
VAX 6000

VAX6000
Rack Mountable Series System

digital™

Installation/Owner's Manual

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Preface

The *VAX6000 Rack Mountable Series System Installation/Owner's Manual* provides information to Digital customer service personnel and customer maintenance personnel on the installation of the VAX6000 Rack Mountable Series System, and information on the operation and maintenance of the equipment.

ORGANIZATION

The *VAX6000 Rack Mountable Series System Installation/Owner's Manual* is organized in the following manner:

- **CHAPTER 1, INTRODUCTION** — Provides an overview of the VAX6000 Rack Mountable Series System, and describes the major chassis, control panel, and power supply trays that make up this system. Specifications for the BA60-BB and BA61-BB Chassis are also included.
- **CHAPTER 2, INSTALLATION** — Discusses site preparation, environmental and electrical requirements, checking the shipment, setting up the chassis, and cabling the BA60-BB and BA61-BB Chassis that make up the system.
- **CHAPTER 3, OPERATION** — Describes how to power-up and power-down the equipment.
- **CHAPTER 4, TROUBLESHOOTING** — Describes performing various steps in basic troublehooting and routine maintenance procedures.

- **CHAPTER 5, REMOVE AND REPLACEMENT** — Describes the removal and replacement procedures for all Field Replaceable Units (FRUs) within the VAX6000 Rack Mountable Series System.
- **APPENDIX A, FIELD REPLACEABLE UNITS** — Lists all FRUs and their part numbers.

CONVENTIONS

Where notes, cautions, and warnings are used in this document, they highlight specific types of information as follows:

NOTE A note calls the reader's attention to any item of information that may be of special importance.

CAUTION A caution contains information essential to avoid damage to the equipment.

WARNING A warning contains information essential to the safety of personnel.

RELATED DOCUMENTATION

VAX6300 VAX Fileserver, 6300 Mini-Reference Guide	EK-620AC-46
VAX6300 VAX Fileserver, 6300 Installation Guide	EK-620AC-IN
VAX6300 VAX Fileserver, 6300 Maintenance Advisory	EK-6263M-MA
VAX6300 VAX Fileserver 6300 Owner's Manual	EK-620AC-OM
VAX6300 VAX Fileserver Systems Technical User's Guide	EK-620AB-TM
VAX6200/6300 Options and Maintenance Manual	EK-620AB-MG
VAX6200/6300 System Upgrade Installation Guide	EK-623AA-UP
VAX6000-400 Mini-Reference Guide	EK-640EA-HR
VAX6000-400 Installation Guide	EK-640EA-IN
VAX6000-400 Maintenance Advisory	EK-620AC-OM
VAX6000-400 Options and Maintenance Manual	EK-640EA-MG
VAX6000-400 Owner's Manual	EK-640EA-OM
VAX6000-400 Systems Technical User's Guide	EK-640EA-TM
VAXBI Expander Cabinet Installation Guide	EK-VBIEA-IN
VAXBI Options Handbook	EB-29228-46

INSTALLATION INSTRUCTIONS

ATTENTION
INSTALLATION INSTRUCTIONS
FOR
EQUIPMENT POWER SERVICE

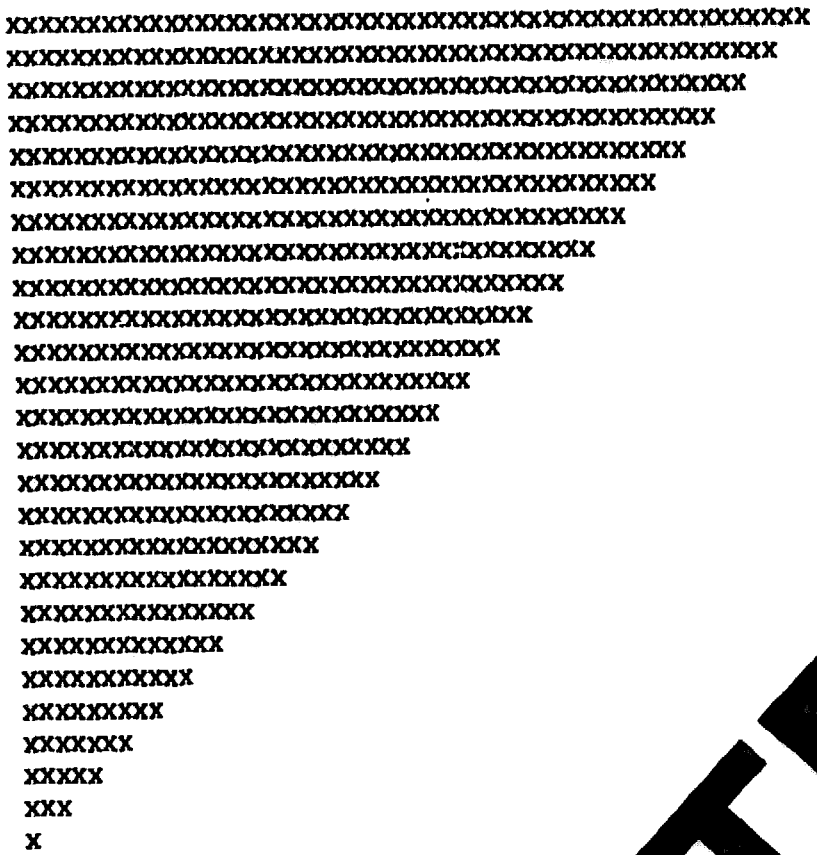
An insulated grounding conductor that is identical in size, insulation material and thickness to the grounded and ungrounded branch-circuit supply conductors except that it is green, with or without one or more yellow stripes, is to be installed as part of the branch circuit that supplies the unit or system.

The grounding conductor described in the above paragraph is to be grounded to earth at the service equipment or, if supplied by a separately derived system, at the supply transformer or motor-generator set.

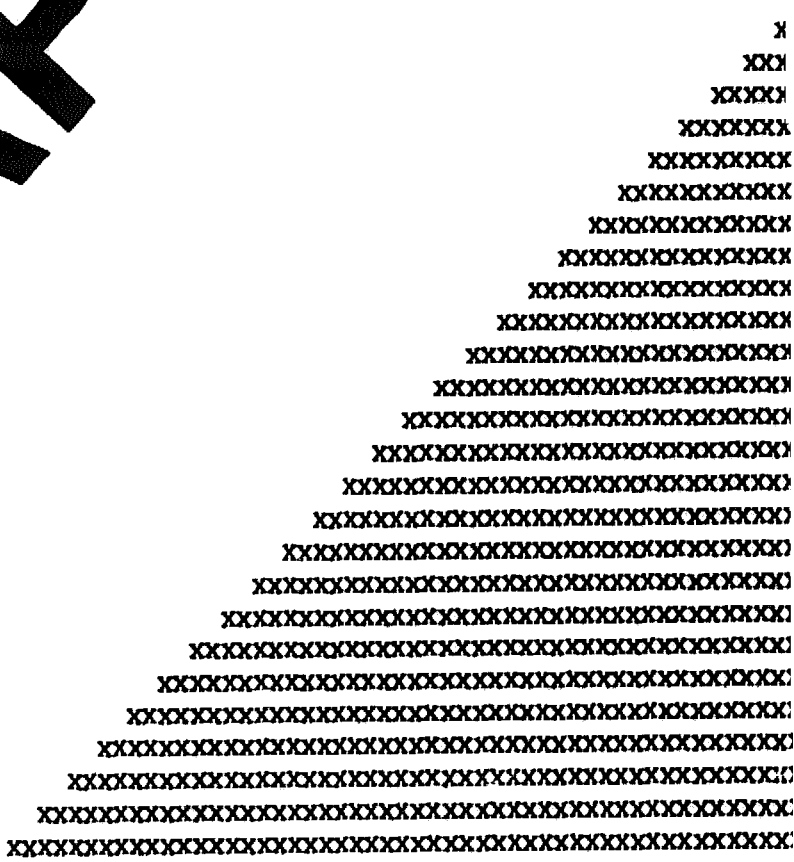
The attachment-plug receptacles in the vicinity of the unit or system are all to be of a grounding type, and the grounding conductors serving these receptacles are to be connected to earth ground at the service equipment.

FCC NOTICE:

The VAX6000 Series Systems Chassis (BA60-BB and BA61-BB) must be mounted in a shielded enclosure and tested to ensure compliance to the FCC and/or VDE regulations. Systems not provided within an enclosure which has been so tested will require the end user to provide proper shielding and testing to ensure compliance to the requirements specified by the appropriate regulatory agencies. Custom configurations will be supplied with the appropriate levels of compliance or statements to the action required by the end user to ensure compliance. These statements will be detailed and agreed to by all parties, as attested by signatures on the Functional Specification, prior to delivery of any equipment and/or systems configured utilizing either or both of the BA60-BB or BA61-BB Chassis.



CHAPTER 1



CHAPTER 1
INTRODUCTION

1.1 GENERAL

The VAX6000 Rack Mountable Series System consists of two rack mountable chassis that attach to the rails within standard 19-inch RETMA enclosures. The first chassis (the BA60-BB Chassis) contains 14 slots of XMI backplane for the processor, memory, and XMI to VAXBI adapters. The second chassis (the BA61-BB Chassis) contains 12 slots of VAXBI backplane for I/O interface, along with an optional TK70 Tape System. The 12 slots of VAXBI are housed in two 6-slot card cages where each contain one XMI to VAXBI interface module. The BA60-BB and BA61-BB Chassis each contain a power supply and a source for cooling air. In addition, each chassis has its own circuit breaker and power cord that requires a single phase, 220-240V ac, 50-60 Hz power source. The XMI and VAXBI (BA60-BB and BA61-BB) backplanes are interconnected to each other through their respective interface modules through a series of flat ribbon cables. The BA60-BB has a power status indicator as part of the operator control panel.

1.2 VAX6000 RACK MOUNTABLE SERIES SYSTEM CONFIGURATION

The following sections list the basic configuration of the XMI and VAXBI Chassis that make up the VAX6000 Rack Mountable Series System.

1.2.1 XMI (BA60-BB) Chassis

The XMI (BA60-BB) Chassis (see Figure 1-1) contains a control panel, a single 14-slot card cage, a power supply that consists of six tray assemblies, two fans, and an air flow/temperature sensor. In addition, the XMI (BA60-BB) Chassis contains the following:

- BA60-BB Chassis with 90° upward tilting slides
- Memory modules (type and quantity configuration dependent)
- Processor modules (type and quantity configuration dependent)
- XTC-Power Sequencer module
- DWMBA-A module (quantity dependent on configuration)

The XMI (BA60-BB) Chassis is also capable of providing power to additional boards as they are developed. A circuit breaker on the rear panel of the XMI Chassis controls the power to the chassis.

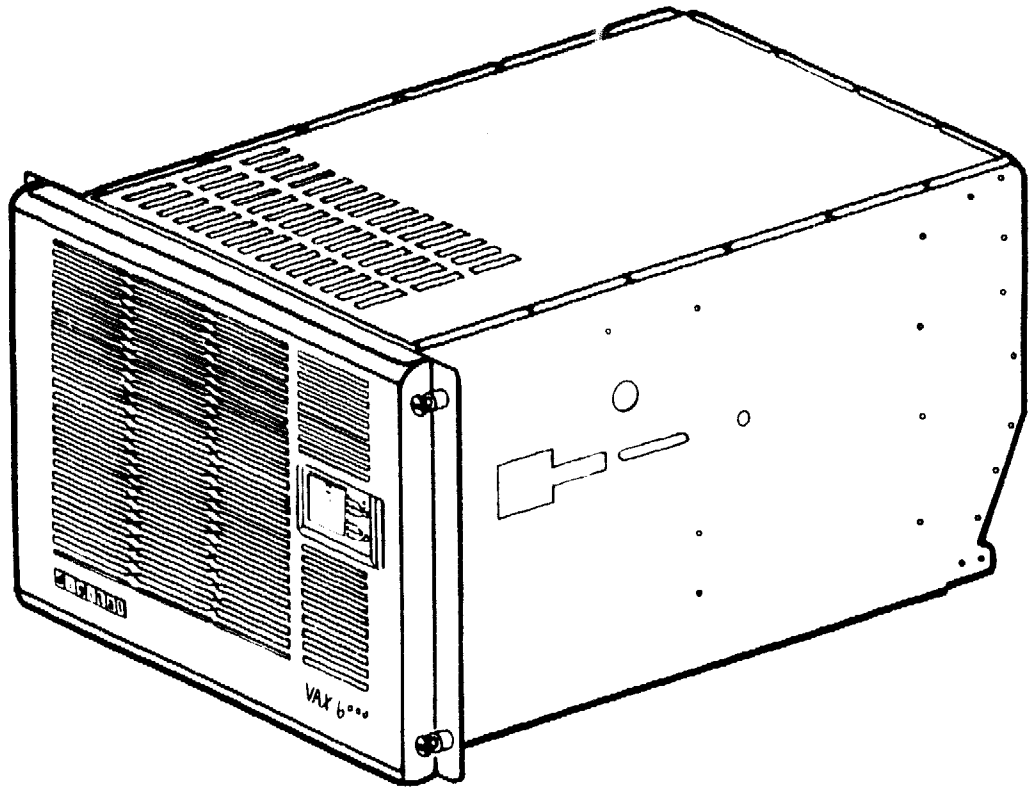


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Figure 1-1 XMI (BA60-BB) Chassis

1.2.1.1 XMI Chassis Control Panel - The VAX6000 Rack Mountable Series System has a single control panel located on the front of the BA60-BB Chassis (see Figure 1-2). The control panel incorporates three switches and seven LEDs.

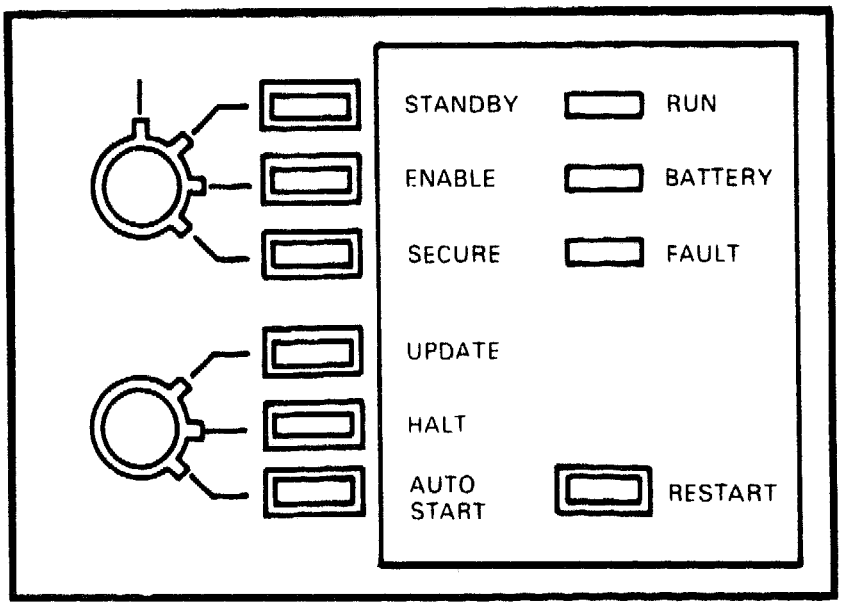

Figure 1-2 XMI Control Panel

Switches - The control panel incorporates two rotary switches (an upper key switch and a lower key switch) and a push-button restart switch. Table 1-1 lists the upper and lower key switches and describes their functions. Table 1-2 describes the functions of the restart switch.

Table 1-1 Control Panel Switches

Position	Light/Color	Effect
	Upper Key Switch	
O (Off)	No Light	Not used.
Standby	Red	Not used.
Enable	Yellow	Indicates power is applied to the whole system. Console terminal is enabled. Used for console mode or restart, and to start self-test.
Secure[1]	Green	Indicates power is applied to the whole system. Console terminal is disabled. Used for normal operation. Prevents console mode. Disables Restart button and causes the lower key switch to have the effect of Auto Start, regardless of its setting.
	Lower Key Switch	
Update	Red	Enables writing to EEPROM on the primary processor. Halts boot processor in the console mode on power-up or when the Restart button is pressed. Used for updating parameters stored in the processor (such as SET BOOT or UPDATE console commands) and to prevent an auto-restart.
Halt	Yellow	Prevents an auto-restart if a failure or transient power outage occurs.
Auto Start[1]	Green	Allows restart or reboot. Used for normal operations of the system.

[1] Normal position.

Table 1-2 Restart Switch

Upper Key Switch	Lower Key Switch	Restart Switch Function
Enable	Update or Halt	Runs self-test, then halts.
Enable	Auto Start	Runs self-test, then reboots the operating system.
Standby or "0" OFF	Any Position	Does not function.

Indicators - The XMI control panel incorporates status indicator lights (LEDs). Table 1-3 lists these LEDs and describes their function.

Table 1-3 Control Panel Status Indicator LEDs

Light	Color	State	Description
Run	Green	On	System is executing operating system instructions on at least one processor.
		Off	System is either in console mode or is turned off.
Battery	Green		(This function is not implemented on the rack mount BA60-AA system).
Fault	Red	On	Self-test is in progress. If light does not turn off, system has a hardware fault.
		Off	Self-test has completed, or the system is turned off.

1.2.1.2 XMI Card Cage • The XMI Chassis incorporates a 14-slot card cage (see Figure 1-3). The Processor modules, Memory modules, and the XMI to VAXBI adapter boards are housed in this card cage. Other modules may also become available for the XMI bus.

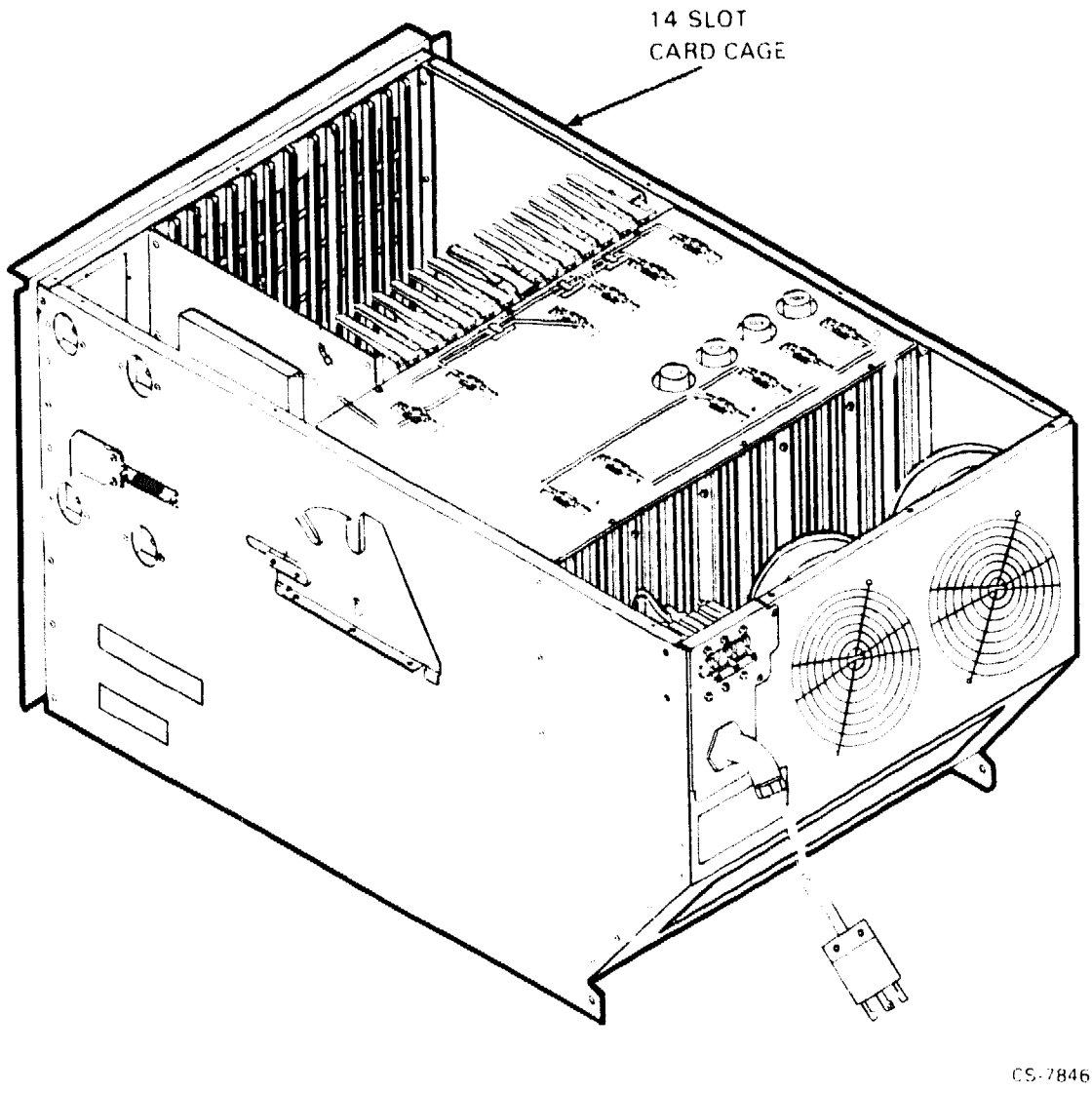

Figure 1-3 Location of the XMI 14-Slot Card Cage

1.2.2 VAXBI (BA61-BB) Chassis

The VAXBI (BA61-BB) Chassis (see Figure 1-4) contains two 6-slot card cages, a power supply that consists of six tray assemblies, two fans, and an air flow/ temperature sensor. In addition, the VAXBI Chassis contains the following subassemblies:

- BA61-BB Chassis with 90° upward tilting slides
- VAXBI Backplane (two 6-slot card cages)
- TK70-AA Tape Drive Unit (Optional)
- T1035-00 Tape Controller Module (Optional)
- DWMBA/B VAXBI to XMI Controller Module (2)
- I/O modules based on configuration requirements

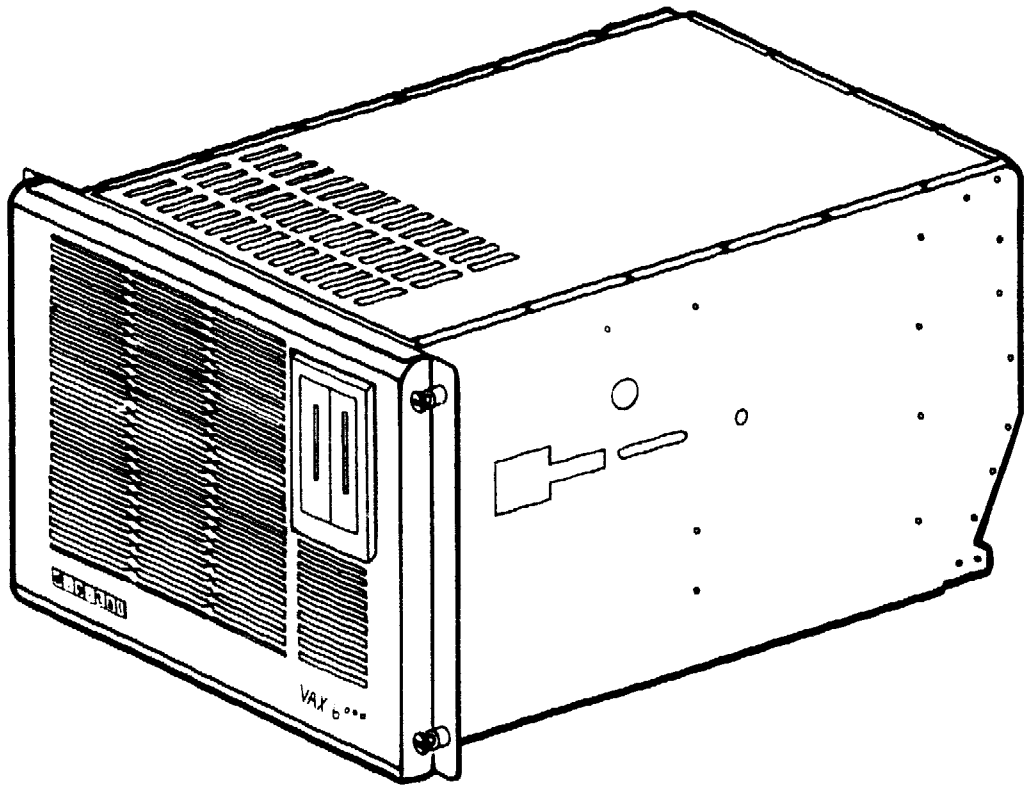

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Figure 1-4 VAXBI (BA61-BB) Chassis

A circuit breaker on the rear panel of the VAXBI Chassis controls the power to the chassis.

