IBM TS4500
Lx5 Base Frame Installation Roadmap
PN 12X4571 EC M11837

TS4500 Lx5 Base Frame Installation

SC27-5987-00

Contents

Figures

IBM TS4500 Lx5 base frame installation roadmap

Written by: D. Hartle-Schutte
Checked/Modeled by: S. Nave, S Lehmann, F. Medrano
Approved by: S. Nunn
S.P. Reviewed by: S. Latham
Status: Field Use

Note: This Field Feature Bill of Material (FFBM) must be installed only on the 3584 model for which it was shipped.

12X4571	EC M11837			

Before installation

Using barcode scanner for inventory

Note: If you are going to use Remote Customer System Inventory (RCSI), use the provided barcode label process for proper component tracking, before starting this install.
The RCSI application automates the inventory checking tasks prior to installing a system or MES. The IBM Service Representative will install the application on their laptop, download the packing list of parts to the laptop using the RCSI application, then use a bar code scanner to scan the parts shipped. The application will process the scanned parts and let the service representative know if there are any missing parts or extra parts. This process allows the service representative to ensure that they received all parts required to install an IBM system or MES.

- You can find the RCSI application guides and resources at: http://w3.rchland.ibm.com/~cuii/CustomizableContent/rcsi.htm

Check the RMSS PFE Communications website for the TS4500 tape library(https://snjlnt02.tucson.ibm.com/tape/tapetec.nsf/pages/TS4500) for the latest code levels, IIs, fix levels (if required), and vtd_exec's that must be applied.

Download the latest version of the library and drive code images to the SSR laptop. These will be used for code updates to the library during the installation process. Bring an Ethernet cable (5 ft. or longer) to the installation.

1.0 Machines affected

This document affects all 3584 TS4500 Lx5 frames. L25 frames support 3592 EH7 drives and associated media, while L55 frames support LTO 5 and LTO 6 (3588 F5C and 3588 F6C) drives and associated media.

For more information on supported LTO and 3592 media, refer to the IBM® TS4500 Service Information Center or IBM TS4500 Customer Information Center in the **Supported tape cartridges** page in the **Overview** section.

2.0 Prerequisites / concurrent / companion

Prerequisites

A combination of up to three total additional TS4500 Dx5 and/or Sx5 expansion frames can be installed with the Lx5 base frame. Those expansion frames are installed after the Lx5 base frame is installed, but all frames should be moved to the installation location and unpacked at the same time. Refer to the installation instructions shipped with those frames.

Note: Some customer sites require unpacking in a location that is separate from the actual installation. In these situations, complete minimal unpacking in first location, and do not remove any shipping tie downs until the frame is in the final installation location.

Concurrent

Expansion frames can be installed either to the right or the left of the Lx5 base frame in a TS4500 library. Future expansion options must be considered when installing the initial Lx5 base frame.

All Lx5 frames will be shipped with side doors, side panels, and associated hardware already installed. These components will need to be removed from the base frame and installed on the expansion frames when expansion frames are added.

Attention: The TS4500 integrated management console (IMC) side panel must be mounted on a frame that contains library controller card (LCC) or is adjacent to a frame that contains an LCC. An LCC is included with every Lx5 frame and on D frames with feature code 1450 (TS4500 FCA) installed. The IMC PDU must be mounted in the frame with the LCC. **If the IMC PDU is moved out of the Lx5 frame, the power cord that was connected to the IMC PDU input connector must be connected directly to the card cage power supply to provide redundant power.**

Companion

- The optional 3584 TR1 top rack is a separate installation that can be completed at any point after the Lx5 frame is leveled, or after the Lx5 installation is totally complete. Since the library is not powered down for the TR1 installation, it is a non disruptive procedure. Follow the installation instructions shipped with the top rack.

- Optional feature code FC 1951, two power distribution units, can also be completed at any point after the Lx5 frame is leveled, or after the Lx5 installation is totally complete.
- Optional feature code FC 1909, single power source bifurcated cable is installed during the "Attaching power to the TS4500 tape library" procedure.

Preparing for installation

A successful installation of the TS4500 tape library requires careful planning and preparation. This preparation includes planning for any future expansion of the library.

It is the customer's responsibility to have the installation site prepared to meet or exceed the requirements provided in the *IBM TS4500 Introduction and Planning Guide*. This information is also available for reference in the **Planning** section of the IBM TS4500 Service Information Center and IBM TS4500 Customer Information Center.

The customer must provide the SSR with a listing of the values to enter in the network setup for the library IP address, subnet mask, and gateway. Use the worksheet attached at the end of this guide.

Be familiar with all appropriate safety procedures. Refer to "Safety notices" on page 4.

Carefully review all installation instructions before you start the installation.

If you have a quality problem with this installation, call the Quality Hotline (see "Quality Hotline" on page 51).

Time required to install

Installation time for the TS4500 tape library depends upon the number of frames that are installed. Use these time estimates to plan the installation time.

Plan the installation time to allow 4.3 hours for an Lx5 frame and 4.0 hours for each additional Dx5 or Sx5 frame. Actual hardware installation time is typically about 2.1 hours for an Lx5 frame and 2 hours for each additional Dx5 or Sx5 frame. Be sure to report preinstallation planning time as PLAN/INSTL/RR code 1, and actual hardware installation time as PLAN/INSTL/RR code 2.

Installation reporting and call reporting must be completed for each library frame. The 3592 and 3588 (LTO) drives are machine types, not features, which must be written off against each drive's serial number.

Preinstallation planning

Ensure that the customer has completed all preinstallation planning tasks before starting to install the TS4500 tape library.

See the *IBM TS4500 Introduction and Planning Guide* for complete installation planning information.

Attention: This product may not be certified in your country for connection by any means whatsoever to interfaces of public telecommunications networks. Further certification may be required by law prior to making any such connection. Contact an IBM representative or reseller for any questions.

Configurations of the TS4500 tape library can include as many as four frames. When you are planning for installation, consider the possibility of adding more frames in the future. Complete a library configuration plan to define the frame layout before you start the installation. The Lx5 base frame can be located at any position within the string, with a total of three Dx5 and/or Sx5 expansion frames in the library. The library has side doors on the first and last frames of the string. Plan for enough space at either end of the library string to allow access through these doors.

Attention: With the initial release, a combined total of three expansion frames can be added on either side of the base frame. Confirm that the customer has planned for potential future expansion options when installing the base frame. There must be a minimum of three feet clearance on the end of the library string where the IMC is installed.

Door keys are shipped with each frame. The key with the round opening is the customer key for the front door. The key with the square opening is the SSR key for the rear door.

The TS4500 tape library requires at least one cleaning cartridge and one SSR diagnostic cartridge to be installed within the library subsystem. These cartridges are shipped with the 3584 Lx5 base frame. Different diagnostic and cleaning cartridges are required for the LTO and 3592 drives. For more details on the drives and cartridges, see the **Supported tape drives** and **Supported tape cartridges** pages under **Overview** in either the IBM TS4500 Customer Information Center or the IBM TS4500 Service Information Center.

The diagnostic cartridge and cleaning cartridges are scanned during the library inventory, and can be stored in any Tier 0 slot of any frame.

Safety notices

Observe the safety notices when using this product. These safety notices contain danger and caution notices. These notices are sometimes accompanied by symbols that represent the severity of the safety condition.

Most danger or caution notices contain a reference number (Dxxx or Cxxx). Use the reference number to check the translation in the *IBM Systems Safety Notices*, G229-9054 manual. This manual is on the publications CD-ROM that is shipped with the product.

The sections that follow define each type of safety notice and give examples.

Danger notice

A danger notice is a special note in the text that calls attention to a situation that is potentially lethal or extremely hazardous to people. A sample danger notice follows:

DANGER

An electrical outlet that is not correctly wired could place hazardous voltage on 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. (D004)

Caution notice

A caution notice is a special note in the text that calls attention to a situation that is potentially hazardous to people because of some existing condition, or to a potentially dangerous situation that might develop because of some unsafe practice. A caution notice can be accompanied by one of several symbols:

If the symbol is...	It means...
	A generally hazardous condition not represented by other safety symbols.
	A hazardous condition due to mechanical movement in or around the product.
	This part or unit is heavy, with a weight greater than 18 kg (39.7 lb). Use care when lifting, removing, or installing this part or unit. (*C008*)

Sample caution notices follow:

CAUTION:
The battery is a lithium ion battery. To avoid possible explosion, do not burn. (C007)

CAUTION:
The system contains circuit cards, assemblies, or both that contain lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the circuit card as instructed by local regulations. (C014)

Attention notices

Attention: Do not connect an IBM control unit directly to a public optical network. The customer must use an additional connectivity device between an IBM control unit optical adapter (that is, fiber, ESCON®, FICON®) and an external public network. Use a device such as a patch panel, a router, or a switch. You do not need an additional connectivity device for optical fibre connectivity that does not pass through a public network.

Branch circuit CB switched off check

Complete these steps to verify the customer's power receptacle used to provide power to the TS4500 frame.

Before you begin

Attention: Follow local regulations for performing safety checks on customer circuits and outlets. In some locations, only licensed electricians are permitted to conduct these tests.

DANGER

Each frame must be protected by a circuit breaker (CB) of the proper rating at the service rail (customer outlet).

Procedure

__ 1. Have the customer locate and switch off the circuit breaker (CB) for each branch circuit that supplies voltage to a 3584 power cord.

__ 2. Perform one of the following for each receptacle:

Attention: There are two power cords for each L model frame and for each D or S model frame that is equipped with a power feature.

a. A metal clad connector is not an approved connector to use on this product. If a metal clad connector is used, perform the "Safe-to-Handle Check" and the "Disconnect Precautions" procedures in "Miscellaneous Safety Tips" of the *Electrical Safety for IBM Customer Engineers*

b. If the power cord has an insulated plug, grip the plug without touching any metal parts, and remove the plug from the customer power receptacle.

__ 3. Perform the "Power Receptacle Safety Check" in *Electrical Safety for IBM Customer Engineers*, S229-8124.

DANGER

If the receptacle has a metal shell, do not touch the shell until you have completed the voltage and grounding checks. Improper wiring or grounding could place dangerous voltage on the metal shell. If any of the conditions are not as described, *STOP***. Ensure the improper voltage or impedance conditions are corrected before proceeding. (D003)**

__ 4. Measure the phase-to-ground voltage at each receptacle. If a neutral is present, measure the phase-to-neutral voltage, phase-to-ground voltage, and the neutral-to-ground voltage.

__ 5. If any voltage values are not less than 1.0 V ac, have an electrician check the circuit.

Branch circuit CB switched on check

Complete these steps to verify the customer's power receptacle used to provide power to the TS4500 frame.

Before you begin

Attention: Follow local regulations for performing safety checks on customer circuits and outlets. In some locations, only licensed electricians are permitted to conduct these tests.

DANGER

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. (D004)

DANGER

Hazardous voltages are present. Do not touch the internal parts (pins and sockets) of the outlet.

Procedure

1. Measure the phase-to-ground voltage at each receptacle. If a neutral is present, measure the phase-to-neutral voltage, phase-to-ground voltage, and the neutral-to-ground voltage. Record the voltages for future reference. You can use the log provided in Table 1.

Table 1. Voltage log

Date	Description of circuits checked	Voltage values	Comments	Name

2. Have the customer switch off the branch circuit CB before you connect the machine power cord to the customer's outlet.

TS4500 tape library installation overview

An IBM TS4500 tape library can consist of an Lx5 base frame and Dx5 and/or Sx5 expansion frames. Use this section to preview the major steps required to install a TS4500 tape library.

Use the major steps listed below as an overview to organize the library installation. Note that several of the steps only apply if you are installing multiple frames in the library. Complete the installation using the appropriate detailed instructions for each major step. Check off each step after you complete it.

DANGER

Refer to the Important Notice in the "Unpacking the TS4500 tape library" on page 10 section before you attempt to move any TS4500 tape library shipment.

Installation sequence overview

The topics below are arranged in the typical installation sequence. Use this listing to guide your library installation. Use the actual detailed installation instructions in the referenced sections to complete each task listed below. Depending on the library configuration and the features ordered, you may need to refer to additional documentation (such as Feature Code installation instructions), and then return to this installation roadmap to complete the library installation.

1. Unpack the Lx5 base frame. **(All installations.)**
2. If you are installing any expansion frames, unpack the first expansion frame, and repeat the procedure until all frames have been unpacked. **(Multi-frame installations only.)**
3. Physically install the Lx5 frame. **(All installations.)** These instructions are included in this document.
4. If you are installing any expansion frames, use the printed installation instructions shipped with the expansion frame to install each expansion frame. **(Multi-frame installations only.)**
   - If you are installing a Dx5, refer to **PN 12X4572** *Installing a Drive Expansion Frame (Dx5)*.
   - If you are installing an Sx5 expansion frame, refer to **PN 12X4573** *Installing a Storage Expansion Frame (Sx5)*.
5. If you have installed multiple frames, verify that you have connected the cables between the LFI cards in each of the frames. This procedure is covered in the installation instructions for the expansion frames. **(Multi-frame installations only.)**
6. If you have removed any doors or side panels for a single frame library, go to "Installing side doors and side panels" on page 23 to install them on the library. If you are installing a multi-frame library, these steps are covered in the expansion frame installation instructions. The customer Ethernet cable for Call Home must be connected to the IMC TinyPC before the IMC side panel is installed on the library. **(All installations.)**
7. Install the IMC monitor on the IMC side panel. If you are adding expansion frames or moving the IMC side panel, complete those tasks first. **(All installations.)**
8. Go to "Installing tape drives" on page 34 to verify that all ordered drives are installed. **(All installations.)**

9. Complete “Connecting the library to the customer network” on page 35. **(All installations.)**
10. Connect power cords to the library, following the steps in “Attaching power to the TS4500 tape library” on page 38. **(All installations.)** Instructions for connecting power cords to expansion frames are included in the expansion frame installation instructions.
11. Power on the library. **(All installations.)**
12. Update the library to the latest level of code using the SSR laptop by following the instructions in “Update library code before initial setup” on page 44. **(All installations.)**
13. Complete the initial setup of the library, following the steps in “Completing the library initial setup” on page 45. **(All installations.)**
14. Enable remote support by completing “Enabling remote support (Call Home)” on page 49 **(All installations.)**
15. Complete the steps in “Verifying the installation” on page 51. **(All installations.)**

Unpacking the TS4500 tape library

Use these instructions to safely position, move, and unpack the TS4500 tape library.

Before you begin

Important Notice about IBM, Customer, and Shipper Responsibilities When Moving Large, Heavy IBM Systems

IBM and IBM Business Partner sales representatives must ensure that customers are aware of who is responsible for moving large IBM systems at customer locations. Read the following notice:

Attention - Delivery And Subsequent Transportation Of The Equipment

Only professional movers/riggers are qualified to transport the equipment. The customer must prepare the environment to accept the new product, using the installation planning information that is provided, with assistance from an IBM Installation Planning Representative (IPR) or IBM authorized service provider. In anticipation of the equipment delivery, the final installation site must be prepared in advance such that professional movers/riggers can transport the equipment to the final installation site within the computer room. If it is not possible at the time of delivery, the customer must make arrangements to have professional movers/riggers return to finish the transportation. The customer is also responsible for using professional movers/riggers in the case of equipment relocation or disposal. The IBM authorized service provider can do only minimal frame repositioning within the computer room, as required to complete service actions.

Figure 1. Library Frame Warning Label

Note: Complete unpacking instructions are not included here. For complete instructions, see the unpacking instructions for each TS4500 frame.

Some parts that you need are packaged in the packing material and are labeled. When you unpack the frames and remove the packing material, do not lose or misplace any enclosed parts.

Attention: Each library frame carton has a tilt indicator on the side. If the box was tilted or laid on its side, the tilt indicator is red. If the indicator is red, complete the following steps:

- Unpack the shipment.
- Check for visible damage.
- If undamaged, install the product and open a PMH for tracking any problems.
- If damage is visible, contact the carrier immediately.

DANGER

If a TR1 top rack is installed on top of any 3584 frame, the 3584 frame cannot be moved without first removing the TR1 top rack frame and any attached equipment. The additional weight on top creates a tipping hazard for the frame. Alternatively, professional movers can transport the frame within the same room. To move a frame with a top rack attached to a different room, building, or site, the top rack must always be removed first, even when professional movers are doing the transport.

About this task

Refer to Figure 2 on page 12 as you unpack the library.

Procedure

__ 1. Remove the shipping carton from the base frame.

__ 2. Remove the Lx5 frame shipping braces and packing materials, following the unpacking instructions included in the shipping carton.

Attention: If you are unpacking the frame in a location other than the final installation location, do not cut any ties or remove the x-axis shipping pin until the frame is in the actual installation location. Complete steps 1 and 2 in the unpacking location. Complete the remaining steps in the installation location.

