

SA-H190

**Expansion Chassis for Dual
8" Fujitsu Drives**

Manual

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Manual

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Table of Contents

| | | |
|-----------|---|----|
| 1. | General Information | |
| 1.1 | Introduction..... | 1 |
| 1.2 | General Description..... | 2 |
| 1.3 | Convenient Drive Installation..... | 3 |
| 1.4 | Power Supply and Cooling..... | 3 |
| 1.5 | Controller I/O Panel and Cabling..... | 4 |
| 1.6 | The Front Panel..... | 5 |
| 1.7 | Specifications | 6 |
| 2. | Installation | |
| 2.1 | Unpacking and Inspection | 7 |
| 2.2 | Rackmount Installation | 8 |
| 2.3 | Drive Installation..... | 10 |
| 2.4 | Drive Cabling | 12 |
| 3. | The Power Supply | |
| 3.1 | Introduction..... | 15 |
| 3.2 | AC Conversion and DC Adjustments | 16 |
| | Appendices | |
| A. | SA-H190 System Wiring Diagram..... | 17 |
| B. | Power Supply Schematic (350-1422) | 18 |

List of Figures

| | | |
|-------------|---|----|
| Figure 1-1: | The SA-H190 Chassis..... | 2 |
| Figure 1-2: | The SA-H190 Chassis..... | 3 |
| Figure 1-3: | Rear Panel Functions | 4 |
| Figure 1-4: | The Front Panel..... | 5 |
| Figure 2-1: | Installing the SA-H190 in a Rack | 8 |
| Figure 2-2: | Drive Power Connectors..... | 9 |
| Figure 2-3: | Installing the Optional Drive Fan Mounting Bracket..... | 10 |
| Figure 2-4: | Installing the Drive Mounting Brackets..... | 11 |
| Figure 2-5: | Internal Drive Cabling..... | 12 |
| Figure 2-6: | Controller I/O Cabling | 13 |
| Figure 3-1: | AC Conversion and DC Adjustments..... | 16 |

1. General Information

1.1 Introduction

This manual provides general installation and maintenance information, including drive installation and cabling, for the SA-H190 drive expansion chassis manufactured by Sigma Information Systems, Anaheim, California. The material is arranged into the following sections:

Section 1 – GENERAL INFORMATION. This section provides a general description of the chassis. Specifications are included.

Section 2 – INSTALLATION. This section describes the procedures for mounting drives into the chassis and for cabling to the peripheral controller.

Section 3 – THE POWER SUPPLY. This section describes power supply adjustments and conversions.

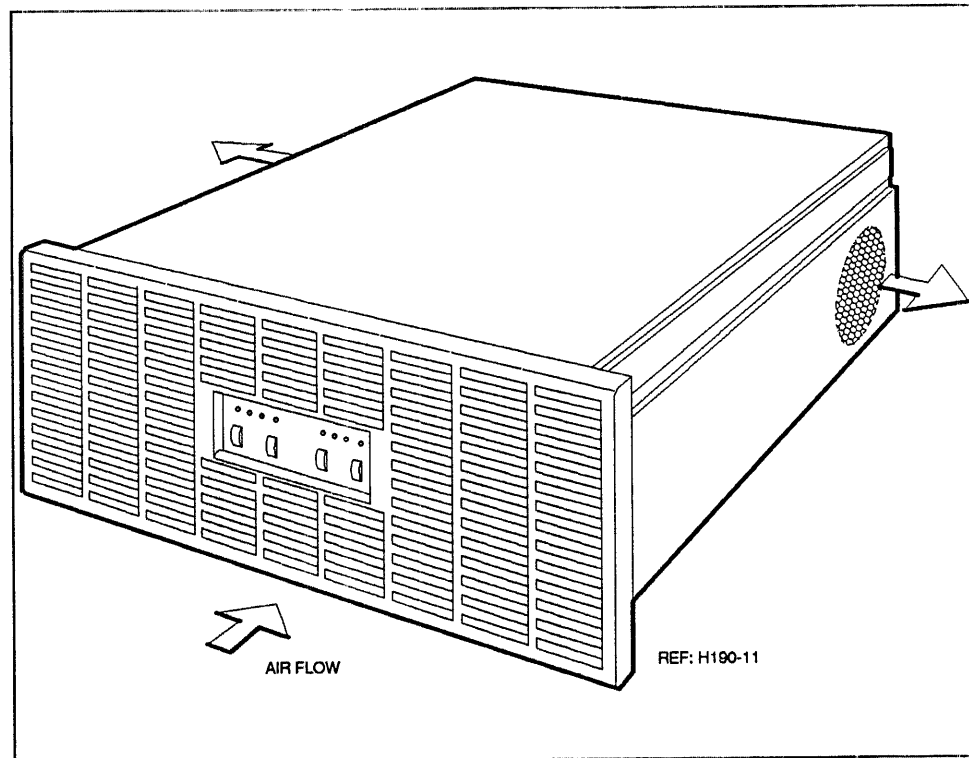
APPENDICES. The appendices include the system wiring diagram and power supply schematics.

1.2 General Description

The SA-H190 rackmount expansion chassis provides mounting space and power for two 8 inch Winchester disk drives. The chassis supports Fujitsu's M2300 series drives.

Figure 1-1 is an exterior view of the SA-H190 chassis.

