

## Power Systems

*Fans for the 9009-41A, 9009-41G,  
9009-42A, 9009-42G, 9223-42H, or  
9223-42S*



**Note**

Before using this information and the product it supports, read the information in [“Safety notices” on page v](#), [“Notices” on page 47](#), 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.

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# Safety notices

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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.
- 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 continue with the inspection if any unsafe conditions are present.
- 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.



**DANGER:**

- 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)**



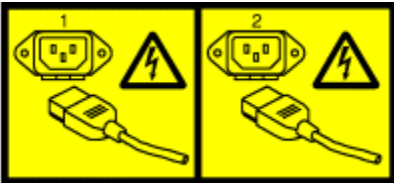


**DANGER:** Rack-mounted devices are not to be used as shelves or work spaces. Do not place objects on top of rack-mounted devices. In addition, do not lean on rack-mounted devices and do not use them to stabilize your body position (for example, when working from a ladder). Stability hazard:

- 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



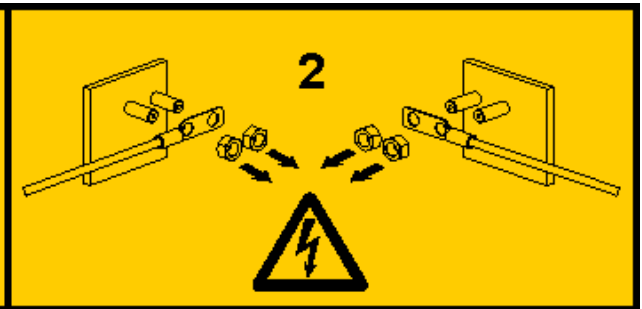
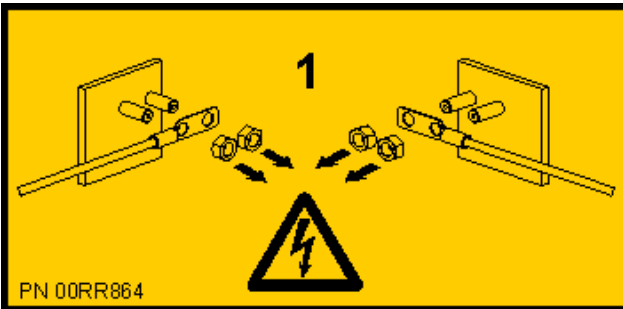
or




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.



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# Removing and replacing a fan

Find information about removing and replacing a fan 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:** Removing or replacing 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 remove a part from the system. For instructions, see [Removing a part by using the HMC](http://www.ibm.com/support/knowledgecenter/POWER9/p9haj/hmcremove.htm) (www.ibm.com/support/knowledgecenter/POWER9/p9haj/hmcremove.htm).

If you do not have an HMC, complete the following procedures to remove and replace a fan.

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## Preparing the 9009-41A, 9009-41G, 9009-42A, 9009-42G, 9223-42H, or 9223-42S system to remove and replace a fan

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

## About this task

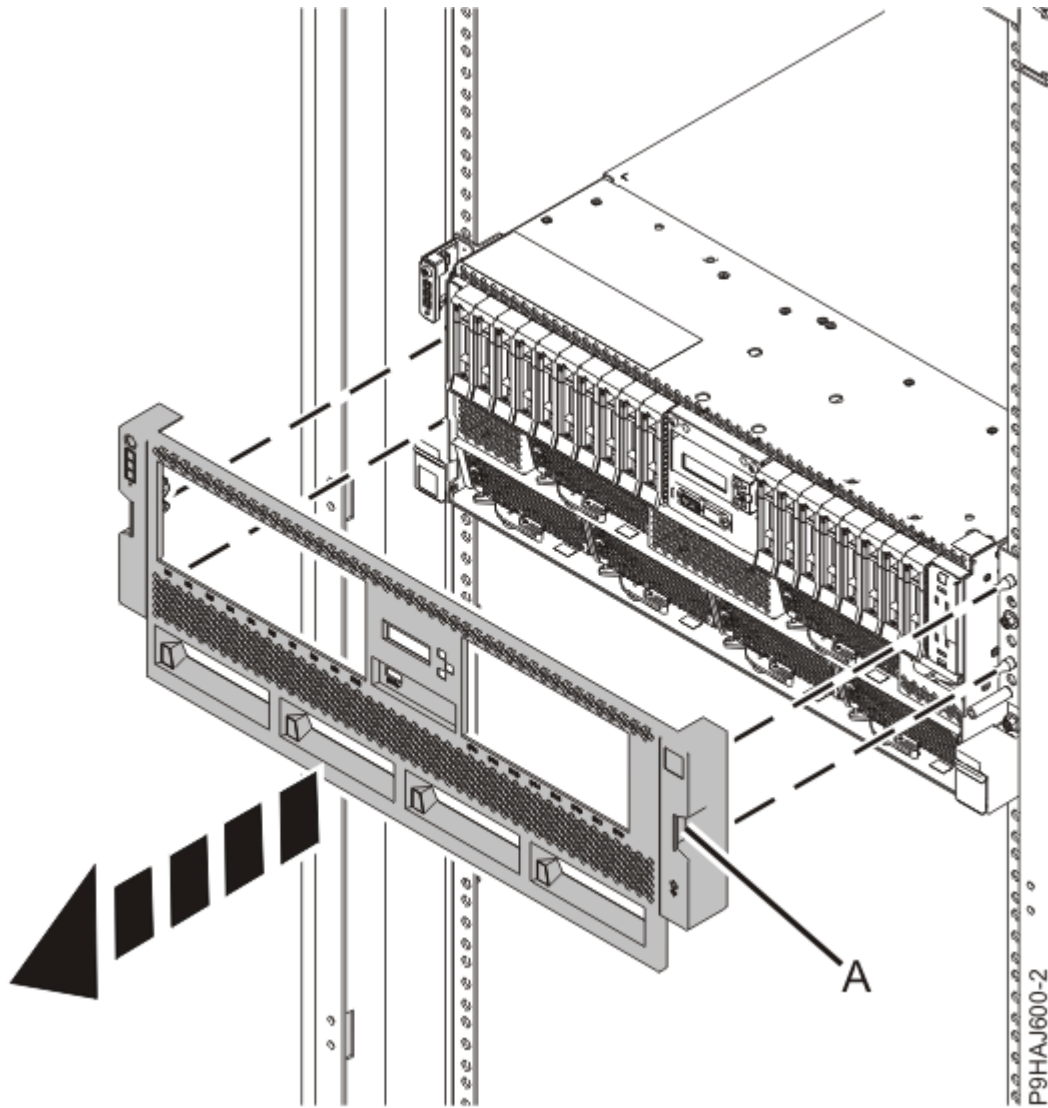


**Attention:** Removing and replacing the failed fan is a time sensitive task when the system is serviced with the system powered on (concurrent). You must replace the failed fan within 2.5 minutes after you remove the fan to avoid a system shutdown. Ensure that you read the complete procedure to remove and replace a system fan and that you are prepared to remove and replace the fan within this time. After 1 minute, the system might slow down the processors, and might speed up the remaining fans.

**Note:** When you remove a fan with the system power turned on, more errors might get logged and reported as serviceable events during this service action. No service actions are required for these errors and you can close these serviceable events as part of the serviceable event.

## Procedure

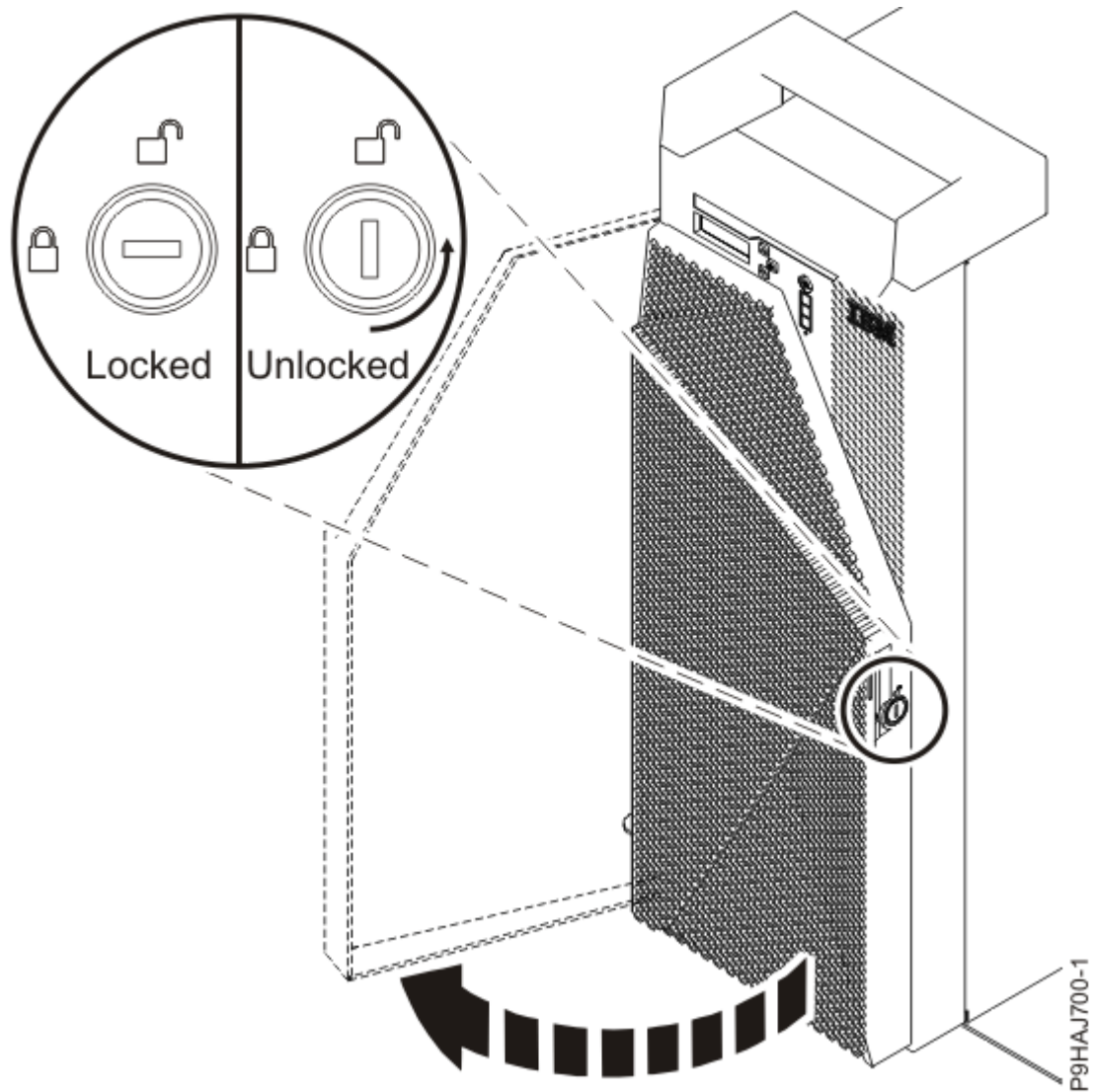
1. If applicable, open the rack front door.
2. Identify the part and the system that you are working on. For instructions, see [Identifying a part](http://www.ibm.com/support/knowledgecenter/POWER9/p9haj/sal.htm) (www.ibm.com/support/knowledgecenter/POWER9/p9haj/sal.htm).  
Use the blue identify LED on the enclosure to locate the system. Ensure that the serial number of the system matches the serial number to be serviced.
3. For a rack-mounted system, remove the front cover by pulling it away from the system.  
The cover has indentations **(A)** where you can hold it more easily. See [Figure 1 on page 2](#).



*Figure 1. Removing the front cover*

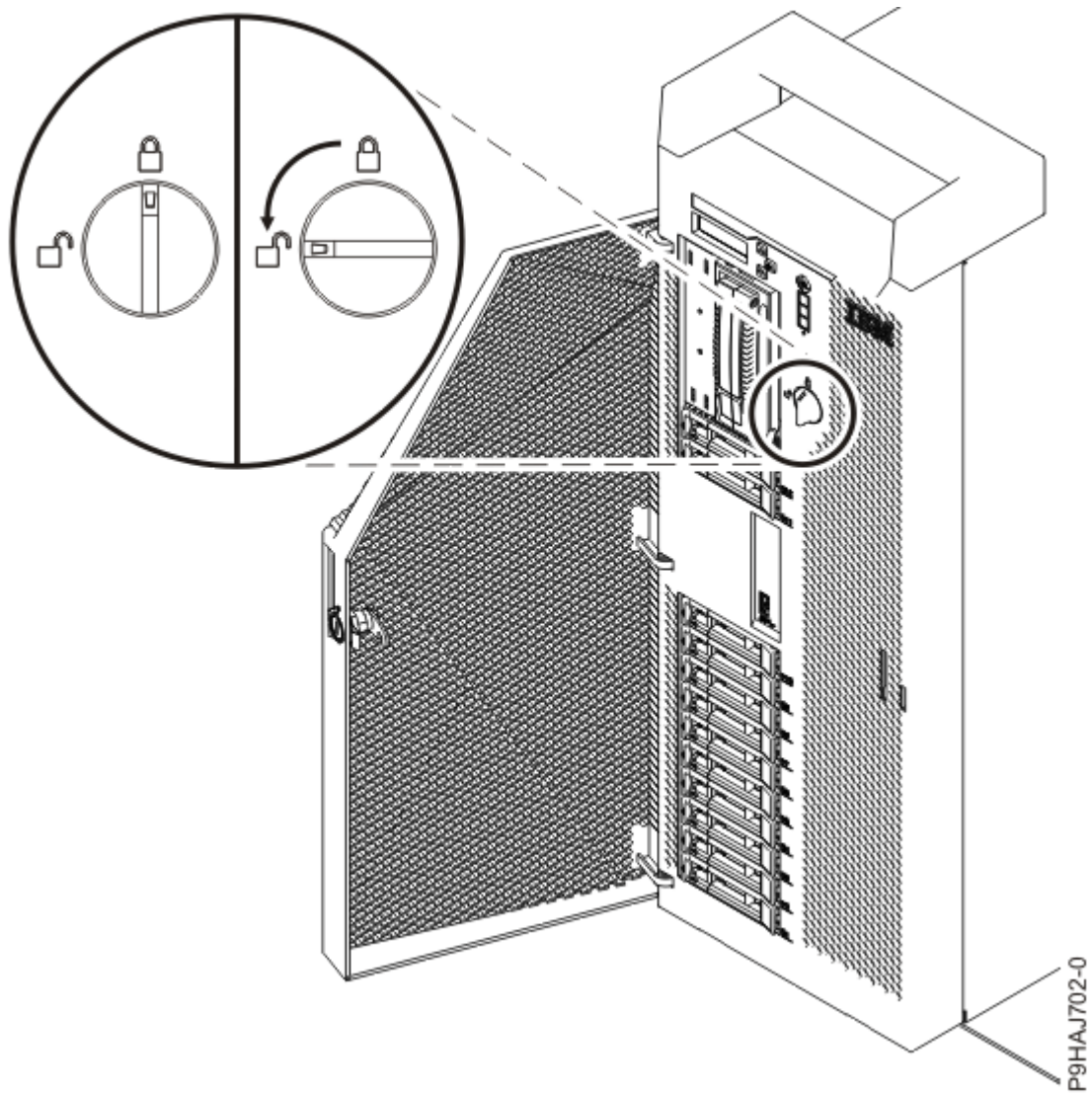
4. For a stand-alone system, remove the front cover and door by completing these steps.
  - a) Insert the front door key into the lock as shown in [Figure 2](#) on page 3. Twist the key to the left (counterclockwise) to unlock the door. Horizontal is locked; vertical is unlocked. Open the front door.





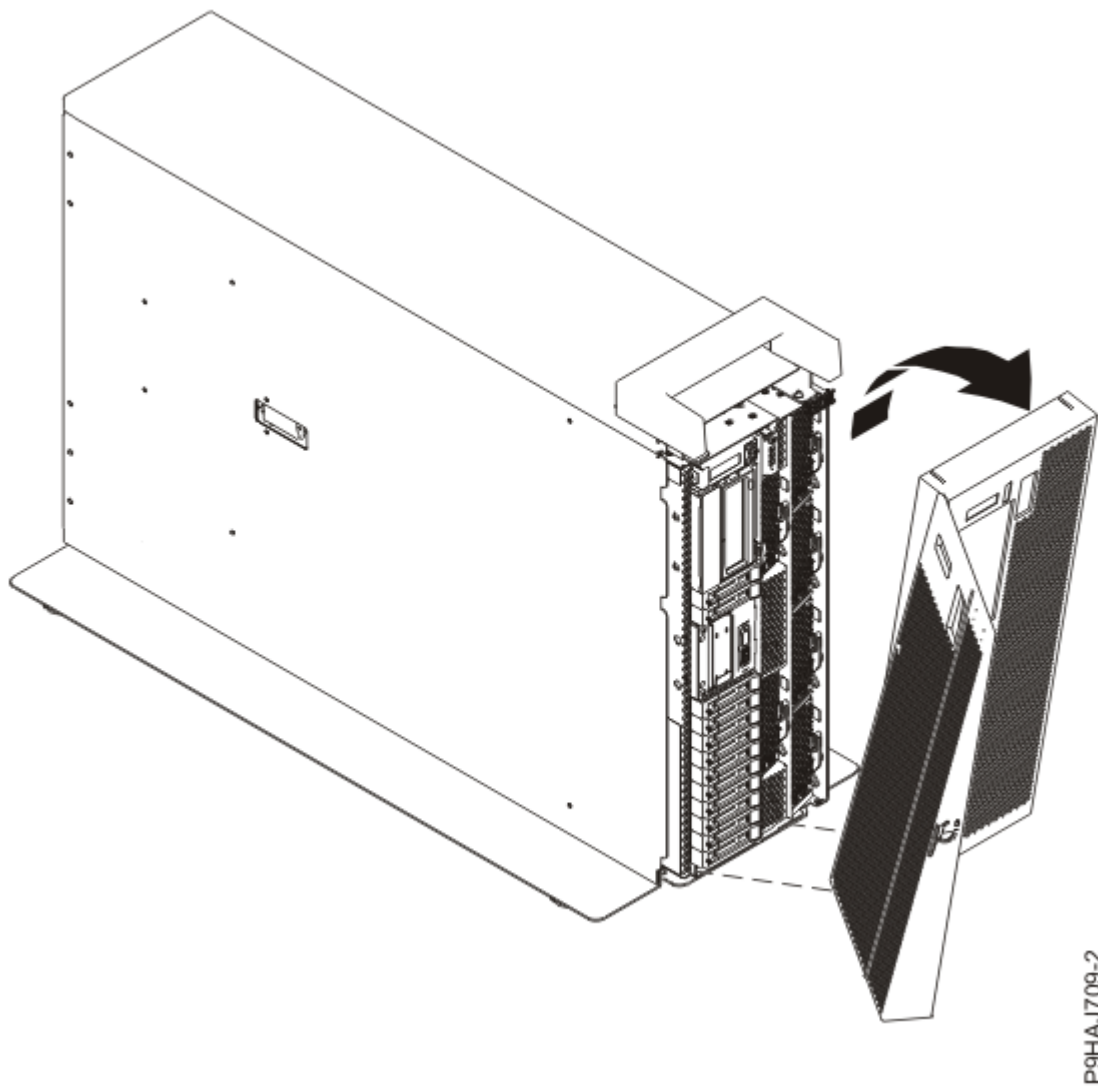
*Figure 2. Unlocking the front door*

- b) 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.
- c) Twist the cover latch to the left (counterclockwise) to unlock the cover as shown in [Figure 3](#) on [page 4](#).  
Vertical is locked; horizontal is unlocked.



*Figure 3. Opening the front cover latch*

- d) Pull the cover away from the system as shown in [Figure 4](#) on page 5. The cover has an indentation where you can hold onto it more easily.



*Figure 4. Removing the front cover*

5. Determine whether the repair operation can continue when the system power is turned on.

To continue the repair operation when the system power is turned on, the following conditions must be true:

- The server might have 4 or 6 fans, depending on the number of processors. A fan must be installed in the slots as shipped.
  - A system that can have one processor has the four fans in the bottom row. The two fan locations in the upper locations have fillers.
  - A system that can have two processors has the four fans in the bottom row and two fans in the upper row.
- Each fan has a green LED **(A)** and an amber LED **(B)**, as shown in [Figure 5 on page 6](#). The green LED is lit solid for all fans, but the fan with the failure has the amber fault LED lit.
- If only one amber fault LED is **On**, the repair operation can be completed when the system power is turned on.

