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MINI-GRAM REPLACEMENT

1- REPLACEMENT PROCEDURE

1-1 Tools and Instruments Required

Item	Description	Part Number
1.	Mini-Gram Module	FRU# 2169727-2
2.	Phillips-head screwdriver	
3.	Flat-blade screwdriver	
4.	Universal Lift Hoist Kit with SGD Attachments	46-317266G4
5.	Medium Crescent Wrench	
6.	Digital Multimeter with high voltage probes	

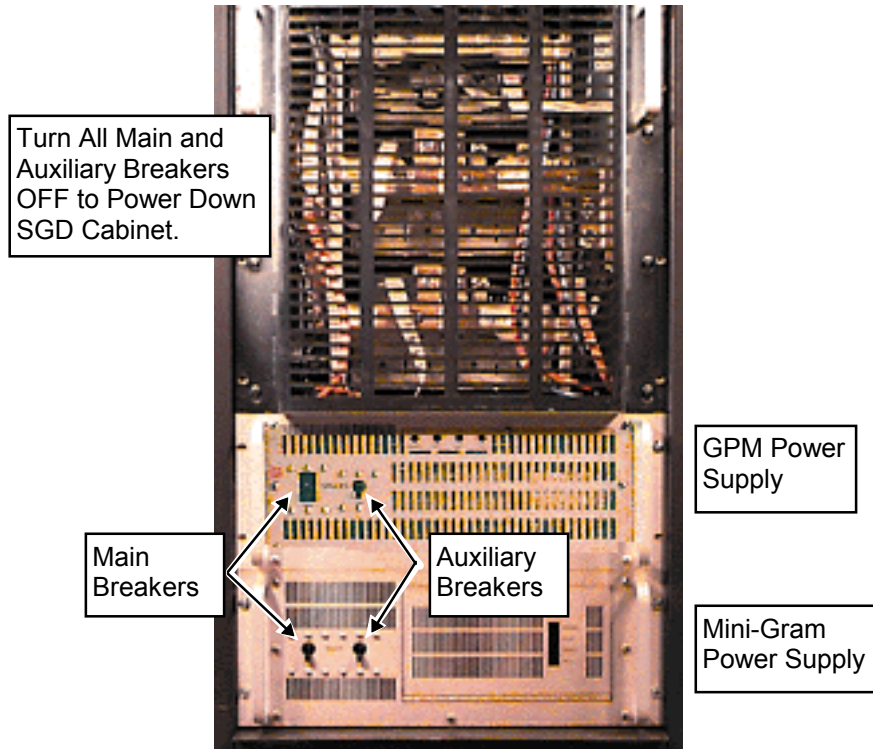
1-2 Preliminary Set Up Procedure



FATAL ELECTRIC SHOCK HAZARD!! TO PREVENT FATAL ELECTRIC SHOCK, DISCONNECT POWER FROM THE PDU BEFORE YOU PERFORM THE FOLLOWING 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 SCALEABLE GRADIENT CABINET.

1-2 Preliminary Setup Procedure (Continued)

1. Power down the SGD Cabinet by turning off the Main Breakers and Auxiliary Breakers on the Front Panel of **both** the Mini-GRAM Power Supply and the Gradient Power Module Power Supply. See Illustration 1-1.

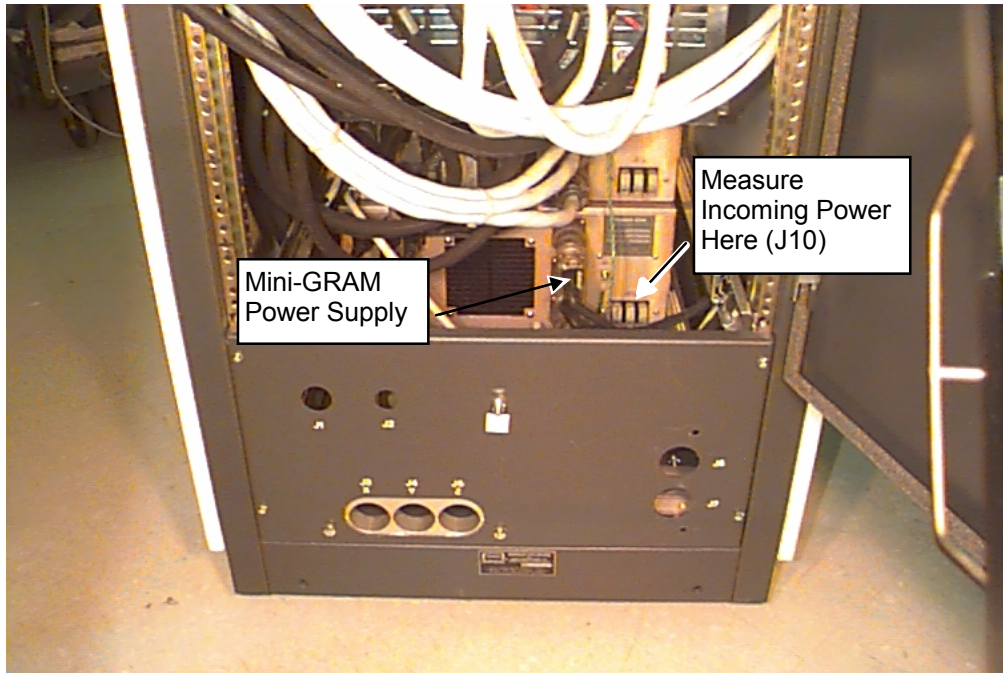


SGD HI-SLEW CABINET—LOWER HALF (FRONT COVER REMOVED)
ILLUSTRATION 1-1

2. Turn off the SGD Cabinet Breaker at the Power Distribution Unit. Lock out the Breaker and tag it.
3. After power to the SGD Cabinet has had sufficient time to dissipate, take a Digital Multimeter and set it to its highest AC voltage range.

