

Exabyte 210, Exabyte 218, and
Exabyte 018

Maintenance

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Revision History

Revision	Date	Description
000	November 1993	Preliminary
001	April 1994	Initial release as <i>EXB-210 Maintenance</i> .
002	March 1997	Changed the title. Added the EXB-018 and EXB-218 4mm Libraries. Added the Exabyte Mammoth and Eliant 820 8mm tape drives. Updated the procedures.

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510811-002

Product Warranty Caution

The Exabyte® 210, Exabyte 218, and Exabyte 018 Libraries (EXB-210, EXB-218, and EXB-018) are warranted to be free from defects in materials, parts, and workmanship and will conform to the current product specification upon delivery. **For the specific details of your warranty, refer to your sales contract or contact the company from which the library was purchased.**

The warranty for the library shall not apply to failures of any unit when:

- The library is repaired by anyone other than the Manufacturer's personnel or approved agent.
- The library is physically abused or is used in a manner that is inconsistent with the operating instructions or product specification defined by the Manufacturer.
- The library fails because of accident, misuse, abuse, neglect, mishandling, misapplication, alteration, faulty installation, modification, or service by anyone other than the factory service center or its approved agent.
- The library is repaired by anyone, including an approved agent, in a manner that is contrary to the maintenance or installation instructions supplied by the Manufacturer.
- The Manufacturer's serial number tag is removed.
- The library is damaged because of improper packaging on return.

CAUTION

Returning the library in unauthorized packaging may damage the unit and void the warranty.

If you are returning the library for repair, package it in its original packaging (or in replacement packaging obtained from your vendor). Refer to the packing instructions on the carton.

If problems with the library occur, contact your maintenance organization; do not void the product warranty by allowing untrained or unauthorized personnel to attempt repairs.

FCC Notice

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

Shielded cables are required for this device to comply with FCC. Use shielded cables when connecting this device to others.

Industry Canada Notice per ICES-003

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

English translation:

This class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

VDE Notices

Bescheinigung des Herstellers/Importeurs: Hiermit wird bescheinigt, daß das EXB-018, EXB-210, und EXB-218 in Übereinstimmung mit den Bestimmungen der Vfg 243/1991 Funkentstört ist. Der Deutschen Bundespost wurde das in Verkehr bringen dieses Gerätes angezeigt und die Berechtigung zur Überprüfung der Serie auf Einhaltung der Bestimmungen eingeräumt. Einhaltung mit betreffenden Bestimmungen kommt darauf an, daß geschirmte Ausführungen gebraucht werden. Für die Beschaffung richtiger Ausführungen ist der Betreiber verantwortlich.

Dieses Gerät wurde sowohl einzeln als auch in einer Anlage, die einen normalen Anwendungsfall nachbildet, auf die Einhaltung der Funkentstörbestimmungen geprüft. Es ist jedoch möglich, daß die Funkentstörbestimmungen unter ungünstigen Umständen bei anderen Gerätekombinationen nicht eingehalten werden. Der Betreiber ist für die Einhaltung der Funkentstörungs Bestimmungen seiner eigenen Anlage verantwortlich, in der dieses Gerät betrieben wird.

English Translation:

Certificate by Manufacturer/Importer: This is to certify that the libraries are shielded against radio interference in accordance with the provisions of Vfg 243/1991. The German Postal Services have been advised that this device is being put on the market and that they have been given the right to inspect the series for compliance with the regulations. Compliance with applicable regulations depends on the use of shielded cables. It is the user who is responsible for procuring the appropriate cables.

This equipment has been tested concerning compliance with the relevant RFI protection requirements both individually and on system level (to simulate normal operation conditions). However, it is possible that these RFI requirements are not met under certain unfavorable conditions in other installations. It is the user who is responsible for compliance of his particular installation.

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About This Manual

This manual provides detailed instructions for performing maintenance on the Exabyte® 210, Exabyte 218, and Exabyte 018 Libraries (EXB-210, EXB-218, and EXB-018). This manual also provides a list of error codes and describes the Diagnostics firmware used for displaying library statistics, calibrating (where needed), and performing tests on the library.

Intended Audience

This manual is provided for Exabyte customers and third party maintainers who have signed self-maintenance contracts and who need to maintain and diagnose problems with the library.

Note: For best results, perform maintenance on both standalone and rack-mount models of the library with the library placed horizontally on the work surface. Most of the instructions and illustrations in this manual refer to a horizontally positioned library.

Problems and Questions

If you encounter any problems or have any questions about the information in this manual, contact your vendor or contact Exabyte at:

Exabyte Technical Support	1-800-445-7736 1-303-417-7792 1-303-417-7160 (fax)
EXAFacts™ Fax-on-Demand	1-800-445-7736 1-303-417-7792
e-mail	support@exabyte.com
World Wide Web	http://www.exabyte.com
Bulletin Board (BBS)	1-303-417-7100 Connect at up to 28,800 baud with 8 data bits, 1 stop bit, and no parity. Turn on hardware (RTS/CTS) flow control.

Conventions Used in This Manual

In this manual, the following terms are used frequently:

Tape drive: A 4mm or 8mm half-high tape drive.

CHM: Cartridge handling mechanism. The robotic assembly in the library that moves horizontally and vertically to retrieve and place data cartridges.

Library: The library in its entirety.

Special information in this manual is highlighted in the following ways:

Note: Notes provide hints or suggestions about the topic or procedure being discussed.

➤ **Important** Information next to the word "Important" helps you complete a procedure or avoid additional steps..

CAUTION

Boxed text under the word "CAUTION" provides information you must know to avoid damaging the library.

WARNING!

Boxed text under the heading "WARNING!" provides information you must know to avoid personal injury.

Related Publications

For further information about the libraries, refer to the following publications:

- *EXB-210 and EXB-220 SCSI Reference*, 510806
- *Exabyte 210 Product Specification*, 510807
- *Exabyte 210 and Exabyte 220 Installation and Operation*, 510808
- *EXB-018 and EXB-218 SCSI Reference*, 306237
- *EXB-018 Product Specification*, 310169
- *EXB-218 Product Specification*, 312599
- *EXB-018 Installation and Operation*, 310170
- *EXB-218 Installation and Operation*, 312285
- *EXB-018 Integration*, 310172

Standards

For information about the standards used for the library, refer to the following publications:

- *ANSI Small Computer System Interface (SCSI)*, X3.131-1989
- *ANSI Small Computer System Interface-2 (SCSI-2)*, X3T9/89-042
- *ANSI Helical-Scan Digital Computer Tape Cartridge*, X3B5/89-136, Rev. 6

Notes

1 Overview

The Exabyte® 210 (EXB-210) is an 8mm library; the Exabyte 218 (EXB-218) and Exabyte 018 (EXB-018) are 4mm libraries. Minor differences exist between the libraries, such as the design of the data cartridge magazine; however, most features and maintenance procedures are the same.

The library enclosure contains a robotic handler, referred to as the cartridge handling mechanism (CHM), one or two half-high tape drives (8mm or 4mm), a data cartridge magazine (ten 8mm data cartridges or eighteen 4mm data cartridges), and a fixed cartridge slot for a cleaning cartridge or an additional data cartridge.

The library includes a four-line liquid crystal display (LCD) and keypad on the front panel that enable you to interactively control library operations. Using the LCD and keypad, you can set options, check operating statistics, and diagnose errors.

1.1 Locator Maps

This section provides locator maps for library components and information about where to look for details on each component.

Front Panel and Cover

The library is available in two models: the standalone and the rack-mount.

The standalone model, shown on the left in Figure 1-1, has a textured finish.

The rack-mount model, shown on the right in Figure 1-1, has a sheet metal cover. (The cabinet or rack has been omitted from the illustration for clarity.)

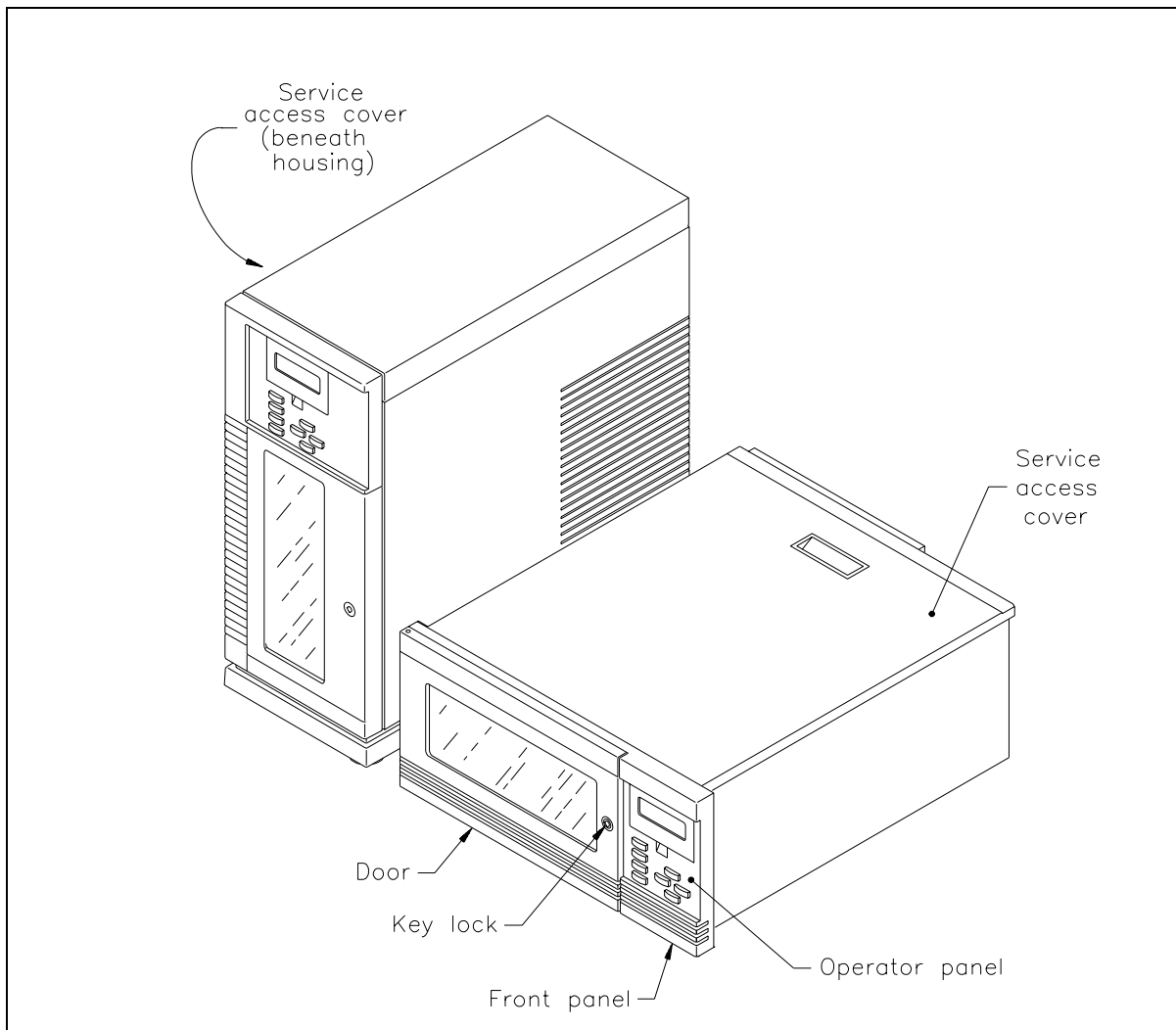


Figure 1-1 Front panel and cover

➤ **Important** Regardless of which model you are using, it is recommended that you perform maintenance procedures with the library placed horizontally on the work surface. Most of the procedures and illustrations in this manual refer to a library placed horizontally.

Figure 1-1 shows the following components:

- The service access cover provides covering for the library's internal components. You must remove the cover to replace most library parts. Refer to Chapter 3 for procedures.
- The front panel includes the door, key lock, solenoid, and the operator panel. See Chapter 4 for maintenance procedures.
- The door provides a clear, shatterproof window that allows you to view the interior.
- The key lock provides data security. When you turn the key to the unlocked position, the library completes its current operation, moves the CHM to the park position, then releases the latch on the front door. Any other pending operations will be performed when you lock the door again.
- The solenoid (not shown) provides the electronic locking mechanism that allows the CHM to complete its current operation before the door latch is released.
- The operator panel allows the user to manually change control modes, set SCSI IDs, and perform diagnostics on the library. A security option allows you to prevent users from making changes from these menus. For more information, refer to your installation and operation manual.

Back Panel Components

Figure 1-2 shows the back panel.

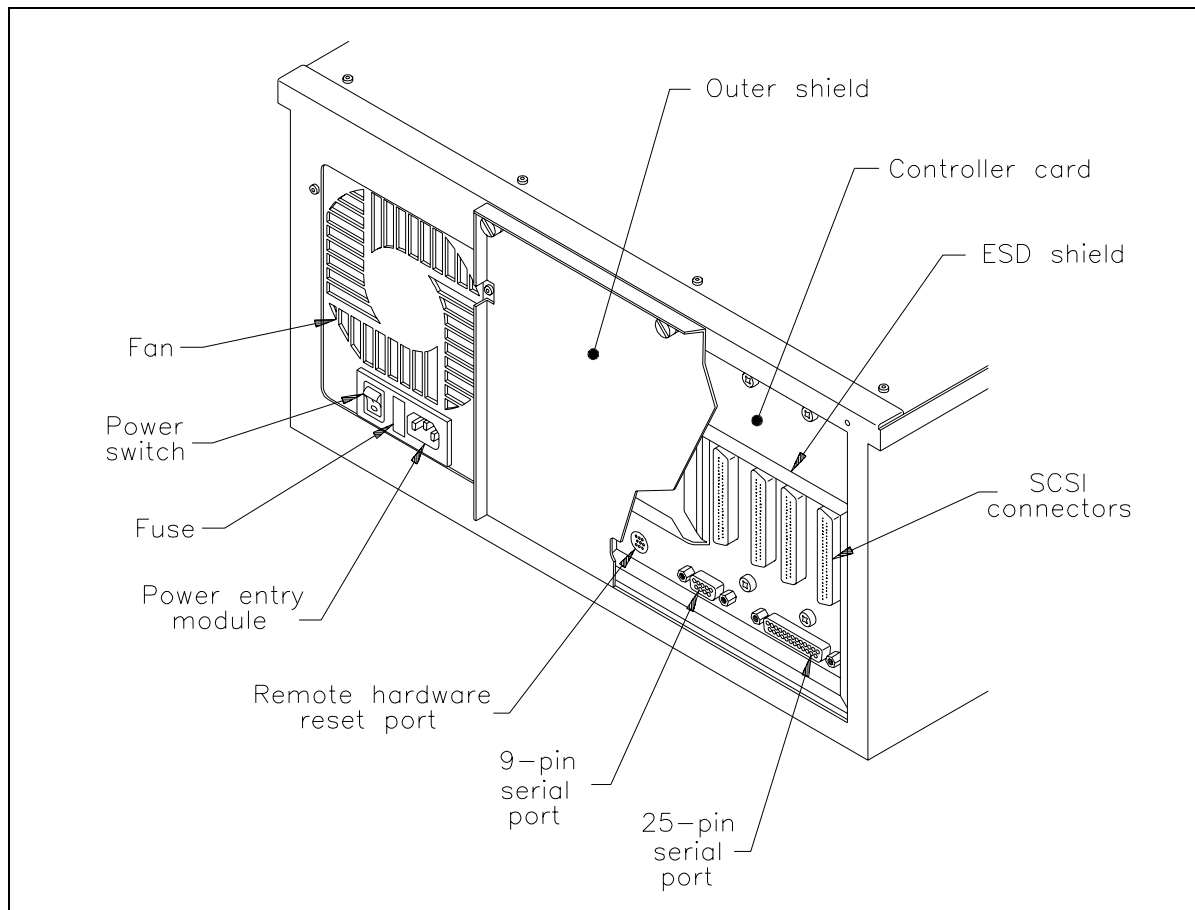


Figure 1-2 Back panel (dual SCSI bus shown)

The back panel includes the following components:

- The controller card provides control for the library's robotics. The serial diagnostic ports, SCSI connectors, and ESD shield are part of the controller card assembly. See Chapter 8 for maintenance procedures. The outer shield provides protection for the controller card. The remote hardware reset port is used to reset the library using a cable (see Section 11.3).
- The fan, power switch, power entry module, and fuse are part of the power supply assembly. See "Back Internal Components" on page 1-7.

Front Internal Components

Front internal components differ slightly between the library models; Figure 1-3 and Figure 1-4 show the two library models.

EXB-210

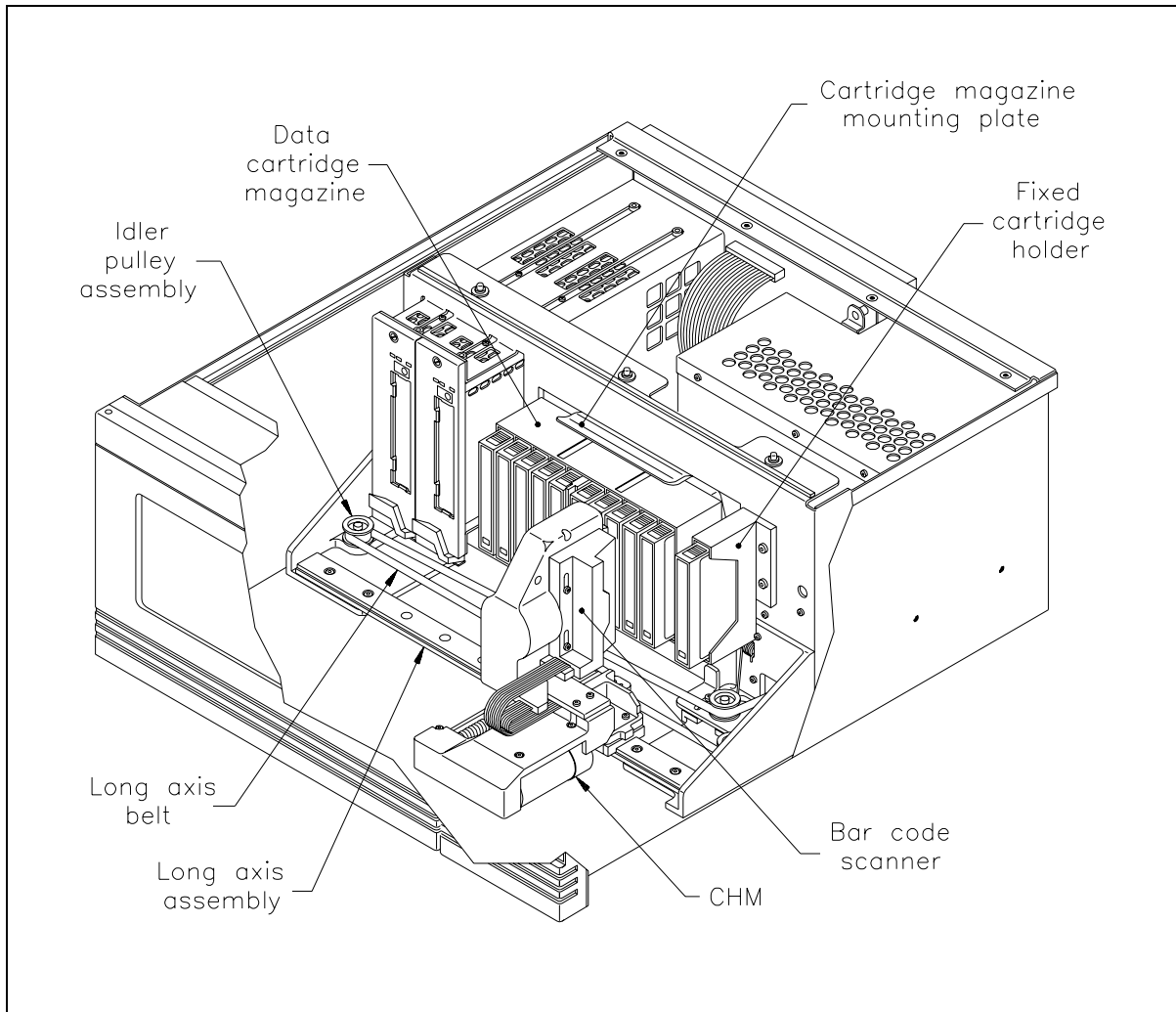


Figure 1-3 EXB-210: Front internal components

EXB-018 and EXB-218

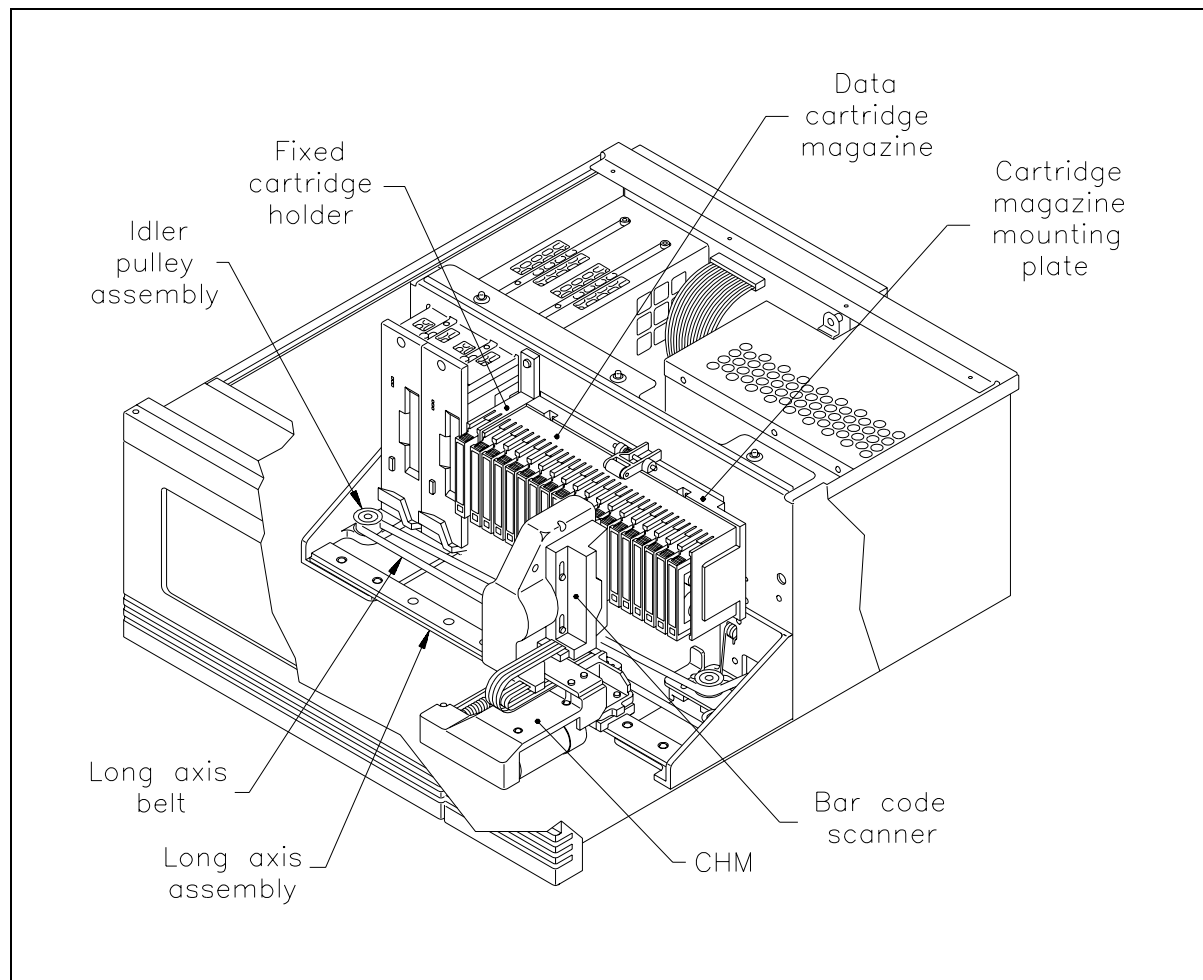


Figure 1-4 EXB-018 and EXB-218: Front internal components

- The data cartridge magazine holds the data cartridges. The fixed cartridge slot was designed to store a cleaning cartridge; however, it can also hold a data cartridge.
- The data cartridge magazine mounting plate provides a mount for the data cartridge magazine. Refer to Chapter 9 for maintenance procedures.
- The cartridge handling mechanism (CHM) is the robotic arm that moves cartridges between the tape drives, the data cartridge magazine, and the fixed cartridge slot. The bar code scanner is an optional component of the CHM that allows you to read bar code labels on your data cartridges. The CHM is mounted on the long axis assembly. The idler pulley assemblies provide movement control for the long axis belt. See Chapter 6 for maintenance procedures.

Back Internal Components

Figure 1-5 shows the internal components in the back of the library.

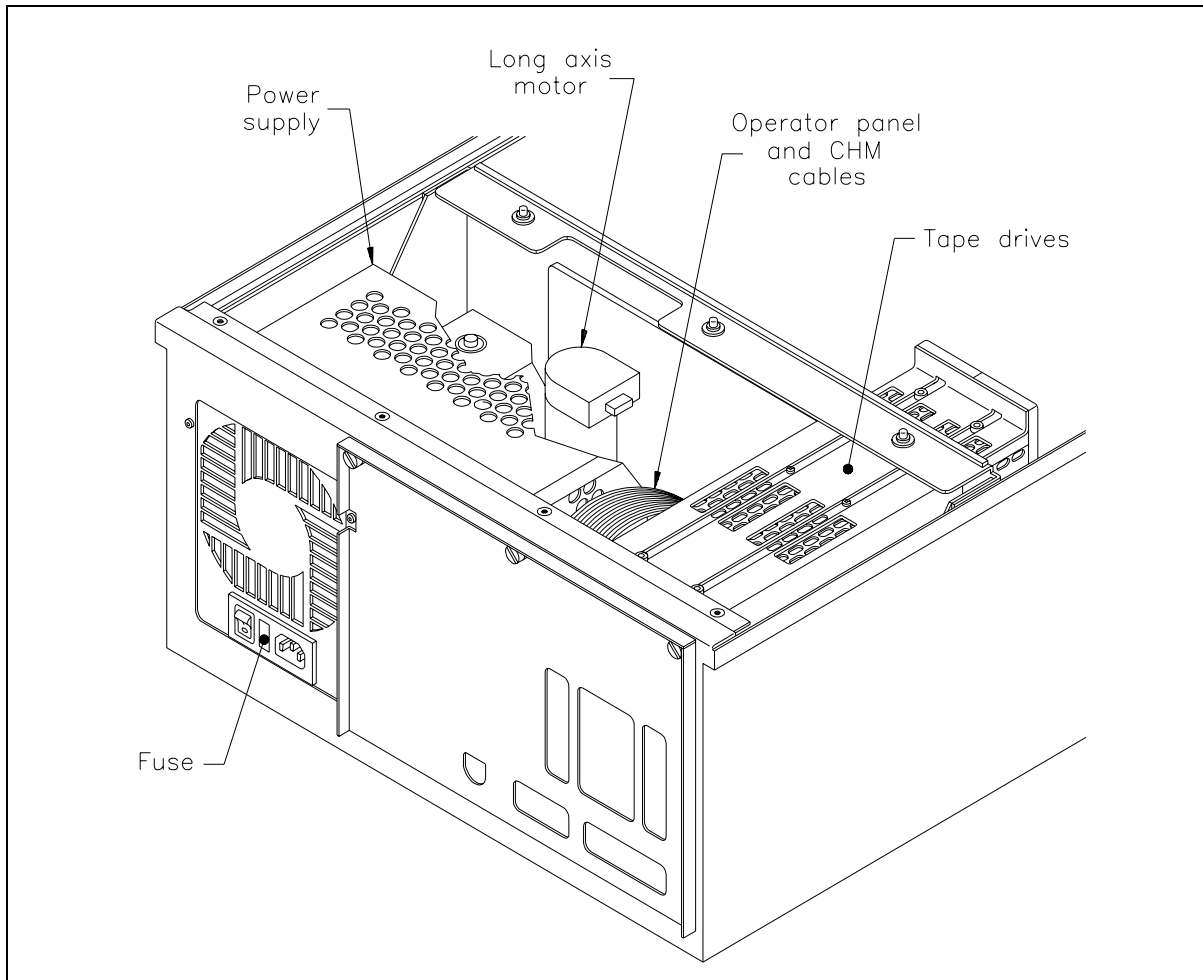


Figure 1-5 Back internal components

- The power supply provides power for the library. The fan, power switch, power entry module, and fuse (shown in Figure 1-2) are part of this assembly. See Chapter 7 for maintenance procedures.
- The long axis motor controls the motion of the CHM on the long axis. See Chapter 6 for maintenance procedures.
- The CHM cable provides a connection between the controller card and the CHM; the operator panel cable provides connection between the controller card and the operator panel. See Chapter 10 for maintenance procedures.

- The EXB-210 operates with Exabyte 8mm half-high tape drives. The EXB-018 and EXB-218 operate with 4mm tape drives. If you have only one tape drive, you must have a drive blank (not shown) in the unused slot.

2 Maintenance Preparation

This chapter describes how to keep the repair environment free of electrostatic discharge (ESD) and lists tools required for repairs.

WARNING!

When you are replacing parts on the library, make sure you have first turned off the power and disconnected the power cord. The standalone library weighs up to 85 pounds (40 kg); the rack-mount model weighs up to 64 pounds (29 kg). At least two people are needed to lift it.

2.1 Electrostatic Protection Requirements

The repair environment for the library must be free of conditions that could cause electrostatic discharge (ESD). To protect the library from ESD, follow these procedures when repairing or testing the library:

- Place a static protection mat on the work surface used for testing and repairing the library. Use a 1-megohm resistor to ground the static protection mat.
- Wear a static protection wrist band whenever you handle library cards that have been removed from their antistatic bags. Connect this wrist band to the static protection mat or to other suitable ESD grounding.
- Keep all cards in antistatic bags when not in use.
- Ensure that the host computer communicating with the library is properly grounded.

- When the library is in operation, make sure the AC power source is properly grounded.

2.2 Maintenance Tools

The following tools are needed for performing maintenance on the library:

- Torque limiting screwdriver, straight and right-angle
- T-8 TORX® bit*
- T-10 TORX bit*
- T-15 TORX bit*
- T-20 TORX bit*
- Flat-blade screwdriver
- # 1 and # 2 Phillips screwdrivers
- Nut driver

*Magnetized bits are recommended.

Note: This manual specifies TORX bits for screws on most components. Some earlier models of the library require Phillips screwdrivers (# 0, # 1, and # 2).

3 Accessing Internal Components

To access the library's internal components and perform maintenance, you must first do the following:

For the rack-mount model:

- Extend the rack's support legs and slide the library out on its rails (see Figure 3-2), or remove the library from the cabinet.
- Remove the service access cover. See page 3-15.

For the standalone model:

- Remove the top, left, and right cover of the housing. See page 3-10.
- Remove the service access cover. See page 3-15.

3.1 Removing and Installing the Rack-Mount Library

This section describes how to remove the rack-mount library from a cabinet or rack, and install it into a cabinet or rack. These procedures apply only to the rack-mount model of the library.

Do This First

- ✓ Turn off the power and disconnect the power cord.
- ✓ Disconnect all cables to the library.
- ✓ Follow the ESD guidelines in Chapter 2.
- ✓ Obtain a T-20 TORX bit.

WARNING!

The rack-mount library weighs up to 64 pounds (29 kg). At least two people are needed to remove or install the unit into a rack.

If you are sliding the library out on the rails for maintenance purposes, be sure to first extend the rack's support legs to avoid the possibility of tipping.

Removing the Library from a Rack

To remove the rack-mount library from a rack:

1. Use the key to open the front door of the library.

2. Pull on the cabinet latch inside the door (see Figure 3-1).

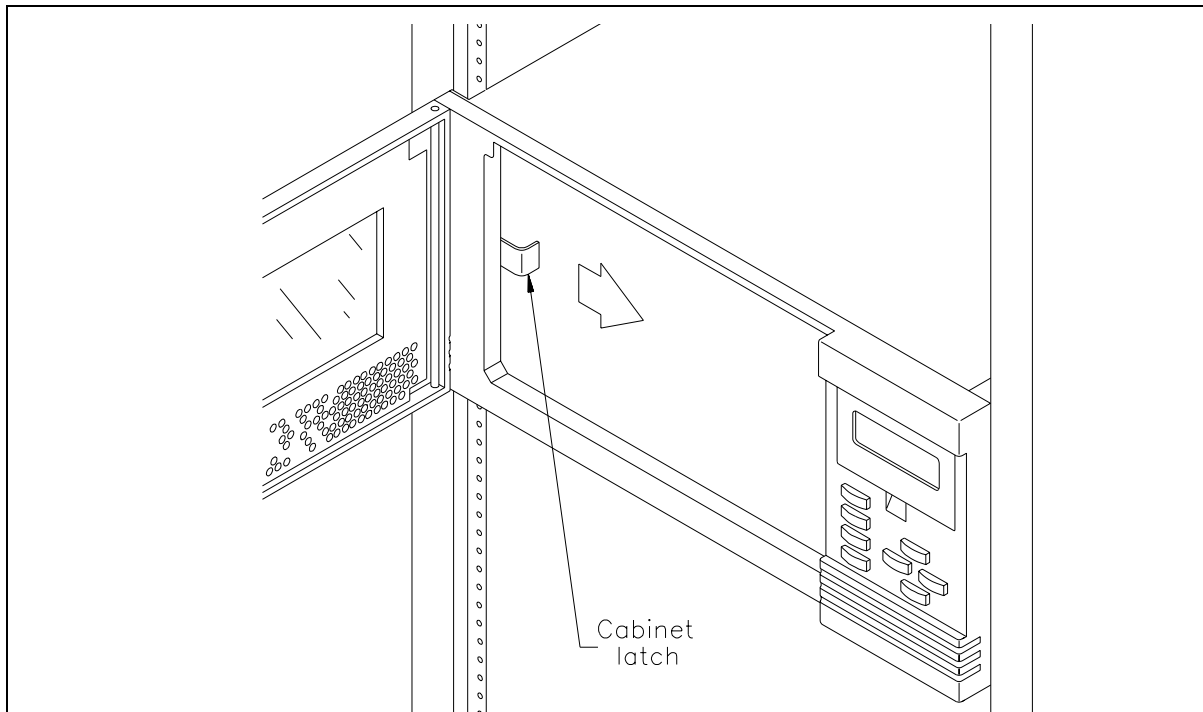


Figure 3-1 Pulling the cabinet latch

3. Slide the library out of the rack until the rails stop at their spring clips (see Figure 3-2). Press the spring clips to disengage the rails.

4. Using two people, pull the library out of the rack.

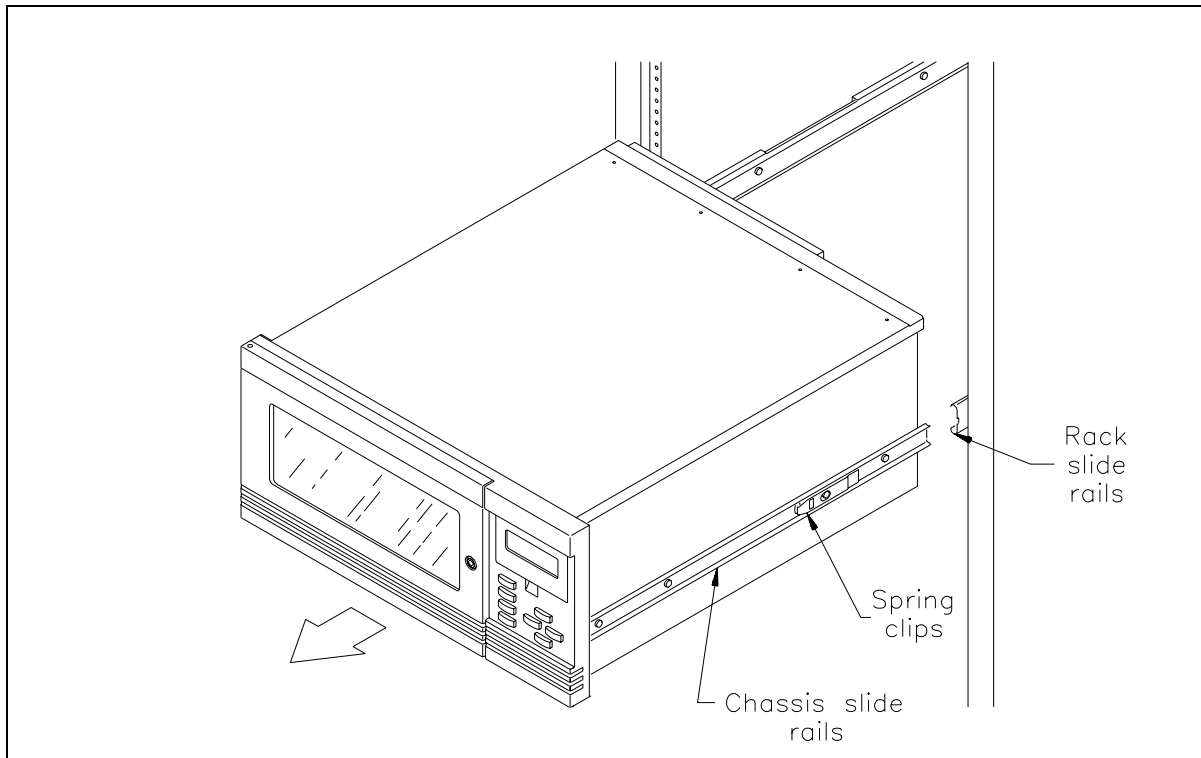


Figure 3-2 Removing the library from the rack

Installing the Library into a Rack (or Cabinet)

If you have a rack-mount library, follow these instructions to install the library into a standard EIA 19-inch rack.

WARNING!

The rack-mount model weighs 64 pounds (29 kg). To install the library into a rack, you need at least two people to lift it.

Make sure you install the library in the lowest possible location in the rack. To reduce the risk of tipping, use a rack with extension support legs.

For this procedure, you will need at least two people and the following tools and equipment:

- EIA standard 19-inch rack
- T-15 TORX bit
- T-20 TORX bit
- Eight 10-32 × 0.5 truss head screws
- Eight clip nuts

To install the library into a rack:

1. Locate the slide rail assembly attached to each side of the rack-mount library. Slide the rail toward the rear of the library, as shown in Figure 3-3.

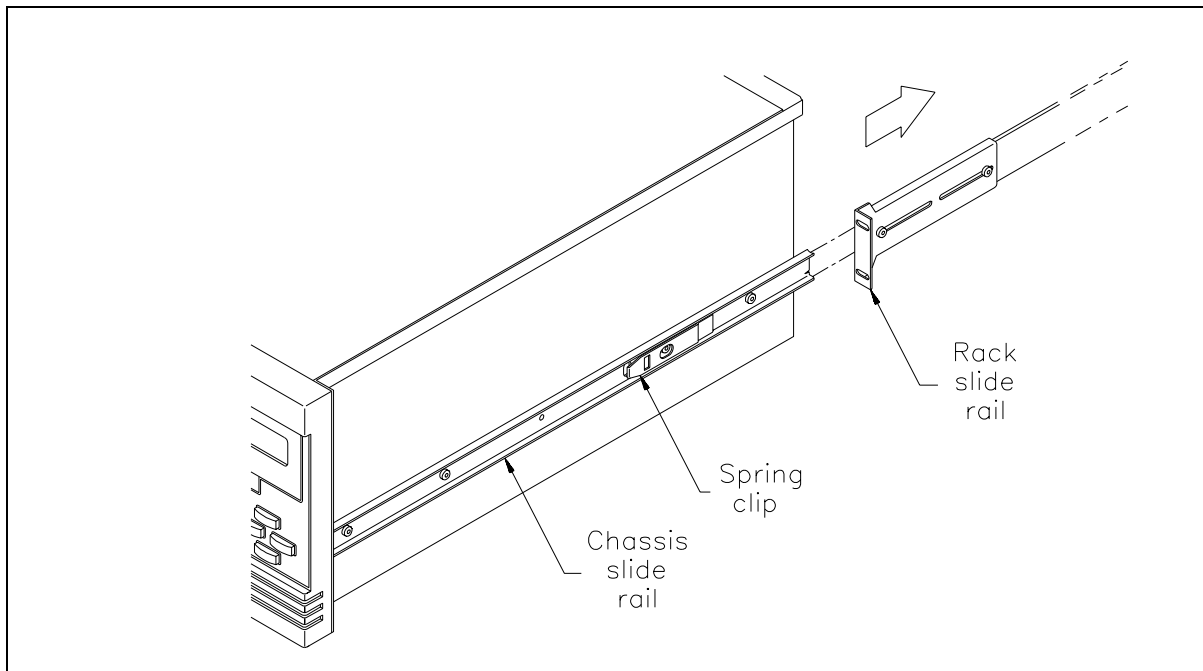


Figure 3-3 Separating the slide rails

2. Press the spring clips to release the latch and remove the rail from the chassis slide rail.

3. Locate the mounting holes on the rack where you want to install the library. Allow 1½ inches (3.8 cm) minimum clearance below the bottom mounting hole.

Note: If the rack does not have threaded holes, attach the clip nuts provided with the library over the mounting holes, as shown in Figure 3-4.

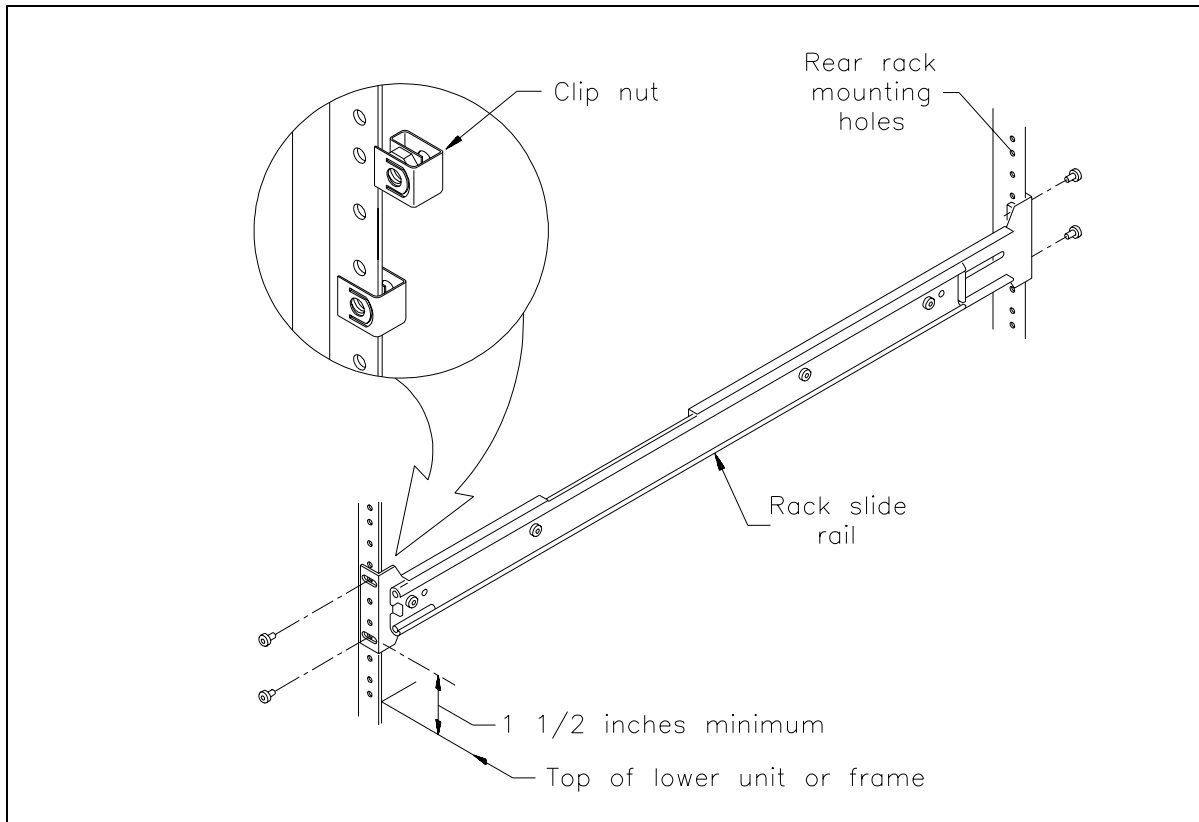


Figure 3-4 Locating the mounting holes

4. Orient the slide rails so the metal stop is toward the back of the cabinet, as shown in Figure 3-5. If the rails are not long enough to reach the back of the cabinet, use a T-15 TORX bit to loosen the screws on the rails. Extend the rails to the desired length and tighten the nuts.

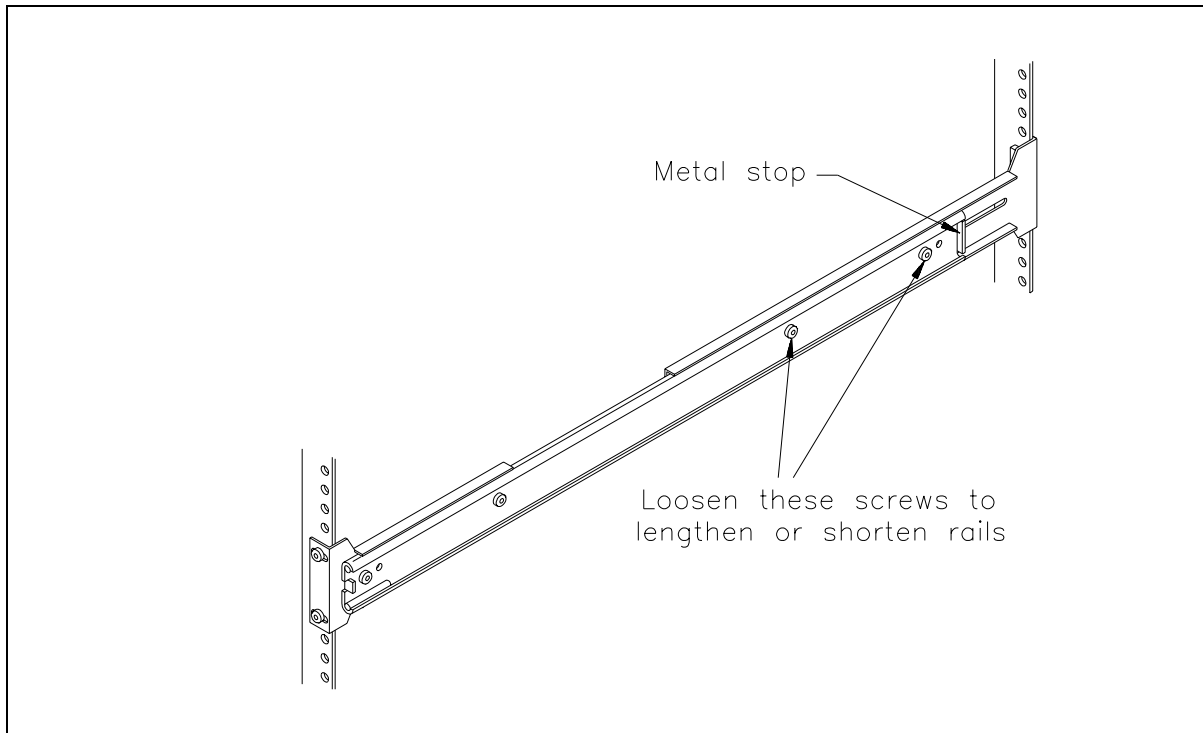


Figure 3-5 Attaching the slide rails

3 Accessing Internal Components

5. Using a T-20 TORX bit and four screws per rail, attach (but do not tighten) the slide rails to the mounting holes on the rack, as shown in Figure 3-6.
6. As shown in Figure 3-6, adjust the distance between the rail brackets on each side of the cabinet to $17\frac{5}{8}$ inches (44.75 cm). Measure both the front and back.

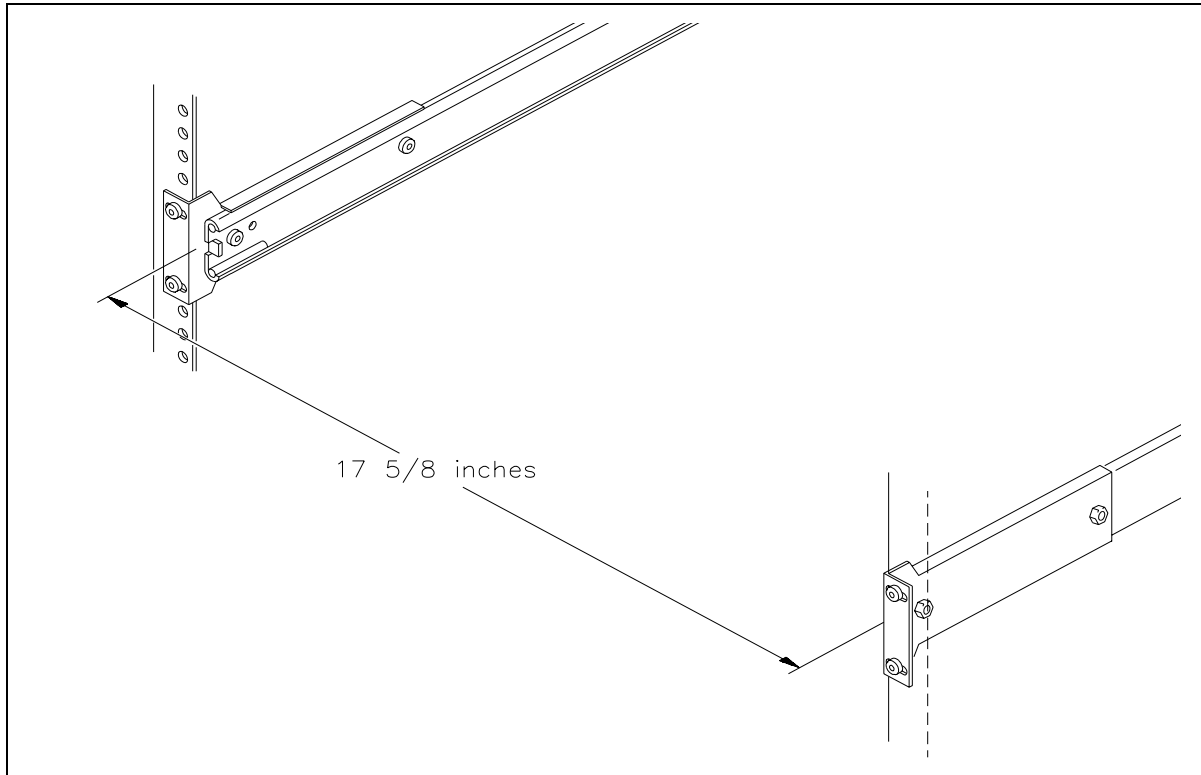


Figure 3-6 Adjusting the distance between slide rails

7. Use a T-20 TORX bit to tighten the screws to 12.0 inch-pounds (13.8 kg-cm) of torque.

8. Using two people to lift the library, insert the chassis slide rails into the rack slide rails, as shown in Figure 3-7. Press the spring clips and push the library back into the rack until you hear the latch inside the library engage.

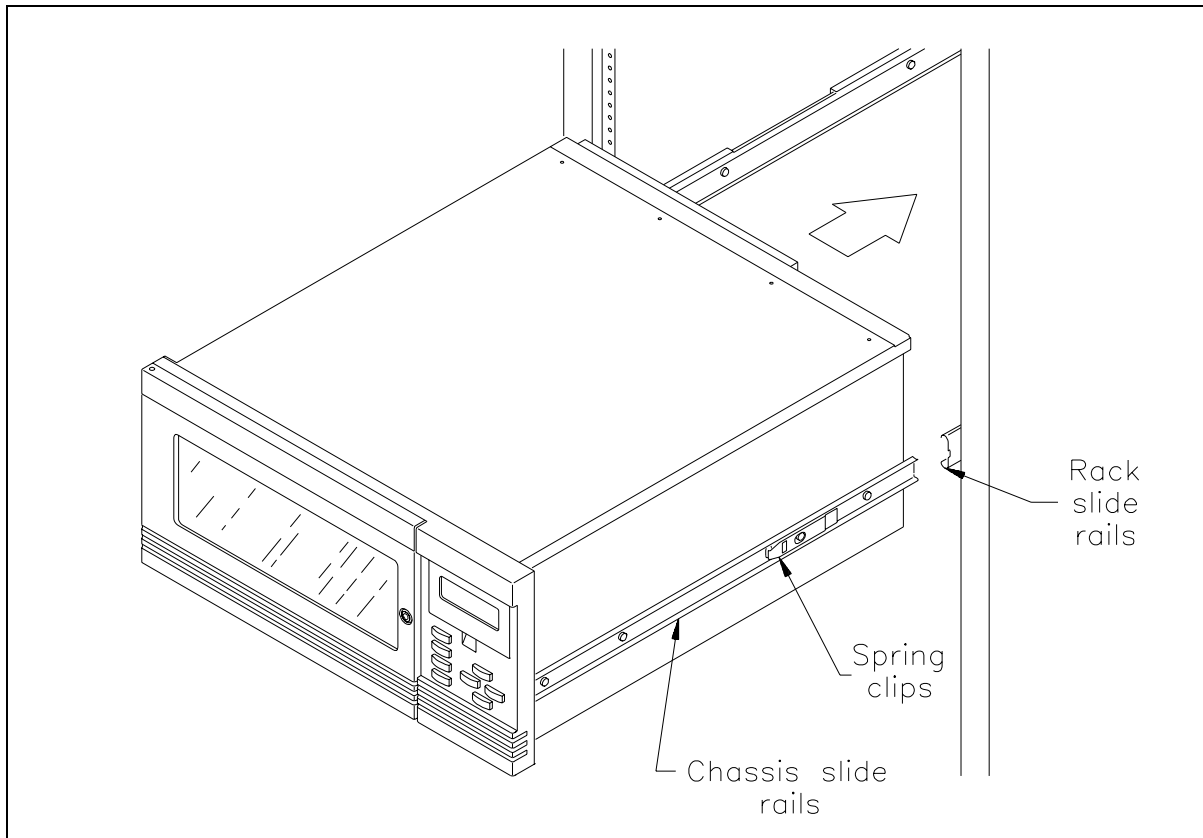


Figure 3-7 Inserting the library into the rack

3.2 Removing and Replacing the Housing on the Standalone Library

This section describes how to replace the housing on the standalone library. This includes replacing the top and side covers and replacing the pedestal and feet.

Do This First

- ✓ Turn off the power and disconnect the power cord.
- ✓ Follow the ESD guidelines provided in Chapter 2.
- ✓ Obtain a T-20 TORX bit. (Some earlier models may use a # 2 Phillips screwdriver.)

Removing the Housing

1. Use a T-20 TORX bit to remove the two screws from the back of the top cover (see Figure 3-8).
2. From the rear, push up on the top cover and pull it towards the rear until the front lip of the cover disengages from the front panel. Remove the cover.

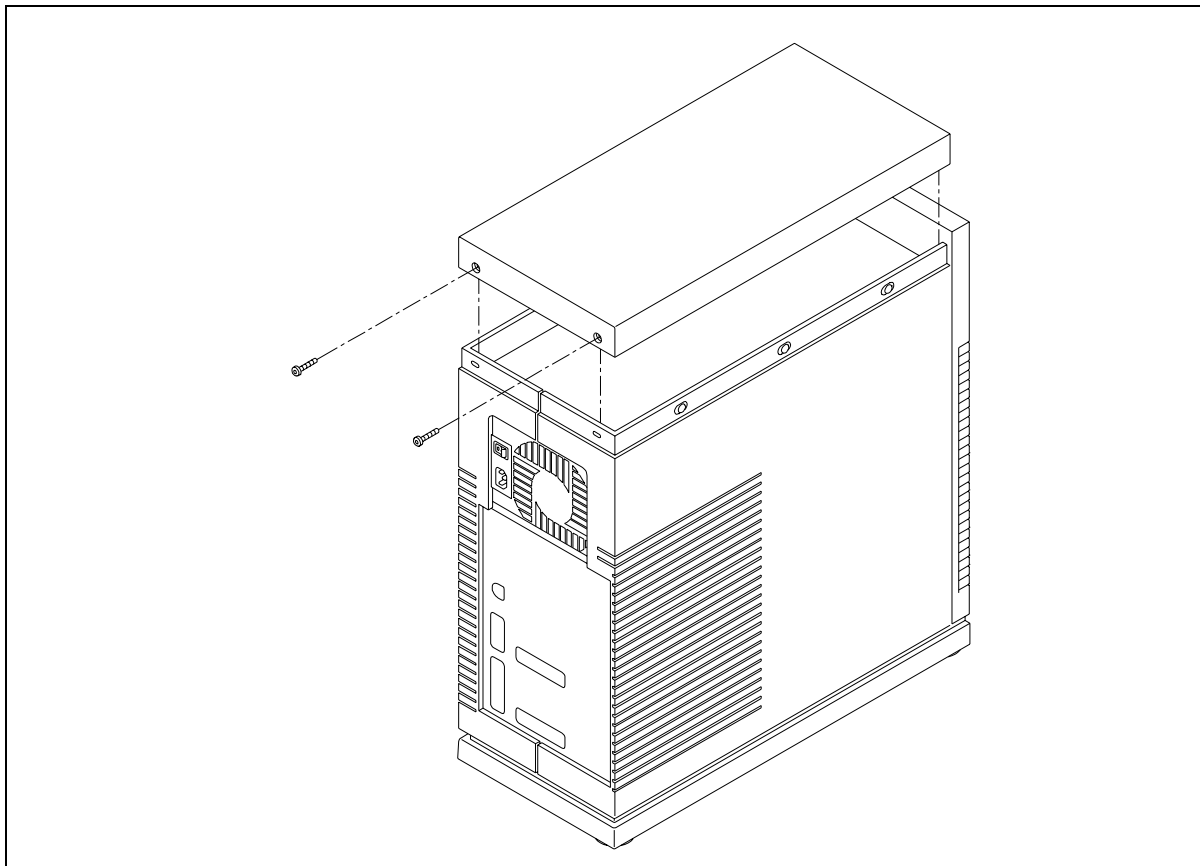


Figure 3-8 Removing the top cover

3. Use a T-20 TORX bit to remove the three screws from the top of the right cover (as seen from the rear). Slide the right cover toward the rear and lift it up to remove it (see Figure 3-9).
4. Use a T-20 TORX bit to remove the three screws from the top of the left cover (as seen from the rear).
5. Pull up on the left cover to remove it as shown in Figure 3-9.

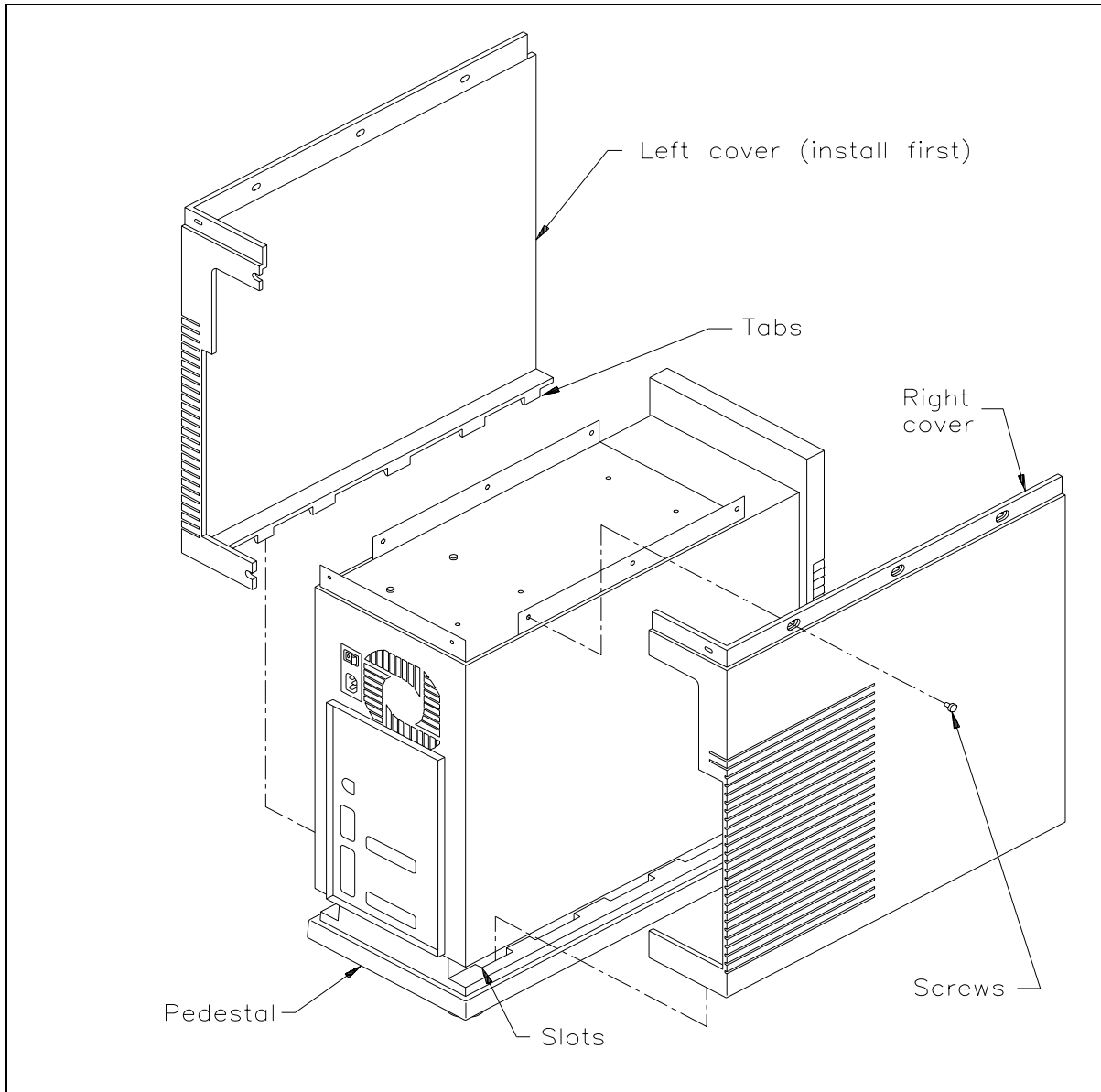


Figure 3-9 Removing the left and right covers

Replacing the Housing

1. Position the left cover on the library, using the tabs along the bottom as guidance. Use a T-20 TORX bit to replace the three $8-32 \times 0.50$ panhead screws. Tighten the screws to 15.0 inch-pounds (17.2 kg-cm) of torque.
2. Position the right cover on the right side of the library (as seen from the rear), using the tabs along the bottom as guidance (see Figure 3-9). Use a T-20 TORX bit to replace the three $8-32 \times 0.50$ panhead screws. Tighten the screws to 15.0 inch-pounds (17.2 kg-cm) of torque.
3. Replace the top cover, lining up the two screw holes in the cover with the two holes on the rear edge. Use a T-20 TORX bit to replace the two $8-32 \times 0.750$ countersink screws. Tighten the screws to 15.0 inch-pounds (17.2 kg-cm) of torque.

Removing the Pedestal and Feet

Note: To do this procedure, position the library on its side with the bottom of the library (the pedestal) protruding from your work surface (see Figure 3-10). This will assist you in lining up the screw holes when you replace the pedestal.

1. Use a T-20 TORX bit (some models may require a # 2 Phillips screwdriver) to remove the eight screws from underneath the library (see Figure 3-10).
2. Pull the pedestal off the library.
3. To remove the feet, unscrew them.

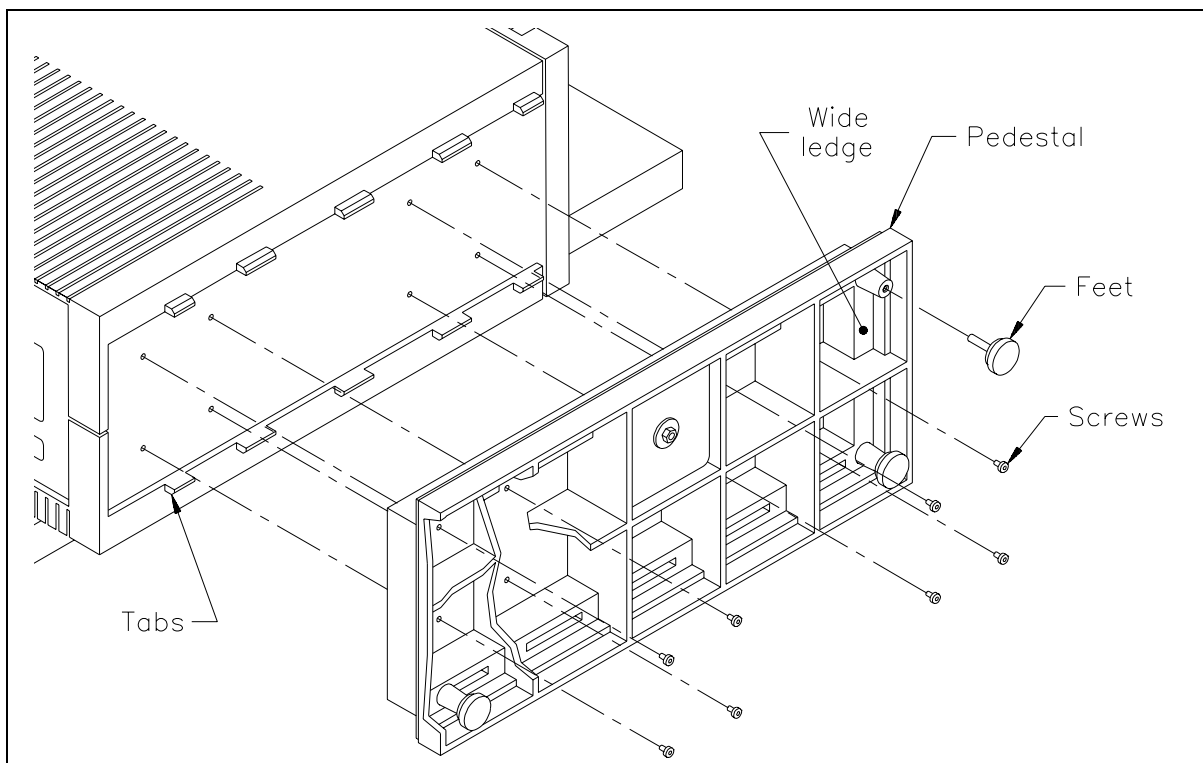


Figure 3-10 Removing the pedestal and feet

Replacing the Pedestal and Feet

1. Orient the pedestal so the wide ledge is at the front (as shown in Figure 3-10). Using the alignment tabs at the bottom of the left and right covers for guidance, push the pedestal onto the library. Make sure each alignment tab is inserted properly into the narrow end of the corresponding slot on the pedestal.
2. Use a T-20 TORX bit (some models may require a # 2 Phillips screwdriver) to replace the eight 8-32 × 0.50 screws. Tighten the screws to 15.0 inch-pounds (17.2 kg-cm) of torque.

3.3 Removing and Replacing the Service Access Cover

This section describes how to remove and replace the service access cover (the inside cover) on the rack-mount and standalone library.

Do This First

- ✓ Turn off the power and disconnect the power cord.
- ✓ Follow the ESD guidelines provided in Chapter 2.
- ✓ Obtain a T-10 TORX bit.

Removing the Service Access Cover

1. Use a T-10 TORX bit to remove the four screws from the service access cover, as shown in Figure 3-11. For standalone models, the service access cover is under the right cover as seen from the rear.

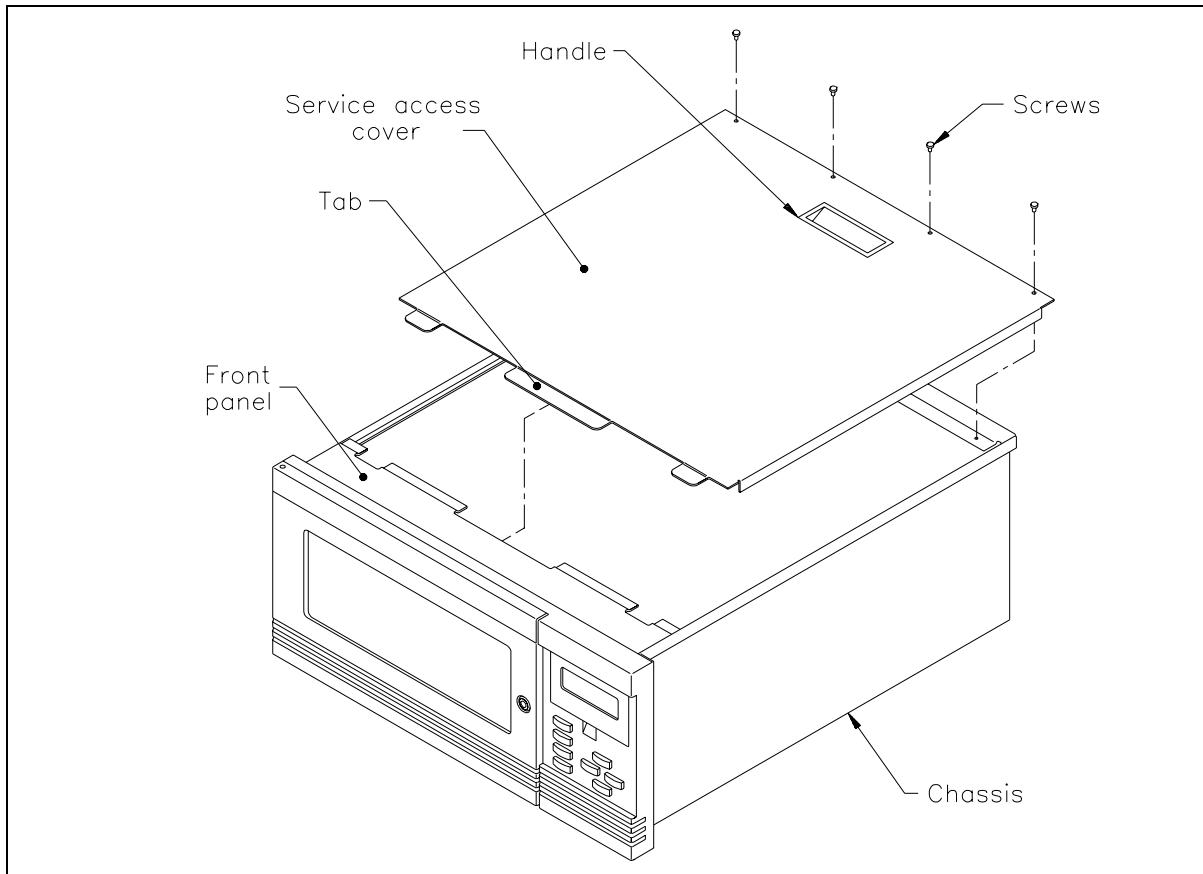


Figure 3-11 Removing the service access cover

2. Pull up on the handle and slide the cover away from the front panel. Lift it off the chassis.

Replacing the Service Access Cover

1. Position the service access cover on top of the library with the handle toward the back. Slide the tabs into the slots on the front panel (see Figure 3-11) and position the cover over the chassis.
2. Use a T-10 TORX bit (some models may require a # 1 Phillips screwdriver) to replace the four 6-32 \times 0.250 undercut countersink screws that secure the service access cover to the chassis. Tighten the screws to 8.0 inch-pounds (9.2 kg-cm) of torque.

