



HDP-500 SUPERDATA PROJECTION MONITOR

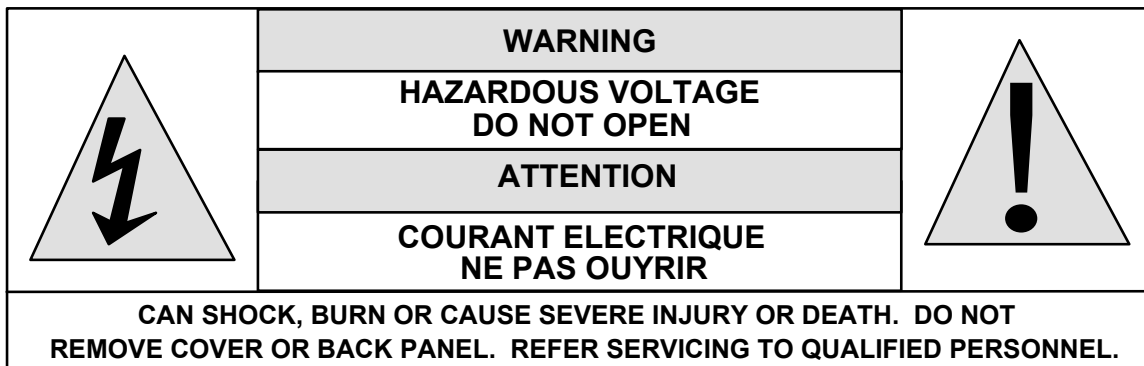
Installation and Operating Instructions

Read these instructions completely before operating this unit.

Contents subject to change without notice or obligation.

Table of Contents

Safety Information	3
Important Information for the User	4
Specifications	5
Introduction	6
Pre Installation Preparations	7
Signal Connections	7
Front Panel Connections	8
Preparation for Adjustment	9
Remote Control Operation	10
Initial Set Up and Adjustment	11
Focus Adjust Menu	11
Geometry Adjust Menu	13
Convergence Adjustments	17
Gray Scale Adjustment	20
Brightness Adjustment	21
Contrast Adjustment	21
Center Convergence	21
Centering Adjustments	21
Blanking Adjustments	22
Size Adjustments	22
Source Memory Entry	22
Global Setup Adjustments	23
Power On Control	23
Menu Access	23
Menu time-out	24
White Balance Control	24
Scan Reversal	25
Screen Size Change Procedures	27
Service & Warranty	29



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SAFETY INFORMATION

1. Read and apply all of the safety and operating instructions provided with your video equipment.
2. Keep all safety and operating instruction for future reference.
3. Unplug this video equipment from the wall outlet before cleaning. Never use liquid or aerosol cleaners. Use only a damp cloth for cleaning.
4. Do not use any attachments or accessories not recommended by the manufacturer as they may cause hazards.
5. Do not use this video equipment near water. Avoid placing it near a bathtub, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool.
6. Do not place this video equipment on an unstable cart, stand, or table. The video equipment may fall, causing serious injury to a child or adult and serious damage to the appliance. Use only with a cart or stand recommended by the manufacturer. Wall or shelf mounting should follow the manufacturer's instructions, and should use a mounting kit approved by the manufacturer.
Move any appliance and cart combination with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and a cart to overturn.
7. Top and bottom openings in the cabinet are provided for ventilation, and to insure reliable operation of the video equipment and protect it from overheating. These openings must not be blocked or covered. Never place the video equipment on a bed, sofa, rug, or other similar surface that may block ventilation openings. Never place this product near or over a radiator or heat register. Do not place this product in a built-in installation such as a bookcase or rack unless proper ventilation is provided.
8. Operate only from the type of power source indicated on the marking label. If you are not sure of the type of power supply to your home, consult your appliance dealer or local power company.
9. This unit is equipped with a three conductor polarized alternating-current line plug. This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug.
10. Route power-supply cords so that they will not be walked on or pinched by items placed on or against them. Pay particular attention to cords at plugs, convenience receptacles, and the points where they exit the products.
11. Protect your video equipment from lightning during a storm or when it is left unattended and unused for long periods of time, unplug it from the wall outlet. This will prevent damage to the unit due to lightning and power-line surges.
12. Do not overload wall outlets and extension cords as this can result in fire or electric shock.
13. Never push objects of any kind into this video equipment through cabinet slots as they may touch dangerous voltage points or short out parts that could result in a fire or electric shock. Never spill liquid of any kind on the video equipment.
14. Do not attempt to service this unit yourself as opening or removing cover may expose you to dangerous voltages or other hazards. Refer all servicing to qualified service personnel.
15. Unplug this video equipment from the wall outlet, and refer servicing to qualified service personnel under the following conditions:
 - a. When the power cord or plug is damaged or frayed.
 - b. If liquid has been spilled into the video equipment.
 - c. If the video equipment has been exposed to rain or water.
 - d. If the video equipment does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions as improper adjustment of other controls may result in damage and will often require

extensive work by a qualified technician to restore the video equipment to normal operation.

- e. If the video equipment has been dropped or the cabinet has been damaged.
 - f. When the video equipment exhibits a distinct change in performance.
16. When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer that have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock, or other hazards.
 17. Upon completion of any service or repairs to this video equipment, ask the service technician to perform routine safety checks to determine that the system is in safe operating condition.
 18. Do not place anything on the video equipment. Heavy objects placed on any part of this system will cause damage.
 19. **WARNING: To prevent fire or shock hazard, do not expose this appliance to rain or moisture.**
 20. **CAUTION: TO PREVENT ELECTRIC SHOCK DO NOT USE THIS (POLARIZED) PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.**

NOTE: This equipment is designed to operate in countries where the AC Mains power is 117 volts. Use with other AC voltages will cause serious damage to the unit and may present a safety hazard. If you are in doubt as to the line current in your area, please check with your installer before operating the projector.

IMPORTANT INFORMATION FOR THE USER

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. The limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communication. However, there is no guarantee that harmful interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept interference received, including interference that may cause undesired operation.

Note: Changes or modifications may cause this unit to fail to comply with Part 15 of the FCC Rules and may void the user's authority to operate the equipment.

SPECIFICATIONS AND TECHNICAL DATA

System Description: Red, Green, Blue three CRT/lens large screen refractive projection system for video and data applications. Separate screen required.

Optics: USPL high resolution HD-145 data grade lenses. F1.03, hybrid design, fully color corrected.

CRT's: 7" Magnetic focus, liquid cooled with anti-reflective coated faceplate.
5.6" active raster diagonal and 70 degree deflection angle.

Screen Size: 60 - 150 inch diagonal. Factory Preset for 100" diagonal.

Screen Configuration: Front or rear through, floor or ceiling mounted.

Light Output: 1100 lumens (10% peak white)

Optical Resolution: 10 line pairs per mm, 1250 TV lines

Video Bandwidth: 75 MHz (-3 dB)

Pixel Resolution: 1280 x 1024

Input: RGB - 0.7V p-p, 75 ohm positive (BNC)
H/V Sync - 0.7 - 4.0 V p-p, 75 ohm positive or negative. (BNC)

Convergence System: Digital system with 60 preset memory positions. Static and dynamic wave convergence via wireless remote or RS-232C port.

Convergence Accuracy: Less than 0.2% of vertical height.

Test Patterns: Cross Hatch, Cross Hair, Focus Dot, Window, H & E Patterns,
Gray Scale, Flat Field, Needle Pulse.

Scan Frequency: Horizontal: 28 - 65 kHz. Vertical: 40 - 120 Hz

Retrace Time: Horizontal - 3.5 uS Vertical: 450 uS

Data Communication Port: RS-232C, sample software supplied. DB-9 connector.

Power Input: 100 - 130 / 200 - 250 VAC 50/60 Hz

Power Consumption: 220 watts max.

Dimensions: (H x W x D): 9.5" x 22" x 22.5".

Weight: 65 lbs/29.5 kg

Environment: Operating Temperature: 10 to +35 deg. C Humidity: 0 - 90% non condensing
Storage: minus 10 to +50 deg. C.

Supplied Accessories: Full function wireless remote, Ceiling Mount kit, Owner's Manual & Installation Manual, PC control software (3.5" disk).

Introduction

This manual contains the information required to properly install, configure, setup and operate the DWIN HDP-500 data projection monitor. Please make certain that you fully read and understand the information in this manual before proceeding with any installation.

THIS MANUAL CONTAINS IMPORTANT INSTRUCTIONS THAT WILL ASSURE A SAFE AND SUCCESSFUL INSTALLATION. INSTALLING THE UNIT OTHER THAN AS DESCRIBED IN THIS MANUAL MAY LEAD TO UNSAFE OPERATION AND/OR CONDITIONS WHICH MAY RESULT IN UNSATISFACTORY OPERATION OR SHORTENED LIFE SPAN OF KEY COMPONENTS. INSTALLATIONS NOT COMPLYING WITH THESE INSTRUCTIONS MAY ALSO RESULT IN CONDITIONS THAT VOID THE PRODUCT'S WARRANTY.

The HDP-500 is a totally new projector design, combining state of the art circuit components and proprietary software that makes installation and operation easier than ever before. In order to take advantage of this breakthrough product, it is helpful to consider the installation process as containing five distinct steps. Carefully plan for each of them and your installation will proceed quickly and easily.

