Film-Tech

The information contained in this Adobe Acrobat pdf file is provided at your own risk and good judgment.

These manuals are designed to facilitate the exchange of information related to cinema projection and film handling, with no warranties nor obligations from the authors, for qualified field service engineers.

If you are not a qualified technician, please make no adjustments to anything you may read about in these Adobe manual downloads.

www.film-tech.com

L C R
NO L EXTRA
NO R EXTRA

THX® MONITOR 3417
Instruction Manual

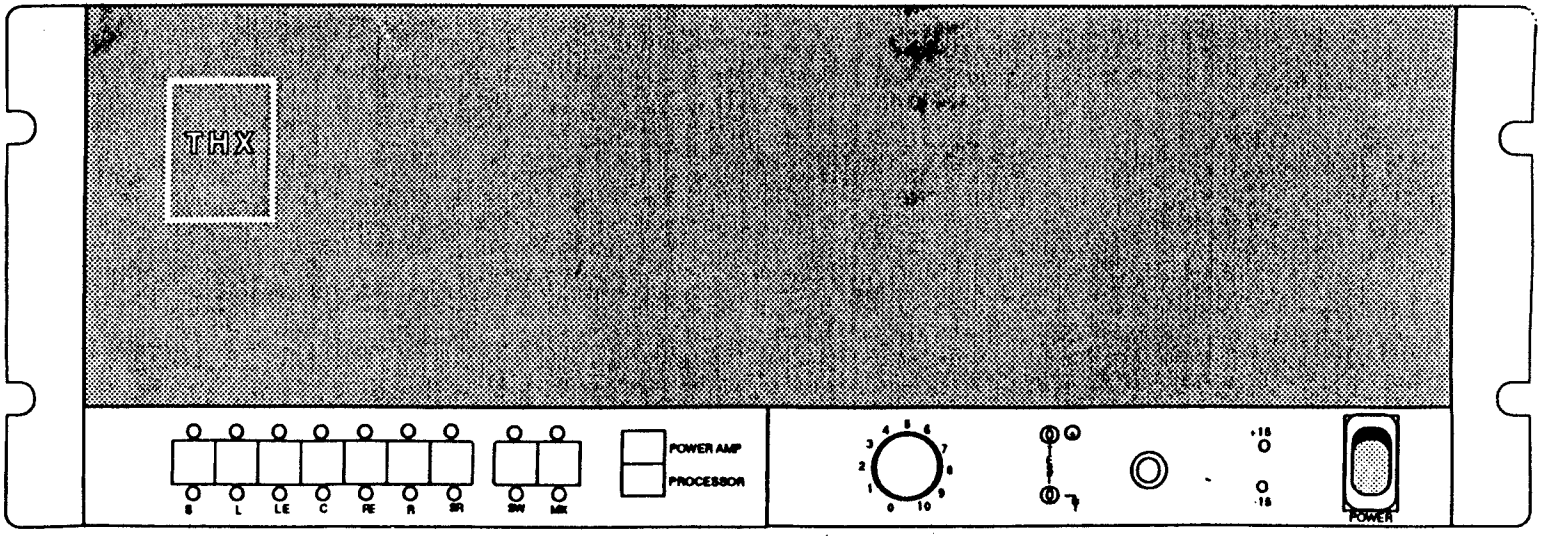


TABLE OF CONTENTS

page

Monitor Description 1
Installation 1
Operation 2
Initial Adjustments 3

LIST OF DIAGRAMS:

Overall THX Sound System Diagram 4
Single Channel Diagram of Monitor 3417 5
Diagram of Rear Terminal Area 6
Monitor Input Cable Pin-out 7
Monitor 3417 Interconnection with Dolby® CP 200 8
Monitor 3417 Interconnection with Dolby® CP55 9
Inputs From Processor Outputs 10
Interconnection with Balanced and Unbalanced Power Amplifiers 11
Monitor Switcher Inputs 12
Subwoofer and Surround Connections 13
Insert Points and Utility Outputs 14
Initial Level Adjustments 15
Monitor 3417 16
Front Panel Switching 17
Front Panel Outputs and Controls 18

Warranty 19

Monitor Description

A modern Motion picture theatre audio system is generally characterized as two sub-systems, the "A" chain, and"B" chain. The "A" chain consists of the optical, magnetic, and non sync signal sources and their channel processing. The "B" chain consists of the master fader, auditorium equalization, power amplification, speaker systems, and auditorium environment.

Utilizing years of experience, and research in theatre sound, Lucasfilm Ltd. has designed many practical and innovative features into Monitor 3417. The monitor houses and powers up to six THX Sound System crossover cards, and provides switching capability allowing selection of any channel's output from the processor or power amplifier output through the internal high quality speaker system.

Installation of the monitor is made quick and easy by the terminal connection system on the rear panel. This connection design insures an installation free from the all-to-common ground loops found in theatre sound systems. A shielded cable with a D 25 connector is also provided to connect the cinema processors output to the monitor input.

The THX Sound System imposes a high frequency boost to overcome screen loss, equalize the constant directivity horn system, and meet the standard "House Curve" as described in ISO 2969 curve X. Unlike other monitors, the 3417's internal power amplifier has a tailored frequency response to compensate for this high frequency boost enabling the operator to monitor a natural sounding signal.

Installation

Location

For ease of installation, operation, and safety, metal equipment racks must be used. The monitor should be located approximately 4 feet off the floor. Where all the sound equipment is in one rack, the monitor should be placed just below the sound processor. Where multiple racks are used, the monitor should be located in the power amplifier rack.

Wiring

Standard wiring practice should be followed throughout the installation of the THX Sound System. Diagrams have been provided which show wiring details for various installation options for the 3417 Monitor. Please refer to these diagrams which are located at the back of this manual. If specific installation problems arise call the THX office for assistance.

Grounding

Grounding design is particularly important in planning a sound system installation. To promote a noise-free system, and to ensure life safety, an earth ground must be provided to the sound system metal rack unit. This should be at least a #10 stranded insulated wire and should terminate securely at the metal rack structure. Each piece of equipment in the signal chain should have its chassis grounded to this ground source. The monitor 3417 has been equipped with a "chassis ground" screw, and that is where the ground is to be attached.

Installations using Dolby CP-200

The ground straps located on the power supplies and MPU chassis should be removed prior to installation into the metal sound racks.

Installations that do not use the Le & Re speaker positions, require the CN 160 card to be modified. The pass band of the sub woofer channel must be extended to cover the band that is regularly covered by the Le & Re speakers. To accomplish this, remove C139 & C140 from the CN 160 card. Refer to the Dolby CP-200 manual for component location. Exercise care in the removal, as this action can damage the card substrate and trace structure. When in doubt wait for the THX technician to arrive for the certification check and remove the components with his help.

Operation

The THX Booth Monitor 3417 performs two functions: 1) Houses the THX crossover cards, 2) Provides the monitoring of the processor and power amplifiers.

Immediately after turning on the power to the Monitor 3417 three LEDs will light, the positive and negative power supply voltage indicators, and the indicator above the MIX button. This is the normal "wake-up" position for the monitor, and indicates that the power supply is operating correctly and a MIX of the Left, Center, and Right is being monitored from the power amplifiers.

Operation is simple. One of five screen channels, Left Surround, Right Surround, Sub Woofer, or a mix of Left, Center, and Right is selected to be monitored by pushing the appropriate button on the front panel. The position in the signal chain where that channel will be monitored is selected by pushing either the PROCESSOR output or the POWER AMP output button. A volume control varies the level of the speaker system in the monitor, the headphones output, and an external speaker output.

The switching function makes Monitor 3417 useful as a troubleshooting tool. If, for example, there is no sound coming from the center channel speaker system, the monitor can be used to help determine the source of the problem in the following way: Check the center (C) channel PROCESSOR output. If there is signal at that point, then check the POWER AMP output of that channel. If there is signal at that point then the most likely thing to check next would be the wiring between the center channel power amplifiers and the center channel speaker system.

