Power Systems

# *Temple's Zeppelin procedures for install, remove, replace*

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# Control panel and control panel display for the 9040-MR9

Find information about removing and replacing the control panel and control panel display in the IBM® Power® System E950 (9040-MR9) server.

The following figure shows the control panel **(A)** and the control panel display **(B)**.

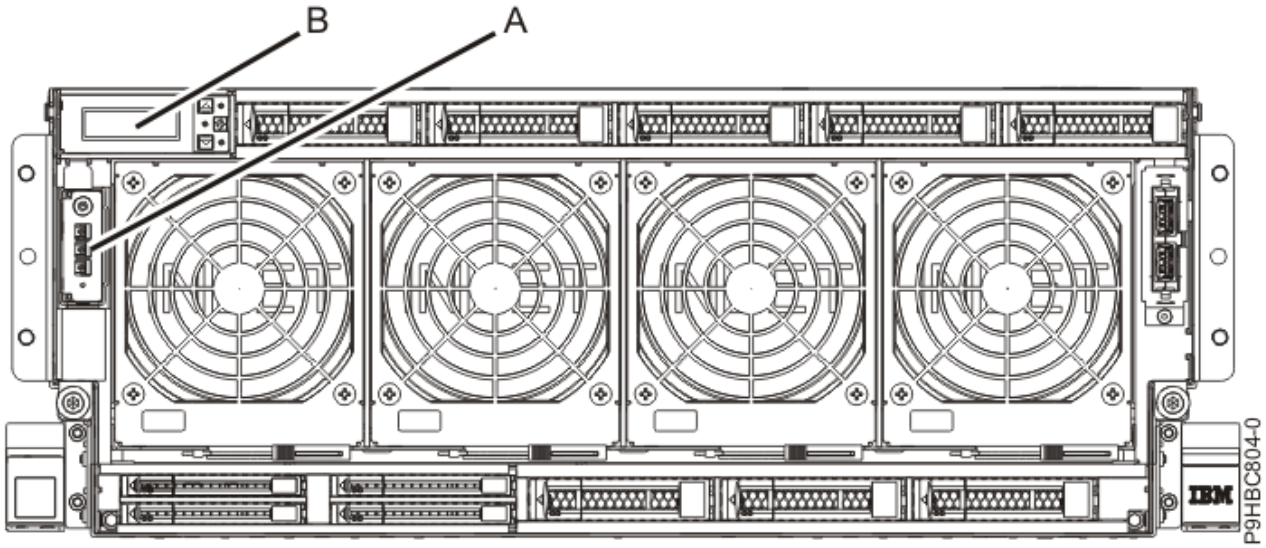



*Figure 1: Control panels*

## Removing and replacing the control panel in the 9040-MR9

Find information about removing and replacing the control panel in the IBM Power System E950 (9040-MR9) server.

**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 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, use the following procedures to remove and replace the control panel.

### Preparing the system to remove and replace the control panel in the 9040-MR9

To prepare the system to remove and replace a control panel, complete the steps in this 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. Place your fingers on the indentations and pull the latches **(B)** located on both sides of the cover as shown in the following figure.

   Pull the cover **(A)** away from the system.

   **CAUTION:** The fans can pull in hair, jewelry, loose clothing, and so forth, and cause injury or damage. Operate the system with the bezel installed. For service operations, if the front cover

must be removed with the system operating, ensure that all such loose material is secured away from the fan area, to prevent any loose material from being pulled into the fan.

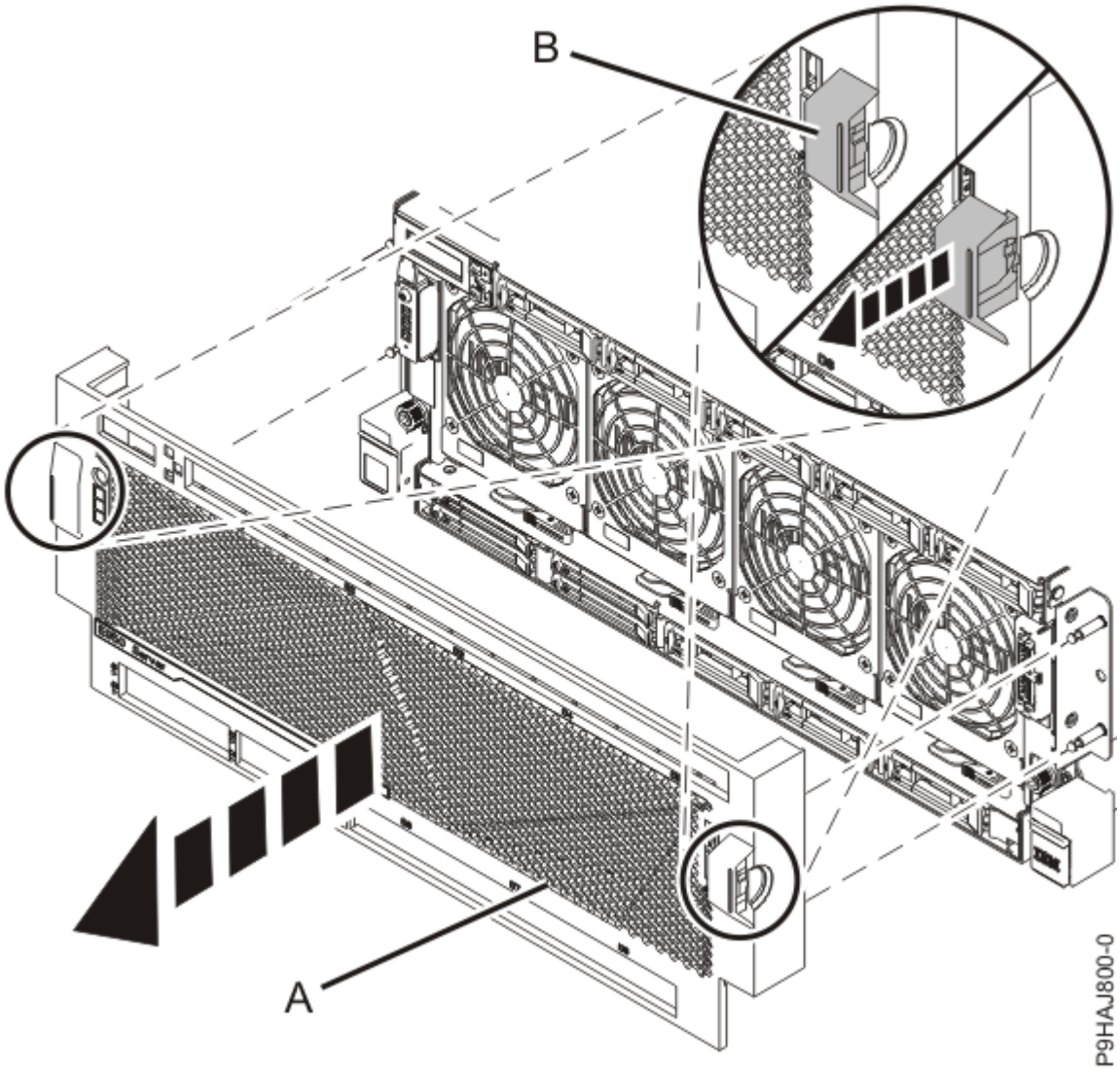



*Figure 2: Removing the front cover*

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

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

   **Attention:**

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

## Removing the control panel from the 9040-MR9

To remove a control panel, complete the steps in this 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. Access the Advanced System Management Interface (ASMI).

   **Attention:** During this procedure: Do not reset the service processor, do not remove the service processor card, and do not power off and power on the system.
3. In the navigation area, select **Concurrent maintenance** > **Control Panel**.
4. In the Control Panel window, select the **Remove** action and press **Continue**.
5. Verify that the location code D1 for the control panel is selected and then click **Save Settings**.
6. If the operation was successful, the window displays **Operation completed successfully**. You can then remove the control panel.
7. Lift up the retaining clip **(A)** under the control panel and remove the control panel from the front of the system as shown in the following figure.

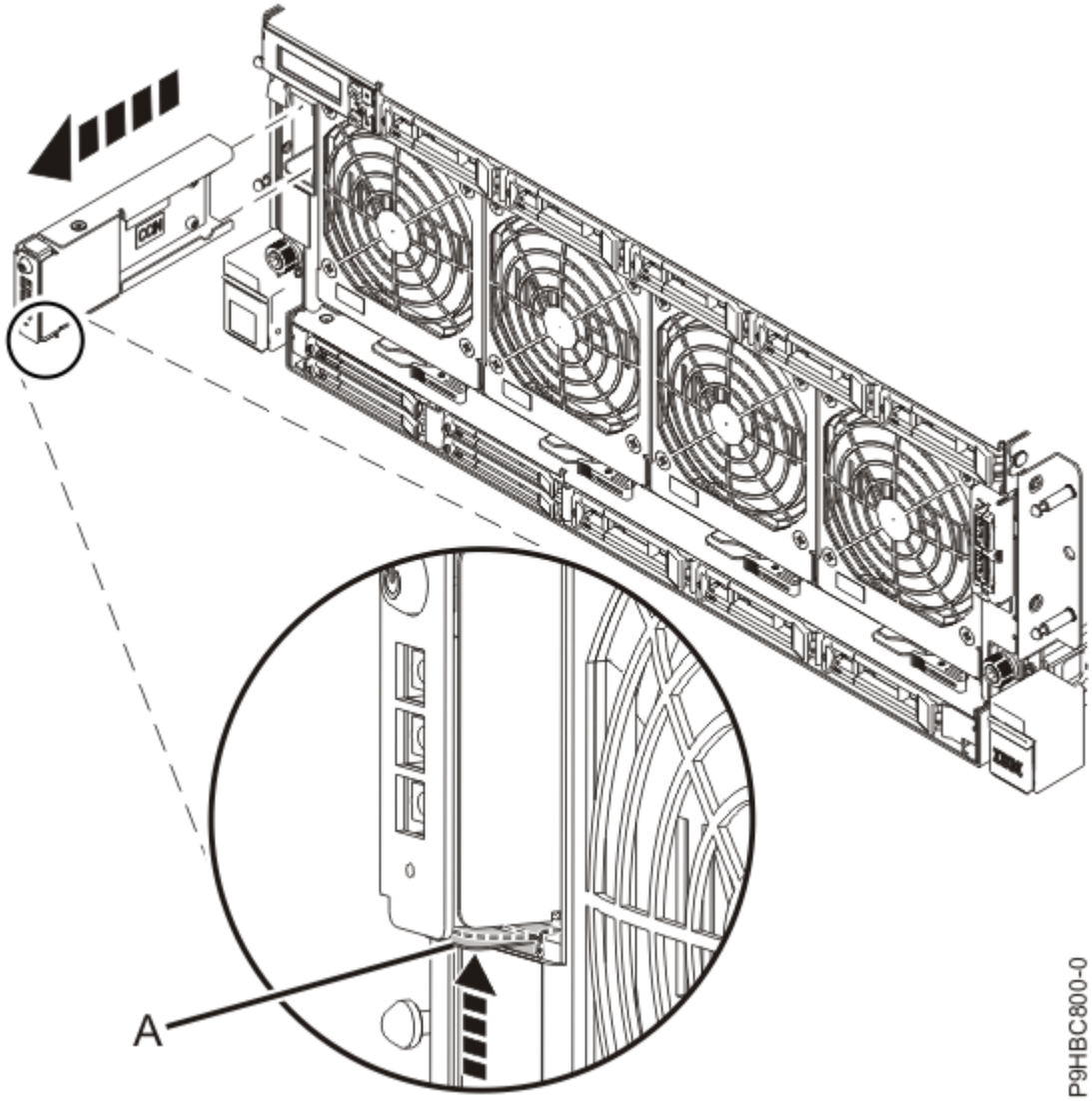



*Figure 3: Removing the control panel*

## Replacing the control panel in the 9040-MR9

To replace a control panel, complete the steps in this 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. Install the control panel into the front of the system as shown in the following figure.

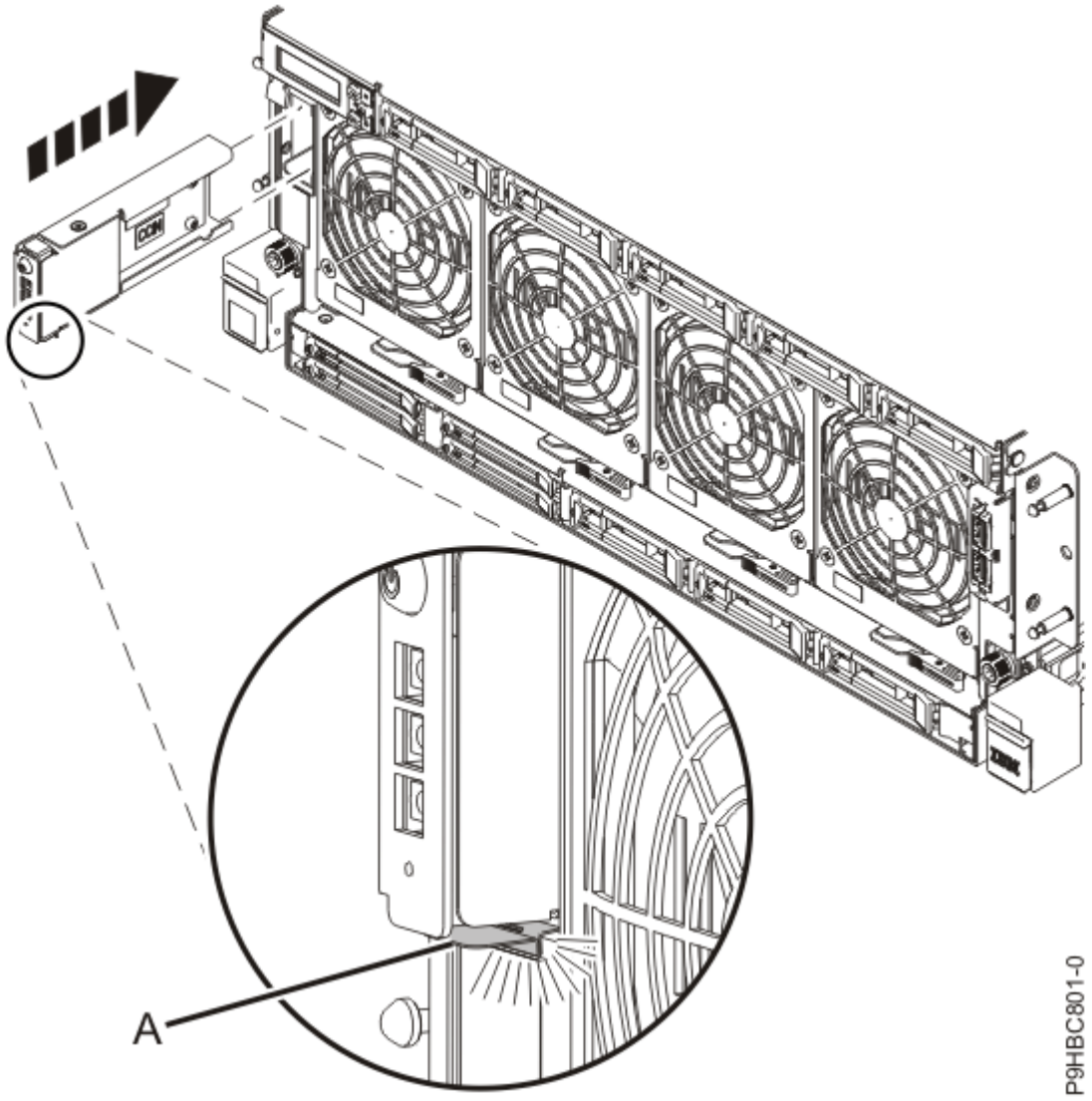



*Figure 4: Installing the control panel*

3. Access the Advanced System Management Interface (ASMI).

   **Attention:** During this procedure: Do not reset the service processor, do not remove the service processor card, and do not power off and power on the system.

4. In the navigation area, select **Concurrent maintenance** > **Control Panel**.
5. In the ASMI Control Panel window, select the **Install** action and press **Continue**.
6. Verify that the location code D1 for the control panel is selected and then click **Save Settings**.
7. In the ASMI Control Panel window, press **Continue**.

## Preparing the system for operation after removing and replacing the control panel in the 9040-MR9

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

1. Ensure that you have the electrostatic discharge (ESD) wrist strap on and that the ESD clip is plugged into a ground jack or connected to an unpainted metal surface. If not, do so now.
2. Position the cover **(A)** on the front of the system unit as shown in the following figure, so that the four pins **(B)** on the system match the four holes at the rear of the cover.

   Press the tabs **(C)** to snap the cover into position.

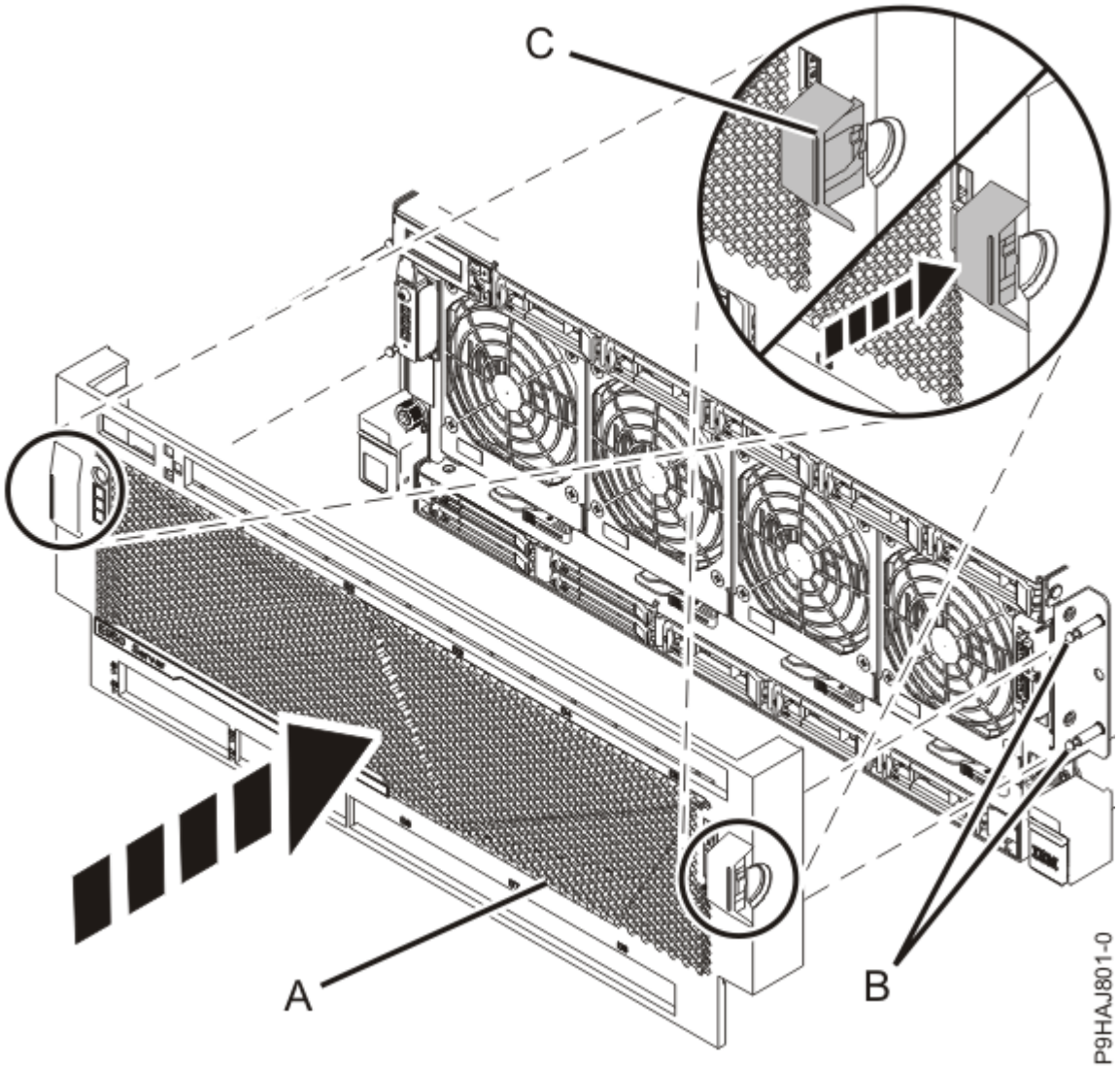



*Figure 5: Installing the front cover*

3. Check that the power LED **(A)**, as shown in the following figure, is on.

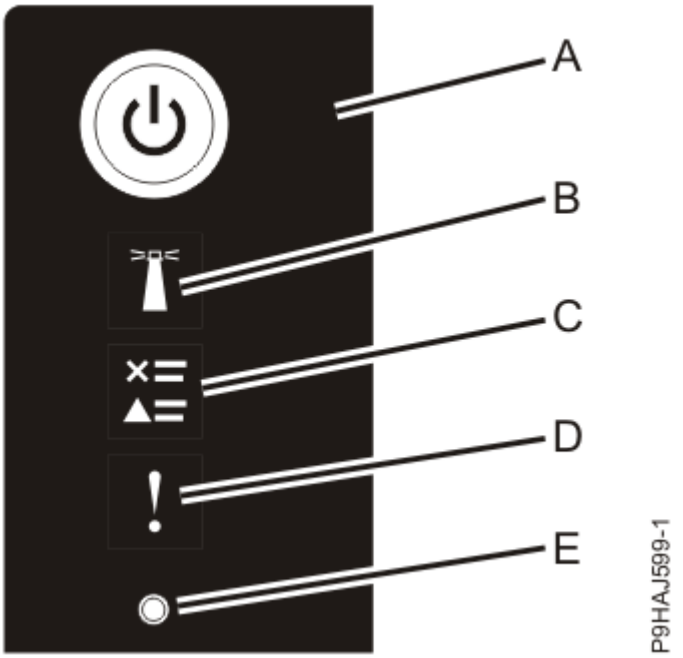



*Figure 6: Control panel LEDs*

4. 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).

## Removing and replacing the control panel display in the 9040-MR9

Find information about removing and replacing the control panel display in the IBM Power System E950 (9040-MR9) server.

**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 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, use the following procedures to remove and replace the control panel display.

### Preparing the system to remove and replace the control panel display in the 9040-MR9

To prepare the system to remove and replace a control panel display, complete the steps in this 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. Place your fingers on the indentations and pull the latches **(B)** located on both sides of the cover as shown in the following figure.

   Pull the cover **(A)** away from the system.

   **CAUTION:** The fans can pull in hair, jewelry, loose clothing, and so forth, and cause injury or damage. Operate the system with the bezel installed. For service operations, if the front cover must be removed with the system operating, ensure that all such loose material is secured away from the fan area, to prevent any loose material from being pulled into the fan.

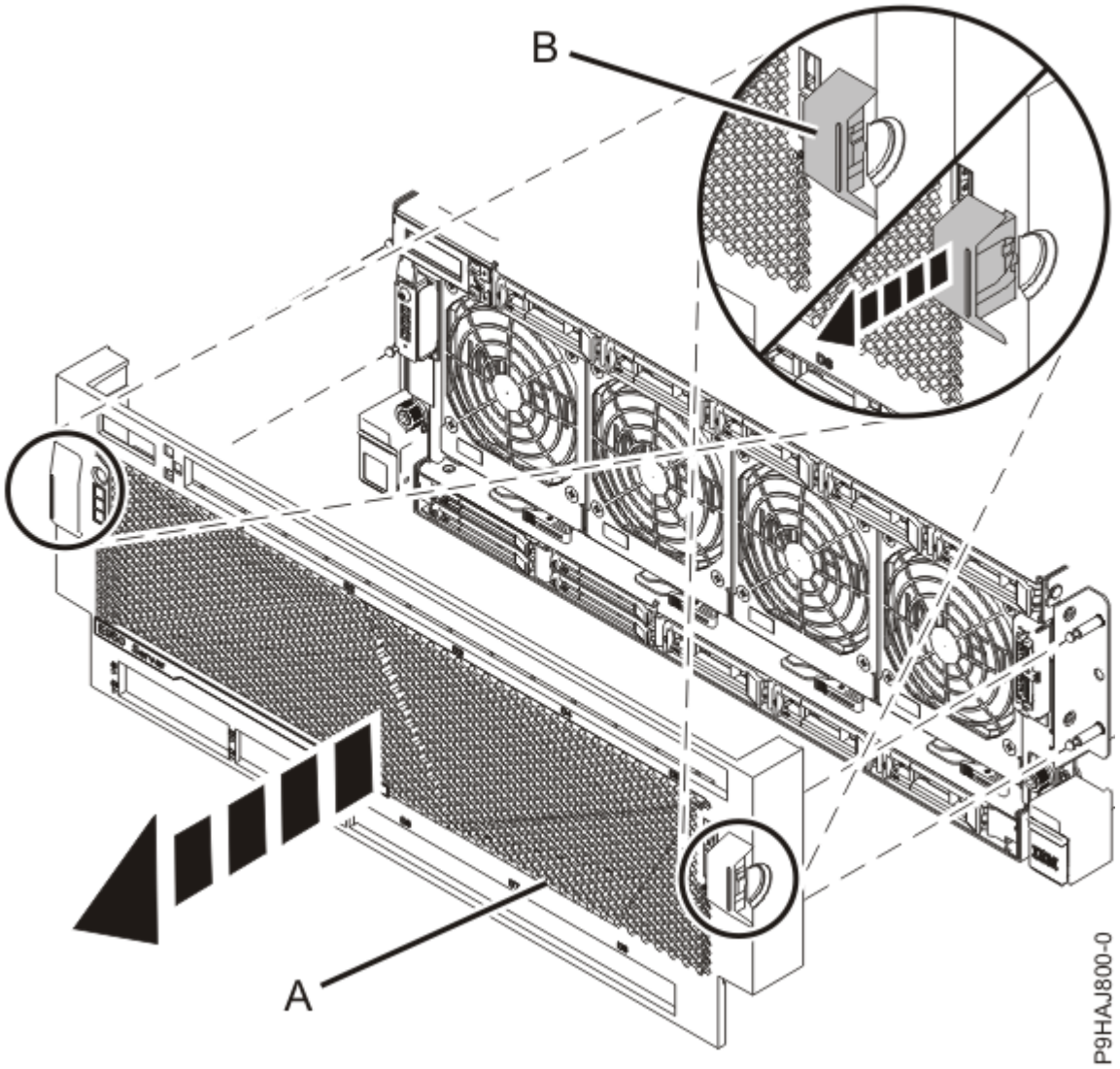



*Figure 7: Removing the front cover*

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

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

**Attention:**

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

## Removing the control panel display from the 9040-MR9

To remove a control panel display, complete the steps in this 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. Access the Advanced System Management Interface (ASMI).

   **Attention:** During this procedure: Do not reset the service processor, do not remove the service processor card, and do not power off and power on the system.
3. In the navigation area, select **Concurrent maintenance** > **Control Panel**.
4. In the Control Panel window, select the **Remove** action and press **Continue**.
5. Verify that the location code D2 for the control panel display is selected and then click **Save Settings**.
6. If the operation was successful, the window displays **Operation completed successfully**.
7. Wait 30 seconds. You can then remove the control panel display.
8. Pull the tab **(A)** to release the control panel display as shown in the following figure. Then pull the control panel display out of the system.

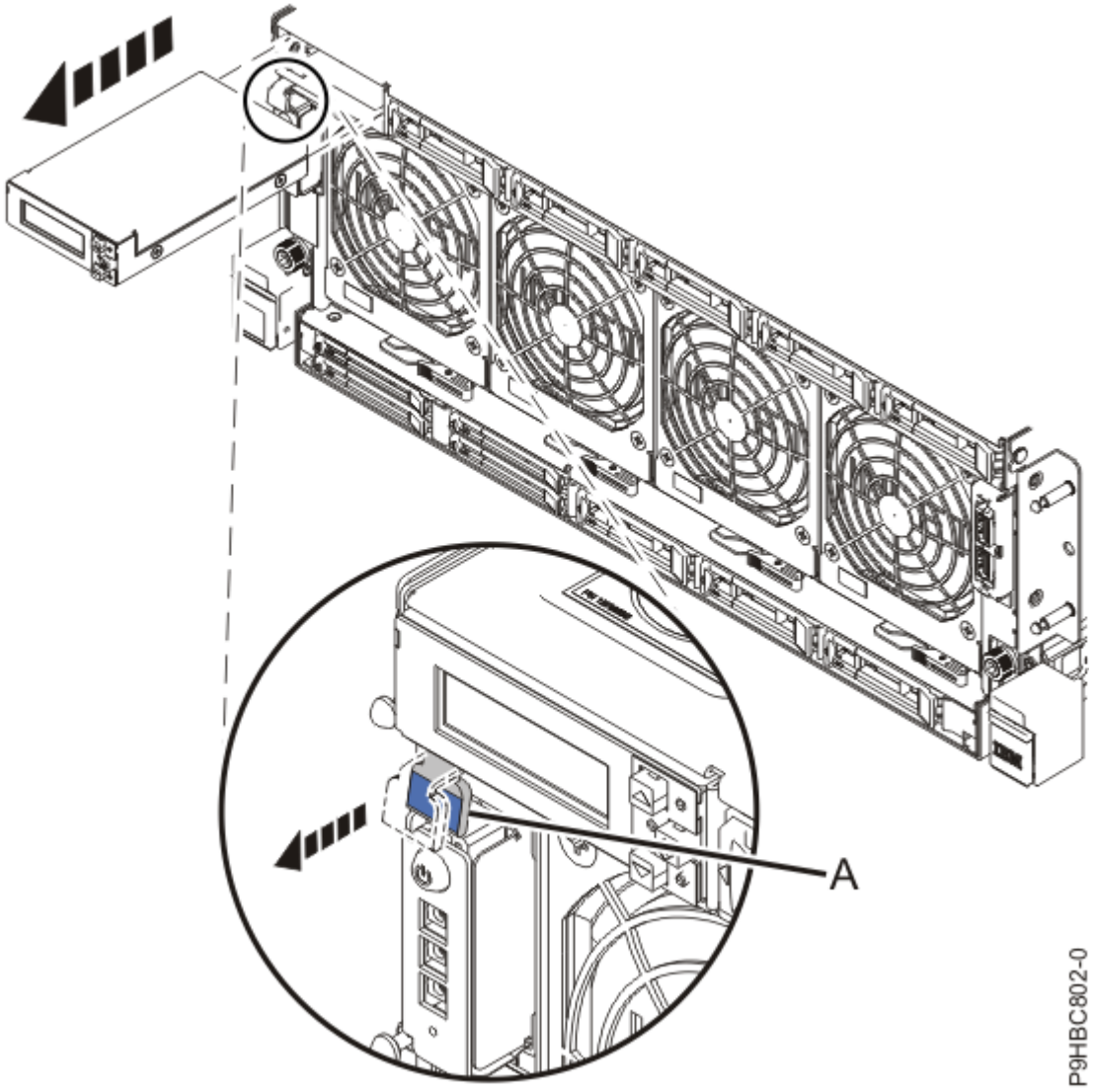



*Figure 8: Removing the control panel display*

## Replacing the control panel display in the 9040-MR9

To replace a control panel display, complete the steps in this 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 control panel display into the front of the system as shown in the following figure. Press the tab in to lock the control panel display into place.

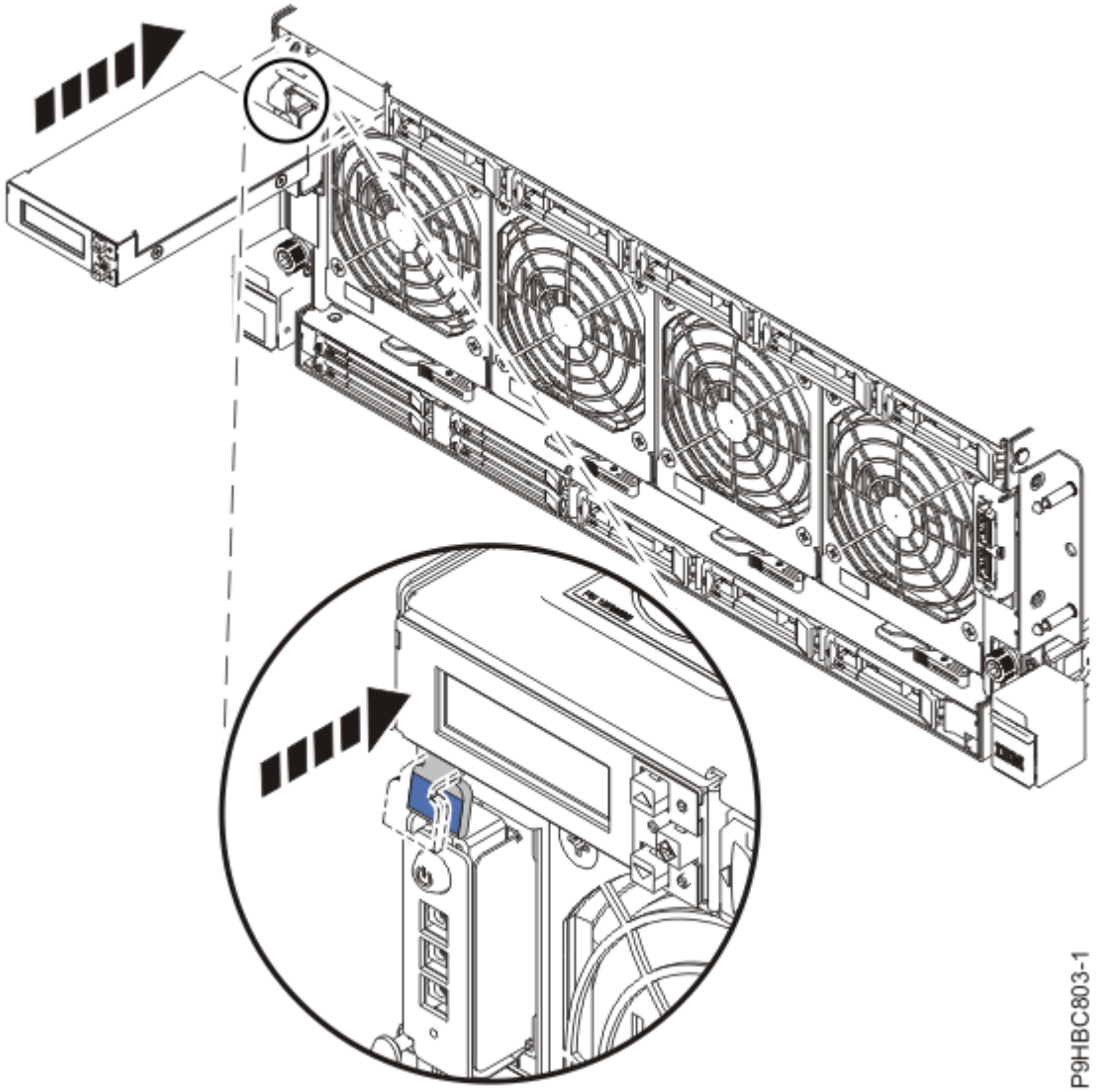



*Figure 9: Replacing the control panel display*

3. Access the Advanced System Management Interface (ASMI).

**Attention:** During this procedure: Do not reset the service processor, do not remove the service processor card, and do not power off and power on the system.

4. In the navigation area, select **Concurrent maintenance** > **Control Panel**.
5. In the ASMI Control Panel window, select the **Install** action and press **Continue**.
6. Verify that the location code D2 for the control panel display is selected and then click **Save Settings**.
7. In the ASMI Control Panel window, press **Continue**.

## Preparing the system for operation after removing and replacing the control panel display in the 9040-MR9

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

1. Ensure that you have the electrostatic discharge (ESD) wrist strap on and that the ESD clip is plugged into a ground jack or connected to an unpainted metal surface. If not, do so now.
2. Position the cover **(A)** on the front of the system unit as shown in the following figure, so that the four pins **(B)** on the system match the four holes at the rear of the cover.

   Press the tabs **(C)** to snap the cover into position.

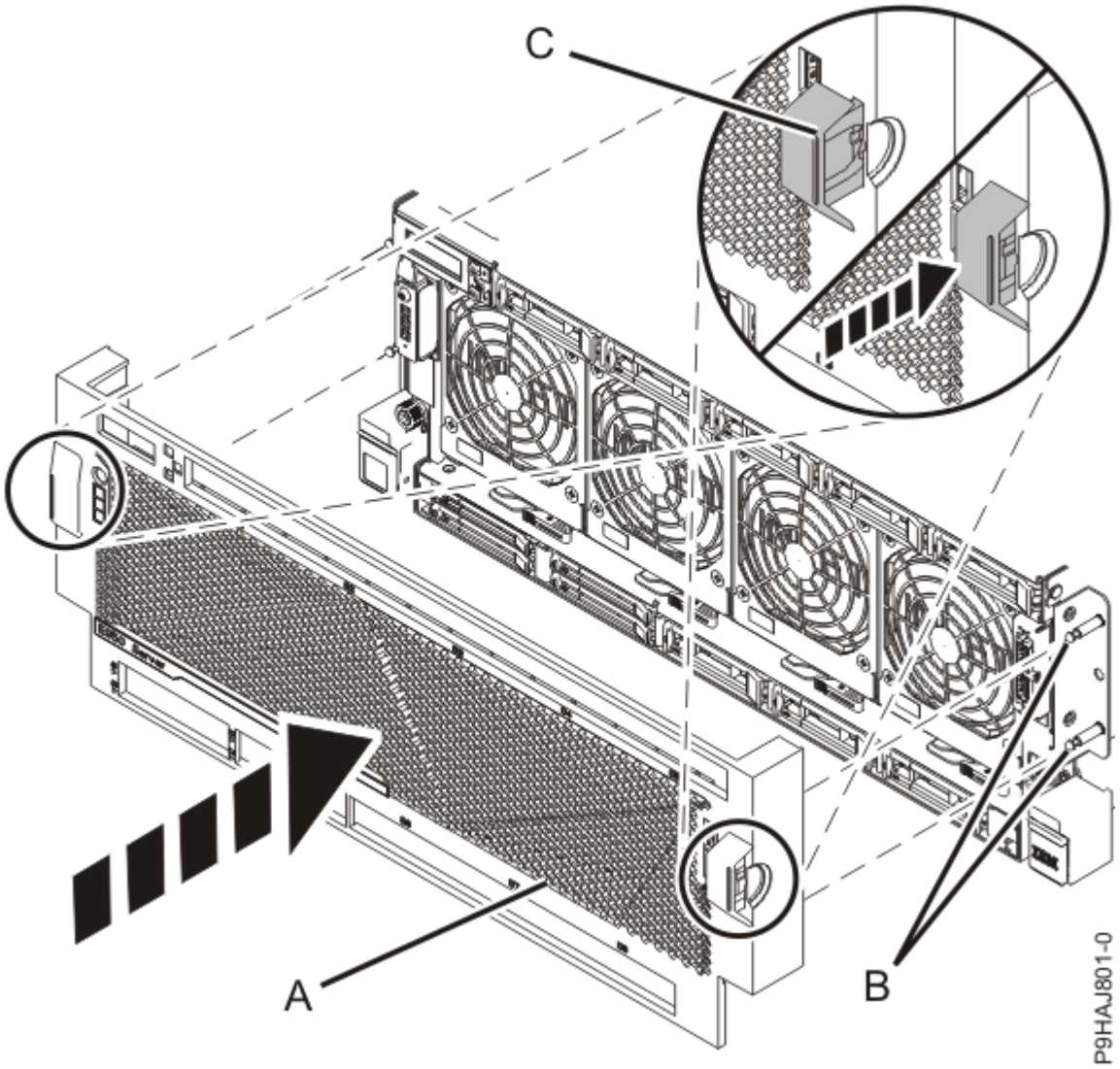



*Figure 10: Installing the front cover*

3. 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).

# Fans for the 9040-MR9

Find information about removing and replacing fans in the IBM Power System E950 (9040-MR9) server.

## Removing and replacing a fan in the 9040-MR9

Find information about removing and replacing a fan in the IBM Power System E950 (9040-MR9) server.

**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 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 following procedures to remove and replace a fan.

### Preparing the system to remove and replace a fan in the 9040-MR9

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

**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.

**(L008)**

**CAUTION:** Hazardous moving parts nearby. (L008)

**(L018)**

**CAUTION:** High levels of acoustical noise are (or could be under certain circumstances) present. Use approved hearing protection and/ or provide mitigation or limit exposure. (L018)

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. Place your fingers on the indentations and pull the latches **(B)** located on both sides of the cover as shown in the following figure.

   Pull the cover **(A)** away from the system.

   **CAUTION:** The fans can pull in hair, jewelry, loose clothing, and so forth, and cause injury or damage. Operate the system with the bezel installed. For service operations, if the front cover must be removed with the system operating, ensure that all such loose material is secured away from the fan area, to prevent any loose material from being pulled into the fan.

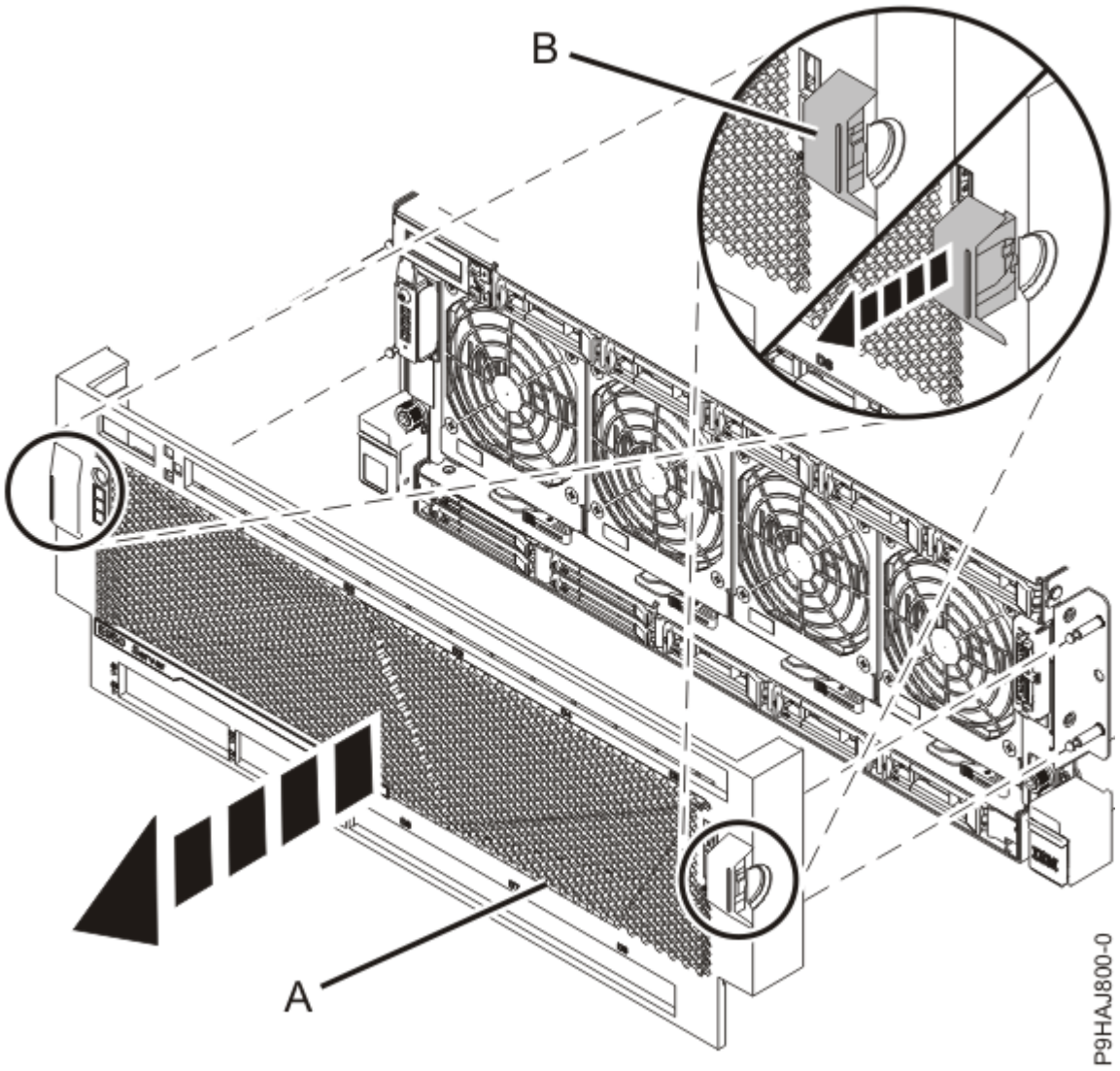



*Figure 11: Removing the front cover*

3. 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:

   - Fans must be installed in all four slots.

     Each of the four fans has a green LED and an amber LED, as shown in Figure 12 on page 13. The green LED is lit solid for all four 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.

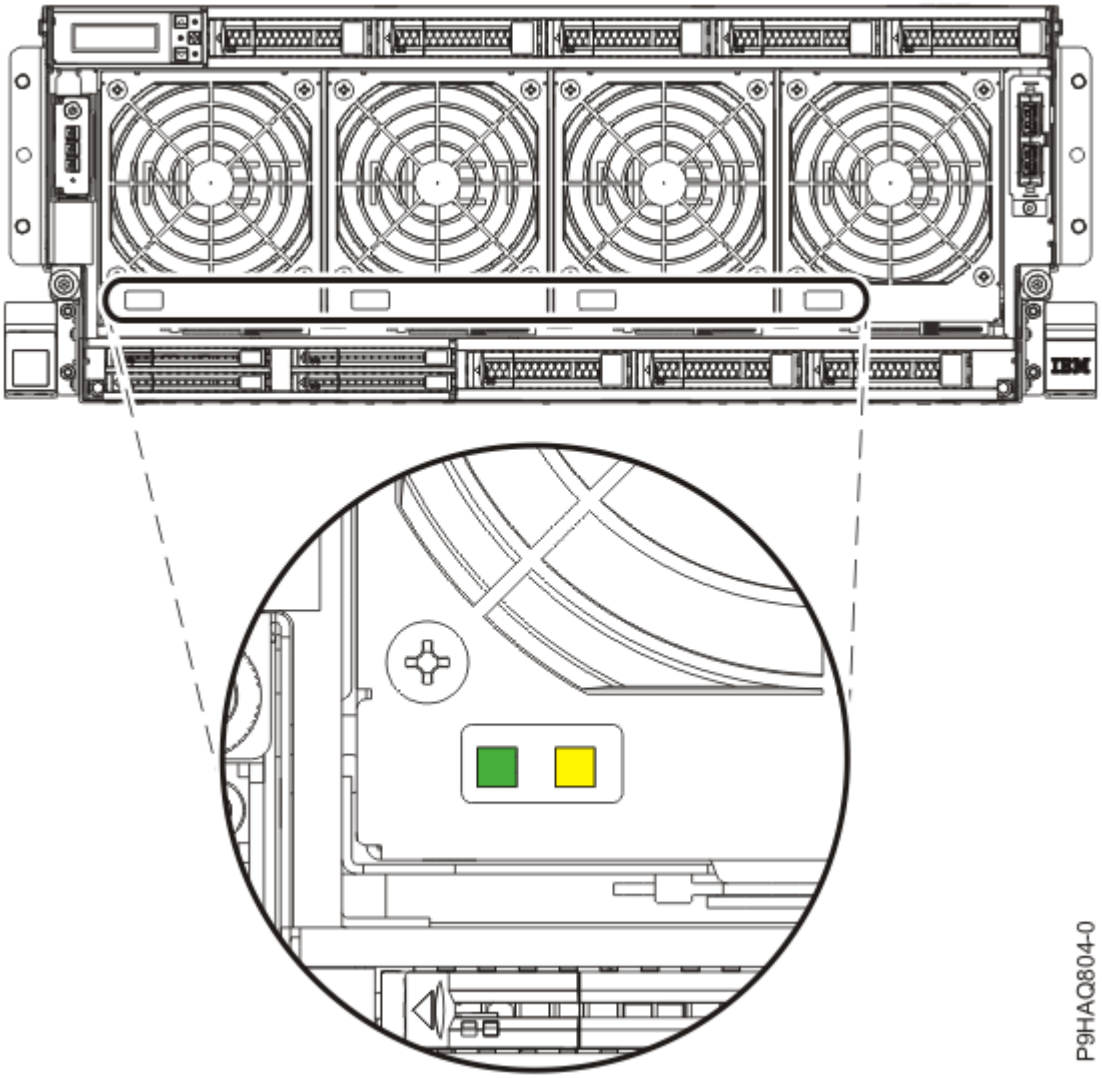



*Figure 12: Fan LEDs in the system*

4. Ensure that the amber LED corresponds to the location of the fan with the lit fault LED.
5. If you can complete the procedure with the system power turned on, continue with step “7” on page 15.
6. 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 (www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustopsys.htm).
   b) Label and disconnect the power cords from the system unit as shown in the following figure.

      **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 power sources to the system are disconnected.
      - The power cord **(B)** is fastened to the system with a 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.

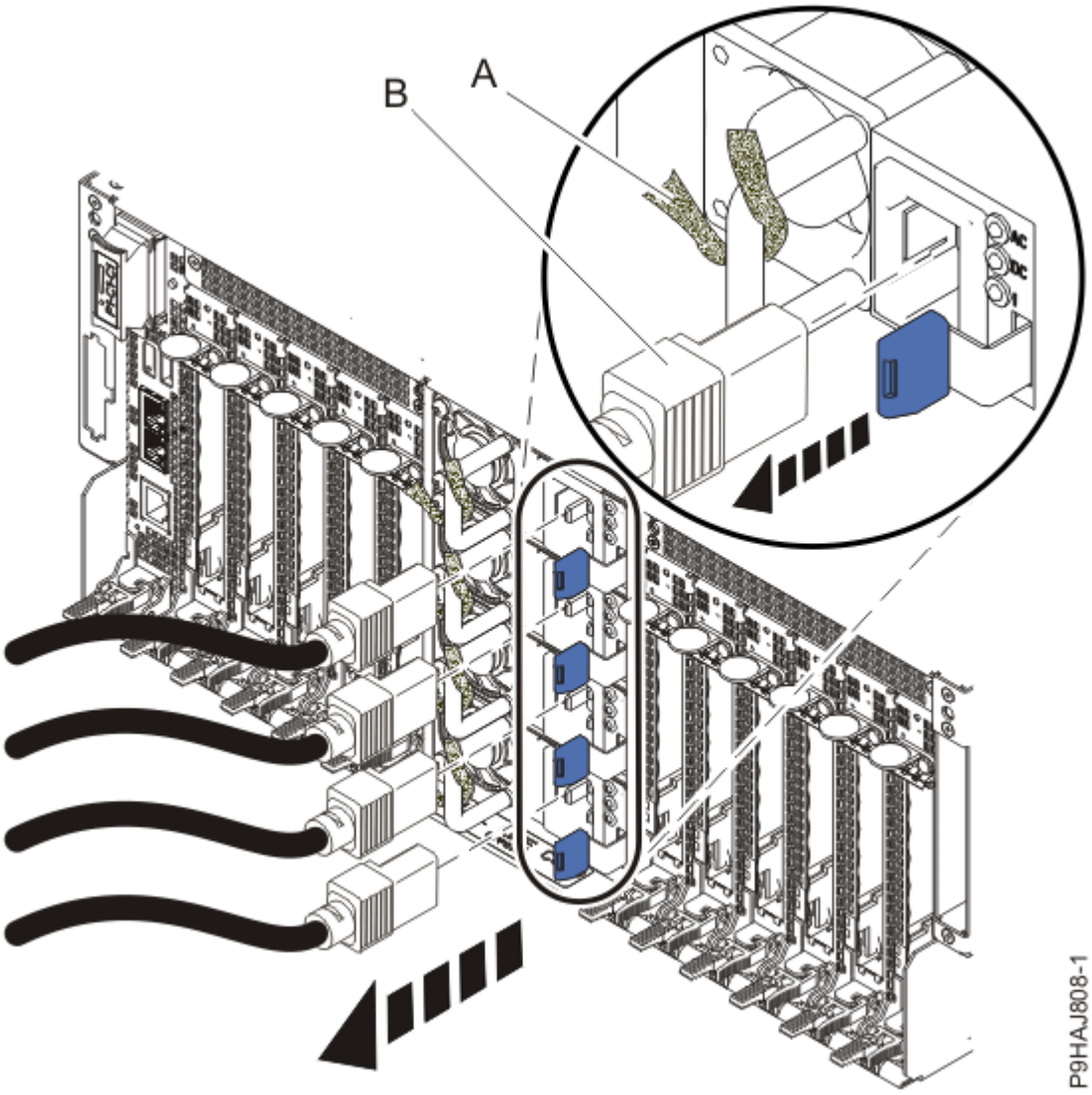
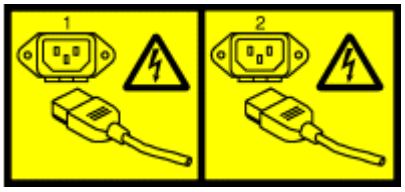



*Figure 13: Removing the power cords*

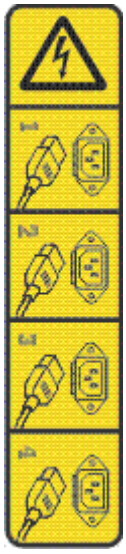
**(L003)**



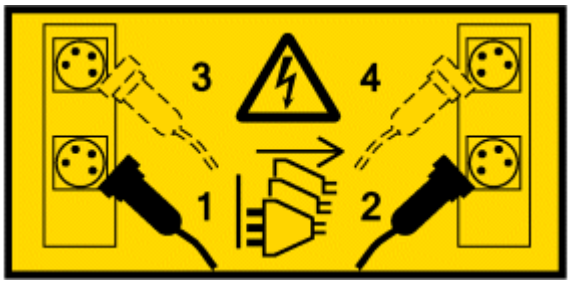

or

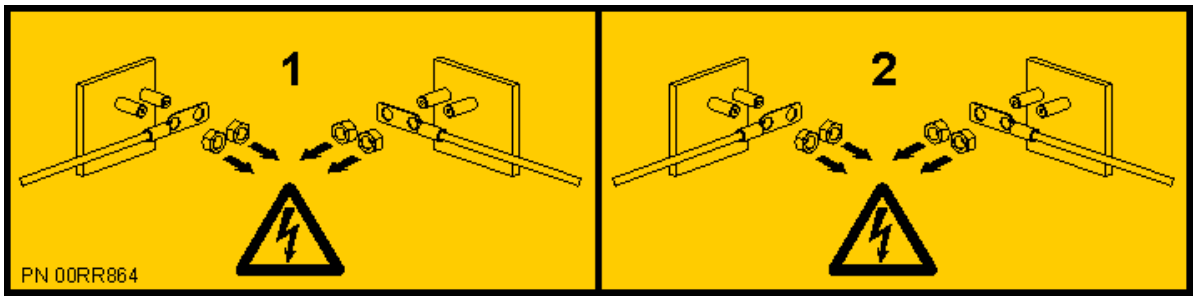
or

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)

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

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

**Attention:**

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

## Removing a fan from the 9040-MR9

To remove a fan from the system, complete the steps in this 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 latch **(A)** in the following figure, and put your index finger against the latch **(B)**.
   b) Push against the latch with your thumb and then pull out the latch with your index finger. This action releases the latch.
   c) Rotate the fan handle in the direction that is shown in the following figure to unlock the fan from its slot.
   d) Hold onto the fan handle and by using your hand to support the bottom of the fan, pull out the fan from its slot as shown in the following figure.

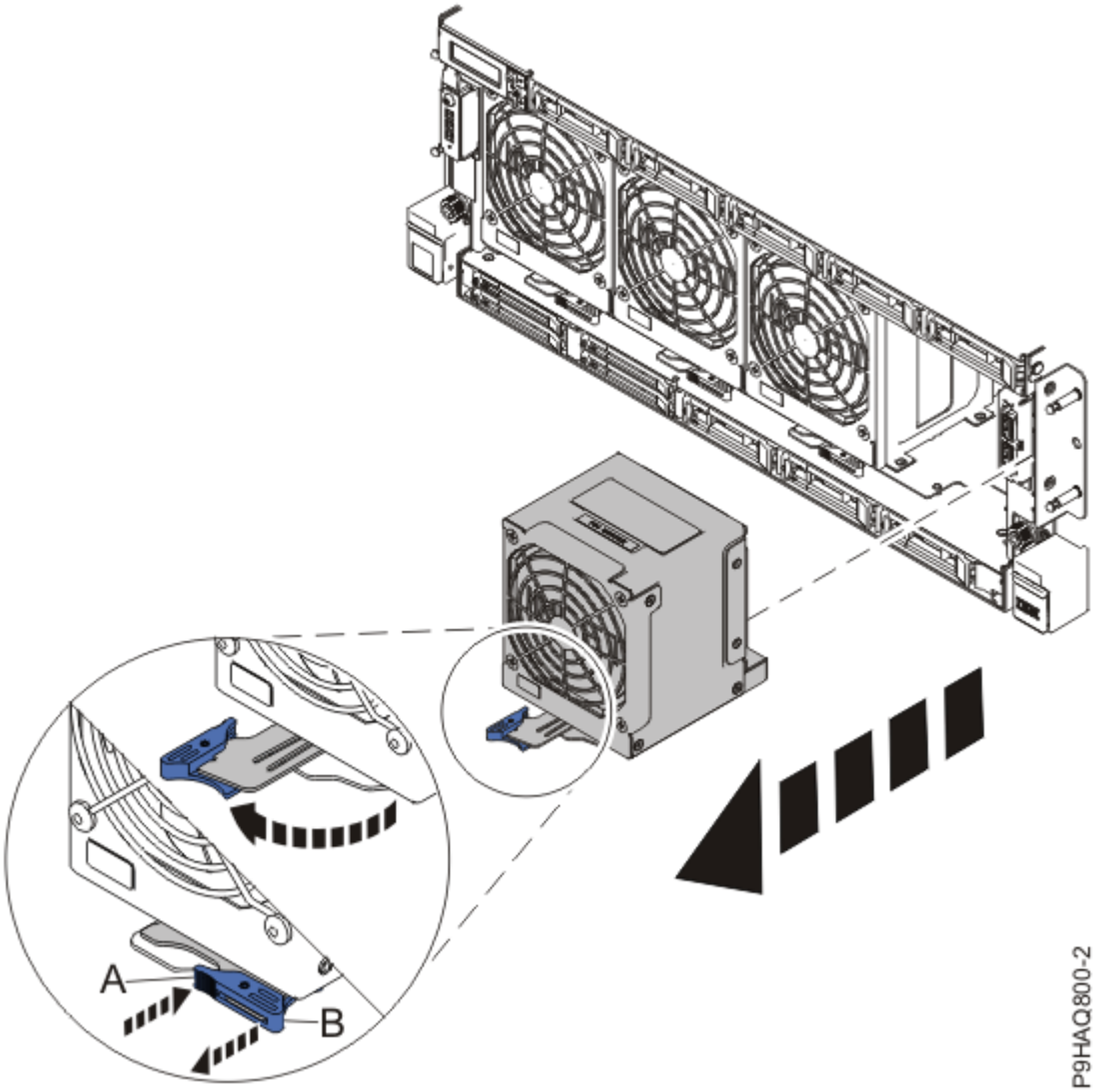



*Figure 14: Removing a fan from the system*

## Replacing a front fan in the 9040-MR9

To replace a fan in the system, complete the steps in this 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 replace the fan, complete the following steps:
   a) Ensure that the fan handle **(A)** is open as shown in the following figure.
   b) Hold on to the fan handle and by using your hand to support the bottom of the fan, push the fan into its slot as shown in the following figure.
   c) Push the fan handle in the direction that is shown in the following figure.
   d) Push against the left front of the blue touch point latch **(B)** with your thumb and then slightly pull the latch at **(C)** with your index finger. This action opens the latch.
   e) Continue to push in the lever with your thumb until the latch is fully seated at **(C)**.

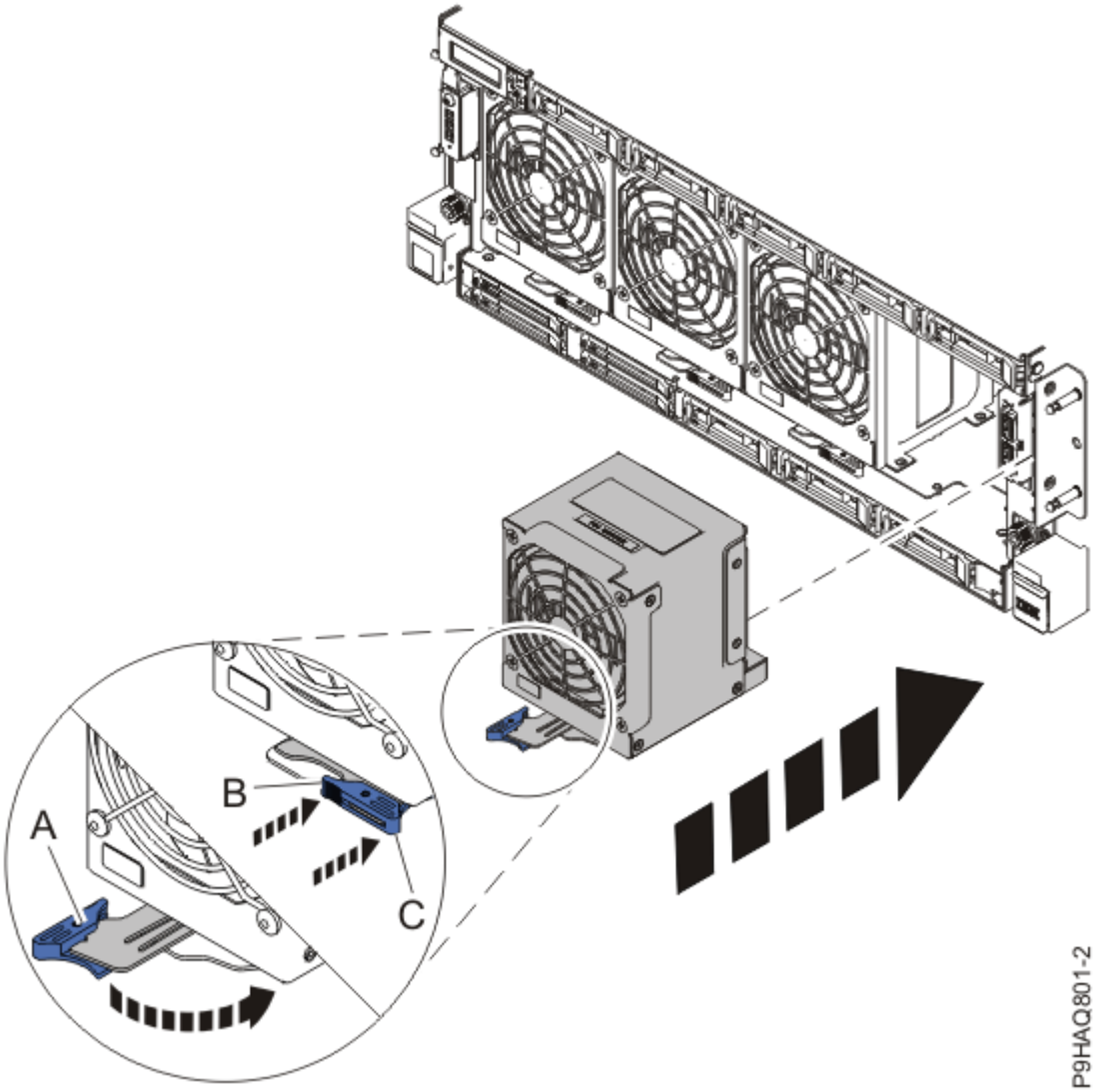



*Figure 15: Replacing a fan in the system*

## Preparing the system for operation after removing and replacing a fan in the 9040-MR9

To prepare the system for operation after removing and replacing a fan, complete the steps in this 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 (www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustartsys.htm).
4. Verify that the amber fault LED on the replaced fan is not lit.
5. 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).
6. Position the cover **(A)** on the front of the system unit as shown in the following figure, so that the four pins **(B)** on the system match the four holes at the rear of the cover.

   Press the tabs **(C)** to snap the cover into position.

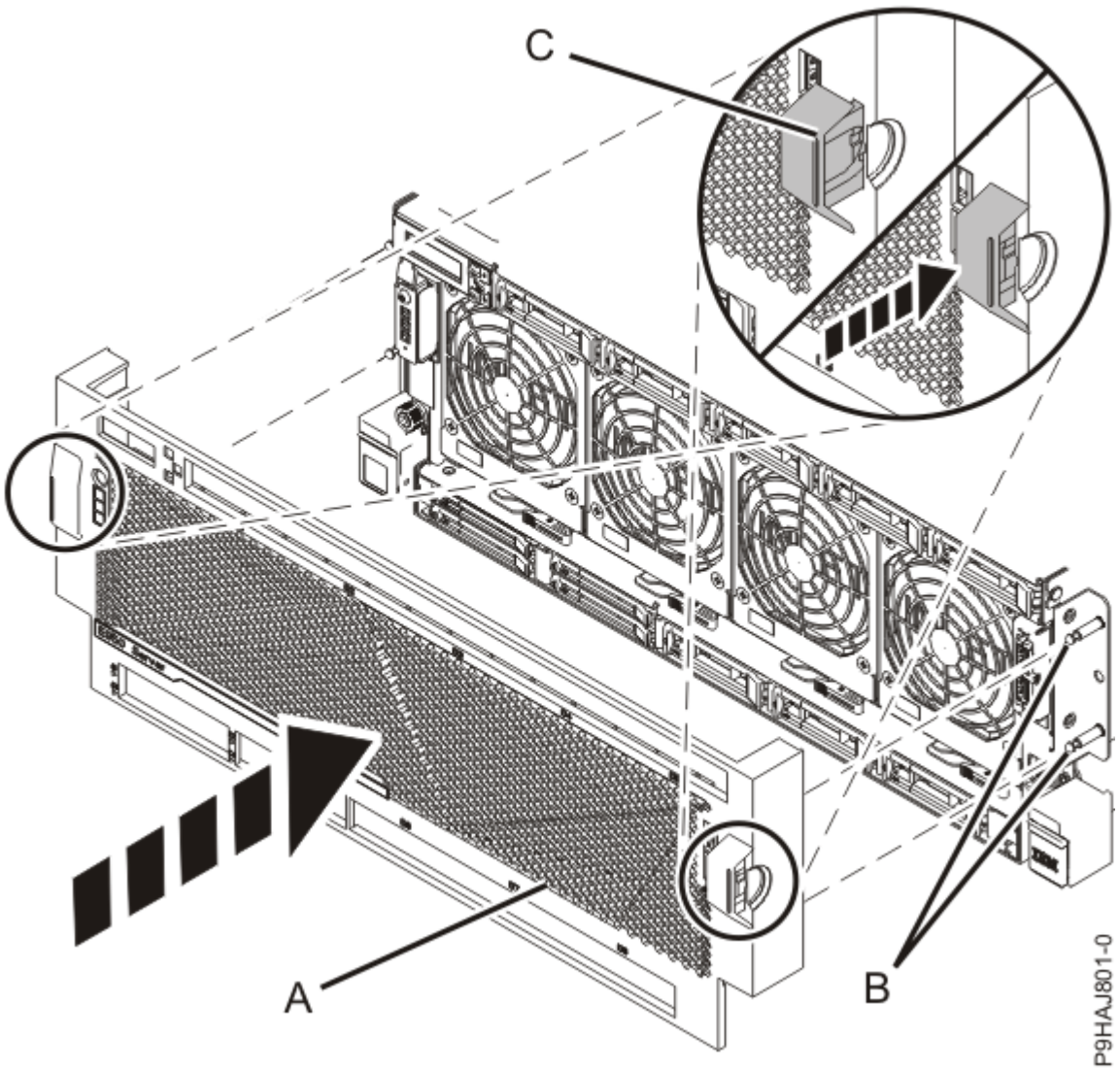



*Figure 16: Installing the front cover*

7. If applicable, close the rack front door.

# Power supplies for the 9040-MR9

Find information about removing and replacing power supplies in the IBM Power System E950 (9040-MR9) server.

## Removing a power supply from the 9040-MR9 system

Find information about removing and replacing a power supply in the IBM Power System E950 (9040-MR9) server.

**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 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, use the following procedures to remove and replace a power supply.

### Preparing the system to remove and replace a power supply in the 9040-MR9

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

1. If applicable, open the rack door at the rear of the system.
2. 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.
3. The power supplies are installed in the rear of the system.

   The following figure shows the location of the power supplies in a system and the position of the light-emitting diodes (LEDs) on the power supply.

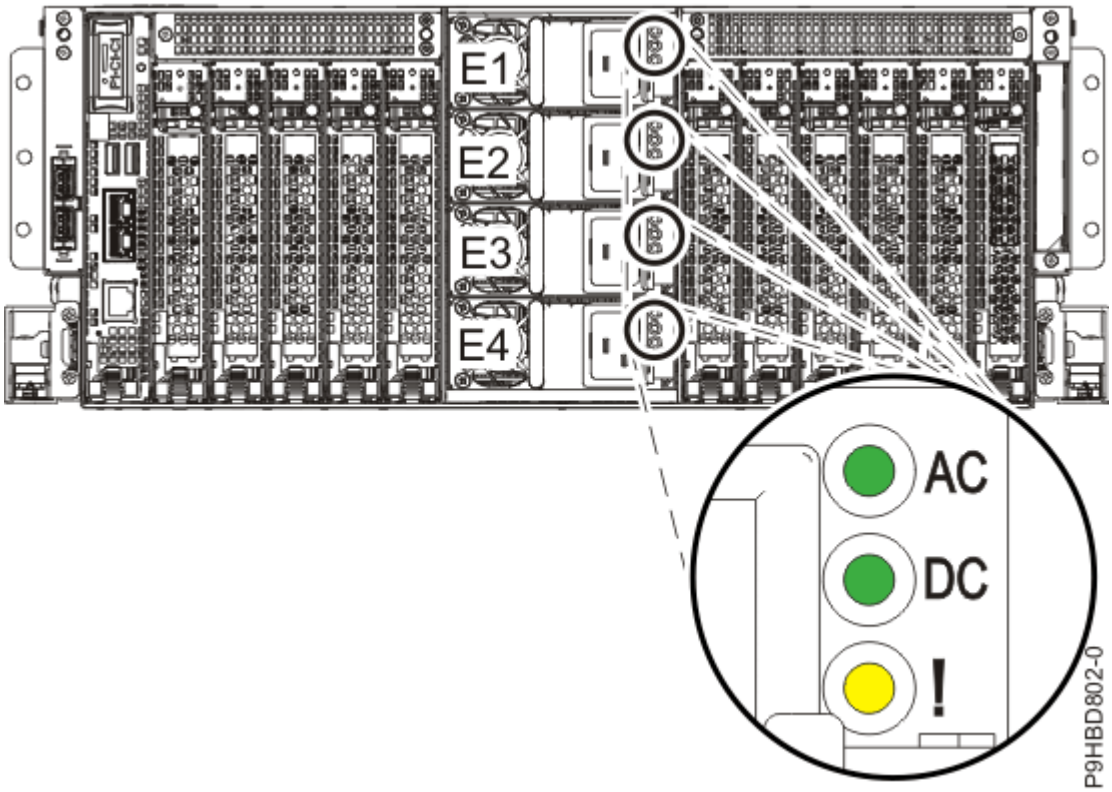



*Figure 17: Location of the power supplies and LEDs*

The power supply has the following LEDs that indicate the status of the power supply:

- An AC power-on LED (green)
- A DC power-on LED (green)
- An error and identify function LED (amber)

The following table describes the states of the power supply LEDs and helps to identify whether the power supplies are working or have a failure.

*Table 1: Description of the power supply LED states*

| **AC Power LED (Green)** | **DC Power LED (Green)** | **Error and Identify LED (Amber)** | **Power Supply Status** |
|---|---|---|---|
| On (Solid) | On (Solid) | Off | The power supply is operating correctly. See **(B)** in the following figure. |
| On (Solid) | Flashing | Off | The system is turned off, but the power supply is still connected to the power source. See **(B)** in the following figure. |
| On (Solid) | Off | On | The power supply is not operating correctly or has failed. See **(C)** in the following figure. |
| On (Solid) | On (Solid) | Flashing | The faulty or failed power supply has been selected by using the identify function. See **(D)** in the following figure. |

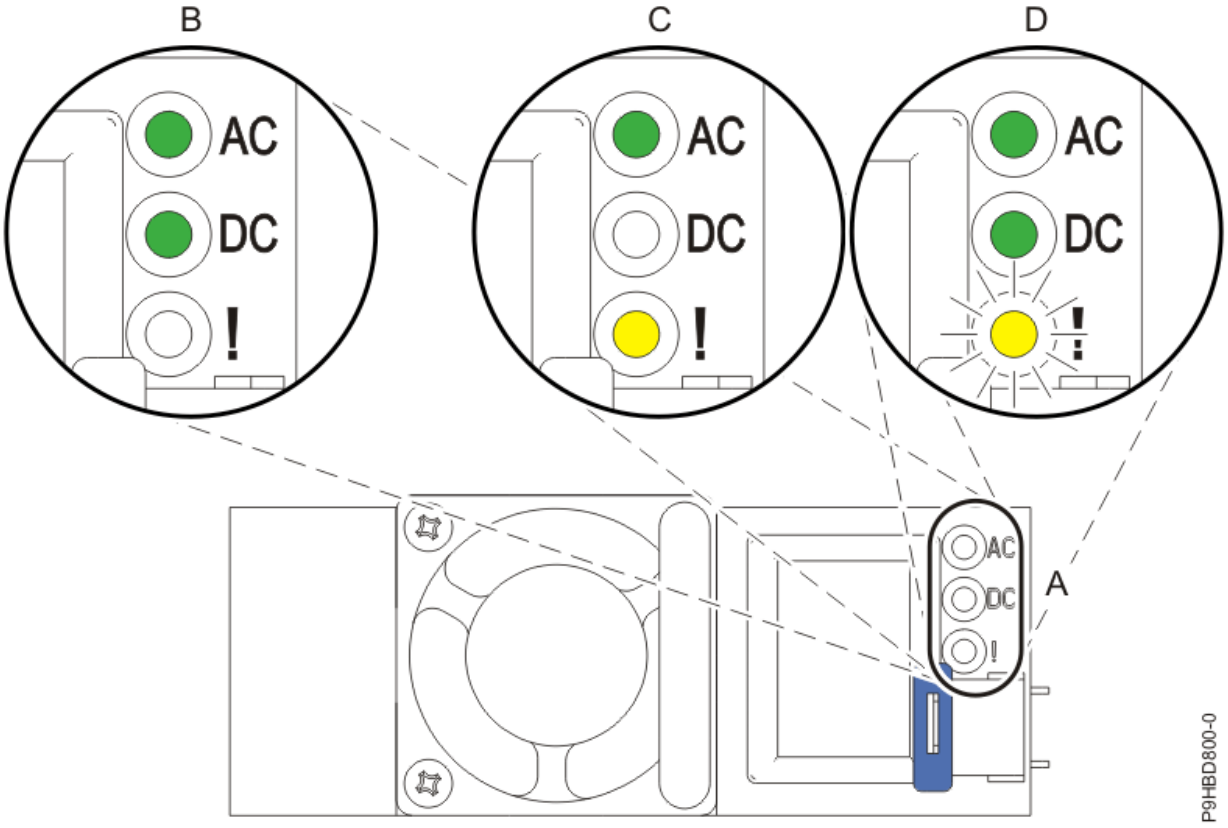



*Figure 18: LEDs for a working **(B)** and failed **(C, D)** power supply in a rack-mounted system*

4. Determine whether you can continue with the system repair operation when the system is powered on.

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

   - All 4 power supplies must be installed.
   - If only one amber fault LED is turned on, the replace operation can be completed when the system is powered on.

5. Ensure that the amber LED that is on corresponds to the location of the power supply.
6. If you can complete the procedure with the system power turned on, continue with step "8" on page 25.
7. 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 (www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustopsys.htm).

   b) Label and disconnect the power source from the system by unplugging the power cords from the system.

   **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 power sources to the system are disconnected.
   - The power cord **(B)** is fastened to the system with a 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.

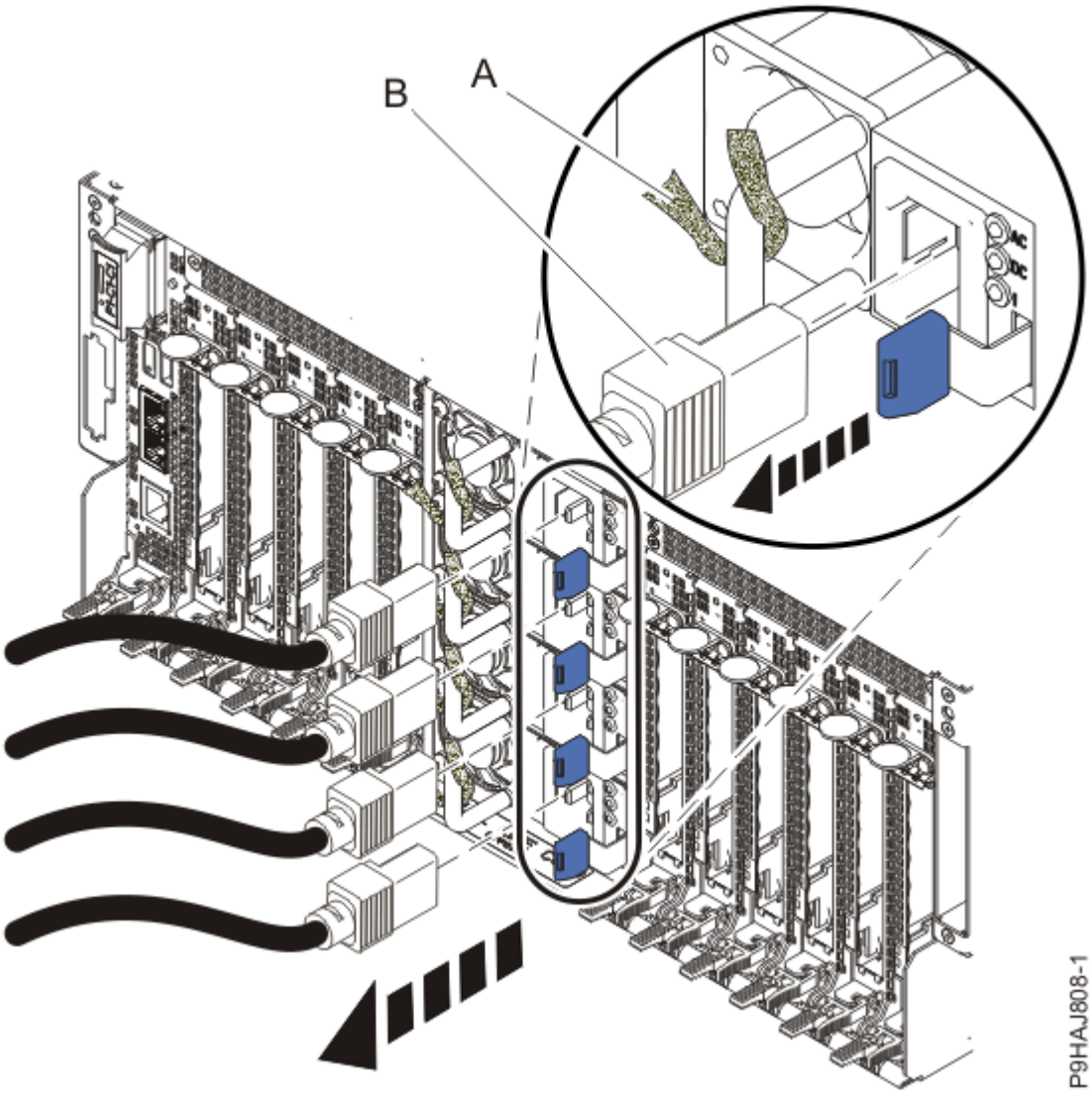
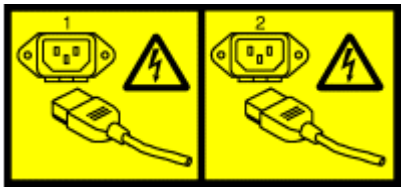



*Figure 19: Removing the power cords*

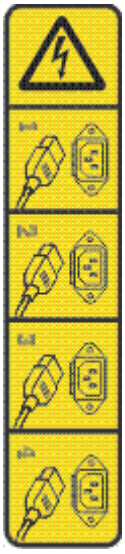
**(L003)**




or

or

or

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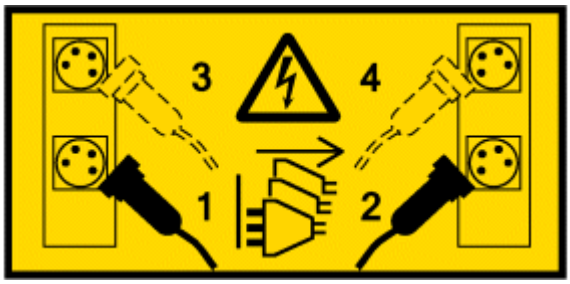
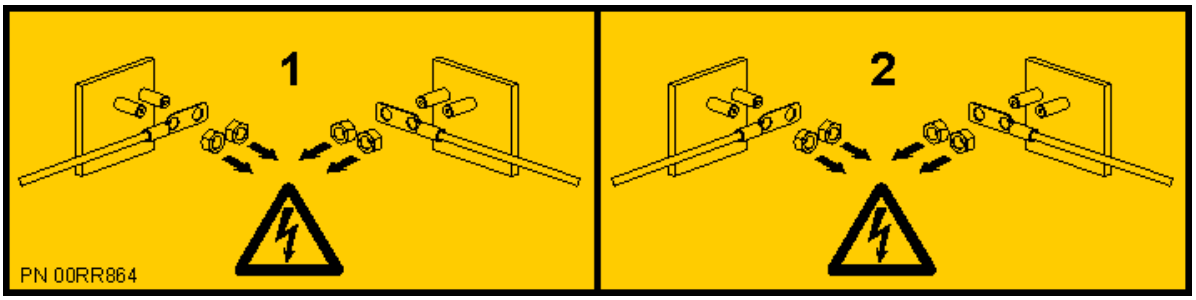



**DANGER:** Multiple power cords. The product might be equipped with multiple AC power cords or multiple DC power cables. To remove all hazardous voltages, disconnect all power cords and power cables. (L003)

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

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

**Attention:**

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

## Removing a power supply from the 9040-MR9 system

To remove a power supply, complete the steps in this 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 power supply when the system is powered on, label the power cord, and then unstrap the hook-and-loop fastener **(D)** to release the power cord **(A)** from the power supply handle.

   See the following figure. Do not remove the power cord from the cable-management arm.

   a) Pull the power cord **(A)** out of the power supply **(C)** in the direction shown.

      Pull the power cord connector; do not pull the cord itself.

   b) Retain the hook-and-loop fastener for future use.

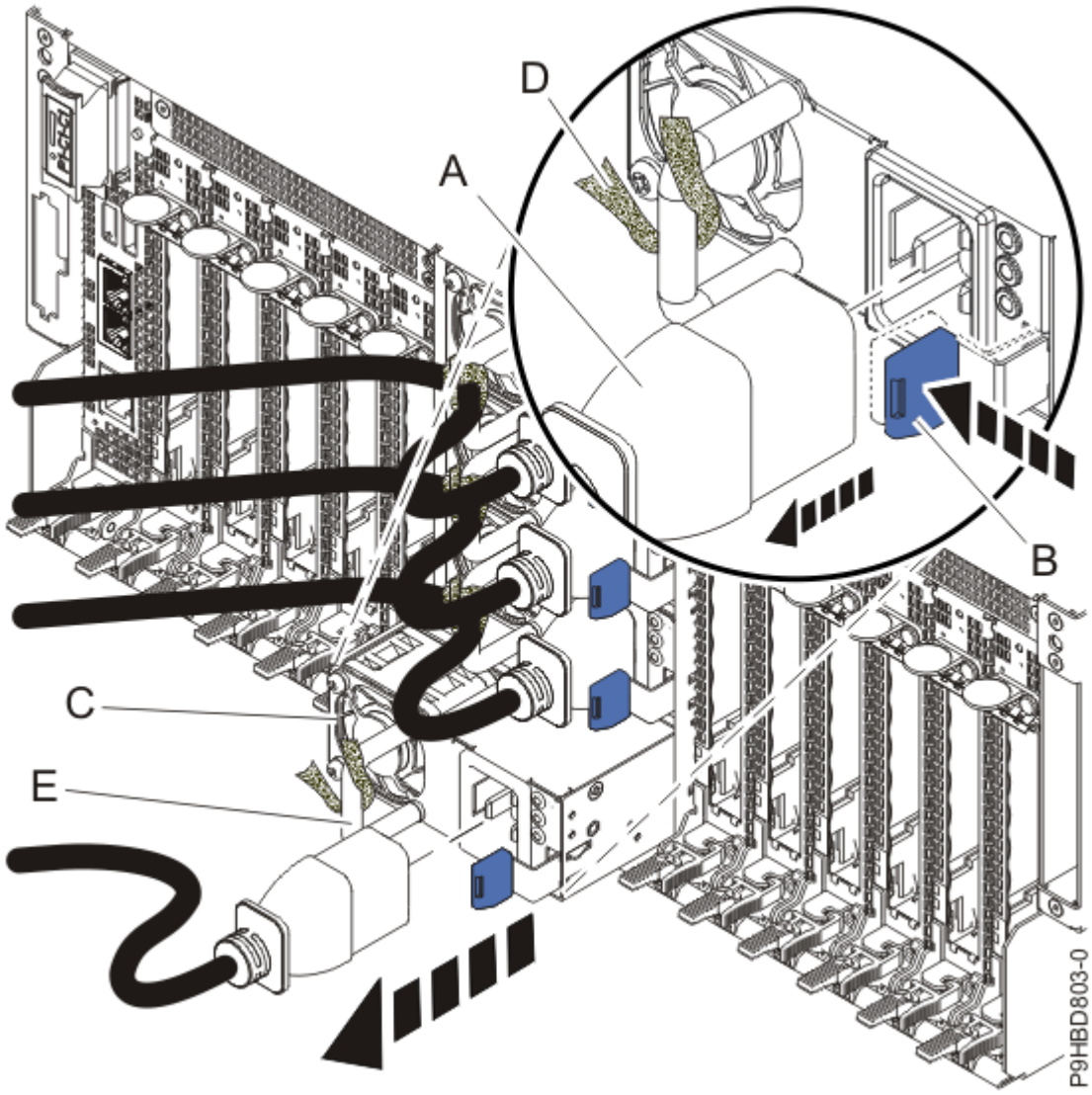



*Figure 20: Removing a power supply*

**Note:** The locking-tab **(B)** might be terracotta instead of blue.

3. To remove the power supply; complete the following steps.

   See the previous figure.

   a) To unseat the power supply from its position in the system, push the locking-tab **(B)** in the direction shown.

   b) Using the handle **(E)**, pull the power supply **(C)** away from the system.

## Replacing a power supply in the 9040-MR9 system

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

   See the following figure.

   a) Align the power supply **(C)** with the bay and slide the power supply into the system until the latch **(B)** locks in place.

   b) Connect the power cord **(A)** to the power supply **(C)**.

   c) Use the hook-and-loop fastener **(D)** and tie the power cord to the power supply handle.

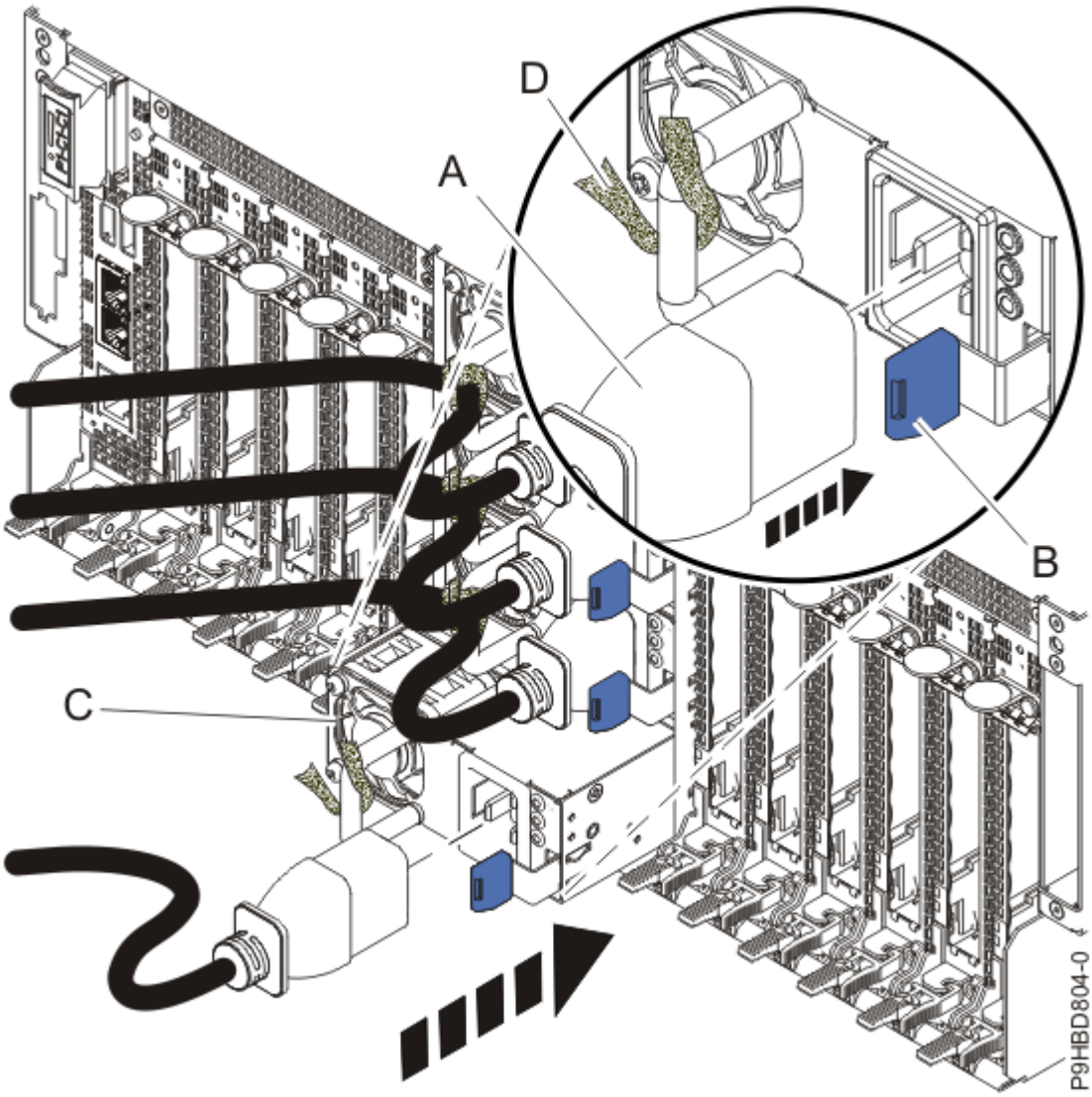



*Figure 21: Replacing a power supply*

**Note:** The replacement part might have a terracotta latch **(B)**. You can replace the terracotta latch with the original blue one from the removed part.

## Preparing the system for operation after removing and replacing a power supply in the 9040-MR9

To prepare the system for operation after removing and replacing a power supply, complete the steps in this 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, complete the following steps:
   a) Start the system. For instructions, see Starting a system (www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustartsys.htm).
4. 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).
5. Note the state of LEDs on the replaced power supply; see the following figure.

   The LEDs for that power supply must be in the following state:

- The AC power-on LED is turned on (solid).
- The DC power-on LED is turned on (solid).
- The amber fault LED is turned off.

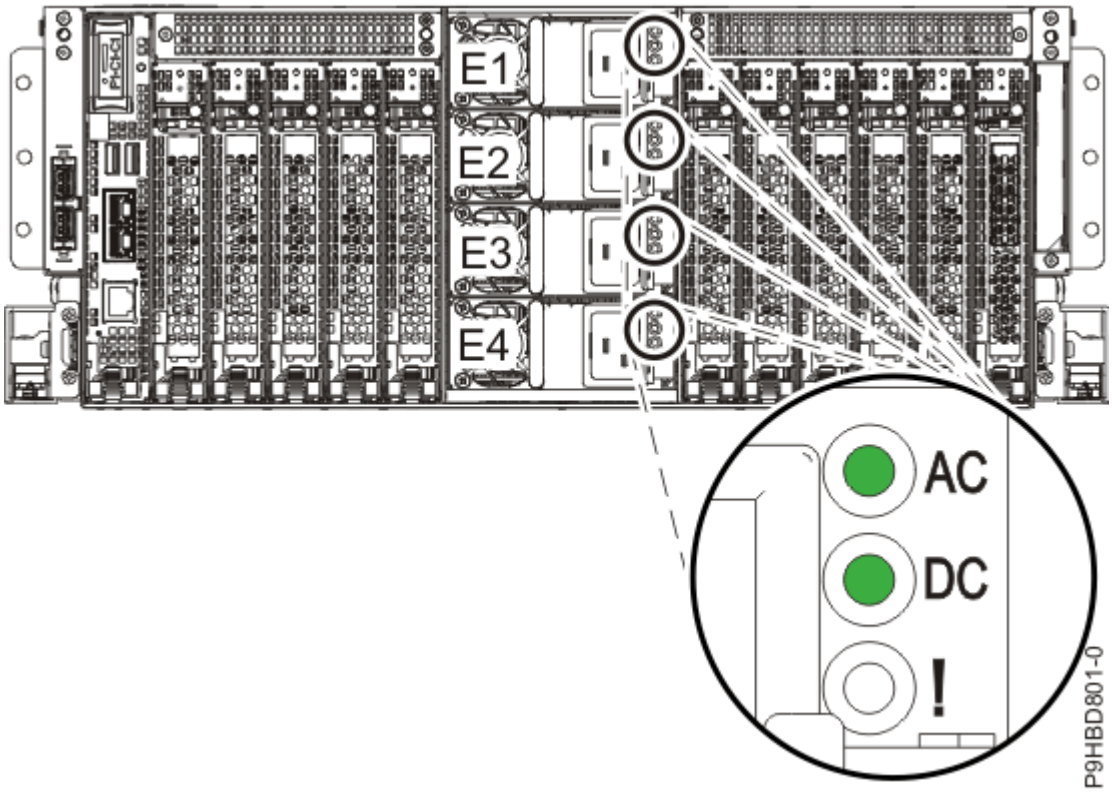



*Figure 22: LEDs for a working power supply*

6. Verify that the amber fault LED on the replaced power supply is not lit.
7. If opened, close the rack door at the rear of the system.

# Front USB cable for the 9040-MR9

Find information about removing and replacing a front USB cable in the IBM Power System E950 (9040-MR9) servers.

## Removing and replacing the front USB cable in the 9040-MR9

Find information about removing and replacing the front USB cable in the IBM Power System E950 (9040-MR9) server.

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 the front USB cable.

### Preparing the system to remove and replace a front USB cable in the 9040-MR9

To prepare the system to remove and replace a front USB cable, complete the steps in this 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. 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 (www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustopsys.htm).
4. Label and disconnect the power cords from the system unit as shown in the following figure.

   **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 power sources to the system are disconnected.
   - The power cord **(B)** is fastened to the system with a 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.

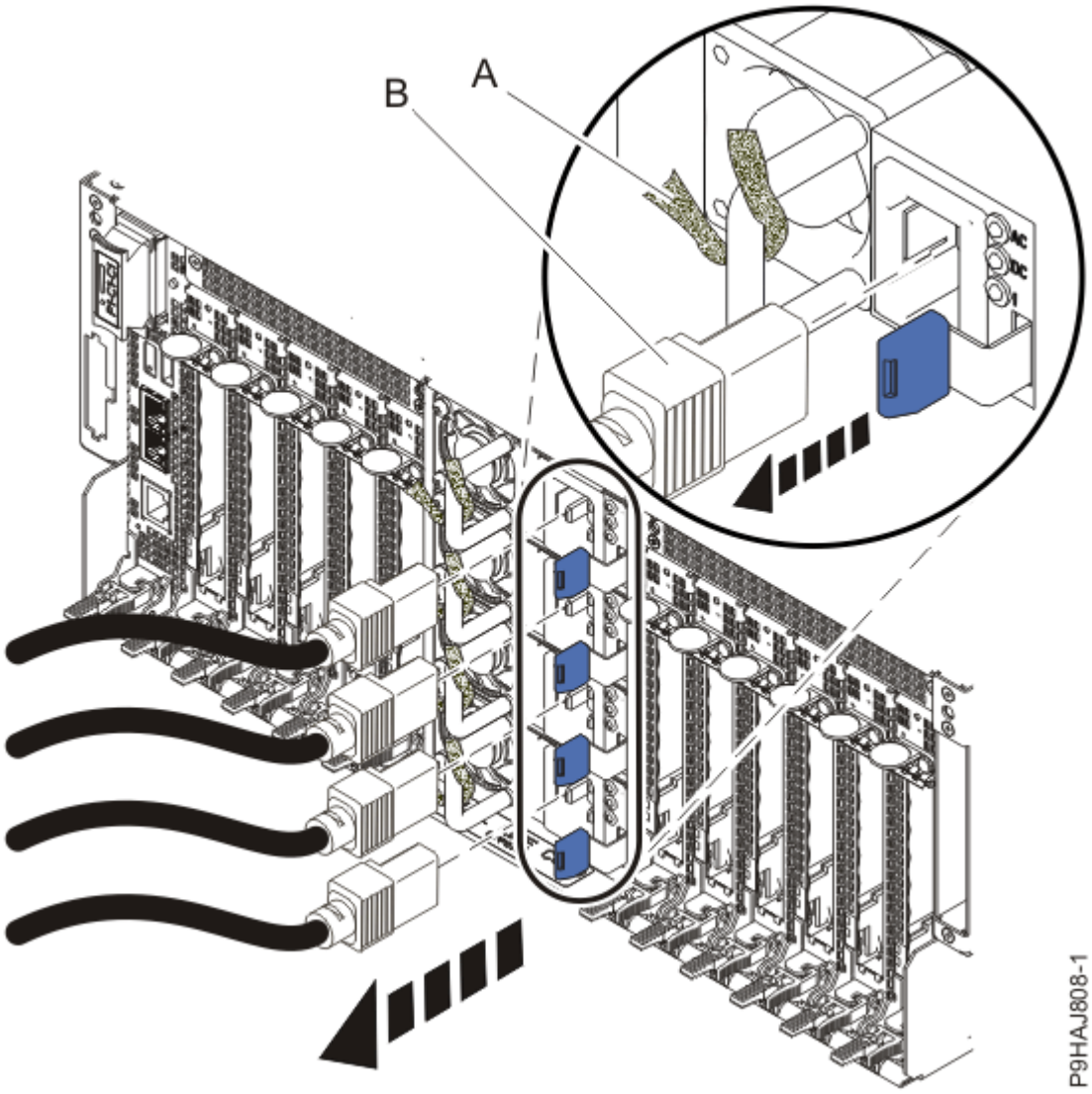
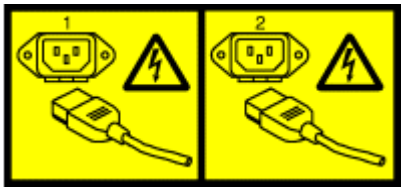



*Figure 23: Removing the power cords*

**(L003)**

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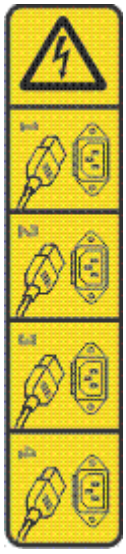

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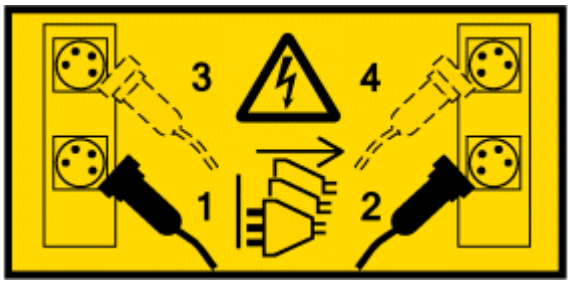
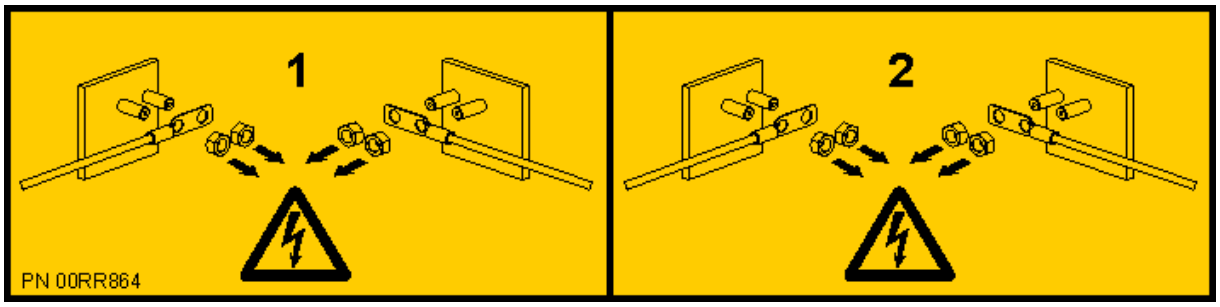



**DANGER:** Multiple power cords. The product might be equipped with multiple AC power cords or multiple DC power cables. To remove all hazardous voltages, disconnect all power cords and power cables. (L003)

5. Label and disconnect all external cables that are attached to the PCIe adapters.
6. If applicable, open the rack front door.

7. Remove the front cover. For instructions, see Removing the front cover (www.ibm.com/support/knowledgecenter/POWER9/p9haj/p9haj_950_front_bezel_off.htm).
8. 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.
9. Remove all the fans from the disk drive backplane as shown in the following figure.
   a) Put your thumb against the latch **(A)** in the following figure, and put your index finger against the latch **(B)**.
   b) Push against the latch with your thumb and then pull out the latch with your index finger. This action releases the latch.
   c) Rotate the fan handle in the direction that is shown in the following figure to unlock the fan from its slot.
   d) Hold onto the fan handle and by using your hand to support the bottom of the fan, pull out the fan from its slot as shown in the following figure.

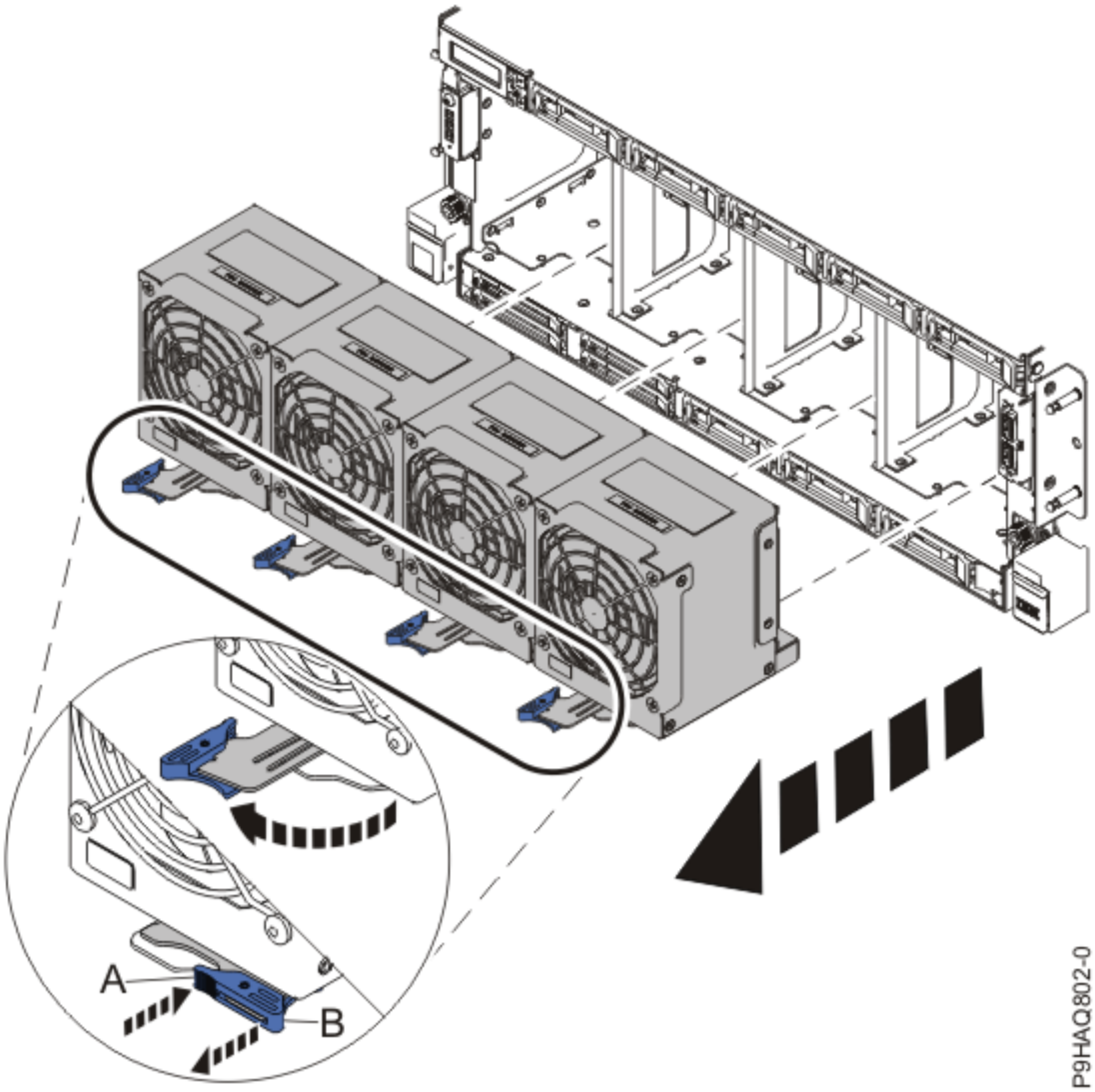



*Figure 24: Removing the fans*

10. To remove the disk drive backplane from the front of the system, complete the following steps:

    **CAUTION:** To prevent damage to the SAS cables, you must unplug the SAS cables from the rear of the disk drive backplane before fully removing the disk drive backplane.

    a) Loosen the two screws **(A)** as shown in the following figure.

    b) Loosen the two recessed screws **(B)** as shown in the following figure. Use a 4 mm ball-end hex driver (130 mm long, IBM part number 02EA546) to loosen the screws.

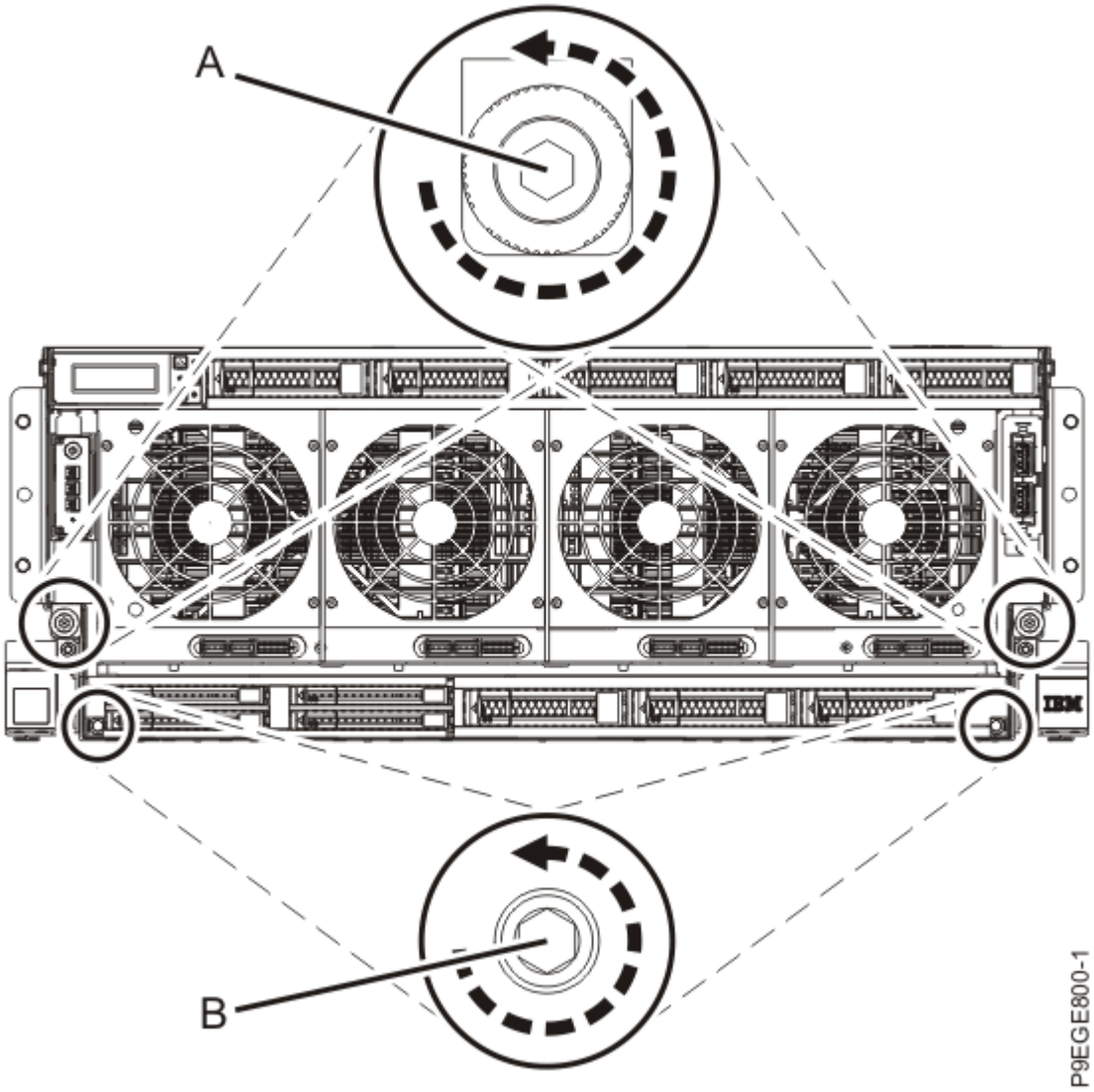



*Figure 25: Loosening the disk drive backplane screws*

c) Grasp the disk drive backplane with two hands as indicated by the blue squares in the following figure. Pull the disk drive backplane approximately 2.5 cm (1 in) straight out from the front of the system.

   If you pull the disk drive backplane with one hand, it might twist sideways.

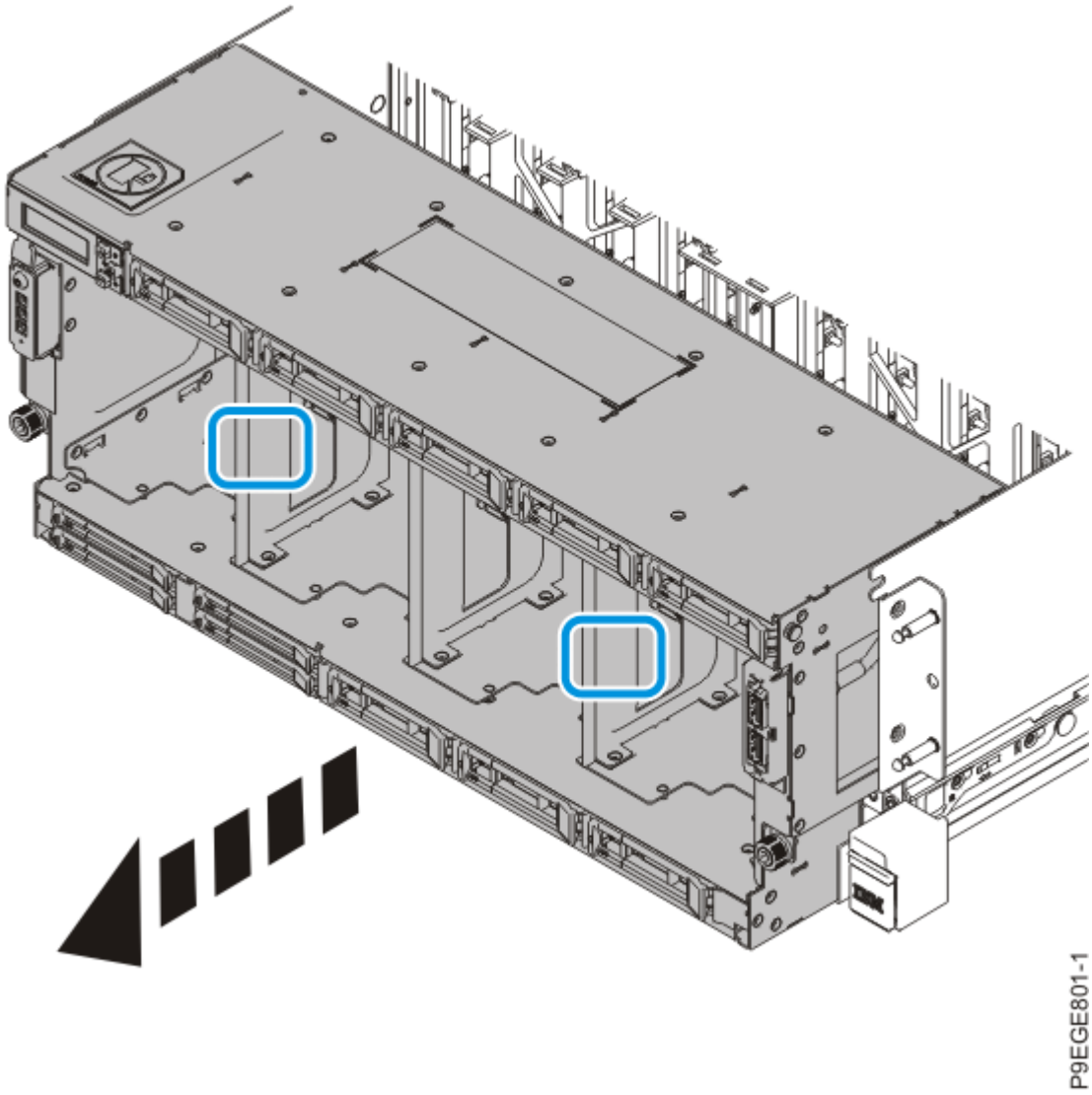



*Figure 26: Partially removing the disk drive backplane*

d) Pull the entire system unit out of the rack at most 20.3 cm (8 in), enough to access and disconnect the SAS cables and to remove the disk drive backplane.

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.

1) If not already removed, remove the shipping screws **(A)** as shown in the following figure by using a Phillips screwdriver.
2) Release the side latches **(B)** by pressing them downward as shown in the following figure.
3) Pull out the entire system unit **(C)** at most 20.3 cm (8 in) from the rack as shown in the following figure. Ensure that any cables do not catch or bind as you pull out the system.

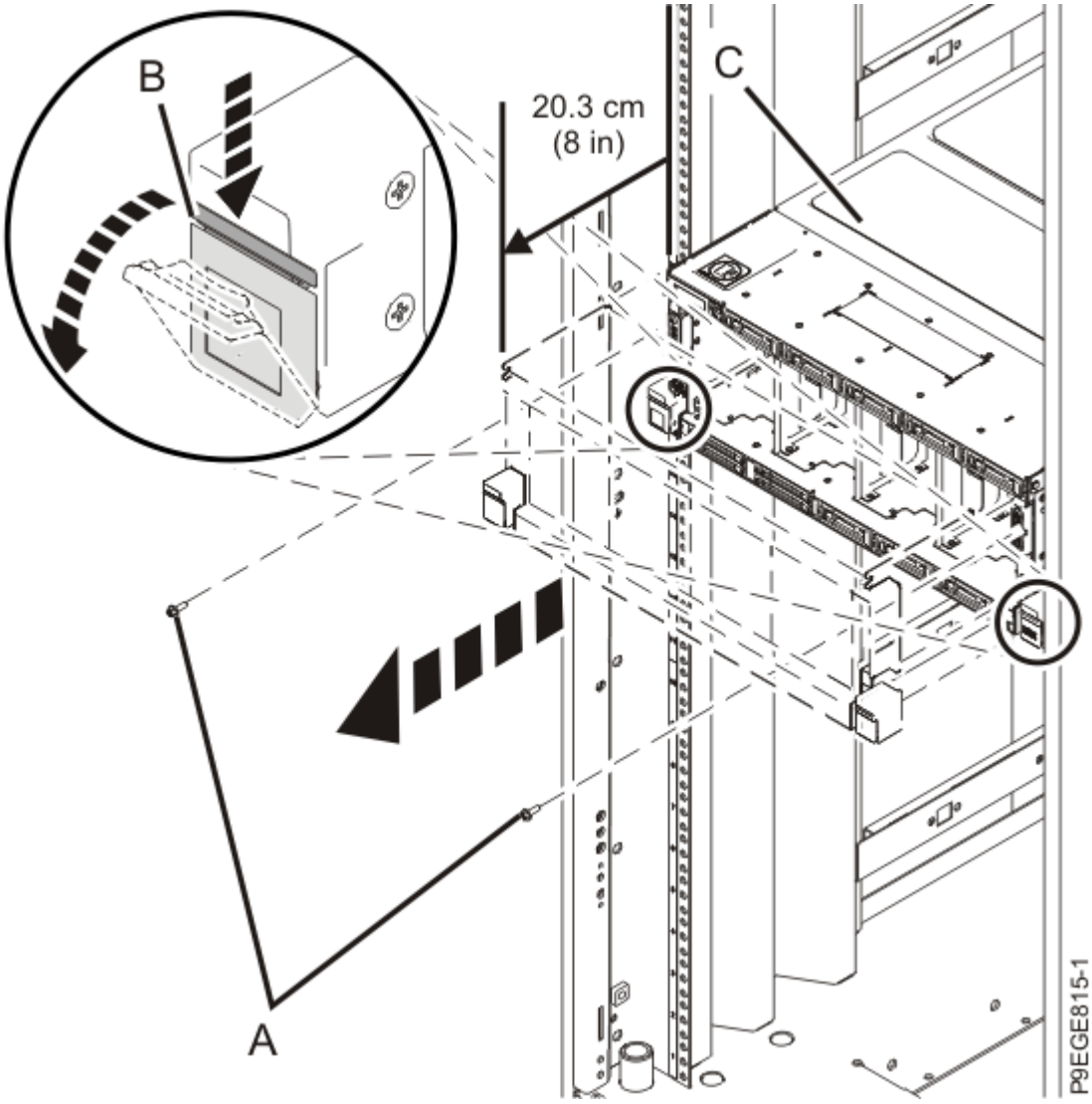



*Figure 27: Partially sliding the system from the rack*

e) Label and unplug the SAS cables from the rear of the disk drive backplane as shown in the following figure.

Press in on the clip to release the cable. Hold the disk drive backplane while you remove the SAS cables to prevent the disk drive backplane from tipping forward and out of the system.

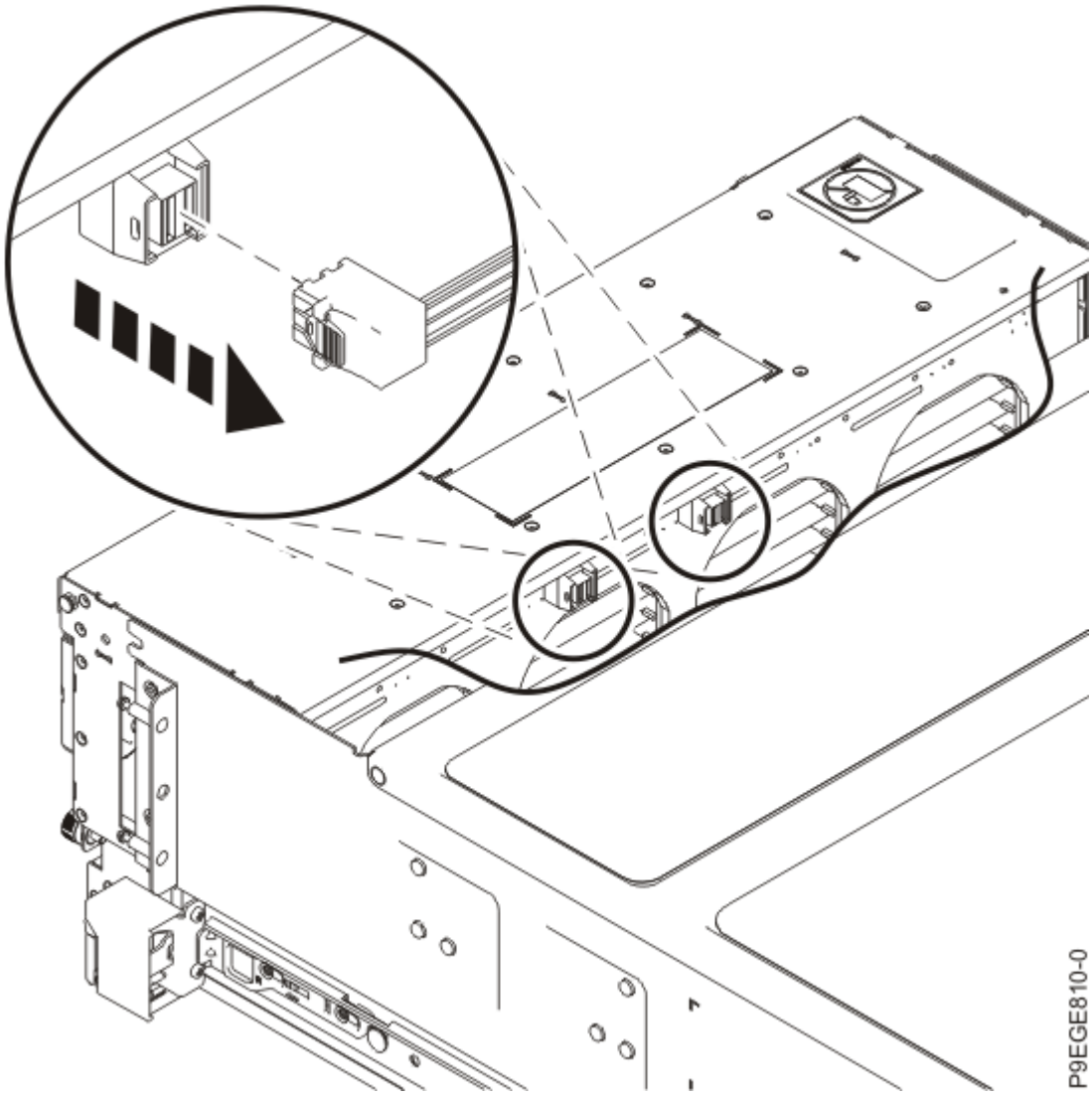



*Figure 28: Unplugging the SAS cables*

f) After the SAS cables are disconnected from the rear of the disk drive backplane, using two hands, push the disk drive backplane back into place, ensuring that the alignment pins at **(A)** insert into the slots at **(B)**.

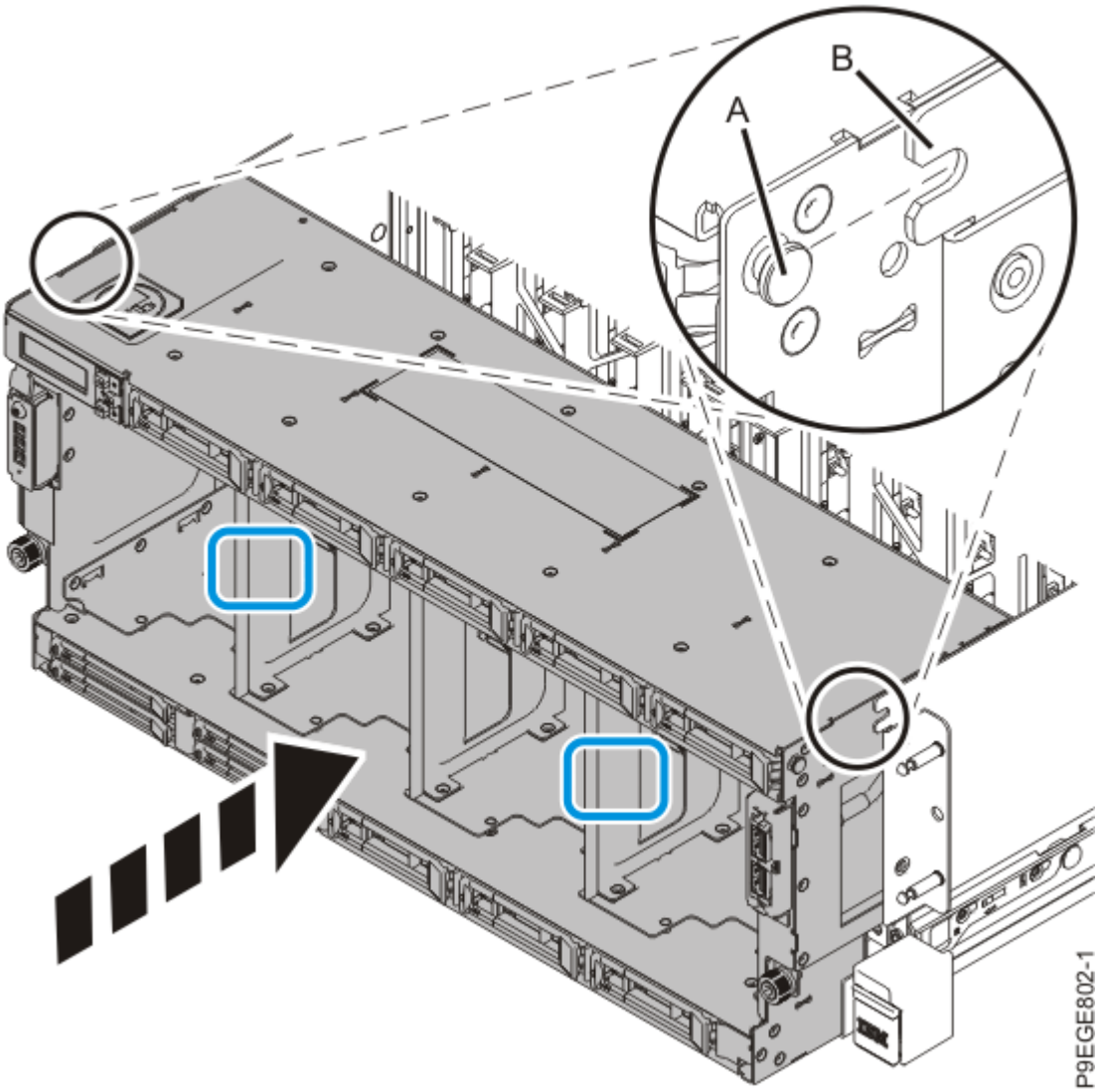



*Figure 29: Replacing the disk drive backplane*

g) Push the system unit **(A)** back into the rack until both release latches of the system unit lock into position. Ensure that any cables do not catch or bind as you push in the system.

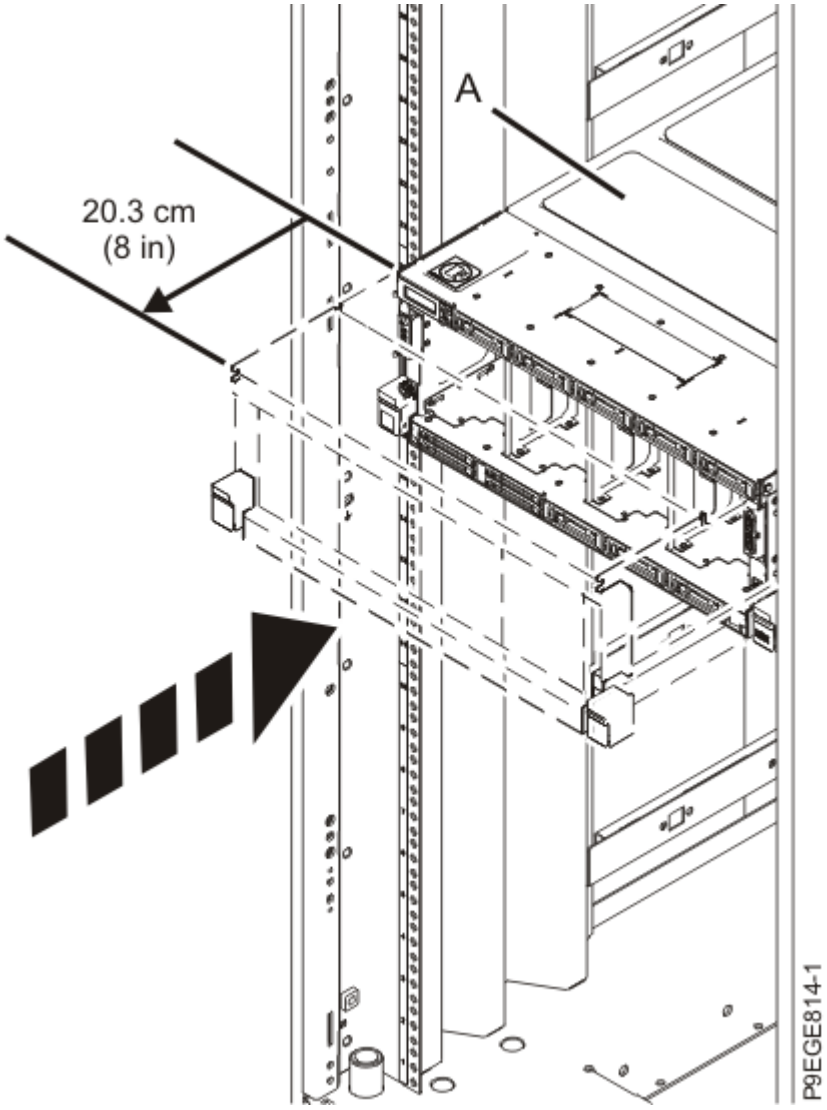



*Figure 30: Pushing the system back into the rack*

h) Using two hands, fully remove the disk drive backplane from the system.