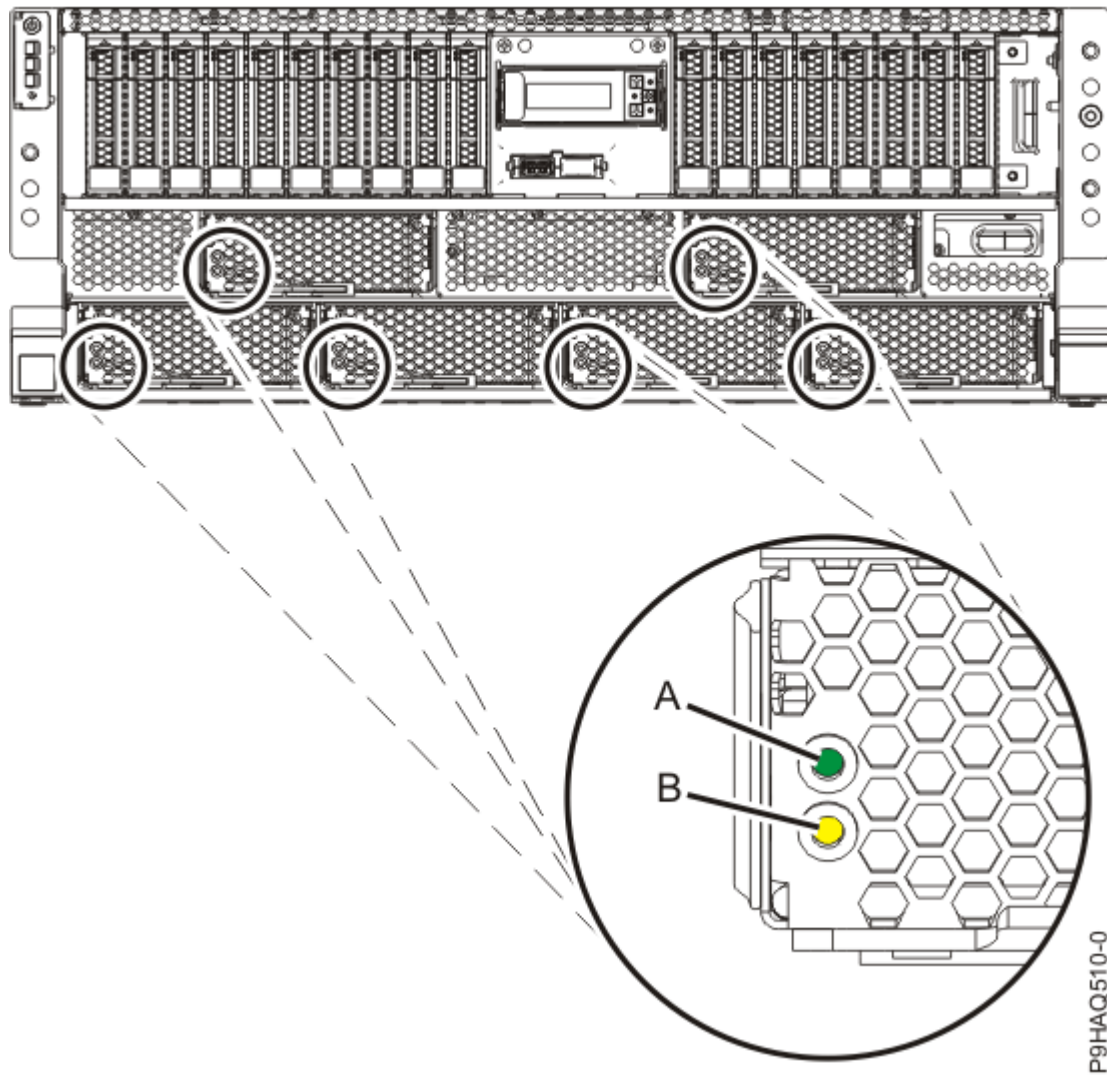
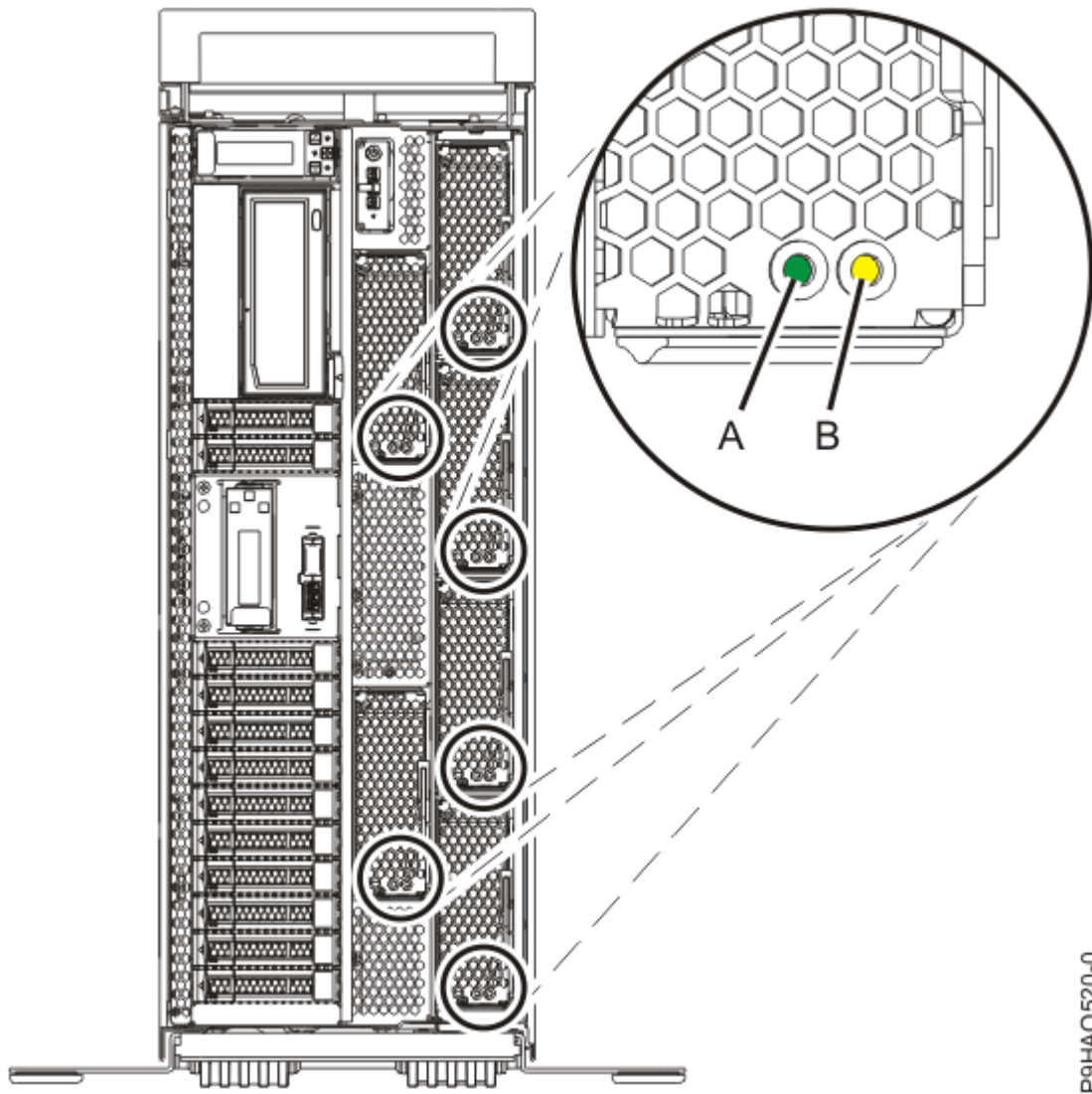


Figure 5. Fan LEDs in a rack-mounted system



P9HAQ520-0

Figure 6. Fan LEDs in a stand-alone system

6. Ensure that the amber LED corresponds to the location of the fan with the lit fault LED.
7. If you can complete the procedure with the system power turned on, continue with step “9” on page 11.
8. If you need to power off the server to complete the repair operation, complete the following steps:
  - a) Stop the system. For instructions, see [Stopping a system](http://www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustopsys.htm) ([www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustopsys.htm](http://www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustopsys.htm)).
  - b) Label and disconnect the power cords from the system unit. See [Figure 7 on page 8](#) or [Figure 8 on page 9](#).

**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.



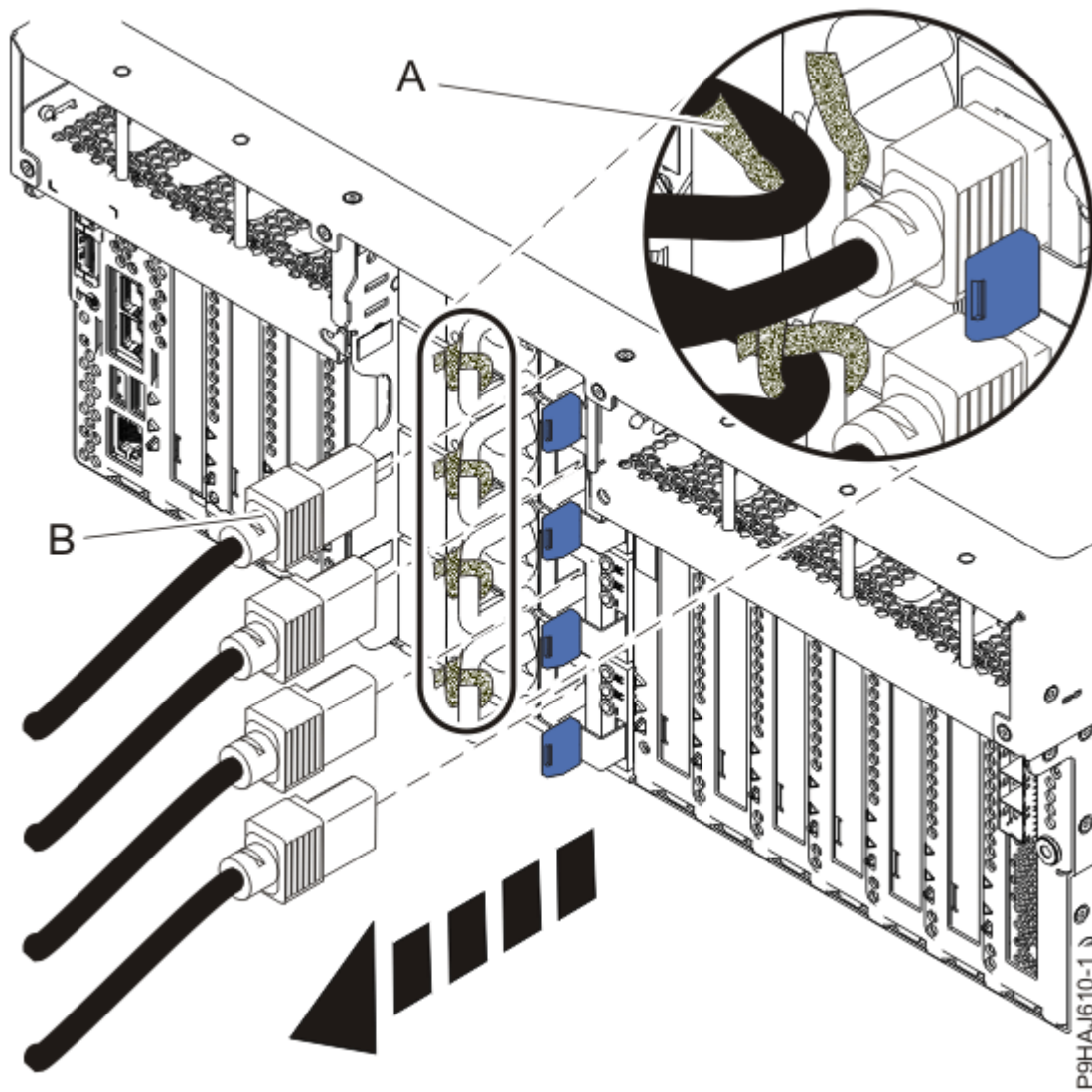


Figure 7. Removing the power cords from a rack-mounted server

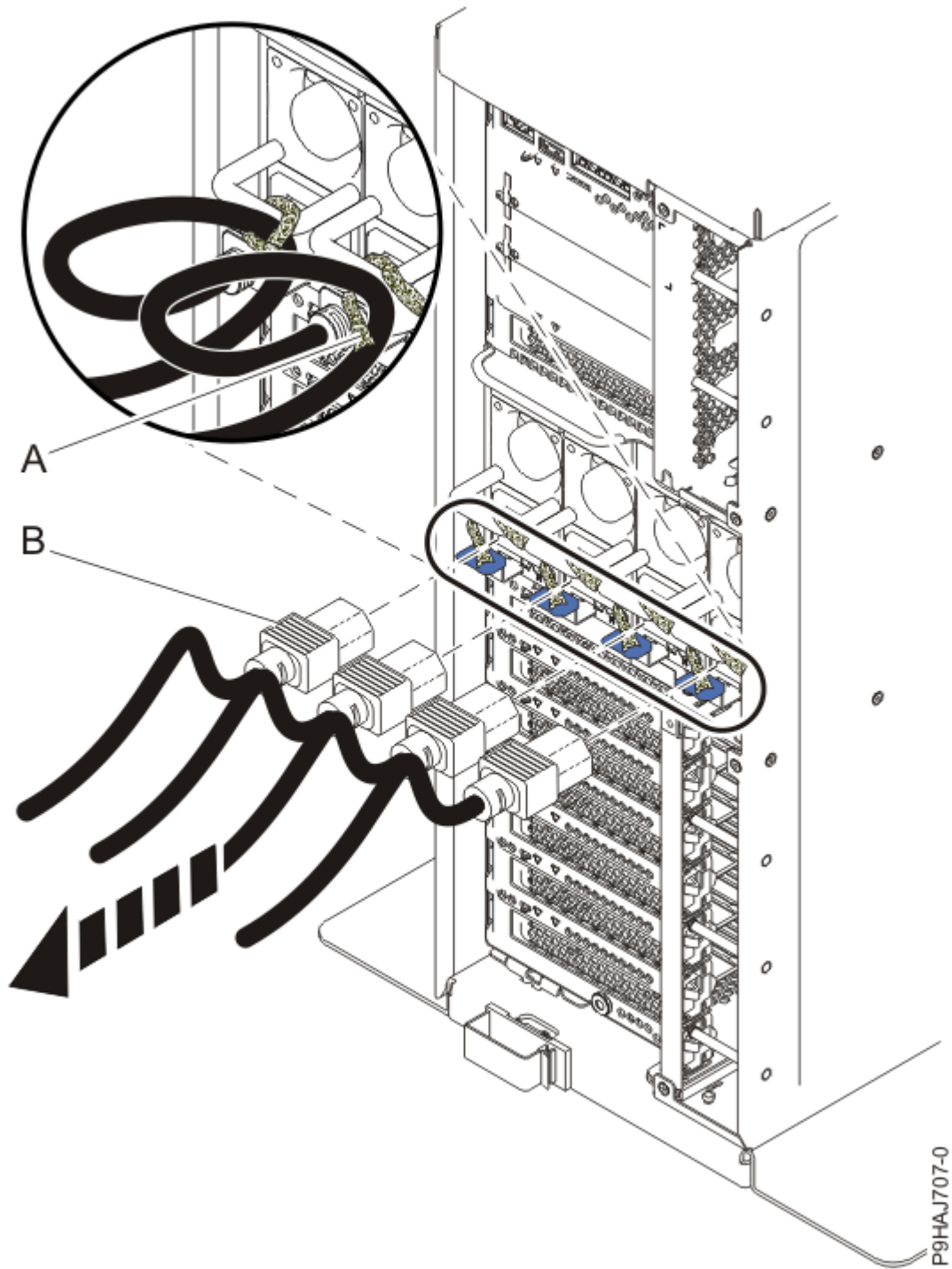
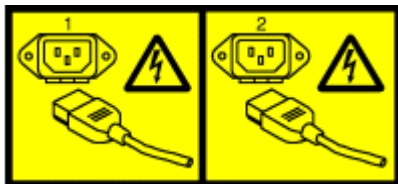


Figure 8. Removing the power cords from a stand-alone server

(L003)



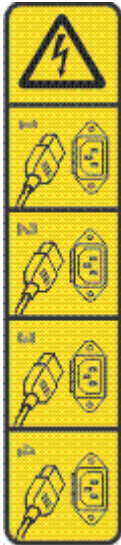
or



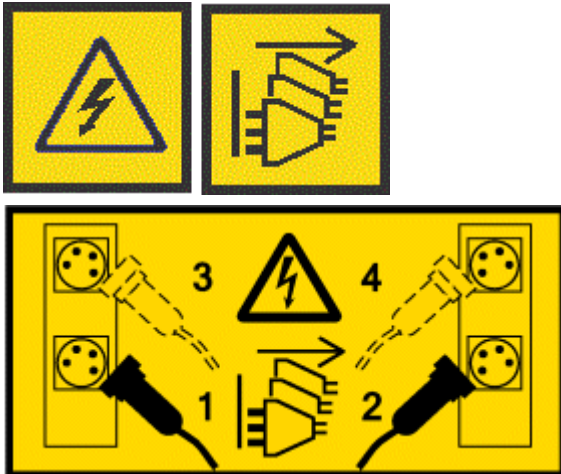
or



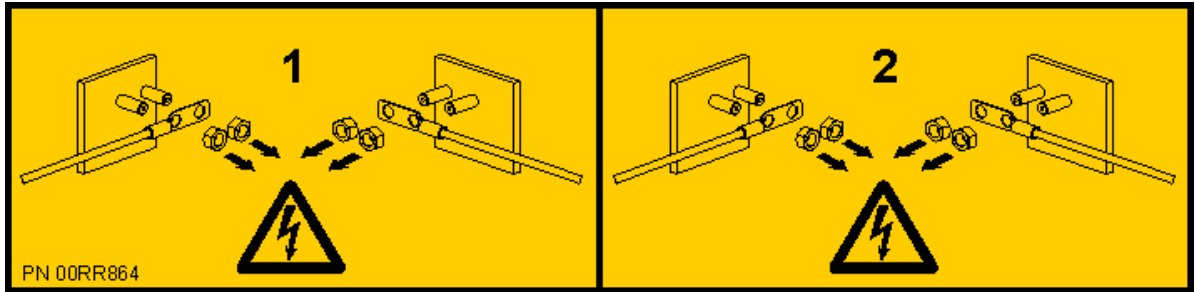
or



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)

9. Attach the electrostatic discharge (ESD) wrist strap. Your system has ESD jacks on the front and on the rear of the system as shown in the following figure. Plug the ESD wrist strap into the ESD jack.



**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.

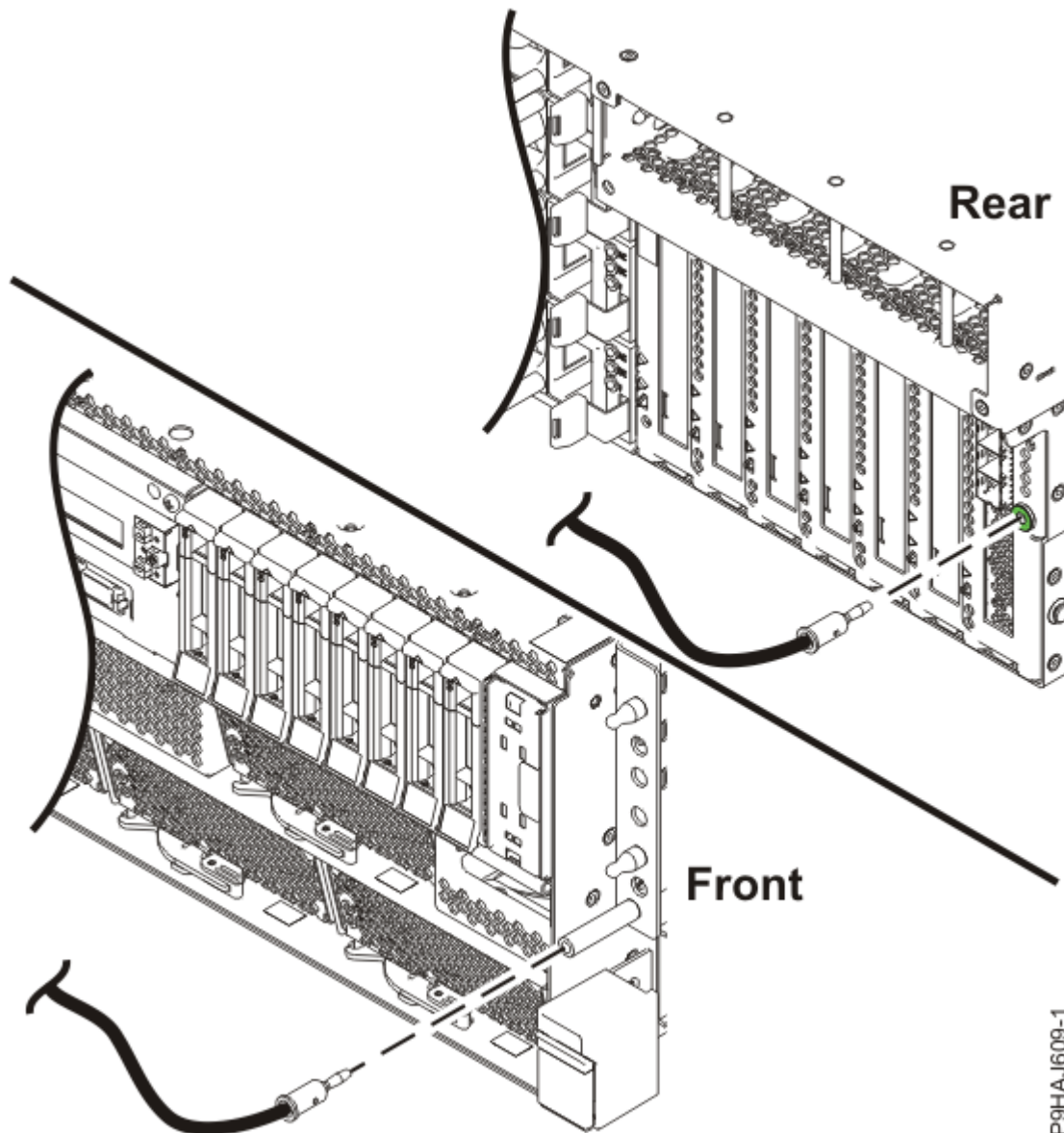


Figure 9. Location of ESD plugs

## Removing a fan from the 9009-41A, 9009-41G, 9009-42A, 9009-42G, 9223-42H, or 9223-42S system

To remove a fan 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. To remove the fan, complete the following steps:
  - a) Put your thumb against the front of the latch, **(A)** as shown in [Figure 10 on page 13](#), and put your index finger against the rear of the latch.
  - b) Push against the latch with your thumb and then pull the latch out with your index finger. This action releases the latch.
  - c) Rotate the handle in the direction that is shown in [Figure 10 on page 13](#) to unlock the fan from its slot.

d) Hold on to the handle and by using your hand to support the bottom of the fan, pull out the fan from its slot as shown in [Figure 10](#) on page 13.

