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1- GRADIENT AMPLIFIER REPLACEMENT

This procedure applies to Signa OpenSpeed 0.7T Power Cabinet and the required steps to remove and replace a gradient amplifier (2165248).

1-1 Required Tools

- Digital Multimeter
- Philips Screwdriver
- Standard Screwdriver
- Wrench

2- REMOVAL/REPLACEMENT OF GRADIENT AMPLIFIER

2-1 Lock Out Tag Out

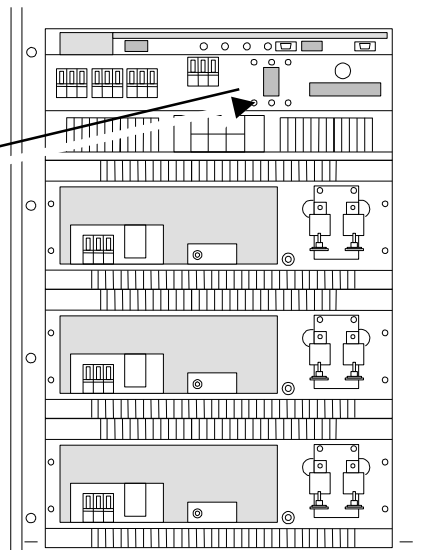


FATAL ELECTRIC SHOCK HAZARD! TO PREVENT FATAL ELECTRIC SHOCK, DISCONNECT POWER FROM THE PDU BEFORE YOU PERFORM THE REMOVAL/REPLACEMENT PROCEDURES. PERFORM LOCKOUT/TAGOUT PROCEDURE PER GE OSHA LOCKOUT/TAGOUT REQUIREMENTS 29 CFR 1910.147. DO THIS BY SECURING THE PDU CIRCUIT BREAKER FOR THE GRADIENTS.

1. Turn AC power OFF at service panel.
2. Remove front and rear covers.
3. Turn power OFF at Power Supply Unit (PSU) at rear of cabinet. See Illustration 2-1 for circuit breaker location.

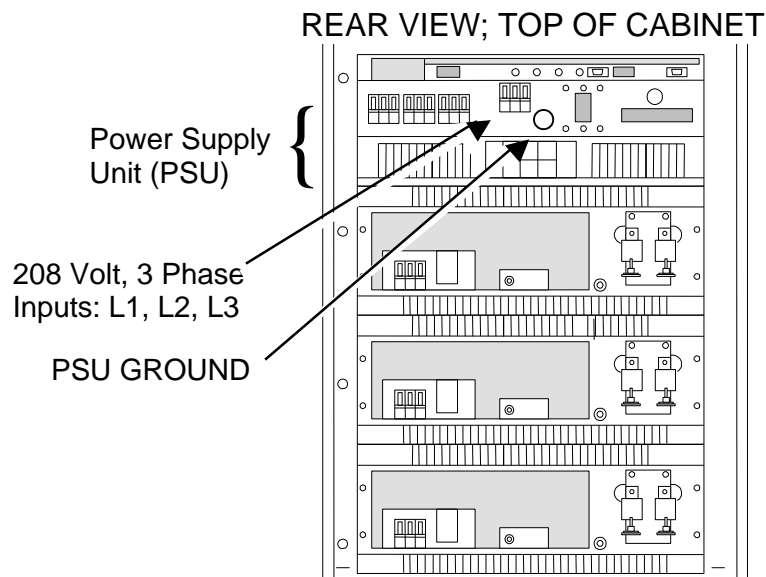
REAR VIEW

CB1
Power OFF



**PSU CIRCUIT BREAKER LOCATION
ILLUSTRATION 2-1**

4. Verify all LEDs are OFF on front of PSU.
5. Wait 5 minutes for power to dissipate.
6. Turn off the Gradient Breaker at the Power Distribution Unit (PDU). Lock out the Breaker and tag it.
7. After power to the Gradient Amplifiers has had sufficient time to dissipate take a Digital Multimeter and set it to its highest AC voltage range.
8. Verify that measuring incoming power to all components of the Gradients have dissipated all energy. See Illustration 2-2.
 - Place the reference probe (black) on the PSU Ground.
 - Locate L1, L2, and L3. These are the 208V, 3 Phase inputs to the PSU.