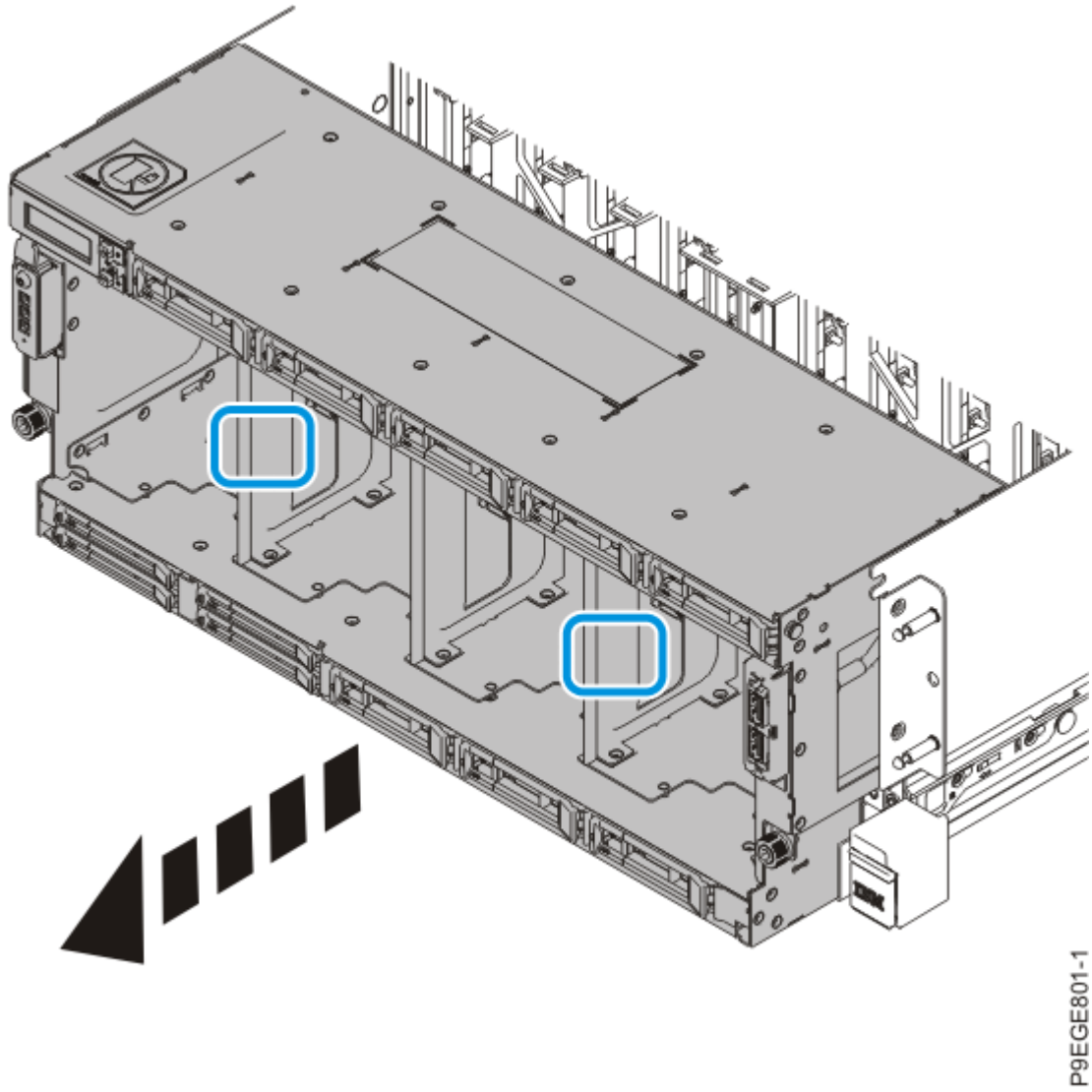



*Figure 31: Fully removing the disk drive backplane*

i) Place the disk drive backplane on an ESD surface.

## Removing the front USB cable from the 9040-MR9

To remove the front USB cable from the server, complete the steps in this procedure.

1. Ensure that you have the electrostatic discharge (ESD) wrist strap on and that the ESD clip is plugged into a ground jack or connected to an unpainted metal surface. If not, do so now.
2. Remove the front USB cable by completing the following steps:
   a) Press the latch releases **(A)** and disconnect the USB connector **(B)** from the disk drive backplane as shown in the following figure.
   b) Push the USB connector **(B)** into the side area of the disk drive backplane.
   c) Press the cable release **(C)** and disconnect the USB cable from the disk drive backplane.
   d) Remove the front USB cable from the disk drive backplane.

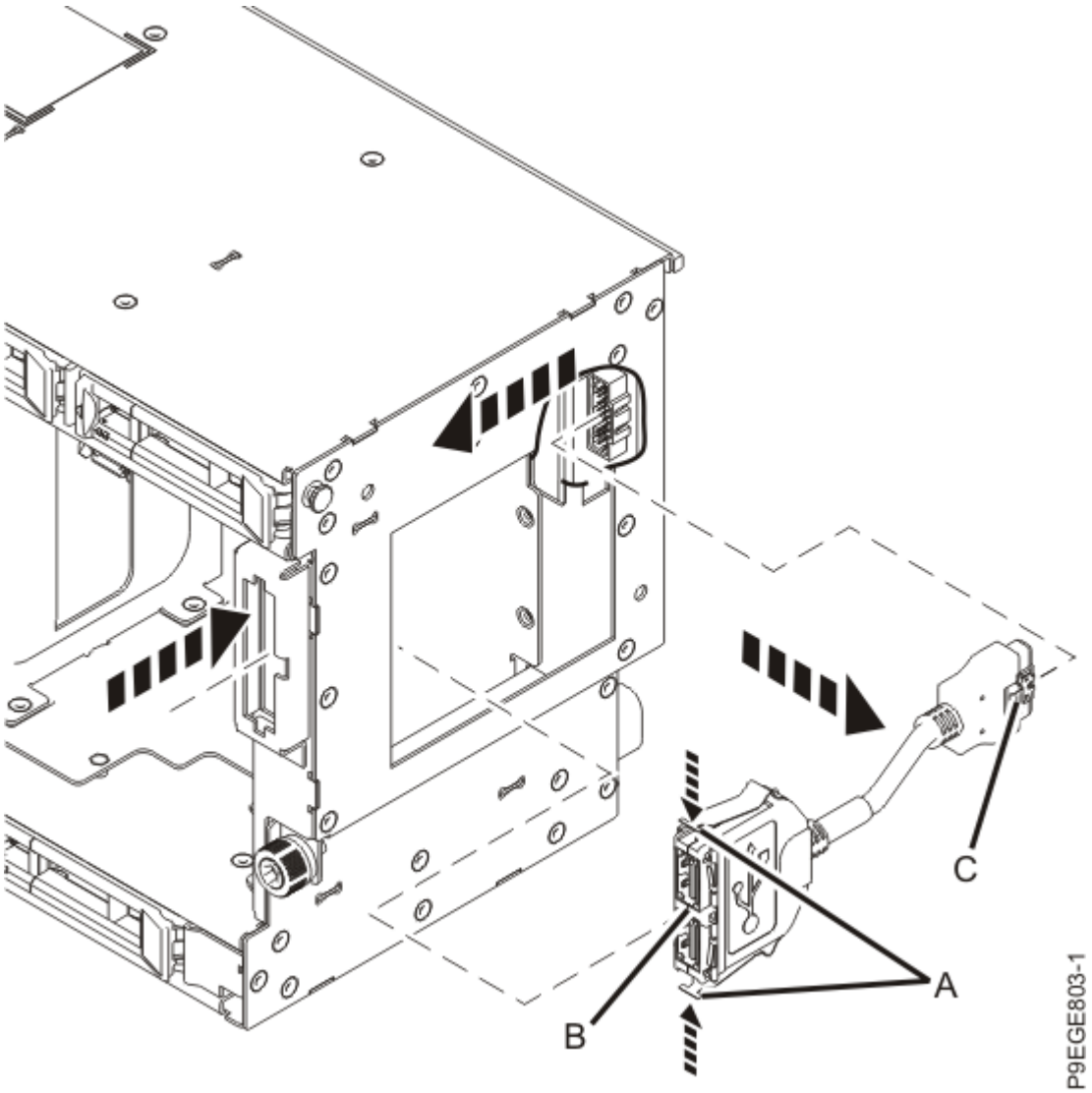



*Figure 32: Removing the front USB port connector*

## Replacing the front USB cable in the 9040-MR9

To replace the front USB cable in the server, complete the steps in this 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. Install the front USB cable by completing the following steps:
   a) Hook the top latch **(A)** of the USB connector into place as shown in the following figure.
   b) Press in the bottom latch **(B)** and connect the USB connector to the front of the disk drive backplane.
   c) Plug the USB cable **(C)** into the USB socket of the disk drive backplane.

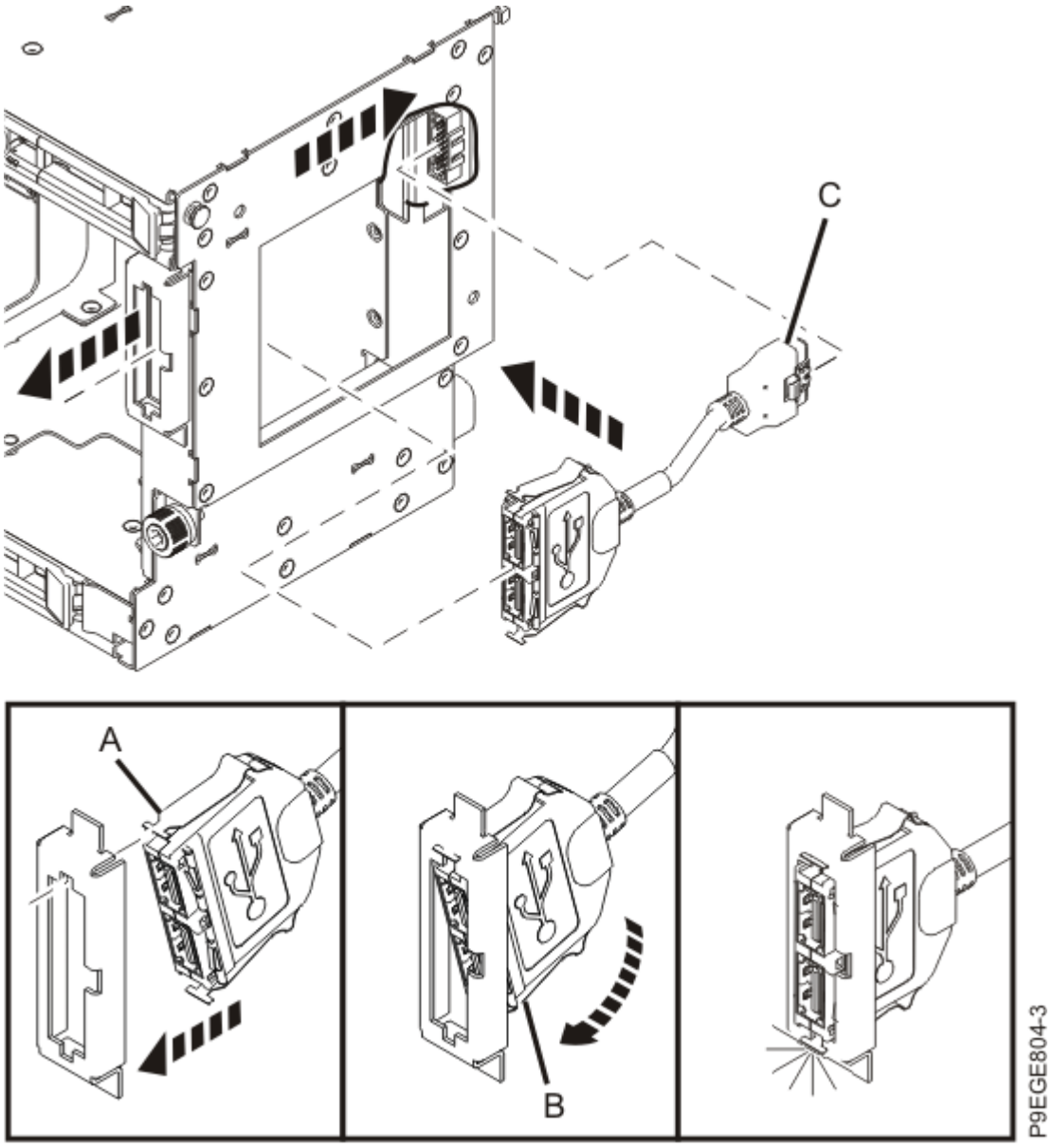



*Figure 33: Replacing the front USB port connector*

## Preparing the system for operation after removing or replacing the front USB cable in the 9040-MR9

To prepare the system for operation after removing or replacing the front USB cable, complete the steps in this 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 replace the disk drive backplane, complete the following steps:

   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.

a) Using two hands, grasp the disk drive backplane where indicated by the blue squares in the following figure. Partially insert the disk drive backplane straight into the front of the system.

   Do not yet fully insert the disk drive backplane; leave about a 2.5 cm (1 in) gap at the rear of the disk drive backplane.

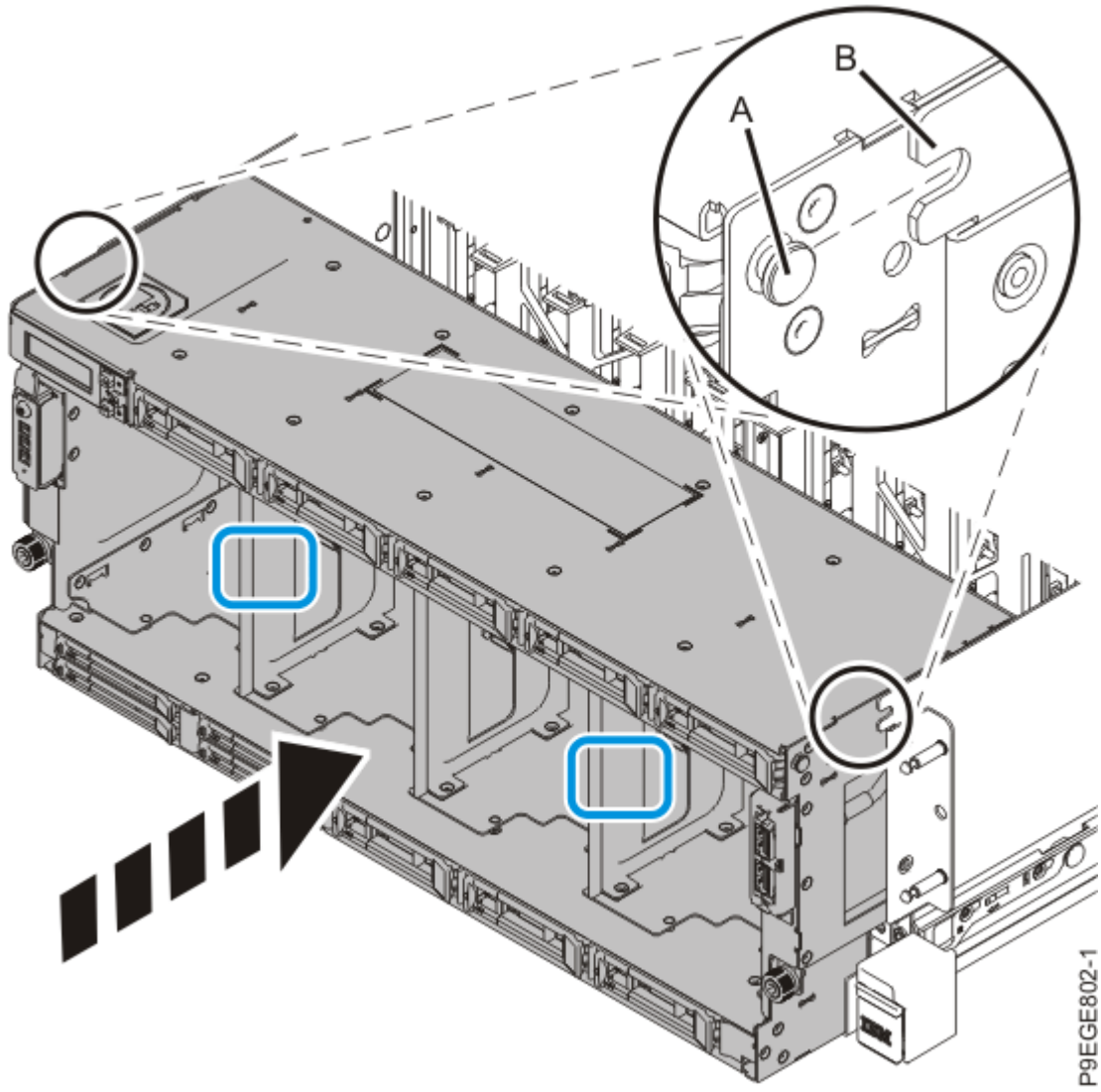



*Figure 34: Partially replacing the disk drive backplane*

b) Pull out the system unit **(B)** at most 20.3 cm (8 in) from the rack as shown in the following figure. Ensure that any cables do not catch or bind as you pull out the system.

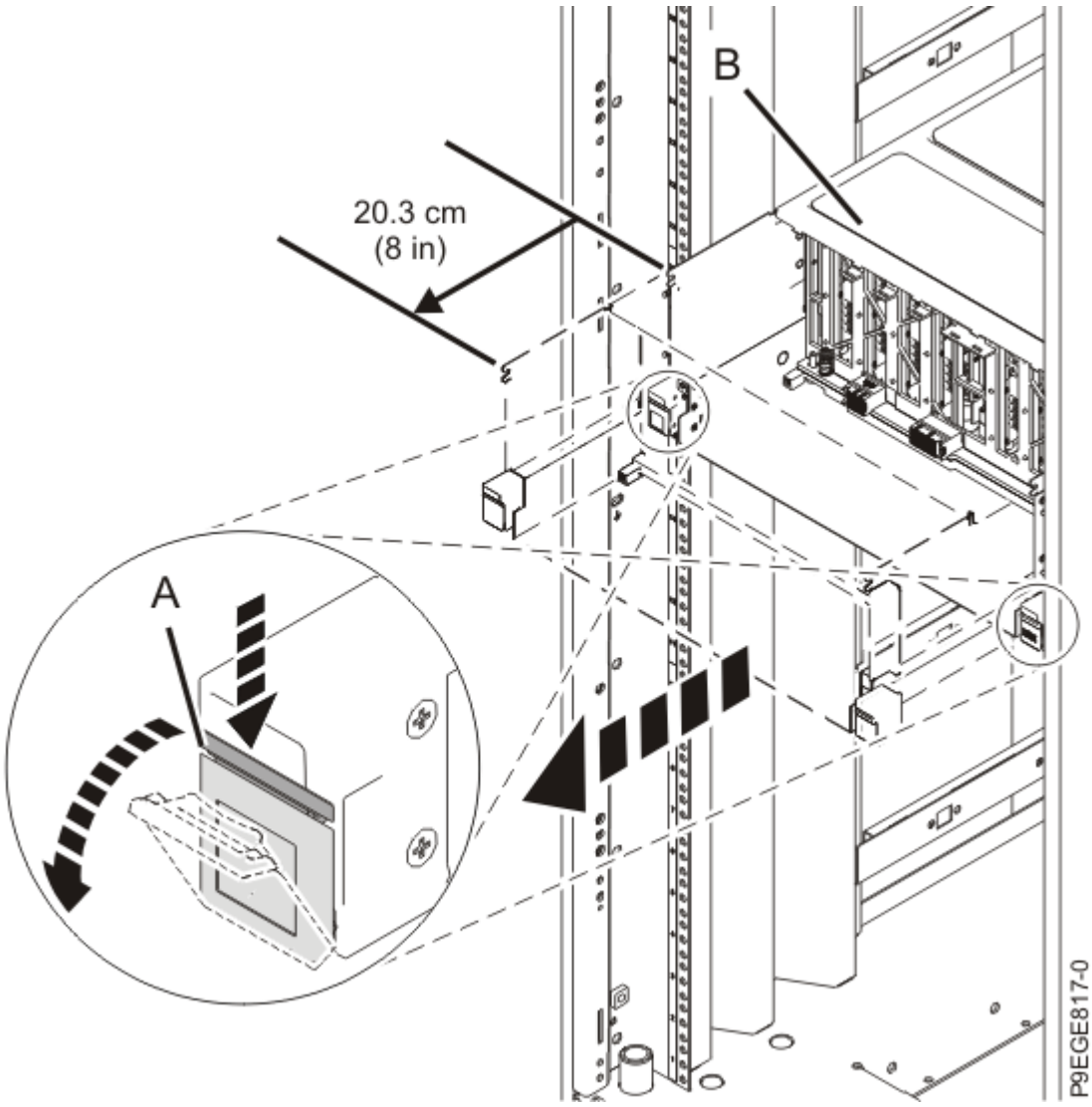



*Figure 35: Partially sliding the system from the rack*

c) Using the connector labels near the ends of the SAS cables, attach the SAS cables to the rear of the disk drive backplane as shown in the following figure.

   Hold the disk drive backplane while you attach the SAS cables to prevent the disk drive backplane from tipping forwards out of the system.

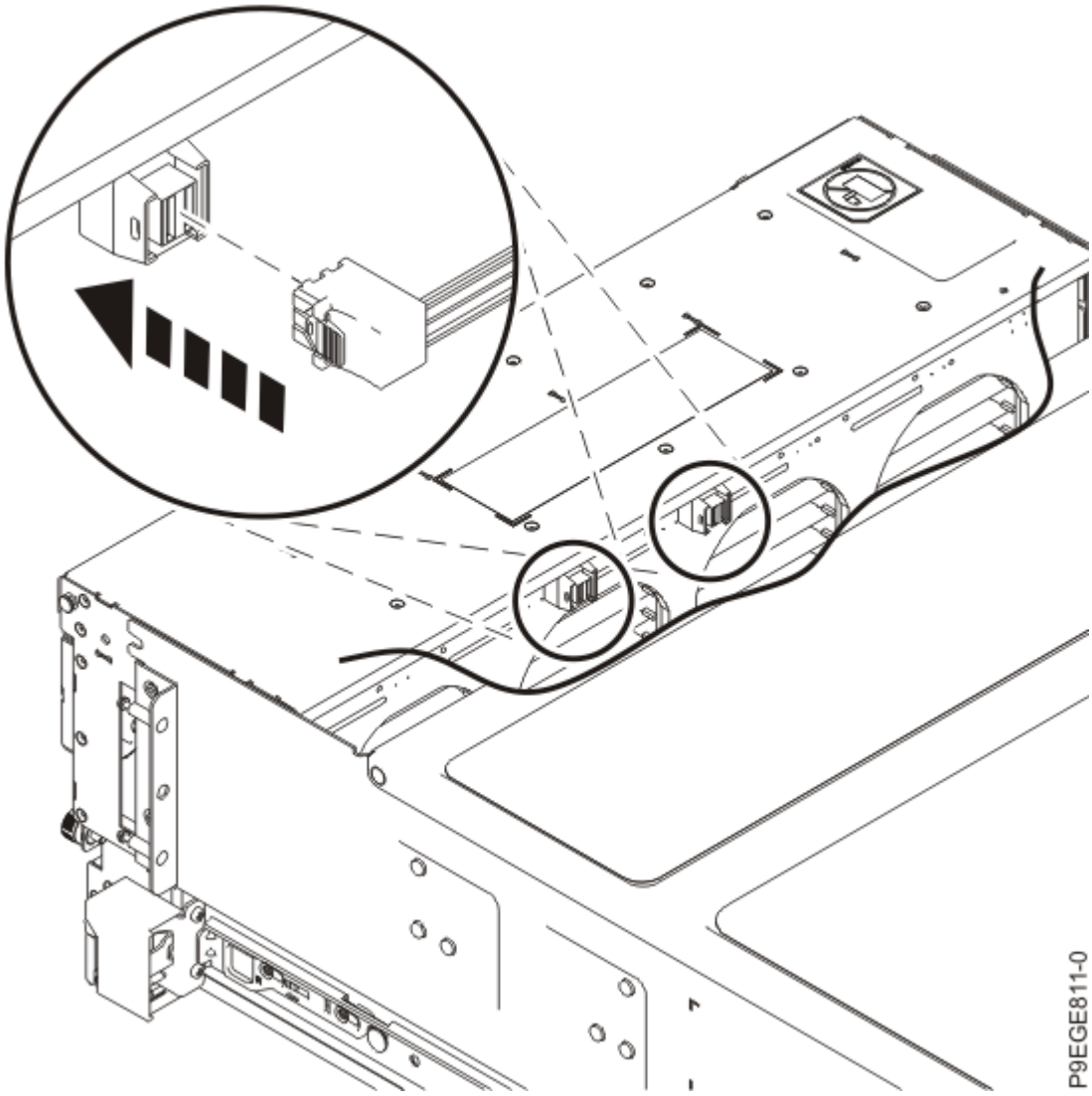



*Figure 36: Attaching the SAS cables*

d) Again using two hands, push the disk drive backplane back into place, ensuring that the alignment pins at **(A)** insert into the slots at **(B)**.

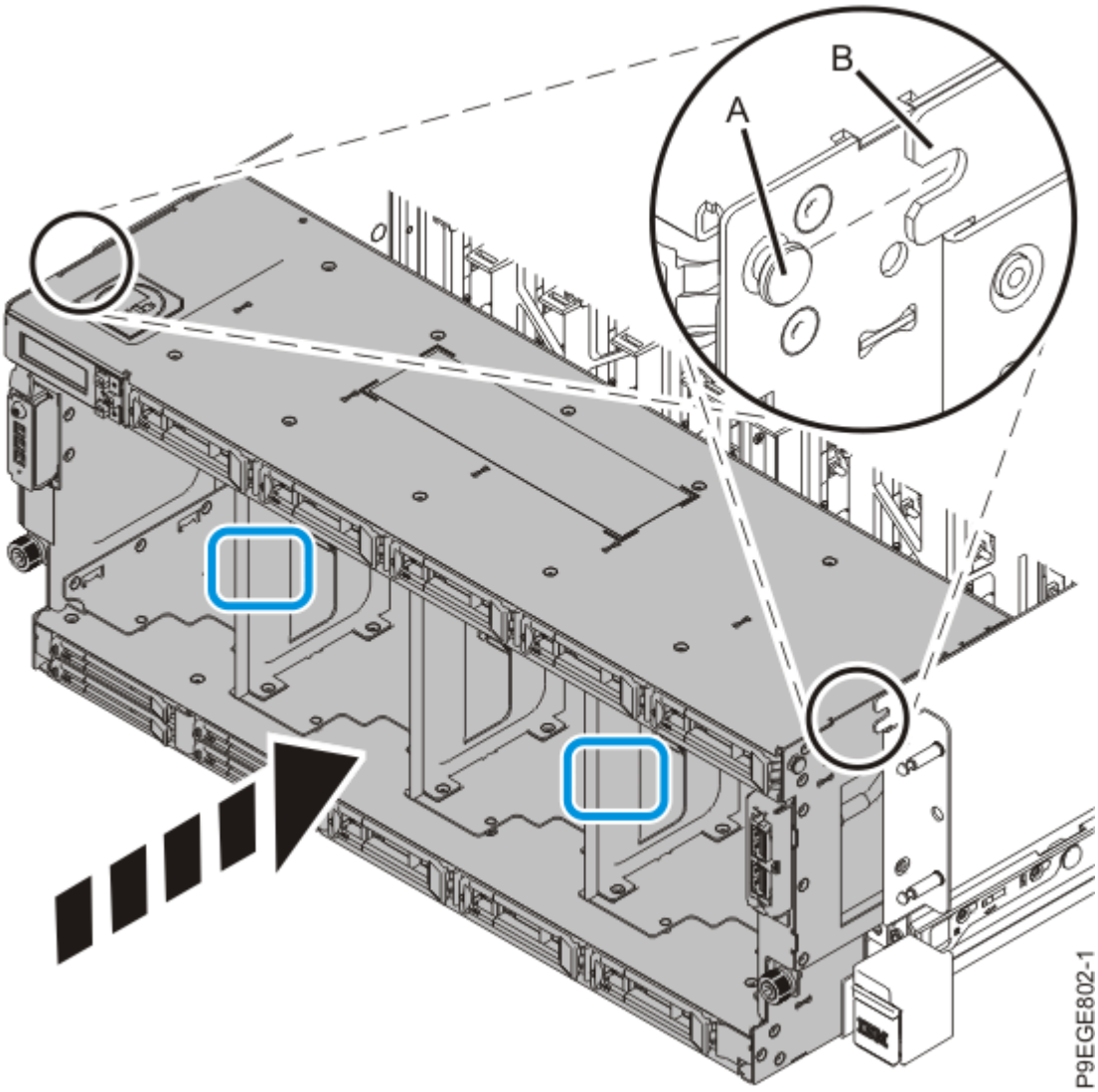



*Figure 37: Replacing the disk drive backplane*

e) Push the system unit **(A)** back into the rack until both release latches of the system unit lock into position. Ensure that any cables do not catch or bind as you push in the system.

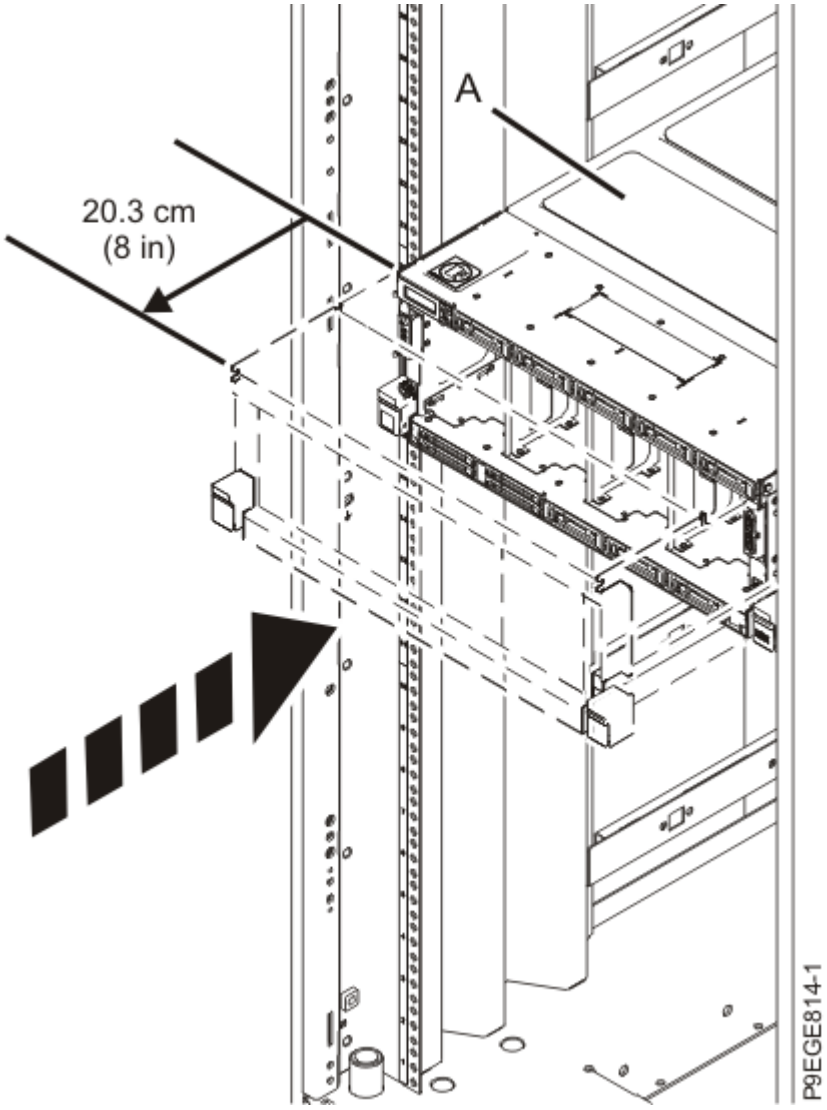



*Figure 38: Placing the system into the operating position*

f) Secure the disk drive backplane with two recessed screws at **(A)**. Use a 4 mm ball-end hex driver (130 mm long, IBM part number 02EA546) to tighten the screws.

First, set the screw threads on one side, then the other. Then, evenly tighten the screws on both sides until both sides are seated. If you screw in one side of the disk drive backplane completely, the disk drive backplane might twist, preventing the disk drive backplane from properly seating in the chassis.

g) Secure the disk drive backplane with two screws at **(B)**.

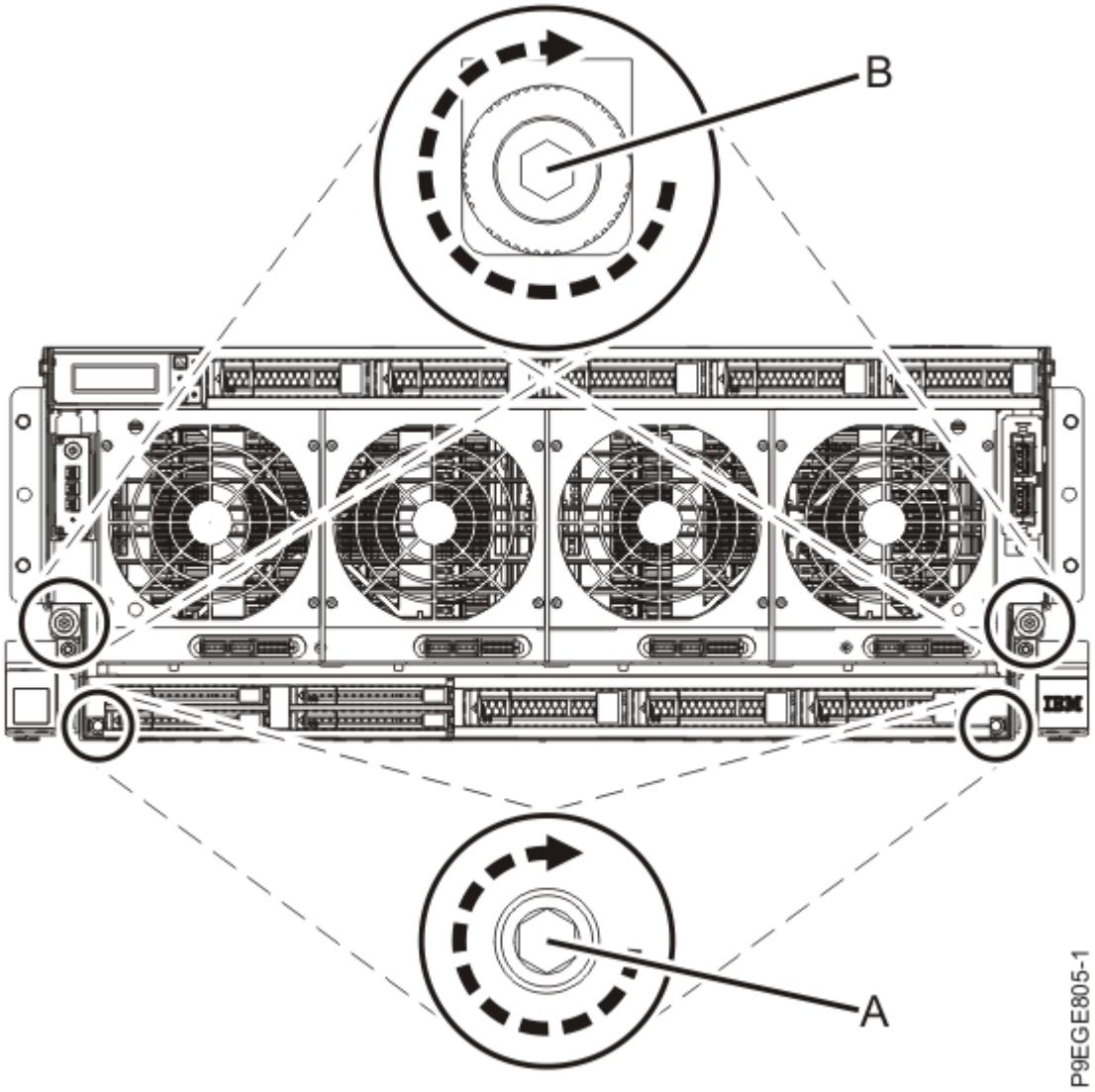



*Figure 39: Fastening the screws for the disk drive backplane*

3. Replace all the fans in the disk drive backplane.
   a) Ensure that the fan handle **(A)** is open as shown in the following figure.
   b) Hold on to the fan handle and by using your hand to support the bottom of the fan, push the fan into its slot as shown in the following figure.
   c) Push the fan handle in the direction that is shown in the following figure.
   d) Push against the left front of the blue touch point latch **(B)** with your thumb and then slightly pull the latch at **(C)** with your index finger. This action opens the latch.
   e) Continue to push in the lever with your thumb until the latch is fully seated at **(C)**.

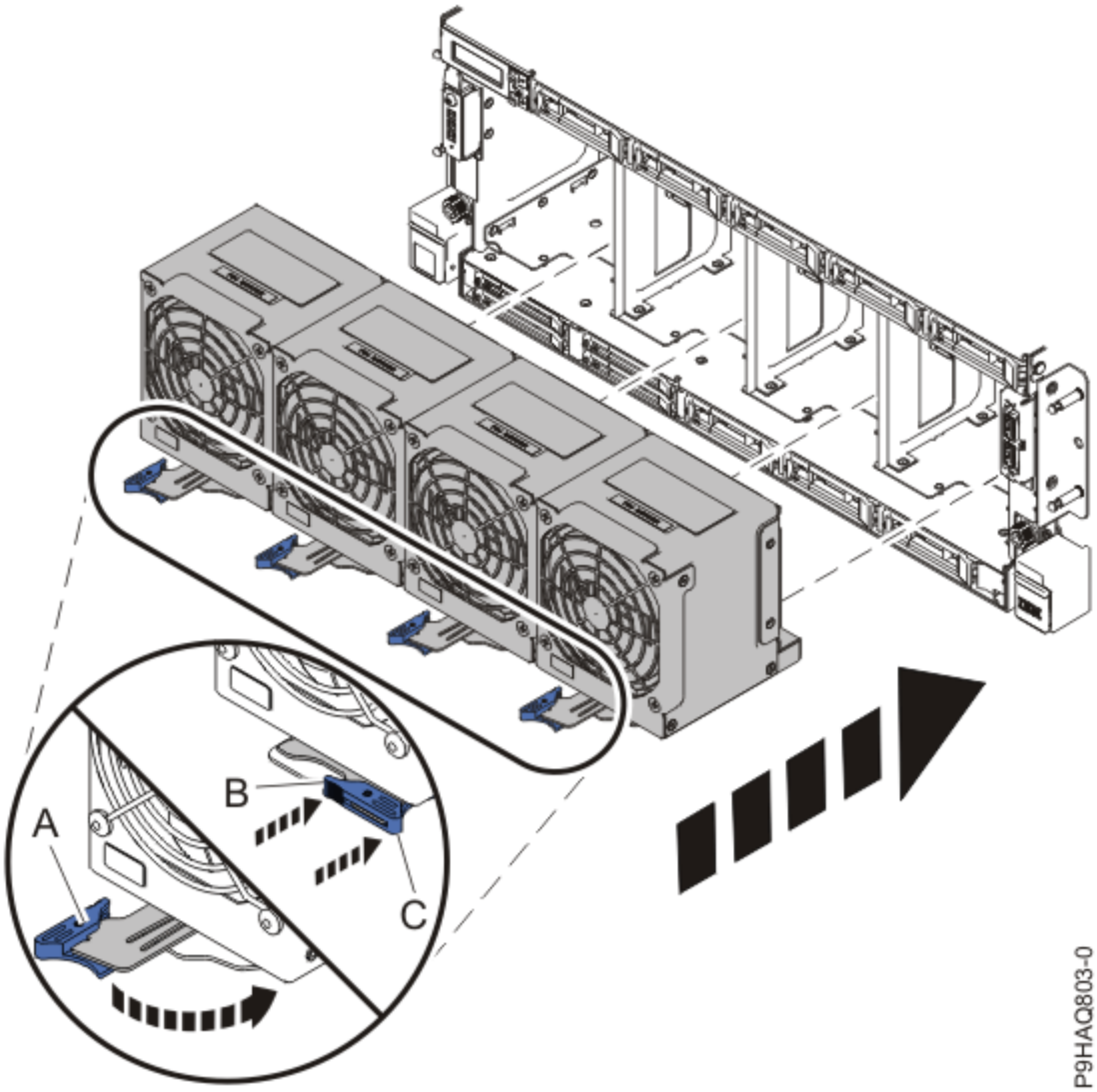



*Figure 40: Replacing the fans*

4. Replace the front cover. For instructions, see Installing the front cover (www.ibm.com/support/knowledgecenter/POWER9/p9haj/p9haj_950_front_bezel_on.htm).
5. If applicable, close the rack front door.
6. Reconnect the power cords to the system. For instructions, see Connecting the power cords (www.ibm.com/support/knowledgecenter/POWER9/p9haj/p9haj_950_power_cord_in.htm).
7. Using your labels, reconnect all of the external cables that plug into the PCIe adapters.
8. Start the system. For instructions, see Starting a system (www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustartsys.htm).
9. 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).
10. Verify the installed part.
    - If you replaced the part because of a service action, verify the installed part. For instructions, see https://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 https://www.ibm.com/support/knowledgecenter/POWER9/p9haj/pxhaj_hsmverify.htm (www.ibm.com/support/knowledgecenter/POWER9/p9haj/pxhaj_hsmverify.htm).

# Rear USB cable for the 9040-MR9

Find information about removing and replacing a rear USB cable in the IBM Power System E950 (9040-MR9) server.

## Removing and replacing the rear USB cable in the 9040-MR9

Find information about removing and replacing the rear USB cable in the IBM Power System E950 (9040-MR9) server.

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 rear USB cable.

### Preparing the 9040-MR9 system to remove and replace a rear USB cable

To prepare the system to remove and replace a rear USB cable, complete the steps in this 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. 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 (www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustopsys.htm).
4. Label and disconnect the power cords from the system unit as shown in the following figure.

   **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 power sources to the system are disconnected.
   - The power cord **(B)** is fastened to the system with a 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.

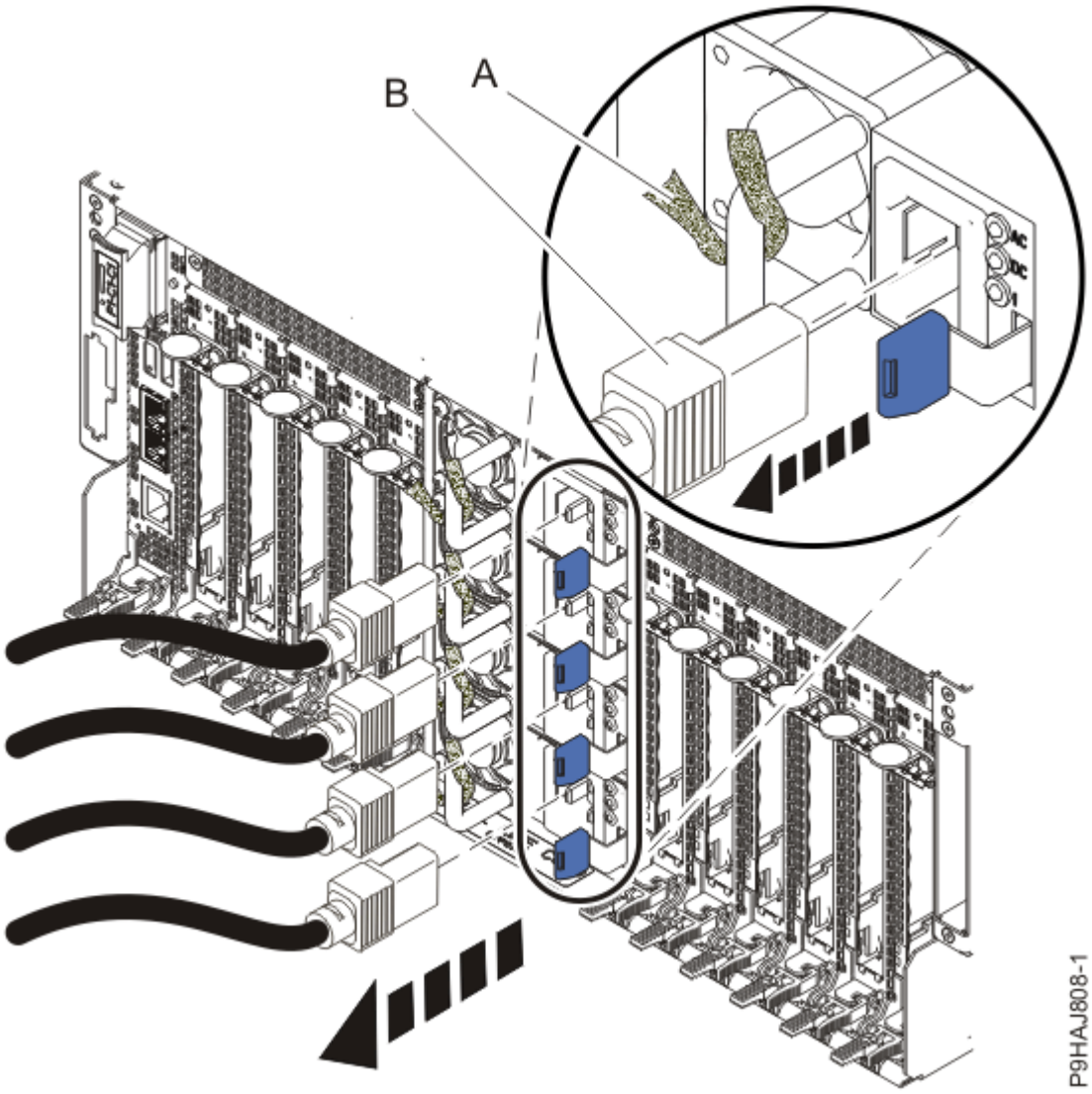
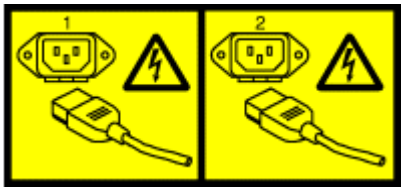



*Figure 41: Removing the power cords*

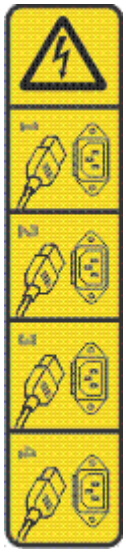
**(L003)**



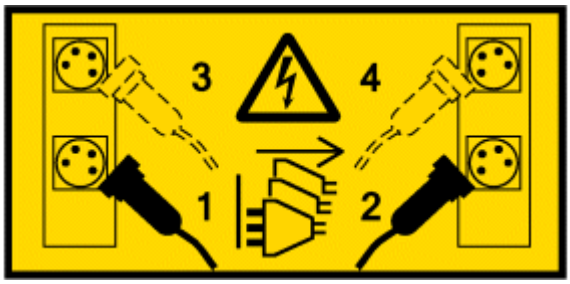

or

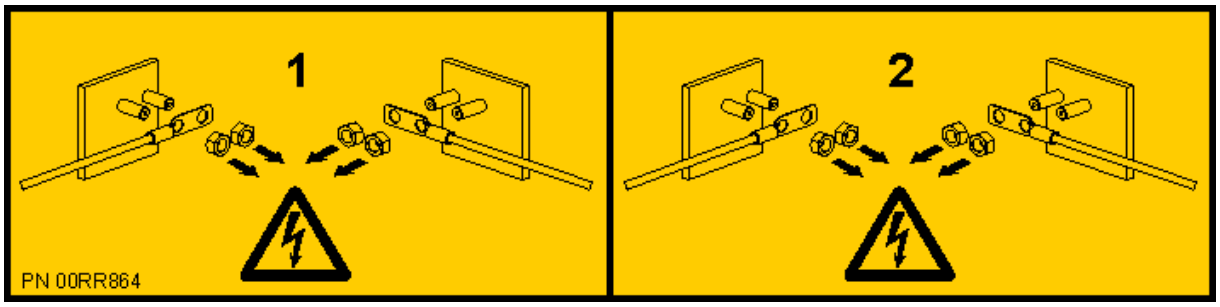
or

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. 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. Label and disconnect all external cables that are attached to the PCIe adapters.
7. Label and remove the service processor card assembly and the leftmost PCIe cassettes as shown in the following figure, so that you can access the rear USB cable.
   a) Label and remove the cables from the service processor card assembly and from the leftmost PCIe cassettes.
   b) Remove the service processor card assembly **(B)** as shown in the following figure.

      Release the latch **(A)** by pushing the latch to the left, then by pushing down on the latch. While supporting the card holder from underneath, remove the card holder from the system. Set the card holder on an ESD surface.
   c) Label and remove the leftmost PCIe cassettes **(C)** as shown in the following figure.

      Release the latch **(A)** by pushing the latch to the left, then by pushing down on the latch. While supporting the card holder from underneath, remove the card holder from the system. Set the card holder on an ESD surface.

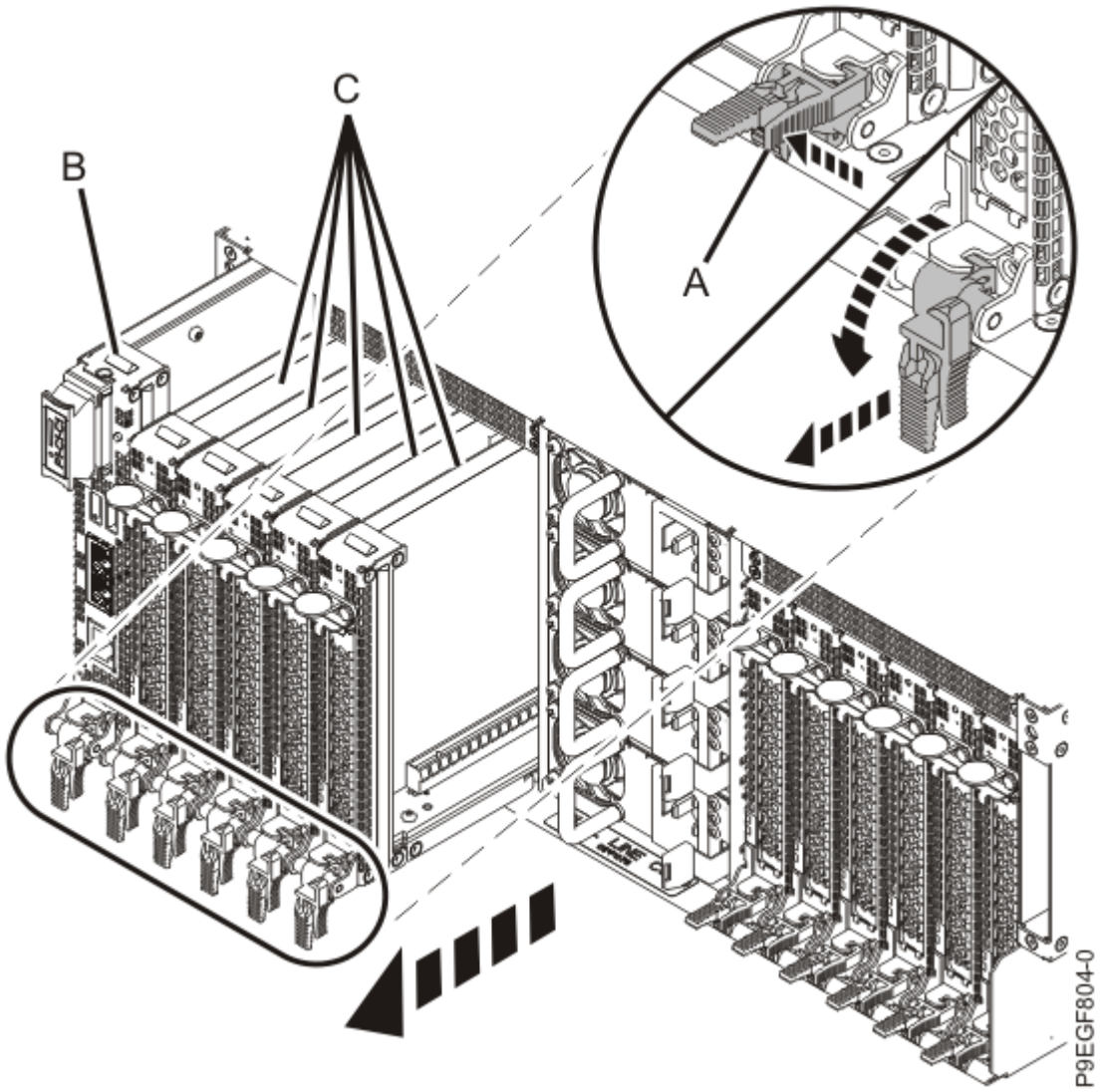



*Figure 42: Removing the service processor card and PCIe cassettes*

8. Place the system into the service position. For instructions, see Placing a system into the service position (www.ibm.com/support/knowledgecenter/POWER9/p9haj/p9haj_950_service_position.htm).
9. Remove the service access cover.

   **Attention:** Operating the system without the cover for more than 10 minutes might damage the system components. For proper cooling and airflow, replace the cover before turning on the system.

   a. Push the release latches **(A)** in the direction shown in the following figure.
   b. Slide the cover **(B)** off the system unit as shown in the following figure. When the front of the service access cover has cleared the upper frame ledge, lift the cover up and off the system unit.

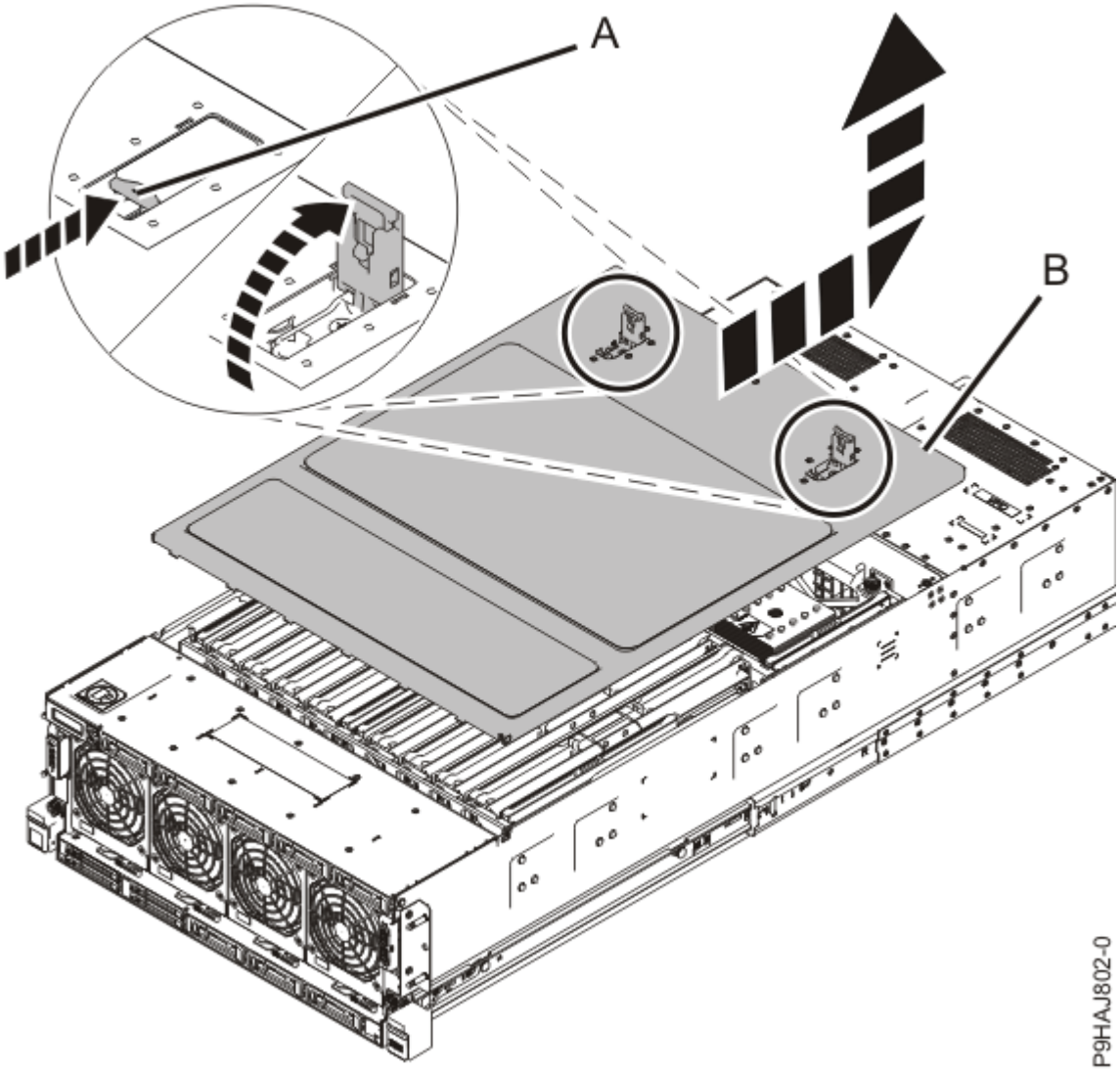



*Figure 43: Removing the service access cover*

10. Remove the memory riser or filler that is nearest to the where the rear USB cable plugs into the system backplane.
    - For a memory riser, lift up and rotate open the two latches at **(A)** to release the memory riser from the system backplane as shown in the following figure. Remove the memory riser and place it on an ESD surface.

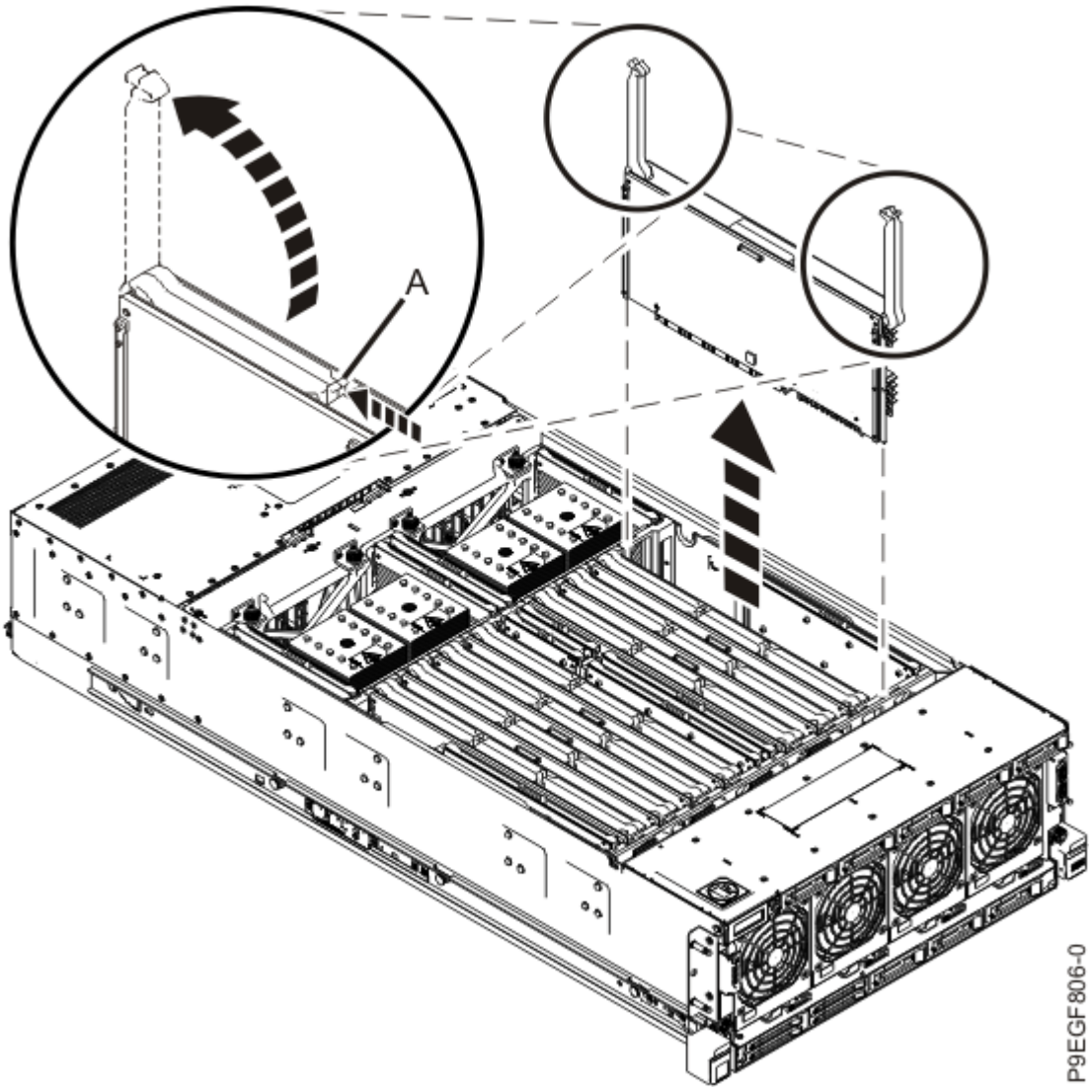



*Figure 44: Removing a memory riser*

- For a memory riser filler, unclip the riser and lift it out.

## Removing the rear USB cable from the 9040-MR9 system

To remove the rear USB cable from the system, complete the steps in this 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. Press the cable release **(A)** and remove the rear USB cable from the system backplane as shown in the following figure.

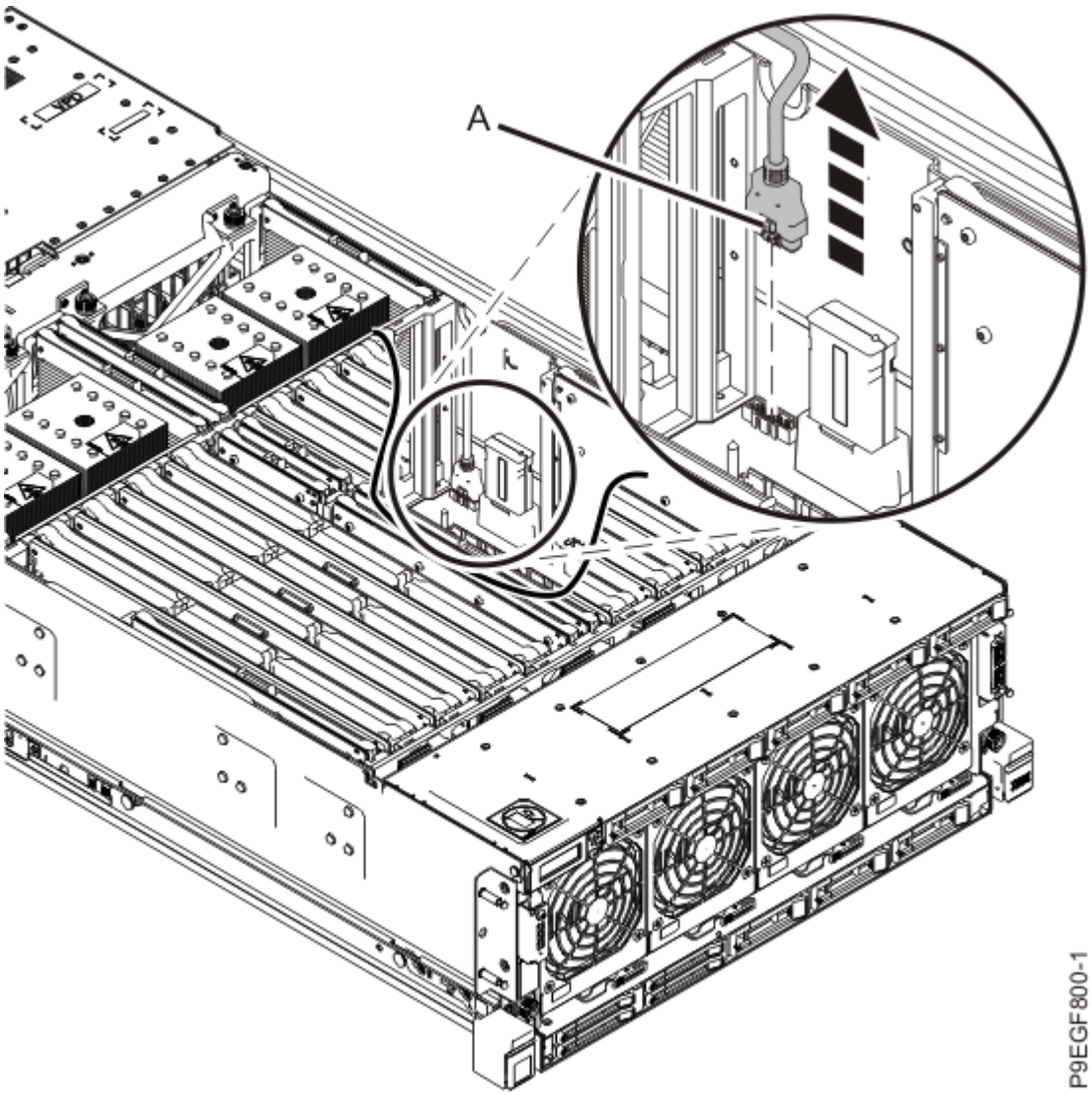



*Figure 45: Removing the rear USB cable from the system backplane*

3. Place the rear USB cable into the channel along the inside of the system.
4. Slide the system back into the rack to continue removing the rear USB cable.
   a. Unlock the blue rail safety latches **(A)** by pushing them towards the front as shown in the following figure.
   b. Push the system unit back into the rack as shown in the following figure until both release latches of the system unit lock into position. Ensure that any cables do not catch or bind as you push in the system.

**Note:** Slide the system unit slowly into the rack to ensure that your fingers do not get caught in the side rails.

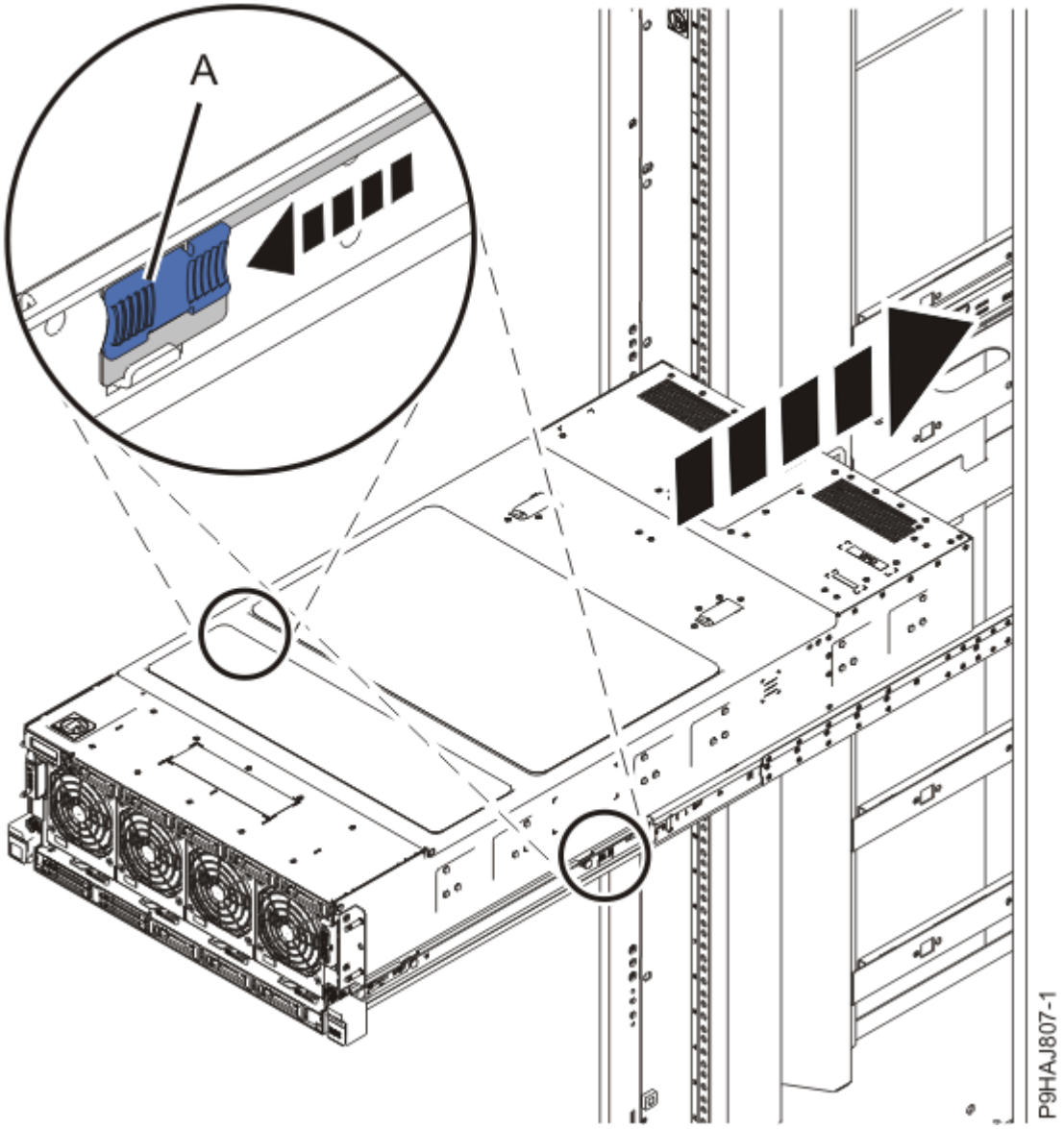



*Figure 46: Placing the system into the operating position*

5. Remove the rear USB cable by completing the following steps:
   a) Press the latch releases **(A)** and disconnect the USB connector **(B)** from the rear of the system as shown in the following figure.
   b) Push the USB connector **(B)** into the side area of the system.
   c) Carefully pass the rear USB cable to the rear of the system, being careful not to catch the cable end **(C)** on the chassis.
   d) Remove the rear USB cable from the system.

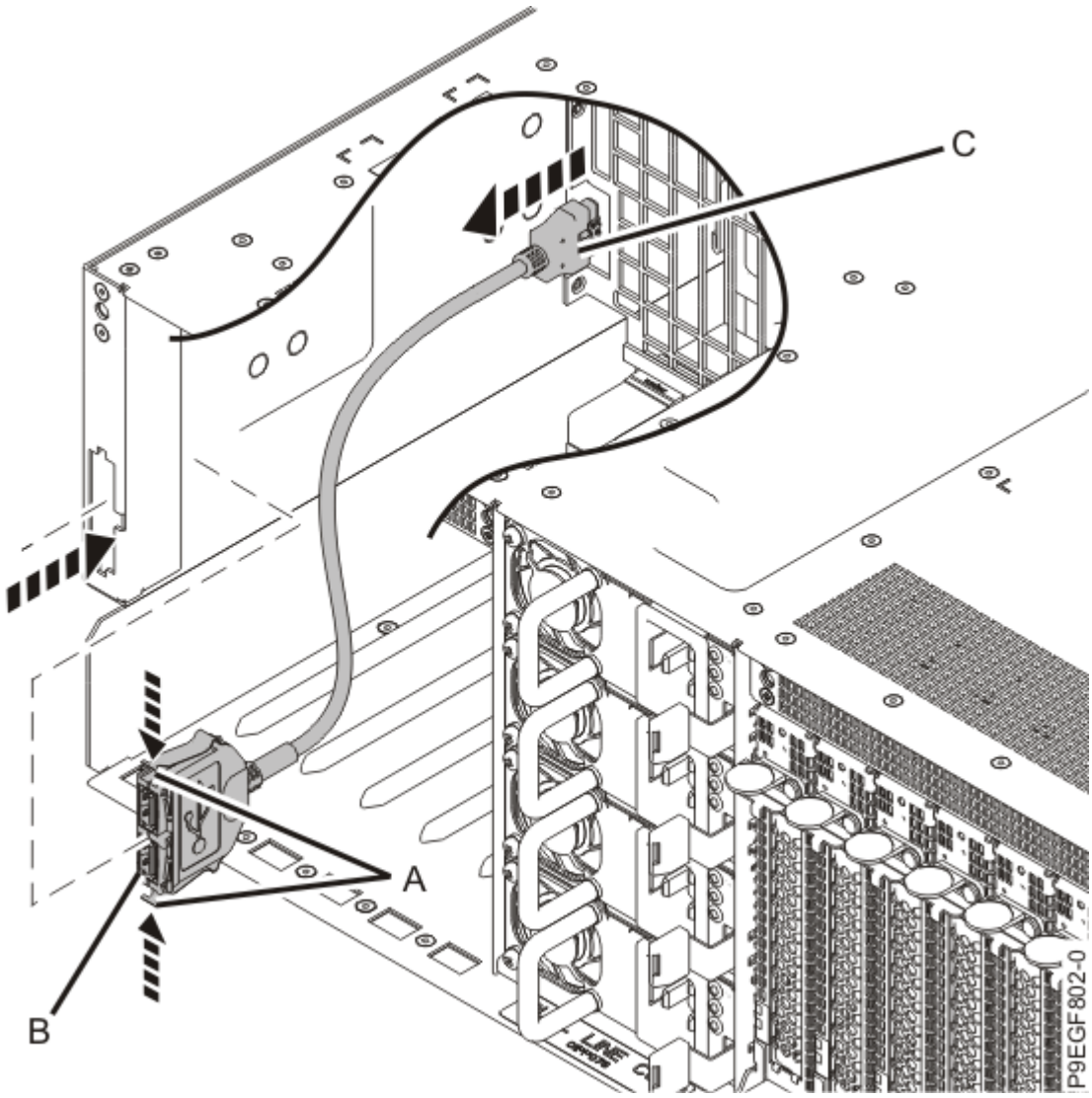



*Figure 47: Removing the rear USB port connector*

## Replacing the rear USB cable in the 9040-MR9 system

To replace the rear USB cable in the system, complete the steps in this 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. Install the rear USB cable by completing the following steps:
   a) Press in the latches **(C)** and from the inside of the chassis, connect the USB connector **(B)** to the rear of the system as shown in the following figure.
   b) Carefully pass the rear USB cable **(A)** into the system through the access location as shown in the following figure, being careful not to catch the cable on the chassis.

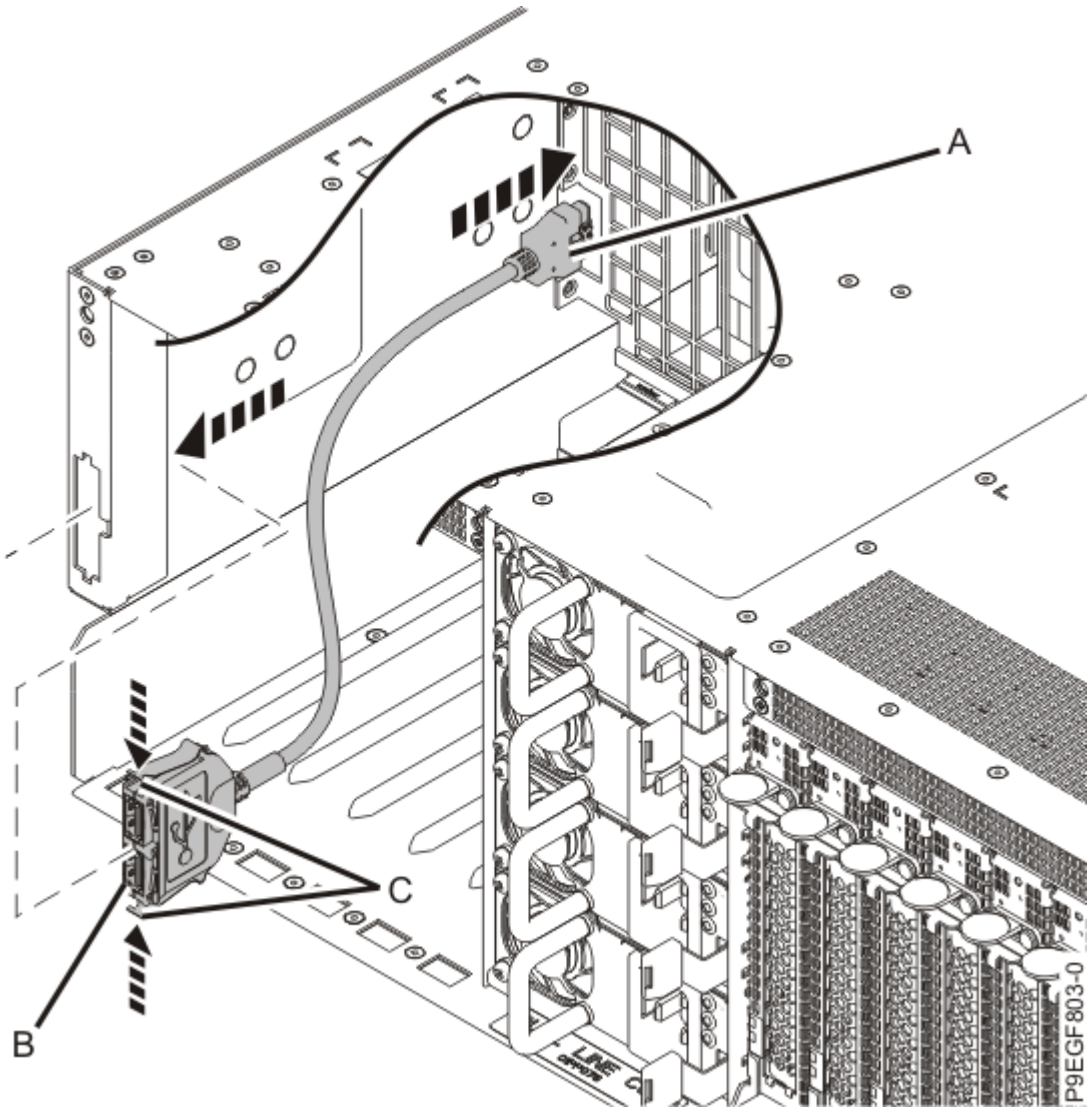



*Figure 48: Replacing the rear USB port connector*

3. Slide the system out of the rack to continue replacing the rear USB cable.

   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.

   a. If not already removed, remove the shipping screws **(A)** as shown in the following figure by using a Phillips screwdriver.
   b. Release the side latches **(B)** by pressing them downward as shown in the following figure.
   c. Pull out the system **(C)** as shown in the following figure. Ensure that any cables do not catch or bind as you pull out the system.

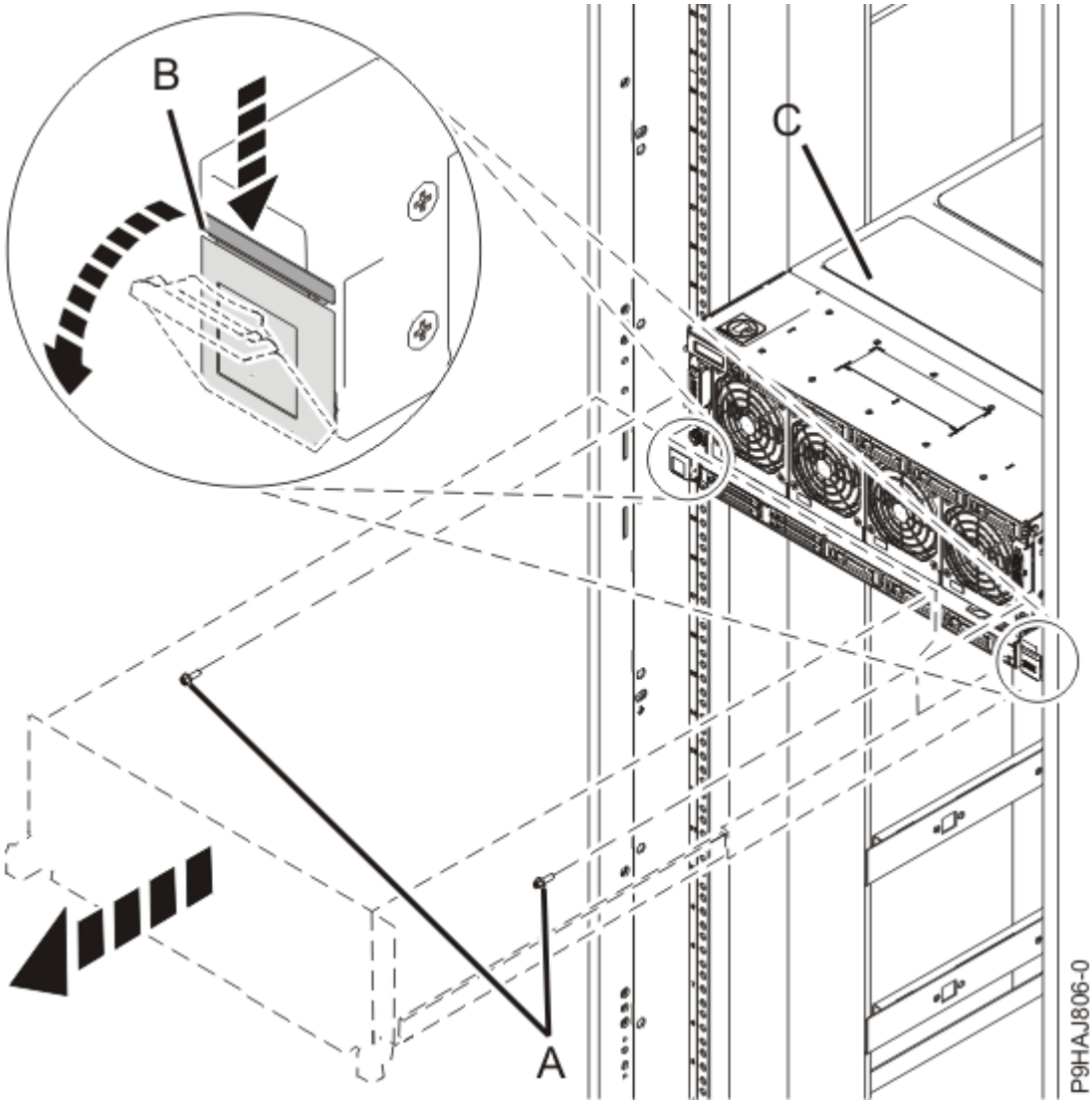



*Figure 49: Placing the system in service position*

4. Plug the rear USB cable **(A)** into the USB socket on the system backplane as shown in the following figure.

   Ensure that the rear USB cable passes through the groove in the side of the chassis.

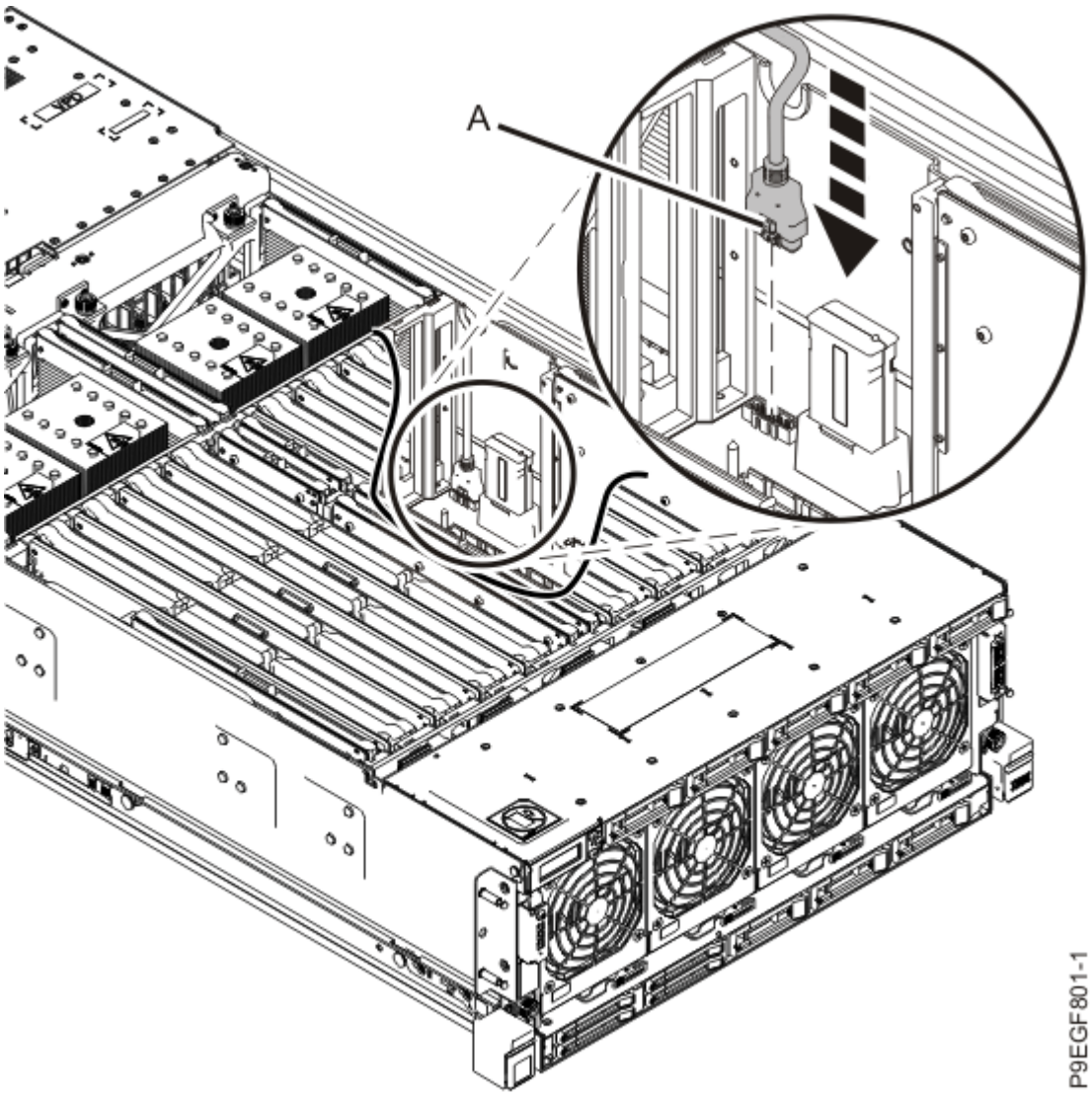



*Figure 50: Replacing the rear USB cable into the system backplane*

## Preparing the 9040-MR9 system for operation after removing or replacing the rear USB cable

To prepare the system for operation after removing or replacing the rear USB cable, complete the steps in this 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 a memory riser, replace the memory riser into the system backplane as shown in the following figure.
   a) Ensure that the two latches **(A)** are open.
   b) Install the memory riser straight into the system.
   c) Rotate the latches **(A)** closed to fully seat the memory riser into the system backplane.

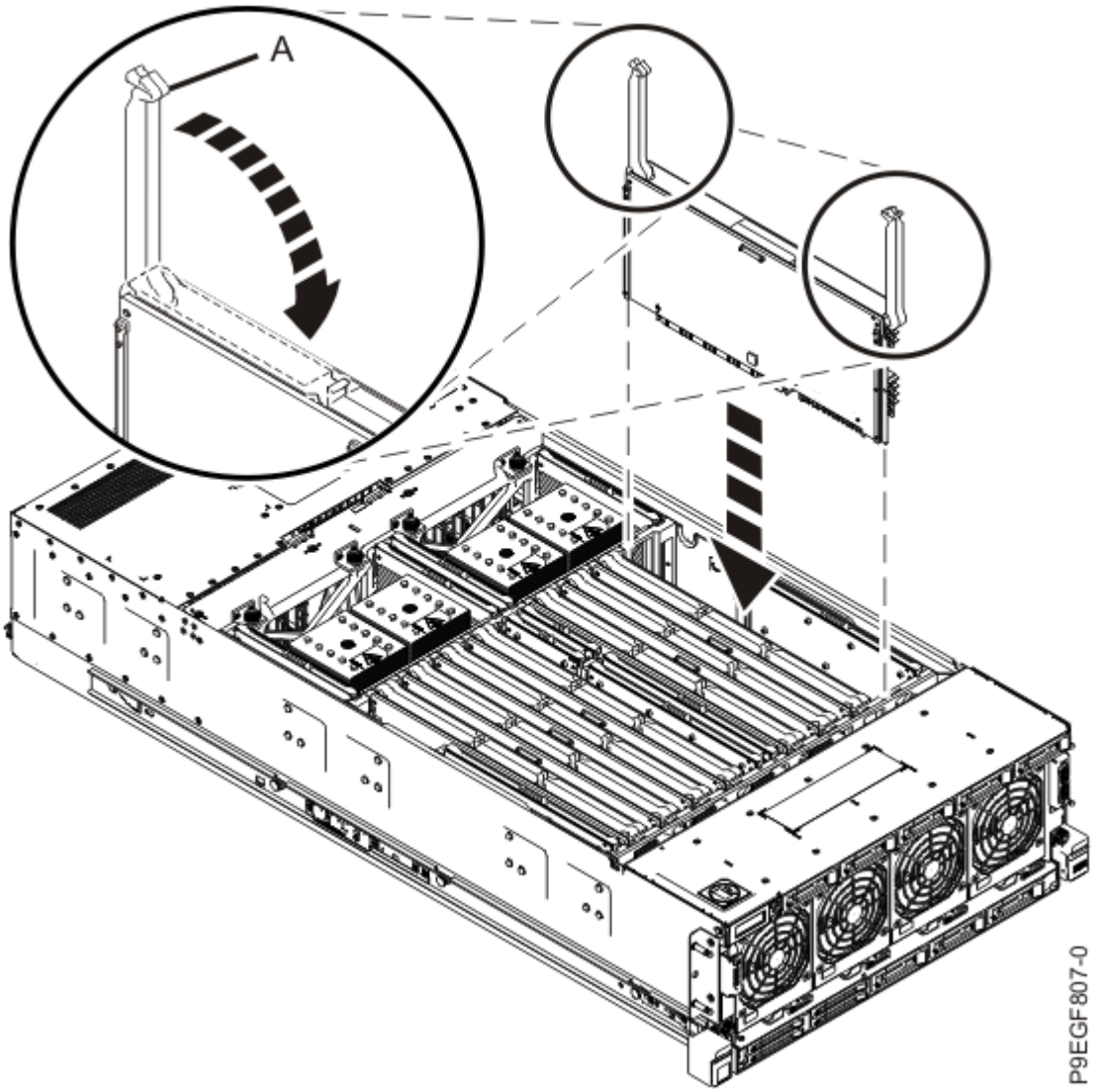



*Figure 51: Installing a memory riser*

3. If you removed a memory riser filler, replace it.
4. Replace the service access cover.
   a) Lower the cover **(A)** onto the system unit. Ensure that the cover alignment pins **(C)** on each side of the cover fit into the matching slots in the chassis.
   b) Slide the cover **(A)** onto the system unit. Ensure that the tabs **(D)** tuck under the mesh along the front opening of the chassis.
   c) Close the release latches **(B)** by pushing it in the direction that is shown in the following figure.

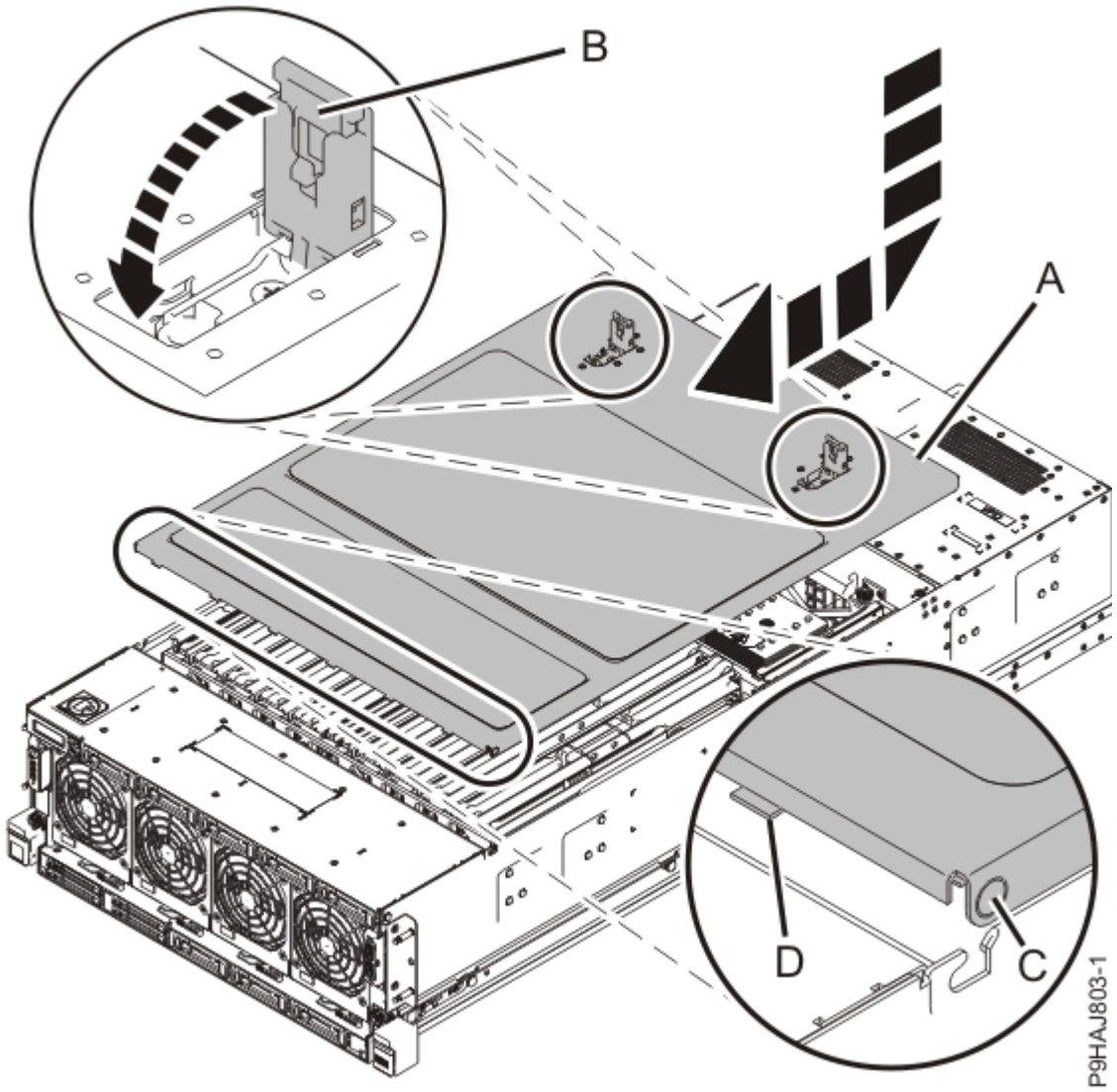



*Figure 52: Installing the service access cover*

5. Place the system into the operating position. For instructions, see Placing a rack-mounted model into the operating position (www.ibm.com/support/knowledgecenter/POWER9/p9haj/p9haj_950_operating_position.htm).
6. Using your labels, replace the PCIe cassettes that you removed.
   a) Replace the service processor card assembly **(A)** as shown in the following figure.

      Open the latch **(B)**. While supporting the card holder from underneath, replace the card holder into the system until fully seated. Clip the latch **(B)** into place to secure the card.
   b) Using your labels, replace the leftmost PCIe cassettes **(C)** as shown in the following figure.

      Open the latch **(B)**. While supporting the card holder from underneath, replace the card holder into the system until fully seated. Clip the latch **(B)** into place to secure the card.
   c) Using your labels, replace the cables to the service processor card assembly and to the leftmost PCIe cassettes.

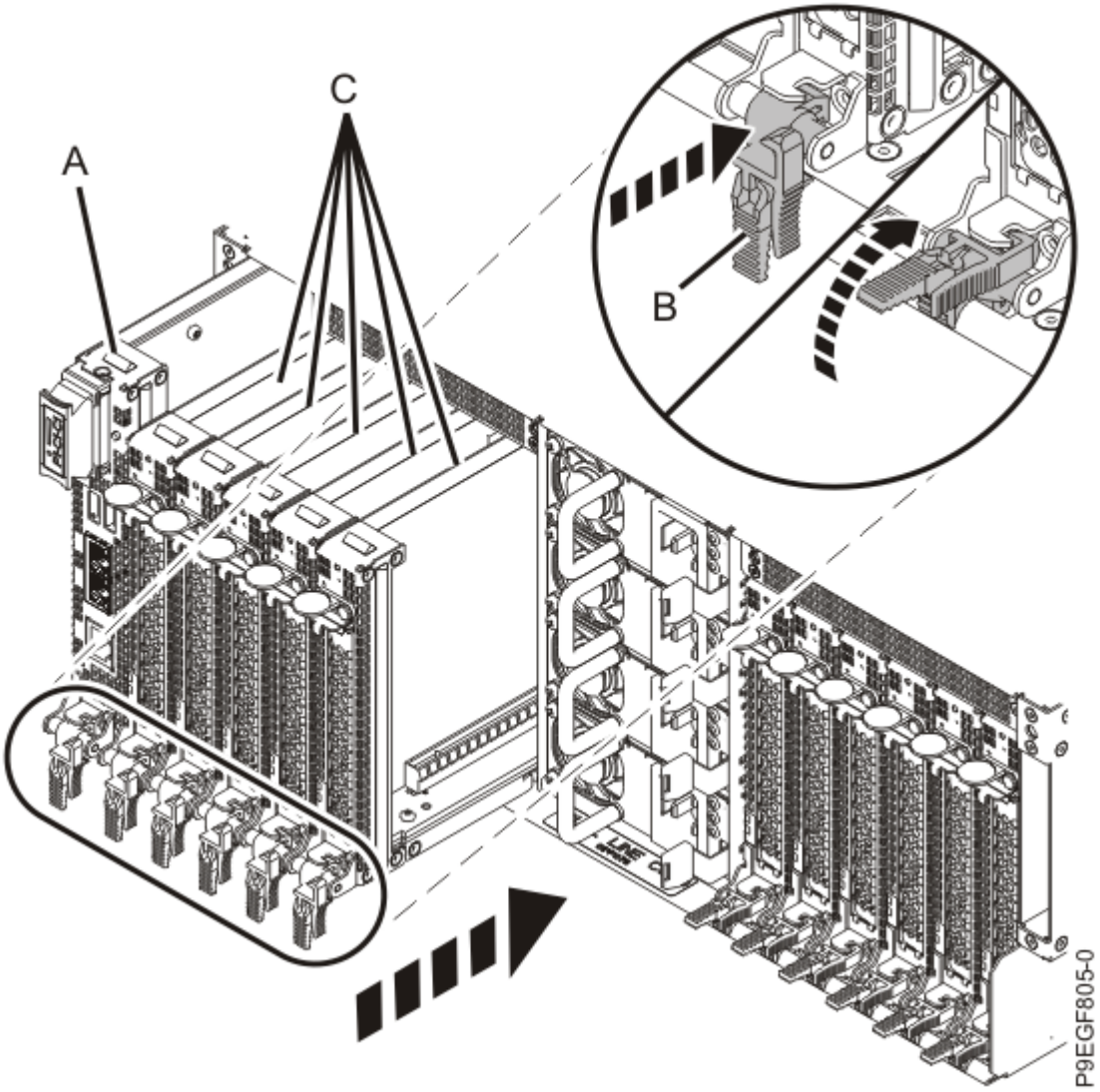



*Figure 53: Replacing the service processor card and PCIe cassettes*

7. Reconnect the power cords to the system. For instructions, see Connecting the power cords (www.ibm.com/support/knowledgecenter/POWER9/p9haj/p9haj_950_power_cord_in.htm).
8. Using your labels, reconnect all of the external cables that plug into the PCIe adapters.
9. Start the system. For instructions, see Starting a system (www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustartsys.htm).
10. 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).
11. Verify the installed part.
    - If you replaced the part because of a service action, verify the installed part. For instructions, see https://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 https://www.ibm.com/support/knowledgecenter/POWER9/p9haj/pxhaj_hsmverify.htm (www.ibm.com/support/knowledgecenter/POWER9/p9haj/pxhaj_hsmverify.htm).

# Time-of-day battery for the 9040-MR9

Find information about removing and replacing the time-of-day battery in the IBM Power System E950 (9040-MR9) server.

## Removing and replacing the time-of-day battery in the 9040-MR9

Find information about removing and replacing the time-of-day battery in the IBM Power System E950 (9040-MR9) server.

The time-of-day battery is required to supply power to the processor real-time clock so that the time and date settings are continuously maintained in the system. The time-of-day battery is installed in the battery socket on the service processor card. The physical location code for the time-of-day battery is P1-C1-E1.

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 your system is not managed by an HMC, complete the steps in the following procedures to remove and replace the time-of-day battery.

### Preparing to remove and replace the time-of-day battery in the 9040-MR9

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

The time-of-day battery is required to supply power to the processor real-time clock so that the time and date settings are continuously maintained in the system. The time-of-day battery is installed in the battery socket on the service processor card. The physical location code for the time-of-day battery is P1-C1-E1.

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. Attach the electrostatic discharge (ESD) wrist strap.

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

   **Attention:**

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

## Removing the time-of-day battery from the 9040-MR9

To remove the time-of-day battery, complete the steps in this 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. Access the Advanced System Management Interface (ASMI).

   **Attention:** During this procedure: Do not reset the service processor, do not remove the service processor card, and do not power off and power on the system.
3. In the navigation area, select **Concurrent maintenance** > **TOD Battery**.
4. Verify that the location code is selected then press **Continue**.
5. In the **ASMI Battery Panel** window, press **Remove Battery**.
6. If the operation was successful, the window displays **Successfully removed the TOD battery**. You can then remove the battery.
7. Remove the time-of-day battery cover **(A)**, then grasp the time-of-day battery **(B)** and pull it out of its slot as shown in the following figures.

   **Attention:** While removing the battery, do not use a metallic tool to disengage it from its slot.

   **CAUTION:**

   - After removing the failed time-of-day battery, do not:
     - Burn or charge the battery (to avoid possible explosion as the battery contains lithium).
     - Throw or immerse the battery in water.
     - Heat the battery to more than 100 ºC (212 ºF).
     - Repair or disassemble the battery.
   - Exchange the battery 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.

   a) Remove the time-of-day battery cover **(A)**.

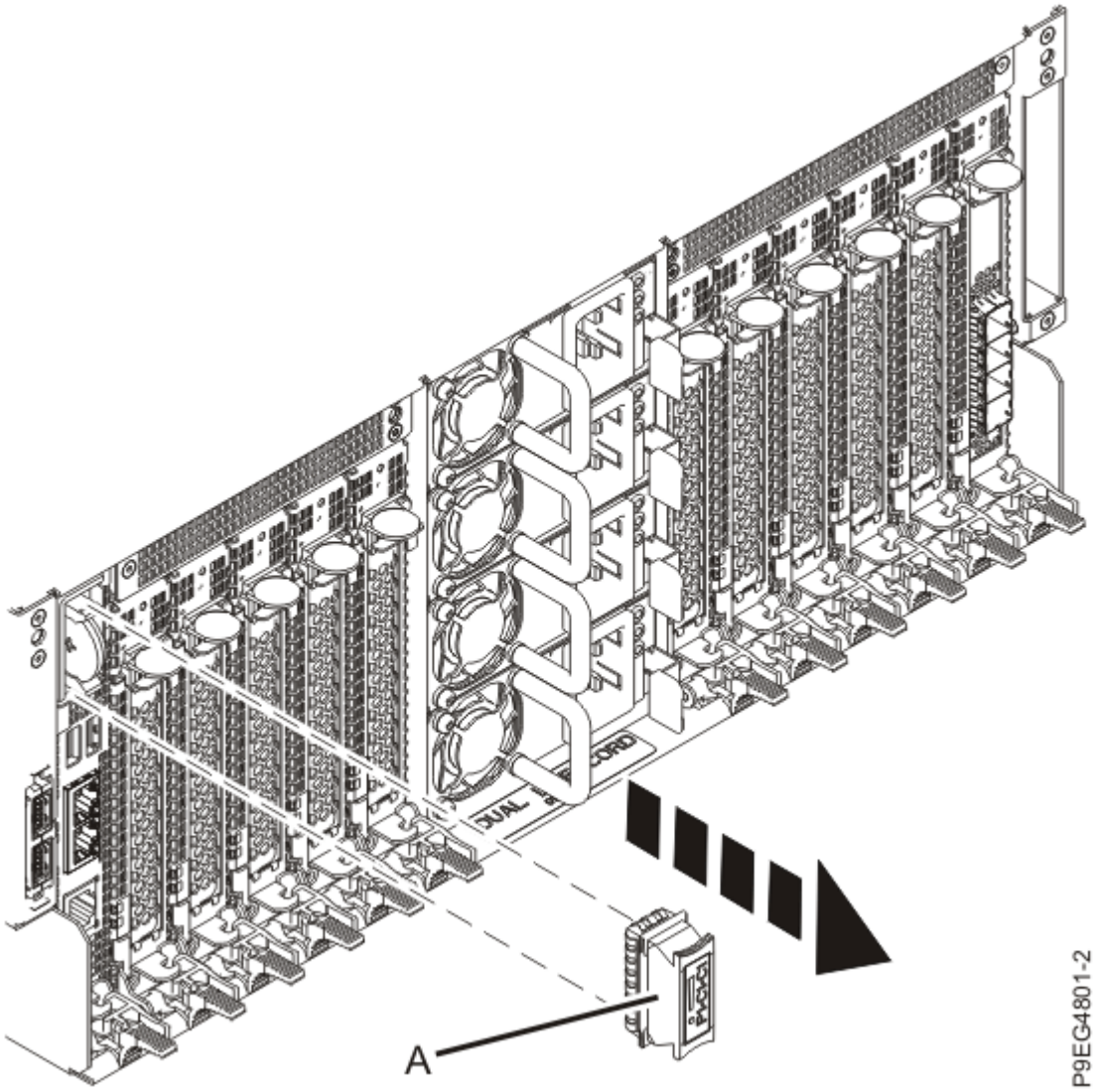



*Figure 54: Removing the time-of-day battery cover*

b) Slide the hook side of the battery removal tool **(A)** along the negative or left side of the time-of-day battery **(B)**. When you hear or feel a click, the tool is secured to the time-of-day battery.

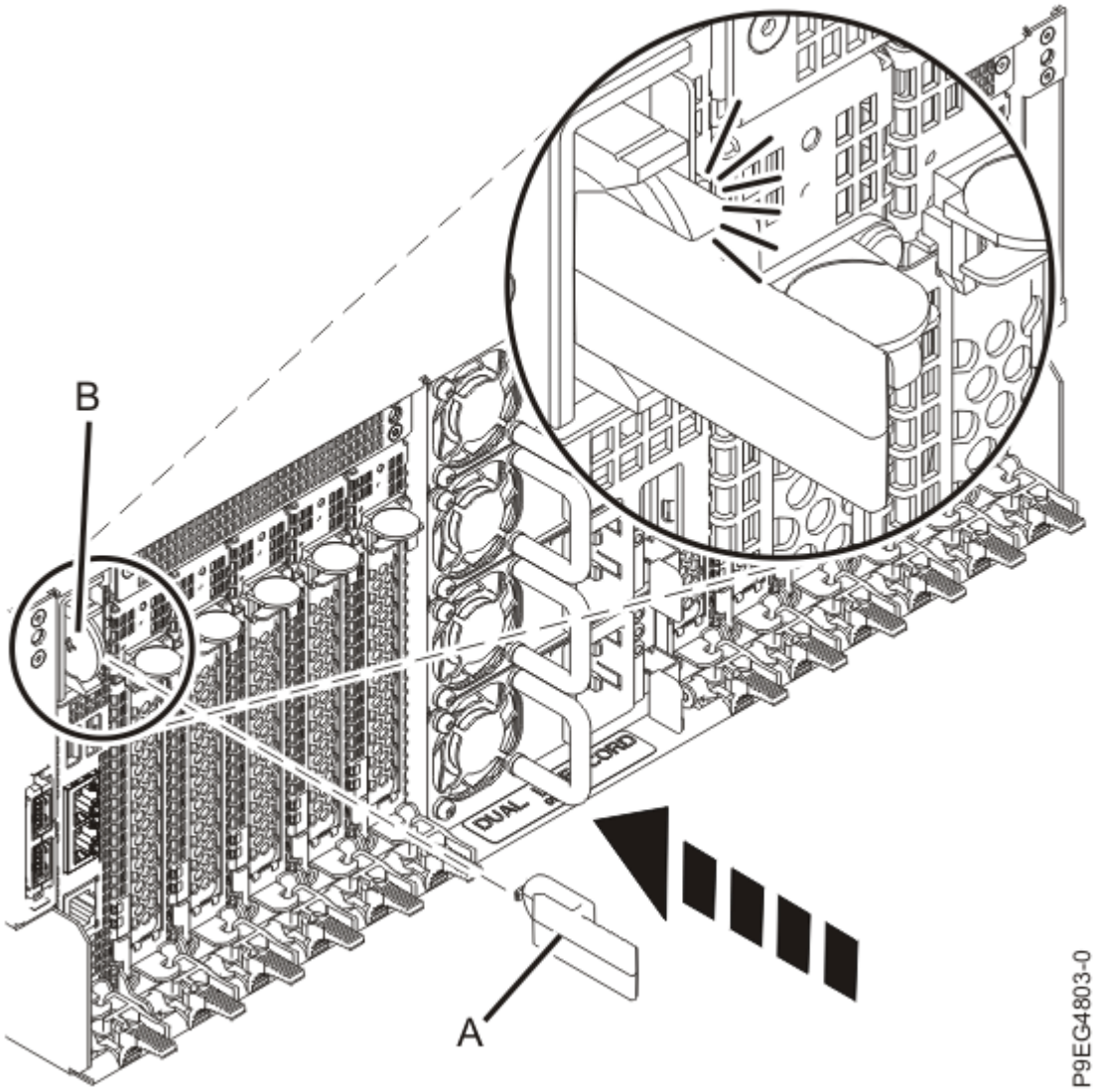



*Figure 55: Connecting the battery removal tool to the time-of-day battery*

c) Pull the tool and the time-of-day battery **(A)** from the service card.

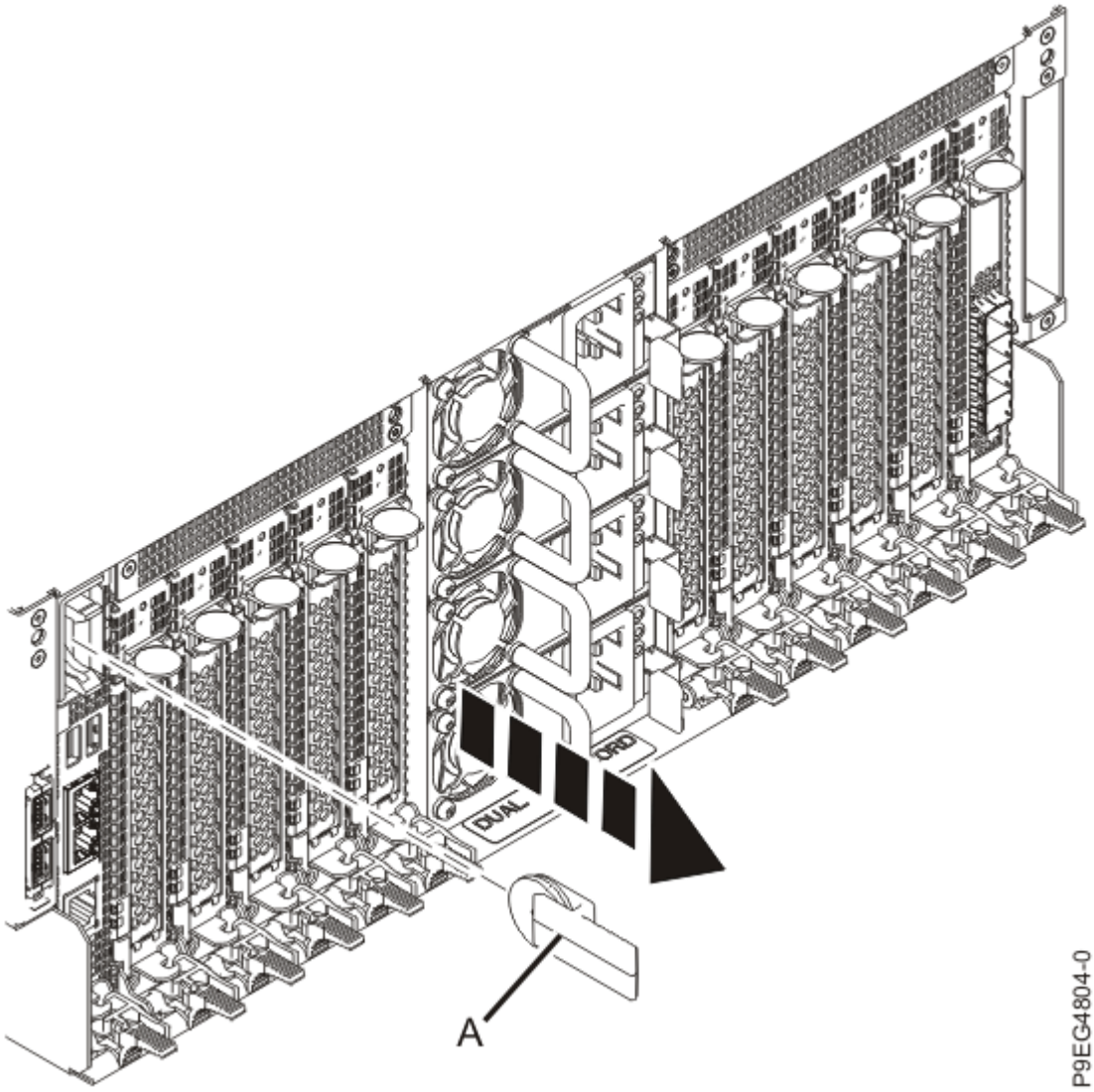



*Figure 56: Removing the time-of-day battery*

## Replacing the time-of-day battery in the 9040-MR9

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

1. Ensure that you have the electrostatic discharge (ESD) wrist strap on and that the ESD clip is plugged into a ground jack or connected to an unpainted metal surface. If not, do so now.
2. Insert the time-of-day battery **(A)** into its slot as shown in the following figure; the + (plus) side of the battery orients towards the outside of the server. Then, replace the battery cover **(B)**.

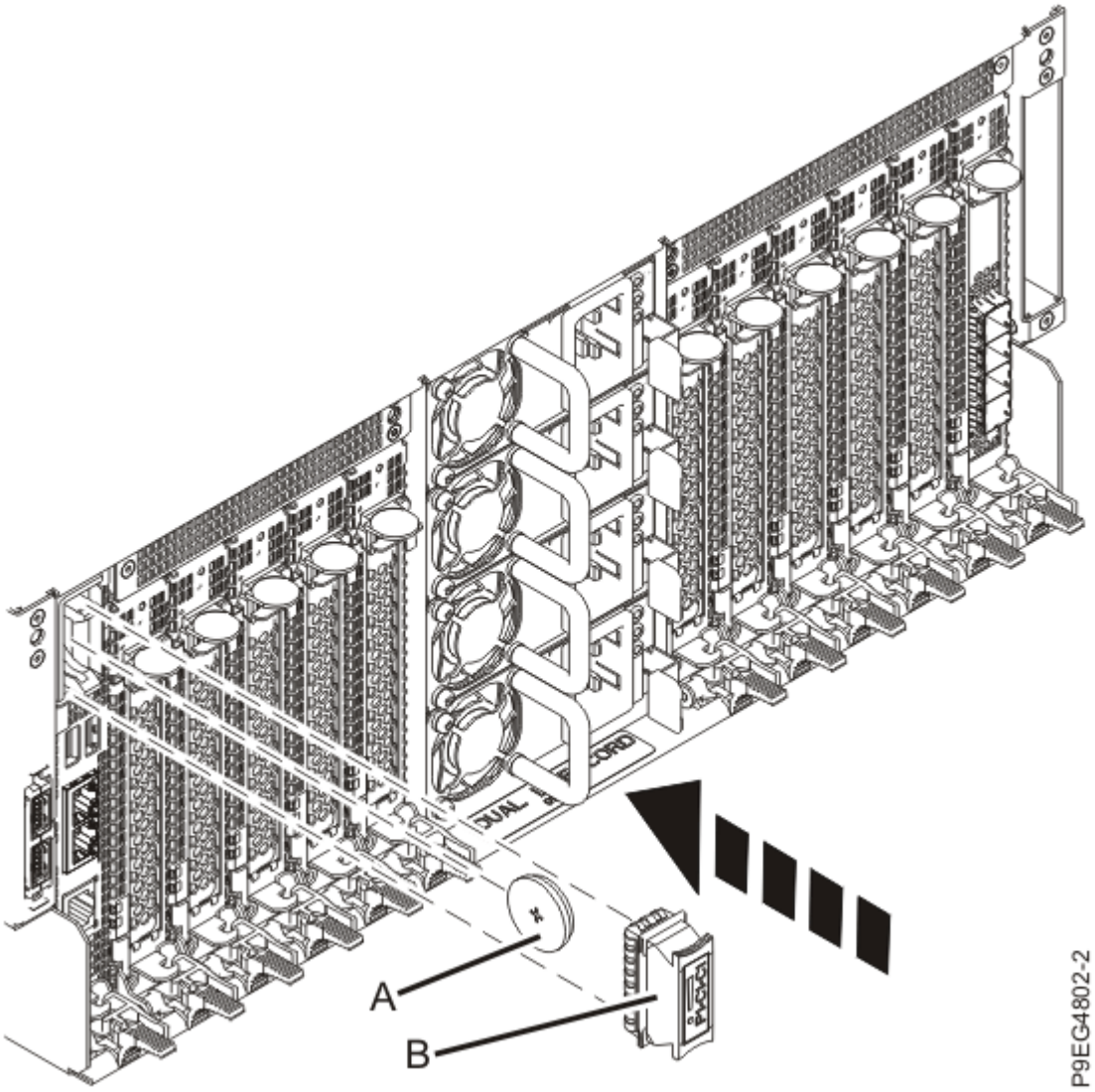



*Figure 57: Inserting the time-of-day battery*

3. Access the Advanced System Management Interface (ASMI).

   **Attention:** During this procedure: Do not reset the service processor, do not remove the service processor card, and do not power off and power on the system.

4. In the navigation area, select **Concurrent maintenance** > **TOD Battery**.
5. In the **ASMI Battery Panel** window, select **Install**.

## Preparing the system for operation after removing and replacing the time-of-day battery in the 9040-MR9

To prepare the system for operation after removing and replacing the time-of-day battery, complete the steps in this 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. 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).
3. Access the Advanced System Management Interface (ASMI).
   - You can access the ASMI without using the HMC. For instructions, see Accessing the ASMI without an HMC (www.ibm.com/support/knowledgecenter/POWER9/p9hby/connect_asmi.htm).

- To access the ASMI by using the HMC, complete the following steps:
  a. Select the system on which you are working.
  b. Click **Tasks**.
  c. Click **Operations** > **Launch Advanced System Management (ASM)**.

4. Reset the time-of-day settings by using the ASMI. To set the time-of-day, complete the following steps:
   a) In the navigation area of the ASMI, click **System Configuration** > **Time of Day**.
   b) If the system is powered off, the content pane displays a form that shows the current date (month, day, and year) and time (hours, minutes, and seconds).
   c) Change the date, the time, or both, and then click **Save Settings**.
5. To verify whether the time is set correctly, complete the following steps:
   a) Exit from the ASMI.
   b) Label and disconnect the power source from the system by unplugging the power cords from the system.

      **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 power sources to the system are disconnected.
      - The power cord **(B)** is fastened to the system with a 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.

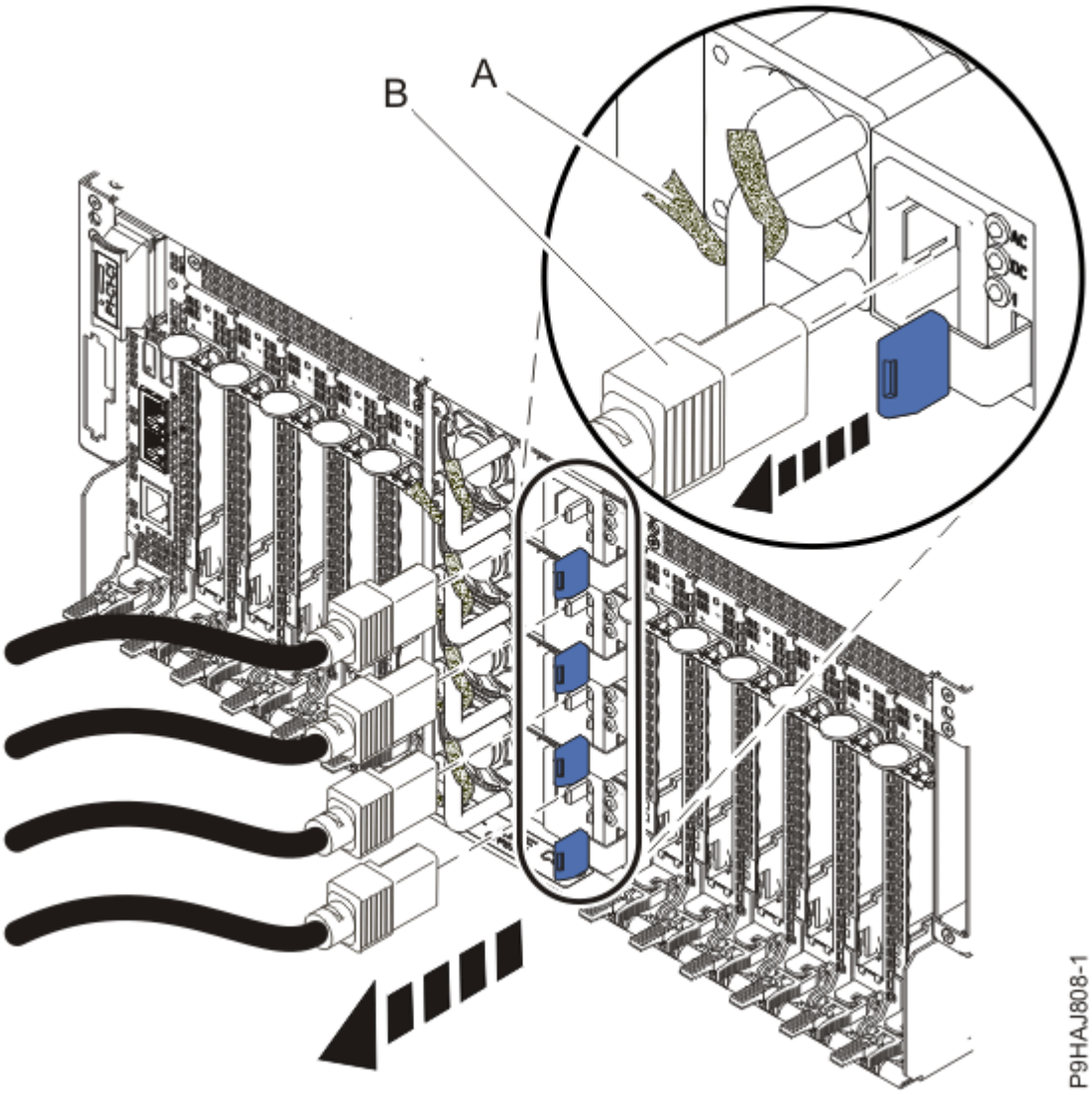
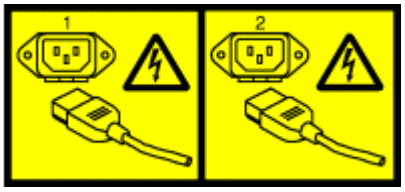



*Figure 58: Removing the power cords*

**(L003)**




or

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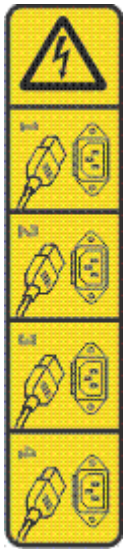
or



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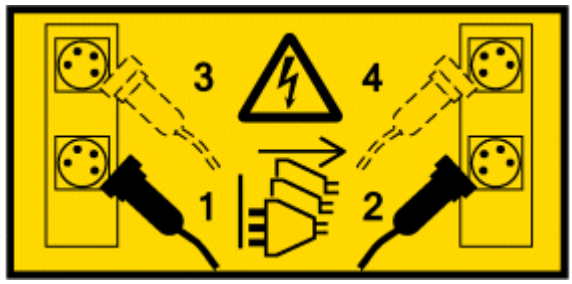
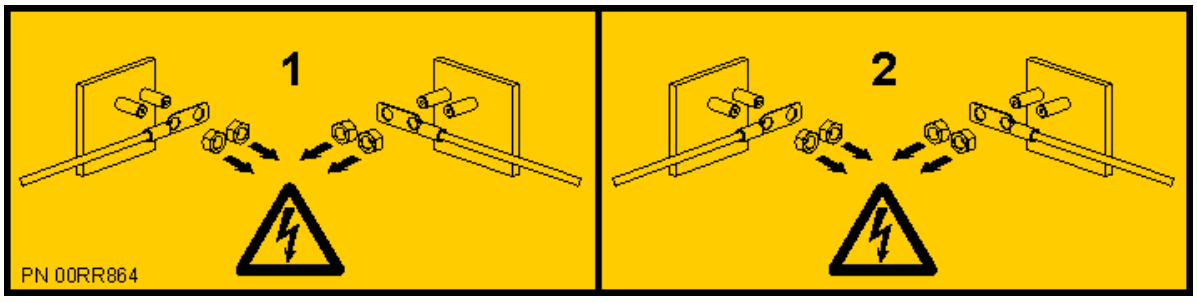



**DANGER:** Multiple power cords. The product might be equipped with multiple AC power cords or multiple DC power cables. To remove all hazardous voltages, disconnect all power cords and power cables. (L003)

c) Using your labels, reconnect the power cords **(A)** to the system unit as shown in the following figure.

Fasten the power cords to the system by using the hook-and-loop fasteners **(B)** as shown in the following figure.

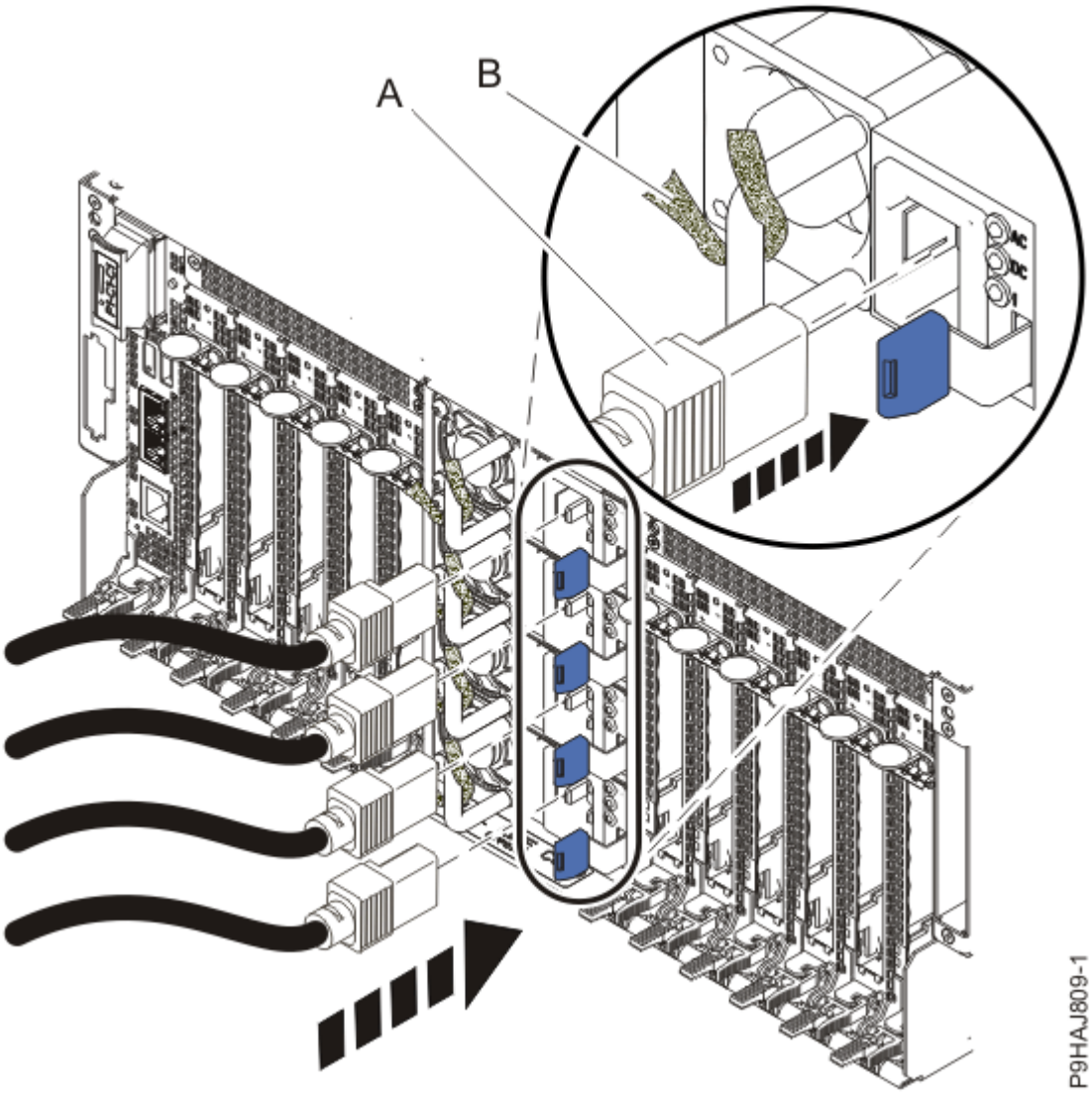



*Figure 59: Connecting the power cords*

d) Access the ASMI.