1-2 Preliminary Setup Procedure (continued)

2. Verify that all energy has been dissipated by measuring incoming power to all components of the Scaleable Gradient Cabinet
 - A. Measure incoming power to the Mini-GRAM Power Supply as follows:
 - Place the reference probe (black) on the SGD Cabinet Ground.
 - Locate J10. This is the 208V, 3 Phase input to the Mini-GRAM Power Supply.
 - Measure voltage at each of three 208 Volt input terminals. The meter should read 0 Volts AC at each of the three measuring points. See Illustration 1-2.

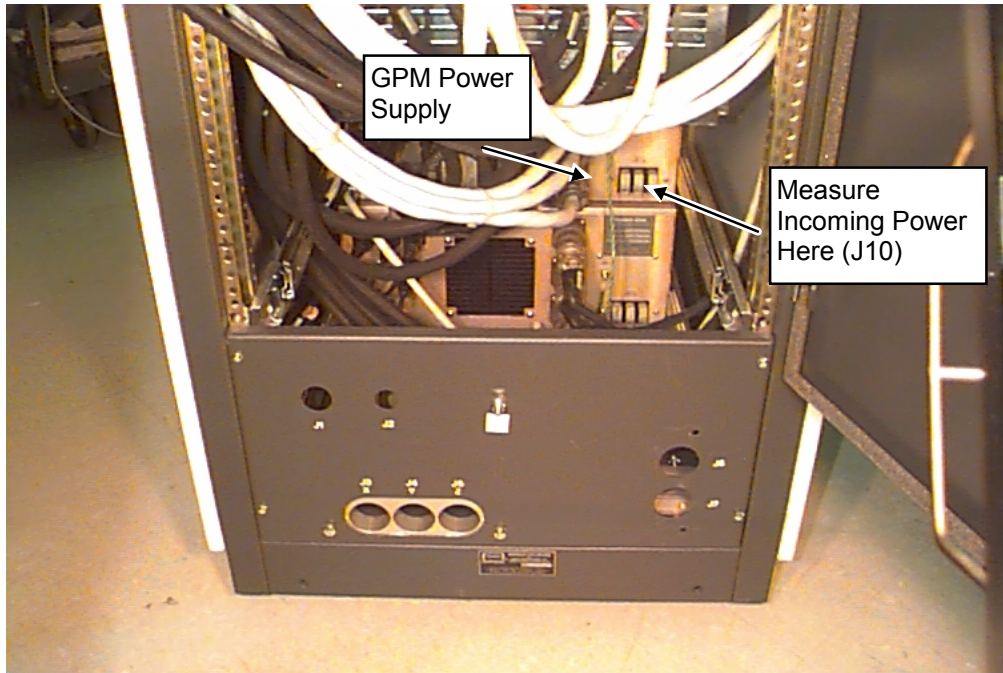


SGD CABINET—REAR VIEW: INCOMING POWER MEASUREMENT LOCATIONS
ILLUSTRATION 1-2

1-2 Preliminary Setup Procedure (continued)

B. Measure voltage at the GPM Power Supply as follows:

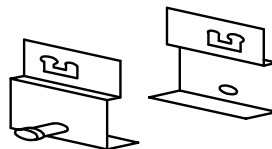
- Place the reference probe (black) on the SGD Cabinet Ground.
- Locate J-10. This is the 208V, 3 Phase input to the GPM Power Supply.
- Place the red probe on each of three 208 Volt input terminals: L1, L2, and L3. The meter should read 0 Volts AC at each of the three measuring points. See Illustration 1-3.



SGD CABINET—REAR VIEW: INCOMING POWER MEASUREMENT LOCATIONS
ILLUSTRATION 1-3

1-3 Mini-GRAM Replacement Procedure

1. Remove the SGD Cabinet front cover.
2. Remove four (4) Phillips-head screws which secure the clear plastic shields that cover the high voltage cables at the rear of the Mini-Gram Module.
3. Use a medium crescent wrench to loosen and remove the brass colored 6/8" hex bolts. The two far right bolts have a knob for the attachment of meter probes.
4. Remove the four (4) Mini-Gram cables. Replace the brass colored bolts to avoid misplacing them.
5. Unscrew the four pin connector, the AC power cord, and data cables from the rear of the Mini-Gram.
6. Remove the four (4) Phillips-head screws from the Mini-Gram front panel, which secure the Mini-Gram to the SGD cabinet.
7. Carefully pull out the Mini-Gram on its slide and allow the catch to engage.
8. One person removal of the Mini-GRAM is possible using the Universal Lift Kit (Refer to Appendix A). Steps 9-13 describe attachment of the brackets for the Universal Lift kit. Refer to the procedure for "Universal Lift Kit Assembly & Operation" on the CD-ROM or else proceed at step 15 with one person on each side of the Mini-GRAM.
9. Locate the Universal Lift Hoist Mini-Gram Lift Brackets in the Universal Lift Kit. See Illustration 1-4.

