

IBM ESS expansion and IBM SAS Storage Enclosure

*Hot Swap Side Card - Quick
Installation Guide*



Note

Before using this information and the product it supports, read the following information:

- The general information in “Notices” on page 7
- The information in the “Safety and environmental notices” on page vii
- The information in the *IBM Environmental Notices and User Guide* (provided on a DVD)

This edition applies to IBM ESS expansion Model 084 and IBM SAS Storage Enclosure 5107-084, and is valid until replaced by new editions.

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Safety and environmental notices

Review the safety notices, environmental notices, and electronic emission notices for IBM ESS expansion (5147-106) before you install and use the product.

Suitability for telecommunication environment: This product is not intended to connect directly or indirectly by any means whatsoever to interfaces of public telecommunications networks.

Here are examples of a caution and a danger notice. Numbers in parentheses refer to message numbers in the *IBM Safety Notices* publication G229-9054, which is included with your product.

CAUTION:

A caution notice indicates the presence of a hazard that has the potential of causing moderate or minor personal injury. (C001)

DANGER

A danger notice indicates the presence of a hazard that has the potential of causing death or serious personal injury. (D002)
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- "Safety notices"
- "Environmental notices" on page xii
- "Support information" on page xii

Safety notices

Required safety notices for this product.

Familiarize yourself with the *IBM Safety Notices* publication G229-9054, which is included with your product.

DANGER

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

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

- **If IBM® supplied the power cord(s), connect power to this unit only with the IBM provided power cord. Do not use the IBM provided power cord for any other product.**
- **Do not open or service any power supply assembly.**
- **Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.**
- **The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords.**
- **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.**
- **Do not attempt to switch on power to the machine until all possible unsafe conditions are corrected.**
- **Assume that an electrical safety hazard is present. Perform all continuity, grounding, and power checks specified during the subsystem installation procedures to ensure that the machine meets safety requirements.**
- **Do not continue with the inspection if any unsafe conditions are present.**
- **Disconnect the attached power cords, telecommunications system, 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.**
- **Sharp edges, corners and joints may be present in and around the system. Use care when handling equipment to avoid cuts, scrapes and pinching. (D005)**

DANGER

Heavy equipment—personal injury or equipment damage might result if mishandled. (D006)

DANGER

Professional movers are to be used for all relocation activities. Serious injury or death may occur if systems are handled and moved incorrectly. (D008)

DANGER

Serious injury or death can occur if loaded lift tool falls over or if a heavy load falls off the lift tool. Always completely lower the lift tool load plate and properly secure the load on the lift tool before moving or using the lift tool to lift or move an object. (D010)

Do not: Throw or immerse into water, heat to more than 100°C (212°F), repair or disassemble. (C003) Use the following general safety information for all rack mounted devices:

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. (R001 part 1 of 2)

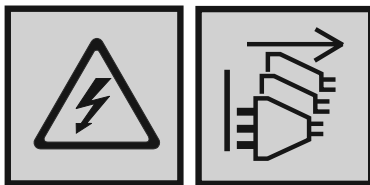
(R001 part 2 of 2):

CAUTION:

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



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



DANGER

Multiple power cords. The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords. (L003)

CAUTION:



The weight of this part or unit is more than 55 kg (121.2 lb). It takes specially trained persons, a lifting device, or both to safely lift this part or unit. (C011)



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)

Environmental notices

This information contains all of the required environmental notices for IBM Systems products in English and other languages.

The IBM Systems Environmental Notices information includes statements on limitations, product information, product recycling and disposal, flat panel display, battery removal and disposal, refrigeration and water-cooling systems, external power supplies, and safety data sheets.

IBM Elastic Storage™ Server Knowledge center

The latest IBM ESS expansion publications are available on the IBM ESS knowledge center.

IBM SAS Storage Enclosure Knowledge Center

The latest IBM SAS Storage Enclosure publications are available on the IBM Power Systems™ knowledge center.