__ 3. Remove any parts that are packed in the base frame shipping carton.

__ 4. Locate and remove the set of keys that are taped to the door handle.

__ 5. Open the front door **2** .

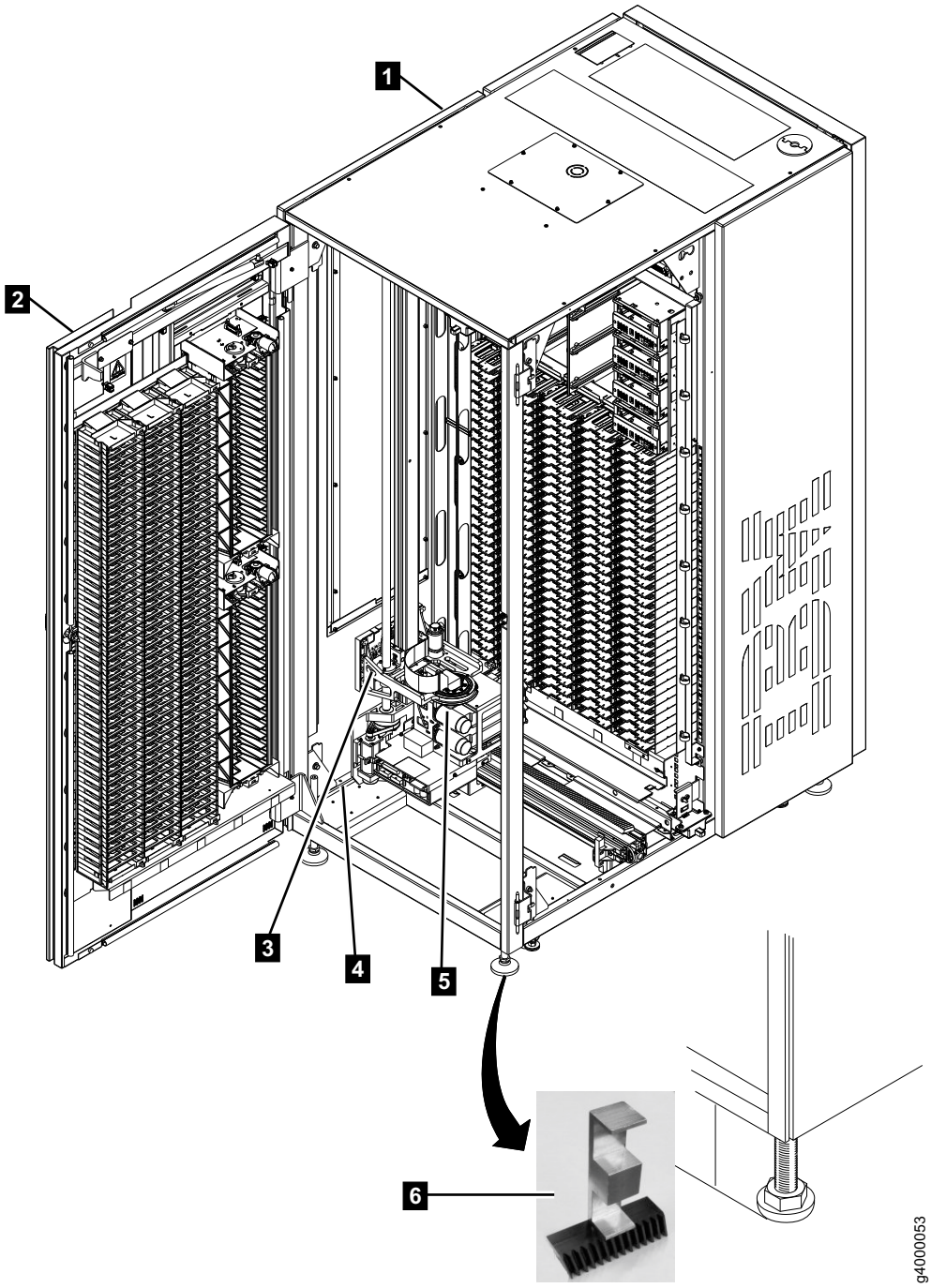


Figure 2. Lx5 base frame

__ 6. Refer to the unpacking instructions and remove the packing material and tie wraps from the accessor and y-axis assembly. Remove the plastic film from the side door windows.

__ 7. Remove the x-axis shipping pin from the lower left side of the x-axis assembly.

Note: Store the shipping pin in the hole **4** in the frame (not the hole that is used to secure the x-axis assembly for shipping). The pin and cable must remain in the base frame. Ensure that the shipping pin cable is positioned so that it does not interfere with the accessor movement.

__ 8. Move the accessor **5** vertically and horizontally to ensure that all packing material was removed and that it moves freely without binding.

Attention: When you move the picker assembly **3** vertically, lift the picker assembly from underneath the ACC. To avoid damaging the gripper/pivot assembly, do not lift the picker assembly by the gripper.

__ 9. If you are not unpacking any expansion base frames, go to step 15.

__ 10. Remove the shipping carton from the expansion frame.

__ 11. Remove the parts that are packed in the expansion frame shipping carton.

__ 12. Remove the shipping braces and packing materials from the expansion frame, following the unpacking instructions.

__ 13. Remove the plastic film from the window at the top inside of the frame.

__ 14. If you have more expansion frames to unpack, repeat steps 10 through 13 for each frame.

__ 15. Check the ship group. Refer to your ship group documentation (the packing list) and verify that all listed parts and supplies are included and are not damaged. If parts are missing or damaged, refer to "Quality Hotline" on page 51.

__ 16. To install a base frame, go to "Installing the base frame (Lx5)" on page 14.

Installing the base frame (Lx5)

Use these instructions to install the TS4500 Lx5 base frame.

About this task

Attention:

Before starting the installation, see the **Attention - Delivery And Subsequent Transportation Of The Equipment** notice in "Unpacking the TS4500 tape library" on page 10 for information on moving library frames.

Complete the physical installation of the Lx5 base frame before installing any expansion frames.

Procedure

__ 1. If this is a raised floor environment and power cables will exit through the floor, ensure that there is a cutout in the floor for the power and communications cables. The cutout should be near the rear of the base frame, and must not be close enough to the leveling pads to allow a leveling pad to fall into the hole. If the customer plans to route the power cables out the top of the frame, see Figure 27 on page 43 in the "Attaching power to the TS4500 tape library" on page 38 section to plan for these connections.

__ 2. Move the base frame into position on the floor.

__ 3. If the frame was unpacked in a separate location and then moved to the installation location, finish the unpacking instructions, starting with step 3 in "Unpacking the TS4500 tape library" on page 10.

__ 4. Open the front and rear doors, and open or remove the side doors to improve access during the installation. To *temporarily* remove a side door, open it about 45 degrees, and then lift the door straight up off the hinge pins. The rear door can also be lifted off the hinges to provide better access.

Attention: If you are also installing expansion frames to either side of the base frame, the full instructions for removing the side door, door hinges, side door switch, and aisle side cables are included in the expansion frame installation instructions. Complete the physical installation of the Lx5 base frame before moving to those installation instructions.

__ 5. Remove both side panels, using the instructions below. Removing the non-IMC side panel is not required in all cases, but does provide easier access and visibility during the installation of the base frame. Refer to Figure 3 on page 15 for both procedures.

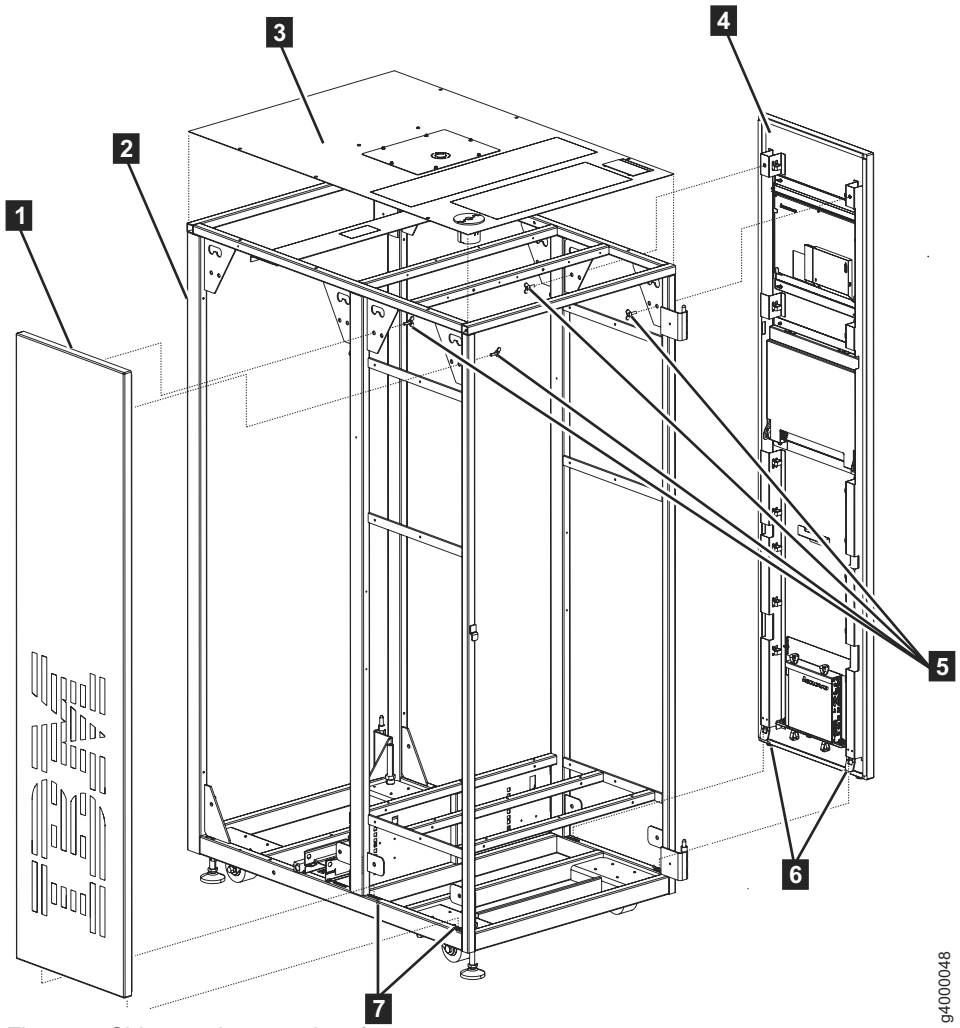


Figure 3. Side panels on an Lx5 frame

1 – non-IMC side panel (with or without IBM logo)
2 – library frame
3 – top of library frame (shown detached for clarity)
4 – side panel with IMC
5 – M6 x 20 wing screws (4)
6 – side panel tabs
7 – slots in frame

Removing the non-IMC side panel

__ 6. From the inside of the frame, locate and remove the two M6 x 20 wing screws (**1** in Figure 4 on page 16) that secure the side panel to the frame.

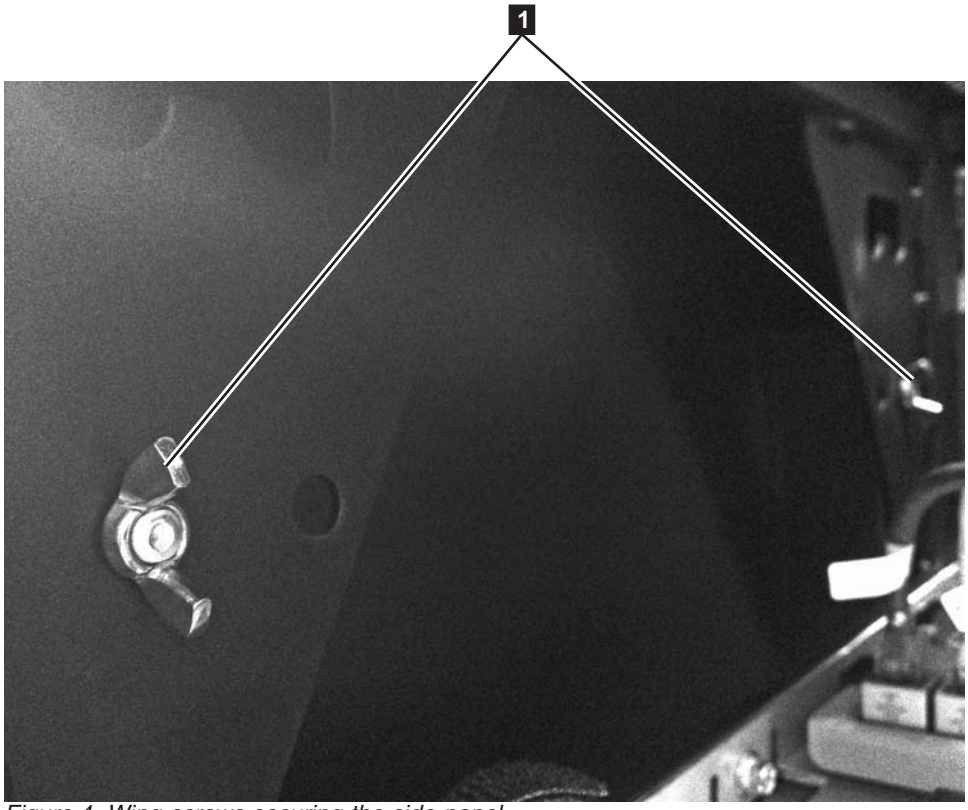


Figure 4. Wing screws securing the side panel

Note: The side panel tabs (**6** in Figure 3 on page 15) will keep the side panel upright against the frame. You do not need to hold the panel as you remove the wing screws.

__ 7. From the side of the frame, pull the top of the side panel out slightly and then grasp the edges of the side panel.

__ 8. While pressing in with your foot on the corner of the side panel towards the back of the frame, lift up on the side panel until the side panel tabs clear the slots in the frame.

__ 9. Set the side panel off to the side.

Removing the IMC side panel

Note:
If the IMC side panel will not be moved to another frame or to the other side of the base frame, you can leave all cables connected and just rotate the IMC side panel around 180° and lean it against the side of the frame. However, if this creates a tripping hazard, it is safer to completely remove the IMC side panel by disconnecting the power and Ethernet cables.

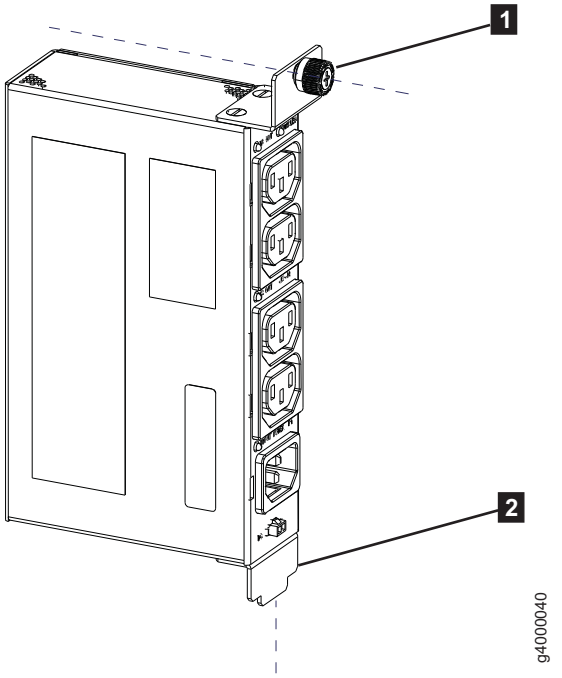
__ 10. Verify that the IMC keyboard is folded up (closed) into the side panel.

__ 11. Optionally, disconnect the two Ethernet cables connected to the TSSC and IMC ports on the LCC. Disconnect them if you will be moving the IMC side panel to a different frame or the other side of the base frame.

__ 12. Optionally, disconnect the power cords from the top two outlets on the IMC PDU that connect to the IMC monitor and the IMC Tiny PC. Disconnect them if you will be moving the IMC side panel to a different frame or the other side of the base frame.

__ 13. Optionally, from the back of the frame, move the IMC PDU to provide better access to the wing screw located behind the PDU.

__ a. Loosen the captive thumbscrew **1** at the top of the IMC PDU.



__ b. Tilt the IMC PDU to the left until there is enough clearance to view and reach the wing screw.

__ 14. Locate and remove the two M6 x 20 wing screws (**1** in Figure 5 on page 18) that secure the IMC side panel to the frame.

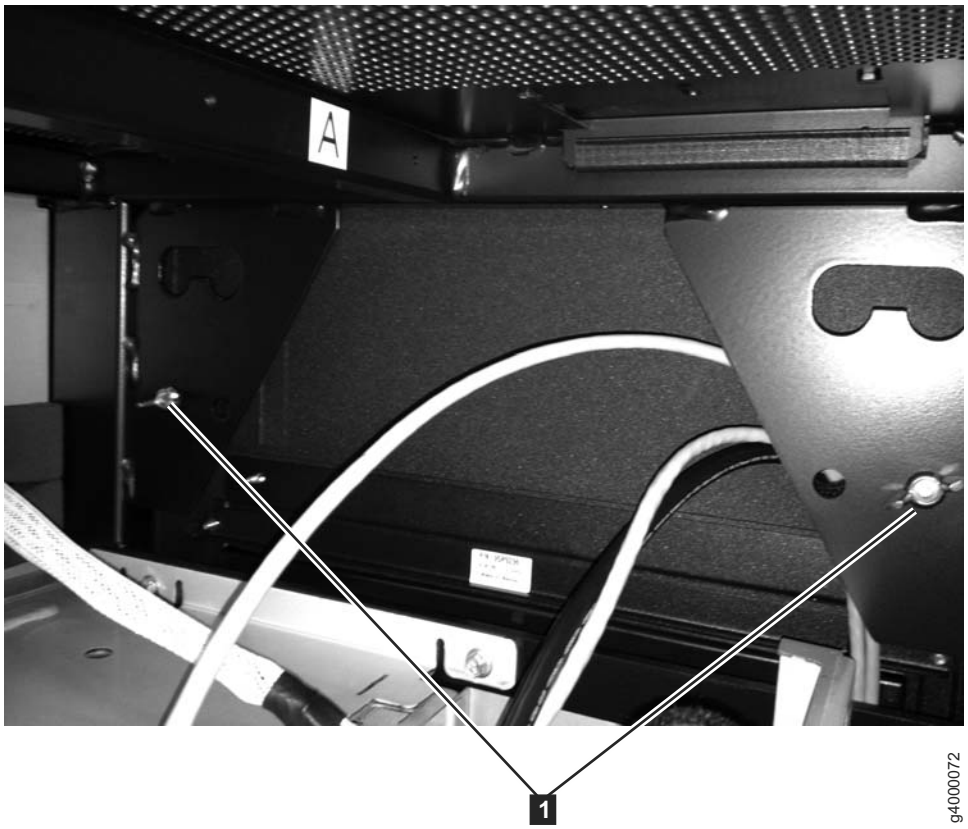


Figure 5. Wing screws securing the side panel

Note: The side panel tabs **6** will keep the side panel upright against the frame.

