ESPRIT
PROJECTION SYSTEMS

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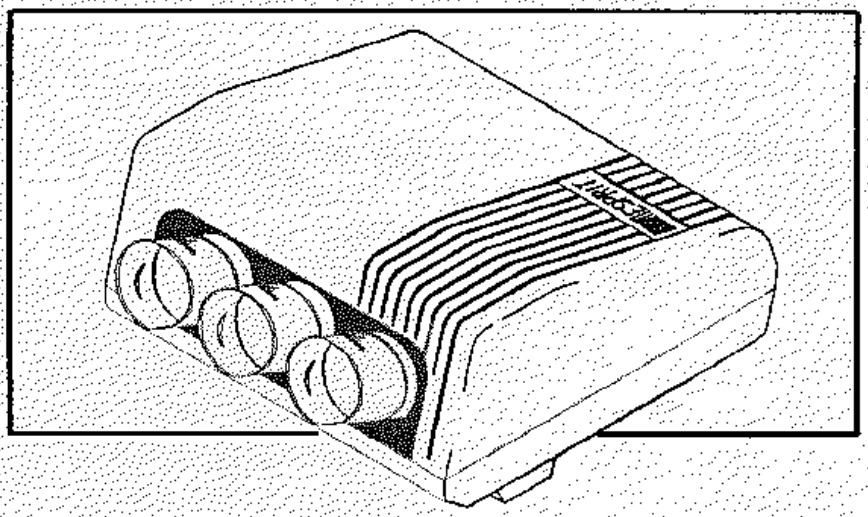

ESPRIT SERIES 4000D / 4000G OPERATION MANUAL

MODELS 69195, 69196, 69238, 69239, 69240

JULY 1992 REVISION C
AMPRO P/N 71063

Before operating this Video/Computer Graphics Display System, please read this manual carefully and completely. This manual will provide you with a full understanding of the many functions and special features, and the necessary instructions for adjustments and operation of this equipment.

Please follow all notes and warnings.

Made in the U.S.A.

QUICK REFERENCE

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TRADEMARKS:®

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Chapter 1

INTRODUCTION / FEATURES / SPECIFICATIONS

The ESPRIT 4000 Series offers superior resolution of 1600 x 1600 lines. Its three proprietary 9" liquid-coupled lenses, with "Scheimpflug" focal plane adjustment and high speed amplifiers that reproduce pixels at computer clock rates to 180MHz establish a new standard for overall sharpness and precise edge-to-edge resolution. In addition with 1200 lumens, makes the ESPRIT 4000 Series the brightest, sharpest, highest performance projector in the industry.

The ESPRIT 4000 Series Computer Data / Graphics display system has as standard equipment many functions not found in even the most expensive systems. The ESPRIT **4000Data** may be upgraded to the model **4000Graphics** as a result of the modular design concept, so as that your display system can grow with your requirements. Some of the innovations offered by the ESPRIT 4000D and 4000G are:

1.1 . . . . . FEATURES:

1.1.1 . . . . . AUTOLOCK:

The autolock feature is the ability to automatically lock the horizontal and vertical circuits to the input sync signals. This capability is invaluable in any system where more than one signal will be utilized.

1.1.2 . . . . .REMOTE CONTROL:

The remote control is extremely user friendly, for all ESPRIT Computer Data/Graphics display systems. The microprocessor used in the system allows a vast array of information to be controlled by the remote control. Within the standard remote control is a large 16 X 2 character LCD read-out which gives the operating and diagnostics status of the unit. The remote control is available in three versions: a full function hard-wired with an LCD read-out, a infrared TECHNICIAN, and an infrared EXECUTIVE with On/Off/Standby and eight channel selection only.

1.1.3 . . . . .STORE/RECALL:

The ESPRIT series of Computer Data/Graphics display systems automatically stores and recalls each of the image, raster alignment, convergence, phasing settings, picture settings, mode of operation and all registration settings via the remote control for ANALOG RGB, TTL, and VIDEO inputs. Any combination of up to **50** ANALOG RGB, TTL and VIDEO inputs may be stored in memory and recalled by the remote control.

1.1.4 . . . . . SELF DIAGNOSTIC:

The system constantly monitors all major voltages and signals and provides a plain English operational status on a large 16 x 2 LCD display located on the standard hard -wired remote control.

1.1.5 . . . . .RS-232:

The ESPRIT series Computer Data/Graphics display systems offers full duplex RS-232 communications and networking capability. The systems can be controlled from the remote control, a computer keyboard or through a modem using RS-232. Systems can be looped through so that multiple systems can be addressed individually or globally (as one) and controlled by one central source.

1.1.6 . . . . .INTERNAL HELP SCREENS:

The software incorporated into the ESPRIT system allows the user the capability of using the internal help system for instruction on the step-by-step setup, alignment,registration, operation and special features of the ESPRIT Computer Data/Graphics display system.

1.1.7 . . . . . DIGITAL REGISTRATION:

The ESPRIT system alignment and registration is totally controlled by remote control. The software incorporated in the ESPRIT Computer Data/Graphics display system permits either a controlled (guided) or random static and dynamic convergence of the system. An internal HELP MENU guides the first time user through a step-by step procedure.

All registration settings are channel sensitive, meaning the each individual source may be precisely aligned to its particular parameters.

1.1.7.1 . . . .CONVERGENCE ON GREEN (OPTIONAL):

Convergence on green option provides for the green image all the dynamic registration adjustments normally only available on red and blue. This feature is necessary for applications where extremely precise image alignment is desired, i.e., superimposing multiple projected images to provide extra brightness or jointing multiple projected images side-to-side to form one continuous image.

1.1.7.2 . . . .INTENSITY MODULATION (OPTIONAL):

Intensity modulation allows the contrast and color balance of the top, bottom, left, right and all four quadrants (corners) of the projected image to be adjusted individually.

1.1.8 . . . . .OPTIONAL INPUTS:

1.1.8.1 . . . . QUAD STANDARD/S-VHS (OPTIONAL):

This *optional module* has a built in capability which automatically senses and decodes any of the four international standards of video information that is applied to the composite video input. The auto select capability can be manually overridden if desired via the remote control. Another feature of the Quad Standard Module is the S-VHS input. Selection between the Composite Video input and the S-VHS input is accomplished via the remote control.

1.1.8.2 . . . . CGA/EGA/VGA (OPTIONAL):

The ESPRIT systems have the capability to include an optional CGA/EGA/VGA (TTL module) which includes two standard *nine* pin"D" connectors. Interface cables are available for various VGA inputs. The system will automatically configure itself to accept either CGA or EGA inputs and can be switched to VGA via the remote control.

1.1.8.3 . . . .SECOND ANALOG RGB (OPTIONAL):

The ESPRIT systems have the capability to include an additional Analog RGB and Composite Sync module in place of the above mentioned TTL/VGA module. The second Analog RGB2 module enables you to switch between two separate Analog RGB sources via the remote control.

1.2 . . . . . SPECIFICATIONS:

1.2.1 . . . . . GENERAL:

The ESPRIT 4000D and ESPRIT 4000G are small, light, state-of-the- art systems which are designed to blend with the decor where it is utilized. The systems have built-in mechanical 12° lens offset to facilitate mounting close to the ceiling, which places the systems out of the viewing area.

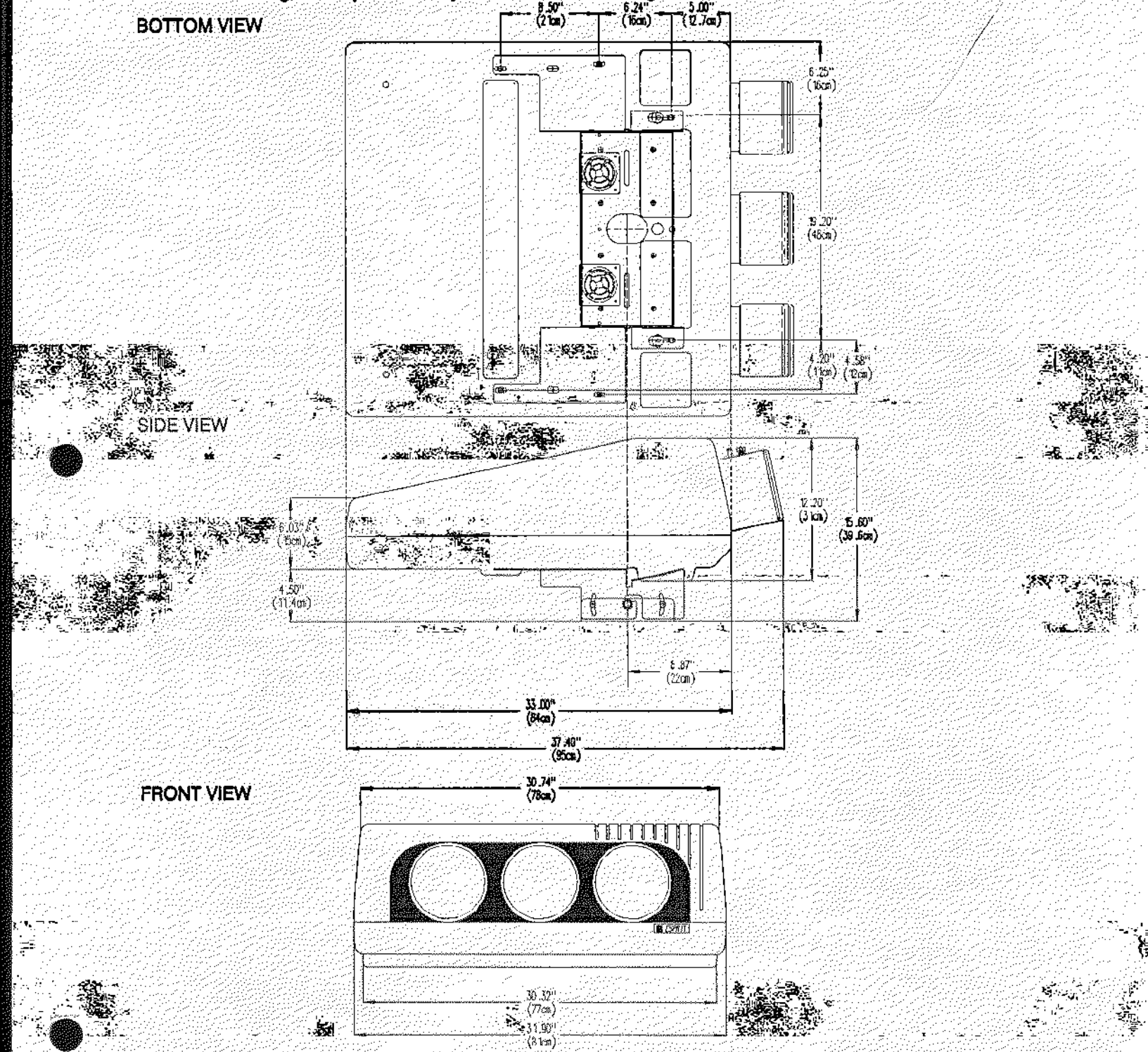


FIGURE 1-1. ESPRIT 4000D AND 4000G BASIC DIMENSIONS

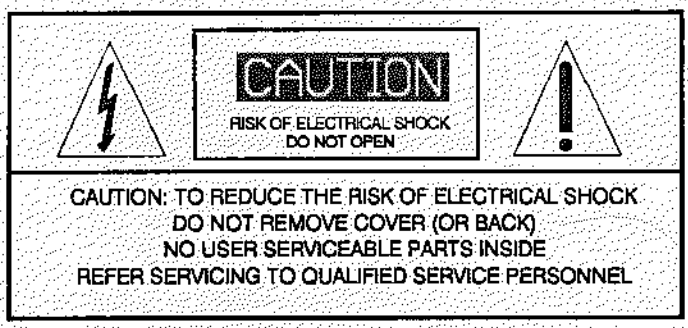
1.2.2 . . . . .SPECIFICATION CHART:

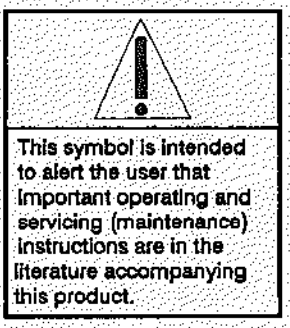
SPECIFICATIONS		ESPRIT 4000D	ESPRIT 4000G
Rated Light Output:	Peaked:	1200 lumens	1000 lumens
	Focused:	600 lumens	500 lumens
CRTs:		Proprietary liquid-cooled/coupled 9" CRTs with Scheimpflug focal plane adjustment for precise oveall edge-to-edge sharpness	
Resolution:	RGB:	1280	1600
	Video:	650	650
Autoscan Frequencies	Horiz.	15KHz to 56KHz	15KHz to 80KHz
	Vert.	40Hz to 150Hz	40Hz to 150Hz
Minimum Retrace:	Horiz.	3μS	
	Vert.	400μS	
Inputs:	Standard:	Analog RGB1	
	Optional:	(1) TTL/VGA (2) Quad Video/S-VHS (3) Analog RGB2 (4) Convergence on green (5) Intensity Modulation (6) HDTV	
Remote Controls:	Standard:	Full function LCD hard-wired remote control with 25ft. (2.6m) cable	
	Optional:	Executive Infrared and Technician Infrared Transmitter/Receiver	
Remote Control Operates:		Brightness, contrast, color, tint, size, phasing, rater aligment, Standby, On/Off, blanking, test patterns and all static and dynamic registration, store and recall of all settings, up to 50 channels of Analog RGB, TTL and Video, Optional 8 channel RS232 switcher	
Feature:		Upgradable to Esprit 4000G	
Special Features:		RS232 communications for computer control, and networking. Four sided blanking with variable picture aspect ratio. Microprocessor-based, modular design for ease of servicing. Operational and error diagnostic LCD display on the remote control. Internal Help menu setup and operating instructions. Remote digital registration.	
Dimensions (H x W x D):		10.8in.(27.4cm) x 32.8in. (83cm) x 36.7in. (93cm)	
Net Weight:		165lb. (74.8kg)	
Shipping Weight:		238lb. (108kg)	
Part Number:		69196,69239,69240	69195,69238
Operating Ambient Temperature:		+32°F to 97°F (0°C to 36°C)	
Operating Ambient Humidity:		20% to 80%, Non-condensing	
Power Requirements:	110Vac	90Vac to 132Vac 60/50Hz	
	220Vac	180Vac to 264Vac 60/50Hz	
Maximum power:		500 Watts	

TABLE 1-1. ESPRIT 4000D/4000G SPECIFICATIONS.

Chapter 2

WARNINGS AND PRECAUTIONS





2.1 . . . . . X-RADIATION:

During the operation of any solid state Data/Graphics display system, the picture tube is a primary source of x-radiation. The projection tubes in ESPRIT systems incorporate leaded glass to safeguard against the leakage of x-rays. ESPRIT projectors comply with all U.S. Department of Health and Human Services rules governing the emission of x-radiation. **FOR CONTINUED X-RADIATION PROTECTION THE USER SHOULD NEVER ATTEMPT TO REPLACE THE PROJECTION TUBES OR OTHER ELECTRONIC COMPONENTS.** Instead, all service to the system should be performed by a qualified service technician.

X-RAY SHIELD
DO NOT REMOVE

"WARNING"

COMPONENTS FOR X-RAY SAFETY ARE CONTAINED IN THIS POWER SUPPLY. RETURN COMPLETE HIGH VOLTAGE MODULES TO FACTORY FOR REPLACEMENT AND CONTINUED SAFETY

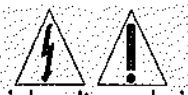
NOTE

THE DEFLECTION YOKES MUST BE FIRMLY AGAINST THE BELL OF THE CRT TO PREVENT X-RADIATION.

"WARNING"

BACKWARD MOVEMENT OF THE YOKE RESULTS IN PICTURE DEGRADATION AND LOSS OF RADIATION PROTECTION

2.2 . . . . . .HIGH VOLTAGE:



The projection display system contains high voltage derived from supplies capable of delivering **LETHAL** quantities of energy. To avoid serious personal injury, only a qualified technician should service and adjust the internal modules within the unit. There are no user serviceable parts in the ESPRIT system. All internal servicing must be performed by a qualified technician.

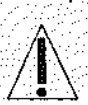
HIGH VOLTAGE

THIS UNIT OPERATES AT 34KV MAX

2.3 . . . . . EXPOSURE TO RAIN OR MOISTURE:

To reduce FIRE or SHOCK HAZARD, never expose the system to rain or moisture. If this happens inadvertently, do not use the system until it has been inspected and/or serviced by a qualified technician.

2.4 . . . . . .PROJECTION TUBES:

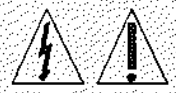


The projection tubes inside the system enclose a high vacuum. Care must be taken to ensure that the system is not dropped or otherwise subject to violent blows.

WARNING

ATTEMPTS TO ALTER THE SEALED FACTORY-SET INTERNAL CONTROLS OR TO CHANGE OTHER SETTINGS NOT SPECIFICALLY DISCUSSED IN THIS MANUAL CAN LEAD TO PERMANENT DAMAGE TO THE PROJECTION SYSTEM AND VOID THE WARRANTY.

2.5 . . . . . .A.C. LINE / ELECTRICAL GROUNDING OF EQUIPMENT:



The ESPRIT projection system is configured for 115V or 230V operation and supplied with one of four standard power cords, as specified at the time the system is ordered. To change configurations, refer to Chapter 5, section 5.7, page 5-8 For your safety and proper operation, the system **MUST** be connected to a properly wired and grounded outlet. An improperly grounded system can place **HAZARDOUS VOLTAGES** on accessible metal parts of the system chassis and voids the Warranty due to potential damage to the system.

FOR INTERNAL ADJUSTMENTS OR SERVICE REFER TO QUALIFIED PERSONNEL. THE POWER CORD PROTECTIVE GROUNDING CONDUCTOR MUST BE CONNECTED TO EARTH GROUND. FOR CONTINUED SAFETY AND PROTECTION REPLACE FUSE WITH SPECIFIED TYPE: 110-120V 5AMP 220-240V 3 AMP
AGC SLO-BLO AGC SLO-BLO

2.6 . . . . . CRT PHOSPHOR LIFE CRITERIA:

The phosphor coating on the face of the CRT has a given useful life and will provide satisfactory performance under normal usage. Since the phosphor efficiency decreases throughout its use at a rate which is a function of the beam intensity, the useful life of the CRT is determined by the application and the usage at high intensities.

Consequently, the continuous use at high brightness, and in particular prolonged use of a fixed pattern at high intensity, will adversely affect the useful life of the CRT. Continuous or repetitive use with a high-intensity fixed pattern will ultimately result in the "*etching*" of that pattern into the phosphor as a result of accelerated degradation in the area of the pattern. In the case of fixed pattern applications, the life is optimized by repositioning the pattern from time to time or by limiting the brightness when not in active use.

2.7 . . . . . .CEILING MOUNT PRECAUTION:

In a ceiling-mount application, the strength and rigidity of the ceiling are very important. The location should be carefully checked before hand to determine that the installation will safely support the weight of the system.

NOTE

AmPro Corporation IS NOT RESPONSIBLE FOR INJURY OR DAMAGE CAUSED BY AN IMPROPERLY INSTALLED SYSTEM.

Chapter 3

LIMITED WARRANTY

AmPro Corporation warrants this product to be free from defects in material and workmanship under normal use, subject to the limitations provided below.

3.1 . . . . . WARRANTY PERIOD:

For the first twelve (12) months after the date of installation, AmPro Corporation will repair or replace any defective part, exclusive of the CRT for degradation of the phosphor coating, without charge for labor or parts. Replacement parts will be covered by this limited warranty for the remainder of the warranty period. This Limited Warranty applies only to parts supplied or designed by AmPro Corporation.

3.2 . . . . . DATE OF INSTALLATION:

To establish the date of installation, the AmPro Corporation Certificate of Registration should be completed, signed and returned to AmPro Corporation, postmarked no later than thirty (30) days from the date of installation. If the AmPro Corporation Certificate of Registration is not returned within such time, AmPro Corporation will use the date that the system was shipped from the factory as the date of installation.

3.3 . . . . . .ORIGINAL PURCHASER:

This Limited Warranty is limited to the original purchaser (end user) of this product from either AmPro Corporation or AmPro Corporation authorized dealer, distributor or agent.

3.4 . . . . . WARRANTY SERVICE:

For servicing under this Limited Warranty, this product must be presented to AmPro Corporation, an authorized AmPro Corporation service center or the authorized AmPro Corporation selling dealer.

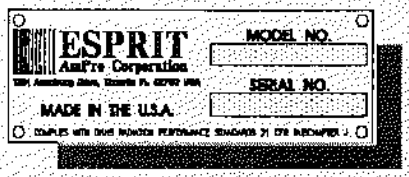
3.5 . . . . . .SHIPPING:

Prior to shipping this product or any sub-assembly to AmPro Corporation, a Return Authorization Number must be obtained from the AmPro Corporation Customer Service Department. The product must be shipped in the manufacturer's original shipping carton or other AmPro Corporation approved packaging. All freight and shipping charges to AmPro Corporation must be prepaid by the purchaser. Damage resulting from abuse in shipment of this product is not covered by this Limited Warranty. AmPro Corporation approved shipping cartons are available from AmPro Corporation for a nominal charge.

3.6 . . . . . .ENVIRONMENTAL DAMAGE:

This Limited Warranty does not cover damage or repairs that are necessary due to floods, winds, fires, lightning, accidents, corrosive atmosphere, excessive exposure to water (moisture) or heat, or any other conditions beyond the control of AmPro Corporation.

3.7 . . . . . .SERIAL NUMBER DEFACEMENT:



This Limited Warranty is void for the product if the serial number has been changed, removed or defaced.

3.8 . . . . . .MISUSE:

This Limited Warranty does not cover repairs that are necessary due to:

- incorrect installation;
- voltage conditions, blown fuses, open circuit breakers or any other inadequacy or interruption of properly grounded electrical service;
- misapplication, abuse, improper servicing, or any other improper operation, including mis-adjustments of any control;
- defects in or caused by associated equipment; or
- repair and/or modification of a sub-assembly performed by other than AmPro Corporation factory personnel.

Normal maintenance as outlined in the installation and servicing instructions of this Operator's Manual will be the responsibility of the purchaser.

AmPro Corporation MAKES NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, IN CONNECTION WITH THIS PRODUCT EXCEPT AS HEREINABOVE PROVIDED. IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ARISING FROM A COURSE OF DEALING OR USAGE OF TRADE ARE SPECIFICALLY EXCLUDED. SHOULD THIS PRODUCT PROVE TO BE DEFECTIVE IN MATERIAL OR WORKMANSHIP, THE PURCHASER'S SOLE REMEDY SHALL BE SUCH REPAIR OR REPLACEMENT AS HEREINABOVE EXPRESSLY PROVIDED AND UNDER NO CIRCUMSTANCES SHALL AmPro Corporation BE LIABLE FOR ANY LOSS, OR DAMAGE, DIRECT, INCIDENTAL OR CONSEQUENTIAL, INCLUDING LOSS, OR LOSS OF PROFITS OR BUSINESS OPPORTUNITIES, RESULTING FROM DEALER OR DISTRIBUTOR INSTALLATION OR SERVICES.

Some states do not allow the exclusion of incidental or consequential damages, so the above limitation may not apply to you. This Limited Warranty gives you specific legal rights, and you may also have other rights which may vary from state to state or country. NO other person is authorized to assume for AmPro Corporation any additional obligations beyond those provided herein.

Chapter 4

SYSTEM APPLICATIONS AND SCREENS

4.1 . . . . . SYSTEM 1/BASIC CONFIGURATION:

This system is the most versatile large screen data/graphics system in that it enables a large number of people to view the image.

USED FOR;

- ☐ CLASSROOMS
- ☐ CONFERENCE ROOMS
- ☐ PRIVATE USE
- ☐ SHOWS / PRESENTATIONS
- ☐ ANIMATION

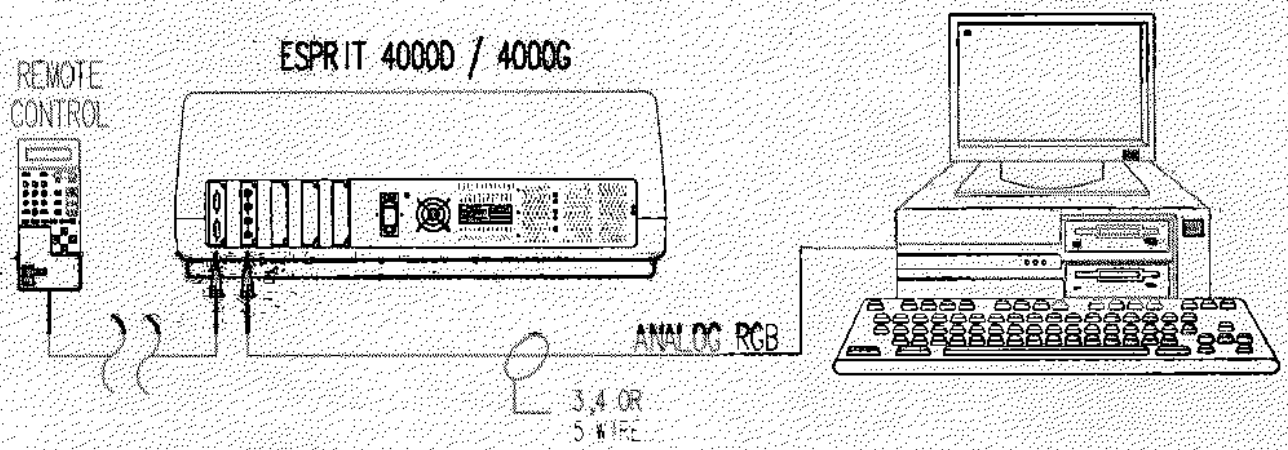


FIGURE 4-1. STANDARD SYSTEM CONFIGURATION.

4.2 . . . . . .SYSTEM 2/OPTIONAL CONFIGURATION 1:

This system is configured to bring together video and graphics and technical presentations for business. Its high resolution and versatility to accept various types of personal computers and workstations make it ideal for conferences, training and diversified graphics/data/video services.

USED IN;

- ☐ INDUSTRIAL TRAINING
- ☐ SCHOOLS AND UNIVERSITIES
- ☐ TELECONFERENCING
- ☐ CREW TRAINING
- ☐ ADVERTISING
- ☐ CAD/CAM/CAE SOLID MODELING

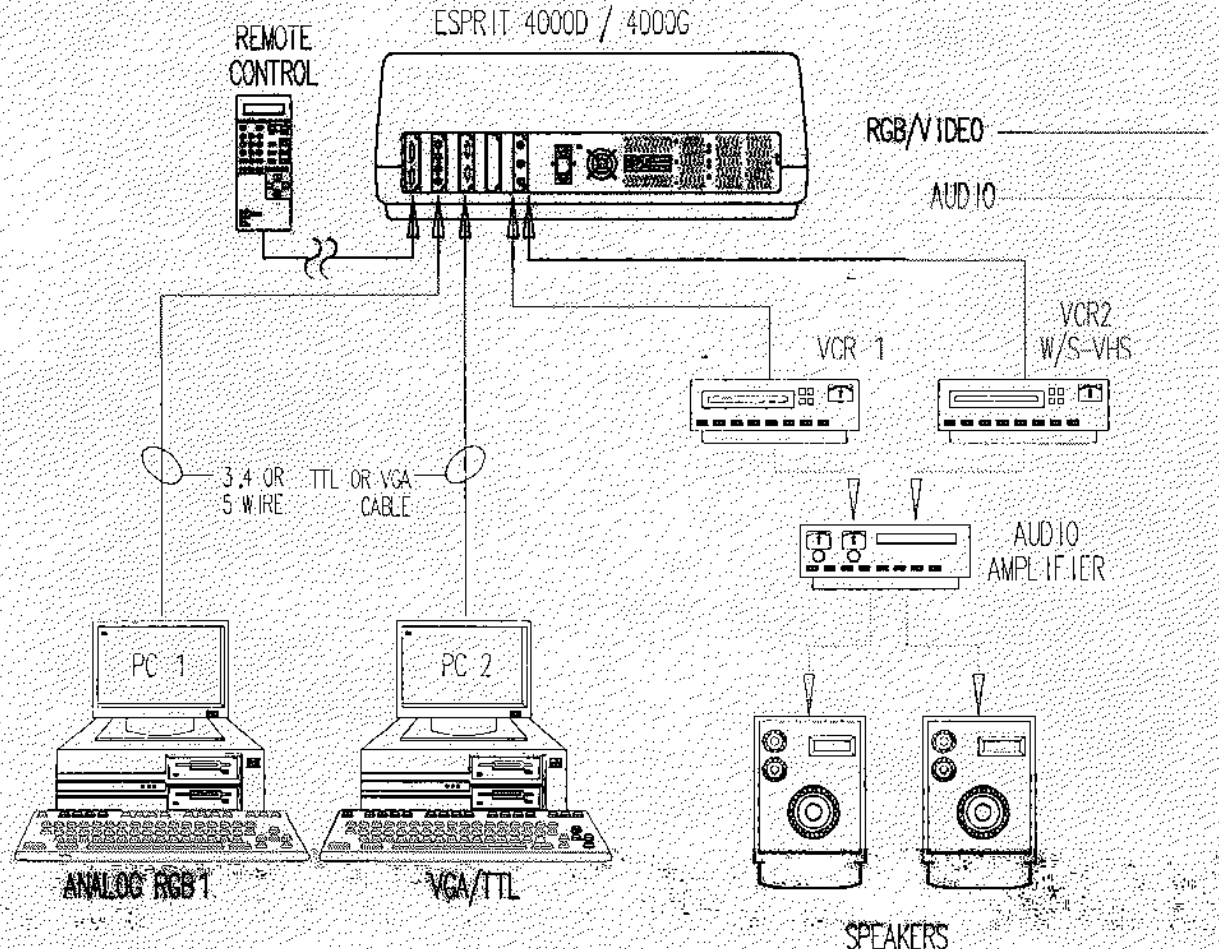


FIGURE 4-2. OPTIONAL SYSTEM CONFIGURATION 1.

System's configuration: (1) Analog RGB1 module (standard), (2) TTL/VGA module (optional), and (3) Quad Video Decoder module (optional).

4.3 . . . . . .SYSTEM 3/OPTIONAL CONFIGURATION 2:

This system is ideal for a wide range of educational activities as an effective teaching aid.

USED IN;

- ☐ CLASSROOMS
- ☐ AUDITORIUMS
- ☐ LECTURE HALLS
- ☐ COMPUTER AND SOFTWARE TRAINING
- ☐ COMMAND AND CONTROL CENTER DISPLAYS

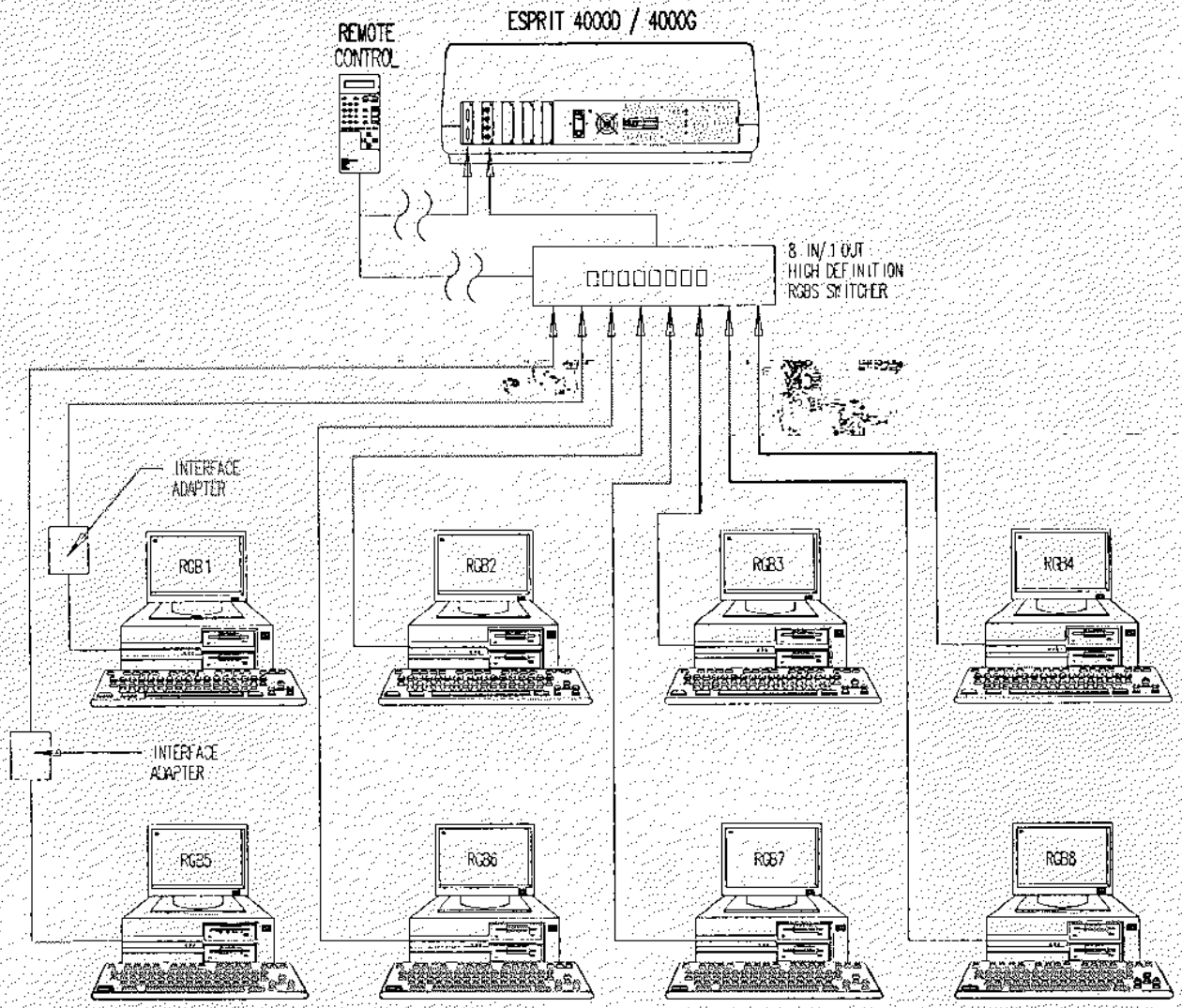


FIGURE 4-3. OPTIONAL SYSTEM CONFIGURATION 2.

System's configuration: (1) Analog RGB1 module (standard), (2) High Definition Switcher 8 "in" and 1 "out". Display system and switcher are controlled via a single remote control.

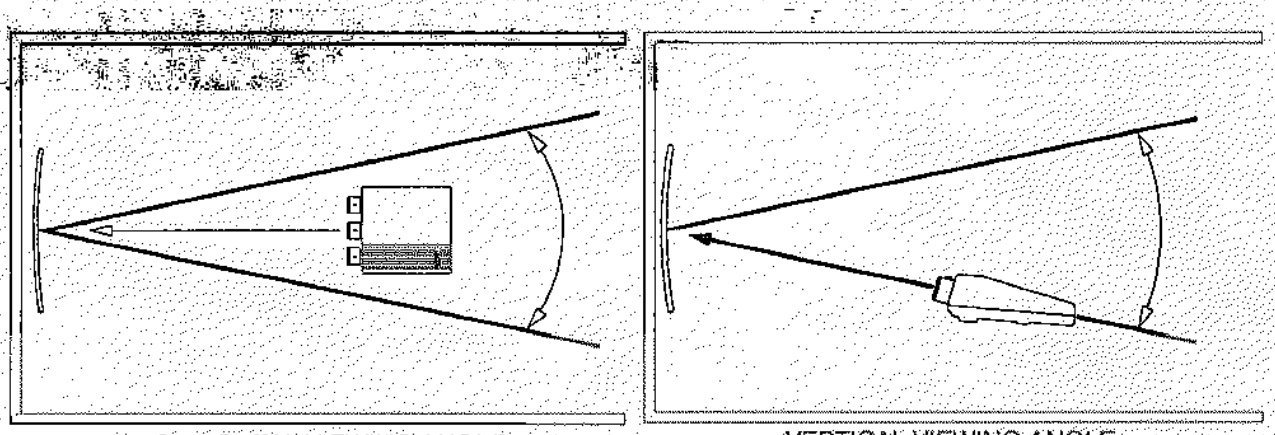
4.4 . . . . . .SCREEN MATERIAL:

There are variations in screen material which can provide different results. Low gain screens have a wide viewing angle and are best suited for computer graphics applications. High gain screens concentrate the image into a narrow viewing angle as they increase the gain (brilliance) of the projected image and are best limited to video and low resolution graphics applications.

High gain screens provide a viewing angle ≈ ± 50 ° from the center line of the screen. Low gain screens can provide viewing up to ± 90 ° off the center line of the screen. Refer to figure 4.4 for examples.

Rear screens provide a nominal gain with a viewing angle typically less than ± 90 ° from the center line. Some rear screen material my cause a "hot spot" if the viewing angle is the same as the projection angle.

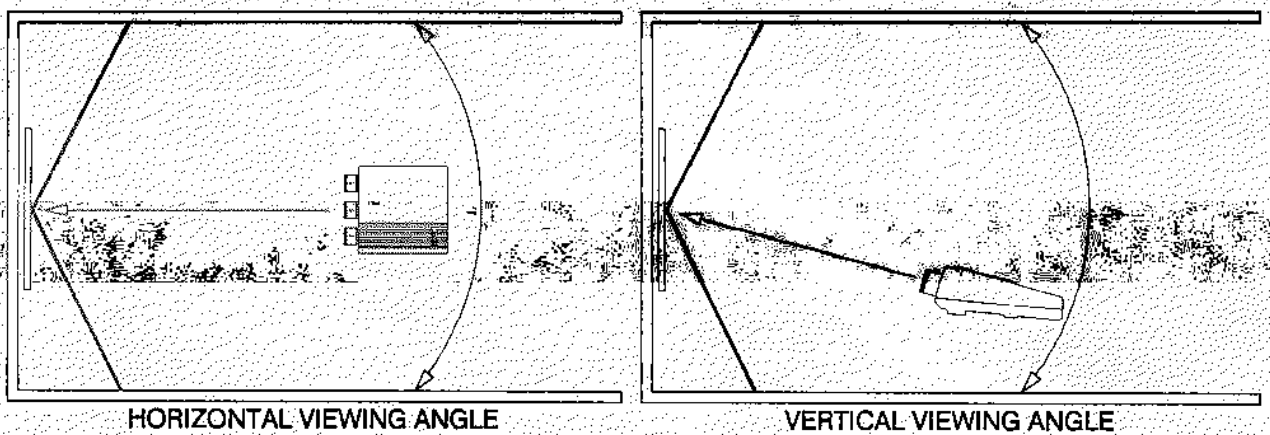
It is recommended that you consult with your dealer as to the best screen for your particular application.



HORIZONTAL VIEWING ANGLE VERTICAL VIEWING ANGLE

CURVED SCREEN WITH HIGH GAIN (VIEWING ANGLE).

NOTE: Curve screens are not recommended to be used with the ESPRIT 4000D or 4000G.



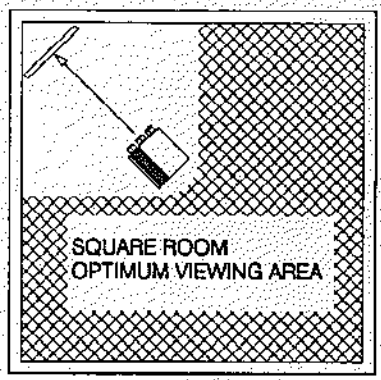
HORIZONTAL VIEWING ANGLE VERTICAL VIEWING ANGLE

FIG. 4-4. FLAT SCREENS WITH LOW GAIN (VIEWING ANGLES)

4.5 . . . . . SCREEN PLACEMENT:

The optimal viewing would be in a darken room. However compromises must be made. In order to make the best compromises, the following should be considered. Refer to figures 4-5 and 4-6

- ☐ Determine the desired image and screen size when considering the total room area and the size of the text material to be presented.
- ☐ Select a screen type suited for the application and the ambient lighting conditions.
- ☐ Determine the screen location
- ☐ Determine the range from which the screen will be viewed when selecting the screen size.
- ☐ Keep the sources of ambient light as far a part as possible and off the screen area.
- ☐ Where there are windows, drape all windows near the projector to avoid any light source between the projector and screen.
- ☐ Seat the nearest viewer no closer than to the rear of the projection unit.
- ☐ Avoid fluorescent lighting. Use controlled recessed incandescent lighting for optimum lighting condition results.



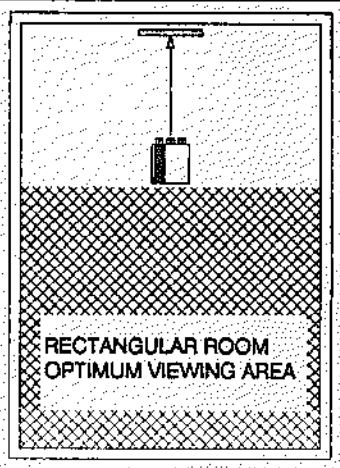


FIGURE 4-5.

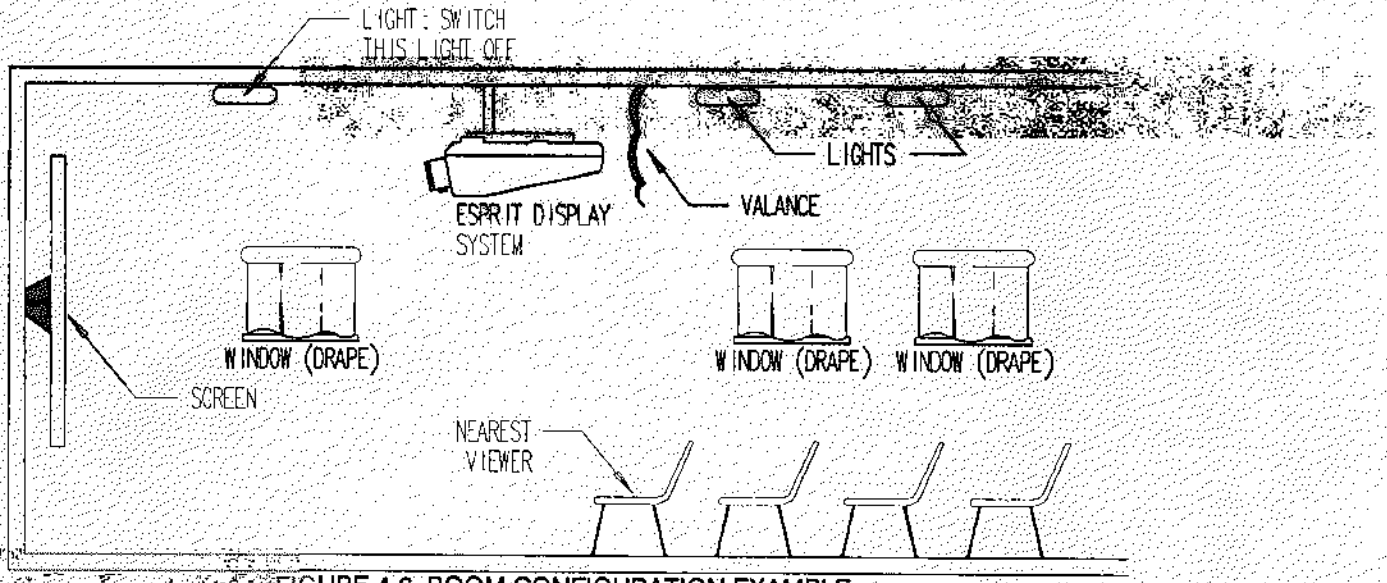


FIGURE 4-6. ROOM CONFIGURATION EXAMPLE.

Chapter 5

CHANGING PARAMETERS AND INSTALLATION GUIDELINES

5.1 . . . . . .BEFORE INSTALLATION:

5.1.1 . . . . . .SHIPPING CARTON CONTENTS:

Save the shipping carton ,surrounding foam inserts and lens covers.

NOTE: Original carton and foam inserts must be used for shipping. It is specifically designed to minimize potential damage during shipment.

- An optional shipping/carrying case is available for mobile applications.

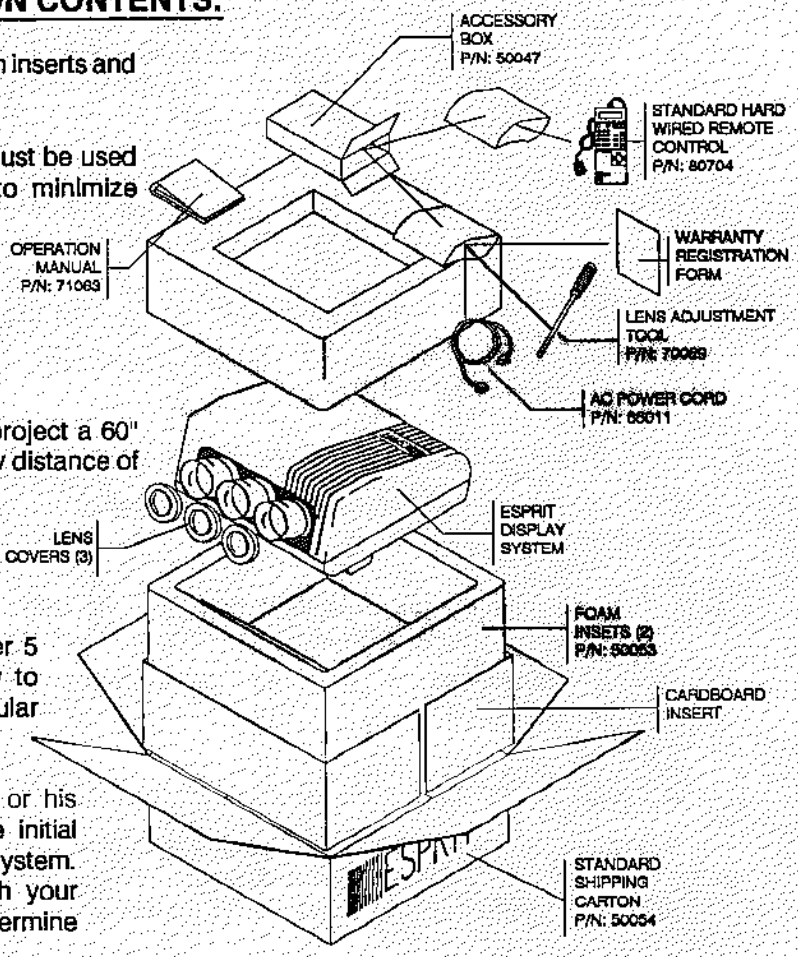


FIGURE 5-1.

SHIPPING CARTON CONTENTS.

5.2 . . . . . .GENERAL:

The ESPRIT system is factory preset to project a 60" (1524mm) x 80" (2032mm) image at a throw distance of approximately 8 feet when table mounted 12 ° below the center line of screen. Unless otherwise specified at time of order.

The system may be re-configured for all front and rear screen applications. Chapter 5 provides the required information on how to change the configuration for your particular needs.

Please consult with your selling dealer, or his authorized representative, concerning the initial installation, set-up and registration of the system. Discuss any non-standard installation with your dealer, prior to the actual installation, to determine the feasibility. Determine the following requirements:

- ☐ Computer Data/Graphics projection system location and lighting.
- ☐ Screen size, type, and location.
- ☐ Projection configuration, I.e.; front/floor mount etc. Note: Refer to section 5.5 to determine sweep configurations from factory settings.
- ☐ Operating A.C. line voltage. The system is set for 115V line operation, unless otherwise noted. Refer to Chapter 5, section 5.7 for changing A.C. line voltage.

5.3 . . . . . INITIAL SYSTEM TEST:

Once the system has been removed from the packaging and placed on a secure surface, perform the following initial system test prior to attempting any changes or installation of the system.

NOTE: Check for the proper main a.c. configuration.

There is a main power rocker switch on the rear panel, just above the power cord (Figure 5-2). When this switch is "OFF," a "O" can be observed. Turn the switch to the "ON" position. When this switch is turned ON, the LCD on the hard-wired remote should display the message, "ESPRIT 4000D" or "ESPRIT 4000G," depending upon your particular system.

The next step is to press the POWER button on the remote control. When this button is pressed, a sequence of events should occur:

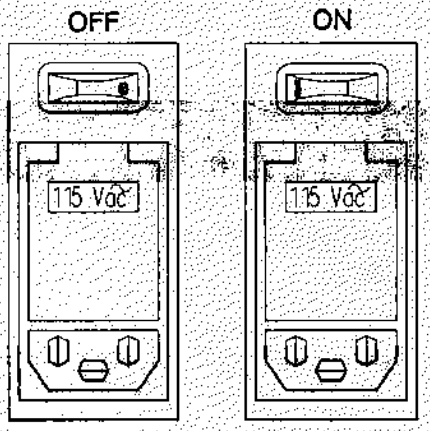


FIGURE 5-2.

MAIN AC ROCKER SWITCH POSITIONS.

