

5886 removal and replacement procedures□□

ESCALA Power7



REFERENCE
86 A1 56FF 03

ESCALA Power7

5886 removal and replacement procedures□□

This publication concerns the following models:

- Bull Escala E5-700 (Power 750 / 8233-E8B)
- Bull Escala M6-700 (Power 770 / 9117-MMB)
- Bull Escala M7-700 (Power 780 / 9179-MHB)
- Bull Escala E1-700 (Power 710 / 8231-E2B)
- Bull Escala E2-700 / E2-700T (Power 720 / 8202-E4B)
- Bull Escala E3-700 (Power 730 / 8231-E2B)
- Bull Escala E4-700 / E4-700T (Power 740 / 8205-E6B)

References to Power 755 / 8236-E8C models are irrelevant.

Hardware

May 2011

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FRANCE

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Safety notices

Safety notices may be printed throughout this guide:

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

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German safety information

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

Laser safety information

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

Laser compliance

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

DANGER

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

Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard:

- Connect power to this unit only with the IBM provided power cord. Do not use the IBM provided power cord for any other product.
- Do not open or service any power supply assembly.
- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure that the outlet supplies proper voltage and phase rotation according to the system rating plate.
- Connect any equipment that will be attached to this product to properly wired outlets.
- When possible, use one hand only to connect or disconnect signal cables.
- Never turn on any equipment when there is evidence of fire, water, or structural damage.
- Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.
- Connect and disconnect cables as described in the following procedures when installing, moving, or opening covers on this product or attached devices.

To Disconnect:

1. Turn off everything (unless instructed otherwise).
2. Remove the power cords from the outlets.
3. Remove the signal cables from the connectors.
4. Remove all cables from the devices

To Connect:

1. Turn off everything (unless instructed otherwise).
2. Attach all cables to the devices.
3. Attach the signal cables to the connectors.
4. Attach the power cords to the outlets.
5. Turn on the devices.

(D005)

DANGER

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

- Heavy equipment—personal injury or equipment damage might result if mishandled.
- Always lower the leveling pads on the rack cabinet.
- Always install stabilizer brackets on the rack cabinet.
- To avoid hazardous conditions due to uneven mechanical loading, always install the heaviest devices in the bottom of the rack cabinet. Always install servers and optional devices starting from the bottom of the rack cabinet.
- Rack-mounted devices are not to be used as shelves or work spaces. Do not place objects on top of rack-mounted devices.



- Each rack cabinet might have more than one power cord. Be sure to disconnect all power cords in the rack cabinet when directed to disconnect power during servicing.
- Connect all devices installed in a rack cabinet to power devices installed in the same rack cabinet. Do not plug a power cord from a device installed in one rack cabinet into a power device installed in a different rack cabinet.
- An electrical outlet that is not correctly wired could place hazardous voltage on the metal parts of the system or the devices that attach to the system. It is the responsibility of the customer to ensure that the outlet is correctly wired and grounded to prevent an electrical shock.

CAUTION

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

(R001)

CAUTION:

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

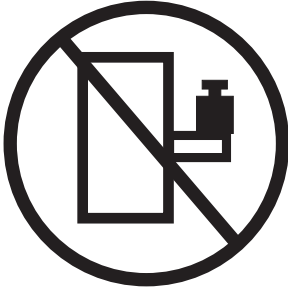
- Reduce the weight of the rack cabinet by removing equipment starting at the top of the rack cabinet. When possible, restore the rack cabinet to the configuration of the rack cabinet as you received it. If this configuration is not known, you must observe the following precautions:
 - Remove all devices in the 32U position and above.
 - Ensure that the heaviest devices are installed in the bottom of the rack cabinet.
 - Ensure that there are no empty U-levels between devices installed in the rack cabinet below the 32U level.
- If the rack cabinet you are relocating is part of a suite of rack cabinets, detach the rack cabinet from the suite.
- Inspect the route that you plan to take to eliminate potential hazards.
- Verify that the route that you choose can support the weight of the loaded rack cabinet. Refer to the documentation that comes with your rack cabinet for the weight of a loaded rack cabinet.
- Verify that all door openings are at least 760 x 230 mm (30 x 80 in.).
- Ensure that all devices, shelves, drawers, doors, and cables are secure.
- Ensure that the four leveling pads are raised to their highest position.
- Ensure that there is no stabilizer bracket installed on the rack cabinet during movement.
- Do not use a ramp inclined at more than 10 degrees.
- When the rack cabinet is in the new location, complete the following steps:
 - Lower the four leveling pads.
 - Install stabilizer brackets on the rack cabinet.
 - If you removed any devices from the rack cabinet, repopulate the rack cabinet from the lowest position to the highest position.
- If a long-distance relocation is required, restore the rack cabinet to the configuration of the rack cabinet as you received it. Pack the rack cabinet in the original packaging material, or equivalent. Also lower the leveling pads to raise the casters off of the pallet and bolt the rack cabinet to the pallet.

