

Install a Projector for Direct Throw in a Custom Enclosure

This instruction sheet outlines how to reconfigure and install an Entero HB projector into a custom structure, which uses a direct throw orientation. The adapter plate is only provided with light engines that come with a 1.2:1 lens.

For information on installing the projector and adjusting the image, refer to the *Entero HB Rear-Access Cube Installation and Setup Manual (020-101007-XX)*.

Safety Precautions

CAUTION

- For custom installations: Maintain a minimum clearance of 2.5 cm (1.0") around the projector for air circulation and 7.5 cm (3") clearance for cable connections to the input panel. Insufficient clearance can cause the projector to overheat during operation or place undue stress on source connections. Failure to comply could result in minor or moderate injury.
- Mount the projector on a sturdy, flat surface that fits the entire projector. Use all eight mounting points to secure the projector to the surface. Maintain a minimum clearance of 25 cm (10") around the projector, called a stay-out-zone, for air circulation and clearance for cable connections to the input panel. Insufficient stay-out-zone clearance can cause the projector to overheat during operation or place undue stress on source connections. Failure to comply could result in minor or moderate injury.

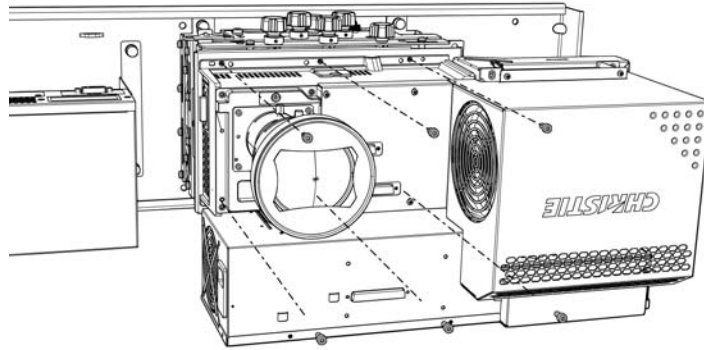
Tools and Hardware Required

- 2.5 mm hex driver (long shaft)
- 3 mm hex driver (long shaft)
- Adapter plate

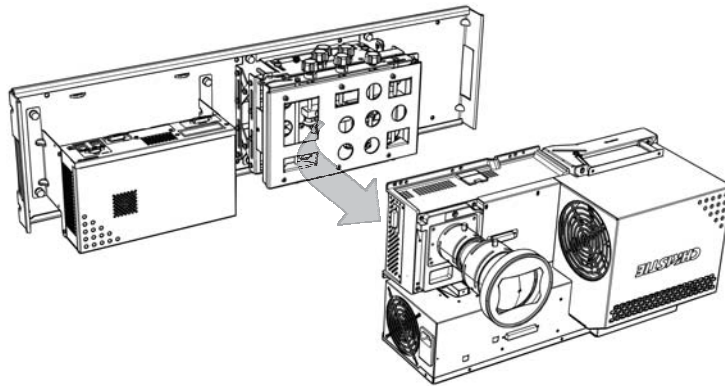
Change Orientation for Direct Throw Installations

1. Disconnect the **Control-S** and **Control-P** connectors from the optical module.

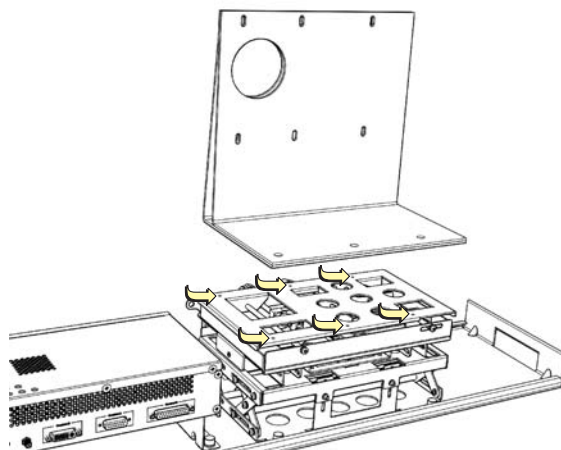
2. Use a 3 mm hex driver to remove the six M4 screws fastening the optical module to the 6-axis adjuster. Use a long driver to access the screws between the optical module and power supply.



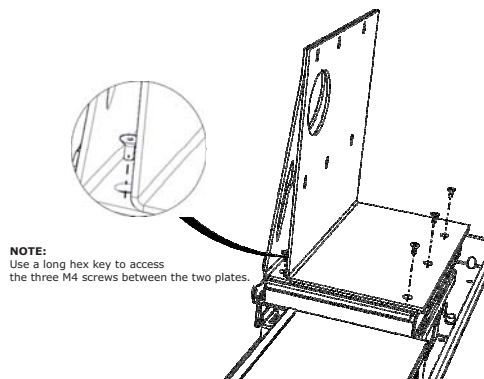
3. Remove the light engine and place in a safe location.



4. Place the adapter plate in line with the six mounting holes on the 6-axis adjuster, as shown below.



5. Use a 2.5 mm hex driver to secure the horizontal bracket with the 6 M4 flat head screws. Tighten the M4 flat head screws to a torque setting of 1.35 Nm/12 lbf-in.

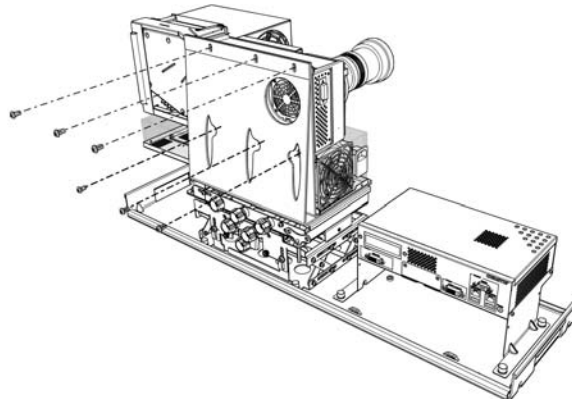
**NOTICE**

The bracket in the below images is specific to the 1.2:1 lens version of the light engine. The bracket for your projector may be different.