- "INITIALIZING" will be displayed on the LCD.
- The RED LED above the fan on the rear panel should light up and the fans should start running.
- The LCD will then display the mode of operation that the system was in when it was de-energized.

NOTE: Ensure that there is an active source applied to the system and the system is switched to that particular source.

☐ If the above events occur as listed, proceed with the installation of your system and refer to Chapter 5 to perform the necessary mounting requirements for your application.

☐ If for some reason the events do not occur as listed above, proceed to Chapter 11 for aid in determining the cause.

5.4. . . . . CHANGING DEFLECTION ANGLE:

Since it is optional to table or ceiling mount the system, several procedures must be performed prior to installing the system. (1): Determine the installation configuration i.e., front- table projection, see section 5.5 (2): Determine the sweep configuration and perform the required changes, see section 5.6.

Additionally the system will be installed above or below the center line of the screen area which produces a off-angle projection (in the vertical plane) causing a different throw distance from the top of the screen to the bottom of the screen, (typically some top and bottom defocusing will occur). The lenses have an built-in adjustment to compensate for this defocusing and is performed during the initial set-up and registration. Refer to chapter 8 (Lens Focusing and Positioning).

5.4.1 . . . . .CHANGING PICTURE SIZE:

To change picture size, the system must be moved closer to the screen for smaller projected images and further from the screen for larger images. When the projected distance is changed, two things happen to the projected image. The first is that the image de-focuses and the second is that the red, green and blue images separate on the horizontal plane. To determine where the system must be mounted for a given size screen, refer to section 5.8. To re-focus the projected image and to re-converge the three images, refer to Chapter 8 (LENS FOCUSING AND POSITIONING).

5.5 . . . . . .MOUNTING / SWEEP CONFIGURATIONS:

5.5.1 . . . . . FRONT TABLE / CEILING MOUNTING:

Front projection provides the brightest image, but the screen is more sensitive to direct ambient light. High image light gain is available with front screens but with a compromise in resolution and viewing angle. Refer to section 4.5. The built-in 12° vertical lens offset places the system approximately at the top (or bottom) edge of the screen as to minimize interference with the viewing audience.

Front/ table mounting requires NO horizontal or vertical sweep deviation from the factory preset conditions. Refer to 5-3.

Front/ ceiling mounting of the system moves the unit out of the path of the audience. When the ESPRIT system is ceiling mounted, it will be inverted from the table/floor mounting. This inversion requires that the horizontal and vertical sweeps be reversed. Refer to Figure 5-3.

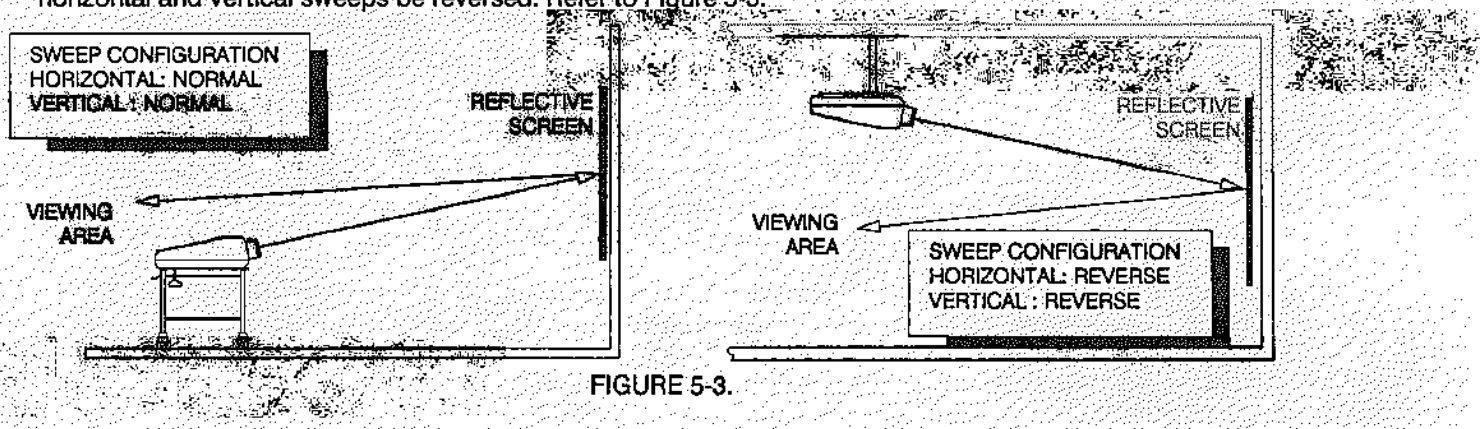


FIGURE 5-3.

Front table and ceiling mount / sweep configuration.

5.5.2 . . . . .REAR TABLE / CEILING MOUNTING:

Rear projection permits higher ambient lighting and physically removes the system from the viewing area. However, it requires either a large area behind the screen or the use of a folded image with a first (front,optical) surface mirror. Rear screen provide a nominal gain with a viewing angle typically less than ± 90° from the center line. It is recommended that you consult with your dealer or the company if you contemplate a folded image rear screen application.

Rear/table mounting requires only the horizontal sweep being reversed. Please refer to Figure 5-4.

Rear ceiling mounting requires only the vertical sweep being reversed from the factory preset. Please refer to figure 5-4.

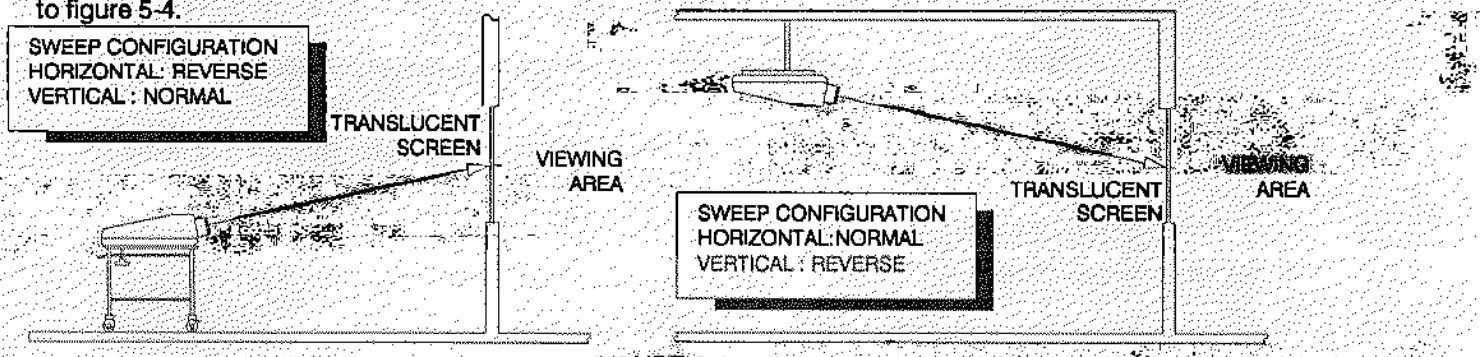


FIGURE 5-4.

Rear table and ceiling mount / sweep configuration.

5.6 . . . . . SWEEP REVERSAL PROCEDURES:

5.6.1 . . . . .HORIZONTAL SWEEP REVERSAL PROCEDURE:

WARNING

DO NOT SERVICE THE HORIZONTAL SWEEP WHILE THE SYSTEM IS ENERGIZED, IF THE SWEEP PLUGS ARE REMOVED WHILE THE SYSTEM IS ENERGIZED, HIGH VOLTAGE SHOCK WILL RESULT AND THE SYSTEM WILL BE DAMAGED.

To reverse the sweep , turn the system **"OFF"** and **DISCONNECT** the power cord.

- STEP 1A. EARLY REVISION: Lift and lock the top cover up. The top cover may be lifted by, **(1)**: pulling the quick release handle located at the front of the system on the top cover, this will allow the top cover to tilt-up, **(2)** pull and lock the 2 each hinges located on either side. See Figure 5-5.
- STEP 1B. LATER REVISIONS: The top cover may be lifted by, **(1)**: turning the 2 ea. 1/4 turn fasteners located on both sides of the bottom cover towards the front of the system, **(2)**: pull and lock the 2 ea. hinges located on either side. See Figure 5-5.
- STEP 2. Unlock and tilt up the Registration Board which is across the center of the system. See Figure 5-6.
- STEP 3. Horizontal sweep reversal is accomplished by reversing the horizontal Sweep and Registration connectors on the three deflection interface boards. See figure 5-6. NOTE: See Table 5-1, Page 5-7 for further sweep reverse configurations..
- STEP 3A. Pull the horizontal sweep plug **(P-1)** out of **(J-1)**, turn it end for end **(180 °)** and plug it back into **(J-1)**. See Figure 5-6.
- STEP 3B. Remove the horizontal registration plug **(P-4)** from **(J-4)** turn it end for end **(180°)** and plug it back into **(J-4)**. Refer to figure 5-6.

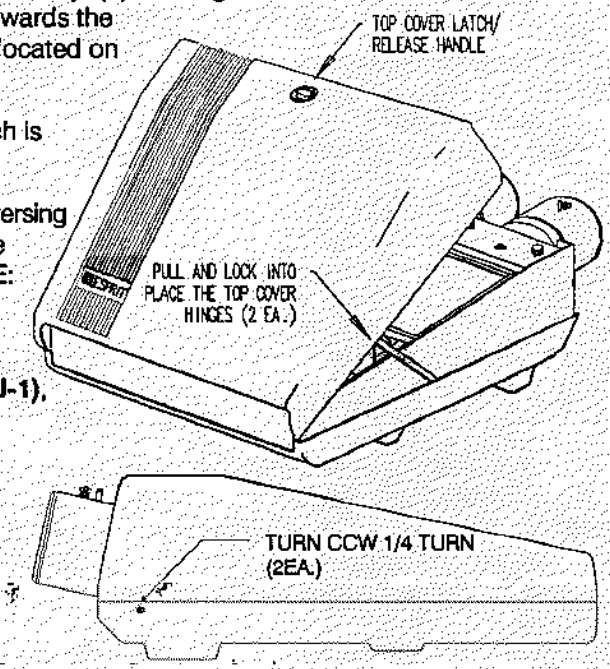


FIGURE 5-5.

Perform **STEP 3A AND 3B** on all three yoke interface boards. **RECHECK YOUR WORK!**

- STEP 4. Lower the Registration Board and lock it into position.

NOTE: Perform Steps 5 and 6 on all units Revision level G and below

- STEP 5. Remove the Registration board/tray cover by loosening the three each phillips screws. Refer to Figure 5-7.
- STEP 6. Position LK7 and LK8 (Registration Board, lower right hand corner as viewed from the rear) for the proper sweep configuration. Refer to Figure 5-7.

¤ **Normal Sweep Configuration**; Position LK7 across pins 1 and 2, LK8 across pins 2 and 3.

¤ **Reverse Sweep Configuration**; Position LK7 across pins 2 and 3, LK8 across pins 1 and 2.

- STEP 7. Perform the Vertical sweep reverse procedure as required. If not required: Replace the top cover, plug in the power cord, and energize the system.

5.6.1.1 . . . . SWEEP AND REGISTRATION PLUGS LOCATION :

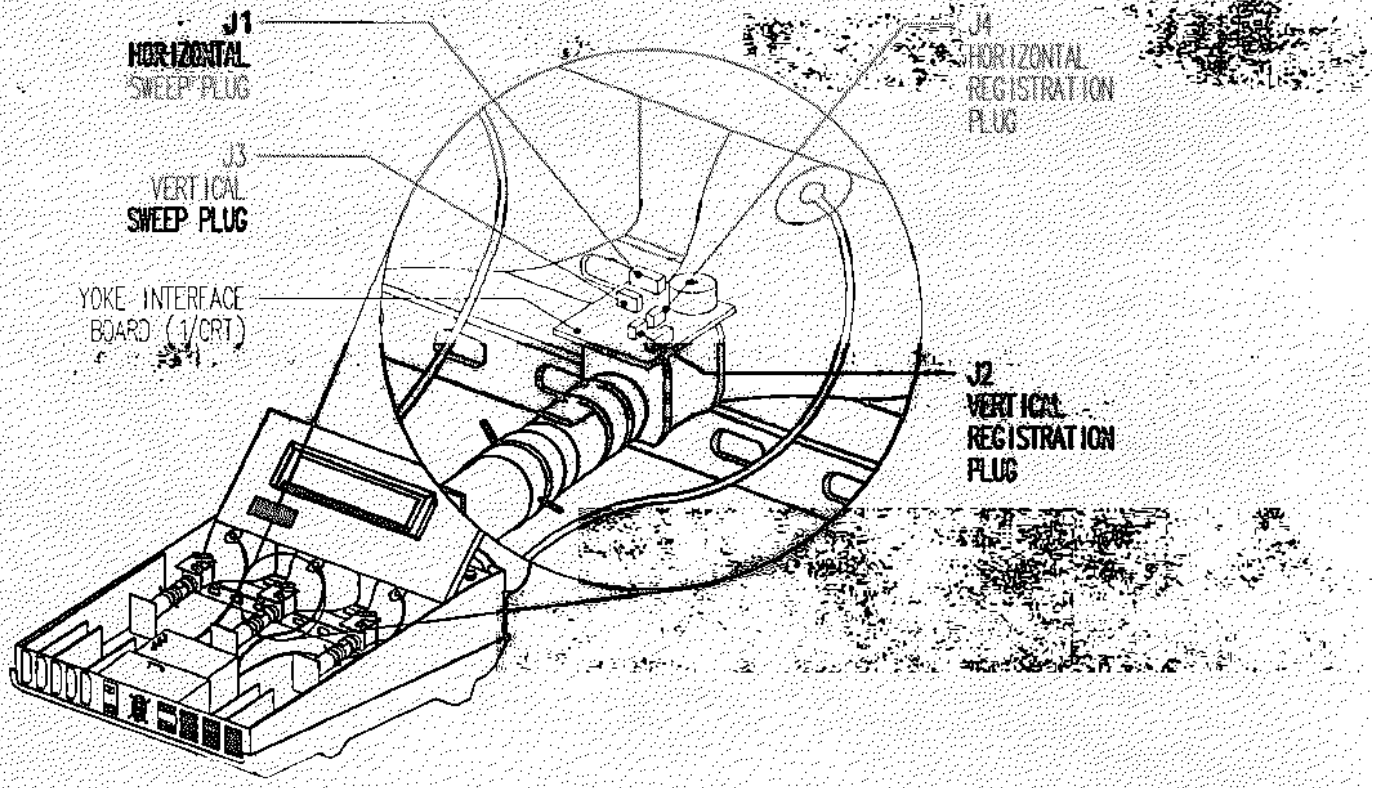


FIGURE 5-6.

5.6.1.2 . . . .POSITIONING LK7 AND LK8 :

NOTE: Perform LK7 and LK8 on Revision level G and below only.

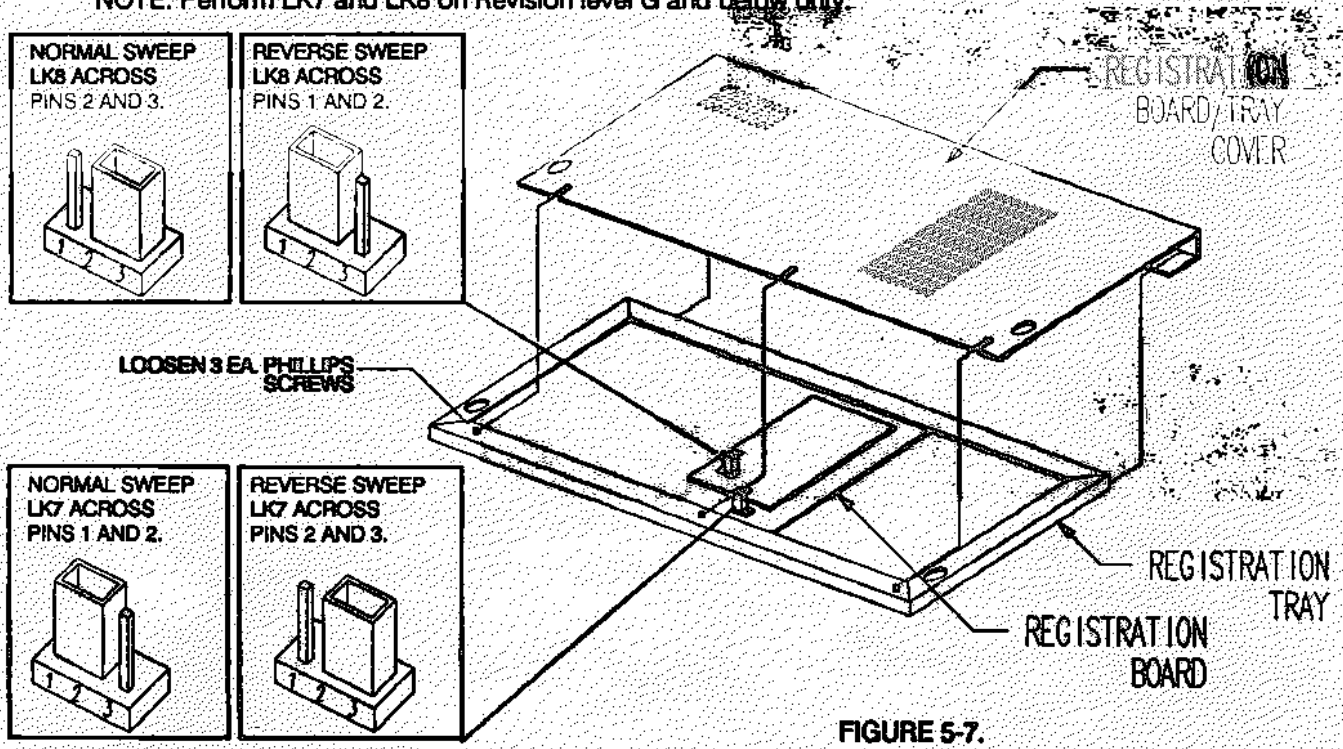


FIGURE 5-7.

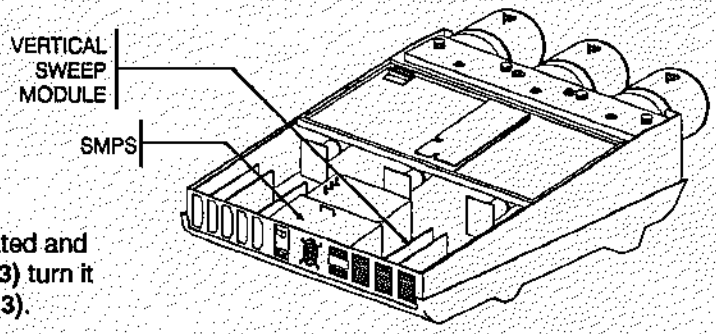
5.6.2 . . . . .VERTICAL SWEEP REVERSAL PROCEDURE:

WARNING

DO NOT CHANGE THE POSITION OF THE VERTICAL REVERSE SWITCH WHILE THE SYSTEM IS ENERGIZED. CHANGING THE POSITION OF THIS SWITCH WHILE THE SYSTEM IS ENERGIZED WILL RESULT IN DAMAGE TO THE EQUIPMENT.

To reverse the sweep, turn the system **"OFF"** and **DISCONNECT** the power cord.

- STEP 1. Remove the top cover. Refer to Section 5.6.1, Step 1 and figure 5-5.
- STEP 2. Unlock and tilt up the Registration Board which is across the center of the system.
- STEP 3. The Vertical sweep reversal is accomplished by reversing the Sweep and Registration plugs on the three Yoke Interface boards and changing the position of the Vertical Sweep Configuration switch located on the Vertical Deflection module.



- STEP 4. On the Yoke interface board, located and pull the Vertical Sweep Plug **(P3)** out of **(J3)** turn it end-for-end **(180°)** and plug it back into **(J3)**. See Figure 5-6.
- STEP 5. Again on the Yoke Interface board , pull the Vertical Registration plug from **(P2)** from **(J2)**, turn it end-for-end **(180°)** and reinsert **(J2)**. See figure 5-6.
- STEP 6. On the Vertical Deflection Module, locate and change the position of the Vertical Sweep Configuration switch as follows: See Figure 5-8

¤ NORMAL SWEEP (TABLE) : SWITCH IS UP.

¤ REVERSE SWEEP (CEILING) : SWITCH IS DOWN.

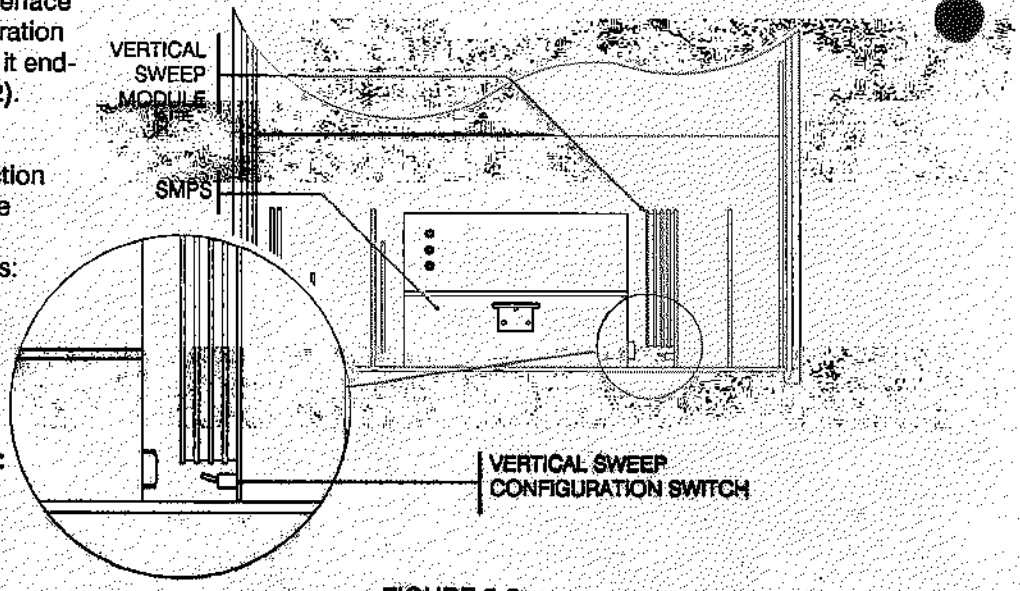


FIGURE 5-8.

Vertical Sweep Module and Sweep Configuration switch location.

Perform Steps 4 and 5 on all three Yoke Interfece boards.

RECHECK YOUR WORK!

- STEP 7. Replace the top cover, plug in the power cord, and energize the system. The vertical sweep should now be reversed.

5.6.3 . . . . . SWEEP REVERSE QUICK REFERENCE:

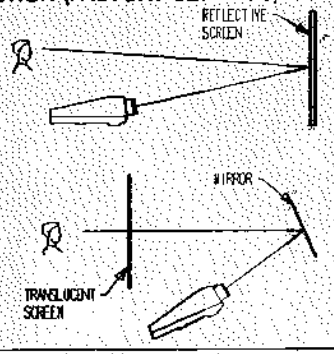
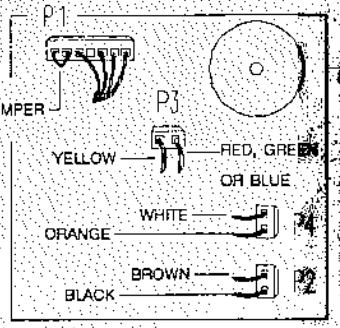
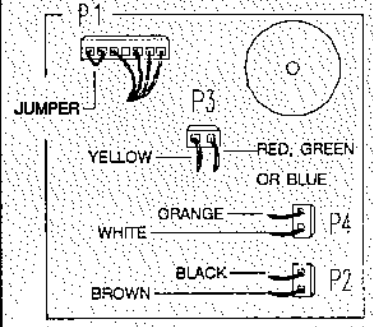
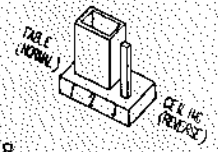
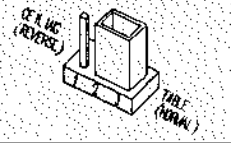
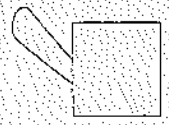
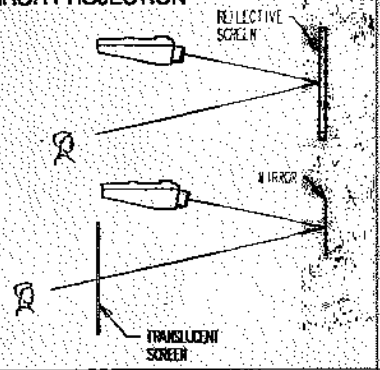
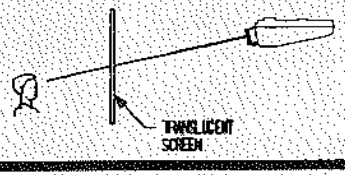
FRONT OR REAR TABLE W/MIRROR PROJECTION (FACTORY SETTINGS)	YOKE INTERFACE PLUG CONFIGURATIONS MODELS: 69195 / 69239	MODELS 69196 / 69238 / 69240	LK7 / LK8 POSITIONING: PERFORM ON ALL UNITS REVISION LEVEL G AND BELOW	VERTICAL SWEEP CONFIGURATION SWITCH
			LK7 JUMPER ACROSS PINS 1 AND 2  LK8 JUMPER ACROSS PINS 2 AND 3 	SWITCH POSITION UP 
FRONT CEILING OR REAR CEILING W/MIRROR PROJECTION 	FIRST CHECK YOUR MODEL NUMBER ROTATE P1, P2, P3 AND P4 180 DEGREES ON ALL THREE YOKE INTERFACE BOARDS CAUTION: DO NOT MISPIN PLUGS AND PLEASE DOUBLE CHECK YOUR WORK.		MOVE LK7 AND LK8 JUMPERS TO CEILING (REVERSE) POSITION LK7 ACROSS PINS 2 AND 3 LK8 ACROSS PINS 1 AND 2	TOGGLE SWITCH DOWN
REAR TABLE PROJECTION 	ROTATE P1, AND P4 180 DEGREES ON ALL THREE YOKE INTERFACE BOARDS		LK7 ACROSS PINS 2 AND 3 LK8 ACROSS PINS 1 AND 2	SAME AS FACTORY CONFIGURATION
REAR CEILING PROJECTION 	ROTATE P2, AND P3 180 DEGREES ON ALL THREE YOKE INTERFACE BOARDS		LK7 ACROSS PINS 1 AND 2 LK8 ACROSS PINS 2 AND 3	TOGGLE SWITCH DOWN

TABLE 5-1

5.7 . . . . . CHANGING A.C. LINE OPERATION (115V - 230V):

Unless specified at the time ordered, all ESPRIT systems are shipped from the factory configured for 115 Volt, 50/60 Hz operation with a standard US power cord. To change the system so that you can apply a different line voltage, perform the following steps and refer to Figure 5-9.

- STEP 1. Remove the power cord from the back of the unit.
- STEP 2. Open the door above the power plug. Using a small screwdriver, gently push down on the door latch and pop it open to access the fuse and voltage select barrel.
- STEP 3. The voltage select barrel will indicate the present voltage selected. If it is not the desired voltage, pull the barrel straight out , rotate it and plug it back so that it reads the correct voltage.
- STEP 4. Replace the fuse with the proper size for the voltage selected. (5 Amp ACG Slow blow for 115v and 3 Amp ACG Slow blow for 230v). Ensure arrows line up.
- STEP 5. Ensure that the correct power plug is installed for the respective country.
- STEP 6. Plug the proper cord back into the rear of the system.

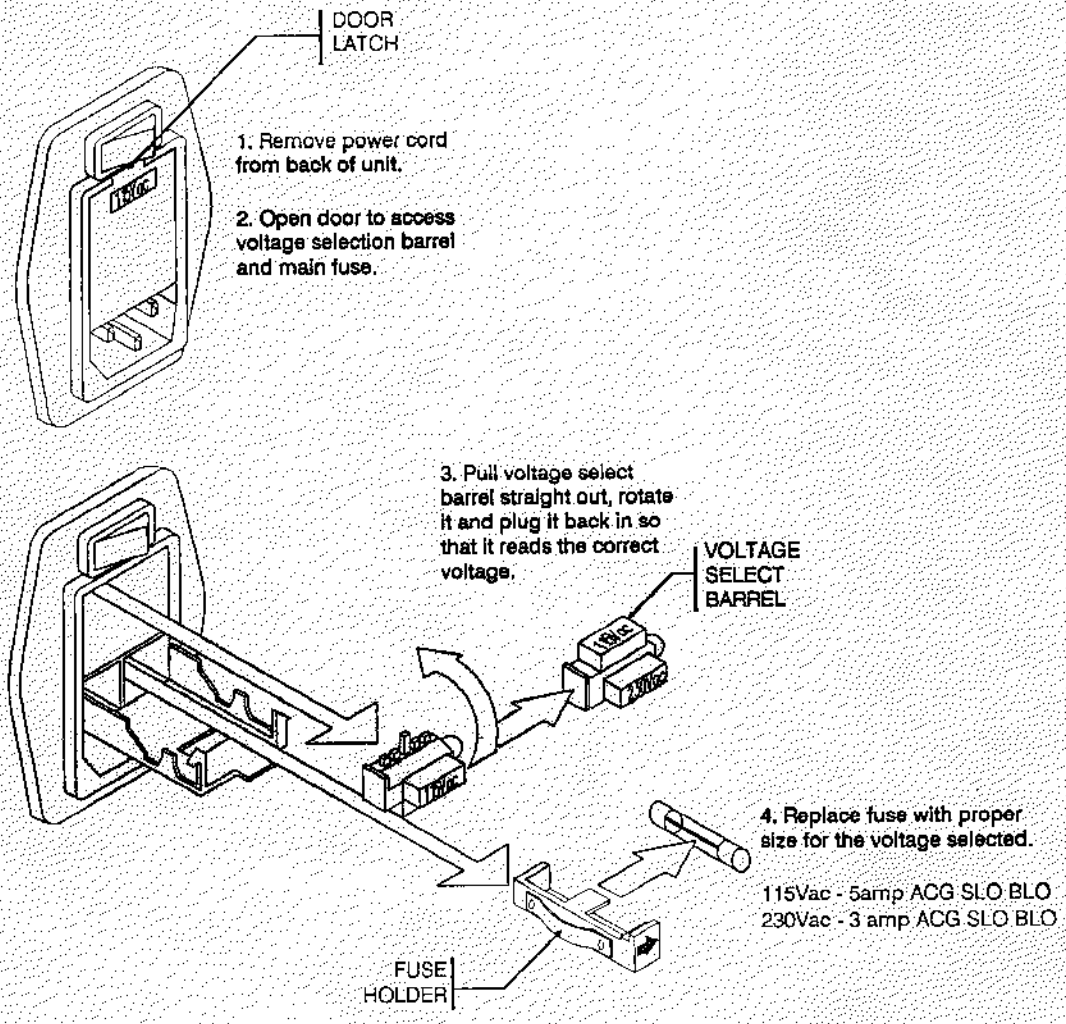


FIGURE 5-9.

VOLTAGE SELECTION BARREL AND MAIN FUSE LOCATION / CHANGE

5.8 . . . . . INSTALLATION GUIDELINES (MOUNTING DISTANCE):

The display system mounting distance (throw-distance) depends on several factors, **(1):** Type of lenses installed, (magnification factor,) **(2):** the particular model number, which is found on the ESPRIT nameplate located on the rear panel, **(3):** all calculations are based on an aspect ratio of 4:3, an optimum 12 ° off-axis projection and using the NTSC video information to optimize the picture size, and **(4):** the desired screen width dimension. Section 5.8.1 defines the individual placement parameters, and section 5.8.2 provides the calculations required for proper system placement, whether table or ceiling mounted.

5.8.1 . . . . . MOUNTING DISTANCE DEFINITIONS: Refer to figure 5-10

- Reference **A** indicates the system's mounting distance , "throw-distance" required.

  NOTE 1: For table mount, the "throw-distance is measured from the screen surface to the front of the system.

  NOTE 2: For ceiling mount, the "throw-distance" is measured from the screen surface the ceiling mounting pipe placement.

- Reference **B** indicates the distance measured from the floor to the screen center, or for ceiling mount, **B** indicates the distance from the screen center to the ceiling.

- Reference **C** indicates the required table height for floor mounting or for ceiling mount configuration the required pipe length.

  NOTE 3: All figures are rounded off to the nearest millimeter (.250in.)

  NOTE 4: Please use your particular model number and refer to the appropriate section.

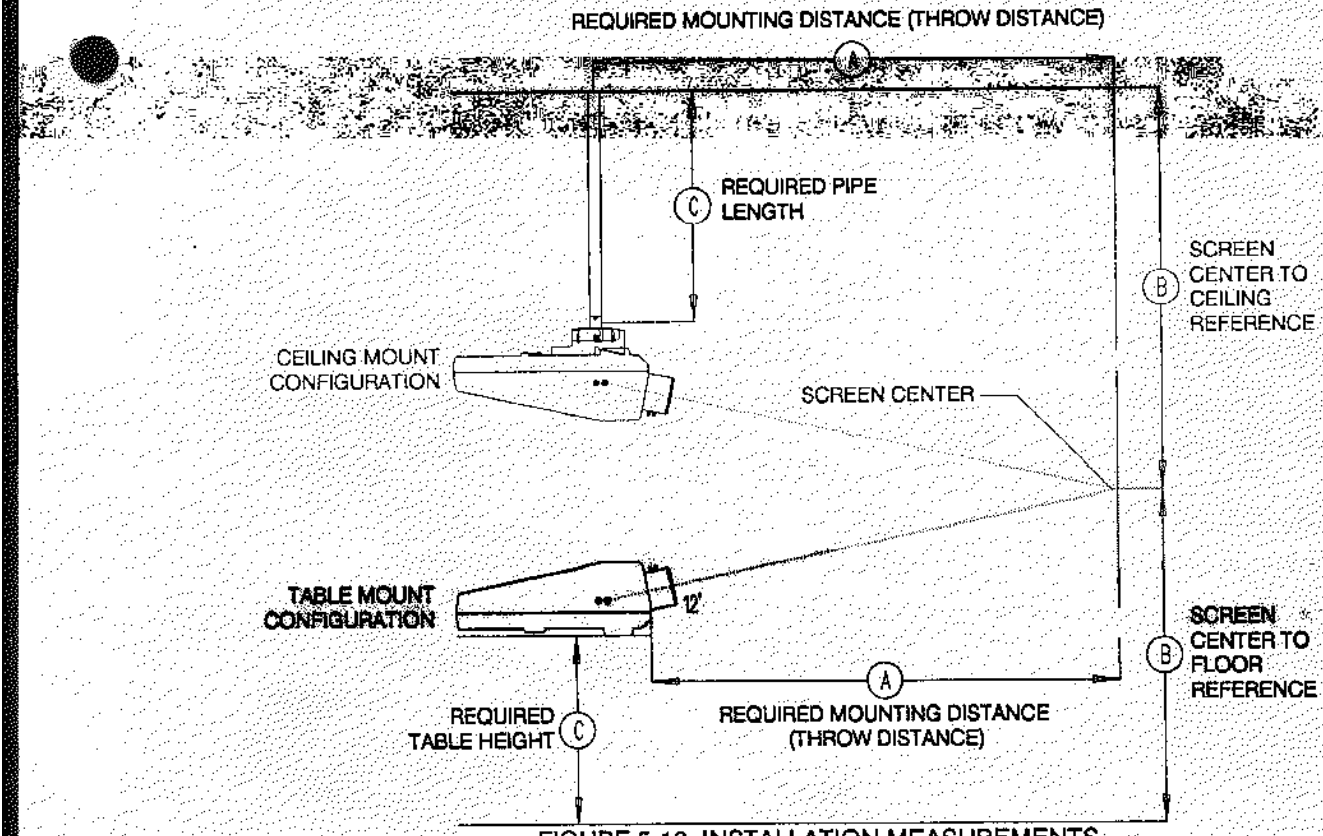


FIGURE 5-10. INSTALLATION MEASUREMENTS.

5.8.2 . . . . . MOUNTING DISTANCE FORMULAS:

5.8.2.1 . . . . MODEL 69196 (TOC7 LENSES)

REFER TO SECTION 5.8.3

SCREEN WIDTH: FROM 1829mm (72.0in.) TO 5486mm (216.0in.)

TABLE MOUNT

MILLIMETERS	INCHES
Amm = 1.06(SWmm) + 118mm	Ain. = 1.06(SWin.) + 4.6in.
Bmm = Distance from screen center to floor in millimeters.	Bin. = Distance from screen center to floor in inches
Cmm = Bmm - [0.226(SWmm)] - 214mm	Cin. = Bmm - [0.226(SWin.)] - 8.4in.
CEILING MOUNT	
Amm = 1.06(SWmm) + 344mm	Ain. = 1.06(SWin) + 13.5in.
Bmm = Distance from screen center to ceiling in millimeters	Bin. = Distance from screen center to ceiling in inches
Cmm = Bmm - [0.226(SWmm)] - 334mm	Cin. = Bin. - [0.226(SWin.)] - 13.25in.

5.8.2.2 . . . . MODEL 69195/69239 (HD10/HD10-GT17/HD10-GT26 LENSES)

REFER TO SECTION 5.8.4

HD-10 LENSES: SCREEN WIDTH: FROM 1829mm (72in.) TO 6096mm (240.0in.)

HD-10GT17 LENSES: SCREEN WIDTH: FROM 1778mm (70.0in.) TO 2540mm (100.0in.)

HD-10GT26 LENSES: SCREEN WIDTH: FROM 2540mm (100.0in) TO 3810mm (150.0in.)

TABLE MOUNT

MILLIMETERS	INCHES
Amm = 1.31(SWmm) + 189mm	Ain. = 1.31(SWin.) + 7.5in.
Bmm = Distance from screen center to floor in millimeters	Bin. = Distance from screen center to floor in inches
Cmm = Bmm - [0.279(SWmm) - 229mm	Cin. = Bin. - [0.279(SWin.)] - 9.0in.
CEILING MOUNT	
Amm = 1.31(SWmm) + 415mm	Ain. = 1.31(SWin.) + 16.25in.
Bmm = Distance from screen center to ceiling in millimeters	Bin. = Distance from screen center to ceiling in inches.
Cmm = Bmm - [0.279(SWmm)] - 349mm	Cin. = Bin. - [0.279(SWin.)] - 13.75in.

5.8.2 . . . . MOUNTING DISTANCE FORMULAS (continued):

5.8.2.3 . . . . MODEL NUMBER: 69238 / 69240 (HD10L LENSES):

REFER TO SECTION 5.8.5

SCREEN WIDTH: FROM 1092mm (43.0in.) TO 1346mm (53.0in.)

TABLE MOUNT

MILLIMETERS	INCHES
Amm = 1.4(SWmm) + 122mm	Ain. = 1.4(SWin.) + 4.8in.
Bmm = Distance from screen center to floor in millimeters	Bin. = Distance from screen center to floor in inches
Cmm = Bmm - [0.30(SWmm)] - 214mm	Cin. = Bin. - [0.30(SWin.)] - 8.4in.

CEILING MOUNT

Amm = 1.4(SWmm) + 348mm	Ain. = 1.4(SWin.) + 13.7in.
Bmm = Distance from screen center to ceiling in millimeters	Bin. = Distance from screen center to ceiling in inches
Cmm = Bmm - [0.30(SWmm)] - 334mm	Cin. = Bin. - [0.30(SWin.)] - 13.25in.

5.8.2.4 . . . . MOUNTING DISTANCE TABLE:

MOUNTING DISTANCE REFERENCE TABLE						
SCREEN WIDTH	HD-10L		TOC-7		[1]HD-10 / [2]HD-10GT17 / [3]HD-10GT26	
mm (in.)	TABLE	CEILING	TABLE	CEILING	TABLE	CEILING
1092 (43.00)	1651 (65.00)	1878 (74.00)				
1346 (53.00)	2007 (79.00)	2233 (88.00)				
[1,2]1829 (72.00)			2057 (81.00)	2283 (90.00)	[1,2]2585 (101.75)	[1,2]2811 (110.75)
[1,2]2134 (84.00)			2376 (93.50)	2602 (102.50)	[1,2]2984 (117.50)	[1,2]3210 (126.50)
[1,2]2438 (96.00)			2701 (106.25)	2927 (115.25)	[1,2]3383 (133.25)	[1,2]3609 (142.00)
[1,3]2743 (108.0)			3025 (119.00)	3251 (128.00)	[1,3]3783 (149.00)	[1,3]4009 (158.00)
[1,3]3048 (120.0)			3348 (132.00)	3574 (141.00)	[1,3]4182 (164.50)	[1,3]4408 (173.50)
[1,3]3353 (132.0)			3671 (144.50)	3897 (153.50)	[1,3]4581 (180.25)	[1,3]4807 (189.25)
[1,3]3658 (144.0)			3994 (157.25)	4220 (166.00)	[1,3]4980 (196.00)	[1,3]5206 (205.00)
[1]3962 (156.0)			4317 (170.00)	4543 (179.00)	[1]5380 (212.00)	[1]5606 (220.75)
[1]4267 (168.0)			4640 (182.50)	4866 (191.50)	[1]5779 (227.50)	[1]6005 (236.50)
[1]4572 (180.0)			4963 (195.50)	5189 (204.25)	[1]6178 (243.25)	[1]6404 (252.00)
[1]4877 (192.0)			5286 (208.00)	5512 (217.00)	[1]6578 (260.00)	[1]6804 (268.00)
[1]5182 (204.0)			5609 (221.00)	5835 (229.75)	[1]6977 (274.75)	[1]7203 (283.50)
[1]5486 (216.0)			5932 (233.50)	6158 (242.50)	[1]7376 (290.50)	[1]7602 (299.25)
[1]5791 (228.0)					[1]7775 (306.00)	[1]8001 (315.00)
[1]6096 (240.0)					[1]8175 (322.00)	[1]8401 (330.75)

[1] REFERS TO HD-10 APPLICATIONS, [2] REFERS TO HD-10GT17 APPLICATIONS AND [3] REFERS TO HD-10GT26 APPLICATIONS

TABLE 5-2. MOUNTING DISTANCE TABLE.

The mounting distance is based on an aspect ratio of 4:3, an optimum 12° off-axis projection and using the NTSC video information to optimize the picture size.

5.8.3 . . . . . Model Number 69196 (TOC-7) Installation Example: (SW: 2540mm (100in.); 4:3 aspect)

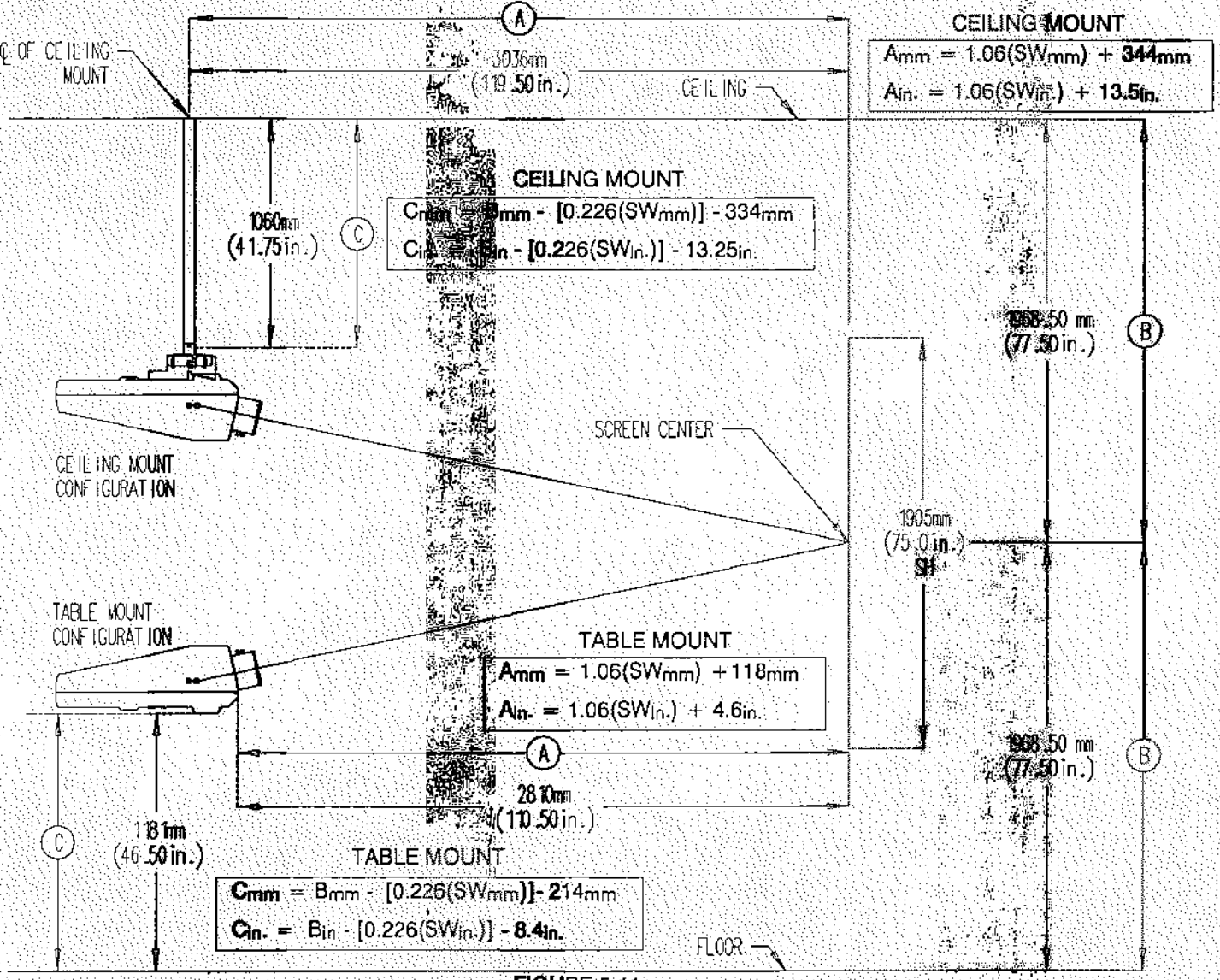


FIGURE 5-11.

5.8.4 . . . . . Model Numbers 69195/69239 (HD-10/GT17/GT26)Installation Example: (SW: 2540mm (100in.); 4:3 aspect)

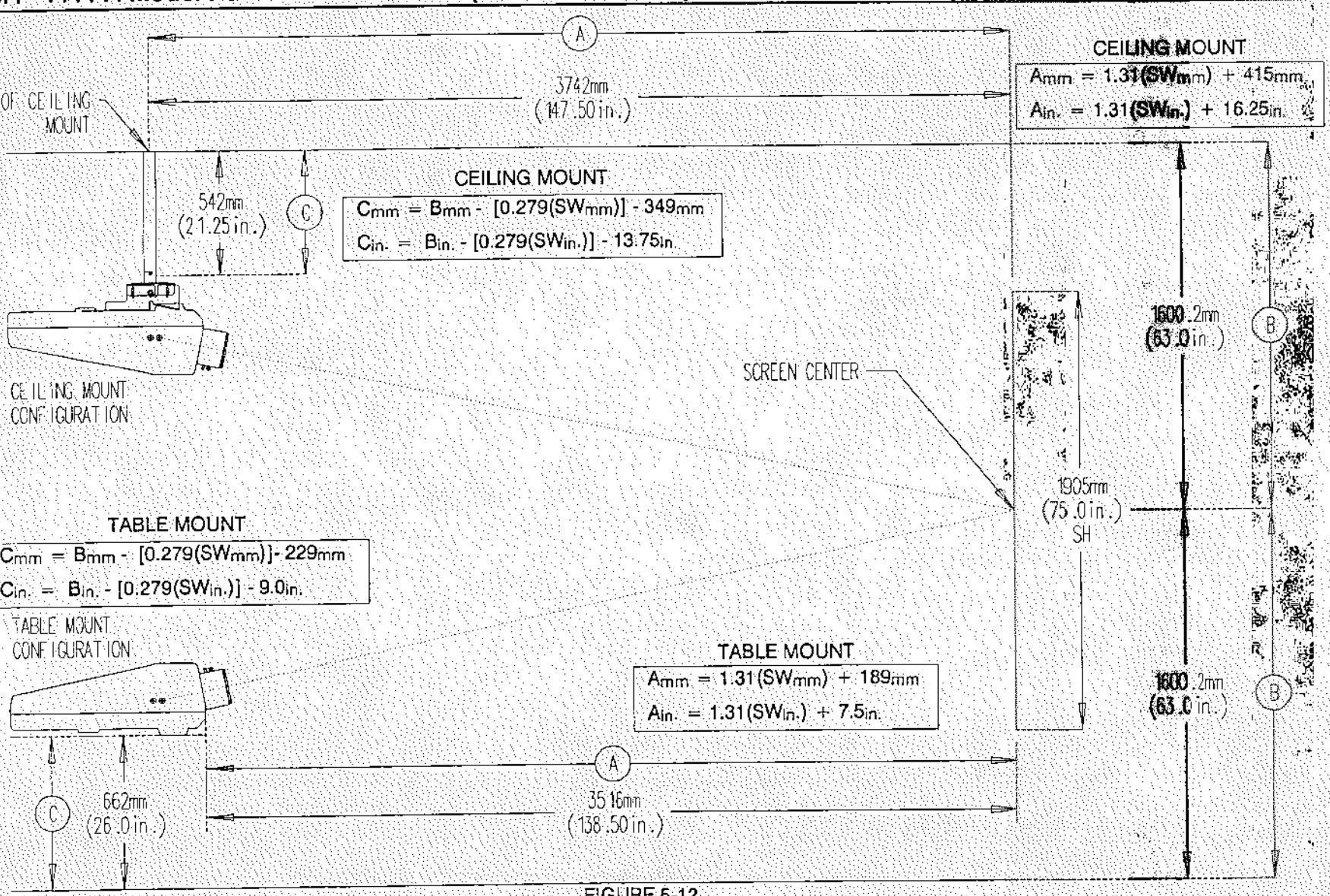


FIGURE 5-12.