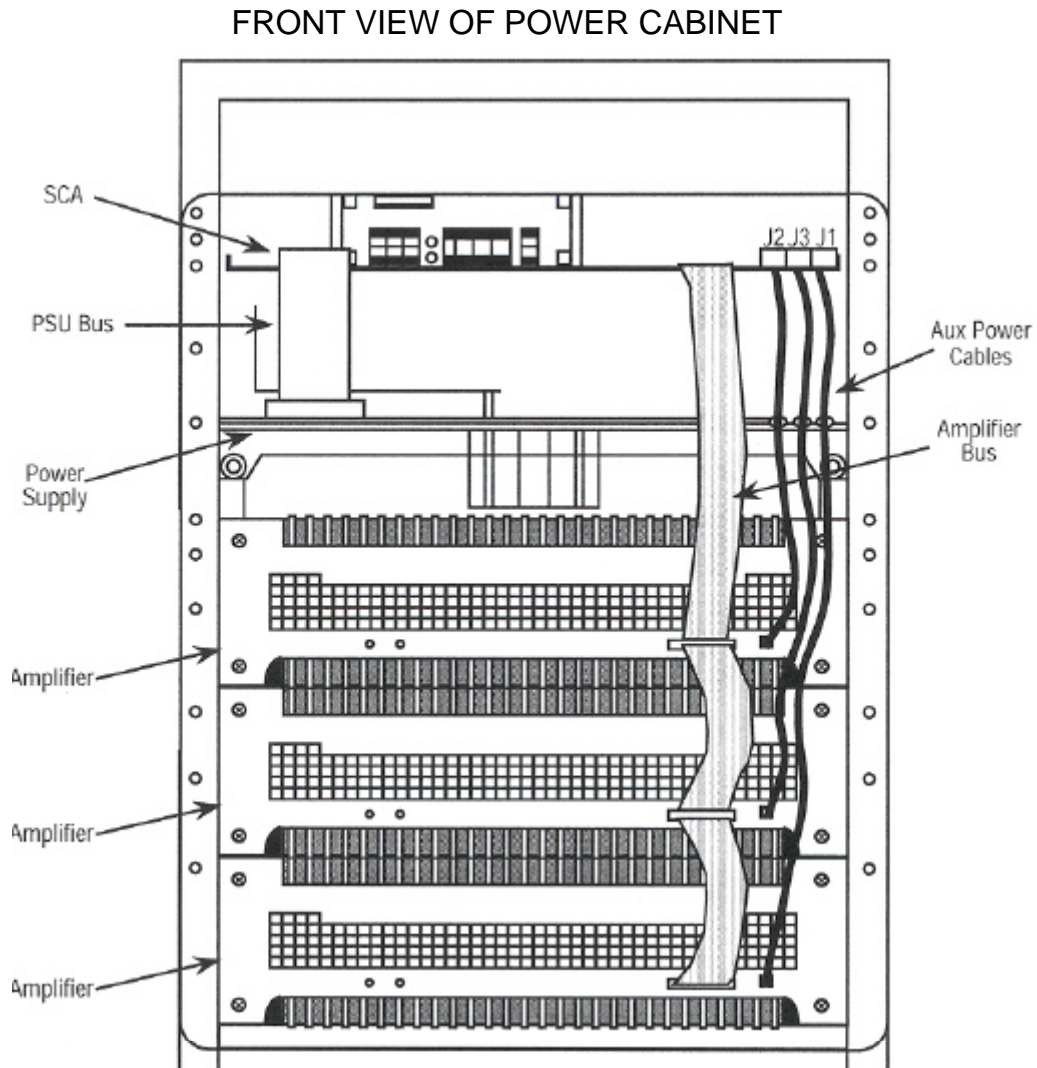


INCOMING POWER MEASUREMENT LOCATIONS
ILLUSTRATION 2-2

9. Measure voltage at each of three 208 volt input terminals. The meter should read 0 volts AC at each of the three measuring points.

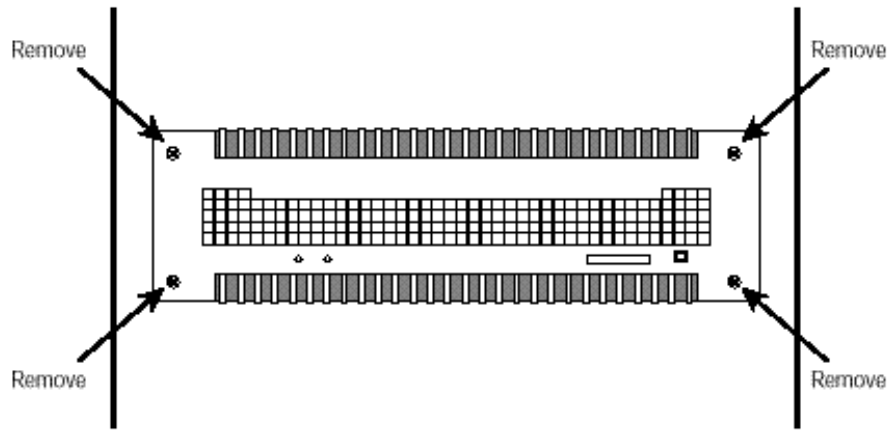
2-2 Removal of Gradient Amplifier

1. Disconnect amp bus and auxiliary power cables at front of amplifier to be replaced. See Illustration 2-3.
 - Disconnect all other control ribbon cables to amplifiers and drape over top of rack.