Notes

4 Replacing Front Panel Components

This chapter describes how to replace the following components:

- Front panel (standalone and rack-mount models)
- Front door (standalone and rack-mount models)
- Solenoid (standalone and rack-mount models)
- Air filter

4.1 Replacing the Front Panel (Standalone Model)

Follow these instructions to replace the front panel.

Do This First

- ✓ Turn off the power and disconnect the power cord.
- ✓ Follow the ESD guidelines provided in Chapter 2.
- ✓ Remove the top and right covers (see Section 3.2).
- ✓ Remove the service access cover (see Section 3.3).
- ✓ Obtain a T-8 TORX bit, if necessary.
- ✓ Obtain a T-10 TORX bit. (Some models may require a # 1 Phillips screwdriver.)

Removing the Standalone Front Panel

1. If necessary, use a T-8 TORX bit to remove the two screws from the cable clamp that secures the cable to the chassis beside the operator panel. Remove the cable clamp and set it aside—you will use the same clamp when you replace the cable.
2. Disconnect the operator panel cable from inside the front panel by pressing the release and gently pulling on the connector (see Figure 4-1).

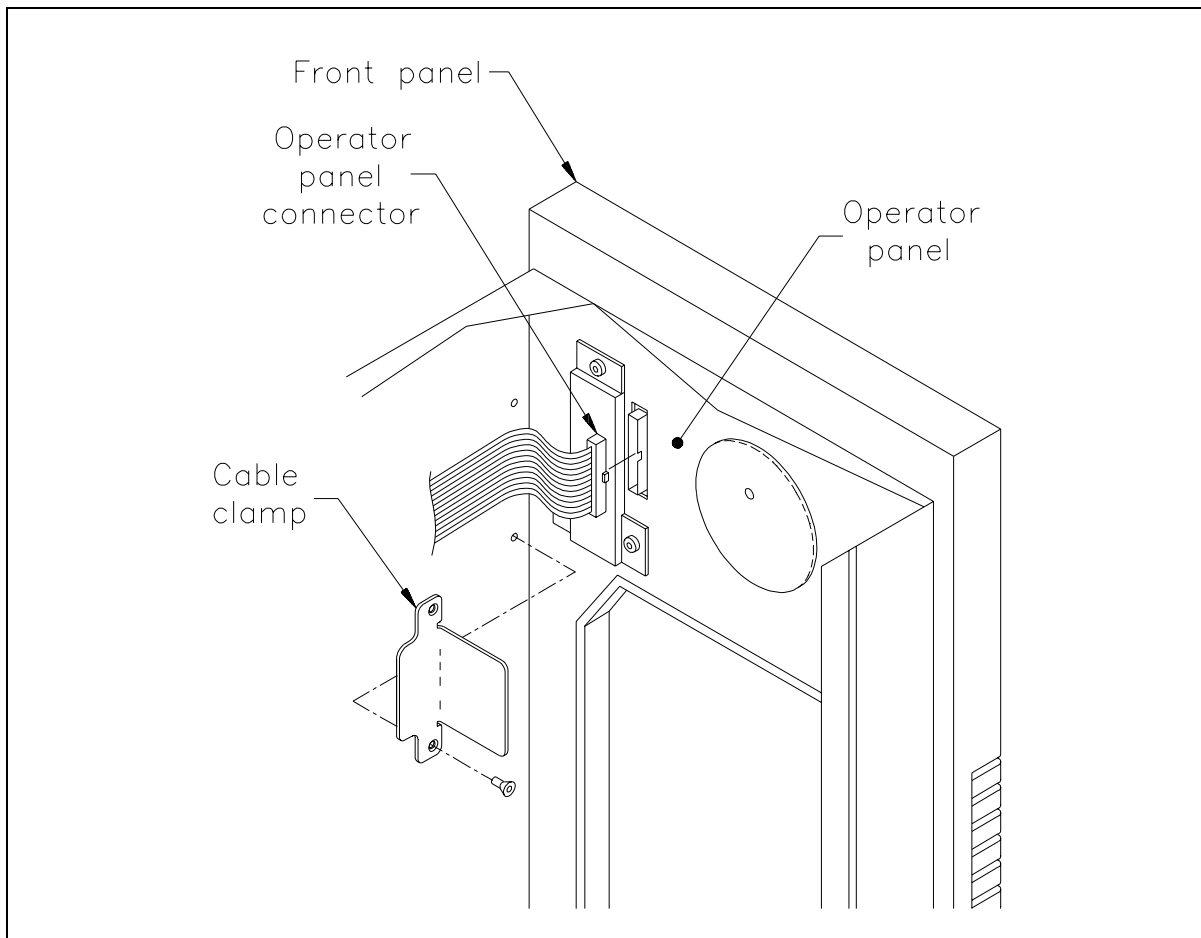


Figure 4-1 Removing the operator panel cable from the standalone front panel

3. Open the front door and use a T-10 TORX bit to remove the five screws from the outside of the front panel (see Figure 4-2).

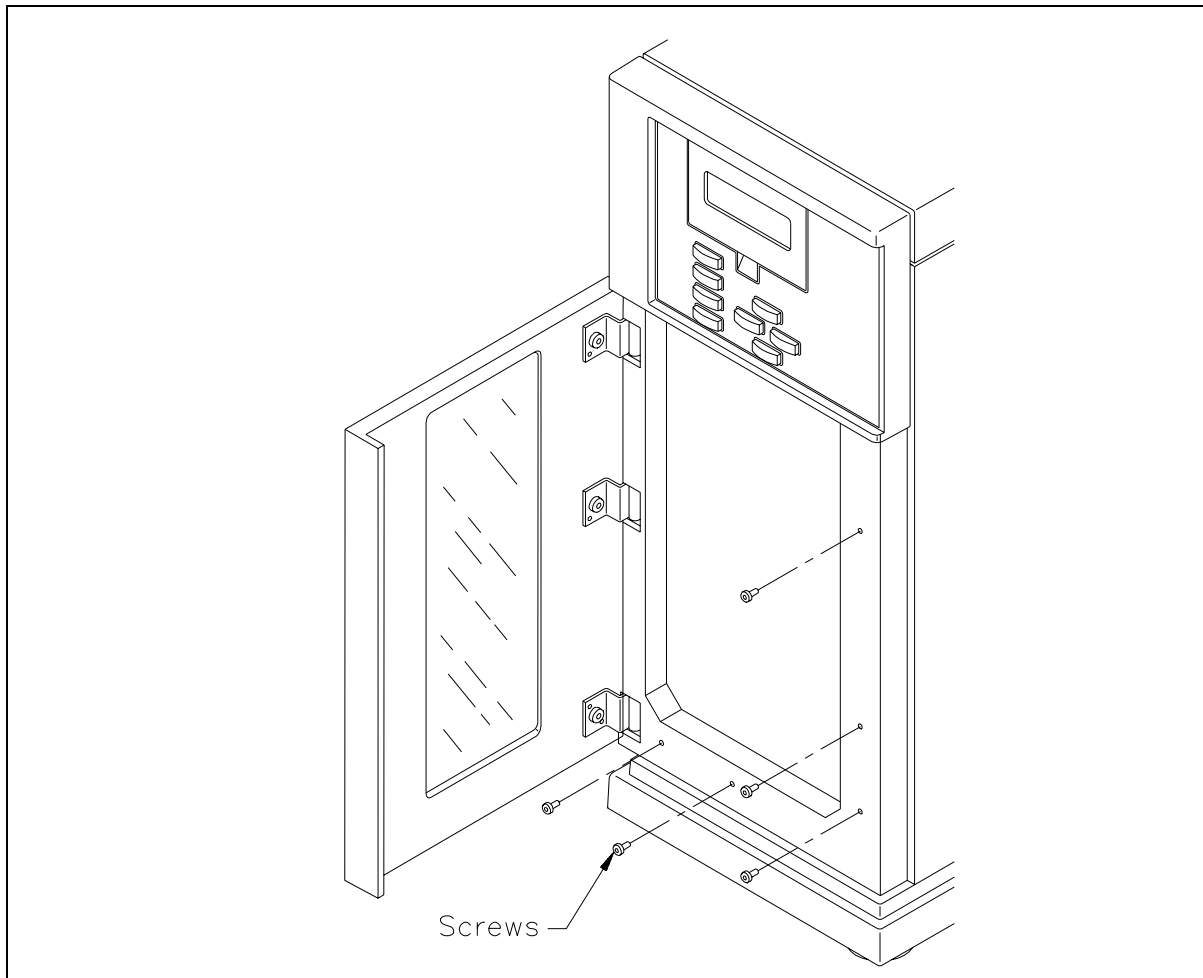


Figure 4-2 Removing the screws from the front panel

4. Use a T-10 TORX bit to remove the three screws that secure the front panel to the chassis (see Figure 4-3).

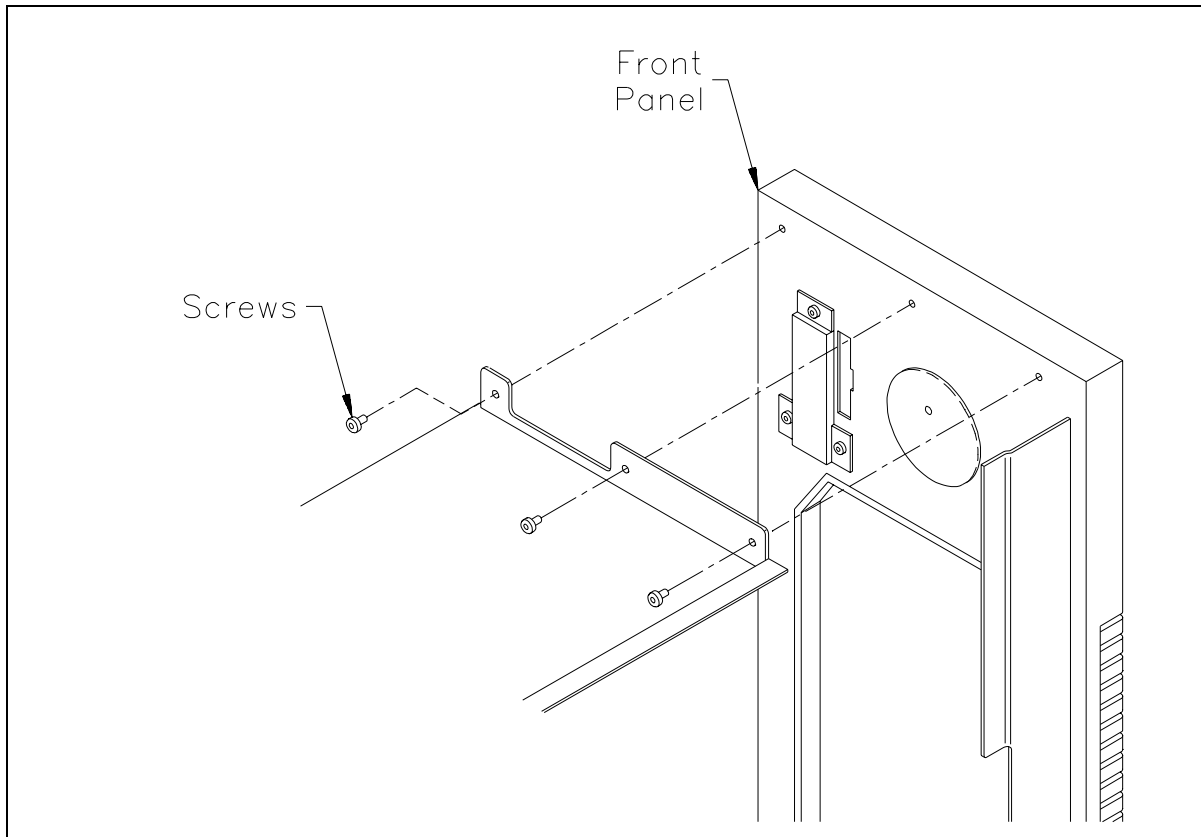


Figure 4-3 Removing the three chassis screws from the standalone front panel

Installing the Standalone Front Panel

1. Position the front panel with the door open on the front of the library, using the screw holes for guidance.
2. Use a T-10 TORX bit to replace the five 6-32 \times 1.0 flathead screws on the front side of the panel (see Figure 4-2). Tighten the screws to 8.0 inch-pounds (9.2 kg-cm) of torque.
3. Use a T-10 TORX bit to replace the three 6-32 \times 0.25 flathead screws that secure the front panel to the chassis (see Figure 4-3). Tighten the screws to 8.0 inch-pounds (9.2 kg-cm) of torque.
4. Carefully reattach the operator panel cable (see Figure 4-1).
5. If you removed it, replace the cable clamp (see Figure 4-1).

After Installing the Standalone Front Panel

- ✓ Replace the service access cover (see Section 3.3).
- ✓ Replace the top and right covers (see Section 3.2).
- ✓ Turn on the library and make sure the LCD illuminates and displays the main screen. If the LCD does not light, check the connection on the operator panel cable.
- ✓ Lock and unlock the door, making sure you hear the solenoid click. In the unlikely event that you do not hear the click, check to make sure the operator panel cable is plugged in correctly. If the cable is correct, you may have a faulty solenoid in the new front panel.

4.2 Replacing the Front Panel (Rack-Mount Model)

Follow these instructions to replace the front panel.

Do This First

- ✓ Turn off the power and disconnect the power cord.
- ✓ Follow the ESD guidelines provided in Chapter 2.
- ✓ Remove the service access cover (see Section 3.3).
- ✓ Obtain a T-8 TORX bit.
- ✓ Obtain a T-10 TORX bit. (Some models may require a # 1 Phillips screwdriver.)

Removing the Rack-Mount Front Panel

1. Use a T-8 TORX bit to remove the two screws from the cable clamp that secures the cable to the chassis below the operator panel. Remove the cable clamp and set it aside—you will use the same clamp when you replace the cable.
2. Disconnect the operator panel cable from inside the front panel by pressing the release and pulling on the connector (see Figure 4-4).

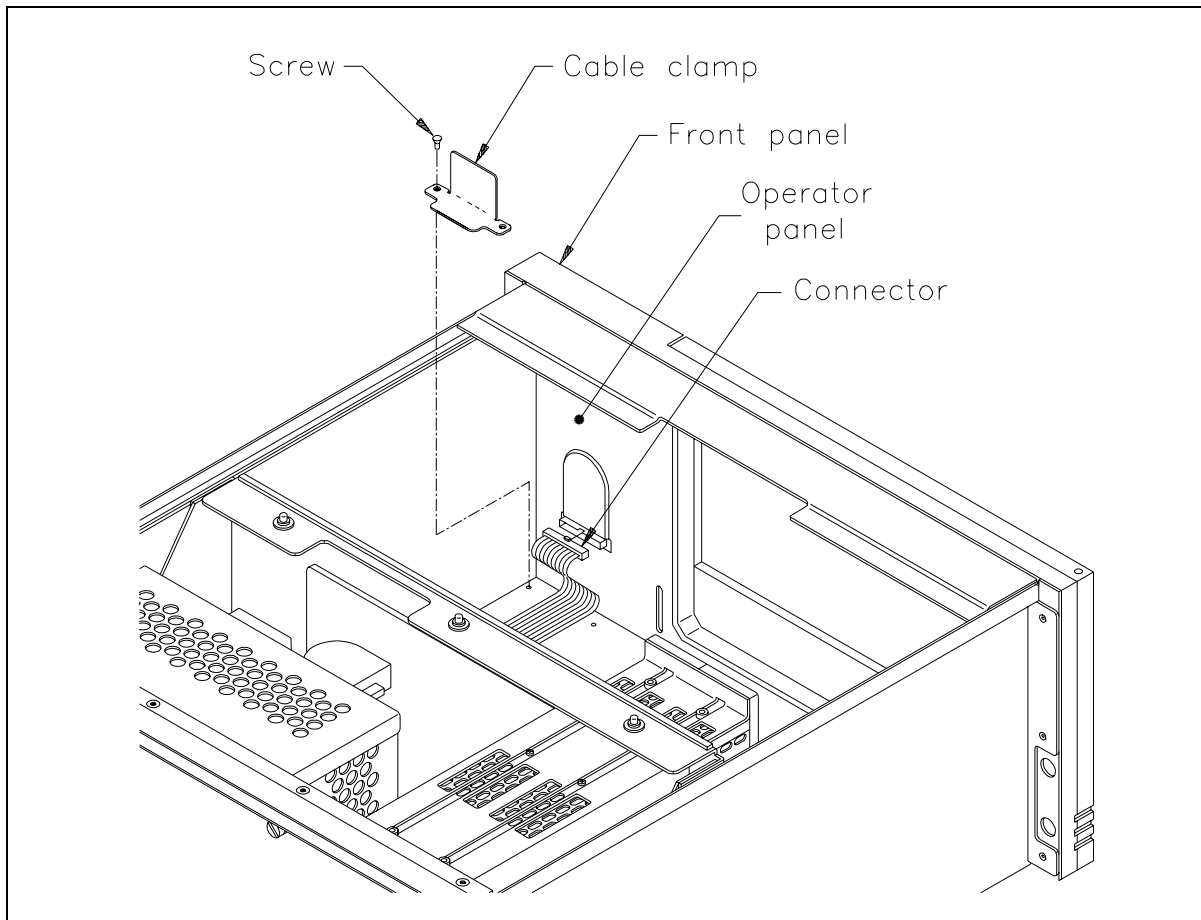


Figure 4-4 Disconnecting the operator panel cable from the front panel

3. Using a T-10 TORX bit (some models may require a # 1 Phillips screwdriver), remove the six screws from the panel and pull it away from the library (see Figure 4-5).

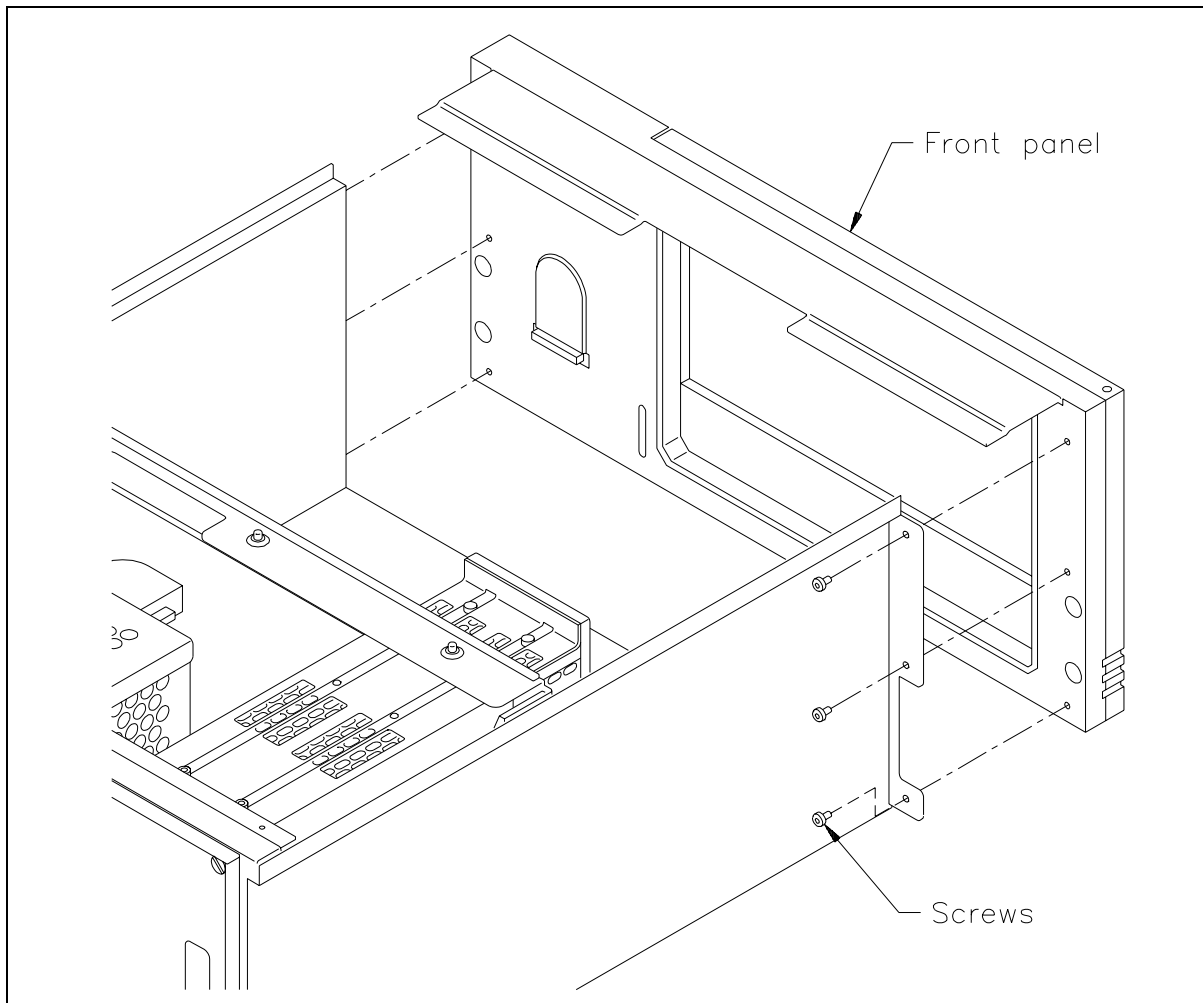


Figure 4-5 Removing the front panel

Installing the Rack-Mount Front Panel

1. Position the front panel on the front of the library, using the screw holes for guidance (see Figure 4-5).
2. Use a T-10 TORX bit (some models may require a # 1 Phillips screwdriver) to replace the six 6-32 \times 0.187 undercut countersink screws. Tighten the screws to 8.0 inch-pounds (9.2 kg-cm) of torque.
3. Reattach the operator panel cable (see Figure 4-4) and replace the cable clamp.

After Installing the Rack-Mount Front Panel

- ✓ Replace the service access cover (see Section 3.3).
- ✓ Turn on the library and make sure the LCD illuminates and displays the main screen. If the LCD does not light, check the connection on the operator panel cable.
- ✓ Lock and unlock the door, making sure you hear the solenoid click. In the unlikely event that you do not hear the click, check to make sure the operator panel cable is plugged in correctly. If the cable is correct, you may have a faulty solenoid in the new front panel.

4.3 Replacing the Front Door (Standalone Model)

Follow these instructions to replace the front door on the standalone model.

Do This First

- ✓ Turn off the power and disconnect the power cord.
- ✓ Follow the ESD guidelines provided in Chapter 2.
- ✓ Obtain a T-15 TORX bit.

Removing the Standalone Front Door

1. Unlock and open the front door.

2. As shown in Figure 4-6, use a T-15 TORX bit to remove the three screws from the metal hinges.
3. Remove the door.

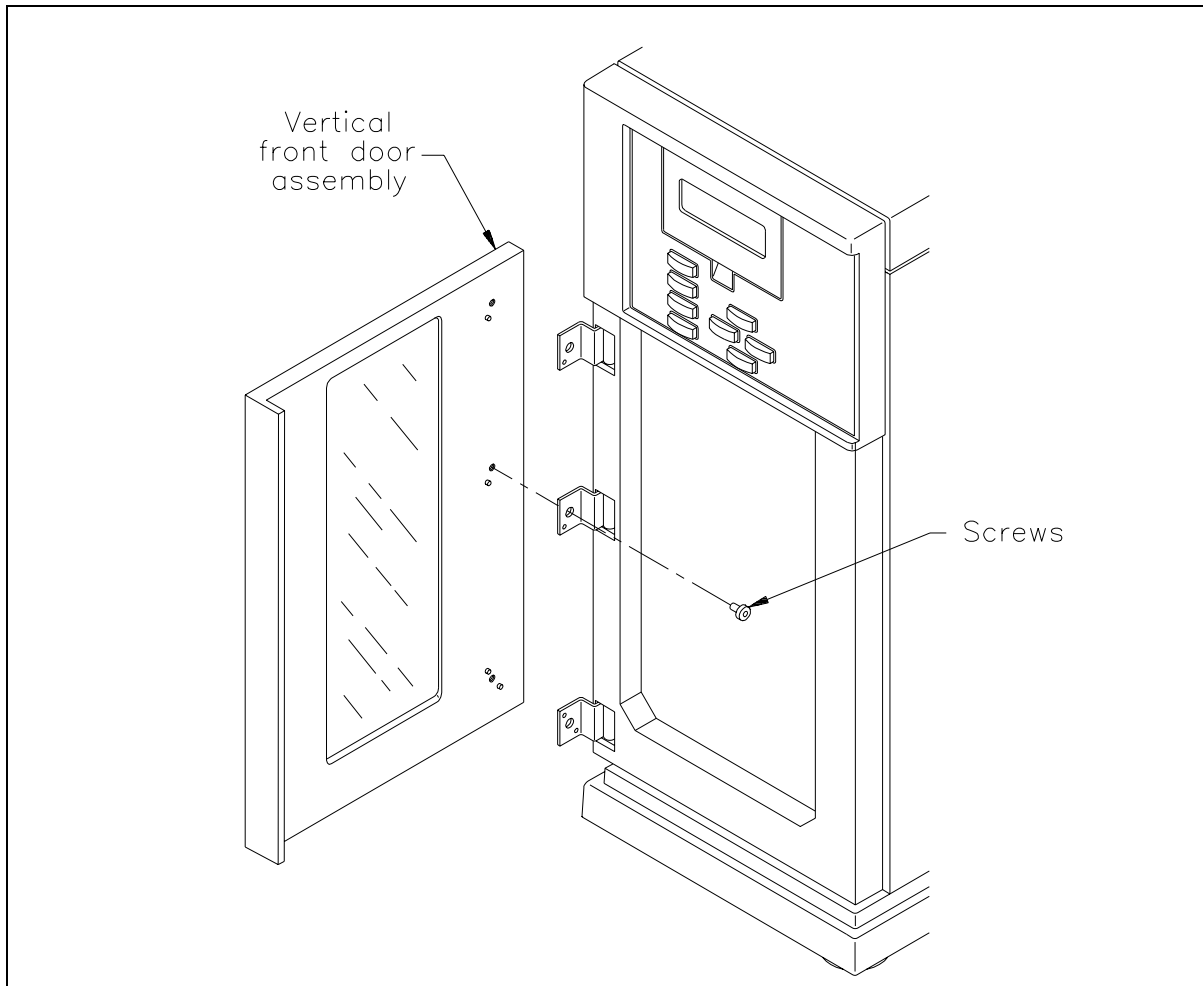


Figure 4-6 Removing the front door (standalone model)

Installing the Standalone Front Door

1. Use the alignment pins on the inside of the door for guidance to position the new door against the three hinges.
2. Using a T-15 TORX bit, attach the door to the hinges using one 8-32 \times 0.375 flathead screw for each hinge. Tighten each screw to 15.0 inch-pounds (17.2 kg-cm) of torque.

After Installing the Standalone Front Door

- ✓ Close and lock the door.

4.4 Replacing the Front Door (Rack-Mount Model)

Follow these instructions to replace the front door on the rack-mount model.

Do This First

- ✓ Turn off the power and disconnect the power cord.
- ✓ Follow the ESD guidelines provided in Chapter 2.
- ✓ Obtain a half-inch Allen wrench (later models) or a slotted screwdriver (earlier models).

Removing the Rack-Mount Front Door

1. Unlock and open the front door.
2. As shown in Figure 4-7, use the required tool to remove the two screws from the front door hinge, and remove the door.

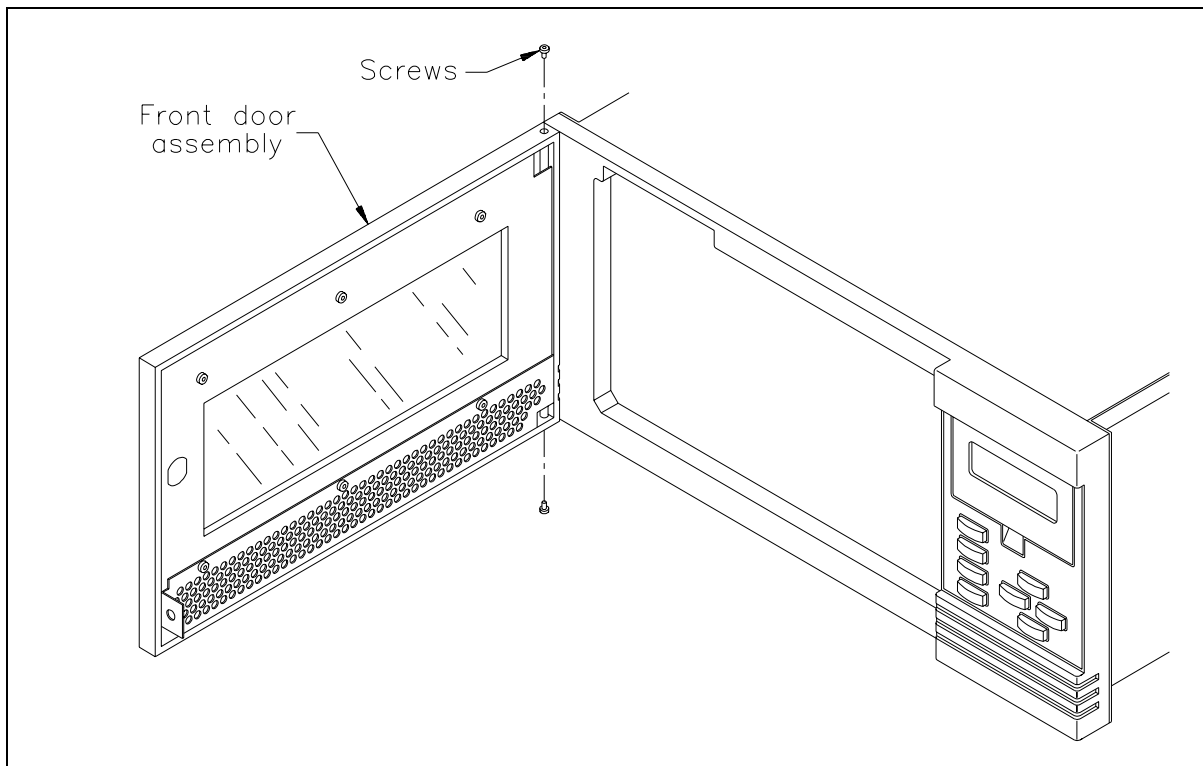


Figure 4-7 Removing the front door (rack-mount model)

Installing the Rack-Mount Front Door

1. Place the new door over the front panel so the hinge fits into the slots in the front panel.
2. Insert a screw on either end of the door hinge and use the required tool to tighten each hinge screw to 15.0 inch-pounds (17.2 kg-cm) of torque.

After Installing the Rack-Mount Front Door

- ✓ Close and lock the door.

4.5 Replacing the Solenoid (Standalone Model)

Follow these instructions to replace the solenoid on the standalone model library.

Do This First

- ✓ Turn off the power and disconnect the power cord.
- ✓ Follow the ESD guidelines provided in Chapter 2.
- ✓ Remove the top and right covers (see Section 3.2).
- ✓ Remove the service access cover (see Section 3.3).
- ✓ Push against the base of the CHM to move it to the bottom of the linear way.
- ✓ Obtain the following tools:
 - T-8 TORX bit
 - T-15 TORX bit

Removing the Solenoid from the Standalone Model

1. If necessary, use a T-8 TORX bit to remove the two screws from the cable clamp that secures the operator panel cable to the chassis below the operator panel. Remove the cable clamp and set it aside—you will use the same clamp when you replace the cable.
2. Disconnect the operator panel cable from inside the front panel by pressing the release and gently pulling on the connector (see Figure 4-8).

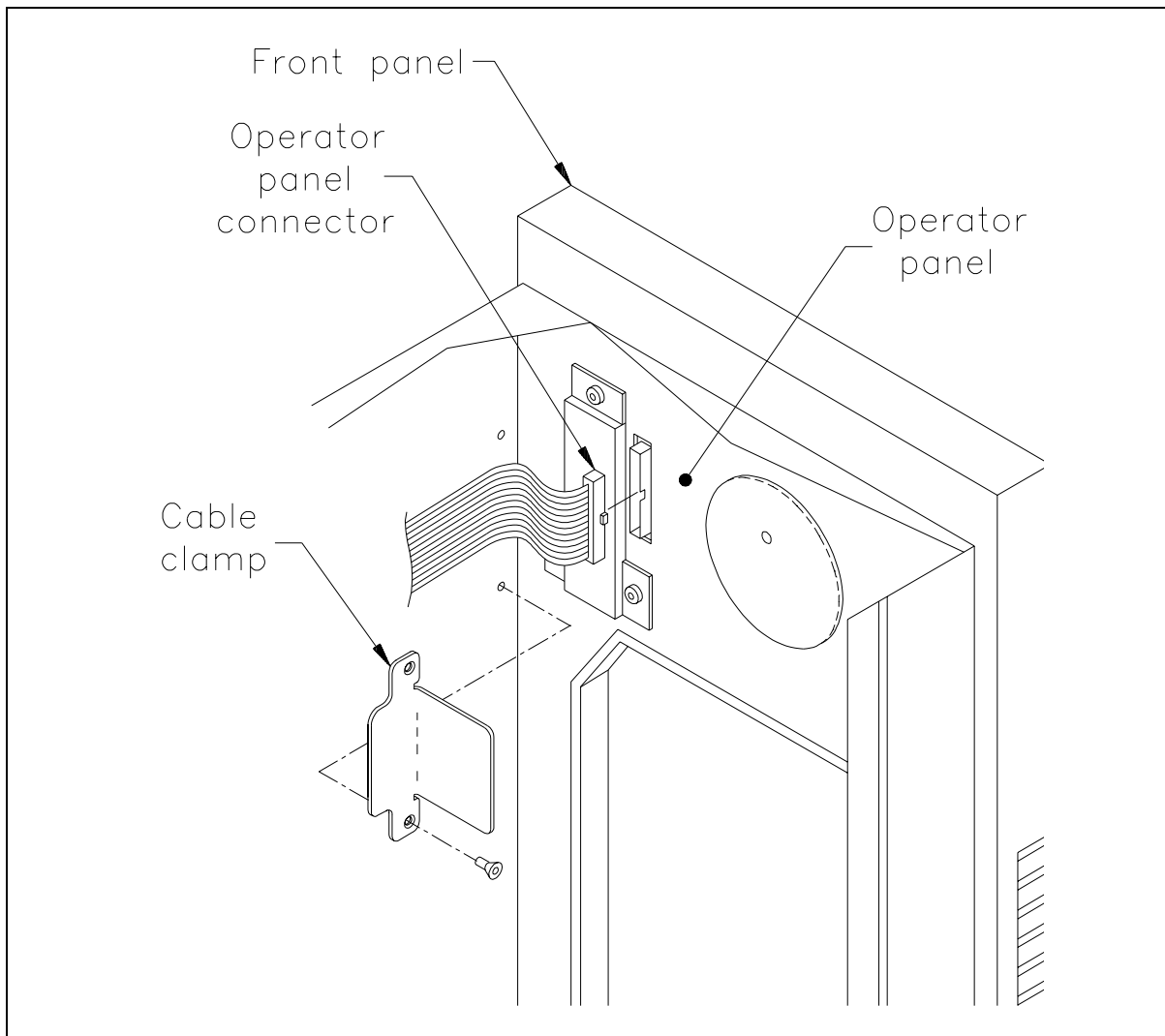


Figure 4-8 Disconnecting the operator panel cable from the front panel

3. Use a T-15 TORX bit to remove the three screws from the solenoid bracket (see Figure 4-9), and carefully pull the assembly away from the back of the operator panel. Do not try to remove it yet.

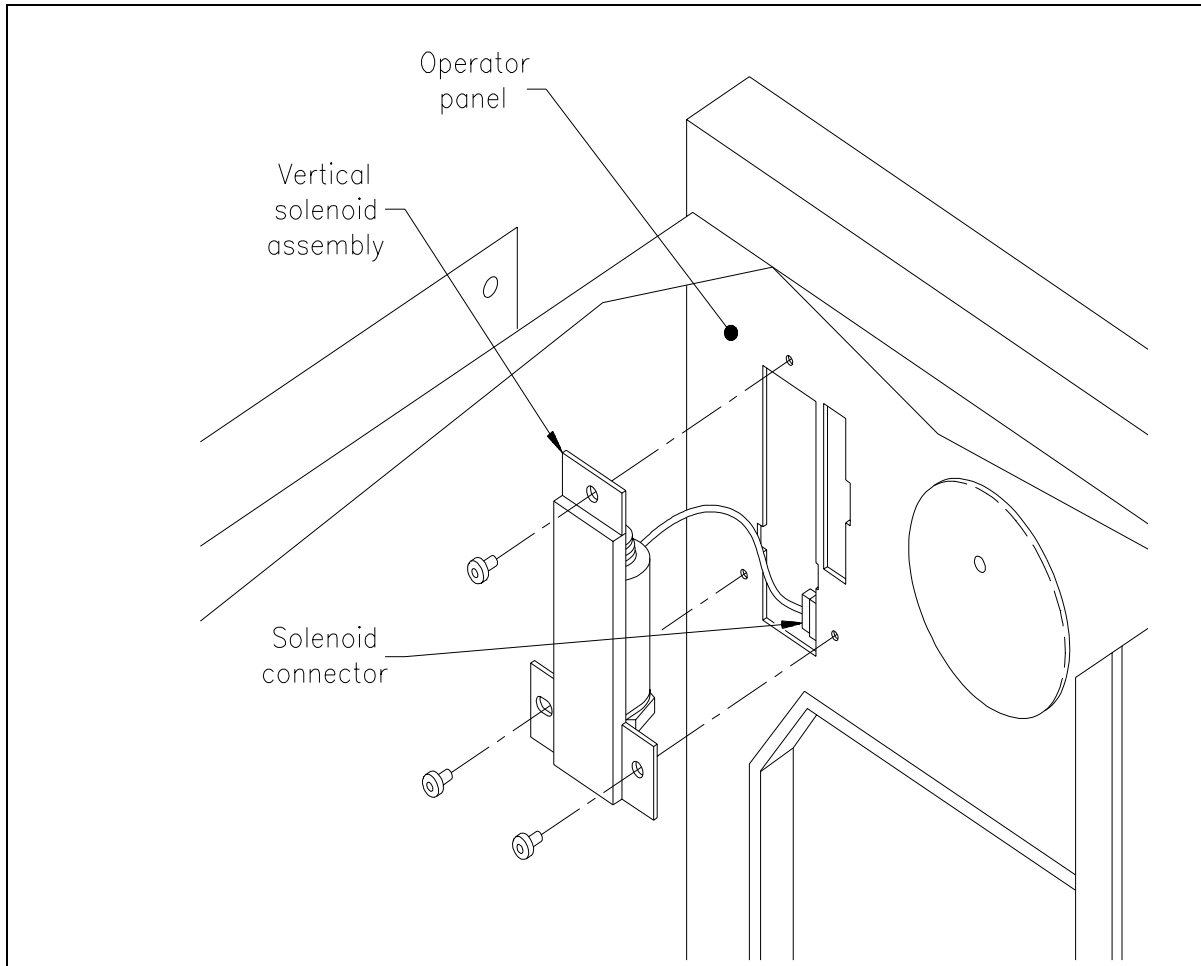


Figure 4-9 Removing the bracket and solenoid (standalone model)

4. Unplug the 3-pin solenoid connector from the card (see Figure 4-9).
5. Remove the solenoid and bracket.

Installing the Solenoid on the Standalone Model

1. Connect the 3-pin solenoid connector to the card as shown in Figure 4-10.
2. Position the solenoid and bracket as shown in Figure 4-10.
3. Use a T-15 TORX bit to replace the three 6-32 \times 0.312 screws in the order shown in Figure 4-10. Tighten them to 15.0 inch-pounds (17.2 kg-cm) of torque.

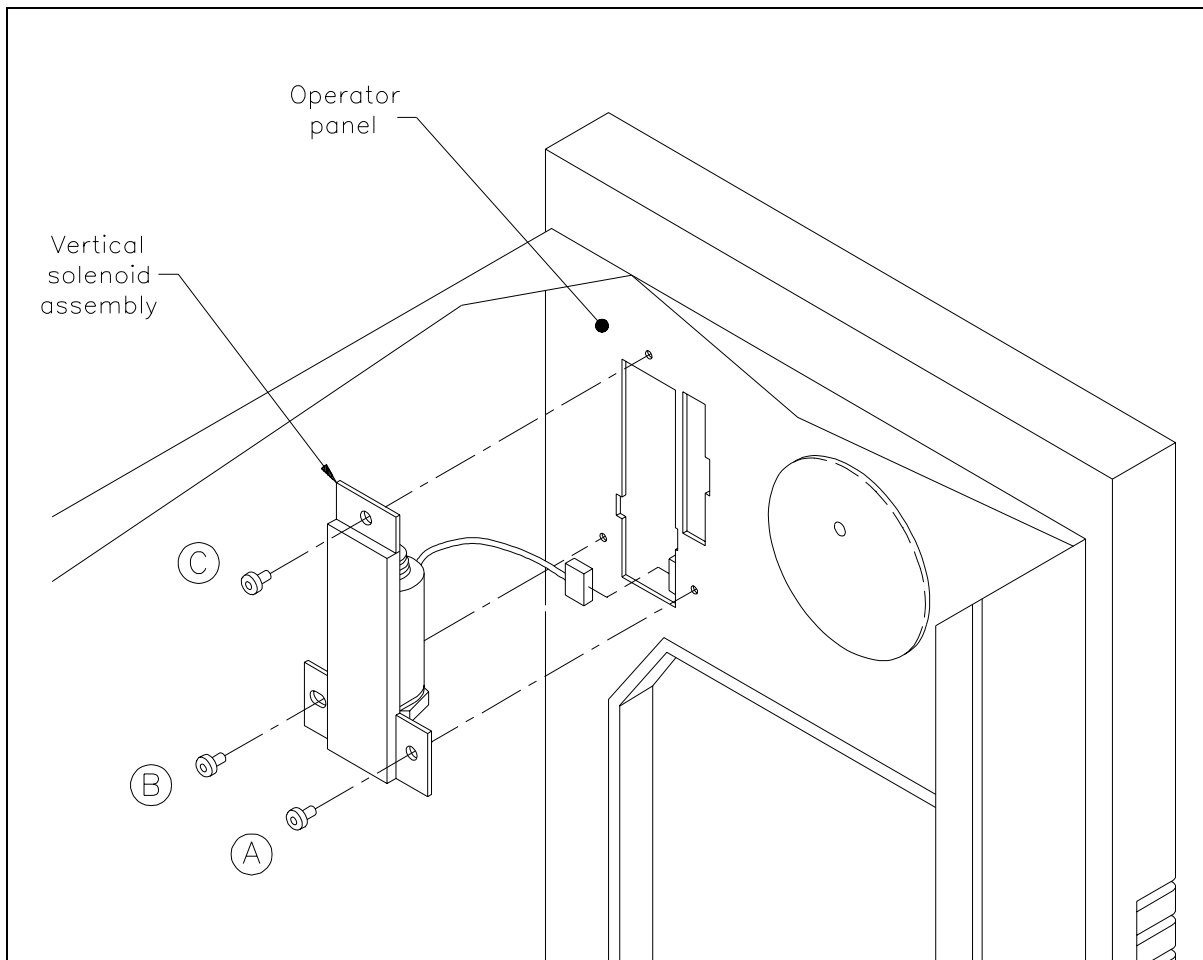


Figure 4-10 Positioning the solenoid and bracket in the standalone model

4. Replace the operator panel cable (see Figure 4-11).
5. If you removed it, use a T-8 TORX bit to replace the cable clamp.

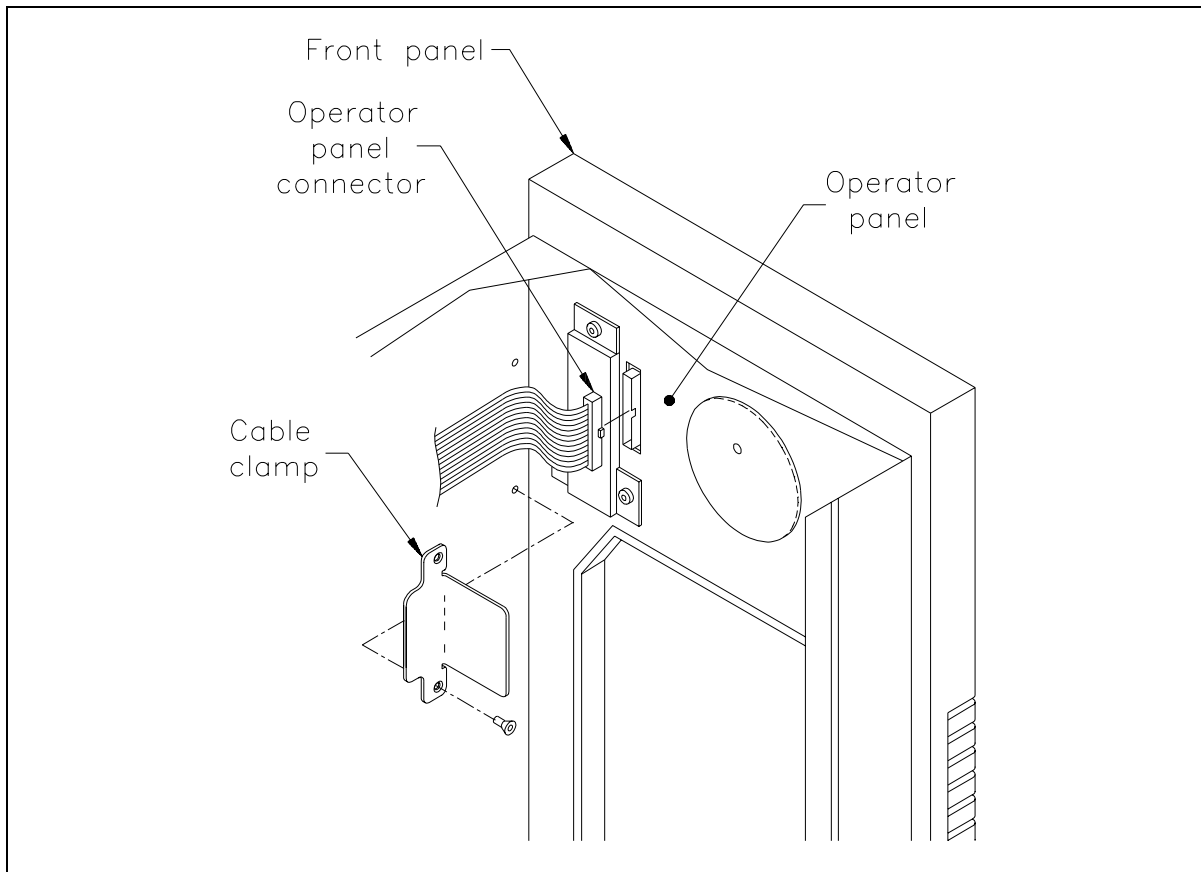


Figure 4-11 Replacing the operator panel cable in the standalone model

After Installing the Solenoid on the Standalone Model

- ✓ Replace the service access cover (see Section 3.3).
- ✓ Replace the top and right covers (see Section 3.2).
- ✓ Turn on the library and make sure the LCD illuminates and displays the main screen. If the LCD does not light, check the connection on the operator panel cable.
- ✓ Lock and unlock the door, making sure you hear the solenoid click. In the unlikely event that you do not hear the click, check to make sure the operator panel cable is plugged in correctly. If the cable is correct, you may have a faulty solenoid in the new front panel.

4.6 Replacing the Solenoid (Rack-Mount Model)

Follow these instructions to replace the solenoid on the rack-mount model library.

Do This First

- ✓ Turn off the power and disconnect the power cord.
- ✓ Follow the ESD guidelines provided in Chapter 2.
- ✓ Remove the service access cover (see Section 3.3).
- ✓ Push against the base of the CHM to move it to the left of the linear way.
- ✓ Obtain the following tools:
 - T-8 TORX bit
 - T-15 TORX bit

Removing the Solenoid from the Rack-Mount Model

1. Use a T-8 TORX bit to remove the two screws from the cable clamp that secures the operator panel cable to the chassis below the operator panel. Remove the cable clamp and set it aside—you will use the same clamp when you replace the cable.
2. Disconnect the cable from inside the front panel by pressing the release and pulling on the connector (see Figure 4-12).

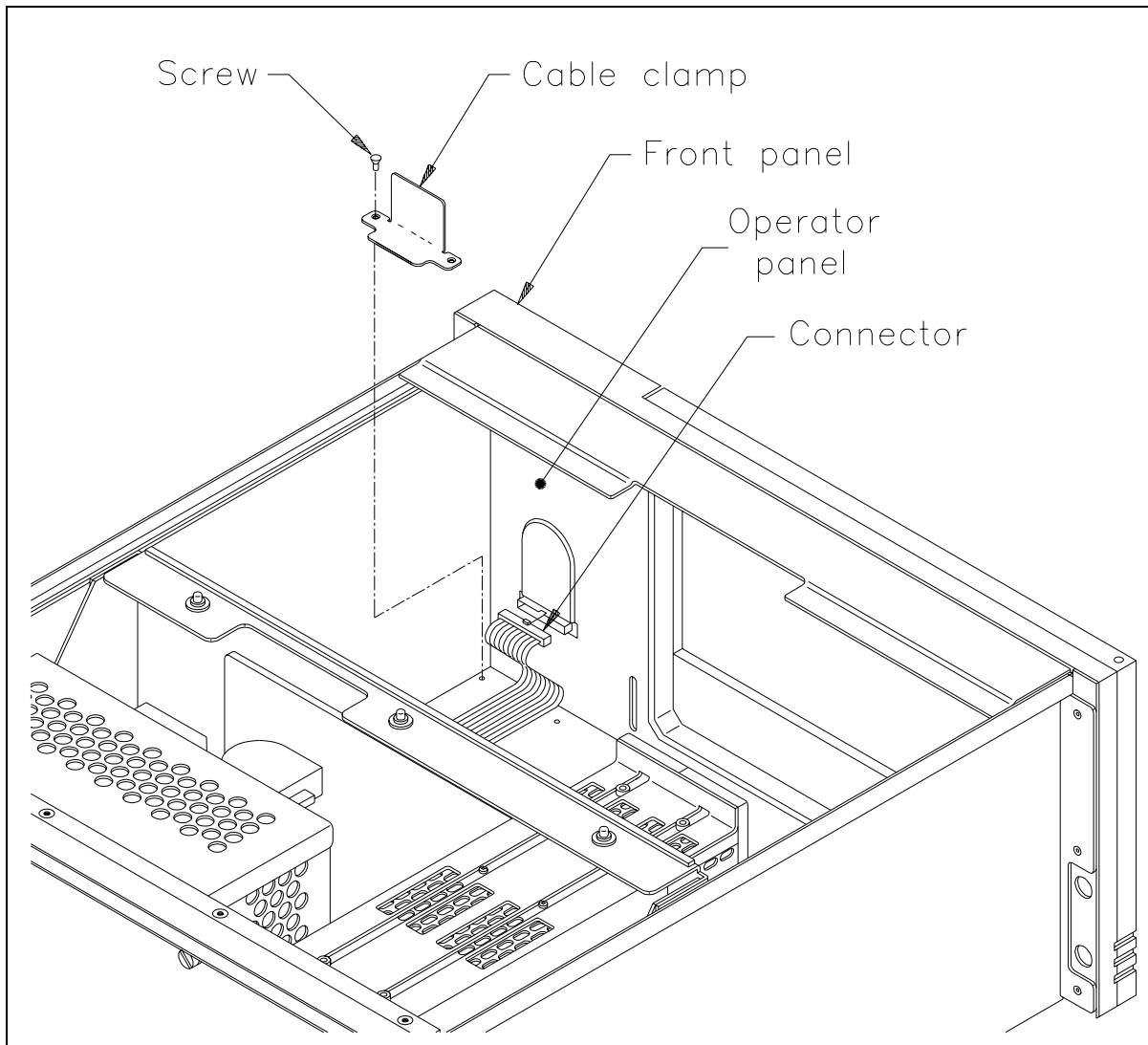


Figure 4-12 Disconnecting the operator panel cable from the rack-mount model

3. Use a T-15 TORX bit to remove the three screws from the solenoid bracket (see Figure 4-13), and pull the assembly away from the back of the operator panel. Do not try to remove it yet.

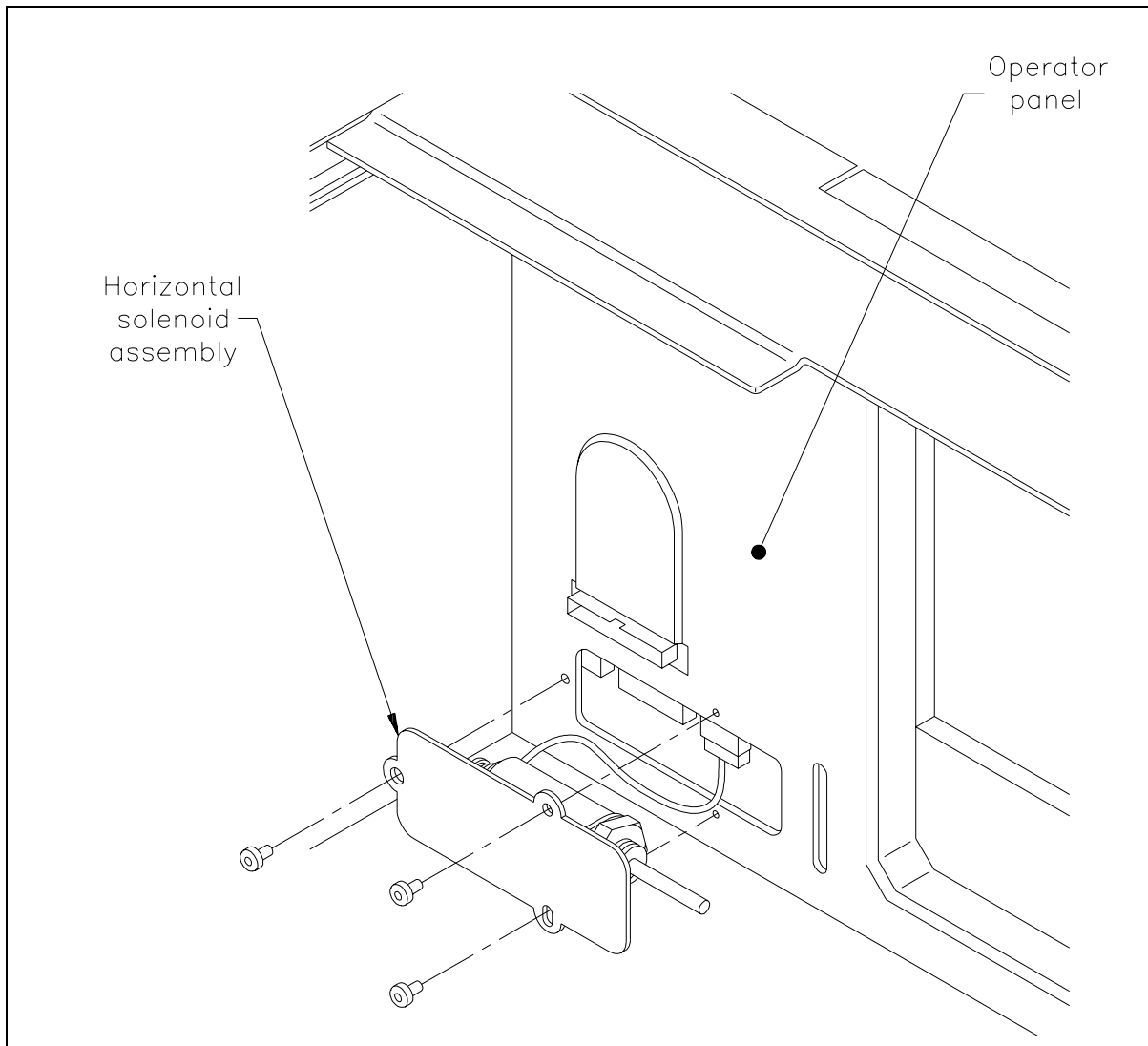


Figure 4-13 Detaching the solenoid bracket from the rack-mount model

4. Unplug the 3-pin solenoid connector from the card (see Figure 4-14).
5. Remove the solenoid and bracket.

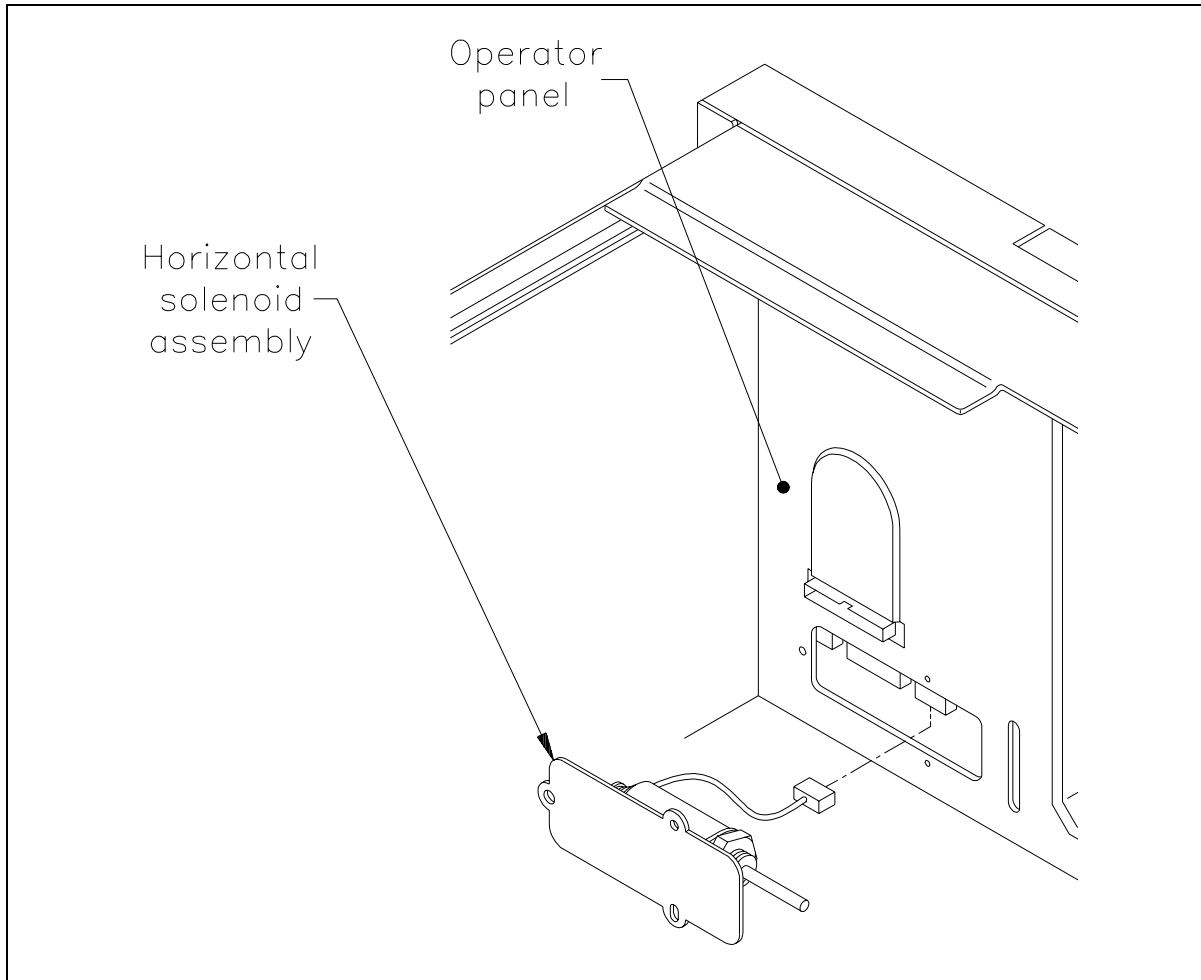


Figure 4-14 Unplugging the solenoid connector from the rack-mount model

Installing the Solenoid on the Rack-Mount Model

1. Connect the 3-pin solenoid connector to the card as shown in Figure 4-15.

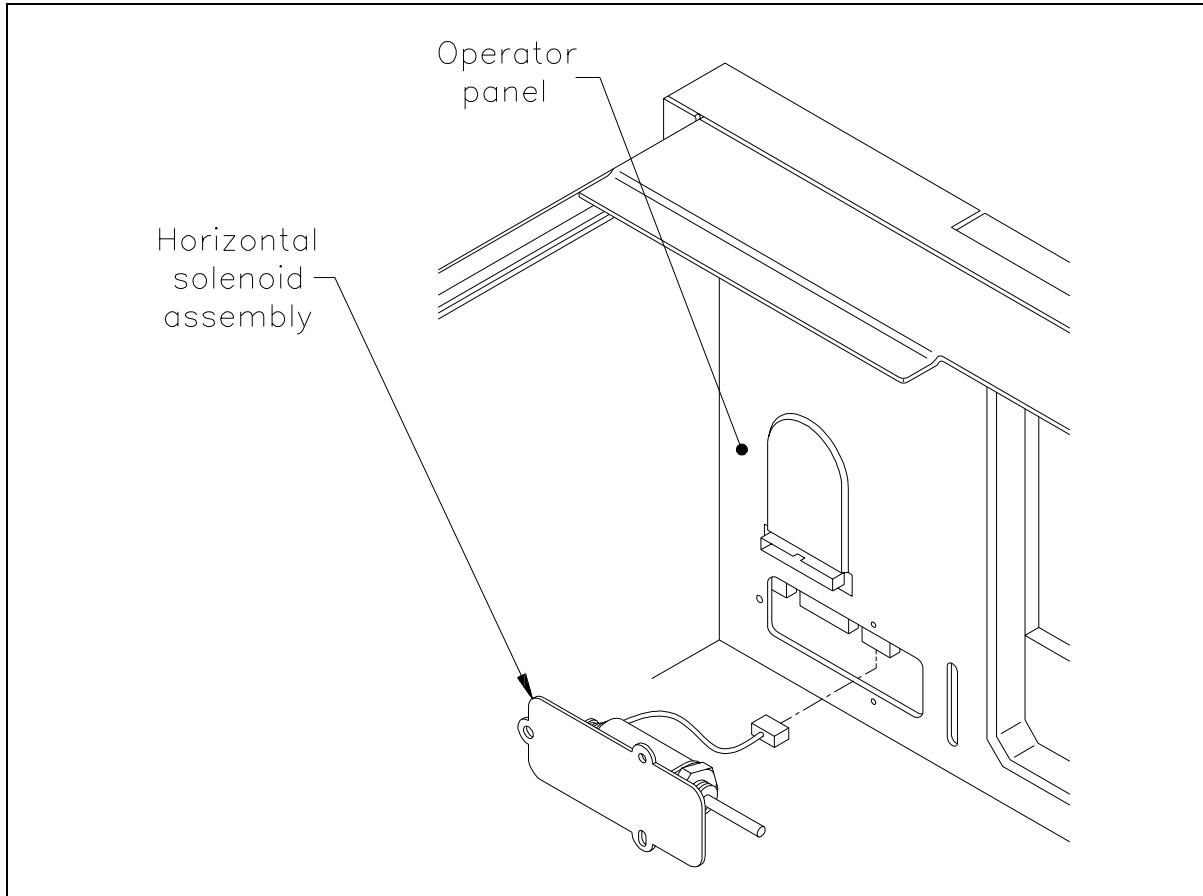


Figure 4-15 Connecting the 3-pin solenoid connector on the rack-mount model

2. Position the solenoid and bracket as shown in Figure 4-16.
3. Use a T-15 TORX bit to replace the three 6-32 \times 0.312 screws in the order shown in Figure 4-16. Tighten the screws to 15.0 inch-pounds (17.2 kg-cm) of torque.

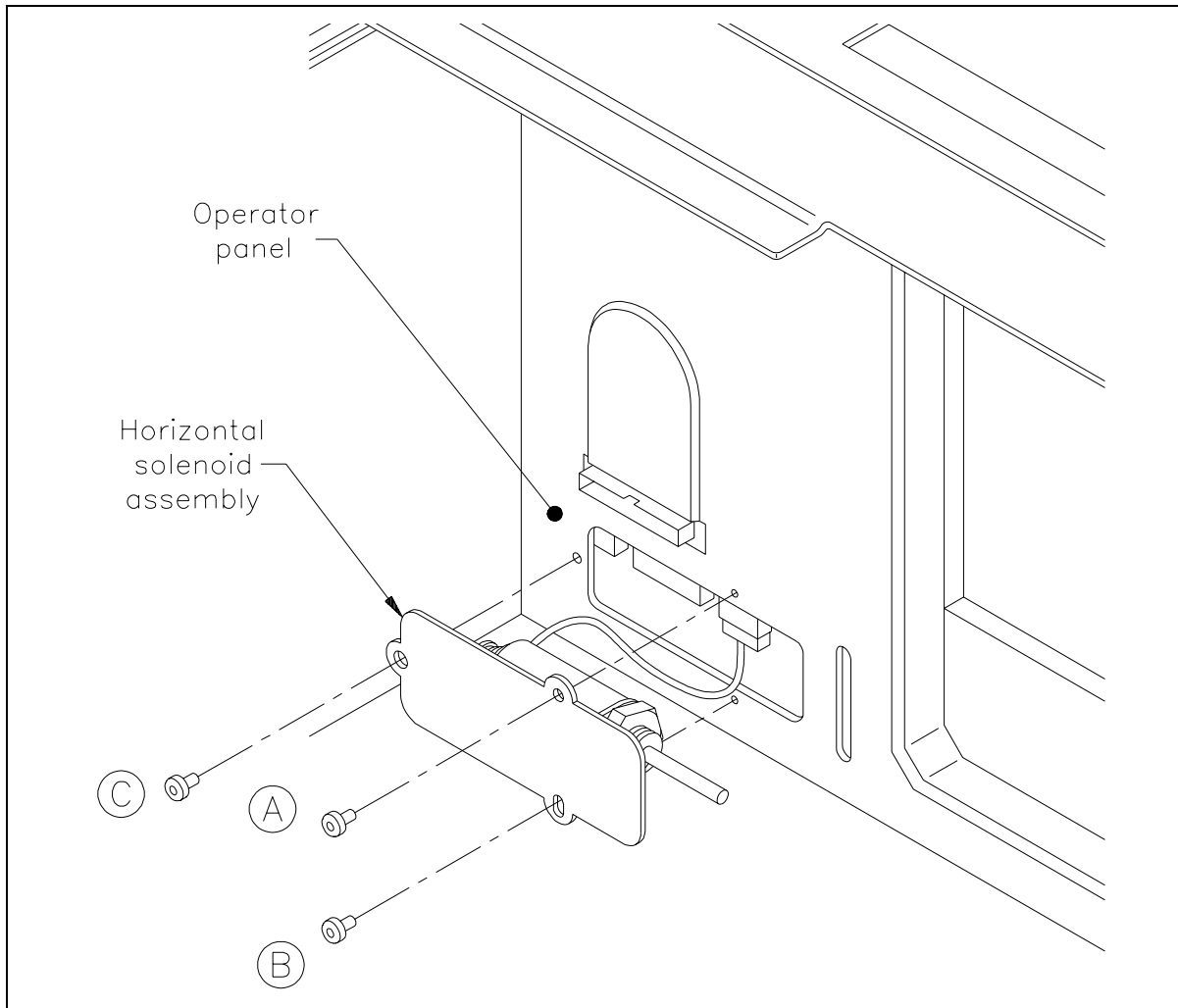


Figure 4-16 Positioning the solenoid bracket on the rack-mount model

4. Replace the operator panel cable (see Figure 4-17).
5. Use a T-8 TORX bit to replace the cable clamp.

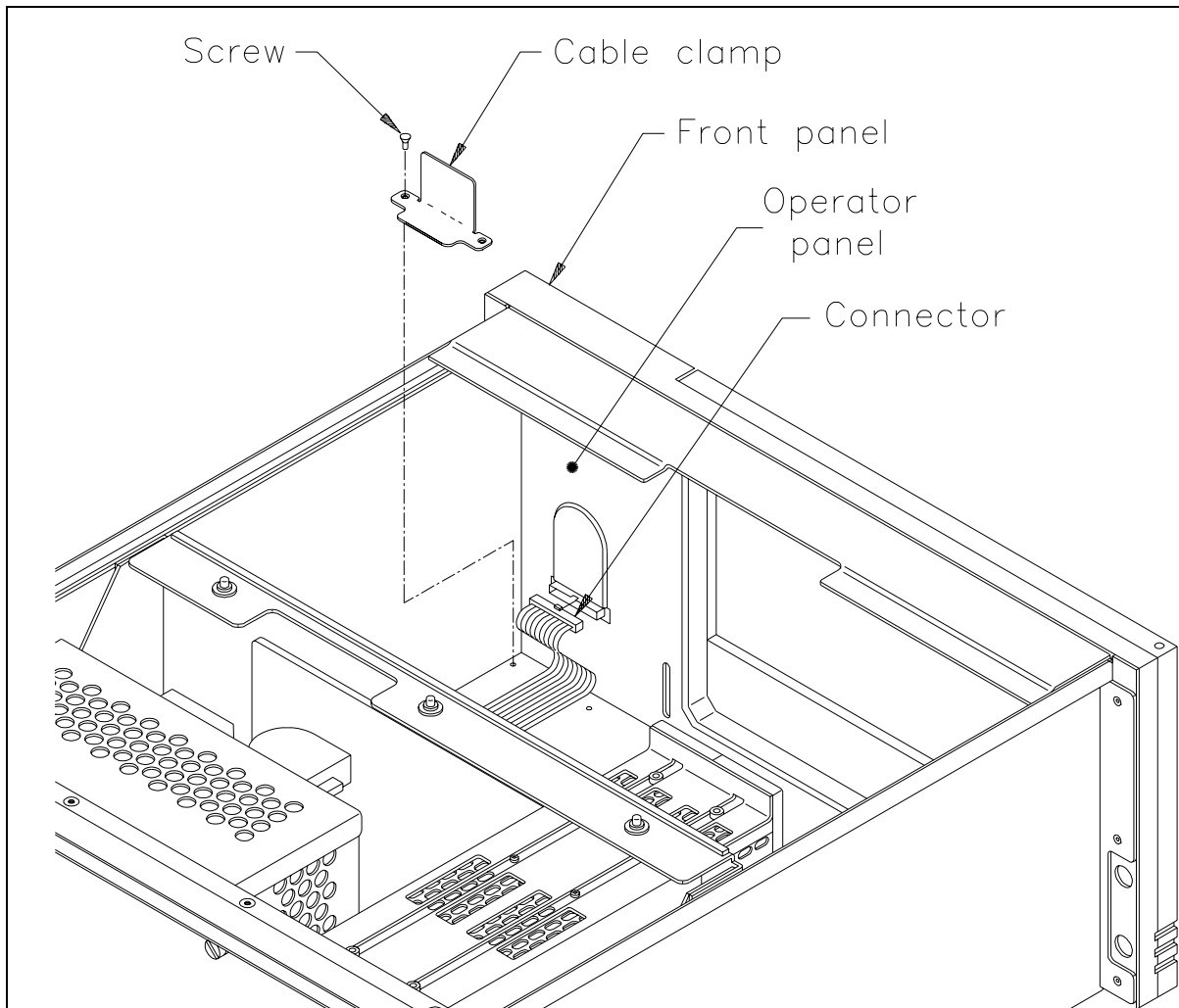


Figure 4-17 Replacing the operator panel cable on the rack-mount model

After Installing the Solenoid on the Rack-Mount Model

- ✓ Replace the service access cover (see Section 3.3).
- ✓ Turn on the library and make sure the LCD illuminates and displays the main screen. If the LCD does not light, check the connection on the operator panel cable.