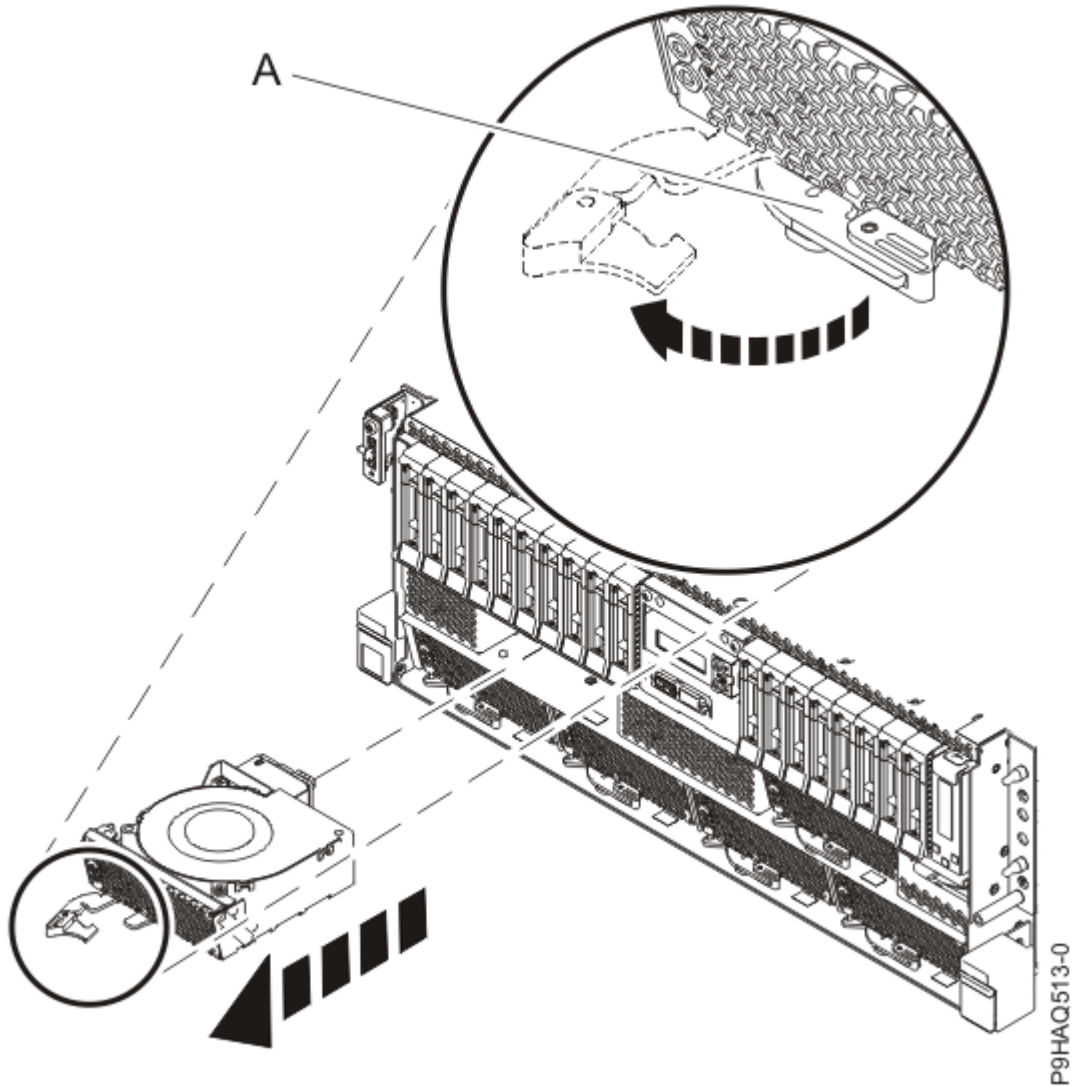


Figure 10. Removing a fan from the system

## Replacing a fan in the 9009-41A, 9009-41G, 9009-42A, 9009-42G, 9223-42H, or 9223-42S system

To replace a fan 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. Ensure that the fan handle (**A**) is opened as shown in [Figure 11](#) on page 14.

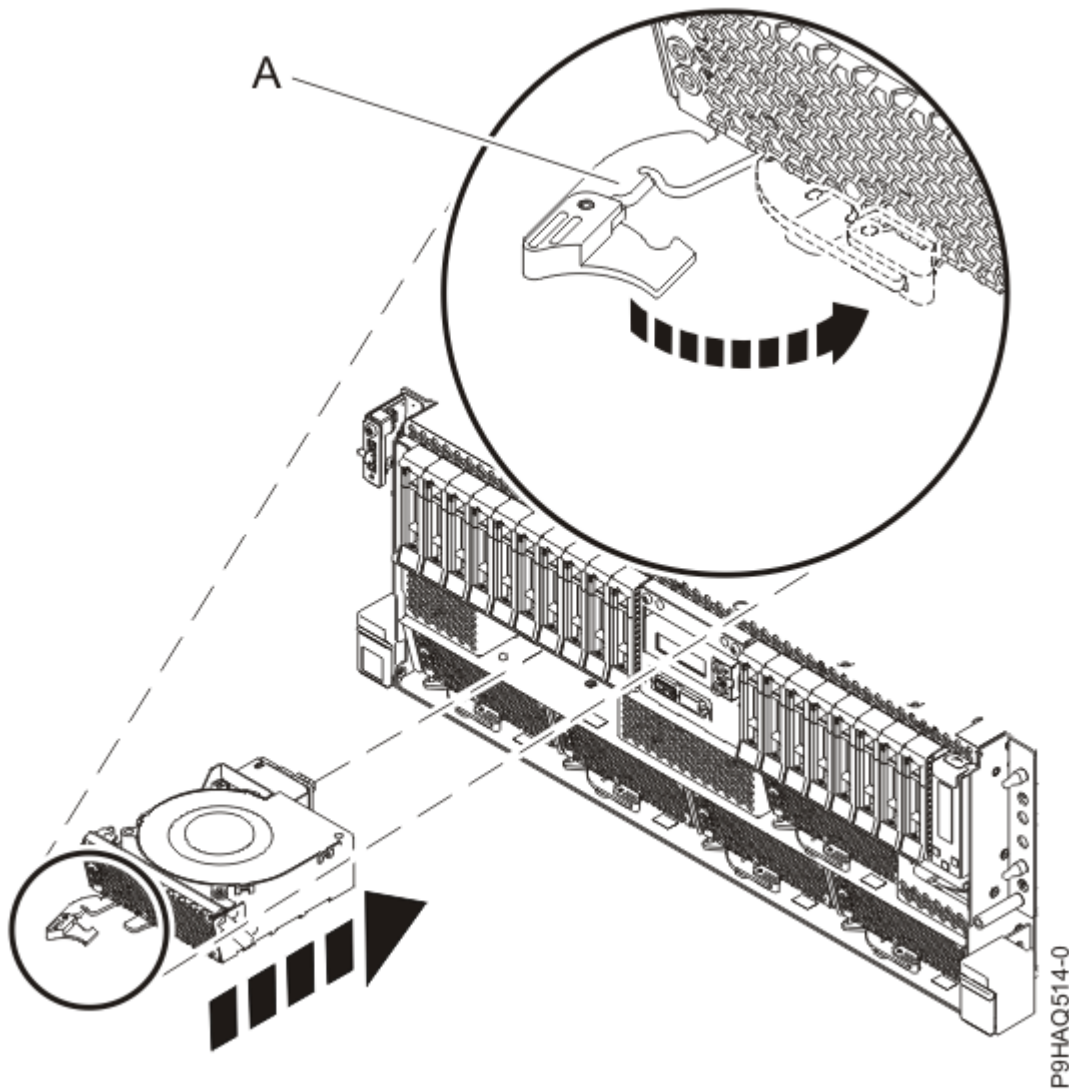


Figure 11. Replacing a fan in the system

3. Using your hand to support the bottom of the fan, align the fan with the slot and slide it into the system. See [Figure 11 on page 14](#).
4. Rotate the fan handle (**A**) in the direction shown, and then press the handle until the latch locks in place. See [Figure 11 on page 14](#).

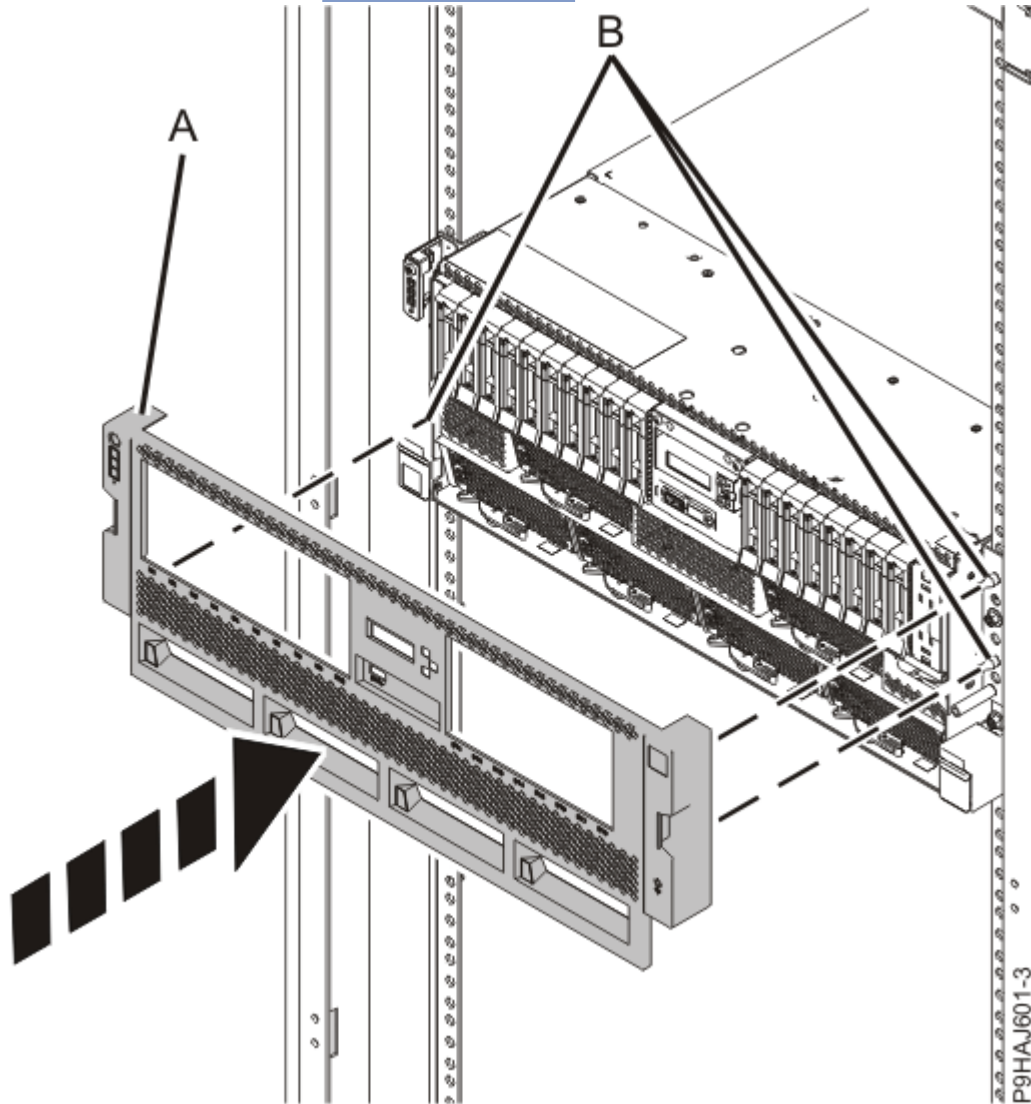
## Preparing the 9009-41A, 9009-41G, 9009-42A, 9009-42G, 9223-42H, or 9223-42S system for operation after removing and replacing a fan

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

### Procedure

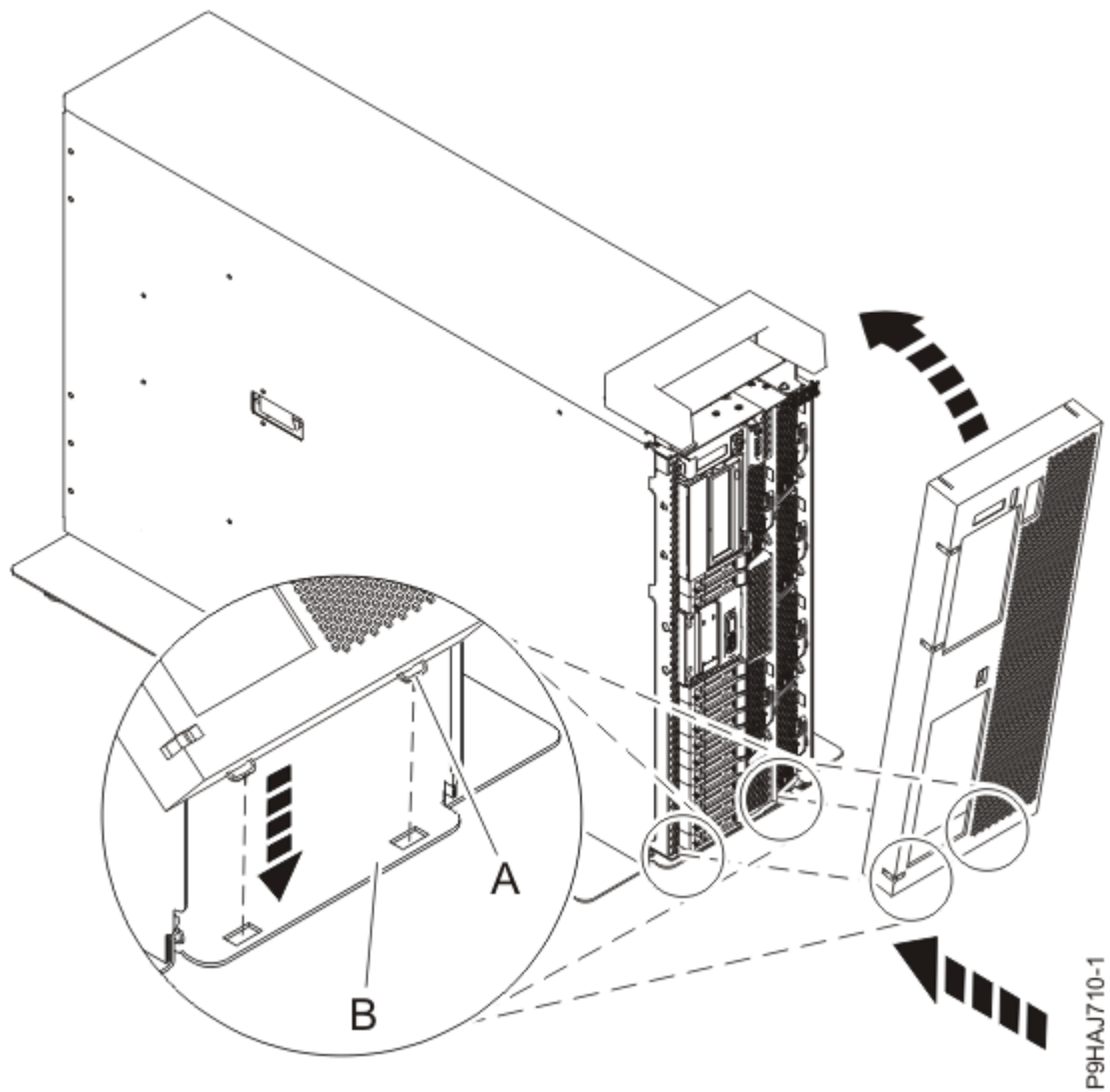
1. Ensure that you have the electrostatic discharge (ESD) wrist strap on and that the ESD clip is plugged into a ground jack or connected to an unpainted metal surface. If not, do so now.
2. If you removed the power cords, connect all power cords to the system that you are servicing.
3. If you needed to power off the server to complete the repair operation, start the system. For instructions, see [Starting a system](http://www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustartsys.htm) ([www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustartsys.htm](http://www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustartsys.htm)).

4. Turn off the identify LED. For instructions, see [Deactivating an identify LED](http://www.ibm.com/support/knowledgecenter/POWER9/p9haj/p9haj_turn_off_identify_led.htm) (www.ibm.com/support/knowledgecenter/POWER9/p9haj/p9haj\_turn\_off\_identify\_led.htm).
5. Verify that the amber fault LED on the replaced fan is not lit.
6. For a rack-mounted system, gently push the front cover **(A)** in until the cover snaps into place. The cover has indentations where you can hold it more easily. Use the alignment pins **(B)** to secure the cover to the system as shown in [Figure 12](#) on page 15.



*Figure 12. Installing the front cover*

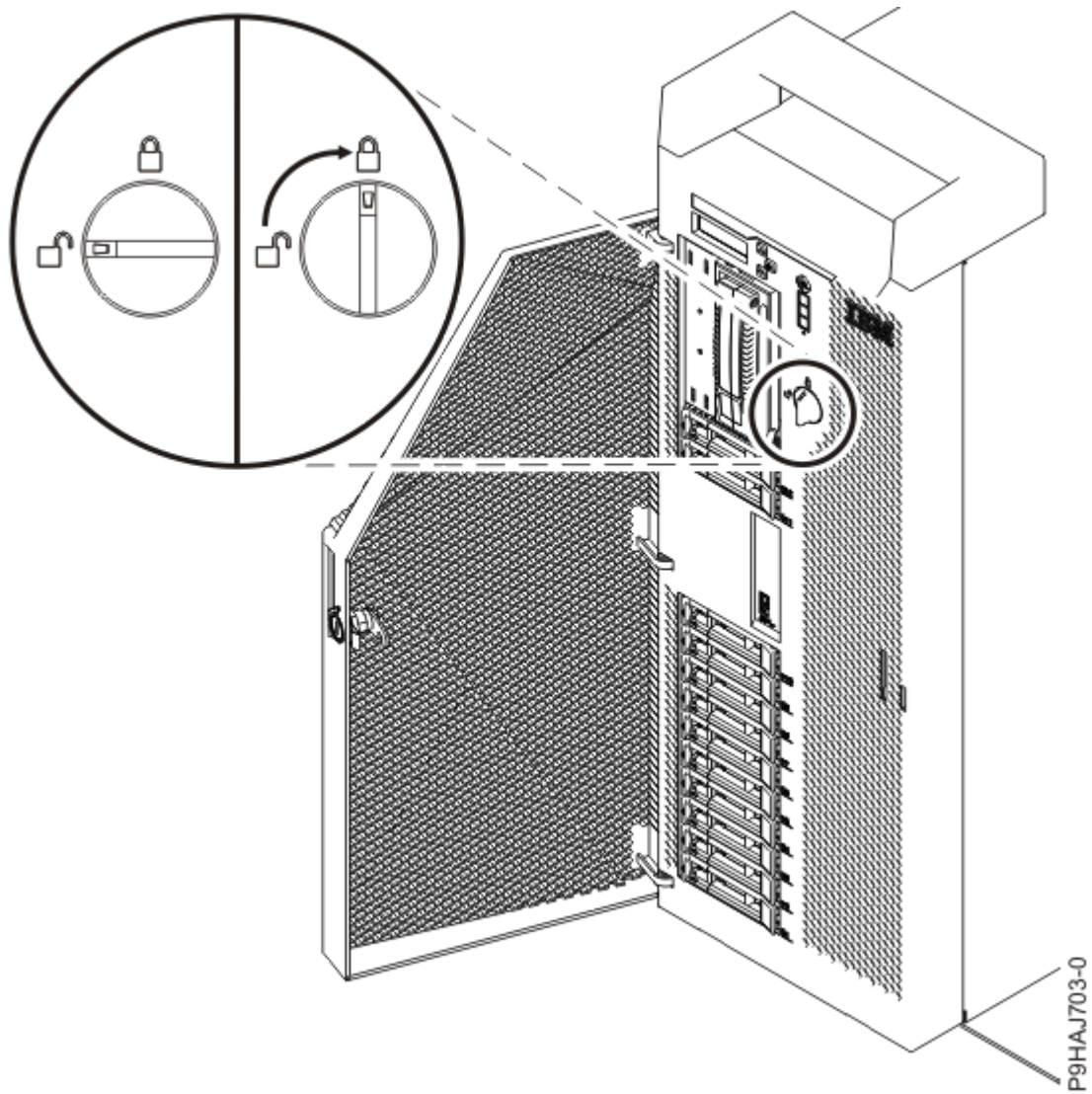
7. For a stand-alone system, install the front cover and door by completing these steps.
  - a) Ensure that you have the electrostatic discharge (ESD) wrist strap on and that the ESD clip is plugged into a ground jack or connected to an unpainted metal surface. If not, do so now.
  - b) Align the cover until the two cover tabs **(A)** are seated into the slots on the base plate **(B)** as shown in [Figure 13](#) on page 16.