- Plan the physical aspects of the installation carefully. Use the DWIN's HDP-500 Projection software to make certain that the projector to screen distance is correct for the size and aspect ratio of the screen.
- Adjust the unit while it is easily accessible, BEFORE mounting it to a ceiling or placing it in the final installation. Pre-setting the unit up to rough in adjustments for focus, screen size, geometry and convergence will greatly speed your final installation. In addition, it is always easier to make mechanical and electronic adjustments on the bench than it is on the ceiling! Don't forget to make any needed changes to set the unit for floor/ceiling or front/rear projection throw before the final installation!
- CAREFULLY AND SAFELY mount the unit. For ceiling mount installation, make certain that the mounting hardware is properly secured to the structural frame. For floor or table mount installations, be certain that the unit is mounted on a firm, level surface that can support the projector's weight. Make certain that all mounting surfaces are free from vibration and that adequate space is provided for ventilation around the unit.
- Once the unit is set or installed in the actual viewing location, carefully follow the mechanical and physical installation procedures.
- Finally, make certain that you explain all operating features of the projector to the owner and that any possible compatibility issues with playback software and the chroma decoder, doubler or quadrupler, or computer used with the projector are resolved.

Pre Installation Preparations

Planning a projection television installation is a critical part of the installation. Even with the extended range of mechanical and electronic correction circuitry built into the HDP-500, incorrect physical placement of the projector may place it outside the range of the circuits.

Using the **HDP-500** Projection software provided by DWIN, enter the width of the screen, the aspect ratio and the mounting position of the projector (ceiling, center of screen or floor). The program will automatically calculate the correct distance from the screen to the projector. Make certain that you correctly plan the mounting position and that the information obtained from the planning software is carefully transferred to the installation venue.

For Floor Mount Installations

Floor mount locations should be level and solid, with an unobstructed view of the screen. DO NOT place the projector on carpeting or other materials that will interfere with the circulation of air into the ventilation holes at the bottom of the unit. Also, be careful not to place the projector in a location that is in the direct flow of heating or cooling vents or in a damp location.

For Center Screen Installations

Follow the same basic instructions as for Floor Mount locations. In addition, make certain that the mounting location is capable of supporting the weight of the projector.

For Ceiling Mount Installations

Follow the instructions included with the ceiling mount hardware, making certain that the assembly is carefully attached to structural beams capable of supporting the weight of the projector. Plan for connections to the projector of AC power, RGBS connections from the signal source, and a DB-9 connection if the RS-232C port will be used for external control. To insure freedom from power line interference, a separate and properly grounded AC circuit should be provided. Avoid the use of circuits connected to mechanical equipment, as they may induce noise in the video system.

Pre Installation Adjustment and Set Up

We strongly recommend that these instructions be followed BEFORE final installation. However, if the projector is already mounted in place, follow these steps to establish proper operating conditions.

Unpacking

When the unit is first received, verify that the carton does not show any signs that may indicate internal damage. If damage is suspected, make a report to the freight carrier immediately, and follow their claim procedures. In addition, please report any carrier damage to DWIN.

If there is no obvious sign of damage, carefully unpack the projector. Due to the weight of the unit two people should lift the projector from the carton. Carefully place the unit in the location where it will be tested and inspect it again for any signs of concealed damage that may have been incurred in shipping. Report any interior damage to the freight carrier and to DWIN.

Before proceeding, you may wish to store the carton for future use should the unit require return to DWIN. If you discard the carton and shipping material, please observe local recycling rules.

Signal Connections

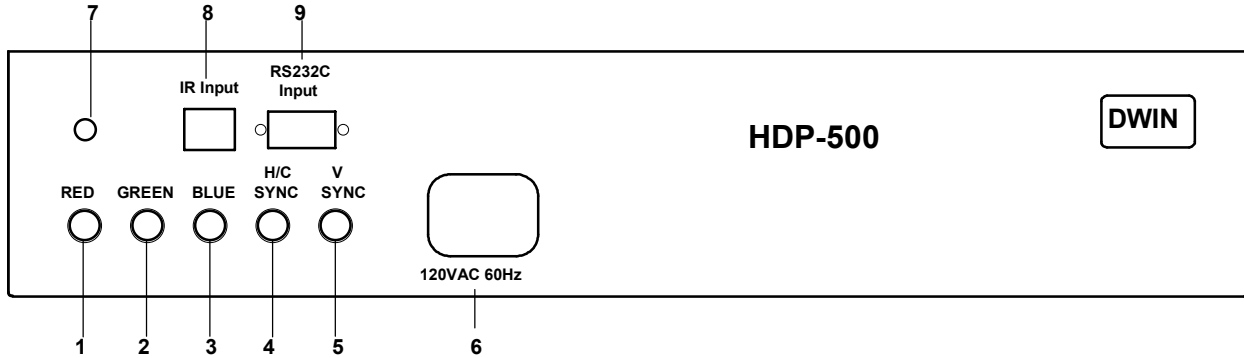
The HDP-500 is an RGB/Sync monitor, which means that it requires an external, line doubler, line quadrupler, or chroma decoder for video playback. A computer interface may be required for display of computer images. Connect your video and/or data sources to the external interface or processor, and then connect the RGBS outputs of the processor, doubler, quadrupler or interface to the signal and sync connections on the HDP-500's front panel.

If composite sync is used, connect it to the "H/C Sync" terminal. If separate horizontal and vertical sync are used, make connections to the appropriate terminals. The HDP-500 will not operate with "sync on green".

Connect the AC power cord to the front panel and to a wall mounted AC power outlet. The use of extension cords is not recommended.

Front Panel Connections

Make the appropriate connections to the front panel, using the following descriptions as a guide.



1. Red Input: Connect the RED signal from the external decoder/processor to this jack.

2. Green Input: Connect the GREEN signal from the external decoder/processor to this jack.

3. Blue Input: Connect the BLUE signal from the external decoder/processor to this jack.

4. H/C Sync Input: When COMPOSITE SYNC is available, connect the feed from the external decoder/processor to this terminal. If separate horizontal and vertical sync are present, connect the HORIZONTAL SYNC feed to this jack.

5. Vertical Sync Input: If separate sync feeds are being used, connect the VERTICAL SYNC feed to this jack.

6. AC Power Input: Connect the supplied AC power cord this receptacle.

7. The POWER LED is a multi-purpose indicator:

When the LED is dark the AC power to the unit is turned off.

When the LED is flashing on and off, power is connected to the unit, this indicates that the unit is in the standby mode.

When the LED is on the unit is powered on.

NOTE: Depending on the configuration of the “Auto Power” the unit may be in a “Stand By” mode, awaiting signal information. ALWAYS REMOVE THE AC POWER CORD TO POSITIVELY TURN THE UNIT OFF BEFORE MAKING ANY INTERNAL ADJUSTMENTS.

8. IR Sensor: This window is the sensor for the HDP-500’s remote control system. For best operation, make certain that the sensor has a direct view of the screen so that remote commands made by pointing the control at the screen will be bounced back to the sensor. If the sensor window is obstructed a remote IR extension system should be used.

9. RS232C Port: This DB-9 plug is used to operate the HDP-500 directly from a compatible computer using the supplied software.

NOTE: THIS IS A DATA PORT ONLY. DO NOT MAKE ANY VIDEO SIGNAL CONNECTIONS TO THIS INPUT!

Preparation for adjustment

Before initial adjustments are made to the unit, locate the correct distance from the screen. This distance should be obtained by using the HDP-500 Projection software supplied to you. Make certain that the front rubber feet are set so that the unit is level and parallel to the floor. You may wish to verify this with a standard carpenter's level.

In order to make certain adjustments, it is necessary to remove the unit's cover.

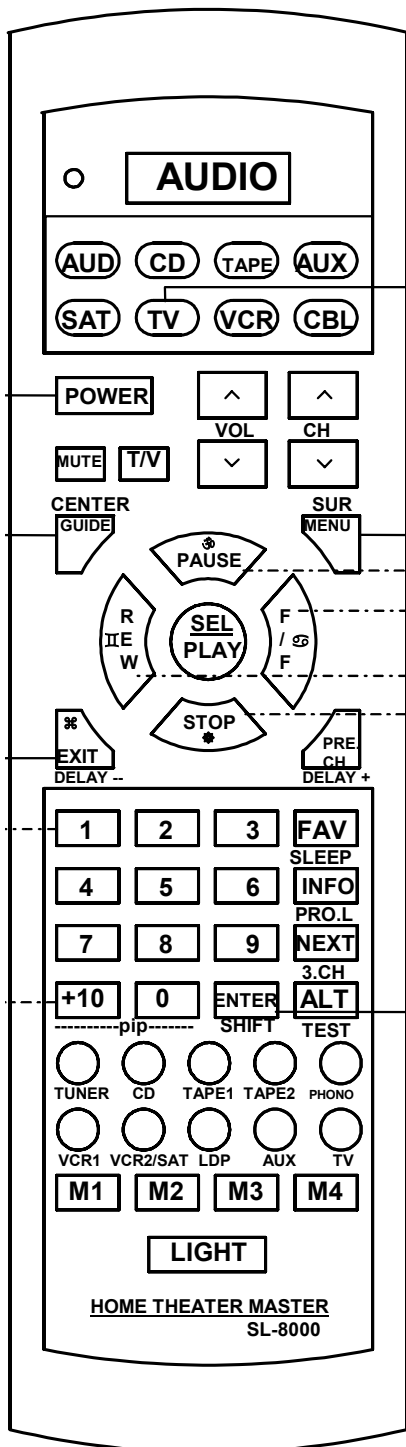
First, loosen the screws at either side of the green (center) lens about 1/2" until the cover panel pops up. It is not necessary to completely remove the screws. Next, push in on the metal tabs at either end of the cover and gently pull the cover upward. While holding the cover, pull it forward to remove it from the unit.

Remote Control Operation

The HDP-500 has no on board user controls. All operation is controlled through the wireless remote control or the optional RS-232C link to a computer or control system.

The remote control supplied with the unit is factory programmed to operate the HDP-500 when "TV" mode is selected.