__ 15. From the side of the frame, pull the top of the IMC side panel out slightly and then grasp the edges of the side panel.

__ 16. While pressing in with your foot on the corner of the IMC side panel towards the back of the frame, lift up on the side panel until the side panel tabs clear the slots in the frame.

__ 17. If you have disconnnected the cables, set the IMC side panel off to the side. If you are leaving the cables connected, lean the IMC side panel against the frame, moving it out of the way as much as the cables will allow.

Continue installing the base frame

__ 18. Loosen the locknuts on the leveling pads and lower the leveling pads to the floor.

__ 19. Using the 5/16" hex bit (supplied with the base frame), adjust the leveling pads so that the clearance from the floor to the bottom of the frame is 115 mm (4.5 in.) ± 5 mm (0.2 in.) at all four corners of the base frame. The frame should be approximately level, and the casters must be off the floor. You can use the rack alignment tool P/N 50G0406 and the E-shaped tool PN 24R0183 **6** together as a floor-to-frame clearance gauge for the initial adjustment. The combined length of both tools is 115 mm (4.5 in.).

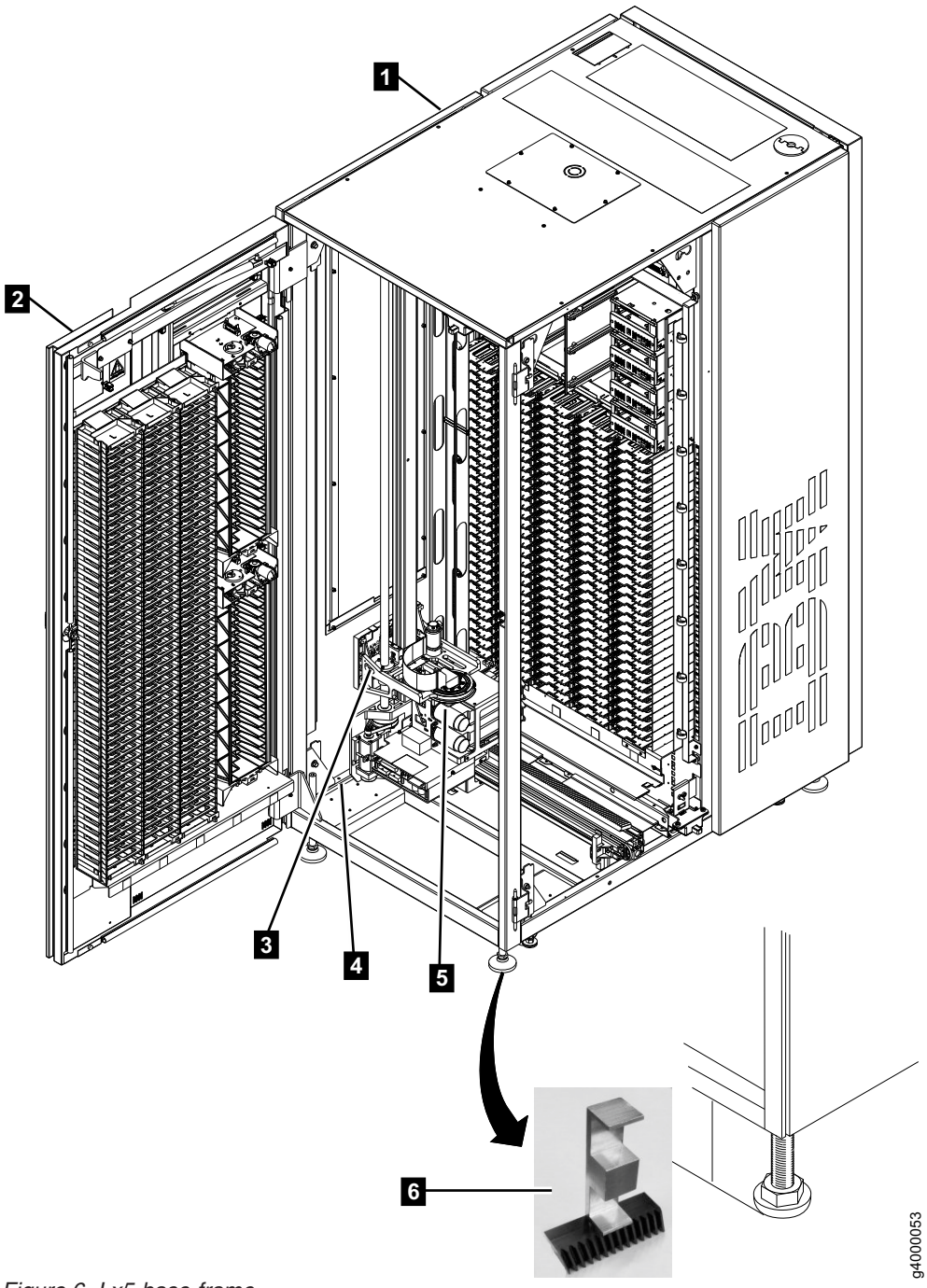


Figure 6. Lx5 base frame

Note: The 115 mm (4.5 in.) clearance may be needed to ensure that any variation in the level of the customer's floor will not affect the installation of the expansion frames.

Attention: Large circular carpet protector pads are included in the ship group. Do not use these in any installations other than in carpeted locations.

__ 20. Move the accessor assembly to the left side of the base frame. Inspect the grippers to ensure they are still fully-seated in their dual gripper housings.

__ 21. Verify that the blue interlock latches on both sides of both grippers are in the forward (locked) position, as shown in Figure 7 on page 20.

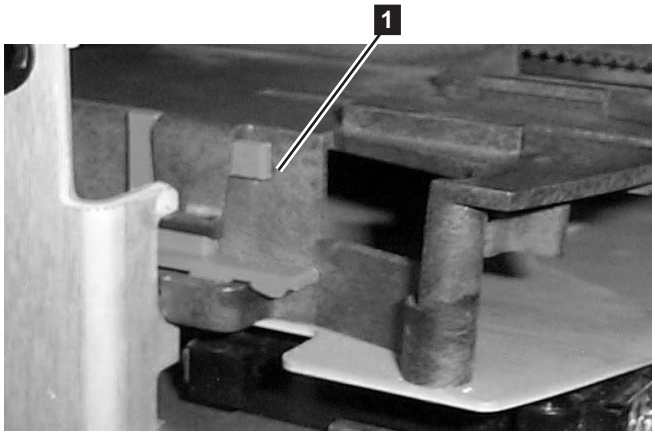


Figure 7. Gripper clips locked

__ 22. Refer to Figure 8 on page 21. Place the level **2** on the right side of the base frame. Ensure that the base frame is level from front to back.

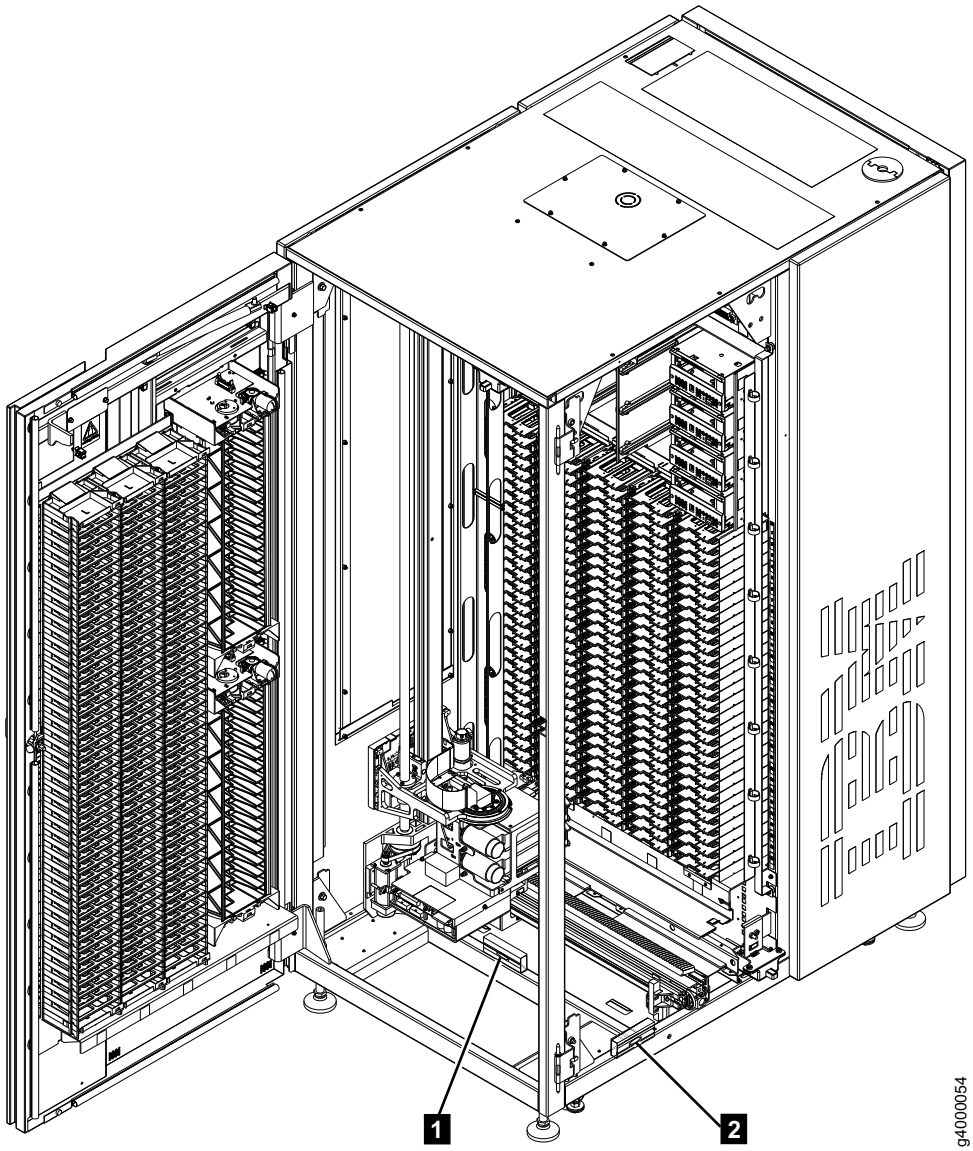


Figure 8. Leveling the base frame

The bubble should be centered between the two lines.

- If the bubble is too close to the rear of the frame, raise the front of the frame by turning both front leveling pads an equal number of turns.
- If the bubble is too close to the front of the frame, raise the rear of the frame by turning both rear leveling pads an equal number of turns.

  Note: If any leveling pad is off the floor, turn the pad jackscrew down to the floor and then turn ¼ turn more.

Refine the leveling adjustments until the bubble is centered between the two lines.

__ 23. Place the level **1** on one of the interior lower front frame member as shown below. **Do NOT place the level on the x-rail.** Ensure that the base frame is level (left to right). The bubble should be centered between the two lines. Refine the leveling adjustments until the bubble is centered between the two lines.

__ 24. Repeat steps 22 on page 20 and 23 on page 21 until the frame is level front to rear and left to right.

Attention: It is particularly important to level the Lx5 frame precisely if multiple frames are installed, or if there is potential for installing additional expansion frames in the future. Alignment of adjacent frames is dependent upon the leveling of the base frame.

__ 25. A tilted y-mast can cause calibration problems and barcode scan problems. Check to ensure the y-mast is vertical to the horizontal base. If it is not vertical, see Appendix A, "Aligning the y-axis mast assembly," on page 53. Complete the steps there, and then return here.

__ 26. With the front door closed, verify that the door roller is snug up against the front door latch. If it is not, continue to step 27. If it is snug, no adjustment is needed; skip to step 28.

__ 27. With the front door open, loosen the two bolts **1** on the frame door roller. Close and lock the front door. From inside the frame push the door roller up until it touches the bracket **2**, then tighten bolt **3**. Open the door and tighten both bolts **1** securely.

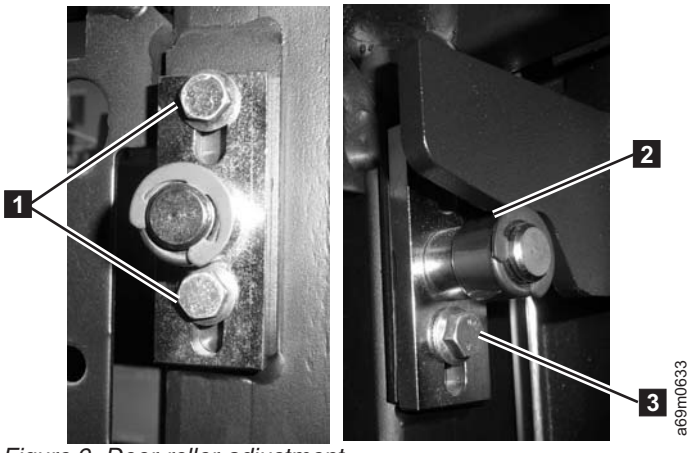


Figure 9. Door roller adjustment

__ 28. Install the diagnostic cartridge in one of the slots in the Lx5 frame door. The L25 cabinet will require a 3592 CE diagnostic cartridge, and the L55 cabinet will require an LTO CE diagnostic cartridge. The diagnostic cartridge and cleaning cartridges are scanned during the library inventory, and can be stored in any Tier 0 slot of any frame.

__ 29. If you are not adding an expansion frame (Dx5 or Sx5) at this time, tighten the locknuts on the base frame leveling pads, and then go to "Installing side doors and side panels" on page 23.

__ 30. If you are adding an expansion frame, go to the installation instructions shipped with that frame (*Installing a Drive Expansion Frame (Dx5)* or *Installing a Storage Expansion Frame (Sx5)*). When you have completed the physical installation of all expansion frames, return to this document to "Installing the IMC monitor" on page 29.

Installing side doors and side panels

Use these topics to reinstall side panels on the Lx5 frame. The base frame is shipped with the side panels installed. These parts are removed during the base frame installation process. In a multi-frame installation, use the procedures included in the expansion frame installation instructions to install the doors and side panels in new locations.

If this is a single frame library and you temporarily removed either side door, follow these steps to reinstall the door.

__ 1. Position the door upright over the lower hinge pin, with the door approximately half way open.

__ 2. Align the hole near the lower end of the side door frame over the lower hinge pin, and then allow it to slide down a short distance (approximately 5 mm).

__ 3. Align the hole near the upper end of the side door frame over the upper hinge pin and allow the door to slide down into place. The side door frame rests on the nylon washer only on the lower hinge bracket assembly. The door does not rest on the top hinge bracket assembly.

__ 4. Verify that the door closes and is aligned properly.

Installing the non-IMC side panel

Use these instructions to install the non-IMC side panel of the TS4500 library frame during an initial library installation of a single frame library. Use the procedures in the expansion frame installation instructions for multi-frame installations.

Before you begin

The Lx5 frame is shipped from manufacturing with the non-IMC side panel installed on the right side. Determine which side the customer wants the IMC installed, and install the non-IMC side panel on the opposite side.

About this task

The instructions for installing this side panel on the left or right end are identical, except where noted. Figure 10 on page 24 shows the non-IMC side panel in the standard configuration as viewed from the back of the frame.

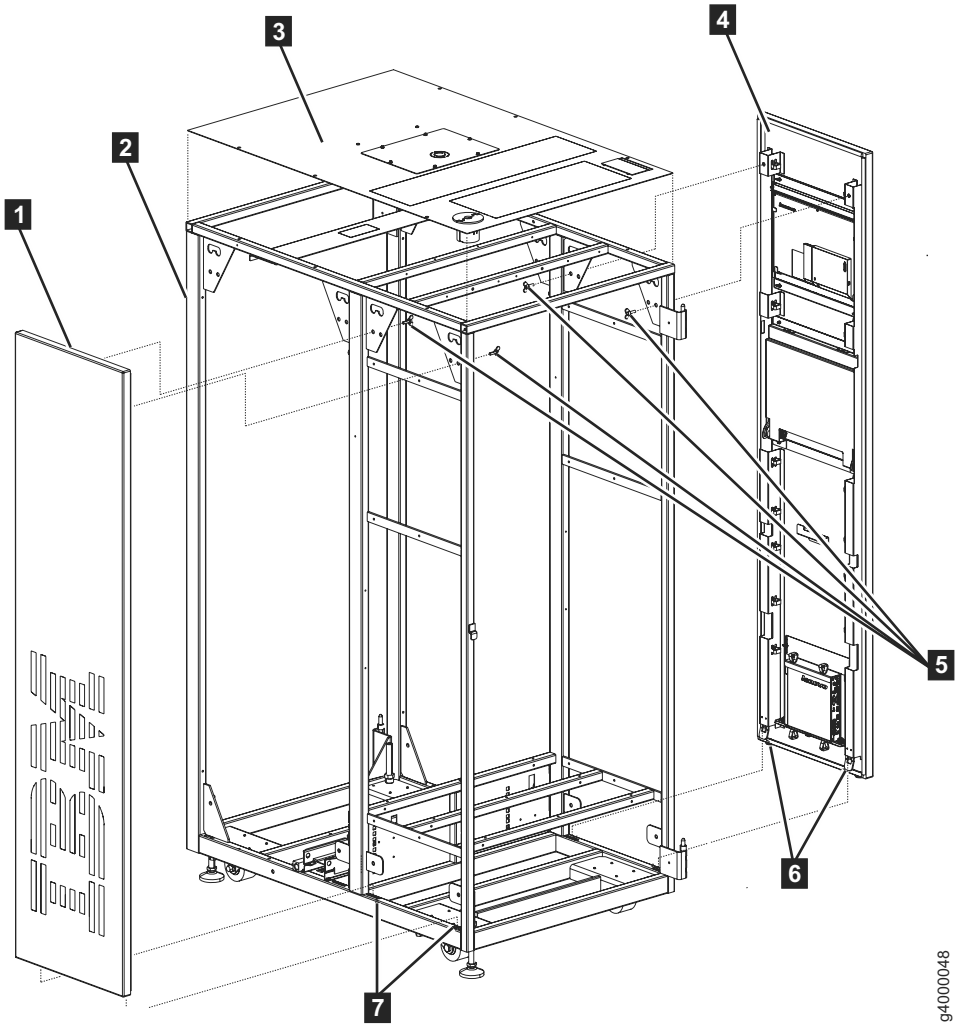


Figure 10. TS4500 side panels

1 – side panel without IMC
2 – library frame
3 – top of library frame (shown detached for clarity)
4 – side panel with IMC
5 – M6 x 20 wing screws (4)
6 – side panel tabs
7 – slots in frame

Procedure

__ 1. Hold the non-IMC side panel upright by the side edges, tilted slightly towards you.
__ 2. Loop any cables out of the way and into the top of the frame.
__ 3. Slide the side panel tabs **6** into the slots **7** in the frame and slide the side panel down (see Figure 10).