- ✓ Lock and unlock the door, making sure you hear the solenoid click. In the unlikely event that you do not hear the click, check to make sure the operator panel cable is plugged in correctly. If the cable is correct, you may have a faulty solenoid in the new front panel.

4.7 Replacing the Air Filter

Follow these instructions to replace the air filter on a rack-mount or standalone model.

Do This First

- ✓ Obtain a T-15 TORX bit.

Removing the Air Filter

1. Unlock and open the door.
2. From the inside of the door, use a T-15 TORX bit to remove the three screws that secure the metal filter cover to the inside of the door (see Figure 4-18 for the rack-mount model; see Figure 4-19 for the standalone model).

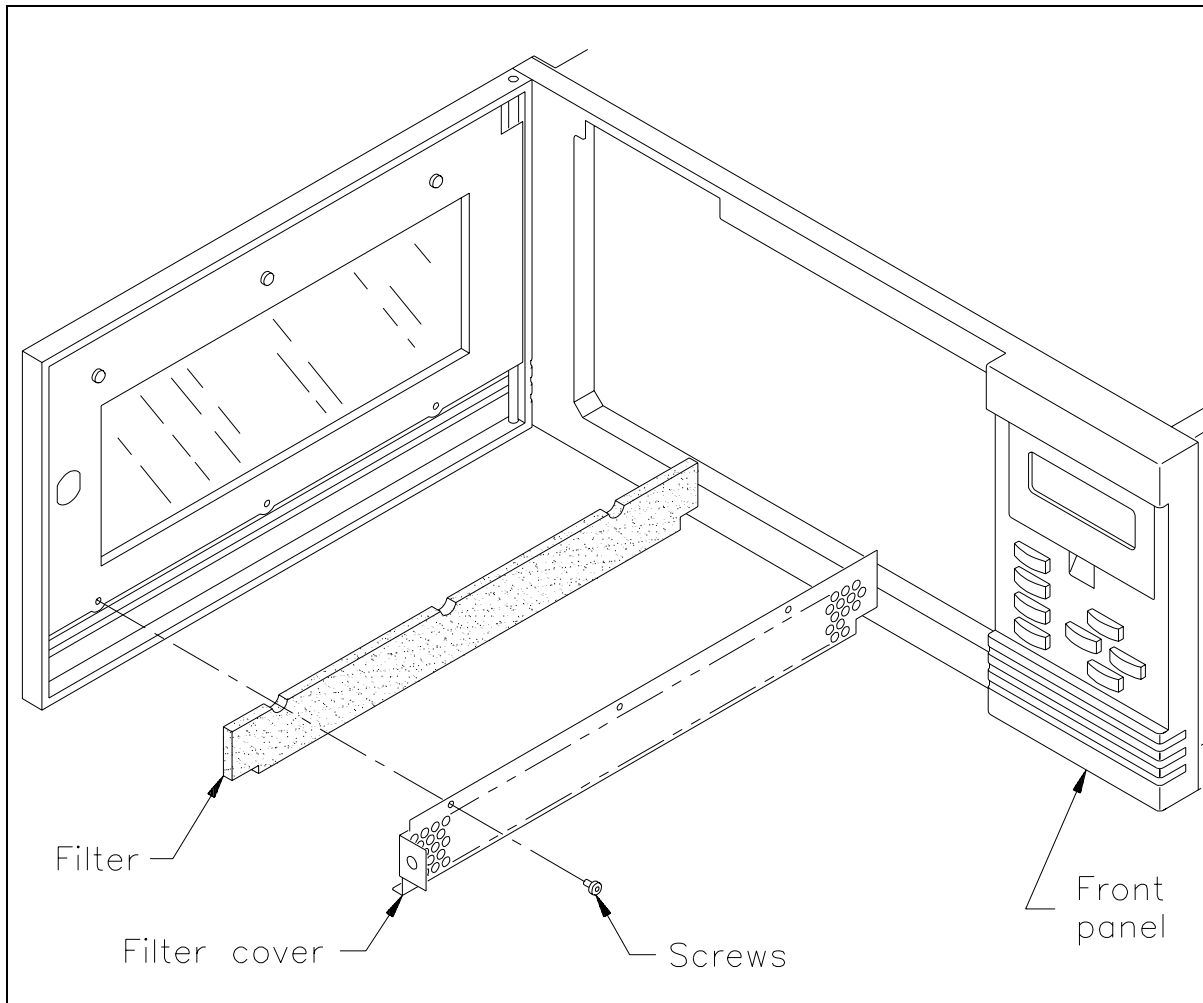


Figure 4-18 Removing the air filter from the rack-mount model

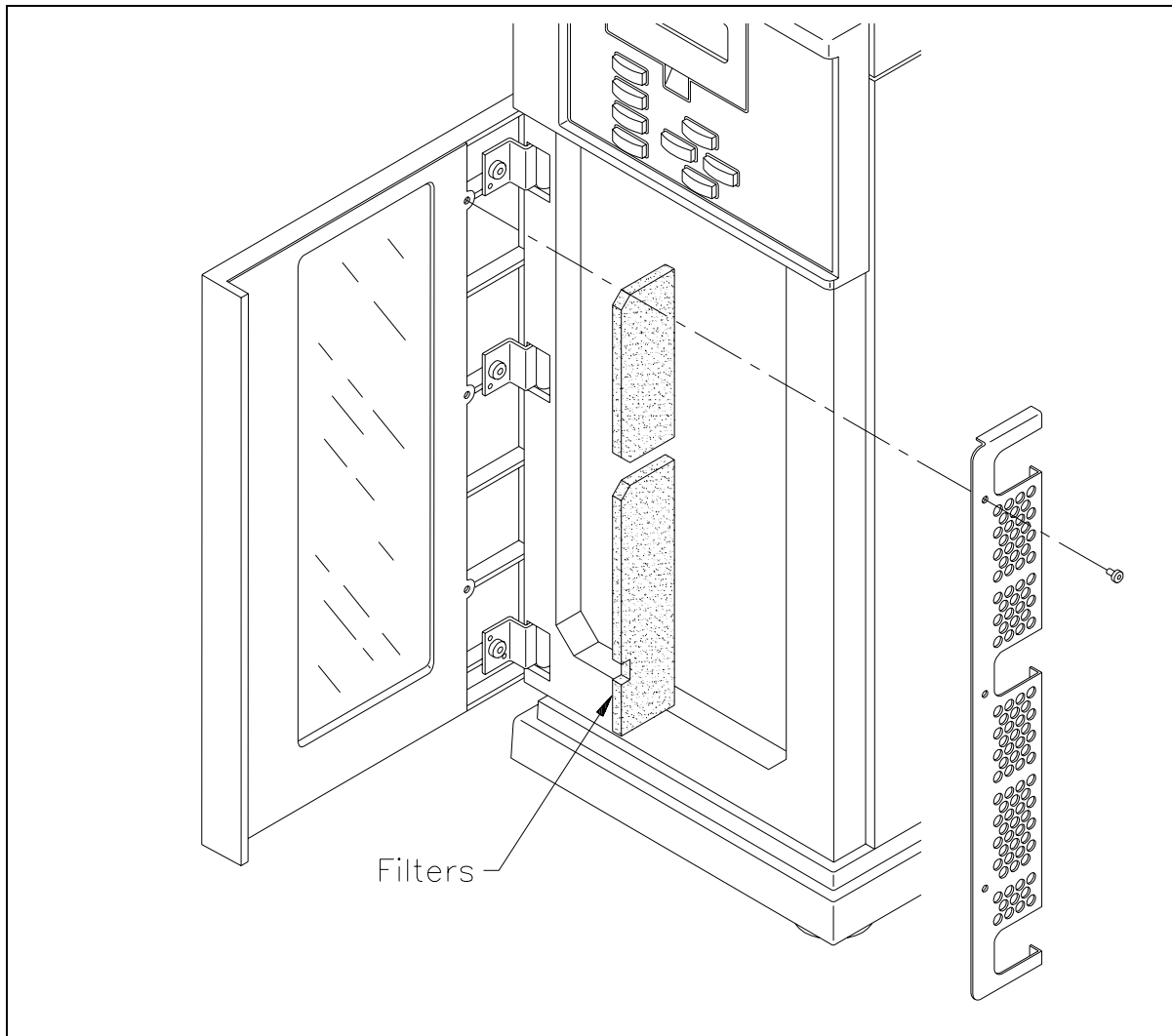


Figure 4-19 Removing the air filter from the standalone model

3. As shown in Figure 4-18 for the rack-mount model and in Figure 4-19 for the standalone model, remove the metal filter cover.
4. Pull out the air filter as shown.

Note: The standalone model contains two half-sized air filters.

Replacing the Air Filter

1. Place the filter or filters inside the door as shown (see Figure 4-18 for the rack-mount model; see Figure 4-19 for the standalone model).
2. Position the metal cover over the filter.
3. Using a T-15 TORX bit, replace the three 6-32 \times 0.312 screws that secure the metal filter cover to the inside of the door. Tighten the screws to 8.0 inch-pounds (9.2 kg-cm) of torque.
4. Close and lock the door.

Notes

5 Replacing Tape Drive Components

This chapter describes the following:

- Installing and removing the tape drive
- Installing and removing the drive carrier
- Installing and removing drive blanks

5.1 Installing and Removing Tape Drives

This section describes how to install a tape drive into a drive carrier, and remove a tape drive from a drive carrier. Tape drives must be installed in drive carriers for operation in the library.

Note: Your tape drive may already be installed in a drive carrier.

Do This First

- ✓ If you are replacing a tape drive that has a cartridge loaded, remove the cartridge by pressing the eject button on the drive carrier faceplate.
- ✓ Turn off the power and disconnect the power cord.
- ✓ Follow the ESD guidelines provided in Chapter 2.
- ✓ Obtain the following tools:
 - # 1 Phillips screwdriver (Some models may require a flatblade screwdriver.)
 - T-8 TORX bit
 - T-10 TORX bit

Installing an 8mm Tape Drive into a Drive Carrier

Follow these instructions to install an 8mm tape drive into a drive carrier. If you are not sure if you have the correct drive carrier, refer to Figure 5-1 below.

CAUTION

When you handle an Exabyte Mammoth tape drive, hold it on the sides using both hands; do not grip the front of the tape drive with one hand.

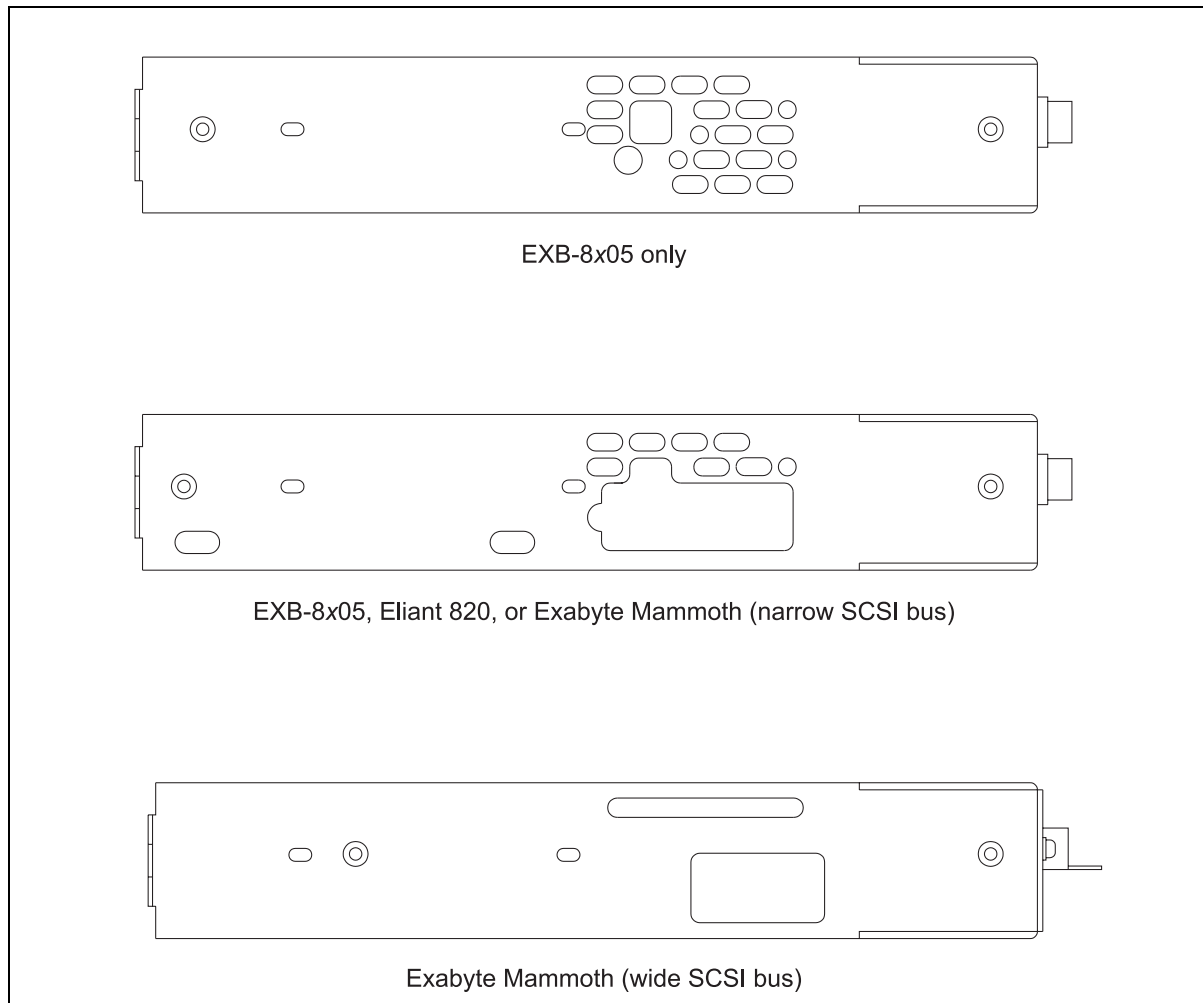


Figure 5-1 8mm tape drive carriers

1. If you have an EXB-8x05 or Eliant 820 tape drive, use a # 1 Phillips screwdriver to remove the two screws that hold the faceplate to the tape drive (see Figure 5-2), and remove the faceplate. If you have an Exabyte Mammoth tape drive, press in on the buttons on each side of the carrier and remove the faceplate. You will not need this faceplate or the screws for tape drive operation inside the library.

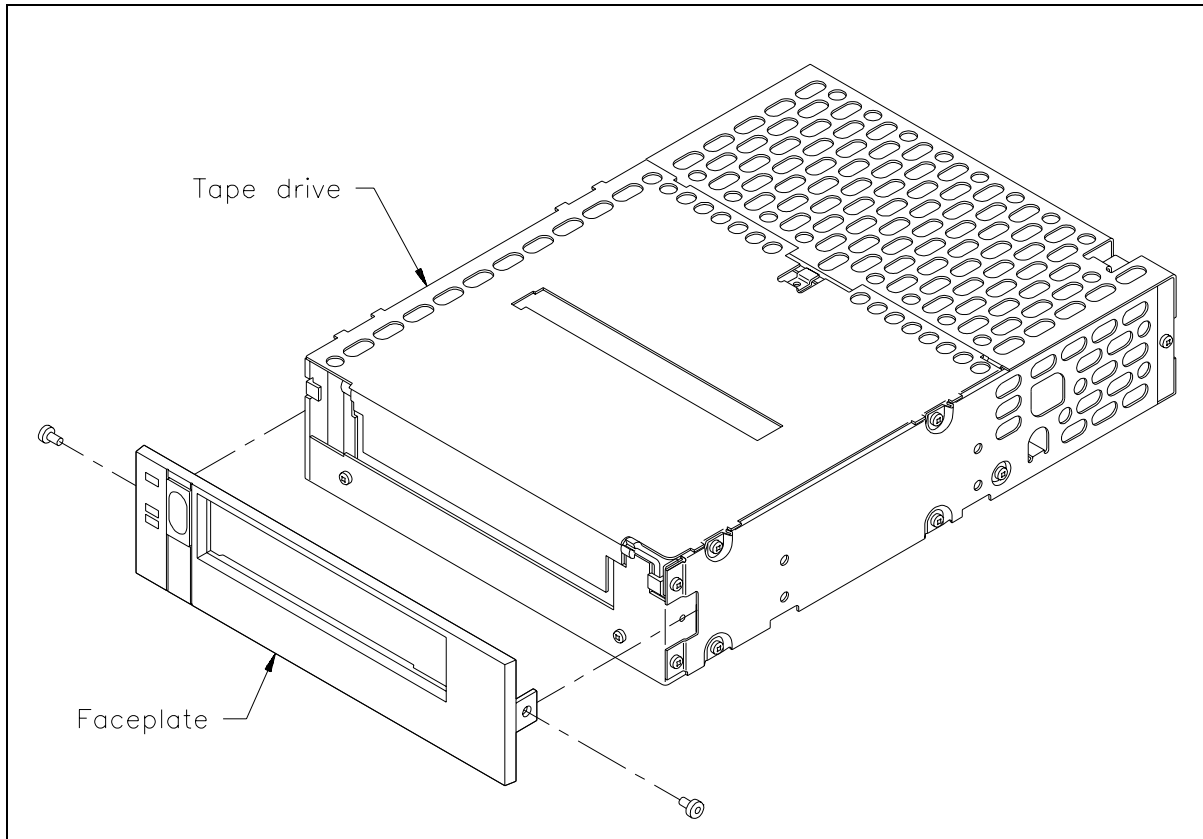


Figure 5-2 Removing the faceplate from an 8mm tape drive

2. If there are any jumpers or SCSI terminators on the back of the drive, remove them.
3. Using a T-8 TORX bit (some models may require a # 1 Phillips screwdriver), remove the four screws that fasten the drive carrier faceplate to the drive carrier.

4. Slide the tape drive into the drive carrier until the front of the tape drive protrudes slightly from the front of the drive carrier. There will be a space at the rear of the carrier; this space is for the cable assembly.

If you have inserted the tape drive correctly, the screw holes on the sides of the tape drive will be aligned with the holes on the drive carrier.

Note: If the holes do not line up, check to make sure you do not have the tape drive inserted upside down.

5. Insert, but do not tighten, the four M3 × 8 panhead screws with washers (included with the drive carrier) into the two holes on each side of the drive carrier. See Figure 5-3.

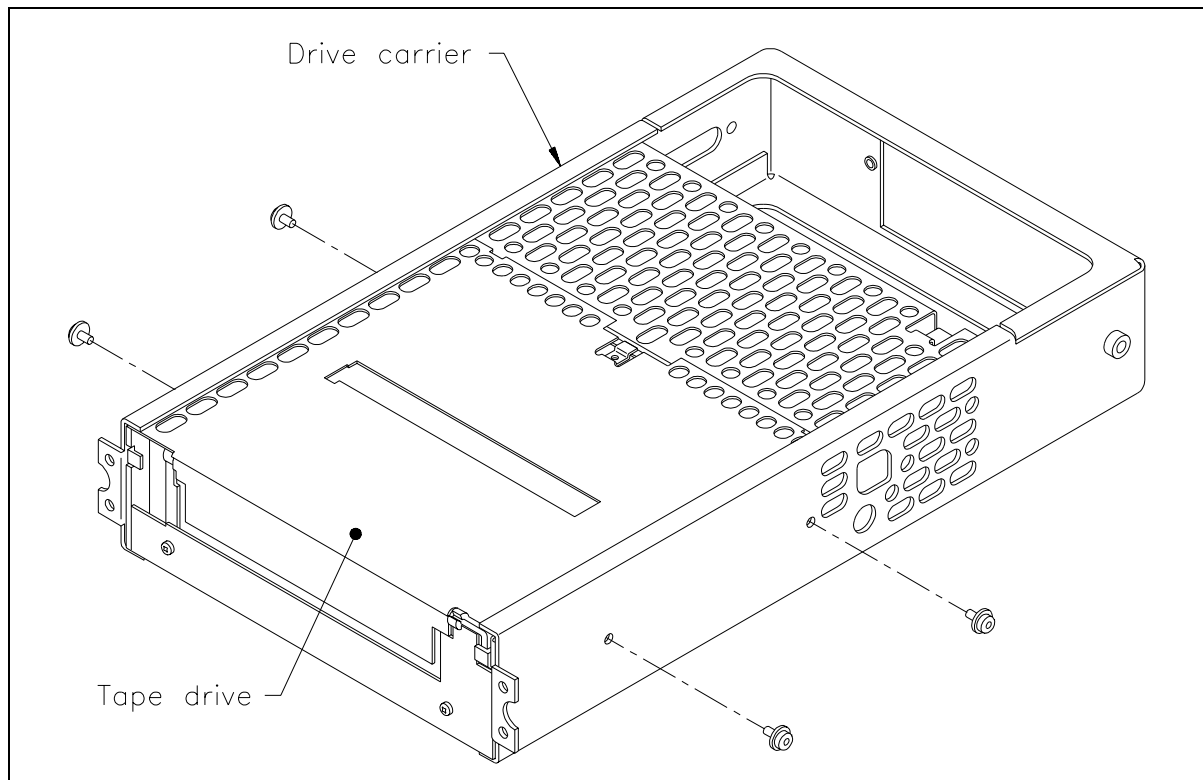


Figure 5-3 Securing the tape drive to the drive carrier

6. Position the drive carrier faceplate as shown in Figure 5-4, aligning the slot on the faceplate with the door of the tape drive. Using a T-8 TORX bit (some models may require a # 1 Phillips screwdriver), insert the four 4-40 \times 0.187 undercut countersink screws that fasten the faceplate to the drive carrier and tighten them to 4.5 inch-pounds (5.2 kg-cm) of torque.

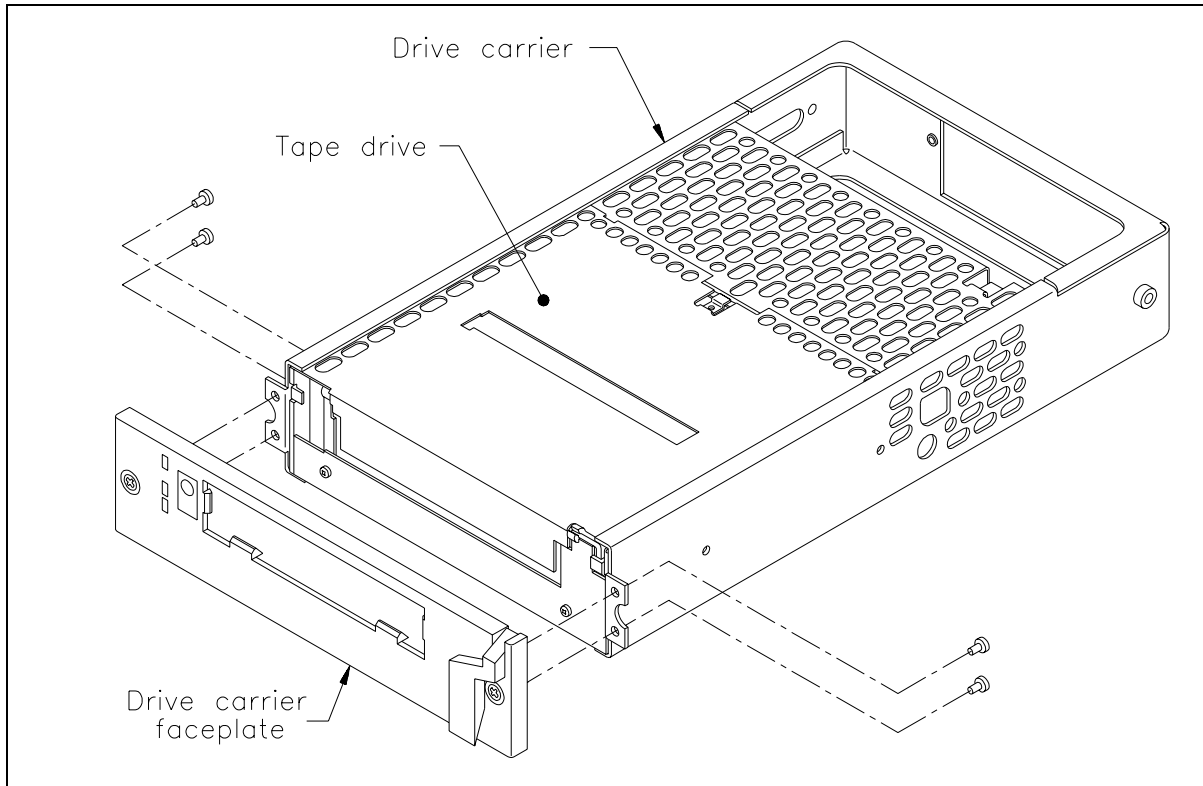


Figure 5-4 Installing the drive carrier faceplate

7. Slide the drive forward as far as possible and use a T-10 TORX bit to tighten the two panhead screws on each side of the drive carrier to 4.5 inch-pounds (5.2 kg-cm) of torque.
8. The tape drive cabling is included with the drive carrier assembly. Connect each cable to the back of the tape drive as shown in Table 5-1, Figure 5-5, and Figure 5-6.

Table 5-1 Connecting the SCSI ID cables

Attach the following cable...	To the following port on the back of the tape drive...
3-pin serial cable or 4-pin serial cable	3-pin Monitor port (narrow or wide SCSI bus) or 4-pin Monitor port (narrow SCSI bus only)
Power cable	4-pin power connector
SCSI ID cable	6-pin SCSI ID connector (narrow SCSI bus) or 12-pin SCSI ID connector (wide SCSI bus). Note: Make sure you do not connect this cable upside down (see Figure 5-5).
50-pin (narrow) or 68-pin (wide) SCSI connector	SCSI port (use the notch on the cable for guidance).

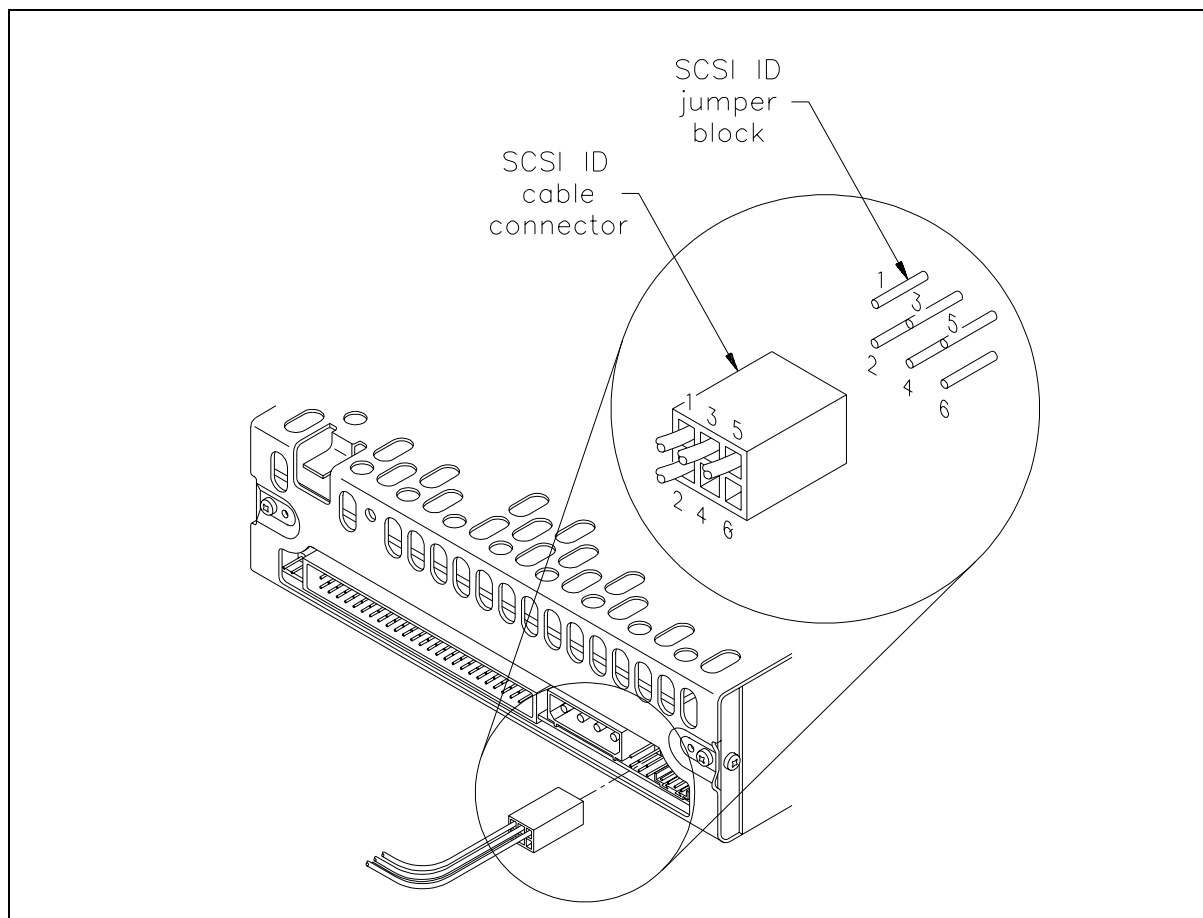


Figure 5-5 Connecting the SCSI ID cable

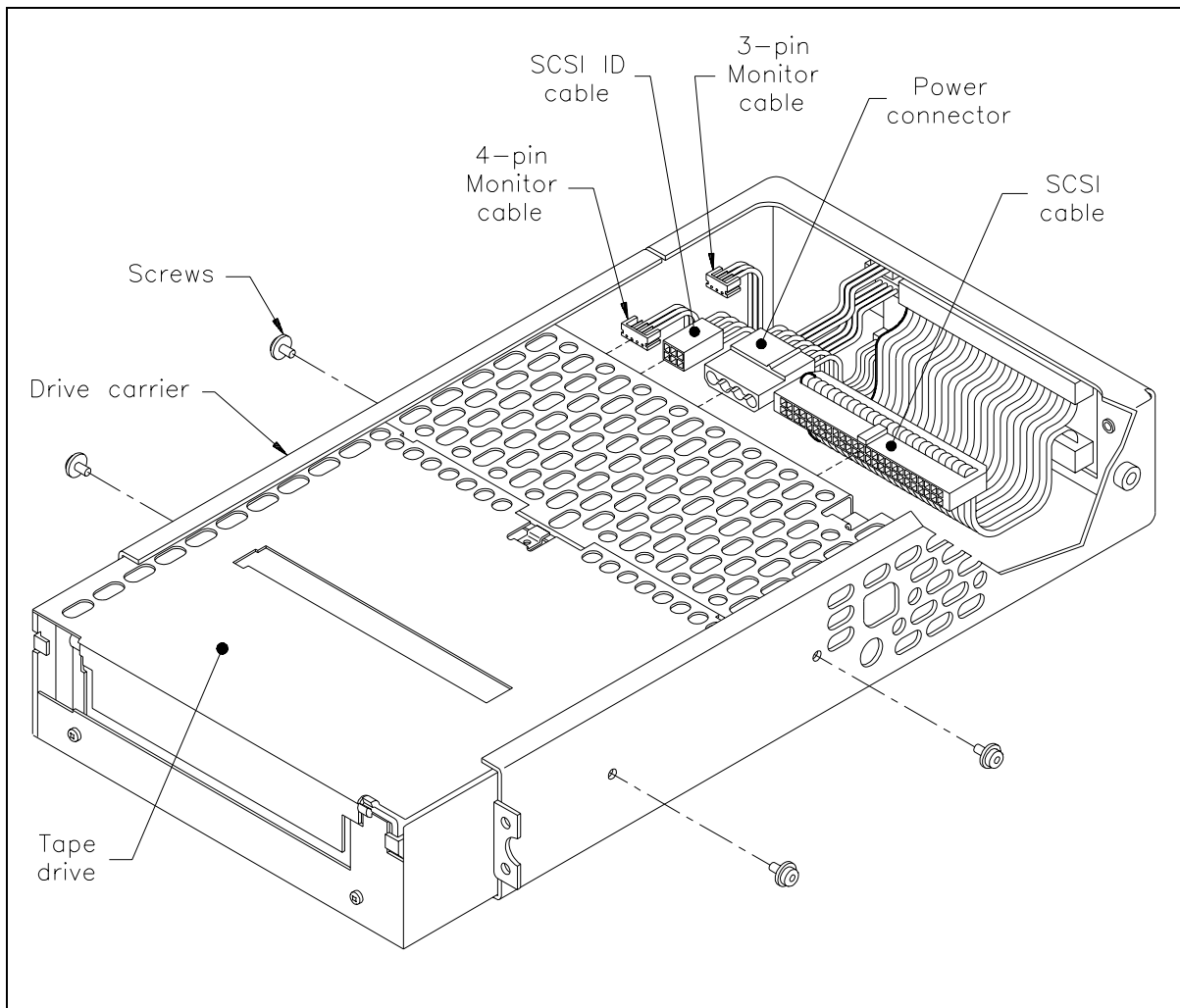


Figure 5-6 Connecting cables to the 8mm tape drive (narrow SCSI cable shown)

Removing an 8mm Tape Drive from the Drive Carrier

1. Remove the drive carrier from the library (see Section 5.2).
2. Use a T-8 TORX bit (some models may require a # 1 Phillips screwdriver) to remove the four screws from the back of the drive carrier faceplate (see Figure 5-4).
3. Remove the drive carrier faceplate.
4. Use a T-10 TORX bit to remove the four screws from the sides of the drive carrier (see Figure 5-3).

5. Slide the tape drive out a short way so you have more space at the rear, and disconnect the four cables from the back of the tape drive. Leave the cable assembly connected to the drive carrier. (See Table 5-1 for a description of cable connections.)
6. Slide the tape drive out of the drive carrier.

Installing a 4mm Tape Drive into a Drive Carrier

To install a 4mm tape drive into a drive carrier, follow these steps:

1. Using the screws provided, install mounting brackets on the sides of the tape drive as shown in Figure 5-7.

CAUTION

Do not use screws longer than those provided. Longer screws may damage the tape drive.

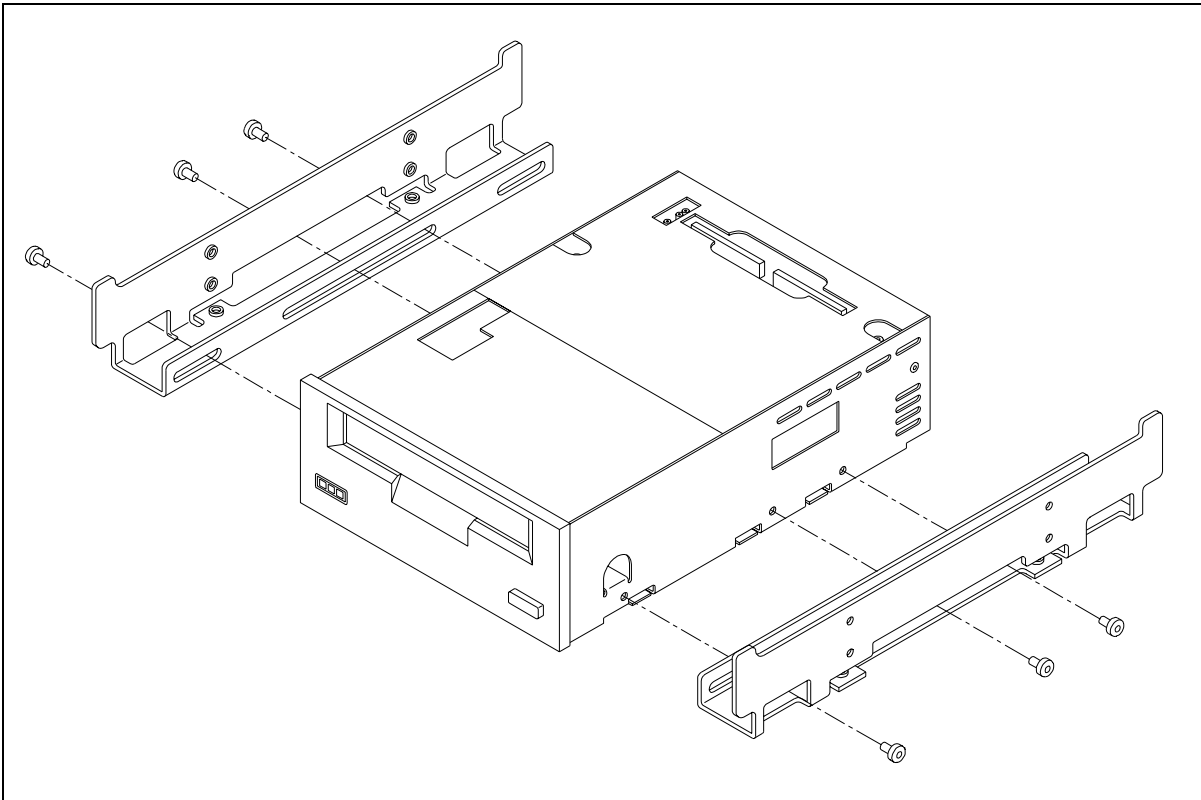


Figure 5-7 Attaching the mounting brackets to the tape drive

2. Slide the tape drive into the drive carrier until the front of the tape drive is flush with the front of the drive carrier. There will be a space at the rear of the carrier; this space is for the tape drive cabling.

If you have inserted the tape drive correctly, the holes on the mounting brackets will align with the holes on the drive carrier.

Note: If the holes do not line up, check to make sure you do not have the tape drive inserted upsidedown or the mounting brackets attached upsidedown.

3. Insert, but do not tighten, the four panhead screws with washers (included with the drive carrier) into the two holes on each side of the drive carrier, as shown in Figure 5-8.

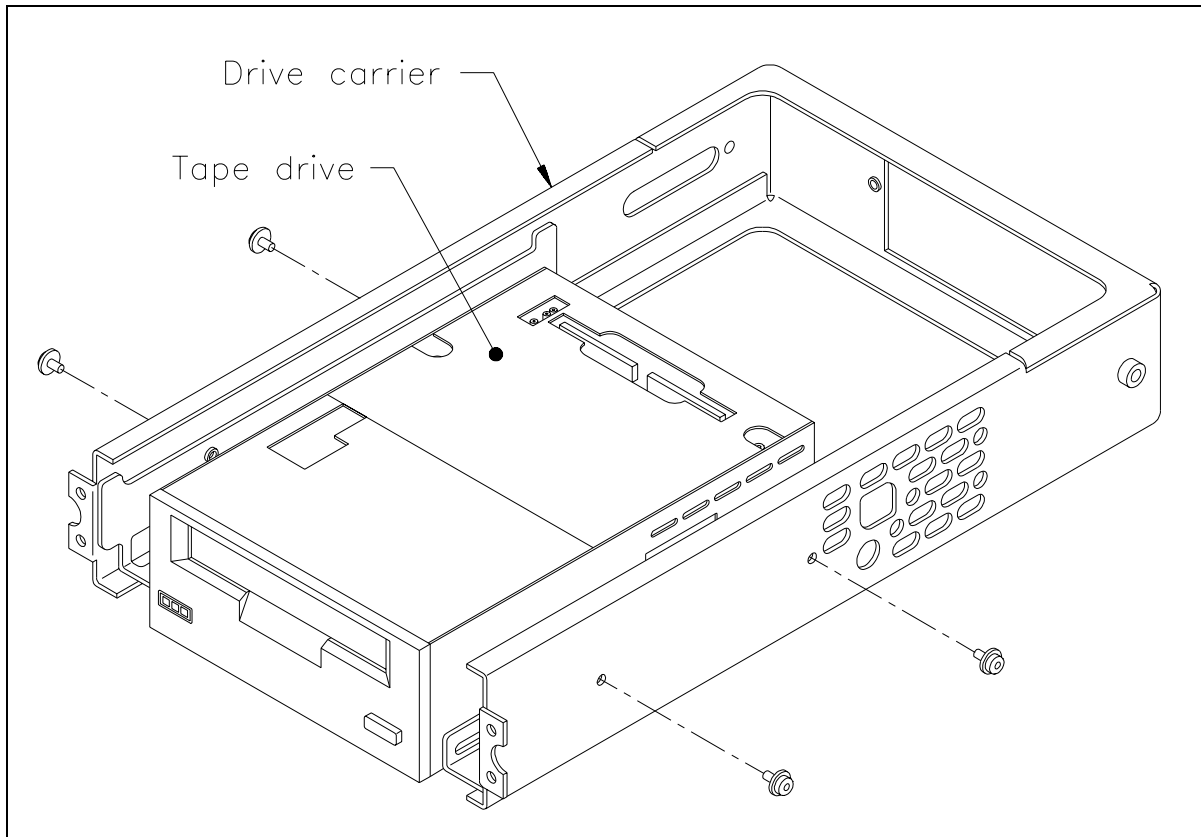


Figure 5-8 Inserting the drive carrier screws

4. Install the drive carrier faceplate, aligning the slot on the faceplate with the door of the tape drive. The tape drive faceplate fits into the recessed area in the back of the drive carrier faceplate. Using a T-8 TORX bit (some models may require a # 1 Phillips screwdriver), insert and tighten the four screws that fasten the faceplate to the drive carrier.

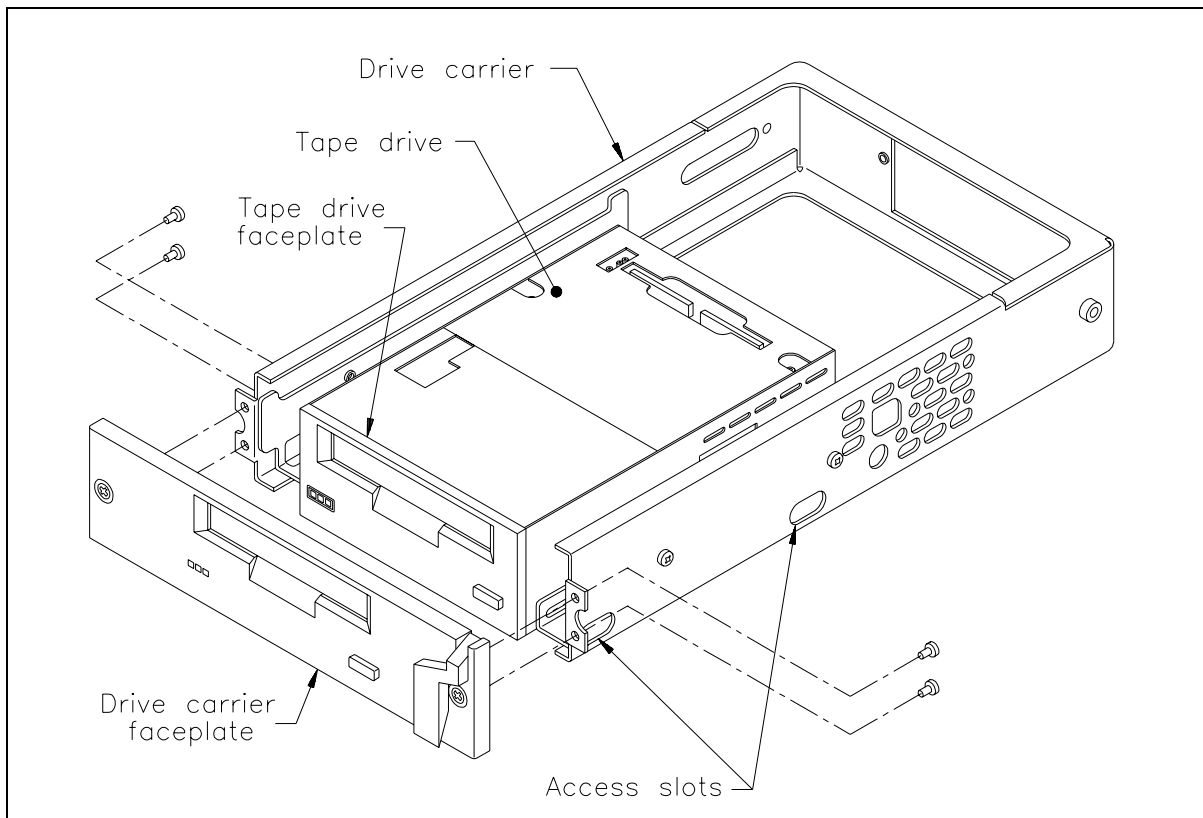


Figure 5-9 Installing the drive carrier faceplate for 4mm tape drive

5. Turn the tape drive assembly so that the faceplate is down and push gently on the tape drive. This ensures that the tape drive is properly seated in the drive carrier.

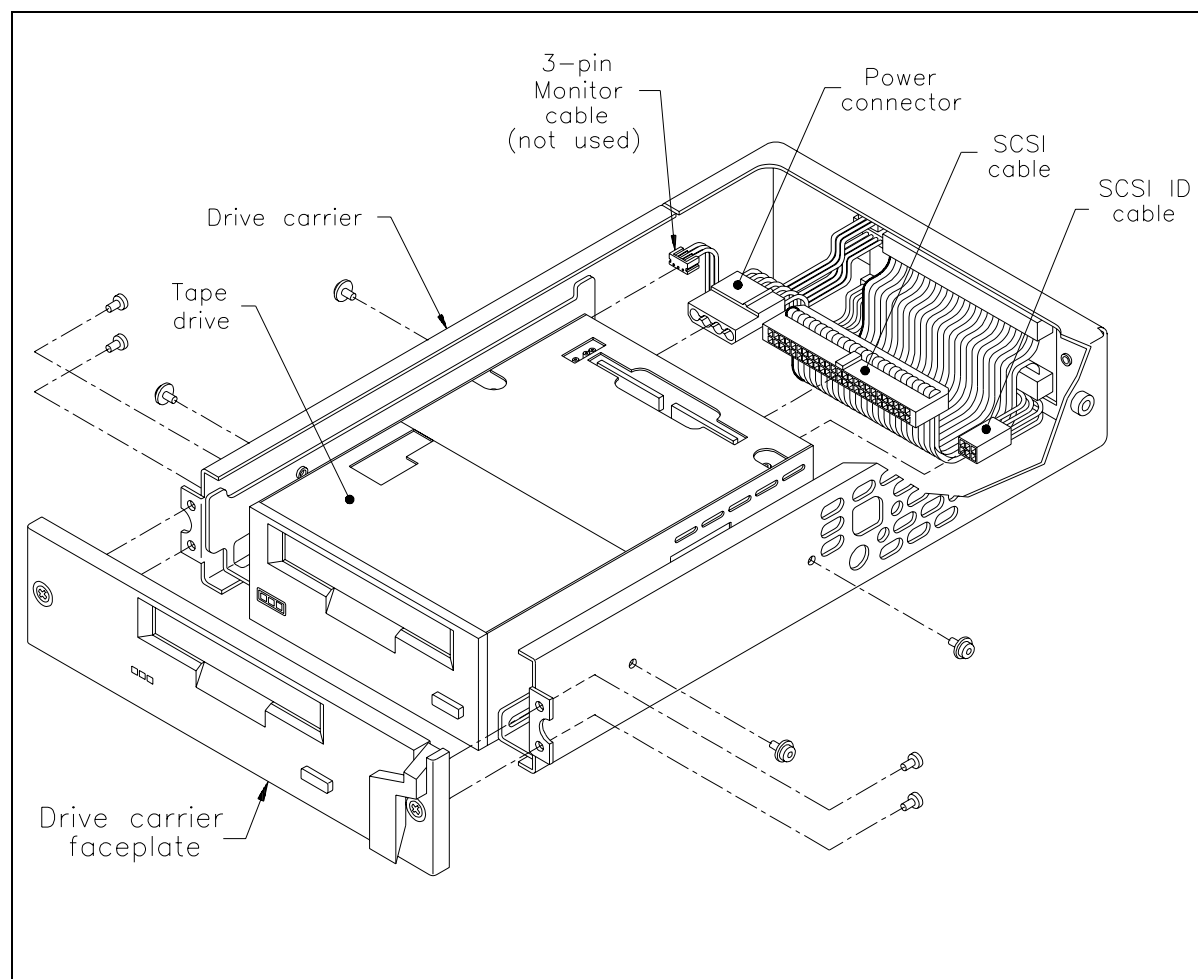
Note: Make sure there are not any gaps between the drive carrier faceplate and the tape drive faceplate.

6. Tighten the two panhead screws on each side of the drive carrier.

7. Attach the cables as indicated in Table 5-2.

Table 5-2 Attaching cables to the 4mm tape drive

Attach the following cable...	To the following port on the back of the tape drive...
3-pin serial cable	3-pin Monitor port connector
Power cable	4-pin power connector
SCSI ID cable	6-pin SCSI ID connector See Figure 5-10 if you are installing a Sony or Conner 4mm tape drive or Figure 5-11 if you are installing a Hewlett Packard 4mm tape drive. Note: If there are jumpers installed, remove them first.
50-pin SCSI cable	50-pin SCSI connector

**Figure 5-10** Tightening the screws and connecting the cables to a Sony/Conner tape drive

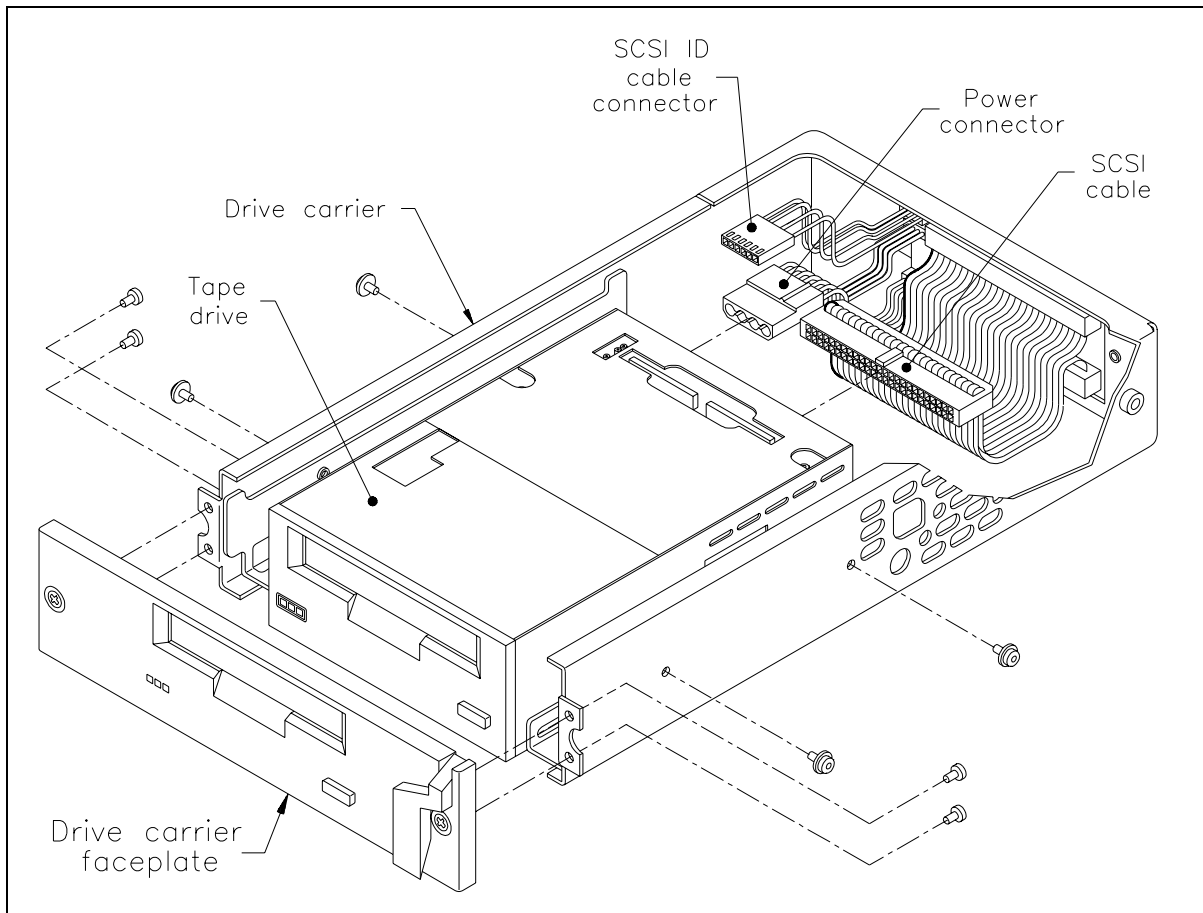


Figure 5-11 Tightening the screws and connecting the cables to a Hewlett Packard tape drive

Removing a 4mm Tape Drive from the Drive Carrier

To remove the tape drive from the drive carrier, follow these steps:

1. Use a T-8 TORX bit (some models may require a # 1 Phillips screwdriver) to remove the four screws from the back of the drive carrier faceplate and remove the faceplate (see Figure 5-9).
2. Use a T-8 TORX driver bit to remove the four screws from the sides of the drive carrier (see Figure 5-8).
3. Slide the tape drive out a short way so you have more space at the rear, and disconnect the four cables from the back of the tape drive. Leave the cables connected to the drive carrier. If necessary, carefully use a flat-blade screwdriver to push the SCSI cable away from the connector.

4. Slide the tape drive out of the drive carrier.
5. If necessary, remove the mounting brackets from the sides of the tape drive (see Figure 5-7).

5.2 Removing and Installing a Drive Carrier

This section describes how to remove a drive carrier from the library and install a drive carrier in the library. In this section, *drive carrier* refers to a tape drive installed in a drive carrier.

CAUTION

If you operate the library with only one tape drive, you must have a *drive blank* installed in the other drive carrier slot. Failure to install a drive blank will interrupt the SCSI bus.

If you are using the earlier models of drive blank, the blank must be installed in the *outer* slot (the slot furthest away from the data cartridge magazine) to ensure correct air flow (see Figure 5-11).

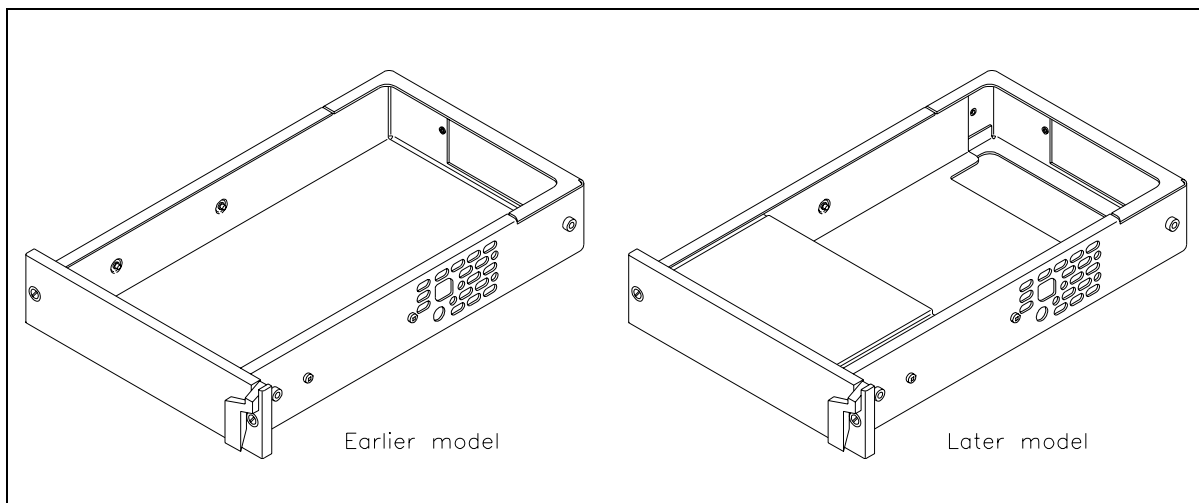


Figure 5-12 Earlier model of drive blank (left) must be installed in the outside slot

Do This First

- ✓ Remove any data cartridges from the tape drives.
- ✓ Turn off the power and disconnect the power cord.
- ✓ Follow the ESD guidelines provided in Chapter 2.
- ✓ Remove the service access cover (see Section 3.3).
- ✓ Open the front door.
- ✓ Push against the base of the CHM to move it out of the way.
- ✓ Obtain a # 1 Phillips screwdriver (some models may use a flatblade).

Removing the Drive Carrier

To remove a drive carrier, follow these steps:

1. Using the appropriate screwdriver, loosen the two captive screws on either side of the faceplate.
2. Using your finger, pull out the lever to extract the tape drive from its connector.

➤ **Important** Do not try to pull out the lever without first loosening the screws.

3. From the front of the library, slide the drive carrier out of its frame. (see Figure 5-13 for 8mm drives; see Figure 5-14 for 4mm drives).

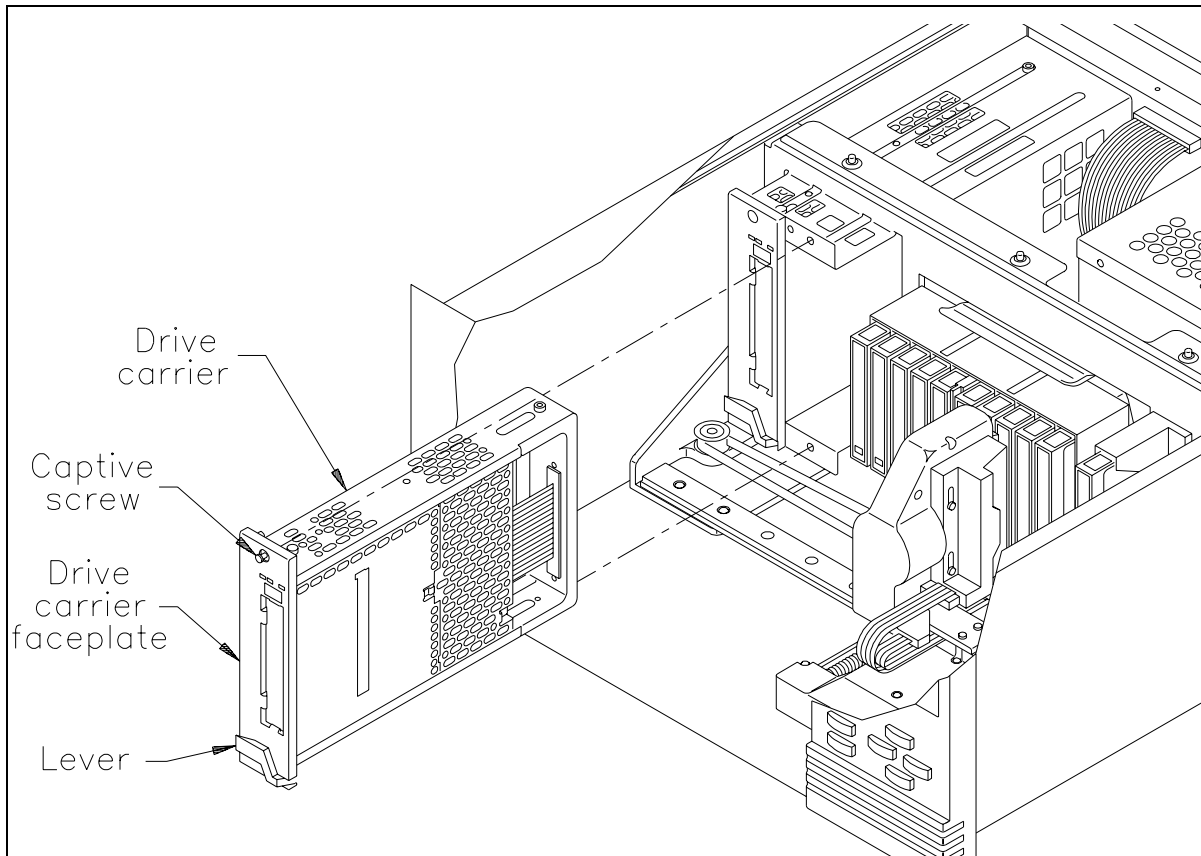


Figure 5-13 Installing or removing an 8mm drive carrier

Installing a Drive Carrier

To install the drive carrier in the library, follow these steps:

1. Insert the tape drive into the slot with the lever toward the bottom. If you are installing two tape drives, it does not matter which tape drive you insert first. See Figure 5-13 for 8mm drive carriers; see Figure 5-14 for 4mm drive carriers.

CAUTION

If you operate the library with only one tape drive, you must have a *drive blank* installed in the other drive carrier slot. Failure to install a drive blank will interrupt the SCSI bus.

If you are using the earlier model of drive blank, the blank must be installed in the *outer* slot (the slot furthest away from the data cartridge magazine) to ensure correct air flow (see Figure 5-12).

2. Push the drive carrier toward the rear of the slot; you will feel some resistance as the tape drive connects with the controller card. If the tape drive doesn't go all the way in, be sure the lever is flat against the bezel. Use the alignment pins on the back of the faceplate for guidance.

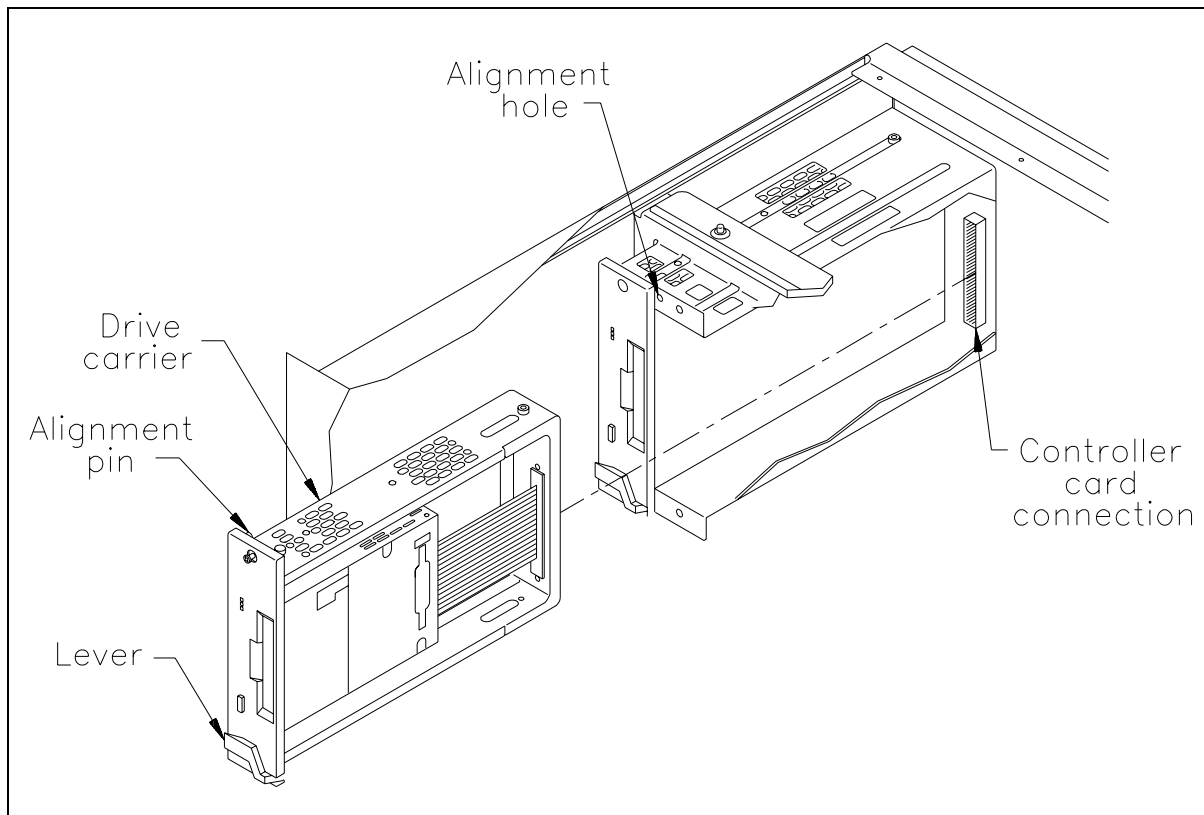


Figure 5-14 Installing or removing a 4mm drive carrier

3. Using the appropriate screwdriver, replace the captive screws on each end of the drive carrier faceplate.

After Installing a Drive Carrier

- ✓ Replace the data cartridges, if necessary.
- ✓ Replace the service access cover (see Section 3.3).
- ✓ Close the front door.
- ✓ 4mm tape drives only. Recalibrate the tape drive position using your LCD or by typing [c] from the Console Main menu if you are using the Diagnostics firmware. Either method will recalibrate the entire library.

5.3 Removing and Installing a Drive Blank

To remove and install a drive blank, follow the procedures in Section 5.2, “Removing and Installing a Drive Carrier.”

CAUTION

If you operate the library with only one tape drive, you must have a *drive blank* installed in the other drive carrier slot. Failure to install a drive blank will interrupt the SCSI bus.

If you are using the earlier model of drive blank, the blank must be installed in the *outer* slot (the slot furthest away from the data cartridge magazine) to ensure correct air flow (see Figure 5-12).

6 Replacing CHM Components

This chapter describes how to replace the following CHM components:

- Cartridge handling mechanism (CHM), without the linear way or the bar code scanner
- Bar code scanner
- Long axis belt
- Long axis assembly, including the linear way and the left and right mounts, but not including the CHM
- Idler pulley assembly: any of the three idler pulley assemblies that operate the long axis belt
- Motor module, motor, and belt
- Motor distribution card

6.1 Replacing the CHM

This section describes how to remove and install the cartridge handling mechanism (CHM).

Do This First

- ✓ Turn off the power and disconnect the power cord.
- ✓ Follow the ESD guidelines provided in Chapter 2.
- ✓ Remove the service access cover (see Section 3.3).

- ✓ Remove the data cartridge magazine.
- ✓ Move the CHM aside by pushing against its base to slide it along the long axis toward the tape drives.
- ✓ Locate the alignment triangle included with your replacement CHM. You will use this tool to make sure the CHM is properly positioned on its base.
- ✓ Obtain the following tools:
 - # 1 Phillips screwdriver
 - Right-angle TORX screwdriver
 - T-10 TORX bit
 - T-20 TORX bit

Removing the CHM

1. Use a T-20 TORX bit to loosen the two tension screws on the long axis pulley plate (see step A in Figure 6-1).
2. As shown in step B in Figure 6-1, push the pulley plate toward the wall. This loosens the belt so you can pull it off the pulleys. Temporarily tighten one of the screws so it holds the plate out of the way during this procedure.
3. Unhook the loosened belt from the motor module pulley (underneath the motor module) and pull the loosened belt out through the access hole at the bottom of the center chassis wall (see step C in Figure 6-1).