5.8.5 . . . . . Model Numbers 69238/69240 (HD-10L) Installation Example: (SW: 1346mm (53in.): 4:3 aspect)

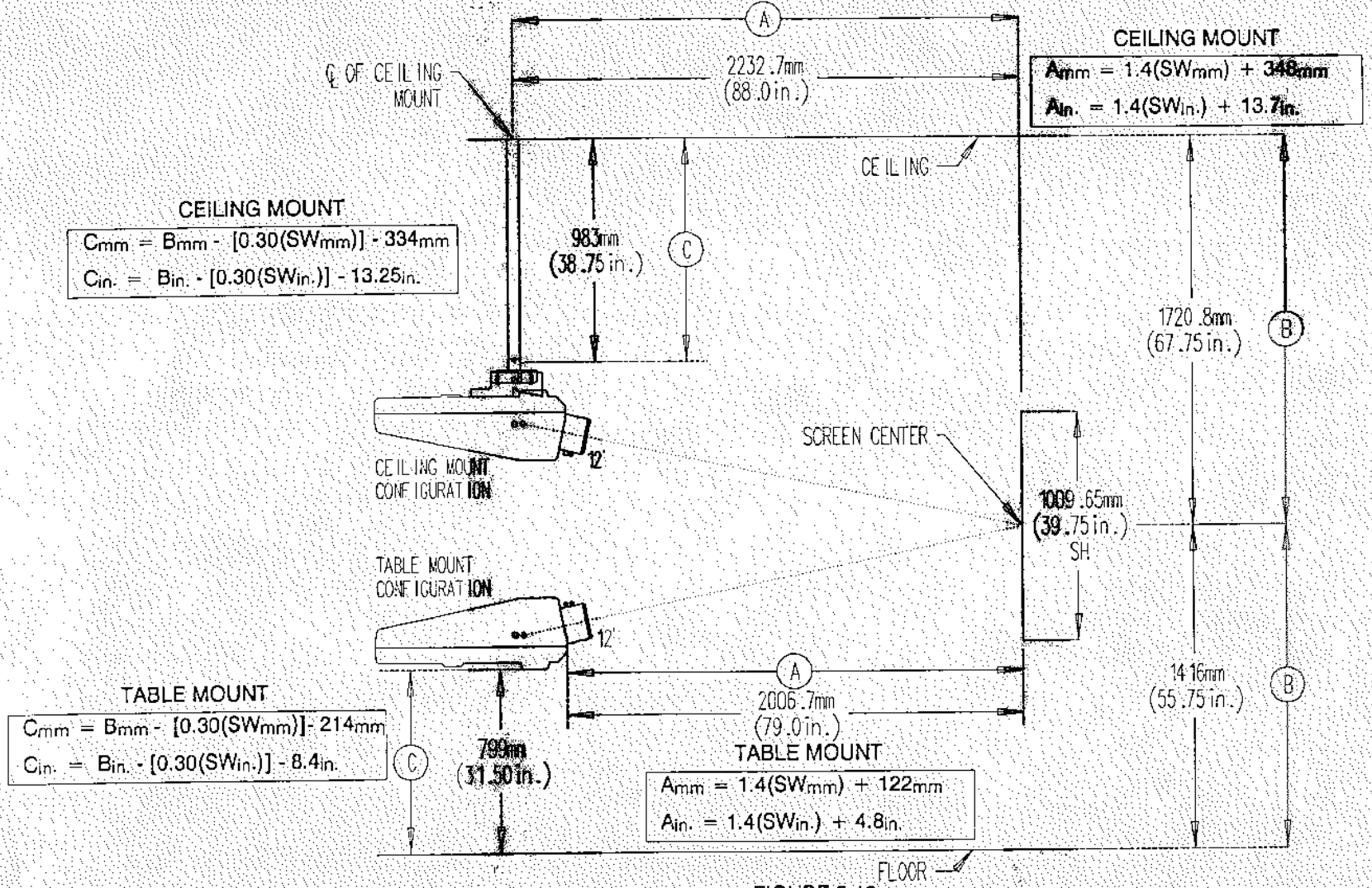


FIGURE 5-13.

Chapter 6

REAR PANEL CONNECTIONS

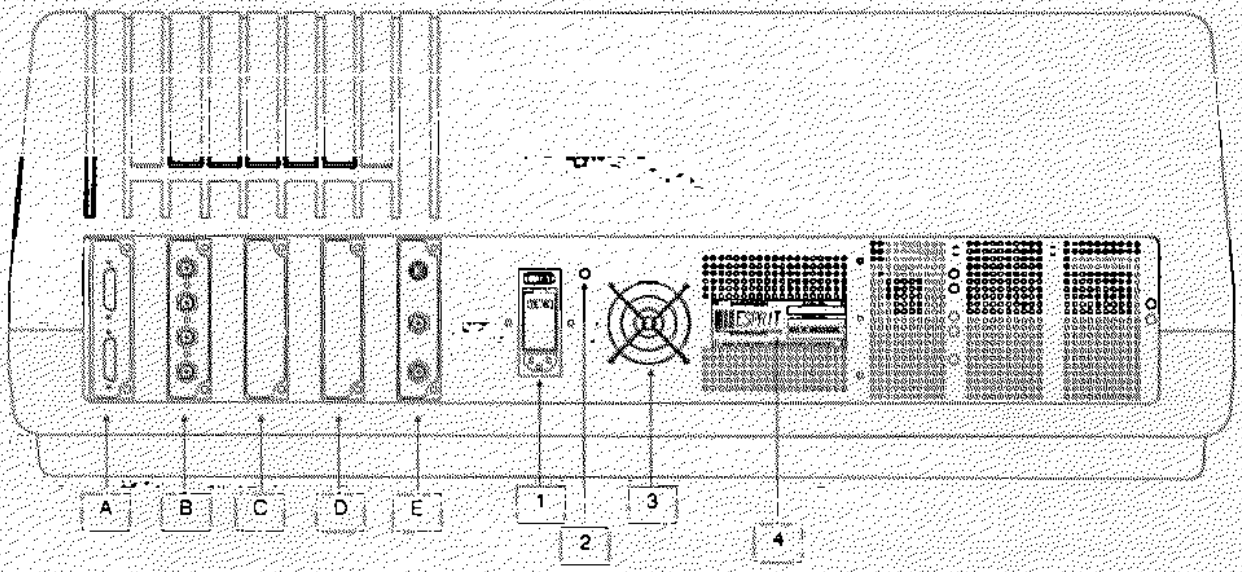
6.1 . . . . . GENERAL:

This section of the manual will familiarize you with the connections, controls and parameters available for operation of your system. It should be all you need to operate your system once it has been installed and set up (focused and registered).

The way in which your system operates will, in some ways, depend on the application. This means, for instance, that a system installed with direct signal inputs will not operate exactly the same as a system with a special options such as an RGB/VIDEO Switcher. If your installation has special options, refer to the technical data furnished with the options for additional information.

6.2 . . . . . REAR PANEL DESCRIPTION:

The rear panel of the system is where all connectors are located. Also located on the rear panel are several other devices, such as, the power rocker switch and access to the main power fuse and voltage select barrel, etc. Refer to figure 6-1.



SLOT	STANDARD MODULE	OPTIONAL MODULE
A	CPU MODULE	NONE
B	ANALOG RGB1	NONE
C	INTERNAL TEST/TEXT INTERFACE	ANALOG RGB2 OR TTL VGA
D	BLANK	FUTURE USE
E	VERTICAL DRIVE PANEL/BNC	QUAD VIDEO DECODER

ITEM	DESCRIPTION
1	AC LINE FILTER / MAIN FUSE
2	RUNNING INDICATOR (LED)
3	REAR FAN
4	MODEL/NAMEPLATE

FIGURE 6-1. REAR PANEL ILLUSTRATION / CONFIGURATION.

6.3 . . . . . INPUT SIGNALS:

6.3.1 . . . . . CPU MODULE (SLOT A):

Located on the CPU module are the remote control MASTER input and SLAVE output. The SLAVE output is utilized for networking, i.e., to control more than one ESPRIT system with one host unit. Refer to Chapter 10 for RS232 interface data.

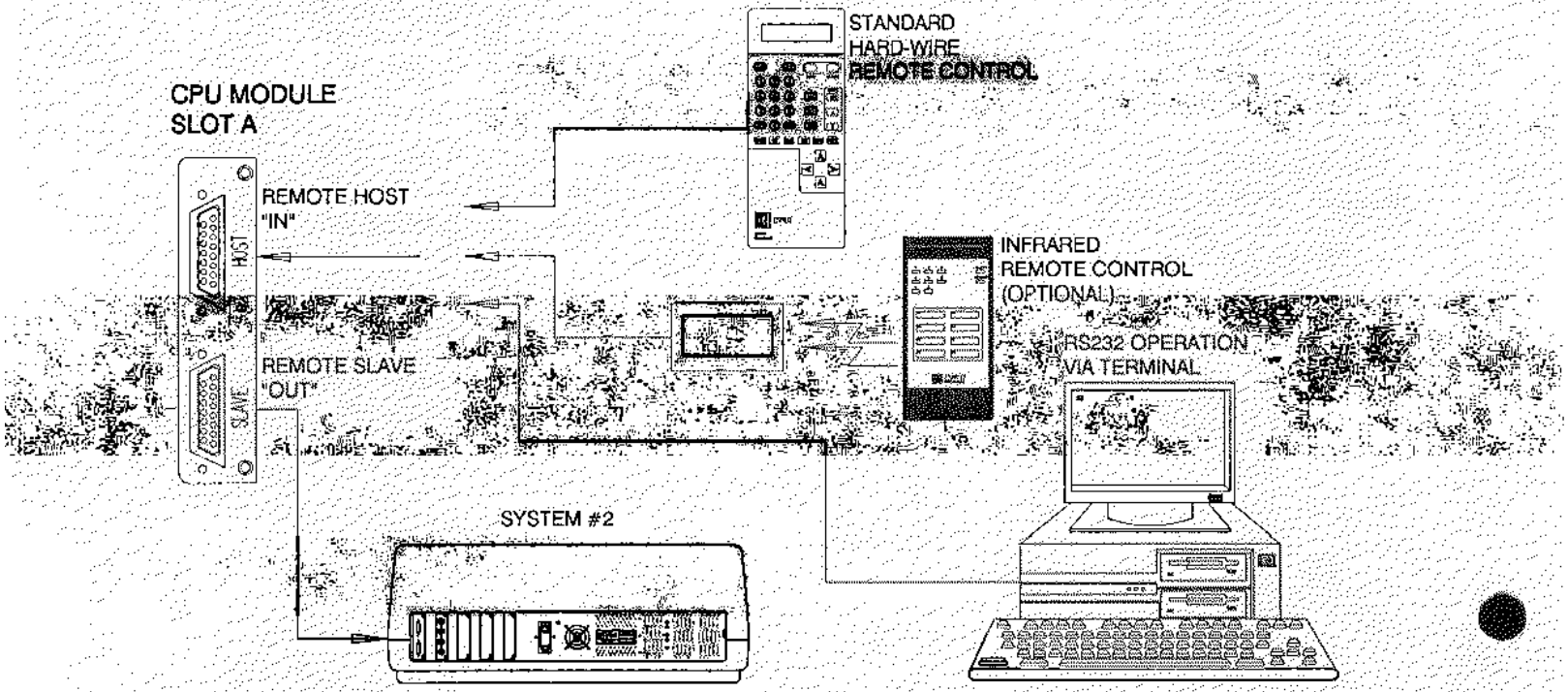


FIGURE 6-2.

6.3.2 . . . . . RGB1 MODULE / RGB ANALOG INPUT (SLOT B):

The Analog RGB1 input falls into three major categories, three- wire, four-wire and five-wire. The ESPRIT Video/Computer Graphics display system will automatically configure itself properly if the input signals are applied to the proper connectors.

A optional Analog RGB2 module is available and can be installed into SLOT C. The second Analog RGB inputs can only be used with three or four - wire RGB sources. Refer to Chapter 7 to access the RGB and optional RGB sources.

SPECIFICATIONS ANALOG RGB VIDEO AND SYNC INPUTS
• RED, GREEN, BLUE: RS170 COMPATIBLE: 0.7Vp-p ~ 5Vp-p / 75 OHM
• SYNC: COMPOSITE HORIZONTAL & VERTICAL, SEPERATE HORIZONTAL AND VERTICAL, OR SYNC ON GREEN: 0.3Vp-p ~ TTL LEVELS / 75 OHM
• AUTOMATIC SYNC POLARITY SELECT.
• SELECTABLE SYNC TIP OR BACK PORCH CLAMPING.

6.3.2.1 . . . .THREE WIRE RGB:

For three-wire RGB, the signals are Red video, Green video (with Composite Sync), and Blue video. These signals would be applied to the Red,Green and Blue connectors respectively. Refer to figure 6-3.

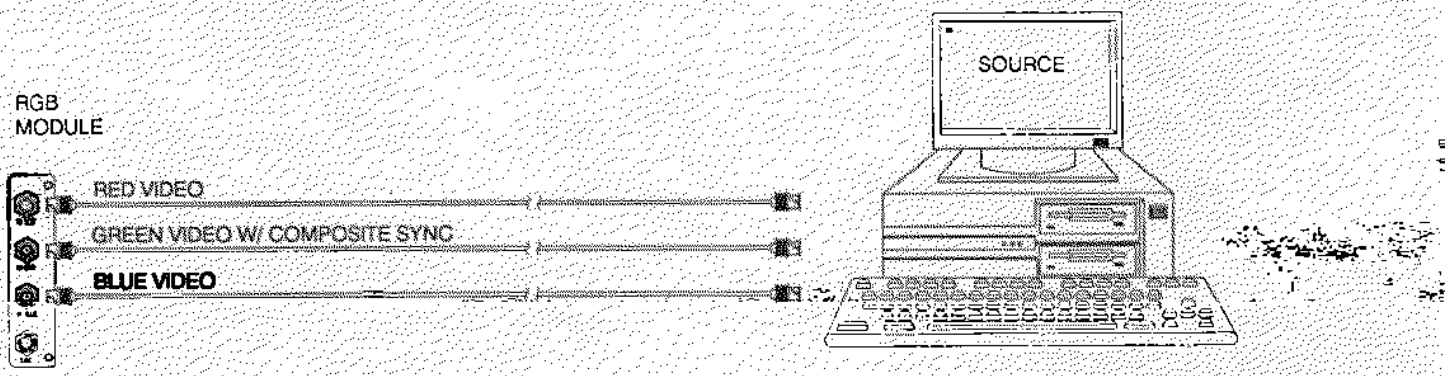


FIGURE 6-3.

☐ NOTE: Ensure that there is no active signal connected to the fourth SYNC BNC connector on the RGB Module and the VERTICAL DRIVE BNC connector on the Quad Video Module (SLOT E) while in this mode of operation. Maintain an equal length for each cable used to avoid an imbalance in the signals.

6.3.2.2 . . . . FOUR WIRE RGB:

For four-wire RGB, the signals are Red video, Green video, Blue video and Composite Sync. These signals would be connected to the Red, Green, Blue and Sync BNC connectors respectively. Refer to figure 6-4.

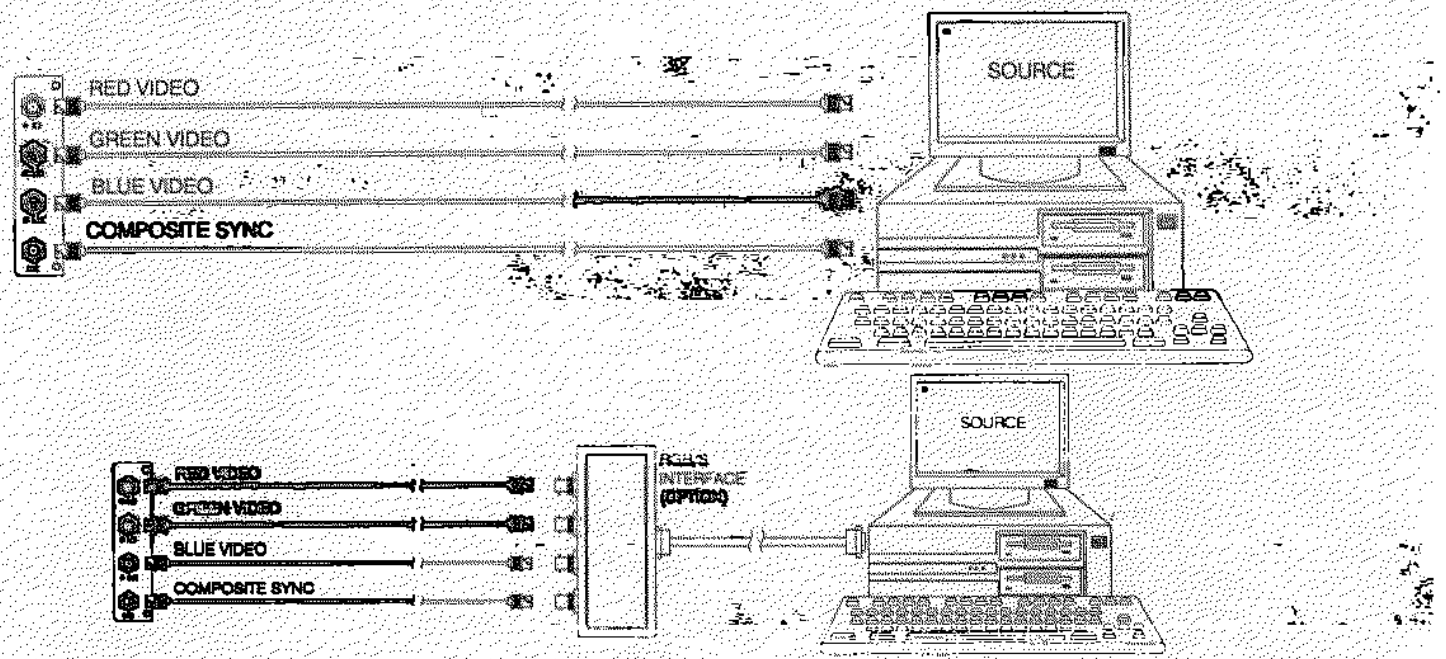


FIGURE 6-4.

☐ NOTE: Ensure that there is no active signal connected to the VERTICAL DRIVE BNC connector on the Quad Video Module (SLOT E) while in this mode of operation and maintain equal lengths for each cable used.

6.3.2.3 . . . . FIVE WIRE RGB:

For five -wire RGB, the signals are RED video, GREEN video, BLUE video, HORIZONTAL sync and VERTICAL sync. These signals would be connected to the RED, GREEN, BLUE, SYNC and VERTICAL DRIVE respectively. Refer to figure 6-5.

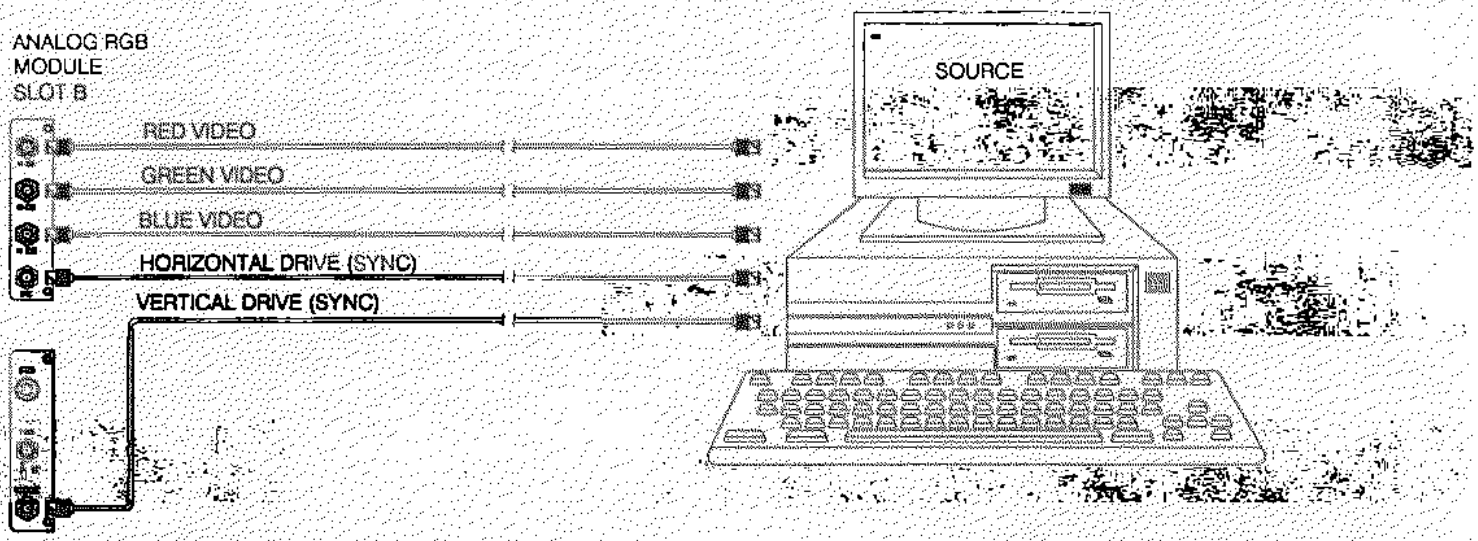


FIGURE 6-5.

The operator controls that affect the ANALOG RGB image via the remote control are brightness, contrast controls, red, green and blue registration and phasing, and the R, G, and B gain controls (below their respective BNC connectors) on the RGB1 and RGB2 Module.

6.3.2.4 . . . . GAIN ADJUSTMENTS:

The following procedure is used for both the standard Analog RGB1and the optional Analog RGB2 modules.

The gain controls are provided to attenuate any signal level above 1Vp-p, and are factory set for unity drive 1 "in" / 1 "out". To adjust the controls, enter the desired RGB mode and **display a full page of white text. Set the brightness and contrast via the remote control to the desired level. Adjust the Red, Green and Blue gain controls as high as possible without causing de-focusing of the Image while obtaining the desired grayscale. Refer to figure 6-6 for the control locations.**

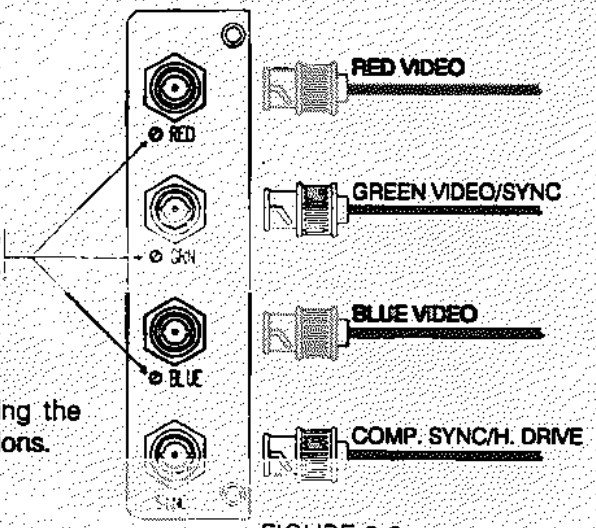


FIGURE 6-6.

6.3.3 . . . . .VIDEO MODULE (OPTIONAL) (SLOT E):

6.3.3.1 . . . .INPUT 1: S-VHS INPUT:

The S-VIDEO/S-VHS input utilizes a mini "D" 4 pin connector which is the standard for this input. The connector and plug are keyed to ensure proper connection. The switching between the S-Video/S-VHS and the composite video input is accomplished by the remote control. Refer to figure 6-7 for the pin-out /description for the female (rear panel) S-Video connector and figure 6-8 for location.

PIN NO.	DESCRIPTION
1	GROUND
2	GROUND
3	"Y" SIGNAL 1Vp-p
4	"C" SIGNAL .285Vp-p

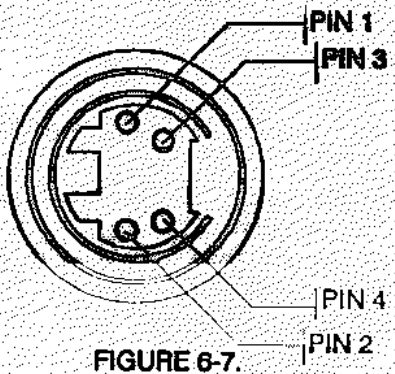


FIGURE 6-7.

S-VHS CONNECTOR PIN-OUT.

6.3.3.2 . . . . INPUT 2: COMPOSITE VIDEO INPUT:

The composite video input will automatically decode any of the quad standards. The four standards are NTSC 3.58, NTSC 4.43, PAL and SECAM. The automatic selection process may be overridden via the remote control by pressing the appropriate numeric key followed by the B button. Refer to Chapter 7.

The composite video input is a standard BNC connector with loop through capability. To loop a signal through the system, install a BNC "T" connector to the Video "IN" BNC, switch the termination switch located beneath the Video "IN" BNC from "IN" (down) to "OUT" (up) and connect to any 75 Ω terminated load. If the loop through is not being used, the termination switch must remain in the "IN" position or loss of the picture quality will occur. Refer to figure 6-8.

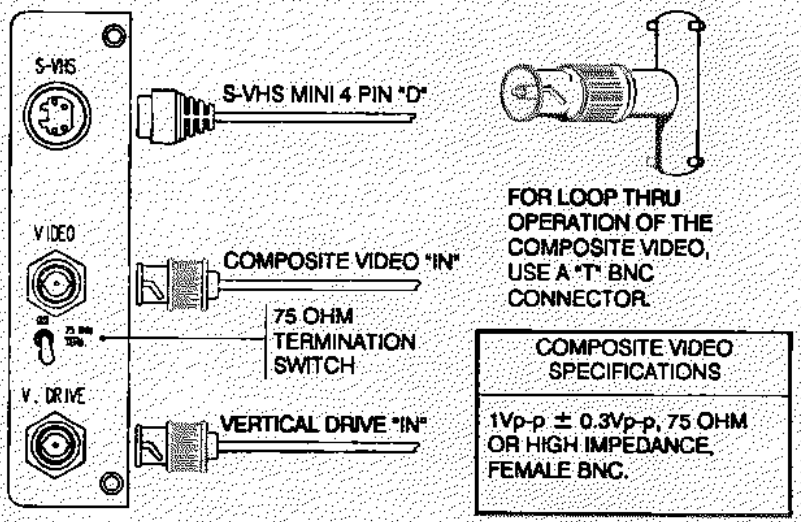


FIGURE 6-8.

S-VHS , COMPOSITE VIDEO AND VERTICAL DRIVE INPUT CONNECTORS.

6.3.3.3 . . . .VERTICAL DRIVE INPUT:

This connector is used with an RGB analog input in Slot E that requires a separate vertical sync input (i.e., five - wire RGB). Refer to figure 6-8 for location information. If the Quad Video/S-VHS module is not being utilized, a module with the VERTICAL DRIVE input (only) is provided.

6.3.4 SLOT C:

6.3.4.1 TEST/TEXT INTERFACE MODULE (STANDARD):

The standard module located in the SLOT C position for the ESPRIT system is the TEST/TEXT Interface module. This module provides interfacing for the signals generated from the internal test generator and the the internal Help System to the RGB1 module. This module may be substituted with the TTL/VGA module (section 6.3.4.2) or the Analog RGB2 module at any time without losing the Test/Text interfacing capabilities.

6.3.4.2 . . . .TTL/VGA MODULE (OPTIONAL):

The inputs for the TTL/VGA module include a 9 pin "D" connector for the CGA/VGA inputs and a 15 pin "high density" connector for the VGA input. The VGA input may be used with any IBM® (VGA) or compatible. The TTL input automatically configures to accept either CGA or EGA, with VGA being selected via the remote control. Pin-out information for the back panel connection are provided below. Refer to figure 6-9 Please refer to Chapter 7, page 7-9 to access the TTL/VGA mode of operation.

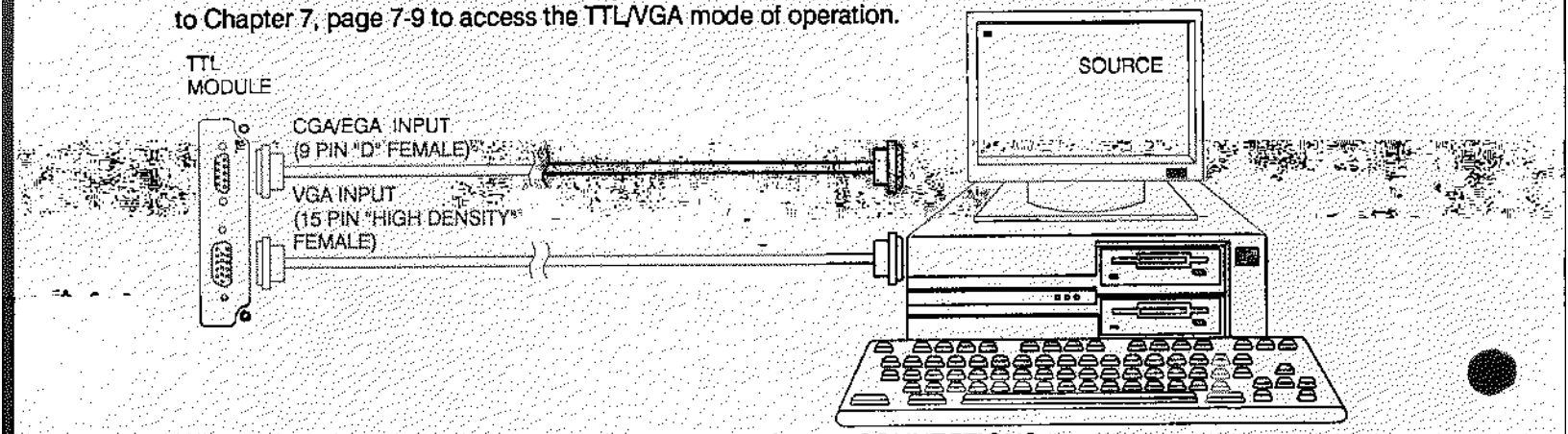
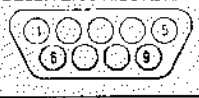


FIGURE 6-9. TTL/VGA MODULE CONNECTIONS.

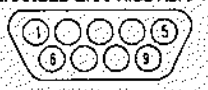
6.3.4.2.1 . . . .CGA/EGA AND VGA CONNECTOR PIN CONFIGURATIONS:

CGA
COLOR GRAPHICS ADAPTER



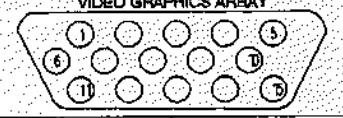
1- Ground	6 - Intensity
2 - Ground	7 - No Connection
3 - Red	8 - Horizontal Sync
4 - Green	9 - Vertical Sync
5 - Blue	

EGA
ENHANCED GRAPHICS ADAPTER



1- Ground	6 - Secondary Green
2 - Secondary Red	7 - Secondary Blue
3 - Primary Red	8 - Horizontal Sync
4 - Primary Green	9 - Vertical Sync
5 - Primary Blue	

VGA
VIDEO GRAPHICS ARRAY



1 - Red Video	9 - No Connection
2 - Green Video	10 - Ground
3 - Blue Video	11 - Ground
4 - Ground	12 - No Connection
5 - Ground	13 - Horizontal Sync
6 - Red Ground	14 - Vertical Drive
7 - Green Ground	15 - No Connection
8 - Blue Ground	

Chapter 7

REMOTE CONTROL FUNCTIONS

7.1 . . . . . .THE REMOTE CONTROL:

This Chapter will familiarize you with the remote control operation and the many features that are available. Please read completely so to avoid any confusion on how the digital remote control operates.

The ESPRIT Hard-Wired Remote Control unit incorporates a 16 X 2 LCD readout which indicates the operation and diagnostic status of the system. The hard wired remote comes standard with a cable length of 25 ft.(7.6 m), which can be extended in increments of 50 ft. (15.2 m) or 100 ft. (30.5 m).

An optional Infrared EXECUTIVE REMOTE, with ON/OFF/, STANDBY and 8 Channel select, is available.

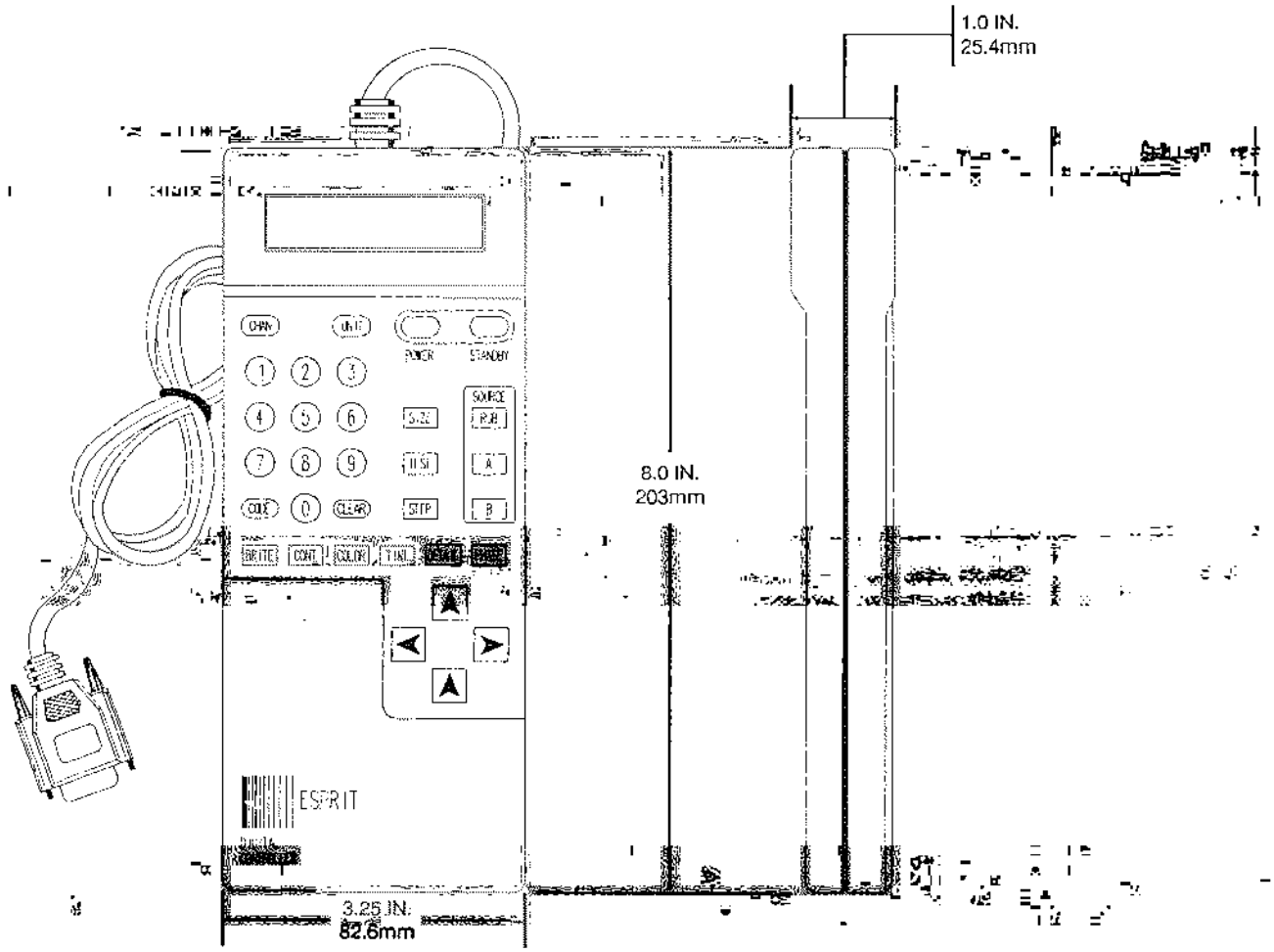
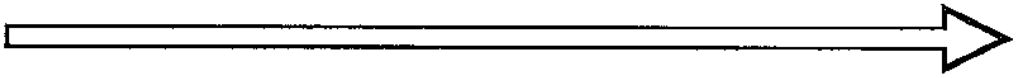


Figure 7-1. Hard-wired Remote Control dimensions.

FOLD OUT TO VIEW THE REMOTE CONTROL KEYPAD DIAGRAM,

KEYPAD SUMMARY AND INDEX.



7.1.1 . . . . .REMOTE CONTROL KEYPAD DIAGRAM:

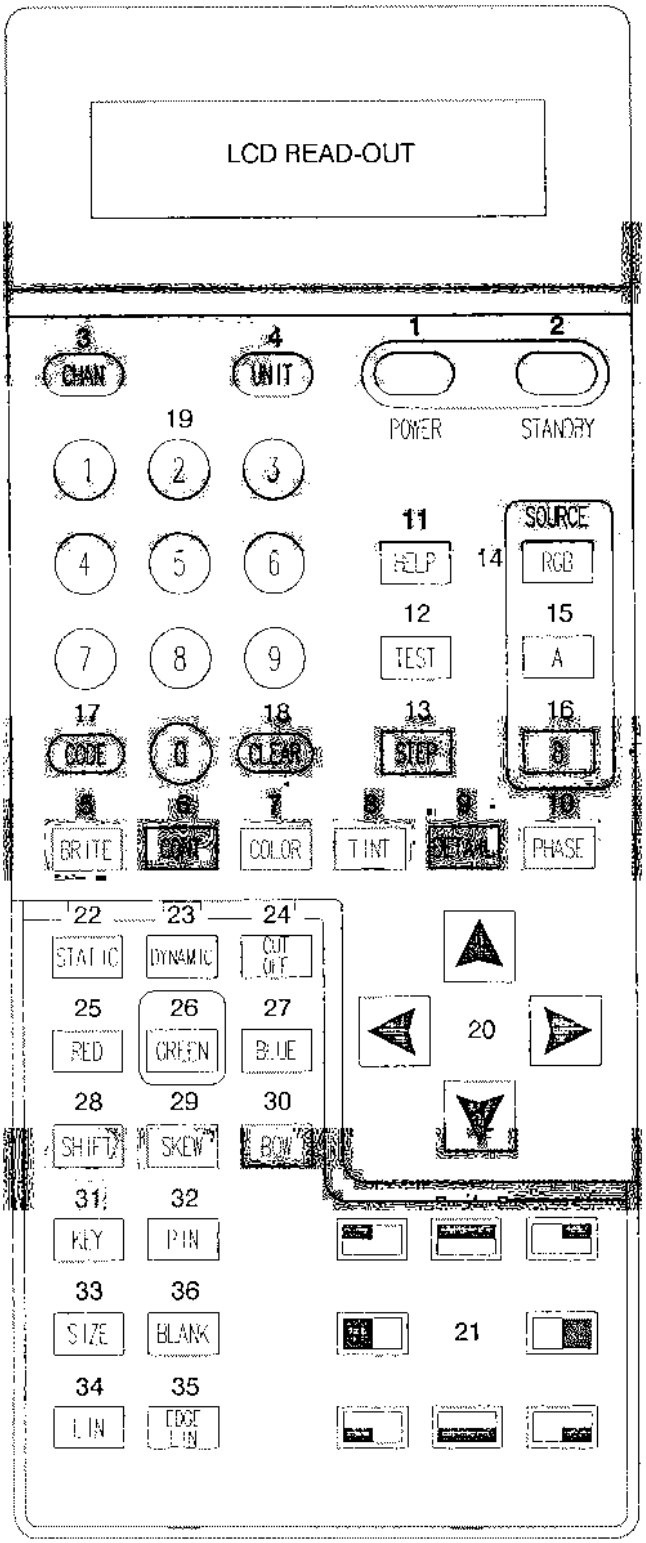


Figure 7-2. Remote Control Keypad diagram.

(ACTUAL SIZE SHOWN)

7.1.2 . . . . .KEYPAD SUMMARY/INDEX:

CONTROL	DESCRIPTION	PAGE
1. POWER	Toggles power ON/OFF	7-5
2. STANDBY	Toggles Stand-by ON/OFF.	7-5
3. CHANNEL	Inputs channel number.	7-5
4. UNIT	Inputs unit number.	7-6
5. BRITE	Selects brightness control.	7-6
6. CONT	Selects contrast control.	7-6
7. COLOR	Selects color control.	7-6
8. TINT	Selects hue control.	7-6
9. DETAIL	Selects sharpness control.	7-6
10. PHASE	Selects phase control.	7-7
11. HELP	Selects help mode.	7-8
12. TEST	Toggles into test mode.	7-8
13. STEP	Advances test patterns.	7-9
14. RGB	Selects RGB mode. Selects 62.5 - kHz test frequency.	7-9
15. A	Selects CGA/EGA/VGA mode (opt.) or 2nd analog RGB source (opt.) Selects 31kHz. test frequency.	7-9
16. B	Selects video mode (opt.)Selects 15kHz. internal test frequency.	7-10
17. CODE	Inputs code assignments.	7-11
18. CLEAR	Removes an incorrect entry.	7-15

CONTROL	DESCRIPTION	PAGE
19. NUMERIC KEYPAD	Used in establishing channel / unit numbers and Percentage setting of image controls.	7-16
20. ARROW KEYS	Used to adjust Image and Registration Settings.	7-16
21. QUADRANTS / EDGES	Selects desired adjustment area of registration.	7-17
22. STATIC	Selects static registration operation.	7-17
23. DYNAMIC	Selects dynamic registration operation.	7-17
24. CUTOFF	Toggles selected color ON/OFF.	7-18
25. RED	Enables red only functions.	7-18
26. GREEN	Enables MASTER functions.	7-18
27. BLUE	Enables blue only functions.	7-18
28. SHIFT	Selects shift functions.	7-19
29. SKEW	Selects skew functions.	7-19
30. BOW	Selects bow functions	7-20
31. KEY	Selects keystone functions.	7-20
32. PIN	Selects pincushion functions.	7-21
33. SIZE	Selects H & V size.	7-22
34. LIN	Selects linearity functions.	7-23
35. EDGELIN	Selects edge linearity functions.	7-24
36. BLANK	Selects blanking functions.	7-24

Table 7-1.

Standard Remote Control Summary and Index.

7.2 . . . . . REMOTE CONTROL FUNCTIONS

1. . . . . POWER BUTTON: (POWER)

FUNCTION: Toggles projector "ON"and "OFF."

☐ OPERATION 1: Once the system has been installed and the main rocker switch on the rear panel is "ON", you are ready for system turn "ON." The **POWER** button toggles the projector "ON "and "OFF." In the "OFF" mode with the main rocker switch "ON," the LCD will display the Model number of the projector. When the **POWER** button is pressed the system will turn "ON" and the display will indicated the last mode of operation that the system was in when it was de- energized.

2. . . . . STANDBY BUTTON: (STANDBY)

FUNCTION: Toggles image "ON" and "OFF."

☐ OPERATION 1: The system provides the user with the capability of removing the projected image from the screen without changing any of the image settings or cooling down the system. The operator need only to press the **STANDBY** button on the remote control to remove the image. The image is restored to the screen by pressing the **STANDBY** key a second time.

3. . . . . CHANNEL BUTTON: (CHAN)

FUNCTION: Selects channel number. See Codes page 7-11 to write protect a channel.

DEFINITION OF A CHANNEL: A Channel refers to a location within battery backup memory in which data such as mode of operation, all image quality and convergence adjustments are established as a group. The data within the channel is defined and set by the operator/end-user for a particular external video source or sources. The objective of establishing and using channels is to provide a smooth and simply transition between multiple external video inputs that have varying operating parameters such as, black level, contrast, size, phase, blank and mode of operation.

STORING DATA: To store data such as brightness, contrast, phasing, blanking, height, width ,mode of operation, all image quality adjustments and *ALL* Registration Settings for a dedicated channel location, select a channel number and set the parameters for the particular source. All settings will have been automatically stored. Refer to example below.

☐ STEP 1. Select a channel number e.g., (1) then press (CHAN).

☐ STEP 2. Set the following parameters: brightness, contrast, phasing, blanking, height, width, mode of operation, and *ALL* registration settings. To recall a channel repeat Step 1.

☐ STEP 3: Continue with Steps 1 and 2 to preset all other sources into other channels.

☐ CHANNEL INDENTIFICATION: To determine a particular channel number for an active source, simply press the (CHAN) button and the Remote LCD will indicated the channel number.

4. . . . . UNIT BUTTON: (UNIT)

FUNCTION: Assign/select one or multiple projector operation.

☐ OPERATION 1: In this mode of operation, up to 256 projectors may be networked together and controlled via either the hard-wired remote control or a computer keyboard. Perform the following to select an individual unit in a multiple system operation.

STEP 1. Select unit's number "N", where "N" equals desired unit number.

STEP 2. Press the (UNIT) button.

- NOTE 1: It is not required to perform steps 1 and 2 for a single unit configuration. Refer to Chapter 10 for more information on the RS232 operation.
- NOTE 2: It is possible to address all the projectors at the same time by entering number 256 on the numeric keypad then pressing (UNIT) on the remote keypad. This global command will remain in effect until one of the projectors is individually selected. The LCD will display "GLOBAL LISTEN".
- NOTE 3: Refer to Chapter 10 for multiple system interconnection/operation, ASCII commands, setting baud rate and address switches of multiple systems.

5-10. . . . . IMAGE QUALITY ADJUSTMENTS: BRITE CONT COLOR TINT DETAIL PHASE

FUNCTION: Control image quality

☐ OPERATION 1: There are six buttons across the center of the remote control that control image quality and may be stored within a *Channel*. The six buttons are described below.

5. BRITE (BRIGHTNESS): Operates when in Video, Analog RGB modes, TTL modes, HELP mode and TEST modes. Adjust the brightness level until the black portions of a projected image are black, but detail in shaded areas is not lost.

6. CONT (CONTRAST): Operates when in Video, analog RGB, TTL modes, HELP mode and TEST modes. The contrast button will change the amount of image intensity. If image defocusing or loss of detail occurs, decrease either contrast or brightness or both.

7. COLOR Operates when in Video only. The color button controls the color intensity of the video image. If the image appears TOO PALE or weak, increase the color level, and if the image appears FLUSHED or TOO BRIGHT, decrease the color level.

8. TINT Operates when in NTSC video modes only. The tint button controls the hue of the video image. If facial tones or objects appear TOO GREEN, increase the tint setting. If facial tones appear TOO PURPLE, decrease the tint level.

9. DETAIL Operates when in Video only. The detail button controls the sharpness of the picture in the video modes only. If the image appears soft, increase the detail. If the image appears grainy, decrease the detail setting. The desired setting of detail is as high as allowed without the image appearing grainy.

5-10 . . . . . IMAGE QUALITY ADJUSTMENTS: (CONTINUED)

10. [PHASE] One problem frequently encountered is improper horizontal and vertical framing of the projected image on the raster. This is seen as characters lost on either the right, left and/or top,bottom edge of the image due to variations in phasing in computers. The ESPRIT system via the remote control allows the image to moved either left or right, up or down to correct for this variation.

ADJUSTING IMAGE SETTINGS:

There are two ways of setting the image controls;

The first method is by selecting a percentage of the desired level (i.e. 75%) within the range of 0 to 100%.

NOTE: Due to limitations, rounding of the actual entry may occur, i.e. 75% = 74%.

PERCENTAGE SETTING:

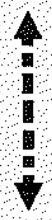
- STEP 1. Select function, e.g. ; [BRITE] on the remote control. LCD will indicate current setting.
- STEP 2. Select a percentage, e.g.; (7) (5) on the numeric keypad.
- STEP 3. Re-select function, e.g. ; [BRITE] on the remote control.
- NOTE: STEP 1 is only required to determine the present setting of the function.

The second method of setting the desired level, is by increasing the setting using the arrow keys,

ARROWS KEYS: [▲] [▼]

- STEP 1. Select function, e.g.; [BRITE] on the remote control.
- STEP 2. Use the up [▲] arrow key to increase level (increment) and the down [▼] arrow key to decrease level (decrement).

LCD: BRIGHT MAX



LCD: BRIGHT MIN

11. . . . . HELP BUTTON: [HELP]

FUNCTION: Enters the HELP program at main menu page.

☐ OPERATION 1: Enters internal help mode at the main menu selections.