Figure 1-1:
The SA-H190 Chassis

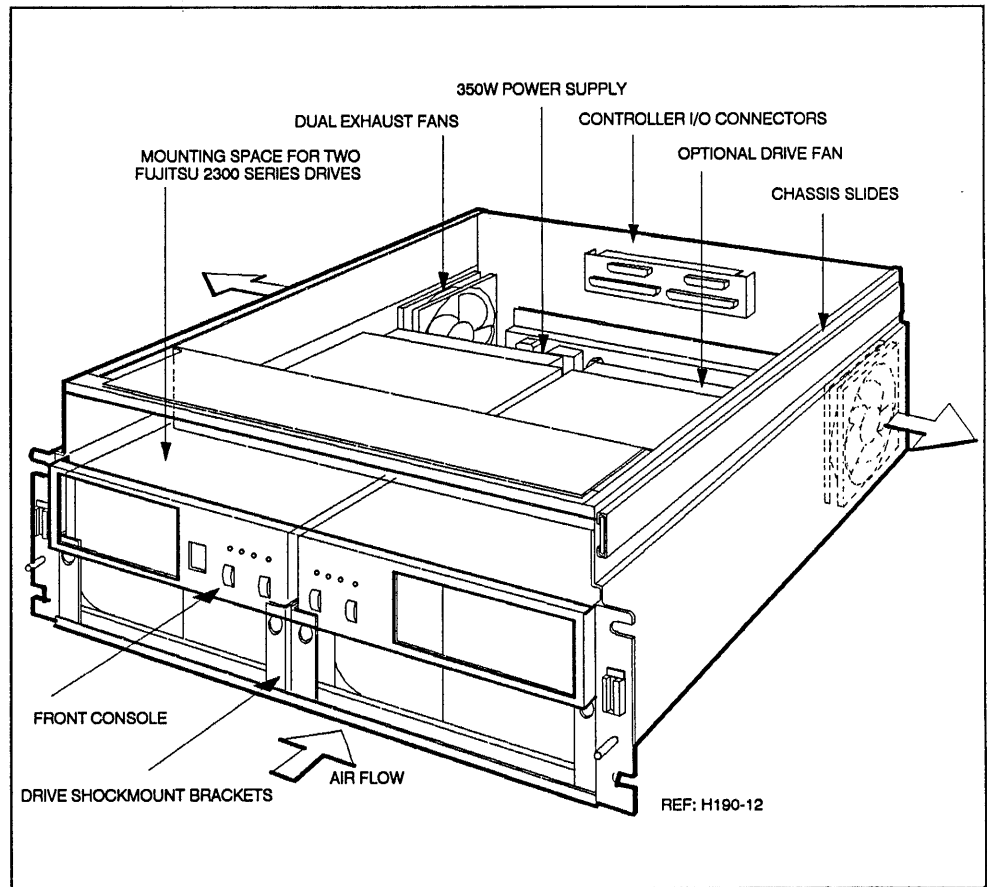


The front panel includes drive control switches and status indicator LEDs. The rear of the chassis contains an ON/OFF switch and I/O connectors for convenient cabling to the controller. The ON/OFF switch can, optionally, be installed on the front panel. Cables are included for interfacing between the I/O connectors and the drives.

The major components provide convenient installation and removal for maintenance and troubleshooting.

Figure 1-2 shows a typical SA-H190 configuration.

**Figure 1-2:
The SA-H190 Chassis**



1.3 Convenient Drive Installation

Drive mounting brackets are installed over the shockmounts on each drive. The drive/bracket assemblies mount directly on the chassis floor.

1.4 Power Supply and Cooling

The heavy duty 350 watt power supply provides +5VDC at 10A, +24VDC at 16A (19A peak), and two -12VDC outputs at 5A each. The rear of the chassis provides access to the AC input connector and fuse.

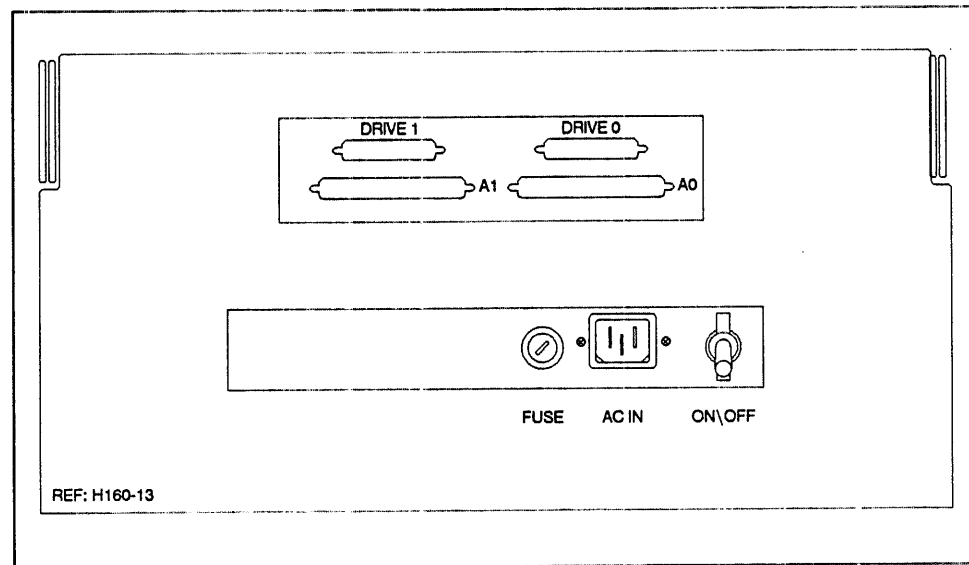
The chassis contains two 12VDC fans that draw cooling air from the front of the chassis, through the drives, and out at the rear-sides of the chassis.

1.5 Controller I/O Panel and Cabling

A controller I/O panel at the rear of the chassis provides access to the drives' data and control cables. The standard bulkhead connectors are a 60-pin connector for the control cable and two 26-pin connectors for the data cables. An optional bulkhead connector configuration for allowing two drives to be daisy chained includes two 60-pin control connectors and two 26-pin data connectors — one set for each drive.

Figure 1-3 shows the controller I/O panel.

