# INSTALLATION/OPERATION MANUAL


# VX-6000d

THX

**1080p Digital Light Processing™ Projector and Digital High Definition (DHD™) Controller**

**VX-6000d**
**VX-6000d/CineWide™**
**VX-6000d/CineWide with AutoScope™**

RUNCO

THE WORLD'S FINEST HOME THEATER PRODUCTS™

# TWO YEAR LIMITED WARRANTY

For Projectors, Video Processors and Controllers
from Runco International, LLC ("Runco")

Congratulations on your purchase of a Runco video product and welcome to the Runco family! With proper installation, setup and care, you should enjoy many years of unparalleled video performance.

This is a LIMITED WARRANTY as defined in the Magnuson-Moss Warranty Act. Please read it carefully and retain it with your other important documents.

## WHAT IS COVERED UNDER THE TERMS OF THIS LIMITED WARRANTY:

The following Runco product models are covered under this Limited Warranty:
VX-6000d, VX-6000d/CineWide™ and VX-6000d/CineWide with AutoScope™ ("Product" individually and "Products" collectively).

SERVICE LABOR: Runco will pay for service labor at an Authorized Service Center when needed as a result of manufacturing defect for a period of two (2) years from the date of delivery to the initial end user (excluding the lamp).

PARTS (not including the lamp): Runco will provide new or rebuilt replacement parts for the parts that fail due to defects in materials or workmanship for a period of two (2) years from the effective date of delivery to the initial end user. Such replacement parts are then subsequently warranted for the remaining portion (if any) of the original warranty period.

PROJECTOR LAMP: Runco will pay for service labor at an Authorized Service Center when needed as a result of a manufacturing defect for a period of six (6) months or 1000 hours, whichever comes first, from the effective date of delivery to the initial end user. In addition, Runco will provide a new or rebuilt replacement lamp for the lamp that fails due to defects in materials or workmanship for a period of six (6) months or 1000 hours, whichever comes first, from the effective date of delivery to the initial end user. Such replacement parts are then subsequently warranted for the remaining portion (if any) of the original warranty period.

## WHAT IS NOT COVERED UNDER THE TERMS OF THIS LIMITED WARRANTY:

This Limited Warranty only covers failure due to defects in materials and workmanship that occur during normal use and does not cover normal wear and tear nor any Product on which the serial number has been defaced, modified, or removed. This Limited Warranty does not cover: cabinets or any appearance items; failure resulting from accident, misuse, abuse, neglect, mishandling, misapplication, or faulty or improper installation or setup adjustments; improper maintenance; alteration; improper use of any input signal; damage due to lightning or power line surges, spikes and brownouts; damage that occurs during shipping or transit; damage that is attributed to acts of God; customer caused defects; or rental costs incurred due to Product failure. In the case of remote control units, damage resulting from leaking, old, damaged or improper batteries is also excluded from coverage under this Limited Warranty.

CAUTION: THIS LIMITED WARRANTY ONLY COVERS RUNCO PRODUCTS PURCHASED FROM AUTHORIZED RUNCO DEALERS. ALL OTHER PRODUCTS ARE SPECIFICALLY EXCLUDED FROM COVERAGE UNDER THIS WARRANTY. MOREOVER, DAMAGE RESULTING DIRECTLY OR INDIRECTLY FROM IMPROPER INSTALLATION OR SETUP IS SPECIFICALLY EXCLUDED FROM COVERAGE UNDER THIS LIMITED WARRANTY. IT IS IMPERATIVE THAT INSTALLATION AND SETUP WORK BE PERFORMED ONLY BY AN AUTHORIZED RUNCO DEALER TO PROTECT YOUR RIGHTS UNDER THIS WARRANTY. THIS WILL ALSO ENSURE THAT YOU ENJOY THE FINE PERFORMANCE OF WHICH YOUR RUNCO PRODUCT IS CAPABLE WHEN INSTALLED AND CALIBRATED BY AN AUTHORIZED RUNCO DEALER.

## RIGHTS, LIMITS AND EXCLUSIONS:

THE FOREGOING DESCRIBED WARRANTIES ARE THE ONLY WARRANTIES THAT APPLY TO THE PRODUCTS. RUNCO MAKES NO OTHER WARRANTY OR REPRESENTATION AND HEREBY DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. RUNCO'S LIABILITY RELATED TO THE PRODUCT IS LIMITED TO THE COST OF THE APPLICABLE REMEDY AS NOTED ABOVE. IN NO EVENT SHALL RUNCO BE LIABLE FOR:

- DAMAGE TO OTHER PROPERTY CAUSED BY ANY DEFECTS IN THE PRODUCT, DAMAGES BASED UPON INCONVENIENCE, LOSS OF USE OF THE PRODUCT, LOSS OF TIME, LOSS OF PROFITS, LOSS OF BUSINESS OPPORTUNITY, LOSS OF GOODWILL, INTERFERENCE WITH BUSINESS RELATIONSHIPS, OR OTHER COMMERCIAL LOSS, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGES;
- ANY OTHER DAMAGES, WHETHER INCIDENTAL, CONSEQUENTIAL OR OTHERWISE;
- ANY CLAIM AGAINST THE CUSTOMER BY ANY OTHER PARTY; OR
- ANY VERBAL WARRANTY ASSURANCES MADE BY A RUNCO EMPLOYEE OR A RUNCO AUTHORIZED DEALER THAT CONFLICTS WITH OR ENHANCES THE WRITTEN WARRANTY INCLUDED HEREIN.

## EFFECTIVE WARRANTY DATE:

This Limited Warranty begins on the date of delivery to the end user. For your convenience, keep the original bill of sale as evidence of the purchase date.

## CONTACT AN AUTHORIZED SERVICE CENTER TO OBTAIN SERVICE:

Repairs made under the terms of this Limited Warranty covering your VX-6000d Product will be performed at the location of the Product, during usual working hours, provided that the location of the Product is within normal operating distance from an Authorized Runco Service Center. In some instances it may be necessary for the Product to be returned to the Runco factory for repairs. If, solely in Runco's judgment, location of Product to be repaired is beyond normal operating distance of the closest Authorized Runco Service Center, or the repair requires the unit be returned to the Runco factory, it is the owner's responsibility to arrange for shipment of the Product for repair. These arrangements must be made through the selling Runco Dealer. If this is not possible, contact Runco directly for a Return Authorization number and shipping instructions. Runco will return Product with transportation prepaid in the United States, unless no Product defect is discovered. In that instance, shipping costs will be the responsibility of the Product owner.

## COPYRIGHT AND TRADEMARKS:



Runco Products are manufactured under one or more of the following patents: US. Patent 6755540 and Other Patents Pending.

## ADDITIONAL INFORMATION:

To locate the name and address of the nearest Authorized Runco Service Center, or for additional information about this Limited Warranty, please call or write:

**RUNCO INTERNATIONAL, LLC**

**1195 NW Compton Drive**
**Beaverton, OR 97006-1992**
**Ph: (503) 748-5799**
**Fax: (503) 748-8161**
**Toll Free: (800) 23RUNCO (800-237-8626)**

# PRODUCT INFORMATION
# RETAIN FOR YOUR RECORDS

_____ _____

Model Purchased Date

_____

Serial Number

_____

Runco Authorized Dealer Name

_____

Address

_____ _____ _____

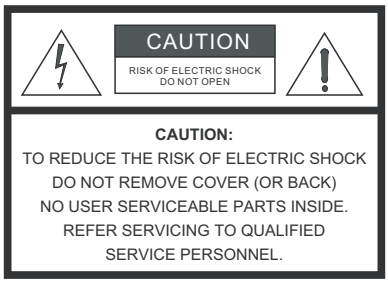
City State/Province Postal Code

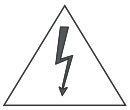
_____ _____

Phone Fax

# Important Safety Instructions

Thank you for your purchase of this quality Runco video product! It has been designed to provide you with the quality of video that is expected in a home theater. For the best performance, please read this manual carefully as it is your guide through the menus and operation.



WARNING
This symbol is intended to alert the user to the presence of uninsulated “dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock.

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with a dry cloth.
7. Do not block any of the ventilation openings. Install in accordance with the manufacturer’s instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. When the provided plug does not fit into your outlet, consult an electrician for the replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles and the point where they exit from the apparatus.
11. Only use the attachments/accessories specified by the manufacturer.
12. Use only with a cart, stand, tripod, bracket or table specified by the manufacturer or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus to avoid injury from tip-over.

13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. The +12V trigger only outputs 12Vdc signal for triggering. Do not connect to any other power input or output. This could cause damage to this unit.
16. Keep the packing material in case the equipment should ever need to be shipped.
17. The lamp becomes extremely hot during operation. Allow the projector to cool down for approximately 45 minutes prior to removing the lamp assembly for replacement.
18. Do not operate lamps beyond the rated lamp life. Excessive operation of lamps beyond rated life could cause them to explode in rare occasions.

19. Never look directly into the lens when the lamp is on.

# Compliance Information

## DECLARATION OF CONFORMITY:

Manufacturer's Name: Runco International, LLC

Manufacturer's Address: 1195 NW Compton Drive, Beaverton, OR 97006-1992

hereby declares that the Products' Model Numbers:

VX-6000d, VX-6000d/CineWide™ and VX-6000d/CineWide with AutoScope™

conform with the provisions of:

Council Directive 2004/108/EC on Electromagnetic Compatibility;

EN 55022 "Limits and methods of measurements of radio interference characteristics of information technology equipment" 1998;

EN 55024 "Limits and methods of measurements of immunity characteristics of information technology equipment" 1998;

Including:

- EN 61000-4-2 "Electromagnetic compatibility (EMC) Part 4: Testing and measurement techniques Section 2: Electrostatic discharge immunity test"
- EN 61000-4-3 "Electromagnetic compatibility (EMC) Part 4: Testing and measurement techniques Section 3: Radiated, Radio-Frequency, Electromagnetic Field Immunity Test"
- EN 61000-4-4 "Electromagnetic compatibility (EMC) Part 4: Testing and measurement techniques Section 4: Electrical fast transient/burst immunity test"
- EN 61000-4-5 "Electromagnetic compatibility (EMC) Part 4: Testing and measurement techniques Section 5: Surge immunity test"
- EN 61000-4-6 "Electromagnetic compatibility (EMC) Part 4: Testing and measurement techniques Section 6: Conducted disturbances induced by radio-frequency fields immunity test"
- EN 61000-4-8 "Electromagnetic compatibility (EMC) Part 4: Testing and measurement techniques Section 8: Conducted disturbances induced by power frequency magnetic fields immunity test"
- EN 61000-4-11 "Electromagnetic compatibility (EMC) Part 4: Testing and measurement techniques Section 11: Voltage dips, short interruptions and voltage variations immunity tests"

And:

- EN 61000-3-2 "Electromagnetic compatibility (EMC) Part 3, Section 2: Limits for harmonic current emissions (equipment input current up to and including 16 A per phase)" 2000;
- EN 61000-3-3 "Electromagnetic compatibility (EMC) Part 3, Section 3: Limitations of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current up to and including 16 A and not subject to conditional connection" 1995;

Council Directive 2006/95/EC and amended by M1 and C1 on Low Voltage Equipment Safety;

EN 60950 "Safety of information technology equipment, including electrical business equipment"

The Technical Construction file required by this Directive is maintained at the corporate headquarters of Runco International, LLC, located at 1195 NW Compton Drive, Beaverton, OR 97006-1992.

Date of Declaration: April 2008

## FCC PART 15:

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. These 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 communications. However, there is no guarantee that 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.

## INDUSTRY CANADA (ICES-003):

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

## PRODUCT DISPOSAL:

The Product contains small amounts of tin, lead and/or mercury. Disposal of these materials may be regulated due to environmental considerations.

## IMPORTANT RECYCLE INSTRUCTIONS


Lamp(s) inside this product contain mercury. This product may contain other electronic waste that can be hazardous if not disposed of properly. Recycle or dispose in accordance with local, state, or federal Laws.

For more information, contact the Electronic Industries Alliance at WWW.EIAE.ORG.

For lamp specific disposal information check WWW.LAMPRECYCLE.ORG.

## DISPOSAL OF OLD ELECTRICAL AND ELECTRONIC EQUIPMENT (Applicable throughout the European Union and other European countries with separate collection programs)

This symbol found on your product or on its packaging, indicates that this product should not be treated as household waste when you wish to dispose of it. Instead, it should be handed over to an applicable collection point for the recycling of electrical and electronic equipment. By ensuring this product is disposed of correctly, you will help prevent potential negative consequences to the environment and human health, which could otherwise be caused by inappropriate disposal of this product. The recycling of materials will help to conserve natural resources. This symbol is only valid in the European Union. If you wish to discard this product, please contact your local authorities or dealer and ask for the correct method of disposal.

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# 1. Introduction

## 1.1 About This Manual

This Owner's Manual describes how to install, set up and operate the Runco Video Extreme™ VX-6000d DLP™ Projector and DHD Controller. Throughout this manual, the Runco VX-6000d DLP Projector and DHD Controller are referred to collectively as the "VX-6000d."

### ➤ *Target Audience*

Runco has prepared this manual to help home theater installers and end users get the most out of the VX-6000d.

Runco has made every effort to ensure that this manual is accurate as of the date it was printed. However, because of ongoing product improvements and customer feedback, it may require updating from time to time. You can always find the latest version of this and other Runco product manuals on-line, at www.runco.com.

### ➤ *If You Have Comments About This Manual...*

Runco welcomes your comments about this manual. Send them to techpub@runco.com.

### ➤ *Textual and Graphic Conventions*

**Text Conventions:** The following conventions are used in this manual, in order to clarify the information and instructions provided:

- Remote and built-in keypad button identifiers are set in upper-case bold type; for example, "Press **EXIT** to return to the previous menu."
- Computer input (commands you type) and output (responses that appear on-screen) is shown in monospace (fixed-width) type; for example: "To change the aspect ratio to Letterbox, type `LETTERBOX` **`<Enter>`**."
- All keys with functional names are initial-capped, set in bold type and enclosed in angle brackets. These keys are the following: **`<Enter>`**, **`<Spacebar>`**, **`<Control>`**, **`<Esc>`** and **`<Tab>`**.
- **`<Enter>`** indicates that you may press either the RETURN or ENTER key on your keyboard if it has both keys.

In addition to these conventions, underlining, boldface and/or italics are occasionally used to highlight important information, as in this example:

***Note***

*A carriage return **must** be used after each command or string.*

**Graphic Conventions:** These symbols appear in numerous places throughout the manual, to emphasize points that you must keep in mind to avoid problems with your equipment or injury:

***Tip*** — *TIPS highlight time-saving short cuts and helpful guidelines for using certain features.*

***Note*** — *NOTES emphasize text with unusual importance or special significance. They also provide supplemental information.*

***Caution*** — *CAUTIONS alert users that a given action or omitted action can degrade performance or cause a malfunction.*

***WARNING*** — *WARNINGS appear when a given action or omitted action can result in damage to the equipment, or possible non-fatal injury to the user.*

***DANGER!*** — *DANGER appears when a given action can cause severe injury or death.*

## 1.2 Using This Manual

Use the following table to locate the specific information you need in this manual.

| If you need... | ... Turn to page: |
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| Information about obtaining service | iv |
| General information about the VX-6000d DLP Projector and DHD Controller | 3 |
| Installation instructions | 19 |
| First-time configuration instructions | 43 |
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## 1.3 Description, Features and Benefits

The Runco Video Extreme™ VX-6000d follows in the footsteps of its renowned predecessor, the VX-5000d by offering extraordinary performance, state of the art optics, impressive custom installation flexibility and today's most advanced DLP technology with 1920 x 1080 SuperOnyx™ resolution.

Its performance is so extraordinary, in fact, that the VX-6000d has earned its place in our exclusive, Video Xtreme™ family of products — our top of the line and the world's first video products to earn prestigious THX® certification.

The VX-6000d incorporates Runco's exclusive Enhanced GEN 3™ engineering advancements to make more efficient use of optical light engine design. This results in greater light output and dramatically increases contrast ratio.

Among the advances Runco has developed are a sophisticated color balancing system and Reflectance Volume Regulation™ (RVR™), which provides the perfect balance of black and white levels. These engineering achievements are combined with lens choices featuring world-class optics and lens shift versatility. The resulting images are superb. In fact, the VX-6000d can easily surpass the black levels of film projectors!

The VX-6000d is supplied with Runco's next-generation, Digital High Definition (DHD™) Controller, featuring advanced Vivix II™ video processing and superb scaling. In addition, Runco's multiple aspect ratio control includes its unique VirtualWide™ mode for viewing standard video formats in widescreen without loss of image quality. The DHD provides for a pure digital signal path from input to light engine.

The VX-6000d produces an impressive 1750 ANSI lumens of light output (CSMS light output of 17.3 to 29.8 ft-Lamberts).

For uncompromising widescreen reproduction of movies originally filmed in the "scope" (2.35:1) format, the VX-6000d can be equipped with Runco's patent-pending CineWide™ technology, a combination of software, electronics and high-quality anamorphic optics. CineWide maintains constant vertical height on the screen just as in a movie theater. When a viewer transitions from 1.78:1 (16:9) program material to 2.35:1, the image simply gets wider while full height is maintained. Also available with the VX-6000d is CineWide with AutoScope™, an enhanced, remote-controlled motorized version of CineWide.

***Note***

*CineWide requires the use of a 2.35:1 or similar aspect ratio superwide format screen.*

Discrete IR and RS-232 control make custom installation seamless, while discrete source and aspect ratio selection accommodate any automation control system.

### Key Features and Benefits ➤

The VX-6000d offers these key features and benefits:

- Runco-engineered, Enhanced GEN 3 Technology™ with RVR
- Native Resolution: 1920 x 1080 (16:9 Native Aspect Ratio)
- Two HDMI Inputs (on DHD Controller) with High-bandwidth Digital Content Protection (HDCP)
- HDTV Compatible
- CinOptx™ *Telesto* lens options for stunning sharpness and throw distance flexibility

### Parts List ➤

Your VX-6000d is shipped with the following items. If any items are missing or damaged, please contact your Runco dealer or Runco Customer Service at (800) 23-RUNCO.

- VX-6000d DLP Projector and DHD Controller
- Setup Remote Control Unit and four (4), AAA-size batteries (for adjusting lens zoom and focus)
- DHD Controller Remote Control Unit and two (2), AAA-size batteries
- AC Power Cords (2)
- RJ-11 Telephone Cable, 50 feet (15.24 meters)
- 3/16” Hex Wrench (for adjusting lens position)
- Rack-mount hardware for the DHD Controller
- Runco VX-6000d Installation/Operation Manual (this document)

**Optional Accessories:**

- CineWide™ technology (fixed, secondary anamorphic lens)
- CineWide™ with AutoScope™ system (secondary anamorphic lens and motorized mount)
- Ceiling mount kit (part number 956-0074-00)

# 2. Controls and Functions

## 2.1 VX-6000d at a Glance

Figure 2-1 shows the key VX-6000d components.

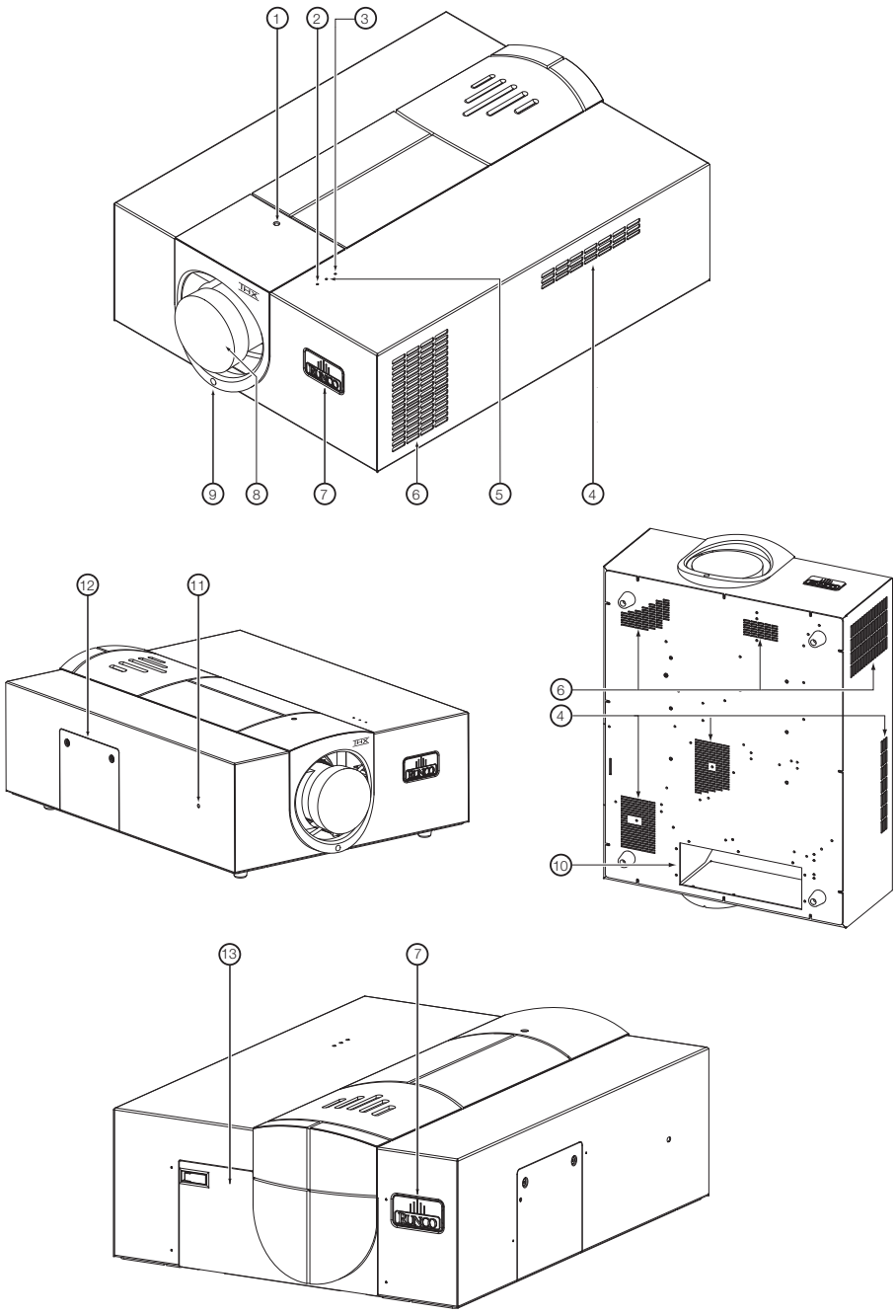
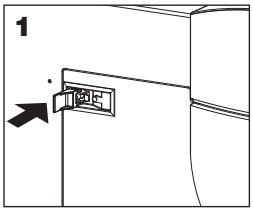
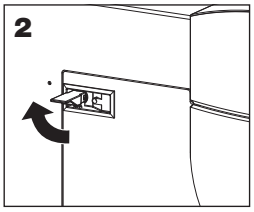


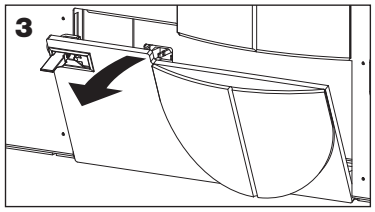

**Figure 2-1. VX-6000d Front/Top/Side/Bottom/Rear View**

1. **VERTICAL LENS SHIFT**
   Using a 3/16” hex wrench, turn this to move the lens up or down.
2. **POWER LED**
   Lights red to indicate that the projector is in standby; lights blue to indicate normal operation.
3. **TEMP LED**
   Lights red to indicate that the projector has overheated and shut down.
4. **INTAKE VENTS**
   Cool air enters the projector through these vents. To prevent overheating, ensure that these vents are never blocked.
5. **LAMP LED**
   Lights blue to indicate normal lamp operation; off when the lamp has failed or the projector is off.
6. **EXHAUST VENTS**
   Hot air exits the projector through these vents. This air can be quite hot. Ensure that there are no heat-sensitive objects near them and that they are never blocked.
7. **RUNCO LOGO / LENS CONTROL INFRARED (IR) RECEIVER**
   During initial installation, rotate the logo plate one quarter-turn (90 degrees) to uncover the lens control IR receiver. This enables you to use the motorized focus and zoom (image size) controls.

   When you have finished adjusting the zoom and focus, you can rotate the logo to match the projector orientation: inverted (ceiling-mounted) or upright. To rotate the logo, grip it at the sides, pull it away from the projector and turn it.
8. **LENS**
9. **JEWELRY RETAINING SCREW**
   Loosen this screw to remove the front jewelry, should you ever need to replace the lens.
10. **CABLE OPENING**
    Pass cables through this opening.
11. **HORIZONTAL LENS SHIFT**
    Using a 3/16” hex wrench, turn this to move the lens left or right.
12. **LAMP COVER**
    Remove this cover to access the lamp compartment.
13. **REAR PANEL ACCESS DOOR**
    Open this door to access the rear-panel connectors and built-in keypad. To open the door, push on the left side of the lever and rotate it 90 degrees clockwise. Then, pull the lever toward you and down slightly.







## 2.2 VX-6000d Rear Panel

Figure 2-2 shows the VX-6000d rear connector panel.

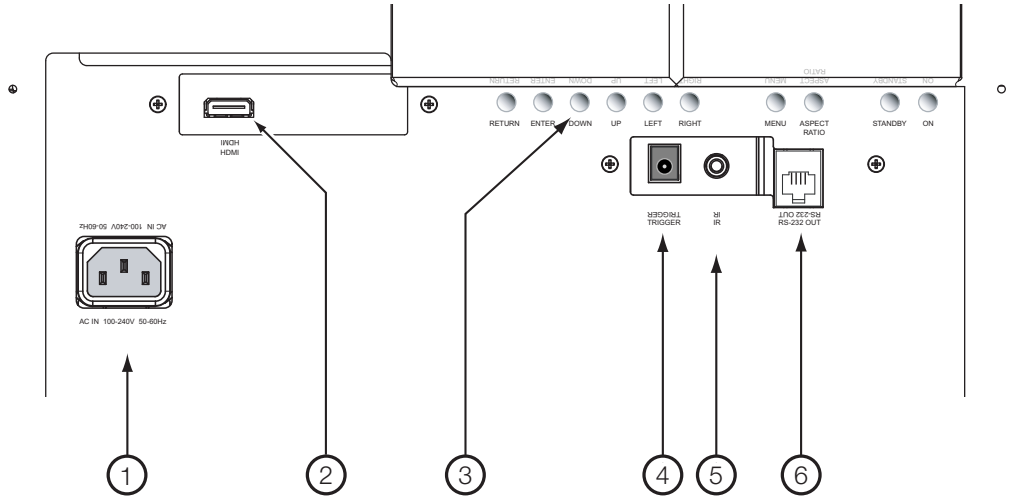



**Figure 2-2. VX-6000d Rear Panel**

1. **POWER INPUT (100 to 240 VAC)**
   Connect the VX-6000d to power here.
2. **HDMI INPUT**
   An HDCP-compliant, digital video input for connecting the HDMI output from the DHD Controller.
3. **BUILT-IN KEYPAD**
   Used to navigate the VX-6000d on-screen menus. Refer to ***VX-6000d Built-In Keypad*** on page 16 for more information.
4. **12-VOLT (200 mA) TRIGGER OUTPUT (cylindrical, DC power supply-type jack)**
   Connection for a retractable screen, screen masking or other, 12-volt trigger-activated equipment. Outputs +12 volts/200 mA when the projector is turned on.
5. **WIRED IR (3.5-mm, mini phono jack)**
   Not used. To use an external infrared receiver or wired remote control with this projector, connect it to the IR input on the DHD Controller (see Figure 2-4).
6. **RS-232C INPUT (RJ-11 female connector)**
   Connect the RS-232 output from the DHD Controller here, using the provided communication cable.

## 2.3 DHD Controller Front Panel

Figure 2-3 shows the controls and indicators on the DHD Controller front panel; the paragraphs that follow describe them.