Note: The side panel tabs (**6** in Figure 10) will keep the side panel upright against the frame.

__ 4. From the back door opening, secure the side panel with two M6 x 20 wing screws **1** in Figure 11, making sure that cables are not pinched between the side panel and the frame. Wing screws are located in the same positions for the left and right panels. They attach through the outermost holes in the triangular corner braces. You may need a flashlight to visualize alignment, and may need to adjust the side panel slightly to align the holes.

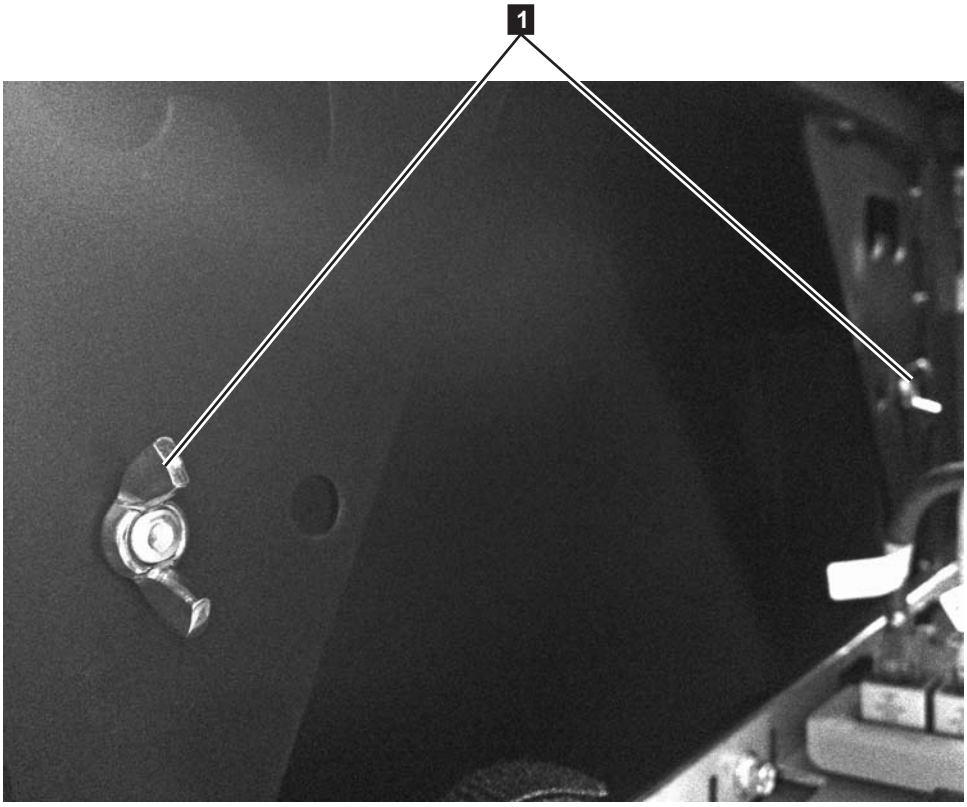


Figure 11. Wing screws securing the side panel

Installing the TS4500 IMC side panel

Use these instructions to install the Integrated Management Console (IMC) side panel during an initial library installation of a single frame library. Use the procedures in the expansion frame installation instructions for multi-frame installations.

Before you begin

The Lx5 frame is shipped from manufacturing with the IMC side panel installed on the left side. Determine which side the customer wants the IMC installed.

About this task

The instructions for installing the IMC on the left or right end are identical, except where noted. Figure 12 on page 26 shows the side panels in the standard configuration on an Lx5 frame as viewed from the back of the frame.

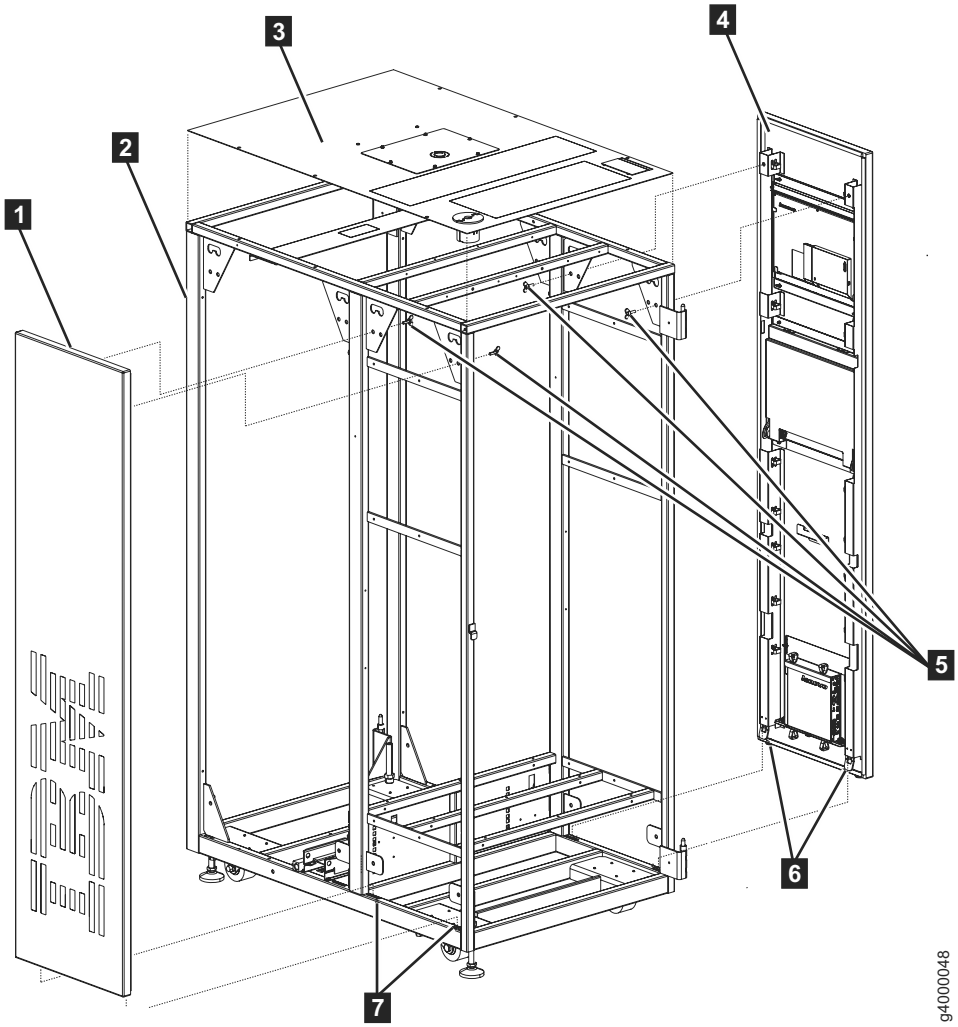


Figure 12. TS4500 side panels

1 – side panel without IMC
2 – library frame
3 – top of library frame (shown detached for clarity)
4 – side panel with IMC
5 – M6 x 20 wing screws (4)
6 – side panel tabs
7 – slots in frame

Procedure

__ 1. Verify that the IMC keyboard is folded up (closed) into the side panel.
__ 2. Position the IMC side panel next to the frame on the side that it will be installed.
__ 3. If you are moving the IMC side panel to the right side, extend the power cords and Ethernet cables by releasing about two feet of the excess stored within the panel. If you are reinstalling the IMC side panel on the left side, skip to step 4 on page 27.

__ a. Note the length of power cords and Ethernet cables extending from the top of the IMC side panel. Adding about two feet to the length, determine how far to extend the cables.

__ b. If necessary, loosen the hook and loop fasteners along both side rails of the IMC side panel.

__ c. Trace the cables back to the point where the excess length is coiled within the panel.

__ d. Carefully feed each cable through the hook and loop fasteners until there is enough total length extending from the top of the panel.

__ 4. If the customer is using the default broadband remote support (Call Home), locate the customer Ethernet cable that will provide Call Home connectivity.

Important: Access to the connector on the TinyPC is available only when the IMC side panel is removed. Be sure to attach it before reattaching the IMC side panel.

a. Route this Ethernet cable into the frame either down through the knockout in the back right corner of the top cover or up into the frame through the opening in the bottom of the frame.

b. Connect the cable to the top USB to Ethernet converter (dongle) that is plugged into the USB port on the top left side of the TinyPC.

__ 5. If you have kept the IMC side panel power cords and Ethernet cables connected to the base frame, skip to step 9. If you have disconnected the cables, continue to the next step.

__ 6. Connect the Ethernet cables from the IMC side panel to the connectors on the LCC card. Use the labels on the Ethernet cables to guide you. The cable from the lower USB to Ethernet adapter (left side when viewing the inside of the panel) connects to the **TSSC** port on the LCC card. The other Ethernet cable (right side, plugged directly into the Tiny PC) connects to the **IMC** port on the LCC card.

__ 7. Connect the two power cords from the monitor and the Tiny PC power supplies to the top two sockets in the IMC PDU.

__ 8. Secure the power cords and Ethernet cables along the top of the card cage, using hook and loop fasteners.

__ 9. Position the IMC side panel close to the side of the frame.

__ 10. Loop any cables out of the way and into the top of the frame.

__ 11. Tilt the top edge of the IMC side panel towards you.

__ 12. Lift the side panel and slide the side panel tabs **6** into the slots **7** in the frame and slide the side panel down (see Figure 12 on page 26).

__ 13. From the back door opening, secure the IMC side panel with two M6 x 20 wing screws **1** in Figure 13 on page 28, making sure that cables are not pinched between the side panel and the frame.

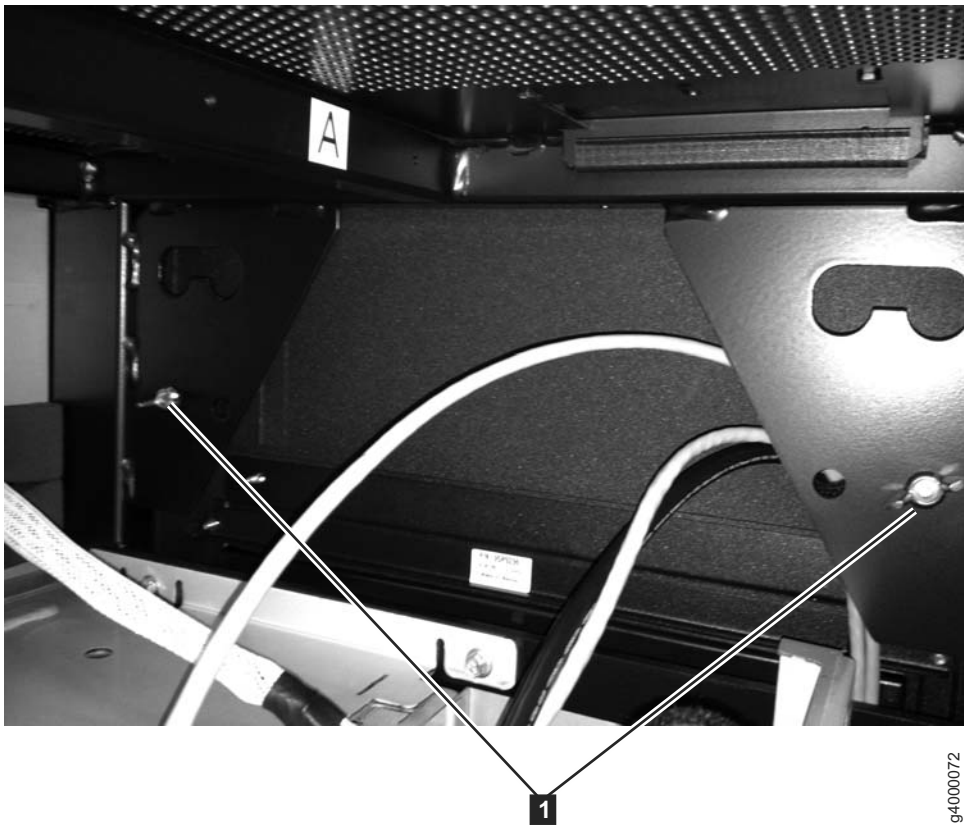
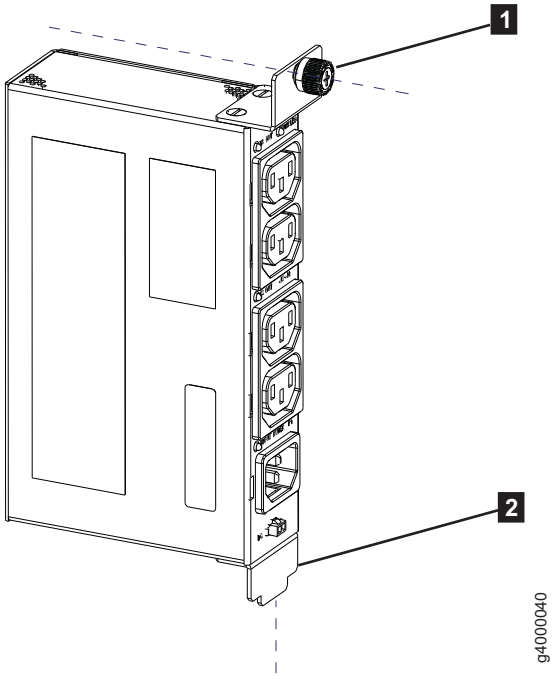


Figure 13. Wing screws securing the side panel

Note: The side panel tabs **6** will keep the side panel upright against the frame.

__ 14. Optionally, if the IMC PDU blocks your view and access, loosen the captive thumbscrew **1**, and tilt the PDU to the left until there is enough clearance to view and reach the hole for inserting the wing screw. Once the wing screw is secured, tilt the PDU back upright and tighten the captive thumbscrew.



Installing the IMC monitor

The Integrated Management Console (IMC) monitor is shipped detached from the IMC side panel. Use these instructions to install the monitor on the TS4500 library frame IMC side panel.

Before you begin

The IMC side panel is shipped attached to the left side of the Lx5 base frame, but without the monitor attached. When the full library is installed, the IMC side panel must be on either the right or the left end of the library string. To reduce the potential of damaging the IMC monitor, install the IMC side panel in the new location before installing the monitor.

In a single frame library, if the IMC side panel is being moved to the right side of the Lx5 base frame, move the IMC side panel before installing the monitor.

For a multi frame library with one or more expansion frames, complete the installation of the expansion frames, and then install the IMC side panel in the new location before attaching the monitor.

About this task

Complete these steps to install the IMC monitor on the IMC side panel. The IMC side panel is shipped with the monitor mounting bracket, monitor power supply, and VGA cable already installed on the side panel.

Procedure

__ 1. Refer to Figure 14 on page 30 to become familiar with the locations of the cables and mounting mechanism of the IMC side panel.

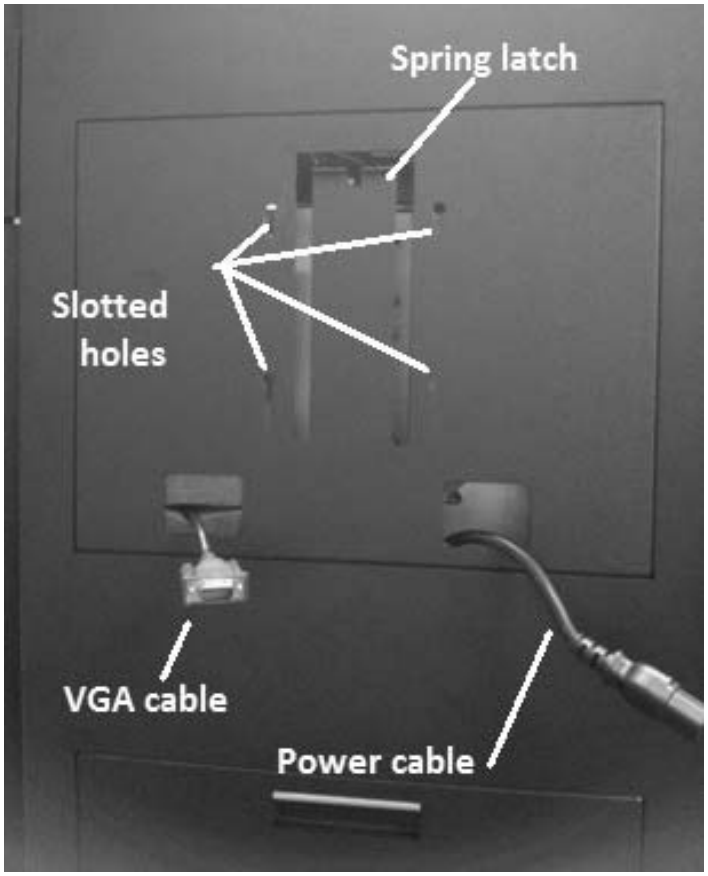


Figure 14. IMC side panel

__ 2. Refer to Figure 15 on page 31 to become familiar with the locations of the connectors and mounting pins on the back side of the IMC monitor.

