CONVEX 3480-Compatible Cartridge Tape Drive Service Guide

Document No. 081-006730-001

First Edition, Rev. 1
September 1990

CONVEX Computer Corporation
Richardson, Texas USA

CONVEX 3480-Compatible Cartridge
Tape Drive Service Guide
Order No. DHW-062
First Edition, Rev. 1

Printed in the United States of America

Revision Sheet

CONVEX 3480-Compatible Cartridge Tape Drive Service Guide

Edition	Document	Date	Description
First, Rev.1	081-006730-001	September 1990	Made minor corrections including correcting dip switch settings.
First	081-006730-000	June 1990	First release of the *CONVEX 3480-Compatible Cartridge Tape Drive Service Guide.*

FCC NOTICE

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

Do not connect external equipment to the utility outlets in CONVEX equipment cabinets. Unauthorized connection voids all agencies' emissions certifications.

Table of Contents

Appendixes

List of Tables

List of Figures

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Preface

Purpose and Audience

The *CONVEX 3480-Compatible Cartridge Tape Service Guide* provides a general overview of the CONVEX 3480-compatible cartridge tape system and related hardware and shows how to:

- Install the 3480-compatible cartridge tape system and related hardware
- Integrate the 3480-compatible cartridge tape system into the CONVEX Operating System (ConvexOS)
- Test the 3480-compatible cartridge tape system and related hardware
- Remove and replace the 3480-compatible cartridge tape system and related hardware

Audience

This document is intended for:

- CONVEX Customer Support Engineers and CONVEX manufacturing personnel
- Customers who need to install a 3480-compatible cartridge tape system and related hardware

Organization

The document consists of the following:

- **Chapter 1. Description and Specifications**—Describes the 3480-compatible cartridge tape system and related hardware at the block diagram level. Defines and lists the electromechanical and environmental specifications.
- **Chapter 2. Unpacking and Installation**—Provides guidelines on how to unpack and install the 3480-compatible cartridge tape and related hardware.
- **Chapter 3. Integration and Test**—Explains how to integrate the 3480-compatible cartridge tape system into the CONVEX operating system. Explains how to test the 3480-compatible cartridge tape drive and 3480-compatible formatter.
- **Chapter 4. Maintenance Procedures and IPB**—Provides removal and replacement instructions for the 3480-compatible cartridge tape system and related hardware. Provides an Illustrated Parts Breakdown (IPB) for the cables of the 3480-compatible cartridge tape system.
- **Appendix A. Fujitsu 2481B Tape Subsystem Configurator** —Contains a copy of the Fujitsu 2481B Tape Subsystem Configurator document.
- **Appendix B. Reporting Problems**—Provides an example of the CONVEX ***contact*** utility for reporting minor software and hardware problems.

Notational Conventions

The following are examples of warnings, cautions, and notes and their typical content as used in CONVEX documents:

WARNING

Warnings highlight procedures or information necessary to avoid injury to personnel. A warning immediately precedes the critical information and includes a description of the hazard.

CAUTION

Cautions highlight procedures or information necessary to avoid damage to equipment, loss of data, or invalid test results. A caution immediately precedes the critical information and includes a description of the possible damage.

NOTE

Notes highlight useful information that is supplemental in nature. A note may immediately precede or follow the information that is being highlighted.

Associated Documents

The following is a partial list of other manuals or books that may provide more detailed information on the topics presented in this manual:

- *CONVEX Diagnostic Utility Manual (C1, C120)*, Order No. DHW-072
- *CONVEX Diagnostic Utility Manual (C200 Series)*, Order No. DHW-082
- *CONVEX Installation Guide (C200 Series)*, Order No. DHW-096
- *CONVEX PBUS I/O System Diagnostics Manual*, Order No. DHW-008
- *CONVEX Processor Operation Guide (C100 Series, C200 Series)*, Order No. DHW-015
- *CONVEX System Manager's Guide*, Product No. DSW-004
- *CONVEX VIOP/VBCU Service Guide*, Order No. DHW-051
- *CONVEX VMEbus Reference Manual*, Order No. DHW-061
- *CONVEX VMEbus SCSI Host Adapter Service Guide*, Order No. DHW-060
- *CONVEX VMEbus Service Kit*, Order No. DHW-050

- *Ciprico Rimfire 3510 SCSI Host Adapter and Floppy Disk Controller Reference Manual,* CONVEX Part No. 900-000425-001
- *Electrostatic Discharge Failures of Semiconductor Devices.* Unger, B.A. 1981. Bell Laboratories
- *Fujitsu Cartridge Tape Controller Customer Engineering Manual,* CONVEX Part No. 900-000444-001
- *Fujitsu Cartridge Tape Drives CE Manual,* CONVEX Part No. 900-000443-001
- *The VMEbus SPECIFICATION C.1,* Motorola Inc.

Ordering Documentation

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- The comment

Reader's Forum

If you wish to mail your comments to us, please use the form at the end of this manual and list the document page number with your questions and comments. Thank you.

Acknowledgments

I would like to thank the following people for their contributions to this manual:

- Technical contributors: Larry Price
- Document review team: Ray Anderson, Rob Carruthers, Alan Gant, Alan Hasty, Harold Hinson, Allan Koh, Joe Machado, John Rachels, Andy St Martin, Dick Shelton, Chip Stroup, Cari Tuttle, Lihwen Wu
- Hardware documentation staff: Larry Bonura and Josie Davis

Without the efforts of the aforementioned, this document would not have been possible.

Bill Benson
CONVEX I/O Documentation

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Chapter 1
Description and Specifications

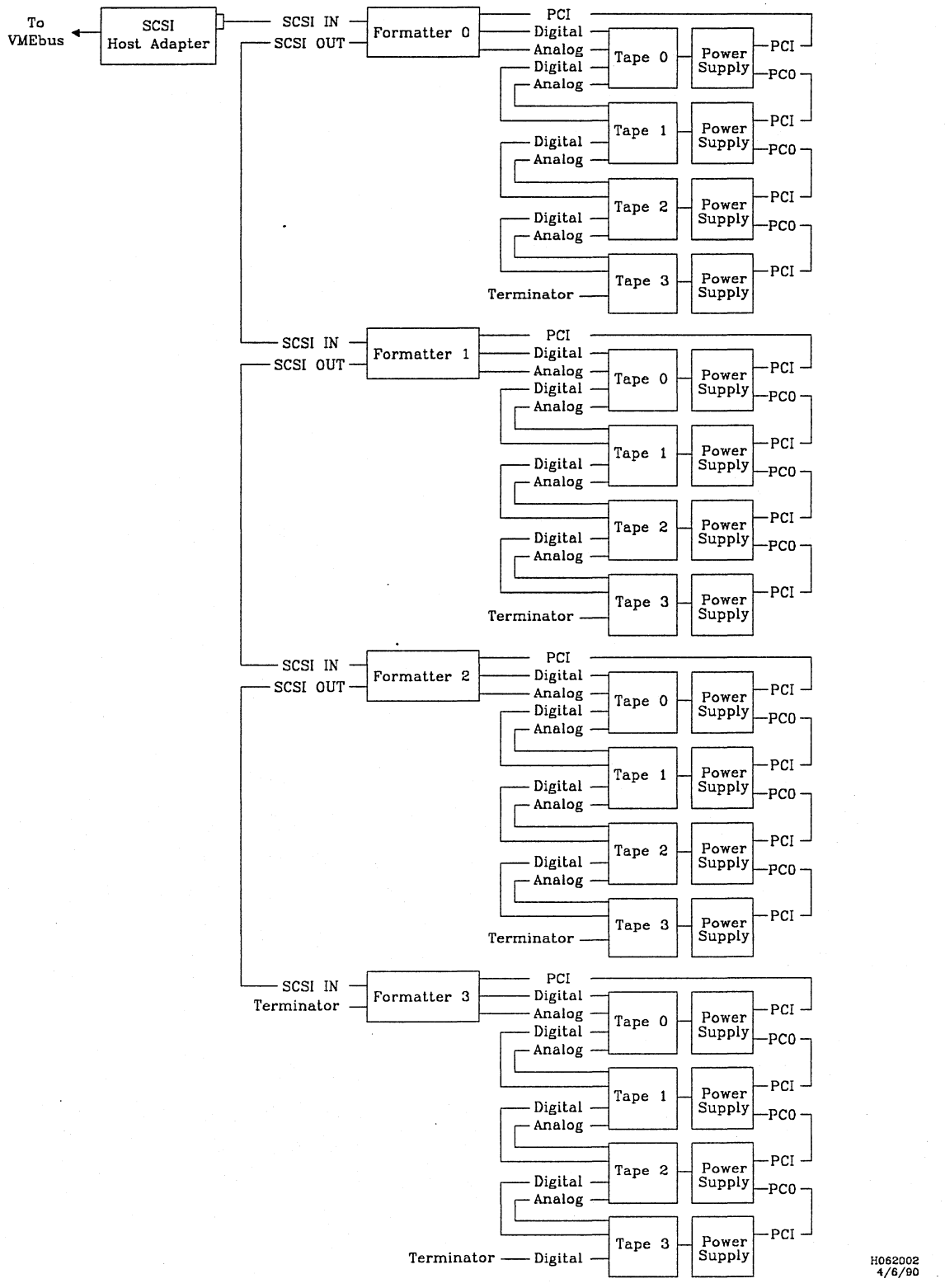
1.1 Overview

The CONVEX 3480-compatible cartridge tape system is a high-performance 1/2-inch cartridge tape with a 4-inch by 4-inch form factor. The peak data transfer rate is 3 Mbytes/second with a total storage capacity of 200 Mbytes. A single VMEbus SCSI host adapter can control up to 4 formatters. Each formatter can operate up to 4 tape drives. A maximum system configuration with 1 VMEbus SCSI host adapter would include 4 formatters and 16 cartridge tape drives.

> **NOTE**
>
> A maximum of 16 CONVEX 3480-compatible cartridge tape drives can be connected to a single VMEbus Input/Output Processor (VIOP).
>
> For performance reasons, customers may elect to limit the number of devices attached to a single host adapter to a maximum of 2 formatters and 4 tape drives.

This chapter describes the general functions and specifications of the CONVEX 3480-compatible cartridge tape system. Figure 1–1 shows a block diagram of the CONVEX 3480-compatible cartridge tape system:

Figure 1–1, CONVEX 3480-Compatible Cartridge Tape System Block Diagram



1.1.1 3480-Compatible Cartridge Tape Drive Overview

The CONVEX 3480-compatible cartridge tape drive and the CONVEX 3480-compatible formatter form the CONVEX 3480-compatible cartridge tape system. This system was developed to allow compatibility with the ISO-X3B5 standard and other 3480-compatible cartridge tape devices.

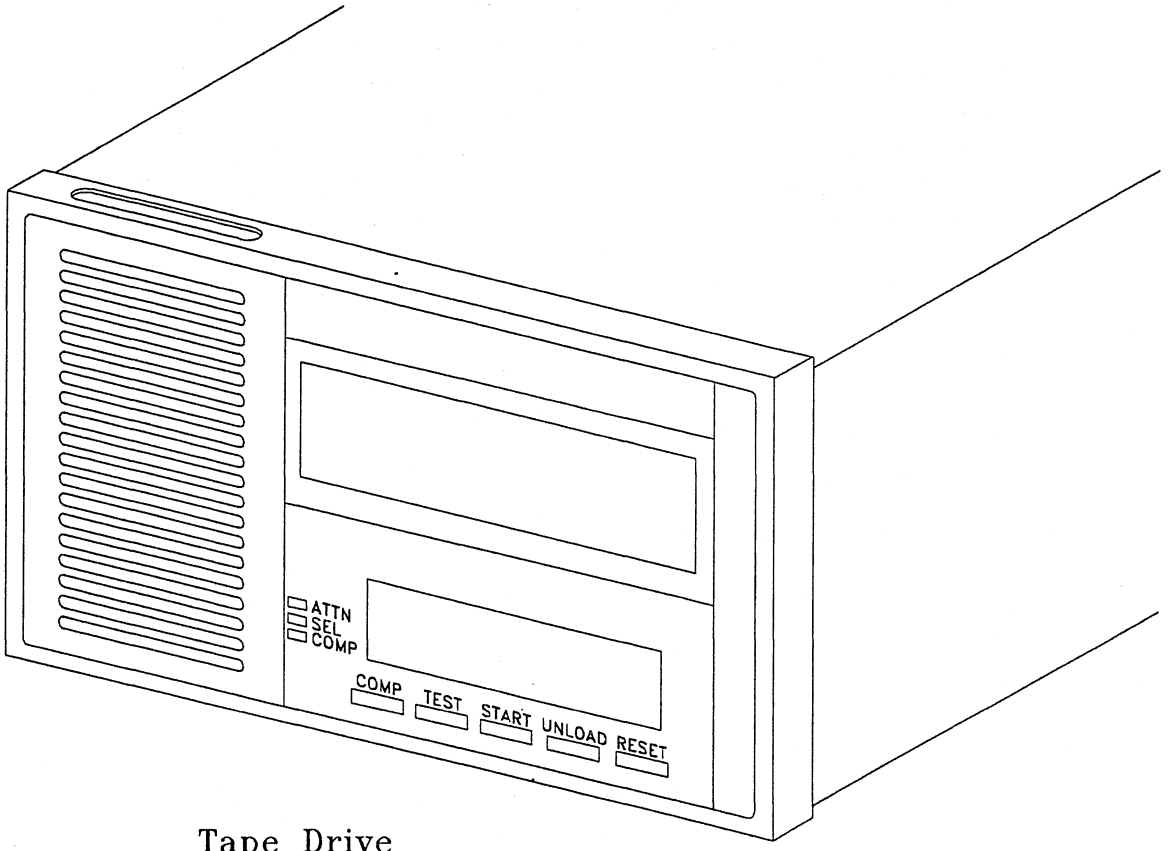
The CONVEX 3480-compatible cartridge tape drive has the following features:

- Compatibility with the ISO-X3B5 standard and other 3480-compatible cartridge tape devices
- Peak transfer rate of 3 Mbytes/second synchronously
- 200-Mbyte data cartridge using 18 tracks at 37,871 bpi
- Built-in diagnostic routines
- Two cartridge tape drives with power supplies that will install in a EIA-standard, 19-inch rack mount

> **NOTE**
>
> Refer to the *Fujitsu Cartridge Tape Drives CE Manual,* chapter 1, "INTRODUCTION," for more information on the CONVEX 3480-compatible cartridge tape drive.

Figure 1–2 shows a front view of the CONVEX 3480-compatible cartridge tape drive:

Figure 1–2, 3480-Compatible Cartridge Tape Drive



Tape Drive
(Front View)

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1.1.2 3480-Compatible Formatter Overview

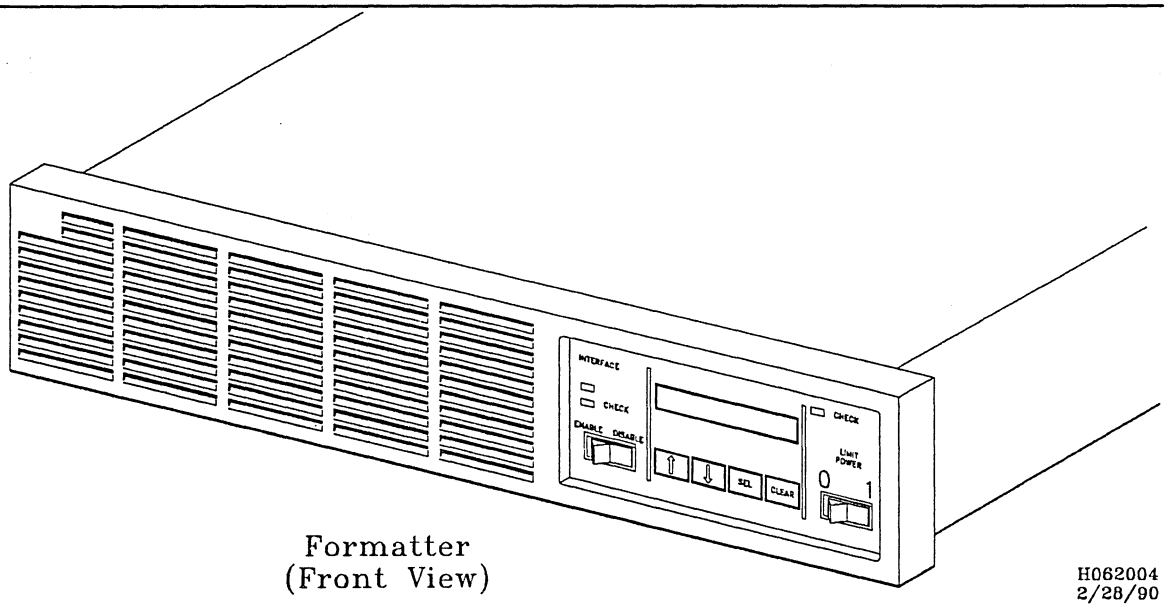
The CONVEX 3480-compatible cartridge tape system is designed to include four formatters that interface with the CONVEX VMEbus SCSI host adapter installed in the VMEbus chassis. Also, each formatter can control up to four cartridge tape drives.