Setup and future adjustment of the system is facilitated by the TEST output on the front panel which follows the switching selection and provides a convenient test point for a voltmeter, oscilloscope, or other test gear.

Refer to the following diagrams for an explanation of crossover card placement and front panel controls: THX BOOTH MONITOR, FRONT PANEL SWITCHING, FRONT PANEL OUTPUTS AND CONTROLS.

Initial Adjustments

The following adjustments should only be made after the power amplifier output levels have been set (refer to INITIAL LEVEL ADJUSTMENTS diagram):

1) Send pink noise from the processor to the Monitor 3417 processor inputs which will be utilized in your installation.

2) Remove the two screws which hold the switch panel faceplate in place and remove the faceplate.

3) Measure the level at one of the monitor inputs.

4) Adjust the TEST line level output trimpot to achieve the same level at the TEST jacks on the front panel (unity gain).

5) With the monitor in the POWER AMP mode, adjust the SUBWOOFER, SURROUND RIGHT, and SURROUND LEFT line output trimpots to achieve the same level at the TEST jacks on the front panel when their respective channels are selected.

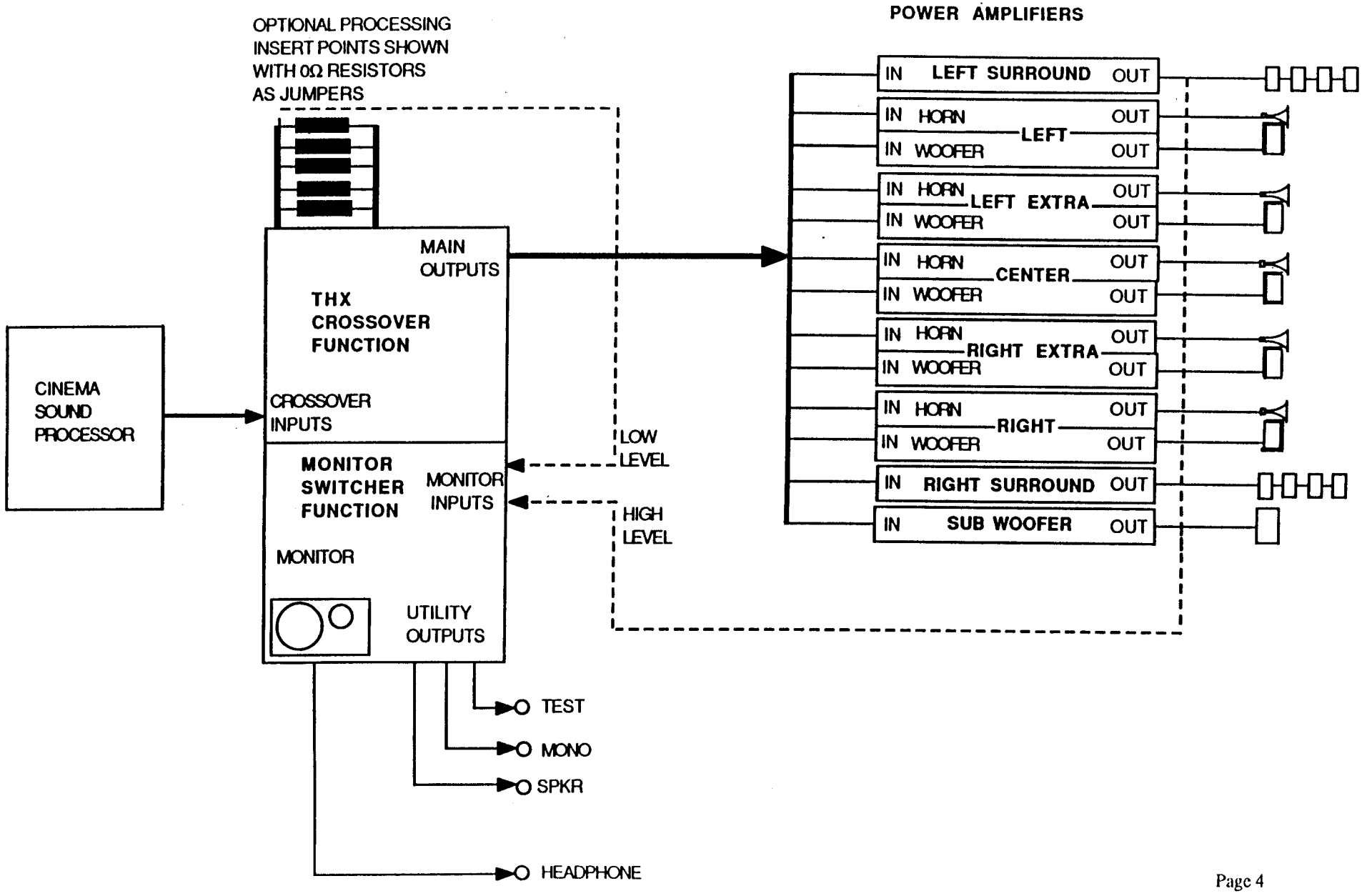
6) Connect a real time analyzer to the TEST jacks.

7) Select the LEFT channel and adjust the LEFT HI and LOW trimpots so that the level and spectral balance, as read on the analyzer, does not change when the mode is switched from POWER AMP to PROCESSOR and back again.

8) Repeat step 7 with the LEFT EXTRA (if used), CENTER, RIGHT EXTRA (if used), and RIGHT channels.

9) Adjust the Mono output trimpot to the correct level for the use to which it will be put.

OVERALL THX SOUND SYSTEM DIAGRAM



SINGLE CHANNEL DIAGRAM OF MONITOR 3417

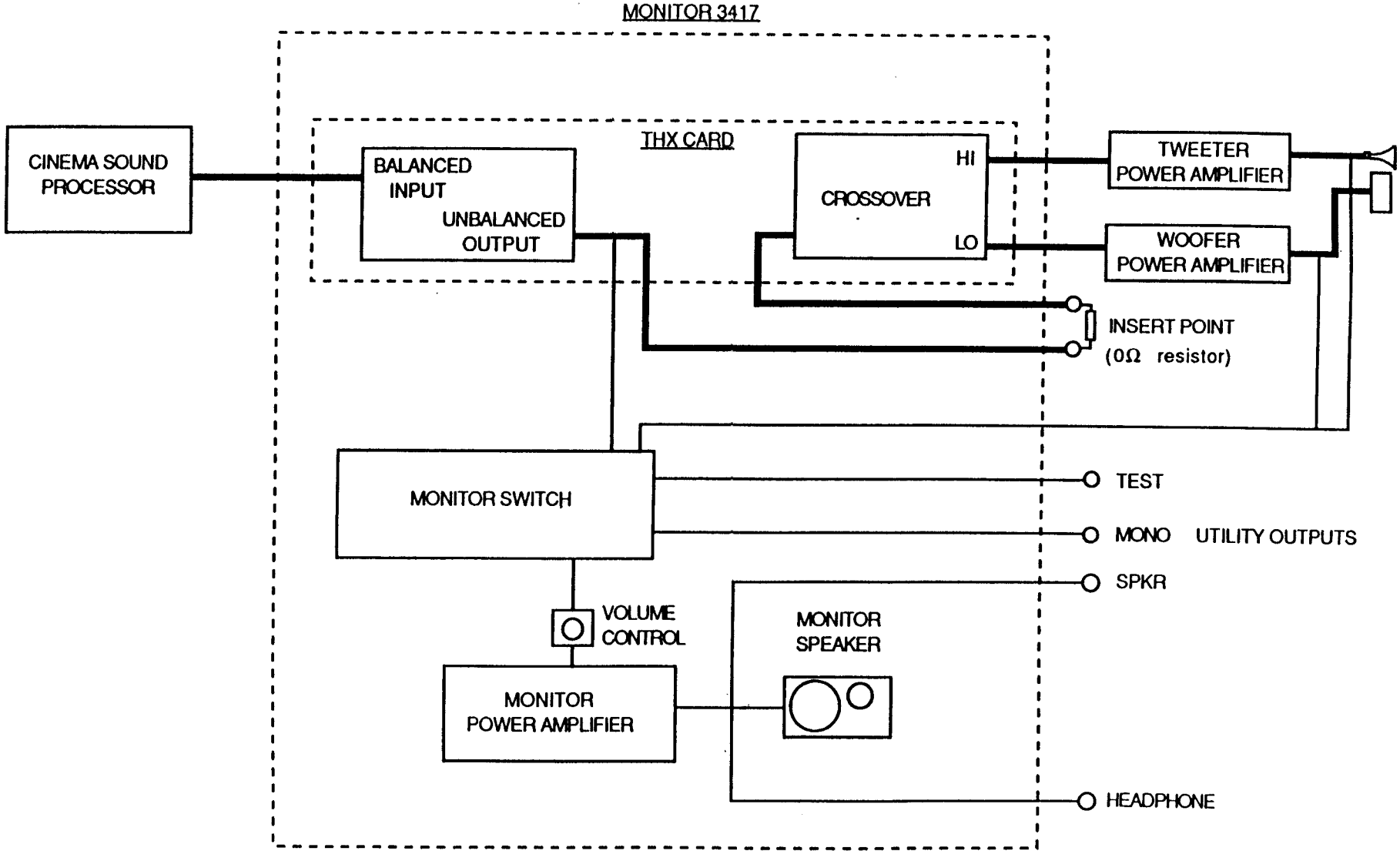
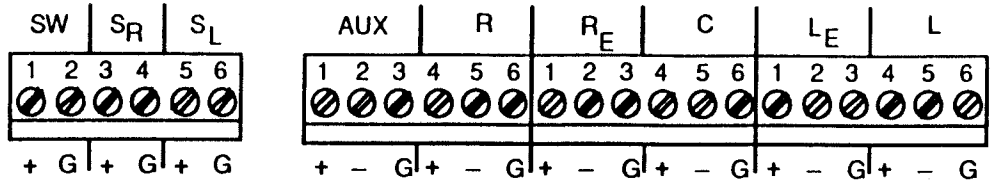