SL-8000 remote furnished with the HDP-500 is a universal remote control capable of controlling 8 different devices. The operational instructions on this page refer to the remote buttons used with the HDP-500 only. Consult the SL-8000 operating manual for complete information on programming the remote and using it with other devices.



To control the HDP-500 select "TV" mode.

1. Press "TV" or "POWER" buttons to turn the HDP-500 **ON**.
2. To turn the HDP-500 **OFF** press the "POWER" button.
3. Press "MENU" button to view the **Main Control Menu** at any time. Pressing the "MENU" button while a sub menu is displayed on the screen will return back to the **Main Menu**. Pressing the "MENU" button while the Main Menu is displayed will **cancel** the menus.
4. Press "GUIDE" button to display the list of sources entered into the HDP-500's memory. To select one of the sources press the **numeric buttons** corresponding to the desired source. The HDP-500's memory stores any set of presets relating to scan frequencies and/or aspect ratios as a "source". This means that the same physical source, such as a single line doubler, may have numerous sources for different aspect ratios or screen sizes.
5. Press "EXIT" to exit the menu and to clear the screen.
6. When converging the HDP-500, press "ENTER" button to toggle between cursor movement (a solid block cursor will be shown) and the adjustment mode (an outline cursor will be shown).
7. **CURSOR/MOVEMENT CONTROLS** </>/▲/▼:
These buttons are used to move the cursor on the screen or to control the left/right and up/down movement of screen adjustments.
8. **NUMERIC BUTTONS:** Use these buttons to select a specific function listed on a menu.

The brand code for HDP-500 is "177".

Initial Set Up and Adjustment

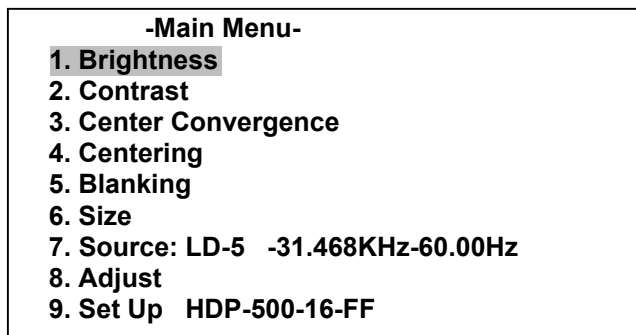
At this point you are ready to proceed with the initial adjustment of the unit. Make certain that the power and signal connections have been made, and that a high quality signal feed is supplied from either a laser disc player or a test signal generator.

NOTE: All initial adjustments will be saved in the Source memory with the preset name "LD-10". If you wish to save the adjustments with a different name you must first create that name memory. To create a different name please follow the steps for "SOURCE MEMORY ENTRY" on page 20 before performing adjustments.

Focus Adjust Menu

Turn the unit on by pressing the "POWER" switch and note that the green LED on the HDP-500's front connection panel will illuminate.

Press the "MENU" button and observe that the Main Menu will appear on the screen.



If the menu is not in clear focus, adjust the optical focus on the green lens. Loosen the back wing nut and rotate the lens barrel by holding the lens with one hand and moving the nut with the other along the track provided. When the picture is in sharp focus hand tighten the wing nut.

To adjust the edge focus, loosen the wing nut closest to the outer edge of the lens and focus by holding the back of the lens with one hand while you rotate the outer barrel with the other. You may find it easier to grasp the "wings" that protrude up from the barrel to aid in the focus.

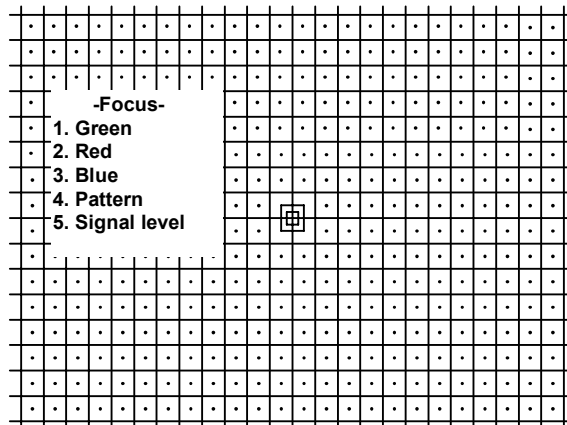
Once this initial focus has been made you may proceed with the complete focus process.

1. Press the "MENU" button to display the Main Menu.
2. Press the "8" button to display the Adjust menu.

-Adjust-

1. Focus
2. Gray Scale
3. Geometry
4. Convergence

Press “1” to view the focus screen. Note that the screen will display the Focus menu against a background of the crosshatch/dot pattern.



Signal Level

Before adjusting focus you may wish to change the signal level for the on screen test pattern. This adjustment **DOES NOT** affect the actual signal level for picture displays, but it does allow lower signal levels during adjustments so that they are more precise. Low levels use less beam current. This, in turn, means that the video spot size is as small as possible and is not prone to the softening caused by an over driven signal.

To change the signal level for focus adjustments, first reach the Focus menus as outlined in the steps shown above. At the Focus menu, press “7” to display the Signal Level Menu.

Use the left or right adjustment buttons on the remote (◀▶), increase or decrease the signal level. When you have reached the desired signal level press “1” to display the Green Focus adjustment screen.

NOTE: Any change to the signal level in this menu will be effective only during focus adjustments. The signal level will return to normal levels when you return to the Main Menu or cancel the focus adjustment.

Focus Adjustment

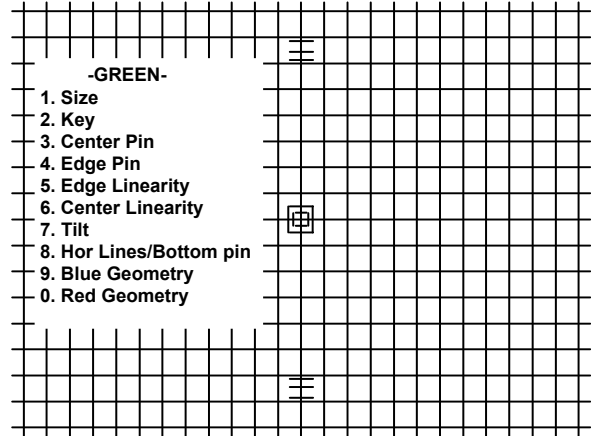
Once the signal level has been set, adjust the focus of each color channel using the following steps:

1. From the Focus menu press “1” to display the Green Focus adjustment screen.
2. Adjust the overall optical focus by loosening the wing nut at the rear of the green (center) lens so that it is loose, but do not remove it. Rotate the lens barrel by holding the lens with one hand and moving the nut post with the other along the provided track. When the picture is in sharp focus hand tighten the wing nut.
3. Adjust the edge focus by loosening the wing nut closest to the outer edge of the lens, but do not remove it. Focus the lens by holding the back of the lens with one hand while you rotate the outer barrel with the other. You may find it easier to grasp the “wings” that protrude up from the barrel to aid in the focus. Tighten the wing nut when complete.
4. Adjust the electronic focus using the arrow keys on the remote control (◀▶) until the picture is sharpest.
5. Press “2” on the remote to move to the Red Focus menu. Repeat the procedures in items 2 through 4 above, adjusting the optical main focus, optical edge focus and electronic focus for the Red channel.
6. When the Red focus is complete, press “3” to display the Blue Focus menu. Repeat the procedures in items 2 through 4 above, adjusting the optical main focus, optical edge focus and electronic focus for the Blue channel.
7. When these adjustments are complete press the “MENU” button to return to the Focus menu. At this point you may wish to check the focus using different test patterns. To change the pattern, first press “6” on the remote. Each subsequent press of the “6” button will change the pattern. Available patterns are dots, “H repeat”, “E repeat” and crosshatch/dot.
8. When all focus adjustments are complete press “MENU” twice to return to the Adjust menu, or “EXIT” button on the remote to exit the menu system.

Geometry Adjust Menu

Geometry is the series of adjustments that correctly align the picture scans to the size of the screen. Just as important, geometry adjustments are used to compensate for the differences in alignment that result from the placement of the projector with regard to the screen. The HDP-500's flexibility of geometry adjustments makes it possible to correct for differences caused by the projector's "shooting angle" and mounting position as well as any tilt that may exist in the screen itself.

Geometry is an important part of the projector's set-up. You should establish the geometry settings after initial focus adjustments, and check them again after all aspect ratios have been sized and centered to the screen.



IMPORTANT NOTE: The adjustments described below presume that the screen size has not been changed from the factory setting. If you have changed the screen size please make certain that the adjustments described in the "Screen Size Change Procedures" are completed before attempting to adjust the geometry.

Once the projector has been focused, select the Geometry Adjustments by first pressing "**MENU**" on the remote, and then to display the Main Menu. Press "**8**" to go to the Adjust menu, and then "**3**" to reach the Green Geometry menu.

Green geometry is adjusted first, as the green tube serves as the reference to which the red and blue channels are matched during all phases of projector installation.

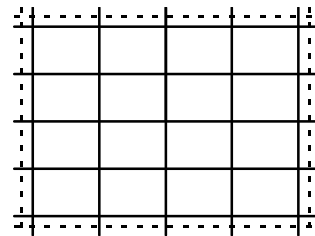
Size

Press "**1**" to select "**Size**" and note that the cross hatch pattern will appear along with numeric indications of the size.

For a conventional 4:3 aspect ratio screen adjust the picture until the edges of the cross hatch pattern are exactly at screen edges. To completely fill the screen with a wider aspect ratio expand the picture until the markers shown on the center vertical line reach the top and bottom of the screen. The outer markers are for 1.66 aspect ratio, the middle markers for 1.78, and the inner markers for 1.85. When size is complete, press "**2**" to move directly to the next step, or press "**MENU**" to exit.