☐ OPERATION 2: Entering selection number of main menu will advance to the first page of the selected subject. Use [◄] and [►] arrows to turn the pages, [▲] arrow to bring you back to the index page, and the [▼] arrow to exit the HELP mode. These are shown on the help screens for reference.

- NOTE 1: Image Quality adjustments cannot be entered while a MENU is on screen. Once a MENU is active and the LCD displays [SELECT SUBJECT] , you may only select a subject or exit.
- NOTE 2: If while in the help mode and other than a menu is being displayed, and one of the image quality buttons is pressed, e.g. [BRITE] , then the arrow keys are reassigned to that function.

You may now use the up [▲] and down [▼] arrows to adjust the brightness level.

- NOTE: Upon completion of making image quality adjustments , the (CLEAR) button must be pressed to allow the arrow keys to resume the functionality in the help mode.

12. . . . . TEST BUTTON: [TEST]

FUNCTION: Toggles into last selected test mode of operation.

- NOTE 1: Image Quality adjustments (except phasing) may be adjusted while in the TEST mode of operation.

☐ OPERATION 1: While in the TEST mode of operation, pressing one of the following will

[STEP] Cycles through the available test patterns. Available test patterns; **(1)**, Crosshatch 1 (dense crosshatch), **(2)** Crosshatch 2 (normal), **(3)** Crosshair, or **(4)** Dots.

[B] OR (1) [TEST] selects 15kHz internal test frequency of operation.

[A] OR (2) [TEST] selects 31.25kHz internal test frequency of operation.

[RGB] OR (3) [TEST] selects 62.5kHz internal test frequency of operation.

(4) [TEST] selects internal test pattern operation at the operating frequency (*genlocked*) of the input that was running when TEST was selected, i.e. Video, RGB or TTL

13. . . . . STEP BUTTON: [STEP]

FUNCTION: Advances sequence of events.

☐ Operation 1: In the TEST mode , [STEP] will sequence to next available test pattern.

☐ Operation 2: In the Guided Registration programs, [STEP] will advance to next step of alignment.

14. . . . . RGB BUTTON: [RGB]

FUNCTION: Enter the Analog RGB1 mode of operation.

☐ OPERATION 1: In the HELP mode, pressing the [RGB] button will exit to the RGB mode.

☐ OPERATION 2: In the TEST mode, pressing the [RGB] button will select the 62.5kHz internal test frequency of operation.

15 . . . . . A BUTTON: (OPTIONAL INPUT(S)): [A]

FUNCTION: Enters the last mode of operation used, i.e. TTL (CGA/EGA)/ VGA or RGB2 analog mode of operation.

☐ OPERATION 1: With the 2nd analog RGB option installed: Pressing [A] will select this mode of operation.

☐ OPERATION 2: With the HDTV option installed, Pressing [A] will select the HDTV mode of operation.

- HDTV NOTE 1: With the HDTV option installed, the "A" mode of operation will select the Analog RGB1module as its source input and automatically initiate a 3μS retrace time.
- HDTV NOTE 2: Ensure the channel you have designated for HDTV operation has been setup for "back-porch" clamping. To toggle the clamping point use 48 CODE.

☐ OPERATION 3: With the TTL option installed follow Steps 1 and 2 for proper source selection.

STEP 1: Press (1) then [A] for CGA/EGA mode of operation.

STEP 2: Press (2) then [A] for VGA mode of operation.

☐ OPERATION 4: In the TEST mode: Pressing [A] selects the 31.25 kHz. internal test frequency of operation.

☐ OPERATION 5: If in the HELP mode: Pressing [A] will exit to the TTL or 2nd analog RGB mode of operation. If either of the two options are not installed, the system will display error message: [NOT INSTALLED.]

16. . . . . B BUTTON: (OPTIONAL INPUT): [B]

FUNCTION: Enters video mode of operation (last mode used.)

- ☐ OPERATION 1: While in the TEST mode ,pressing [B] will select the 15.625kHz internal test pattern frequency of operation.
- ☐ OPERATION 2: When in the HELP mode pressing [B] will exit to the VIDEO mode.
- ☐ OPERATION 3: With the Video Module option installed and using the numeric keypad, depress [#], then [B] to manually select the various video formats and operations.

PRESS	ACTION/LCD DISPLAY
1 [B]	QUAD AUTO MODE (Composite)
2 [B]	PAL MODE (Composite)
3 [B]	SECAM MODE (Composite)
4 [B]	NTSC 4.43 MODE (Composite)
5 [B]	NTSC 3.58 MODE (Composite)
6 [B]	S-VIDEO QUAD AUTO MODE
7 [B]	S-VIDEO PAL MODE
8 [B]	S-VIDEO SECAM MODE
9 [B]	S-VIDEO 4.43 MODE
10 [B]	S-VIDEO 3.58 MODE

ENTERING AND SELECTION OF THE VARIOUS VIDEO FORMATS.

17. . . . . CODE BUTTON (CODE)

FUNCTION: Activates the System's special internal commands.

☐ OPERATION: 1: Use the numeric keypad to enter the desired command, then press the CODE button to activate the command. NOTE: The LCD read-out will prompt you to enter setting, ACC = "N", (where "N" refers to the corresponding entry listed in the following tables).

CODE	FUNCTION	LCD READ-OUT / OPERATION
10*	DISPLAY TIME OF DAY	00:00 / 24 HOUR CLOCK FORMAT
11*	SET TIME OF DAY	ENTER TIME / H:M (HOUR:MIN.)
12*	ENABLE TIMER OPERATION	TIMER ENABLED / AUTO "ON" ENABLED
13*	DISABLE TIMER OPERATION	TIMER DISABLED / AUTO "OFF" DISABLED
14*	DISPLAY TIMER "ON" TIME	TIME 00:00 / AUTO "ON" TIME
15*	SET TIMER "ON" TIME	00:00 / SET AUTO "ON" TIME (DAILY)
16*	DISPLAY TIMER "OFF" TIME	TIME 00:00 / AUTO "OFF" TIME
17*	SET TIMER "OFF" TIME	00:00 / SET AUTO "OFF" TIME (DAILY)
20	CHANNEL WRITE PROTECT	CHANNEL WRITE PROTECT ON/OFF / PROTECTS A (TOGGLE OPERATION) CHANNEL FROM ACCIDENTAL CHANGES OF PRESET ADJUSTMENTS
21	COPY *"BEST-FIT"* CHANNEL	COPY IN PROGRESS / AUTOMATICALLY SEARCHES AND COPIES THE CLOSEST CHANNEL SETTINGS FOR THIS PARTICULAR SOURCE INTO THE ACTIVE CHANNEL (COPIES ALL DATA, EXCLUDING MODE OF OPERATION) NOTE 1: THIS COMMAND SELECTS THE FIRST CHANNEL OF THE CLOSEST MATCH, STARTING FROM THE LOWEST TO HIGHEST HORIZONTAL FREQUENCY. NOTE 2: THIS COMMAND WILL ONLY CHOOSE CHANNELS THAT ARE "VALIDATED". SEE 24 CODE
22	COPY CHANNEL *TO* COMMAND	COPY CHANNEL TO (ENTER 1 - 50) / COPIES THE ACTIVE CHANNEL SETTINGS TO THE DESIRED (SELECTED) CHANNEL
23	COPY CHANNEL *FROM* COMMAND	COPY CHANNEL FROM (ENTER 1 - 50) / COPIES CHANNEL SETTINGS FROM THE SELECTED CHANNEL TO THE ACTIVE CHANNEL

CODES 10 THROUGH 23 DESCRIPTIONS.

*CODES 10 THROUGH 17 (AUTOMATIC TIMER) ARE ONLY AVAILABLE WITH REVISION 1.04 AND BELOW OR 2.0 AND ABOVE.

CODE	FUNCTION	LCD READ-OUT / OPERATION
24	VALIDATE CHANNEL FREQUENCY	FREQ VALIDATED/ THIS COMMAND IS USED TO CONFIRM THAT A CHANNEL HAS BEEN SET AND ADJUSTED. ONCE VALIDATED, THIS COMMAND WRITES THE CHANNELS' HORIZONTAL FREQUENCY INTO A "LOOK-UP" TABLE FOR THE "BEST-FIT" COMMAND TO USE. IF A CHANNEL HAS NOT BEEN VALIDATED, IT CAN NOT BE USED WITH THE "BEST-FIT" COMMAND NOTE: 24 CODE ADDITIONALLY ACTIVATES THE CHANNEL WRITE-PROTECT COMMAND-20 CODE
25	TEST CHANNEL FOR VALIDATION	DISPLAYS THE FREQUENCY VALIDATED (STORED) WITHIN THE SELECTED CHANNEL LOCATION. NOTE: IF THE CHANNEL HAS NOT BEEN VALIDATED USING 24 CODE A NOT VALIDATED" MESSAGE WILL APPEAR ON THE LCD
26	DISPLAY "*BEST-FIT*" CHANNEL	DISPLAYS THE CHANNEL NUMBER AND HORIZONTAL FREQUENCY FROM THE TABLE OF VALIDATED CHANNELS A POSSIBLE CLOSEST MATCH FOR THE BEST-FIT OR ANY OTHER COPY COMMAND TO USE.
27	CHANNEL AUTO-SEARCH MODE	AUTO SEARCH ON / THIS COMMAND ALLOWS THE SYSTEM OF OPERATION TO CONSTANTLY MONITOR THE INCOMING SIGNAL FOR (TOGGLE OPERATION) CHANGES. IF A CHANGE IS DETECTED, SUCH AS THE FREQUENCY OF THE INCOMING SIGNAL, THE SYSTEM AUTOMATICALLY RE-CONFIGURES THE CHANNEL PARAMETERS FOR THE BEST POSSIBLE SETTINGS
28	COPY CHANNEL *ALL* COMMAND	LCD PROMPT: COPY CHAN ALL ARE YOU SURE? PRESS **CODE** FOR **YES** OR ANY OTHER KEY FOR **NO.** COPIES THE PRESENTLY ACTIVE CHANNEL SETTINGS INTO ALL 50 CHANNELS
29	CLEAR ACTIVE CHANNEL	LCD PROMPT: CLEAR CHAN ARE YOU SURE? PRESS **CODE** FOR **YES** OR ANY OTHER KEY FOR **NO** CLEARS (RESETS TO APPROXIMATELY 50%) ALL SETTINGS OF THE ACTIVE CHANNEL
30	DISPLAY DIAGNOSTICS	ENABLE/DISABLE ERROR DIAGNOSTICS. DISPLAYS ALL APPROPRIATE ERROR MESSAGES OR SIMPLY "SYSTEM OK"
31	DISPLAY TOT TIME	ELAPSED TOT TIME / DISPLAYS THE TOTAL ELAPSED TIME (TOTAL OPERATING TIME) IN (DAYS : HOURS : MINUTES)

CODES 24 - 31 DESCRIPTION.

CODE	FUNCTION	LCD READ-OUT / OPERATION
32	DISPLAY CRT TIME	ELAPSED CRT TIME / DISPLAYS THE TOTAL ELAPSED CRT (TOTAL CRT OPERATING TIME)TIME IN (DAYS : HOURS : MINUTES)
33	DISPLAY ORIENTATION	DISPLAYS THE PROJECTION MODE OF OPERATION I.E., FLOOR MOUNTED FRONT PROJECTION
34	DISPLAY BOARD STATUS	DISPLAYS THE INPUT MODULES AVAILABLE (INSTALLED)
35	DISPLAY ROM REVISION	DISPLAY THE CURRENT REVISION LEVEL OF THE OPERATING SYSTEM
36	DISPLAY FREQUENCY COUNTER	DISPLAYS THE HORIZONTAL RATE OF THE INCOMING SIGNAL OF THE ACTIVE CHANNEL
37	ENABLE EXECUTIVE MODE	EXEC MODE ON / THIS COMMAND ALLOWS THE USER TO LIMIT THE ACTIVE KEYS AVAILABLE TO, POWER ON/OFF, STANDBY AND 8 CHANNEL SELECTION
38	DISPLAY HV FAILURE COUNT	DISPLAYS THE NUMBER OF TIMES HIGH VOLTAGE HAS CYCLED ON AND OFF OR MAY HAVE FAILED
40	ADJUST RVS	ACTIVATES THE RED STATIC VERTICAL SHIFT OPERATION(RED VERTICAL SHIFT-STATIC) MUST BE PERFORMED WITH REGISTRATION OFF-55 CODE
41	ADJUST BVS	ACTIVATES THE BLUE STATIC VERTICAL SHIFT OPERATION (BLUE VERTICAL SHIFT-STATIC) MUST BE PERFORMED WITH REGISTRATION OFF-55 CODE
42	ADJUST LCD BACK LIGHT	LCD PROMPT: ENTER LITE LEVEL (0 OFF / 4 MAX)
43	TEST REMOTE CONTROL	TEST/VERIFY REMOTE CONTROL LCD OPERATION
44	READ SWITCHES	READS / DISPLAY SETTINGS OF THE BAUD RATE AND ADDRESS SWITCHES
45	DISABLE REGISTRATION KEYS	KEYS DISABLED / THIS COMMAND ALLOWS THE USER (SEE 46 CODE) TO LOCK-OUT THE REGISTRATION KEYS WHICH WILL PREVENT ADJUSTMENTS FROM BEING MADE
46	ENABLE REGISTRATION KEYS	KEYS ENABLED / ACTIVATES KEYS PLACED INACTIVE BY 45 CODE
47	ENABLE GUIDED REGISTRATION	ENTERS THE COMPLETE GUIDED REGISTRATION MODE OF OPERATION (PRESS CODE TO EXIT AT ANY TIME)

CODES 32 THROUGH 47 DESCRIPTIONS.

CODE	FUNCTION	LCD READ-OUT / OPERATION
48	TOGGLE CLAMP POINT	CHANGE BLACK LEVEL CLAMP POINT. SYNC TIP OR BACK PORCH (SYSTEM DEFAULTS TO BACK PORCH CLAMPING)
49	TOGGLE MONOCHROME MODE	MONOCHROME MODE OR COLOR RESTORED / ENABLES OF OPERATION THE USER TO TURN THE COLOR LEVEL ON OR OFF
55	TOGGLE REGISTRATION ON/OFF	REGISTRATION ON OR REGISTRATION OFF / TURN REGISTRATION OFF WHEN PERFORMING THE MECHANICAL (STATIC) ALIGNMENTS AND TURN REGISTRATION ON WHEN PERFORMING THE DYNAMIC ALIGNMENT FUNCTIONS
60	ENABLE MASTER SIZE	MASTER H SIZE OR MASTER V SIZE / ACTIVATES THE OPERATION MASTER SIZE (WIDTH AND HEIGHT) FUNCTIONS
61	ENABLE TOP BLANKING	TOP BLANKING / ACTIVATES THE TOP BLANKING FUNCTION
62	ENABLE BOTTOM BLANKING	BOTTOM BLANKING / ACTIVATES THE BOTTOM BLANKING FUNCTION
63	ENABLE LEFT BLANKING	LEFT BLANKING / ACTIVATES THE LEFT BLANKING FUNCTION
64	ENABLE RIGHT BLANKING	RIGHT BLANKING / ACTIVATES THE RIGHT BLANKING FUNCTION
65	RED CRT CUTOFF	TOGGLES THE RED CRT ON AND OFF
66	GREEN CRT CUTOFF	TOGGLES THE GREEN CRT ON AND OFF
67	BLUE CRT CUTOFF	TOGGLES THE BLUE CRT ON AND OFF
70	UPDATE MODULE STATUS	USE THIS COMMAND IN CONJUCTION WITH THE TABLE GIVEN IN APPENDIX D WHEN ADDING OR REMOVING AN INPUT MODULE.
77	INITIALIZE INTERNAL TEST	USED TO ESTABLISH SCREEN PARAMETERS FOR THE AND HELP SCREENS IN TEST AND HELP SCREENS. SETS PARAMETERS TO APPROXIMATELY 50%
79	RESET INTERNAL SCREENS	RESETS THE TEST AND HELP SCREEN PARAMETERS TO FACTORY PRESET SETTINGS FOR BRIGHTNESS, CONTRAST, SIZE, BLANK, AND PHASE.

CODES 48 THROUGH 79.

CODE	FUNCTION	LCD READ-OUT / OPERATION
*80	ENABLE VOLUME CONTROL	ACTIVATES THE VOLUME CONTROL FOR USER ADJUSTMENTS USING THE **UP** AND **DOWN** ARROW KEYS.
*81	ENABLE BASS CONTROL	ACTIVATES THE BASS CONTROL FOR USER ADJUSTMENTS USING THE **UP** AND **DOWN** ARROW KEYS.
*82	ENABLE TREBLE CONTROL	ACTIVATES THE TREBLE CONTROL FOR USER ADJUSTMENTS USING THE **UP** AND **DOWN** ARROW KEYS.
*83	MUTE "ON"	DISABLES (CUTOFF) THE AUDIO OUTPUT
*84	MUTE "OFF"	ENABLES (TURN-ON) THE AUDIO OUTPUT
92	ENABLE INTENSITY MODULATION	USED TO ACTIVATE THE INTENSITY MODULATION MODE OF OPERATION. ACTS AS A INTENSITY MODULATION BUTTON.
93	CLEAR INTENSITY SETTINGS	NULL INTENSITY / LCD PROMPT: NULL INTENSITY ARE YOU SURE? ENTER CODE FOR **YES** OR ANY OTHER KEY FOR **NO.** THIS CODE WILL RESET INTENSITY MODULATION SETTINGS TO 50%.
900	DISABLE QUITE MODE	DISABLE THE QUIET MODE OF OPERATION AND RETURNS THE SYSTEM BACK TO THE NORMAL COMMUNICATIONS MODE OF OPERATION
901	ENABLE QUIET MODE	ENABLES THE QUIET MODE OF OPERATION AND DISABLES THE NORMAL "REMOTE MESSAGES" AND PROVIDES ABSOLUTES VALUES. MAINLY USED FOR UPLOADING/DOWNLOADING OF DAC DATA AND EXTERNAL RS232 CONTROL OR COMPUTER CONTROL
902	DISABLE EDGE BLEND FEATURE	DISABLES THE EDGE BLEND FUNCTION CONTROL AND RETURNS THE PROJECTOR BACK TO NORMAL REMOTE CONTROL OPERATION
903	ENABLE EDGE BLEND FEATURE	ENABLES THE EDGE BLEND MODE OF OPERATION IN WHICH THE PROJECTOR IS "EXCLUDED" FROM THE EXPLICIT ENDGE BLEND COMMANDS GIVEN FROM THE REMOTE CONTROL
909	DISABLE EXECUTIVE MODE	EXEC MODE OFF / EXITS EXECUTIVE MODE OF OPERATION AND RESUMES NORMAL (FULL) REMOTE CONTROL .

CODES 72 THROUGH 909.

*FOR USE WITH THE ESPRIT RETROS ONLY.

18. . . . . CLEAR BUTTON: (CLEAR)

FUNCTION: Resets accumulator to zero (ACC)

☐ OPERATION 1: Removes an incorrect entry from the display when press before any function or operation key is pressed.

☐ OPERATION 2: Reset arrows keys while in the HELP mode of operation.

19. . . . . NUMERIC KEYPAD:

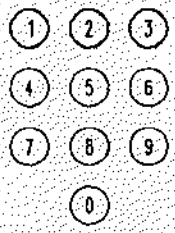


Figure 7-3. Numeric Keypad diagram.

☐ OPERATION 1: Used to set and recall channel and unit numbers.

☐ OPERATION 2: Address internal special features (CODES).

☐ OPERATION 3: Percentage setting of the image quality functions.

20. . . . . ARROW KEYS:

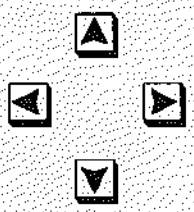


Figure 7-4. Arrows keys.

☐ OPERATION 1: Increment and decrement selected function level.

☐ OPERATION 2: In the HELP MODE used to advance and regress pages or exit.

REMOTE CONTROL COVER REMOVAL:

To access the Registration controls, remove the Remote Control cover by pressing on the upper middle portion of the cover and slide the cover down.

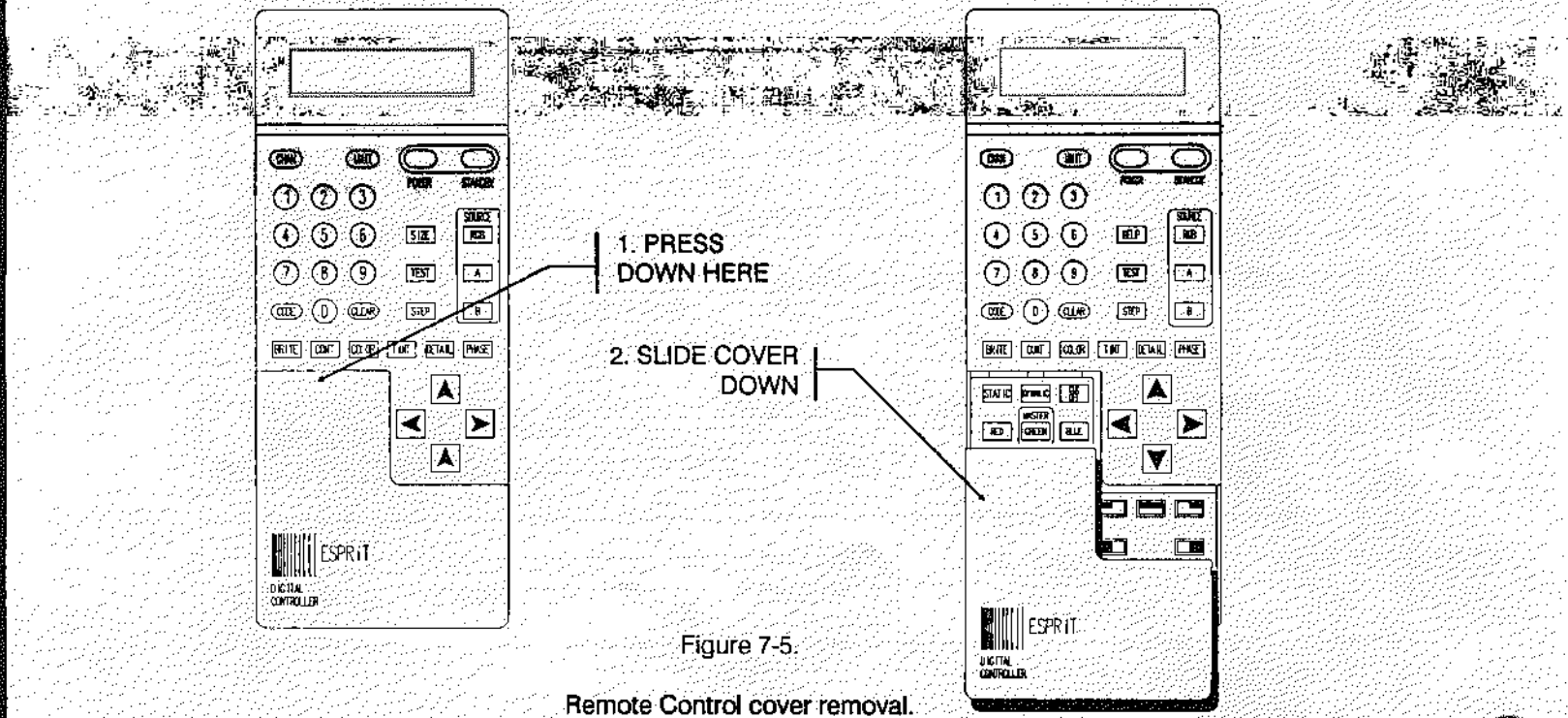


Figure 7-5.

Remote Control cover removal.

The remainder of this section will highlight the use and functionality of the registration controls. It should be noted that this section includes instructions for both the **STANDARD** registration operation and the **OPTIONAL** convergence on green. All functions which apply to the standard registration additionally apply the the optional registration (convergence on green).

- Optional convergence on green note: All adjustments being made to the green image will additionally effect the red and blue images simultaneously with the exception of green horizontal shift.

21. . . . . QUADRANTS AND EDGES:

☐ OPERATION 1: Selects a particular registration control location for master or individual Red, Green or Blue image adjustments.

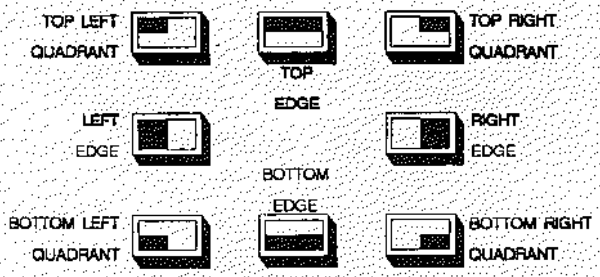


Figure 7-6. Quadrant and Edge controls.

22 . . . . . STATIC BUTTON: STATIC

FUNCTION: Enables all static operations.

NOTE: Before activating static registration functions disable registration with 55 CODE, then press STATIC and perform the following static functions:

STANDARD and OPTIONAL OPERATION:

☐ KEYSTONE: Press KEY, then use the ◀ and ▶ arrows to adjust the E-W Keystone.

☐ PINCUSHION: Press PIN, then use the ◀ and ▶ arrows to adjust the E-W Pincushion.

RED AND BLUE STATIC SHIFT OPERATIONS:

☐ RED STATIC SHIFT: With Registration "OFF", enter 40 CODE and adjust the RED VERTICAL SHIFT.

☐ BLUE STATIC SHIFT: With Registration "OFF", enter 41 CODE and adjust the BLUE VERTICAL SHIFT.

OPTIONAL OPERATION:

☐ SIZE: Green only. Press SIZE and use the ▲ and ▼ arrow keys and adjust for the master vertical size. Use the ◀ and ▶ arrow keys and adjust for the master horizontal size.

☐ LINEARITY: Green only. Press LIN and use the ▲ and ▼ arrow keys and adjust until the squares from top to bottom of a crosshatch pattern are equal in height.

☐ SHIFT: Green only. Press SHIFT and use the ▲ or ▼ arrow keys and adjust the image until it is centered on the screen. DO NOT OVER SCAN THE FACE OF THE CRT. NOTE: Static shift operates in the vertical direction only.

- NOTE: AFTER COMPLETING THE STATIC SHIFT FUNCTIONS, ENTER 55 CODE, REGISTRATION "ON".

23 . . . . . DYNAMIC BUTTON: [DYN]

FUNCTION: Enables dynamic registration operation.

☐ OPERATION 1: If STATIC operation was previously selected then the [DYN] button exits STATIC mode and enables registration functions.

- **NOTE:** REFER TO THE INDIVIDUALLY REGISTRATION FUNCTION TO DETERMINE WHEN EITHER STATIC OR DYNAMIC OPERATIONS ARE REQUIRED.

24 . . . . . CUTOFF BUTTON : [CUT OFF]

FUNCTION: Toggles selected colors "OFF" and "ON."

☐ OPERATION 1: Press [CUT OFF] then the desired color key to turn toggle the image on and off.

25 . . . . . RED BUTTON : [RED]

FUNCTION: [DYNAMIC] Selects RED Registration or Red cutoff.

☐ OPERATION 1: Press [RED] and select the desired registration function and appropriate area key.

☐ OPERATION 2: Turns " OFF " RED CRT when preceded by the [CUT OFF] button.

☐ OPERATION 3: If STATIC function was previously selected then the [RED] button additionally exits the STATIC mode and enables DYNAMIC registration mode of operation for Red.

26 . . . . . GREEN (MASTER) BUTTON: [GREEN]

FUNCTION: [DYNAMIC] Selects Master and/or Green Registration or Green cutoff.

☐ OPERATION 1: Press [GREEN] and select the desired registration function and appropriate area key.

☐ OPERATION 2: Turns " OFF " GREEN CRT when preceded by the [CUT OFF] button.

☐ OPERATION 3: If STATIC function was previously selected then the [GREEN] button additionally exits the STATIC mode and enables DYNAMIC registration mode of operation for Green.

27. . . . . BLUE BUTTON : [BLUE]

FUNCTION: [DYNAMIC] Selects BLUE Registration or Blue cutoff.

☐ OPERATION 1: Press [BLUE] and select the desired registration function and appropriate area key.

☐ OPERATION 2: Turns " OFF " BLUE CRT when preceded by the [CUT OFF] button.

☐ OPERATION 3: If STATIC function was previously selected then the [BLUE] button additionally exits the STATIC mode and enables DYNAMIC registration mode of operation for Blue.

28. . . . . SHIFT BUTTON : [SHIFT]

FUNCTION: [DYNAMIC] Selects shift operations and highlights a center pattern on the screen where active.

- NOTE 1: See **STATIC** functions for Master Vertical shift, Red Vertical Shift and Blue Vertical Shift per section 22 for proper setting prior to proceeding with the remainder of this section.

STANDARD and OPTIONAL OPERATION:

☐ OPERATION 1: [DYNAMIC] Press [RED], [GREEN] or [BLUE], then [SHIFT] to select the particular color and SHIFT operation.

VERTICAL SHIFTS: Use the [▲] and [▼] arrows to adjust for the Vertical Shifts.

HORIZONTAL SHIFTS: Use the [◀] and [▶] arrows will adjust for the Horizontal Shifts.

- NOTE 1: Green Horizontal shift is only available with the Convergence On Green option and effects only the green image.
- NOTE 2: SHIFT operation is not active in the edge or quadrant controls, only in highlighted center.

29. . . . . SKEW BUTTON : [SKEW]

FUNCTION: [DYNAMIC] Selects skew operations and highlights the center axis of the screen where active.

STANDARD AND OPTIONAL OPERATION:

MASTER HORIZONTAL SKEW OPERATION:

☐ OPERATION 1A: (STANDARD) Press [SKEW], then [GREEN] and use the [▲] or [▼] arrows to adjust.

☐ OPERATION 1B: (OPTIONAL) Press [SKEW], then [GREEN] and any registration zone (quadrant/edge) key other than the LEFT/RIGHT edge key. Use the up or down arrow keys to adjust.

INDIVIDUAL SKEW OPERATION:

☐ HORIZONTAL SKEW : Select [SKEW], [RED], [GREEN][1] or [BLUE], then [▣] or [▣] edge and adjust the horizontal skew using [▲] or [▼] arrow key.

☐ VERTICAL SKEW: Select [SKEW], [RED], [GREEN] or [BLUE] and adjust the vertical skew using [◀] or [▶] arrow key. The selection of the left or right arrow key will automatically select the vertical skew operation which moves and highlights the center axis of the projected image.

[1]NOTE: Convergence on Green required.

30. . . . . BOW BUTTON : [BOW]

FUNCTION: [DYNAMIC] Selects the bow operation and highlights the center of the screen where active.

STANDARD AND OPTIONAL OPERATION:

MASTER HORIZONTAL BOW:

☐ OPERATION 1A: (STANDARD): Press [BOW], then [GREEN] to select the Master Horizontal Bow operation and use the [▲] and [▼] arrows to adjust.

☐ OPERATION 1B: (OPTIONAL): Press [BOW] then [GREEN] then any registration zone (quadrant/edge) other than the LEFT/RIGHT edge keys. Use the [▲] and [▼] arrows to adjust.

INDIVIDUAL BOW OPERATION:

FUNCTION: [DYNAMIC] Selects the bow operation and highlights the center of the screen where active.

☐ HORIZONTAL BOW : Select [BOW], [▮] or [▮] edge , [RED], [1][GREEN] or [BLUE] and adjust the using [▲] or [▼] arrow key.

☐ VERTICAL BOW: Select [BOW], [RED], [GREEN] or [BLUE] and adjust the vertical bow using [◀] or [▶] arrow key. The selection of the left or right arrow key will automatically select the vertical bow operation which moves and highlights the center axis of the projected image.

- [1]NOTE: Convergence on Green option required.

31. . . . . KEY BUTTON : [KEY]

FUNCTION: [STATIC AND DYNAMIC] Selects keystone (trapezium) operation.

STANDARD and OPTIONAL OPERATION:

☐ STATIC KEYSTONE: (Registration "OFF") Pressing [STATIC], then [KEY] will select the static keystone operation for Master (GREEN) which provides adjustment of the total image.

☐ DYNAMIC KEYSTONE 1: Pressing [GREEN], an EDGE control, then [KEY] will select the master keystone operation for the selected TOP, BOTTOM, LEFT or RIGHT edge control of the projected image and highlight the selected edge of the image.

☐ DYNAMIC KEYSTONE 2: Pressing [RED], [1][GREEN] or [BLUE], a QUADRANT control then [KEY] will select the color and keystone operation for the selected TOP LEFT, TOP RIGHT, BOTTOM LEFT or BOTTOM RIGHT quadrant of the projected image and highlight the selected quadrant.

- [1]NOTE: Convergence on Green option required.
- NOTE: RED and BLUE keys operate on QUADRANTS. If an EDGE is selected for RED or BLUE key, the display will prompt, [SELECT QUADRANT].

32. . . . . PIN BUTTON : [PIN]

FUNCTION: [STATIC AND DYNAMIC] Selects pincushion operation.

STANDARD and OPTIONAL OPERATION:

☐ STATIC PINCUSHION: (Registration "OFF") Pressing [STATIC] , then [PIN] will select static pincushion operation for Master (GREEN) which provides adjustment of the total image. Use the [◀] and [▶] arrow keys to adjust.

- NOTE 1: The quadrant and edge controls are inactive in the static mode of operation.

☐ DYNAMIC PINCUSHION 1: Pressing [GREEN] , an EDGE control, then [PIN] will select master pincushion operation for the selected TOP, BOTTOM, LEFT or RIGHT edge of the projected image and highlight the selected edge of the image. Use the [▲] and [▼] arrows for the TOP/BOTTOM pincushions and the [◀] and [▶] arrows for the LEFT/RIGHT pincushions

☞ STANDARD OPERATION: Green pincushion operates on EDGES. If an QUADRANT is selected for the Green pincushion, the display will prompt [SELECT EDGE].

☐ DYNAMIC PINCUSHION 2: Pressing [RED] , [1] [GREEN] or [BLUE] a QUADRANT control, then [PIN] will select color and pin operation for the selected TOP LEFT, TOP RIGHT, BOTTOM LEFT or BOTTOM RIGHT and highlight the selected quadrant. Use the [▲] and [▼] arrows adjust the horizontal pincushions and use the [◀] and [▶] arrows adjust the vertical pincushions.

33. . . . . SIZE BUTTON: [SIZE]

FUNCTION: [STATIC OR DYNAMIC], Selects the height and width operations.

STANDARD AND OPTIONAL OPERATIONS:

MASTER SIZE OPERATION:

☐ STANDARD OPERATION: Press [GREEN] , then [SIZE] to perform the master size operations

☐ OPTIONAL OPERATION: Press [STATIC] , then [SIZE] to perform the master size operations

- Use the [◀] and [▶] to adjust the image width. Use the [▲] and [▼] to adjust the image height.

EDGE SIZE OPERATION:

☐ Press [RED] , [1] [GREEN] or [BLUE] , then an EDGE control, then [SIZE] to perform individual edge size operations.

☐ WIDTH: After selecting a *color* and SIZE. select [▮] or [▮] edge and use the [◀] and [▶] arrow keys to perform the edge size operation for the selected color and edge.

☐ HEIGHT: After selecting a *color* and SIZE. select [▬] or [▬] edge and use the [▲] and [▼] arrow keys to perform the edge size operation for the selected color and edge.

- [1]NOTE: Convergence on Green option required.

34. . . . . LIN BUTTON : LIN

FUNCTION: [DYNAMIC] Selects vertical and horizontal linearity operations.

STANDARD and OPTIONAL OPERATION:

MASTER LINERAITY:

- ☐ STANDARD: Pressing GREEN, then LIN will select Master Vertical linearity operation. Use the ▲ or ▼ arrows to adjust.
- ☐ OPTIONAL: Pressing STATIC, then LIN will select Master Vertical linearity operation. Use the ▲ or ▼ arrows to adjust.
- NOTE: The master linearity will highlight the entire image and ignore quadrant and edge controls.
- NOTE: The master horizontal linearity has been preset at the factory and is not adjustable with the remote control.

EDGE LINEARITY:

- ☐ Pressing RED[1], GREEN or BLUE, an EDGE control, then LIN will select individual edge linearity operations.
- After selecting a *color* and LIN, press ▮ or ▮ to select LEFT or RIGHT edge and adjust horizontal linearity by using the ◀ or ▶ arrow.
- After selecting a COLOR and LIN, press ▬ or ▬ to select TOP or BOTTOM edge and adjust vertical linearity by using the ▲ or ▼ arrows.

35. . . . . EDGLIN BUTTON : EDGE LIN

FUNCTION: [DYNAMIC] Selects edge linearity operations.

STANDARD and OPTIONAL OPERATION:

- ☐ Press RED[1], GREEN or BLUE then ▮ or ▮ edge control then, LIN.
- NOTE: The EDGLIN function affects only the OUTER RIGHT or OUTER LEFT edges of image.
- HORIZONTAL EDGE LINEARITY: After selecting a *color* and EDGLIN, select ▮ or ▮ edge to select Horizontal Linearity operation and use the ◀ or ▶ arrow keys to adjust.
- [1]NOTE: Convergence on Green required.

36. BLANK BUTTON : 

FUNCTION: [STATIC OR DYNAMIC]Selects blanking operation.

Use the blanking function in case of the wanted (active) video is cutoff or to eliminate unwanted (non-active) video information. See PHASE for additional information.

☐ BLANKING: Select an EDGE, then 

to perform the following blanking operations:

- LEFT and/or RIGHT: Press  or  edge control to select horizontal blanking which is adjusted by the ◀ and ▶ arrows.
- TOP and/or BOTTOM: Press  or  edge control to select vertical blanking which is adjusted by the ▲ and ▼ arrows.

Chapter 8

LENS FOCUSING AND POSITIONING

8.1 . . . . . .GETTING STARTED:

In order to focus the and position lenses it will be necessary to unlatch and lock into place the top cover.

- STEP 1. The top cover unlatched and locked by: (1): lifting the quick release handle/latch located at the front of the system on the top cover. This will allow the top cover to tilt-up. (2): The top cover may be locked into place by the 2 locking hinges located on the left and right side of the system. See figure 8-1.

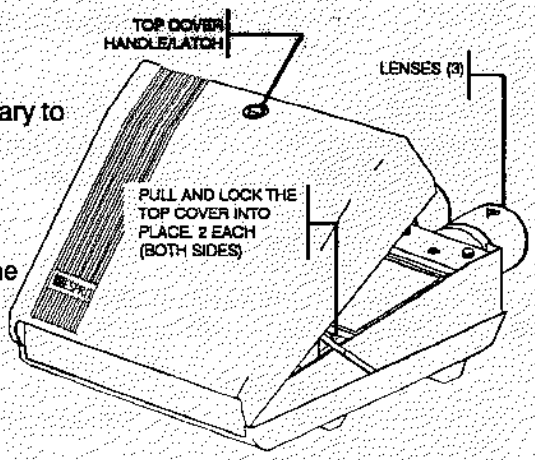
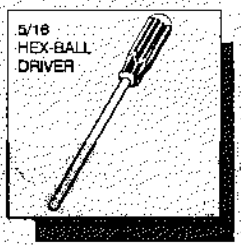


FIGURE 8-1.

TOP COVER REMOVAL

- NOTE: The tool required (5/16 Hex-Ball Driver) to focus the lenses is provided and located within the accessory box.



8.1.1 . . . . .REQUIRED TEST PATTERNS OR HELP PROGRAM:

To focus and position the lenses you will use the crosshatch and crosshair test patterns (as indicated), or utilize the internal help system for automatic selection of the appropriate test screens, with on- screen instructions and proper sequencing.

If you are <u>not</u> using the Internal help system perform the following steps . Each lens should be focused individually. Use the following functions as required:

- CUT OFF then RED , GREEN and BLUE to cutoff the individual colors that are not being used.
- Use the TEST button to enter the test mode of operation, and the STEP button to select the appropriate test pattern.
- Turn Registration "OFF" using 55 CODE .
- Use 40 CODE (RVS) and 41CODE (BVS) to vertically shift the appropriate color.

Or enter the internal help system for a step-by step instruction with the appropriate setup menus/screens. Perform the following:

- Press the HELP button, then
- Enter SYSTEM SETUP MENU (Selection 3) , then
- Select FOCUSING AND POSITIONING OF THE LENSES, (selection 3). Note: This program will automatically turn Registration "OFF." This will allow you to focus and position the lenses without having to perform the Complete Guided Setup program.

Once your unit has been installed for your particular requirements, you are now ready to perform the first stage of alignment , lens focusing and positioning.

8.1.1.2 . . . .LENS TYPES:

There are several different types of lenses that may be used on your display system, The lenses used on the ESPRIT 4000D and 4000G are determine by the magnification factor in which the system will be used.

Use the MODEL NUMBER on the rear identification plate of your system to determine the type of lens provided with your system or look for the identification label located on the top of each lens assemblies.

- ☐ TYPE 1: Model Number 69196: (ESPRIT 4000D W/TOC-7 LENSES) Magnification factor of 14X to 45X , (1702mm / 67.0in to 5486mm / 216.0in. picture width), high resolution , hybrid lens
- ☐ TYPE 2: Any system with HD10 lenses: Magnification factor of 14X to 45X, 1.7m to 5.5m (67in to 216in.) picture width, high resolution, hybrid lens.
- ☐ TYPE 3: Any system with HD10L lenses: Magnification factor of 9X to 11X, 0.8m to 1.35m (43in. to 53in.),picture width, high resolution, hybrid lens
- ☐ Type 4: Any system with HD10-GT17 lenses: Magnification factor of 14.0X to 20X, optimal at 16.5X , 1.7m to 2.4m (69in. to 96in.), optimal at 2.0m (79in.) picture width.
- ☐ TYPE 5: Any system with HD10-GT26 lenses: Magnification factor of 21X to 30X, optimal at 26X, 2.6m to 3.6m (100.0in. to 144.0in.), optimal at 3.2m (124.0in.) picture width

Regardless, of the type of lens being used, the focus procedure remains the same.

8.1.1.3 . . . FOCUS PROCEDURE:

With the dual adjustment type lens, adjust the primary (center) and secondary (edge) focus adjustment for the best focus as outlined in Table 8-1, Step 1 for your particular configuration. You may be required to go back and forth between the adjustments.

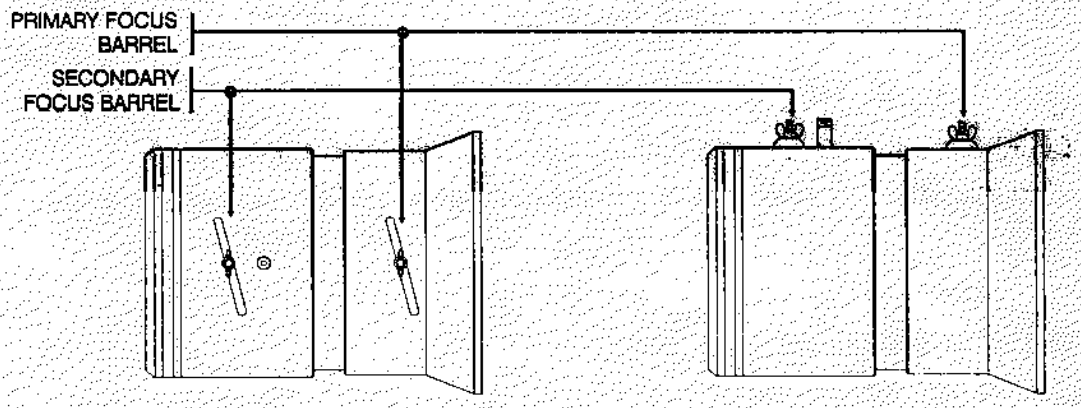
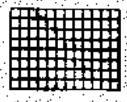


FIGURE 8-2. LENS ILLUSTRATION AND ADJUSTMENTS.

8.2 . . . . . .LENS FOCUS AND POSITIONING:

NOTE: The following procedure is outlined for a "FRONT-CEILING MOUNT" installation. Reference is as viewed from the front of the unit. Refer to Table 8-1 page 8-5 for procedures on other installation configurations.

- CROSSHATCH PATTERN REQUIRED.



- **STEP 1.** Tighten all three lens adjustments, then turn counterclockwise ¾ of a turn. Refer to Figure 8-3
- **STEP 2.** Adjust the primary and secondary lens barrel until the upper left corner of the projected image is focused.
- **STEP 3.** Repeat step 1 and 2 for each color.

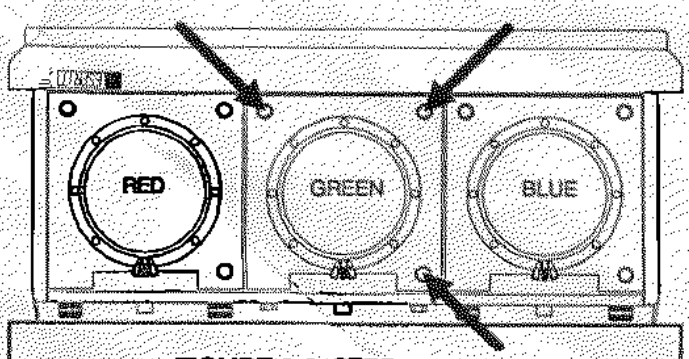


FIGURE 8-3. STEP 1 AND 2.

Thighten all three lens adjustment on all three colors, then turn clockwise 3/4 turns.

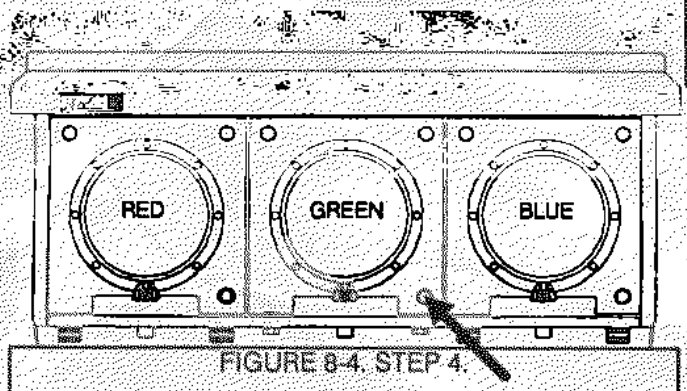


FIGURE 8-4. STEP 4.

Adjust the lower right lens adjustment until the upper right corner of the projected image is focused.

- **STEP 4.** GREEN ONLY ! Adjust the lower right lens adjustment until the upper right corner of the projected image is focused. See figure 8-4. **REPEAT**..... Steps 2 and 4 (if necessary) to achieve optimum focus in the upper and lower left corners of the projected image.

- **STEP 5.** GREEN ONLY ! Adjust the upper left lens adjustment for side-to-side focus. See figure 8-5.

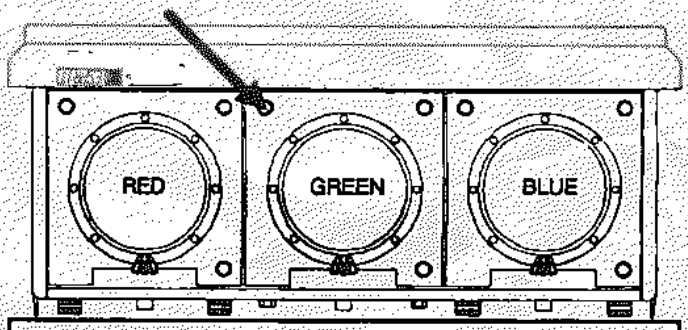
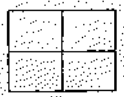


FIGURE 8-5. STEP 5.

Adjust the left upper lens adjustment for side-to-side focus.

- CROSSHAIR PATTERN REQUIRED.



- **STEP 6.** RED to GREEN lens positioning. Loosen the two lens positioning knobs located directly behind the RED LENS/CRT assembly. Figure 8-6.
- **STEP 7.** Carefully pivot the RED LENS/CRT assembly until the center vertical line in the RED image exactly overlays the center vertical line in the GREEN image.
- **STEP 8.** Once the lens is in the proper position tighten the two positioning knobs.

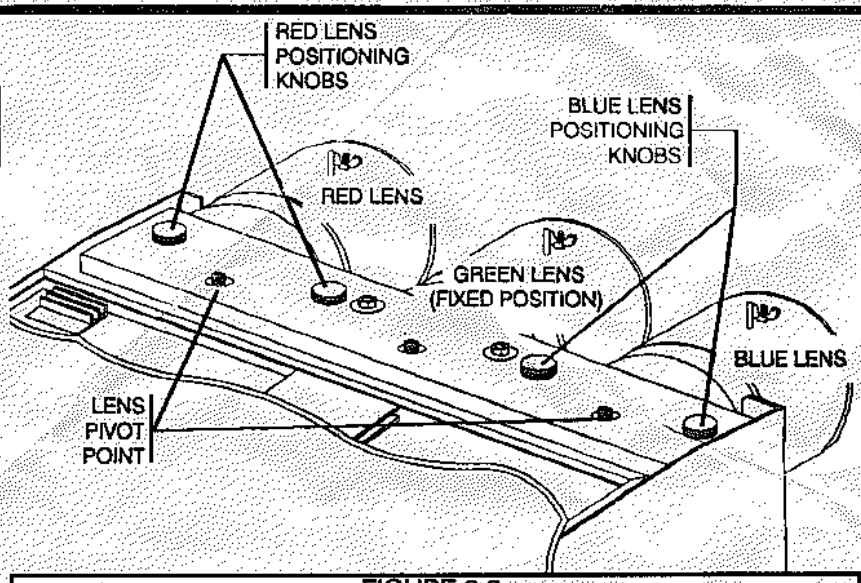


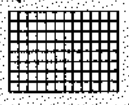
FIGURE 8-6.

