SolidData

Excellerator™

Service/Repair Manual

Excellerator Service/Repair Manual ver. 90010b

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Preface

This manual explains how to remove and install all major components in a Solid Data Excellerator™ and is intended to serve as an addendum to the *Excellerator Installation and Support Manual*. For information on installation, operation, and troubleshooting, please refer to the *Excellerator Installation and Support Manual*.

Whereas every effort has been made to ensure the accuracy of the information presented in this manual, engineering and manufacturing changes may occur which alter the actual configuration of the hardware. Please contact Solid Data Systems' Technical Support Group, should there be doubt as to how to perform any function described in this manual.

CAUTION: This manual is intended for qualified engineers who are familiar with the safety requirements appropriate for working on equipment of this nature. **DO NOT ATTEMPT TO UPGRADE OR REPAIR AN EXCELLERATOR™ IF YOU ARE NOT SO QUALIFIED.** Failure to follow proper upgrade and/or repair procedures could result in substantial property damage and serious or fatal personal injury. Please contact Solid Data Systems' Technical Support Group if you have any questions concerning proper upgrade and/or repair procedures. Solid Data Systems' Technical Support Group is available to provide upgrade and/or repair service and/or consultation for its products. Accordingly, **IN NO EVENT SHALL SOLID DATA SYSTEMS BE LIABLE IN ANY WAY FOR LOSS, DAMAGE, COST OR EXPENSE ARISING OUT OF OR IN ANY WAY CONNECTED WITH PROPERTY DAMAGE, PERSONAL INJURY OR DEATH RESULTING FROM FAILURE OF OTHERS TO PERFORM PROPER UPGRADE AND/OR REPAIR OF SOLID DATA SYSTEMS' PRODUCTS.**

Audience

The *Excellerator Service/Repair Manual* is for service engineers engaged in upgrading or repairing the Excellerator.

Document Overview

This manual is organized as follows:

- Chapter 1, "General Servicing Procedures," explains how to gain access to the internal components of an Excellerator.
- Chapter 2, "Memory Arrays and Controller Cards," explains how to add or replace memory array and controller cards in an Excellerator.
- Chapter 3, "Front Panel Switch Assembly," gives instructions on how to replace the front panel switch assembly.
- Chapter 4, "Hard Drives and Differential Converter," provides information and instructions on replacing hard drives on various Excellerator models and replacing a differential converter or adding one to convert an Excellerator to a dual port model.
- Chapter 5, "Back Plane Assembly," explains how to replace the back plane in an Excellerator.
- Chapter 6, "Power System and Fans," provides information on replacing the batteries, power supply, transformer assembly, EMI filter, and fans in an Excellerator.
- Index.

Figures

Chapter 1
General Servicing Procedures

1.1 Removing Excellerator from Cabinet/Rack

CAUTION: Excellerators can weigh up to 115 pounds when fully configured. Two people are required when removing or mounting these units.

Refer to Section 3.5, “Shutdown Procedure” in the *Installation and Support Manual* for instructions on the proper method of shutting down a Solid State Excellerator.

1. Unplug the power cord and any SCSI cables from the rear of the Excellerator which would prevent the Excellerator from being removed from the cabinet/rack.

2. Slide the Excellerator forward in the rack until the slide locking mechanisms engage, producing audible clicks and revealing the release levers on both sides of the unit. Refer to Figure 1-1.

3. Depress the release levers on both sides of the Excellerator allowing the unit to be slid in a forward direction and out of the cabinet/rack. Place the Excellerator on a work surface capable of sustaining the Excellerator’s weight (up to 115 lbs.!).

Figure 1-1

1.2 Removing/Reinstalling Top Cover and Front Panel Assembly

1. Remove the chassis top cover by removing the 14 flat-head screws as shown in Figure 1-2.

Figure 1-2

2. Disconnect the front panel ribbon cable at J16 on the control board. Refer to Figure 1-3 for the location of J16.

Figure 1-3

3. Remove the Excellerator front panel by grasping it firmly and pulling it towards you.

4. To reinstall the top cover and front panel assembly, reverse the above procedure.

Chapter 2
Memory Arrays and Controller Cards

The Excellerator must be removed from its cabinet/rack and the top cover and front panel assembly must be removed to gain access to the controller card. Please refer to Sections 1.1 and 1.2 for the procedures. Memory arrays may be replaced without top cover removal by removing the front panel. To remove the front panel, grasp and pull it towards you being careful not to put any strain on the still-connected front panel connector cable. Refer to Figure 2-1.