(R002)

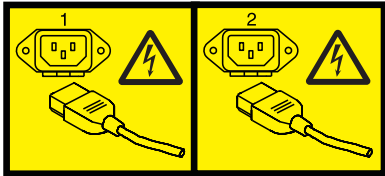
(L001)



(L002)



(L003)



or



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

CAUTION:

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

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

(C026)

CAUTION:

Data processing environments can contain equipment transmitting on system links with laser modules that operate at greater than Class 1 power levels. For this reason, never look into the end of an optical fiber cable or open receptacle. (C027)

CAUTION:

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

CAUTION:

Some laser products contain an embedded Class 3A or Class 3B laser diode. Note the following information: laser radiation when open. Do not stare into the beam, do not view directly with optical instruments, and avoid direct exposure to the beam. (C030)

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

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

The equipment is suitable for installation in the following:

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

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

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

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

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

Removal and replacement procedures

Use the removal and replacement procedures when you repair, maintain, or exchange your system parts.

Before you begin a replacement, perform these tasks:

1. If you are performing a replacement procedure that might put your data at risk, ensure, if possible, that you have a current backup of your system or logical partition (including operating systems, licensed programs, and data).
2. Review the installation or replacement procedure for the feature or part.
3. Note the significance of color on your system. Black or silver on a part of the hardware indicates a touch point where you can grip the hardware to remove it from or install it in the system, open or close a latch, and so on. Black or silver might also indicate that the part can be removed and replaced with the system or logical partition power on.
4. Ensure that you have access to a medium, flat-blade screwdriver.
5. If parts are incorrect, missing, or visibly damaged, contact your service provider or next level of support.

DANGER

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

Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard:

- Connect power to this unit only with the IBM provided power cord. Do not use the IBM provided power cord for any other product.
- Do not open or service any power supply assembly.
- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure that the outlet supplies proper voltage and phase rotation according to the system rating plate.
- Connect any equipment that will be attached to this product to properly wired outlets.
- When possible, use one hand only to connect or disconnect signal cables.
- Never turn on any equipment when there is evidence of fire, water, or structural damage.
- Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.
- Connect and disconnect cables as described in the following procedures when installing, moving, or opening covers on this product or attached devices.

To Disconnect:

1. Turn off everything (unless instructed otherwise).
2. Remove the power cords from the outlets.
3. Remove the signal cables from the connectors.
4. Remove all cables from the devices

To Connect:

1. Turn off everything (unless instructed otherwise).
2. Attach all cables to the devices.
3. Attach the signal cables to the connectors.
4. Attach the power cords to the outlets.
5. Turn on the devices.

(D005)

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

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

- The electrostatic discharge (ESD) kit and the ESD wrist strap must be used when handling logic cards, SCMs, MCMs, electronic boards, and disk drives.
- Keep all electronic components in the shipping container or envelope until you are ready to install them.
- If you remove, then reinstall an electronic component, temporarily place the component on an ESD pad or blanket.

What's new in 5886 removal and replacement procedures

Read about new or significantly changed information in 5886 removal and replacement procedures since the previous update of this topic collection.

February 2010

- Added information for IBM Power Systems™ servers that contain the POWER7® processor.

Disk unit

How to service the disk unit.

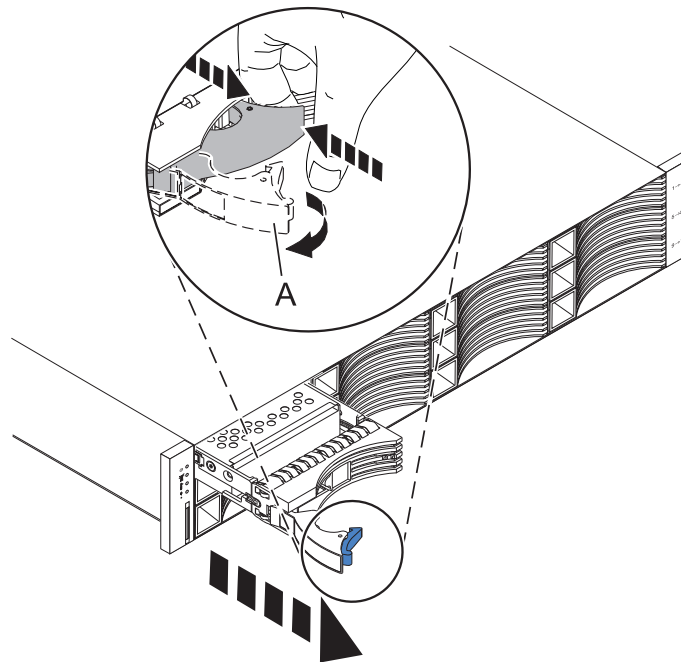
Use this procedure to service the disk unit.