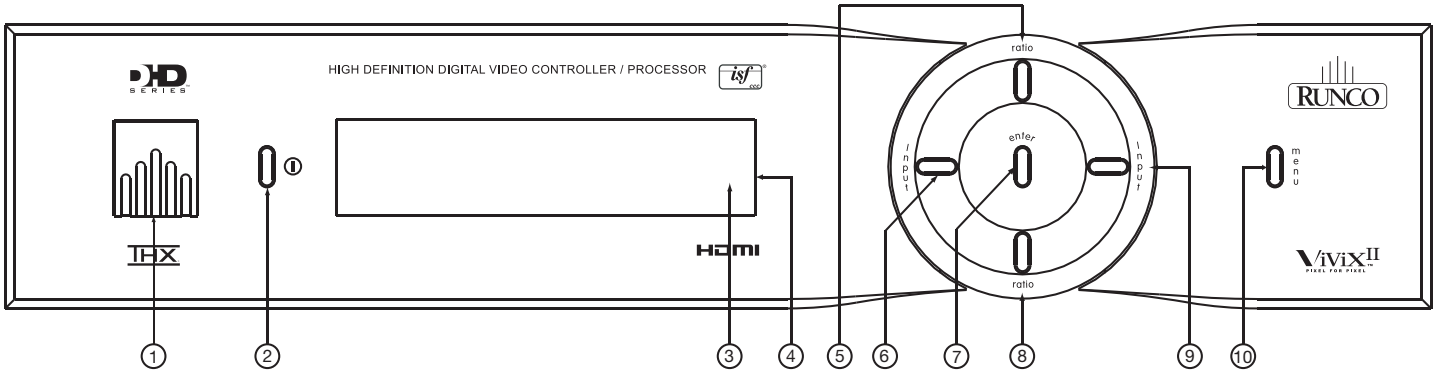



**Figure 2-3. DHD Controller Front Panel**

1. **RUNCO ICON**
   Lights red to indicate that the DHD Controller is in standby mode; lights blue to indicate that the unit is on.
2. **POWER BUTTON**
   Press once to toggle from standby mode to on mode. Press it again to return to standby mode. For a discrete on or off command, you can use the direct access buttons on the remote control.
3. **IR SENSOR**
   Receives IR commands from the remote.
4. **VACUUM FLUORESCENT DISPLAY**
   Can be used instead of the On-Screen Display (OSD). Displays currently-selected menu or – if no menu is selected – the current source, signal format (NTSC or PAL), input resolution and aspect ratio.
5. **UP BUTTON**
   Used to direct select aspect ratios or move the menu cursor up in the OSD. When no menu is present on-screen, the **UP** button toggles through aspect ratios in the following order:
   16:9 - 4:3 - Letterbox - VirtualWide - Cinema - Virtual Cinema

   ***Note*** *Virtual Cinema is available only on the VX-6000d/CineWide and only on the analog inputs (HD/RGB, SD Component, Composite and S-Video). For more information about aspect ratios, refer to Table 4-1.*
6. **LEFT BUTTON**
   Used to direct select inputs or move the menu cursor left in the OSD. When no menu is present on-screen, the **LEFT** button toggles through the different sources, in this order:
   HDMI 2 - HDMI 1 - HD/RGB 2 - HD/RGB1 - Component SD - S-Video 2 - S-Video 1 - Composite

7. **ENTER BUTTON**
   Press **ENTER** to select a highlighted menu item.

8. **DOWN BUTTON**
   Used to direct select aspect ratios or move the menu cursor down in the OSD. When no menu is present on-screen, this button toggles through the different aspect ratios, in this order:
   Virtual Cinema - Cinema - VirtualWide - Letterbox - 4:3 - 16:9

9. **RIGHT BUTTON**
   Used to direct select inputs or move the menu cursor right in the OSD. When no menu is present on-screen, the **RIGHT** button toggles through the different sources, in this order:
   Composite - S-Video 1 - S-Video 2 - Component SD - HD/RGB 1 - HD/RGB 2 - HDMI 1 - HDMI 2

***Note***

*The "direct select" function of the **UP**, **DOWN**, **LEFT** and **RIGHT** buttons is available only on the analog inputs (HD/RGB, SD Component, Composite and S-Video).*

10. **MENU BUTTON**
    Press this button to access the OSD controls, or to exit the current menu and return to the previous one.

## 2.4 DHD Controller Rear Panel

Figure 2-4 shows the rear connector panel on the DHD Controller.

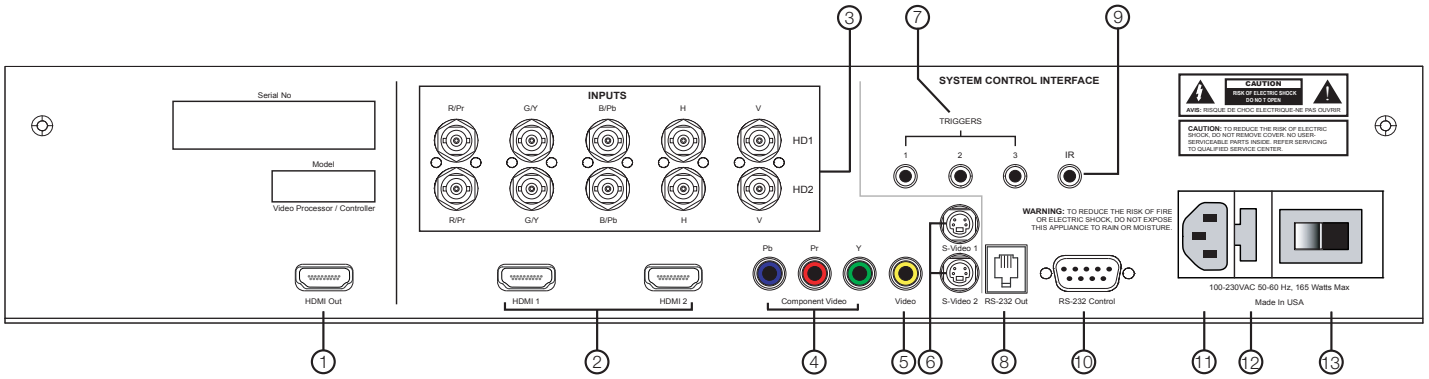



**Figure 2-4. DHD Controller Rear Panel**

***Outputs*** ➤

1. **HDMI OUT**
   Connect this to the **HDMI** Input on the VX-6000d (see Figure 2-2).

***Inputs*** ➤

2. **HDMI 1 / HDMI 2 (Digital)**
   Two, HDCP-compliant digital video inputs for connecting a DVD player or HD tuner with a DVI or HDMI output.
3. **HD1 / HD2 (5 x Analog BNCs)**
   Two inputs (five BNCs per input) for connecting either RGB or component high-definition television signals. The DHD Controller automatically detects the signal format: RGB(HV) or YPrPb, 480p, 720p, 480i, 576i or 1080i.
4. **COMPONENT VIDEO (RCA connectors)**
   Standard Definition (480i/576i) Component (YPrPb) input. This is the input for component video from sources such as DVD players.

***Tip***

*For best results, do not run your DVD player in progressive mode.*

5. **COMPOSITE VIDEO INPUT**
   Standard composite video input for connecting a VCR, laser disc player or other composite video source.
6. **S-VIDEO 1 / S-VIDEO 2**
   Two, standard S-Video inputs for connecting a DVD player, satellite receiver or Super VHS (S-VHS) VCR.
7. **12-VOLT (750 mA) TRIGGER OUTPUTS**
   Connection for up to three (3), 12-volt trigger-controlled devices such as retractable screens or screen masks.
8. **ComLink (RS-232) OUTPUT**
   Connect this to the ComLink (RS-232) input on the projector, using the provided communication cable.
9. **IR**
   Wired input from a wired remote control or infrared receiver. It is a 3.5-mm, mini phono jack, wired as follows:
   Ring = +5V
   Tip = IR Input
   Sleeve = Ground

***Note***

*When an external remote control or infrared receiver is connected to the wired IR input, the IR sensor on the front of the DHD is disabled.*

10. **RS-232 CONTROL PORT**
    A female, 9-pin D-sub connector for interfacing with a PC or home theater automation/control system.
11. **POWER INPUT (100 to 240 VAC)**
    Connect the DHD Controller to power here.
12. **MAIN AC FUSE**
    This is the main AC input fuse (5mm x 20mm, 500 mA, 250V slow-blow).
13. **MAIN POWER SWITCH**
    Disconnects or applies power to the DHD Controller.

## 2.5 VX-6000d Remote Control Units

The VX-6000d ships with two remote control units:

- A standard Runco DHD Controller remote control unit; and
- A universal, “setup” remote control unit that can be used with other home theater equipment.

**Only the setup remote control can be used to perform zoom and focus adjustments.** For this reason, you must use it to complete the initial VX-6000d installation and setup. After you have completed the installation, only the standard DHD Controller remote control is needed to access all projector and controller functions.

***Standard DHD Remote Control*** ➤

Figure 2-5 shows the standard DHD remote control, and the paragraphs that follow describe its functionality.

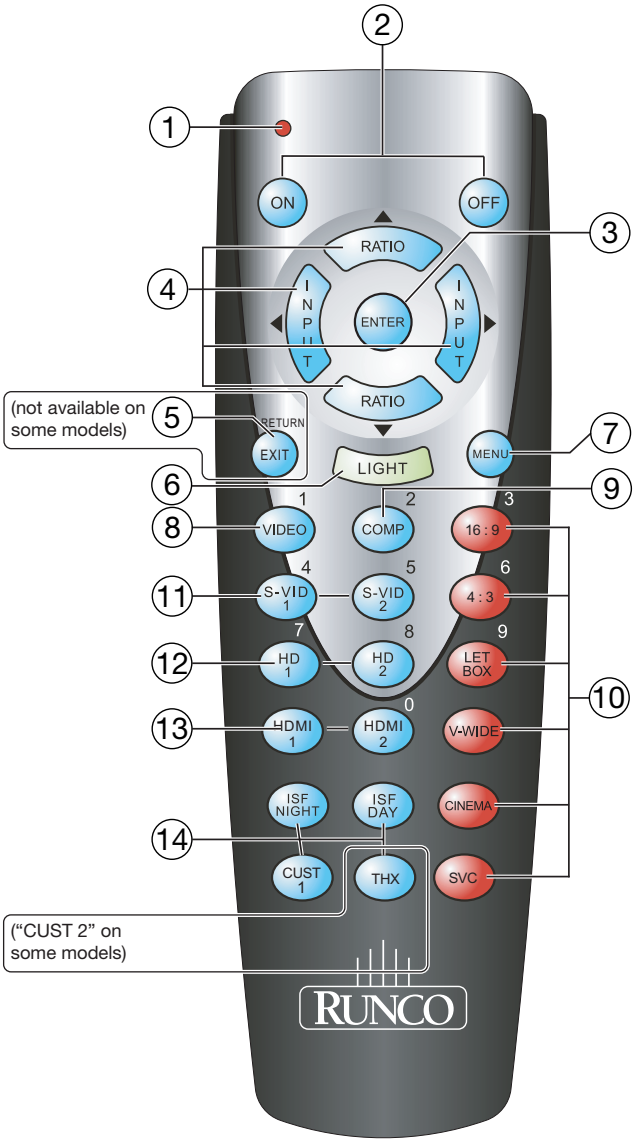



**Figure 2-5. Standard DHD Remote Control**

1. **IR OUTPUT INDICATOR**
   Lights when a button is pressed to indicate that an IR signal is being transmitted.
2. **ON / OFF**
   Press to turn the projector on or off.
3. **ENTER**
   Press to select a highlighted menu item or confirm a changed setting.
4. **Cursor Buttons (▲, ◀, ▼, ▶)**
   Use these buttons to select items or settings, adjust settings or switch display patterns.

   When no menu is present on-screen, the **UP** and **DOWN** buttons toggle through the available aspect ratios, in this order:
   **UP** Button = 16:9 - 4:3 - Letterbox - VirtualWide - Cinema - Virtual Cinema
   **DOWN** Button = Virtual Cinema - Cinema - VirtualWide - Letterbox - 4:3 - 16:9

   ***Note*** *Virtual Cinema is available only on the VX-6000d/CineWide and VX-6000d/CineWide with AutoScope. For more information about aspect ratios, refer to Table 4-1.*

   Likewise, the **LEFT** and **RIGHT** buttons toggle through the different source inputs, in this order:
   **LEFT** Button = HDMI 2 - HDMI 1 - HD/RGB2 - HD/RGB 1 - Component SD - S-Video 2 - S-Video 1 - Composite
   **RIGHT** Button = Composite - S-Video 1 - S-Video 2 - Component SD - HD/RGB 1 - HD/RGB 2 - HDMI 1 - HDMI 2

   ***Note*** *The "direct select" function of the **UP**, **DOWN**, **LEFT** and **RIGHT** buttons is available only on the analog inputs (HD/RGB, SD Component, Composite and S-Video).*
5. **RETURN / EXIT**
   Press this button to exit the current menu or cancel an operation.

   ***Note*** *Not all remote control units have this button. If yours does not, use the **MENU** button (see below) to exit the menu.*
6. **LIGHT**
   Press to illuminate the buttons.
7. **MENU**
   Press this button to show or hide the OSD controls.
8. **VIDEO (1)**
   Press to select Composite video input as the source or to enter the numeric character "1."
9. **COMP (Component) (2)**
   Press to select Component SD (480i/576i) video input as the source or to enter the numeric character "2."

10. **Aspect Ratio Selection Buttons**
    Use the red buttons to select an aspect ratio directly or to enter numeric characters, as follows:

    **16 : 9 (3)**
    For viewing 16:9 DVDs or HDTV programs in their native aspect ratio.

    **4 : 3 (6)**
    Scales the input signal to fit 4:3 display mode in the center of the screen.

    **LETBOX (Letterbox) (9)**
    For viewing LaserDisc movies or non-anamorphic DVDs on a 16:9 screen.

    **V-WIDE (VirtualWide)**
    Enlarges a 4:3 image horizontally in a NON-linear fashion to fit 16:9 full screen display.

    **CINEMA**
    For viewing 2.35:1 source material.

    **SVC (CineWide-equipped projectors only)**
    Selects the Virtual Cinema aspect ratio, used for viewing 16:9 source material on a 2.35:1 screen.

11. **S-VID 1 (4) / S-VID 2 (5) (S-Video)**
    Press to select an S-Video input or to enter the numeric character “4” or “5.”

12. **HD 1 (7) / HD 2 (8)**
    Press to select a HD (RGBHV or YPbPr component) input or to enter the numeric character “7” or “8.”

13. **HDMI 1 / HDMI 2 (0)**
    Press to select a Digital Video input. Press **HDMI2** to enter the numeric character “0.”

14. **Memory Preset Buttons:**

    **ISF NIGHT**
    Press to recall settings for the current input from the “ISF Night” memory preset.

    **ISF DAY**
    Press to recall settings for the current input from the “ISF Day” memory preset.

    **CUST 1**
    Press to recall settings for the current input from the “Custom 1” memory preset.

    **CUST 2**
    Press to recall settings for the current input from the “Custom 2” memory preset.

### ◄ *Setup Remote*

The setup remote control unit furnished with the VX-6000d gives you access to the motorized lens controls (focus and zoom) and can be programmed to control other, non-Runco home theater components. (For detailed programming instructions, refer to the manual provided with the remote control.)

Figure 2-6 shows the setup remote control, and the paragraphs that follow describe its functionality.

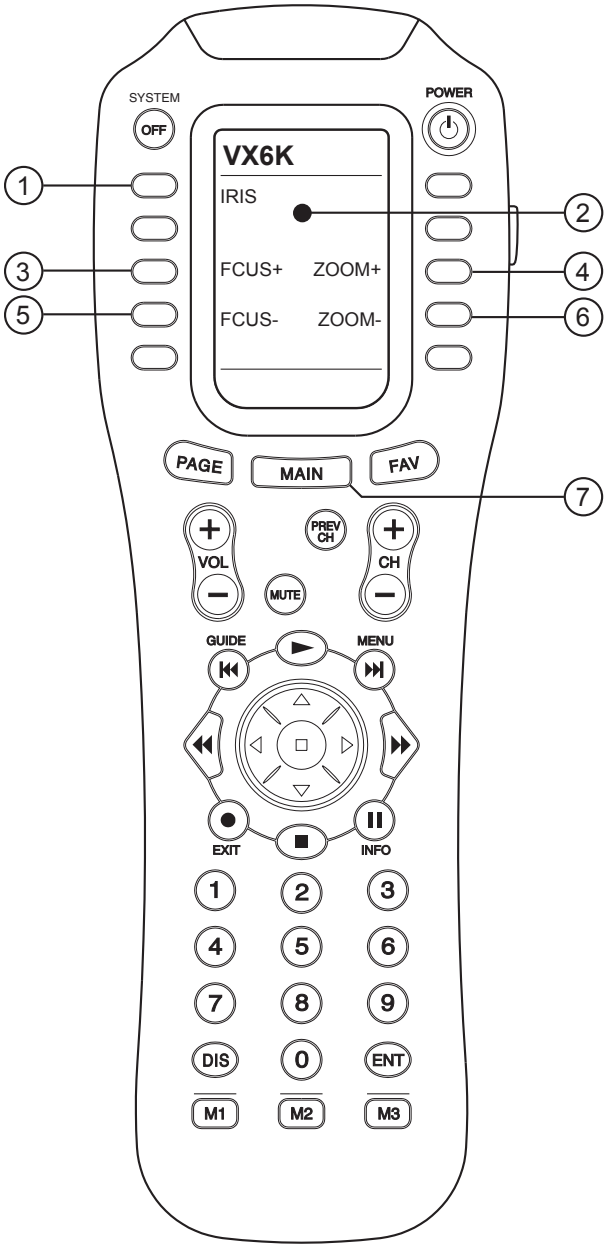



**Figure 2-6. TheaterMaster Remote Control for VX-6000d**

***Setup Remote Control Functions*** ➤

1. **IRIS Button**
   Press repeatedly to change the iris size (small or large).
2. **Liquid Crystal Display**
   Displays currently-selected LCD Menu page.
3. **FCUS+ Button**
   Press and hold to adjust the focus.
4. **ZOOM+ Button**
   Press and hold to zoom in (enlarge the image).
5. **FCUS- Button**
   Press and hold to adjust the focus.
6. **ZOOM- Button**
   Press and hold to zoom out (make the image smaller).
7. **MAIN Button**
   Displays the Main LCD Menu page.

## 2.6 VX-6000d Built-In Keypad

The VX-6000d has a built-in keypad that you can use to access the menu system for working with digital 1080i or 1080p sources. Figure 2-7 shows the VX-6000d built-in keypad; the paragraphs that follow describe its use.

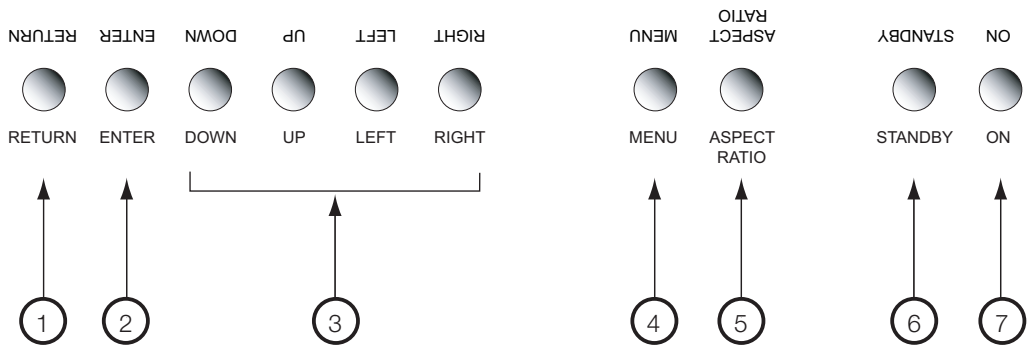



**Figure 2-7. VX-6000d Built-In Keypad**

1. **RETURN**
   Press **RETURN** to exit the current menu or cancel an operation.
2. **ENTER**
   Press **ENTER** to confirm a menu item selection.
3. **DOWN / UP / LEFT / RIGHT**
   Use these buttons to select menu items or adjust settings.
4. **MENU**
   Press **MENU** to display or hide the OSD menus for digital 1080i or 1080p sources.
5. **(not used)**
6. **STANDBY**
   Press **STANDBY** to put the projector into standby mode.
7. **ON**
   Press **ON** to turn the projector on or off.

***Note***

***Only trained service personnel should use the built-in keypad.*** *Almost all projector configuration and operational tasks can be performed using the DHD Controller.*

*It is only necessary to use the built-in keypad if IR signals from the remote control cannot reach the DHD Controller, or for performing service-related tasks such as resetting the lamp hour counter (refer to* ***Lamp Replacement*** *on page 77).*

## Notes:

# 3. Installation

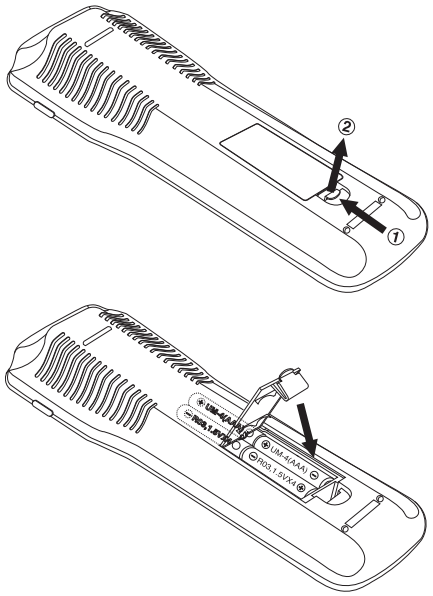
## 3.1 Remote Control

➤ ***Battery Installation***

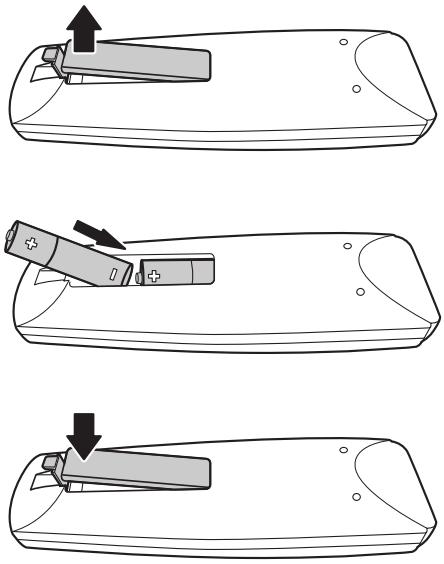
To install batteries in the remote control:

1. Remove the battery cover from the back of the remote control.
2. Insert the batteries included with the remote control. Ensure that the polarities correctly match the ⊕ and ⊖ markings inside the battery compartment.
3. Replace the battery cover.

**Setup Remote**



**Standard DHD Remote**



***Note***

*1. Do not mix an old battery with a new one or different types of batteries.*

*2. If you will not use the remote control for a long time, remove the batteries to avoid damage from battery leakage.*

### Notes on Remote Control Operation ➤

The remote control can be used to control the VX-6000d within the ranges shown in Figure 3-1.

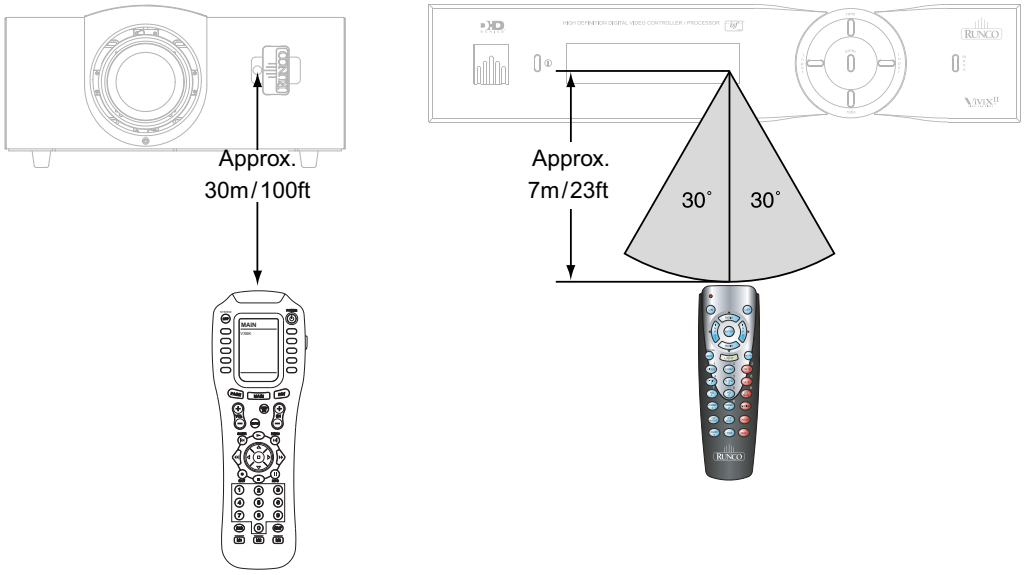



**Figure 3-1. Available Range of the Remote Control**

- Do not drop the remote control or expose it to moisture or high temperature.
- The remote control may malfunction under a fluorescent lamp. If that occurs, move the DHD Controller away from the fluorescent lamp.
- Make sure that there is nothing obstructing the infrared beam between the remote control and the IR receiver on the DHD Controller or projector.

***Note*** *The signal from the remote control can be reflected by walls or other surfaces.*

- If the effective range of the remote control decreases, or it stops working, replace the batteries with new ones.
- Ambient conditions may possibly impede the operation of the remote control. If this happens, point the remote control at the DHD Controller or projector and repeat the operation.

## 3.2 Quick Setup

Table 3-1 gives a quick overview of the VX-6000d installation process. The sections following this one provide detailed instructions.

***Note*** *Installation should be performed by a qualified custom video installation specialist.*

### Table 3-1. Installation Overview

| Step | Procedure | For Details, Refer to page... |
|---|---|---|
| 1 | Choose a location for the projector | 22 |
| 2 | **If installing a VX-6000d/CineWide or VX-6000d/CineWide with AutoScope:** Install AutoScope lens motor or fixed CineWide base plate | 27 |
| 3 | Mount the projector | 32 |
| 4 | Connect the DHD Controller to the projector | 32 |
| 5 | Connect signal sources to the DHD Controller | 34 |
| 6 | Connect external controller to RS-232 port (optional) | 38 |
| 7 | Connect 12-volt trigger outputs to AutoScope lens motor and/or other equipment (optional) | 39 |
| 8 | Connect projector, DHD Controller and lens motor (if present) to AC power and power up | 41 |
| 9 | Primary Lens adjustments: projected image size (zoom), position (shift) and focus | 24, 42 |
| 10 | For rear-screen and/or ceiling-mount installations, select the proper picture orientation | 43 |
| 11 | Install CineWide anamorphic lens (optional) | 44 |
| 12 | CineWide lens adjustments: position, pitch (angle), geometry and focus | 46 |
| 13 | Projector calibration: adjust the following ***for each input***; save settings when finished:<br>• Aspect ratio<br>• Brightness<br>• Contrast<br>• Color level<br>• Tint<br>• Input position | 53 through 76 |

## 3.3 Installation Considerations

Proper installation of your projector will ensure the quality of your display. Whether you are installing a projector temporarily or permanently, you should take the following into account to ensure your projector performs optimally.

***Installation Type*** ➤

Choose the installation type that best suits your needs: front or rear screen, floor mount or inverted mount. Table 3-2 compares these various installation methods.

### Table 3-2. Projector Installation Options

| Advantages | Considerations |
|---|---|
| **Front Screen, Floor Mount Installation** | |
| • Easy to set up<br>• Can be moved or changed quickly<br>• Easy to access | • Shares floor space with audience |
| **Front Screen, Inverted Mount (ceiling) Installation** | |
| • Does not take up audience space<br>• Projector is unobtrusive<br>• Projector cannot be accidentally moved | • Installation is more permanent<br>• Projector access is more difficult |
| **Rear Screen, Floor Mount Installation** | |
| • Projector is completely hidden<br>• Projector is easily accessed<br>• Usually good ambient light rejection | • Requires separate room<br>• Installation cost is usually higher |
| **Rear Screen, Inverted Mount (ceiling) Installation** | |
| • Projector is completely hidden<br>• Usually good ambient light rejection | • Requires separate room<br>• Installation cost is usually higher |
| **Rear Screen, Floor Mount with Mirror** | |
| • Projector is completely hidden<br>• Usually good ambient light rejection<br>• Requires less space behind screen than other rear screen installations | • Requires separate room<br>• Installation cost is usually higher |

***Ambient Light*** ➤

In general, minimize or eliminate light sources directed at the screen. Contrast ratio in your images will be noticeably reduced if light directly strikes the screen, such as when a shaft of light from a window or floodlight falls on the image. Images may then appear washed out and less vibrant.