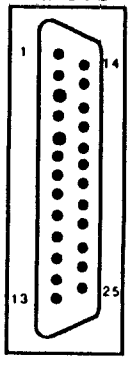
DIAGRAM OF REAR TERMINAL AREA

For detailed illustration of interconnection see following pages.

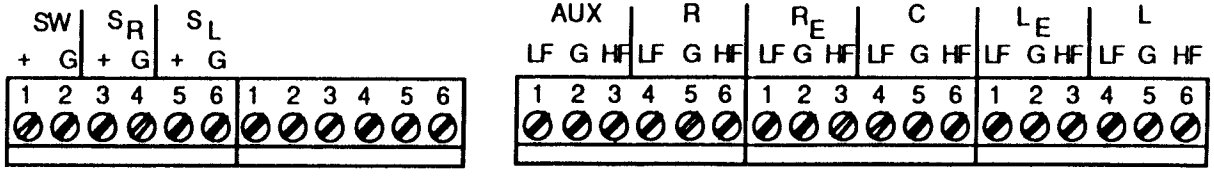


MAIN INPUTS FROM PROCESSOR OUTPUTS

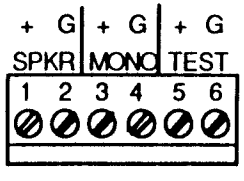
PARALLEL INPUTS



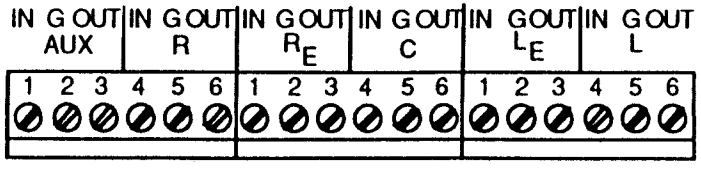
MAIN OUTPUTS TO POWER AMPLIFIER INPUTS



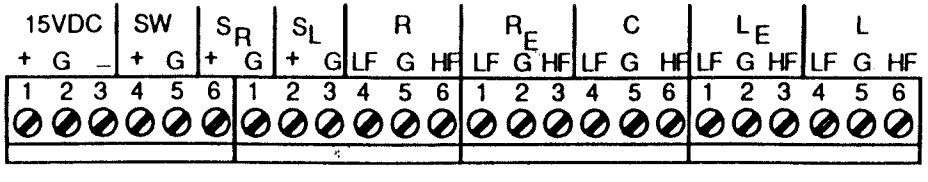
UTILITY OUTPUTS



CROSS-OVER CARD INSERT POINTS

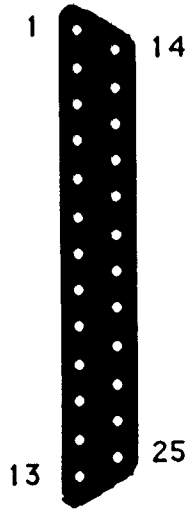


MONITOR AMPLIFIER INPUTS FROM POWER AMP OUTPUTS



Monitor input cable pin-out

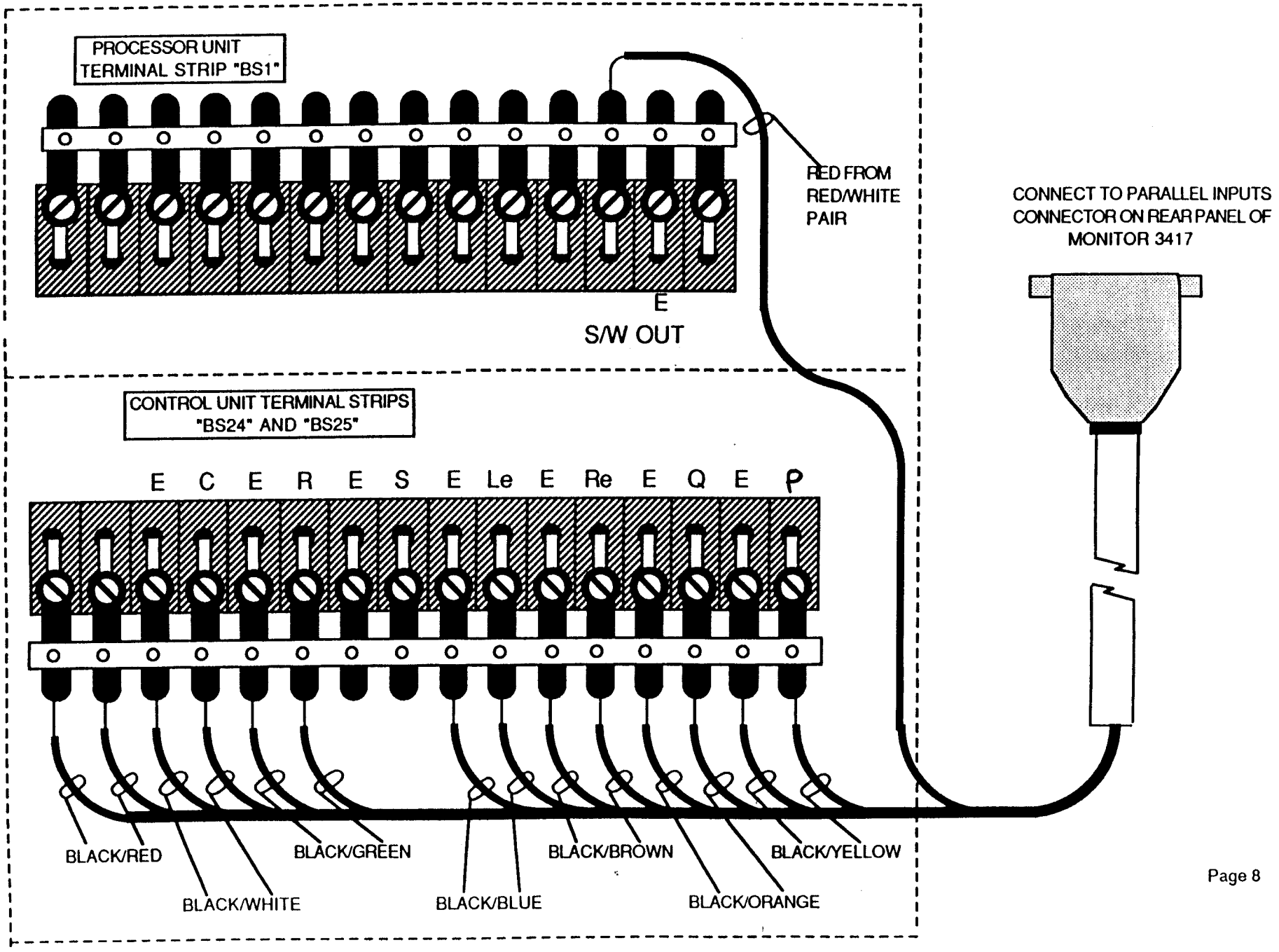