The disk unit is serviced concurrently.

Attention:

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

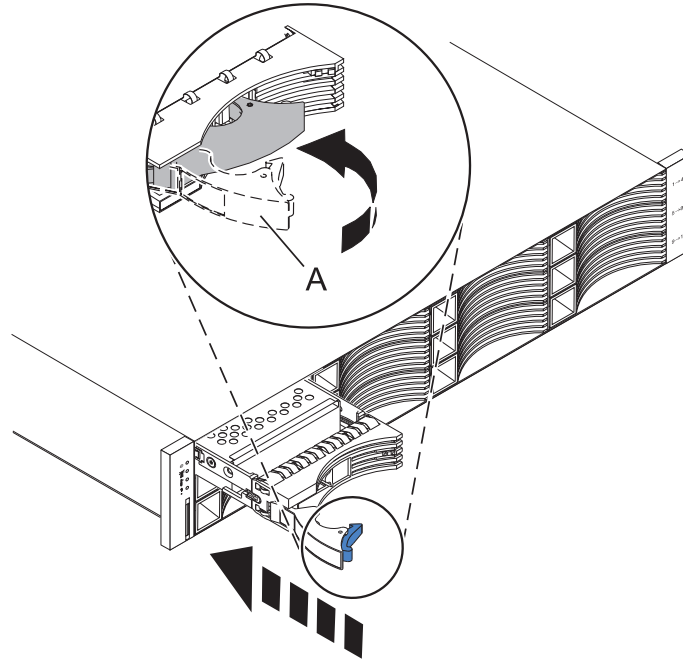
1. Use the following precautions whenever you handle electronic components or cables.
 - Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.
 - If you do not have a wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds.
 - Keep all electronic components in the shipping container or envelope until you are ready to install them.
 - If you remove, then reinstall an electronic component, temporarily place the component on an ESD pad or blanket, if available.



2. Remove the disk unit.

- a. Press the latch on the right end of the disk unit handle to release the disk unit from its slot.
- b. Pull out the handle (A) to the open position. This action releases the disk unit from its slot.
- c. Grasp the front of the disk unit and pull it out from the system unit, make sure that you support the bottom of the drive while you do this.

Note: The concurrent maintenance light for the slot turns off when you remove the disk unit.



3. Install the disk unit.

- a. With the handle (A) in the unlocked position, support the bottom of the disk unit as you align it with the guide rails in the expansion unit.

Note: Do not hold the disk unit solely by the handle.

- b. Slide the disk unit into the expansion unit.
- c. Push the handle towards the disk unit to lock it into place.

Enclosure services manager

Service the enclosure services manager (ESM).

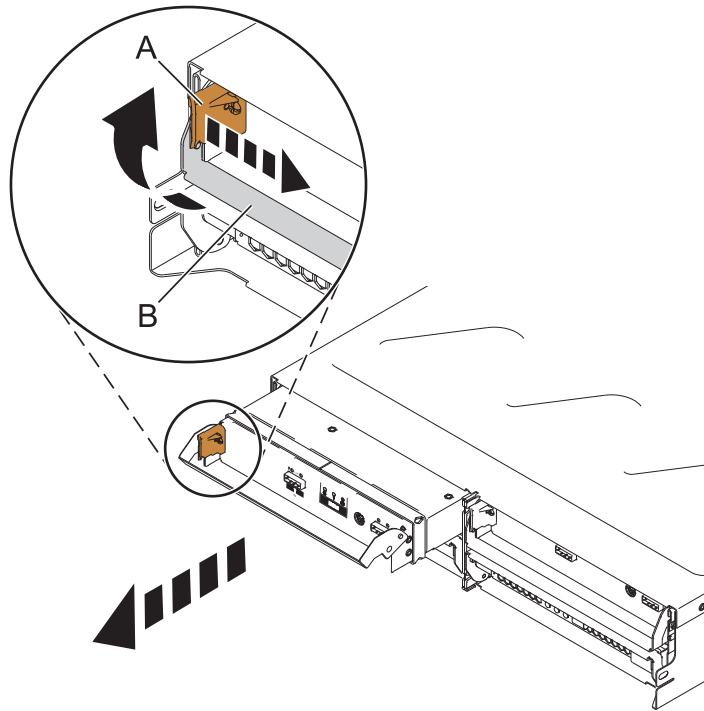
Use this procedure to service the ESM.