1.Size

← 50 →
↑ 50 ↓
Adjust width and height of image



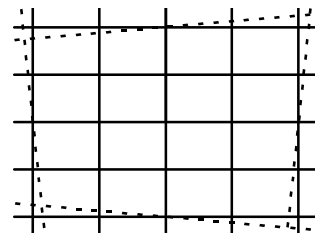
Key

Keystone adjustments make certain that images are parallel to the edges of the screen, regardless of any errors that may be induced in the physical installation of the projector. When making keystone adjustments you may wish to use a carpenter's level to make certain that the actual settings are accurate.

At the Key adjust screen, first use the </> buttons on the remote to adjust the picture until the vertical lines at the far left and right edges of the screen are parallel to each other. Use the ^/v buttons on the remote to adjust the picture until the horizontal lines at the top and bottom outer edges of the screen are parallel to each other.

2. Key

← 50 →
↑ 50 ↓
Adjust Horizontal and Vertical Key-Stone



When keystone adjustments are complete, press "**3**" to move

directly to the next step, or press “MENU” to exit.

Center Pin

Look at the lines that intersect the center of the screen and use the </> buttons on the remote to adjust the picture until they appear straight and perfectly level. It is often helpful to make these adjustments while standing at one side of the screen and looking inward toward the center of the picture. Use the ▲/▼ buttons on the remote to adjust the picture until the horizontal line that runs through the center of the screen. Again, make this adjustment while looking at the screen from the front, and check it while looking at the screen from the side or bottom.

When Center Pin adjustments are complete, press “4” to move directly to the next step, or press “MENU” to exit.

Edge Pin

Edge pin adjustments make certain that the outer edges of the picture are square to the screen.

Use the </> and ▲/▼ buttons on the remote until the outer edges of the picture are square to the corners with no apparent bowing of the lines at the top, bottom or sides.

When Edge Pin adjustments are complete, press “5” to move directly to the next step, or press “MENU” to exit.

Edge Linearity

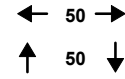
This adjustment permits you to adjust the relationship of the geometry from one side of the picture to the other.

At the Edge Linearity adjust screen, use the </> buttons on the remote to adjust the picture until left and right halves of the picture are equal, and use ▲/▼ buttons on the remote to adjust the picture until top and bottom halves are equal.

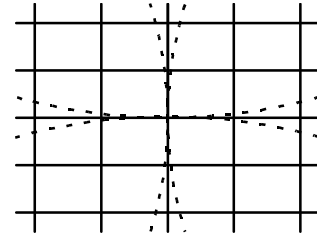
Center Linearity

At the Center Linearity adjust screen, use the </> and ▲/▼ buttons on the remote to adjust the picture until boxes at each edge of the screen (both left and right, and top and bottom) appear to be the same size and have the same internal area. They should also be the same size with respect to the boxes at the very center portion of the screen.

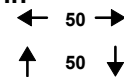
3.Center Pin



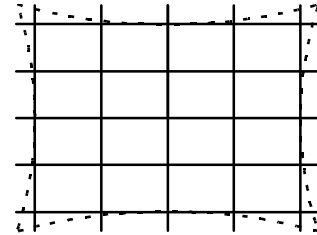
Adjust H & V center line Bow



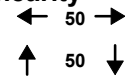
4.Edge Pin



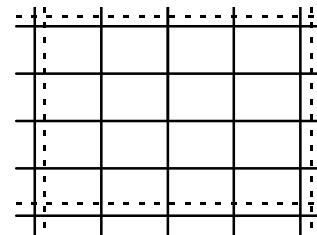
Adjust H & V Pin Cushion



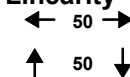
5. Edge Linearity



Adjust Left/Right & Top/Bottom Linearity



6. Center Linearity

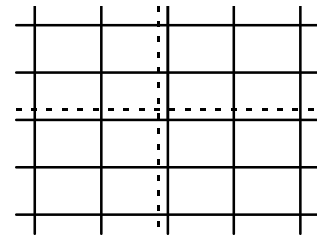


Adjust H & V Center Linearity

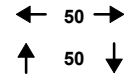
Tilt

At the Tilt screen, use the \leftarrow/\rightarrow and \uparrow/\downarrow buttons to adjust center horizontal and vertical lines parallel to the screen edges.

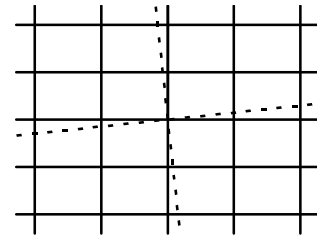
When Tilt adjustments are complete, press “8” to move directly to the next step, or press “MENU” to exit.



7. Tilt



Adjust Horizontal & Vertical Center lines

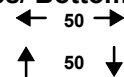


Horizontal Lines/Bottom Pin Cushion:

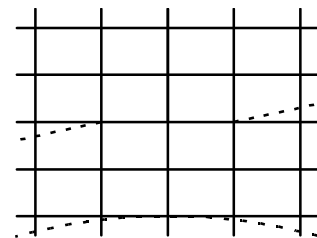
This is another set of adjustments that set the picture so that it is perfectly parallel and evenly adjusted to the screen.

At the menu screen use the \leftarrow/\rightarrow and \uparrow/\downarrow buttons on the remote until the outer edges of the picture at the left/right sides and top/bottom are parallel to each other. (insert graphic here) The lines on the screen should be parallel to the floor, and not bowed in an “S” shape.

8. Hor Lines/ Bottom Pin



Adjust Horizontal Lines Rotation and Bottom Pin-Cushion



IMPORTANT NOTE: Due to the interactive nature of the geometry you may find it helpful to run through each of the setting groups a second time after the initial adjustments.

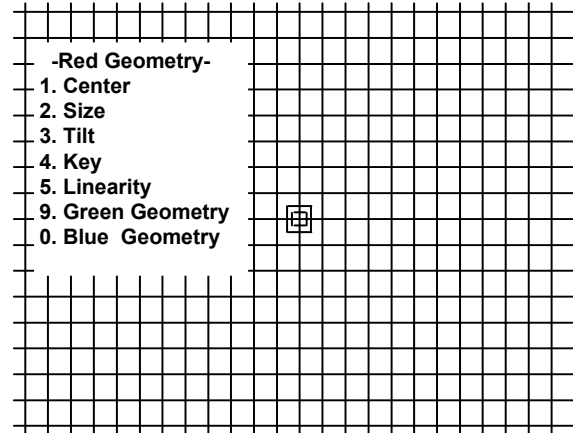
At this point you may press “0” to proceed with the Red Geometry adjustments, or press “MENU” to Exit.

RED GEOMETRY

The adjustments for Red Geometry are similar to those used to set the Green Geometry, except that instead of using the screen as a physical reference you will be matching the red channel to the green settings. The goal for all Red Geometry adjustments is to match the red lines on the test pattern directly over the green lines so that the result is a yellow line.

1. Center

To begin the Red Geometry adjustments, press “1” to display the Center Adjustment screen. Use the \langle/\rangle and $\blacktriangle/\blacktriangledown$ buttons to adjust the outer left/right and top/bottom edges of the picture as well as the direct center so that the red channel completely covers the green. Pay particular attention to the double square at the very center of the pattern, as this is the most critical part of this adjustment.



When Red Center adjustments are complete, press “2” to move directly to the next step.

2. Size:

Use the \langle/\rangle and $\blacktriangle/\blacktriangledown$ buttons to until the red lines on the pattern cover the green lines at the outer left/right and top/bottom edges of the picture.

3. Red Tilt:

Here you will adjust the tilt of the red channel so that it matches the green channel. Use the \langle/\rangle buttons until the red line that runs directly though the vertical center of the screen covers the underlying green line.

4. Red Key:

Here you will adjust the red channel keystone with relation to the green channel. Use the $\blacktriangle/\blacktriangledown$ buttons until the horizontal red lines at the very top and bottom of the crosshatch pattern cover the underlying green lines on the pattern or equally spaced from green lines.

5. Red Linearity:

Here you will adjust the red channel linearity with relation to the green channel. Use the \langle/\rangle buttons until the vertical red lines at the left and right edges of the crosshatch pattern cover the underlying green lines on the pattern or equally spaced from green pattern.

Before moving to the next set of adjustments you may wish to quickly review all steps of Red Geometry to make certain that the interaction between the adjustments has not introduced any errors into the settings.

When the Red Geometry adjustments are compete, press “0” to move to the Blue Geometry adjustments, “MENU” to return to the master Red Geometry Menu, or “9” to go back to the Green Geometry menu.

BLUE GEOMETRY

As with the Red Geometry, these adjustments will be to a master setting previously established. This time the blue will be adjusted to the green master channel.

The adjustment procedure for blue is identical to that for red. Follow steps 1 to 5 above, except that this time you will be adjusting the blue, rather than red channel.

Convergence Adjustments

Once the picture has been focused and adjusted to the screen size for all geometry parameters, the next step in the set up process is convergence. During convergence the green channel used as a master reference, since it is shooting straight at the screen, where the red and blue channels are offset from center and thus must hit the screen at a slight angle. Convergence compensates for these angles, as well as the electronic circuit drift that occurs in any projection television.