## ◄ *Throw Distance*

Throw distance is the distance measured from the front of the projector to the screen. This is an important calculation in any projector installation as it determines whether or not you have enough room to install your projector with a desired screen size and if your image will be the right size for your screen.

You can quickly estimate the throw distance by taking the width of the screen and multiplying it by the lens throw ratio; see Figure 3-2. The result of this calculation tells you roughly how far back the projector should be positioned from the screen in order to project a focused image large enough to fill the screen.

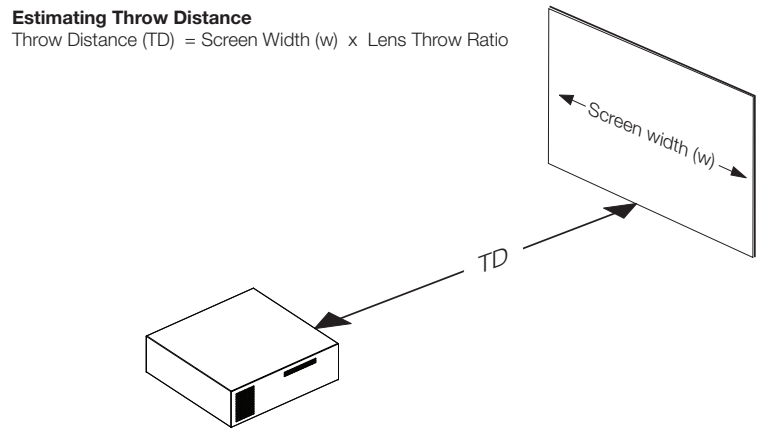



**Figure 3-2. Estimating Throw Distance**

Table 3-3 lists the available lens options for the VX-6000d and their associated throw ratios.

### Table 3-3. VX-6000d Lens Options and Throw Ratios

| Lens Option (Note 2) | Throw Ratio with Primary Lens Only | Throw Range in inches, with 96x54-inch (1.78:1) Screen | | Throw Ratio with Primary Lens and Anamorphic Lens | Throw Range in inches, with 126.9x54-inch (2.35:1) Screen | |
|---|---|---|---|---|---|---|
| | | Minimum | Maximum | | Minimum | Maximum |
| Telesto B | 1.39 - 1.66 | 133.44 | 159.36 | Not Applicable (Note 2) | | |
| Telesto C | 1.70 - 2.27 | 163.20 | 217.92 | 1.60 - 1.74 | 203.04 | 220.81 |
| Telesto D | 2.40 - 4.10 | 230.40 | 393.60 | 1.81 - 3.18 | 229.69 | 403.54 |
| Telesto E | 4.20 - 6.65 | 403.20 | 638.40 | 3.16 - 5.00 | 401.00 | 634.50 |

*Notes:*

*1. Throw distance does not affect image quality, provided these ranges are taken into account.*

*2. Only the Telesto C, D and E lenses can be used with the optional CineWide (secondary anamorphic) lens. Doing so affects the throw distances as shown here.*

### Vertical and Horizontal Position

Proper placement of the projector relative to the screen will yield a rectangular, perfectly-centered image that completely fills the screen.

Ideally, the projector should be positioned perpendicular to the screen and in such a way that the lens center is aligned with either the top or bottom edge of the screen area, and centered horizontally. See Figure 3-3.

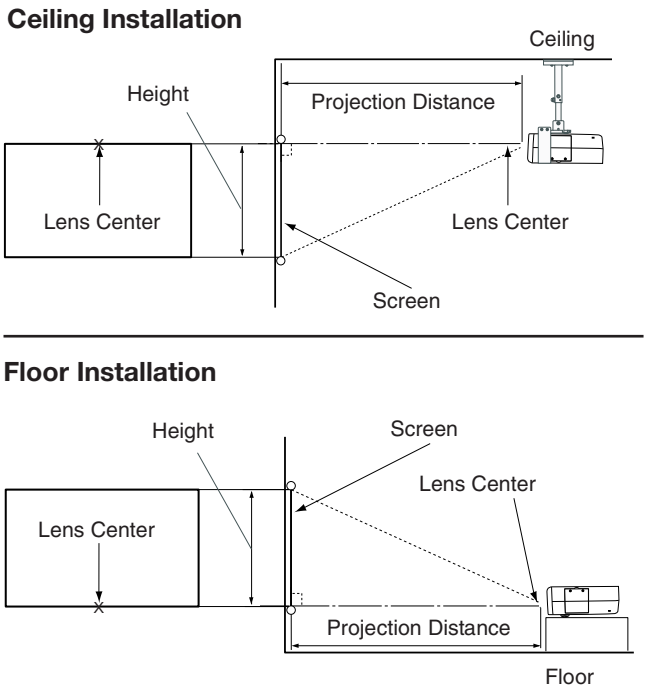
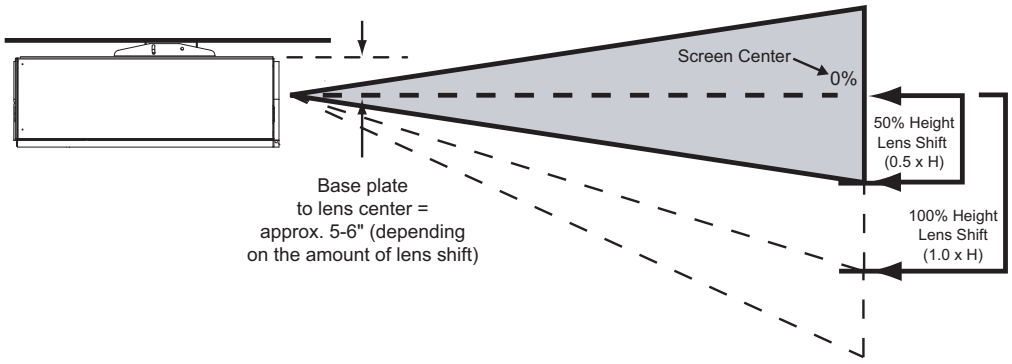



**Figure 3-3. Projector Placement**

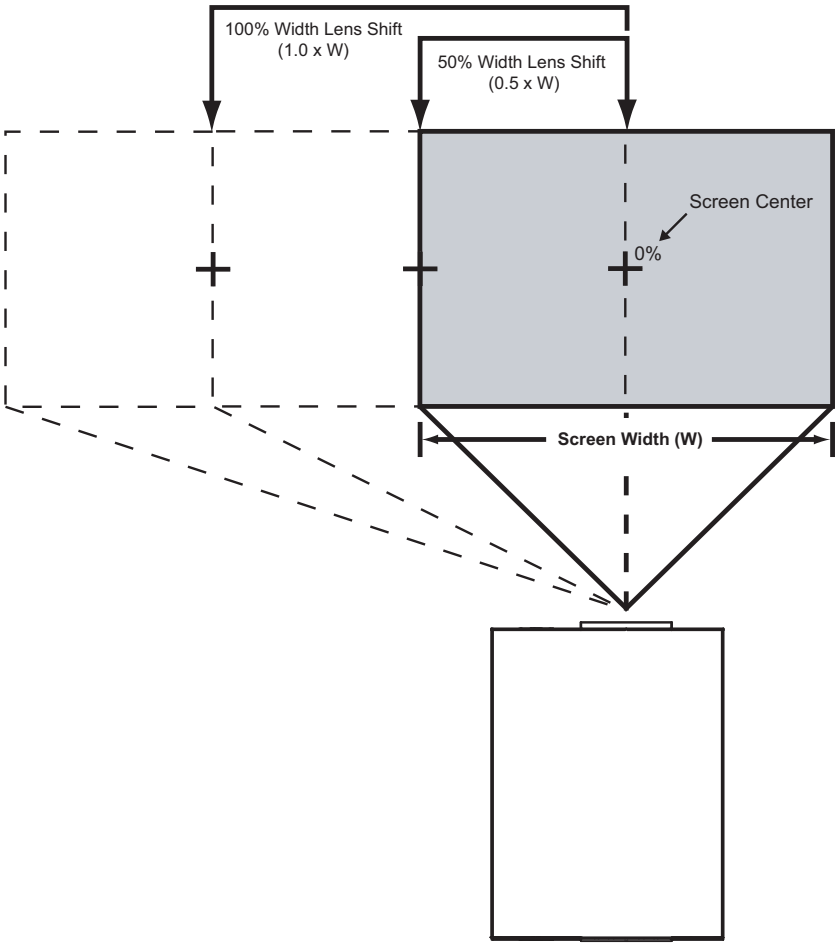
### Vertical and Horizontal Lens Shift

If it is not possible to align the projector and screen as shown in Figure 3-3, you can use the lens shift controls to center the image on the screen. Lens shift is generally expressed as a percentage of the screen height or width, as shown in Figure 3-4 and Figure 3-5.




***Note:*** *This is a general example of lens shift. Lenses vary in their shift capabilities.* ***No particular lens or projector is used in this example.***

**Figure 3-4. Vertical Lens Shift (Example Only)**




***Note:*** *This is a general example of lens shift. Lenses vary in their shift capabilities.* ***No particular lens or projector is used in this example.***

**Figure 3-5. Horizontal Lens Shift (Example Only)**

Table 3-4 lists the lens shift limits for each available VX-6000d lens, as percentages and absolute measurements with a 100 x 56 inch (1.78:1) screen.

### Table 3-4. Vertical and Horizontal Lens Shift Limits

| | | Lens Option | | | |
|---|---|---|---|---|---|
| | | **Telesto B** | **Telesto C** | **Telesto D** | **Telesto E** |
| **Lens Shift Limits, as Percentages of Screen Height or Width (Notes 1, 2 and 3)** | | | | | |
| Vertical (Notes 2 and 3) | Up | 60% | 61% | 63% | 38% |
| | Down | 67% | 75% | 60% | 67% |
| Horizontal (Note 2) | Left | 20% | 25% | 22% | 38% |
| | Right | 20% | 25% | 22% | 38% |
| **Lens Shift Limits in Inches, with a 100-by-56 inch (1.78:1) Screen** | | | | | |
| Vertical | Up | 33.60 | 34.16 | 35.28 | 21.28 |
| | Down | 37.52 | 42.00 | 33.60 | 37.52 |
| Horizontal | Left | 20.00 | 25.00 | 22.00 | 38.00 |
| | Right | 20.00 | 25.00 | 22.00 | 38.00 |

***Notes:***

1. *With no vertical or horizontal lens shift, the lens center and screen center are aligned with each other.*
2. *Vertical shift limits are percentages of the screen height. Horizontal shift limits are percentages of the screen width.*
3. ***Vertical lens shift figures are for ceiling mount configurations.*** *For floor installations (where the projector is upright), reverse the up/down vertical lens shift percentages.*

### ◄ *Folded Optics*

In rear screen applications where space behind the projector is limited, a mirror may be used to fold the optical path, as shown in Figure 3-6. The position of the projector and mirror must be accurately set. If you are considering this type of installation, contact your dealer for assistance.

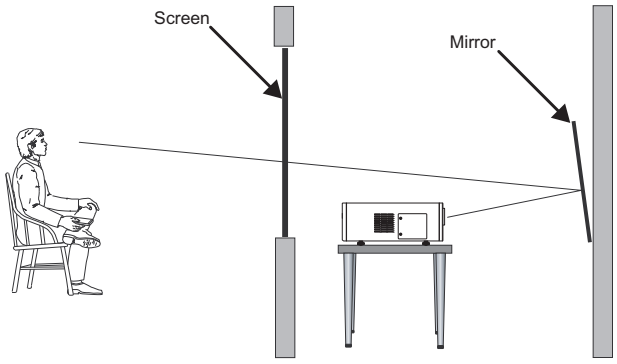



**Figure 3-6. Folded Optics**

### ◄ *Other Considerations*

Other considerations and tips that can help improve your installation:

- Keep the ambient temperature constant and below 35°C (95°F). Keep the projector away from heating and/or air conditioning vents. Changes in temperature may cause drifts in the projector circuitry, which may affect performance.
- Keep the projector away from devices that radiate electromagnetic energy such as motors and transformers. Common sources of these include slide projectors, speakers, power amplifiers and elevators.

## 3.4 Installing the Optional CineWide Lens Mount

If you are installing a standard (non-CineWide) VX-6000d, skip this step and proceed with ***Mounting the VX-6000d*** (page 32).

If you are installing a VX-6000d/CineWide, proceed with ***Installing the Fixed CineWide Base Plate (VX-6000d/CineWide)*** (page 31).

If you are installing a VX-6000d/CineWide with AutoScope, proceed as follows to install the AutoScope lens motor.

***Note***

1. *Do not install the CineWide lens yet, only the fixed CineWide base plate or AutoScope lens motor. You will install the CineWide lens after you install the projector and adjust the primary lens.*
2. *Some components shipped with your projector may differ slightly from what is shown in these instructions.*

### *Installing the AutoScope Lens Motor (VX-6000d/CineWide with AutoScope)*

➤ Figure 3-7 shows the VX-6000d/CineWide with AutoScope motor assembly.

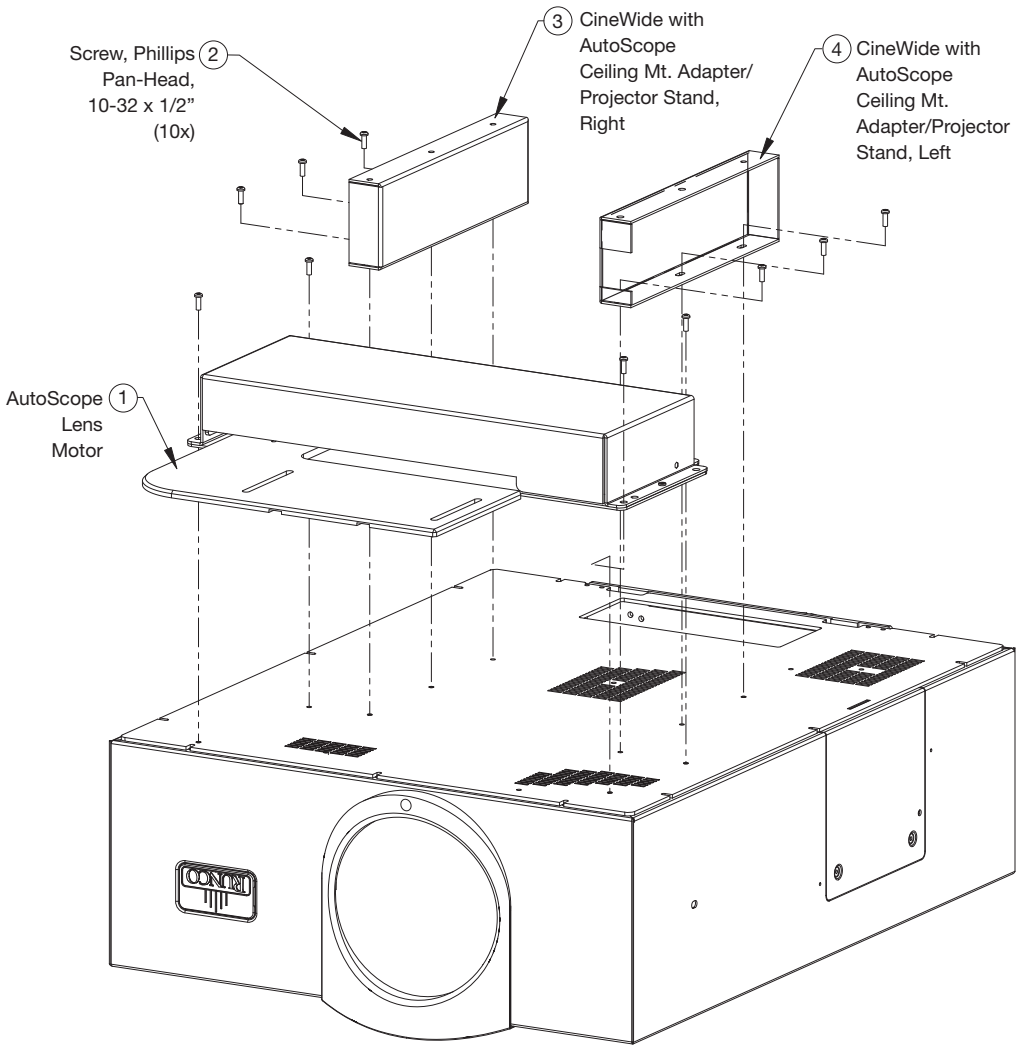



**Figure 3-7. VX-6000d/CineWide with AutoScope Motor Assembly – Exploded View**

**Remove Projector Front Feet:** Place the projector upside down on a blanket or other soft surface. Loosen and remove the two front feet on the projector using a Phillips screwdriver.

**Install Ceiling Mount Adapters/Projector Stands:** For ceiling installations, the adapters bring the attachment points for the projector mounting rails (included with the projector ceiling mount kit) from the bottom of the projector up and around the AutoScope lens motor housing. For floor installations (where the projector is upright), the adapters allow the projector to lie flat on the mounting surface.

Using six (6) each of the supplied, 10-32 x 1/2" Pan-Head Phillips screws (item #2), attach the AutoScope Ceiling Mount Adapters/Projector Stands (items #3 and #4) to the projector as shown in Figure 3-8.

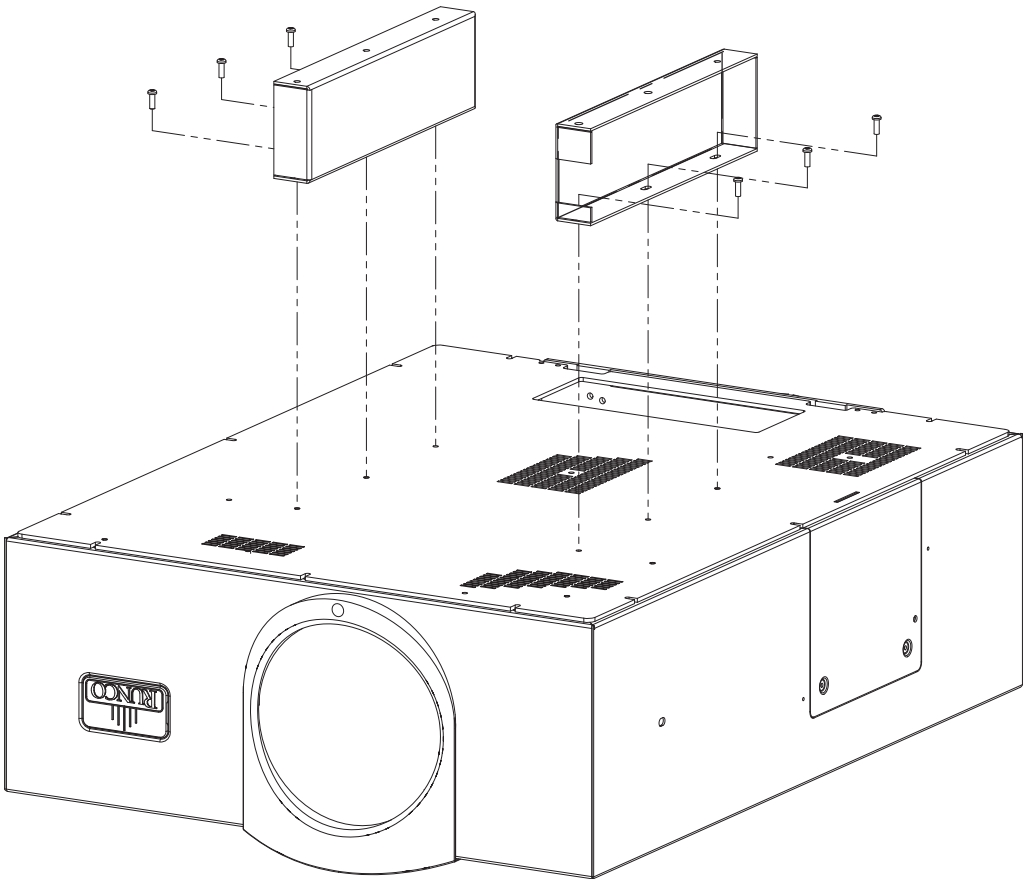


**Figure 3-8. VX-6000d with Ceiling Mount Adapters/Projector Stands**

***Caution*** *DO NOT OVER-TIGHTEN THE SCREWS.*

**Install Lens Motor:** Position the AutoScope Lens Motor (item #1) as shown in Figure 3-9. Line up the mounting holes on the lens motor housing with those on the underside of the projector. Secure the motor to the projector with the four remaining 10-32 x 1/2" Pan-Head Phillips screws (item #2).

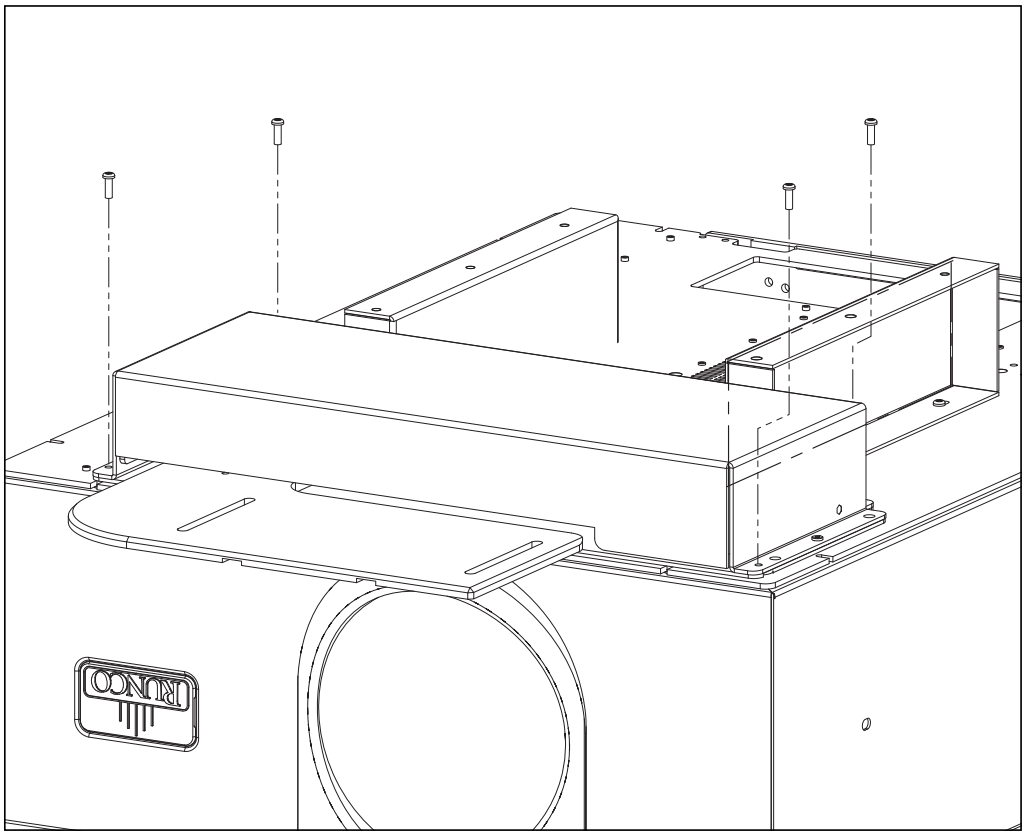


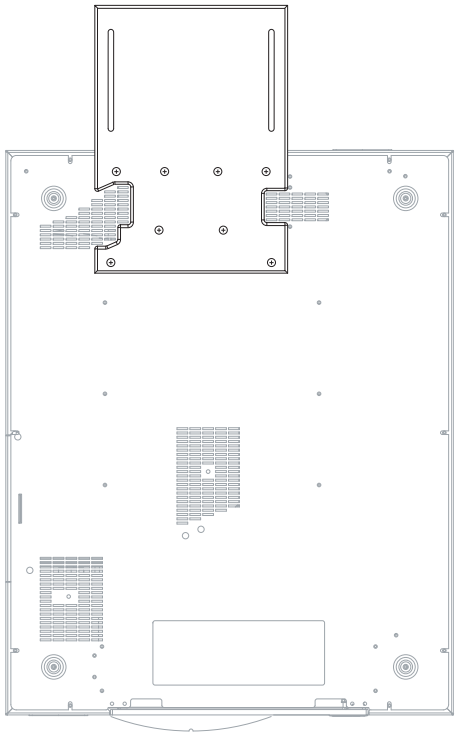
**Figure 3-9. AutoScope Lens Motor Installation**

After you have installed the AutoScope lens motor, proceed with ***Mounting the VX-6000d*** (page 32).

### ➤ *Installing the Fixed CineWide Base Plate (VX-6000d/CineWide)*

To install the fixed CineWide base plate on a VX-6000d/CineWide:

1. Place the projector upside down on a blanket or other soft surface.
2. Line up the mounting holes on the lens mount base plate with those on the bottom of the projector, directly below the primary lens.
3. Secure the base plate to the projector with the screws provided for this purpose.



## 3.5 Mounting the VX-6000d

There are several methods for mounting the projector. Depending on your chosen installation, one method may be more suitable than another.

***Floor Mounting (Upright)*** ➤

In typical front and rear screen installations, the projector can be mounted to a secure and level surface such as a table or cart. Carts are useful when moving a projector during a presentation or from site to site. If possible, lock the wheels when it's in position to prevent it from being moved during a presentation.

***Ceiling Mounting (Inverted)*** ➤

For fixed installations, and for those that want the projector out of sight or have a limited space for projector and audience, you can invert the VX-6000d and suspend it from the ceiling using a specially-designed ceiling mount fixture.

***Note***

*Use only the Runco-approved ceiling mount kit (part number 956-0074-00) designed for your projector. Install the mount kit according to the instructions provided with it.*

The projector can also be inverted and placed in an enclosure above and behind the viewing area. Install four feet on the inside bottom surface of the enclosure on which the projector can rest. A variety of materials can be used for this purpose (for example, rubber crutch tips or turntable feet).

***Adjusting the Projection Angle*** ➤

If the VX-6000d is ceiling-mounted and the screen is significantly lower than the projector, you can tilt the projector at a slight angle by adjusting the ceiling mount.

If you do this, you may need to shift the image using the OSD controls, to compensate. For detailed instructions, refer to ***Using the On-Screen Menus*** on page 51.

## 3.6 Connections to the VX-6000d and DHD Controller

Proceed as follows to connect the DHD Controller to the VX-6000d, your video sources, external controller(s) – if present – and AC power.

When connecting your equipment:

- Turn off all equipment before making any connections.
- Use the correct signal cables for each source.
- Route all cables through the cable opening at the bottom rear of the projector (see Figure 2-1).
- Ensure that the cables are securely connected. Tighten the thumbscrews on connectors that have them.

***Connecting the DHD Controller to the VX-6000d*** ➤

The VX-6000d is designed to receive only video input signals directly from the companion DHD Controller/Processor. All signal sources should be connected to the appropriate inputs on the rear panel of the DHD. The signal from the DHD is then output to the VX-6000d projector through an RGB or DVI cable.

***Note***

*You CANNOT connect signal sources directly to the VX-6000d. They MUST be routed through the DHD Controller for proper operation.*

Connect the HDMI and RS-232 outputs of the DHD Controller to the corresponding inputs of the VX-6000d; see Figure 3-10.