- You can access the ASMI without using the HMC. For instructions, see Accessing the ASMI without an HMC (http://www.ibm.com/support/knowledgecenter/POWER9/p9hby/connect_asmi.htm).
- To access the ASMI by using the HMC, complete the following steps:
  1) Select the system that you are working with.
  2) Click **Tasks**.
  3) Click **Operations** > **Launch Advanced System Management (ASM)**.

e) In the navigation area of the ASMI, click **System Configuration** > **Time of Day**.

f) Verify that the content pane displays the current date (month, day, and year) and time (hours, minutes, and seconds).

6. If applicable, close the rack front and rear doors.
7. Start the system. For instructions, see Starting a system (www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustartsys.htm).

# SAS cables in the 9040-MR9

Find information about removing and replacing the SAS cables in the IBM Power System E950 (9040-MR9) server.

## Removing and replacing externally-secured SAS cables in the 9040-MR9

Learn how to remove and replace the externally-secured SAS cables in the IBM Power System E950 (9040-MR9) server.

**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 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 your server is not managed by an HMC, complete the steps in the following procedures to remove and replace the SAS cables.

### Preparing the system to remove and replace the SAS cables in the 9040-MR9

To prepare the system to remove and replace the SAS cables, complete the steps in this procedure.

1. **If the system has internally-secured SAS cables as shown in the following figure, do not follow the steps in this procedure.** You must follow the steps in Removing the internally-secured SAS cables and replacing them with externally-secured SAS cables.

   The internally-secured SAS cables **do not** have a screw at **(A)**. The area at **(B)** is an **open slot** containing the SAS cables.

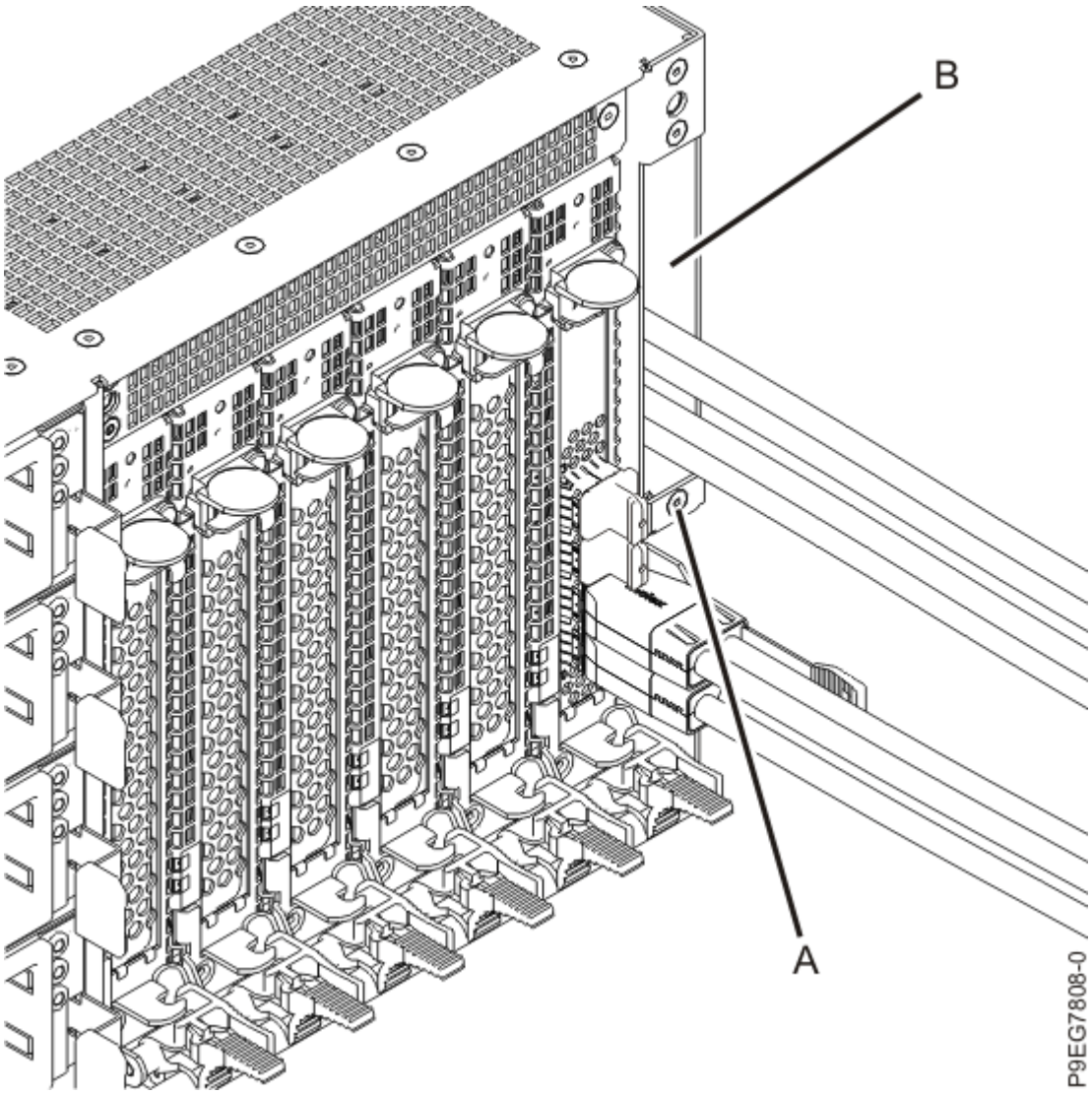



*Figure 60: Identifying the internally-secured SAS cables*

2. If the system has externally-secured SAS cables as shown in the following figure, follow the steps in this procedure.

   The externally-secured SAS cables have a screw at **(A)** and a housing at **(B)**.

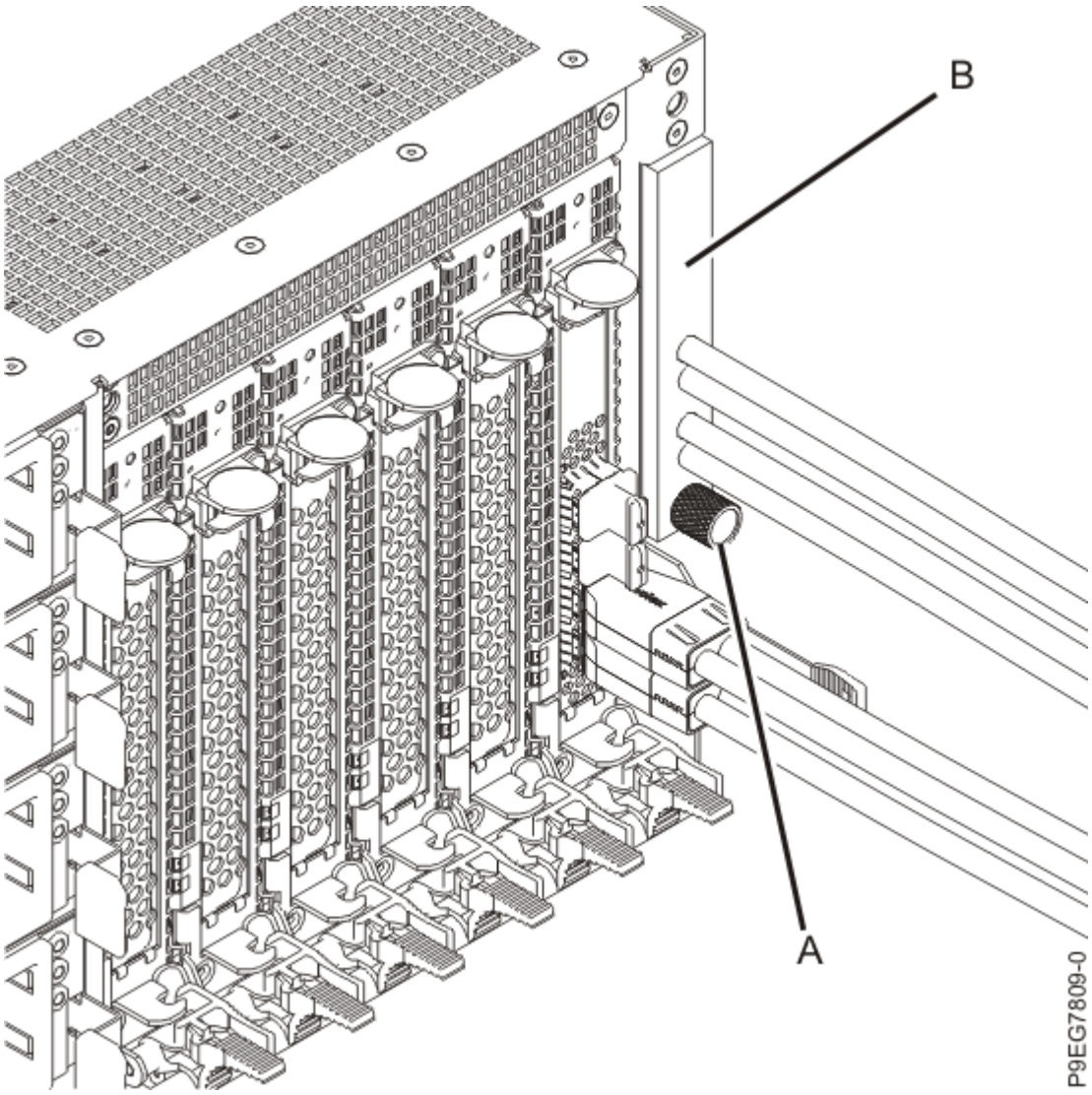



*Figure 61: Identifying the externally-secured SAS cables*

3. 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.
4. From the **Operation** list, select **Set Identify LED**. Then, click **OK** to confirm the operation.

   This action causes the blue server identify LED to turn on.
5. Use the blue LED to identify the server.

   Ensure that the serial number of the system matches the serial number to be serviced.
6. Stop the system. For instructions, see Stopping a system (www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustopsys.htm).
7. Label and disconnect the power cords from the system unit as shown in the following figure.

   **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 power sources to the system are disconnected.
   - The power cord **(B)** is fastened to the system with a 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.

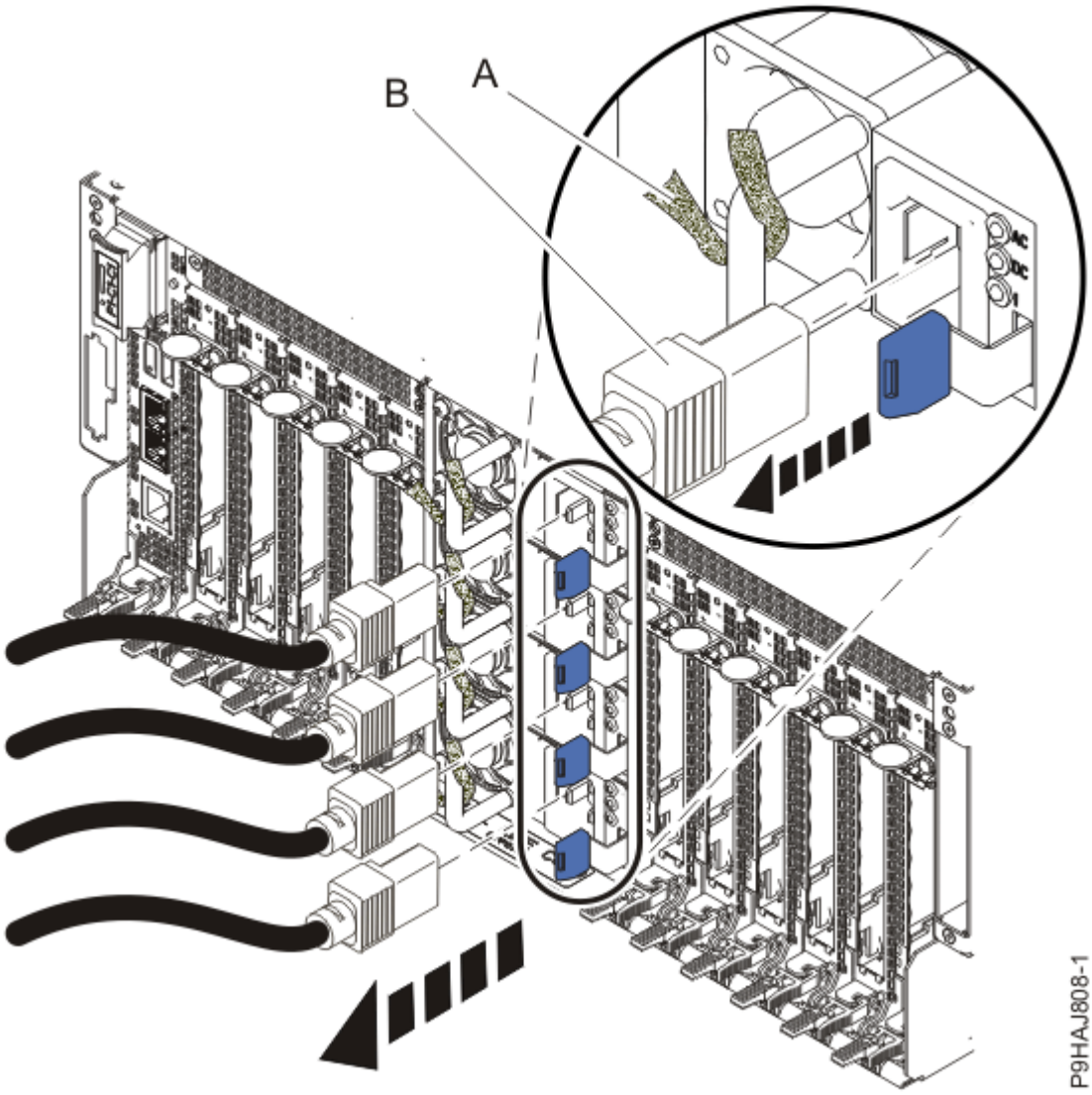
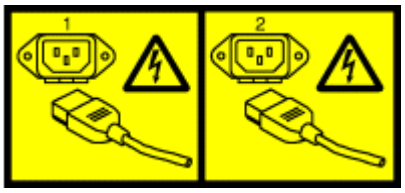



*Figure 62: Removing the power cords*

**(L003)**




or

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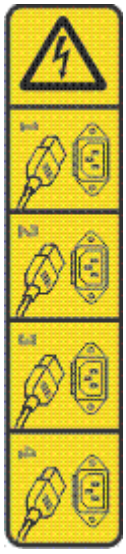
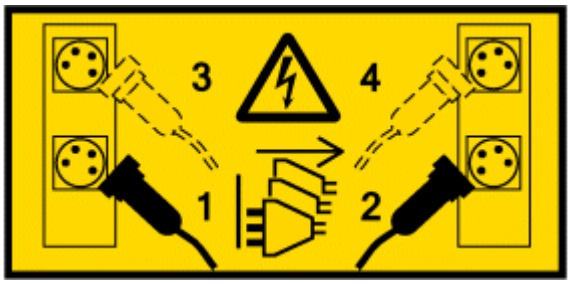
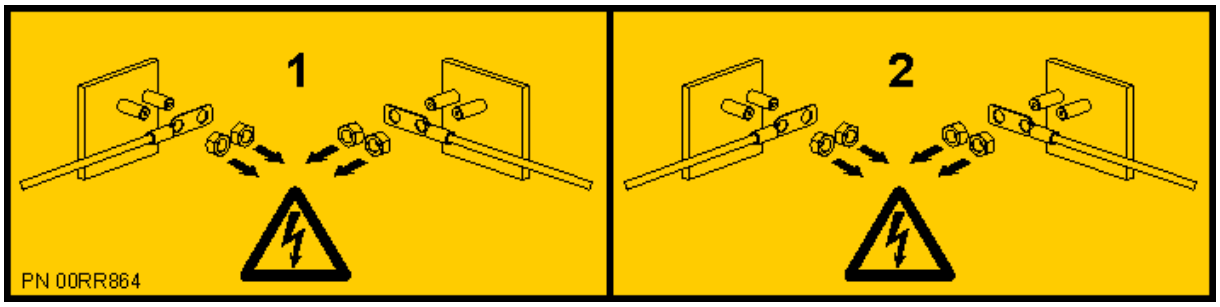
or



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)

8. Label and disconnect all non-SAS external cables that are attached to the PCIe adapters.
   Leave the rear SAS cables connected for now.

9. If applicable, open the rack front door.
10. Remove the front cover. For instructions, see Removing the front cover (www.ibm.com/support/knowledgecenter/POWER9/p9haj/p9haj_950_front_bezel_off.htm).
11. Attach the electrostatic discharge (ESD) wrist strap.

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

    **Attention:**

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

## Removing the SAS cables from the 9040-MR9

To remove the SAS cables from the server, complete the steps in this procedure.

1. Ensure that you have the electrostatic discharge (ESD) wrist strap on and that the ESD clip is plugged into a ground jack or connected to an unpainted metal surface. If not, do so now.
2. Remove all the fans from the disk drive backplane as shown in the following figure.
   a) Put your thumb against the latch **(A)** in the following figure, and put your index finger against the latch **(B)**.
   b) Push against the latch with your thumb and then pull out the latch with your index finger. This action releases the latch.
   c) Rotate the fan handle in the direction that is shown in the following figure to unlock the fan from its slot.
   d) Hold onto the fan handle and by using your hand to support the bottom of the fan, pull out the fan from its slot as shown in the following figure.

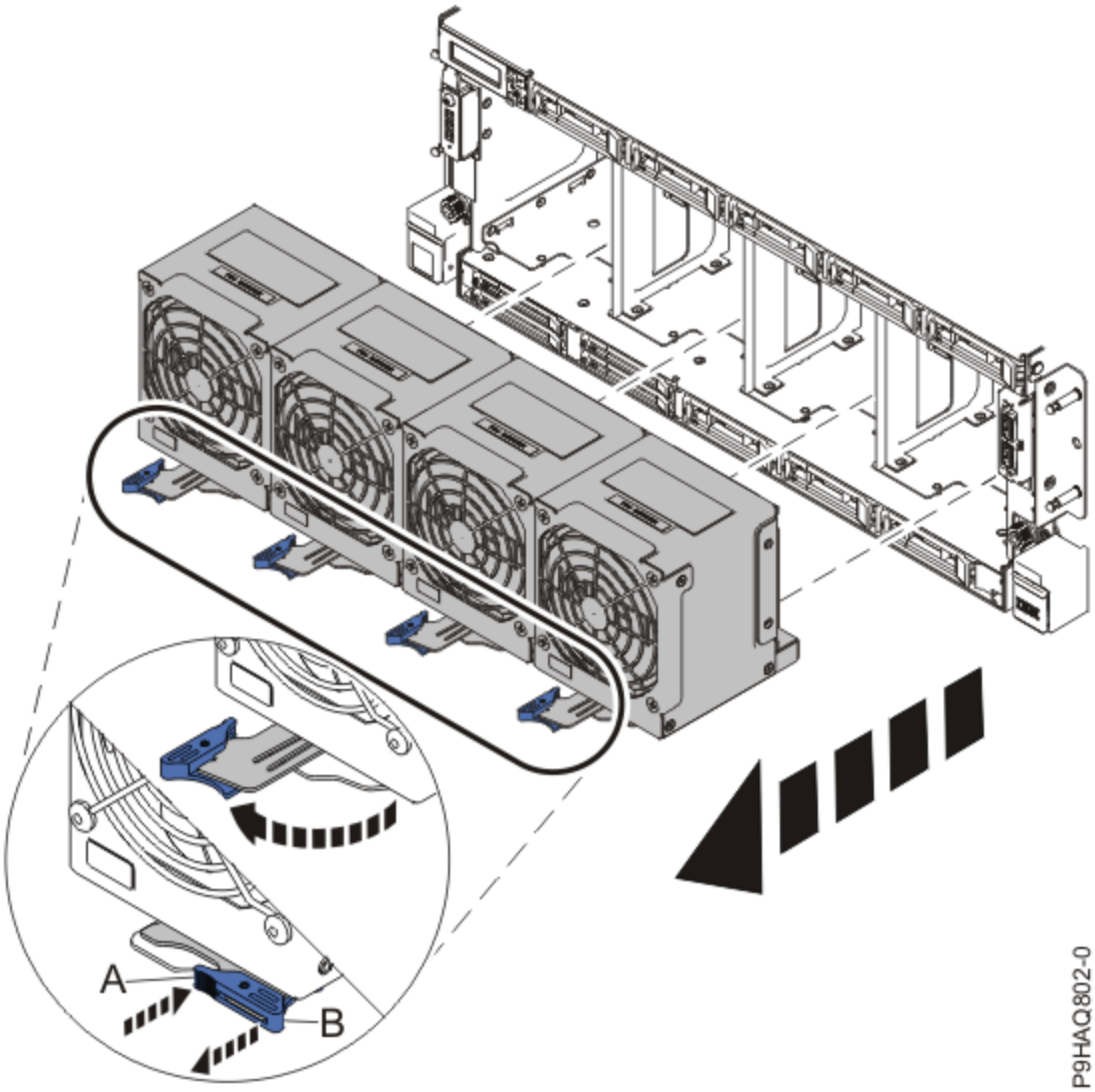



*Figure 63: Removing the fans*

3. To remove the disk drive backplane from the front of the system, complete the following steps:

   **CAUTION:** To prevent damage to the SAS cables, you must unplug the SAS cables from the rear of the disk drive backplane before fully removing the disk drive backplane.

   a) Loosen the two screws **(A)** as shown in the following figure.

   b) Loosen the two recessed screws **(B)** as shown in the following figure. Use a 4 mm ball-end hex driver (130 mm long, IBM part number 02EA546) to loosen the screws.

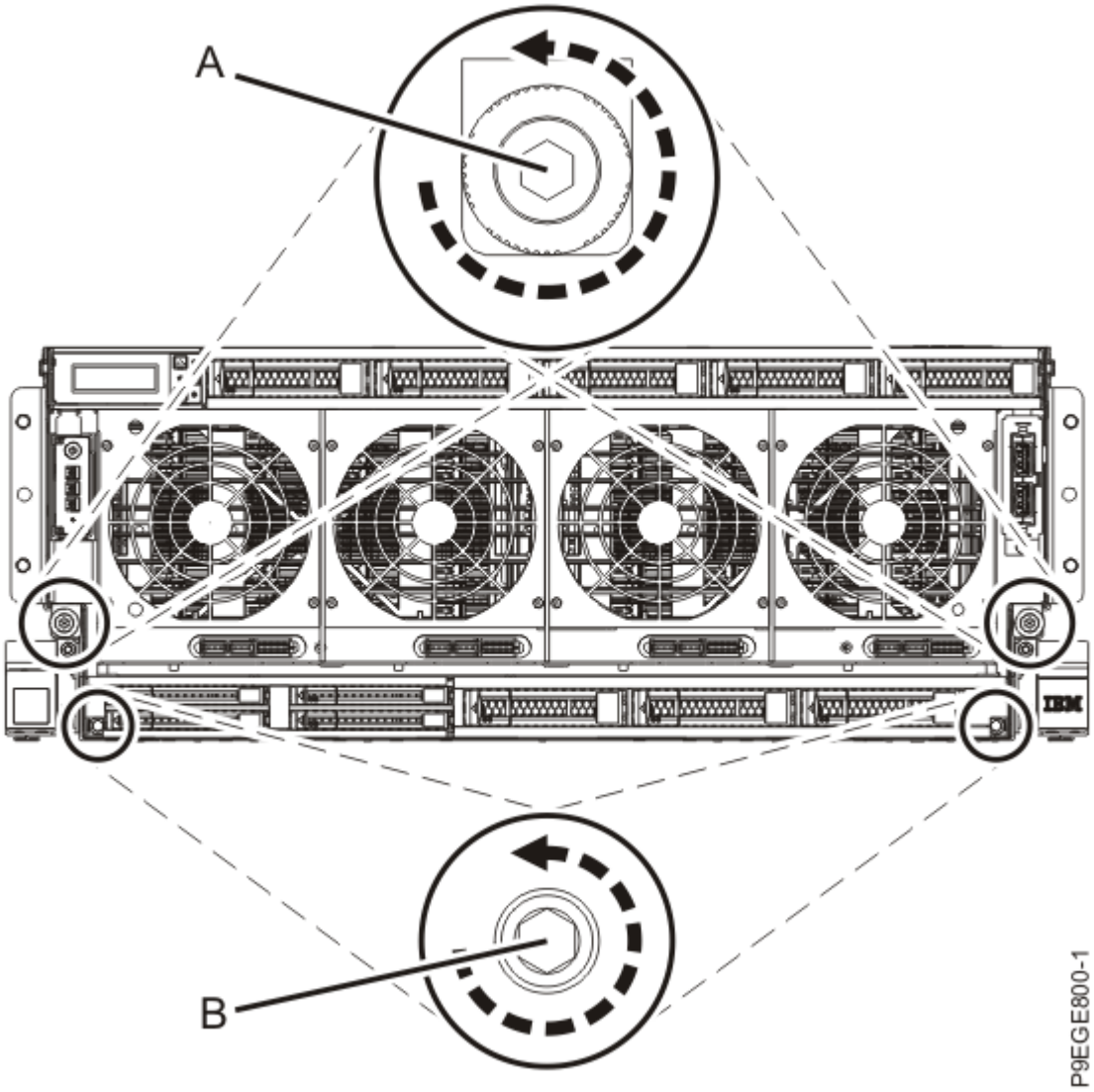



*Figure 64: Loosening the disk drive backplane screws*

c) Grasp the disk drive backplane with two hands as indicated by the blue squares in the following figure. Pull the disk drive backplane approximately 2.5 cm (1 in) straight out from the front of the system.

   If you pull the disk drive backplane with one hand, it might twist sideways.

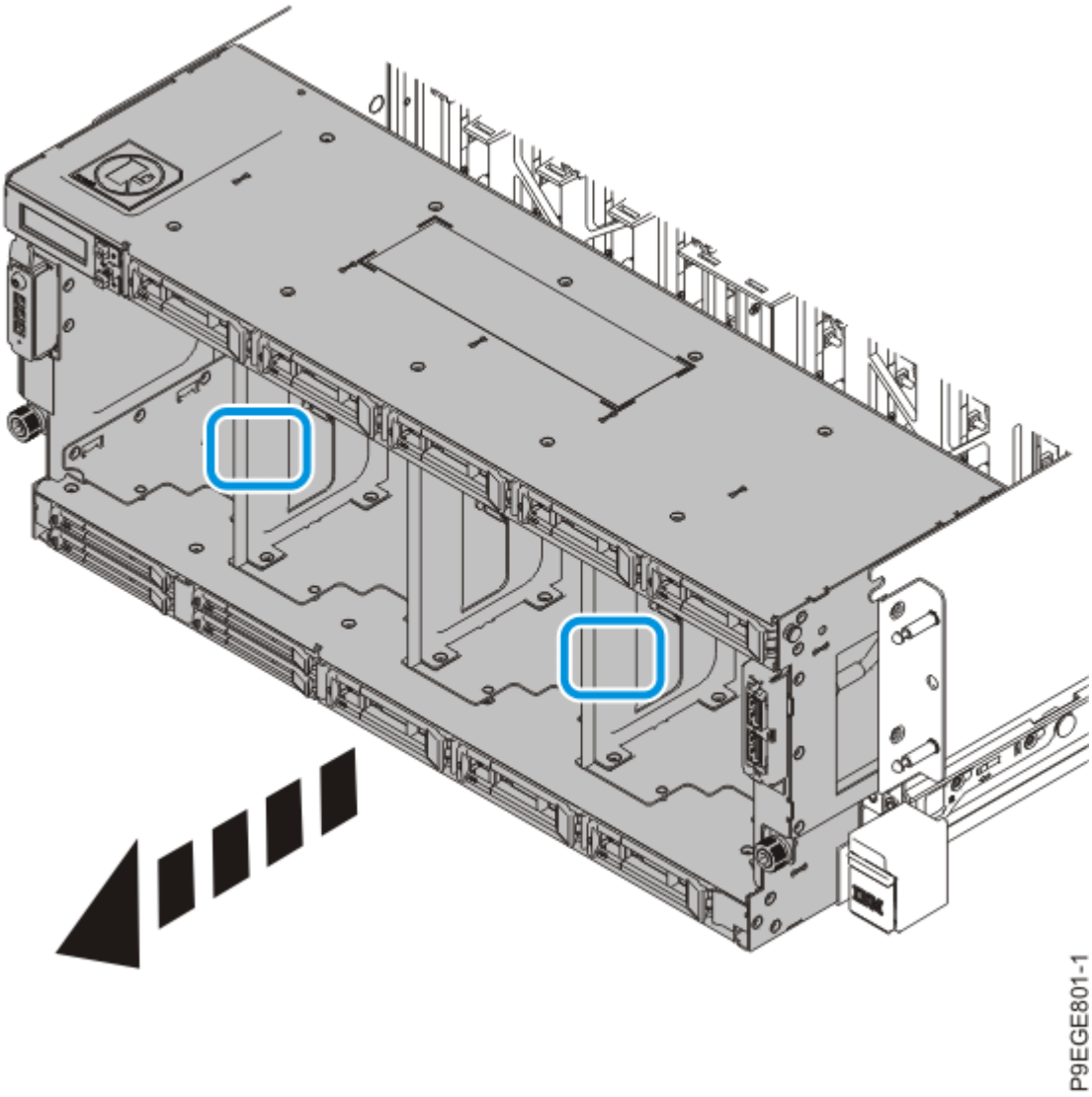



*Figure 65: Partially removing the disk drive backplane*

d) Pull the entire system unit out of the rack at most 20.3 cm (8 in), enough to access and disconnect the SAS cables and to remove the disk drive backplane.

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.

1) If not already removed, remove the shipping screws **(A)** as shown in the following figure by using a Phillips screwdriver.
2) Release the side latches **(B)** by pressing them downward as shown in the following figure.
3) Pull out the entire system unit **(C)** at most 20.3 cm (8 in) from the rack as shown in the following figure. Ensure that any cables do not catch or bind as you pull out the system.

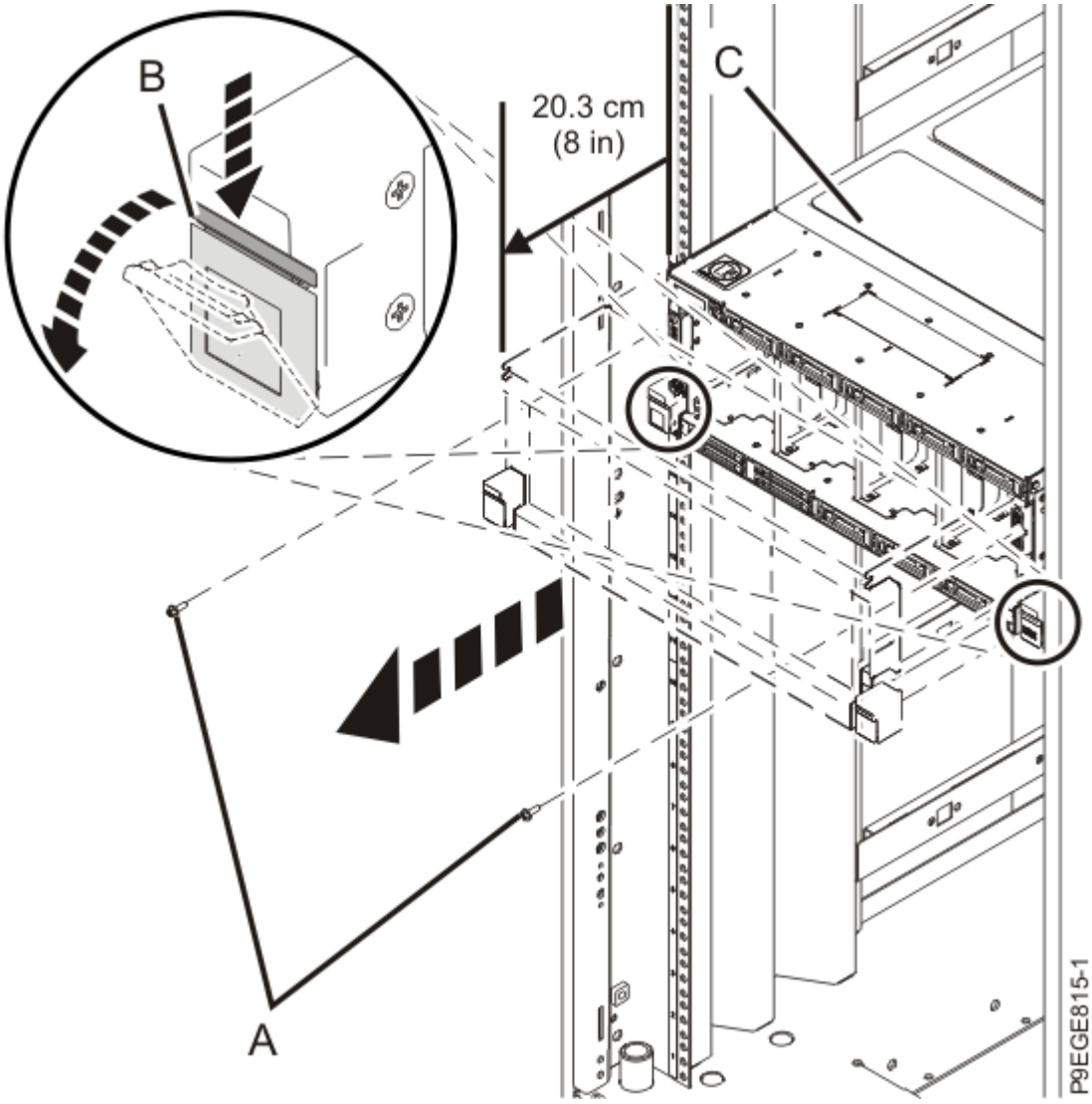



*Figure 66: Partially sliding the system from the rack*

e) Label and unplug the SAS cables from the rear of the disk drive backplane as shown in the following figure.

Press in on the clip to release the cable. Hold the disk drive backplane while you remove the SAS cables to prevent the disk drive backplane from tipping forward and out of the system.

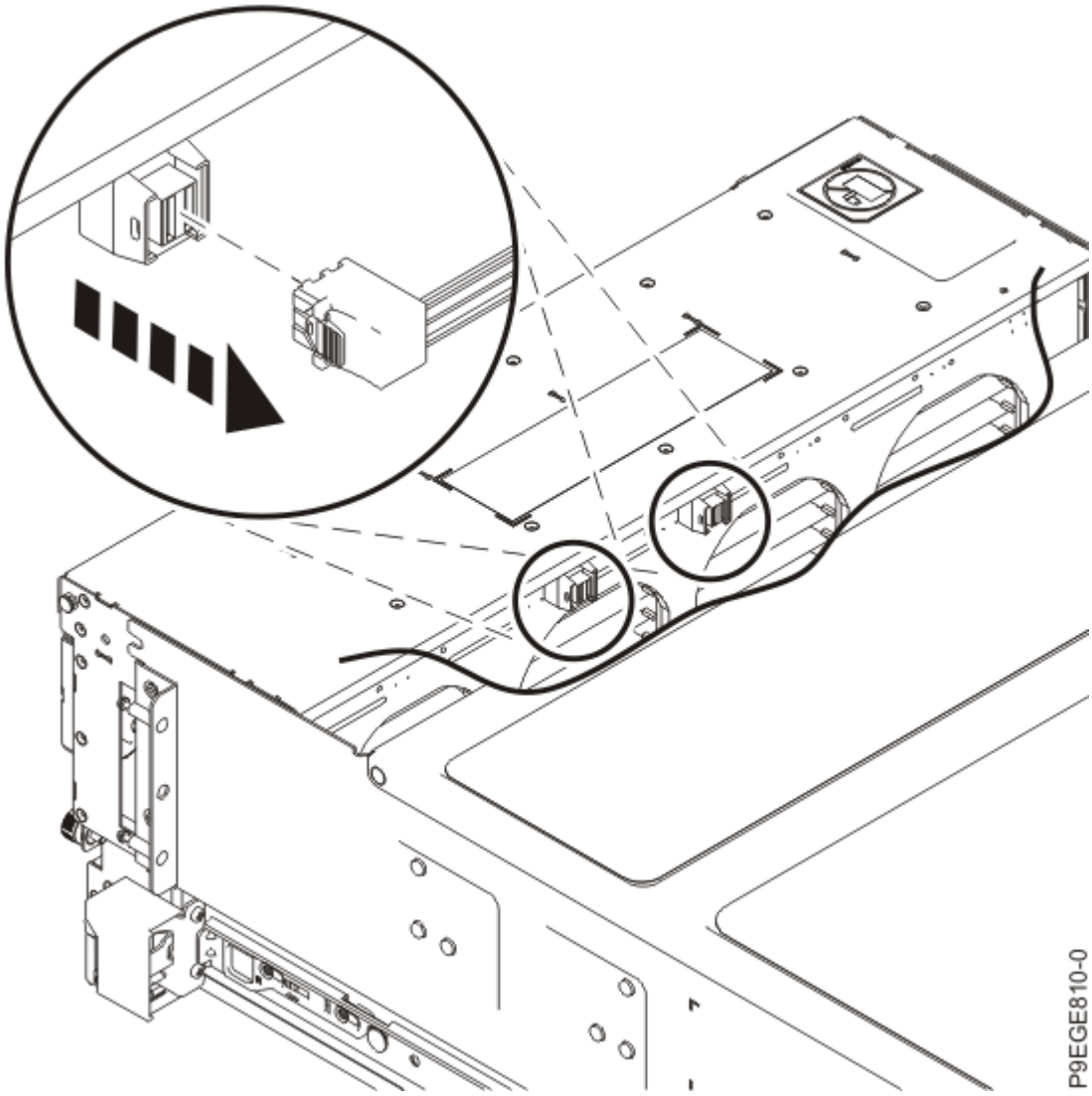



*Figure 67: Unplugging the SAS cables*

f) After the SAS cables are disconnected from the rear of the disk drive backplane, using two hands, push the disk drive backplane back into place, ensuring that the alignment pins at **(A)** insert into the slots at **(B)**.

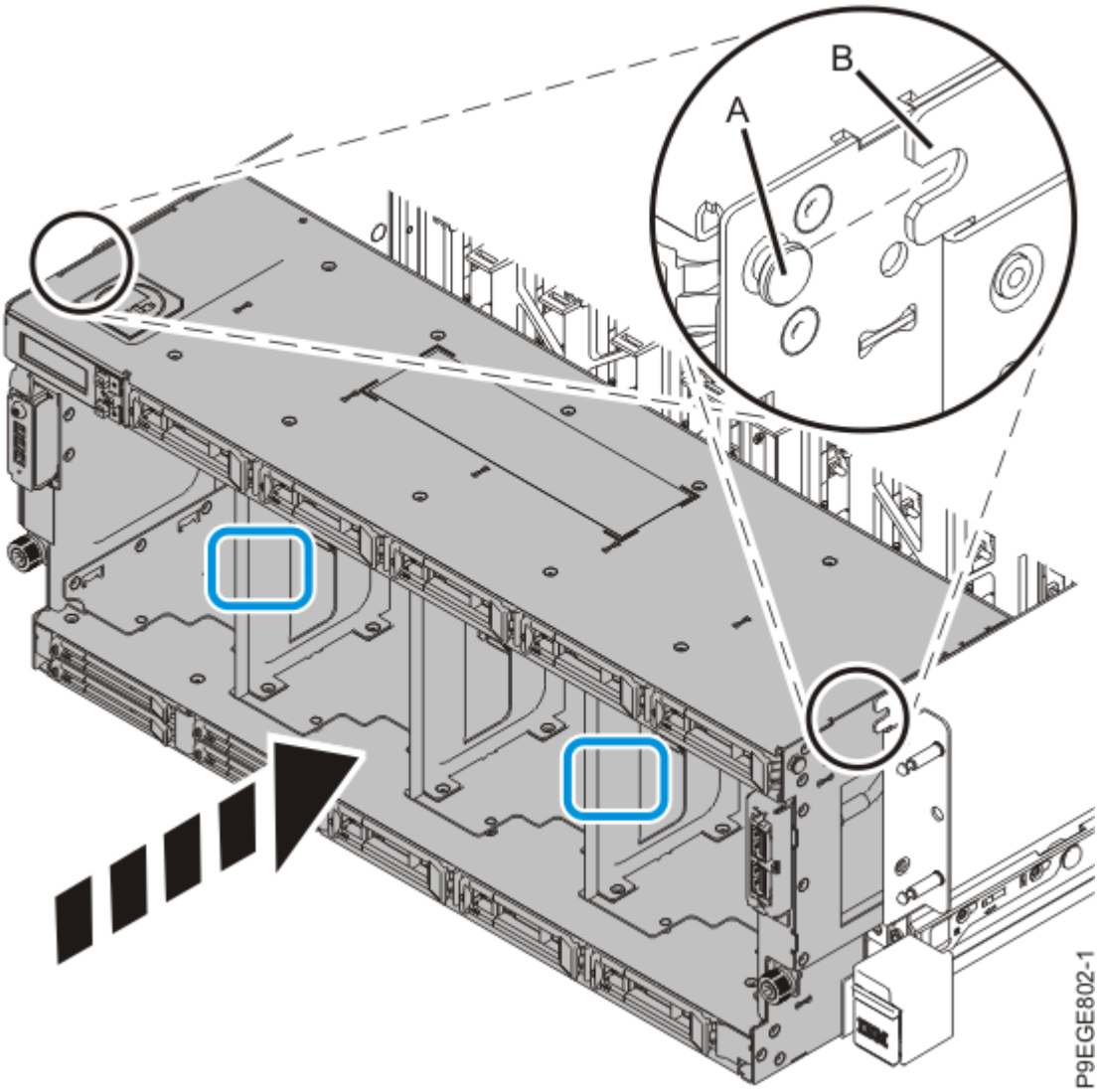



*Figure 68: Replacing the disk drive backplane*

g) Push the system unit **(A)** back into the rack until both release latches of the system unit lock into position. Ensure that any cables do not catch or bind as you push in the system.

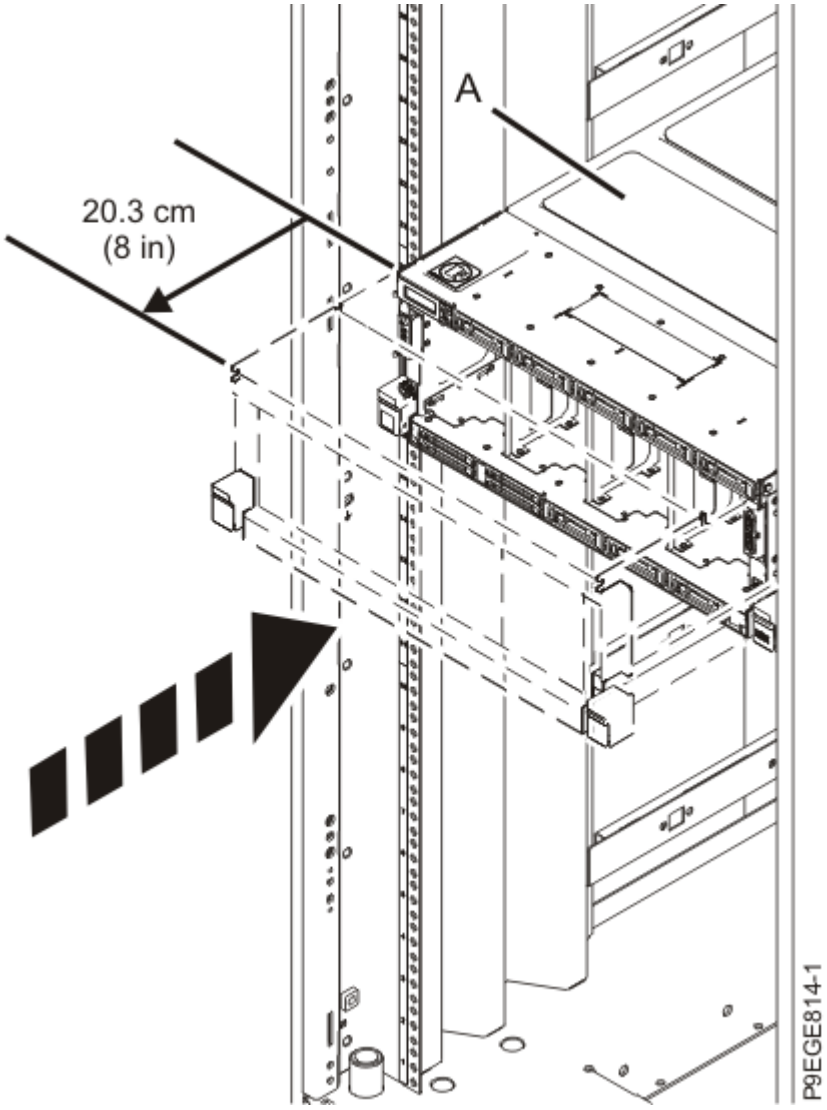



*Figure 69: Pushing the system back into the rack*

h) Using two hands, fully remove the disk drive backplane from the system.

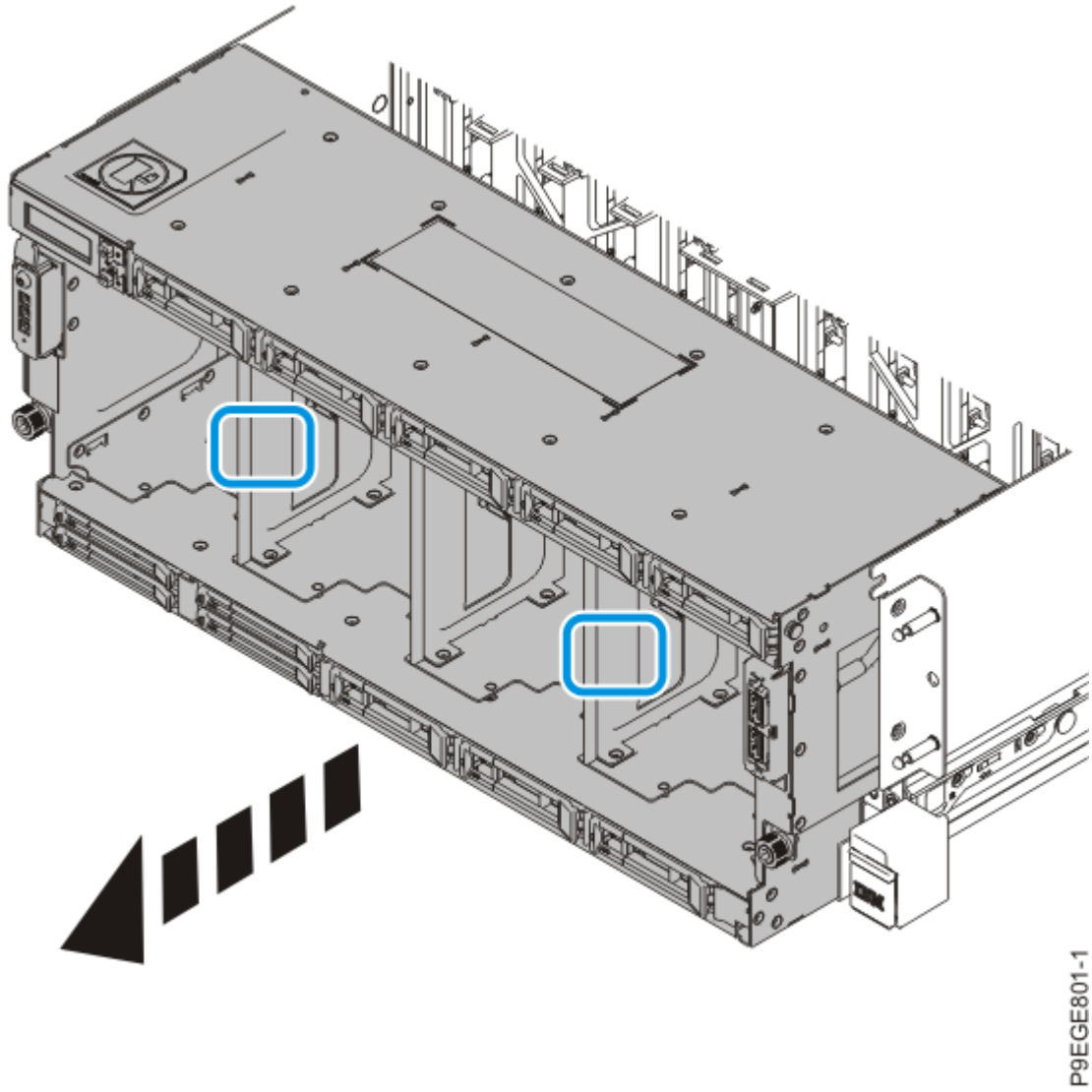



*Figure 70: Fully removing the disk drive backplane*

i) Place the disk drive backplane on an ESD surface.

4. Move the system unit out of the rack at most 79 cm (31 in), enough to remove the top cover.

   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.

   Pull out the system unit **(A)** at most 79 cm (31 in) from the rack as shown in the following figure. Ensure that any cables do not catch or bind as you pull out the system.

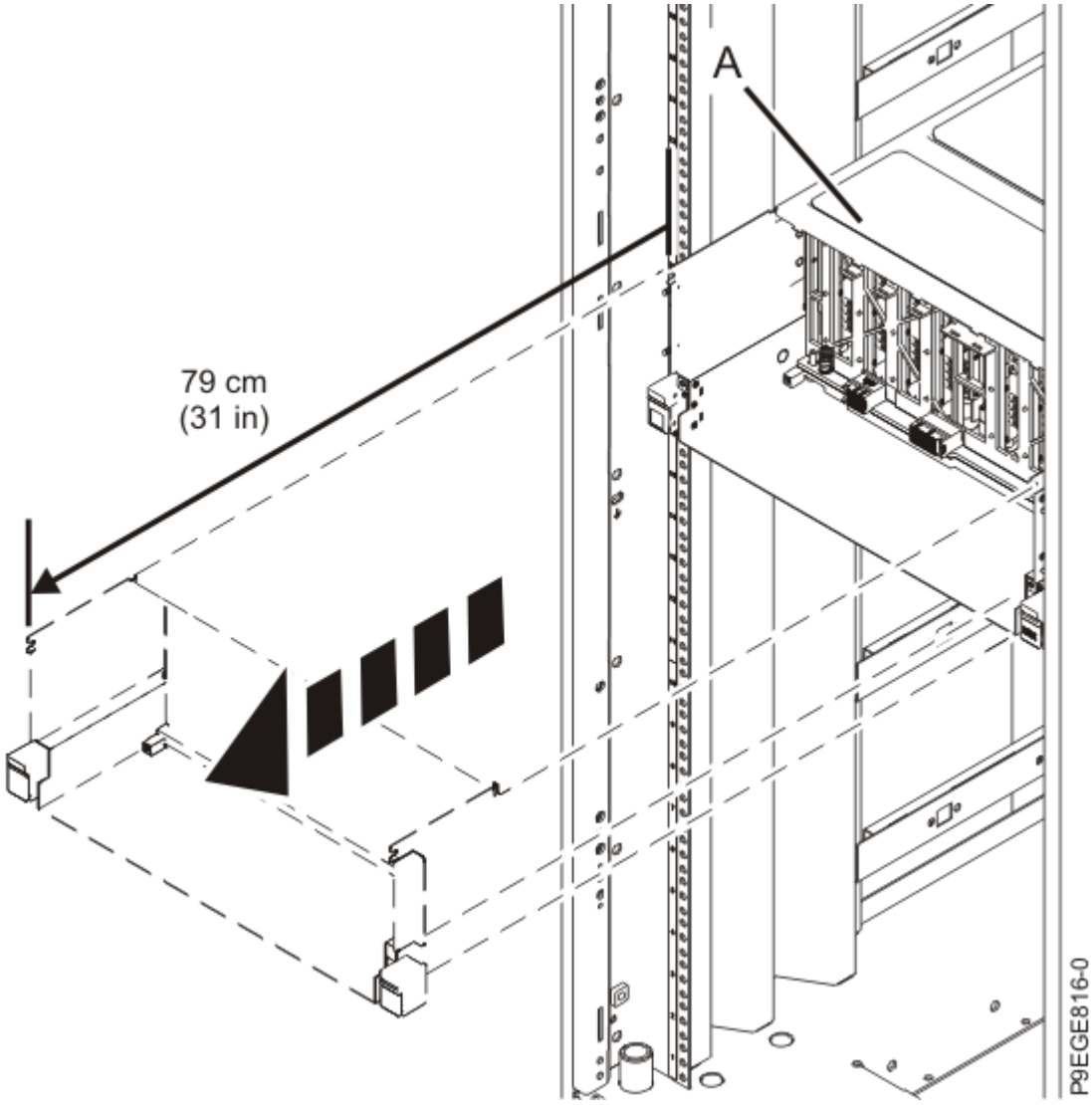



*Figure 71: Partially sliding the system from the rack*

5. Remove the service access cover by completing the following.

**Attention:** Operating the system without the cover for more than 10 minutes might damage the system components. For proper cooling and airflow, replace the cover before turning on the system.

a. Push the release latches **(A)** in the direction shown in the following figure.

b. Slide the cover **(B)** off the system unit as shown in the following figure. When the front of the service access cover has cleared the upper frame ledge, lift the cover up and off the system unit.

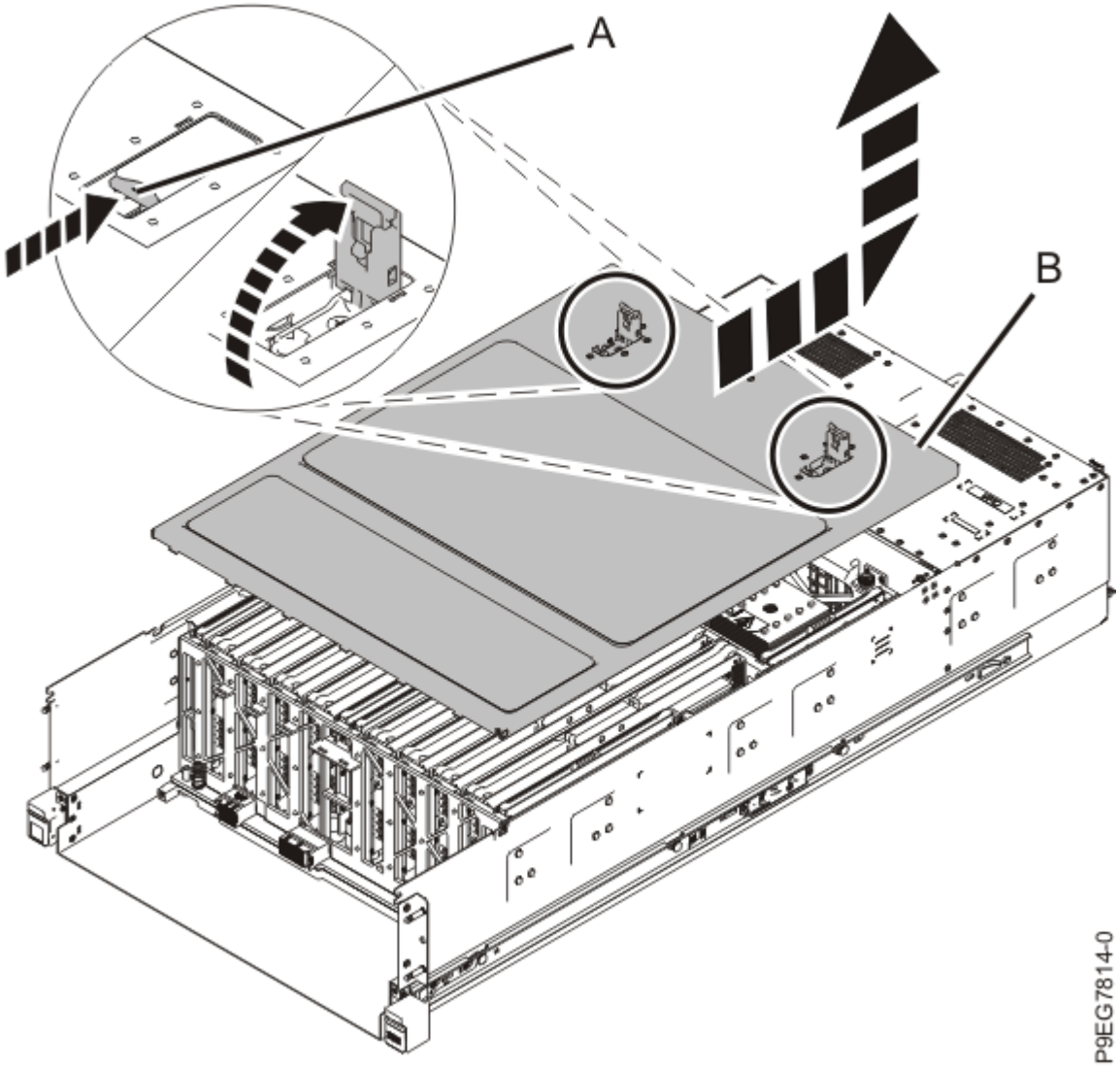



*Figure 72: Removing the service access cover*

6. Remove the SAS cable support **(A)** by lifting it straight up as shown in the following figure.

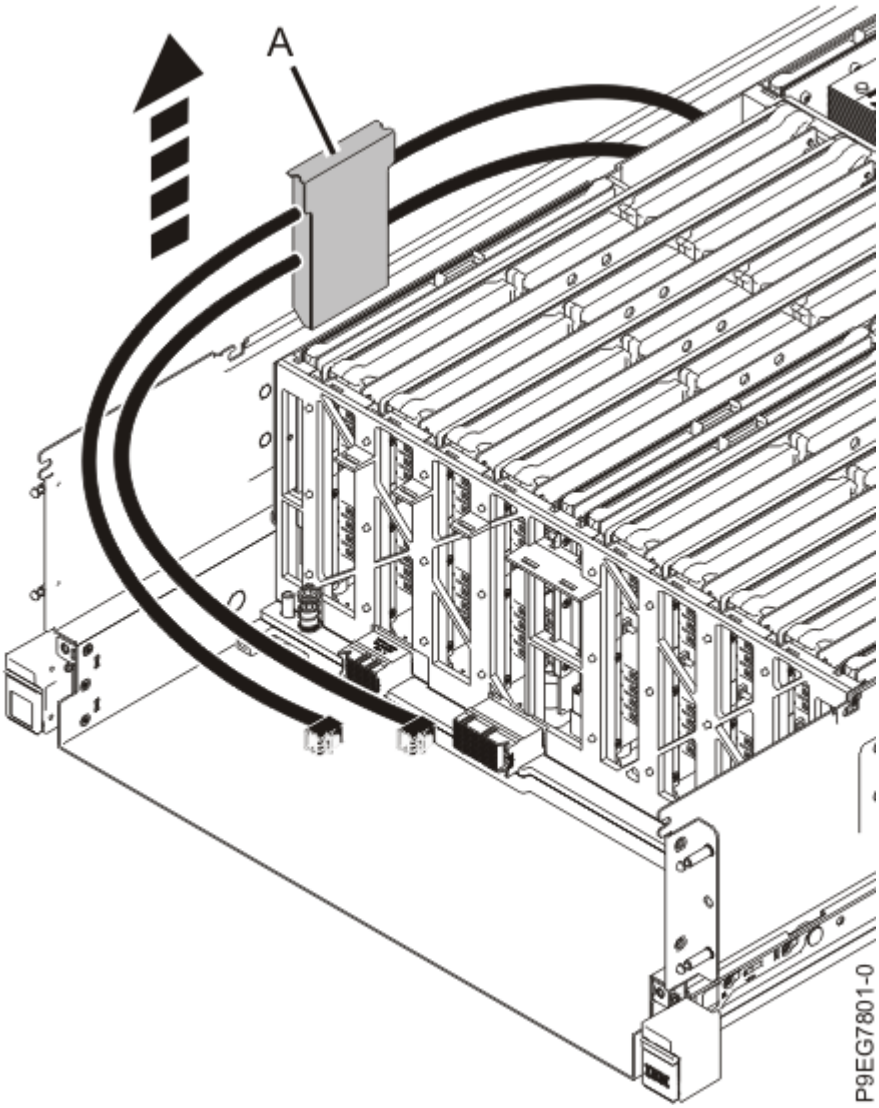



*Figure 73: Removing the SAS cable support*

7. Replace the service access cover.
   a) Lower the cover **(A)** onto the system unit. Ensure that the cover alignment pins **(C)** on each side of the cover fit into the matching slots in the chassis.
   b) Slide the cover **(A)** onto the system unit.
   c) Close the release latches **(B)** by pushing it in the direction that is shown in the following figure.

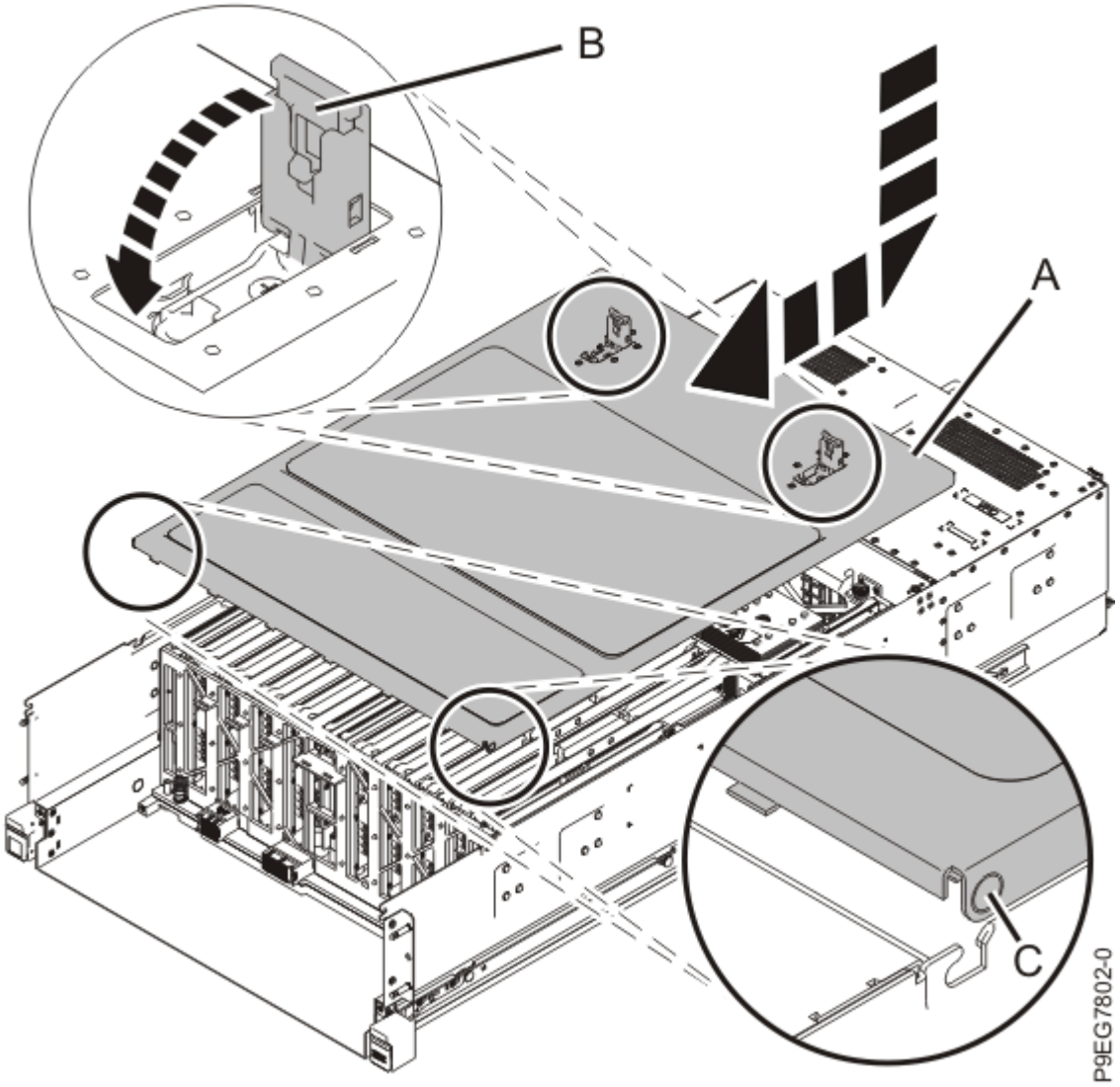



*Figure 74: Installing the service access cover*

8. Loop and push the SAS cables **(A)** from the front of the system, into the side channel inside the system. This enables the cables to be pulled through the system to the rear.

   Do not fold the cables back onto themselves; make a loop as shown in the following figure.

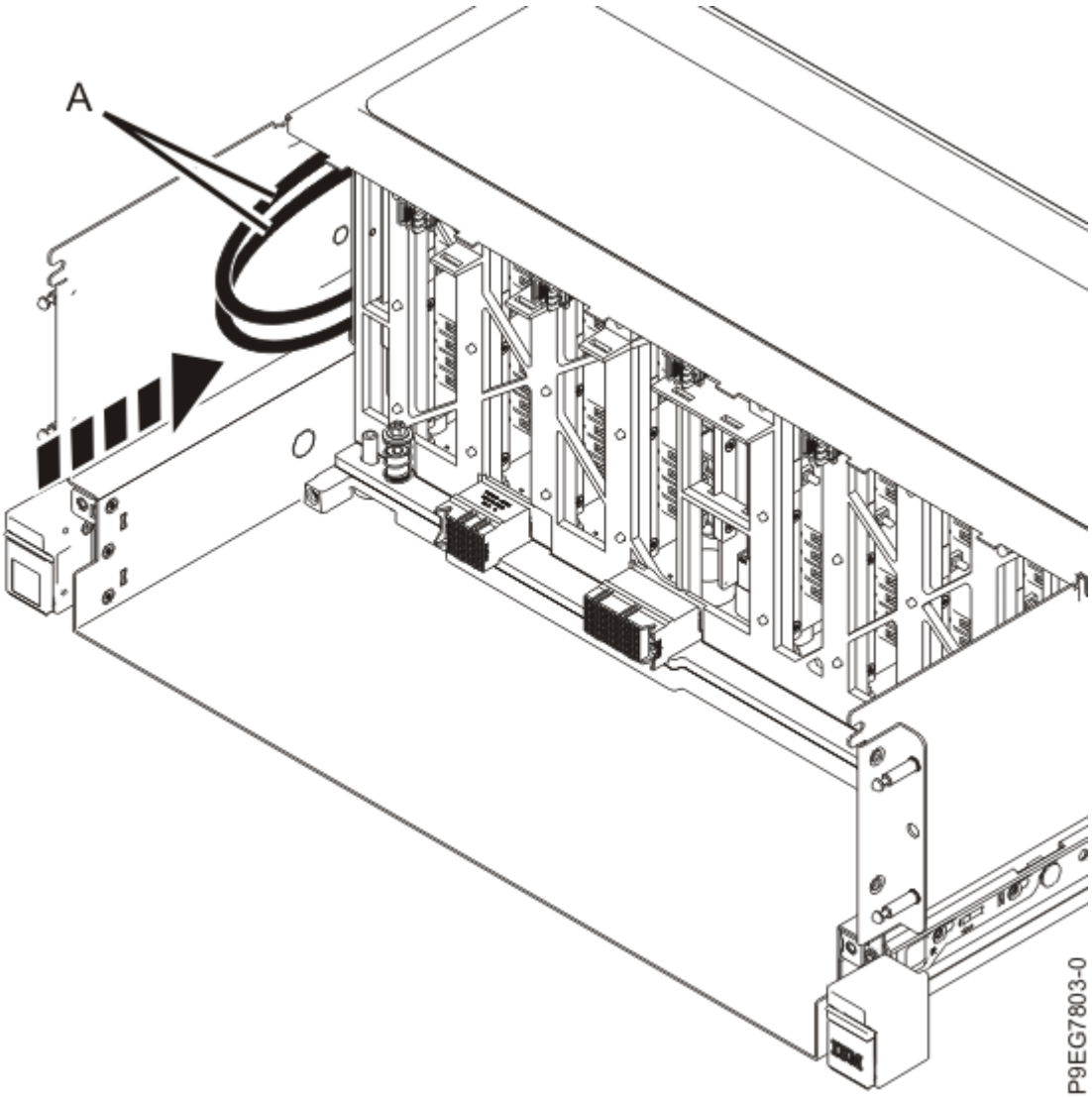



*Figure 75: Looping and pushing the SAS cables inside the system*

9. Complete the following steps to place the system in the operating position.
   a. If needed, unlock the blue rail safety latches **(A)** by pushing them towards the front as shown in the following figure.
   b. Push the system unit back into the rack as shown in the following figure until both release latches of the system unit lock into position. Ensure that any cables do not catch or bind as you push in the system.

   **Note:** Slide the system unit slowly into the rack to ensure that your fingers do not get caught in the side rails.

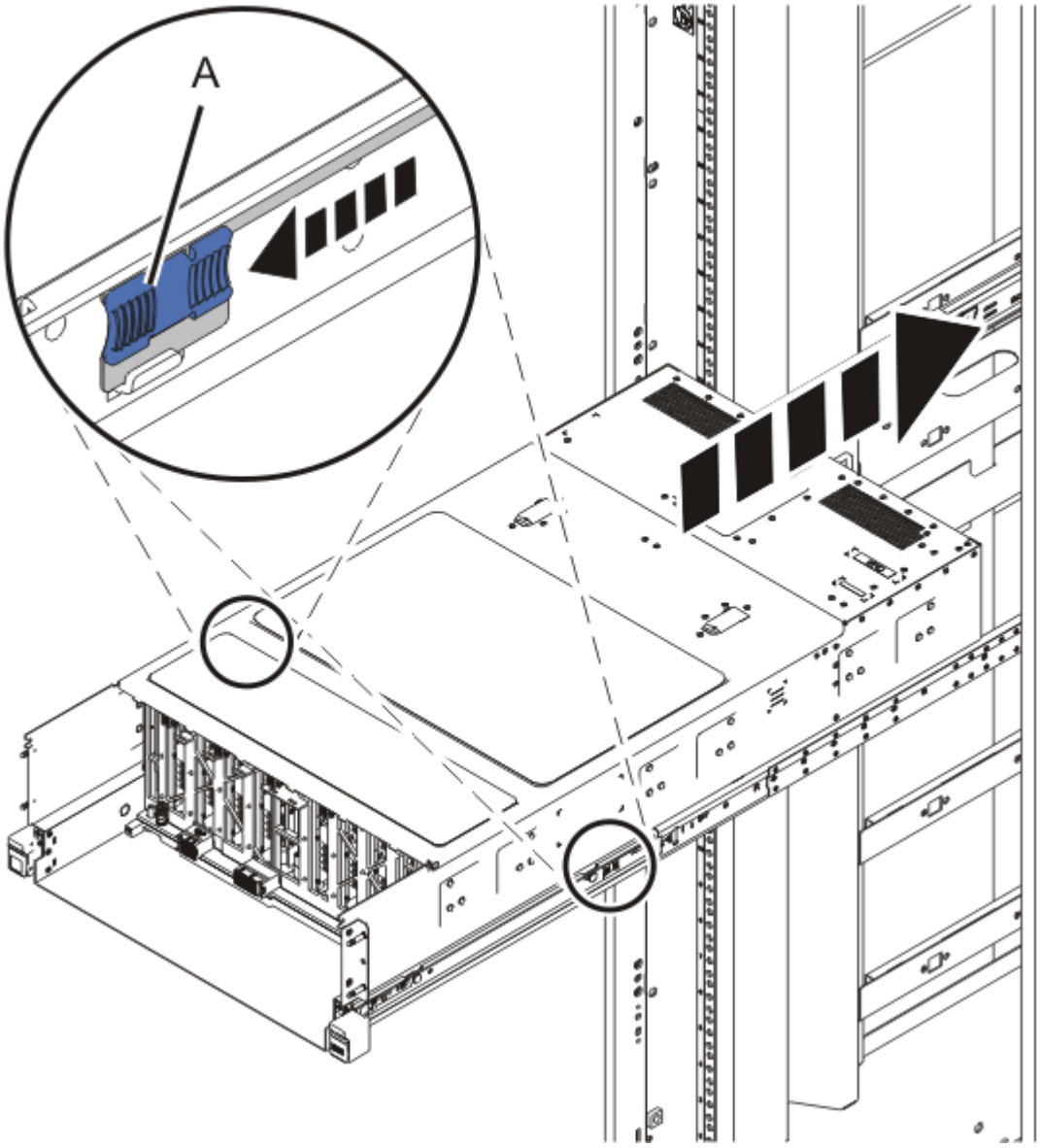



*Figure 76: Placing the system into the operating position*

10. Note the positions and label the rear SAS cables. See the following figures. Complete the following steps to remove the SAS cables.
    a) Slightly push in the SAS cable.
    b) While pushing the SAS cable, gently pull the blue tab **(A)** straight back from the system to release the latches that secure the SAS cable to the PCIe adapter.

       Do not pull the blue tab to the side, you might break the tab and prevent the cable from being removed. Pull the blue tab straight back.
    c) While gently pulling the blue tab, grasp and pull on the black SAS cable itself to unplug and remove the SAS cable from the PCIe adapter.

       To prevent breakage, do not pull with excessive force on the blue tab.
    d) Repeat steps “10.a” on page 98 - “10.c” on page 98 for each SAS cable.

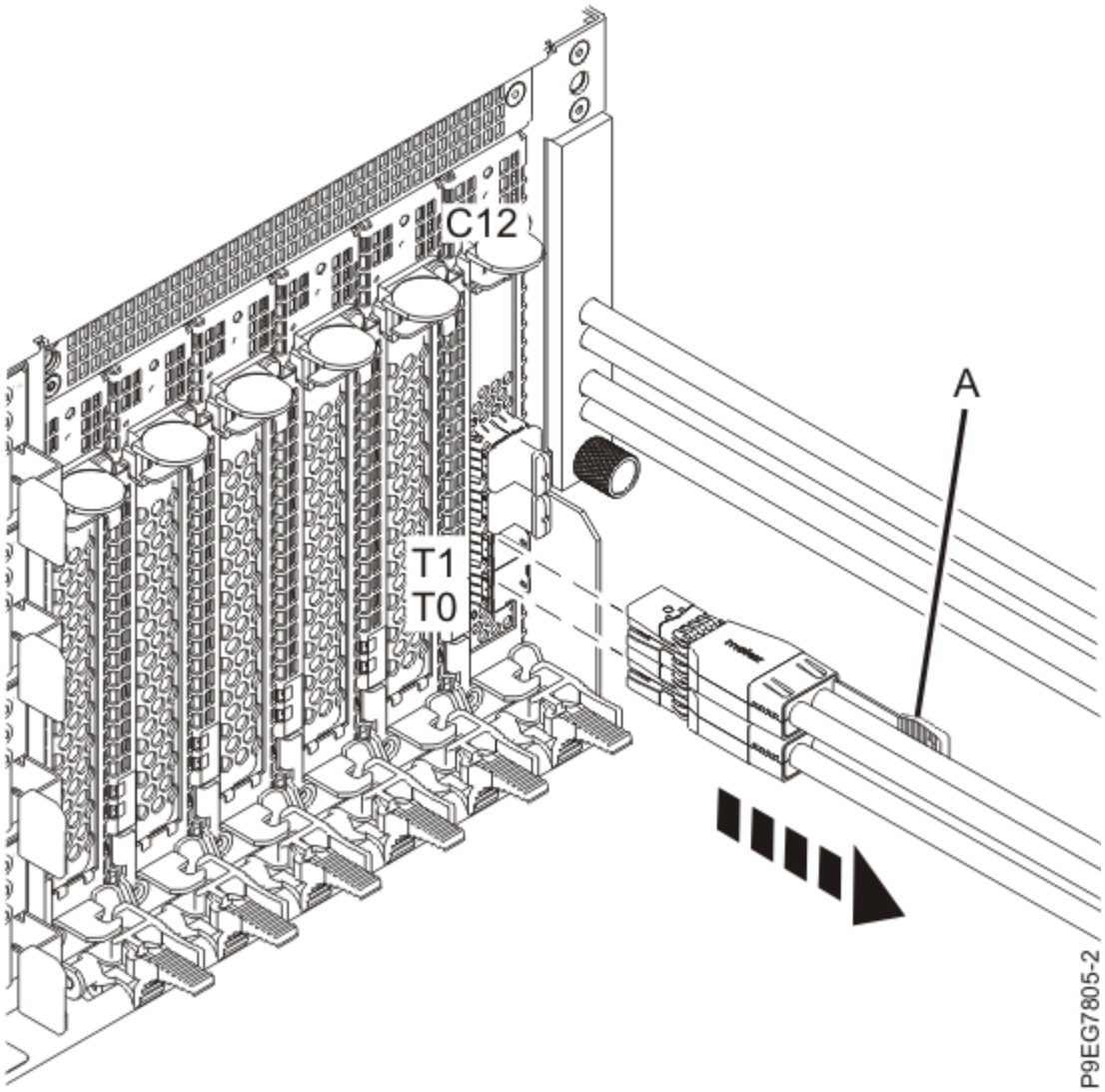



*Figure 77: Disconnecting the SAS cables for the base configuration*

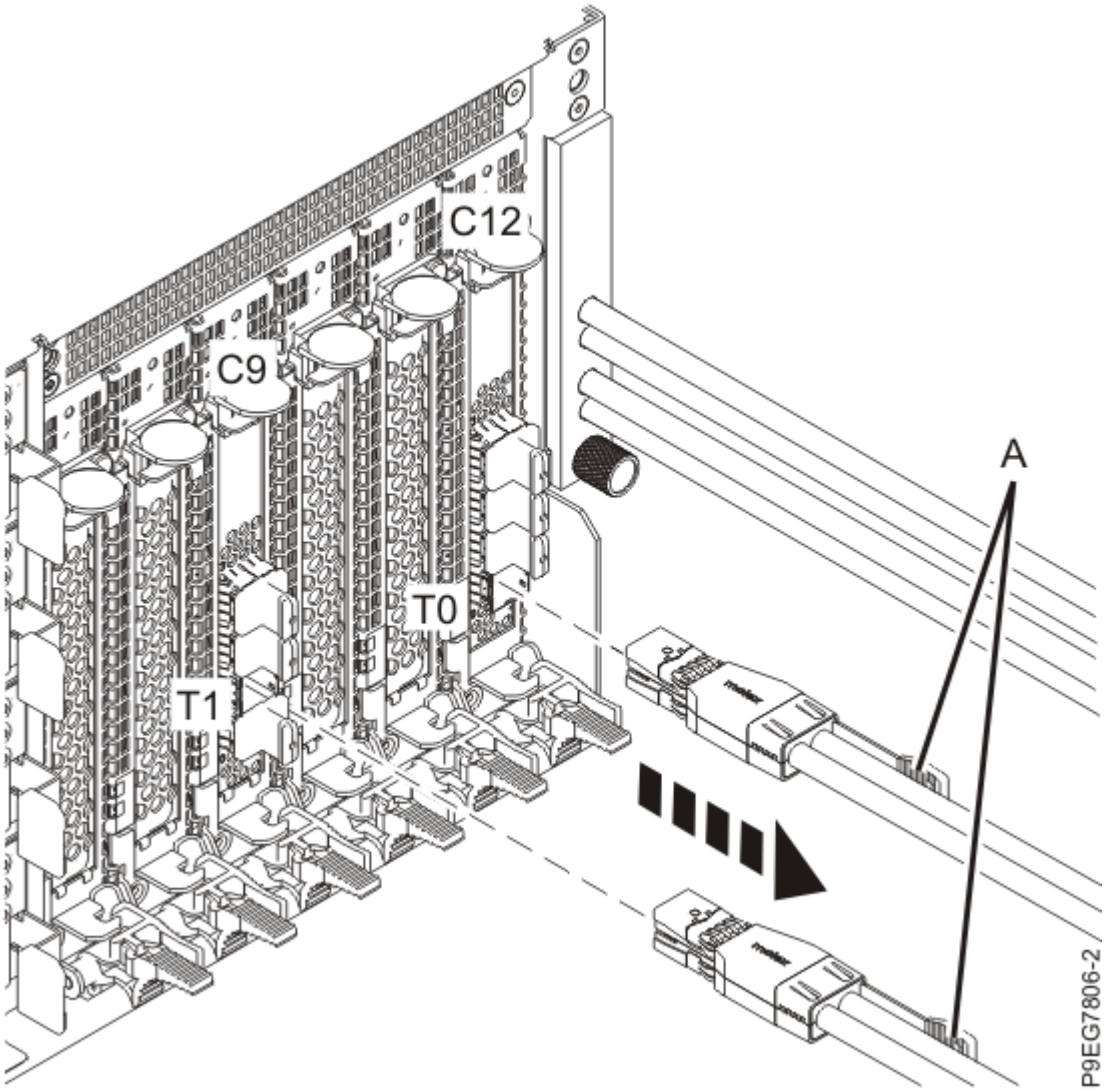



*Figure 78: Disconnecting the SAS cables for the split configuration*

11. Loosen the screw **(A)** that secures the SAS cable holder **(B)** to the rear of the system. Remove the SAS cable holder and SAS cables from the rear of the system.

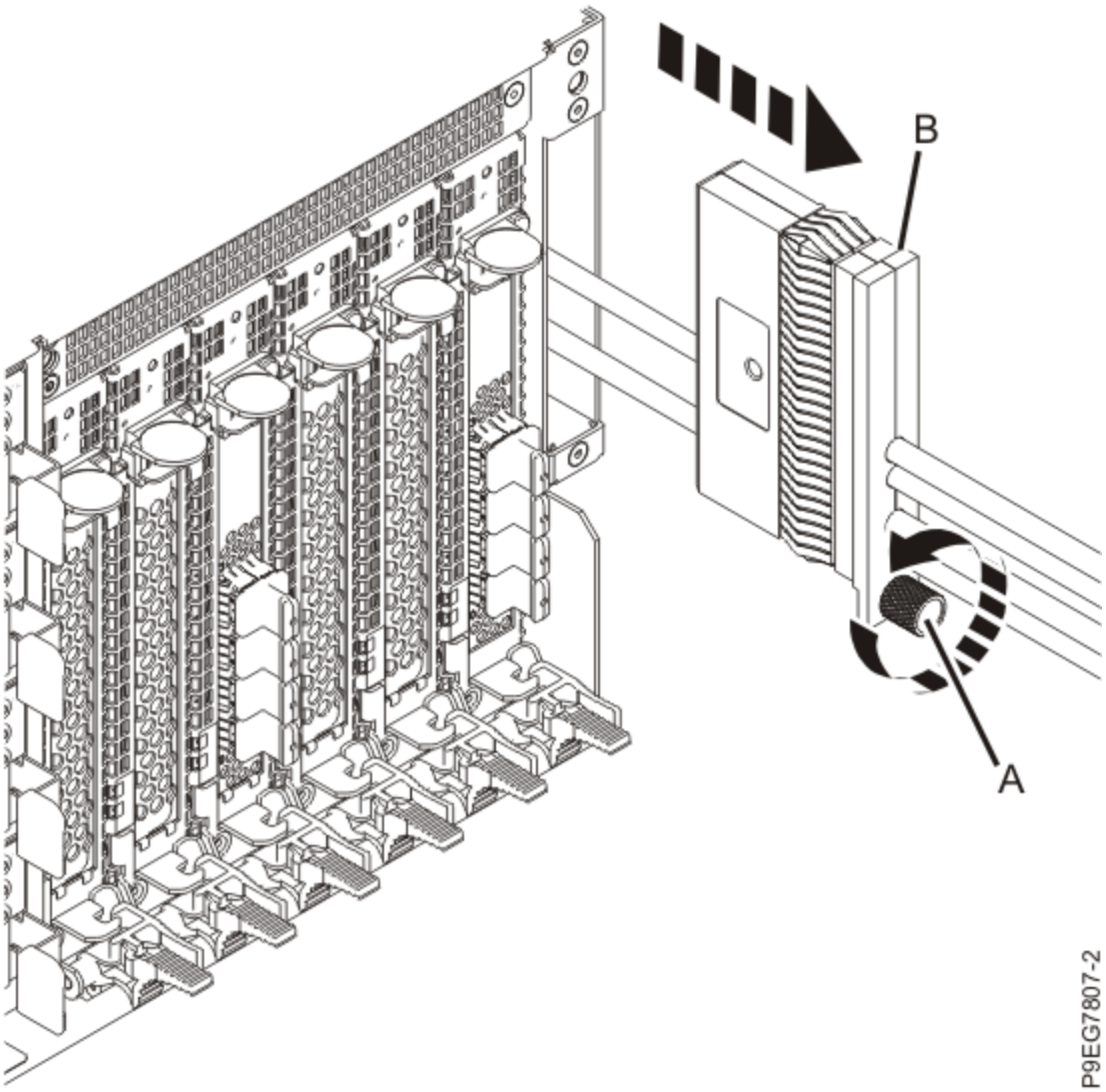



*Figure 79: Removing the SAS cable holder and SAS cables*

## Replacing the SAS cables in the 9040-MR9

To replace the SAS cables in the server, complete the steps in this 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. Carefully insert the SAS cables into the rear of the system as shown in the following figure. Ensure that no connectors catch or bind on internal parts.
   a) Remove the protective covers for the smaller connectors that go through the system to the disk drive backplane.
   b) Do not yet remove the protective covers from the larger connectors that attach the SAS cables to the SAS PCIe adapters at the rear of the system.
   c) Push the SAS cables that connect to the disk drive backplane through to the front of the system.
   d) Insert the SAS cable holder **(A)** into the rear of the system.
   e) Secure the SAS cable holder with the screw **(B)**.

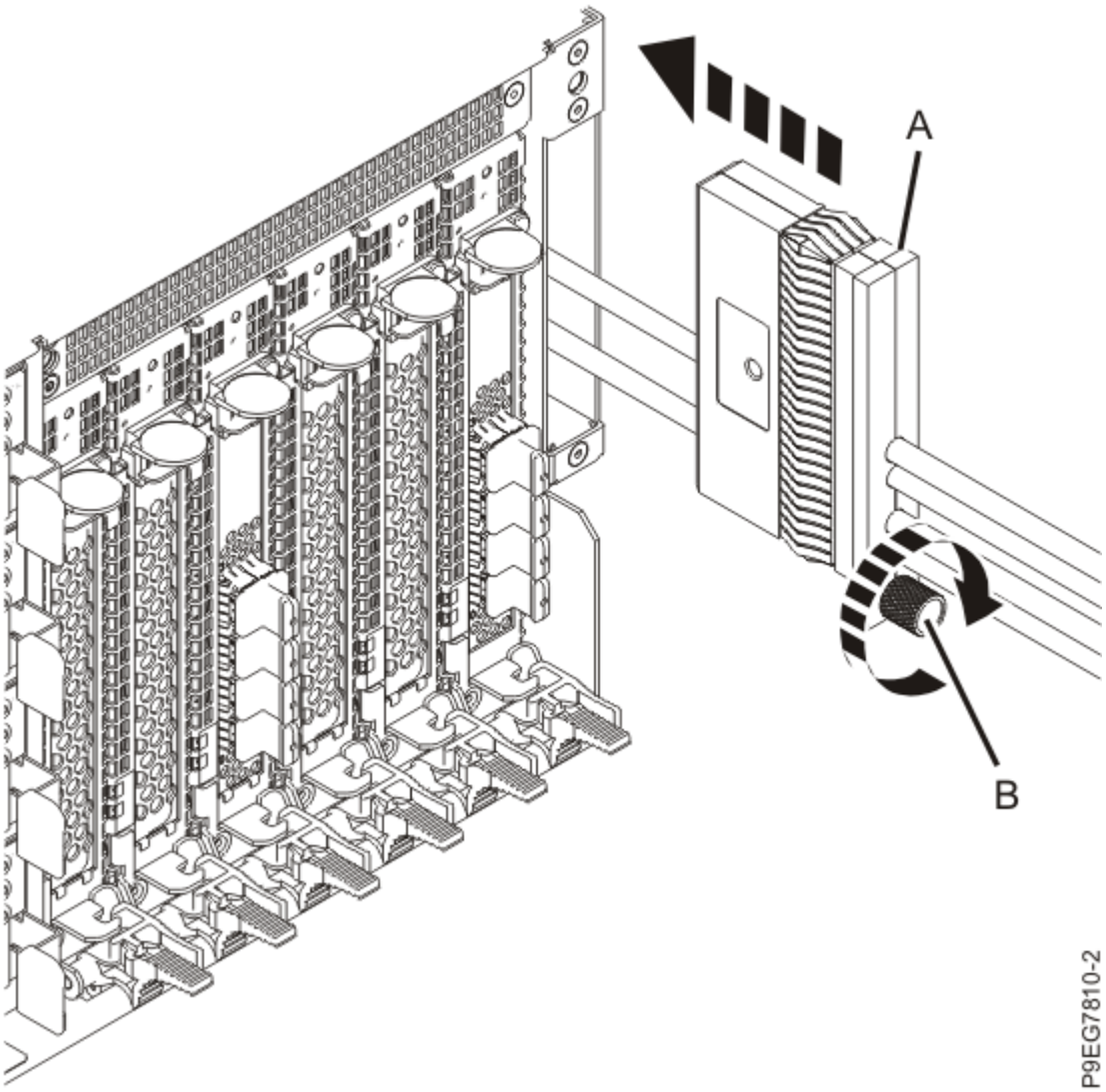



*Figure 80: Inserting the SAS cables and SAS cable holder*

3. Using the labels on the cables, based on your configuration, remove the protective SAS cable covers, and insert the SAS cables into the PCIe cards as shown in the following figure.

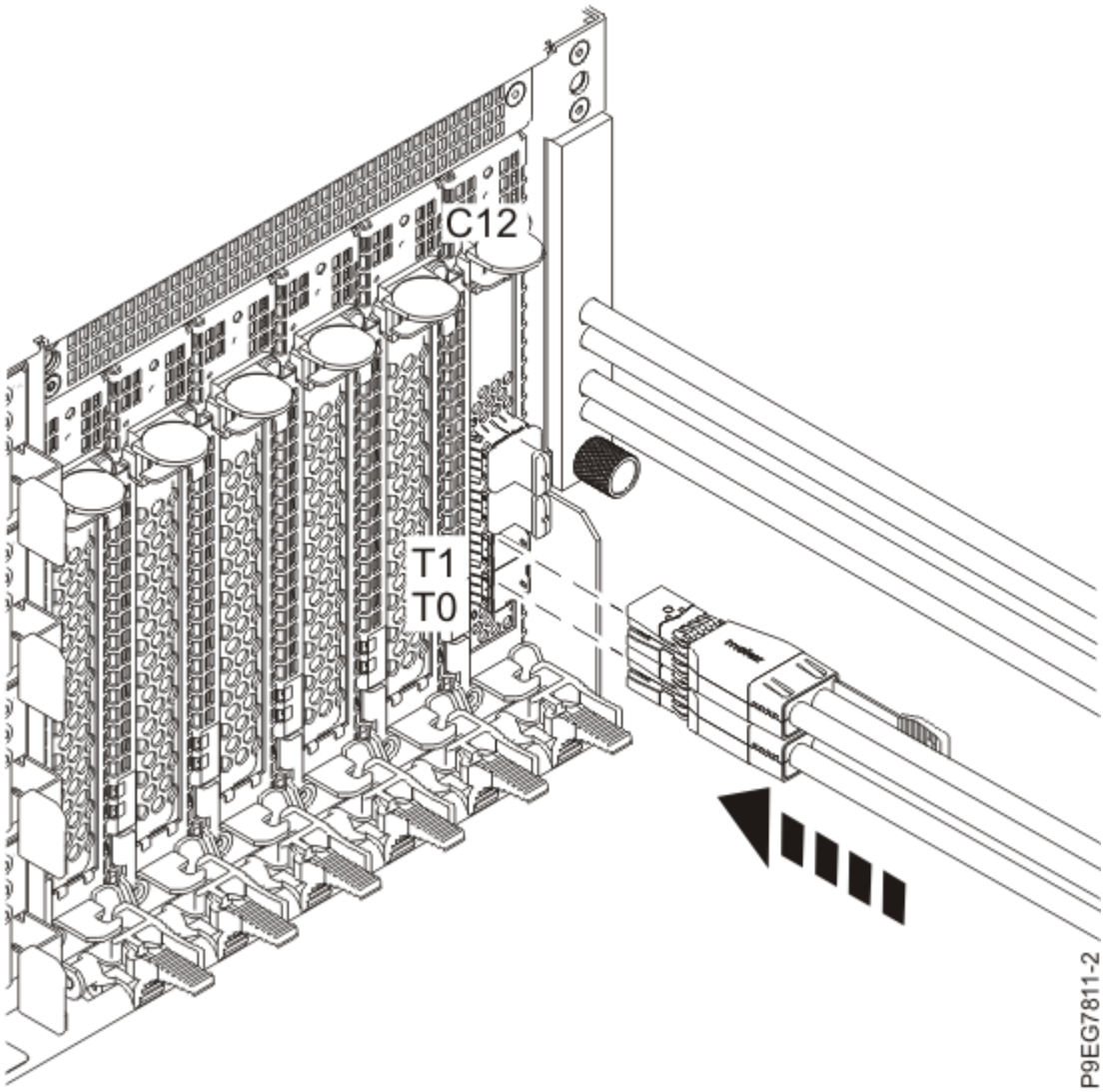



*Figure 81: Plugging the SAS cables for the base configuration*

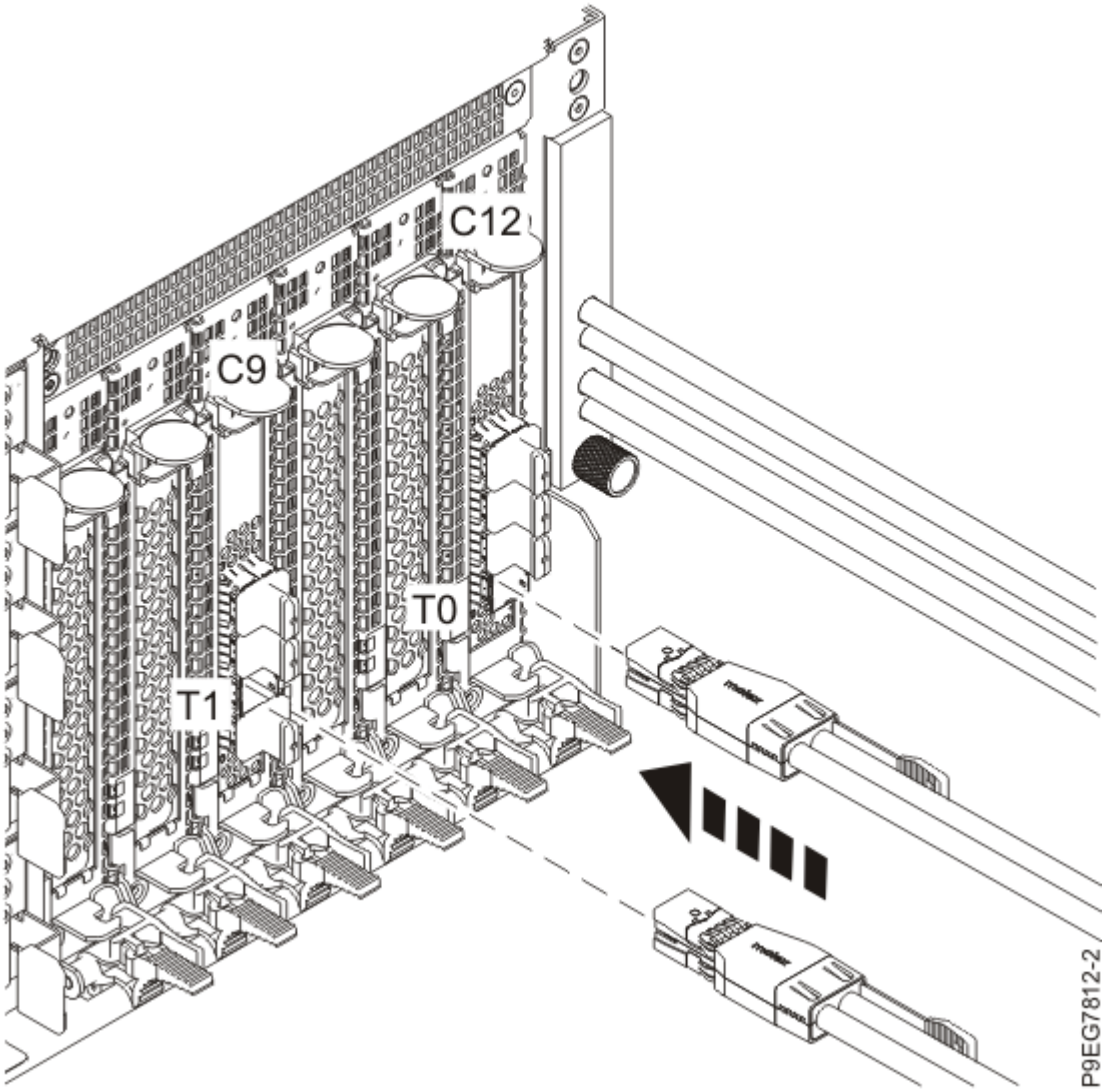



*Figure 82: Plugging the SAS cables for the split configuration*

4. Move the system unit out of the rack at most 79 cm (31 in), enough to remove the top cover.

   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.

   a. If not already removed, remove the shipping screws **(A)** as shown in the following figure by using a Phillips screwdriver.
   b. Release the side latches **(B)** by pressing them downward as shown in the following figure.
   c. Pull out the system unit **(C)** at most 79 cm (31 in) from the rack as shown in the following figure. Ensure that any cables do not catch or bind as you pull out the system.

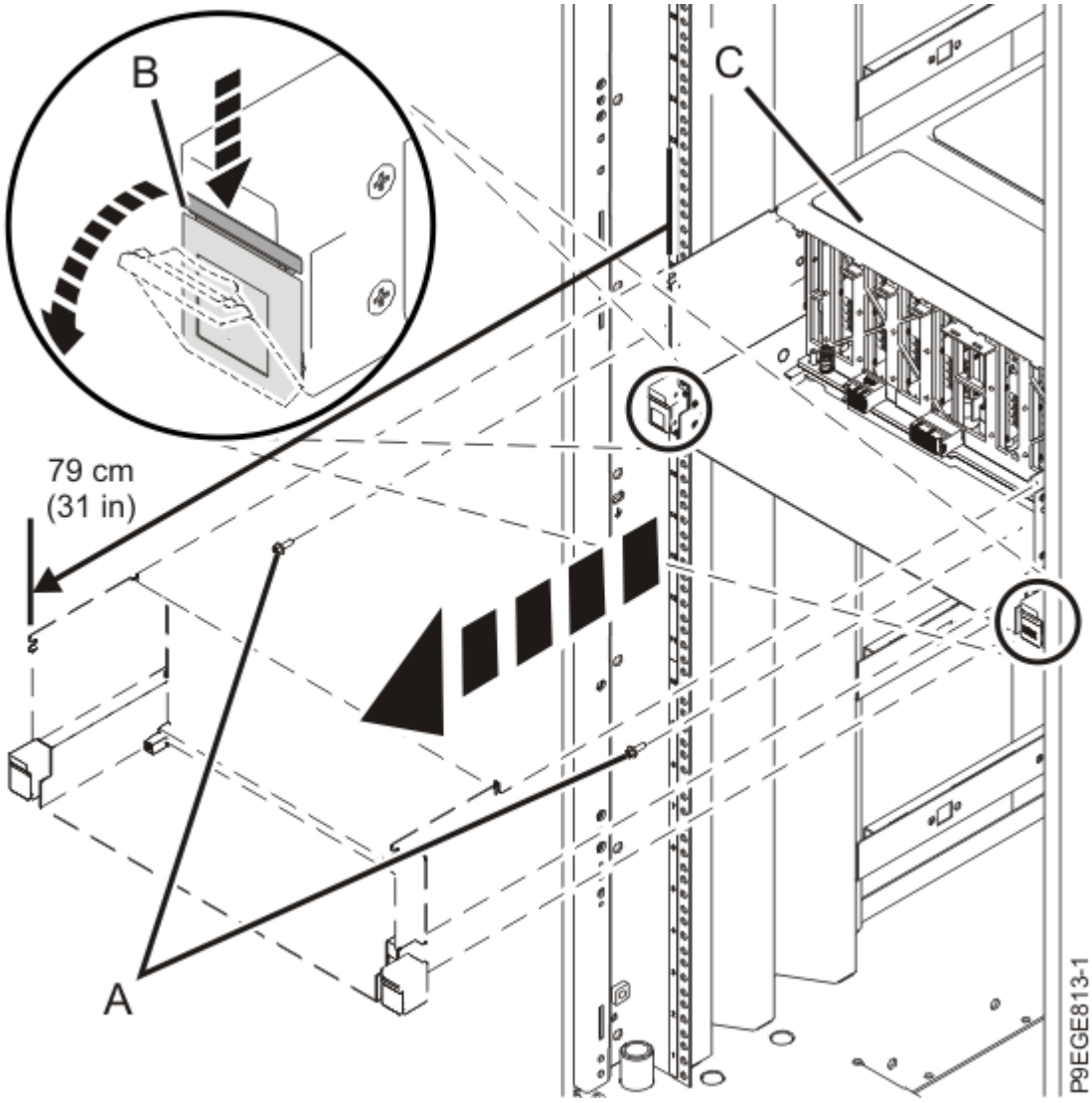



*Figure 83: Partially sliding the system from the rack*

5. Remove the service access cover by completing the following.

**Attention:** Operating the system without the cover for more than 10 minutes might damage the system components. For proper cooling and airflow, replace the cover before turning on the system.

a. Push the release latches **(A)** in the direction shown in the following figure.

b. Slide the cover **(B)** off the system unit as shown in the following figure. When the front of the service access cover has cleared the upper frame ledge, lift the cover up and off the system unit.

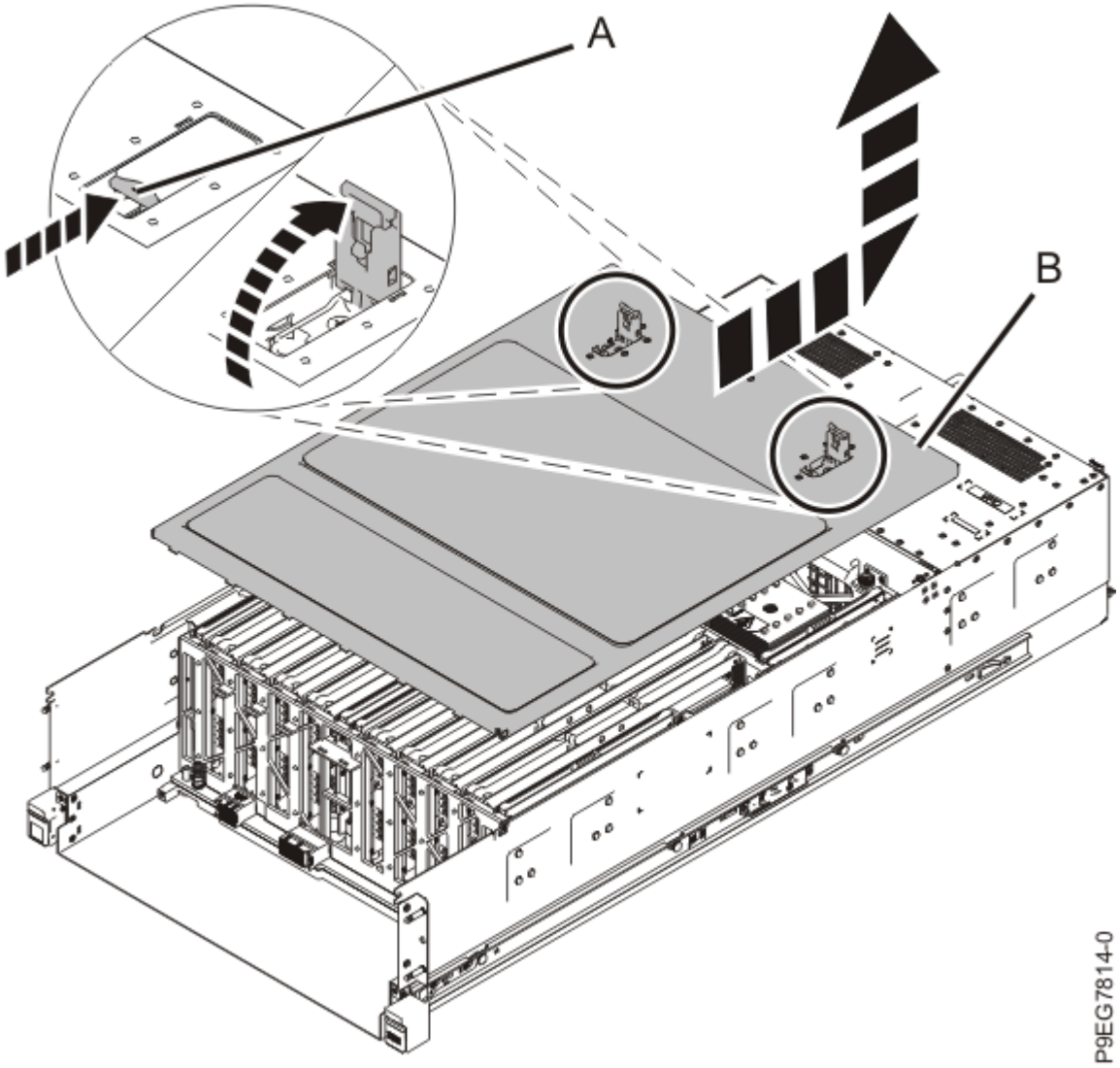



*Figure 84: Removing the service access cover*

6. Place the SAS cables **(A)** against the foam of the SAS cable support **(B)** as shown in the following figure. With your fingers holding the SAS cables against the foam, lower the SAS cable support **(B)** and SAS cables straight down between the alignment pins **(C)**.

   The foam holds the cables against the side of the system and prevents air from blowing through the side channel. Do not simply press the support **(B)** down in the channel on top of the cables.

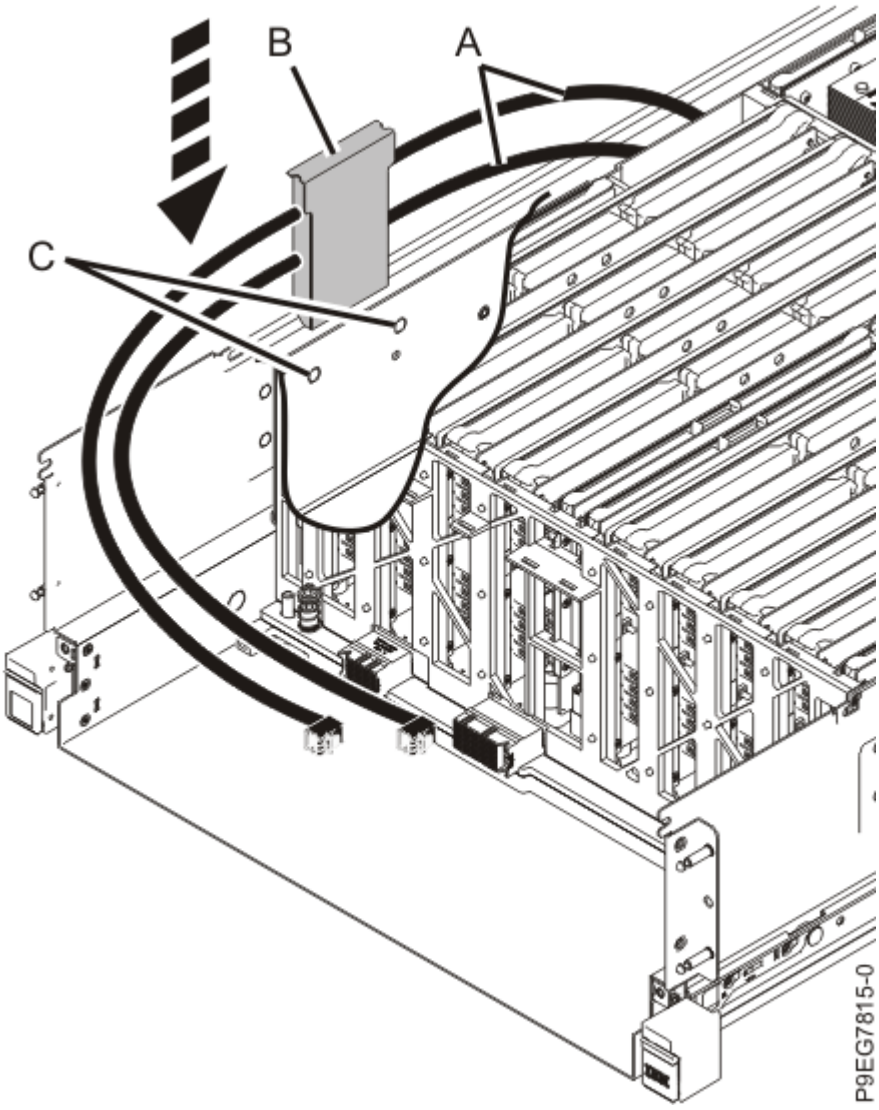



*Figure 85: Replacing the SAS cable holder*

7. Replace the service access cover.
   a) Lower the cover **(A)** onto the system unit. Ensure that the cover alignment pins **(C)** on each side of the cover fit into the matching slots in the chassis.
   b) Slide the cover **(A)** onto the system unit.
   c) Close the release latches **(B)** by pushing it in the direction that is shown in the following figure.

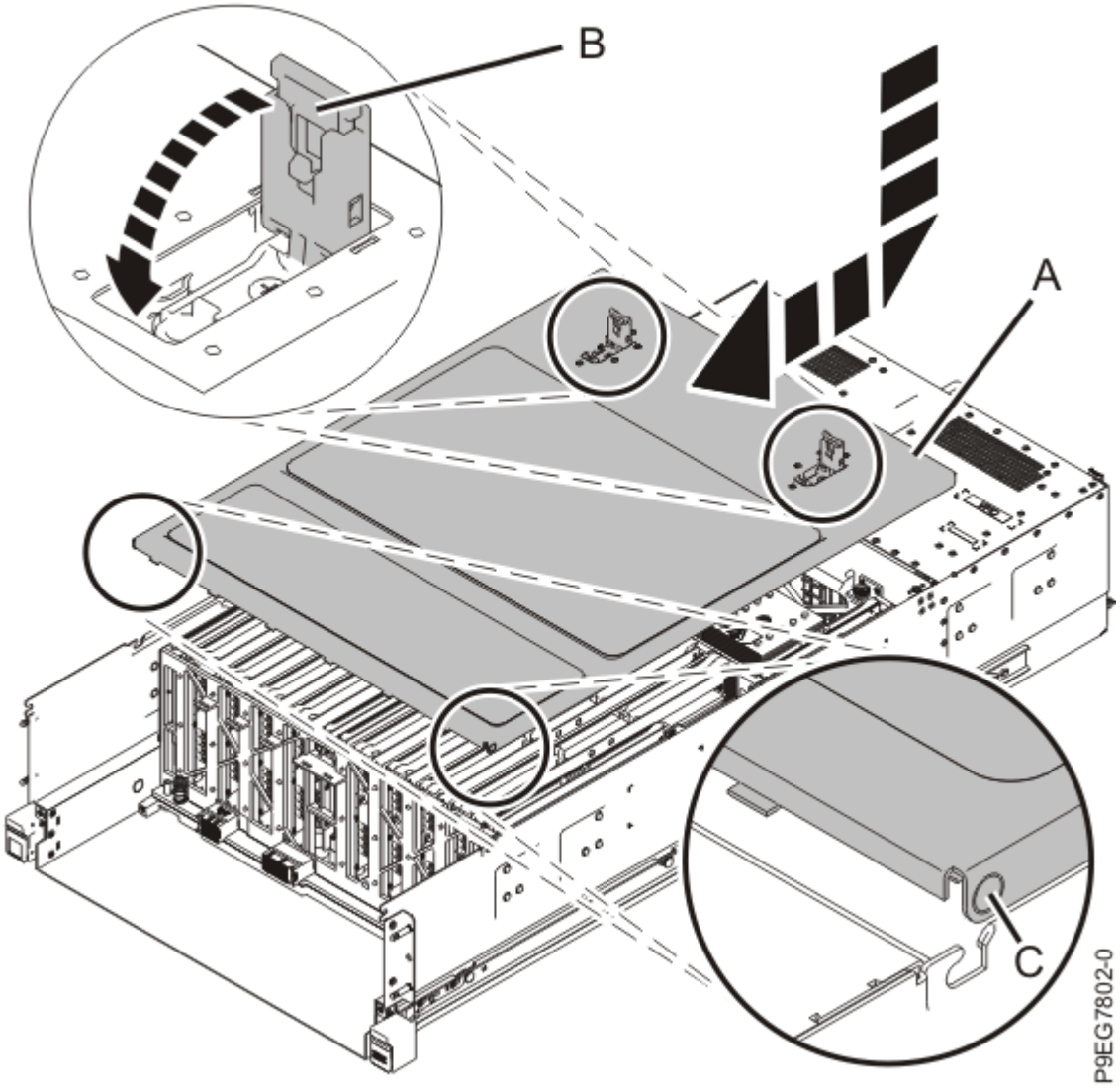



*Figure 86: Installing the service access cover*

8. Route the SAS cables around to the front of the system.

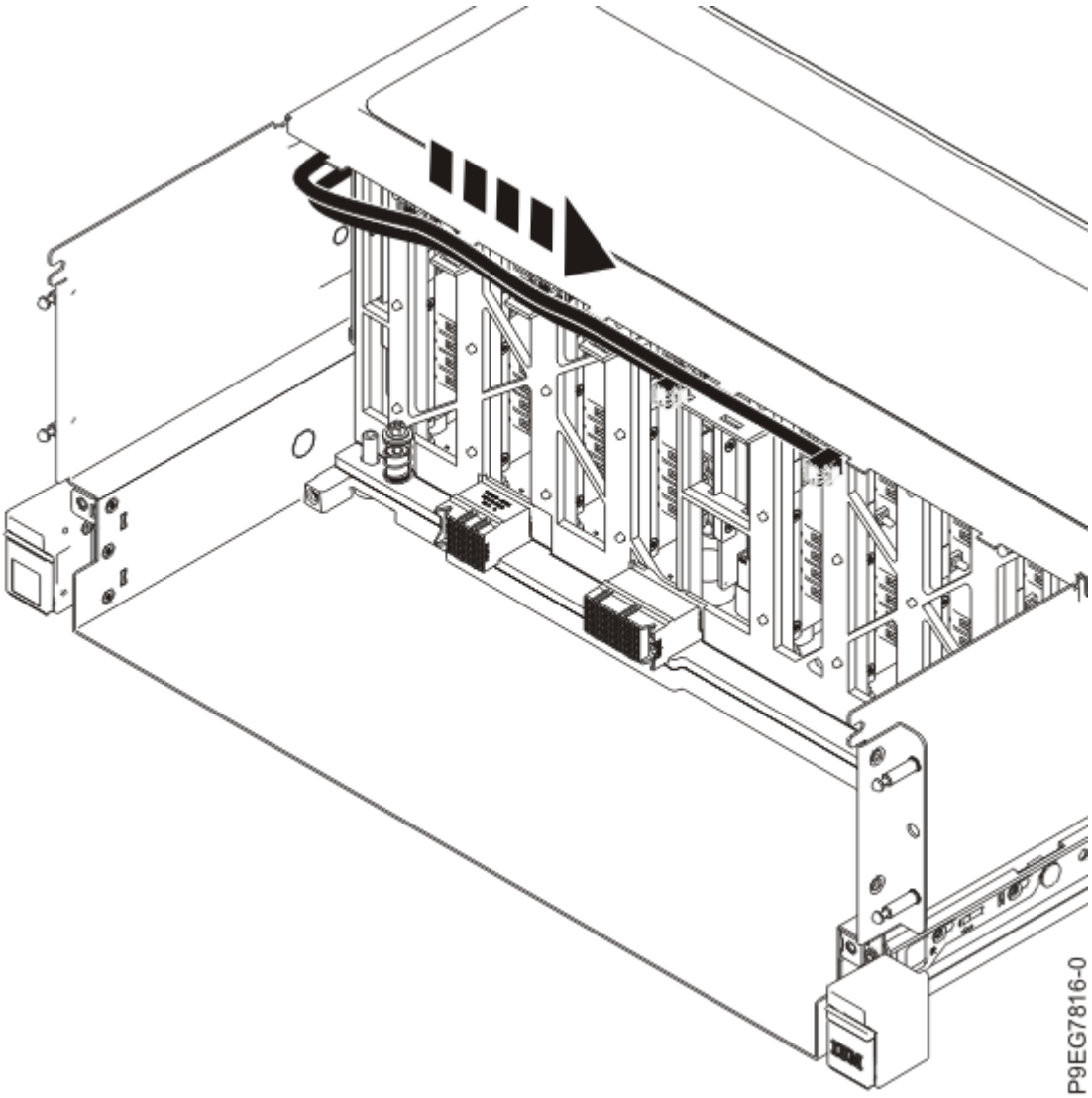



*Figure 87: Routing the SAS cables*

9. To replace the disk drive backplane, complete the following steps:

   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.

   a) Using two hands, grasp the disk drive backplane where indicated by the blue squares in the following figure. Partially insert the disk drive backplane straight into the front of the system.

      Do not yet fully insert the disk drive backplane; leave about a 2.5 cm (1 in) gap at the rear of the disk drive backplane.

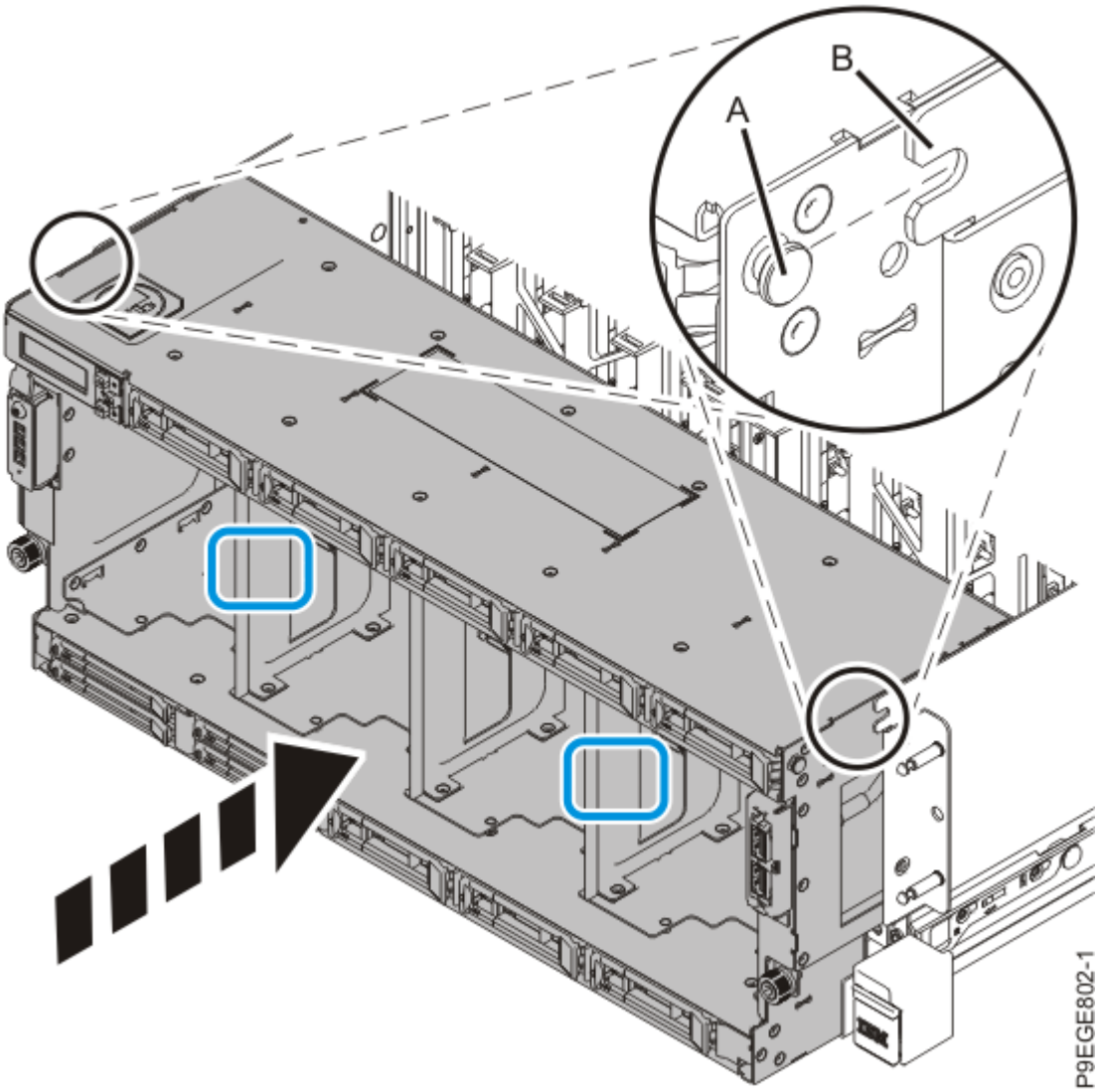



*Figure 88: Partially replacing the disk drive backplane*

b) Move the system unit **(A)** to be at most 20.3 cm (8 in) from the rack as shown in the following figure. Ensure that any cables do not catch or bind as you move the system.

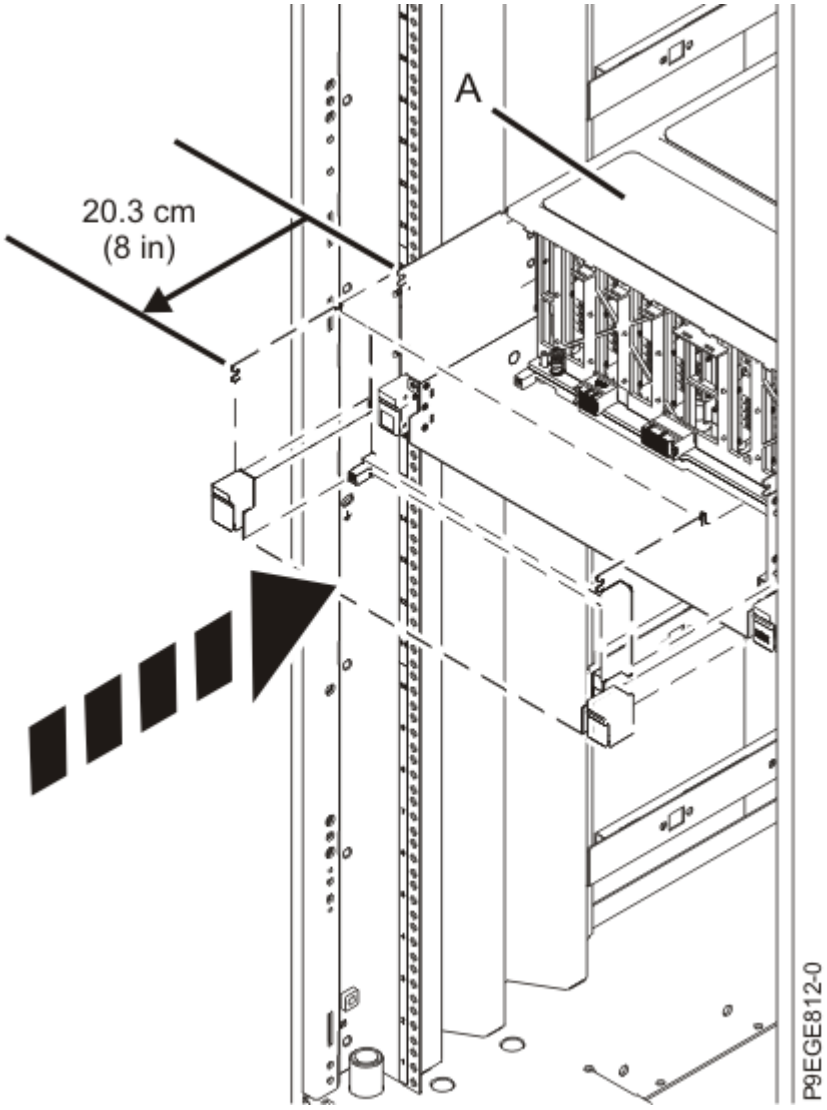



*Figure 89: Partially sliding the system into the rack*

c) Using the connector labels near the ends of the SAS cables, attach the SAS cables to the rear of the disk drive backplane as shown in the following figure.

   Hold the disk drive backplane while you attach the SAS cables to prevent the disk drive backplane from tipping forwards out of the system.

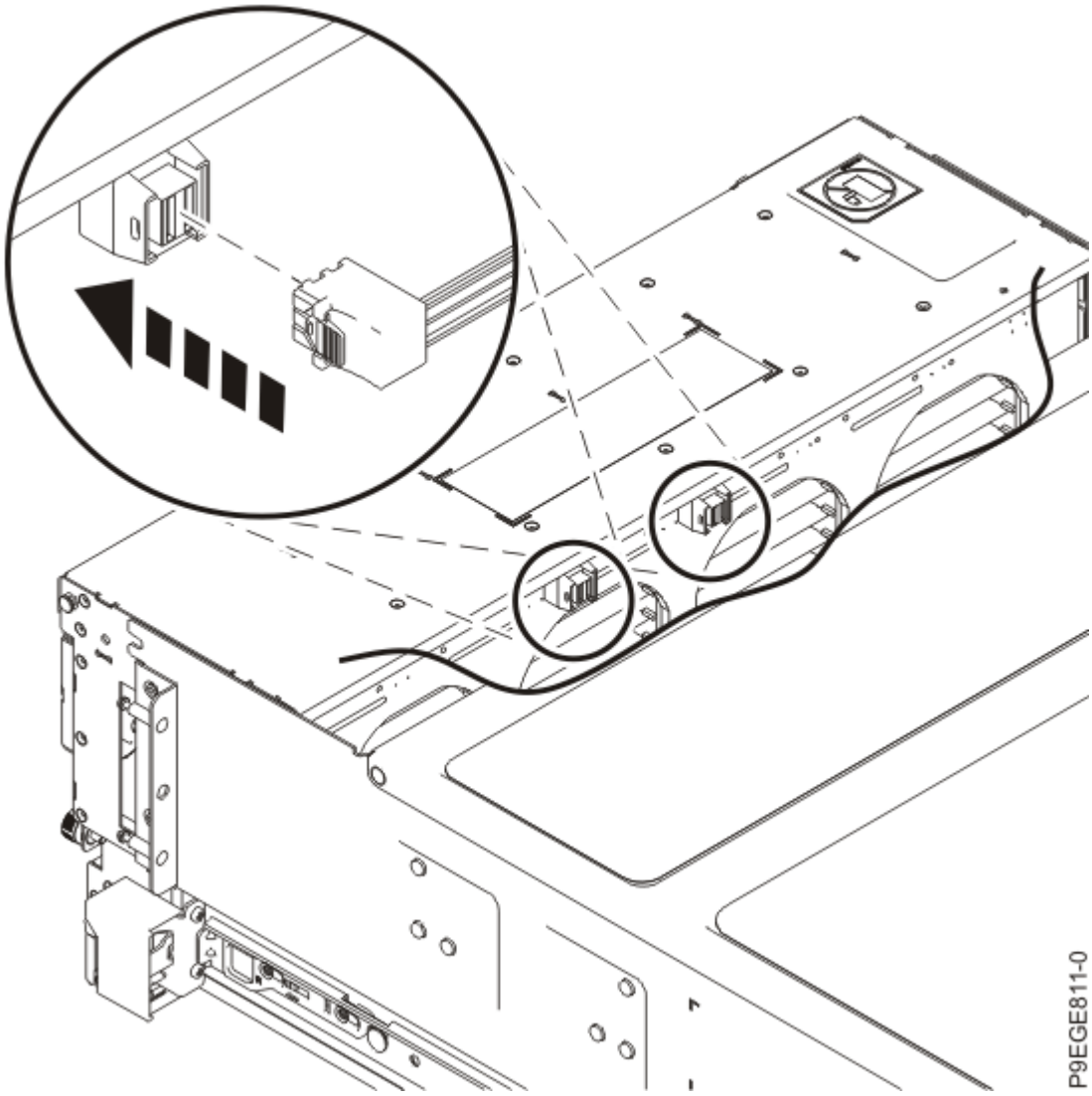



*Figure 90: Attaching the SAS cables*

d) Again using two hands, push the disk drive backplane back into place, ensuring that the alignment pins at **(A)** insert into the slots at **(B)**.