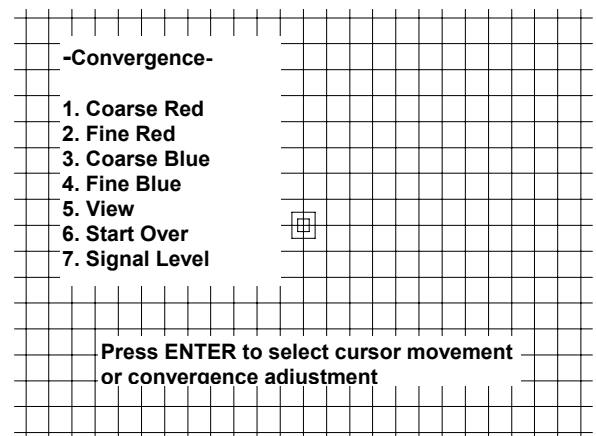
It is important that the convergence system be used as a “fine trim” adjustment, and not to compensate for installation placement errors. That is why any adjustments relating to screen size, mounting angle and projector to screen distance should be completed before convergence.

NOTE: In order to make certain that convergence adjustments are made under conditions that are representative of actual operating temperatures it is always best to let the set warm up for at least 30 minutes before critical convergence settings are established.

To reach the master convergence menu, first call up the main menu by pressing the “**MENU**” key on the remote. From the Main Menu press “**8**” for the Adjust menu, and then “**4**” to reach the Convergence menu. At this point you may first wish to adjust the signal level before proceeding with the actual convergence.

Signal Level Adjustment for Convergence

While the brightness and contrast for the HDP-500’s images are set by a combination of the external controller/decoder and the unit’s own internal controls, those adjustments are designed to present the best possible picture for viewing. During some set up procedures, however, it may be desirable to change the signal level only for the purpose of the adjustment. This adjustment DOES NOT affect the actual signal level for picture displays, but it does permit you to lower the level so at adjustments are more precise. When signal levels are lower less beam current is used. This, in turn, means that the video spot size is as small as possible and is not prone to the softening caused by and over drive signal.



Better focus, in turn, deliver the most accurate convergence adjustments. For that reason, we recommend that, if possible, you lower the signal level to the greatest degree possible when converging the set.

To change the signal level for convergence adjustments, first reach the Convergence menu as outlined in the steps shown above. At the Convergence menu, press “**7**” to display the Signal Level menu.

Use the left or right adjustment buttons on the remote (◀/▶), increase or decrease the signal level. When you have reached the desired signal level press the “**MENU**” button to return to the Convergence menu.

NOTE: Any change to the signal level in this menu will be effective only while the convergence adjustments are being made. The signal level will return to normal levels when you return to the Adjust menu or cancel the convergence adjustment.

Coarse vs. Fine Convergence

The HDP-500 offers two levels of convergence, coarse and fine. The *coarse* convergence is also known as “zone” convergence, while the *fine* convergence is sometimes referred to as “point” convergence. In the initial installation of a projector is always best to step through both convergence processes. During the life of the projector, when touch-up is required, use of the “fine” convergence will usually suffice to permit corrections to convergence errors that are isolated to one area of the picture.

The coarse convergence is centered in nine areas around the edges of the raster and at the center of the image. The convergence is adjusted for a broad area around the center point. Convergence movement is intentionally slow in the coarse mode so that adjustments will be made with increased precision. In general, the coarse adjustment should be used first to establish a working start for the convergence process.

Fine convergence isolates the area of change to a few grid squares around one of 100 points on the screen.

Convergence Movement

During convergence there are two modes: cursor movement and circuit adjustment. When you start the convergence process the cursor appears as a thick solid wall box. When you see this type of cursor you can use the </>/▲/▼ directional arrow buttons on the remote to move the cursor to the point on the screen requiring adjustment. To make a convergence adjustment press the “ENTER” button on the remote and note that the cursor will change to a double outline box. When you see this type cursor adjustments may be made by pressing the directional arrow buttons.

During the convergence process the “ENTER” button is used to change between cursor movement and convergence adjustment.

Red Convergence

Since the green channel is your master reference, the first step is to converge the red channel to the green. Before starting, take a moment to look at the cross hatch display on the screen. A perfectly converged set will show the cross hatch as totally white over a black background. Of course, since the set has not yet been converged, you will see areas of the screen where red or blue lines will separate from the green reference. Make a mental note of the areas where there is the greatest amount of divergence of red from green, as these are areas where you will want to pay special attention to convergence.

As noted above, start with the “Coarse” convergence and then touch up the settings with the “Fine” convergence.

Start the procedure by pressing “1” from the main -Convergence- menu. The first thing to appear will be a WARNING message reminding you entering the Coarse Adjustment menu will erase any fine adjustments settings and return the system to factory presets. If you wish to only change a few very localized convergence errors DO NOT proceed with Coarse Convergence, but press “2” to select Fine Convergence.

To proceed to the next step follow the on screen message and press “ENTER” once to start the process and a second time to confirm the operation.

Before moving the cursor first look at the screen note that you will see a mostly yellow crosshatch, but there will be areas where you will see separate green or red lines. Those are the areas you will need to carefully converge.

Coarse Red Convergence

Start the process with the nine point Coarse Convergence. The cursor will always appear at the center of the screen, so no movement is required. Press “ENTER” on the remote and note that the cursor will turn to its double outline shape. Make adjustments as required using the </>/▲/▼ directional arrow keys until the red crosshatch lines at the very center of the screen disappear. Note that there will continue to be areas of the screen that are out of convergence, but the task here is to perfectly converge the center of the screen.

Next, press “ENTER” to return to the cursor movement mode, and move to the first of the remaining eight coarse convergence points at the center top of the screen. Using the “ENTER” button to toggle between cursor movement and adjustment, align the red lines so that they completely cover the green lines. Converge the top center first, followed by the bottom center, left center and right center.

When the centers are converged, move the cursor to the upper right corner for convergence, and then converge each corner of the screen moving in a counter clockwise manner.

NOTE: The adjustment speed is intentionally slow so that you may reach a perfect alignment. It is also natural for the convergence movement to continue for a few seconds after an arrow key is released so that the on screen positioning may catch up to the microprocessor’s actual memory location.

When all nine coarse convergence points have been converged press “2” to move to Fine Convergence.

Fine Red Convergence

Once the basic Coarse convergence is complete, press “2”, as noted above, to enter the Fine Red Convergence. Here the task is also to completely cover the green lines with the red so that there is no overlap.

To start the procedure, use the </>/▲/▼ directional arrow buttons on the remote to move the solid wall cursor box to the upper left hand corner of the screen. (insert diagram here)

Once the cursor is in the desired position press “ENTER” to select the convergence mode. Use the </>/▲/▼ directional arrow keys on the remote and note that as you press any key the RED line on the test pattern will move in the direction shown on the arrow button. Press the keys, one at a time, until the red line completely and precisely covers the green line at the current cursor position until red and green lines merge into a yellow color.

Note that as you make the convergence adjustments, a readout will appear on screen to indicate the direction you are moving the red channel, as well as numeric indication of the divergence from reference position.

When the convergence is correct at the first point, press “ENTER” to return to the cursor movement mode. Note that the cursor should return to the solid box wall shape before moving to the next spot. Press the ▼ button on the remote ONCE to move to the next convergence point.

From this point on, at each convergence point you will reach the desired spot, press “ENTER” to invoke the double outline box cursor, and then use the directional arrow buttons on the remote to make any needed convergence adjustments.

When the adjustment is complete press “ENTER” to return to cursor movement, and use the directional arrow keys to move to the next adjustment point.

Continue the process until each adjustment point has been converged.

When every point on the screen has been adjusted as required, check the overall convergence to make certain that adjustments at one point have not made further correction necessary elsewhere. When you are satisfied with the red convergence, press “3” to proceed with Blue convergence, or press “MENU” to return to the convergence menu.

Blue Convergence

The process for blue convergence is similar to that for red convergence, except that in this case the blue channel will be adjusted using the red as a reference.

The process for cursor movement and convergence adjustment for blue is identical to that for red: Press the “ENTER” button on the remote to switch between the double outline box for adjustment and the solid wall box for movement. Use the </>/▲/▼ directional arrow buttons on the remote to make the convergence adjustments or move the cursor location.

As with red convergence, start with the Coarse Convergence adjustment at the center of the screen, followed by the remaining Coarse Convergence points. Then press “4” to begin the actual fine convergence adjustments Use the same convergence process and move the blue lines so that they completely cover the red, and then move to the next adjustment position.

When all blue convergence adjustments have been made, press “MENU” to return to the master -Convergence- menu, and press it one more time to go to the main -Adjust- menu.

Convergence Memory Purge

During some adjustments, particularly after other service adjustments, you may need to purge, or “dump” the complete memory of the convergence system.

To empty the memory and start over, you must be at the main -Convergence- menu.

At that menu press “6” on the remote to select “START OVER”.

The next screen will instruct you to type the word “**YES**”. Do this using the up and down $\blacktriangle/\blacktriangledown$ arrow buttons on the remote as the letters change on the display. Use the left/right $\blacktriangleleft/\blacktriangleright$ arrow buttons to move the “typing” position to the next letter.

When you have typed “**YES**”, press the “**ENTER**” button and the convergence memory will be emptied. You may now start the convergence process over from the factory settings.

IMPORTANT NOTE: To protect from unintended memory erasure, the word “**YES**” must be typed exactly as shown, in upper case letters before the memory purge will take effect.

Gray Scale Adjustment

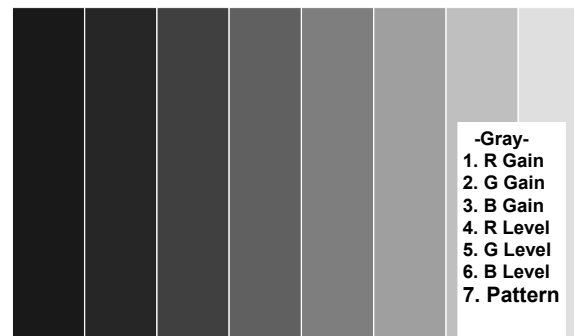
The HDP-500 offers a wide range of gray scale adjustments. For best results we recommend first using the internal test signals offered by the projector. Once those have been made you may wish to use incoming video for additional gray scale adjustments. Note, however, that any adjustments made to incoming video will be subject to the variations induced by the chroma decoder in use. It is also advisable to adjust the HDP-500's internal settings and then make any final trims offered by the decoder, doubler or quadrupler **WITHOUT** changing the HDP-500's settings. This will insure accurate control and tracking of all signals.