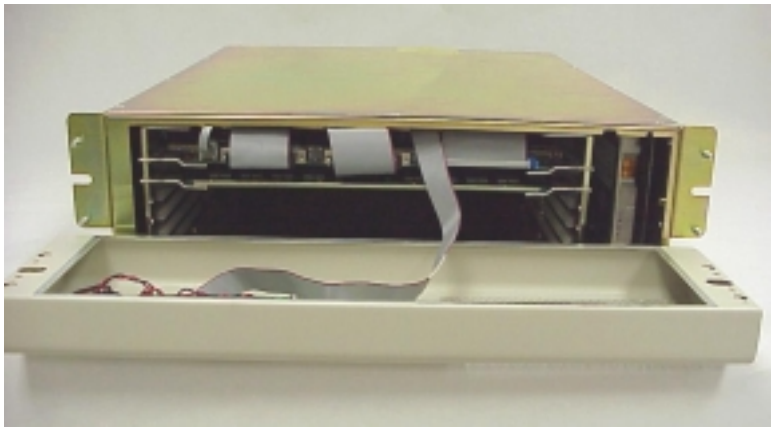

Figure 2-1

Memory arrays can be found in card cage slots two through six on a model 600 or 800, and in slots two through seventeen on a Model 1000, the number of cards being dependent upon the total amount of memory in the Excellerator. The unit must be populated from the slot closest to the controller first, without vacancy, through the last card. Empty slots must be at the high end. Slots may not be skipped!

There are two controller boards for the Solid Data Excellerator depending on the model number. The Models 600 and 800 use the 70025 Fast/Wide SCSI Controller; the Models 800U and 1000U incorporate the 70092 Ultra Fast/Wide Controller. Both controller cards plug into slot number one. They cannot be placed in any other slot.

Memory Array Card Removal

To remove a memory array card, cut the tie wraps on the memory array card handles (if installed) and simultaneously pull forward on both handles to unseat the card allowing it slide forward out of the chassis. Refer to Figure 2-2.

Memory Array Card Insertion

To insert a memory array card, configure the card as per Section 5.2 in the *Excellerator Installation and Support Manual* and slide the card into the card cage, component side toward slot #1 (the control card slot), ensuring the memory array card handles engage the slots on the card cage. Seat the card by simultaneously pushing in on both handles. Refer to Figure 2-2.

Figure 2-2

Controller Card Removal

To remove the controller card, disconnect the SCSI and RJ-11 cables from the front of the controller board, noting their positions for ease in reinstallation. Cut the tie wraps on the controller card handles (if installed) and simultaneously pull forward on both handles to unseat the card allowing it slide forward out of the chassis. Refer to Figure 2-3.

Controller Card Insertion

To insert a controller card, configure the controller card as per Section 5.1 in the *Excellerator Installation and Support Manual* and slide the card into the card cage, component side toward the open side of the chassis, ensuring the control card handles engage the slots on the card cage. Seat the card by simultaneously pushing in on both handles. Reconnect any removed cables. Refer to Figure 2-3.

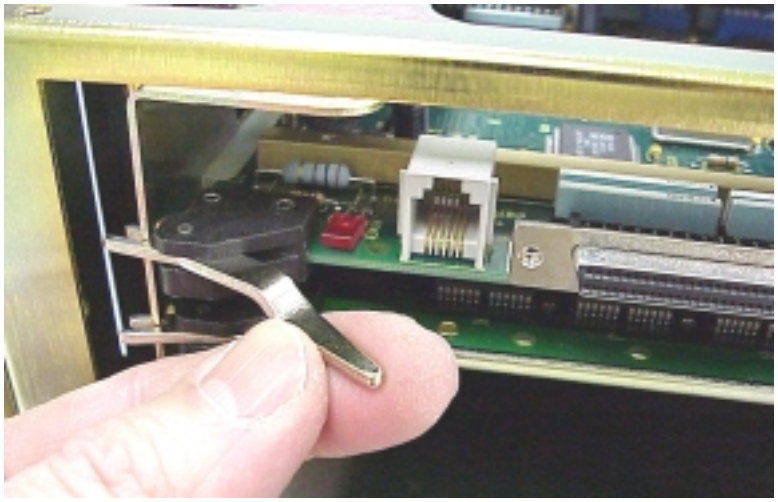

Figure 2-3

Chapter 3
Front Panel Switch Assembly

The Excellerator must be removed from its cabinet/rack and the top cover and front panel assembly must be removed to gain access to the front panel switch assembly. Please refer to Sections 1.1 and 1.2 for the procedures.