The ESM can be serviced concurrently only when its amber fault light is solid on.

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

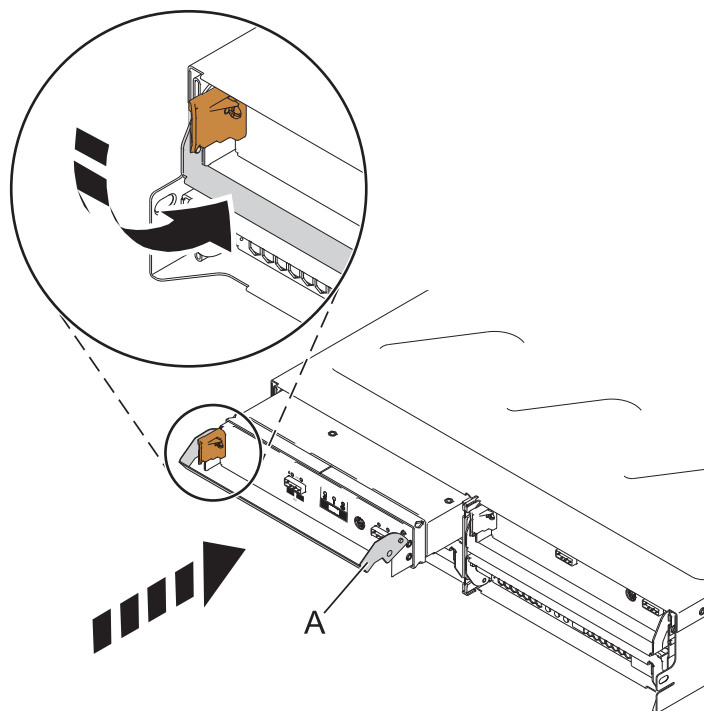
Use the following precautions whenever you handle electronic components or cables.

- Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.
- If you do not have a 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.
- Keep all electronic components in the shipping container or envelope until you are ready to install them.
- If you remove, then re-install an electronic component, temporarily place the component on an ESD pad or blanket, if available.
- If this is a non-concurrent replacement, do not combine replacement of any ESM with a replacement of the midplane unless there has been a power cycle of the drawer with one new FRU at a time. This is needed to preserve serial number tracking.



1. Remove the ESM.

- a. Disconnect the SAS cable or cables from the ESM and mark their locations.
- b. On the left side of the ESM, press the orange release tab (A) to the right as you rotate the handle (B) upward.
- c. Using the handle, gently slide the ESM out of the enclosure, supporting the sides while you do this.



2. Install the ESM.

- a. Hold the replacement ESM so that the handle (A) is fully extended.
- b. Gently slide the ESM into the bay until the ESM stops.

- c. Rotate the handle downward into the closed position until it clicks.
- d. Reconnect the SAS cable or cables to the ESM.

Midplane

How to service the midplane.

Use this procedure to service the midplane.

The midplane will be serviced non-concurrently.

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

1.
 - a. Unconfigure the expansion unit from the system by either method:
 - Power off the entire system
 - Remove the Serial-attached SCSI (SAS) configuration from the system configuration
 - b. Power off the expansion unit by turning off the power supply switches on each of the power supplies.

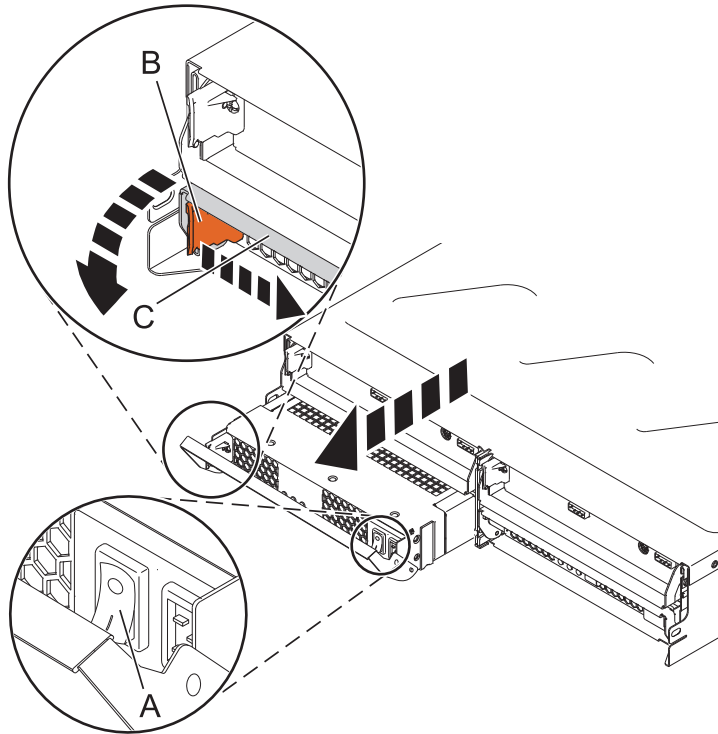
Note: The midplane should be the only FRU replaced in this procedure until power has been applied to the drawer with the new midplane. The original ESMs must be used in this procedure in order to preserve serial number recovery.