The CONVEX 3480-compatible formatter has the following features:

- Controls up to four CONVEX 3480-compatible cartridge tape drives
- Reads up to 128-Kbyte data blocks
- 2-Mbyte internal buffer, partitioned among the tape drives
- Peak transfer rates up to 3 Mbytes/second
- Self-diagnostics invoked from the front panel
- Slide-out drawer in EIA-standard, 19-inch rack mount

Figure 1–3 shows a front view of the CONVEX 3480-compatible formatter:

Figure 1–3, 3480-Compatible Formatter



Formatter
(Front View)

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1.2 Cartridge Tape Drive Specifications

Table 1–1 lists the operational specifications for the 3480-compatible cartridge tape drive:

Table 1–1, 3480-Compatible Cartridge Tape Specifications

Parameter	Value/Comment
Width	8.6 in (218 mm)
Height	5.0 in (127 mm)
Depth	15.0 in (381 mm)
Weight	≥ 27 lb (12 kg)
Voltage Range[1]	+24 VDC +10%, -5% 4.0 Amp +12.0 VDC ± 7% 2.0 Amp +5.0 VDC ± 5% 5.0 Amp -5.2 VDC ± 5% 3.0 Amp
Temperature Range: **Operating** **Non-Operating**	 41 ° F to 104 ° F (5 ° C to 40 ° C) 32 ° F to 122 ° F (0 ° C to 122 ° C)
Temperature Change	≥ 59 ° F/hr (15 ° C/hr)
Humidity Range: **Operating** **Non-Operating**	 20% to 80% with no condensation 8% to 95% with no condensation
Humidity Change	≥ 20%/hr
Wet Bulb	84.2 ° F (29 ° C)
Altitude (operating)[2]	6,000 ft (1,800 m)
Noise	≥ 55 dB

[1] Voltages are measured on the cartridge tape drive side of the power supply terminals.

[2] If the altitude of the installation site is greater than 3000 feet (approximately 1000 meters), set the pump use mode to **HI**. Refer to the *Fujitsu Cartridge Tape Drives CE Manual*, chapter 5, "SETTING METHOD," section 5.2.2, "Setting methods," for the procedures to set the pump use mode. Failure to so will cause damage to equipment.

1.3 3480-Compatible Formatter Specifications

Table 1–2 lists the operational specifications for the 3480-compatible cartridge tape formatter:

Table 1–2, 3480-Compatible Formatter Specifications

Parameter	Value/Comment
Width	19.0 in (483.0 mm)
Height	3.5 in (88.9 mm)
Depth	27.0 in (685.0 mm)
Weight	49 lb (22 kg)
Voltage Range: **Domestic** **International**	 100 VAC to 130 VAC 4 Amp 200 VAC to 240 VAC 2 Amp
Temperature Range: **Operating** **Non-Operating**	 60 °F to 90 °F (16 °C to 40 °C) 50 °F to 120 °F (10 °C to 49 °C)
Temperature Change	≥ 59 °F/hr (15 °C/hr)
Humidity Range: **Operating** **Non-Operating**	 20% to 80% with no condensation 0% to 95% with no condensation
Humidity Change	≥ 20%/hr
Wet Bulb	84.2 °F (29 °C)
Altitude (operating)	10,000 ft (3,000 m)

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Chapter 2
Unpacking and Installation

2.1 Overview

This chapter discusses unpacking and inspection, identifies major components of the 3480-compatible cartridge tape system assembly, and provides installation procedures.

2.2 Unpacking and Inspection

This section gives general guidelines for unpacking and inspecting the 3480-compatible cartridge tape drives, 3480-compatible formatters, and related hardware. Also, this section gives safety and equipment damage precaution information.

2.2.1 Electrostatic Discharge Damage

Typically, Electrostatic Discharge (ESD) damage occurs to electronic circuit boards during handling. Static charges take place when various objects are separated or rubbed together, often creating a high voltage-level charge. If a high voltage-level charge is discharged into electronic computer circuits, the charge damages the electronic components. The main factors that determine a voltage level charge are:

- Types of materials
- Relative humidity
- Rate of change or separation

Table 2–1 lists an approximation of electrostatic charge levels based on various personnel activities and humidity levels:

Table 2–1, Static Charge Levels and Relative Humidity

Personnel Activity[1]	Humidity[2] & Charge Levels (Volts[3])			
	26%	32%	40%	50%
Person walking across linoleum floor	6,150V	5,750V	4,625V	3,700V
Person walking across carpet	18,450V	17,250V	13,875V	11,100V
Person getting up from a plastic chair	24,600V	23,000V	18,500V	14,800V

[1] Source: B. A. Unger, *Electrostatic Discharge Failures of Semiconductor Devices* (Bell Laboratories, 1981).
[2] A high rate of air-flow produces higher static charges than a low air flow rate, for the same relative humidity level.
[3] Some data in this table has been extrapolated.

Table 2–2 lists various components and their susceptibility to static damage:

Table 2–2, Components Susceptibility to ESD Damage

Susceptibility Ranges of Various Devices Exposed to Electrostatic Discharge (Human Body Model[1])	
Device Type	**Level of ESD Susceptibility (Volts)**
MOSFET	>10
JFET	> 140
CMOS	> 250
Schottky Diodes, TTL	> 300
Bipolar Transistors	> 380
ECL (For Hybrid use, PCB level)	> 500
SCR	> 680

[1] Source: B. A. Unger, *Electrostatic Discharge Failures of Semiconductor Devices* (Bell Laboratories, 1981).

2.2.2 Inspection for Damage

All shipping containers have been specially designed to protect their contents under normal shipping conditions. Carefully inspect each carton for signs of shipping damages as it is unpacked. If damage is found after visual inspection, document the damage with photographs and contact the transport carrier immediately.

2.3 Installation into an Existing Expansion Cabinet

The following sections give procedures for installing a 3480-compatible cartridge tape system into an existing CONVEX expansion cabinet.

2.3.1 Expansion Cabinet Configuration Requirements

The CONVEX 3480-compatible cartridge tape system can be installed in any CONVEX peripheral expansion cabinet. The following list gives maximum configurations for each style of cabinet:

- One EXP-105 high-performance expansion cabinet can contain a maximum of 3 formatters and 12 tape drives.

- One EXP-101 or EXP-102 expansion cabinet can contain a maximum of one formatter and four tape drives.

> **NOTE**
>
> For performance reasons, customers may elect to attach only a maximum of two formatters and four tape the number of devices drives to a single host adapter.

2.3.2 Unpacking

The customer's bill of material lists all equipment shipped from CONVEX. It should be used as a checklist to ensure that all equipment has arrived.

Table 2–3 lists a bill of materials for a typical 3480-compatible cartridge tape system:

Table 2–3, Bill of Material

Product Number	Description	Quantity
207-000015-200	3480 Cartridge Tape Drive	2
207-000015-004	Tape Drive Power Cable Dom	2
205-000002-200	3480 Cartridge Tape Formatter	1
205-000002-001	Formatter Power Cable Dom	1
207-000015-018	2 m Tape to Tape (digital) Cable Set	1
207-000015-019	2 m Tape to Tape (analog) Cable Set	1
604-500006-200	20 ft SCSI to Formatter Cable	1
205-000002-004	2 m Formatter to Tape Drive Cable Set	1
207-000015-014	Tape Drive Terminator	1
205-000002-003	Formatter Terminator (Digital)	1

The procedure for unpacking the shipping container is as follows:

1. Unpack each item of equipment from its shipping container.
2. Inspect each item of equipment for any sign of shipping damage as it is unpacked.
3. If equipment damage is found, document and proceed to the next section.

NOTE

Save all packing material until after operational checkout of the equipment. This enables equipment to be returned safely to CONVEX, if required.

2.3.3 Damage Claims

If the 3480-compatible cartridge tape drives, 3480-compatible formatter, or related hardware is damaged, a damage claim must be completed. Damage claims should be completed by the customer and given to the shipping representative. Claim forms are normally obtained from the shipping representative.

2.3.4 Installation

This section gives the procedure for installing the 3480-compatible cartridge tape system into an existing expansion cabinet.

CAUTION

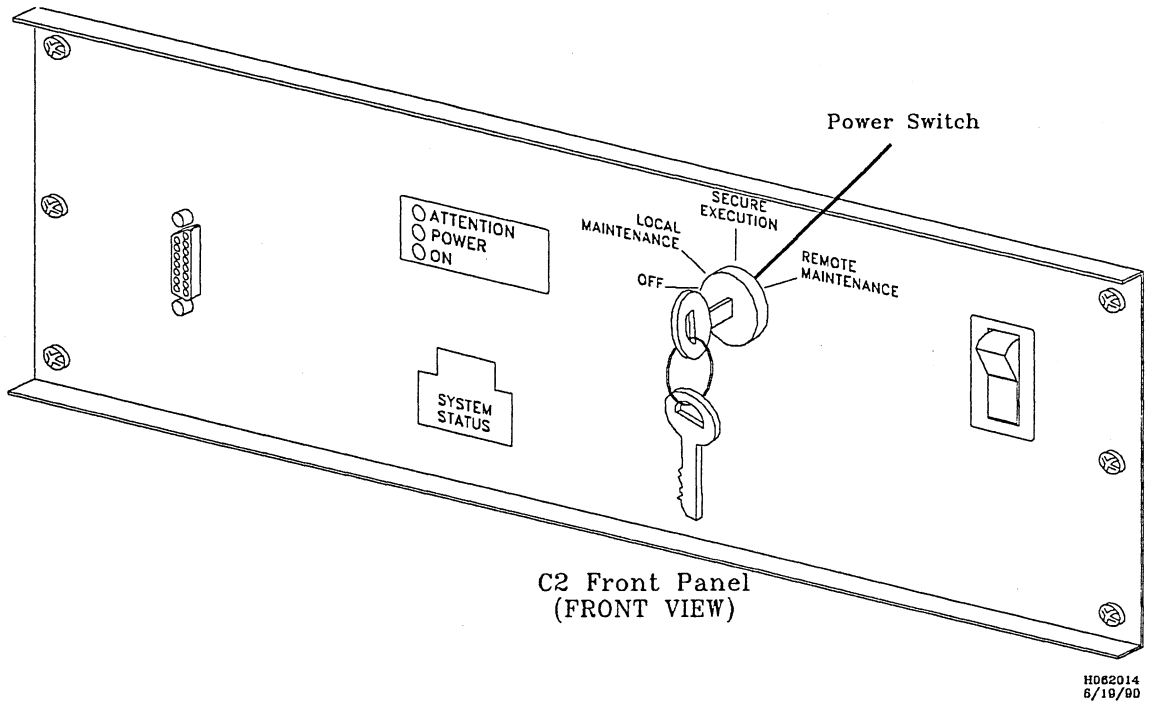
Shut down system before removing power to the existing expansion cabinet. Failure to so will cause a system crash and possible loss of data. Refer to the *CONVEX Processor Operation Guide (C100 Series, C200 Series)* for power-down procedures on a CONVEX supercomputer.

NOTE

The maximum length for the SCSI host adapter cable to the first formatter in the system is approximately 75 feet (25 meters).

1. Turn the processor's front panel key switch to the **OFF** position. Figure 2–1 shows a typical front panel control switch:

Figure 2–1, Front Panel Power Control Switch

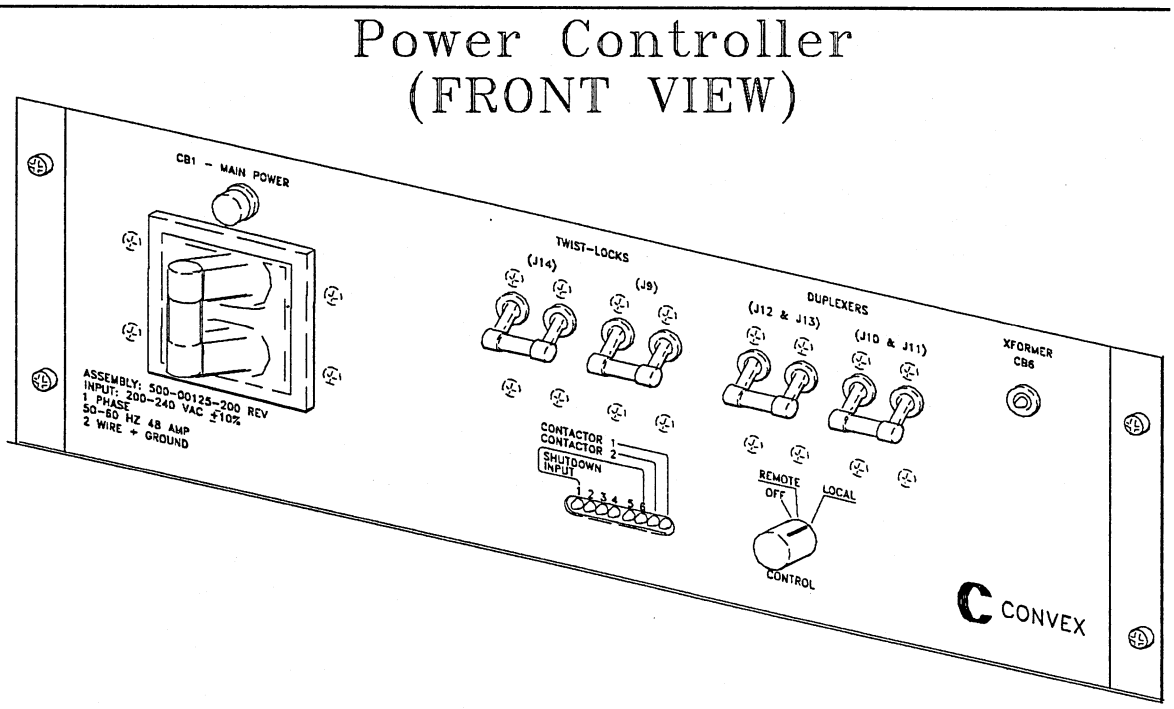


CAUTION

Remove power to the peripheral expansion cabinet before installing or removing equipment. Failure to do so will damage electronic equipment components.

2. Remove power to the expansion cabinet.
   - To remove power from a CONVEX EXP-101 or EXP-102 expansion cabinet, disconnect the cabinet's AC power cord.
   - To remove power from a CONVEX EXP-105 high-performance expansion cabinet, set the main power control switch to the **OFF** position. Figure 2–2 shows the EXP-105 expansion cabinet's power controller front panel and main power control switch:

Figure 2–2, EXP-105 Expansion Cabinet Power Controller Front Panel



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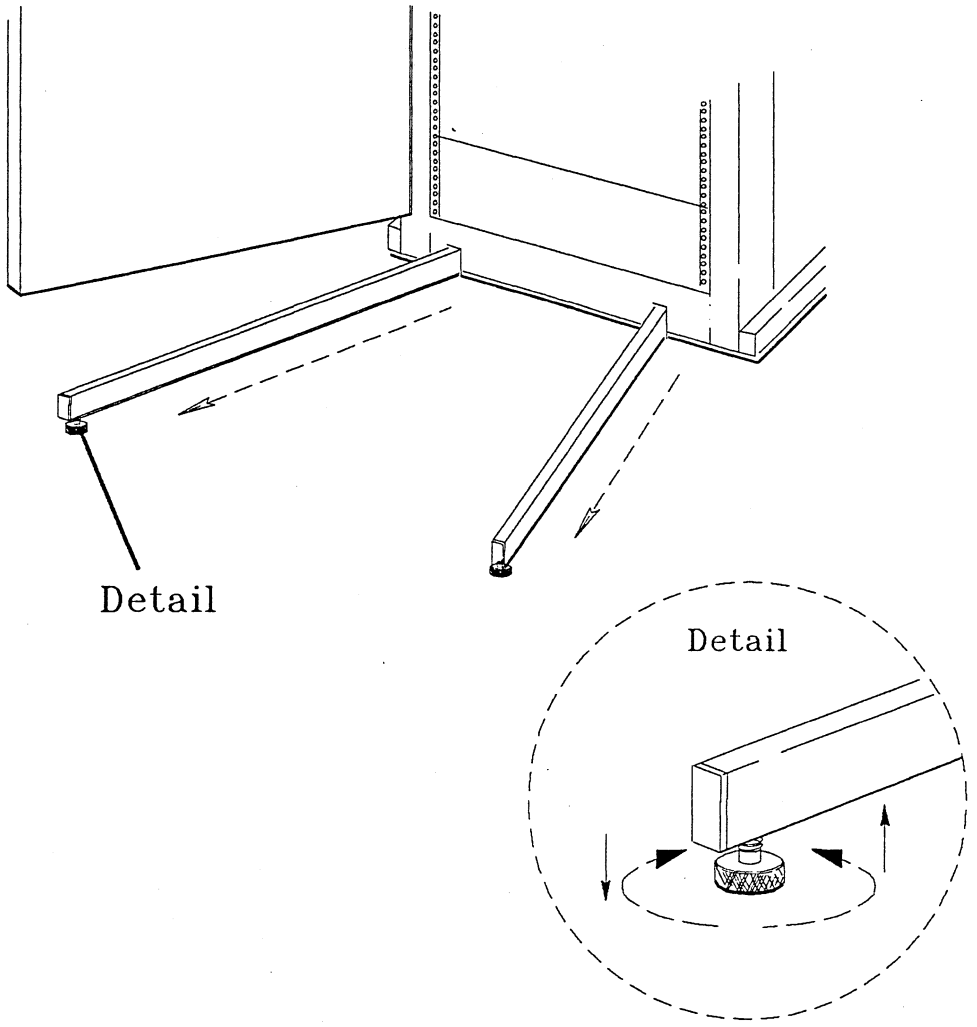
WARNING

Expansion cabinet stabilizer bars must be extended before installing a VMEbus chassis or before extending the VMEbus chassis assembly from its expansion cabinet for service. Failure to do so will make the expansion cabinet unstable, increase the possibility of it falling forward, can cause injury to personnel, and will cause damage to equipment.

3. Extend the expansion cabinet stabilizer bars and adjust the feet until they are in firm contact with the floor. Figure 2–3 shows the expansion cabinet stabilizer bars and adjustable feet:

Figure 2–3, Expansion Cabinet Stabilizer Bars



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2.3.4.1 Installation of the Cartridge Tape Drive and Power Supply

This section gives the procedure for installing a cartridge tape drive.