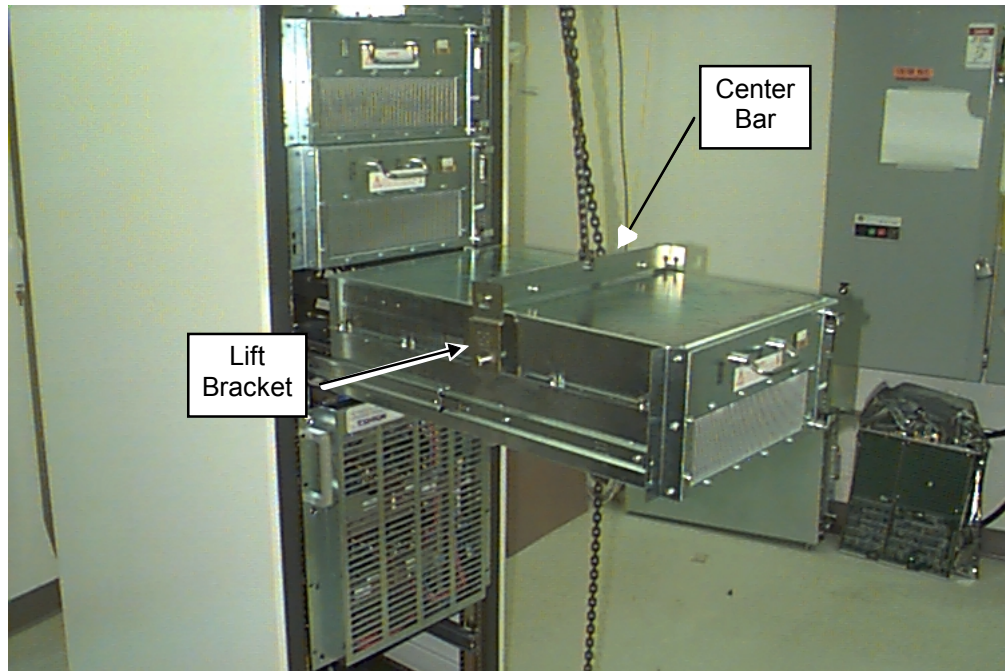


UNIVERSAL LIFT HOIST SGD MINI-GRAM LIFT BRACKETS
ILLUSTRATION 1-4

10. Attach each of two (2) Lift Brackets to the 3/4" holes along the side seam of the Mini-Gram enclosure. Position each bracket so that the serial number faces out.
11. Set the switch on the Mini-Mite puller to the down position.

1-3 Mini-GRAM Replacement Procedure (Continued)

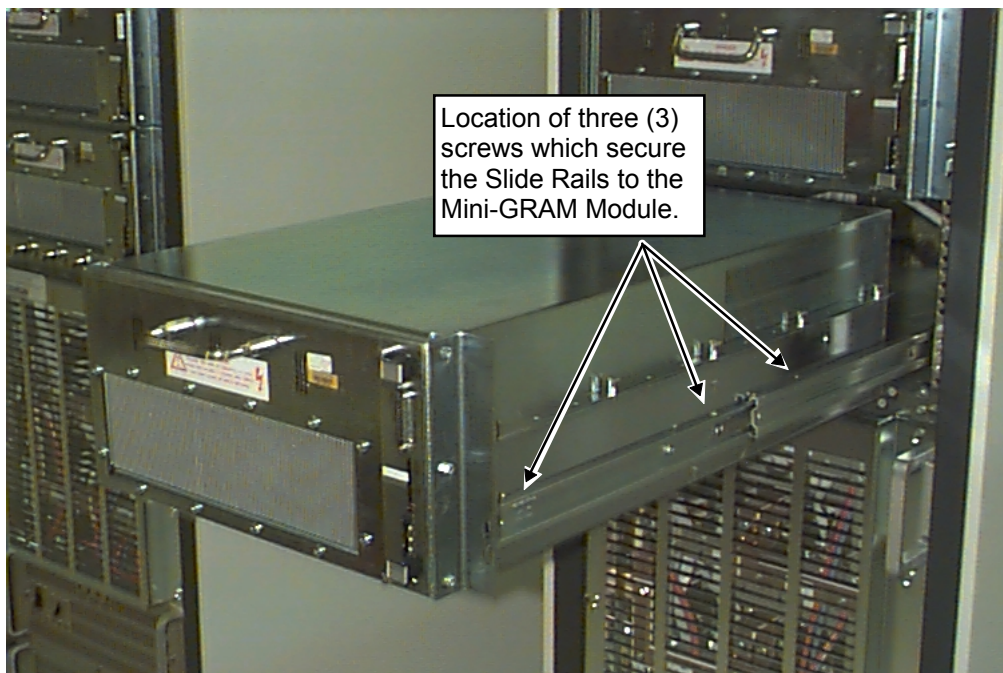
12. Lower the Center Bar until it is resting on the Mini-GRAM top enclosure cover. Attach the Center Bar to the Mini-GRAM Lift Brackets. See Illustration 1-5.



**UNIVERSAL LIFT HOIST CENTER BAR ATTACHED TO SGD MINI-GRAM MODULE
ILLUSTRATION 1-5**

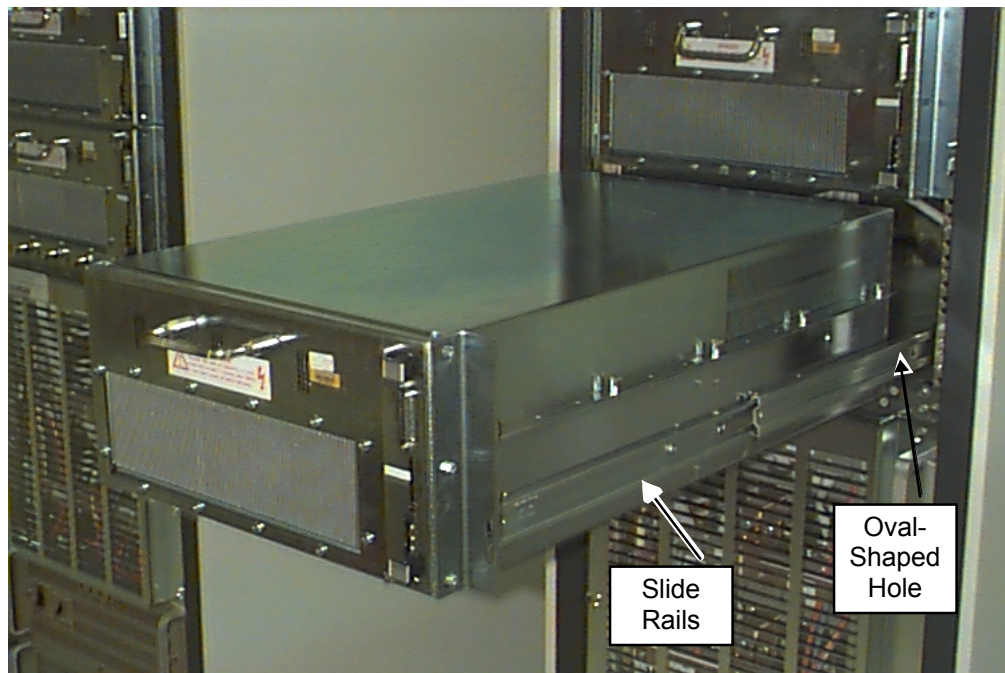
13. Switch the puller selector to the UP position. Pull out the slack by pulling down on the long end of the lift chain.
14. Ensure that the entire weight of the Mini-Gram is supported by the Universal Lift.
15. Follow steps 15 through 22 to disengage the Mini-GRAM module from its slide rails.
16. Face the right side of the module. Slide the module part of the way out (the hoist is still bearing the weight of module).