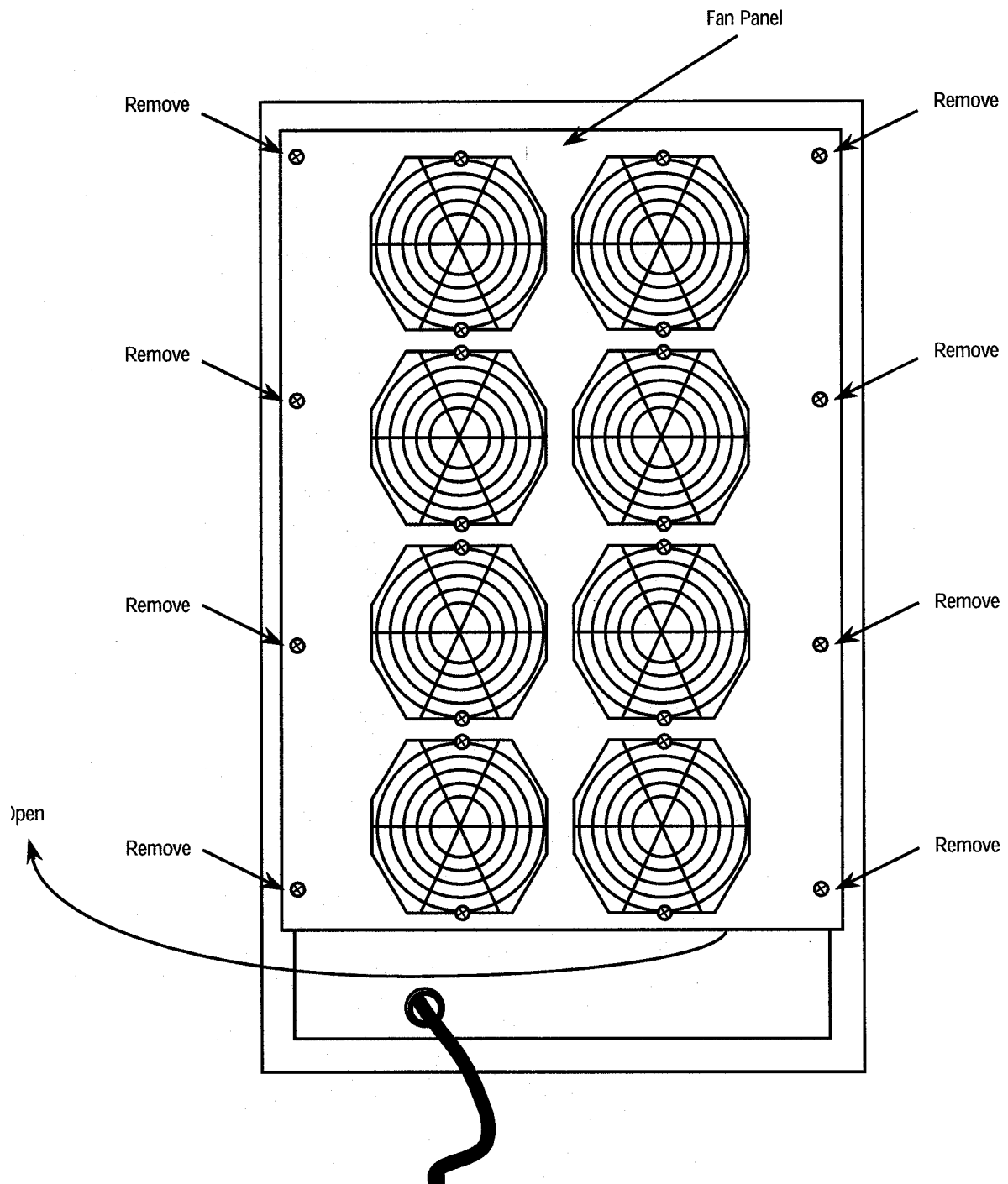
CABLE CONNECTIONS AND LOCATIONS
ILLUSTRATION 2-3

2. Remove 4 screws holding front panel of amplifier to rack. See Illustration 2-4.



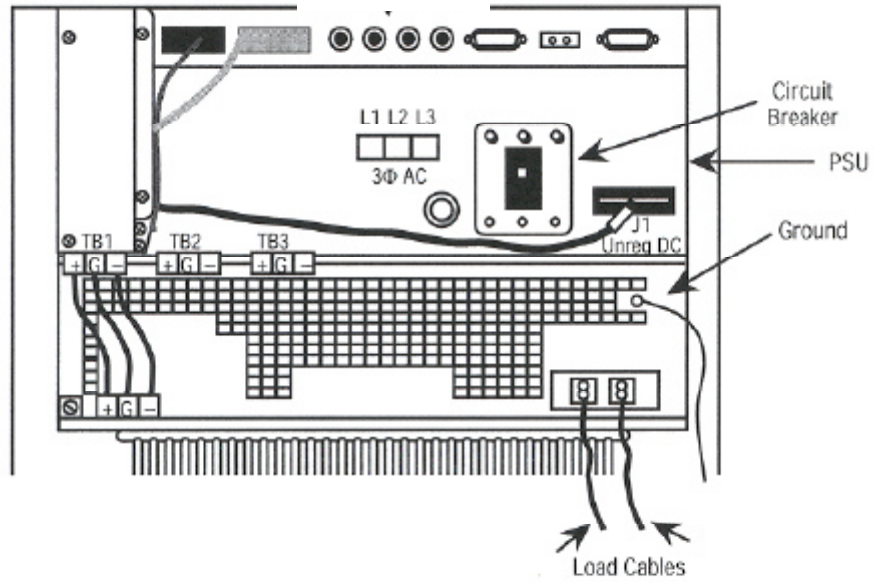
SCREW LOCATIONS
ILLUSTRATION 2-4

3. At the rear of the cabinet, remove 8 screws and open fan panel. See Illustration 2-5.



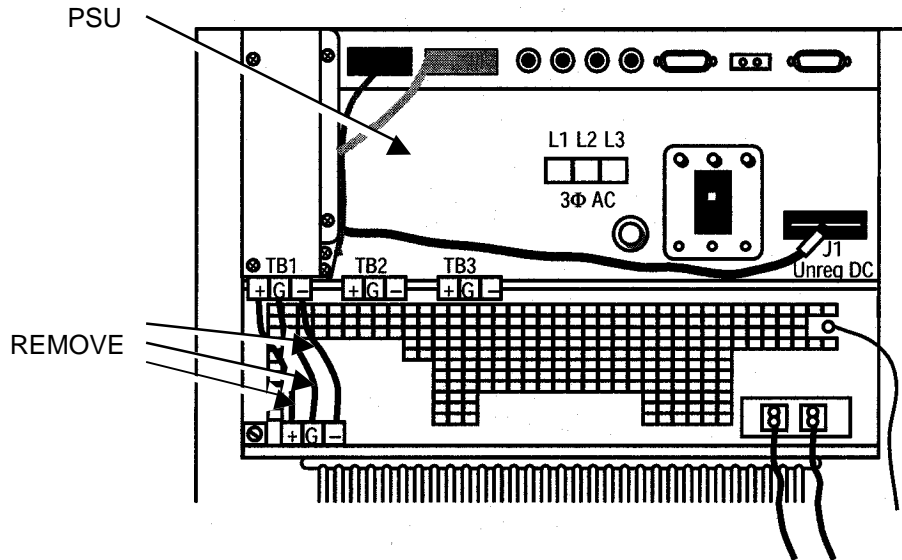
LOCATION OF SCREWS TO REMOVE
ILLUSTRATION 2-5

4. Remove 2 GEYMS load cables from amplifier, including 1 load ground. See Illustration 2-6.