2.

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

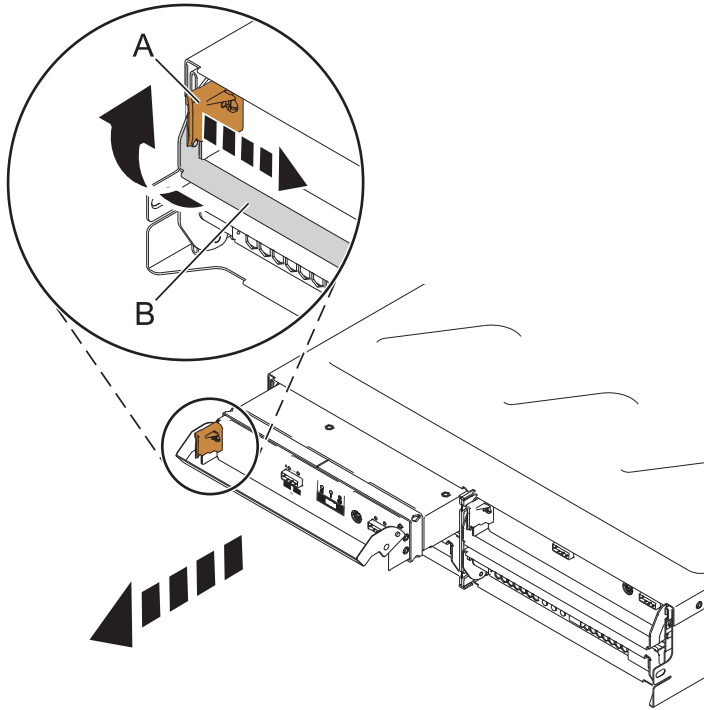
 - Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.
 - If you do not have a wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds.
 - Keep all electronic components in the shipping container or envelope until you are ready to install them.
 - If you remove, then re-install an electronic component, temporarily place the component on an ESD pad or blanket, if available.

3. Remove both power supplies and disk drives.

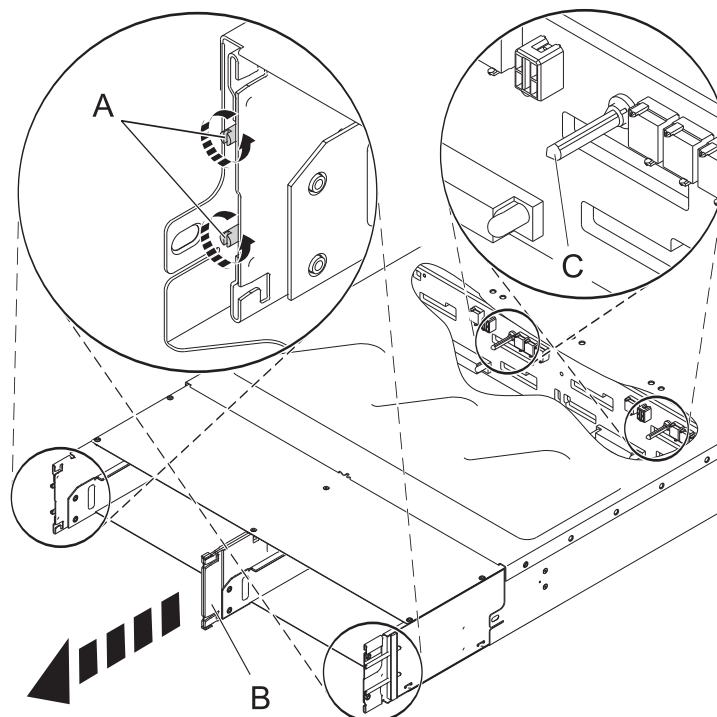


- a. Remove all the disk drives, following the "Disk unit" on page 3 removal procedures.
- b. Make sure that the power switch (A) on the right side of the power supply that is to be removed is in the off position.
- c. Label and remove the power cable from the power supply to be removed.
- d. On the left side of the power supply, press the orange release tab (B) to the right as you rotate the handle (C) downward.
- e. Using the handle, gently slide the power supply out of the enclosure, make sure that you support the bottom while you do this.
- f. Repeat these steps until both power supplies have been removed from the failing unit.