1. Install the tape drive(s), power supply, and mounting frame.

> **NOTE**
>
> Refer to *Fujitsu Cartridge Tape Drives CE Manual,* chapter 3, "INSTALLATION CONDITIONS," section 3.5.1, "Installation to 19-inch rack," for the procedures to install this equipment.

> **CAUTION**
>
> The cable clamp should contact the exposed cable shielding and fit tightly on to the cable. Failure to do so will result in the loss of the Electromagnetic Interference (EMI) shielding and may cause damage to equipment.

2. Install the cables into the cable shielding clamp. The first, intermediate, and last tape drives in a daisy chain have different cable shielding configurations. Figure 2–4 shows how to install the cables into the shielding clamp for the first tape drive in a daisy chain:

Figure 2–4, Cable Shielding Clamp for First Tape Drive

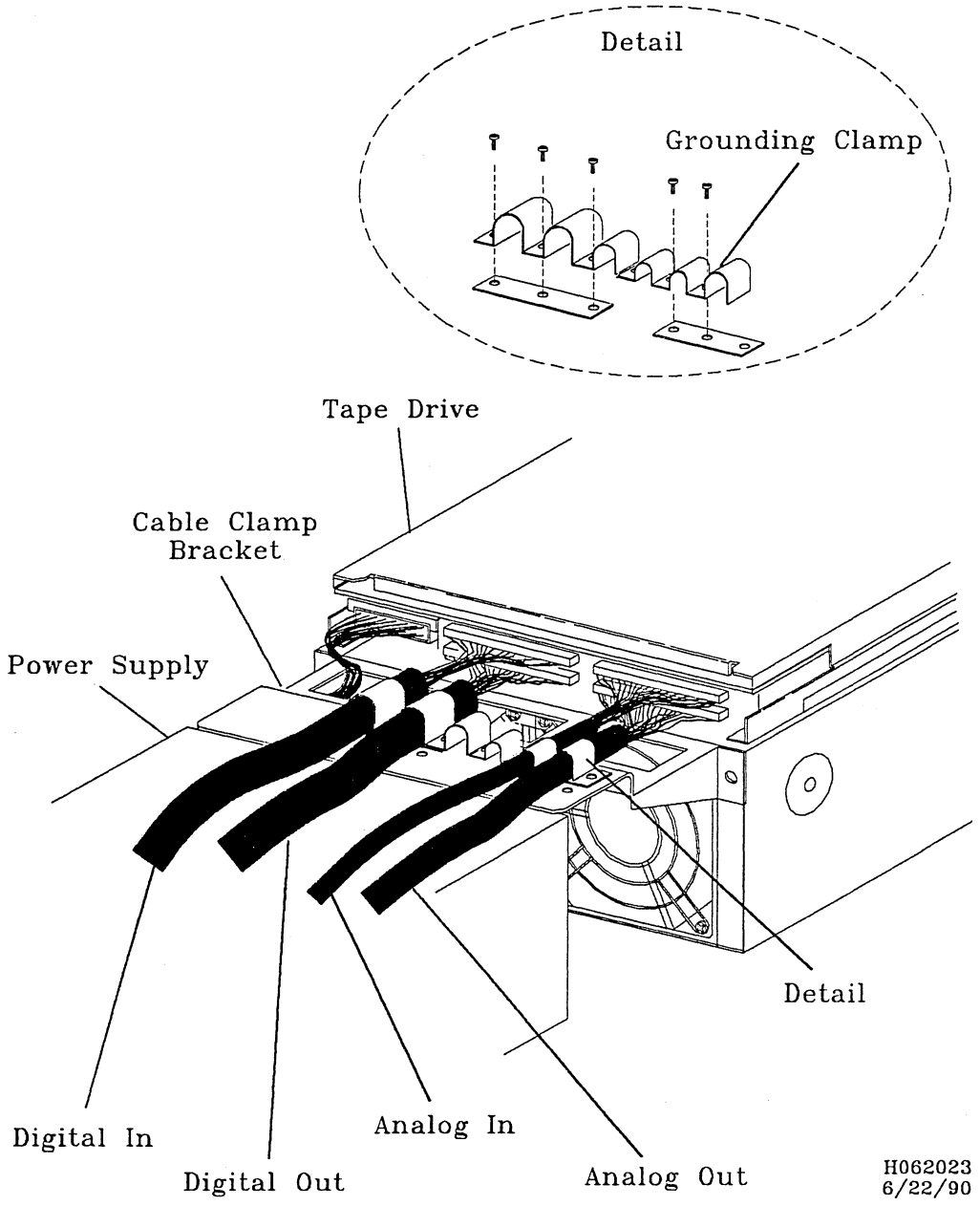


Figure 2–5 shows the cable installation into the shielding clamp for tape drives in the middle of a daisy chain:

Figure 2–5, Cable Shielding Clamp for Intermediate Tape Drives

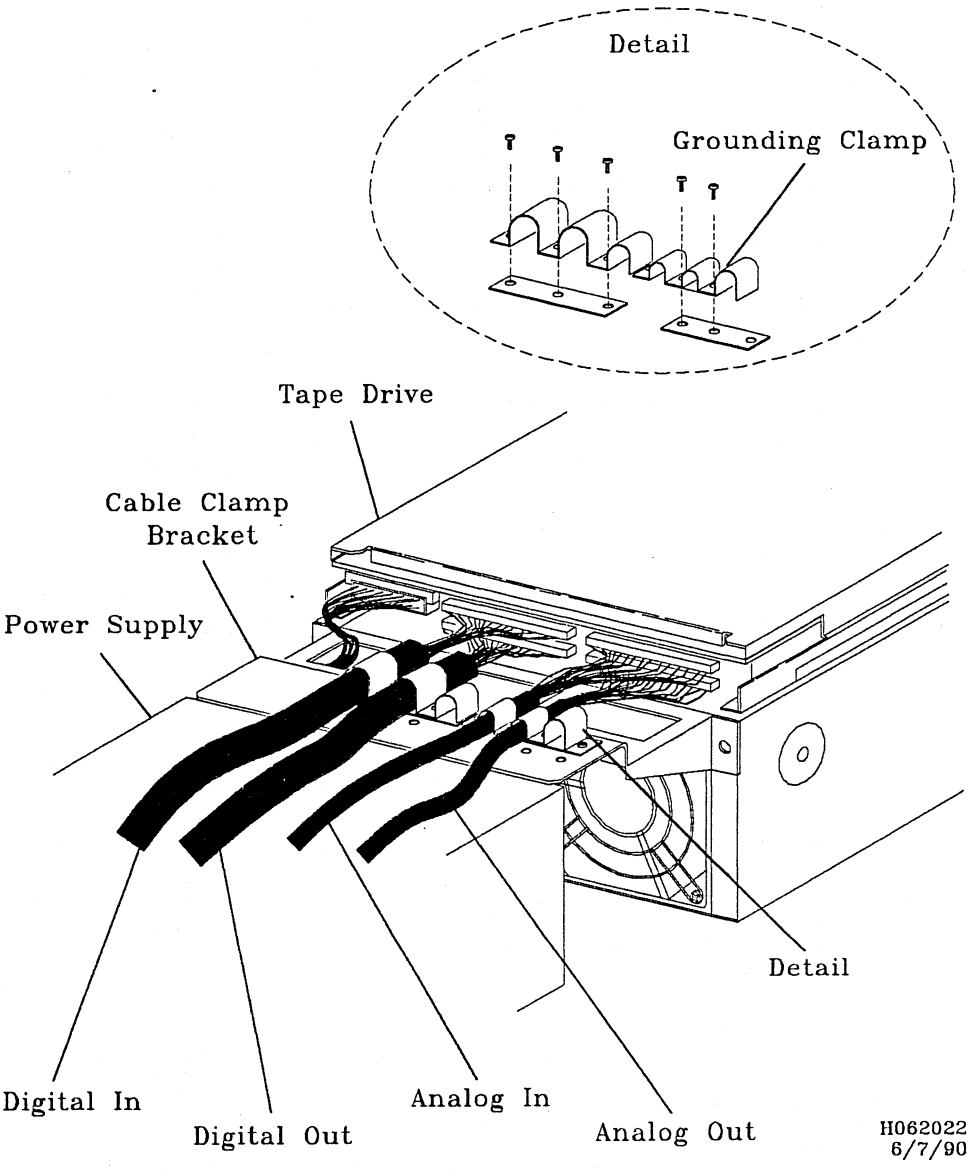
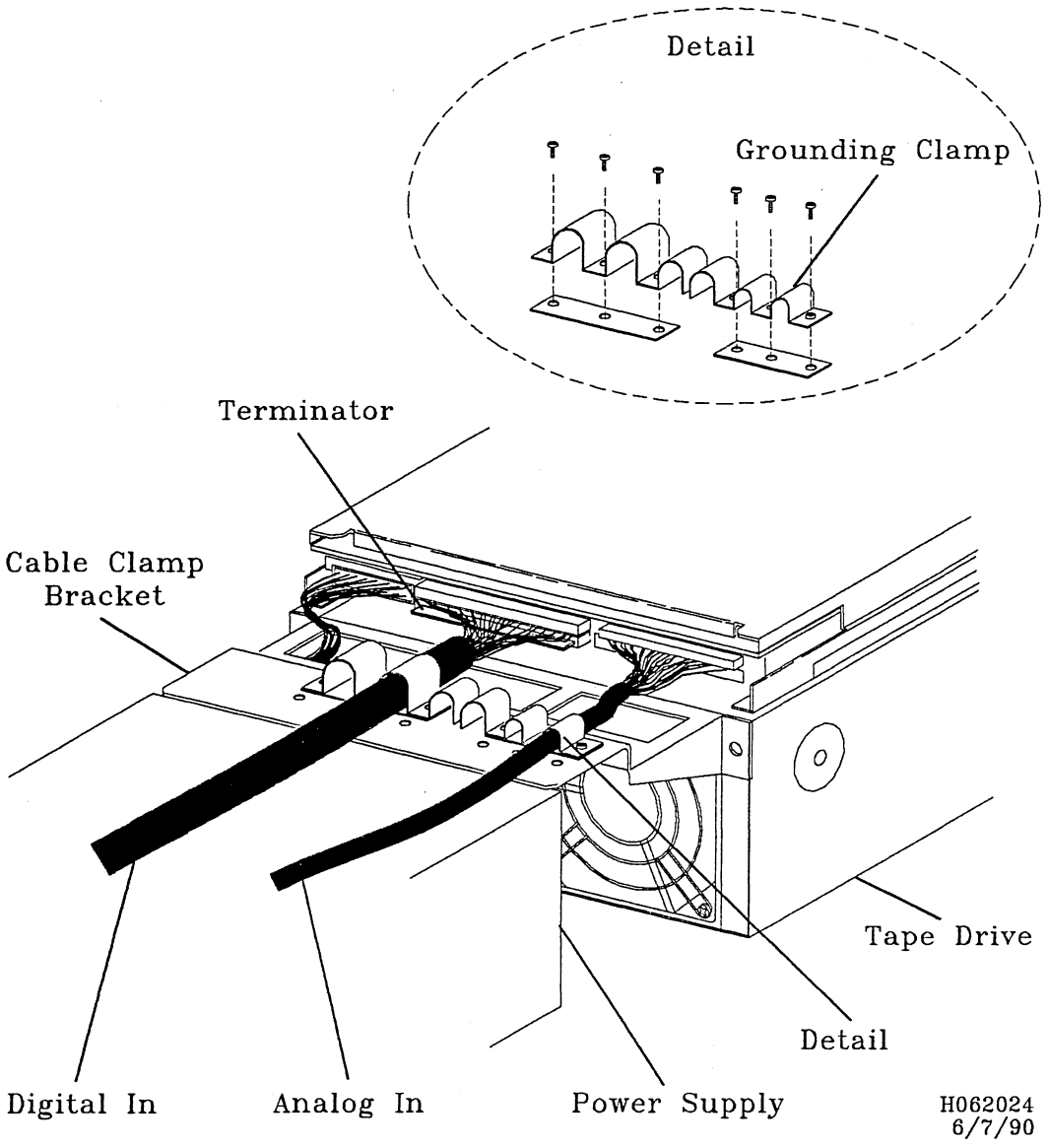


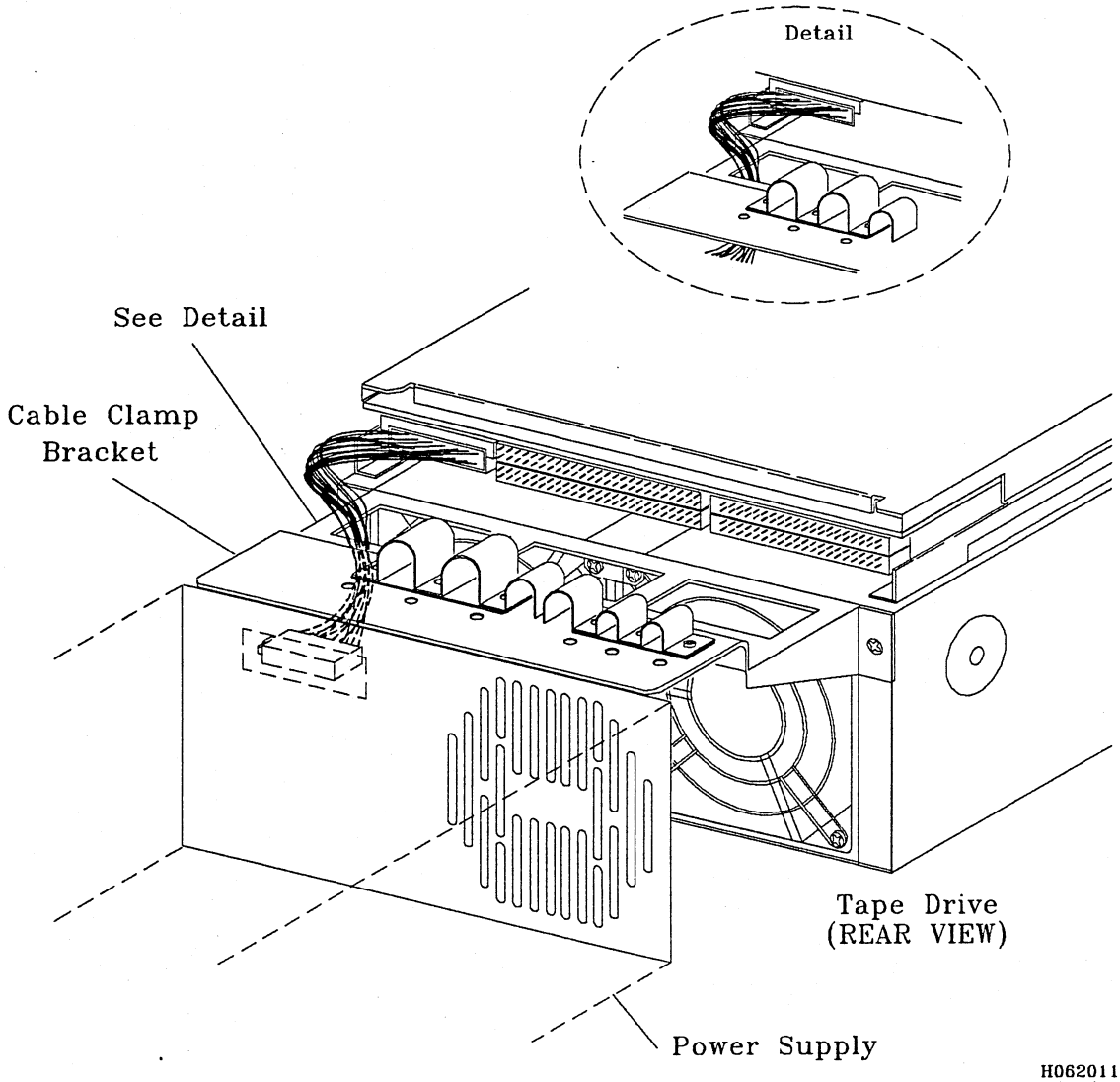
Figure 2–6 shows the cable installation into the shielding clamp for tape drives at the end of a daisy chain:

