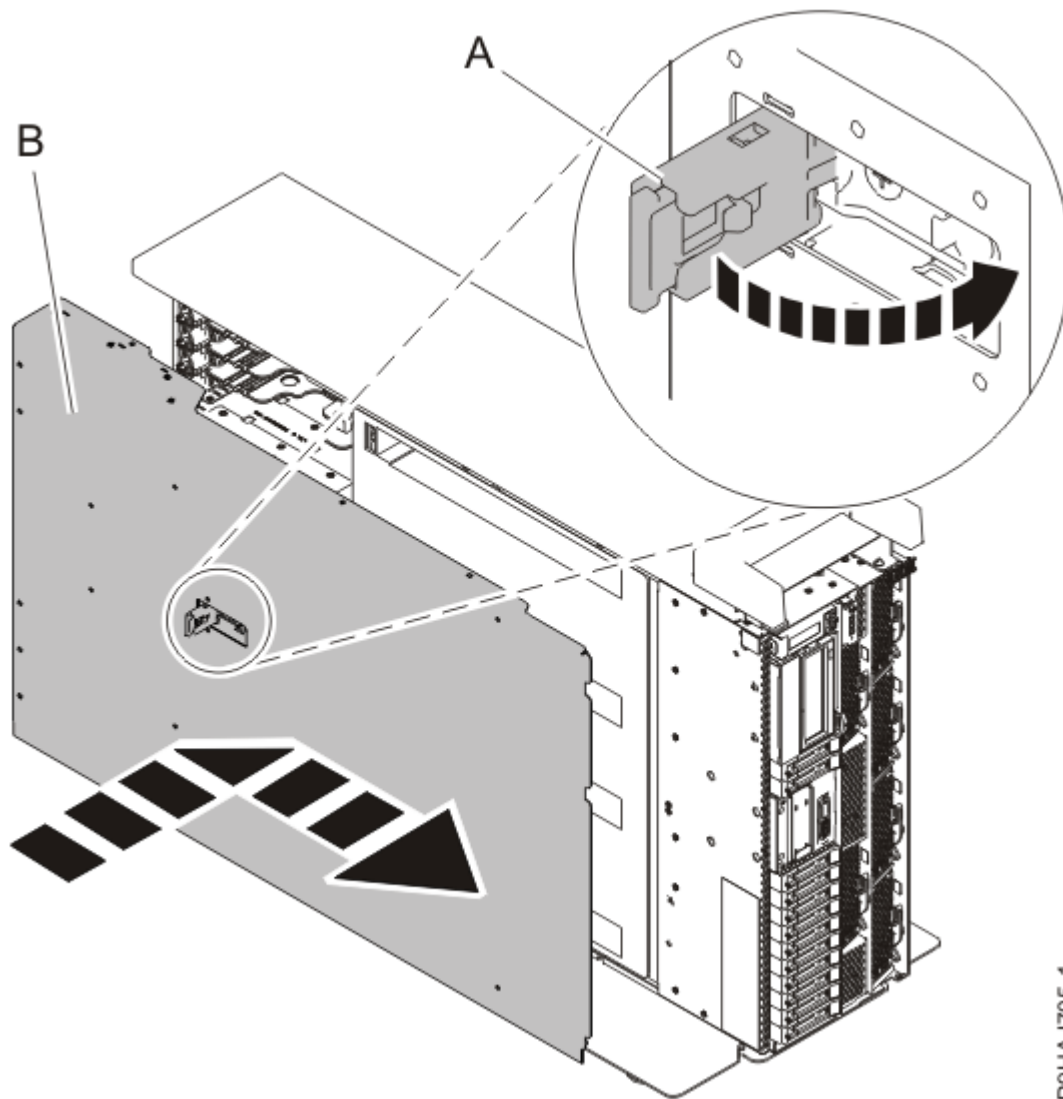
Figure 48. Installing the service access cover

3. For a rack-mounted system, unlock the blue rail safety latches **(A)** as shown in by pushing them inward.

   Ensure that the cable management arms can move freely. Ensure that the cables at the rear of the unit do not catch or bind as you push the unit into the operating position.
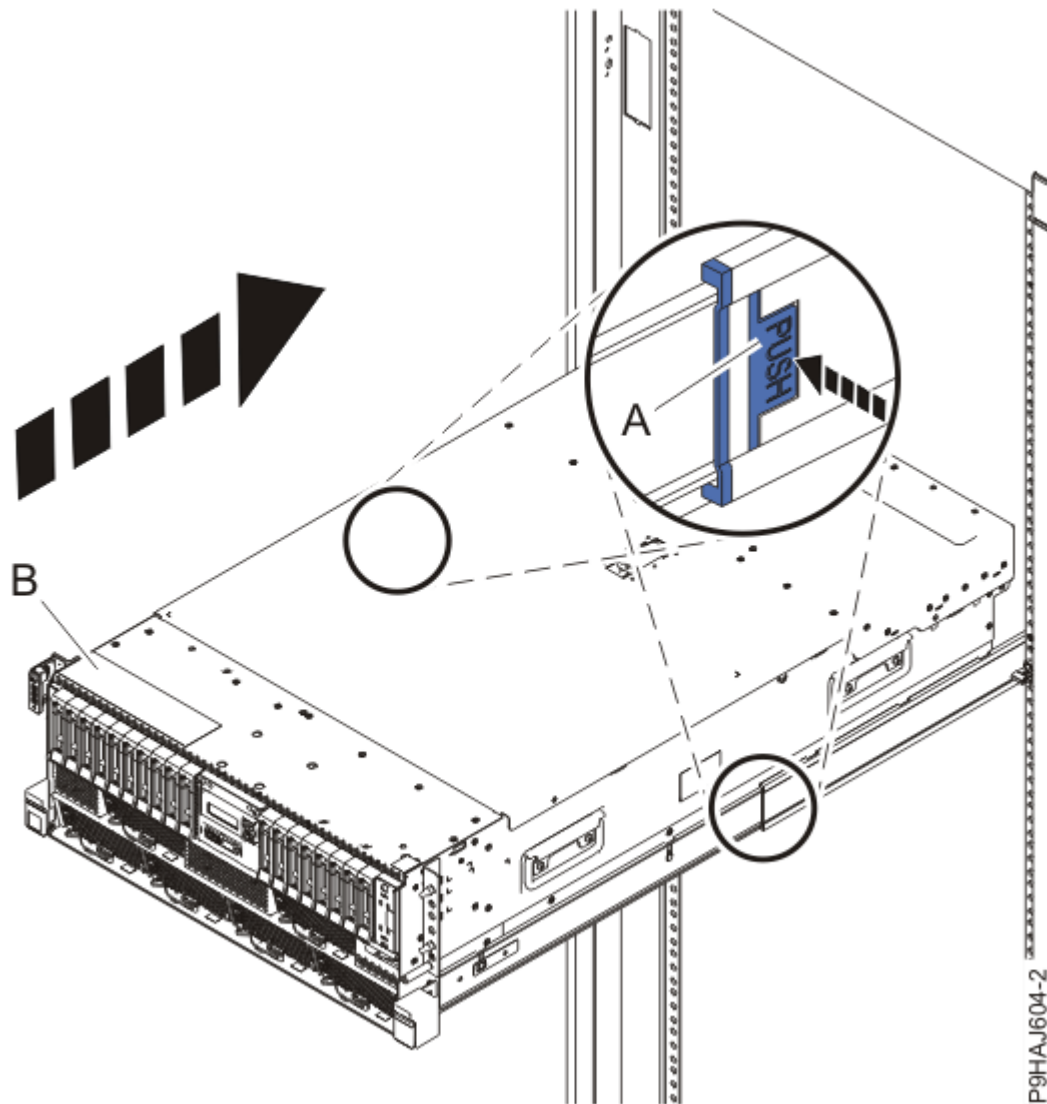
Figure 49. Placing the system into the operating position

4. For a rack-mounted system, push the system unit **(B)** as shown in the previous figure back into the rack until both release latches lock the system into position.

   Secure the cable management arm with hook-and-loop fasteners around the back side of the cable management arm, but not around the cables.