Support information

Your location	Method of contacting the IBM Support Center
In the United States	Call 1-800-IBM-SERV for support.
Outside the United States	Contact your local IBM Support Center or see the Directory of worldwide contacts.

Installing the Side Card

ESD Precautions

It is recommended that you fit and check a suitable anti-static wrist or ankle strap and observe all conventional ESD precautions when handling plugin modules and components. Avoid contact with backplane components and module connectors, etc.

Opening the drawer

This topic describes the procedure of opening the drawer to replace the side card.

Check that the replacement has the correct part number and part (ie LH replacing a LH sideplane). The front panel LEDs on the enclosure drawer identify the failed side plane. See the following figure.

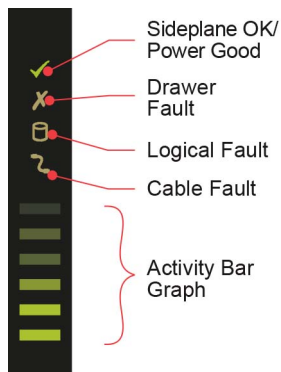


Figure 1. Front panel - drawer status indicators

Important: To avoid HDDs from overheating while the enclosure is powered, the hotswap operation must be undertaken in a maximum ambient temperature of 30°C and within a 10-minute period.

1. Ensure that the anti-tamper locks are not engaged. The red arrows on the locks point inwards if the locks are disengaged as in the following figure. Unlock them if necessary by rotating them counterclockwise using a screwdriver with a torx T20 bit.