Figure 1-3:
Rear Panel Functions



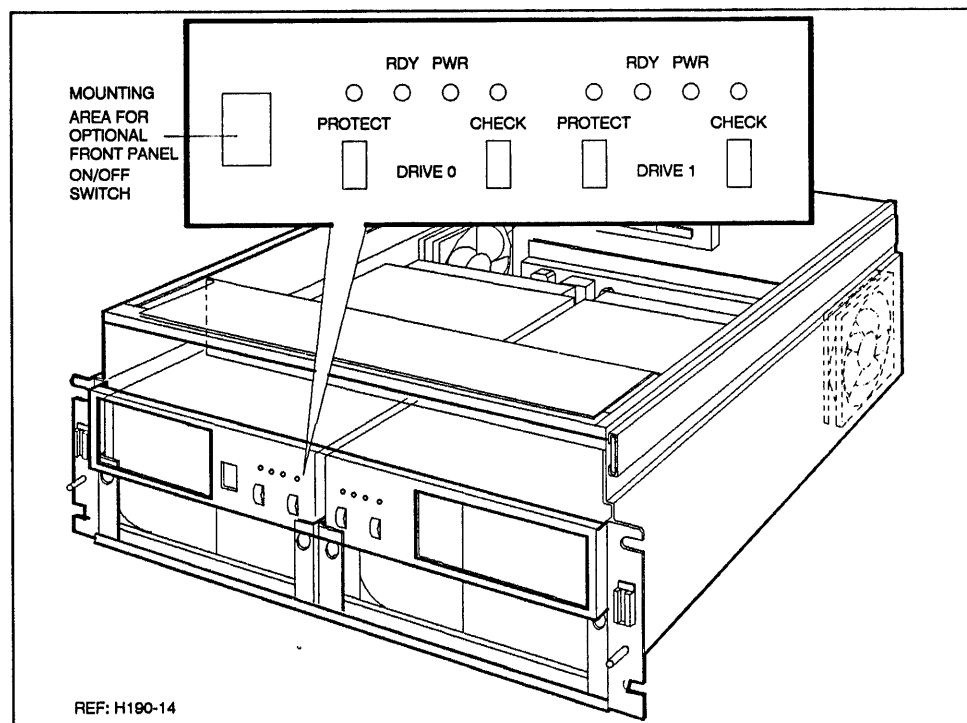
Signals are distributed from the I/O panel to the drives via cables located inside the SA-H190 chassis. Cables are also included for drive power and front panel logic.

- | | |
|---------------------------|--|
| A CABLE | A 60-pin A cable interfaces the parallel bus, status, Unit Select, and control signals between the disk drives and the controller. The standard A cable is attached to drive 0 and daisy chained to drive 1. The radial cable configuration includes separate A cables for each drive. |
| B CABLES | Two 26-pin B cables interface serial data and clocking and timing signals between the disk drives and the controller. |
| POWER CABLES | A power cable harness distributes DC power from the power supply to each drive. |
| FRONT PANEL CABLES | The front panel cable interfaces the drive functions to the front panel. |

1.6 The Front Panel

The front switch/display panel includes drive switches (PROTECT and CHECK) and LED status indicators (POWER, READY, PROTECT and CHECK) for each drive. The ON/OFF switch can optionally be mounted on the front panel and is accessible by removing the front bezel. The chassis includes cables that interface the drive functions to the front panel. Figure 1-4 shows the front panel.

Figure 1-4:
The Front Panel



The front panel contains Write Protect and Check switches for drive 1 and drive 0. A set of LED indicators for each drive provides status information for the following conditions.

| | |
|----------------|--|
| READY | This red LED lights when the unit (drive 0 or drive 1) is up to speed, the heads are positioned over the recording surface, and no fault condition exists. |
| POWER | This red LED lights when power is turned on. |
| CHECK | This red LED lights if a fault condition exists. The Check momentary switch clears the fault condition and resets Device Check status. |
| PROTECT | When the Protect switch is pressed, this yellow LED lights, indicating that the associated drive is Write Protected. Write Protect inhibits further write operations. Write Protect is disabled (LED not lit) when the switch is released. |

1.7 Specifications

| | |
|-------------------|--|
| Drives Supported: | Two Fujitsu 2300 series 8" Winchester disk drives. |
| Cabling: | |
| Power Cables: | Includes two 7-pin power cables for each drive. |
| Front Panel: | Includes cables that interface the drive functions to the front panel. |
| Controller: | Includes A and B cables from controller I/O panel to drives. |
| Power Supply | |
| AC Input: | 4.1A @ 115VAC, 2.1A @ 230VAC. AC input is fused with input connector and ON/OFF switch located at the rear of the chassis. Jumper selectable: 115VAC 60Hz or 230VAC 50Hz. |
| DC Output: | +5VDC at 10A, +24VDC at 16A (19A peak), -12VDC at 5A, -12VDC at 5A. Total outputs not to exceed 350 watts. |
| Cooling: | Two 12VDC fans (in addition to the fan mounted on each drive) provide front air intake with rear exhaust. |
| Front Panel: | Switches and LEDs for each drive. Mounting area for optional front panel ON/OFF switch. |
| LEDS: | Protect, Ready, Power, and Check. |
| Switches: | Protect and Drive. |
| Rear Panel: | |
| Switch: | ON/OFF |
| AC Input: | Standard NEMA-type 3-prong connector |
| Fuse: | 7A 250V |
| Controller I/O: | One 60-pin A connector and two 26-pin B connectors (standard) for controller interfacing. Optional radial configuration includes two 60-pin A connectors. |
| Installation: | Rackmount slides install in standard 19" RETMA rack. Occupies 8.50" of vertical rack space. |
| Dimensions: | 8.5" high x 19" wide x 26" deep. Allow 0.5" for cable egress. |

2. Installation

2.1 Unpacking and Inspection

Unpack the SA-H190 expansion chassis and visually inspect it for damage that might have occurred during shipment. Retain the shipping carton in case reshipment is necessary. Remove the top cover and inspect the power supply, fans, drive mounting brackets, etc., for damage. If any damage has occurred, notify Sigma Information Systems immediately.

Contact Sigma for a Return Merchandise Authorization (RMA) number before returning any equipment.