5. Using your labels, reconnect the power cords **(A)** to the system unit.

   Fasten the power cords **(A)** to the system using the hook-and-loop fasteners **(B)** as shown in .
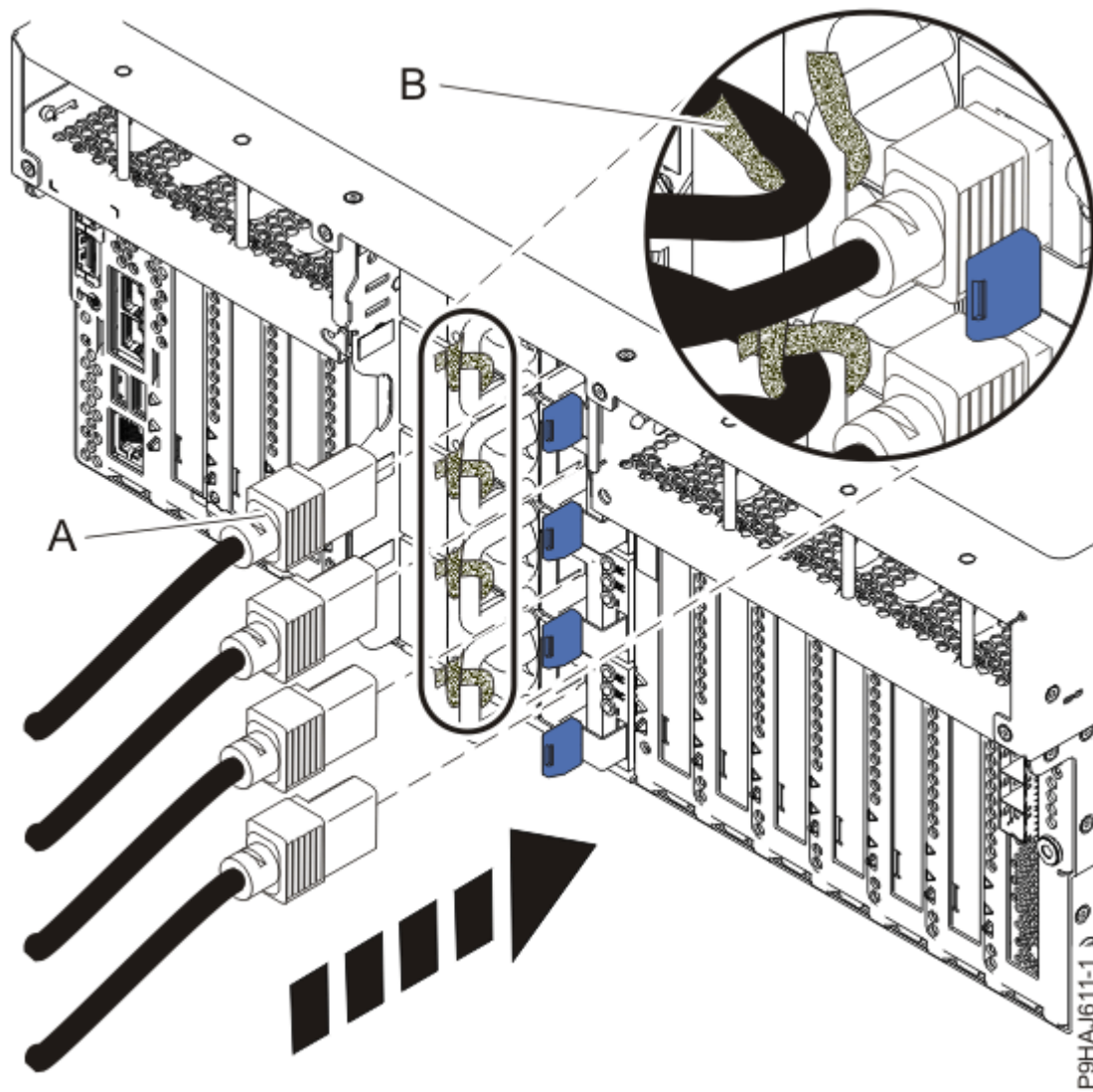
Figure 50. Connecting the power cords to a rack-mounted system
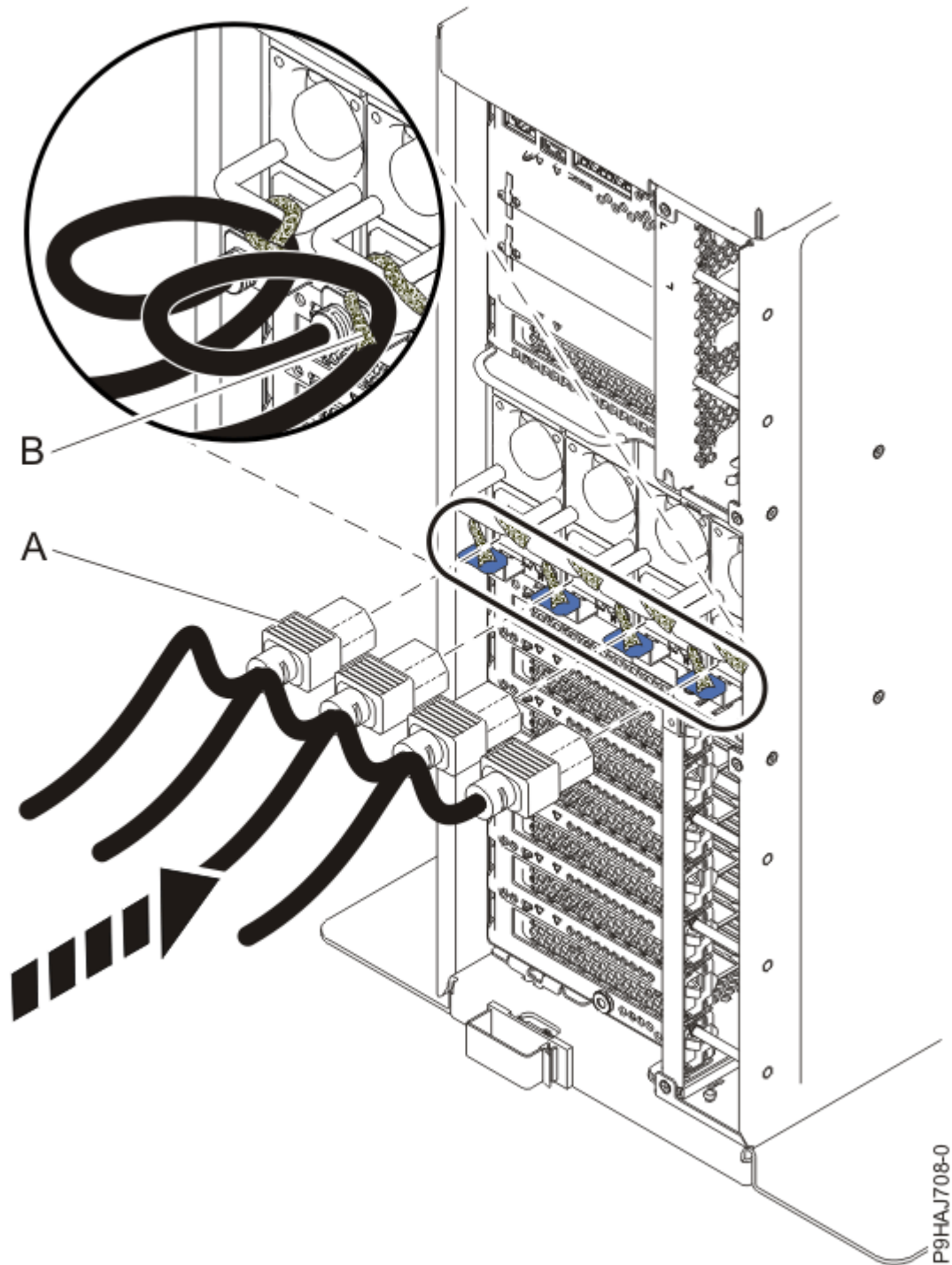
Figure 51. Connecting the power cords to a stand-alone system

6. Start the system. For instructions, see Starting a system (www.ibm.com/support/knowledgecenter/ POWER9/p9haj/crustartsys.htm).

7. Turn off the identify LED. For instructions, see Deactivating an identify LED (www.ibm.com/support/ knowledgecenter/POWER9/p9haj/p9haj_turn_off_identify_led.htm).

8. Verify the installed part.

   - If you replaced the part because of a service action, verify the installed part. For instructions, see Verifying a repair (www.ibm.com/support/knowledgecenter/POWER9/p9ect/pxect_verifyrepair.htm).
   - If you installed the part for any other reason, verify the installed part. For instructions, see Verifying the installed part (www.ibm.com/support/knowledgecenter/POWER9/p9haj/pxhaj_hsmverify.htm).

Permanently removing a PCIe3 x8 SAS RAID or cache SAS RAID internal adapter from the 9009-41A, 9009-41G, 9009-42A, 9009-42G, 9223-42H, or 9223-42S system

Find information about permanently removing a PCIe3 x8 SAS RAID or cache SAS RAID internal adapter from the IBM Power System S914 (9009-41A and 9009-41G), IBM Power System S924 (9009-42A and 9009-42G), IBM Power System H924 (9223-42H), or IBM Power System H924S (9223-42S) server.

About this task

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

If your system is managed by the Hardware Management Console (HMC), use the HMC to repair a part in the system. For instructions, see Repairing a part by using the HMC (www.ibm.com/support/knowledgecenter/POWER9/p9haj/p9haj_hmc_repair.htm).

If you do not have an HMC, complete the steps in the following procedures to permanently remove a PCIe3 x8 SAS RAID or cache SAS RAID internal adapter.

Preparing the 9009-41A, 9009-41G, 9009-42A, 9009-42G, 9223-42H, or 9223-42S system to permanently remove a PCIe3 x8 SAS RAID or cache SAS RAID internal adapter

To prepare the system to permanently remove a PCIe3 x8 SAS RAID or cache SAS RAID internal adapter, complete the steps in this procedure.

Procedure

1. Identify the part and the system that you are working on. For instructions, see Identifying a part (www.ibm.com/support/knowledgecenter/POWER9/p9haj/sal.htm).

   Use the blue identify LED on the enclosure to locate the system. Ensure that the serial number of the system matches the serial number to be serviced.

2. Stop the system. For instructions, see Stopping a system (www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustopsys.htm).

3. Label and disconnect the power cords from the system unit.

   See Figure 52 on page 59 or Figure 53 on page 60.

   Notes:

   - This system might be equipped with two or more power supplies. If the removing and replacing procedures require the system power to be turned off, ensure that all the power sources to the system are disconnected.

   - The power cord **(B)** is fastened to the system with hook-and-loop fastener **(A)**. If you are placing the system in a service position after you disconnect the power cords, ensure that you unstrap the fastener.
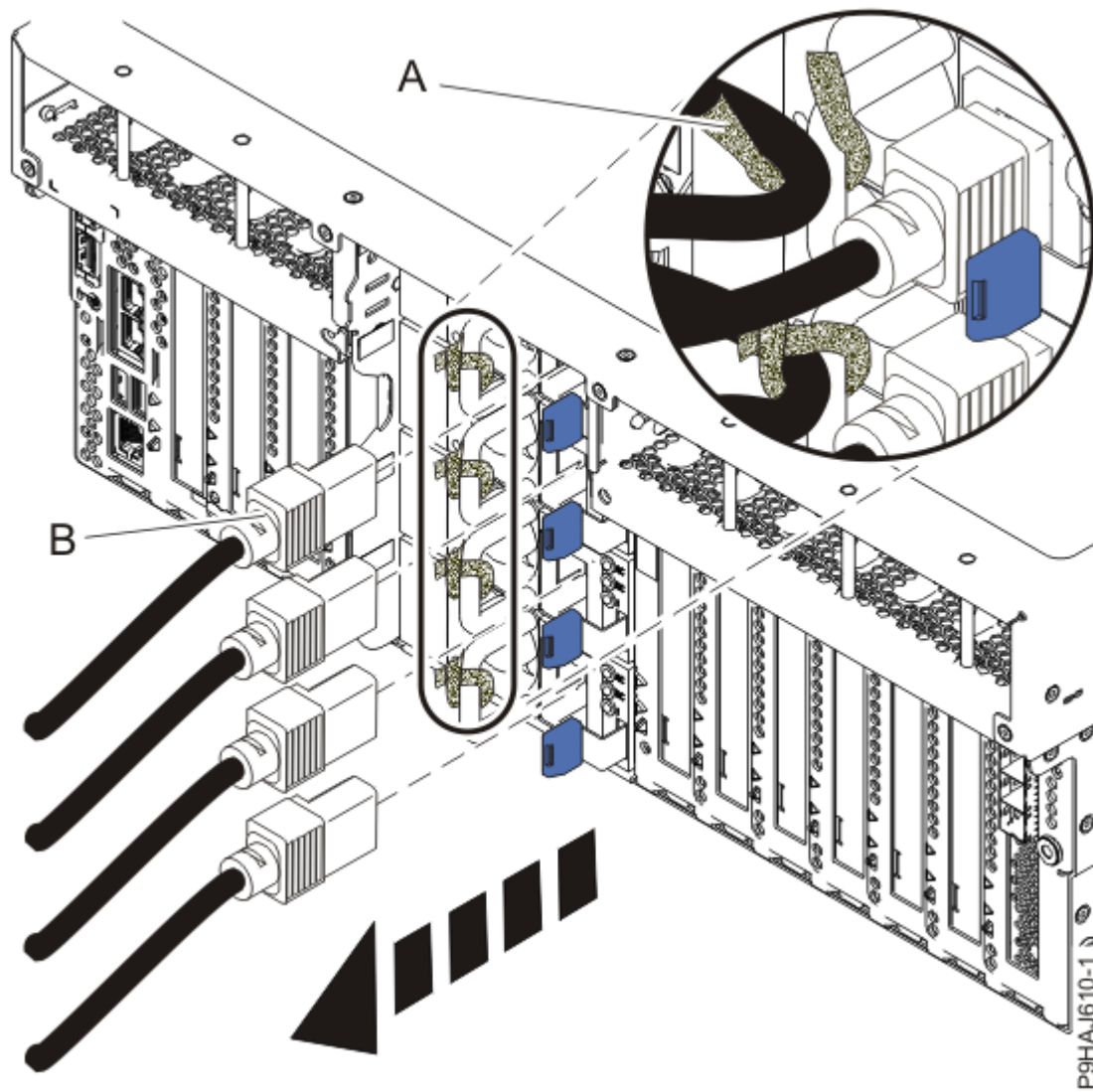
Figure 52. Removing the power cords from a rack-mounted server