Front Panel Switch Assembly Removal

1. Lay the front panel face down on a soft surface such as one inch thick foam rubber. Remove the four screws and lock washers securing the fiber protector (if installed) and switch card to standoffs on the panel. Refer to Figure 3-1.

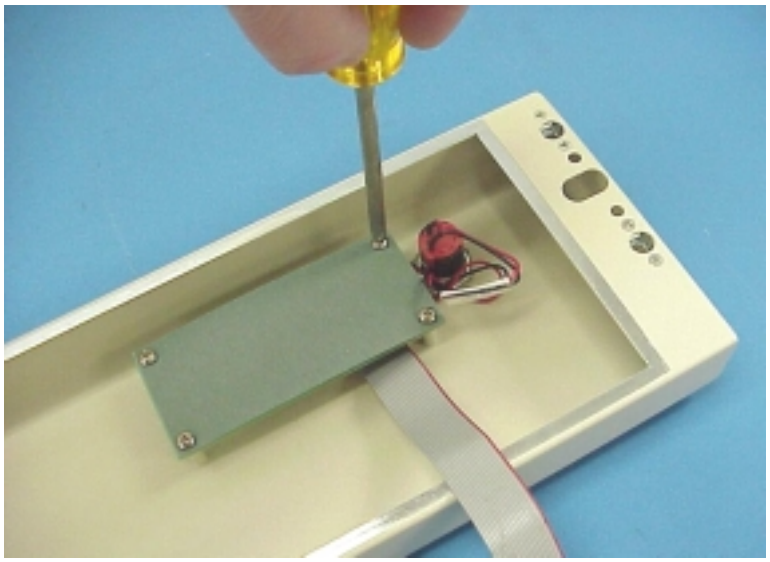

Figure 3-1

2. Remove the fiber protector (if installed) and carefully lift the switch board out of the panel. This will free the black switch housings allowing their removal from the front side of the panel. Refer to Figure 3-2 for detail.

Figure 3-2

3. Disconnect the key lock, busy, and power connectors from the switch board by pulling them from the board by the connectors. Refrain from pulling on the wires themselves.

Front Panel Switch Assembly Installation

1. Reconnect the key lock, busy, and power connectors to the switch board jacks J2 (“LOCK”), J4 (“BUSY”), and J3 (“PWR”) respectively.

2. Place the switch board and fiber protector over the standoffs on the panel and loosely replace the screws and lock washers. Carefully install the two black switch housings from the front side of the panel making sure to properly capture the switches and LED’s within the housings. Tighten the screws. Test the backup and restore switches to ensure they operate freely and did not bind when the screws were tightened. If they did bind, loosen the screws, move the board slightly, and retighten. Retest.

Chapter 4
Hard Drives and Differential Converter

4.1 Hard Drives

Internal hard drives in Excellerator systems come in canister and non-canister versions, with one or two installed drives, and either F/W SCSI or Ultra F/W SCSI interfaces depending on model.

4.1.1 Canister Hard Drive Systems

Canister systems allow easy plug-in replacement of hard drives and come in one or two hard drive versions. They are hot-swappable, so power does not have to be removed from the Excellerator prior to replacing the drive(s). The front panel must be removed to facilitate replacement of a canister type hard drive system. To remove the front panel, grasp and pull it towards you being careful not to put any strain on the still-connected front panel connector cable.

Unlock the canister using the key provided. Grasp the canister handle and pull it towards you to remove the drive(s). Refer to Figure 4-1. To reinstall the hard drive(s), position the canister with the key switch at the bottom and reinsert.