LENS/CRT POSITIONING KNOBS.

- **STEP 9.** With Registration "OFF", perform the STATIC Red and Blue shift operations as required

¤ 40 CODE: RED VERTICAL SHIFT (STATIC) AND 41 CODE: BLUE VERTICAL SHIFT (STATIC

- CROSSHATCH PATTERN REQUIRED.



- NOTE: Ensure that Steps 1 and 2 has been performed on the RED lens, before proceeding with the remaining steps.

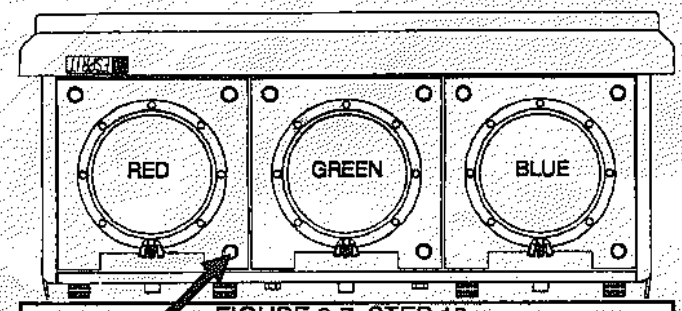


FIGURE 8-7. STEP 10.

Adjust the lower lens adjustment until the upper right corner of the projected image is focused.

- **STEP 10.** RED ONLY ! Adjust the lower right lens adjustment until the upper right corner of the projected image is focused. See figure 8-7. **REPEAT**..... Steps 2 and 9 until optimal focus is achieved in the upper and lower left corners of the projected image.

- **STEP 11.** RED ONLY ! Adjust the upper left lens adjustment for side-to-side focus. See figure 8-8.
- **STEP 12.** Refocus and pivot the lens as necessary..

REPEAT STEPS 6 THROUGH 11 FOR **BLUE** TO **RED** ALIGNMENT.

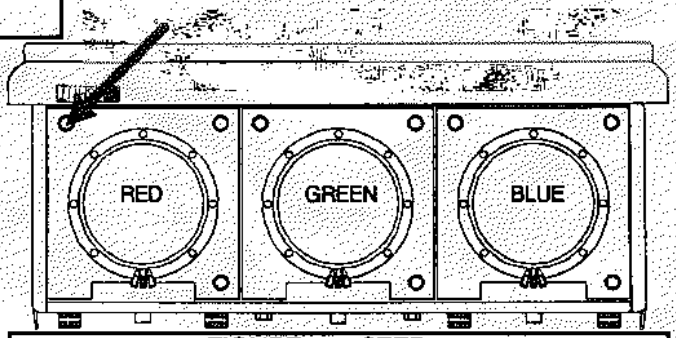


FIGURE 8-8. STEP 11.

Adjust the upper left lens adjustment until the lower left corner of the projected image is focused.

8.3 . . . . . LENS FOCUS / ADJUSTMENT REFERENCE TABLE:

The following table will indicate the relationship in mounting configurations and lens focus adjustments. Using the following table, "look up" your particular installation. Note the adjustment locations indicated and follow procedure outlined in section 8.2 .

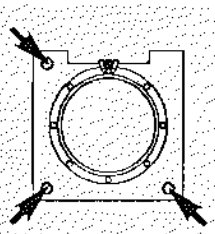
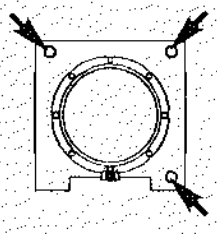
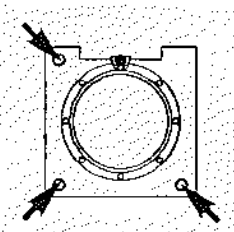
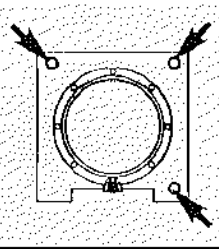
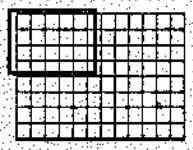
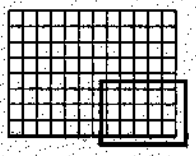
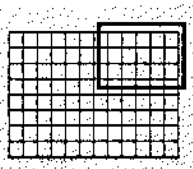
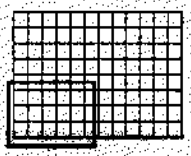
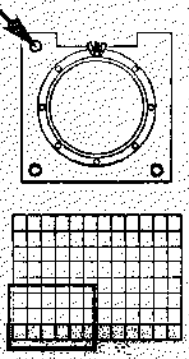
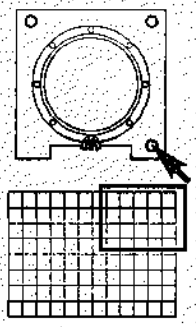
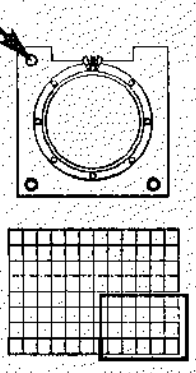
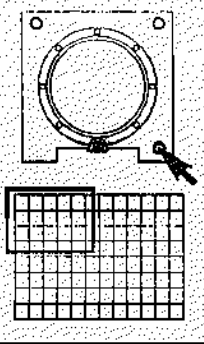
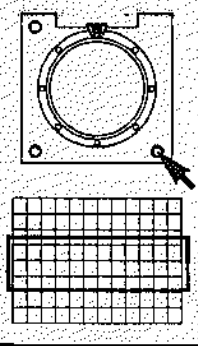
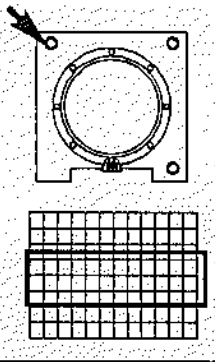
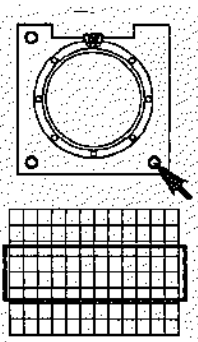
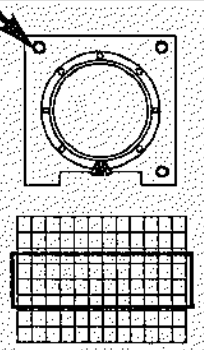
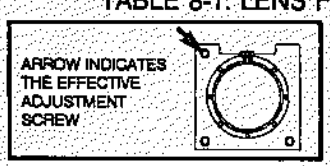
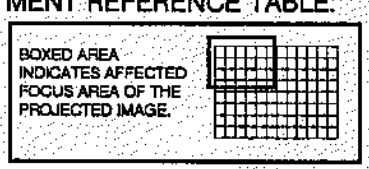
STEP	FRONT FLOOR MOUNT	FRONT CEILING MOUNT	REAR FLOOR MOUNT	REAR CEILING MOUNT.
1. TIGHTEN ALL THREE LENS ADJUSTMENTS, ON ALL THREE CRTS THEN TURN (CCW) 3/4 OF A TURN.				
2. ADJUST THE LENS FOCUS BARRELS UNTIL THE INDICATED CORNER OF THE PROJECTED IMAGE IS OPTIMIZED.				
3. ADJUST INDICATED SCREW TO OPTIMIZE CORNER FOCUS OF THE PATTERN SHOWN BELOW.				
4. ADJUST THE INDICATED SCREW TO OPTIMIZE FOCUS FROM SIDE-TO-SIDE OF THE PATTERN SHOWN BELOW.				

TABLE 8-1. LENS FOCUS/ADJUSTMENT REFERENCE TABLE.





NOTES :

* REAR SCREEN REFERENCE OF AFFECTED FOCUS AREA IS AS VIEWED FROM THE ADJUSTMENT POINT. FROM THE REAR OF THE SCREEN.

REPEAT ABOVE STEPS AS REQUIRED AND REFER TO SECTION 8.2, STEPS 6,7 AND 8 FOR LENS/CRT POSITIONING

Chapter 9

INTERNAL HELP MENUS

REGISTRATION PROCEDURES

9.1 . . . . . INTERNAL HELP MENUS:

Incorporated in the ESPRIT display systems are several on-board help menus. The internal menus are provided to inform and guide you through the operation and setup of the system. To enable the internal help programs simply press the HELP button and select the topic of your choice. Shown below is the main menu and selections with a brief description of each.

9.1.1 . . . . . MAIN INDEX MENU:

ESPRIT PROJECTION SYSTEMS
1301 ARMSTRONG DRIVE
TITUSVILLE, FLORIDA 32780-7999 USA
PHONE: (407) 269-6680 FAX: (407) 267-6211

MAIN MENU

1. HOW TO USE THE HELP SYSTEM.
2. TEST PATTERN SELECTION.
3. SYSTEM SETUP MENU
4. REMOTE CONTROL SUMMARY
5. OPERATION MENU
6. SPECIAL FEATURES
7. HELP SCREEN ADJUSTMENT PAGE

V EXIT HELP PRESS 1 THROUGH 7 TO SELECT

FIGURE 9-1. HELP SYSTEM MAIN MENU.

The index menu is provided to select a particular chapter/subject. The main menu contains the following subjects. Refer to figure 9-1.

9.1.2 . . . . . HOW TO USE THE HELP SYSTEM: (SELECTION 1):

This selection will give you the basic instruction on how to use the internal help system. The active keys in the Help program (*except for the Complete Guided Setup program*)are:

- ▲ GO TO INDEX
- ▼ EXIT HELP
- ◀ PREVIOUS PAGE
- ▶ NEXT PAGE

9.1.3 . . . . . TEST PATTERN SELECTIONS (MAIN MENU SELECTION 2):

This page informs you of the available internal test patterns, frequency and the selection of these patterns. See Section 3, paragraph 12, page 3-8 for more information.

9.1.4 . . . . . SYSTEM SETUP MENU (MAIN MENU SELECTION 3):

This selection will go to another menu for the selections on various registration operations. While in this sub-menu select one of the following topics. See figure 9-2.

1. GUIDED REGISTRATION PROGRAM: Enables the internal guided setup program menu for a selection of the available programs and instructions. i.e. Complete Guided Setup or Touch Up.

2. FOCUSING AND POSITIONING OF THE LENSES: Provides on screen instruction, test patterns and sequence required for proper lens focusing and positioning. NOTE: Uses arrows at bottom legend for directions.

3. REGISTRATION MENU: This selection will bring up another menu for your selection of the following subjects. Refer Section 9.1.5 and to Figure 9-3.

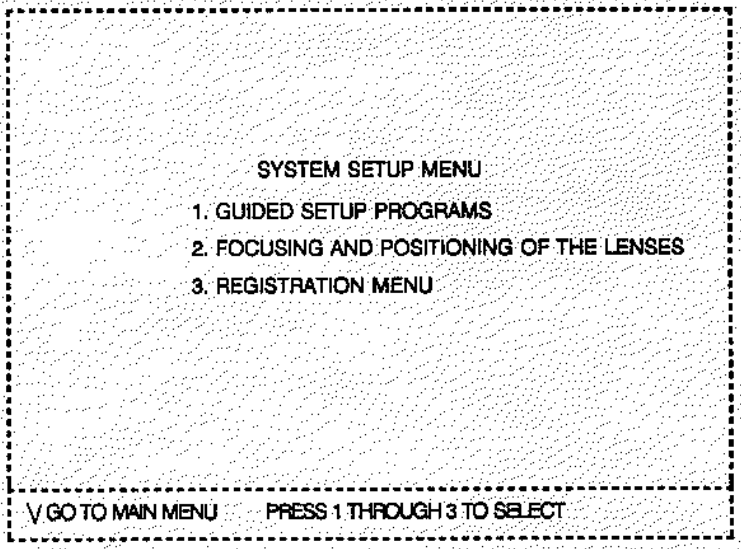


FIGURE 9-2. SYSTEM SETUP MENU SELECTIONS.

9.1.5 . . . . . REGISTRATION MENU (SYSTEM SETUP SELECTION 3) :

1. DESCRIPTION OF CONTROLS: This selection provides information on the registration controls that are available with an brief explanation of their function.

2. ENABLE REMOTE REGISTRATION KEYS: This selection will be used in conjunction with selection 4 (below) to exit "LOCK-OUT" function. NOTE: Same as 46 CODE.

3. DISABLE REMOTE REGISTRATION KEYS: This selection gives you the abilty to "LOCK-OUT" the registration keys to avoid any unwanted registration adjustments. NOTE: Same as 45 CODE.

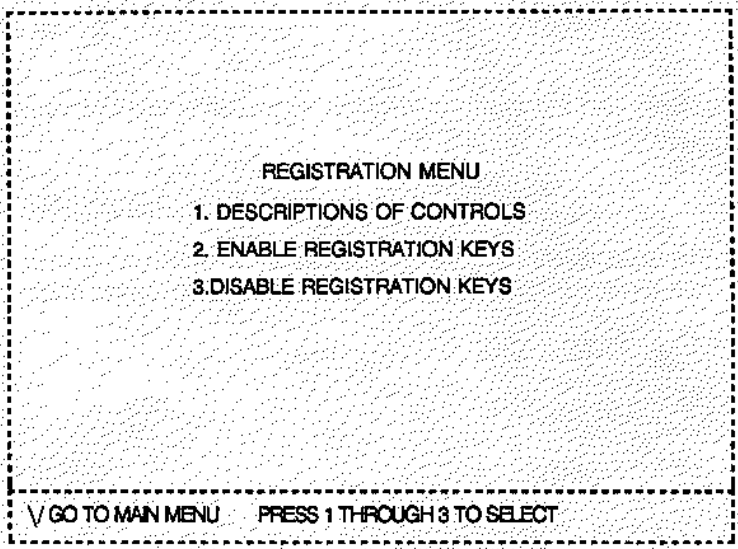


FIGURE 9-3. REGISTRATION MENU SELECTIONS.

9.1.6 . . . . . REMOTE KEYPAD SUMMARY MENU (MAIN MENU SELECTION 4):

This selection provides an additional menu for explanation (of your choice) on the operation of the functions provided on the standard hard-wired remote control. Refer to Figure 9-4.

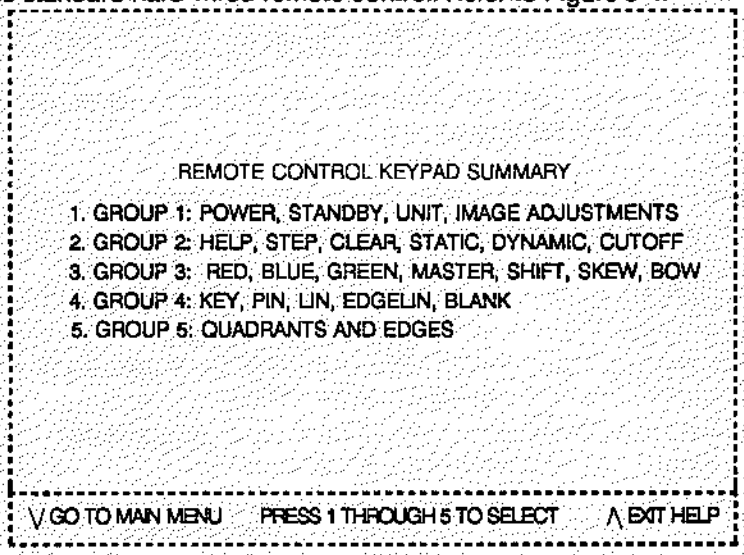


FIGURE 9-4. REMOTE KEYPAD SUMMARY MENU SELECTIONS.

9.1.7 . . . . . OPERATION MENU (MAIN MENU SELECTION 5):

This selection provides information on the special functions and operation of the ESPRIT system. See Figure 9-5.

1. INPUT SELECTION MENU: This selection will switch you to the following on- screen menu for your selection of a brief description of the different modes of operation. See Figure 9-6.

2. CHANNEL MEMORY: This section is provided to instruct you on dedicating a channel number and pre-setting the appropriate adjustments (*including all registration settings*).

3. NUMERIC CODES SUMMARY: This section describes the internal codes, their usage, and the selection of the internal codes.

4. COMPUTER INTERFACING: This provides information on the basic requirements for various configurations of the system.

5. TIMER OPERATION: This selection instructs you on selecting and setting the internal clock for daily auto "ON"/"OFF" operation.

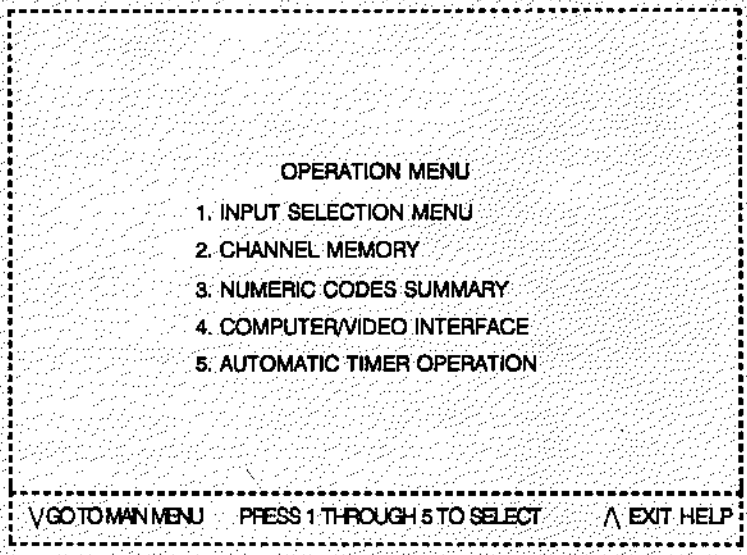


FIGURE 9-5. OPERATION MENU SELECTIONS.

9.1.8 . . . . . SPECIAL FEATURES (MAIN MENU SELECTION 6):

This section provides basic information on special features such as. Intensity Modulation and Edge Blending.

9.1.9 . . . . . HELP SCREEN ADJUSTMENT PAGE (MAIN MENU SELECTION 7):

The help screens are provided in individual channel locations. For this reason it may become necessary to adjust the help screen parameters. Refer to figure 9-6

HELP SCREEN ADJUSTMENT PAGE

1. BRIGHTNESS: PRESS [BRITE] AND ADJUST THE BRIGHTNESS LEVEL OF THIS PAGE.
2. CONTRAST: PRESS [CONT] AND ADJUST THE CONTRAST LEVEL OF THIS PAGE. BRIGHTNESS: PRESS [BRITE] AND ADJUST THE
3. PHASING: PRESS [PHASE] AND ADJUST UNTIL THE BORDERS AROUND THIS PAGE ARE VISIBLE. SEE BLANKING.
4. BLANKING: PRESS [BLANK] AND ADJUST UNTIL THE BORDERS AROUND THIS PAGE ARE VISIBLE. SEE PHASING.
5. SIZING: PRESS [STATIC]THEN [SIZE] AND ADJUST THE WIDTH AND HEIGHT OF THIS PAGE TO YOUR PARTICULAR SCREEN SIZE.
6. SHIFT: PRESS [STATIC] THEN [SHIFT] AND USE THE [/\] AND [\/] ARROW KEYS UNTIL THIS PAGE IS CENTERED WITHIN YOUR SCREEN. IF AN ADJUSTMENT HAS BEEN MADE, PRESS [CLEAR] PRIOR TO EXITING.

\/ GO TO INDEX \/ EXIT HELP <PREVIOUS PAGE >GO TO INDEX

FIGURE 9-6. HELP SCREEN ADJUSTMENT PAGE.

9.2. . . . . REGISTRATION AS A CHANNEL PARAMETER:

All registration functions are handled as individual channel parameters. This will allow you to precisely set each individual source for optimum registration. To perform a random setup of a new or modify a present channel location the following conditions must exist prior to building or changing parameters of a channel.

REGISTRATION SETUP OF A CHANNEL:

1. Select the channel you wish to adjust, i.e., 1,2,3 etc.

2. For building a new channel, select the appropriate mode of operation, i.e., RGB, VIDEO etc.

3. If the channel had been previously built and write-protected, enter 20 CODE to toggle the write-protect "OFF", this will allow you to make the adjustments you want to make.

4. Select the test function method, i.e. Internal Test/Internal Sync or Internal Test/External Sync or an independent test pattern externally generated applied to the appropriate card (slot).

- NOTE: Channel settings such as brightness, contrast, detail, tint, color and phasing will have to be made while the active source is being displayed.

9.2.1 . . . . . FACTORY ALIGNED CHANNEL SETTINGS

To provide a quick start with your registration alignment and channel settings, serveral Video/RGB formats have been pre-aligned at the factory. All pre-aligned channels are based on a 60in.(H) x 80in. (W) screen size. You can use these prealigned channels with the various copy channel commands, such as "COPY BEST-FIT CHANNEL" or the copy 'TO' and "FROM" commands. See Chapter 7, paragraph 17, page 7-11 for more information.

CHANNEL	CHANNEL PARAMETER	CHANNEL	CHANNEL PARAMETER	CHANNEL	CHANNEL PARAMETER
1-44 and 48	RGB MODE / 31.5kHz	46	RGB MODE / 64kHz	49	RGB MODE / 21.5kHz
45	RGB MODE / 80kHz	47	RGB MODE / 54kHz	50	VIDEO MODE / NTSC

- NOTE: All factory pre-aligned channels have been validated and write- protected (24 CODE). When using the Channel copy commands, the write-protect command will also be copied along with all of the other channel parameters. Prior to performing adjustments to your new channel enter 20 CODE (write-protect "off").

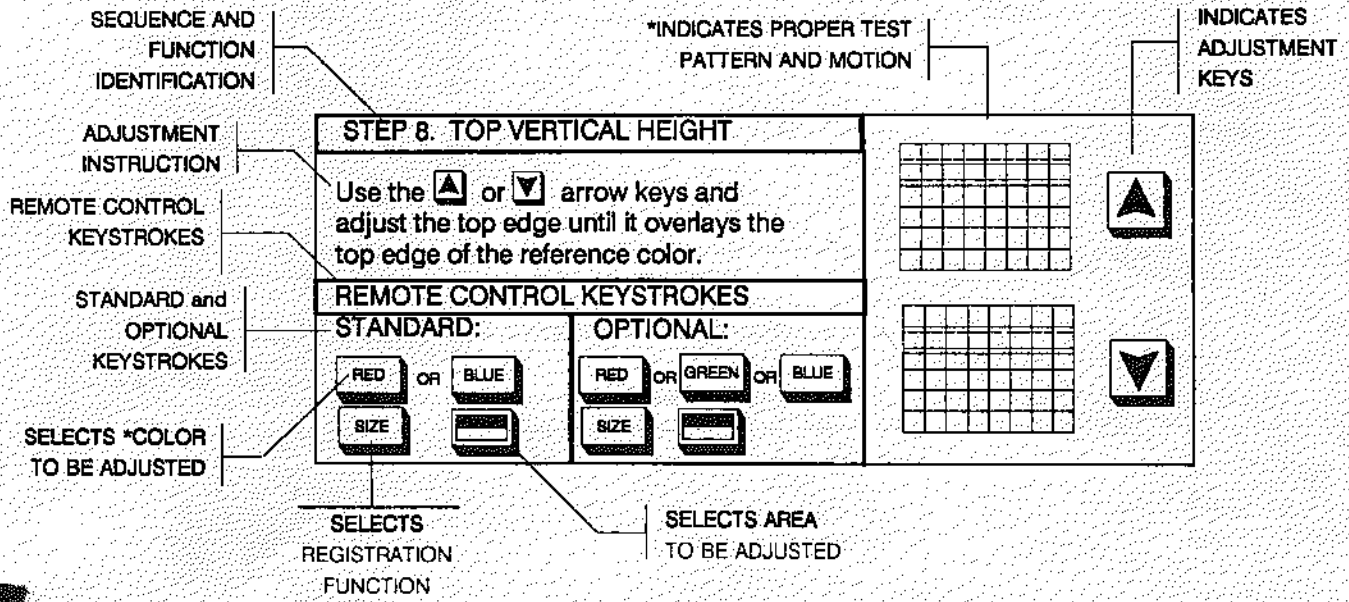
9.3 . . . . . REGISTRATION PROCEDURES:

The registration of the system is divided into four stages. STAGE 1: Focus and positioning of the lenses. STAGE 2: Sizing and optimizing the geometry of the GREEN image. NOTE: All adjustments being made to the Green image will simultaneous effect the Red and Blue images with the exception of the Green hortzontal shift function. STAGE 3: Align the RED image to exactly overlay the GREEN image. STAGE 4: Align the BLUE image to exactly overlay the RED image.

9.4 . . . . . REGISTRATION PREFACE:

This section of the manual is sequenced in such a way as to optimize the registration operation of this system. The information provided in the Registration sequence block will indicate the registration sequence number , function identification, proper function selection (keystrokes) for the standard and optional convergence on green, provides the required test pattern and appropriate adjustment keys. Please refer to example below: NOTE: If your system is equipped with the convergence on green option, then the standard keystrokes indicated in the squence block will be applicable, unless otherwise indicated.

NOTE: This section of the manual make the assumption that the system has been installed and position properly in accordance with the guidelines set forth by the end-user. Additionally, perform the lens focusing, positioning prior to making any registration settings.



*TEST PATTERN SHOWN MAY VARY DEPENDING UPON THE SPECIFIC REQUIREMENTS AND OPTIONS INSTALLED.

9.4.1 . . . . . REGISTRATION PROCEDURE/SEQUENCE:

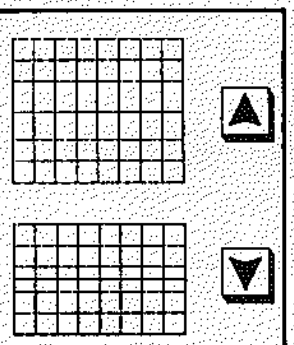
9.4.2 . . . . . MASTER (GREEN) IMAGE ADJUSTMENTS:

STEP 1. MASTER VERTICAL LINEARITY: (REGISTRATION "OFF")

Use the ▲ or ▼ arrow keys and adjust until the squares from **top to bottom** of the image are equal in height.

REMOTE CONTROL KEYSTROKES:

STANDARD:	OPTIONAL:
GREEN LIN	STATIC LIN

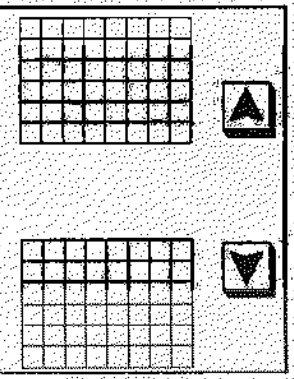


STEP 2. MASTER VERTICAL SHIFT[1]:

Use the ▲ or ▼ arrow keys and adjust the image until it is centered on the screen. DO NOT OVER-SCAN THE FACE OF THE CRT.

REMOTE CONTROL KEYSTROKES:

STANDARD:	OPTIONAL:
GREEN SHIFT	STATIC SHIFT



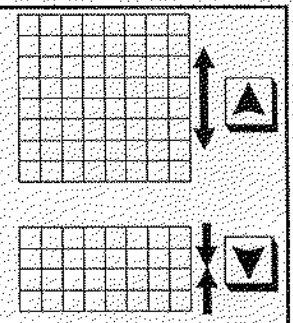
[1]REPEAT STEPS 1 AND 2 AS REQUIRED.

STEP 3. MASTER VERTICAL SIZE:

Use the ▲ or ▼ arrow keys and adjust until the proper height is achieved. DO NOT OVERSCAN THE FACE OF THE CRT!

REMOTE CONTROL KEYSTROKES:

STANDARD:	OPTIONAL:
GREEN SIZE	STATIC SIZE

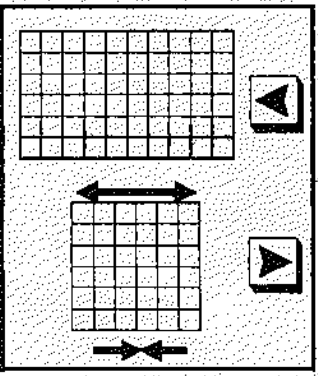


STEP 4 . MASTER HORIZONTAL SIZE:

Use the ◄ or ► arrow keys and adjust until the proper width is achieved. DO NOT OVERSCAN THE FACE OF THE CRT.

REMOTE CONTROL KEYSSTROKES:

STANDARD:	OPTIONAL:
GREEN SIZE	STATIC SIZE



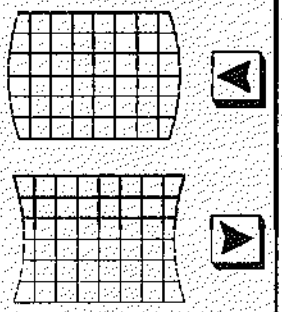
9.4.2. . . . . MASTER (GREEN) IMAGE ADJUSTMENTS: (CONTINUED)

STEP 5. MASTER STATIC E-W PINCUSHION: (REGISTRATION "OFF")

Use the ◀ or ▶ key and adjust the **right edge** until it does not bow in or out.

REMOTE CONTROL KEYSTROKES:

STANDARD:	OPTIONAL:
STATIC PIN	STATIC PIN

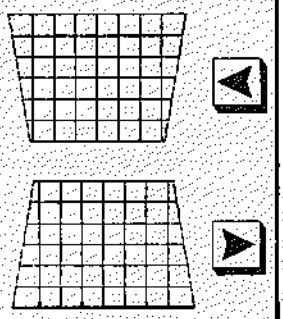


STEP 6. MASTER STATIC KEYSTONE: (REGISTRATION "OFF")

Use the ◀ or ▶ key and adjust the **right side** of the image until it is parallel with the vertical axis of the screen.

REMOTE CONTROLKEYSTROKES:

STANDARD:	OPTIONAL:
STATIC KEY	STATIC KEY

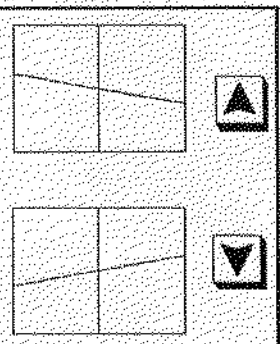


STEP 7. MASTER HORIZONTAL SKEW:

Use the ▲ or ▼ arrow keys and adjust the green horizontal line until it is **parallel** to the horizontal center line of the screen.

REMOTE CONTROL KEYSTROKES:

STANDARD:	OPTIONAL:
GREEN SKEW	GREEN SKEW



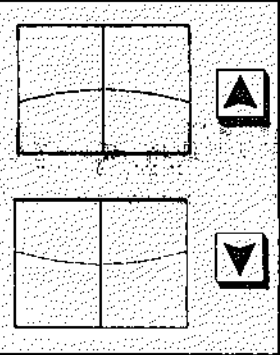
NOTE: OPTIONAL OPERATION, IT MAY BE NECESSARY TO SELECT EITHER TOP OR BOTTOM EDGE KEY WHEN RANDOMLY SELECTING THE MASTER HORIZONTAL SKEW OPERATION.

STEP 8. MASTER HORIZONTAL BOW:

Use the ▲ or ▼ arrow keys and adjust the green horizontal center line until it is straight.

RANDOM ACCESS KEYS:

STANDARD:	OPTIONAL:
GREEN BOW	GREEN BOW



NOTE: OPTIONAL OPERATION, IT MAY BE NECESSARY TO SELECT EITHER TOP OR BOTTOM EDGE KEY WHEN RANDOMLY SELECTING THE MASTER HORIZONTAL BOW OPERATION.

9.4.2. . . . . MASTER (GREEN) IMAGE ADJUSTMENTS: (CONTINUED)

STEP 9. MASTER VERTICAL SKEW:

Use the ◀ or ▶ arrow keys and adjust the green vertical center line until it is parallel to the vertical axis of the screen.

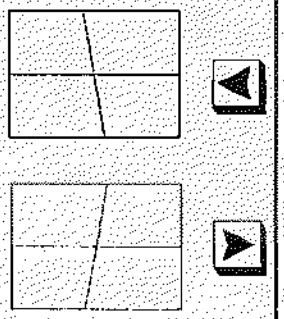
REMOTE CONTROL KEYSTROKES:

STANDARD:

GREEN SKEW

OPTIONAL:

GREEN SKEW



STEP 10. MASTER VERTICAL BOW:

Use the ◀ or ▶ arrow keys and adjust the green vertical center line until it is straight.

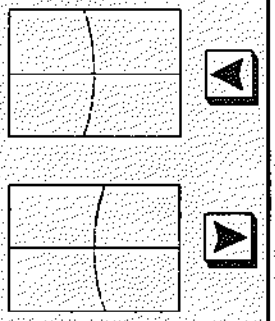
REMOTE CONTROL KEYSTROKES:

STANDARD:

GREEN BOW

OPTIONAL:

GREEN BOW



STEP 11. MASTER TOP PINCUSHION:

Use the ▲ or ▼ arrow keys and adjust until the **top horizontal line** does not bow up or down.

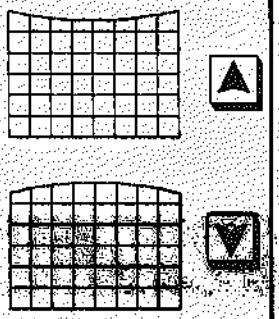
REMOTE CONTROL KEYSTROKES:

STANDARD:

GREEN PIN

OPTIONAL

GREEN PIN



STEP 12. MASTER TOP KEYSTONE:

Use the ▲ or ▼ arrow keys and adjust the top horizontal line until it is parallel with the top horizontal edge of the screen.

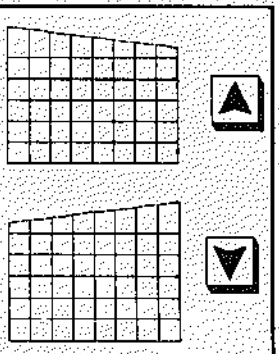
REMOTE CONTROL KEYSTROKES:

STANDARD:

GREEN KEY

OPTIONAL:

GREEN KEY



9.4.2. MASTER (GREEN) IMAGE ADJUSTMENTS: (CONTINUED)

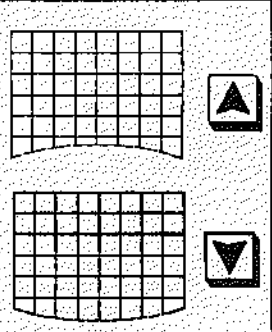
STEP 13. MASTER BOTTOM PINCUSHION:

Use the ▲ or ▼ arrow keys and adjust the **bottom horizontal line** until it does not bow up or down.

REMOTE CONTROL KEYSTROKES:

STANDARD: GREEN PIN —

OPTIONAL: GREEN PIN —



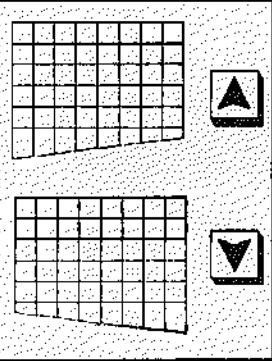
STEP 14. MASTER BOTTOM KEYSTONE:

Use the ▲ or ▼ arrow keys to adjust the **bottom horizontal line** until it is parallel to the bottom horizontal edge of the screen.

REMOTE CONTROL KEYSTROKES:

STANDARD: GREEN KEY —

OPTIONAL: GREEN KEY —



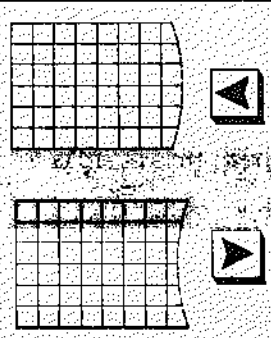
STEP 15. MASTER RIGHT PINCUSHION:

Use the ◀ or ▶ arrow keys and adjust until the **right edge** of the image does not bow in or out.

REMOTE CONTROL KEYSTROKES:

STANDARD: GREEN PIN —

OPTIONAL: GREEN PIN —



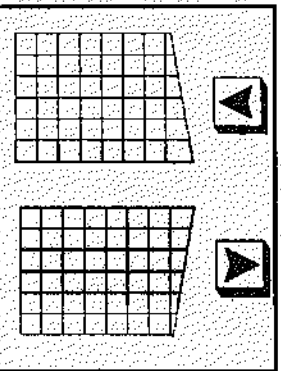
STEP 16. MASTER RIGHT KEYSTONE:

Use the ◀ or ▶ arrow keys and adjust the **right outermost vertical line** until it is parallel to the vertical edge of the screen.

REMOTE CONTROL KEYSTROKES:

STANDARD: GREEN KEY —

OPTIONAL: GREEN KEY —



9.4.2. . . . . MASTER (GREEN) IMAGE ADJUSTMENTS: (CONTINUED)

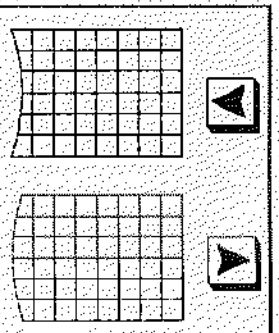
STEP 17. MASTER LEFT PINCUSHION:

Use the ◀ or ▶ arrow keys and adjust the **left edge** of the image until it does not bow in or out.

REMOTE CONTROL KEYSTROKES:

STANDARD: GREEN PIN

OPTIONAL: GREEN PIN



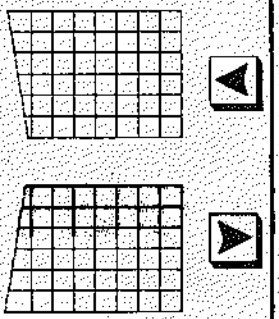
STEP 18. MASTER LEFT KEYSTONE:

Use the ◀ or ▶ arrow keys and adjust the **left outer most vertical line** until it is parallel to the vertical edge of the screen.

REMOTE CONTROL KEYSTROKES:

STANDARD: GREEN KEY

OPTIONAL: GREEN KEY



END OF MASTER (GREEN) ADJUSTMENTS

9.4.2.1 . . . . . RED, GREEN[1] AND BLUE IMAGE ADJUSTMENTS:

The adjustments outlined in this section are for the RED and BLUE images when using the standard convergence board or for the RED, GREEN[2] and BLUE images when using the convergence on green option.

[1]NOTE: Convergence on green option required.

[2]NOTE: Convergence on green option. Adjustments being made to the green image will select simultaneous adjustment of the Red, Green and Blue images with the exception of horizontal shift.

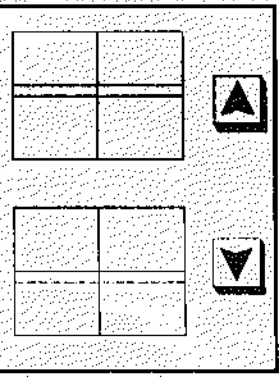
STEP 1. VERTICAL SHIFT*

Use the ▲ or ▼ arrow keys and adjust until the center horizontal line exactly overlays the center horizontal line in the reference color.

REMOTE CONTROL KEYSTROKES:

STANDARD: RED OR BLUE SHIFT

OPTIONAL: RED OR GREEN OR BLUE SHIFT



*ENSURE THE RED AND BLUE STATIC SHIFT OPERATIONS HAS BEEN PERFORMED.

9.4.2.1 . . . . . RED, GREEN* AND BLUE IMAGE ADJUSTMENTS (CONTINUED):

STEP 2. HORIZONTAL SHIFT:

Use the ◀ or ▶ arrow keys and adjust until the center vertical line exactly overlays the center vertical line of the reference color.

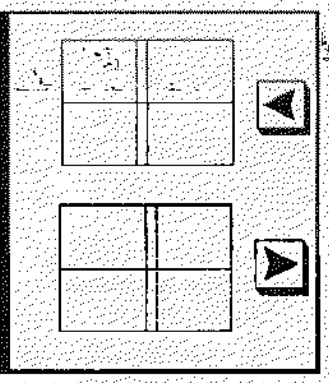
REMOTE CONTROL KEYSTROKES:

STANDARD:

RED OR BLUE SHIFT

OPTIONAL:

GREEN OR RED OR BLUE SHIFT



STEP 3. VERTICAL SKEW:

Use the ◀ or ▶ arrow keys and adjust until the **center vertical line** overlays the reference color.

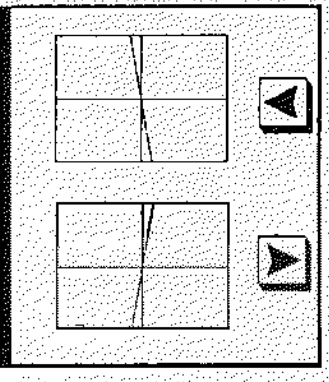
REMOTE CONTROL KEYSTROKES:

STANDARD:

RED OR BLUE SKEW

OPTIONAL:

RED OR BLUE SKEW



STEP 4. VERTICAL BOW :

Use the ◀ or ▶ arrow keys and adjust until the **center vertical line** is straight.

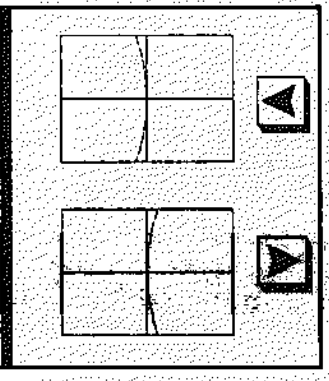
REMOTE CONTROL KEYSTROKES:

STANDARD:

RED OR BLUE BOW

OPTIONAL:

RED OR BLUE BOW



STEP 5. HORIZONTAL SKEW[1]: (LEFT AND RIGHT EDGE)

Use the ▲ or ▼ arrow keys and adjust until the **center horizontal line** overlays the center horizontal line of the reference color.

REMOTE CONTROL KEYSTROKES:

STANDARD:

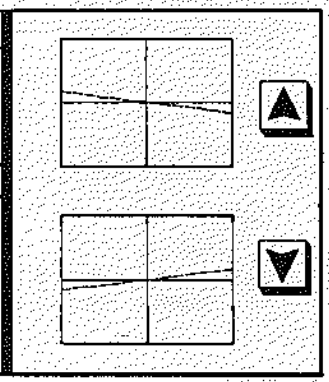
RED OR BLUE SKEW

OR

OPTIONAL:

GREEN OR RED OR BLUE SKEW

OR



[1] HORIZONTAL SKEW OPERATES ON THE LEFT AND RIGHT EDGE.

9.4.2.1 . . . . . RED, GREEN* AND BLUE IMAGE ADJUSTMENTS (CONTINUED):

STEP 6. HORIZONTAL BOW[1] :(LEFT AND RIGHT EDGE)

Use the ▲ or ▼ arrow keys and adjust until the center horizontal line is straight.

REMOTE CONTROL KEYSTROKES:

STANDARD:

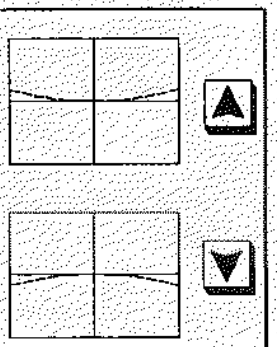
RED OR BLUE BOW

OR

OPTIONAL:

GREEN OR RED OR BLUE BOW

OR



[1] HORIZONTAL BOW OPERATE ON THE LEFT AND RIGHT EDGE.

STEP 7. TOP VERTICAL HEIGHT:

Use the ▲ or ▼ arrow keys and adjust until the inner 2/3 of the top half overlays the inner 2/3 of the top half of the reference color.

REMOTE CONTROL KEYSTROKES:

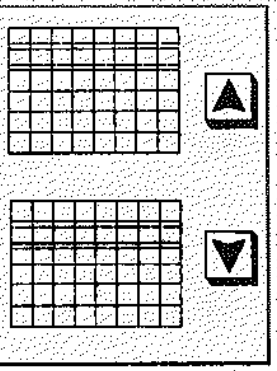
STANDARD:

RED OR BLUE SIZE

OPTIONAL:

GREEN OR RED OR BLUE

SIZE



STEP 8. TOP VERTICAL LINEARITY:

Use the ▲ or ▼ arrow keys and adjust the top edge until it overlays the top edge of the reference color. **NOTE:** Repeat steps 7 and 8 to optimize the top center and top edge convergence.

REMOTE CONTROL KEYSTROKES:

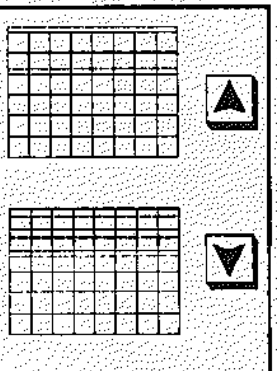
STANDARD:

RED OR BLUE LIN

OPTIONAL:

GREEN OR RED OR BLUE

LIN



STEP 9. BOTTOM VERTICAL HEIGHT :

Use the ▲ or ▼ keys and adjust until the inner 2/3 of the bottom half overlays the inner 2/3 of the bottom half of the reference color.

REMOTE CONTROL KEYSTROKES:

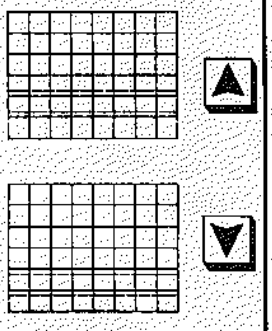
STANDARD:

RED OR BLUE SIZE

OPTIONAL:

GREEN OR RED OR BLUE

SIZE



9.4.2.1 . . . . . RED,GREEN* AND BLUE IMAGE ADJUSTMENTS (CONTINUED):

STEP 10. BOTTOM VERTICAL LINEARITY:

Use the ▲ or ▼ arrow keys and adjust the bottom edge until it overlays the bottom edge of the reference color. NOTE: Repeat Steps 9 and 10 to optimize the bottom center and edge convergence.

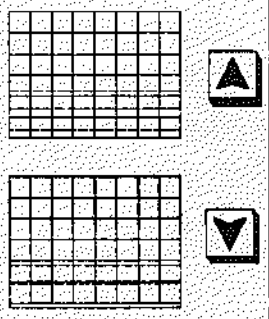
REMOTE CONTROL KEYSTROKES:

STANDARD:

RED OR BLUE | LIN | ▬

OPTIONAL:

GREEN OR RED OR BLUE | LIN | ▬



STEP 11. RIGHT HORIZONTAL LINEARITY:

Use the ◀ or ▶ arrow keys and adjust the right edge until it overlays the right edge of the reference color.

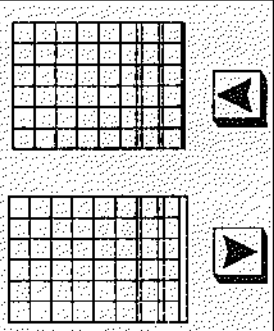
REMOTE CONTROL KEYSTROKES:

STANDARD:

RED OR BLUE | LIN | ▬

OPTIONAL:

GREEN OR RED OR BLUE | LIN | ▬



STEP 12. RIGHT WIDTH:

Use the ◀ or ▶ arrow keys and adjust the right inner 2/3 until it overlays the right inner 2/3 of the reference color.

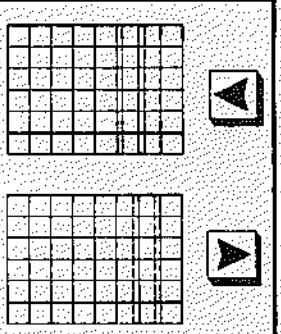
REMOTE CONTROL KEYSTROKES:

STANDARD:

RED OR BLUE | SIZE | ▬

OPTIONAL:

GREEN OR RED OR BLUE | SIZE | ▬



STEP 13. RIGHT HORIZONTAL EDGE LINEARITY:

Use the ◀ or ▶ arrow keys and adjust the right edge until it overlays the right outer edge of the reference color. NOTE: Repeat Steps 11, 12 and 13 to optimize the right center/edge convergence.

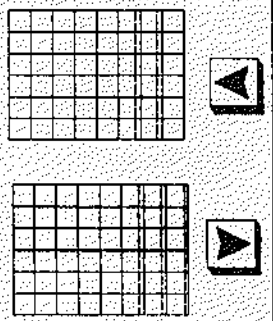
REMOTE CONTROL KEYSTROKES:

STANDARD:

RED OR BLUE | EDGELIN | ▬

OPTIONAL:

GREEN OR RED OR LIN | EDGELIN | ▬



9.4.2.1 . . . . . RED, GREEN* AND BLUE IMAGE ADJUSTMENTS (CONTINUED):

STEP 14. LEFT HORIZONTAL LINEARITY:

Use the ◀ or ▶ arrow keys and adjust until the **left edge** overlays the left edge of the reference color.