Figure 53. Removing the power cords from a stand-alone server

(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)

4. For a rack-mounted system, open the side latches **(A)** and pull the latches to slide the system unit fully into the service position until the slides click and hold the system unit securely. Ensure that the screws inside the latches are not secured to the rack.

See the following figure.

Remove the hook-and-loop fasteners that secure the cable management arms. Ensure that the cable management arms can move freely. Ensure that the cables at the rear of the system do not catch or bind as you pull the system unit into the service position.

Do not pull out or install any drawer or feature if the rack stabilizer brackets are not attached to the rack. Do not pull out more than one drawer at a time. The rack might become unstable if you pull out more than one drawer at a time.

Figure 54. Releasing the side latches

5. 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.

6. Remove the service access cover.

   For a rack-mounted system, complete the following steps. Refer to .

⚠️ **Attention:** Operating the system without the service access cover on for more than 10 minutes when the system power is turned on might damage the system components.

a. Release the service cover latch by pushing the release latch **(A)** in the direction shown.

b. Slide the cover **(B)** off 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.

Figure 55. Removing the service access cover from a rack-mounted system

For a stand-alone system, complete the following steps. Refer to .

⚠️ **Attention:** Operating the system without the service access cover on for more than 10 minutes when the system power is turned on might damage the system components.

a. Release the latch by pushing the release latch **(A)** in the direction shown.

b. Slide the cover **(B)** off the system unit. When the front of the service access cover has cleared the upper frame ledge, lift the cover up and off the system unit.
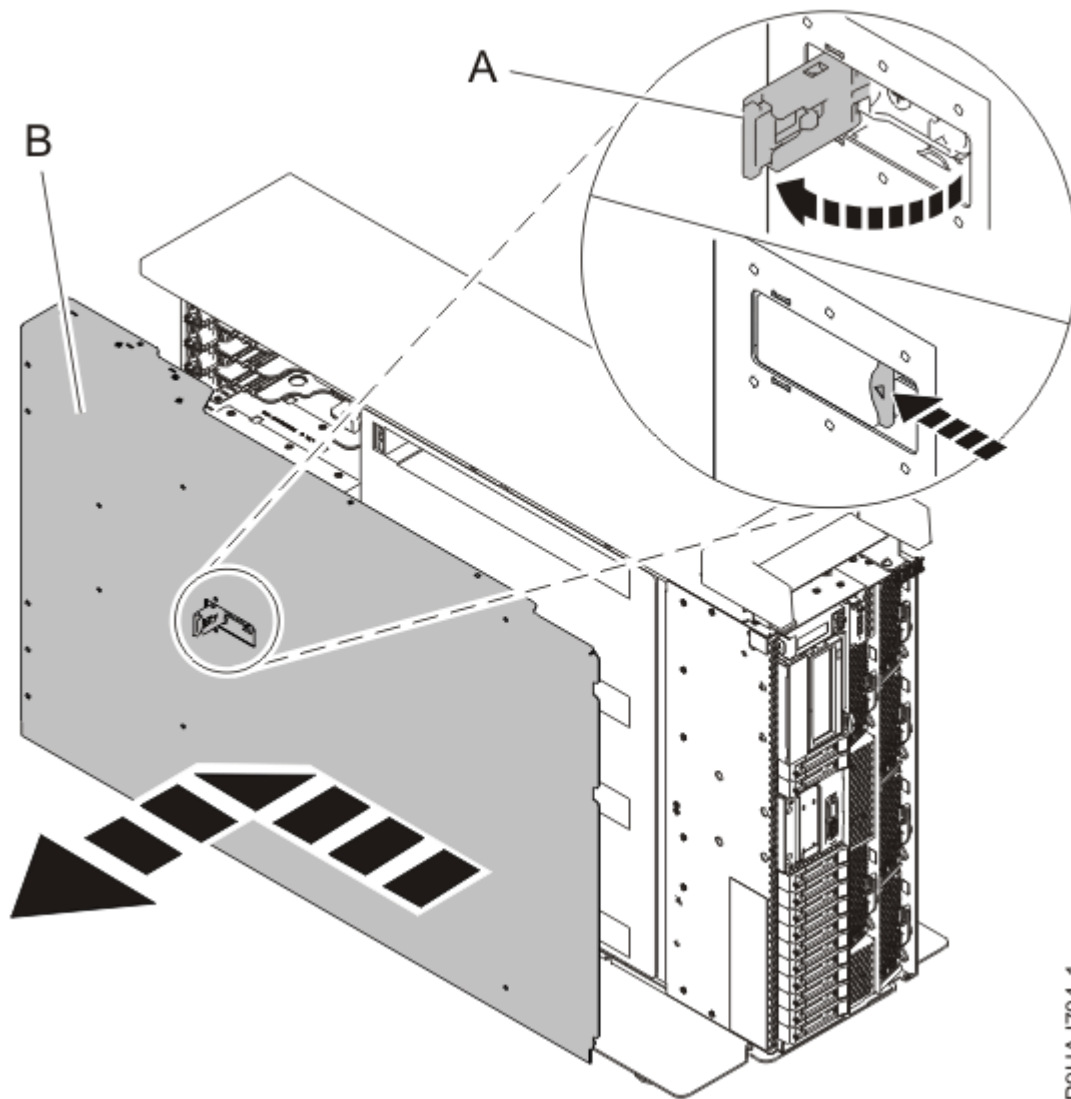
Figure 56. Removing the service access cover

Permanently removing a PCIe3 x8 SAS RAID or cache SAS RAID internal adapter from the 9009-41A, 9009-41G, 9009-42A, 9009-42G, 9223-42H, or 9223-42S system

To permanently remove a PCIe3 x8 SAS RAID or cache SAS RAID internal adapter from the 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. For a rack-mounted system, lift the air baffle **(A)** straight up as shown in .

   For a stand-alone system, remove the air baffle **(A)** straight out as shown in .

   Place the air baffle upside down on a clean area.

A

P9HAJ607-2

Figure 57. Removing the air baffle from a rack-mounted system
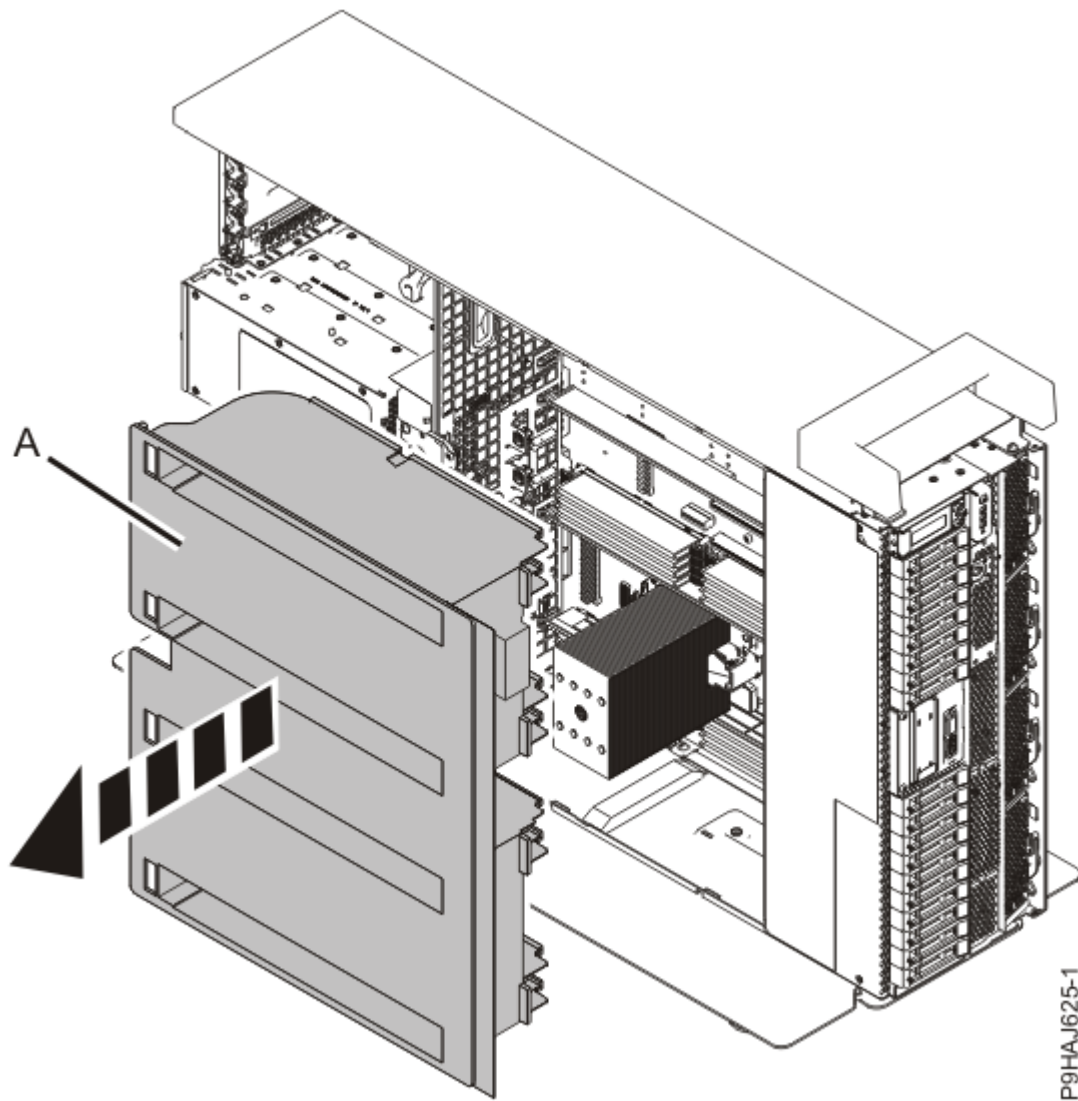
Figure 58. Removing the air baffle from a stand-alone system