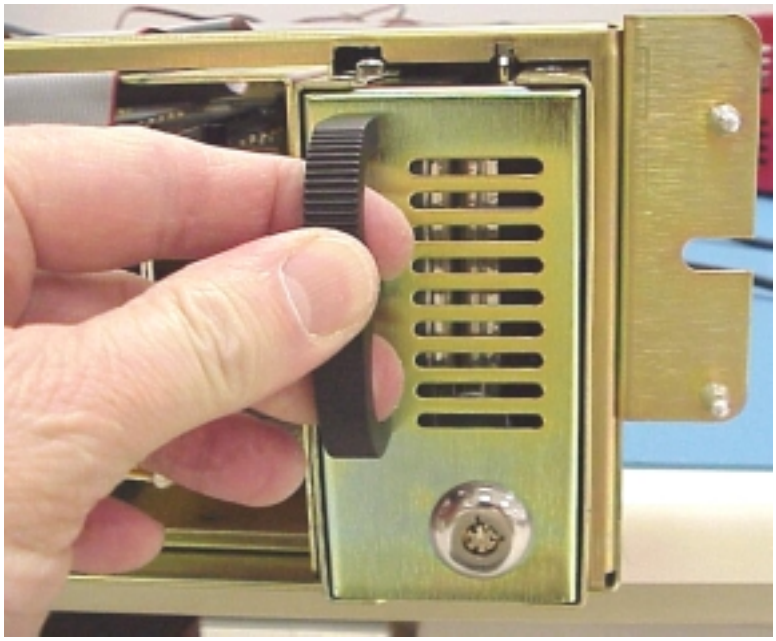

Figure 4-1

4.1.2 Non-Canister Hard Drive Systems

The Excellerator must be removed from its cabinet/rack and the top cover and front panel assembly must be removed to gain access to the internally mounted hard drives. Please refer to Sections 1.1 and 1.2 for the procedures.

Non-canister systems have hard drives mounted on the right inside of the chassis. Replacement of these drives require removing the four screws which mount the drive to the chassis and unplugging the power and signal connectors on the rear of the drive. Reverse the procedure for reinstalling the drive. Refer to Figures 4-2 and 4-3.

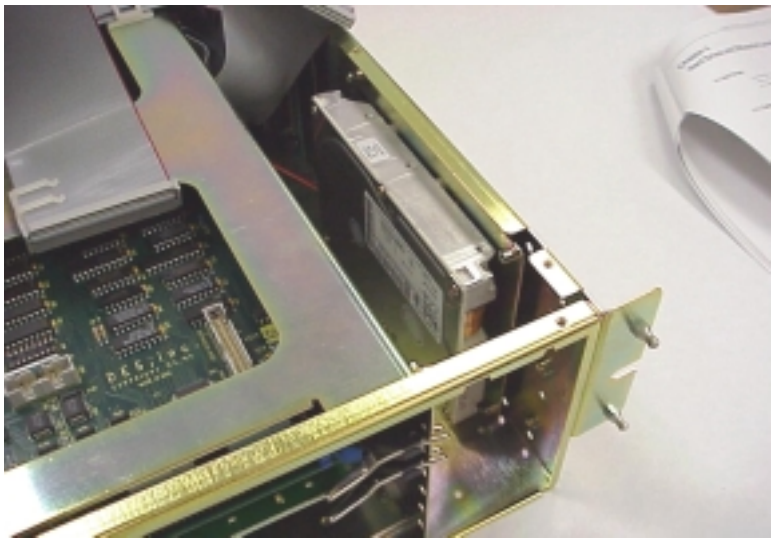

Figure 4-2

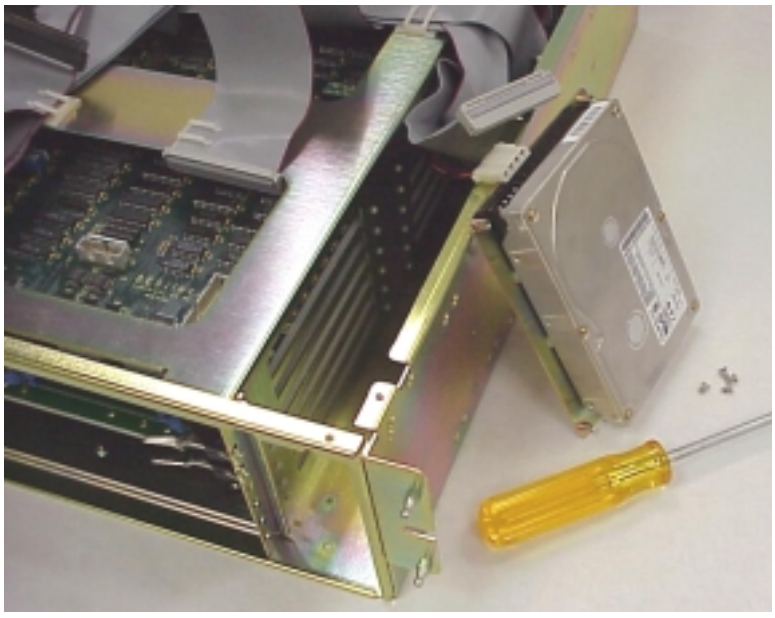

Figure 4-3

4.2 Differential Converter

A differential converter card is found on dual port single ended or dual port differential model Excellerators. These models have two pairs of SCSI ports (“A” and “B”) on the rear of the Excellerator.