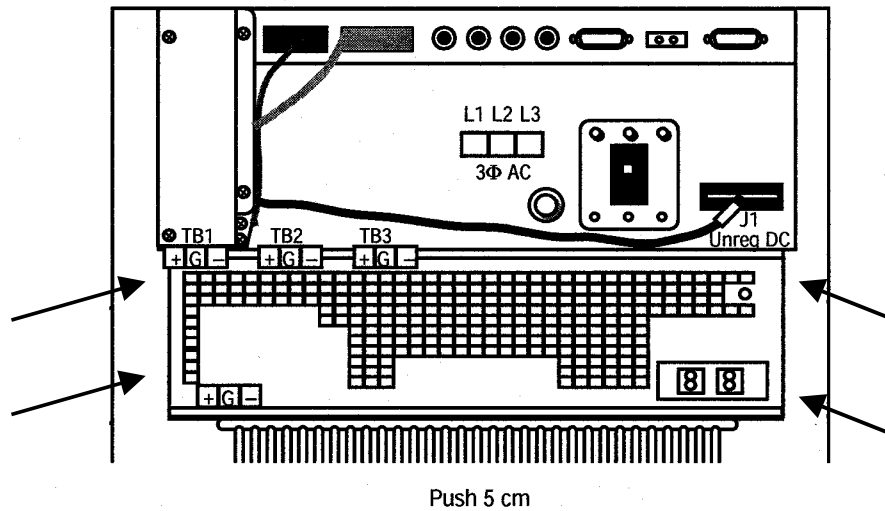
CABLE LOCATIONS
ILLUSTRATION 2-6

5. Remove 3 H.V. DC power cables from amplifier to be replaced. See Illustration 2-6.



POWER CABLE LOCATIONS
ILLUSTRATION 2-6

6. Push amplifier forward in cabinet 5 cm by pushing on rear of amplifier. See Illustration 2-7.



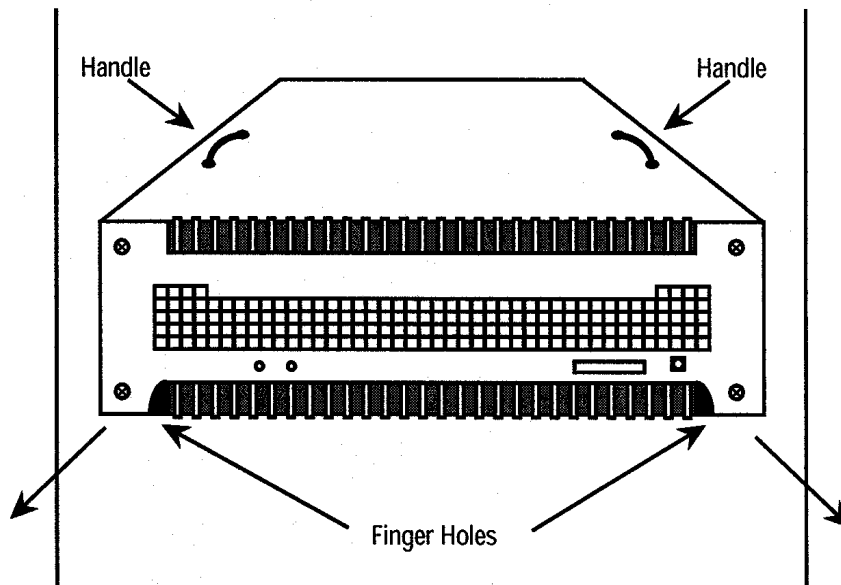
AMPLIFIER PUSH
ILLUSTRATION 2-7

7. Pull front of amplifier out of front until handles are exposed. See Illustration 2-8.