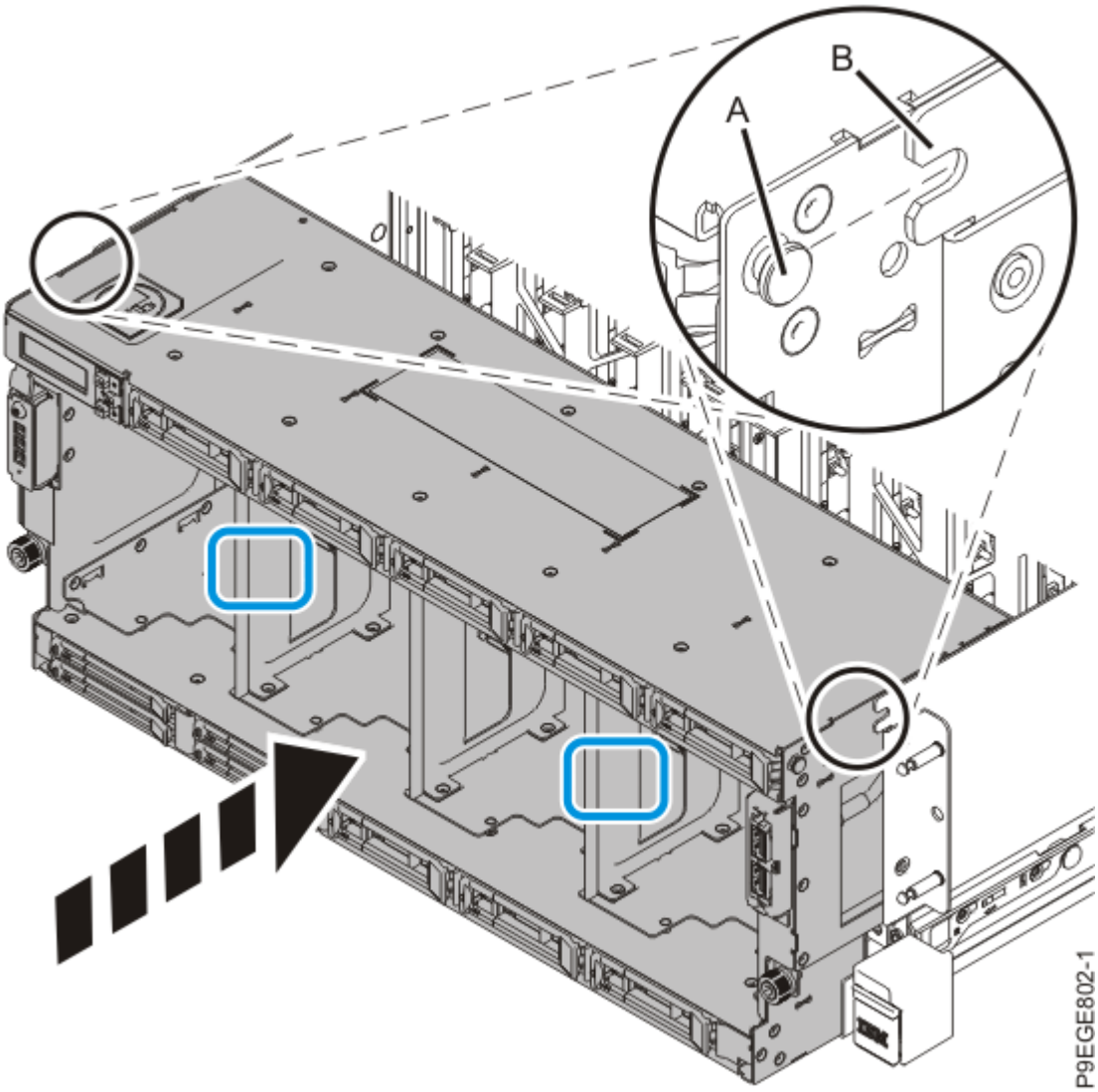



*Figure 91: Replacing the disk drive backplane*

e) Push the system unit **(A)** back into the rack until both release latches of the system unit lock into position. Ensure that any cables do not catch or bind as you push in the system.

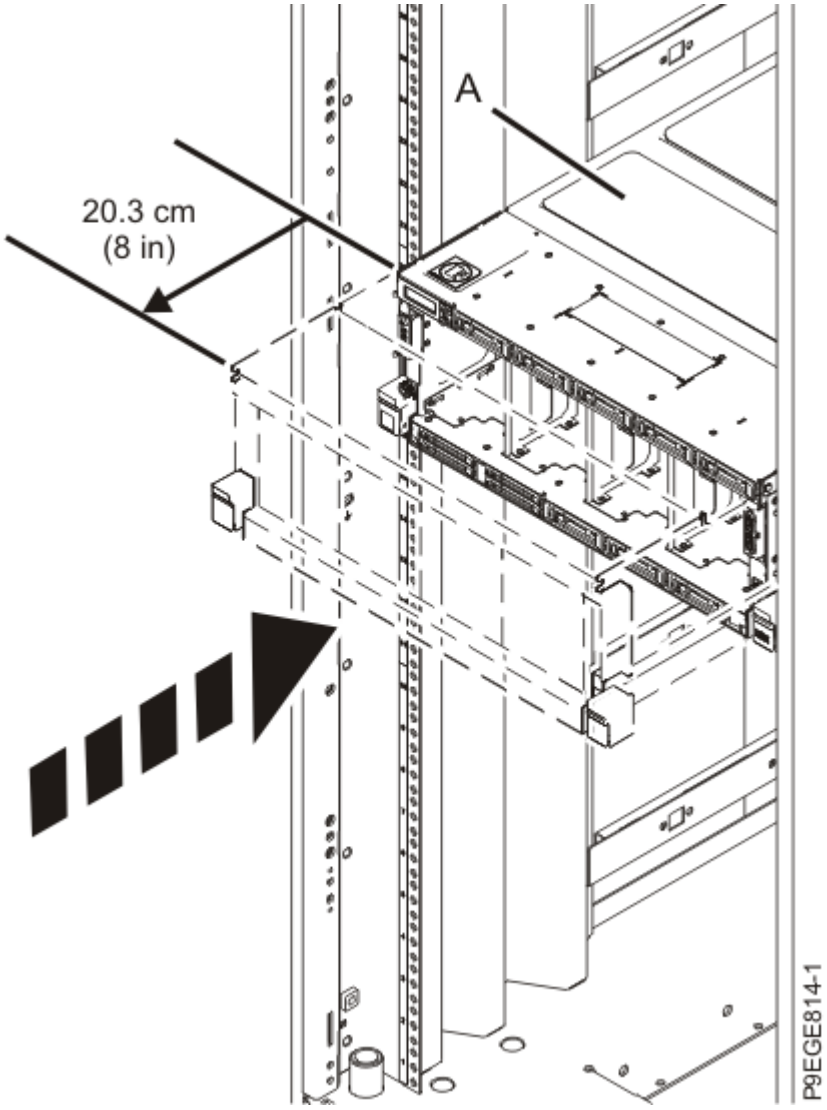



*Figure 92: Placing the system into the operating position*

f) Secure the disk drive backplane with two recessed screws at **(A)**. Use a 4 mm ball-end hex driver (130 mm long, IBM part number 02EA546) to tighten the screws.

First, set the screw threads on one side, then the other. Then, evenly tighten the screws on both sides until both sides are seated. If you screw in one side of the disk drive backplane completely, the disk drive backplane might twist, preventing the disk drive backplane from properly seating in the chassis.

g) Secure the disk drive backplane with two screws at **(B)**.

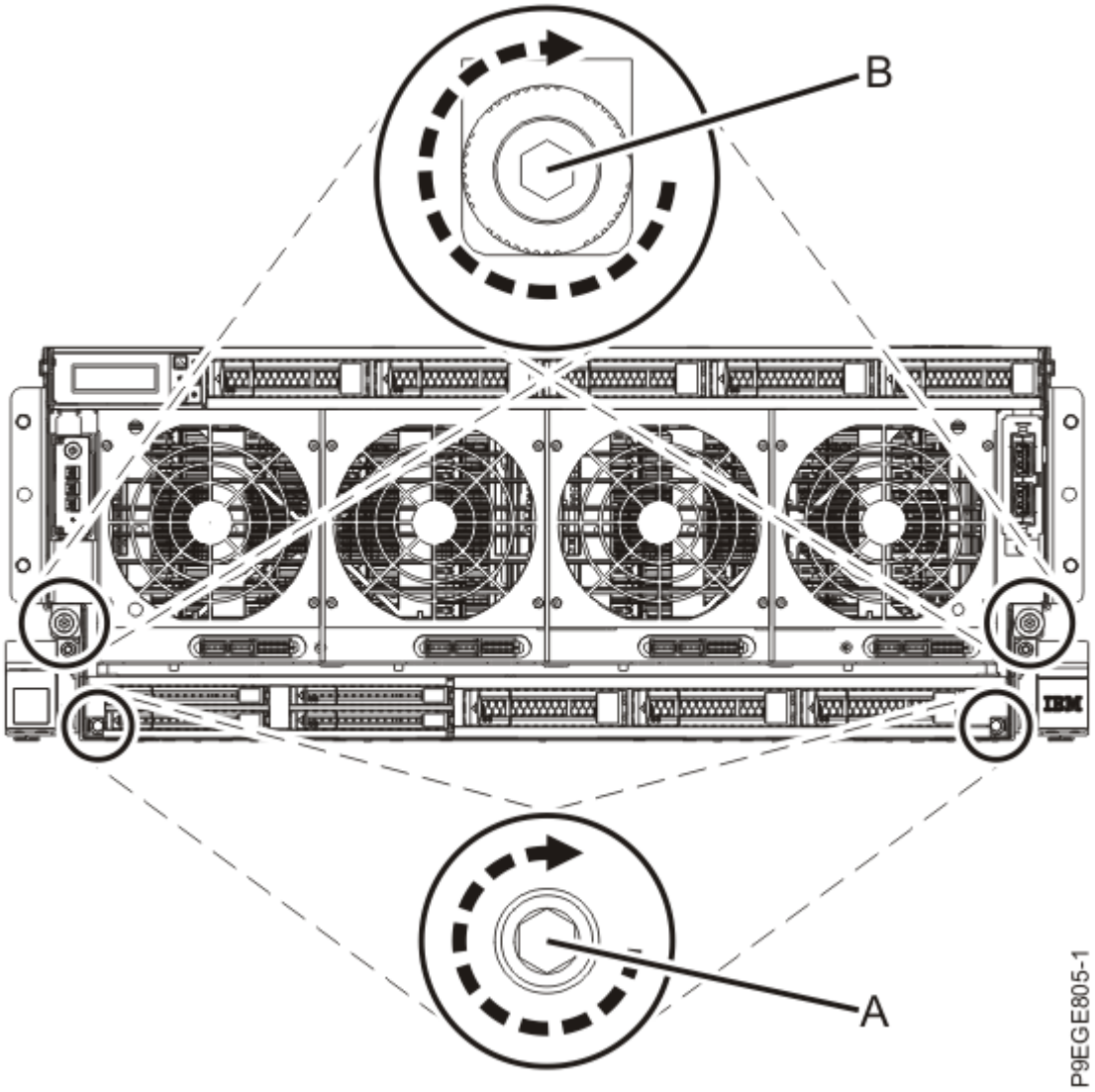



*Figure 93: Fastening the screws for the disk drive backplane*

10. Replace all the fans in the disk drive backplane.
    a) Ensure that the fan handle **(A)** is open as shown in the following figure.
    b) Hold on to the fan handle and by using your hand to support the bottom of the fan, push the fan into its slot as shown in the following figure.
    c) Push the fan handle in the direction that is shown in the following figure.
    d) Push against the left front of the blue touch point latch **(B)** with your thumb and then slightly pull the latch at **(C)** with your index finger. This action opens the latch.
    e) Continue to push in the lever with your thumb until the latch is fully seated at **(C)**.

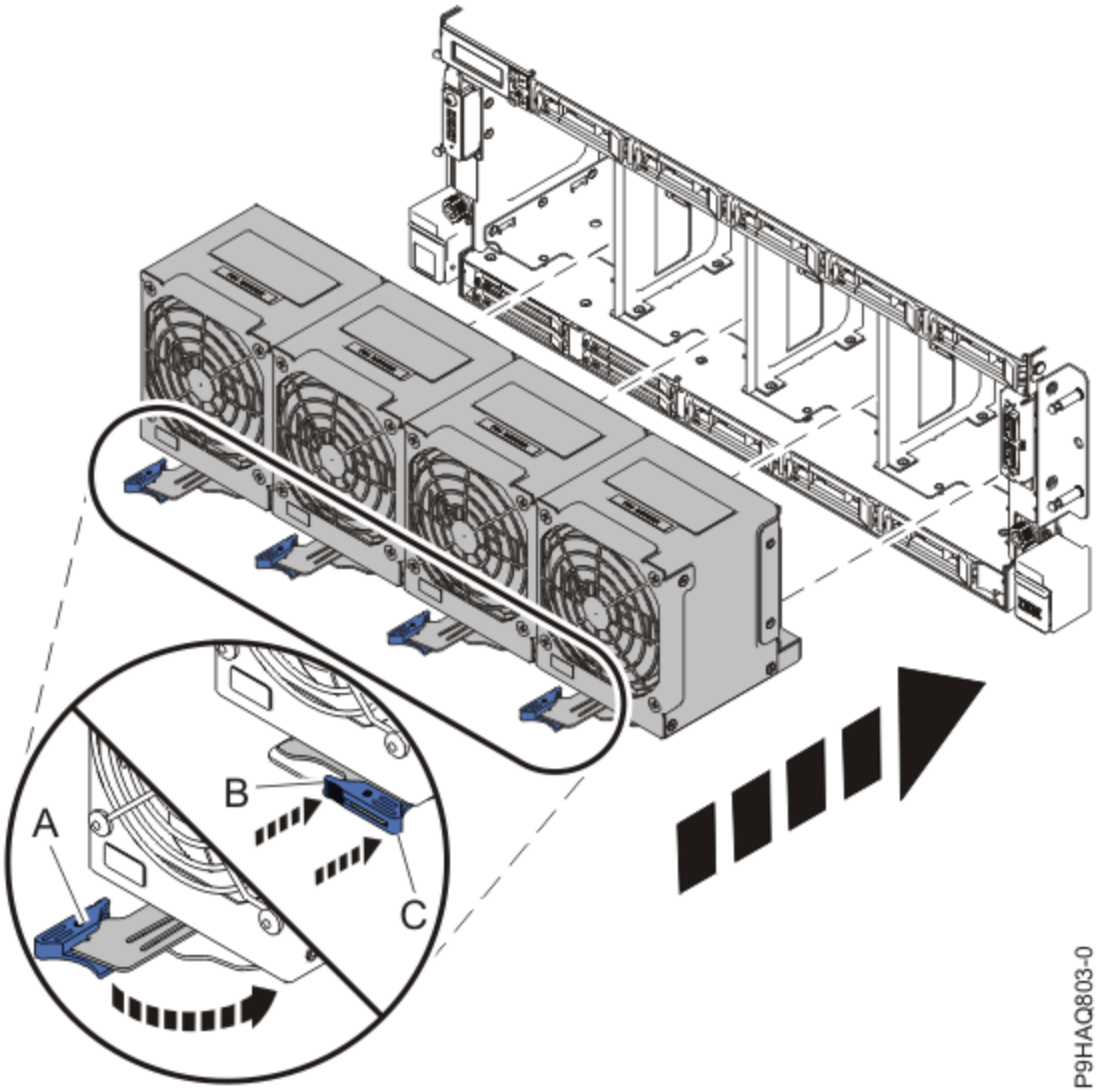



*Figure 94: Replacing the fans*

11. Replace the front cover. For instructions, see Installing the front cover (www.ibm.com/support/knowledgecenter/POWER9/p9haj/p9haj_950_front_bezel_on.htm).

## Preparing the system for operation after removing or replacing the SAS cables in the 9040-MR9

To prepare the system for operation after removing or replacing the SAS cables, complete the steps in this 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. Reconnect the power cords to the system. For instructions, see Connecting the power cords (www.ibm.com/support/knowledgecenter/POWER9/p9haj/p9haj_950_power_cord_in.htm).
3. Using your labels, reconnect all of the external cables that plug into the PCIe adapters.
4. Start the system. For instructions, see Starting a system (www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustartsys.htm).
5. 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).
6. If applicable, close the rack front door.
7. Verify the installed part.

- If you replaced the part because of a service action, verify the installed part. For instructions, see https://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 https://www.ibm.com/support/knowledgecenter/POWER9/p9haj/pxhaj_hsmverify.htm (www.ibm.com/support/knowledgecenter/POWER9/p9haj/pxhaj_hsmverify.htm).

## Removing the internally-secured SAS cables and replacing them with externally-secured SAS cables in the 9040-MR9

To replace the original internally-secured SAS cables in the server with updated externally-secured SAS cables, complete the steps in this procedure.

As part of this procedure, you remove a system processor and heat sink. Before beginning this procedure, ensure that you have these items on hand:

- Thermal interface material (TIM)
- Tweezers
- Plastic putty knife
- Heat sink
- 4MM T-handle Allen wrench

1. If the system has externally-secured SAS cables as shown in the following figure, **do not** follow the steps in this topic. You must follow the steps in “Removing and replacing externally-secured SAS cables in the 9040-MR9” on page 79.

   The externally-secured SAS cables have a screw at **(A)** and a housing at **(B)**.

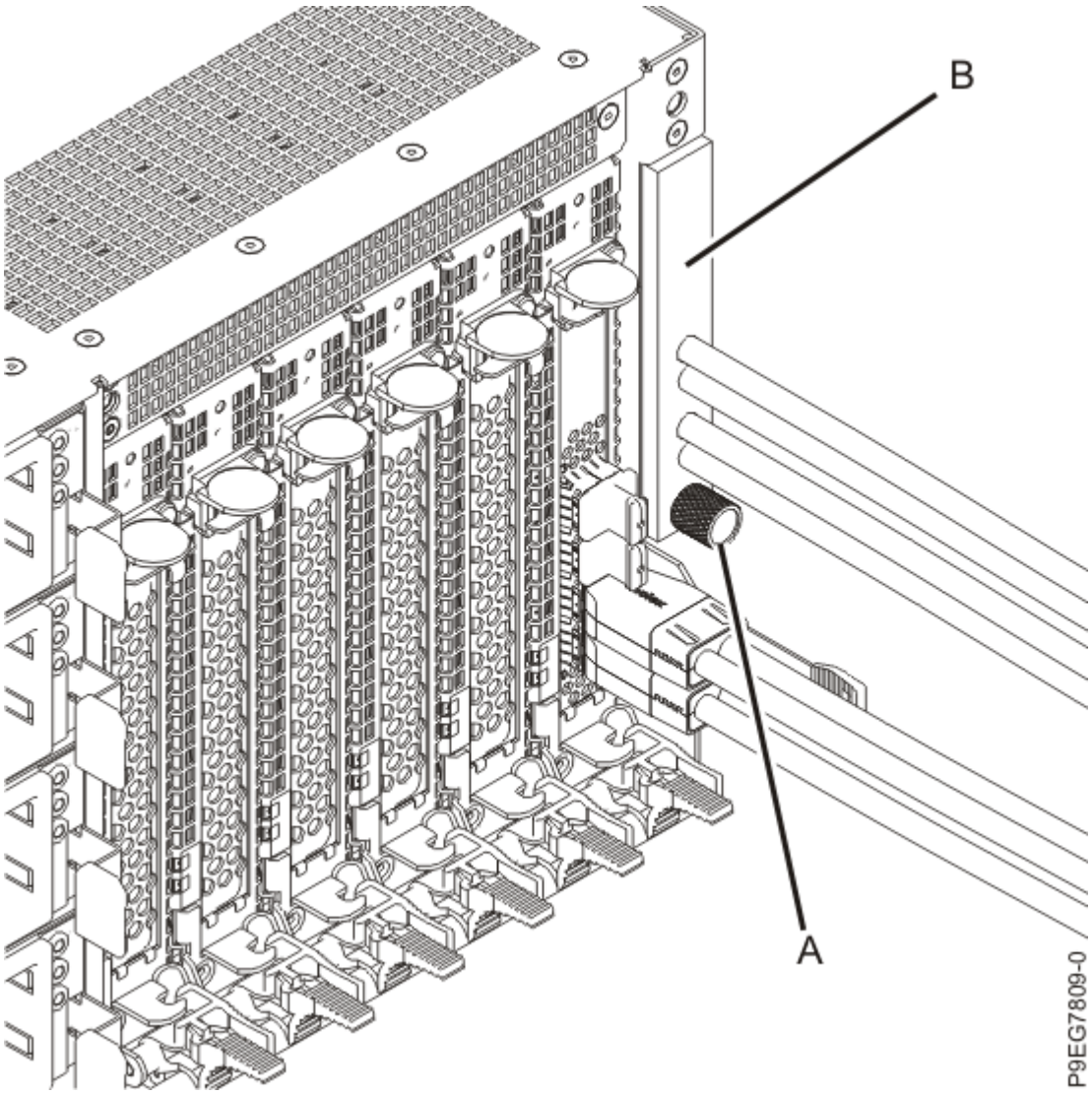



*Figure 95: Identifying the externally-secured SAS cables*

2. **If the system has internally-secured SAS cables as shown in the following figure, complete the steps in this procedure; continue with the next step.**

   The internally-secured SAS cables **do not** have a screw at **(A)**. The area at **(B)** is an **open slot** containing the SAS cables.

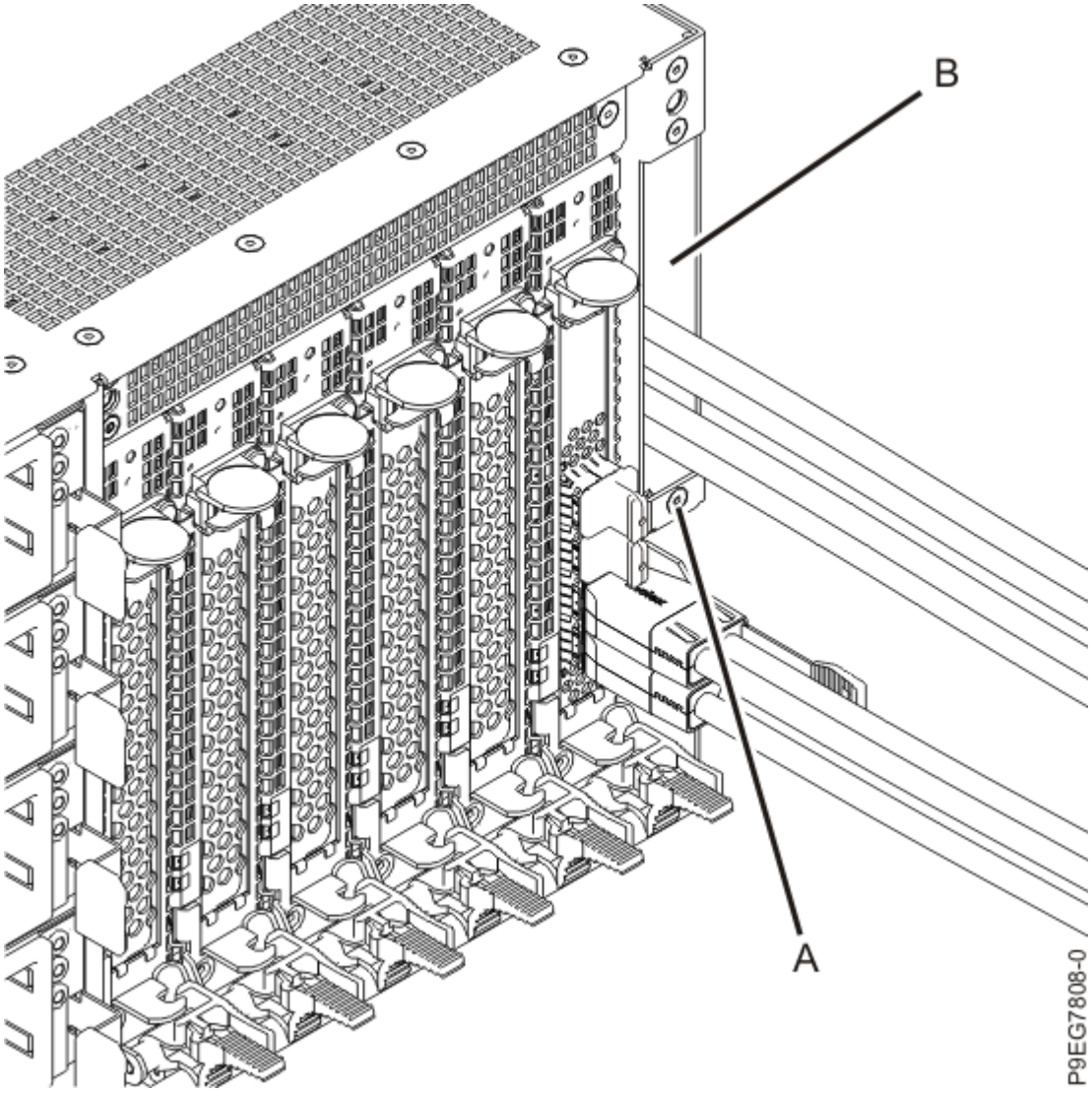



*Figure 96: Identifying the internally-secured SAS cables*

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

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

   **Attention:**

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

4. Note the positions and label the rear SAS cables. See the following figures. Complete the following steps to remove the SAS cables.

   a) Slightly push in the SAS cable.

b) While pushing the SAS cable, gently pull the blue tab **(A)** straight back from the system to release the latches that secure the SAS cable to the PCIe adapter.

   Do not pull the blue tab to the side, you might break the tab and prevent the cable from being removed. Pull the blue tab straight back.

c) While gently pulling the blue tab, grasp and pull on the black SAS cable itself to unplug and remove the SAS cable from the PCIe adapter.

   To prevent breakage, do not pull with excessive force on the blue tab.

d) Repeat steps “4.a” on page 119 - “4.c” on page 120 for each SAS cable.

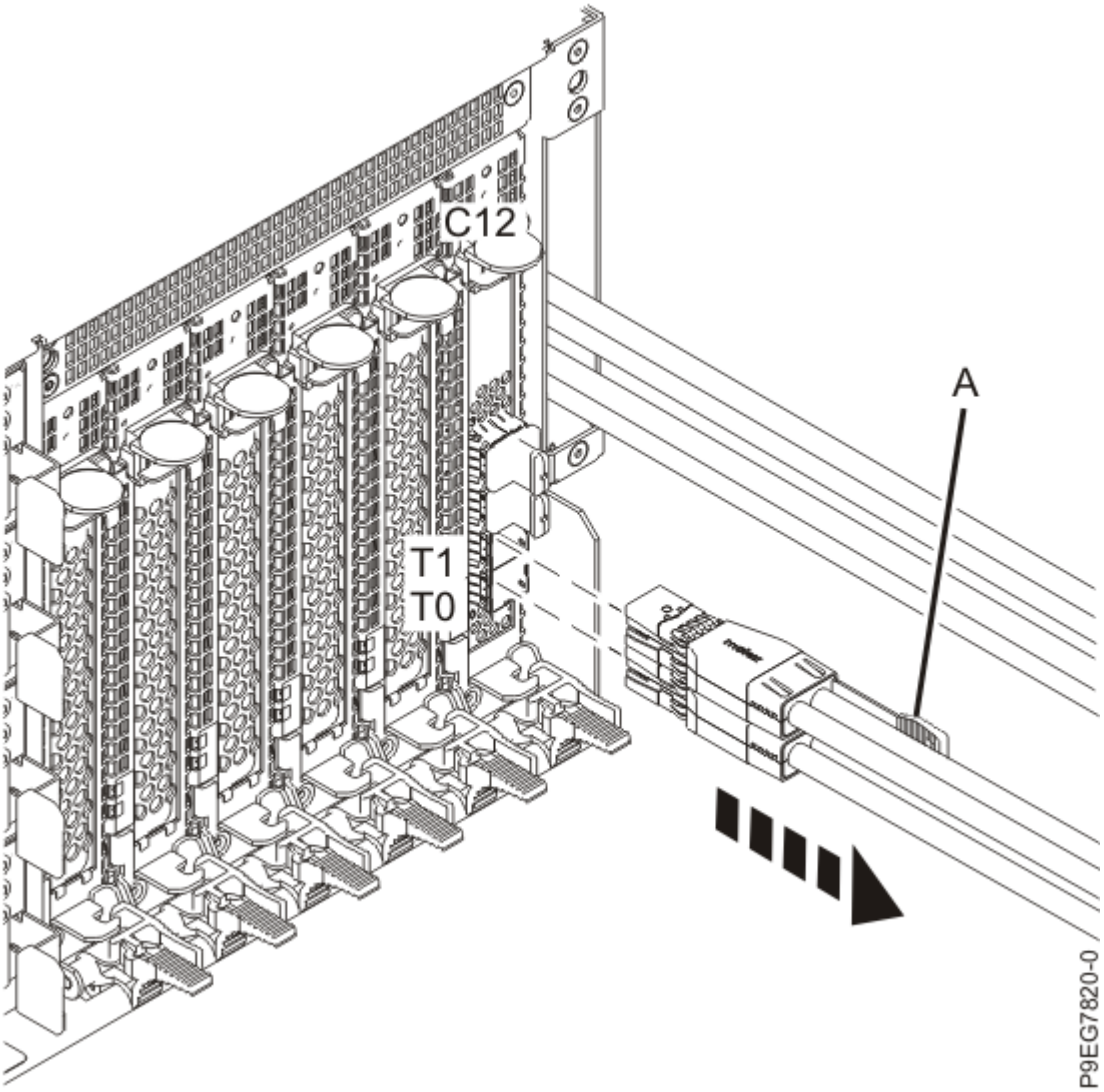



*Figure 97: Disconnecting the SAS cables for the base configuration*

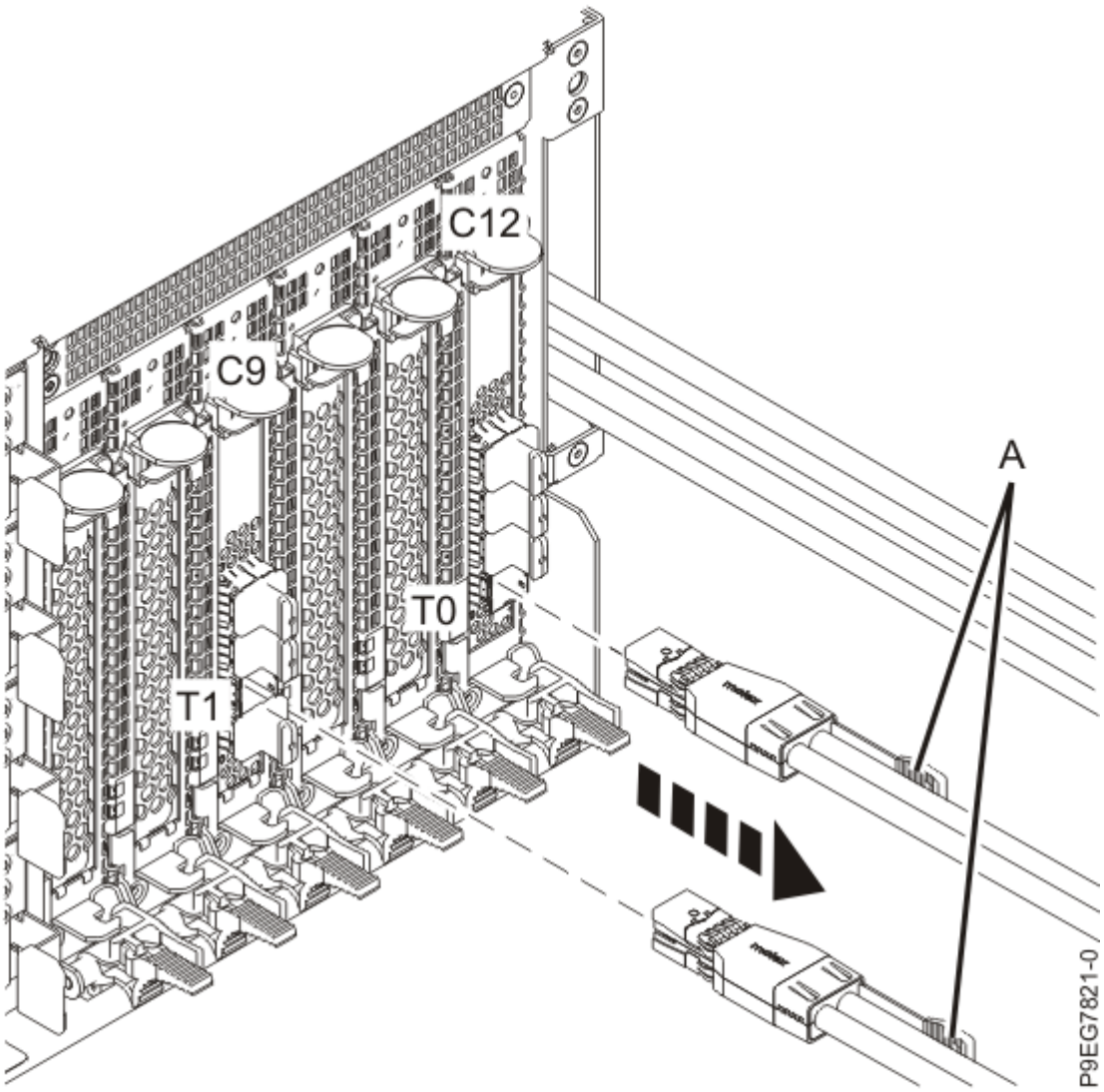



*Figure 98: Disconnecting the SAS cables for the split configuration*

5. Remove all the fans from the disk drive backplane as shown in the following figure.
   a) Put your thumb against the latch **(A)** in the following figure, and put your index finger against the latch **(B)**.
   b) Push against the latch with your thumb and then pull out the latch with your index finger. This action releases the latch.
   c) Rotate the fan handle in the direction that is shown in the following figure to unlock the fan from its slot.
   d) Hold onto the fan handle and by using your hand to support the bottom of the fan, pull out the fan from its slot as shown in the following figure.

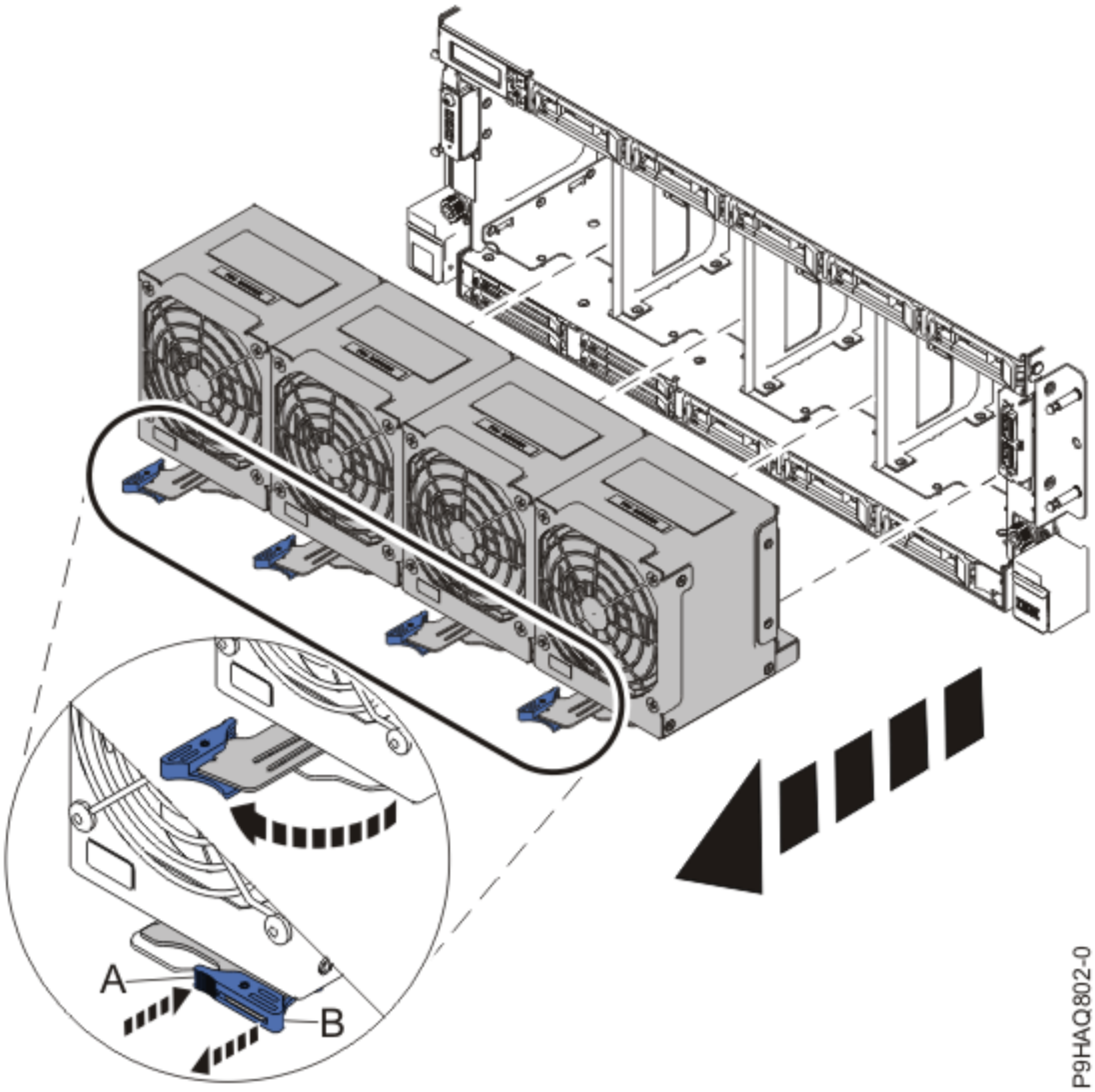



*Figure 99: Removing the fans*

6. To remove the disk drive backplane from the front of the system, complete the following steps:

   **CAUTION:** To prevent damage to the SAS cables, you must unplug the SAS cables from the rear of the disk drive backplane before fully removing the disk drive backplane.

   a) Loosen the two screws **(A)** as shown in the following figure.

   b) Loosen the two recessed screws **(B)** as shown in the following figure. Use a 4 mm ball-end hex driver (130 mm long, IBM part number 02EA546) to loosen the screws.

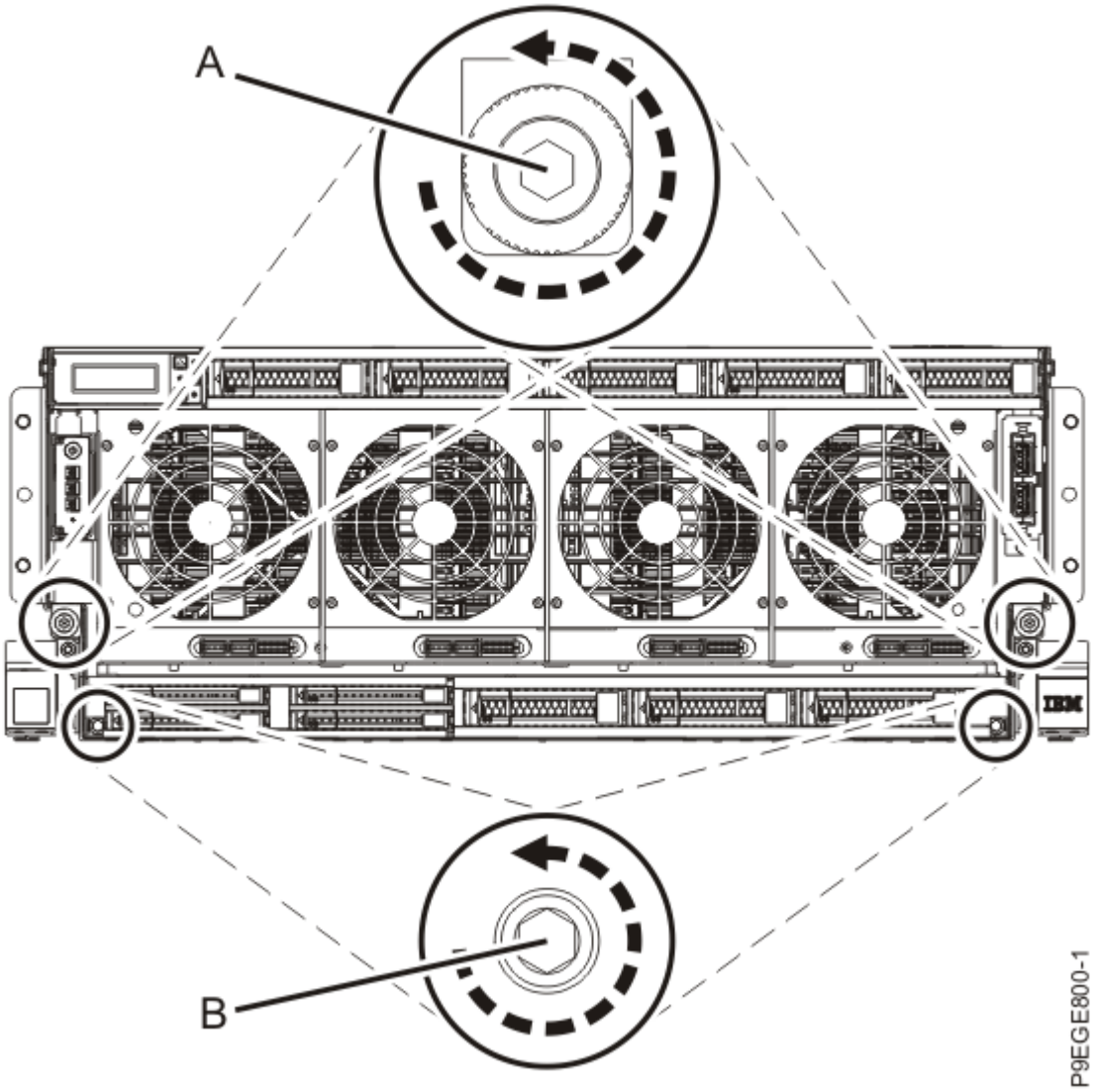



*Figure 100: Loosening the disk drive backplane screws*

c) Grasp the disk drive backplane with two hands as indicated by the blue squares in the following figure. Pull the disk drive backplane approximately 2.5 cm (1 in) straight out from the front of the system.

   If you pull the disk drive backplane with one hand, it might twist sideways.

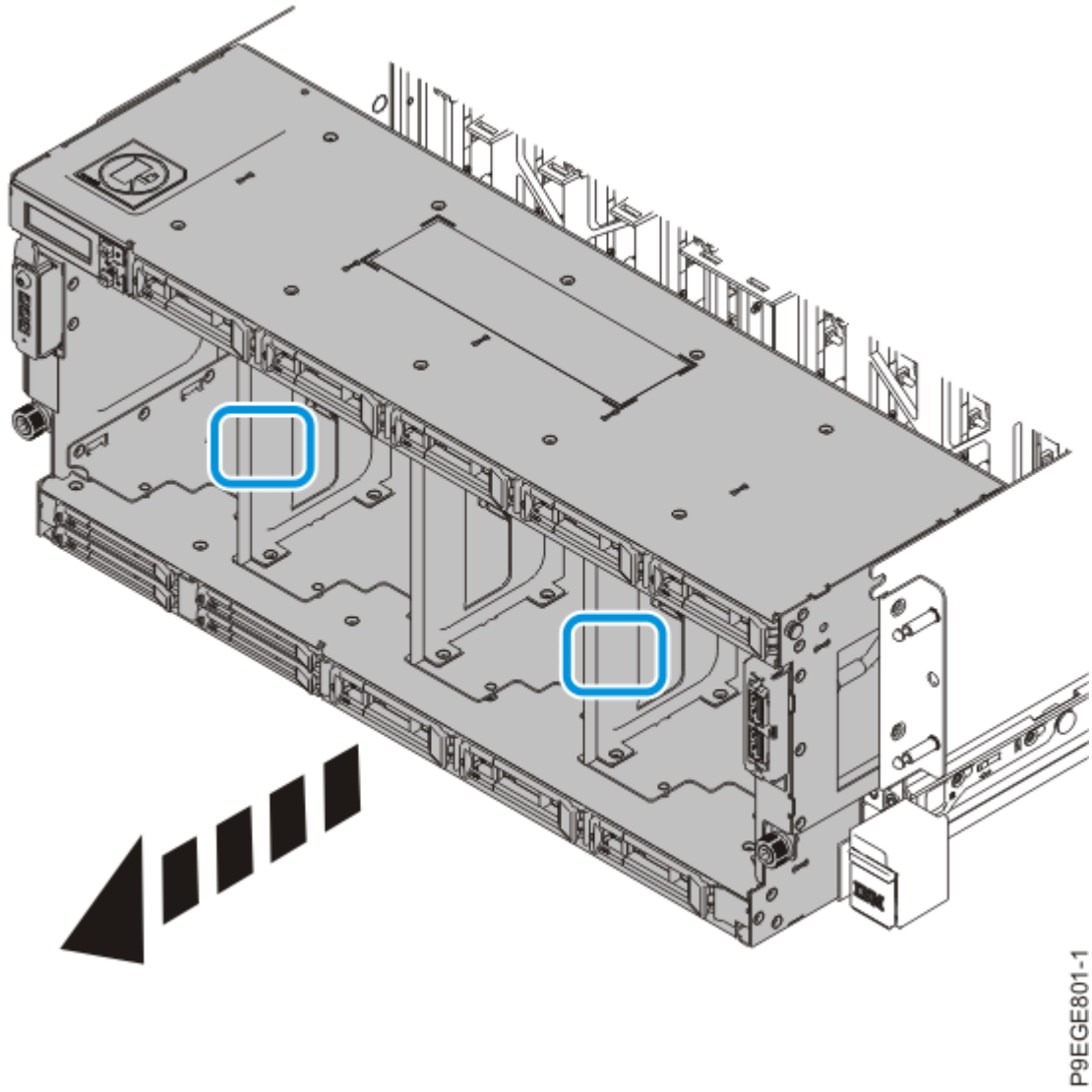



*Figure 101: Partially removing the disk drive backplane*

d) Pull the entire system unit out of the rack at most 20.3 cm (8 in), enough to access and disconnect the SAS cables and to remove the disk drive backplane.

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.

1) If not already removed, remove the shipping screws **(A)** as shown in the following figure by using a Phillips screwdriver.
2) Release the side latches **(B)** by pressing them downward as shown in the following figure.
3) Pull out the entire system unit **(C)** at most 20.3 cm (8 in) from the rack as shown in the following figure. Ensure that any cables do not catch or bind as you pull out the system.

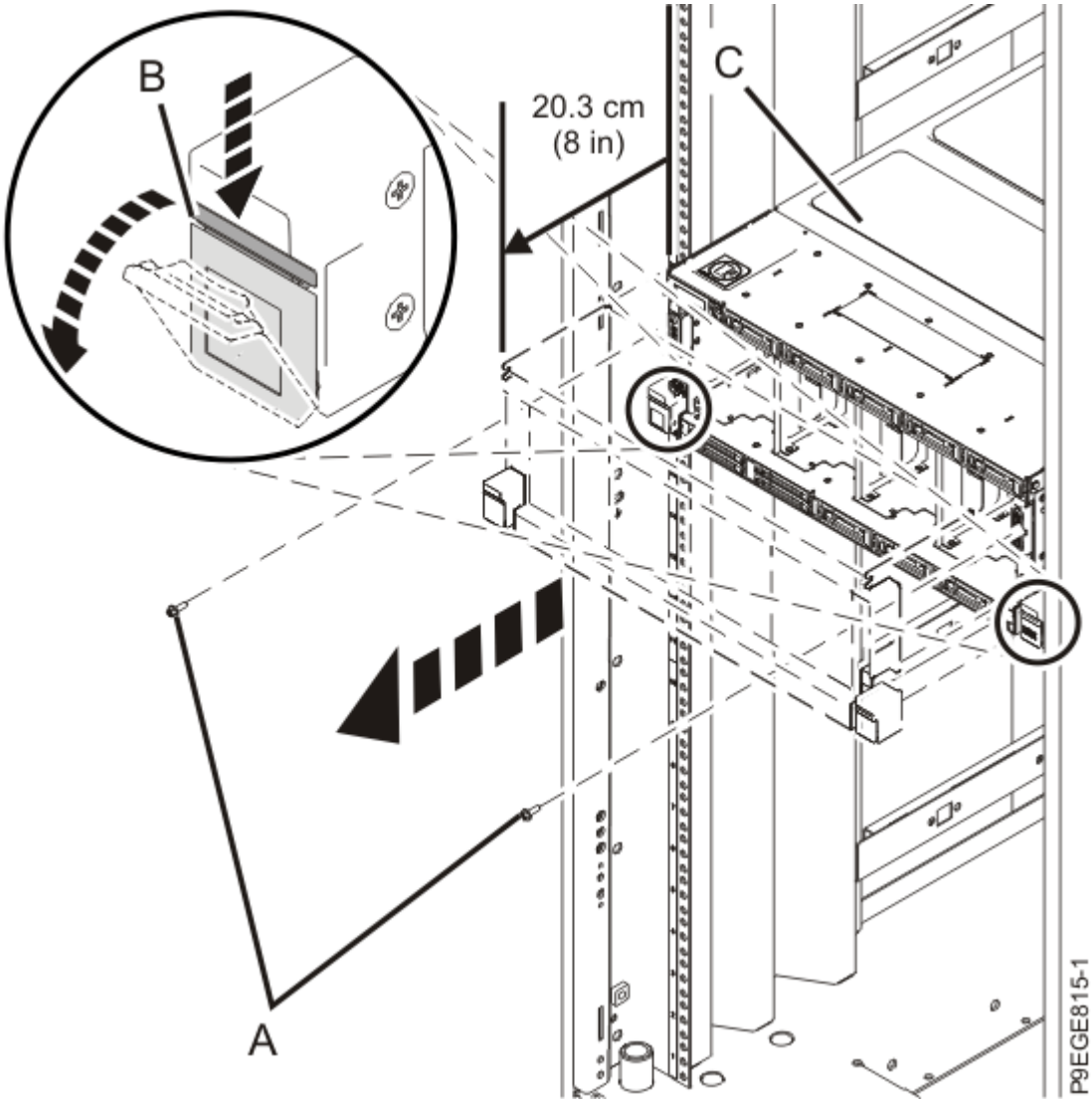



*Figure 102: Partially sliding the system from the rack*

e) Label and unplug the SAS cables from the rear of the disk drive backplane as shown in the following figure.

Press in on the clip to release the cable. Hold the disk drive backplane while you remove the SAS cables to prevent the disk drive backplane from tipping forward and out of the system.

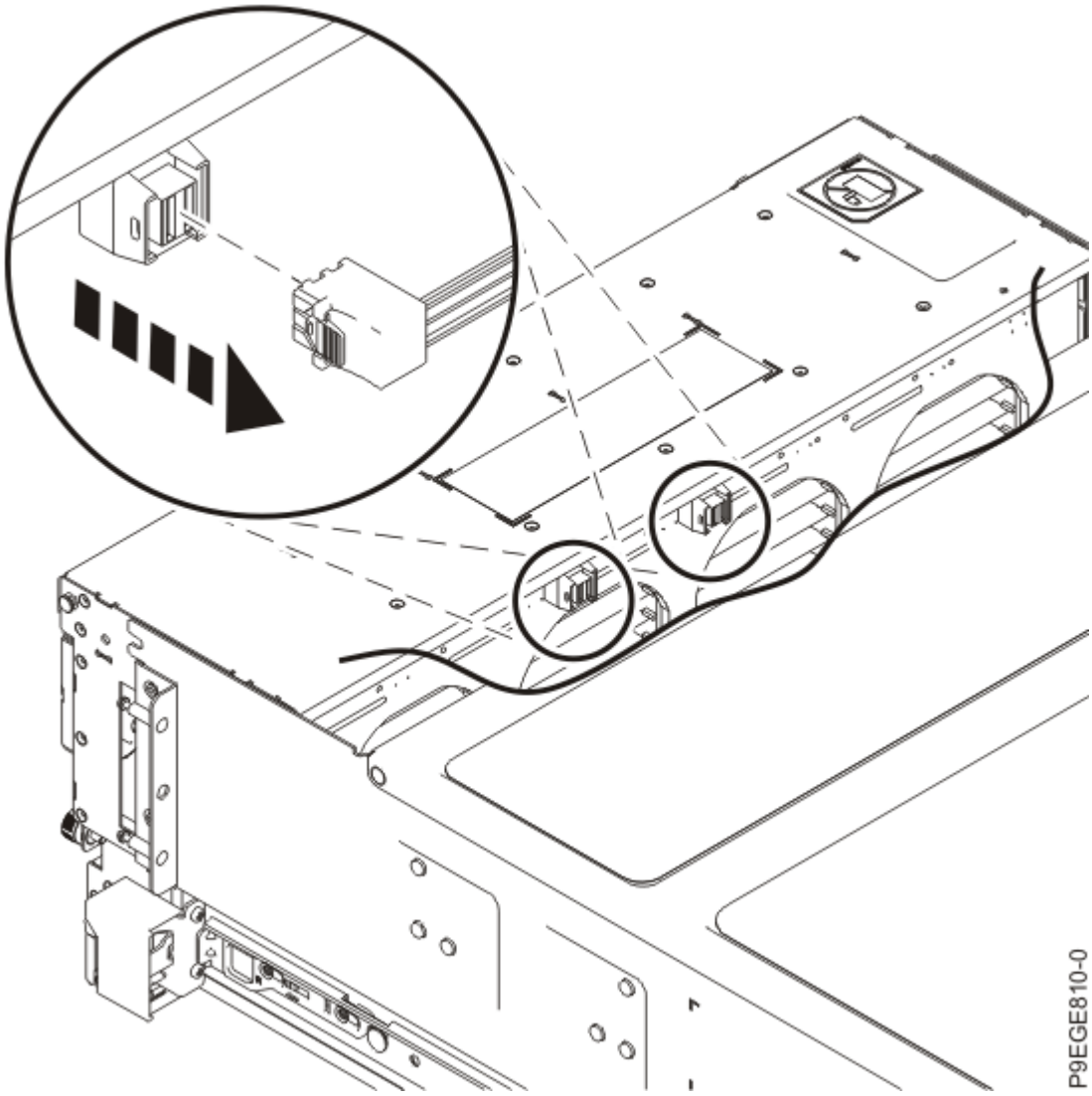



*Figure 103: Unplugging the SAS cables*

f) After the SAS cables are disconnected from the rear of the disk drive backplane, using two hands, push the disk drive backplane back into place, ensuring that the alignment pins at **(A)** insert into the slots at **(B)**.

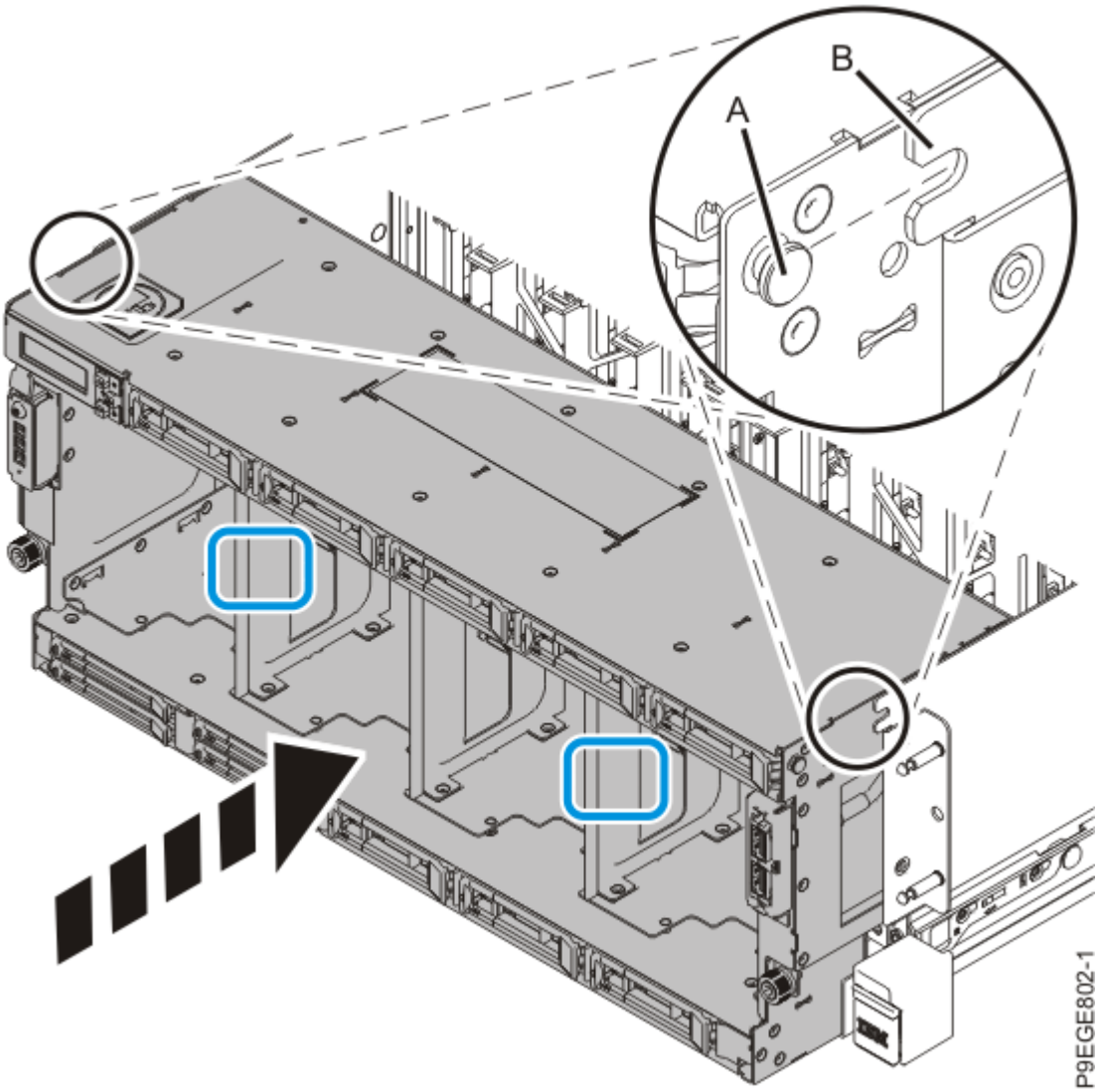



*Figure 104: Replacing the disk drive backplane*

g) Push the system unit **(A)** back into the rack until both release latches of the system unit lock into position. Ensure that any cables do not catch or bind as you push in the system.

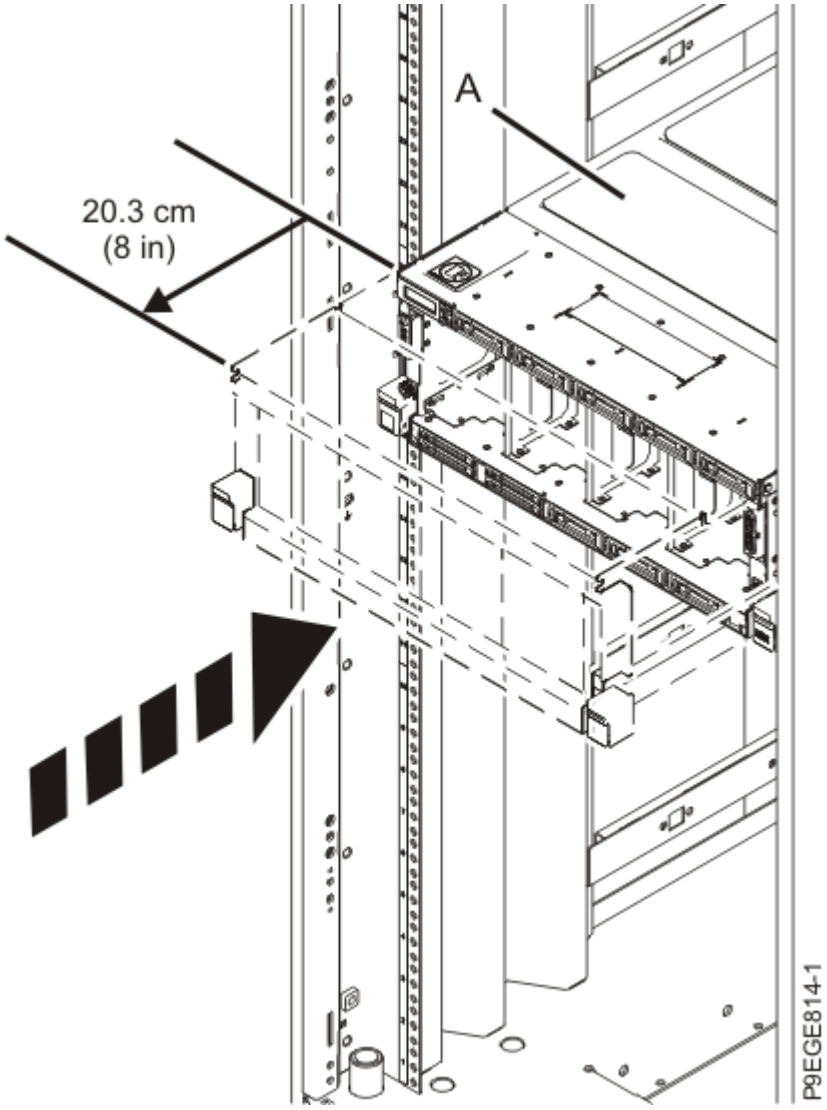



*Figure 105: Pushing the system back into the rack*

h) Using two hands, fully remove the disk drive backplane from the system.

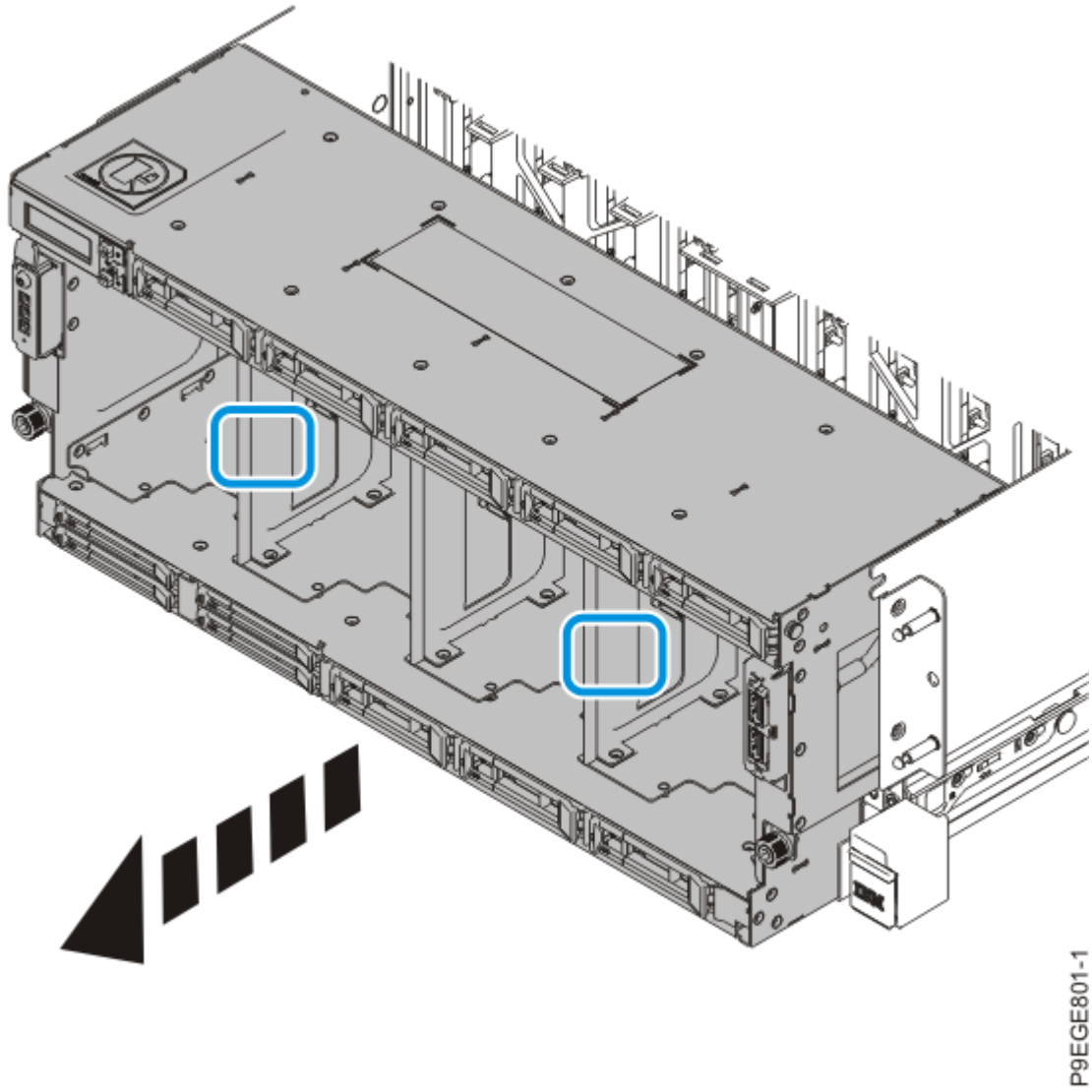



*Figure 106: Fully removing the disk drive backplane*

i) Place the disk drive backplane on an ESD surface.

7. Move the system unit out of the rack at most 79 cm (31 in), enough to remove the top cover.

   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.

   Pull out the system unit **(A)** at most 79 cm (31 in) from the rack as shown in the following figure. Ensure that any cables do not catch or bind as you pull out the system.

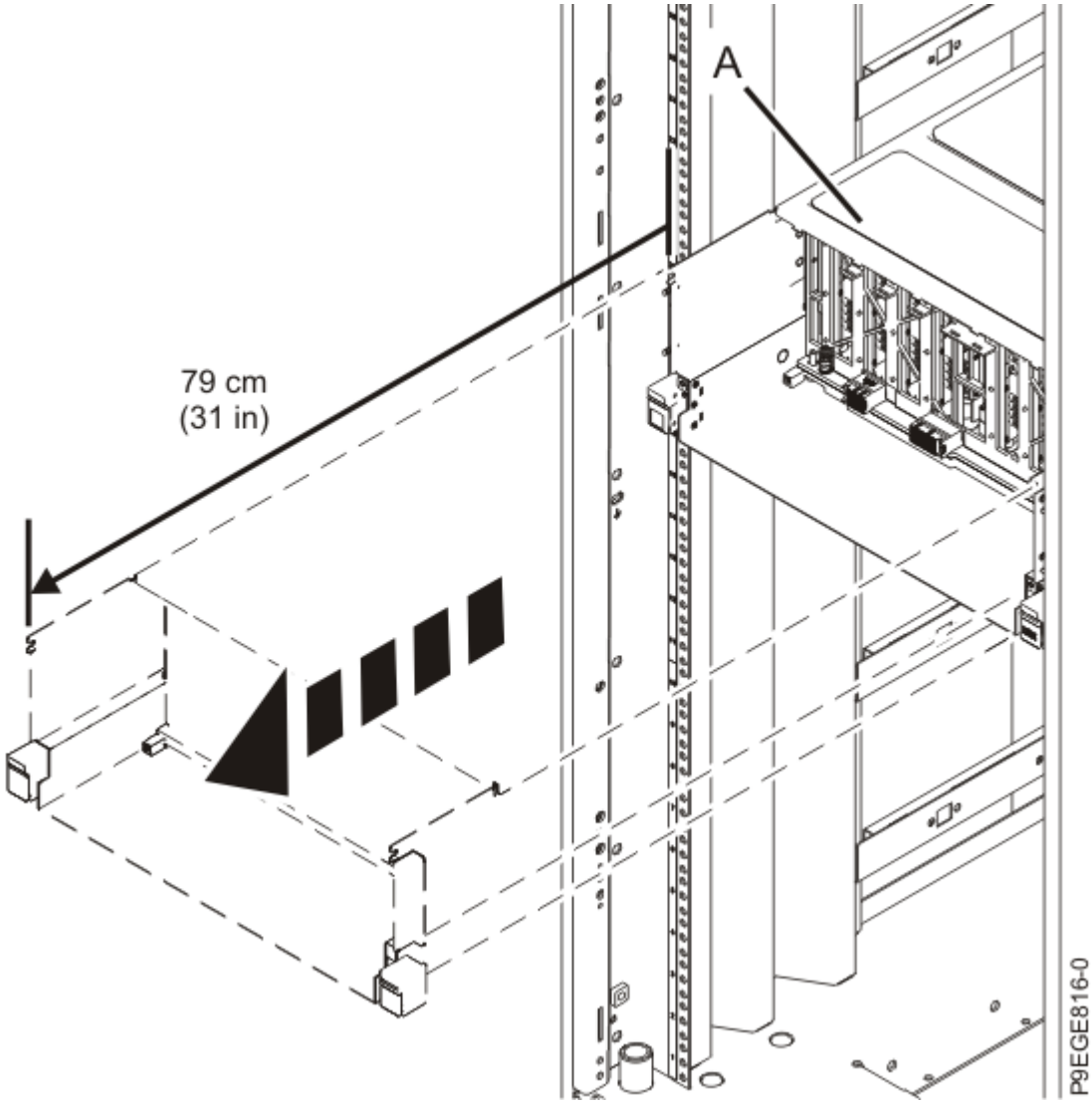



*Figure 107: Partially sliding the system from the rack*

8. Remove the service access cover by completing the following.

**Attention:** Operating the system without the cover for more than 10 minutes might damage the system components. For proper cooling and airflow, replace the cover before turning on the system.

a. Push the release latches **(A)** in the direction shown in the following figure.

b. Slide the cover **(B)** off the system unit as shown in the following figure. When the front of the service access cover has cleared the upper frame ledge, lift the cover up and off the system unit.

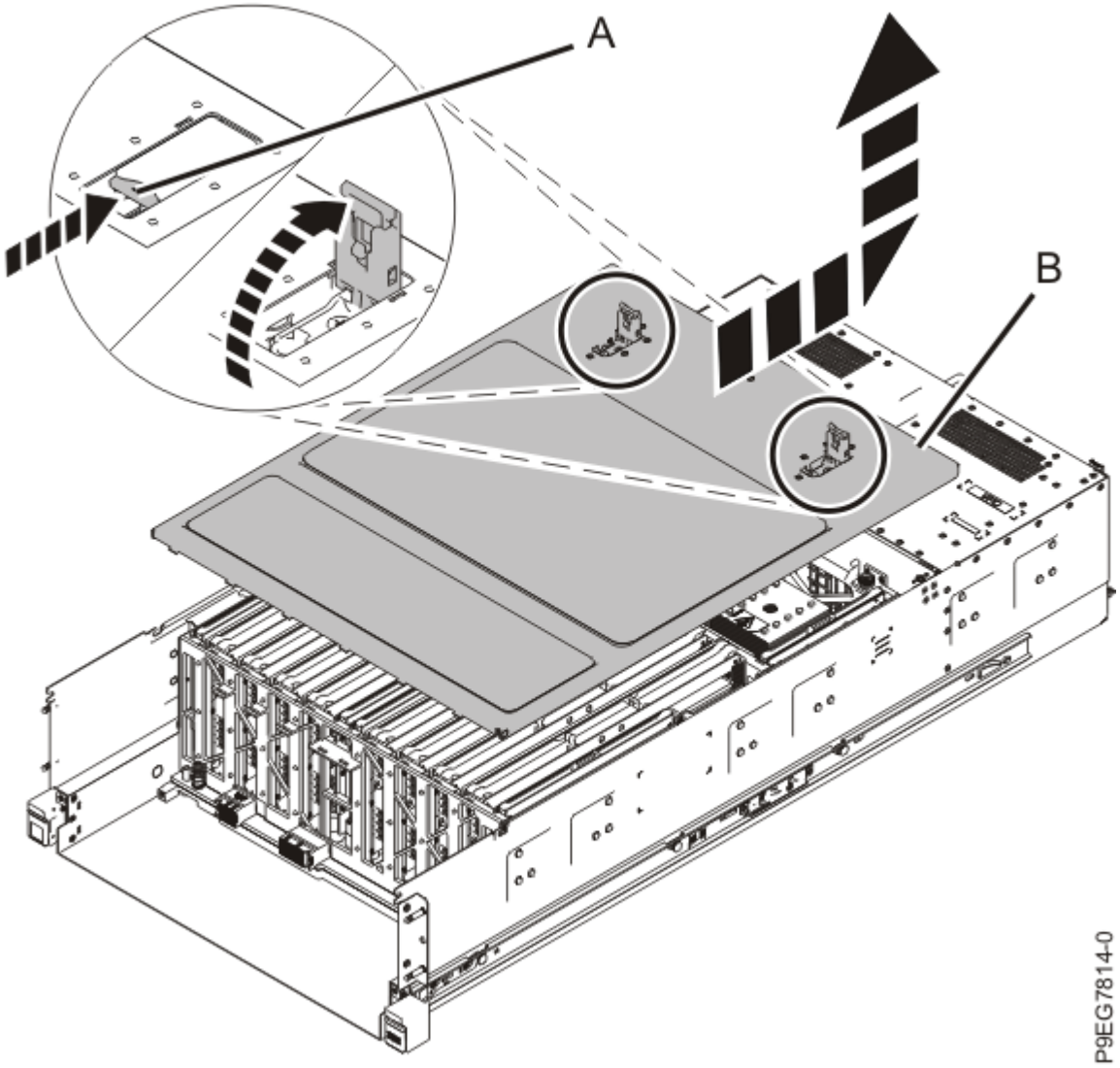



*Figure 108: Removing the service access cover*

9. Install the system-to-rail locking clips onto each rail. The system-to-rail locking clips keep the front end of the system from dislodging from the rails when you move the system into the service position.
   a) On the right side of the rail, pull the blue latch marked **R** (**A**).

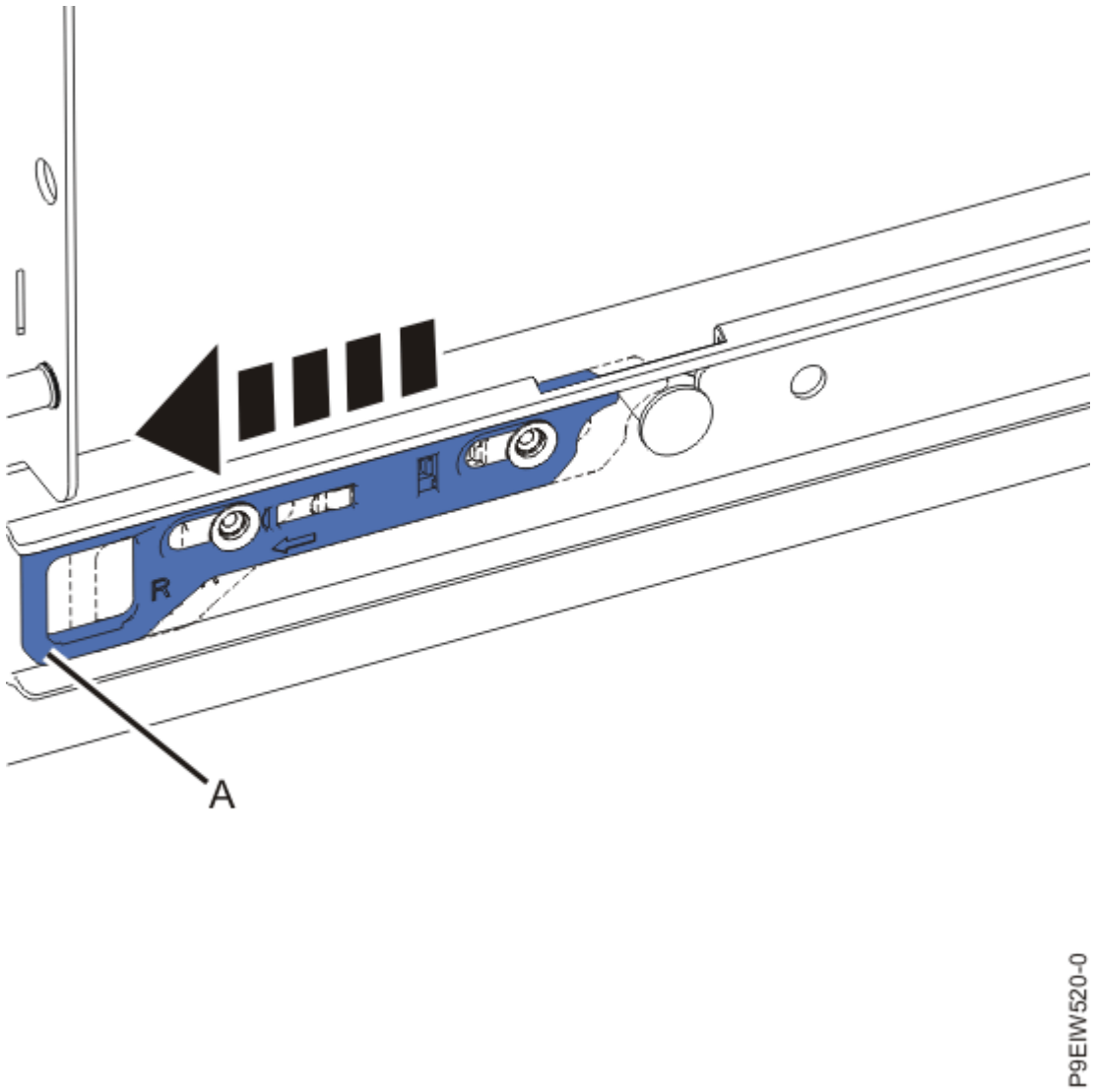



*Figure 109: Pulling the blue rail latch*

b) Each side of each clip is stamped with an **L** and an **R**. For the right side of the rail, ensure that the side stamped **R** is facing outward.

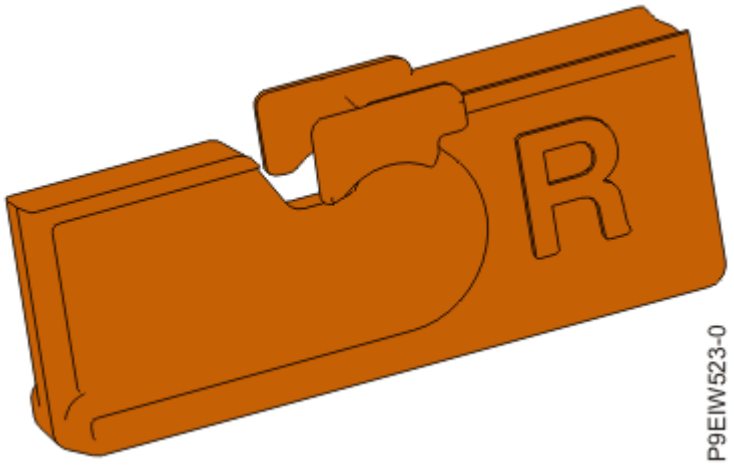



*Figure 110: Right system-to-rail locking clip*

c) While holding the blue latch (**A**), rotate the clip (**B**) into the rail until it clicks into place.

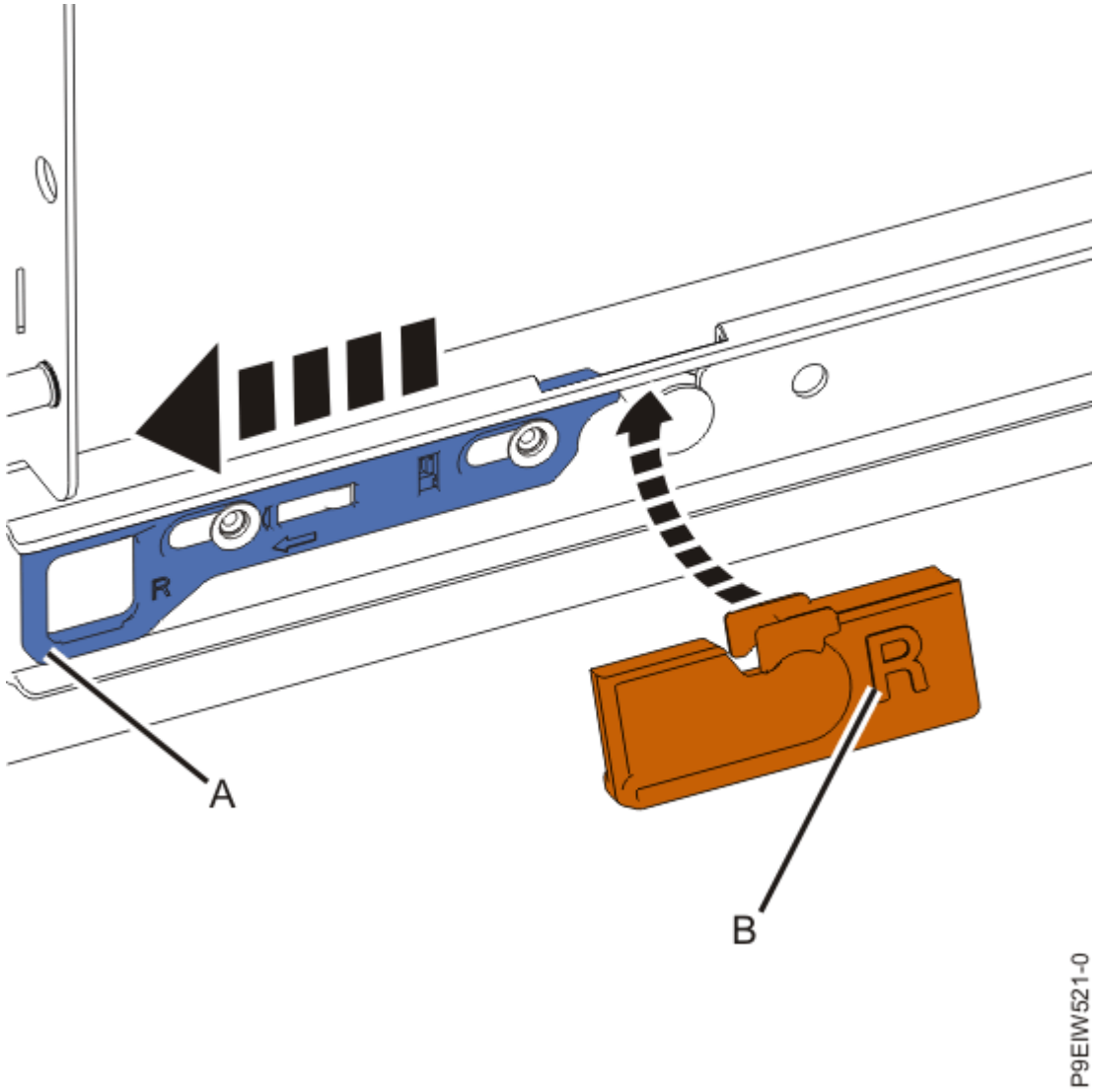



*Figure 111: Installing the clip onto the rail*

d) Ensure that the clip (**C**) is flush with the rail and that the system chassis pin is seated in the clip, as shown in the following figure.

e) Release the blue latch (**D**).

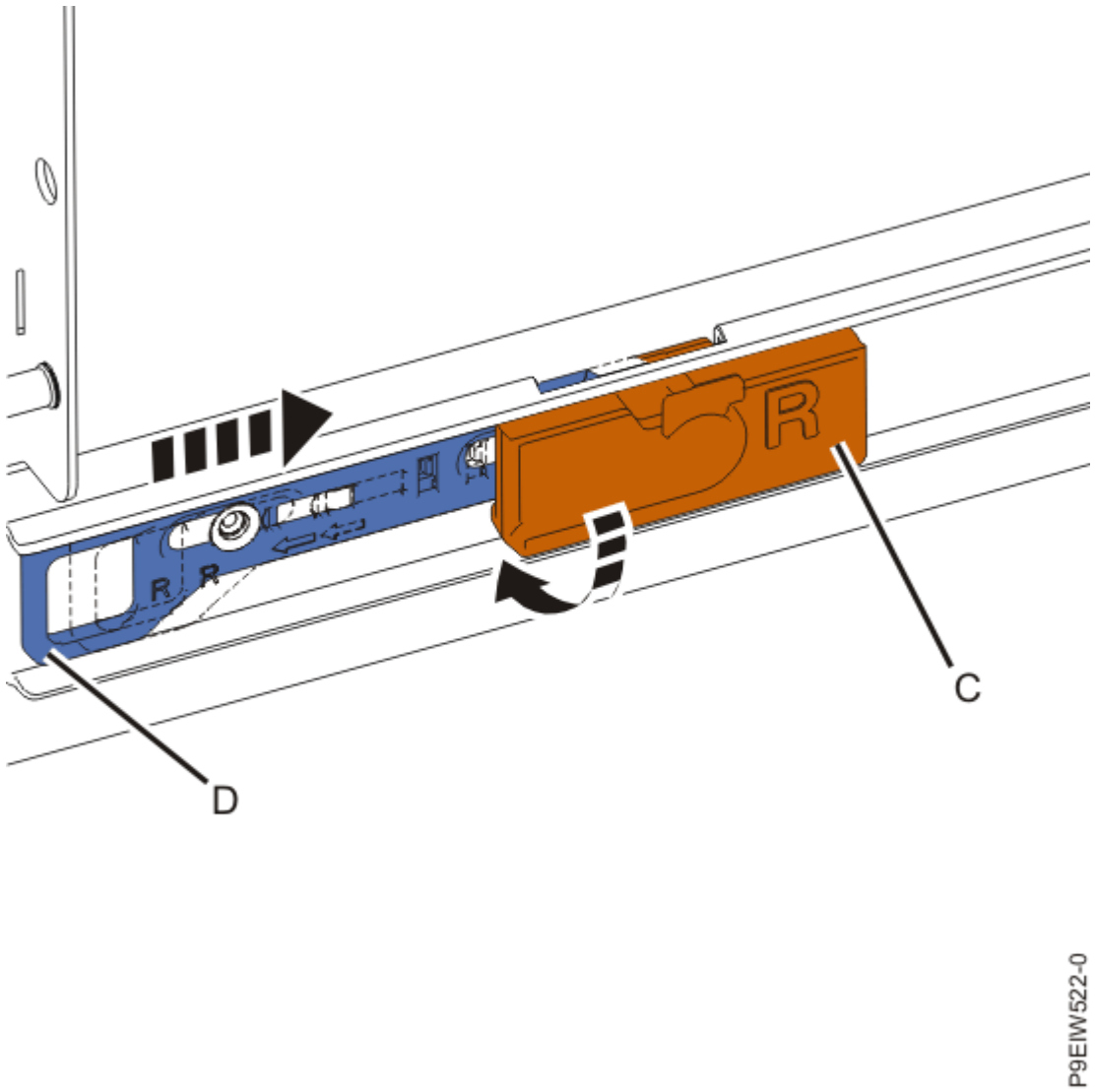



*Figure 112: Releasing the blue latch*

a) Repeat these steps for the **L** slide rail, using the clip with the side stamped **L** facing outward.

10. Remove the memory voltage regulator modules from locations P1-C25, P1-C30, P1-C31, and P1-C36.

    **Tip:** As you remove parts from inside the system, take notes about the location for each part. It is important that you replace parts in the exact location from which they were removed.

    a) Unlock the levers **(A)** to release the voltage regulator module from its connector. Refer to the following image.

    b) Rotate the levers in the direction shown.

    c) While holding the voltage regulator module by its levers, pull upward to remove the card from its slot.

    d) Place the voltage regulator module on an appropriate ESD surface.

    e) Repeat steps “10.a” on page 134 through “10.d” on page 134 to remove the remaining memory voltage regulator modules.

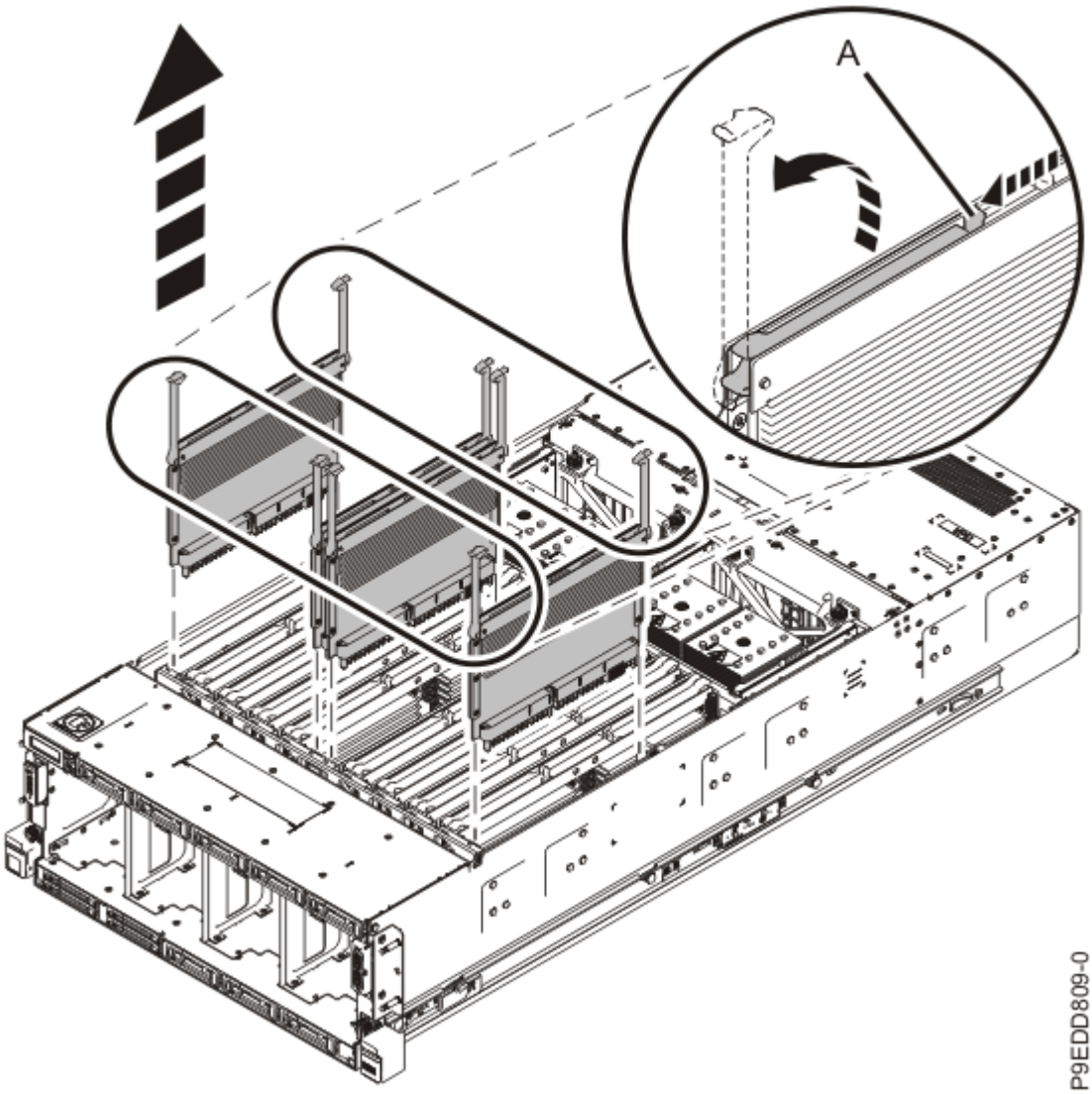



*Figure 113: Removing the memory voltage regulator modules*

11. Remove the memory module riser cards from locations P1-C26, P1-C27, P1-C28, P1-C29, P1-C32, P1-C33, P1-C34, and P1-C35.

    As you remove the cards, take notes about the locations from which you are removing the memory module riser cards.

    a) Open the release latches **(A)** on the memory module riser card as shown in the following figure.

    Open the latches to the fully upright 90 degree position.

    b) Pull out the memory riser module card from the slot by holding onto the latches.

    c) Place the memory riser module card on an appropriate ESD surface.

    d) Repeat steps “11.a” on page 135 through “11.c” on page 135 for the remaining memory module riser cards.

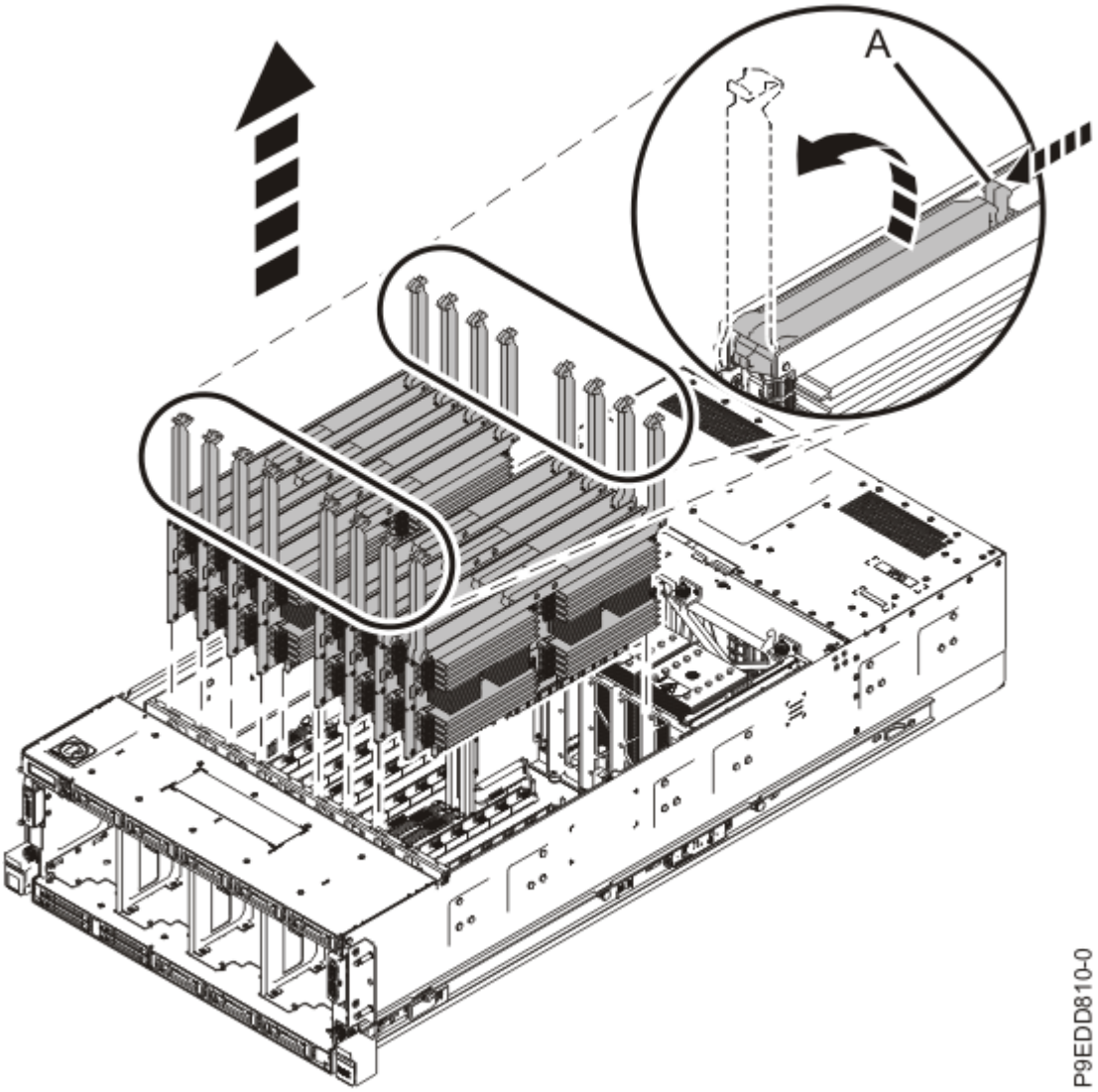



*Figure 114: Removing the memory module riser cards*

12. Remove the trusted platform module (TPM) card from location P1-C21.
    a) Grasp the TPM card by the plastic housing. Refer to the following image.
    b) Pull the TPM card out of its slot on the system backplane.

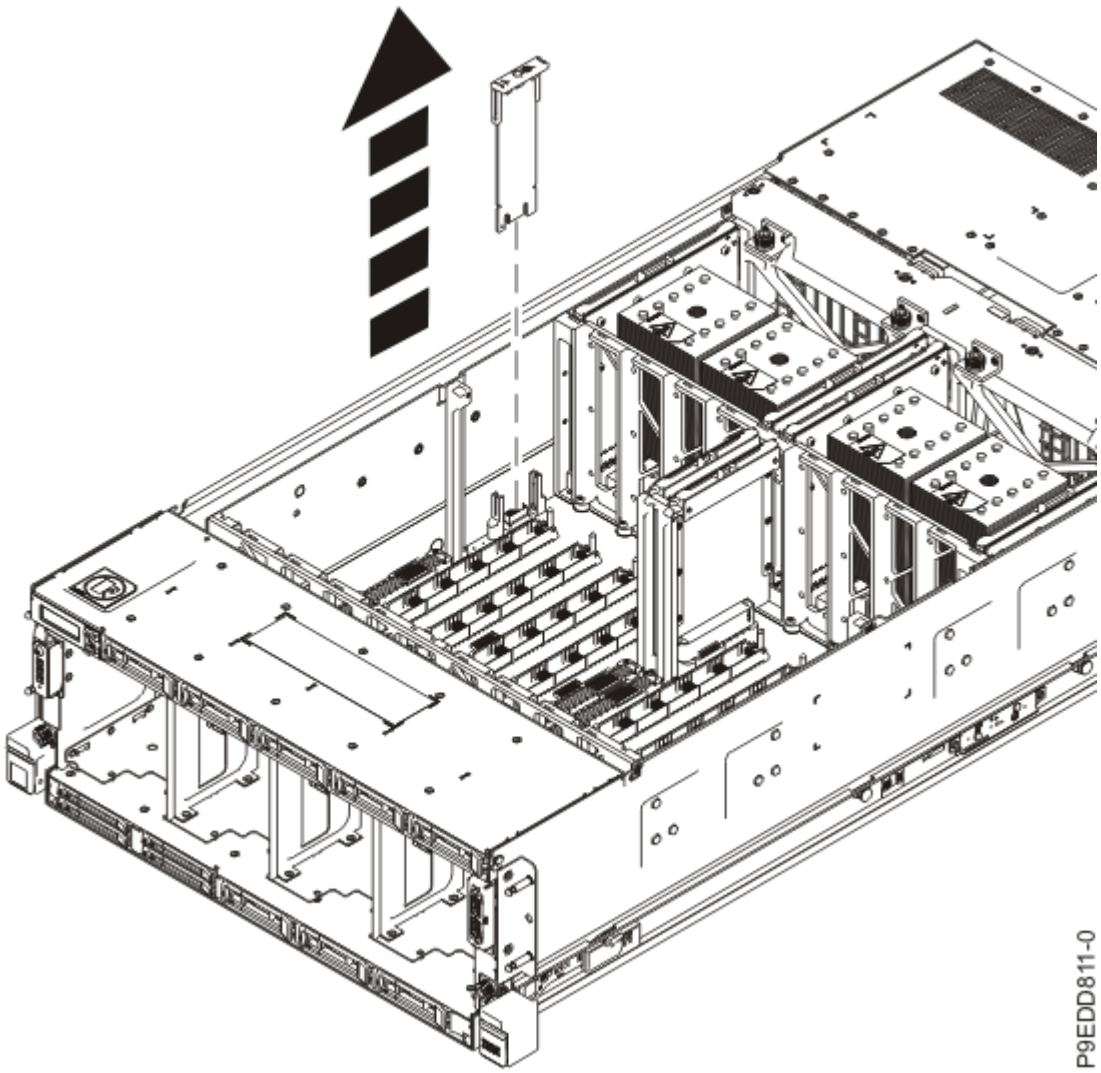



*Figure 115: Removing the TPM card*

13. Remove the standby voltage regulator module from location P1-C22.
    a) Unlock the levers **(A)** to release the voltage regulator module from its connector. Refer to the following image.
    b) Rotate the levers in the direction shown.
    c) While holding the voltage regulator module by its levers, pull upward to remove the card from its slot.

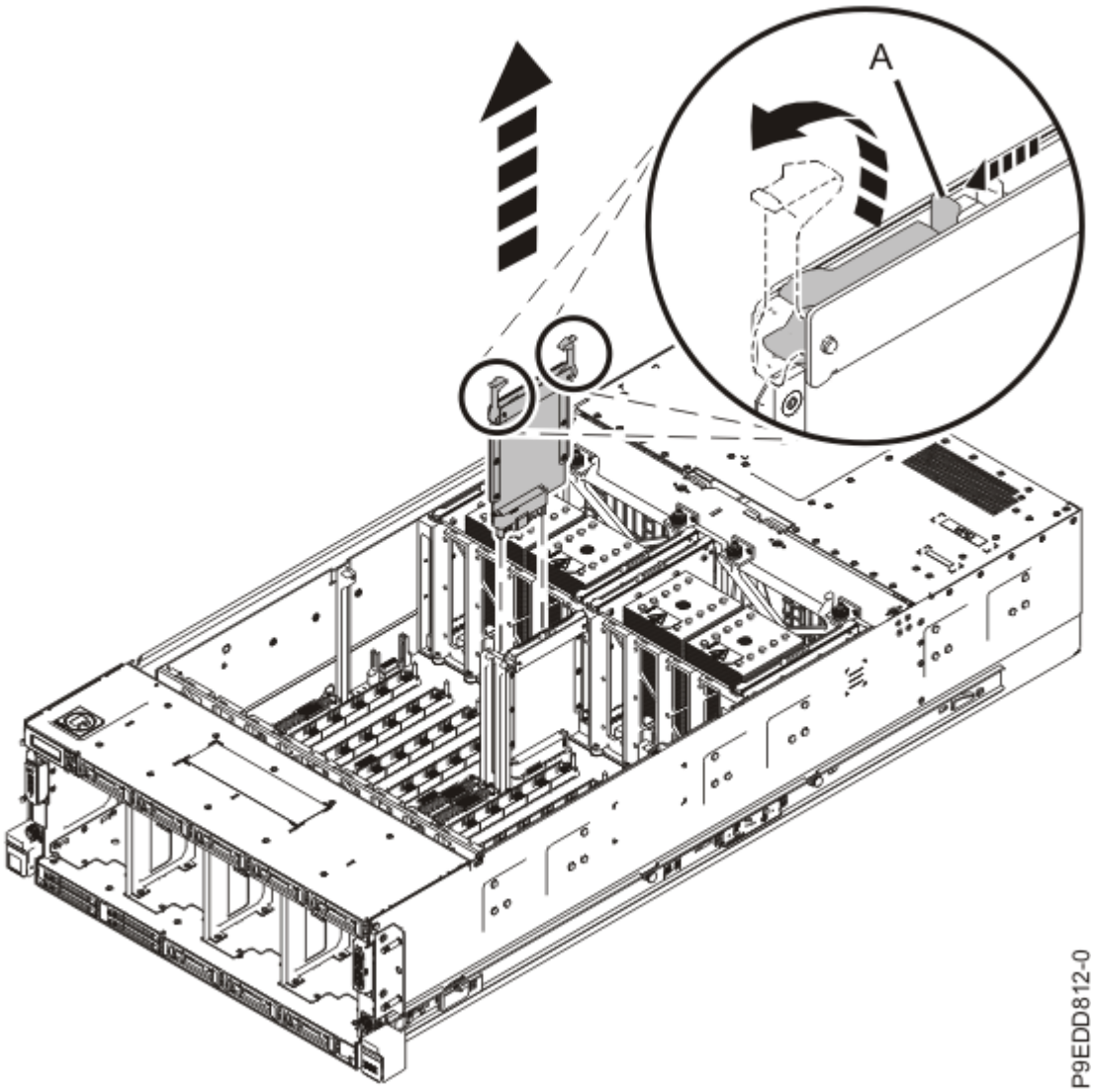



*Figure 116: Removing the standby voltage regulator module*

14. Remove the I/O voltage regulator module from location P1-C23.
    a) Unlock the levers **(A)** to release the voltage regulator module from its connector. Refer to the following image.
    b) Rotate the levers in the direction shown.
    c) While holding the voltage regulator module by its levers, pull upward to remove the card from its slot.

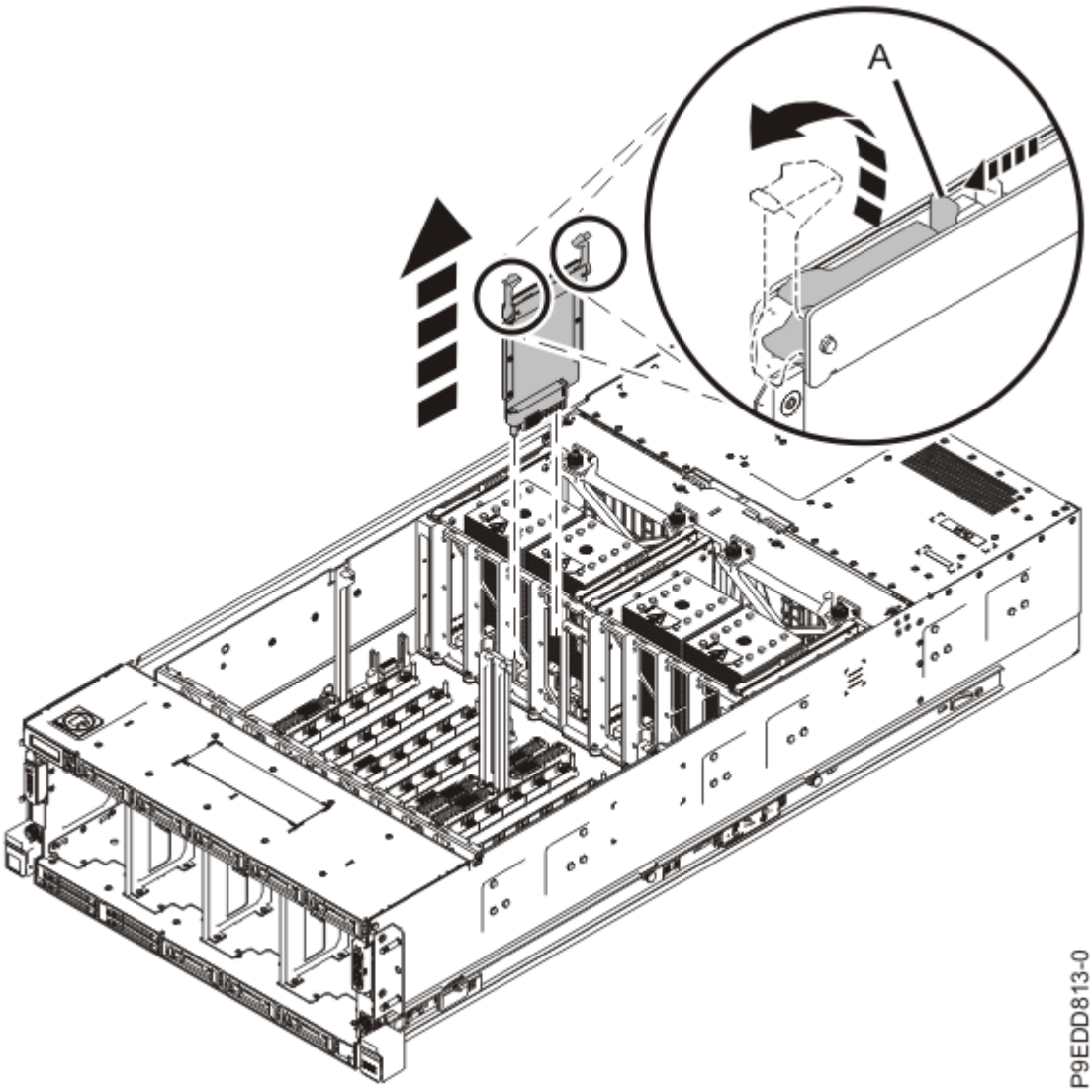



*Figure 117: Removing the I/O voltage regulator module*

15. Disconnect the rear USB cable.
    a) Press the cable release **(A)** to disconnect the rear USB cable from the system backplane as shown in the following figure.

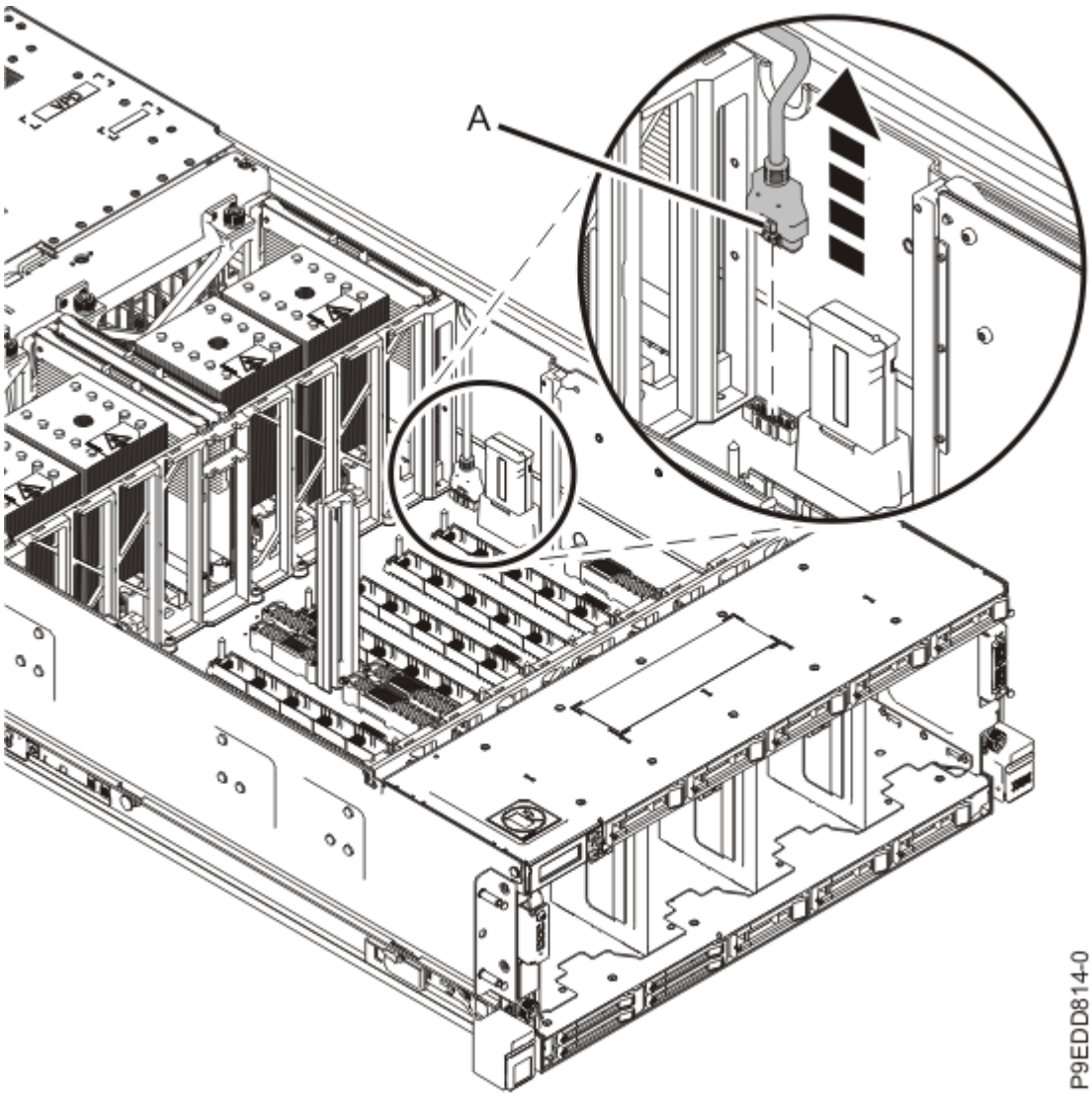



*Figure 118: Disconnecting the rear USB cable from the system backplane*

b) Route the rear USB cable over the side of the system to prevent it from interfering with the removal of the system backplane.

16. Remove the vital product data (VPD) card from location P1-C24.
    a) Grasp the VPD card by the plastic housing. Refer to the following image.
    b) Pull the VPD card out of its slot on the system backplane.

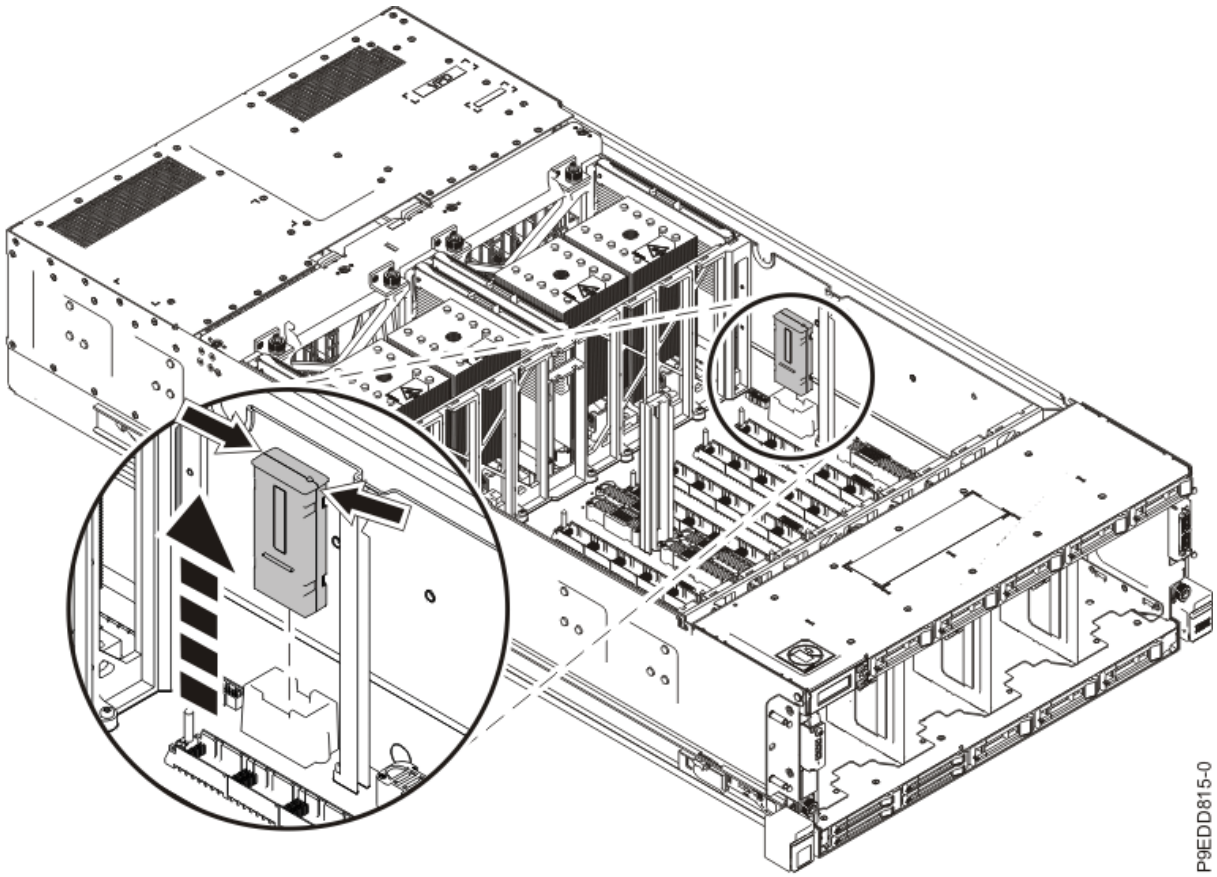



*Figure 119: Removing the VPD card*

17. Remove the processor voltage regulator modules or processor voltage regulator fillers from locations P1-C13, P1-C16, P1-C17, and P1-C20.
    a) Unlock the levers **(A)** to release the voltage regulator module or filler from its connector. Refer to the following image.
    b) Rotate the levers in the direction shown.
    c) While holding the voltage regulator module or filler by its levers, pull upward to remove the voltage regulator module or filler from its slot.
    d) Place the voltage regulator module or filler on an appropriate ESD surface.
    e) Repeat steps “17.a” on page 141 through “17.d” on page 141 to remove the remaining processor voltage regulator modules or fillers.

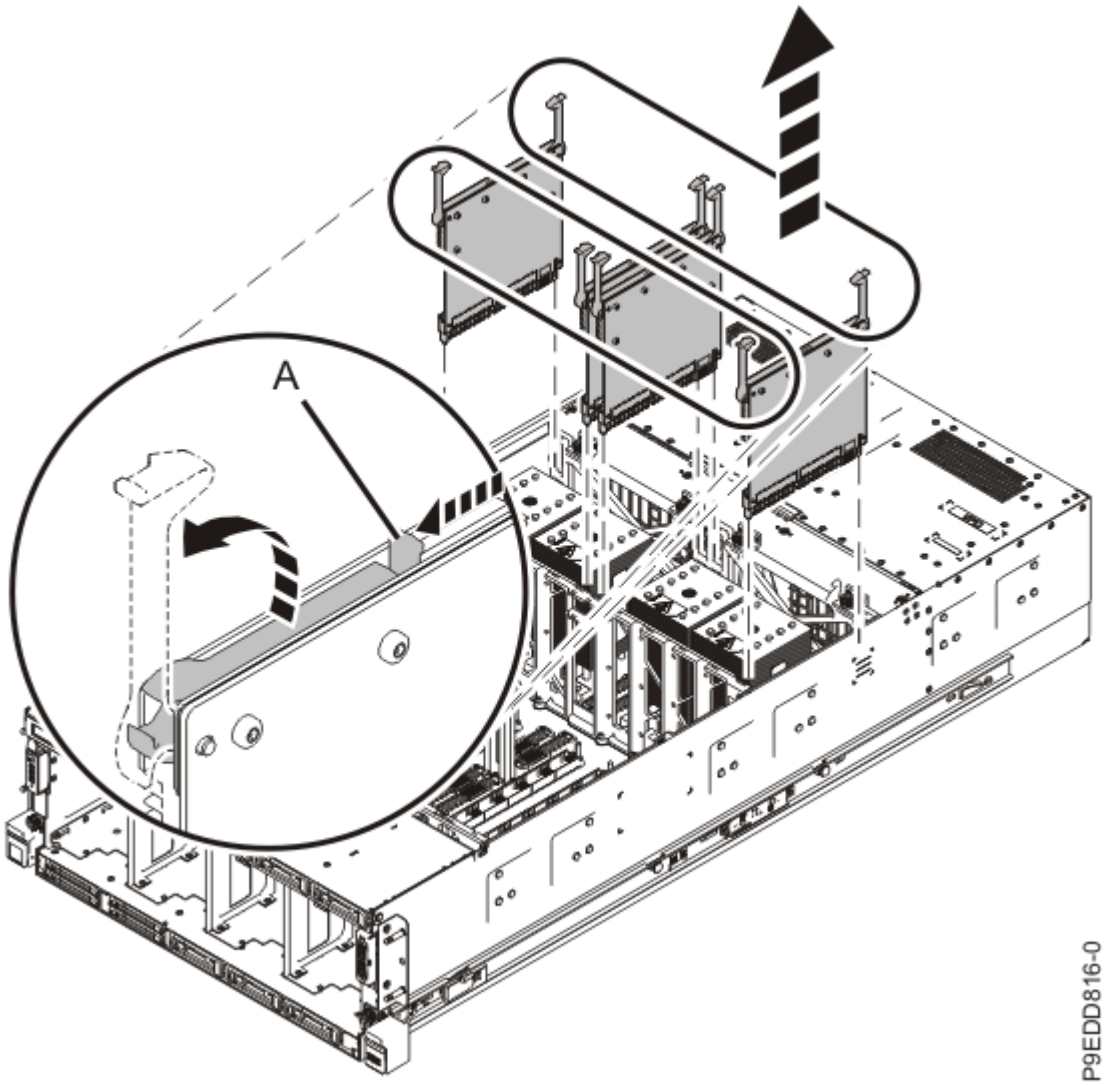



*Figure 120: Removing the processor voltage regulator modules or fillers*

18. Remove the heat sink from the system processor in location P1-C18. As you face the front of the system, location P1-C18 is the third processor from the left.

    **Note:** Do not remove the system processor. It is necessary to remove the heat sink in this location so that you can unplug the cable that connects the power midplane to the system backplane in an upcoming step.

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

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

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

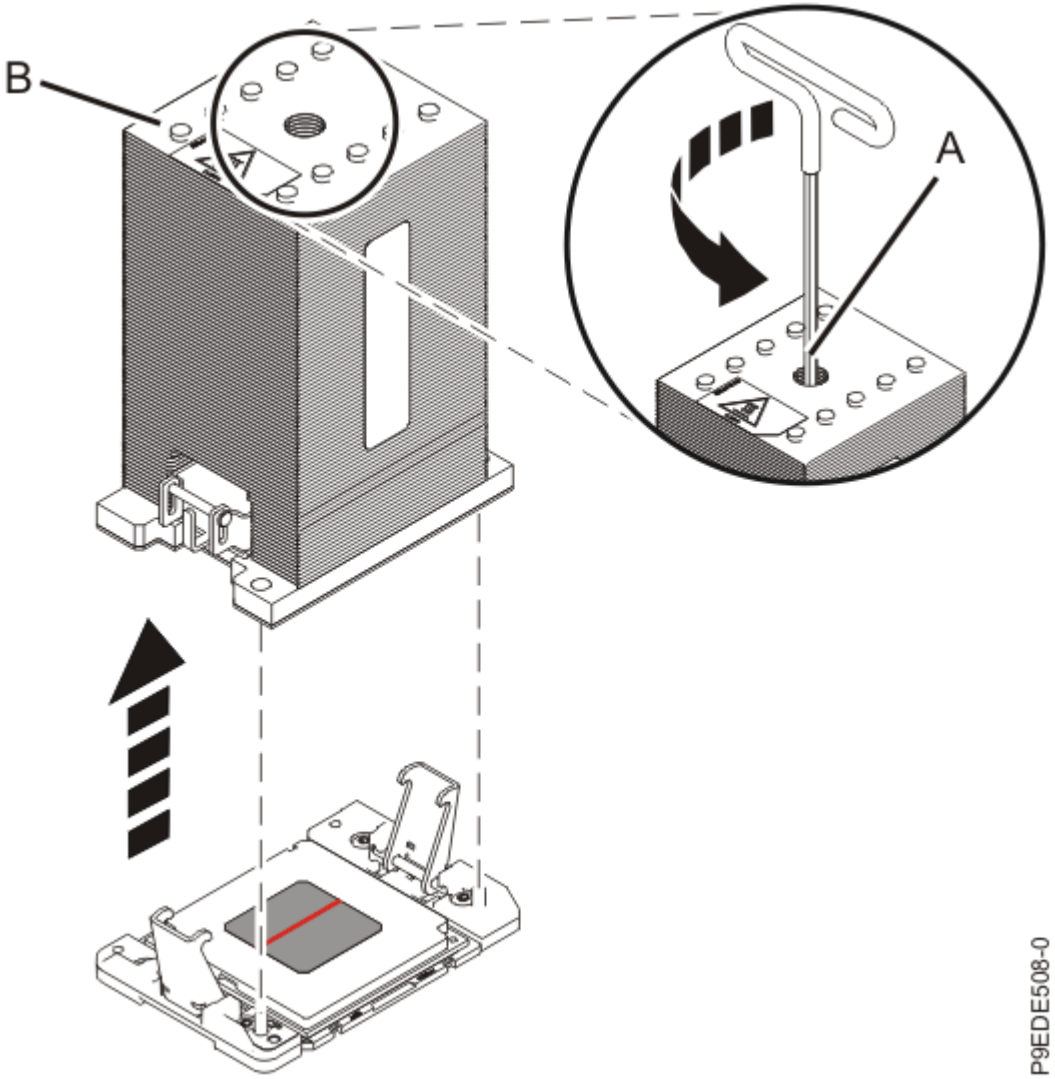



*Figure 121: Removing the heat sink*

19. Remove the power midplane.
    a) Unplug the cable from its connector on the power midplane.

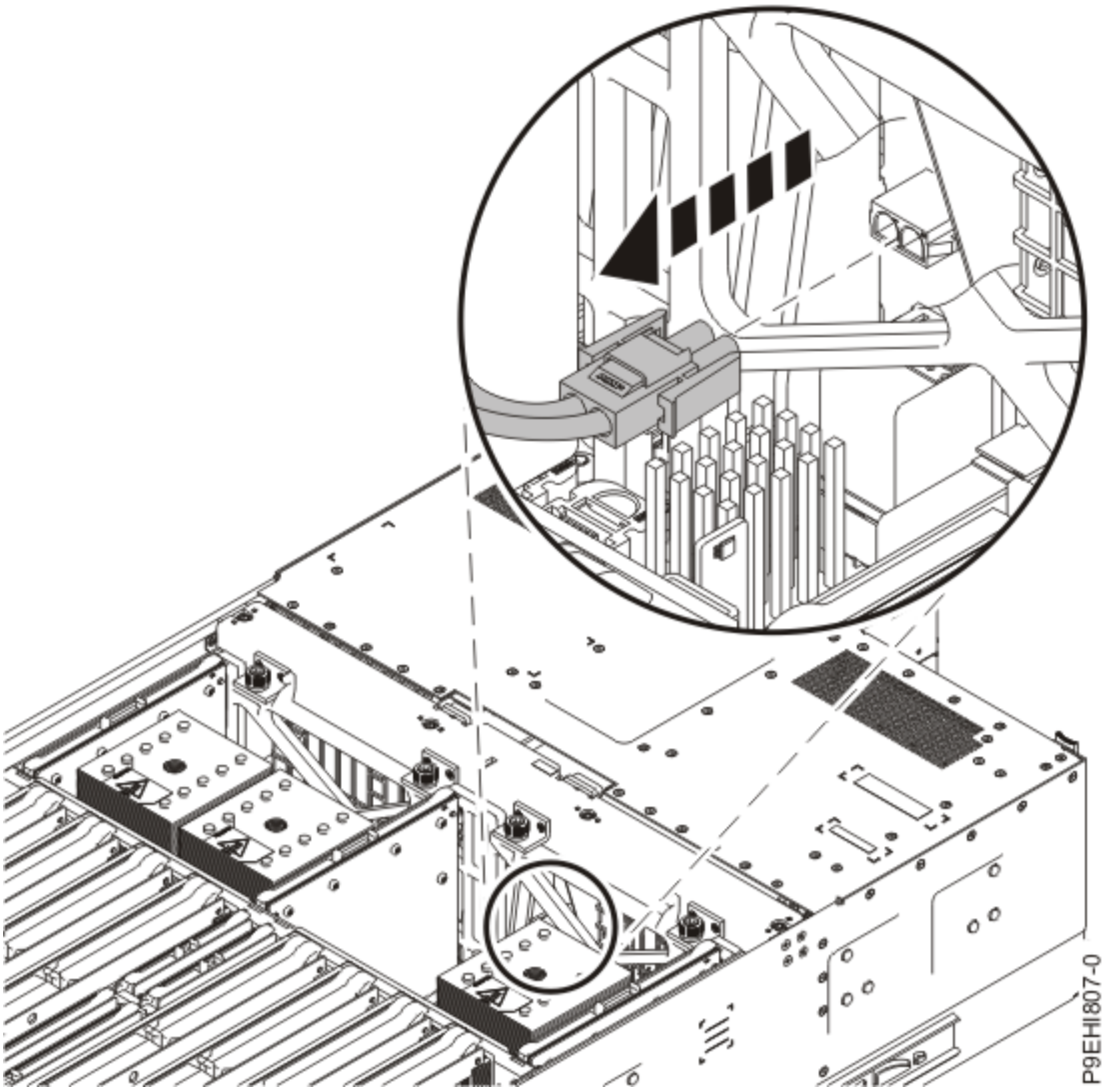



*Figure 122: Unplugging the cable from its connector on the power midplane*

b) Using a 4mm Hex driver, loosen the four captive screws **(A)** on the power midplane bulkhead. The screws attach the power midplane to the system chassis. Refer to the following image.