The Excellerator must be removed from its cabinet/rack and the top cover and front panel assembly must be removed to gain access to the differential converter card. Please refer to Sections 1.1 and 1.2 for the procedures.

The differential converter card is located on the right inside of the Models 600 and 800/800U, just behind the hard drive. On the Model 1000, it is mounted on the rear of the chassis between the fan and the SCSI port connector.

Removal of the differential converter card is accomplished by removing the four screws securing the card to the chassis and unplugging the power and two signal connector cables from the card. Refer to Figure 4-4. Make note of which cable goes to the single-ended and differential connectors, as the connectors themselves are often identical. Refer to Figure 4-5 for connector locations. Replacing the card is accomplished by reversing the above procedure.

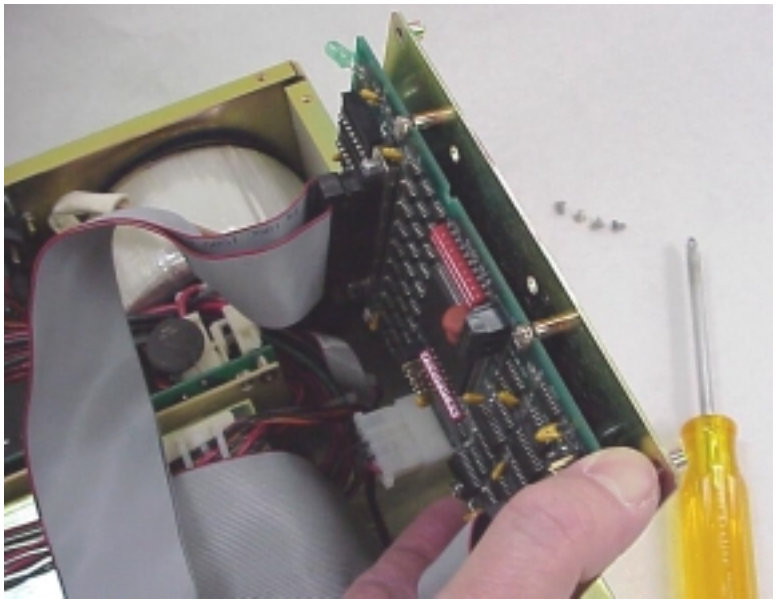

Figure 4-4

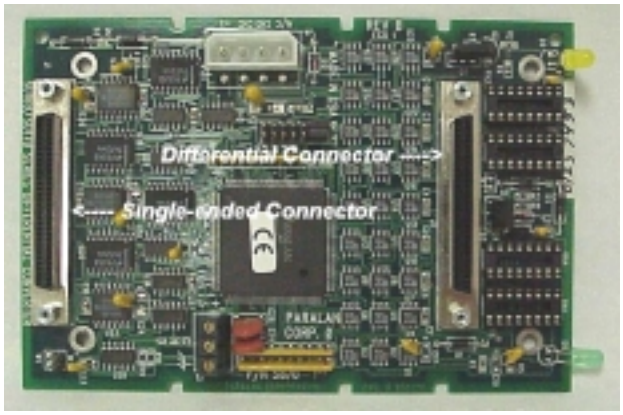

Figure 4-5

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Chapter 5
Back Plane

The back plane is the printed circuit board attached to the rear of the card cage and contains the edge connectors into which the controller and memory array cards are inserted. The card cage must be removed to gain access to the back plane.

5.1 Models 600 and 800/800U Back Plane Assembly

To remove the card cage, first remove the controller card and memory array cards as outlined in Chapter Two. Free all cables from the clips on the card cage, disconnecting any preventing access to the card cage, noting their destinations to ease reinstallation. Clip any cable ties necessary and disconnect the power cable and ten pin signal cable from the back plane. Refer to Figure 5-1.

Figure 5-1

Free the card cage by removing the ten mounting screws accessed from the bottom of the chassis. The back plane can now be freed by removing the ten screws securing it to the card cage. See Figure 5-2.