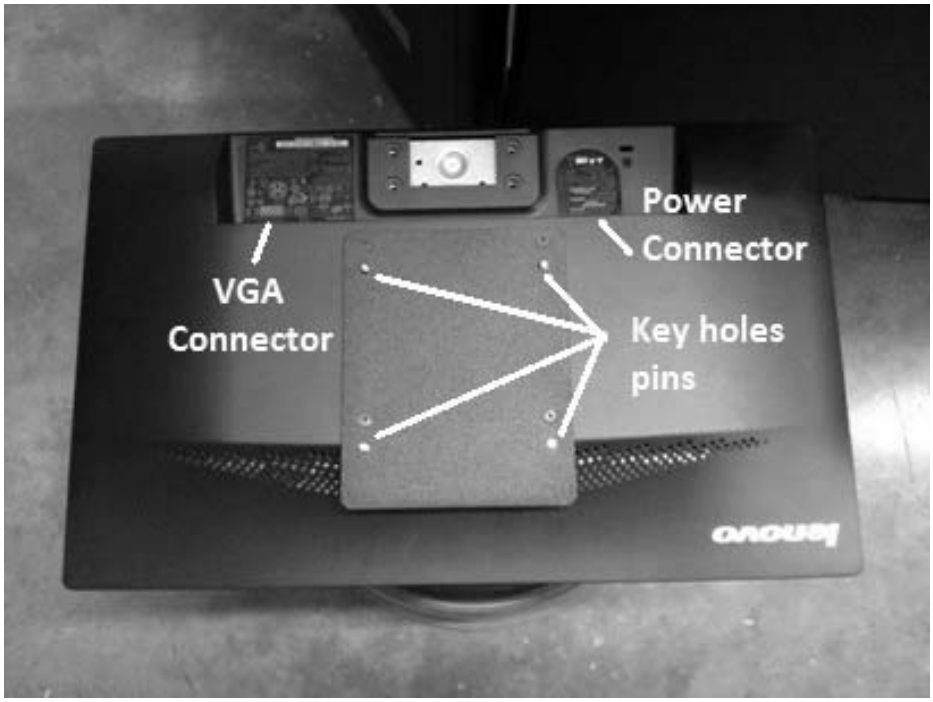


Figure 15. Back side of monitor

__ 3. Remove the monitor from the shipping carton.

__ 4. Carefully supporting the monitor with one arm, hold the monitor with the screen face down and the VGA and power connectors facing towards the IMC side panel as shown in Figure 16 on page 32.

Attention: Handle the monitor with care to avoid scratching the viewing screen.

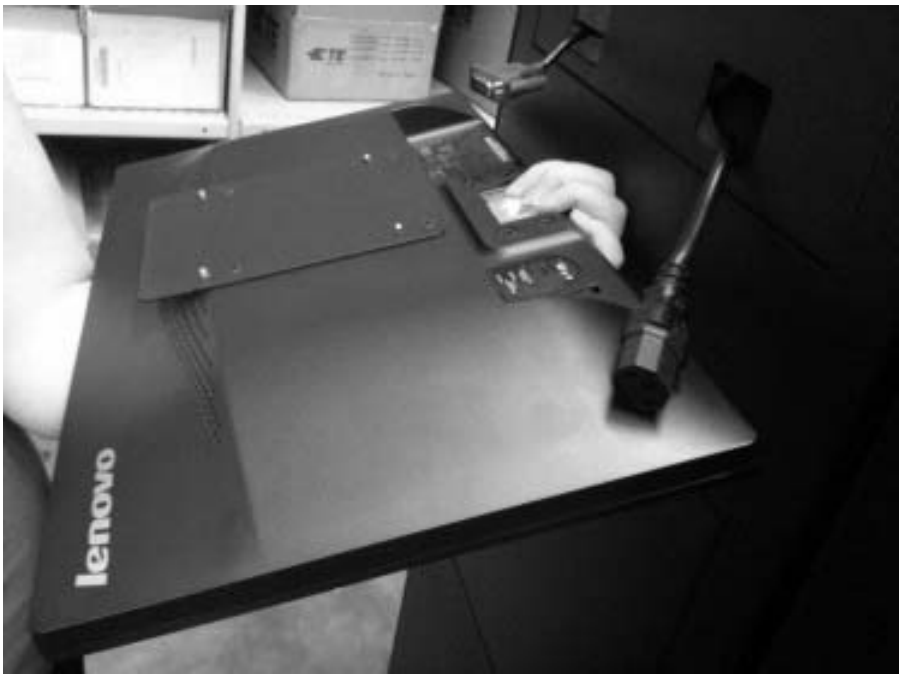


Figure 16. Monitor supported face down next to the IMC side panel

__ 5. While continuing to support the monitor with one arm, connect the VGA cable to the VGA connector on the monitor, as shown in Figure 17. Tighten the two screws to secure the connection.

Figure 17. Connect the VGA cable to the monitor

__ 6. Connect the power cord to the power connector on the monitor, as shown in Figure 18 on page 33.

Figure 18. Connect the power cord to the monitor

__ 7. Rotate the monitor upright and position it in front of the IMC side panel mounting bracket.

__ 8. Using two hands to hold the monitor by the side edges, align the bottom two pins on the monitor mounting bracket to the bottom two keyholes on the side panel mounting bracket.

__ 9. Viewing from the side, verify that the pins are in the key holes. Maintain pressure on the bottom edge of the monitor towards the IMC side panel while gently pushing inwards on the top edge of the monitor.

__ 10. When the monitor is flat against the side panel and is nearly seated, push down on the top edge of the monitor until the top of the monitor's back plate clears the spring latch. The latch clicks into place to secure the monitor to the IMC side panel.

__ 11. Figure 19 on page 34 shows the monitor installed and attached to the IMC side panel.

Figure 19. IMC monitor attached to IMC side panel

Installing tape drives

The TS4500 Lx5 and Dx5 frames are shipped with all tape drives preinstalled that are on the initial order.

About this task

New orders of TS4500 Lx5 and Dx5 frames are shipped from the factory with the drives already installed. Examine the packing list for each frame to determine the quantity of drive features, and the types that were ordered for each frame. Use the following information to determine where the tape drives are installed.

Table 2. Feature Codes and drive types

Feature Code	Description
9690	3588/3592 Drive Field Install
1521	1st TS4500 Quad Drive Mounting Kit
1522	2nd TS4500 Quad Drive Mounting Kit
1523	3rd TS4500 Quad Drive Mounting Kit
1524	4th TS4500 Quad Drive Mounting Kit

Up to 16 drives can be installed in each Lx5 or Dx5 frame. Drives 1–4 are installed in the farthest left column (column 4) of drives bays, and installation of one or more drives requires FC 1521. FC 1522 is required to add one or more drives in the next column for drives 5–8. The next column of drives, 9–12, requires FC 1523, and FC 1524 is required for installing any drives in the fourth column.

Drives are installed beginning with column 4, starting in the lowest row available. This keeps the center of gravity of the frame lower and can provide a slight performance advantage because the drives will be located closer to the media. The drives are distributed across available quad mounting kits to provide redundancy through more than one Drive Switch Card (DSC). For example, if all four quad drive mounting kits are installed and four drives are ordered, one drive is installed in the lowest drive bay in each column rather than filling column 4.

For more information on drives, see **Supported tape drives** in the **Overview** section of the IBM TS4500 Service Information Center.

Note: If the library is a single base frame, when viewing from the front, the drives and storage slots installed in the column to the far left are not available to the accessor. If an expansion frame is added to the left, then those drives and slots become available, but the restrictions now apply to the farthest frame on the left.

Procedure

1. Verify for each frame that the correct number of drives and quad drive mounting kits are installed.

   Note: Quad drive mounting kits can be installed with no drives installed in that column, to allow for future installations.
2. If any additional drives or quad drive mounting kits were ordered separately and need to be installed, follow the installation instructions that shipped with the drives and quad drive mounting kits.

Connecting the library to the customer network

The LCC provides two customer Ethernet ports that can be connected to two independent customer networks. These connections allow remote viewing and management of the library. The customer network is also connected directly to the Tiny PC for remote support (Call Home) purposes. Use these instructions to connect the customer network to the library during an initial installation of the TS4500.

Before you begin

Two separate customer networks can be connected to the TS4500 library through Ethernet cables connected to the library controller card (LCC). Verify with the customer whether there will be a single network connection or two network connections. Identify the location and the routing of the Ethernet cables used to connect to their networks. Figure 20 on page 36 provides an overview of these customer network connections. The schematic is not to scale, and does not represent actual cable routing. The three gray lines represent the Ethernet cables connecting to the customer network. Two connect to the Customer ports on the LCC, and the other, which provides broadband connectivity from the IMC to the customer network connects to the Ethernet/USB converter (dongle) on the Tiny PC.

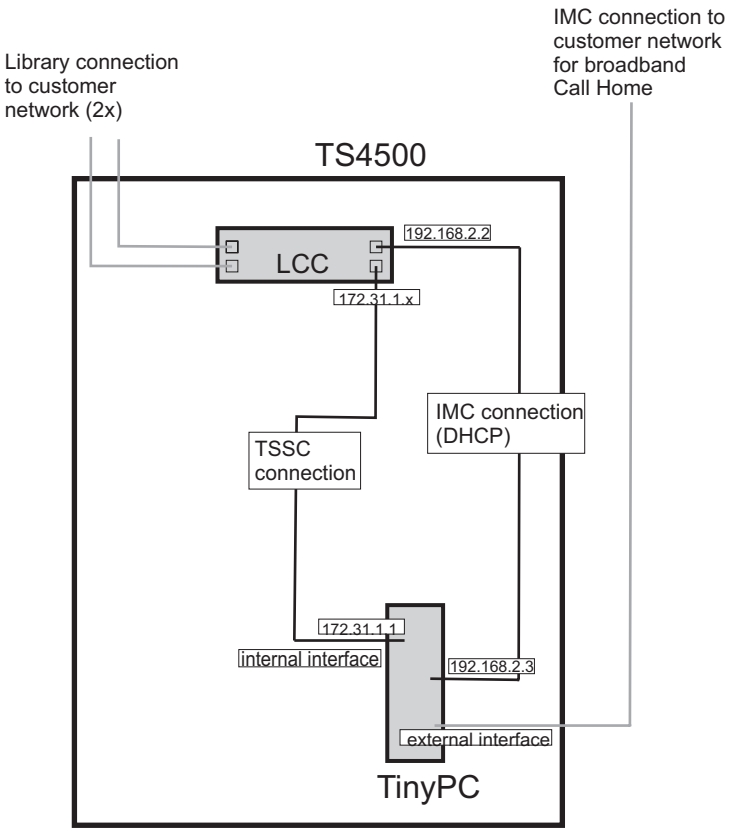


Figure 20. Customer network connections schematic

The Ethernet cable for remote support (Call Home) was connected to the Ethernet to USB converter (dongle) during the reinstallation of the IMC side panel.

Refer to *IBM TS3000 and TS4500 System Console Maintenance Information* for the network requirements for remote support. This publication is included on the publication CD-ROM shipped with the library. If the customer has ordered FC 2735, IMC Non-Broadband Call Home, then the remote support will be connected through a modem and will not require an Ethernet connection from the Tiny PC to the customer network.

About this task

Customer network Ethernet cables can be routed to the customer ports on the LCC and to the Tiny PC either up through the access hole in the bottom of the frame or through the access panel in the top of the frame.

Procedure

__ 1. Open the back door of the Lx5 frame.

__ 2. Route the customer network Ethernet cable(s) into the frame.

   __ a. If the cables are routed up from the floor, route the cables up along the right side of the frame and through the slot in the foam rubber. Towards the top of the frame, secure the cables to the right side sheet metal, towards the back edge of the frame using hook and loop fasteners. Do not fasten to the loops that are closer to the drive nest bays. These are reserved for quad drive mounting kit cables. If the

customer power cords are also routed from below, bundle the cables and cords together in the same fasteners.

__ b. If the customer network cables are from overhead, route them through the access panel located at the right rear corner on the top of the frame (as viewed from the back).

__ 3. Route the cables across the top of the card cage assembly, securing with hook and loop fasteners.

__ 4. Plug the first customer network Ethernet cable into Customer-A port (top) at the far left side of the LCC (**1** in Figure 21).

Figure 21. LCC customer network connections

__ 5. If there is a second customer network Ethernet cable, plug it into Customer-B port (bottom) at the far left side of the LCC (**2** in Figure 21).

__ 6. The customer will configure the network ports later, through the TS4500 management GUI, after the library is installed and the initial setup is complete.

__ 7. The SSR will configure remote support later, after completing the initial setup, using the instructions in "Enabling remote support (Call Home)" on page 49.

Attaching power to the TS4500 tape library

Use these instructions to connect the power cords to the base frame. Power is connected to the IMC PDU, with redundant power connected to the card cage power supply. Power cords connected directly to the card cage power supplies provide power to frames without an IMC PDU.

Before you begin

Safety Checks: Complete safety inspections to verify the safety of the customer power receptacles that the TS4500 frame will attach to. This is to ensure that the customer power sources are correctly installed. Follow local regulations for performing safety checks on customer circuits and outlets. In some locations, only licensed electricians are permitted to conduct these tests.

Perform the **Branch circuit CB switched off check** and **Branch circuit CB switched on check** safety inspections to verify the safety of the customer power receptacles that the TS4500 frames will attach to. Have the customer switch on the circuit breakers that supply mainline ac voltage to the customer power receptacles.

Verify with the customer whether power cords will be routed through the bottom of the frame or through the top of the frame to the customer power source.

About this task

The Lx5 frame is shipped with an IMC PDU **4** in Figure 22 on page 39 and two card cage power supplies **1** installed. These power supplies provide power to the frame card cage and backplane, and to the drives connected through the disk switch cards (DSC). When connected to customer power, the IMC PDU provides power to the IMC monitor, the IMC Tiny PC, and to the card cage A power supply (right side). Redundant power is connected directly from the customer source to the receptacle on the card cage B power supply (left side).

Note: If FC 1909, Single Power Source Bifurcated Cable is ordered, use the instructions shipped with that feature to connect power to the frame. Cable routing and connections are very similar to dual power cords.

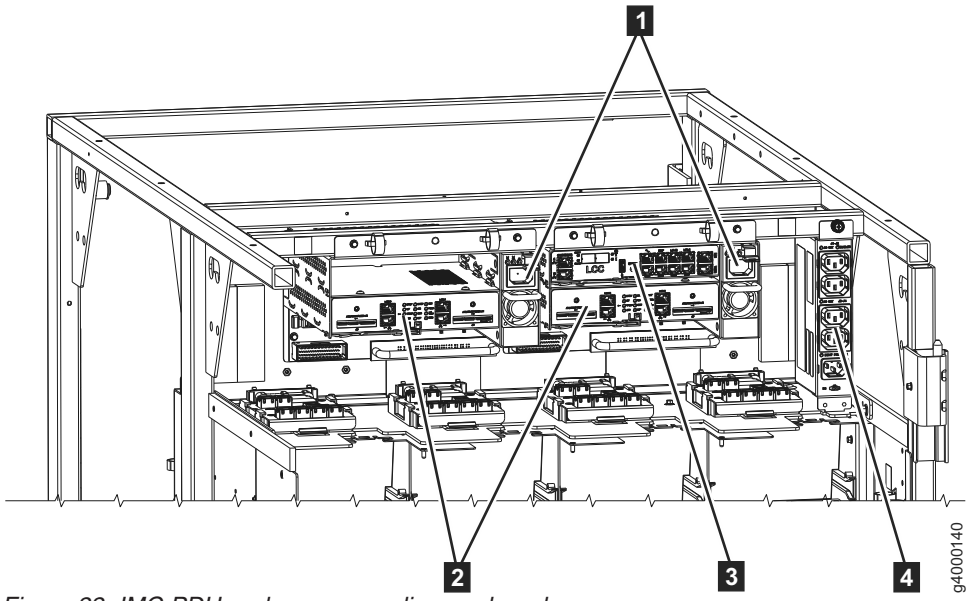


Figure 22. IMC PDU and power supplies, and card cage

1 - Card cage power supplies (A on right, B on left)
2 - LFI cards
3 - Library control card (LCC)
4 - IMC power distribution unit

If the library is a single Lx5 base frame, the customer power is connected to the input receptacle (**3** in Figure 23) on the IMC PDU. This supplies power to the IMC monitor and Tiny PC (through the connections **1**). A short power cord connects from one of the middle receptacles (**2**) to the power supply located in the right side of the card cage. Redundant power is provided to the frame with a power cord connected from a customer outlet on a separate circuit to the second card cage power supply.

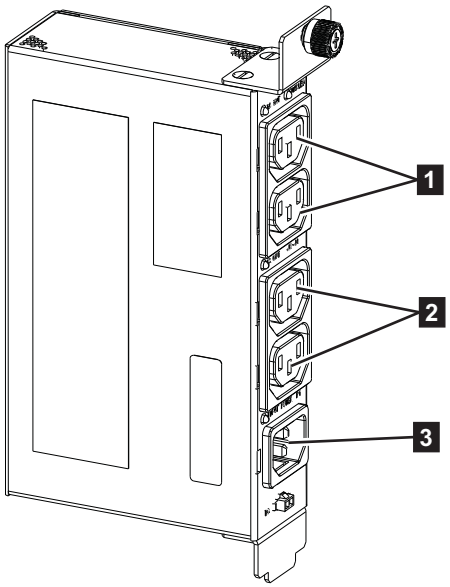


Figure 23. IMC PDU receptacles

1 - Top two outlets used to connect power to the IMC monitor and IMC Tiny PC

2 - A short power cord connects either of the middle two outlets to the card cage A power supply (right side). The other outlet is a spare.