Each shipping container should include the following:

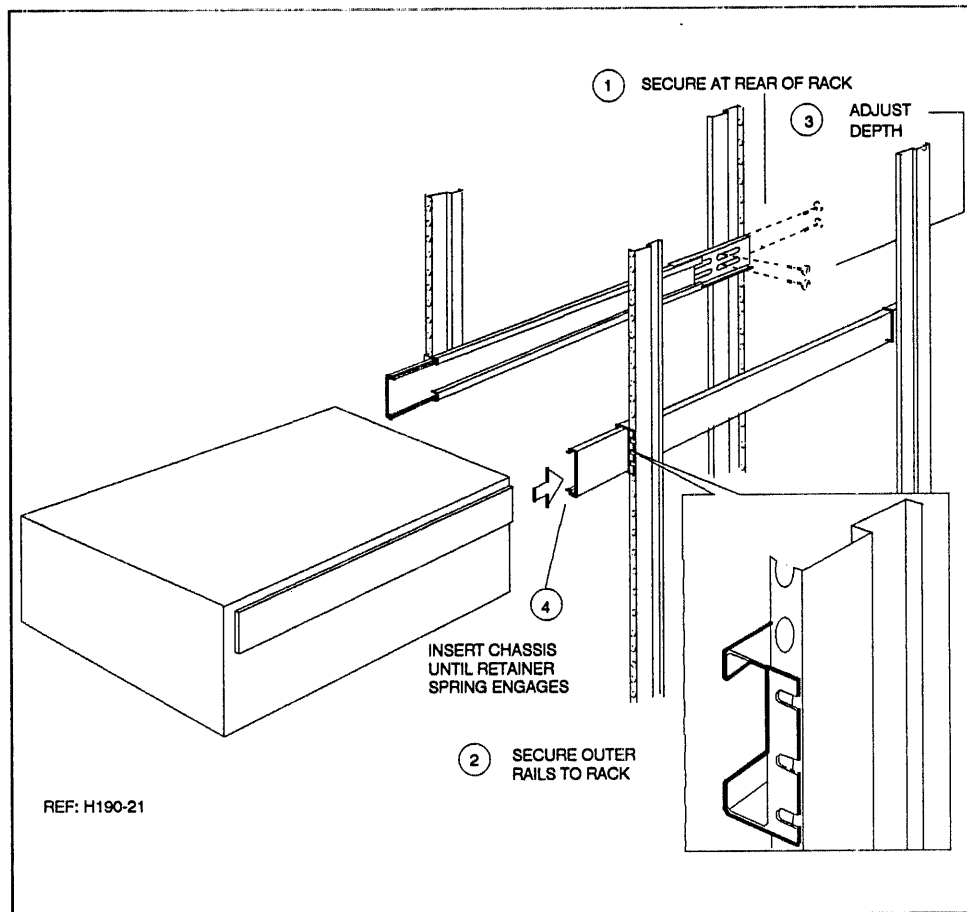
- An SA-H190 expansion chassis with power supply, front console, and rear controller I/O connectors with internal drive cables.
- An SA-H190 chassis manual with logic diagrams for the power supply and front panel.
- An AC power cord.
- Drive mounting brackets (P/N 500866-2 and P/N 500866-1) for each drive.
- An optional drive fan assembly consisting of a fan bracket (P/N 500721-B) and cable egress bracket (P/N 500716-A).

2.2 Rackmount Installation

Mount the SA-H190 in a standard 19" RETMA rack before installing the drives in the chassis.

Use Figure 2-1 and the following procedure to install the SA-H190 into a standard 19" RETMA rack and to apply AC input power.

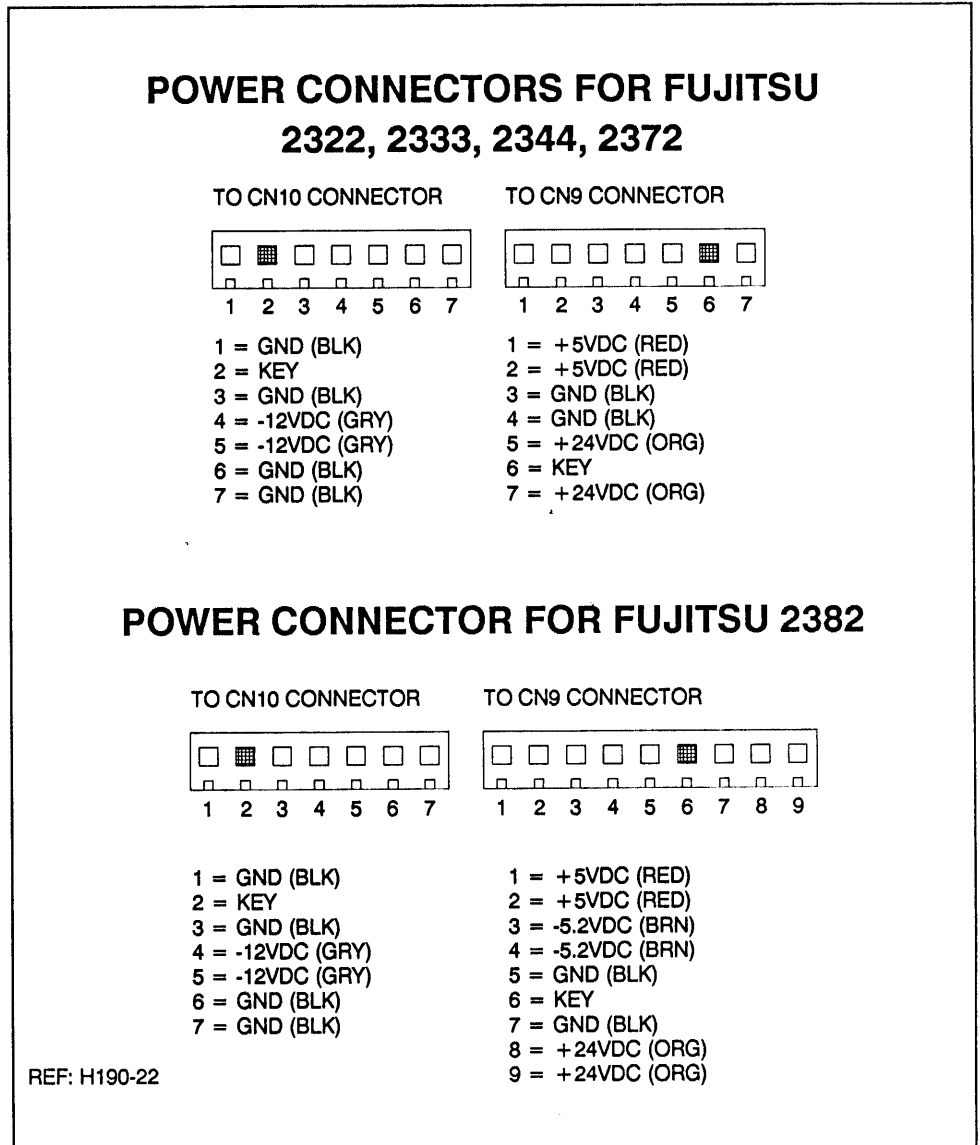
Figure 2-1:
Installing the
SA-H190 in a Rack