Use a long hex key to access the three M4 screws between the two plates.

6. Place the optical module onto the adapter bracket.
7. Use a 3mm hex key to secure the optical module to the bracket with six M5 screws. Tighten the M5 screws to a torque setting of 2.7 Nm/24 lbf-in.



Calculating Throw Distance and Position

Throw distance (also known as projection distance) is the distance measured from the front surface of the projector lens to the screen. The calculated throw distance depends on the type of lens being used and the DMD format (SX+ or HD). This important calculation in a projector installation determines whether or not you have enough room to install your projector with a required screen size and if the displayed image will be of the right size for your screen. Refer to the CAD drawings provided by Christie at www.christiedigital.com.

Focus the Lens

NOTICE

Do not use tools to adjust focus and BFL. Failure to comply may result in equipment damage.



- Applies to the projector models with the part number 139-001102-xx and 139-002103-xx. The lens is factory aligned. Do not loosen the lens mounting screw.
- Always evaluate focus before performing the following adjustments.
- BFL is preset for the 70" screen; therefore, only focus adjustment is required on this screen. For all other screen sizes perform the steps outlined below.
- The 0.69:1 SXGA+ lens is on the light engines provided with the cubes.

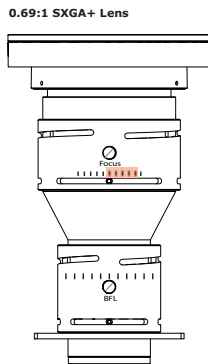
The focus and geometry for Entero HB projectors are preset for installation. If the projector is installed in a different cube or if the test image is out of focus, follow this procedure to focus the lens. If the test image is focused, see *Fine-tune Image Geometry using the Mirror* in the *Entero HB Rear-Access Cube Installation and Setup Manual*.

1. Display a cross-hatch pattern test pattern. To access the test pattern menu from the OSD, go to **Wall Settings > Color and Brightness > Test Patterns**.
2. Adjust the 6-axis adjuster until the image slightly underfills the screen.

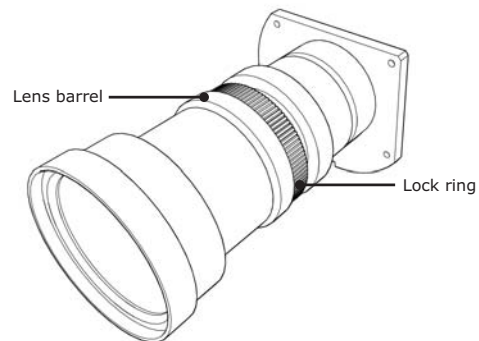
See *Adjust Image Geometry using the 6-axis Adjuster* in the *Entero HB Rear-Access Cube Installation and Setup Manual*.

3. Manually loosen the thumbscrews or lock ring.
4. Adjust the focus of the 0.69:1 lens:
 - For best focus at screen center, adjust **BFL**.
 - For best focus between the corners and center, adjust **BFL** again.
 - Set **Focus** and **BFL** to the center of the adjustment range.
 - For the best corner focus and geometry, adjust **Focus**. Typically best results are in the highlighted range, as shown in the illustration.

0.69:1 lens



1.2:1 lens

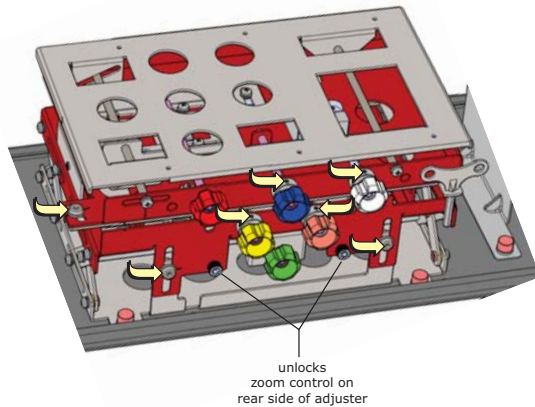


5. Adjust the focus of the 1.2:1 lens by turning the lens barrel until the best focus between the corners and center is achieved.
6. Tighten the thumbscrews or lock ring.
7. If the adjuster cannot fill the screen with the image, it may be necessary to fine tune the mirror.

See *Fine-tune Image Geometry using the Mirror* in the *Entero HB Rear-Access Cube Installation and Setup Manual*.

Adjusting the Image

The optical module is mounted on a 6-axis adjuster. Use the color-coded adjuster controls to adjust image geometry: position, keystone, zoom, and tilt. The 6-axis adjustment label on the product illustrates the function of each. Before making adjustments, make sure the lock screws for each adjustment knob are loosened. Use the 5 mm hex key provided to loosen the M6 lock screws and a 2 mm hex key (not provided) to loosen the collar lock screws. Tighten all lock screws after image adjustments are complete.



- Red Adjustment Knob: Adjust tilt.
- Blue Adjustment Knob: Adjust the vertical position.
- White Adjustment Knob: Adjust keystone.
- Yellow Adjustment Knob: Adjust keystone.
- Orange Adjustment Knob: Adjust the horizontal position.
- Green Adjustment Knob: Adjust zoom.

The orientation of the projector in relation to the screen changes the effect of the knob adjustments. Vertical (lens up) is the default installation. A label for the horizontal (lens forward) installation is included with the projector for installations where the projector is configured for direct throw.