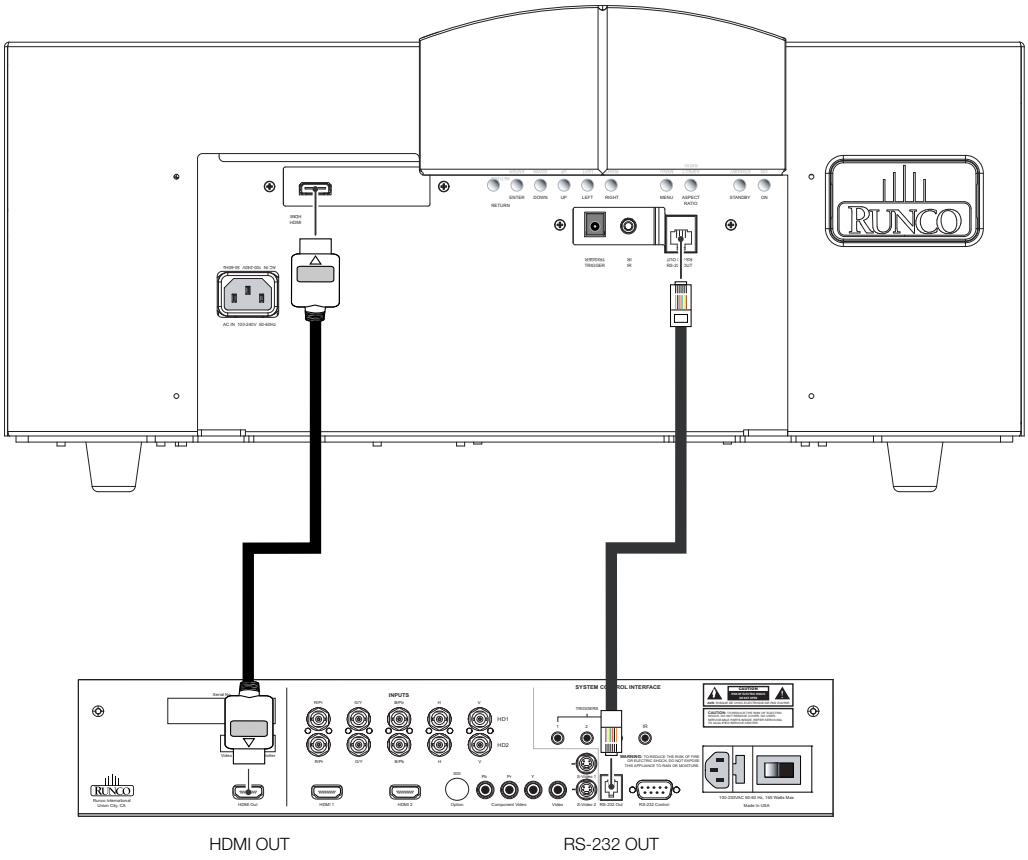



**Figure 3-10. Connecting the VX-6000d to the DHD Controller**

### Connecting Source Components to the DHD Controller

Connect your video sources to the DHD Controller as shown and described in the sections that follow.

**HDMI Connections:** See Figure 3-11.

**Tip**

*Use the HDMI inputs whenever possible. This ensures the highest video quality because the signal is carried in the digital domain throughout the entire signal path, from source component output into the projector.*

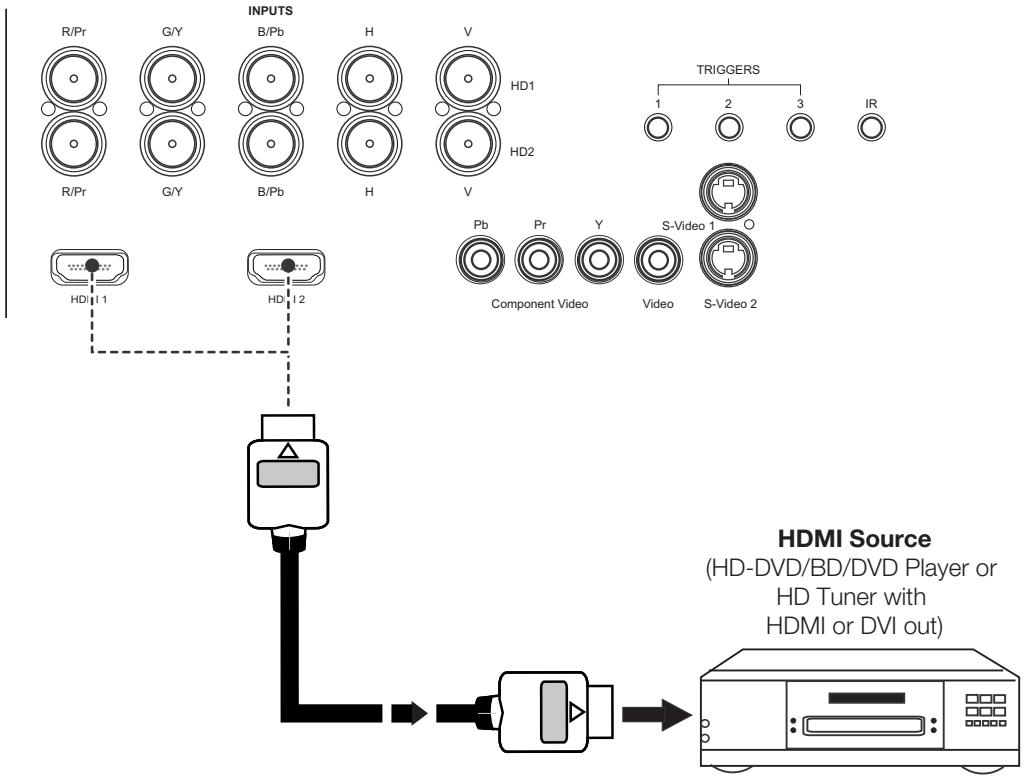



**Figure 3-11. HDMI Source Connections**

**Digital (DTV) RGB or Component Video Connections:** See Figure 3-12.

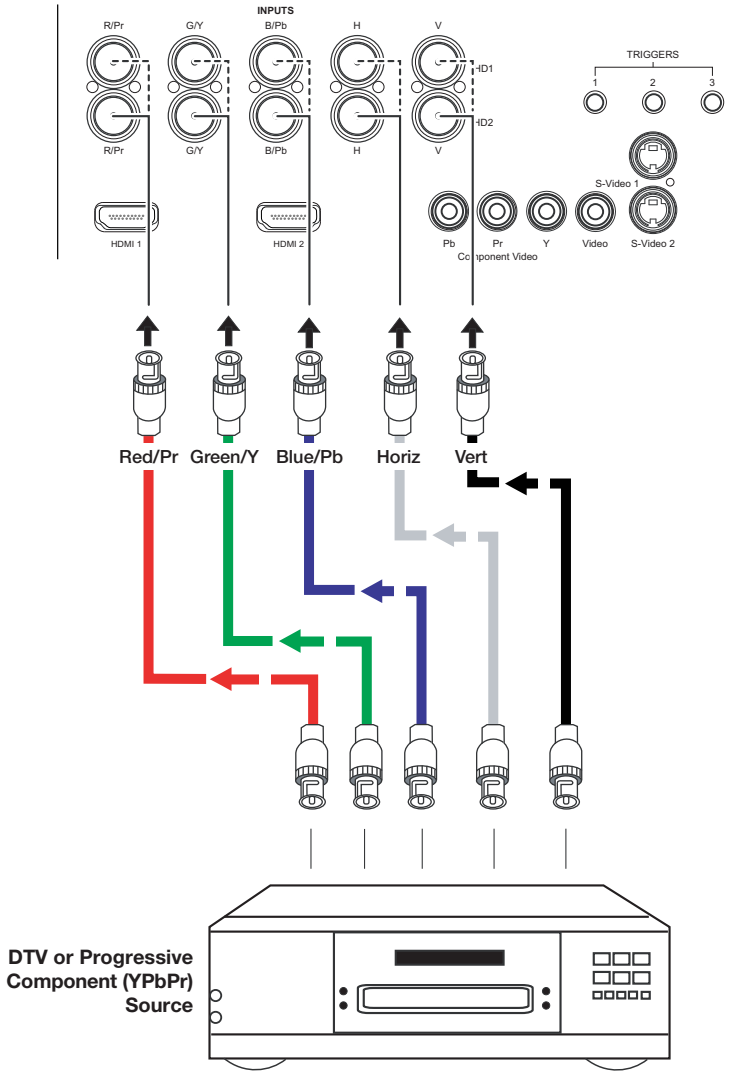



**Figure 3-12. Digital (DTV) RGB or Component Video Connections**

**Analog (Computer) RGB Connections:** See Figure 3-13.

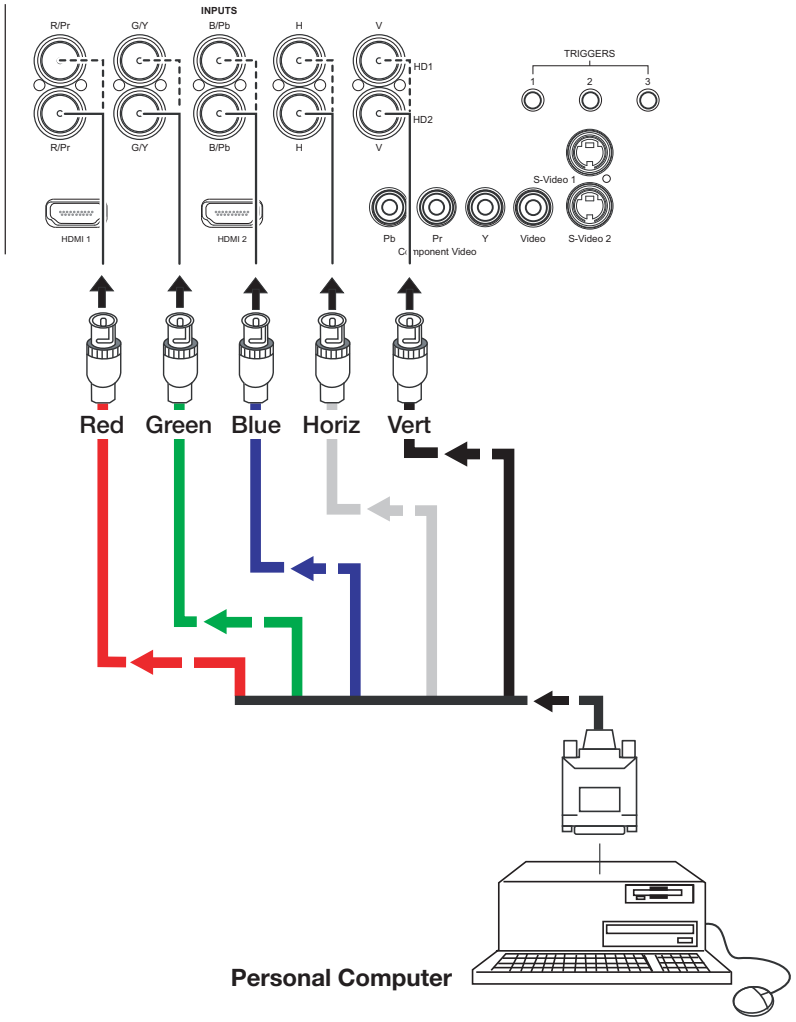



**Figure 3-13. Analog RGB Connections**

**Composite/S-Video/Component Video Connections:** See Figure 3-14.

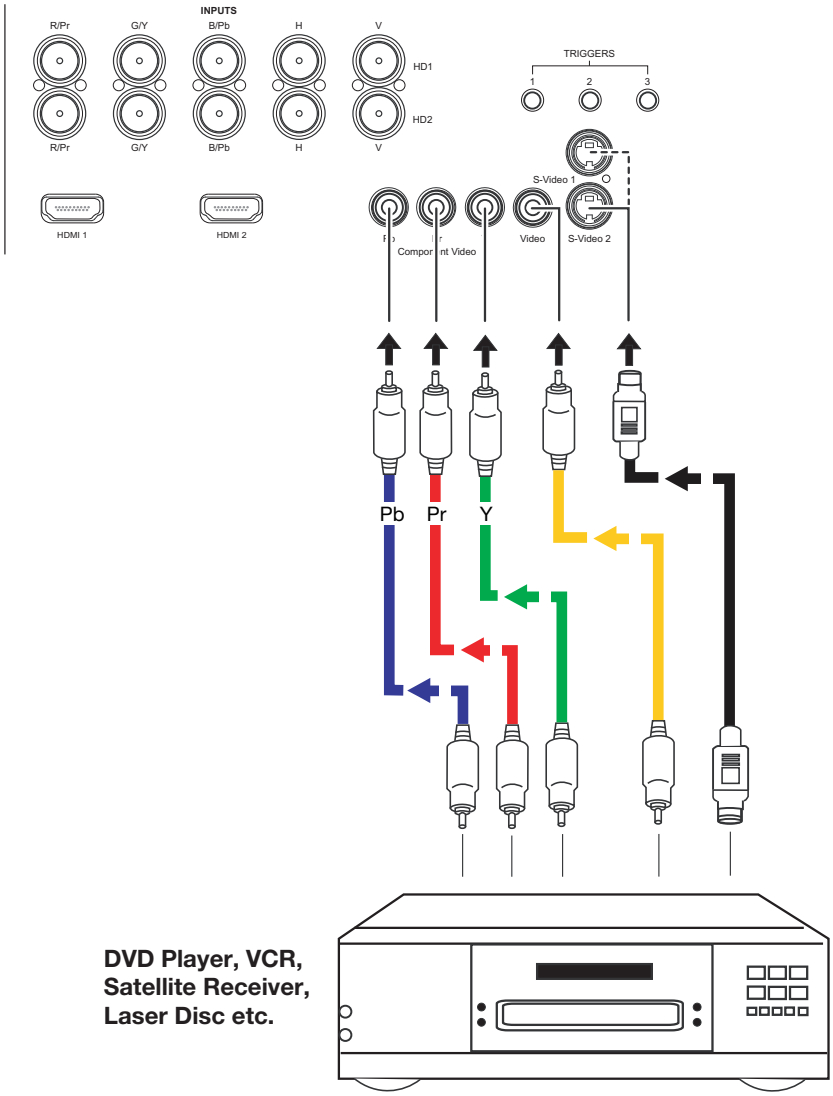



**Figure 3-14. Composite, S-Video and Component Video Connections**

### RS-232 Controller Connection ➤

Use a straight-through, 9-pin RS-232 cable to connect a PC or home theater control/automation system (if present) to the RS-232 Control port on the DHD Controller; see Figure 3-15.

For more information about using this connection, refer to ***Serial Communications*** on page 83.

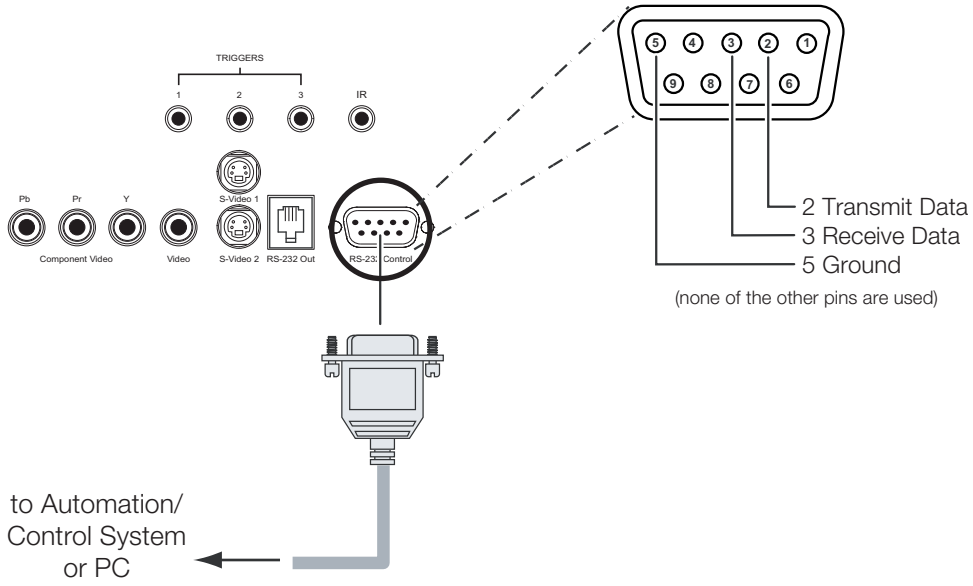



**Figure 3-15. RS-232 Control System Connection**

**DHD Controller:** If your VX-6000d is equipped with a CineWide with AutoScope system, connect the AutoScope lens motor to a 12-volt trigger output on the DHD Controller; see Figure 3-16.

Similarly connect other 12-volt trigger-activated equipment (such as retractable screens or screen masks) to the other trigger outputs.

For more information on using the DHD Controller triggers, refer to ***Triggers*** on page 65.

◄ ***Connecting 12-Volt Trigger Outputs to External Theater Equipment***

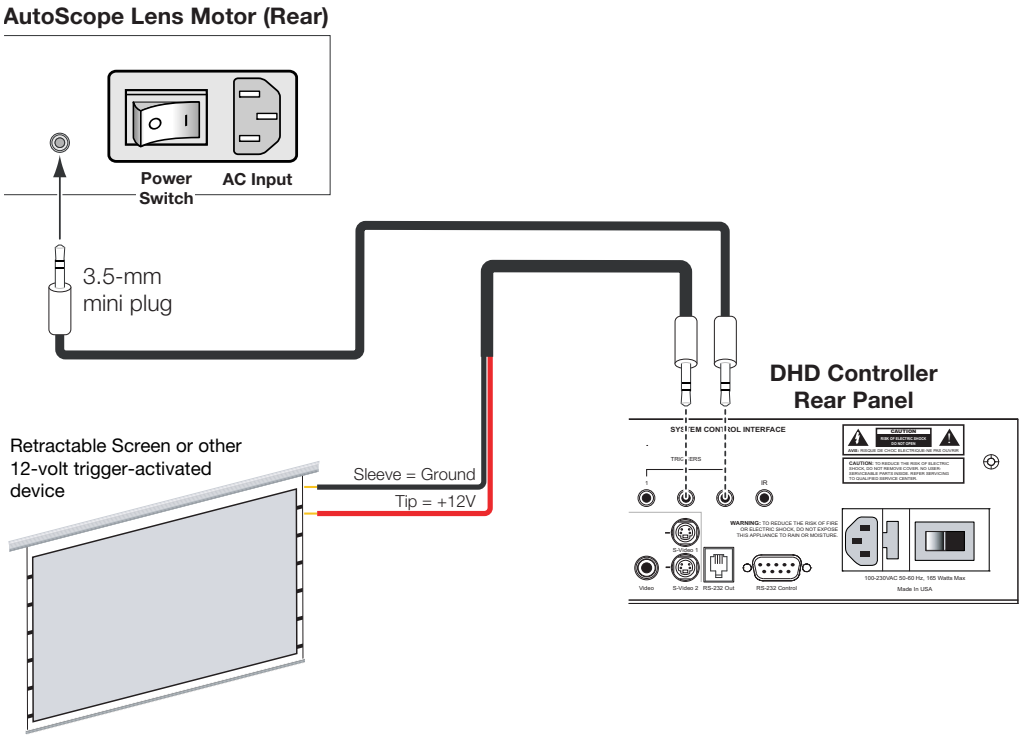



**Figure 3-16. 12-volt Trigger Output Connections (from DHD Controller)**

**Projector:** The projector is equipped with an additional 12-volt trigger output. This trigger activates when the projector is turned on. Connect it to your retractable screen or other, 12-volt trigger-activated equipment as shown in Figure 3-17.

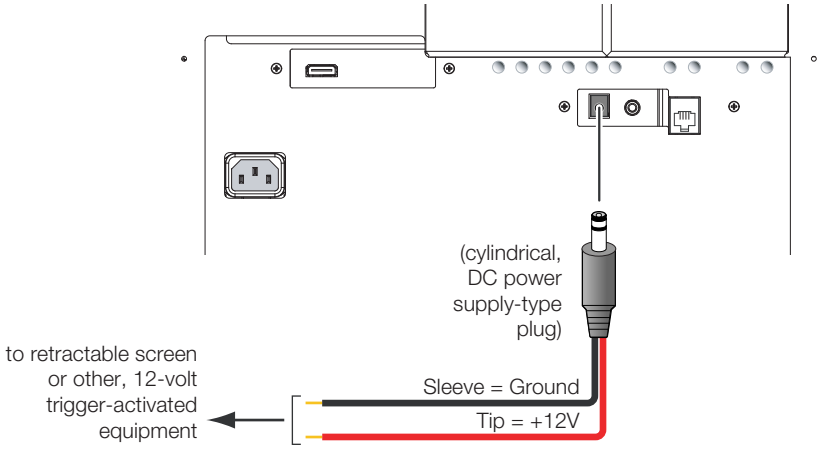



**Figure 3-17. 12-volt Trigger Output Connection (from Projector)**

### *Connecting an External IR Receiver to the DHD Controller*

If infrared signals from the remote control cannot reach the DHD Controller due to excessive distance or obstructions such as walls or cabinet doors, you can connect an external IR receiver to the DHD Controller to extend the range of the remote control. See Figure 3-18.

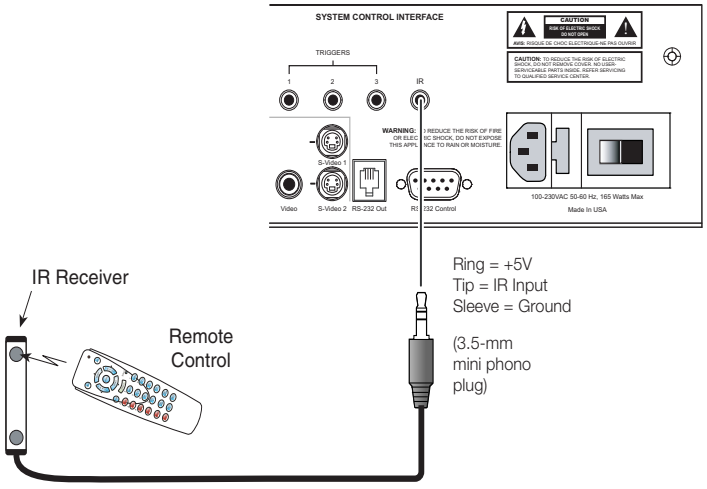



**Figure 3-18. External IR Receiver Connection**

***Note*** *When an external IR receiver is connected to the wired IR input, the built-in IR sensor on the DHD Controller is disabled.*

**Projector/DHD Controller:** The VX-6000d system includes two (2) AC power cords (one each for the projector and DHD Controller).

◄ ***Connecting to AC Power***

Plug the female end of one power cord into the AC receptacle on the rear of the VX-6000d (AC 100V ~ 240V). Then, connect the other end to your AC power source. Similarly connect the DHD Controller to a nearby AC outlet.

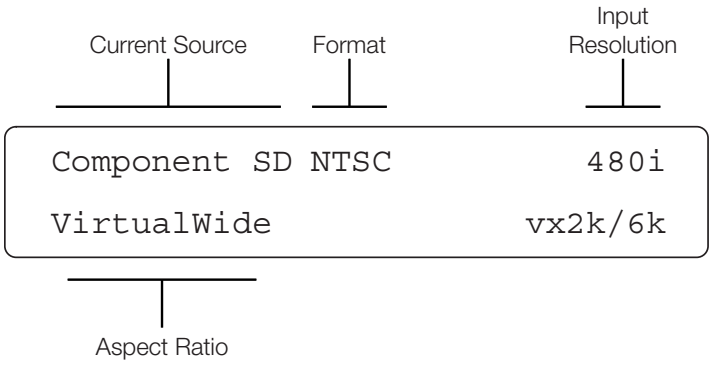
**AutoScope Lens Motor:** With AutoScope-equipped projectors, a third power cord is provided for the lens motor. Plug the female end of the AC power cord into the AC input on the rear of the lens motor assembly. Connect the other end to a 110 VAC power source.

***Caution***

*The input voltage to the AutoScope lens motor must be between 100 and 120 VAC.* ***Do not connect the AutoScope lens motor to a 200-240 VAC power source!***

## 3.7 Turning on the Power

1. Turn on your source components.
2. Turn on the main power switch at the rear of the DHD Controller.
3. If this is an AutoScope-equipped projector, turn on the main power switch at the rear of the AutoScope lens motor. The lens motor power switch is located next to the AC input (see Figure 3-16).
4. Press the **ON** button on the remote control – or the **POWER (⏻)** button on the DHD Controller front panel – to turn on the system. The vacuum fluorescent display on the DHD Controller front panel briefly displays “Starting Display.”
5. When the projector is ready for use, the fluorescent display indicates the active source, signal format (NTSC or PAL), input resolution and aspect ratio; for example:



## 3.8 Primary Lens Adjustments

Lens zoom and focus are motorized adjustments that are adjustable using the Setup remote control (Figure 2-6). This allows you to adjust the focus and image size while at the screen for more accurate results. The remote control has over 100 feet of range to the projector for long throw distances.

The IR receiver for the lens motor assembly is located on the projector behind the front Runco logo cover. Rotate the logo cover 90 degrees as shown to reveal the IR receiver opening.

***Focus*** ➤

1. With the IR receiver revealed on the front of the projector, press the **VX6K** button on the Setup remote control to display the Lens Control menu page.
2. Point the remote directly at the projector for maximum range.
3. To focus the projected image, press and hold the **FCUS+** or **FCUS-** button.

***Zoom*** ➤ To make the picture smaller (zoom out), press and hold the **ZOOM-** button. To enlarge the picture (zoom in), press and hold the **ZOOM+** button.

***Iris*** ➤ Press the **IRIS** button repeatedly to select an optical aperture or *iris* size (large or small).

***Vertical and Horizontal Lens Shift*** ➤ To change the projected image position, use a 3/16” hex driver to shift the lens in the desired direction; see Figure 3-19. The vertical lens shift control is at the top of the projector; the horizontal lens shift control is on the side of the projector nearest the Runco logo. (The tool will automatically center on top of the adjustment nut when inserted into the access hole.)

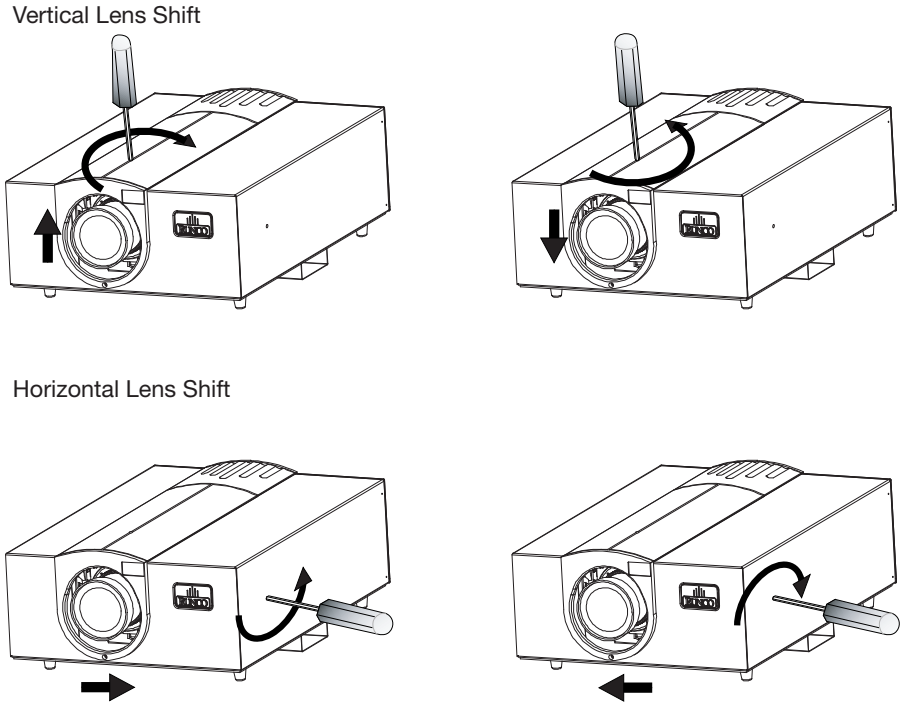



**Figure 3-19. Vertical and Horizontal Lens Shift Adjustments**

## 3.9 Adjusting the Picture Orientation

By default, the VX-6000d is configured for a “floor/front” installation, in which the projector is installed upright and in front of the screen. If it is installed behind the screen and/or mounted on a ceiling, you must change the picture orientation. To do this:

1. Select an input OTHER THAN HDMI 1 or HDMI 2 on the DHD Controller.
2. Press **MENU** (on menu page 4) and enter the Service Menu passcode.
3. Select Service from the Main Menu.
4. Select Display Device from the Service Menu, then select Configure.
5. Press ▼, then choose Floor/Rear, Ceiling/Front or Ceiling/Rear, to match the installation method.

***Note*** *You must enter a passcode to access the Service menu.*

## 3.10 Installing and Adjusting the CineWide Anamorphic Lens

If you are installing a CineWide-equipped projector, proceed as follows to install and adjust the anamorphic lens.