- 17. Observe that there are three Phillips-head screws securing the slide rails to the module. See Illustration 1-6.



SGD MINI-GRAM MODULE AND CABINET SLIDE RAILS –SCREW LOCATION
ILLUSTRATION 1-6

18. Locate the oval-shaped hole in the outer section of the right slide rail. See Illustration 1-7.



SGD MINI-GRAM MODULE AND CABINET SLIDE RAILS—OVAL HOLE LOCATION
ILLUSTRATION 1-7

19. Slide the module out so that the oval hole lines up with and exposes the screw that is closest to the rear of the module. Remove this screw and its external tooth washer.
20. Slide the module all the way out until the rail locks snap in place.



Be sure to note the exact holes that are used in securing the Mini-GRAM module to the slide rails. Different modules use different sets of holes. Only one set will work for each module.

21. Remove the other two screws which also secure the slide rail to the module. See Illustration 1-7.
22. Repeat these steps on the opposite side of the Mini-GRAM module.
23. Remove the Mini-Gram from the SGD cabinet.
24. Reverse the order of the above steps to install a Mini-Gram.

1-4 Functional Checks Required

1. Run Auto LCoil Adjustment Procedure as follows:

Select **[Diagnostics]** from the Service Desktop.

Click **[Start]**

Click **[IPG]**

Click **[Manual]**

Click **[LCoil Adjust]**

Click **[Run Diags]**

The adjustment takes about two minutes to run. It automatically updates the system configuration upon completion.

2. Check DC offsets with procedure for DC Offsets Adjustment - MiniGRAM on the axis that was replaced.
3. Check gradient calibration using procedure for Gradient Calibration (DQA Version) or alternate proprietary procedure for SPT Quick Head Check; calibrate if necessary.
4. Check shim using procedure for Quickshim Check or alternate proprietary procedure for LVshim Check; shim if necessary.

APPENDIX A — UNIVERSAL HOIST LIFT KIT ASSEMBLY

A-1 ASSEMBLY PROCEDURE

A-1-1 Introduction

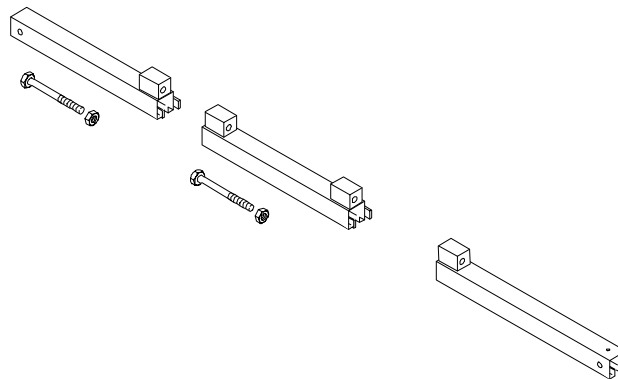
The Universal Lift Hoist is assembled from parts stored in the Universal Lift Hoist Kit. Lift attachments specially designed for the Scaleable Gradient Cabinet (SGD) are found in the outer-most compartments of the lift kit.

A-1-2 Tools Required

- Universal Lift Hoist Kit with SGD attachments, 46-317266G4
- Small hand tools including a Phillips-head screwdriver
- Two medium sized crescent wrenches

A-1-3 Assembly Procedural Steps

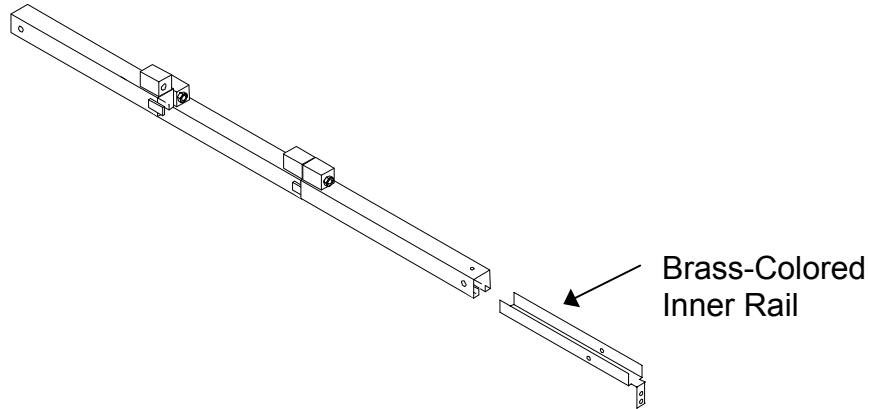
1. Locate the three (3) large Steel Rail sections and place them on a flat surface for assembly. See Illustration A-1.