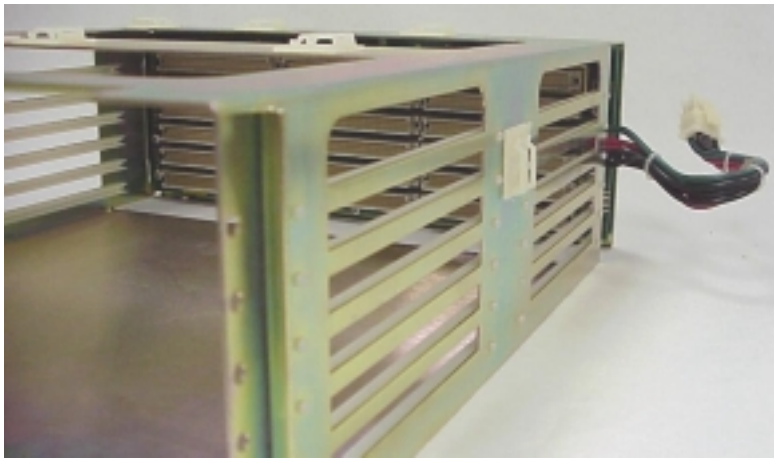

Figure 5-2

5.2 Model 1000 Back Plane Assembly

To remove the card cage, first remove the controller card and memory array cards as outlined in Chapter Two. Free all cables from the clips on the card cage, disconnecting any preventing access to the card cage, noting their destinations to ease reinstallation. Clip any cable ties necessary and disconnect the power cable and ten pin signal cable from the back plane. See Figure 5-3.

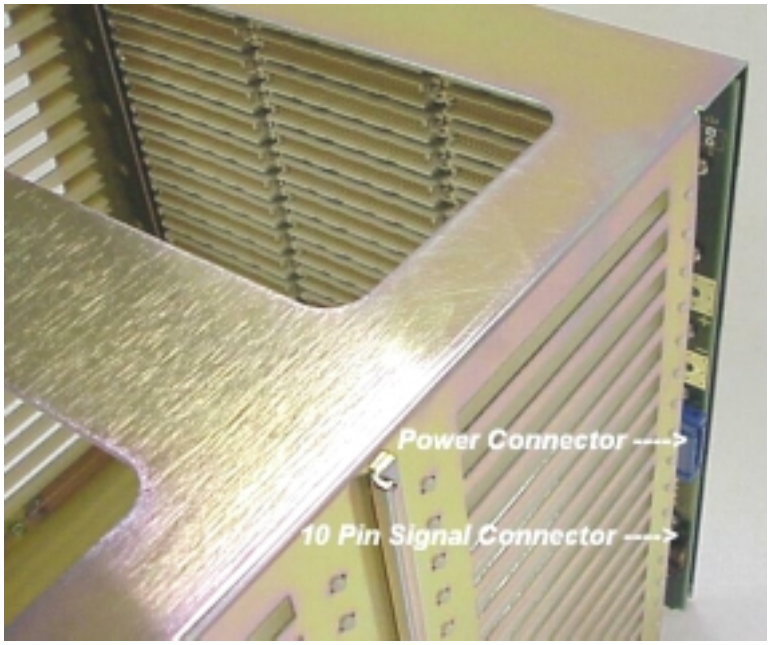

Figure 5-3

Free the card cage by removing the nine mounting screws accessed from the bottom of the chassis. The back plane can now be freed by removing the eighteen screws securing it to the card cage. See Figure 5-4.

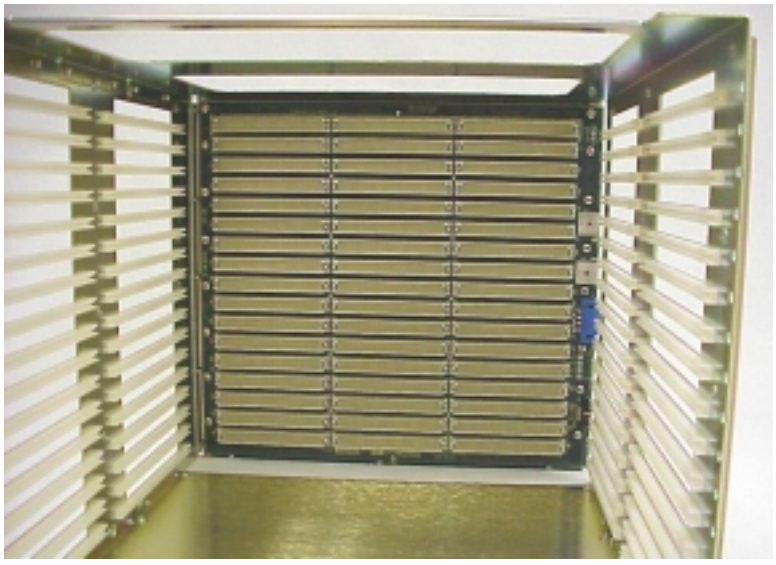

Figure 5-4

Chapter 6
Power System and Fans

The Excellerator must be removed from its cabinet/rack and the top cover and front panel assembly must be removed to gain access to the power system components and fans. Please refer to Sections 1.1 and 1.2 for the procedures.