***Note*** ***It is extremely important that the primary lens is properly adjusted before you install the anamorphic lens. Ensure that the image from the primary lens is perfectly centered on the screen.***

### *Attach Lens Mounting Assembly to Lens Motor Carriage Plate (CineWide with AutoScope) or Base Plate (fixed CineWide)*

The VX-6000d Anamorphic lens mount kit consists of everything shown in Figure 3-20. Some components shipped with your projector may differ slightly from what is shown in these instructions. If any items are missing or damaged, please contact your Runco dealer or Runco Customer Service at (800) 23-RUNCO.

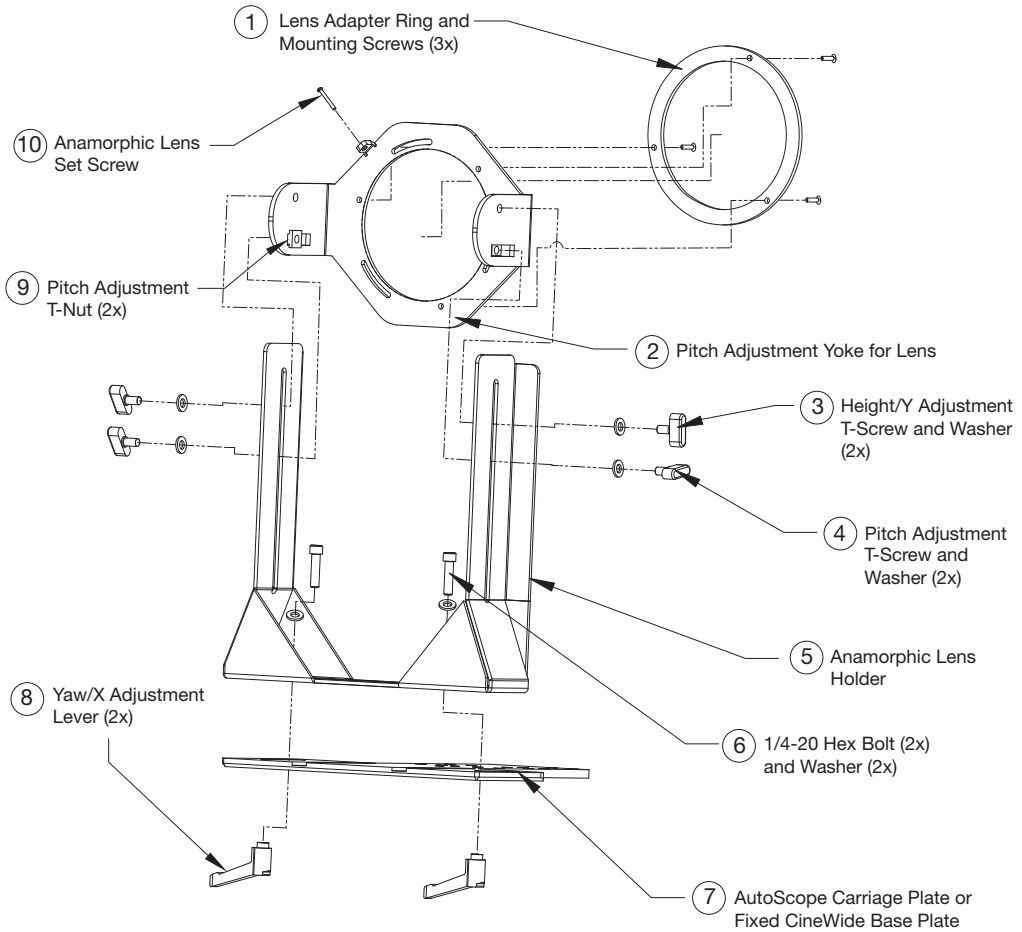



**Figure 3-20. VX-6000d Anamorphic Lens Mounting Assembly - Exploded View**

1. Remove the two Yaw/X Adjustment Levers (item #8) from the bottom of the Anamorphic Lens Holder (item #5).
2. Place the Anamorphic Lens Holder on top of the AutoScope Carriage Plate or fixed CineWide base plate (item #7). Position the bracket so that the long slot at the bottom of the lens holder is perpendicular to the corresponding slots on the carriage plate or base plate.
3. Secure the Anamorphic Lens Holder to the plate using the Hex Bolts/Washers (item #6) and Yaw/X Adjustment Levers that you removed in Step 1.
4. Use the Lens Mounting Screws to attach the Lens Adapter Ring (item #1) to the Pitch Adjustment Yoke (item #2); see Figure 3-21. (Use the round, threaded holes on the yoke.)
5. Use the Height/Y Adjustment T-Screws (item #3), Pitch Adjustment T-Screws (item #4) and T-Nuts (item #9) to attach the Pitch Adjustment Yoke and Lens Adapter Ring to the Anamorphic Lens Holder. **The Yoke should be as close to the primary lens as possible.**
6. Attach the lens to the Lens Adapter Ring by threading it clockwise.

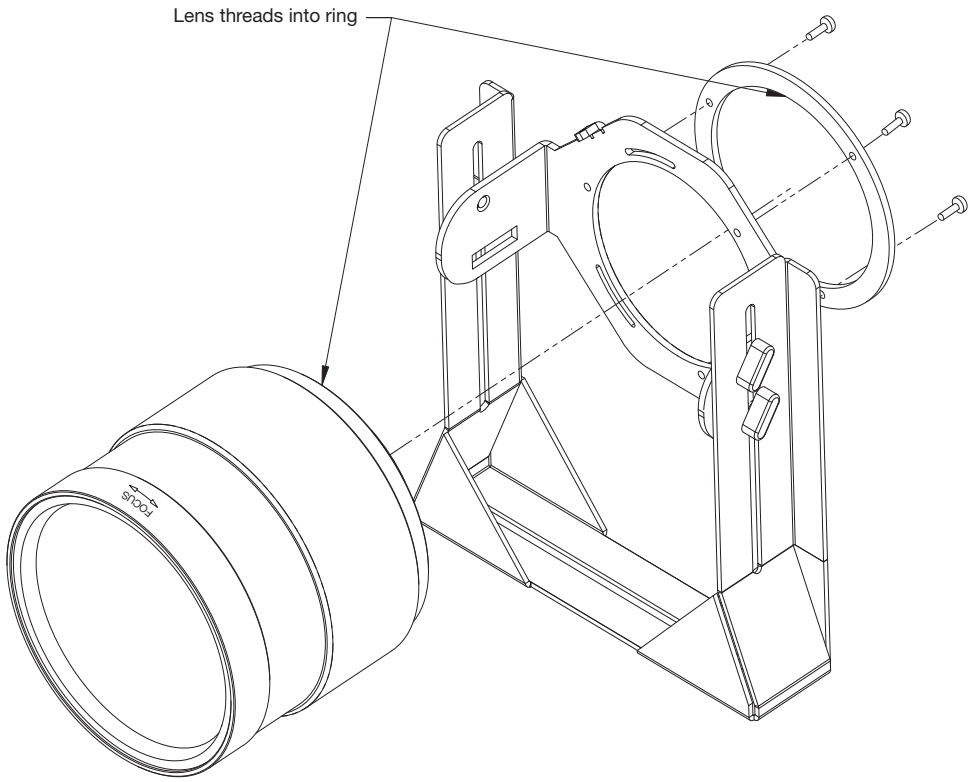


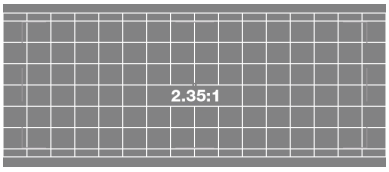

**Figure 3-21. Attaching the Anamorphic Lens to the Lens Adapter Ring**

### *Configure Lens Motor Trigger (CineWide with AutoScope)* ➤

**(Skip this step if you are installing a fixed CineWide anamorphic lens.)**

CineWide with AutoScope maintains constant image height independent of the aspect ratio, while using the full display resolution of the projector. It accomplishes this by moving the anamorphic lens in front of the primary lens when widescreen material is being viewed. When the viewer transitions back to 16:9 or 4:3 source material, the anamorphic lens moves out of the light path.

To configure the lens motor trigger on the DHD Controller for proper AutoScope operation:

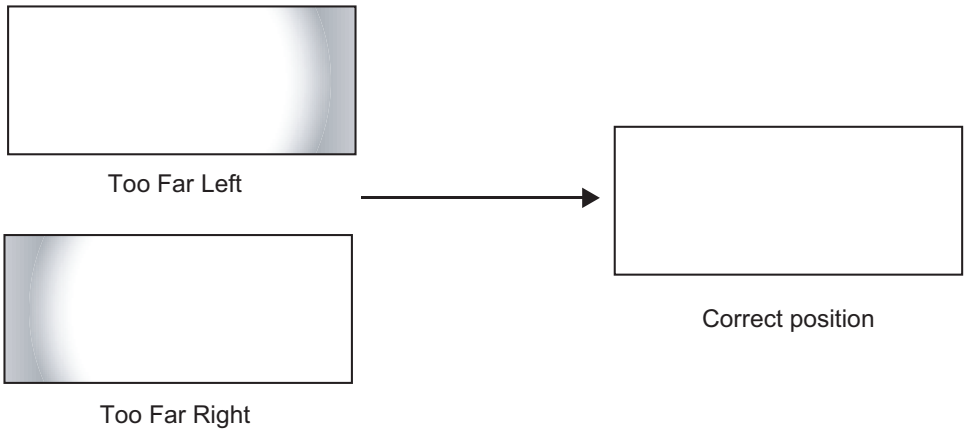



1. Project a 2.35:1 aspect ratio test pattern or other image on the screen.
2. Press **MENU** on the remote control and enter the Service menu passcode.
3. Select **Service** from the Main menu.
4. Select **Triggers** from the Service menu.
5. Assign the trigger output to which the lens motor is connected to the Cinema and Virtual Cinema aspect ratios. This enables the lens motor to move the anamorphic lens into position (in front of the primary lens) when either aspect ratio is selected.
6. To save the trigger settings, press ▼ repeatedly to highlight “Save.” Then, press **ENTER**.
7. Select the Cinema aspect ratio to move the anamorphic lens into position, if it isn’t already. To do this, press **CINEMA** on the DHD Controller remote control (Figure 2-5), or press ▲ or ▼ repeatedly with no menus visible on-screen.

### *Adjust the Anamorphic Lens* ➤

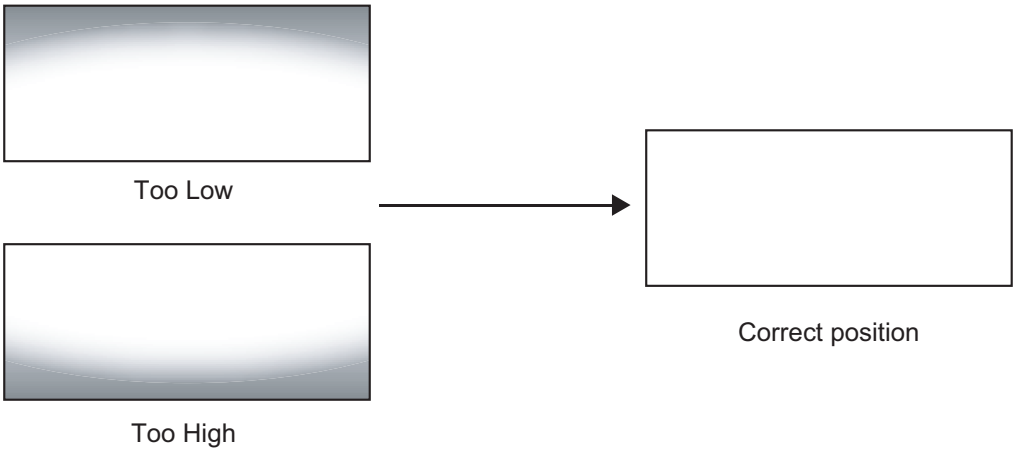
**Adjusting the Horizontal (X) Lens Position:**

1. Project a white field on the screen.
2. Loosen the Yaw/X-Adjustment Levers underneath the lens.
3. Slowly move the anamorphic lens into place so that there are no shadows on either side of the screen:



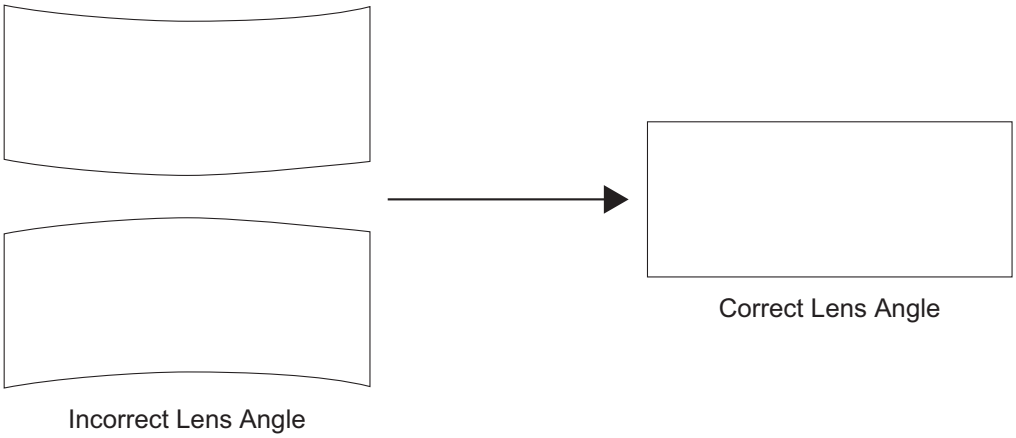

4. When the horizontal position is properly set, tighten the Yaw/X-Adjustment Levers to secure the lens in place.

**Adjusting the Height (Y):** With the white field still on-screen, loosen the Height/Y Adjustment T-Screws on either side of the lens. Then, slowly move the anamorphic lens into place so that there are no shadows on the top or bottom of the screen:




When the height is properly set, tighten the Height Adjustment T-Screws to secure the lens in place.

**Pitch (Angle):** Next, angle the lens to even out any top-to-bottom pincushion distortion. To do this, loosen the Pitch Adjustment T-Screws (directly below the Height/Y Adjustment T-Screws) on either side of the lens to allow it to pivot freely. Then, adjust the anamorphic lens angle so that the projected image is rectangular:




The anamorphic lens will almost always be angled with respect to the projector; this is normal.

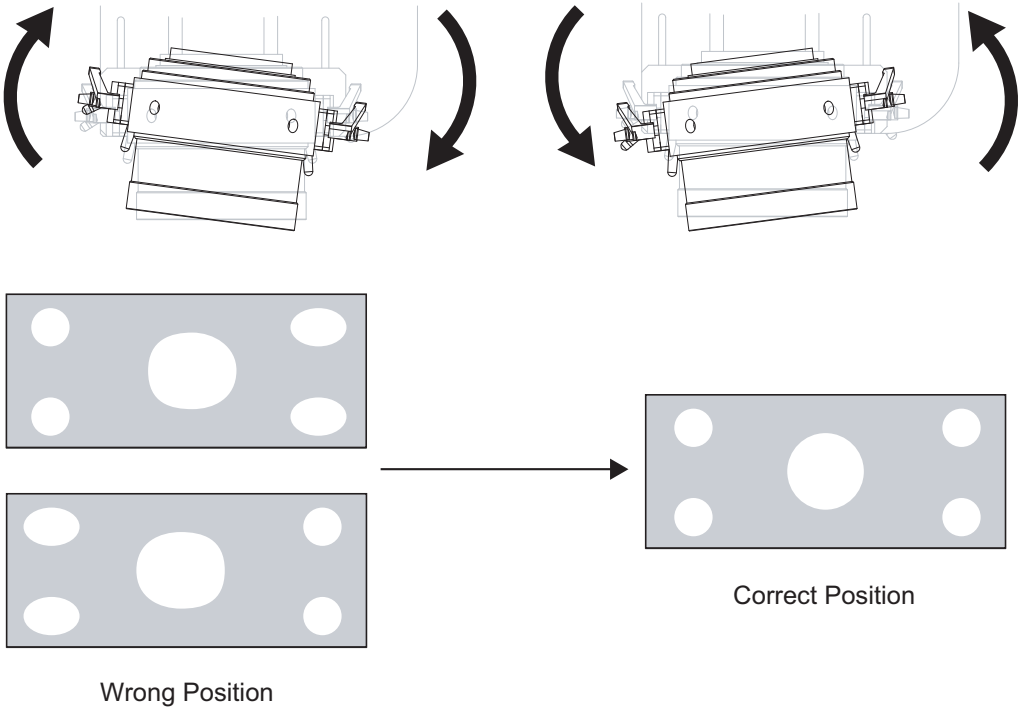
Once the proper lens angle has been set, firmly tighten the Pitch Adjustment T-Screws to secure the lens in place.

***Note***

*There may be some pincushion distortion even after the lens is properly adjusted, especially at shorter throw distances. If this is the case, Runco recommends that you slightly over-scan the image into the screen frame area to mask the distortion.*

**Adjusting the Yaw:** Loosen the Yaw/X-Adjustment Levers to allow the lens to pivot freely from side to side. Then, angle the lens to even out any left-right pincushion distortion:

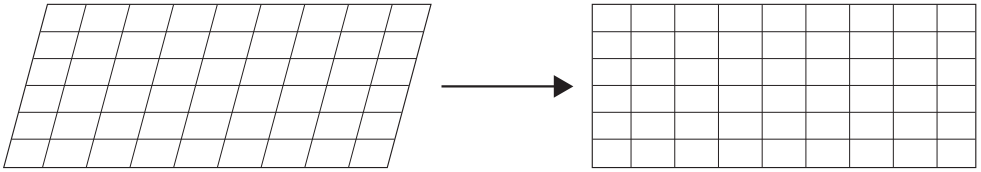
**Anamorphic Lens (Top View)**



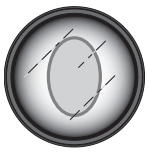

Once the proper lens angle has been set, firmly tighten the Yaw/X-Adjustment Levers to secure the lens in place.

**Adjusting the Geometry:**

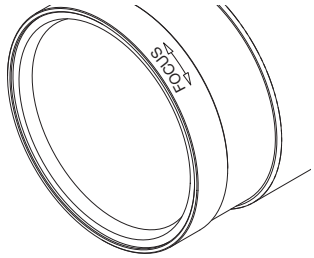
1. Input an anamorphic cross-hatch test pattern to the projector.
2. Unscrew the Anamorphic Lens just enough to allow it to rotate freely.
3. Grasp the lens by the center ring and rotate the lens until the image is properly anamorphic:




4. When the image geometry appears correct, tighten the Anamorphic Lens Set Screw (item #10) to secure the lens in place. (When viewed from the front, the rear opening on the anamorphic lens should appear as a tall, narrow oval.)



**Focus:** Finally, rotate the Focus Ring on the anamorphic lens to fine-tune the optical focus.



## Notes:

# 4. Operation

## 4.1 Using the On-Screen Menus

Press the **MENU** button on the DHD remote control (Figure 2-5) or the DHD Controller front panel to display the Main Menu.

To select a menu item, use the ▲ and ▼ buttons on either the remote control or the DHD Controller front panel to highlight it. Press **ENTER** to confirm your selection.

The VX-6000d OSD menus are arranged hierarchically; exactly how they are arranged depends on the input signal resolution. For 1080i ***digital*** or 1080p signals, the menu structure is as shown and described in ***On-Screen Menus for 1080i (Digital) or 1080p Signals*** on page 67.

## 4.2 On-Screen Menus for 1080i (Analog) and Lower-Resolution Signals

When the input signal resolution is 1080i ***analog*** (via the HD1 or HD2 input) or lower, the menu structure is as shown in Figure 4-1. Depending on the selected input source and signal characteristics, some menu options may not be available.

| | |
|---|---|
| **Input Source** | Composite |
| | S-Video 1 |
| | S-Video 2 |
| | Component SD |
| | HD/RGB 1 |
| | HD/RGB 2 |
| | HDMI 1 |
| | HDMI 2 |
| **Aspect Ratio** | 16:9 |
| | 4:3 |
| | Letterbox |
| | VirtualWide |
| | Cinema |
| | Virtual Cinema |
| **Picture** | Brightness |
| | Contrast |
| | Color |
| | Tint |
| | Sharpness |
| **Input Position** | Left/Right |
| | Up/Down |
| | Width |
| | Height |
| | Overscan |
| **ISF Presets** | Recall ISF Night |
| | Recall ISF Day |
| | Recall/Save Custom 1 |
| | Recall/Save Custom 2 |
| | Reset Custom 1 & 2 to Factory Default |
| **Information** (read-only) | Serial Number |
| | Hardware |
| | Firmware |
| | Date |

**Note:** Virtual Cinema is available only on the VX-6000d/CineWide and VX-6000d/CineWide with AutoScope.

| | | |
|---|---|---|
| **Calibration** | ISF Night - Display Color | Gain |
| | | Offset |
| | | Gamma |
| | | Iris |
| | | Color Temp |
| | | Lamp Power (0 = Low; 1 = High) |
| | ISF Night - Input Image | Brightness |
| | | Contrast |
| | | Color |
| | | Tint |
| | | Sharpness |
| | ISF Night - Input Color | Gain |
| | | Offset |
| | | Chroma Delay |
| | | Phase |
| | | Noise Filter |
| | ISF Day - Display Color | Gain |
| | | Offset |
| | | Gamma |
| | | Iris |
| | | Color Temp |
| | | Lamp Power |
| | ISF Day - Input Image | Brightness |
| | | Contrast |
| | | Color |
| | | Tint |
| | | Sharpness |
| | ISF Day - Input Color | Gain |
| | | Offset |
| | | Chroma Delay |
| | | Phase |
| | | Noise Filter |
| | Save ISF Settings | Back / Confirm |
| | Output Shift | Left/Right |
| | | Up/Down |
| | | Width |
| | | Height |
| | | Save |
| | Splash Configure | Owner Name |
| | | ISF Calibrated |
| | | ISF Other |
| | | Runco/ISF Logo Splash Screen Timers (2 ... 60 sec.) |
| | OSD Position | |

| | | | |
|---|---|---|---|
| **Service** | Test Video | Grey Bars 1 | |
| | | Grey Bars 2 | |
| | | Color Bars 1 | |
| | | Color Bars 2 | |
| | Input Names | Rename, Restore or Save | |
| | Remote Control | Primary | |
| | | Secondary | |
| | Analog Out Mode | RGB--, RGB++ or RGBS | |
| | Display Device | Configure | Orientation |
| | | | Overscan |
| | | | Fan Mode (0 = Normal; 1 = High Altitude) |
| | | | Height (0 ... 100) |
| | | | Lamp Hours |
| | HD Format | HD/RGB 1 | Auto, RGB or YUV |
| | | HD/RGB 2 | |
| | | ADC Bandwidth | Auto, 75 MHz, 150 MHz or 300 MHz |
| | | YPbPr Input Resolution | Auto, 480i/p, 576i/p, 720p or 1080i |
| | Triggers | 1 / 2 / 3 / Save | |
| | Miscellaneous | Language | English, French, German or Spanish |
| | | Menu Mode | |
| | | Timeout | |
| | | Side Bar Color | |
| | | Film Mode (SD src. only) | |
| | System Reset | | |
| | Restore Saved Settings | | |

**Figure 4-1. DHD Controller OSD Menu Structure for VX-6000d (1080i Analog and Lower-Resolution Sources)**

The Main Menu is the starting point for accessing all projector functions.

(The Calibration and Service menus are hidden and not accessible until you enter a passcode.)

### ◄ *Main Menu*

| Runco Video |
|---|
| **Input Source** |
| **Aspect Ratio** |
| **Picture** |
| **Input Position** |
| **ISF Presets** |
| **Information** |
| **Calibration** |
| **Service** |

From the Main Menu, select Input Source to choose a video signal source.

The active source is indicated by an arrow (>) to its left; in this example, Composite is the active source.

### ◄ *Input Source*

| Input Source | |
|---|---|
| > | **Composite** |
| | **S Video 1** |
| | **S Video 2** |
| | **Component SD** |
| | **HD/RGB 1** |
| | **HD/RGB 2** |
| | **HDMI 1** |
| | **HDMI 2** |

To change the aspect ratio (size and shape) of the projected image, select Aspect Ratio from the Main Menu and press **ENTER**. Select the appropriate aspect ratio for your screen size and the type of program material being viewed; refer to Table 4-1.

The currently-selected aspect ratio is indicated by a "☒" to its left; in this example, 16:9 is selected.

### ◄ *Aspect Ratio*

| Aspect Ratio | |
|---|---|
| ☒ | **16:9** |
| ☐ | **4:3** |
| ☐ | **Letterbox** |
| ☐ | **VirtualWide** |
| ☐ | **Cinema** |
| ☐ | **Virtual Cinema** |

***Note***

*When you change the aspect ratio, save the change to a preset afterwards. Otherwise, the change will be lost when a different input is selected. (The aspect ratio is saved for each input and resolution separately.) For information about saving settings, refer to* ***ISF Presets*** *on page 60.*

## Table 4-1. Aspect Ratio Settings

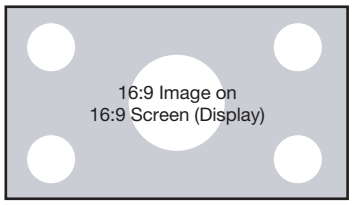
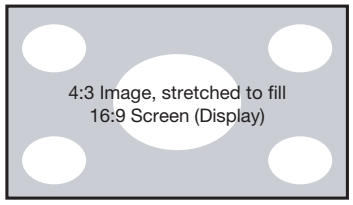
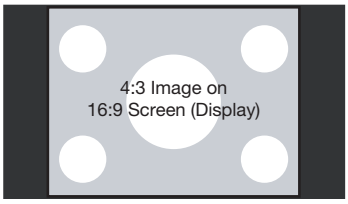
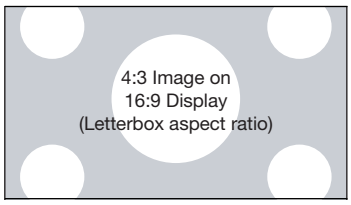
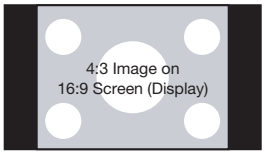
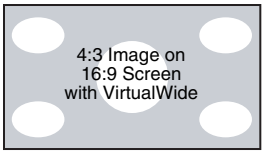
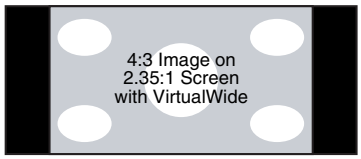
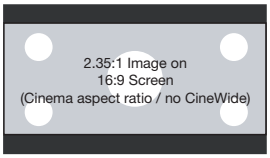
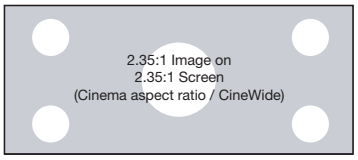
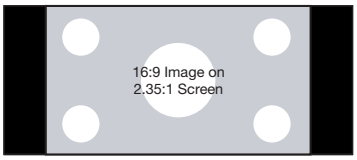
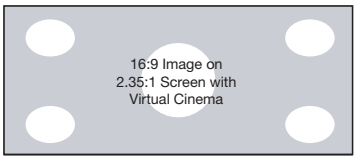
| Aspect Ratio | Description | |
|---|---|---|
| 16:9 |  | Select 16:9 to view 16:9 DVDs and HDTV programs in their native aspect ratio. |
| |  | 4:3 images are stretched horizontally to fit a 16:9 screen. |
| 4:3 |  | 4:3 scales the input signal to fit in the center of the 16:9 screen. 4:3 is the aspect ratio used by computer monitors, standard television programming and most VHS video cassettes. |
| Letterbox |  | Letterbox mode scales (zooms in on) a 4:3 image linearly (by the same amount on all sides) to fill a 16:9 display. Letterbox is best suited for viewing LaserDisc movies or non-anamorphic DVDs on a 16:9 screen. |
| VirtualWide |  | VirtualWide scales a 4:3 image NON-linearly (more on the sides than in the center) to fit a 16:9 screen. |
| |  | |
| |  | On a 2.35:1 screen, the image is centered between black bars on either side. |

**Table 4-1. Aspect Ratio Settings (continued)**

| Aspect Ratio | Description | |
|---|---|---|
| Cinema |  <br>  | Select Cinema to view 2.35 source material in its native aspect ratio.<br><br>With a 16:9 screen and a non-CineWide projector (no anamorphic lens), the upper and lower portions of the screen are masked, but the geometry of the active image area is unchanged.<br><br>With a 2.35:1 screen and a CineWide-equipped projector, the DHD Controller scales the 2.35:1 image so that the active image area fills the 16:9 chip surface, eliminating the black bars. The secondary, anamorphic lens then restores the proper geometry to the 2.35:1 image. |
| Virtual Cinema |  <br>  | A 16:9 image is scaled NON-linearly (more on the sides than in the center) to fit a 2.35:1 screen. Virtual Cinema is available only on the VX-6000d/CineWide and VX-6000d/CineWide with AutoScope. |

Use the controls in the Picture Menu to calibrate your VX-6000d for optimum picture quality.