3 - Customer power connects to lowest receptacle. (Input power)

In a multi frame library, the IMC PDU is installed along with the LCC in the end frame or the frame adjacent to the end frame of the library. Frames that require power and do not have the IMC PDU are connected with power cords from customer outlets directly to the card cage power supplies.

Attention: If you move the IMC and IMC PDU to another frame, you disconnect the customer power from the lowest receptacle **3**, disconnect the short power cord between the IMC PDU and card cage A power supply, **and then connect the customer power cord to the card cage A power supply**. This will continue to provide redundant power to the frame even after the IMC PDU is removed. Complete instructions for moving the IMC side panel and the IMC PDU are included in the expansion frame installation instructions.

Procedure

__ 1. Locate the AC power cords provided with the library.

__ 2. Visually inspect the power cord plugs to ensure they match the customer receptacles. If a plug does not match the receptacle, refer to the power cord, plug, and receptacle specifications in the *IBM TS4500 Introduction and Planning Guide* to determine the correct power cord, and then order the cord through your local ordering procedures.

Note: In many countries, the end of the power cord that will connect to the customer receptacle comes without a plug. It is the customer's responsibility to furnish this plug. The plug that connects to the PDU is standard for all installations.

__ 3. There are three options for routing power into the Lx5 base frame.
- If you are routing the power cords through the **knockout in the top of the frame**, continue on to step 4.
- If you are routing the power cords through the **bottom of the frame**, also continue on to step 4.
- If you are routing the power cords through the **top of the frame using the ferrite/cable restraint assembly**, skip to step 15 on page 43.

Connecting power cords to the IMC PDU and the card cage power supplies

__ 4. Starting with the ends of both of the power cords, run the cords along the inside of the right side of the frame, and then behind the IMC PDU, as shown in Figure 24 on page 41.

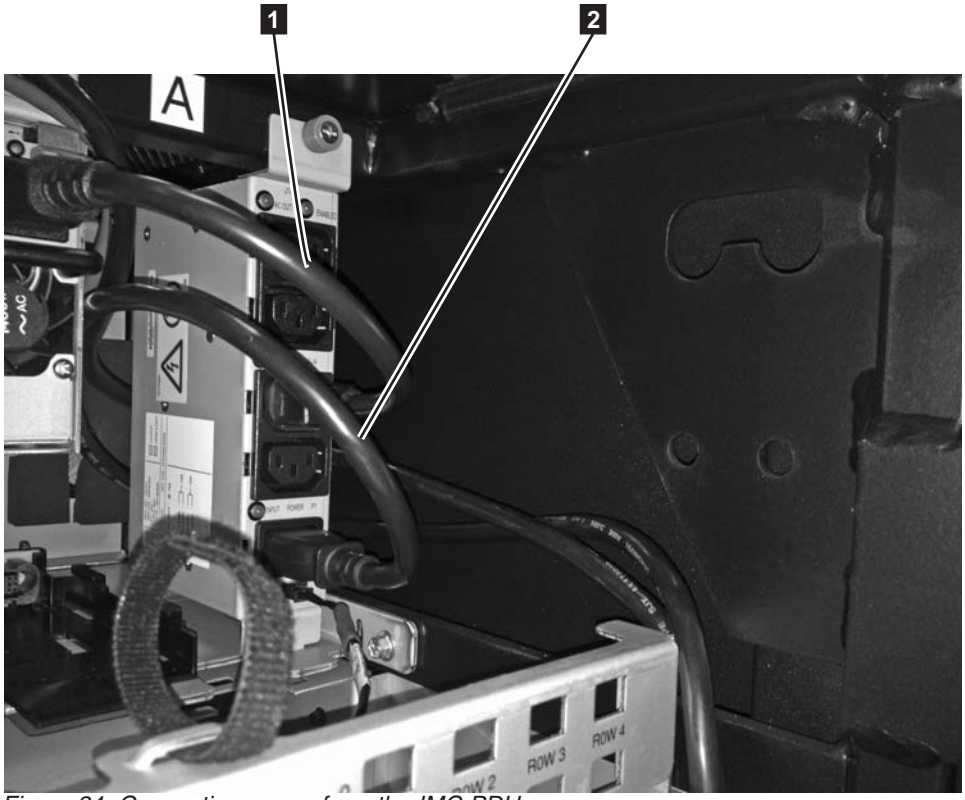


Figure 24. Connecting power from the IMC PDU

__ 5. Attach one customer power cord **2** in Figure 24 to the lower receptacle (Input power) in the PDU.

__ 6. As shown in Figure 25, attach the other customer power cord **1** to card cage B power supply **2**.

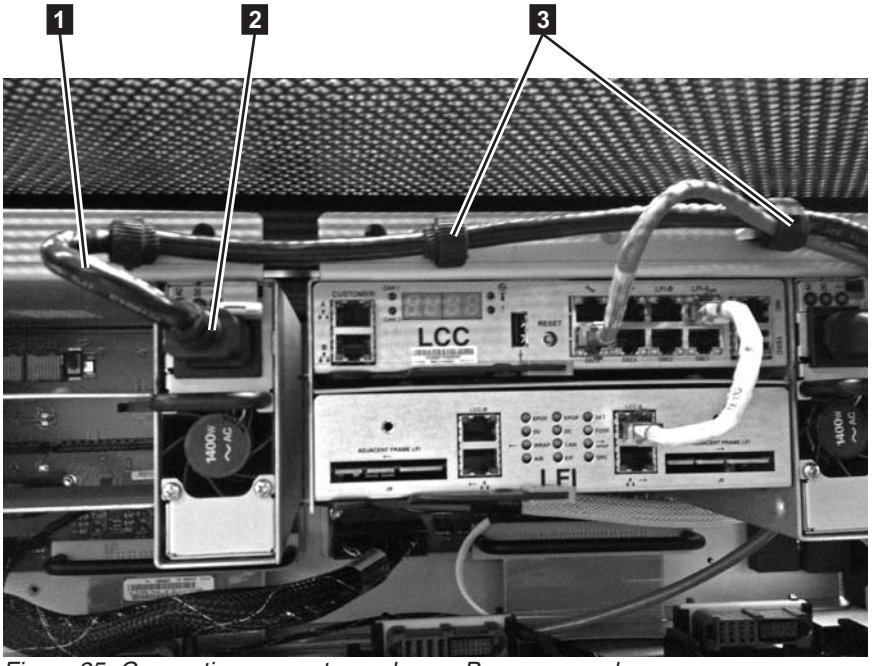


Figure 25. Connecting power to card cage B power supply

__ 7. Route the power cord from card cage B upwards and across the card cage, securing with hook and loop fasteners **3** as shown in Figure 25.

__ 8. Complete the routing of the power cables depending on where the power cords will exit the frame.
   - If the power cords will be routed through the **bottom of the frame**, continue to step 9.
   - If the power cords will be routed through the knock out in the **top of the frame**, skip to step 12 on page 43.

Bottom of frame power cord routing

__ 9. Run the power cords snug against the side of the frame. Continue to route the cables downward, through the slot in the foam rubber **2** . Secure the power cords to the side sheet metal with hook and loop fasteners **1** . Use the set of fasteners closest to the back of the frame. Do not fasten to the loops that are closer to the drive nest bays. These are reserved for quad drive mounting kit cables. If the customer network Ethernet cables are also routed from below, bundle the cables and cords together in the same fasteners.

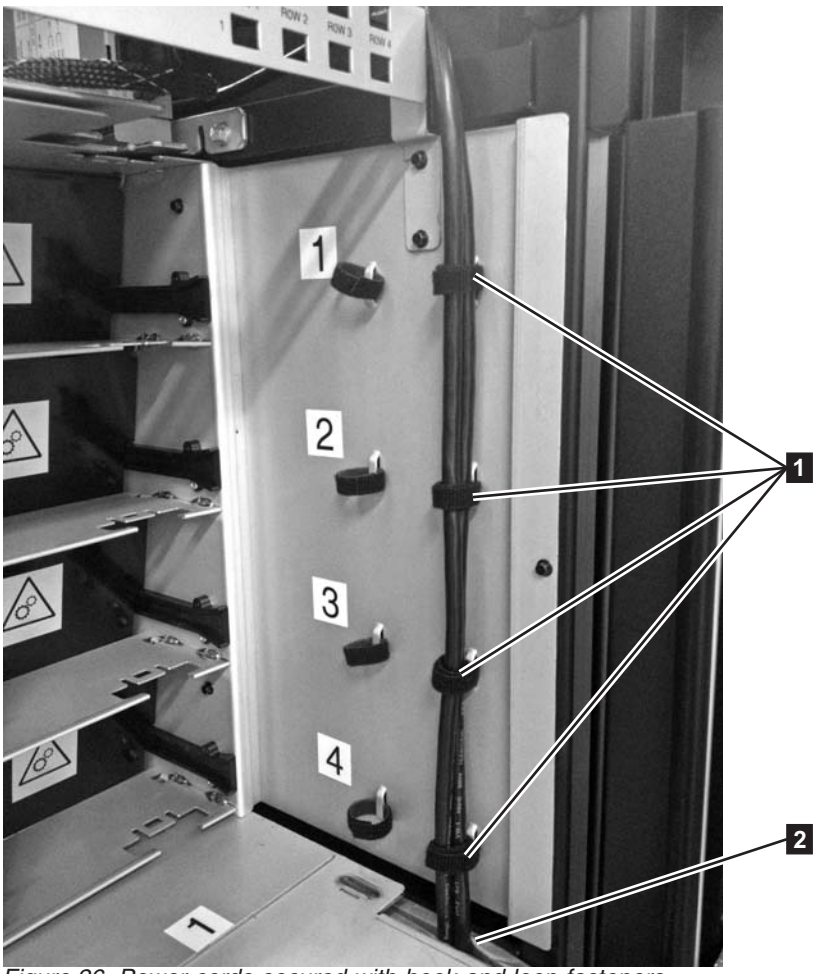


Figure 26. Power cords secured with hook and loop fasteners

__ 10. Continue to route the power cords downwards through the bottom of the frame, and connect them to the customer power source.

__ 11. Verify that the IMC PDU and card cage power supply LEDs are green. LEDs on the LFI card will also display green. Continue on to “Update library code before initial setup” on page 44.

Top of frame power cord routing through the knock out hole

__ 12. Feed the ends of the power cords through the top of the frame near the top rear of the frame. Pull the excess cord out of the top of the frame, making sure that the portion remaining inside the frame is not pulled tight, and that the cords are routed out of the way. Secure to the frame as needed with hook and loop fasteners.

__ 13. Coil any excess power cord length on top of the frame if needed, and then connect the power cords to customer outlets on separate circuits.

__ 14. Verify that the IMC PDU and card cage power supply LEDs are green. LEDs on the LFI card will also display green. Continue on to "Update library code before initial setup" on page 44.

Top of frame power cord routing using the ferrite/cable restraint assembly

__ 15. Remove the ferrite/cable restraint assembly (**1** in Figure 27) from the top cover by rotating it and pulling up; set it aside.

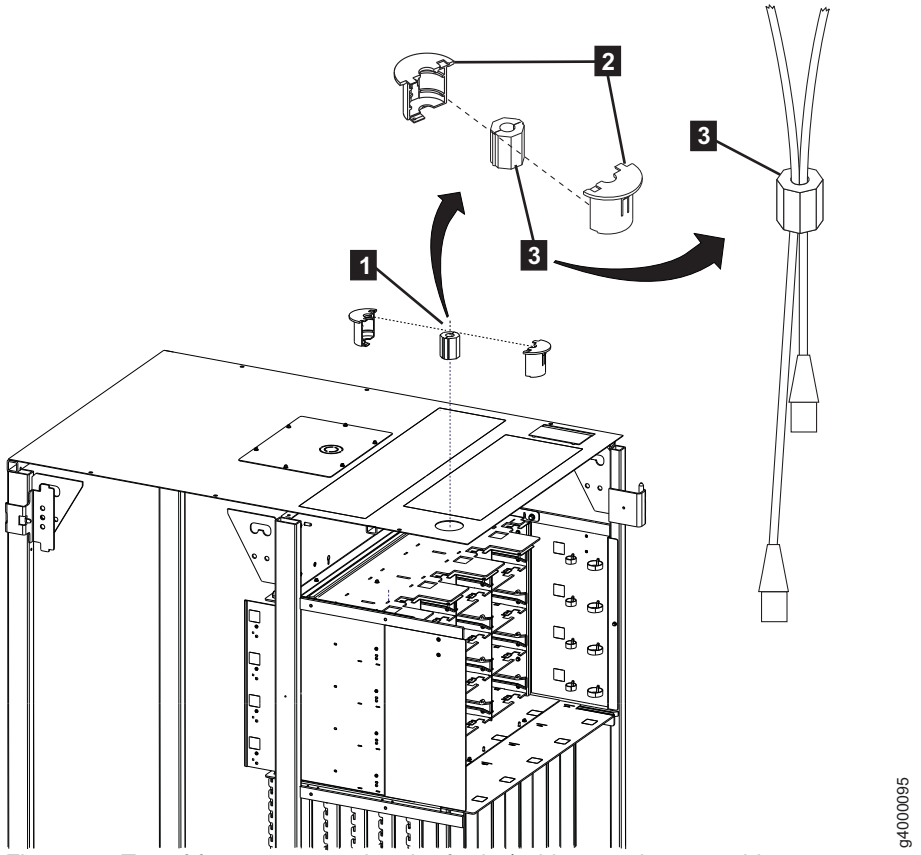


Figure 27. Top of frame power using the ferrite/cable restraint assembly

__ 16. Feed the customer power cords through the exposed access hole.

__ 17. Plug one power cord into the lower (input power) receptacle in the IMC PDU. (See **3** in Figure 23 on page 39).

Note: If the IMC PDU is moved to another frame, connect the customer power cord to the receptacle in card cage power supply A instead of the IMC PDU.

__ 18. Connect the other power cord directly to the card cage power supply on the left half of the card cage (card cage B).

__ 19. Referring to Figure 27 on page 43, open the plastic cable restraint housing **2** and remove the ferrite **3**.

__ 20. Open the ferrite and secure it around the power cords.

__ 21. Place the ferrite inside the plastic cable restraint housing and close it securely.

__ 22. Slide the power cords outwards through the ferrite until excess slack is removed from inside the frame. Secure the power cords in place along the top of the card cage using the hook and loop fasteners.

__ 23. Coil any excess power cord length on top of the frame if needed, and then connect the power cords to customer outlets on separate circuits.

__ 24. Verify that the IMC PDU and card cage power supply LEDs are green. LEDs on the LFI card will also display green. Continue on to "Update library code before initial setup."

Update library code before initial setup

Use these instructions to update the TS4500 library code before running the Initial Setup wizard.

Before you begin

Complete all physical installation of the library frames, complete all frame to frame connections, complete all customer network connections, complete and verify proper power connections.

If you have not already done so, download the latest TS4500 library firmware to the SSR laptop from Fix Central or the RMSS PFE website at https://snjlnt02.tucson.ibm.com/tape/tapetec.nsf/pages/TS4500. The link to the library code on the PFE website is towards the bottom of the page ("Get TS4500 Library Firmware").

Attention: Load only released code from Fix Central on customer hardware unless advised otherwise.

Procedure

__ 1. At the front of the Lx5 base frame, slide up the clear cover that protects the power button on the display panel.

__ 2. Press the power button and verify that the green power indicator turns on and stays on. If the power indicator light fails to turn on or stay on, refer to the **Resolving power problems** page in the IBM TS4500 Service Information Center.

__ 3. Connect the Ethernet port on the laptop to the service port (wrench symbol) on the LCC with a Ethernet cable.

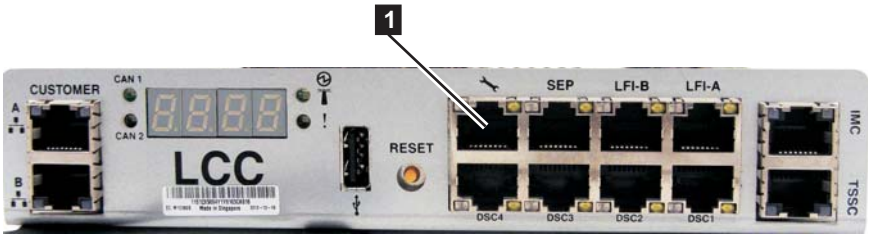


Figure 28. LCC Service connection

__ 4. Set your laptop local network settings to obtain and IP address and DNS server address automatically.

__ 5. Launch a web browser and enter the IP address 192.168.1.2/web in the browser address field, and then press **Enter** on your laptop keyboard.

Tip: If you are having difficulty connecting, try disabling the wireless network on your laptop.

__ 6. The TS4500 Storage Management login page will display. Enter user name **Service** and password **ibm2serv**.

__ 7. When the home page displays, click **Actions** in the upper left corner, and then select **Firmware Update**.

__ 8. From the window that displays, browse to the location on your laptop where the library firmware file is saved, and then select the file.

__ 9. The **Apply Library Firmware** window displays with a question asking if you want to continue. Click **Yes**.

__ 10. It will take up to 12 minutes to complete the library code upgrade; **do not** close the web page or navigate to any other window.

__ 11. When the upgrade process has completed, the current session will log out and the login page will appear again. Log in again with the same user name: **Service** and password **ibm2serv**.

__ 12. Verify that you have upgraded the library to the latest firmware level by clicking on the question mark icon in the upper right corner of the management GUI. Select **About IBM TS4500 Tape Library**. The firmware version will appear in the middle of the displayed page.

__ 13. Disconnect the SSR laptop Ethernet cable from the LCC service port, and then continue on to "Completing the library initial setup."