● Anti-tamper Locks

Figure 2. Anti-tamper locks

2. Push the drawer latches inward and hold them (see Figure 3).
3. Pull the drawer all the way out until it locks open.

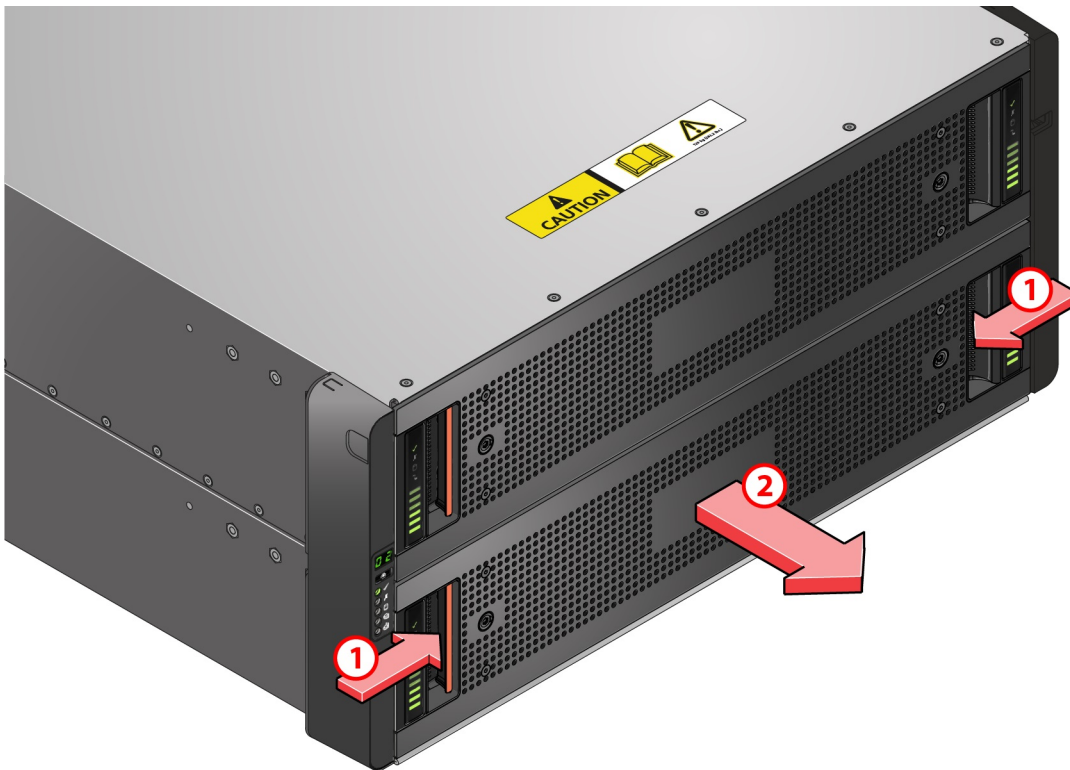


Figure 3. Open drawer

Removing the Side Card

This topic describes the procedure of opening the failed side card.

1. Fully loosen both captive screws at each end of the top cover, unclip from lower cover, and remove as per the following figure.

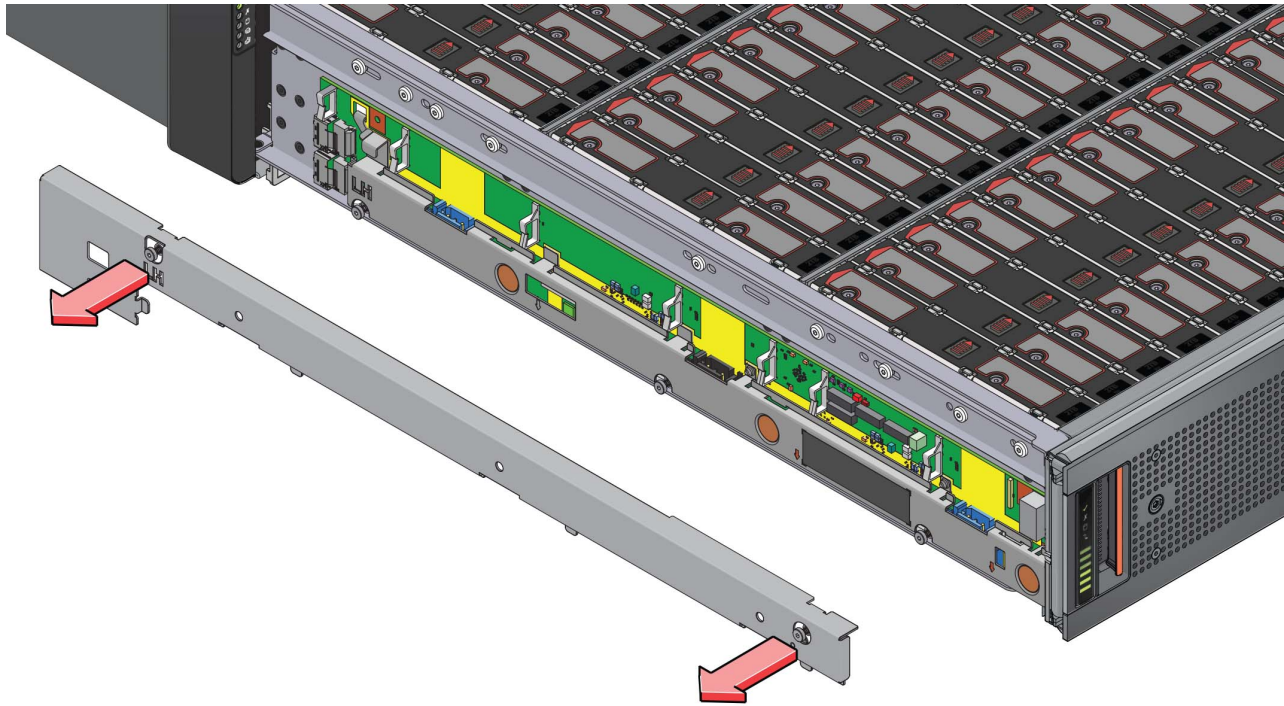


Figure 4. Removing the top cover

2. Wait for the green '12V Power' LED to go out and the yellow 'Power Disabled' LED to be lit. See the following figures.