6.1 Power System

6.1.1 Batteries

The Models 600 and 800/800U contain two 12V, 5AH batteries. The Model 1000 contains two 12V, 12AH batteries. These batteries provide backup power to the Excellerator in case of primary power failure. They are held in place in the Excellerator by a metal bracket, which must be removed to gain access to the batteries for replacement.

CAUTION: Be sure to remove the cables from the battery terminals before loosening the metal bracket to minimize the possibility of shorting out the batteries with the metal bracket. **Also, be careful not to short the battery terminals with the sheet metal cover during cover removal and replacement.**

The Model 600 and 800/800U metal bracket is mounted with three screws---two on the right side of the chassis and one on the bottom. Refer to Figure 6.1.

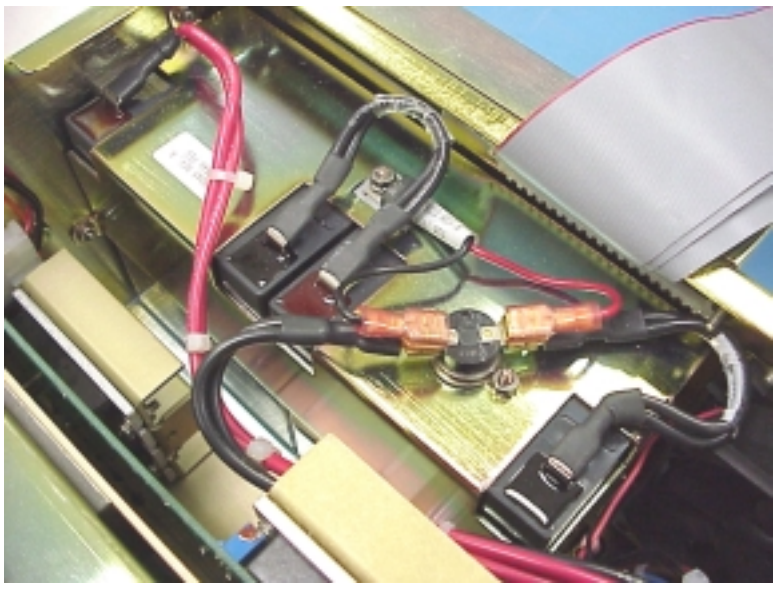

Figure 6.1

The Model 1000 bracket is mounted with four screws---two on the back panel of the chassis and two on the bottom. See Figure 6.2.

Figure 6.2

Carefully lift the bracket off the batteries. The batteries are now free from the Excellerator. To reinstall batteries, reverse the above procedure.

6.1.2 Power Supply Assembly

The power supply in the Models 600 and 800/800U is located behind the card cage and in front of the batteries. It is mounted with three screws accessible from the bottom of the chassis. Refer to Figure 6.3.

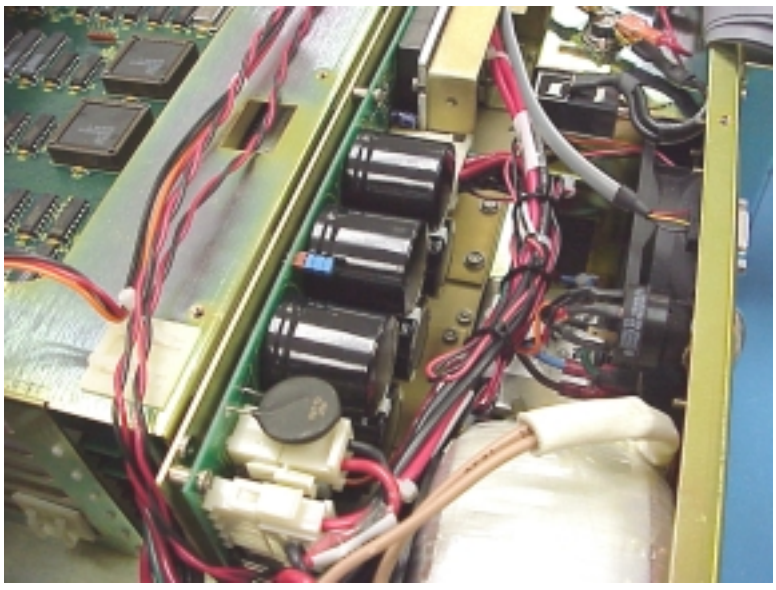

Figure 6.3

The Model 1000's power supply is located on the lower right chassis panel and is mounted with eight screws, five on the Excellerator's right panel and three on the bottom.