- Insert handles if needed.

CAUTION

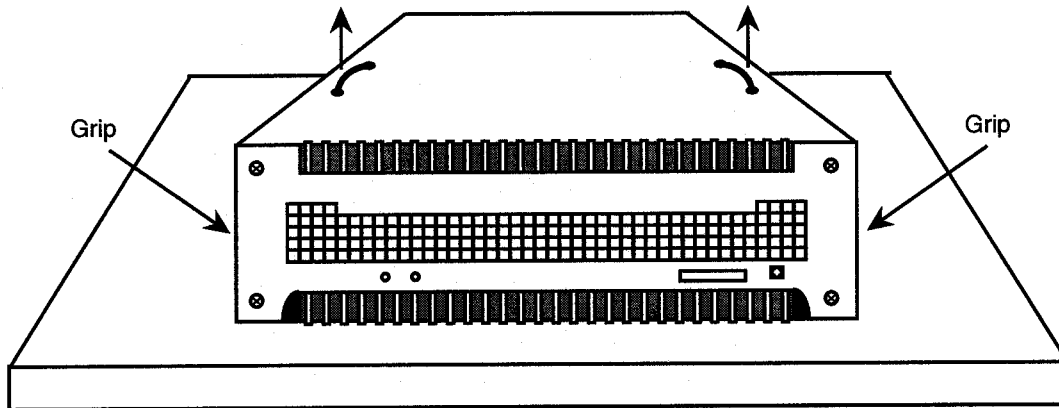
Property Damage! Amplifiers weight: 28 kg, must be supported if pulled out past center of gravity to avoid property damage.



REMOVAL OF AMPLIFIER FROM CABINET
ILLUSTRATION 2-8

8. Remove amplifier from front of cabinet.

- Carry by handles or sides. Be careful to avoid damage to terminals.
- Lay amplifier on bottom heat sink. Never place amplifier on front or rear, connections may become damaged as a result. See Illustration 2-9.