"D 25" Input Connector



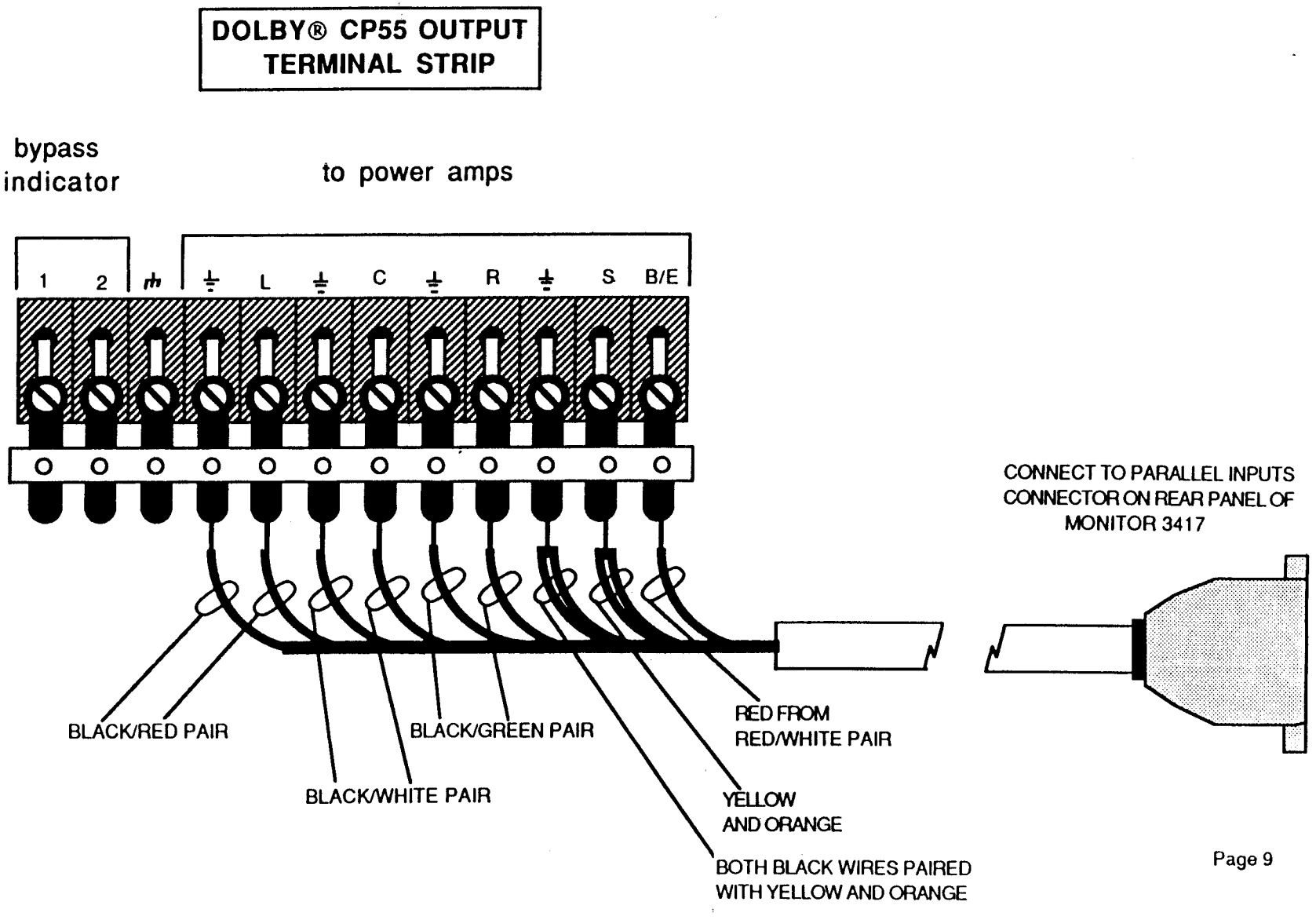
Note: For Mono Surrounds using one amplifier, connect both the plus wires of the surround pairs to the processor surround output.

Channel	Pin #	Wire Color
Left +	2	Red
Left -	14	Black
Left Extra +	16	Blue
Left Extra -	3	Black
Center +	5	White
Center -	17	Black
Right Extra +	19	Brown
Right Extra -	6	Black
Right +	8	Green
Right -	20	Black
Surround Left +	23	Yellow
Surround Left -	10	Shield
Surround Right +	24	Orange
Surround Right -	11	Shield
Sub Woofer+	25	Red
Sub Woofer-	12	Shield

MONITOR 3417 INTERCONNECTION WITH DOLBY® CP200 (STEREO SURROUNDS)