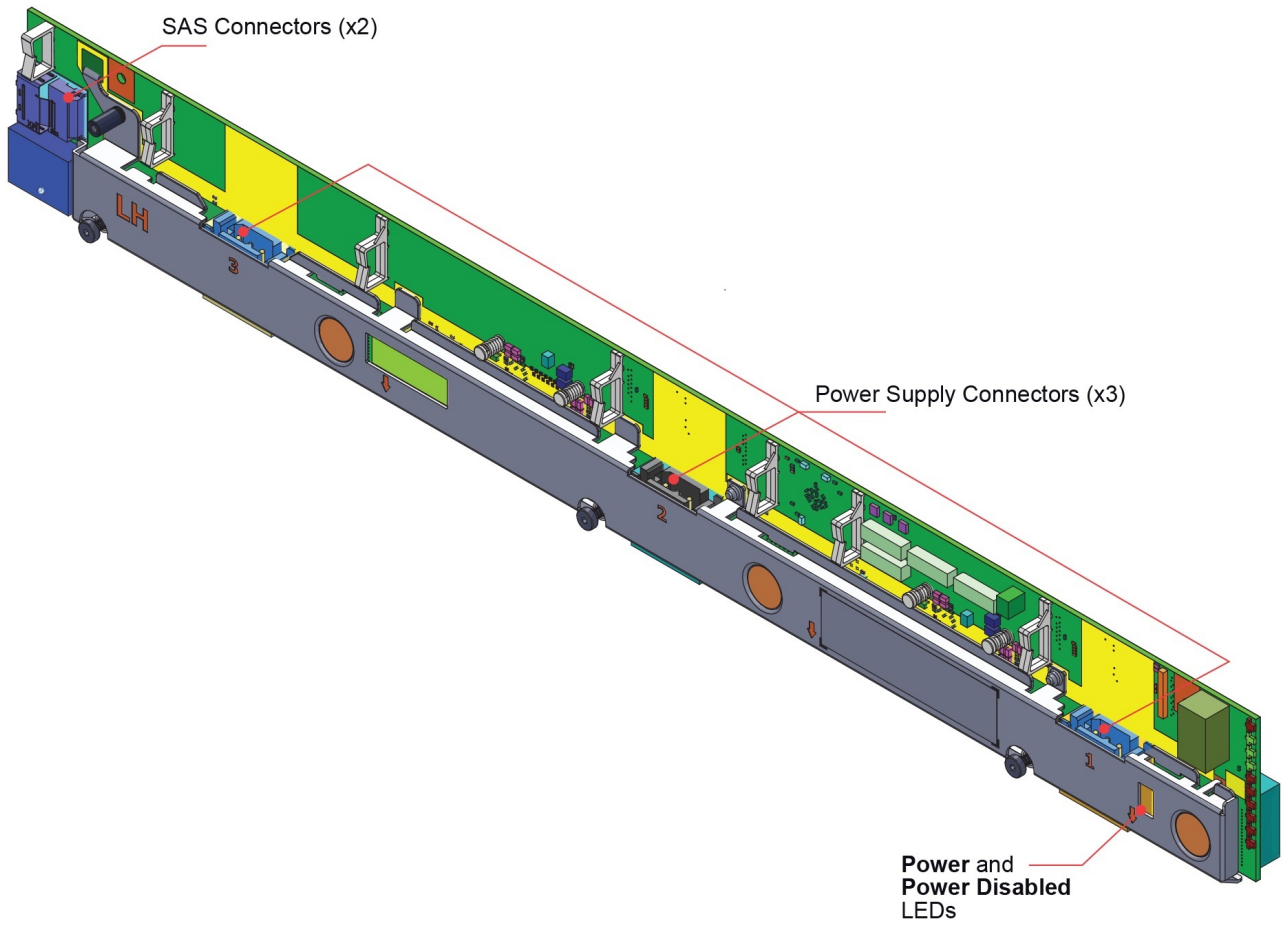


Figure 5. Lower cover and card

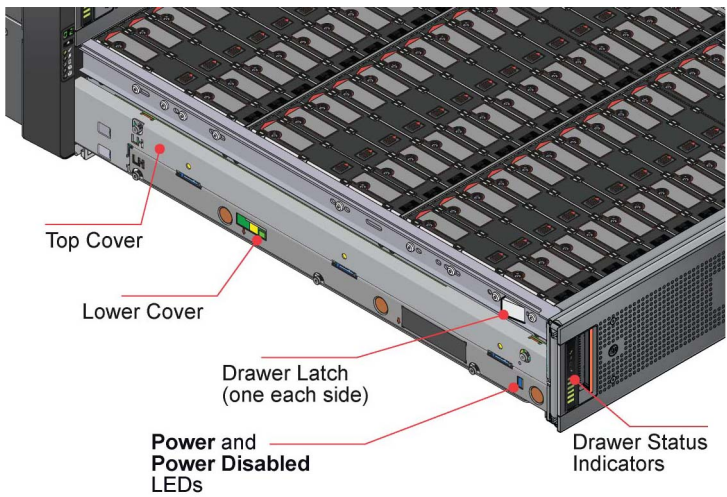


Figure 6. Components

3. Unclip the three power cables, allowing the cables to hang down at the rear of the drawer.
4. Unclip the SAS connectors at the rear of the side card.
5. Loosen the three captive screws fully, retaining the lower cover.