The steps outlined below are for adjustments that are made by eye, without the use of automated or external test equipment. Your actual procedures may vary when color analyzers are used, based on the sequence of the specific test gear. Consult the DWIN Technical Service Department for additional instructions for calibration using external analyzers, or follow the appropriate DWIN Technical Bulletins.

NOTE: Since the eye reacts slowly to color changes it is strongly recommended that you proceed slowly with these adjustments, and to make them in as dark an environment as possible.

To begin the Gray Scale Adjustments, start at the Master Gray Scale menu. If you are not at that screen, first call up the main menu by pressing the “**MENU**” key on the remote. At the Main Menu press “**8**” to reach the Adjust menu, and then “**2**” to reach the Gray menu.

The first step is to select the test pattern to be used. The gray scale pattern is the factory default. To select either the window pattern or incoming video from a test generator press “**7**” from the Gray Scale menu and the display will toggle from the gray scale pattern to a window pattern to the external video feed and then back to the test pattern.



Two gray scale adjustments are available for each of the three color channels, gain and level. Gain impacts the lighter, or right side of the test pattern while level impacts the black, or left side of the test pattern. The overall goal is to obtain the “blackest” black while defining the highest white level. At the same time, even step increments must be maintained between the gray scale bars on the test pattern.

NOTE: When making gray scale adjustments with automated test equipment or color analyzers it is desirable to turn off the on screen menu instructions so that the color of the graphical instructions does not cause the instruments to register an incorrect reading. To turn the graphics off while making any of the gray scale gain or level adjustments press the “**ENTER**” button on the remote. Press it again to toggle the graphic back on.

The easiest way to adjust the gray scale is to start by setting the Green Gain and Green Level to the mid point of “**50**”. To do this, press “**2**” on the remote and use the $\blacktriangleleft/\blacktriangleright$ buttons until the reading of 50 appears on the screen. Press “**5**” and repeat the setting procedure.

Next, set the Red and Blue levels until the bar on the far left side of the screen is as black as possible while you are still able to see that there is a distinct gray, or slightly less black bar, next to it. Press “**4**” and then use the $\blacktriangleleft/\blacktriangleright$ buttons to adjust the Red Level and “**6**” and $\blacktriangleleft/\blacktriangleright$ to adjust the Blue Level.

Finally, set the Red and Blue gain controls so that the far right bar is as bright as possible while maintaining an even step of gray from one bar to the next across the screen. The far right bar should not be so bright that you cannot clearly distinguish eight separate bars on the screen.

Press "1" and then use the </> buttons to adjust the Red Gain and "2" and </> to adjust the Blue Gain.

Note: The next two adjustments are available to consumers or end users even when the menu controls are protected. You should still make them here as a final picture set .

Brightness Adjustment

The brightness setting should be adjusted so that the on screen video maintains proper contrast. The picture should be adjusted so that black areas are truly black, not light gray or blue tinted.

To adjust brightness, press "MENU" to display the Main Menu, and then press "1".

The Brightness screen will be displayed, with the input source also being noted in the upper right corner of the screen. Use the < and > buttons on the remote to adjust the setting so that it is acceptable.

Contrast Adjustment

The Contrast setting should be adjusted until the video maintains proper overall brightness and contrast.

To adjust contrast, press "MENU" to display the Main Menu, and then press "2" if you are not already at the correct display screen.

The Contrast screen will be displayed, with the input source also being noted in the upper right corner of the screen. Use the < and > buttons on the remote to adjust the setting so that it is acceptable.

Center Convergence

Since the master point convergence has been established during the initial setup, there should be no need to make a further adjustment at this time. However, it is good practice to check the setting at this point in the installation. This will also familiarize you with the operation of this setting, as it is a part of the menu system that will be available to the consumer when the projector is delivered.

Center Convergence is also referred to as "static convergence", as it is based on a global X/Y axis setting rather than the more exact point convergence available in the Adjust menu.

To access the Center Convergence, press "MENU" to display the Main Menu, and then press "3".

The Center Convergence screen will now be displayed, with vertical and horizontal lines across the center of the screen and a double box cursor in the middle.

Press "1" from the Center Convergence menu to adjust the Red Center. Use the </>/▲/▼ directional arrow buttons on the remote to move the red lines so that they cover the green lines at the center of the picture to show a yellow outline.

When the Red Center adjustment is complete, press "2" to adjust the Blue Center Convergence.

Line "3 Pattern" toggles between internal or external cross-hatch pattern.

Centering Adjustments

These adjustments permit you to properly center the picture to the screen. They will not impact geometry or convergence settings, but they will assure that the picture is properly positioned within the screen.

To center the picture, press **"MENU"** to display the Main Menu, and then press **"4"** to access the Centering screen.

When the Centering screen is displayed, use the $\langle/\rangle/\blacktriangle/\blacktriangledown$ directional arrow buttons on the remote until the picture is properly centered both vertically and horizontally on the screen. If there is any overscan it should be equal the top/bottom and left/right edges of the screen.

Blanking Adjustments

Blanking adjusts the video timing signals that determine the outer edge boundaries of the picture at the top/bottom and left and right. This is different from the centering adjustments in that the picture, itself, is not moved on the face of the CRT or the screen. Blanking adjustments may be likened to moving "blinders" across the underlying picture to mask portions of it off.

To adjust blanking, press **"Menu"** to call up the Main Menu, and press **"5"** to access the main Blanking screen.

At the Blanking screen you have the ability to individually select the top, bottom, left or right blanking for adjustment. Press **"1"** to start the adjustment with the Top Blanking.

When the Blanking Top screen is displayed, use the \blacktriangle and \blacktriangledown directional arrow keys to mask off a the top of the picture to the desired place on the screen. When finished, press **"2"** to move to the Bottom Blanking adjustment.

At the Blanking Bottom screen you will also, use the \blacktriangle and \blacktriangledown directional arrow keys, this time to place the outer edge of the active picture area at the bottom of the screen. When finished, press **"3"** to move to the Left Blanking adjustment.

At the Blanking Left screen use the \blacktriangleleft and \blacktriangleright directional arrow keys, to place the outer edge of the active picture area at the left side of the screen. When finished, press **"4"** to move to the Right Blanking adjustment.

At the Blanking Right screen use the \blacktriangleleft and \blacktriangleright directional arrow keys, to place the outer edge of the active picture area at the right side of the screen.

Size Adjustments

The size adjustments are the final picture adjustment. They define the size of the picture within the blanking area previously established. These adjustments have the impact of stretching and/or compressing the picture. To change the picture size, press **"MENU"** to call up the Main Menu, and press **"6"** to access Size control screen. Use the $\langle/\rangle/\blacktriangle/\blacktriangledown$ directional arrow buttons on the remote until the picture is sized to your requirements.

Source Memory Entry

Once all of the adjustments have been made to establish the picture parameters, they may be saved under a particular name so that these settings may be quickly recalled at a later time. This allows you to create different settings for the same input source, for different characteristics such as aspect ratio. It also enables the exact geometry, convergence and blanking to be set for inputs with different scan frequencies when NTSC video inputs are mixed with a doubler, quadrupler, multiplier or various computer outputs such as VGA, SVGA and MAC.

To enter a series of settings to memory, start at the Main Menu by pressing **"MENU"**. Press **"7"** to select **"Source"**, and then **"0"** to enter a **"New Video Source"** to memory.

After pressing these buttons the Set Video Source Name menu will appear at the top of the screen.

You can choose between a Standard Screen or a Wide Screen settings.

If you have a Standard screen with 4:3 aspect ratio, choose the Standard Screen setting by pressing **"1"** for any type of recorded material.

If you have a wide screen with 16:9 aspect ratio:

- For letterbox recordings choose Wide Screen setting by pressing **"2"**
- For anamorphic recordings choose Standard Screen by pressing **"1"**

To name the source, use the ▼ and ▲ arrow buttons on the remote to cycle through the alphanumeric characters. When the first character is set, use the ► button to move to the next position, and set the next character using the ▼ and ▲ arrow buttons. Again, when set, use the ► button to move to the next spot and the ▼ and ▲ arrow buttons to select the character. When the complete input name or designator is on screen, press **"MENU"** to enter the source name and settings to memory. The system will go back to the list of inputs, and you will see that your new setting has been added to the list.

Press **"MENU"** again to return to the Main Menu. Once a group of settings has been entered to the memory it may be recalled at any time by pressing the **"Source"** button on the remote, followed by the number corresponding to the input settings you wish to select.

Adjusting for other inputs

After the first parameters for the first input source and/or aspect ratio have been entered you may wish to preset the settings for additional inputs or aspect ratios. When setting a new input, proceed through each of the steps listed above. In general, you will not need to set the focus or gray scale for a new input, as those settings are independent of scan frequencies.

The memory system of the HDP-500 is organized so that all inputs with the same vertical and horizontal frequencies are grouped together. Further, a maximum of nine separate settings may be established for each scan frequency set.

This means that for each input source (i.e. NTSC chroma decoder, PAL chroma decoder, SECAM chroma decoder, line doubler, line quadrupler, or any single computer input) have up to nine memory settings for different aspect ratios or screen size/blanking areas. A total of 60 separate memories may be entered to the system when all inputs are combined.