Figure 1-5 shows the location of the two 6-slot card cages in the VAXBI Chassis.

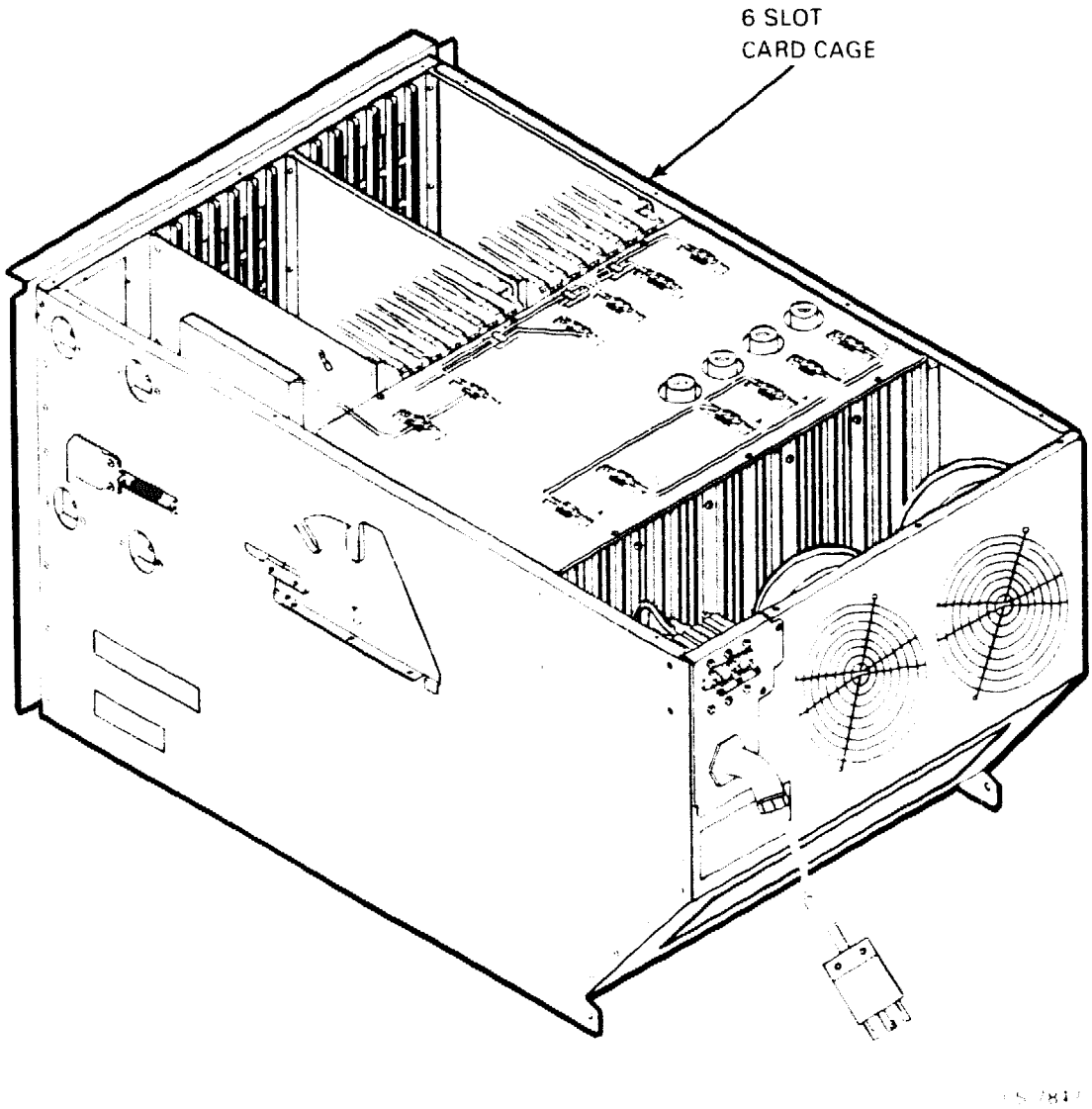

Figure 1-5 Location of the Two 6-Slot VAXBI Card Cages

1.3 POWER SUPPLIES

The power supplies for the XMI and VAXBI Chassis are identical and differ only in the manner in which they are connected to their respective buses. Table 1-4 lists the dc power distribution for the XMI and VAXBI Chassis. Figure 1-6 shows the location of these six power supply assemblies.

Table 1-4 XMI and VAXBI DC Power Distribution

Power Module	XMI Chassis	VAXBI Chassis
5V dc Regulator "A2"	+5V dc	+5V dc/+5V BB
5V dc Regulator "B2"	+5V BB	+5V dc/+5V BB
5V/5V/15V dc Regulator "A1"		
5V dc (Trimmed)	-5.2V dc	-5.2V dc
5V dc (Trimmed)	-2V dc	-2V dc
15V dc	N/A	+15V dc (Ethernet)
12V/12V/24V DC Regulator "B1"		
12V dc	+12V dc	+12V dc
12V dc	-12V dc	-12V dc
24V dc	+24V dc (Fans)	+24V dc (Fans)

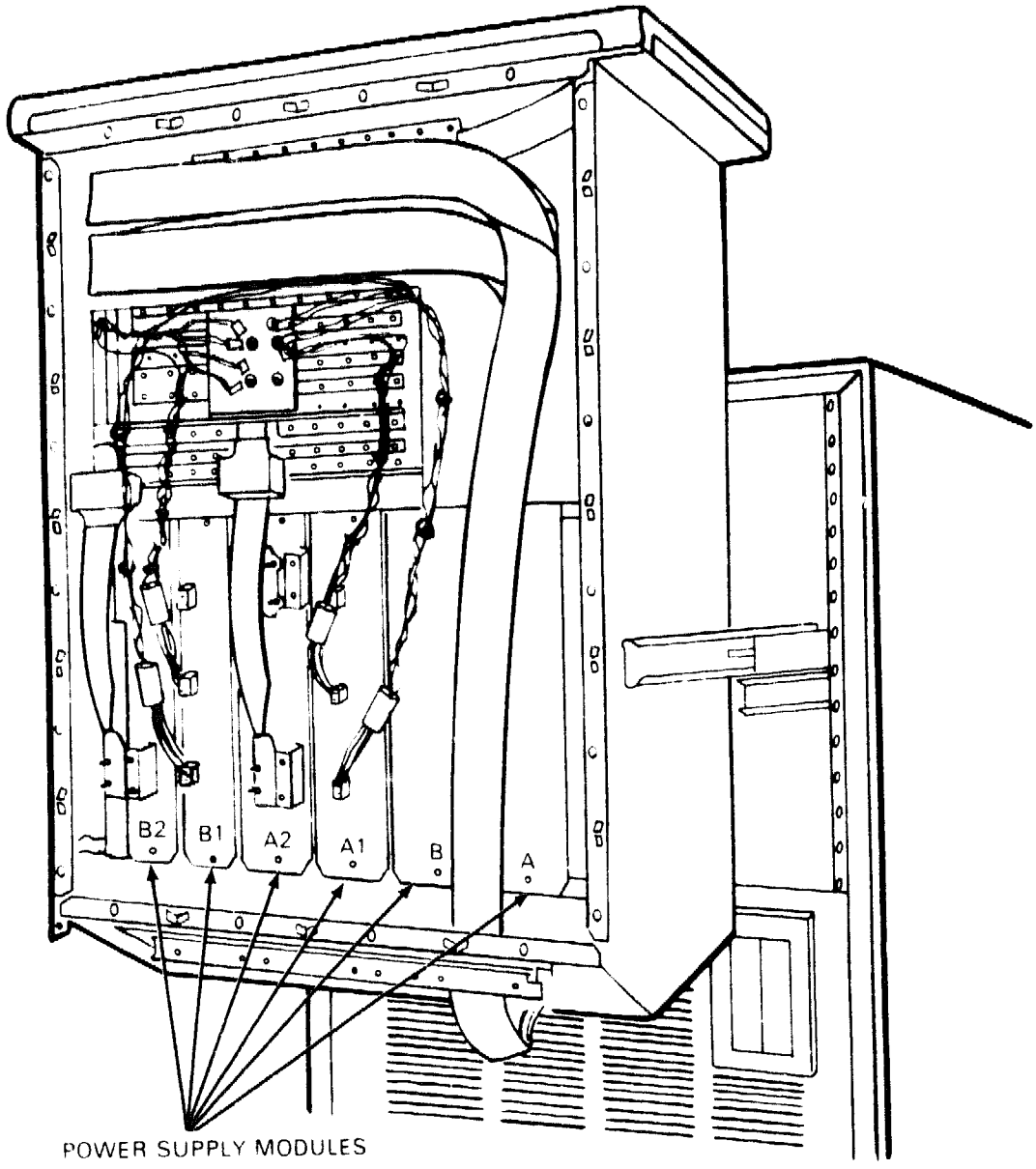

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Figure 1-6 Power Supply Tray Assemblies

The total power available from the power supplies within both the XMI and VAXBI Chassis is listed in Table 1-5.

NOTE

The VAX6000 Rack Mountable Series System power supplies *do not* support the corporate H7231-N Battery Backup Unit (BBU).

Table 1-5 XMI and VAXBI Power Supply Capabilities

	XMI Power Supply		VAXBI Power Supply	
Voltage VDC	**Current AMPS**	**Power WATTS**	**Current AMPS**	**Power WATTS**
-2.0	25.0	50.0	25.0	50.0
+5.0	90.0	450.0	120.0	600.0
+5.0B	90.0	450.0	0.0	0.0
-5.2	20.0	100.0	20.0	100.0
+12.0	4.1	50.0	4.1	50.0
-12.0	4.1	50.0	4.1	50.0
+15.0	6.0	90.0	6.0	90.0
+24.0	8.3	200.0	8.3	200.0 (fans only)

1.3.1 XMI Power Supply

The XMI power supply consist of six separate tray assemblies that include two ac-to-dc front end modules and four dc-to-dc regulator trays. The dc-to-dc regulator trays include a 5V dc regulator A1, a 5V dc regulator A2, a 5V/5V/15V dc regulator (trimmed to -2.0V/-5.2V/15V dc), and a 12V/12V/24V dc regulator tray. Each of these trays are Field Replaceable Units (FRUs) and are described in the following subsections (refer to Appendix A for a complete list of FRUs and their part numbers). Figure 1-7 provides a block diagram of the XMI power supply.

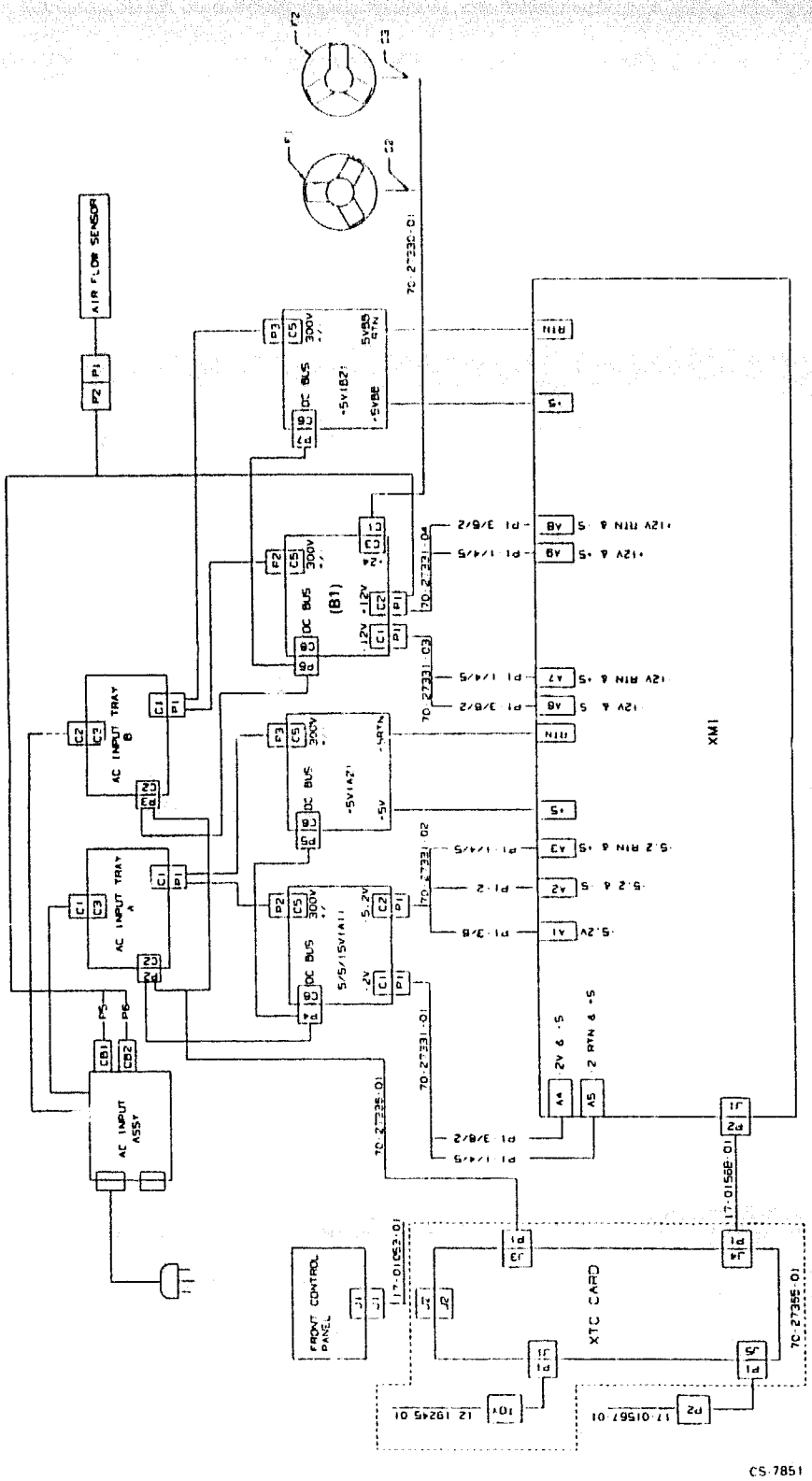

Figure 1-7 XMI Power Supply and System Interconnect Block Diagram

1.3.1.1 AC Front End Tray Assembly (P/N 70-27334-01) - The XMI power supply incorporates two ac front end tray assemblies that provide power for the dc regulator inputs (see Figure 1-8). These two trays take the 220-240V ac input from the electrical service and convert it to 300V dc output. Each of the two ac front ends provide 300V dc to a pair of regulators through its own power cable assemblies. The "A" front end feeds (300V dc) to the "A1" and "A2" regulators and the "B" front end feeds (300V dc) to the "B1" and "B2" regulators (see Figure 1-7). The ac front end tray assemblies are rated at 750 watts each. These trays are FRUs (refer to Chapter 5 for Removal and Replacement Procedures)

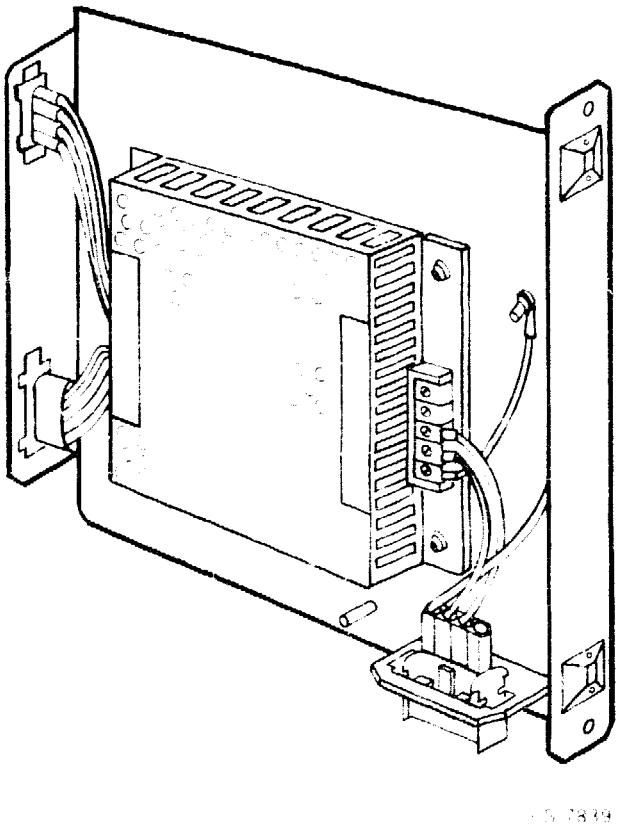

Figure 1-8 AC Front End Tray Assembly

1.3.1.2 5V DC-to-DC Regulator Tray Assembly (P/N 70-27340-01) - The XMI power supply incorporates two separate 5V dc-to-dc regulator tray assemblies. The 5V dc-to-dc regulator tray "A2" provides +5V dc to the XMI modules, the timing control (XTC) board, and the front control panel.

The 5V dc-to-dc regulator tray "B2" provides +5V dc for the memory modules only.

Figure 1-9 shows the 5V dc-to-dc regulator tray assembly.

1.3.1.3 5V/5V/15V DC-to-DC Regulator Tray Assembly (P/N 70-27341-01) - The 5V/5V/15V dc-to-dc regulator tray in the XMI power supply provides -5.2V dc and -2V dc voltages to modules and circuits in the XMI chassis. The 15V dc portion of this regulator is not used on current XMI modules (see Figure 1-10).

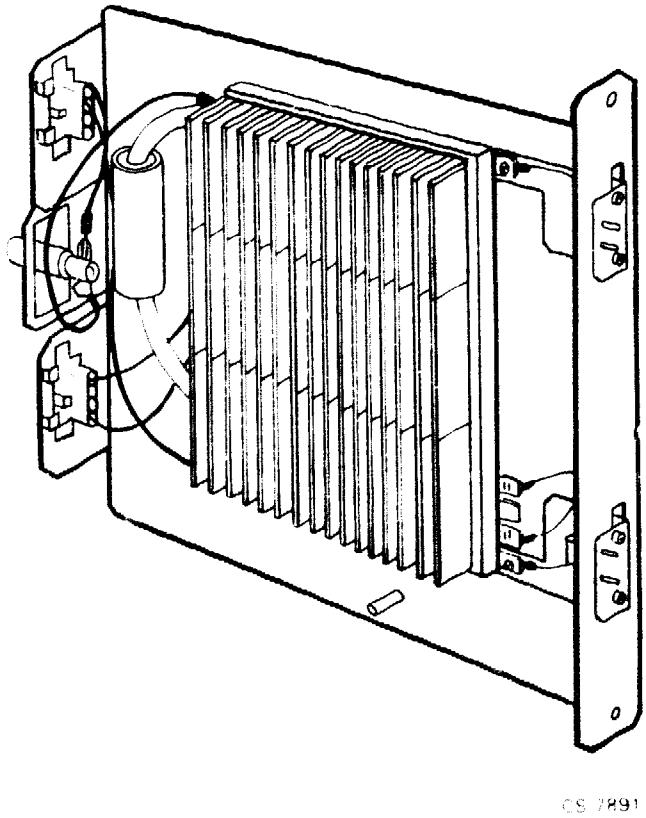

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Figure 1-9 5V DC-to-DC Regulator Tray Assembly

1.3.1.4 12V/12V/24V DC Regulator Tray Assembly (P/N 70-27341-02) - The 12V/12V/24V dc-to-dc regulator tray provides +12V dc to the air flow sensors located at the rear of the cage. This tray assembly also provides ±12V dc to the XMI cage and to the XTC module to drive the serial port. +24V dc is provided for the two cooling air fans in the XMI Chassis. Figure 1-10 shows this module.

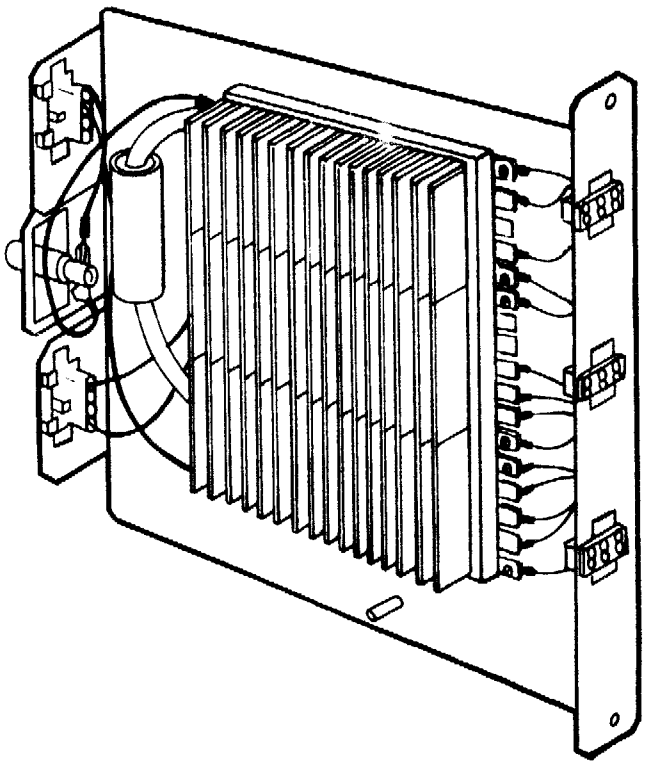

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Figure 1-10 12V/12V/24V DC-to-DC Regulator Tray Assembly

1.3.2 VAXBI Power Supply

The VAXBI power supply consist of six separate tray assemblies that include two ac-to-dc front end trays and four dc-to-dc regulator trays. The dc-to-dc regulator tray assemblies include a 5V dc regulator "A2", a 5V dc regulator "B2", a 5V/5V/15V dc regulator, and a 12V/12V/24V dc regulator tray. Each of these trays are Field Replaceable Units (FRUs) and are described in the following subsections. Figure 1-11 provides a block diagram of the VAXBI power supply.