6. Use the removal tool (included in this FRU kit) to lever the side card from the drawer at highlighted locations. See the following figure.

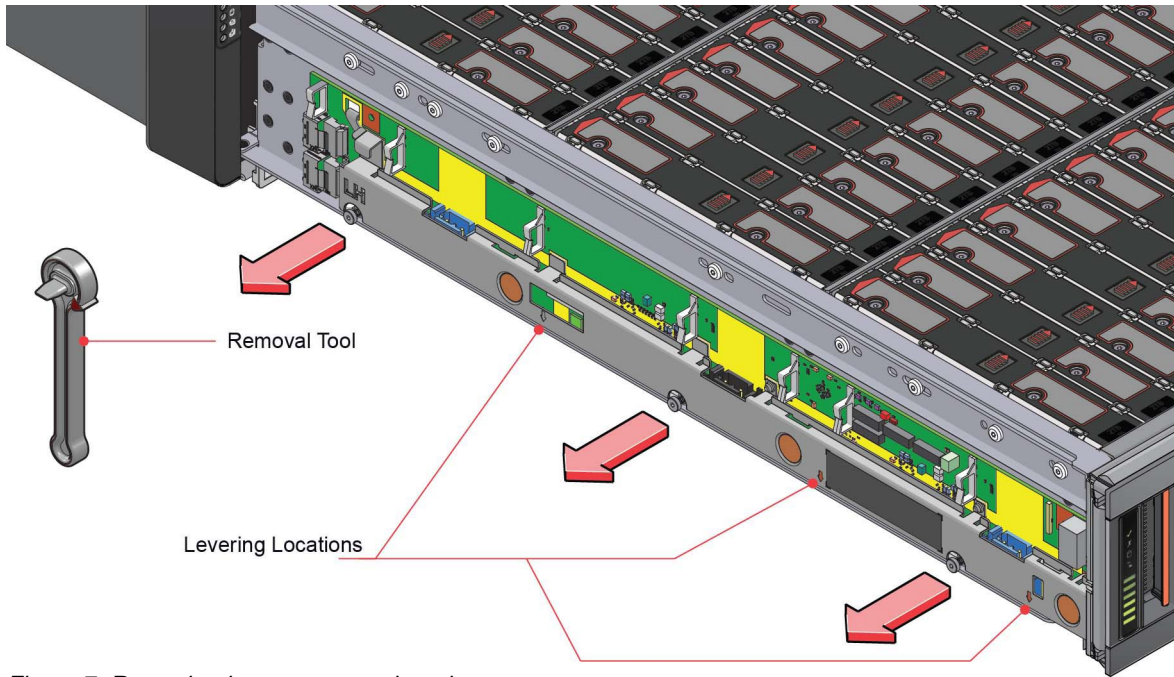


Figure 7. Removing lower cover and card

Replacing the Side Card

This topic describes the procedure of fixing the new side card.