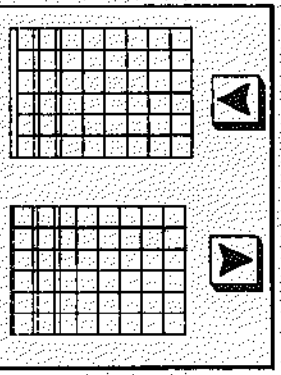
REMOTE CONTROL KEYSTROKES:

STANDARD:

RED OR BLUE LIN

OPTIONAL:

GREEN OR RED OR BLUE LIN



STEP 15. LEFT WIDTH:

Use the ◀ or ▶ arrow keys and adjust until the **left inner** 2/3 overlays the left inner 2/3 of the reference color.

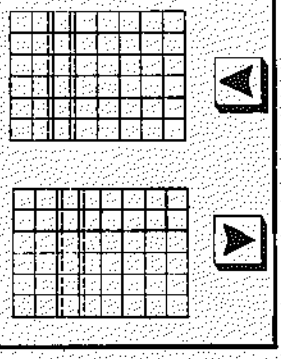
REMOTE CONTROL KEYSTROKES:

STANDARD:

RED OR BLUE SIZE

OPTIONAL:

GREEN OR RED OR BLUE SIZE



STEP 16. LEFT HORIZONTAL EDGE LINEARITY:

Use the ◀ or ▶ arrow keys and adjust the left outer edge until it overlays the left outer edge of the reference color. **NOTE:** Repeat Steps 14, 15 and 16 to optimize the left center/edge convergence.

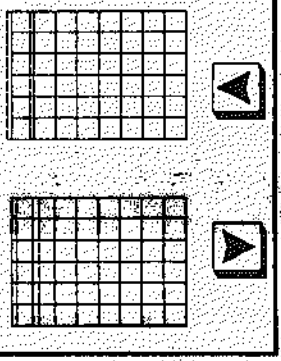
REMOTE CONTROL KEYSTROKES:

STANDARD:

RED OR BLUE EDGELIN

OPTIONAL:

GREEN OR RED OR BLUE EDGELIN



STEP 17. TOP RIGHT VERTICAL KEYSTONE:

Use the ▲ or ▼ arrow keys and adjust the **top horizontal line** until it is straight and overlays the reference color.

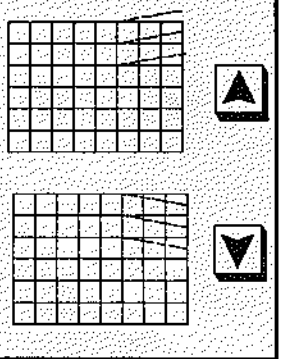
REMOTE CONTROL KEYSTROKES:

STANDARD:

RED OR BLUE KEY

OPTIONAL:

GREEN OR RED OR BLUE KEY



9.4.2.1 . . . . . RED, GREEN* AND BLUE IMAGE ADJUSTMENTS: (CONTINUED)

STEP 18. TOP RIGHT VERTICAL PINCUSHION:

Use the ▲ or ▼ arrow keys and adjust the top horizontal line until it is straight and overlays the reference color.

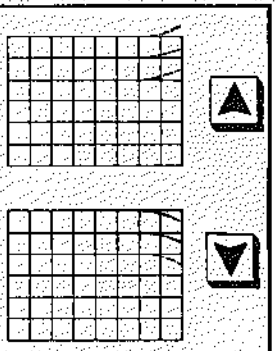
REMOTE CONTROL KEYSTROKES

STANDARD:

RED OR BLUE PIN

OPTIONAL:

GREEN OR RED OR BLUE PIN



STEP 19. TOP RIGHT HORIZONTAL KEYSTONE:

Use the ◀ or ▶ arrow keys and adjust the outermost vertical line until it is straight and overlays the reference color.

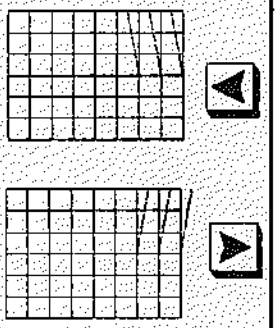
REMOTE CONTROL KEYSTROKES

STANDARD:

RED OR BLUE KEY

OPTIONAL:

GREEN OR RED OR BLUE KEY



STEP 20. TOP RIGHT HORIZONTAL PINCUSHION:

Use the ◀ or ▶ arrow keys and adjust the outermost vertical line until it is straight and overlays the reference color.

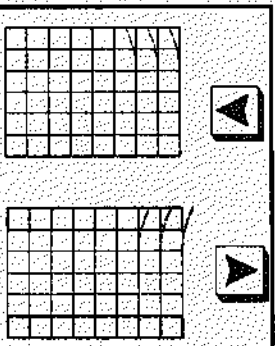
REMOTE CONTROL KEYSTROKES

STANDARD:

RED OR BLUE PIN

OPTIONAL:

GREEN OR RED OR BLUE PIN



STEP 21. BOTTOM RIGHT VERTICAL KEYSTONE:

Use the ▲ or ▼ arrow keys and adjust the top horizontal line until it is straight and overlays the reference color.

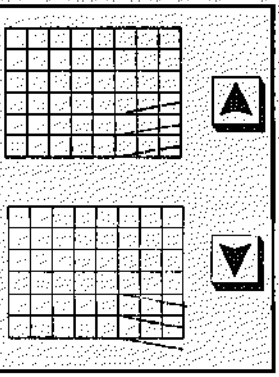
REMOTE CONTROL KEYSTROKES

STANDARD:

RED OR BLUE KEY

OPTIONAL:

GREEN OR RED OR BLUE KEY



9.4.2.1 . . . . . RED, GREEN* AND BLUE IMAGE ADJUSTMENTS: (CONTINUED)

STEP 22. BOTTOM RIGHT VERTICAL PINCUSHION:

Use the ▲ or ▼ key and adjust the top horizontal line until it is straight and overlays the reference color.

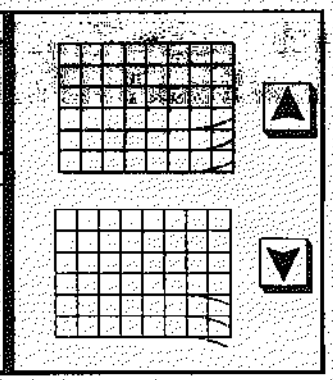
REMOTE CONTROL KEYSTROKES

STANDARD:

RED OR BLUE PIN

OPTIONAL:

GREEN OR RED OR BLUE PIN



STEP 23. BOTTOM RIGHT HORIZONTAL KEYSTONE:

Use the ◀ or ▶ arrow keys and adjust the outermost vertical line until it is straight and overlays the reference color.

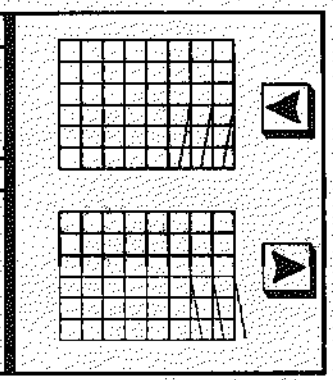
REMOTE CONTROL KEYSTROKES

STANDARD:

RED OR BLUE KEY

OPTIONAL:

GREEN OR RED OR BLUE KEY



STEP 24. BOTTOM RIGHT HORIZONTAL PINCUSHION:

Use the ◀ or ▶ arrow keys and adjust the outermost vertical line until it is straight and overlays the reference color.

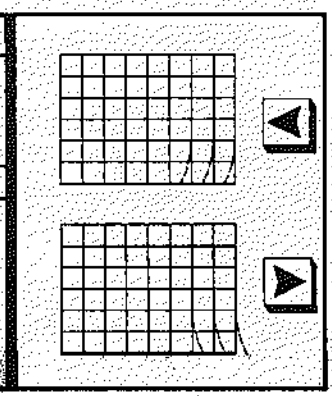
REMOTE CONTROL KEYSTROKES

STANDRAD:

RED OR BLUE PIN

OPTIONAL:

GREEN OR RED OR BLUE PIN



STEP 25. TOP LEFT VERTICAL KEYSTONE:

Use the ▲ or ▼ arrow keys and adjust the top horizontal line until it is straight and overlays the reference color.

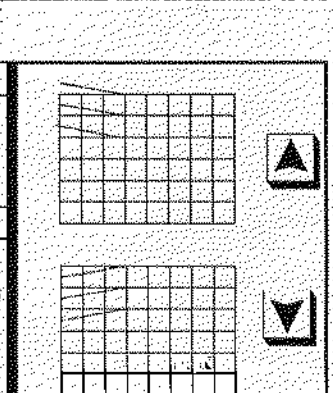
REMOTE CONTROL KEYSTROKES

STANDARD:

RED OR BLUE KEY

OPTIONAL:

GREEN OR RED OR BLUE PIN



9.4.2.1 . . . . . RED, GREEN* AND BLUE IMAGE ADJUSTMENTS: (CONTINUED)

STEP 26. TOP LEFT VERTICAL PINCUSHION:

Use the ▲ or ▼ arrow keys and adjust the top horizontal line until it is straight and overlays the top horizontal line in the reference color.

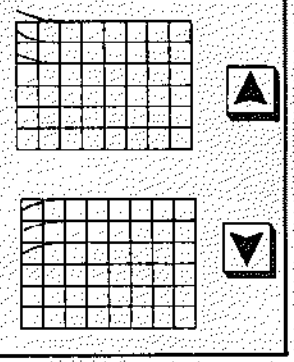
REMOTE CONTROL KEYSTROKES

STANDARD:

RED OR BLUE PIN

OPTIONAL:

GREEN OR RED OR BLUE PIN



STEP 27. TOP LEFT HORIZONTAL KEYSTONE:

Use the ◄ or ► arrow keys and adjust the outermost vertical line until it is straight and overlays the reference color.

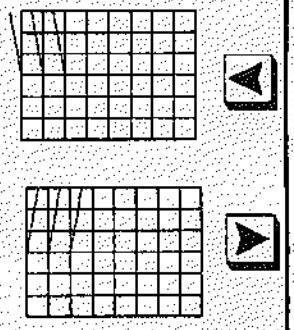
REMOTE CONTROL KEYSTROKES

STANDARD:

RED OR BLUE KEY

OPTIONAL:

GREEN OR RED OR BLUE KEY



STEP 28. TOP LEFT HORIZONTAL PINCUSHION:

Use the ◄ or ► arrow keys and adjust the outermost vertical line until it is straight and overlays the outermost vertical line of the reference color.

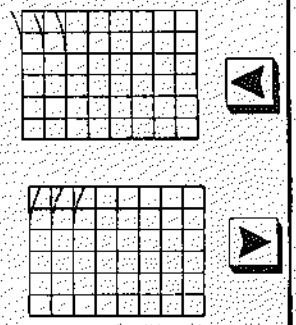
REMOTE CONTROL KEYSTROKES

STANDARD:

RED OR BLUE PIN

OPTIONAL:

GREEN OR RED OR BLUE PIN



STEP 29. BOTTOM LEFT VERTICAL KEYSTONE:

Use the ▲ or ▼ arrow keys and adjust the bottom horizontal line until it is straight and overlays the bottom horizontal line of the reference color.

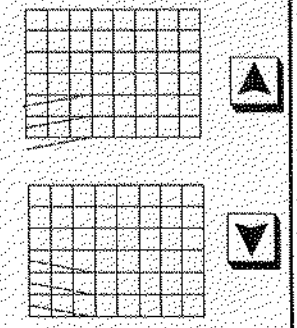
REMOTE CONTROL KEYSTROKES

STANDARD:

RED OR BLUE KEY

OPTIONAL:

GREEN OR RED OR BLUE KEY



9.4.2.1 . . . . . RED, GREEN* AND BLUE IMAGE ADJUSTMENTS: (CONTINUED)

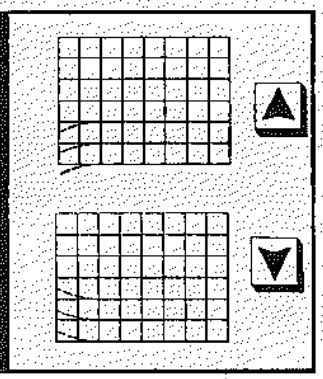
STEP 30. BOTTOM LEFT VERTICAL PINCUSHION:

Use the ▲ or ▼ arrow keys and adjust the **top horizontal line** until it is straight and overlays the reference color.

REMOTE CONTROL KEYSTROKES

STANDARD: RED OR BLUE PIN [ ]

OPTIONAL: GREEN OR RED OR BLUE PIN [ ]



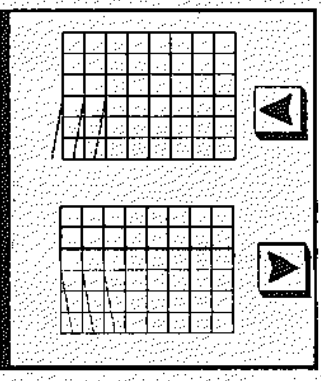
STEP 31. BOTTOM LEFT HORIZONTAL KEYSTONE:

Use the ◀ or ▶ arrow keys and adjust the **outermost vertical line** until it is straight and overlays the outermost vertical line of the reference color.

REMOTE CONTROL KEYSTROKES

STANDARD: RED OR BLUE KEY [ ]

OPTIONAL: GREEN OR RED OR BLUE KEY [ ]



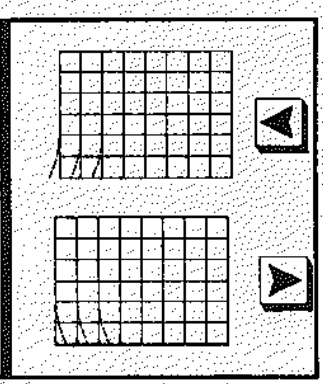
STEP 32. BOTTOM LEFT HORIZONTAL PINCUSHION:

Use the ▲ or ▼ arrow keys and adjust the **outermost vertical line** until it is straight and overlays the reference color.

REMOTE CONTROL KEYSTROKES

STANDARD: RED OR BLUE PIN [ ]

OPTIONAL: GREEN OR RED OR BLUE PIN [ ]



- NOTE: Upon completion of adjusting your new channel, enter 24 CODE to validate and write-protect your channel. Continue with procedure to align all your channels.

Chapter 10

RS - 232 INTERFACE DATA

10.1 . . . . .GENERAL:

The ESPRIT Video/Computer Graphics display system features duplex RS-232 communication network capability. The projectors can be controlled from a remote, a computer or modem using RS-232 and ASCII characters. Display systems can be looped together so that multiple display systems and switchers can be addressed and controlled by one central source. Refer to Figure 10-1 for network configuration example.

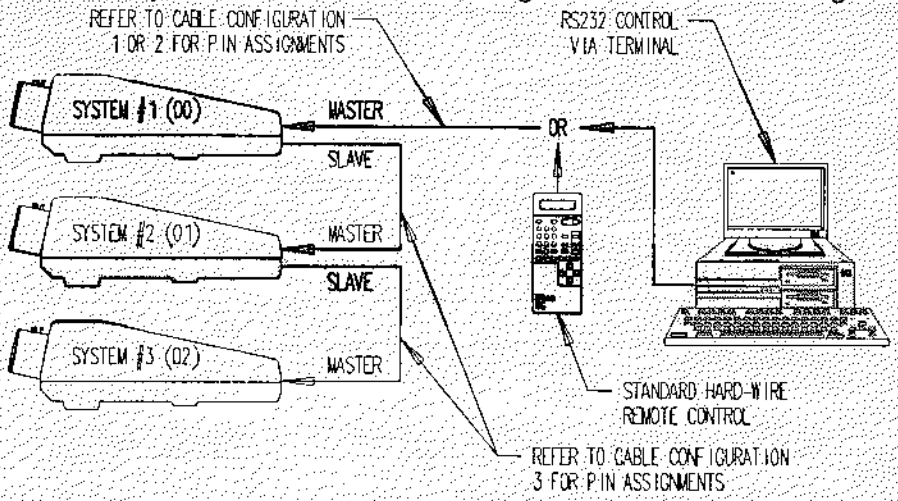


FIGURE 10-1. Multiple system control configuration.

10.2 . . . . .HEXADECIMAL SWITCH CONFIGURATIONS:

The system has three hexadecimal rotary switches located on the CPU module (figure 10-2) These switches may be accessed by removing the top cover. The switches are marked S1, S2 and S3. The switch closest to the rear panel (S1) and the center switch (S2) are used to assign the individual projector number to each unit installed in a network of multiple systems.

Refer to Table 10-2 for setting S1 and S2. The third switch from the rear panel is S3 and determines the baud rate. See table 10-1 for baud rate information.

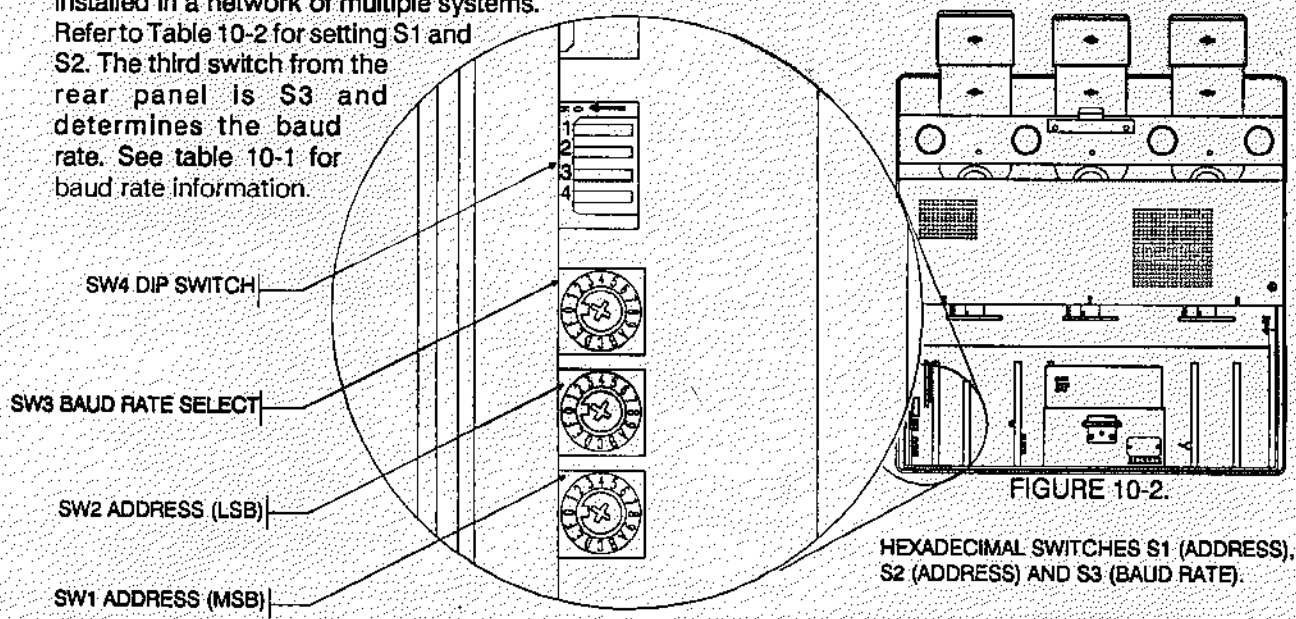


FIGURE 10-2.

HEXADECIMAL SWITCHES S1 (ADDRESS), S2 (ADDRESS) AND S3 (BAUD RATE).

10.2.1 . . . .BAUD RATE SWITCH 3 (S3) CONFIGURATION:

The tables below show the projector (CPU) and the hard wired LCD remote control baud rate switch settings for a variety of baud rates. Under normal conditions, the remote control and CPU should always be set to communicate at 9600 baud. However, limitations of the overall RS232 network, i.e. slower devices connected to the network or lengthy cabling, may require that the baud rate of the CPU and remote control be reduced.

10.2.2 . . . .CPU BAUD RATE (SW3) REFERENCE TABLE:

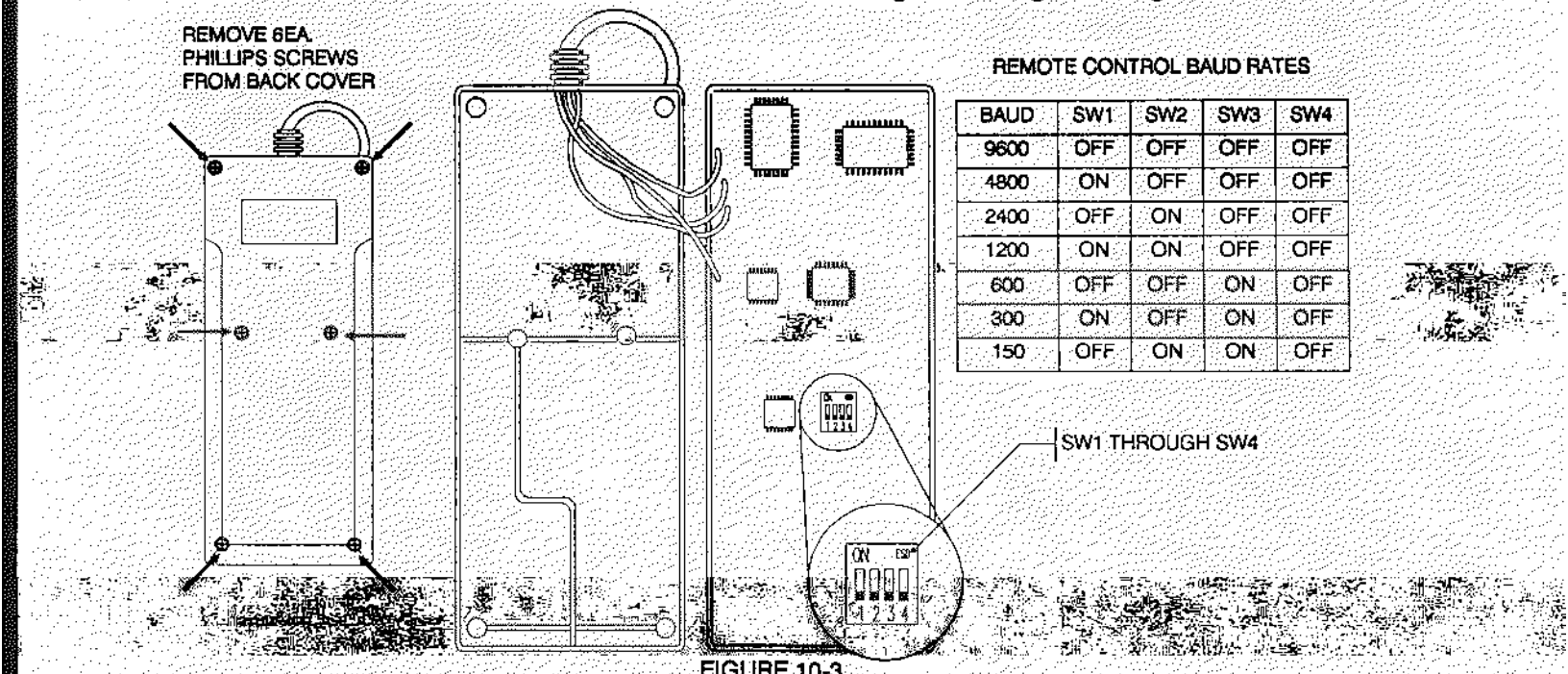
The top cover of the ESPRIT system must be removed to access CPU S3 which is a rotary hexadecimal switch located on the CPU. See Figure 10-2.

S3 POSITION	BAUD RATE	S3 POSITION	BAUD RATE
0	9600 CTS/RTS handshaking disabled	8	9600 CTS/RTS handshaking enabled
1	4800 CTS/RTS handshaking disabled	9	4800 CTS/RTS handshaking enabled
2	2400 CTS/RTS handshaking disabled	A	2400 CTS/RTS handshaking enabled
3	1200 CTS/RTS handshaking disabled	B	1200 CTS/RTS handshaking enabled
4	600 CTS/RTS handshaking disabled	C	600 CTS/RTS handshaking enabled
5	300 CTS/RTS handshaking disabled	D	300 CTS/RTS handshaking enabled
6	150 CTS/RTS handshaking disabled	E	150 CTS/RTS handshaking enabled
7	19.2k CTS/RTS handshaking disabled	F	19.2k CTS/RTS handshaking enabled

TABLE 10-1. CPU BAUD RATE SELECTIONS.

10.2.3 . . . .REMOTE CONTROL BAUD RATE REFERENCE TABLE:

The back cover of the remote control must be removed to access the remote switches SW1 through SW4. These switches are housed in a 4 switch DIP and labeled 1 through 4 left to right. See Figure 10-3.



REMOTE CONTROL BAUD RATES

BAUD	SW1	SW2	SW3	SW4
9600	OFF	OFF	OFF	OFF
4800	ON	OFF	OFF	OFF
2400	OFF	ON	OFF	OFF
1200	ON	ON	OFF	OFF
600	OFF	OFF	ON	OFF
300	ON	OFF	ON	OFF
150	OFF	ON	ON	OFF

FIGURE 10-3.

REMOTE CONTROL BAUD RATE SW1-4 LOCATION/CONFIGURATION.

10.2.4 . . . . HANDSHAKE SIMULATION:

Located on the CPU module are two jumpers labeled LK1 and LK2. These jumpers are used for simulating the DTR - DSR handshaking signal. When using one system or in a multiple system configuration, LK1 and LK2 are installed in the individual unit or in the last unit of the network. See Figure 10-4 for location of LK1 and LK2.

One example of using LK1 and LK2 in a network is to ensure the integrity of the cabling between systems. With LK1/LK2 installed in the last system of the network and no handshake response is reflected to the host unit, this is seen as a cabling fault within the network.

☐ NOTE: Refer to your particular host unit requirements for the proper LK1/LK2 configuration.

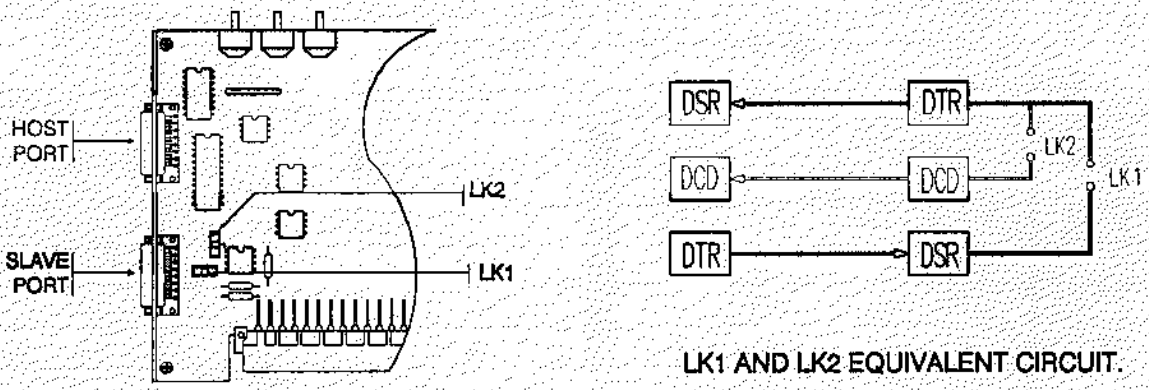


FIGURE 10-4.

JUMPERS LK1 AND LK2 LOCATION (CPU MODULE)

10.2.5 . . . .SETTING SWITCH 1 AND 2:

As mentioned earlier, S1 and S2 will select the unit's particular address or unit number, which is a requirement whether using one or multiple systems. In a singular system configuration or a multiple system network the first unit the switches must be set as 0(S1) and 0(S2). Refer to Table 10-2 for multiple system operation numbering and Figure 10-1 for the COMPUTER - MASTER - PROJECTOR - SLAVE relationship.

☐ NOTE 1: To determine the presently active unit, simply press the (UNIT) button.

☐ NOTE 2: Table 10-2 indicates a 32 unit numbering sequence out of a maximum of 256 systems. Refer to a Decimal-to-Hexadecimal conversion chart for higher hexadecimal equivalents.

☐ NOTE 3: Enusre dip switch (SW4) switch 2 is in the off position when networking multiple systems. Refer to Figure 10-2 for location of SW4.

UNIT NUMBER	POSITION S1	S2	UNIT NUMBER	POSITION S1	S2	UNIT NUMBER	POSITION S1	S2	UNIT NUMBER	POSITION S1	S2
1	0	0	9	0	8	17	1	0	25	1	8
2	0	1	10	0	9	18	1	1	26	1	9
3	0	2	11	0	A	19	1	2	27	1	A
4	0	3	12	0	B	20	1	3	28	1	B
5	0	4	13	0	C	21	1	4	29	1	C
6	0	5	14	0	D	22	1	5	30	1	D
7	0	6	15	0	E	23	1	6	31	1	E
8	0	7	16	0	F	24	1	7	32	1	F

TABLE 10-2. Hexadecimal switches S1/S2 configurations.

10.3 . . . . .MASTER/SLAVE PORT AND RS-232 CABLE PIN ASSIGNMENTS:

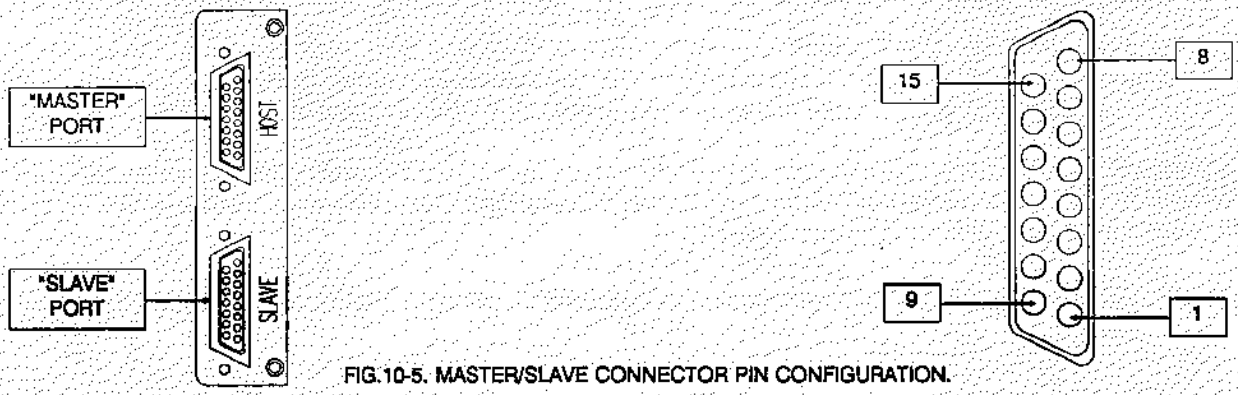


FIG.10-5. MASTER/SLAVE CONNECTOR PIN CONFIGURATION.

PIN	HOST	SLAVE	PIN	HOST	SLAVE
1	GND	GND	9	N/C	NC
2	TXD	RXD	10	N/C	N/C
3	RXD	TXD	11	Vraw	N/C
4	RTS	CTS	12	Vraw	N/C
5	CTS	RTS	13	N/C	N/C
6	DTR	N/C	14	N/C	N/C
7	GND	GND	15	DSR	DSR
8	DCD	DCD			

TABLE 10-3.

Master and Slave connectors (ports) pin assignments.

10.3.1 . . . . CABLE CONFIGURATION 1: HOST TO PROJECTOR:

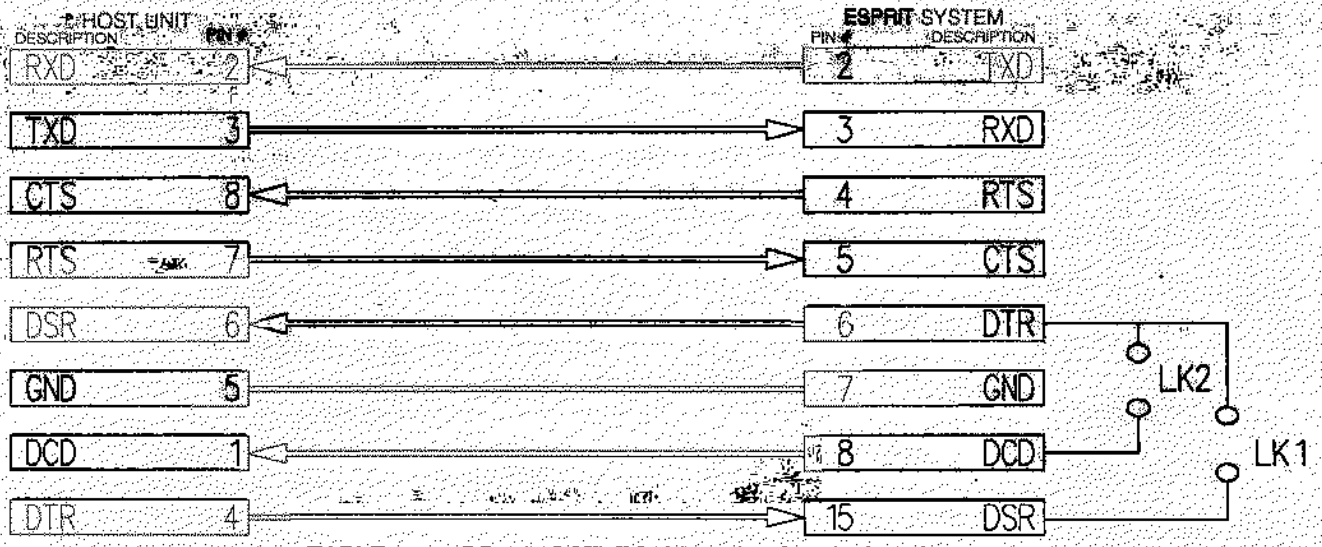


TABLE 10-4. DB9 (HOST) TO DB15 (PROJECTOR) CABLE.

10.3.2 . . . .CABLE CONFIGURATION 2: IBM® PC TO PROJECTOR:

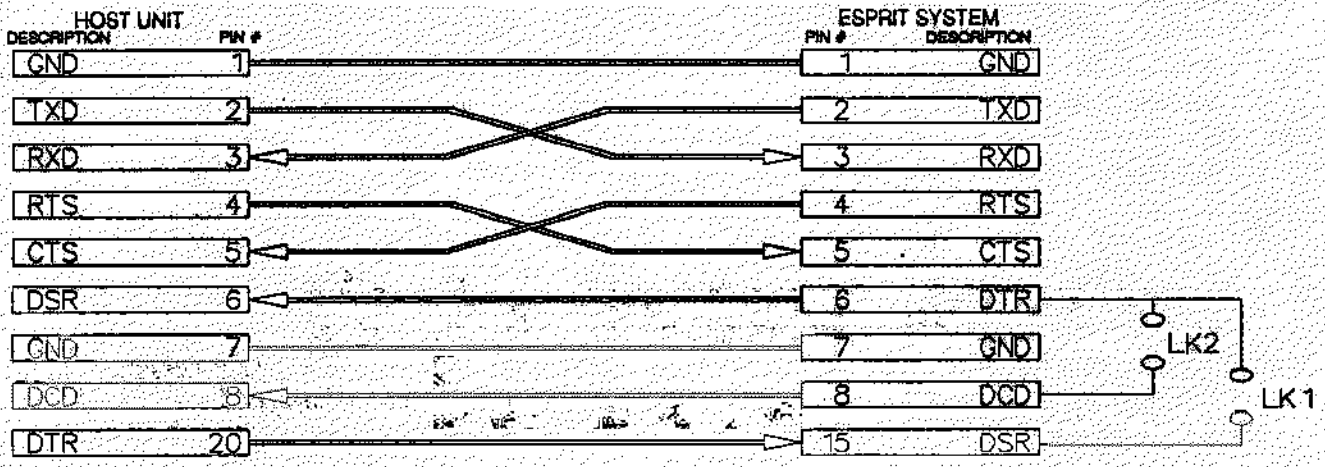


TABLE 10-5. DB25 (HOST) TO DB15 (PROJECTOR) CABLE.

10.3.3 . . . .CABLE CONFIGURATION 3: PROJECTOR TO PROJECTOR

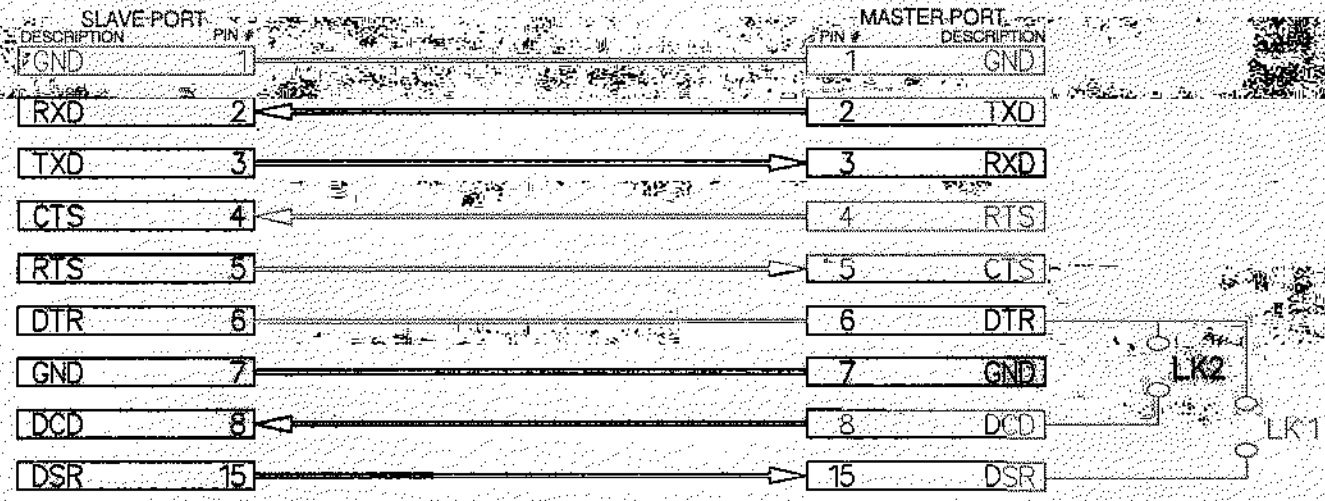


TABLE 10-6. DB15 (ESPRIT) TO DB15 (ESPRIT) CABLE.

NOTE: TABLE 10-6 DOES NOT SHOW PINS11 AND 12 POWER CONNECTIONS. USE A ONE-TO-ONE PIN CONFIGURATION WHEN CONNECTING FROM PROJECTOR TO PROJECTOR.

10.4 . . . . . RS-232 OPERATION:

10.4.1 . . . . MODE SELECTION COMMANDS:

A Analog RGB mode select command	**R** Test mode select command
T TTL or RGB2 mode select command	**$** Help mode select command
V Video mode select command	

NOTE: Refer to Chapter 7 for additional information on the above modes of operation.

10.4.2 . . . . ADJUSTMENT MODE COMMANDS:

B Brightness adjust mode command	**P** Contrast adjust mode command
C Color adjust mode command	**+** Up arrow command
D Detail adjust mode command	**<** Left arrow command
E Phase adjust mode command	**-** Down arrow command
H Tint adjust mode command	**>** Right arrow command

The adjustment mode commands have two modes of operation. The first uses the arrow keys to increment or decrement the adjustment which has been selected previously by one of the above keys. For example, if you wish to increase the brightness level, transmit a B, then transmit + until you have the desired brightness level.

☐ NOTE: When one of the adjustment mode select commands is received, the system responds by transmitting the present level of the desired adjustment.

The second mode of operation allows you to set the level of the desired adjustment directly by transmitting an integer value in the range **0 - 100** followed by the appropriate adjustment character. For example, to set the tint level to a 75% level, you would transmit **75H**. NOTE: Due to limitations, rounding of the actual entry may occur, i.e. 75% = 74% .

10.4.3 . . . .TOGGLE COMMANDS:

c Cutoff command. This command is used in conjunction with one of the color keys e.g. **cd**, Cutoff Red CRT. To restore the Red CRT transmit **cd** a second time. Use **ce** for green and **cf** for blue cutoff commands.

K Registration ON/OFF command. With registration on, the first **K** will turn registration "OFF" and the second **K** will turn registration "ON."

O Power ON/OFF command. If the system is "OFF": the first **O** will turn the system "ON" and the second **O** will turn the system "OFF."

Q Channel protect command. This allows the user to protect the settings stored in a particular channel location. Refer to Chapter 7, Section 3, Page 7-6, for information on setting channel parameters.

X RED CUTOFF command. This command is similar to the previous command cd. The first **X** will turn the RED CRT "OFF", presuming it was on, and the second **X** will turn the RED CRT "ON."

Y GREEN CUTOFF command. This is similar to using the **ce** command. Use the **Y** character to toggle the GREEN CRT "ON and OFF."

Z BLUE CUTOFF command. This command is the same as using the **cf** command. Toggle the BLUE CRT "ON and OFF" using the **Z** character.

? Display diagnostic status. This command is used to display the diagnostic capability of the system. Transmit the **?** character a second time to disable the diagnostic display.

10.4.4 . . . .NUMERIC COMMANDS:

! CHANNEL command. This command is preceded by an individual channel location number. Refer to Chapter 7, Section 3, Page 7-5 for additional information on recalling channels.

CODE command. This command is preceded by an specific code. Refer to Chapter 7, Section 17, Page 7-11, for code identification and operation, e.g. to display time of day, transmit **10#**.

= UNIT command. This command is used to address an individual unit number or use command **256=** to address all systems in a network. Refer to Chapter 7, Section 4, Page 7-6 for additional information and operation.

10.4.5 . . . .NETWORK COMMANDS:

: Global listen command. Causes all projectors in a network to listen and respond to commands at the same time. This mode of operation continues until another projector is selected to listen, or until a global un-listen command is received. When in the global mode, only the projector with address "01" (switch settings "00") will respond with messages.

; Global un-listen command. All projectors are commanded to not respond until a unit number has been selected or a global listen command is given.

10.4.6 . . . .EXPLICIT COMMANDS:

(STANDBY "ON" command. This character is used to place the system into a standby mode of operation.

) STANDBY "OFF" command. This character is used in conjunction with the STANDBY "ON" command).

[POWER "ON" command. This command will enable you to turn "ON" the system.

] POWER "OFF" command. This command is used in conjunction with the POWER "ON" command [.

10.4.7 . . . .REGISTRATION COMMANDS:

The registration commands listed in table 7A and 7B are used in the same manner as outlined in Chapter 7. The lower case letters from "**a**" through "**w**" are assigned for registration commands.

The adjustment method is performed by using the +, -, < or > characters, e.g. to adjust the right edge linearity of the red image transmit "**dms**", then adjust by transmitting "<" or ">" characters (dms<) or (dms>).

☐ NOTE: When using the registration commands the system will respond with the selected area of adjustment, selected color and selected function.

10.4.8 . . . .MISCELLANEOUS COMMANDS:

L Display revision level command. With this command it is possible to determine the current ROM revision level and date of the operating system.

N Next test pattern command. This command is used in conjunction with the "**R**" command (TEST mode of operation.). While in the test mode of operation use the "**N**" character to step to the next available test pattern.

U Display active unit number. This command allows you to determine the number assigned to a unit, or to determine which unit is active within a network.

\n CLEAR command (LINEFEED). This character emulates the CLEAR key on the remote control. Refer to Chapter 7, section 18, page 7-15 for additional information on the use of the clear command.

10.5 . . . . .RS-232 COMMANDS / TABLE 7A and 7B:

ASCII CHARACTER COMMANDS					
ASCII KEY	COMMAND†	REMOTE KEY EQUIVALENT	ASCII KEY	COMMAND†	REMOTE KEY EQUIVALENT
a	STATIC	STATIC	A	RGB	RGB
b	DYNAMIC	DYNAMIC	B	BRIGHTNESS	BRITE
c	CUTOFF	CUT OFF	C	COLOR	COLOR
d	RED	RED	D	DETAIL	DETAIL
e	GREEN	GREEN	E	PHASE	PHASE
f	BLUE	BLUE	F	RED SHIFT	RED + SHIFT
g	SHIFT	SHIFT	G	BLUE SHIFT	BLUE + SHIFT
h	SKEW	SKEW	H	TINT	TINT
i	BOW	BOW	I	Static Blue Vertical Shift	40 + CODE
j	KEYSTONE	KEY	J	Static Red Vertical Shift	41 + CODE
k	PINCUSHION	PIN	K	Registration On/Off (toggle)	55 + CODE
l	SIZE	SIZE	L	Display revision level/date	35 + CODE
m	EDGE LINEARITY	EDGE LIN	M	Monochrome mode (toggle)	49 + CODE
n	LINEARITY	LIN	N	Next test pattern	STEP

TABLE 10-7A.

10.5 . . . . RS-232 COMMANDS / TABLE 7A AND 7B (CONTINUED)

ASCII CHARACTER COMMANDS					
ASCII KEY	COMMAND†	REMOTE KEY EQUIVALENT	ASCII KEY	COMMAND†	REMOTE KEY EQUIVALENT
o	BLANKING	BLANK	O	On/Off (toggle)	POWER
p	TOP EDGE		P	CONTRAST	CONT
q	BOTTOM EDGE		Q	Channel protect (toggle)	20 CODE
r	LEFT EDGE		R	TEST	TEST
s	RIGHT EDGE		S	STANDBY (toggle)	STANDBY
t	TOP LEFT QUAD		T	[A]	A
u	TOP RIGHT QUAD		U	Display active unit number	UNIT
v	BOTTOM LEFT QUAD		V	[B]	B
w	BOTTOM RIGHT QUAD		W	NOT USED	NOT USED
x	NOT USED	NOT USED	X	RED CUTOFF (toggle)	CUT OFF RED
y	NOT USED	NOT USED	Y	GREEN CUTOFF (toggle)	CUT OFF GREEN
z	NOT USED	NOT USED	Z	BLUE CUTOFF (toggle)	CUT OFF BLUE
\n	CLEAR (LINEFEED)	CLEAR	-	DOWN ARROW	
!	CHANNEL	CHAN	>	RIGHT ARROW	
#	CODE	CODE	.	Global listen	256 UNIT
$	HELP	HELP	=	UNIT	UNIT
(	Standby "ON"	NOT USED	?	Display diagnostic (toggle)	30 CODE
)	Standby "OFF"	NOT USED	[	Power "ON"	NOT USED
+	UP ARROW		]	Power "OFF"	NOT USED
<	LEFT ARROW				

TABLE 10-7B

† Refer to section 10.4 for operation of the ASCII commands.

Chapter 11

PREVENTATIVE MAINTENANCE AND SYSTEM TROUBLE SHOOTING

11.1 . . . . .PREVENTATIVE MAINTENANCE:

- 1. Avoid direct sunlight, moisture, heat and improper mounting.
- 2. Provide sufficient ventilation to the rear and bottom two fans to avoid overheating of internal components.
- 3. Clean and maintain the three fans , one on the rear panel and two on the bottom side, to avoid restriction of air flow and overheating of the system.

NOTE: Filters are provided for the bottom fans. Refer to section 11.2 for removing and cleaning of the filter media inserts.

- 4. Adjust your cleaning schedule according to your particular environment.
- 5. The Data/Graphic Display System may be kept in good condition by wiping it with a clean, soft, dry cloth. See section 11.3 for special lens care and cleaning.
- 6. For general safety, the system should be cleaned internally only by an authorized ESPRIT PROJECTION SYSTEMS (AmPro Corporation) service technician.
- 7. Do not place magnetic equipment near the system.

11.1.1 . . . . PRECAUTIONS:

- 1. Secure service any time the Data/Graphics display system is damaged or fails. An obvious change in performance may also indicate a need for service.
- 2. Do not attempt to service this system yourself by opening or removing covers that may expose you to dangerous voltages or other hazards. Refer all servicing to qualified service personnel.
- 3. Remove the power plug from the wall socket when the Data/Graphics Display System is not functioning properly.

11.2 . . . . . FAN FILTERS REMOVAL AND CLEANING:

The two filters on the bottom of the system are reusable and are provided to maintain a clean environment within the system. Please check the filters periodically and adjust your cleaning periods accordingly. In areas of heavy dust, smoke, or other environmental contaminants, the system will require more frequent cleaning periods, i.e. weekly, bimonthly, monthly, etc. To remove and clean the filter medias, follow the steps listed below.

- 1. Remove the filter retainer by pulling the sides with the catch apart. Refer to figure 11-1.
- 2. Remove the filter media from between the retainer and the guard. Refer to figure 11-2.
- 3. Clean the filter media by shaking or blowing. Ensure the filter is as clean as possible. DO NOT WASH.
- 4. Repeat steps 1 through 3 for each filter.
- 5. Place the filter media between the filter guard and the retainer. Push the retainer until the catches lock in place.

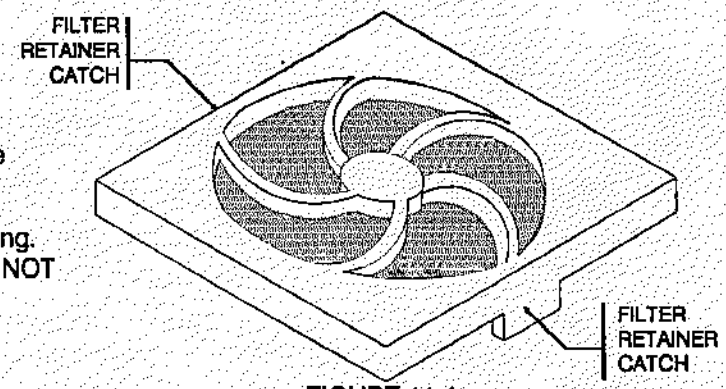


FIGURE 11-1.