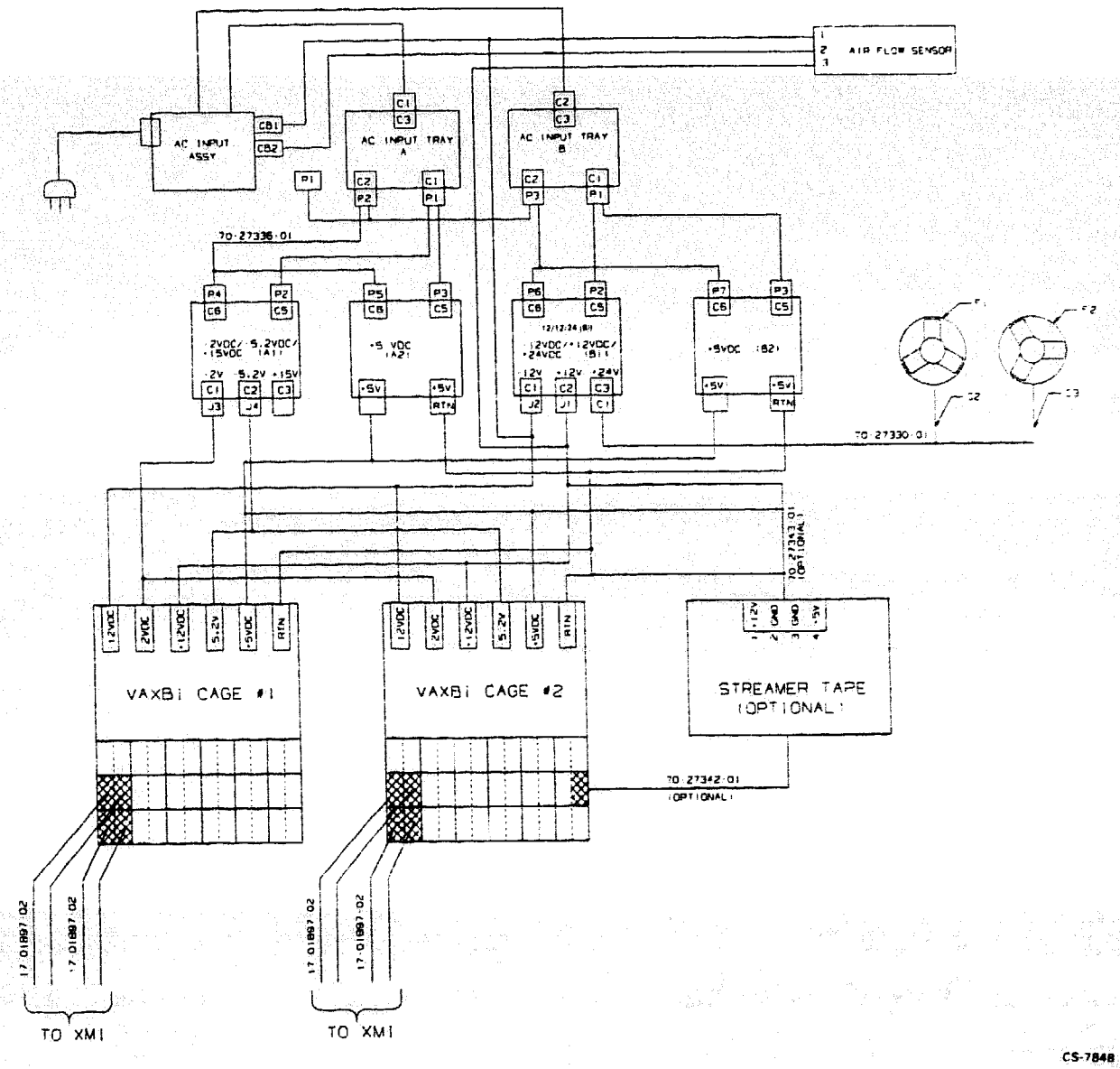


Figure 1-11 VAXBI Power Supply and System Interconnect Block Diagram

1.3.2.1 AC Front End Tray Assembly (P/N 70-27334-01) - The VAXBI power supply incorporates two ac front end tray assemblies that provide power for the dc regulator inputs (see Figure 1-8). These two trays take the 220-240V ac input from the electrical service and convert it to 300V dc output. Each of the two ac front ends provide 300V dc to a pair of regulators through its own power cable assemblies. The "A" front end feeds (300V dc) to the "A1" and "A2" regulators and the "B" front end feeds (300V dc) to the "B1" and "B2" regulators (see Figure 1-11). The ac front end tray assemblies are rated at 750 watts each. These trays are FRUs (refer to Chapter 5 for Removal and Replacement Procedures).

1.3.2.2 5V DC-to-DC Regulator Tray Assembly (P/N 70-27340-01) - The VAXBI power supply incorporates two separate 5V dc-to-dc regulator trays (see Figure 1-9). The 5V dc-to-dc regulator tray "A2" and the 5V dc-to-dc regulator tray "B2" are interconnected and provides +5V dc to the VAXBI boards.

1.3.2.3 5V/5V/15V DC-to-DC Regulator Tray Assembly (P/N 70-27341-01) - The 5V/5V/15V dc-to-dc regulator tray in the VAXBI power supply is trimmed to provide -5.2V dc and -2V dc voltages to modules and circuits in the VAXBI Chassis, and +15V dc for Ethernet configurations (see Figure 1-9).

1.3.2.4 12V/12V/24V DC Regulator Tray Assembly (P/N 70-27341-02) - The 12V/12V/24V dc-to-dc regulator tray provides +12V dc to the TK70 tape drive and to the air flow sensors located at the rear of the cage. This module also provides ±12V dc to the VAXBI cage. The +24V dc is provided for the two cooling air fans in the VAXBI Chassis (see Figure 1-10).

1.4 SPECIFICATIONS

1.4.1 XMI Chassis Specifications

Table 1-6 lists the XMI Chassis specifications.

Table 1-6 XMI Chassis Specifications

Physical Characteristics		
Enclosure	Height	35.56 cm (14.00 in)
	Width	48.26 cm (19 in)
	Depth	71.75 cm (28.25 in)
	Weight	54.5 kg (120 lbs) maximum
Electrical Requirements		
AC Input Power		180 to 270V ac (220-240 Vrms nominal) 50 Hz or 60 Hz Single Phase
Line Frequency		47 Hz to 63 Hz (50 Hz or 60 Hz nominal)
Environmental Requirements		
Operating Temperature		10°C to 40°C (50°F to 104°F)
Relative Humidity		10% to 90% non-condensing
Storage Temperature		-40°C to 70°C (-40°F to 151°F)
Relative Humidity		10% to 95% non-condensing

1.4.2 VAXBI Chassis Specifications

Table 1-7 lists the VAXBI chassis specifications.

Table 1-7 VAXBI Chassis Specifications

Physical Characteristics		
Enclosure	Height	35.56 cm (14.00 in)
	Width	48.26 cm (19 in)
	Depth	71.75 cm (28.25 in)
	Weight	54.5 kg (120 lbs) maximum
Electrical Requirements		
AC Input Power	180 to 270V ac (220-240 Vrms nominal) 50 Hz or 60 Hz Single Phase	
Line Frequency	47 Hz to 63 Hz (50 Hz or 60 Hz nominal)	
Environmental Requirements		
Operating Temperature (with TK70 Tape Drive Unit Operating)	10°C to 40°C (50°F to 104°F)	
Relative Humidity	20% to 80% non-condensing	
Operating Temperature (without TK70 Tape Drive Unit Operating)	10°C to 40°C (50°F to 104°F)	
Relative Humidity	10% to 90% non-condensing	
Storage Temperature	-40°C to 70°C (-40°F to 151°F)	
Relative Humidity	10% to 95% non-condensing	

1.5 CONFIGURATIONS

The following subsections discuss the configuration of the XMI and VAXBI Chassis.

1.5.1 XMI Chassis Configuration

The XMI Chassis contains a single 14-slot card cage and a power supply that provides a maximum of 90 amperes on the 5 volt (A2) supply and 90 amperes on the 5 volt (B2) supply. The BA60-AA Chassis power supply can support the full family configuration for the VAX6000 Rack Mountable Series System.

1.5.2 VAXBI Chassis Configuration

The VAXBI Chassis contains two 6-slot VAXBI card cages; however, three of these slots are used by required devices. These devices are the VAXBI to XMI interface (one module in each card cage) and the optional TK70 tape drive interface module. The remaining 9 slots are available for customer options. The power supply is the same as used in the XMI Chassis.

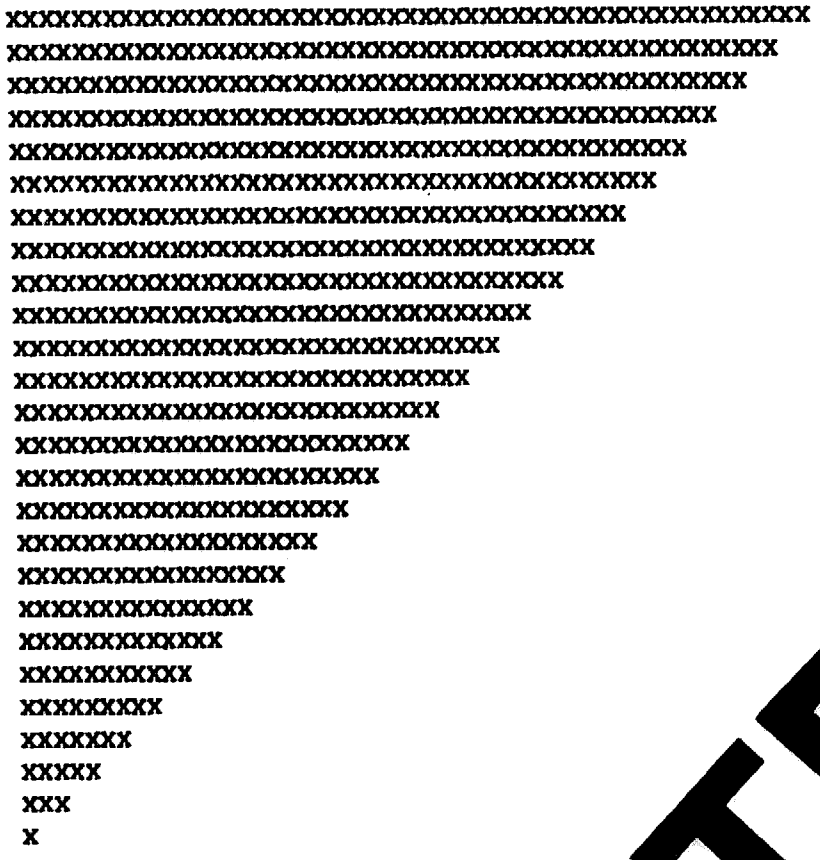
Table 1-8 lists the power that remains for customer usage for the 9 open I/O slots for the various VAXBI options.

Table 1-8 VAXBI System Power for 9 Open I/O Slots

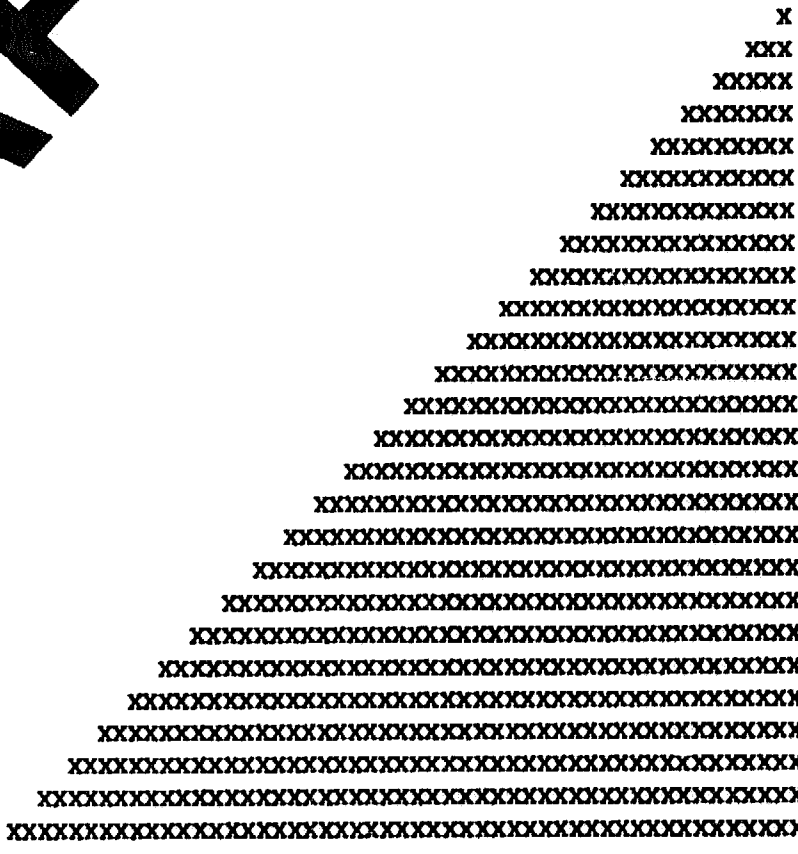
Voltage	Current AMPS.	Power Watts
+5.0	86.0	430.0
-2.0	25.0	50.0
-5.2	20.0	100.0
+13.5	3.5	50.0
+12.0	1.7	20.4
-12.0	4.1	50.0

NOTE

An interface to UNIBUS is accomplished by using the VAXBI-to-UNIBUS adapter (DWBUA-CA) that draws an additional 8.29 amperes from the +5V dc power supply and 0.04 amperes from the -12V dc supply, subject to corporate limitations. The UNIBUS capabilities are provided through a chassis configuration, which is not described in this manual or included as part of the BA60-BB or BA61-BB configurations. For more information about this capability, please call 1-800-TEAM-CSS.



CHAPTER 2



CHAPTER 2
INSTALLATION

2.1 INTRODUCTION

This chapter discusses the installation of the VAX6000 Rack Mountable Series System. Topics covered in this chapter include:

- Site preparation
- Checking the equipment
- Installing the BA60-BB and BA61-BB Chassis
- Connecting power cords
- Cabling

2.2 SITE PREPARATION

2.2.1 Environmental Requirements

- Keep the environment between 10°C and 40°C (50°F and 104°F).
- Keep the environment between 10% and 90% relative humidity.

NOTE

When the TK70 tape drive unit is used, the relative humidity range is 20% to 80%.

- Keep the air around the equipment well circulated to prevent heat from building up.
- Keep the equipment away from heaters, photocopiers, and direct sunlight.
- Decrease static electricity build-up by locating the equipment away from busy areas such as office corridors, and keep the environment at the recommended humidity levels. Static electricity can cause the equipment to fail, data to be lost, and other problems to occur.
- Keep the area where the equipment is located clean. Do not place food or liquids on or near the equipment.
- Keep the area where the equipment is located free from dust (dust particles can interfere with chassis cooling, and can damage the hardware).

2.2.2 Electrical Requirements

A dedicated 15-ampere (220-240V ac nominal) 3-wire branch circuit is required for each of the XMI and VAXBI Chassis. The circuit must meet national and local standards, provide a good system ground, be stable, and be free from electrical noise. If power disturbances cannot be prevented, add power-conditioning equipment. Consult with Digital customer service personnel about the electrical requirements for the VAX6000 Rack Mountable Series System.

The ac power source should allow for system expansion. Do not connect other equipment (such as air conditioners or office copiers) to the circuit dedicated to the VAX6000 Rack Mountable Series System.

2.3 CHECKING THE SHIPMENT

The VAX6000 Rack Mountable Series System hardware shipment consists of two cartons:

1. The XMI Chassis (BA60-BB) carton
2. The VAXBI Chassis (BA61-BB) carton

Check the shipment to verify that all items shown in Figure 2-1, and listed on the packing slip, have been received. Optional items are not shown.

WARNING

The XMI and VAXBI Chassis each weigh 54.5 kg (120 lbs). Use sufficient personnel, or proper lifting equipment, when lifting or moving these units.

If the equipment is damaged or if any items are missing, notify the delivery agent and contact the Digital sales representative.

Save all shipping cartons in case the equipment needs to be moved to a new location, or needs to be returned for repair.

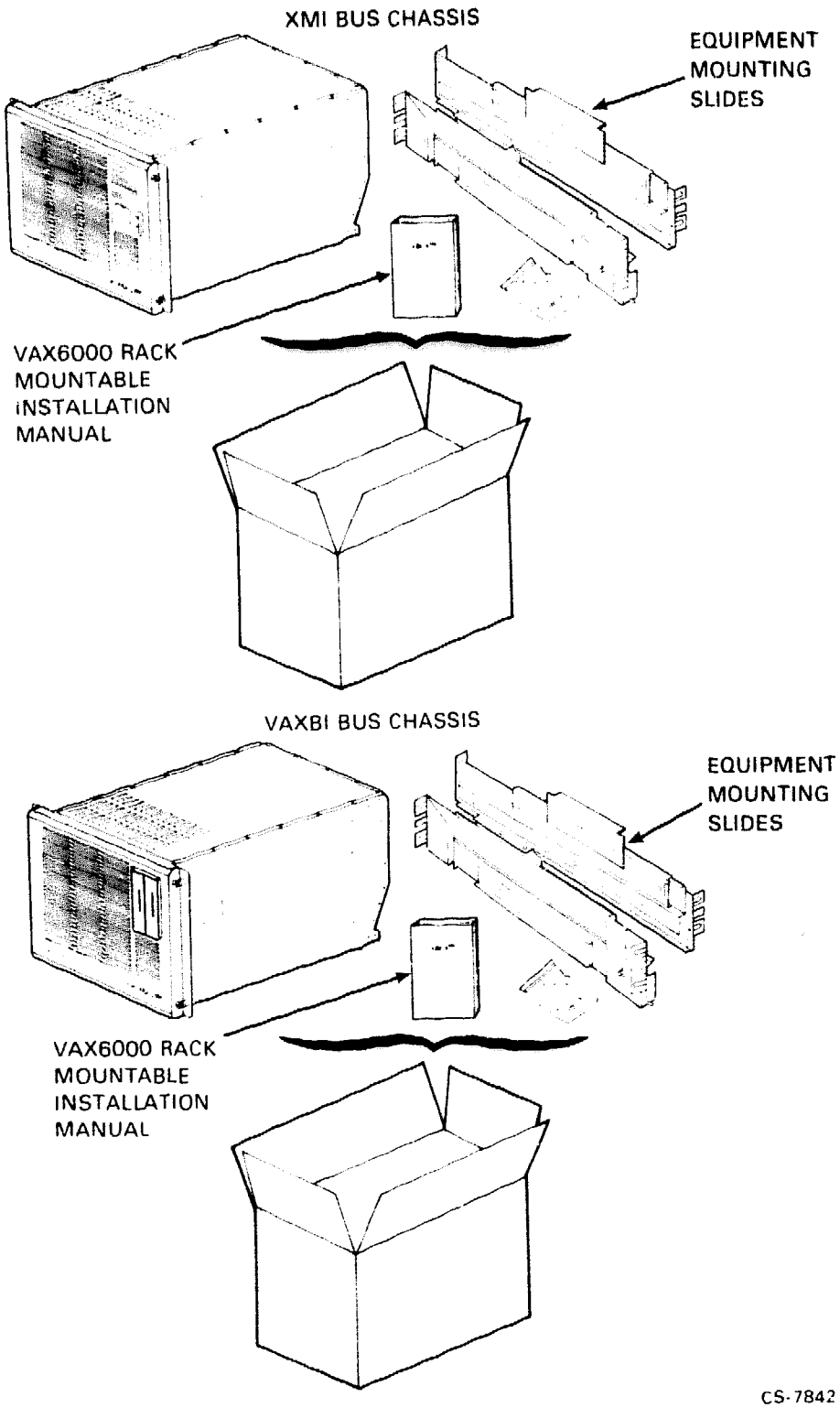


Figure 2-1 Contents of Shipping Cartons

2.4 INSTALLING THE CHASSIS

The following subsections discuss the installation of the XMI and VAXBI (BA60-BB and BA61-BB) Chassis in a standard "RETMA" 48.26 cm (19 in) equipment cabinet. Open the rear door before installing either chassis.

WARNING

Before attempting to install the equipment into a cabinet or rack, ensure that the cabinet is stable and that provided stabilizing features have been activated. The stability features for the rack or enclosure is configuration dependent.

2.4.1 Installing the Chassis Slides

Each chassis is shipped with a pair of RETMA chassis slides (see Figures 2-1 and 2-2). These slides have a right and left slide. To install the slides, perform the steps in the following procedure:

1. Check each slide for any damage and for smooth operation.
2. Install the left slide between the front and rear vertical mounting rails from the front of the cabinet.
3. Count down 13 mounting holes in the front vertical mounting rail and mark.

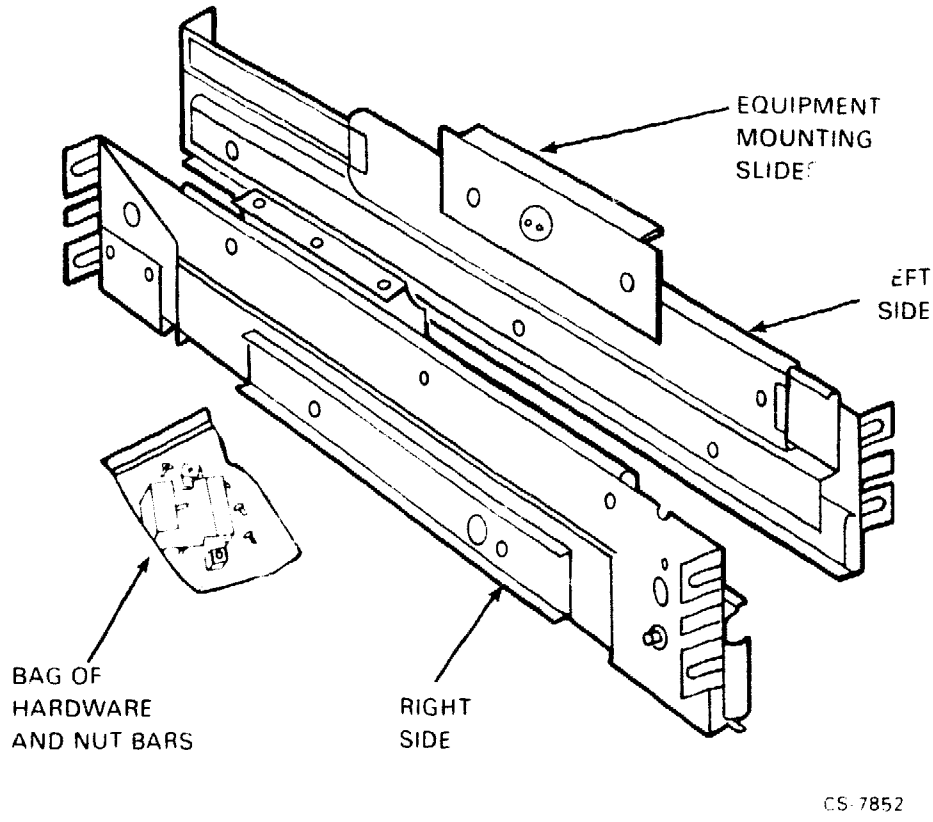


Figure 2-2 Equipment Mounting Slides

4. Position the slide mounting brackets between the front and rear vertical rails, ensuring that the slide is level from front to rear (see Figure 2-3).

NOTE

It will be easier if a second person supports the slide at the rear of the cabinet for the next steps.

5. Position the bar nut behind the slide and align the four holes.
6. Install a 10x32x1/2 inch screw with captive lock washer in the first hole (see Figure 2-3).
7. Install a second 10x32x1/2 inch screw with captive lock washer four holes down from the first screw (see Figure 2-3).
8. Tighten both screws.
9. Repeat steps 5 through 8 at the other end of the slide at the rear of the cabinet (see Figure 2-3).
10. Repeat steps 1 through 9 for the other slide.
11. Install the second set of equipment slides for the VAXBI chassis by repeating steps 1 through 10 above. Start in the 31st hole from the top, or as specifically recommended by the system configuration.

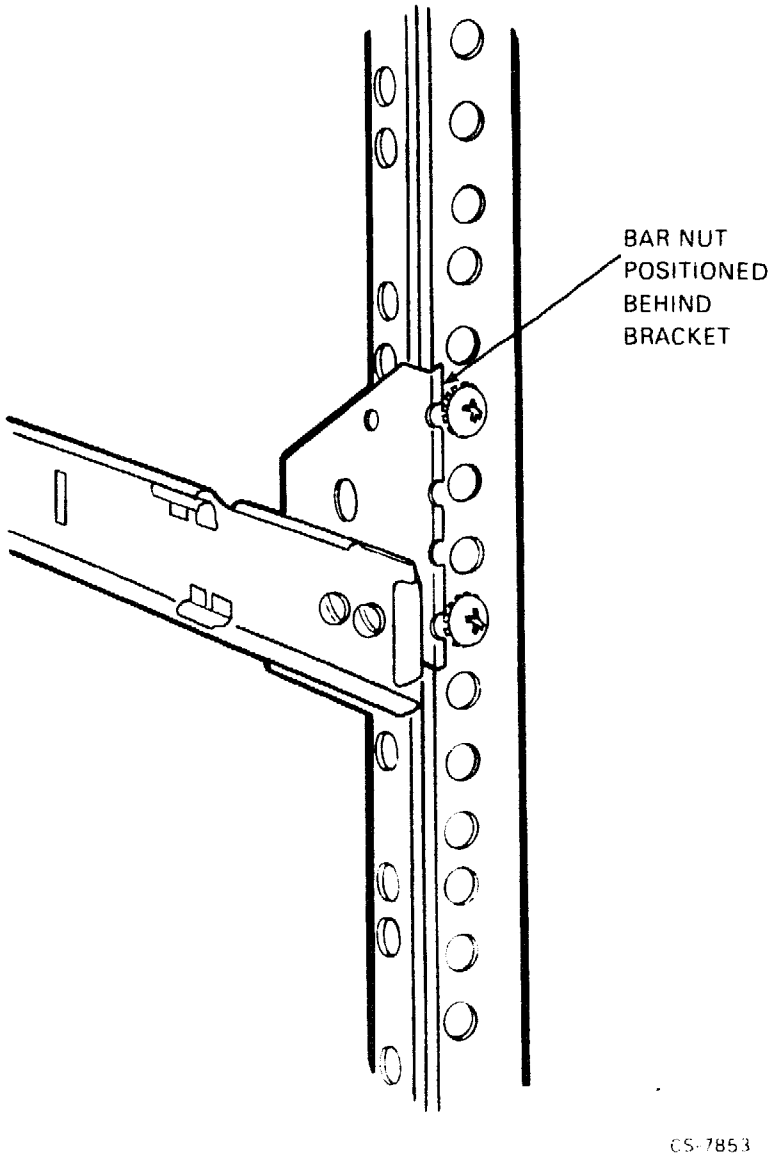


Figure 2-3 Installing the Equipment Mounting Slides (Rear View of Left Slide with Slide Extended)

2.4.2 Installing the XMI (BA60-BB) Chassis

Generally the XMI (BA60-BB) Chassis is mounted above the VAXBI (BA61-BB) Chassis. However, the VAXBI (BA61-BB) Chassis could be mounted above, if so desired. To install the XMI (BA60-BB) Chassis, perform the steps in the following procedure:

1. Extend both of the upper equipment slides from the cabinet.

WARNING

The XMI (BA60-BB) Chassis weigh 54.5 kg (120 lbs) maximum (configuration dependent). Use sufficient personnel, or proper lifting equipment, when lifting or moving these units.