Figure 2–6, Cable Shielding Clamp for Last Tape Drive



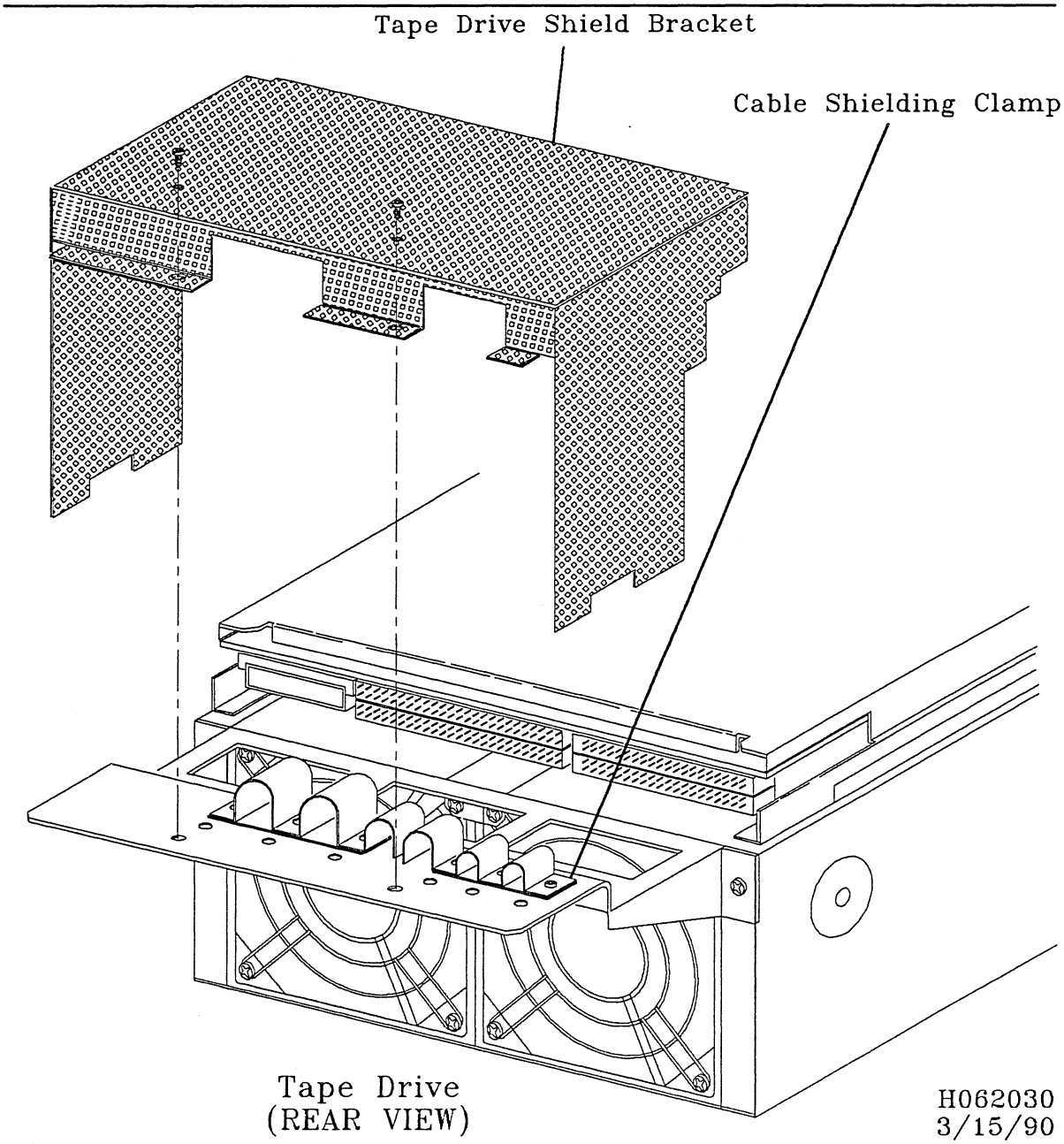
3. Connect the DC power cable to the tape drive. Route the cable through the cable shielding clamp and connect to the power supply. Figure 2–7 shows the DC power cable connected between the power supply and the tape drive:

Figure 2–7, Power Supply to Tape Drive Cable



4. Install the shield bracket onto the rear of the tape drive and over the cable shield clamp. Install the 2 screws that secure the shield bracket. Figure 2–8 shows the shield bracket in place:

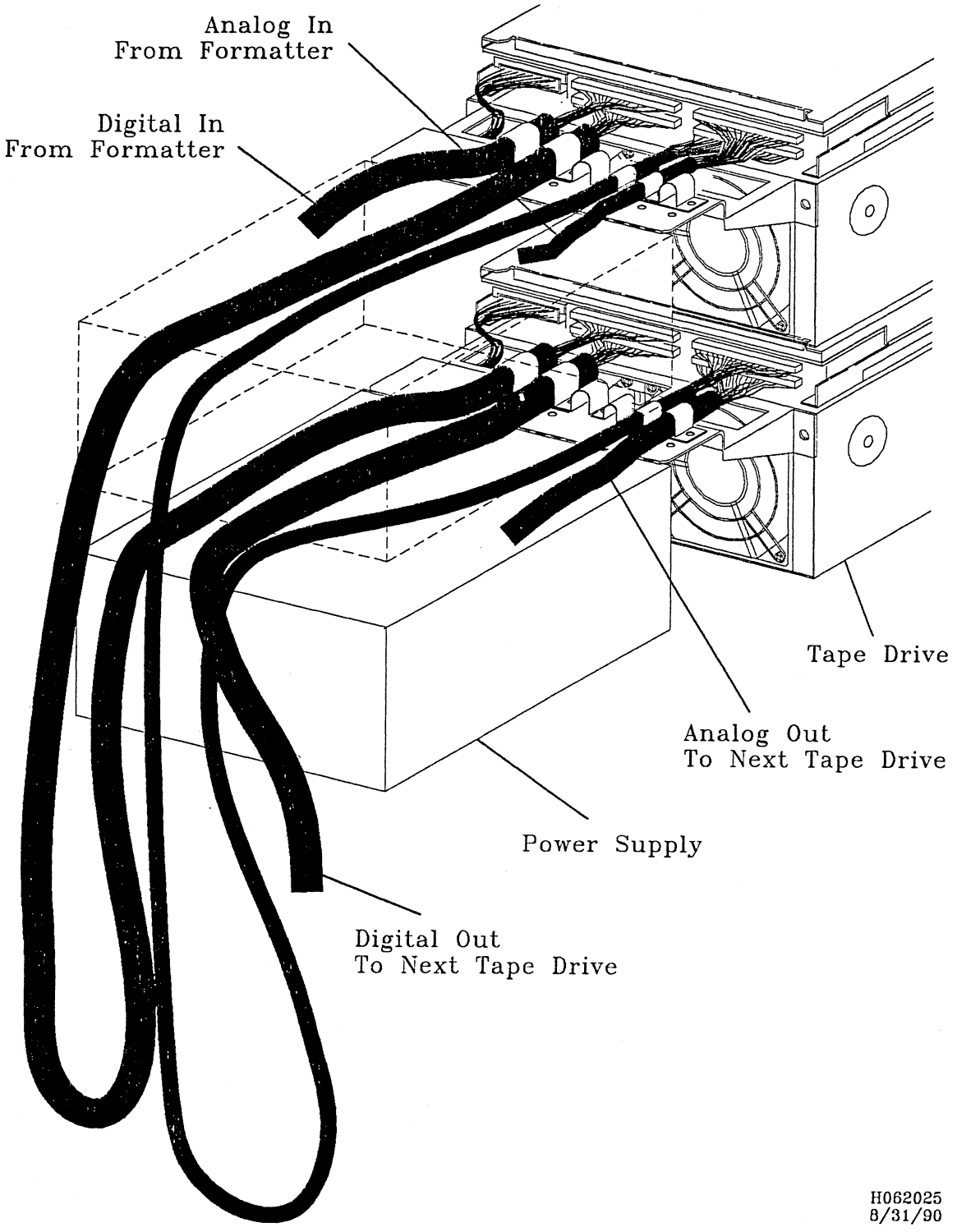
Figure 2–8, Tape Drive Shield Bracket



5. Cable the tape drives to the formatter and daisy chain to other drives (if necessary). Figure 2–9 shows the cabling of a tape drive to another tape drive:

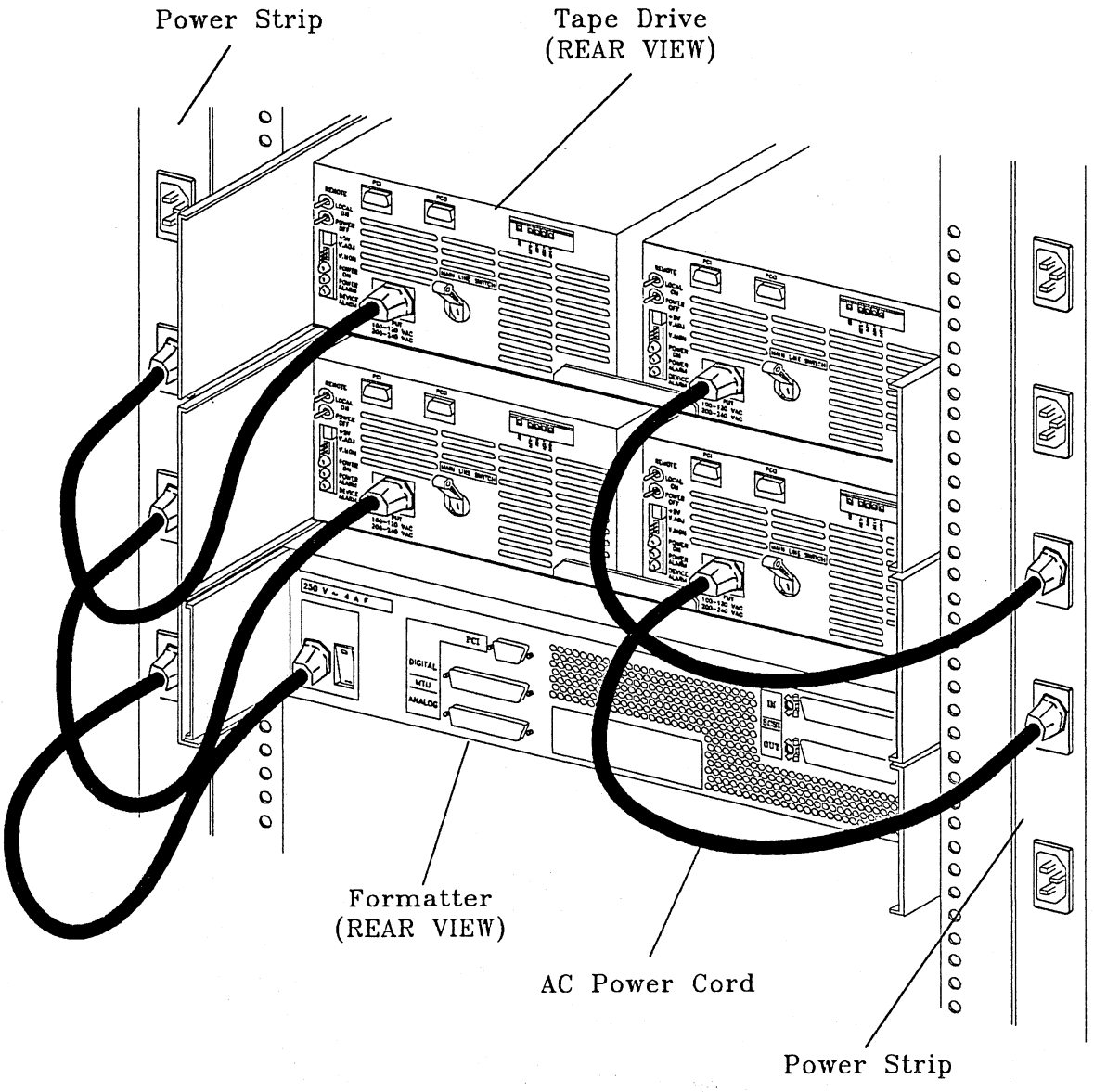
> **NOTE**
>
> Refer to *Fujitsu Cartridge Tape Drives CE Manual,* chapter 3, "INSTALLATION CONDITIONS," section 3.5.2, "Cable connection," for cabling procedures.

Figure 2–9, Tape-Drive-to-Tape-Drive Cabling



6. Connect the AC power cable from the power supply to the expansion cabinet power strip. Figure 2–10 shows the power strips of an EXP-105 high-performance expansion cabinet:

Figure 2–10, Expansion Cabinet Power Strip and AC Power Cables



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CAUTION

If the altitude of the installation site is greater than 3000 feet (approximately 1000 meters), set the pump use mode to **HI**. Refer to the *Fujitsu Cartridge Tape Drives CE Manual*, chapter 5, "SETTING METHOD," section 5.2.2, "Setting methods," for the procedures to set the pump use mode. Failure to do so will can damage to equipment and loss of data.

2.3.4.2 Formatter Power Supply Voltage Jumper Check

This section gives the procedure to insure that the formatter's internal power supply voltage jumper is set properly.

CAUTION

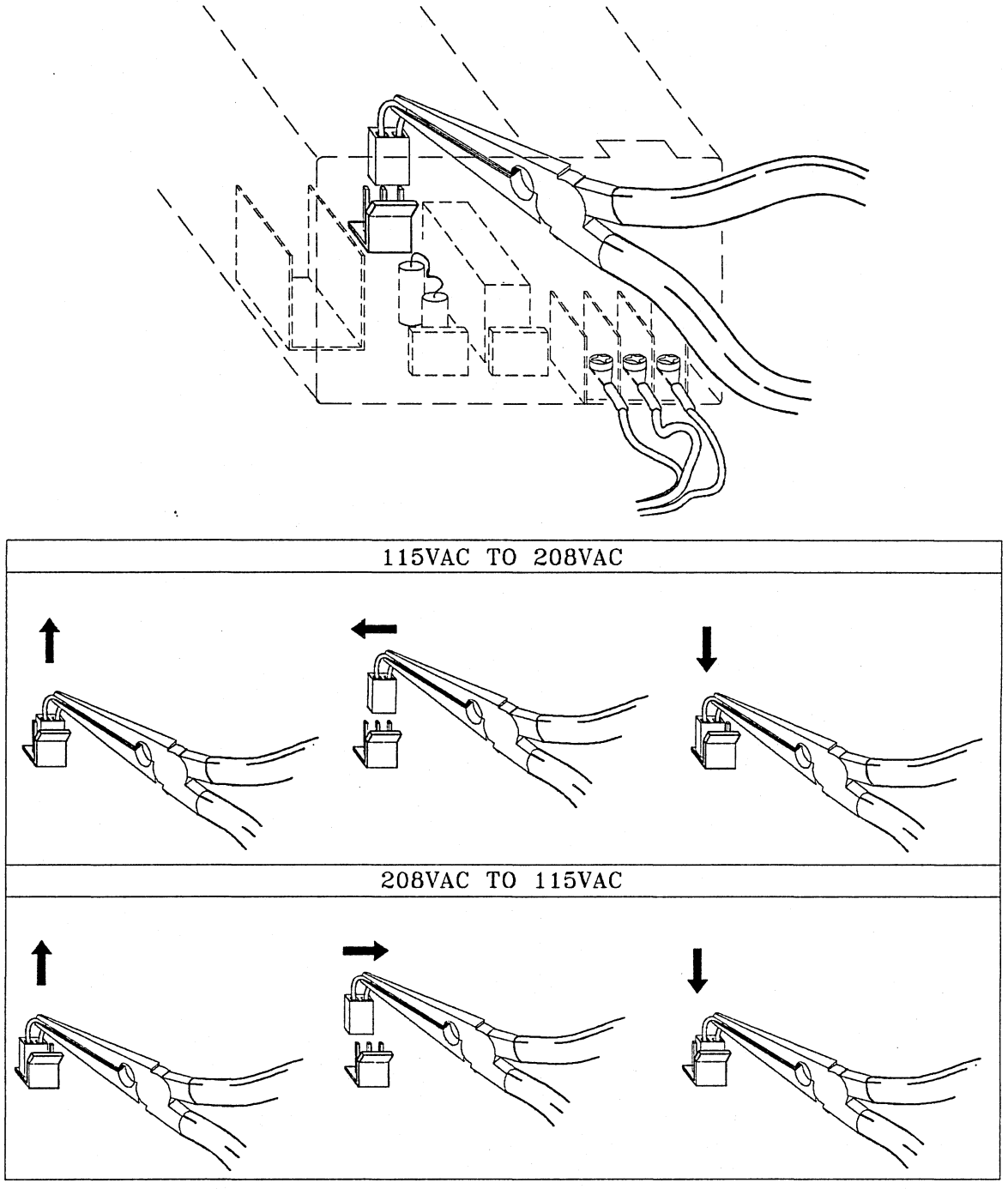
During installation, make sure that the 3480-compatible formatter's internal power supply voltage jumper is set properly and agrees with the label on the rear of the formatter. An improper voltage jumper setting will cause damage to equipment.

NOTE

Later versions of the formatter will have a switch at the rear of the power supply to set the proper input voltage. Set the switch to the **115** position for domestic installations and the **220** position for international installations.

1. Slide the formatter out of its drawer. The jumper is located on the rear of the power supply.
2. Check the AC voltage label above the AC power connector on the rear of formatter for correct voltage setting. Check the voltage jumper to ensure the correct setting. Figure 2–11 shows the location of the formatter's internal power supply jumper:

Figure 2–11, Formatter Voltage Jumper Location and Settings



3. If the jumper is set incorrectly, use 4-inch needle-nose pliers to remove the jumper and move the jumper to the other configuration. Figure 2-11 shows the correct voltage jumper settings for the formatter's internal power supply.
4. Slide the formatter back into the drawer.

2.3.4.3 Installation of the Formatter

This section gives the procedure for installing a 3480-compatible formatter.