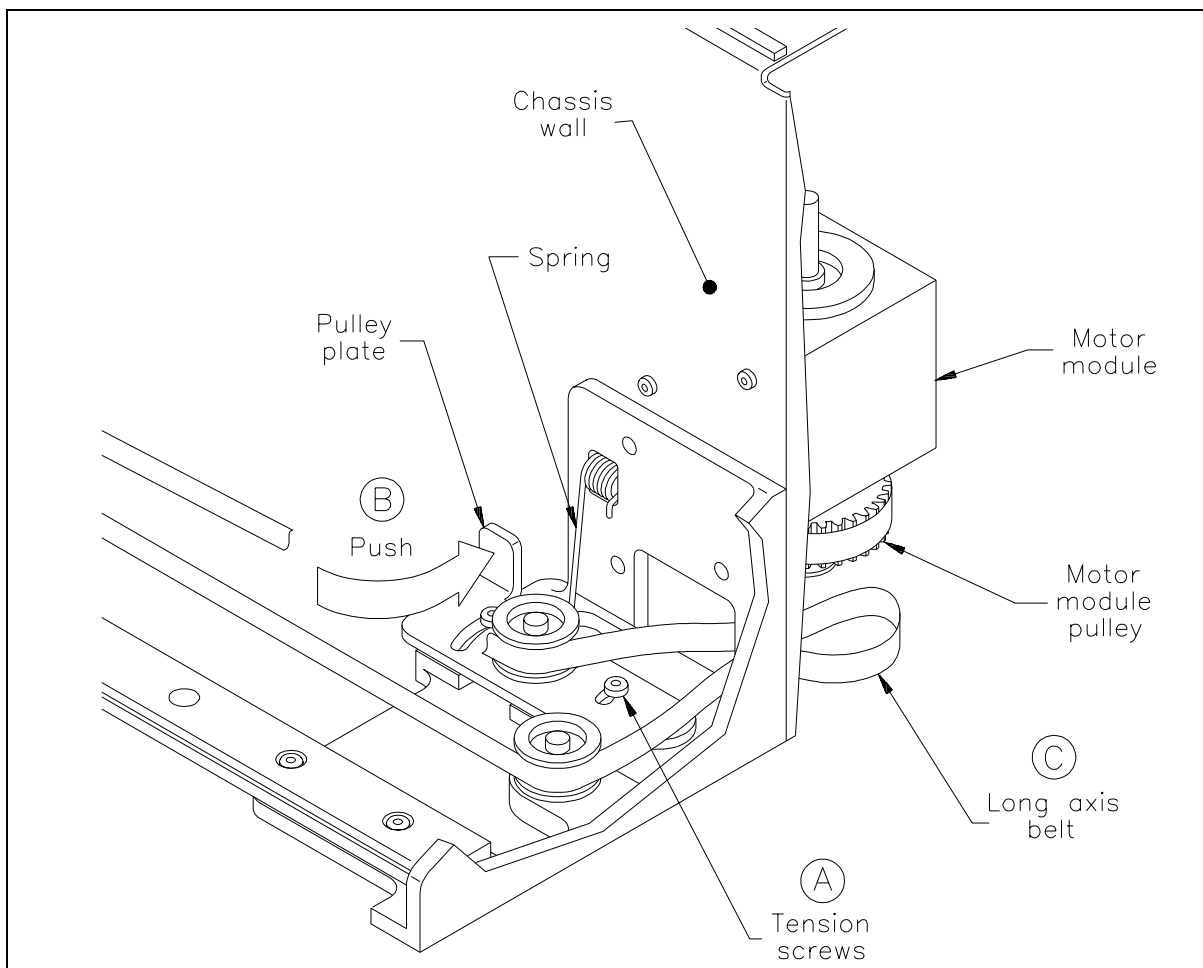


Figure 6-1 Removing the long axis belt from the pulleys

4. Use a T-10 TORX bit to remove the screw from the strain relief on the CHM (see Figure 6-2). Remove the strain relief.

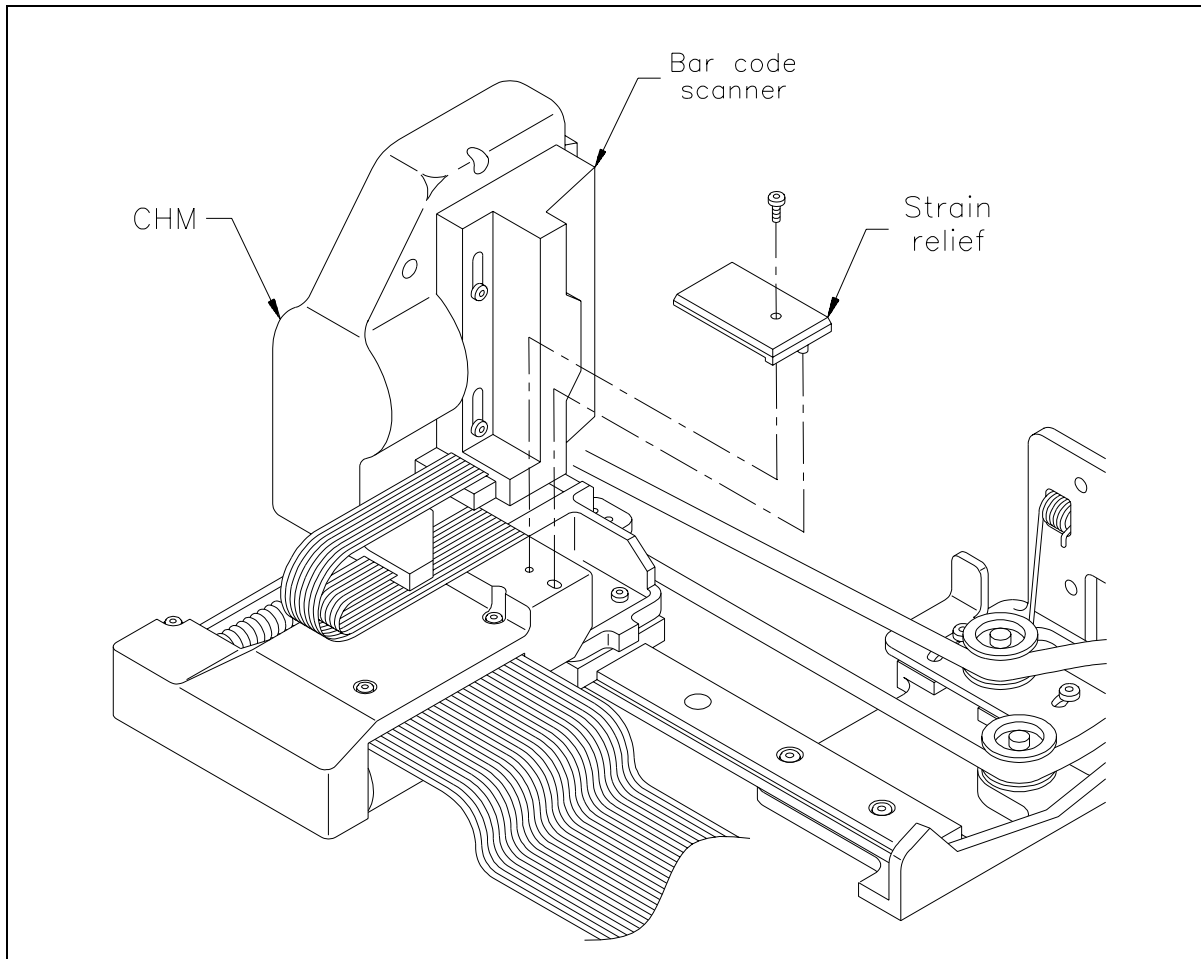


Figure 6-2 Removing the strain relief from the CHM

5. Using a T-10 TORX bit, remove the three screws from the CHM cover (see step A in Figure 6-3), and remove the cover.
6. As shown in step B in Figure 6-3, use a T-10 TORX bit to remove the grounding screw that secures the CHM cable to the CHM.
7. Disconnect the CHM cable from the CHM (see step C in Figure 6-3).

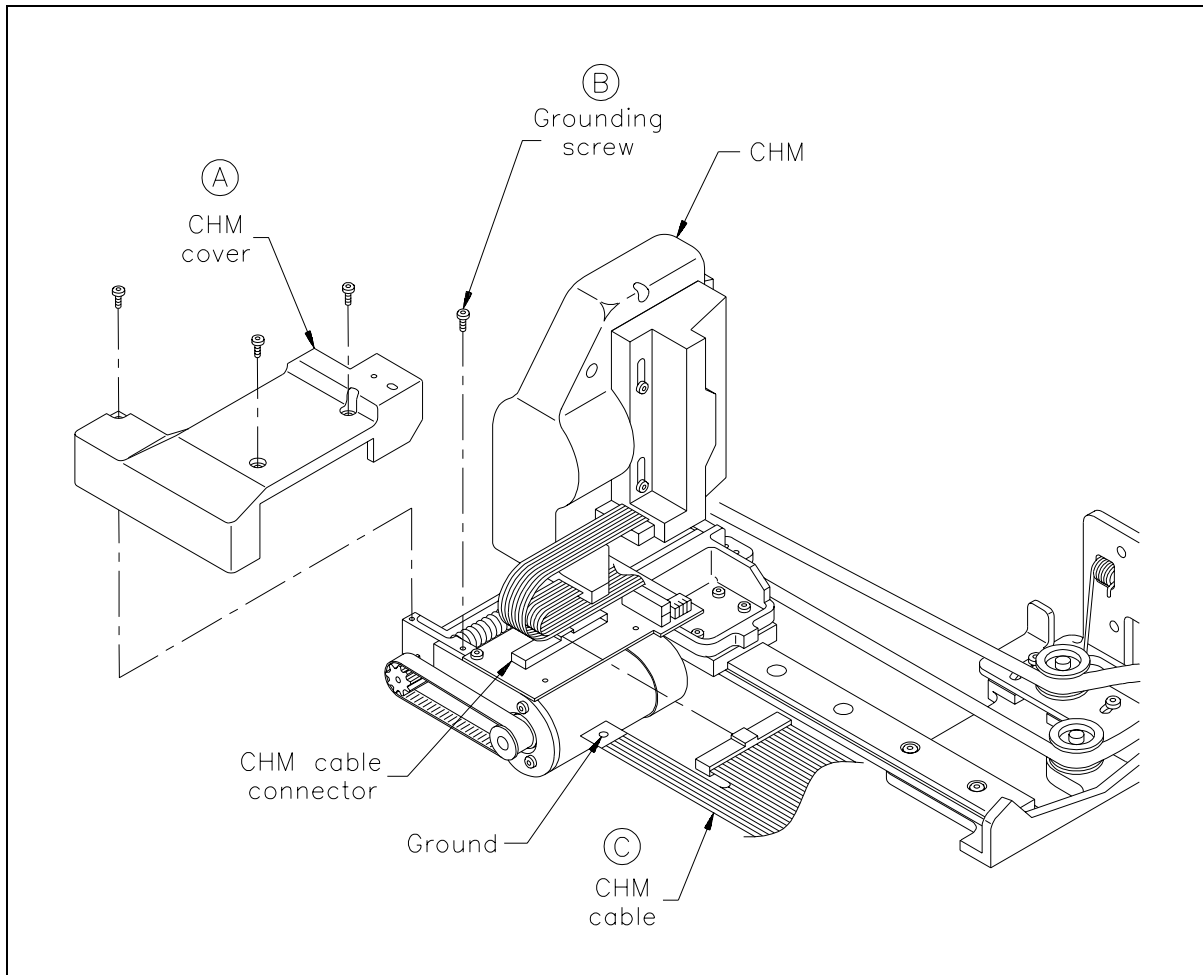


Figure 6-3 Removing the grounding screw, cover, and CHM cable from the CHM

8. As shown in Figure 6-4, use a T-10 TORX bit to remove the four screws that secure the CHM base to the linear way block. Remove the CHM.

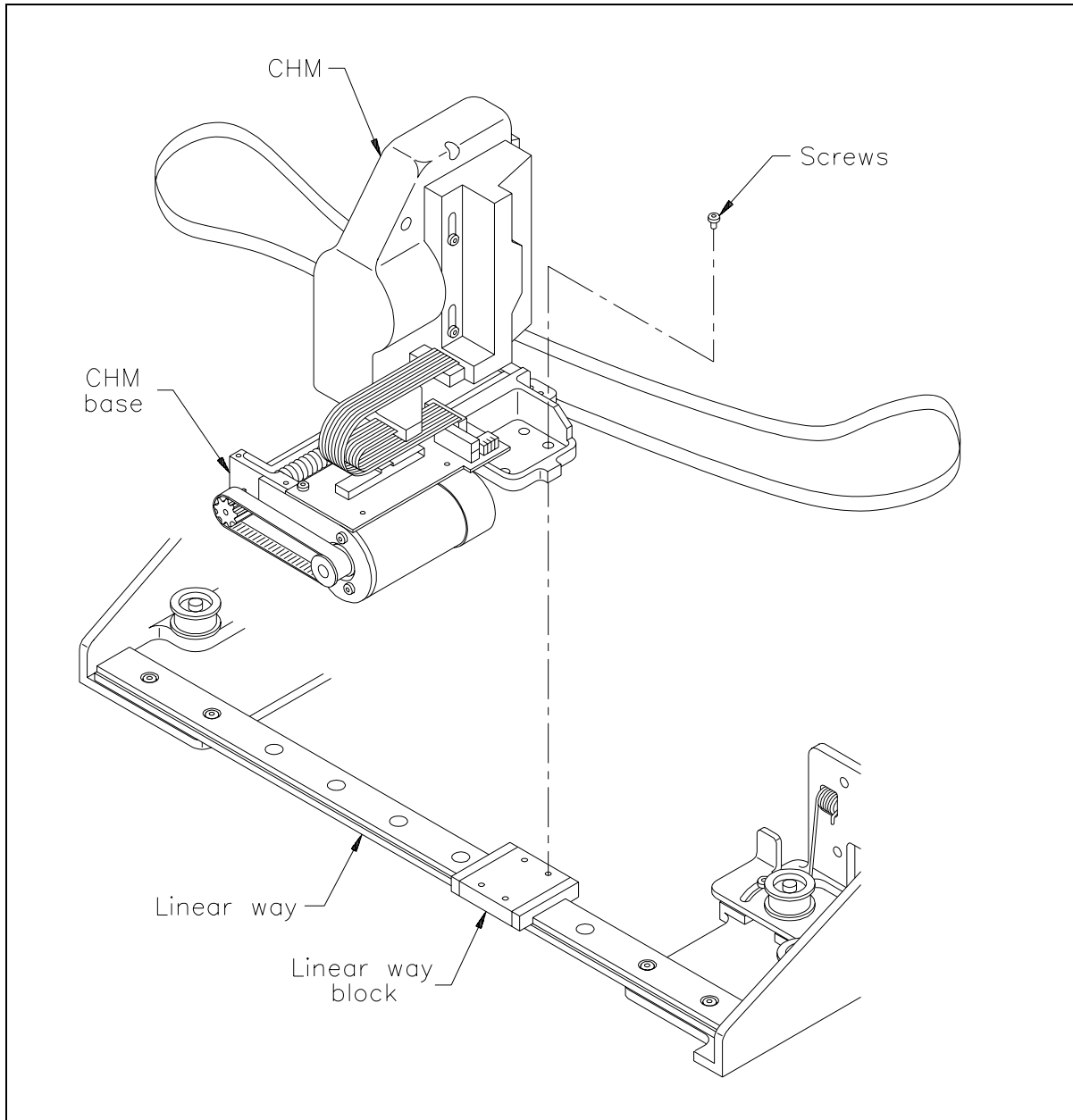


Figure 6-4 Removing the CHM from the linear way

9. Earlier models of the library use a single-piece belt clamp, shown in Figure 6-5; later models use the two-piece clamp shown in Figure 6-6. Use a T-10 TORX bit to remove the two screws that attach the belt clamp to the CHM.

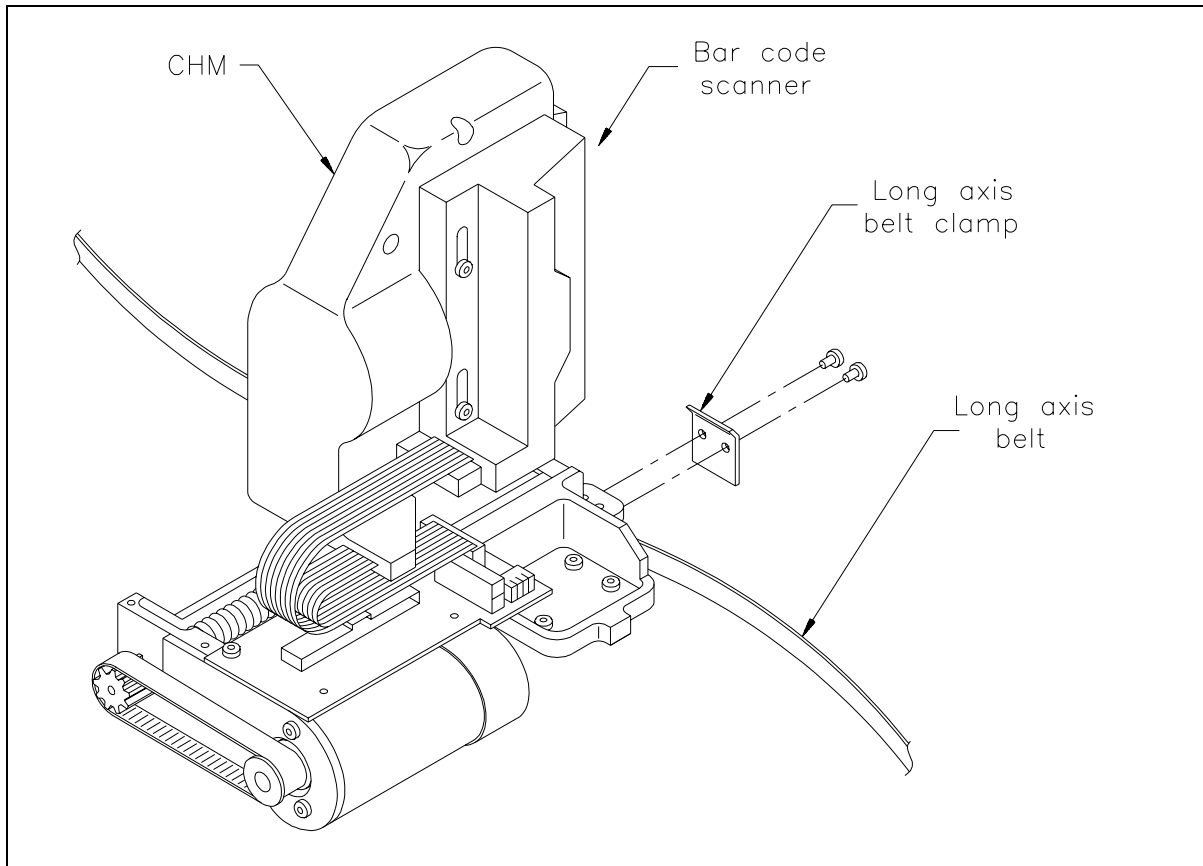


Figure 6-5 Removing the long axis belt clamp (earlier models)

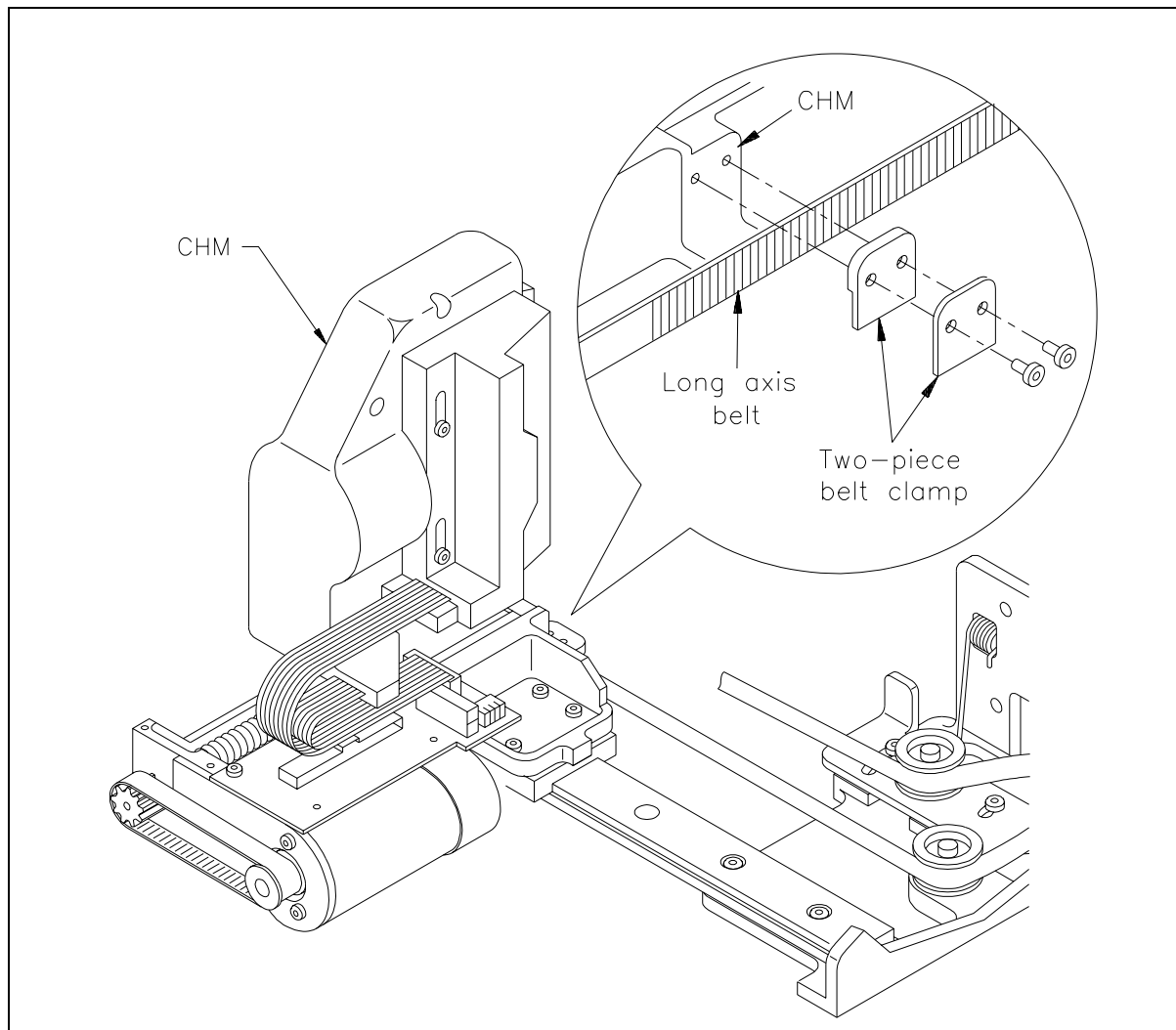


Figure 6-6 Removing the long axis belt clamp (later models)

10. Follow the instructions in Section 6.2 to remove the bar code scanner, if any. Set the bar code scanner aside in a safe place; you will re-install it on the new CHM.

➤ **Important** The replacement CHM does not include a bar code scanner.

Installing the CHM

Installing the CHM involves the following procedures:

- ✓ Replacing the bar code scanner, if any.
- ✓ Connecting the long axis belt to the CHM.
- ✓ Using the alignment triangle to position and align the CHM on the linear way block.
- ✓ Replacing the long axis belt.
- ✓ Connecting the CHM cable and ground, and replacing the CHM cover and strain relief.

Each of these procedures is described on the following pages.

Replacing the Bar Code Scanner

Follow the instructions in Section 6.2 to install the bar code scanner, if any, on the new CHM.

Connecting the Long Axis Belt

Position the two-piece belt clamp as shown in Figure 6-6, and use a T-10 TORX bit to replace the two 4-40 × 0.375 panhead screws. Make sure the teeth on the belt clamp engage the teeth on the belt. Tighten the screws to 4.5 inch-pounds (5.2 kg-cm) of torque.

Positioning, Aligning, and Securing the CHM to the Linear Way

1. Position the CHM mounting surface squarely on the linear way block (see Figure 6-7), and insert the four M3 \times 0.50 screws. Tighten the screws, but leave them loose enough to allow alignment. Do not tighten the screws to torque yet.
2. Locate the alignment triangle included with your replacement CHM. Place one side of the triangle in the linear way channel as shown in Figure 6-7. Push the triangle against the CHM base and adjust the CHM so there is no visible gap between the triangle and the CHM base (make sure the CHM cover is still off). Push forward against the base of the CHM to align the base against the linear way block (see arrows in Figure 6-7).

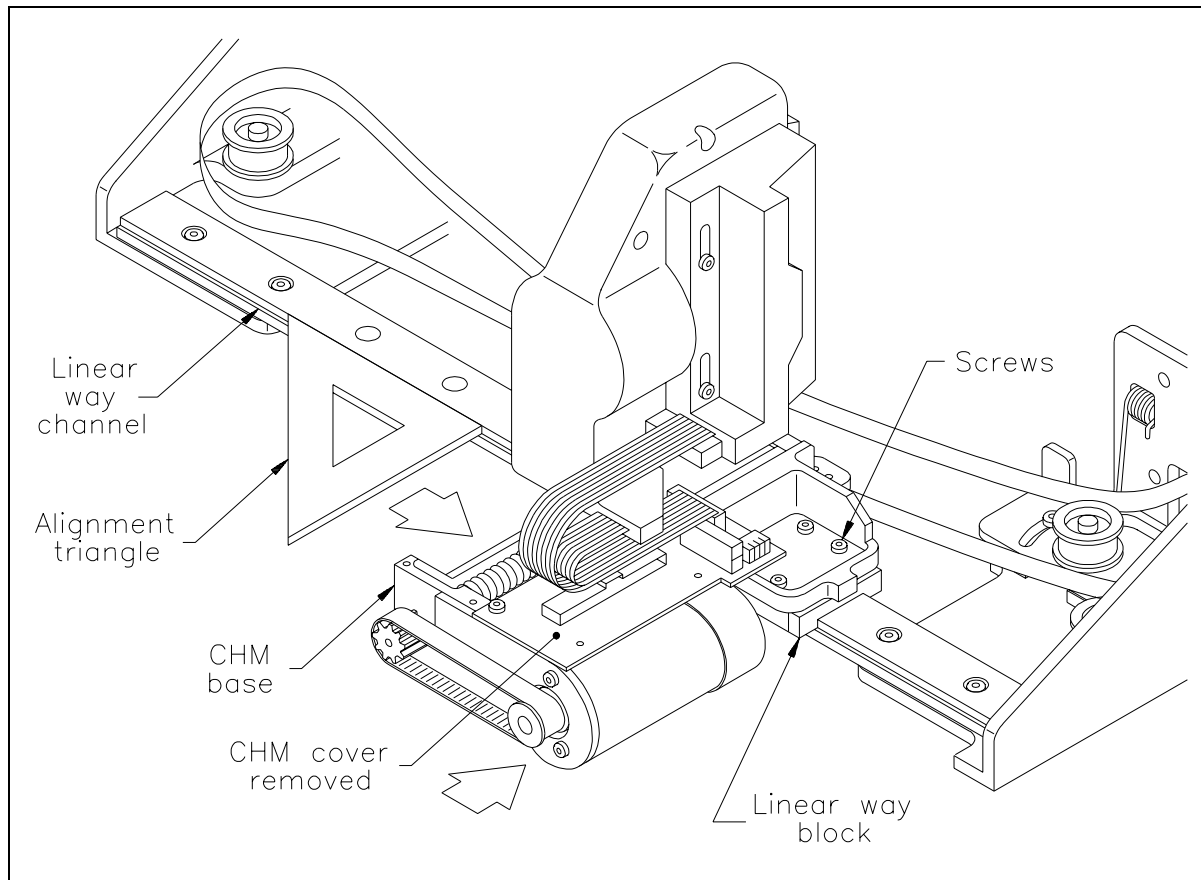


Figure 6-7 Using the alignment triangle to properly position the CHM

CAUTION

Make sure the CHM is aligned before you tighten the screws.

3. When you are certain that the CHM is aligned squarely on the linear way, use a T-10 TORX bit to tighten the four screws to 6.0 inch-pounds (6.9 kg-cm) of torque.
4. After you tighten the screws, use the alignment triangle to re-check the alignment.

Replacing the Long Axis Belt

➤ **Important** To properly tension the belt, position the CHM in the middle of the long axis so the length of the belt is equal on either side.

1. Push the long axis belt through the access hole and hook it onto the pulley underneath the motor module (see step A in Figure 6-8).
2. As shown in step B in Figure 6-8, make sure the spring is still seated in its retention slot on the pulley plate.
3. If you did not tighten the screw to hold the plate toward the chassis wall during an earlier step, push the pulley plate toward the chassis wall now (see step C).
4. Route the belt around the pulleys as shown in step D in Figure 6-8. When the belt is in position, loosen the screw you tightened earlier to release the plate. Gently let go of the plate so it returns to its normal position.
5. Use a T-20 TORX bit to tighten the tension screws to 15.0 inch-pounds (17.2 kg-cm) of torque (see step E).

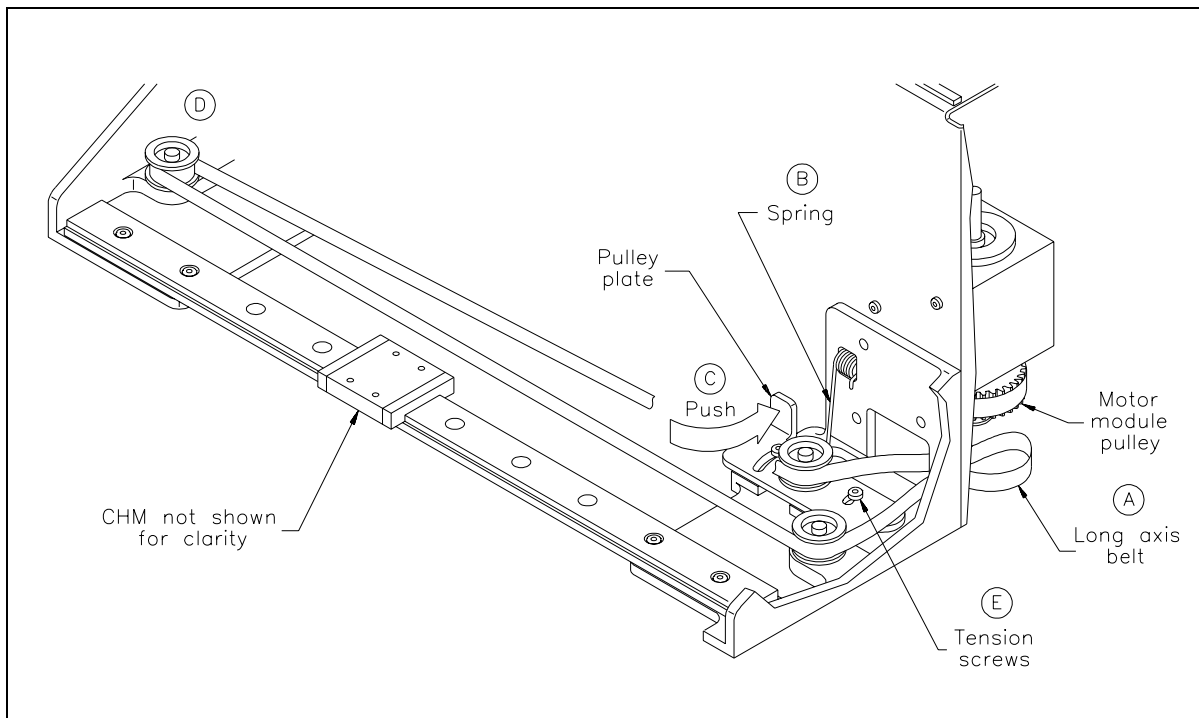


Figure 6-8 Replacing the long axis belt

Connecting the Cables and Replacing the Cover and Strain Relief

1. As shown in step A in Figure 6-9, connect the CHM cable to the CHM.
2. Use a T-10 TORX bit and one 4-40×0.375 panhead screw to connect the CHM ground cable to the CHM (see step B). Tighten the screw to 4.5 inch-pounds (5.2 kg-cm) of torque.
3. Use a T-10 TORX bit to replace the three 4-40×0.375 panhead screws that secure the CHM cover to the CHM (see step C in Figure 6-9). Tighten the screws to 4.5 inch-pounds (5.2 kg-cm) of torque.

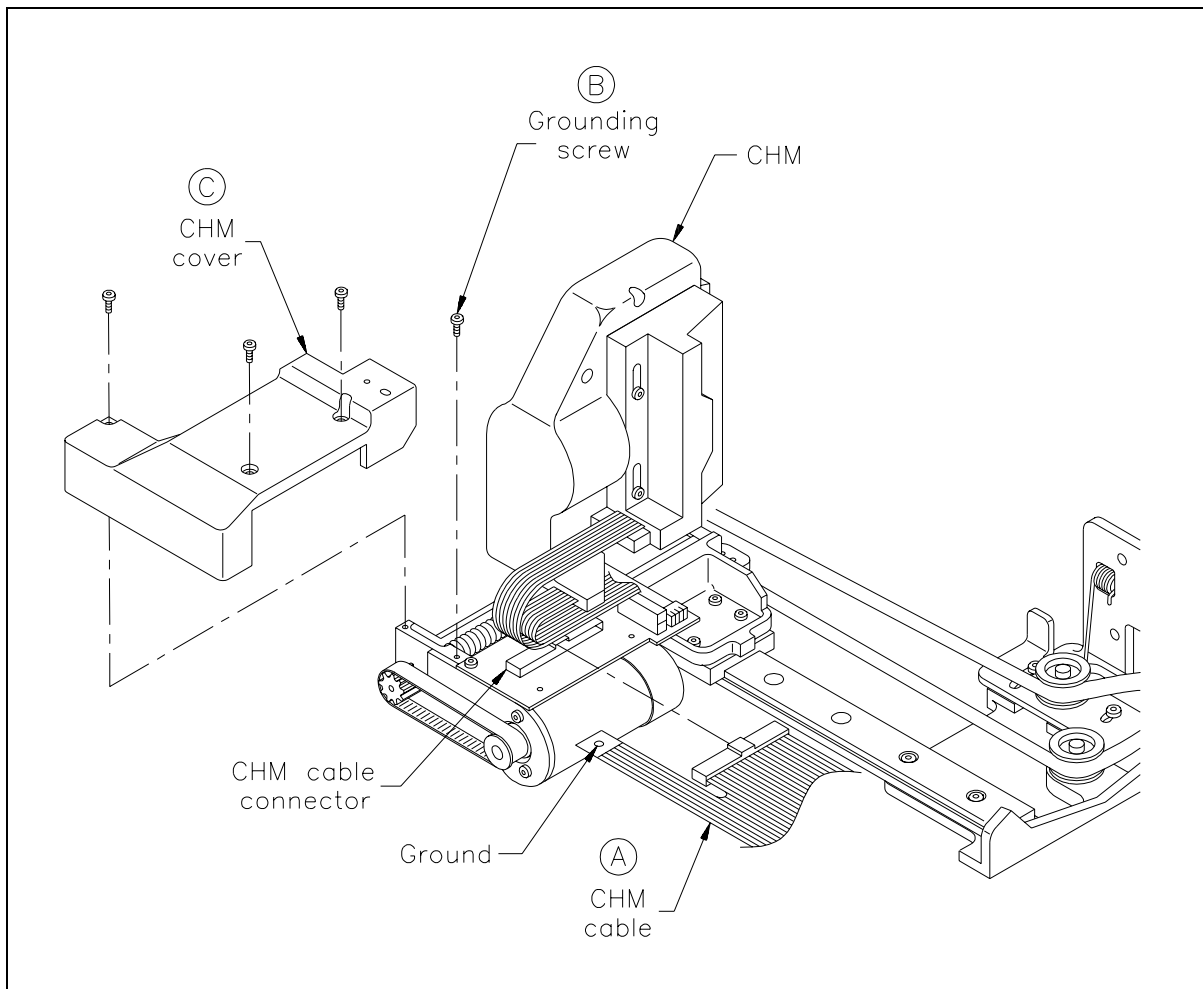


Figure 6-9 Connecting the CHM cable and grounding screw, and replacing the cover on the CHM

4. Make sure the cables are connected and lined up properly. Use a T-10 TORX bit and a single 4-40 × 0.375 panhead screw to replace the strain relief (see Figure 6-10). Tighten the screws to 4.5 inch-pounds (5.2 kg-cm) of torque

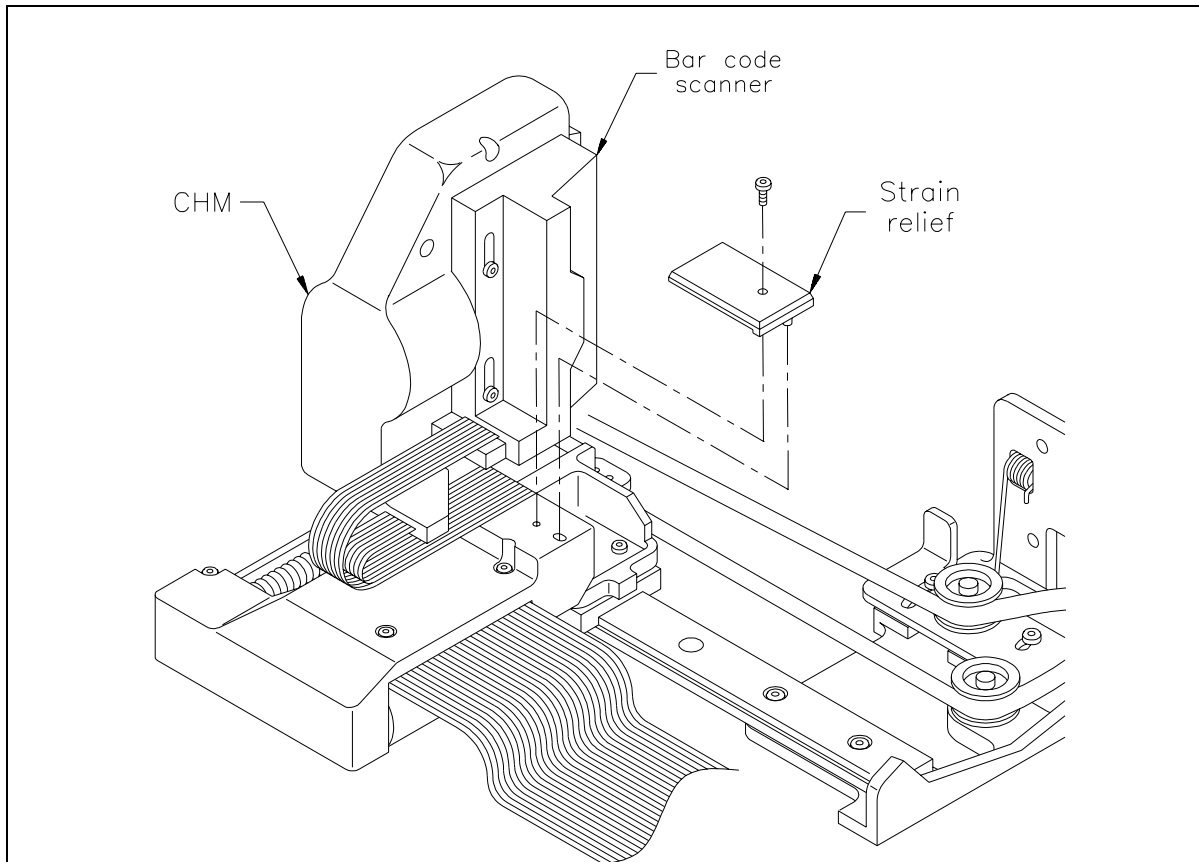


Figure 6-10 Replacing the cable restraint on the CHM

After Replacing the CHM

- ✓ Replace the cartridge magazine.
- ✓ Replace the service access cover (see Section 3.3).
- ✓ Use the Diagnostics menu on the operator panel to check CHM operations (refer to your installation and operation manual for instructions).

6.2 Replacing the Bar Code Scanner

This section describes how to remove and replace the bar code scanner.

Do This First

- ✓ Turn off the power and disconnect the power cord.
- ✓ Follow the ESD guidelines provided in Chapter 2.
- ✓ Remove the service access cover (see Section 3.3).
- ✓ Obtain the following tools:
 - T-10 TORX bit
 - T-15 TORX bit

Removing the Bar Code Scanner

1. Use a T-10 TORX bit to remove the single screw from the strain relief as shown in Figure 6-11. Remove the strain relief and set it aside with the screw. You will use the same strain relief and screw when you replace the bar code scanner.

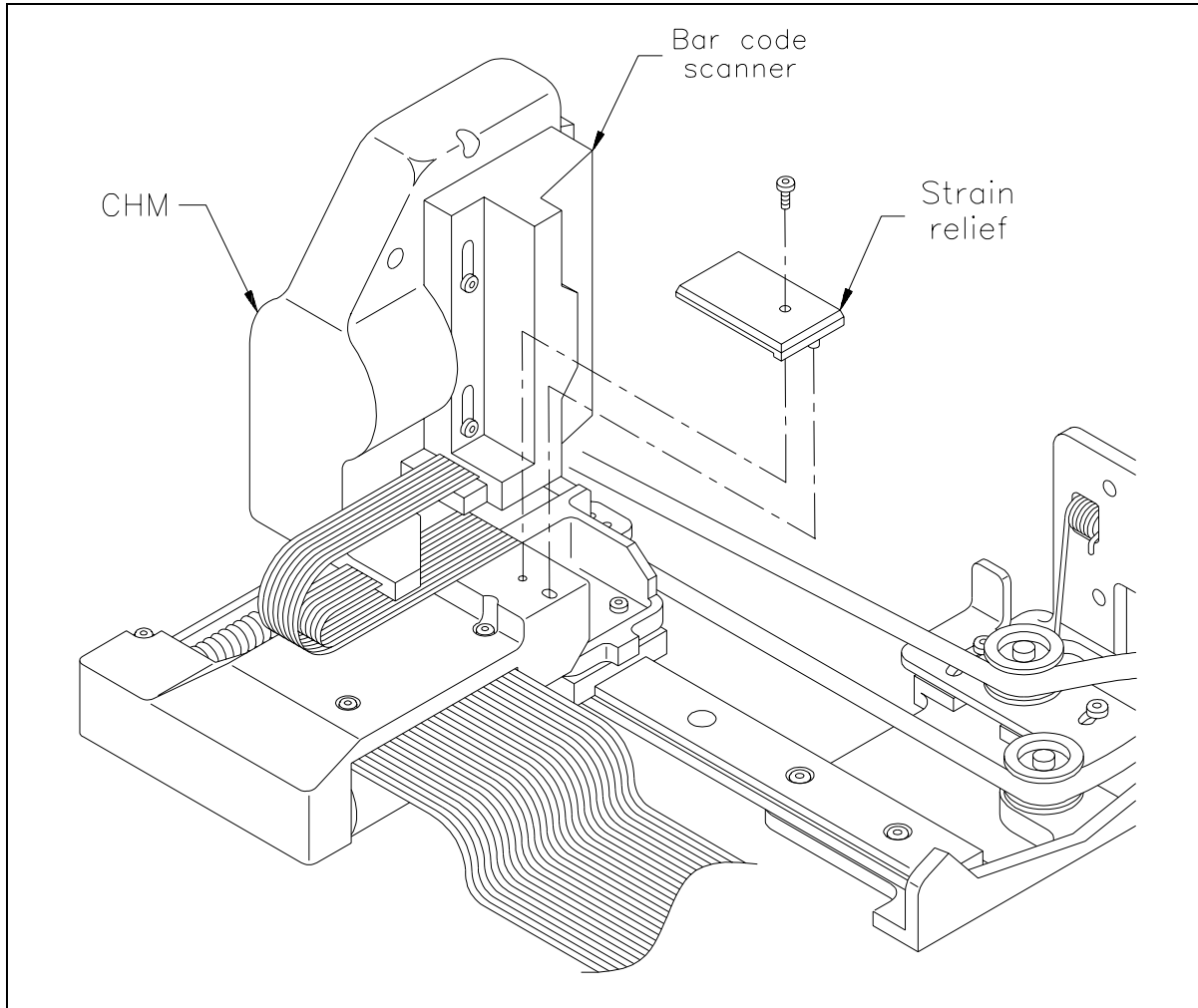


Figure 6-11 Removing the strain relief from the CHM

2. Remove the cover as shown in Figure 6-12.

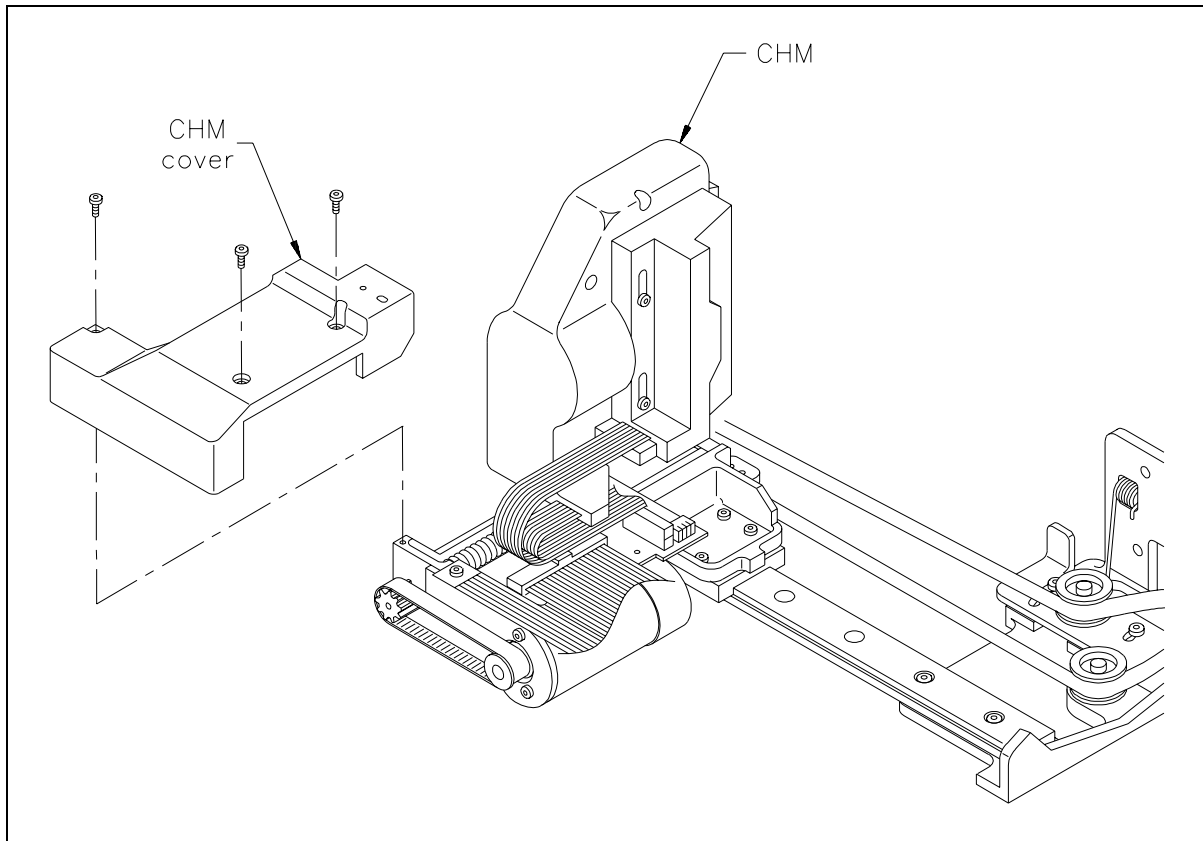


Figure 6-12 Removing the cover from the CHM

3. For easier access to the bar code scanner cable, use a T-10 TORX driver to remove the ground screw, as shown in Figure 6-13.
4. Optionally, press against the latch on the gripper flex cable and remove the cable from the J3 connector, as shown in Figure 6-13.
5. Press against the latch on the bar code scanner cable to disconnect the cable from the J2 connector (see Figure 6-13).

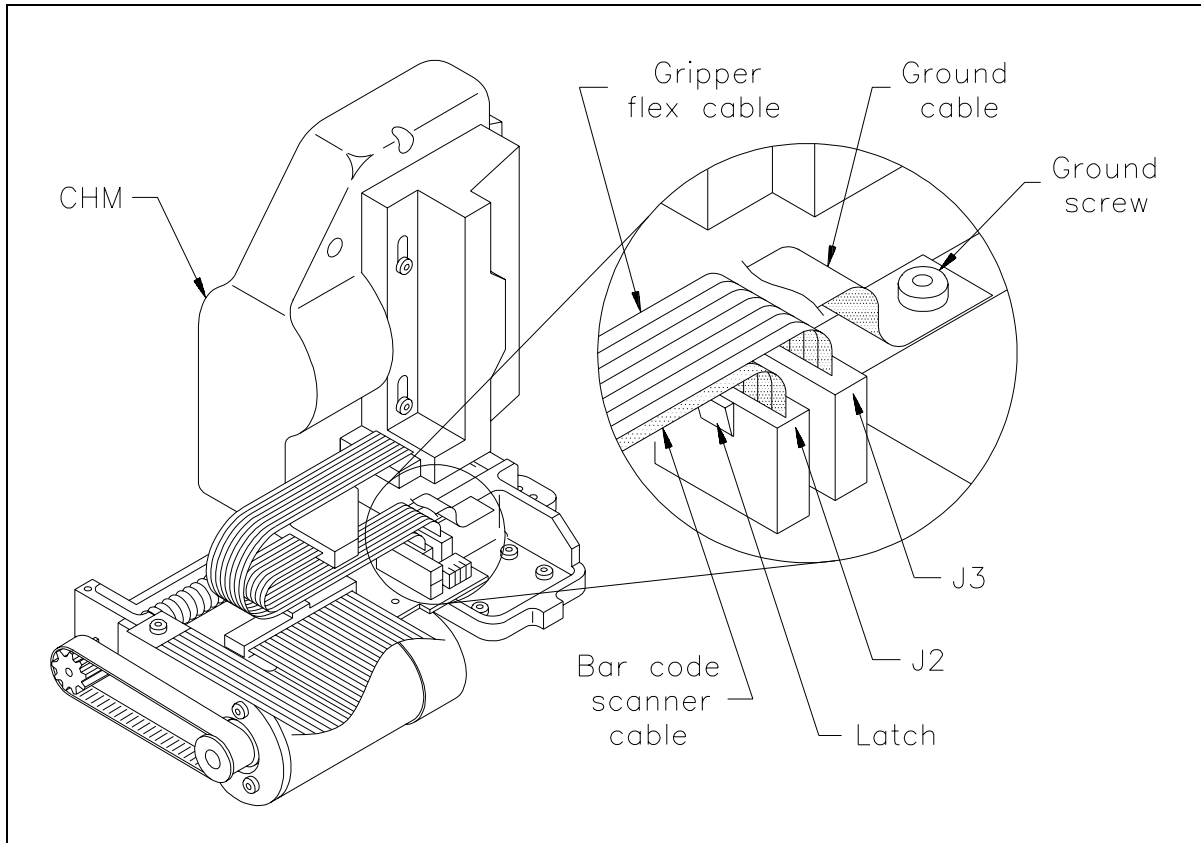


Figure 6-13 Disconnecting the gripper flex and bar code scanner cables

6. Use a T-15 TORX bit to remove the two screws that secure the scanner to the CHM (see Figure 6-14).
7. Remove the scanner from the CHM.

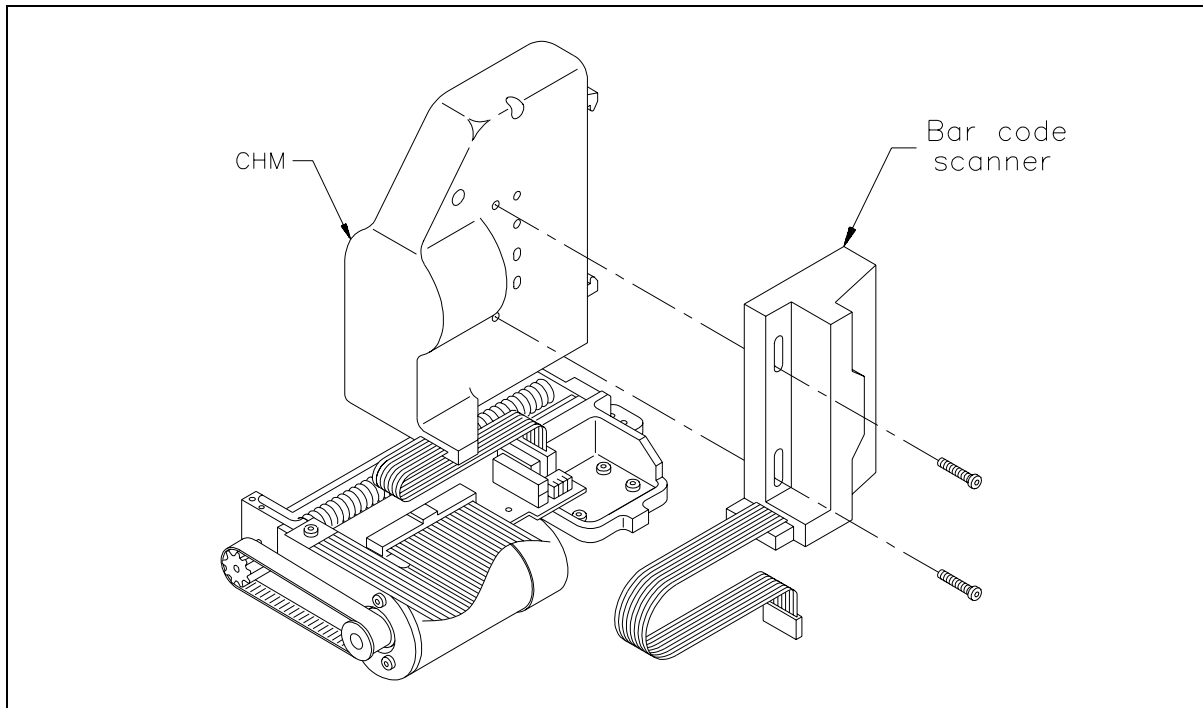


Figure 6-14 Removing the bar code scanner from the CHM

Installing the Bar Code Scanner

1. Find the two locating pins on the back of the scanner as shown in Figure 6-15.
2. Locate the alignment holes on the side of the CHM, shown in Figure 6-15.

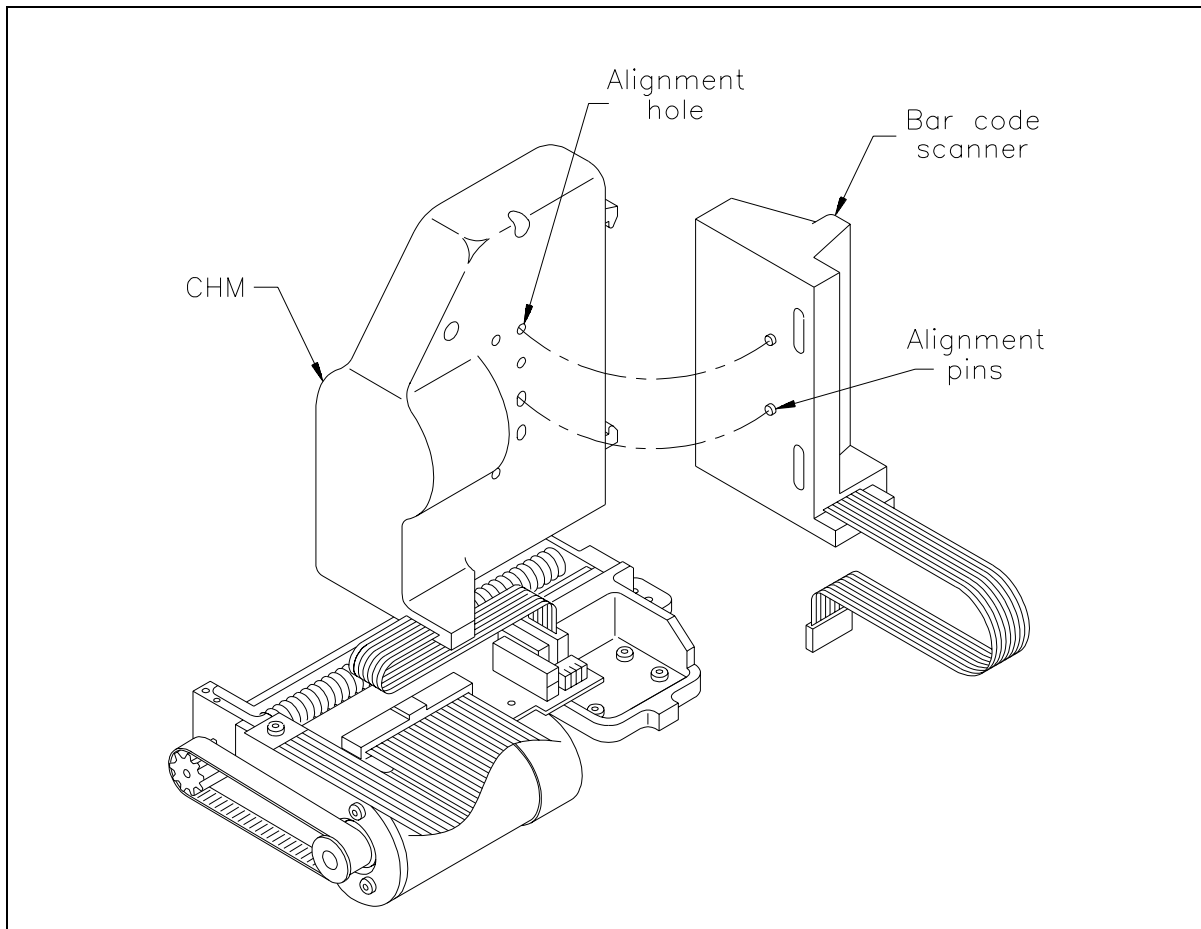


Figure 6-15 Inserting the bar code scanner alignment pins into the upper alignment holes on the CHM

3. Locate the notch labelled 2xx on the bar code scanner (see Figure 6-16). Line up the 2xx notch with the notch on the CHM, and insert the two alignment pins on the back of the bar code scanner into the upper holes (the first and third holes) on the CHM.

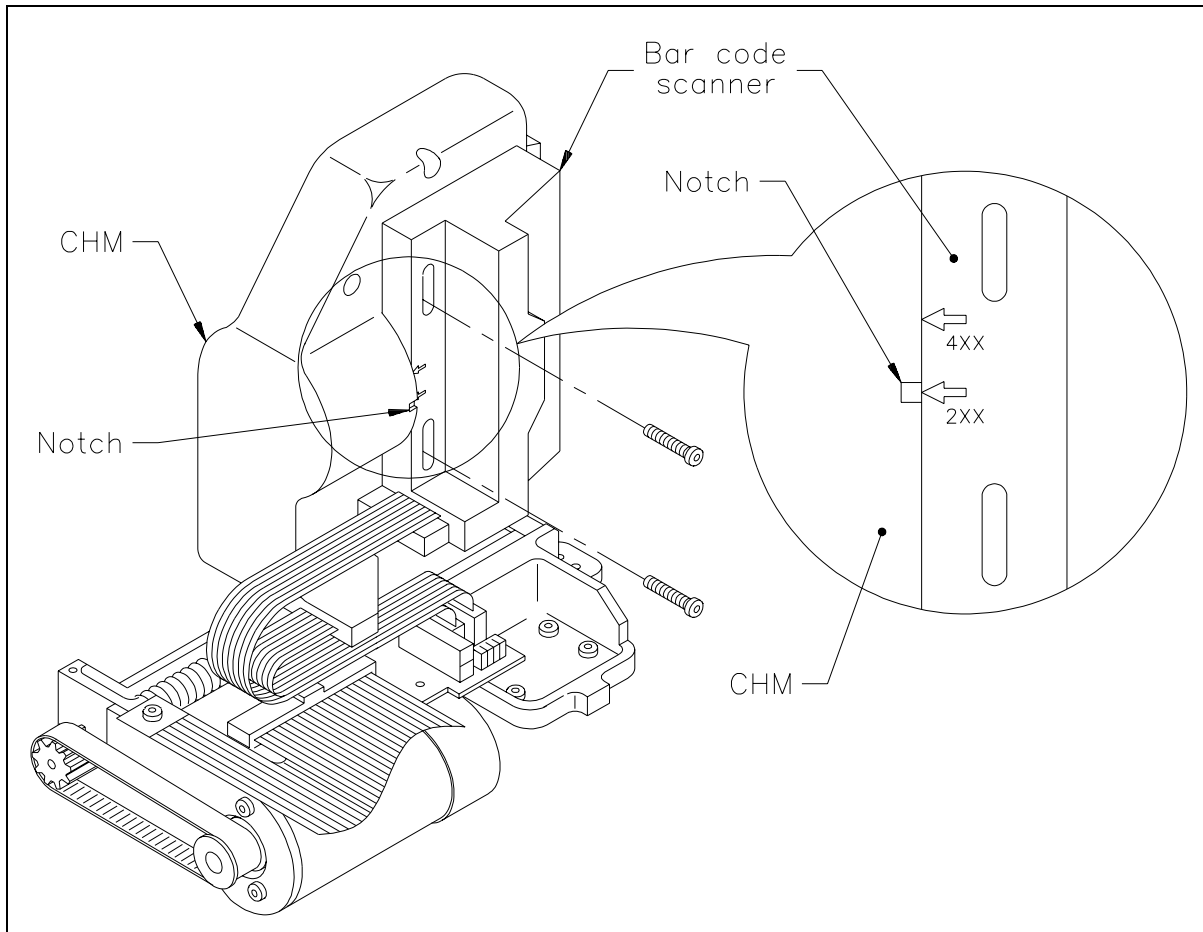


Figure 6-16 Installing the bar code scanner

4. Use a T-15 TORX bit to replace the two 6-32 \times 0.750 panhead screws that attach the scanner to the CHM (see Figure 6-16).

► **Important** Make sure the screws are positioned at the bottom of each screw slot, as shown.

5. Tighten the screws to 6.0 inch-pounds (6.9 kg-cm) of torque.

6. Connect the bar code scanner cable to the J2 connector on the CHM card, using the pin on the connector for guidance (see Figure 6-17).
7. If necessary, reconnect the gripper flex cable to the J3 connector (see Figure 6-17).
8. If you removed it, use a T-10 TORX bit to replace the ground screw (see Figure 6-17).

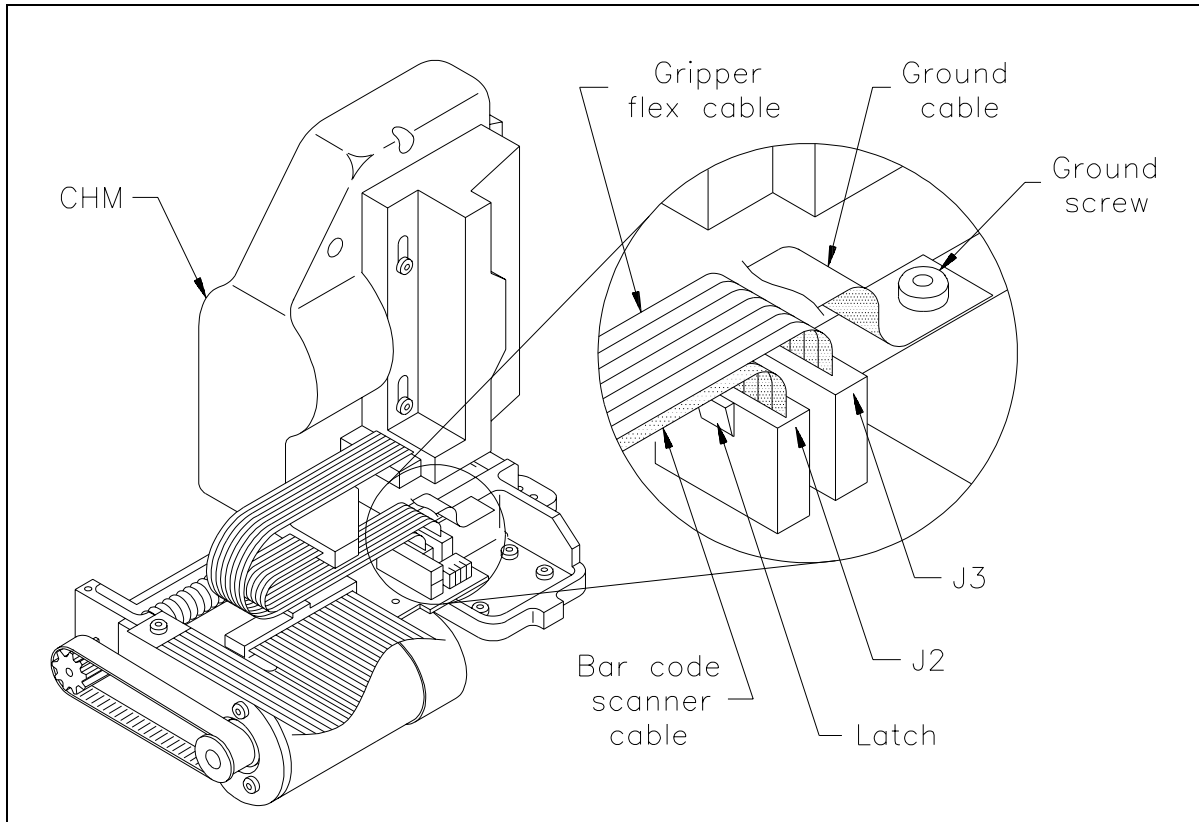


Figure 6-17 Reconnecting the bar code scanner cable and the gripper flex cable

➤ **Important** Make sure the cables are straight and neatly clamped to allow smooth flex motion.

9. Use a T-10 TORX bit and one 4-40×0.375 screw to replace the strain relief over the gripper cable and bar code scanner cable (see Figure 6-18). Tighten the screw to 4.5 inch-pounds (5.2 kg-cm) of torque.

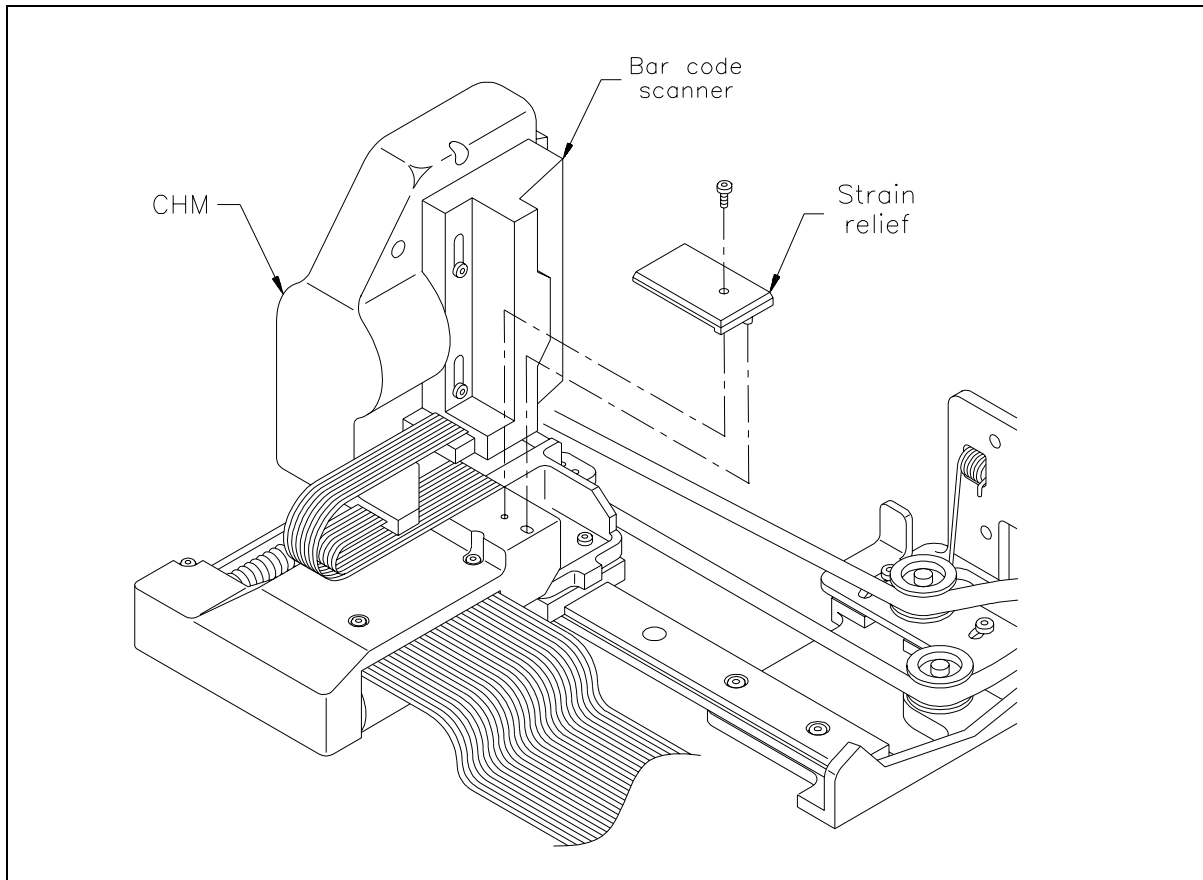


Figure 6-18 Replacing the strain relief

After Installing the Bar Code Scanner

- ✓ Replace the service access cover (see Section 3.3).
- ✓ Use the Scan function on the operator panel's Diagnostics menu to test the bar code scanner (refer to your installation and operation manual for instructions).

6.3 Replacing the Long Axis Belt

This section describes how to remove and replace the long axis belt.

Do This First

- ✓ Turn off the power and disconnect the power cord.
- ✓ Follow the ESD guidelines provided in Chapter 2.
- ✓ Remove the service access cover (see Section 3.3).
- ✓ Remove the data cartridge magazine.
- ✓ Obtain the following tools:
 - Straight and right-angle TORX driver
 - T-20 TORX bit (straight driver)
 - T-10 TORX bit (right-angle driver)

Removing the Long Axis Belt

1. Move the CHM aside by pushing against its base to slide it along the long axis toward the tape drives.

2. Use a T-20 TORX bit to loosen the two tension screws on the long axis pulley plate (see step A in Figure 6-19).
3. As shown in step B in Figure 6-19, push the pulley plate toward the wall. This loosens the belt so you can pull it off the pulleys. Temporarily tighten one of the screws so it holds the pulley plate out of the way during the procedure.

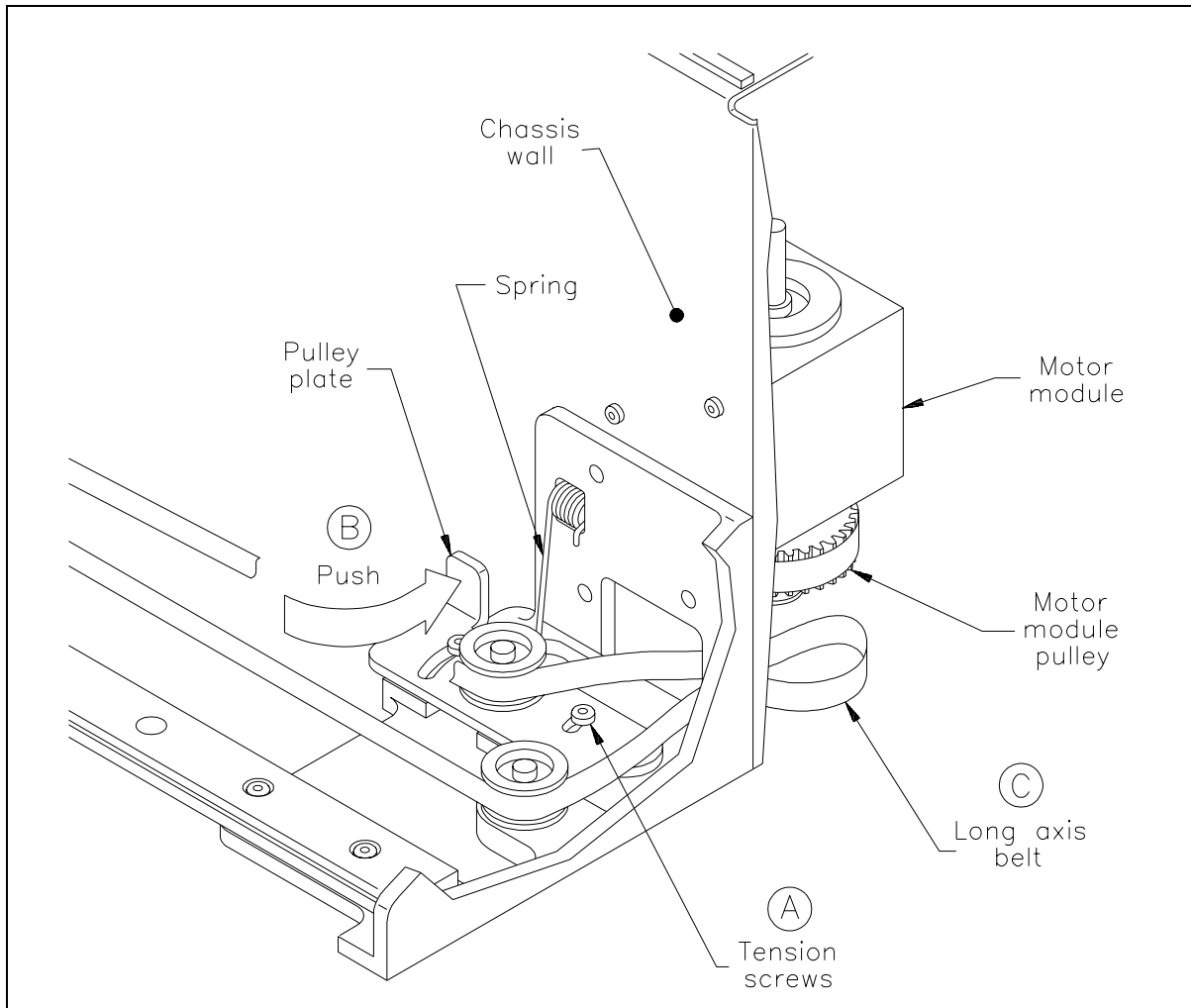


Figure 6-19 Loosening the screws and pushing the pulley plate toward the wall

4. Unhook the loosened belt from the motor module pulley (underneath the motor module) and pull the loosened belt out through the access hole at the bottom of the center chassis wall (see step C in Figure 6-19).