2. Lift the XMI (BA60-BB) Chassis onto the equipment slides and carefully position the slide index plate over the three mounting holes in the slide (see Figure 2-4).

WARNING

Once the XMI (BA60-BB) Chassis is positioned on the slides, one person should press the slides towards each other, while a second person secures the equipment to the slides.

3. Secure the XMI (BA60-BB) Chassis to the slides by installing three 8-32 screws through the slide index plates and into the equipment slides (see Figure 2-4).
4. Release the slide locking levers on each slide and carefully slide the XMI BA60-BB Chassis into the cabinet. Ensure that the chassis is level, can clear the top of the cabinet, and that the slides operate smoothly.
5. Secure the chassis to the equipment rails by turning the four thumb screws located on the front bezel.

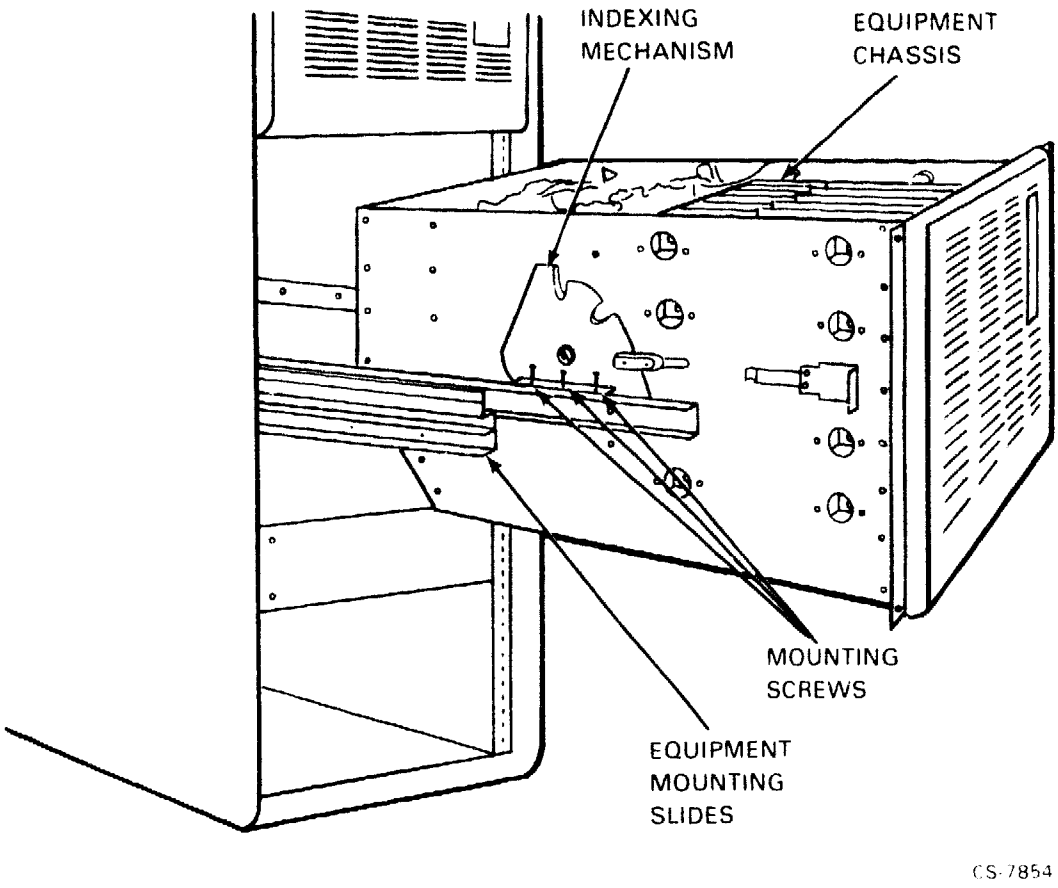


Figure 2-4 Installing the XMI (BA60-BB) Chassis on the Equipment Slides

2.4.3 Installing the VAXBI (BA61-BB) Chassis

The VAXBI (BA61-BB) Chassis is installed in the same way as the XMI (BA61-BB) Chassis. Refer to Section 2.4.2 for the installation procedure.

2.5 CONNECTING POWER CORDS

The XMI (BA60-BB) and VAXBI (BA61-BB) Chassis each have a separately installed power cord. These power cords must connect to separate power sources or to a power controller module if the rack or cabinet is so equipped.

ATTENTION

WARNING
INSTALLATION INSTRUCTIONS
FOR
CONNECTING EQUIPMENT POWER SERVICE

An insulated grounding conductor that is identical in size, insulation material, and thickness to the grounded and ungrounded branch-circuit supply conductors, except that it is green, with or without one or more yellow stripes, is to be installed as part of the branch-circuit that supplies the unit or system.

The grounding conductor above is to be grounded to earth at the service equipment or, if supplied by a separate derived system, at the supply transformer or motor generator set.

The attachment-plug receptacles in the vicinity of the unit or system are all to be of a grounding type, and the grounding conductors serving these receptacles are to be connected to earth ground at the service equipment.

2.6 CABLING

Cabling consists of connecting eight I/O interface cables (P/N 17-01897-01 - four pairs) from the XMI (BA60-BB) Chassis to the VAXBI (BA61-BB) Chassis. These cables are terminated in 30-pin IDC connectors and are connected from the XMI (BA60-BB) Chassis to the VAXBI (BA61-BB) Chassis as indicated in Table 2-1.

Figure 2-5 shows the slot designations of the XMI and the two VAXBI card cages as viewed from the top front of the chassis. Figure 2-6 shows the cable connections for the XMI and VAXBI backplanes.

Table 2-1 XMI/VAXBI I/O Interface Cabling

Card Cage	Slot	Section		Card Cage	Slot	Section
XMI	D	D1	to	VAXBI-1	1	D2
XMI	D	D2	to	VAXBI-1	1	D1
XMI	D	E1	to	VAXBI-1	1	E2
XMI	D	E2	to	VAXBI-1	1	E1
XMI	E	D1	to	VAXBI-2	1	D2
XMI	E	D2	to	VAXBI-2	1	D1
XMI	E	E1	to	VAXBI-2	1	E2
XMI	E	E2	to	VAXBI-2	1	E1

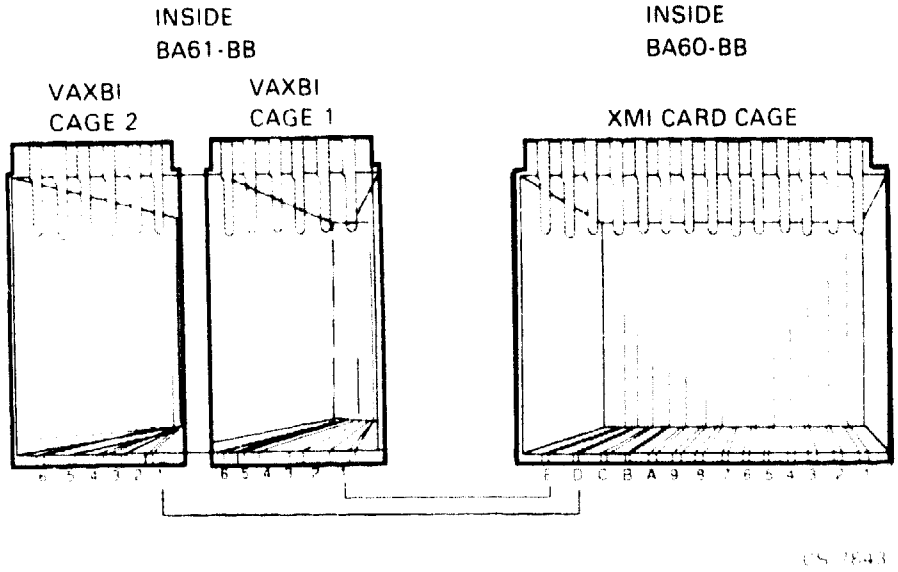


Figure 2-5 Card Cage Slot Designations Looking from Front of Chassis

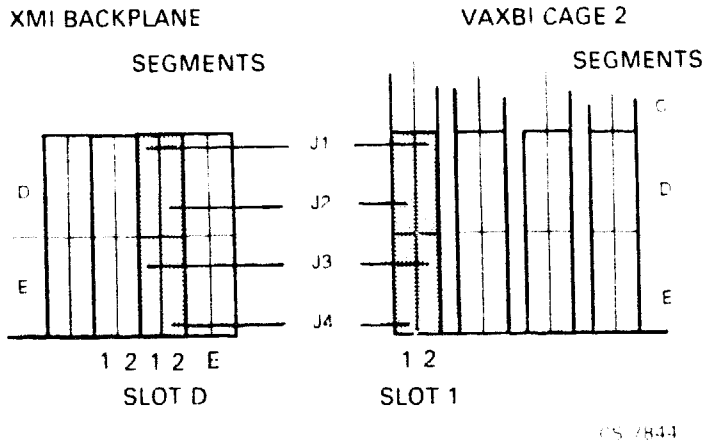


Figure 2-6 Card Cage Cable Connectors

2.6.1 Cabling the XMI (BA60-BB) Chassis

Cable the XMI (BA60-BB) Chassis by performing the steps in the following procedure:

1. Extend the stabilizing legs at the front of the cabinet (if stabilizing legs are provided).

WARNING

Ensure that the cabinet or rack is stable prior to proceeding with the next steps.

2. Release the four retaining screws located on the front bezel.
3. Carefully slide the XMI (BA60-BB) Chassis forward until the slides lock in the extended position.
4. Pull the slide index plate locking levers (one on each side of the chassis) forward and tilt the XMI (BA60-BB) Chassis upwards (see Figures 2-4 and 2-5).
5. Remove the 20 captive screws from the bottom cover of the chassis (see Figure 2-7).

NOTE
The 20 captive screws will remain with the cover.

6. Remove the bottom cover.
7. Install and dress the four pair of VAXBI Input/Output ribbon cables (P/N 17-01897-01) as shown in Figure 2-8.

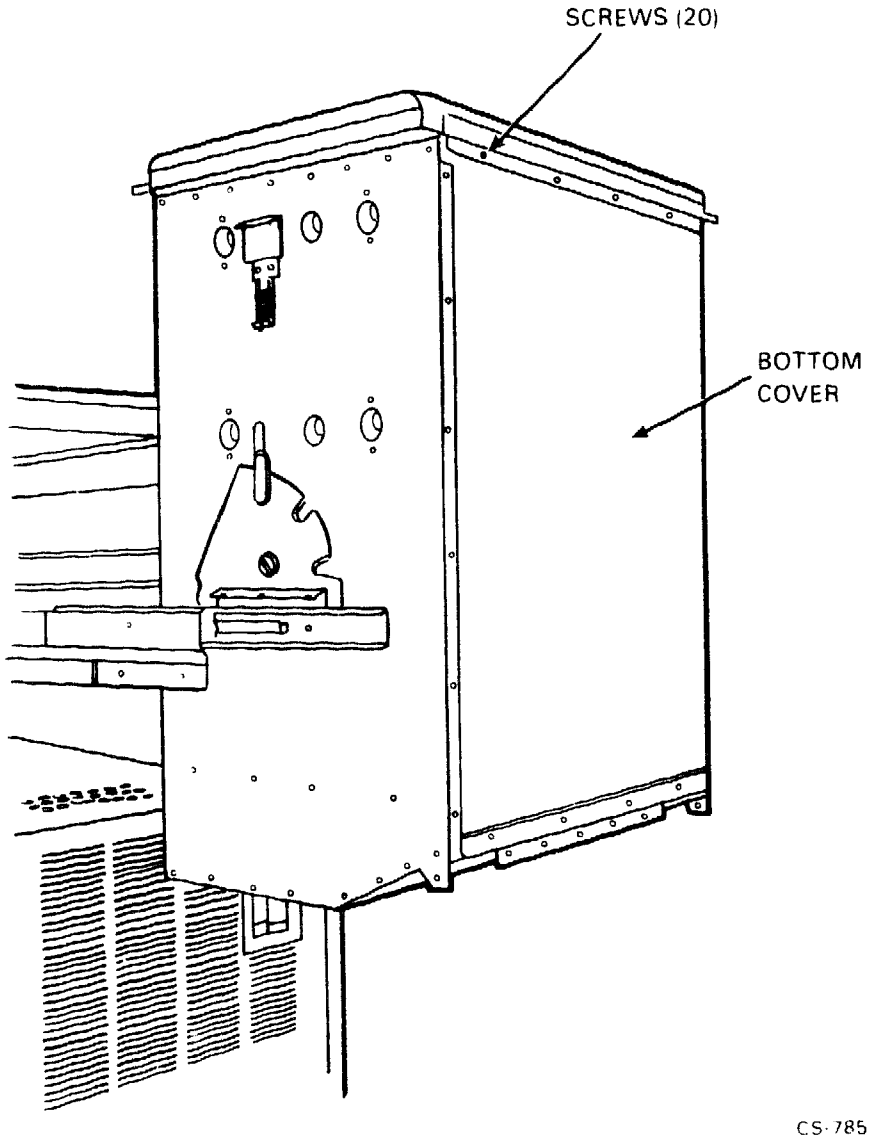


Figure 2-7 Removing the Screws from the Bottom Cover (XMI (BA60-BB) Chassis Shown)

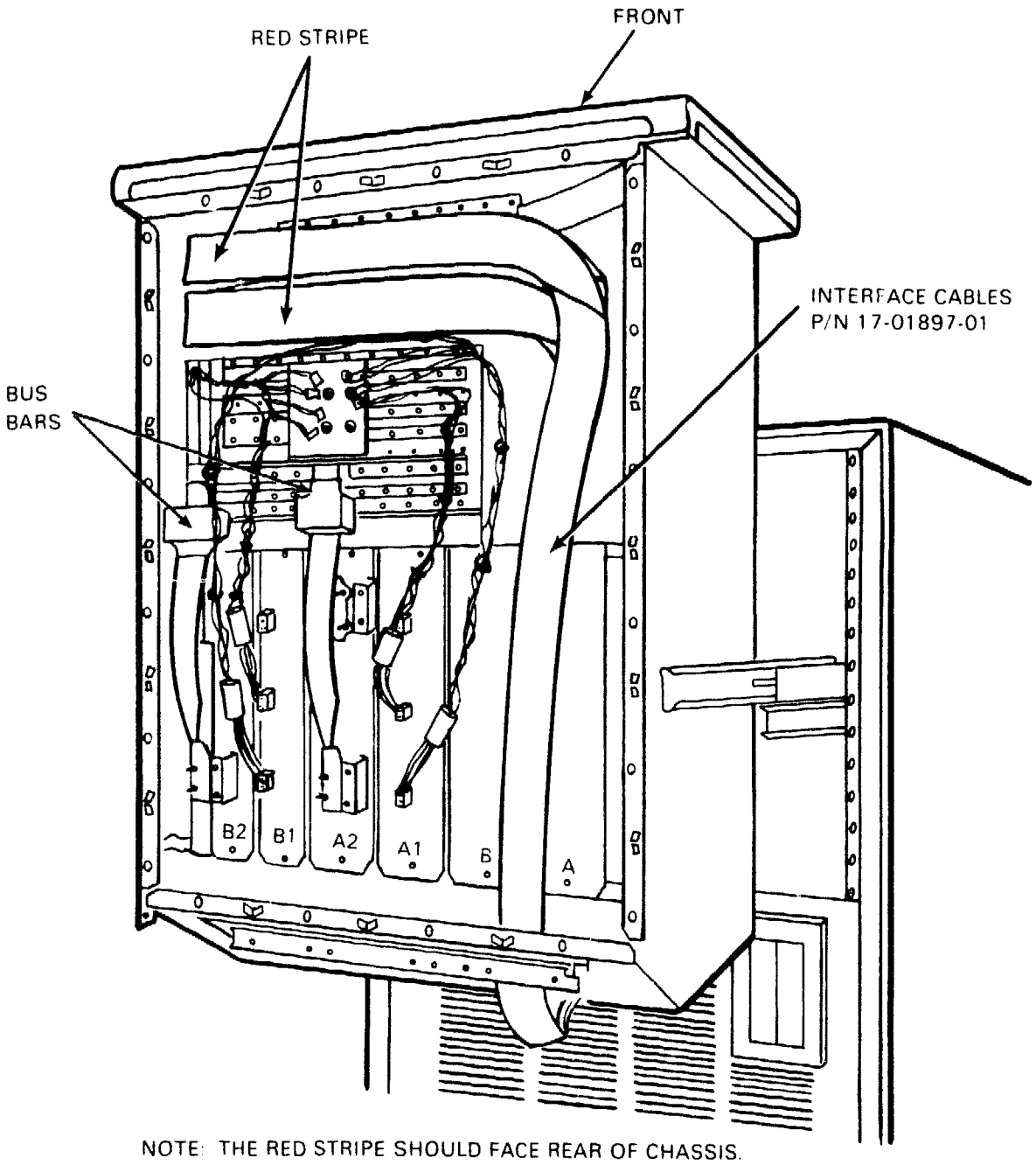


Figure 2-8 Installing and Dressing the XMI (BA60-BB) Chassis Cables

2.6.2 Cabling the VAXBI (BA61-BB) Chassis

Cable the VAXBI (BA61-BB) Chassis by performing the steps in the following procedure:

1. Extend the stabilizing legs at the front of the cabinet (if stabilizing legs are provided).

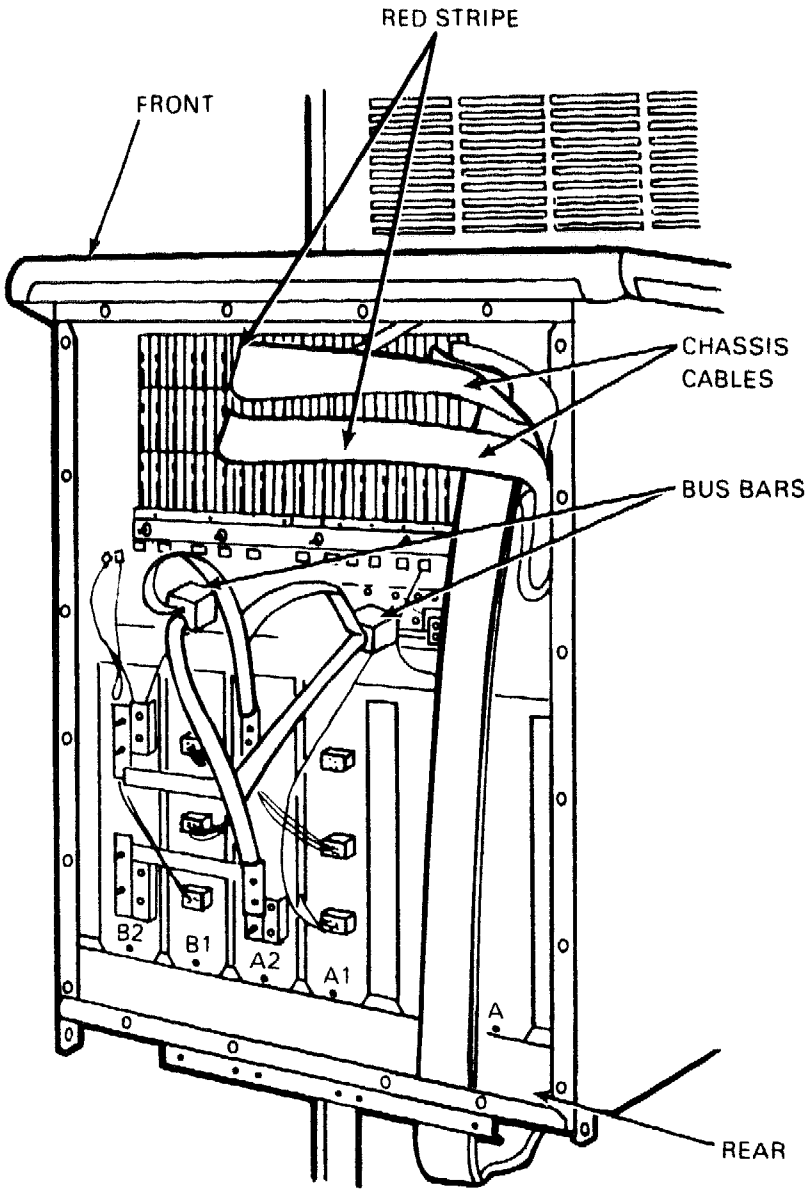
WARNING

Ensure that the cabinet or rack is stable prior to proceeding with the following steps.

2. Release the four retaining screws located on the front bezel.
3. Carefully slide the VAXBI (BA61-BB) Chassis forward until the slides lock in the extended position.
4. Pull the slide index plate locking levers (one on each side of the chassis) forward and tilt the VAXBI (BA61-BB) Chassis upwards, as was done for the XMI (BA60-BB) Chassis (see Figures 2-4 and 2-7).
5. Remove the 20 screws securing the bottom cover to the chassis (see Figure 2-7).

NOTE
The 20 captive screws will remain with the cover.

6. Remove the bottom cover.
7. Install and dress the four pair of XMI/VAXBI adapter cables (P/N 17-01897-01) as shown in Figure 2-9.



NOTE: THE RED STRIPE SHOULD FACE REAR OF CHASSIS.