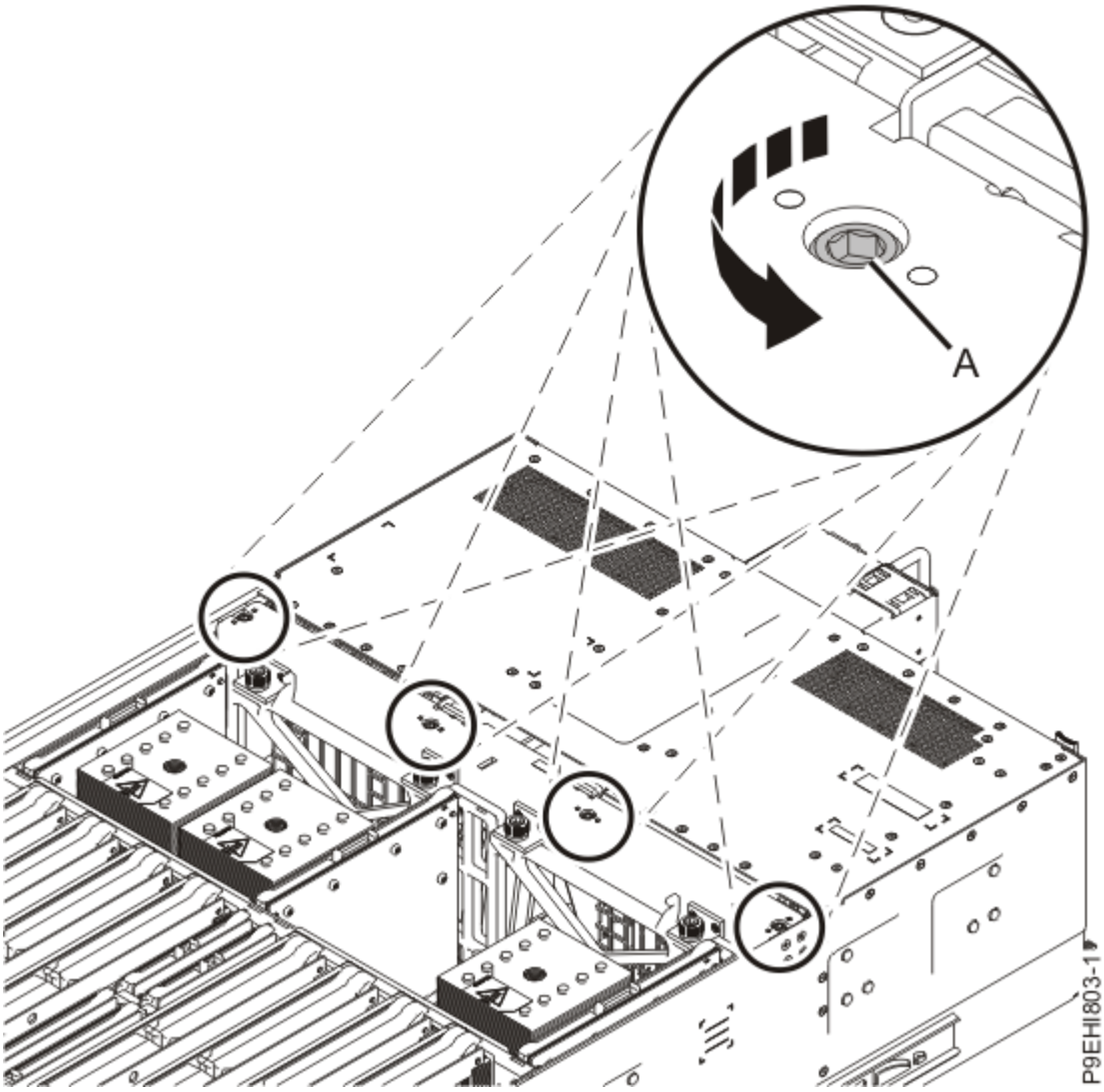



*Figure 123: Loosening the captive screws on the power midplane bulkhead*

c) Using a 4mm Hex driver, loosen the four thumbscrews **(B)** that secure the power midplane to the metal brackets inside the system.

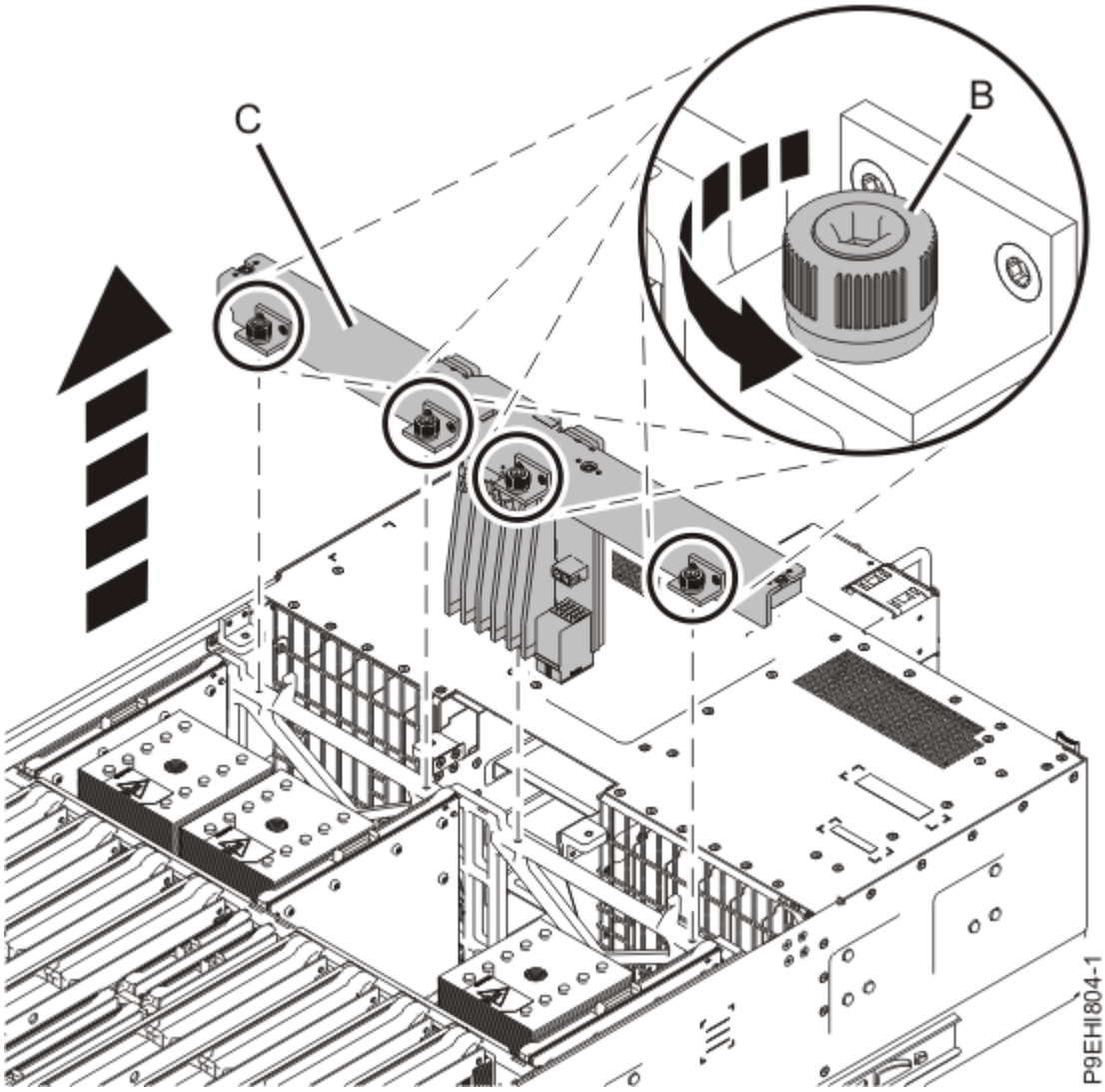



*Figure 124: Loosening the thumbscrews and removing the power midplane*

d) Lift the power midplane by its bulkhead **(C)** and pull it out of the system. Refer to the previous image.

e) Place the power midplane on an appropriate ESD surface.

20. Remove the system backplane.

a) Using a 5.5 mm Phillips head screwdriver, loosen but do not remove the four captive screws **(A)** that mount the backplane to the chassis. Refer to the following image for the location of the screws.

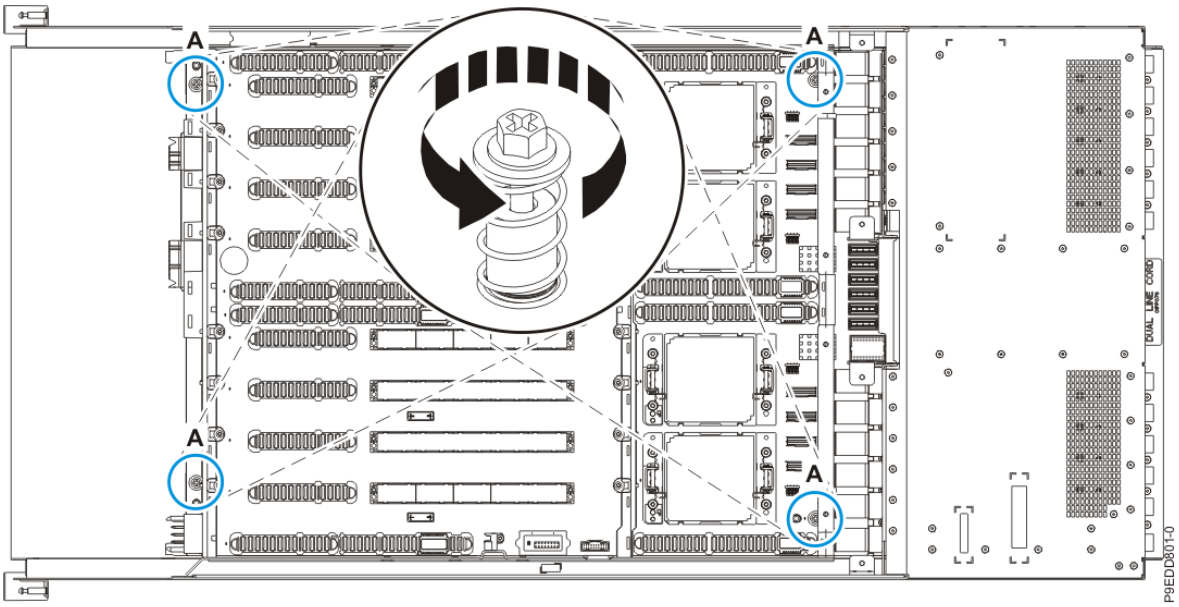



*Figure 125: System backplane screw locations*

b) Grasp the system backplane by the front **(A)** or middle **(B)** metal bulkheads and the rear metal bulkhead **(C)**. Lift straight up to disengage the four alignment pins from the bottom of the chassis.

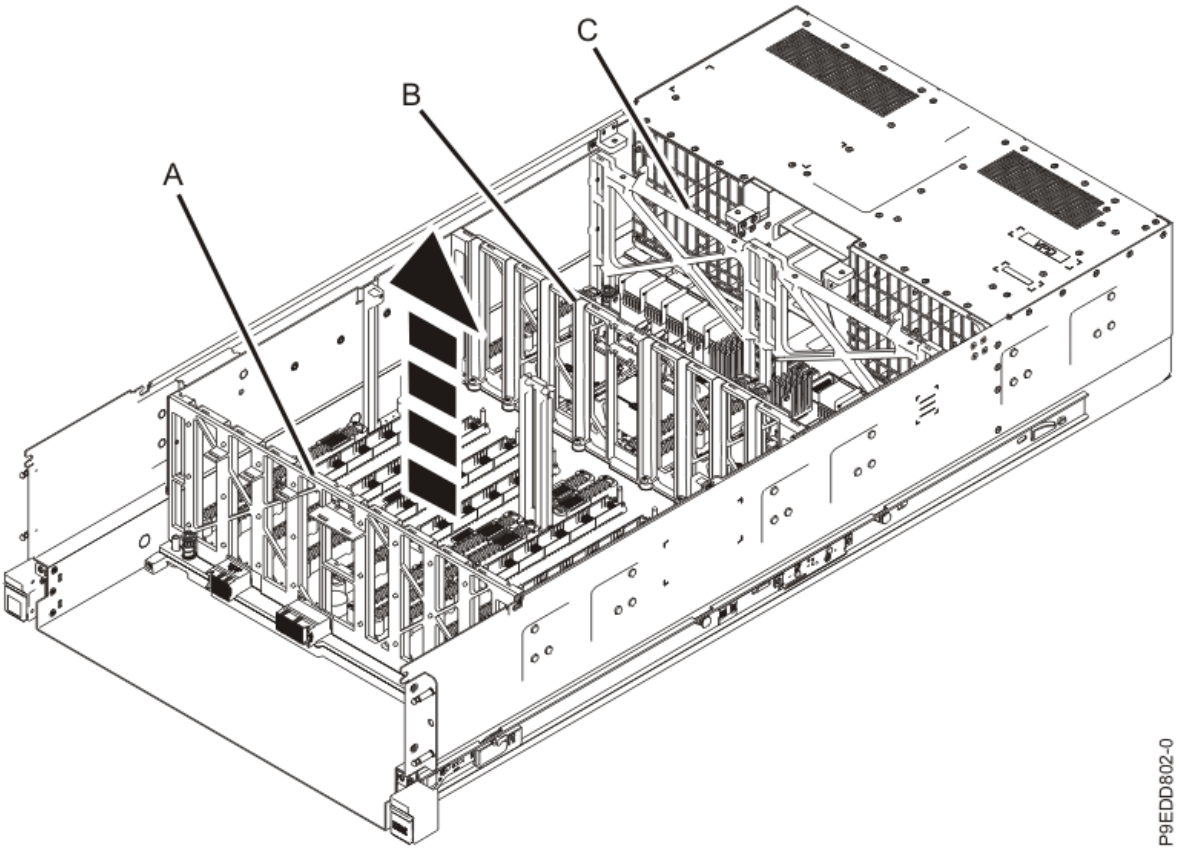



*Figure 126: Grasping the system backplane and disengaging the pins*

c) Place the system backplane on an appropriate ESD surface.

21. Remove the internally-secured SAS cable holder from inside the server as shown in the following figure.

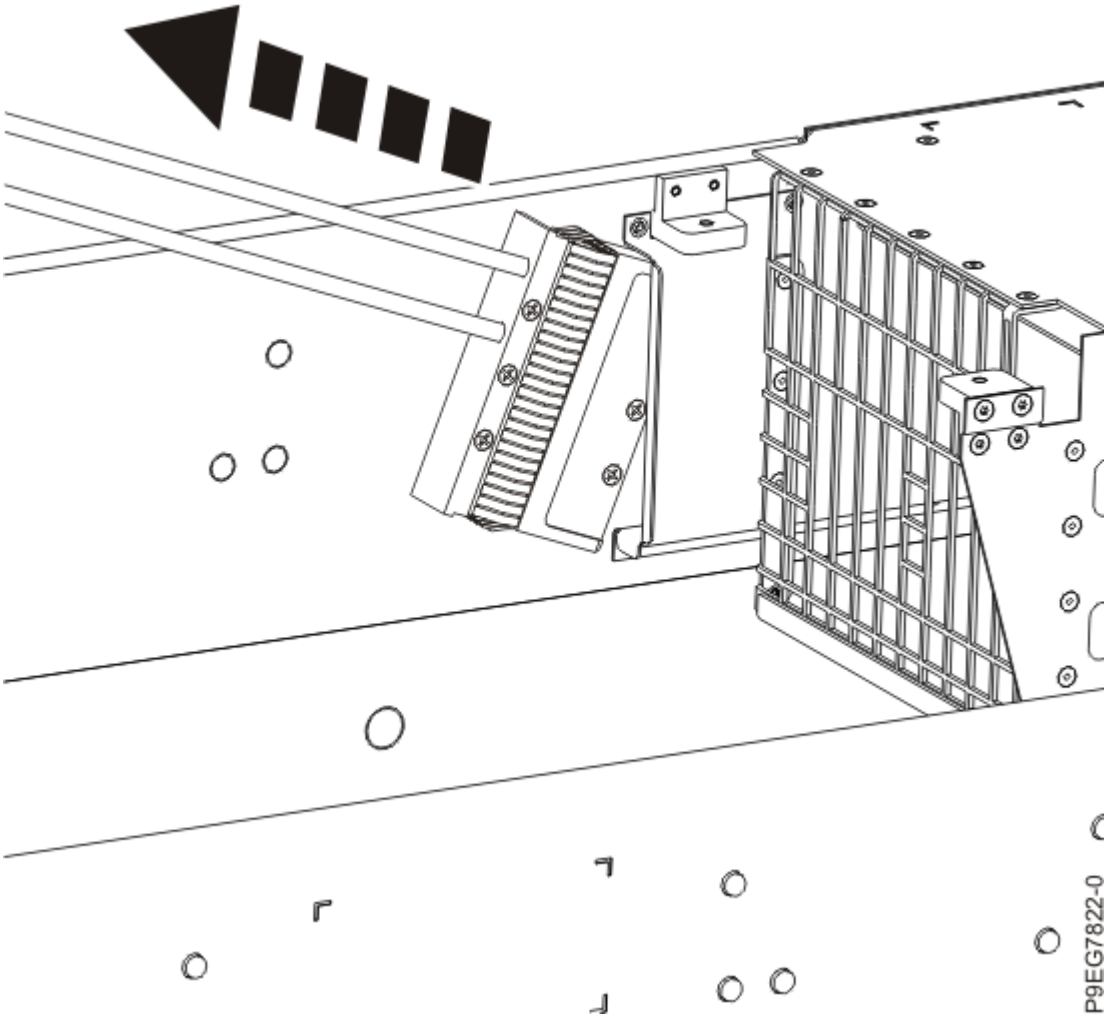



*Figure 127: Removing the internally-secured SAS cable holder*

22. To remove the internally-secured SAS cables from the chassis, complete the following steps.
    a) Guide the SAS cables into the system from the rear.
       Ensure that the SAS cables do not get caught in the chassis.
    b) Carefully pull the SAS cables that extend out of the rear of the server into the middle server area as shown in the following figure.

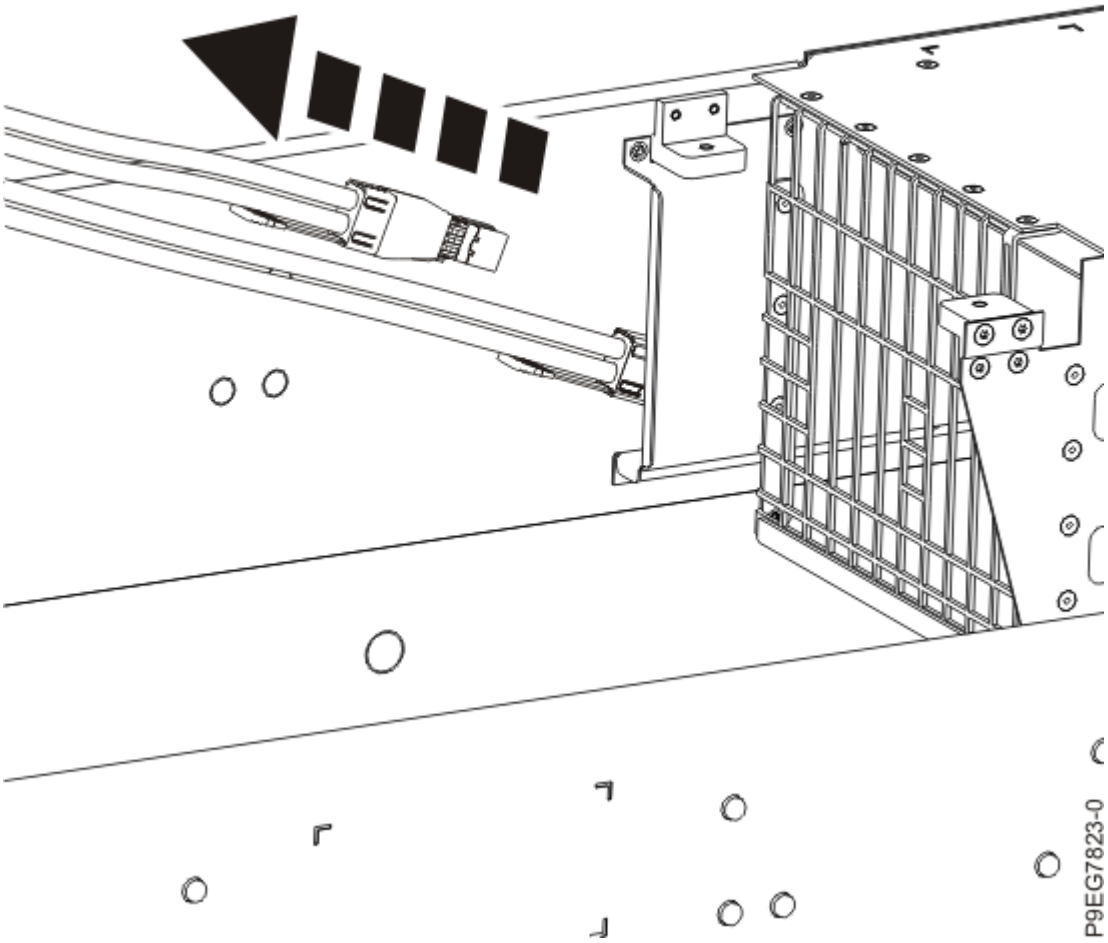



*Figure 128: Removing the internally-secured SAS cables*

23. Replace the system backplane by completing the following steps.
    a) Grasp the system backplane by the front **(A)** and middle **(B)** or rear metal bulkheads **(C)**. As you lower the backplane straight down into the chassis, take care to ensure that the pins on the bottom of the backplane align with the holes in the chassis.

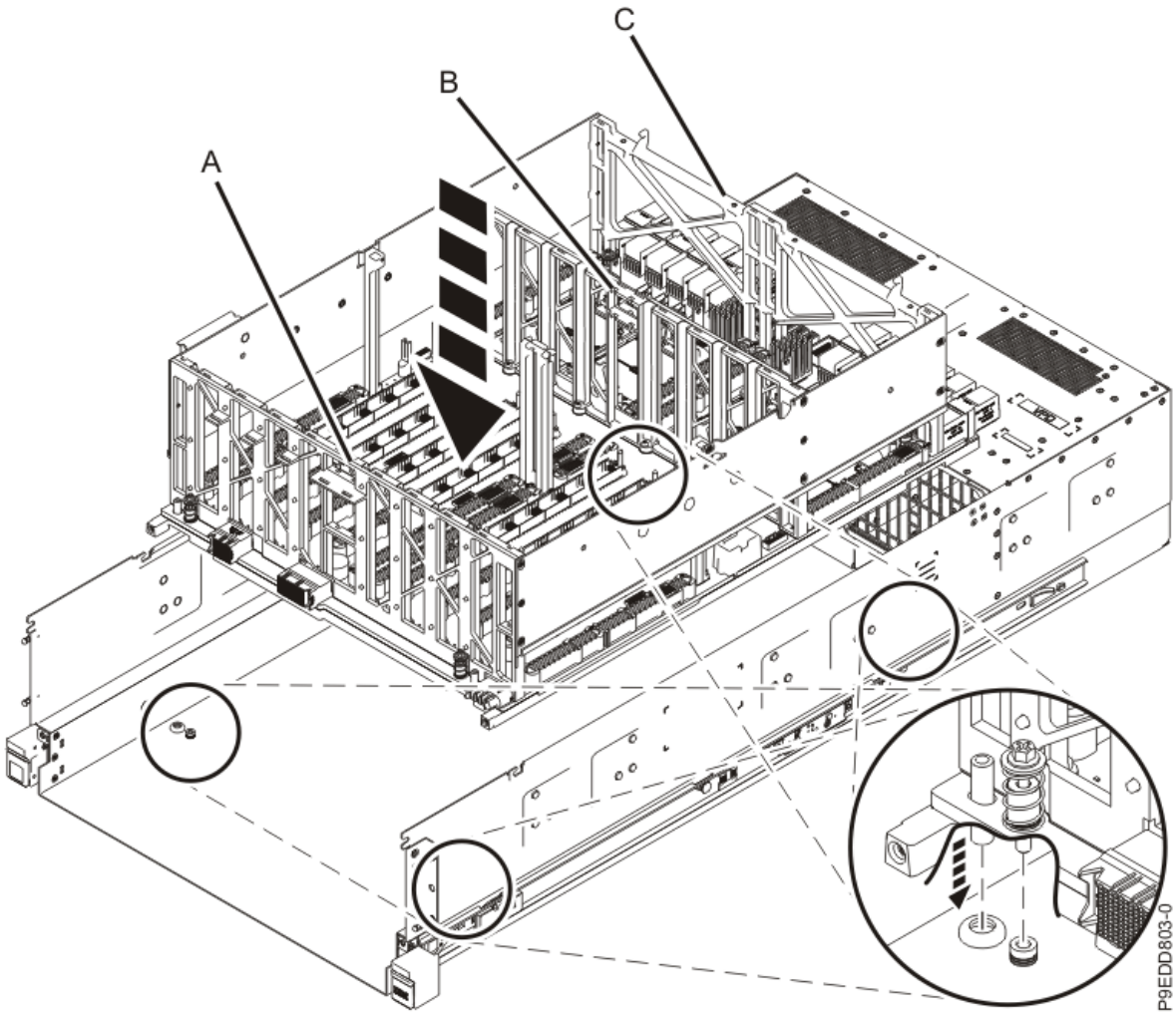



*Figure 129: Lowering the system backplane into the chassis*

b) Using a 5.5 mm Phillips head screwdriver, tighten the four captive screws **(A)** that mount the backplane to the chassis. Refer to the following image for the location of the screws.

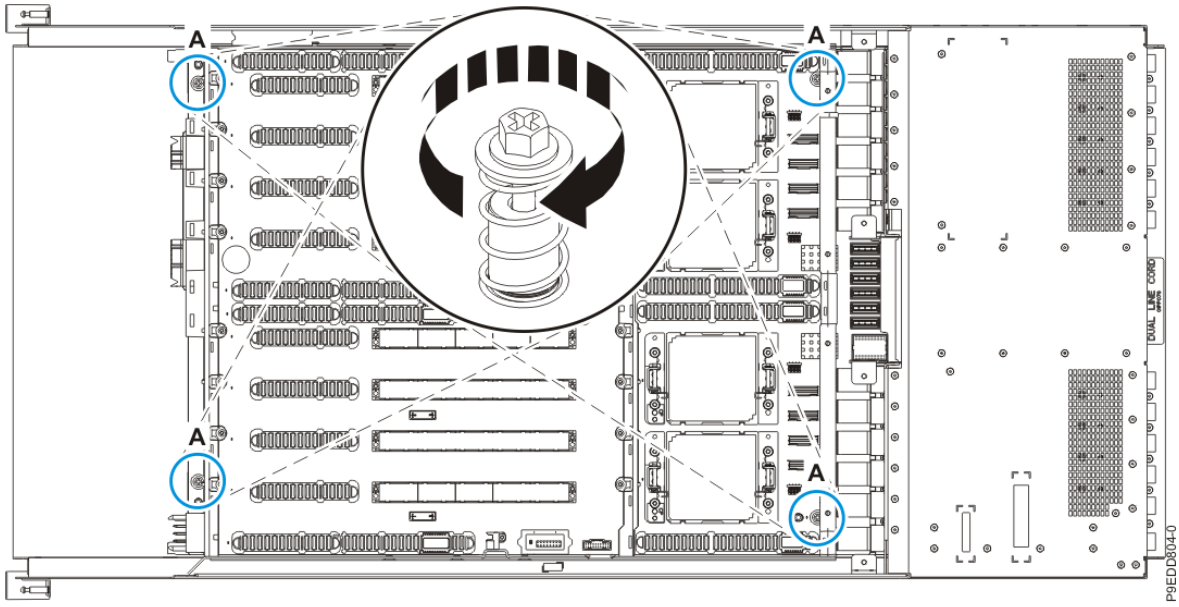



*Figure 130: System backplane screw locations*

24. Replace the power midplane.
    a) Grasp the power midplane by its bulkhead **(A)** and lower it into the system chassis. Refer to the following image.

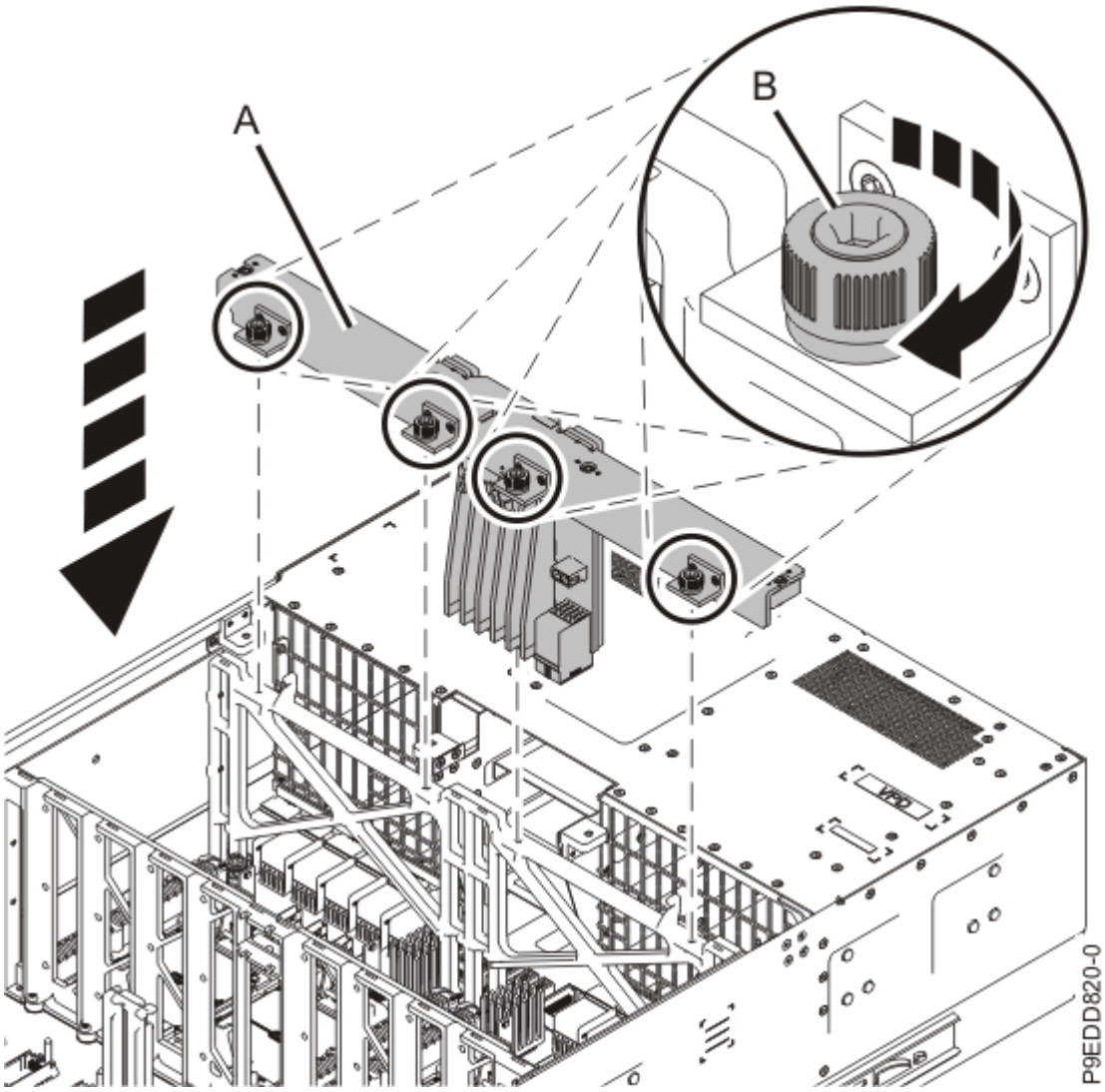



*Figure 131: Replacing the power midplane*

    b) Using a 4mm Hex driver, tighten the four captive thumbscrews **(B)** on the power midplane bulkhead. Refer to the previous image.
    c) Using a 4mm Hex driver, tighten the four captive screws **(C)** so that the power midplane bulkhead is securely attached to the system chassis. Refer to the following image.

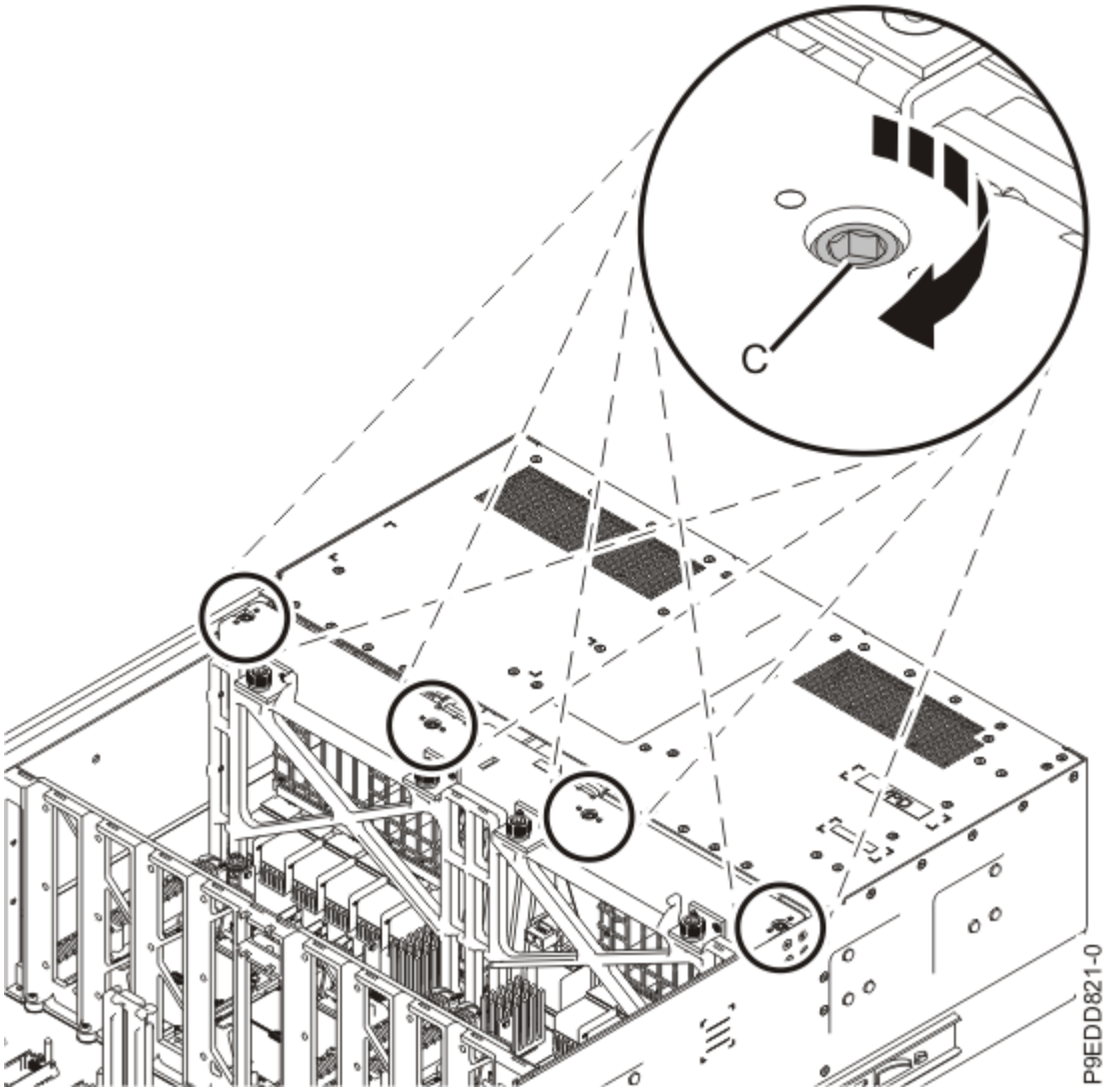



*Figure 132: Tightening the captive screws on the power midplane bulkhead*

d) Reconnect the cable to its connector on the power midplane.

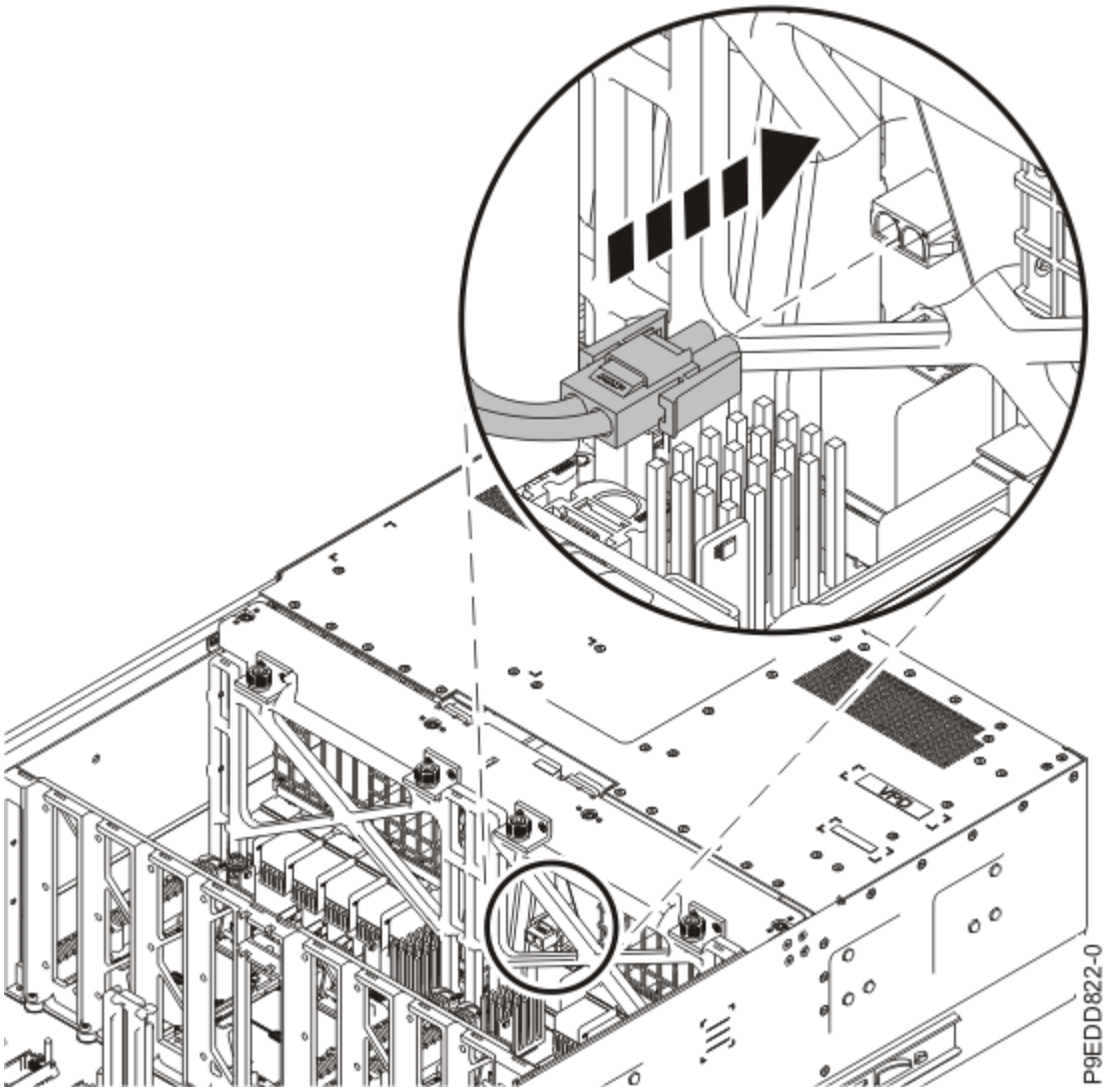



*Figure 133: Reconnecting the cable to its connector on the power midplane*

25. Use this step to install a new silver-colored TIM and the heat sink.
    a) The thermal interface material (TIM) is typically adhered to the heat sink.
        - If the old TIM cannot be easily removed from the heat sink, use the supplied plastic putty knife to scrape the TIM from the heat sink.
        - If the TIM cannot be removed from the heat sink, or if you are unsure about the old heat sink, do not reuse the removed heat sink. Use a new heat sink
    b) Open the TIM packaging and carefully remove the TIM, holding it by the edges of the carrier strip and holding it away from the shipping container.
    c) Remove the protective film from the clear carrier strip by using the supplied tweezers.

       The TIM must remain flat. Small wrinkles are acceptable, but folds are not acceptable.
    d) Using the tweezers, remove the TIM from the carrier strip and center it onto the system processor module.

       The silver-colored TIM must have the red stripe up. Align the beveled corners of the silver-colored TIM and the system processor module **(A)**, as shown in Figure 134 on page 154.

       Use the alignment marks on the top of the system processor module to properly place the TIM. You must center the TIM in the alignment marks on the system processor module.

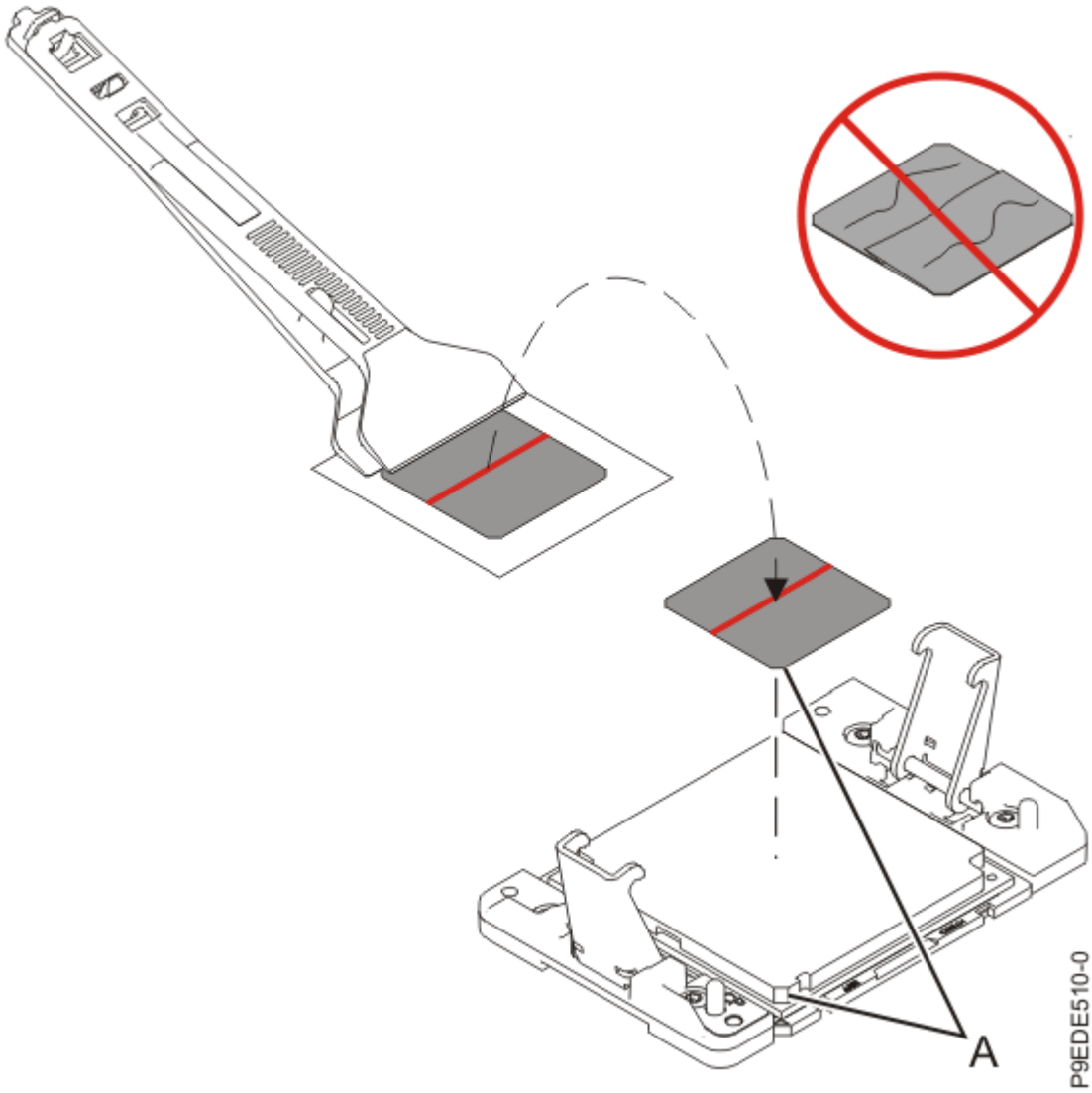



*Figure 134: Installing the silver-colored TIM onto the system processor module*

e) Place the heat sink on the TIM as shown in Figure 135 on page 155.

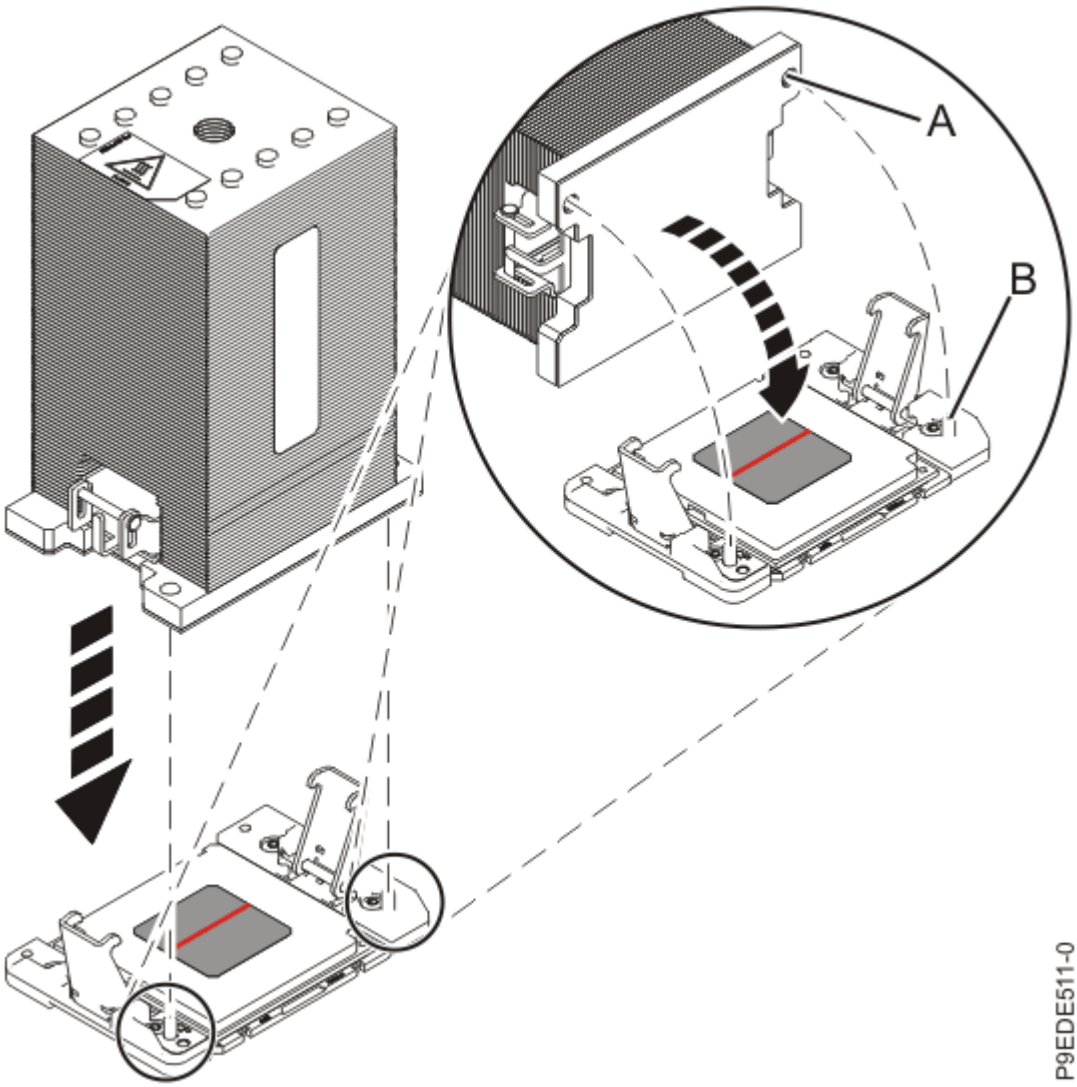



*Figure 135: Installing the heat sink on the silver-colored TIM*

26. Secure the TIM and heat sink to the socket of the system processor module.
    a) Ensure that the heat sink load arms are engaged as shown by **(A)** in Figure 136 on page 156.
    b) Tighten the center load screw clockwise by using the supplied hex key as shown by **(B)** in Figure 136 on page 156 until a firm stop is reached. If the heat sink moves noticeably, the load arms are not engaged. Unscrew the center load screw and repeat this step again.

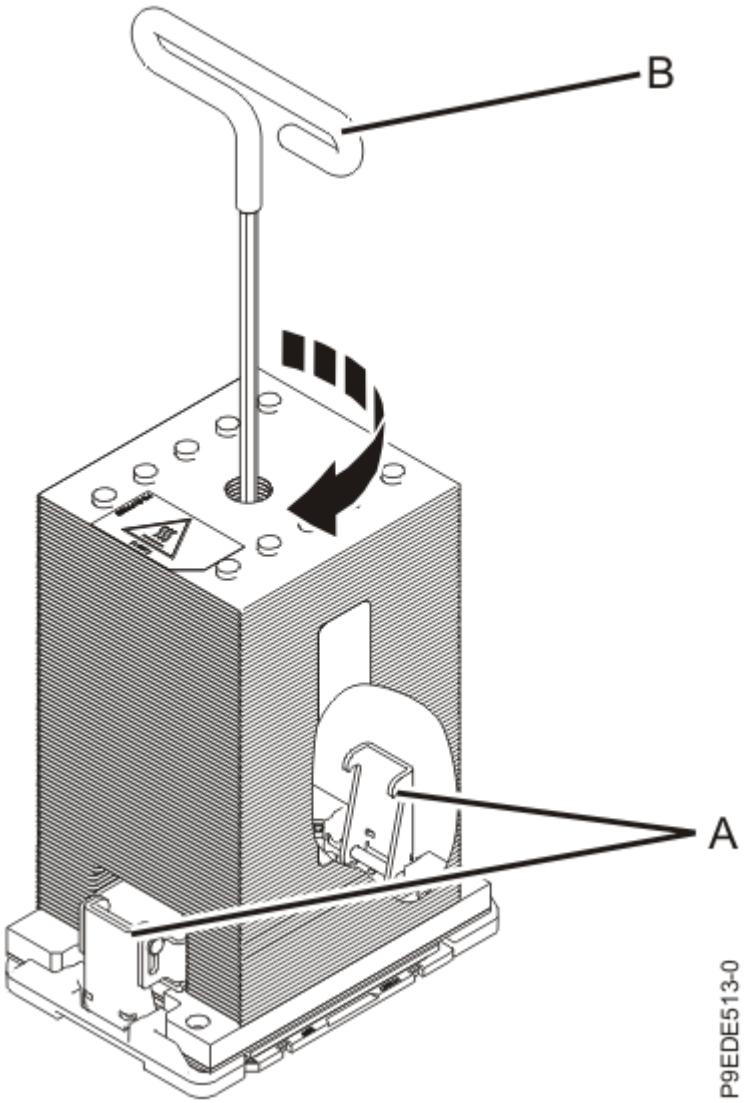



*Figure 136: Tightening the center load screw on the heat sink*

27. Replace the processor voltage regulator modules or processor voltage regulator module fillers in locations P1-C13, P1-C16, P1-C17, and P1-C20.
    a) With the levers **(A)** in the open position, hold the voltage regulator module or filler by its levers and lower the voltage regulator module or filler into its slot in the system. Refer to the following image.
    b) Gently push the voltage regulator module or filler into its connector.
    c) Rotate the levers in the direction that is shown and press down on the latches to secure the voltage regulator module or filler in its slot.
    d) Repeat steps “27.a” on page 156 through “27.c” on page 156 to replace the remaining processor voltage regulator modules or fillers.

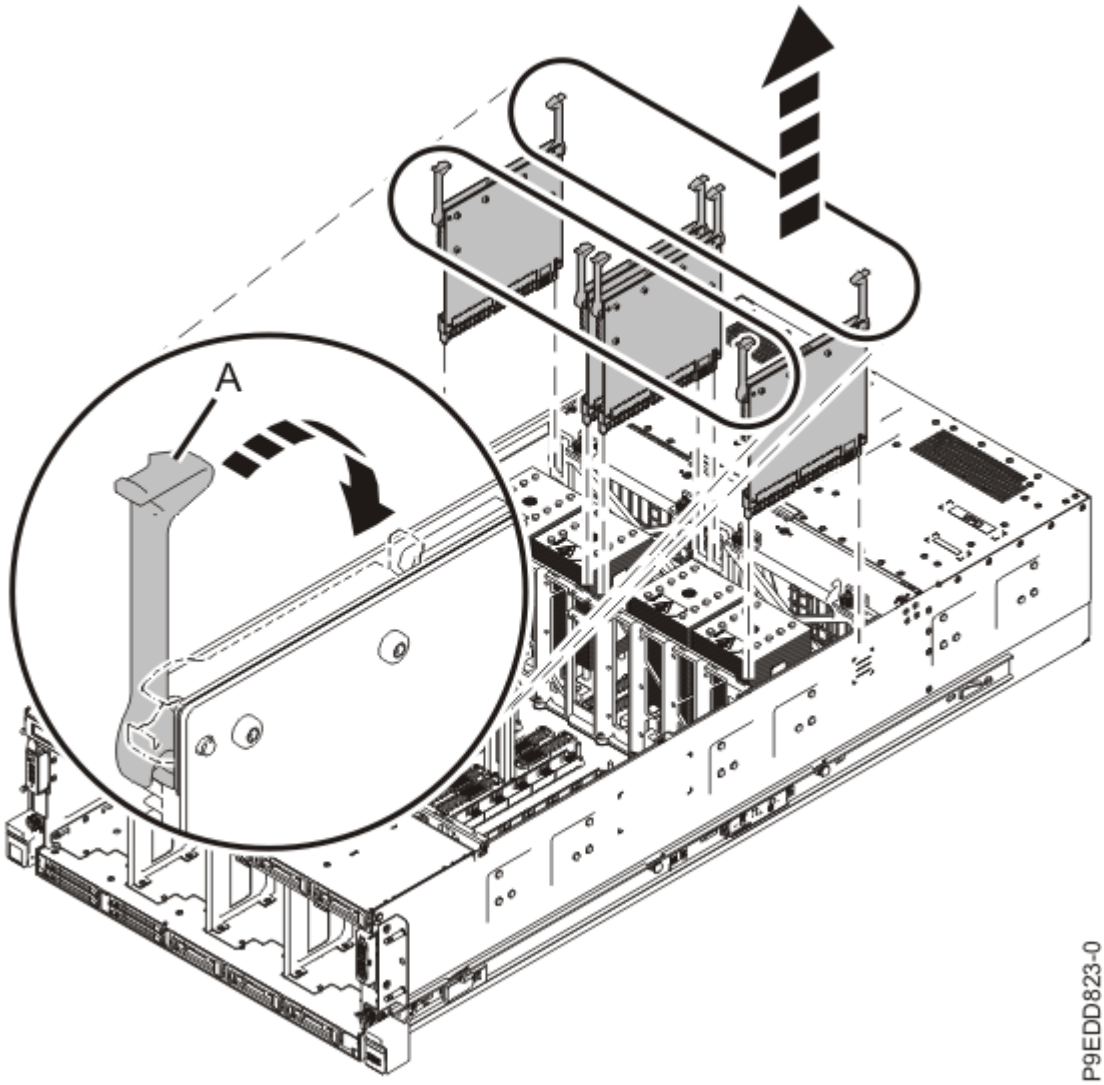



*Figure 137: Replacing the processor voltage regulator modules or fillers*

28. Replace the vital product data (VPD) card in location P1-C24.
    a) Align the VPD card in its slot on the system backplane. Refer to the following image.
    b) Press the VPD card firmly into place until it is fully seated.

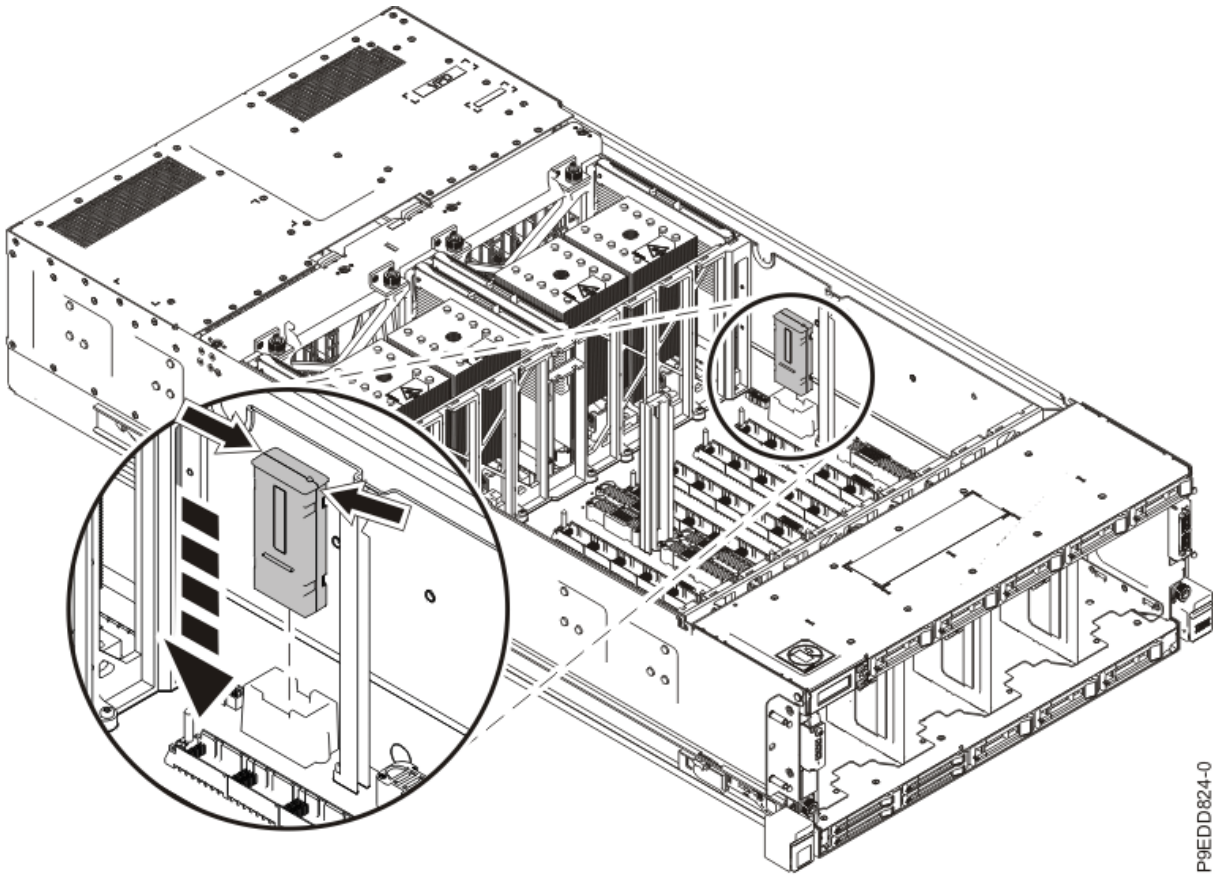



*Figure 138: Replacing the VPD card*

29. Reconnect the rear USB cable **(A)** in the USB socket on the system backplane as shown in the following figure.

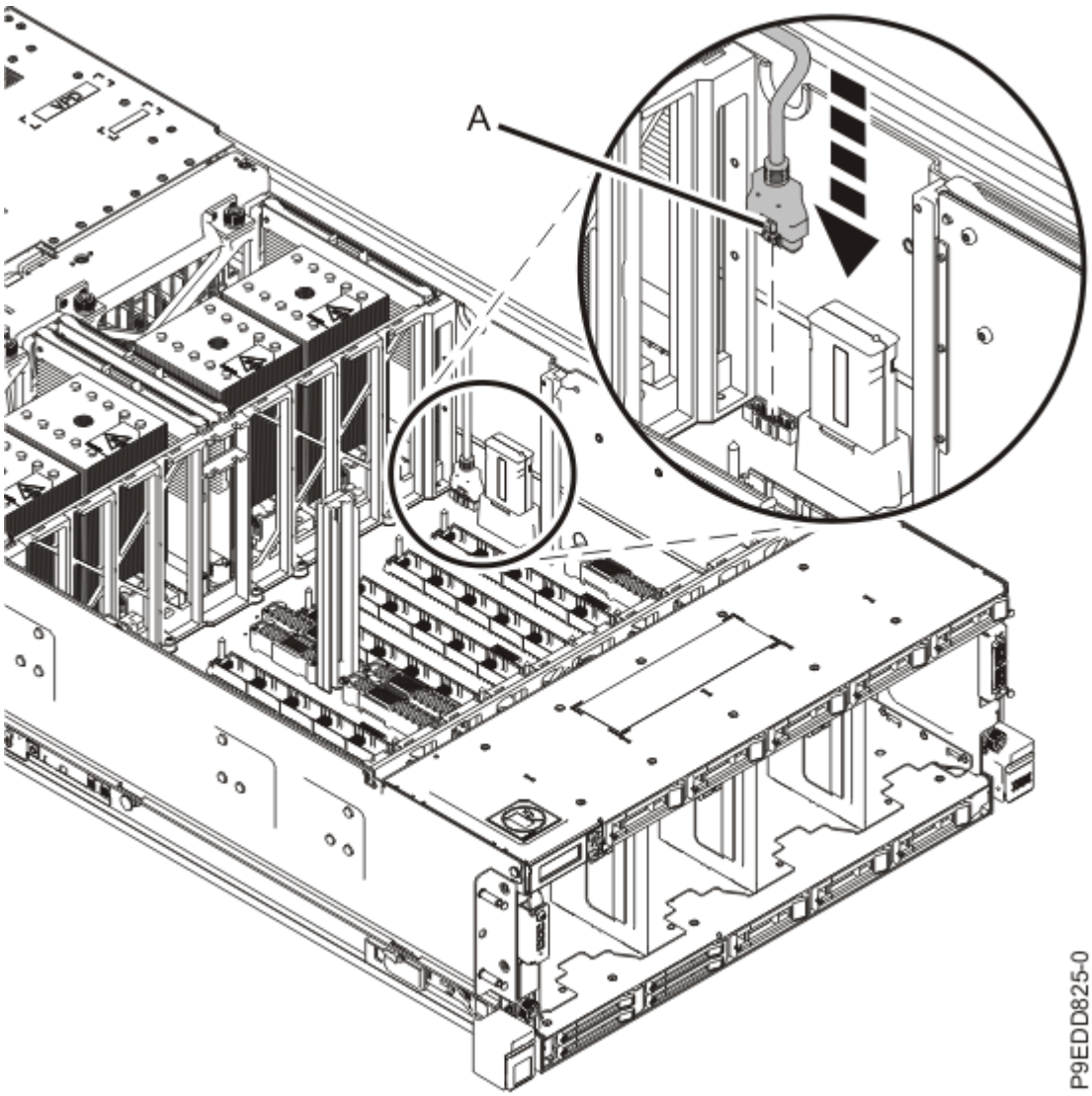



*Figure 139: Reconnecting the rear USB cable in the USB socket on the system backplane*

30. Replace the I/O voltage regulator module in location P1-C23.
    a) With the levers **(A)** in the open position, hold the voltage regulator module by its levers and lower the voltage regulator module into its slot in the system. Refer to the following image.
    b) Gently push the voltage regulator module into its connector.
    c) Rotate the levers in the direction shown and press down on the latches to secure the voltage regulator module in its slot.

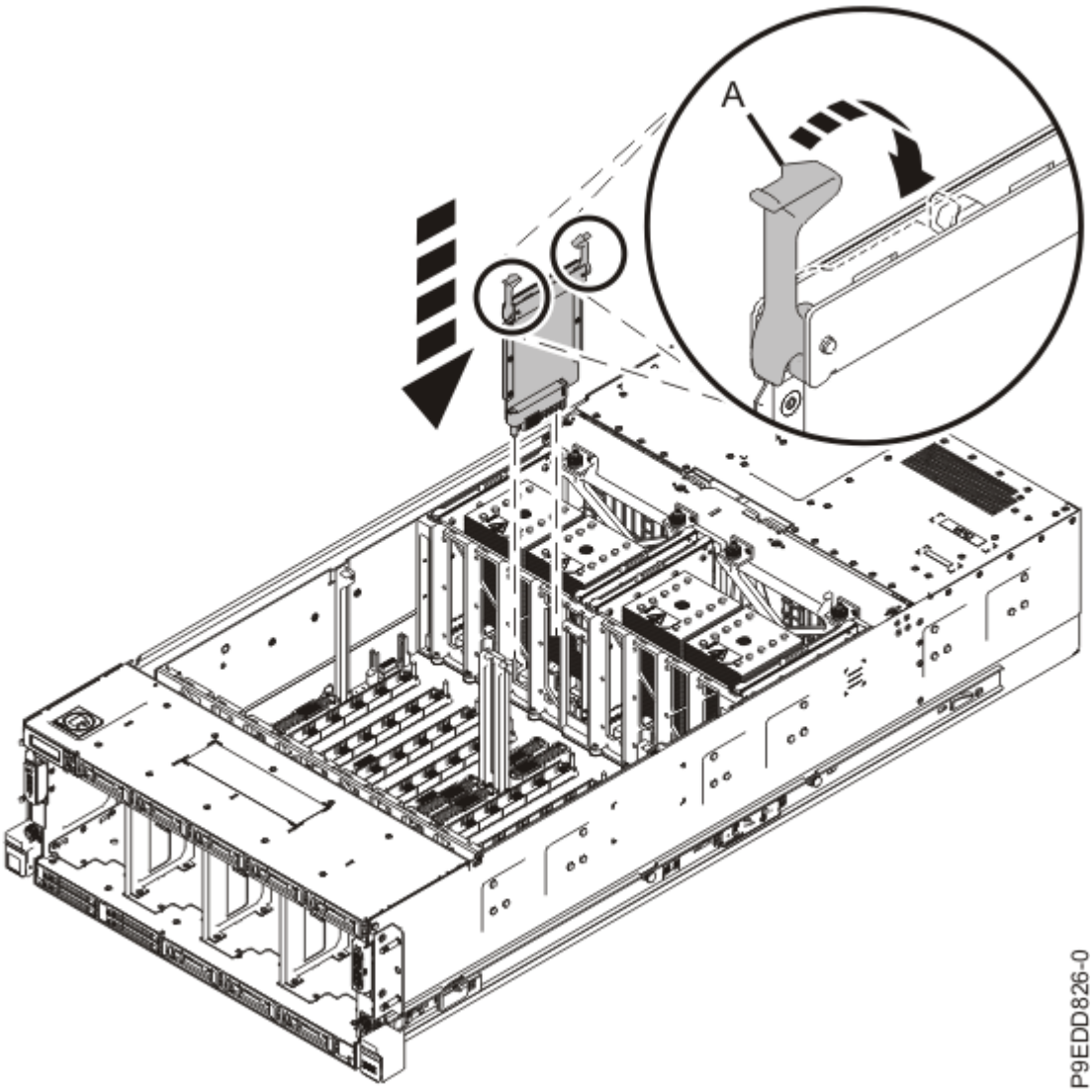



*Figure 140: Replacing the I/O voltage regulator module*

31. Replace the standby voltage regulator module in location P1-C22.
    a) With the levers **(A)** in the open position, hold the voltage regulator module by its levers and lower the voltage regulator module into its slot in the system. Refer to the following image.
    b) Gently push the voltage regulator module into its connector.
    c) Rotate the levers in the direction shown and press down on the latches to secure the voltage regulator module in its slot.

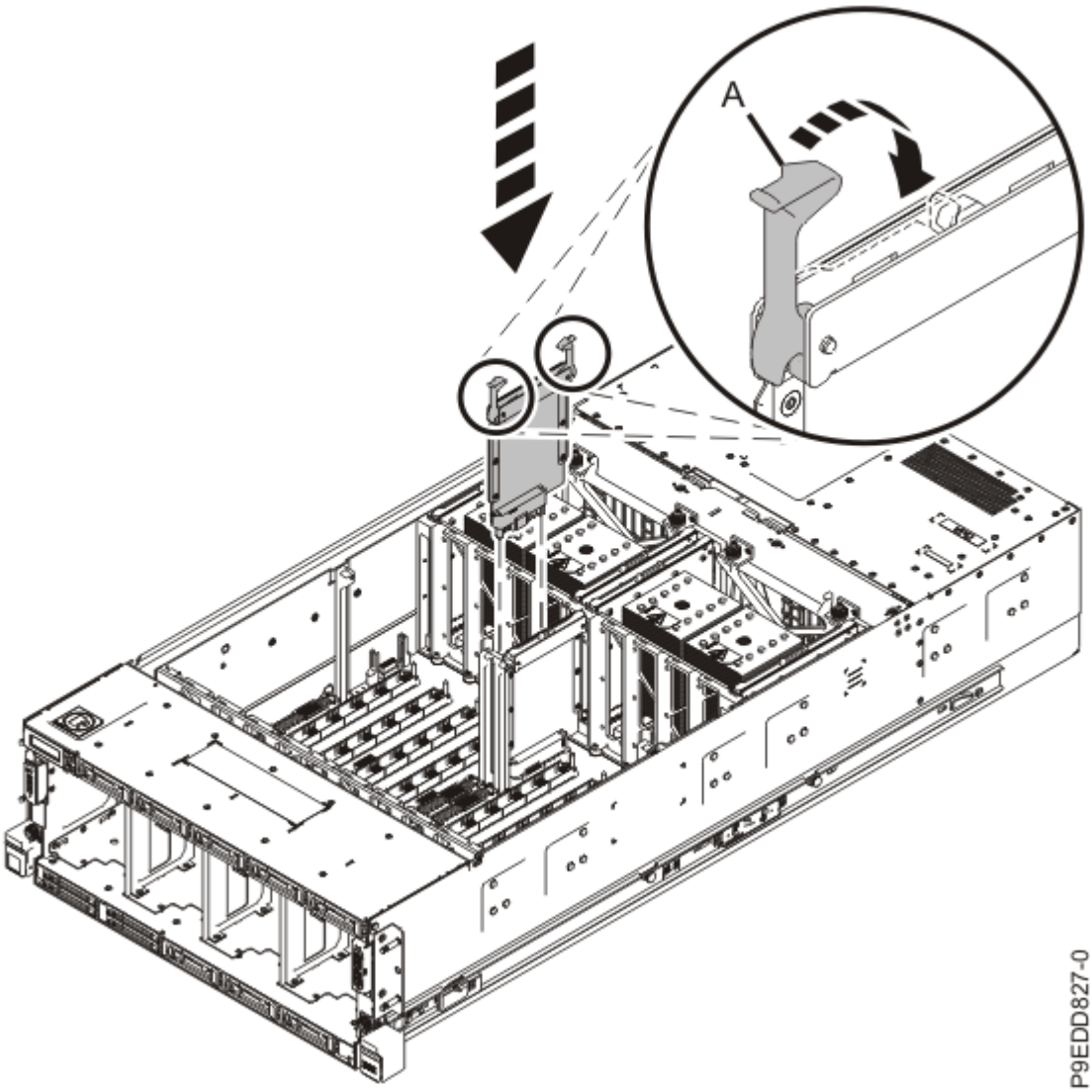



*Figure 141: Replacing a standby voltage regulator module*

32. Replace the trusted platform module (TPM) card in location P1-C21.
    a) Insert the TPM card into its slot on the system backplane. Refer to the following image.
    b) Push the TPM card into place until it is fully seated.

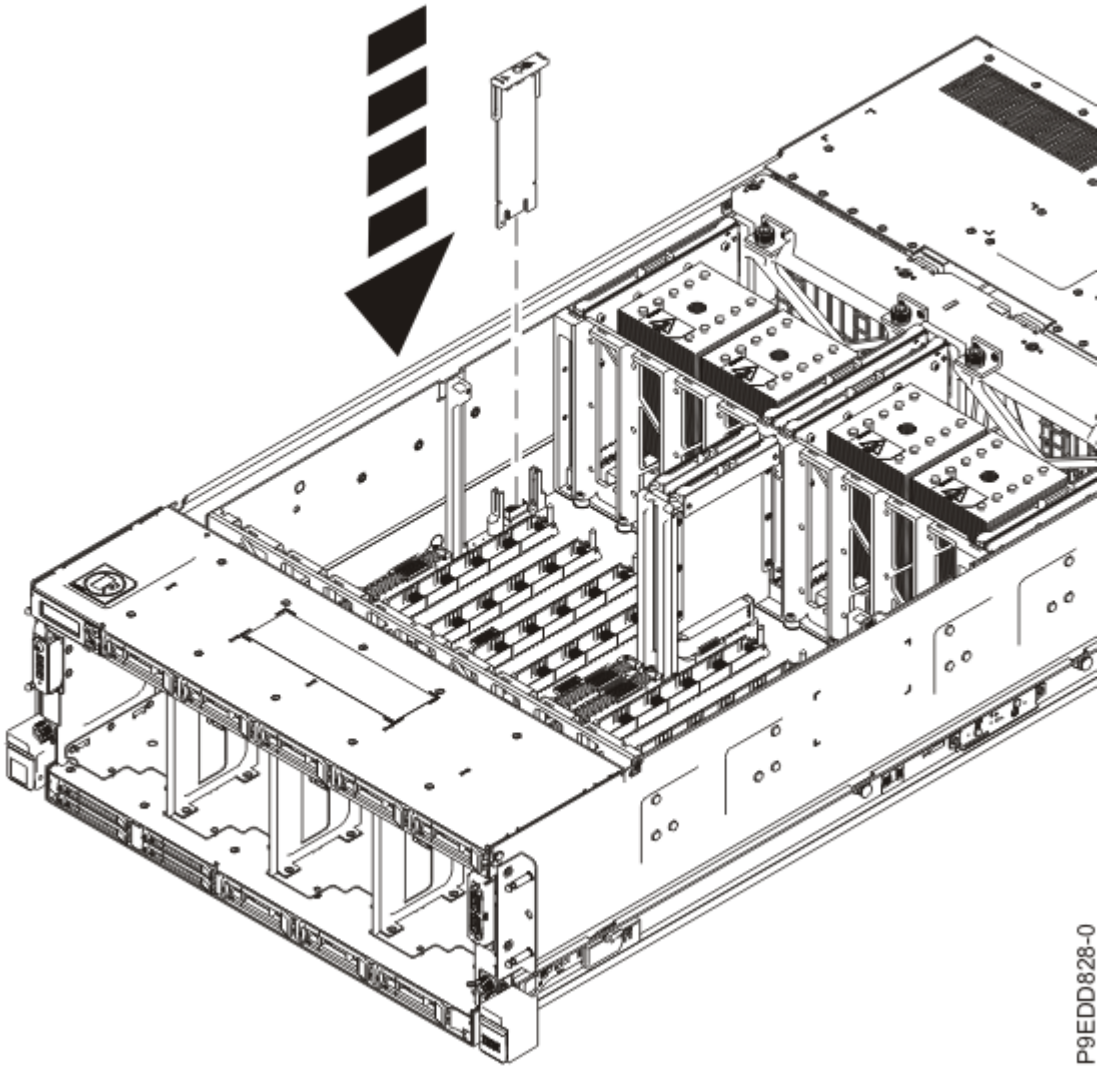



*Figure 142: Replacing the TPM card*

33. Replace the memory module riser cards in locations P1-C26, P1-C27, P1-C28, P1-C29, P1-C32, P1-C33, P1-C34, and P1-C35.
    a) Ensure the release latches **(A)** are fully open to a 90 degree angle as shown in the following figure.
    b) Align the memory module riser card with the connector.
    c) Press the memory module riser card firmly into the connector.
    d) Rotate the release latches into the closed position, and press the release latches down to ensure that the memory module riser card is fully seated into the connector.
    e) Repeat steps “33.a” on page 162 through “33.d” on page 162 for the remaining memory module riser cards.

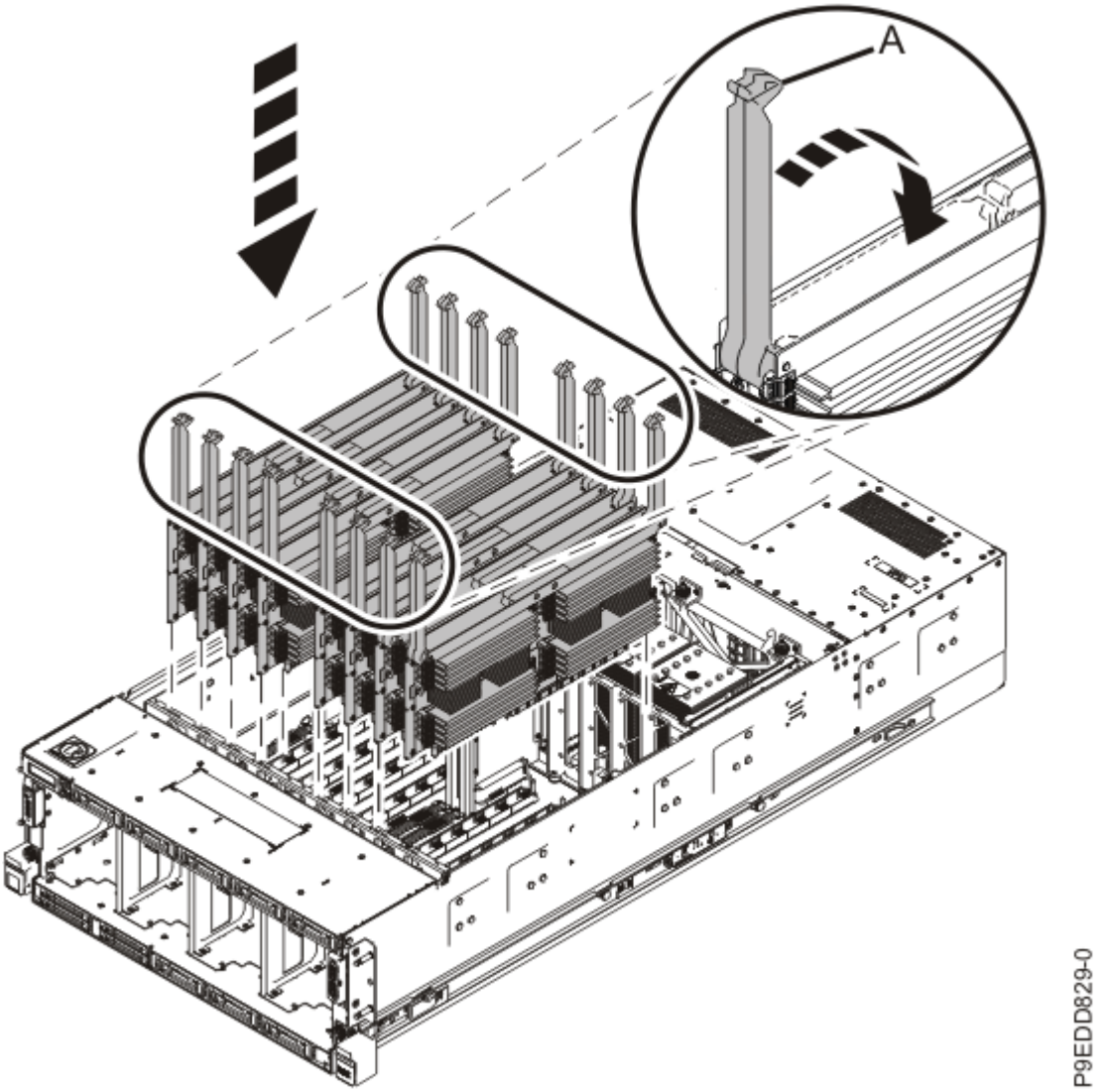



*Figure 143: Replacing the memory module riser cards*

34. Replace the memory voltage regulator modules in locations P1-C25, P1-C30, P1-C31, and P1-C36.
    a) With the levers **(A)** in the open position, hold the voltage regulator module by its levers and lower the voltage regulator module into its slot in the system. Refer to the following image.
    b) Gently push the voltage regulator module into its connector.
    c) Rotate the levers in the direction shown and press down on the latches to secure the voltage regulator module in its slot.
    d) Repeat steps “34.a” on page 163 through “34.c” on page 163 to replace the remaining memory voltage regulator modules.

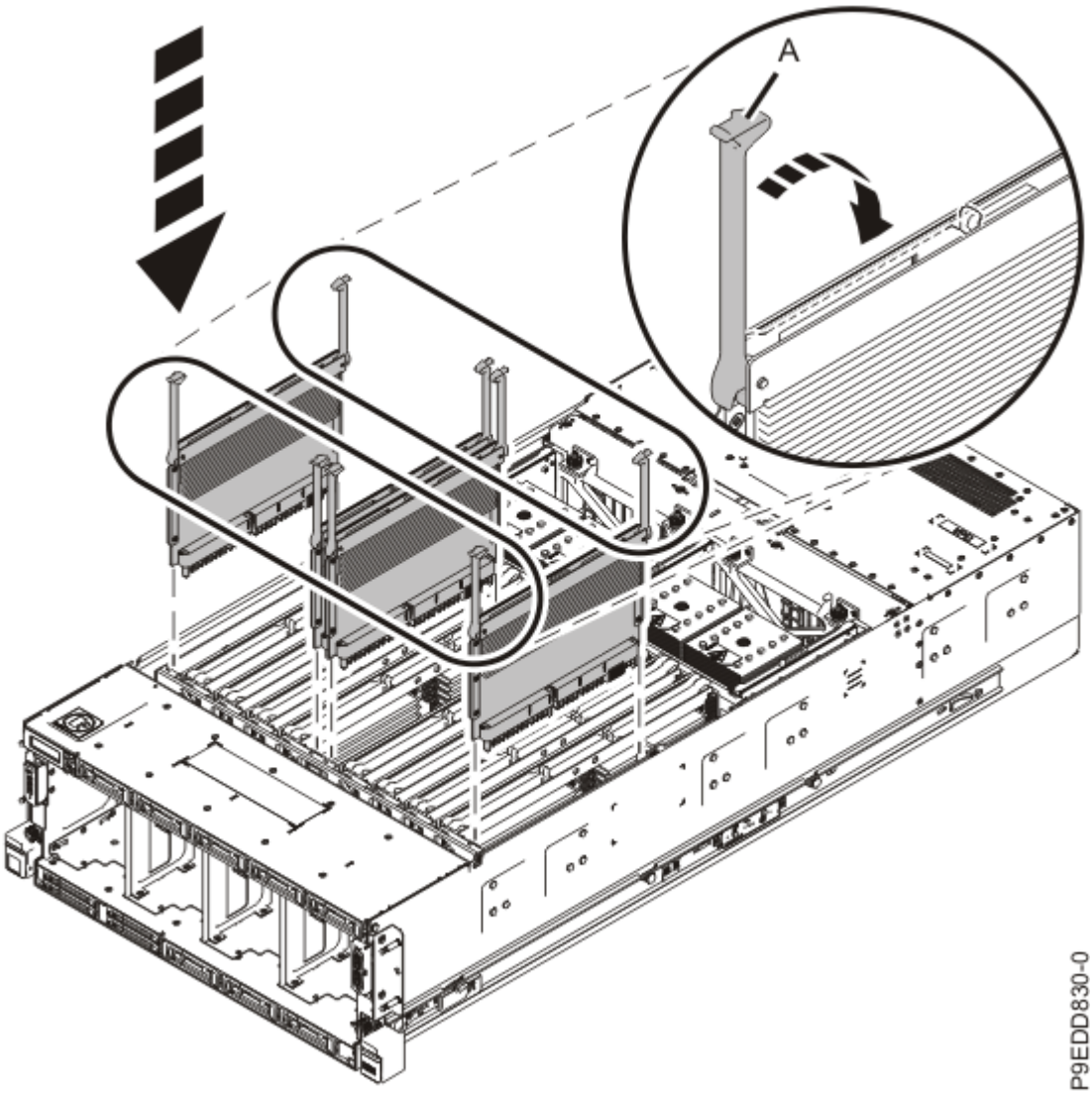



*Figure 144: Replacing the memory voltage regulator modules*

35. Replace the service access cover.
    a) Lower the cover **(A)** onto the system unit. Ensure that the cover alignment pins **(C)** on each side of the cover fit into the matching slots in the chassis.
    b) Slide the cover **(A)** onto the system unit.
    c) Close the release latches **(B)** by pushing it in the direction that is shown in the following figure.

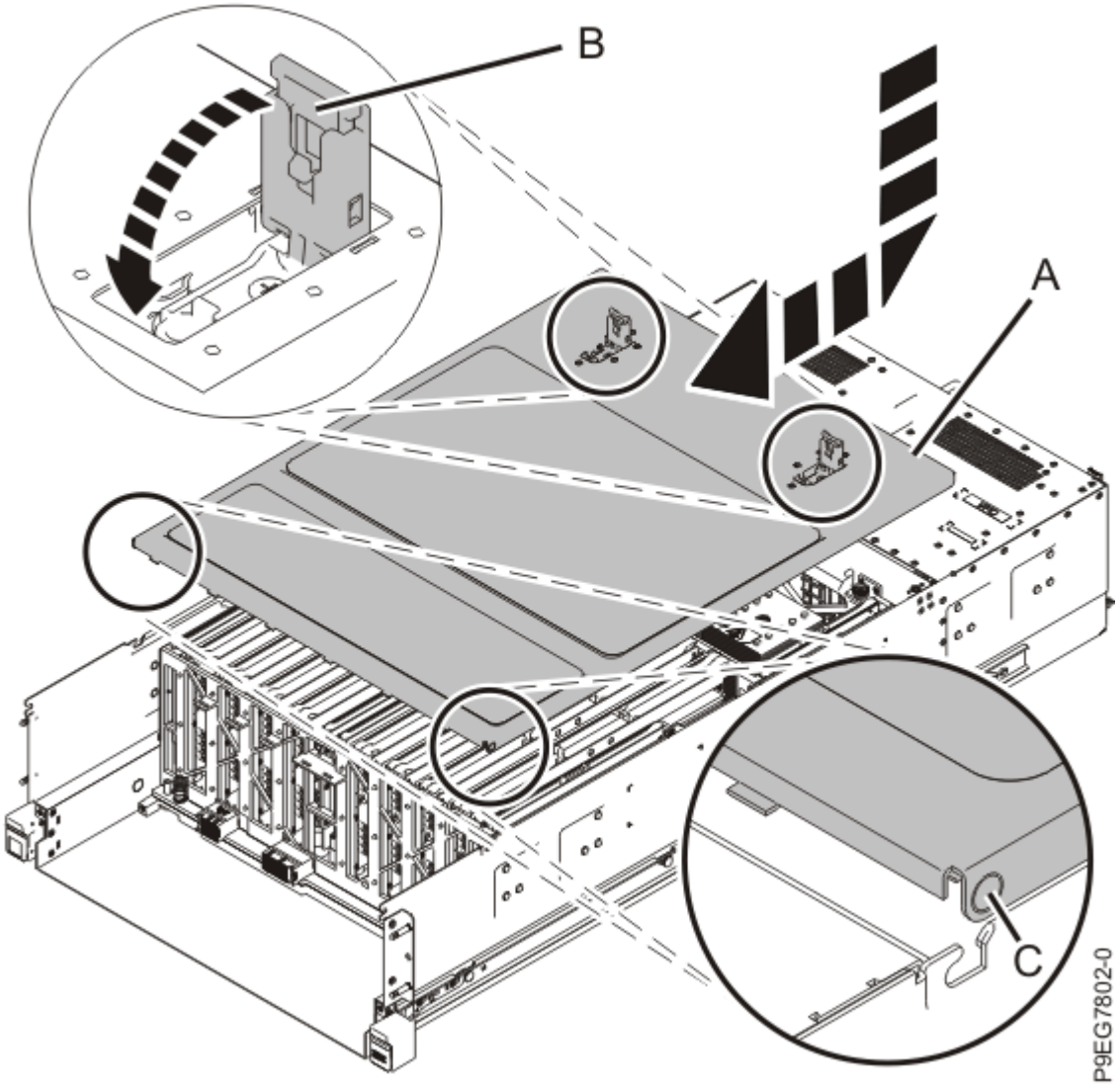



*Figure 145: Installing the service access cover*

36. Remove the system-to-rail locking clips.
    a) On the right rail, pull the blue latch marked **R**.
    b) While holding the blue latch, rotate the clip off the rail.
    c) Release the blue latch.
    d) Repeat steps “36.a” on page 165 through “36.c” on page 165 to remove the system-to-rail locking clip from the left rail.
37. Complete the following steps to place the system in the operating position.
    a. If needed, unlock the blue rail safety latches **(A)** by pushing them towards the front as shown in the following figure.
    b. Push the system unit back into the rack as shown in the following figure until both release latches of the system unit lock into position. Ensure that any cables do not catch or bind as you push in the system.

    **Note:** Slide the system unit slowly into the rack to ensure that your fingers do not get caught in the side rails.

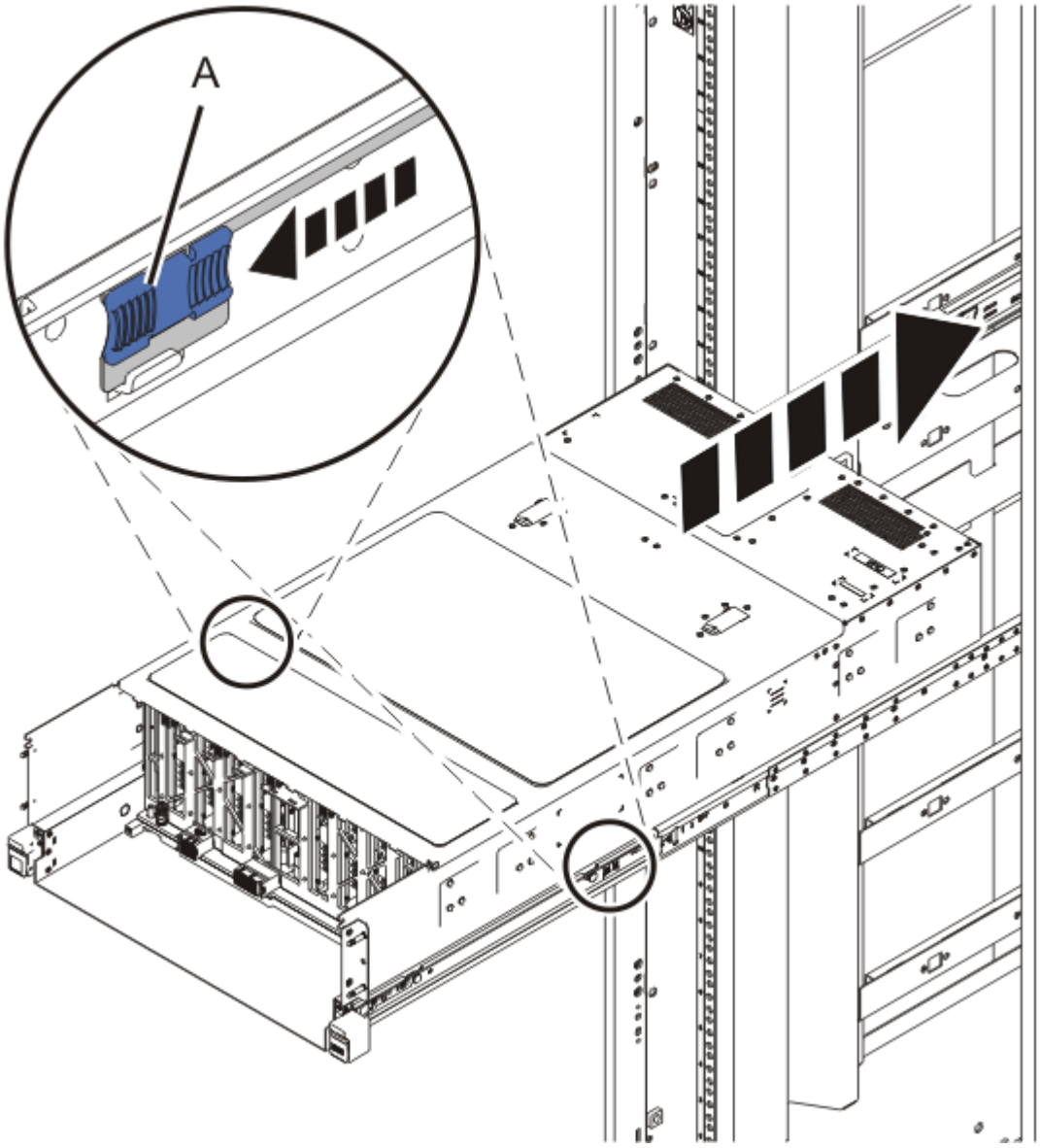



*Figure 146: Placing the system into the operating position*

38. Install the new replacement externally-secured SAS cable. Carefully insert the SAS cables into the rear of the system as shown in the following figure. Ensure that no connectors catch or bind on internal parts.
    a) Remove the protective covers for the smaller connectors that go through the system to the disk drive backplane.
    b) Do not yet remove the protective covers from the larger connectors that attach the SAS cables to the SAS PCIe adapters at the rear of the system.
    c) Push the SAS cables that connect to the disk drive backplane through to the front of the system.
    d) Insert the SAS cable holder **(A)** into the rear of the system.
    e) Secure the SAS cable holder with the screw **(B)**.

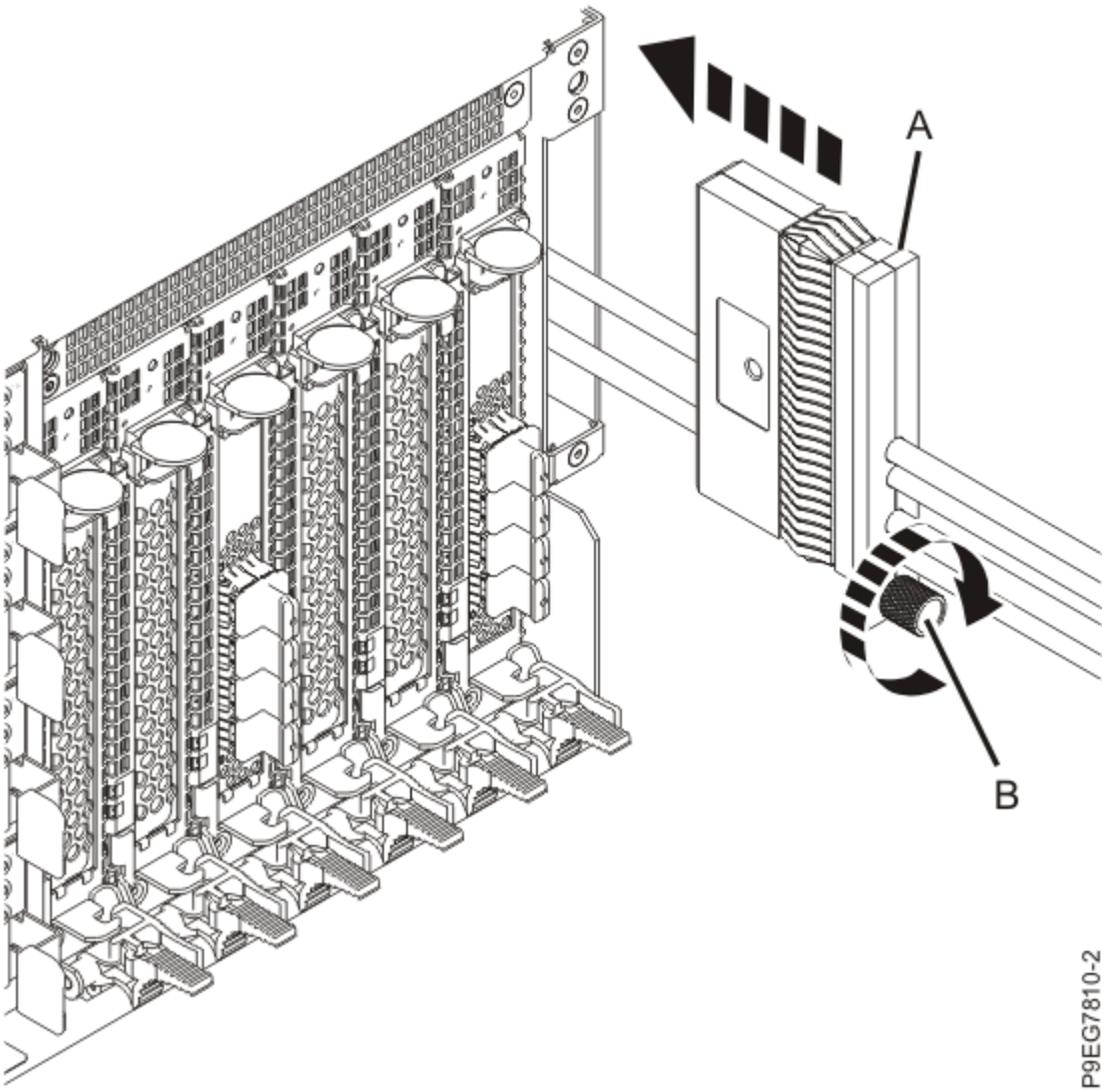



*Figure 147: Inserting the SAS cables and SAS cable holder*

39. Move the system unit out of the rack at most 79 cm (31 in), enough to remove the top cover.

    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.

    a. If not already removed, remove the shipping screws **(A)** as shown in the following figure by using a Phillips screwdriver.
    b. Release the side latches **(B)** by pressing them downward as shown in the following figure.
    c. Pull out the system unit **(C)** at most 79 cm (31 in) from the rack as shown in the following figure. Ensure that any cables do not catch or bind as you pull out the system.

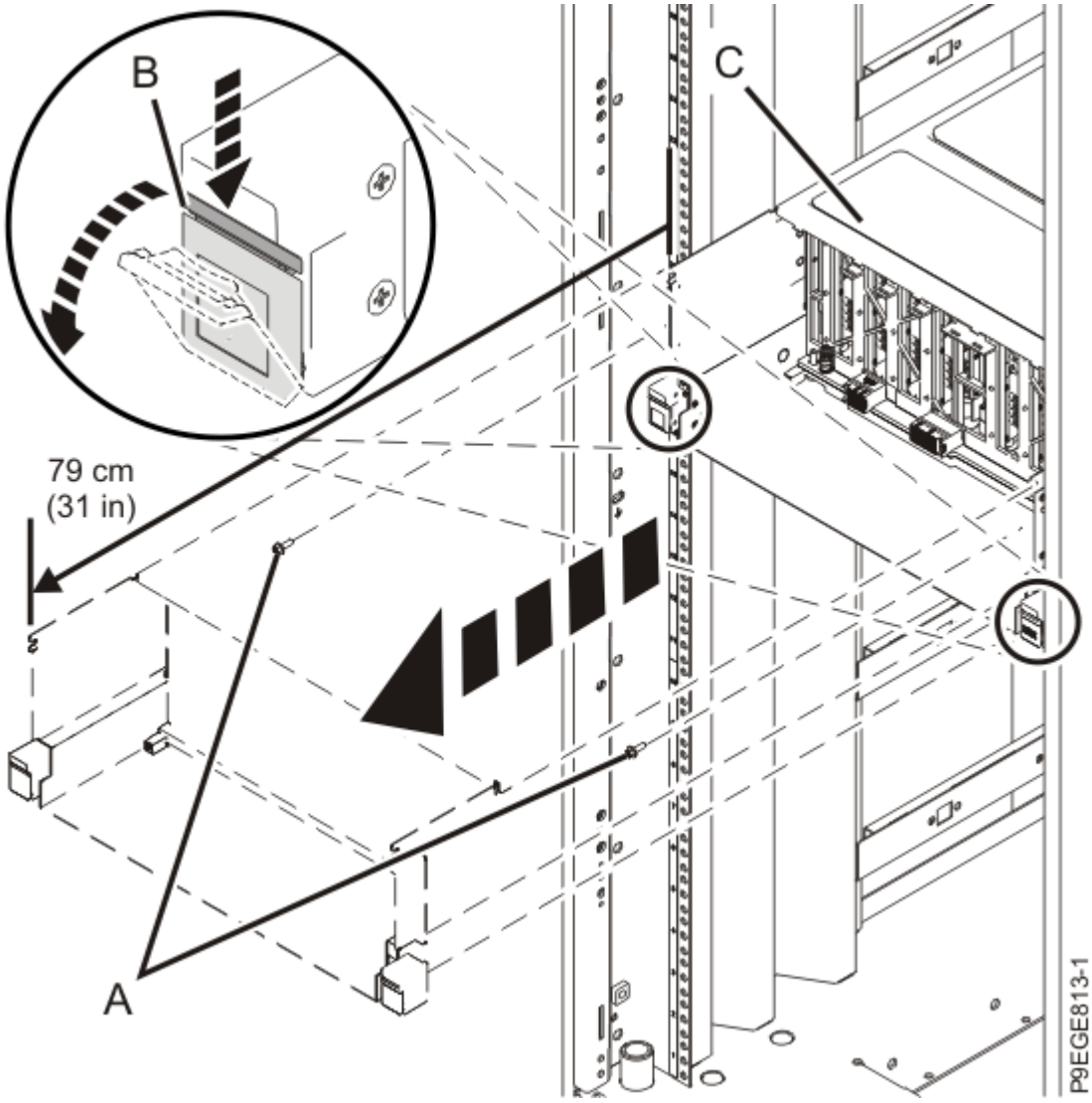



*Figure 148: Partially sliding the system from the rack*

40. Remove the service access cover by completing the following.

**Attention:** Operating the system without the cover for more than 10 minutes might damage the system components. For proper cooling and airflow, replace the cover before turning on the system.

a. Push the release latches **(A)** in the direction shown in the following figure.

b. Slide the cover **(B)** off the system unit as shown in the following figure. When the front of the service access cover has cleared the upper frame ledge, lift the cover up and off the system unit.

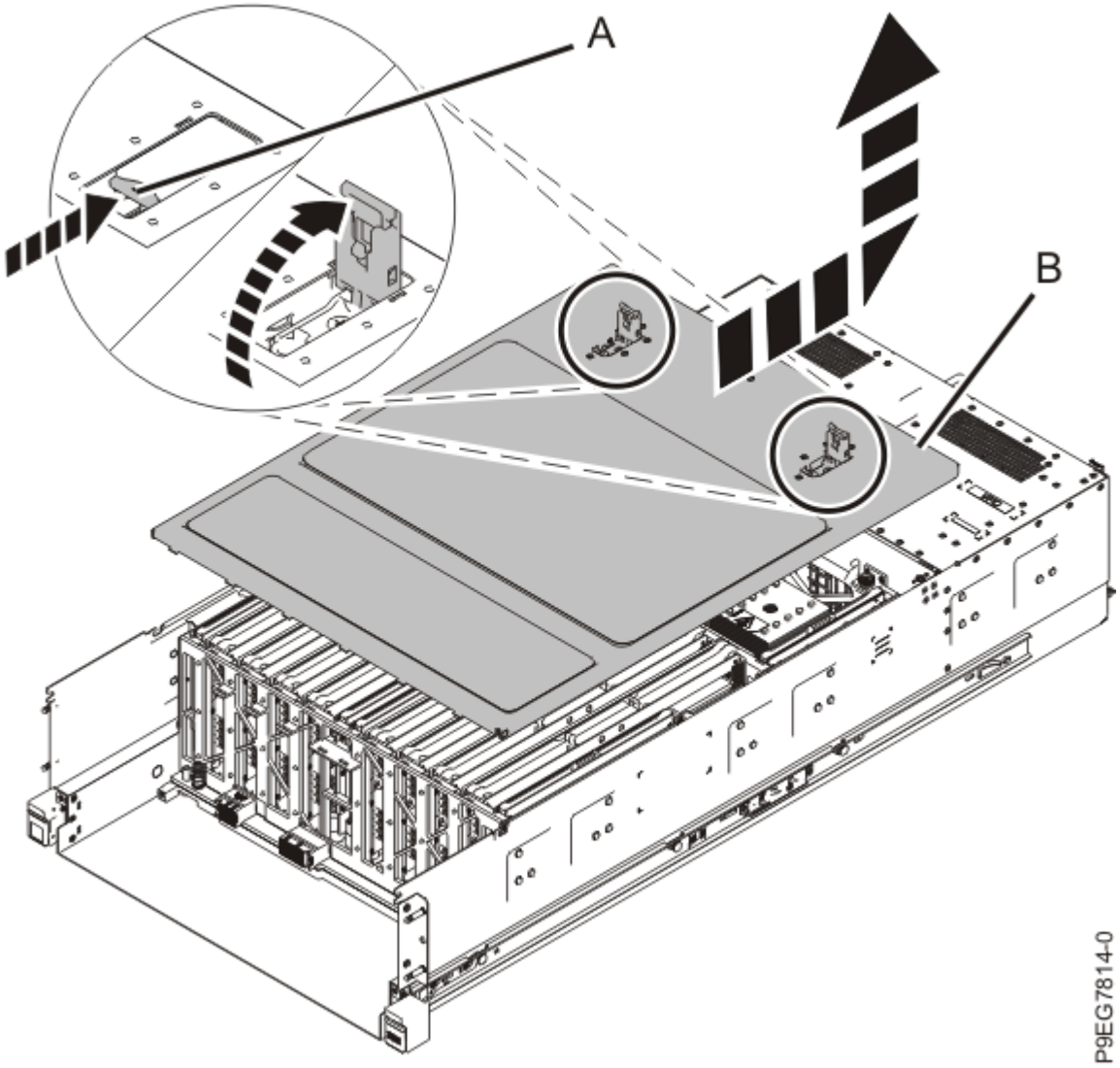



*Figure 149: Removing the service access cover*

41. Place the SAS cables **(A)** against the foam of the SAS cable support **(B)** as shown in the following figure. With your fingers holding the SAS cables against the foam, lower the SAS cable support **(B)** and SAS cables straight down between the alignment pins **(C)**.

    The foam holds the cables against the side of the system and prevents air from blowing through the side channel. Do not simply press the support **(B)** down in the channel on top of the cables.

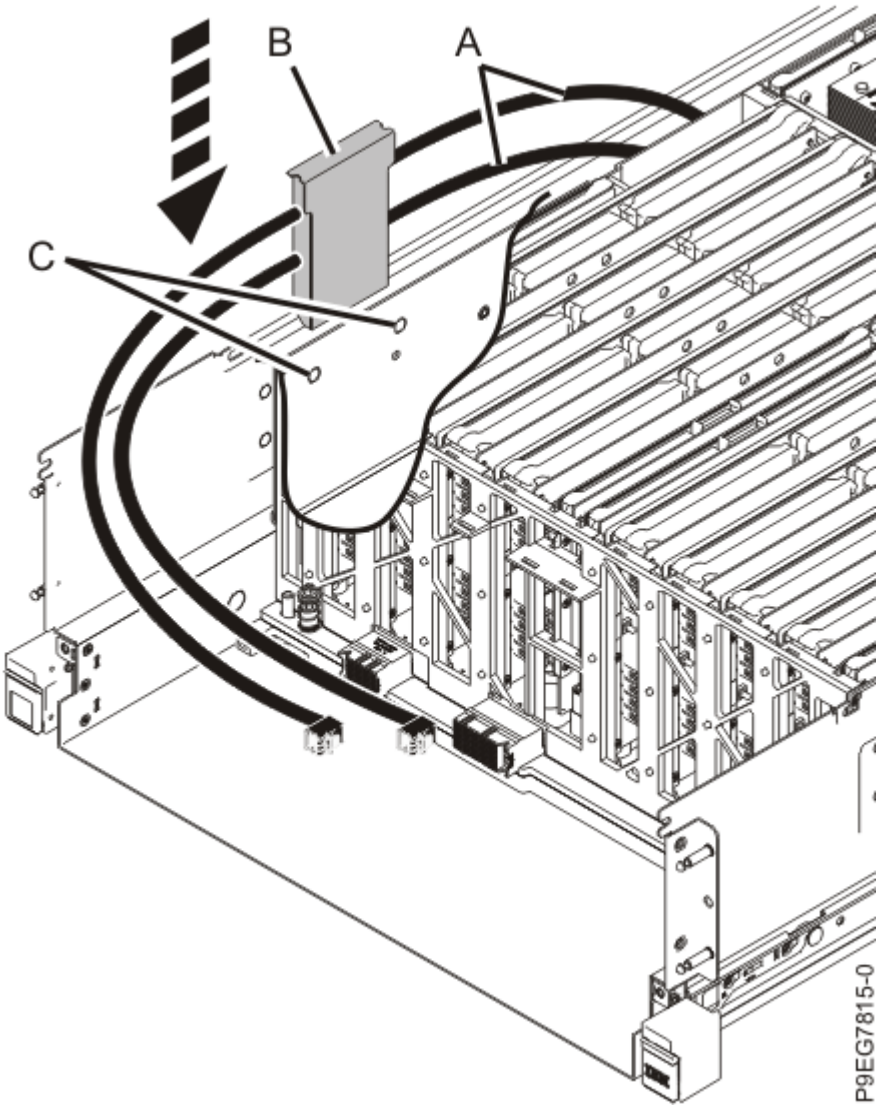



*Figure 150: Replacing the SAS cable holder*

42. Replace the service access cover.
    a) Lower the cover **(A)** onto the system unit. Ensure that the cover alignment pins **(C)** on each side of the cover fit into the matching slots in the chassis.
    b) Slide the cover **(A)** onto the system unit.
    c) Close the release latches **(B)** by pushing it in the direction that is shown in the following figure.

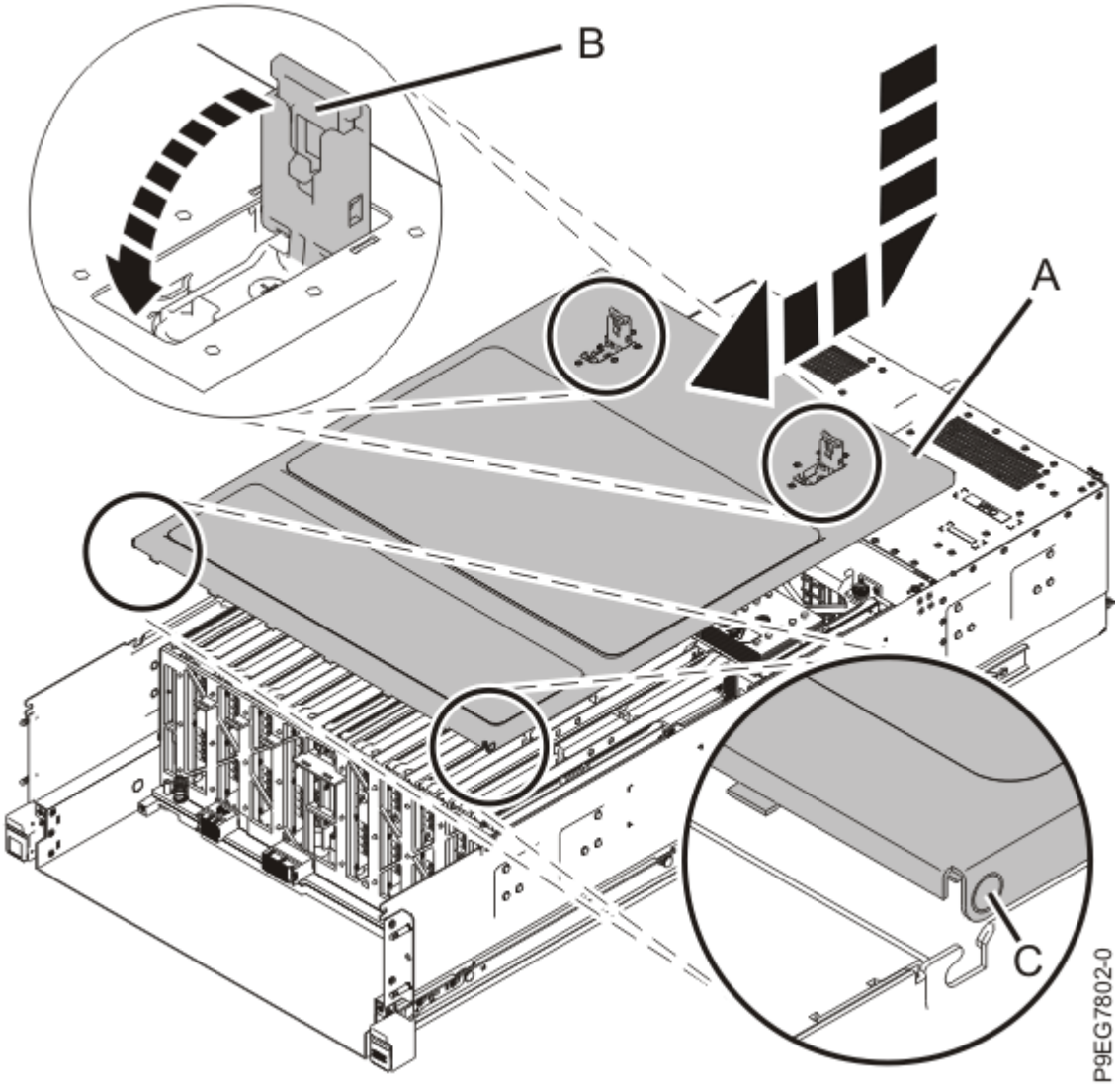



*Figure 151: Installing the service access cover*

43. Route the SAS cables around to the front of the system.

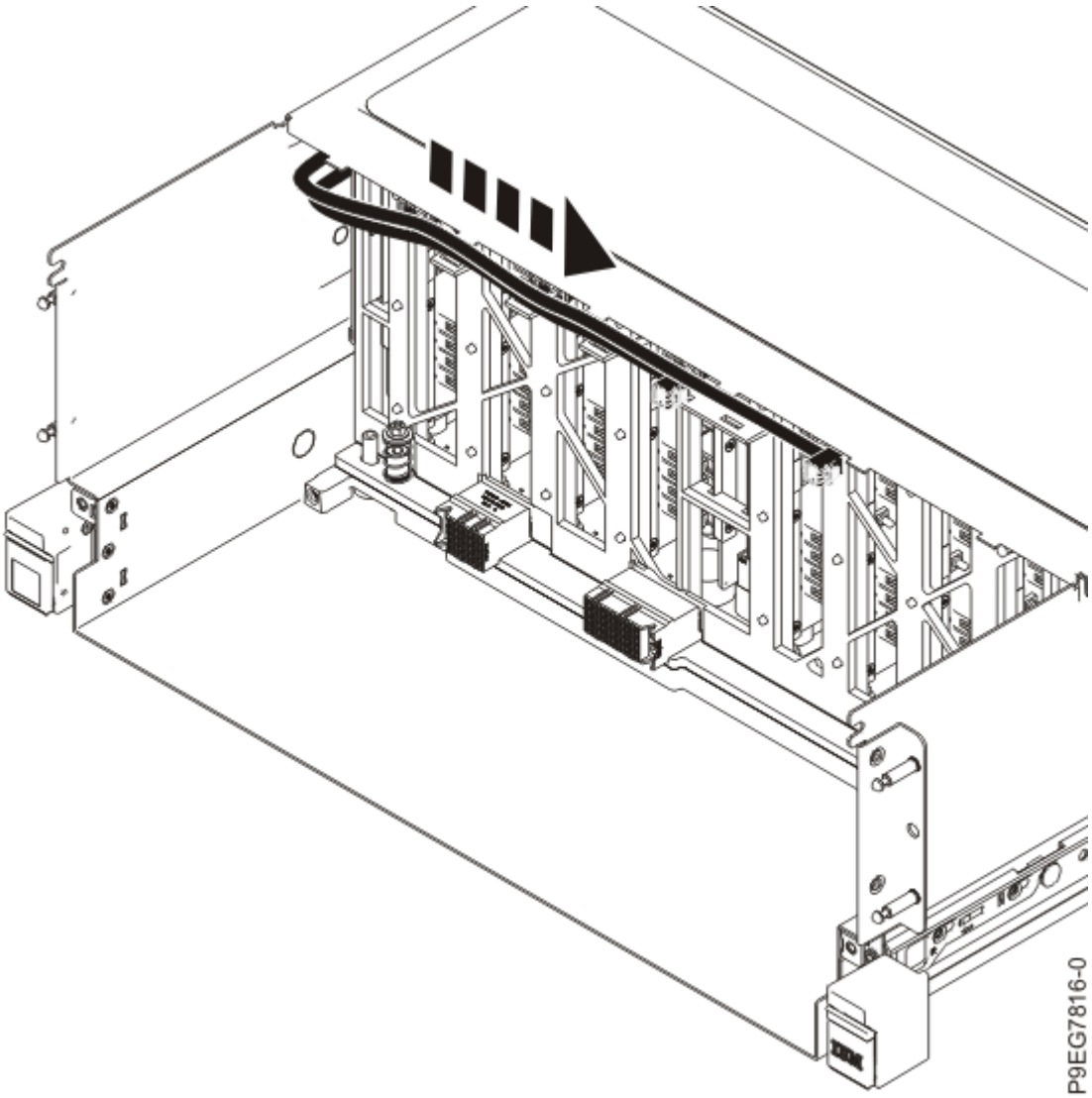



*Figure 152: Routing the SAS cables*

44. To replace the disk drive backplane, complete the following steps:

    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.

    a) Using two hands, grasp the disk drive backplane where indicated by the blue squares in the following figure. Partially insert the disk drive backplane straight into the front of the system.

       Do not yet fully insert the disk drive backplane; leave about a 2.5 cm (1 in) gap at the rear of the disk drive backplane.

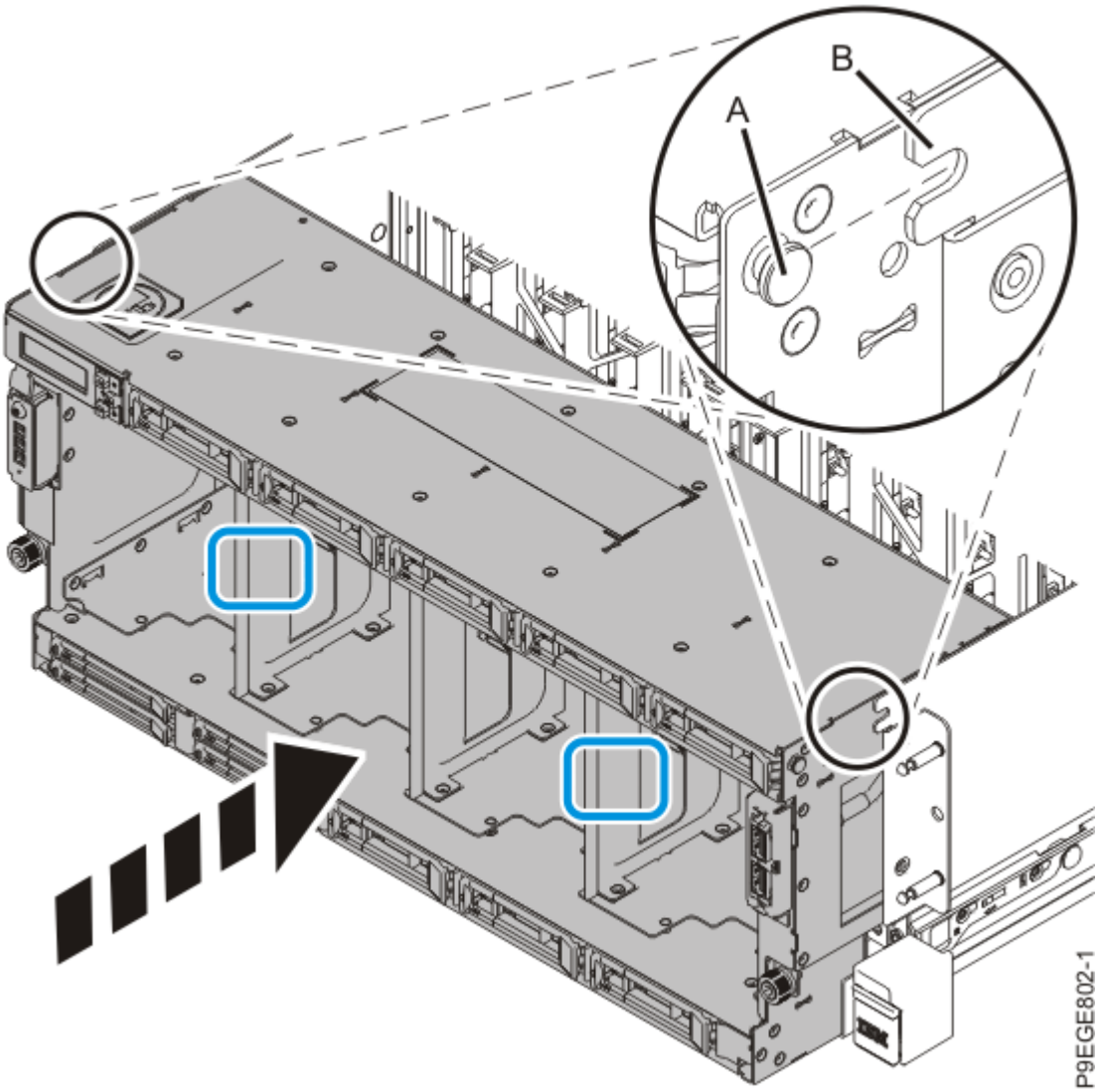



*Figure 153: Partially replacing the disk drive backplane*

b) Move the system unit **(A)** to be at most 20.3 cm (8 in) from the rack as shown in the following figure. Ensure that any cables do not catch or bind as you move the system.

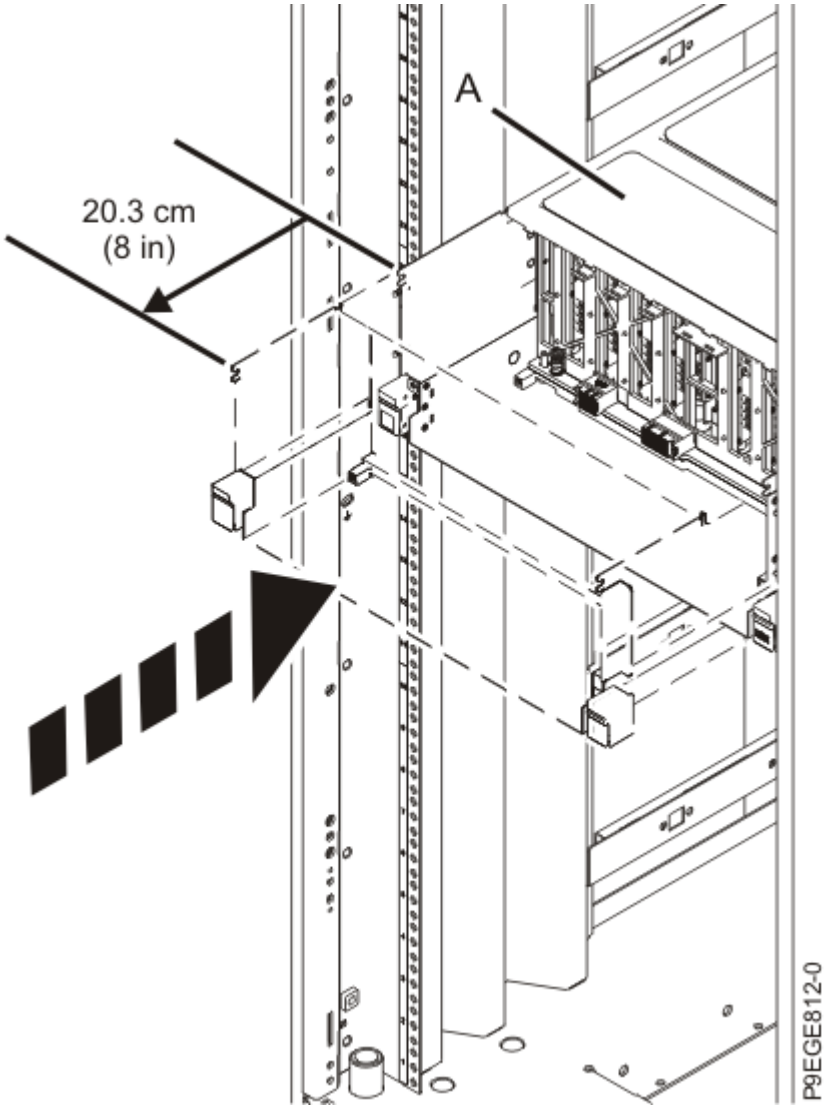



*Figure 154: Partially sliding the system into the rack*

c) Using the connector labels near the ends of the SAS cables, attach the SAS cables to the rear of the disk drive backplane as shown in the following figure.

   Hold the disk drive backplane while you attach the SAS cables to prevent the disk drive backplane from tipping forwards out of the system.

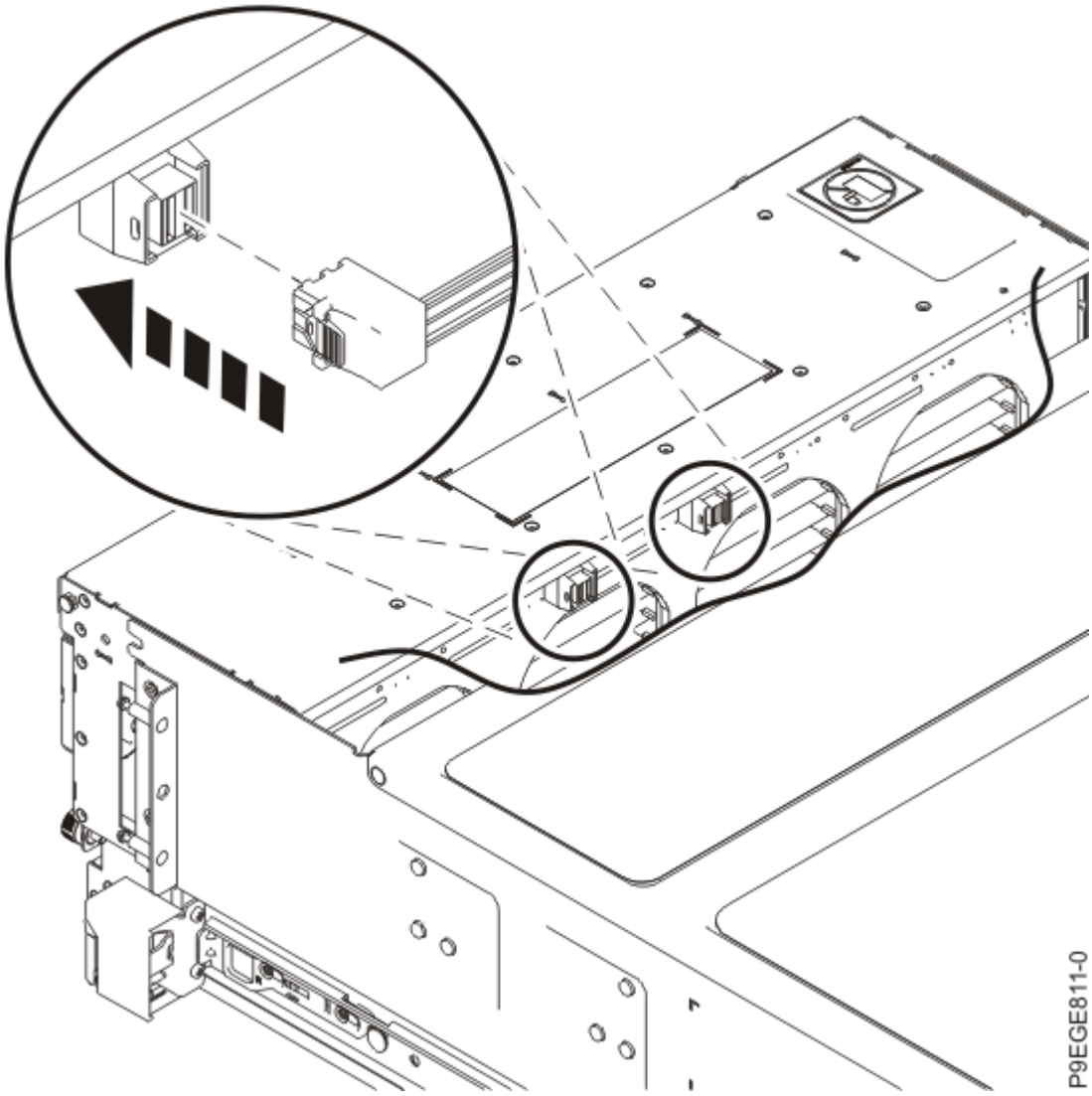



*Figure 155: Attaching the SAS cables*

d) Again using two hands, push the disk drive backplane back into place, ensuring that the alignment pins at **(A)** insert into the slots at **(B)**.