STEEL RAIL SECTIONS, HEX BOLTS, AND HEX NUTS
ILLUSTRATION A-1

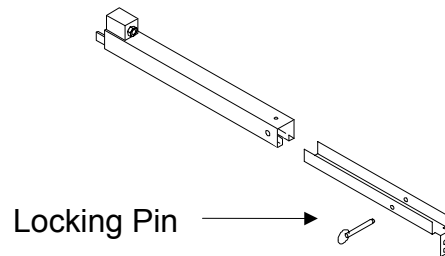
2. Arrange the rail sections in the proper order (rear, center, then front) and fasten them together with 4.75" X 1/2" caps crews and hex nuts.
3. Use the crescent wrenches to tighten the cap screws.

- 4. Locate the Brass Colored Inner Rail and insert it into the Steel Rails as shown in Illustration A-2.



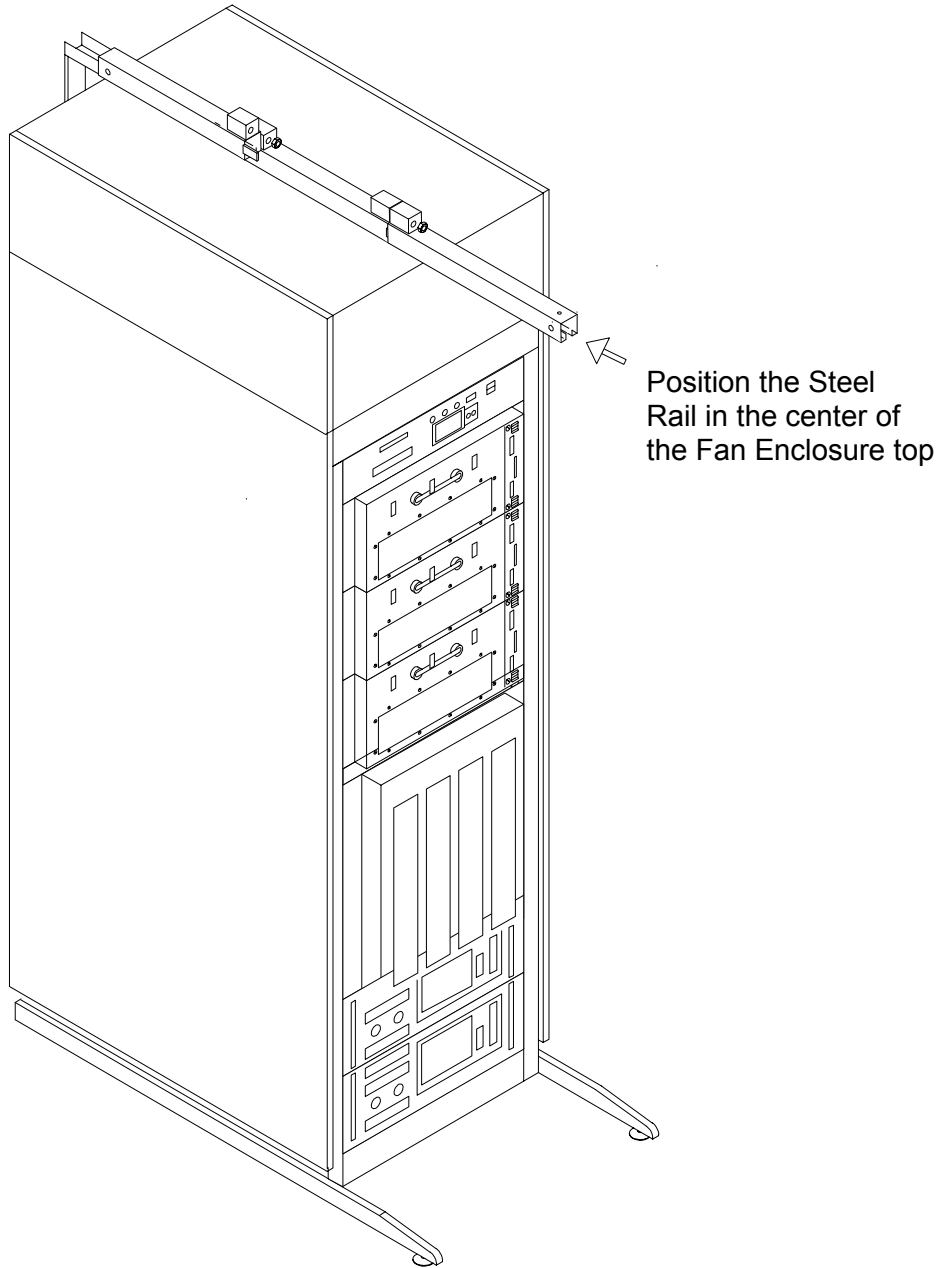
ASSEMBLED STEEL RAILS AND BRASS-COLORED INNER RAIL
ILLUSTRATION A-2

- 5. Insert the Brass Colored Inner Rail into the open end of the rear rail section.
- 6. Locate one of two (2) locking pins in the lift kit. Insert one locking pin into the hole near the open end of the rear rail section. This locking pin secures the Brass Colored Inner Rail to the outer Steel Rail. See Illustration A-3.



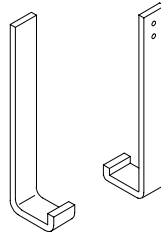
REAR STEEL RAIL, LOCKING PIN, AND BRASS-COLORED INNER RAIL
ILLUSTRATION A-3

7. Place the Steel Rail assembly on top of the Fan Enclosure at the top of the SGD Cabinet. Center the Rail Assembly on the top of the enclosure. See Illustration A-4.