4. Remove both Enclosure Services Managers (ESMs).



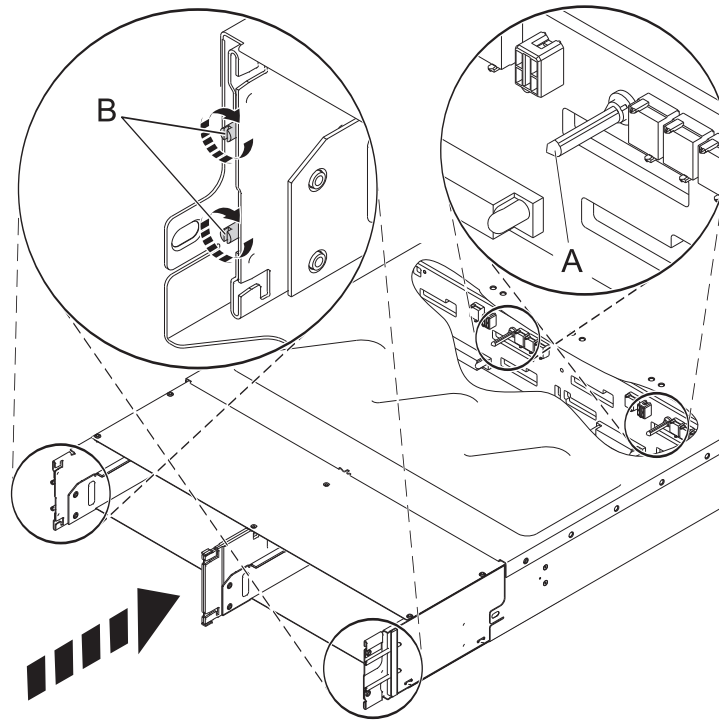
- a. Label and disconnect the SAS cables from the ESM.
- b. On the left side of the ESM, press the orange release tab (A) to the right as you rotate the handle (B) upward.
- c. Using the handle, gently slide the ESM out of the enclosure, make sure that you support the bottom while you do this.
- d. Repeat these steps until both ESMs have been removed from the failing unit.



5. Remove the midplane.

- a. Using a flathead screwdriver, loosen (do not remove) four captive screws (**A**) by turning them counter-clockwise. Two screws are located on each side of the drawer toward the back.
- b. Grab the center vertical bar (**B**) and pull out the rear docking tray.
- c. Take hold of the two metal guide posts (**C**), and gently pull the midplane out.

Note: To get the midplane past the blocks near the opening, you will have to hold the midplane at an angle.



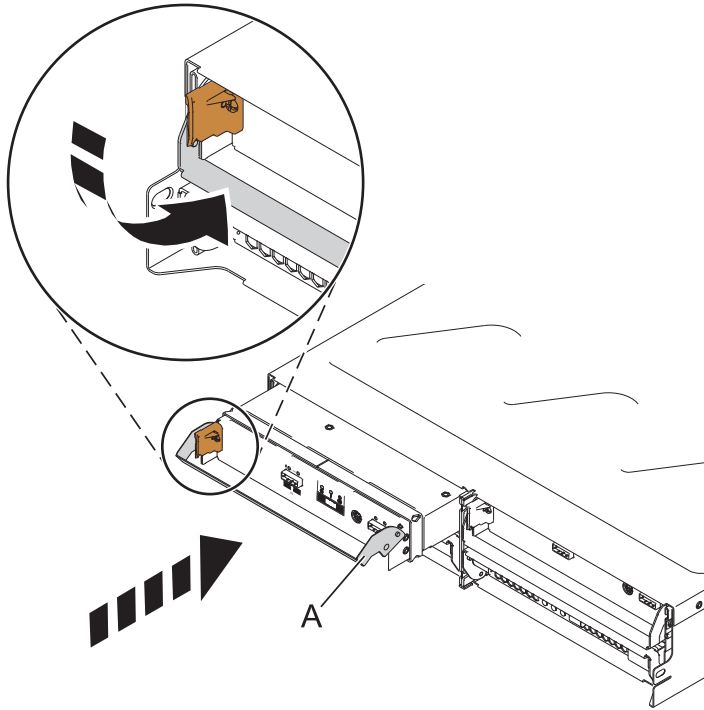
6. Install the midplane.

- a. Using the two metal guide posts (**A**), gently slide the midplane into the drawer.