Completing the library initial setup

The Initial Setup wizard launches the first time the TS4500 tape library is powered on, however it does not initiate actions until you log in to the management GUI. Use these instructions to complete the service portion of the initial setup.

Before you begin

Complete the following tasks before initiating the Initial Setup.

- Complete all physical installation of the library frames.
- Complete all frame to frame connections.
- Complete all customer network connections.
- Complete and verify proper power connections.
- Power on the library.
- Install the latest library code using an Ethernet connection between the SSR laptop and the service port on the LCC.

Locate any installation instructions for feature codes requiring a license key. You will enable these features during the initial setup. If the library came with a license key that was factory installed, manufacturing installed a label with that key number at the rear of the Lx5 frame. You may need to enable these license features during the initial setup.

Procedure

__ 1. Close all front doors on the library frames.

__ 2. Verify that all side doors or panels have been reinstalled.

__ 3. Open the keyboard on the IMC panel by grasping the recessed handle below the monitor, and then pulling it outward and down.

__ 4. Wait for the internal boot process to complete (this most likely occurred while you were updating the library code through the service port). When it is complete, the login screen will display on the IMC monitor.

Note: The login screen will display a red stripe near the bottom of the screen with the following text, "Initial setup has not been completed by the service team." If the GUI fails to display, call support to resolve the issue.

__ 5. Log in to the management GUI using login **Service** and password **ibm2serv**.

__ 6. When the Initial Setup wizard launches, follow the prompts on the management GUI. You will be led through the following major steps. Each step may take several minutes, depending upon the configuration of the library.

- hardware discovery
- licensed functions
- network settings
- library verification
- door safety interlock test

__ 7. The library performs hardware discovery and inventory on all connected frames, library control cards (LCCs), drives, and I/O stations.

Note: There are two progress bars in the screen. The progress bar for hardware discovery (**1** in Figure 29) is within the **Discover Hardware** frame, and indicates progress and the estimated time remaining. It also identifies the specific part of the three-part hardware discovery process. The other progress bar (**2**) indicates the progress in the entire initial setup.

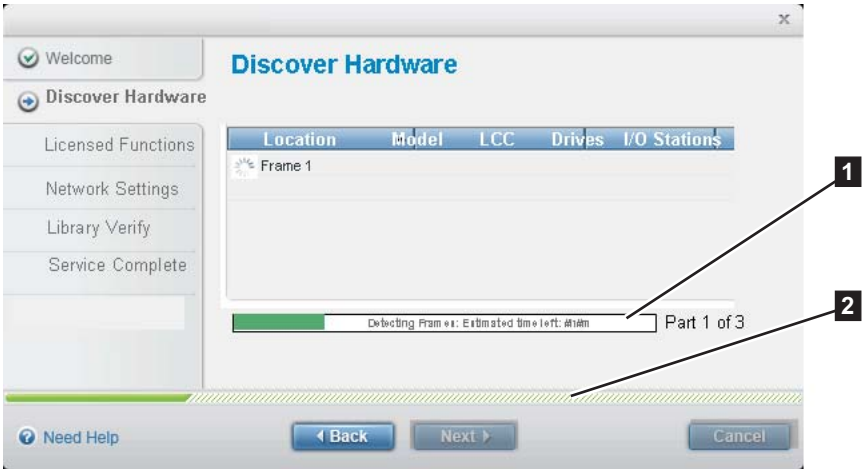


Figure 29. Discover hardware

__ 8. When the discovery process is complete, click **Next** in the management GUI to add licensed functions.

__ 9. One by one, select the licensed feature in the table, and then enter the license key in the field at the top of the page (**1** in Figure 30). Click **Apply** (**2**). A green check mark will appear in the **Licensed** column.

Note: Some additional licensed features may automatically display the green checkmark if there are dependencies among the features, such as with different levels of capacity on demand. You do not need to enter the additional license keys if the green check mark is displayed. ALMS is included in the base code and will display a green checkmark without entering a license key.

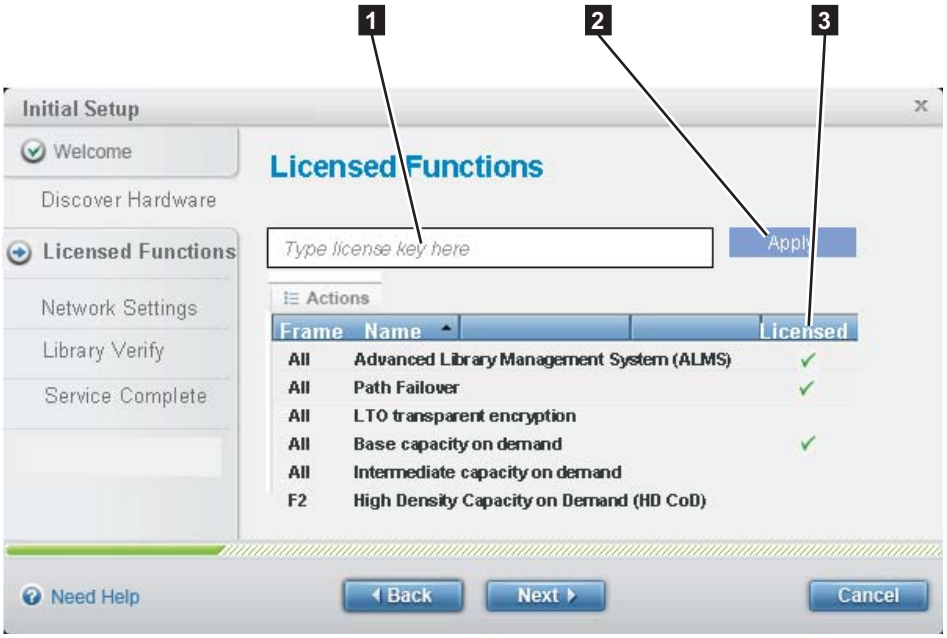


Figure 30. Licensed features

Note: You should have received all of the license keys with the ship group. Use the printed documents to verify the ordered licensed features.

__ 10. Repeat for each of the licensed features.

__ 11. Verify that check marks appear in the **Licensed** column (**3** in Figure 30) on the **Licensed Functions** page for each of the licensed functions installed on the library. Click **Next**.

__ 12. In the **Network Settings** page, enter the IP addresses provided by the customer. For static IP assignment, the customer must provide the SSR with a listing of the values to enter in the network setup for the library IP address, subnet mask, and gateway. You may need to change the default IP address to either 192.168.1.2 or 192.168.2.2.

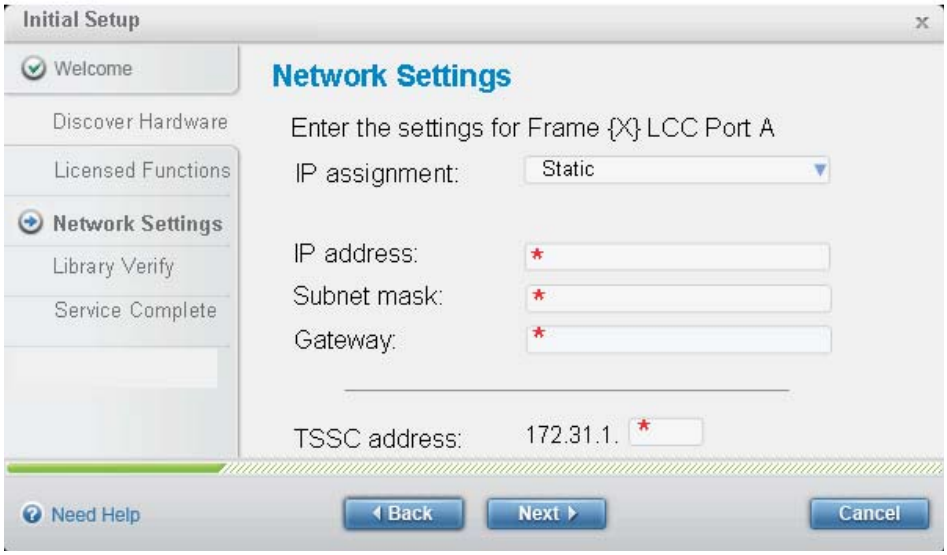


Figure 31. Network settings

a. **Static** is the default value for **IP assignment**.
b. Enter the **IP address**.
c. Click in the **Subnet mask** field. Values will populate this field and the **Gateway** field automatically. Verify and change these values if necessary.
d. In the **TSSC address** field, the first 6 digits are already entered. For the last digit, "1" is reserved, and will return an error if entered. Enter any value from 2 to 255.
e. Click **Next**.

__ 13. Click **Run Library Verify** on the displayed management GUI page. Depending on the library size and configuration, this may take several minutes. When the process is complete, click **Next**.

__ 14. When the **Door Safety Interlock Test** displays, click **Next** to *skip* this built in test.

__ 15. Go to Appendix B, "Verifying the library door safety interlock," on page 55, complete that procedure, and then return here to step 16.

__ 16. When the **Service Complete** page displays, record the displayed information to give to the customer storage administrator when the setup is fully complete. This information will allow them remote access to the management interface.

Note: The customer will be prompted to change temporary login and password of **admin** when they first log in to the Customer management GUI.

__ 17. Click **Finish** to exit the Initial Setup. The session will terminate.

__ 18. Log back in to the management GUI using **Service** and **ibm2serv**.

Upgrade drive firmware

__ 19. Determine the current drive firmware level.

__ a. From the home page of the management GUI, select **Drives > Drives**.

__ b. To view the current drive firmware level of a specific drive, select a drive row, and then select **Properties**. The firmware level is displayed on the **Properties** page.

__ c. If you want to have the drive firmware displayed in the table, click the icon in the upper right corner of the table header and select the **Firmware** check box. The firmware level is now displayed in the table column for all drives in the library.

__ d. If that version matches the latest drive firmware on Fix Central or the RMSS PFE Communications Website for the TS4500 (https://snjlnt02.tucson.ibm.com/tape/tapetec.nsf/pages/TS4500), you do not need to upgrade; skip to step 24. To install a drive firmware upgrade, continue to step 20.

Attention: Install only released versions of code from Fix Central on customer hardware, unless advised otherwise.

__ 20. From the home page of the TS4500 management GUI, select **Actions > Firmware Update**.

__ 21. If you have already downloaded the firmware image, use the **File Upload** window that opens to browse and to locate the drive firmware file. When you select the file and click **Open**, the GUI detects the type of firmware image file selected, and opens the appropriate dialog window to update drive firmware.

__ 22. If you need to download the firmware image, you can navigate to IBM Fix Central or the RMSS PFE Communications Website for the TS4500 (https://snjlnt02.tucson.ibm.com/tape/tapetec.nsf/pages/TS4500).

Attention: Install only released versions of code from Fix Central on customer hardware, unless advised otherwise.

__ 23. Click **Yes** on the **Update Drive Firmware** window that appears. Drive code takes less than 5 minutes to upgrade.

__ 24. Continue on to "Enabling remote support (Call Home)."

What to do next

Alternative methods for updating the library code and the system console (IMC) code are available in the appendices. If library and IMC code cannot be updated using the standard upgrade methods, use one of these methods before continuing.

- Appendix C, "Library code upgrade using CLI," on page 57
- Appendix D, "Library code upgrade with USB flash drive," on page 59
- Appendix E, "Upgrading IMC code using DVDs," on page 61
- Appendix F, "Upgrading IMC code through broadband connection," on page 63

Enabling remote support (Call Home)

Remote support for the TS4500 involves the use of a Call Home feature to report and solve problems. The Call Home feature uses the TS4500 integrated management console (IMC) to report failures that are detected by the library or a tape drive.

Before you begin

Complete the initial configuration of the TS4500 library using the Initial Setup wizard. Under **Network Settings**, enter the IP address for TSSC. If the customer is

using the default broadband for remote support, the customer Ethernet cable must be connected to the IMC Tiny PC. This is described in “Installing the TS4500 IMC side panel” on page 25.

Locate the *IBM TS3000 and TS4500 System Console Maintenance Information*, which is included on the publications CD-ROM shipped with the library. You will use that publication to complete the system console configuration. Refer to the section, "Using the TS4500 management GUI to configure for Call Home" in Chapter 2.

The customer must provide you with the values required for configuring the system console application.

About this task

The default method used by the library for remote support (Call Home) is a broadband connection using the Electronic Customer Care (ECC) Call Home function through the system console. Use these instructions to configure the system console for broadband connections.

If preferred, the customer can order feature code 2735 (IMC non-broadband call home) to use a analog modem connection. If the customer has selected the non-broadband connection for Call Home, follow the instructions included with FC 2735, IMC non-broadband Call Home. This feature provides a USB modem and optical drive for use with the TS4500 integrated management console (IMC).

Procedure

__ 1. If you are not already logged in to the management GUI, log in using **Service** and password, **ibm2serv**.

__ 2. When the management GUI home page displays, press **Ctrl** + **Alt** + **Delete** to exit the management GUI.

__ 3. Click **OK** in the pop-up window to confirm.

__ 4. Log in to the system console using **service** and **service** as the login and password.

Tip: Nothing displays in the password field as you type. If you get an error on logging in, repeat the login.

__ 5. Refer to the "Using the TS4500 management GUI to configure for Call Home" section of the *IBM TS3000 and TS4500 System Console Maintenance Information* to complete the initial configuration.

__ 6. Continue on to the "Configuration" section in the *IBM TS3000 and TS4500 System Console Maintenance Information* to complete the System Console configuration, using the values provided by the customer. Complete the following setup procedures:

- basic IMC/TSSC setup
- attached subsystem setup
- Call Home setup

__ 7. After completing the system console configuration, right-click anywhere on the screen. In the pop-up window, click **logout** to log out of the system console.

__ 8. Log in again to the TS4500 management GUI, using **Service** and **ibm2serve**.

__ 9. From the home page of the management GUI, select **Settings > Networking**, and then select **LCC TSSC interface**.

__ 10. Enter the same IP address (example 172.31.1.x) that you configured for the library in the System Console configuration. Click **Apply**.

__ 11. Select **Settings > Service**, and then select the **TSSC** check box. Fill in the remaining values, including the IP address and customer name, and then click **Apply**.

Verifying the installation

Confirm that the library is ready to be turned over to the customer by completing steps to verify the installation.

About this task

Complete these final steps to verify that the library is fully functional and can be turned over to the customer.

Procedure

__ 1. Verify that you have installed the LTO or 3592 diagnostic cartridge in the base frame in any Tier 0 slot.

__ 2. Load the LTO or 3592 cleaner cartridge(s) into the library. Automatic cleaning is built into the system and cannot be disabled.

__ 3. Reinstall any access panels or covers removed during installation.

__ 4. Give the front and side door keys to the customer and inform the customer that the tape library is ready to be configured to the host system and is available for use.

__ 5. Provide the customer with the information saved during the Initial Setup process from the **Service Complete** page. The customer now has remote access to the library as well at through the IMC. They can now log in to the management GUI to complete the administrator configuration.

Note: If you neglected to record the login and password information, the default temporary customer login and password are typically both **admin**.

__ 6. Complete a separate install (service code 20, PLAN/INSTL/RR code 2) for each library frame that you installed. The same applies to any 3592 or 3588 drives installed. Any time spent repairing the library during the installation should be charged to the appropriate frame serial number. Time spent repairing any drives should be charged to the drive serial number.

Note: Time associated with attachment, configuration, or service of devices not provided with the library must not be charged against the 3584 library.

__ 7. Give the shipping material to the customer to use for future relocations.

__ 8. Store any ship group items that may be needed on future service calls in the storage bin on the inside of the base frame rear door.

Quality Hotline

IBM needs your timely feedback on the TS4500 products (new installations, EC activities, or MES changes). This will allow us to quickly correct any quality problem and implement any necessary changes for future shipments.

HOTLINE telephone numbersU.S. and Canada - Tieline 8-648-8459 or 1-800-442-6773 (Available 24 hrs/day, 7 days/week)

Note: If using the toll-free number, select option 1: Tape Quality Hotline.

For EMEA countries you have to address quality problems and missing parts with the 'Missing Parts Form' to CIM-Copenhagen (CIM = Central Inventory Management). For details, contact your local support who will provide you the 'Missing Parts Form'.

WT - Tieline 8-648-8459 or 1-770-858-8459

For issues that don't require an immediate response, you can also send a Lotus note to: **HOTLINE7/San Jose/IBM@IBMUS**

Use this HOTLINE immediately if you have any quality problems, questions, or concerns during installation, EC activity, or MES change with a 3584 tape library.

Have the following information available:

- Your name and telephone number
- Machine type, model, and serial number
- Branch office, territory, and area (if IBM CE)
- Customer name
- Customer telephone number
- Activity (new installation, EC, or MES)
- Description of the problem
- Other pertinent information:
  - Incident number
  - EC number
  - MES number
  - FCS number
  - Bill of material number

This HOTLINE will be answered Monday through Friday (except holidays) from 7:00 a.m. to 4:00 p.m., PST. At all other times, leave a detailed message for action during the next work day.

This HOTLINE is an addition to existing reporting and service procedures, but it does not replace them.

Thank you,

TS4500 tape library Manufacturing

Appendix A. Aligning the y-axis mast assembly

A tilted y-axis mast of the accessor assembly can cause calibration problems and barcode scan problems. If the y-axis mast assembly became tilted from perpendicular during shipment, use these steps to align the y-mast.