1. Configure the formatter. To make the formatter compatible with the system, the switches on the differential (DI) card inside the formatter must be set correctly. Figure 2–12 shows the location of the DI card dip switches:

Figure 2–12, DI Card Dip Switches

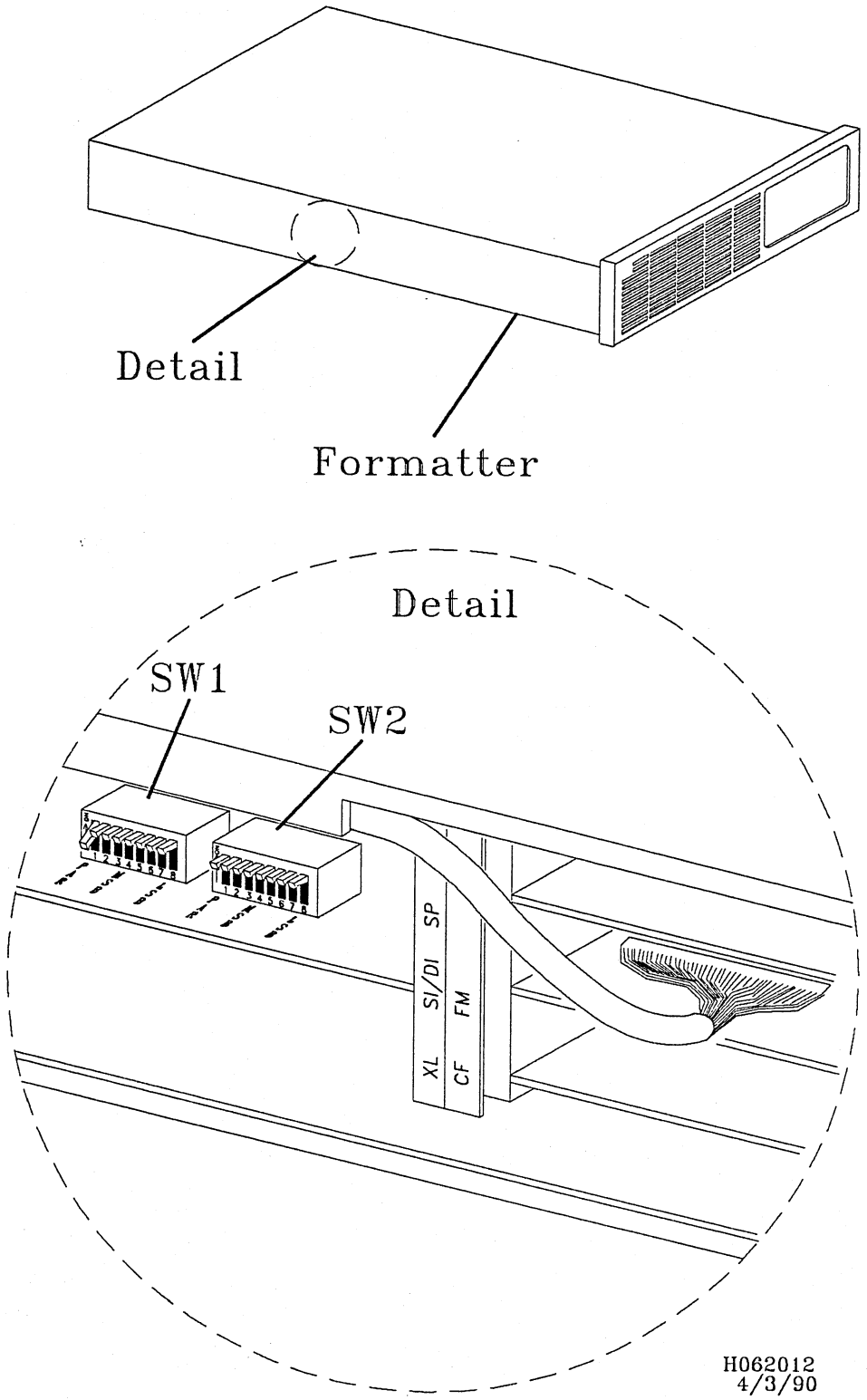


Table 2–4 lists the settings for the SW1 dip switch on the DI card:

Table 2–4, SW1 Jumper Switch Settings on the DI Card

Address	1	2	3	4	5	6	7	8
000	OFF	ON	ON	ON	ON	ON	ON	ON
001	OFF	ON	ON	ON	ON	ON	ON	OFF
002	OFF	ON	ON	ON	ON	ON	OFF	ON
003	OFF	ON	ON	ON	ON	ON	OFF	OFF

Table 2–5 lists the settings for the SW2 dip switch on the DI card:

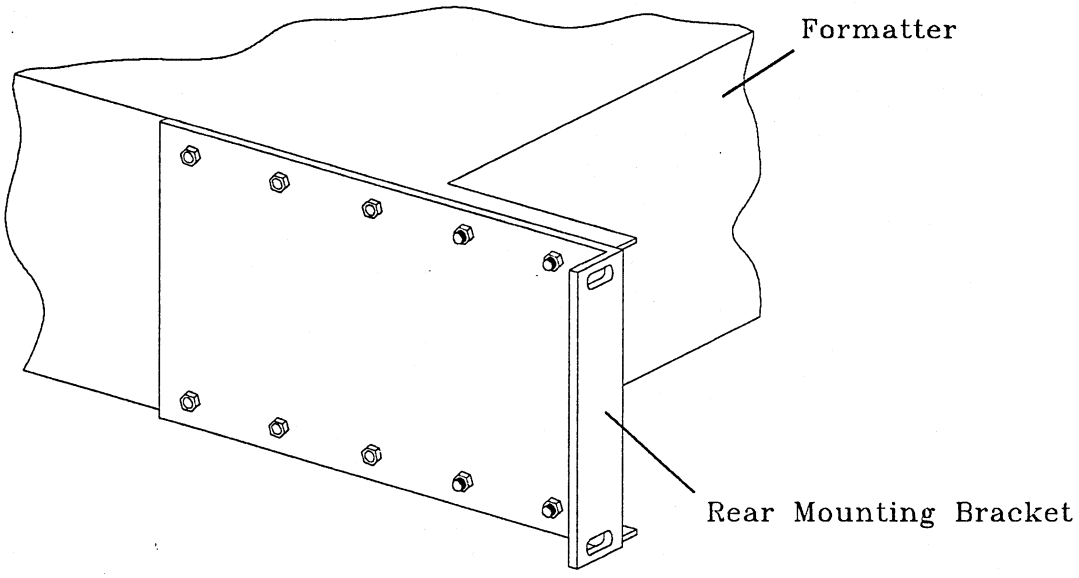
Table 2–5, SW2 Jumper Switch Settings on the DI Card

1	2	3	4	5	6	7	8
ON	ON	ON	ON	ON	ON	ON	ON

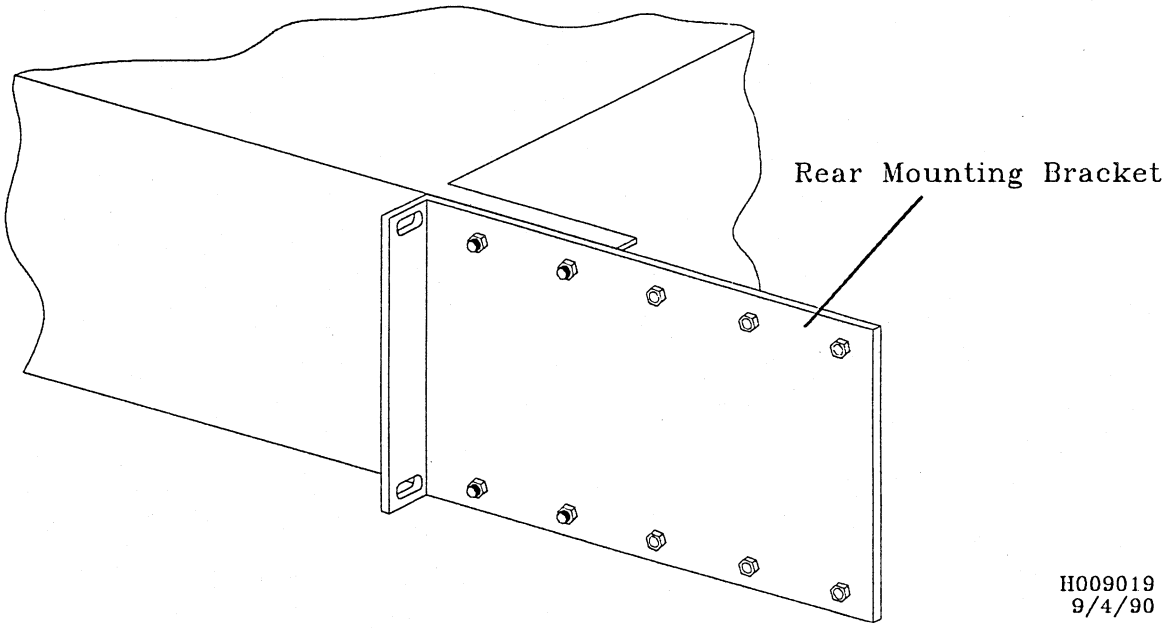
2. Remove the rear mounting brackets on the formatter and re-install them on the opposite side of the intermediate RETMA rails. Figure 2–13 shows the rear mounting brackets of the formatter in their shipping and installation configurations:

Figure 2–13, Formatter Rear Mounting Brackets

Shipping Configuration



Installation Configuration

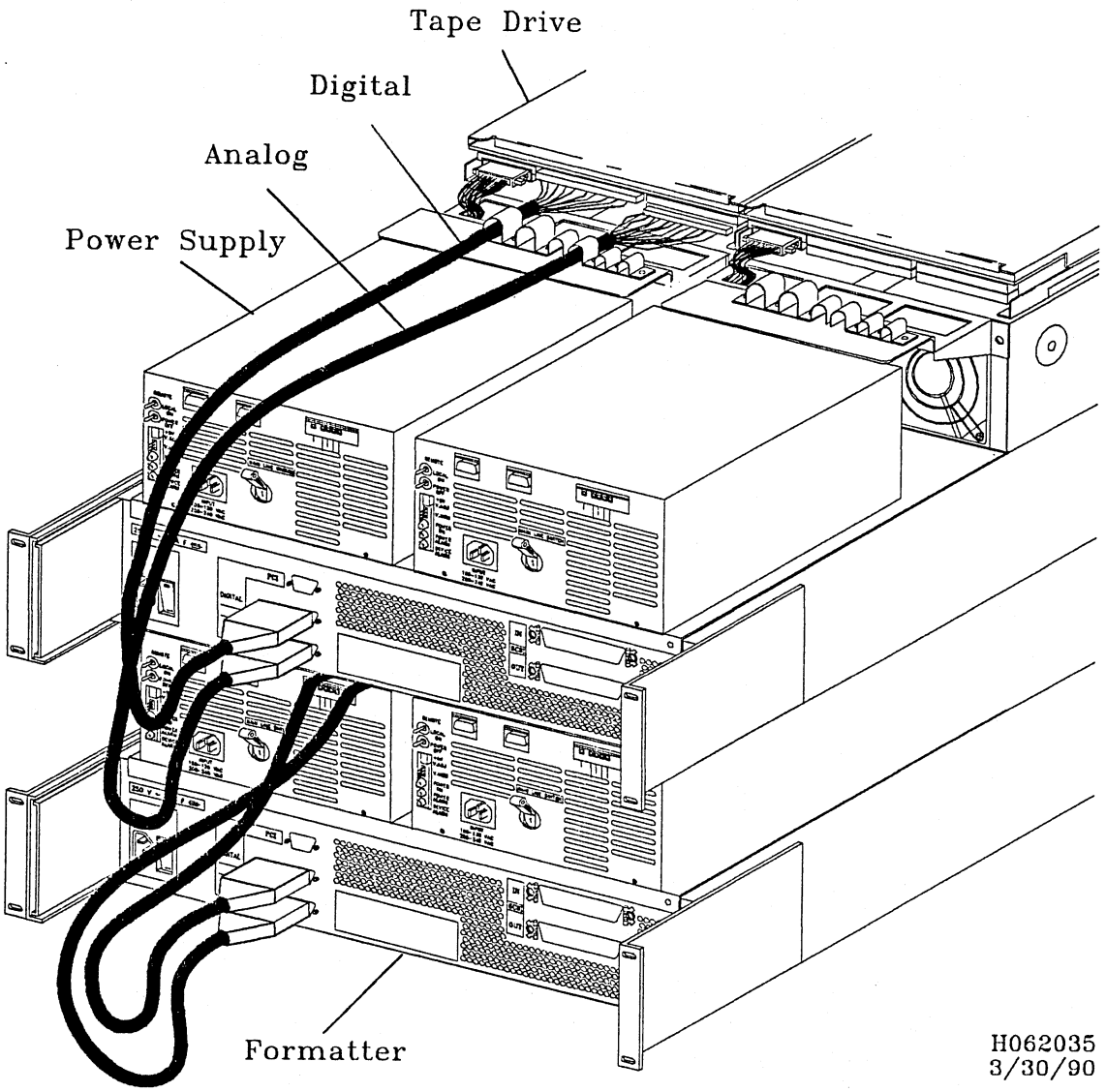


3. Install the formatter and mounting frame.

> **NOTE**
>
> When installing a formatter in an existing expansion cabinet, the rear mounting brackets of the formatter will need to be removed and re-installed on the opposite site of the intermediate RETMA rails.

4. Cable the **MTU DIGITAL** and the **MTU ANALOG** connectors from the formatter to the keyed connectors on the rear of the tape drive. Figure 2–14 shows the cabling of a 3480-compatible daisy-chain system:

Figure 2–14, Formatter-to-Tape Drive Cabling



NOTE

Refer to the *CONVEX VMEbus SCSI Host Adapter Service Guide* for information on installation and cabling of the VMEbus SCSI host adapter.

The maximum cable length allowed between the SCSI host adapter and the formatter is approximately 75 feet (25 meters).

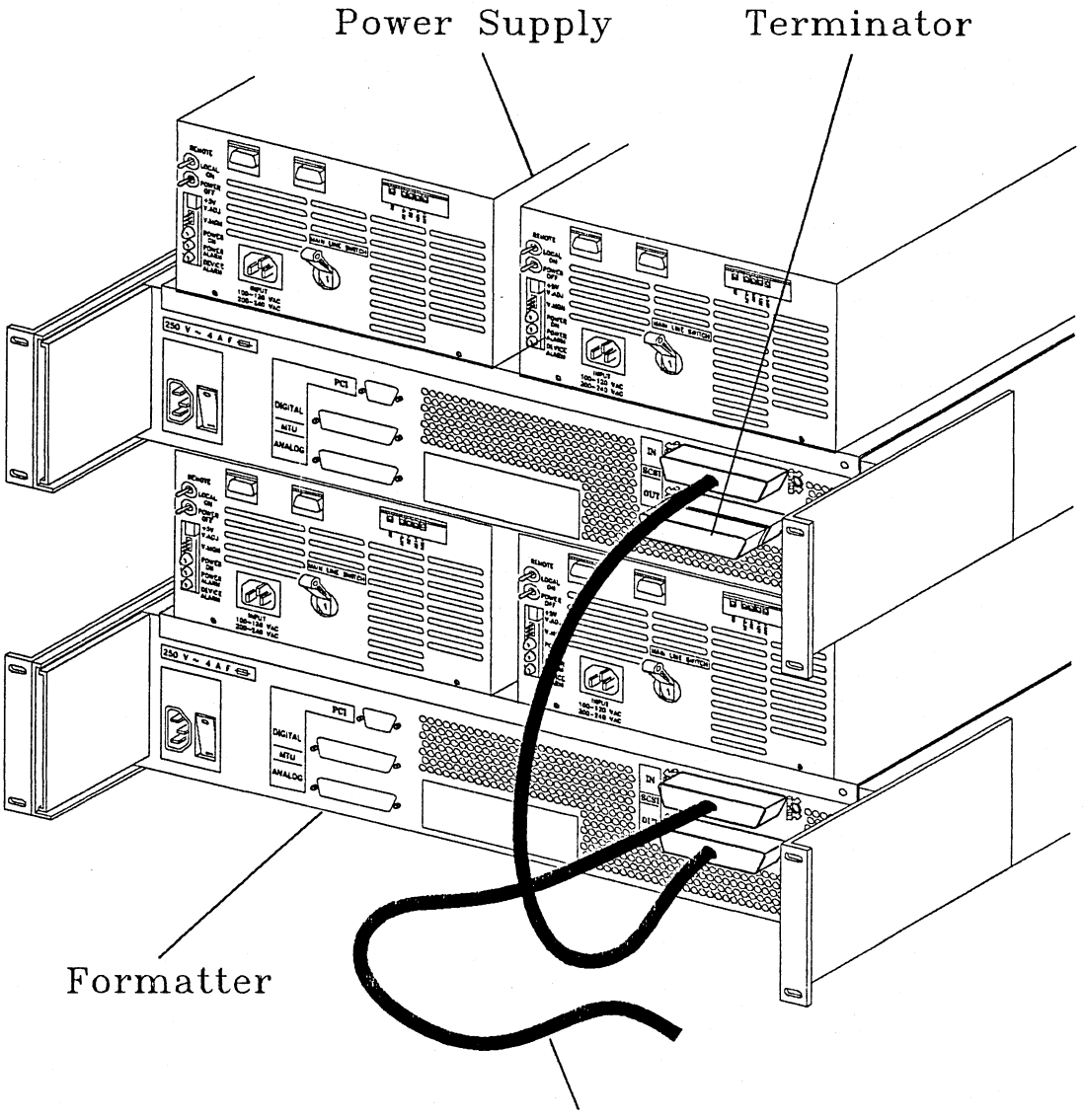
5. Connect the cable from the SCSI host adapter to the **SCSI IN** connector on the rear of the 3480-compatible formatter unit. Install a terminator in the **SCSI OUT** connector.

   If the cabinet has an existing formatter, cable the **SCSI IN** connector on the newly-installed formatter to the **SCSI OUT** connector on the last formatter in the daisy chain and install a terminator in the **SCSI OUT** connector of the newly-installed formatter. Figure 2–15 shows the cabling **SCSI IN** and **SCSI OUT** of a formatter daisy-chain:

> **CAUTION**
>
> Ensure all terminators are firmly installed. An improperly installed terminator will cause a system failure and possible loss of data.

> **NOTE**
>
> A terminator is required in the **SCSI OUT** connector of the only formatter or the last daisy-chained formatter in a system.