3. Label the front SAS cables, paying attention to the connectors to which each cable is attached on the drive backplane and the SAS RAID internal adapter.

4. Identify to which SAS RAID adapter the front SAS cable is connected. Depending on which SAS RAID adapter is installed in your system, one or two front SAS cables are connected to the SAS RAID adapter. A rear SAS cable might also be connected to the SAS RAID adapter.

5. Press the latch on connector **(A)** and unplug the front SAS cables from the disk drive backplane. Leave the other end of these cables plugged in to the SAS RAID adapter until directed to unplug them.
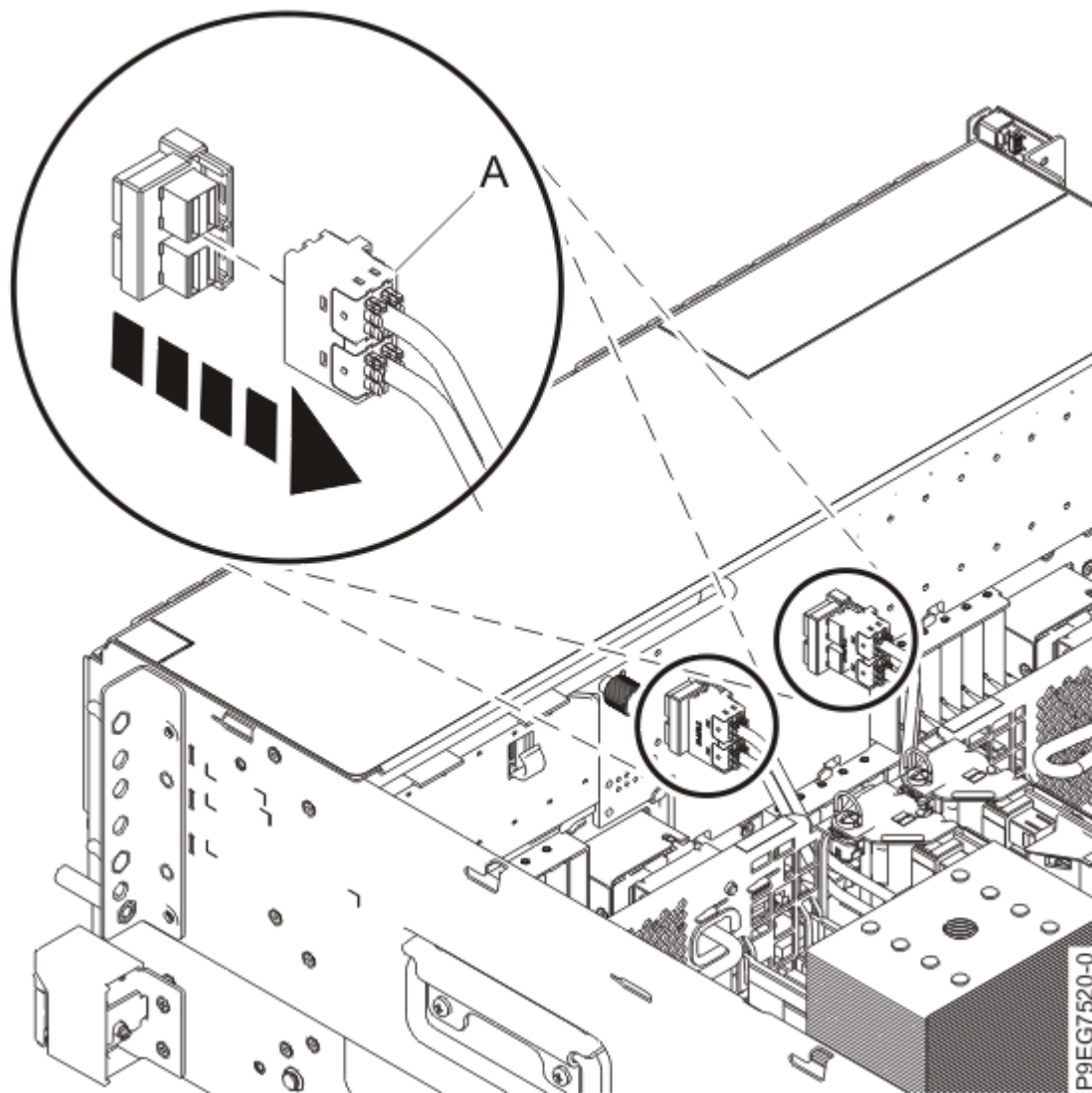
Figure 59. Unplugging the front SAS cables

6. If a rear SAS cable is attached to the SAS RAID adapter, disconnect it from the SAS RAID adapter by pressing the connector latch **(A)** and unplugging the cable.
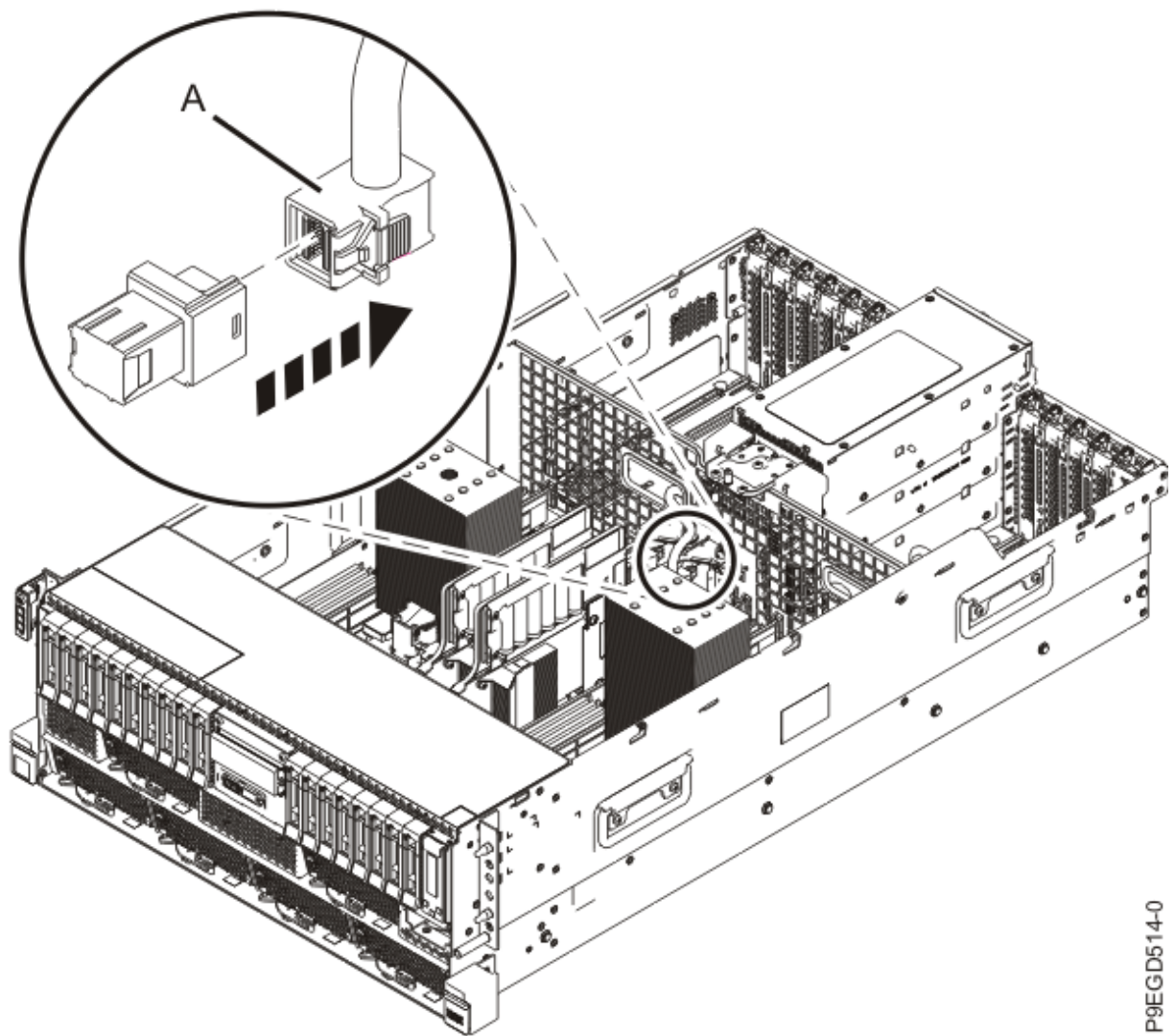
Figure 60. Disconnecting the rear SAS cables from the SAS RAID internal adapter in slot location P1-C49 and P-C50