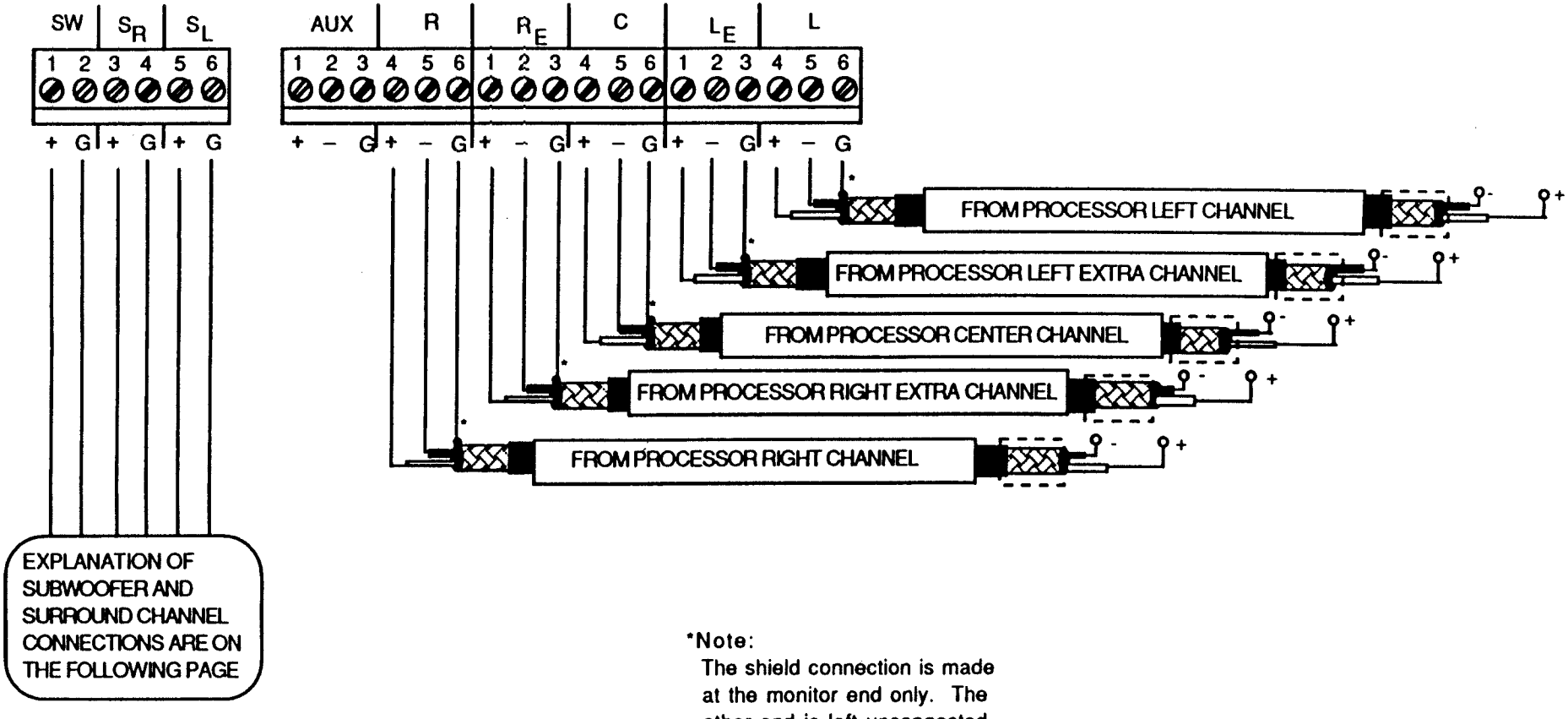
MONITOR 3417 INTERCONNECTION WITH DOLBY® CP55 PROCESSOR



INPUTS FROM PROCESSOR OUTPUTS

(When not using THX "parallel inputs"cable)

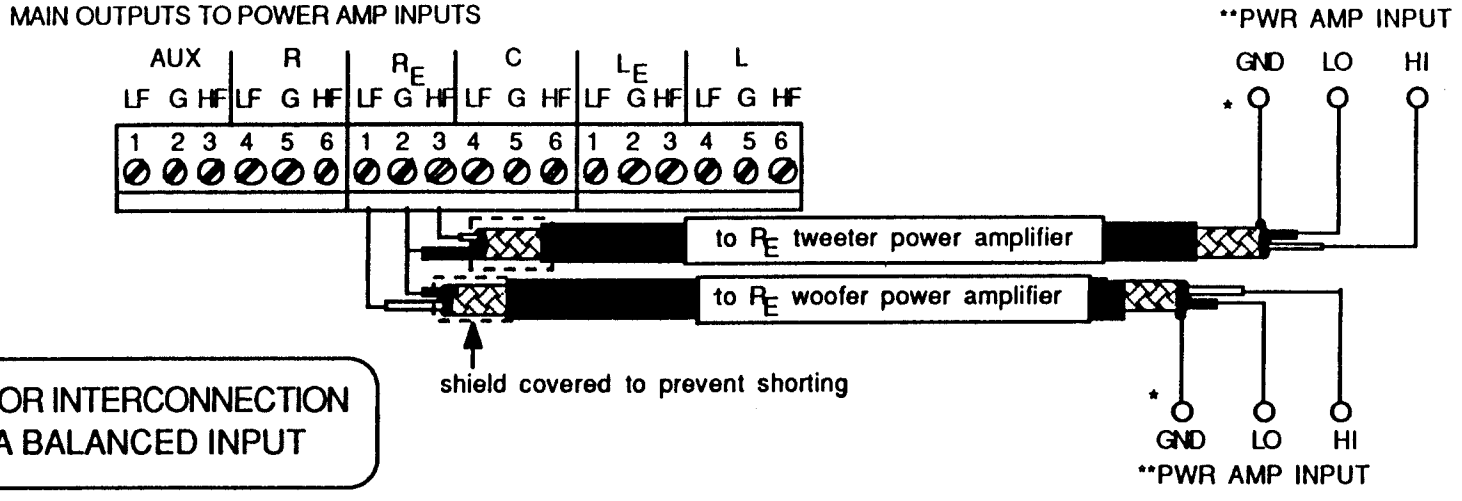
MAIN INPUTS FROM PROCESSOR OUTPUTS



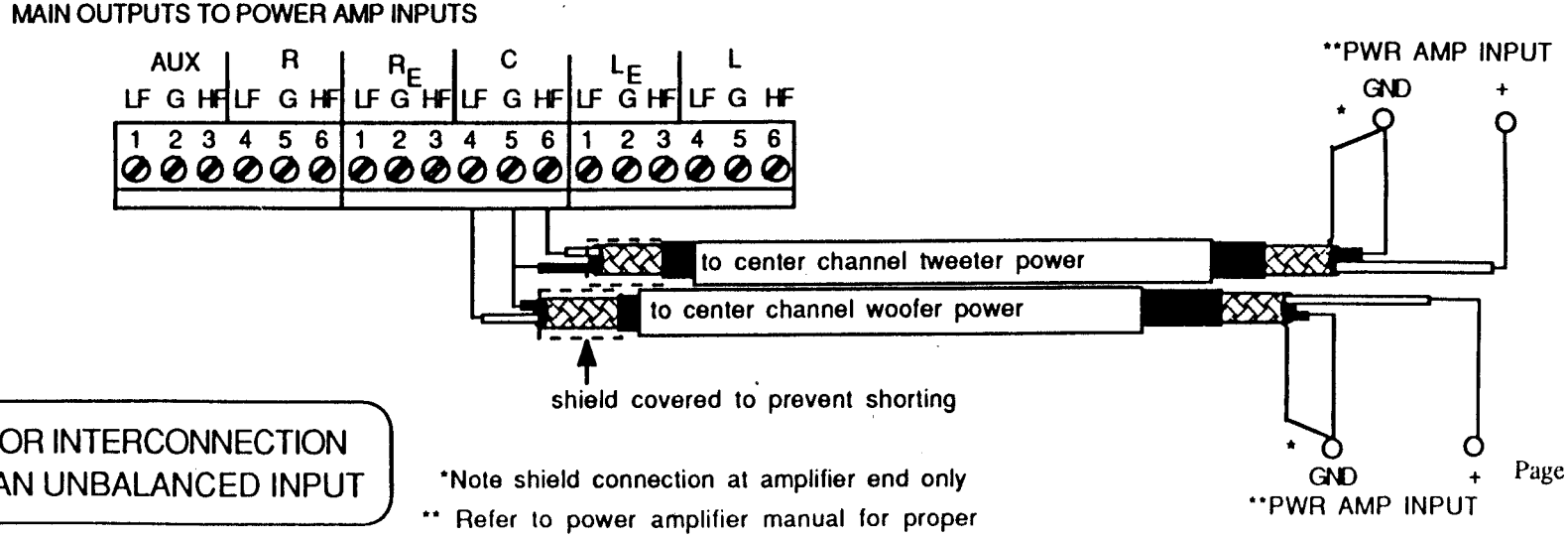
EXPLANATION OF SUBWOOFER AND SURROUND CHANNEL CONNECTIONS ARE ON THE FOLLOWING PAGE

*Note:
The shield connection is made at the monitor end only. The other end is left unconnected and unexposed to prevent accidental shorting to ground or signal sources.