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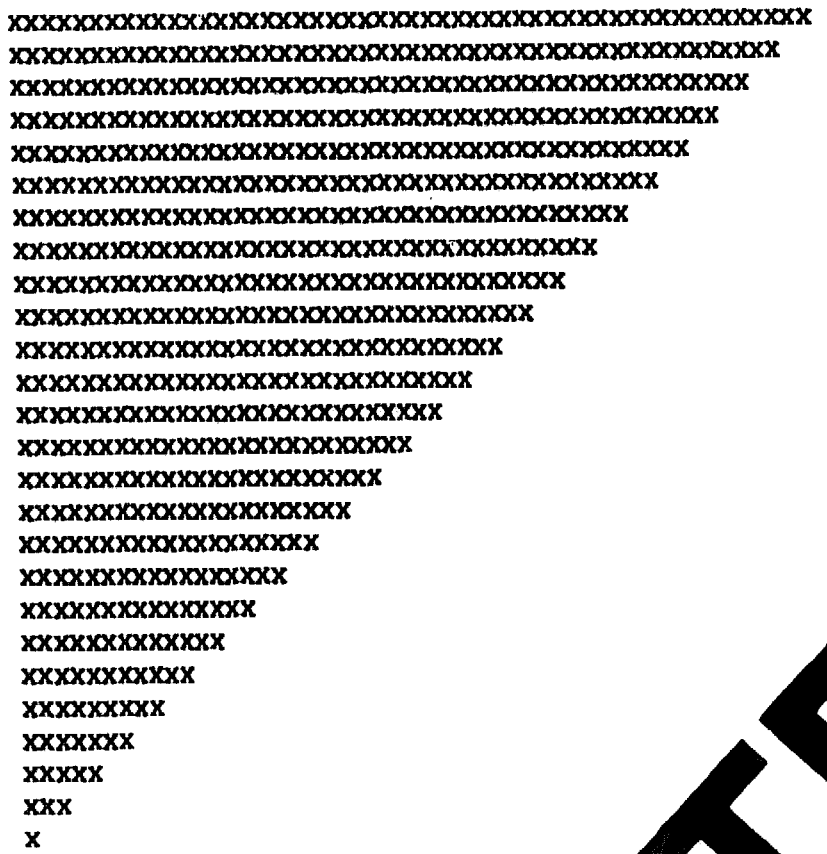
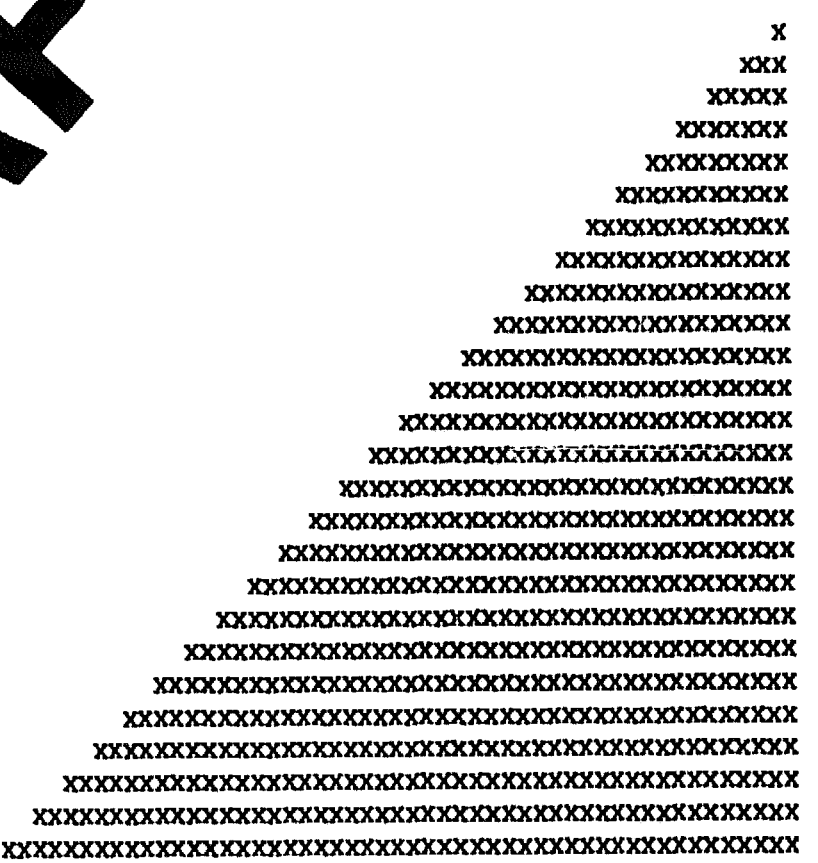
Figure 2-9 Installing and Dressing the VAXBI (BA61-BB) Chassis Cables



CHAPTER 3



CHAPTER 3
OPERATION

Operation of either the XMI (BA60-BB) or VAXBI (BA61-BB) Chassis consists simply of placing the circuit breaker in the ON position. The circuit breaker on each of the chassis is identical and is located in the upper left corner of the rear of the chassis (see Figure 3-1).

To remove power from the chassis, place the circuit breakers in the OFF position.

NOTE

The circuit breakers mounted at the rear of the BA60-BB or BA61-BB Chassis is the only local way to apply or remove power from each chassis.

For system specific operational instructions, refer to the appropriate manuals furnished with the equipment.

NOTE

Both chassis should be powered up simultaneously, or the BA61-BB Chassis first, followed by the BA60-BB Chassis, to ensure properly sequenced start-up diagnostics.

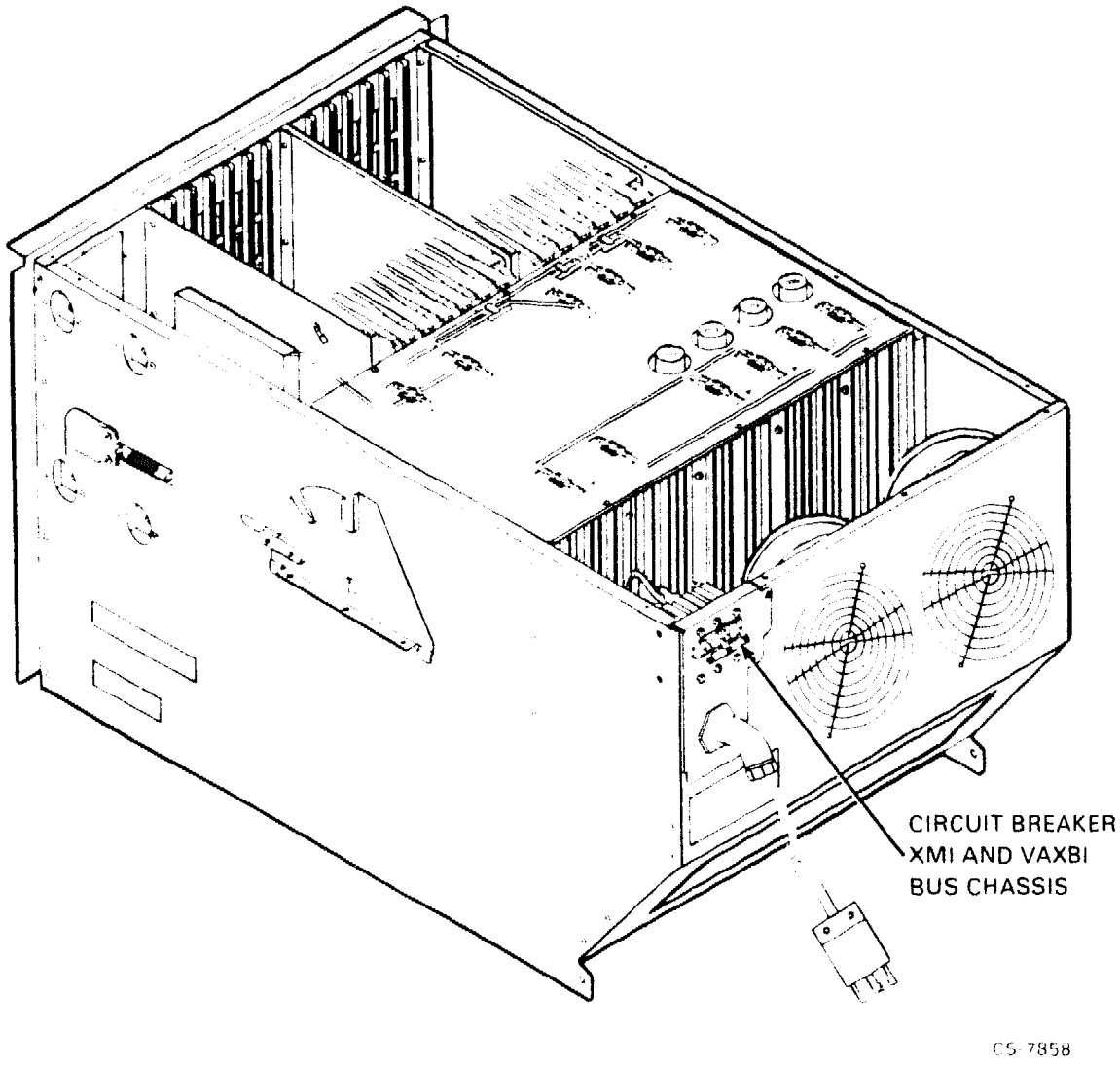
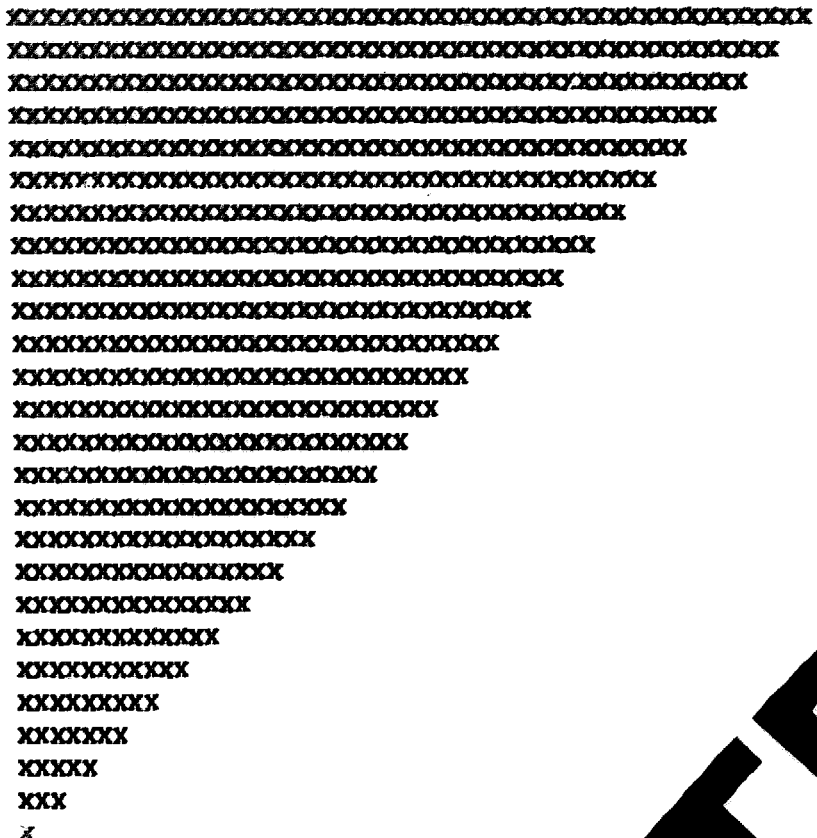
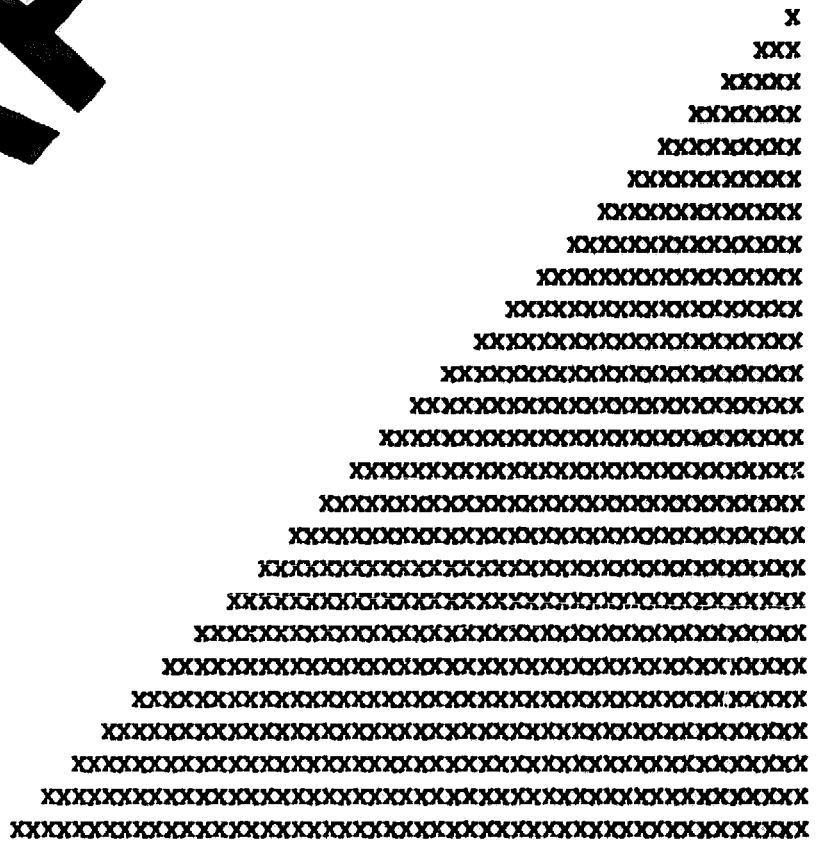


Figure 3-1 Location of Chassis Circuit Breaker



CHAPTER 4



CHAPTER 4
TROUBLESHOOTING

4.1 GENERAL

This chapter discusses basic troubleshooting, routine maintenance procedures, and diagnostic testing.

4.2 BASIC TROUBLESHOOTING

This subsection aids in troubleshooting the BA60-BB and BA61-BB enclosures. Table 4-1 lists the possible hardware problems. If during installation or normal operation a failure occurs in either the XMI (BA60-BB) or VAXBI (BA61-BB) Chassis, refer to Table 4-1 for a list of troubleshooting steps that should be checked. Table 4-2 lists the supplies needed to clean the connectors.

4.3 DIAGNOSTIC TESTING

For a complete description of the VAX6000 Rack Mountable Series System diagnostics, refer to the appropriate Option and Maintenance Manual that was shipped with your system.

Table 4-1 VAX6000 Rack Mountable Series System Troubleshooting Chart

Symptom	Possible Cause	Corrective Action
No fans or lights (XMI and VAXBI)	Power cord not plugged in.	Plug in power cord.
	Circuit breaker not ON.	Place the circuit breaker in the ON position.
No fans, unit shuts down after one minute (XMI and VAXBI)	Fan cable loose or not Connected.	Check fan cable or reconnect cable.
	No 24 Volts.	Check cables. Replace the 12V/12V/24V dc-to-dc regulator tray (70-27341-02).
Fans ok, but no lights (XMI (BA60-BB) only)	Check cables between XMI backplane, XTC card, and console panel.	Make sure that the connectors are on securely.
	No +5 Volts.	Check cables. Replace the +5V dc-to-dc regulator tray (70-27340-01).
Fault light goes out but no self test display (XMI (BA60-BB) only)	Check that console terminal is powered up and on-line.	Power-up the terminal and place it on-line.
	Check that the front console switch, S1, is not in SECURE mode.	Place S1 in either STANDBY or ENABLE mode.
	Check baud rate.	Set to correct baud rate.

Table 4-1 VAX6000 Rack Mountable Series System Troubleshooting Chart (Cont)

Symptom	Possible Cause	Corrective Action
Module does not appear on self test results (XMI and VAXBI)	Loose cabling on backplane.	Check and secure all cables on the backplane.
	System not configured correctly.	Configure correctly.
Intermittent module response (XMI and VAXBI)	Loose cabling on backplane.	Check and secure all cables on the backplane.
	Poor contact on module connectors.	Clean module connectors.

Table 4-2 Connector Cleaning Supplies

Item	Function	Part Number
VAXBI Tool Kit	Maintaining Card Cages	A2-M1094-10
Paddle Wipe Handle	Holding paddle wipes	47-00116-01
Paddle Wipes	Cleaning contact area inside ZIF connectors	12-26321-01
Gold-wipe™	Cleaning module connector contact area	49-01603-00
Protective Goggles	Eye protection	29-16141-10
Nitrile Gloves	Hand protection	29-26403-00

Gold-wipe™ is a trademark of TEXWIPE.

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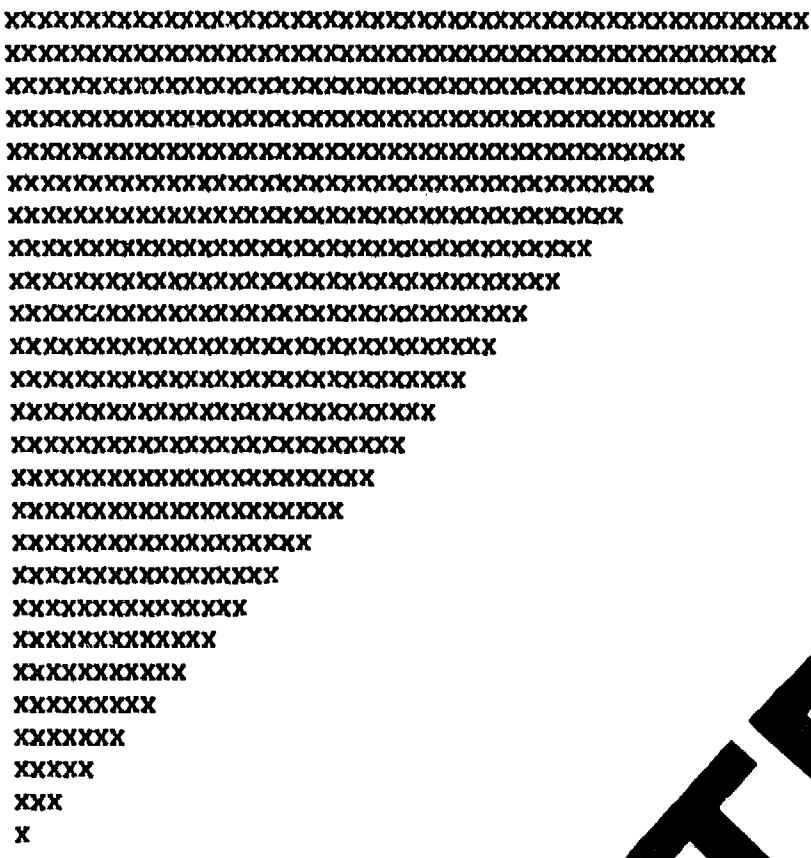
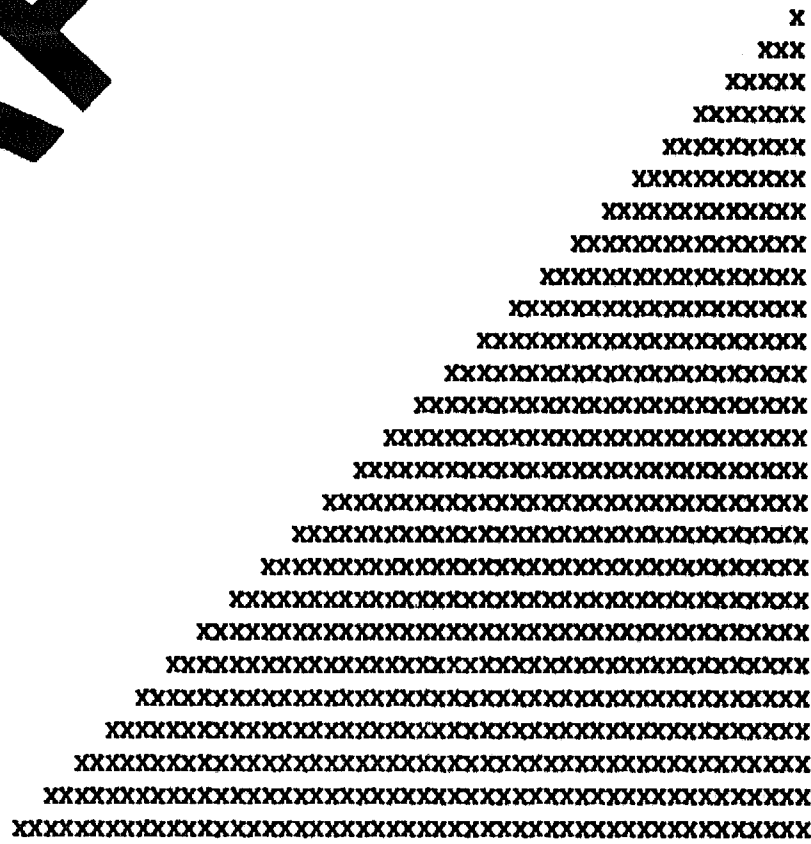


CHAPTER 5



CHAPTER 5
REMOVE/REPLACE PROCEDURES

This chapter discusses the procedures for removing or replacing the Field Replaceable Units (FRUs) in either the XMI (BA60-BB) or VAXBI (BA61-BB) Chassis. Topics covered in this chapter include:

- Preparing the chassis for servicing
- XMI (BA60-BB) chassis unique FRUs
- VAXBI (BA61-BB) Chassis unique FRUs
- Power supply tray FRUs
- Fans
- Thermal sensor
- Fuses

The following tools are required for servicing the two chassis:

- Medium Phillips screwdriver
- Small Phillips screwdriver
- Small flat blade screwdriver
- 5/16 inch open end wrench
- DVM meter and probes

WARNING

Before servicing either chassis, ensure that the power is OFF and that the power cords are removed from the source.

Procedures for removing or replacing the card cages in the XMI and VAXBI Chassis, individual modules from the card cages, and the power supply bus bars are discussed in the appropriate *VAX6000 Series Options and Maintenance Manual.*

5.1 PREPARING THE CHASSIS FOR SERVICING

This section discusses the initial procedures required for servicing either the XMI (BA60-BB) or VAXBI (BA61-BB) Chassis.

WARNING

Ensure that the equipment cabinet or rack is stable before servicing the equipment.

5.1.1 Extending the Chassis for Servicing

Extend the chassis for servicing by performing the following steps:

1. Open the rear door of the cabinet (if a cabinet is used).
2. Release the four retaining screws located on the front bezel.
3. Carefully pull the chassis to be serviced forward about six inches, and check that cables are free and moving with the chassis.
4. Pull the chassis all the way forward until the chassis slides lock in place (see Figure 5-1).

5.1.2 Removing the Top Cover

Perform the following procedure with the chassis to be serviced in the normal service position (see Figure 5-1).

1. Remove the 22 4-40 captive screws securing the top cover to the chassis using a small flat blade screwdriver.
2. Lift the cover off and set aside.

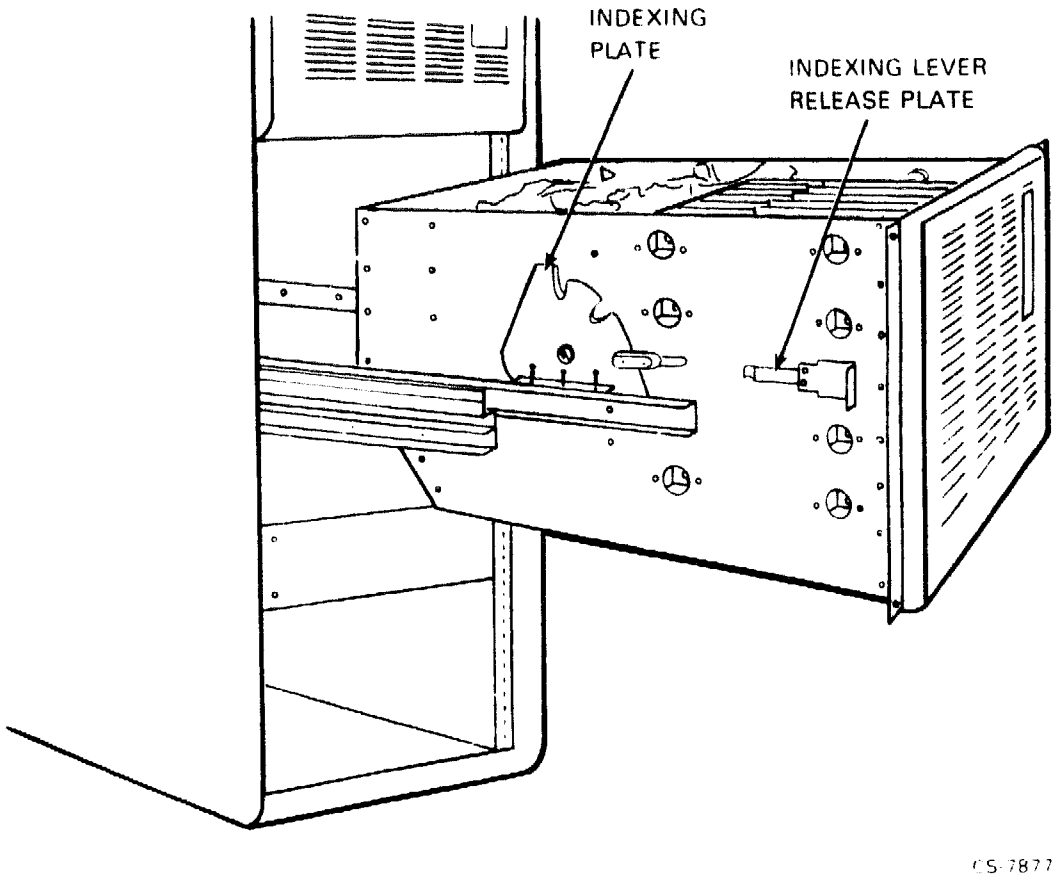


Figure 5-1 Chassis in Normal Service Position

5.1.3 Removing the Bottom Cover

Perform the following procedure with the chassis to be serviced in the upright service position (see Figure 5-2).