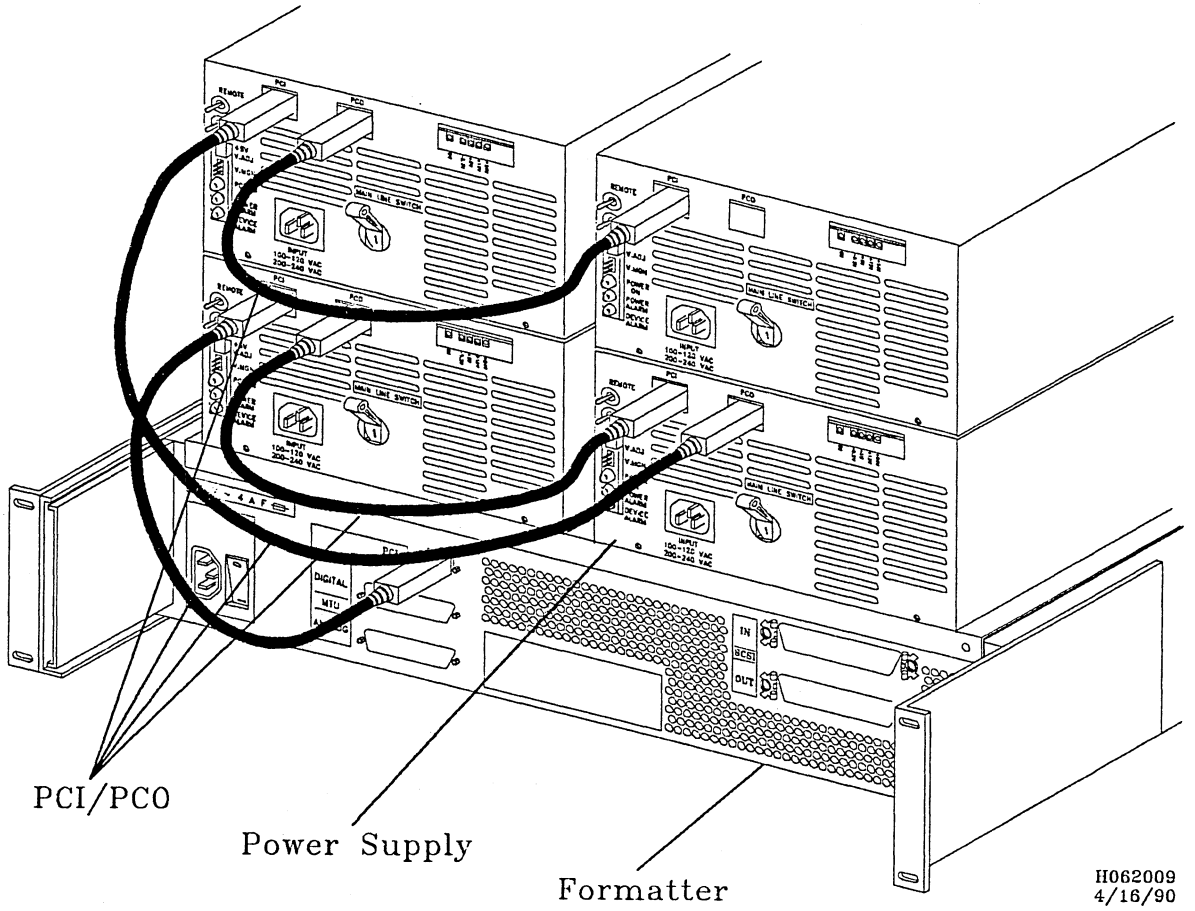
Figure 2–15, Formatter-to-Formatter Cabling



6. Install one end of the Power Control Interconnect (PCI) cable into the **PCI** connector on the back of the formatter. Connect the other end of the cable into the **PCI** connector of the first cartridge tape drive power supply in the daisy chain.

7. Install one end of another PCI cable into the **PCO** connector of the power supply and the other end into the **PCI** connector of the next power supply in the daisy chain. Connect the remainder of the power supplies in the daisy chain the same way. The **PCO** connector on the last power supply is *not* terminated. Figure 2–16 shows the **PCI-to-PCO** cable connections:

Figure 2–16, PCI-to-PCO Cabling



8. Return the expansion cabinet expansion bars to their retracted position.
9. Restore AC power to the expansion cabinet.
   - To restore AC power to a CONVEX EXP-101 or EXP-102, connect the cabinet's AC power cord to the AC power source.
   - To restore AC power to a CONVEX EXP-105 high-performance expansion cabinet, set the cabinet's main power switch to the **ON** position.
10. Set the processor's front panel key switch to the **ON** position.

2.4 Installation of Expansion Cabinet Containing a Cartridge Tape System

This section discusses the installation of an expansion cabinet containing a 3480-compatible cartridge tape system pre-installed at the factory.

> **NOTE**
>
> Refer to the *CONVEX Installation Guide (C200 Series)*, Chapter 4, "New System Cabinet Installation," section 4.5, "Mating and Securing the Expansion Cabinets," for more information on unpacking and installation of a peripheral expansion cabinet.

1. Remove packaging from around the cabinet.
2. Remove the cabinet from the pallet.
3. Set the processor cabinet's main circuit breaker to the **OFF** position and set the LOCAL/REMOTE switch to the **OFF** position.
4. Mate and secure the expansion cabinet to the processor cabinet.
5. Install the SCSI host adapter in the VMEbus chassis.

> **NOTE**
>
> Refer to the *CONVEX SCSI Host Adapter Service Guide* for more information on installation of the SCSI host adapter.
>
> The maximum cable length allowed between the SCSI host adapter and the formatter is approximately 75 feet (25 meters).

6. Connect the cable from the SCSI host adapter in the VMEbus chassis to the formatter or the first formatter in the daisy chain.

> **NOTE**
>
> Refer to section 2.3.4.3, "Installation of the Formatter," for formatter cabling instructions.

Chapter 3
Integration and Test

3.1 Overview

The CONVEX 3480-compatible cartridge tape system must be integrated into the CONVEX Operating System (ConvexOS) before it can be used. This chapter contains guidelines for integrating a 3480-compatible cartridge tape drive into ConvexOS as well as information on the CONVEX diagnostic tests and internal tests for the 3480-compatible tape drive and the formatter.

> **NOTE**
>
> ConvexOS V8.1 or greater is required to operate a CONVEX 3480-compatible cartridge tape system.
>
> ConvexOS V8.1 requires a system generation of the software drivers when a SCSI host adapter and 3480-compatible cartridge tape system are installed.
>
> ConvexOS V9.0 or later contains all the software drivers needed for the SCSI host adapter. This means a system generation is not required when a SCSI host adapter and 3480-compatible cartridge tape system are installed.

3.2 Software Integration

The software for the CONVEX 3480-compatible cartridge tape system is released separately from ConvexOS and utilities. Refer to the *ConvexOS System Manager's Guide* for additional software integration information. That document includes a complete description of the software integration procedures for CONVEX 3480-compatible cartridge tape system software.

System-level hardware is identified to ConvexOS via a configuration file (*/ioconfig*) located on the Service Processor Unit (SPU) disk. The */ioconfig* file describes, in hierarchical fashion, the connections between VIOPs, VMEbus chassis number, controller type, Control and Status Register (csr) address, interrupt number, and peripheral device type. The device codes for the 3480-compatible cartridge tape system are listed below:

- MTC-202—SCSI host adapter
- MTD-207—3480 cartridge tape system

Figure 3–1 shows a typical */ioconfig* file with 3480-compatible cartridge tape system and SCSI host adapter specific items in **bold** type:

Figure 3–1, Example */ioconfig* File

```
iop 3
    mbus 0
      ctrl DKC-001 csr 0x3f0 int 2
        unit 0 type DKD-005
      ctrl MTD-001 csr 0x0c0 int 4
        unit 0 type MTC-001
      ctrl ACM-001 csr 0x3c0 int 7
        unit 0 type TTY
        unit 1 type TTY
        unit 2 type TTY
        unit 3 type TTY
        unit 4 type TTY
viop 4
    vme 0
      ctrl LAN-202 csr 0x7740 int 3
        unit 0 type unet

    vme 1
      ctrl MTC-202 csr 0xee00 int 2
        unit 0 subunit 0 type MTD-207
        unit 0 subunit 1 type MTD-207
        unit 0 subunit 2 type MTD-207
        unit 0 subunit 3 type MTD-207
        unit 1 subunit 0 type MTD-207
        unit 1 subunit 1 type MTD-207
        unit 2 subunit 0 type MTD-207
        unit 3 subunit 0 type MTD-207
      ctrl DKC-203 csr 0x800 int 3
        unit 0 DKD-214
        unit 1 DKD-214
      ctrl DKC-203 csr 0xa00 int 4
        unit 0 DKD-214
        unit 1 DKD-214
```

Whenever 3480-compatible cartridge tape drives or formatters are added or removed, the information in the hardware section of the configuration file (*/ioconfig*) must be changed, otherwise system operation problems will occur. Refer to the *ConvexOS System Manager's Guide* when making these changes.

3.3 Testing the 3480-Compatible Cartridge Tape System

The CONVEX 3480-compatible cartridge tape system is tested by the *dev_v3480* diagnostic program. This program verifies the operation of the 3480-compatible cartridge tape drive and the 3480-compatible formatter. The *dev_v3480* diagnostic program verifies the:

- Functional ability of the SCSI host adapter to operate in the CONVEX VMEbus I/O environment. This testing includes main memory access and interrupt generation and detection.
- Ability of the host adapter to detect anomalous conditions on the SCSI bus.
- Operational integrity of the cable interface between the tape controller and the tape unit.

The *dev_v3480* diagnostic program is an offline program that must be executed on the SPU while the CPU is halted. The procedures for executing this test are beyond the scope of this manual. This information is contained in the *CONVEX PBUS I/O System Diagnostics Manual*; consult that manual before running CONVEX diagnostics.

3.4 3480-Compatible Cartridge Tape Internal Tests

The CONVEX 3480-compatible cartridge tape drive has built-in diagnostics for troubleshooting and repair. These tests are accessed via the front panel (OP panel).

> **NOTE**
>
> The tape drive must complete power-up procedures before attempting to run any of the built-in diagnostics. Failure to do so will cause the diagnostics to fail.

Refer to *Fujitsu Cartridge Tape Drives CE Manual*, section 9.4, "Confirmation Test Procedure," for diagnostic test procedures.

Refer to *Fujitsu Cartridge Tape Drives CE Manual*, section 9.2, "Troubleshooting," for diagnostic and repair information.

3.5 3480-Compatible Formatter Internal Tests

The CONVEX 3480-compatible formatter has built-in diagnostics for troubleshooting and repair. These tests are accessed via the front panel (OP panel).

Refer to *Fujitsu Cartridge Tape Controller CE Manual*, chapter 4, "Troubleshooting Via the Front Panel," for diagnostic test procedures and diagnostic test overview.

Refer to *Fujitsu Cartridge Tape Controller CE Manual*, chapter 7, "Offline Routine Control Procedures," for a description of the built-in offline diagnostic tests.

Refer to *Fujitsu Cartridge Tape Controller CE Manual*, chapter 9, "Inline Diagnostic Routines," for a description of the built-in inline diagnostic tests.

Refer to *Fujitsu Cartridge Tape Controller CE Manual*, chapter 10, "Diagnostic Error Codes," for error code identification and explanation.

Chapter 4
Maintenance Procedures and IPB

4.1 Overview

This chapter gives information on preventative maintenance, removal/replacement procedures, an Illustrated Parts Breakdown (IPB), and CONVEX part numbers for the CONVEX 3480-compatible cartridge tape system.

4.2 Cartridge Tape Drive Preventative Maintenance

This section gives information on the preventative maintenance schedules and procedures for the 3480-compatible cartridge tape drive.

4.2.1 Cleaning the Tape Drive

This section describes the cleaning of the 3480-compatible cartridge tape drive:

> **NOTE**
>
> Cleaning cartridges may be purchased at the customer's local business supply or computer supply vendor. For more information on vendors, contact your local CONVEX sales office.

1. When cleaning is required, a message is displayed on the operator panel of the tape drive.
2. Insert the cleaning cartridge into the tape drive.
3. When the cleaning process is finished, the cleaning cartridge is rewound and ejected automatically.

> **NOTE**
>
> Refer to *Fujitsu Cartridge Tape Drives CE Manual,* chapter 4, "HOW TO OPERATE," section 4.3, "Cleaning," for more information on the cleaning of the tape drive.

4.2.2 Filter Maintenance

The 3480-compatible cartridge tape drive has a vane pump filter and an air filter which require replacement at least once a year. New filters may be ordered from your local CONVEX sales office. The following sections give removal/replacement procedures and part numbers for the vane pump filter and the air filter.

4.3 Cartridge Tape Drive Maintenance Procedures

This section gives information on the removal/replacement procedures and Integrated Parts Breakdown (IPB) for Field Replaceable Units (FRUs) for the 3480-compatible cartridge tape drive.

4.3.1 Tape Drive Unit Removal and Replacement

This section gives the procedure for removing and replacing the 3480-compatible cartridge tape drive:

4.3.1.1 Removal

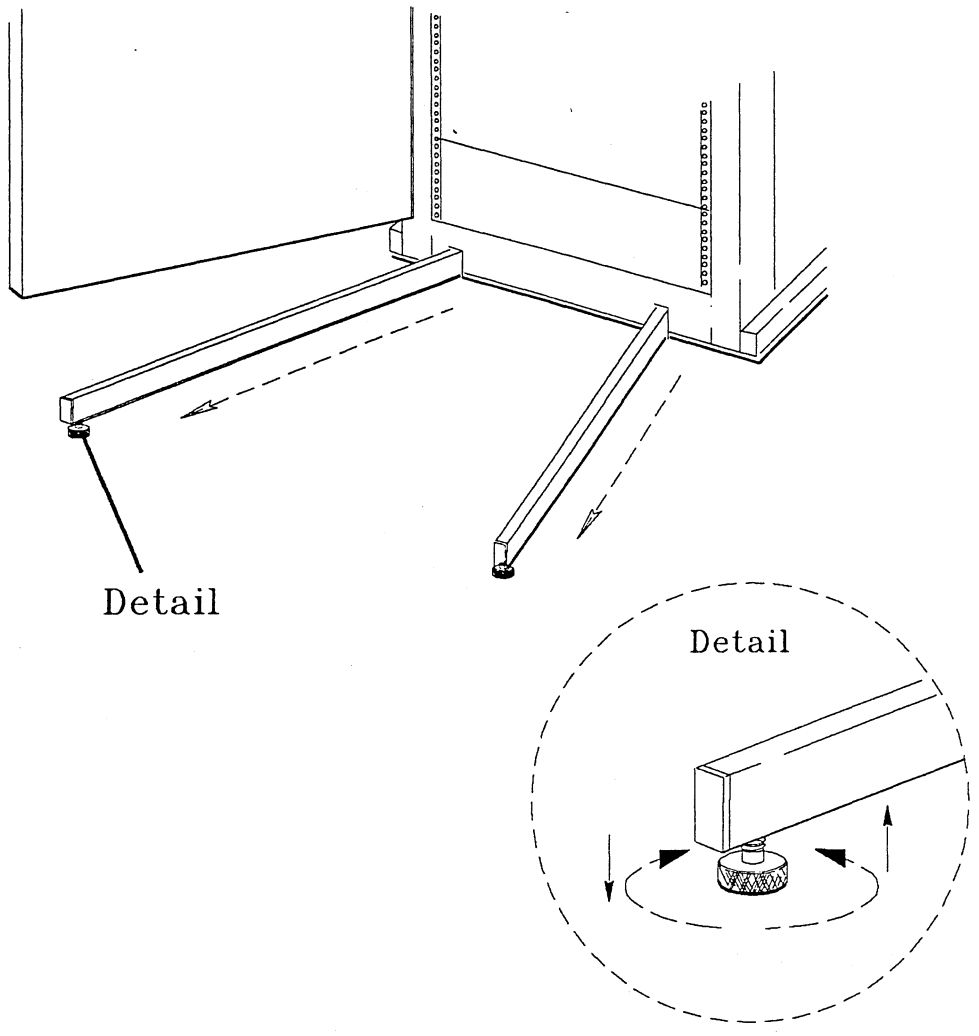
> **CAUTION**
>
> Remove power to the expansion cabinet before removing or servicing any equipment. Failure to do so will cause damage to electronic equipment components.

1. Remove power to the expansion cabinet.
   - To remove power from a CONVEX EXP-101 or EXP-102 expansion cabinet, disconnect the AC power cord from the AC power source.
   - To remove power from a CONVEX EXP-105 high-performance expansion cabinet, set the main power control switch to the **OFF** position.

> **WARNING**
>
> Expansion cabinet stabilizer bars *must* be extended prior to extending any component installed in the expansion cabinet. Failure to do so will make the expansion cabinet unstable, increase the possibility of it falling forward, can cause injury to personnel, and will cause damage to equipment.

2. Extend the expansion cabinet stabilizer bars and adjust the feet until they are in firm contact with the floor. Figure 4–1 shows the expansion cabinet stabilizer bars and adjustable feet:

Figure 4–1, Expansion Cabinet Stabilizer Bars



3. Disconnect the target tape drive's power supply's AC power cord from the expansion cabinet's power strip.
4. Remove the 2 screws holding the cartridge tape drive tray and slide the tray partially out of the cabinet.
5. Remove the 2 screws securing the shielding bracket covering the cables and remove the shielding bracket.
6. Mark each cable attached to the tape drive for easy replacement.

7. Remove each cable attached to the tape drive. Remove the terminator from the tape drive (if present).
8. Remove the 2 screws that secure the cable shielding clamp to the tape drive.
9. Remove the 4 screws from the bottom of the tray holding the target tape drive.
10. Remove the tape drive.

4.3.1.2 Replacement

1. Place the replacement tape drive in the tray.
2. Install the 4 screws into the bottom of the tray that holds the replacement tape drive.