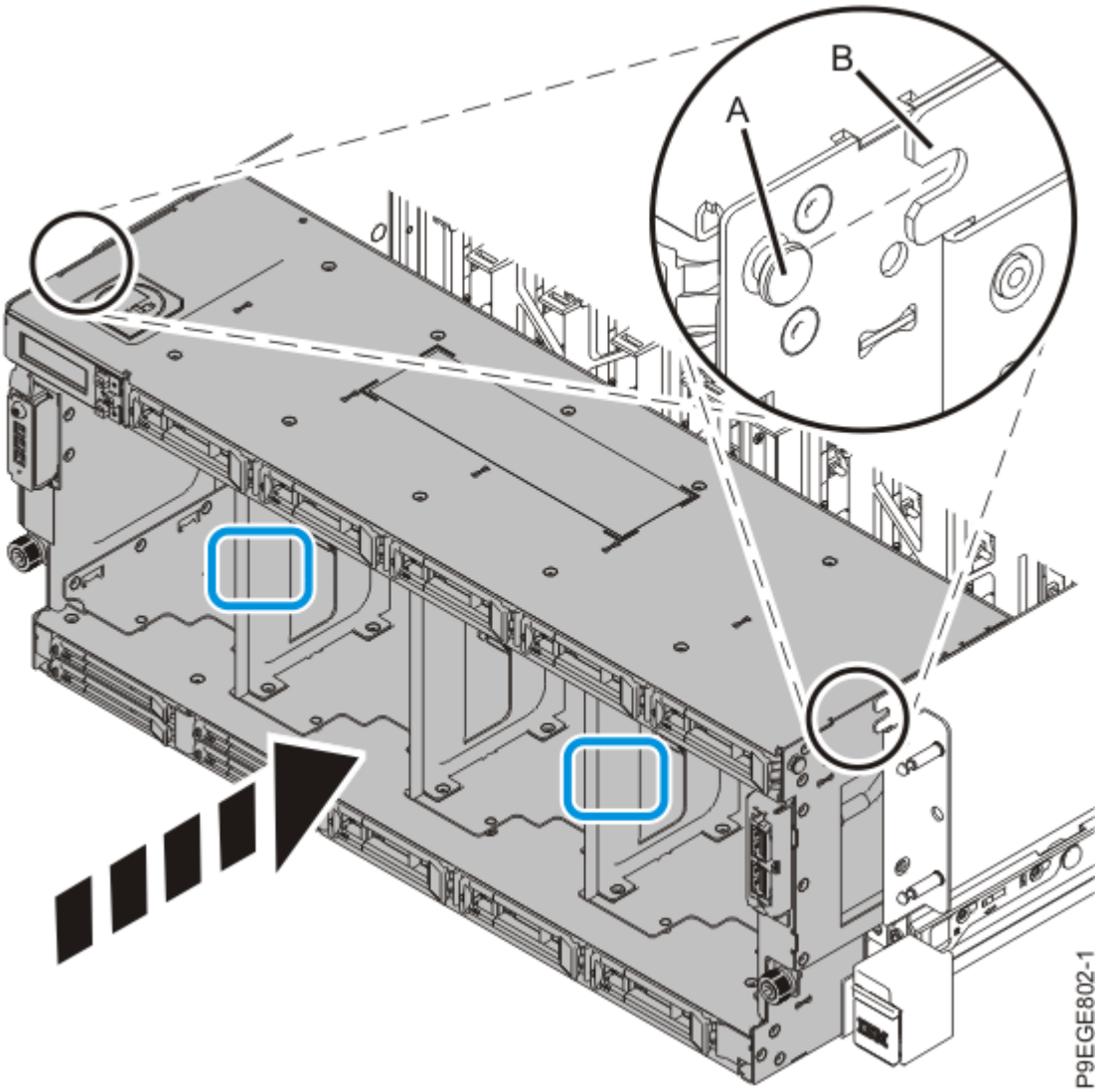



*Figure 156: Replacing the disk drive backplane*

e) Push the system unit **(A)** back into the rack until both release latches of the system unit lock into position. Ensure that any cables do not catch or bind as you push in the system.

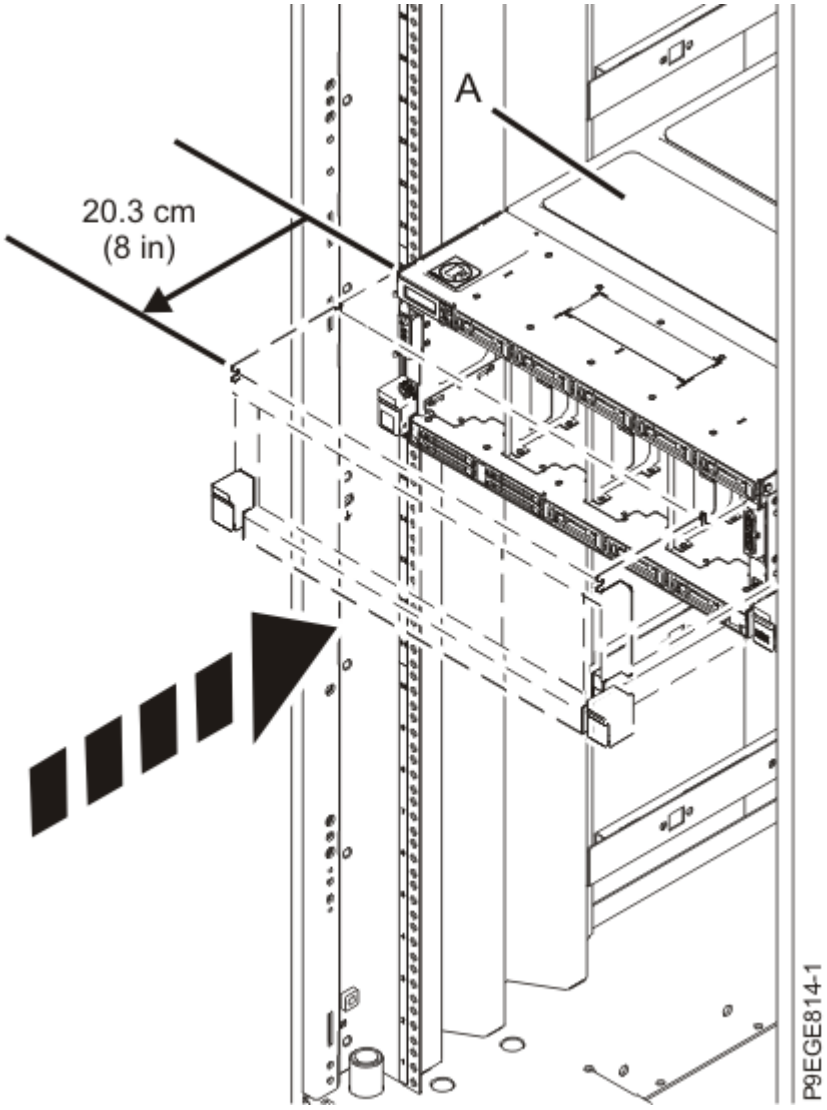



*Figure 157: Placing the system into the operating position*

f) Secure the disk drive backplane with two recessed screws at **(A)**. Use a 4 mm ball-end hex driver (130 mm long, IBM part number 02EA546) to tighten the screws.

First, set the screw threads on one side, then the other. Then, evenly tighten the screws on both sides until both sides are seated. If you screw in one side of the disk drive backplane completely, the disk drive backplane might twist, preventing the disk drive backplane from properly seating in the chassis.

g) Secure the disk drive backplane with two screws at **(B)**.

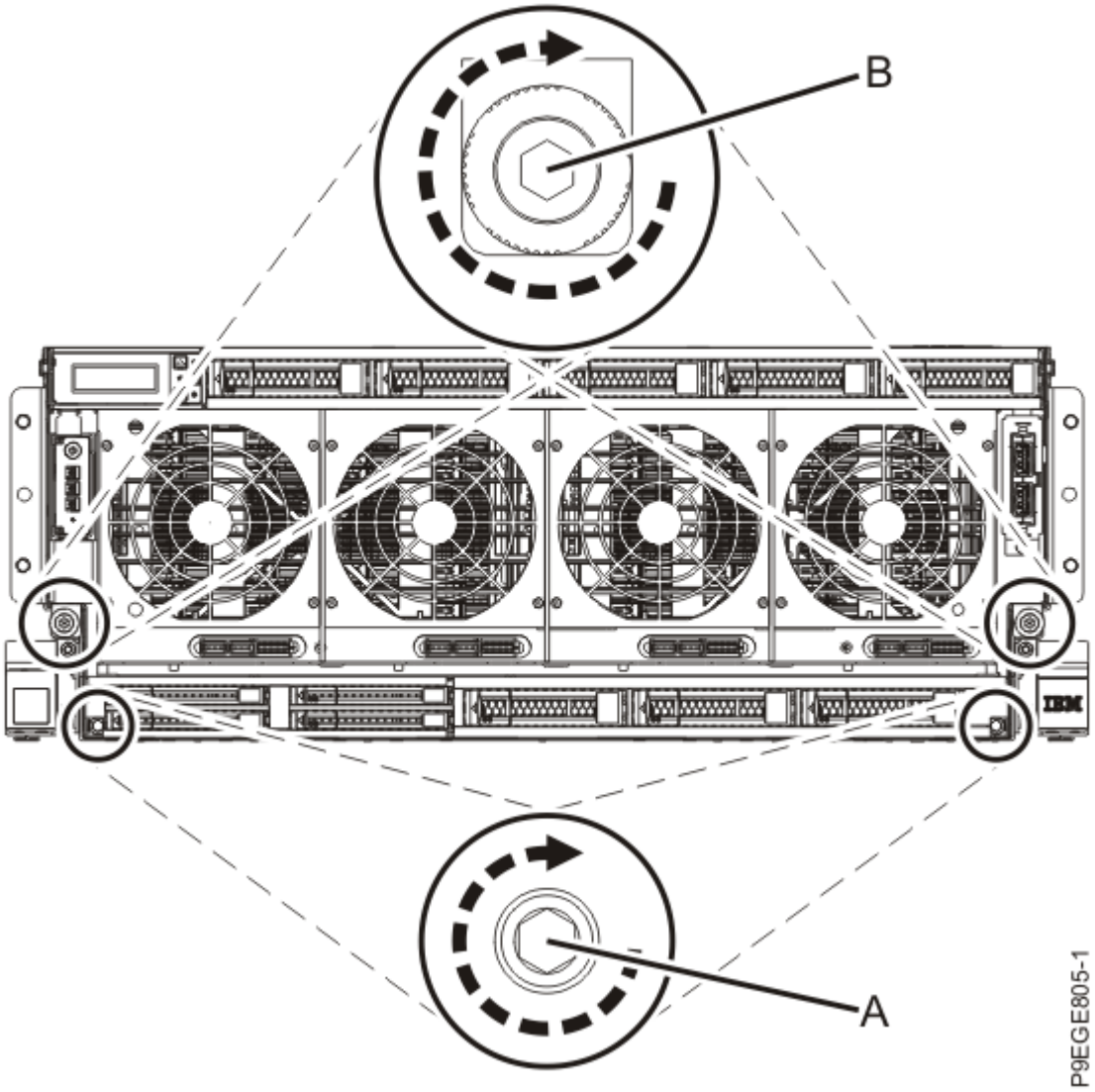



*Figure 158: Fastening the screws for the disk drive backplane*

45. Replace all the fans in the disk drive backplane.
    a) Ensure that the fan handle **(A)** is open as shown in the following figure.
    b) Hold on to the fan handle and by using your hand to support the bottom of the fan, push the fan into its slot as shown in the following figure.
    c) Push the fan handle in the direction that is shown in the following figure.
    d) Push against the left front of the blue touch point latch **(B)** with your thumb and then slightly pull the latch at **(C)** with your index finger. This action opens the latch.
    e) Continue to push in the lever with your thumb until the latch is fully seated at **(C)**.

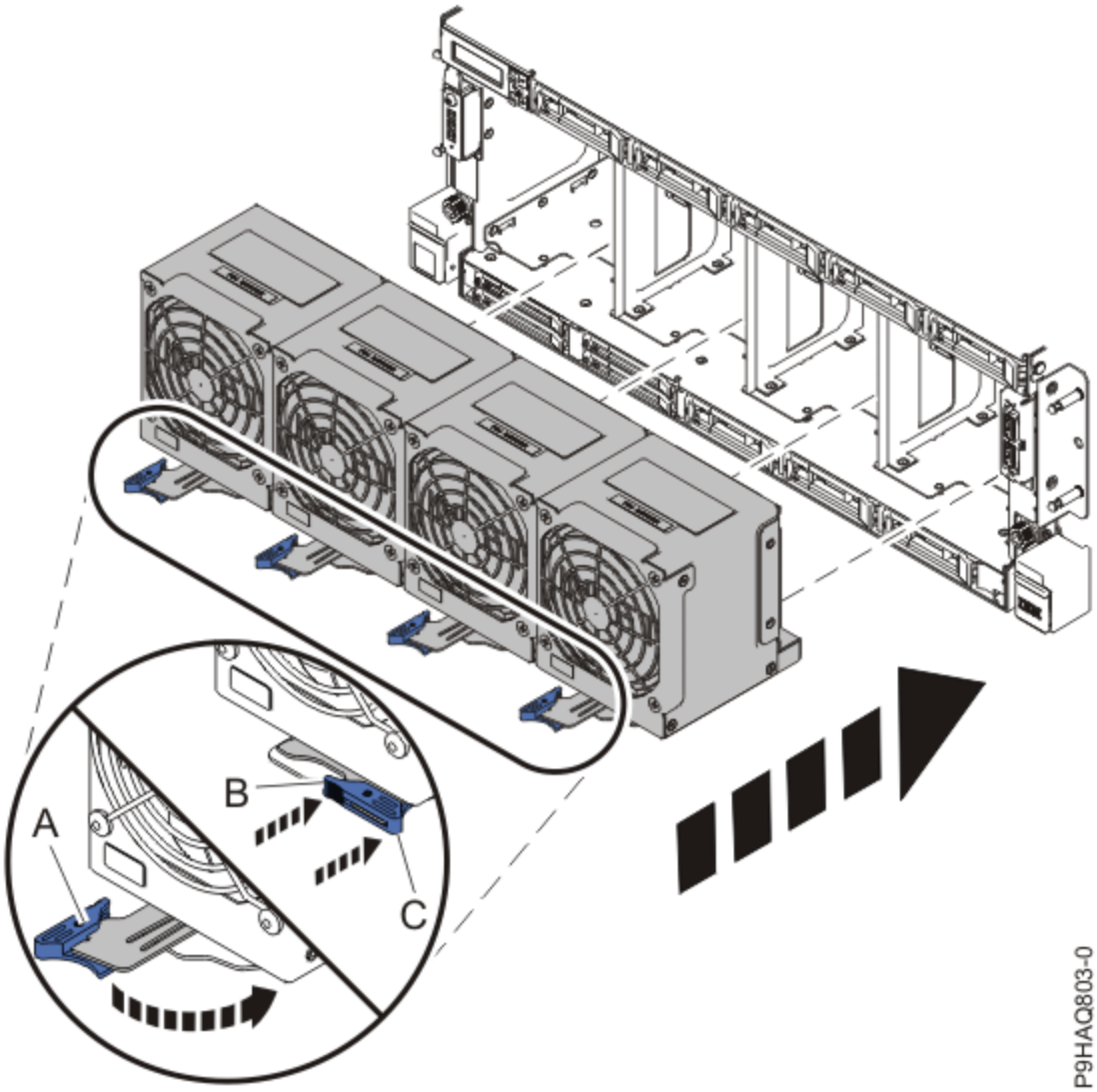



*Figure 159: Replacing the fans*

46. Replace the front cover. For instructions, see Installing the front cover (www.ibm.com/support/knowledgecenter/POWER9/p9haj/p9haj_950_front_bezel_on.htm).
47. Replace the power supplies:
    a) Slide the power supply into the system until the latch locks in place.
    b) Repeat step “47.a” on page 179 to replace the remaining power supplies.

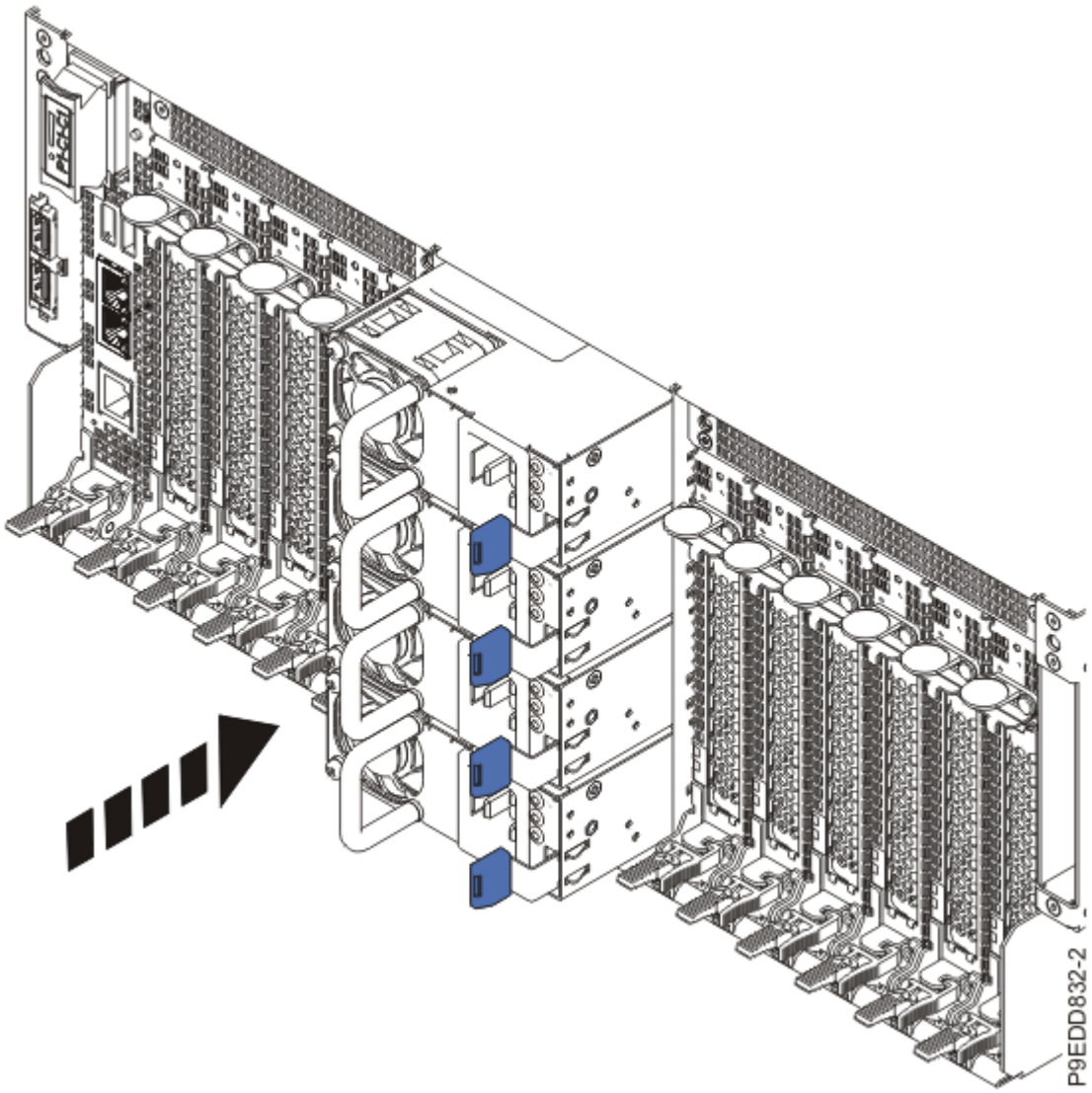



*Figure 160: Replacing the power supplies*

48. Replace the PCIe adapter cassettes.
    a) Slide the PCIe adapter cassette forward until the cassette is fully seated.
    b) To lock the cassette in its slot, squeeze the latch lever **(A)** toward the latch **(B)** and rotate the latch **(B)** in the direction that is shown.

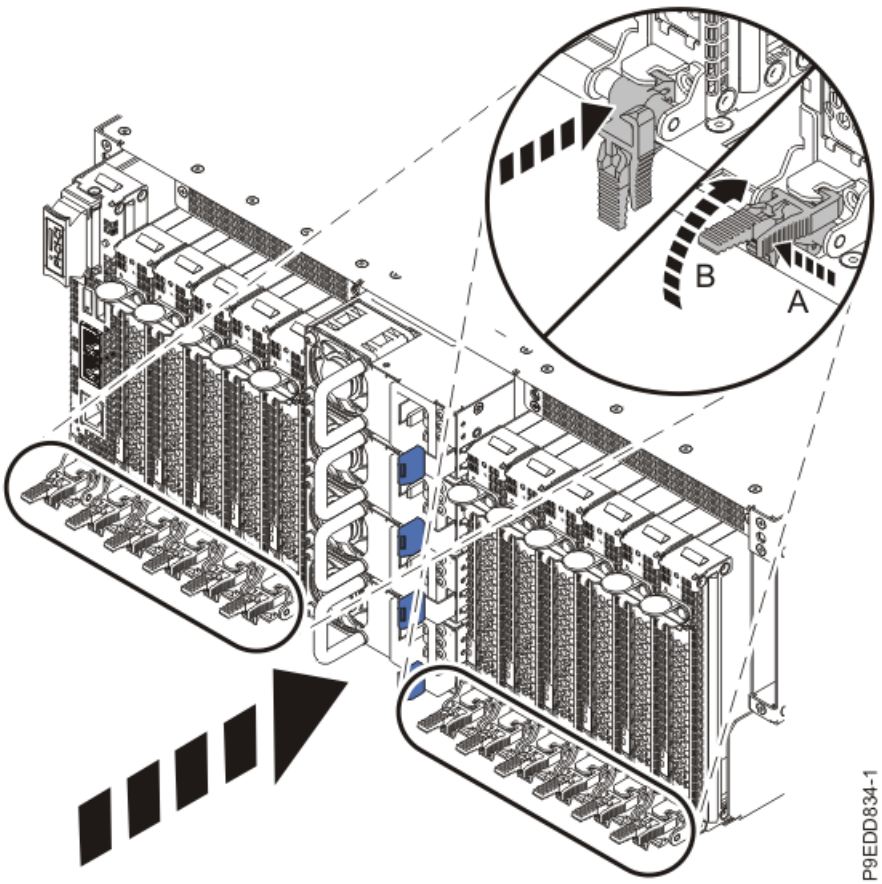



*Figure 161: Replacing the PCIe adapter cassettes*

c) Repeat steps “48.a” on page 180 through “48.b” on page 180 to replace the remaining PCIe adapter cassettes.

49. Using the labels on the cables, based on your configuration, remove the protective SAS cable covers, and insert the SAS cables into the PCIe cards as shown in the following figure.

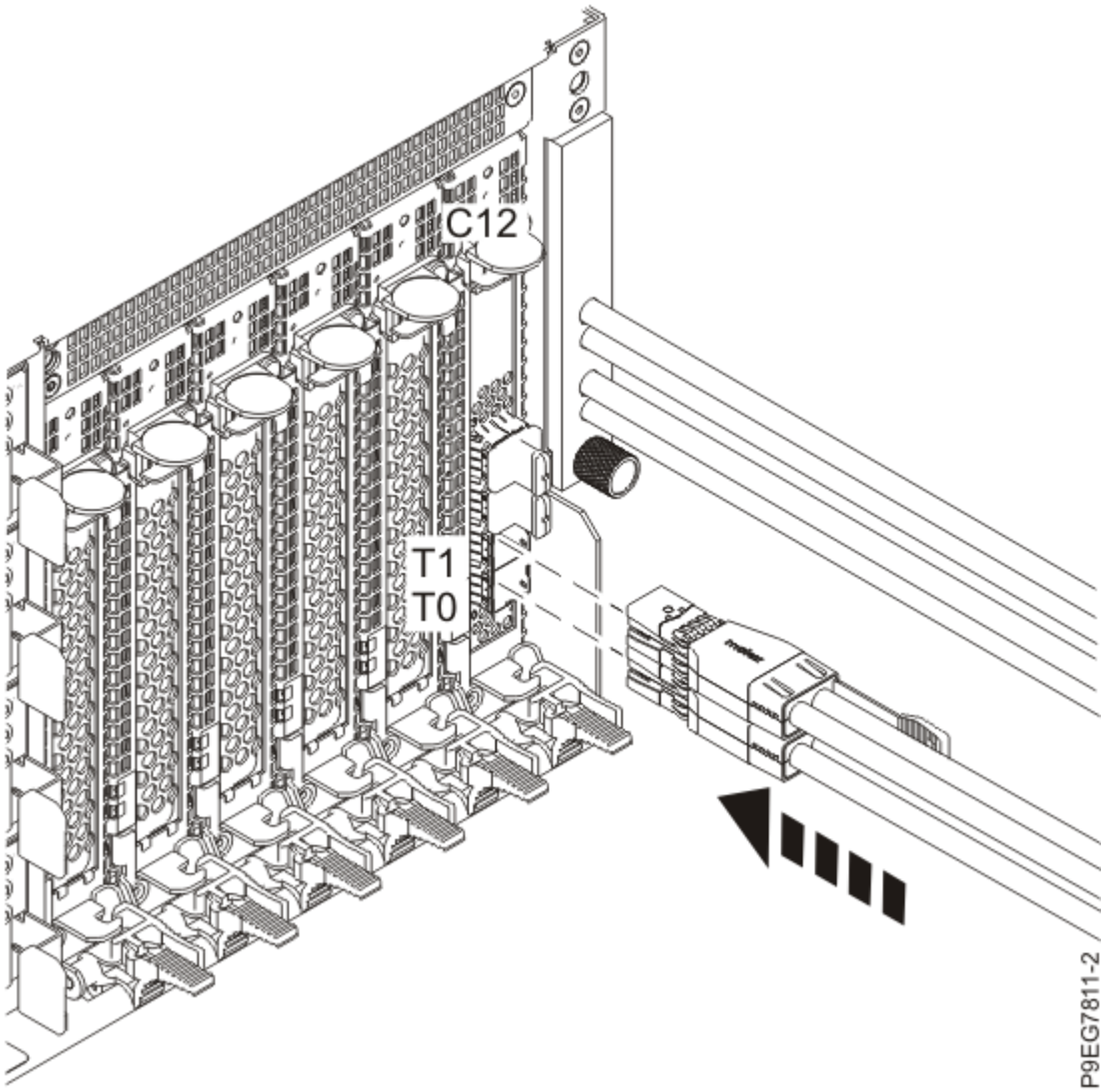



*Figure 162: Plugging the SAS cables for the base configuration*

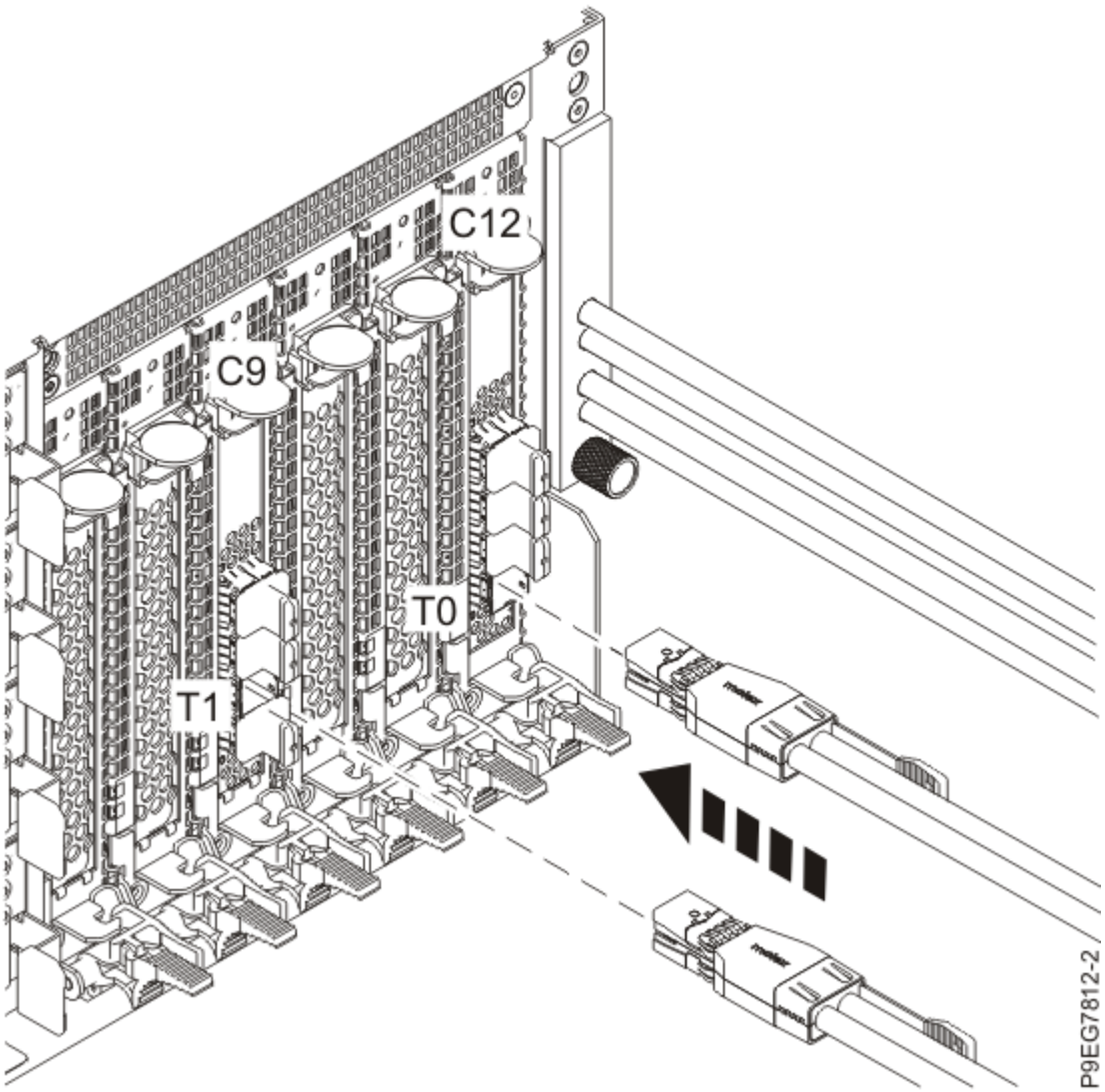



*Figure 163: Plugging the SAS cables for the split configuration*

50. Using your labels, reconnect all of the external cables that plug into the PCIe adapters.
51. Reconnect the power cords to the system. For instructions, see Connecting the power cords (www.ibm.com/support/knowledgecenter/POWER9/p9haj/p9haj_950_power_cord_in.htm).
52. 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).
53. Start the system. For instructions, see Starting a system (www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustartsys.htm).
54. Verify the installed part.
    - If you replaced the part because of a service action, verify the installed part. For instructions, see https://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 https://www.ibm.com/support/knowledgecenter/POWER9/p9haj/pxhaj_hsmverify.htm (www.ibm.com/support/knowledgecenter/POWER9/p9haj/pxhaj_hsmverify.htm).

# Memory modules and memory risers for the 9040-MR9

Find information about memory modules and memory risers in the IBM Power System E950 (9040-MR9) server.

## Memory modules for the 9040-MR9

Find information about installing, removing, and replacing the memory modules in the IBM Power System E950 (9040-MR9) server.

### Installing memory modules in the 9040-MR9 system

To install memory modules in a system, complete the steps in this procedure.

Before you install a feature, ensure that the software that is required to support the feature is installed on your system. For more information about software prerequisites, see the Power Systems Prerequisites website (https://www14.software.ibm.com/support/customercare/iprt/home). If the required software is not installed, see the following websites to download it, and then install it before you continue:

- To download firmware updates, software updates, and fixes, see the Fix Central website (http://www.ibm.com/support/fixcentral/).
- To download Hardware Management Console (HMC) updates and fixes, see the Hardware Management Console Support and downloads website (https://www14.software.ibm.com/webapp/set2/sas/f/hmcl/home.html).

**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 complete the steps for installing a memory module in the system. For instructions, see Installing a part by using the HMC (www.ibm.com/support/knowledgecenter/POWER9/p9haj/hmcinstall.htm).

If your system is not managed by an HMC, complete the steps in the following procedures to install a memory module in the system.

#### Preparing the 9040-MR9 system to install memory modules

To prepare the system to install memory modules, complete the steps in this procedure.

1. Determine the slots in which you want to install the memory modules.

   See “Plugging rules for memory modules in the 9040-MR9 system” on page 207 to understand the plugging rules and to ensure that you plug the memory modules in the correct sequence. Record the plugging order of the memory module slots for the installation.
2. 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.
3. Stop the system. For instructions, see Stopping a system (www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustopsys.htm).
4. Label and disconnect the power source from the system by unplugging the power cords from the system.

   **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 power sources to the system are disconnected.
- The power cord **(B)** is fastened to the system with a 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.

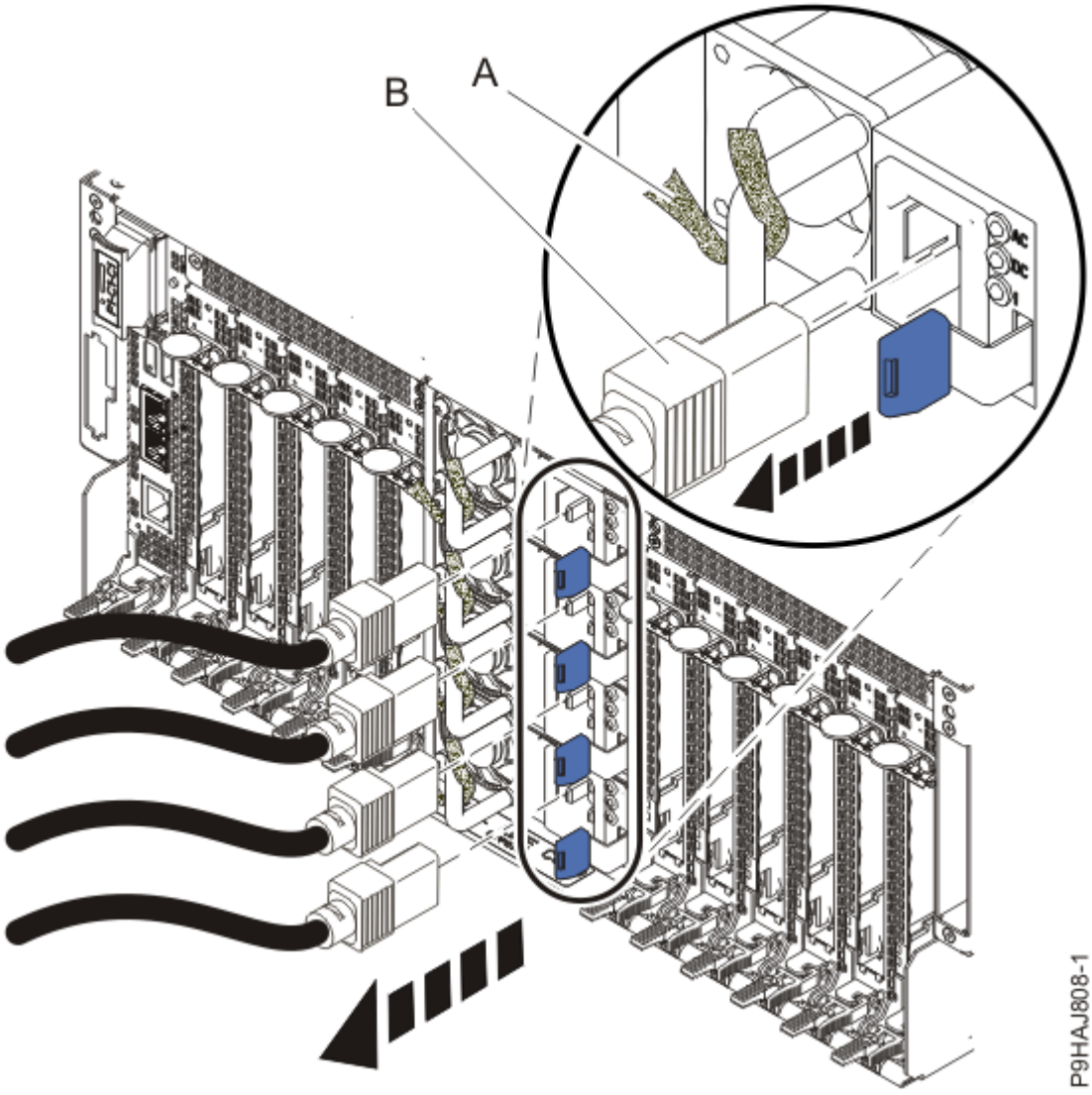
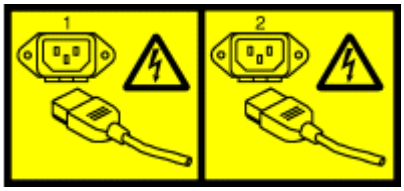



*Figure 164: Removing the power cords*

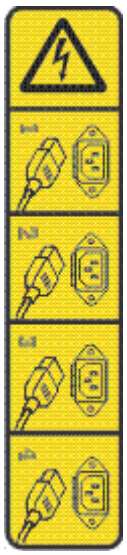
**(L003)**



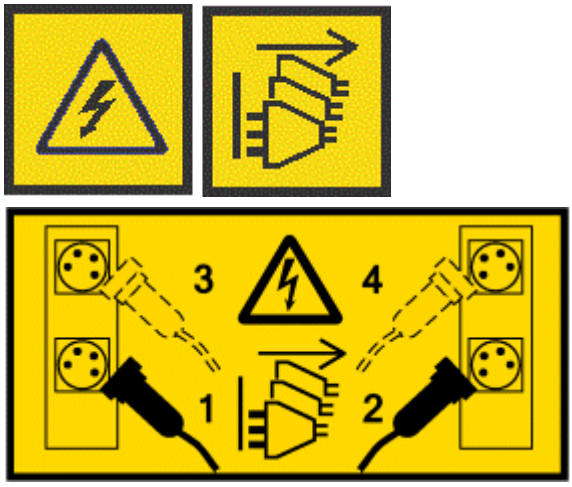

or

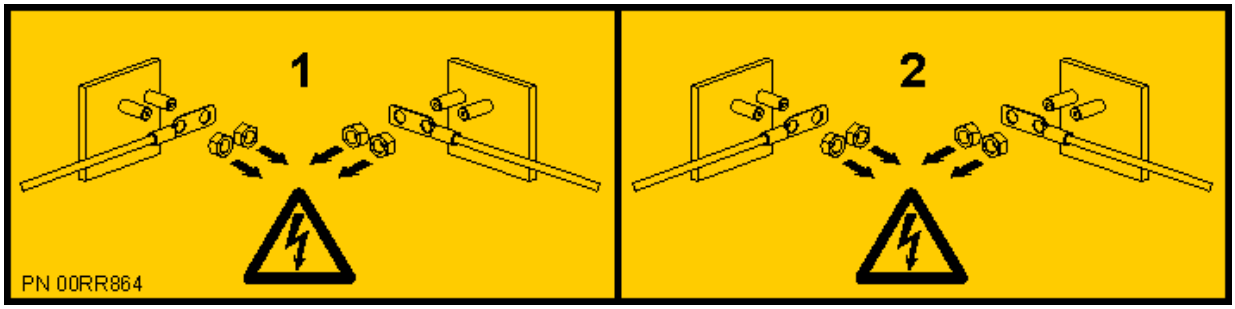
or

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. Label and disconnect all external cables that are attached to the PCIe adapters.
6. Place the system into the service position. For instructions, see Placing a system into the service position (www.ibm.com/support/knowledgecenter/POWER9/p9haj/p9haj_950_service_position.htm).
7. 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.

8. Remove the service access cover.

**Attention:** Operating the system without the cover for more than 10 minutes might damage the system components. For proper cooling and airflow, replace the cover before turning on the system.

a. Push the release latches **(A)** in the direction shown in the following figure.

b. Slide the cover **(B)** off the system unit as shown in the following figure. When the front of the service access cover has cleared the upper frame ledge, lift the cover up and off the system unit.

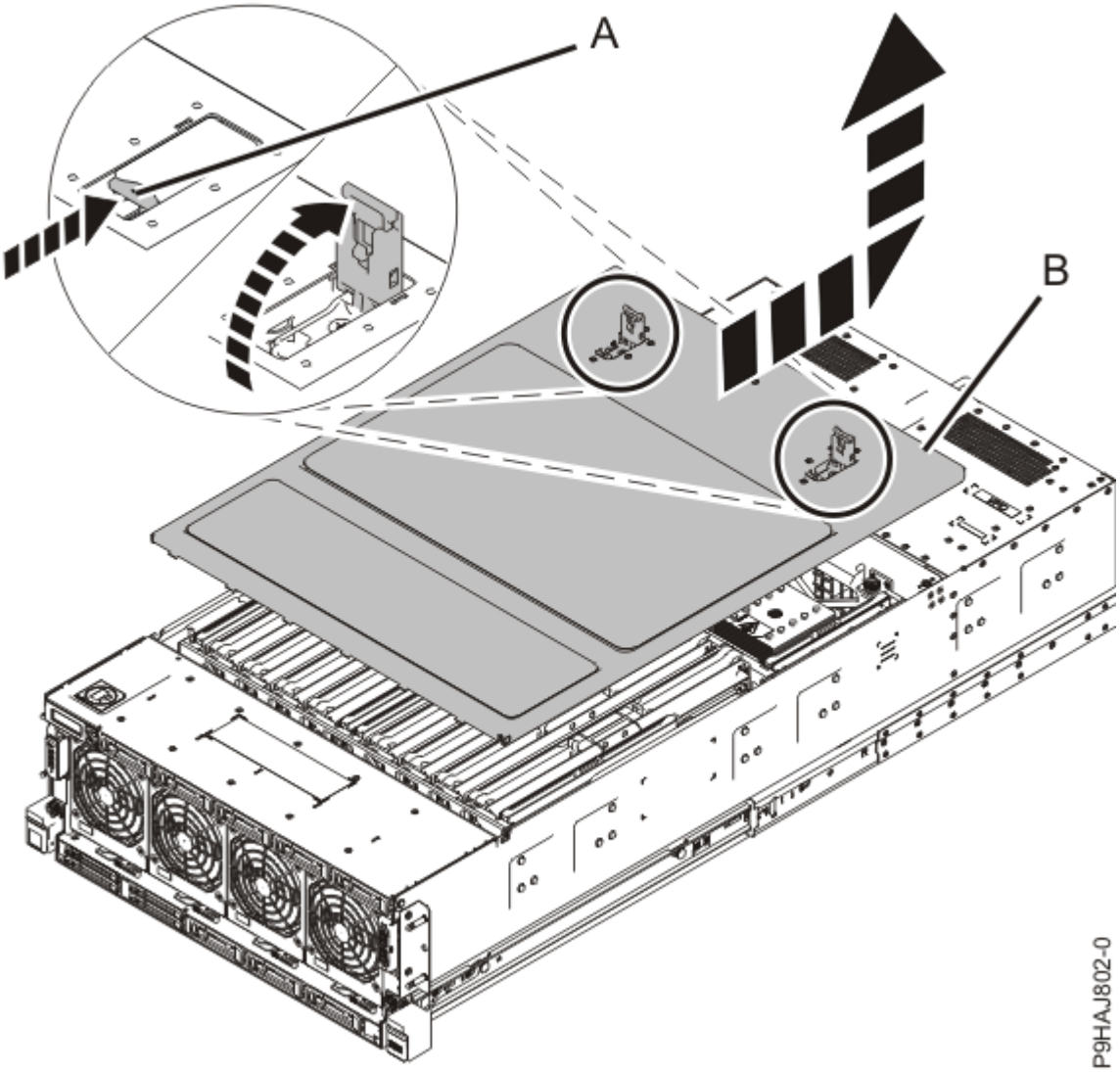



*Figure 165: Removing the service access cover*

9. Remove the memory riser.
   a) Open the release latches **(A)** on the memory riser as shown in the following figure. Open the latches to the fully upright 90 degree position.
   b) Pull out the memory riser from the slot by holding onto the latches.

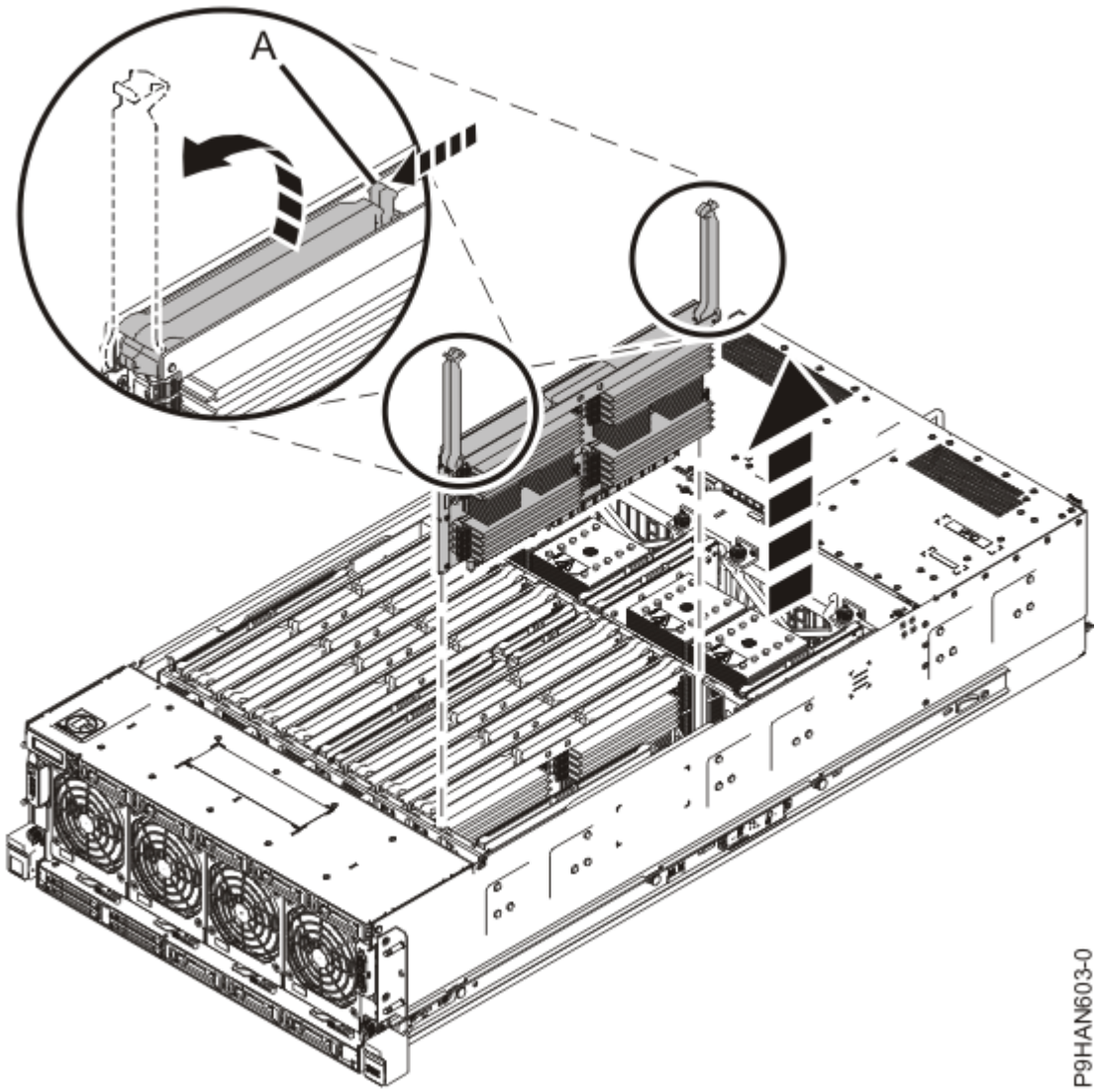



*Figure 166: Removing a memory riser*

**Installing memory modules in the 9040-MR9 system**

To install memory module into a memory riser, complete the steps in this 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. Use the slot information that you recorded to determine the slot location to place the memory module.
3. If the slot you want to use contains a filler, remove the filler from the slot. Push the locking tabs **(A)** away from the filler.

   **Note:** The memory module slots must contain either a memory module or a filler to ensure proper cooling.

   To remove the memory module filler, complete the following steps:

   a) To unlock the memory module filler from its connector in the slot, push the locking tabs away from the memory module filler. If you find it hard to open the tabs with your fingers, you may use the tips of ball point pens, or the eraser ends of pencils.

      The lever action of the tabs pushes the memory module filler out of the connector.

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

   c) Retain the removed memory module filler so that you can use it to fill up an empty slot, if required.
4. Grasp the new memory module along its edges and align it with the slot.

**Attention:** Memory modules are keyed to prevent a memory module from being installed incorrectly. Note the location of the key tab within the memory module connector before you attempt to install the memory module.

5. Ensure that the locking tabs of the memory module are open. Slowly press the memory module straight down, firmly into the slot, until the locking tabs lock into place. See Figure 167 on page 191.

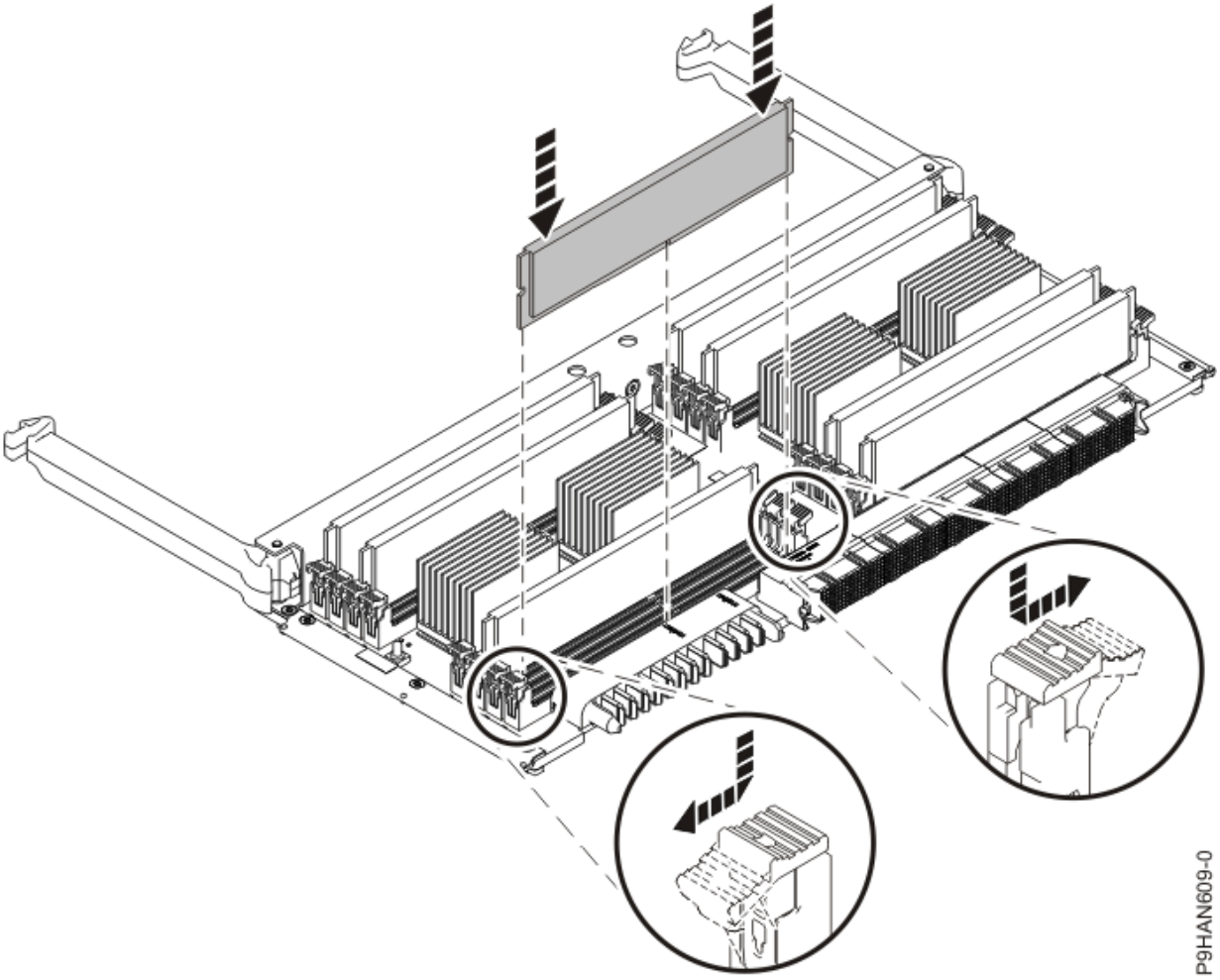



*Figure 167: Installing memory modules in a memory riser*

6. Repeat steps “2” on page 190 through “5” on page 191 for each memory module.

**Preparing the 9040-MR9 system for operation after installing memory modules**

To prepare the system for operation after you install memory modules, complete the steps in this 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 insert the memory riser, complete the following steps:
   a) Ensure the release latches **(A)** are fully open to a 90 degree angle as shown in the following figure.
   b) Align the memory riser with the connector.
   c) Press the memory riser firmly into the connector.
   d) Rotate the release latches into the closed position, and press the release latches down to ensure that the memory riser is fully seated into the connector.

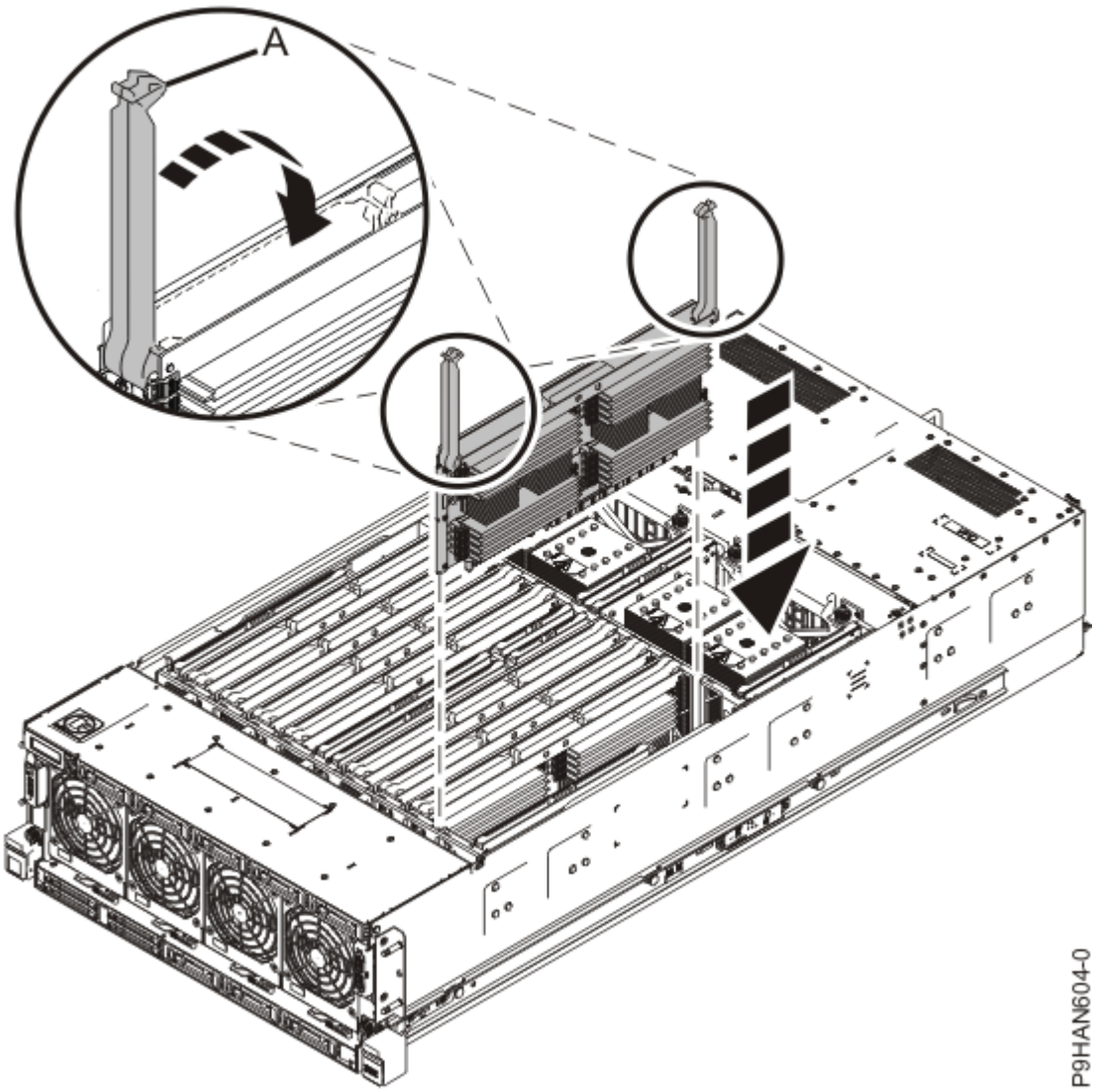



*Figure 168: Inserting a memory riser*

3. Replace the service access cover.
   a) Lower the cover **(A)** onto the system unit. Ensure that the cover alignment pins **(C)** on each side of the cover fit into the matching slots in the chassis.
   b) Slide the cover **(A)** onto the system unit. Ensure that the tabs **(D)** tuck under the mesh along the front opening of the chassis.
   c) Close the release latches **(B)** by pushing it in the direction that is shown in the following figure.

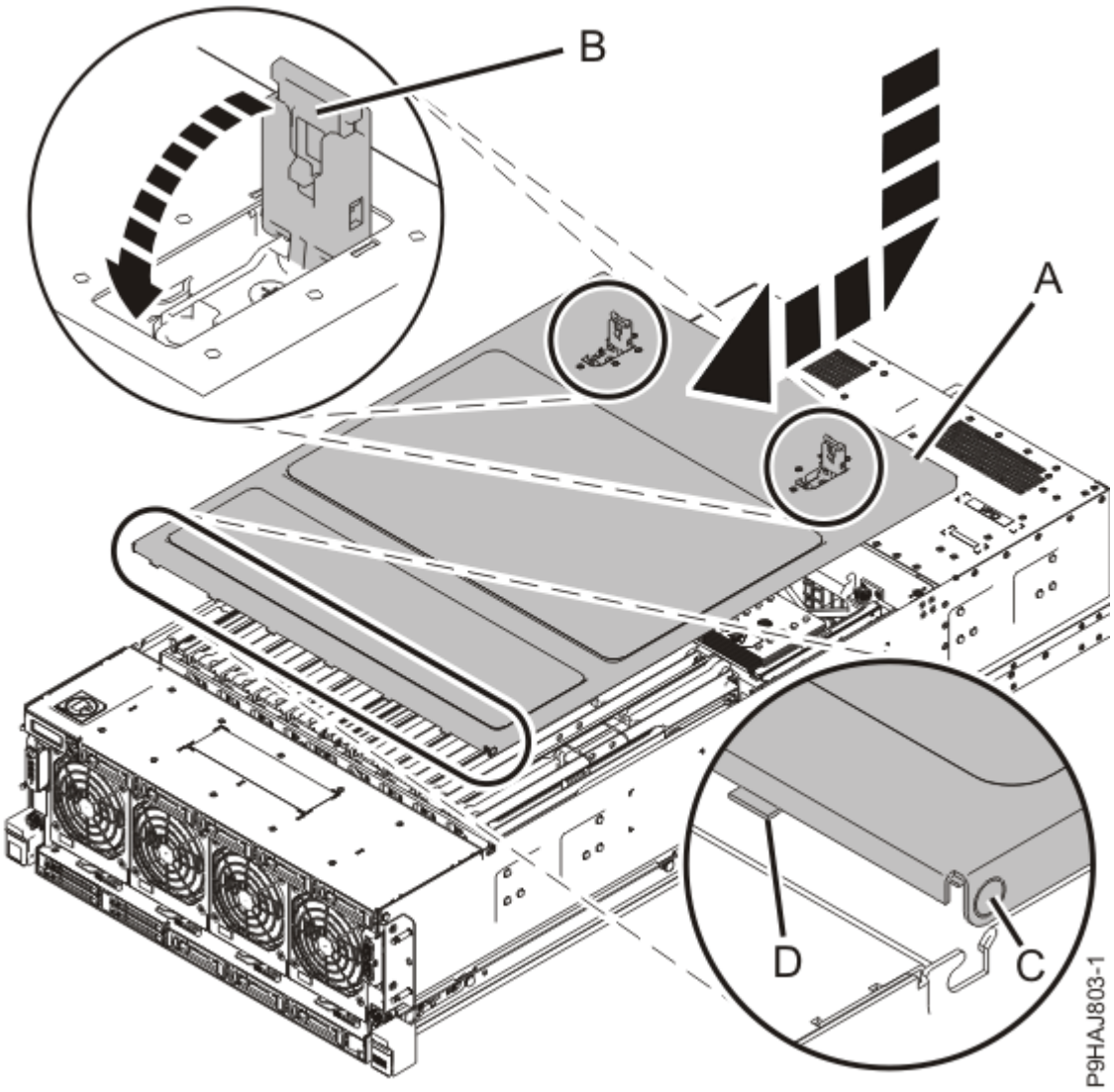



*Figure 169: Installing the service access cover*

4. Place the system into the operating position. For instructions, see Placing a rack-mounted model into the operating position (www.ibm.com/support/knowledgecenter/POWER9/p9haj/p9haj_950_operating_position.htm).
5. Reconnect the power cords to the system. For instructions, see Connecting the power cords (www.ibm.com/support/knowledgecenter/POWER9/p9haj/p9haj_950_power_cord_in.htm).
6. Using your labels, reconnect all of the external cables that plug into the PCIe adapters.
7. Start the system. For instructions, see Starting a system (www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustartsys.htm).
8. 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).
9. Verify the installed part.
   - If you replaced the part because of a service action, verify the installed part. For instructions, see https://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 https://www.ibm.com/support/knowledgecenter/POWER9/p9haj/pxhaj_hsmverify.htm (www.ibm.com/support/knowledgecenter/POWER9/p9haj/pxhaj_hsmverify.htm).

## Removing and replacing memory modules in the 9040-MR9 system

Find information about removing and replacing memory modules in the system.

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 your system is not managed by an HMC, complete the steps in the following procedures to remove and replace a memory module in the system.

**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.

### Preparing the 9040-MR9 system to remove and replace a memory module

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

1. Determine the slots in which you want to install the memory modules.

   See “Plugging rules for memory modules in the 9040-MR9 system” on page 207 to understand the plugging rules and to ensure that you plug the memory modules in the correct sequence. Record the plugging order of the memory module slots for the installation.
2. 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.
3. Stop the system. For instructions, see Stopping a system (www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustopsys.htm).
4. Label and disconnect the power source from the system by unplugging the power cords from the system.

   **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 power sources to the system are disconnected.
   - The power cord **(B)** is fastened to the system with a 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.

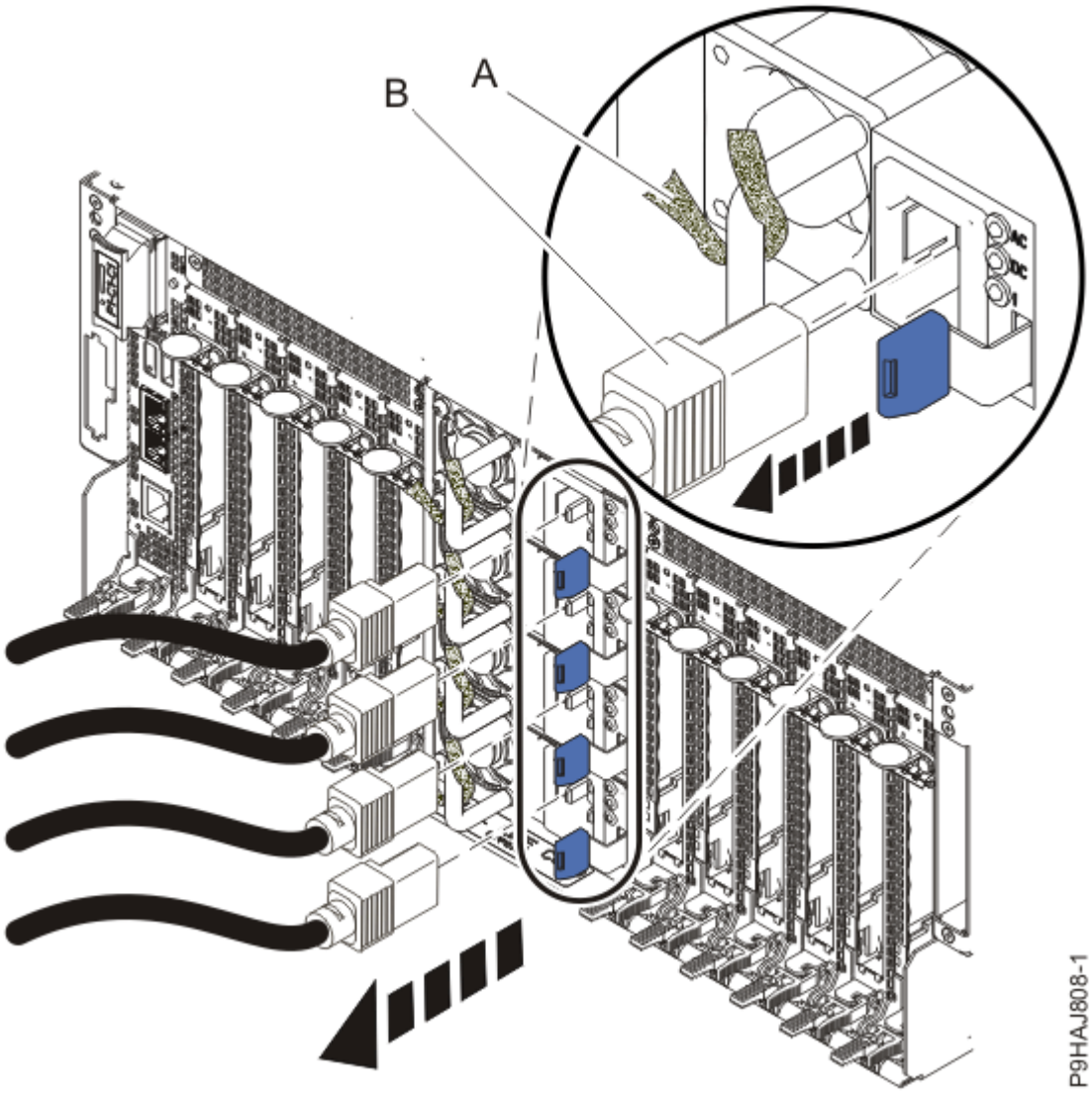
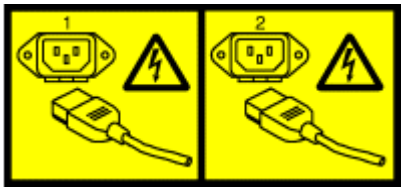



*Figure 170: Removing the power cords*

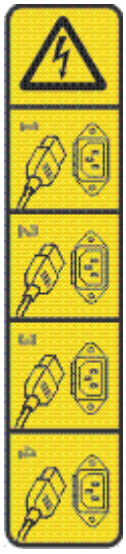
**(L003)**



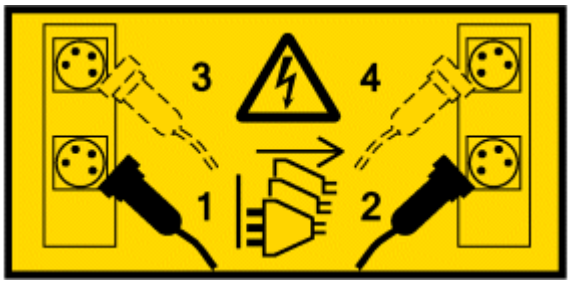

or

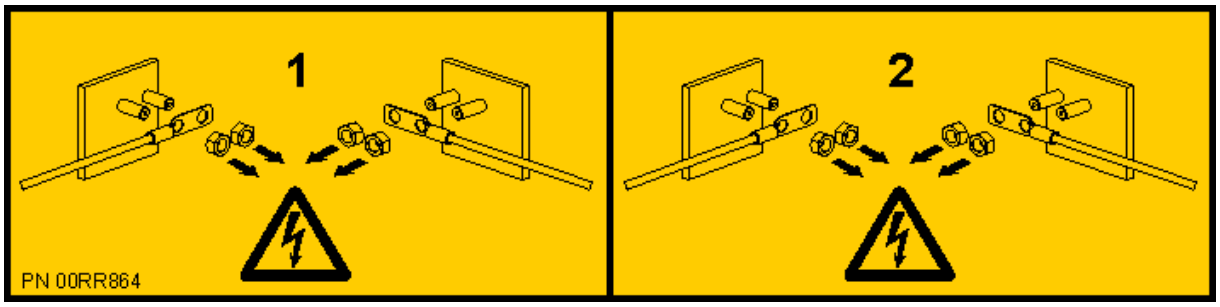
or

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. Label and disconnect all external cables that are attached to the PCIe adapters.

6. Place the system into the service position. For instructions, see Placing a system into the service position (www.ibm.com/support/knowledgecenter/POWER9/p9haj/p9haj_950_service_position.htm).
7. 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.
8. Remove the service access cover.

   **Attention:** Operating the system without the cover for more than 10 minutes might damage the system components. For proper cooling and airflow, replace the cover before turning on the system.

   a. Push the release latches **(A)** in the direction shown in the following figure.
   b. Slide the cover **(B)** off the system unit as shown in the following figure. When the front of the service access cover has cleared the upper frame ledge, lift the cover up and off the system unit.

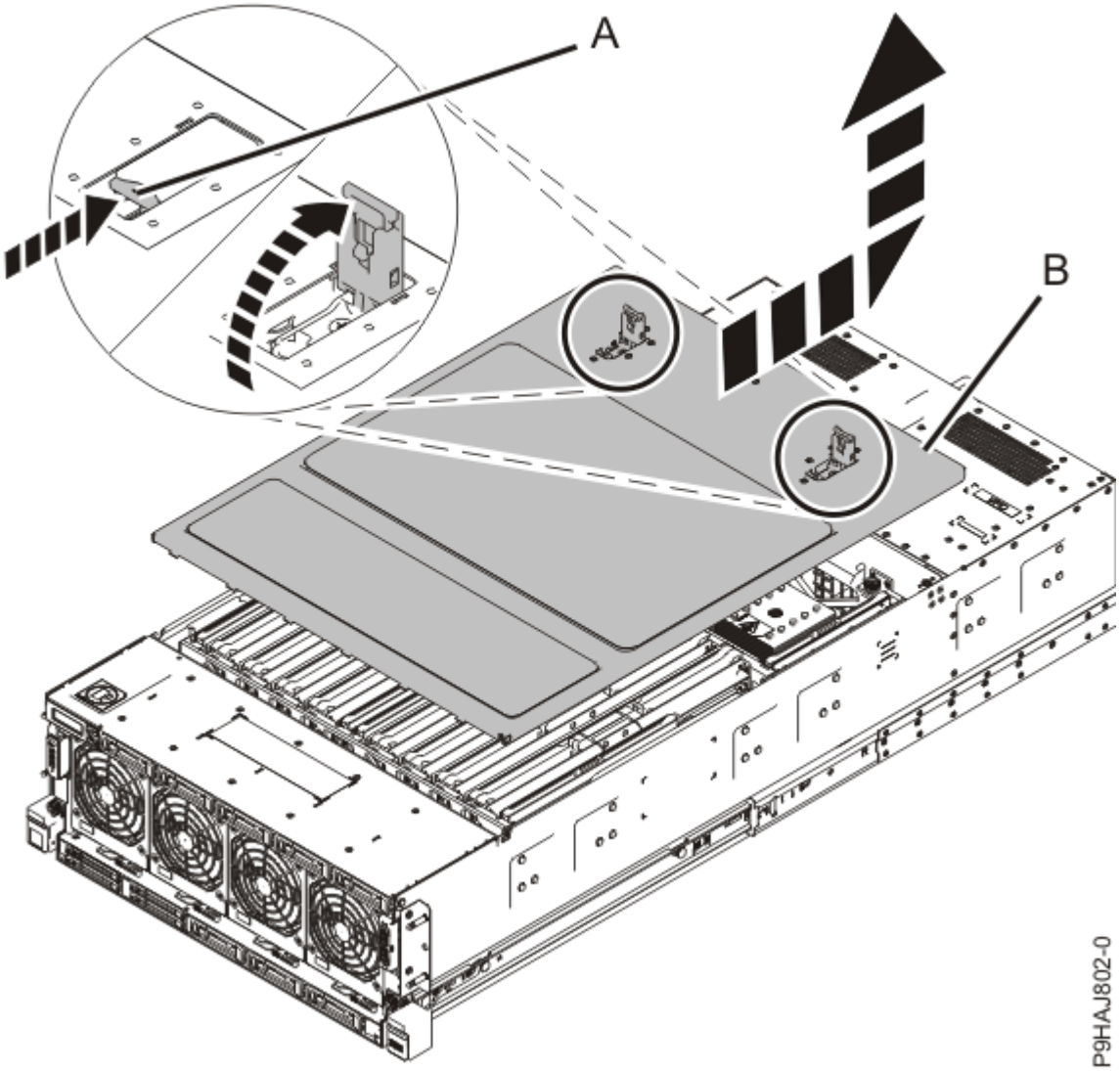



*Figure 171: Removing the service access cover*

9. To activate the identify LED for the faulty part, press and hold push-button **(A)** on the trusted platform module card as shown in the following figure.

   Verify that the green LED **(B)** is lit, which indicates that sufficient power exists for the identify LED. If the LED **(B)** is not lit, use the location code to find the physical location by using the service label.

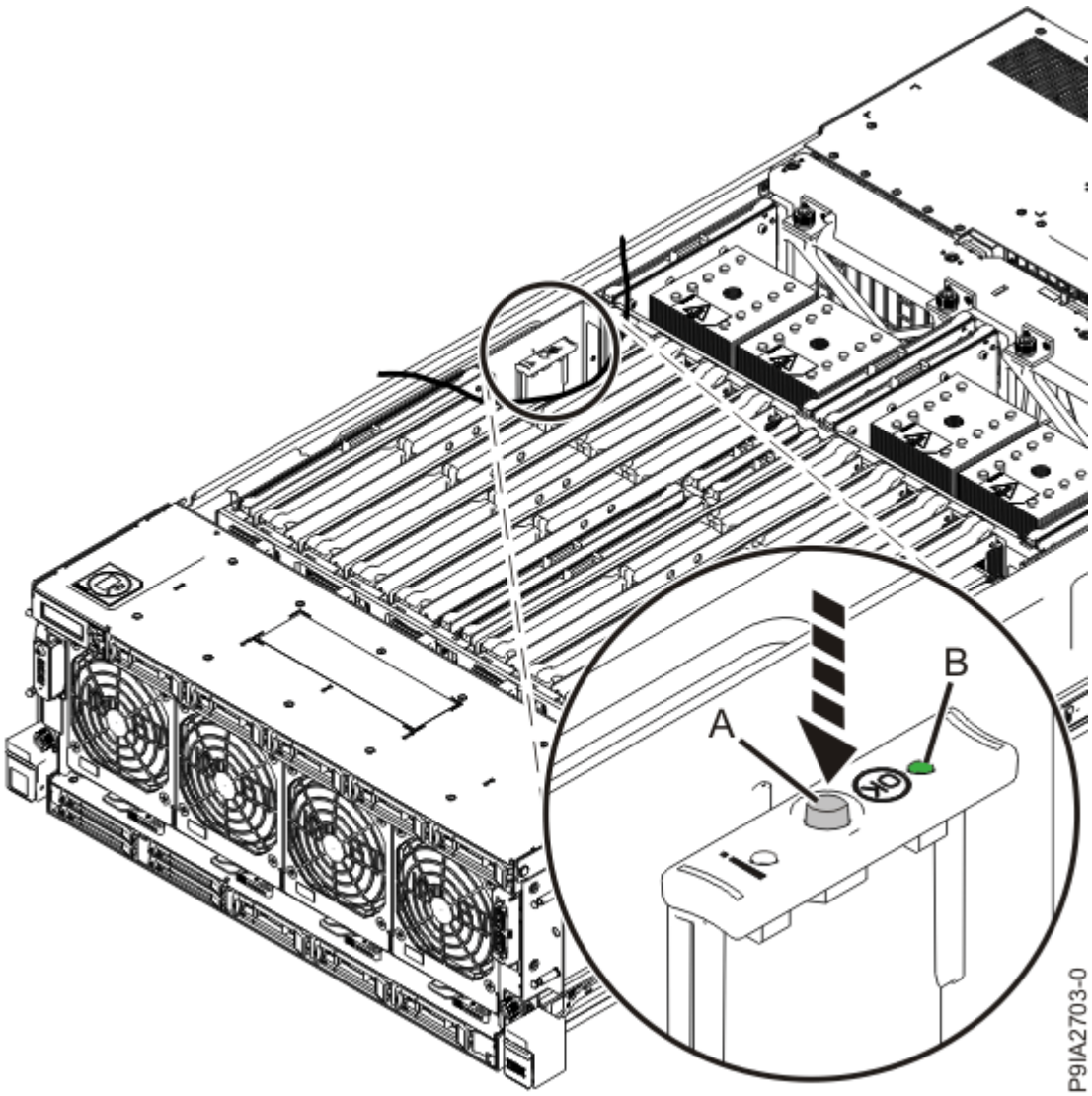



*Figure 172: Activating the identify LED*

10. Locate the amber LED for the memory riser for the failed memory module. Make a note of which memory riser is lit; that indicates the memory module to replace.

    Figure 173 on page 200 shows the locations **(A)** of the memory riser LEDs.

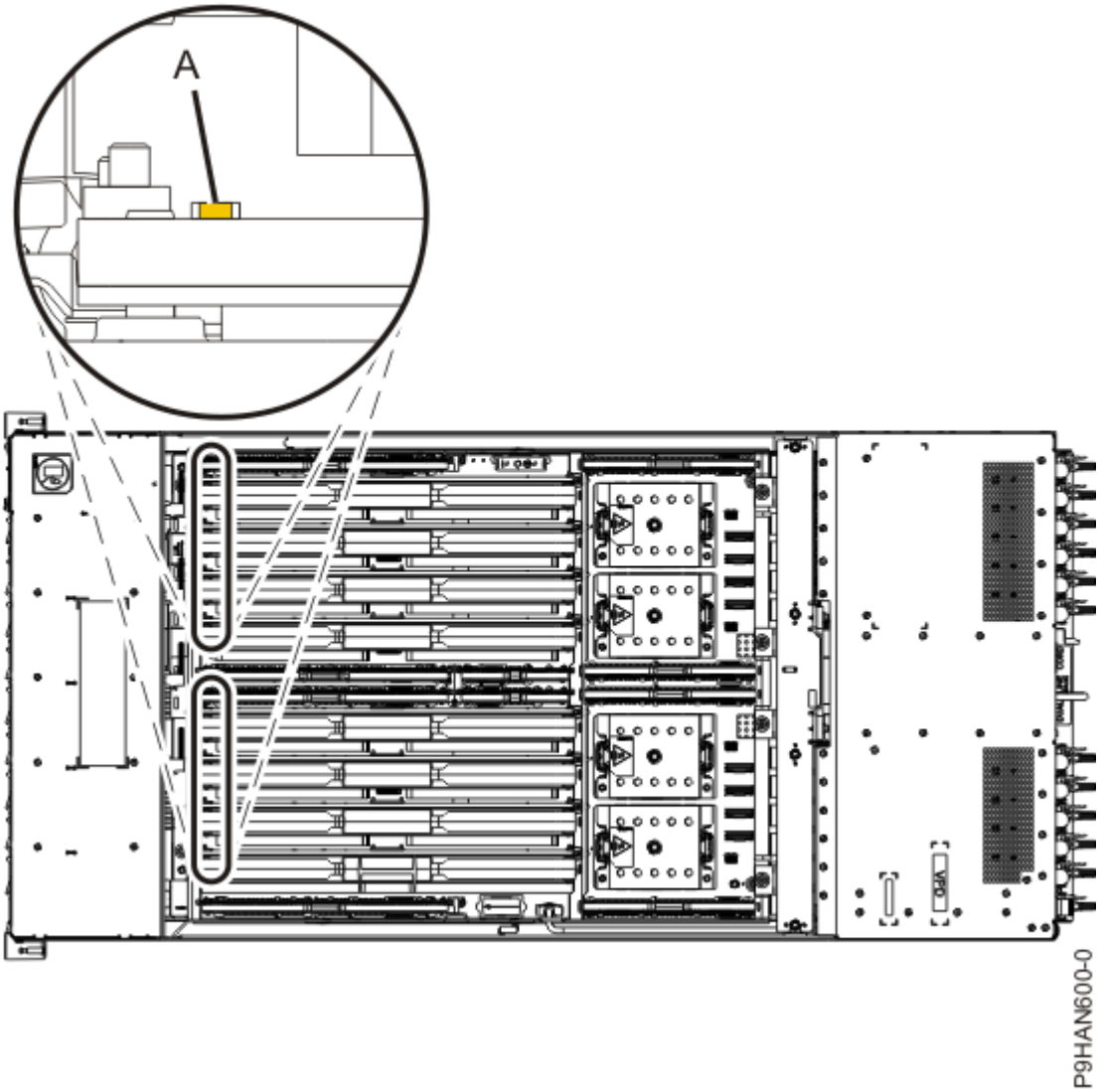



*Figure 173: LEDs for a memory riser*

If the locator function does not work, you will need to use the event log information to locate the memory riser to remove.

11. To remove the memory riser that was identified, complete the following steps:
    a) Open the release latches **(A)** on the memory riser as shown in the following figure.
       Open the latches to the fully upright 90 degree position.
    b) Pull out the memory riser from the slot by holding onto the latches.

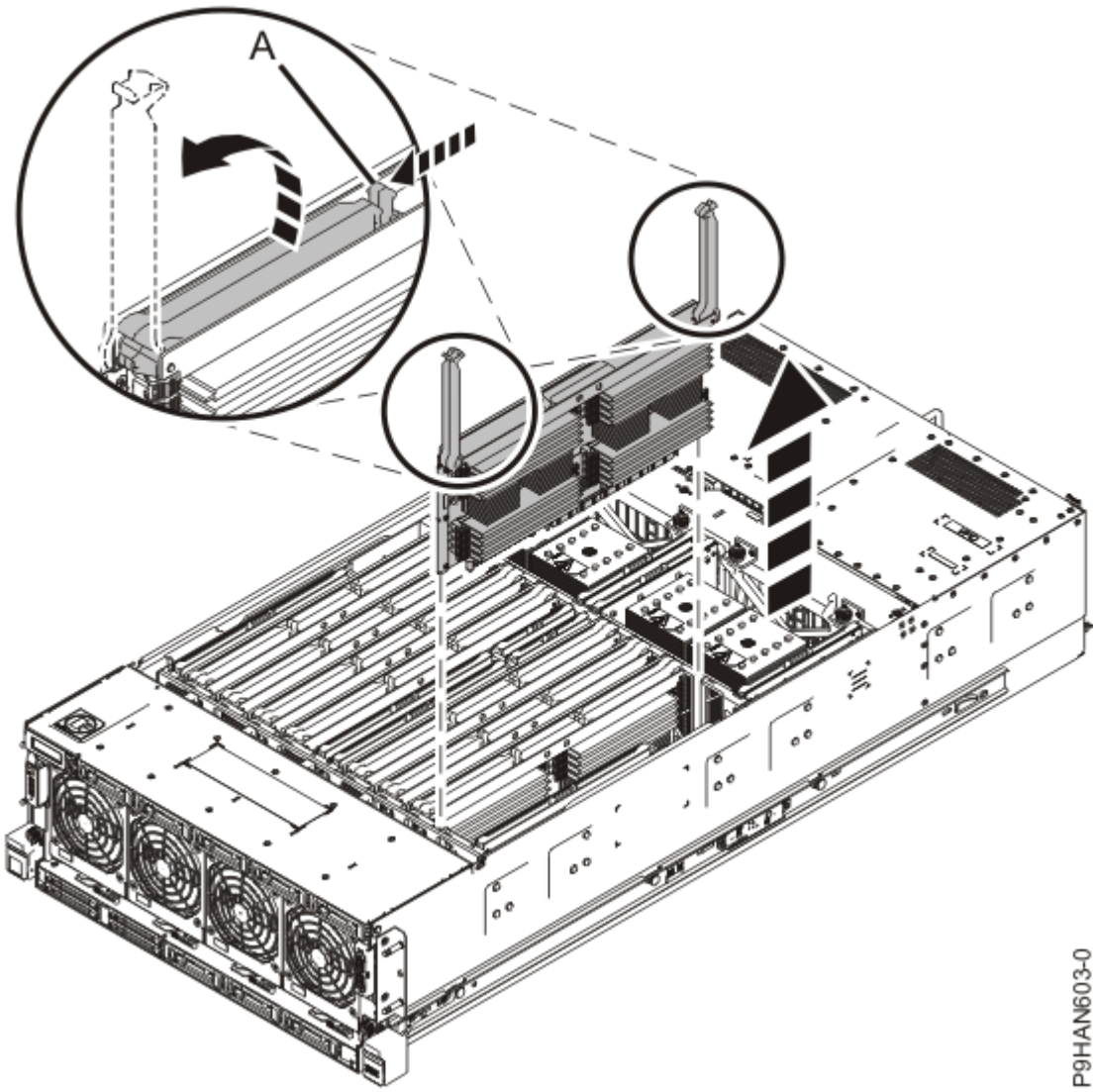



*Figure 174: Removing a memory riser*

12. Place the memory riser on an electrostatic discharge (ESD) mat.

**Removing a memory module from the 9040-MR9 system**

To remove a memory module from the system, complete the steps in this 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 determine which memory module is faulty in the memory riser, press the locator button **(A)** on the memory riser. The green LED at **(B)** indicates whether the memory riser indicators have enough power to light the memory module indicators. The yellow LED at **(C)** indicates an issue with the memory riser. The LED for the faulty memory module LEDs are at **(D)**.

   If the locator function does not work, you will need to use the event log information to locate the memory module to replace.

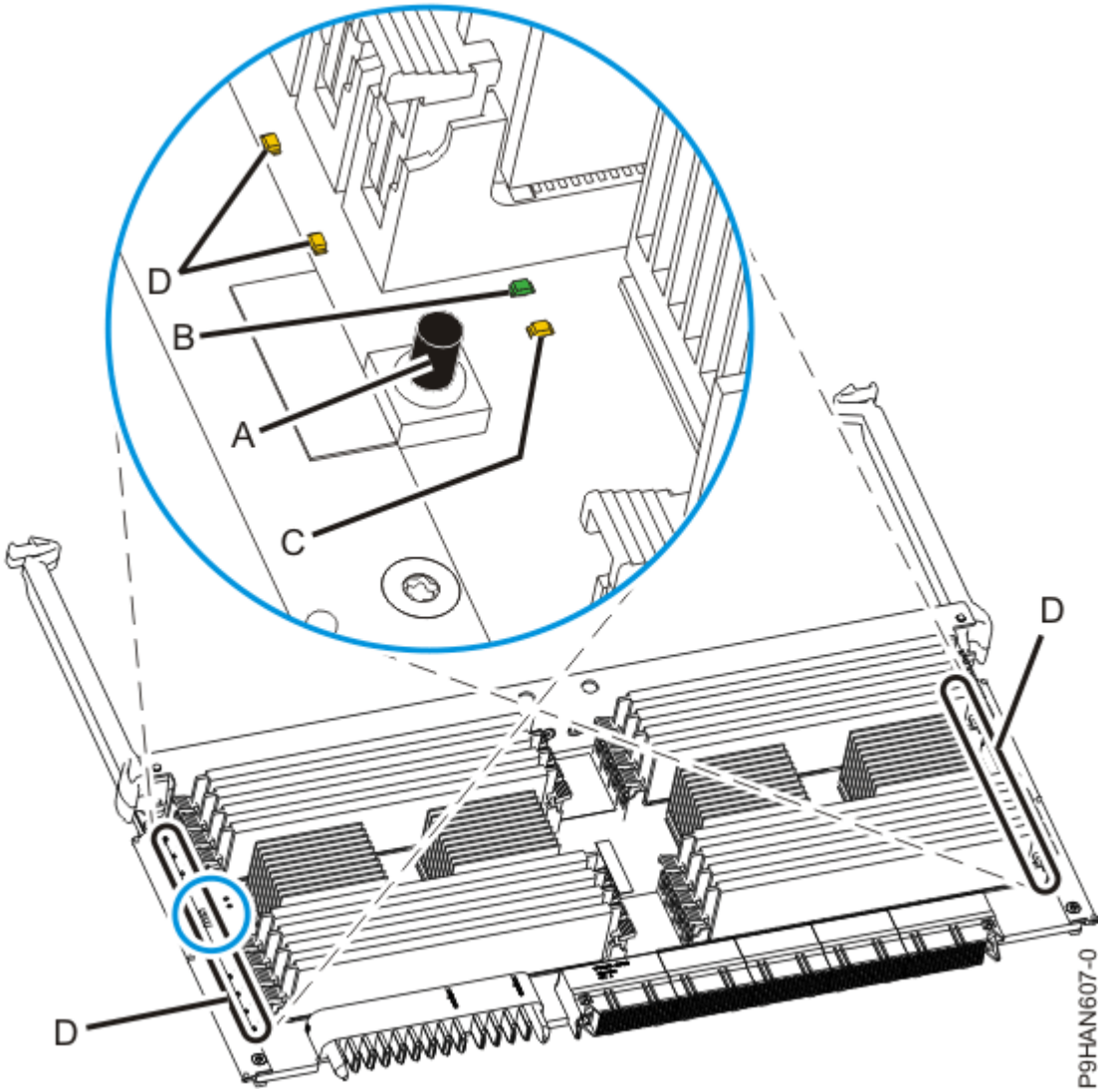



*Figure 175: Identifying a memory module*

3. To unlock the memory module from its connector, simultaneously push both of the locking tabs away from the module in the direction that is shown in Figure 176 on page 203.

   The lever action of the tabs pushes the memory module out of the connector. If you find it hard to open the tabs with your fingers, you may use the tips of ball point pens, or the eraser ends of pencils. The levers must be opened simultaneously, so that the memory module lifts straight up.

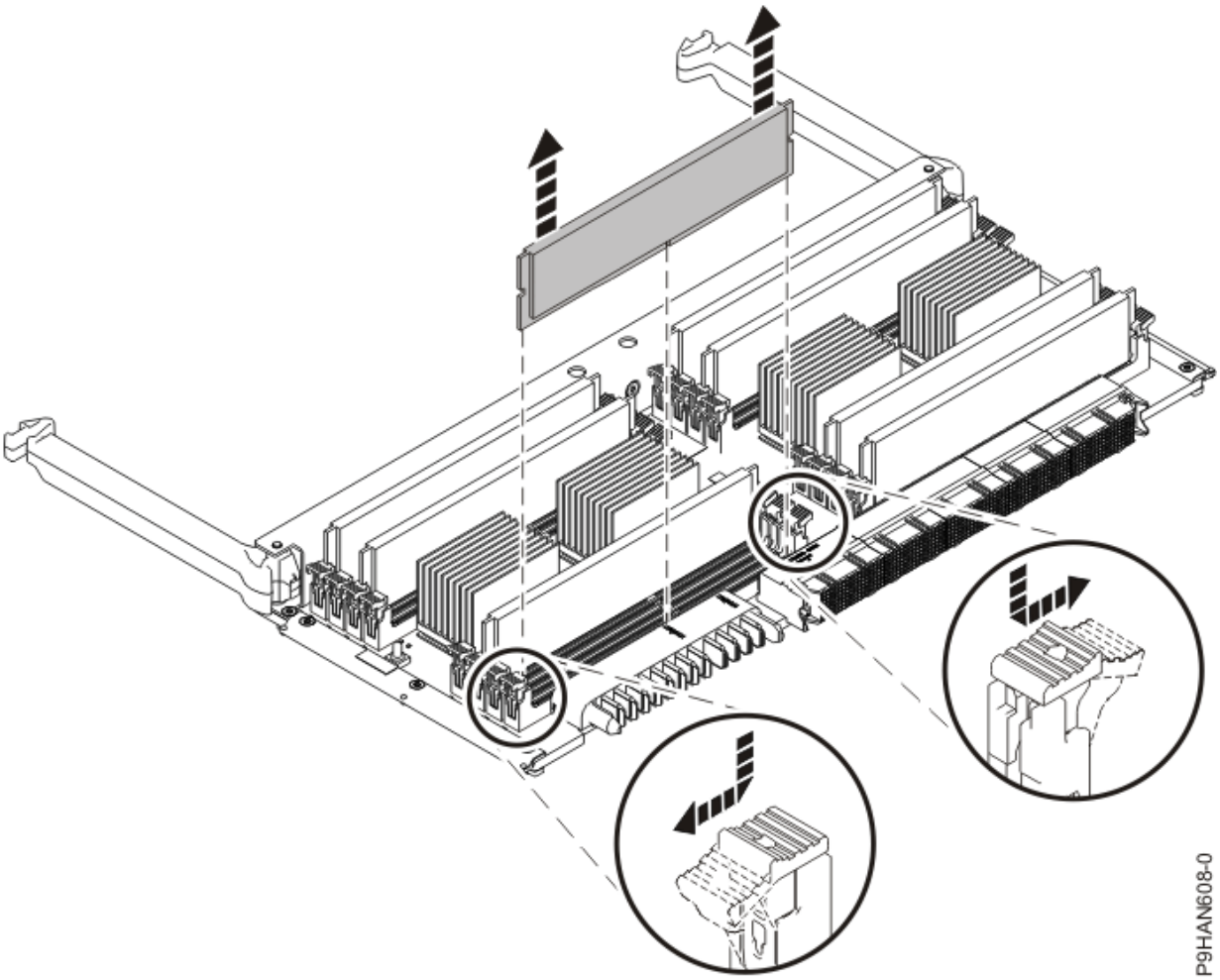



*Figure 176: Removing a memory module*

4. Hold the memory module by the edges and pull it out of the system.
5. If the removed part is used again, place the part on an electrostatic discharge (ESD) mat.

**Replacing a memory module in the 9040-MR9 system**

To replace a memory module in the system, complete the steps in this 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. Use the slot information that you recorded to determine the slot location to place the memory module.
3. Grasp the new memory module along its edges and align it with the slot.

   **Attention:** Memory modules are keyed to prevent a memory module from being installed incorrectly. Note the location of the key tab within the memory module connector before you attempt to install the memory module.
4. Ensure that the locking tabs of the memory module are open. Slowly press the memory module straight down, firmly into the slot, until the locking tabs lock into place. See Figure 177 on page 204.

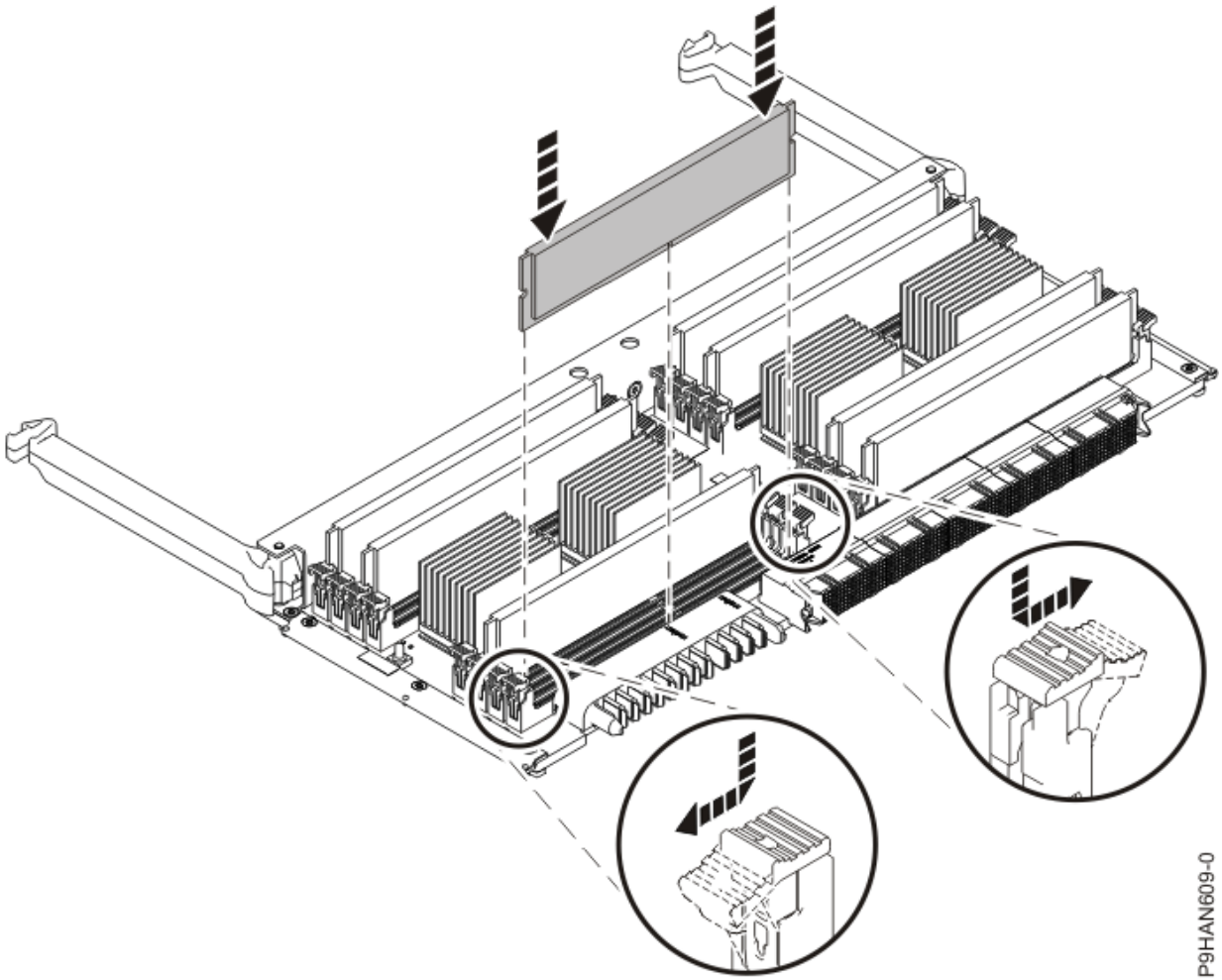



*Figure 177: Replacing a memory module*

**Preparing the 9040-MR9 system for operation after removing and replacing a memory module**
To prepare the system for operation after you remove and replace a memory module, complete the steps in this 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 insert the memory riser, complete the following steps:
   a) Ensure the release latches **(A)** are fully open to a 90 degree angle as shown in the following figure.
   b) Align the memory riser with the connector.
   c) Press the memory riser firmly into the connector.
   d) Rotate the release latches into the closed position, and press the release latches down to ensure that the memory riser is fully seated into the connector.

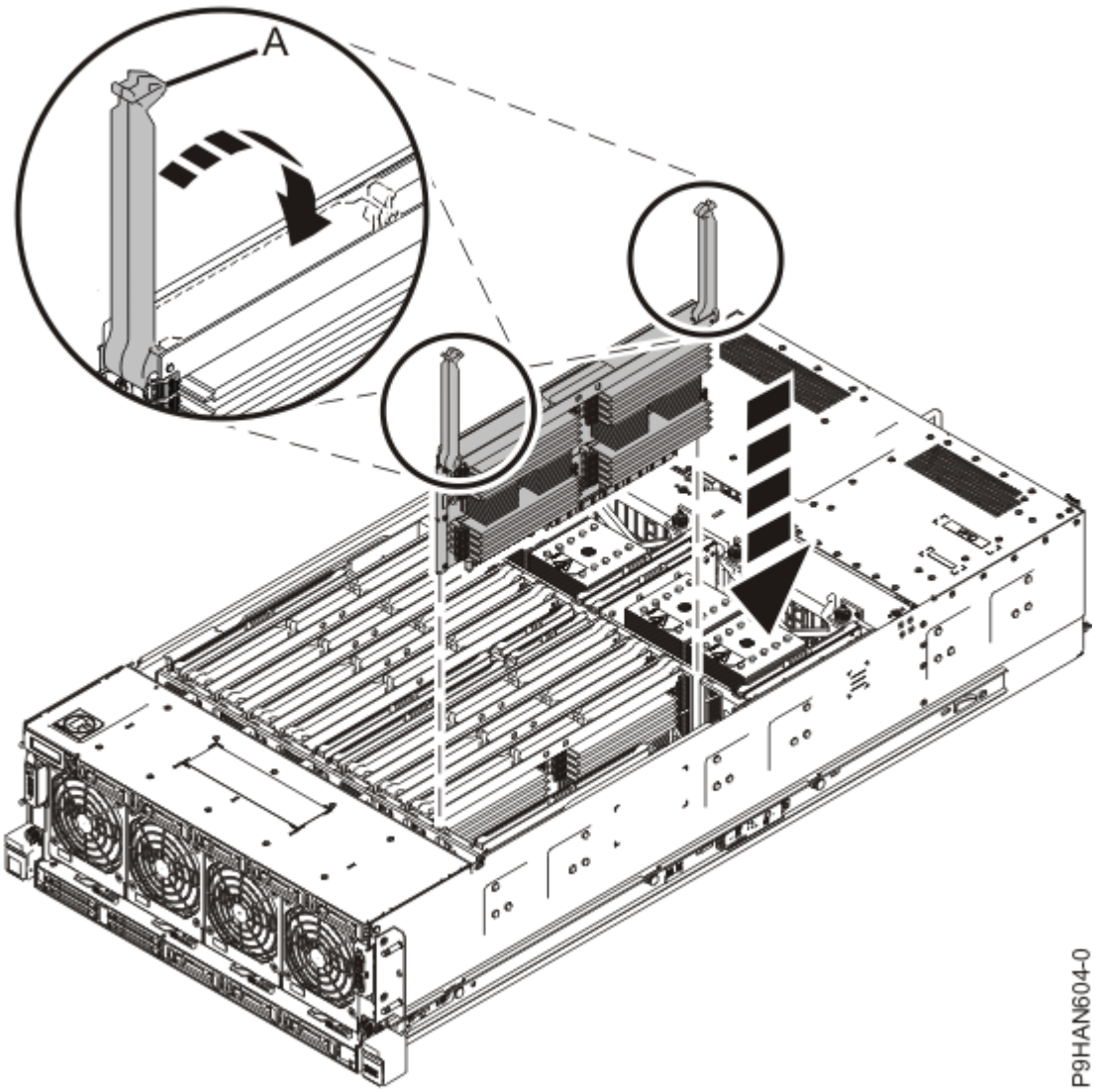



*Figure 178: Inserting a memory riser*

3. Replace the service access cover.
   a) Lower the cover **(A)** onto the system unit. Ensure that the cover alignment pins **(C)** on each side of the cover fit into the matching slots in the chassis.
   b) Slide the cover **(A)** onto the system unit. Ensure that the tabs **(D)** tuck under the mesh along the front opening of the chassis.
   c) Close the release latches **(B)** by pushing it in the direction that is shown in the following figure.

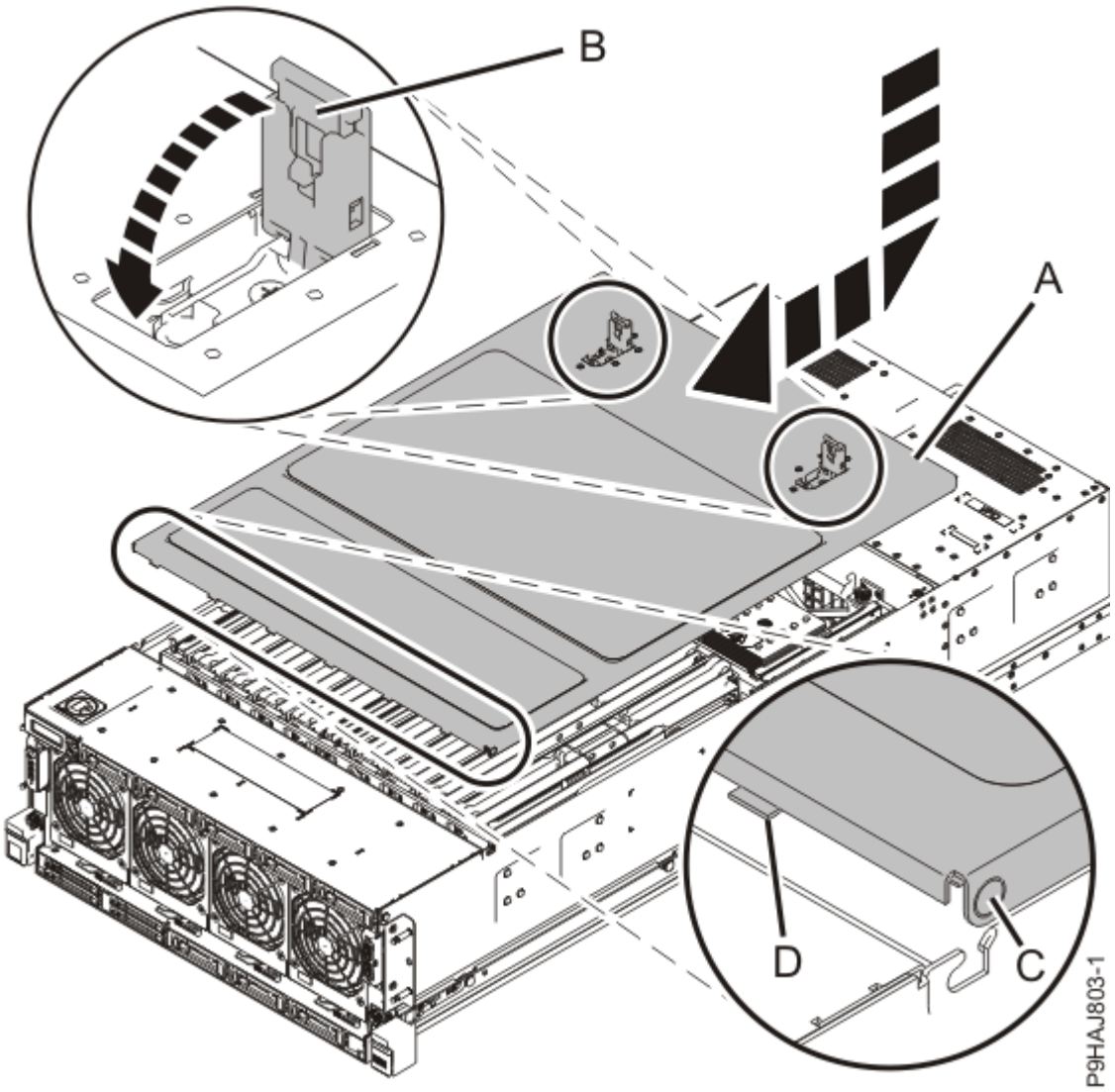



*Figure 179: Installing the service access cover*

4. Place the system into the operating position. For instructions, see Placing a rack-mounted model into the operating position (www.ibm.com/support/knowledgecenter/POWER9/p9haj/p9haj_950_operating_position.htm).
5. Reconnect the power cords to the system. For instructions, see Connecting the power cords (www.ibm.com/support/knowledgecenter/POWER9/p9haj/p9haj_950_power_cord_in.htm).
6. Using your labels, reconnect all of the external cables that plug into the PCIe adapters.
7. Start the system. For instructions, see Starting a system (www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustartsys.htm).
8. 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).
9. Verify the installed part.
   - If you replaced the part because of a service action, verify the installed part. For instructions, see https://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 https://www.ibm.com/support/knowledgecenter/POWER9/p9haj/pxhaj_hsmverify.htm (www.ibm.com/support/knowledgecenter/POWER9/p9haj/pxhaj_hsmverify.htm).

## Plugging rules for memory modules in the 9040-MR9 system

Find information about the configurations and rules that apply to memory modules for the IBM Power System E950 (9040-MR9) server.

This information describes the rules for memory modules in the system.

- The system supports DDR4 memory modules of 8 GB, 16 GB, 32 GB, 64 GB, and 128 GB.
- The system has eight memory riser cards.
- Each memory riser card must have 8 DIMMs.
- Each system processor must have one memory riser card.
- Unused memory module connectors must have a memory module filler.
- Unused memory riser positions must have a memory riser filler.
- A memory riser card can have up to 16 DIMMs.
- Each system processor can have two memory riser cards.
- All memory modules must be of the same size and type on each memory riser.
- The memory module connector colors are black and white. The first eight memory modules must be installed in the white-colored DIMM connectors.
- If the memory riser cards for the processors have different capacities, populate the largest memory riser card with system processor CP0.
- Consider the following requirements when you add memory riser cards:
  - After all of the first memory riser cards for the system processors are filled up, add a second memory riser card to system processor CP0. The second memory riser card of each system processor can have different memory module capacities from the memory module capacity of the first memory riser card. It is recommended that the memory modules of the second memory riser card have the same type and size as the first memory riser card.
  - Add a second memory riser card to system processor CP1, then to system processor CP2, and finally to system processor CP3.

## Permanently removing memory modules from the 9040-MR9 system

Find information about permanently removing memory modules from the system.

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 your system is not managed by an HMC, complete the steps in the following procedures to permanently remove a memory module from the system.

**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.

### Preparing the 9040-MR9 system to permanently remove memory modules

To prepare a system to permanently remove memory modules, complete the steps in this procedure.

1. Determine the slots from which you want to remove the memory modules.

   See “Plugging rules for memory modules in the 9040-MR9 system” on page 207 to understand the plugging rules and to ensure that you plug the memory modules in the correct sequence. Record the plugging order of the memory module slots for the installation.
2. 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.

3. Stop the system. For instructions, see Stopping a system (www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustopsys.htm).
4. Label and disconnect the power source from the system by unplugging the power cords from the system.

   **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 power sources to the system are disconnected.
   - The power cord **(B)** is fastened to the system with a 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.

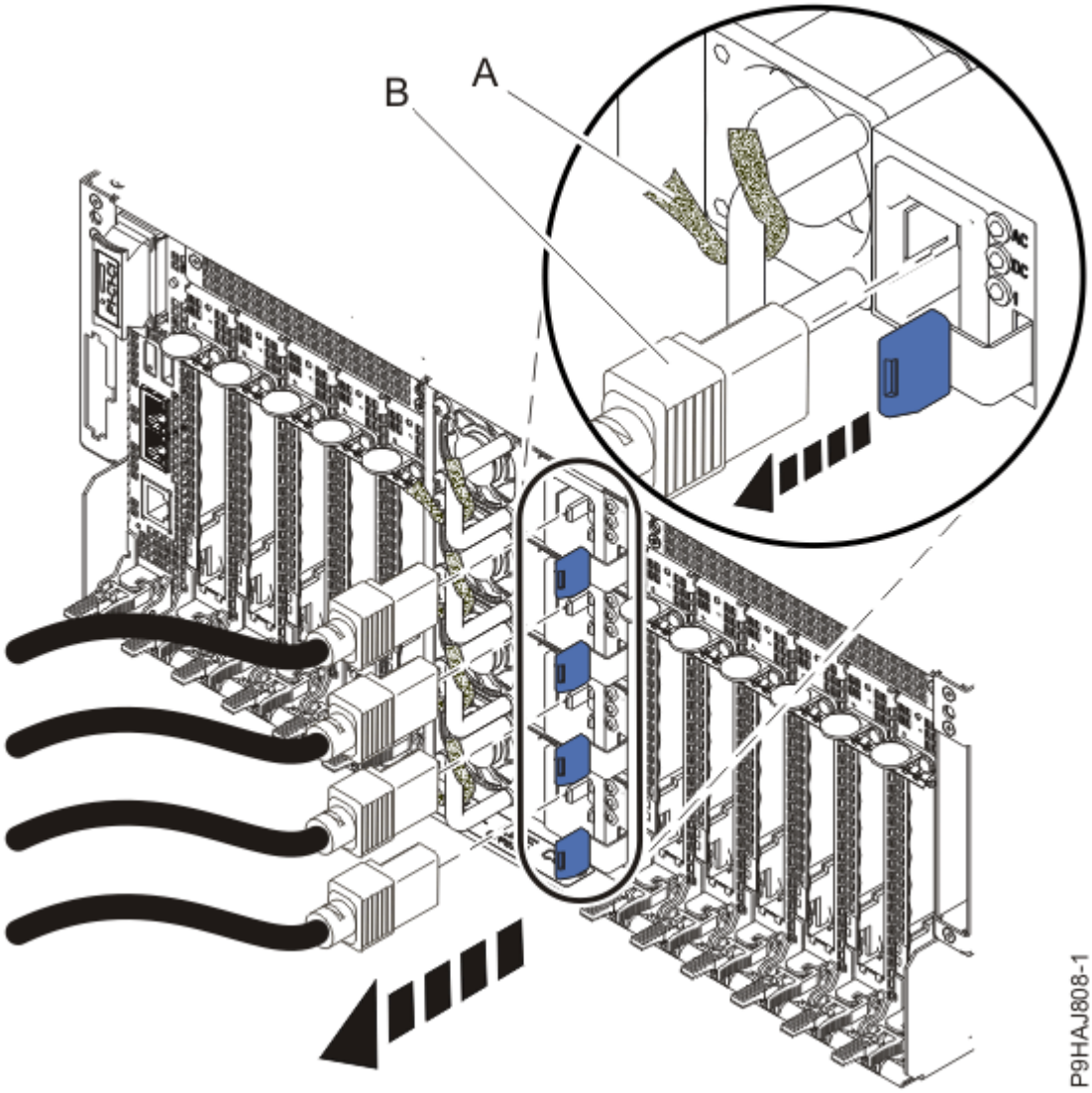
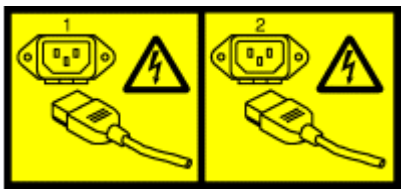



*Figure 180: Removing the power cords*

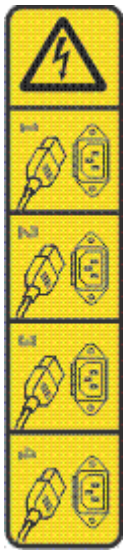
**(L003)**



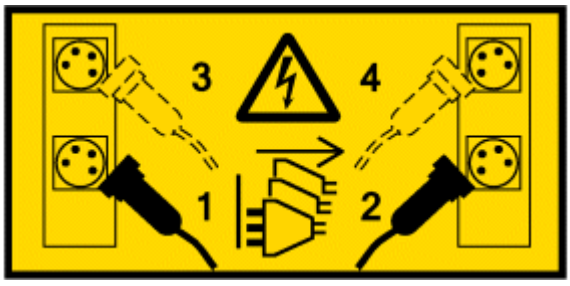

or

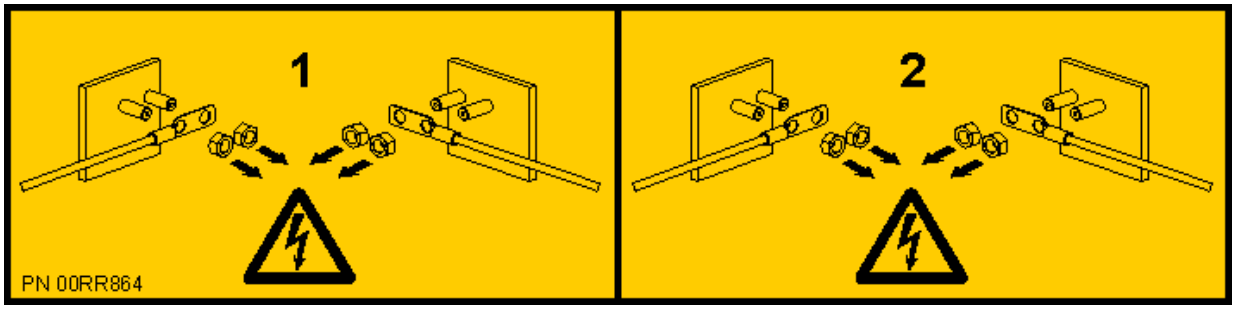
or

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. Label and disconnect all external cables that are attached to the PCIe adapters.
6. Place the system into the service position. For instructions, see Placing a system into the service position (www.ibm.com/support/knowledgecenter/POWER9/p9haj/p9haj_950_service_position.htm).
7. 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.

8. Remove the service access cover.

**Attention:** Operating the system without the cover for more than 10 minutes might damage the system components. For proper cooling and airflow, replace the cover before turning on the system.

a. Push the release latches **(A)** in the direction shown in the following figure.

b. Slide the cover **(B)** off the system unit as shown in the following figure. When the front of the service access cover has cleared the upper frame ledge, lift the cover up and off the system unit.

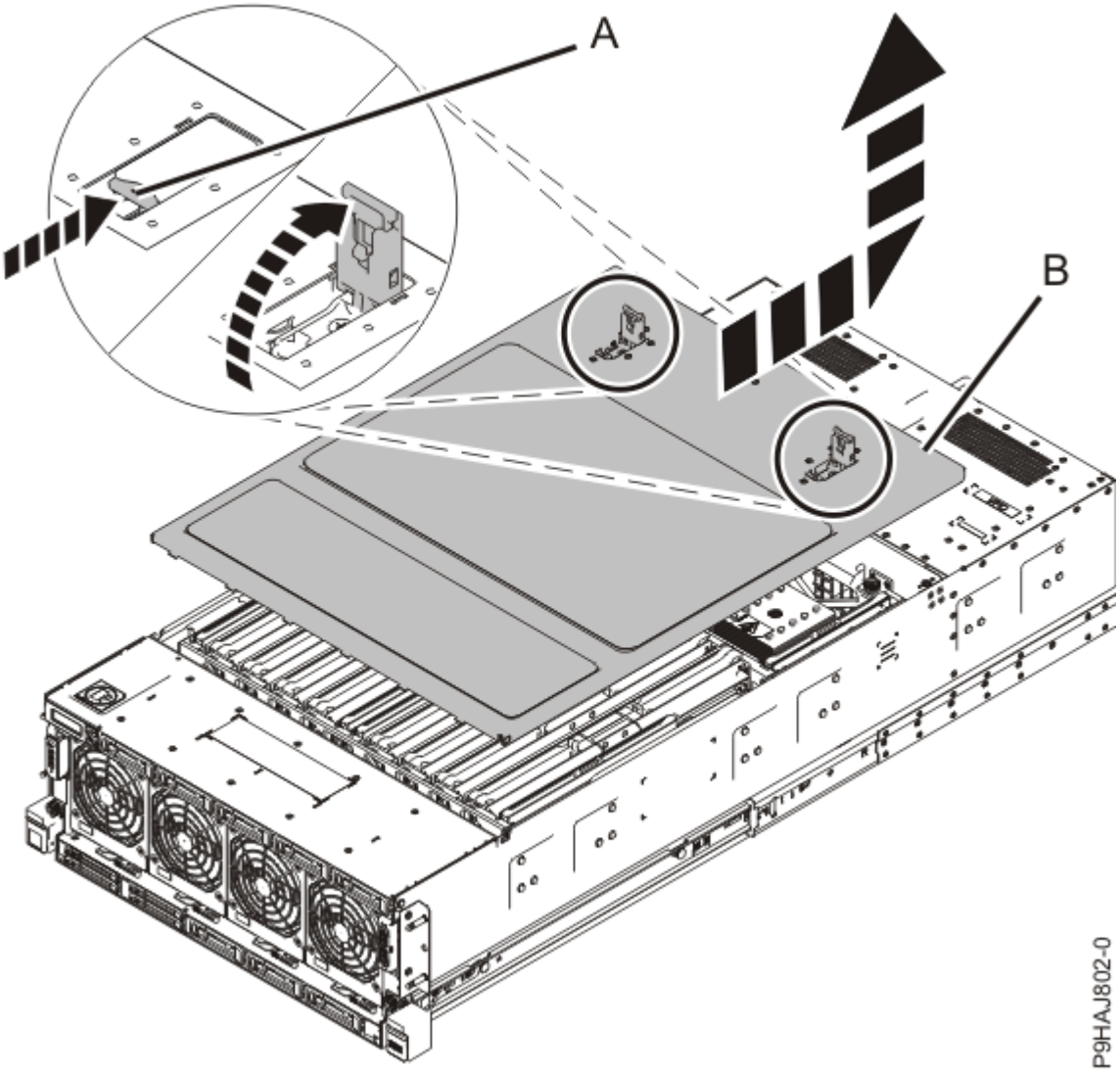



*Figure 181: Removing the service access cover*

9. Remove the memory riser from which you will remove memory modules.
   a) Open the release latches **(A)** on the memory riser as shown in the following figure. Open the latches to the fully upright 90 degree position.
   b) Pull out the memory riser from the slot by holding onto the latches.

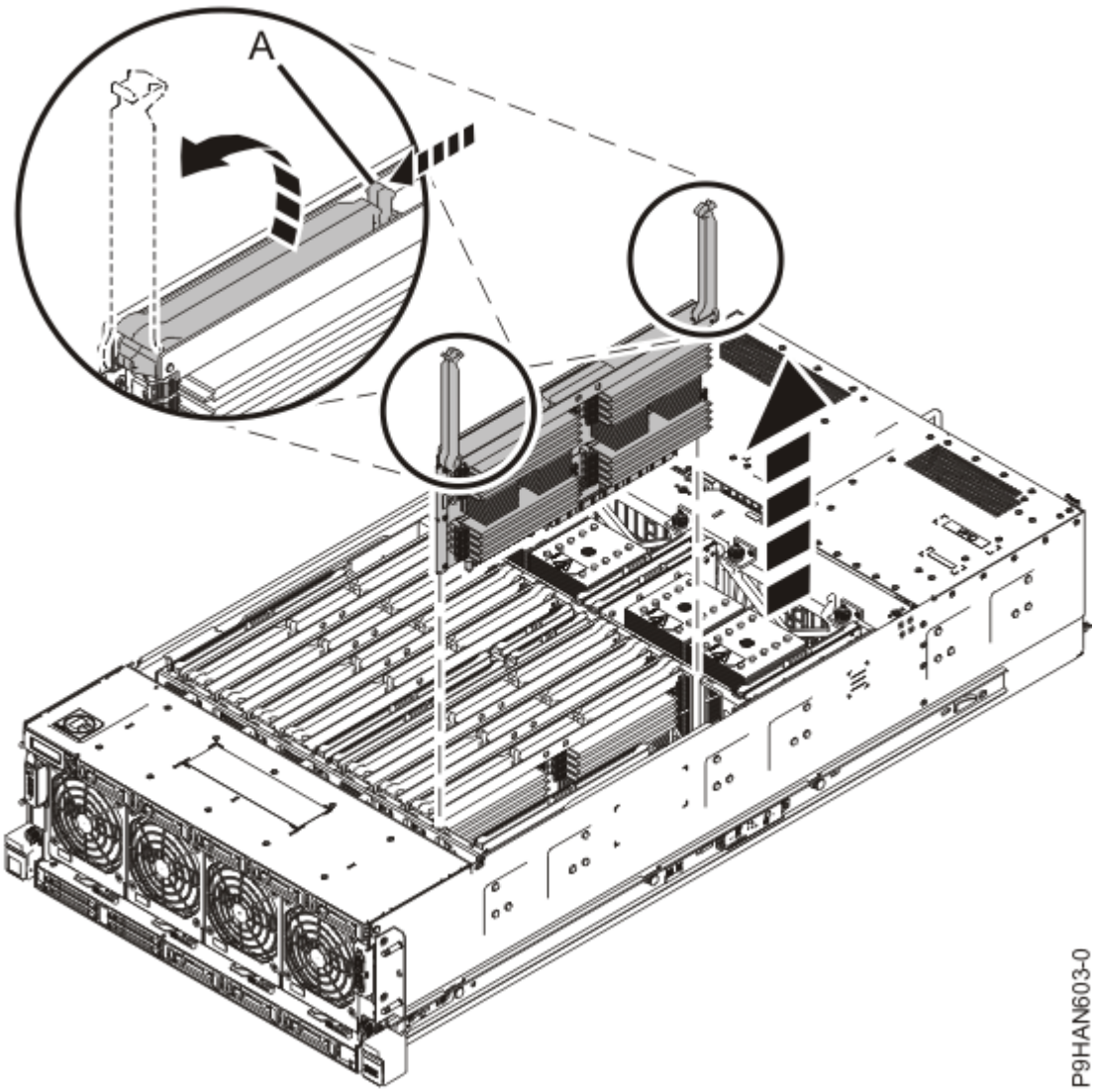



*Figure 182: Removing a memory riser*

**Permanently removing a memory module from the 9040-MR9 system**

To permanently remove memory modules from the system, complete the steps in this 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 unlock the memory module from its connector, simultaneously push both of the locking tabs away from the module in the direction that is shown in Figure 183 on page 213.

   The lever action of the tabs pushes the memory module out of the connector. If you find it hard to open the tabs with your fingers, you may use the tips of ball point pens, or the eraser ends of pencils. The levers must be opened simultaneously, so that the memory module lifts straight up.

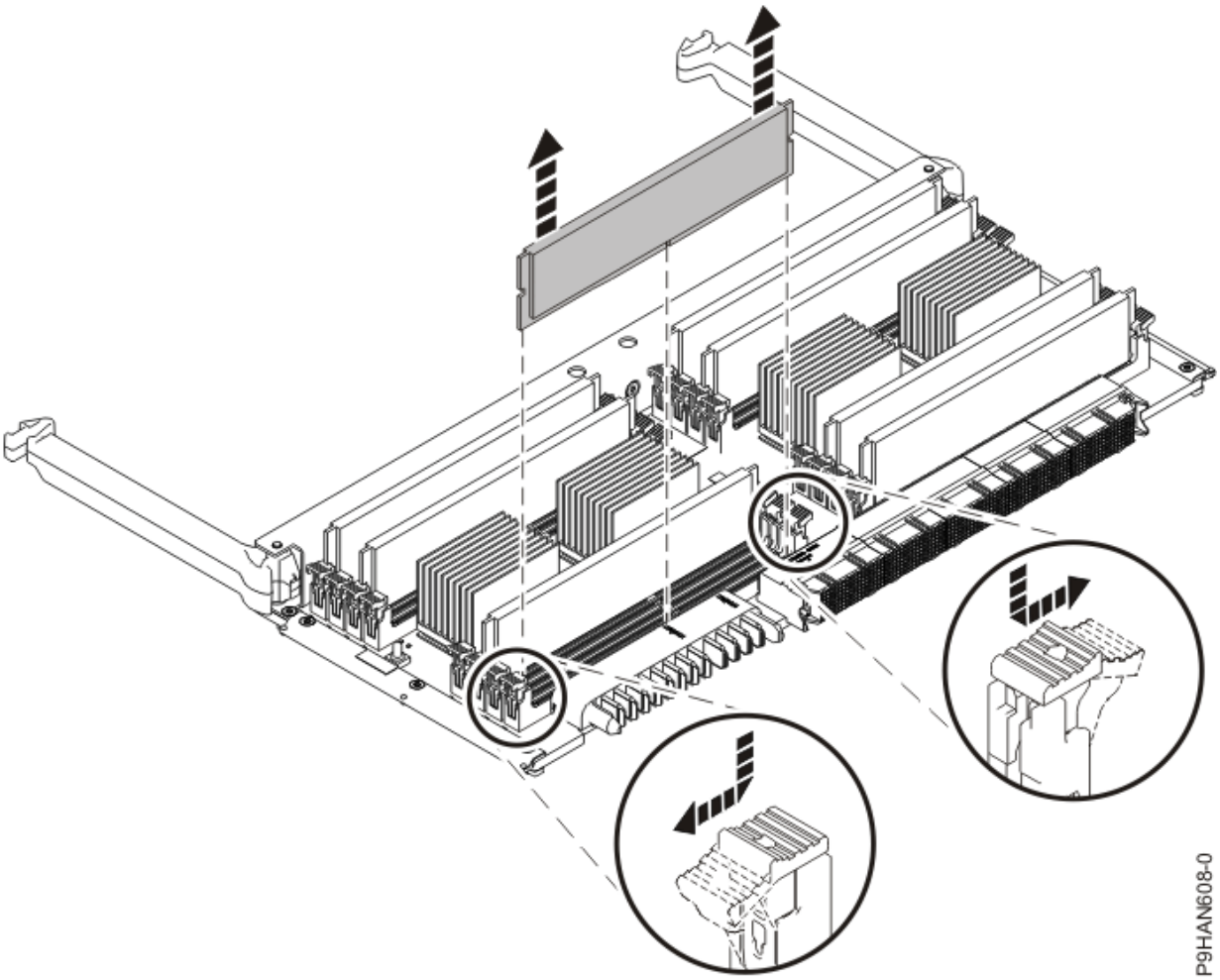



*Figure 183: Removing a memory module*

3. Hold the memory module by the edges and pull it out of the system.
4. If the removed part is used again, place the part on an electrostatic discharge (ESD) mat.
5. Insert a memory module filler.

   **Note:** The memory module slots must contain either a memory module or a filler to ensure proper cooling.

   To insert the memory module filler, complete the following steps:

   a) Ensure that the locking tabs are open.

   b) Hold the memory module filler by the edges and press it firmly into the slot until the locking tabs lock into place.
6. Repeat steps “2” on page 212 - “5” on page 213 to remove the other memory modules.

**Preparing the 9040-MR9 system for operation after permanently removing a memory module**
To prepare the system for operation after you permanently remove memory modules, complete the steps in this 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 insert the memory riser, complete the following steps:

   a) Ensure the release latches **(A)** are fully open to a 90 degree angle as shown in the following figure.

   b) Align the memory riser with the connector.

   c) Press the memory riser firmly into the connector.

d) Rotate the release latches into the closed position, and press the release latches down to ensure that the memory riser is fully seated into the connector.