*Figure 13. Installing the front cover and door*

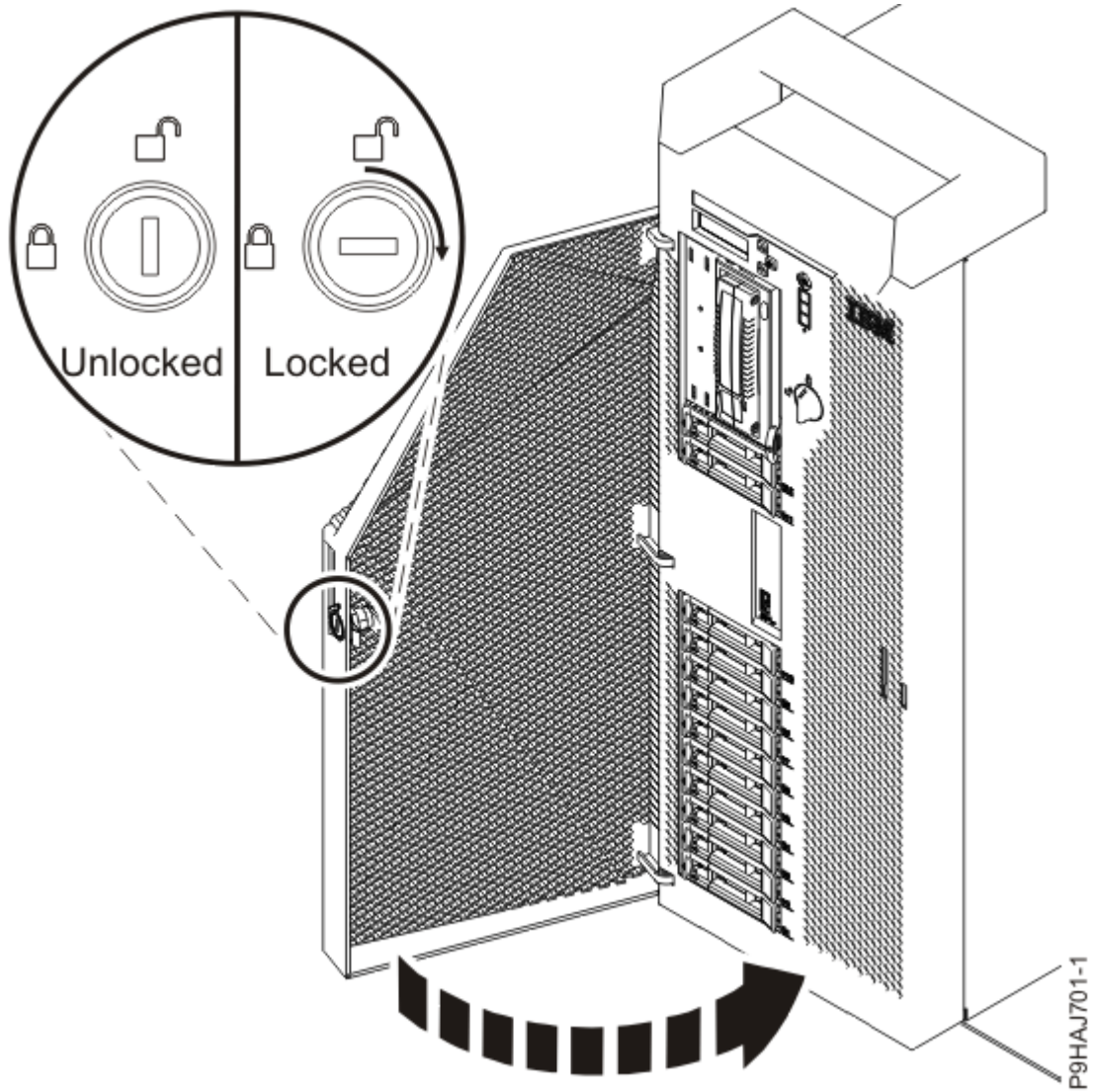
- c) Rotate the cover up and towards the system until the release latch is seated into its respective slot.
- d) Twist the cover latch to the right (clockwise) to lock the cover as shown in [Figure 14](#) on page 17.  
Vertical is locked; horizontal is unlocked.





*Figure 14. Closing the front cover latch*

- e) Close the front door. Insert the front door key into the lock as shown in [Figure 15](#) on [page 18](#). Twist the key to the right (clockwise) to lock the door. Horizontal is locked; vertical is unlocked.



*Figure 15. Locking the front door*  
8. If applicable, close the rack front door.



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# Removing and replacing a fan cable

Find information about removing and replacing a fan cable 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:** Removing or replacing 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 remove a part from the system. For instructions, see [Removing a part by using the HMC](http://www.ibm.com/support/knowledgecenter/POWER9/p9haj/hmcremove.htm) (www.ibm.com/support/knowledgecenter/POWER9/p9haj/hmcremove.htm).

If you do not have an HMC, complete the following procedures to remove and replace a fan cable.

---

## Preparing the 9009-41A, 9009-41G, 9009-42A, 9009-42G, 9223-42H, or 9223-42S system to remove and replace a fan cable

---

To prepare the system to remove and replace a fan cable, 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](http://www.ibm.com/support/knowledgecenter/POWER9/p9haj/sal.htm) (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. Use the blue LED to identify the server.  
Ensure that the serial number of the system matches the serial number to be serviced.
3. Stop the system. For instructions, see [Stopping a system](http://www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustopsys.htm) (www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustopsys.htm).
4. Label and disconnect the power cords from the system unit.  
See [Figure 16 on page 20](#) or [Figure 17 on page 21](#).

### 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.

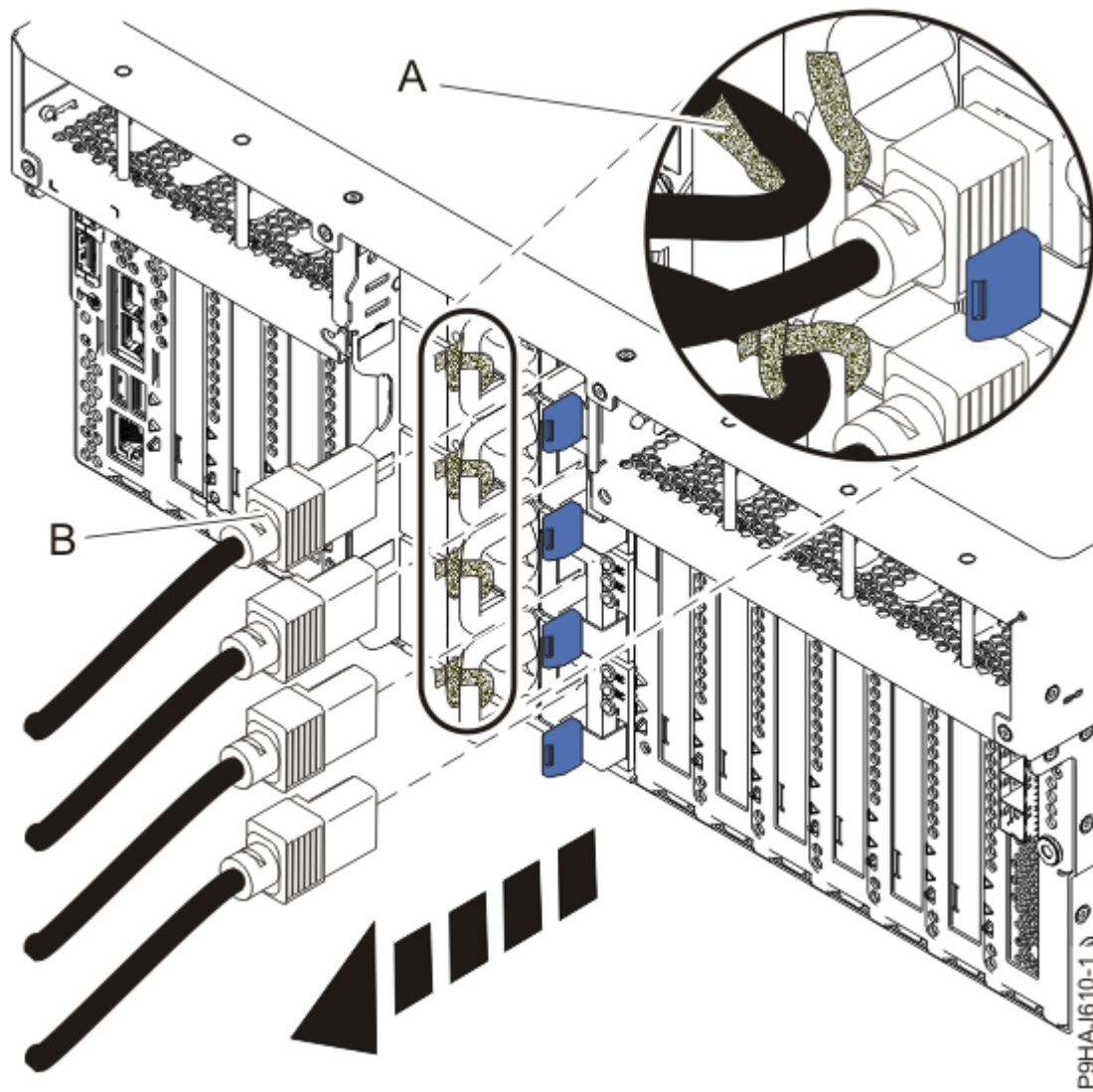


Figure 16. Removing the power cords from a rack-mounted server

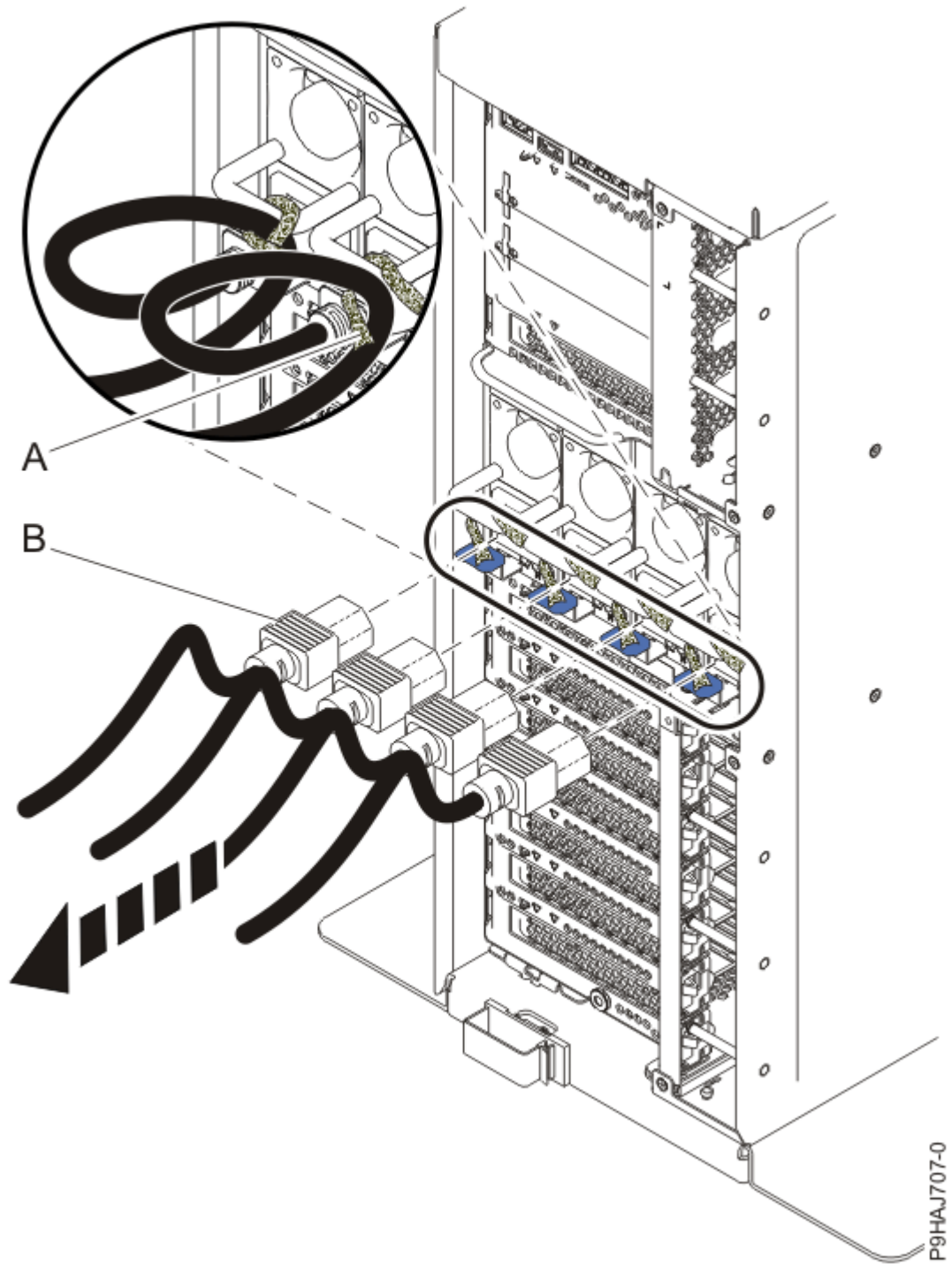
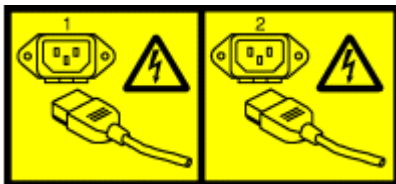


Figure 17. Removing the power cords from a stand-alone server

(L003)



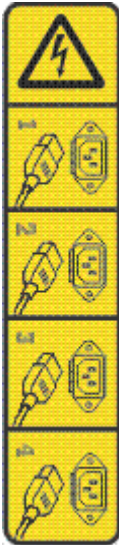
or



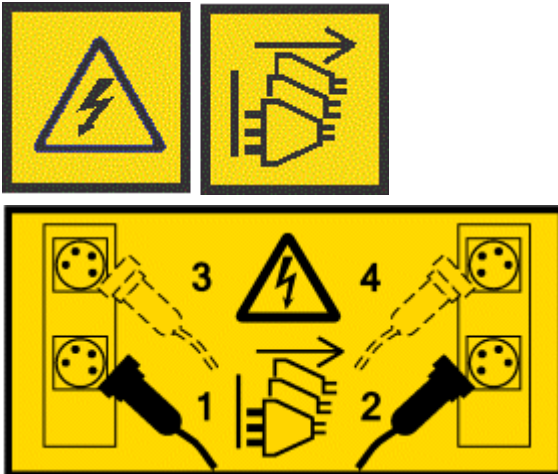
or

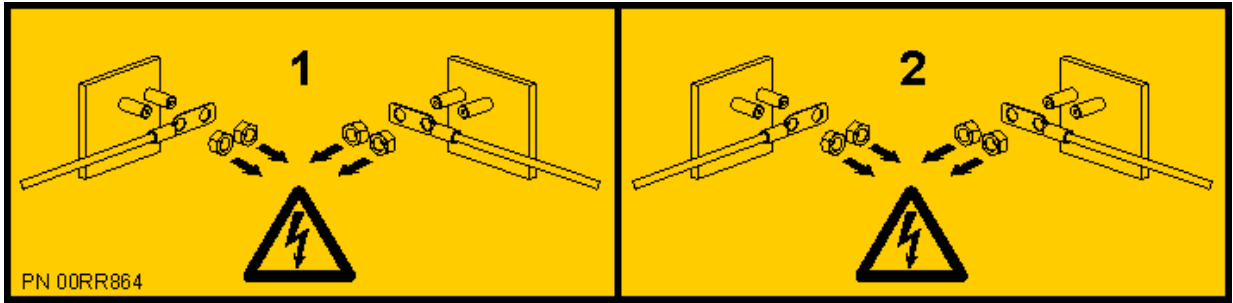


or



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)

5. 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.



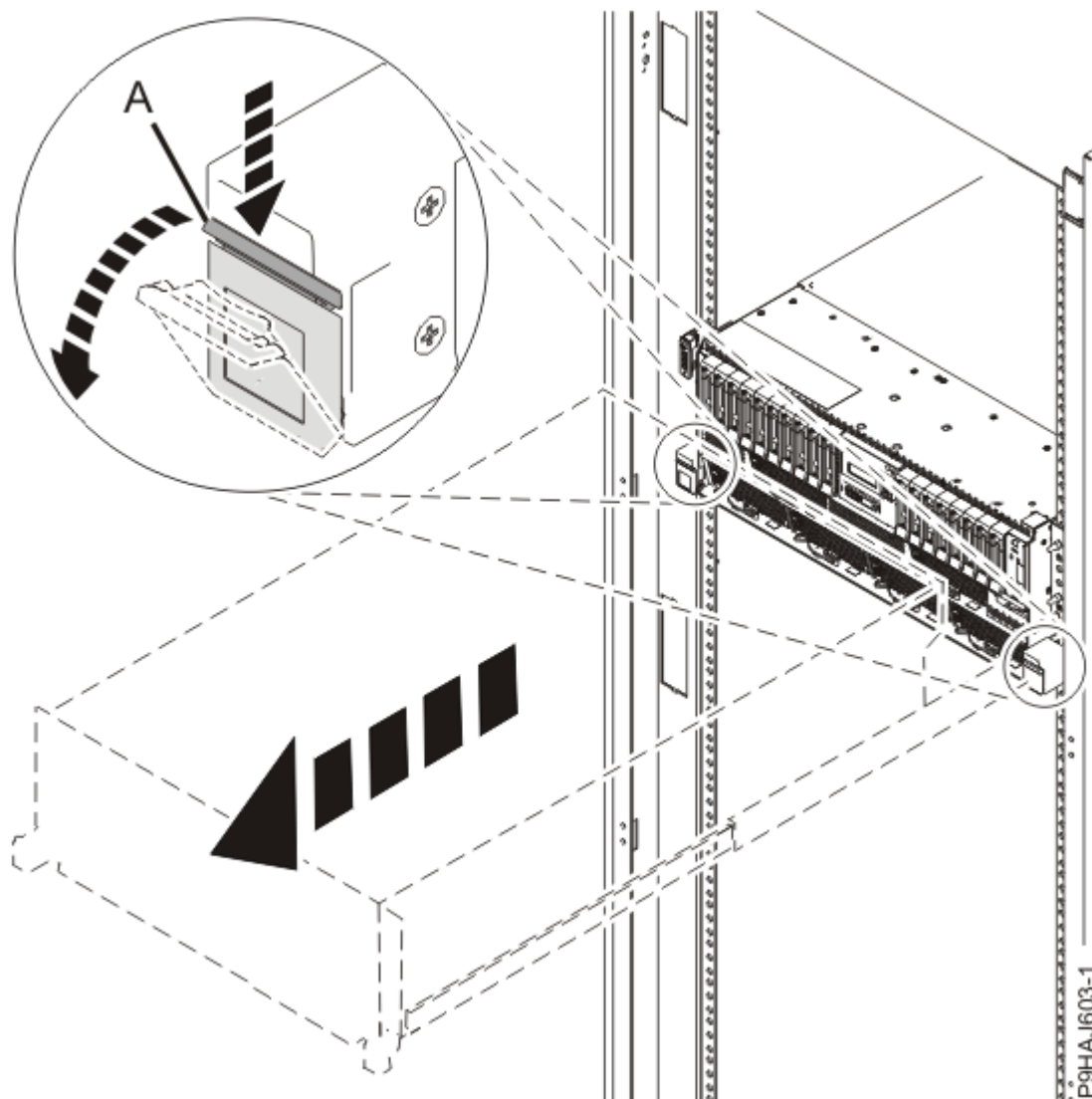
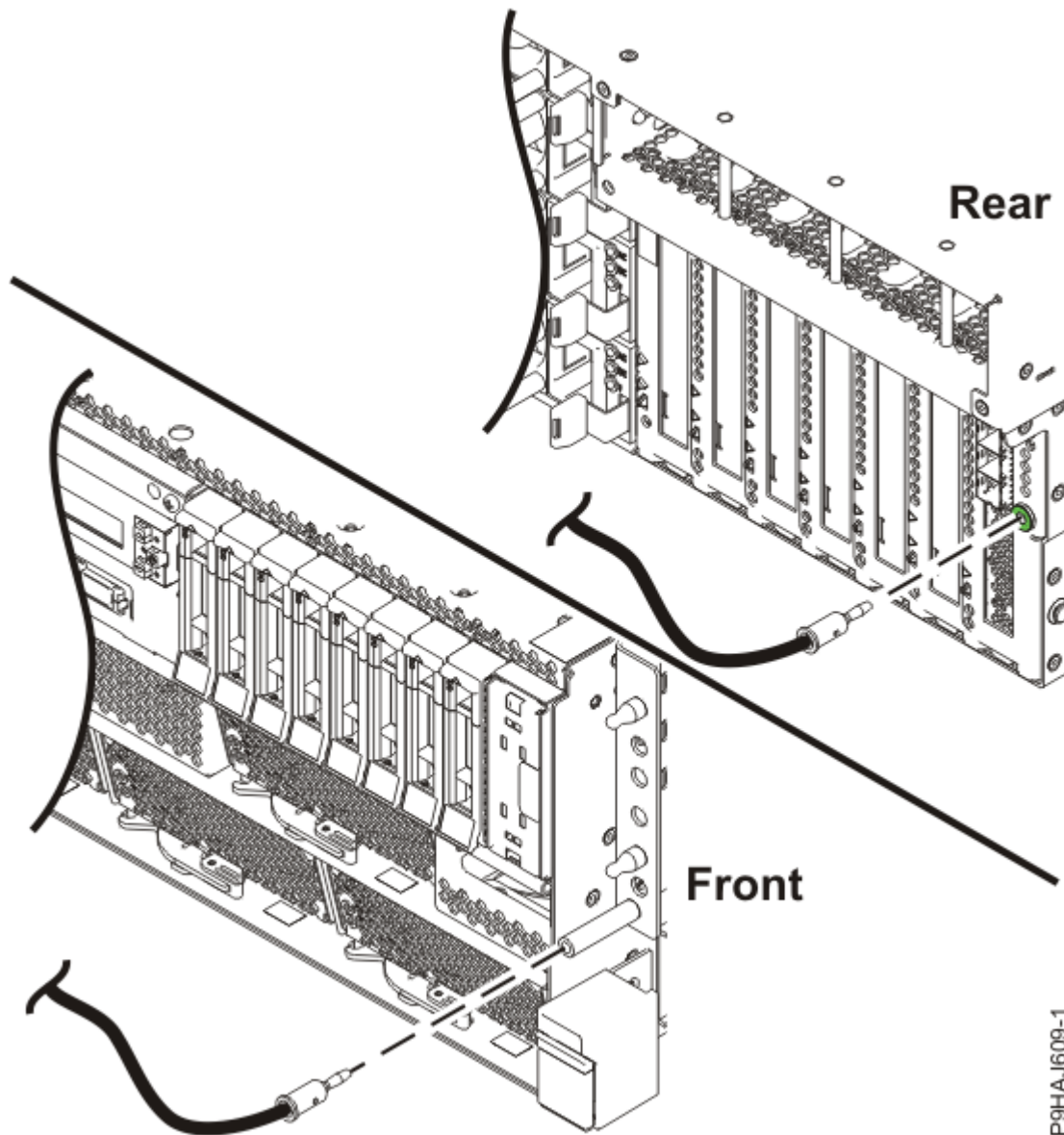


Figure 18. Releasing the side latches

6. Attach the electrostatic discharge (ESD) wrist strap. Your system has ESD jacks on the front and on the rear of the system as shown in the following figure. Plug the ESD wrist strap into the ESD jack.