> **NOTE**
>
> Refer to chapter 2, "Unpacking and Installation," section 2.3.4.1, "Installation of the Cartridge Tape Drive and Power Supply," for more detailed cabling instructions.

3. Install the 2 screws that secure the cable clamp bracket to the tape drive.
4. Install the cables and terminator (if necessary) to the tape drive.
5. Install the shielding bracket over the cable clamp bracket and secure with 2 screws.
6. Slide the tape drive tray back into the expansion cabinet.
7. Install the 2 screws that hold the tray in the expansion cabinet.
8. Connect the power supply's AC power cord to the expansion cabinet's power strip.
9. Return the expansion cabinet stabilizer bars to their retracted position.
10. Return power to the expansion cabinet.
    - To return power to a CONVEX EXP-101 or EXP-102 expansion cabinet, connect the AC power cord to the AC power source.
    - To return power to a CONVEX EXP-105 high-performance expansion cabinet, set the main power control switch to the **ON** position.

4.3.2 Power Supply Removal and Replacement

This section gives the procedure for removing and replacing the power supply of the 3480-compatible cartridge tape drive:

4.3.2.1 Removal

> **CAUTION**
>
> Remove power to the expansion cabinet before removing or servicing any equipment. Failure to do so will cause damage to electronic equipment components.

1. Remove power to the expansion cabinet.
   - To remove power from a CONVEX EXP-101 or EXP-102 expansion cabinet disconnect the AC power cord from the AC power source.
   - To remove power from a CONVEX EXP-105 high-performance peripheral cabinet set the main power control switch to the **OFF** position.

> **WARNING**
>
> Expansion cabinet stabilizer bars *must* be extended prior to extending any component installed in the expansion cabinet. Failure to do so will make the expansion cabinet unstable, increase the possibility of it falling forward, can cause injury to personnel, and will cause damage to equipment.

2. Extend the expansion cabinet stabilizer bars and adjust the feet until they are in firm contact with the floor. Figure 4-1 shows the expansion cabinet stabilizer bars and adjustable feet.
3. Disconnect the target power supply's AC power cord from the expansion cabinet's power strip.
4. Remove the AC power cord, the **PCI** cable, and the **PCO** cable (if installed) from the rear of the power supply.
5. Remove the 2 screws holding the power supply to the rear of the tray.
6. Remove the 2 screws holding the cartridge tape drive tray and slide the tray partially out of the cabinet.
7. Remove the 2 screws securing the shielding bracket to the tape drive and remove the shielding bracket.
8. Remove the DC power cable from the front of the power supply.
9. Remove the 2 screws from the bottom front of the power supply securing it to the tray.

10. Remove the power supply from the tray.

4.3.2.2 Replacement

1. Install the new power supply.
2. Install the 2 screws to the bottom front of the power supply securing it to the tray.
3. Connect the DC power cable to front of power supply.
4. Install the shielding bracket the 2 screws that secure it.
5. Slide the tray back into the cabinet and install the 2 screws holding the tray to the cabinet.
6. Install the 2 screws to the rear of the power supply that secure it to the tray.
7. Connect the **PCI** cable, the **PCO** cable (if necessary), and the AC power cable to the rear of the power supply.
8. Connect the power supply's AC power cord to the expansion cabinet's power strip.
9. Return the expansion cabinet stabilizer bars to their retracted position.
10. Return power to the expansion cabinet.
    - To return power to a CONVEX EXP-101 or EXP-102 expansion cabinet connect the AC power cord.
    - To return power to a CONVEX EXP-105 high-performance expansion cabinet set the main power control switch to the **ON** position.

4.3.3 Air Filter Removal/Replacement

Refer to the *Fujitsu Cartridge Tape Drives CE Manual*, chapter 9, "MAINTENANCE," section 9.3.8, "Filter replacement," for the procedures to remove and replace the air filter.

4.3.4 Vane Pump Filter Removal/Replacement

Refer to the *Fujitsu Cartridge Tape Drives CE Manual*, chapter 9, "MAINTENANCE," section 9.3.9, "Vane pump filter replacement," for the procedures to remove and replace the vane pump filter.

4.3.5 CR Board Removal/Replacement

Refer to the *Fujitsu Cartridge Tape Drives CE Manual*, chapter 9, "MAINTENANCE," section 9.3.15, "PCA-CR removal/mounting (with bracket)," for the procedures to remove and replace the CR board.

4.3.6 OP Panel Board Removal/Replacement

Refer to the *Fujitsu Cartridge Tape Drives CE Manual*, chapter 9, "MAINTENANCE," section 9.3.2, "PCA-OP replacement," for the procedures to remove and replace the OP panel board.

4.4 Formatter Maintenance Procedures

This section gives information on the removal/replacement procedures and IPB for Field Replaceable Units (FRUs) for the 3480-compatible system formatter.

4.4.1 Formatter Unit Removal/Replacement

This section gives information on the removal and placement of the 3480-compatible formatter:

4.4.1.1 Removal

> **CAUTION**
>
> Remove power to the expansion cabinet before removing or servicing any equipment. Failure to do so will cause damage to electronic equipment components.

1. Remove power to the expansion cabinet.
   - To remove power from a CONVEX EXP-101 or EXP-102 expansion cabinet, disconnect the AC power cord from the power source.
   - To remove power from a CONVEX EXP-105 high-performance expansion cabinet, set the main power control switch to the **OFF** position.

> **WARNING**
>
> Expansion cabinet stabilizer bars *must* be extended prior to extending any component installed in the expansion cabinet. Failure to do so will make the expansion cabinet unstable, increase the possibility of it falling forward, can cause injury to personnel, and will cause damage to equipment.

2. Extend the expansion cabinet stabilizer bars and adjust the feet until they are in firm contact with the floor. Figure 4-1 shows the expansion cabinet stabilizer bars and adjustable feet.
3. Mark all cables connected to the rear of the formatter for easy reconnection.
4. Disconnect the AC power cable, the **PCI** cable, the **MTU DIGITAL** cable, the **MTU ANALOG** cable, the **SCSI IN**, and the **SCSI OUT** cable from the rear of the formatter.
5. Slide the formatter out of the cabinet.

4.4.1.2 Replacement

1. Install new formatter into cabinet.
2. Connect the AC power cable, the **PCI** cable, the **MTU DIGITAL** cable, the **MTU ANALOG** cable, the **SCSI IN**, and the **SCSI OUT** cable to the rear of the formatter.
3. Return the expansion cabinet stabilizer bars to their retracted position.
4. Return power to the expansion cabinet.
   - To return power to a CONVEX EXP-101 or EXP-102 expansion cabinet, connect the AC power cord.
   - To return power to a CONVEX EXP-105 high-performance expansion cabinet, set the main power control switch to the **ON** position.

4.4.2 PC Board Removal/Replacement

> **NOTE**
>
> A special tool (CONVEX part number 900-000235-001) is required to remove the PC boards from the formatter.

Refer to *Fujitsu Cartridge Tape Controller Customer Engineering Manual*, chapter 2, "FRU REMOVAL AND REPLACEMENT," sections 2.5.1, "PCB removal" and 2.5.2, "PCB replacement," for the procedures to remove and replace PC boards within the formatter.

4.4.3 OP Panel Assembly Removal/Replacement

Refer to the *Fujitsu Cartridge Tape Controller Customer Engineering Manual* chapter 2, "FRU REMOVAL AND REPLACEMENT," sections 2.5.3, "Front panel removal" and 2.5.4, "Front panel replacement," for the procedures to remove and replace the OP panel assembly.

4.4.4 Fan Removal/Replacement

Refer to the *Fujitsu Cartridge Tape Controller Customer Engineering Manual* chapter 2, "FRU REMOVAL AND REPLACEMENT," sections 2.5.7, "Power supply fan removal," and 2.5.8 "Power supply fan replacement," for the procedures to remove and replace the power supply fan.

4.4.5 Power Supply Removal/Replacement

Refer to the *Fujitsu Cartridge Tape Controller Customer Engineering Manual* chapter 2, "FRU REMOVAL AND REPLACEMENT," sections 2.5.5, "Power supply removal," and 2.5.6, "Power supply replacement," for the procedures to remove and replace the power supply.

4.5 3480-Compatible Cartridge Tape Drive Part List

Table 4–1 lists the part numbers and descriptions for the FRUs of the 3480-compatible cartridge tape drive:

Table 4–1, 3480-Compatible Cartridge Tape Drive Parts List

Part Number	Description
207-000015-201	TAPE DR,CART 3MBS,SCSI/DIFF IF BLK
207-000015-003	POWER SUPPLY, 3480 CART TAPE SYSTEM
900-000502-001	CR BOARD, FUJITSU 3480 TAPE
900-000501-001	OP BOARD, FUJITSU 3480 TAPE
900-000503-001	VANE PUMP FILTER, FUJITSU 3480 TAPE
900-000504-001	AIR FILTER, FUJITSU 3480 TAPE
207-000015-014	TERMINATOR, 3480 TAPE DRIVE

NOTE

Refer to *Fujitsu Cartridge Tape Drives CE Manual*, chapter 9, "MAINTENANCE," section 9.3, "Parts Replacement," for part identifications.

4.6 3480-Compatible Formatter Parts List

Table 4–2 lists the part numbers and descriptions for the FRUs of the 3480-compatible cartridge tape formatter:

Table 4–2, 3480-Compatible Formatter Parts List

Part Number	Description
207-000015-024	CNTRL/FMTR, 3MBS DIFF/SCSI BLACK
900-000500-001	RA BOARD, FUJITSU 3480 FORMATTER
900-000509-001	FM BOARD, FUJITSU 3480 FORMATTER
900-000510-001	DI BD, FUJITSU 3480 FORMATTER
900-000508-001	XL BOARD, FUJITSU 3480 FORMATTER
900-000506-001	OP PANEL, FUJITSU 3480 FORMATTER
900-000507-001	FAN, FUJITSU 3480 FORMATTER
900-000505-001	PWR SUPPLY, FUJITSU 3480 FORMATTER

NOTE

Refer to *Fujitsu Cartridge Tape Controller Customer Engineering Manual*, chapter 3, "ILLUSTRATED PARTS CATALOG," for part identifications.

4.7 3480-Compatible Cartridge Tape System Cable List and IPB

Table 4–3 lists the part numbers, descriptions, and figure item numbers of the cables for a 3480-compatible cartridge tape system:

Table 4–3, 3480-Compatible Cartridge Tape System Cable List

Part Number	Description	Item Number
605-030004-202	CABLE ASSY,JUMPER,3COND,18 AWG 20"[1]	1,4
304-000017-001	CORD SET, PWR, 115V (AMERICAN)[2]	1,4
304-000017-002	CORD SET, PWR, 220V (AMERICAN)[2]	1,4
207-000015-017	CABLE ASSY, POWER CONTROL (PC) 3480	2
604-500006-200	CABLE ASSY, STD/CINCH SHLD 20 FT	3
604-500006-201	CABLE ASSY, STD/CINCH SHLD 50 FT	3
604-500006-202	CABLE ASSY, STD/CINCH SHLD 10 FT	3
207-000015-011	TERMINATOR, SCSI, DIFF	5
207-000015-012	CABLE SET, CTC-CTU, 2 METERS	6
900-000025-003	CABLE ASSY, DIGITAL CTC-CTU 3480	6
900-000025-004	CABLE ASSY, ANALOG CTC-CTU 3480	6
604-500013-200	CABLE ASSY, CINCH/CINCH PLUG 2.0FT	7
604-500013-201	CABLE ASSY, CINCH/CINCH PLUG 5 FT	7
604-500013-202	CABLE ASSY, CINCH/CINCH PLUG 10 FT	7
207-000015-020	CABLE, DC POWER 3480 TAPE DR	8
207-000015-006	CABLE SET, CTU-CTU, 2 METERS	9,10
900-000025-001	CABLE ASSY, ANALOG CTU-CTU 3480	9
900-000025-002	CABLE ASSY, DIGITAL CTU-CTU, 3480	10

[1] This is used with the EXP-105 High Performance Peripheral Cabinet (HPPC).
[2] This is used with a standard EXP-101 or EXP-102 peripheral cabinet.

Figures 4–2 and 4-3 show the IPB callouts for the cables of a 3480-compatible cartridge tape system:

Figure 4–2, 3480-Compatible Cartridge Tape System Cable IPB #1

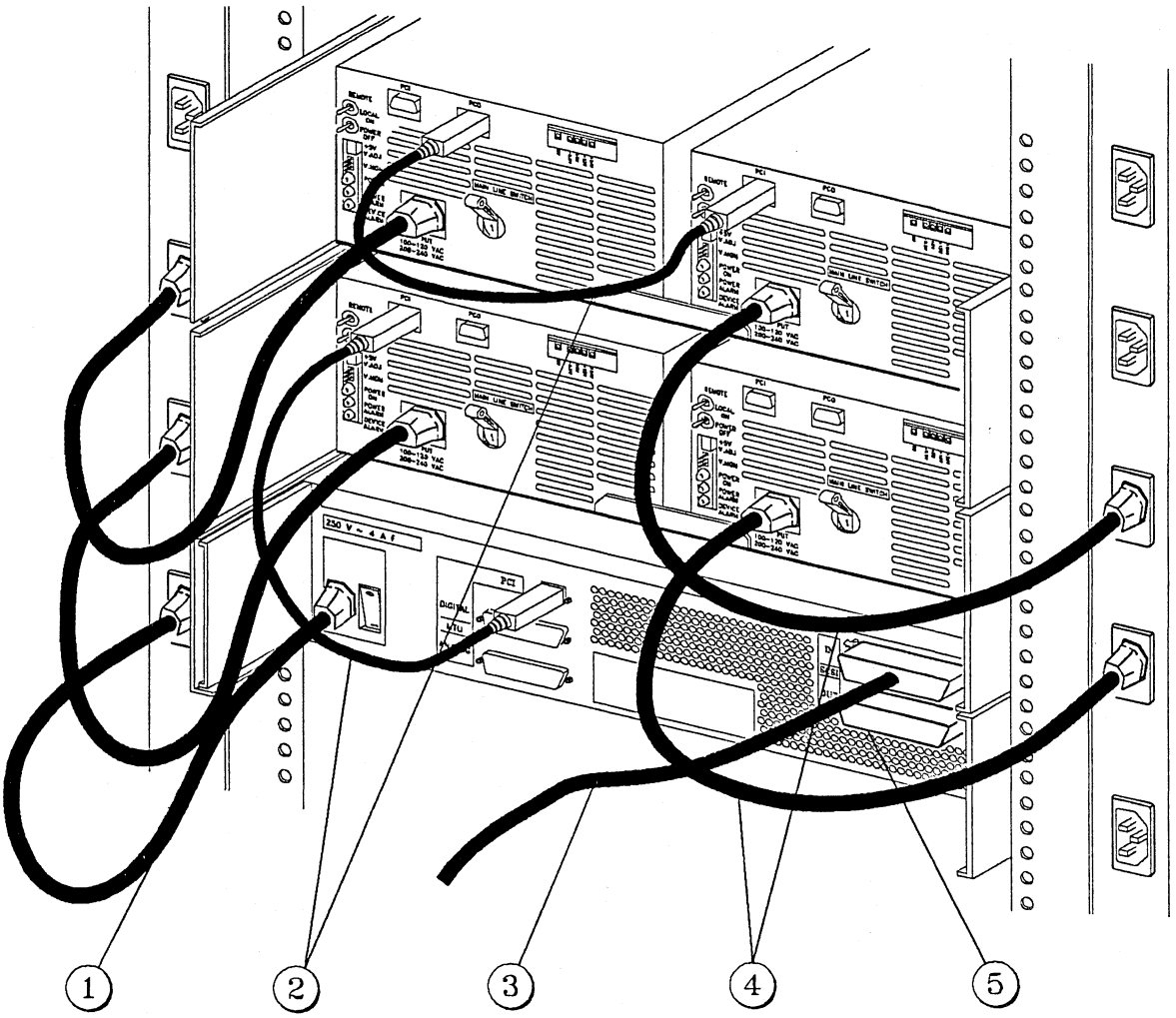


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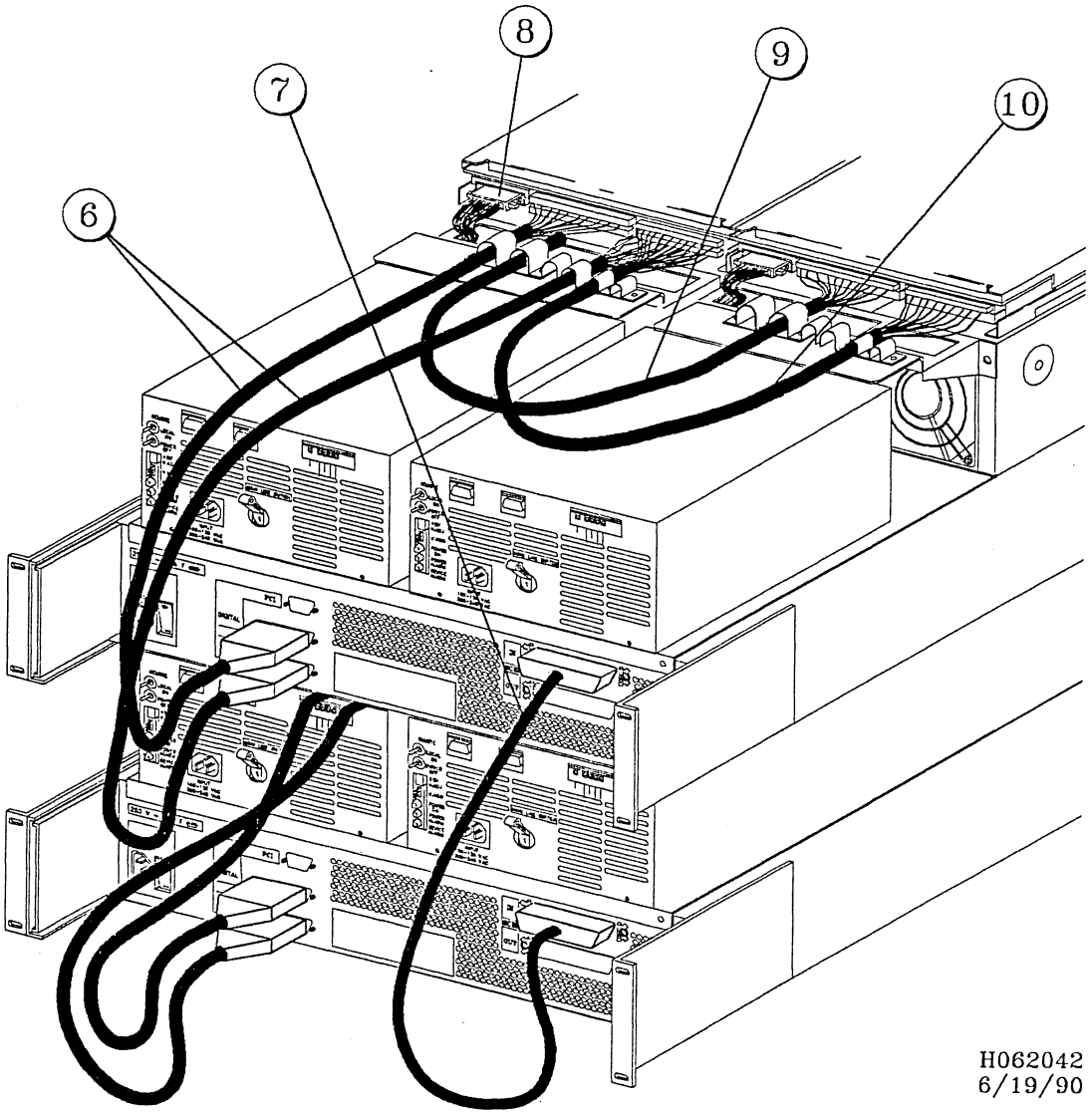
Figure 4–3, 3480-Compatible Cartridge Tape System Cable IPB #2



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Appendix A
Fujitsu 2481B Tape Subsystem Configurator

This appendix contains a copy of the Fujitsu 2481B Tape Subsystem Configurator document.