5. As shown in Figure 6-5 or Figure 6-6, use a right-angle TORX driver with a T-10 bit to remove the two screws from the clamp that secures the long axis belt to the CHM.
6. Remove the clamp and belt.

Installing the Long Axis Belt

➤ **Important** To properly tension the belt, position the CHM in the middle of the long axis so the length of the belt is equal on either side.

1. Push the belt through the access hole and hook it onto the pulley underneath the motor module (see step A in Figure 6-20).
2. As shown in step B in Figure 6-20, make sure the spring is still seated in its retention slot on the pulley plate.
3. If you did not tighten the screw to hold the plate toward the chassis wall during an earlier step, push the pulley plate toward the chassis wall (see step C).
4. Route the belt around the pulleys as shown in step D in Figure 6-20. When the belt is in position, loosen the screw you tightened earlier to release the plate. Gently let go of the plate so it returns to its normal position.
5. Use a T-20 TORX bit to tighten the tension screws to 15.0 inch-pounds (17.2 kg-cm) of torque (see step E).

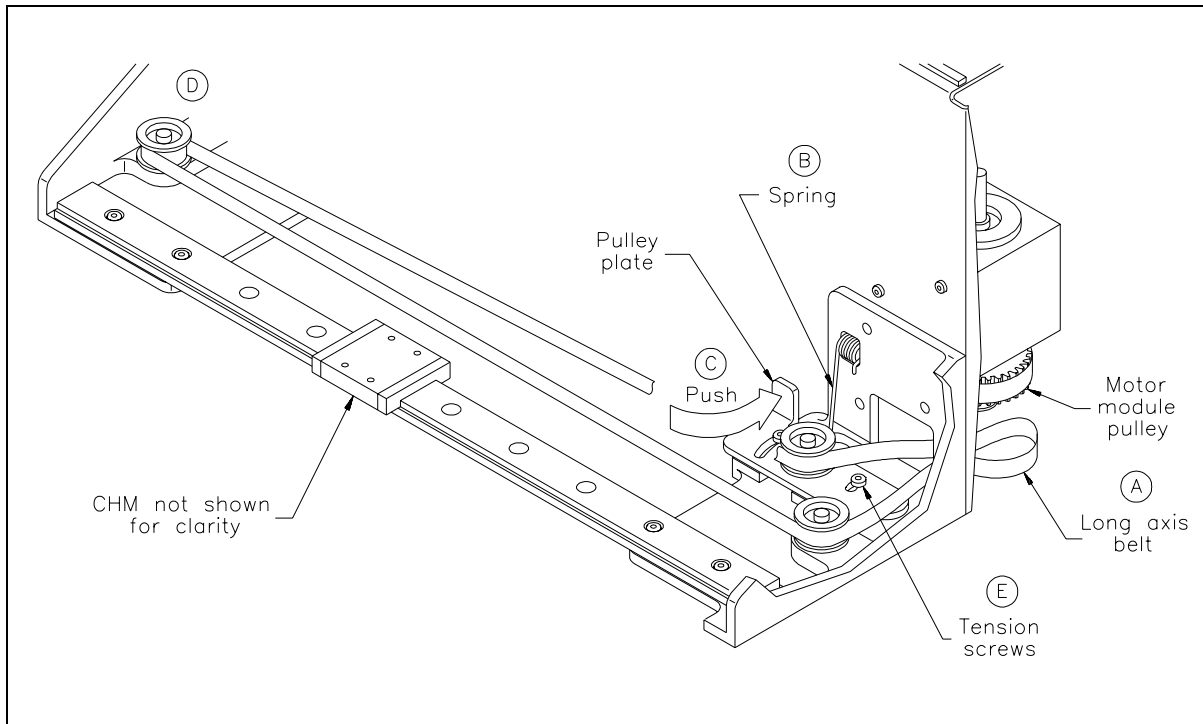


Figure 6-20 Installing the long axis belt

6. Position the CHM's belt clamp over the belt (see Figure 6-21) and use a right-angle T-10 TORX bit to replace the two 4-40 × 0.375 panhead screws. Make sure the teeth on the clamp engage the teeth on the belt. Tighten the screws to 4.5 inch-pounds (5.2 kg-cm) of torque.

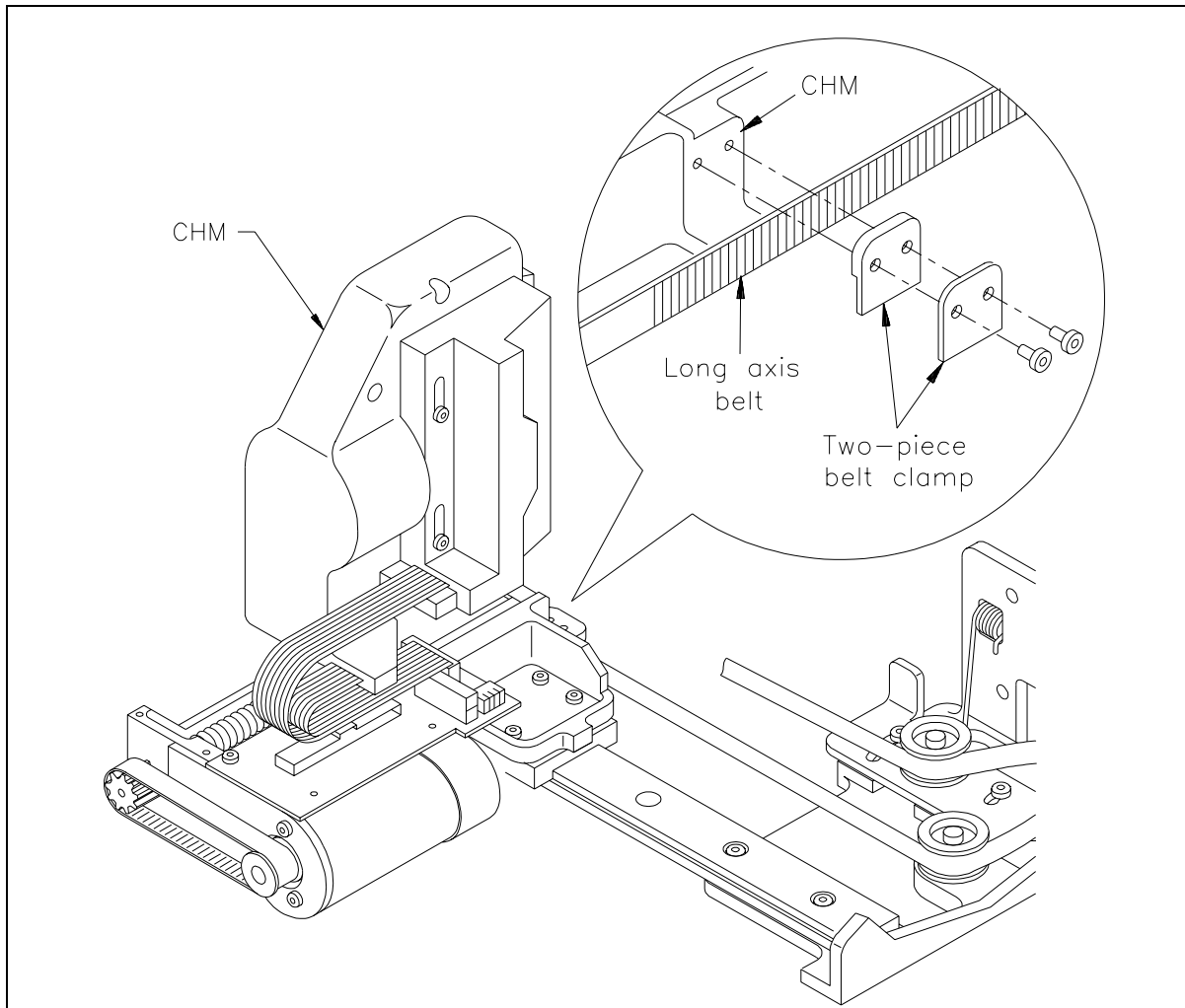


Figure 6-21 Replacing the long axis belt clamp

After Installing the Long Axis Belt

- ✓ Replace the data cartridge magazine.
- ✓ Replace the service access cover (see Section 3.3).
- ✓ Use the Diagnostics menu on the operator panel to test the movement of the CHM (refer to your installation and operation manual).

6.4 Replacing the Long Axis Assembly

This section describes how to replace the long axis assembly, which includes the linear way and the right and left mounts. The long axis assembly does not include the CHM or the long axis belt.

CAUTION

Do not remove the linear way from the left and right mounts or you may lose the ball bearings.

Do This First

- ✓ Remove the service access cover (see Section 3.3).
- ✓ Remove the cartridge magazine.
- ✓ Remove the fixed cartridge slot (see Chapter 9).
- ✓ Remove the CHM (see Section 6.1).
- ✓ Remove the long axis belt (see Section 6.3).
- ✓ Obtain a T-20 TORX bit.

Removing the Long Axis Assembly

1. Use a T-20 TORX bit to remove the three screws from the right (or top) mount (see Figure 6-22).
2. Use a T-20 TORX bit to remove the three screws from the left (or bottom) mount.
3. Lift the long axis assembly out of the library.

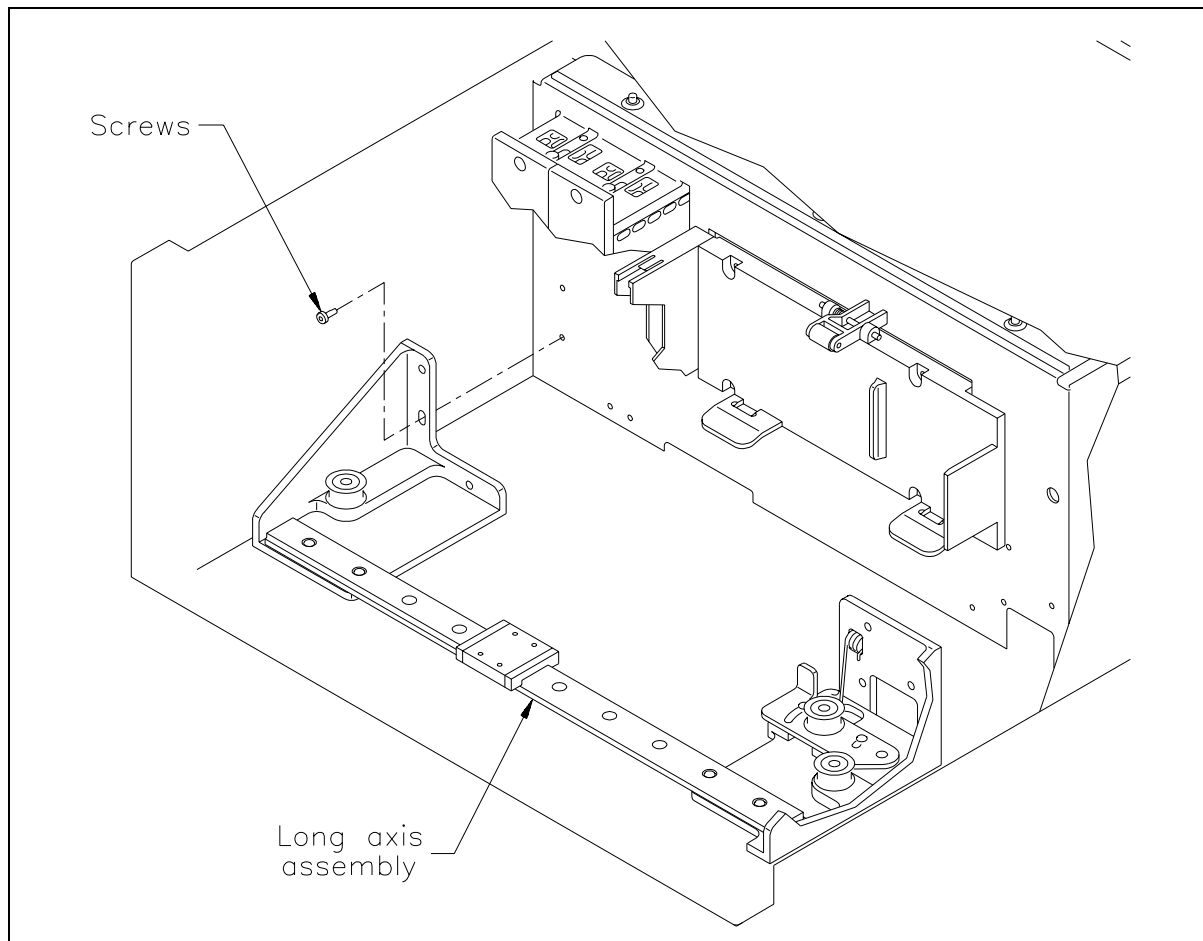


Figure 6-22 Removing the long axis assembly

Installing the Long Axis Assembly

CAUTION

Do not remove the linear way from the left and right mounts or you may lose the ball bearings.

1. Using the locating pin on the back of the right and left mounts for guidance, insert the long axis assembly into the library as shown in Figure 6-23. Make sure you insert the pins in the alignment holes before inserting the screws.
2. Use a T-20 TORX bit to replace the three 8-32 \times 0.5 panhead screws that secure the right mount to the chassis. Tighten the screws to 15.0 inch-pounds (17.2 kg-cm) of torque.

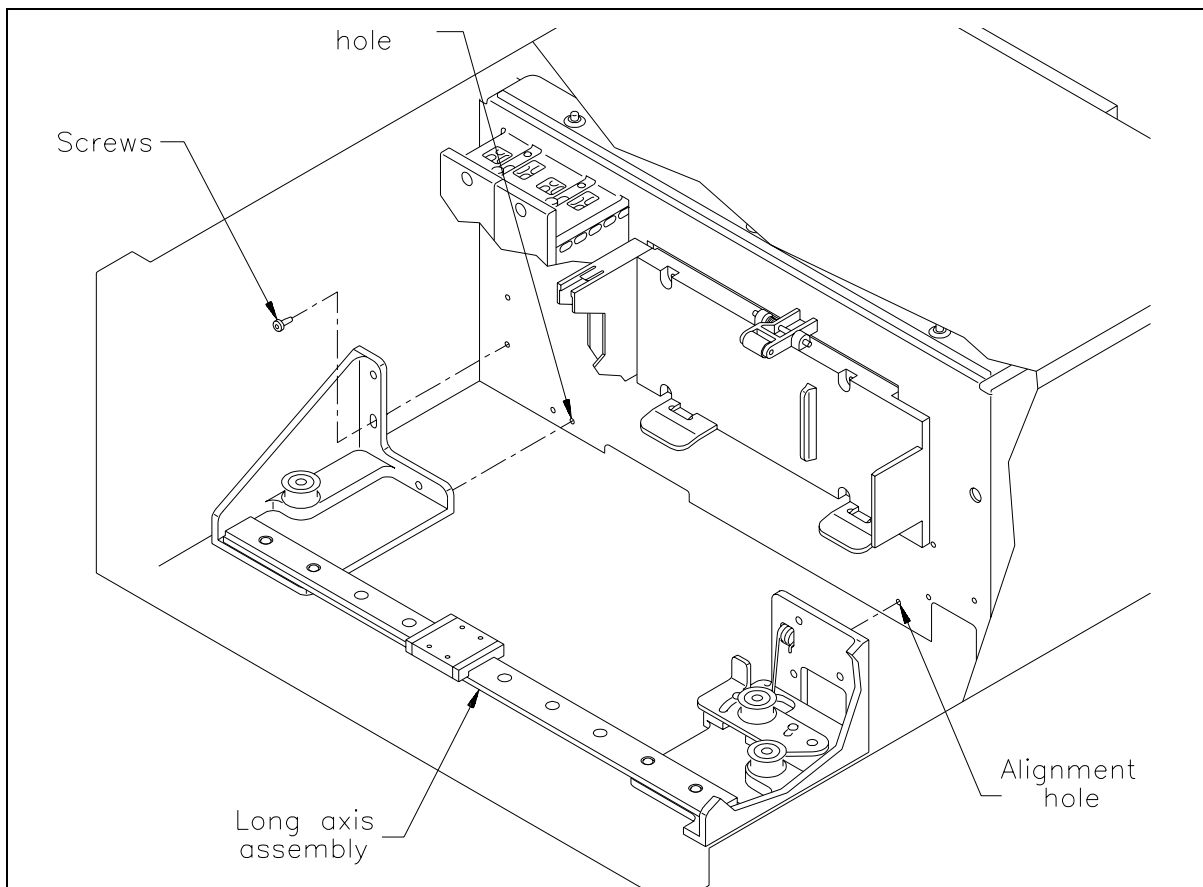


Figure 6-23 Replacing the long axis assembly

3. Use a T-15 TORX bit to replace the three 8-32×0.500 panhead screws that secure the left mount to the chassis. Tighten the screws to 15.0 inch-pounds (17.2 kg-cm) of torque.

After Installing the Long Axis Assembly

- ✓ Replace the CHM (see Section 6.1).
- ✓ Replace the long axis belt (see Section 6.3).
- ✓ Replace the fixed cartridge slot (see Chapter 9).
- ✓ Replace the cartridge magazine.
- ✓ Replace the service access cover (see Section 3.3).
- ✓ Use the Diagnostics menu on the operator panel to test the movement of the CHM (refer to your installation and operation manual).

6.5 Replacing the Idler Pulley Assemblies

This section describes how to replace any of the three idler pulley assemblies that operate the long axis belt.

Do This First

- ✓ Remove the service access cover (see Section 3.3).
- ✓ Remove or loosen the long axis belt (see Section 6.3).
- ✓ Obtain a flat-blade screwdriver.

Removing the Idler Pulley Assembly

1. Use a flat-blade screwdriver to loosen the screw that secures the idler pulley assembly to the right or left long axis mount (see Figure 6-24).
2. Remove the idler pulley assembly.

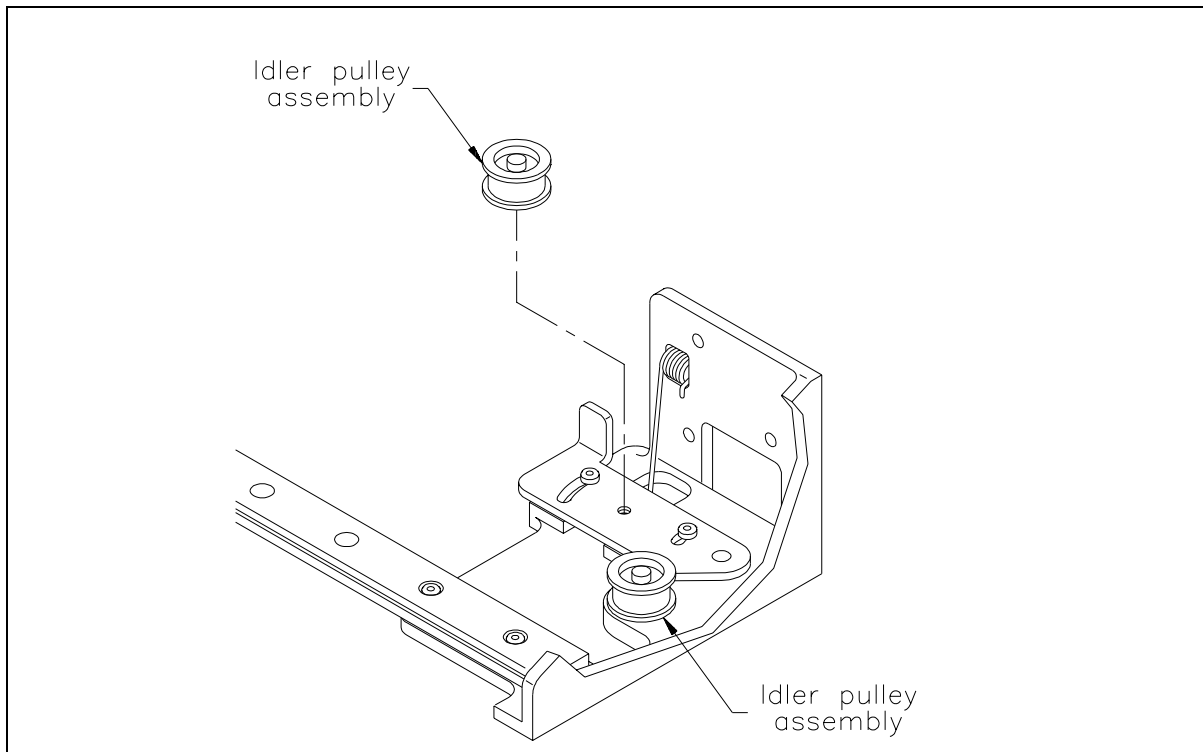


Figure 6-24 Removing the idler pulley assembly

Installing the Idler Pulley Assembly

1. As shown in Figure 6-24, insert the idler pulley assembly into the tension brace.
2. Use a flat-blade screwdriver to tighten the captive slotted head screw that secures the idler pulley assembly to the right or left long axis mount. Tighten the screw to 15.0 inch-pounds (17.2 kg-cm) of torque.

After Installing the Idler Pulley Assembly

- ✓ Replace or tighten the long axis belt (see Section 6.3).

- ✓ Replace the service access cover (see Section 3.3).
- ✓ Use the Diagnostics menu on the operator panel to test the movement of the CHM (refer to your installation and operation manual).

6.6 Replacing Motor Module Components

This section describes how to replace the motor module, motor, and belt.

Do This First

- ✓ Remove the service access cover (see Section 3.3).
- ✓ Obtain the following tools:
 - T-15 TORX bit
 - T-20 TORX bit

Removing the Motor Module, Motor, and Belt

This procedure consists of the following steps:

1. Removing the motor module from the library
2. Removing the motor module belt
3. Removing the motor

Removing the motor module

1. As shown in Figure 6-25, disconnect the following cables from the motor distribution card:

- Motor power cable from J1
- Motor encoder cable from J2

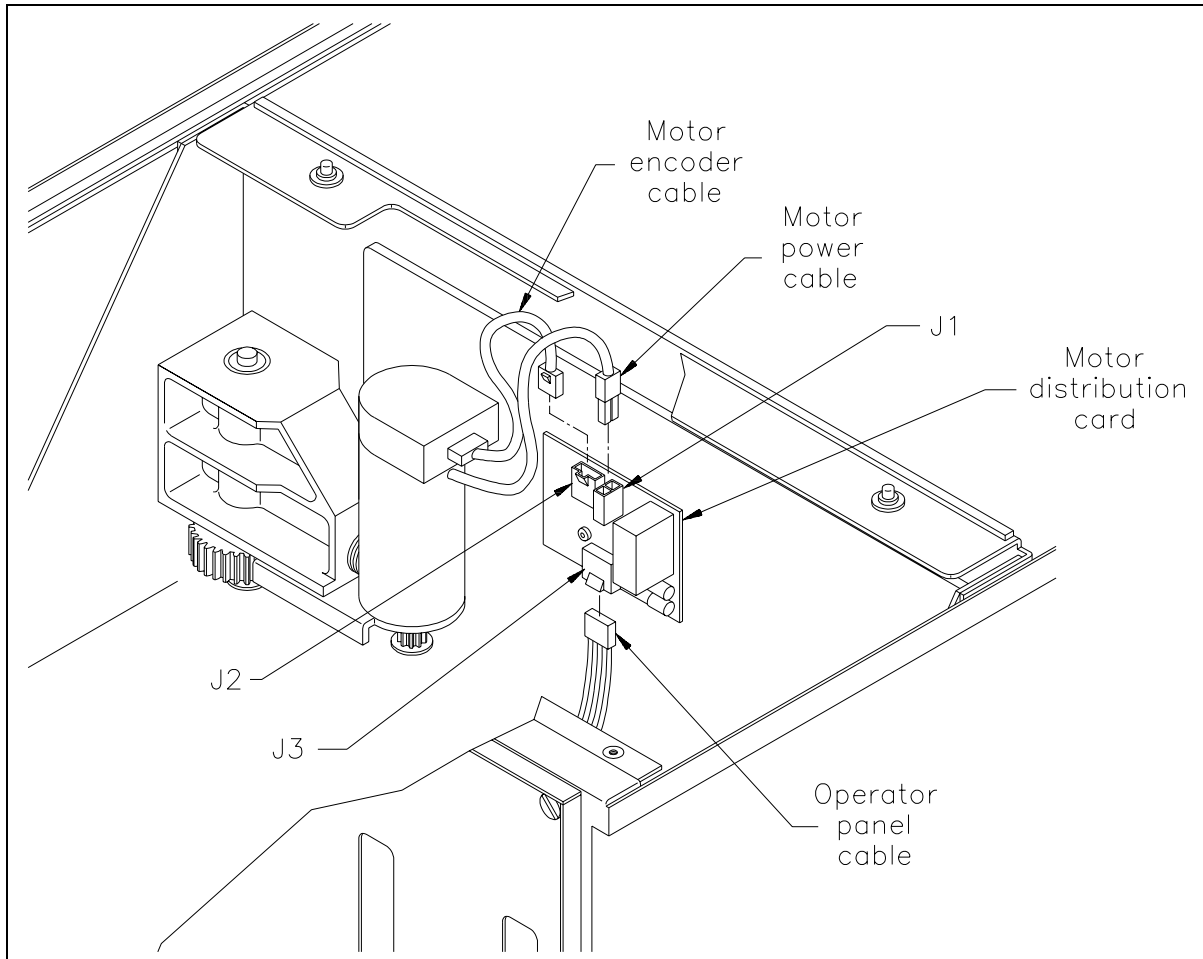


Figure 6-25 Removing the motor cables

2. Using a T-20 TORX bit, loosen the tension screws on the long axis belt pulley plate (see step A in Figure 6-26).
3. As shown in step B in Figure 6-26, push the plate toward the center chassis and tighten one of the screws to hold the plate out of your way. This loosens the tension on the belt so you can remove it.
4. Use your fingers to remove the long axis belt from the pulley underneath the motor module (see step C in Figure 6-26).

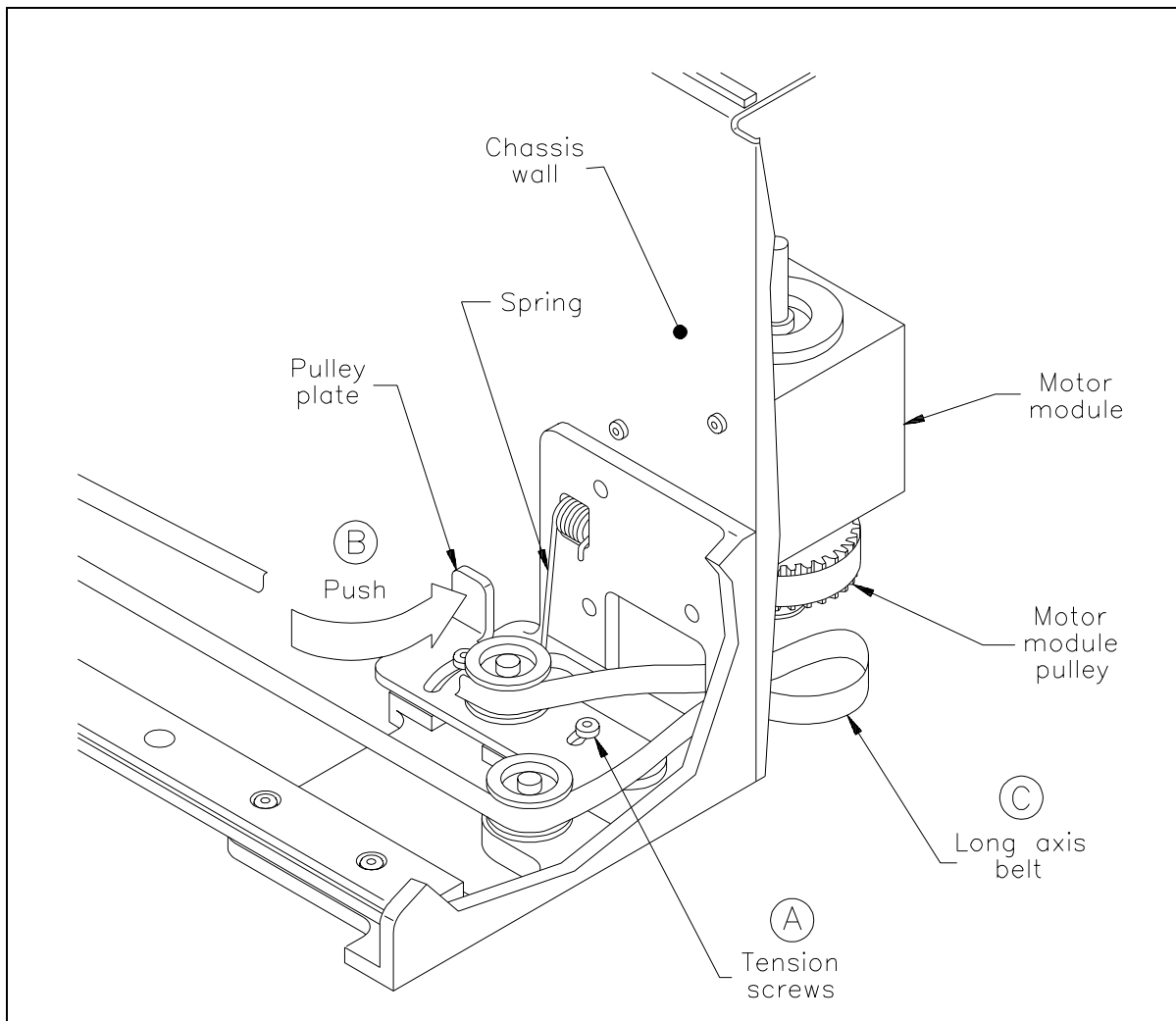


Figure 6-26 Removing the long axis belt from the motor module

5. Holding the motor module steady with one hand, use a T-20 TORX bit to remove the three screws (from the CHM side of the chassis wall) that secure the motor module to the chassis wall.
6. Remove the motor module (see Figure 6-27).

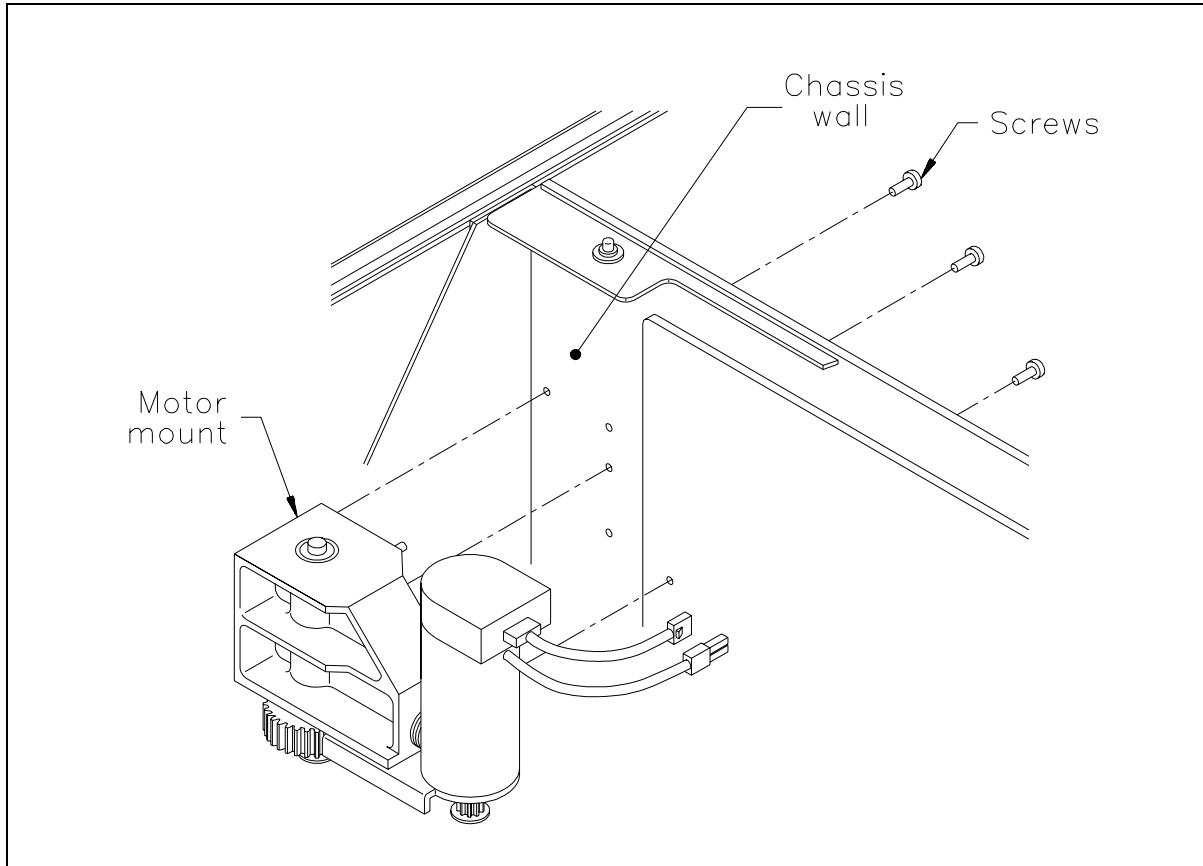


Figure 6-27 Removing the motor module from the chassis

Removing the Motor Module Belt

1. Using a T-20 TORX bit, loosen the three tension screws underneath the motor module (see step A in Figure 6-28).
2. As shown by the arrow in step B in Figure 6-28, push the motor toward the mount to loosen the motor module belt.
3. Remove the belt.

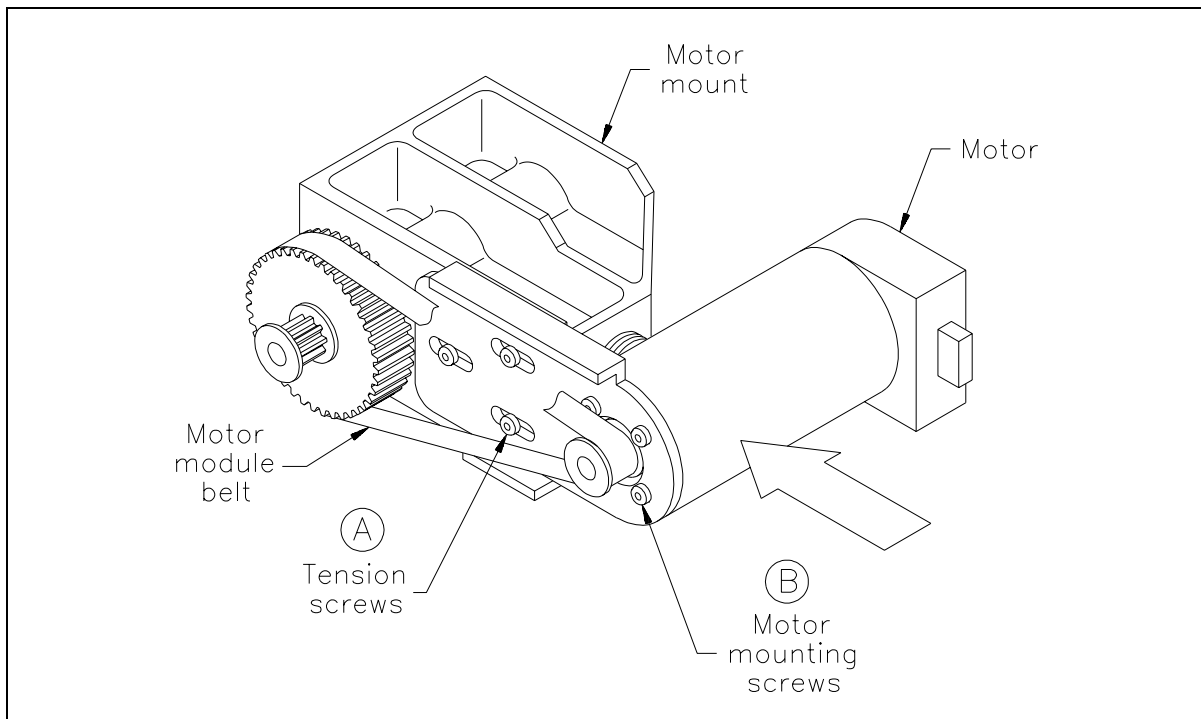


Figure 6-28 Removing the belt and motor

Removing the Motor

1. Use a T-15 TORX bit to remove the four motor mounting screws that secure the motor to the motor module (see Figure 6-28). Do not misplace the spring.

Installing the Motor, Belt, and Motor Module

Replacing the Motor

1. Insert the spring as shown in Figure 6-29.
2. Insert the motor pulley through the hole in the mount as shown.
3. Replace the four 6-32 \times 0.375 panhead countersink motor mounting screws using a T-15 TORX bit. Tighten the screws to 8.0 inch-pounds (9.2 kg-cm) of torque.

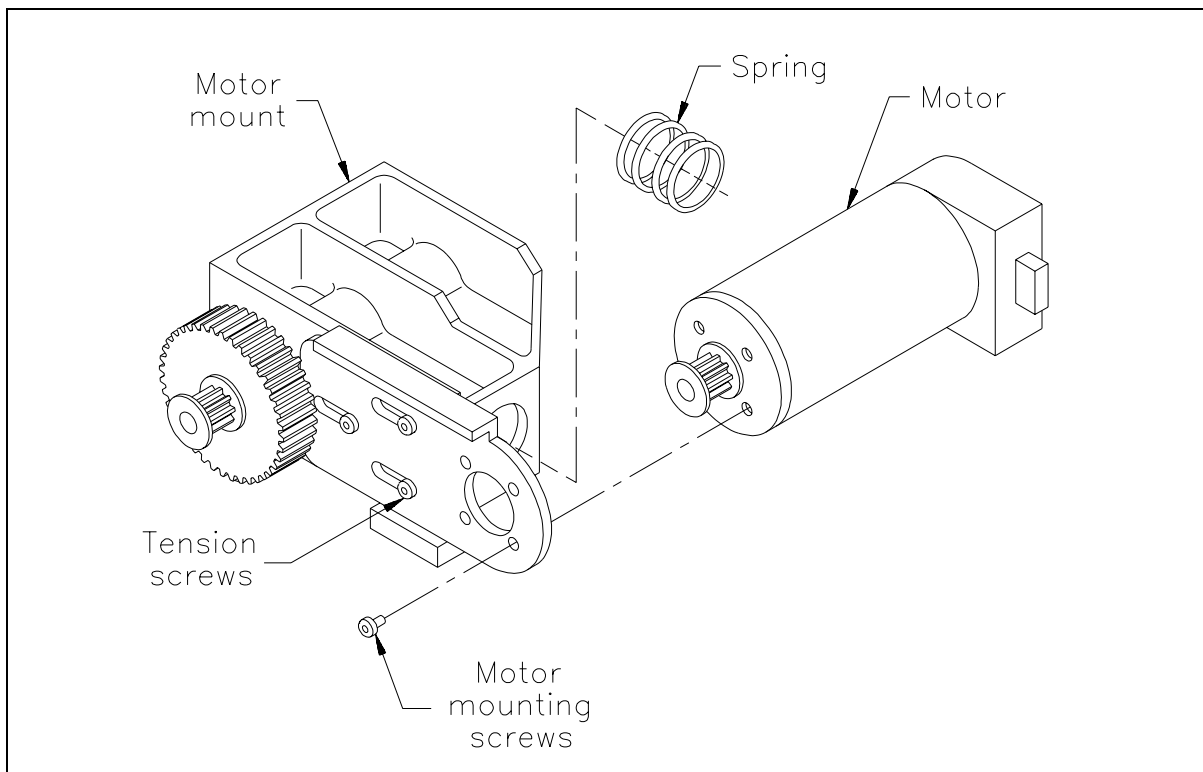


Figure 6-29 Installing the motor on the motor mount

Replacing the Motor Module Belt

1. As shown by the arrow in Figure 6-28, push the motor toward the mount.
2. Slip the new belt over the large and small pulleys.
3. Gently release the motor so that it returns to its normal position.
4. Hold the motor module so that the belt and spring are horizontal and the motor is down (this allows the spring to properly tension the belt). Use a T-20 TORX bit to tighten the three tension screws to 15.0 inch-pounds (17.2 kg-cm) of torque.

Replacing the Motor Module

1. Using the locating holes for guidance, as shown in Figure 6-30, position the motor module against the chassis wall with the belt underneath.

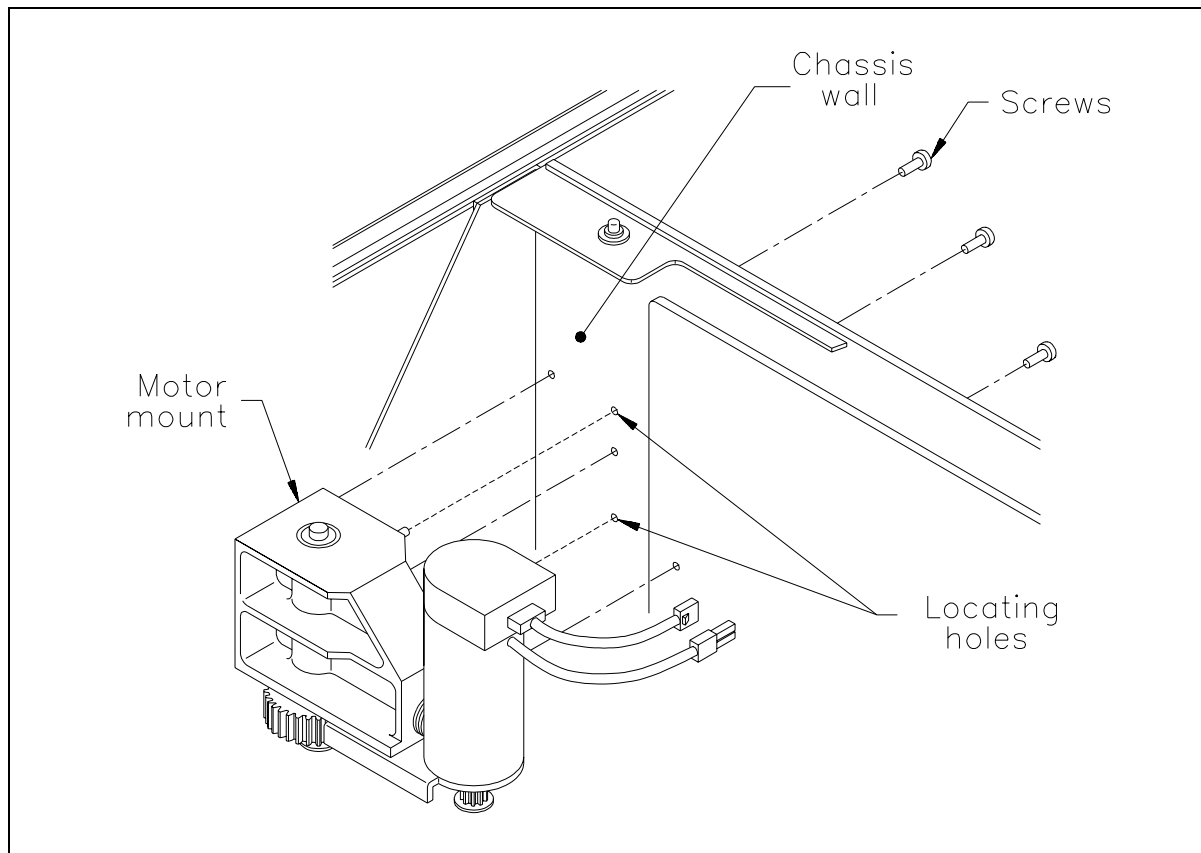


Figure 6-30 Positioning the motor module against the chassis wall

2. Holding the motor module against the wall with one hand, use a T-20 TORX bit in the other hand to replace the three 8-32 \times 0.5 panhead countersink screws on the other side of the chassis wall. Tighten the screws to 15.0 inch-pounds (17.2 kg-cm) of torque.
3. Replace the long axis belt (see Section 6.3 for instructions).
4. Connect the following cables to the motor distribution card:
 - Motor power cable to J1
 - Motor encoder cable to J2

After Installing the Motor Module

- ✓ Replace the service access cover (see Section 3.3).
- ✓ Use the Diagnostics menu on the operator panel to test the movement of the CHM (refer to your installation and operation manual).

6.7 Replacing the Motor Distribution Card

This section describes how to replace the motor distribution card.

Do This First

- ✓ Remove the service access cover (see Section 3.3).
- ✓ Obtain a right-angle TORX driver and a T-10 TORX bit.

Removing the Motor Distribution Card

1. As shown in Figure 6-31, disconnect the following three cables from the motor distribution card:

- Motor power cable from J1
- Motor encoder cable from J2
- Operator panel cable from J3

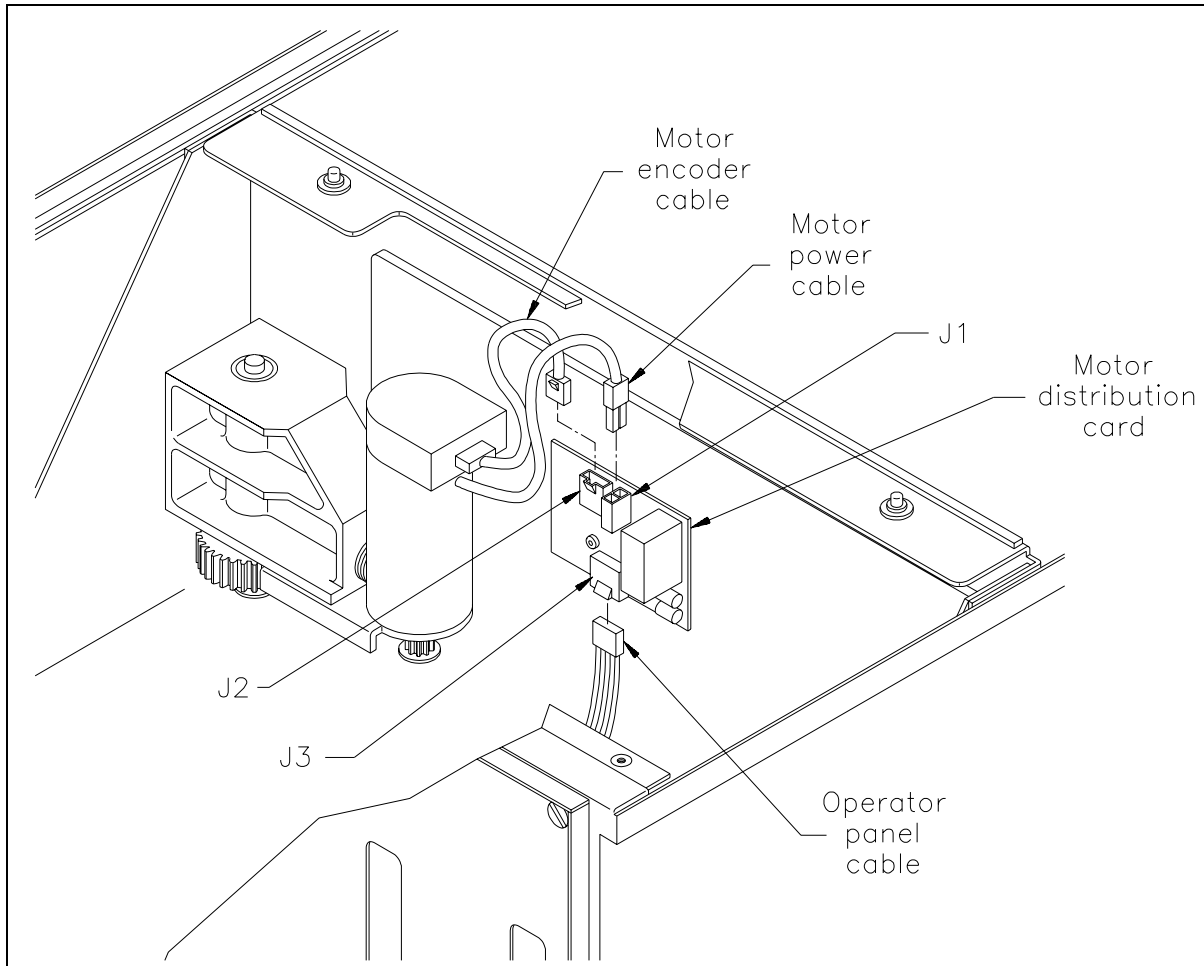


Figure 6-31 Disconnecting the cables from the motor distribution card

2. Using a T-10 TORX bit, remove the two screws from the standoffs that secure the motor distribution card to the chassis (see Figure 6-32). Remove the card.

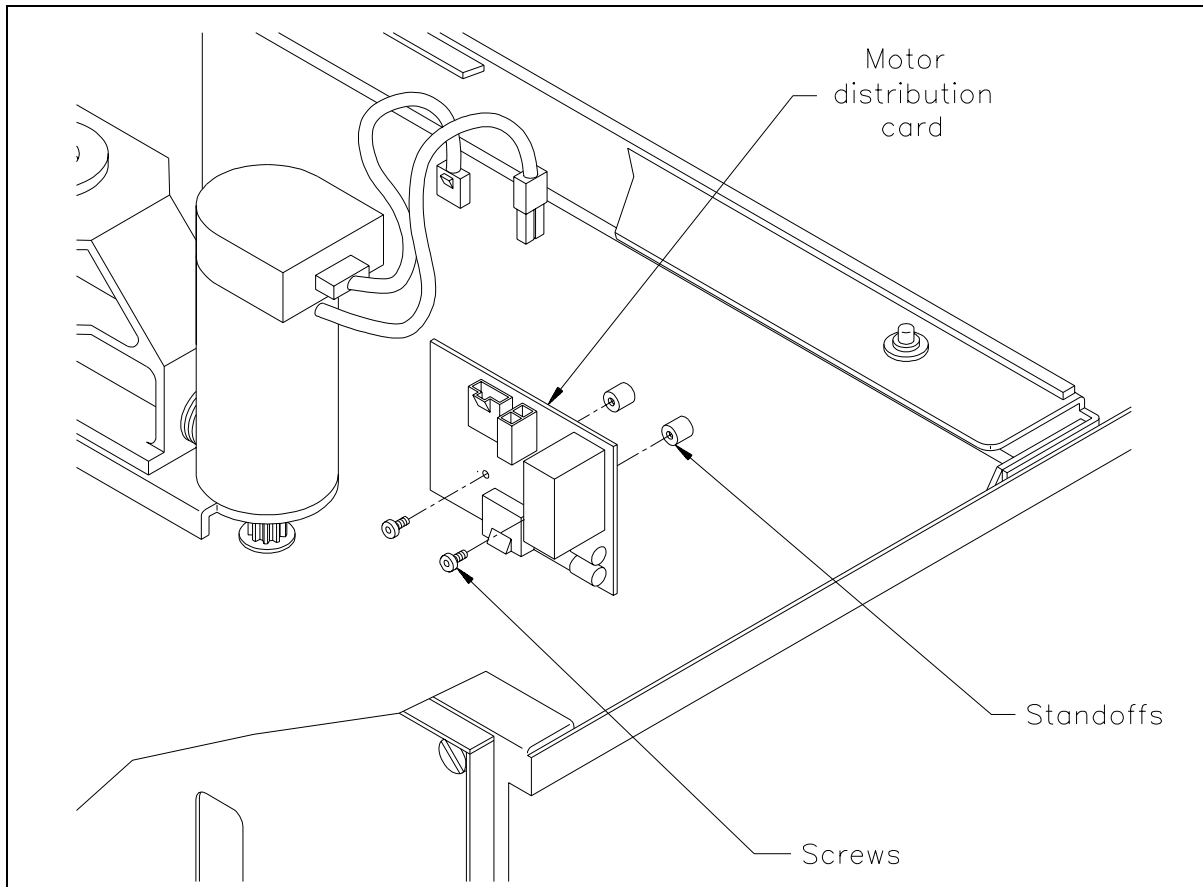


Figure 6-32 Removing the motor distribution card

Installing the Motor Distribution Card

1. Using a T-10 TORX bit, replace the two 6-32 \times 0.312 panhead screws on the standoffs that secure the motor distribution card to the chassis (see Figure 6-32). Tighten the screws to 6.0 inch-pounds (6.9 kg-cm) of torque.
2. Connect the following cables to the motor distribution card (see Figure 6-31):
 - Motor power cable from J1
 - Motor encoder cable from J2
 - Orange operator panel cable from J3

After Installing the Motor Distribution Card

- ✓ Replace the service access cover (see Section 3.3).
- ✓ Use the Diagnostics menu on the operator panel to test the movement of the CHM (refer to your installation and operation manual).

7

Replacing Power Supply Components

This chapter describes how to replace the power supply and the fuse.

7.1 Replacing the Power Supply

Follow the instructions in this section to replace the power supply.

Do This First

- ✓ Turn off the power and disconnect the power cord.
- ✓ Follow the ESD guidelines provided in Chapter 2.
- ✓ Remove the service access cover (see Section 3.3).
- ✓ Obtain the following tools:
 - # 2 Phillips screwdriver (some models may use a flatblade)
 - T-20 TORX bit

Removing the Power Supply

1. Use a T-20 TORX bit to remove the two screws that attach the power supply to the back of the chassis (see Figure 7-1).

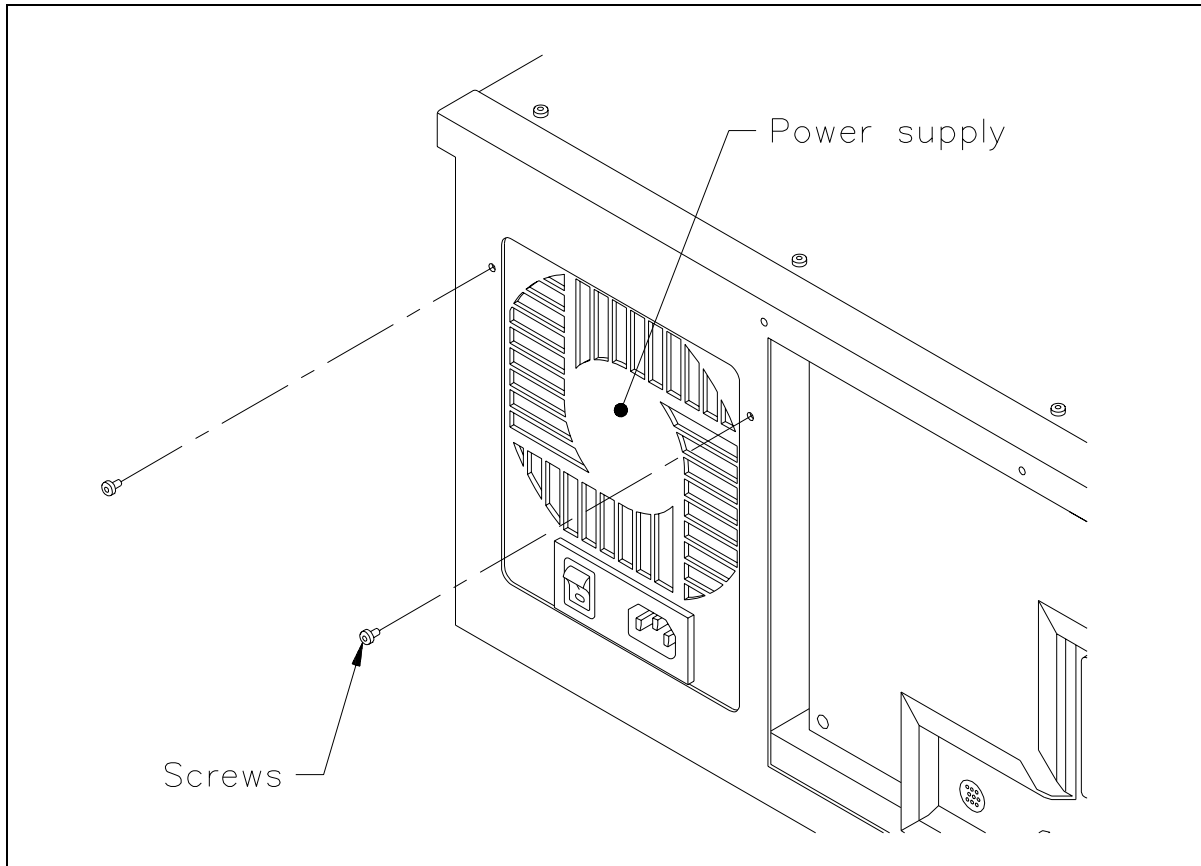


Figure 7-1 Removing power supply screws from the back of the chassis

2. Inside the chassis, use a T-20 TORX bit to remove the ground screw that connects the power supply to the spacer block on the back side of the chassis (see Figure 7-2).

3. Using the appropriate screwdriver, loosen the two captive screws that secure the power supply to the floor of the chassis (see Figure 7-2).
4. With your fingers positioned close to the J1 connection on the controller card (see Figure 7-2), push the power supply away from the chassis. As you push, disconnect the power supply from the J1 connector.

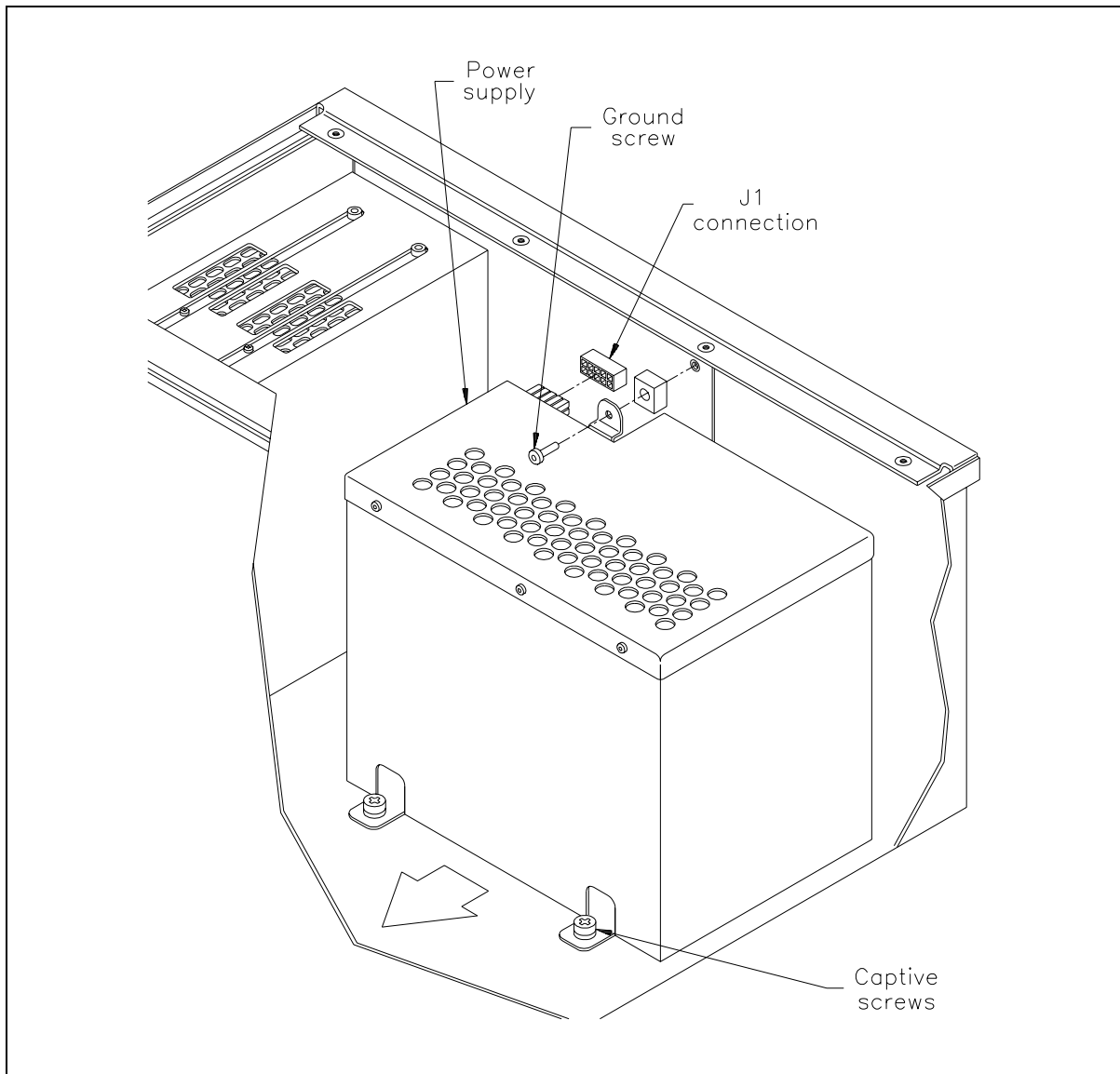


Figure 7-2 Removing the screws from the power supply

5. Using both hands, tilt the power supply away from the back panel and lift it out of the library.

Installing the Power Supply

1. Lower the power supply into the library, tilting it away from the back panel to get it past the motor.
2. Align the tabs at the bottom of the power supply with the slots in the chassis.
3. Press the power supply connection into J1 on the controller card (see Figure 7-3). To secure the connection, use your thumb to press against the controller card.

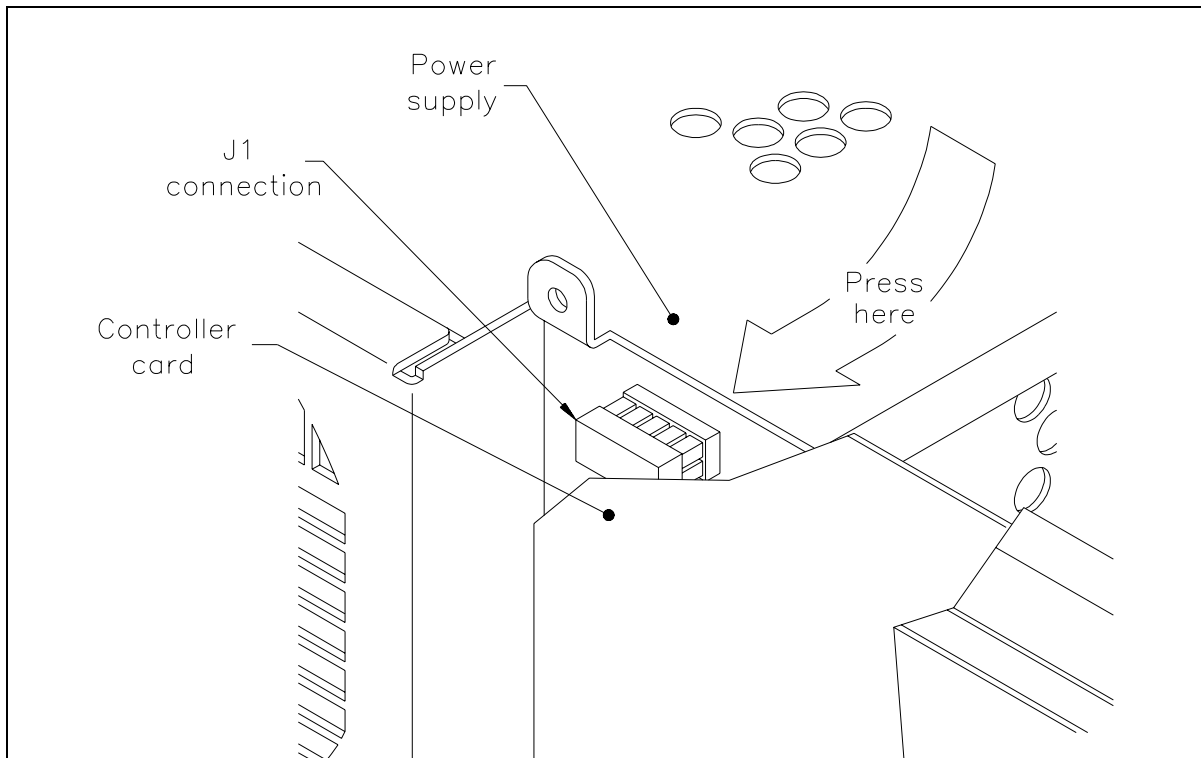


Figure 7-3 Connecting the power supply to the J1 connector on the controller card

4. Use a T-20 TORX bit to replace the two 8-32 \times 0.250 panhead screws on either side of the fan that secure the power supply to the back of the chassis (see Figure 7-4).

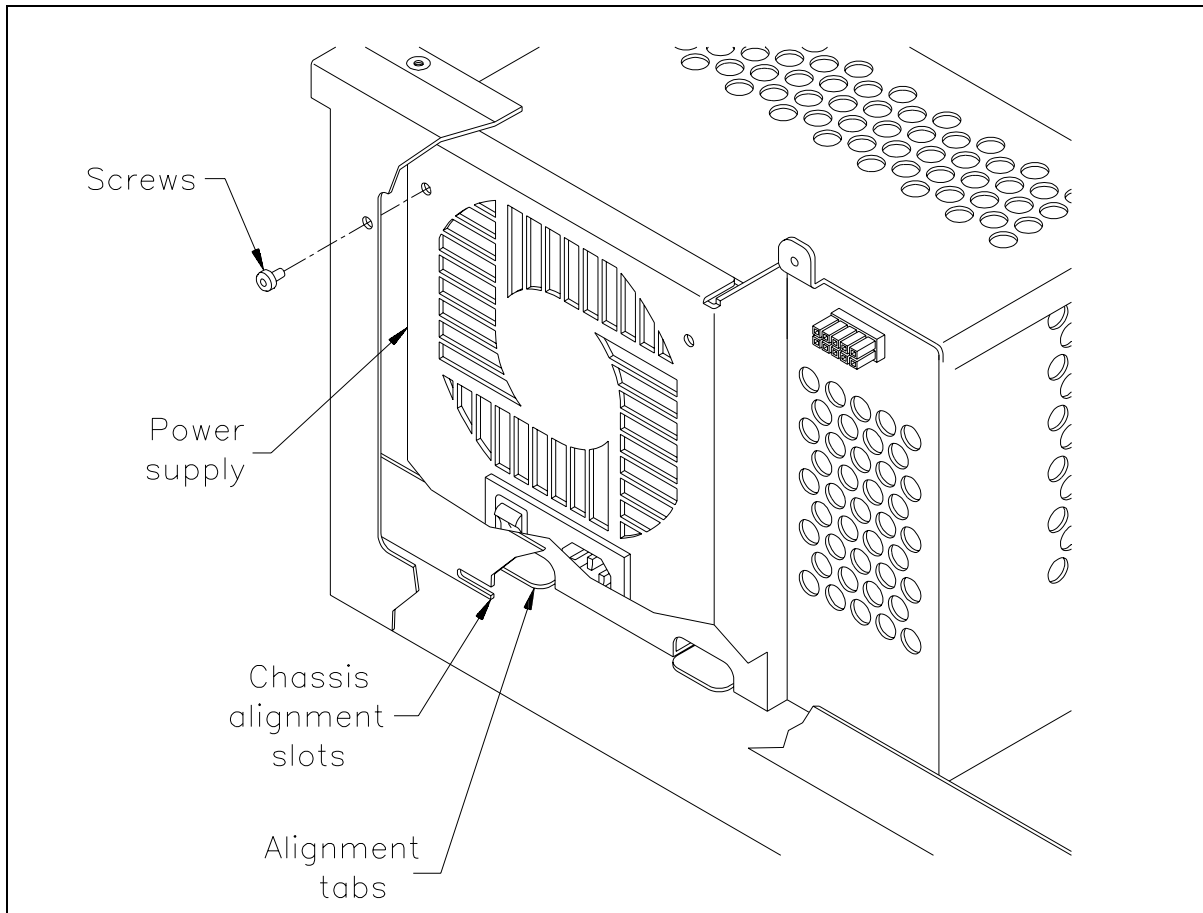


Figure 7-4 Installing the power supply

5. Using a T-20 TORX driver, replace the screw between the power supply and the back chassis (see Figure 7-2). Tighten the screw to 8.0 inch-pounds (9.2 kg-cm) of torque.
6. Using the appropriate screwdriver, tighten the two captive 8-32×0.250 panhead screws that secure the back of the power supply to the floor of the chassis. Tighten the screws to 12.0 inch-pounds (13.8 kg-cm) of torque.

After Installing the Power Supply

- ✓ Replace the service access cover (see Section 3.3).

7.2 Replacing the Power Supply Fuse

Follow the instructions in this section to replace the fuse.

Do This First

- ✓ Turn off the power and disconnect the power cord.
- ✓ Follow the ESD guidelines provided in Chapter 2.
- ✓ Obtain a 2.5A Hi-break fuse (a spare fuse is provided in the fuse box).

Removing the Power Supply Fuse

1. Open the fuse drawer by inserting a small screwdriver into the slot and pulling the drawer out (see Figure 7-5).
2. Pull the old fuse out of the fuse slot.