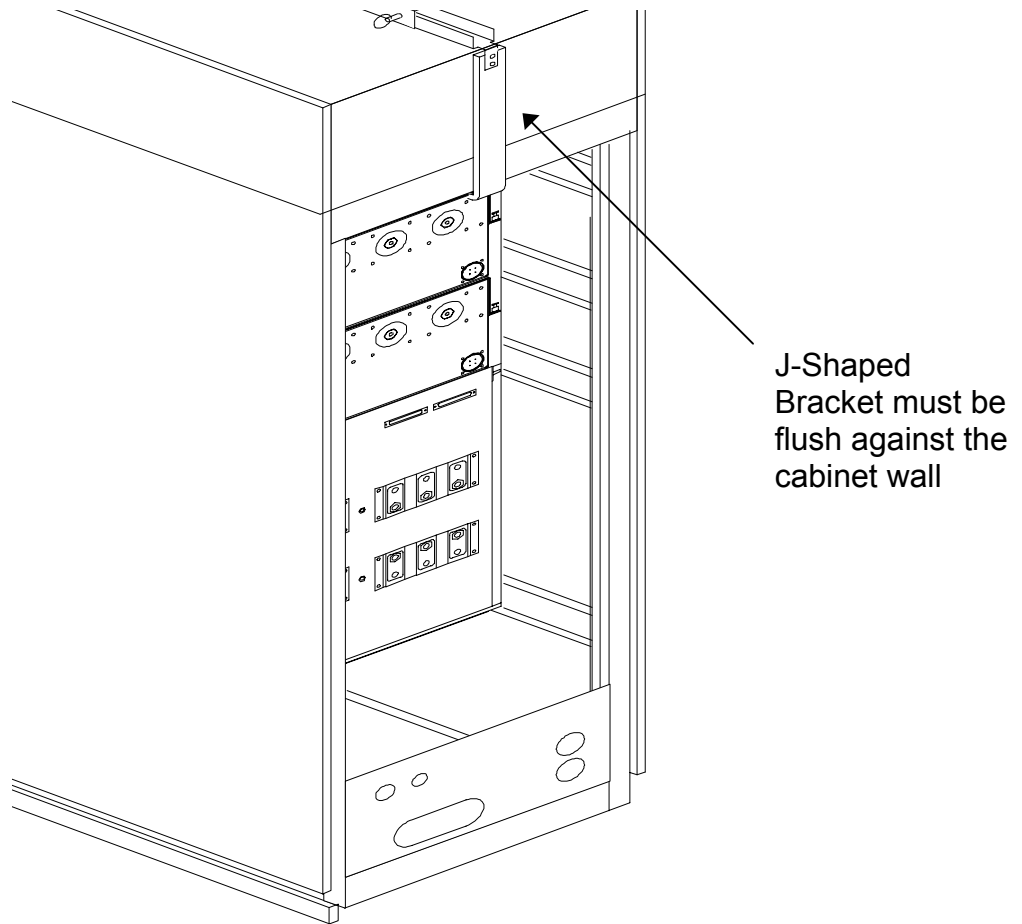
POSITIONING OF THE STEEL RAIL ASSEMBLY
ILLUSTRATION A-4

8. Locate the Brass Colored J-shaped Bracket in the Lift Kit. See Illustration A-5.



J-SHAPED BRACKET
ILLUSTRATION A-5

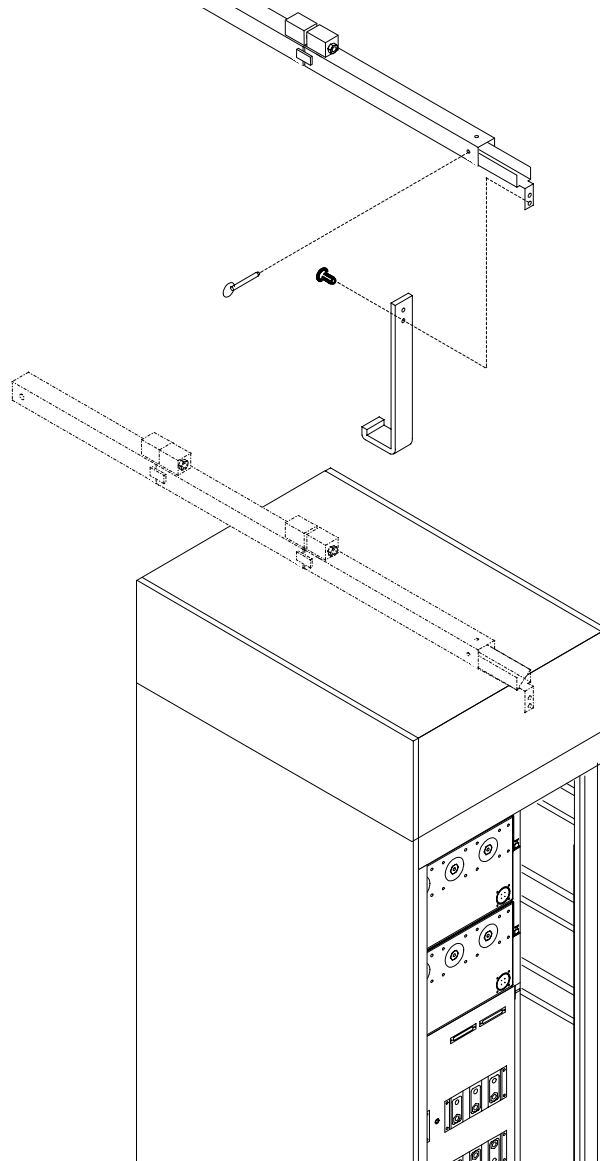
9. Open the rear door of the SGD Cabinet. Observe how the J-shaped Bracket fits into the rear door frame. See Illustration 1-6.