When memory settings are entered they are automatically routed to the memory group for the proper scan frequency range.

When finished with each input do not forget to enter it into the memory with a name or designator that may easily be recalled by the end user.

Global Setup Adjustments

In addition to the settings that must be set individually for each input source, the HDP-500 has a number of global settings that address certain aspects of the projector's operation. They should be adjusted to the preferences of the end user before the set is delivered.

Power On Control

This setting permits the HDP-500 to turn on automatically whenever a sync signal is present at the "H/C" input. This means that the will be in a standby mode when no signal is present, and it will instantly display a picture when you turn on the feed device such as a computer, decoder, doubler or quadrupler. When the signal is removed the picture will go dark and the unit will return to a standby mode.

To place the unit in the **"Auto"** mode, press **"MENU"** and then Press **"9"** to go to the Set Up menu. Check to see that the word **"Auto"** is highlighted. If it is, the unit is already in the automatic mode and no further adjustment is required. If the word **"Manual"** is highlighted, press ◀ to change the setting.

To move the unit back into the **"Manual"** mode, press ► until the word **"Manual"** is highlighted. In this condition the projector must be manually turned on with the remote control each time it is used.

Menu Access

Once the unit is delivered to an end user you may wish to lock out most of the major adjustment settings. This will limit the amount of adjustments a user may make, protecting critical convergence and geometry adjustments.

To lock the menus and enable menu access protection press **"2"** while the system is displaying the main -Set Up-Menu.

This will bring the highlight down to item 2, "**Menu Access**", where "**Enabled**" is normally highlighted on the right side of the menu. This indicates that full access to all menus is allowed.

To "**Protect**" the menus press the **➤** button, "**Type the PASSWORD and then press 'ENTER'** ", message will appear at the top of the screen. A single cursor block will also appear at the right side of the "**Menu Access**" text line.

You should now enter the password that will enable access to the menus. It may be up to nine alphanumeric characters, including upper and lower case letters. Use the **▲** and **▼** buttons on the remote

to scroll through the letters, and the **◀** and **▶** buttons to move across the nine letter field once a character is entered. When the password is entered, press the "**ENTER**" button on the remote. The system will ask you to press "**ENTER**" a second time to confirm the password.

Once the password is entered the only menu functions available will be Brightness, Contrast and Center Convergence from the Main Menu. Power On setting, Menu Access, menu Time-out, White Balance and Color Temperature adjustments will also be permitted from the Set Up Menu.

To return to full menu access, press "**MENU**", and then "**9**" to reach the Set Up menu. Press "**2**" to access the Menu Control System. Noting that "**Protected**" will be highlighted, press **◀** to indicate that you wish to enable the menu control system. Once you press **◀**, the message will appear at the top of the screen asking you to enter the password established when the menus were restricted. Enter the password using the **▲** and **▼** buttons on the remote to scroll through the letters, and the **◀** and **▶** buttons to move across the nine letter field once a character is entered. When the password is entered, press the "**ENTER**" button on the remote. The system will ask you to press "**ENTER**" a second time to confirm the password.

Once the menus system is unlocked, the word "**Enabled**" will be highlighted, and the restricted menu selections will once again be available.

NOTE: Remember that passwords for this system are case sensitive. Any password created using upper and lower case letters must be repeated **EXACTLY** as it was originally entered in order to unlock the system.

NOTE: To **overwrite** any previously saved password enter the following code "**A,A,A,A,A**" (Capital Letter **A** followed by a coma, etc...)

Menu Time-out

This selection allows the user to choose between a ten second time-out for the on screen menus and a thirty second time-out. In general, the shorter time-out is preferable for normal use, while the longer time-out is typically selected when making system adjustments and calibrations. To change the Menu Time-out, press "**MENU**" to display the Main Menu and then press "**9**" to go to the Set Up menu.

Press "**3**" to select Menu Time-out, and press the **◀** or **▶** button on the remote, as required, so that the desired option is highlighted. If this is the only action required at this time, simply wait until the menus time-out, press another number key to select a menu item on this screen, or press "**MENU**" to return to the Main Menu.

White Balance Control

This is an automated system that maintains constant gray scale tracking during the life of the CRTs by measuring the beam current in the tubes.

NOTE: When the auto white balance system is selected it is normal to see a red and blue line at the very top of the picture. If the lines are objectionable you may wish to disable this function.

To activate the automatic white balance system, press "**MENU**" to display the Main Menu and then press "**9**" to go to the Set Up menu.

Press "**4**" to select White Balance, and press the **◀** or **▶** button on the remote, as required, so that the desired option is highlighted. If this is the only action required at this time, simply wait until the menus time-out, press another number key to select a menu item on this screen, or press "**MENU**" to return to the Main Menu

Color Temperature Adjustment: Many users consider color temperature to be one of the most important aspects of video display operation. To accommodate the wide variety of requirements for color temperature, the HDP-500 offers three factory preset color temperature settings, as well as a user adjustable setting.

- **High:** This setting is roughly equivalent to a color temperature of 9,300° K . It will deliver the “brightest” picture at the expense of a slightly blue tint to black and white pictures.
- **Normal:** This is the factory default setting, and it is roughly equivalent to a color temperature of 6,500° .
- **Low:** This setting is roughly equivalent to a color temperature of 3,300° K. It will deliver the “warmest” picture at the expense of a slightly reddish tint to black and white pictures.
- **User:** This setting will recall the gray scale settings established during the configuration process.

To change the color temperature setting, press “**MENU**” to display the Main Menu and then press “**9**” to go to the Set Up menu. Press “**5**” to select Color Temperature, and press the ◀ or ▶ button on the remote, as required, so that the desired option is highlighted. If this is the only action required at this time, simply wait until the menus time-out, press another number key to select a menu item on this screen, or press “**MENU**” to return to the Main Menu.

Source Memory Copy, Rename or Delete

This will enable you to copy, rename or delete memory occupied by Source Configuration data.

To copy, rename or delete a source memory, press “**MENU**” to display the Main Menu and then press “**9**” to go to the Set Up menu.

Press “**6**” to select “**Copy, Rename or Delete Video Memory**”. This will display a listing of all Sources entered into the HDP-500’s memory. The list of sources is too long to fit on the screen use the ▲ or ▼ buttons to scroll through the list.

Enter the number corresponding to the source you wish to **COPY**. Press “**7**” followed by “**ENTER**” to “**COPY**”. This will copy the selected source memory data to a new memory position.

Enter the number corresponding to the source you wish to **RENAME**. Press “**8**” followed by “**ENTER**” to “**RENAME**”. To rename the source, use the ▼ and ▲ arrow buttons on the remote to cycle through the alphanumeric characters. When the first character is set, use the ▶ button to move to the next position, and set the next character using the ▼ and ▲ arrow buttons. Again, when set, use the ▶ button to move to the next spot and the ▼ and ▲ arrow buttons to select the character. When the complete input name or designator is on screen, press “**ENTER**” to save the source name and settings to memory. The system will go back to the list of inputs, and you will see that your new setting has been added to the list.

Enter the number corresponding to the source you wish to **DELETE**.

NOTE: Once a source is deleted it is permanently removed from the memory and may not be restored. If you wish to re-enter the information for a specific source after it has been deleted you will have to completely re-establish the parameters for that source and save it again.

Press “**9**” followed by “**ENTER**” to “**DELETE**”. The system will ask you to press “**ENTER**” again to confirm that you wish to delete a source.

Preparation for installation

Once the unit has been configured for operation and all settings established, it may be taken to the customer’s location for final installation. When installing the projector make certain that the projector to screen distance is identical to the distance used in shop testing. If another distance is used the focus, geometry and convergence adjustments will need to be fine tuned.

If the set is to be installed in a ceiling mount configuration, you will need to change the two jumpers inside the set prior to installation.

To change the mounting position from floor to ceiling, or to projection throw direction from front to rear, follow these instructions:

Scan Reversal

By changing the configuration of jumpers on the Main Board and the Convergence Board, it is possible to set the unit for any combination of floor or ceiling operation from front or rear projection. To change the projection direction or picture orientations follow these steps:

CAUTION: ! THE UNIT MUST BE DISCONNECTED FROM AC POWER WHILE THIS ADJUSTMENT IS MADE! IF AC IS CONNECTED THE MICROCONTROLLER WILL NOT SENSE THE SCAN REVERSAL!

1. Turn the unit off by pressing the power button “ **OFF-ON**” on the remote control.
2. Unplug the AC line cord from the unit.

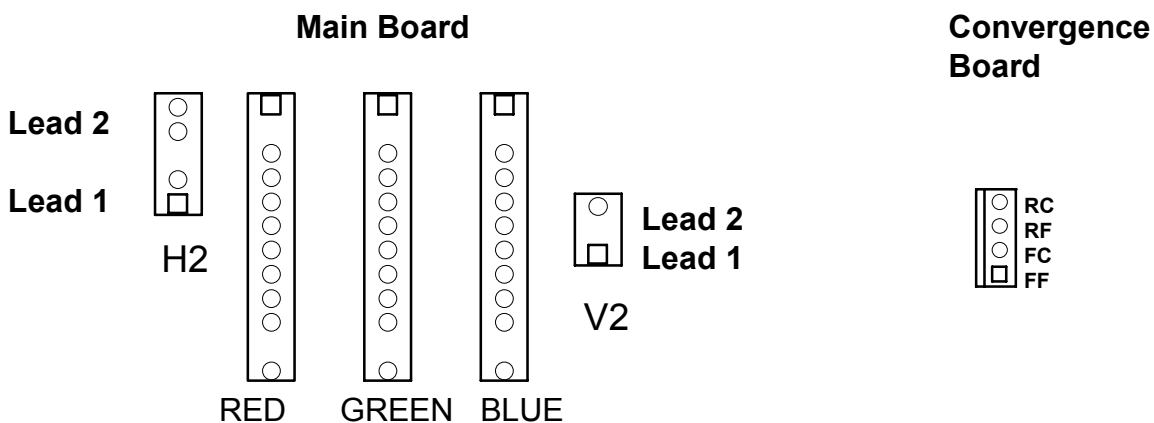
3. Open the top cover by removing the two screws located on the front bezel above either side of the center lens. Remove the top cover by holding it with one hand while pressing in on the metal tab at each side of the cover. Tilt the cover upward and pull it towards you (away from the rear) to remove.
4. Change the H2 and V2 plugs on the Main Board by pulling them straight upwards and then rotate and reseal them as required so that the configuration matches the desired mode of operation.
5. Consult Table #1 for the proper setting for your installation. When reseating the plugs be certain to properly match all pins correctly.