The VX-6000d has been designed to incorporate setup and calibration standards established by the Imaging Science Foundation (ISF). The ISF has developed carefully crafted, industry-recognized standards for optimal video performance and has implemented a training program for technicians and installers to use these standards to obtain optimal picture quality from Runco video display devices. Accordingly, Runco recommends that setup and calibration be performed by an ISF certified installation technician.

All signal types require separate processing. Therefore, you need to calibrate each input separately.

◄ ***Picture***

| Picture |
|---|
| **Brightness** |
| **Contrast** |
| **Color** |
| **Tint** |
| **Sharpness** |

***Note***

*When you change a picture quality setting, save the change to a preset afterwards. Otherwise, the change will be lost when a different input is selected. (Picture quality settings are saved for each input and resolution separately.) For information about saving settings, refer to* ***ISF Presets*** *on page 60.*

Although it may be possible to obtain satisfactory picture quality using the naked eye and regular program material, Runco recommends using the following calibration tools for best results:

- External test pattern source -- Ovation Multimedia, Digital Video Essentials or AVIA test DVD or equivalent.
- A blue filter (provided with many test DVDs), for color level and tint adjustments.

Connect your test pattern source to the input that you are calibrating and proceed as follows. **Perform the adjustments in the order listed here.**

**Brightness:** On your external test pattern source, select a PLUGE pattern. (PLUGE is an acronym for "Picture Line-Up Generation Equipment.") Figure 4-2 shows a typical PLUGE pattern.

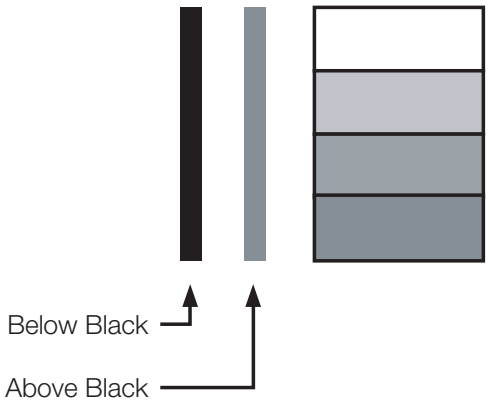



**Figure 4-2. Typical PLUGE Pattern for Adjusting Brightness**

PLUGE patterns vary but generally consist of some combination of black, white and gray areas against a black background. The example above includes two vertical bars and four shaded boxes.

Select Brightness from the Picture menu and press **ENTER**. Adjust the brightness so that:

- The darkest black bars disappear into the background.
- The dark gray areas are barely visible.
- The lighter gray areas are clearly visible.
- The white areas are a comfortable level of true white.
- The image contains only black, gray and white (no color).

**Contrast:** On your external test pattern source, select a stepped, gray-bar pattern like the one shown in Figure 4-3.

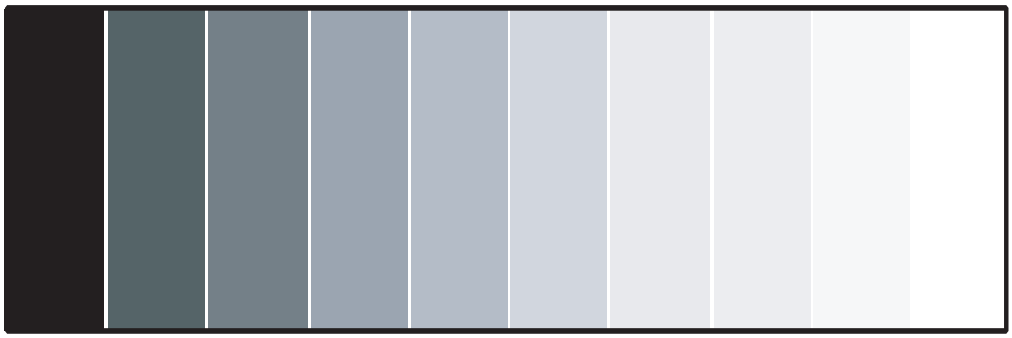


**Figure 4-3. Typical Gray Bar Pattern for Adjusting Contrast**

Select Contrast and press **ENTER**. Adjust the contrast to a point just below which the white rectangle starts to increase in size.

***Note***

*Brightness and contrast controls are interactive. A change to one may require a subtle change to the other in order to achieve the optimum setting.*

**Color Saturation:** On your external test pattern source, select a color bar pattern like the one shown in Figure 4-4.

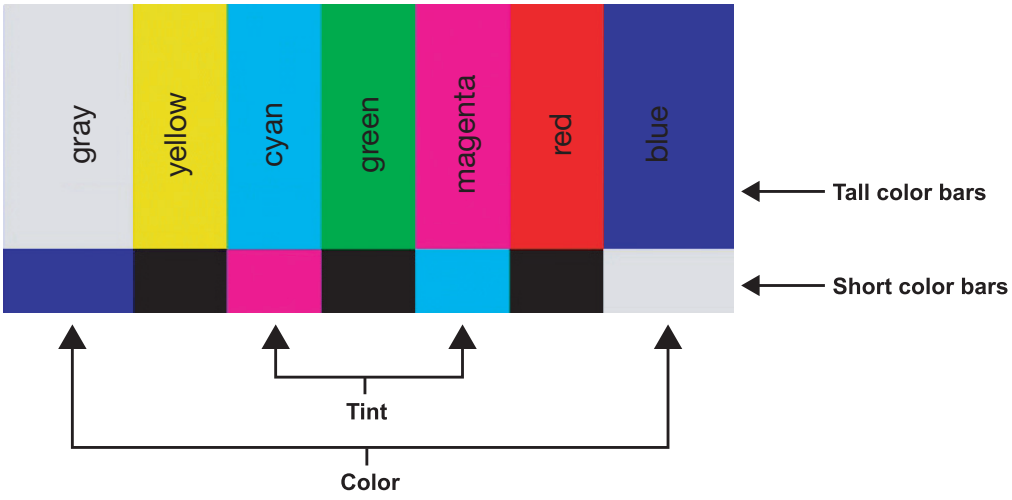
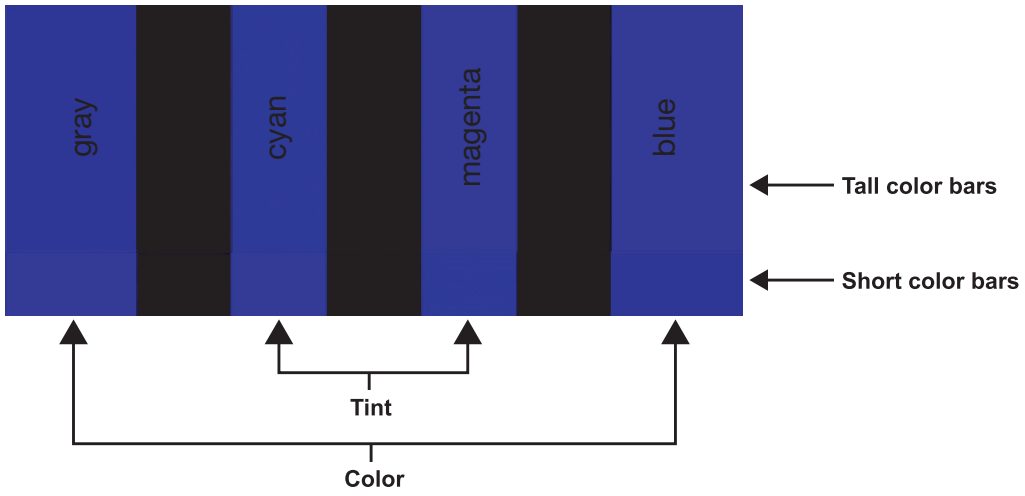



**Figure 4-4. Typical Color Bar Pattern for Adjusting Color Saturation and Tint**

Select Color and press **ENTER**. While looking at the color bar pattern through a blue filter, adjust the color saturation level until the outermost (gray and blue) color bars appear to be a single shade of blue:




**Tint:** Tint or “hue” is essentially the ratio of red to green in the color portion of the image. When tint is decreased, the image appears redder; when it is increased the image appears greener. To set the tint, select Tint and press **ENTER**. While looking at the color bar pattern through a blue filter, adjust the tint level until the cyan and magenta color bars (on either side of the green bar) appear to be a single shade of blue.

***Note***

*Like the brightness and contrast controls, the color and tint controls are interactive. A change to one may require a subtle change to the other in order to achieve the optimum setting.*

**Sharpness:** “Sharpness” is the amount of high-frequency detail in the image. To adjust sharpness, select Sharpness from the Picture menu and press **ENTER**. On your external test pattern source, select a pattern like the one shown in Figure 4-5. Adjust as needed, looking for white edges around the transitions from black to gray and differently-sized lines in the “sweep” patterns at the top and bottom. Lower the sharpness setting to eliminate them.

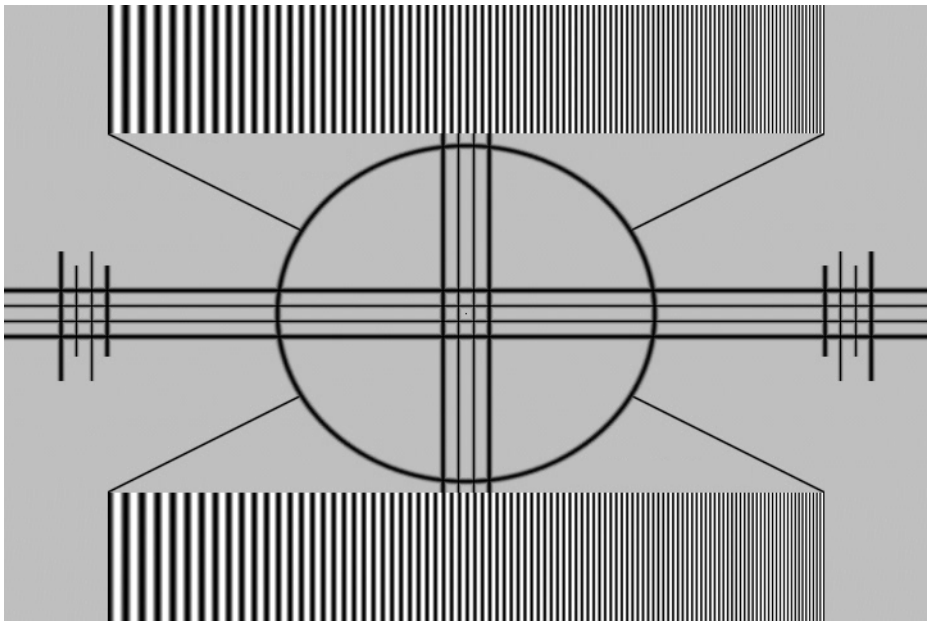


**Figure 4-5. Typical Test Pattern for Adjusting Sharpness**

Use the controls in the Input Position Menu to fine-tune the aspect ratio and image position for the current source.

◄ ***Input Position***

| Input Position |
|---|
| **Left/Right** |
| **Up/Down** |
| **Width** |
| **Height** |
| **Overscan** |

***Note***

*When you change an input position setting, save the change to a preset afterwards. Otherwise, the change will be lost when a different input is selected. (The input position settings are saved for each input and resolution separately.) For information about saving settings, refer to* ***ISF Presets*** *on page 60.*

**Left/Right:** Select Left/Right from the Input Position menu to shift the projected image horizontally. Use the right or up cursor button to shift the image to the right; use the left or down button to shift it to the left.

**Up/Down:** Select Up/Down from the Input Position menu to shift the projected image vertically. Use the right or up cursor button to shift the image upward; use the left or down button to shift it downward.

**Width:** Select Width from the Input Position menu to change the projected image width. Use the right or up cursor button to increase the width; use the left or down button to decrease it.

**Height:** Select Height from the Input Position menu to change the projected image height. Use the right or up cursor button to increase the height; use the left or down button to decrease it.

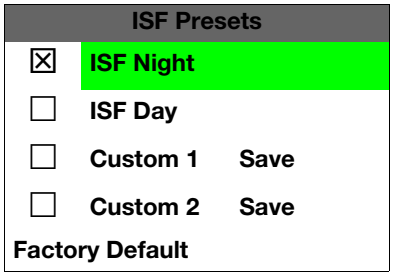
**Overscan:** Image Overscan pushes the outside edge of the active picture area of the video signal out beyond the edge of the display area.

Some television programs are produced based on the assumption that older television sets may not display the outer edges of the broadcast picture area. Overscan effectively trims away these inactive, outer edges and enlarges the remaining portion of the image to fill the display area.

Select from 1% to 10% of Overscan, as desired.

For HDTV, DVDs and other video sources, Overscan is generally not necessary or desirable.

### *ISF Presets* ➤



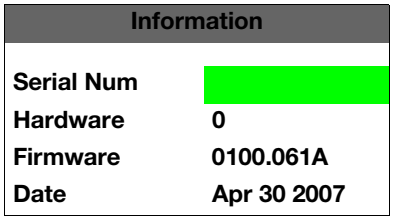

For each input, the VX-6000d lets you save image quality settings as presets that you can recall at a later time. You can create up to four presets per input and resolution. Use the ISF Presets menu to recall saved image presets, or to save image settings in the "Custom 1" or "Custom 2" memory location. The currently-selected preset is indicated by a "☒" to its left; in the example shown here, ISF Night is selected.

You should save changes to any of the following settings to a preset; otherwise they will be lost when a new input source or resolution is selected:

- Aspect ratio
- Picture quality settings (brightness, contrast, color saturation, tint and sharpness)
- Input position (image position, width, height and overscan percentage)

To reset the Custom 1 and Custom 2 image presets to their factory defaults, select Factory Default and press **ENTER**.

### *Information* ➤




Select Information from the Main Menu to see information that uniquely identifies your projector: its serial number, the installed hardware and firmware versions and the firmware version build date. Should you ever need to contact Runco Technical Support, this information will help them answer your questions or resolve product performance issues.

Use the Calibration menu to perform advanced picture quality adjustments. **This menu should be used by ISF-certified technicians only.**

◄ ***Calibration***

| Calibration |
|---|
| **ISF Night** |
| **Display Color** |
| **Input Image** |
| **Input Color** |
| **ISF Day** |
| **Display Color** |
| **Input Image** |
| **Input Color** |
| **Save ISF Settings** |
| **Output Shift** |
| **Splash Configure** |
| **OSD Position** |

***Note***

*You must enter a passcode to access the Calibration menu.*

To recall the ISF Night or ISF Day settings, do one of the following:

- Select “ISF Night” or “ISF Day” from the ISF Presets menu (see above);
- Press **ISF NIGHT** or **ISF DAY** on the remote control; or
- From this menu, choose Display Color, Input Image or Input Color for the preset you want to recall.

**ISF Night - Display Color:** Use the Display Color settings to change the characteristics of the output signal. These settings are global (independent of any particular input).

- **Gain:** Use the Gain controls to correct color imbalances in the bright areas of the image. A good way to do this is to use a test pattern consisting mostly of solid white areas, such as an 80 IRE “window” pattern. If the white areas contain traces of red, green or blue, decrease the Gain for that color.
- **Gamma/Offset:** Use the Gamma and Offset controls in the White Balance sub-menu to correct color imbalances in the dark areas of the image.

  A good way to do this is to use a test pattern consisting mostly of dark gray areas, such as a 30 IRE “window” pattern. If the gray areas contain traces of red, green or blue, decrease the Gamma or Offset for that color.

***Tip***

*Adjust Gamma before Offset. Gamma provides coarse adjustment of low-lights; Offset provides finer adjustment.*

- **Iris:** Select Iris from the Display Color Menu to increase or decrease the Reflectance Volume Regulation setting. RVR lets you control the aperture or iris size (the physical opening through the lens; similar to an “f-stop” on a camera). Doing so allows you to optimize brightness and contrast according to the amount of ambient light in the viewing area.

  Use the lower setting (1) for rooms with lots of ambient light. Use the higher setting (2) for more “theater-like” viewing conditions (little or no ambient light).
- **Color Temp:** Select Color Temp from the Display Color menu to adjust the color temperature. The default setting is appropriate for most situations. Higher settings produce a “bluer” picture.
- **Lamp Power:** Select Lamp Power from the Display Color menu to adjust the lamp output level. You can choose to run the lamp as bright as possible (“1”) or you can choose the lower setting (“0”). Generally, lower lamp output can prolong the life of the lamp, but decreases brightness.

**ISF Night - Input Image:** The Input Image controls are similar to those in the Picture menu, but are accessible only by entering the Calibration menu passcode. This makes it possible to restore the picture quality settings to what they were when the projector was installed, simply by recalling the “ISF Night” preset.

**ISF Night - Input Color:** The Input Color controls are similar to those in the Display Color menu (see above), but can be set independently for each input.

- **Gain/Offset:** Refer to ***ISF Night - Display Color***, above.
- **Chroma Delay:** use the Chroma Delay control to correct a mis-aligned image from a Composite, S-Video or Component video source. Chroma delay in an image causes color shifts to occur to the left of the vertical edge transitions, producing artificial shadows or a "halo" effect. If necessary, adjust this setting to eliminate them.
- **Phase:** Adjust the phase if the image (usually from an RGB source) shows shimmer or "noise." Pixel phase adjusts the phase of the pixel sampling clock relative to the incoming signal. The effect of this control is similar to that of a tracking control on a VCR.

  For best results, use a good test pattern such as a smooth gray consisting of a clear pattern of black and white pixels, or a similar "half on, half off" graphic image. (You may notice that you can stabilize the image at more than one point. Use either setting in this case.)
- **Noise Filter:** Select Noise Filter from the Input Color menu to filter a noisy Composite, S-Video or Component source signal. Adjust as desired, keeping in mind that reducing noise (which reduces high frequencies) may also soften the image.

**ISF Day - Display Color:** Refer to ***ISF Night - Display Color***.

**ISF Day - Input Image:** Refer to ***ISF Night - Input Image***.

**ISF Day - Input Color:** Refer to ***ISF Night - Input Color***.

**Save ISF Settings:** Whenever you make a change to the ISF settings, you should always save it. Select Save ISF Settings from the ISF Calibration menu to do this. In the event you ever have to perform a System Reset, you can restore the saved ISF settings by selecting Restore Saved Settings in the Service menu. (System Reset and Restore Saved Settings are described on page 66.)

**Output Shift:** The controls in the Output Shift menu are similar to those in the Input Position menu, except that they change the characteristics of the output signal (so the change is visible no matter which input is selected). You can set these controls independently for each aspect ratio.

To save the Output Shift settings for the current aspect ratio so that they can be restored after a System Reset (described on page 66), press ▼ repeatedly to highlight "Save." Then, press **ENTER**.

**Splash Configure:** Use the Splash Configure menu to customize the appearance of the start-up message that appears on the vacuum fluorescent display upon power-up.

- **Owner Name/ISF Calibrated/ISF Other:** You can have the VX-6000d display the owner's name, your name, the phrase "ISF Calibrated" and/or any other string, up to 20 characters in length.

  Use the up or down cursor button to select a character. Use the right and left cursor buttons to change the cursor position. Press **MENU** when you have finished entering text. Then, check the "Splash Enable" box to have the VX-6000d display the information you enter here when it is turned on.

- **Runco/ISF Logo Splash Screen Timers:** When you turn on the VX-6000d, it projects a welcome screen with the Runco logo followed by one with the ISF logo. Select Splash Timer from the Splash Configure menu to set the amount of time that these two images appear. The range is from 2 to 60 seconds, in one-second increments.

  Use the up or down cursor button to select a timer value to adjust. Use the right or left cursor button to change the timer value. Press **MENU** when you have finished configuring both timers.

**OSD Position:** Select OSD Position, press **ENTER** and use the arrow buttons to change the size and position of the OSD controls.

Use the Service menu to access advanced projector configuration settings. **This menu should be used by ISF-certified technicians only.**

◄ ***Service***

| Service |
|---|
| **Test Video** |
| **Input Names** |
| **Remote Control** |
| **Analog Out Mode** |
| **Display Device** |
| **HD Format** |
| **Triggers** |
| **Miscellaneous** |
| **System Reset** |
| **Restore Saved Settings** |

***Note***

*You must enter a passcode to access the Service menu.*

**Test Video:** Select Test Video from the Service Menu to access the internal test patterns on the VX-6000d. Four patterns are available, consisting of white/gray or colored bars.

Press **MENU** to exit test pattern mode.

**Input Names:** You can give each DHD Controller input a descriptive name. For example, you may want to change the default input name to the type of source component connected to it: “VCR,” “DVD,” “Laptop” et cetera. Composite, S-Video and Component SD input names can be up to 12 characters long; the others can be up to eight characters long.

| Input Names | |
|---|---|
| | **Restore** |
| **Composite** | **Composite** |
| **S Video 1** | **S Video 1** |
| **S Video 2** | **S Video 2** |
| **Component SD** | **Component SD** |
| **HD/RGB 1** | **HD/RGB 1** |
| **HD/RGB 2** | **HD/RGB 2** |
| **HDMI 1** | **HDMI 1** |
| **HDMI 2** | **HDMI 2** |
| **Save** | |

To edit an input name, select Input Names from the Service menu. Press ▲ or ▼ to select an input and press **ENTER**. Use the ▲ or ▼ buttons to change a character; press ◀ or ▶ to select a character to change. When you have finished editing the input name, press **MENU**.

To restore the default input name, press ▼ repeatedly to highlight that input name in the “Restore” column. Then, press **ENTER**.

To save input names so that they can be restored after a System Reset (described on page 66), press ▼ repeatedly to highlight “Save.” Then, press **ENTER**.

***Note***

*The ▼ button takes you from top to bottom in the left column, then from top to bottom in the right column. To highlight “Save,” scroll through both columns.*

**Remote Control:** The Remote Control menu shows you the primary and secondary infrared (IR) codes to which the VX-6000d will respond. By default, both are set to 17. You can change these codes if either:

- Another device in the theater (a DVD player, for example) is responding to commands from the *standard* DHD remote control (Figure 2-5) in ways that are unpredictable or undesirable.
- You have multiple VX-6000d projectors and want to control them independently, as opposed to broadcasting commands from a single remote to all of them. In this scenario, you can use multiple remotes programmed to use different IR codes. Or, you can use a single remote and change the IR code as needed to address a specific projector.

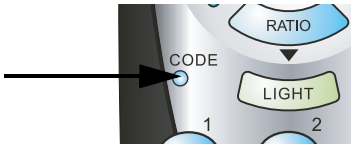
*Use the DHD Controller front-panel keypad to change the projector IR code. Then, change the code sent by the remote to match as described below.*

***Note***

*Do not change the "Type" setting in this menu.*

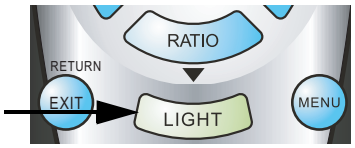
When you change a remote code on the VX-6000d, you must re-program the standard DHD remote control to send that same code. To do this:

1. Using a straightened paper clip or similar object, press and hold the **CODE** button on the remote control for approximately three seconds, or until the LED on the remote lights solid red.




   – OR –

   If your remote control unit does not have a **CODE** button, press and hold the **LIGHT** button on the remote control for approximately three seconds, or until the LED on the remote lights solid red.




2. Enter a new two-digit code between 00 and 31 inclusive. Include a leading zero for single-digit codes; for example, enter 9 as "09."
3. The LED turns off to confirm the code change. If you enter an invalid code, the LED flashes for three or four seconds. Try again, entering a valid code.

**Analog Out Mode:** Select Analog Out Mode from the Service menu to change the output sync polarity from the DHD Controller. The choices are RGB-- (separate sync with negative polarity), RGB++ (separate sync with positive polarity) or RGBS (composite sync).

**Display Device:** The options in the Display Device menu allow you to change the picture orientation, adjust the amount of overscan and access other projector-specific functions.

- **Configure:** Select Configure from the Display Device menu. Then:
  - **Orientation:** Select Orientation to change the picture orientation to suit the method of installation (Floor Front, Floor Rear, Ceiling Front or Ceiling Rear).
  - **Overscan:** Refer to ***Overscan*** on page 60.
  - **Fan Mode**: If the projector is being used in a high-altitude environment, use the Fan Mode control to prevent it from overheating. Set it to High Altitude ("1") to run the fan at high speed; set it to Normal ("0") to run the fan at normal speed.
  - **Height:** Select Height from the Display Device menu to adjust the displayed image height in small increments. Higher values **compress** the height. **This setting affects all sources.**

***Note***

*Use this control to fine-tune the image geometry on a VX-6000d/CineWide. (It should not be necessary to change this setting on a standard VX-6000d.)*

  - **Lamp Hours:** To display the number of hours that the lamp has been in service, press ▲ or ▼ to highlight Lamp Hours.

**HD Format:** If the characteristics of the incoming signal on the HD1 or HD2 inputs are known, select HD Format from the Service menu and set them as described below. Doing so can reduce the time it takes the DHD Controller to switch from HD to 480i signals or vice versa.

| HD Format | |
|---|---|
| HD/RGB 1 | Auto |
| HD/RGB 2 | Auto |
| ADC Bandwidth | Auto |
| YPbPr Input Resolution | |

This is generally not necessary unless the DHD Controller – for whatever reason – has difficulty determining the color space (RGB or YUV), bandwidth or resolution of the incoming HD signal. In most situations, the **Auto** settings work well.

- **HD/RGB 1 and HD/RGB 2 (Color Space):** Select Auto, RGB or YUV.
- **ADC Bandwidth:** Select Auto, 75 MHz, 150 MHz or 300 MHz.
- **YPbPr Input Resolution:** Select Auto or specify the input resolution, if known: 480i, 480p, 576i, 576p, 720p or 1080i.

**Triggers:** Select Triggers from the Service menu to configure the 12-volt trigger outputs. You can assign one or more trigger outputs to each aspect ratio. Those triggers are then activated by selecting that aspect ratio.

If your projector is equipped with the Runco CineWide with AutoScope system, assign at least one trigger output (the same one to which the lens motor is connected) to the Cinema and Virtual Cinema aspect ratios.

To save the trigger settings so that they can be restored after a System Reset (described below), press ▼ repeatedly to highlight "Save." Then, press **ENTER**.

**Miscellaneous:** Select Miscellaneous from the Service menu to set the following options:

- **Language:** Select Language from the Miscellaneous menu and press the up- or down-arrows to select the OSD Language (English, French, Spanish or German).
- **Menu Mode:** This is the manner in which the OSD menus appear and disappear when you press **MENU**. Choose one of the following:

  0 = No transition; menus abruptly appear and disappear.
  1 = Menus fade in and out.
  2 = “Checkerboard” dissolve; menus appear and disappear in sections.
  3 = “Window shade” effect; menus are drawn on a diagonal from top left to bottom right, and retract in the opposite direction.
- **Timeout - Short/Long:** These settings control how long the OSD menus stay on screen. Select a time-out period of from 2 to 60 seconds.
- **Side Bar Color:** This controls the color of the inactive image area. The range is from -100 (black) to 100 (white).

  The inactive image area is on either side of the active image area when using the 4:3 aspect ratio (or the entire screen when no incoming video signal is present).
- **Film Mode:** Enable Film Mode to smooth out moving images from interlaced, standard-definition (SD) sources. In most cases, the VX-6000d detects the proper “pull-down” rate and vertical frequency. However, if your source is jittery and/or tearing you may wish to enable Film Mode to ensure stable processing for that source.

**System Reset:** To reset ALL projector and controller settings (including image settings) back to their factory defaults, choose System Reset from the Service menu.

A confirmation message appears, reminding you to save your settings before you perform the reset, so that you can restore them afterwards. If you have done this, select Confirm to continue with the reset. Otherwise, click Back to cancel.