1. Remove the outer rails from the chassis by sliding them apart until the rear retaining spring button engages. Press the spring button and slip the slides free from the chassis. Set the chassis aside.
2. Place the outer mounting rails into the rack and mark the intended position of the chassis in the rack.
3. Bolt the rear extension bracket to the rear of the rack using #10-32 x 1/2" screws. All screws should use flat washers, with lock washers next to the hex nut.
4. Bolt the outer rails at the front of the rack using #10-32 x 1/2" screws. Place the rear of the rails inside the extension brackets. Adjust depth and bolt the rails in place.

5. Install the chassis slides into the outer rails. Push forward until the retaining spring engages.
6. Check the AC receptacle for proper input power. Plug the AC cord into a main receptacle and switch the power ON/OFF switch to the ON position.
7. Check DC voltages. The voltages can be measured from the drive power connectors shown in Figure 2-2.

**Figure 2-2:
Drive Power
Connectors**

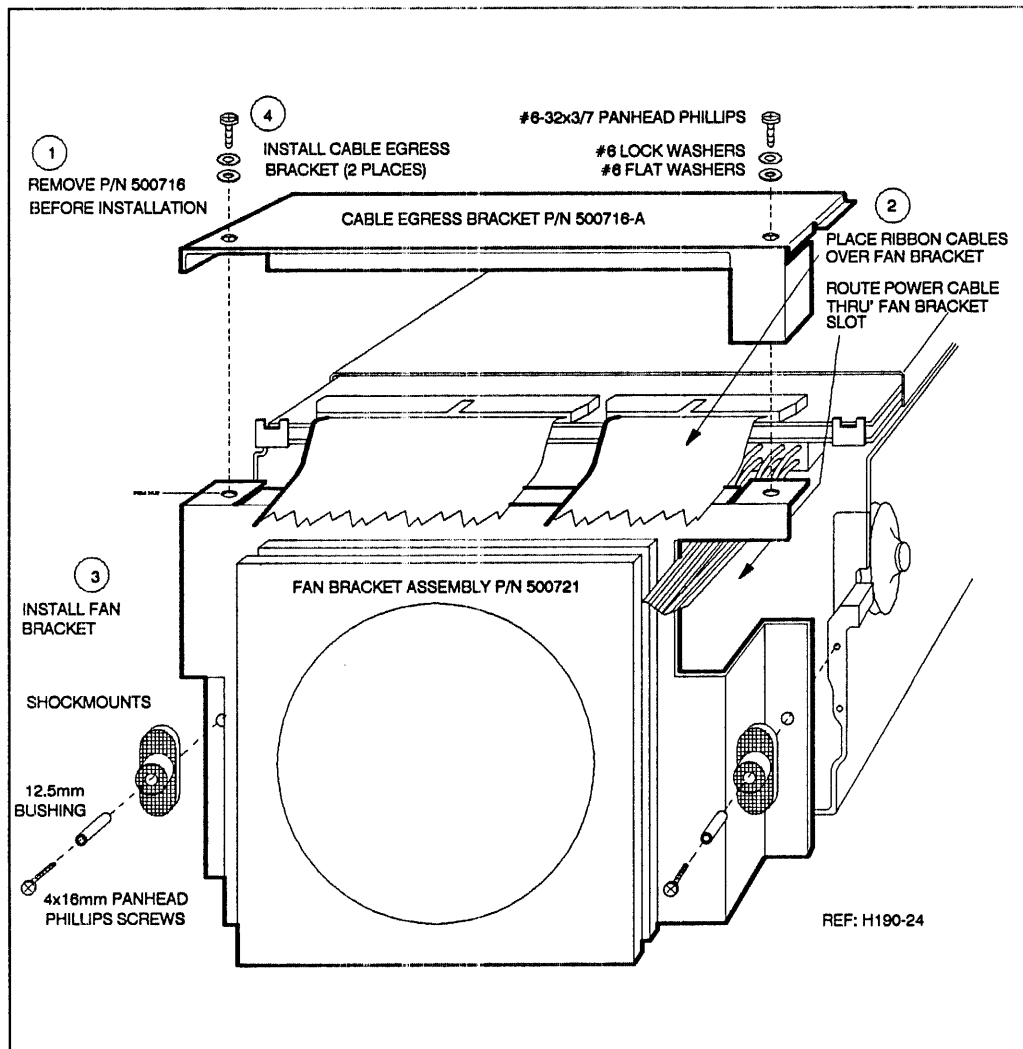


2.3 Drive Installation

With Figures 2-3 and 2-4 as a guide install the drives using the following procedure.

1. Before installing drive mounting brackets onto the drives, connect the front panel cable to the drive PCBA. The top cover on the drive must be removed to gain access to the front panel connector. Refer to the manufacturer's instructions for connecting the cable.
2. Terminate the drives per manufacturer's instructions.