NOTE: Do not make any changes to the Red/Green/Blue plugs that separate the H2 and V2 plugs.

Locate the jumper on the top rear corner of the Convergence Board and change it to desired configuration as shown in Table #1. If no further adjustments are required, replace the cover by sliding the tabs into the rear panel and tilting the cover back into the unit. Press the metal tabs at either end of the cover in so that the cover seats firmly. While holding the cover in place, reinsert and tighten the locking screws on either side of the center lens.

Table 1

Connector Settings	Horizontal		Vertical		Convergence Jumper
	H2 Lead 1	H2 Lead 2	V2 Lead 1	V2 Lead 2	
Front Floor	Blue	Red	Blue	Red	FF
Front Ceiling	Red	Blue	Red	Blue	FC
Rear Floor	Red	Blue	Blue	Red	RF
Rear Ceiling	Blue	Red	Red	Blue	RC



To physically mount the projector to the ceiling or a lift, follow the instructions supplied with the ceiling mount kit.

IMPORTANT NOTE: CEILING MOUNT INSTALLATION SHOULD ONLY BE ATTEMPTED BY TRAINED PERSONNEL USING MOUNTING HARDWARE SUPPLIED BY OR APPROVED BY DWIN ELECTRONICS. THE USE OF UNAPPROVED HARDWARE OR INCORRECT INSTALLATION MAY CREATE A SIGNIFICANT SAFETY HAZARD!

At the installation site, it is always a good idea to touch up all settings to compensate for any minor variations in projection throw distance or the projector to screen angle.

After the projector is installed you should consider whether or not the menu system should be protected. Protecting the menu system will restrict the user's access to the setup menus so that your calibrations will not be disturbed. Some users, however, will insist on the ability to change the internal settings. If the settings are NOT protected, you should be certain to explain the care with which any modifications or corrections should be made.

When the set is installed, you should explain the basic operational controls to the user: power on/off (using either the remote or automatic operation with source sensing), Source selection, brightness, contrast and center convergence adjustment, and the white balance and color temperature controls. You should also explain the functions of the LED indicator on the front panel of the HDP-500 as noted at the beginning of this manual.

Screen Size Change Procedures

The HDP-500 is delivered from the factory with settings for a 100" diagonal screen and a 4:3 aspect ratio. The unit is capable of a wide range of screen sizes, however, from 60" diagonal to 300" diagonal.

If you wish to change the screen size, follow these steps:

Establish the correct projector to screen distance using the software provided by DWIN with the projector. If you do not have access to the software, the projection distance may be set by multiplying the screen's width by 1.25 and adding nine (to reach the distance to the green lens at the front of the projector).

For example, a 120" diagonal screen has a width of 96". Multiply that figure by 1.3, which is 125, and add 9 to reach the correct mounting distance of 134" from the screen to the front of the lens.

Add another nine inches to derive the distance to the center of the mounting bracket. (In the example of the 120" diagonal screen, this would result in a screen to mounting bracket distance of 138".)

Remove the projector top panel cover. First, loosen the screws at either side of the green (center) lens about 1/2" until the cover panel pops up. It is not necessary to completely remove the screws. Next, push in on the metal tabs at either end of the cover and gently pull the cover upward. While holding the cover, pull it forward to remove it from the unit.

With the projector fixed at the correct distance, connect the power and a video source so that the unit may turn on, with the lens caps covering the green lens, establish a mechanical focus by first using the back ring of the lens and then the front ring of the lens.

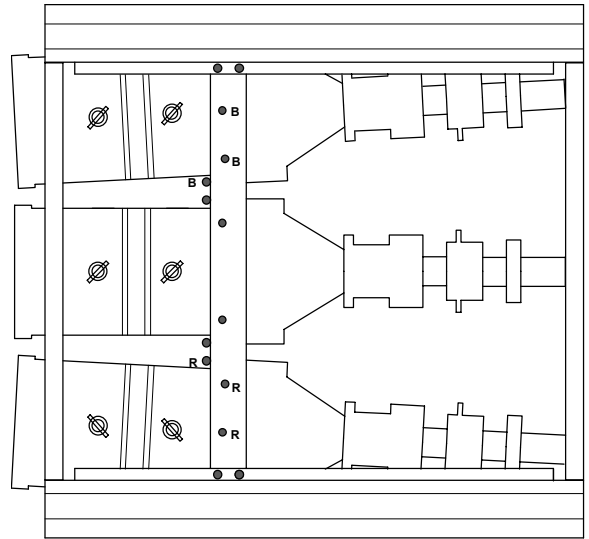
When a rough green focus has been achieved, remove the lens caps and focus the unit more precisely for all three color channels using the instructions outlined on FOCUS section of this manual. Ignore the fact that the test patterns will not overlap at this time.

Mechanical Alignment: This procedure is the same as adjusting the headlight alignment on a car. It mechanically moves the red and blue tube/lens assemblies so that they cover the master green reference channel.

IMPORTANT NOTE: It is important that this step be performed **DO NOT** adjust for alignment using the centering rings on the back of the tubes or depend on the convergence system to make the adjustment. In order to preserve memory space for normal convergence adjustments it is very important that a mechanical alignment be performed when the screen size is changed.

When three channels have been focused, cover the blue lens with the lens cap and use the menu system to call up the Red Convergence pattern. You may reach this menu by pressing “Menu” to reach the Main Menu, “8” to reach the “Adjust” menu, “4” to reach the main “Convergence” menu and finally, “1” to reach the red convergence.

To proceed with the alignment, loosen the two screws at the top of the red tube and the screw on the floor pan of the projector as shown in the diagram on this page.



Refer to the diagram for the exact location of the three screws. The screws for the Red tube are marked on the diagram with an “R” and the screws for the Blue tube are marked with a “B”. You may need to use a flashlight to locate the screw that connects the tube assembly to the floor pan.

IMPORTANT NOTE: Make certain that you locate the base screw closest to the red or blue tube. **DO NOT** loosen the screws that secure the green tube. **LOOSEN THE SCREWS ONLY, DO NOT** remove them.

When the screws have been loosened, use two hands to gently move the red tube/lens assembly so that the red lines precisely cover the green reference at the center of the screen. IT is more important to achieve center coverage here; any variations at the outer edges of the picture may be corrected during setup with the geometry and convergence controls.

Once the best center convergence is achieved, tighten all three screws.

Press “2” to call up the Blue Convergence grid and repeat the procedure outlined above, this time loosening the three screws that secure the blue tube/lens assembly and move the tube to achieve best coverage of the red lines with the blue channel. Be certain to tighten the screws when you are finished.

Press “MENU” three times or “EXIT” to exit the menu system.

The unit is now aligned for the new screen size, and you should proceed with all normal setup instructions detailed in this manual.

Limited Warranty

This warranty protects the owner of HDP-500 for one (1) year from the date of purchase for labor and parts.

Implied warranties of merchant ability and fitness for particular purpose are limited in duration to a period of one year from the date of purchase. DWIN Electronics shall not be liable or in any way responsible for any incidental or consequential damages of any kind. Some states do not allow limitations on how long an implied warranty lasts and/or do not allow the exclusion of incidental or consequential damages, so the above limitations and exclusions may not apply to you. This warranty gives you specific legal rights, and you may also have other rights that vary from state to state.

This warranty covers all defects in material and workmanship when shipped in its original container, with the following specific exceptions. These are:

- damage to or deterioration of any accessory or decorative surface;
- damage caused by improper installation or adjustment;
- damage caused by accident, unreasonable use or neglect;
- damage from failure to follow instructions contained in your operating instructions;
- damage from the performance of repairs by someone not authorized by DWIN Electronics;
- any unit on which the serial number has been effaced, modified, or removed;
- damage occurring during shipment;
- units which have been altered or modified in design, appearance or construction.

This warranty covers only the actual defects within the PRODUCT itself, and DOES NOT cover the costs of installation or removal from a fixed installation, normal set-up or adjustments, claims based on any misrepresentation by the seller, or performance variations resulting from installation related circumstance such as signal quality, AC power or incompatibilities with signal sources or computer software.

DWIN Electronics will, at its option, either repair or replace the defect, or replace the defective product or part thereof at no charge to the owner for parts and labor covered by this warranty. If necessary repairs are not covered this warranty, or if a unit is examined which is not in need of repair, you will be charged for the repairs of the examination.

You must pay shipping charges incurred in getting your product to the factory. We will pay the return shipping charges if the repairs are covered by the warranty. Please save the original shipping cartons. A charge will be made for additional cartons.

If your product needs service, you should notify us at:

DWIN Electronics, Inc.

710 N. Mariposa St.

Burbank, CA 91506

Tel. 818-239-1500

Fax 818-239-1506

ATTENTION: **SERVICE DEPARTMENT**

You'll need to present the original bill of sale to establish the date of purchase.