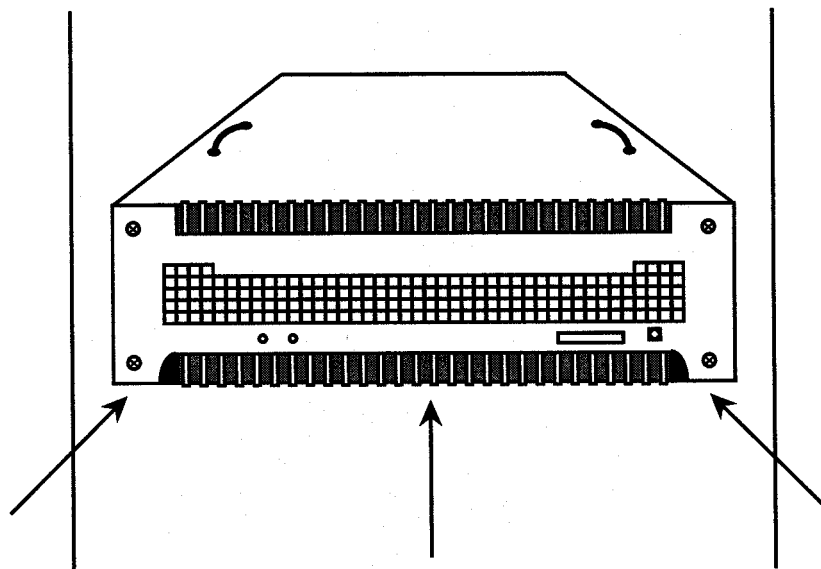


RESTING POSITION OF AMPLIFIER
ILLUSTRATION 2-9

2-3 Replace Gradient Amplifier

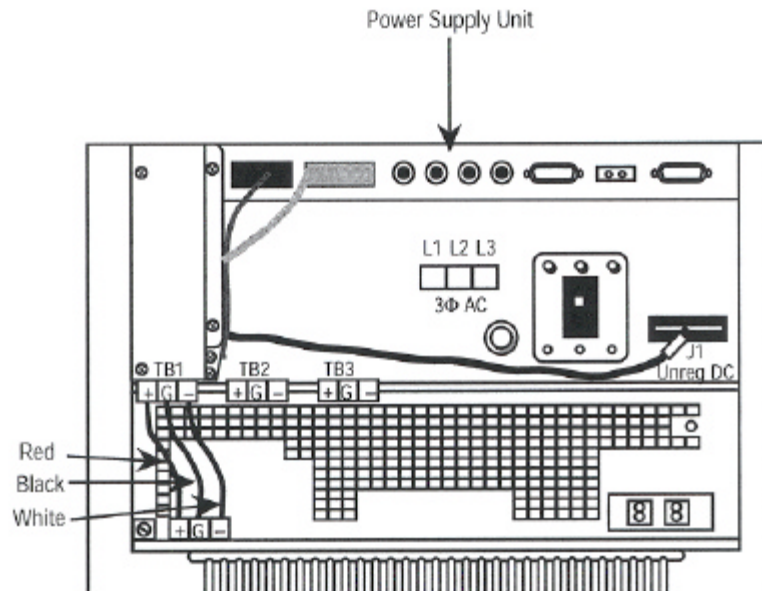
1. Place new amplifier in cabinet and slide in from front to back. See Illustration 2-10.

- Be sure front screws line up with holes.
- Engage guide pins.



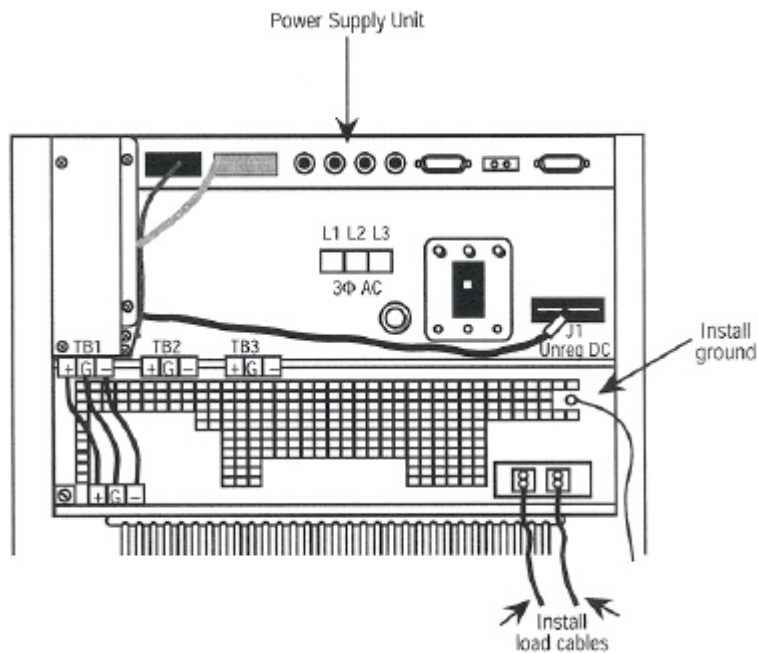
AMPLIFIER IN
ILLUSTRATION 2-10

2. Install 3 H.V. cables in amplifier terminals. See Illustration 2-11.
 - Tighten with special screwdriver provided. Do not damage wire connections.