 **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.



P9HAJ609-1

Figure 19. Location of ESD plugs

7. Remove the service access cover.

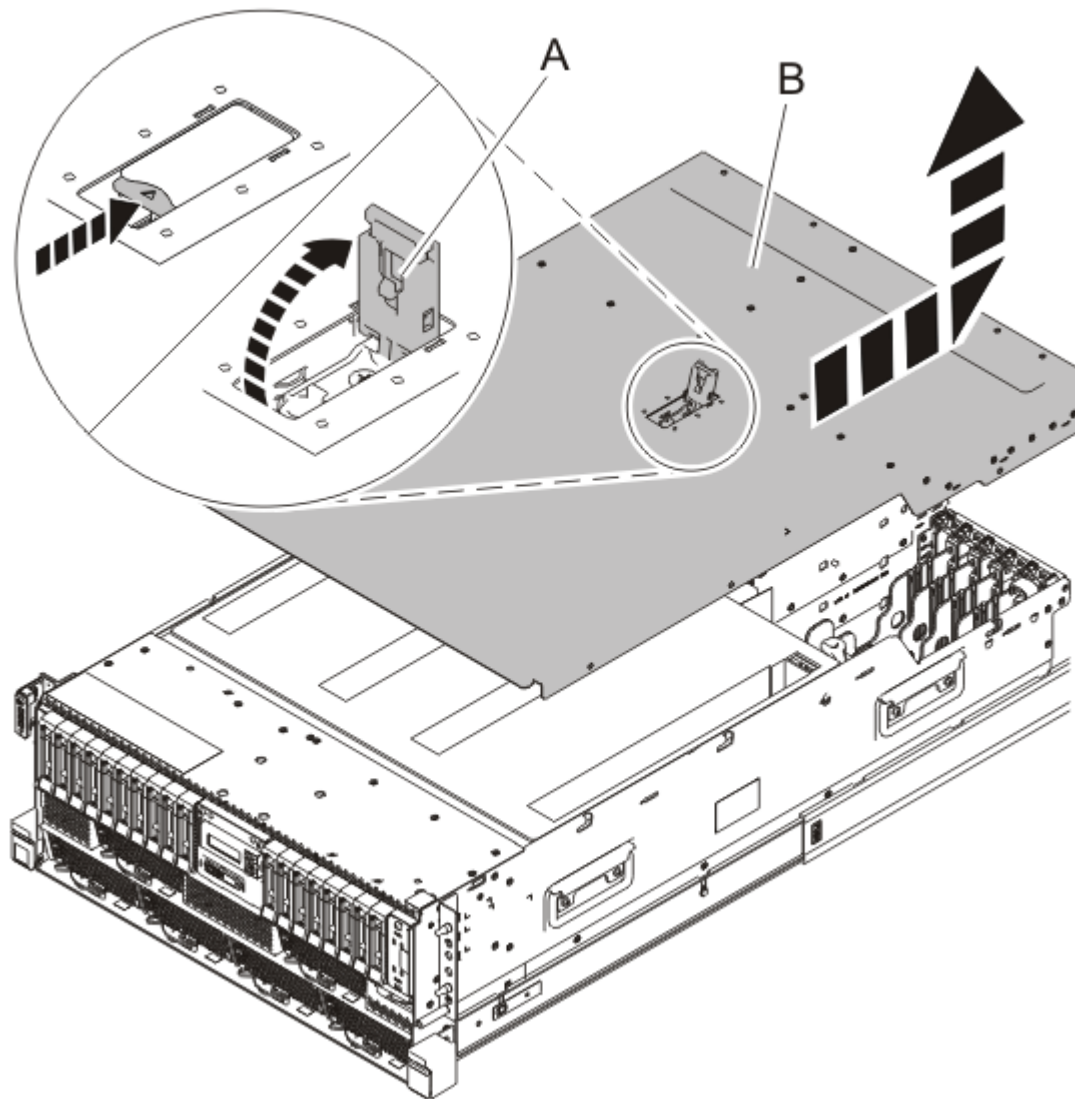
For a rack-mounted system, complete the following steps. Refer to [Figure 20](#) on page 26.



**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.





P9HAJ605-2

Figure 20. Removing the service access cover from a rack-mounted system

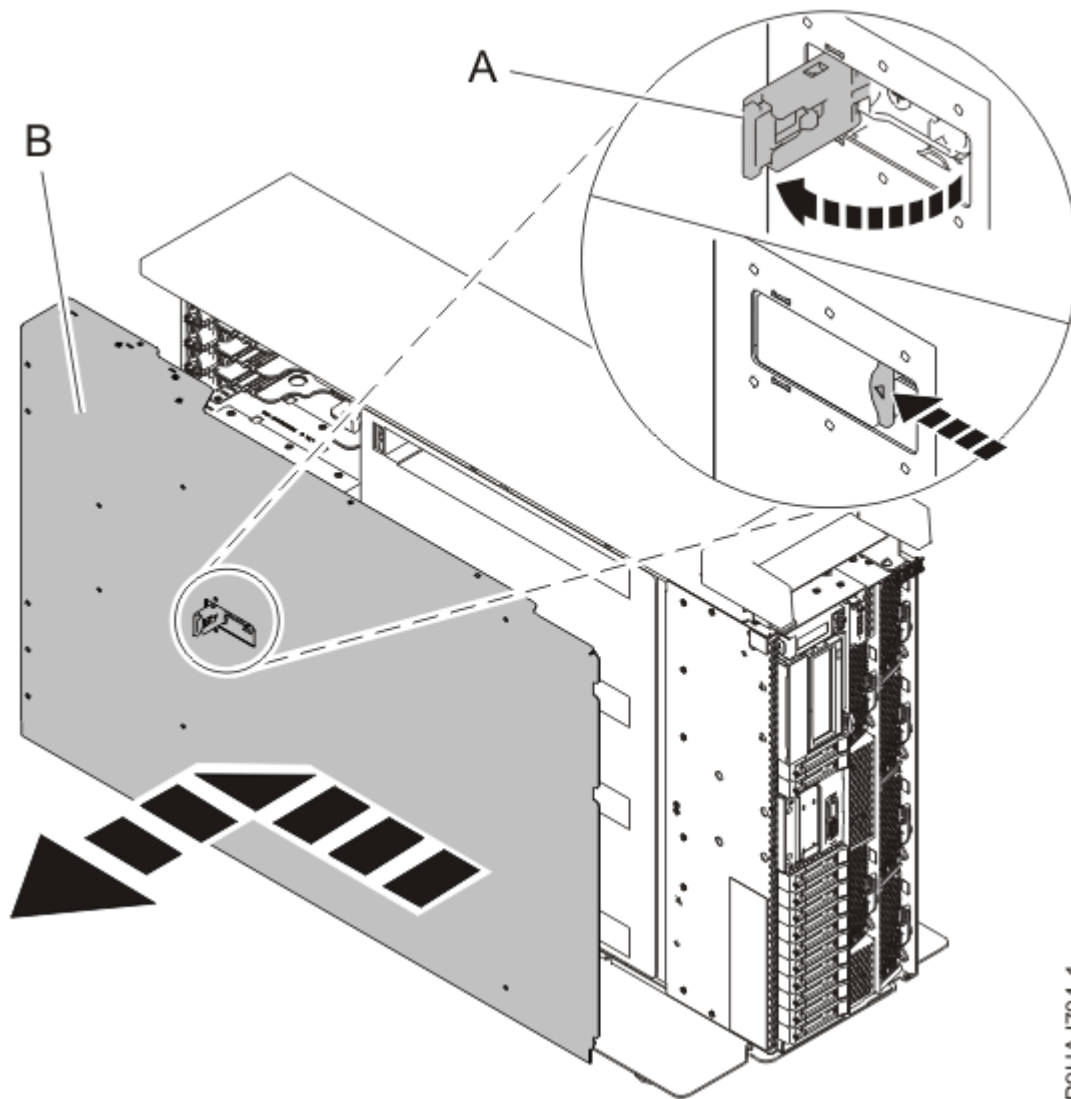
For a stand-alone system, complete the following steps. Refer to [Figure 21 on page 27](#).



**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.





P9HAJ704-1

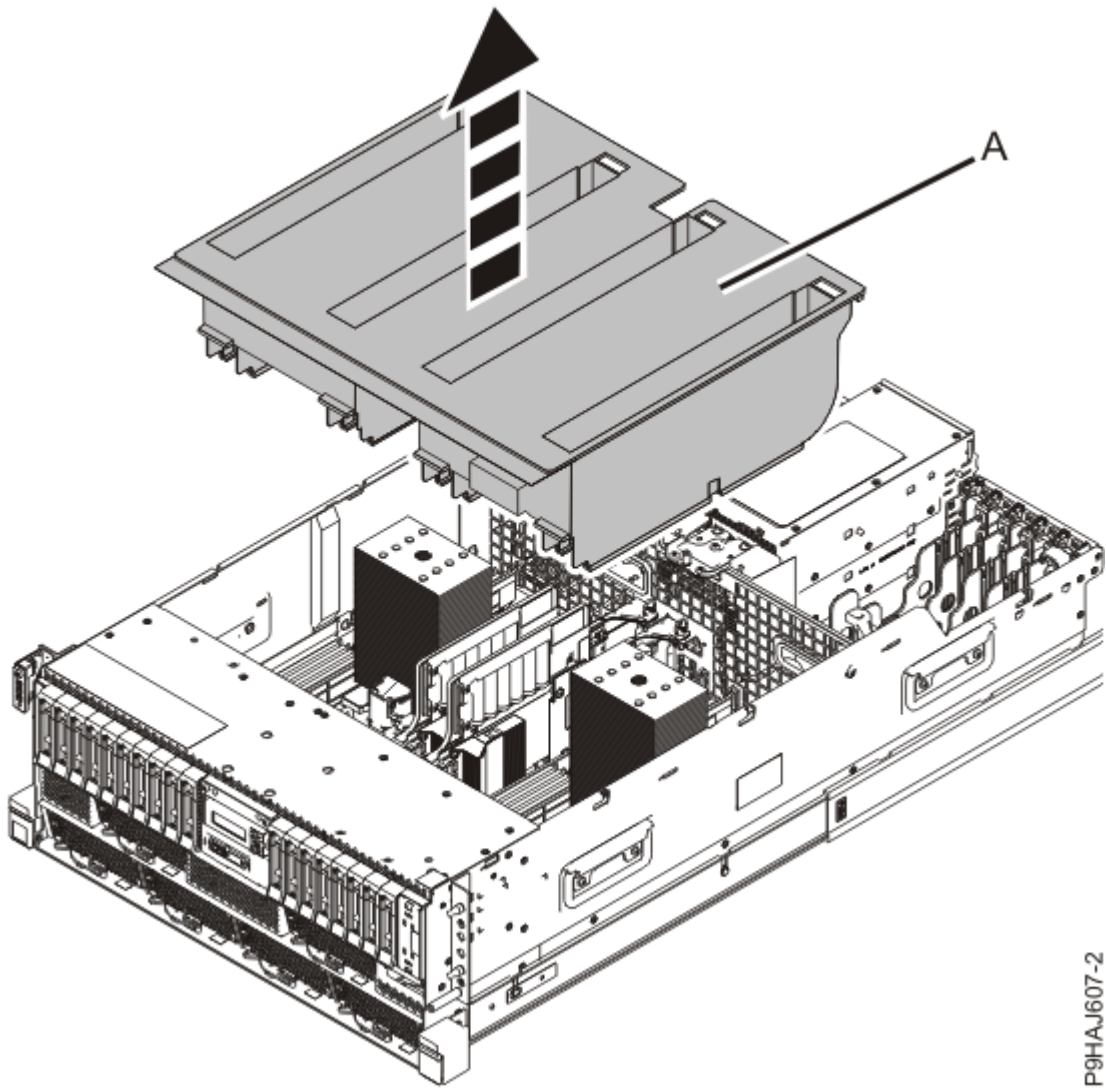
Figure 21. Removing the service access cover

## Removing the fan cable from the 9009-41A, 9009-41G, 9009-42A, 9009-42G, 9223-42H, or 9223-42S system

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

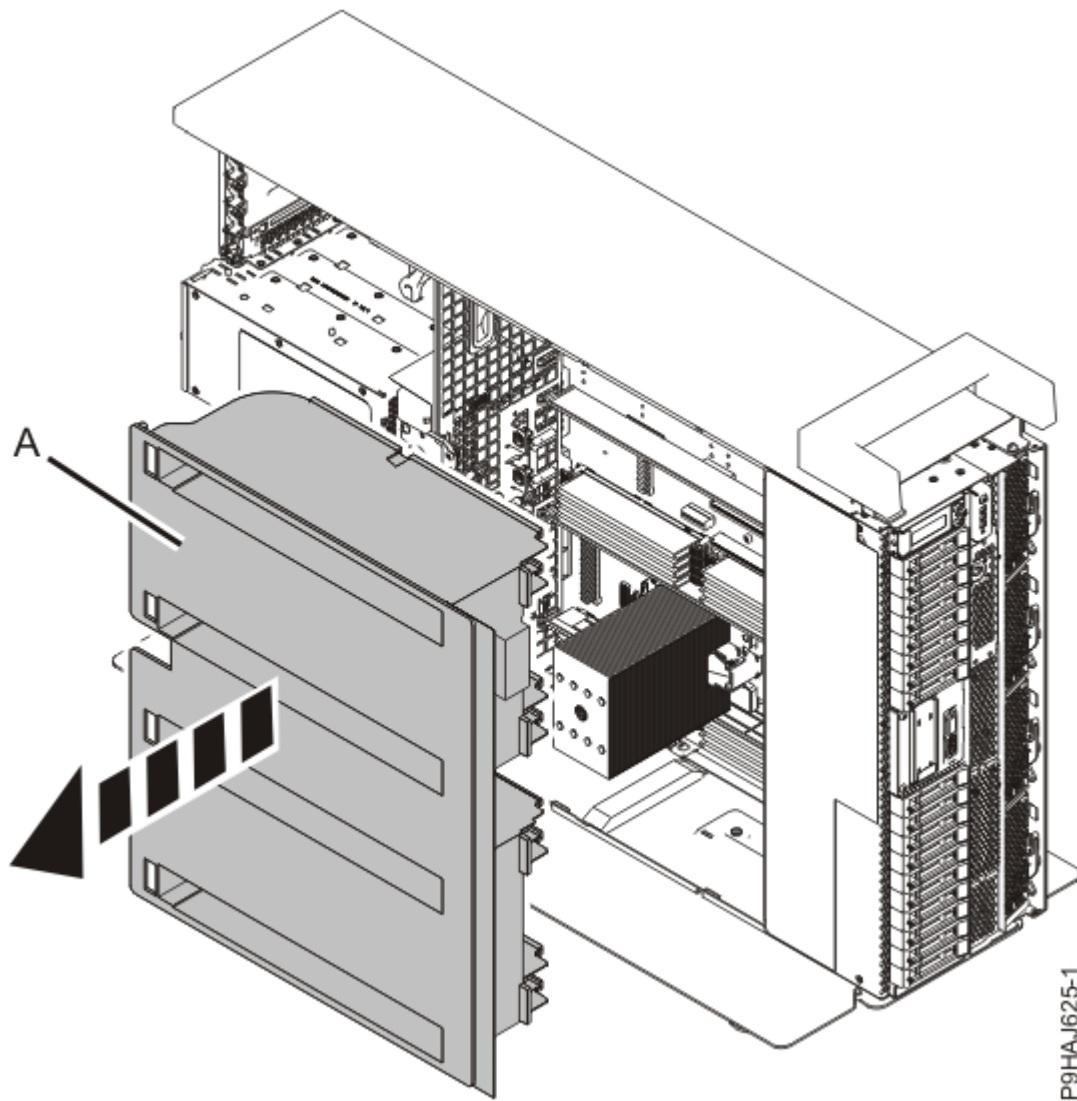
### Procedure

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 22 on page 28](#). For a stand-alone system, remove the air baffle (A) straight out as shown in [Figure 23 on page 29](#). Place the air baffle upside down on a clean area.