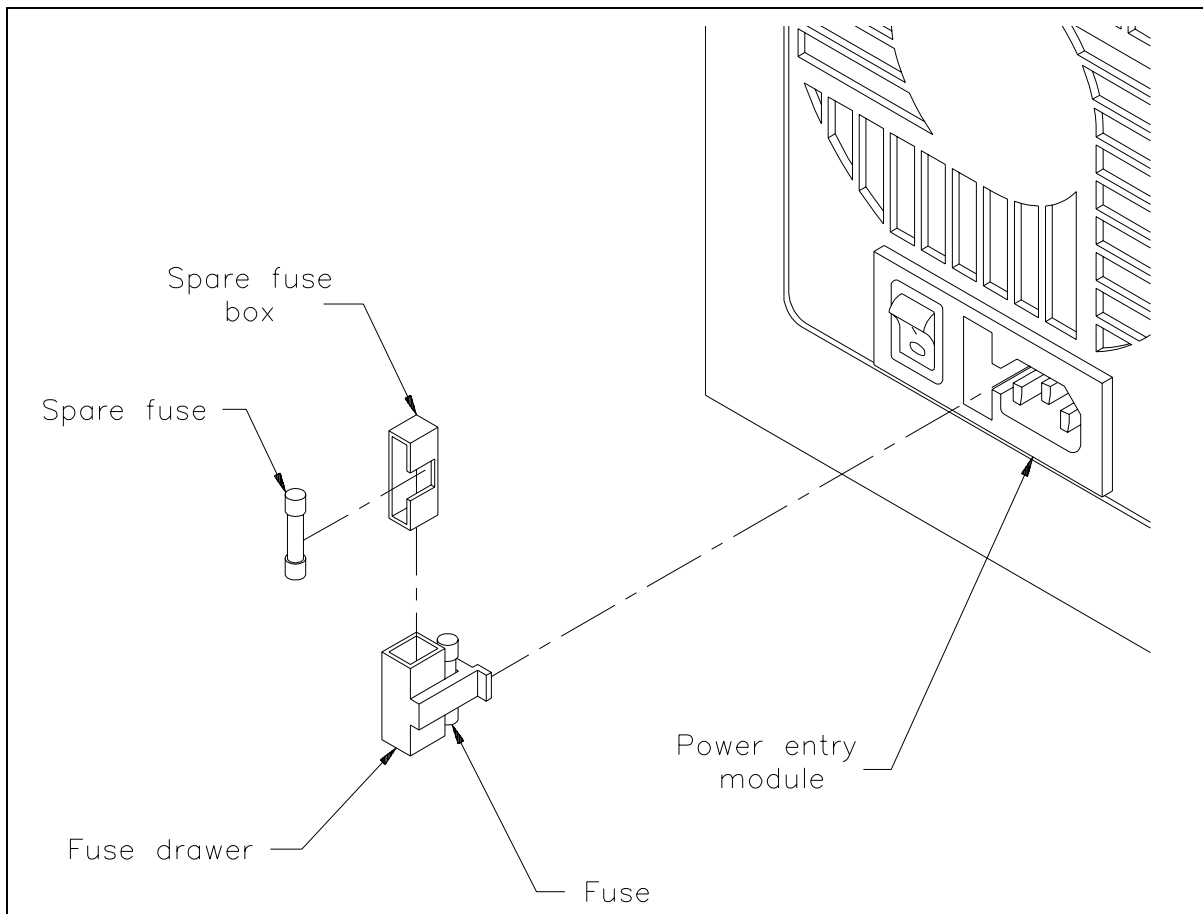


Figure 7-5 Removing the fuse

Installing the Power Supply Fuse

1. Use a small screwdriver to push open the spare fuse box (see Figure 7-5). Remove the spare fuse.
2. Install the 2.5A Hi-Break fuse in the fuse slot.
3. Insert the fuse drawer into the back panel as shown in Figure 7-5. Push in until you hear it snap into place.
4. Order another spare fuse (refer to the illustrated parts catalog for your library to order parts).

After Installing the Power Supply Fuse

- ✓ Replace the power cord.

Notes

8 Replacing Controller Card Components

This chapter describes how to replace the controller card and the outer cover that protects the controller card.

8.1 Removing and Replacing the Controller Card

Follow the instructions in this section for replacing the controller card.

Do This First

- ✓ Turn off the power and disconnect the power cord.
- ✓ Follow the ESD guidelines provided in Chapter 2.
- ✓ Optionally, remove the service access cover (see Section 3.3).
- ✓ Obtain the following tools:
 - # 2 Phillips screwdriver (some models may use a flat-blade)
 - T-20 TORX bit

Removing the Controller Card

1. Unscrew the drive carriers and pull up the levers on the drive carrier faceplates. Pull the carriers away from the back panel so the tape drives are disconnected from the controller card.
2. Using the appropriate screwdriver, loosen the three thumbscrews (later models have captive screws) from the outer cover on the rear panel (see Figure 8-1). Remove the outer cover.

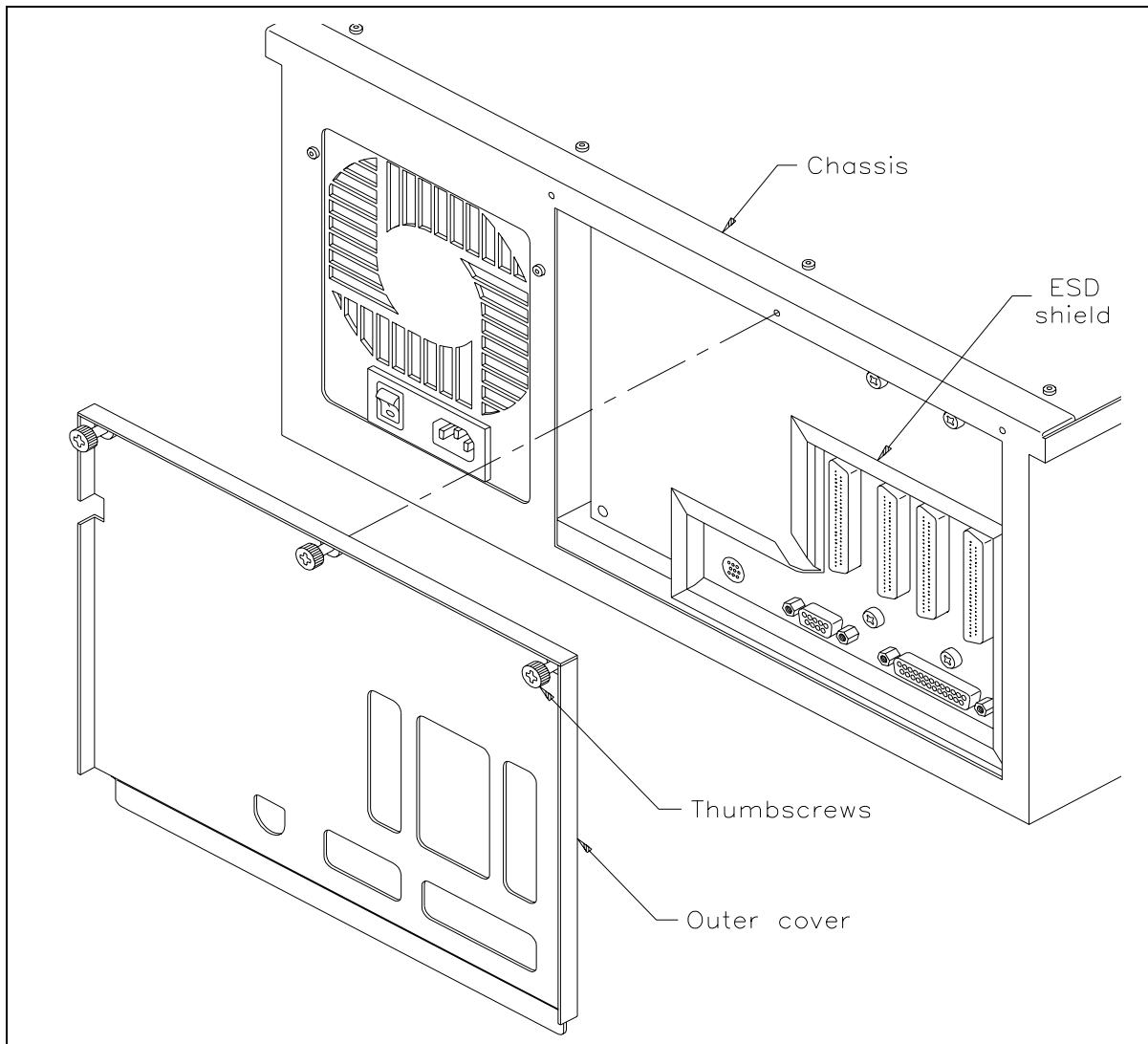


Figure 8-1 Removing the outer cover from the back panel (dual SCSI bus shown)

3. Disconnect the operator panel cable from the J10 connector on the controller card (see Figure 8-2).

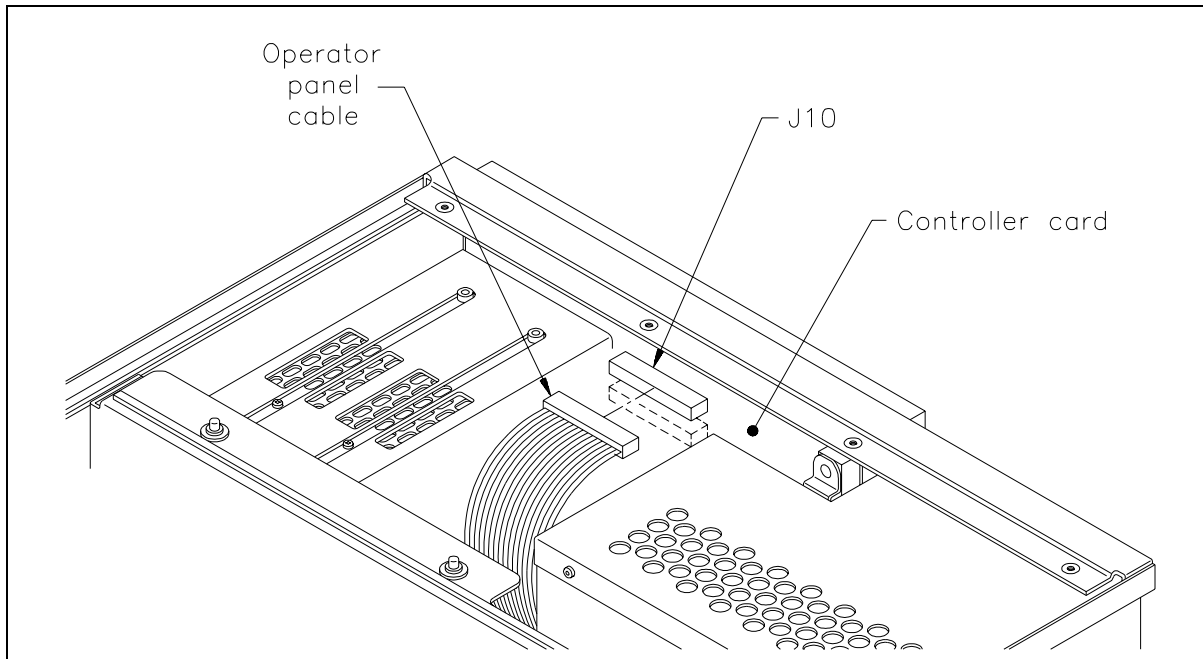


Figure 8-2 Disconnecting the operator panel cable from the J10 connector

4. Disconnect the CHM cable from the J9 connector on the controller card (see Figure 8-3).

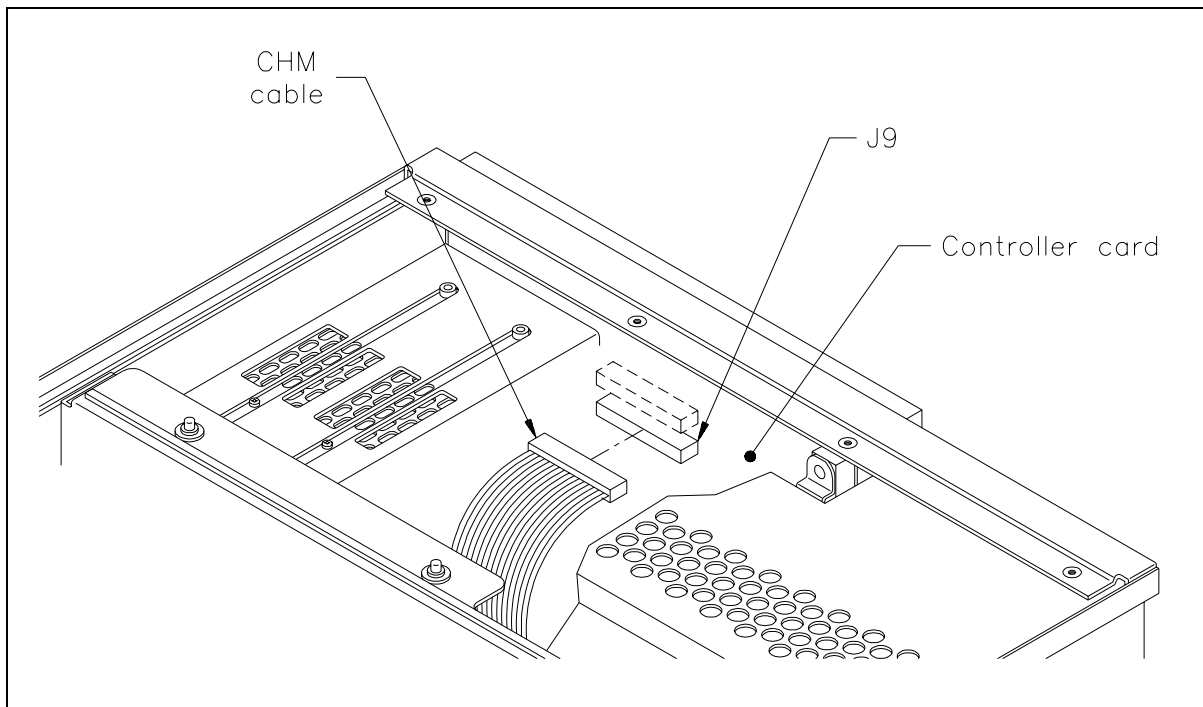


Figure 8-3 Disconnecting the CHM cable from the J9 connector

5. Using a T-20 TORX bit (some models may require a # 1 Phillips screwdriver), unscrew the six screws that secure the controller card to the chassis, as shown in Figure 8-4. You can remove the screws in any order.
6. Using your hand, push the controller card out from the inside as shown in Figure 8-4, until it detaches from the chassis.

Note: The ESD shield is part of the controller card; do not remove it.

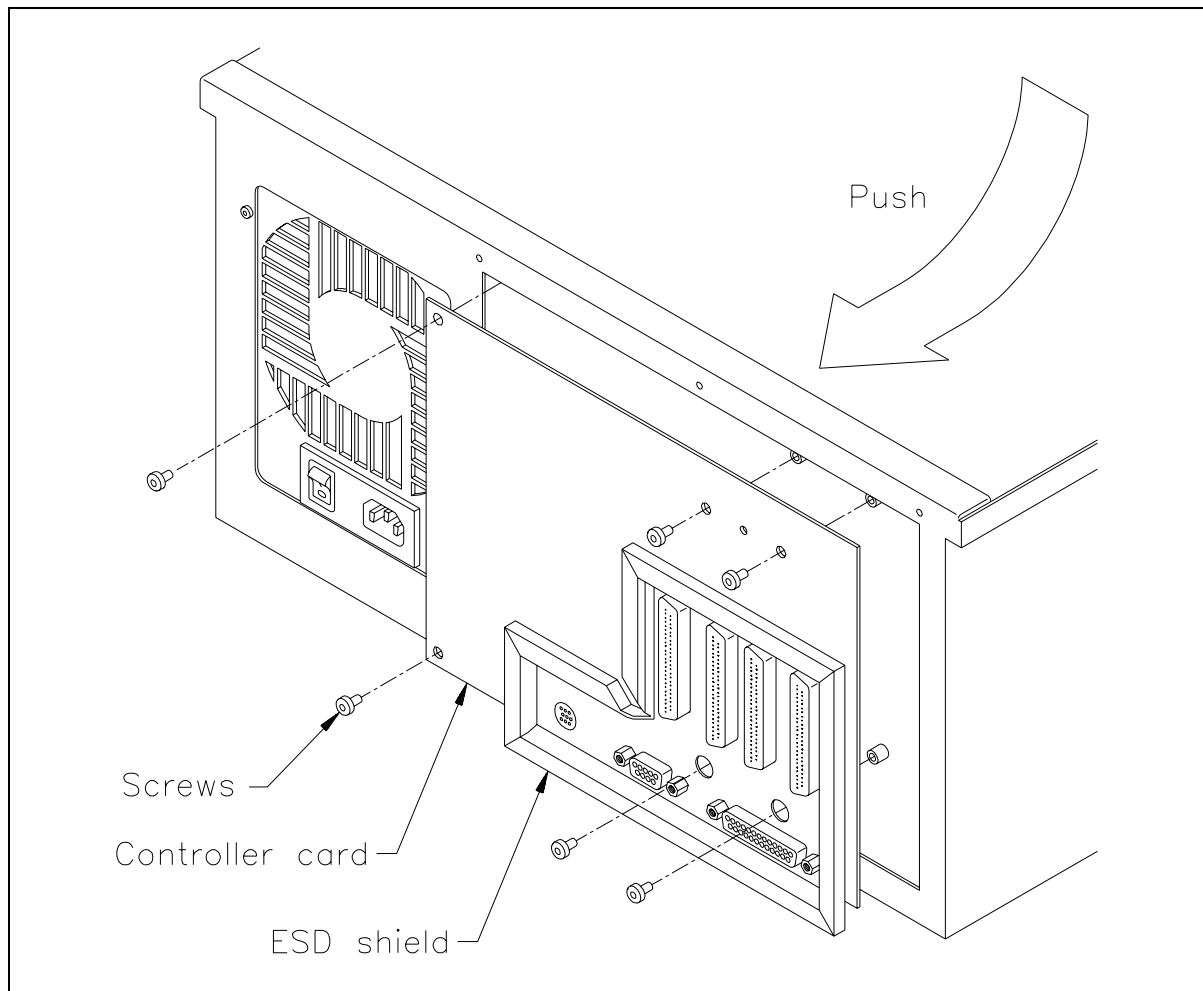


Figure 8-4 Removing the screws from the controller card

Replacing the Controller Card

1. Using the two locating pins and four screw holes on the drive carrier frame for guidance, position the controller card in its slot. Push against it until you feel the controller card snap onto the locating pins.
2. Locate the J1 connector on the upper left corner of the controller card that connects to the power supply (see Figure 8-5). Press against it until you feel the connection snap into place.
3. Using a T-20 TORX bit (some models may require a # 1 Phillips screwdriver), replace the six 8-32 \times 0.250 screws that secure the controller card to the chassis. Tighten the screws to 8.0 inch-pounds (9.2 kg-cm) of torque.
4. Reposition the drive carriers by pushing them into their slots until you feel the SCSI connectors on the back of the tape drives become seated in the controller card. Tighten the screws on the drive carrier face plate.

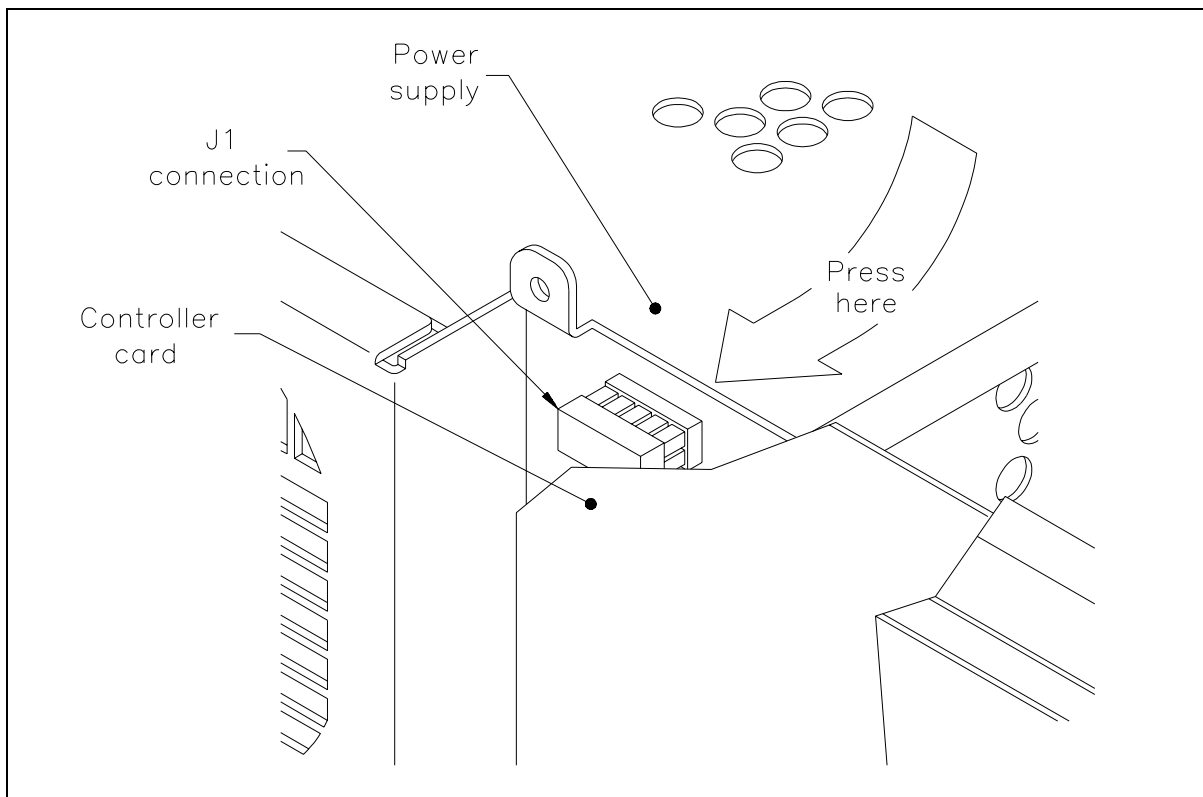


Figure 8-5 Attaching the controller card's J1 connector to the power supply

5. Insert the CHM cable into the J9 connector on the controller card (see Figure 8-3).
6. Insert the operator panel cable into the J10 connector on the controller card (see Figure 8-2).

After Replacing the Controller Card

- ✓ Replace the outer cover by positioning it over the controller card with the thumbscrews (later models have captive screws) at the top. Make sure the screws go inside the frame. Use the appropriate screwdriver to tighten the three screws. See Figure 8-1.
- ✓ Replace the service access cover (see Section 3.3).
- ✓ If you are working on an EXB-018 or EXB-218, recalibrate the positions of the drives, magazine, and fixed cartridge slot (see Section 11.13).

8.2 Replacing the Outer Cover

Follow the instructions in Section 8.1 to replace the outer cover.

9 Replacing Data Cartridge Components

This chapter describes how to replace the following components:

- Data cartridge magazine
- Data cartridge mounting plate
- Fixed cartridge holder

The procedures differ depending on which library model you are using; separate instructions are provided for the 8mm library (EXB-210) and the 4mm libraries (EXB-018 and EXB-218).

9.1 EXB-210

Replacing the Data Cartridge Magazine: EXB-210

Follow the instructions in this section to replace the data cartridge magazine.

Do This First

- ✓ Turn off the power and disconnect the power cord.
- ✓ Follow the ESD guidelines provided in Chapter 2.
- ✓ Unlock and open the front door of the library.

Removing the Data Cartridge Magazine

1. If necessary, push against the base of the CHM to move it out of the way.
2. Grasp the data cartridge magazine on either side and pull it straight out.

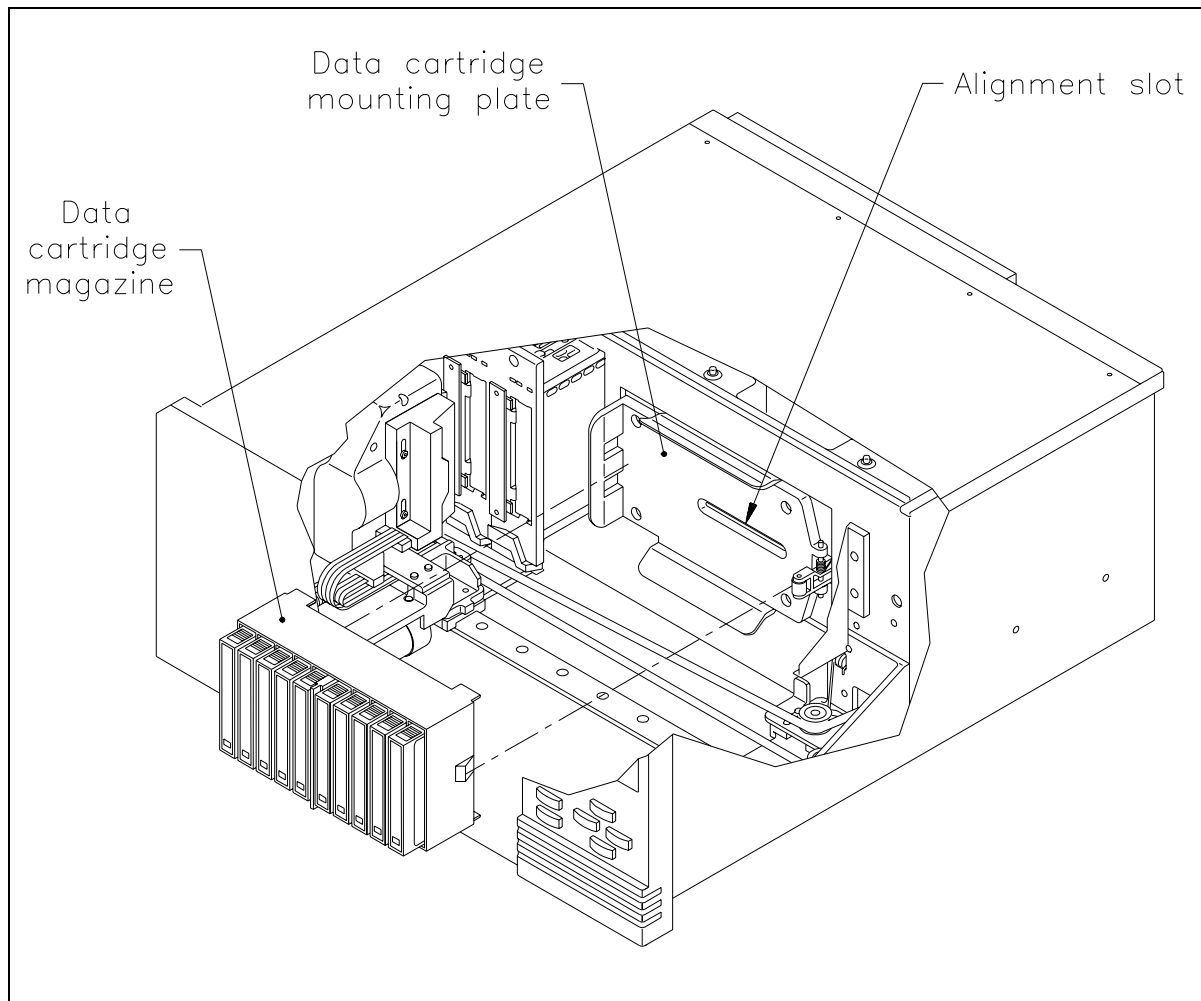


Figure 9-1 EXB-210: Removing the data cartridge magazine

Installing the Data Cartridge Magazine

1. Position the data cartridge magazine with the two end clips toward the tape drives.
2. Using the alignment holder for guidance, clip the data cartridge magazine onto the chassis.

After Installing the Data Cartridge Magazine

- ✓ Close the front door.

Replacing the Data Cartridge Magazine Mounting Plate: EXB-210

Follow the instructions below to replace the data cartridge magazine mounting plate.

Do This First

- ✓ Turn off the power and disconnect the power cord.
- ✓ Follow the ESD guidelines provided in Chapter 2.
- ✓ Optionally, remove the service access cover (see Section 3.3).
- ✓ Remove the data cartridge magazine.
- ✓ Obtain a T-15 TORX bit.

Removing the Data Cartridge Magazine Mounting Plate

1. Using a T-15 TORX bit, remove the four screws that secure the mounting plate to the chassis. Make sure you hold onto the mounting plate as you remove the last screw.
2. Remove the mounting plate.

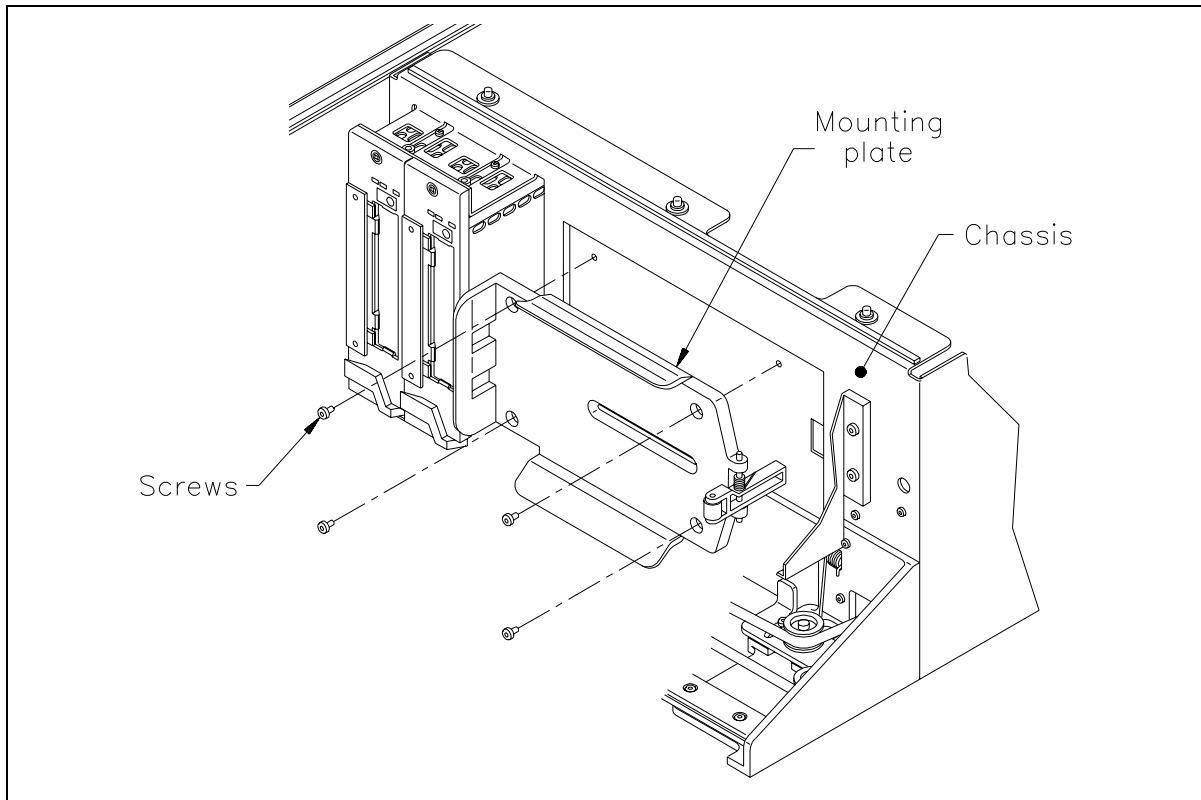


Figure 9-2 EXB-210: Removing the cartridge magazine mounting plate

Installing the Data Cartridge Magazine Mounting Plate

1. Position the mounting plate against the chassis.
2. Using a T-15 TORX bit, replace the four 6-32 \times 0.5 panhead screws that hold the mounting plate to the chassis.
3. Tighten the screws to 8.0 inch-pounds (9.2 kg-cm) of torque.

After Installing the Data Cartridge Magazine Mounting Plate

- ✓ Replace the data cartridge magazine.
- ✓ Replace the service access cover.

Replacing the Fixed Cartridge Holder: EXB-210

Follow the instructions in this section to replace the fixed cartridge holder.

Do This First

- ✓ Turn off the power and disconnect the power cord.
- ✓ Follow the ESD guidelines provided in Chapter 2.
- ✓ Optionally, remove the service access cover (see Section 3.3).
- ✓ Obtain a T-10 TORX bit.

Removing the Fixed Cartridge holder

1. As shown in Figure 9-3, use a T-10 TORX bit to remove the screw that secures the fixed cartridge holder to the bracket.

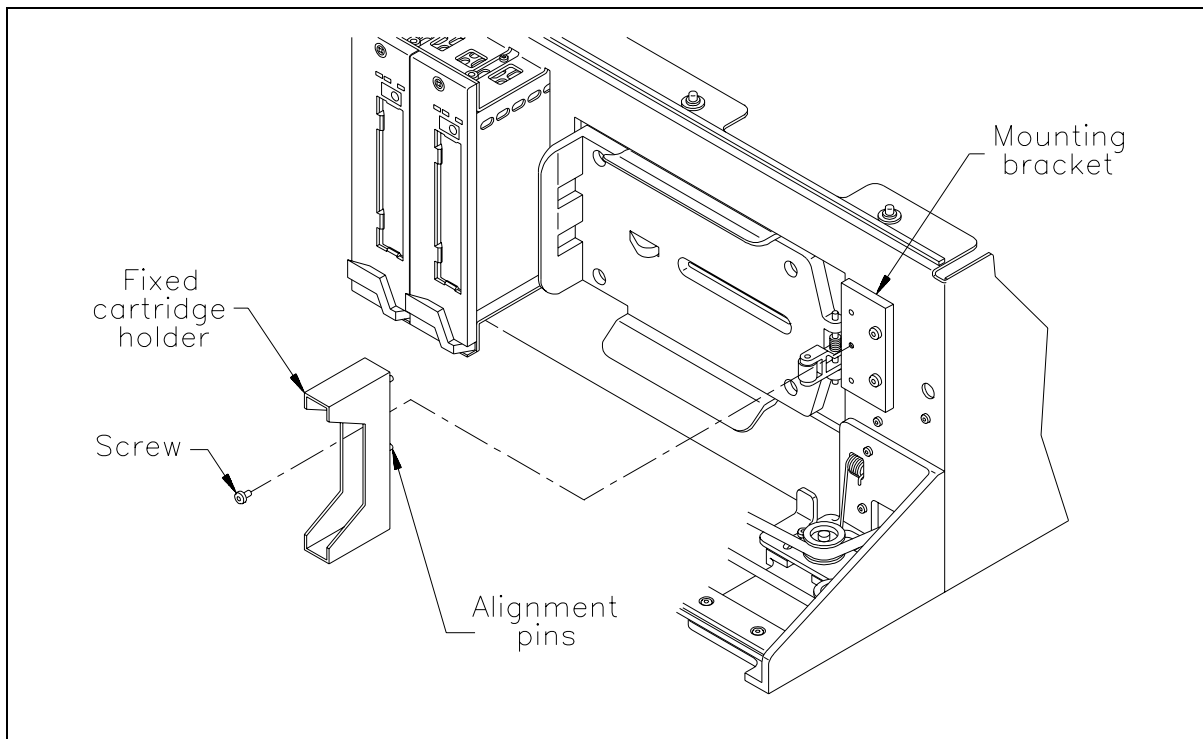


Figure 9-3 EXB-210: Removing the fixed cartridge holder

Installing the Fixed Cartridge Holder

1. Using the two alignment pins for guidance, clip the fixed cartridge holder on the mounting bracket.
2. Using a T-10 TORX bit, replace the single 6-32× 0.375 panhead screw that secures the fixed cartridge holder to the mounting bracket on the chassis.
3. Tighten the screw to 8.0 inch-pounds (9.2 kg-cm) of torque.

After Replacing the Fixed Cartridge Holder

- ✓ If necessary, replace the service access cover.

9.2 EXB-018 and EXB-218

Replacing the Data Cartridge Magazine: EXB-018 and EXB-218

Follow the instructions in this section to replace the data cartridge magazine.

Do This First

- ✓ Turn off the power and disconnect the power cord.
- ✓ Follow the ESD guidelines provided in Chapter 2.
- ✓ Unlock and open the front door of the library.

Removing the Data Cartridge Magazine

1. If necessary, push against the base of the CHM to move it out of the way.
2. Grasp the data cartridge magazine on either side (see Figure 9-4) and pull it straight out.

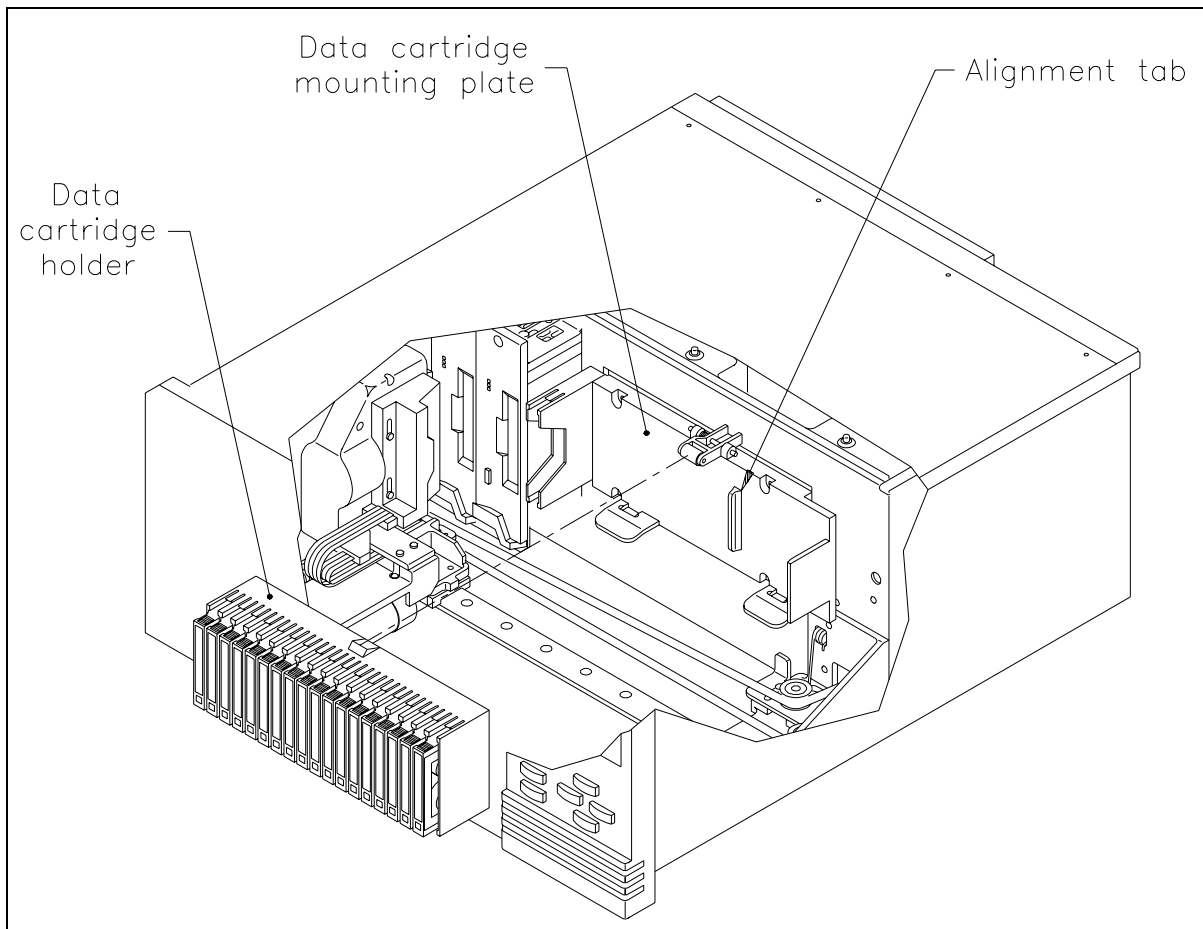


Figure 9-4 EXB-018 and EXB-218: Replacing the data cartridge magazine

Installing the Data Cartridge Magazine

1. On the magazine mounting plate, locate the roller on the top side of the plate (on the left side in the standalone model).
2. Position the magazine over the mounting plate with the single mounting guide toward the right (toward the top in the standalone model).
3. Clip the magazine onto the bottom end of the mounting plate (on the right in the standalone model).
4. Snap the magazine into plate by pressing on the top side (the left side in the standalone model).

After Replacing the Data Cartridge Magazine

- ✓ Close the library's front door.

Replacing the Data Cartridge Magazine Mounting Plate: EXB-018 and EXB-218

Follow the instructions below to replace the data cartridge magazine mounting plate.

Do This First

- ✓ Turn off the power and disconnect the power cord.
- ✓ Follow the ESD guidelines provided in Chapter 2.
- ✓ Optionally, remove the service access cover (see Section 3.3).
- ✓ Remove the data cartridge magazine.
- ✓ Obtain a T-15 TORX bit.

Removing the Data Cartridge Magazine Mounting Plate

1. Using a T-15 TORX bit, remove the four screws that secure the mounting plate to the chassis (see Figure 9-5). Make sure you hold onto the mounting plate as you remove the last screw.
2. Remove the mounting plate.

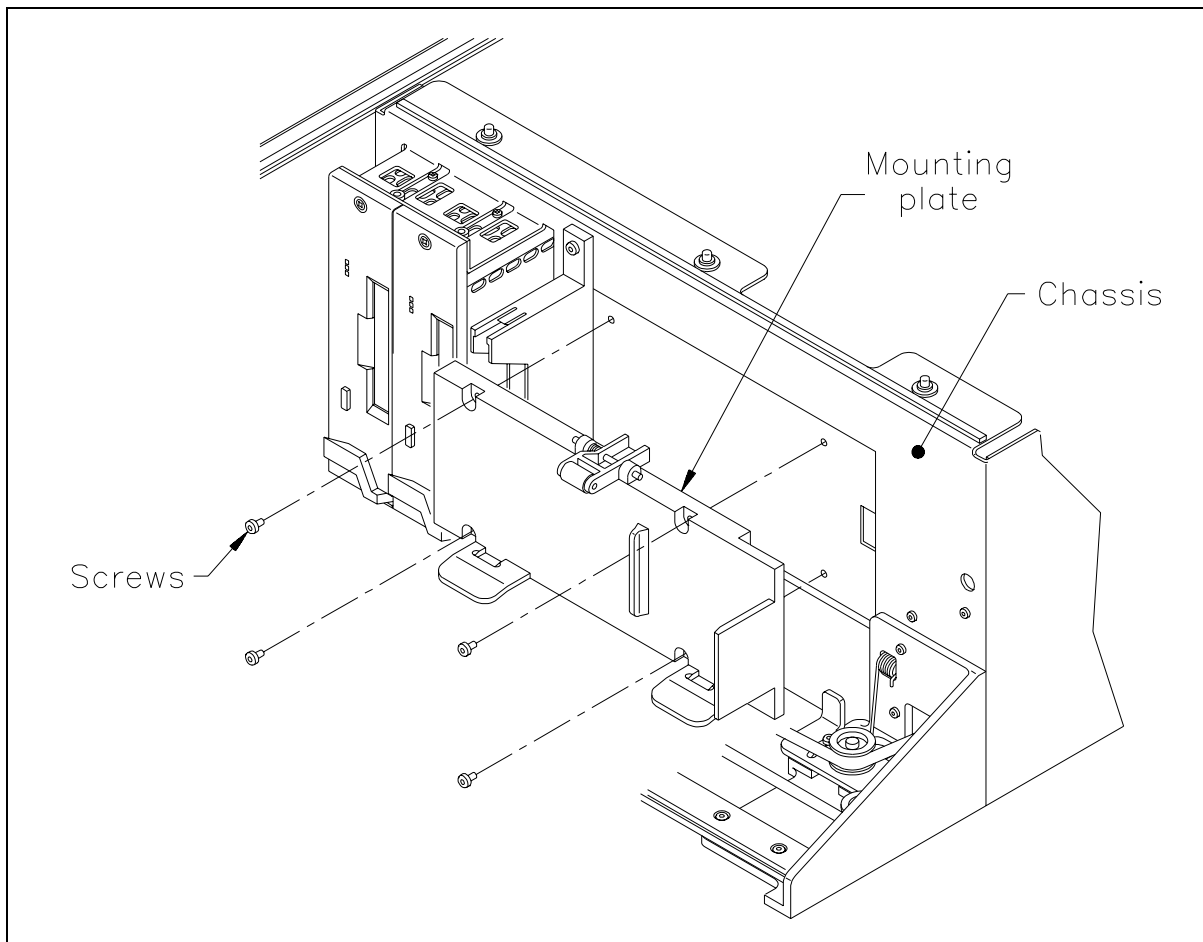


Figure 9-5 EXB-018 and EXB-218: Removing the data cartridge magazine mounting plate

Installing the Data Cartridge Magazine Mounting Plate

1. Position the mounting plate against the chassis (see Figure 9-5).
2. Using a T-15 TORX bit, replace the four 6-32 \times 0.5 panhead screws that hold the mounting plate to the chassis. Tighten the screws to 8.0 inch-pounds (9.2 kg-cm) of torque.

After Replacing the Data Cartridge Magazine Mounting Plate

- ✓ Replace the data cartridge magazine.
- ✓ If necessary, replace the service access cover (see Section 3.3).

- ✓ Recalibrate the data cartridge magazine using your LCD or by typing [c] from the Console Main menu if you are using the Diagnostics firmware. Either method will recalibrate the entire library.

Replacing the Fixed Cartridge Holder: EXB-018 and EXB-218

Follow the instructions in this section to replace the fixed cartridge holder.

Do This First

- ✓ Turn off the power and disconnect the power cord.
- ✓ Follow the ESD guidelines provided in Chapter 2.
- ✓ Optionally, remove the service access cover.
- ✓ Obtain a T-20 TORX bit.

Removing the Fixed Cartridge Holder

1. As shown in Figure 9-6, use a T-20 TORX bit to remove the screw that secures the fixed cartridge holder to the chassis.

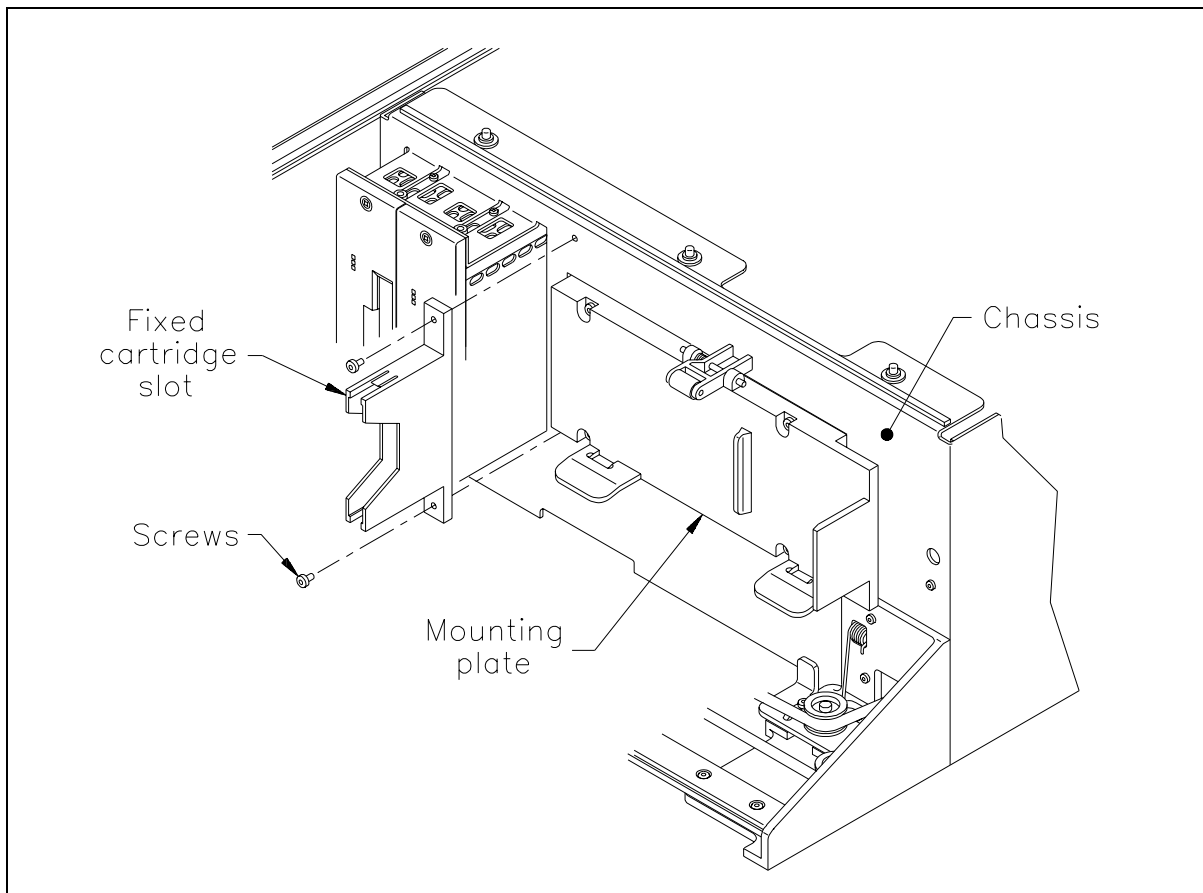


Figure 9-6 EXB-018 and EXB-218: Removing the fixed cartridge holder

Installing the Fixed Cartridge Holder

1. Using the two alignment pins for guidance, clip the fixed cartridge holder on the chassis.
2. Using a T-20 TORX bit, replace the two 8-32 x 0.4375 panhead screw that secures the fixed cartridge holder to the chassis.
3. Tighten the screw to 8.0 inch-pounds (9.2 kg-cm) of torque.

After Replacing the Fixed Cartridge Holder

- ✓ If necessary, replace the service access cover.
- ✓ Recalibrate the fixed cartridge holder using your LCD or by typing [c] from the Console Main menu if you are using the Diagnostics firmware. Either method will recalibrate the entire library.

Notes

10 Replacing Library Cables

This chapter describes how to remove and replace the following two cables:

- Operator panel cable
- CHM cable

10.1 Replacing the Operator Panel Cable

This section describes how to remove and replace the operator panel cable.

Do this first

- ✓ Turn off the power and disconnect the power cord.
- ✓ Follow the ESD guidelines provided in Chapter 2.
- ✓ If you have a standalone model, remove the top and left panels (see Section 3.2).
- ✓ Remove the service access cover (see Section 3.3).
- ✓ Push against the base of the CHM to move it out of the way (to the left on the rack-mounted model; to the bottom on the standalone model).
- ✓ Obtain a T-8 TORX bit.

Removing the Operator Panel Cable

1. Disconnect the cable from the controller card, as shown in Figure 10-1.

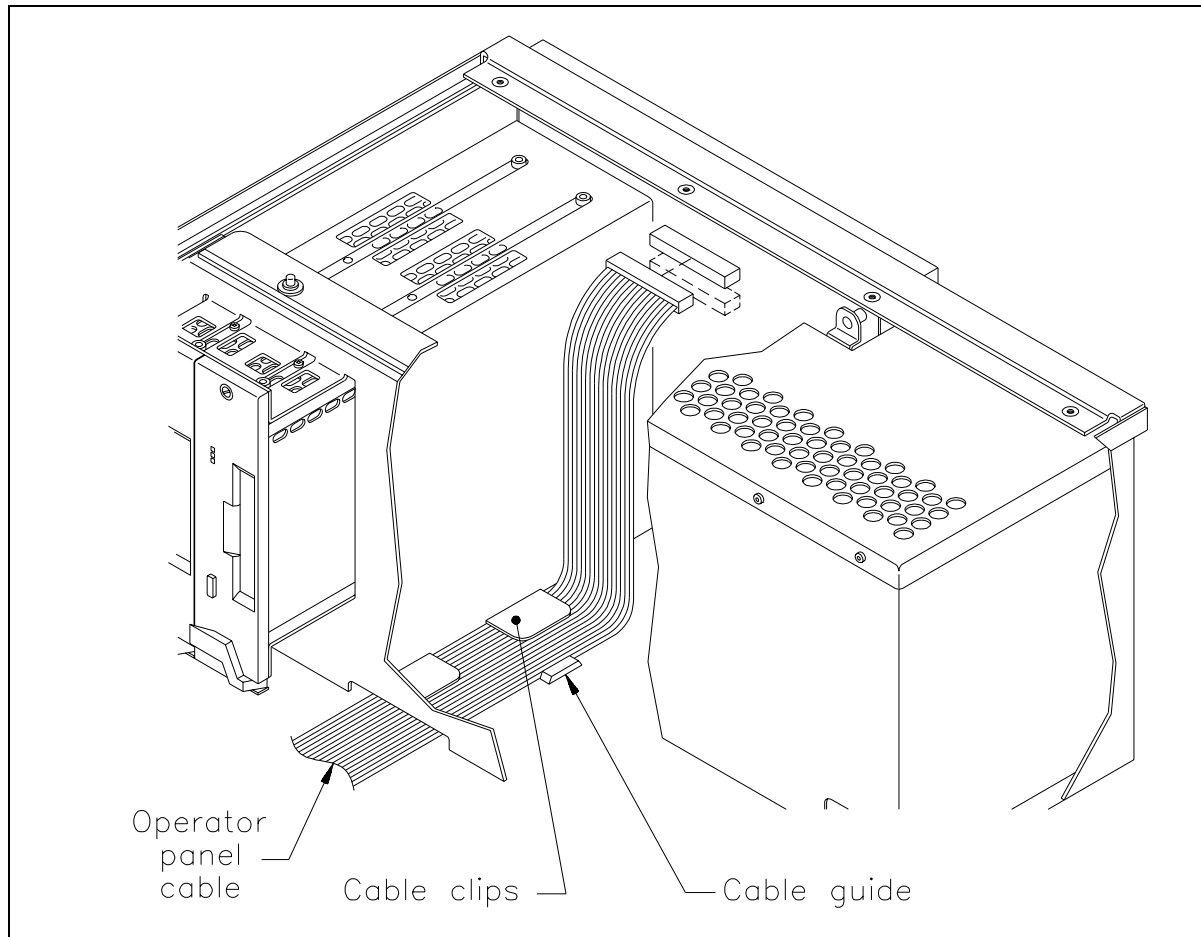


Figure 10-1 Disconnecting the operator panel cable from the controller card

2. Disconnect the cable from J3 on the motor distribution card (see Figure 10-2).

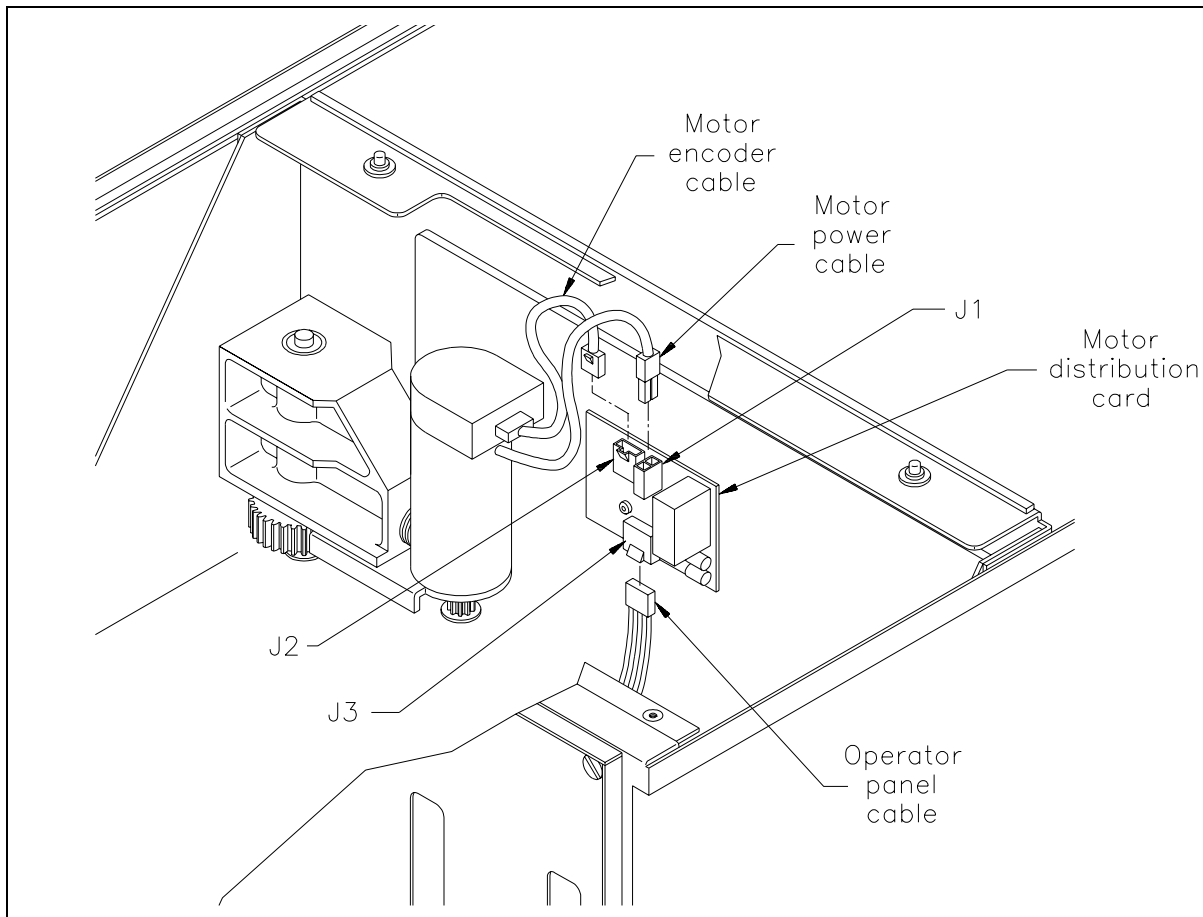


Figure 10-2 Disconnecting the operator panel cable from the motor distribution card

3. Slip the cable out from underneath the two cable clips as shown in Figure 10-1.
4. Use a T-8 TORX bit to remove the two screws from the cable clamp that secures the cable to the chassis below the operator panel (see Figure 10-3). Remove the cable clamp and set it aside—you will use the same clamp when you replace the cable.

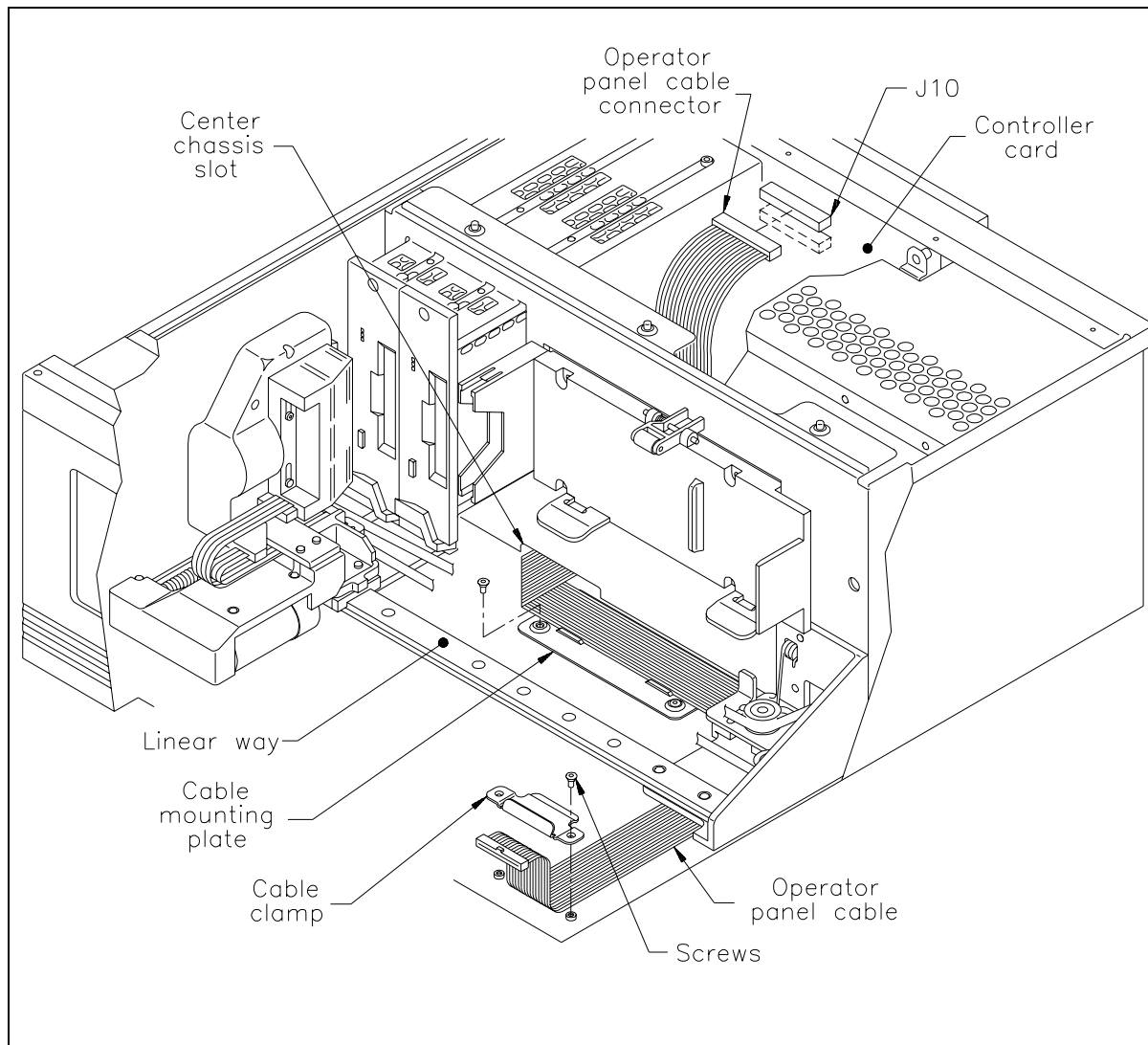


Figure 10-3 Removing the operator panel cable

5. Disconnect the cable from the front panel (see Figure 10-4).

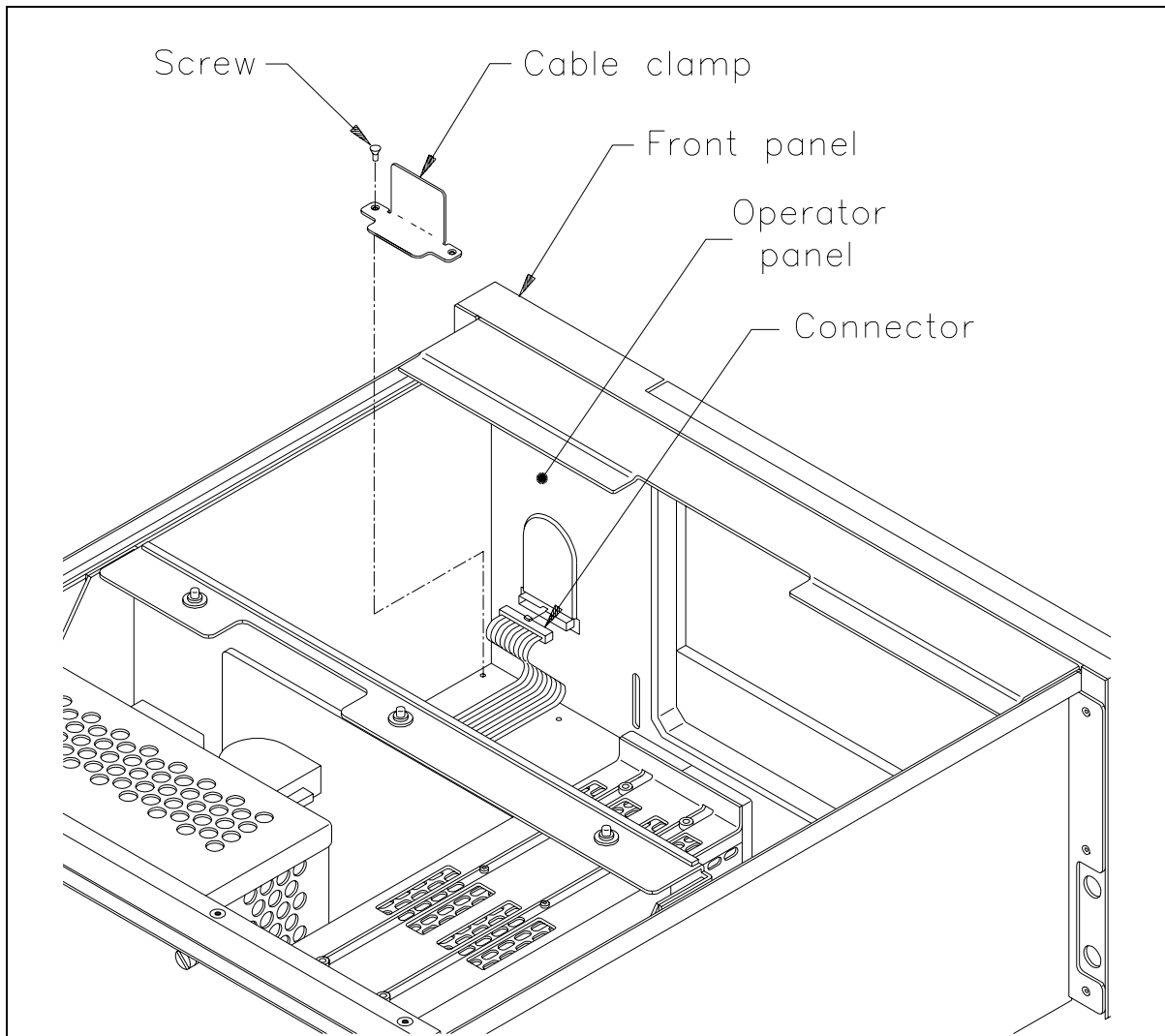


Figure 10-4 Disconnecting the operator panel cable

6. Using a T-8 TORX driver, remove the two screws from the cable mounting plate and remove the plate and cable (see Figure 10-3).

Note: Later models have a mounting plate on top of the cable. For these mounting plates, save the plate and reuse it when you install the new cable. Earlier models have the mounting plate attached to the operator panel cable with adhesive. Discard the mounting plate with the cable and order a replacement.

7. Pull the cable out through the slot at the bottom of the center chassis.

8. Pull the cable out from underneath the linear way. If your cable is attached to the mounting plate with adhesive, pull out the entire assembly and discard it. If the mounting plate was positioned on top of the cable and is not attached with adhesive, set aside the mounting plate for reuse with the new cable.

Installing the Operator Panel Cable

1. Locate the controller card connection on the cable.
2. Push the cable under the linear way and feed the end with the controller card connection through the slot in the chassis.
3. As shown in Figure 10-5, slip the cable under the cable clips and line it up using the cable guide for guidance.
4. Connect the cable to the top connector on the controller card (see Figure 10-5).

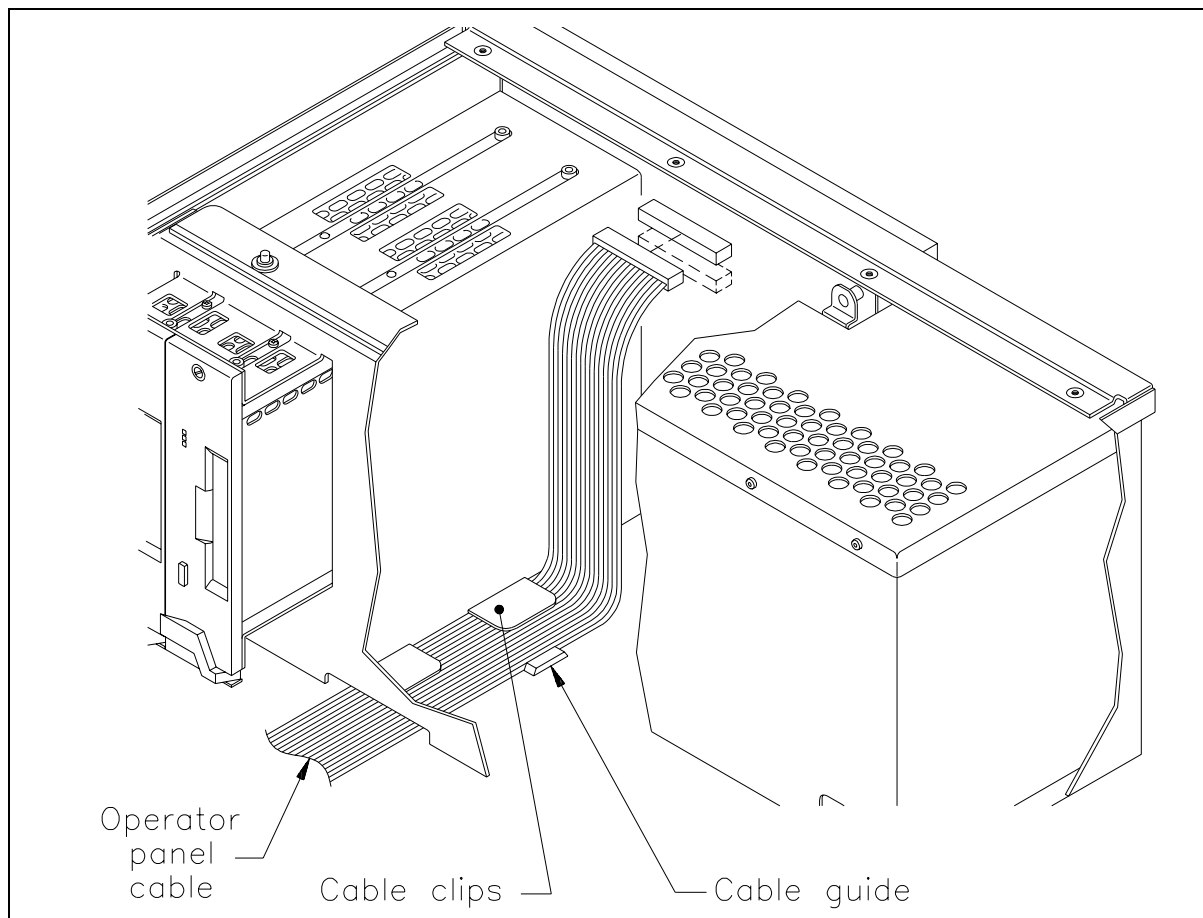


Figure 10-5 Connecting the operator panel cable to the controller card

5. As shown in Figure 10-6, connect the cable to the J3 connector on the motor distribution card.

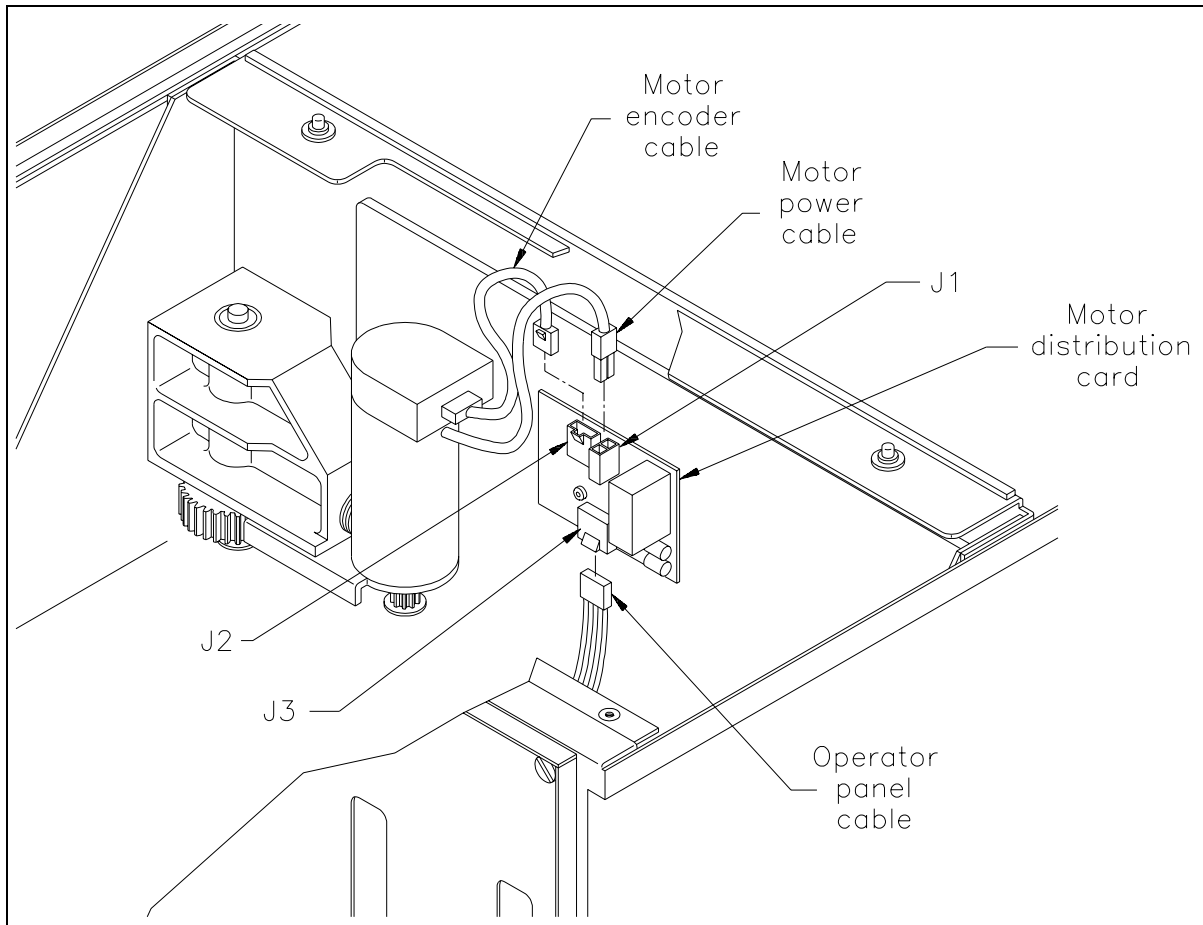


Figure 10-6 Connecting the operator panel cable to the J3 connector on the motor distribution card

6. On the front side of the library, align the cable as shown in Figure 10-7. Make sure the cable is pulled tight and lying flat.
7. Use a T-8 TORX bit and two 4-40×0.187 undercut countersink screws to secure the cable mounting plate to the chassis. Tighten the two screws to 4.5 inch-pounds (5.2 kg-cm) of torque.