To remove the power supply, unplug all connectors (noting their destination for ease in replacement) and remove the mounting screws. To reinstall a power supply, reverse the above instructions. Note: each connector is unique and can be plugged into only one spot in the Excellerator.

6.1.3 Power Transformer, Autoranging AC-DC Switcher and EMI Filter

Power Transformer

The Models 600 and 800/800U contain a power transformer, which is secured to the right rear of the chassis by a single large screw and wing nut assembly. See Figure 6.4.

Figure 6.4

Autoranging AC-DC Switcher

The Model 1000 contains an autoranging AC-DC switcher located on the right side of the chassis between the power supply assembly and the rear panel. It is mounted with five screws accessed from the outside of the right chassis panel. Refer to Figure 6.5.

Figure 6.5

EMI Filter

All Excellerators contain an EMI filter, which is mounted by two screws on the rear bottom of the Model 600 and 800/800U chassis. See Figure 6.6.

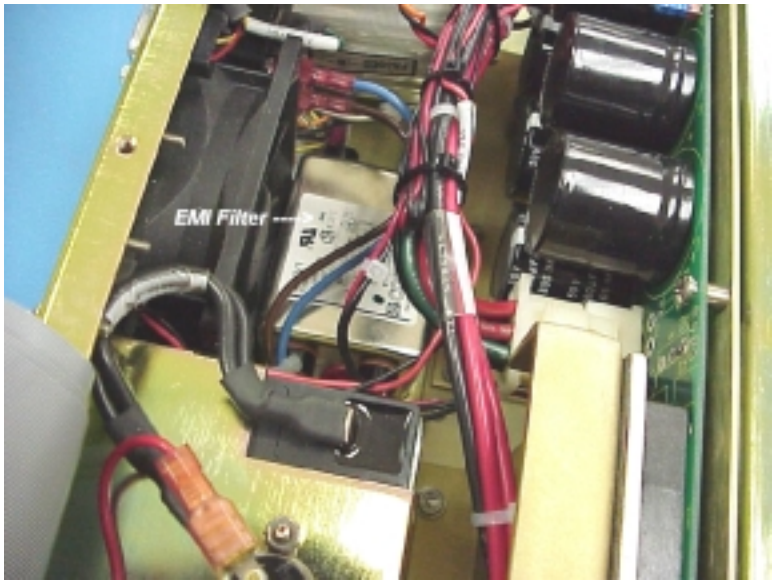

Figure 6.6

The EMI filter in the Model 1000 is located on the rear panel of the Model 1000. See Figure 6.7.

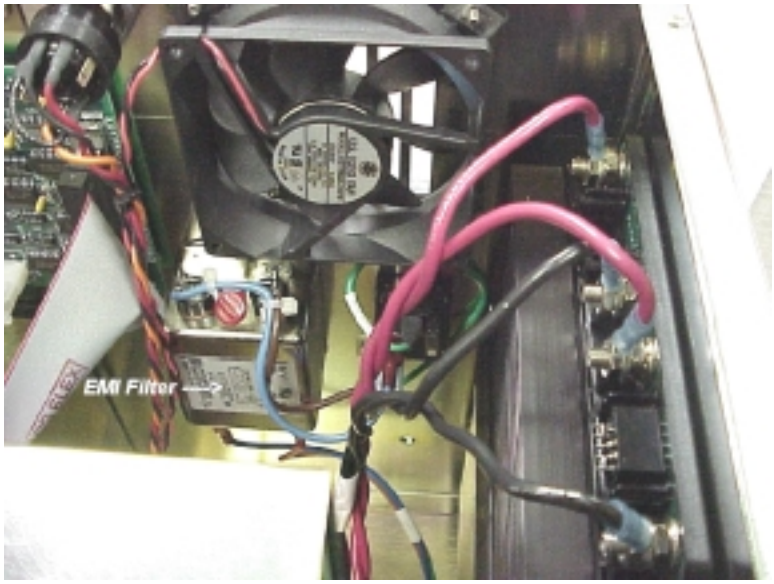

Figure 6.7

6.2 Fans

The Models 600 and 800/800U have three fans, two 120 mm fans on the left side of the chassis, and one 80 mm fan on the rear panel. All three plug directly into the power supply and can be freed by removing the four mounting screws securing them to the chassis.

The Model 1000 has a total of five fans, four 120 mm fans on the left side of the chassis, and one 80 mm fan on the rear panel. The rear fan plugs into the power supply, whereas the four larger fans on the side panel connect to a terminal strip also located on the left side panel. All five fans can be freed by removing the four mounting screws securing each to the chassis.

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