INTERCONNECTION WITH BALANCED AND UNBALANCED POWER AMPLIFIER INPUTS



MONITOR INTERCONNECTION WITH A BALANCED INPUT

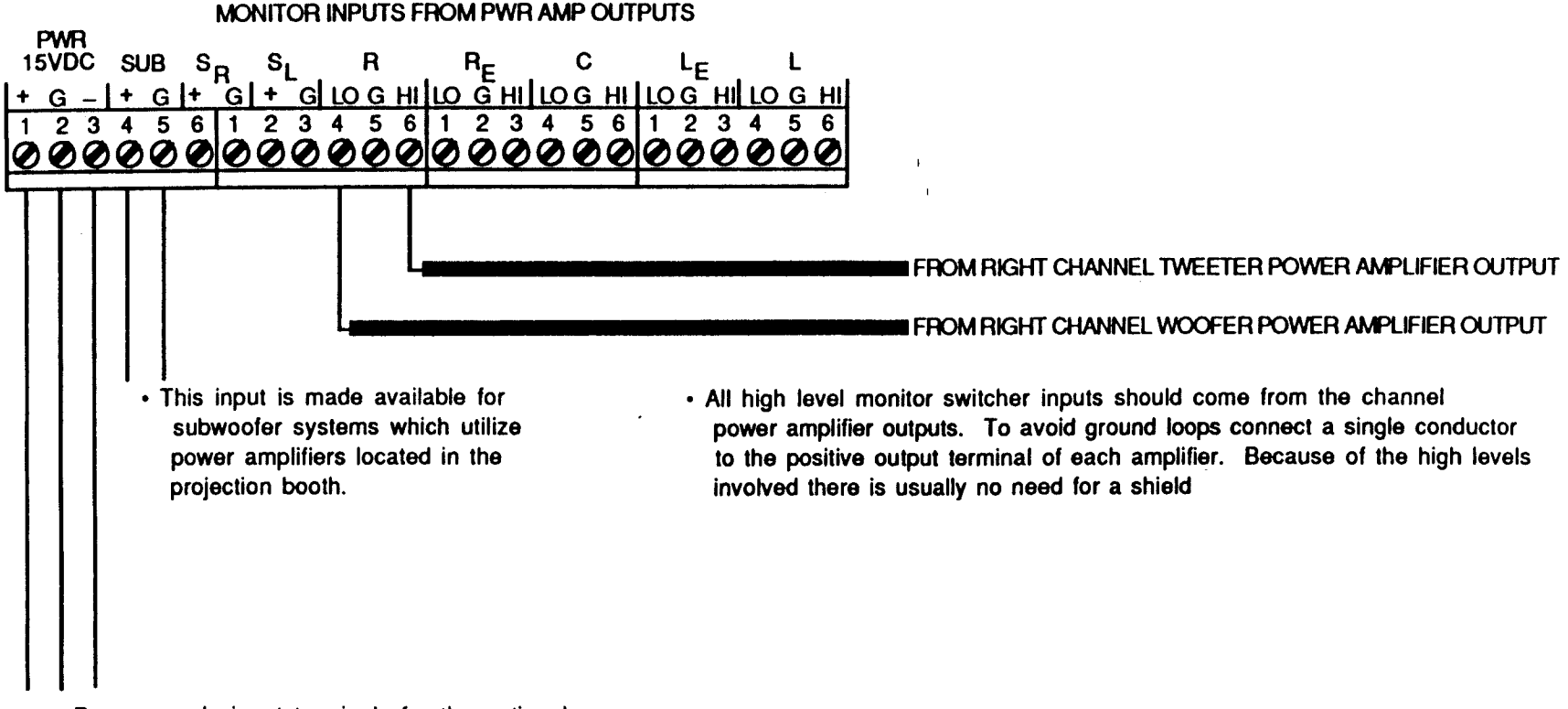


MONITOR INTERCONNECTION WITH AN UNBALANCED INPUT

*Note shield connection at amplifier end only

** Refer to power amplifier manual for proper connector configuration.

MONITOR SWITCHER INPUTS

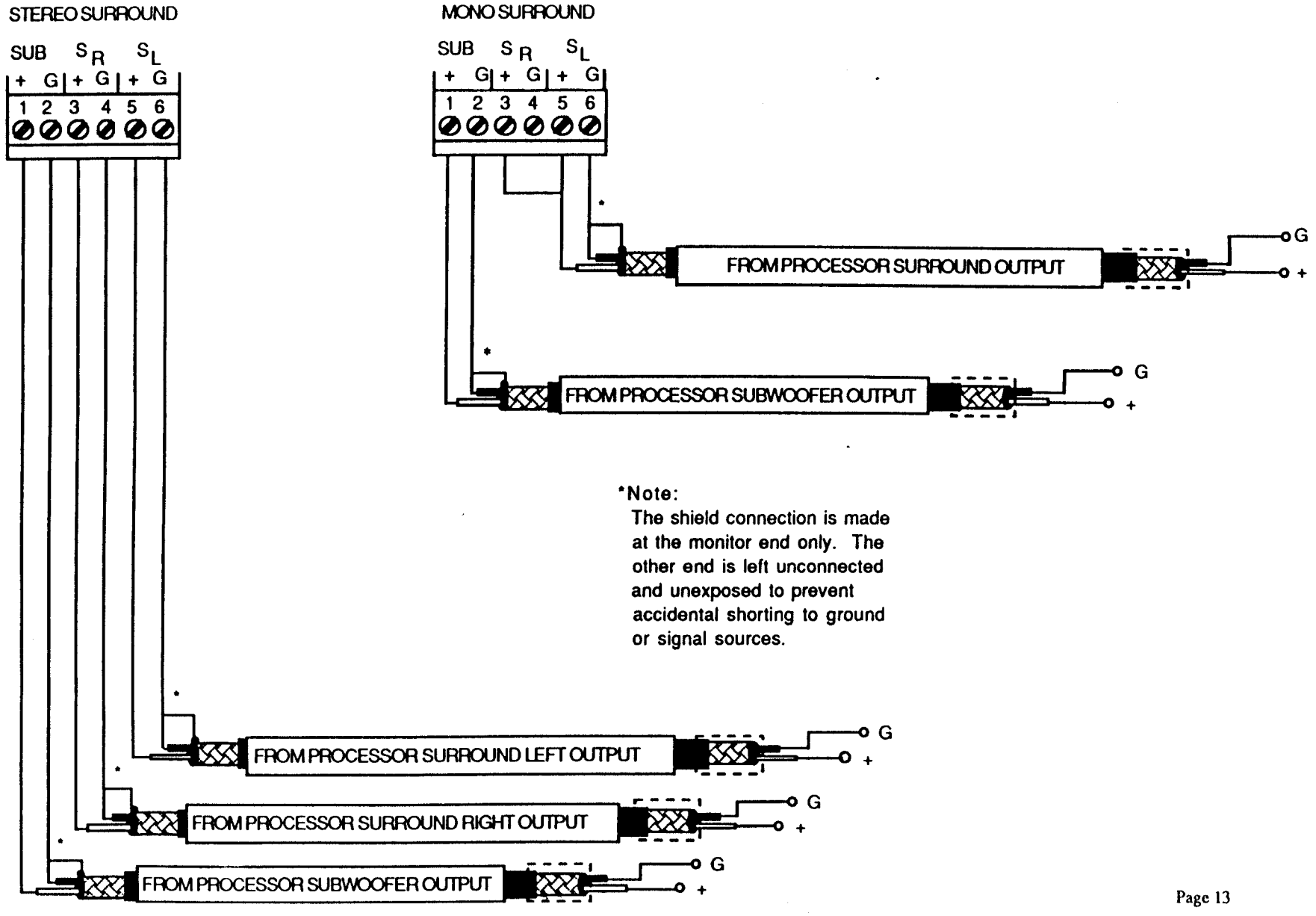


- This input is made available for subwoofer systems which utilize power amplifiers located in the projection booth.

- All high level monitor switcher inputs should come from the channel power amplifier outputs. To avoid ground loops connect a single conductor to the positive output terminal of each amplifier. Because of the high levels involved there is usually no need for a shield

- Power supply input terminals for the optional back-up power supply.
  (check with THX for availability)

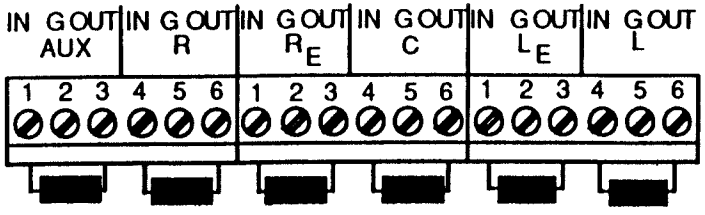
SUBWOOFER AND SURROUND CONNECTIONS



*Note:
The shield connection is made at the monitor end only. The other end is left unconnected and unexposed to prevent accidental shorting to ground or signal sources.