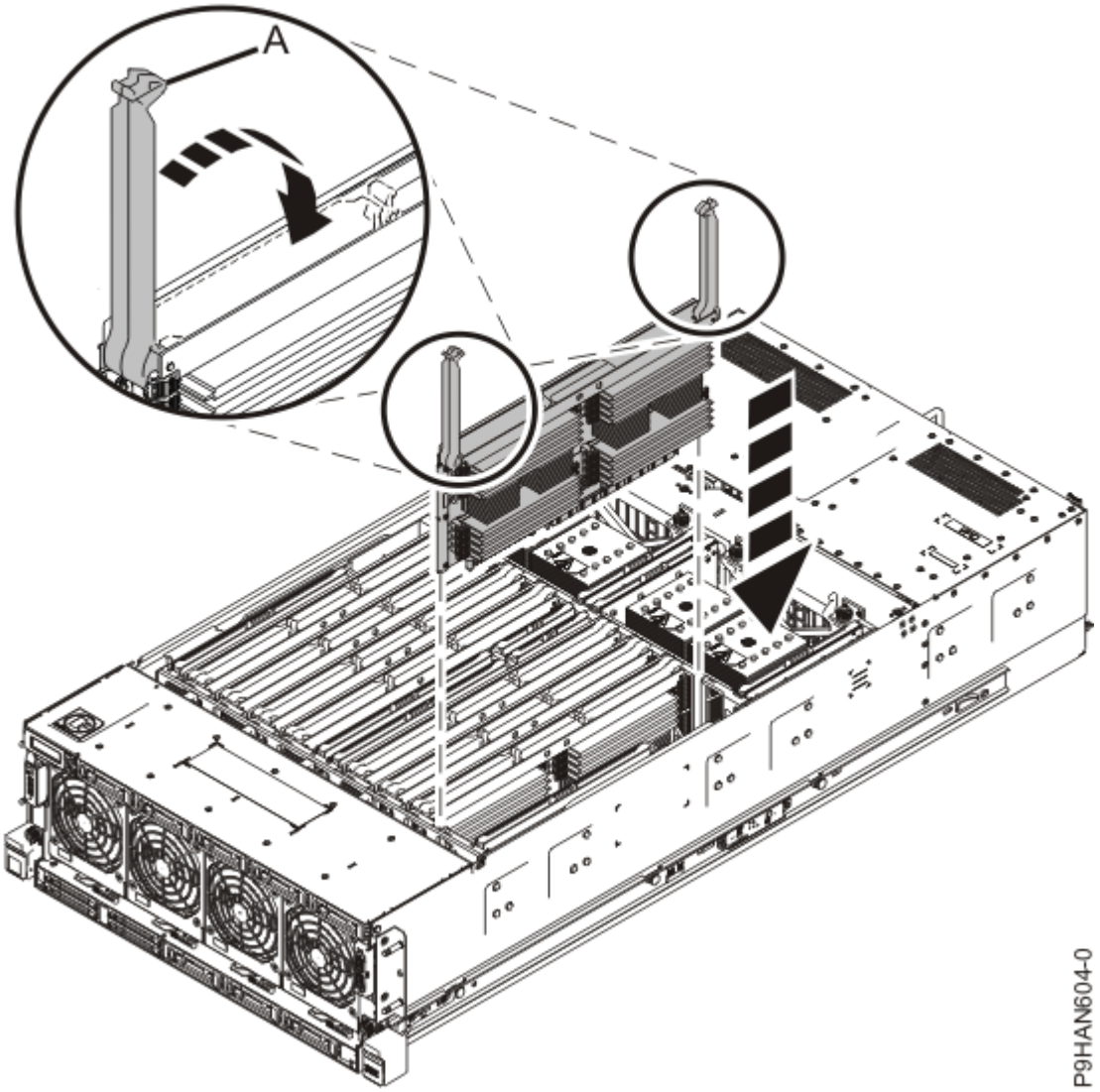



*Figure 184: Inserting a memory riser*

3. Replace the service access cover.
   a) Lower the cover **(A)** onto the system unit. Ensure that the cover alignment pins **(C)** on each side of the cover fit into the matching slots in the chassis.
   b) Slide the cover **(A)** onto the system unit. Ensure that the tabs **(D)** tuck under the mesh along the front opening of the chassis.
   c) Close the release latches **(B)** by pushing it in the direction that is shown in the following figure.

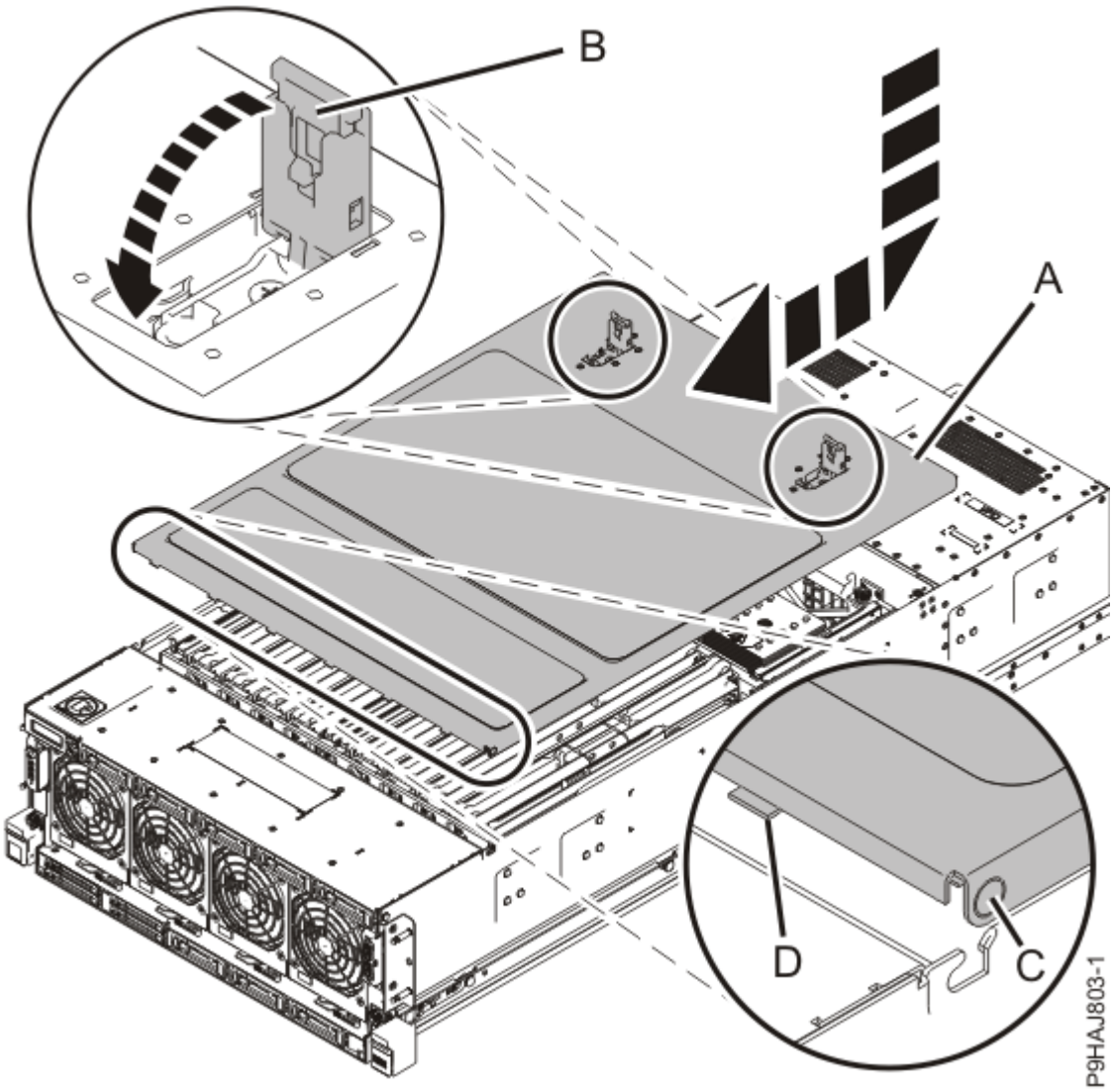



*Figure 185: Installing the service access cover*

4. Place the system into the operating position. For instructions, see Placing a rack-mounted model into the operating position (www.ibm.com/support/knowledgecenter/POWER9/p9haj/p9haj_950_operating_position.htm).
5. Reconnect the power cords to the system. For instructions, see Connecting the power cords (www.ibm.com/support/knowledgecenter/POWER9/p9haj/p9haj_950_power_cord_in.htm).
6. Using your labels, reconnect all of the external cables that plug into the PCIe adapters.
7. Start the system. For instructions, see Starting a system (www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustartsys.htm).
8. 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).

# Memory riser for the 9040-MR9

Find information about installing, removing, and replacing the memory riser in the IBM Power System E950 (9040-MR9) server.

## Installing a memory riser in the 9040-MR9 system

To install a memory riser in a system, complete the steps in this procedure.

Before you install a feature, ensure that the software that is required to support the feature is installed on your system. For more information about software prerequisites, see the Power Systems Prerequisites website (https://www14.software.ibm.com/support/customercare/iprt/home). If the required software is not installed, see the following websites to download it, and then install it before you continue:

- To download firmware updates, software updates, and fixes, see the Fix Central website (http://www.ibm.com/support/fixcentral/).
- To download Hardware Management Console (HMC) updates and fixes, see the Hardware Management Console Support and downloads website (https://www14.software.ibm.com/webapp/set2/sas/f/hmcl/home.html).

**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 complete the steps for installing a memory riser in the system. For instructions, see Installing a part by using the HMC (www.ibm.com/support/knowledgecenter/POWER9/p9haj/hmcinstall.htm).

If your system is not managed by an HMC, complete the steps in the following procedures to install a memory riser in the system.

### Preparing the 9040-MR9 system to install a memory riser

To prepare the system to install a memory riser, complete the steps in this procedure.

1. Determine the slots in which you want to install the memory modules and memory riser cards.

   See “Plugging rules for memory modules in the 9040-MR9 system” on page 207 to understand the plugging rules and to ensure that you plug the memory modules in the correct sequence. Record the plugging order of the memory module slots for the installation.
2. 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.
3. Stop the system. For instructions, see Stopping a system (www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustopsys.htm).
4. Label and disconnect the power source from the system by unplugging the power cords from the system.

   **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 power sources to the system are disconnected.
   - The power cord **(B)** is fastened to the system with a 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.

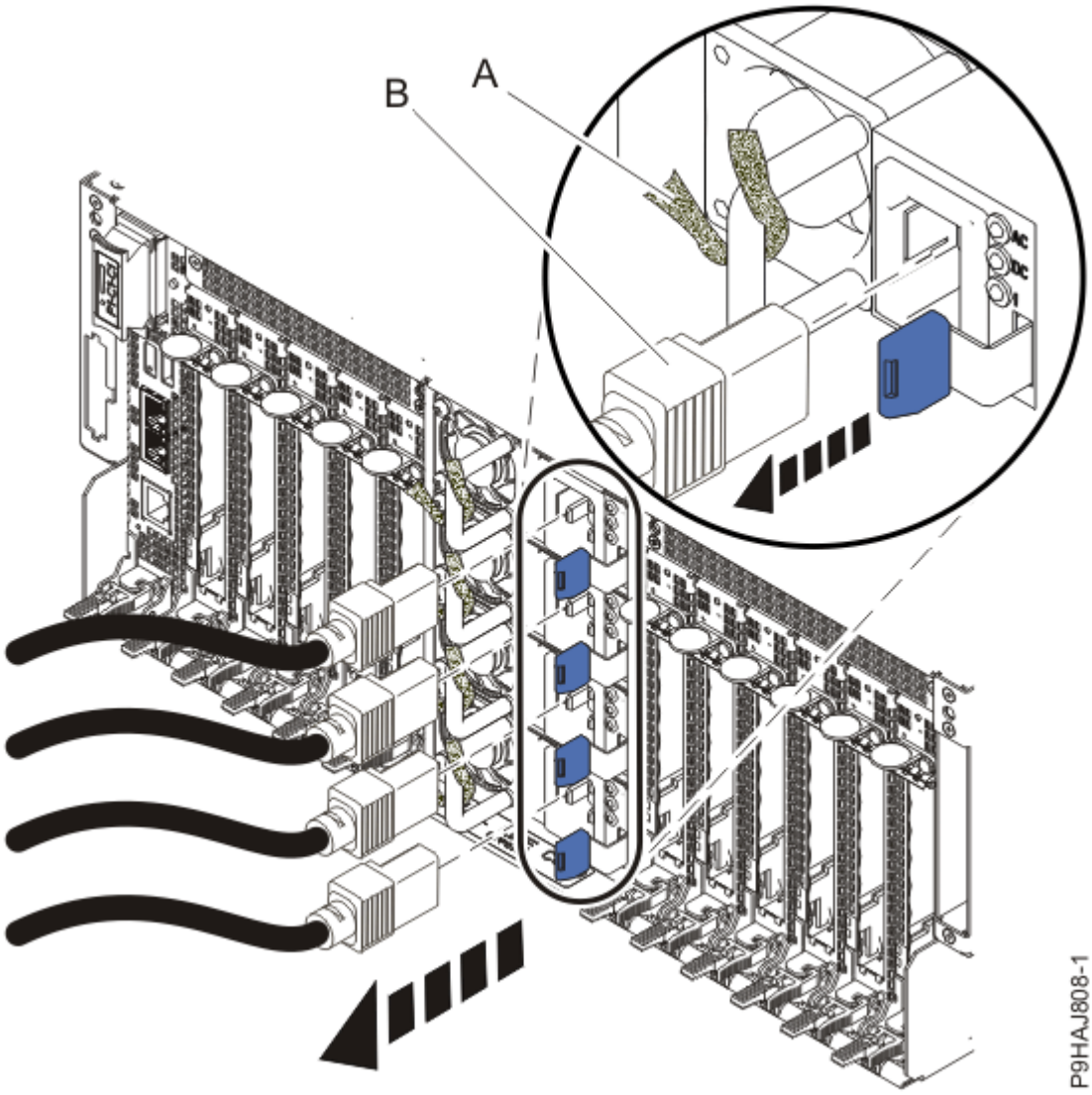
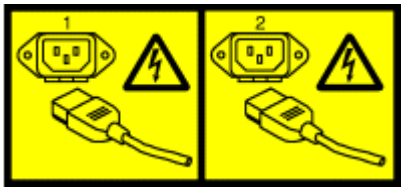



*Figure 186: Removing the power cords*

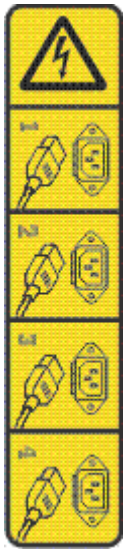
**(L003)**



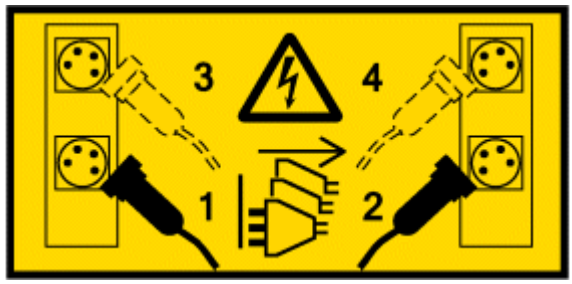

or

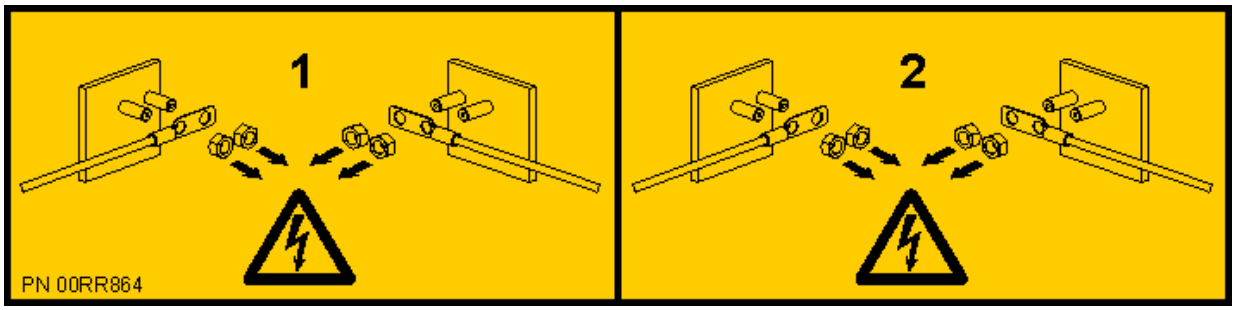
or

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. Label and disconnect all external cables that are attached to the PCIe adapters.

6. Place the system into the service position. For instructions, see Placing a system into the service position (www.ibm.com/support/knowledgecenter/POWER9/p9haj/p9haj_950_service_position.htm).
7. 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.
8. Remove the service access cover.

   **Attention:** Operating the system without the cover for more than 10 minutes might damage the system components. For proper cooling and airflow, replace the cover before turning on the system.

   a. Push the release latches **(A)** in the direction shown in the following figure.

   b. Slide the cover **(B)** off the system unit as shown in the following figure. When the front of the service access cover has cleared the upper frame ledge, lift the cover up and off the system unit.

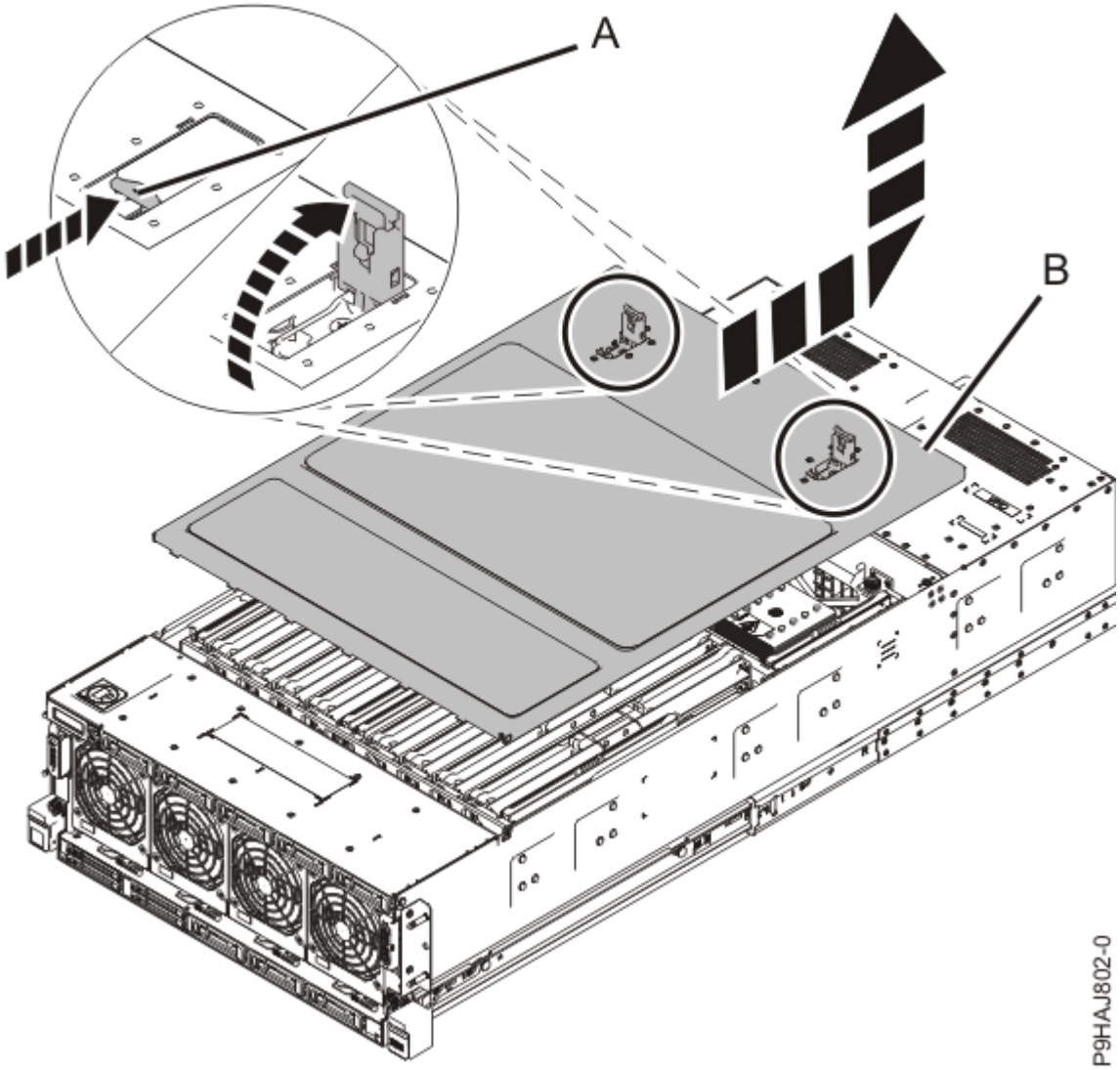



*Figure 187: Removing the service access cover*

**Installing a memory riser in the 9040-MR9 system**

To install memory riser cards in a system, complete the steps in this 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. Use the slot information that you recorded to determine the slot location to place the memory riser.
3. For each memory riser that you are installing, remove a memory riser filler from that slot as shown in Figure 188 on page 221.

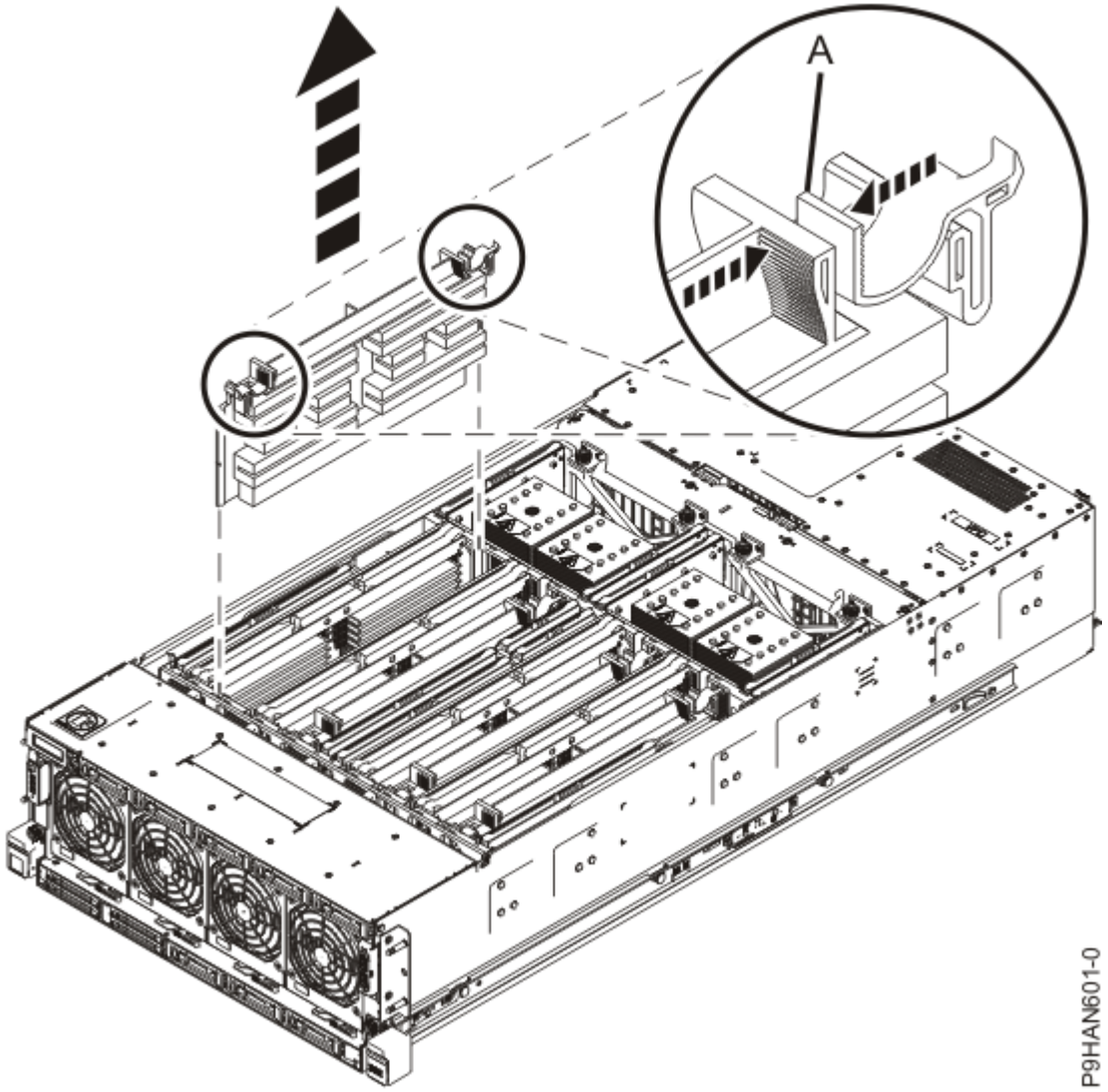



*Figure 188: Removing a memory riser filler*

4. To insert the memory riser, complete the following steps:
   a) Ensure the release latches **(A)** are fully open to a 90 degree angle as shown in the following figure.
   b) Align the memory riser with the connector.
   c) Press the memory riser firmly into the connector.
   d) Rotate the release latches into the closed position, and press the release latches down to ensure that the memory riser is fully seated into the connector.

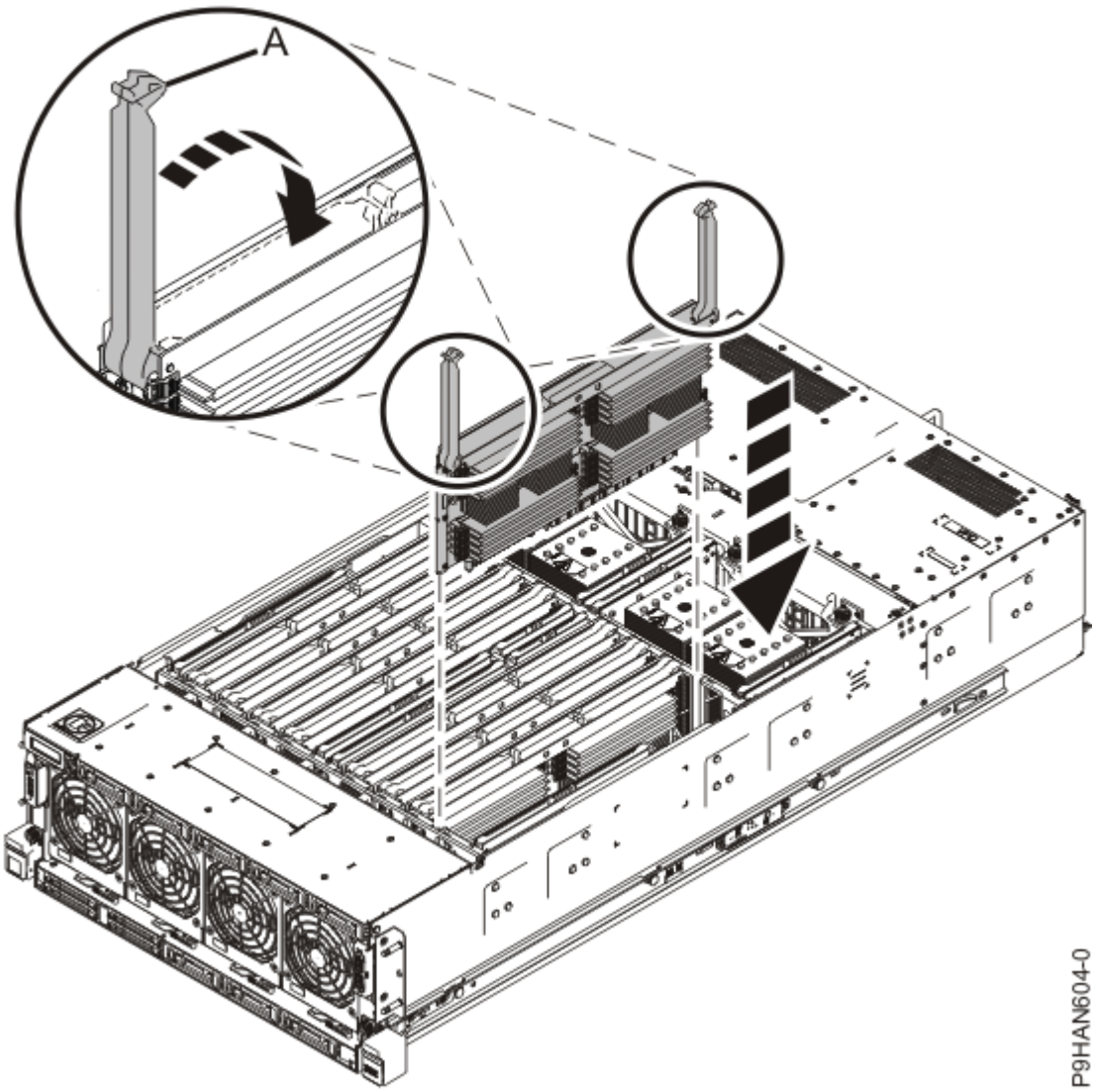



*Figure 189: Inserting a memory riser*

5. Repeat steps “3” on page 220 - “4” on page 221 for each memory riser.

**Preparing the 9040-MR9 system for operation after installing a memory riser**

To prepare the system for operation after you install a memory riser, complete the steps in this 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.
   a) Lower the cover **(A)** onto the system unit. Ensure that the cover alignment pins **(C)** on each side of the cover fit into the matching slots in the chassis.
   b) Slide the cover **(A)** onto the system unit. Ensure that the tabs **(D)** tuck under the mesh along the front opening of the chassis.
   c) Close the release latches **(B)** by pushing it in the direction that is shown in the following figure.

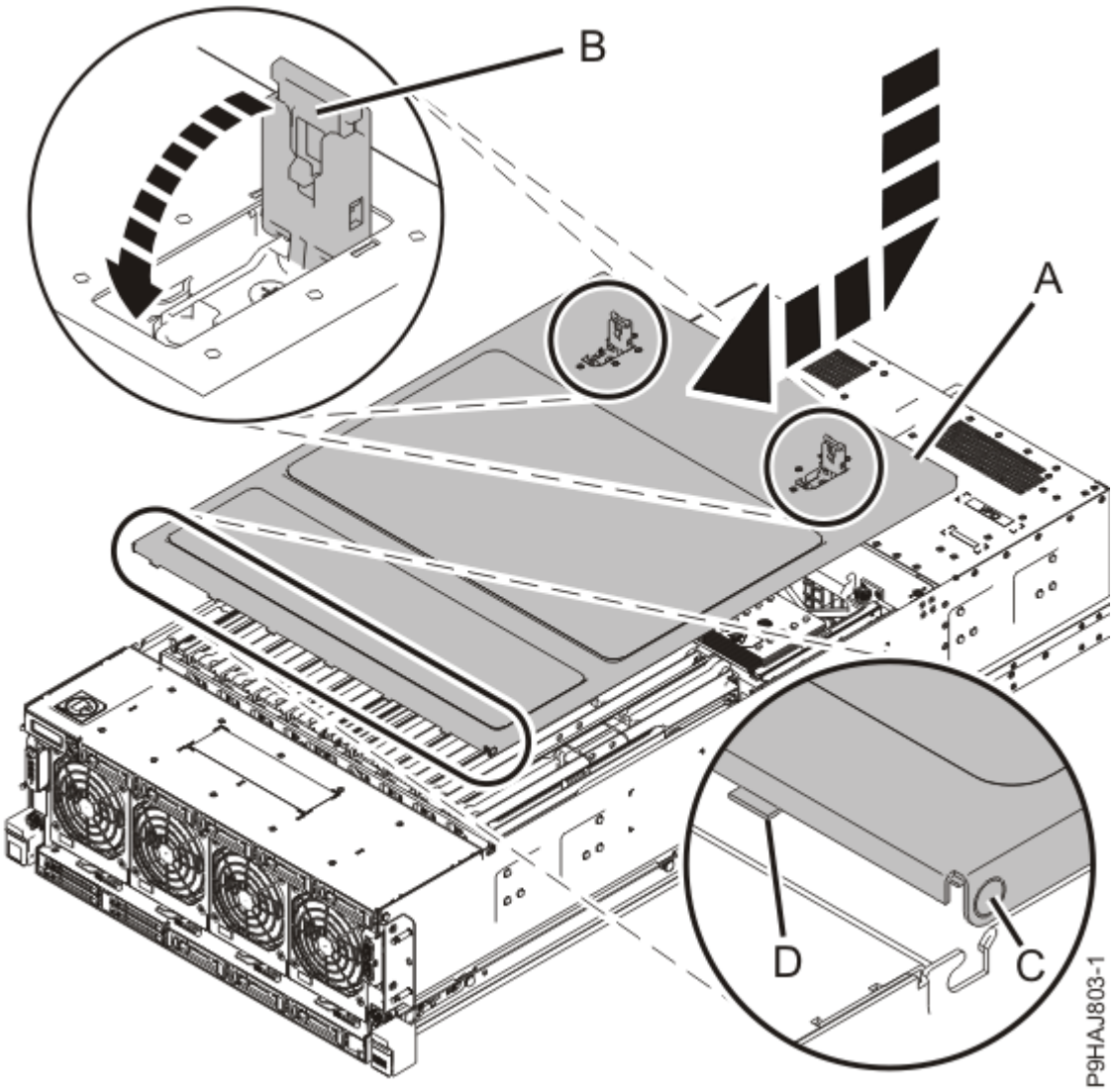



*Figure 190: Installing the service access cover*

3. Place the system into the operating position. For instructions, see Placing a rack-mounted model into the operating position (www.ibm.com/support/knowledgecenter/POWER9/p9haj/p9haj_950_operating_position.htm).
4. Reconnect the power cords to the system. For instructions, see Connecting the power cords (www.ibm.com/support/knowledgecenter/POWER9/p9haj/p9haj_950_power_cord_in.htm).
5. Using your labels, reconnect all of the external cables that plug into the PCIe adapters.
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 https://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 https://www.ibm.com/support/knowledgecenter/POWER9/p9haj/pxhaj_hsmverify.htm (www.ibm.com/support/knowledgecenter/POWER9/p9haj/pxhaj_hsmverify.htm).

## Removing and replacing a memory riser in the 9040-MR9 system

Find information about removing and replacing a memory riser in the system.

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 your system is not managed by an HMC, complete the steps in the following procedures to remove and replace a memory riser in the system.

**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.

### Preparing the 9040-MR9 system to remove and replace a memory riser

To prepare a system to remove and replace a memory riser, complete the steps in this 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 source from the system by unplugging the power cords from the system.

   **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 power sources to the system are disconnected.
   - The power cord **(B)** is fastened to the system with a 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.

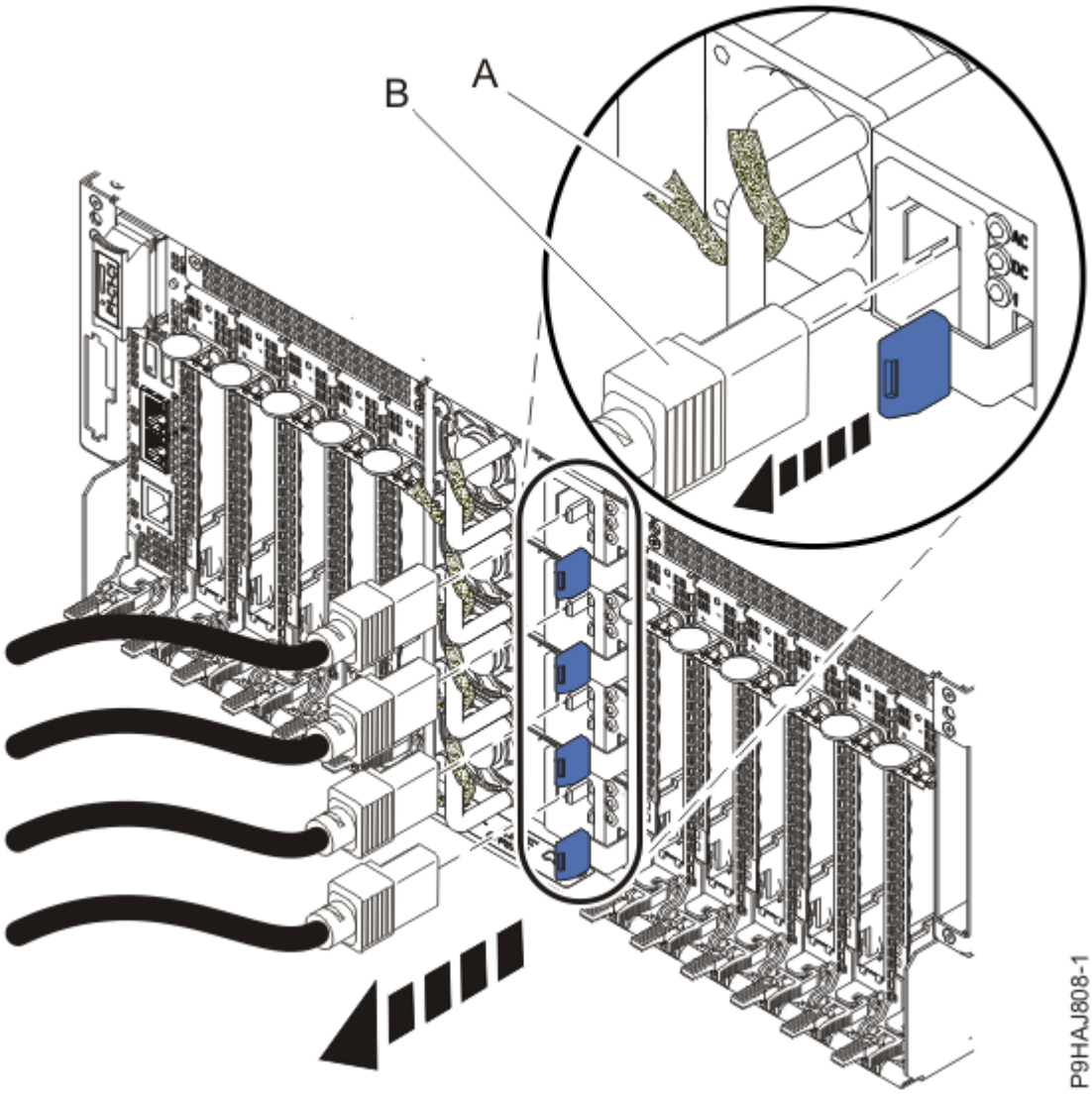
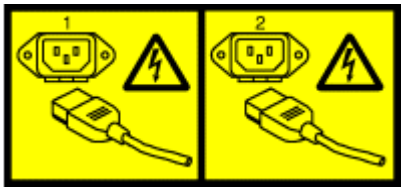



*Figure 191: Removing the power cords*

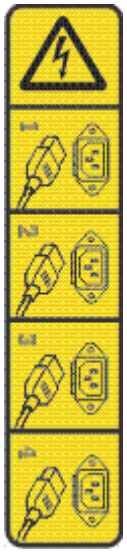
**(L003)**



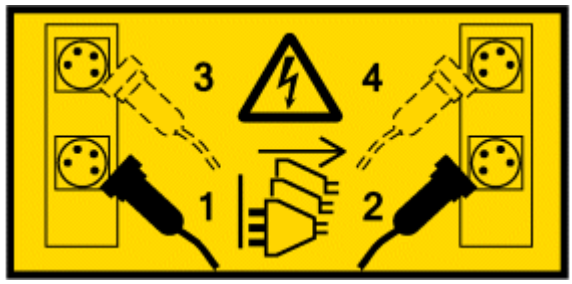

or

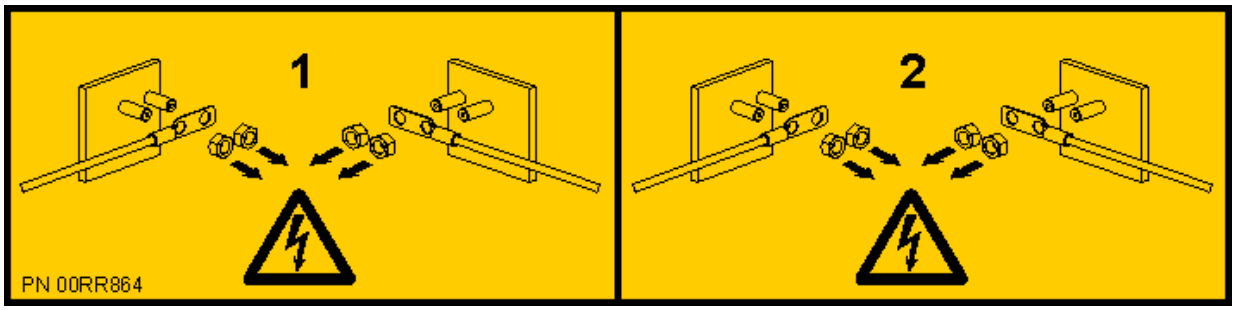
or

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)

4. Label and disconnect all external cables that are attached to the PCIe adapters.

5. Place the system into the service position. For instructions, see Placing a system into the service position (www.ibm.com/support/knowledgecenter/POWER9/p9haj/p9haj_950_service_position.htm).
6. 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.
7. Remove the service access cover.

   **Attention:** Operating the system without the cover for more than 10 minutes might damage the system components. For proper cooling and airflow, replace the cover before turning on the system.

   a. Push the release latches **(A)** in the direction shown in the following figure.

   b. Slide the cover **(B)** off the system unit as shown in the following figure. When the front of the service access cover has cleared the upper frame ledge, lift the cover up and off the system unit.

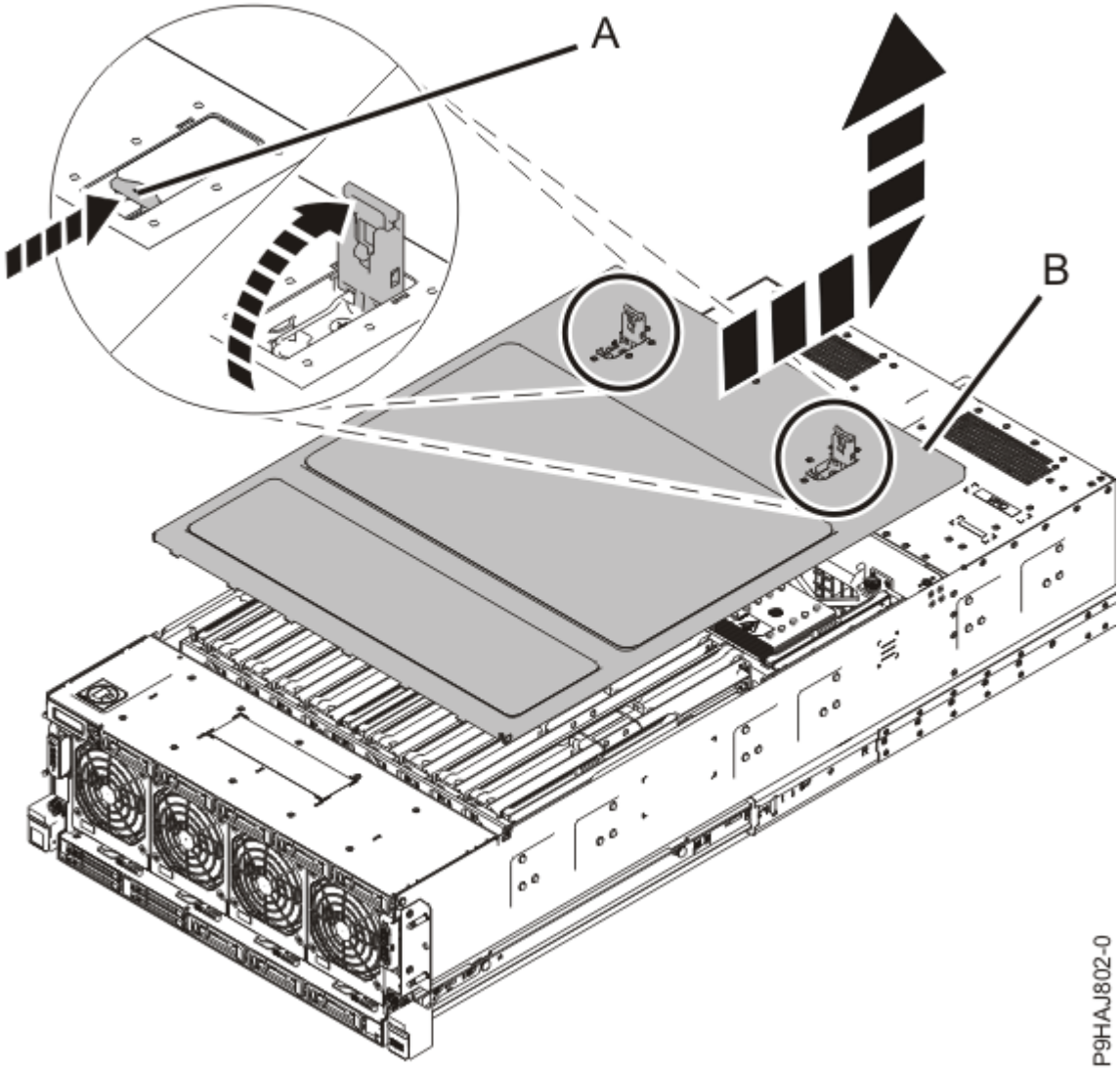



*Figure 192: Removing the service access cover*

8. To activate the identify LED for the faulty part, press and hold push-button **(A)** on the trusted platform module card as shown in the following figure.

   Verify that the green LED **(B)** is lit, which indicates that sufficient power exists for the identify LED. If the LED **(B)** is not lit, use the location code to find the physical location by using the service label.

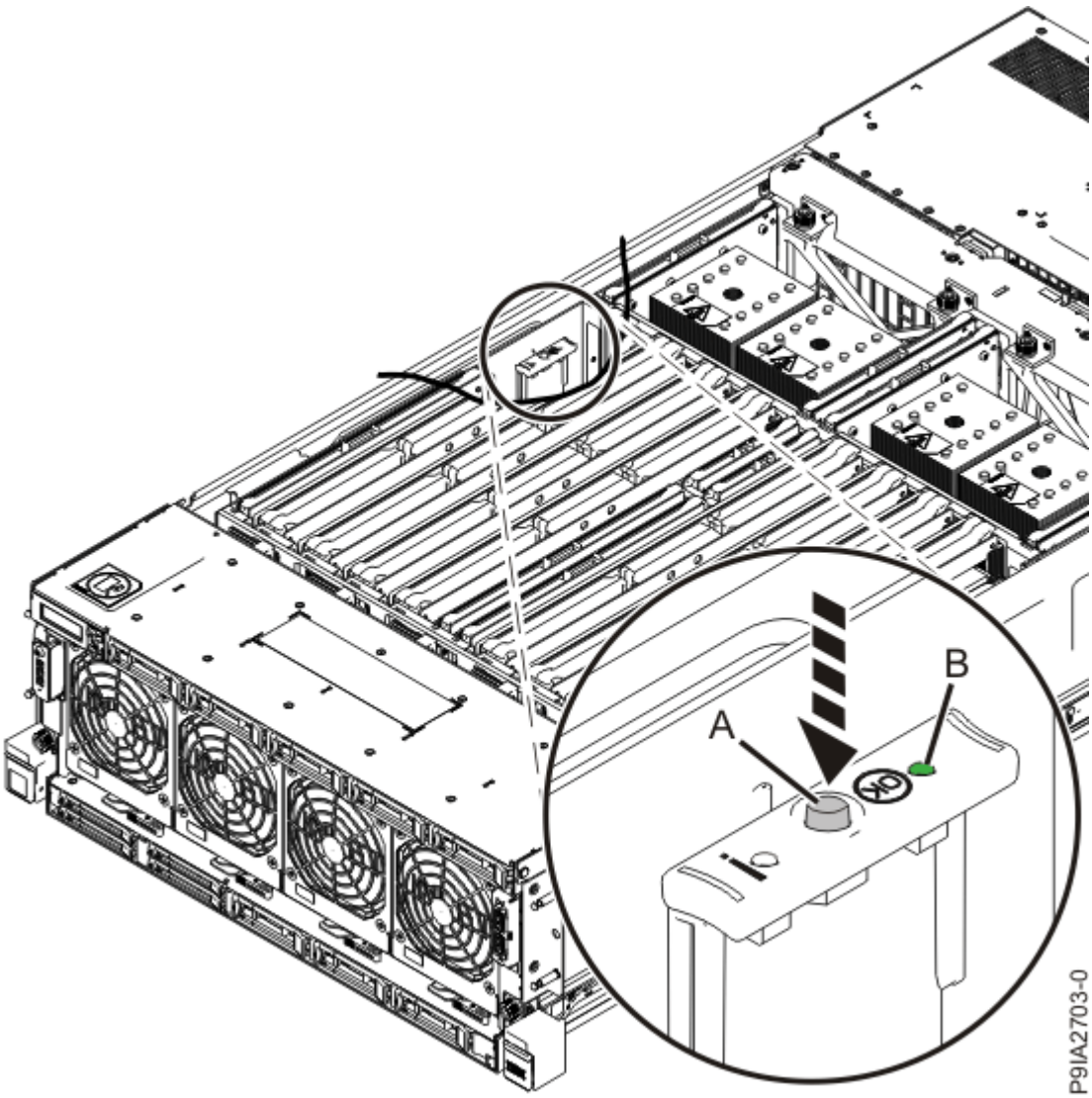



*Figure 193: Activating the identify LED*

9. Locate the amber LED for the failed memory riser. Make a note of which memory riser is lit.

   Figure 194 on page 230 shows the locations **(A)** of the memory riser LEDs.

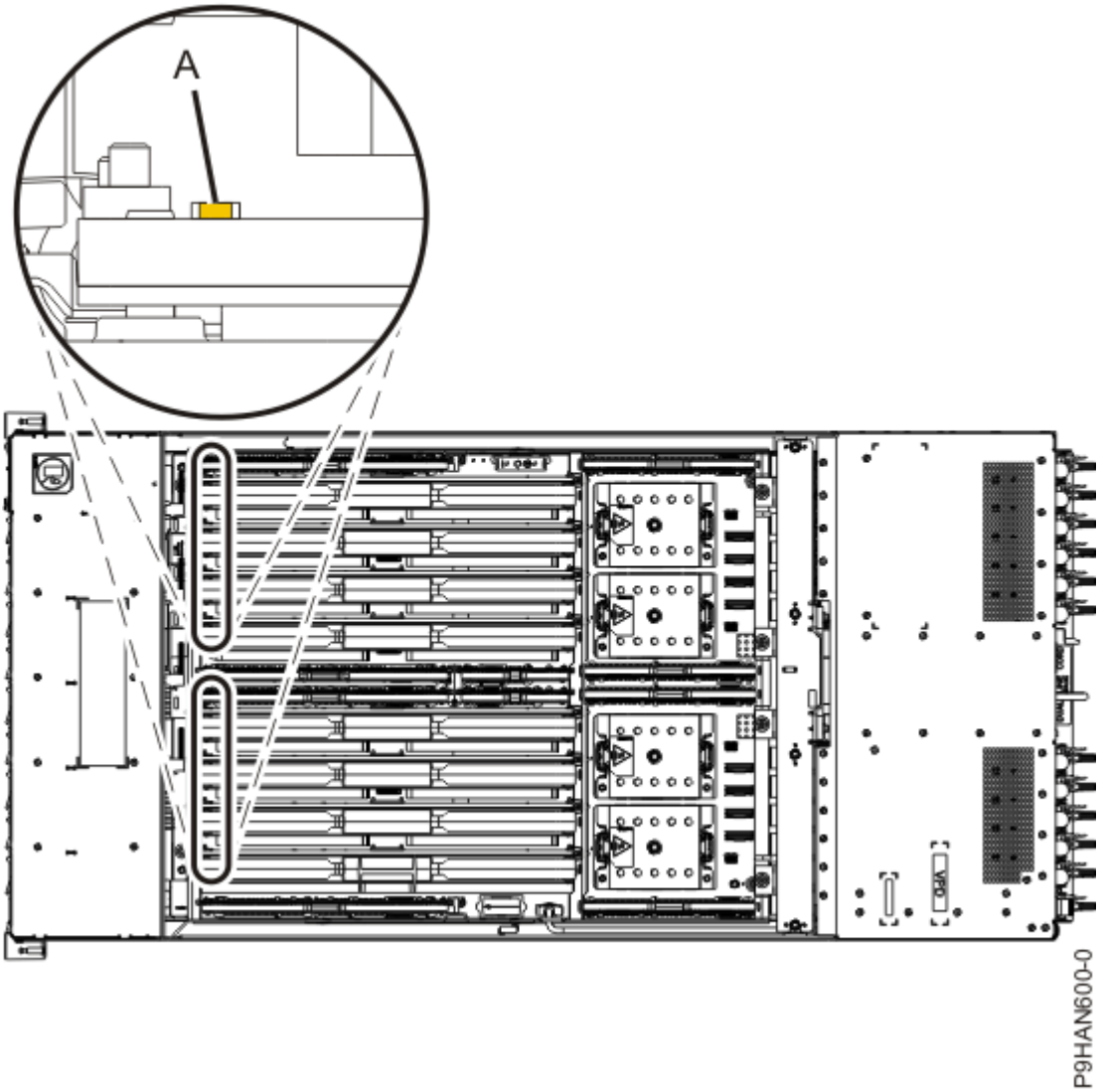



*Figure 194: LEDs for a memory riser*

If the locator function does not work, you will need to use the event log information to locate the memory riser to remove.

**Removing a memory riser from the 9040-MR9 system**

To remove a memory riser from the system, complete the steps in this procedure.

1. Ensure that you have the electrostatic discharge (ESD) wrist strap on and that the ESD clip is plugged into a ground jack or connected to an unpainted metal surface. If not, do so now.
2. Remove the memory riser.
   a) Open the release latches **(A)** on the memory riser as shown in the following figure.
      Open the latches to the fully upright 90 degree position.
   b) Pull out the memory riser from the slot by holding onto the latches.

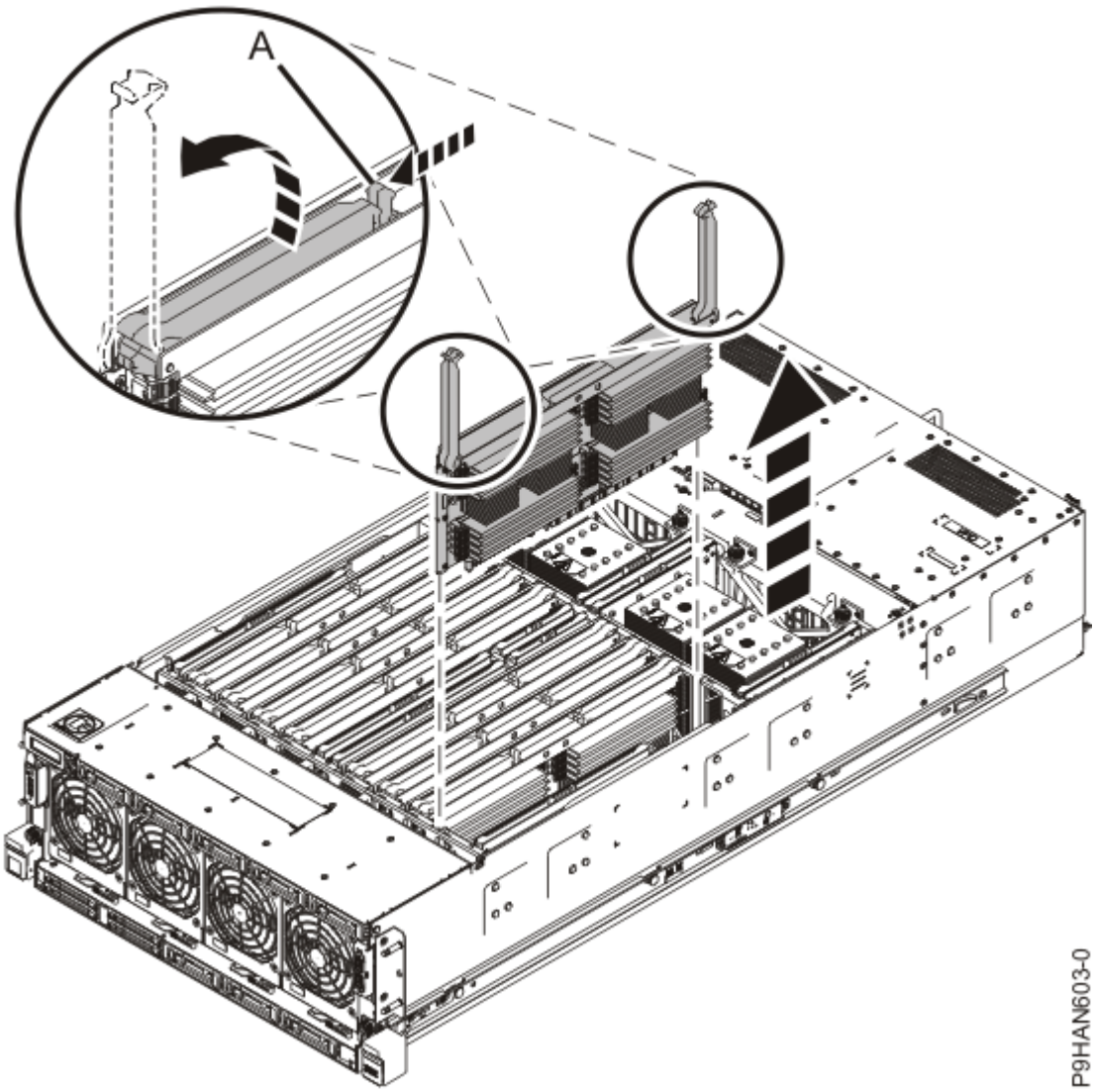



*Figure 195: Removing a memory riser*

3. If the removed part is used again, place the part on an electrostatic discharge (ESD) mat.

**Replacing a memory riser in the 9040-MR9 system**

To replace a memory riser in the system, complete the steps in this 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 insert the memory riser, complete the following steps:
   a) Ensure the release latches **(A)** are fully open to a 90 degree angle as shown in the following figure.
   b) Align the memory riser with the connector.
   c) Press the memory riser firmly into the connector.
   d) Rotate the release latches into the closed position, and press the release latches down to ensure that the memory riser is fully seated into the connector.

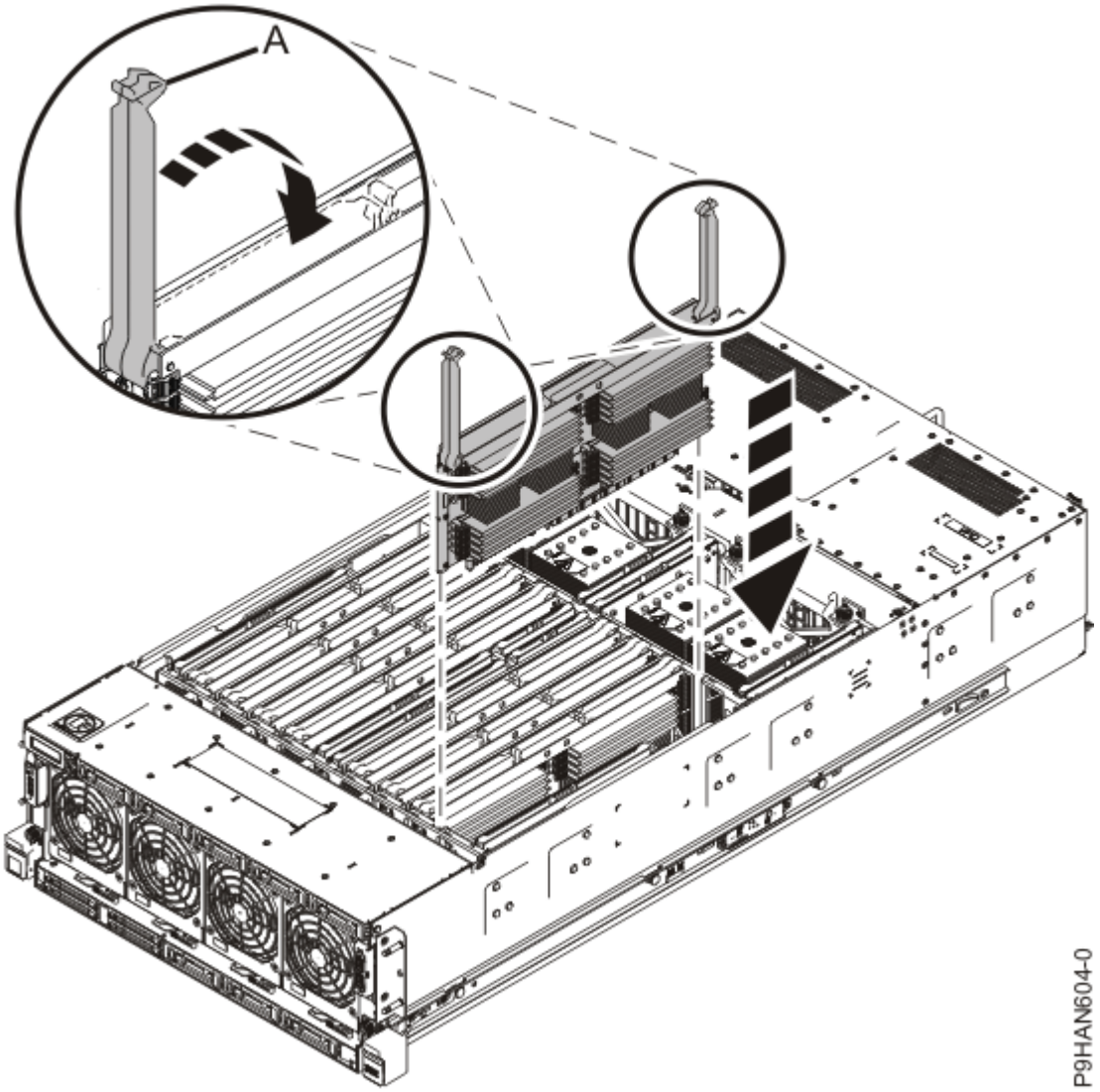



*Figure 196: Inserting a memory riser*

**Preparing the 9040-MR9 system for operation after removing and replacing a memory riser**
To prepare the system for operation after you remove and replace a memory riser, complete the steps in this 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.
   a) Lower the cover **(A)** onto the system unit. Ensure that the cover alignment pins **(C)** on each side of the cover fit into the matching slots in the chassis.
   b) Slide the cover **(A)** onto the system unit. Ensure that the tabs **(D)** tuck under the mesh along the front opening of the chassis.
   c) Close the release latches **(B)** by pushing it in the direction that is shown in the following figure.

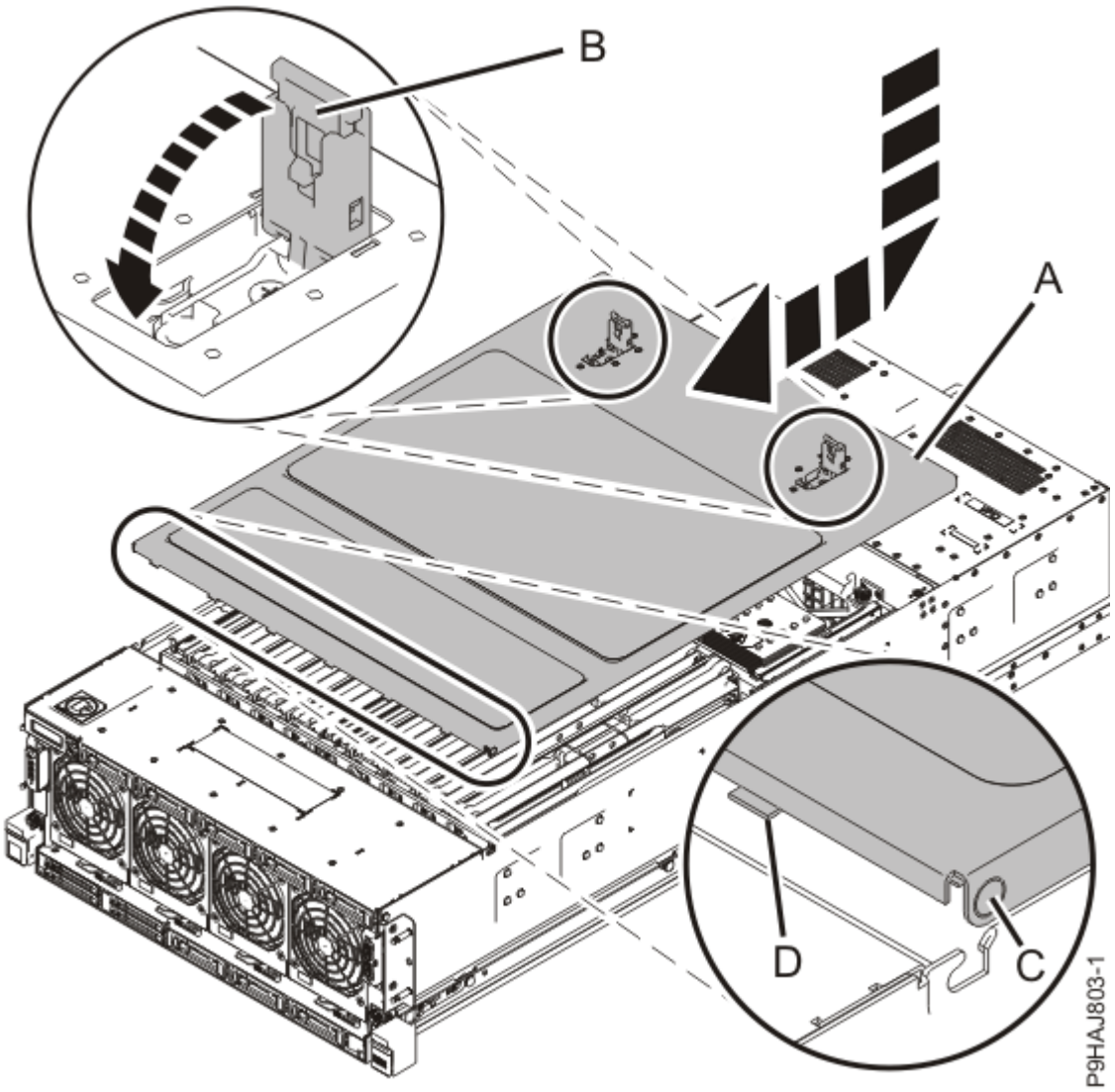



*Figure 197: Installing the service access cover*

3. Place the system into the operating position. For instructions, see Placing a rack-mounted model into the operating position (www.ibm.com/support/knowledgecenter/POWER9/p9haj/p9haj_950_operating_position.htm).
4. Reconnect the power cords to the system. For instructions, see Connecting the power cords (www.ibm.com/support/knowledgecenter/POWER9/p9haj/p9haj_950_power_cord_in.htm).
5. Using your labels, reconnect all of the external cables that plug into the PCIe adapters.
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 https://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 https://www.ibm.com/support/knowledgecenter/POWER9/p9haj/pxhaj_hsmverify.htm (www.ibm.com/support/knowledgecenter/POWER9/p9haj/pxhaj_hsmverify.htm).

## Permanently removing a memory riser from the 9040-MR9 system

Find information about permanently removing a memory riser from the system.

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 your system is not managed by an HMC, complete the steps in the following procedures to permanently remove a memory riser from the system.

**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.

### Preparing the 9040-MR9 system to permanently remove a memory riser

To prepare a system to permanently remove a memory riser, complete the steps in this procedure.

1. Determine the slots from which you want to permanently remove the memory modules and memory riser cards.

   See “Plugging rules for memory modules in the 9040-MR9 system” on page 207 to understand the plugging rules and to ensure that you have the memory modules in the correct sequence. Record the plugging order of the memory module slots for the installation.
2. 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.
3. Stop the system. For instructions, see Stopping a system (www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustopsys.htm).
4. Label and disconnect the power source from the system by unplugging the power cords from the system.

   **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 power sources to the system are disconnected.
   - The power cord **(B)** is fastened to the system with a 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.

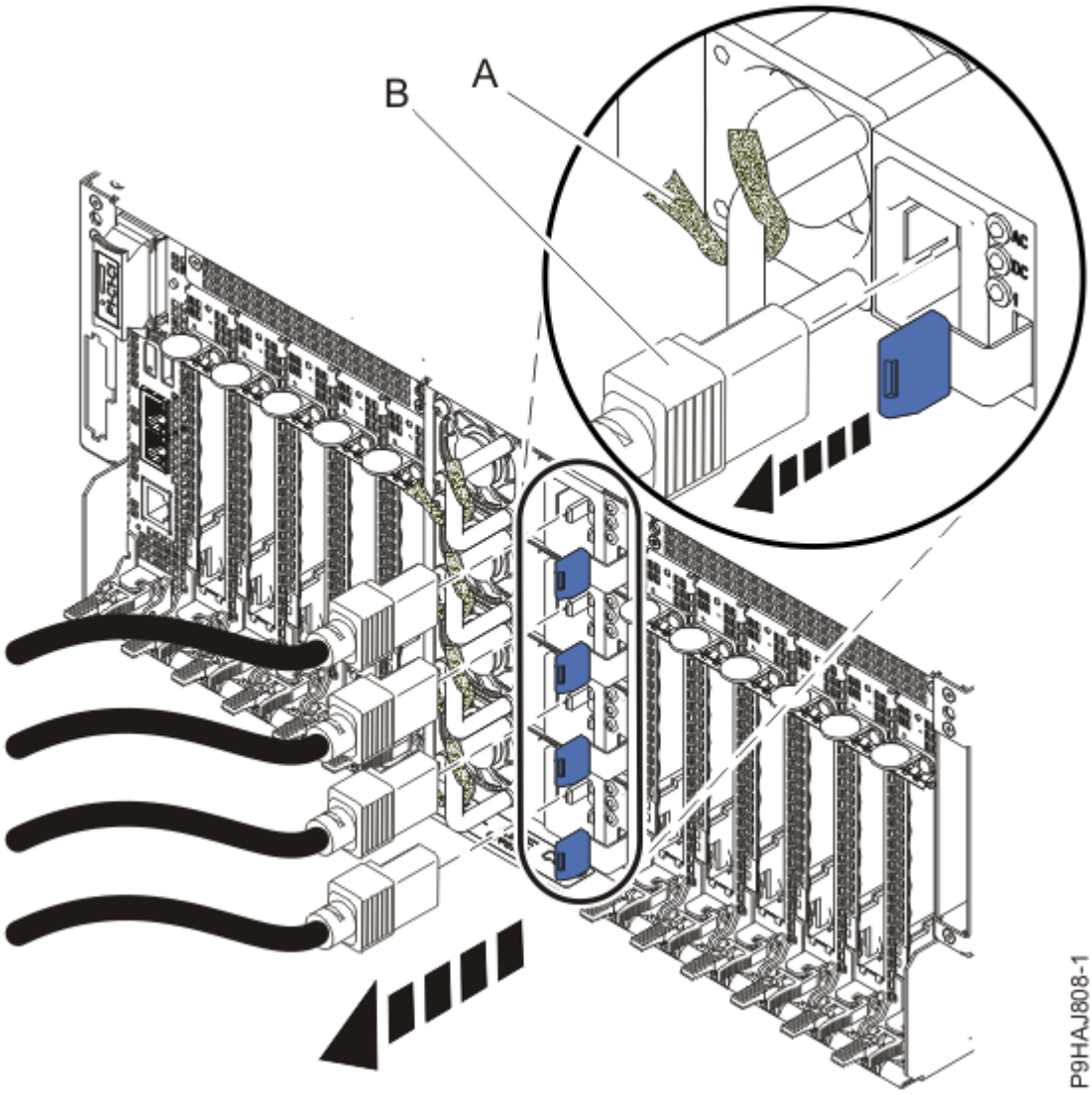
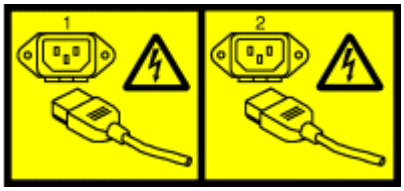



*Figure 198: Removing the power cords*

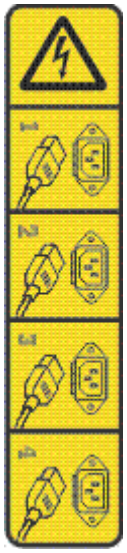
**(L003)**



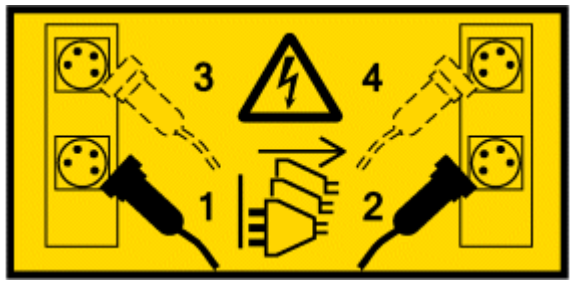

or

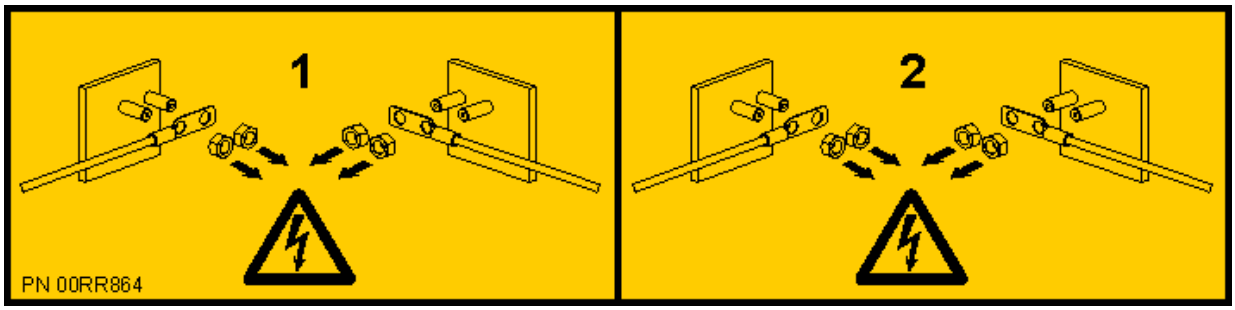
or

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. Label and disconnect all external cables that are attached to the PCIe adapters.

6. Place the system into the service position. For instructions, see Placing a system into the service position (www.ibm.com/support/knowledgecenter/POWER9/p9haj/p9haj_950_service_position.htm).
7. 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.
8. Remove the service access cover.

   **Attention:** Operating the system without the cover for more than 10 minutes might damage the system components. For proper cooling and airflow, replace the cover before turning on the system.

   a. Push the release latches **(A)** in the direction shown in the following figure.

   b. Slide the cover **(B)** off the system unit as shown in the following figure. When the front of the service access cover has cleared the upper frame ledge, lift the cover up and off the system unit.

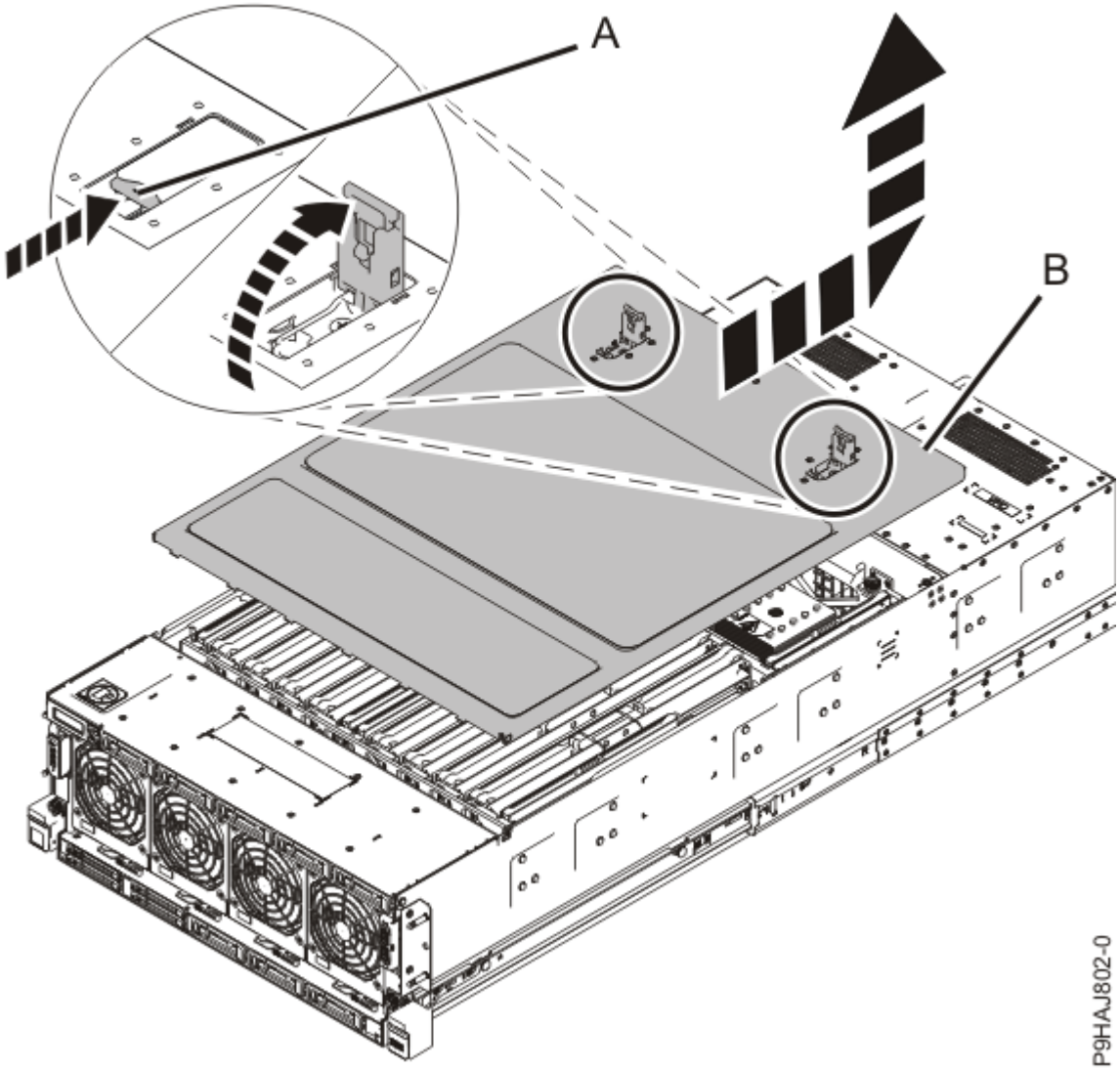



*Figure 199: Removing the service access cover*

**Permanently removing a memory riser from the 9040-MR9 system**

To permanently remove a memory riser from the system, complete the steps in this procedure.

1. Ensure that you have the electrostatic discharge (ESD) wrist strap on and that the ESD clip is plugged into a ground jack or connected to an unpainted metal surface. If not, do so now.
2. Remove the memory riser.
   a) Open the release latches **(A)** on the memory riser as shown in the following figure.
      Open the latches to the fully upright 90 degree position.
   b) Pull out the memory riser from the slot by holding onto the latches.

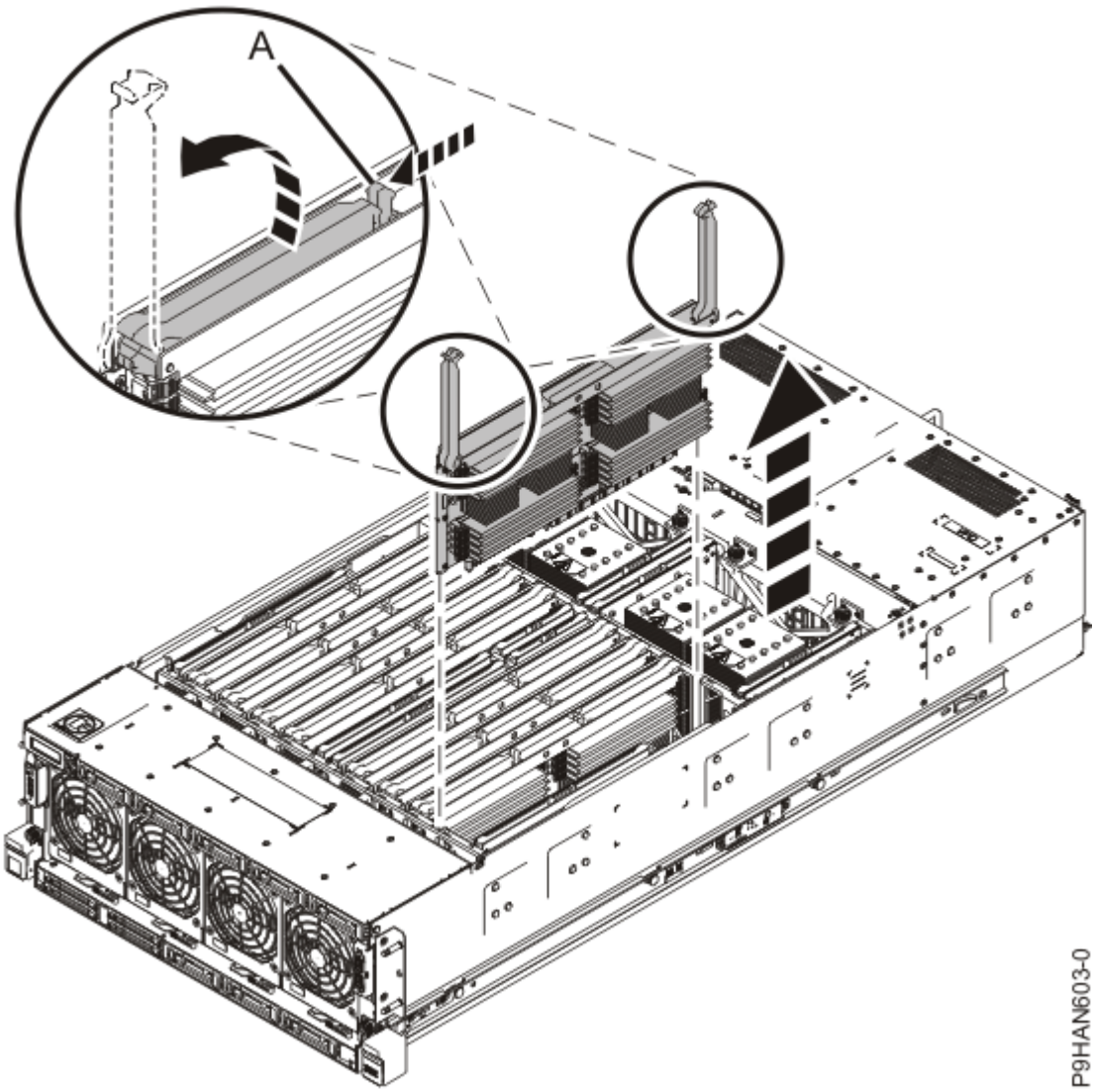



*Figure 200: Removing a memory riser*

3. If the removed part is used again, place the part on an electrostatic discharge (ESD) mat.
4. For each memory riser that you are removing, insert a memory riser filler into that slot as shown in Figure 201 on page 240.

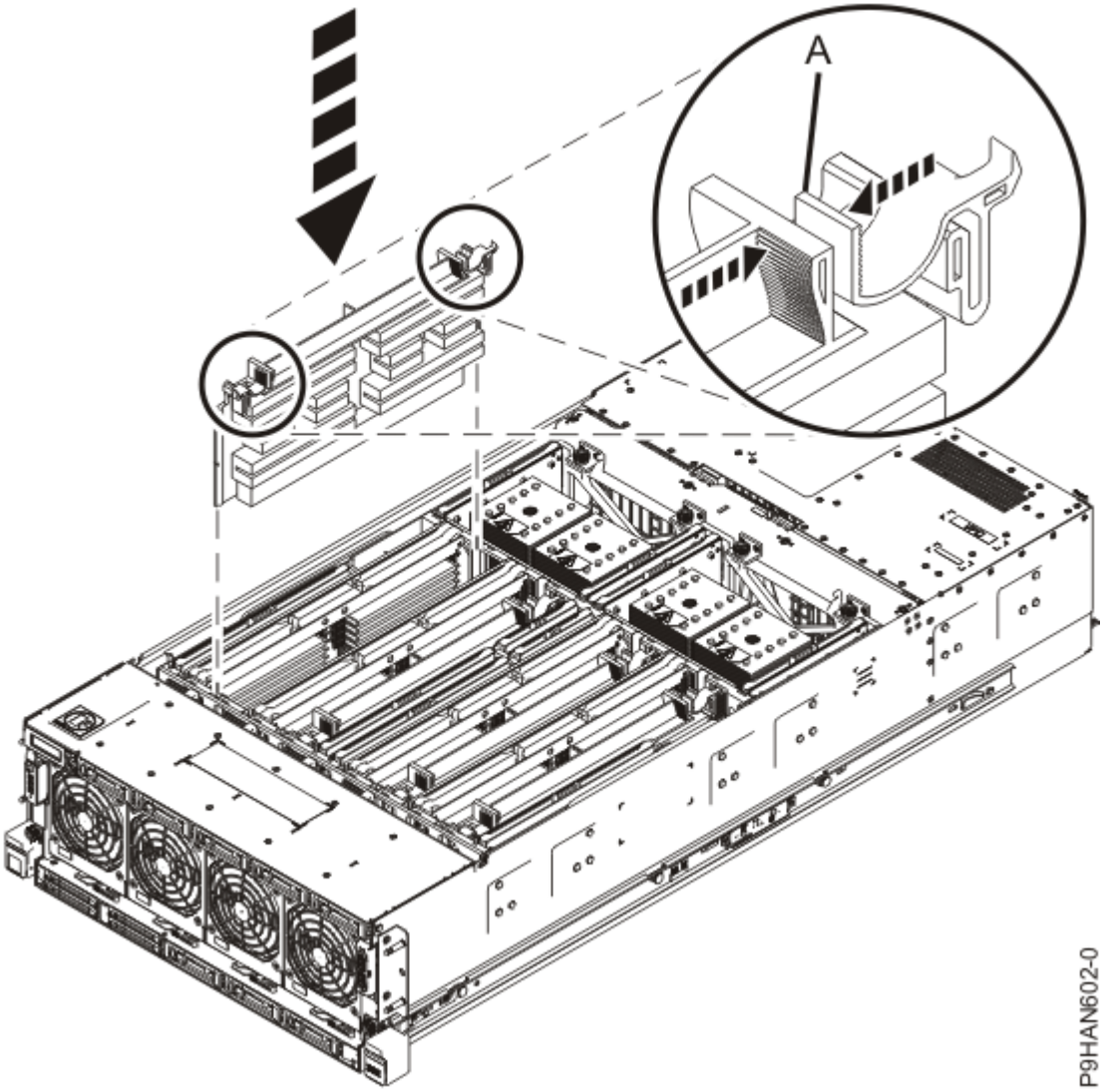



*Figure 201: Inserting a memory riser filler*

5. Repeat steps “2” on page 238 - “4” on page 239 for each memory riser that you want to remove.

**Preparing the 9040-MR9 system for operation after permanently removing a memory riser**

To prepare the system for operation after you permanently remove a memory riser, complete the steps in this 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.
   a) Lower the cover **(A)** onto the system unit. Ensure that the cover alignment pins **(C)** on each side of the cover fit into the matching slots in the chassis.
   b) Slide the cover **(A)** onto the system unit. Ensure that the tabs **(D)** tuck under the mesh along the front opening of the chassis.
   c) Close the release latches **(B)** by pushing it in the direction that is shown in the following figure.

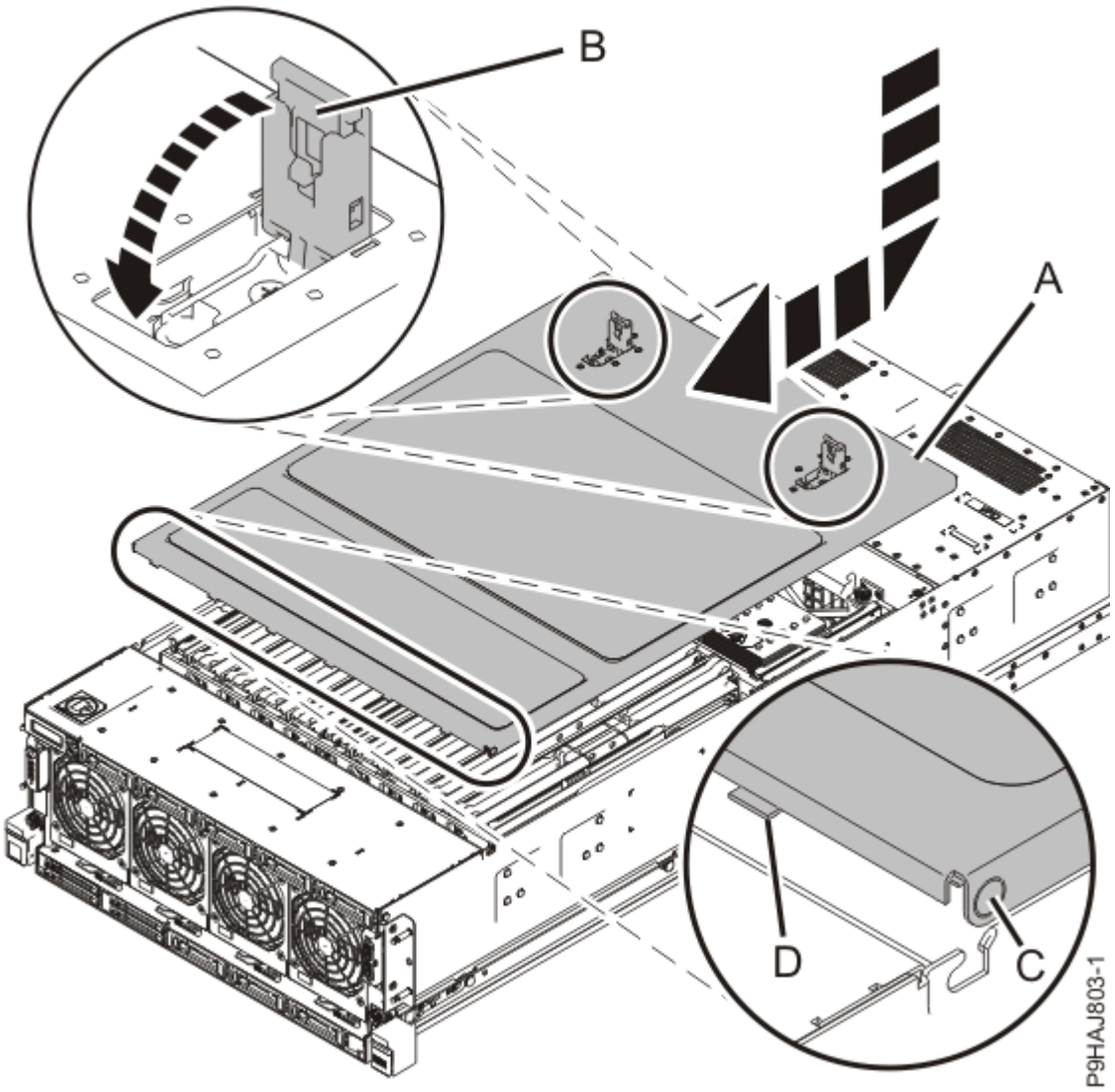



*Figure 202: Installing the service access cover*

3. Place the system into the operating position. For instructions, see Placing a rack-mounted model into the operating position (www.ibm.com/support/knowledgecenter/POWER9/p9haj/p9haj_950_operating_position.htm).
4. Reconnect the power cords to the system. For instructions, see Connecting the power cords (www.ibm.com/support/knowledgecenter/POWER9/p9haj/p9haj_950_power_cord_in.htm).
5. Using your labels, reconnect all of the external cables that plug into the PCIe adapters.
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 https://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 https://www.ibm.com/support/knowledgecenter/POWER9/p9haj/pxhaj_hsmverify.htm (www.ibm.com/support/knowledgecenter/POWER9/p9haj/pxhaj_hsmverify.htm).

# Service processor card assembly for the 9040-MR9

Find information about removing and replacing the service processor card assembly in the IBM Power System E950 (9040-MR9) system.

## Removing and replacing the service processor card assembly in the 9040-MR9

Find information about removing and replacing the service processor card assembly in the IBM Power System E950 (9040-MR9) server.

Removing and replacing the service processor card assembly is a nonconcurrent procedure, which requires the system to be powered off. The service processor card assembly is installed into slot P1-C1.

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 your system is not managed by an HMC, complete the steps in the following procedures to remove and replace the service processor card assembly.

### Preparing the 9040-MR9 system to remove and replace the service processor card assembly

To prepare the system to remove and replace the service processor card assembly, complete the steps in this procedure.

1. Access the Advanced System Management Interface (ASMI).

   For instructions, see Accessing the ASMI without an HMC (www.ibm.com/support/knowledgecenter/POWER9/p9hby/connect_asmi.htm).
2. Check and record the current firmware level.

   On the ASMI Welcome pane, view the existing level of server firmware in the upper-right corner under the copyright statement, for example, 01EM310 or FW760.00 (AM760_019).
3. Check and record the following service processor card settings:
   - System Name
   - System Power Control
   - System Service Aids
   - System Configuration
   - Network Services
   - Performance Option
   - Login Profile
4. 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.
5. Stop the system. For instructions, see Stopping a system (www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustopsys.htm).
6. Label and disconnect the power source from the system by unplugging the power cords from the system.

   **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 power sources to the system are disconnected.
- The power cord **(B)** is fastened to the system with a 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.

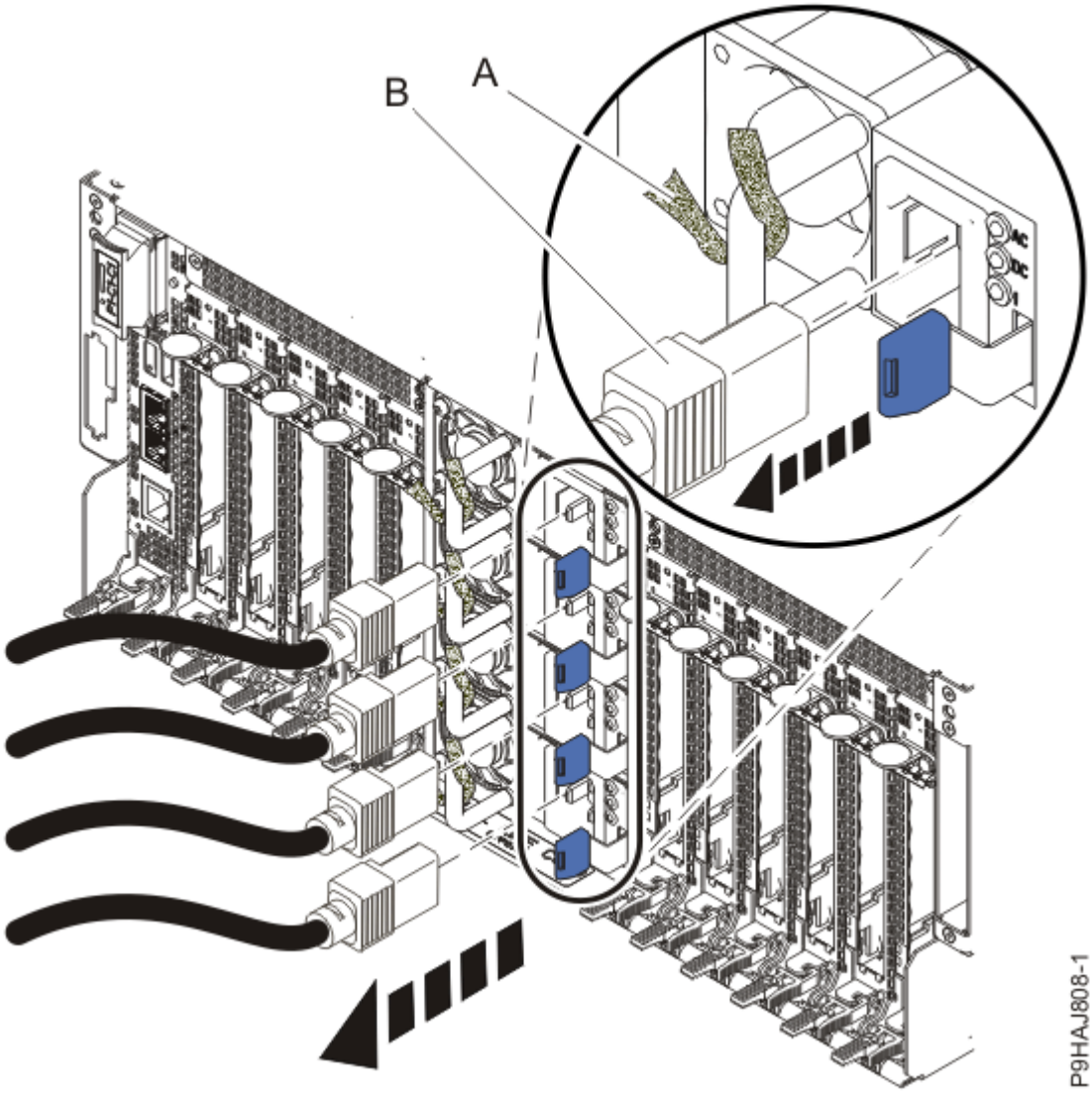
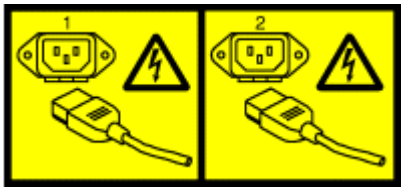



*Figure 203: Removing the power cords*

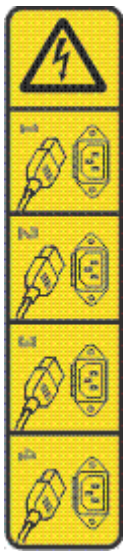
**(L003)**



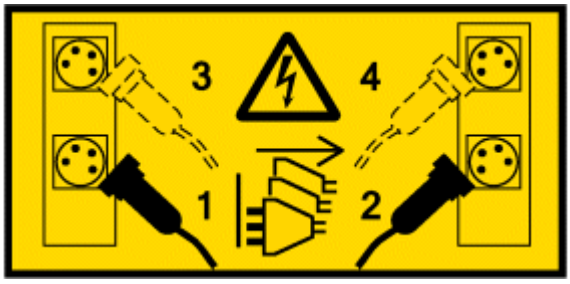

or

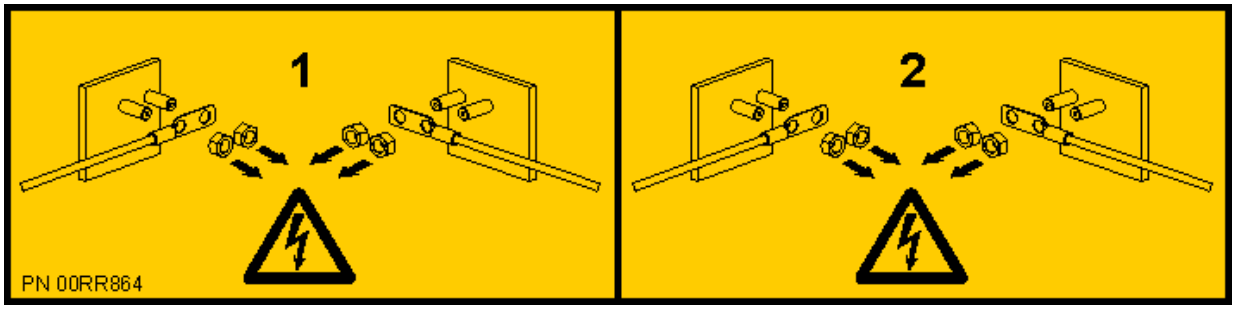
or

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)

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

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

**Attention:**

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

## Removing the service processor card assembly from the 9040-MR9 system

To remove a service processor card assembly from the system, complete the steps in this procedure.

1. Ensure that you have the electrostatic discharge (ESD) wrist strap on and that the ESD clip is plugged into a ground jack or connected to an unpainted metal surface. If not, do so now.
2. Remove the service processor card assembly from the rear of the system.
   a) Label and remove the cables from the service processor card assembly **(B)**.
   b) Remove the service processor card assembly **(B)** as shown in the following figure. Release the latch **(A)** by pushing the latch to the left, then pushing down on the latch.
   c) Support the service processor card assembly from underneath and remove the service processor card assembly from the system.
   d) Set the service processor card assembly on an ESD surface.

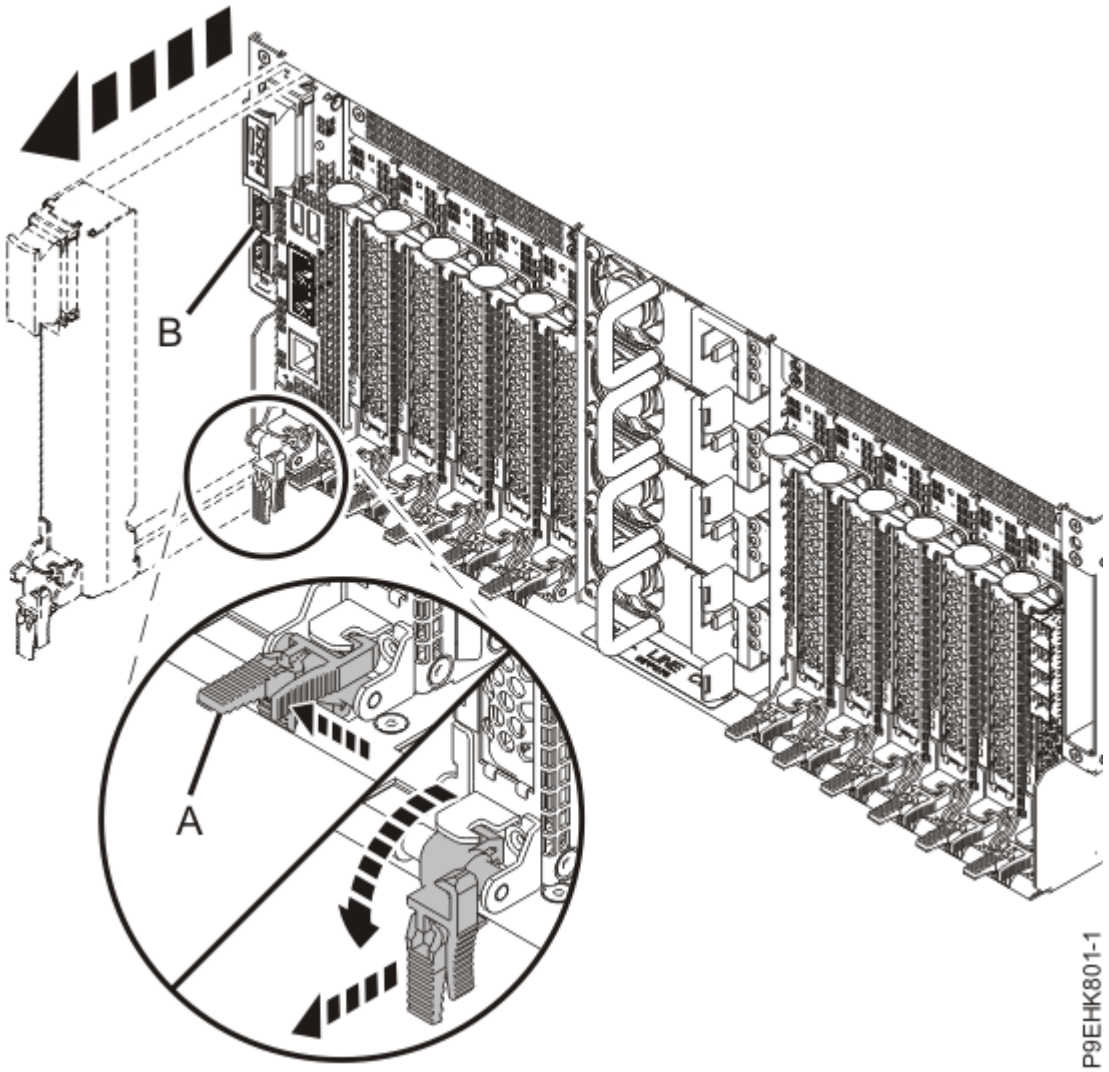



*Figure 204: Removing the service processor card assembly*

3. If the removed part is used again, place the part on an electrostatic discharge (ESD) mat.

   The service processor card assembly is both the PCIe cassette like holder and the service processor card within that holder. The service processor card assembly is replaced as a unit. Do not attempt to remove the service processor card from the holder.

## Replacing the service processor card assembly in the 9040-MR9 system

To replace a service processor card assembly in the system, complete the steps in this 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. Install the service processor card assembly.
   a) Replace the service processor card assembly **(A)** as shown in the following figure. Open the latch **(B)**. Support the service processor card assembly from underneath and replace the service processor card assembly into the system until fully seated. Clip the latch **(B)** into place to secure the service processor card assembly.
   b) Using your labels, replace the cables to the service processor card assembly.

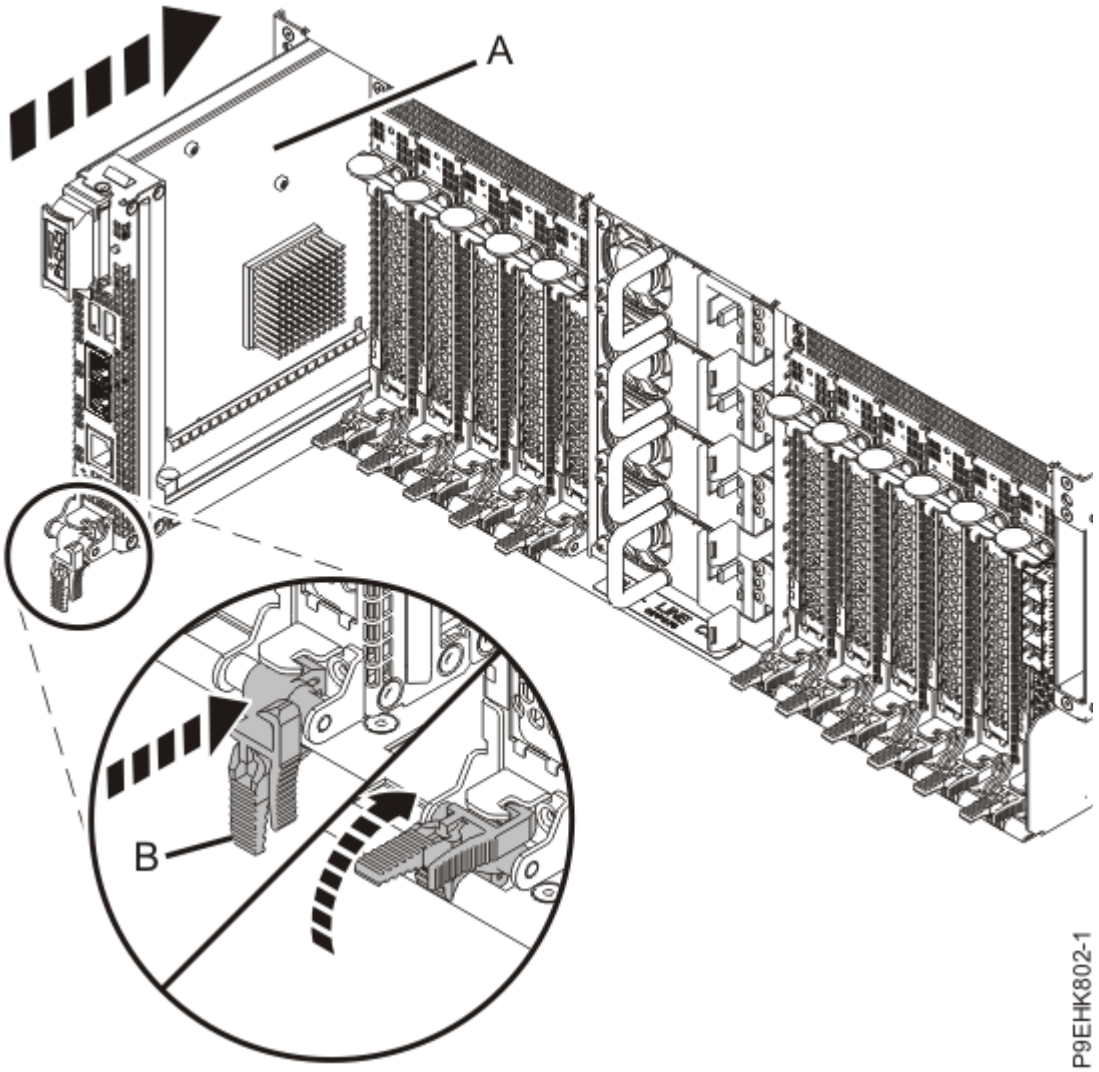



*Figure 205: Installing the service processor card assembly into slot*

3. Remove the time-of-day battery cover **(A)** as shown in the following figure.

   Remove the protective plastic insulator **(B)** from the time-of day battery, to allow the time-of-day battery to make contact with the service processor card.

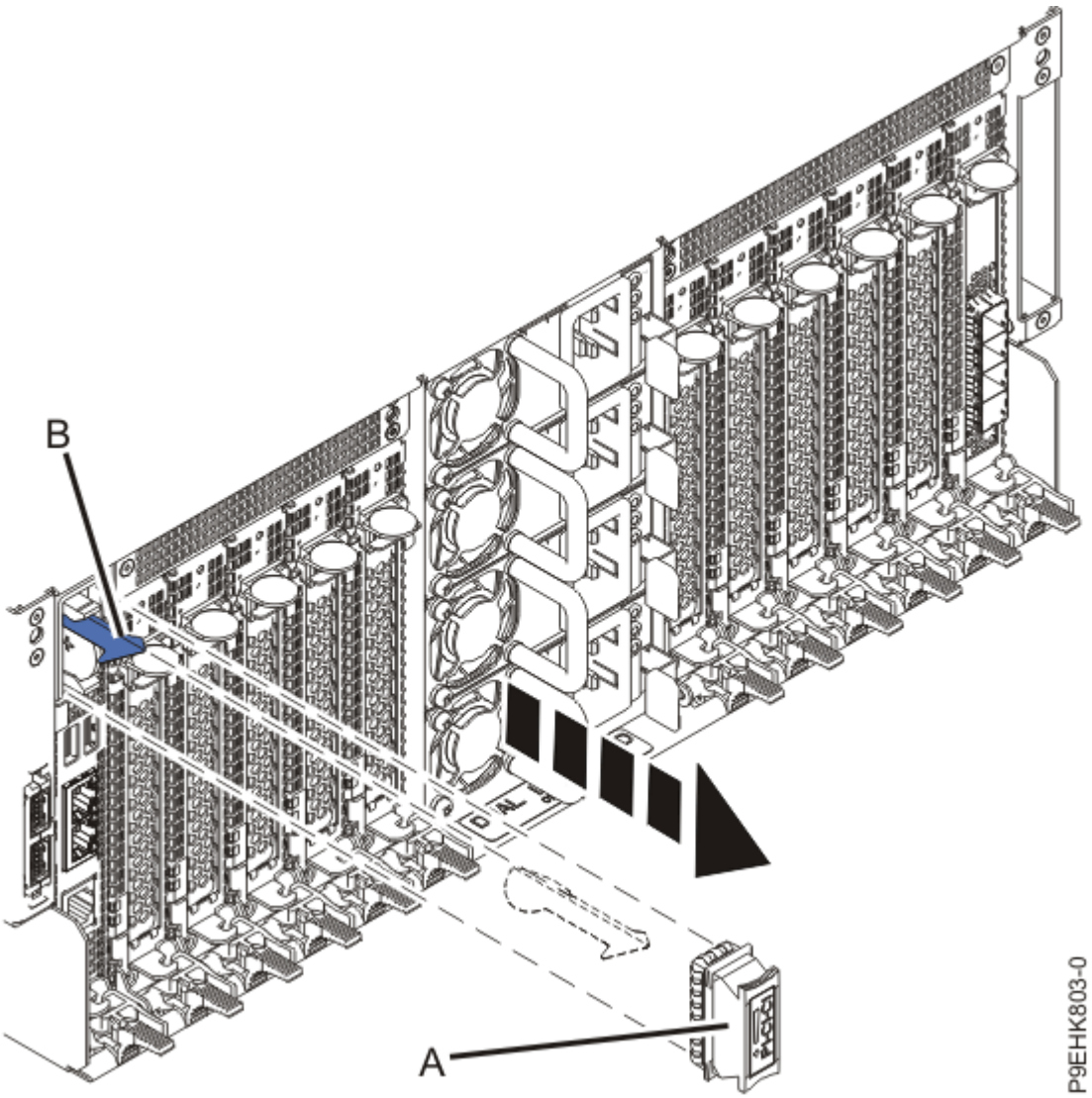



*Figure 206: Removing the protective plastic insulator from the battery*

4. Replace the time-of-day battery cover as shown in the following figure.

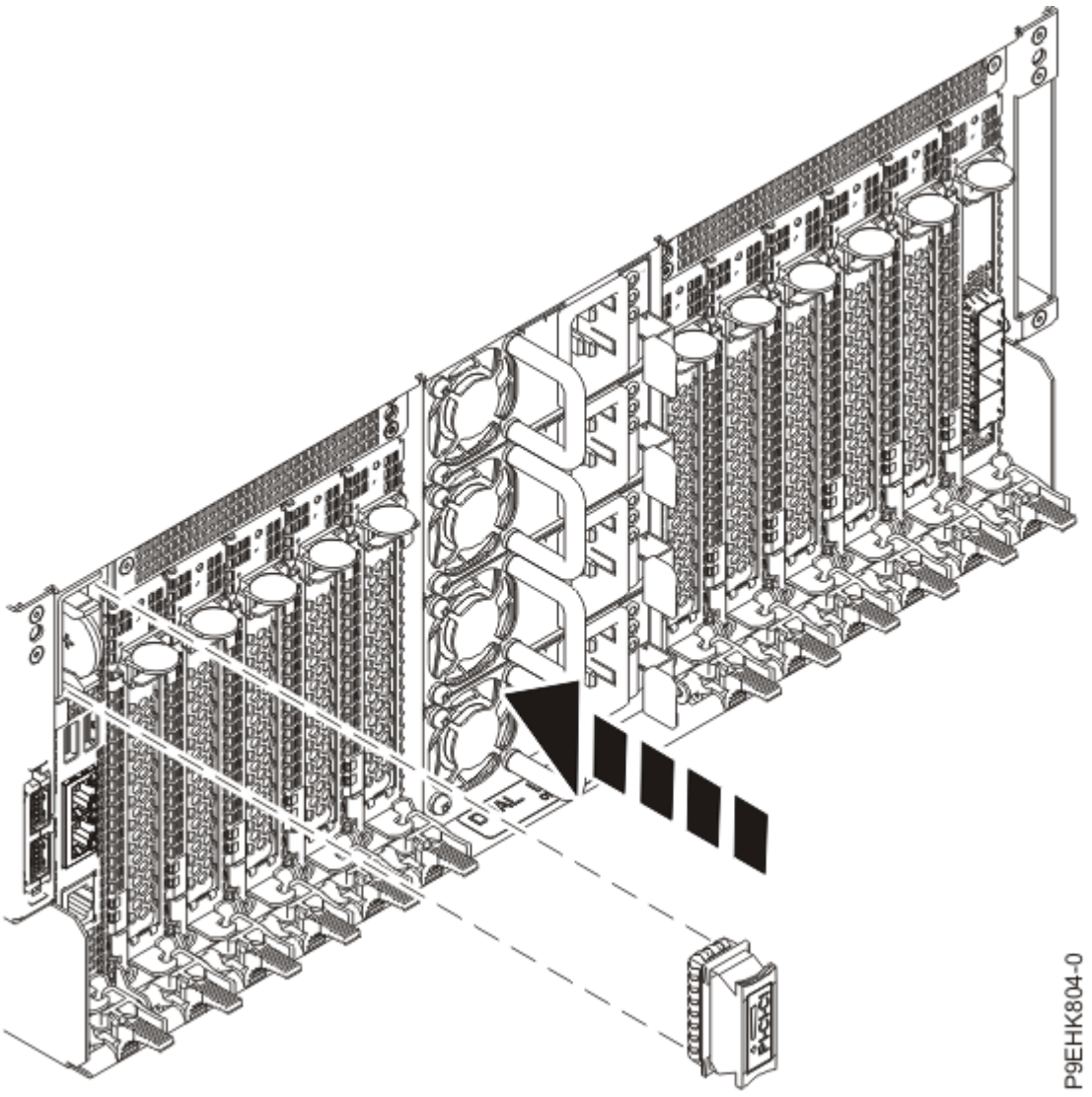



*Figure 207: Replacing the time-of-day battery cover*

## Preparing the 9040-MR9 system for operation after removing and replacing the service processor card assembly

To prepare the system for operation after you replace the service processor card assembly, complete the steps in this procedure.

1. Ensure that you have the electrostatic discharge (ESD) wrist strap on and that the ESD clip is plugged into a ground jack or connected to an unpainted metal surface. If not, do so now.
2. Using your labels, reconnect the power cords **(A)** to the system unit as shown in the following figure.

   Fasten the power cords to the system by using the hook-and-loop fasteners **(B)** as shown in the following figure.

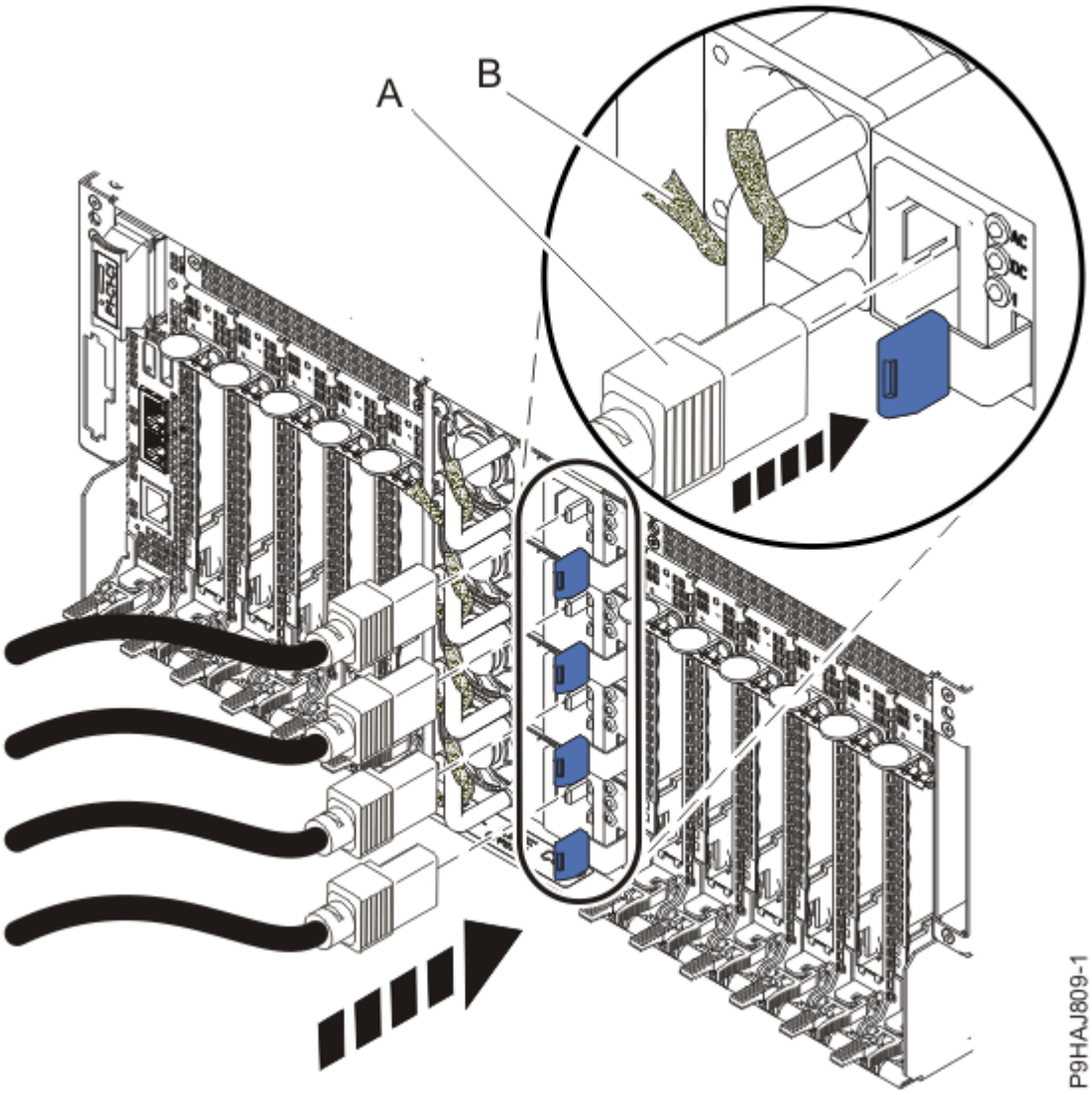



*Figure 208: Connecting the power cords*

3. Access the Advanced System Management Interface (ASMI).

   For instructions, see Accessing the ASMI without an HMC (www.ibm.com/support/knowledgecenter/POWER9/p9hby/connect_asmi.htm).

4. A new service processor card has the following settings:

   - Port 1 default IP: 169.254.2.147
   - Port 2 default IP: 169.254.3.147

   You can also use the control panel display, function code 30, to display the IP addresses.

   To reconfigure the IP addresses, see Accessing the ASMI using a PC or notebook and web browser (www.ibm.com/support/knowledgecenter/POWER9/p9hby/browser.htm).

5. If removed, reconnect the Ethernet, serial, and Universal Serial Bus (USB) cables.
6. Use the ASMI to ensure that the time is set correctly and to restore the service processor card settings.

   a) In the navigation area of the ASMI, click **System Configuration** > **Time of Day**.

   b) Verify that the content pane displays the current date (month, day, and year) and time (hours, minutes, and seconds).

   c) In the navigation area of the ASMI, click **System Configuration** and restore the service processor card settings by using the information that you recorded earlier.

7. Start the system. For instructions, see Starting a system (www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustartsys.htm).
8. 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).
9. Use the ASMI to ensure that the new service processor card has the same level of firmware as the original service processor card.

   On the **ASMI Welcome pane**, view the existing level of server firmware in the upper-right corner under the copyright statement, for example, 01EM310 or FW760.00 (AM760_019). If the service processor card that you just replaced has a different firmware level than what you recorded earlier, you must install the original firmware level on the new card.

   See Getting firmware fixes (http://www.ibm.com/support/knowledgecenter/POWER9/p9ha5/fix_serv_firm_kick) and use the USB port method to install the firmware. Then, return to this procedure and continue with the next step.
10. If you get a pending authentication message, you may need to set up the new passwords for the new service processor card.
11. If you get a message that indicates you need to recover data, restore profile data from HMC backup data.
12. Verify the installed part.
    - If you replaced the part because of a service action, verify the installed part. For instructions, see https://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 https://www.ibm.com/support/knowledgecenter/POWER9/p9haj/pxhaj_hsmverify.htm (www.ibm.com/support/knowledgecenter/POWER9/p9haj/pxhaj_hsmverify.htm).

# System processor modules for the 9040-MR9

You can install, remove, and replace the system processor modules in the IBM Power System E950 (9040-MR9) server.

## Removing and replacing the system processor module in the 9040-MR9

Find information about removing and replacing a system processor module in the IBM Power System E950 (9040-MR9) server.

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 system processor module.

### Preparing the 9040-MR9 system to remove and replace a system processor module

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

Before beginning this procedure, ensure that you have these items on hand:

- System processor module
- Thermal interface material (TIM)
- Tweezers
- Putty knife
- Heat sink
- 4MM T-handle Allen wrench

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 source from the system by unplugging the power cords from the system.

   **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 power sources to the system are disconnected.
   - The power cord **(B)** is fastened to the system with a 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.

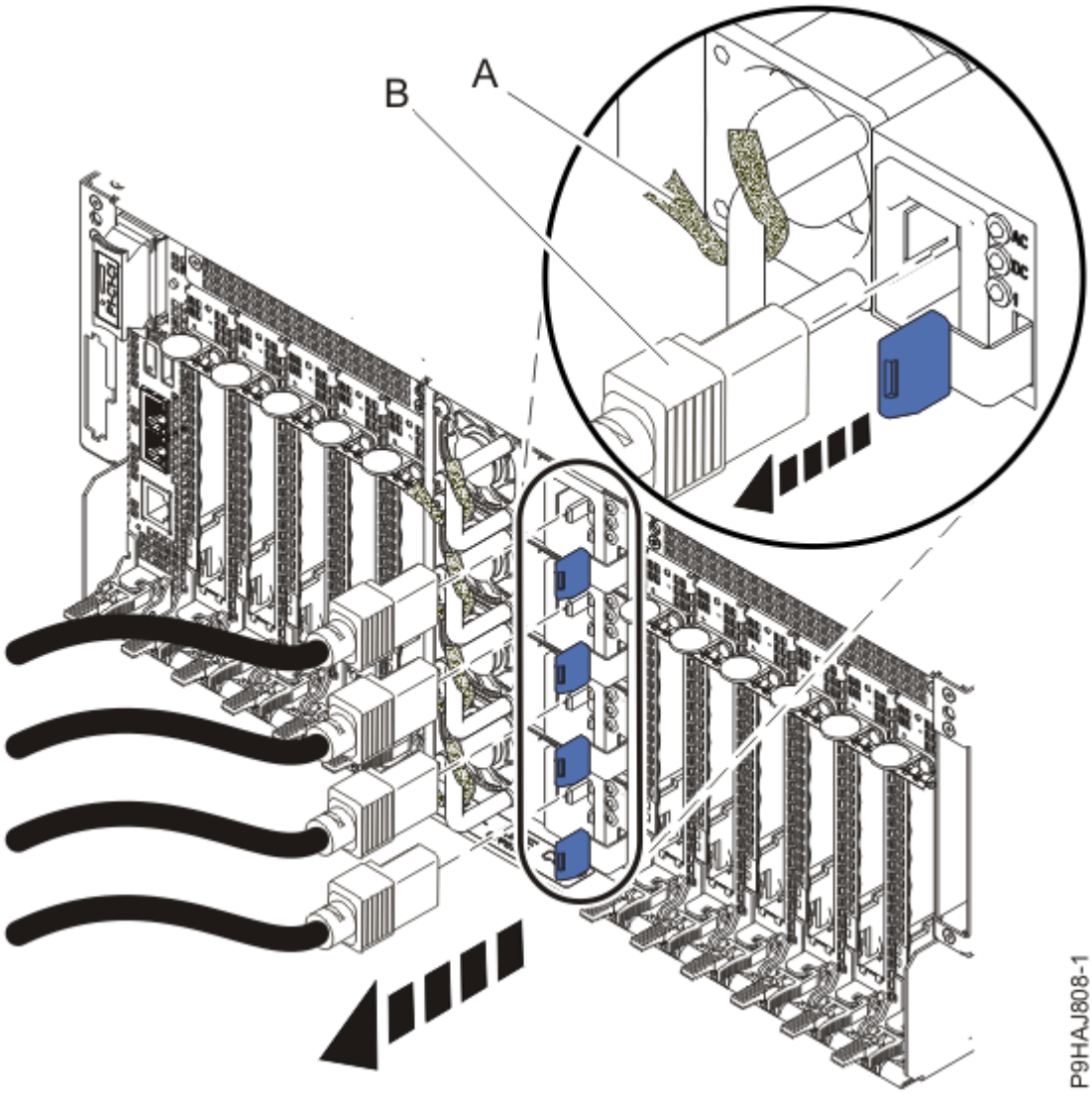
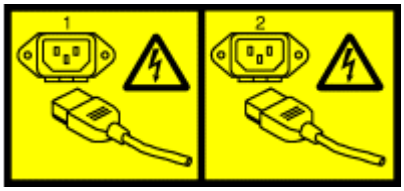



*Figure 209: Removing the power cords*

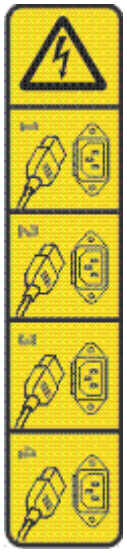
**(L003)**



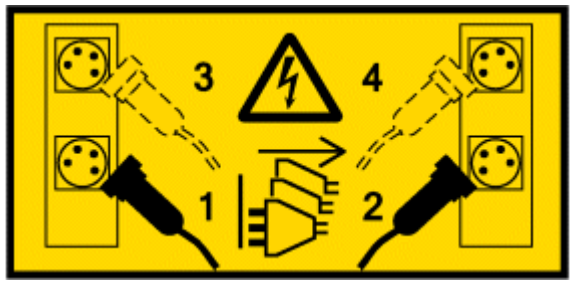

or

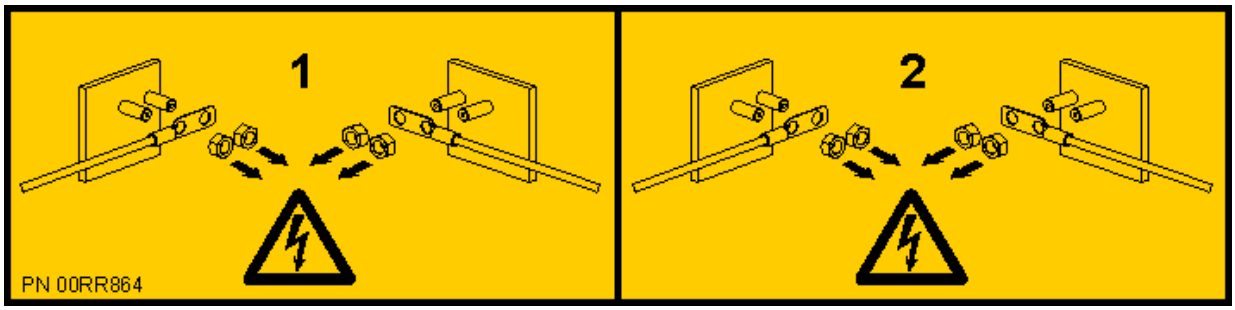
or

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)

4. Complete the following steps to place the system in 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.

a. If not already removed, remove the shipping screws **(A)** as shown in the following figure by using a Phillips screwdriver.
b. Release the side latches **(B)** by pressing them downward as shown in the following figure.
c. Pull out the system **(C)** as shown in the following figure. Ensure that any cables do not catch or bind as you pull out the system.