7. Leave the front SAS cable connected to this SAS RAID adapter. Twist the screws **(A)** counterclockwise to release the SAS RAID adapter. Lift both the SAS RAID adapter and the front SAS cable out of the slot. Ensure that the front SAS cable does not catch on any components while you are lifting the SAS RAID adapter out of the slot.
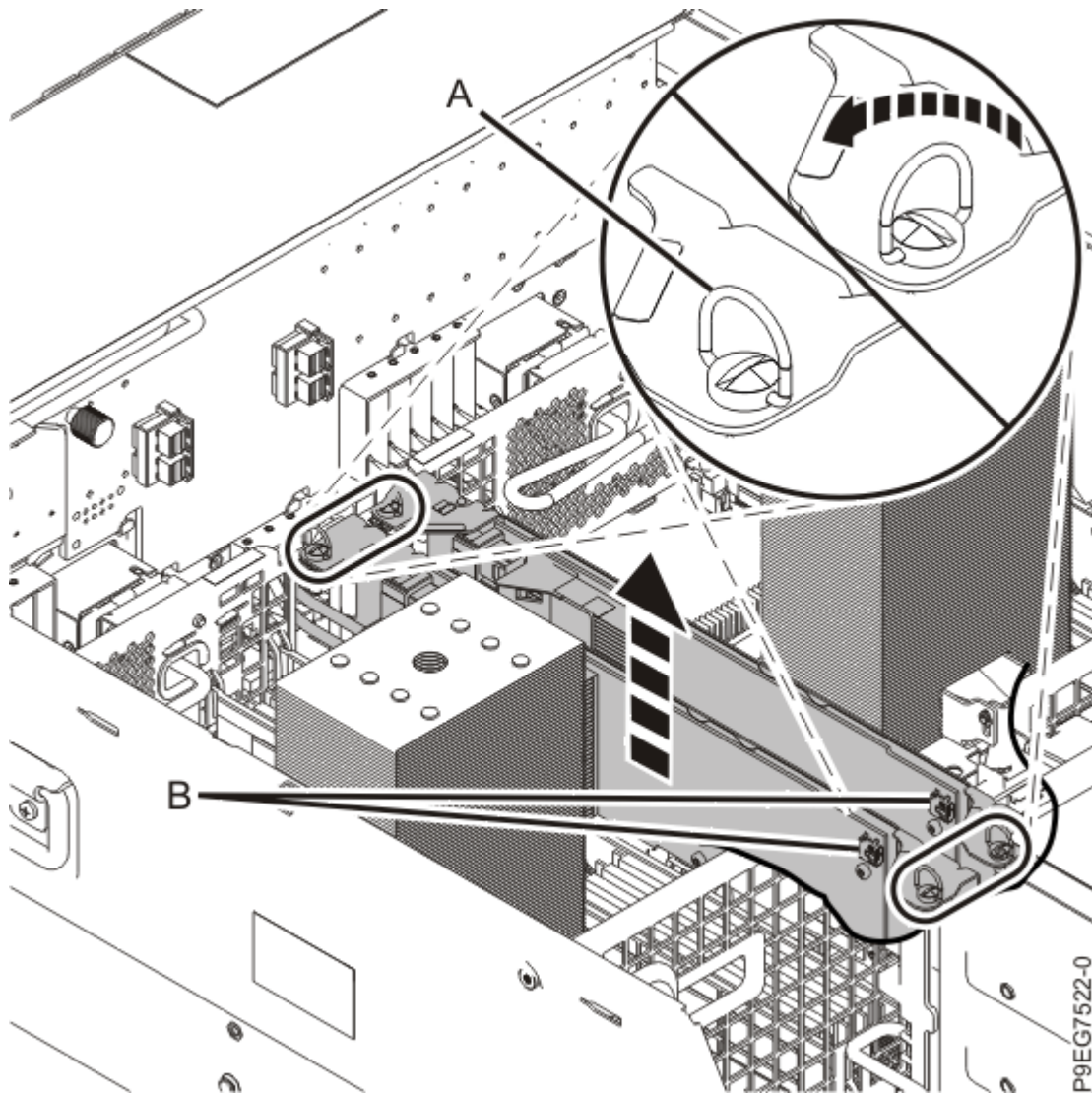
Figure 61. Removing the SAS RAID adapter

8. Press the connector latch and disconnect the front SAS cable to remove it from the SAS RAID adapter. This ends the removal procedure for the front SAS cable. Continue with the replacement procedure.

9. Place the SAS RAID adapter on an appropriate ESD surface.

10. To ensure proper air flow, you must install a clip-in filler and air divider.

    a) Align the clip-in filler over the empty SAS slot.

    b) Rotate the top of the clip-in filler until the bottom hook clips onto the air screen.
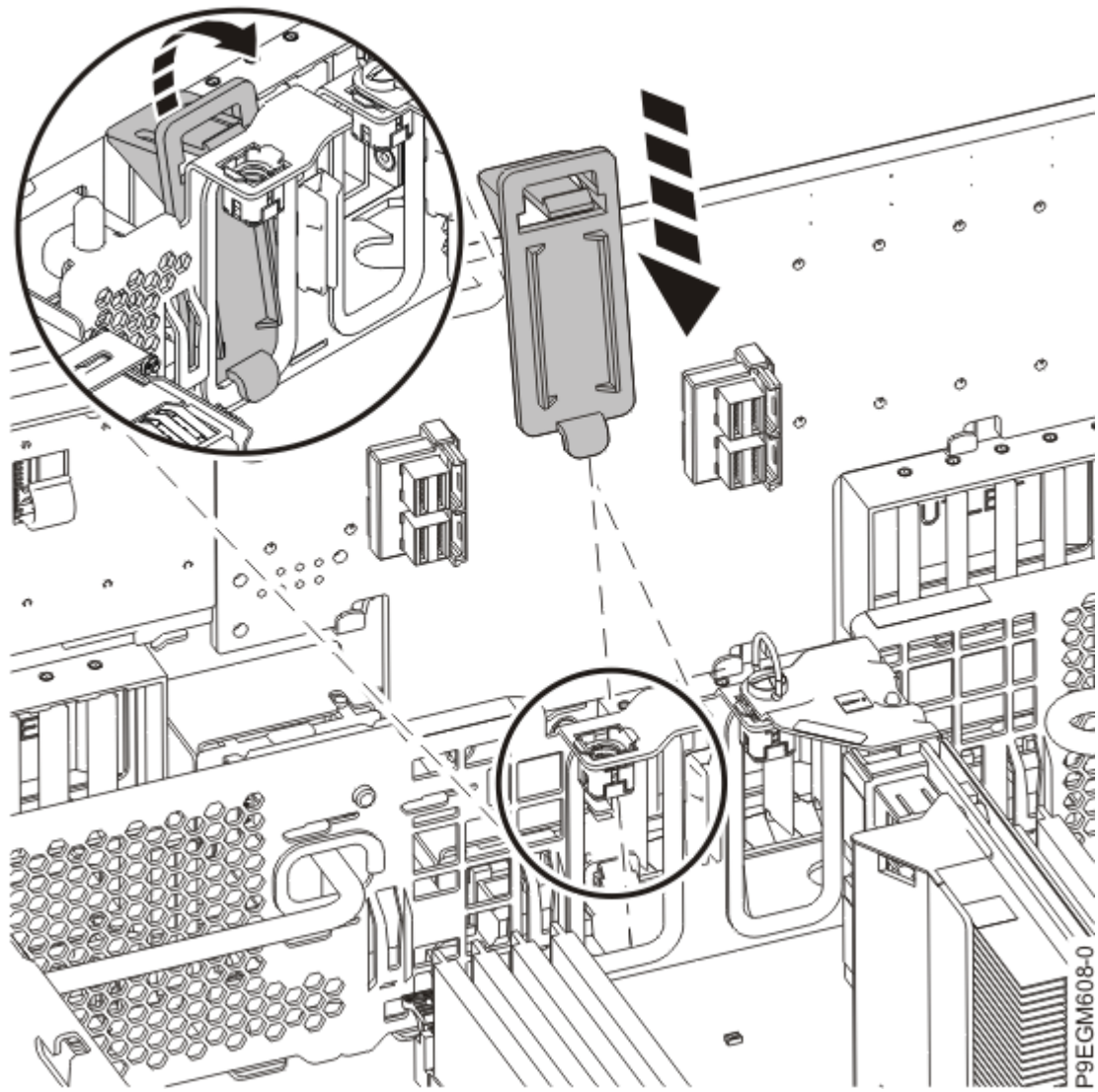
Figure 62. Installing the clip-in filler

c) Lower the air divider into place as shown in the following figure.
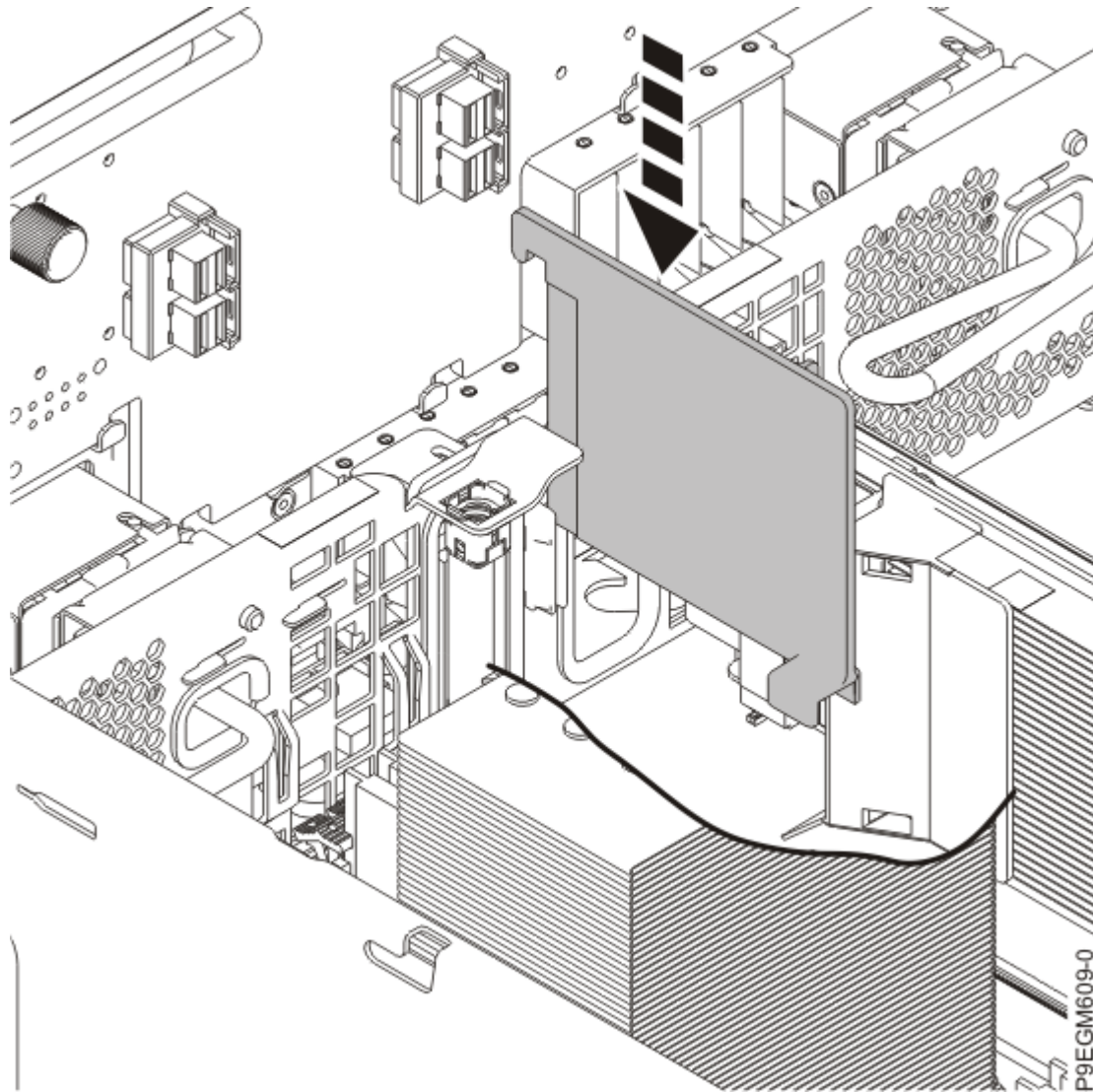
Figure 63. Installing the air divider

