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Description - This material covers the replacement of the Digital Tuning Board in the Gradient Ramp Accelerator Module (GRAM) for Signa Horizon HiSpeed and EchoSpeed systems.

1- INTRODUCTION

The GRAM Digital Tuning Board (part no. 2120062) is a field-replaceable unit (FRU).

2- TOOLS REQUIRED

A DVM with alligator clips is required for the Lock Out-Tag Out procedure.

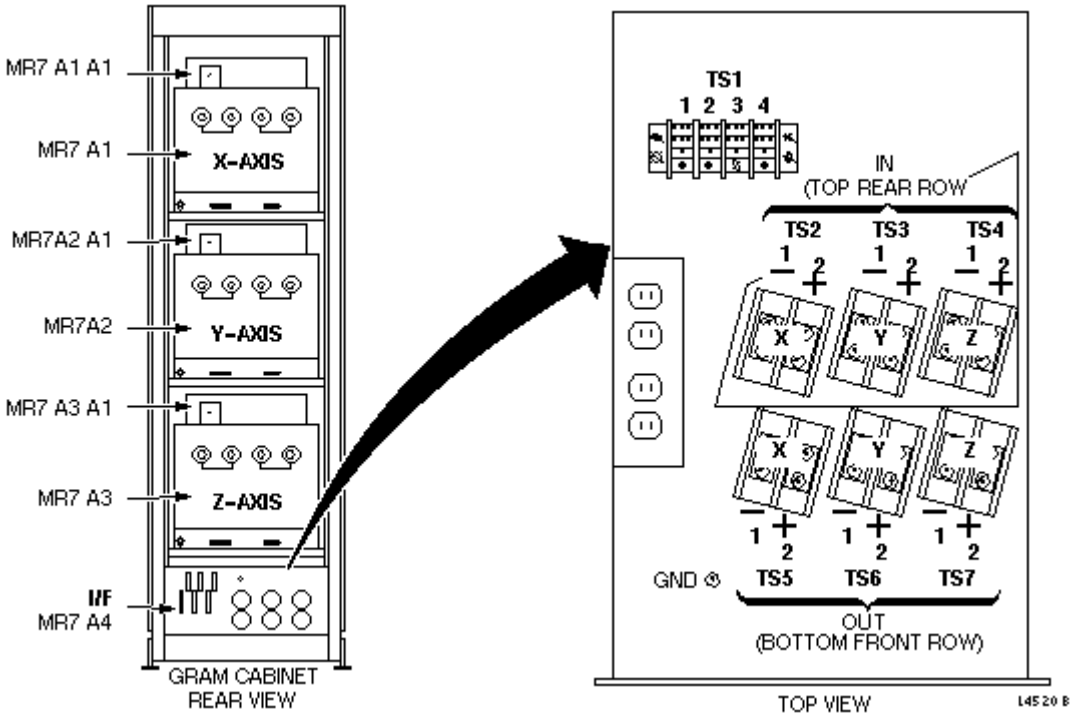
3- PRELIMINARY SET-UP

DANGER!!