Note: To get the midplane past the blocks near the opening, you will have to hold the midplane at an angle.

- b. Slide the rear docking tray into the drawer, ensuring the tray fits against the midplane.
- c. Apply pressure on the midplane's corners and midpoint of the top and bottom to firmly seat the midplane.
- d. Using a flathead screwdriver, tighten the four captive screws (**B**) clockwise.

7. Install both original Enclosure Services Managers (ESMs).



- a. Hold the ESM so that the handle (A) is fully extended.
 - b. Gently slide the ESM into the bay until the ESM stops.
 - c. Rotate the handle downward into the closed position until it clicks.
 - d. Reconnect the SAS cables to the ESM.
 - e. Repeat these steps to install the other ESM.
8. Install both original power supplies and disk drives.
- a. Replace all the disk drives, following the “Disk unit” on page 3 replacement procedures.
 - b. Hold the replacement power supply so that the handle is fully extended downward.
 - c. Gently slide the power supply into the bay until it stops.
 - d. Rotate the handle upward into the closed position until it clicks.
 - e. Reconnect the power cable to the power supply.
 - f. Turn on the power supply switch on the right side of the power supply being replaced.
 - g. Repeat these steps to install the other power supply.

Power supply

How to service the power supply.

Use this procedure to service the power supply.

The power supply can be serviced concurrently or nonconcurrently.

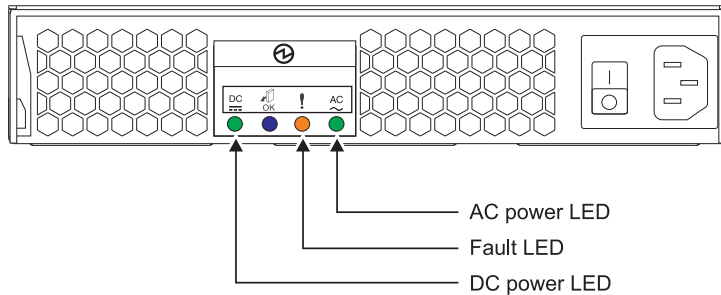


Figure 1. Rear view of power supply

1. You must determine if the repair can continue concurrently. To continue the repair concurrently, the following conditions must be true:
 - A second power supply must already be installed.
 - The second power supply LEDs must be set as follows:
 - DC power LED (green) - solid on
 - Fault LED (amber) - off
 - AC power LED (green) - solid on

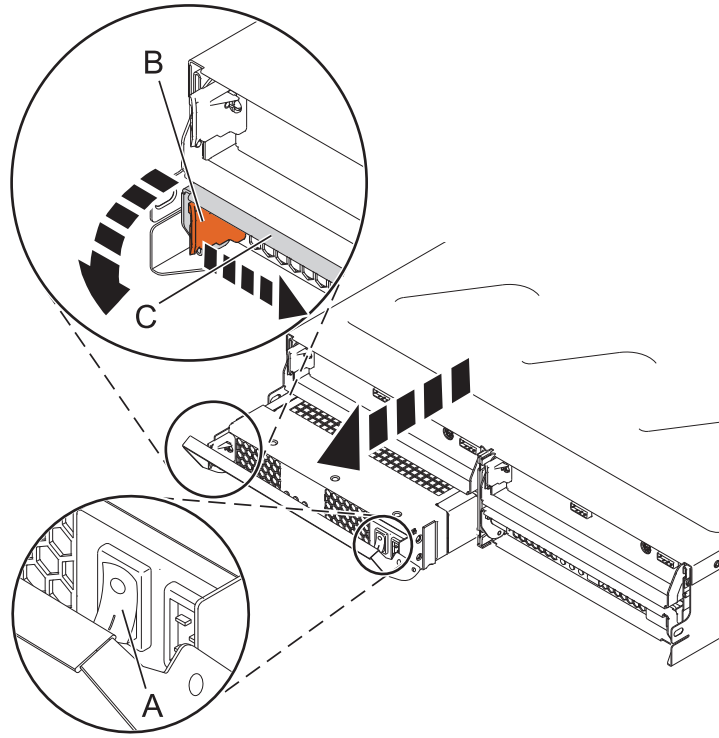
Note: If you choose to remove and replace the failing power supply with the power on, it **must** be performed in less than 15 minutes to prevent overheating.

2. If any of these conditions are **not** true, the repair can continue only after powering off the unit containing the FRU that is being repaired, and you must begin with **The power supply will be serviced nonconcurrently**. Otherwise, continue with **The power supply will be serviced concurrently**.
 - **The power supply will be serviced concurrently.**
Do not remove power from the working power supply during this procedure. Continue with the next step.
 - **The power supply will be serviced nonconcurrently.**
 - Failure to follow the step-by-step sequence for this FRU removal or installation might result in FRU or system damage.