Note: In later models, the old mounting plate is reused and positioned on top of the cable. In earlier models, the mounting plate needs to be replaced and positioned on the top of the cable.

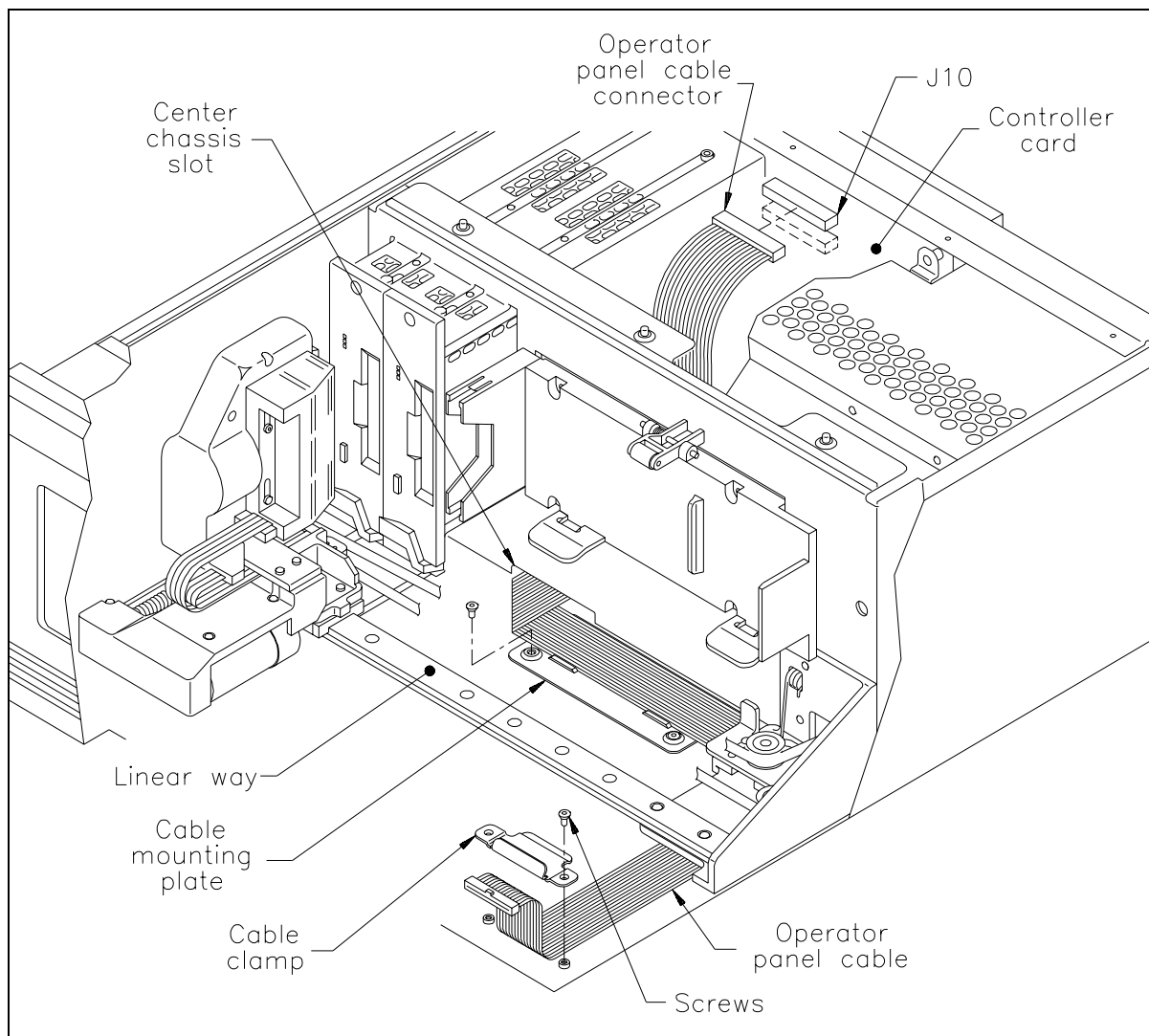


Figure 10-7 Replacing the operator panel cable

- 8.** As shown in Figure 10-8, connect the cable to the operator panel.

9. At the operator panel, use a T-8 TORX driver and two 4-40 × 0.187 screws to secure the cable clamp over the cable (see Figure 10-7). Tighten the two screws to 4.5 inch-pounds (5.2 kg-cm) of torque.

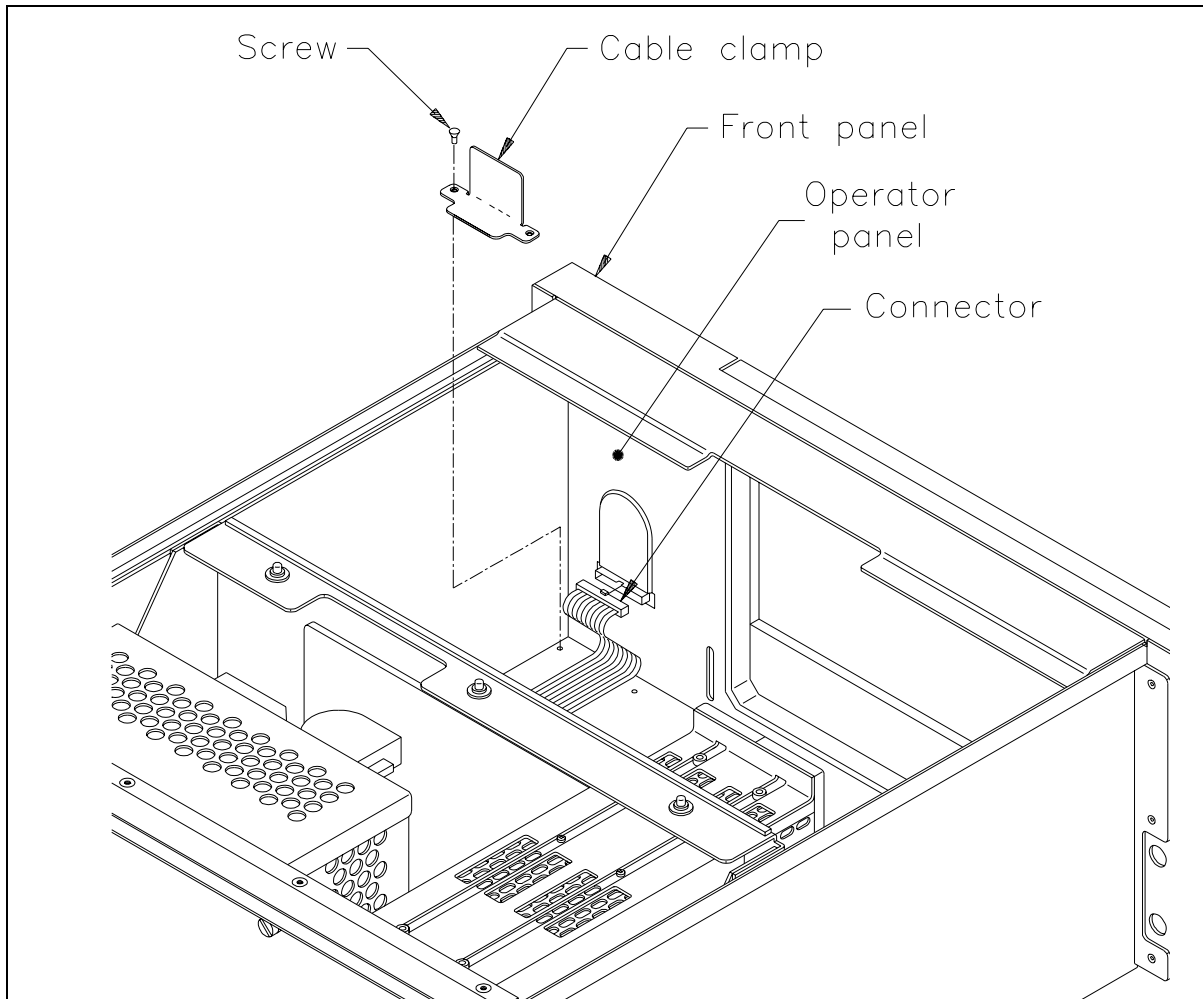


Figure 10-8 Connecting the operator panel cable to the operator panel

After Installing the Operator Panel Cable

- ✓ Replace the service access cover (see Section 3.3).
- ✓ Turn on the library and check the LCD to make sure it illuminates.
- ✓ Run several tests from the Diagnostics menu on the operator panel (refer to your installation and operation manual for instructions).
- ✓ Replace the housing (for standalone models). See Section 3.2.

10.2 Replacing the CHM Cable

This section describes how to remove and replace the CHM cable.

Do This First

- ✓ If you have a standalone model, remove the top and left panels (see Section 3.2).
- ✓ Remove the service access cover (see Section 3.3).
- ✓ Push against the base of the CHM to move it out of the way (to the left on the rack-mounted model; to the bottom on the standalone model).
- ✓ For easier access, disconnect the operator panel cable from the J10 connector and remove it from the clamps (see Section 10.1).

Removing the CHM Cable

1. Disconnect the cable from the controller card as shown in Figure 10-9.
2. Use a T-15 TORX driver to remove the ground screw from the CHM ground on the center chassis (see Figure 10-9).
3. Slip the cable out from underneath the two cable clips as shown in Figure 10-9.

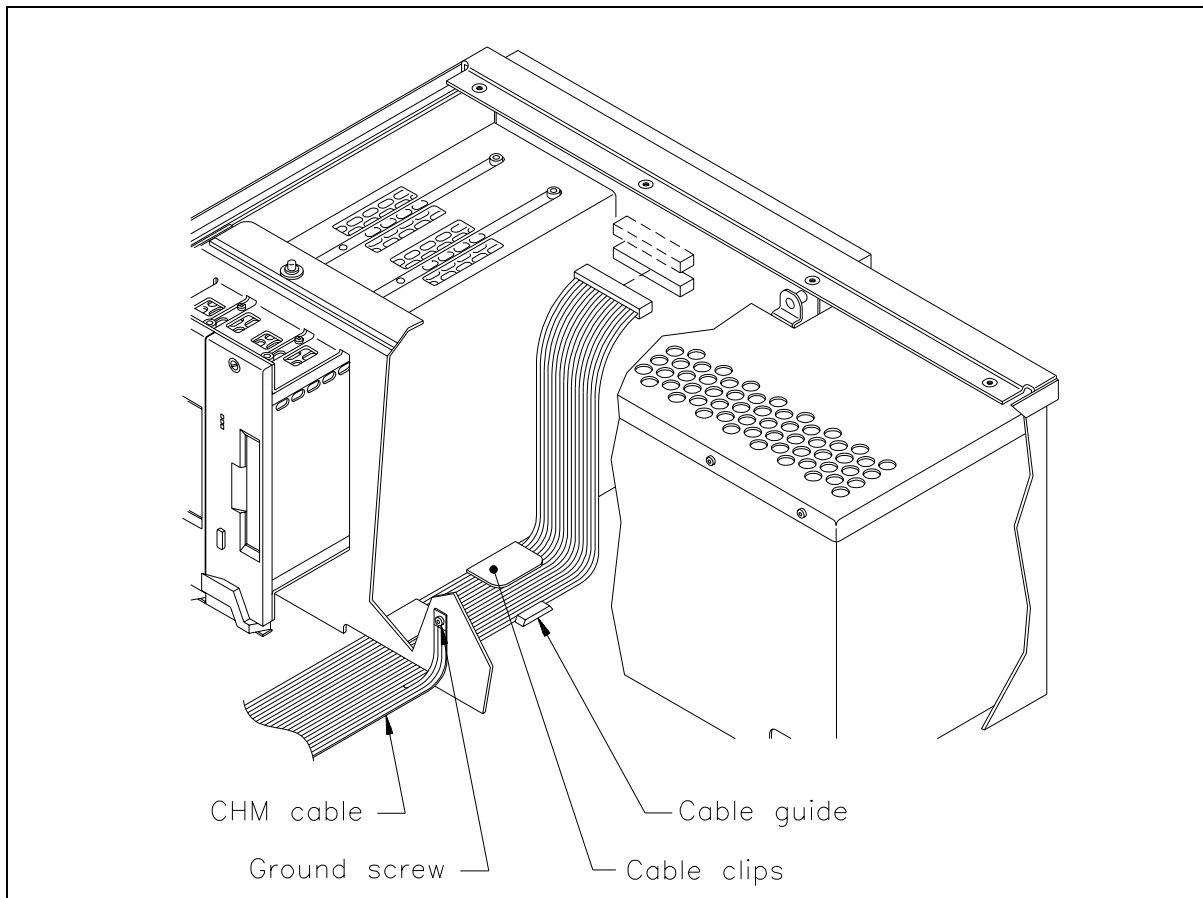


Figure 10-9 Disconnecting the CHM cable from the controller card

4. Use a T-10 TORX bit to remove the screw from the strain relief on the CHM (see Figure 10-10). Remove the strain relief.
5. Use a T-10 TORX bit to remove the three screws from the CHM cover (see Figure 10-10). Set the cover aside.
6. Use a T-10 TORX bit to remove the grounding screw from the CHM.
7. As shown, disconnect the CHM cable from the CHM.

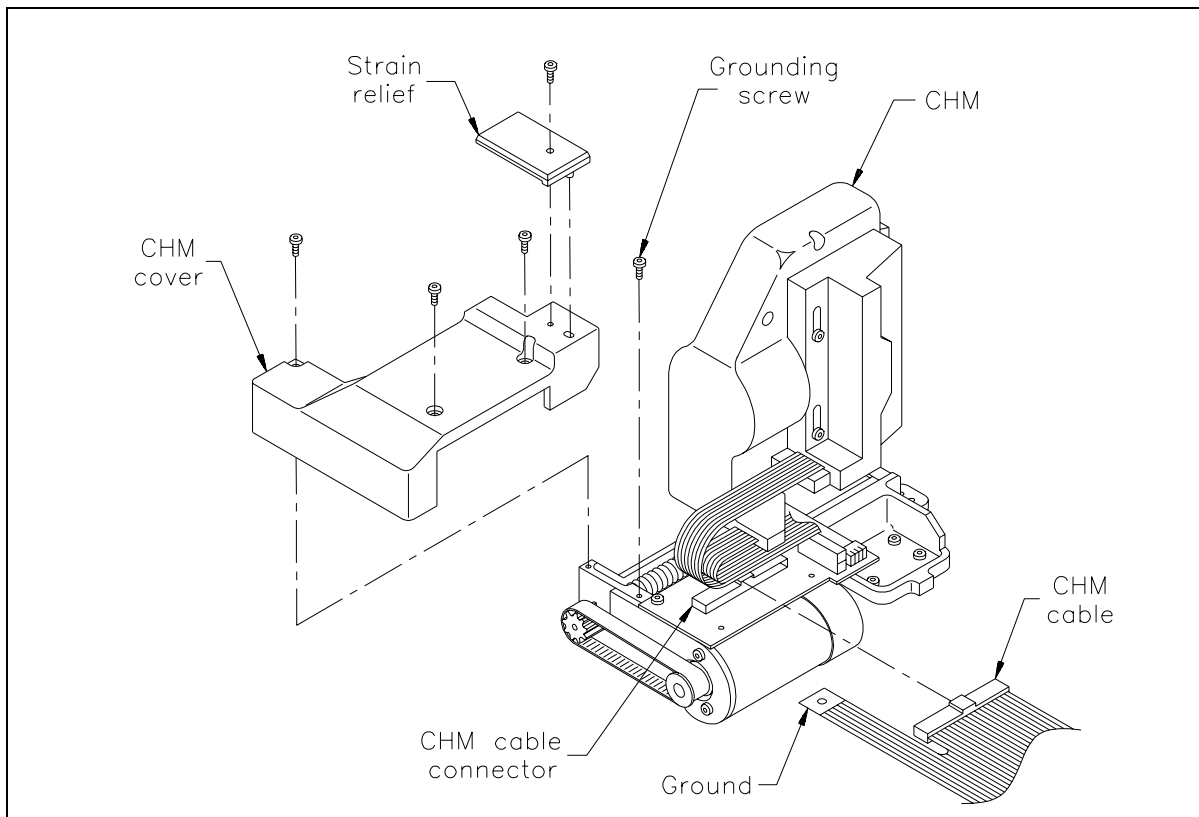


Figure 10-10 Disconnecting the CHM cable from the CHM

8. Using a T-8 TORX driver, remove the three screws from the cable mounting plate (see Figure 10-11). If the cable is not attached to your mounting plate, set aside the mounting plate for reuse with the new cable.
9. Pull the cable out through the slot at the bottom of the center chassis.
10. Pull the cable out from underneath the linear way. If the cable is attached to the mounting plate with adhesive, discard the entire assembly.

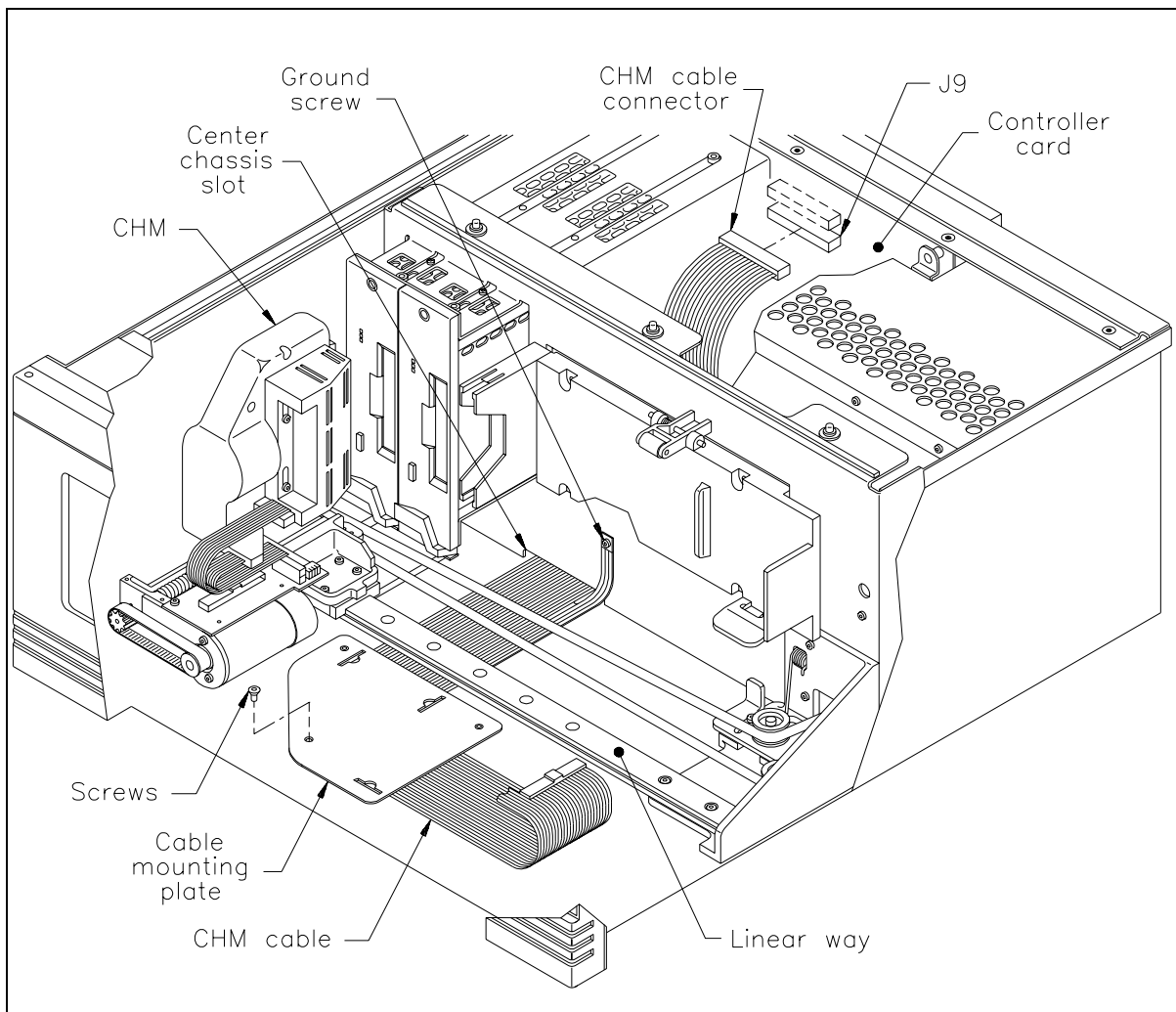


Figure 10-11 Removing the CHM cable

Installing the CHM Cable

1. Locate the controller card connection on the cable (see Figure 10-12).
2. Push the cable under the linear way and feed the end with the controller card connection through the slot in the chassis.
3. As shown in Figure 10-12, slip the cable under the cable clips and line it up using the two cable guides for guidance.
4. Use a T-15 TORX driver to replace the 6-32 \times 0.312 CHM ground screw on the center chassis (see Figure 10-12). Tighten the screw to 8.0 inch-pounds (9.2 kg-cm) of torque.
5. Connect the cable to the bottom connector on the controller card (see Figure 10-12).

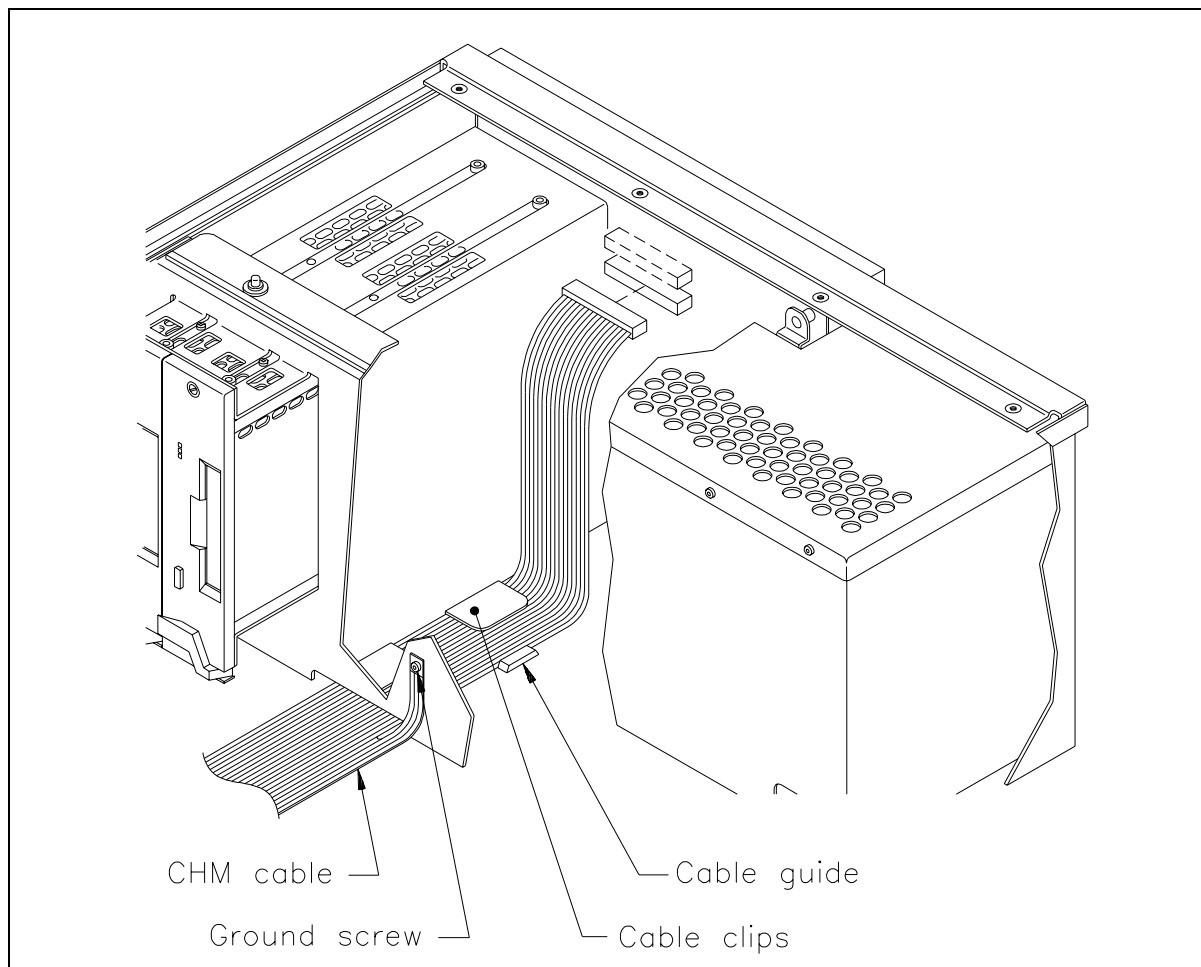


Figure 10-12 Connecting the CHM cable to the controller card

6. On the front side of the library, align the cable as shown in Figure 10-13, using the slots in the mounting plate for guidance. Make sure the cable is pulled tight and lying flat.
7. Use a T-8 TORX driver and three $4-40 \times \frac{3}{16}$ undercut counter sink screws to secure the mounting plate to the chassis. Tighten the two screws to 4.5 inch-pounds (5.2 kg-cm) of torque.

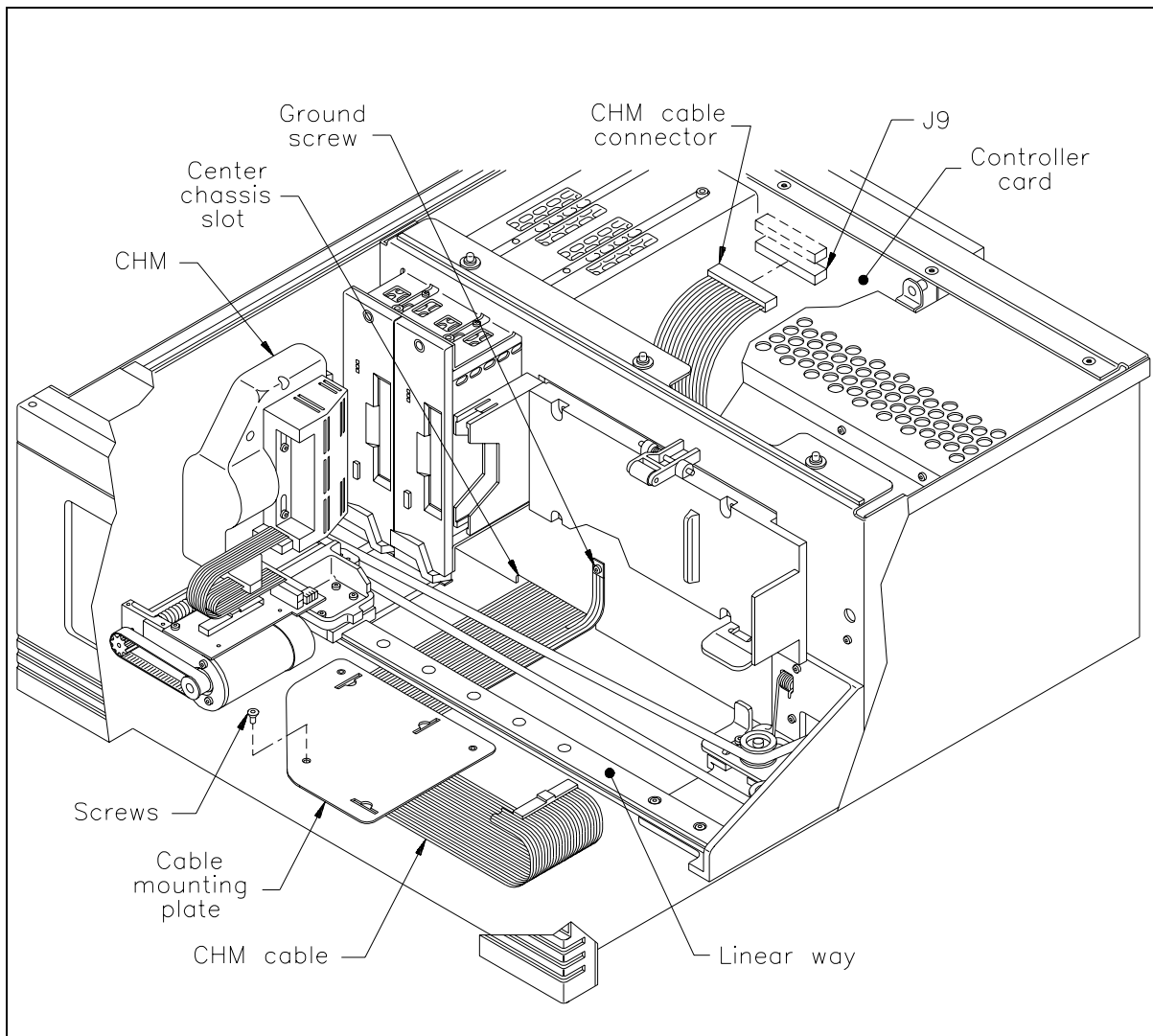


Figure 10-13 Aligning the CHM cable and securing the mounting plate to the chassis

8. Connect the cable to the CHM (see Figure 10-14).
9. Use a T-10 TORX bit to connect the single 4-40 × 0.375 panhead grounding screw to the CHM (see Figure 10-14).
10. Replace the CHM cover and use a T-10 TORX bit to replace the three 4-40 × 0.375 screws. Tighten the screws to 4.5 inch-pounds (5.2 kg-cm) of torque (see Figure 10-14).
11. Use a T-10 TORX bit to replace the 4-40 × 0.375 panhead screw on the strain relief. Tighten the screw to 4.5 inch-pounds (5.2 kg-cm) of torque.

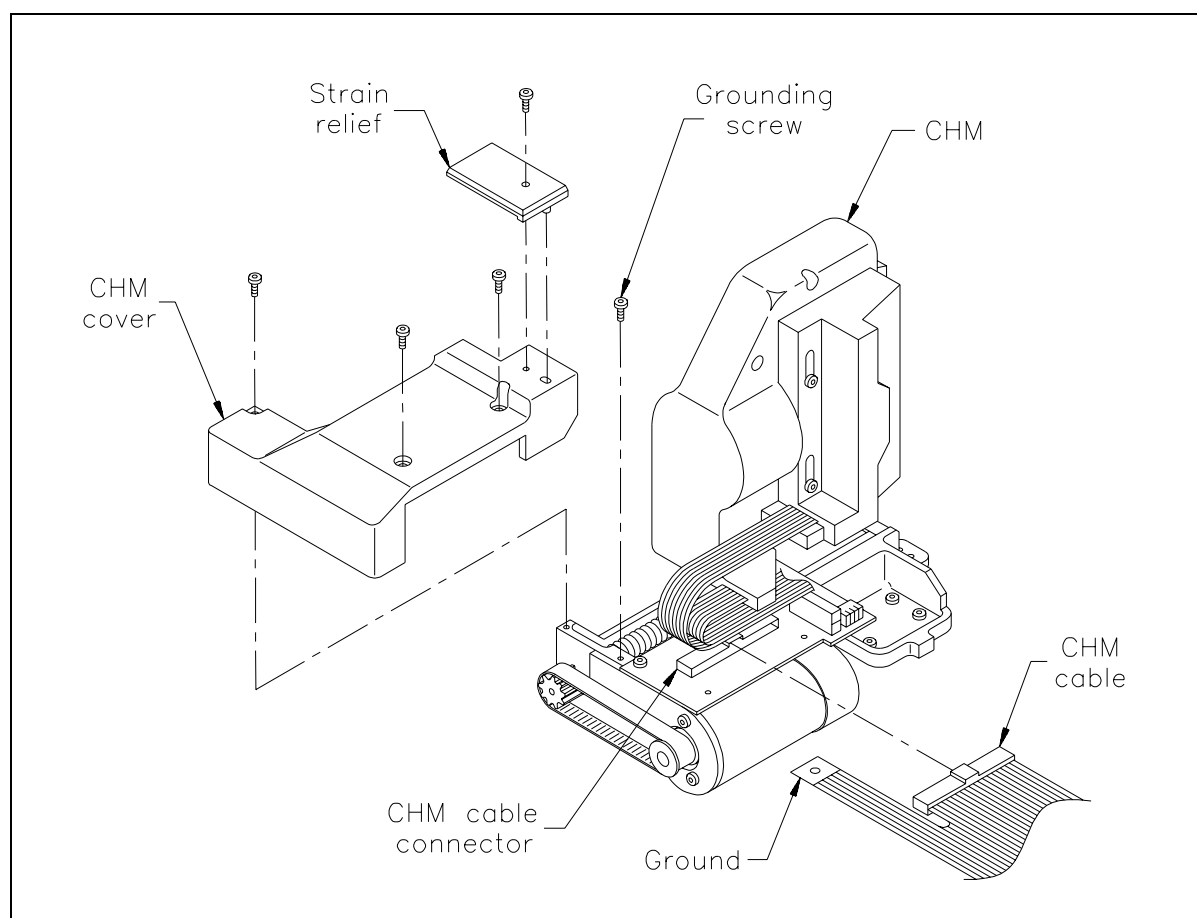


Figure 10-14 Connecting the CHM cable to the CHM

After Installing the CHM Cable

- ✓ Replace the operator panel cable (see Section 10.1).
- ✓ Replace the service access cover (see Section 3.3).
- ✓ Turn on the library and use the Diagnostics menu on the operator panel to exercise the CHM.
- ✓ Replace the housing (for standalone models).

Notes

11

Diagnostics

This chapter describes how to use the Diagnostics firmware, also referred to as the Console, to help determine operational problems with the library, to gather system statistics, and to upgrade to new firmware. This chapter contains the following information:

- Required hardware and software for running Diagnostics
- How to set up and run Diagnostics
- How to reset the library
- A description of each screen on the Console Main menu

The Diagnostics firmware resides in the library's flash EEPROM. You can access the firmware from any hardware and software environment that supports the protocols listed in Section 11.1.

Note: Depending on which library model you have, the screens you see may differ slightly.

11.1 Required Hardware and Software

To access the Diagnostics firmware, you must first set up the following hardware and software environment:

- Host computer connected to the library, using an RS232 serial port and a straight-through serial cable. You can use a 9-pin or a 25-pin cable for Diagnostics. Refer to Figure 11-1 for the location of the 9-pin and 25-pin ports on the back of the library.

Note: To upgrade your system with new firmware, you must use a 9-pin serial cable connected to the 9-pin port. You can also upgrade firmware using the READ FIRMWARE and WRITE FIRMWARE SCSI commands. For more information, refer to the SCSI reference manual for your library.

- If needed, software that supports XMODEM data transfer protocol to read and write firmware.

Note: Exabyte provides a PC-based program, CHSTERM, that supports the required protocols. CHSTERM is available on the Exabyte Internet site (<http://www.exabyte.com>), Exabyte Technical Support Bulletin Board Services (BBS), or on diskette.

- If needed, new versions of firmware are available on the Exabyte Internet site, Exabyte BBS, or on diskette.
- Software that supports ASCII data transfer protocol to receive a formatted diagnostic dump or to receive bar code data.
- ANSI 3.64 terminal protocol.

➤ **Important** Make sure the baud rate on your host is the same as the baud rate on the library. The library baud rate is set from the LCD (refer to your installation and operation manual). Make sure you do not specify a baud rate that is too fast for your PC.

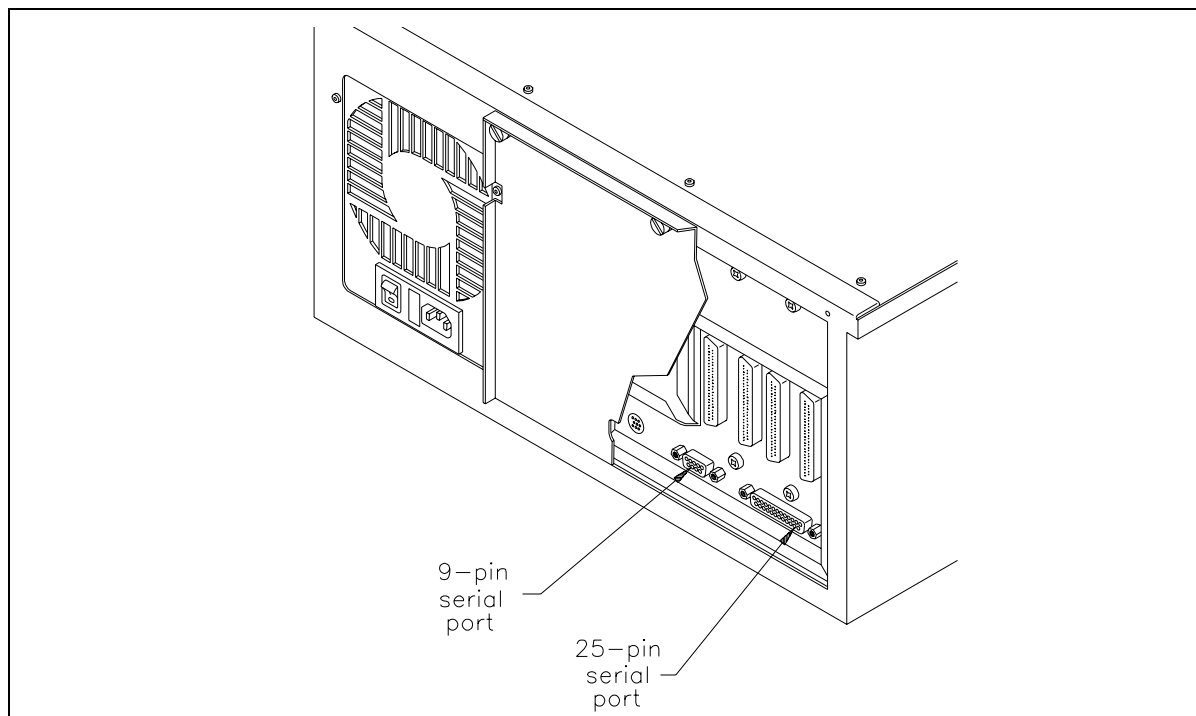


Figure 11-1 Diagnostic ports (rear view of the library)

11.2 Setting Up and Starting Diagnostics

This chapter uses the following conventions:

- Boxed text (for example, Escape) indicates keys you press on the library's operator panel.
- Keys shown boldfaced in brackets (for example, **[Enter]**), are keys you type on your host computer's keyboard.
- Words shown in courier, for example `chsterm`, are commands you type at the DOS prompt.

To start Diagnostics, follow these steps:

1. Turn on the library.

Note: Steps 2 through 5 are required only if you want to send motion commands to the CHM using the Diagnostic, Self Test, Calibrate (EXB-018 and EXB-218 only), and Bar Code Self Test functions, which are menu options on the Console Main screen.

2. On the operator panel, press Escape. The system displays the LCD menu:

```

→ M a i n       S c r e e n
   I n t e r f a c e   M e n u
   C o n f i g u r a t i o n   M e n u
   M a i n t e n a n c e   M e n u   ↓

```

3. Press ↓ on the operator panel to select Interface Menu and press Enter.

```

→ C o n t r o l   M o d e   M e n u
   C o n f i g   2 5 - P i n   P o r t
   C o n f i g   9 - P i n   P o r t   ↓

```

4. Select Control Mode Menu. The following screen appears:

```

→ * L C D   I n t e r f a c e
   S C S I   I n t e r f a c e
   2 5 - P i n   S e r i a l   P o r
   9 - P i n   S e r i a l   P o r t   ↓

```

Note: This screen is for the EXB-218 with Hewlett Packard tape drives. Depending on which library you have, the screen you see may vary.

5. Press **↓** to view the serial port options. Press **Enter** to select the serial port you are using. The system displays a confirmation message.
6. From your host computer, access the software you are using to communicate with the library. (For CHSTERM users, type `chsterm` in the directory where you installed the program. If your monitor displays a blank screen with function keys along the top, type **[m]** to display the Console Main menu.)

Note: If garbled characters or no characters appear on your screen, make sure you have set the same baud rate for the host and the library.

11.3 Resetting the Library

The descriptions of Diagnostic functions provided in this chapter often refer to resetting the library. For example, many counters in the Diagnostic firmware keep track of events *across resets*. A reset causes the library and the tape drives to perform their power-on self tests. You can manually reset the library, or the library might be reset automatically.

CAUTION

Before manually resetting the library, make sure the library or tape drives are not being used by any host. Resetting the library or tape drives may disrupt communications on any connected SCSI bus.

Manually Resetting the Library

If the library has encountered an error and is still not operating after you have tried the corrective action for the error, you may need to reset the library. You can manually reset the library by:

- Pressing **Reset** on the operator panel
- Turning the library off, then on
- Performing a remote hardware reset

Reset Button

When you press **Reset**, the following message appears on the LCD:



D o y o u r e a l l y w a n t
t o r e s e t ?
E N T E R : R e s e t n o w
E S C A P E : C a n c e l

After the library is reset, the Main screen appears on the LCD.

Power-On Reset

Turn the power switch on the back of the library to the off position, then back on. A power-on reset also resets the tape drives.

Remote Hardware Reset

You can plug a cable into the remote reset connector and press a reset button on the cable. (See the product specification for your library for more information.) A remote hardware reset also resets the tape drives.

Host-Driven Resets

The library and tape drives can be reset by the host under the conditions described below.

SCSI Bus Reset

A reset (RST) pulse on the SCSI bus occurring for a minimum of 25 μ sec causes the library to be reset. A SCSI bus reset immediately clears all devices on the bus, resets their associated equipment, and terminates pending I/O processes. A SCSI bus reset also resets the tape drives on that SCSI bus.

Bus Device Reset Message

A Bus Device Reset (0Ch) message from the host to a device (the library or a tape drive) causes the device to be reset. A device reset clears the device from the bus, causes all commands to be cleared, and terminates all pending I/O processes. A Bus Device Reset message received by the library does not reset the tape drives.

11.4 Console Main Menu

Figure 11-2 shows the Console Main menu. To return to this menu from other screens in the Diagnostics firmware, type [m].

F1 Help Alt-L Log is OFF Alt-J COM1: Alt-B 19200 Alt-X eXit 10:45:14			
+-----+ Console Screens: Press: +-----+		n [9-Pin]	
+-----+ Main 0 10:48:47 +-----+		Jul 09 12:49:06 1996	
Cartrid	History Buffer Display	h	
	Cartridge Inventory	i	
Do	Diagnostic Dump	d	Home: -00056 25-Pin Mode: CONSOLE
	Self Test	s	Home: -00001 9-Pin Mode: CONSOLE
Do	Maintenance Functions	m	4-Pin Mode: CONSOLE
	Bar Code CCD Data	b	Active Port: SCSI
Te	Bar Code Self Test	f	imit: N/A
	Calibration	k	imit: 012778 Port ID: COM3
Te	SCSI ASC/ASCQ Data	a	Port H/W ID: DUART2
	SCSI Chip History	p	
Te	SCSI Mode Select Info 1	1	epth: 3187
	SCSI Mode Select Info 2	2	
Te	SCSI Miscellaneous Info	o	
	Configuration	c	
Transfer Control To ROM		t	
+-----+			
Cancel		q	
+-----+			
Reason for Restart: PWRUP/RESET			

Figure 11-2 Console Main menu (EXB-218 menu shown)

The following sections describe each menu option. In each section, “Display Fields” describes the information displayed on the screen, and “Options” describes the operations you can perform from the screen.

Note: The EXB-210 menu also lists a Drive Status Screen. Type [e] to view this screen, as described on page 11-64.

11.5 Console Main Screen

The Console Main screen shows general information about the library. To display the Console Main screen, type [0] (zero) from the Console Main menu. Figure 11-3 shows the Console Main screen.

Note: This screen goes into shutdown mode after three minutes of inactivity.

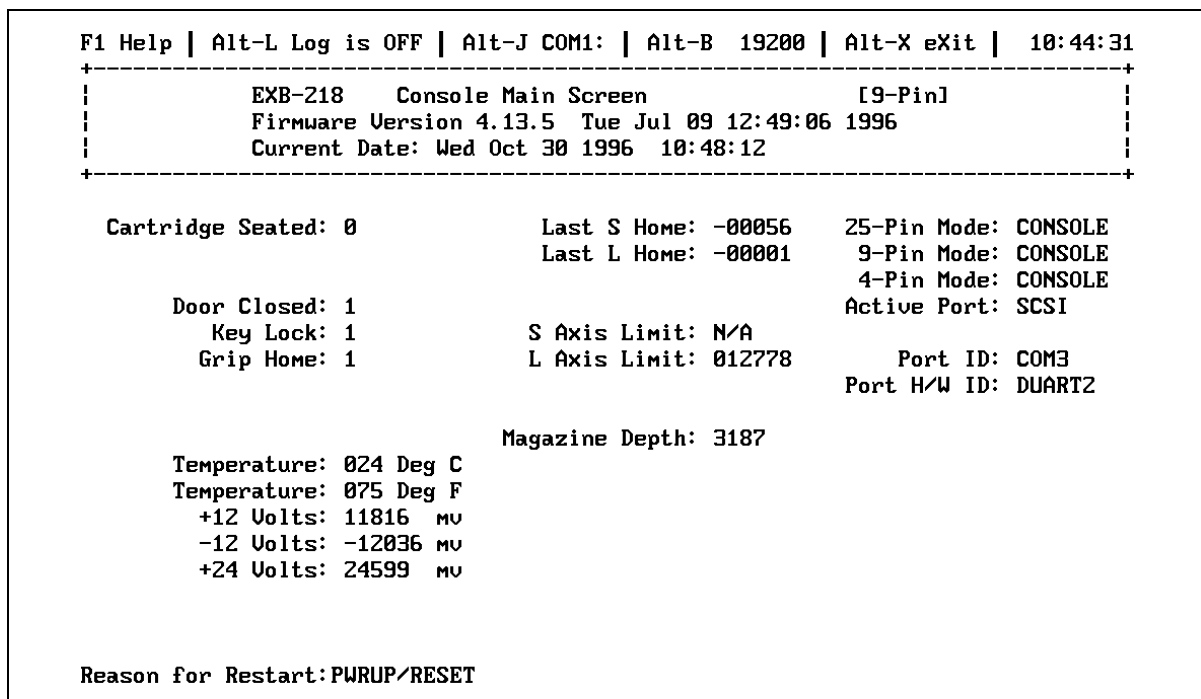


Figure 11-3 Console Main screen (EXB-218 shown)

Display Fields

Cartridge Seated

- 0 – A cartridge is not present in the gripper.
- 1 – A cartridge is present in the gripper.

Door Closed

- 0 – The library door is open.
- 1 – The library door is closed.

Key Lock

- 0 – The key lock is not locked.
- 1 – The key lock is locked.

Grip Home

- 0 – The gripper is not in its home position.
- 1 – The gripper is in its home position (the fingers are open).

Temperature

The current temperature of the library, in degrees Celsius (°C).

Temperature

The current temperature of the library, in degrees Fahrenheit (°F).

+12 Volts

The current output of the 12-volt power supply in millivolts.

-12 Volts

The current output of the negative 12-volt power supply in millivolts.

+24 Volts

The current output of the 24-volt power supply in millivolts.

Last S Home

The difference in the short axis servo position from the last time the CHM went to S home (before the servo position was reset to 0). The S home position (short axis home position) is on or near the outermost position on the short axis.

Last L Home

The difference in the long axis servo position from the last time the CHM went to L home (before the servo position was reset to 0). The L home position (long axis home position) is on or near the rightmost or topmost position on the long axis.

S Axis Limit

The position number (in thousandths of an inch) of the S axis limit (the innermost position on the short axis). (The S axis limit is not currently available.)

L Axis Limit

The position number (in thousandths of an inch) of the L axis limit (the leftmost or bottom position on the long axis).

Magazine Depth

The distance (in thousandths of an inch) the grab base has to move from X axis home to touch the magazine.

25-Pin Mode

The current mode of the 25-pin port.

9-Pin Mode

The current mode of the 9-pin port.

4-Pin Mode

Exabyte use only.

Active Port

The port currently being used to control the CHM.

Port ID

Exabyte use only.

Port H/W ID

Exabyte use only.

Reason for Restart

The reason the library was restarted (power up, reset from front panel, SCSI bus reset, or SCSI device reset).

11.6 History Buffer Display Screen

The History Buffer Display screen creates a display of the most recent 300 events that have occurred in the library. If necessary, you can also type **[f]** from this screen and use the Change Database Filter Menu to define selection criteria for displaying only certain events.

Note: The most recent event in the History Buffer is displayed at the bottom of the screen.

To select the History Buffer Display screen, type **[h]** from the Console Main menu.

➤ **Important** Displaying this screen can considerably decrease SCSI throughput. Do not leave this function running if you are not using it. Exit this screen and return to the Console Main menu before you exit your communications program.

F1 Help Alt-L Log is OFF Alt-J COM1: Alt-B 19200 Alt-X eXit 10:45:37					
History Buffer Display			M - Menu		
017	SERVO	0955	Go to 2572	18:03:21	10-29-96 00256
016	SERVO	0955	Go to 3066	18:03:21	10-29-96 00281
015	SERVO	0955	Go to 3560	18:03:23	10-29-96 00306
014	SERVO	0955	Go to 4054	18:03:25	10-29-96 00331
013	SERVO	0955	Go to 4548	18:03:27	10-29-96 00356
012	SERVO	0955	Go to 5042	18:03:27	10-29-96 00381
011	SERVO	0955	Go to 5536	18:03:29	10-29-96 00406
010	SERVO	0955	Go to 6030	18:03:31	10-29-96 00431
009	SERVO	0955	Go to 6524	18:03:33	10-29-96 00456
008	SERVO	0955	Go to 7018	18:03:33	10-29-96 00481
007	SERVO	0955	Go to 7512	18:03:35	10-29-96 00506
006	SERVO	0955	Go to 8006	18:03:37	10-29-96 00531
005	SERVO	0955	Go to 8500	18:03:39	10-29-96 00556
004	SERVO	0955	Go to 9189	18:03:40	10-29-96 00580
003	SERVO	0955	Go to 10036	18:03:42	10-29-96 00601
002	SERVO	0955	Go to 11758	18:03:52	10-29-96 00622
001	SERVO	0955	Go to 250	18:04:03	10-29-96 00643
000	PWRUP	2832	Motion control i/f: SCSI	1	18:04:06 10-29-96 00652

IDX From:	Line Event Description:			Time:	Date: Seq:
Options:	a - Display All s - Change Display Index u - Scroll Up				
	t - Display Tagged Only f - Change Database Filter d - Scroll Down				

Figure 11-4 History Buffer Display screen

Display Fields

IDX (Index)

The line number of this event within the History Buffer. The range is 000 (the most recent event) through 299.

From

The process name that caused this event. See Appendix C for a list of process names.

Line

The line number of the source code that caused this event.

Event Description

A description of the event.

Time

The time, according to the library internal clock, that the event took place.

Date

The date, according to the library internal calendar, that the event took place.

Seq

The sequence number of this event across all system buffers.

Options**m – Menu**

Returns you to the Console Main menu.

a – Display All

Disregards the filter and displays all history events (000 through 299) on the screen.

t – Display Tagged Only

Displays only those events tagged in the filter. See “Change Database Filter Menu” on page 11-14 for instructions on defining filters and displaying the tagged items.

s – Change Display Index

Allows you to view the history buffer beginning at a specific line. The default is line 000, which is the most recent history event. To change the display index, follow these steps:

1. Type [s]. The system displays the following prompt:

```
Enter starting history index (BETWEEN 0 AND 299):
```

2. Type the line number of the line (up to 299) where you want to begin viewing the contents of the history buffer.
3. Press **[Enter]**. The system displays the contents of the history buffer beginning at the line you specified.

f – Change Database Filter

Displays the Change Database Filter menu, which allows you to define a filter for the history buffer.

u – Scroll Up

Scrolls up through the history buffer.

d – Scroll Down

Scrolls down through the history buffer.

Change Database Filter Menu

The Change Database Filter menu allows you to specify search parameters (filters) for searching through the history buffer. You access this screen by typing [f] from the History Buffer Display screen or from the Diagnostics Dump Options screen (see Section 11.8 on page 11-21).

F1 Help Alt-L Log is OFF Alt-J COM1: Alt-B 19200 Alt-X eXit 10:46:03									
History Buffer Display					-----+				
017	SERVO	0955	Go to	2572	Change Database Filter:				0256
016	SERVO	0955	Go to	3066	p - Set Process Name	[ANY]			0281
015	SERVO	0955	Go to	3560	l - Set Line Number	[ANY]			0306
014	SERVO	0955	Go to	4054	e - Set Error Number	[ANY]			0331
013	SERVO	0955	Go to	4548	v - Set Event Number	[ANY]			0356
012	SERVO	0955	Go to	5042					0381
011	SERVO	0955	Go to	5536	t - Tag Matching Items				0406
010	SERVO	0955	Go to	6030	c - Clear All Tags				0431
009	SERVO	0955	Go to	6524	d - Display Mode: ALL ITEMS				0456
008	SERVO	0955	Go to	7018					0481
007	SERVO	0955	Go to	7512	[0000] Items Tagged In Last Scan				0506
006	SERVO	0955	Go to	8006	[0000] Tagged Items In Buffer				0531
005	SERVO	0955	Go to	8500					0556
004	SERVO	0955	Go to	9189	Press ESC To Return				0580
003	SERVO	0955	Go to	10036	To History Display				0601
002	SERVO	0955	Go to	11758	-----+				0622
001	SERVO	0955	Go to	250			18:04:03 10-29-96		00643
000	PWRUP	2832	Motion control i/f: SCSI	1			18:04:06 10-29-96		00652

IDX From:	Line Event Description:				Time:	Date:	Seq:		
Options:	a - Display All				s - Change Display Index	u - Scroll Up			
	t - Display Tagged Only				f - Change Database Filter	d - Scroll Down			

Figure 11-5 Change Database Filter options

Display Fields

[0000] Items Tagged In Last Scan

Displays the number of history events tagged in the last scan.

[0000] Tagged Items In Buffer

Displays the cumulative number of tagged history events currently in the buffer.

Options

p – Set Process Name

Allows you to type in the number associated with the process name you want the filter to select. See Appendix C for a list of process names and their associated numbers. See “Procedure for Changing the Filter” on page 11-16 for instructions.

l – Set Line Number

Allows you to specify that the filter select history events generated by a line in the source code. This information is used by Exabyte Technical Support to troubleshoot problems. You may be asked to type a specific line number into this field and generate a diagnostic printout. See “Procedure for Changing the Filter” on page 11-16 for instructions.

e – Set Error Number

Allows you to list all occurrences of a particular error code. See Appendix A for a list of valid error codes. See “Procedure for Changing the Filter” on page 11-16 for instructions.

v – Set Event Number

Allows you to type in the number associated with a specific history event. See Appendix B for a list of possible events and their associated numbers. See “Procedure for Changing the Filter” on page 11-16 for instructions.

t – Tag Matching Items

Executes the search for history events and tags those events. See “Procedure for Changing the Filter” on page 11-16 for instructions.

c – Clear All Tags

Clears all tags generated by Tag Matching Items.

d – Display Mode

Toggles between “All Items” and “Tagged Items.”

Procedure for Changing the Filter

Follow these steps to select history events by process name, line number, error number, or event number.

1. From the History Buffer Display screen, type **[f]** to switch to the Change Database Filter menu.
2. Select one of the following filters:

p – process name
l – line number from source code
e – error number
v – event number

The system displays one of the following prompts:

```
Enter process index (BETWEEN 1 AND 167):  
Enter line number (BETWEEN 0 AND 9999):  
Enter error number (BETWEEN 0 AND 999):  
Enter event number (BETWEEN 0 AND 367):
```

3. Enter a number as follows:
 - For **p** (process name), select the process name you want and enter the corresponding number (see Appendix C for process names and numbers).
 - For **l** (line number from source code), enter the number requested by Exabyte Technical Support.
 - For **e** (error number), enter an error code from Appendix A.
 - For **v** (event number), enter an event number (see Appendix B for event numbers and descriptions).

Note: To return to the default, ANY, press **[Enter]**.

4. Press **[Enter]**.

The system displays the item you selected next to the filter.

5. Type **[t]** to initiate the search and tag those history events matching your filter.

The system writes the number of matching items in the “Items Tagged in Last Scan” field and adds that number to “Tagged Items in Buffer.”

6. Press **[Esc]** to return to the History Buffer screen.
7. Type **[t]** to display the tagged items on the screen.

11.7 Cartridge Inventory Screen

The Cartridge Inventory screen, shown in Figure 11-6, displays information about an element in the library. To access this screen, type **[i]** from the Console Main menu. To display information about a particular element, type **[h]** and **[l]** (the letter “L”) to highlight that element on the element display bar (D2, D1, ..., *n*).

```

F1 Help | Alt-L Log is OFF | Alt-J COM1: | Alt-B 19200 | Alt-X eXit | 10:46:39
+-----+
| EXB-218      Cartridge Inventory  [OFFLINE]                      m - Menu |
+-----+

      1 1 1 1 1 1 1 1 1
D2 D1 F 8 7 6 5 4 3 2 1 0 9 8 7 6 5 4 3 2 1

current index: 00      reserved: 0
address: 00000      hostid: 0
present: 001      res_id: 00000
tape drive: 0      warning: 000
drive_accessible: 0  pick_retries: 00000
occupied: 0      put_retries: 00000
occupied_valid: 1  scan_retries: 00000
source_index: 255  total_puts: 00000
label:      depth: 0000
label_valid: 0      long_axis: 09189
label_error: 00
sndvol_match: 0      calibrated: 1

Options: h/l - Move Cursor

```

Figure 11-6 Cartridge Inventory screen (EXB-218 shown)

Display Fields

D2, ..., *n* (Element Display Bar)

Identifiers for each element in the library, as follows:

D2 – The left or bottom tape drive.

D1 – The right or top tape drive.

F – The fixed cartridge slot.

n – The cartridge slots, from left to right or bottom to top.

Current Index

Index of the highlighted element. (The remaining fields display information about this element.)

Address

Address of the highlighted element. Can be changed using a SCSI MODE SELECT command.

Present

0 – A data cartridge or tape drive is not present in the highlighted element.

1 – A data cartridge or tape drive is present in the highlighted element.

Tape Drive

0 – The highlighted element is not a tape drive (the element is either a slot in the data cartridge magazine or the fixed cartridge slot).

1 – The highlighted element is a tape drive.

Drive Accessible

0 – The current tape drive either contains no cartridge or a cartridge is loaded in the drive (not ejected).

1 – The current tape drive contains an ejected cartridge.

Occupied

0 – The highlighted element is currently empty.

1 – The highlighted element is currently occupied.

Occupied Valid

- 0 – The information in the Occupied field may not be valid because the library door has been opened or the library has been reset.
- 1 – The information in the Occupied field is valid.

Source Index

The most recent location (element index) of the cartridge now present in the current element. The number 255 indicates the source is unknown.

Label

The last valid bar code label associated with this cartridge, if any, even if the current cartridge has no label.

Label Valid

- 0 – The information in the label field may not be valid because the library was reset or the library door has been opened since the cartridge was last scanned.
- 1 – The bar code label is valid.

Label Error

The numbers 60 through 69 indicate bar code label errors (see Appendix A). Zero indicates no label error.

Sndvol Match

- 0 – The highlighted element is not a match for a SEND VOLUME TAG command.
- 1 – The highlighted element is a match for a SEND VOLUME TAG command.

Reserved

- 0 – A host has not reserved the highlighted element.
- 1 – A host has reserved the highlighted element.

Hostid

The SCSI ID of the reserving host, if the highlighted element is reserved.

Res ID

Reservation ID assigned to the highlighted element by the reserving host, if any.

Warning

Not currently used.

Pick Retries

The number of pick retries on the highlighted element since the library was reset. A *pick* is when the CHM picks a cartridge from the highlighted element.

Put Retries

The number of put retries on the highlighted element since the last reset. A *put* is when the CHM puts or places a cartridge in the highlighted element.

Scan Retries

The number of times the bar code scanner tried to re-scan the highlighted element since the last reset.

Total Puts

The total number of puts on the highlighted element since the last reset.

Depth

The position number (in thousandths of an inch) on the short axis from home to the cartridge holder.

Long Axis

The highlighted element's position on the long axis, relative to L home.

Calibrated

- 0 – The library has not yet determined the presence of the magazine.
- 1 – The library has determined the presence of the magazine.

Options

m – Menu

Returns to the Console Main menu.

h/l – Move Cursor

h – Moves the cursor one element to the left on the element display bar and displays data for that element.

l – Moves the cursor one element to the right on the element display bar and displays data for that element.

11.8 Diagnostic Dump Screen

The Diagnostic Dump function sends an ASCII copy of a diagnostic dump to the selected serial port. A diagnostic dump contains contents of the history buffer and other pertinent information used by support personnel to troubleshoot incidents with the library. If you report a problem, you may be asked by a support person to save a diagnostic dump to a file. To access this function, type **[d]** from the Console Main menu.

```

F1 Help | Alt-L Log is OFF | Alt-J COM1: | Alt-B 19200 | Alt-X eXit | 10:46:51

Diagnostic Dump Options:

s - Set Starting History Index           [000]
n - Set Number of History Items To Dump [0300]
t - Toggle Dump Only Tagged History Items Flag [ON ]
f - Change History Database Filter

c - Continue Diagnostics Dump

```

Figure 11-7 Diagnostic Dump screen

Options

The history buffer contains up to 300 lines, beginning with the most recent event (line 000). The options available on the Diagnostic Dump screen allow you to specify that all or a portion of the history buffer be written to an output file.

s – Set Starting History Index

Allows you to specify that the events written to the output file begin with an event other than 000.

n – Set Number of History Items to Dump

Allows you to specify the maximum number of history events you want written to the output file.

t – Toggle Dump Only Tagged History Items Flag

Allows you to specify that only those events tagged in the History Buffer Display screen will be written to the output file. The two options are:

- ON – Write only the tagged events to the output file.
- OFF – Write all events specified by start number and number of items.

f – Change History Database Filter

See page 11-13.

c – Continue Diagnostics Dump

Follow these steps to perform a diagnostic dump:

1. Type [c].
2. Using your communications program, specify the file name for the diagnostic data. (For CHSTERM users, type [ALT-i] and specify the file name.) If you do not specify a path with your file name, the file is written to the default directory on the current drive.
3. Press [Enter] twice. The system writes the contents of the history buffer to the file name you specified. (For CHSTERM users, you only need to press [Enter] once.)

11.9 Self Test Screen

The Self Test screen is used to test the picking and placing operations of the CHM. To select this function, type **[s]** from the Console Main menu.

Note: Before you can perform these operations, you must switch control to either 9-pin or 25-pin control mode, depending on which of the library's connectors you are using for Diagnostics. To do so, use the CHM Control Mode menu on the LCD display (see "Setting up and Starting Diagnostics" on page 11-3).

```

F1 Help | Alt-L Log is OFF | Alt-J COM1: | Alt-B 19200 | Alt-X eXit | 10:47:07
+-----+
|                                     Self Test                                     |
+-----+
|
|          1 1 1 1 1 1 1 1          Test Status:
DZ D1 F 8 7 6 5 4 3 2 1 0 9 8 7 6 5 4 3 2 1      Delay1/Delay2: 003/003
|
|                                     Current Test: NONE
|                                     Cycles Completed: 00000
|                                     Test Time:
|
| -Cart Info-      Toggle:      Options:
|                                     b - Disable BC
| Tape Drive: 0      |                                     c - Enable Drives
| # Places: 000000   |                                     h - Cursor Left
| Occupied: 0        |                                     l - Cursor Right
| Occ. Valid: 1      |                                     t - Start Demo
| Present: 1         |                                     q - Stop Demo
| Pick Retries: 0000 |                                     x - Goto Rib Pos.
| Put Retries: 0000  |                                     s - Set Source
| Calibrated: 1      |                                     d - Set Dest.
| -Overall Statistics- |                                     g - Move Cart.
| Total Cycles: 006966 |                                     w - Reverse Move
| Pick Retries: 000000 |                                     1 - Set ST Delay 1
| Put Retries: 000003 |                                     2 - Set ST Delay 2
| Double Picks: 001654 |                                     r Redraw Screen
|
| Error Status:
| Error Number: 0
|
| System Mode: [OFFLINE]
| Bar Code Enabled: YES
| Drives Enabled: NO
|
| Current Move:
| Source: 00
| Dest: 00
|

```

Figure 11-8 Self Test screen (EXB-218 shown)

You can perform the following cartridge inventory tests from this screen:

- A *single move* moves a cartridge from a source element to a destination element. To perform a single move:
 - a. Press **[h]** and **[l]** (the letter "L") to highlight the element on the element display bar you want to pick the cartridge from.
 - b. Type **[s]** to select that element as the source. The system writes that element index into the "Source" field.

- c. Press **[h]** and **[l]** (the letter "L") to highlight the element where you want to place the cartridge.
- d. Type **[d]** to select that element as the destination. The system writes that element index into the Dest field.
- e. Type **[g]** to execute the move.
- A *reverse move* reverses the most recent move by swapping the source and destination. To perform a reverse move, type **[w]**.
- *Demo Test* performs random moves between cartridge slots. To start a demo test, type **[t]**. You can include tape drives **[c]** and bar code scans **[b]** in the test; including the tape drives is not recommended because the tape drives will not automatically eject the cartridge. To quit the demo test, type any key.

➤ **Important** Make sure you have at least one empty cartridge slot before running the demo test.

Display Fields

D2, D1, ..., *n* (Element Display Bar)

Identifiers for each element in the library, as follows:

D2 – The left or bottom tape drive.

D1 – The right or top tape drive.

F – The fixed cartridge slot.

n – The cartridge slots, from left to right or bottom to top.

Tape Drive

0 – The highlighted element is not a tape drive (the highlighted element is either a slot in the data cartridge magazine or the fixed cartridge slot).

1 – The highlighted element is a tape drive.

Places

The total number of places (or puts) on the highlighted element since the last reset.

Occupied

- 0 – The highlighted element is currently empty.
- 1 – The highlighted element is currently occupied.

The **o** option toggles between 0 and 1 for testing purposes.

Occ. Valid

- 0 – The information in the Occupied field may not be valid because the library door has been opened or the library has been reset.
- 1 – The information in the Occupied field is valid.

The **v** option toggles between 0 and 1 for testing purposes.

Present

- 0 – A data cartridge or tape drive is not present in the highlighted element.
- 1 – A data cartridge or tape drive is present in the highlighted element.

The **p** option toggles between 0 and 1 for testing purposes.

Pick Retries

The number of pick retries on the highlighted element since the last reset.

Put Retries

The number of put retries on the highlighted element since the last reset.

Calibrated

- 0 – The library has not yet determined the presence of the magazine.
- 1 – The library has determined the presence of the magazine.

Total Cycles

The total number of cartridge moves performed on all elements across resets.

Pick Retries

The total number of pick retries performed on all elements across resets.

Put Retries

The total number of put retries performed on all elements across resets.

Double Picks

EXB-018 and EXB-218 only. The number of times the CHM had to double pick to pick a cartridge from the drive since the last reset.

Delay1/Delay2

EXB-018 and EXB-218 only. The delay, in seconds, between drive picks during a Demo test.

Current Test

NONE – No test is currently running.

DEMO – A demo test is currently running.

SINGLE – A single move test is currently running.

Cycles Completed

For the demo test, the number of cycles already completed in the test.

Test Time

For the demo test, the time (in hours, minutes, and seconds) that has elapsed since the beginning of the test.

Error Number

If an error occurs, the error code. See Appendix A for a description of error codes.

System Mode

ONLINE – The console (the Diagnostics firmware) has control over the CHM, and the library is ready to accept a motion request.

OFFLINE – The console (the Diagnostics firmware) does not have control over the CHM or the library has not completed the power-on self-test, or the library door is opened.

Bar Code Enabled

YES – For the demo test, scanning the bar codes is included as part of the test.

NO – For the demo test, scanning the bar codes is not included as part of the test.

Drives Enabled

YES – For Exabyte use only.

NO – For the demo test, the tape drives are not included as part of the test.

Source

The index of the source element in the current move.

Dest

The index of the destination element in the current move.

Options

m – Menu

Returns to the Console Main menu.

b – Disable BC

Toggles between YES and NO on the Bar Code Enabled display field.

c – Enable Drives

Toggles between YES and NO on the Drives Enabled field.

➤ **Important** Because the tape drive will not automatically eject the cartridge as expected by the demo test program, do not enable the tape drive during the demo test.

h – Cursor Left

Moves the highlight to the left on the element display bar.

l – Cursor Right

Moves the highlight to the right on the element display bar.

t – Start Demo

Begins the demo test. The demo test is an infinite cycle of cartridge moves, which continues until you type any key.

➤ **Important** Make sure you have at least one empty cartridge slot before running the demo test.

q – Stop Demo

Ends the demo test program.

x – Goto Rib Pos.

Moves the CHM in front of the center rib on the data cartridge magazine.

s – Set Source

Defines the highlighted element as the pick source for a single move test.

d – Set Dest.

Defines the highlighted element as the place destination for a single move test.

g – Move Cart.