> **NOTE**
>
> The *Fujitsu 2481B Tape Subsystem Configurator* document contains basic configuration information for the 3480-compatible tape subsystem. In the event of changes regarding Fujitsu 2481B tape subsystem configuration, an updated version of the document will be made available. Configurator document updates should be inserted into this appendix.

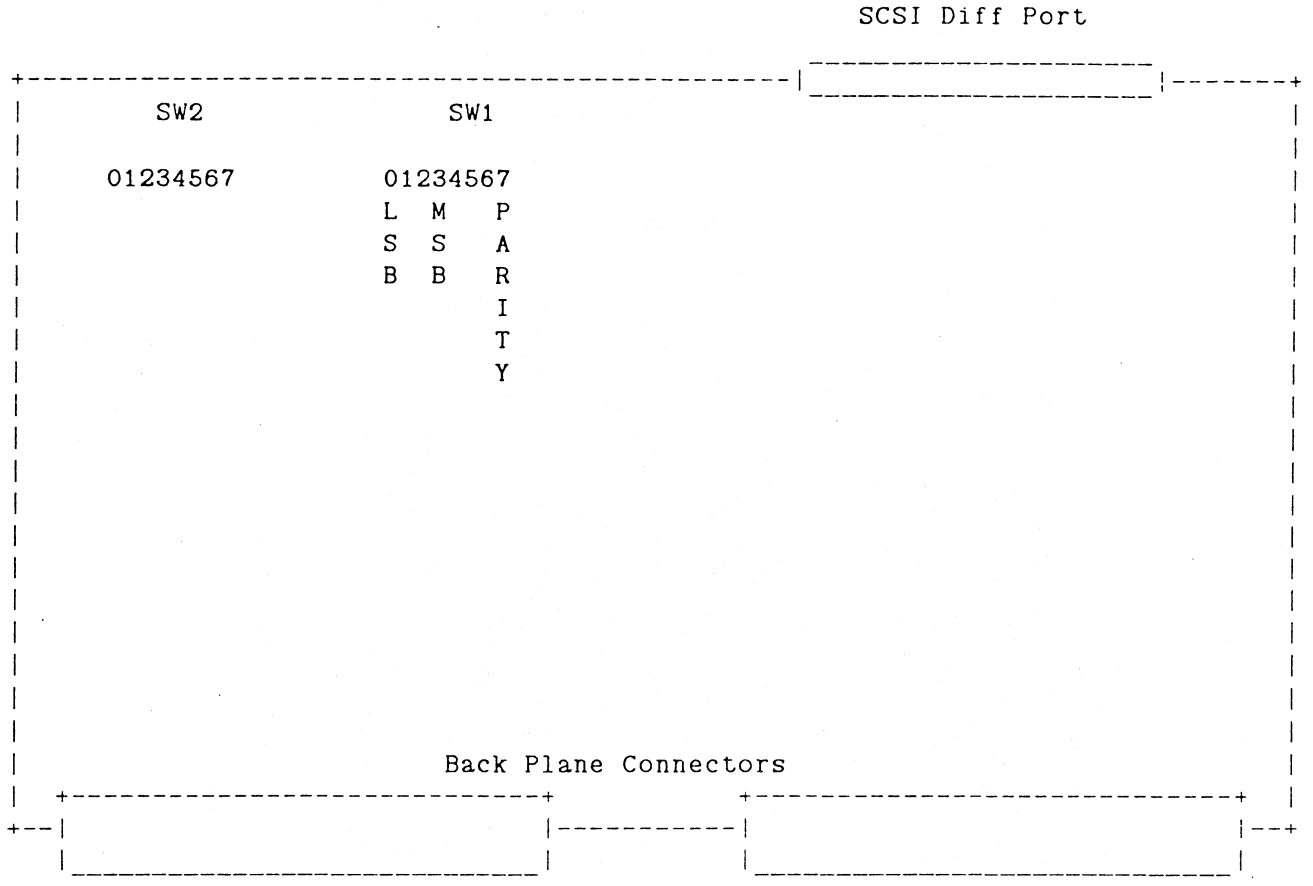
Fujitsu 2481B 3480 Compatible Tape Subsystem

1.1 Scope

The purpose of this document is to provide configuration information for the Fujitsu 2481B Tape Subsystem, (CONVEX P/N 220-000015-200).

The Tape subsystem consist of two units minimum. At least one tape drive (PN 207-000015-200) and one formatter (PN 207-000015-800). To configure the subsystem extend the formatter and set the switches on the DI board. It is the inner most board in the slot marked SI/DI. There are no switches to be set on the Tape Unit.

1.2 Tape Subsystem Configuration



Normal Usage: Base Address of 1st controller in the SCSI BUS is normally "0".

The Interrupt Level is always configured OFF.

CONVEX	TITLE: Fujitsu 2481B Tape Subsystem Configurator Part Number: 207-000015-600	REV: A.0 06/20/90 ENGR: John Rachels PAGE: 1

1.2 Tape Subsystem Configuration (continued)

Jumper & Switch Setting Options:

SCSI DEVICE ADDRESS SWITCH SETTINGS

BASE ADDRESS	*0*	*1*	*2*	*3*	*7*
0	OFF	OFF	OFF	OFF	ON
1	ON	OFF	OFF	OFF	ON
2	OFF	ON	OFF	OFF	ON
3	ON	ON	OFF	OFF	ON

NOTE:
Switch "7", the eighth switch of SW1, the Parity switch, must always be set to "ON".

Switches 4-6 on SW1 are used for trouble shooting. They set an RS232 address to allow a terminal connection. Refer to CE manual 900-000444-001.

The AC power for the Formatter can be set to 110VAC or 230VAC. To set the power supply it is necessary to open the Formatter and move a jumper in the power supply. To execute this maneuver properly refer to the procedure defined in the Service Guide.

The Tape Drive Unit has a user interface for setting address of the unit and other data. Refer to the CE manual 900-000443-001 or the Convex Service Guide.

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Appendix B
Reporting Problems

B.1 Overview

This appendix introduces the CONVEX Technical Assistance Center (TAC) and the *contact* utility. The *contact* utility is an online system for reporting problems to the TAC. To learn *contact* by using it, enter **contact** at the system prompt and then answer the questions as they appear on the screen. To find out more about using *contact*, read through this appendix. It describes prerequisites and tips for using *contact* and the step-by-step process *contact* takes you through.

B.2 Technical Assistance Center

The CONVEX Technical Assistance Center (TAC) is staffed by technical specialists who can address the diverse questions and problems that arise in a supercomputing environment. If you have a hardware, software, or documentation problem, contact the TAC. This group stands ready to solve such problems.

B.3 The *contact* Utility

The TAC recommends using the *contact* utility to report a hardware, software, or documentation problem. The *contact* utility is an interactive utility that helps the TAC track reports and route them to the the CONVEX personnel most qualified to fix them.

After invoking *contact*, it prompts for information about the problem. When you finish your report, *contact* electronically mails it to the TAC. You are notified within 48 hours that the TAC has received your report.

B.4 Prerequisites

To use *contact* requires

- a UNIX-to-UNIX Communication Protocol (UUCP) connection to the TAC
- the full path name of the program or utility in question
- the version number of the program or utility in question

B.4.1 UUCP Connection

Before using *contact*, check with your system administrator to be sure there is a UUCP connection to the TAC. A UUCP connection allows files to be copied from one UNIX system to another. The *uucp* (UNIX-to-UNIX copy) command relies on either a dial-up or hard-wired UUCP communication line.

B.4.2 Finding the Program Path Name

To determine the full path name of the program or utility in question, use the *which* command. The following screen illustrates using the *which* command to find the full path name of the loader (*ld*) utility:

```
>which ld
/bin/ld
>
```

In this example, the full path name of the loader is */bin/ld*.

For more information on the *which* command, refer to the *which*(1) man page. You can also use the *info* online information system. Enter **info which** at the system prompt. If you use the C shell (*csh*), you can also use the *whence* command to find the program path name. The *whence* command works like *which*, only faster.

B.4.3 Finding the Program Version Number

To determine the version number of the program or utility in question, use the *vers* command. The following screen illustrates using the *vers* command (enter **vers**, then the path name of the program or utility) to find the version number of the loader (*ld*) utility.

```
>vers /bin/ld
/bin/ld: 7.0
>
```

In this example, the loader utility version number is 7.0.

For more information on the *vers* command, refer to the *vers*(1) man page. You can also use the *info* online information system. To do so, enter **info vers** at the system prompt.

B.5 Tips on Using the *contact* Utility

The *contact* utility is interactive and easy to use. This section lists tips to help use it efficiently. In particular, this section tells how to

- use a *.contact* file
- abort a contact session
- resubmit an aborted report
- suspend a contact session
- move from one prompt to another
- use tilde-escape sequences in the *contact* utility

B.5.1 Using a *.contact* File

When invoked, *contact* prompts for information regarding the problem. The first prompt is for your name, title, phone number, and company name. You can, however, create a *.contact* file to skip this first prompt. Follow these steps:

1. Create a *.contact* file in your home directory.
2. Enter your name, job title, phone number, and company name, each on a new line.

When you invoke *contact*, it automatically includes the *.contact* file as input for the first prompt and proceeds to the next prompt.

B.5.2 Aborting the Report

To abort a contact report, either enter the interrupt key (usually CTRL-C) or choose the abort option when prompted by the *contact* utility. Using CTRL-C to abort does not save the contents of the report. Using the abort option saves the contents of the report in a file named *dead.report* in your home directory.

B.5.3 Submitting the *dead.report* File

When aborting a contact session, the *contact* utility saves the report in a file named *dead.report* in your home directory. Using the *contact* command with the *-r* option automatically merges the contents of the *dead.report* file into the new contact session. Enter

contact -r

and *contact* finds the *dead.report* file in your home directory and merges it into the contact report. You can then edit the report. When you end the editing session, *contact* returns to the final prompt, which asks you to review, edit, submit, or abort the report.

B.5.4 Suspending a Report

Sometimes it is necessary to stop in the middle of a contact report and return to the shell (for instance, to suspend the contact session to find the program path name or version number). To suspend the contact session, press CTRL-Z. To return to the contact session, enter **fg**. Using CTRL-Z and the *fg* (foreground) command lets you switch back and forth between the *contact* utility and the shell. You cannot, however, use CTRL-Z and *fg* to switch back and forth if you are using a Bourne shell (*sh*).

B.5.5 Ending a Response

The *contact* utility prompts for information pertinent to your hardware, software, or documentation question. Some prompts require one-line responses; to move to the next prompt, press RETURN. Other prompts require more than a one-line response; to move to the next prompt, press CTRL-D.

B.5.6 Tilde-Escape Sequences

The *contact* utility treats input beginning with a tilde (~) as a special sequence. The character following the tilde is considered a request for a special function. The following tilde sequences are recognized by *contact*:

~e	Start the text editor (defined in your EDITOR environment variable).
~h	Display a list of available tilde-escape sequences.
~p	Print the contact report to the terminal screen.
~r *filename*	Read the contents of *filename* as a response to the current prompt. Some prompts require only a one-line response. This tilde-escape sequence only works for prompts that allow more a than one-line response.
~~	Insert a single tilde as the first character in the line.

B.6 Using the *contact* Utility

The *contact* utility prompts for the following information:

- your name, title, phone number, and corporate name
- the name and version of the product involved
- a one-line summary of the problem
- a detailed description of the problem
- the priority of the problem
- instructions on how to reproduce the problem
- comments about the problem
- comments about the documentation supporting the problem
- files to include in the contact report

The following is a step-by-step discussion of these prompts:

1a. To invoke the *contact* utility, enter **contact** at the system prompt. The system responds with a welcome message and a series of questions regarding your hardware, software, or documentation question. The following screen illustrates the *contact* command and the system response:

```
>contact
Welcome to contact version 0.11 ()

Enter your name, title, phone number, and corporate name (^D to terminate)
>
```

1b. If there is a *.contact* file in your home directory, *contact* skips the first prompt. The following screen illustrates the *contact* command and the system response when a *.contact* file is in your home directory:

```
>contact
Welcome to contact version 0.11 ()

Enter the name of the product involved
>
```

2. The *contact* utility prompts for the version number of the product. If you do not know the version number, use CTRL-Z to suspend the session. Use the *which* (or *whence* if using *csh*) and *vers* commands to find the version number of the product. Use the *fg* command to return to the session and enter the version number in the form X.X or X.X.X.X.
3. The *contact* utility prompts for a one-line summary of the problem. This summary is the subject header in any further correspondence regarding the problem. Make this summary as descriptive as possible in one line.
4. The *contact* utility prompts for a detailed description of the problem. Make this description as complete as possible. Include source code and a stack backtrace whenever possible. (Refer to the *adb*(1) or *csd*(1) man page for information on obtaining a stack backtrace.) The more information provided, the quicker the TAC can isolate and solve the problem.
5. The *contact* utility prompts for the priority of the problem. The following screen illustrates this prompt and the priority levels from which to choose; you must enter a priority number.

```
Enter a problem priority, based on the following:
1) Critical    - work cannot proceed until the problem is resolved.
2) Serious     - work can proceed around the problem, with difficulty.
3) Necessary   - problem has to be fixed.
4) Annoying    - problem is bothersome.
5) Enhancement - requested enhancement.
6) Informative - for informational purposes only.
>
```

6. The *contact* utility prompts for an explanation of how to reproduce the problem. Include the command syntax and options you used and anything else you did to make your program run.
7. The *contact* utility prompts for any other pertinent comments. Include any relevant information.
8. The *contact* utility prompts for suggestions regarding the documentation supporting the product. Indicate if the documentation could be revised to address the question.
9. The *contact* utility asks for the names of files necessary to reproduce the problem. The following screen illustrates the *contact* prompt and sample user response:

```
Are there any files that should be included in this report (yes | no)?
>yes
Please enter the names of the files, one to a line (^D to terminate)
>test.f
>~/subroutines/sub.f
>
```

> **NOTE**
>
> Tilde-escape sequences are not recognized in responses to this prompt. Instead, *contact* treats a tilde in this section to mean your home directory. This convention is based on use of the tilde for expanding file names in *csh*.

If the files specified are small text files, they are automatically included in the contact report. If the files are too big to be included in this report, *contact* gives further instructions on how to submit these files.

To specify a directory, combine the directory files into a single file using the *tar* command (refer to the *tar*(1) man page for further information) or enter each file name in the directory on a single line in the contact report.

10. The *contact* utility prompts you to review, edit, submit, or abort the contact report. The following screen illustrates this prompt:

```
Please select one of the following options:
1) Review the problem report.
2) Edit the problem report.
3) Submit the problem report.
4) Abort the problem report.
>
```

Choose the number of the option you want to select. These options let you do the following:

Review	Review the text of your contact report. You are then prompted again to select an option.
Edit	Edit the text of the contact report. If you choose to edit the report, *contact* puts you in your default text editor.
Submit	Send the report to the CONVEX TAC. You are notified within 48 hours that the TAC has received the report. This option exits the *contact* utility and returns you to the shell environment.
Abort	Save the text of your report in a file named *dead.report* in your home directory. This option exits the *contact* utility and returns you to the shell environment.

Index

F

H

I

J

L

M

N

O

P

R

S

T

U

V

W

Electronic Mail

Using Electronic Mail

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