***Caution***

***This action is not undoable. Proceed with caution!*** *Before you perform a System Reset, save ALL settings, including “Custom” ISF Presets (page 60), ISF Day/Night presets (page 62), Output Shift settings (page 62), Input Names (page 63) and Trigger settings (page 65).*

**Restore Saved Settings:** Following a System Reset, select Restore Saved Settings to apply all previously-saved settings to the projector and DHD Controller.

## 4.3 On-Screen Menus for 1080i (Digital) or 1080p Signals

After you have finished calibrating the projector to optimize the display of 1080i analog and lower-resolution sources, do likewise for 1080i digital and 1080p sources (connected to the HDMI 1 or HDMI 2 inputs on the DHD Controller).

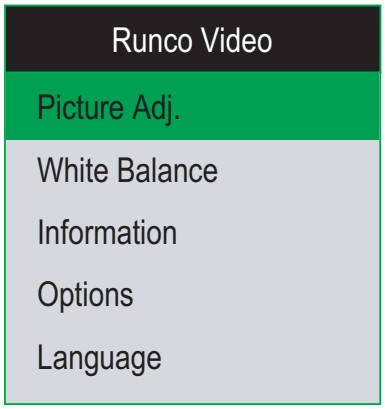
When the projector receives a 1080i digital and 1080p signal, it displays the menus shown in Figure 4-6.

| | | |
|---|---|---|
| **Picture Adjust** | Picture Memory | Standard, Custom 1, Custom 2, ISF Day, ISF Night or THX Mode |
| | Contrast | -90, -89, ... 0 ... +89, +90 |
| | Brightness | |
| | Color | -30, -29, -28 ... 0 ... +28, +29, +30 |
| | Tint | |
| | Sharpness | |
| | Color Temp. | 5500, 6500, 7500, 8500, 9300 or 10500 |
| | White Balance | Standard, Custom 1, Custom 2, ISF Day, ISF Night or THX Mode |
| | RVR | High Brightness, Theater or CRT Emulation |
| | Lamp Power | 220 watts (Hi) or 180 watts (Low) |
| **Picture Adjust (Advanced)** | ACC | Hue |
| | | Saturation |
| | | Intensity |
| | | Reset to Defaults |
| | | Red |
| | | Yellow |
| | | Green |
| | | Cyan |
| | | Blue |
| | | Magenta |
| | | Reset to Defaults |
| | Color Enhance | On/Off |
| | SD Advanced Mode | Motion, Graphic or Game |
| | Film Mode | Auto or Off |
| | Video NR | Off, 1, 2 or 3 |
| | MPEG NR | |
| | Sharpness Enhancement | |
| | Automatic Contrast | |
| | Reset to Defaults | Yes or No |
| **White Balance** | Mem. Select | Standard, Custom 1, Custom 2, ISF Day, ISF Night or THX Mode |
| | Red Gamma | -30, -29, -28 ... 0 ... +28, +29, +30 |
| | Green Gamma | |
| | Blue Gamma | |
| | Red Gain | |
| | Green Gain | |
| | Blue Gain | |
| | Red Offset | |
| | Green Offset | |
| | Blue Offset | |
| | Reset to Defaults | Yes/No |

| | | |
|---|---|---|
| **Information** | Frequency | (N/A) |
| | Phase | |
| | H-Shift | |
| | V-Shift | |
| | Reset to Defaults | |
| | Special Mode | |
| | Signal Info (read-only) | Format (480i ... 1080p), H/V Frequency |
| | Auto Setup | (N/A) |
| **Options** | Image Shift | -30, -29, -28 ... 0 ... +28, +29, +30 (available only with certain 1080i signals) |
| | Subtitle | |
| | Overscan | 0, 1%, 2% ... 10% |
| | Reset to Defaults | Yes or No |
| | Adjust White Level | (N/A) |
| | Adjust Black Level | |
| | LED | On or Off |
| | Lamp Hours (read-only) | Hours in use |
| | OSD | On or Off |
| | Signal Type | Auto, RGB, YCbCr4:4:4 or YCbCr4:2:2 |
| | Color Space | Auto, ITU601 or ITU709 |
| | HDMI Black Level | Auto, 0 IRE or 7 IRE |
| | Splash Screen Color | Runco Logo, Blue or Black |
| | Power Save | RS-232C Port (On or Off) |
| | | Auto Power Off (On or Off) |
| | Baud Rate | 9600, 38400 or 115200 bps |
| | Fan Mode | Normal or High Altitude |
| | Orientation | Floor Front, Ceiling Front, Floor Rear or Ceiling Rear |
| | Factory Default | All Reset or Return |
| **Language** | English | |
| | Deutsch | |
| | Español | |
| | Français | |
| | Italiano | |

**Figure 4-6. OSD Menu Structure for VX-6000d (1080i Digital or 1080p Sources)**

***Main Menu*** ➤





Press **MENU** on either the remote control or built-in keypad (on the projector rear panel) to display the Main Menu. The Main Menu is the starting point for calibrating the VX-6000d to optimize the display of digital 1080i and 1080p sources.

To use the on-screen menus:

1. Press ▲ or ▼ to select a sub-menu, then press **ENTER** or ▶.
2. Press ▲ or ▼ to select a sub-menu item.
3. For items that present a list of choices, such as Picture Memory:
   a Press **ENTER** or ▶.
   b Press ▲ or ▼ to select a value from the list.
   c Press **ENTER** again to confirm your selection.
   d Press ◀ or **RETURN** to return to the menu.

   – OR –

   For items that are represented by numeric values, such as Contrast:
   a Press **ENTER** to hide the “parent” menu and display only the slidebar for that item.
   b Press ◀ or ▶ to adjust the value.
   c Press ▲ or ▼ to select another item to adjust. Or, press **ENTER** or **RETURN** to return to the menu.
4. Press **MENU** to hide the OSD menus.

### ◄ *Language*

The VX-6000d OSD language is initially set to English, but can also display the menus in German (Deutsch), Spanish (Español), French (Français) or Italian (Italiano). To change the OSD language:

1. Press **MENU**.
2. Press ◄ or ► to select **Language** from the Main Menu.
3. Press up- or down-arrow button (▲ or ▼) to highlight the desired language and press **ENTER**. The change takes effect immediately.

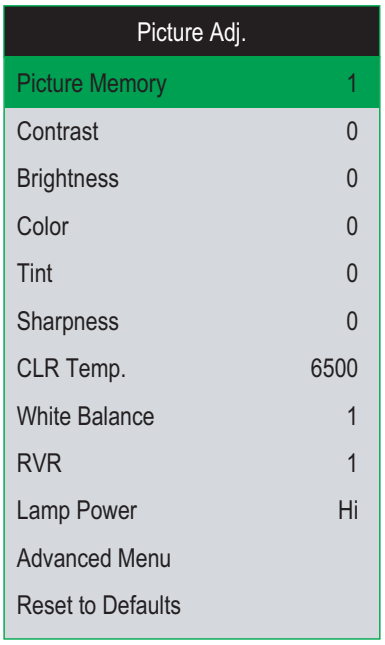

### ◄ *Picture Adjust*

To perform basic picture quality adjustments, select Picture Adjust from the Main Menu and proceed as follows:

**Picture Memory:** The VX-6000d lets you save image quality settings as presets that you can recall at a later time. For digital 1080i and 1080p sources, you can create up to six presets.

To recall and/or change the settings associated with a preset, select Picture Memory from the Picture Adjust menu. Press ►, then press ▲ or ▼ until your choice is highlighted. To confirm your selection, press **ENTER**.

The default settings for each preset are described in Table 4-2. Contrast, Brightness, Color, Tint and Sharpness are all set to zero (0) by default. These provide convenient starting points for calibrating the projector to suit different viewing environments. Any picture quality adjustments you make here are stored in the currently-selected preset.




### Table 4-2. Default Picture Memory Settings for Digital 1080i and 1080p Sources

| Picture Memory Setting | Description | Default Settings for Selected Picture Memory | | | | | Remote Control Key |
|---|---|---|---|---|---|---|---|
| | | Color Temp. | RVR (Iris) | Lamp Power | Sharpness Enhancement | Auto Contrast | |
| Standard | Provides good picture quality under the widest variety of viewing conditions. | 7500 | High Brightness | Hi (220W) | Off | Off | – |
| Custom1 | Similar to “Standard” mode, but with enhanced black levels. | 7500 | CRT Emulation | Hi (220W) | Off | 1 | CUST 1 |
| Custom2 | Similar to “Standard” mode, but with enhanced white levels. | 7500 | High Brightness | Hi (220W) | 1 | Off | CUST 2 |

**Table 4-2. Default Picture Memory Settings for Digital 1080i and 1080p Sources (continued)**

| Picture Memory Setting | Description | Default Settings for Selected Picture Memory | | | | | Remote Control Key |
|---|---|---|---|---|---|---|---|
| | | Color Temp. | RVR (Iris) | Lamp Power | Sharpness Enhancement | Auto Contrast | |
| ISF Day | For viewing images with the brightness slightly decreased in a darkened room. | 6500 | Theater | Low (180W) | Off | Off | ISF DAY |
| ISF Night | For viewing images with the brightness slightly increased in a darkened room. | 6500 | CRT Emulation | Low (180W) | Off | Off | ISF NIGHT |
| THX Mode | Similar to “Standard” mode, but sets the color temperature to 6500K. | 6500 | High Brightness | Hi (220W) | Off | Off | – |

**Contrast:** Refer to ***Contrast*** on page 57.

**Brightness:** Refer to ***Brightness*** on page 56.

**Color:** Refer to ***Color Saturation*** on page 57.

**Tint:** Refer to ***Tint*** on page 58.

**Sharpness:** Refer to ***Sharpness*** on page 59.

**Color Temp.:** To adjust the color temperature, select Color Temp. from the Picture Adjust menu. (Color temperature defines the “color of gray.”) Press ◀ or ▶ to select 5500, 6500, 7500, 8500, 9300 or 10500. In most cases, 6500 or 7500 will produce the most realistic colors. Higher settings produce a “bluer” picture; lower ones cause the image to appear more red.

**White Balance:** Select White Balance from the Picture Adjust menu to choose a white balance preset (or “gamma curve”) to store in the currently-selected picture memory. For more information on white balance presets, refer to ***White Balance*** on page 73.

**RVR:** Select RVR from the Picture Adjust menu to increase or decrease the Reflectance Volume Regulation setting. RVR lets you control the aperture or iris size (the physical opening through the lens; similar to an “f-stop” on a camera). Doing so allows you to optimize brightness and contrast according to the amount of ambient light in the viewing area.

Select High Brightness or Theater for rooms with lots of ambient light. Select CRT Emulation for more “theater-like” viewing conditions (little or no ambient light).

**Lamp Power:** Select Lamp Power from the Picture Adjust menu to adjust the lamp output level. You can choose to run the lamp as bright as possible (220W; this is the default setting) or you can choose the lower setting (180W). Generally, lower lamp output can prolong the life of the lamp, but decreases brightness.

To access advanced picture quality settings, select Advanced from the Picture Adjust menu. This sub-menu presents the following options:

◄ ***Picture Adjust (Advanced)***

| Picture Adj. | |
|---|---|
| Picture Memory | 1 |
| Contrast | 0 |
| Brightness | 0 |
| Color | 0 |
| Tint | 0 |
| Sharpness | 0 |
| CLR Temp. | 6500 |
| White Balance | 1 |
| RVR | 1 |
| Lamp Power | Hi |
| Advanced Menu | |
| ACC Adjust | |
| Color Enhance | |
| SD Advanced Mode | |
| Film Mode | |
| Video NR | |
| MPEG NR | |
| Sharpness Enhancement | |
| Automatic Contrast | |
| Reset to Defaults | |

**ACC:** Select ACC from the Advanced Picture Adjust menu to customize the displayed color space. ("ACC" stands for "Advanced Color Correction.") The adjustments you make here are stored in the currently-selected "Picture Memory" preset.

For each of the six primary colors – red, yellow, green, cyan, blue and magenta – you can adjust the following:

- **Hue:** These slidebars adjust the red/green color hue for true color reproduction of video signals. For best results, adjust the hue while displaying an external color bar test pattern (Figure 4-4).

  Changing the hue of a primary color affects the gamut (range) of possible colors. For example, changing the value for red moves the color closer to either yellow or magenta, which in turn affects all displayed colors having a red component.

| ACC Adjust | |
|---|---|
| ACC - Hue | |
| ACC - Saturation | |
| ACC - Intensity | |
| Reset to Defaults | |
| Red | 0 |
| Yellow | 0 |
| Green | 0 |
| Cyan | 0 |
| Blue | 0 |
| Magenta | 0 |
| Reset to Defaults | |

Table 4-3 describes the effects of adjusting the primary color hues.

### Table 4-3. Effects of Primary Color Hue Adjustments

| Primary Color | Press ◀ to move the color... | Press ▶ to move the color... |
|---|---|---|
| Red | **Closer to magenta** | **Closer to yellow** |
| Yellow | **Closer to red** | **Closer to green** |
| Green | **Closer to yellow** | **Closer to cyan** |
| Cyan | **Closer to green** | **Closer to blue** |
| Blue | **Closer to cyan** | **Closer to magenta** |
| Magenta | **Closer to blue** | **Closer to red** |

- **Saturation:** This slidebar adjusts the color saturation level – the *amount* of that color in a video image. Lower settings produce less saturated colors; a setting of "-30" removes that color from the image entirely. If the saturation is too high, that color will be overpowering and unrealistic.
- **Intensity:** This slidebar adjusts the intensity – also known as *luminance* – of a given color.
- **Reset to Defaults:** To reset ALL ACC settings – Hue, Saturation AND Intensity of all six colors – for the currently-selected "Picture Memory" preset to their factory-default values, select Reset to Defaults (directly below the "Intensity" menu item) from the ACC menu. Then, select Yes to confirm the reset.

  To reset only the Hue, Saturation OR Intensity of all six colors for the currently-selected "Picture Memory" preset to their factory-default values, select Hue, Saturation or Intensity from the ACC menu and press **ENTER**. Then, select Reset to Defaults (the last menu item) from the ACC menu. Then, select Yes to confirm the reset.

**Color Enhance:** Select Color Enhance from the Advanced Picture Adjust menu to change the Color Enhance setting. Color Enhance utilizes a new color-processing algorithm and system level enhancements to enable higher picture brightness while providing truer, more vibrant colors. To enable Color Enhance, set it to On; to disable it, set it to Off.

**SD Advanced Mode:** Select SD Advanced Mode from the Advanced Picture Adjust menu to adjust the projector's motion detection threshold. Doing so can improve detail and minimize flickering or motion artifiacts. Choose the appropriate setting for the selected source: Motion for high-definition video, Graphic for still pictures or graphics or Game for video gaming.

**Film Mode:** Refer to ***Film Mode*** on page 66.

**Video NR:** To apply noise reduction to the input signal, select Video NR from the Advanced Picture Adjust menu. Noise reduction is useful for improving the signal-to-noise ratio of video signals. Set it to Off, 1, 2 or 3, as needed, keeping in mind that higher settings (which reduce high frequencies) may also "soften" the image.

**MPEG NR:** Select MPEG NR from the Picture Adjust menu to reduce or eliminate so-called “mosquito noise” in MPEG-compressed video signals (digital broadcasts or DVDs). Set it to Off, 1, 2 or 3, as needed to minimize distortion around the edges of moving objects, moving artifacts around edges and/or blotchy noise patterns superimposed over the objects.

**Sharpness Enhancement:** select Sharpness Enhancement from the Advanced Picture Adjust menu to apply edge enhancement to images, giving the impression of added depth. Set it to Off, 1, 2, or 3 as desired.

**Automatic Contrast:** The VX-6000d can dynamically adjust the contrast (white level) according to the color content in the signal, to produce the best picture quality. Select Automatic Contrast from the Picture Adjust menu to activate this feature. Set it to Off, 1, 2, or 3 as desired. Selecting “3” results in a higher average white level than the other settings.

**Reset to Defaults:** To reset all picture quality settings for the current input to their factory-default values, select Reset to Defaults from the Picture menu.

### ➤ *White Balance*

The VX-6000d provides nine adjustable white balance parameters, allowing precise adjustment of the intensity of the red, blue and green color components in the dark areas (Offset), light areas (Gain) and “mid-tone” areas (Gamma).

You can adjust these parameters as needed and store them in any of six presets (memory locations). The selected white balance preset can, in turn, be associated with a “Picture Memory“ preset (refer to ***White Balance*** on page 70). The most logical way to do this is to associate a white balance preset with the picture memory preset of the same name; however, you can associate a white balance preset with any picture memory preset.

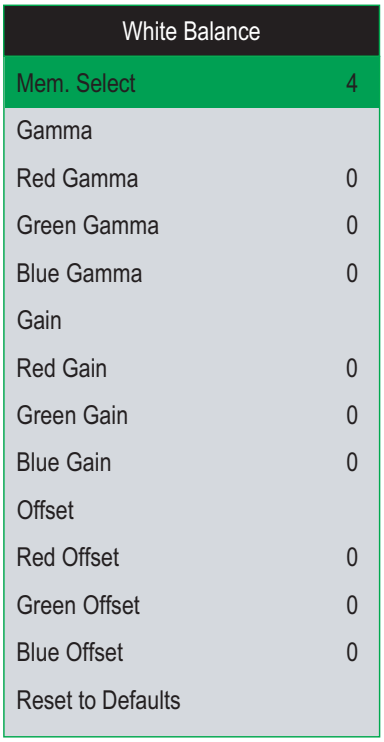
**Mem. Select:** To select and edit a white balance preset, select Mem. Select from the White Balance menu.

**Red Gamma/Green Gamma/Blue Gamma:** Refer to ***ISF Night - Display Color*** on page 61.

**Red Gain/Green Gain/Blue Gain:** Refer to ***ISF Night - Display Color*** on page 61.

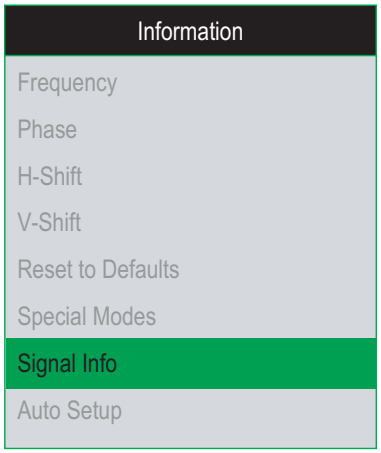
**Red Offset/Green Offset/Blue Offset:** Refer to ***ISF Night - Display Color*** on page 61.

**Reset to Defaults:** To reset the Gamma, Gain and Offset settings for the currently-selected white balance preset to their factory-default values, select Reset to Defaults from the White Balance menu. Then, select Yes to confirm the reset.



***Information*** ➤

Select Information from the Main Menu, then select Signal Info from the Information menu to display the resolution, horizontal frequency and vertical frequency of the current input signal.




***Options*** ➤

Select Options from the Main Menu to perform the following projector configuration tasks.

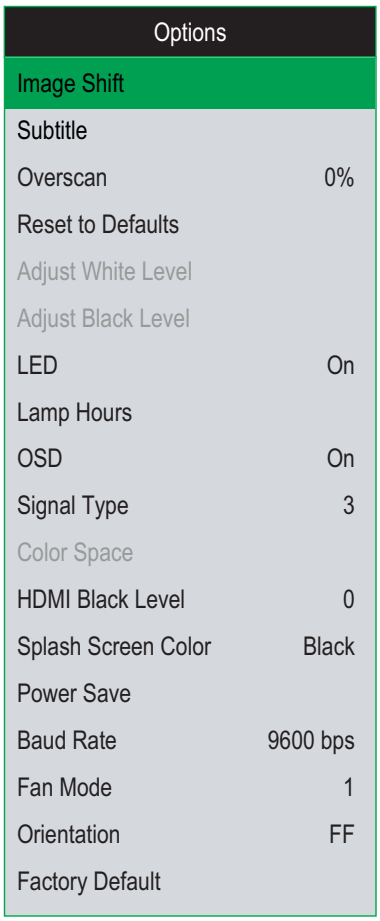



**Image Shift:** Select Image Shift from the Options menu to vertically shift the projected image.

**Subtitle:** Select Subtitle from the Options menu to adjust the projected image height in small increments.

***Note*** *Image Shift and Subtitle can only be adjusted for certain 1080i signals.*

**Overscan:** Refer to ***Overscan*** on page 60.

**Reset to Defaults:** To reset the Overscan setting to its default value, select Reset to Defaults from the Options menu, then select Yes to confirm the reset.

**LED:** Select LED from the Options menu to change the behavior of the projector's indicator LEDs.

- When set to ON, the LEDs indicate operating status as described in ***VX-2000d at a Glance*** on page 5.

***Note*** *When you set the Auto Power Off function (refer to **Power Save**, below) to Off, the LED function is automatically set to On.*

- When set to OFF, the LEDs illuminate when the VX-6000d is in standby mode, warming up or indicating an error condition; otherwise, they are off.

**Lamp Hours (read-only):** Refer to ***Lamp Hours*** on page 65.

**OSD:** When you select an aspect ratio or input with the remote control (or from the DHD Controller), the VX-6000d displays your selection on-screen. To prevent the display of these items, select OSD from the Options menu and set it to Off.

**Signal Type:** Select Signal Type from the Options menu to specify the incoming signal type (encoding method):

- Choose Auto to have the VX-6000d automatically detect the signal type.
- Choose RGB (1) for RGB-encoded video signals.
- Choose YCrCb4:4:4 (2) for uncompressed, component video. This encoding method uses a “luminance” signal (Y) to represent brightness and “difference” signals (Cb and Cr) to represent colors.
- Choose YCrCb4:2:2 (3) for compressed, component video (similar to YCrCb4:4:4).

In most situations, selecting Auto produces the most accurate colors. If it does not, try the other choices and select the one that does.

**Color Space:** “Color Space” determines how the color components of an analog input signal are decoded for accurate color in the display. Select Color Space from the Options menu to specify the color space to use. In most situations, selecting Auto produces the most accurate colors. If it does not, try the other choices and select the one that does.

**HDMI Black Level:** This control compensates for incoming elevated black levels present in certain video signals. When you set it to Auto, the VX-6000d automatically determines the best setting according to the incoming video signal type. For some types of video, you may want to override the setting. Set it to 0 IRE if blacks appear elevated (dark gray). If blacks appear “crushed” (too dark), set it to 7 IRE.

**Splash Screen Color:** Select Splash Screen Color from the Options menu, then press ▲ or ▼ to select the image background – solid blue, solid black or the Runco logo welcome screen. The Splash Screen Color appears when no incoming signal is present.

**Power Save:** Select Power Save from the Options menu to access the power management features of the VX-6000d.

- **RS-232C Port:** When this option is set to On, the RS-232 port is always active and consuming power, even when the projector is in standby mode. When set to Off, the RS-232 port is inactive and does not consume power when the projector is in standby mode.

  ***Caution*** ***Always set this option to On.*** *Doing otherwise may disrupt communication between the projector and DHD Controller.*

- **Auto Power Off:** When this option is set to On, the projector enters standby mode after 15 minutes of inactivity (no input signal). Five minutes before this is to occur, the message “Enter STANDBY mode in 5 min.” appears on-screen. This message updates to indicate the amount of time before the projector enters standby mode.

  When set to Off, the projector remains in the “power on” state regardless of the presence or absence of an input signal.

  ***Note*** *When you set the Auto Power Off function to Off, the LED function (refer to page 74) is automatically set to On.*

**Baud Rate:** Select Baud Rate from the Options menu, then press the ▲ or ▼ button to change the data rate of the RS-232 connection between the projector and the DHD Controller. The default setting is 9600 bps. **Do not change it unless specifically instructed to do so by Runco Technical Support.**

**Fan Mode:** If the projector is being used in a high-altitude environment, use the Fan Mode control to prevent it from overheating. Set it to High Altitude (2) to run the fan at high speed; set it to Normal (1) to run the fan at normal speed.

**Orientation:** Refer to ***Adjusting the Picture Orientation*** on page 32.

**Factory Default:** To reset all projector settings (including image settings) back to their factory defaults, choose Factory Default from the Options menu. When the confirmation message appears, select **All Reset** to perform the reset or **Return** to cancel. **This action is not undoable. Proceed with caution!**

***Note***

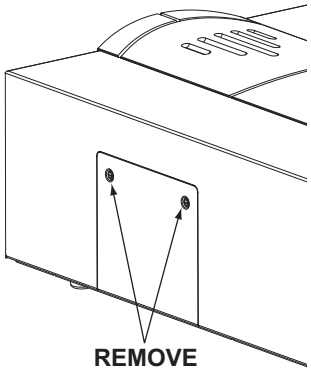
*The Factory Default command does not reset the Lamp Timer or OSD Language setting.*

# 5. Maintenance and Troubleshooting

## 5.1 Lamp Replacement

The lamp should be replaced when it reaches the end of its life (typically 2000 hours), or sooner if a noticeable degradation in brightness occurs. Contact your Runco dealer to obtain a replacement lamp.

1. Turn off the projector and unplug the power cord. Allow the projector to cool down for approximately 45 minutes prior to removing the lamp assembly for replacement.
2. Using a flat-blade screwdriver, loosen the two captive Lamp Cover screws on the side of the projector and remove the cover.




3. Remove the three Phillips round-head lamp assembly mounting screws. These are identified by arrows pointing to them on the lamp housing.
4. Grasp the lamp assembly handle and pull gently, removing the lamp module from the projector housing.
5. Install the new lamp module. Secure it in place with the three screws that you removed in Step 3.
6. Replace the lamp cover and re-tighten the two Lamp Cover screws.
7. Turn the projector on.
8. Reset the Lamp Hour counter by doing either of the following:
   - **On the projector rear-panel keypad (see Figure 2-7),** press and hold the **ENTER**, ▼ and ▶ buttons simultaneously. Then, press the **POWER** button.
   - **On the DHD Controller front panel (see Figure 2-3),** while pressing and holding the **ENTER** button, press the **POWER (⏻)** button.

   When you do, "LAMP 0000H" appears on-screen to confirm the counter reset.


***Note***

*Always reset the Lamp Hour counter when you replace the lamp. Do this **only** if you have just installed a new lamp. This will ensure that number of hours logged on the lamp is accurate.*

## 5.2 Lens Replacement

Figure 5-1 shows the VX-6000d lens assembly.

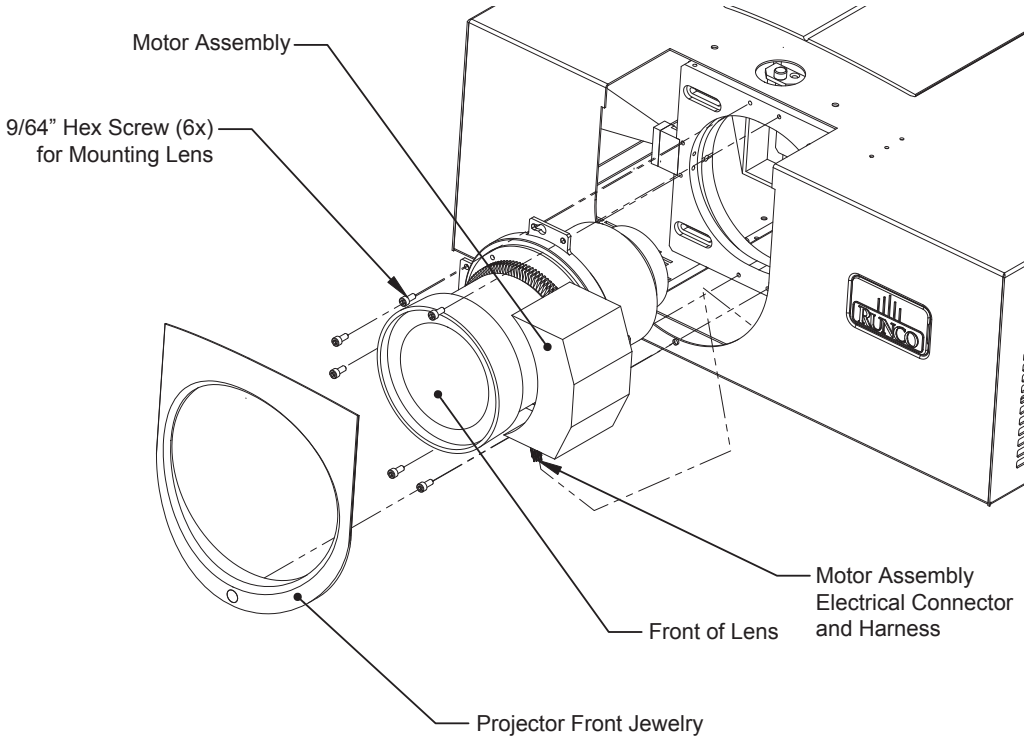



**Figure 5-1. VX-6000d Lens Assembly Exploded View**

***Note***

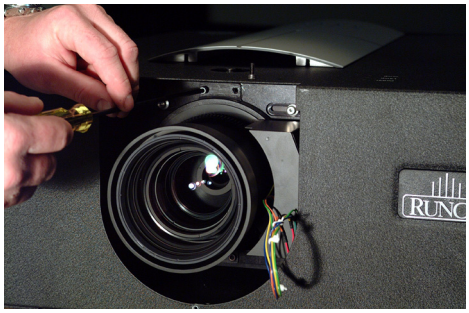
***Only trained, authorized Runco dealers should attempt to remove or replace a lens. Please read this procedure carefully before doing so.***

*Lens replacement is normally performed at the Runco factory. Field replacement of lenses is generally only required if the projector is re-installed in a new location or the lens has been damaged.*

1. Remove the Projector Front Jewelry by loosening the captive #2 Phillips screw below the lens.

2. Locate and unplug the Motor Assembly Connector. Note the connector orientation for when you install the new lens.

3. Locate the six 9/64” Hex Mounting Screws (two each at 12 o'clock, 9 o'clock and 6 o'clock).
4. Remove the six Mounting Screws while supporting the Lens Assembly; Lens and Motor Assembly are now free.