11. For a rack-mounted system, replace the air baffle **(A)** straight down into the chassis as shown in Figure 64 on page 73.

    For a stand-alone system, replace the air baffle **(A)** straight into the side of the chassis as shown in Figure 65 on page 74.

    Ensure that the front flap tucks under the front chassis.

A
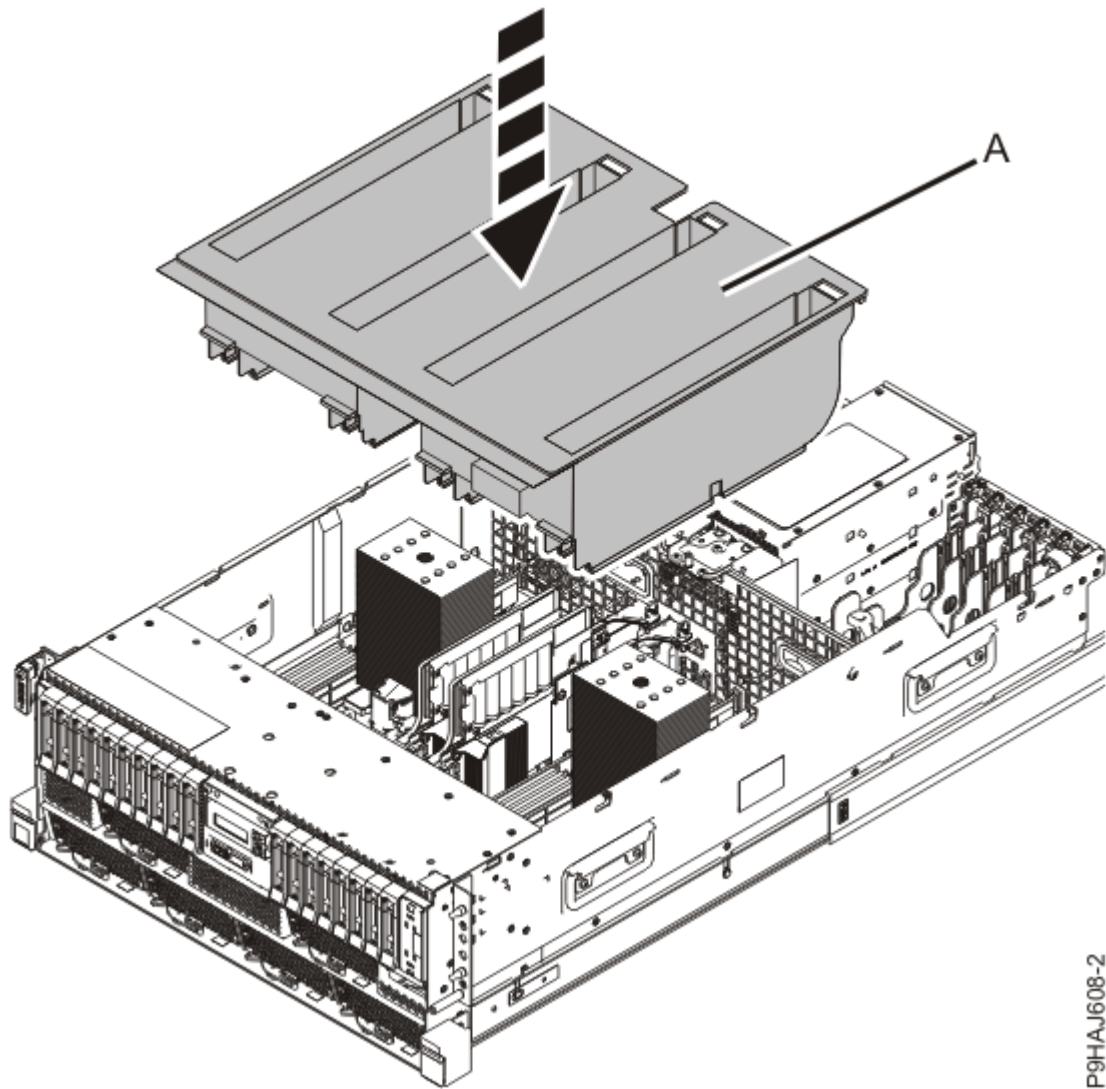
P9HAJ608-2

Figure 64. Replacing the air baffle in a rack-mounted system
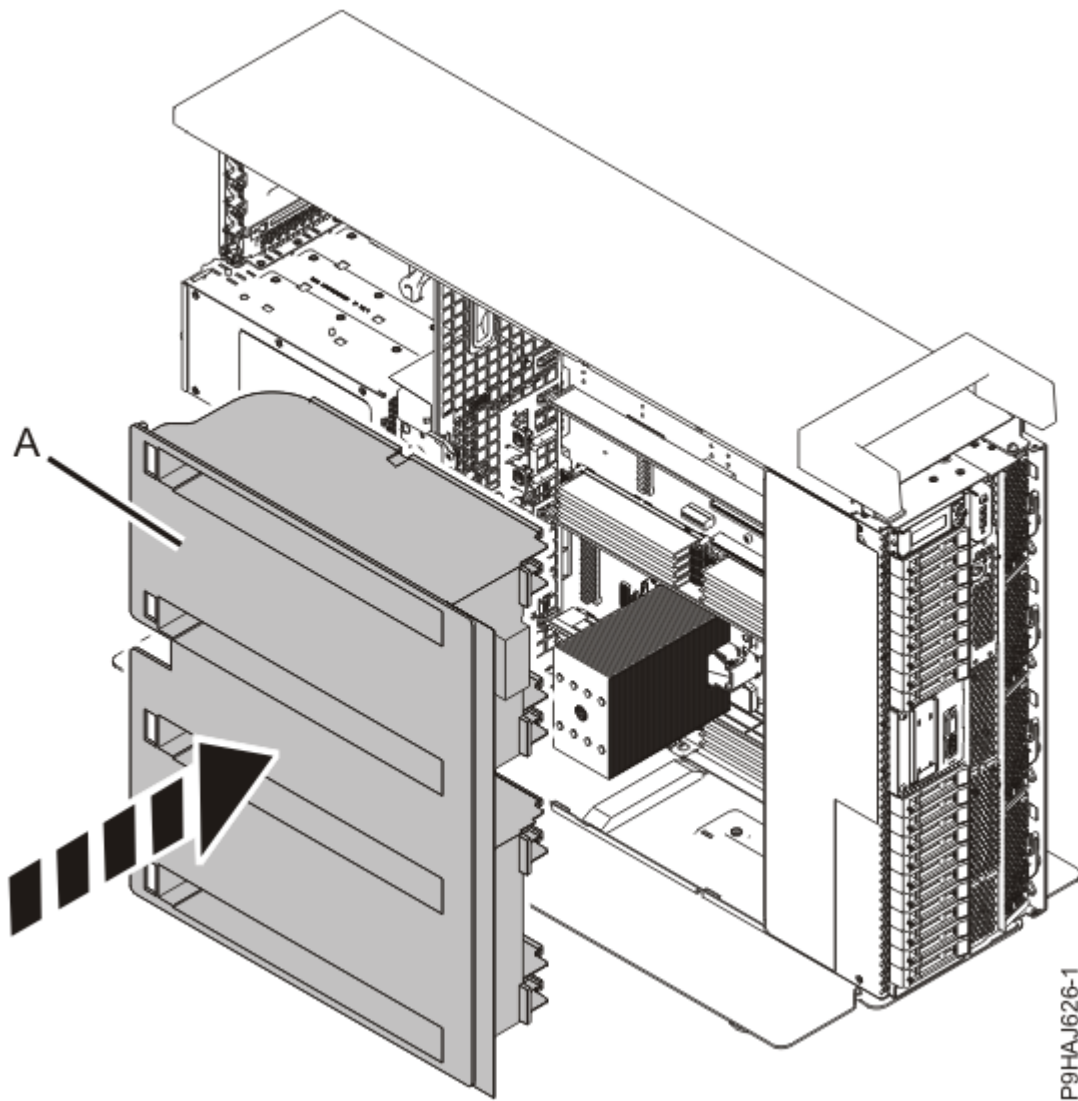
Figure 65. Replacing the air baffle in a stand-alone system

Preparing the 9009-41A, 9009-41G, 9009-42A, 9009-42G, 9223-42H, or 9223-42S system for operation after removing and replacing a PCIe3 x8 SAS RAID or cache SAS RAID internal adapter

To prepare the system for operation after removing and replacing a PCIe3 x8 SAS RAID or cache SAS RAID internal adapter, 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 a rack-mounted system, complete the following steps. Refer to .

   a. Slide the cover **(A)** onto the system unit.
   b. Close the release latch **(B)** by pushing it in the direction shown.