POSITIONING OF THE J-SHAPED BRACKET
ILLUSTRATION A-6

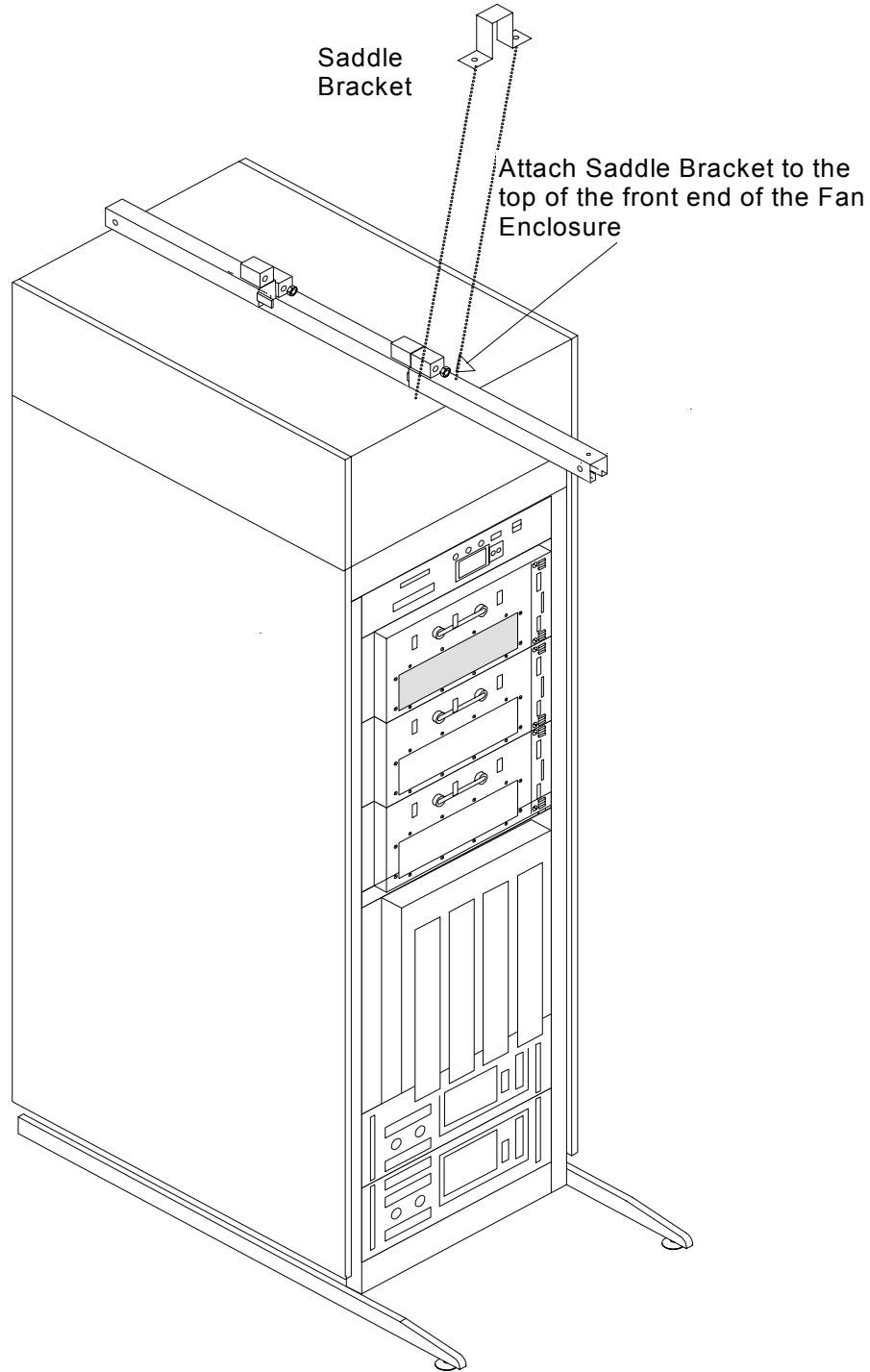
10. Slide the Rail Assembly toward the front of the SGD Cabinet. Maintain its centered position.

11. Attach the J-shaped Bracket to the Brass Colored Inner Rail so that the J-shaped Bracket is flush against the rear panel of the Fan Enclosure. Use the flat Phillips-head screws to secure the J-shaped Bracket to the Brass Colored Inner Rail. See Illustration A-7.



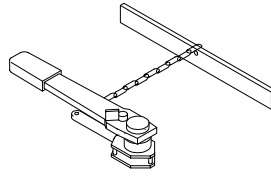
**CONNECTION OF THE J-SHAPED BRACKET TO THE STEEL RAIL ASSEMBLY
ILLUSTRATION A-7**

- 12. Once the J-Shaped Bracket is secured to the cabinet and the Steel Rail, attach the Saddle Bracket to the top of the Fan Enclosure. The screw holes are located at the front end of the Fan Enclosure. The Saddle Bracket prevents the Steel Rail from sliding from center position. See Illustration A-8.