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

- Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.
- If you do not have a 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.

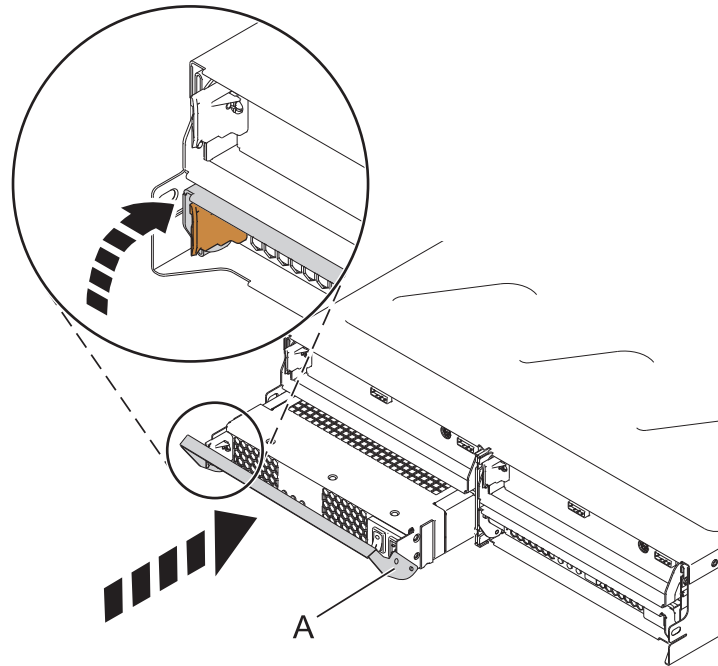
- Keep all electronic components in the shipping container or envelope until you are ready to install them.
- If you remove, then reinstall an electronic component, temporarily place the component on an ESD pad or blanket, if available.



3. Remove the power supply.

Note: If you are removing the power supply with the power on, this operation **must** be performed within 15 minutes to prevent overheating.

- Turn off power switch on right side of the power supply (A) to be removed.
- Label and remove the power cable from the power supply to be removed.
- On the left side of the power supply, press the orange release tab (B) to the right as you rotate the handle (C) downward.
- Using the handle, gently slide the power supply out of the enclosure, supporting the bottom while you do this.



4. Install the power supply.

- a. Hold the replacement power supply so that the handle (A) is fully extended downward.
- b. Gently slide the power supply into the bay until it stops.
- c. Rotate the handle upward into the closed position until it clicks.
- d. Reconnect the power cable to the power supply.
- e. Turn on the power supply switch on the right side of the power supply being replaced.

Note the state of the LEDs on the power supply.

- a. If the LEDs indicate that the power supply is not operating correctly; that is, after 15 seconds both of the green LEDs are not on solid, turn off the power supply switch on right side of the power supply being replaced, wait 5 seconds, then turn on the power supply switch on right side of the power supply being replaced.
- b. If the LEDs still indicate that the power supply is not operating correctly; that is, after 15 seconds both of the green LEDs are not on solid, remove the power supply from the system and reinstall it. Do not proceed until the LEDs indicate that the new power supply is operating correctly.

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Class A Notices

The following Class A statements apply to the IBM servers that contain the POWER7 processor and its features unless designated as electromagnetic compatibility (EMC) Class B in the feature information.

Federal Communications Commission (FCC) statement

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

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

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

Industry Canada Compliance Statement

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

Avis de conformité à la réglementation d'Industrie Canada

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

European Community Compliance Statement

This product is in conformity with the protection requirements of EU Council Directive 2004/108/EC on the approximation of the laws of the Member States relating to electromagnetic compatibility. IBM cannot accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of the product, including the fitting of non-IBM option cards.

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European Community contact:
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Technical Regulations, Department M456
IBM-Allee 1, 71139 Ehningen, Germany
Tele: +49 7032 15-2937
email: tjahn@de.ibm.com

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**Japanese Electronics and Information Technology Industries Association (JEITA)
Confirmed Harmonics Guideline (products less than or equal to 20 A per phase)**

高調波ガイドライン適合品

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高調波ガイドライン準用品

Electromagnetic Interference (EMI) Statement - People's Republic of China

声 明

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IBM Taiwan Contact Information:

台灣IBM 產品服務聯絡方式：
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台北市松仁路7號3樓
電話：0800-016-888

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Germany Compliance Statement

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

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

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

Electromagnetic Interference (EMI) Statement - Russia

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