1. Pull the two indexing plate release levers toward you and swing the chassis upright 90°. Release the lever to lock the chassis in position.
2. Remove the 20 4-40 captive screws securing the bottom cover to the chassis using a small flat blade screwdriver.

NOTE

Hold the cover in place while removing the last screw.

3. Lift the cover off and set aside.

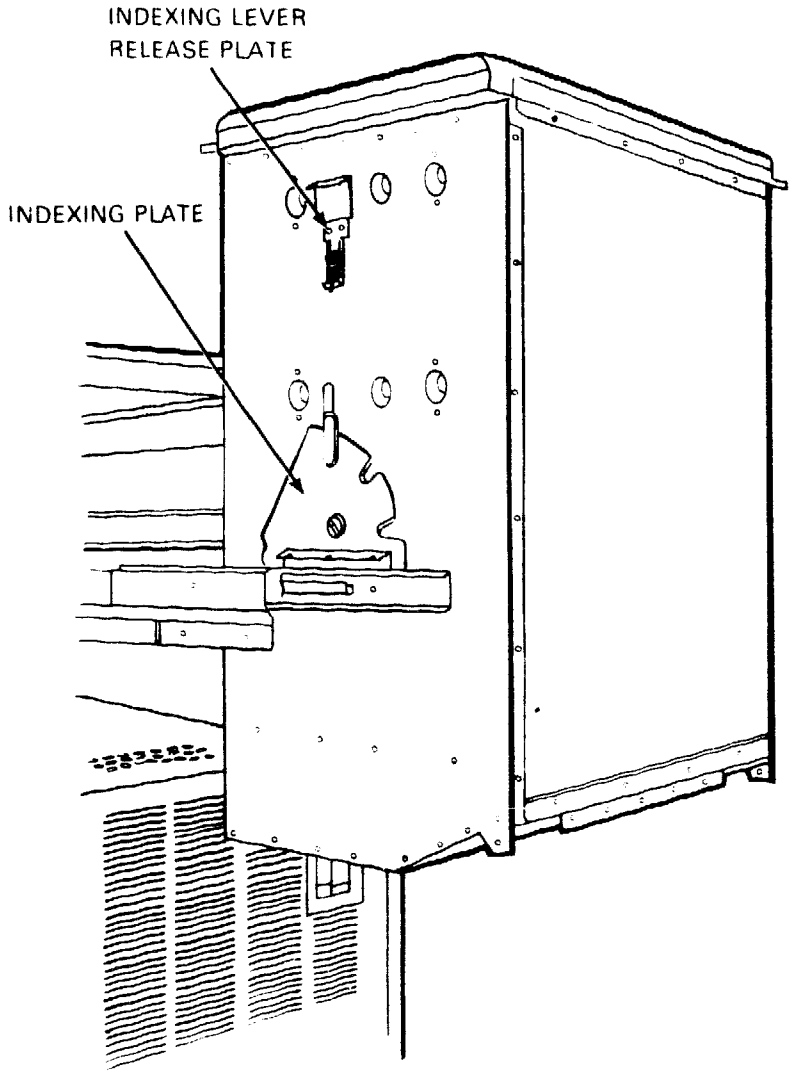


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Figure 5-2 Chassis in Upright Service Position

5.2 XMI (BA60-BB) CHASSIS UNIQUE FRUs

This section discusses the removal and replacement procedures for the FRUs that are unique to the XMI (BA60-BB) Chassis. These FRUs consists of the following:

- Control panel
- Control panel keys
- Control panel module
- XTC timing module
- Battery
- XMI clock arbiter card

5.2.1 Control Panel Keys

To remove the control panel keys, pull key straight out from control panel (see Figure 5-3).

To replace the control panel keys, align the keyway in the key with the slot in the control panel (see Figure 5-3) and then push the key in until it is fully seated.

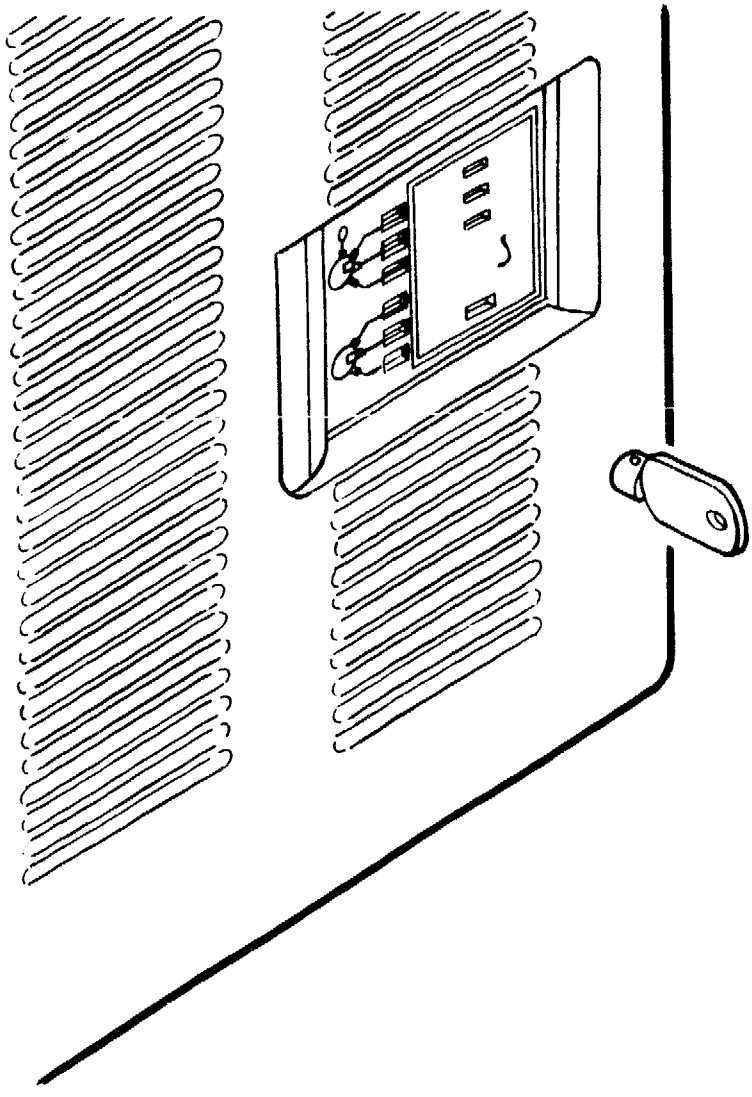

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Figure 5-3 Control Panel and Key

5.2.2 Control Panel Bezel

WARNING

Before performing this procedure, make sure that power is removed by placing the circuit breaker, located at the rear of the BA60-BB Chassis, in the OFF position, and removing the power cord from the source.

To remove the control panel bezel, perform the following steps:

1. Extend the XMI (BA60-BB) Chassis all the way out to the service position (refer to Section 5.1.1).
2. Remove the three 10-32 hex spacers, on each side of the chassis, securing the XMI front bezel to the chassis (see Figure 5-4).
3. Remove the two 4-40 screws securing the control panel to the front of the chassis using a small Phillips screwdriver (see Figure 5-5).
4. Carefully lift the control panel off.

NOTE

Be careful not to lose the small free floating reset button inside the control panel.

To replace the control panel, reverse steps 1 through 4 above.

NOTE

When replacing the control panel, ensure that the key slots inside the control panel align with the switches on the control panel printed circuit board.

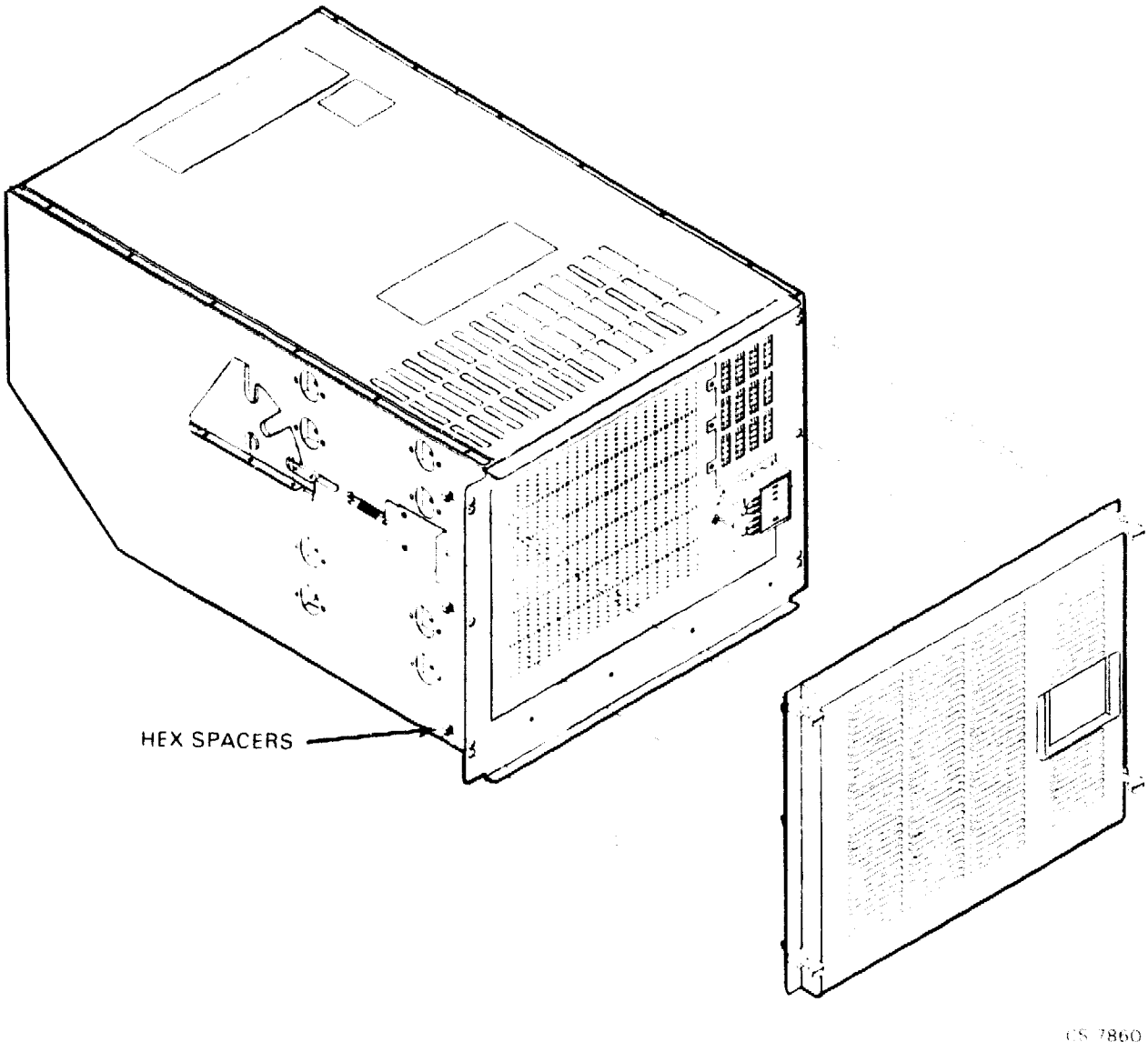


Figure 5-4 Removing the Front Bezel

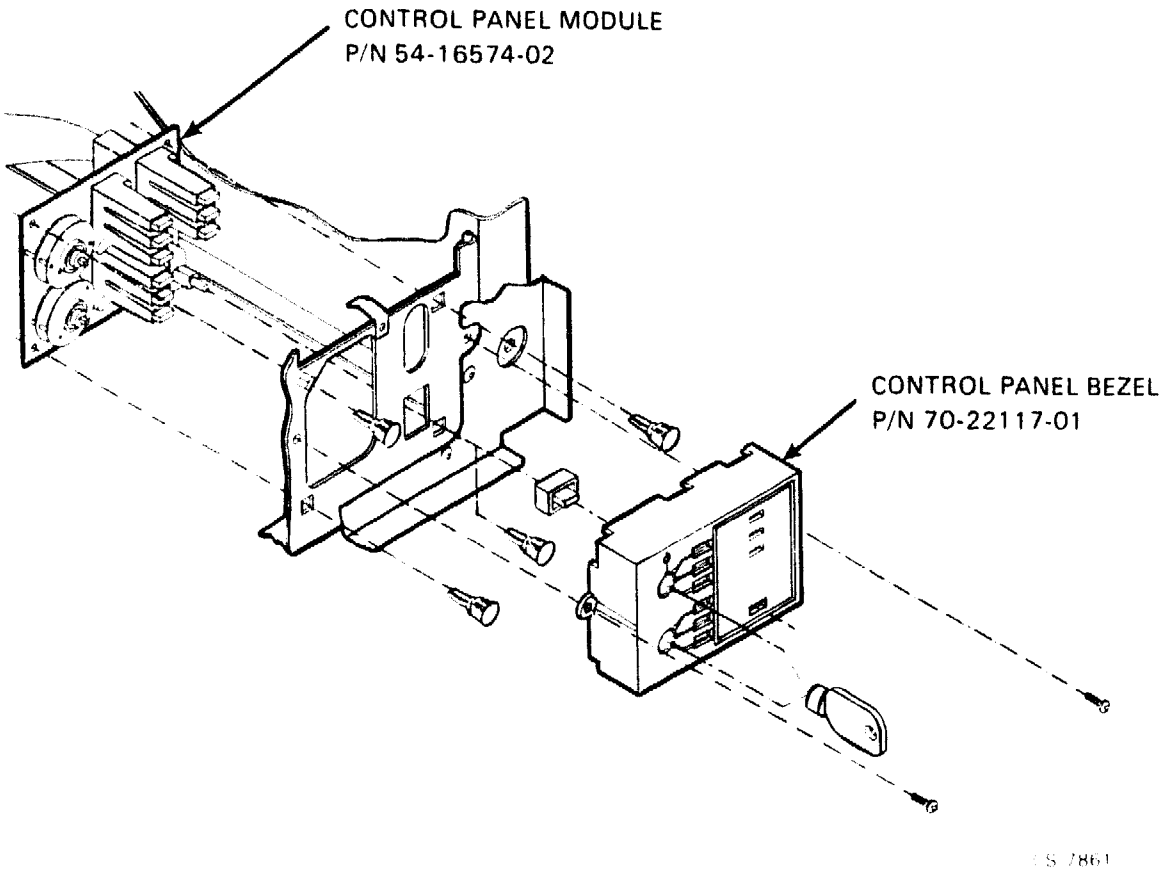


Figure 5-5 Removing the Control Panel

5.2.3 Control Panel Module (P/N 54-16574-02)

WARNING

Before performing this procedure, make sure that power is removed by placing the circuit breaker, located at the rear of the BA60-BB Chassis, in the OFF position, and removing the power cord from the source.

To remove the control panel module, perform the following steps:

1. Extend the XMI (BA60-BB) Chassis all the way out to the service position (refer to Section 5.1.1).
2. Remove the top cover (refer to Section 5.1.2).
3. Remove the control panel (refer to Section 5.2.2).

CAUTION

You must wear an antistatic wrist strap attached to the chassis when handling any modules.

4. Put on the two antistatic wrist straps. These straps are contained in the plastic pouch within the front right hand side of the chassis (see Figure 5-6).
5. Disconnect the cable connector from the control panel module (see Figure 5-7).
6. Squeeze the tops of the four standoffs holding the module to the chassis, and move the module away from the locking tab on each standoff (see Figure 5-7).
7. Remove the module.

To replace the control panel module, reverse steps 1 through 7 above.

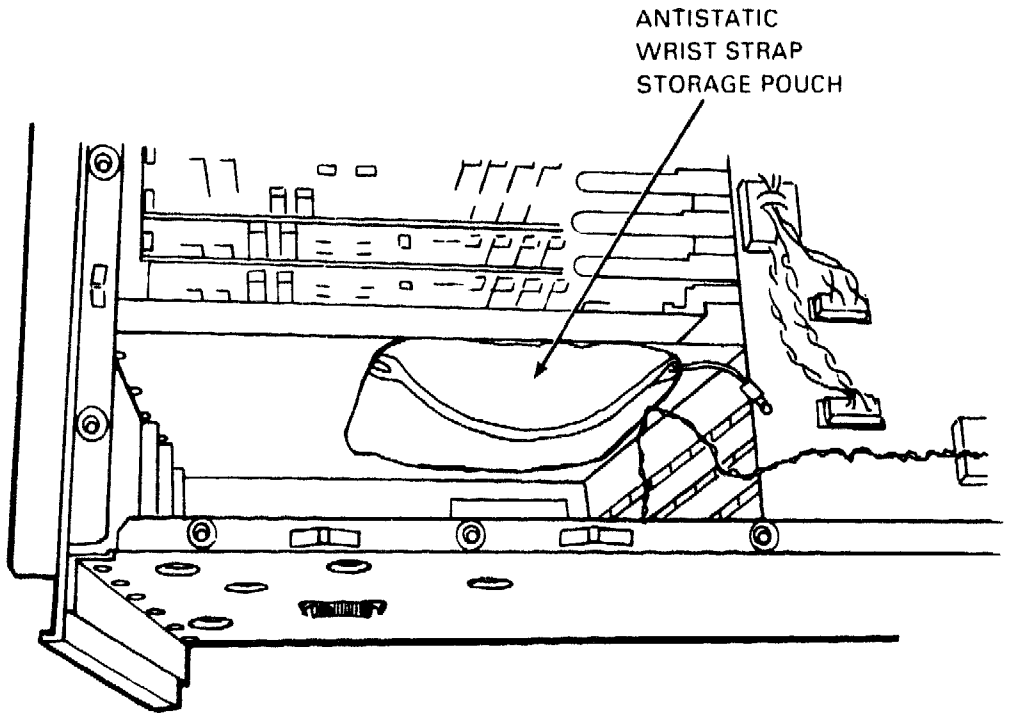


Figure 5-6 Antistatic Wrist Strap Storage Pouch

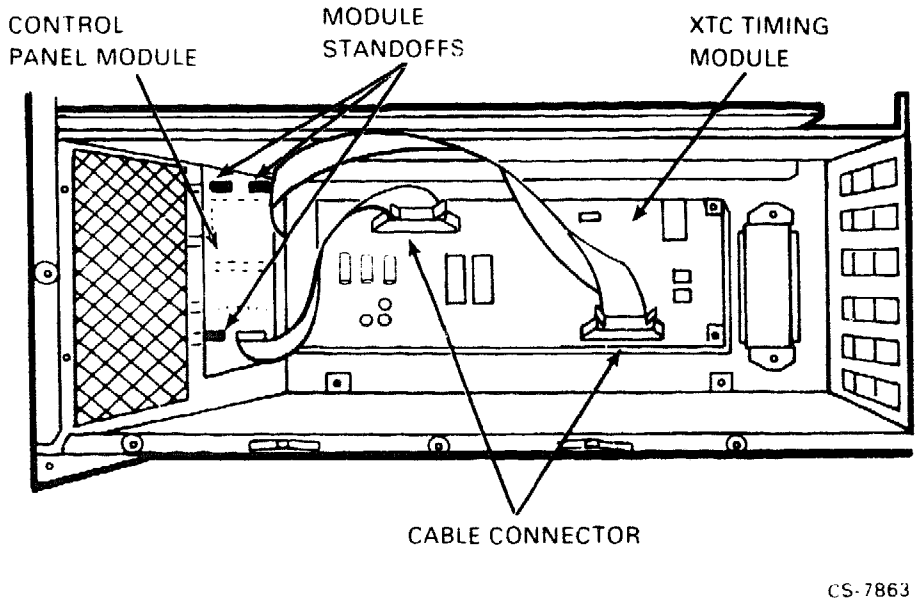


Figure 5-7 Removing the Control Panel Module

5.2.4 XTC Timing Module (P/N 54-20019-01)

WARNING

Before performing this procedure, make sure that power is removed by placing the circuit breaker, located at the rear of the BA60-BB Chassis, in the OFF position, and removing the power cord from the source.

To remove the XTC timing module, perform the following steps:

1. Extend the XMI (BA60-BB) Chassis all the way out to the service position (refer to Section 5.1.1).
2. Remove the top cover (refer to Section 5.1.2).

CAUTION

You must wear an antistatic wrist strap attached to the chassis when handling any modules.

3. Put on the two antistatic wrist straps. These straps are contained in the plastic pouch within the front right hand side of the chassis (see Figure 5-6).
4. Reach down past the pouch that held the antistatic wrist straps and disconnect the four cable connectors on the XTC timing module (see Figure 5-7). Note the orientation of the module for later replacement.
5. Place the XMI (BA60-BB) Chassis in the upright service position (refer to Section 5.1.3).
6. Remove the bottom cover (refer to Section 5.1.3).
7. Remove the four 6-32 screws securing the XTC timing module subassembly to the chassis, using a Phillips screwdriver (see Figure 5-7).
8. Remove the XTC timing module subassembly and set aside.

To replace the XTC timing module subassembly, reverse steps 1 through 8 above.

NOTE

The XTC module (P/N 54-20019-01) used on the VAX6000 Rack Mountable Series System is not compatible or interchangeable with the XTC module used in the standard corporate VAX6000 systems.

5.2.5 Battery (P/N 12-19245-00)

WARNING

Before performing this procedure, make sure that power is removed by placing the circuit breaker, located at the rear of the BA60-BB Chassis, in the OFF position, and removing the power cord from the source.

To remove the battery, perform the following steps:

1. Remove the XTC timing module (refer to Section 5.2.4).
2. Remove the two 6-32 screws from the battery retaining bracket using a Phillips screwdriver (see Figure 5-7).
3. Remove cover.
4. Remove battery.

To replace the battery, reverse steps 1 through 4 above.

5.2.6 XMI Clock Arbiter Card (P/N 54-18172-01)

WARNING

Before performing this procedure, make sure that power is removed by placing the circuit breaker, located at the rear of the BA60-BB Chassis, in the OFF position, and removing the power cord from the source.

To remove the XMI clock arbiter card, perform the following steps:

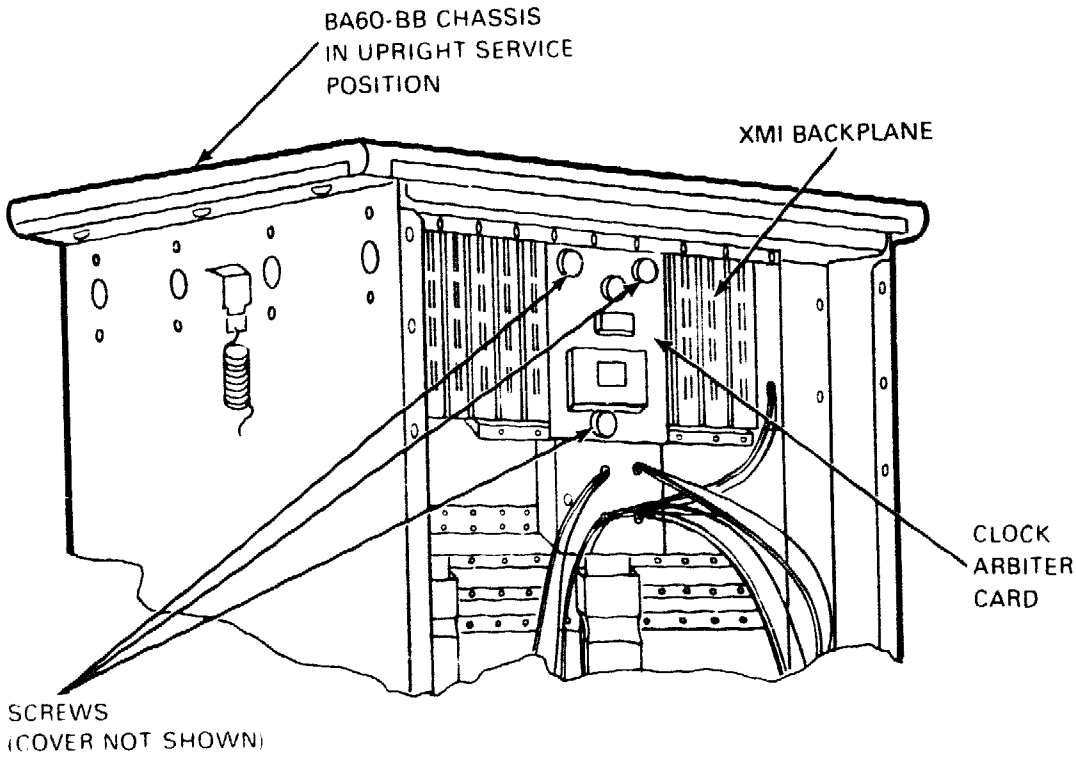
1. Extend the XMI (BA60-BB) Chassis all the way out to the service position (refer to Section 5.1.1).
2. Remove the top cover (refer to Section 5.1.2).