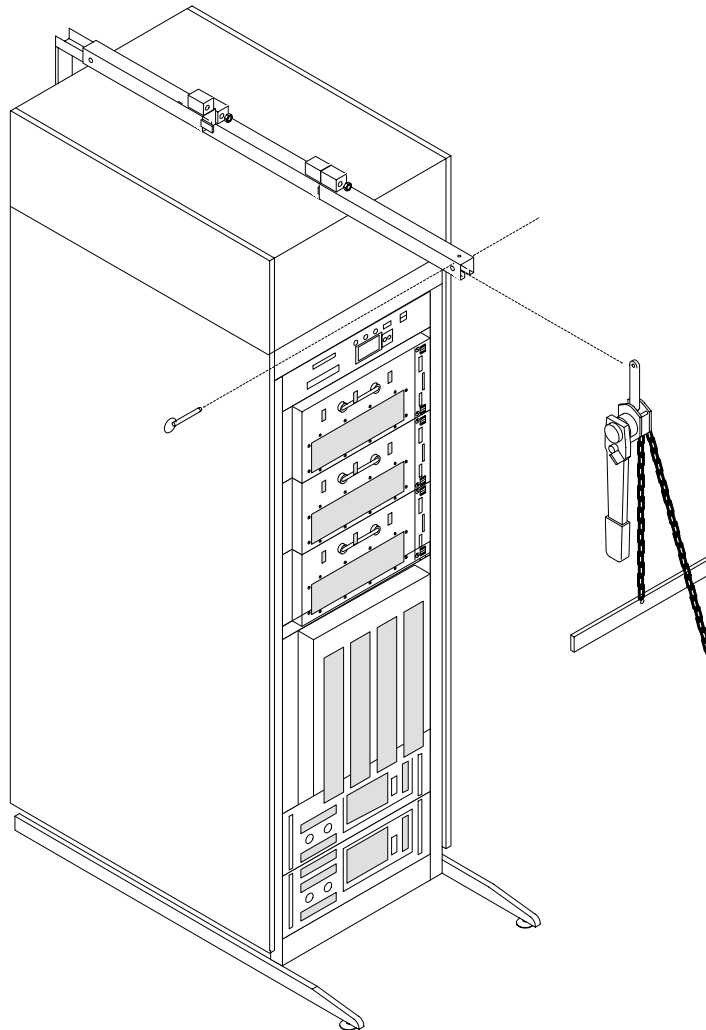
POSITIONING AND ATTACHMENT OF THE SADDLE BRACKET
ILLUSTRATION A-8

13. Locate the Hoist Assembly in the Lift Kit. See Illustration A-9.



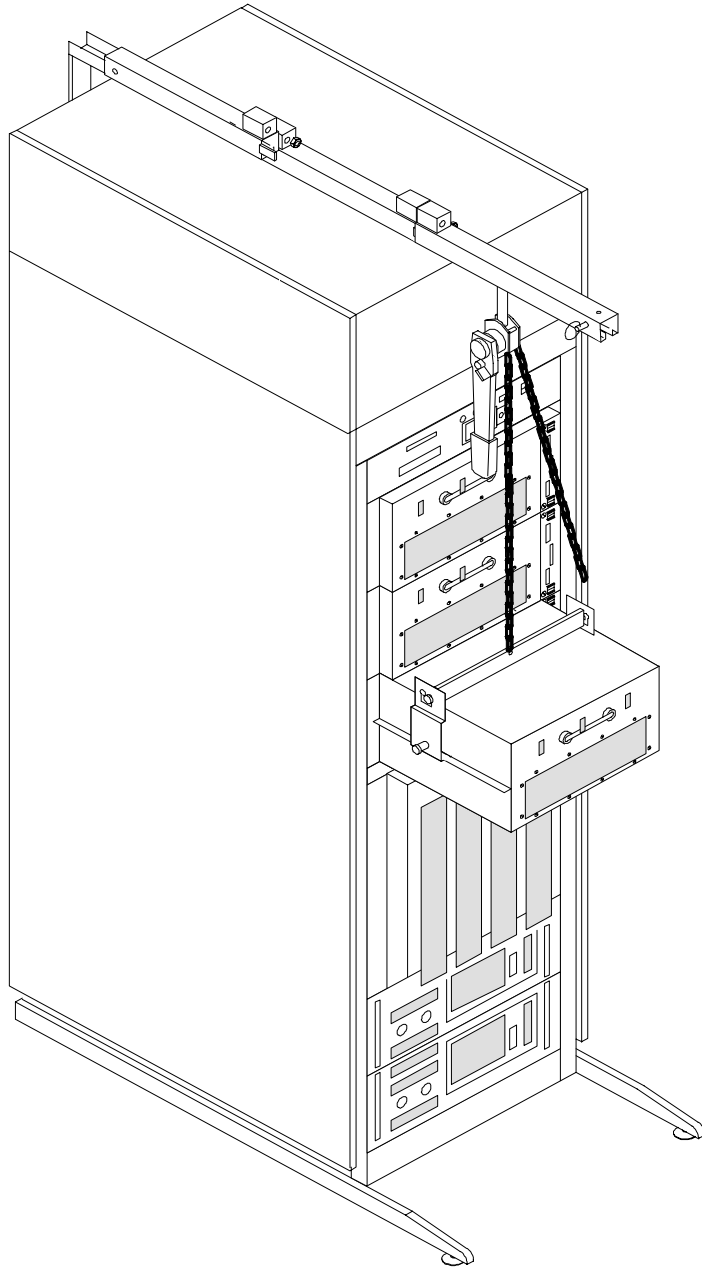
HOIST ASSEMBLY
ILLUSTRATION A-9

14. Insert the Hoist Assembly into the open end of the front rail. Insert a locking pin into the holes near the front edge of the front rail. This locking pin prevents the Hoist Assembly from sliding out of the rails. See Illustration A-10.



PLACEMENT OF HOIST ASSEMBLY INTO FRONT END OF STEEL RAIL ASSEMBLY
ILLUSTRATION A-10

- 15. Select the appropriate lift-brackets cabinet and attach them to the Hoist Assembly. The Universal Lift Hoist is now ready for operation. Illustration A-11 shows the Universal Lift Hoist being used to remove a Mini-GRAM Module from an SGD Cabinet.



USING THE UNIVERSAL LIFT HOIST TO REMOVE A MINI-GRAM MODULE
ILLUSTRATION A-11

REVISION HISTORY

REV	DATE	AUTHOR	PRIMARY REASONS FOR CHANGE
A	08/14/97	F. Fiore	Initial draft of document completed
B	09/06/97	F. Fiore	Enter original draft in MR template for Microsoft Word documents.
C	09/11/97	F. Fiore	Incorporate illustrations and call outs
0	10/03/97	F. Fiore	Initial release for SGD
1	12/14/99	K. Keshena	Added the Universal Hoist Lift procedure as Appendix A and created references in text in section 1-3.