5. Remove the Lens and Motor Assembly by pulling forward and to the left in order to clear the Projector chassis with the Motor Assembly.

6. **Install New Lens Assembly:** Repeat Steps 1 through 5 in reverse order.

***Caution*** *Make sure to route the wire harness in its original position and away from the moving lens stages and Motor Assembly, to prevent unexpected disconnection or lens damage.*

## 5.3 Troubleshooting Tips

Table 5-1 provides some general guidelines for troubleshooting problems you may encounter with the VX-6000d.

If you encounter an issue not described here or in Section 3 (refer to ***Installation Considerations*** on page 22), or if the suggested solutions fail to resolve the problem, please contact your Runco dealer or Runco Technical Support.

### Table 5-1. Troubleshooting Chart

| Symptom | Possible Cause(s) | Solution |
|---|---|---|
| The projector does not turn on after initial installation. The power LED on the front of the DHD Controller lights red after you press the power button. | • The VX-6000d is not plugged in or the AC outlet is not active.<br>• The serial connection from the DHD Controller to the VX-6000d is incorrect.<br>• The remote control batteries have run out. | • Ensure that the VX-6000d is plugged in and that the AC outlet is active.<br>• Ensure that the RS-232 output from the DHD Controller is properly connected to the COM LINK IN port on the VX-6000d (see Figure 3-10).<br>• Replace the batteries. |
| The projector and DHD Controller are both on, but there is no picture and on-screen menus do not appear. | • Faulty or incorrect video connection between the DHD Controller and the VX-6000d. | • Ensure that the HDMI output from the DHD Controller is properly connected to the HDMI input on the VX-6000d (see Figure 3-10). |
| The projector and DHD Controller are both on and menus appear on-screen, but there is no picture. | • Incorrect source selection.<br>• Source component is not turned on.<br>• Source component is connected incorrectly or not at all. | • Select the correct source.<br>• Turn on the source.<br>• Check video connections to source component. |
| A projected image from a DVD is split or otherwise scrambled. | • DVD player is connected to the Component input and set to progressive scan mode. | • Turn off progressive scan on the DVD player. Or, connect the DVD player to the HD1 or HD2 input. |
| Image is too bright and/or lacks definition in the bright areas of the image. | • Contrast is set too high. | • Lower the contrast setting. |
| Image appears “washed out” and/or dark areas appear too bright. | • Brightness is set too high. | • Lower the brightness setting. |
| Colors in the image are swapped (for example, reds appear blue or vice versa) on one or more sources. | • The Red/Pr, Green/Y or Blue/Pb outputs from the source are connected to the wrong inputs on the DHD Controller. | • Ensure that the source outputs are connected to the correct DHD Controller input. |

## Table 5-1. Troubleshooting Chart (continued)

| Symptom | Possible Cause(s) | Solution |
|---|---|---|
| Image geometry is incorrect. | • Incorrect aspect ratio selection.<br>• Image height may need adjusting (VX-6000d/CineWide only). | • Select the aspect ratio that best matches the source image and screen size (refer to Table 4-1).<br>• Adjust displayed image height (refer to ***Display Device*** on page 65). |
| The projected image is trapezoidal in shape. | • The projector is not perpendicular to the screen. | • Adjust the projection angle. |
| The projector will not turn back on after it was powered down, or the image disappears during operation. | • The projector will not turn on for two minutes after power-down, to protect the lamp.<br>• The lamp has failed or reached its usage limit of 2000 hours. | • Wait two minutes until the LED at the front of the DHD Controller turns red.<br>• Replace the lamp. |

## Notes:

# 6. Serial Communications

## 6.1 RS-232 Connection and Port Configuration

To interface the DHD Controller with a home theater automation/control system or a PC running terminal emulation software, connect it to your control system or PC as shown in Figure 3-15.

Configure the RS-232 controller or PC serial port as follows: no parity, 8 data bits, 1 stop bit and no flow control. Set the baud rate to 19200, to match that of the DHD Controller RS-232 port.

## 6.2 Serial Command Syntax

Serial commands to the DHD Controller take the following form:

- Commands are not case-sensitive.
- For a single command that takes no parameters, type the command followed by a carriage return; for example, to set the aspect ratio to Letterbox, type `LETTERBOX` **`<Enter>`**.
- For a single command that takes a parameter, type the command, a space or a comma and the desired value followed by a carriage return; for example, to set the brightness to -10, type `BRIGHTNESS -10` **`<Enter>`** or `BRIGHTNESS,-10` **`<Enter>`**.
- You can also send a string of multiple commands on a single line, separated by commas. For example, `COMPOSITE,BRIGHTNESS 100,16:9` **`<Enter>`** switches to the Composite video input, sets the brightness to 100 and sets the aspect ratio to 16:9. Command strings can be up to 255 characters long.

***Note***

*Avoid combining the* `ON` *or* `POWER 1` *commands with other commands on a single line. After sending* `ON` *or* `POWER 1,` *allow at least 15 seconds for the DHD Controller to power up. Once it does, it will accept and properly execute multiple serial commands.*

Table 6-1 lists the RS-232 command set. The “Parameter (min/max)” column shows the valid parameter ranges, or “NA” for commands that take no parameters.

When you enter a valid command, the DHD Controller executes it and acknowledges it with a plus sign on the command line (+ >). When you enter an invalid command -- one that is misspelled or followed by values outside the valid range for that command -- the DHD Controller ignores it and returns a minus sign (- >).

### Table 6-1. Serial Commands

| Command | Parameter (min/max) | Value Stored? | Description |
|---|---|---|---|
| **Power On/Off Commands** | | | |
| OFF | NA | NA | Turns projector off |
| ON | NA | NA | Turns projector on |
| POWER | 0/1 | NA | Turns projector on and off |
| POWER? | NA | NA | Returns power status |

## Table 6-1. Serial Commands (continued)

| Command | Parameter (min/max) | Value Stored? | Description |
|---|---|---|---|
| **Input Selection Commands** | | | |
| COMPONENT | NA | YES | Selects the Component input |
| COMPOSITE | NA | YES | Selects the Composite video input |
| HDMI1 | NA | YES | Selects the HDMI 1 input |
| HDMI2 | NA | YES | Selects the HDMI 2 input |
| HD1 | NA | YES | Selects the RGB HD 1 input |
| HD2 | NA | YES | Selects the RGB HD 2 input |
| INPUT? | NA | NA | Returns active input |
| SVIDEO1 | NA | YES | Selects the S-Video 1 input |
| SVIDEO2 | NA | YES | Selects the S-Video 2 input |
| **Aspect Ratio Commands** | | | |
| 16:9 | NA | YES | Selects the 16:9 aspect ratio |
| ASPECT? | NA | NA | Returns current aspect ratio |
| ASPECTIN? | NA | NA | Returns the input source aspect ratio |
| ASPECTOUT? | NA | NA | Returns output screen size |
| CINEMA | NA | YES | Selects the Cinema aspect ratio |
| LETTERBOX | NA | YES | Selects the Letterbox aspect ratio |
| 4:3 | NA | YES | Selects the 4:3 aspect ratio |
| VIRTUALWIDE | NA | YES | Selects the VirtualWide aspect ratio |
| VIRTUALCINEMA | NA | YES | Selects the Virtual Cinema aspect ratio (available only on the VX-6000d/CineWide and VX-6000d/CineWide with AutoScope) |
| OUT169 | NA | YES | Sets the output screen to 1.78:1 (16:9) |
| OUT235 | NA | YES | Sets the output screen to 2.35:1 |

## Table 6-1. Serial Commands (continued)

| Command | Parameter (min/max) | Value Stored? | Description |
|---|---|---|---|
| **Picture Adjust Commands (not available on HDMI 1 or HDMI 2 inputs)** | | | |
| BRIGHTNESS | -100/100 | YES | Sets a value for brightness |
| BRIGHTNESS? | NA | NA | Returns brightness setting value |
| CHROMADELAY | -12/12 | YES | Sets a value for input color chroma delay |
| CHROMADELAY? | NA | NA | Returns input color chroma delay setting |
| COLOR | -100/100 | YES | Sets a value for color |
| COLOR? | NA | NA | Returns color setting value |
| CONTRAST | -100/100 | YES | Sets a value for contrast |
| CONTRAST? | NA | NA | Returns contrast setting value |
| FILMMODE | 0/1 | YES | Sets Film Mode off (0) or on (1) |
| FILMMODE? | NA | NA | Returns Film Mode setting (0 = off; 1 = on) |
| FILTER | 0/15 | YES | Sets a value for input color noise filter |
| FILTER? | NA | NA | Returns input color noise filter setting |
| PHASE | 0/3 | YES | Adjusts phase |
| PHASE? | NA | NA | Returns phase setting value |
| SHARPNESS | -6/6 | YES | Sets a value for sharpness |
| SHARPNESS? | NA | NA | Returns sharpness setting value |
| TINT | -100/100 | YES | Sets a value for tint |
| TINT? | NA | NA | Returns tint setting value |
| **Image Preset Commands (not available on HDMI 1 or HDMI 2 inputs)** | | | |
| CUSTOM1 | NA | YES | Loads “Custom 1” image preset |
| CUSTOM2 | NA | YES | Loads “Custom 2” image preset |
| DAY | NA | YES | Loads “ISF Day” image preset |
| NIGHT | NA | YES | Loads “ISF Night” image preset |
| PRESET? | NA | NA | Returns currently-selected preset (ISF Day, ISF Night, Custom 1 or Custom 2) |

## Table 6-1. Serial Commands (continued)

| Command | Parameter (min/max) | Value Stored? | Description |
|---|---|---|---|
| **Input Position Commands (not available on HDMI 1 or HDMI 2 inputs)** | | | |
| IHEIGHT | -100/100 | YES | Sets the value for input height |
| IHEIGHT? | NA | NA | Returns input height value |
| IHPOS | -100/100 | YES | Sets a value for horizontal input position |
| IHPOS? | NA | NA | Returns input horizontal position value |
| IVPOS | -100/100 | YES | Sets a value for vertical input position |
| IVPOS? | NA | NA | Returns input vertical position value |
| IWIDTH | -100/100 | YES | Sets the value for input width |
| IWIDTH? | NA | NA | Returns input horizontal width value |
| OVERSCAN | 0/10 | YES | Sets the overscan percentage |
| OVERSCAN? | NA | NA | Returns overscan percentage |
| **Output Shift Commands (not available on HDMI 1 or HDMI 2 inputs)** | | | |
| OHEIGHT | -100/100 | YES | Sets the value for output height |
| OHEIGHT? | NA | NA | Returns output height value |
| OHPOS | -100/100 | YES | Sets the value for output horizontal position |
| OHPOS? | NA | NA | Returns output horizontal position value |
| OVPOS | -100/100 | YES | Sets the value for output vertical position |
| OVPOS? | NA | NA | Returns output vertical position value |
| OWIDTH | -100/100 | YES | Sets the value for output width |
| OWIDTH? | NA | NA | Returns output horizontal width value |

## Table 6-1. Serial Commands (continued)

| Command | Parameter (min/max) | Value Stored? | Description |
|---|---|---|---|
| **Miscellaneous Commands** | | | |
| BKGND | -100/100 | YES | Sets the background color for 4:3 aspect ratio (-100 = black; 100 = white) |
| BKGND? | NA | NA | Returns background setting value |
| DATE? | NA | NA | Returns projector manufacture date |
| HDINPUTRES | NA | YES | Sets YPbPr input resolution and refresh rate for HD1/HD2, as follows:<br>0 = 480i<br>1 = 480p<br>2 = 576i<br>3 = 576p<br>4 = 720p / 60 Hz<br>5 = 1080i / 60 Hz<br>6 = 720p / 50 Hz<br>7 = 1080i / 25 Hz<br>Any other value = Auto |
| HWVER? | NA | NA | Returns hardware version number |
| INRES? | NA | NA | Returns input resolution |
| LENS1? | NA | NA | Returns Lens 1 configuration |
| LENS2? | NA | NA | Returns Lens 2 configuration |
| RGBNN | NA | NA | Sets output color space to RGB with negative horizontal and vertical sync |
| RGBPP | NA | NA | Sets output color space to RGB with positive horizontal and vertical sync |
| RGBS | NA | NA | Sets output color space to RGB with composite sync |
| STATUS | NA | NA | Returns current operating status (power, input source, input resolution and input aspect ratio) |
| SWVER? | NA | NA | Returns software version number |
| TRIGGER | 1/3 | YES | Assigns trigger to currently-selected aspect ratio |

**Table 6-1. Serial Commands (continued)**

| Command | Parameter (min/max) | Value Stored? | Description |
|---|---|---|---|
| The following serial commands are meant to emulate buttons on the remote control or DHD Controller front panel. Each button has its own serial command, so effectively it is as if you were using the IR remote only you'll be doing so via serial commands. These commands provide active OSD responses just like the IR remote. | | | |
| DOWN | NA | NA | Down-Arrow (▼) key |
| ENTER | NA | NA | **ENTER** key |
| LEFT | NA | NA | Left-Arrow (◀) key |
| MENU | NA | NA | **MENU** |
| RIGHT | NA | NA | Right-Arrow (▶) key |
| UP | NA | NA | Up-Arrow (▲) key |

# 7. Specifications

## 7.1 VX-6000d Specifications

Table 7-1 lists the VX-6000d specifications.

### Table 7-1. VX-6000d Specifications

| | |
|---|---|
| **Projector Type:** | Digital Light Processing (DLP), single-chip, 16:9 SuperOnyx™ DMD |
| **Native Resolution:** | 1920 x 1080 (16:9) |
| **Aspect Ratios:** | Refer to Table 7-2 |
| **Video Standards:** | Refer to Table 7-2 |
| **DTV Compatibility:** | 480p, 720p, 1080i, 1080p |
| **Scan Frequency:** | Horizontal: 15 - 81 kHz<br>Vertical: 43 - 100 Hz |
| **Picture Size (16:9 Screen):** | Recommended Width: 72 - 96 in.<br>Maximum Width: 200 in. |
| **Throw Distance (Factor x Screen Width):** | Refer to Table 3-3 |
| **Horizontal and Vertical Offset:** | Refer to Table 3-4 |
| **Lamp:** | 220 Watts |
| **Estimated Lamp Life:** | 2000 hours |
| **Inputs (from DHD Controller):** | (1) HDMI with HDCP, (1) RS-232 |

## Table 7-1. VX-6000d Specifications (continued)

| | |
|---|---|
| **Brightness and Contrast (variable, depending on RVR calibration):** | **Cinema Standards Measurement System (CSMS) Specifications**<br>- Brightness: 17.3 to 29.8 foot-Lamberts (fL)<br>- Contrast Ratio: 285:1 to 360:1<br>These measurements are taken from the projector in a controlled, home theater environment. All measurements are made to ANSI/NAPM IT7.228-1997 specifications using the Photo Research PR-650 SpectraColorimeter and Minolta LS-100 Luminance Meter, Video Essentials test DVD and a 1.3 gain, 72-inch wide screen. The projector is calibrated to a color temperature of 6,500K and has a minimum of 150 hours of usage.<br>The foot-Lambert (fL) is the unit of measurement used in commercial movie theaters to express image brightness at the screen surface. The Society of Motion Picture and Television Engineers (SMPTE) specifies 16 fL as the target image brightness for film-based projectors using an open gate (without film in the projector). More importantly, today SMPTE specifies 12 fL as the target image brightness in Digital Cinema theaters. The foot-Lambert measurement is dependent on screen size, screen gain and projector light output.<br>**Home Theater Calibration Specifications**<br>- Light Output: 468 to 801 ANSI Lumens<br>- Contrast Ratio: 285:1 to 360:1<br>These specifications are obtained by calibrating the projector as described above for CSMS measurements.<br>**Industry-Standard Specifications**<br>- Light Output: 1750 ANSI Lumens<br>- Contrast Ratio: 4450:1 to 5000:1<br>These are typical projector brightness and contrast specifications found in most companies' sales literature. Runco includes these measurements in its literature to allow for direct comparison with other manufacturers' projectors. These measurements are typically taken at 9,000K to 13,000K to get expected performance data when the projector is used in professional, commercial and industrial displays. |
| **Power Requirements:** | 100 to 240 VAC (auto-sensing), 50/60 Hz, 380 Watts (1296.9 BTUs/hour) |
| **Operating Environment:** | 40°F to 95°F (5°C to 35°C), 0% to 90% humidity (non-condensing) |
| **Dimensions:** | See Figure 7-1 |
| **Weight (without lens):** | 73 lbs. (33.11 kg) |
| **Regulatory Approvals:** | Complies with FCC, CE C-Tick |
| **Limited Warranty:** | Projector: Two (2) years parts and labor from the date of delivery to the end user.<br>Lamp: 1000 hours or six (6) months, whichever comes first. |

**Specifications are subject to change without notice.**

## 7.2 DHD Controller Specifications

Table 7-2 lists the DHD Controller specifications.

### Table 7-2. DHD Controller Specifications

| | |
|---|---|
| **Aspect Ratios:** | 4:3, Letterbox, 16:9, VirtualWide, Cinema, Virtual Cinema |
| **Video Standards:** | NTSC, PAL |
| **Inputs:** | (1) Composite; (2) S-Video; (1) Component; (2) HD-R (Pr), G (Y), B (Pb), H, V; (2) HDMI with HDCP |
| **Outputs:** | (1) HDMI with HDCP |
| **Control Options:** | - Discrete infrared remote<br>- Serial commands via RS-232<br>- Front-panel controls |
| **RS-232 Communication Parameters:** | 19200 bps, no parity, 8 data bits, 1 stop bit, no flow control |
| **Trigger Outputs:** | (3) +12 VDC, each rated at 750 mA and thermal fuse-protected |
| **Bandwidth:** | 150 Mega Samples per Second (MSPS) |
| **Power Requirements:** | 100 to 240 VAC (auto-sensing), 50/60 Hz, 160 Watts (546.1 BTUs/hour) |
| **Operating Environment:** | 40°F to 95°F (5°C to 35°C), 0% to 90% humidity (non-condensing) |
| **Dimensions:** | Width = 17.50 inches (444.5 mm)<br>Depth = 11.19 inches (284.1 mm)<br>Height = 3.75 inches (95.3 mm) |
| **Weight:** | 13.0 lbs. (5.90 kg) |
| **Regulatory Approvals:** | Complies with FCC, CE C-Tick |
| **Limited Warranty:** | Two (2) years parts and labor from the date of delivery to the end user. |
| **Specifications are subject to change without notice.** | |

## 7.3 VX-6000d Dimensions

Figure 7-1 shows the VX-6000d/CineWide dimensions (all dimensions are in inches).

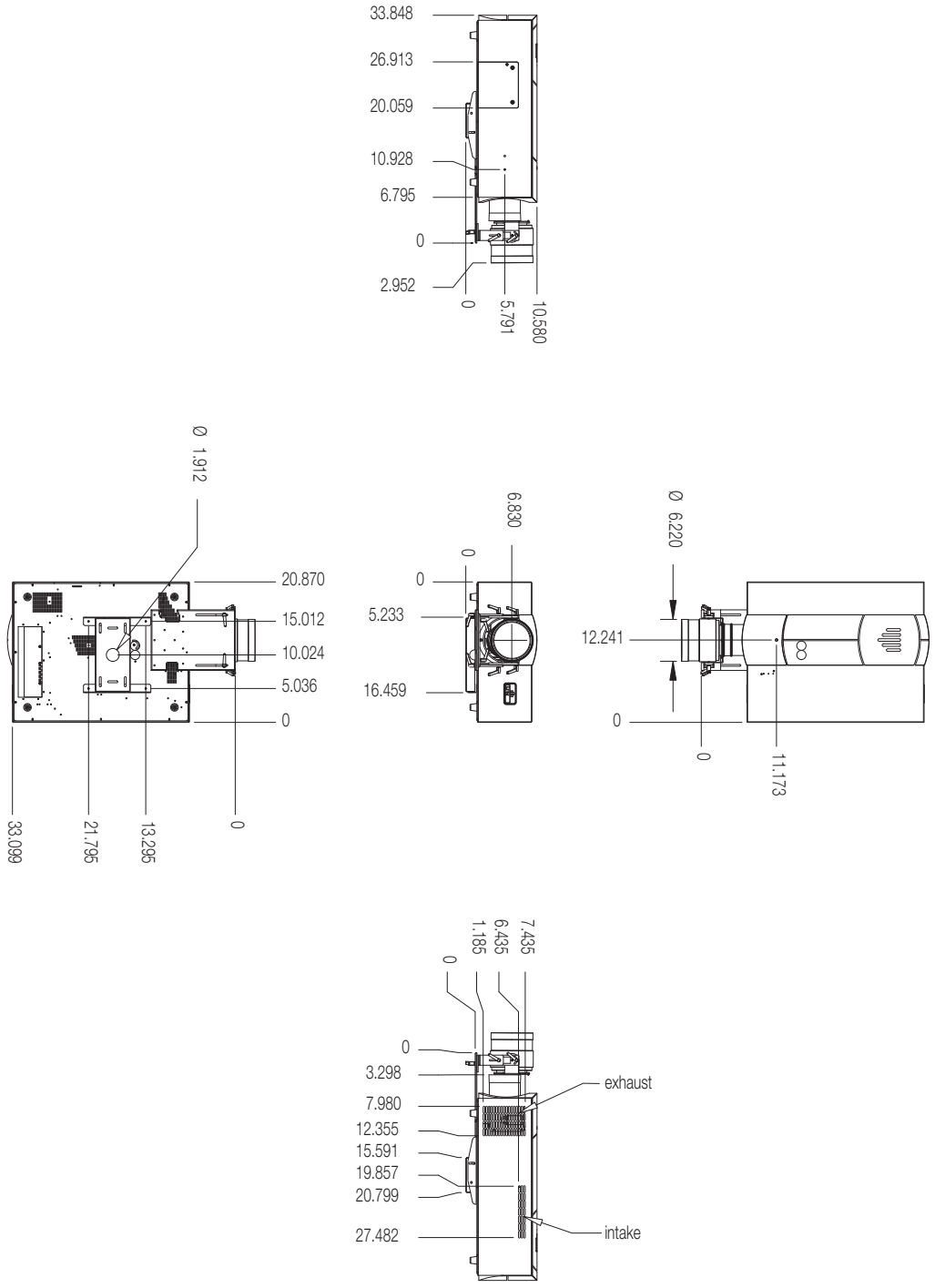



**Figure 7-1. VX-6000d/CineWide Dimensions**

## 7.4 Supported Timings

Table 7-3 lists the signal types supported by each input on the DHD Controller.

**Table 7-3. Supported Signal Timings by Input**

| Format | Resolution | Refresh Rate (Hz) | Horizontal Frequency (kHz) | Pixel Frequency (MHz) | Supported? (√ = Yes, – = No) | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | HD/RGB 1 HD/RGB 2 | HDMI 1 HDMI 2 | Component | S-Video 1 S-Video 2 | Video |
| 640x480 | 640x480 | 60.00 | 31.469 | 25.175 | √ | – | – | – | – |
| | | 72.00 | 37.861 | 31.500 | √ | – | – | – | – |
| | | 75.00 | 37.500 | 31.500 | √ | – | – | – | – |
| | | 85.00 | 43.269 | 36.000 | √ | – | – | – | – |
| 800x600 | 800x600 | 56.00 | 35.156 | 36.000 | √ | – | – | – | – |
| | | 60.00 | 37.879 | 40.000 | √ | √ | – | – | – |
| | | 72.00 | 48.077 | 50.000 | √ | √ | – | – | – |
| | | 75.00 | 46.875 | 49.500 | – | √ | – | – | – |
| | | 85.00 | 53.674 | 56.250 | √ | √ | – | – | – |
| 1024x768 | 1024x768 | 60.00 | 48.363 | 65.000 | √ | √ | – | – | – |
| | | 70.00 | 56.476 | 75.000 | √ | √ | – | – | – |
| | | 75.00 | 60.023 | 78.750 | √ | – | – | – | – |
| 1280x1024 | 1280x1024 | 60.00 | 63.981 | 108.000 | √ | – | – | – | – |
| 1920x1080 | 1920x1080 | 60.00 | 74.038 | 154.000 | – | √ | – | – | – |
| 480/60i | 720x487 | 59.94 | 15.734 | 13.500 | √ | – | √ | √ | √ |
| 480/60p | 720x483 | 59.94 | 31.469 | 27.000 | √ | √ | – | – | – |
| 576/50i | 720x576 | 50.00 | 15.625 | 14.750 | √ | – | √ | √ | √ |
| 576/50p | 720x576 | 50.00 | 31.250 | 29.000 | √ | √ | – | – | – |
| 720/50p | 1280x720 | 50.00 | 37.500 | 75.250 | √ | √ | – | – | – |
| 720/60p | 1280x720 | 60.00 | 45.000 | 74.250 | √ | √ | – | – | – |
| 1080/50i | 1920x1080 | 50.00 | 28.125/31.250 | 74.250/72.000 | √ | √ | – | – | – |
| 1080/60i | 1920x1080 | 59.94/60.00 | 33.716/33.750 | 74.175/74.250 | √ | √ | – | – | – |
| 1080/24p | 1920x1080 | 23.98/24.00 | 26.978/27.000 | 74.175/74.250 | – | √ | – | – | – |
| 1080/50p | 1920x1080 | 50.00 | 56.250 | 148.500 | – | √ | – | – | – |
| 1080/60p | 1920x1080 | 59.94/60.00 | 67.433/67.500 | 148.350/148.500 | – | √ | – | – | – |
| NTSC 3.58 | – | 59.94/60.00 | 15.734/15.750 | 3.580 | √ | – | √ | √ | √ |
| NTSC 4.43 | – | 59.94/60.00 | 15.734/15.750 | 4.430 | √ | – | √ | √ | √ |
| PAL-B/G | – | 50.00 | 15.625 | 4.430 | √ | – | √ | √ | √ |
| PAL-M | – | 59.94/60.00 | 15.734/15.750 | 3.580 | √ | – | √ | √ | √ |

**Table 7-3. Supported Signal Timings by Input (continued)**

| Format | Resolution | Refresh Rate (Hz) | Horizontal Frequency (kHz) | Pixel Frequency (MHz) | Supported? (√ = Yes, – = No) | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | HD/RGB 1<br>HD/RGB 2 | HDMI 1<br>HDMI 2 | Component | S-Video 1<br>S-Video 2 | Video |
| PAL-N | – | 50.00 | 15.625 | 3.580 | √ | – | √ | √ | √ |
| PAL-60 | – | 59.94/60.00 | 15.734/15.750 | 4.430 | √ | – | √ | √ | √ |

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