CAUTION

You must wear an antistatic wrist strap attached to the chassis when handling any modules.

3. Put on the two antistatic wrist straps. These straps are contained in the plastic pouch within the front right hand side of the chassis (see Figure 5-6).
4. Place the XMI (BA60-BB) Chassis in the upright service position (refer to Section 5.1.3).
5. Remove the bottom cover (refer to Section 5.1.3).
6. Remove the three screws and cover securing the XMI clock arbiter card to connectors on the XMI backplane (see Figure 5-8).
7. Remove the XMI clock arbiter card and set aside.

To replace the XMI clock arbiter card, reverse steps 1 through 7 above.



NOTE REMOVE FLAT RIBBON CABLES.

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Figure 5-8 Removing the XMI Clock Arbiter Card

5.3 VAXBI (BA61-BB) CHASSIS UNIQUE FRUs

This section discusses the removal and replacement procedures for the unique FRU located in the VAXBI (BA61-BB) Chassis. This FRU is the TK70 tape drive unit.

5.3.1 TK70 Tape Drive Unit

WARNING

Before performing this procedure, make sure that power is removed by placing the circuit breaker, located at the rear of the BA61-BB Chassis, in the OFF position, and removing the power cord from the source.

To remove the TK70 tape drive unit, perform the following steps:

1. Extend the VAXBI (BA61-BB) Chassis all the way out to the service position (refer to Section 5.1.1).
2. Remove the top cover (refer to Section 5.1.2).
3. Remove the cable connector from the rear of the TK70 tape drive unit mounted in the upper right hand corner of the VAXBI (BA61-BB) Chassis (see Figure 5-9).
4. Remove the four 6-32 screws securing the TK70 tape drive unit to the chassis. These screws are located on the right hand side of the chassis (see Figure 5-9).
5. Slide the tape drive unit out from the chassis and set aside.

Replace the TK70 tape drive unit by reversing steps 1 through 5 above.

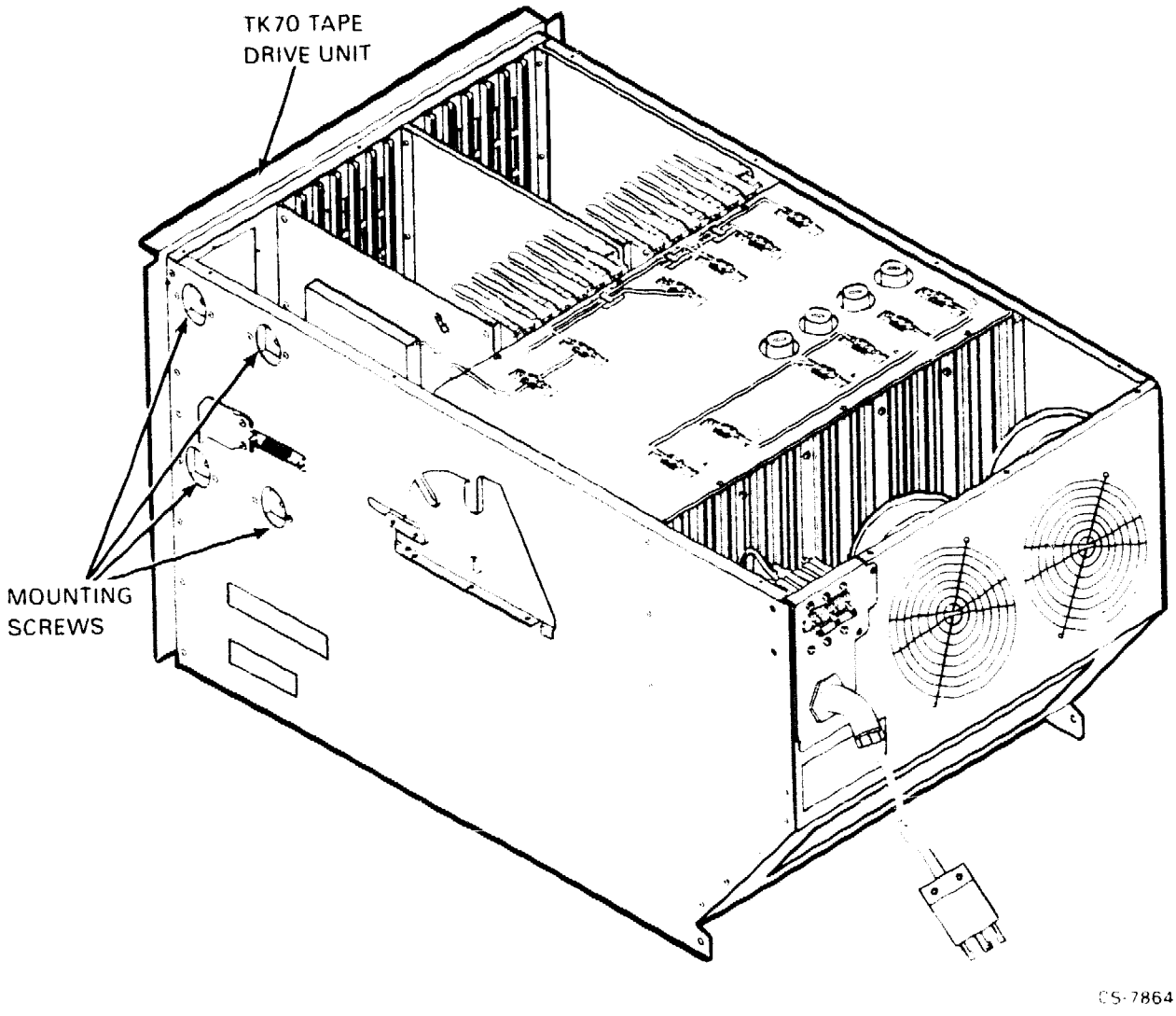

Figure 5-9 Removing the TK70 Tape Drive Unit

5.4 POWER SUPPLY ASSEMBLY

The power supply assembly in both the XMI (BA60-BB) and VAXBI (BA61-BB) Chassis are identical and contain six power supply tray assemblies that consist of the following:

- AC front end trays (2)
- 5V dc-to-dc regulator trays (2)
- 5V/5V/15V dc-to-dc regulator trays (1)
- 12V/12V/24V dc-to-dc regulator trays (1)

The following sections discuss how to remove and replace these assemblies in the power supply.

5.4.1 AC Front End Tray Assemblies (P/N 70-27334-01)

Each power supply assembly contains two ac front end trays.

WARNING

Before performing this procedure, make sure that power is removed by placing the circuit breaker, located at the rear of the BA60-BB or BA61-BB Chassis, in the OFF position, and removing the power cord from the source.

To remove the ac front end tray assemblies, perform the following steps:

1. Extend the appropriate chassis all the way out to the service position (refer to Section 5.1.1).
2. Remove the top cover (refer to Section 5.1.2).
3. Disconnect the two cable connectors from the appropriate ac front end tray to be replaced (see Figure 5-10).
4. Place the chassis in the upright service position (refer to Section 5.1.3).
5. Remove the bottom cover (refer to Section 5.1.3).
6. At the right hand side of the chassis, remove the input connector, then remove the two screws securing the ac front end tray in the power supply assembly (see Figure 5-11).
7. Remove the ac front end tray assembly.

Replace the ac front end tray assembly by reversing steps 1 through 7 above.

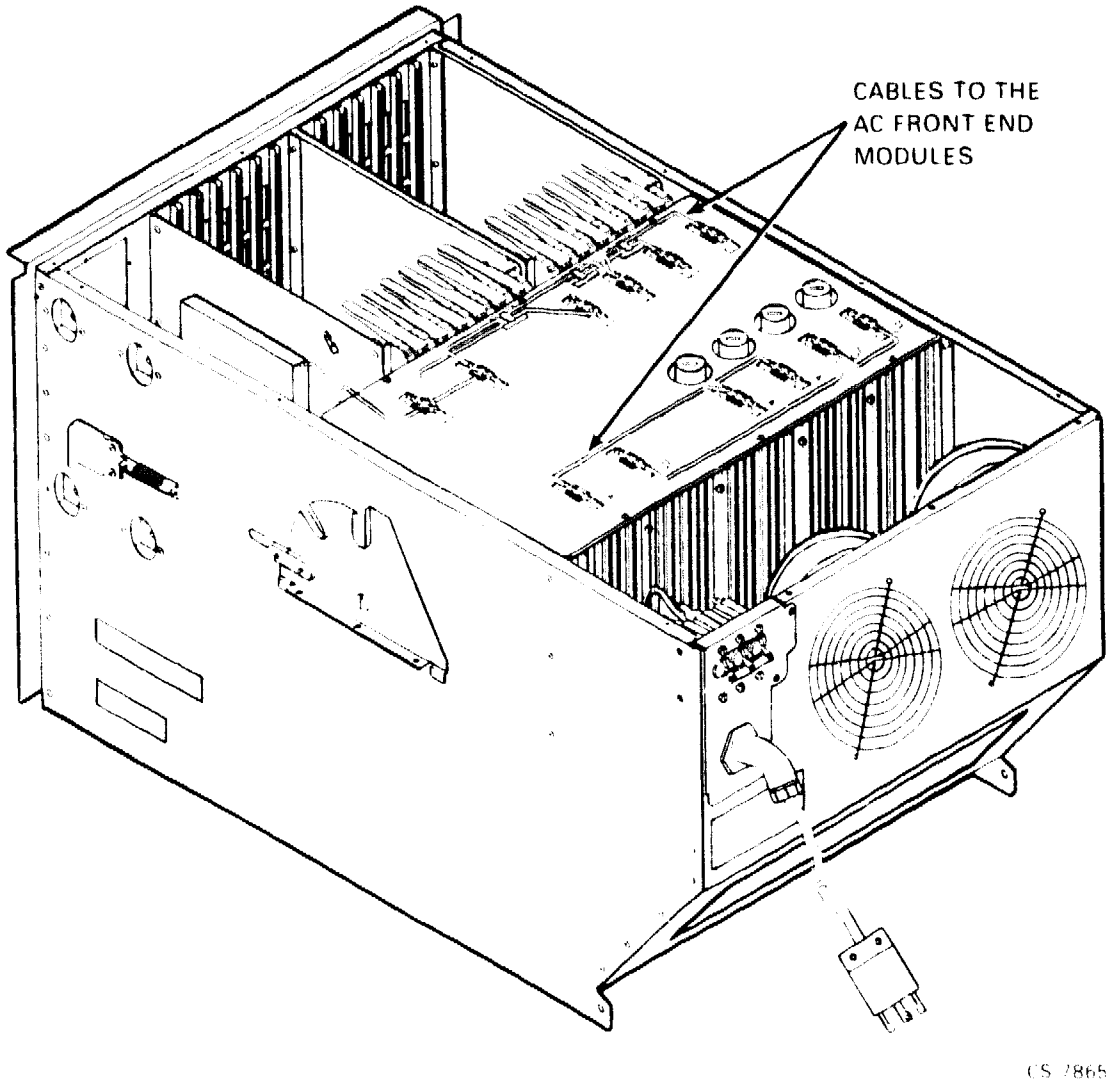

Figure 5-10 Removing the Cables from the AC Front End Tray

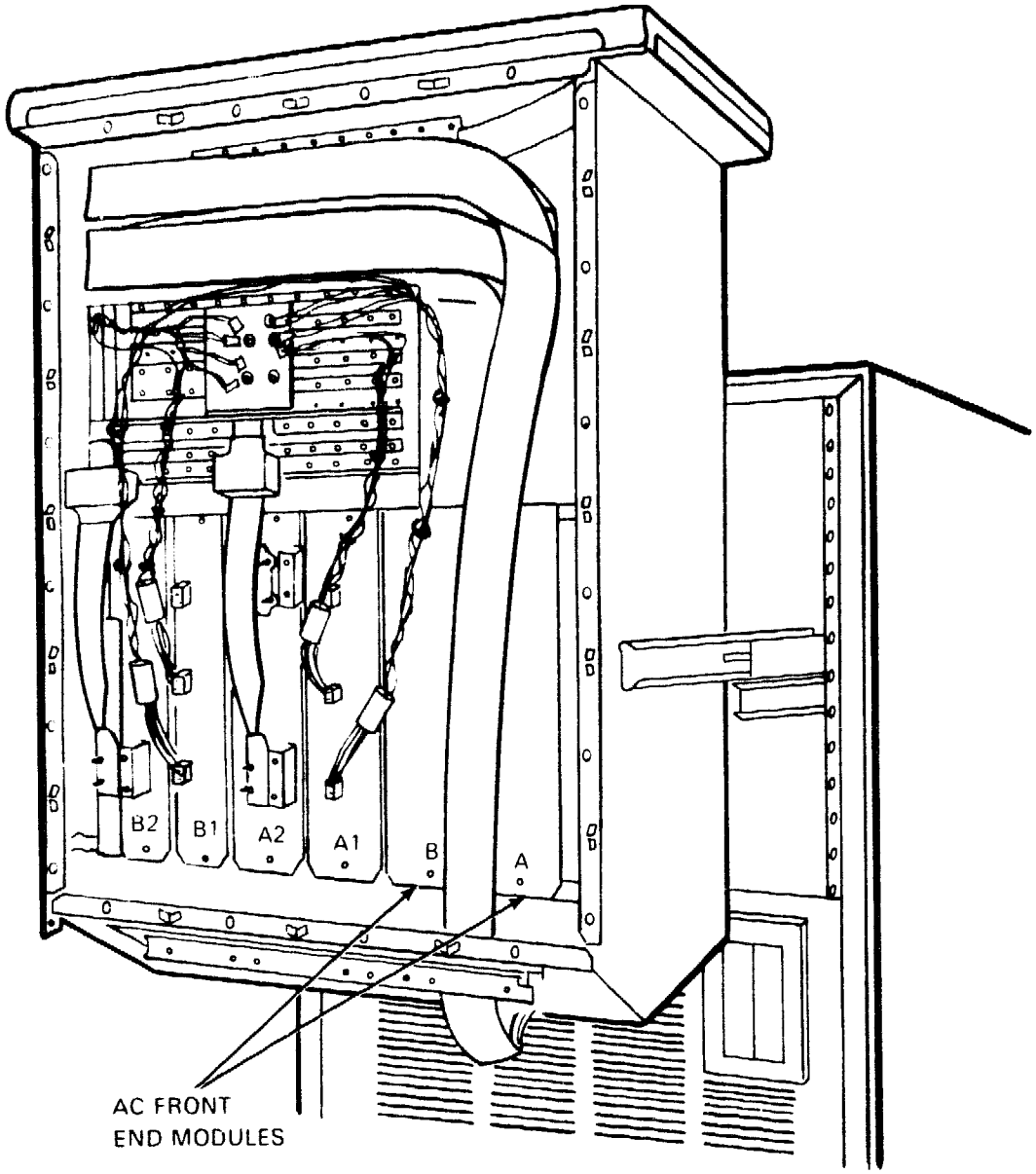

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Figure 5-11 Removing the AC Front End Tray

5.4.2 +5V DC-to-DC Regulator Tray (P/N 70-27340-01)

Each power supply assembly contains two +5V dc-to-dc regulator trays.

WARNING

Before performing this procedure, make sure that power is removed by placing the circuit breaker, located at the rear of the BA60-BB or BA61-BB Chassis, in the OFF position, and removing the power cord from the source.

To remove the +5V dc-to-dc regulator tray, perform the following steps:

1. Extend the appropriate chassis all the way out to the service position (refer to Section 5.1.1).
2. Remove the top cover (refer to Section 5.1.2).

WARNING

Check that the 300V dc is absent with a DVM before continuing with the removal procedure.

3. Disconnect the two cable connectors from the appropriate +5V dc-to-dc regulator tray to be replaced (see Figure 5-10).
4. Place the chassis in the upright service position (refer to Section 5.1.3).
5. Remove the bottom cover (refer to Section 5.1.3).
6. Remove the two No. 8 hex nuts from the (-) bus bar on the appropriate +5V dc-to-dc regulator tray to be replaced (see Figure 5-12).
7. Lift the bus bar of the mounting posts and carefully bend the (-) bus bar up and back out of the way so that the tray will clear the bus bar when the tray is removed (see Figure 5-13).
8. Remove the two No. 8 hex nuts from the (+) bus bar on the appropriate +5V dc-to-dc regulator tray to be replaced (see Figure 5-12).
9. Lift the bus bar of the mounting posts and carefully bend the (+) bus bar up and back out of the way so that the tray will clear the bus bar when the tray is removed (see Figure 5-12).

10. Remove the two 6-32 screws securing the +5V dc-to-dc regulator tray in the power supply assembly (see Figure 5-12).
11. Remove the +5V dc-to-dc regulator tray from the power supply assembly.

Replace the +5V dc-to-dc regulator tray by reversing steps 1 through 11 above.

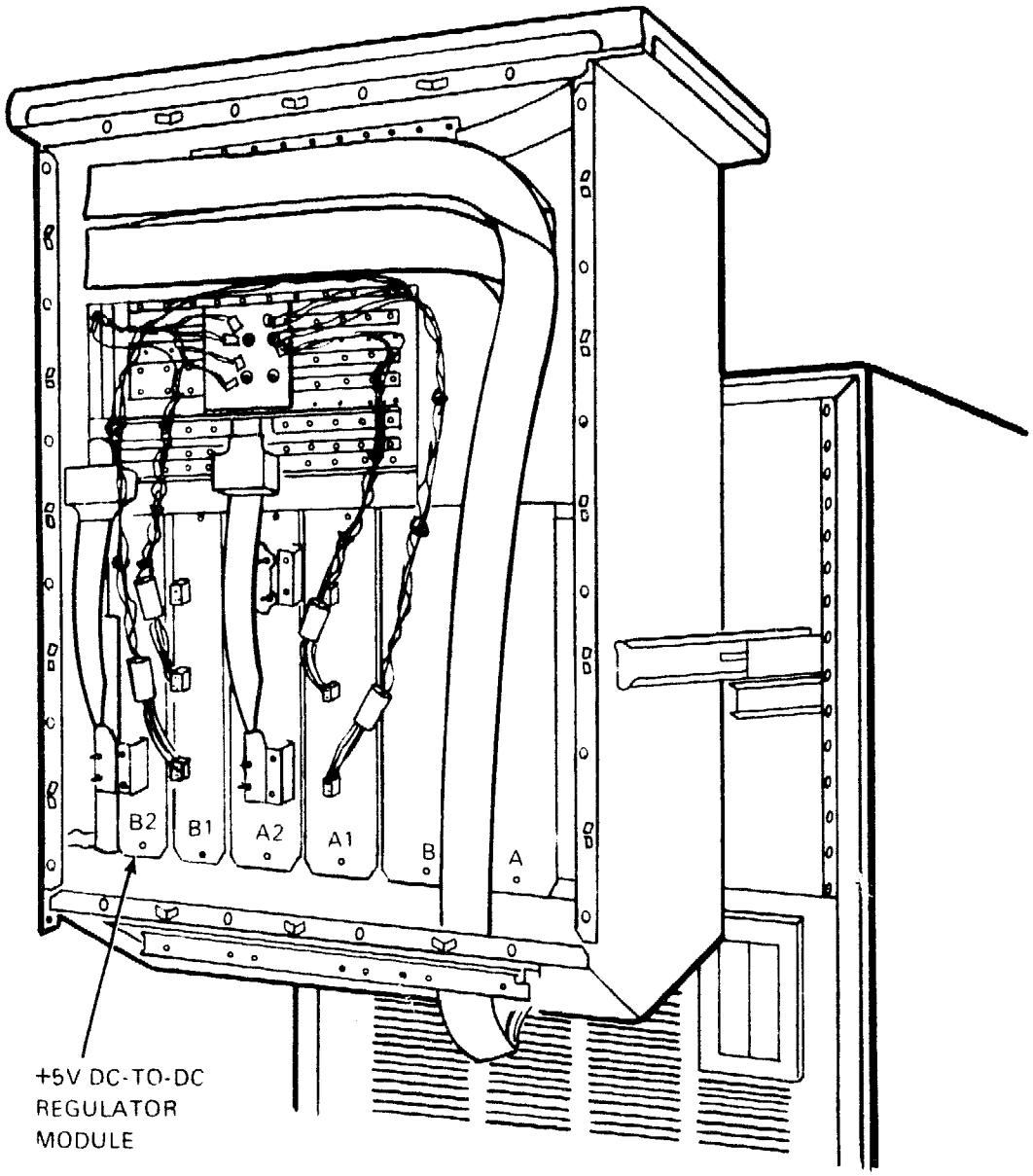

Figure 5-12 Removing the +5V DC-to-DC Regulator Tray

5.4.3 5V/5V/15V DC-to-DC Regulator Tray (P/N 70-27341-01)

WARNING

Before performing this procedure, make sure that power is removed by placing the circuit breaker, located at the rear of the BA60-BB or BA61-BB Chassis, in the OFF position, and removing the power cord from the source.

To remove the 5V/5V/15V dc-to-dc regulator tray, perform the following steps:

1. Extend the appropriate chassis all the way out to the service position (refer to Section 5.1.1).
2. Remove the top cover (refer to Section 5.1.2).

WARNING

Check that the 300V dc is absent with a DVM before continuing with the removal procedure.

3. Disconnect the two cable connectors from the 5V/5V/15V dc-to-dc regulator tray to be replaced (see Figure 5-10).
4. Place the chassis in the upright service position (refer to Section 5.1.3).
5. Remove the bottom cover (refer to Section 5.1.3).
6. Remove the three power distribution cables by unplugging the connectors and pushing the cables back out of the way.
7. Remove the two 6-32 screws securing the 5V/5V/15V dc-to-dc regulator tray in the power supply assembly (see Figure 5-12).
8. Remove the 5V/5V/15V dc-to-dc regulator tray from the power supply assembly.

Replace the 5V/5V/15V dc-to-dc regulator tray by reversing steps 1 through 8 above.

5.4.4 12V/12V/24V DC-to-DC Regulator Tray (70-27341-02)

WARNING

Before performing this procedure, make sure that power is removed by placing the circuit breaker, located at the rear of the BA60-BB or BA61-BB Chassis, in the OFF position, and removing the power cord from the source.

To remove the 12V/12V/24V dc-to-dc regulator tray, perform the following steps:

1. Extend the appropriate chassis all the way out to the service position (refer to Section 5.1.1).
2. Remove the top cover (refer to Section 5.1.2).

WARNING

Check that the 300V dc is absent with a DVM before continuing with the removal procedure.

3. Disconnect the two cable connectors from the 12V/12V/24V dc-to-dc regulator tray to be replaced (see Figure 5-10).
4. Place the chassis in the upright service position (refer to Section 5.1.3).
5. Remove the bottom cover (refer to Section 5.1.3).
6. Remove the three power distribution cables by unplugging the connectors and pushing the cables back out of the way.
7. Remove the two 6-32 screws securing the 12V/12V/24V dc-to-dc regulator tray in the power supply assembly (see Figure 5-12).
8. Remove the 12V/12V/24V dc-to-dc regulator tray from the power supply assembly.

Replace the 12V/12V/24V dc-to-dc regulator tray by reversing steps 1 through 8 above.

5.5 FAN (P/N 12-31907-02)

Both the BA60-BB and BA61-BB Chassis assemblies contain two fans located at the rear of the chassis.

WARNING

Before performing this procedure, make sure that power is removed by placing the circuit breaker, located at the rear of the BA60-BB or BA61-BB Chassis, in the OFF position, and removing the power cord from the source.