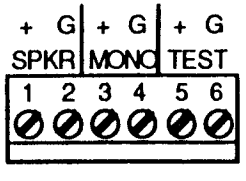
INSERT POINTS AND UTILITY OUTPUTS

CROSS-OVER CARD INSERT POINTS



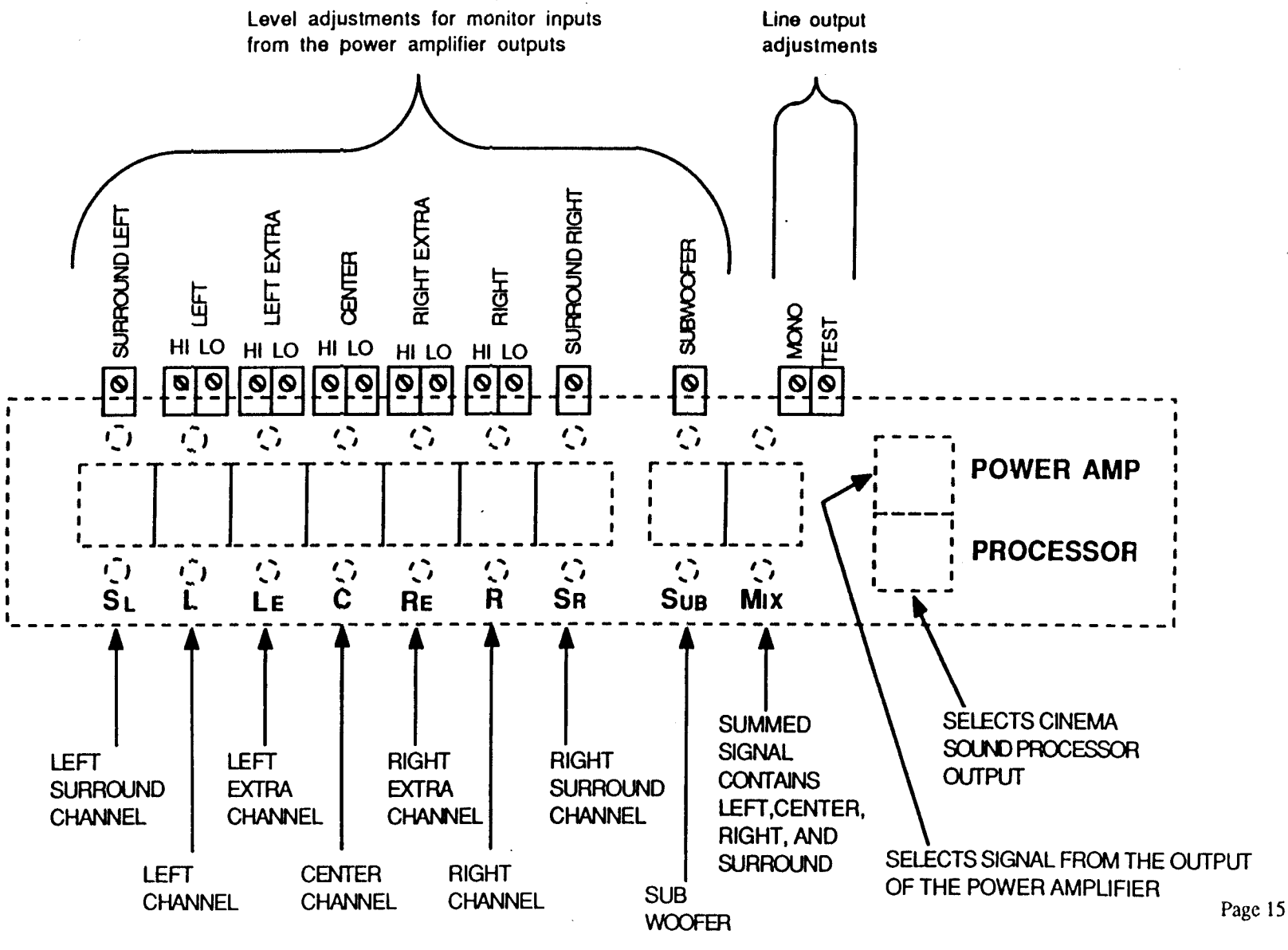
- Unbalanced insert points optional processing.
- all insert points are shipped with 0Ω resistor jumpers.

UTILITY OUTPUTS



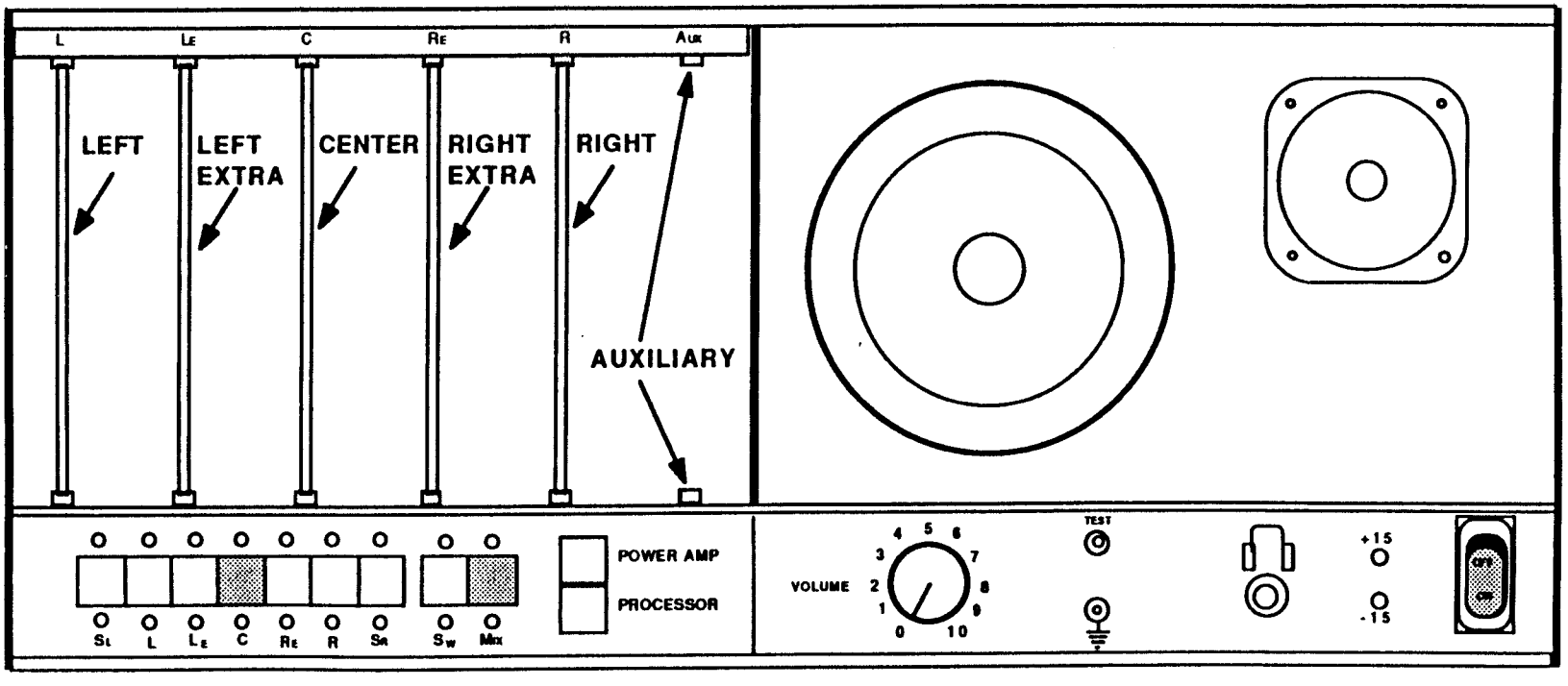
- The SPKR output is designed for an 8Ω external speaker load. This output follows the monitor switching and is controlled by the volume control on the front panel. It is meant to be used for a remote monitoring speaker.
- The MONO output is the summed signals from the left, center, right, and surround channels. This line level output does not follow the monitor switching and is not controlled by the volume control on the front panel. It is meant to drive an external amplifier for remote monitoring or a system for the hearing impaired.
- The TEST output is a unity gain output. It provides a test signal which follows the monitor switching and may be used for troubleshooting or level testing using external test gear. This output is not controlled by the volume control on the front panel.