Begins the single move test.

w – Reverse Move

Reverses the most recent cartridge move (either the preceding single move or the last move in a demo test).

1 – Set ST Delay 1

EXB-018 and EXB-218 only. Exabyte use only.

2 – Set ST Delay 2

EXB-018 and EXB-218 only. Exabyte use only.

r – Redraw Screen

Refreshes the screen.

11.10 Maintenance Functions

To access the Maintenance Functions screen, type **[m]** from the Console Main menu.

```

F1 Help | Alt-L Log is OFF | Alt-J COM1: | Alt-B 19200 | Alt-X eXit | 10:47:24
+-----+
| Maintenance Functions           [OFFLINE]                      m - Menu |
+-----+
x  - Long Axis Home              j - Position to Element
v  - Short Axis Home             i - Park
o  - Open Grip To Home           y - Self Test
                                   $ - Cycle Pick/Place
                                   ! - Cycle Gripper
                                   @ - Cycle Solenoid
                                   < - Cycle Short Axis
                                   > - Cycle Long Axis

                                   S Axis:           59
                                   L Axis:           249   Cycles:
                                                of:
                                   Grip Position:    0    Element:
                                                Error:
                                                Status:

```

Figure 11-9 Maintenance Functions screen

Display fields

S Axis

Current short axis position (in thousandths of an inch).

L Axis

Current long axis position (in thousandths of an inch).

Grip Position

Current position (in steps) of gripper fingers from the home position.

Cycles

During a cycle test, the number of completed cycles.

of

During a cycle test, the number of cycles that will be performed.

Element

During a cycle test, the element in use.

Error

During a cycle test, the error number, if any.

Status

During a cycle test, the status.

Options**x – Long Axis Home**

Moves the CHM to the home position on the long axis (the topmost or rightmost position).

v – Short Axis Home

Moves the CHM to the home position on the short axis (away from the magazine).

o – Open Grip to Home

Causes the gripper to move to its home position (open). This test also recalibrates the home or zero position for the gripper.

j – Position to Element

Positions the CHM in front of a tape drive, fixed cartridge slot, or a magazine slot. When you select Position to Element, type in the element index where you want to position the CHM, then press **[Enter]**.

i – Park

Moves the CHM to the park position (at the top of the long axis for the standalone model or the right of the long axis in the rack-mount model).

y – Self Test

Causes the CHM to do the following:

- Perform a Home CHM test
- Cycle the short axis once
- Cycle the long axis once
- Move the CHM to home position

\$ – Cycle Pick/Place

Causes the CHM to take a cartridge from a specified element and replace it in the same location. When you select Cycle Pick/Place, the Set Source screen appears. Type in the source index (where you want the CHM to pick and place the cartridge) and press **[Enter]**. The Set Cycles screen appears. Type in the number of cycles you want this test to run and press **[Enter]**.

! – Cycle Gripper

Causes the CHM gripper to open and close the number of times you specify. When you select Cycle Gripper, the Set Cycles screen appears. Type in the number of cycles for the Cycle Gripper test to run and press **[Enter]**.

@ – Cycle Solenoid

Exercises the solenoid that controls the locking mechanism on the front door. When you select Cycle Solenoid, the Set Cycles screen appears. Type in the number of cycles you want the Cycle Solenoid test to run and press **[Enter]**. You will hear a click each time the solenoid extends and retracts.

(– Cycle Short Axis

Causes the CHM to move end to end along the short axis (the axis on which the CHM moves in and out). When you select Cycle Short Axis, the Set Cycles screen appears. Type in the number of cycles you want the Cycle Short Axis test to run and press **[Enter]**.

) – Cycle Long Axis

Causes the CHM to move end to end along the long axis (the axis on which the CHM moves left and right for the rack-mount model or up and down for the standalone model). When you select Cycle Long Axis, the Set Cycles screen appears. Type in the number of cycles you want the Cycle Long Axis to run and press **[Enter]**.

11.11 Bar Code CCD Data Display

The Bar Code CCD Data Display allows you to judge the validity of a bar code label. Use the Bar Code Self Test to scan the labels (see Section 11.12). To access this function, type **[b]** from the Console Main menu.

Figure 11-10 shows a scan on a valid bar code label. Figure 11-11 shows an example of an invalid bar code label. The numbers along the left column indicate the voltage for each Charge-Coupled Device (CCD) element. The CCD is a solid-state camera inside the bar code that receives an image of 2048×1 elements.

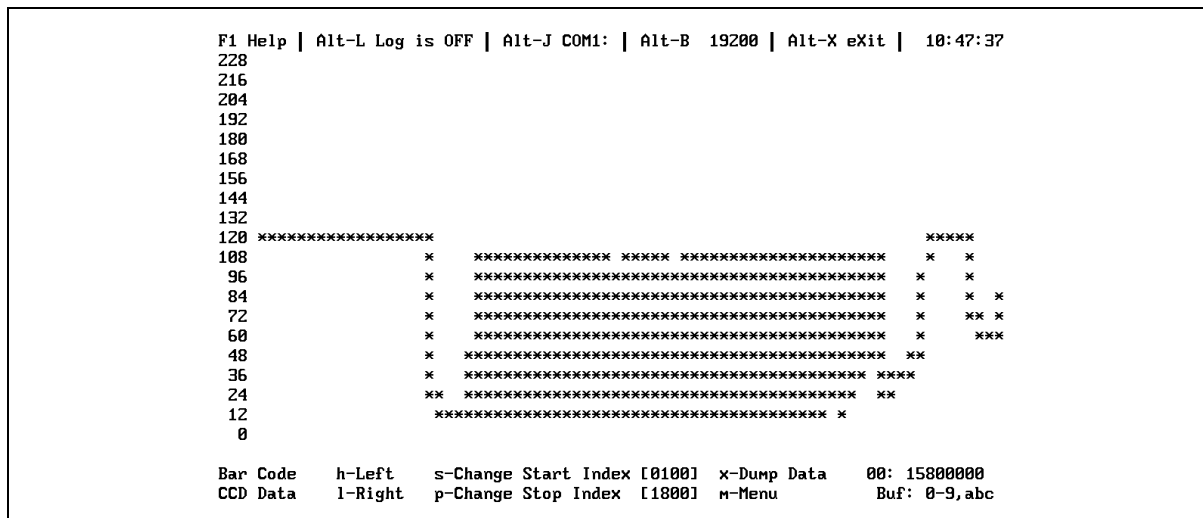


Figure 11-10 Bar Code CCD Data Display: Valid bar code

```

F1 Help | Alt-L Log is OFF | Alt-J COM1: | Alt-B 19200 | Alt-X eXit | 15:21:45
228
216
204
192
180
168
156
144
132
120 ***** *
108 * *****
 96          *
 84          *
 72
 60
 48
 36
 24
 12
  0

Bar Code   h-Left   s-Change Start Index [0100]  x-Dump Data   00: 15800000
CCD Data   l-Right  p-Change Stop Index  [1800]  m-Menu       Buf: 0-9,abc

```

Figure 11-11 Bar Code CCD Data Display: Invalid bar code

Options

m – Menu

Returns to the Console Main menu.

h – Left

Moves the contents of the buffer half a screen to the left of the current display.

l – Right

Moves the contents of the buffer half a screen to the right of the current display.

s – Change Start Index

Zooms in on the bar code data. To do so:

1. Type **[s]**. The system prompts:

Enter start index (BETWEEN 0 AND 1800)

2. Enter the number of the CCD element where you want the display to begin.

p – Change Stop Index

Used in conjunction with the Change Start Index to zoom in on the bar code data. To do so, specify a start index, then follow the steps below to specify a stop index:

3. Type **[p]**. The system prompts:

Enter stop index (BETWEEN *n* AND 2048)
where *n* is the current start index

4. Enter the number of the CCD element where you want the display to end.

x – Dump Data

Writes the contents of the buffer to a file (see the following instructions).

Note: To download bar code data to a file, you must use a program that supports ASCII data transfer protocol.

1. Type **[x]**.
2. Using your communications program, specify a file name for the bar code data. If you do not specify a path, the system will write the file to the default directory. (For CHSTERM users, type **[ALT-L]**. The system prompts you for the file name.)
3. To start the download, type any key except **[ESC]**. To abort the download, type **[ESC]**.
4. If you are using CHSTERM, press **[ALT-L]** to close the log file when the dump has finished.

Buf

Displays the results of the most recent scan performed from the Bar Code Self Test screen (see Section 11.12). To use this option, type the ID (from the following list) of the element you want to view. After a moment, the results of the most recent bar code scan will appear.

EXB-018 and EXB-218

0 through 8 – The current nine cartridge slots. Use the [9] option on the Bar Code Self Test screen to toggle between the first and second nine cartridge slots. Buffer 9 is not used.

- a – The fixed cartridge slot.
- b – The right or top tape drive.
- c – The left or bottom tape drive.

EXB-210

0 – The fixed cartridge slot.

1, 2, 3, 4, 5, 6, 7, 8, 9, A – The ten cartridge slots in the data cartridge magazine.

- b – The right or top tape drive.
- c – The left of bottom tape drive.

11.12 Bar Code Self Test Screen

The Bar Code Self Test screen allows you to scan a bar code label and obtain information about the bar codes in the library. To access this function, type [f] from the Console Main menu.

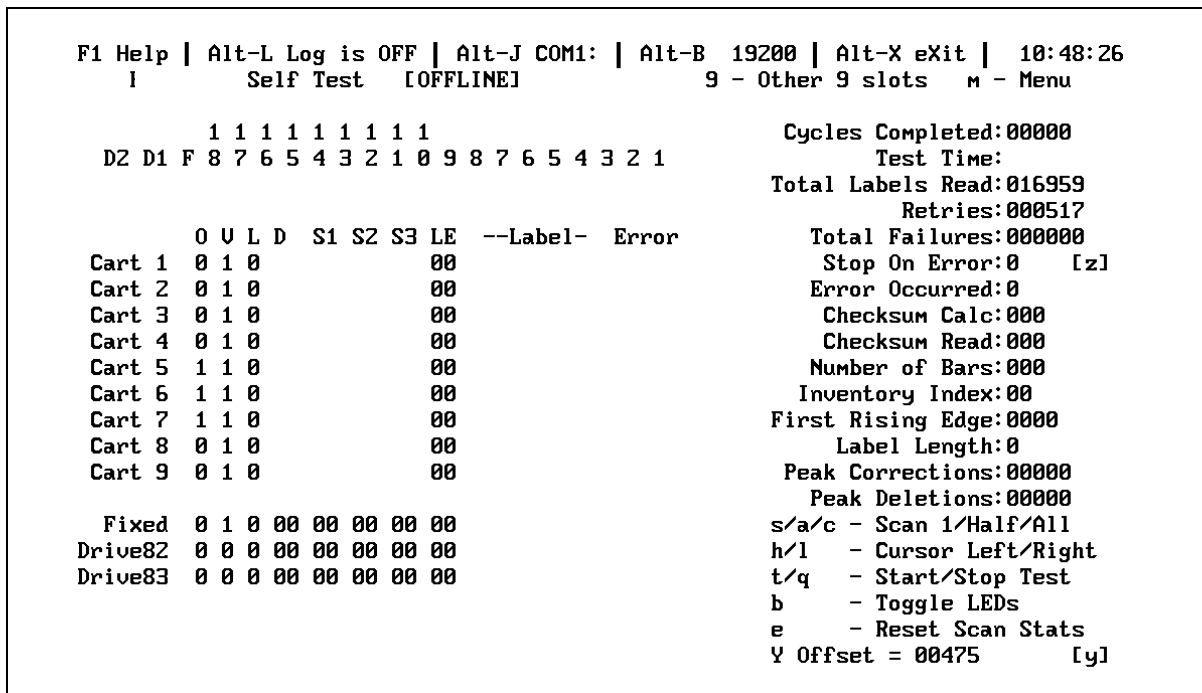


Figure 11-12 Bar Code Self Test screen (EXB-218 shown)

Display Fields

D2, ..., *n* (Element Display Bar)

Identifiers for each element in the library, as follows:

D2 – The left or bottom tape drive.

D1 – The right or top tape drive.

F – The fixed cartridge slot.

n – The cartridge slots, from left to right or bottom to top.

Cart 1 through 9 (EXB-018 and EXB-218) or Cart 1 through 10 (EXB-210)

EXB-018 and EXB-218. The current nine cartridges in the data cartridge magazine (type [9] to display information for the other nine cartridges).

EXB-210. The ten cartridges in the data cartridge magazine.

Fixed

The fixed cartridge slot.

Drive 82

The right or top tape drive.

Drive 83

The left or bottom tape drive.

O – Occupied

- 0 – The highlighted element is currently empty.
- 1 – The highlighted element is currently occupied.

V – Occupied Valid

- 0 – The information in the Occupied field may not be valid because the library door has been opened, or the library has been reset.
- 1 – The information in the Occupied field is valid.

L – Label Valid

- 0 – The information in the bar code label field may not be valid because the library door has been opened, or the library has been reset.
- 1 – The bar code label is valid.

D

Exabyte use only.

S1

Exabyte use only.

S2

Exabyte use only.

S3

Exabyte use only.

LE

The numbers 60 through 69 indicate bar code label errors (see Appendix A). Zero indicates no label error.

Label

The last valid bar code label, if any, even if the current cartridge has no label.

Error

If any, displays one of the following bar code error conditions:

- NO READ – The bar code scanner could not read the label.
- BAD CHAR – An invalid character was found on the label.
- CHK ERROR – A checksum error occurred.
- NO STOP – No stop character was found in the bar code.
- NO START – No start character was found in the bar code.
- NO LABEL – There is no label on the current cartridge.

If this field is blank, there is no error condition.

Cycles Completed

The number of cycles completed for this bar code scan test.

Test Time

The amount of time this test has been running.

Total Labels Read

The cumulative number of labels read by the bar code scanner, across resets.

Retries

The cumulative number of retries generated by the bar code scanner, across resets.

Total Failures

The cumulative number of failures generated by the bar code scanner, across resets.

Stop On Error

When set, this flag causes the bar code scanner to stop after the first cartridge that it could not read with 0 retries. Type [z] to toggle this flag on (1) and off (0).

Error Occurred

This flag is set whenever a label cannot be read on the first attempt. It is reset when the test begins.

Checksum Calc

The checksum calculated from the most recently scanned label.

Checksum Read

The checksum read off the most recently scanned label.

Number of Bars

The number of black and white bars on the most recently scanned label. In the EXB-210, for a standard 8mm 8-character label, the number of bars should be 110. In the EXB-018 or EXB-218, for a standard 4mm 6-character label, the number of bars should be 90.

Inventory Index

The index of the most recently scanned label.

First Rising Edge

The CCD element index at which the edge of the first black bar was detected.

Label Length

The number of characters in the most recently scanned label, for example, 8.

Peak Corrections

The number of times the bar code decoder has used alternate algorithms to successfully decode a bar code label. The number is cumulative, since the last reset.

Peak Deletions

The number of times the bar code decoder has used alternate algorithms to successfully decode a bar code label. The number is cumulative, since the last reset.

Y Offset

Exabyte use only.

Options

9 – Other 9 Slots

EXB-018 and EXB-218 only. Toggles between the first nine (topmost or rightmost) cartridge slots, and the second nine.

m – Menu

Returns to the Console Main menu.

s/a/c – Scan 1/Half/All

s – Scan 1. Scans a specific bar code label, as follows:

1. Press [h] or [l] (the letter "L") to highlight the element you want to scan.
2. Type [s] to scan that element.

a – Scan Half (EXB-018 and EXB-218) or Scan Mag (EXB-210). In the EXB-018 and EXB-218, this option scans half of the data cartridge magazine. In the EXB-210, this option scans the entire data cartridge magazine.

c – Scan All. Scans the data cartridge magazine, the fixed cartridge holder, and the tape drives.

➤ **Important** If a cartridge does not have a bar code label, there will be a delay while the bar code scanner attempts a successful scan.

h/l – Cursor Left/Right

h – Moves the highlight to the left on the element display bar.

l – Moves the highlight to the right on the element display bar.

t/q – Start/Stop Test

Starts and stops the Bar Code Scan test, which scans bar code labels in a continuing cycle.

b – Toggle LEDs

Turns the bar code scanner's LEDs on and off (for testing purposes).

e – Reset Scan Stats

Resets the Total Labels Read, Retries, and Total Failures counters to zero.

11.13 Calibration Screen (EXB-018 and EXB-218 only)

The calibration screen displays the calibrated positions (in thousandths of an inch) of all data elements in the library for the EXB-018 and EXB-218 4mm libraries. You must recalibrate the library whenever you replace or add a tape drive, or when you replace the controller card or the CHM. To access this function, type **[k]** from the Console Main menu.

F1 Help Alt-L Log is OFF Alt-J COM1: Alt-B 19200 Alt-X eXit 10:48:46											
Calibration			[OFFLINE]		Drive Pick/Put: 2794			Magazine Short Axis Depth:			
-----					Slot Pick/Put: 3165			Current Last		Delta	
M - Menu					Drive Focus: 430			-----		-----	
9 - Other 9 Slots					Slot Focus: 530			0000		0000 0000	
								Key:		Position:	
Slot 1	0	1	00102	00125	-023	00125	-023	Mag. 0	18181818	04548	
Slot 2	0	1	00596	00618	-022	00618	-022	Fixed	EEEEEEEE	09189	
Slot 3	0	1	01090	01111	-021	01111	-021	Drive0	00000000	09999 H	
Slot 4	0	1	01584	01603	-019	01603	-019	Drive1	22222222	11758 H	
Slot 5	1	1	02078	02096	-018	02096	-018				
Slot 6	1	1	02572	02589	-017	02589	-017				
Slot 7	1	1	03066	03089	-023	03089	-023				
Slot 8	0	1	03560	03582	-022	03582	-022				
Slot 9	0	1	04054	04075	-021	04075	-021				
Fixed	0	1	09189	09254	-065	09254	-065				
Drive0	0	0	10036	10036	0000	10036	0000	1 - Calibrate Library			
Drive1	0	0	11758	11796	-038	11796	-038				

Figure 11-13 Calibration screen (EXB-218 shown)

Display Fields

Calibration

OFFLINE – Indicates that the library is not in 9-pin or 25-pin serial port mode. You must be in one of the serial port modes to calibrate the library. (Use the operator panel to change to 9-pin or 25-pin serial port mode, depending on which connector you are using.)

ONLINE – Indicates that the library is in serial port mode.

Drive Pick/Put

The short axis position used to pick from and place to the tape drives.

Slot Pick/Put

The short axis position used to pick from and place to the fixed cartridge slot and the magazine slots.

Drive Focus

The position from which the bar code scanner can read labels on cartridges that are protruding from the tape drives.

Slot Focus

The position which the bar code scanner can read a label on a cartridge in the fixed cartridge slot or the magazine.

Magazine Short Axis Depth: Current

Not currently implemented.

Magazine Short Axis Depth: Last

Not currently implemented.

Magazine Short Axis Depth: Delta

Not currently implemented.

Slots 1 through 9

The current nine cartridges in the data cartridge magazine (type [9] to display information for the other nine cartridges). The associated columns display information about the data cartridge slots in the data cartridge magazine.

Fixed

The fixed cartridge slot. The associated columns display information about the fixed cartridge slot.

Drive0

The right or top tape drive. The associated columns display information about the tape drive.

Drive1

The left or bottom tape drive. The associated columns display information about the tape drive.

OCC – Occupied

- 0 – This element is currently empty.
- 1 – This element is currently occupied.

VLD – Occupied Valid

- 0 – The information in the Occupied field may not be valid because the library door has been opened or the library has been reset.
- 1 – The information in the Occupied field is valid.

FND

Not currently implemented.

CUR

The current calibrated long axis position of this element.

LAST

The last calibrated long axis position of this element since power-on.

DELT

The difference between the current and last calibrated positions.

DEFLT

The factory default of the calibrated position.

DELT

The difference between the current and default calibrated positions.

Mag. 0 Key and Position

Key – 18181818 indicates that the Position is valid. Any other value indicates that the Position is not valid.

Position – The calibrated long axis position of the data cartridge magazine.

Fixed Key and Position

Key – EEEEEEEE indicates that the Position is valid. Any other value indicates that the Position is not valid.

Position – The calibrated long axis position of the fixed cartridge slot.

Drive0 Key and Position

Key – 1111111 indicates that the Position is valid. Any other value indicates that the Position is not valid.

Position – The calibrated long axis position of Drive 0 (the top or rightmost tape drive).

Drive1 Key and Position

Key – 2222222 indicates that the Position is valid. Any other value indicates that the Position is not valid.

Position – The calibrated long axis position of Drive 1 (the bottom or leftmost tape drive).

Options

m – Menu

Returns to the Console Main menu.

9 – Other 9 Slots

Toggles between the first nine and second nine slots in the data cartridge magazine.

I – Calibrate Library

Calibrating the library determines the exact position of each data element so the CHM can properly pick and place cartridges.

➤ **Important** Do not calibrate the library using the Calibration option on the LCD. That option allows you to calibrate after replacing a tape drive with another tape drive of the same model. When you are first installing tape drives in a library, or when you are changing the model of tape drives installed in a library (EXB-018 only), you must run the procedure described in this chapter.

Before calibrating the library

1. Make sure the library is in serial port mode (9-pin or 25-pin).
2. Install an empty data cartridge magazine.
3. Make sure the tape drives and fixed cartridge slot are empty.
4. Install one or two calibration blocks, as described below.

Install the calibration blocks

The library is shipped with two calibration blocks in the accessory kit. You must install a calibration block into each installed tape drive. If you installed one tape drive and one drive blank, the library recognizes the drive blank and does not require a calibration block for that slot.

Note: The library must go through its initialization process in order to detect the presence of the calibration blocks. Initialization occurs after the door is closed, a reset, or a power-on.

1. Insert a calibration block into each installed tape drive as shown in Figure 11-14. Make sure the calibration blocks are fully seated. It does not matter which way you orient them.

Note: If you have installed Hewlett-Packard tape drives, the calibration blocks fit tightly; insert the blocks slowly.

2. Close and lock the library door.

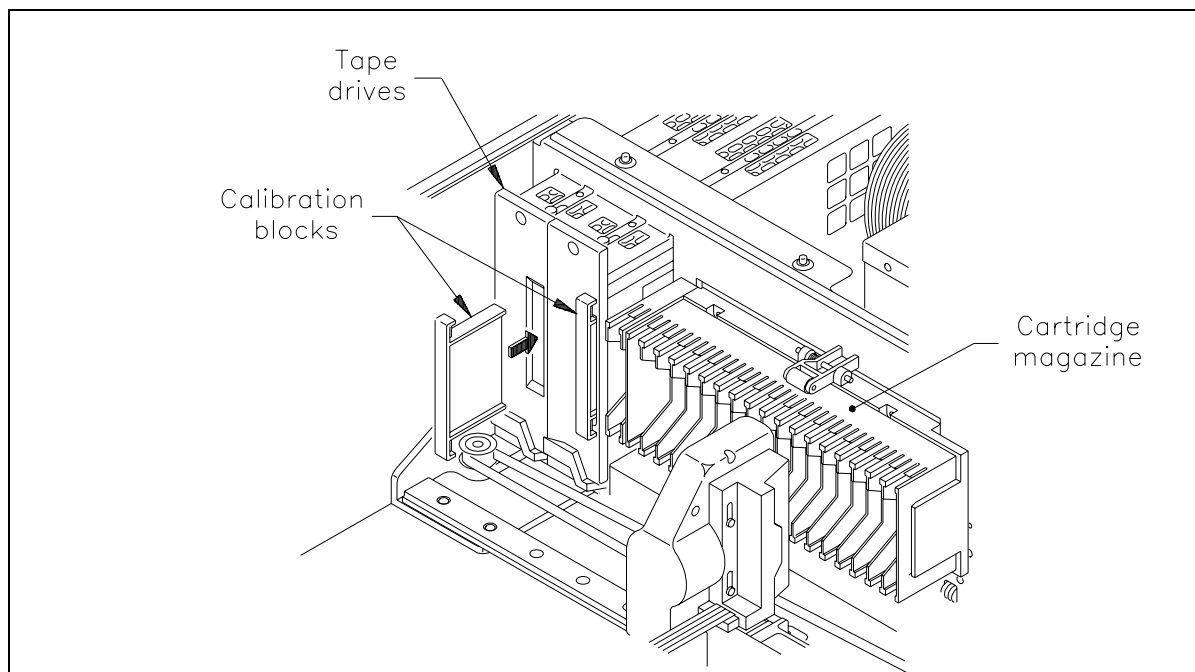


Figure 11-14 Installing the calibration block

Calibrate the library

1. Type **[I]** (the letter “L”) to select Calibrate Library. The system displays a box showing the drive type option or options for your library, and the following prompt at the bottom of the screen:

Enter drive type (BETWEEN 0 AND 3):

2. Enter the number associated with your tape drive.

0 – Exabyte 4mm tape drive
 1 – Sony 4mm tape drive
 2 – Hewlett Packard 4mm tape drive
 3 – Conner 4mm tape drive

3. The system configures the library for the tape drive model you selected and calibrates the position of the magazine, the fixed slot, and any tape drives you have installed. When the process is complete, the Calibration screen displays the following message:

CAL Complete

4. Remove the calibration blocks and store them in a convenient location. Tape drives must be re-calibrated whenever they are replaced. (If you replace a tape drive with another of the same model, you can re-calibrate the library from the operator panel. See the instructions provided with the drive carrier kit.)

11.14 SCSI ASC and ASCQ Data Screen

The SCSI ASC and ASCQ Data screen displays SCSI sense data which will be returned if the next command is a REQUEST SENSE (03h) command. This information is used to display sense data created as a result of the last command sent by each host and to display the Unit Attention condition pending for each host, if any. For more information, see the SCSI reference for your library.

To access this screen, type **[a]** from the Console Main menu. The screen shown in Figure 11-15 appears.

F1 Help Alt-L Log is OFF Alt-J COM1: Alt-B 19200 Alt-X eXit 10:48:59										
SCSI ASC/ASCQ Data										M - Menu
SCSI SENSE DATA										
HOST	SENSE	ASC	ASCQ	SKSV	CD	BPU	BP	FP	PREU DOOR	UA
0	0x00	0x00	0x00	0	0	0	0	00	0	1
1	0x00	0x00	0x00	0	0	0	0	00	0	1
2	0x00	0x00	0x00	0	0	0	0	00	0	1
3	0x00	0x00	0x00	0	0	0	0	00	0	1
4	0x00	0x00	0x00	0	0	0	0	00	0	1
5	0x00	0x00	0x00	0	0	0	0	00	0	1
6	0x00	0x00	0x00	0	0	0	0	00	0	1
7	0x00	0x00	0x00	0	0	0	0	00	0	1

Unit Attention Codes:		
0: No UA	3: Mode Select Change	6: SEQ to SCSI Mode
1: Bus Reset	4: New Firmware	7: LCD to SCSI Mode
2: Front Door Closed	5: Console to SCSI Mode	

Figure 11-15 SCSI ASC and ASCQ Data screen

Display Fields

Host

The SCSI ID of the host or initiator that "owns" the sense data.

Sense

The sense key value currently in effect for each host.

ASC

The Additional Sense Code (ASC) value currently in effect for each host.

ASCQ

The Additional Sense Code Qualifier (ASCQ) value currently in effect for each host.

SKSV

The Sense Key Specific Valid (SKSV) value currently in effect for each host.

CD

The Command Data (CD) value currently in effect for each host.

BPV

The Bit Pointer Valid (BPV) value currently in effect for each host.

BP

The Bit Pointer (BP) value currently in effect for each host.

FP

The Field Pointer (FP) value currently in effect for each host.

PREV DOOR

Indicates whether any host has issued a PREVENT MEDIUM REMOVAL command to the library, as follows:

- 0 – The host has not issued a PREVENT MEDIUM REMOVAL command.
- 1 – The host has issued a PREVENT MEDIUM REMOVAL command.

Note: If any host has issued a PREVENT MEDIUM REMOVAL command, the operator cannot open the library door.

UA

What caused the Unit Attention condition for each host, as follows:

- 0 – No UA.** No Unit Attention condition.
- 1 – Bus Reset.** SCSI bus reset occurred.
- 2 – Front Door Closed.** The front door was closed.
- 3 – Mode Select Change.** MODE SELECT parameters have been changed.
- 4 – New Firmware.** New firmware has been loaded.
- 5 – Console to SCSI Mode.** Control of the CHM has changed from the Console to SCSI.
- 6 – SEQ to SCSI Mode.** Control of the CHM has changed from Sequential CTS 1 or Sequential CTS 2 to SCSI.
- 7 – LCD to SCSI Mode.** Control of the CHM has changed from the LCD to SCSI.

Options

m – Menu

Returns you to the Console Main menu.

11.15 SCSI Chip History Screen

The SCSI Chip History screen reflects the current status of the library's SCSI chip. The information is used only by Exabyte Technical Support to troubleshoot problems on the SCSI bus and is therefore not described in this manual. You may be asked to display this screen and relay information to Exabyte Technical Support. To access this function, type [p] from the Console Main menu.

11.16 SCSI Mode Select Information 1 Screen

The SCSI Mode Select Information 1 screen displays some of the current and saved parameter values that were set using the MODE SELECT (15h) command (see Section 11.17, "SCSI Mode Select Information 2 Screen," for the remaining MODE SELECT values). You can also use this screen to change any parameter values shown.

To access the SCSI Mode Select Information 1 screen, type [1] from the Console Main menu. The screen shown in Figure 11-16 appears.

F1 Help Alt-L Log is OFF Alt-J COM1: Alt-B 19200 Alt-X eXit 10:49:27			
+-----+ SCSI Mode Select Information 1 m - Menu +-----+			
Element Address Page	Current	Saved	Options:
CHM Address	00086	00086	e - Element Defaults
Number of CHM Elements	00001	00001	t - Clear Save Element
First Storage Address	00000	00000	v - Parity Defaults
Number of Storage Elements	00019	00019	c - Clear Save Parity
First Drive Element Address	00082	00082	p - Toggle Cur Parity
Number of Drive Elements	00002	00002	s - Toggle Sav Parity
Entry/Exit Port Address	00000	00000	i - Inc Parity Retries
Number of Entry/Exit Ports	00000	00000	d - Dec Parity Retries
Parity Page	Current	Saved	
Parity <1=Enabled, 0=Disabled>	1	1	
Parity Retries	001	001	

Figure 11-16 SCSI Mode Select Information 1 screen (EXB-218 shown)

Display Fields

The *Current* fields display the default values or the current values as set using the MODE SELECT command.

The *Saved* fields display the values stored in nonvolatile memory. The library uses the saved values, if they are available, after the library is reset.

Element Address Page

CHM Address

Indicates the address (current and saved) of the CHM. The default is 86. You can change this using the MODE SELECT command (see the SCSI reference for your library).

Number of CHM Elements

Indicates the number of CHM elements (current and saved). Must be 1.

First Storage Address

Indicates the address (current and saved) of the first data cartridge slot. The default is 0. You can change this using the MODE SELECT command (see the SCSI reference for your library).

Number of Storage Elements

Indicates the number of storage elements (current and saved). For the EXB-210, there must be 11 (10 slots in the data cartridge magazine plus one in the fixed cartridge holder). For the EXB-018 and EXB-218, there must be 19 (18 slots in the data cartridge magazine plus one in the fixed cartridge holder).

First Drive Element Address

Indicates the address (current and saved) of the first tape drive. The default is 82. You can change this using the MODE SELECT command (see the SCSI reference for your library).

Number of Drive Elements

Indicates the number of tape drives (current and saved) present in the library. Must be either 0, 1, or 2.

Entry/Exit Port Address

Must be 0.

Number of Entry/Exit Ports

Must be 0.

Parity Page

Parity (1=Enabled, 0=Disabled)

0 – SCSI bus parity checking is disabled (current and saved).

1 – SCSI bus parity checking is enabled (current and saved). The default is enabled.

Parity Retries

Indicates the maximum number of times the library will retry an operation after it detects a parity error. The valid values for this field are 0 through 255, where 0 indicates that no retries are performed. The default is 1.

Options

m – Menu

Returns to the Main Console menu.

e – Element Defaults

Assigns the element default values listed in Table 11-1 to the current Mode Select setting:

Table 11-1 Element default values

Element	Default
CHM Address	86
Number of CHM Elements	1
First Storage Address	0
Number of Storage Elements	EXB-210: 11 EXB-018/EXB-218: 19
First Drive Element Address	82
Number of Drive Elements	Number of installed tape drives
Entry/Exit Port Address	0
Number of Entry/Exit Ports	0

t – Clear Save Element

Clears the saved element page. The current element values will be set to the default values (see Table 11-1).

v – Parity Defaults

Sets the current parity settings to the default values listed in Table 11-2:

Table 11-2 Parity defaults

Setting	Default
Parity	1 (check parity)
Parity Retries	1

c – Clear Save Parity

Clears the saved parity page. The current parity values will be set to the default parity values shown in Table 11-2.

p – Toggle Cur Parity

Toggles the current parity setting.

s – Toggle Sav Parity

Toggles the saved parity setting. The current parity setting is set to the new saved parity setting.

i – Inc Parity Retries

Increments the current number of parity retries.

d – Dec Parity Retries

Decrements the current number of parity retries.

11.17 SCSI Mode Select Information 2 Screen

The SCSI Mode Select Information 2 screen allows you to change the contents of the LCD display. To access this screen, type **[2]** from the Console Main menu. The screen shown in Figure 11-17 appears.

```

F1 Help | Alt-L Log is OFF | Alt-J COM1: | Alt-B 19200 | Alt-X eXit | 10:49:38
+-----+
|          SCSI Mode Select Information 2          | M - Menu |
+-----+

Default LCD Display Parameters          Options:
Messages                               a/b/c/d - New Cur Msg On Line 1/2/3/4
Line 1:  " Exabyte EXB-218  "          e/f/g/h - New Sav Msg On Line 1/2/3/4
Line 2:  "VER 4.13.5 10:53:18 "          t/s - Toggle Cur/Sav Security Flag
Line 3:  "                      "          k/v - Toggle Cur/Sav Keypad Mode
Line 4:  "                      "          i/j - Set Cur/Sav Beeper Duration
                                      x/y - Set Cur/Sav Parm's to Default
                                      z - Clear Saved Parameters

-- Current LCD Display Parameters --    ---- Saved LCD Display Parameters ----
Mode 1/2/3/4:  DEF /DEF /DEF /DEF      Mode 1/2/3/4:  DEF /DEF /DEF /DEF
Messages
Line 1:  " Exabyte EXB-218  "          Line 1:  "                      "
Line 2:  "VER 4.13.5 10:53:18 "          Line 2:  "                      "
Line 3:  "                      "          Line 3:  "                      "
Line 4:  "                      "          Line 4:  "                      "
SCSI LCD Security: 0                    SCSI LCD Security: 0
Keypad Passthru Mode: 0 Beeper: 0      Keypad Passthru Mode: 0 Beeper: 0

```

Figure 11-17 SCSI Mode Select Information 2 screen (EXB-218 shown)

Display Fields

Default LCD Display Parameters

Messages, Lines 1 through 4 Shows the default message that will appear on the four-line LCD (operator panel), unless the host is controlling one or more lines.

Current LCD Display Parameters

Mode 1/2/3/4 Indicates the originator of the message being displayed.

DEF – Default. The message was generated by the library's firmware.
 SCSI – The message was generated by the host or by using this screen.

Messages, Lines 1 through 4 Shows the text currently displayed on the LCD screen, created using either the **a/b/c/d** option or the **e/f/g/h** option from this screen or by using the MODE SELECT command.

SCSI LCD Security Indicates the current setting of the SCSI LCD Security bit set by using the **t/s** option or using the MODE SELECT command, as follows:

- 0 – SCSI LCD security is not active.
- 1 – SCSI LCD security is active.

Setting this bit prevents access to the following activities:

- Changing the control mode
- Changing SCSI IDs
- Changing SCSI parity checking
- Performing LCD diagnostics
- Using the options for cleaning the tape drives
- Calibrating the library (EXB-018 and EXB-218 only)
- Enabling or disabling the Use Mammoth option (EXB-210 only)

A user trying to access the LCD menu options for these activities receives an error message.

Note: You can also enable security from the LCD by typing in a password. Instructions are provided in the installation and operation manual for your library. Whichever method you use to enable security (LCD or MODE SELECT), you must use the same method (LCD or MODE SELECT) to disable LCD security.

Keypad Passthru Mode Exabyte use only.

Beeper Exabyte use only.

Saved LCD Display Parameters

Shows the contents of the LCD display as stored in nonvolatile memory. The library uses the saved values after the library is reset. (There may not be saved settings.)

Mode 1/2/3/4 Indicates the originator of the message being displayed.

DEF – Default. The message was generated by the library's firmware.
SCSI – The message was generated by the host or by using this screen.

Messages, Lines 1 through 4 Shows the saved text, either created by the **e/f/g/h** option from this screen or by issuing a MODE SELECT command with the Saved Page bit set to 1.

SCSI LCD Security Indicates the saved setting of the SCSI LCD Security bit set by the MODE SELECT command or the **s** option. The settings for this bit are as follows:

0 – SCSI LCD security is not active.

1 – SCSI LCD security is active.

When this bit is set, access to the following activities is prevented:

- Changing the control mode
- Changing SCSI IDs
- Changing SCSI parity checking
- Performing LCD diagnostics
- Using the options for cleaning the tape drives
- Calibrating the library (EXB-018 and EXB-218 only)
- Enabling or disabling the Use Mammoth option (EXB-210 only)

A user trying to access the LCD menu options for these activities receives an error message.

Note: You can also enable security from the LCD by typing in a password. Instructions are provided in the installation and operation manual for your library. Whichever method you use to enable security (LCD or MODE SELECT), you must use the same method (LCD or MODE SELECT) to disable security.

Keypad Passthru Mode Exabyte use only.

Beeper Exabyte use only.

Options

m – Menu

Returns to the Console Main menu.

a/b/c/d – New Cur Msg on Line 1/2/3/4

Allows you to change the contents of the current LCD (and the Current LCD Display Parameters window). For example, to change line 1:

1. Type [a].

Note: To change line 2, type [b]. To change line 3, type [c]. To change line 4, type [d].

2. Type the text of that line as you want it to appear on the LCD display. Your changes will take effect when you press [Enter].

e/f/g/h – New Sav Msg on Line 1/2/3/4

Allows you to change the contents of the Current LCD and the Saved LCD (and the Saved LCD Display Parameters window). For example, to change line 1:

1. Type [e].

Note: To change line 2, type [f]. To change line 3, type [g]. To change line 4, type [h].

2. Type the text of that line as you want it to appear on the LCD. Your changes will take effect when you press [Enter].

t/s – Toggle Cur/Sav Security Flag

t – Toggles the current setting for the LCD security flag

s – Toggles the saved setting for the LCD security flag. The current setting is then set to the saved setting.

k/v – Toggle Cur/Sav Keypad Mode

Exabyte use only.

i/j – Set Cur/Sav Beeper Duration

Exabyte use only.

x/y – Set Cur/Sav Parm to Defaults

x – Replaces the current parameters with the default parameters.

y – Replaces the saved and current parameters with default parameters.

z – Clear Saved Parameters

Erases the saved LCD display parameters. Replaces the current parameters with defaults.

11.18 SCSI Miscellaneous Information Screen

The SCSI Miscellaneous Information screen displays information about various library operations and settings. This screen also contains a table of reserved elements. To access this screen, type [o] from the Console Main menu. The screen shown in Figure 11-18 appears.

F1 Help Alt-L Log is OFF Alt-J COM1: Alt-B 19200 Alt-X eXit 10:49:55						
+-----+-----+-----+-----+-----+-----+-----+						
SCSI Miscellaneous Information						m - Menu
+-----+-----+-----+-----+-----+-----+-----+						
Element	Element	Element	Host	Reservation	Reserved Unit	= 0
Index	Address	Type	ID	ID	Reserved ID	= 0
0	0	SLOT	----	NONE	-----	
1	1	SLOT	----	NONE	-----	Disconnected = 0
2	2	SLOT	----	NONE	-----	
3	3	SLOT	----	NONE	-----	Prevent Door = 0
4	4	SLOT	----	NONE	-----	
5	5	SLOT	----	NONE	-----	
6	6	SLOT	----	NONE	-----	Offline = 0
7	7	SLOT	----	NONE	-----	Initialization = 0
8	8	SLOT	----	NONE	-----	LCD = 0
9	9	SLOT	----	NONE	-----	Console = 0
10	10	SLOT	----	NONE	-----	Sequential = 0
11	11	SLOT	----	NONE	-----	Door Open = 0
12	12	SLOT	----	NONE	-----	
Reservation Options:						
t/T - Top		d/D - Down 1/5 Lines				
b/B - Bottom		u/U - Up 1/5 Lines				

Figure 11-18 SCSI Miscellaneous Information screen (EXB-218 shown)

Display Fields

Reserved Unit

- 0 – The library is not reserved.
- 1 – The library is reserved.

Reserved ID

The SCSI ID (0 through 7) of the host that has reserved the library.

Disconnected

- 0 – The library is not busy processing a command.
- 1 – The library is busy processing a command for a host (for example, processing a move command) and will reconnect when finished.

Prevent Door

Set by the SCSI PREVENT/ALLOW MEDIUM REMOVAL command.

- 0 – The library door can be unlocked manually.
- 1 – The library door cannot be unlocked manually.

Offline

- 0 – The library is online.
- 1 – The library is offline. That is, it is not ready to process SCSI motion commands. When the library is offline, at least one of the following fields will contain a 1.

Initialization

- 0 – The library is not performing an initialization
- 1 – The library is performing an initialization and is not ready.

LCD

- 0 – The library is not in LCD control mode.
- 1 – The library is in LCD control mode.

Console

- 0 – The library is not in either 4-pin, 9-pin, or 25-pin Control Mode.
- 1 – The library is in either 4-pin, 9-pin, or 25-pin Control Mode.

Sequential

- 0 – The library is not in sequential drive 1 or sequential drive 2 mode.
- 1 – The library is in sequential drive 1 or sequential drive 2 mode.

Door Open

- 0 – The library door is closed and locked.
- 1 – The library door is opened or unlocked.

Element Index

- 0 – Fixed cartridge slot.
- 1 through n – Data cartridge slots, from left to right or bottom to top.
- 82 – The right or top tape drive.
- 83 – The left or bottom tape drive.
- 86 – The CHM.

Element Address

Same as Element Index, unless the host has changed the addresses using the MODE SELECT command.

Element Type

- SLOT – Cartridge slot.
- DRIVE – Tape drive.
- CHM – Cartridge handling mechanism.

Host ID

The SCSI ID of the reserving host, if the element is reserved.

Reservation ID

Reservation ID assigned by the reserving host, if any.

Options

t/T – Top

EXB-018 and EXB-218 only. Displays the elements beginning at 0.

b/B – Bottom

EXB-018 and EXB-218 only. Displays the elements, ending at 86 (CHM).

d/D – Down 1/5 Lines

EXB-018 and EXB-218 only.

d – Moves the display down 1 line.

D – Moves the display down 5 lines.

u/U – Up 1/5 Lines

EXB-018 and EXB-218 only.

u – Moves the display up 1 line.

U – Moves the display up 5 lines.

m – Menu

Returns to the Console Main menu.

11.19 Configuration Screen

The Configuration screen shows the configuration of this library. The screen is used only by Exabyte to configure the library before shipping, and is therefore not described in this manual. To view this screen, type [c] from the Console Main menu.

11.20 Drive Status Screen (EXB-210 only)

The Drive Status screen displays information about the tape drives in the EXB-210 library. To access this screen, type [e] from the Console Main menu.

```

F1 Help | Alt-L Log is OFF | Alt-J COM1: | Alt-B 19200 | Alt-X eXit | 15:24:05
Mammoth # 1 -----
P/O/U/A/C: 1/0/1/1/0
Serial: 0060000750
BOOT: 8BM1-U13
FLASH: 8CM1U30
# packets: 8270
pass_thru: 0
state: SELECT
err state: ??
connects: 1

Mammoth # 2 -----
P/O/U/A/C: 1/1/1/1/0
Serial: 0060000725
BOOT: 8BM1-U13
FLASH: 8CM1U30
# packets: 8270
pass_thru: 0
state: SEND_HEAD
err state: ??
connects: 1

Mammoth # 3 -----
P/O/U/A/C: 0/0/1/0/0
Serial: Unknown
BOOT: Unknown
FLASH: Unknown
# packets: 0
pass_thru: 0
state: ??
err state: ??
connects: 0

Mammoth # 4 -----
P/O/U/A/C: 0/0/1/0/0
Serial: Unknown
BOOT: Unknown
FLASH: Unknown
# packets: 0
pass_thru: 0
state: ??
err state: ??
connects: 0

```

Figure 11-19 Drive Status screen (Exabyte Mammoth tape drives shown)

Display fields

Tape Drives

Identifies the tape drive. Mammoth # 1 (or Drive 1 for 8x05 and Eliant 820 tape drives) is the tape drive closest to the magazine. Mammoth # 2 (or Drive 2 for 8x05 and Eliant 820 tape drives) is furthest from the magazine. Mammoth # 3 and # 4 are not used by the EXB-210.

P – Present

- 0 – A tape drive is not present.
- 1 – A tape drive is present.

O – Occupied

- 0 – There is no cartridge loaded in the tape drive.
- 1 – There is a cartridge loaded in the tape drive.

V – Occupied Valid

- 0 – The information in the Occupied field may not be valid because the library door has been opened, or the library has been reset.
- 1 – The information in the Occupied field is valid.

A – Accessible

- 0 – A cartridge is loaded in the tape drive or the tape drive's status is unknown.
- 1 – A cartridge is protruding from the tape drive or the tape drive is empty.

C – Clean

- 0 – The tape drive is clean.
- 1 – The tape drive is not clean.

Serial

Exabyte Mammoth tape drives only. The serial number of the tape drive.

BOOT

Exabyte Mammoth tape drives only. The code level of the tape drive's boot ROM.

FLASH

Exabyte Mammoth tape drives only. The code level of the tape drive's flash EEPROM.

packets

Exabyte Mammoth tape drives only. Exabyte use only.

Pass_thru

Exabyte Mammoth tape drives only. Exabyte use only.

State

Exabyte Mammoth tape drives only. Exabyte use only.

Err state

Exabyte Mammoth tape drives only. Exabyte use only.

Connects

Exabyte Mammoth tape drives only. Exabyte use only.

Warning

EXB-8x05 and Eliant 820 tape drives only. Exabyte use only.

Options

m – menu

Returns to the Console Main menu. (Not shown on the Mammoth Drive Status screen.)

11.21 Transfer Control to ROM

Transfer Control to ROM allows you to transfer into a ROM menu where you can save your current flash firmware and write new firmware to the library's flash EEPROM. The new firmware may be sent to you on a diskette, or you can download it from Exabyte's Internet site (<http://www.exabyte.com>) or Technical Support Bulletin Board Service (BBS). (For more information, contact Exabyte Technical Support.)

CAUTION

Because of memory limitations, the library cannot validate the new firmware data before erasing and reprogramming the flash EEPROM. If the checksum calculated by the library does not match the embedded checksum (see ROM Console Main screen), the new firmware is unusable. Therefore, *before* performing the write firmware operation, perform the read firmware operation to save your existing firmware on your host PC.

To transfer control of the library to ROM:

1. Type [t] from the Console Main menu. The system displays the following prompt (see Figure 11-20).

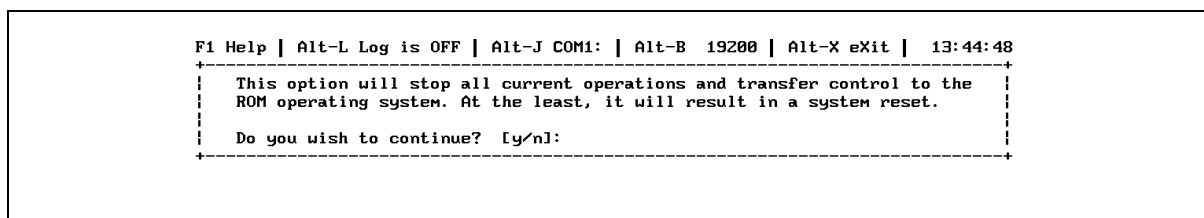


Figure 11-20 Transfer Control to ROM screen

2. Type [y] to continue. The system transfers to the ROM Console Main screen.

ROM Console Main screen

The ROM Console Main screen displays information about the firmware (see Figure 11-21).

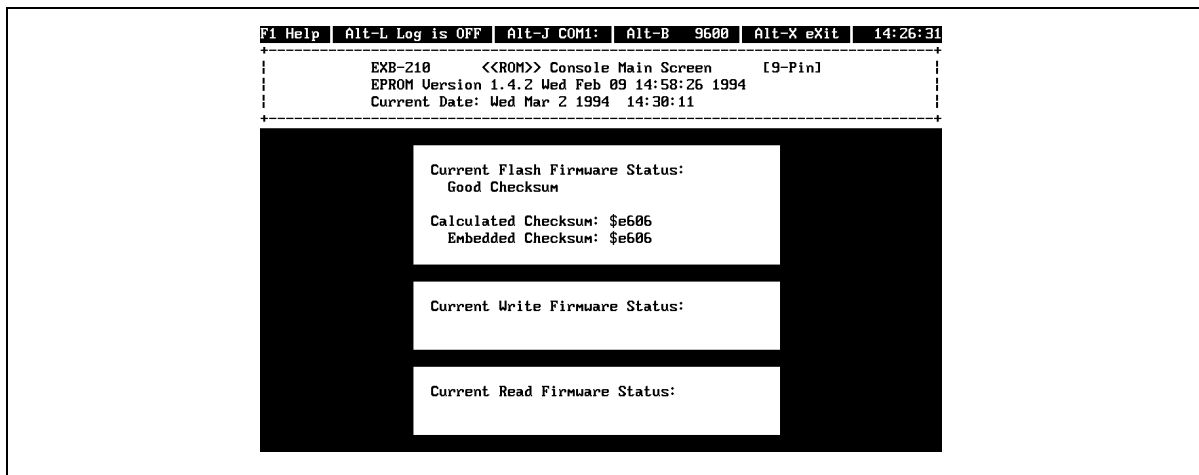


Figure 11-21 ROM Console Main screen (EXB-210 shown)

Field Descriptions

Current Flash Firmware Status Displays one of the following conditions:

- **Bad Checksum** The flash EEPROM does not contain valid firmware; the calculated checksum does not match the embedded checksum.
- **Good Checksum** The flash EEPROM contains valid firmware; the calculated checksum and the embedded checksum are the same.

Calculated Checksum Contains the calculated flash checksum. The checksum is calculated each time the library is reset, and after a firmware read and write. Discrepancies between this number and the embedded checksum (below) indicate a problem with the firmware write. If this occurs, attempt the firmware write again. If the error still occurs, rewrite the old firmware using the file you saved during the read operation and contact Exabyte Technical Support. The error may indicate incompatible versions of flash EEPROM and boot ROM.

Embedded Checksum The checksum embedded in the firmware. This number must match the calculated checksum.

Current Write Firmware Status Indicates the status after an XMODEM write firmware operation is completed.

Current Read Firmware Status Indicates the status after an XMODEM read firmware operation is completed.

ROM Console Menu

From the ROM Console Main screen, type **[m]** to return to the ROM Console menu. The system switches to the ROM Console menu (see Figure 11-22).

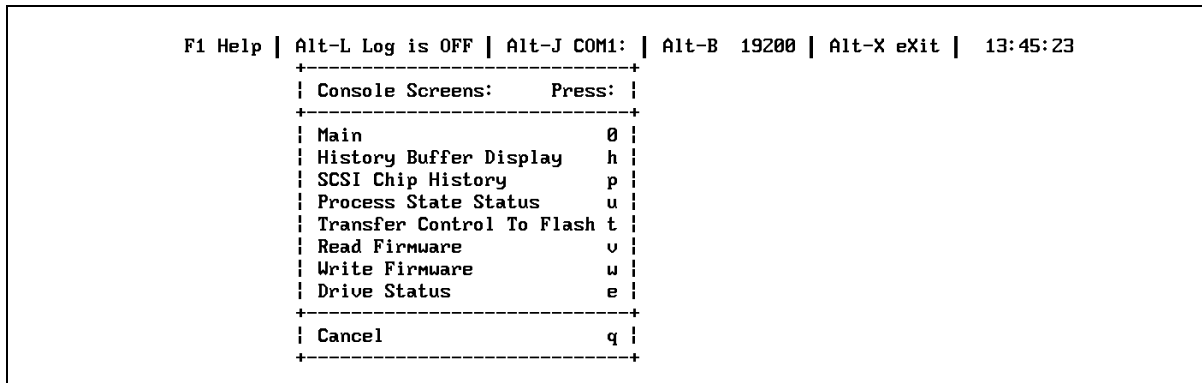


Figure 11-22 ROM Console menu

Menu Options

0 – Main Displays the ROM Console Main screen (see Figure 11-21).

h – History Buffer Display Same as History Buffer Display in flash EEPROM (see Section 11.6), without use of filters.

p – SCSI Chip History Same as SCSI Chip History in flash EEPROM (see Section 11.15).

u – Process State Status Exabyte use only.

t – Transfer Control to Flash Transfers control back to flash EEPROM. This is only allowed if the current flash firmware status indicates a good checksum.

v – Read Firmware Uses an XMODEM protocol to read the firmware from the library flash EEPROM. This is used to save the previous version of firmware before writing new firmware.

w – Write Firmware Uses an XMODEM protocol to write new firmware to the library's flash EEPROM.

e – Drive Status Displays the status of installed tape drives (see Section 11.20).

q – Cancel Returns to the previous screen.

Read Firmware

This section gives the procedure for reading firmware. This operation reads your existing firmware and saves it in a file on your host computer's hard disk. If you receive a bad checksum error after writing new firmware, you can rewrite the old firmware using the file you create during this operation.

Note: Make sure you have at least 512 KB of free space on your hard disk before performing a read firmware operation.

1. From the ROM Console menu, type **[v]** to read firmware. The system displays the following instructions (see Figure 11-23).

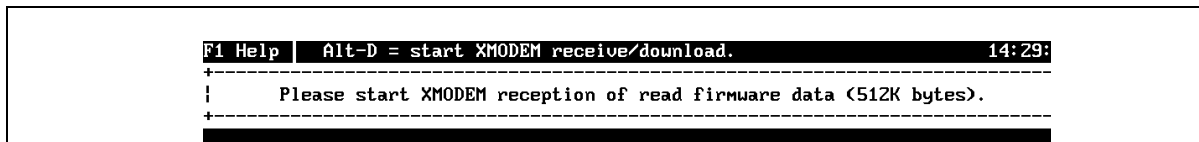


Figure 11-23 Initiating the read firmware operation

2. Enter the path and filename on your host computer's hard disk where you want the read program to write your current firmware, and press **[Enter]**. (For CHSTERM users, type **[ALT-D]**, type in the path and filename, and press **[Enter]**.) The system displays a progress report during the read operation (see Figure 11-24).

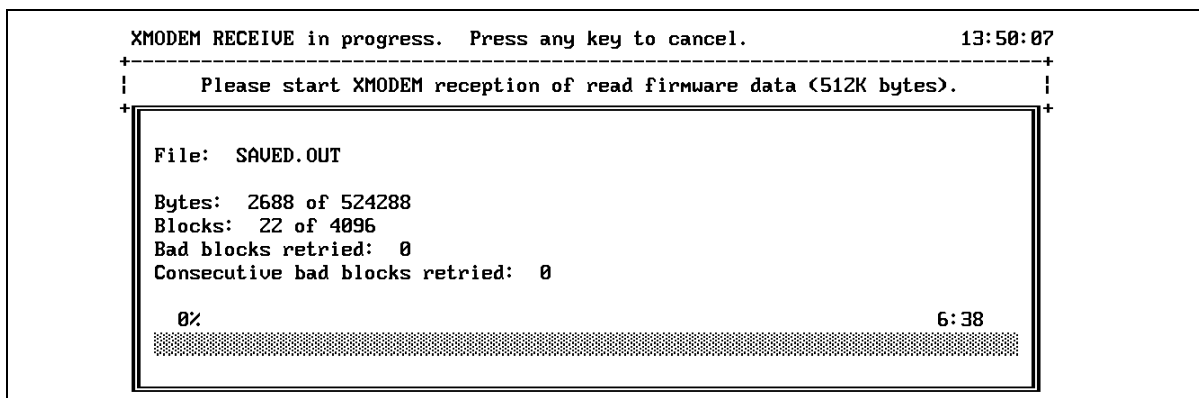


Figure 11-24 Online progress report for firmware read

When the firmware read has completed successfully, the system displays the message: File Received Successfully. The library resets and displays the ROM Console Main screen.

Write New Firmware

This section gives the procedure for writing new firmware.

CAUTION

Because of memory limitations, the library cannot validate the new firmware data before erasing and reprogramming the flash EEPROM. If the checksum calculated by the library after the write operation does not match the embedded checksum (see ROM Console Main screen), the new firmware is unusable. Therefore, before performing the write firmware operation, perform the read firmware operation to save your existing firmware on your host PC.

1. From the ROM menu, type **[w]** to write new firmware. The system displays the following instructions (see Figure 11-25).

```
F1 Help | Alt-L Log is OFF | Alt-J COM1: | Alt-B 19200 | Alt-X eXit | 13:57:37
Write Flash EEPROM Code
```

This option is used to program the flash EEPROM with new firmware. Before beginning this process, you must have a copy of the new firmware and an XMODEM file transfer program. If you decide to proceed with this option the following actions will occur:

1. The library flash EEPROM will be erased.
2. You will be instructed to prepare the XMODEM transfer of the new code to the library.
3. The flash EEPROM will be programmed with the new firmware.
4. After the flash EEPROM has been programmed with the new firmware, the Checksum is validated. If the Checksum is valid, control is transferred to the flash EEPROM. If the Checksum is not valid, the Main ROM console screen will be displayed, with the status of the Firmware Upgrade.

Are you sure you want to Write Firmware to the flash EEPROM (y/n)?:

Figure 11-25 Displaying instructions for writing new firmware

2. Type **[y]** to continue. The system displays the following prompt:

CAUTION

Make sure you have your new firmware ready to be installed. Once you type **[y]**, your current firmware will be erased and you will not be able to stop the file transfer process.

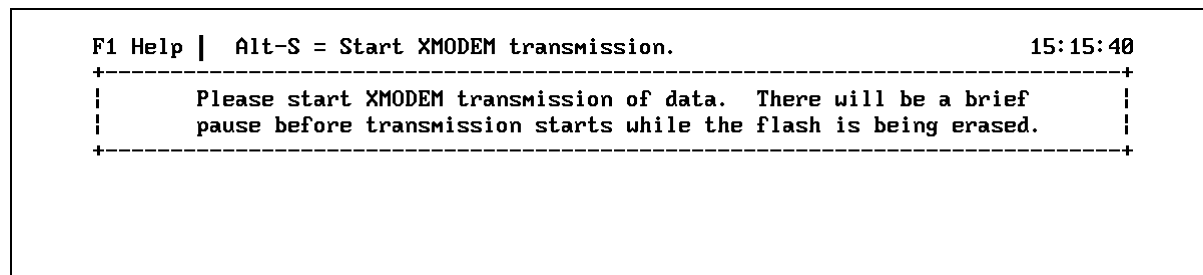


Figure 11-26 Starting the XMODEM transfer of new firmware

3. Use your communications program to specify the path and filename of the firmware. (For CHSTERM users, type **[ALT-S]** and the path and filename of the firmware you want to load.)

Note: If necessary, you can use wild card characters (*.*) and press **[Enter]** to search your drives and directories for the filename.

4. Select or type in the file name you want and press **[Enter]**. The system initiates the firmware upgrade, displaying its progress on the screen.
5. When the upgrade has completed successfully, the system transfers control to the new flash EEPROM code which then performs a power-on self test.
6. Press any key to return to the Console Main screen or press **[m]** to return to the Console Main menu.

A Error Codes

This appendix describes the error codes for the library and corrective actions for each error condition.

CAUTION

If you reset the library, you may disrupt communications on all connected SCSI buses. Always make sure there is no SCSI activity on any connected SCSI bus before resetting the library.

The following table lists the library error conditions in numerical order. The columns in the table indicate the following:

- **Error Number.** The error code's number, which appears on the library's operator panel LCD or on the Console screen when the error occurs.
- **Description.** A description of the error.
- **Corrective Action.** Corrective actions.

Table A-1 Error Codes

Error Number	Description	Corrective Action
10	DROPPED A CARTRIDGE. The CHM dropped a cartridge.	Put the cartridge back in the magazine if you know where it goes and reset the library. If the problem occurs again, contact Exabyte Technical Support. CAUTION: Do not try to put the cartridge back in the CHM gripper.
11	SOURCE EMPTY. There is no cartridge in the source location.	Install a cartridge in the source location, or redirect the CHM to another location.
12	DESTINATION FULL. A cartridge already exists in the destination location.	Remove the cartridge from the destination or redirect the CHM to another location.
13	PUT MECH. FAILURE. The CHM could not successfully place a cartridge because of mechanical problems.	Make sure there is nothing blocking the CHM or the tape drives. If the error persists, contact Exabyte Technical Support.
14	PICK MECH. FAILURE. The CHM could not successfully pick a cartridge because of mechanical problems.	
15	NO SRC ELEMENT; NO DEST ELEMENT.	Install a data cartridge magazine or redirect the CHM.
16	No data cartridge magazine was installed at the selected location.	
17	CHM FULL BEFORE MOVE. There was a cartridge in the gripper when the operator powered-on or reset the library, or before a move operation.	Remove the cartridge and put it back in the cartridge magazine if you know where it goes. Make sure the library and tape drives are not being used by any host, then press RESET on the operator panel. If the error persists, contact Exabyte Technical Support.
18	SRC CART IN DRIVE. The CHM could not successfully pick a cartridge because it was still loaded in the tape drive.	Press the tape drive eject button and wait for the cartridge to be unloaded, or redirect the CHM to another location.

Table A-1 Error Codes (*continued*)

Error Number	Description	Corrective Action
19	PICK MECH. FAILURE. The CHM could not successfully pick from a full cartridge slot.	<p>Open the door and look for anything that might be obstructing the CHM gripper.</p> <p>Make sure the library and tape drives are not being used by any host, then press Reset on the operator panel. If the error persists, contact Exabyte Technical Support.</p>
21	GRIP HOME ERROR. A gripper error occurred.	
22	GRIP MOTION TIMEOUT. A gripper motion took longer than the maximum time allocated for it. When motion functions do not complete in the allocated time, the current to the servo motors is shut off.	
25	PICK STALL. The CHM stalled while trying to pick a cartridge from the tape drive.	
26	CANNOT OPEN GRIPPER. The gripper could not open.	<p>Open the door and look for anything that might be obstructing the CHM gripper.</p> <p>Make sure the library and tape drives are not being used by any host, then press RESET on the operator panel. If the error persists, contact Exabyte Technical Support.</p>
30	S AXIS DOES NOT MOVE. The CHM could not move along the short axis.	
31	S AXIS FAILED HOME. The CHM could not return to the home position along the short axis.	
36	S LM629 FAILURE. The library could not reset the servo chip for the short axis.	<p>Make sure the library and tape drives are not being used by any host, then press RESET on the operator panel. If the error persists, contact Exabyte Technical Support.</p>
38	CANNOT LOAD DRIVE. The CHM could not load the cartridge into the tape drive. (It could not move in far enough on the short axis.)	<ul style="list-style-type: none"> ▪ Open the door and look for anything that might be obstructing the CHM along its short axis. ▪ Make sure that a cartridge is not already loaded in the tape drive. ▪ Make sure that the flap on the cartridge is closed. ▪ Make sure the library and tape drives are not being used by any host, then press Reset on the operator panel. If the error persists, contact Exabyte Technical Support.

Table A-1 Error Codes *(continued)*

Error Number	Description	Corrective Action
40	L AXIS DOES NOT MOVE. The CHM could not move along the long axis.	Open the door and look for anything that might be obstructing the CHM gripper.
41	L AXIS FAILED HOME. The CHM could not return to the home position on the long axis.	Make sure the library and tape drives are not being used by any host, then press RESET on the operator panel. If the error persists, contact Exabyte Technical Support.
46	L LM629 RESET FAIL. The library could not reset the servo chip for the long axis.	Make sure the library and tape drives are not being used by any host, then press RESET on the operator panel. If the error persists, contact Exabyte Technical Support.
60	NO LABEL. The bar code scanner could not read the bar code label because there was no label on the cartridge.	If present, this error appears on the Label Info screen. If the cartridge does not have a label, place a label on the cartridge. If the cartridge does have a label, reposition or replace it. If the error persists, contact Exabyte Technical Support.
61	READ ERROR. The bar code scanner could not read the bar code label because the label was unreadable.	
62	NOT PRESENT. The bar code scanner could not read the bar code label because there was no data cartridge magazine present.	If present, this error appears on the Label Info screen. If necessary, install a data cartridge magazine.
65	DMA OVERRUN. The bar code scanner could not read the bar code label because a Direct Memory Access overrun occurred.	If present, this error appears on the Label Info screen. Make sure the library and tape drives are not being used by the host, then press RESET on the operator panel.
67	DMA CH. 2 TIMEOUT. Controller board error.	If the error persists, contact Exabyte Technical Support.
69	LABEL UPSIDE DOWN. The bar code scanner could not read the bar code label because the label is upside down.	If present, this error appears on the Label Info screen. Remove the label and reposition it on the cartridge. If the label is affixed correctly, contact Exabyte Technical Support.
70	L SERVO TIMEOUT. The CHM could not reach its destination along the long axis.	Open the door and look for anything that might be obstructing the CHM along its long axis. Make sure the library and tape drives are not being used by any host, then press RESET on the operator panel. If the error persists, contact Exabyte Technical Support.

Table A-1 Error Codes (*continued*)

Error Number	Description	Corrective Action
71	PARAMETER > LIMIT. Firmware error.	<p>Make sure the library and tape drives are not being used by any host, then press RESET on the operator panel.</p> <p>If the error persists, contact Exabyte Technical Support. You may be asked to supply a diagnostic listing, and you may need new firmware.</p>
72	FRONT DOOR OPEN. The front door is open or the door solenoid is malfunctioning.	<ul style="list-style-type: none"> ▪ Close and lock the door. ▪ If the error still appears, make sure the library and tape drives are not being used by any host, then press RESET on the operator panel. ▪ If the error persists, contact Exabyte Technical Support.
73	S SERVO TIMEOUT. The CHM could not reach its destination along the short axis.	<p>Open the door and look for anything that might be obstructing the CHM along its short axis.</p> <p>Make sure the library and tape drives are not being used by any host, then press RESET on the operator panel. If the error persists, contact Exabyte Technical Support.</p>
75	INTERNAL S/W ERROR. Firmware error.	<p>Make sure the library and tape drives are not being used by any host, then press RESET on the operator panel.</p> <p>If the error persists, contact Exabyte Technical Support. You may be asked to supply a diagnostic listing, and you may need new firmware.</p>
76	POS ERROR TIMEOUT. The CHM could not reach its destination along the long axis.	<p>Open the door and look for anything that might be obstructing the CHM along its long axis.</p> <p>Make sure the library and tape drives are not being used by any host, then press RESET on the operator panel. If the error persists, contact Exabyte Technical Support.</p>
77	INTERFACE DISABLED. The library was not in the correct control mode when the operator sent a command.	<p>Make certain you have set the correct control mode. If it is, contact Exabyte Technical Support.</p>

Table A-1 Error Codes (*continued*)

Error Number	Description	Corrective Action
90	INVALID BLANK CONFIG. The drive blank configuration is invalid.	This error applies to earlier models of the library only. If you operate the library with one tape drive, you must have a drive blank installed in the outermost slot.
91	OPERATOR ABORTED. A diagnostic was aborted while it was in progress.	No corrective action required.
97	DRIVE NOT INSTALLED. The tape drive could not be cleaned because no tape drive is installed in this location.	This error only appears on the Clean Drives Menu. If no tape drive is installed in the location, redirect the CHM. If a tape drive is installed, make sure that the drive carrier is correctly seated. If the error persists, contact Exabyte Technical Support.
98	NO MAGAZINE. There is no magazine installed in this location.	If no magazine is installed in that location, redirect the CHM. If a magazine is installed, make sure that it is correctly seated on the mounting plate. If the error persists, contact Exabyte Technical Support.
104	DRIVE DID NOT EJECT. The CHM timed out waiting for a tape drive to eject a cartridge.	There may be a problem with the tape drive. Call Exabyte Technical Support.
108	INCOMPATIBLE BOOT ROM. The installed boot ROM is not compatible with the flash EEPROM code.	You do not have the correct boot ROM for the firmware you are trying to run in your library. Call Exabyte Technical Support.
109	CHECK CLEANER. The cleaning cartridge was ejected immediately after being loaded into the tape drive.	<p>Replace the cleaning cartridge. Make sure you are using the correct cleaning cartridge for your tape drive. If the error persists, contact Exabyte Technical Support.</p> <p>Note: This error is displays only if the cleaning was requested from the operator panel.</p>
130	FAS216 ERROR; SCSI UNEXPECTED INT; SCSI INT STUCK ERROR. There is a SCSI chip failure.	<p>Make sure the library and tape drives are not being used by any host, then press RESET on the operator panel.</p> <p>If the error persists, contact Exabyte Technical Support. You may be asked to supply a diagnostic listing; you may need new firmware or a new controller card.</p>
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B Event Names

This appendix lists the event names and numbers you can use as filters when searching for processing events in the history buffer. See Chapter 11 for instructions.

B Event Names

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HISTORY_SERIAL_SHORT	20	HISTORY_CDB_PARITY1	66
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HISTORY_SERIAL_BADF	25	HISTORY_SCSI_RET_ERROR	71
HISTORY_SERIAL_UA	26	HISTORY_SCSI_IDE_MSG	72
HISTORY_SERIAL_OFFLINE	27	HISTORY_SCSI_REJ_MSG	73
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HISTORY_SERIAL_INQ	33	HISTORY_SCSI_ID_DIFF	78
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HISTORY_GO	244	HISTORY_LRETRY	278
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HISTORY_PICK_EMPTY	246	HISTORY_MODE_SEQ2	280
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HISTORY_DIAG_LONG	305	HISTORY_CON_RETRACT	339
HISTORY_DIAG_DRUM	306	HISTORY_LCD_DIAG_STATUS	340
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HISTORY_CON_POE	313	HISTORY_DRIVE_STATUS	347
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C Process Names

This appendix lists the process names and numbers you can use as filters when searching for processing events in the history buffer. See Chapter 11 for instructions.

C Process Names

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PSID_OFFL	5	PSID_DATAI	39
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PSID_SM	8	PSID_MSGI	42
PSID_SEQ	9	PSID_IES	43
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