Procedure

__ 1. Referring to Figure 32, loosen two bolts **1** and two bolts **2** enough to allow for adjustments.

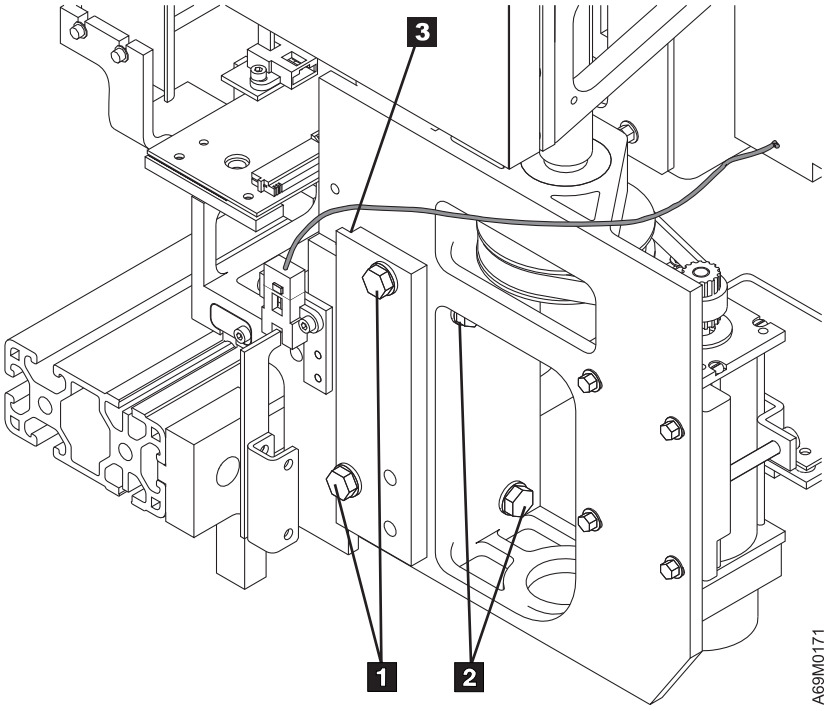


Figure 32. Lower portion of y-axis mast assembly

__ 2. Ensure that the y-mast is fully seated into the x-axis v block assembly before you continue.

__ 3. The bolts and screws that secure the y-axis mast assembly to the x-axis carrier must be tightened in the correct sequence.

Attention: The y-axis mast will be deformed if the screws **1** are over tightened.

__ 4. Snug, but do not tighten the four screws. Ensure the lip on the stiffener plate **3** is pushed back firmly against the accessor.

__ 5. Tighten the front screws **2** just enough to pull the mast against the accessor.

__ 6. Tighten the side screws **1** sequentially top and bottom.

__ 7. Firmly-tighten the front screws **2** . Verify that the mast is straight.

__ 8. Return to the step in **Installing the base frame (Lx5)** that sent you to this procedure. (See step 25 on page 22.)

Appendix B. Verifying the library door safety interlock

The TS4500 library has moving mechanical elements. For the safety of the users and operators, the library has a safety circuit that turns off the accessor power whenever a front or side door on the library opens.

Before you begin

Complete the **Run Library Verify** portion of the Initial Setup wizard. Skip the built in **Door Safety Interlock Test** in the Initial Setup, and complete these steps instead.

About this task

This procedure provides steps to verify the door safety circuitry. Refer to Figure 33 to locate the A/B LED on the LFI cards at the rear of each library frame. When lit, the A/B LED indicates that the accessor has power. The Lx5 frame may have only one LFI card but each Sx5 and Dx5 frame has two LFI cards. In this procedure, the phrase: "*Verify that the accessor power is off*" means that the A/B LEDs in **all** of the LFI cards in every library frame must be off. The phrase, "*Verify that the accessor power is on*" means that one or more of the A/B LEDs on all of the LFI cards must be on.

You will repeat the sequence of steps for each library side door and each library frame front door to verify that the safety interlock functions for each door that opens to the accessor path.

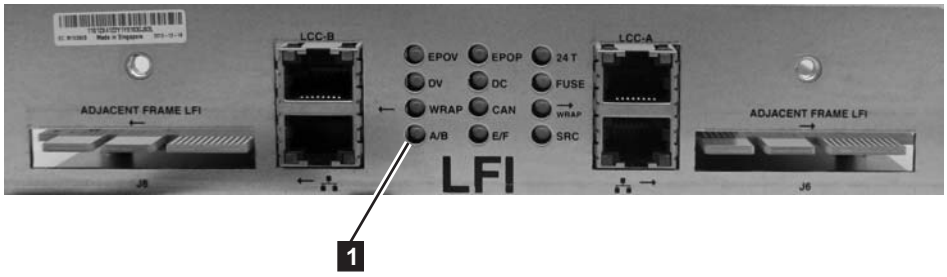


Figure 33. LFI accessor power LED

Procedure

__ 1. Ensure that all front and side doors in the library are closed and firmly latched.
__ 2. Verify that the accessor power is on (one or more A/B LEDs are lit).
__ 3. Starting at one end of the library, open the side door.
__ 4. Verify the accessor power is now off (all A/B LEDs are off).
__ 5. Close the door.
__ 6. Verify that the accessor power is now on.
__ 7. Wait approximately 30 seconds for the library to react, and verify that the accessor re-zeros and scans the frame that had its door opened.
__ 8. If you observe no accessor action:

- If this is the **first** time for this door, open, and then close the same door one more time. If there is still no accessor action:
  - __ a. Open the door.
  - __ b. Check the switch cable connections on the ASC-A and the ASC-B cards.
  - __ c. Reseat the BPB-A to ASC-A connector on the ASC-A card.
  - __ d. Reseat the BPB-A to ASC-A connector on the BPC-A card.
  - __ e. Reseat the BPC-B to ASC-B connector on the ASC-B card.
  - __ f. Reseat the BPC-B to ASC-B connector on the BPB-B card.
  - __ g. Repeat the process from step 1 on page 55.
- If this is the **second** time for this door, replace the switch.

__ 9. Repeat steps 1 on page 55 through 8 on page 55 for each of the remaining front and side doors.

__ 10. Return to **Completing the library initial setup**. (Step 16 on page 48).

Appendix C. Library code upgrade using CLI

Use this optional method to upgrade the TS4500 library code using a firmware image on a DVD. This method requires feature code FC 2735, which provides an optical drive to connect to the IMC Tiny PC. This procedure upgrades the library code on the LCC (not the system console code on the IMC Tiny PC).

Before you begin

You must have feature code FC 2735, which provides a USB optical drive. You must also have a DVD with the library firmware image.

Procedure

__ 1. From the back door of the frame with the IMC side panel attached, locate the IMC Tiny PC at the bottom of the IMC side panel.

Tip: The Tiny PC is installed at the lowest part of the IMC side panel, and is barely visible from the back door. You may need a flashlight to locate an available USB port. However, you should not need to remove the IMC side panel to access the Tiny PC unless there are no available USB ports on the side of the Tiny PC facing the back of the frame.

__ 2. Attach optical drive to any available USB port on the IMC Tiny PC.

__ 3. Verify that the optical drive powers on from the USB connection.

__ 4. Insert the DVD with the library firmware image into the optical drive.

__ 5. From the management GUI, press **Ctrl** + **Alt** + **Delete**. This opens a dialog with the option to connect to the system console. Click **OK**.

__ 6. Log in with user **service** and password **service**.

__ 7. Right-click on the blank screen that displays.

__ 8. From the context menu, select **System Console (Terminal)** to open a command line prompt.

__ 9. Run the CLI command to update the library firmware from the DVD. For example:

```
java -jar TS4500CLI.jar -ip 192.168.2.2 -u Service -p ibm2serv
 --codeupdate TS4500_1100-O4Q.afwz
```

Where:

-u = User

-p = password

--codeupdate = the command

TS4500_1100-O4Q.afwz is the library firmware file name

__ 10. Press **Enter**.

__ 11. Wait for "Done" to appear, as in the following example.

```
Name: TS4500_1100-04Q.afwz
 >>>Uploadling file..
 ..........................................................
 Done.
```

__ 12. When update is complete, return to the browser

__ 13. Log in to the management GUI using **Service** and **ibm2serv**.

__ 14. Verify the library code level.

__ a. Click the question mark icon in the upper right corner of the GUI.
__ b. Select **About IBM TS4500 Tape Library**.
__ c. The firmware version is displayed in the middle of the page.

__ 15. Disconnect the USB DVD drive from the Tiny PC.

__ 16. Close the back door of the Lx5 frame.

Appendix D. Library code upgrade with USB flash drive

Use this optional method to upgrade the TS4500 library code using a firmware image on a USB flash drive. This procedure upgrades the library code on the LCC (not the system console code on the IMC Tiny PC).

Before you begin

You must have the library code loaded on a USB flash drive. This procedure is to be only used after the initial setup sequence for the library has been completed.

Procedure

__ 1. Open the IMC keyboard.

__ 2. From the management GUI, press **Ctrl** + **Alt** + **Delete**. This opens a dialog with the option to connect to the System Console. Click **OK**.

__ 3. Log in with user **service** and password **service**.

__ 4. Attach the USB flash drive to either of the two USB ports on the back edge of the IMC keyboard.

__ 5. Right-click any place on the system console login page to switch to the context menus.

__ 6. From the context menu, select **Service Console Functions**, and then select **Mount USB**.

__ 7. From the context menu, **Service Console Functions** > **Service Window** to open the **Service** window.

__ 8. Use the command prompt `ls -l /media/usb` to display the directory of and the files on the USB flash drive.

__ 9. Use the command prompt `cp /media/usb/directory/filename` to copy the library code image from USB flash drive to a temporary location on the IMC Tiny PC hard drive, for example home/service. Use the following example as a guide.

```
cp /media/usb/TS3500_FW/TS4500_1100-0A7.afwz  /home/service
```

__ 10. From the context menu, select **Service Console Functions**, and then select **Unmount USB**.

__ 11. When prompted, remove the USB flash drive from the IMC keyboard.

__ 12. From the context menu, select **Browser Functions**, and then select **Web browser** to launch a web browser.

__ 13. Enter the library IP address into browser URL input field. This can be the IP of either the 172.31.x.x TSSC network or the 192.168.x.x IMC network.

__ 14. When the TS4500 login page displays, enter **Service** and **ibm2serv** to log in the Service mode.

__ 15. From the home page of the TS4500 management GUI, select **Actions > Firmware Update**.

__ 16. Use the **File Upload** window that opens to browse and to locate the image file you copied earlier (e.g. /home/service). When you select the file and click **Open**, the GUI detects the type of firmware image file selected, and opens the appropriate dialog windows to update either library or drive firmware.

__ 17. Click **Yes** on the **Apply Library Firmware** window that appears. Library firmware updates take less than 15 minutes to complete.

__ 18. When update is complete, return to the browser.
__ 19. Log in to the management GUI using **Service** and **ibm2serv**.
__ 20. Verify the library code level.
    __ a. Click the question mark icon in the upper right corner of the GUI.
    __ b. Select **About IBM TS4500 Tape Library**.
    __ c. The firmware version is displayed in the middle of the page.
__ 21. Delete the firmware from the temporary location.

Appendix E. Upgrading IMC code using DVDs

Use this optional method to upgrade the TS4500 IMC code using code images on DVDs. This procedure updates the system console code, not the TS4500 library code stored on the LCC. This method requires feature code FC 2735, which provides a USB optical drive to connect to the IMC Tiny PC.

Before you begin

You will use the IMC keyboard and IMC monitor to complete this task. Feature code FC 2735, which provides an optical drive to connect to the IMC Tiny PC is required. You must have the DVDs with the system console code images. A flashlight will be helpful to locate and connect the optical drive to an available Tiny PC USB port.

Procedure

__ 1. From the back door of the frame with the IMC side panel attached, locate the IMC Tiny PC at the bottom of the IMC side panel.

Tip: The Tiny PC is installed at the lowest part of the IMC side panel, and is barely visible from the back door. You may need a flashlight to locate an available USB port. However, you should not need to remove the IMC side panel to access the Tiny PC unless there are no available USB ports on the side of the Tiny PC facing the back of the frame.

__ 2. Attach optical drive to any available USB port on the IMC Tiny PC.

__ 3. Verify that the optical drive powers on from the USB connection.

__ 4. Verify that the Ethernet cables from the Tiny PC are connected to the IMC and TSSC ports on the LCC card at the top of the library frame.

__ 5. Change the boot up sequence to boot up from the DVD drive.

a. Open the IMC keyboard, and verify that the system console is active. If not, press **Ctrl** + **Alt** + **Delete**.

b. From the system console main menu, right click on any part of the screen and select **Restart Console**. This will restart the Tiny PC.

c. As the system reboots, press F1 multiple times to default to the Lenovo BIOS setup utility.

d. Enable CSM (compatibility support module).

e. In the **Startup** tab, select **USB CDROM**, and move it to the top of the list.

__ 6. Insert DVD disk 1 into the DVD drive.

__ 7. Exit the Lenovo BIOS setup utility and reboot the system. It will now boot from the DVD drive.

__ 8. When the boot process completes, four options will display. Select option '**N**' (N: Erase all Partitions and Install Again).

__ 9. Follow the prompts on the screen to install the console and the OS. Warning messages may indicate that the installation will erase everything on the device. Enter **Y**. Installation of the system console code will take about 30 minutes. It will take additional time for the remaining code to install and to erase partitions.

__ 10. Monitor the progress and insert DVD 2 when prompted, and then press **Enter** to continue.

__ 11. If prompted to enter a new password, enter **service**.

__ 12. When the installation is complete, the system will reboot.

__ 13. After the reboot, DHCP will configure the IP addresses.

__ 14. Wait for the reboot process to complete.

__ 15. When the reboot has completed, the system will be in kiosk mode. You can log in to the TS4500 Service mode (login **Service** and password **ibm2serv**.

__ 16. Alternatively, you can enter the system console. Press **Ctrl** + **Alt** + **Delete**, which will bring up a message asking if you want to exit. Select **Yes**.

__ 17. Disconnect the optical drive from the Tiny PC USB port, and return it to the location where you found it. Typically it is stored on the lowest shelf of the frame next to the IMC side panel.

Appendix F. Upgrading IMC code through broadband connection

Use this optional method to upgrade the TS4500 IMC code using a broadband connection. This procedure updates the system console code, not the TS4500 library code stored on the LCC.

Before you begin

You will use the IMC keyboard and IMC monitor to complete this task.

Procedure

__ 1. Open the IMC keyboard.

__ 2. Press **Ctrl** + **Alt** + **Delete**.

__ 3. Log in as **service**.

__ 4. Download the ISO files to the `/updatepkg` directory through the broadband connection. You can use secure copy protocol (SCP) or other ftp method to retrieve the files. If you are prompted for a login for service@tssnet1, use **service** and password **service**. Note that there are two image files for each system console code upgrade, which match the image files used with a DVD upgrade. Download both ISO image files.

```
[service@tssnet1 ~]$ ls /updatepkg/
tsmc042214-2.iso  tsmc042214.attr  tsmc042214.md5
tsmc042214-2.attr  tsmc042214-2.md5  tsmc042214.iso
```

__ 5. Right-click any place on the screen to access the context menus.

__ 6. Open the terminal console by choosing **Terminal** from the pull down menu.

__ 7. Enter `rsStaticUpdate.sh` command with `sudo` and `-a` options, as in the following example. The `-a` option backs up the current configuration to `/persist` directory. It will be restored automatically.

```
[service@tssnet1 ~]$ sudo rsStaticUpdate.sh -a
System Static Update
Backing up current configuration...
```

__ 8. Enter `HD` for the broadband method of update.

```
Please choose update method [CD|HD|quit] :HD
```

__ 9. At the next prompt, enter `Y`.

```
updated system will be installed to BANK1
If you choose 'N',rsStaticUpdate.sh would be aborted
OK? [Y|N] :Y
```

__ 10. At the next prompt, choose the desired package (e.g., 1 in the example below).

```
Select First ISO file for update
1) /updatepkg/tsmc042214.iso(7.3.14,DISK1)
Type number [Current Version: 7.3.14] >1
```

__ 11. At the next prompt, enter `Y`

```
/updatepkg/tsmc042214.iso(7.3.14,DISK1)
version is not newer than 7.3.14.
OK? [Y|N] :Y
```

__ 12. At the next prompt, choose the desired package (e.g., 1 in the example below).

```
Select Second ISO file for update
1) /updatepkg/tsmc042214-2.iso(7.3.14,DISK2)
Type number [Current Version: 7.3.14] > 1
```

__ 13. At the next prompt, enter Y.

```
/updatepkg/tsmc042214-2.iso(7.3.14,DISK2)
version is not newer than 7.3.14.
OK? [Y|N] :Y
```

__ 14. At the next prompt, enter Y.

```
First ISO file  :/updatepkg/tsmc042214.iso
Second ISO file :/updatepkg/tsmc042214-2.iso
OK? [Y|N] :Y
checking system version...
```

__ 15. At the next prompt, enter Y.

```
Version information of first ISO:
Version:7
Release:3
Modification:14

Version information of second ISO:
Version:7
Release:3
Modification:14

If you choose 'N',rsStaticUpdate.sh would be aborted
OK? [Y|N] :Y
```

__ 16. At the next prompt, enter Y.

```
If you choose 'N' or other keys, rsStaticUpdate.sh would be aborted
If you choose 'Y',system would be rebooted and continue this installation

OK? [Y|N] :Y
```

__ 17. The code installation will take about 30 minutes. Follow the prompts on the screen. Warning messages may indicate that the installation will erase everything on the device. Enter Y. The process will automatically switch to and install the second ISO image file after the first is installed.

__ 18. When the installation is complete, the system will reboot.

__ 19. After the reboot, DHCP will configure the IP addresses.

__ 20. Wait for the reboot process to complete.

__ 21. When the reboot has completed, the monitor will display the service login. You can log in to the TS4500 Service mode (login **Service** and password **ibm2serv** .

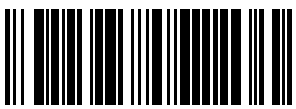
__ 22. Alternatively, you can enter the system console. Press **Ctrl** + **Alt** + **Delete**, which will bring up a message asking if you want to exit. Select **Yes**.

Part Number: 12X4571

Printed in USA

(1P) P/N: 12X4571

SC27-5987-00



EC M11837