FAN FILTER RETAINER, FILTER MEDIA.

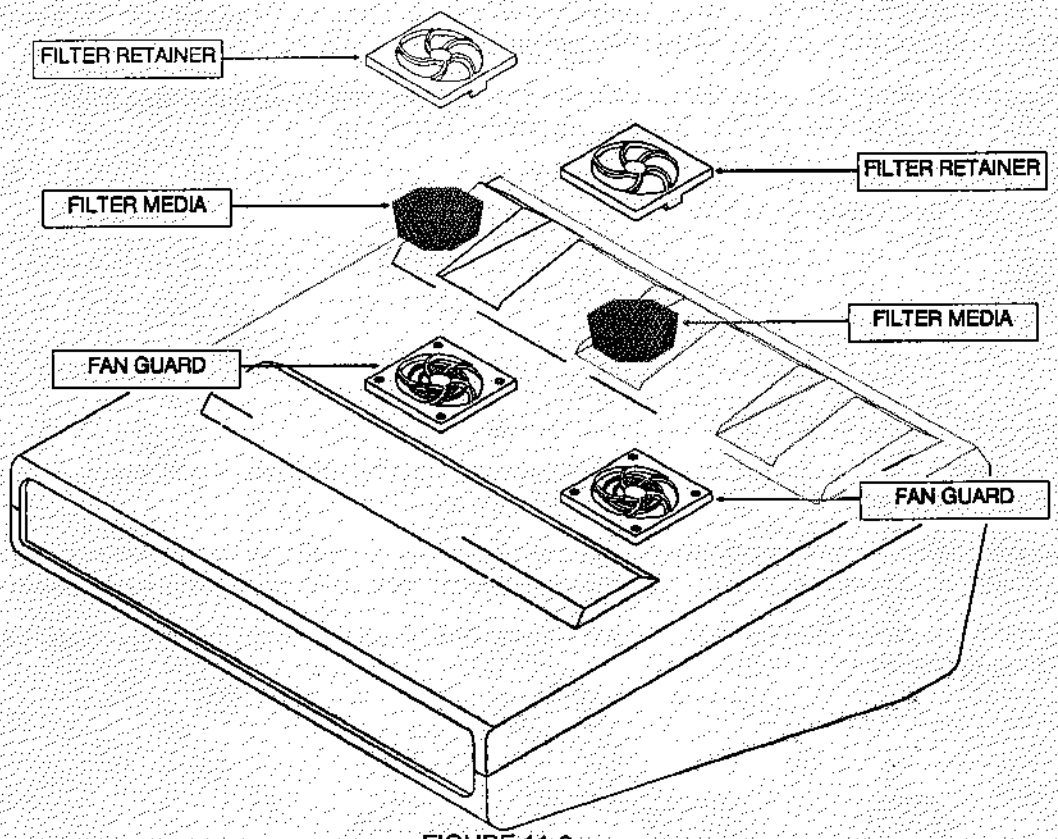


FIGURE 11-2.

BOTTOM FAN ASSEMBLIES (2 EA.).

11.3 . . . . .LENS CARE AND CLEANING:

When your Video/Computer Graphics display system is not being used for prolong periods of time, please cover the lenses with the lens covers provided with the system.

To minimize the possibility of damage to the optical coating or scratching the exposed lens surface, we recommend you first try to remove any material from the lens by blowing it off with deionized air or lightly brushing it with a soft camel's hair brush.

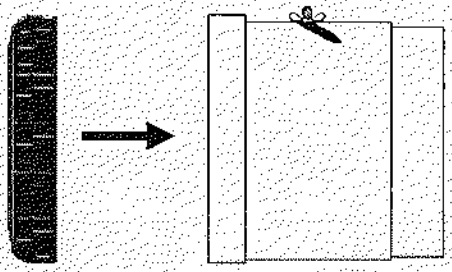


FIGURE 11-3. LENS COVER.

11.3.1 . . . . .LENS CLEANING:

- 1. Do not spray any type of fluid directly on the lens surface.
- 2. Do not use any dry material to clean the surface (dry rag, tissue, etc.)
- 3. Use a commercial liquid window cleaner (e.g. Windex, Easy Off or Glass Plus). Do not use an aerosol. Other cleaning agents, such as laboratory grade acetone or ethyl-ether (70% - 30%) may also be used. If you are not sure of the cleaning agent, experiment with a small area of the lens first.
- 4. Use a lens tissue, a soft cotton cloth, or any soft facial tissue.
- 5. When using a window cleaner, moisten the tissue or cloth and lightly wipe the surface. Then dry with a new tissue.
- 6. When using acetone or ethyl-ether mixture, proceed as follows:

Fold the tissue or cloth several times to form a pad. Soak the folded end of the pad in the acetone. Starting at the diameter opposite to you immediately wipe the coated lens, with very little pressure, toward you in a straight line equal to the evaporation rate. This is important to prevent streaking and spotting. Start your wiping at one side of the lens and, with successive wipes, move to the other side. Turn the pad over for each wipe, then inside out. Do not make more than one wipe per clean area of pad. Be careful of the painted edge of the lens, since acetone will soften it.

11.4 . . . . .TROUBLE SHOOTING:

SYMPTOM	POSSIBLE CAUSE	SOLUTION
The unit is connected to an A.C. outlet. The rocker switch is in the "ON" position. There is no LCD read-out.	Faulty line cord.	Replace line cord.
	Open mains fuse.	Replace mains fuse.
	Wrong voltage selected.	Select proper voltage and mains fuse.
	Hard wired Remote Control is not connected.	Connect remote control to "MASTER" port.
	Faulty Remote control or cable.	If available try another Remote control/cable.
No LCD read-out on Remote control and LCD back light functions properly.	Unit's address switches are not set properly.	Refer to Chapter 11, section 11.2.2
	Baud rate switch (S1) is not set properly.	Refer to Chapter 11, section 11.2.1
The LCD indicates model number. The system does not turn 'ON' when the "POWER" button is pressed.	Remote control may be faulty. remote control.	If available try another
	If an extended cable is being used.	Remove extension cable from the circuit.
The projector is "ON". No error messages are displayed. No image is being projected.	Lens covers are still installed.	Remove lens covers.
	Unit is in the "STANDBY" mode.	Press the standby button.
	Wrong mode of operation is selected.	Select the proper mode of operation.
	Source is not turned "ON" Contrast level is too low.	Enable source. Increase contrast level.
	Blanking is not set properly.	Adjust top, bottom, left and right blanking levels.

TABLE 11-1. TROUBLE-SHOOTING CHART.

11.5 . . . . .ERROR MESSAGES:

The ESPRIT systems provide two sets of diagnostics messages which are displayed on the LCD read-out located on the standard hard- wired remote control to provide information about the projector mode and operational status.

One set of error messages that may be displayed are mode status error messages. Mode status error messages indicate a wrong function has been selected for the current mode of operation or the selected function can not be entered. An example of a mode status error message is as follows. When a particular channel number has been selected and an attempt to adjust brightness is made, an error message "WRITE PROTECTED" is displayed. This error message refers to a particular channel location and that the parameters of this channel has been established and placed inactive to avoid unwanted adjustments. Refer to section 11.5.1, tables 11-2A, 11-2B and 11-2C for additional mode status error messages.

The second set of error messages provided are operational status messages. This type of message provides information about the projector in case of a malfunction for either a voltage or wave form error.

When the system is connected to an active A.C. source and the rocker switch on the rear panel is turned on, the LCD will display "ESPRIT 4000D" or "ESPRIT 4000G" as the case may be. When the POWER button on the remote control is pressed, the system's LCD read-out will display "INITIALIZING," then display the last mode of operation used when the system was de-energized, if there are no malfunctions.

If there is a malfunction of the equipment the system will display an error message. An example of the sequence of messages you would get if the - 20V rail was missing is as follows. After the power button on the remote control is pressed, the first read-out would be "INITIALIZING" then "-20 VOLTS LO". This error process continues to cycle through all error messages applicable.

If for some reason the system has been turned on, the desired mode of operation has been selected and the appropriate source is active; however, no image is being projected and there are no diagnostic error messages being displayed on the LCD, use the enable status command 30 CODE. Refer to section 11.5.2 for additional operational status error messages.

11.5.1 . . . .MODE STATUS ERROR MESSAGES:

ERROR MESSAGE	POSSIBLE CAUSE	SOLUTION
AUTO RESTART	System has momentarily loss A.C. line voltage or system was de-energized by main rocker switch.	System should power up as normal.
BAD NUMERIC CODE	Numeric code outside of range entered.	Enter numeric code within range (10-79,909). Refer to Chapter 7, section 17.
BAD TTL MODE	TTL mode of operation outside of range entered .	Enter proper mode of operation. Refer to Chapter 7, section 15.
BAD VIDEO MODE	Video mode of operation outside of range entered.	Refer to Chapter 7,section 16 for desired mode of operation.
CHOOSE EDGE	Wrong area of adjustment selected for desired function.	Refer to Chapter 7,. desired function.

TABLE 11-2A. Mode status error message chart.

11.5.1 . . . .MODE STATUS ERROR MESSAGES: (continued)

ERROR MESSAGE	POSSIBLE CAUSE	SOLUTION
DYNAMIC FUNCTION	Wrong operation for selected function.	Refer to Chapter 7, desired function.
ERROR # AT # (I^2C ERROR)	Communication failure between internal modules.	Contact a service technician
ERROR CODE 1000	Call factory	Call factory
ERROR CODE 1001	Call factory	Call factory
ERROR CODE 1002	Call factory	Call factory
HI BEAM CURRENT	CRT protection mode of operation.	Toggle main power rocker switch OFF/ON. Restart system. If continuous, contact a service technician.
HVPS RESTART	Momentary protection from high voltage arcing occurred.	If continuous, contact a service technician.
HVPS SHUTDOWN	Loss of high voltage occurred.	Contact a service technician.
INVALID	Unrecognized command.	Retry command.
INVALID CHANNEL	Channel number outside of range (1-50) entered.	Enter channel number within range.
INVALID TEST	Test number outside of range entered.	Refer to Chapter 7, section 12.
INVALID TIME	Time outside of range entered.	Enter time within range (24 hour clock)
INVALID VALUE	Value outside of range (0-100) entered.	Enter value of 0-100.
KEYS DISABLED	Registration adjustments are being attempted with "lock-out" feature activated.	To enable registration keys, enter 46 CODE.
MEMORY FAILURE	Loss of data occurred.	Re-enter all settings, channel numbers, registration settings, etc.
MUST BE IN NTSC	Function entered operates in the NTSC modes only.	Refer to Chapter 7, section 5-10, page 7-6
MUST BE IN RGB	Function entered pertains to the RGB mode of operation only.	Enter RGB and retry function.
MUST BE IN VIDEO	Function entered operates in the Video modes of operation only.	Refer to chapter 7, section 5-10, page 7-6
NETWORK DISABLED	Unit number other than 1 has been entered, with the network capability disabled.	Refer to Chapter 10, section 10.2.2
NOT INSTALLED	Optional mode selected with no optional module installed.	Refer to Chapter 1, section 1.1.1 or 1.1.6

TABLE 11-2B. Mode status error message chart.

11.5.1 . . . .MODE STATUS ERROR MESSAGES: (continued)

ERROR MESSAGE	POSSIBLE CAUSE	SOLUTION
OPEN INTERLOCK	Missing or loose module/connector.	Verify or re-seat all modules / connectors.
OVER FREQUENCY	Source selected outside of specified frequency range.	Refer Chapter 1, Table 1.
RED OR BLUE ONLY	Wrong area of adjustment selected for desired color.	Refer to Chapter 7, the desired function.
RIGHT OR LEFT ONLY	Wrong area of adjustment selected for desired function.	Refer to Chapter 7, the desired function.
SELECT QUADRANT	Wrong area of adjustment selected for desired function.	Refer to Chapter 7, the desired function.
WRITE PROTECTED	Attempts to adjust predetermined parameters are being made to a channel location.	Refer to chapter 7 section 17.
WRONG DIRECTION	Wrong adjustment arrow selected for desired function	Refer to Chapter 7 for desired function.

TABLE 11-2C. Mode status error message chart.

11.5.2 . . . . OPERATIONAL STATUS ERROR MESSAGES:

If any of the following error messages are displayed, contact your selling dealer or the factory for assistance.

OPERATIONAL ERROR MESSAGES		
HIGH OR LOW VOLTAGE ERROR MESSAGES		
-9	+9	-20
+20	-25	+25
+40	+190	GRID 2
HIGH VOLTAGE		

WAVE FORM ERROR MESSAGES	
"NO H SYNC" (NO HORIZONTAL SYNC)	"NO H RESET" (NO HORIZONTAL RESET PULSE)
"NO V SYNC" (NO VERTICAL SYNC)	"NO V RESET" (NO VERTICAL RESET PULSE)
"H SWEEP FAIL" (HORIZONTAL SWEEP FAIL)	"G1 FAIL LOW" (GRID 1 VOLTAGE LOW)
"V SWEEP FAIL" (VERTICAL SWEEP FAIL"	NO INPUT (CHECK SOURCE)

11.5.3 . . . .LED ERROR INDICATORS

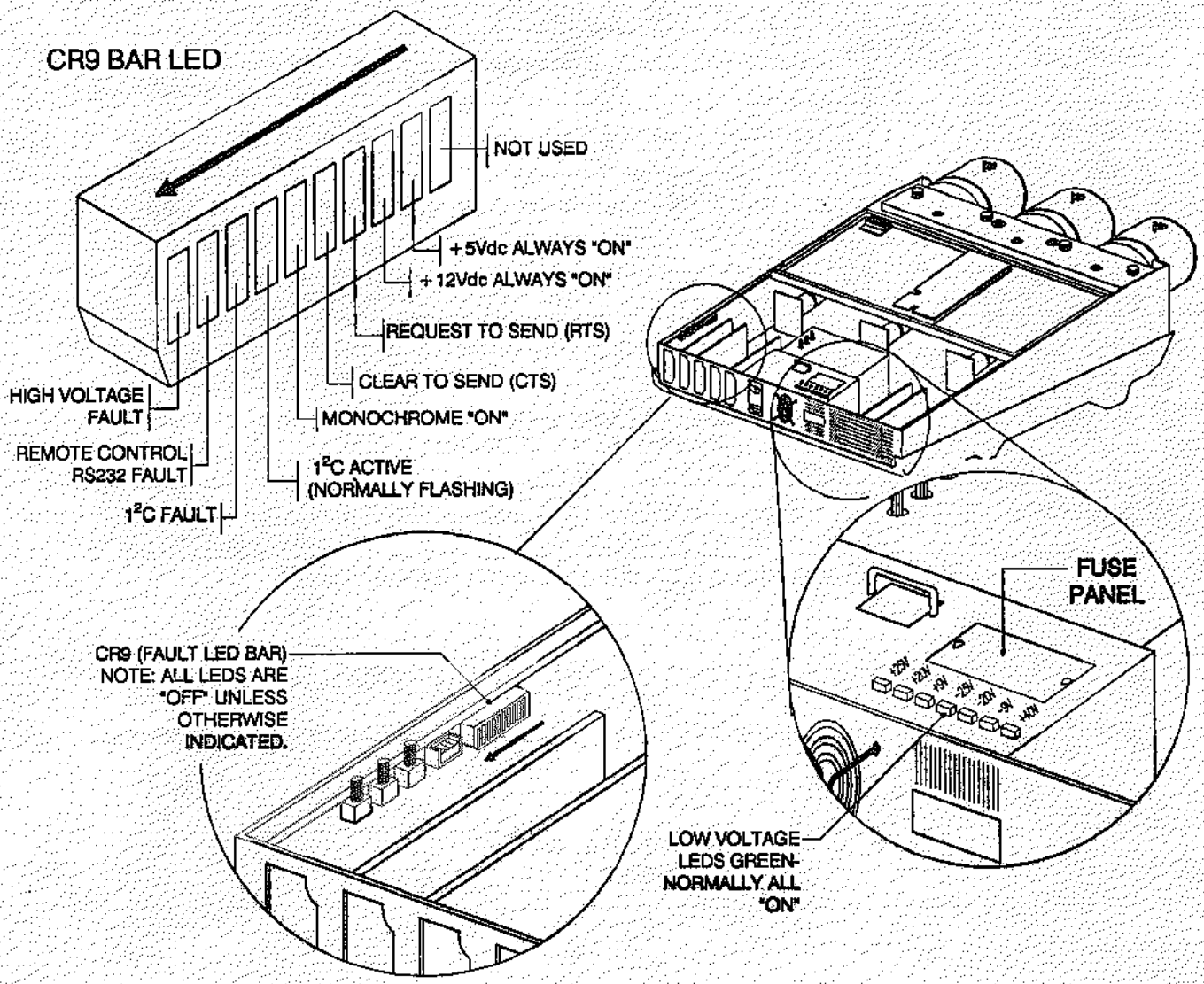


FIGURE 11-4. ERROR LED NAME AND LOCATIONS.

11.6 . . . . . SERVICING POLICY:

Repair of the ESPRIT modular designed systems shall be accomplished exclusively through a factory sub-assembly module exchange program. Servicing by a ESPRIT PROJECTION SYSTEMS Service Center or by an ESPRIT PROJECTION SYSTEMS selling dealer, is limited to failure diagnostics, registration alignment, and replacement of CRT assemblies, lenses, and sub-assembly modules.

No material and/or labor credit will be granted for an exchange sub-assembly, if it has been repaired, reworked or modified. The warranty is voided if a repair, rework and/or modification of a sub-assembly module is performed other than by ESPRIT PROJECTION SYSTEMS.

To return a sub-assembly module for exchange a Return Authorization number (RA number) must be obtained from the ESPRIT PROJECTION SYSTEMS Customer Service Department. To obtain an RA number for exchange of a sub-assembly module it will be necessary to have the particular symptom, model number and serial number of the system available for the Customer Service Representative.

APPENDIX A

AUTOMATIC TIMER OPERATION

The automatic timer is capable of turning the display system "ON and OFF" at a predetermined time according to your particular requirements. The automatic timer operation is based on a daily occurrence and the 24 hour clock format. If no automatic timer operation is desired the timer may be disabled. The three modes of operation are explained below.

NOTE: The Automaic timer operation is only available with revision level 1.04 and below and revison level greater than 2.0.

To use this special feature, first you must verify the correct setting of the internal clock for the time zone you are located in.

DISPLAY TIME OF DAY:

- Using the numeric keypad, enter **10** then press the CODE button to verify the time of day. If incorrect , refer to the set time of day procedure. If the time of day is correct refer to the desired mode of operation and perform the steps listed for that mode of operation.

SET TIME OF DAY:

- STEP 1. Enter **11** then press the CODE button. At the LCD prompt, enter HOUR:MIN, i.e., 2:00 p.m. is entered as 1400.

MODE 1- AUTO "ON" ONLY OPERATION: i.e., (8:00 a.m.)

- STEP 1. Set [TIMER ON TIME], enter **15** then press CODE. At the LCD prompt, enter 0800.
- STEP 2. Set [TIMER OFF TIME], enter **17** then press CODE. At the LCD prompt, enter 0000 or simply press the CLEAR button to reset the display to 0000.
- STEP 3. [ENABLE TIMER OPERATION], enter **12** then press CODE .

MODE 2- AUTO "OFF" ONLY OPERATION: i.e., (5:00 p.m.)

- STEP 1. Set [TIMER ON TIME], enter **15** then press CODE. At the LCD prompt, enter 0000 or press CLEAR .
- STEP 2. Set [TIMER OFF TIME], enter **17** then press CODE. At the LCD prompt, enter 1700. Now the system is set to turn "OFF" at 5:00 p.m. daily.
- STEP 3. [ENABLE TIMER OPERATION], enter **12** then press CODE .

MODE 3- AUTO "ON/OFF" OPERATION: i.e., ("ON" 08:00 a.m. / "OFF" 5:00 p.m.)

- STEP 1. To set [TIMER ON TIME], enter **15**, press (CODE), then enter 0800.
- STEP 2. To set [TIMER OFF TIME], enter **17**, press (CODE), then enter 1700.
- STEP 3. [ENABLE TIMER OPERATION], enter **12** , then press (CODE) .

TO VERIFY YOUR SETTINGS

- STEP 1. [DISPLAY TIMER ON TIME] enter **14**, then press (CODE).
- STEP 2. [DISPLAY TIMER OFF TIME] enter **16**, press (CODE).

NOTE 2: To completely disable the alarm feature:

- STEP 1. [DISABLE TIMER OPERATION] enter 13, then press (CODE) .

NOTE 3: Ensure to leave the main power switch located on the rear panel in the "ON" position.

APPENDIX B

INTENSITY MODULATION

Intensity modulation provides the ability to increase or decrease the contrast/color level over the entire or portions of the projected image presenting an "even field" of white from the center to the edges of the image. Intensity modulation is useful to overcome possible shading of the image, when using curve, high gain screens causing "hot spots" and overlaying of multiple projected images.

Intensity modulation allows the contrast and color balance of the top, bottom, left, right and all four corners of the projected image to be adjusted individually. The center of the image serves as a reference point for the surrounding zones and can only be adjusted with the master contrast control. As with the other adjustments on the ESPRIT systems, intensity modulation is designated within a channel location. Each channel may have unique intensity modulation settings. Use the following procedure to perform intensity modulation adjustments for the active channel.

☐ NOTE: The following procedure makes the assumption that the system has been completely and correctly installed , aligned and a acceptable grayscale has been achieved.

☐ PATTERN REQUIRED: White field at the desired frequency.

☐ TEST EQUIPMENT: Light meter /photometer I.e., Tektronix® J16 photometer , Photo Research® PR650 SpectraColorimeter™ or equivalent.

1.0 . . . . . PROCEDURE:

- STEP 1. Divide the white field pattern into 9 zones. Refer to Figure B-1. Note the area selection keys and the affected zone.
- STEP 2. Select desired mode of operation with a white field input.

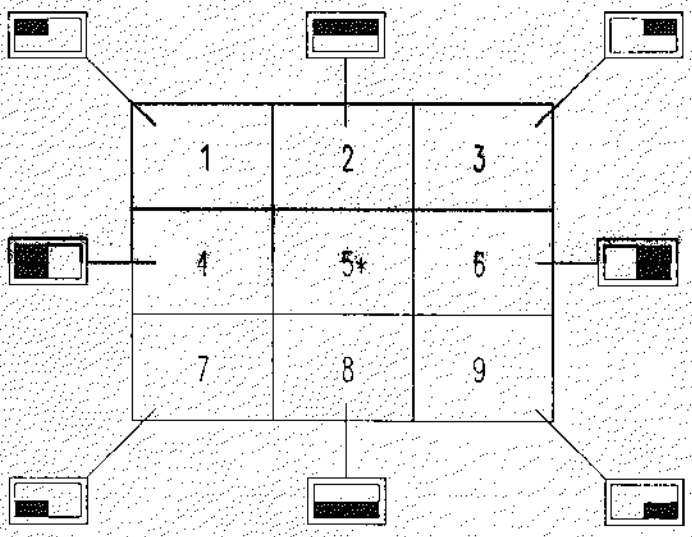


FIGURE B-1.

* Zone 5 (center of image) serves as a reference point for the surrounding zones and can only be adjusted by the master contrast control.

- STEP 3. Using the remote control set brightness to 75% and contrast to 65%
- STEP 4. Turn the Red and Blue CRTs "OFF".
- STEP 5. GREEN ONLY! Measure and record the readings of each zone indicated in Figure B-1.
- STEP 6. Set zone 5 (Figure B-1) to the lowest reading (recorded above), with the CONT button.
- STEP 7. Enter 92 (CODE), to enable intensity modulation operation.
- STEP 8. Select GREEN, then select an edge, , , , and use the ▲ and ▼ down arrow keys to adjust zone 2, 4, 6, and 8 light levels to equal the light level of zone 5.
- STEP 9. Once the edges have been set, adjust the quadrants for zones 1, 3, 7 and 9 to equal that of zone 5 as in Step 8.
- STEP 10. RED ONLY then BLUE ONLY . Measure the light level of zone 5 of the red and set all other zones of the red image to equal zone 5. Repeat the process for the blue image.

Start your adjustments with the edge controls for zones 2, 4, 6 and 8, as the settings of these edges will affect the light level of the quadrants (corners), i.e., the setting of zone 2 will affect the levels of zone 1 and zone 3 and always finish your adjustments with the quadrant controls for zones 1, 3, 7, and 9.

NOTES:

- Enter 92 (CODE) to enable intensity modulation adjustment for the active channel. If any other adjustment other than Master brightness and contrast is made , 92 (CODE) will have to be re-entered.
- Pressing the GREEN (MASTER) button will select simultaneous adjustment of RED, GREEN and BLUE intensity. Press the RED or BLUE button to select individual adjustment of the RED or BLUE intensity.
- Use the edge and quadrant keys to select the desired side or corner of the projected image to be adjusted. Always start your adjustments with the edge controls and finish with the quadrant controls.
- Use the Up or Down arrow key to increase or decrease the level of the selected intensity modulation adjustment.
- Enter 93 (CODE) to null the process or reset (set to 50%)the settings for the intensity modulation.
- Use the following template to record your readings.

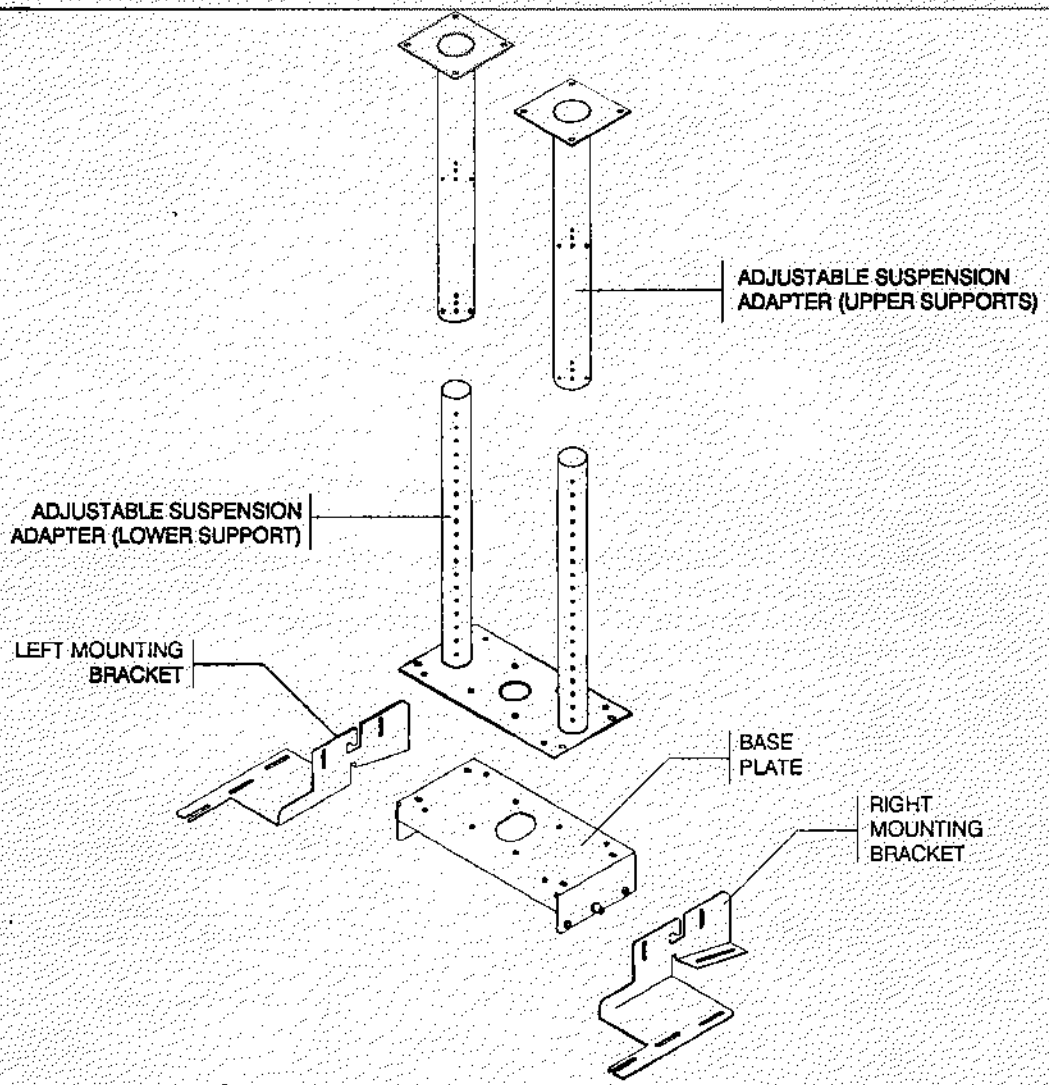
R = G = B =	R = G = B =	R = G = B =
R = G = B =	R = G = B =	R = G = B =
R = G = B =	R = G = B =	R = G = B =

APPENDIX C

CEILING MOUNT INSTALLATION INSTRUCTIONS

WARNING

For proper installation, the ceiling for mounting the ESPRIT 4000 series display systems must be capable of supporting at least 1200 lbs. If it cannot, the ceiling must be reinforced. Improper installation may result in serious personal injury.



ESPRIT 4000 V/D/G CEILING MOUNT

AMPRO P/N: 69230 INCLUDES, UPPER AND LOWER SUPPORTS. ADJUSTABLE FROM 24" TO 46"

AMPRO P/N: 69231 INCLUDES, BASE PLATE, LEFT AND RIGHT MOUNTING BRACKETS.

AMPRO P/N: 69232 INCLUDES, UPPER /LOWER SUPPORTS, BASE PLATE AND LEFT/RIGHT MOUNTING BRACKETS.

- STEP 1: Carefully turn the ESPRIT up-side down on a secured surface. Install the left and right mounting brackets to the projector with 6 each 5/16" x 1" bolts and washers as shown in Figure C-1.

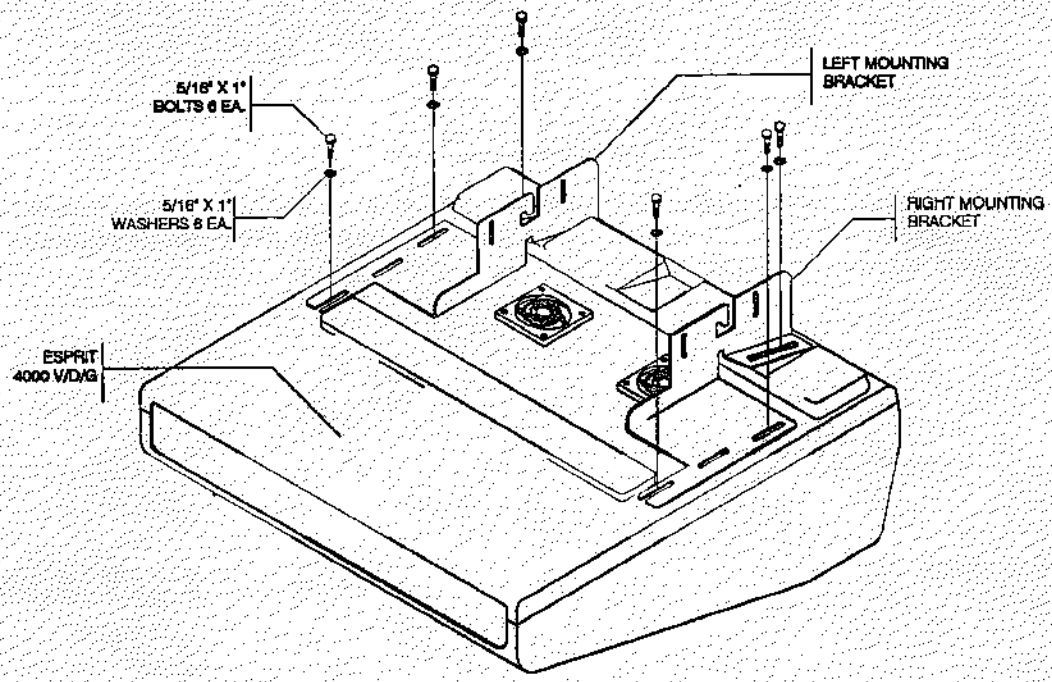


FIGURE C-1.

LEFT AND RIGHT MOUNTING BRACKETS INSTALLATION.

- STEP 2: Install the base plate (69231) as shown in Figure C-2 for direct ceiling mounting. Install as shown in Figure C-3 when mounting on an adjustable suspension adapter (P/N: 69230). Use 8 each 3/8" x 1" bolts, 3/8" hex nuts and 16 each 3/8" flat washers (supplied) to bolt the base plate (69231) to the adjustable suspension adapter (69230).

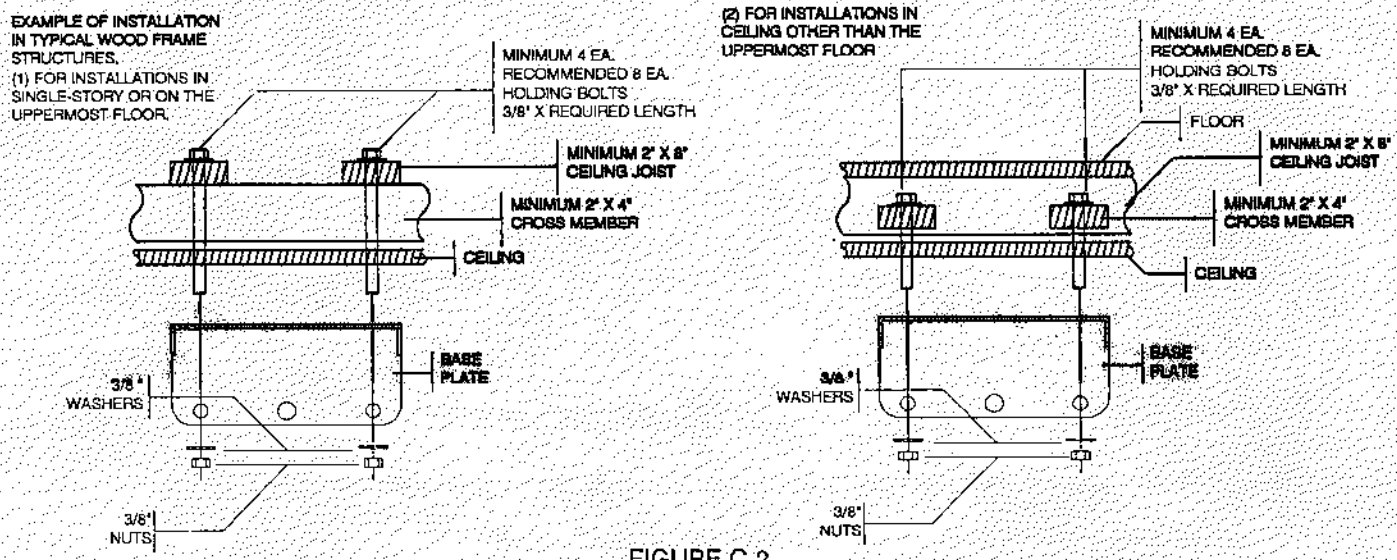


FIGURE C-2.

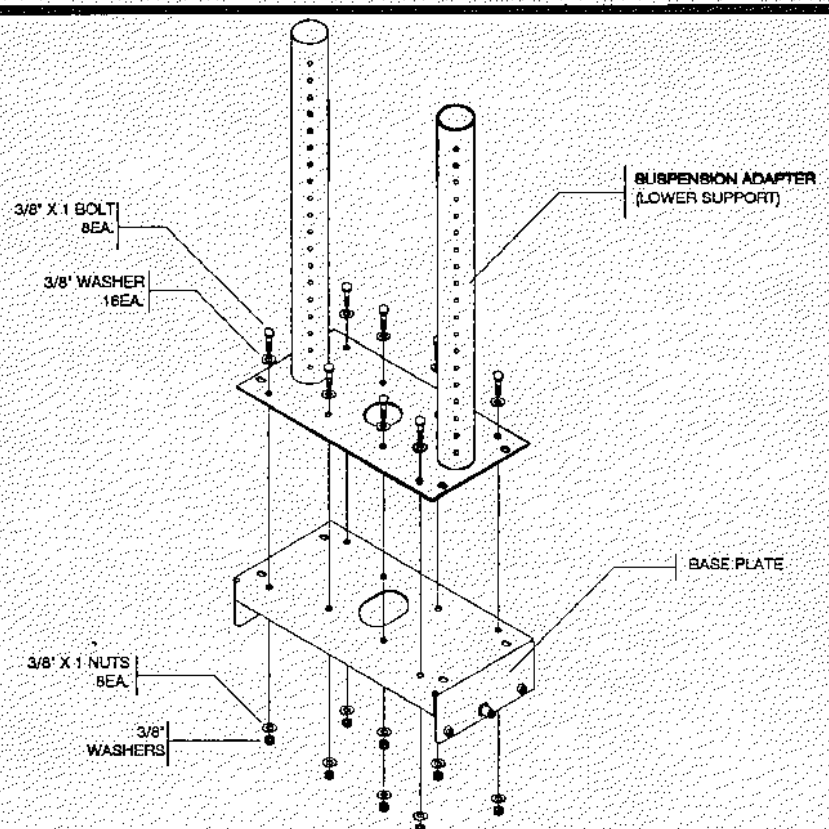


FIGURE C-3.

BASE PLATE TO ADJUSTABLE SUSPENSION ADAPTER (LOWER SUPPORT) INSTALLLATION.

- STEP 3: Once the base plate has been securely attached to the ceiling of adjustable suspension adapter, the projector is lifted and hooked on the hinging pins as shown in Figure C-4 and detail A.

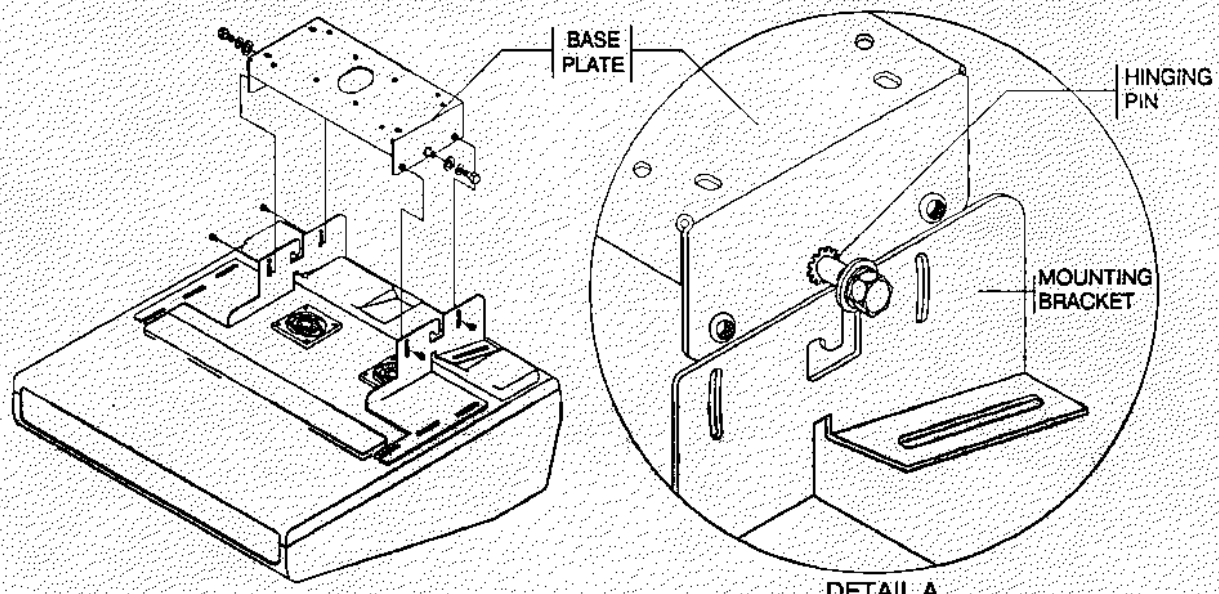


FIGURE C-4. AND DETAIL A.

DETAIL A

PROJECTOR TO BASE PLATE INSTALLATION.

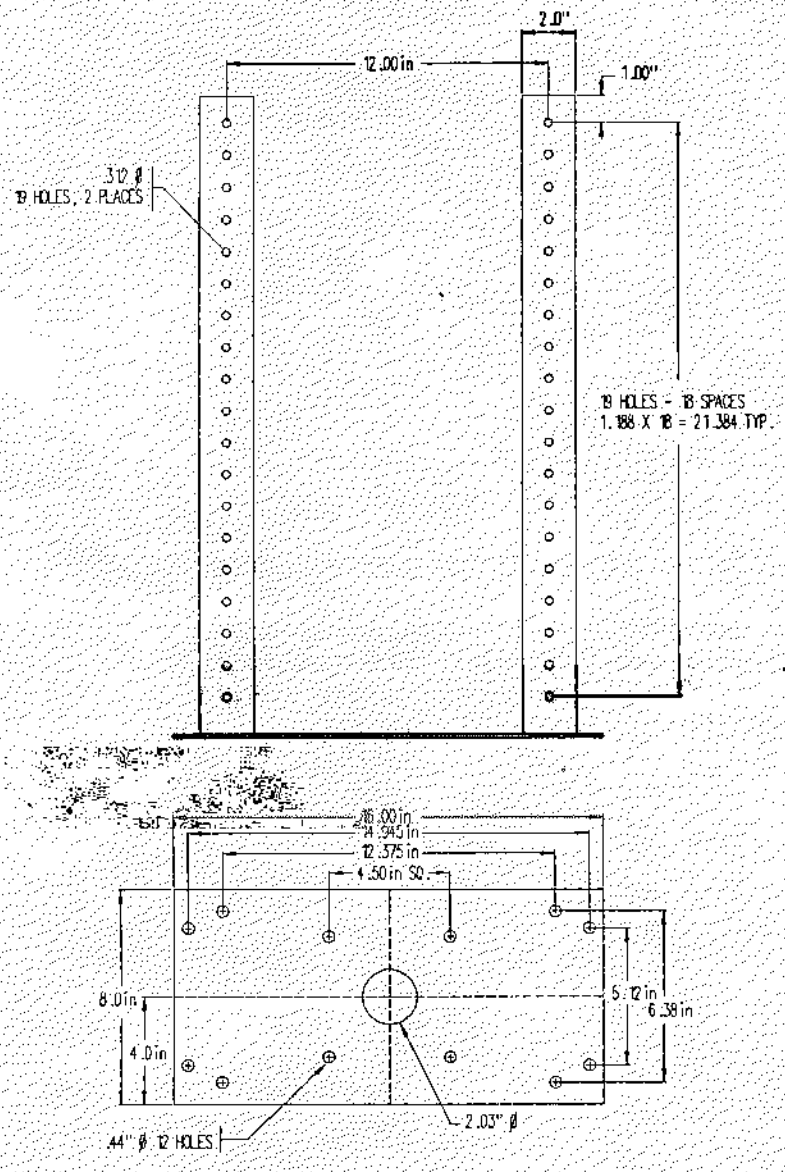
- STEP 4: Once attached, the proper final adjustments can be set and all bolts firmly tightened.

CEILING MOUNT SPECIFICATIONS:

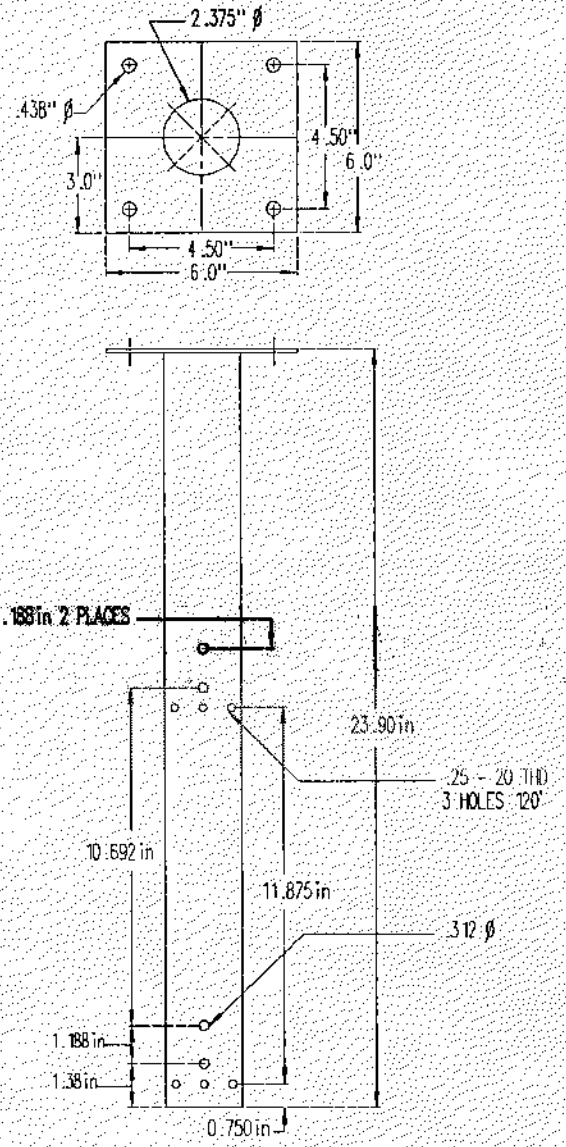
Heavy Duty Double Pipe Adjustable Suspension Adapter:

ESPRIT Model 4000V/D/G; P/N: 69230

LOWER SUPPORT



UPPER SUPPORT

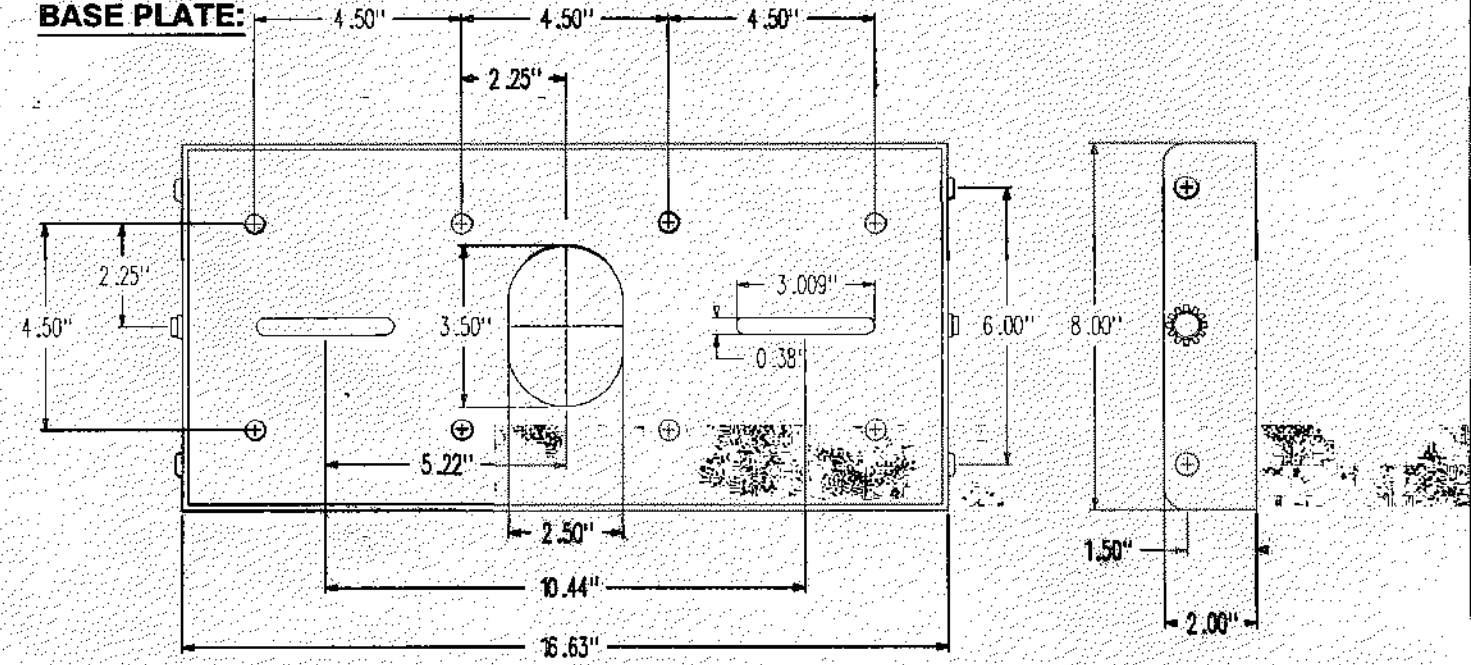


CEILING MOUNT SPECIFICATIONS:

Ceiling Mount Base Plate Kit: (Revision C)

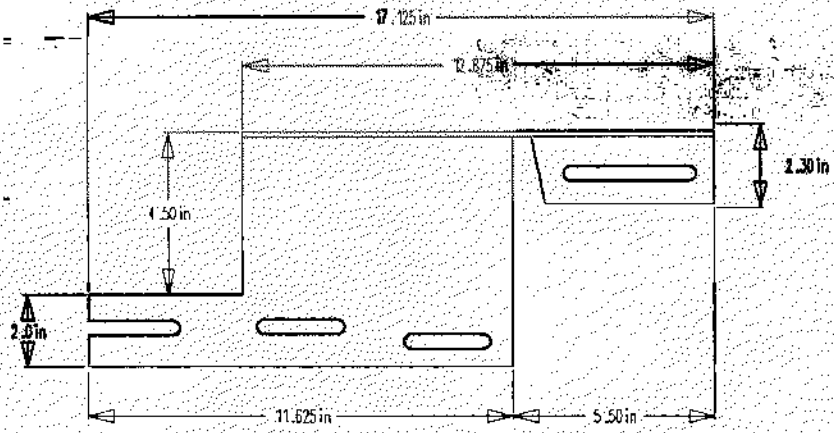
ESPRIT Model 4000 V/D/G, P/N: 69231

BASE PLATE:

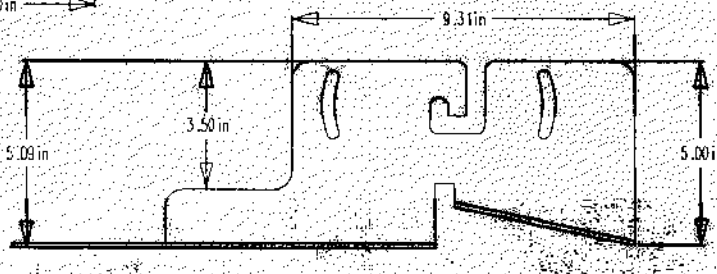


MOUNTING BRACKETS (2EA.):

TOP VIEW



SIDE VIEW

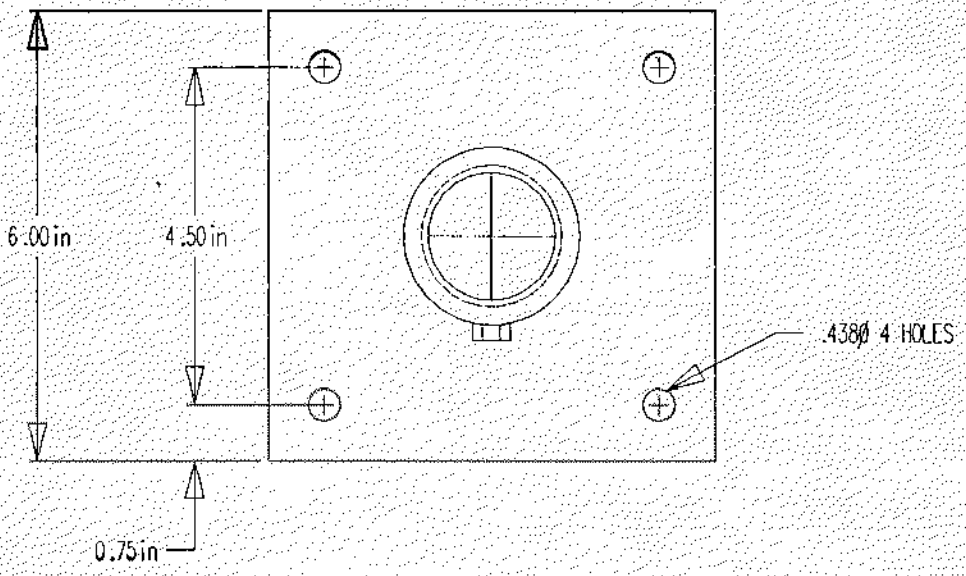


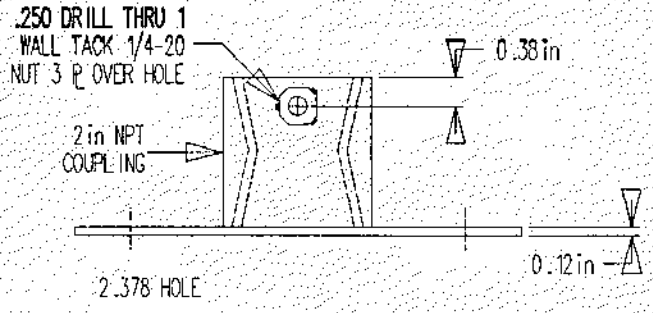
2" PIPE ADAPTER PLATE / KIT: P/N: 69277

The 2" adapter plate is designed for custom drop installations that exceed the adjustment of the Adjustable Suspension Adapters (69230). By adding a pair of 2 inch pipe adapter plates and any length of (commercially available) threaded 2" plumbing pipe you can extend the height capability to any length beyond the standard 46" length available in the Adjustable Suspension Adapters.