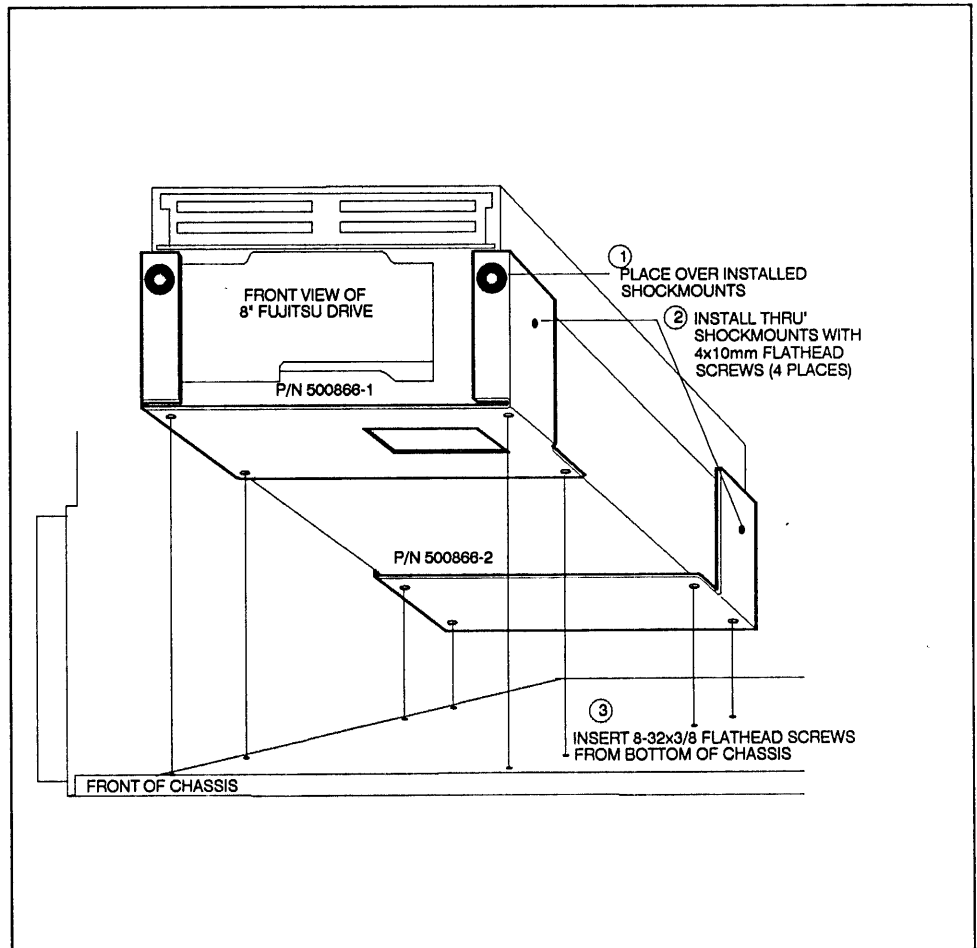
Figure 2-3:
Installing the
Optional
Drive Fan
Mounting
Bracket



3. Install the optional fan/bracket assembly using the following procedure. If the drive already contains a fan, go to step 9 below.
4. Disassembly the cable egress bracket (P/N 500716-A) from the fan bracket assembly (P/N 500721).
5. Place the fan bracket P/N 500721-B to the rear (cable side) of the drive and route the controller ribbon cables and the power cable as shown.

6. Bolt the fan bracket to the drive using 4 x 16 mm screws through the supplied shockmounts.
7. Install two additional shockmounts directly onto the front (non-cable end) of the drive.
8. Reinstall the cable egress bracket to the fan bracket using 6-32 x 3/8 panhead screws and associated lock and flat washers.

**Figure 2-4:
Installing the
Drive Mounting
Brackets**



9. Screw the wraparound drive mounting brackets onto the drive shockmounts using 4mm x 10mm screws. Notice that P/N 500866-1 mounts at the rear of the drive and P/N 500866-2 mounts at the front of the drive.
10. Place the drive/bracket assembly into the chassis. Insert four 8/32 x 3/8 flathead screws from the bottom of the chassis through the PEM nuts on each mounting bracket.

NOTE

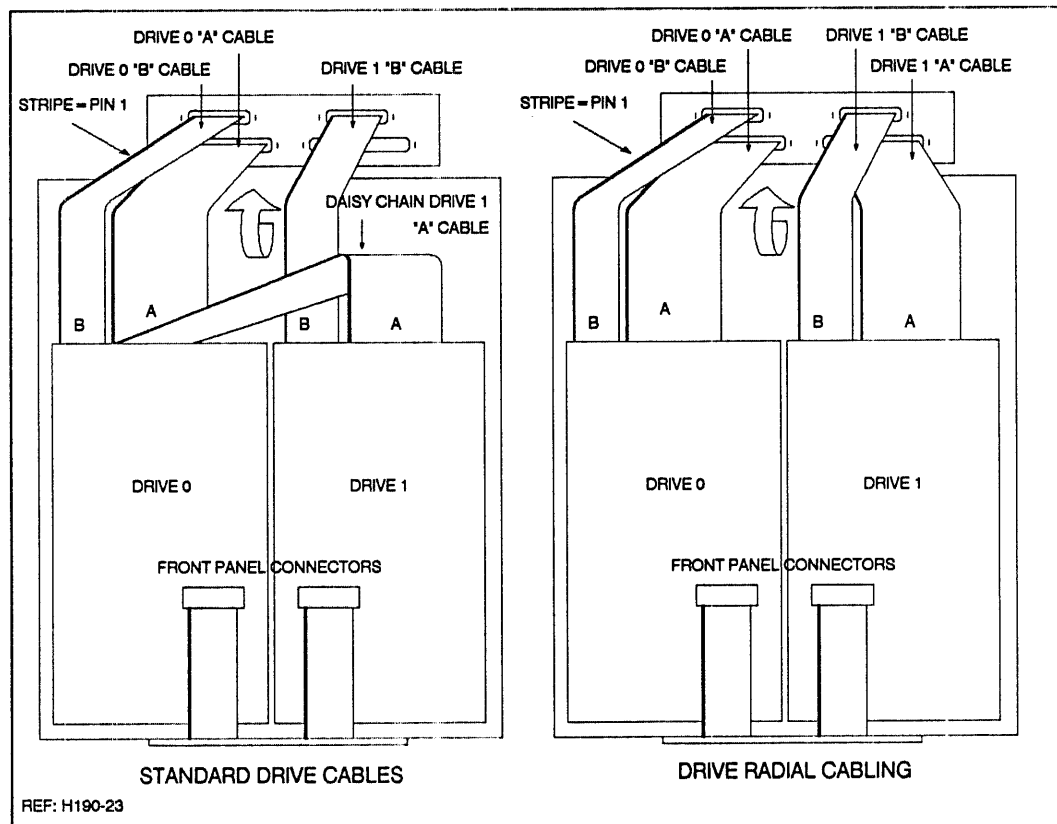
Before applying power to the drives, be sure to check manufacturer's DC power specifications for correct pin-out and polarity. Figure 2-2 shows DC power connections.