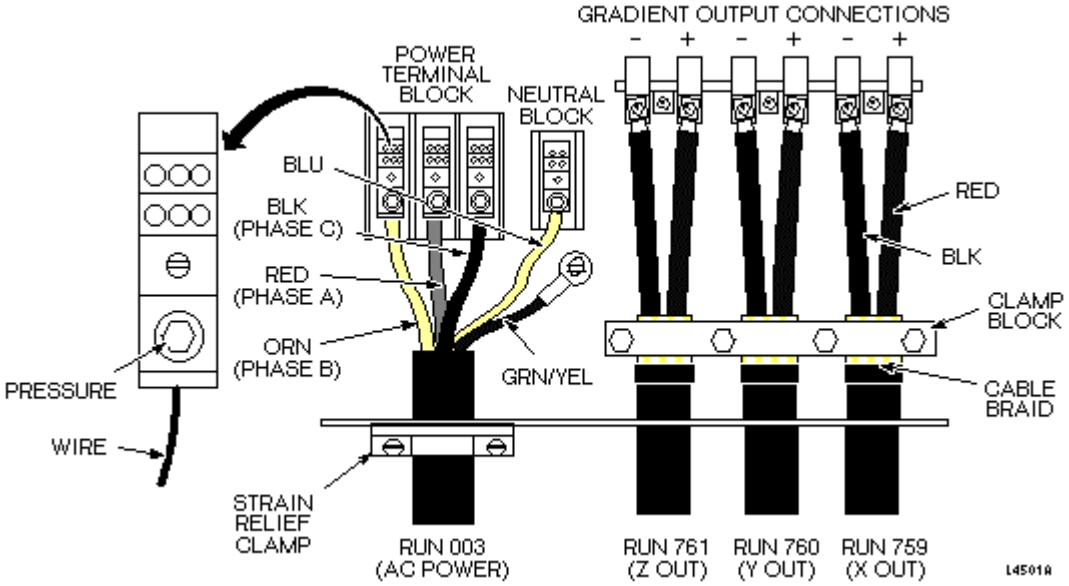
FATAL ELECTRIC SHOCK HAZARD!! THE GRAM AND GRADIENT AMPLIFIERS ACT AS CONSTANT LOAD SOURCES, AND WILL SEND MAXIMUM CURRENT TO ANY LOAD (INCLUDING YOU!). TO PREVENT FATAL ELECTRIC SHOCK, ENSURE THAT POWER IS OFF TO BOTH CABINETS BEFORE CONTINUING WITH THIS PROCEDURE.

1. Lock out and tag out the PDU Circuit Breaker for the GRAM Cabinet and the 8645 Gradient Amplifier Cabinet using appropriate OSHA procedure. (Refer to *Procedure For Safety: Section 6*)

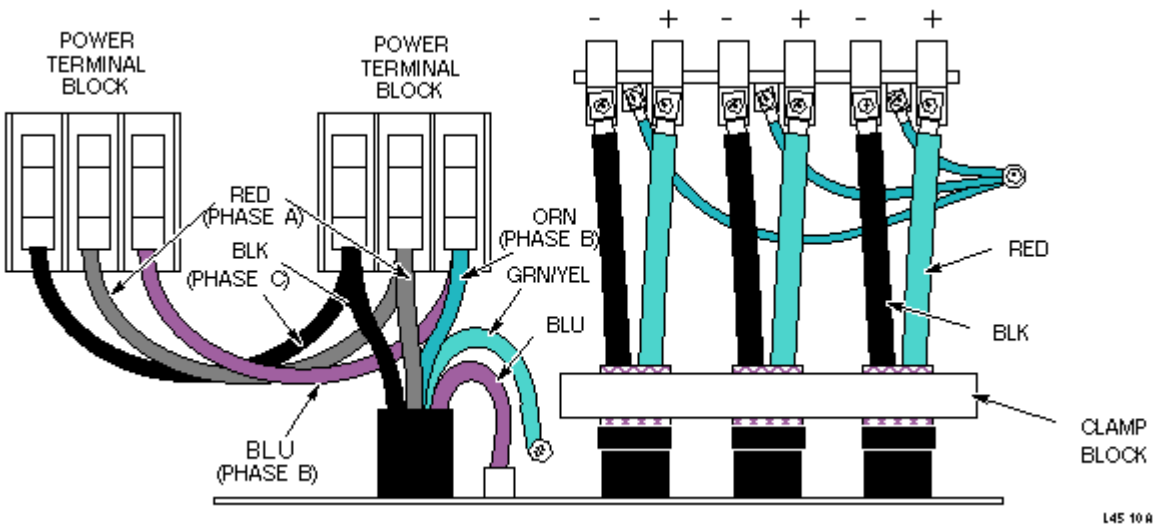
2. Verify that all energy has been dissipated by measuring incoming power to the GRAM Cabinet at TS1 (see Illustration L4520B). Verify that all energy has been dissipated for the 8645 Gradient Amplifier Cabinet by measuring power at TS1. Also see Illustration L4501A for Signa Horizon HiSpeed system, or Illustration L4510A for Signa Horizon or Horizon EchoSpeed systems.