Figure 66. Installing the service access cover

For a stand-alone system, complete the following steps. Refer to .

a. Slide the cover **(B)** on to the system unit as shown.

b. Close the latch release **(A)** by pushing it in the direction shown.
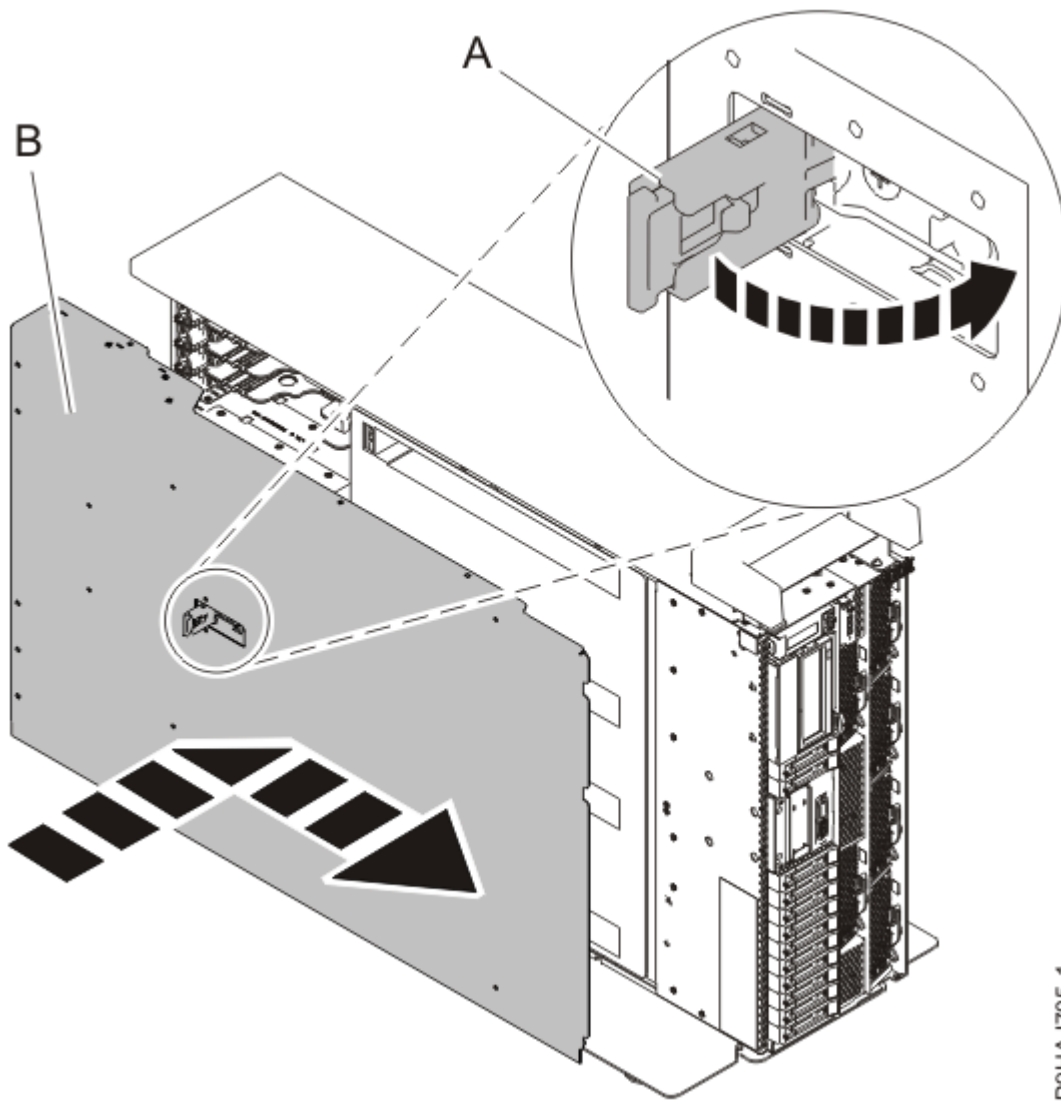
Figure 67. Installing the service access cover

3. For a rack-mounted system, unlock the blue rail safety latches **(A)** as shown in by pushing them inward.

Ensure that the cable management arms can move freely. Ensure that the cables at the rear of the unit do not catch or bind as you push the unit into the operating position.
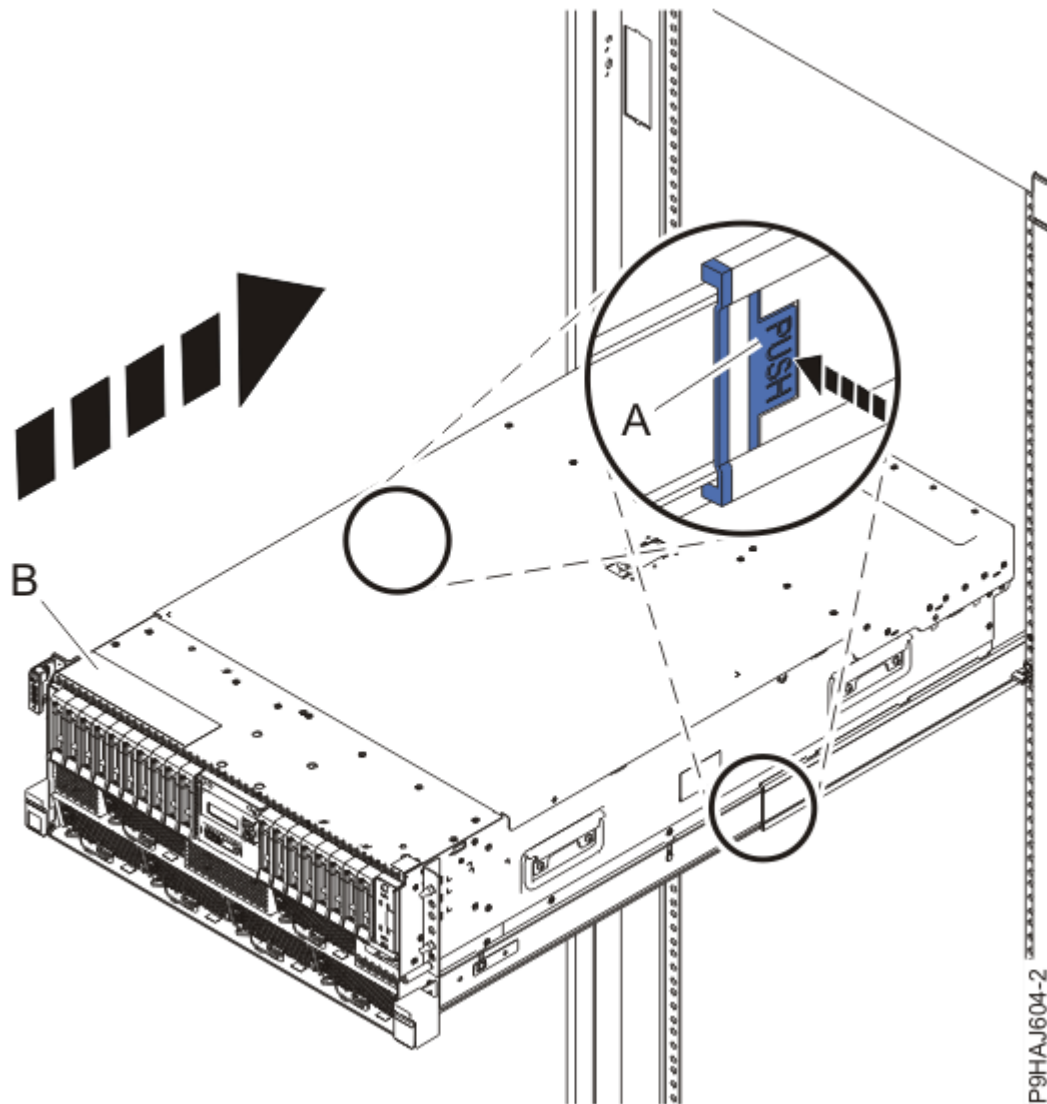
Figure 68. Placing the system into the operating position

4. For a rack-mounted system, push the system unit **(B)** as shown in the previous figure back into the rack until both release latches lock the system into position.

   Secure the cable management arm with hook-and-loop fasteners around the back side of the cable management arm, but not around the cables.