P9HAJ607-2

Figure 22. Removing the air baffle from a rack-mounted system

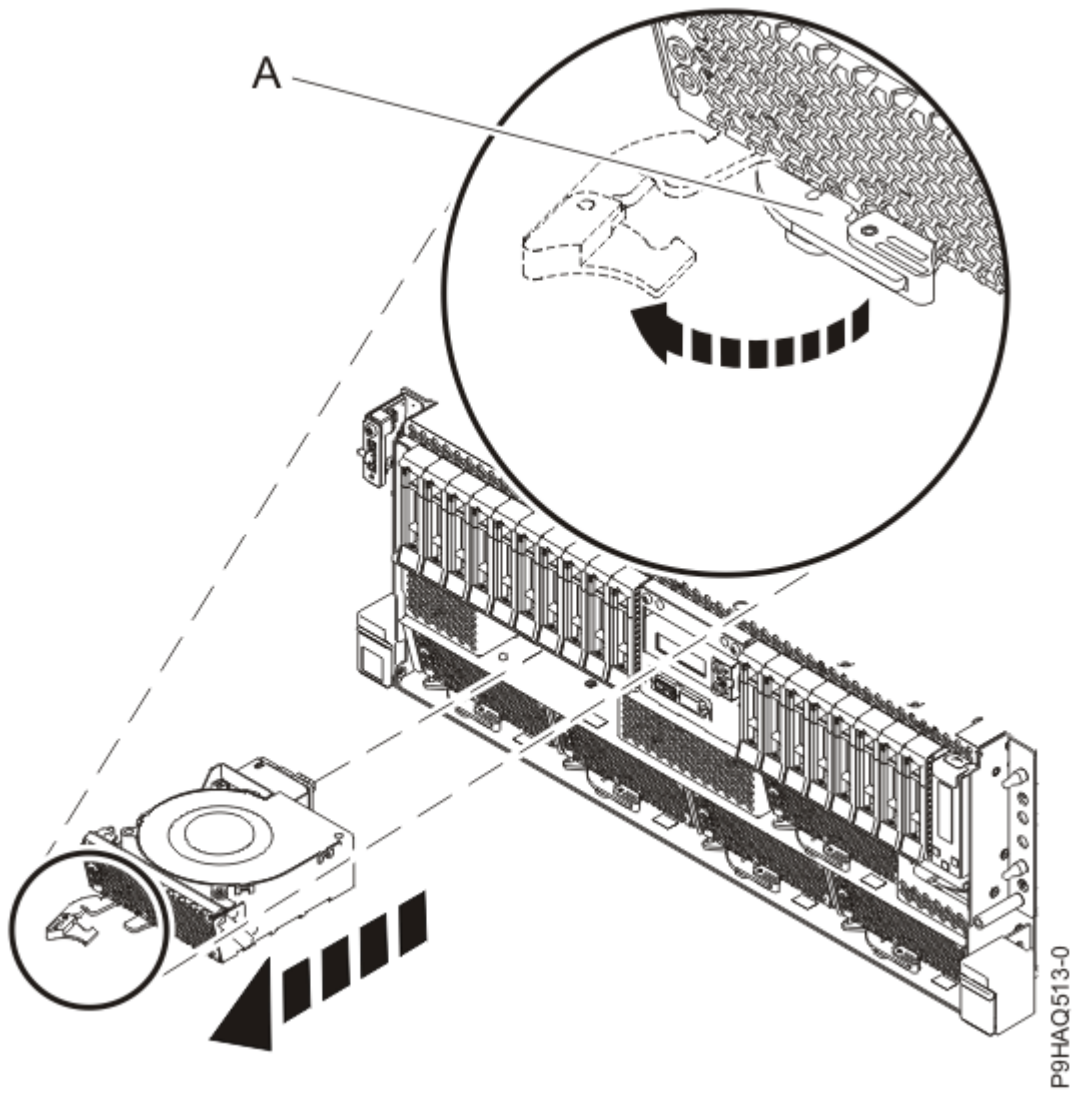


*Figure 23. Removing the air baffle from a stand-alone system*

3. Remove the top fans from the system.

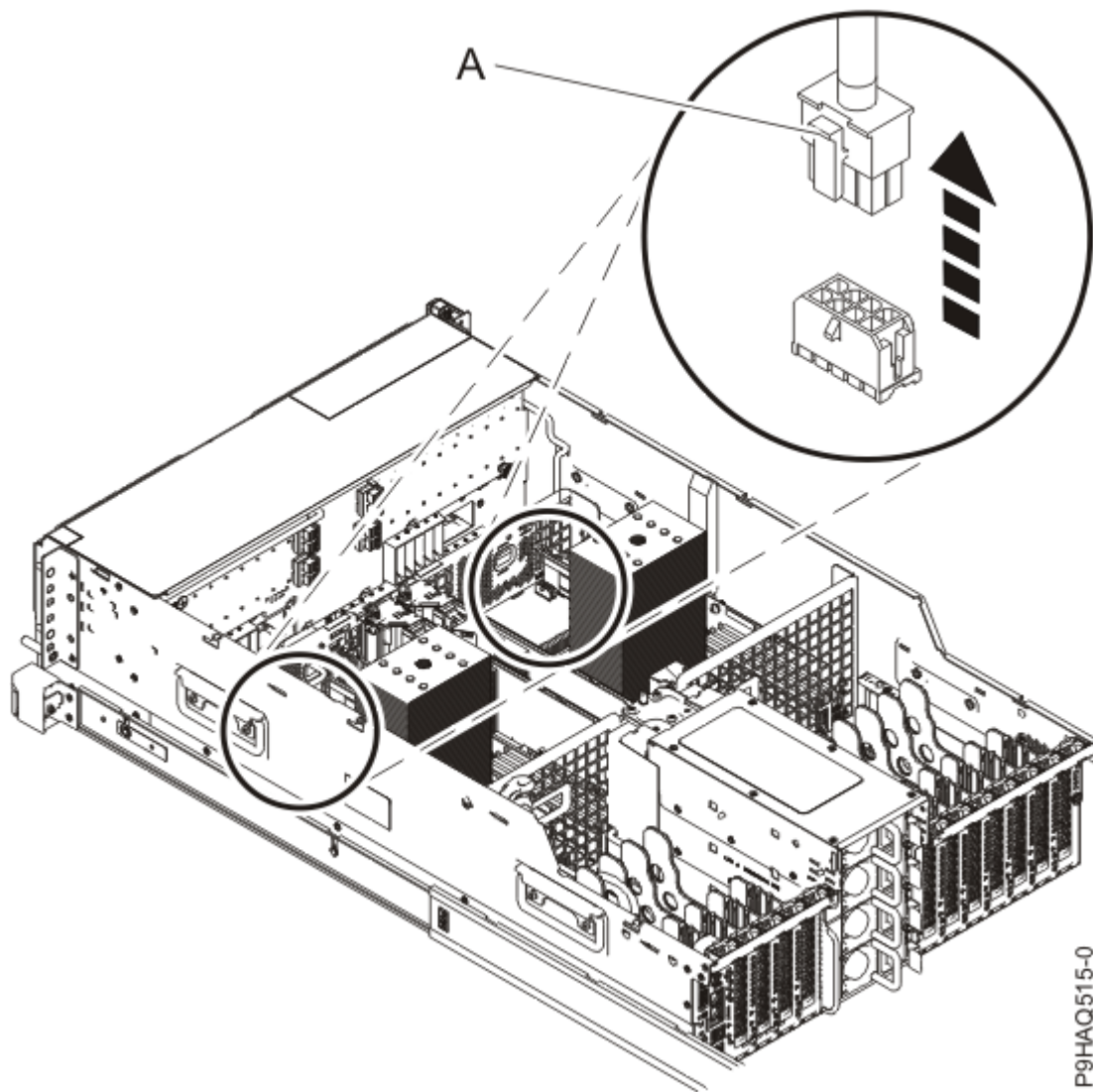
4. To remove the fan, complete the following steps:

- a) Put your thumb against the front of the latch, **(A)** as shown in [Figure 24 on page 30](#), and put your index finger against the rear of the latch.
- b) Push against the latch with your thumb and then pull the latch out with your index finger. This action releases the latch.
- c) Rotate the handle in the direction that is shown in [Figure 24 on page 30](#) to unlock the fan from its slot.
- d) Hold on to the handle and by using your hand to support the bottom of the fan, pull out the fan from its slot as shown in [Figure 24 on page 30](#).



*Figure 24. Removing a fan from the system*

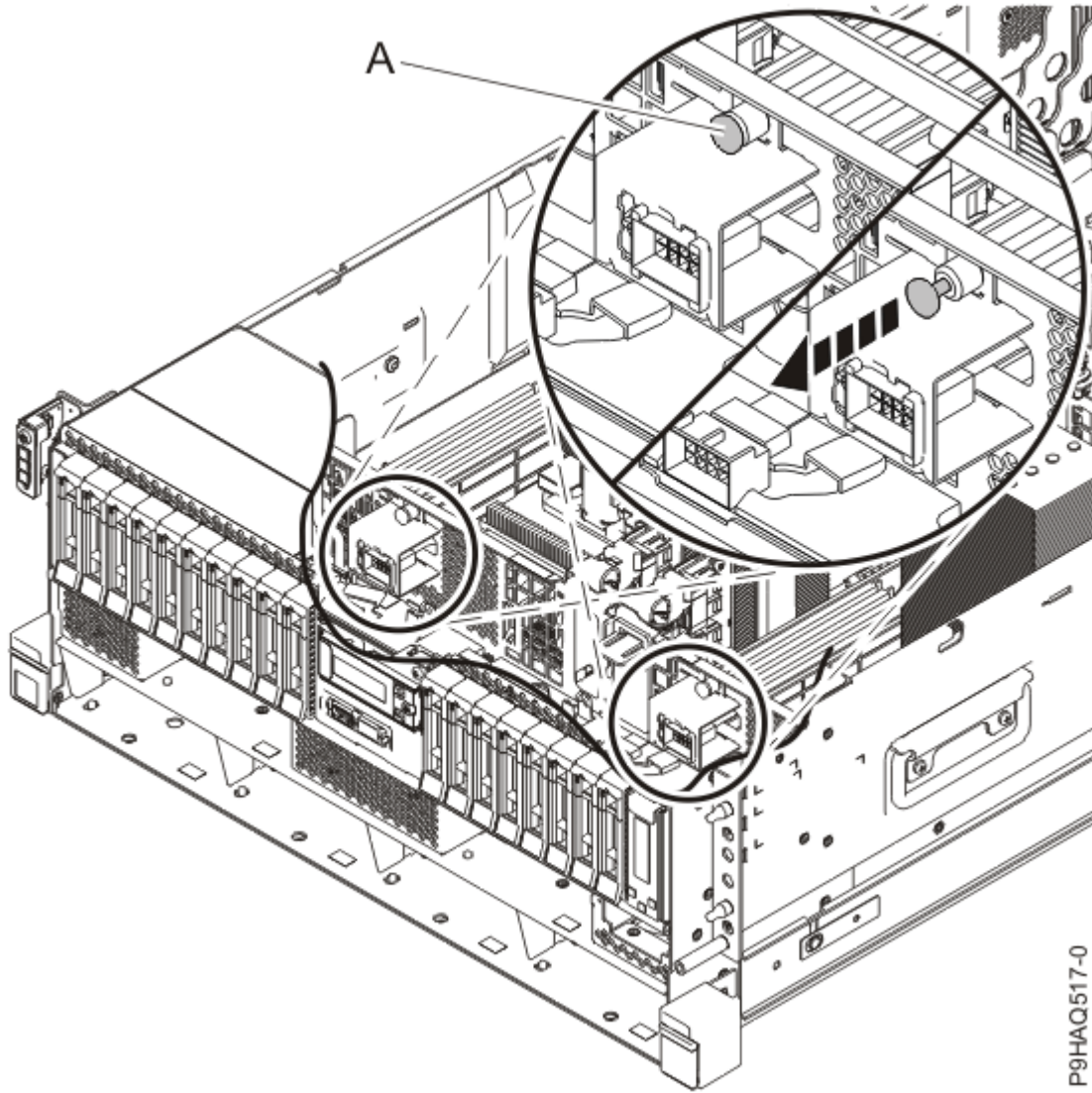
5. Disconnect the fan cable **(A)** from the system backplane by pressing the latch release on the connector as shown in [Figure 25](#) on page 31, then use the connector to pull the cable.



*Figure 25. Removing a fan cable from the system backplane*

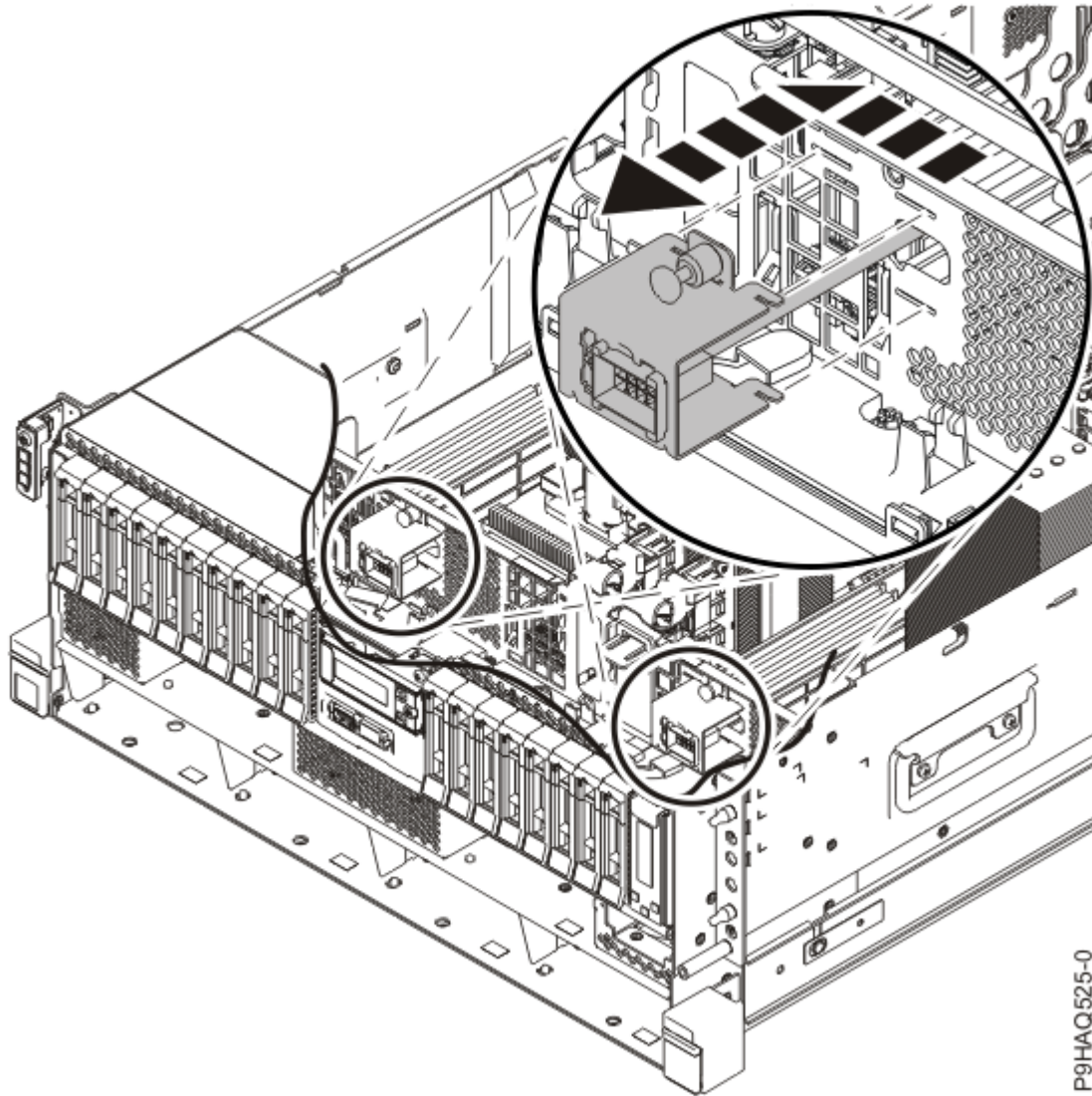
6. Unfasten the fan socket from bulkhead as shown in [Figure 26 on page 32](#) and [Figure 27 on page 33](#).
  - a) Pull out the release pin **(A)** towards the front of the system.
  - b) Slide the fan socket to the side to release it from the bulkhead.





P9HAQ517-0

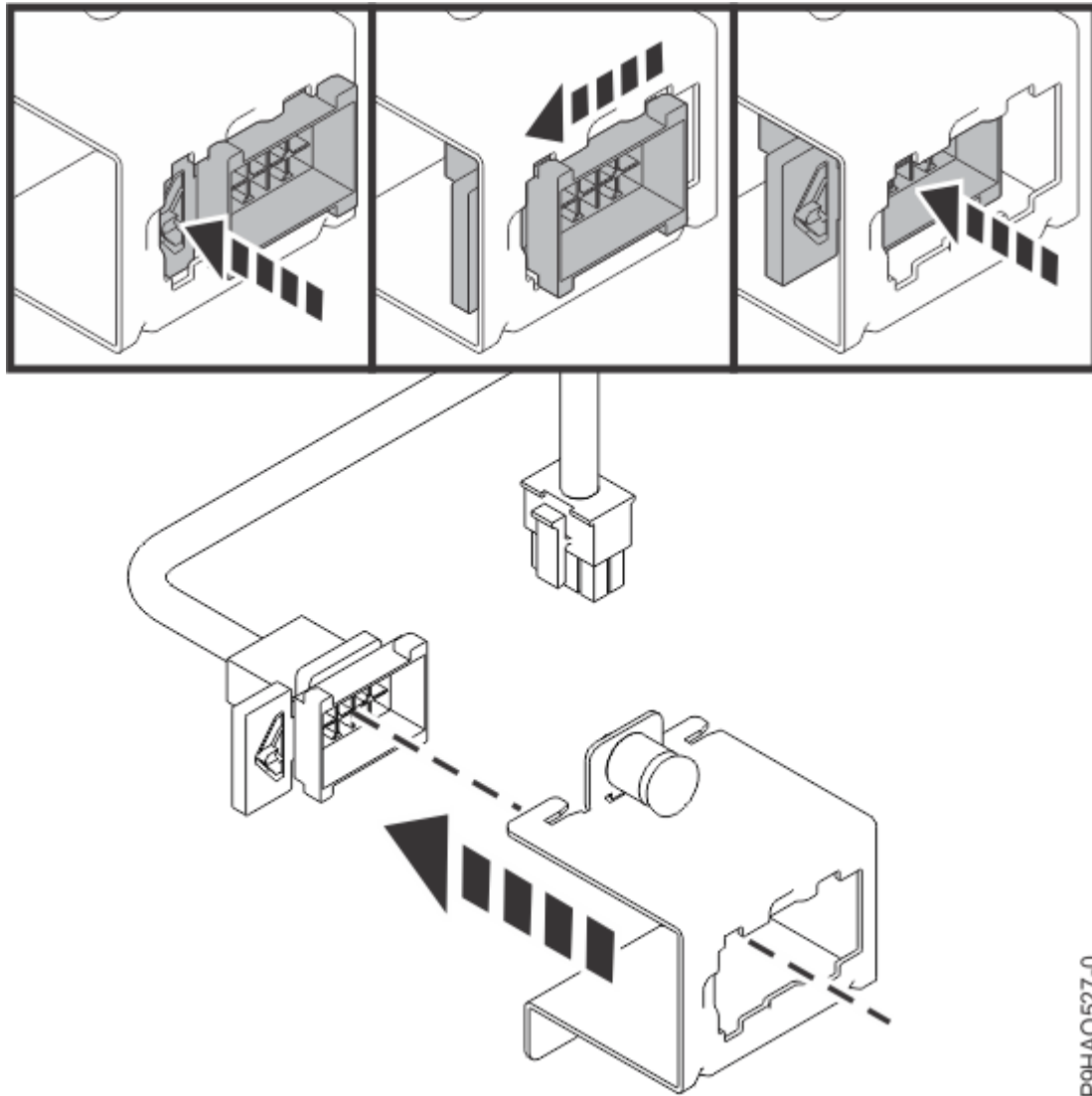
Figure 26. Releasing the fan socket from the bulkhead



*Figure 27. Removing the fan socket from the bulkhead*

7. Pull out the fan cable through the opening in the bulkhead.
8. Remove the fan cable from the fan cable bracket by pressing the latch release on the connector and sliding the fan cable to the side as shown in the following figure.





P9HAQ527-0

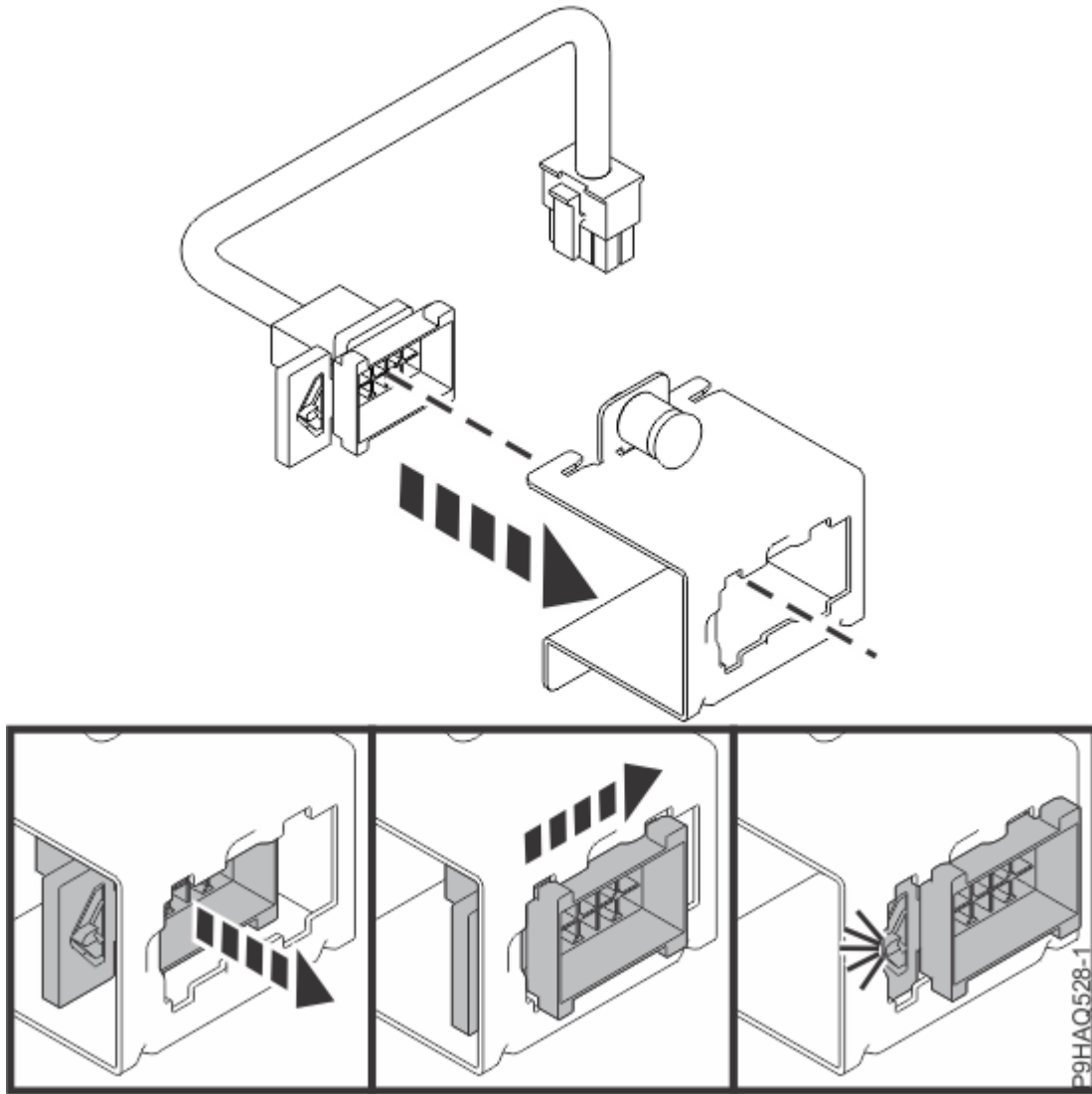
Figure 28. Removing the fan cable from the fan cable bracket