GRAM CABINET, REAR VIEW – BOTTOM PANEL AND TS1
ILLUSTRATION L4520B



8645 CABINET POWER AND OUTPUT CABLE CONNECTIONS
ILLUSTRATION L4501A



INCOMING POWER TO A DOUBLE-BAY 8645 GRADIENT CABINET
ILLUSTRATION L4510A

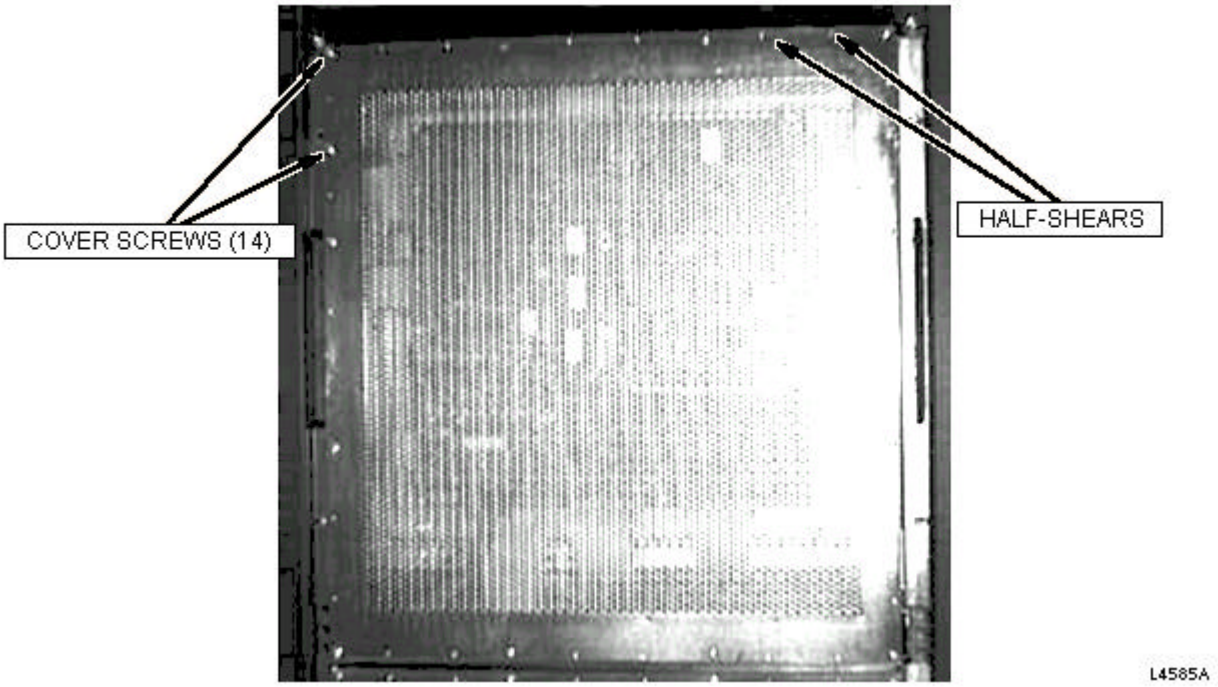
4- REPLACING THE GRAM DIGITAL TUNING BOARD

CAUTION

Equipment damage possibility. The GRAM has static-sensitive components that may be damaged if not handled in a static-free environment. Take appropriate care (e.g., wear wrist grounding strap) when handling this module and the Digital Tuning Board.

1. Remove GRAM Cabinet front cover.

2. Use proper ESD precautions, and, at the front of the GRAM Cabinet, remove and set aside the fourteen screws that hold the electromagnetic containment (EMC) cover on the GRAM (see Illustration L4585A).

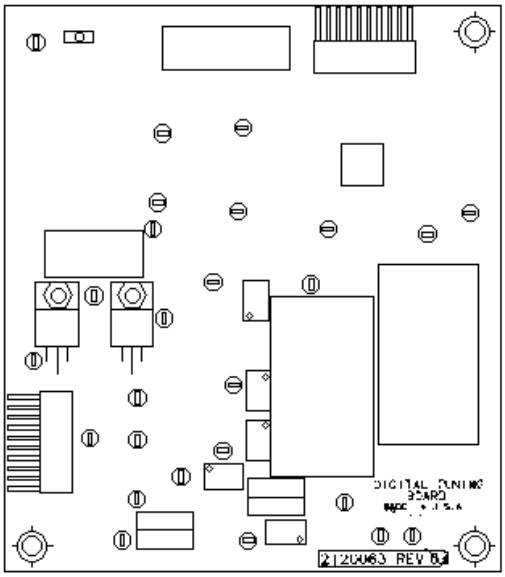


EMC COVER, SCREWS, AND HALF-SHEARS
ILLUSTRATION L4585A

Note

Importance of EMC cover screws - These fourteen screws help the EMC cover prevent electromagnetic leakage; do not misplace any of them.