1. Locate the side card assembly in position over the mating half connectors and apply pressure on the pressure application points until the connectors are fully mated.

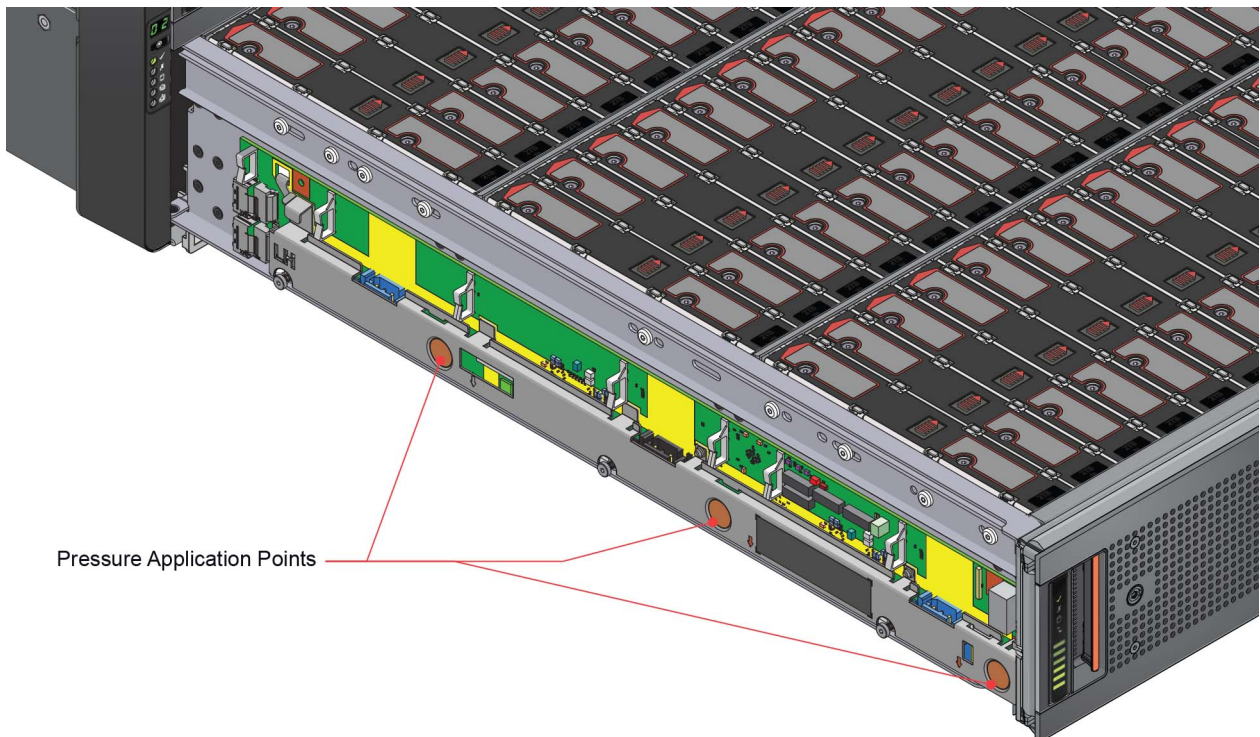


Figure 8. Replacing lower cover and card

2. Connect the SAS connectors on the side card (observing the connector keying)
3. Tighten the three captive screws fully.
4. Attach the power cables.

Important: To avoid excessive tension on the cables and that the covers sit correctly, see the cabling positions.

5. Position the rear tab of the top cover into the slot on the lower cover.
6. Rotate the top cover down, fitting each of the three tabs into the corresponding slots on the lower cover. See the following figure.