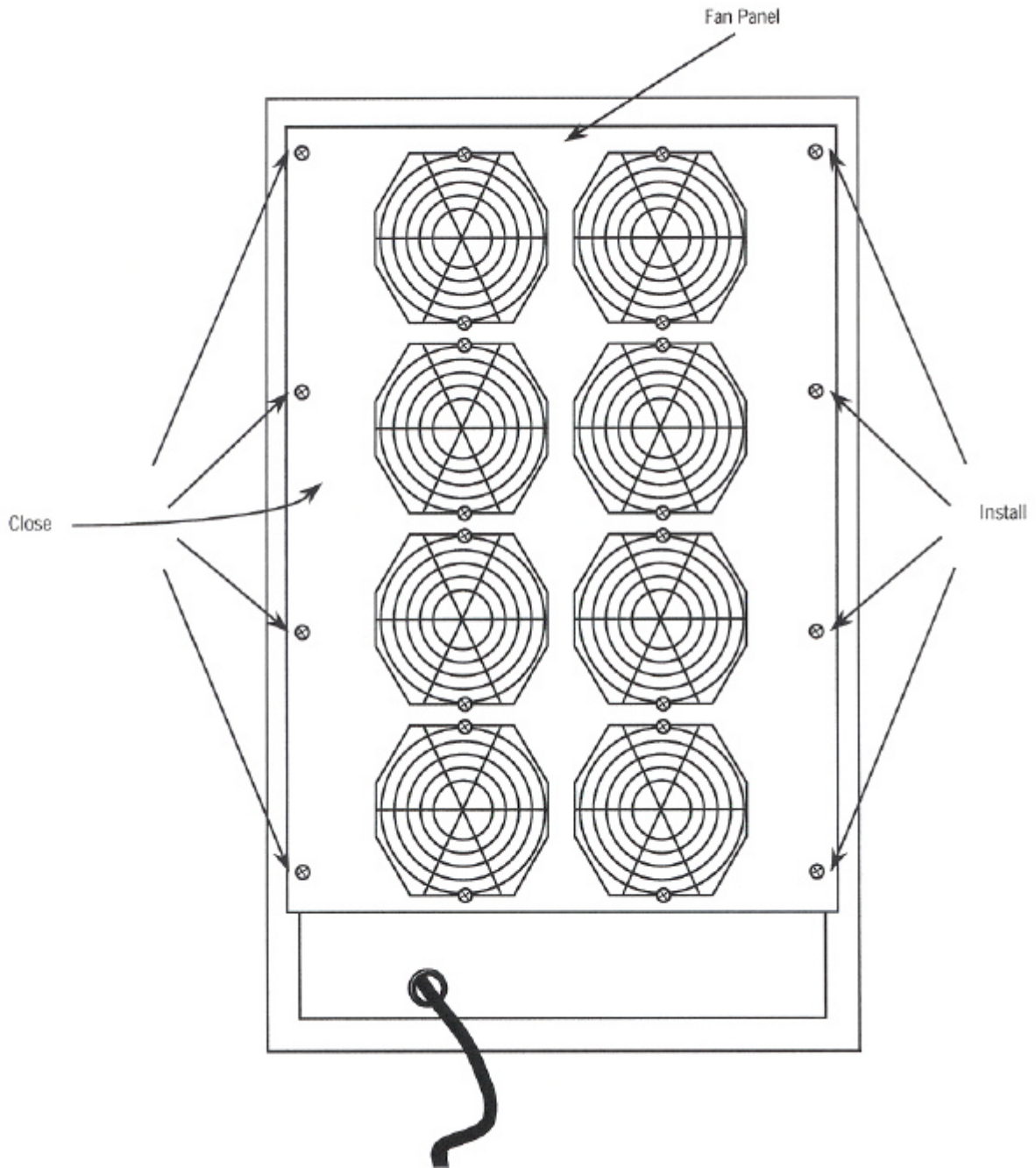
H.V. CABLE LOCATION
ILLUSTRATION 2-11

3. Install 2 GEYMS load cables plus ground load and ground terminals. See Illustration 2-12.
 - Inspect and verify all connections are visually correct. Observe polarity of cables.