3. With the EMC cover removed, disconnect both ribbon cables on the GRAM Digital Tuning Board (see Illustration L4055A).

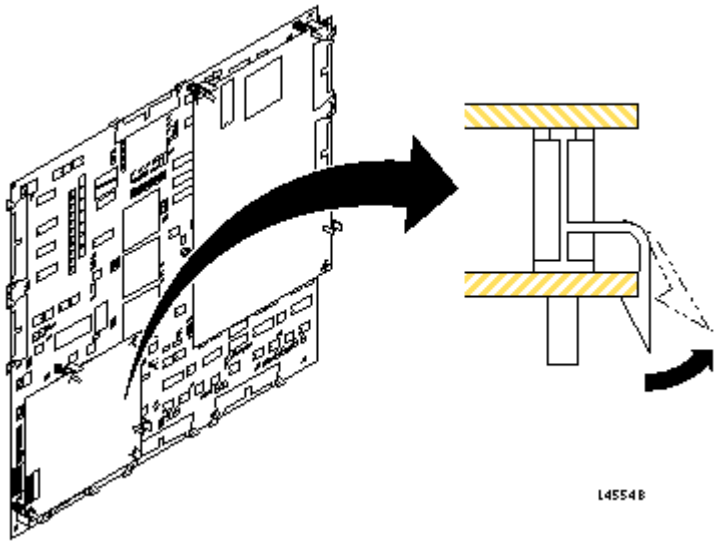


GRAM DIGITAL TUNING BOARD
ILLUSTRATION L4055A

CAUTION

Equipment damage possibility. Do not try to pull off the board. The nylon stand-offs that hold it are quite brittle and may break. Push the top of each stand-off one at a time. If any of them do not push off of the board at first, work on the others iteratively.

4. Carefully push back the three white nylon stand-offs on the GRAM Digital Tuning Board (see Illustration L4554B), one at a time, until all are released. Remove the board, and place it in a static bag for return to the manufacturer.



GRAM DIGITAL TUNING BOARD STAND-OFFS
ILLUSTRATION 4554B

5. Remove the replacement tuning board from its static bag, and carefully attach to the GRAM. Attach the ribbon cables to the new board at the appropriate J Connector.

6. Reattach the EMC cover. Be sure that the half-shears (small bumps) between the screw holes face in, toward the cabinet, not out. It is important to the electromagnetic integrity of the cover that you account for all fourteen screws. Tighten them just to snug. See Illustration L4585A.

7. Replace front cover on cabinet.

5- FUNCTIONAL CHECKS REQUIRED

1. Procedure for GRAM Tuning (Digital Tuning Bd).

Note

Alternate proprietary procedure is available for GE use, and to sites with a valid Advanced Service Package Limited License. See the procedure for GRAM Tuning - (Proprietary).

2. Check shim using procedure for LVShim Check; shim if necessary.

3. Check gradient calibration using procedure for Gradient Calibration (DQA Version) or alternate proprietary procedure for SPT Quick Head Check; calibrate if necessary.

For Systems With EPI Option:

4. Perform procedure for EPI Bandpass Asymmetry Correction Characterization.

5. Perform EPI B_0 Dither and Group Delay Calibrations located in Rev 1 of paper manual *Direction 2138247, Signa Horizon Supplemental Service Methods*.

REVISION HISTORY

REV	DATE	AUTHOR	PRIMARY REASONS FOR CHANGE
0	May 22, 1998	J. Saperstein	Initial conversion from Toolbook to Word
1	May 21, 1999	SM Atladottir	Updated Procedure References for New GUI