5. Using your labels, reconnect the power cords **(A)** to the system unit.

   Fasten the power cords **(A)** to the system using the hook-and-loop fasteners **(B)** as shown in .
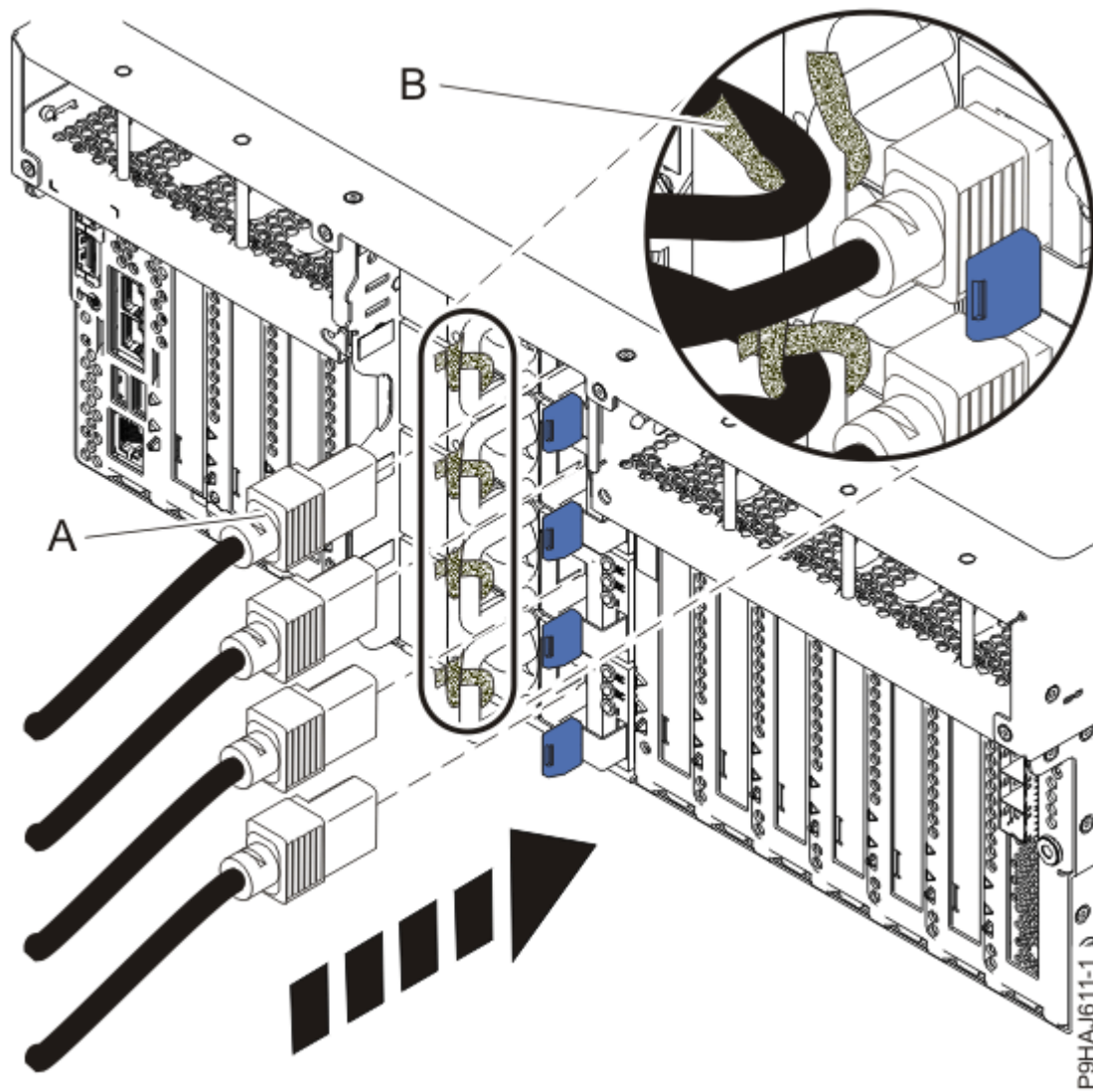
Figure 69. Connecting the power cords to a rack-mounted system
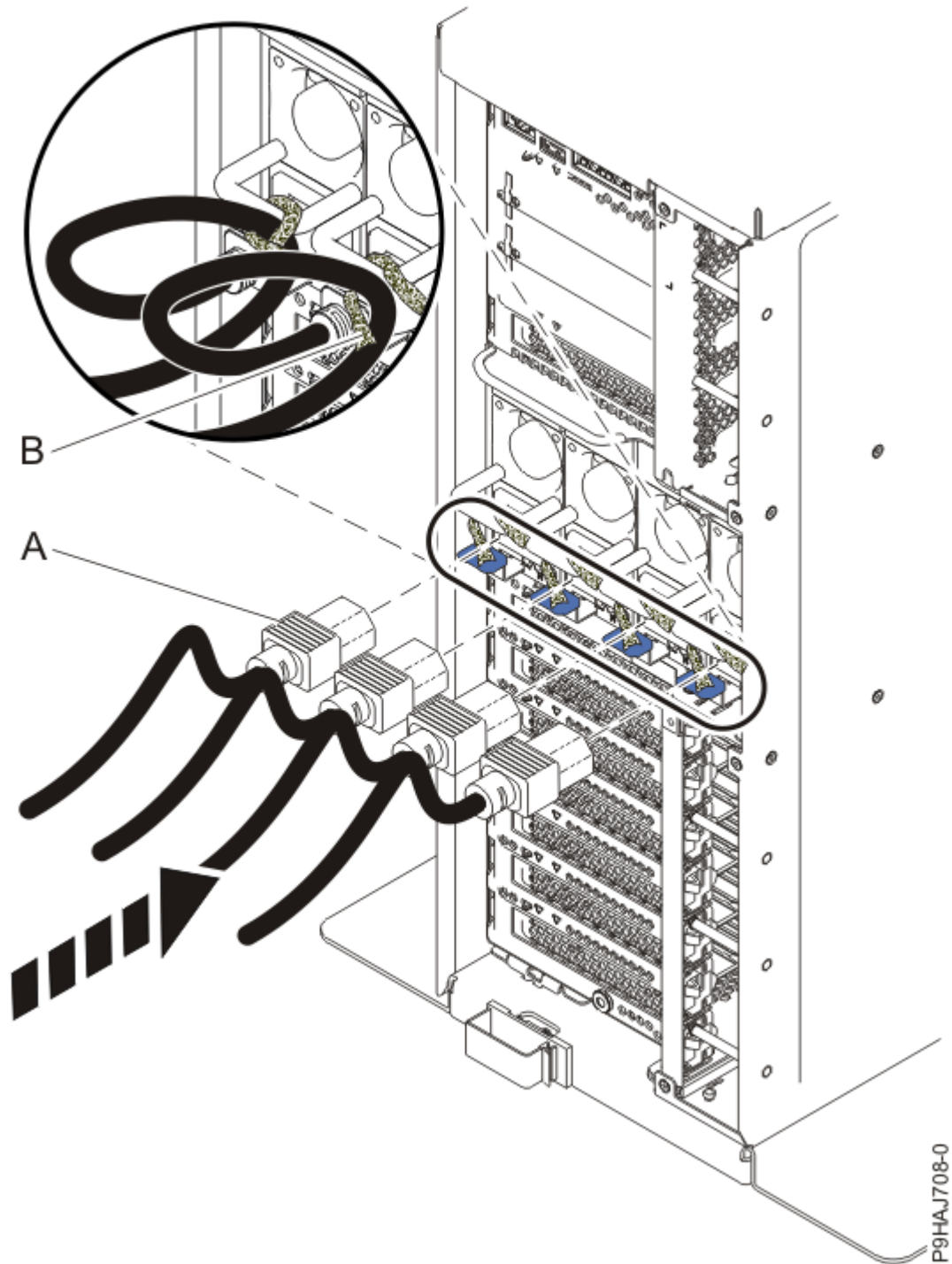
Figure 70. Connecting the power cords to a stand-alone system

6. Start the system. For instructions, see Starting a system (www.ibm.com/support/knowledgecenter/ POWER9/p9haj/crustartsys.htm).

7. Turn off the identify LED. For instructions, see Deactivating an identify LED (www.ibm.com/support/ knowledgecenter/POWER9/p9haj/p9haj_turn_off_identify_led.htm).

8. Verify the installed part.

   • If you replaced the part because of a service action, verify the installed part. For instructions, see Verifying a repair (www.ibm.com/support/knowledgecenter/POWER9/p9ect/pxect_verifyrepair.htm).

   • If you installed the part for any other reason, verify the installed part. For instructions, see Verifying the installed part (www.ibm.com/support/knowledgecenter/POWER9/p9haj/pxhaj_hsmverify.htm).

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- Operations that use a screen reader

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IBM-Allee 1, 71139 Ehningen, Germany
Tel: +49 (0) 800 225 5426
email: HalloIBM@de.ibm.com

Generelle Informationen:

Das Gerät erfüllt die Schutzanforderungen nach EN 55024 und EN 55022 / EN 55032 Klasse A.

Japan Electronics and Information Technology Industries Association (JEITA) Notice

(一社）電子情報技術産業協会　高調波電流抑制対策実施
要領に基づく定格入力電力値： Knowledge Centerの各製品の
仕様ページ参照

This statement applies to products less than or equal to 20 A per phase.

高調波電流規格　JIS C 61000-3-2 適合品

This statement applies to products greater than 20 A, single 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　：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.

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・換算係数　：０

Japan Voluntary Control Council for Interference (VCCI) Notice

この装置は、クラスA 情報技術装置です。この装置を家庭環境で使用すると電波妨害
を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求され
ることがあります。　　　　　　　　　　　　　　　　　　　　　　　VCCI－A

Korea Notice

이 기기는 업무용 환경에서 사용할 목적으로 적합성평가를 받은 기기로서
가정용 환경에서 사용하는 경우 전파간섭의 우려가 있습니다.

People's Republic of China Notice

声　明

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

Russia Notice

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

Taiwan Notice

警告使用者:
此為甲類資訊技術設備,
於居住環境中使用時,可
能會造成射頻擾動,在此
種情況下,使用者會被要
求採取某些適當的對策。

IBM Taiwan Contact Information:

台灣IBM 產品服務聯絡方式：
台灣國際商業機器股份有限公司
台北市松仁路7號3樓
電話：0800-016-888

United States Federal Communications Commission (FCC) Notice

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

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. 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, NY 10504
Contact for FCC compliance information only: fccinfo@us.ibm.com

Class B Notices

The following Class B statements apply to features designated as electromagnetic compatibility (EMC) Class B in the feature installation information.

When attaching a monitor to the equipment, you must use the designated monitor cable and any interference suppression devices supplied with the monitor.

Canada Notice

CAN ICES-3 (B)/NMB-3(B)

European Community and Morocco Notice

This product is in conformity with the protection requirements of Directive 2014/30/EU of the European Parliament and of the Council on the harmonization of the laws of the Member States relating to electromagnetic compatibility. IBM cannot accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of the product, including the fitting of non-IBM option cards.

German Notice

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

Dieses Produkt entspricht den Schutzanforderungen der EU-Richtlinie 2014/30/EU zur Angleichung der Rechtsvorschriften über die elektromagnetische Verträglichkeit in den EU-Mitgliedsstaatenund hält die Grenzwerte der EN 55022/ EN 55032 Klasse B ein.

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

Deutschland: Einhaltung des Gesetzes über die elektromagnetische Verträglichkeit von Geräten

Dieses Produkt entspricht dem "Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG)". Dies ist die Umsetzung der EU-Richtlinie 2014/30/EU in der Bundesrepublik Deutschland.

Zulassungsbescheinigung laut dem Deutschen Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG) (bzw. der EMC Richtlinie 2014/30/EU) für Geräte der Klasse B

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

Verantwortlich für die Einhaltung der EMV Vorschriften ist der Hersteller:
International Business Machines Corp.
New Orchard Road
Armonk, New York 10504
Tel: 914-499-1900

Der verantwortliche Ansprechpartner des Herstellers in der EU ist:
IBM Deutschland GmbH
Technical Relations Europe, Abteilung M456
IBM-Allee 1, 71139 Ehningen, Germany

Tel: +49 (0) 800 225 5426
email: HalloIBM@de.ibm.com

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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
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　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:

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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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