## Replacing the fan cable in the 9009-41A, 9009-41G, 9009-42A, 9009-42G, 9223-42H, or 9223-42S system

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

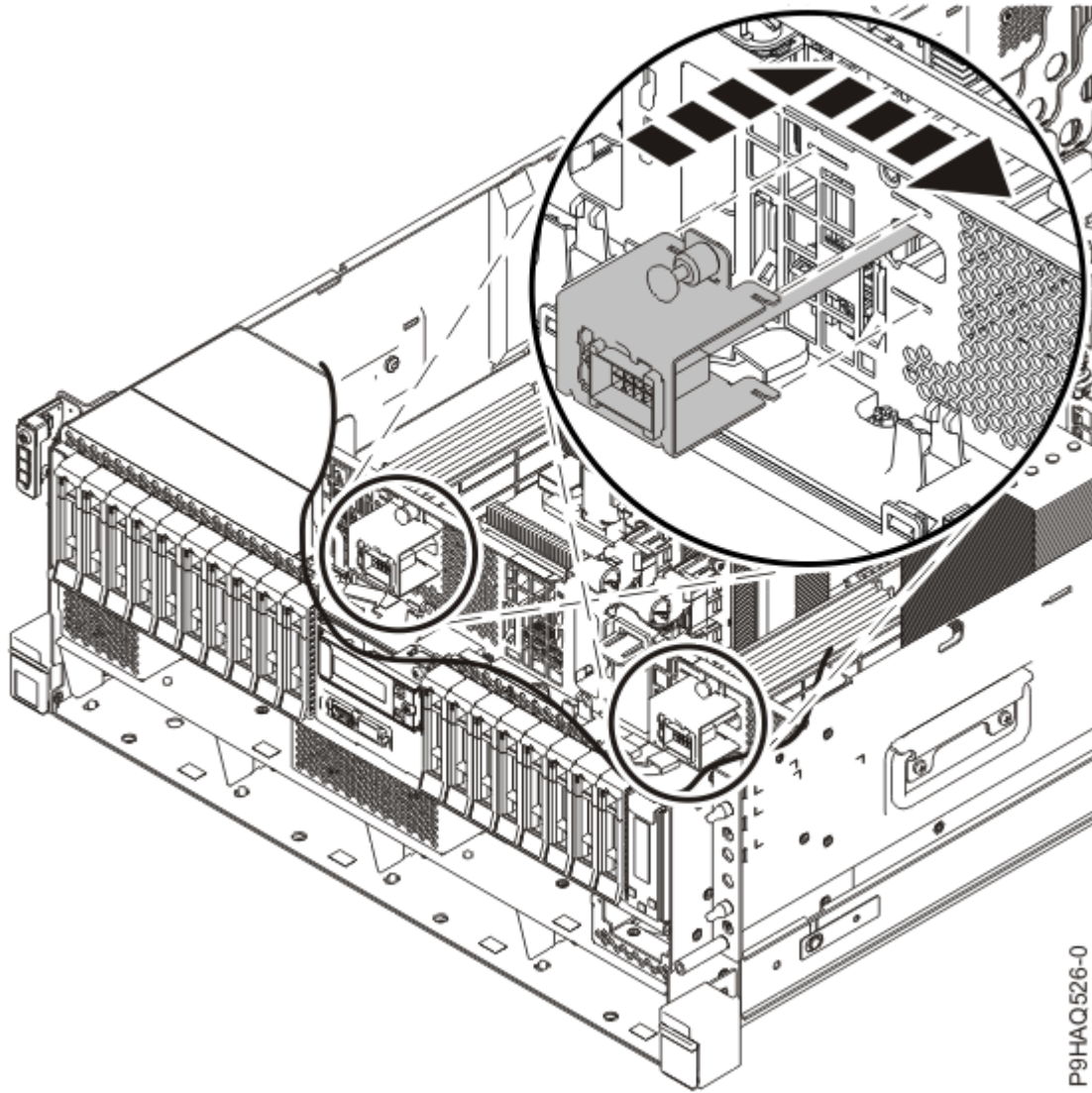
### Procedure

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. Replace the fan cable in the fan cable bracket by inserting the latch of the connector into the bracket and sliding the connector until the connector clicks into place as shown in the following figure.



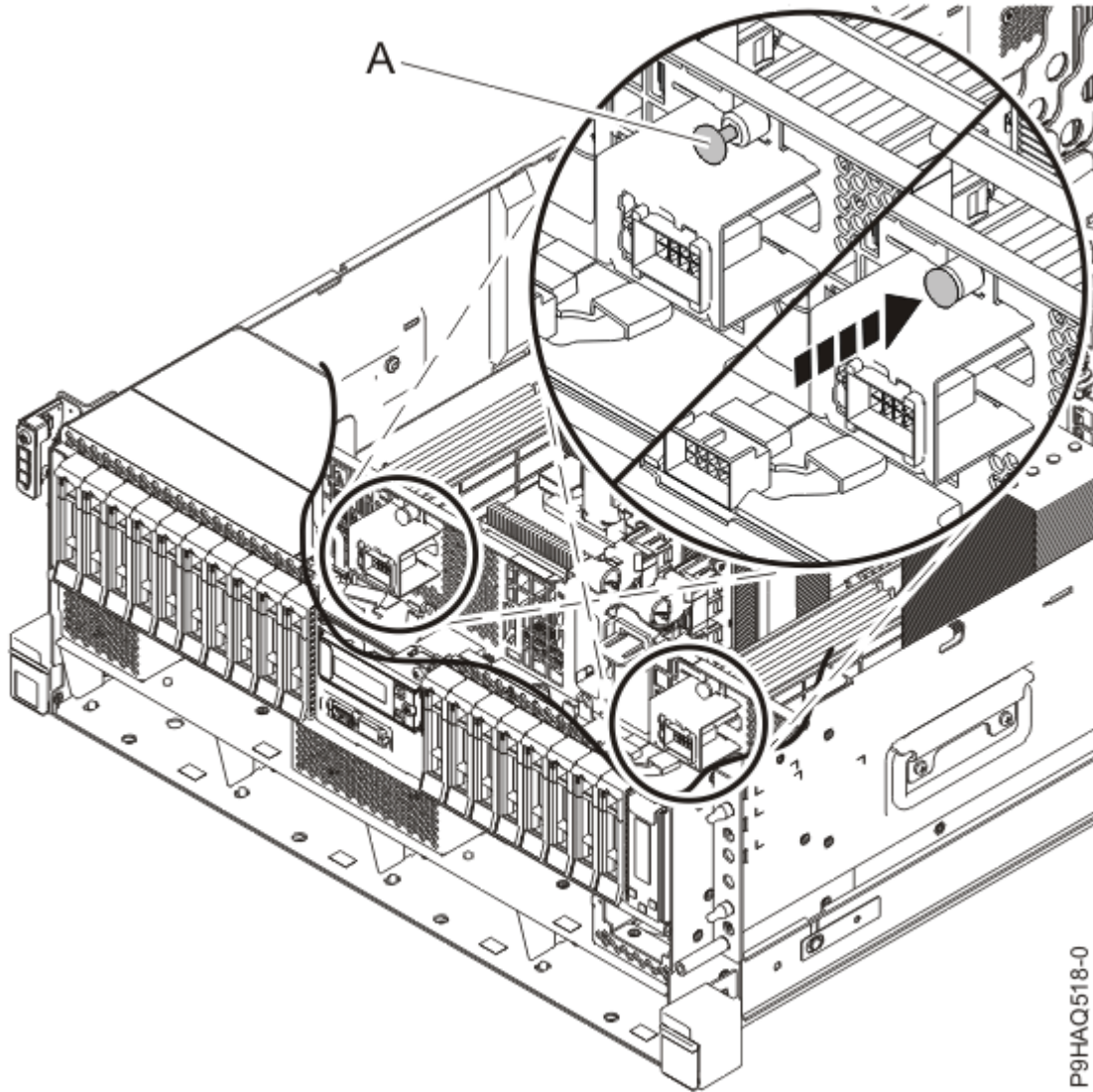
*Figure 29. Replacing the fan cable in the fan cable bracket*

3. Insert the fan cable through the opening in the bulkhead.
4. Fasten the fan socket to bulkhead as shown in [Figure 30 on page 36](#) and [Figure 31 on page 37](#).
  - a) Insert the socket tabs into the bulkhead.
  - b) Slide the socket to the side to fasten it to the bulkhead.
  - c) Ensure that the pin **(A)** clicks into place to secure the socket to the bulkhead.



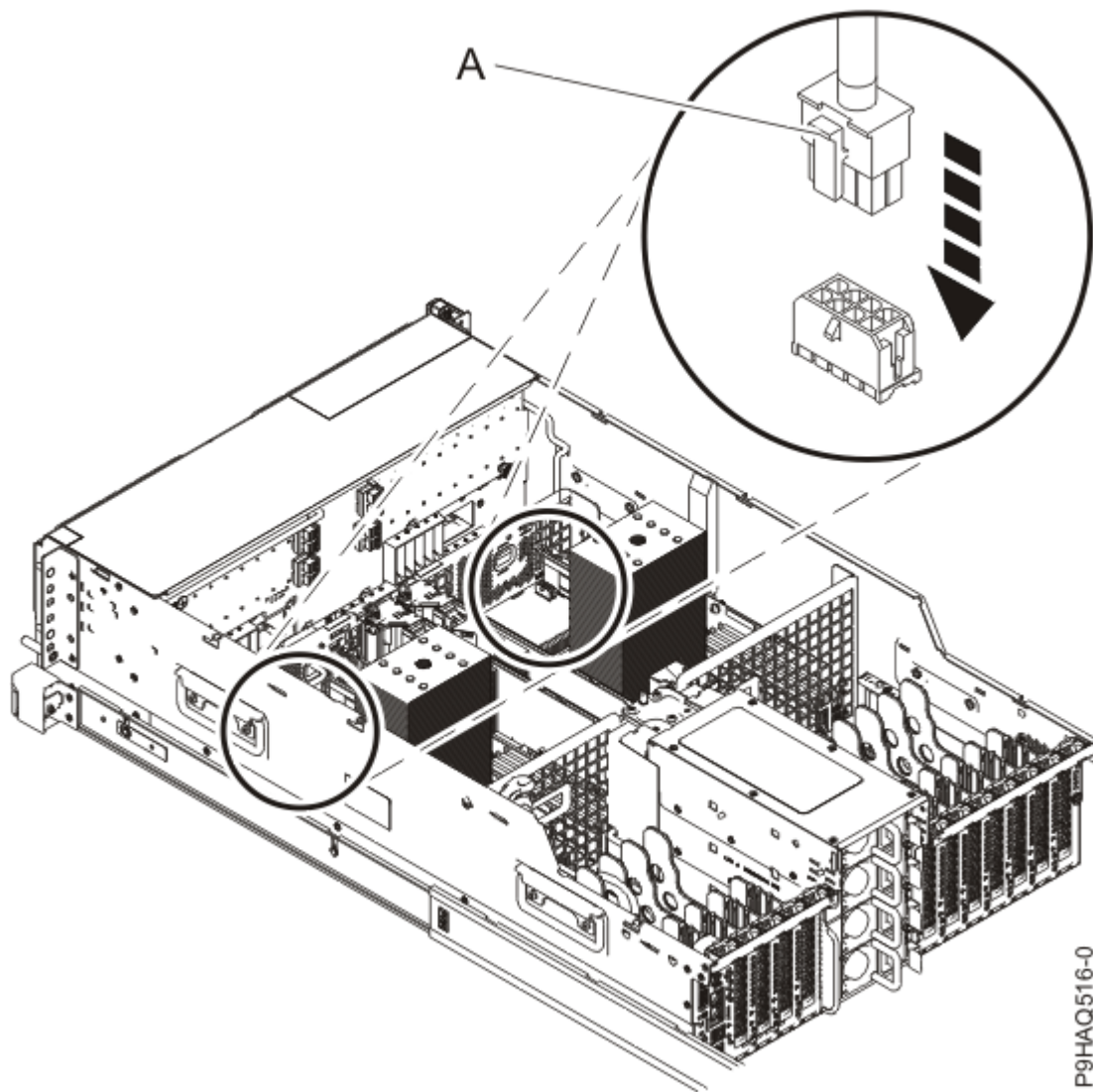
P9HAQ526-0

Figure 30. Replacing the socket in the bulkhead



*Figure 31. Fastening the fan socket to the bulkhead*

5. Connect the fan cable **(A)** to the system backplane as shown in [Figure 32](#) on page 38.



P9HAQ516-0

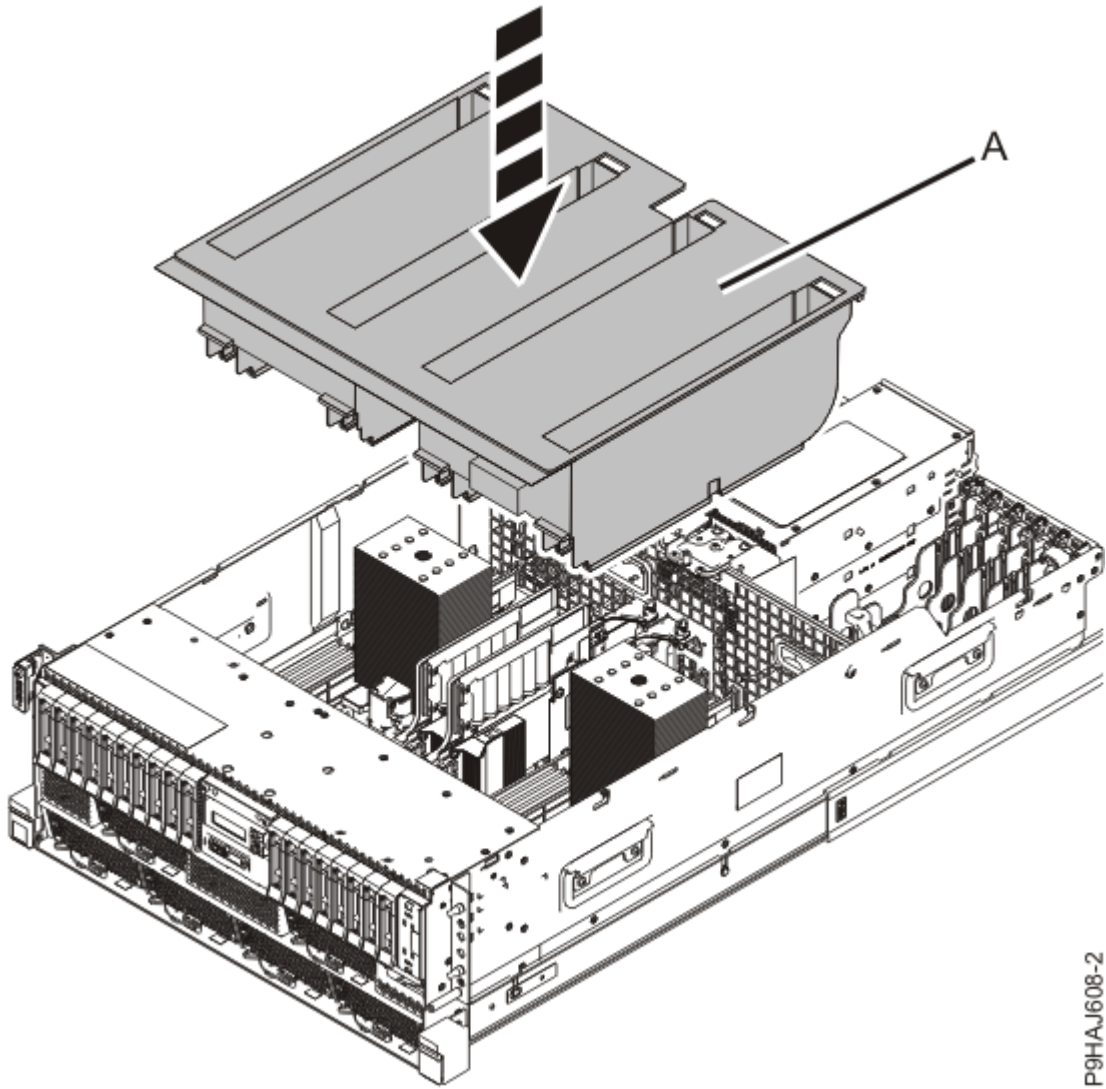
*Figure 32. Replacing a fan cable into the system backplane*

6. For a rack-mounted system, replace the air baffle **(A)** straight down into the chassis as shown in [Figure 33](#) on page 39.

For a stand-alone system, replace the air baffle **(A)** straight into the side of the chassis as shown in [Figure 34](#) on page 40.

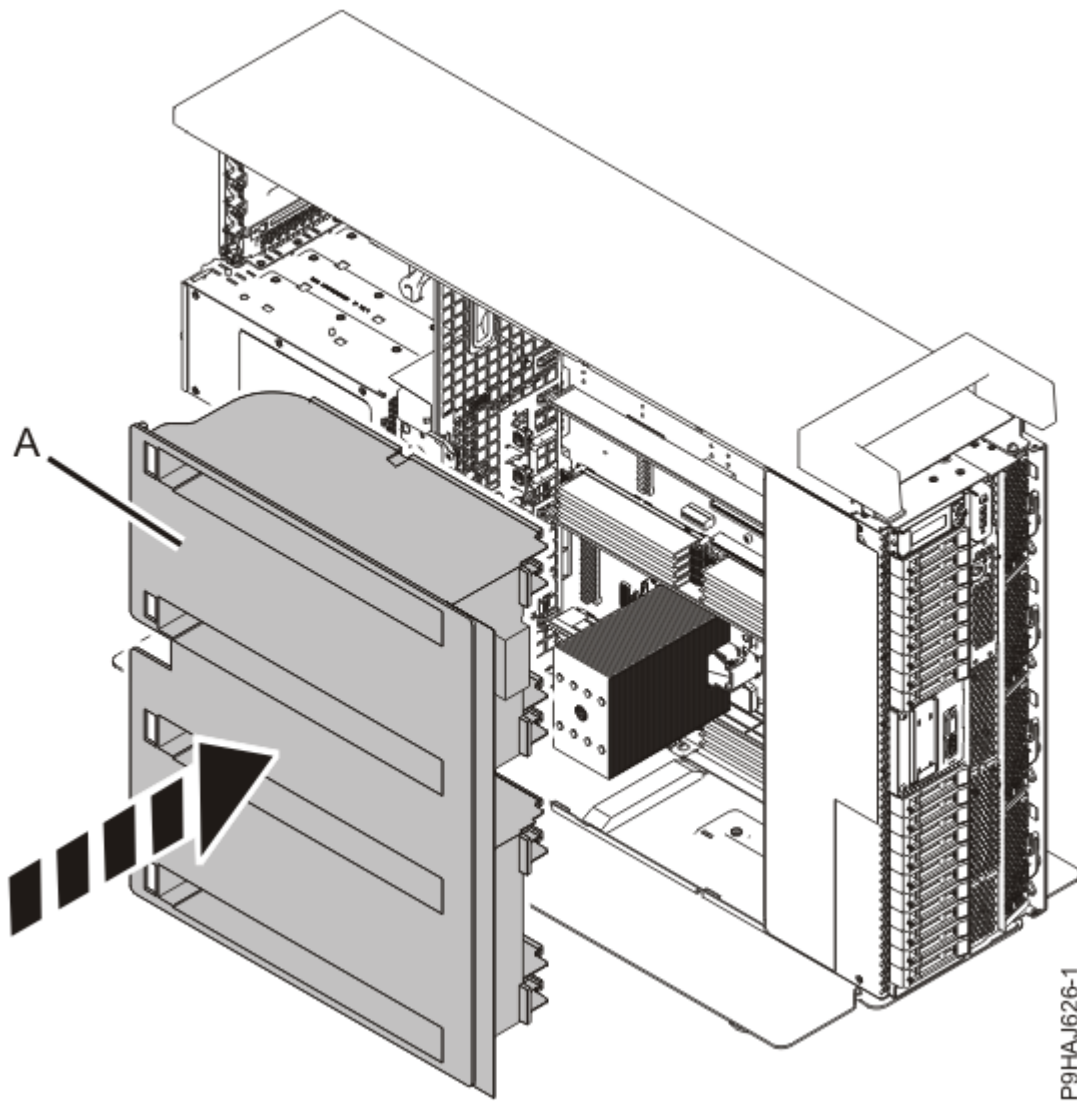
Ensure that the front flap tucks under the front chassis.