The 2" Pipe Adapter Plate kit includes, 2 each 2" pipe plates and the Ceiling Mount Base Kit (69231).

TOP VIEW





SIDE VIEW
COUPLING PLATE
PAINT SATIN BLACK

APPENDIX D

INFRARED REMOTE CONTROL SYSTEMS

1.0 . . . . . .FEATURES:

1.1 . . . . . TECHNICIAN INFRARED REMOTE KIT (69092):

The ESPRIT Technician Infrared Remote Transmitter (P/N 69092) is a small, push-button unit powered with a 9 volt battery supply. The transmitter can be utilized at distances within fifty feet (15.2 m) by simply pointing the unit at the infrared receiver and depressing the desired function key. Included with the Technician IR Transmitter, is the IR Receiver, and a "Y" adapter, which permits interfacing the Infrared Receiver with the display system and the standard hard-wired remote control.. Some of the functions include the image quality adjustments, store/recall of channels, control one or multiple units and, by pressing the HELP key, enable the Guided Setup mode of operation.

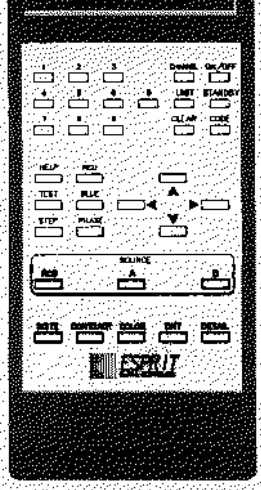
1.1.1 . . . . .EXECUTIVE INFRARED REMOTE KIT (69124):

The ESPRIT Executive Infrared Remote kit (P/N 69124) transmitter can be used up to 50ft. (15.2m) and has available the following controls; On/Off, Standby and 8 channel selections. Refer to Figure D-10 for the name, location and a brief description of the controls on this remote transmitter. Included with the Executive IR Transmitter, is the IR Receiver, and a "Y" adapter, which permits interfacing the Infrared Receiver with the display system and the standard hard- wired remote control..

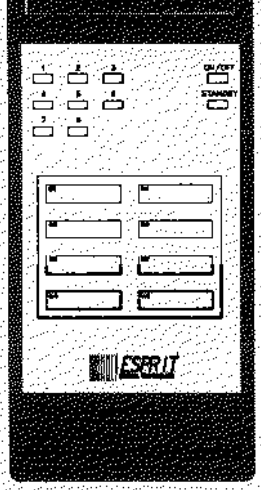
1.2 . . . . . .INFRARED RECEIVER:

The ESPRIT Infrared Receiver (P/N 80703) is a compact and portable unit with a contemporary and decorative case design. The receiver may be used with various optional lengths of up to 100 ft. (30.4 m) of 12 conductor-shielded cable with a PVC jacket. Power to the receiver is supplied from the projection system via a 15 pin "DB" connector with thumb screw fasteners. The IR Receiver is included with either the Technician or Executive IR Remote kits.

TECHNICIAN IR TRANSMITTER



EXECUTIVE IR TRANSMITTER



IR RECEIVER AND "Y" ADAPTER, INCLUDED WHEN ORDERING EITHER THE TECHNICIAN OR EXECUTIVE IR KITS.

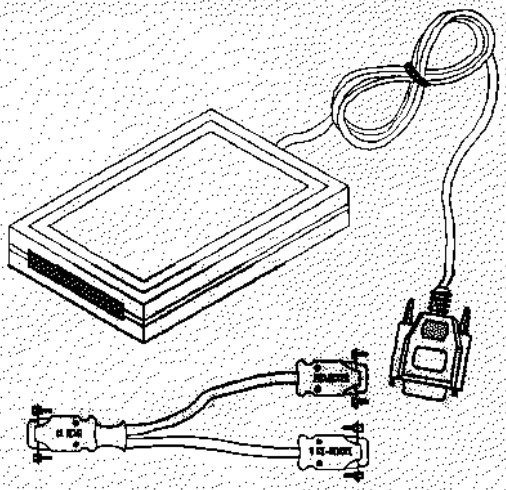


FIGURE D-1.

2. . . . . .RECEIVER INSTALLATION:

2.1 . . . . . INSTALLATION PARAMETERS:

For direct control of one or more display systems and/or switchers simply plug the standard 6ft. (1.8m) cable into the "MASTER" port of the master system being controlled. For proper receiver installation/mounting configurations and other options refer to section 2.2.

When using the Infrared Remote Transmitter/Receiver, ensure you are within the effective operating area. The remote control unit will not function properly if strong light strikes the sensor window or if there are obstacles between the remote control transmitter and receiver. Refer to Figure D-2.

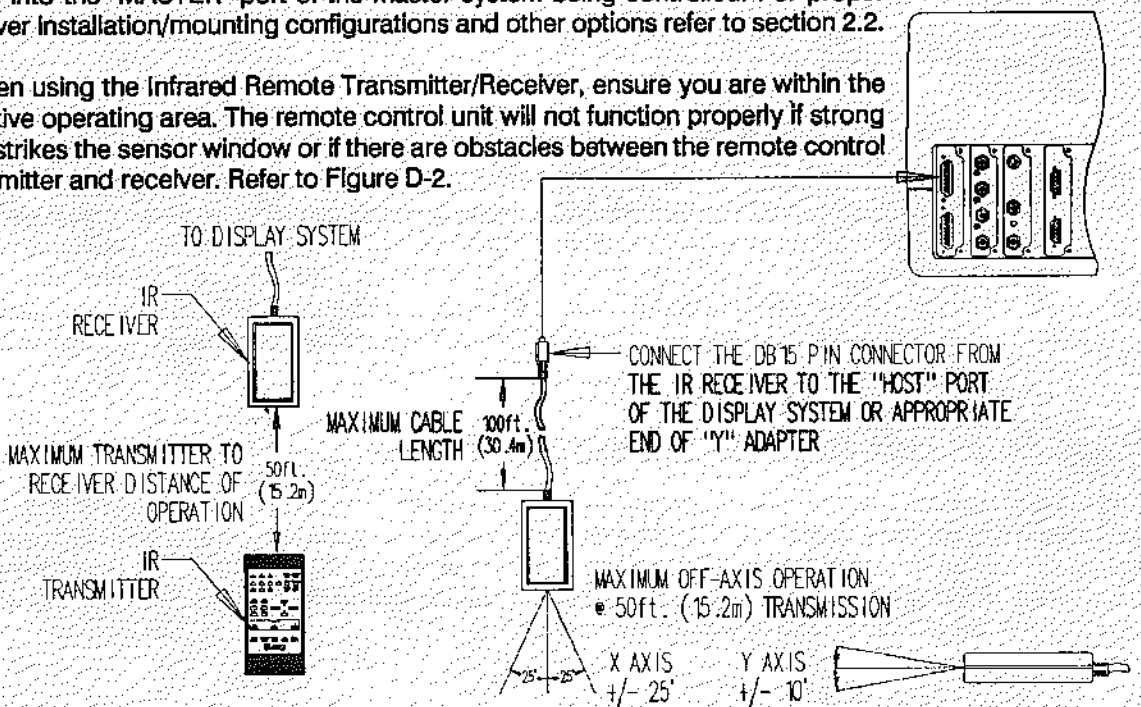


FIGURE D-2.

2.2 . . . . . .IR RECEIVER OPTIONAL INSTALLATION / MOUNTING EXAMPLES:

The IR Receiver may be installed in various ways. However, one basic consideration that must be followed is that the IR Receiver sensor window be shielded from any external light source in particular, fluorescent lighting, as this type of lighting will interfere with the operation of your system.

Remote control of the ESPRIT is achieved by interfacing the remote controls with the display system via a "Y" adapter supplied with the infrared receiver. Additional the optional RS232 switcher may be connected to the "SLAVE" port of the display system and controlled using either remote control.

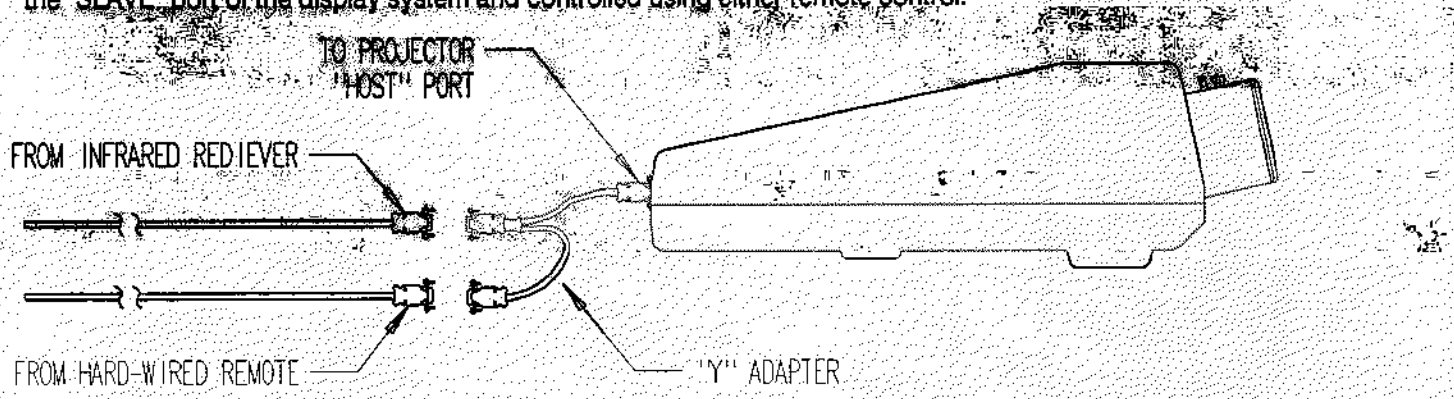


FIGURE D-3.

OPTIONAL REMOTE CONTROL CONFIGURATIONS USING THE "Y" ADAPTER.

2.2.1 . . . . .IR RECEIVER INSTALLATION EXAMPLE 1 (CEILING MOUNT):

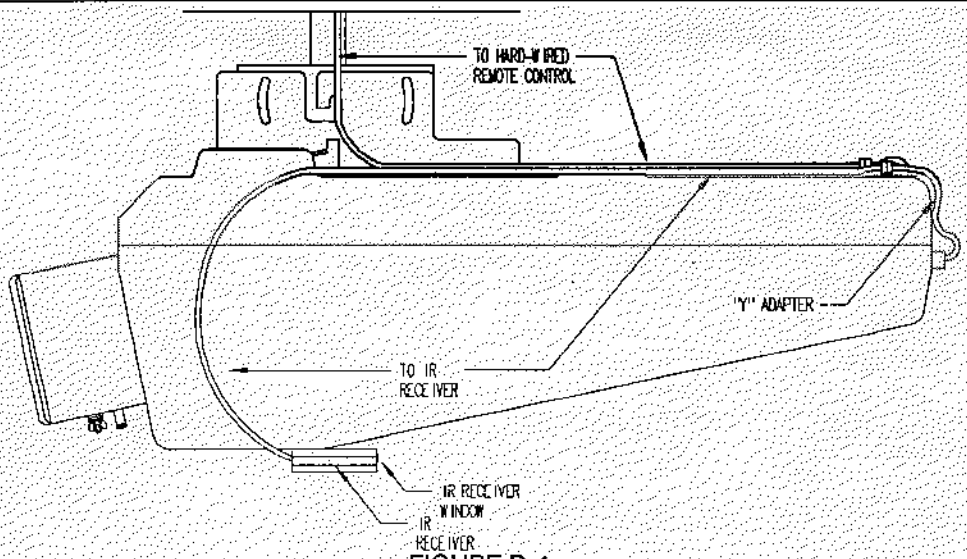


FIGURE D-4.

CEILING MOUNT CONFIGURATION SHOWING INFRARED RECEIVER AND HARD-WIRED REMOTE CONTROL CONNECTIONS

2.2.2 . . . . . IR RECEIVER INSTALLATION EXAMPLE 2 (REAR SCREEN):

Figure D-5 illustrates one method of using both the IR receiver and hard-wired remote in a rear screen application with the use of the "Y" adapter and the optional RS232 wallplate.

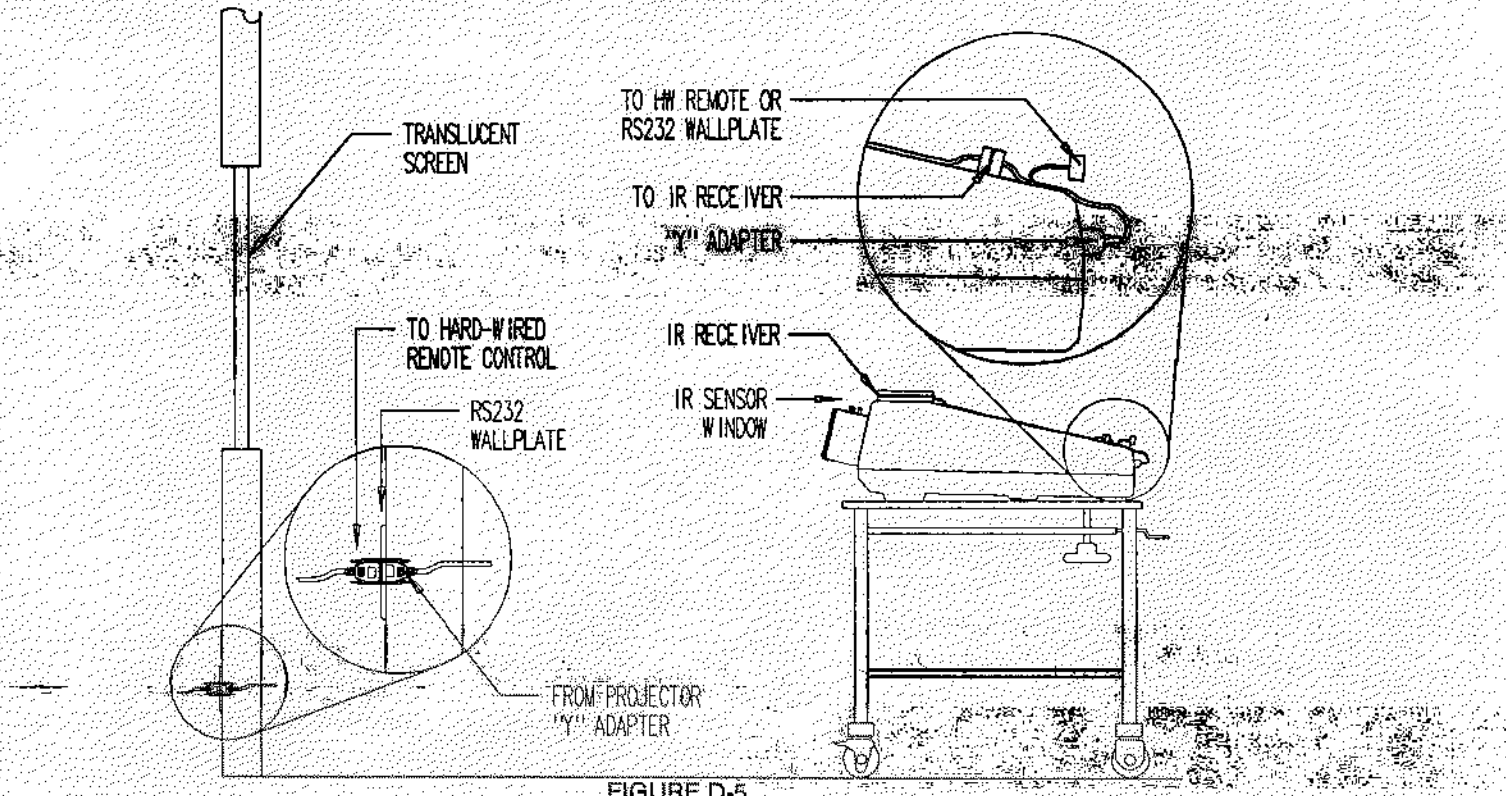


FIGURE D-5.

REAR SCREEN APPLICATION USING THE IR REMOTE, "Y" ADAPTER AND THE OPTIONAL RS232 WALLPLATE.

2.2.3 . . . . .IR RECEIVER "Y" ADAPTER:

To maintain proper operation when using the "Y" adapter, both the IR receiver and the hard-wired remote control must be connected.

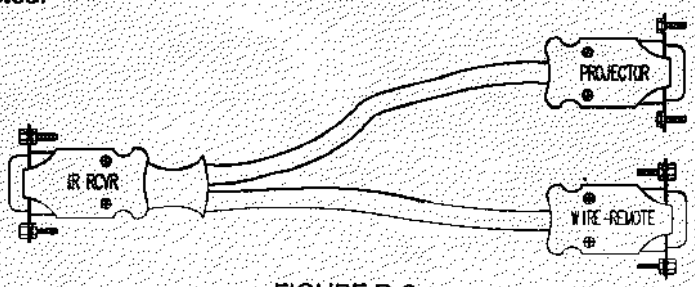


FIGURE D-6.

ESPRIT REMOTE CONTROL "Y" ADAPTER. PROVIDED WITH EITHER THE TECHNICIAN OR EXECUTIVE REMOTE CONTROLS.

2.2.4 . . . . . OPTIONAL RS232 WALLPLATE:

The optional RS232 flush face wallplate allows the DB-15 connector to be recessed to protect it from damage. The RS232 wallplate is constructed of stainless steel and is used with any standard single gang electrical box. See Figure D-7.

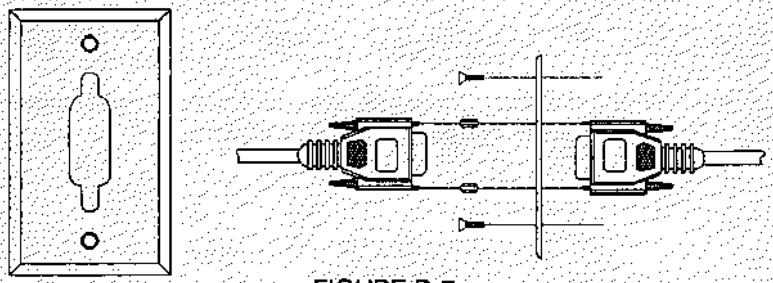


FIGURE D-7.

3.0 . . . . . .TRANSMITTER BATTERY REPLACEMENT:

As previously mentioned the transmitter operates using a single 9 volt battery. If the range of operation has decreased replace the battery following the procedure listed below. Refer to figure D-8.

- STEP 1. Turn the transmitter over.
- STEP 2. Locate the battery compartment cover and slide this cover to the right.
- STEP 3. Remove the old battery and discard.
- STEP 4. Replace with a new battery: Duracell MN 1604 B or equivalent.
- STEP 5. Replace the battery compartment cover

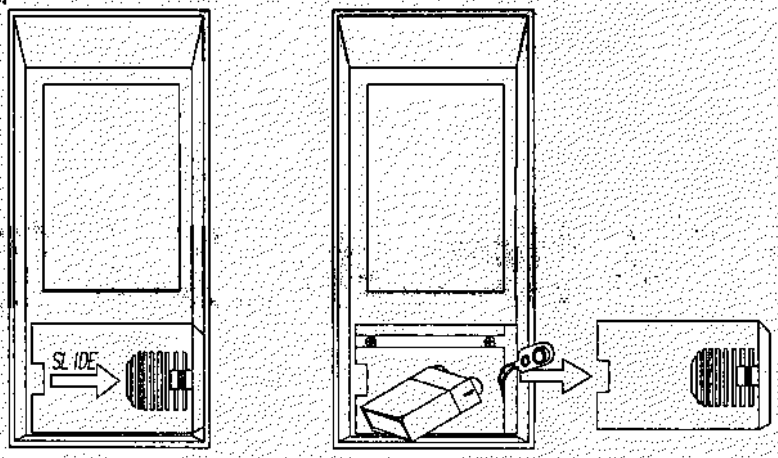


FIGURE D-8. BATTERY LOCATION/REPLACEMENT.

3.1 . . . . . .SPECIFICATIONS:

3.1.1 . . . . .TECHNICIAN IR REMOTE TRANSMITTER:

RANGE:	50 ft. (15.2m) @ ± 25° off axis (X axis). See Figure 2 20 ft. (6.1m) @ ± 80° off axis (X axis).
RECEIVER CABLE:	6 ft. (1.82m) (standard) 12 conductor-shielded, PVC jacket, 15 pin "DB" connector with thumbscrew fasteners.
POWER:	9 volt battery in transmitter: Duracell MN 1604 B or equivalent.
REMOTE FUNCTION KEYS:	Power On/Off, Standby, Code, Channel, Unit, Clear, Help (Guided Setup), Test, Step, Red, Blue, Phase, RGB, A- Video mode, B- TTL/VGA or Analog RGB2, Brightness, Contrast, Color, Tint, Detail, a numeric keypad and the UP, Down, Left, Right arrow keys.
WEIGHT:	TRANSMITTER: 8oz. RECEIVER: 4oz.
SIZE:	TRANSMITTER: 6.0" (15.2 cm) x 1.3" (3.3cm) x 3.0" (7.6cm) RECEIVER: 4.56" (11.6cm) x 1.06" (2.7cm) x 0.9" (2.3cm)

TECHNICIAN IR TRANSMITTER SPECIFICATIONS.

3.1.2 . . . . .EXECUTIVE IR REMOTE TRANSMITTER:

RANGE	50 ft. (15.2m) @ ± 25° off axis (X axis). See Figure 2 20 ft. (6.1m) @ ± 80° off axis (X axis).
RECEIVER CABLE:	6 ft. (1.82m) (standard) 12 conductor-shielded, PVC jacket, 15 pin "DB" connector with thumbscrew fasteners.
POWER:	9 volt battery in transmitter: Duracell MN 1604 B or equivalent.
REMOTE FUNCTION KEYS:	Power On/Off, Standby, 8 Channel selections.
WEIGHT:	TRANSMITTER: 8oz. RECEIVER: 4oz.
SIZE:	TRANSMITTER: 6.0" (15.2 cm) x 1.3" (3.3cm) x 3.0" (7.6cm) RECEIVER: 4.56" (11.6cm) x 1.06" (2.7cm) x 0.9" (2.3cm)

EXECUTIVE IR TRANSMITTER SPECIFICATIONS.

4.0 . . . . . .TECHNICIAN IR TRANSMITTER KEYPAD SUMMARY:

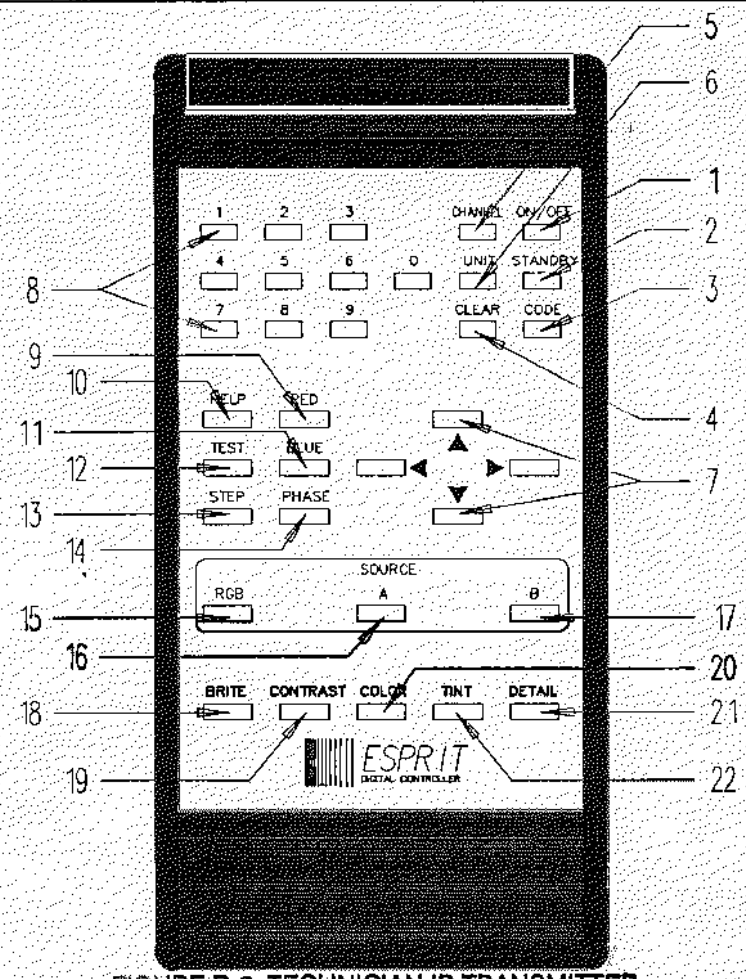


FIGURE D-9. TECHNICIAN IR TRANSMITTER.

1. ON/OFF: TOGGLES MAIN POWER	**9. RED:** ENABLES RED SHIFT FUNCTION	**17. B:** SELECTS THE QUAD VIDEO MODE AND WHILE IN TEST, SELECTS THE 15KHz TEST MODE OF OPERATION
2. STANDBY: TOGGLES STAND-BY ON.OFF	**10. HELP:** SELECTS HELP MODE OF OPERATION FOR GUIDED SETUP	**18. BRITE:** SELECTS BRIGHTNESS CONTROL
3. CODE: INPUTS INTERNAL CODE ASSIGNMENT	**11. BLUE:** ENABLES BLUE SHIFT FUNCTION	**19. CONTRAST:** SELECTS CONTRAST CONTROL
4. CLEAR: REMOVES AN INCORRECT ENTRY FROM THE ACCUMULATOR	**12. TEST:** TOGGLES INTO AND OUT OF THE TEST MODE OF OPERATION	**20. COLOR:** SELECTS COLOR CONTROL
5. CHANNEL: INPUTS PREVISOULY SELECTED CHANNEL NUMBER	**13. STEP:** ADVANCES TEST PATTERNS AND USED WHILE IN THE GUIDED MODE OF OPERATION	**21. TINT:** SELECTS HUE CONTROL
6. UNIT: INPUTS PREVISOULY SELECTED UNIT NUMBERS OR USED WITH THE GLOBAL COMMAND	**14. PHASE:** SELECTS PAHESE CONTROL, ADJUST HORIZONTAL AND VERTICAL PHASE	**22. DETAIL:** SELECTS SHARPNESS CONTROL
7. ARROW KEYS: USED TO ADJUST IMAGE QUALITY, SHIFT AND REGISTRATION SETTINGS	**15. RGB:** SELECTS RGB MODE AND WHILE IN TEST, SELECTS 62.5KHz TEST MODE OF OPERATION	
8. NUMERIC KEYPAD: USED FOR INPUTTING CHANNEL/UNIT NUMBERS AND PERCENTAGE SETTINGS	**16: A:** SELECTS EITHER CGA/EGA/VGA, OR RGB2, OR HDTV AND THE 31KHz TEST MODE OF OPERATION	

NOTE: For additional information on the functions, please consult your operation manual.

4.1 . . . . . .EXECUTIVE IR TRANSMITTER:

The ESPRIT Executive IR Transmitter provides a ease of use for the average user. The Executive IR can be use up to 50ft. (15.2m) and has On/Off, Standby, and 8 channel selection. Please refer to Figure D-10 for the name, location and a brief description of the controls.

NOTE: TO USE THE EXECUTIVE IR TRANSMITTER WITH THE ESPRIT DISPLAY SYSTEM, THE DISPLAY SYSTEM AND/OR OPTIONAL 8 CHANNEL SWITCHER MUST BE PLACED INTO THE EXECUTIVE MODE OF OPERATION USING **37 CODE.**

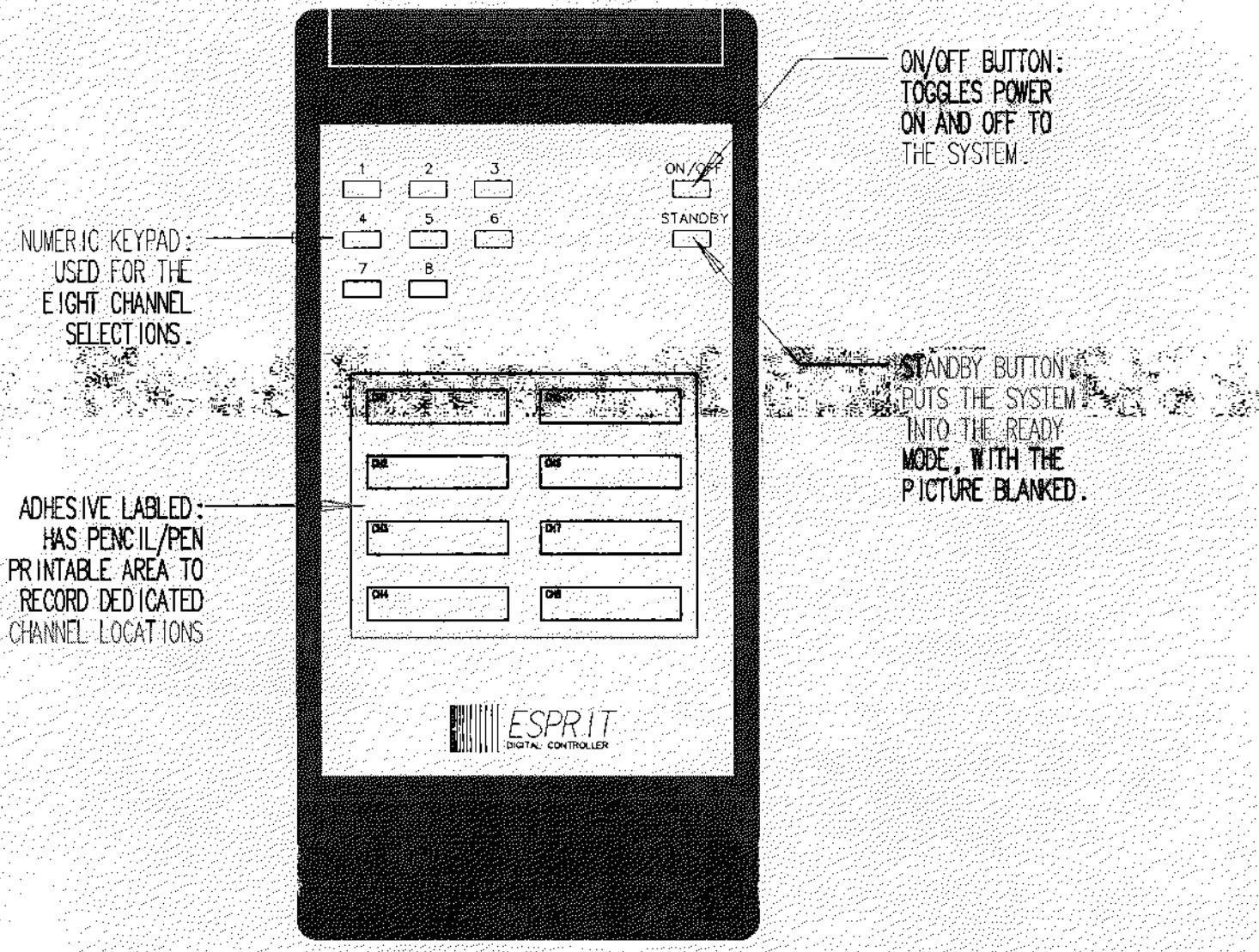


FIGURE D-10. EXECUTIVE IR TRANSMITTER.

5.0 . . . . . .ESPRIT SETUP USING THE TECHNICIAN IR REMOTE:

The function keys incorporated in the Technician IR Remote Control permit the user to perform an alignment of the ESPRIT Display Systems. The setup is performed by entering the HELP mode of operation and utilizing one of the setup programs.

NOTE: Since there will be no LCD read-out to lead you in the alignment process, please refer to your ESPRIT Operation Manual Chapter 9, section 9.4.2 and section 9.4.2.1 for the complete guided setup sequence.

EXAMPLE 1: ENTERING THE COMPLETE GUIDED SETUP.

- 1. After completing your installation of your ESPRIT display system and the remote control system (transmitter/receiver), power the system up.
- 2. Depress the HELP key.
- 3. At the Main Menu select subject 3, "System Setup Menu".
- 4. At the System Setup Menu select subject 1, "Guided Setup Program".
- 5. At the Guided Setup Program select subject 1 and follow all on-screen instructions.

NOTE: Refer to Chapter 9 for more information on the help mode of operation and the guided setup mode of operation.

5.1 . . . . . .ACTIVE KEYS WHILE IN THE GUIDED SETUP:

Increase/decrease/move alignment function.

HELP — Enter/exit help page for a brief explanation of the control/alignment function.

STEP — Advance to next alignment page.

TEST — Revert to previous alignment page.

CODE — Exits guided registration program.

5.2 . . . . . .ADDITIONAL COMMANDS (CODES):

When the guided setup (registration) of your system has been completed perform the normal channel assignments (See Chapter 8, page 8-5, section 3-CHANNEL BUTTON) for each individual source. While using the technician infrared remote control there are some functions , SIZING, BLANKING and CRT CUTOFFS that are not directly accessible with keys. To enable you to make these adjustments use the following CODES to perform these desired functions.

SIZE OPERATIONS:

- HORIZONTAL SIZE: (60 CODE)

  To perform the horizontal size enter 60 , then CODE and use the LEFT and RIGHT arrow keys to adjust the image width.

- VERTICAL SIZE: (60 CODE)

  To perform the vertical size enter 60, then CODE and use the UP and DOWN arrow keys to adjust the image height.

BLANKING OPERATIONS:

- TOP BLANKING: (61 CODE)

  To perform the top blanking enter 61, then CODE and use the UP and DOWN arrow keys and adjust the top vertical blanking.

- BOTTOM BLANKING: (62 CODE)

  To perform the bottom blanking enter 62, then CODE and use the UP and DOWN arrow keys to adjust the bottom vertical blanking.

- LEFT BLANKING: (63 CODE)

  To perform the left blanking enter 63, then CODE and use the LEFT and RIGHT arrow keys to adjust the left horizontal blanking.

- RIGHT BLANKING: (64 CODE)

  To perform the right blanking enter 64, then CODEand use the LEFT and RIGHT arrow keys to adjust the right horizontal blanking.

CRT CUTOFFS:

- RED CRT CUTOFF: (65 CODE)

  To toggle the red CRT ON/OFF enter 65, then CODE.

- GREEN CRT CUTOFF: (66 CODE)

  To toggle the green CRT ON/OFF enter 66, then CODE.

- BLUE CRT CUTOFF: (67 CODE)

  To toggle the blue CRT ON/OFF enter 67, then CODE.

APPENDIX E

OPTIONAL MODULE(S) INSTALLATION

1.0 . . . . . INSTALLATION PROCEDURE:

- NOTE: For the following installation procedure, the top cover must be removed and the registration board unlocked and tilted up.

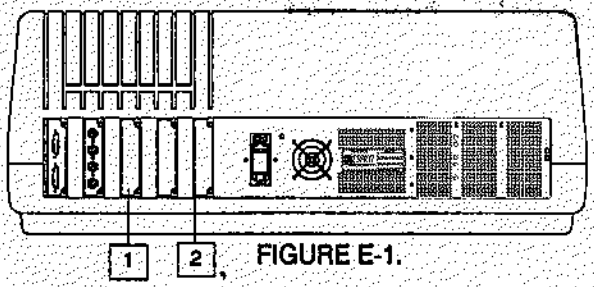


FIGURE E-1.

MODULE CONFIGURATION		
SLOT	STANDARD	OPTIONAL
1	TEST/TEXT INTERFACE	ANALOG RGB2 OR TTL/VGA
2	VERTICAL DRIVE PANEL	QUAD VIDEO DECODER

- STEP 1. De-energize the system and remove the main power cord.
- STEP 2. Please refer to Figure E-1 for the proper optional module slot position.
- STEP 3. Remove the existing module (panel) from the desired module position by remove the two 4- 40 phillips head screws and lift out that particular module (panel).
- STEP 4. With the appropriate slot empty, insert the desired optional module and secure with the two 4-40 screws.
- STEP 5. Locate DIP switch SW4 on the CPU module. Change SW4-1 to the "ON" position, replace the power cord and energize the system. Refer to Figure E-2.

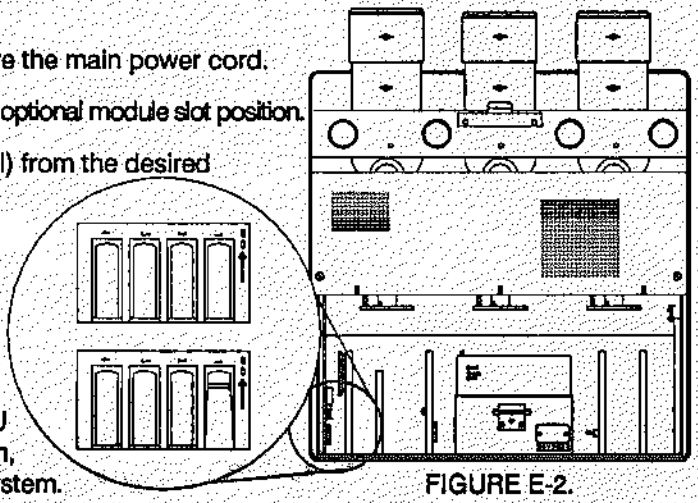


FIGURE E-2.

- STEP 6. Once the system has been energized, use the numeric keypad and enter 70, then press the CODE button.
- STEP 7. Using the reference table below, enter the appropriate configuration number that applies to your system. **NOTE:** All channels will be reset to the Analog RGB1 mode of operation.

MODULE STATUS REFERENCE TABLE					
ENTER	MODULE(S) INSTALLED	ENTER	MODULE(S) INSTALLED	ENTER	MODULE(S) INSTALLED
0	RGB1	3	RGB1 + QUAD VIDEO + RGB2	6 &7	NOT USED
1	RGB1 + QUAD VIDEO	4	RGB1 + TTL	8	RGB1 + HDTV
2	RGB1 + RGB2	5	RGB1 + TTL + QUAD VIDEO	9	RGB1 + HDTV + QUAD VIDEO

- STEP 8. Return SW4-1 (CPU module) to the "OFF" position and enter 44 then press the CODE button [READ SWITCHES].
- STEP 9. To verify your installation enter 34, then press the CODE button and view the LCD read-out.
- NOTE: Refer to your particular operation manual for the operation and selection of the Various Modes of operation.

APPENDIX F

ESPRIT 4000 SERIES ACCESSORIES

This Series features video, data, HD and graphics with 9" liquid-cooled-coupled CRTs, and Scheimpflug focal plane adjustment for precise overall focus.

Part No.	Model No	Description
69196	4000D	High bright,1200-lumen color video/data projection display system with 4-element lenses ☐ Guided digital remote convergence with on-screen help menu ☐ High RGB resolution of >1280 lines, Video >650 lines ☐ Autolock H: 15-56KHz, V: 40-150Hz ☐ Display >20,000 characters ☐ Adjustable for screen widths from 6' to 20' (1.8m to 6m) ☐ Single function remote control of optional switcher and system with total recall of uo to 50 source/set-up configurations which may be both downloaded and uploaded from a computer ☐ RS-232 communications for switching, networking and duplexing from a computer keyboard or conference room controller. ☐ Complete with 25' (7.6m) wired remote with backlighted LCD operating status and diagnostics display and one RGB input. ☐ Upgradable to ESPRIT 4000G
69239	4000D w/ optional lenses	ESPRIT 4000D with 7-element, coma-corrected, ultra high resolution, coated f1.15 lenses ☐ Adjustable screen widths from 6' (1.8m) to 9' (2.7m).
69197	4000HD	ESPRIT 4000D with IDTV, EDTV and HDTV compatibility and 7-element, coma-corrected, ultra high resolution, coated f1.15 lenses ☐ Adjustable screen widths from 6' (1.8m) to 9' (2.7m).
69195	4000G	High bright,1000-lumen color video/graphics projection display system with ultra high resolution, coma-corrected, 7-element lenses ☐ Guided digital remote convergence with on-screen help menu ☐ High RGB resolution of >1600 lines, Video >650 lines ☐ Autolock H: 15-85KHz, V: 40-150Hz ☐ Display >25,000 characters ☐ Adjustable for screen widths from 6' to 9' (1.8m to 2.7m) ☐ Single function remote control of optional switcher and system with total recall of uo to 50 source/set-up configurations which may be both downloaded and uploaded from a computer ☐ RS-232 communications for switching, networking and duplexing from a computer keyboard or conference room controller. ☐ Complete with 25' (7.6m) wired remote with backlighted LCD operating status and diagnostics display and one RGB input.

Options include executive or technician infrared remote, NTSC/PAL line doubler, switcher, quad video/S-VHS decoder, CGA/EGA/VGA or second RGB input, full convergence on green and intensity modulation.

4000 Series Package Systems

Part No.	Model	Description
69222	4000D	ESPRIT 4000D with 250 MHz, 8-channel, universal table or rack mount switcher with separate or composite sync inputs, audio follow in RGB or standard video, and 12" RS-232 communication cable (PN 69301), quad video/S-VHS decoder (PN 69127) and dual ceiling mount with pair of 2" pipe flange adapter plates (PN 69277).
69223	4000G	Same as above except with ESPRIT 4000G.

ESPRIT Series Accessories

Item	Part No.	Description
Special Options	69211	NTSC/PAL line doubler with composite video, S-VHS and RGB inputs
	69226	Full Convergence on Green for 2000, 3000 and 4000 D, HD and G models
	69286	Full Convergence on Green with Intensity Modulation for 2000, 3000 and 4000 D, HD and G models
	69315	Soft Edge Matching system interface for 2000, 3000 and 4000 D and HD models
	69368	250 MHz ground loop isolator
	69371	HDTV tri-level to bi-level sync converter
	69180	50' RS-232 cable for networking 2000, 3000 and 4000 D, HD and G models
	69181	100' version of above
	*	Factory set-up of system to your screen size and mount specifications
Input Options	69128	RGB2 input for 2000, 3000 and 4000 D, HD and G models
	69129	CGA/EGA/VGA input for 2000, 3000 and 4000 D, HD and G models
	69127	Quad video/S-VHS decoder for 2000, 3000 and 4000 D, HD and G models
Lens Options	69369	4000 Series 7-element, ultra high resolution, coma-corrected f1.15 lenses for screen width from 9' (2.7m) to 12' (3.6m)
	69210	4000 Series 7-element, ultra high resolution, coated f1.15 lenses for screen widths from 6' (1.8m) to 20' (6m)
	69209	4000 Series same as above except for screen widths from 4' (1.2m) to 1.5m)
Switcher and Cables	69301	250 MHz, 8-channel, universal table or rack mount switcher with separate or composite sync inputs, audio follow in RGB or standard video, and 12" RS-232 communication cable for compatibility with all ESPRIT projection systems (PN 69364). Factory preset at 110V or 220V.
	69355	50' RS-232 extension communication cable for switcher
	69356	100' version of above

Item	Part No.	Description
Computer Interfaces with Cables	69358	Universal TTL, analog and ECL computer video interface with EGA, CGA and MDA cable
	69357	Same as above except with VGA cable
	69360	Same as above except with MAC II cable
	69361	Dedicated computer video interface with 13W3 connector and cable for NeXT® and Sun Sparc® Station color computers
Distribution Amplifiers	69365	One-input, two-output, 220 MHz analog distribution amplifier with RGsB, RGBS and RGB HV sync
	69366	One-input, three-output, 180 MHz analog distribution amplifier with RGsB and RGBS sync
	69367	One-input, four-output, 300 MHz analog distribution amplifier with RGsB and RGBS sync
Ceiling Mounts	69277	4000 Series dual mount with pair of 2" pipe flange adapter plates (except 4200G)
	69232	4000 Series dual mount with telescoping adjustment from 12" (30cm) to 46" (117cm) (except 4200G)
Carrying Cases	69207	4000 Series ruggedized case (except 4200G)
Remote Controls and Cables	69124	Executive 8-channel select on/off/standby only infrared remote control transmitter and receiver with 6' cable for use with 2000, 3000 and 4000 D, HD and G models
	69092	Technician infrared remote control transmitter and receiver with 6' cable for use with 2000, 3000 and 4000 D, HD and G models
	69125	50' RS-232 extension cable for executive and technician infrared receivers and 2000, 3000 and 4000 D, HD and G model wired remote(s)
	69126	100' version of above
Coaxial Cables	69135	50' RGBS high resolution cable with BNC connectors
	69136	100' version of above
	69307	50' RGB HV high resolution cable with BNC connectors
	69359	100' version of above
Manuals	71063	ESPRIT 4000D/G operation manual
	71078	ESPRIT 4000D/G service manual