To remove the fan, perform the following steps:

1. Extend the appropriate chassis all the way out to the service position (refer to Section 5.1.1).
2. Remove the top cover (refer to Section 5.1.2).
3. Place the chassis in the upright service position (refer to Section 5.1.3).
4. Remove the bottom cover (refer to Section 5.1.3).
5. Disconnect the cable from the bottom of the fan to be removed (see Figure 5-13).
6. Place the chassis in the normal service position.
7. Remove the three screws and mounting hardware from around the face of the fan using a 5/16 inch open end wrench and a Phillips screwdriver.
8. Carefully remove the fan from the top of the chassis (see Figure 5-14).

To replace the fan, reverse steps 1 through 8 above.

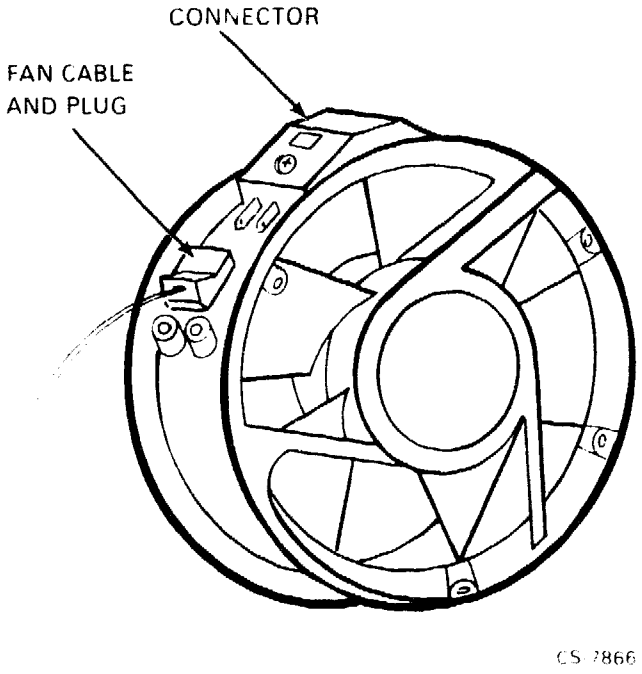

Figure 5-13 Removing the Cable from the Fan

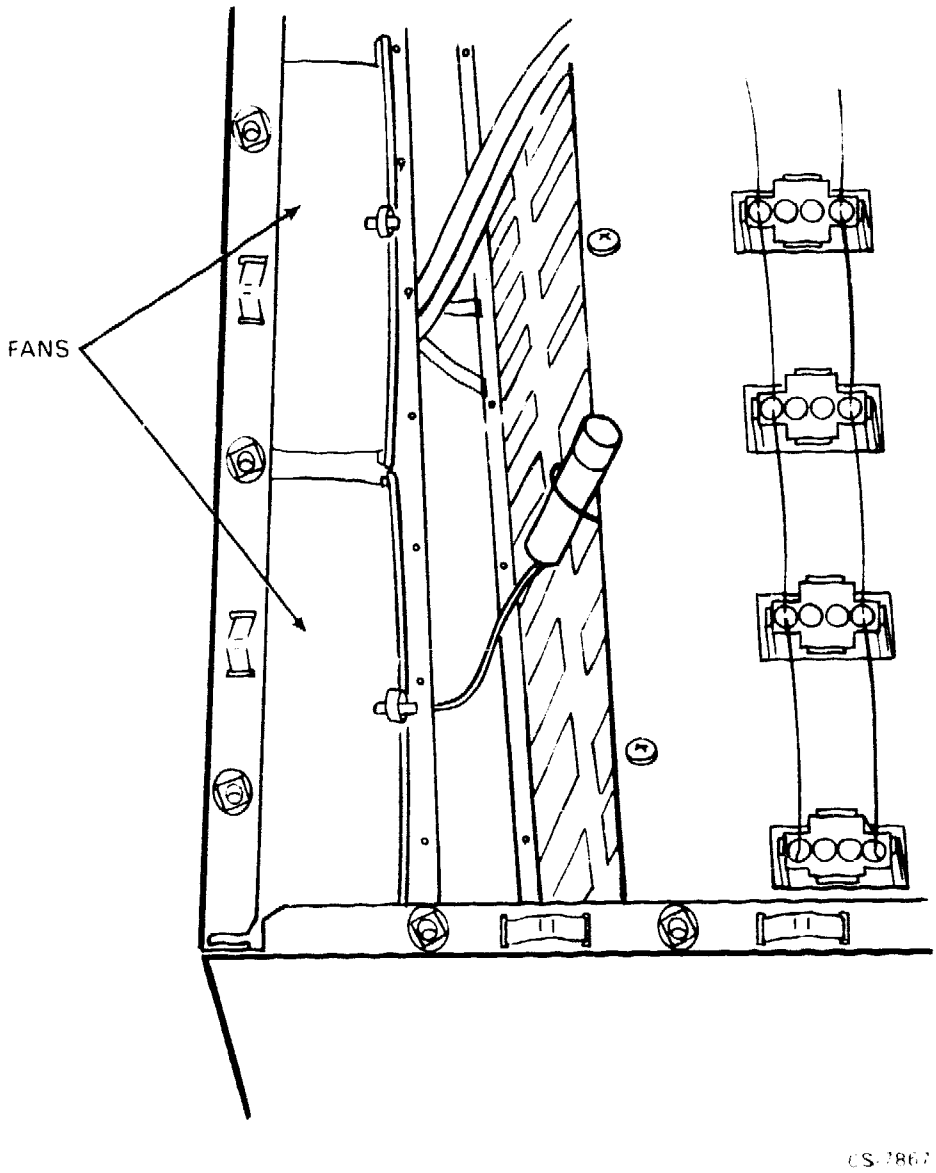

Figure 5-14 Removing the Fan from the Top of the Chassis

5.6 AIR FLOW SENSOR (P/N 12-32656-01)

Both the BA60-BB and BA61-BB Chassis contain an air flow sensor located at the rear of the chassis between the fans and the card cage.

WARNING

Before performing this procedure, make sure that power is removed by placing the circuit breaker, located at the rear of the BA60-BB or BA61-BB Chassis, in the OFF position, and removing the power cord from the source.

To remove the air flow sensor, perform the following steps:

1. Extend the appropriate chassis all the way out to the service position (refer to Section 5.1.1).
2. Remove the top cover (refer to Section 5.1.2).
3. Disconnect the air flow sensor cable (see Figure 5-15).
4. Cut the tie wrap securing the air flow sensor to the card cage (see Figure 5-15).
5. Remove the air flow sensor.

To replace the air flow sensor, reverse steps 1 through 5 above.

NOTE

When replacing the air flow sensor, position the tab on the air flow sensor in one of the slots in the card cage before securing with a new tie wrap.

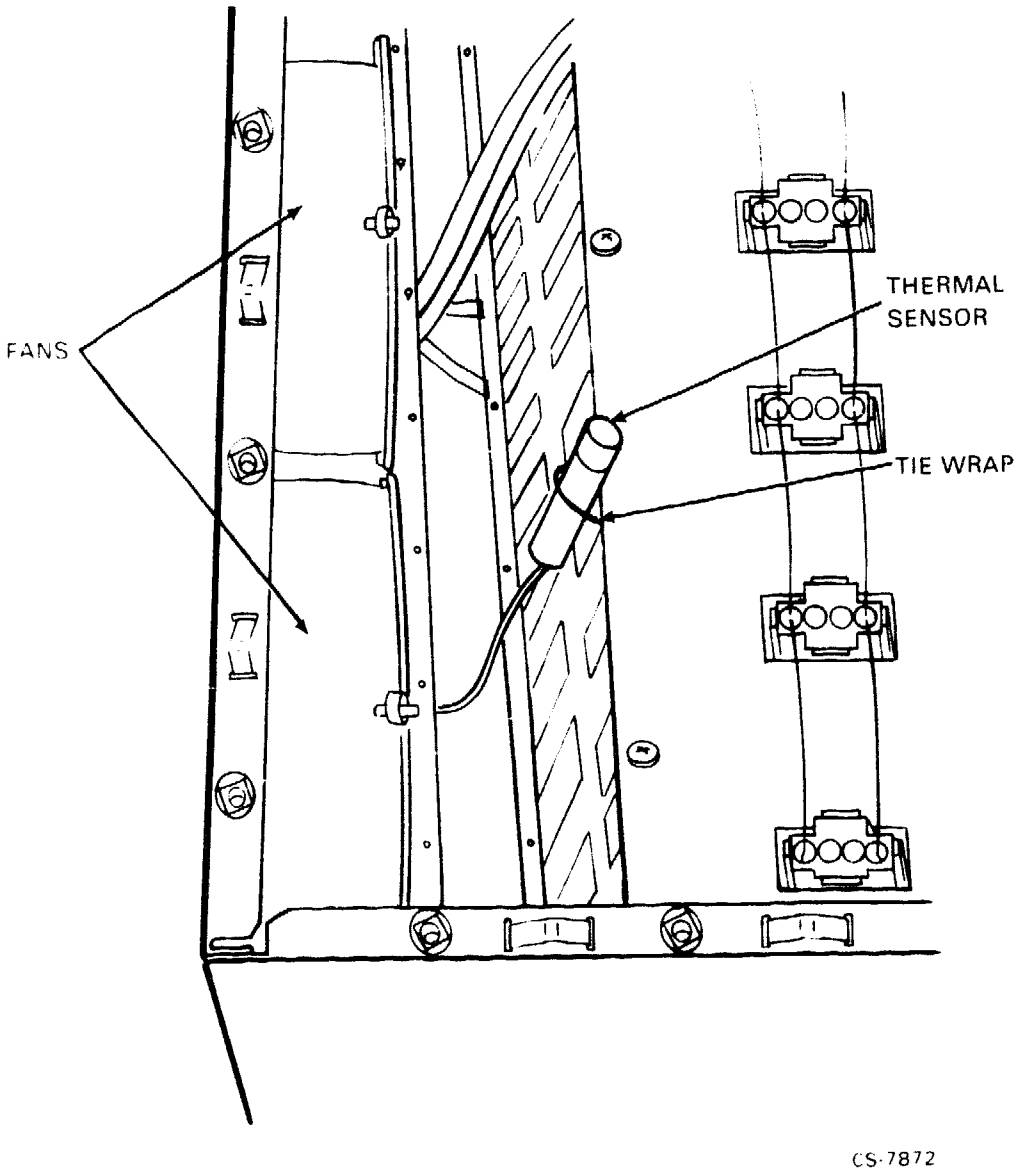

Figure 5-15 Removing the Air Flow Sensor

5.7 FUSE (P/N 90-07217-00)

WARNING

Before performing this procedure, make sure that power is removed by placing the circuit breaker, located at the rear of the BA60-BB or BA61-BB Chassis, in the OFF position, and removing the power cord from the source.

To remove the fuse, perform the following steps:

1. Extend the appropriate chassis all the way out to the service position (refer to Section 5.1.1).
2. Remove the top cover (refer to Section 5.1.2).

WARNING

Check that the 300V dc is absent with a DVM before continuing with the removal procedure.

3. Locate the appropriate fuse to be replaced (see Figure 5-16).
4. Turn the fuse holder 1/4-turn counterclockwise, using a flat blade screwdriver.
5. Lift the fuse holder out (see Figure 5-17).
6. Remove fuse.

To replace the fuse, reverse steps 1 through 6 above.

NOTE

Replacement fuse is a 3AG (250 volt), 3 AMP, normal blow (P/N 90-07217-00).

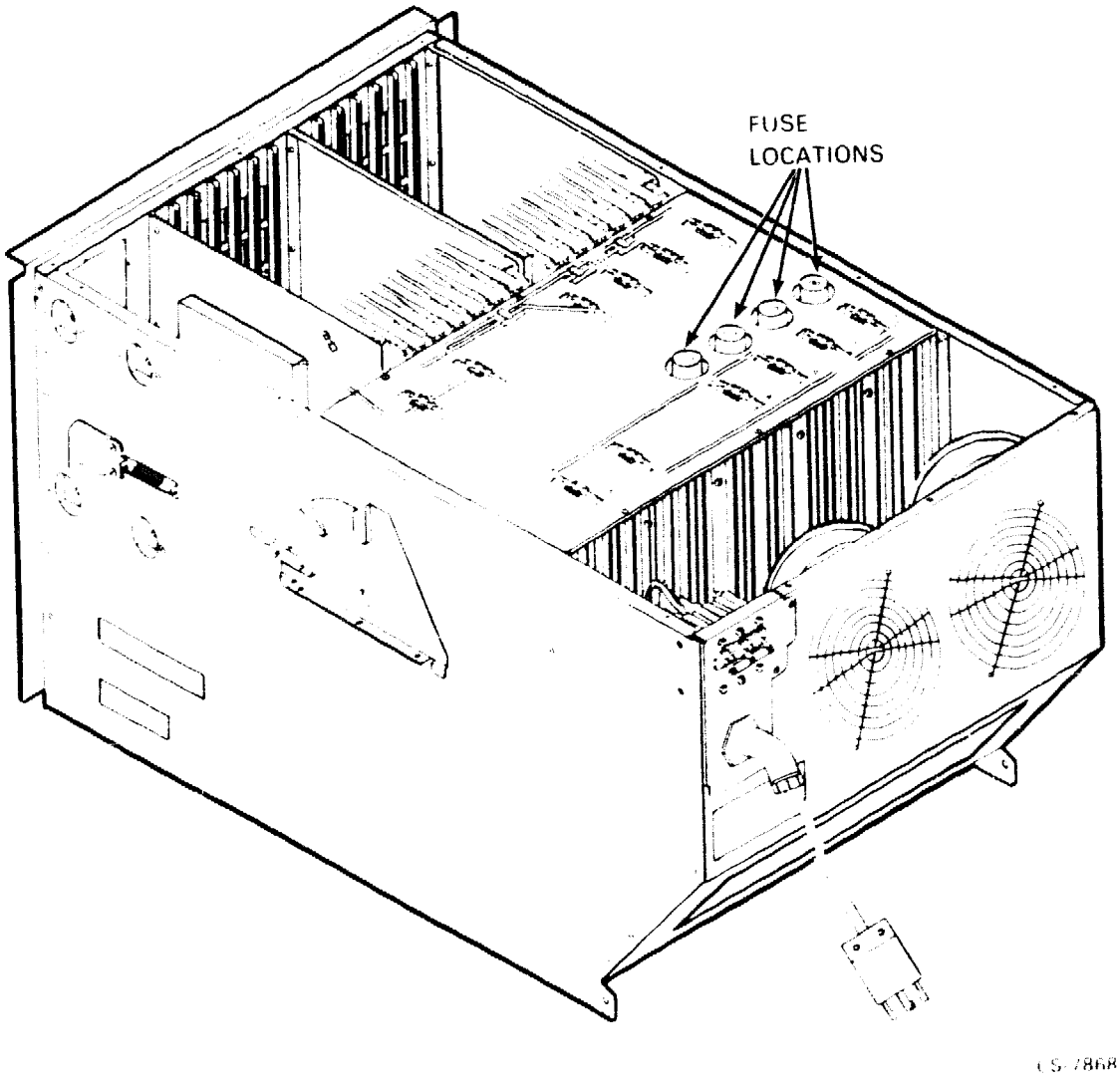

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Figure 5-16 Fuse Locations on the Power Supply Modules

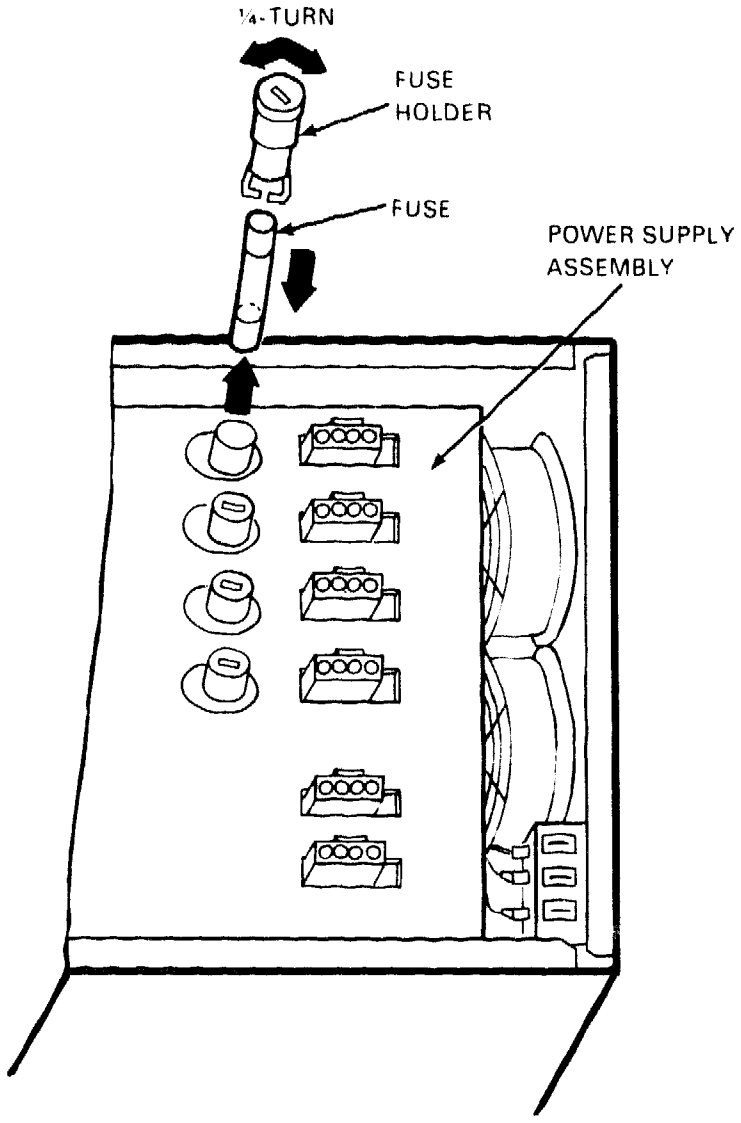
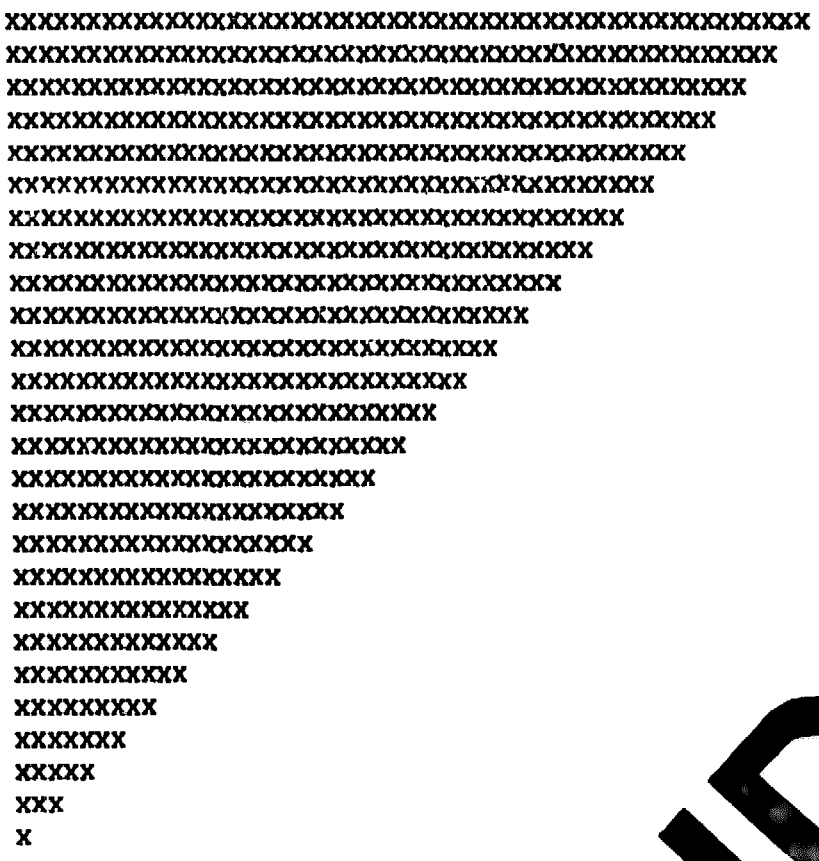
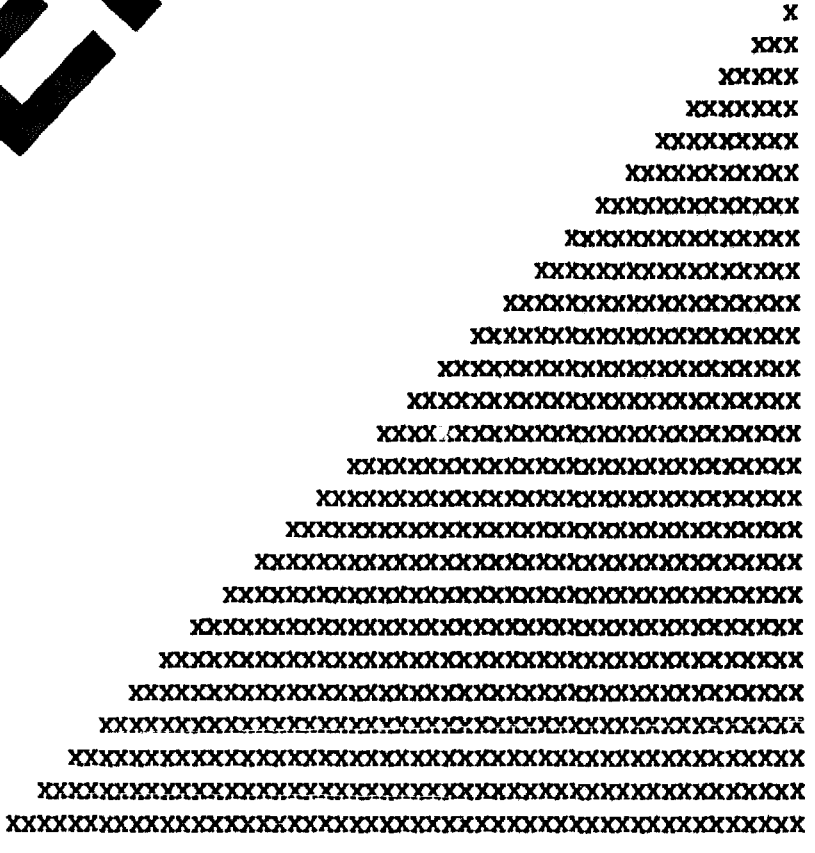


Figure 5-17 Removing the Fuse



APPENDIX A



APPENDIX A
FIELD REPLACEABLE UNITS

This appendix list the major Field Replaceable Units (FRUs) and part numbers for the XMI (BA60-BB) and VAXBI (BA61-BB) Chassis, but does not include cables.

A.1 XMI (BA60-BB) CHASSIS MAJOR FRUs

XTC Timing Module	54-20019-01
XMI Clock Arbiter Module	54-18172-01
Control Panel Module	54-16574-02
AC Front End Tray	70-27334-01
+5V dc-to-dc Regulator Tray	70-27340-01
5V/5V/15V dc-to-dc Regulator Tray	70-27341-01
12V/12V/24V dc-to-dc Regulator Tray	70-27341-02
Control Panel Bezel	70-22117-01
Battery, 3 Cell 3.75V, 0.18 mA NICAD	12-19245-00
Key, Plastic	12-17119-01
Fan, 240CFM, 24Vdc	12-31907-02
Fuse, 3 AGC, 3A, 250V Normal Blow	90-07217-00
Card Cage (14-slot), XMI	70-24373-01
Air Flow Sensor	12-32656-01

A.2 VAXBI (BA61-BB) CHASSIS MAJOR FRUs

AC Front End Tray	70-27334-01
+5V dc-to-dc Regulator Tray	70-27340-01
5V/5V/15V dc-to-dc Regulator Tray	70-27341-01
12V/12V/24V dc-to-dc Regulator Tray	70-27341-02
Fan, 240CFM, 24Vdc	12-31907-02
Fuse, 3 AGC, 3A, 250V Normal Blow	90-07217-00
Card Cage (6-Slot), VAXBI	H9400-AA
Air Flow Sensor	12-32656-01