P9HAJ608-2

Figure 33. Replacing the air baffle in a rack-mounted system



P9HAJ626-1

Figure 34. 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 fan cable

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

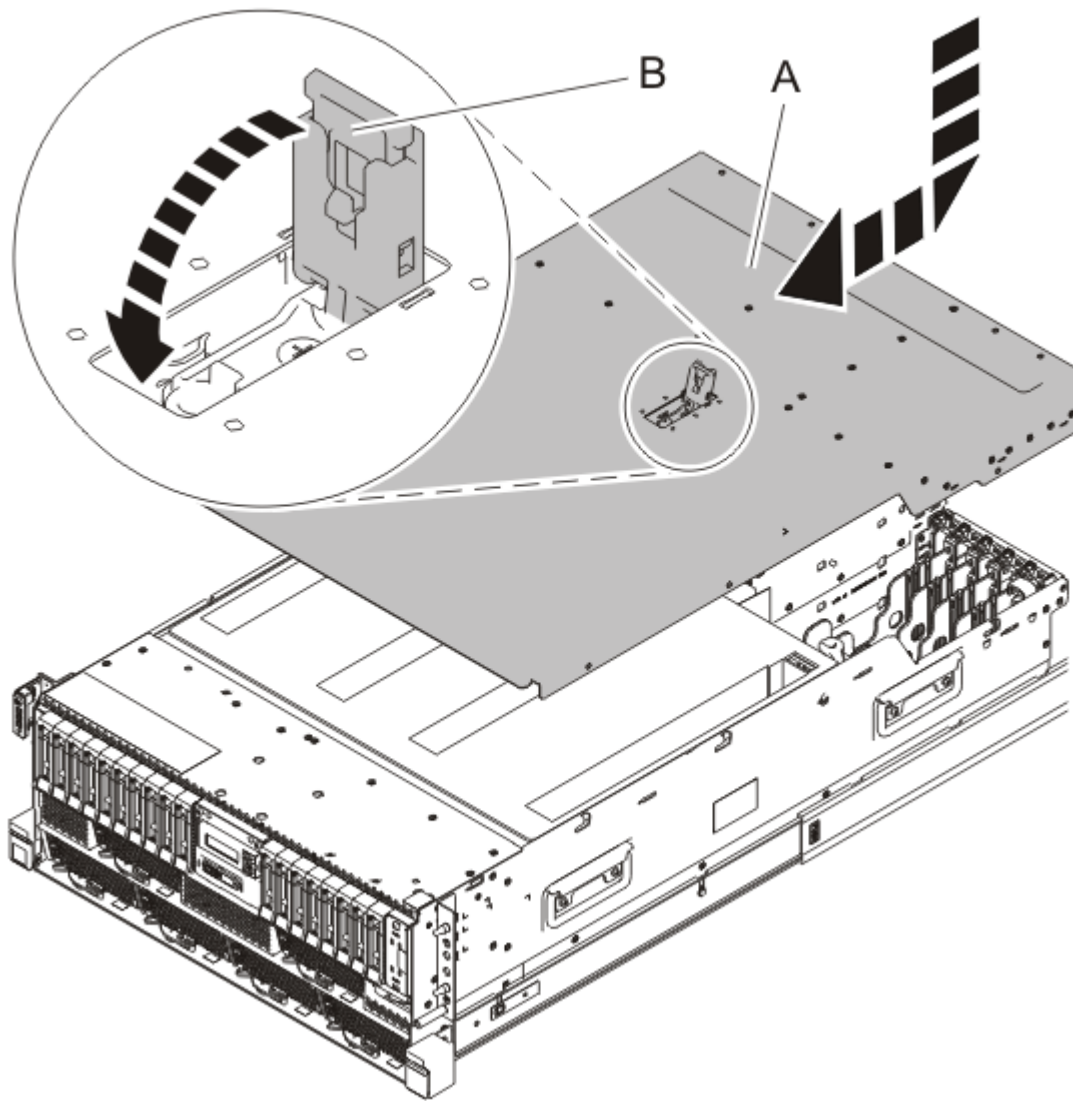
### Procedure

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. Replace the service access cover.

For a rack-mounted system, complete the following steps. Refer to [Figure 35 on page 41](#).

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



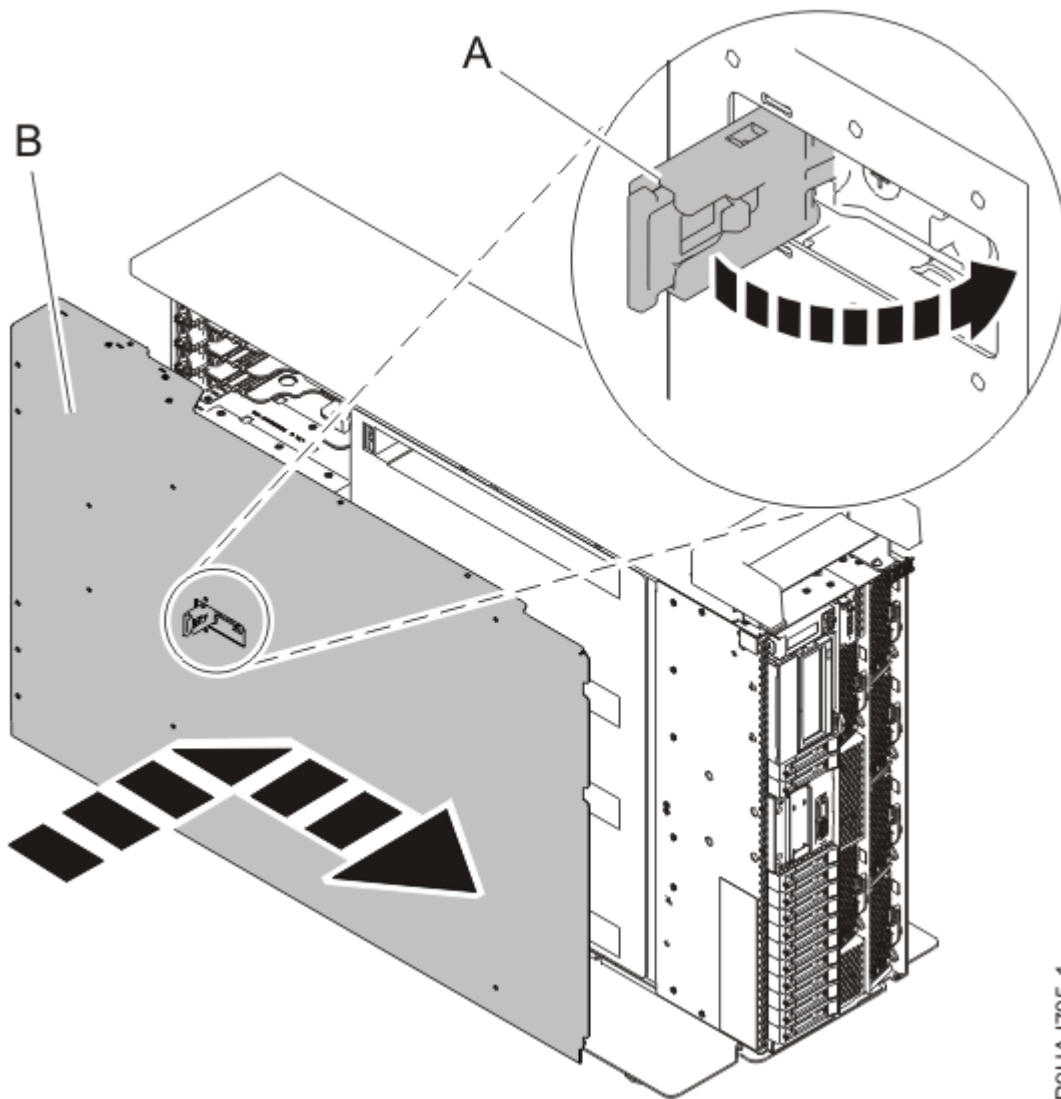


P9HAJ606-2

*Figure 35. Installing the service access cover*

For a stand-alone system, complete the following steps. Refer to [Figure 36 on page 42](#).

- 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.

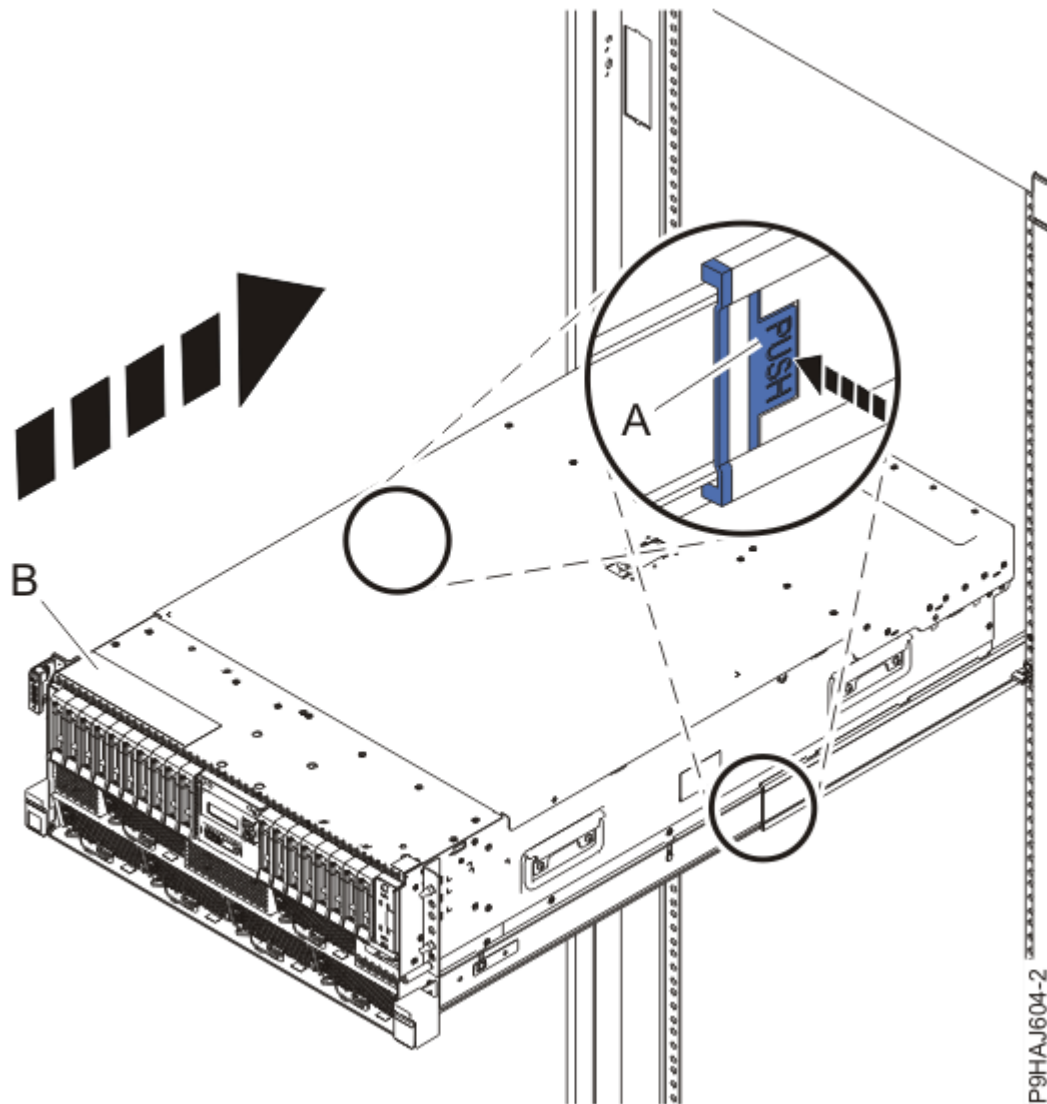


P9HAJ705-1

*Figure 36. Installing the service access cover*

3. For a rack-mounted system, unlock the blue rail safety latches **(A)** as shown in [Figure 37](#) on page 43 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 37. 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 38](#) on page 44 or [Figure 39](#) on page 45.

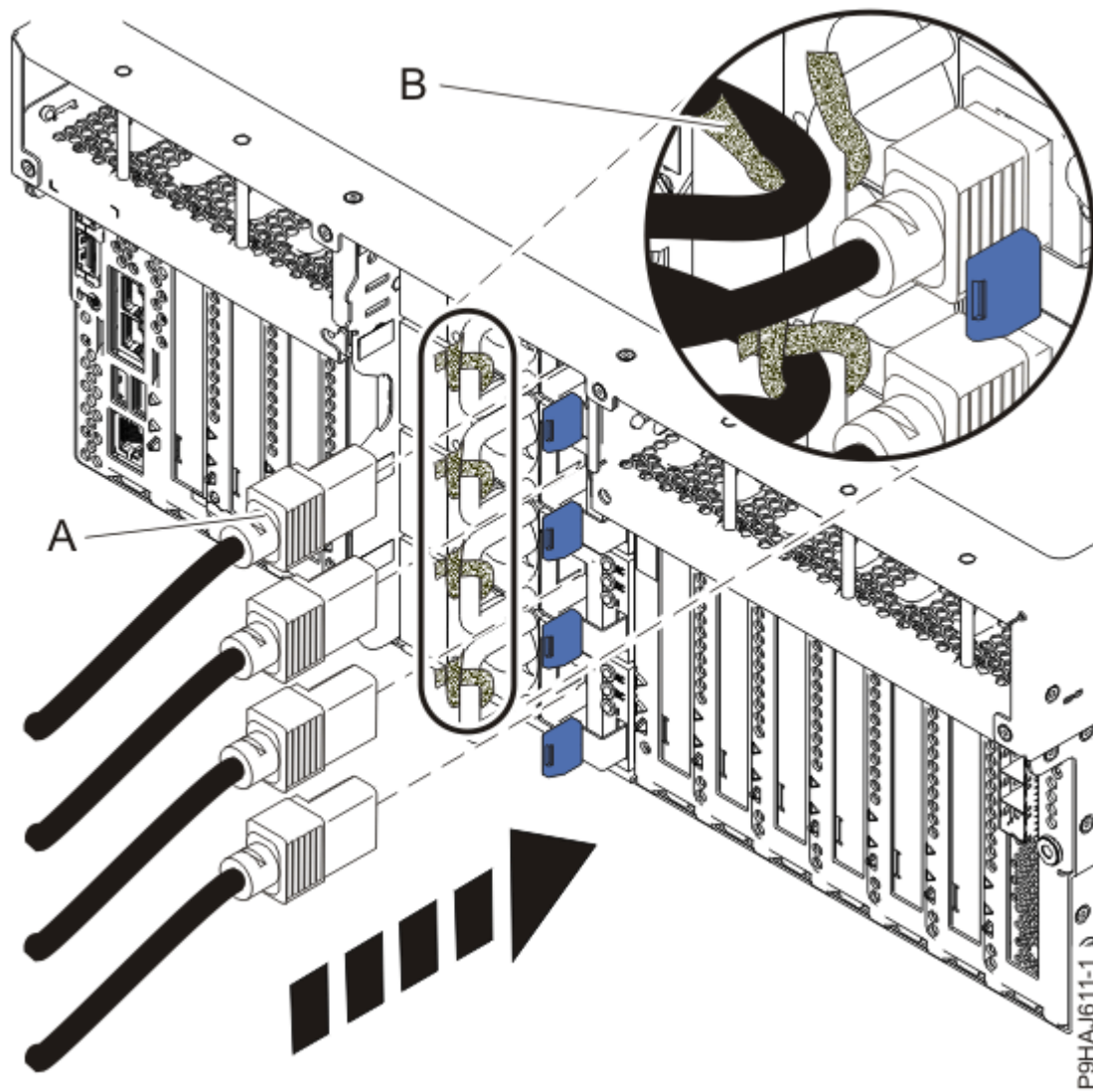


Figure 38. Connecting the power cords to a rack-mounted system

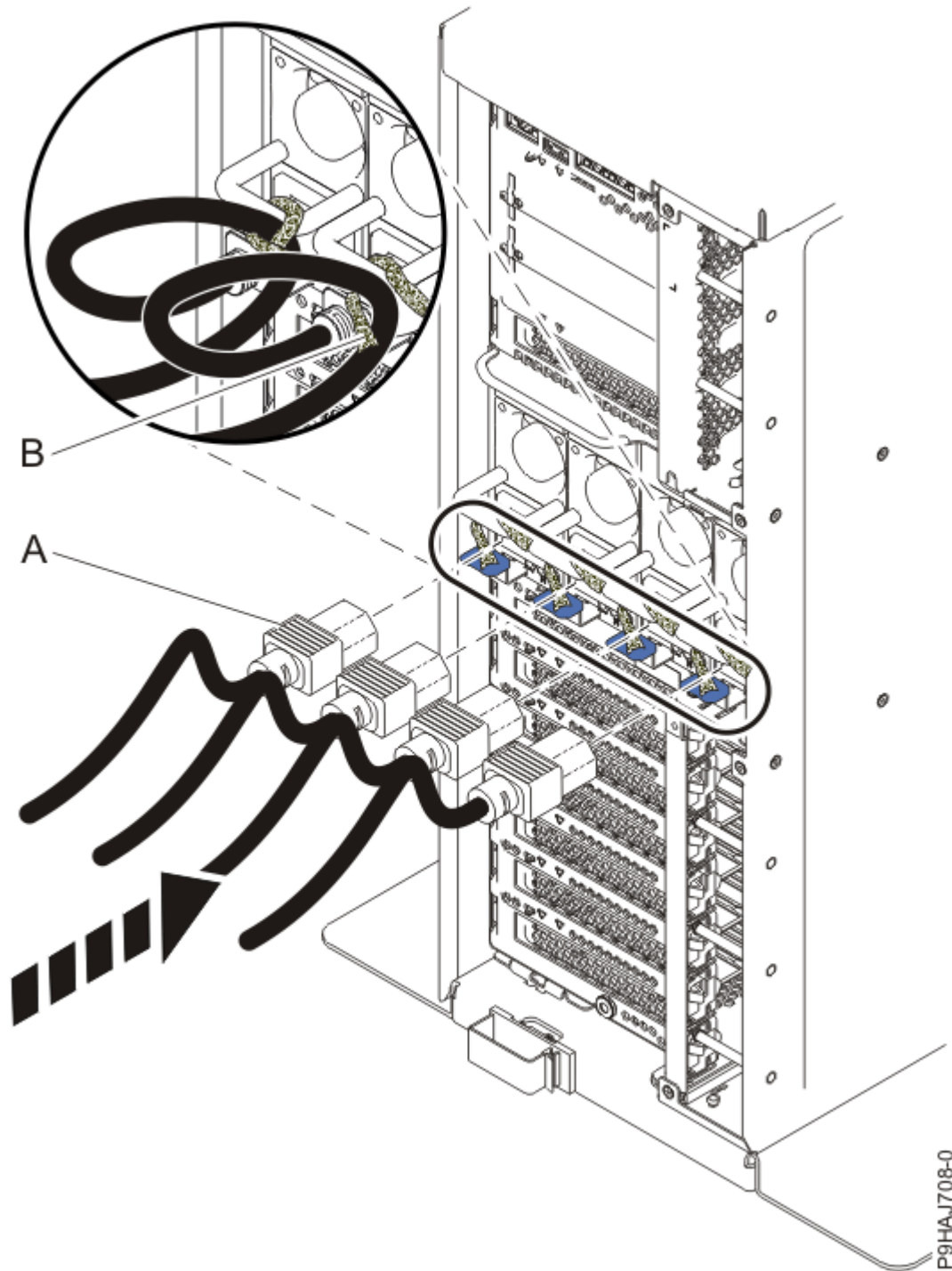


Figure 39. Connecting the power cords to a stand-alone system

6. Start the system. For instructions, see [Starting a system](http://www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustartsys.htm) (www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustartsys.htm).
7. Turn off the identify LED. For instructions, see [Deactivating an identify LED](http://www.ibm.com/support/knowledgecenter/POWER9/p9haj/p9haj_turn_off_identify_led.htm) (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](http://www.ibm.com/support/knowledgecenter/POWER9/p9ect/pxect_verifyrepair.htm) (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](http://www.ibm.com/support/knowledgecenter/POWER9/p9haj/pxhaj_hsmverify.htm) (www.ibm.com/support/knowledgecenter/POWER9/p9haj/pxhaj\_hsmverify.htm).



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## Notices

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## **Accessibility features for IBM Power Systems servers**

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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 \(www.w3.org/TR/wai-aria/\)](http://www.w3.org/TR/wai-aria/), to ensure compliance with [US Section 508 \(www.access-board.gov/guidelines-and-standards/communications-and-it/about-the-section-508-standards/section-508-standards\)](http://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 \(www.w3.org/TR/WCAG20/\)](http://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 \(www.ibm.com/support/knowledgecenter/doc/kc\\_help.html#accessibility\)](http://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.

## Vendor software

The IBM Power Systems servers include certain vendor software that is not covered under the IBM license agreement. IBM makes no representation about the accessibility features of these products. Contact the vendor for accessibility information about its products.

## Related accessibility information

In addition to standard IBM help desk and support websites, IBM has a TTY telephone service for use by deaf or hard of hearing customers to access sales and support services:

TTY service  
800-IBM-3383 (800-426-3383)  
(within North America)

For more information about the commitment that IBM has to accessibility, see [IBM Accessibility \(www.ibm.com/able\)](http://www.ibm.com/able).

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## Electronic emission notices

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### Class A Notices

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

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This product may cause interference if used in residential areas. Such use must be avoided unless the user takes special measures to reduce electromagnetic emissions to prevent interference to the reception of radio and television broadcasts.

Warning: This equipment is compliant with Class A of CISPR 32. In a residential environment this equipment may cause radio interference.

## **Germany Notice**

### **Deutschsprachiger EU Hinweis: Hinweis für Geräte der Klasse A 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-Mitgliedsstaaten und hält die Grenzwerte der EN 55022 / EN 55032 Klasse A ein.

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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 A**

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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

Generelle Informationen:

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

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VCCI-A

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Responsible Party:  
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New Orchard Road  
Armonk, NY 10504  
Contact for FCC compliance information only: fccinfo@us.ibm.com

## **Class B Notices**

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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.

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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.

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Verantwortlich für die Einhaltung der EMV Vorschriften ist der Hersteller:  
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New Orchard Road  
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Generelle Informationen:

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