2.4 Drive Cabling

Refer to the drives manufacturer's instructions to connect controller I/O cables to the drives. Figure 2-5 shows the cabling from the rear controller I/O panels.

The standard SA-H190 configuration includes two 26-pin data cables and one 50-pin control cable that is daisy-chained between drive 0 and drive 1. The optional radial configuration includes one 26-pin data cable and one 50-pin control cables for each drive.

Figure 2-5:
Internal
Drive
Cabling

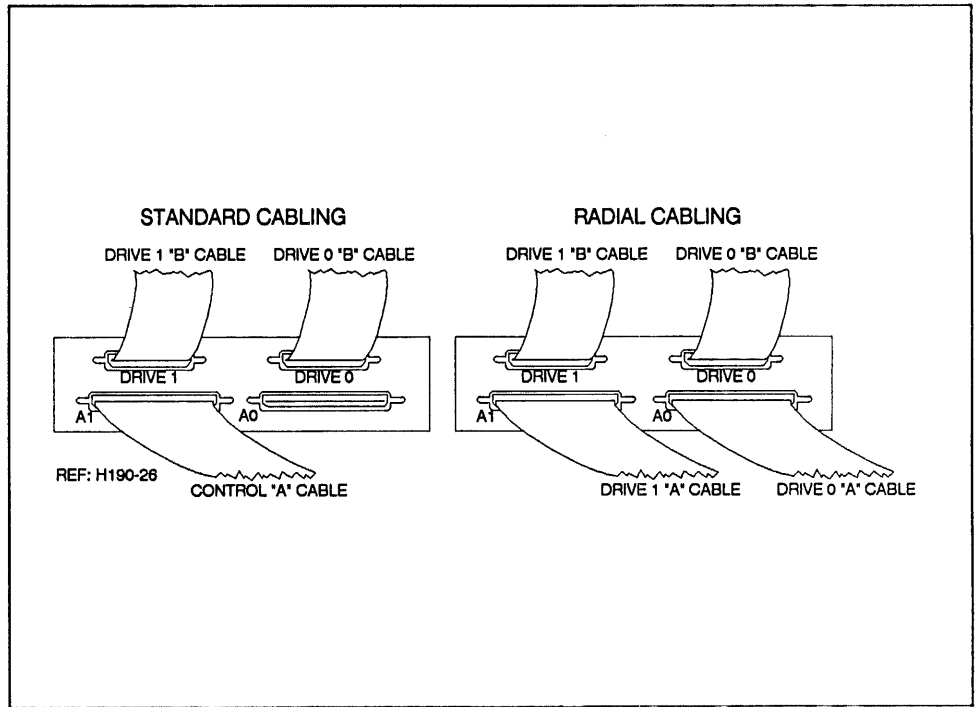


Connect the peripheral disk controller cables to the connectors on the controller I/O panel at the rear of the chassis.

The standard SA-H190 configuration contains two 26-pin connectors for the controller data cables and one 50-pin connector for the control cable. The optional radial configuration contains a 26-pin data connector and a 50-pin control connector for each installed drive.

Figure 2-6 shows the controller I/O cabling scheme for both configurations.

**Figure 2-6:
Controller I/O
Cabling**



Notes

3. The Power Supply

3.1 Introduction

The 350 watt power supply outputs are +5VDC at 10 amps, and +24VDC at 16 amps (19 amps peak) – plus two +12VDC outputs at 5 amps each. Output power can be verified from the drive power connectors (Figure 2-2).

The AC input is configured and DC output voltage is set at the factory and should not require adjustment.

If AC conversion or DC adjustment is necessary Sigma recommends that such adjustments be made only by qualified and experienced personnel who are familiar with the shock hazard associated with open frame switching power supplies.

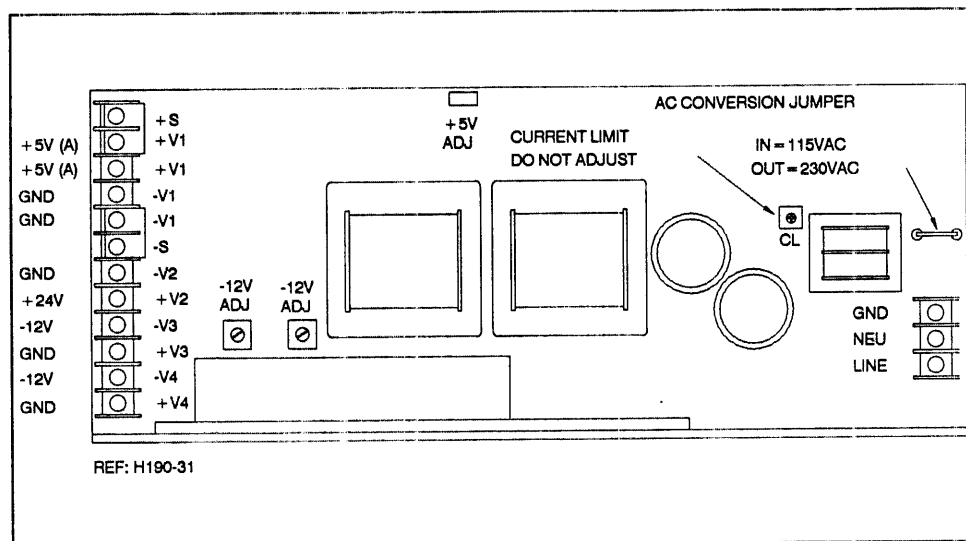
Appendix A contains a system wiring diagram for the SA-H190 expansion chassis. Appendix B contains the schematic for the power supply unit.