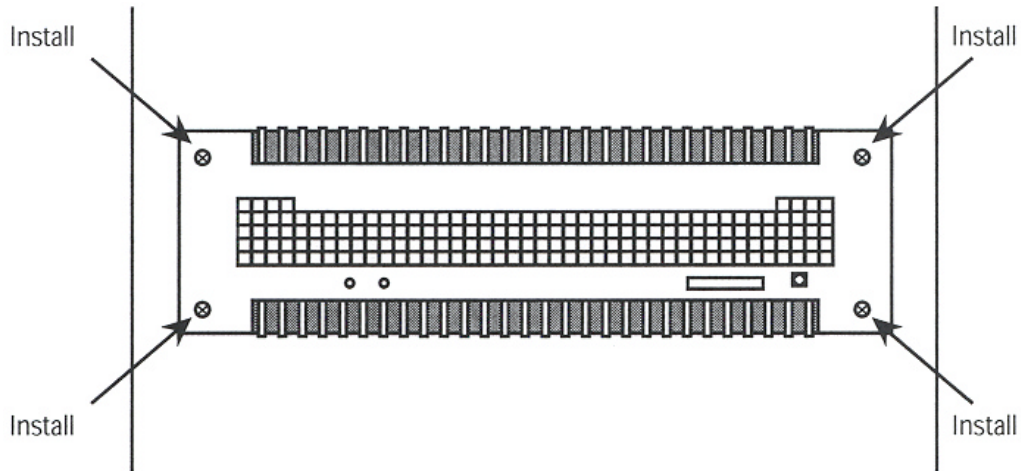
LOAD CABLE LOCATION
ILLUSTRATION 2-12

4. Close fan panel and install 8 screws. See Illustration 2-13.



FAN PANEL SCREW LOCATIONS
ILLUSTRATION 2-13

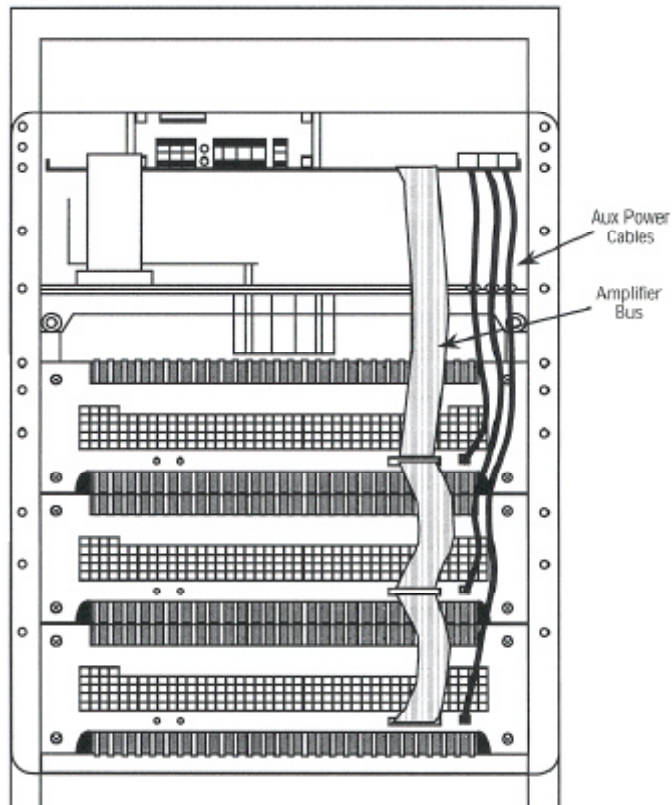
5. Install 4 front panel screws holding amplifier to rack. See Illustration 2-14.



FRONT PANEL SCREW LOCATIONS
ILLUSTRATION 2-14

6. Install amplifier bus and auxiliary power cables on front of amplifier. See Illustration 2-15.

- Reconnect control ribbon cable to all amplifiers. Be sure connectors are latched.



CABLE CONNECTION LOCATIONS
ILLUSTRATION 2-15

3- FUNCTIONAL CHECKS REQUIRED

1. Check grafidy using procedure for Eddy Current Compensation for Signa Horizon on the axis with the replacement amplifier and calibrate if out of specification.
2. Check gradient calibration using procedure for Gradient Calibration (DQA Version) or alternate proprietary procedure for SPT Quick Head Check; calibrate if necessary.
3. Check shim using procedure for LVShim Check; shim if necessary.

REVISION HISTORY

REV	DATE	AUTHOR	PRIMARY REASONS FOR CHANGE
A	Nov 29, 1999	Analogic (K. Keshena)	Modified procedure specifically to the OpenSpeed Power Cabinet-- Preliminary release.