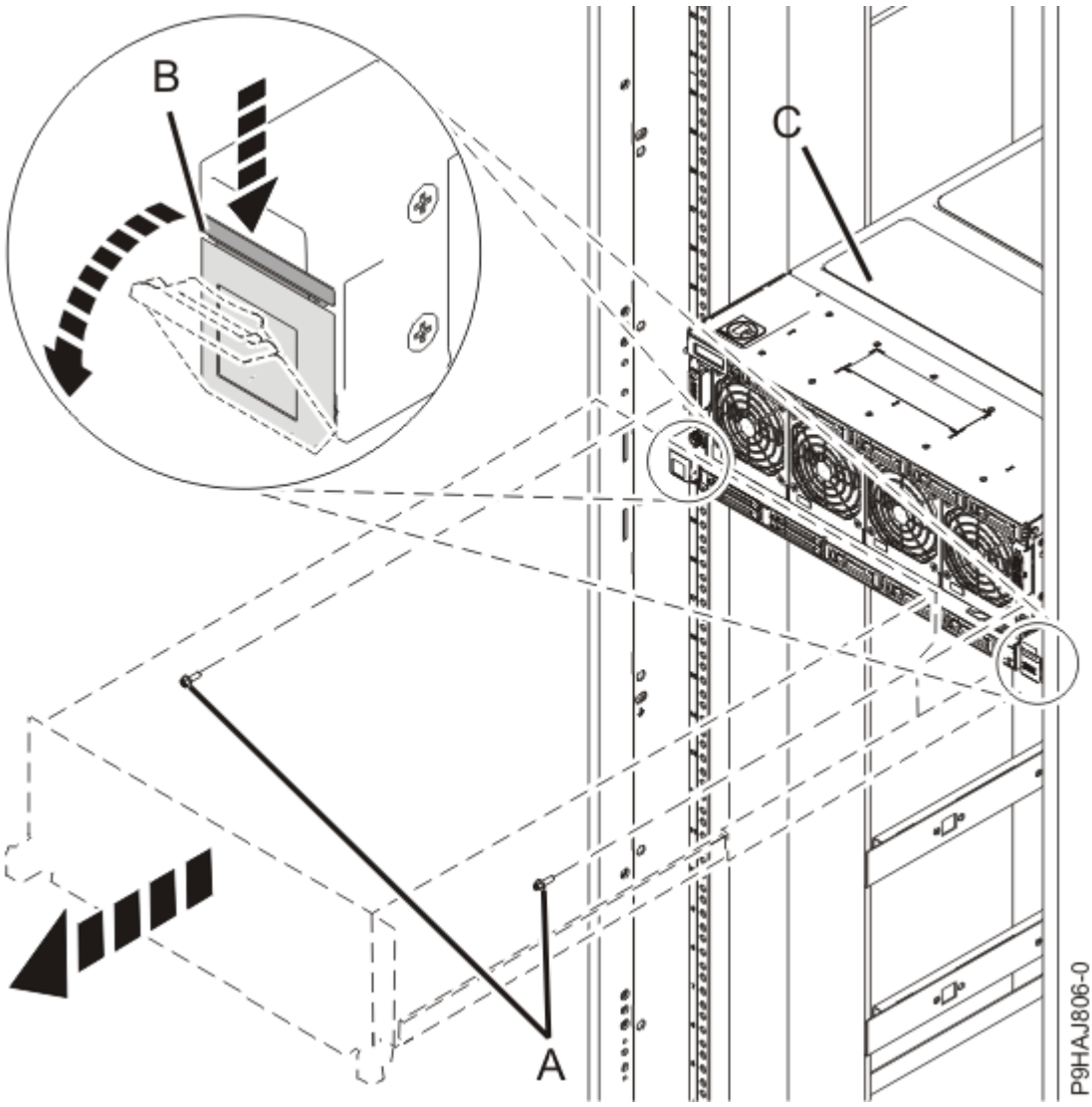



*Figure 210: Placing the system in service position*

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.

**Attention:** Operating the system without the cover for more than 10 minutes might damage the system components. For proper cooling and airflow, replace the cover before turning on the system.

a. Push the release latches **(A)** in the direction shown in the following figure.

b. Slide the cover **(B)** off the system unit as shown in the following figure. When the front of the service access cover has cleared the upper frame ledge, lift the cover up and off the system unit.

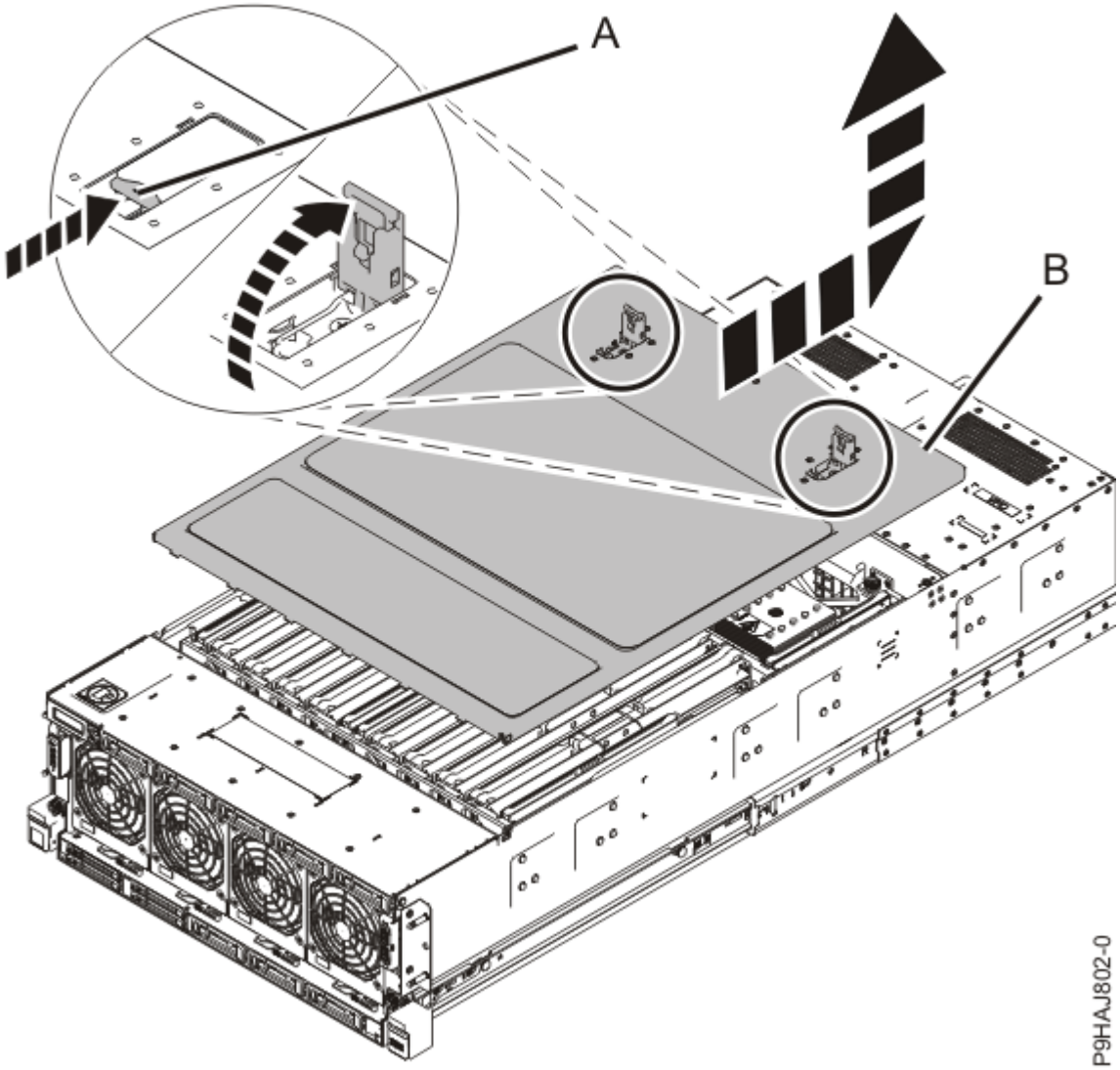



*Figure 211: Removing the service access cover*

7. To activate the identify LED for the faulty part, press and hold push-button **(A)** on the trusted platform module card as shown in the following figure.

   Verify that the green LED **(B)** is lit, which indicates that sufficient power exists for the identify LED. If the LED **(B)** is not lit, use the location code to find the physical location by using the service label.

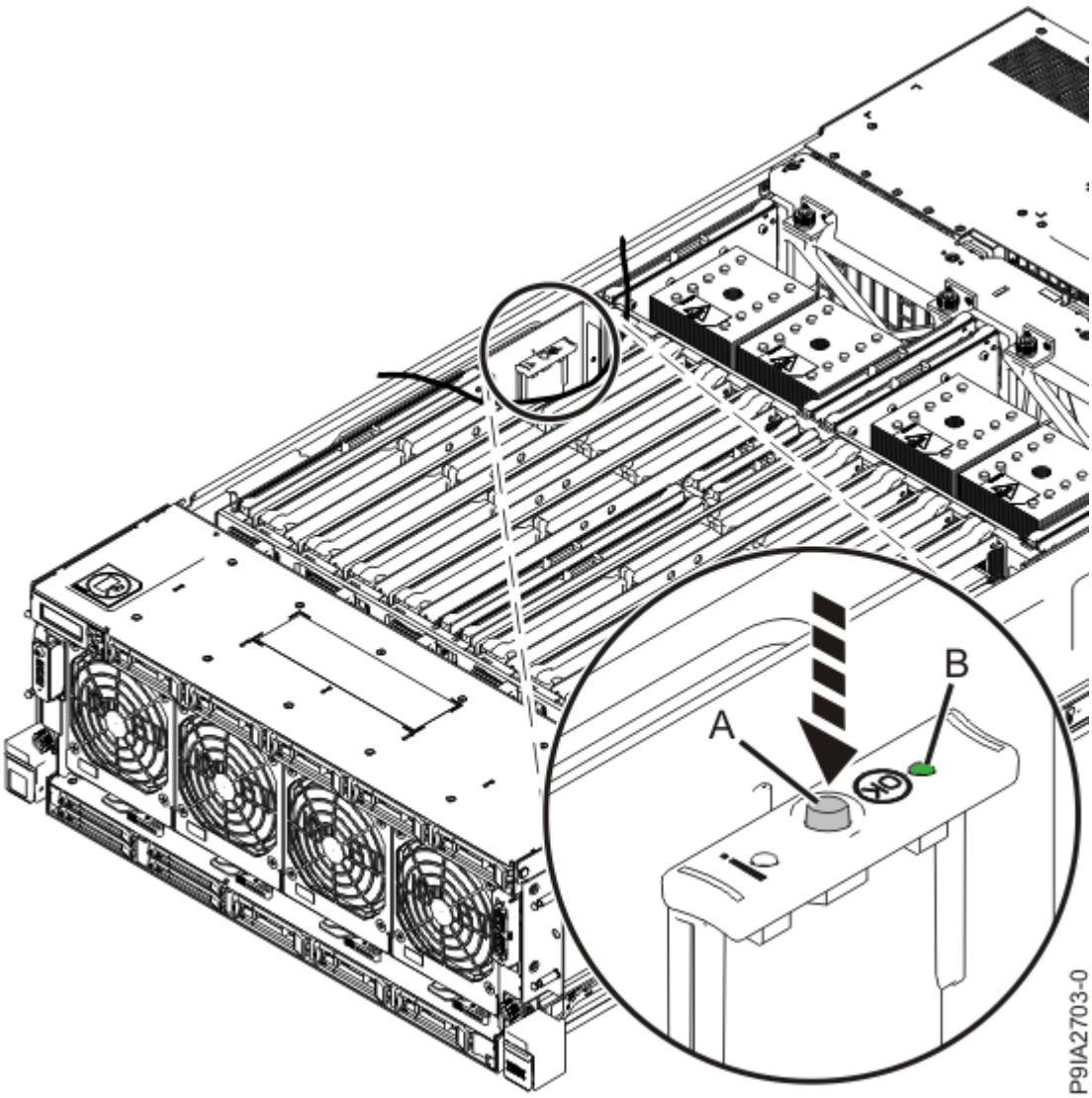



*Figure 212: Activating the identify LED*

8. Locate the amber LED for the failed system processor module. Make a note of which LED is on.

   Figure 213 on page 260 shows the locations of the system processor module LEDs.

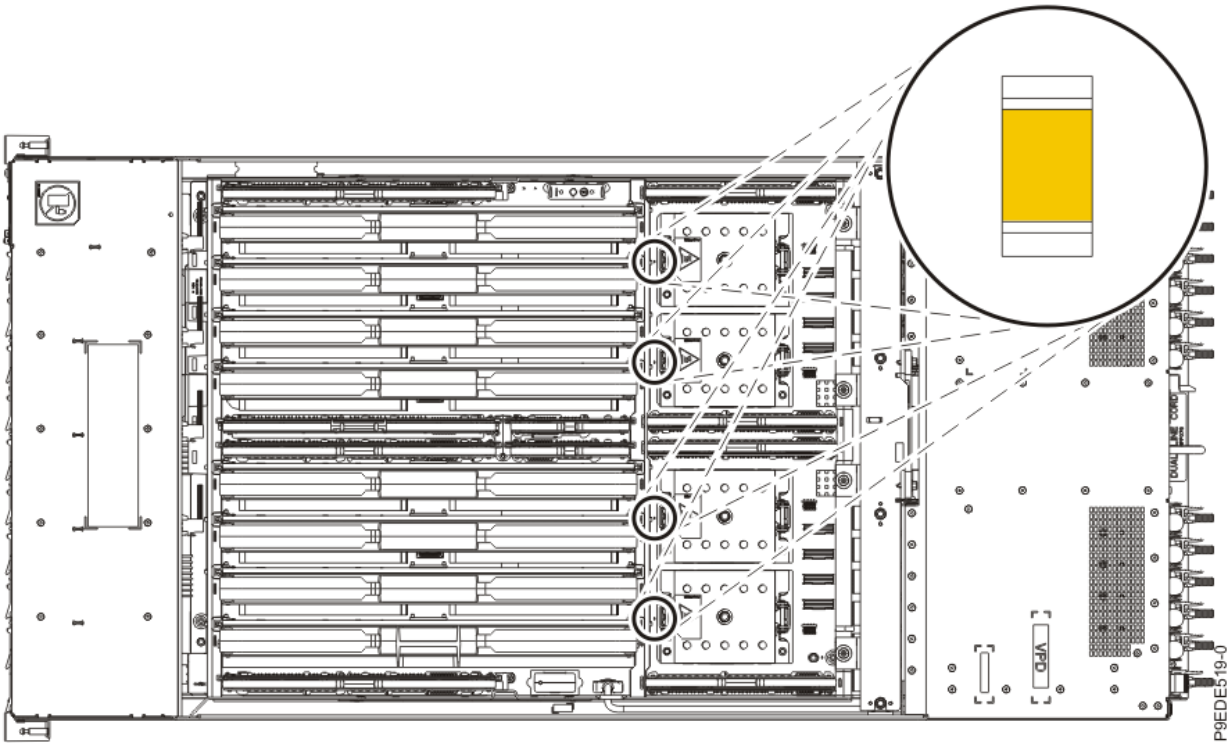



*Figure 213: LEDs for a system processor module*

If the locator function does not work, you will need to use the event log information to locate the system processor module to replace.

## Removing the system processor module from the 9040-MR9 system

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

As part of the system processor module replacement, the heat sink is removed. Before you begin the removal and replacement procedure, ensure that you have a spare TIM and heat sink on hand.

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. Open the packaging of the new system processor module, and place the cover upside down next to the tray, as shown in Figure 214 on page 261. The cover is used for the system processor module that you are replacing.

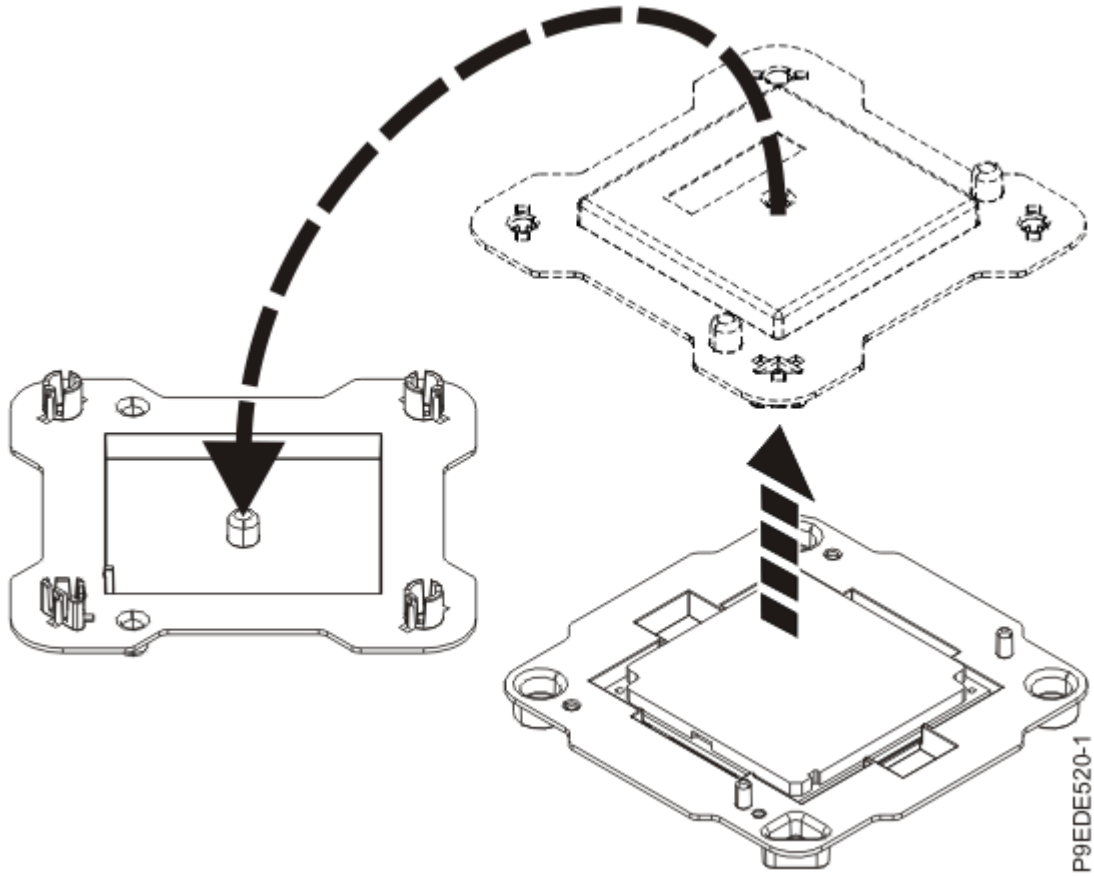



*Figure 214: Opening the system processor module packaging*

3. Remove the heat sink from the system processor module.

**(L007)**

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

a. Loosen the heat sink actuation screw by turning the supplied hex key counterclockwise **(A)**. Loosen the screw until it moves freely. See Figure 215 on page 262.

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

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

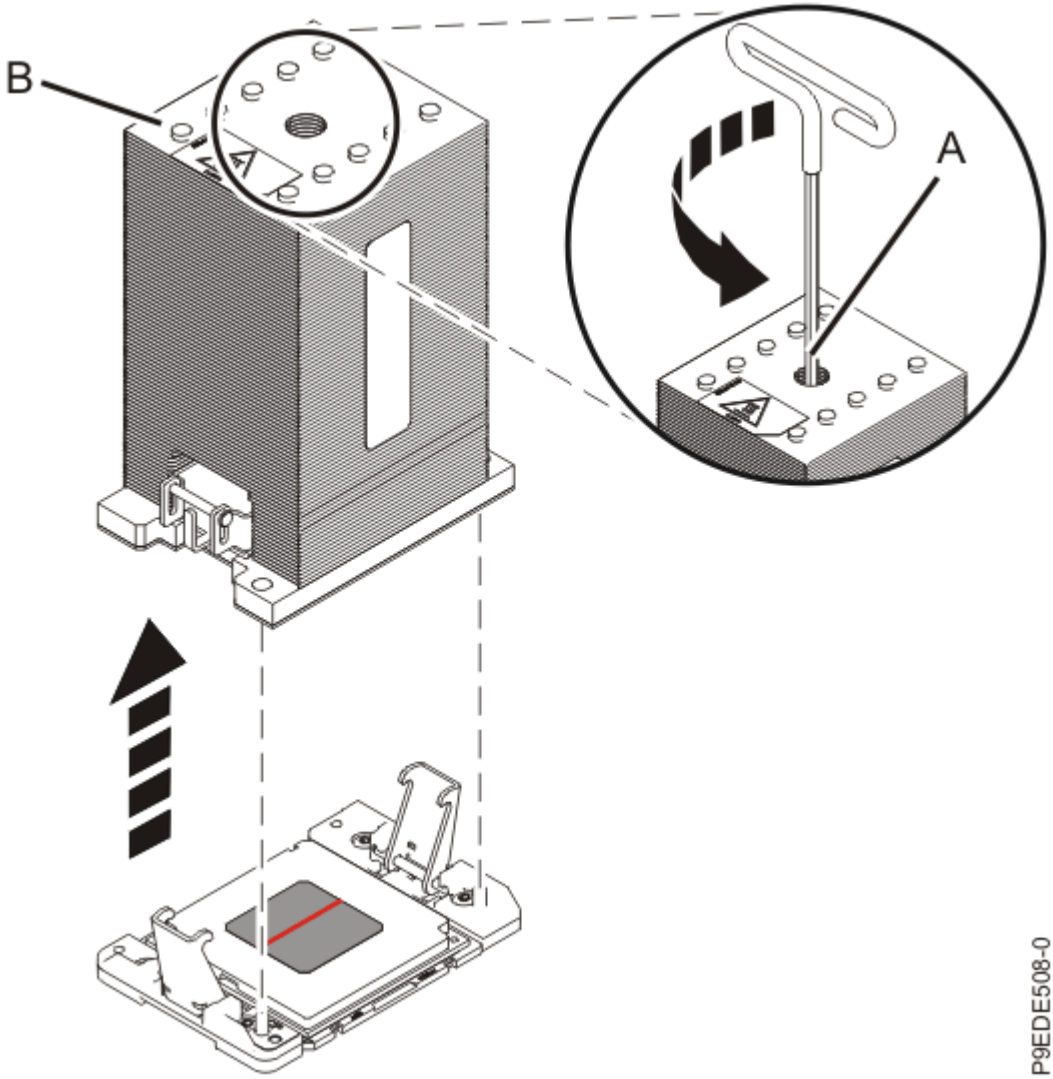



*Figure 215: Removing the heat sink*

4. Prepare the system processor module for removal by completing the following steps.
   a) Ensure that the removal tool **(A)** is in the open position as shown in Figure 216 on page 263. The middle ring **(B)** must be pushed down and blue tabs **(C)** must be turned inward.

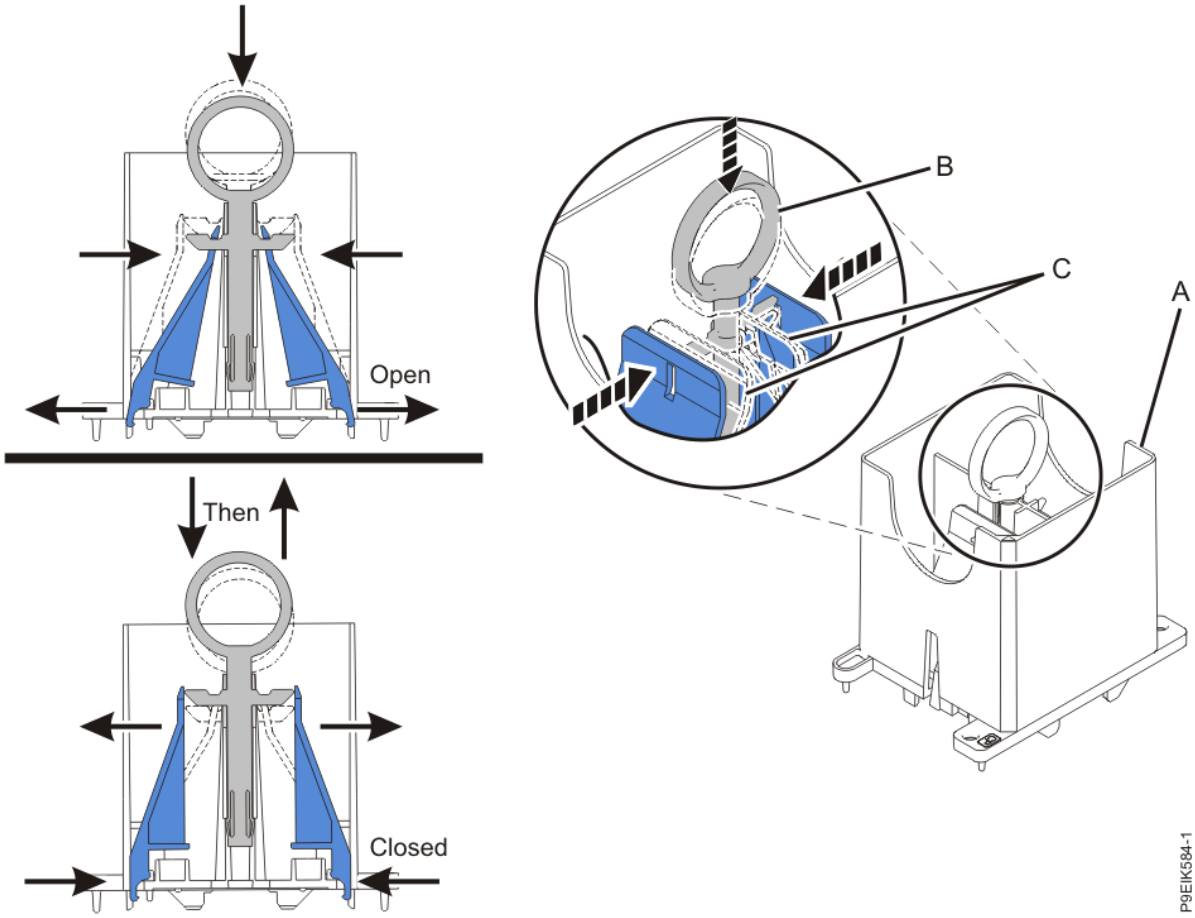



*Figure 216: Ensuring that the removal tool is in the open position*

b) Align the tool over the system processor module.

   Ensure that the beveled edge on the tool aligns with the beveled edge of the system processor module **(C)** as shown in Figure 217 on page 264.

c) Lower the tool over the system processor module.

   Ensure that the two guide pins **(A)** insert into the alignment holes **(B)** on each side of the tool as shown in Figure 217 on page 264.

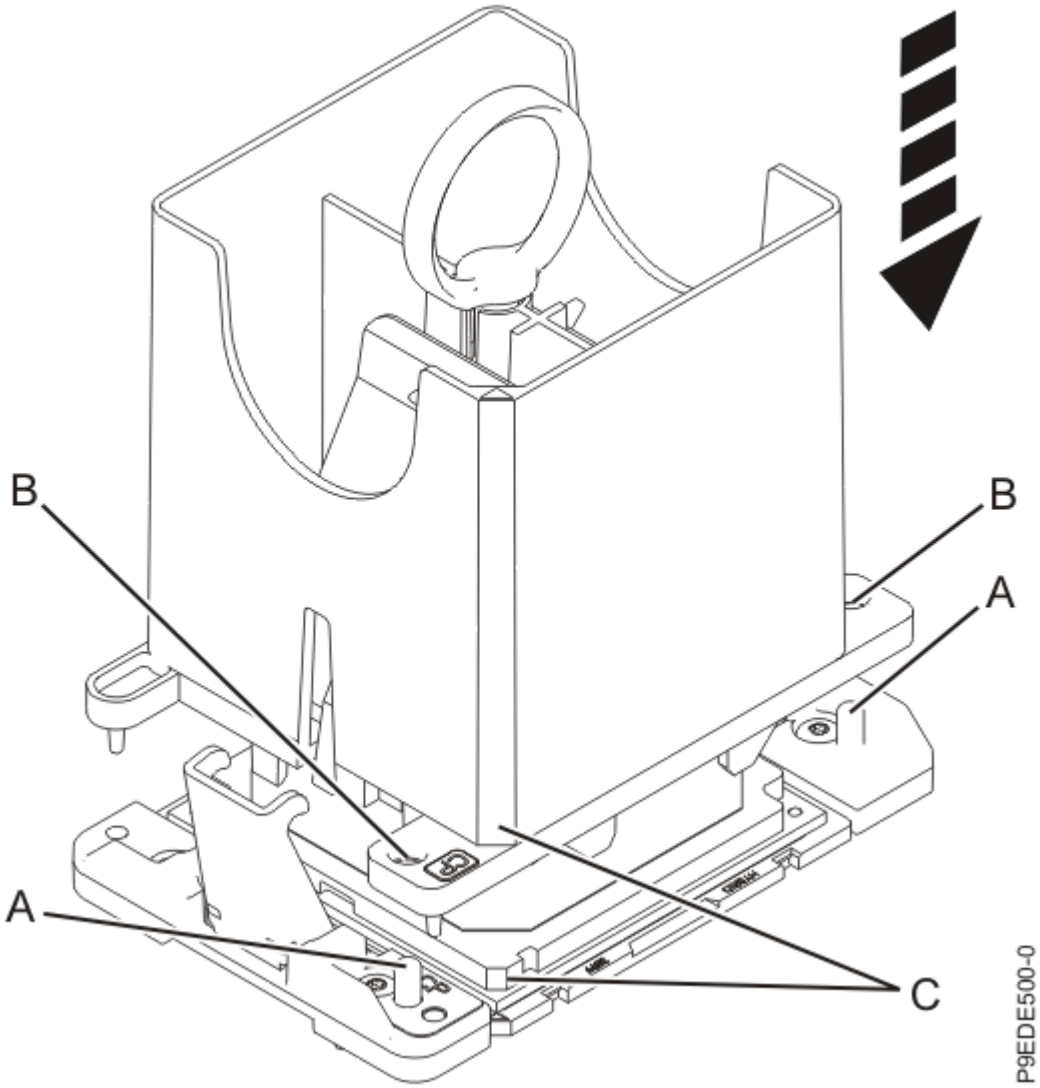



*Figure 217: Lowering the removal tool onto the system processor module*

d) With the removal tool sitting on top of the system processor module, push down on the ring **(A)** slightly so that the blue tabs **(B)** snap outward and the jaws engage with the system processor module as shown in Figure 218 on page 265.

Make sure that both of the tool jaws are locked onto the system processor module by pushing down on the tool.

**Important:** Do not press the blue release ring until directed to do so later.

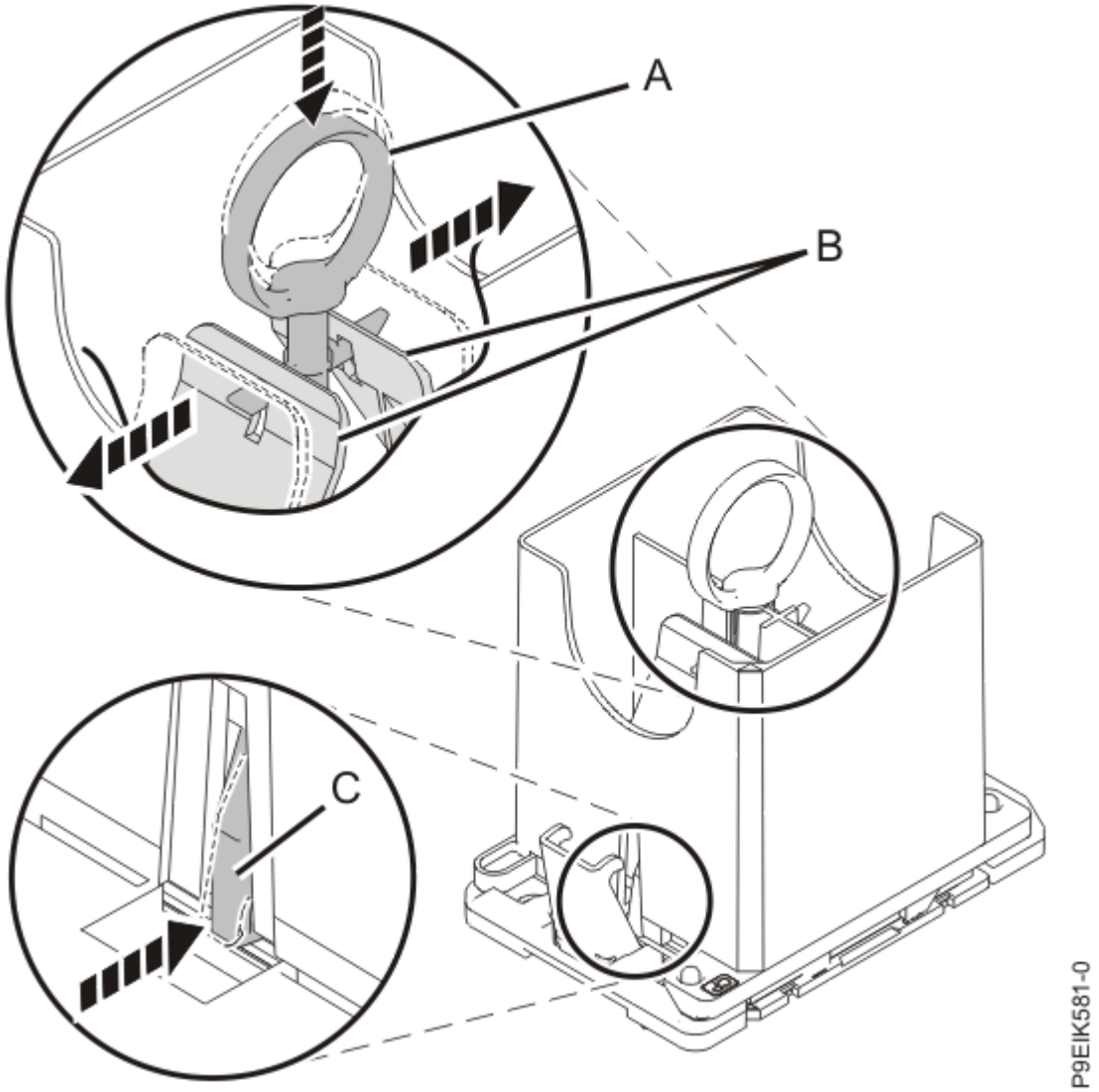



*Figure 218: Locking the system processor module into the tool*

5. Hold the outside of the tool and lift the tool and system processor module from the socket.

   Lift the tool upward slowly to ensure that the jaws are fully engaged with the system processor module. Ensure that the system processor module does not disengage and fall back into the socket of the system processor module. If the system processor module falls back into the socket of system processor module, the pins may be damaged.

   Place the system processor module at an angle on the top cover of the packaging as shown in Figure 219 on page 266. Setting the tool and system processor module at an angle on the top cover of the system processor module packaging makes it easier to place the system processor module in the packaging.

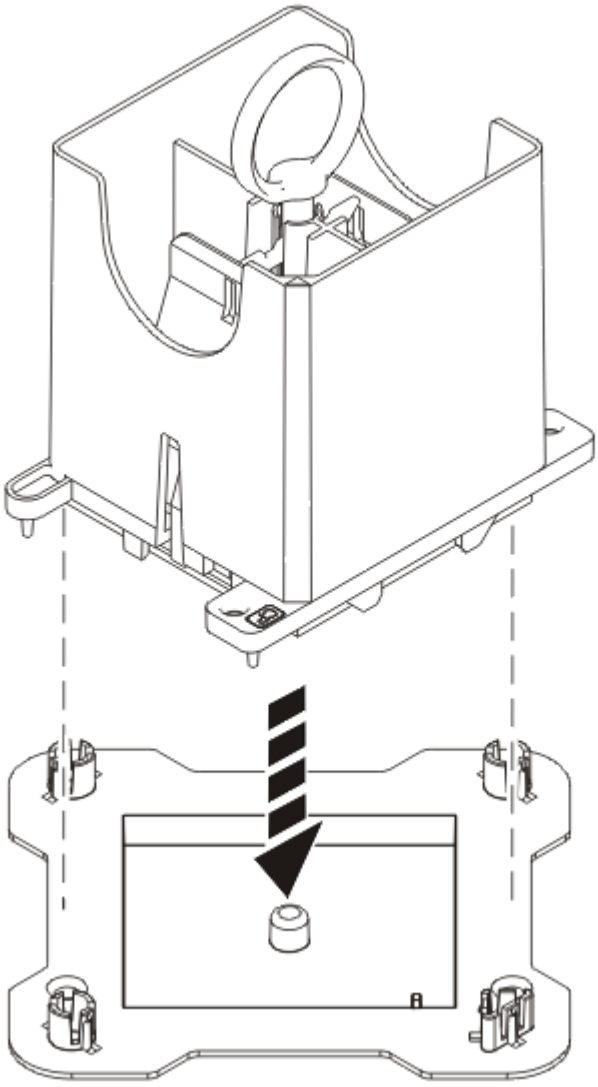



*Figure 219: Placing the tool at an angle on the top cover of the packaging*

6. Release the system processor module by pushing the ring **(B)** downwards. Hold the ring **(B)** down while pushing the blue tabs **(C)** inwards as shown in Figure 220 on page 267. Ensure that the ring catches the openings on the blue tabs, and that the blue tabs are locked in a fixed position.

   To prevent the system processor module from falling, pull up on the round lever before you place the tool on the top cover of the system processor module packaging.

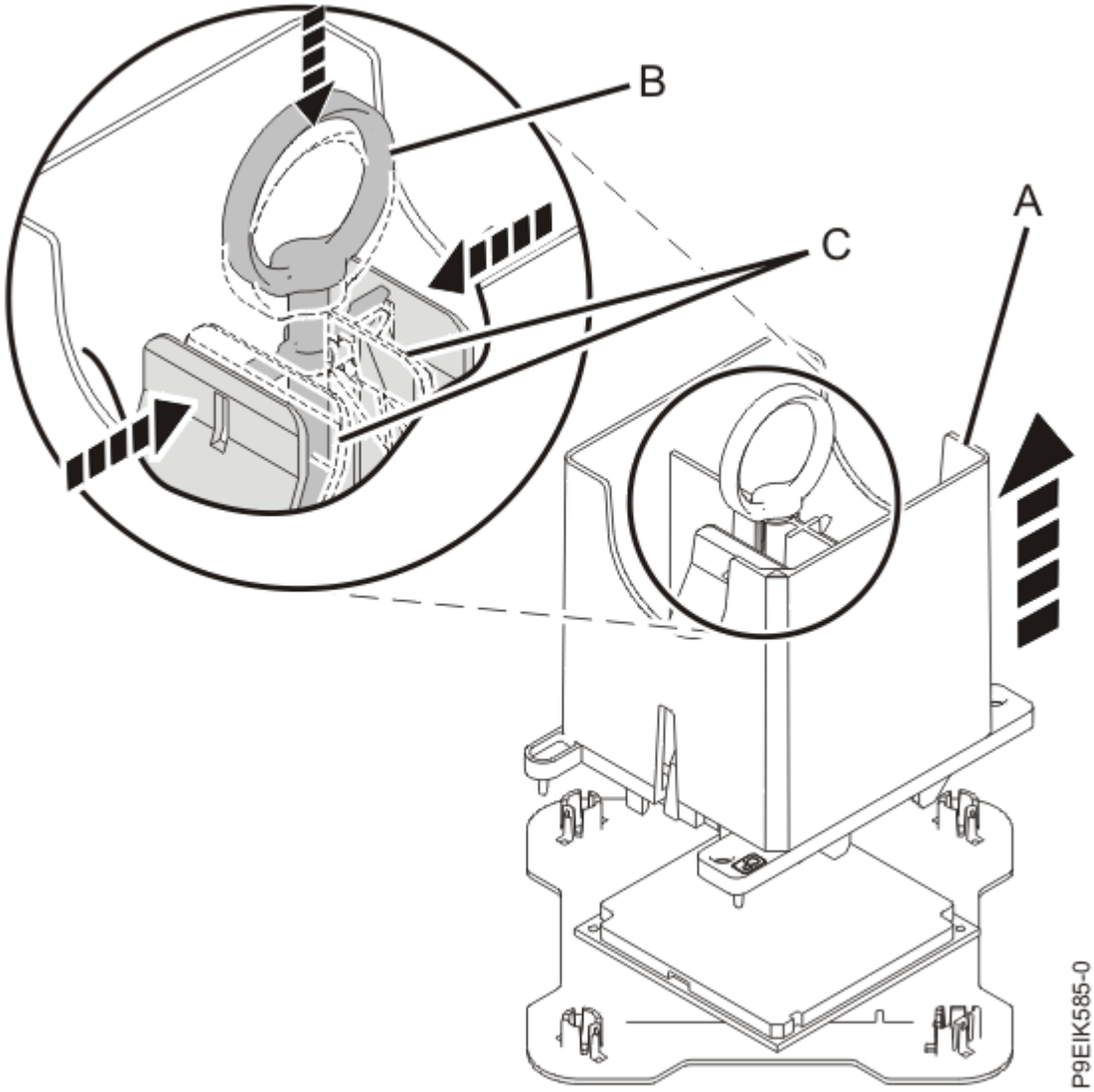



*Figure 220: Releasing the system processor module from the tool*

## Replacing the system processor module in the 9040-MR9 system

To replace a system processor module in the system, complete the steps in this 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. Prepare the system processor module for installation:
   a) Ensure that the removal tool is in the open position as shown in Figure 221 on page 268. The middle ring must be pushed down and blue tabs must be turned inward.

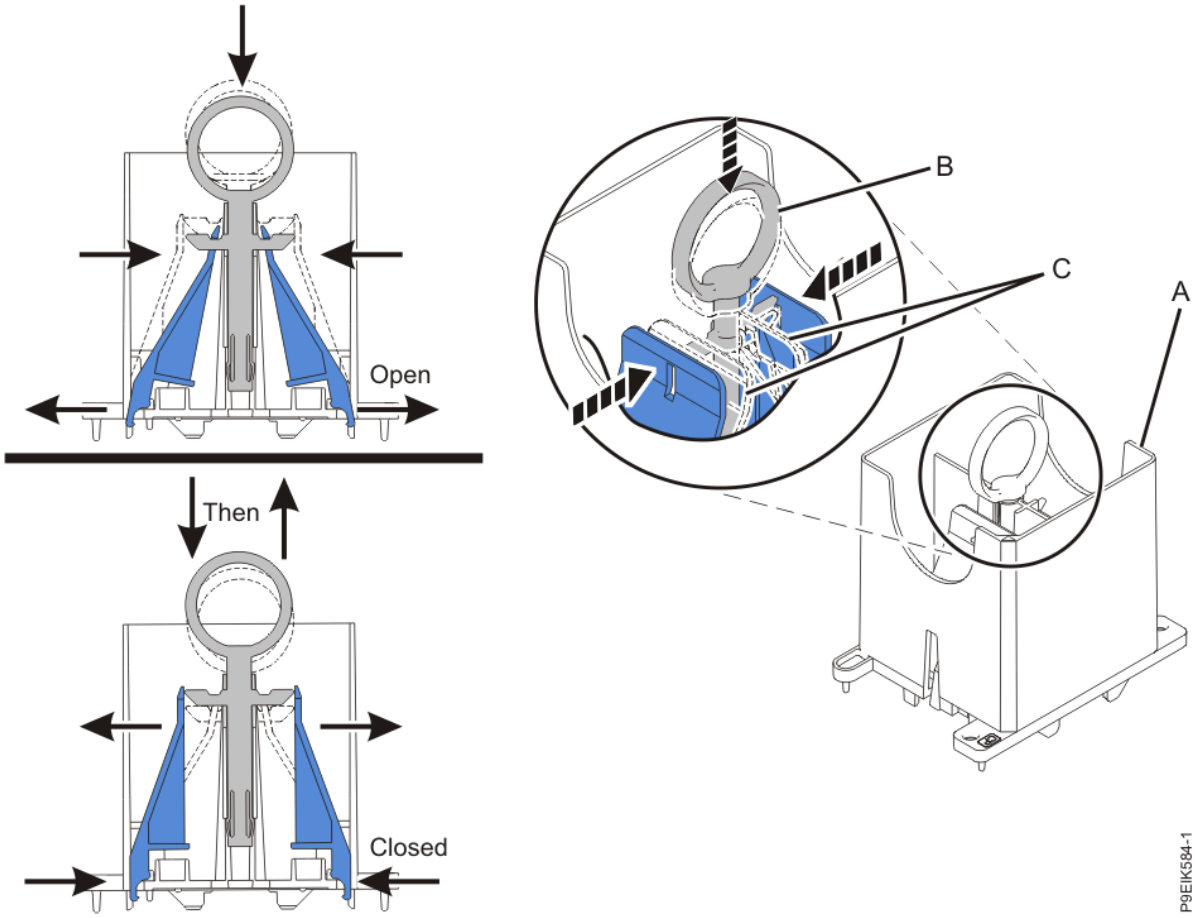



*Figure 221: Ensuring that the removal tool is in the open position*

b) Lower the tool over the system processor module as shown in Figure 222 on page 269. Ensure that the beveled edge on the tool aligns with the beveled edge of the system processor module. Ensure that the two guide pins **(A)** are inserted into the alignment holes **(B)** on each side of the tool.

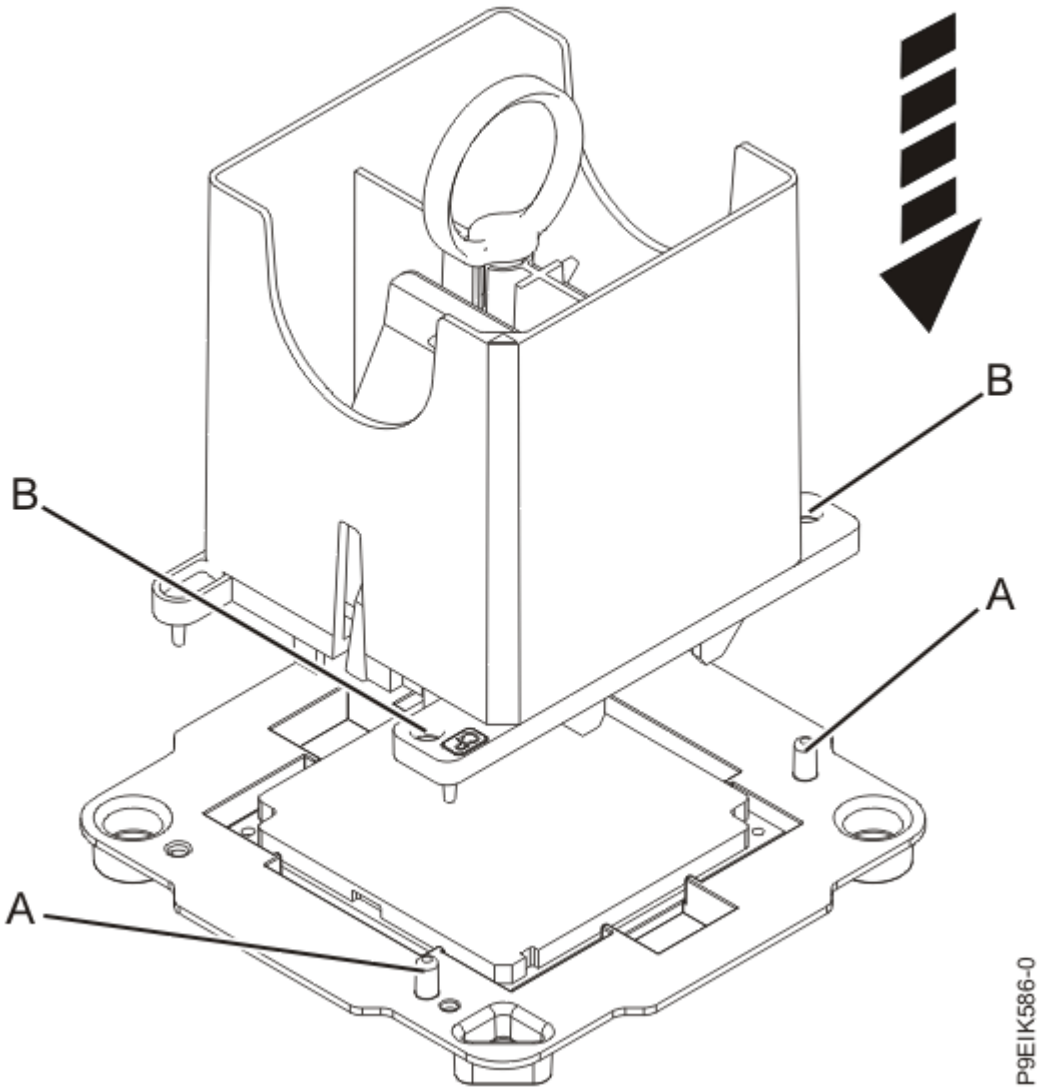



*Figure 222: Lowering the removal tool onto the system processor module*

c) With the removal tool sitting on top of the system processor module, push down on the ring **(A)** slightly so that the blue tabs **(B)** snap outward and the jaws engage with the system processor module **(C)** as shown in Figure 223 on page 270.

Make sure that both of the tool jaws are locked onto the system processor module by pushing down on the tool.

**Important:** Do not press the blue release tabs until directed to do so later.

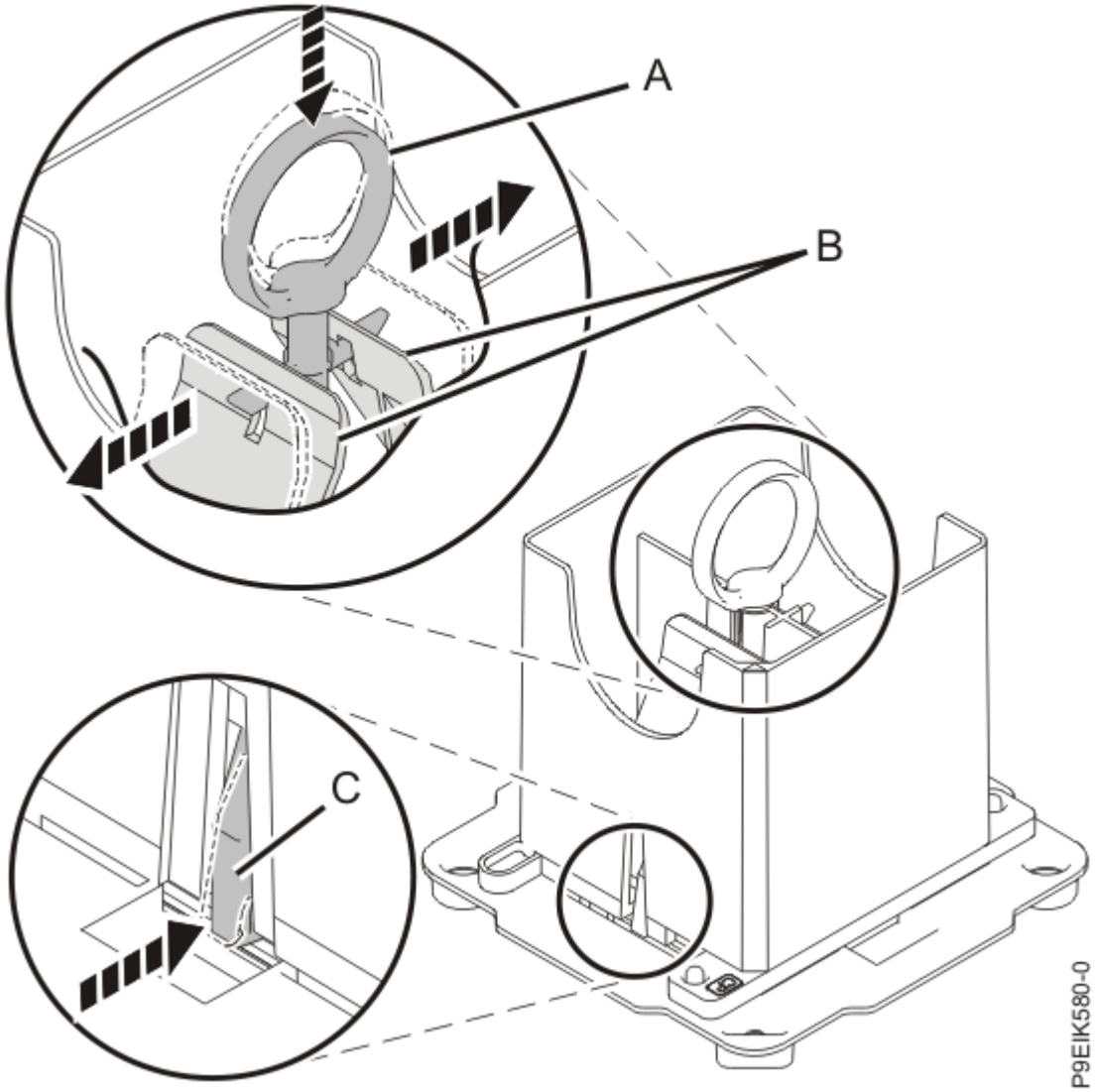



*Figure 223: Locking the system processor module into the tool*

3. Install the system processor module:
   a) If dust or debris is present on the system processor socket, use the supplied air pump to clean the socket. Blow small bursts of air from the center toward the sides of the socket, as shown in Figure 224 on page 271.

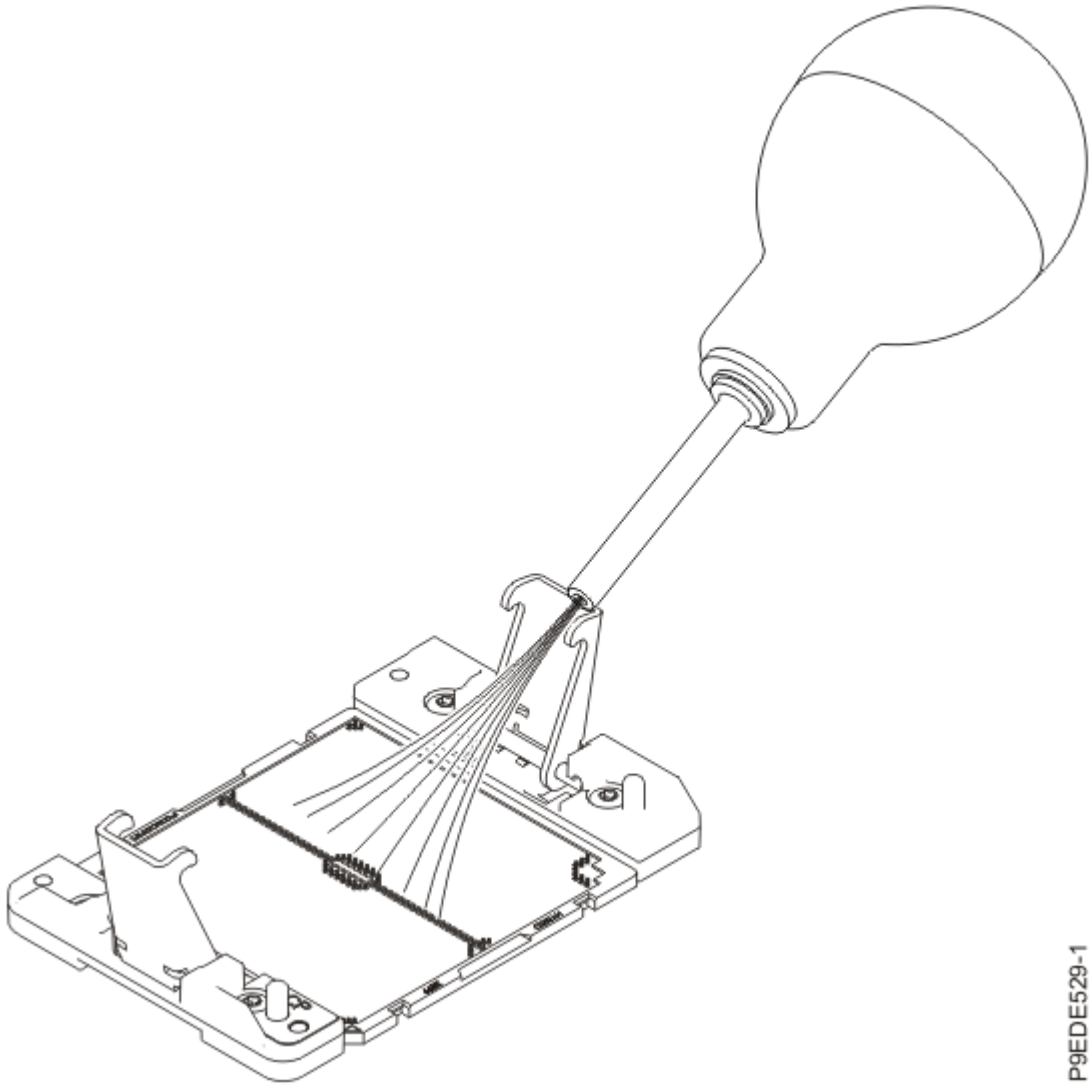



*Figure 224: Removing dust and debris from the system processor socket*

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

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

See Figure 225 on page 272.

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

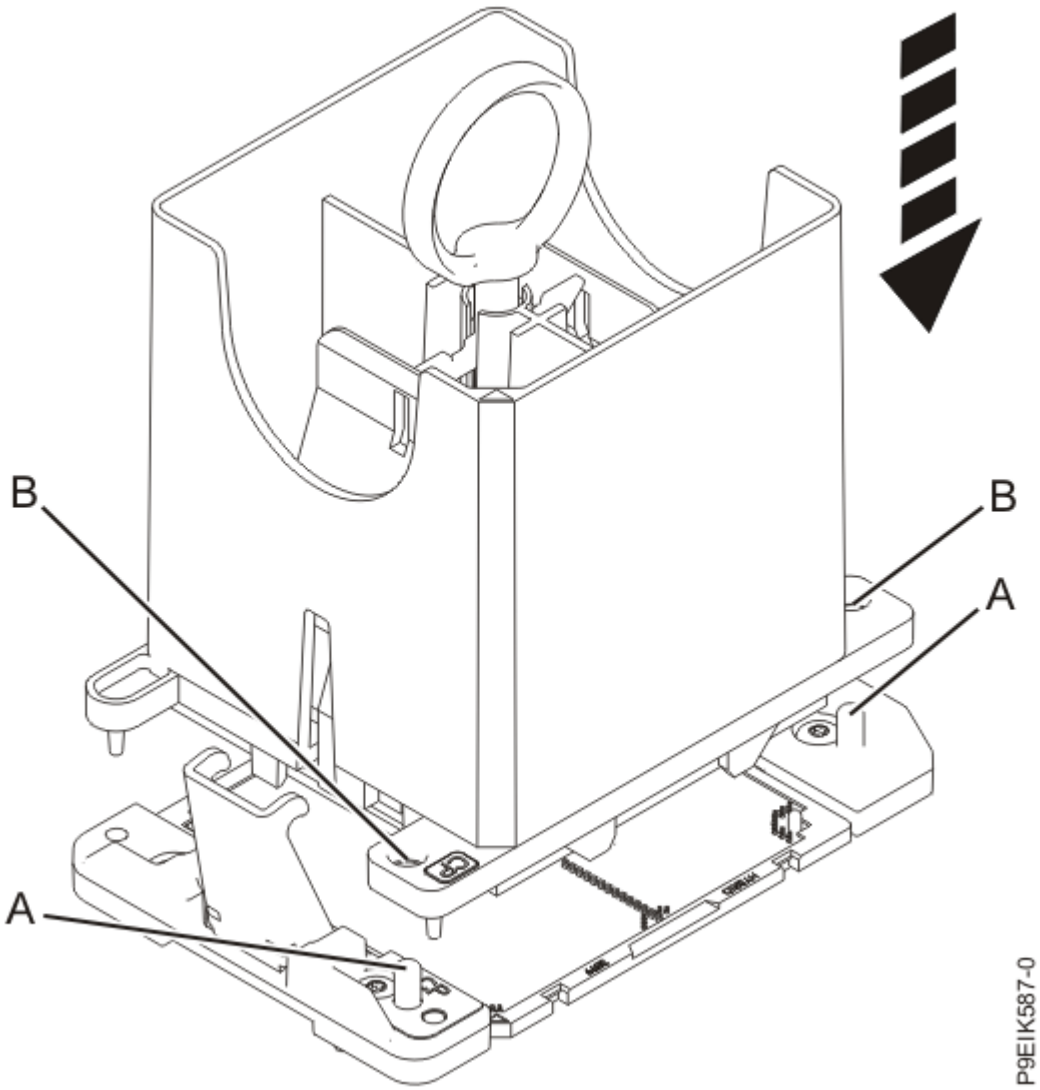



*Figure 225: Installing the system processor module*

d) Open the latches that hold the system processor module in the supplied removal tool **(A)** as shown in Figure 226 on page 273. Push down on the ring **(B)** while pressing in on the tabs **(C)**.

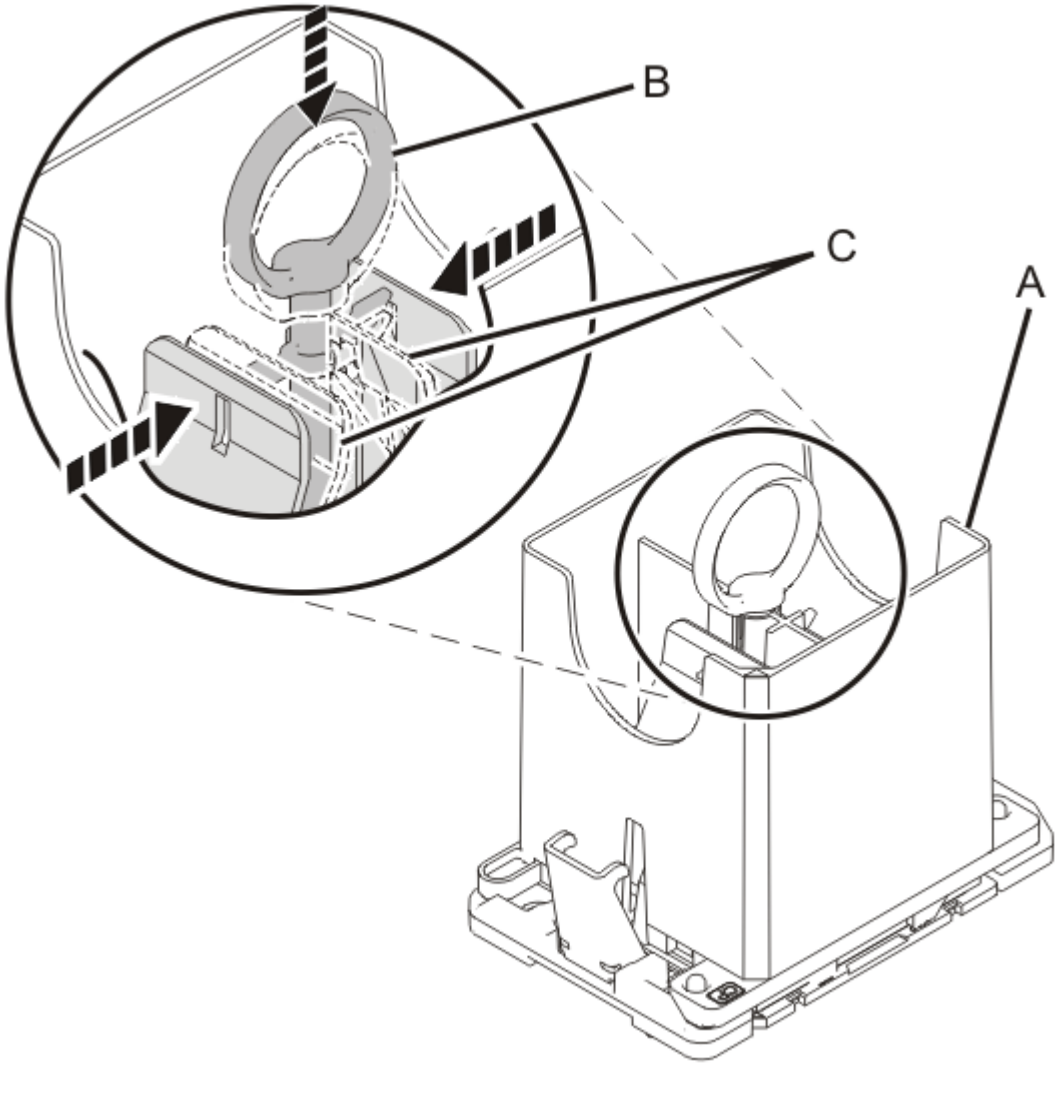



*Figure 226: Removing the system processor module tool*

e) Lift the tool off the system processor module.

4. Use this step to install a new silver-colored TIM and the heat sink.

a) The thermal interface material (TIM) is typically adhered to the heat sink.

- If the old TIM cannot be easily removed from the heat sink, use the supplied plastic putty knife to scrape the TIM from the heat sink.
- If the TIM cannot be removed from the heat sink, or if you are unsure about the old heat sink, do not reuse the removed heat sink. Use a new heat sink

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

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

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

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

The silver-colored TIM must have the red stripe up. Align the beveled corners of the silver-colored TIM and the system processor module **(A)**, as shown in Figure 227 on page 274.

Use the alignment marks on the top of the system processor module to properly place the TIM. You must center the TIM in the alignment marks on the system processor module.

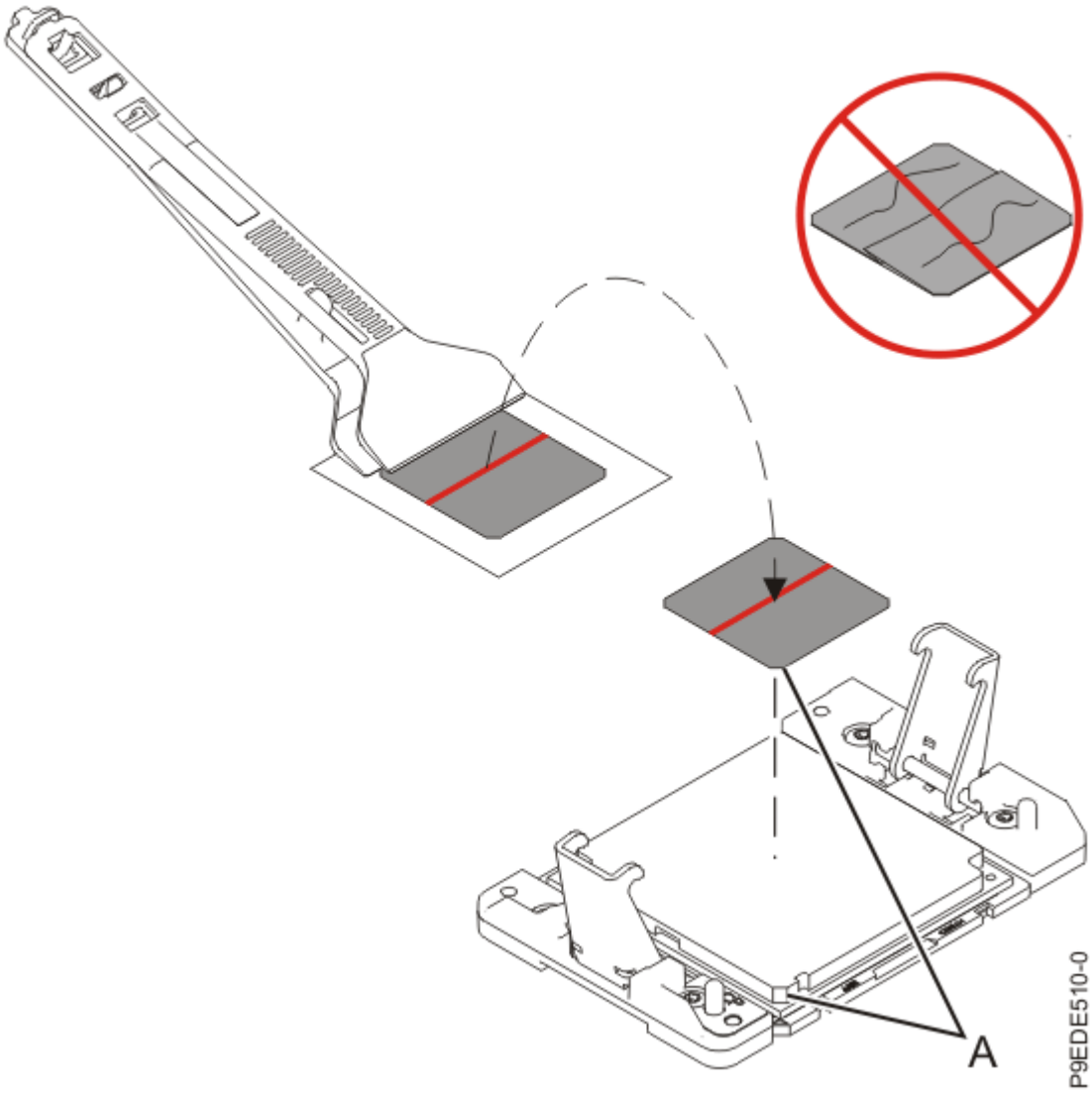



*Figure 227: Installing the silver-colored TIM onto the system processor module*

e) Place the heat sink on the TIM as shown in Figure 228 on page 275.

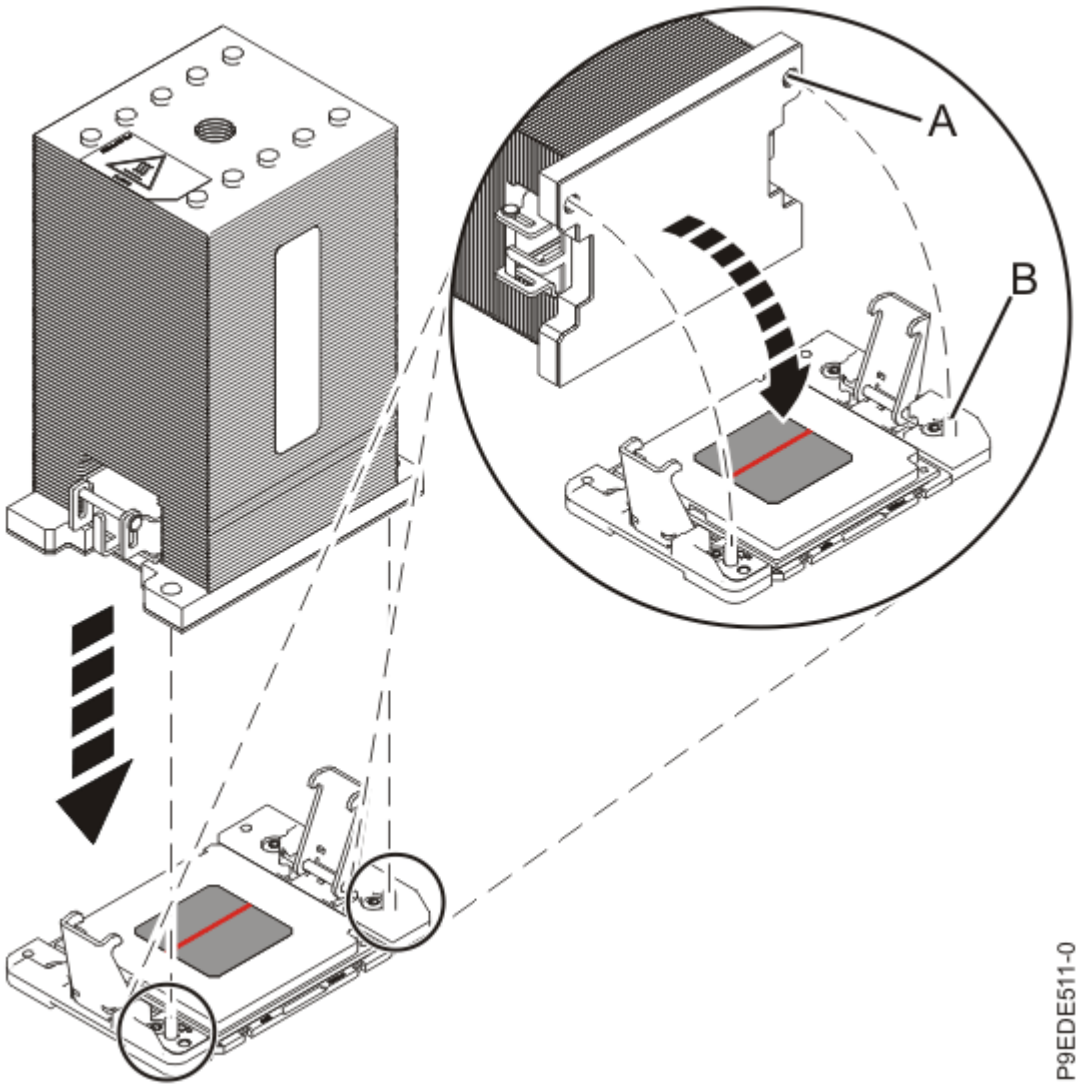



*Figure 228: Installing the heat sink on the silver-colored TIM*

5. Secure the TIM and heat sink to the socket of the system processor module.
   a) Ensure that the heat sink load arms are engaged as shown by **(A)** in Figure 229 on page 276.
   b) Tighten the center load screw clockwise by using the supplied hex key as shown by **(B)** in Figure 229 on page 276 until a firm stop is reached. If the heat sink moves noticeably, the load arms are not engaged. Unscrew the center load screw and repeat this step again.

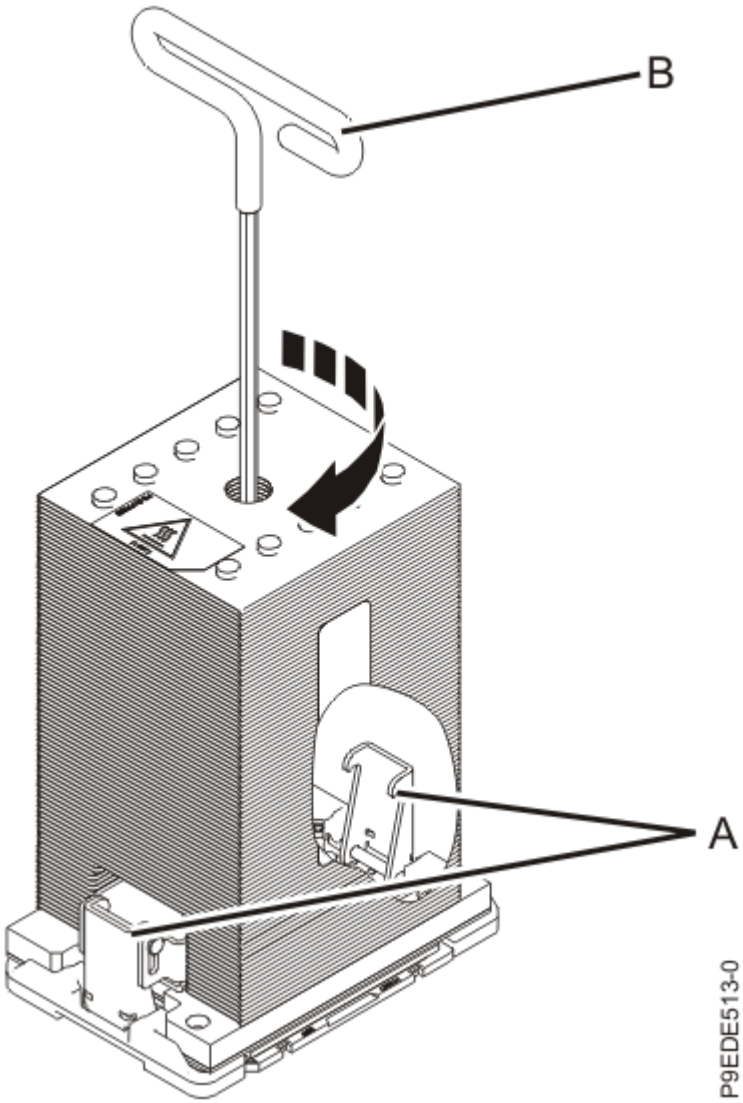



*Figure 229: Tightening the center load screw on the heat sink*

6. Lightly grip the system processor module that you replaced by the edges and lift it off of the packaging cover. Align the beveled corner of the module **(A)** to the corner of the packaging with triangle **(B)** and place it in the packaging, as shown in Figure 230 on page 277. Close the packaging cover.

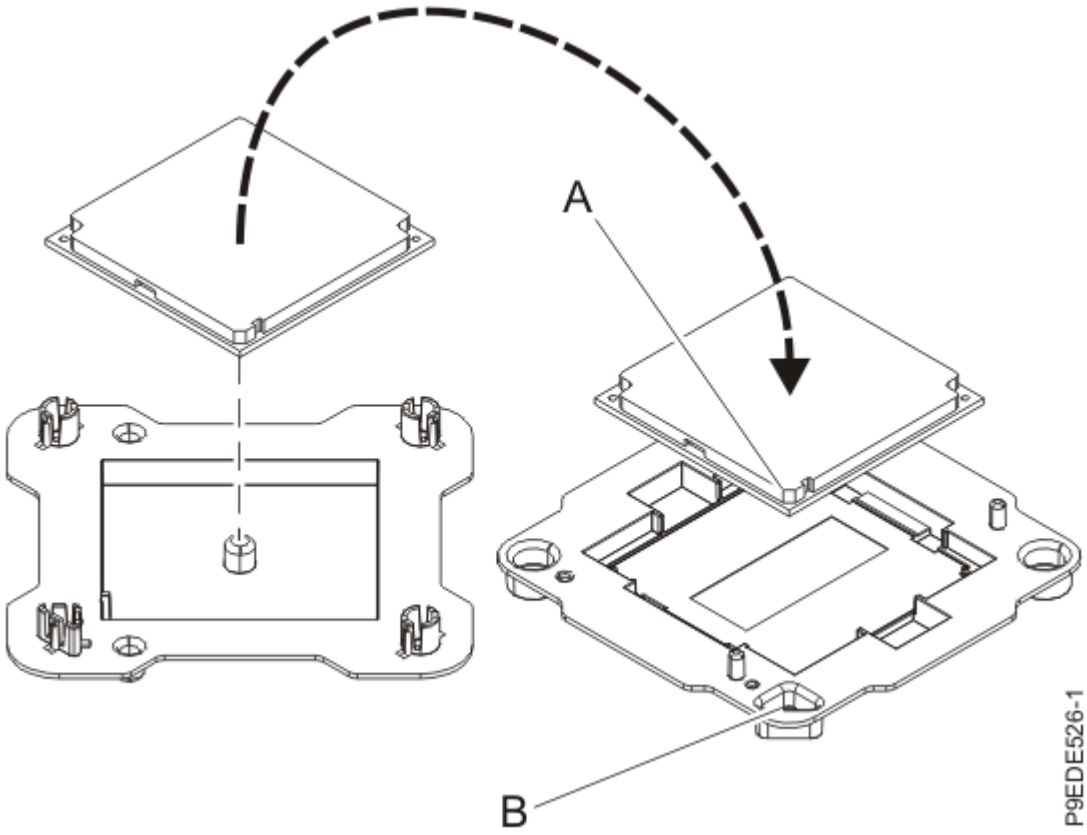



*Figure 230: Placing the system processor module into the packaging*

## Preparing the 9040-MR9 system for operation after removing and replacing a system processor module

Learn how to prepare the system for operation after removing and replacing a system processor module.

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.
   a) Lower the cover **(A)** onto the system unit. Ensure that the cover alignment pins **(C)** on each side of the cover fit into the matching slots in the chassis.
   b) Slide the cover **(A)** onto the system unit. Ensure that the tabs **(D)** tuck under the mesh along the front opening of the chassis.
   c) Close the release latches **(B)** by pushing it in the direction that is shown in the following figure.

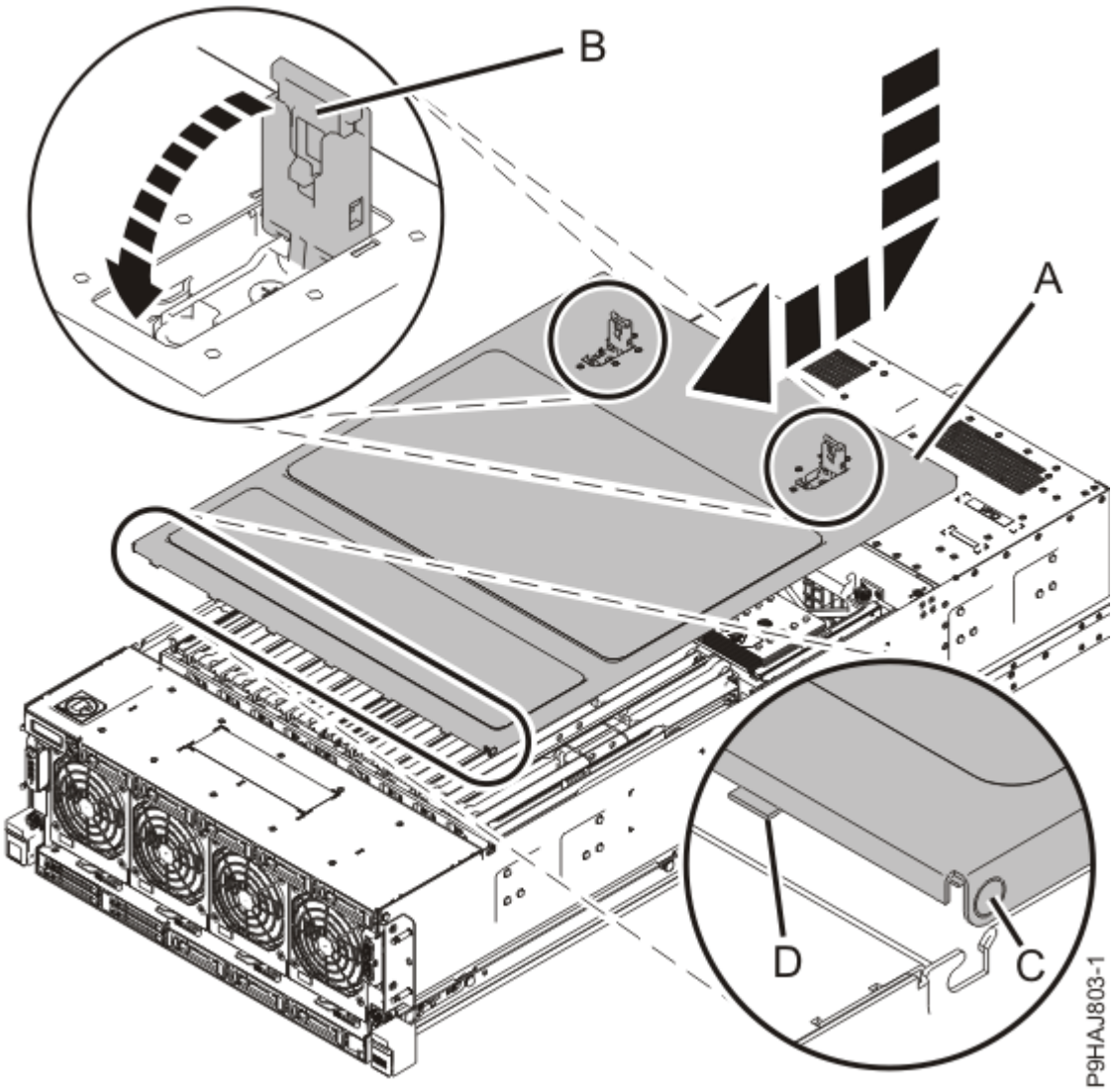



*Figure 231: Installing the service access cover*

3. Complete the following steps to place the system in the operating position.
   a. Unlock the blue rail safety latches **(A)** by pushing them towards the front as shown in the following figure.
   b. Push the system unit back into the rack as shown in the following figure until both release latches of the system unit lock into position. Ensure that any cables do not catch or bind as you push in the system.

   **Note:** Slide the system unit slowly into the rack to ensure that your fingers do not get caught in the side rails.

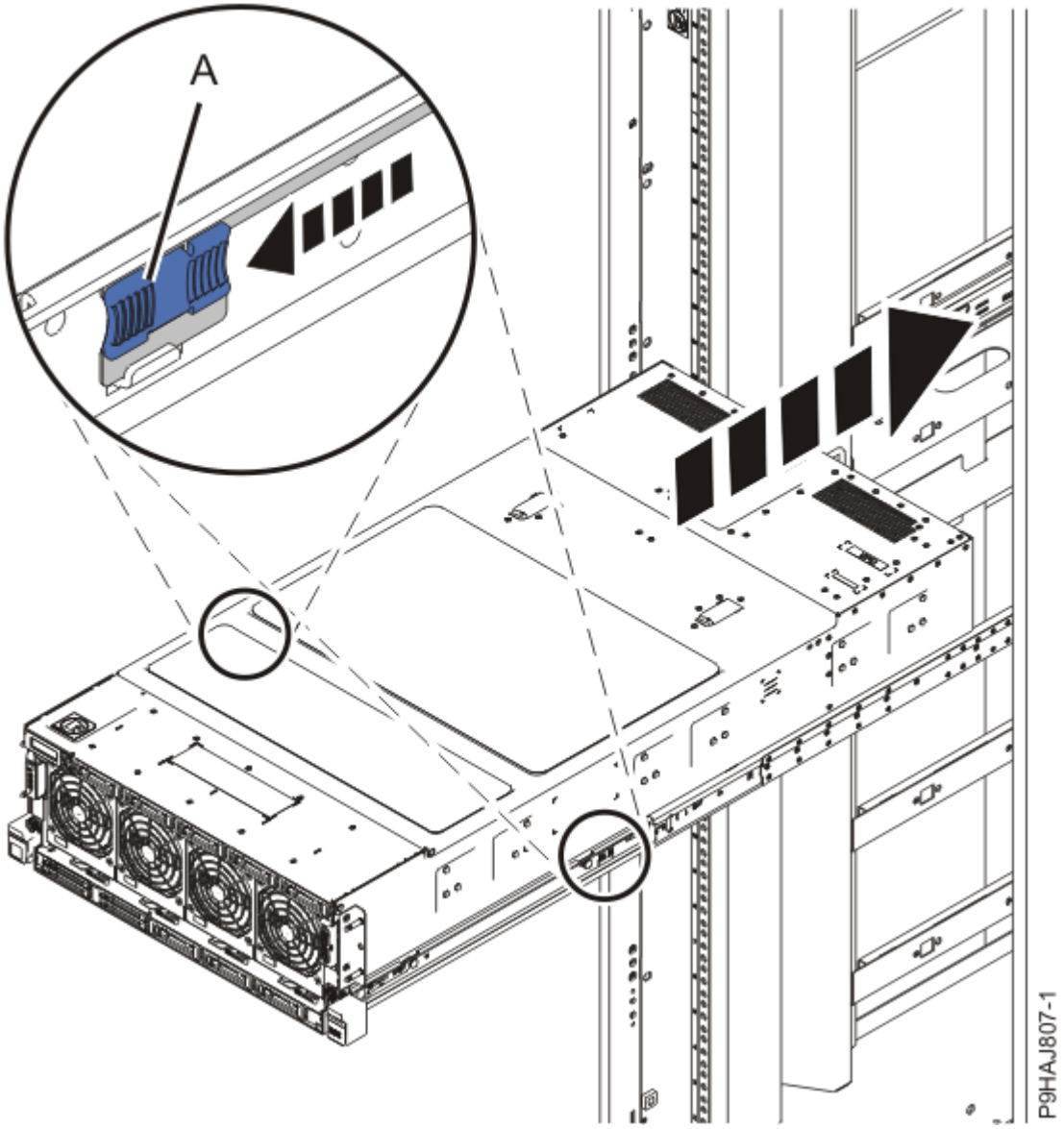



*Figure 232: Placing the system into the operating position*

4. Using your labels, reconnect the power cords **(A)** to the system unit as shown in the following figure. Fasten the power cords to the system by using the hook-and-loop fasteners **(B)** as shown in the following figure.

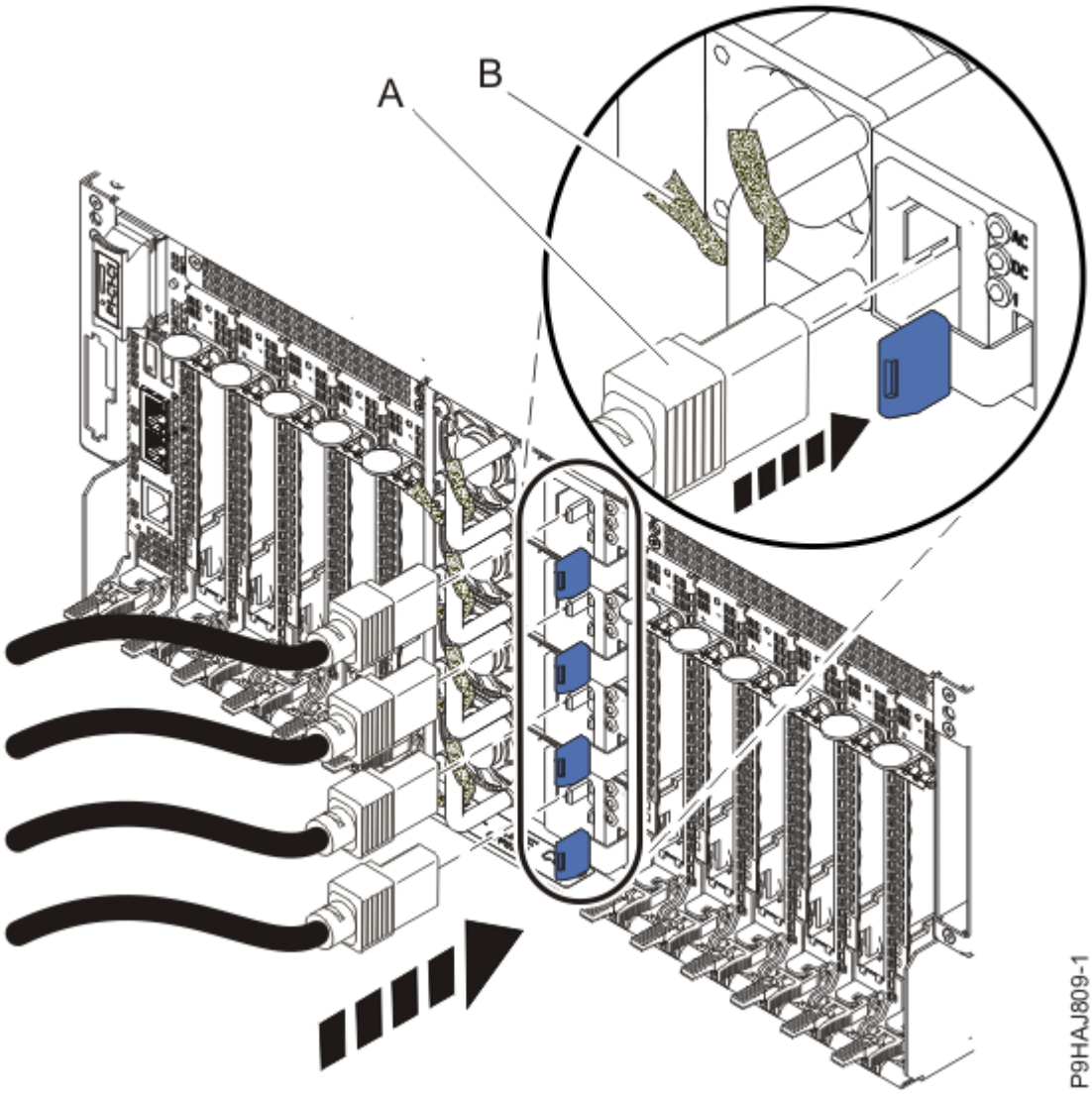



*Figure 233: Connecting the power cords*

5. Start the system. For instructions, see Starting a system (www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustartsys.htm).
6. 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).
7. Verify the installed part.
   - If you replaced the part because of a service action, verify the installed part. For instructions, see https://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 https://www.ibm.com/support/knowledgecenter/POWER9/p9haj/pxhaj_hsmverify.htm (www.ibm.com/support/knowledgecenter/POWER9/p9haj/pxhaj_hsmverify.htm).

# Common things

## Placing a 9040-MR9 system into the service position

Use this procedure to place an IBM Power System E950 (9040-MR9) system into the service position.

**Attention:**

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

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. Label and disconnect all external cables that are attached to the PCIe adapters.
3. If you have not already done so, remove the front cover from the system. For instructions, see “Removing the front cover from a 9040-MR9 system” on page 288.
4. Complete the following steps to place the system in 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.

   a. If not already removed, remove the shipping screws **(A)** as shown in the following figure by using a Phillips screwdriver.
   b. Release the side latches **(B)** by pressing them downward as shown in the following figure.
   c. Pull out the system **(C)** as shown in the following figure. Ensure that any cables do not catch or bind as you pull out the system.

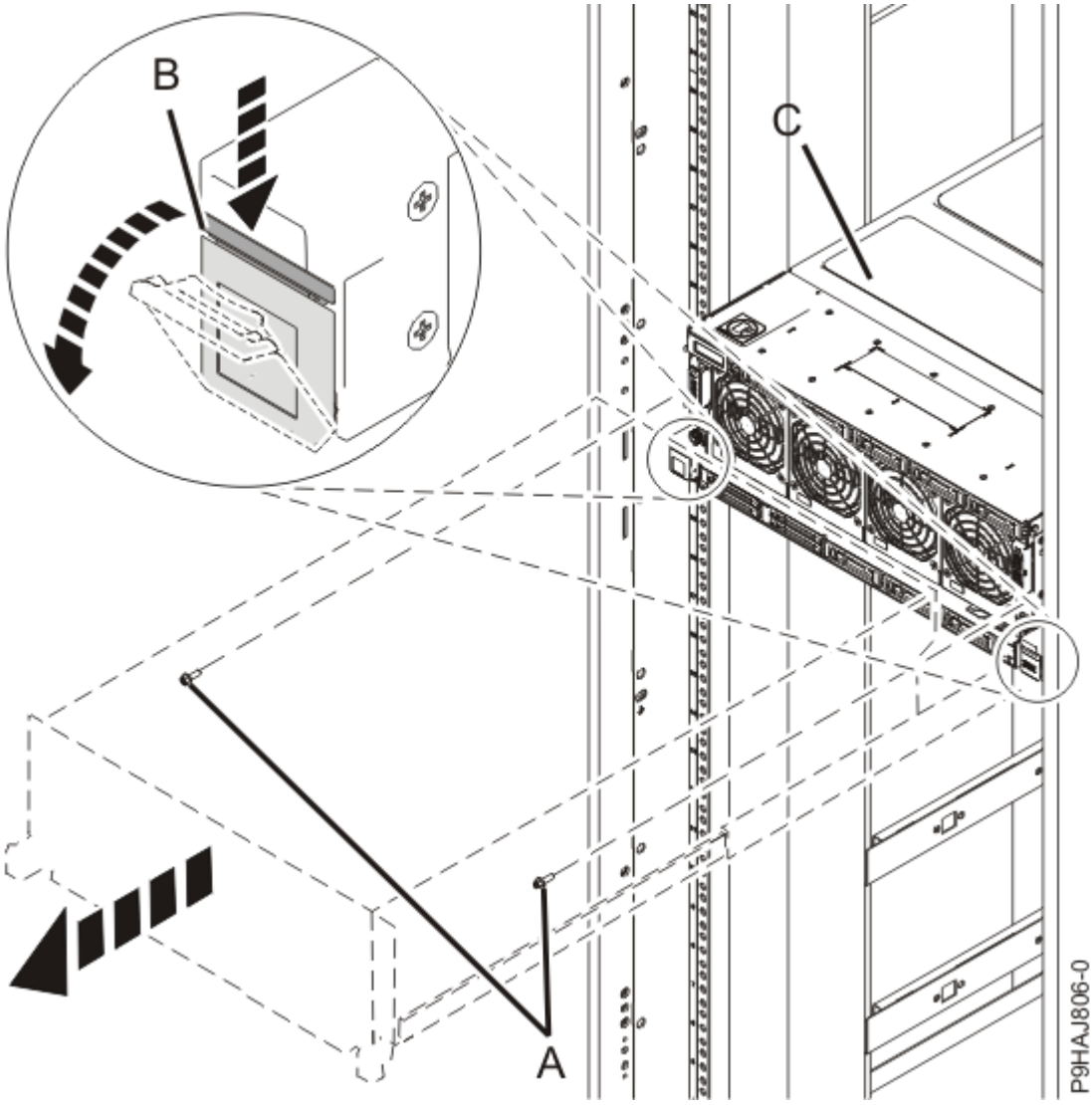



*Figure 234: Placing the system in service position*

## Placing a 9040-MR9 system into the operating position

Use this procedure to place an IBM Power System E950 (9040-MR9) system into the operating position.

**Attention:** When you place the system in the operating position, ensure that the cables at the rear of the system do not catch or bind as you push the system unit back into the rack.

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. Complete the following steps to place the system in the operating position.
   a. Unlock the blue rail safety latches **(A)** by pushing them towards the front as shown in the following figure.
   b. Push the system unit back into the rack as shown in the following figure until both release latches of the system unit lock into position. Ensure that any cables do not catch or bind as you push in the system.

**Note:** Slide the system unit slowly into the rack to ensure that your fingers do not get caught in the side rails.

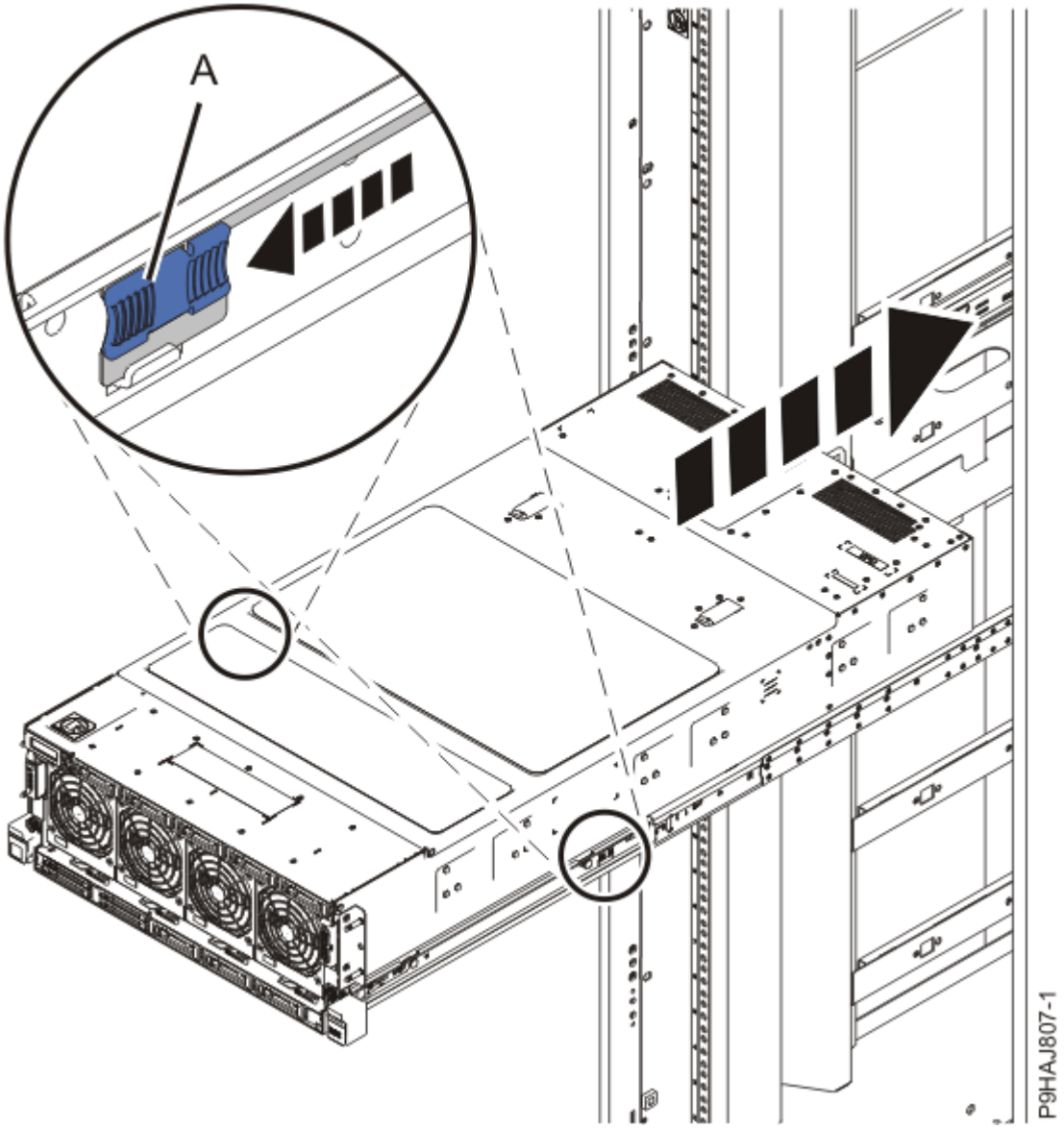



*Figure 235: Placing the system into the operating position*

3. Using your labels, reconnect all of the external cables that plug into the PCIe adapters.

## Removing the service access cover from a 9040-MR9 system

Use this procedure to remove the service access cover from an IBM Power System E950 (9040-MR9) server.

**Attention:** Operating the system without the cover for more than 30 minutes might damage the system components.

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. Complete the following steps to remove the cover.

   **Attention:** Operating the system without the cover for more than 10 minutes might damage the system components. For proper cooling and airflow, replace the cover before turning on the system.

   a. Push the release latches **(A)** in the direction shown in the following figure.

b. Slide the cover **(B)** off the system unit as shown in the following figure. When the front of the service access cover has cleared the upper frame ledge, lift the cover up and off the system unit.

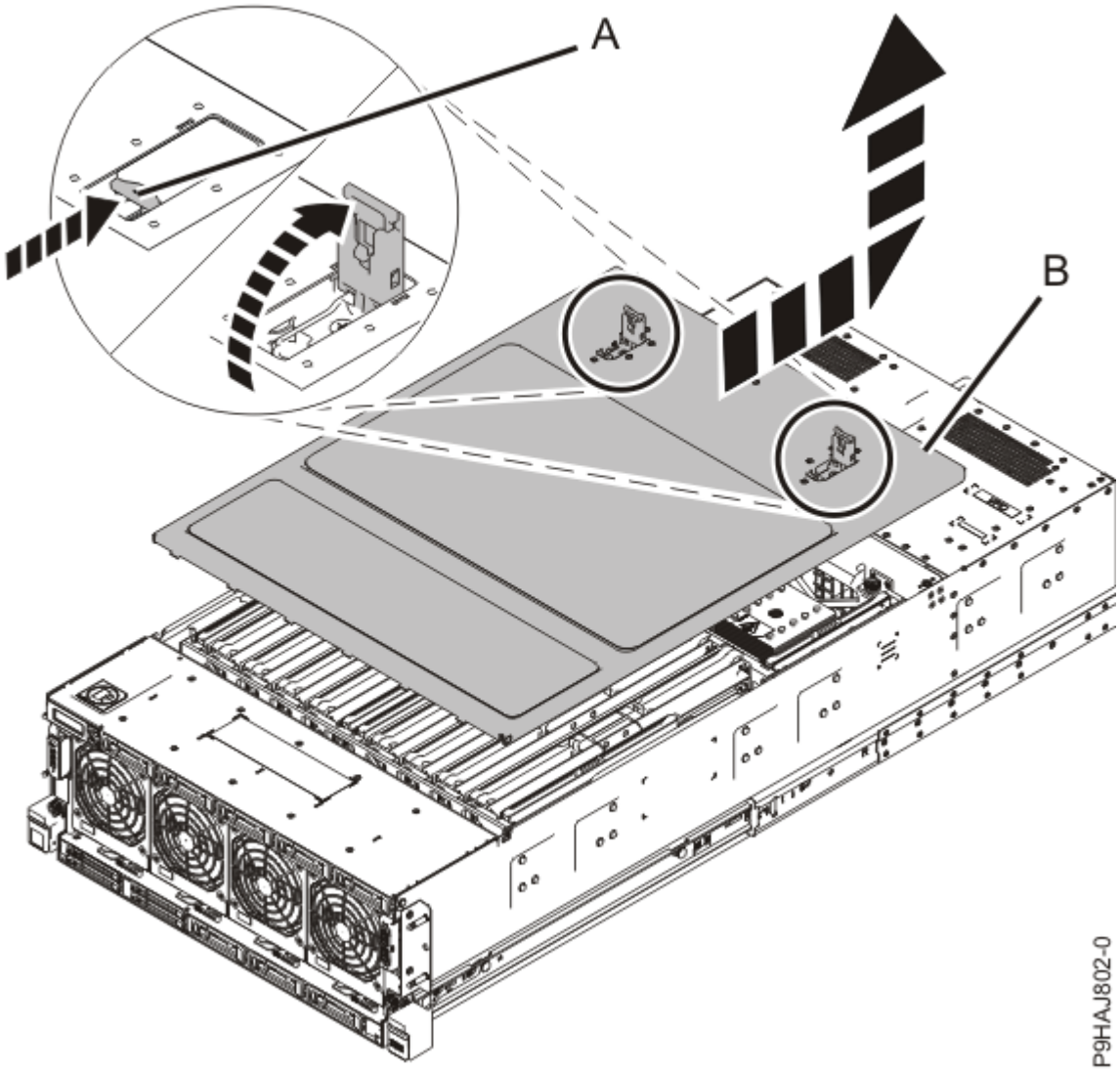



*Figure 236: Removing the service access cover*

## Installing the service access cover on the 9040-MR9 system

Use this procedure to install the service access cover on the IBM Power System E950 (9040-MR9) server.

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. Complete the following steps to replace the service access cover; refer to the following figure.
   a) Lower the cover **(A)** onto the system unit. Ensure that the cover alignment pins **(C)** on each side of the cover fit into the matching slots in the chassis.
   b) Slide the cover **(A)** onto the system unit. Ensure that the tabs **(D)** tuck under the mesh along the front opening of the chassis.
   c) Close the release latches **(B)** by pushing it in the direction that is shown in the following figure.

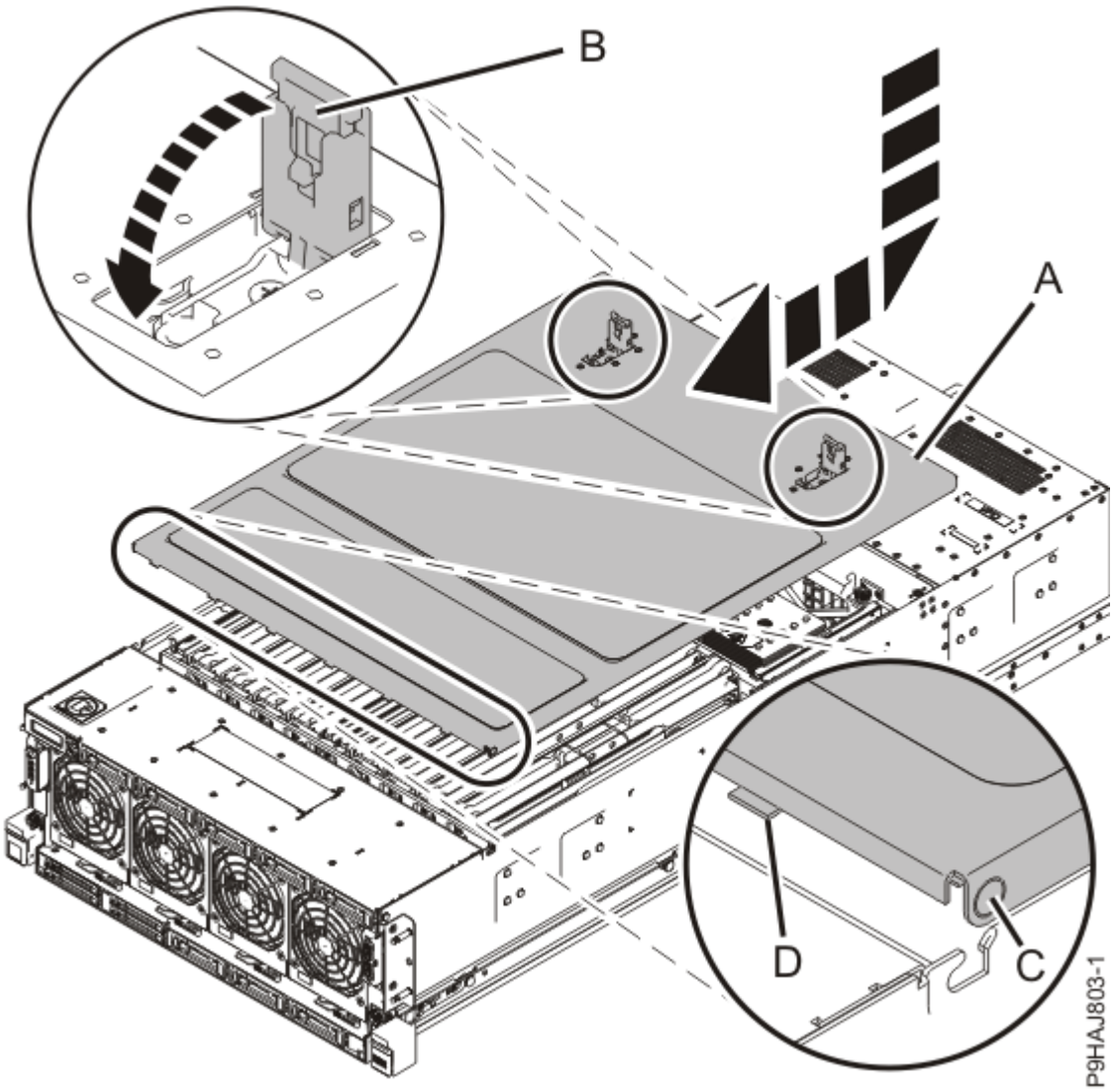



*Figure 237: Installing the service access cover*

## Disconnecting the power cords from the 9040-MR9 system

Use this procedure to disconnect the power cords from an IBM Power System E950 (9040-MR9) server.

1. If applicable, open the rack door at the rear of the system unit that you are servicing.
2. Identify the system unit that you are servicing in the rack.
3. Label and disconnect the power cords from the system unit as shown in the following figure.

   **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 power sources to the system are disconnected.
   - The power cord **(B)** is fastened to the system with a 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.

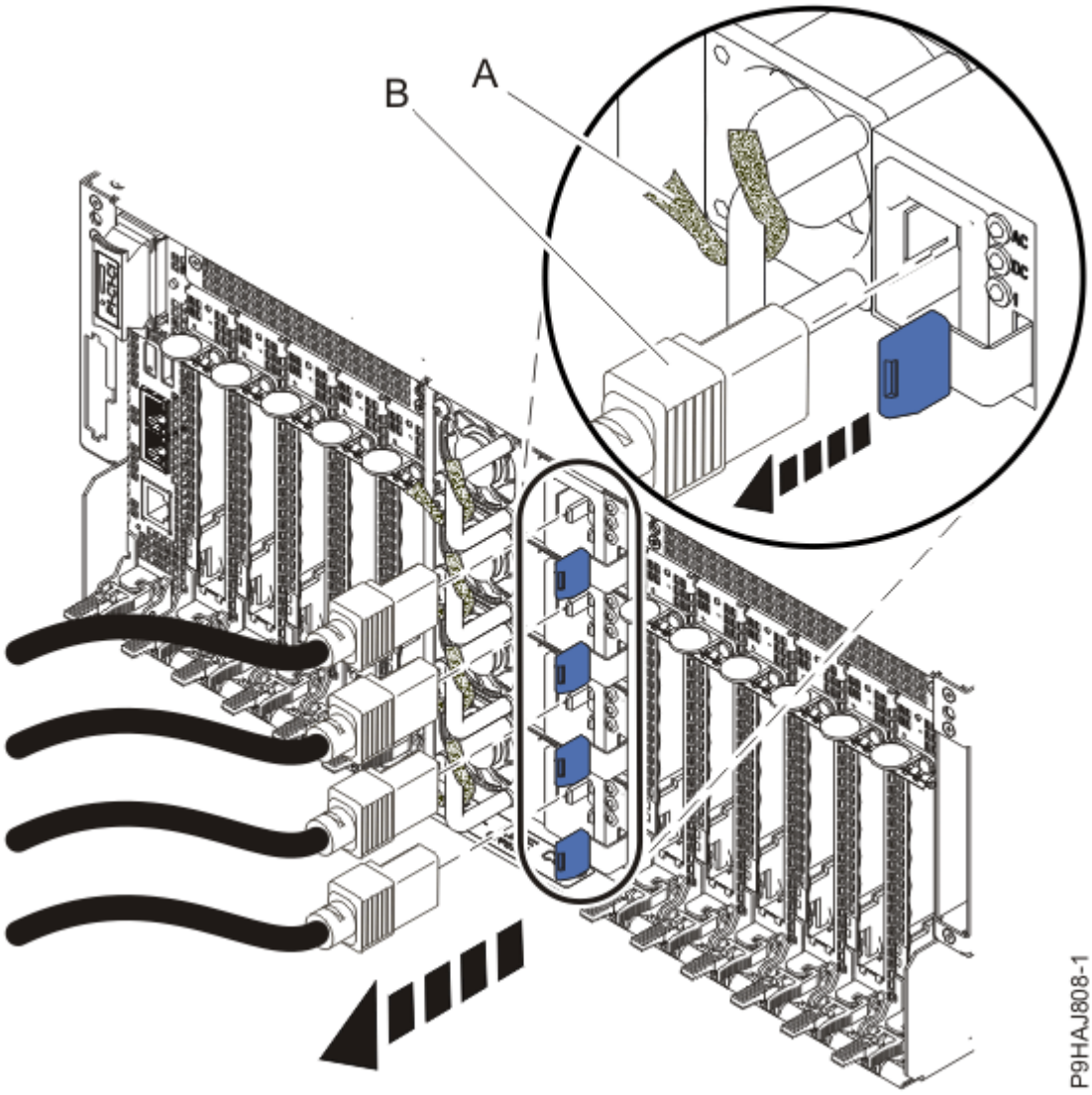
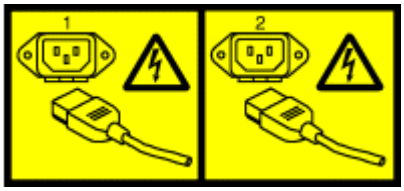



*Figure 238: Removing the power cords*

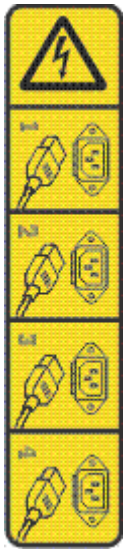
**(L003)**



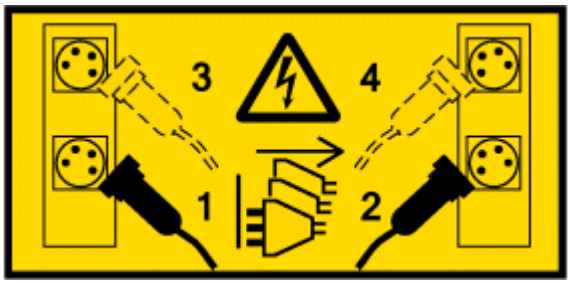

or

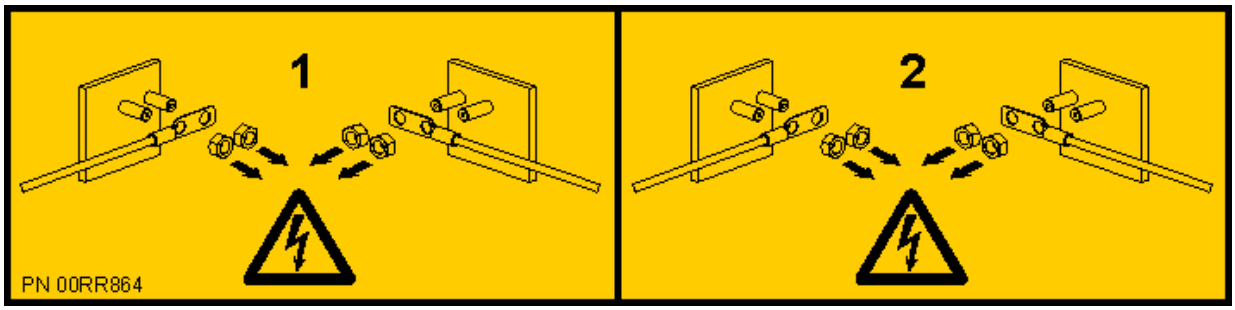
or

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)

## Connecting the power cords to the 9040-MR9 system

Use this procedure to connect the power cords to an IBM Power System E950 (9040-MR9) server.

1. If applicable, open the rack door at the rear of the system unit that you are servicing.
2. Using your labels, reconnect the power cords **(A)** to the system unit as shown in the following figure.
   Fasten the power cords to the system by using the hook-and-loop fasteners **(B)** as shown in the following figure.

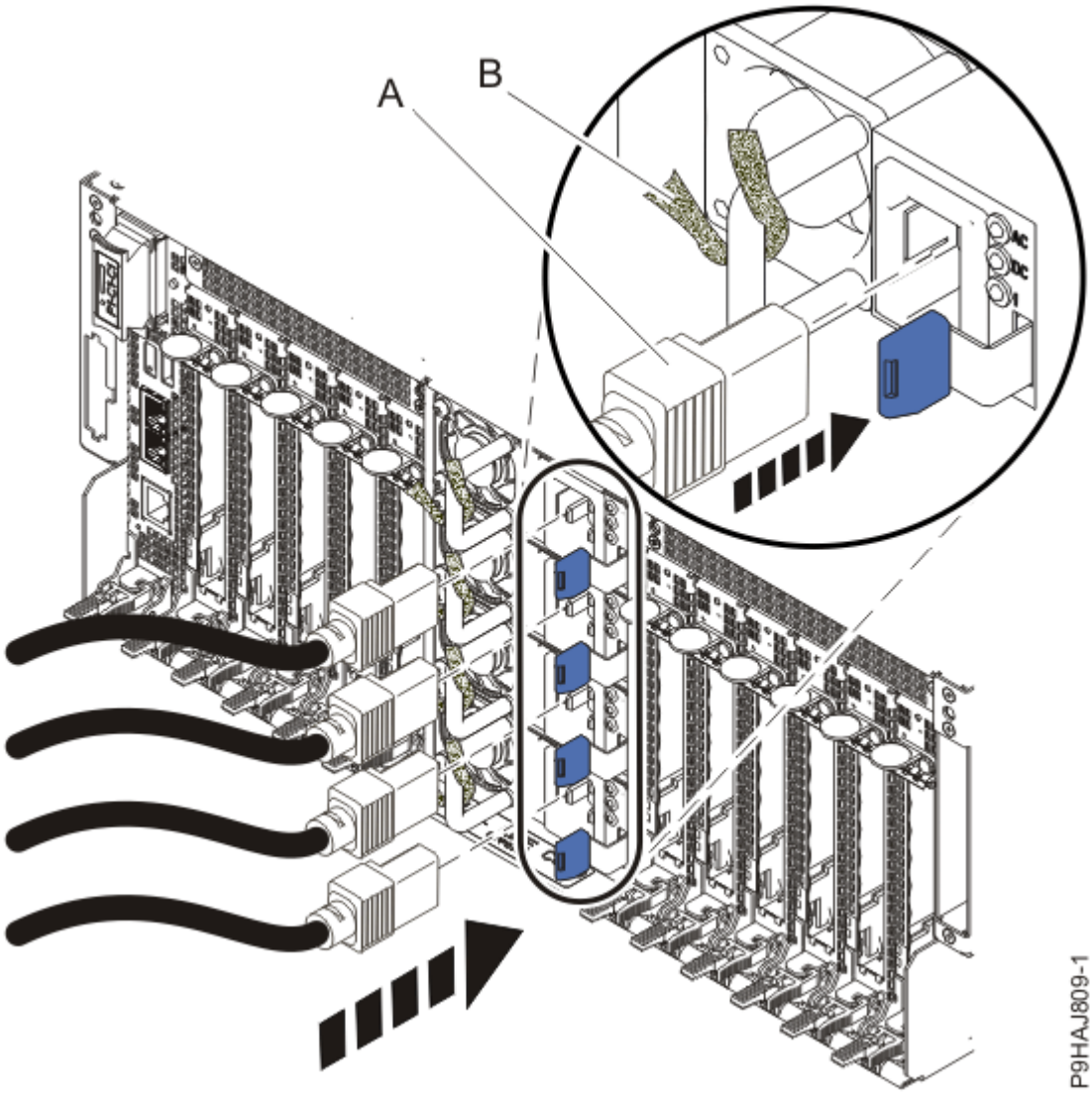



*Figure 239: Connecting the power cords*

3. Close the rack door at the rear of the system.

## Removing the front cover from a 9040-MR9 system

Use this procedure to remove the front cover from a IBM Power System E950 (9040-MR9) server so that you can access the components or perform service.

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

3. Place your fingers on the indentations and pull the latches **(B)** located on both sides of the cover as shown in the following figure.

   Pull the cover **(A)** away from the system.

   **CAUTION:** The fans can pull in hair, jewelry, loose clothing, and so forth, and cause injury or damage. Operate the system with the bezel installed. For service operations, if the front cover must be removed with the system operating, ensure that all such loose material is secured away from the fan area, to prevent any loose material from being pulled into the fan.

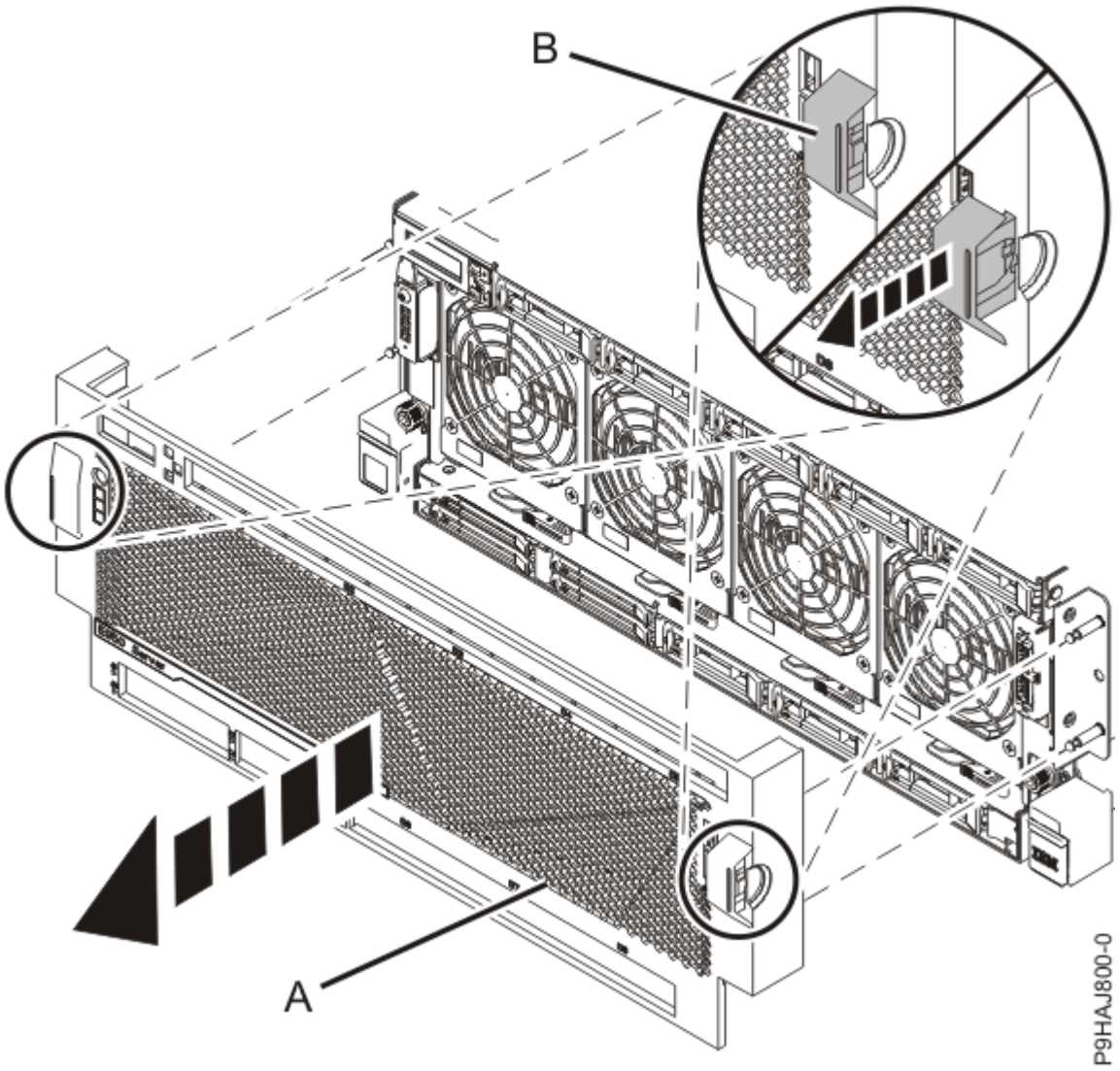



*Figure 240: Removing the front cover*

## Installing the front cover on a 9040-MR9 system

Use this procedure to install the cover on a IBM Power System E950 (9040-MR9) server.

1. Ensure that you have the electrostatic discharge (ESD) wrist strap on and that the ESD clip is plugged into a ground jack or connected to an unpainted metal surface. If not, do so now.
2. Position the cover **(A)** on the front of the system unit as shown in the following figure, so that the four pins **(B)** on the system match the four holes at the rear of the cover.

   Press the tabs **(C)** to snap the cover into position.

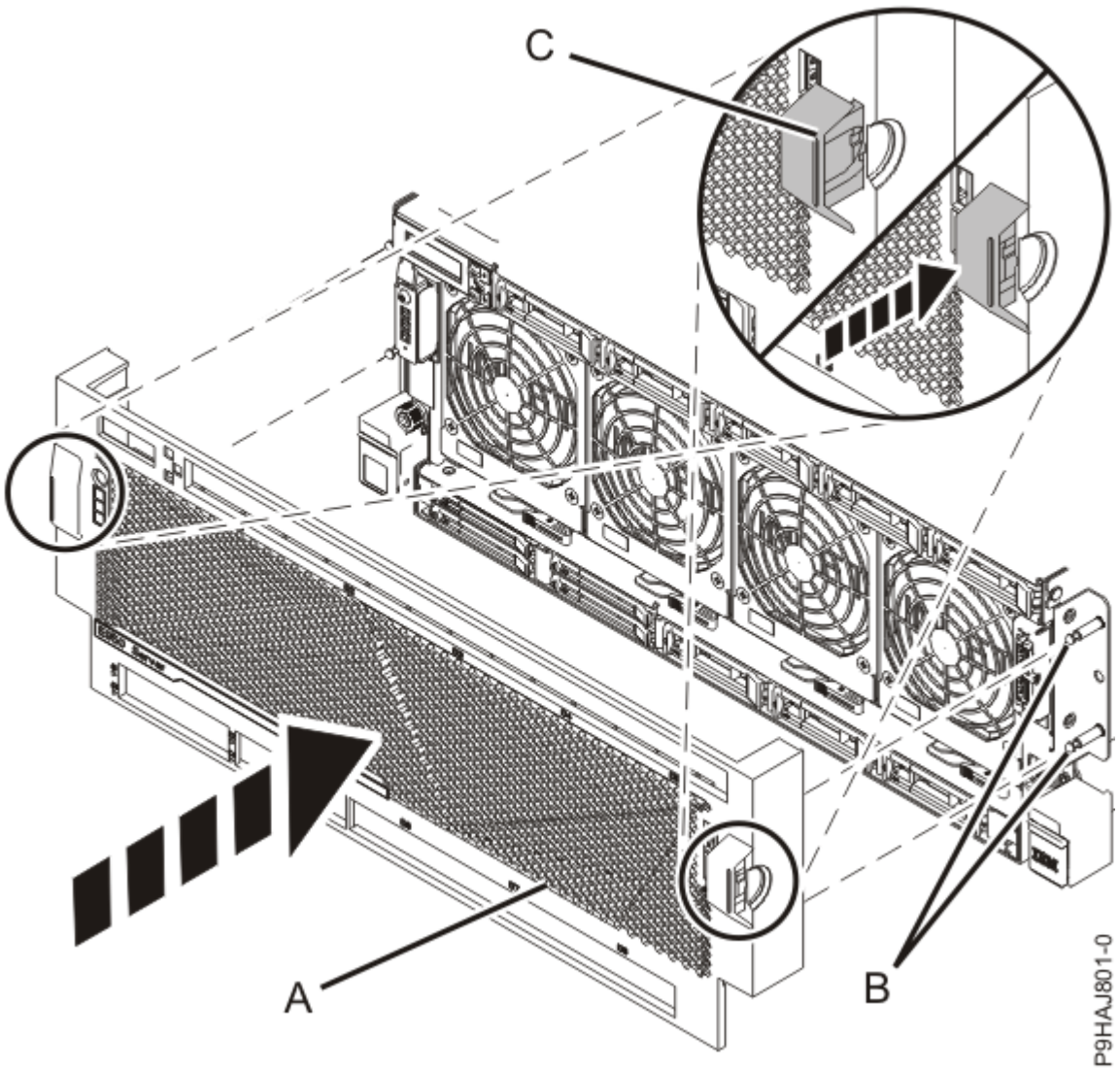



*Figure 241: Installing the front cover*