INITIAL LEVEL ADJUSTMENTS



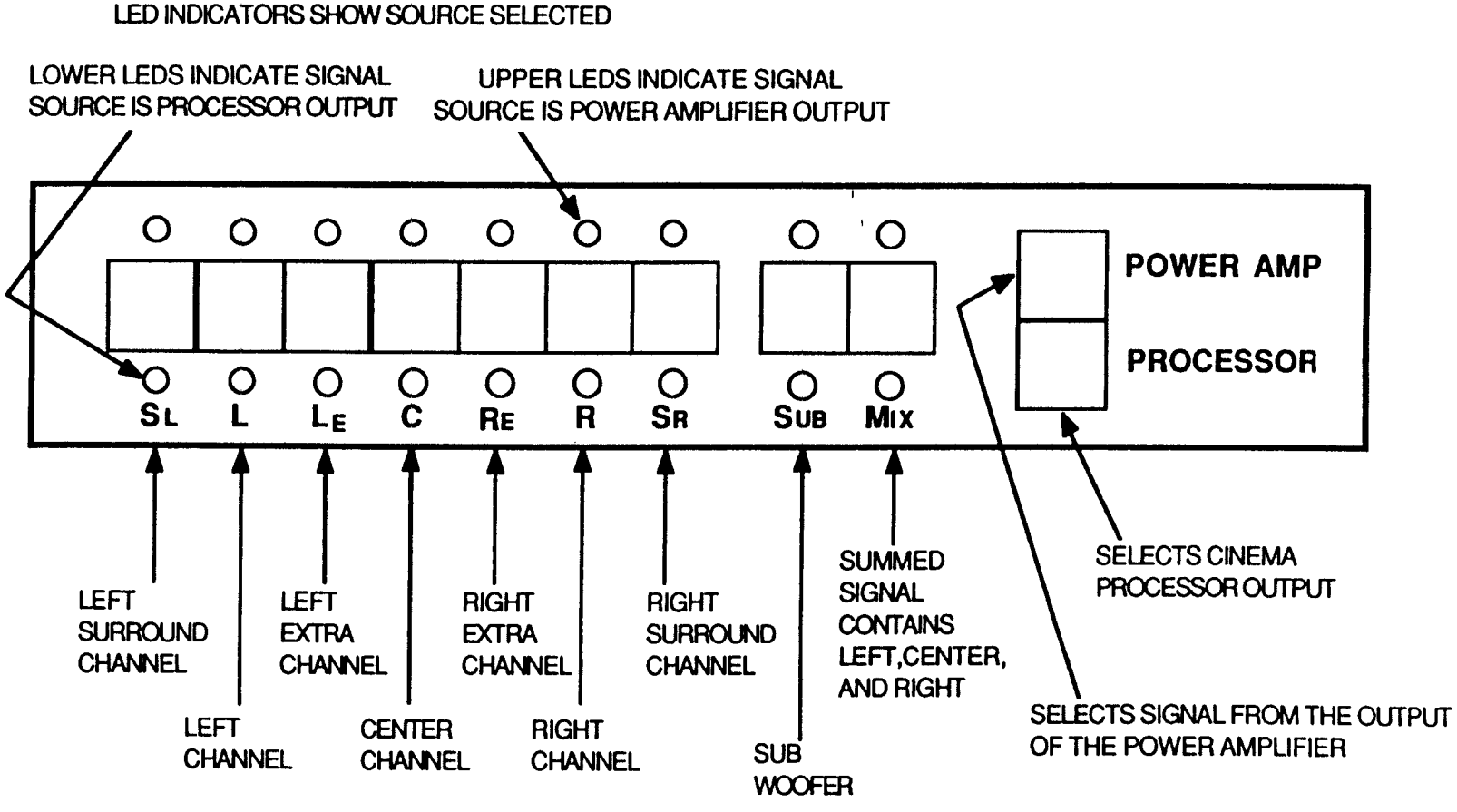
MONITOR 3417

CROSSOVER CARD LOCATIONS

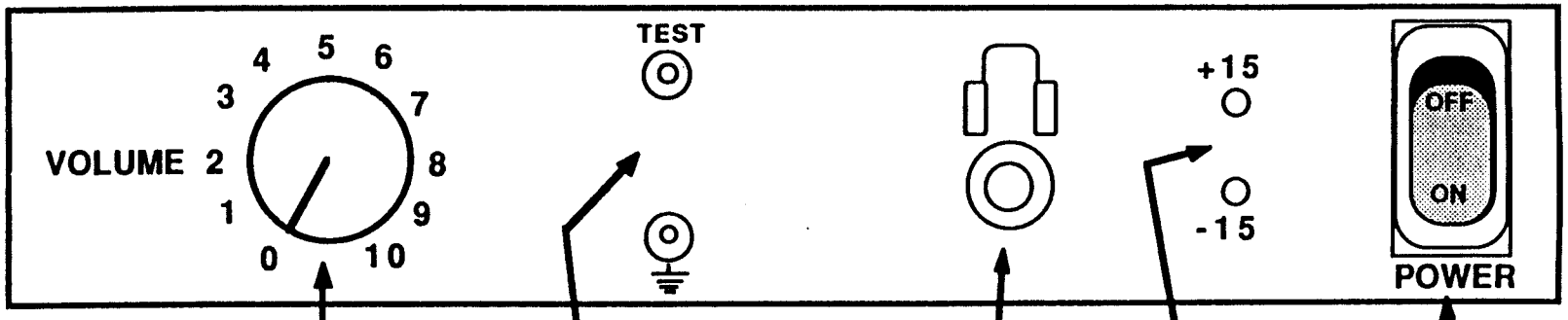


(FRONT COVER REMOVED)

FRONT PANEL SWITCHING



FRONT PANEL OUTPUTS AND CONTROLS



VOLUME CONTROL FOR SPEAKER AND HEADPHONE OUTPUT

LINE LEVEL SIGNAL WHICH FOLLOWS SWITCHING. THIS OUTPUT PROVIDED AS A SIGNAL FOR VOLTMETER, OSCILLOSCOPE, RTA OR OTHER TEST GEAR.

HEADPHONE OUTPUT

+ AND - 15V POWER SUPPLY INDICATOR LEDS

ON-OFF SWITCH

Warranty

Equipment manufactured by THX Sound System Program is warranted against defects in material and workmanship for a period of one year from the date of shipment. There are no other warranties expressed or implied, nor merchantability or fitness for a particular purpose.

During the warranty period THX Sound System Program will repair or, at its option, replace components which prove to be defective, provided the unit is returned, shipping prepaid, to the manufacturer. Defects caused by modifications, misuse or accidents, and any further damage caused by inadequate packing for service return, are not covered under the terms of the warranty.

Obligations of this warranty are restricted to the repair or replacement of defective parts and under no circumstances shall THX Sound System Program be liable for any other damages, either direct or consequential.

All returns for repair must be issued a return authorization number from the THX Sound System Program office prior to shipment . Call (415) 662 1900 for an authorization number and shipping instructions.

Underwriting organizations require, and common sense dictates, the following WARNING: To prevent fire or shock hazard, do not expose this appliance to rain or moisture.

Contents copyright © 1987 LFL Ltd. THX® is a registered trademark of LFL Ltd. All rights reserved. The information and material contained in this Manuaal concerning the THX Sound System and the THX Monitor 3417 is proprietary to Lucasfilm LTd. and is to be disclosed and used strictly in accordance with applicable licenses. The THX Sound System was awarded U.S. Patent Number 4,569,076. Canadian Patent Number 1,215,326. Other foreign patents pending.

Dolby® is a registered trademark of Dolby Laboratories, Inc.

First Edition December, 1987.

THX®Sound System Program
Theatre Operations
Lucasfilm Ltd.

Mailing Address: Post Office Box 2009
San Rafael, CA 94912-2009 USA

Shipping Address: 5858 Lucas Valley Road
Nicasio, CA 94946 USA

Telephone: 415-662-1900
Telex: 330499 LFL SRFL
Telecopier: 415-662-2186