3.2 AC Conversion and DC Adjustments

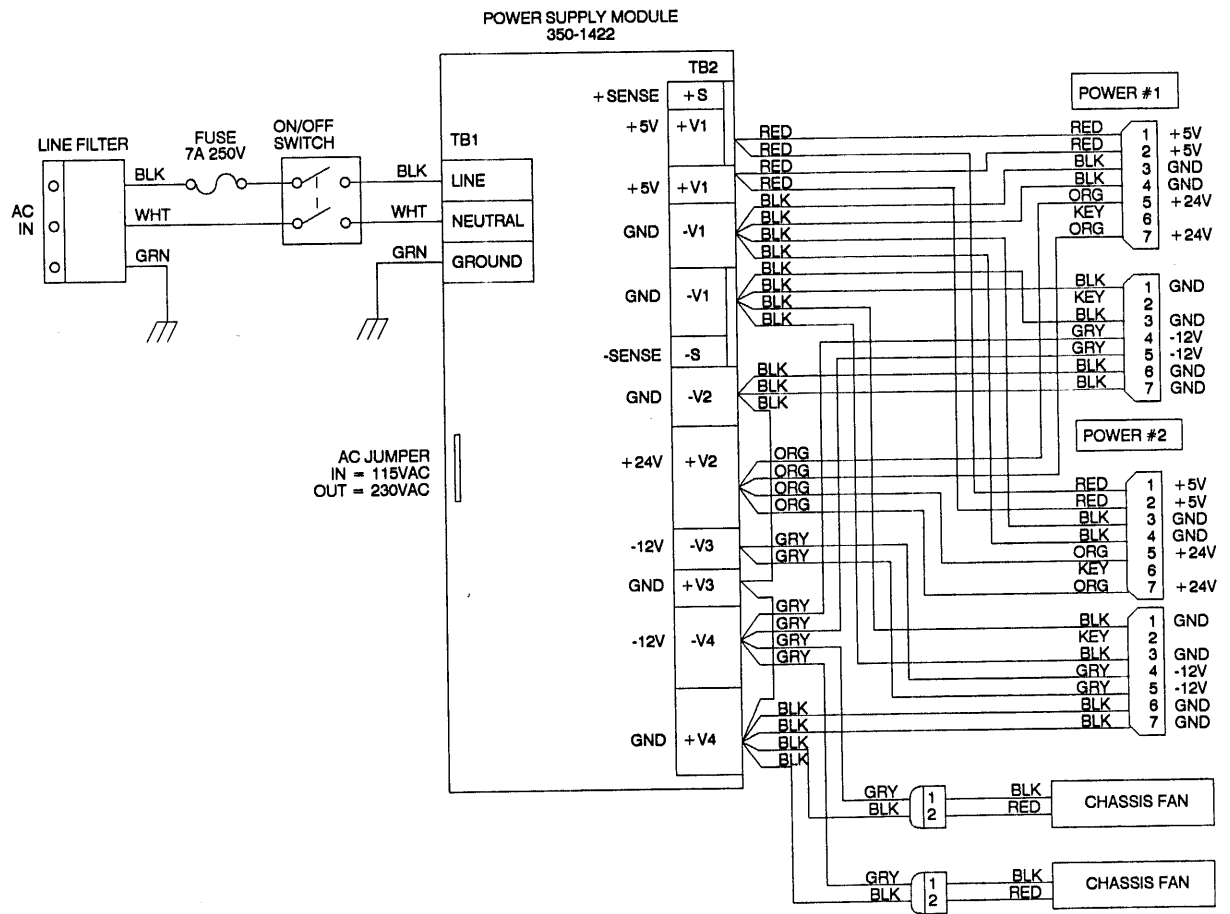
Use Figure 3-1 and the following procedure if AC conversion or DC adjustments are necessary.

1. Unplug AC input power.
2. Remove the top cover of the chassis by unscrewing the 4 screws (2 on each side of the top cover).
3. Figure 3-1 shows DC output adjustments. Measure voltages from the power tabs on TB2 while using a VOM.
4. Install the AC input jumper for 115VAC operation. Remove the jumper for 230VAC operation.

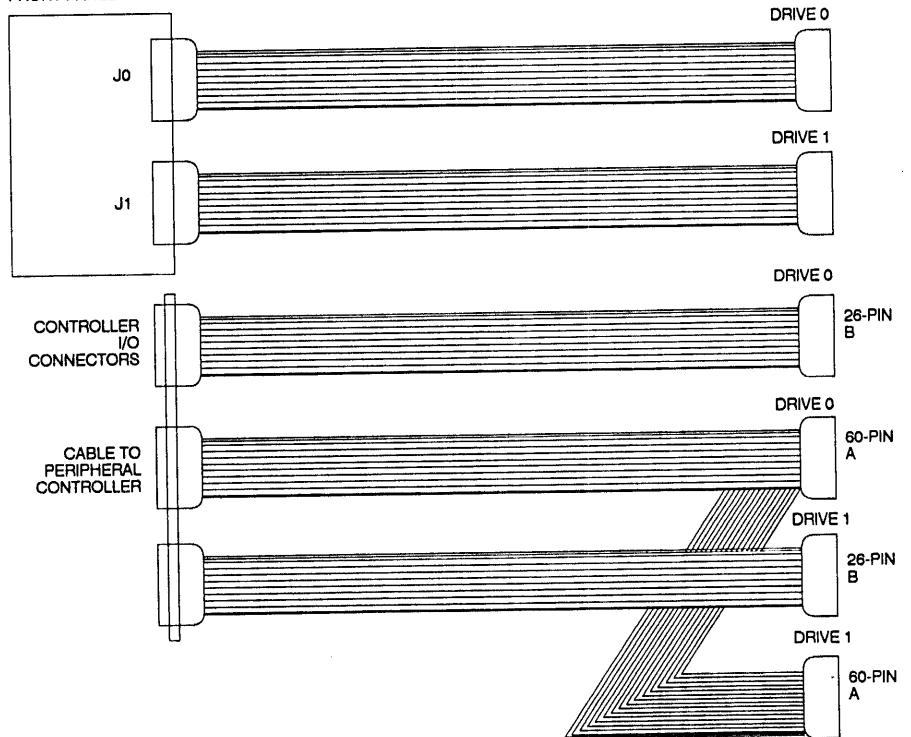
Figure 3-1:
AC Conversion
and DC
Adjustments



Appendix A - SA-H190 System Wiring Diagram



FRONT PANEL PWB 400744



REF: H190SWD

Appendix B - Power Supply Schematic