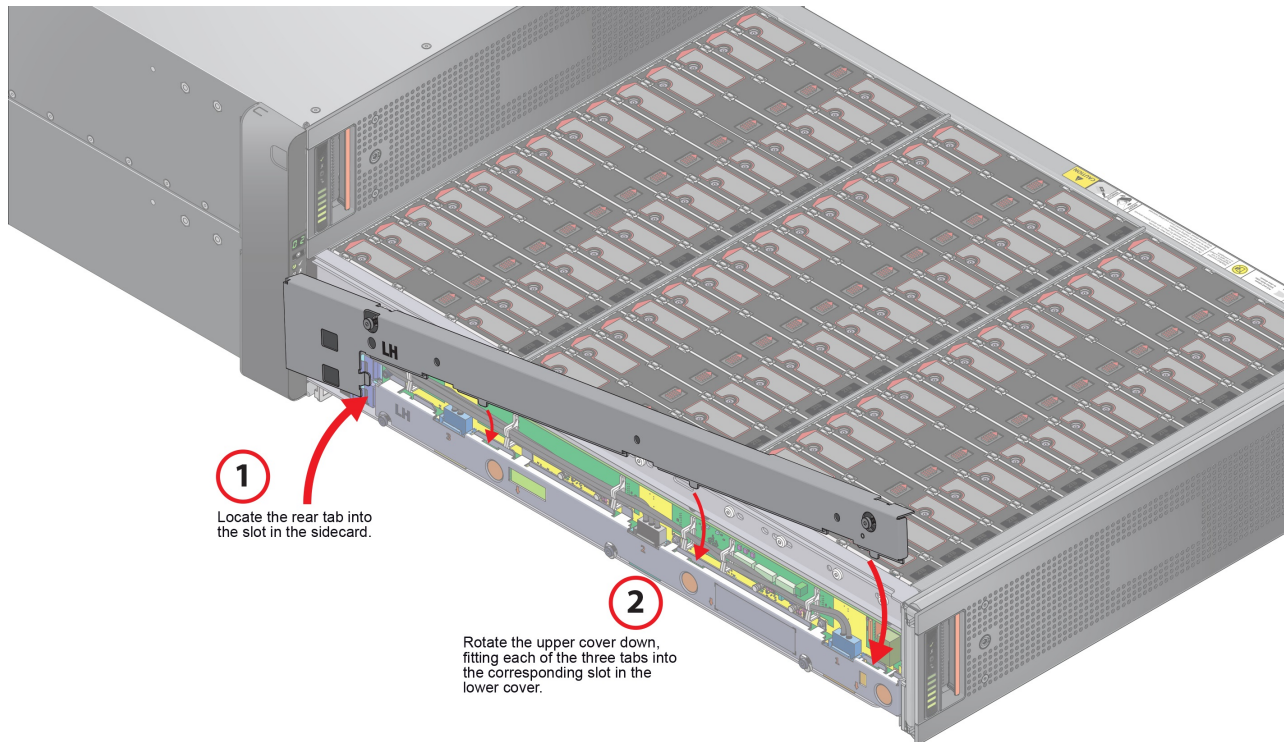


Figure 9. Replacing the top cover

7. Fasten the front mounting screw on the top cover first. Finally, fasten rear screw fully.
8. Wait for the yellow 'Power Disabled' LED to go out and the green '12V Power' LED to be lit.

Closing the drawer

This topic describes the procedure of closing the drawer after the side card is replaced.

1. Press and hold both of the black latches on the sides of the drawer.
2. Push the drawer in slightly.
3. Release the latches.
4. Push the drawer all the way back into the enclosure, ensuring that the drawer clicks home.

After you close the drawer, complete the following steps to ensure that the installation is successful.

1. Check the sideplane LEDs on the front panel. The green Power LED must be illuminated and amber LEDs must not be illuminated.
2. Update the sideplane firmware elements to match the versions in the remainder of the enclosure.

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